Hearing Date: July 25, 2025
J:\MANDATES\2007\TC\07-TC-09 (Discharge of Stormwater Runoff)\07-TC-09-R\Ps&Gs\TOC.docx

ITEM 3

PROPOSED DECISION AND PARAMETERS AND GUIDELINES

San Diego Regional Water Quality Control Board Order No. R9-2007-0001, Permit CAS0108758, Parts D.3.a.(3)(b)(iii), D.5.a.(1), D.5.a.(2), D.5.b.(1)(a), D.5.b.(1)(b)(iii.-vi.), D.5.b.(1)(c), D.5.b.(1)(d), D.5.b.(2), D.5.b.(3), E.2.f., E.2.g., F.1., F.2., F.3., I.1., I.2., I.5., J.3.a.(3)(c)(iv)-(viii), (x)-(xv), the first sentence of L.1. as it applies to the newly mandated activities, and L.1.a.(3)-(6)

07-TC-09-R

Period of reimbursement is January 24, 2007 to December 31, 2017.

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CITY OF SANTEE

2008/2009 JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

IDDE SECTION

DECEMBER 2009

PREPARED BY:

D-MAX ENGINEERING, INC.
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CITY OF SANTEE

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CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Pedro Orso-Delgado
Director of Development Services/Deputy City Manager

Date: December 9, 2009

Telephone: (619) 258-4100 ext. 168

INTRODUCTION AND CONTENTS

Introduction

The Reporting Period as originally written in Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit) was defined as July 1 through June 30. Reporting on the City's implementation of all components of its JURMP was originally required to be submitted to the RWQCB by September 30 following the Reporting Period. However, on September 10, 2008, the RWQCB adopted Addendum No. 2 to the Municipal Permit, which requires that the City discuss its 2009 Dry Weather Monitoring Program activities in Section 7 of its 2008/2009 JURMP Annual Report.

Section 7 of the Annual Report discusses the implementation of the illicit discharge detection and elimination (IDDE) component of the City's storm water program. This program component includes both dry weather monitoring activities and other activities to prevent and respond to illicit connection and illicit discharges, such as operating a storm water hotline. The Reporting Period for the portions of this section that discuss dry weather monitoring activities was changed to extend through September 30, 2009, but the Reporting Period for other activities described in the section was not changed and thus extends through June 30, 2009, the same Reporting Period as applies to the rest of the JURMP Annual Report. Because the field work for the dry weather monitoring program is not required to be completed until September 30, 2009, the same day that the JURMP Annual Report is to be submitted, the RWQCB extended the submittal deadline for all of Section 7 of the 2008/2009 JURMP Annual Report until December 15, 2009.

Contents

This submittal includes a certification statement, the text of Section 7 of the 2008/2009 JURMP Annual Report, and the attachments associated with that section. For clarity, the items included in this submittal are listed below.

- Certification statement for Section 7 submittal
- Introduction and Contents
- Section 7 (IDDE component) of the 2008/2009 JURMP Annual Report
- JURMP Annual Report Requirements Checklist (for Section 7 only)
- Attachment 7.1, City of Santee Dry Weather Field Screening and Analytical Monitoring Program 2009

Please note that the complaint log, referenced as Appendix B in Section 7, was already submitted with the main JURMP Annual Report submittal in September 2009 and is not included again with this submittal.

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION

7.1 INTRODUCTION

The City maintains several programs to prevent and to seek out and eliminate illicit connections and illicit discharges (IC/IDs), which can be significant sources of pollutants to the City's MS4. Illicit discharges may result from activities such as vehicle washing or equipment cleaning without the use of proper BMPs. Illicit connections include improper links to the MS4, typically of conveyances that should be plumbed to the sanitary sewer system, such as car wash facility drains. City storm water personnel work with residents, businesses, and City staff to make them aware of BMPs to prevent IC/IDs and to encourage reporting of IC/IDs. The following activities are the primary components of the City's program to combat IC/IDs:

- Inspecting local businesses, construction sites, and municipal facilities;
- Conducting the Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program);
- Operating a public complaint hotline.

These activities enable the City to provide a comprehensive system to improve the quality of storm water and urban runoff throughout the City through detection and elimination of IC/IDs.

7.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the illicit discharge detection and elimination component during the 2008/2009 Reporting Period are presented in the following bulleted list. Please note that per Addendum No. 2 to the Municipal Permit, the Reporting Period for the Dry Weather Monitoring Program was extended through September 30, 2009. The Reporting Period for all other components of the City's illicit discharge detection and elimination (IDDE) program ended on June 30, 2009.

- The City continued to operate a storm water hotline; the City received and responded to 59 complaints during the Reporting Period.
- The City performed all of the recommended corrective actions proposed in the 2008 Dry Weather Monitoring Program Report to prevent possible pollutants from entering the storm drain system.
- The City conducted two rounds of monitoring during the 2009 Dry Weather Monitoring Program, and performed the recommended corrective actions based on Round One results.

7.2 Public Reporting of Illicit Discharges and Connections

See Section 4.10 of this JURMP Annual Report, which was submitted in September 2009. Additionally, the City received a report of a fish kill in the San Diego River toward the eastern boundary of the City in October 2008. City staff followed up with the County and was provided with monitoring data collected by Lakeside Land Company, which indicated that low dissolved oxygen levels (less than 5.0 mg/L) were present in the river east of the Santee City boundary. City staff also contacted the plant manager at RCP Block and Brick, located along the San Diego River at the eastern side of Santee, to see if he had noticed any discharges or similar circumstances that might have contributed to reduced dissolved oxygen levels. He reported that he had seen evidence of a fish kill but had not noticed any sources or discharges that would directly reduce oxygen levels. City staff also directly visited this segment of the San Diego River to visually investigate and did not note any evidence of discharges that could result in low dissolved oxygen. Based on the results of the investigation, it appears that reduced dissolved oxygen was present in the river upstream of the City of Santee. Given that the observation occurred at the very end of the summer before any rain events, it is possible that effects of high temperature and very slow flow velocities in that portion of the river contributed to the observed conditions. Additionally, the City conducted sampling for dissolved oxygen in the portion of the river at the eastern boundary of the City in May and September 2009. Dissolved oxygen readings in those samples were 7.95 and 7.91 mg/L, respectively, both well above the Basin Plan standard of 5.0 mg/L.

7.3 Spill Reporting, Response, and Prevention

See Section 4.9 of this JURMP Annual Report, which was submitted in September 2009.

7.4 Urban Runoff Monitoring

The City has continued to conduct a Dry Weather Monitoring Program, as required by the Municipal Permit. This program assists the City in detecting and eliminating IC/IDs to the storm drain system. There are three major components to the Dry Weather Monitoring Program:

- Field observations, which include site descriptions and qualitative observations
- Field screening, which includes flow estimation and sample testing using meters and test kits at the site
- Analytical monitoring, which involves submittal of collected samples from selected sites, constituting 25 percent of all flowing or ponded sites, to an analytical laboratory for additional testing

The City visits all designated primary monitoring stations each year between May 1 and September 30 to collect dry weather monitoring data. When a primary monitoring station is found to be dry, the City visits designated alternate monitoring stations.

For both the 2008 and 2009 Dry Weather Monitoring Programs, the City visited 20 monitoring stations with ponded or flowing water to collect Dry Weather Monitoring Program data. The City conducts two rounds of dry weather monitoring each season, one early in the season and one near the end.

Numeric action levels are used as the primary approach for the interpretation of most constituent concentrations measured in the field and laboratory. Action levels for dissolved metals follow the California Toxics Rule (CTR) Criteria Maximum Concentration (CMC). Temperature, turbidity, and conductivity parameters are evaluated using best professional judgment to determine if further investigation is needed. The action levels for pH, surfactants, ammonia-nitrogen, nitrate-nitrogen, orthophosphate-phosphorus, oil and grease, diazinon, and chlorpyrifos were adopted in 2003 and were based on statistical analyses of previous Dry Weather Monitoring Program data, established water quality benchmarks from the Basin Plan, and the United States Environmental Protection Agency Multi-Sector General Permit.

The Regional Monitoring Workgroup in November 2008 requested the Dry Weather Monitoring Sub-workgroup to evaluate dry weather action levels that were submitted in April 2003 by the County of San Diego on behalf of the Copermittees. The Dry Weather Monitoring Sub-workgroup determined that the bacterial indicators action levels required additional analysis. All other action levels were deemed appropriate and will not change. The Dry Weather Monitoring Sub-workgroup contracted the services of D-MAX Engineering (D-MAX) to conduct the evaluation of historical bacterial data collected from dry weather monitoring from 2002 through 2007. Details of their evaluation are posted on the Project Clean Water Website at http://www.projectcleanwater.org/pdf/science_mon/dry_weather_2009bacteria_action_level_report_draft.pdf. The Regional Monitoring Workgroup on May 19, 2009 evaluated the recommendations of the Dry Weather Monitoring Sub-workgroup and selected the 80th percentile values to be proposed as the dry weather action levels for bacterial indicators beginning on May 1, 2010. The current levels and the levels proposed for use beginning May 1, 2010 are presented in Table 7-1.

TABLE 7-1
Bacterial Indicators Action Levels for Dry Weather Monitoring Program

	Total Coliform (MPN/100 mL)	**Fecal Coliform (MPN/100 mL)**	***Enterococcus* (MPN/100 mL)**
2003-2009 Action Levels	50,000	20,000	10,000
Proposed 2010 -2012 Action Levels	130,000	13,000	7,000

7.4.1 2008 DRY WEATHER MONITORING PROGRAM

Both rounds of the City's 2008 Dry Weather Monitoring Program were conducted during the 2008 dry season. For information about how the City addressed issues discovered during the 2008 Dry Weather Monitoring Program and responded to the resulting recommendations, see Section 7.5.1 of this report.

7.4.2 2009 DRY WEATHER MONITORING PROGRAM

Both rounds of the 2009 Dry Weather Monitoring Program were completed as scheduled during the 2009 dry season. Twenty-two routine site visits to the monitoring stations were performed.

If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days. Upstream investigations are performed when exceedances are verified during confirmation visits. See the City's JURMP for a complete discussion of upstream investigation procedures.

Table 7-2 presents a summary of the action level exceedances observed in 2009. Tables 7-3 and 7-4 present the results of confirmation visits and, where necessary, upstream investigations conducted during Round One and Round Two, respectively. A list of all the monitoring stations visited is displayed in Table 7-5. At the end of this section, tables 7-6 and 7-7 provide the complete field analytical results and laboratory analytical results, respectively, from both rounds of the 2009 Dry Weather Monitoring Program.

Table 7-2
Summary of 2009 Action Level Exceedances

Field Screening (20 samples)						
Analyte	**Number of Exceedances**		**Percentage of Sites with Exceedance**		**Site Exceeding Action Level**	
	R1	**R2**	**R1**	**R2**	**R1**	**R2**
pH	0	1	0	5	---	V40d
Conductivity	0	0	0	0	---	---
Turbidity	0	1	0	5	---	Q5l
Surfactants	0	0	0	0	---	---
Ammonia-N	1	0	5	0	E5g	---
Nitrate-N	0	1	0	5	---	P15b
Orthophosphate-P	0	1	0	5	---	Q5l

Laboratory Analyses (5 samples)						
Analyte	Number of Exceedances		Percentage of Sites with Exceedance		Site Exceeding Action Level	
	R1	R2	R1	R2	R1	R2
Oil & Grease	0	0	0	0	---	---
Cadmium	0	0	0	0	---	---
Copper	0	0	0	0	---	---
Lead	0	0	0	0	---	---
Zinc	0	0	0	0	---	---
Diazinon	0	0	0	0	---	---
Chlorpyrifos	0	0	0	0	---	---
Total Coliforms	0	1	0	20	---	J30d
Fecal Coliforms	0	1	0	20	---	J30d
Enterococci	0	1	0	20	---	J30d

Note: Round One (R1) and Round Two (R2) data is from the routine (first) visit to each site only.

Follow-up investigations conducted in response to action level exceedances are summarized in Section 7.5.2 of this report.

A formal trash assessment was performed in 2009 in accordance with the Municipal Permit requirements. A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form's five categories are primarily qualitative descriptions of the amount and extent of trash although a number of trash pieces is also included in each category as a rough guideline. The five categories are defined as follows.

- Optimal: On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
- Suboptimal: On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
- Marginal: Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
- Submarginal: Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (~100-400 pieces). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
- Poor: Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

The threat to human health and threat to aquatic health is also assessed at each site. Prior to the beginning of the 2009 dry weather season, the Dry Weather Monitoring Sub-workgroup added additional detail to the definitions of these categories to help achieve a greater level or inter-jurisdictional consistency. The definitions are as follows:

- *Threat to Human Health* – Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment.
- *Threat to Aquatic Health* – Large amount (50 pieces or more) of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amounts of settleable, degradable, and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence of large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment.

Twenty-two sites were assessed in each of the two rounds, and most of the sites were rated optimal or suboptimal, having little or no trash. One site in Round One and two sites in Round Two received a marginal trash assessment rating. No sites in either round were considered submarginal or poor, and no sites were considered to pose a threat to human or aquatic health.

The 2009 Dry Weather Monitoring Program Report, which includes results of field screening and analytical monitoring, can be found as Attachment 7.1.

Note that no substantive changes were made to the City's MS4 map as a result of the 2009 Dry Weather Monitoring Program.

7.5 Follow-up and Enforcement

7.5.1 Actions Taken in Response to the 2008 Dry Weather Monitoring Program Findings

Based on the 2008 Dry Weather Monitoring Program results, several recommendations were made. The following is a list of actions the City performed, based on the recommendations made in the 2008 Dry Weather Monitoring Report.

- The City has continued to work with the responsible parties for landscaping at the industrial park near 10911 Wheatlands Avenue as necessary to encourage appropriate use of fertilizers. Based on the results of Round Two monitoring, it appeared that the City's actions taken after Round One had been effective.

- In response to field reports of high turbidity at Site Q5l, City crews cleaned out sediment from the catch basin.
- Sediment, litter, and other debris in the storm water conveyance system between the outlet pipe at Site J25c and the junction box at upstream location J25c-2, near El Nopal and Molina Road was cleaned out. These conveyances were also cleaned in the spring, at the end of the wet season, to help reduce summer bacterial growth.
- Trash observed at marginal sites G30c, J25c, and U10, submarginal sites S5c, E5g, H5e, and Y15e, and suboptimal sites J25c2, J30d, K15j2, P20f, V40d RCP1, S15h, and V45K has been removed.
- The City has initiated the process of removing the obstruction in the outlet pipe at Site S5c.

7.5.2 2009 Dry Weather Monitoring Follow-Up Investigations

If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days. Upstream investigations are performed when exceedances are verified during confirmation visits. See the City's JURMP for a complete discussion of upstream investigation procedures.

Tables 7-3 and 7-4, below, present conclusions based on the results of confirmation visits and, where necessary, upstream investigations conducted during Round One and Round Two, respectively, of the 2009 Dry Weather Monitoring Program.

Table 7-3
Round One Summary of Follow-Up Investigations

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
E5g	Ammonia-N	---	Organic material decomposition and human use of the site

Table 7-4
Round Two Summary of Follow-Up Investigations

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
J30d	---	Total Coliforms, Fecal Coliforms, Enterococci	Decomposing vegetation and leaves in the channel (total coliforms); transient (fecal coliforms and enterococci)

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
P15b	Nitrate-N	---	Groundwater seepage into conveyance
Q5l	Orthophosphate-P, Turbidity	---	Historical agricultural activity and groundwater seepage are the most probable sources, additional research is underway
V40d	pH	---	Transient; algal photosynthesis and increased temperature removing carbon dioxide from the water, which increases pH

After the completion of Round One, the City removed trash and debris from Site E5g, which received a marginal trash assessment rating and had an exceedance of ammonia-nitrogen. Round Two observations indicated the City's action was effective; no exceedances were noted at Site E5g, and the site received an optimal trash assessment rating. The City also removed trash and debris from both of the other sites that had received marginal trash assessment ratings and removed vegetative debris from areas upstream of the bacterial exceedances prior to the wet season. The City is in the process of responding to the remaining recommendations based on Round Two of the 2009 Dry Weather Monitoring Program findings. These actions and any other actions taken with respect to the City's Dry Weather Monitoring Program during the remainder of 2009/2010 will be described in the 2009/2010 JURMP Annual Report.

7.5.3 IC/IDs Identified

During the Reporting Period, 30 IC/IDs were identified and eliminated based on investigations of reports made to the City's public complaint hotline. Details of all stormwater complaints made to the City's public complaint hotline are included in the City's complaint log, included with the September 2009 JURMP Annual Report submittal as Appendix B.

7.5.4 Enforcement

The enforcement actions taken by the City of Santee during the 2008/2009 Reporting Period are discussed in sections 4, 5 and 6 of this JURMP Annual Report, which was submitted in September 2009.

7.6 Illicit Discharge Detection and Elimination Component Effectiveness Assessment

The effectiveness assessment of this program component is provided in Section 11 of this JURMP Annual Report, which was submitted in September 2009.

7.7 PROGRAM REVIEW AND MODIFICATION

A revised version of the definitions of threat to human health and threat to aquatic health used during the trash assessment component of the Dry Weather Monitoring Program and proposed bacteria action levels to be used in the 2010 dry weather season are discussed earlier in this section. No other changes to the City's illicit discharge detection and elimination component were made during the Reporting Period.

Table 7-5
2009 Dry Weather Monitoring Locations

Site	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
A5c	Next to 8335 Carlton Oaks Drive, between Cadorette Avenue and Praful Street.	Outlet	Residential	None	907.12	32.84081	-117.02160
E5g	Santee Recreation Lakes, west of the Southern Lake, outfall on east bank of Sycamore Creek.	Outlet	Residential	None	907.12	32.84854	-117.00723
G30c	South end of River Trail Place, north of San Diego River, down trail to the west.	Outlet	Residential	Open	907.12	32.84501	-116.99122
H5e	South of River Park Drive, at end of walkway between Brookview Court and River Rock Court, north of San Diego River.	Outlet	Residential	None	907.12	32.84561	-116.98769
J25c	West end of Carefree Drive, on the west side of channel.	Outlet	Residential	None	907.12	32.85813	-116.97601
J25c2	At the east end of Country Scenes, east of Conejo Road.	Outlet	Residential	None	907.12	32.85639	-116.97598
J30d	In the Woodglen Vista Channel on the south side of Mast Boulevard, 100 feet east of San Remo Road.	Natural Creek	Residential	None	907.12	32.85485	-116.97588
K15j2	North side of Woodglen Vista Drive, east of Woodrose Avenue, south side of the park.	Concrete Channel	Residential	Parks	907.12	32.86596	-116.97418
O40b	At the north end of Abraham Way, south of San Diego River.	Outlet	Commercial	Industrial	907.12	32.84851	-116.96392
P15b	Northeast corner of the North Magnolia Avenue and Rockville Street intersection.	Manhole	Commercial	Residential	907.12	32.83704	-116.96633
P20f	East of North Magnolia Avenue, at the east end of Chubb Lane.	Concrete Channel	Residential	Commercial	907.12	32.84674	-116.96920
Q5I	North side of Prospect Avenue, 50 feet east of Railroad Avenue.	Catch Basin	Commercial	Industrial	907.12	32.83121	-116.97090
RCP1	North bank of the San Diego River in the RCP Brick Factory, across from the southwest corner of the antennae field.	Outlet	Residential	None	907.12	32.84959	-116.96659

Table 7-5 (Continued)
2009 Dry Weather Monitoring Locations

Site	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
RCP3*	North bank of the San Diego River in the RCP Brick Factory, across from the southeast corner of the antennae field.	Outlet	Residential	None	907.12	32.84975	-116.96341
S15h	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, north of Walmart, west of trail.	Outlet	Commercial	None	907.12	32.84326	-116.98969
S5c	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, northwest of Michael's.	Outlet	Commercial	None	907.12	32.84371	-116.98798
T5e*	Northwest of the Prospect Avenue and Argent Street intersection, south of Forester Creek.	Outlet	Commercial	Industrial	907.12	32.83393	-116.98956
U10a*	South bank of Forester Creek, 450 feet south of the Mission Gorge Road and Carlton Hills Boulevard intersection.	Outlet	Commercial	Industrial	907.12	32.83745	-116.99586
V40d	On the south side of Prospect Avenue, east of Fanita Drive.	Concrete Channel	Residential	None	907.12	32.83375	-117.00005
V45k	On the north side of Mission Gorge Road, at the north end of freeway 125.	Natural Creek	Commercial	Open	907.12	32.83895	-117.00251
Y15e*	On the north side of Mission Gorge Road, between Crossway Court and Big Rock Road, across from a shopping center.	Outlet	Commercial	Residential	907.12	32.83670	-117.02158
Z15b	On the north side of Mission Gorge Road, east of Father Junipero Serra Trail.	Outlet	Residential	None	907.12	32.83770	-117.02997

Note: * Alternate sites RCP3 and T5e replaced dry primary sites U10a and Y15e

Table 7-6
Field Analytical Results from the 2009 Dry Weather Monitoring Program

Site	Date	Time	Flow (gpm)	Temp (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
Round One											
A5c	5/26/09	11:45	Ponded	21.4	8.2	5.83	2.14	0.50	0.183	4.83	0.472
E5g	5/20/09	16:00	2	22.1	7.0	7.72	5.12	0.50	**1.590**	8.38	0.985
E5g (Confirmation 1)	5/21/09	15:45	1	22.1	7.3	na	2.80	na	**2.924**	na	na
E5g (Confirmation 2)	5/22/09	14:40	<1	22.4	7.3	na	3.02	na	**>3.00**	na	na
G30c	5/20/09	11:45	1	29	8.9	3.49	3.02	0.25	0.199	3.40	0.080*
H5e	5/20/09	14:50	1	25.3	8.3	0.92	1.52	0.25	0.049*	1.10*	0.090*
J25c	5/21/09	12:15	2	20.8	8.2	0.78	4.39	0.75	0.220	6.98	0.044*
J25c2	5/19/09	15:25	2	25.2	8.0	2.26	4.47	0.50	0.257	5.93	0.098
J30d	5/22/09	9:50	23	20.9	8.2	0.01	2.68	0.25	0.233	4.89	0.010*
K15j2	5/19/09	14:10	2	28.6	8.1	1.80	2.44	0.38	0.281	5.16	0.020*
O40b	5/20/09	9:20	Ponded	19.1	8.1	9.17	1.51	0.25	0.069*	2.26	0.485
P15b	5/21/09	15:15	4	24.6	7.7	0.79	1.62	0.13	0.130	7.00	0.126
P20f	5/21/09	11:40	15.5	23.8	8.8	10.30	1.36	0.13	0.232	2.59	0.049*
Q5I	5/21/09	9:25	<1	19.8	8.2	49.91	1.84	0.50	0.568	6.37	0.722
RCP1	5/21/09	10:45	5	21.5	8.3	0.64	1.60	0.25	0.059*	9.27	0.090*
RCP3	5/26/09	10:25	7.7	21.8	8.2	0.42	1.84	0.25	0.172	0.87*	0.103
S15h	5/26/09	14:10	<1	24.6	8.7	15.00	1.64	0.38	0.194	1.32	0.444

Table 7-6(Continued)
Field Analytical Results from the 2009 Dry Weather Monitoring Program

Site	Date	Time	Flow (gpm)	Temp (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
S5c	5/20/09	12:45	2	24.7	8.1	2.59	1.02	0.13	0.038*	0.33*	0.043*
T5e	5/26/09	13:00	<1	24.4	8.2	5.89	1.05	0.25	0.146	0.36*	0.390
U10a	5/22/09	9:10	Dry	ns	ns	ns	ns	ns	ns	ns	ns
V40d	5/22/09	11:10	33.5	27.9	8.6	1.68	4.19	0.50	0.138	0.14*	0.004*
V45k	5/22/09	12:00	6	21.6	7.9	0.01	4.55	0.50	0.152	0.14*	0.019*
Y15e	5/26/09	12:35	Dry	ns	ns	ns	ns	ns	ns	ns	ns
Z15b	5/26/09	9:20	<1	19.8	8.1	5.14	1.13	0.13	0.034*	0.98*	0.303
Round Two											
A5c	9/8/09	12:30	<1	25.1	8.0	18.10	2.16	0.75	0.432	1.33	0.712
E5g	9/8/09	16:00	Ponded	24.8	7.4	12.68	3.26	0.50	0.693	0.55*	0.465
G30c	9/2/09	15:50	1	33.0	8.8	3.46	2.58	0.25	0.214	2.86	0.186
H5e	9/4/09	14:50	<1	27.9	7.9	1.14	2.70	0.25	0.285	0.81*	0.414
J25c	9/3/09	11:10	1	26.4	8.3	0.18	4.36	0.38	0.221	7.94	0.196
J25c2	9/2/09	15:00	1	30.1	7.9	0.41	5.42	0.38	0.240	6.01	0.054*
J30d	9/4/09	11:30	10	30.8	8.0	8.66	3.11	0.25	0.643	2.43	0.044*
J30d (Confirmation 1)	9/15/09	14:45	3	29.9	8.9	2.82	na	na	na	na	na
J30d (Confirmation 2)	9/21/09	14:00	5	29.5	8.7	2.45	na	na	na	na	na

Table 7-6(Continued)
Field Analytical Results from the 2009 Dry Weather Monitoring Program

Site	Date	Time	Flow (gpm)	Temp (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
J30d (Confirmation 3)	9/23/09	16:00	2	27.4	8.6	2.92	15.65	na	na	na	na
K15j2	9/3/09	14:40	1	29.9	7.7	0.80	2.02	0.13	0.210	5.36	0.037*
O40b	9/8/09	14:15	Ponded	26.2	8.0	1.21	1.36	0.25	0.430	0.71*	0.228
P15b	9/4/09	13:45	3	30.5	7.7	0.82	1.60	0.13	0.202	**13.42**	0.156
P15b (Confirmation)	9/8/09	15:00	3	27.7	7.4	6.70	1.61	na	na	7.56	na
P20f	9/4/09	10:40	3	28.0	8.2	3.50	1.53	0.25	0.268	5.66	0.016*
Q5I	9/8/09	11:20	Ponded	25.2	8.0	**112**	1.86	0.75	0.595	2.88	**9.34**
Q5I (Confirmation)	9/9/09	10:35	Dry	ns	ns	ns	ns	ns	ns	ns	ns
RCP1	9/3/09	12:00	3	28.0	8.2	0.50	1.50	0.13	0.170	9.96	0.103
RCP3	9/9/09	9:45	3	23.6	8.0	0.49	1.73	0.25	0.177	9.93	0.152
S15h	9/9/09	11:20	<1	27.1	7.9	16.76	1.46	0.75	0.750	1.27	0.839
S5c	9/3/09	16:10	<1	28.8	7.8	1.60	2.48	0.25	0.273	1.30	0.267
T5e	9/8/09	10:05	Ponded	23.0	7.5	7.68	1.59	0.25	0.110	0.18*	0.057*
U10a	9/8/09	10:50	Dry	ns	ns	ns	ns	ns	ns	ns	ns
V40d	9/3/09	12:40	23	34.4	**9.1**	1.95	3	0.25	0.177	0.09*	0.015*
V40d (Confirmation)	9/4/09	10:05	31	27.4	8.0	na	3.62	na	na	na	na
V45k	9/9/09	12:30	5	26.1	7.7	3.70	2.60	0.25	0.271	0.12*	0.064*

Table 7-6(Continued)
Field Analytical Results from the 2009 Dry Weather Monitoring Program

Site	Date	Time	Flow (gpm)	Temp (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
Y15e	9/8/09	9:35	Dry	ns	ns	ns	ns	ns	ns	ns	ns
Z15b	9/4/09	9:20	<1	25.9	7.6	7.79	2.35	0.50	0.256	0.60*	0.163
PRACTICAL DETECTION LIMIT				**0.0**	**0.0**	**0.01**	**0.00**	**0.00**	**0.100**	**1.13**	**0.098**
ACTION LEVEL				**BPJ**	**< 6.5 > 9.0**	**BPJ**	**BPJ**	**1.00**	**1.000**	**10.00**	**2.000**

Notes:
na = not analyzed
ns = not sampled (dry site)
* Value reported is below the Practical Detection Limit (PDL). Per manufacturer, the value is reported but flagged.
Red values were at or above the measured constituent's action level
denotes a confirmation visit
denotes a location sampled for laboratory analysis

Table 7-7
Laboratory Analytical Results from the 2009 Dry Weather Monitoring Program

Site	Date	Time	Oil & Grease (mg/L)	Total Hardness (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Lead (mg/L)	Zinc (mg/L)	Diazinon (µg/L)	Chlorpyrifos (µg/L)	Total Coliforms (MPN/100 mL)	Fecal Coliforms (MPN/100 mL)	Enterococci (MPN/100 mL)
Round One													
J25c	5/21/09	12:15	nd	780	nd	0.006	nd	nd	nd	nd	8,000	170	1,300
J30d	5/22/09	9:50	nd	685	nd	nd	nd	nd	nd	nd	11,000	3,000	3,000
P20f	5/21/09	11:40	nd	356	nd	nd	nd	nd	nd	nd	11,000	400	500
RCP1	5/21/09	10:45	nd	520	nd	nd	nd	nd	nd	nd	8,000	70	2,300
V40d	5/22/09	11:10	nd	1,020	nd	nd	nd	nd	nd	nd	1,700	500	300
Round Two													
J25c	9/3/09	11:10	nd	931	nd	0.021	nd	nd	nd	nd	13,000	13,000	5,000
J30d	9/4/09	11:30	nd	834	nd	0.004	nd	nd	nd	nd	**300,000**	**90,000**	**30,000**
J30d** (Confirmation 1)	9/15/09	14:45	na	na	na	na	na	na	na	na	**173,000**	1,200*	1,414
J30d (Confirmation 2)	9/21/09	14:00	na	na	na	na	na	na	na	na	**242,000**	2518	na
J30d (Confirmation 3)	9/23/09	16:00	na	na	na	na	na	na	na	na	**242,000**	434	na
P20f	9/4/08	10:40	nd	534	nd	0.003	nd	nd	nd	nd	22,000	17,000	110
RCP1	9/3/09	12:00	nd	553	nd	0.002	nd	nd	nd	nd	13,000	8,000	800
V40d	9/3/09	12:40	nd	773	nd	0.005	nd	nd	nd	nd	2,300	300	130
ANALYTICAL REPORTING LIMITS			**5**	**10**	**0.001**	**0.001**	**0.001**	**0.020**	**0.05**	**0.05**	**20**	**20**	**20**
ACTION LEVELS			**15**	*****	**CTR**	**CTR**	**CTR**	**CTR**	**0.50**	**0.50**	**50,000**	**20,000**	**10,000**

Notes:

nd = not detected

na = not analyzed

Red values were at or above the measured constituent's action level

denotes a confirmation visit

* Number of fecal coliforms for confirmation samples is derived from *E. coli* count. Number of fecal coliforms = (Number of *E. coli*) / 0.85

** Bacteria confirmation samples are analyzed using the Colilert and Enterolert methods, which have a reporting limit of 10 MPN/100 mL.

*** Total hardness is not considered a pollutant, and thus has no established action level for the purposes of dry weather monitoring. Total hardness is measured because the CTR action levels for metals are dependent on the total hardness value of the water sample.

IDDE

Permit Annual Reporting Requirement—Section J.3.a.(3).(f)	Location in Report
i. Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.	7.4
ii. Reporting of all dry weather field screening and analytical monitoring results. The data should be presented in tabular and graphical form. The reporting shall include station locations, all dry weather field screening and analytical monitoring results, identification of sites where results exceeded action levels, follow-up and elimination activities for potential illicit discharges and connections, the rationale for why follow-up investigations were not conducted at sites where action levels were exceeded, any Copermittee or consultant program recommendations/changes resulting from the monitoring, and documentation that these recommendations/changes have been implemented. Dry weather field screening and analytical monitoring reporting shall comply with all monitoring and standard reporting requirements in Attachment B of Order No. R9-2007-0001 and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001.	7.4, 7.5; Tables 7-2 through 7-7; Attachment 7.1
iii. Any dry weather field screening and analytical monitoring consultant reports generated, to be provided as an attachment to the annual report.	Attachment 7.1
iv. A brief description of any other investigations and follow-up activities for illicit discharges and connections.	7.5; Appendix B
v. The number and brief description of illicit discharges and connections identified.	7.5; Appendix B
vi. The number of illicit discharges and connections eliminated.	7.5; Appendix B
vii. Identification and description of all spills to the MS4 and response to the spills.	4.9, 7.3; Appendix B
viii. A description of activities implemented to prevent sewage and other spills from entering the MS4.	4.9, 7.3
ix. A description of the mechanism whereby notification of sewage spills from private laterals and septic systems is received.	4.9, 7.3
x. Number of times the hotline was called, as compared to previous reporting periods, and a summary of the calls.	4.10, 7.2, Appendix B
xi. A description of efforts to publicize and facilitate public reporting of illicit discharges.	4.10, 7.2
xii. The number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	4.10, 7.5, Table 7-1, Appendix B
xiii. A description of notable activities conducted to manage illicit discharges and connections.	7.1, 7.5

ATTACHMENT 7.1

CITY OF SANTEE DRY WEATHER FIELD SCREENING AND ANALYTICAL MONITORING PROGRAM 2009

IDDE—Additional Dry Weather Monitoring Program Requirements

Permit Annual Reporting Requirement—Attachment B and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001, Section II.B.3.c,d	Location in Report
Meets applicable standard monitoring and reporting requirements listed in Municipal Permit Attachment B.	Attachment 7.1
c. (1) Determining Sampling Frequency: Dry weather field screening and analytical monitoring shall be conducted at each identified station at least once between May 1st and September 30th of each year or as often as the Copermittee determines is necessary to comply with the requirements of section D.4 of Order No. R9-2007-0001.	7.4; Attachment 7.1
c. (2) If flow or ponded runoff is observed at a dry weather field screening or analytical monitoring station and there has been at least seventy-two (72) hours of dry weather, make observations and collect at least one (1) grab sample. Record general information such as time since last rain, quantity of last rain, site descriptions (i.e., conveyance type, dominant watershed land uses), flow estimation (i.e., width of water surface, approximate depth of water, approximate flow velocity, flow rate), and visual observations (i.e., odor, color, clarity, floatables, deposits/stains, vegetation condition, structural condition, and biology).	7.4; Attachment 7.1
c. (3) At a minimum, collect samples for analytical laboratory analysis of the following constituents for at least twenty five percent (25%) of the dry weather monitoring stations where water is present: (a) Total Hardness, (b) Oil and Grease, (c) Diazinon and Chlorpyrifos, (d) Cadmium (Dissolved), (e) Lead (Dissolved), (f) Zinc (Dissolved), (g) Copper (Dissolved), (h) Enterococcus bacteria, (i) Total Coliform bacteria, (j) Fecal Coliform bacteria	7.4; Table 7-7; Attachment 7.1
c.(4) At a minimum, conduct field screening analysis of the following constituents at all dry weather monitoring stations where water is present:	(n/a)
c. (a) Specific conductance (calculate estimated Total Dissolved Solids), (b) Turbidity, (c) pH, (d) Reactive Phosphorus, (e) Nitrate Nitrogen, (f) Ammonia Nitrogen, (g) Surfactants (MBAS)	7.4; Table 7-6; Attachment 7.1
c. (5) If the station is dry (no flowing or ponded runoff), make and record all applicable observations and select another station from the list of alternate stations for monitoring.	7.4; Attachment 7.1
c. (6) Develop and/or update criteria for dry weather field screening and analytical monitoring results whereby exceedance of the criteria will require follow-up investigations to be conducted to identify and eliminate the source causing the exceedance of the criteria.	7.4; Attachment 7.1
c. (7) Assess the presence of trash in receiving waters and urban runoff at each dry weather field screening or analytical monitoring station. Assessments of trash shall provide information on the spatial extent and amount of trash present, as well as the nature of the types of trash present.	7.4; Attachment 7.1

IDDE—Additional Dry Weather Monitoring Program Requirements

Permit Annual Reporting Requirement—Attachment B and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001, Section II.B.3.c,d	Location in Report
c. (8) Dry weather field screening and analytical monitoring stations identified to exceed dry weather monitoring criteria for any constituents shall continue to be screened in subsequent years.	7.4; Attachment 7.1
c. (9) Develop and/or update procedures for source identification follow up investigations in the event of exceedance of dry weather field screening and analytical monitoring result criteria. These procedures shall be consistent with procedures required in section D.4.d of Order No. R9-2007-0001.	7.5; Attachment 7.1
c. (10) Develop and/or update procedures to eliminate detected illicit discharges and connections. These procedures shall be consistent with each Copermittees Illicit Discharge and Elimination component of its Jurisdictional Urban Runoff Management Plan as discussed in section D.4 of Order No. R9-2007-0001.	7.5; Attachment 7.1
d. The Copermittees shall commence implementation of dry weather field screening and analytical monitoring under the requirements of this Order by May 1, 2008. Each Copermittee shall conduct dry weather analytical and field screening monitoring in accordance with its storm water conveyance system map and dry weather analytical and field screening monitoring procedures as described in section II.B.3 above. If monitoring indicates an illicit connection or illegal discharge, conduct the follow-up investigation and elimination activities as described in submitted dry weather field screening and analytical monitoring procedures and sections D.4.d and D.4.e of Order No. R9-2007-0001. Until the dry weather field screening and analytical monitoring program is implemented under the requirements of this Order, each Copermittee shall continue to implement dry weather field screening and analytical monitoring as it was most recently implemented pursuant to Order No. 2001-01.	7.4, 7.5; Attachment 7.1

City of Santee
Dry Weather Field Screening and Analytical Monitoring Program
2009

Submitted to:

City of Santee
Development Services
10601 Magnolia Avenue
Santee, CA 92071-1266

Prepared by:

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D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

December 9, 2009
Project No. 200919W

Ms. Helen Perry
Storm Water Program Manager
City of Santee
Department of Development Services
10601 Magnolia Avenue
Santee, CA 92071-1266

Re: 2009 Dry Weather Field Screening and Analytical Monitoring Program
City of Santee, California

Dear Ms. Perry:

Enclosed please find our final report for the City of Santee 2009 Dry Weather Field Screening and Analytical Monitoring Program.

This report presents the results from both rounds of the monitoring program conducted in the City of Santee during the 2009 dry weather season. The contents include field screening data, analytical laboratory test results, trash assessments, analyses of the collected data, and photographs of sampling locations. The report also presents the results of follow-up investigations conducted to identify the sources of pollutants detected and our recommendations for additional actions.

Review comments from the draft report submitted to the City have been incorporated into this final report. It has been our pleasure working with the City of Santee on this project. If you have any questions regarding this report, please call me at (858) 586-6600 ext. 22.

Sincerely,
D-MAX Engineering Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

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1 INTRODUCTION

1.1 Program Overview

The purpose of the Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program) is to detect and eliminate illicit connections and illegal discharges (IC/ID) to the storm water conveyance system, minimizing the negative impact of human activities on receiving waterbodies. The Dry Weather Monitoring Program consists of the following components:

- Field screening observations
- Field screening and analytical monitoring
- Trash assessments
- Laboratory analytical monitoring

The City of Santee has elected to perform two rounds of monitoring during each dry weather season. These two rounds typically occur near the beginning and end of the season. The data gathered from dry weather monitoring is used to characterize discharges to the storm drain system and identify conveyances that are discharging elevated levels of pollutants. Follow-up studies and source investigations are conducted as needed to detect and eliminate the sources of these pollutants. This report presents the results of both rounds of the 2009 Dry Weather Monitoring Program conducted by D-MAX Engineering, Inc., (D-MAX).

1.2 Hydrologic Setting

The City of Santee (City) is located entirely within the San Diego River Watershed, Hydrologic Unit (HU) 907. The largest receiving waterbody in the City is the San Diego River, which enters the City in the east and flows west towards the Pacific Ocean. Other major receiving waterbodies include Forester Creek and Sycamore Creek, both of which eventually drain to the San Diego River. Forester Creek enters the City from the southeast and drains into the San Diego River at a location west of Carlton Hills Boulevard. Sycamore Creek enters the City from the north, flows southward, entering the San Diego River just west of Santee Recreation Lakes. All storm water drainage in the City of Santee is routed either directly or indirectly to these creeks and ultimately to the San Diego River. The entire City of Santee, along with the whole of the City of El Cajon and portions of the cities of La Mesa, San Diego, and Poway, lie within the Lower San Diego River Hydrologic Area (HA) 907.1.

1.3 Regulatory Requirements

In accordance with San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit), each of the Copermittees, including the City of Santee, is required to annually perform dry weather monitoring of discharges into its storm water conveyance system. During the dry weather season, May 1 through September 30, selected locations along the storm drain conveyance system are evaluated. The City of Santee conducts two rounds of monitoring during this period. Round One occurs near the beginning of this time frame, while Round Two occurs near the end of this time frame. This procedure allows the City to make necessary improvements following Round One, and to evaluate the effectiveness of their actions when sites are revisited during Round Two.

Dry Weather Monitoring procedure includes recording field observations, estimating observed flow rates, and conducting field testing. The Municipal Permit also necessitates that the Copermittees conduct laboratory analyses for at least 25 percent of the visited sites

with flowing or ponded water. If a sampling location is dry, meaning there is no flowing or ponded water, an alternative sampling station is selected. If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days.

1.4 Previous Work

The City of Santee has conducted Dry Weather Monitoring Programs since 1996 at several locations within the City's storm water conveyance system. These programs are conducted in two rounds during each year, with the exception of 1996 and 2002. A summary of the number of sites sampled each year and round is displayed in Table 1-1. Historical dry weather monitoring data is included in Appendix A.

TABLE 1-1
SUMMARY OF HISTORICAL DRY WEATHER SITES

Year	Number of Sites Screened [1]		Number of Flowing Sites		Number of Ponded Sites		Number of Dry Sites		Number of Lab Analysis Sites [2]	
	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2
1996 [3]	12		Data not available [4]				0		---	
1997	8	8	6	7	2	1	7	7	---	---
1998	14	12	11	7	3	5	1	4	---	---
1999	10	10	6	6	4	4	5	5	---	---
2000	12	12	9	10	3	2	4	4	---	---
2001	14	10	10	8	4	2	2	6	---	---
2002 [3]	20		13		7		1		6	
2003	20	20	17	17	3	3	2	0	5	5
2004	20	20	17	17	3	3	1	1	5	5
2005	20	20	19	18	1	2	1	1	5	5
2006	20	20	18	17	2	3	1	1	5	5
2007	20	20	17	17	3	3	1	1	5	5
2008	20	20	18	16	2	4	0	0	5	5

Notes:
[1] Number of Sites Screened = Number Flowing + Number Ponded. Field screening cannot be conducted at sites found to be dry. Dry sites are replaced by either a flowing or ponded site.
[2] Laboratory analyses commenced in 2002 as required by RWQCB Order 2001-001.
[3] The City conducted only one round of the field screening program for this year.
[4] Available information does not distinguish between flowing and ponded sites during this period.

1.5 Report Outline

This report is presented in the following order:

Section 1, Introduction, includes a program overview, a discussion of the City's hydrologic setting, regulatory background, a summary of previous dry weather monitoring, and the report outline.

Section 2, **Sampling Locations,** describes the sampling locations and site selection criteria.

Section 3, Field and Laboratory Analytical Methods, includes field screening and laboratory analytical procedures, quality assurance protocols, and follow-up action levels.

Section 4, Field Screening Results, presents qualitative observations of the sampling locations and quantitative results of the field screening analyses.

Section 5, Trash Assessment, discusses the procedure and results of the trash assessment.

Section 6, Laboratory Analytical Results, presents results of the laboratory analyses.

Section 7, Data Analysis, provides an analysis of this year's field and laboratory data, as well as a comparison of past results.

Section 8, Follow-up Investigations, details the results of follow-up investigations undertaken to isolate the sources of action level exceedances measured during the monitoring program.

Section 9, Summary and Recommendations, provides a summary of the program results and recommendations for follow-up actions.

Appendix A Historical Dry Weather Monitoring Data

Appendix B Photographs of Sampling Locations

Appendix C Laboratory Analytical Reports

Appendix D Field Data and Trash Assessment Sheets

2 SAMPLING LOCATIONS

Twenty primary monitoring stations have been identified for the City of Santee's Dry Weather Monitoring Program. A set of alternative sites are also available for monitoring in the event that a primary station did not have flowing or ponded water. All primary and alternative sampling sites are located in San Diego Hydrological Unit 907.

In 2009, all 20 primary sites were visited during Round One and Round Two of dry weather monitoring. Sites U10a and Y15e were dry during both rounds, therefore alternative sites T5e and RCP3 were also visited for a total of 22 sites visited in each round.

Table 2-1 provides the site name, location, conveyance configuration, land uses, hydrologic subarea, and GPS coordinates of the sampling locations that were visited. Photographs of sampling locations are included in Appendix B. A map of the City including sampling locations was extensively updated in 2008-2009, and is included as Figure A. A map of the watersheds in and around Santee, shown by Hydrologic Subareas (HSAs), is presented in Figure B.

TABLE 2-1
2009 DRY WEATHER MONITORING STATIONS

Site	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
A5c	Next to 8335 Carlton Oaks Drive, between Cadorette Avenue and Praful Street	Outlet	Residential	None	907.12	32.84081	-117.02160
E5g	Santee Recreation Lakes, west of the Southern Lake, outfall on east bank of Sycamore Creek	Outlet	Residential	None	907.12	32.84854	-117.00723
G30c	South end of River Trail Place, north of San Diego River, down trail to the west	Outlet	Residential	Open	907.12	32.84501	-116.99122
H5e	South of River Park Drive, at end of walkway between Brookview Court and River Rock Court, north of San Diego River	Outlet	Residential	None	907.12	32.84561	-116.98769
J25c	West end of Carefree Drive, on the west side of channel	Outlet	Residential	None	907.12	32.85813	-116.97601
J25c2	At the east end of Country Scenes, east of Conejo Road	Outlet	Residential	None	907.12	32.85639	-116.97598
J30d	In the Woodglen Vista Channel on the south side of Mast Boulevard, 100 feet east of San Remo Road	Natural Creek	Residential	None	907.12	32.85485	-116.97588
K15j2	North side of Woodglen Vista Drive, east of Woodrose Avenue, south side of the park	Concrete Channel	Residential	Parks	907.12	32.86596	-116.97418
O40b	At the north end of Abraham Way, south of San Diego River	Outlet	Commercial	Industrial	907.12	32.84851	-116.96392
P15b	Northeast corner of the North Magnolia Avenue and Rockville Street intersection	Manhole	Commercial	Residential	907.12	32.83704	-116.96633
P20f	East of North Magnolia Avenue, at the east end of Chubb Lane	Concrete Channel	Residential	Commercial	907.12	32.84674	-116.96920
Q5l	North side of Prospect Avenue, 50 feet east of Railroad Avenue	Catch Basin	Commercial	Industrial	907.12	32.83121	-116.97090
RCP1	North bank of the San Diego River in the RCP Brick Factory, across from the southwest corner of the antennae field	Outlet	Residential	None	907.12	32.84959	-116.96659

TABLE 2-1
2009 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
RCP3*	North bank of the San Diego River in the RCP Brick Factory, across from the southeast corner of the antennae field	Outlet	Residential	None	907.12	32.84975	-116.96341
S15h	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, north of Walmart, west of trail	Outlet	Commercial	None	907.12	32.84326	-116.98969
S5c	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, northwest of Michael's	Outlet	Commercial	None	907.12	32.84371	-116.98798
T5e*	Northwest of the Prospect Avenue and Argent Street intersection, south of Forester Creek	Outlet	Commercial	Industrial	907.12	32.83393	-116.98956
U10a*	South bank of Forester Creek, 450 feet south of the Mission Gorge Road and Carlton Hills Boulevard intersection	Outlet	Commercial	Industrial	907.12	32.83745	-116.99586
V40d	On the south side of Prospect Avenue, east of Fanita Drive	Concrete Channel	Residential	None	907.12	32.83375	-117.00005
V45k	On the north side of Mission Gorge Road, at the north end of freeway 125	Natural Creek	Commercial	Open	907.12	32.83895	-117.00251
Y15e*	On the north side of Mission Gorge Road, between Crossway Court and Big Rock Road, across from a shopping center	Outlet	Commercial	Residential	907.12	32.83670	-117.02158
Z15b	On the north side of Mission Gorge Road, east of Father Junipero Serra Trail	Outlet	Residential	None	907.12	32.83770	-117.02997

Note: * Alternative sites RCP3 and T5e replaced dry primary sites U10a and Y15e

3 FIELD AND LABORATORY ANALYTICAL METHODS

3.1 Field Screening Procedures and Methods

Field screening techniques consist of qualitative field observations, flow measurement, and quantitative field analyses of selected water quality parameters. Weather conditions, time since last rainfall, and the type of storm water conveyance are recorded as well. Specific observations and results of the field water quality analyses are documented on field datasheets, which also serve as a record of the field visit. Datasheets are completed for every site visit regardless of whether or not samples were collected. Check boxes on the datasheets indicate if the visit is for routine field screening, confirmation of an exceedance, or an IC/ID follow-up visit. A confirmation visit is a revisit of the original site, whereas an IC/ID follow-up is an upstream investigation. Datasheets from the 2009 Dry Weather Monitoring Program are included as Appendix D. Field screening and analyses were conducted according to the following procedures and methods:

Qualitative Observations

Qualitative field observations are made during each site visit. These observations include a general site assessment and description of water odor, clarity, the presence of floatable materials, visible deposits or stains, and organisms. Evidence of present or past illicit connections and illegal discharges to the storm drain system can also be discovered through careful field observations. Each field screening location is photographed to document site conditions. Photographs are included in Appendix B.

Flow Measurement

Flow measurements can help estimate pollutant mass loading, prioritize storm drains for future investigation, and identify significant changes in flow that may be indicative of an illegal discharge. Various field methods are used in formulas to estimate the flow rate. These include measuring the velocity, depth, and width of the flowing water; recording the amount of time required to fill a bottle of known volume with sample water; or, if measuring flow within a cylindrical pipe, measuring the pipe diameter as well as the depth and velocity of the flow. Low levels of flow may also be assessed visually.

Field Water Quality Analyses

At each site with ponded or flowing water, water samples were collected and analyzed in the field for the following constituents:

- Specific conductance
- Temperature
- pH
- Turbidity
- Surfactants, measured as methylene blue active substances (MBAS) (Surfactants are also referred to as detergents.)
- Nitrate-nitrogen (Nitrate-N)
- Ammonia-nitrogen (Ammonia-N)
- Orthophosphate-phosphorus (Orthophosphate-P)
- Dissolved oxygen

The methods used to perform the above field analyses, along with the reporting limit, range, and accuracy of each method, are listed in Table 3-1.

TABLE 3-1
FIELD ANALYTICAL METHODS

Parameter	Method	Reporting Limit	Range	Accuracy
Specific Conductance	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.01 mS/cm	0 – 20 mS/cm	± 2% of functional sensitivity[1]
Temperature	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.1°C	0.0°C – 60.0°C	± 0.5°C
pH	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.01	0.00 – 14.00	± 0.01 pH
Turbidity	Hanna Instruments HI 93703 Portable Turbidity Meter***	0.01 NTU	0.01 – 50.00 NTU and 50 – 1000 NTU	± 0.5 NTU or 5% of reading (whichever is greater)
Surfactants	CHEMetrics CHEMets Kit (K-9400) methylene blue active substances	0.13 mg/L	0.00 mg/L – 3.00 mg/L*	± 0.13 & ± 0.5 mg/L[2]
Nitrate-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Nitrate 3 Vacu-vials® (K-6933) Cadmium reduction[3]***	1.13 mg/L**	1.13 mg/L – 113 mg/L**	± 30%of practical detection limit[4]
Ammonia-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Ammonia 3 Vacu-vials® (K-1403) Salicylate***	0.100 mg/L**	0.100 mg/L – 3.000 mg/L**	Varies with measured concentration[4,5]
Ortho-phosphate-P	CHEMetrics V-2000 Multi-Analyte LED Photometer – Phosphate 2 Vacu-vials® (K-8513) Stannous chloride chemistry[6]***	0.098 mg/L**	0.098 mg/L – 2.608 mg/L**	Varies with measured concentration[4,5]

Notes:

EC = electrical conductivity
mS/cm = millisiemens per centimeter
°C = Degrees Celsius
NTU = nephelometric turbidity unit
mg/L = milligrams per liter
LED = light-emitting diode

[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.

[2] ± 0.13 for the range of 0.0 to 1.0 mg/L, ± 0.25 mg/L for the range of 1.0 to 2.0 mg/L and 0.5 mg/L for the range of 2.0 to 3.0 mg/L.

[3] This method determines the concentration of nitrate in mg/L NO_3. To determine the amount of nitrate-nitrogen, the concentration of nitrogen must be adjusted for the presence of oxygen in the NO_3 molecule. Therefore, the result is multiplied by a conversion factor of 0.226, the ratio of the molecular weight of N (14g/mol) to NO_3 (62 g/mol). The practical detection limit for nitrate is 5.0 mg/L; however, the practical detection limit for nitrate-nitrogen is lowered due to the conversion.

[4] Practical Detection Limit (PDL) is defined as the lower limit of the stated test range.

[5] Percent error adjusts as follows: ±30% at PDL, ±20% for 25% of full range, ±10% for 75% of full range, ±10% for 120% of full range.

[6] This method determines the concentration of orthophosphate in mg/L PO_4. To determine the amount of orthophosphate-P, the concentration of phosphate must be adjusted for the presence of oxygen in the PO_4 molecule. Oxygen is 67.4% of phosphate by mass but is not a plant nutrient in this form. Therefore, the result is multiplied by a conversion factor of 0.326, the ratio of the molecular weight of P (31g/mol) to PO_4 (95 g/mol). The practical detection limit for orthophosphate is 0.3 mg/L; however, the practical detection limit for orthophosphate-phosphorus is lower due to the conversion.

*Extended ranges in chemical analyses can be achieved through dilutions. Accuracies decrease proportionally with further dilutions.

** Readings below the PDL have increased percent error; measurements are reported, but are flagged as being below the PDL.

***Test method information taken from Hanna Instruments and CHEMetrics manuals, available online at www.hannainst.com and www.chemetrics.com.

3.2 Laboratory Analytical Methods

In accordance with the Municipal Permit, laboratory samples were collected at five sites, representing 25 percent of the sites where ponded or flowing water was observed. Samples were submitted to EnviroMatrix Analytical, Inc, a laboratory certified by the California Department of Health Services, for analysis of the following constituents:

- Total hardness
- Oil and grease
- Diazinon
- Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Total Coliform bacteria
- Fecal Coliform bacteria
- *Enterococcus* bacteria

The methods used to perform each of the above analyses along with method reporting limits and holding times are listed in Table 3-2.

3.3 Quality Assurance and Quality Control (QA/QC)

The QA/QC Plan used for this project includes the United States Environmental Protection Agency (USEPA) approved test methods for the field and laboratory analysis of water samples, calibration of test equipment, and pre- and post-rinsing of sample collection containers and test vials. Key components of the QA/QC Plan are described below.

3.3.1 Field Sampling and Analysis QA/QC

The pH meters, turbidity meter, and conductivity meter are tested daily before field screening begins. The pH meters are calibrated as needed with sodium/potassium phosphate, monobasic buffer solutions with pH values equal to 4.00 ± 0.01, 7.00 ± 0.01, and 10.00 ± 0.01 units. The glass electrode tube is kept moist to preserve the meter's accuracy during fieldwork. The turbidity meter and conductivity meter are calibrated as needed using standard solutions.

Field sample collection containers are rinsed first with distilled water and then with the sample water prior to sample collection. Upon completion of sampling and testing at each site, sample collection containers, test vials, and ion-sensitive electrodes are rinsed twice with distilled water and dried.

The accuracy of field analytical techniques and equipment is assessed at the beginning of each sampling week by analyzing solutions of known concentrations for ammonia-nitrogen, surfactants, nitrate, and orthophosphate. The results of the assessment are shown in Table 3-3.

TABLE 3-2
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Reporting Limit	Maximum Holding Time [1]
Oil and Grease	USEPA 1664	5 mg/L	28 days
Total Hardness	USEPA 200.7	10 mg/L	14 days
Dissolved Cadmium	USEPA 200.8	0.001 mg/L	24 hours
Dissolved Copper	USEPA 200.8	0.001 mg/L	24 hours
Dissolved Lead	USEPA 200.8	0.001 mg/L	24 hours
Dissolved Zinc	USEPA 200.8	0.020 mg/L	24 hours
Diazinon	USEPA 8141A	0.05 µg/L	7 days
Chlorpyrifos	USEPA 8141A	0.05 µg/L	7 days
Total Coliforms[2]	SM 9221	20 – 1,600,000 MPN/100 mL	6 hours
Fecal Coliforms[2]	SM 9221	20 – 1,600,000 MPN/100 mL	6 hours
Enterococci[2]	SM 9230	20 – 160,000 MPN/100 mL	6 hours
Total Coliforms	SM 9223 (IDEXX Colilert)[3]	10 – 2,419,600 MPN/100 mL	6 hours
Escherichia coli (E. coli) [4]	SM 9223 (IDEXX Colilert)[3]	10 – 2,419,600 MPN/100 mL	6 hours
Enterococci	IDEXX Enterolert[4]	10 – 241,960 MPN/100 mL	6 hours

Notes:
µg/L = micrograms per liter
MPN/100 mL = most probable number (of colony-forming units) per 100 milliliters
[1] Maximum Holding Time values listed apply to samples collected and preserved in accordance with the quality assurance and quality control procedures listed in Section 3.3.2.
[2] For D-MAX's Dry Weather Monitoring Program, EnviroMatrix Analytical, Inc. (EMA) performs standard dilutions for total coliforms to quantify from 20-1,600,000 most probable number per 100 milliliters (MPN/100 mL). For fecal coliforms and Enterococci, EMA performs standard dilutions to quantify from 20-160,000 MPN/100 mL. During the analysis and interpretation of the results, the number of tubes used to quantify the sample must fit the MPN index table from Standard Method 9221. The dilution set used will determine the detection limit. A standard dilution analysis is set up with 15 tubes at different concentrations. The reporting limit will always be adjusted depending on the dilution factor used for quantifying the actual results based on the MPN table. If the result for the analysis was less than 16,000 MPN/100 mL, the reporting limit will always be 20, and the dilution factor will be 10. As the dilution factor goes up, the reporting limit listed in the results from EMA will also go up based on the calculation made with EMA's data system. However, the lowest quantifiable number or reporting limit would still be 20 based on how the standard tubes for the sample is set up.
[3] IDEXX Colilert and Enterolert tests are used during upstream investigations only.
[4] Number of fecal coliforms is derived from number of *E. coli* through the following formula:
Fecal Coliforms = *E. coli* / 0.85. The converted fecal coliform count, not the number of *E. coli*, is reported in this report's data tables.

TABLE 3-3
FIELD ANALYSIS QA/QC RESULTS

Date	Analyte	Known Concentration (mg/L)	Acceptable Range* (mg/L)	Field Test Kit Results (mg/L)
5/18/09	Ammonia-Nitrogen	0.82	0.66 – 0.98	0.822
5/18/09	Surfactants	1.0	0.75 – 1.25	1.00
5/18/09	Nitrate **	44.3	31.0 – 57.6	43.64
5/18/09	Orthophosphate **	3.07	2.45 – 3.88	2.98
9/2/09	Ammonia-Nitrogen	0.82	0.66 – 0.98	0.786
9/2/09	Surfactants	1.0	0.75 – 1.25	1.00
9/2/09	Nitrate **	44.3	31.0 – 57.6	45.78
9/2/09	Orthophosphate **	3.07	2.45 – 3.88	2.833
9/8/09	Ammonia-Nitrogen	0.82	0.66 – 0.98	0.799
9/8/09	Surfactants	1.0	0.75 – 1.25	1.00
9/8/09	Nitrate **	44.3	31.0 – 57.6	43.97
9/8/09	Orthophosphate **	3.07	2.45 – 3.88	2.798

Notes:
* Acceptable range is calculated based on the error associated with the methods as listed in Table 3-1.
** Nitrate and orthophosphate are converted to nitrate-nitrogen and orthophosphate-phosphorus, respectively, when conducting standard field screening. This is accomplished by multiplying the results by 0.226 for nitrate and 0.326 for orthophosphate. To simplify the calibration process, the unconverted numbers are used when calibrating the instruments.

3.3.2 Laboratory Sampling and Analysis QA/QC

Samples for laboratory analysis are collected concurrently with field samples and used the same sampling procedures. Pre-sterilized sample bottles are obtained from the laboratory and thus do not require rinsing with sample water prior to sample collection. After sample collection, all laboratory samples are kept in a cooler on ice until picked up by the lab. Strict chain of custody procedures are followed, and samples are delivered and analyzed within the appropriate holding times, as listed in Table 3-2. Completed chain of custody forms are included in Appendix C.

3.4 Follow-up Action Levels

Based on dry weather field screening results, immediate follow-up investigations are sometimes necessary to identify and eliminate pollutant sources. In order to determine whether an immediate source investigation is necessary, numeric action levels and best professional judgment are used to interpret the field screening results. If visual and/or analytical evidence of gross contamination are present at a site (e.g., substantial petroleum sheen, extremely high ammonia concentration, evidence of a sewage release, etc.), then an immediate source identification investigation is initiated. For sites that exceed numeric action levels but are not perceived as an immediate threat to water quality, a re-sampling is conducted within two business days. An upstream pollutant source investigation is conducted thereafter if elevated concentrations persist and no sources can be identified in the immediate vicinity of the monitoring station. If elevated levels of pollutants are detected by the laboratory analyses, a comprehensive follow-up pollutant source investigation is conducted within two business days of receiving the laboratory analytical reports. The results of these investigations are included in Section 8.

The following three methods are employed to determine whether immediate or comprehensive follow-up investigations are necessary: (1) Numeric Action Levels; (2) California Toxics Rule (CTR); and (3) Best Professional Judgment. All three approaches are described in detail below and presented in Table 3-4.

Numeric Action Levels

Numeric action levels are used as the primary approach for interpreting pH, orthophosphate-P, nitrate-N, ammonia-N, surfactants, oil and grease, diazinon, chlorpyrifos, total coliforms, fecal coliforms, and *Enterococcus* analytical results (see Table 3-4). Prior to the 2003 dry weather season, no standard action levels had been adopted for use throughout San Diego County. D-MAX calculated the current set of numeric action levels based on county-wide sampling data. These action levels have been used by all San Diego County Copermittees since the 2003 dry weather season.

California Toxics Rule

The CTR criterion maximum concentration (CMC) is used to determine appropriate action levels for dissolved trace metals, including cadmium, copper, lead, and zinc. The CTR equations, as provided in USEPA Federal Register Doc. 40 Code of Federal Regulations (CFR) Part 131, are used to calculate benchmarks based on the total hardness of the sampled water, with the action levels increasing as hardness increases. The CTR criterion maximum concentration (CMC) is a short term concentration limit in which aquatic life can be sustained. The CMC is used to determine appropriate action levels for dissolved trace metals, including cadmium, copper, lead, and zinc. The CTR equations, as provided in USEPA Federal Register Doc. 40 Code of Federal Regulations (CFR) Part 131, are used to calculate benchmarks based on the total hardness of the sampled water, with the action levels increasing as hardness increases. More information on the CTR is available at http://www.epa.gov/region09/water/ctr.

Best Professional Judgment

Best professional judgment is used as the primary approach for interpreting turbidity, water temperature, and conductivity and as a secondary approach for interpreting the results of all other field and laboratory analyses. Under best professional judgment, the need for a follow-up investigation is left to the discretion of the D-MAX field crew. Best professional judgment may indicate that results which either exceed certain action levels or are statistical outliers may be the result of natural or background factors.

TABLE 3-4
ACTION LEVELS FOR FIELD SCREENING AND LABORATORY PARAMETERS

Field Screening Analytes	Action Levels[1]	Source/ Notes
pH	<6.5 or >9.0	Basin Plan[2], with allowance for elevated pH due to excessive photosynthesis. Elevated pH is especially problematic in combination with high ammonia.
Orthophosphate-P (mg/L)	2.000	USEPA Multi-sector General Permit
Nitrate-N (mg/L)	10.00	Basin Plan and drinking water standards
Ammonia-N (mg/L)	1.000	Based on Workgroup experience. May also consider unionized ammonia fraction.
Turbidity (NTU)	Best Professional Judgment	WQOs relevant to inland surface waters are not available. Base judgment on channel type and bottom, time since last rain, background levels, and most importantly visual observation (e.g. unusual colors and lack of clarity) and unusual odors.
Temperature (°C)	Best Professional Judgment	Base judgment on season, air temperature, channel type, shading, etc.
Conductivity (mS/cm)	Best Professional Judgment	Conductivity may be highly elevated in some regions due to high TDS, groundwater exfiltration to surface water, mineral dissolution, drought, and seawater intrusion. Normal source ID and discharge elimination work is not effective in these situations. Knowledge of area background conditions is important. Values <0.75 may indicate excessive potable water discharge or flushing.
Laboratory Analytes	**Action Levels**	**Source/ Notes**
Oil and Grease (mg/L)	15	USEPA Multi-sector General Permit. If petroleum sheen is observed, the sample should be collected from the water surface. Visual observations may justify immediate investigation.
Diazinon (µg/L)	0.5	Response to diazinon and chlorpyrifos levels above 0.5 µg/L should focus on education and outreach to potential dischargers in the target drainage basin. Highly elevated levels should be investigated aggressively as with other potential IC/IDs.
Chlorpyrifos (µg/L)	0.5	
Dissolved Cadmium (µg/L)	California Toxics Rule	Use California Toxics Rule, 1-hour criteria to determine appropriate action level for individual samples. Table provides benchmarks based on hardness and dissolved metals concentration. For example, at 300 mg/L hardness the following action levels would apply: Cd – 14 ppb; Cu – 38 ppb; Pb – 209 ppb; and Zn – 297 ppb.
Dissolved Copper (µg/L)	California Toxics Rule	
Dissolved Lead (µg/L)	California Toxics Rule	
Dissolved Zinc (µg/L)	California Toxics Rule	
Total Coliforms (MPN/100 mL)	50,000	Bacteria levels in many storm drains are likely to exceed public health guidance criteria. Use confidence interval test and best professional judgment to identify conveyances for source ID.
Fecal Coliforms (MPN/100 mL)	20,000	
Enterococci (MPN/100 mL)	10,000	

Notes:
[1] The referenced action levels are not the sole criteria for initiating a source identification investigation. Dry weather monitoring data is interpreted using a variety of available information, including within-site and between-site sample variability.
[2] Basin Plan = Water Quality Control Plan for the San Diego Basin
WQO = Water Quality Objective
ppb = parts per billion

4 FIELD SCREENING RESULTS

4.1 Round One

Round One of the Dry Weather Monitoring Program began in May 2009. Twenty primary sites and two alternative sites were visited.

4.1.1 Qualitative Observations

Qualitative observations for all Round One routine field screening visits are summarized below. Routine field screening and confirmation visit observations are presented in Table 4-1.

Light Conditions
The weather was sunny during two-thirds of the Round One routine visits; the remaining visits occurred during partly cloudy conditions.

Odor
The water sample at one site had a musty odor; all other samples were odorless.

Color
The water at four sites was yellow in color; all other samples were colorless.

Clarity
The water at one site had a slightly cloudy appearance; all other samples were clear.

Floatable Materials
A dust sheen and trash were observed on the water's surface at one site each, and two sites had bubbles/foam. No other types of floatable materials were observed.

Deposits
Sediment, gravel, and/or fine particulates were observed at all sites. No other types of deposits were noted.

Vegetation
All sites contained normal or no vegetation, appropriate to the amount of sunlight exposure and soil at the site.

Biology
The presence of organisms can be an indication of healthy waters. The presence of algae often indicates that flow is persistent. An overabundance of algae often implies high levels of nutrients in the water and can have negative effects on aquatic life. No sites had excessive algal growth this year. Insects and algae were prevalent at most sites. Some sites were also host to snails, crayfish, and/or fish.

TABLE 4-1
FIELD OBSERVATIONS - ROUND ONE

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
A5c	5/26/09	11:45	Sunny	None	Yellow	Clear	None	Sediment/Gravel, Fine Particulates	None	Insects, Snails
E5g	5/20/09	16:00	Partly Cloudy	None	None	Clear	Dust Sheen	Sediment/Gravel, Fine Particulates	Normal	Insects
E5g (Confirmation 1)	5/21/09	15:45	Sunny	None	None	Clear	Dust Sheen	Sediment/Gravel, Fine Particulates	Normal	Insects
E5g (Confirmation 2)	5/22/09	14:40	Partly Cloudy	None	None	Clear	Dust Sheen	Sediment/Gravel, Fine Particulates	Normal	Insects
G30c	5/20/09	11:45	Partly Cloudy	None	None	Clear	None	Sediment/Gravel, Fine Particulates	Normal	Insect/Algae, Snails
H5e	5/20/09	14:50	Partly Cloudy	None	None	Clear	None	Fine Particulates	None	Insect/Algae, Snails
J25c	5/21/09	12:15	Sunny	None	None	Clear	None	Fine Particulates	None	Insect/Algae
J25c2	5/19/09	15:25	Sunny	None	None	Clear	Trash	Fine Particulates	None	Insect/Algae, Snails
J30d	5/22/09	9:50	Sunny	None	None	Clear	None	Sediment/Gravel, Fine Particulates	Normal	Algae, Fish
K15j2	5/19/09	14:10	Sunny	None	None	Clear	None	Fine Particulates	None	Insect/Algae
O40b	5/20/09	9:20	Partly Cloudy	None	Yellow	Clear	None	Sediment/Gravel, Fine Particulates	Normal	Insect/Algae, Snails
P15b	5/21/09	15:15	Sunny	None	None	Clear	None	Sediment/Gravel	None	Insects
P20f	5/21/09	11:40	Sunny	None	None	Clear	None	Fine Particulates	None	Algae, Snails

TABLE 4-1
FIELD OBSERVATIONS - ROUND ONE (CONTINUED)

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
Q5I	5/21/09	9:25	Partly Cloudy	None	Yellow	Slightly Cloudy	None	Sediment/Gravel, Fine Particulates	None	None
RCP1	5/21/09	10:45	Partly Cloudy	None	None	Clear	Bubbles/ Foam	Sediment/Gravel, Fine Particulates	Normal	Insects
RCP3	5/26/09	10:25	Sunny	None	None	Clear	None	Sediment/Gravel	Normal	Insect/Algae, Snails
S15h	5/26/09	14:10	Sunny	Musty	Yellow	Clear	None	Fine Particulates	None	Insects
S5c	5/20/09	12:45	Partly Cloudy	None	None	Clear	Bubbles/ Foam	Fine Particulates	Normal	Insect/Algae
T5e	5/26/09	13:00	Sunny	None	None	Clear	None	Sediment	None	Insects
U10a	5/22/09	9:10	Sunny	na	na	na	Na	Sediment/Gravel	Normal	None
V40d	5/22/09	11:10	Sunny	None	None	Clear	None	Fine Particulates	None	Insect/Algae, Snails
V45k	5/22/09	12:00	Sunny	None	None	Clear	None	Sediment/Gravel, Fine Particulates	Normal	Insect/Algae, Snails, Crayfish
Y15e	5/26/09	12:35	Sunny	na	na	na	na	Sediment/Gravel	Normal	None
Z15b	5/26/09	9:20	Partly Cloudy	None	None	Clear	None	Sediment/Gravel	Normal	Insects

Notes:
denotes a confirmation visit
denotes a location sampled for laboratory analysis
na = not analyzed (dry site)

4.1.2 Field Analytical Results

Field analyses are conducted at all sites with flowing or ponded water. The measured constituents are described below.

Flow rate quantifies the volume of fluid passing across a given surface per unit time. Flow rate measurements are needed to calculate the load or particular amount of a pollutant discharged.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Also, the aquatic habitat must remain within a certain temperature range in order to sustain sensitive aquatic life. In the field, water temperature is measured immediately upon sample collection at each site.

The **pH** is an expression of acidity or alkalinity of a water sample. The pH of an aquatic system will affect a variety of chemical reactions, including the availability of nutrients and the solubility of chemical substances, particularly heavy metals.

Turbidity describes the clarity or cloudiness of a water sample, or the degree to which light is blocked by suspended material in the water. Turbid waters not only limit the amount of light that reaches submerged vegetation, thus reducing photosynthetic capacity, but excessive suspended particles can also absorb heat and increase water temperatures.

Specific conductance (conductivity) measurements indicate the total concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially help indicate the presence of dissolved pollutants.

Surfactant concentrations in water samples often reflect illegal discharges from industrial, commercial, or residential sources. Pollution resulting from surfactants alters the surface tension of water and disrupts the breathing mechanisms of fish gills and other aquatic organisms.

Ammonia-nitrogen (ammonia-N) is an indicator of pollution from decomposing organic matter, agricultural or household fertilizer runoff, or the presence of sewage. Ammonia occurs naturally in the environment; however, in higher quantities it can become toxic to fish and other organisms.

Nitrate-nitrogen (nitrate-N) is a common sign of nutrient pollution from agricultural or household fertilizer runoff. Nitrate pollution can cause excessive algal growth, resulting in oxygen depletion as algae decomposes and may eventually suffocate other aquatic life. During the field analysis, nitrate is measured and converted into nitrate-N using a conversion factor of 0.226. This process is explained in Note 3 of Table 3-1.

Orthophosphate-phosphorus (orthophosphate-P) is also an indicator of nutrient pollution from agricultural or household fertilizer runoff. Similar to nitrate-N, orthophosphate-P pollution can cause nutrient enrichment, stimulate algal growth, and thus deplete oxygen in the water to levels that are dangerous for aquatic life. Even low levels of orthophosphate-P can cause significant algal growth, as it is commonly the limiting nutrient in plant growth. During the field analysis, orthophosphate is measured and converted into orthophosphate-P using a conversion factor of 0.326. This process is explained in Note 6 of Table 3-1.

A statistical summary of the routine field analytical results for Round One data is presented in Table 4-2. Table 4-3 shows the results of all field analyses conducted at each dry weather monitoring station during Round One. Graphs of the various parameters and appropriate action levels for follow-up investigations are included at the end of this section.

TABLE 4-2
FIELD ANALYSIS STATISTICAL SUMMARY – ROUND ONE

Parameter (units)	Maximum	Minimum	Average	Median	Standard Deviation	Number of Exceedances	Graph
Flow Rate (gpm)	33.5	0 (ponded)	5.4	2.0	8.8	---	4-1
Temperature (ºC)	29.0	19.1	23.4	23.0	2.9	0	4-2
pH	8.9	7.0	8.2	8.2	0.4	0	4-3
Turbidity (NTU)	49.91	0.01	6.22	2.43	11.05	0	4-4
Conductivity (mS/cm)	5.12	1.02	2.46	1.84	1.35	0	4-5
Ammonia-N (mg/L)	1.590	0.030	0.254	0.178	0.337	1	4-6
Surfactants (mg/L)	0.75	0.13	0.34	0.25	0.17	0	4-7
Nitrate-N (mg/L)	9.27	0.14	3.61	3.00	3.00	0	4-8
Orthophosphate-P (mg/L)	0.985	0.004	0.229	0.094	0.272	0	4-9

Note: Calculations include complete routine visit data only. Confirmation visits, follow-up visits and dry sites not incorporated.

TABLE 4-3
FIELD ANALYTICAL RESULTS - ROUND ONE

Site	Date	Time	Flow (gpm)	Temp (ºC)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
A5c	5/26/09	11:45	Ponded	21.4	8.2	5.83	2.14	0.50	0.183	4.83	0.472
E5g	5/20/09	16:00	2	22.1	7.0	7.72	5.12	0.50	**1.590**	8.38	0.985
E5g (Confirmation 1)	5/21/09	15:45	1	22.1	7.3	na	2.80	na	**2.924**	na	na
E5g (Confirmation 2)	5/22/09	14:40	<1	22.4	7.3	na	3.02	na	**>3.00**	na	na
G30c	5/20/09	11:45	1	29	8.9	3.49	3.02	0.25	0.199	3.40	0.080*
H5e	5/20/09	14:50	1	25.3	8.3	0.92	1.52	0.25	0.049*	1.10*	0.090*
J25c	5/21/09	12:15	2	20.8	8.2	0.78	4.39	0.75	0.220	6.98	0.044*
J25c2	5/19/09	15:25	2	25.2	8.0	2.26	4.47	0.50	0.257	5.93	0.098
J30d	5/22/09	9:50	23	20.9	8.2	0.01	2.68	0.25	0.233	4.89	0.010*
K15j2	5/19/09	14:10	2	28.6	8.1	1.80	2.44	0.38	0.281	5.16	0.020*
O40b	5/20/09	9:20	Ponded	19.1	8.1	9.17	1.51	0.25	0.069*	2.26	0.485
P15b	5/21/09	15:15	4	24.6	7.7	0.79	1.62	0.13	0.130	7.00	0.126
P20f	5/21/09	11:40	15.5	23.8	8.8	10.30	1.36	0.13	0.232	2.59	0.049*
Q5l	5/21/09	9:25	<1	19.8	8.2	49.91	1.84	0.50	0.568	6.37	0.722
RCP1	5/21/09	10:45	5	21.5	8.3	0.64	1.60	0.25	0.059*	9.27	0.090*
RCP3	5/26/09	10:25	7.7	21.8	8.2	0.42	1.84	0.25	0.172	0.87*	0.103
S15h	5/26/09	14:10	<1	24.6	8.7	15.00	1.64	0.38	0.194	1.32	0.444

TABLE 4-3
FIELD ANALYTICAL RESULTS - ROUND ONE

Site	Date	Time	Flow (gpm)	Temp (ºC)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
S5c	5/20/09	12:45	2	24.7	8.1	2.59	1.02	0.13	0.038*	0.33*	0.043*
T5e	5/26/09	13:00	<1	24.4	8.2	5.89	1.05	0.25	0.146	0.36*	0.390
U10a	5/22/09	9:10	Dry	ns	ns	ns	ns	ns	ns	ns	ns
V40d	5/22/09	11:10	33.5	27.9	8.6	1.68	4.19	0.50	0.138	0.14*	0.004*
V45k	5/22/09	12:00	6	21.6	7.9	0.01	4.55	0.50	0.152	0.14*	0.019*
Y15e	5/26/09	12:35	Dry	ns	ns	ns	ns	ns	ns	ns	ns
Z15b	5/26/09	9:20	<1	19.8	8.1	5.14	1.13	0.13	0.034*	0.98*	0.303
PRACTICAL DETECTION LIMIT				**0.0**	**0.0**	**0.01**	**0.00**	**0.00**	**0.100**	**1.13**	**0.098**
ACTION LEVEL				**BPJ**	**< 6.5 > 9.0**	**BPJ**	**BPJ**	**1.00**	**1.000**	**10.00**	**2.000**

Notes:
na = not analyzed
ns = not sampled (dry site)
* Value reported is below the Practical Detection Limit (PDL). Per manufacturer, the value is reported but flagged. See footnotes to Table 3-1.
Red values are at or above the measured constituent's action level.
denotes a confirmation visit
denotes a location sampled for laboratory analysis

4.2 Round Two

Round Two began in September 2009. Twenty primary sites and two alternative sites were visited.

4.2.1 Qualitative Observations

Qualitative observations for all Round Two routine field screening visits are summarized below. Routine field screening and confirmation visit observations are presented in Table 4-4.

Light Conditions
The weather was sunny during all routine visits.

Odor
The water sample at one site had a musty odor, and an odor like that of decomposing organic waste was noted at one site; all other water samples were odorless.

Color
The water at three sites was yellow in color, and one site had brown water; all other samples were colorless.

Clarity
The water at one site had a slightly cloudy appearance, and water was opaque at another site. All other samples were clear.

Floatable Materials
Trash was the most common type of floatable material, observed at seven sites. One of these sites also had bubbles floating on the water's surface. No other types of floatable materials were observed.

Deposits
Sediment, gravel, and/or fine particulates were observed at all but one site. No other types of deposits were noted.

Vegetation
All sites contained vegetation appropriate to the amount of sunlight exposure and soil at the site. A few sites had limited vegetation, while most sites had either normal or no vegetation.

Biology
Insects and algae were prevalent at most sites. Some sites were also host to snails, frogs, and fish.

TABLE 4-4
FIELD OBSERVATIONS - ROUND TWO

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
A5c	9/8/09	12:30	Sunny	None	Yellow	Clear	None	Sediment, Fine Particulates	None	Insects, Algae
E5g	9/8/09	16:00	Sunny	Musty	None	Clear	None	Sediment, Fine Particulates	Normal	Insects, Frogs
G30c	9/2/09	15:50	Sunny	None	None	Clear	Trash	Sediment/Gravel, Fine Particulates	Limited	Insects, Algae
H5e	9/4/09	14:50	Sunny	None	None	Clear	Trash	Fine Particulates	None	Snails, Insects, Algae
J25c	9/3/09	11:10	Sunny	None	None	Clear	None	None	None	Insects, Algae
J25c2	9/2/09	15:00	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	None	Algae, Snails
J30d	9/4/09	11:30	Sunny	None	Yellow	Clear	None	Sediment, Fine Particulates	Limited	Insects, Algae
J30d (Confirmation 1)	9/15/09	14:45	Sunny	None	None	Clear	None	Sediment/Gravel, Fine Particulates	None	Fish, Snails, Insects, Algae
J30d (Confirmation 2)	9/21/09	14:00	Sunny	None	None	Clear	Trash	Sediment/Gravel, Fine Particulates	None	Snails, Insects, Algae
J30d (Confirmation 3)	9/23/09	16:00	Sunny	None	None	Clear	None	Sediment/Gravel, Fine Particulates	Limited	Snails, Insects, Algae
K15j2	9/3/09	14:40	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae
O40b	9/8/09	14:15	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Limited	Insects, Algae

TABLE 4-4
FIELD OBSERVATIONS - ROUND TWO (CONTINUED)

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
P15b	9/4/09	13:45	Sunny	None	None	Clear	None	Sediment/Gravel, Fine Particulates	None	Insects
P15b (Confirmation)	9/8/09	15:00	Sunny	None	None	Clear	None	Sediment/Gravel, Fine Particulates	None	Insects
P20f	9/4/09	10:40	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	None	Snails, Insects, Algae
Q5l	9/8/09	11:20	Sunny	Decomposing organic waste	Yellow	Opaque	None	Fine Particulates	None	None
Q5l (Confirmation)	9/9/09	10:35	Sunny	ns	ns	ns	ns	Fine Particulates	None	None
RCP1	9/3/09	12:00	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	Normal	Insects, Algae
RCP3	9/9/09	9:45	Sunny	None	None	Clear	Trash	Sediment/Gravel, Fine Particulates	Normal	Insects, Algae
S15h	9/9/09	11:20	Sunny	None	Brown	Slightly Cloudy	Trash, Bubbles	Sediment, Fine Particulates	Normal	Insects
S5c	9/3/09	16:10	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Limited	Insects, Algae
T5e	9/8/09	10:05	Sunny	None	None	Clear	None	Sediment/Gravel, Fine Particulates	Normal	Insects
U10a	9/8/09	10:50	Sunny	ns	ns	ns	ns	Sediment/Gravel, Fine Particulates	Normal	Insects
V40d	9/3/09	12:40	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Limited	Snails, Insects, Algae

TABLE 4-4
FIELD OBSERVATIONS - ROUND TWO (CONTINUED)

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
V40d (Confirmation)	9/4/09	10:05	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Limited	Snails, Insects, Algae
V45k	9/9/09	12:30	Sunny	None	None	Clear	None	Sediment/Gravel, Fine Particulates	Normal	Insects, Algae
Y15e	9/8/09	9:35	Sunny	ns	ns	ns	ns	Sediment/Gravel, Fine Particulates	Normal	Insects
Z15b	9/4/09	9:20	Sunny	None	Brown	Clear	None	Sediment, Fine Particulates	Normal	Insects

Notes:
denotes a confirmation visit
denotes a location sampled for laboratory analysis
ns = not sampled (dry site)

4.2.2 Field Analytical Results

Field analyses for Round Two of the Dry Weather Monitoring Program were conducted at all sites with flowing or ponded water. The measured constituents are described in Section 4.1.2 of this report.

A statistical summary of the routine field analytical results for Round Two data is presented in Table 4-5. Table 4-6 shows the results of all field analyses conducted at the sampled sites during Round Two. Graphs of the various parameters and appropriate action levels for follow-up investigations are included at the end of this section.

TABLE 4-5
FIELD ANALYSIS STATISTICAL SUMMARY – ROUND TWO

Parameter (units)	Maximum	Minimum	Average	Median	Standard Deviation	Number of Exceedances	Graph
Flow Rate (gpm)	23	0 (ponded)	2.8	1	5.3	---	4-1
Temperature (ºC)	34.4	23.0	27.7	27.5	3.0	0	4-2
pH	9.1	7.4	8.0	8.0	0.4	1	4-3
Turbidity (NTU)	112	0.18	13.13	2.71	28.66	0	4-4
Conductivity (mS/cm)	5.42	1.36	2.43	2.26	1.04	0	4-5
Ammonia-N (mg/L)	0.750	0.110	0.331	0.262	0.192	0	4-6
Surfactants (mg/L)	0.75	0.13	0.35	0.25	0.20	0	4-7
Nitrate-N (mg/L)	13.42	0.09	3.67	1.88	3.96	1	4-8
Orthophosphate-P (mg/L)	9.343	0.015	0.676	0.160	2.053	1	4-9

Note: Calculations include complete routine visit data only. Confirmation visits, follow-up visits and dry sites not incorporated.

TABLE 4-6
FIELD ANALYTICAL RESULTS - ROUND TWO

Site	Date	Time	Flow (gpm)	Temp (ºC)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
A5c	9/8/09	12:30	<1	25.1	8.0	18.10	2.16	0.75	0.432	1.33	0.712
E5g	9/8/09	16:00	Ponded	24.8	7.4	12.68	3.26	0.50	0.693	0.55*	0.465
G30c	9/2/09	15:50	1	33.0	8.8	3.46	2.58	0.25	0.214	2.86	0.186
H5e	9/4/09	14:50	<1	27.9	7.9	1.14	2.70	0.25	0.285	0.81*	0.414
J25c	9/3/09	11:10	1	26.4	8.3	0.18	4.36	0.38	0.221	7.94	0.196
J25c2	9/2/09	15:00	1	30.1	7.9	0.41	5.42	0.38	0.240	6.01	0.054*
J30d	9/4/09	11:30	10	30.8	8.0	8.66	3.11	0.25	0.643	2.43	0.044*
J30d (Confirmation 1)	9/15/09	14:45	3	29.9	8.9	2.82	na	na	na	na	na
J30d (Confirmation 2)	9/21/09	14:00	5	29.5	8.7	2.45	na	na	na	na	na
J30d (Confirmation 3)	9/23/09	16:00	2	27.4	8.6	2.92	15.65	na	na	na	na
K15j2	9/3/09	14:40	1	29.9	7.7	0.80	2.02	0.13	0.210	5.36	0.037*
O40b	9/8/09	14:15	Ponded	26.2	8.0	1.21	1.36	0.25	0.430	0.71*	0.228
P15b	9/4/09	13:45	3	30.5	7.7	0.82	1.60	0.13	0.202	**13.42**	0.156
P15b (Confirmation)	9/8/09	15:00	3	27.7	7.4	6.70	1.61	na	na	7.56	na
P20f	9/4/09	10:40	3	28.0	8.2	3.50	1.53	0.25	0.268	5.66	0.016*
Q5l	9/8/09	11:20	Ponded	25.2	8.0	**112**	1.86	0.75	0.595	2.88	**9.343**
Q5l (Confirmation)	9/9/09	10:35	Dry	ns	ns	ns	ns	ns	ns	ns	ns

TABLE 4-6
FIELD ANALYTICAL RESULTS - ROUND TWO (CONTINUED)

Site	Date	Time	Flow (gpm)	Temp (ºC)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
RCP1	9/3/09	12:00	3	28.0	8.2	0.50	1.50	0.13	0.170	9.96	0.103
RCP3	9/9/09	9:45	3	23.6	8.0	0.49	1.73	0.25	0.177	9.93	0.152
S15h	9/9/09	11:20	<1	27.1	7.9	16.76	1.46	0.75	0.750	1.27	0.839
S5c	9/3/09	16:10	<1	28.8	7.8	1.60	2.48	0.25	0.273	1.30	0.267
T5e	9/8/09	10:05	Ponded	23.0	7.5	7.68	1.59	0.25	0.110	0.18*	0.057*
U10a	9/8/09	10:50	Dry	ns	ns	ns	ns	ns	ns	ns	ns
V40d	9/3/09	12:40	23	34.4	**9.1**	1.95	3	0.25	0.177	0.09*	0.015*
V40d (Confirmation)	9/4/09	10:05	31	27.4	8.0	na	3.62	na	na	na	na
V45k	9/9/09	12:30	5	26.1	7.7	3.70	2.60	0.25	0.271	0.12*	0.064*
Y15e	9/8/09	9:35	Dry	ns	ns	ns	ns	ns	ns	ns	ns
Z15b	9/4/09	9:20	<1	25.9	7.6	7.79	2.35	0.50	0.256	0.60*	0.163
PRACTICAL DETECTION LIMIT				**0.0**	**0.0**	**0.01**	**0.00**	**0.00**	**0.100**	**1.13**	**0.098**
ACTION LEVEL				**BPJ**	**< 6.5 > 9.0**	**BPJ**	**BPJ**	**1.00**	**1.000**	**10.00**	**2.000**

Notes:
na = not analyzed
ns = not sampled (dry site)
* Value reported is below the Practical Detection Limit (PDL). Per manufacturer, the value is reported but flagged. See footnotes to Table 3-1 for details.
Red values were at or above the measured constituent's action level
denotes a confirmation visit
denotes a location sampled for laboratory analysis

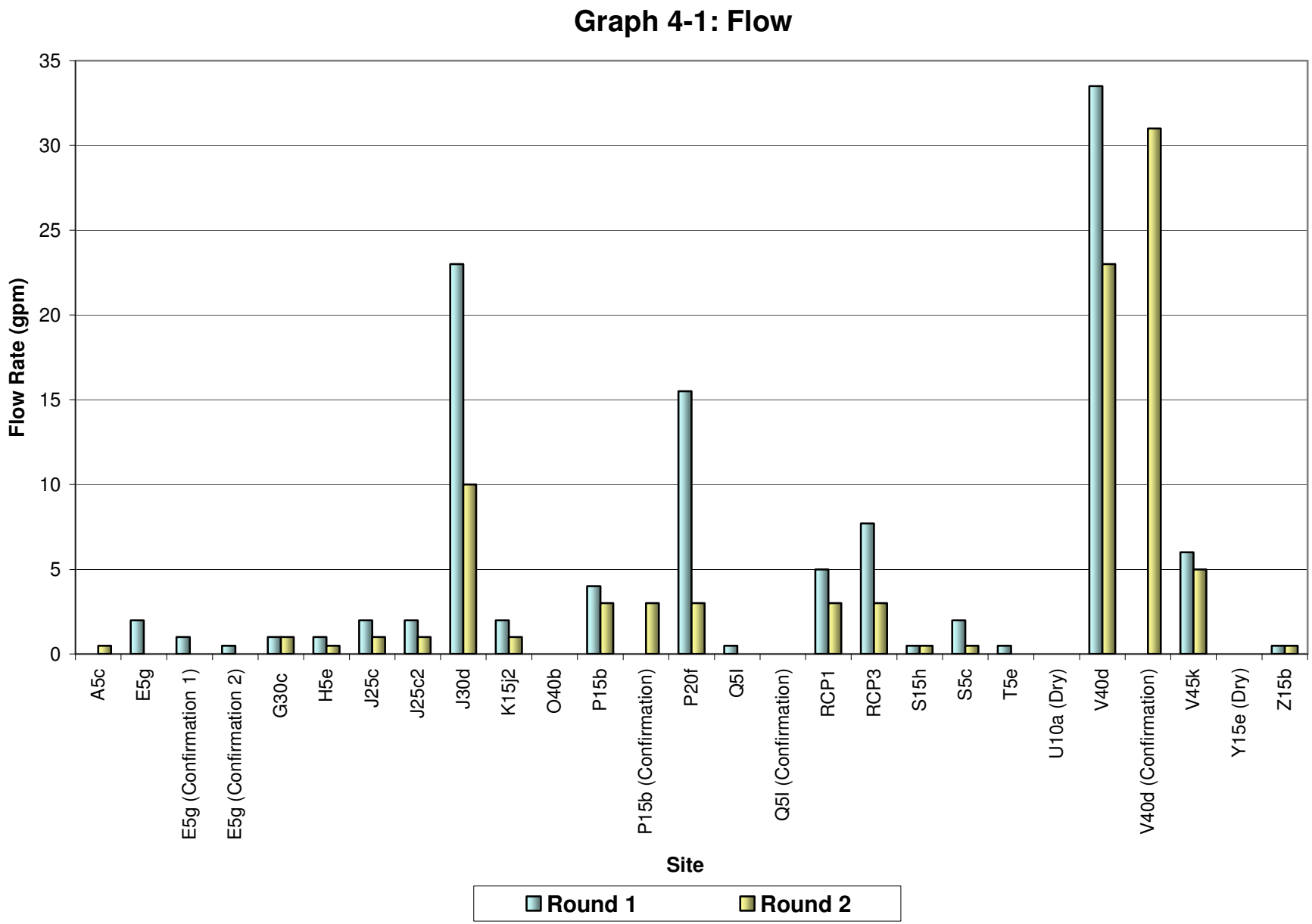
Graph 4-1: Flow
Flow Rate (gpm)
35
30
25
20
15
10
5
0
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5l
Q5l (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

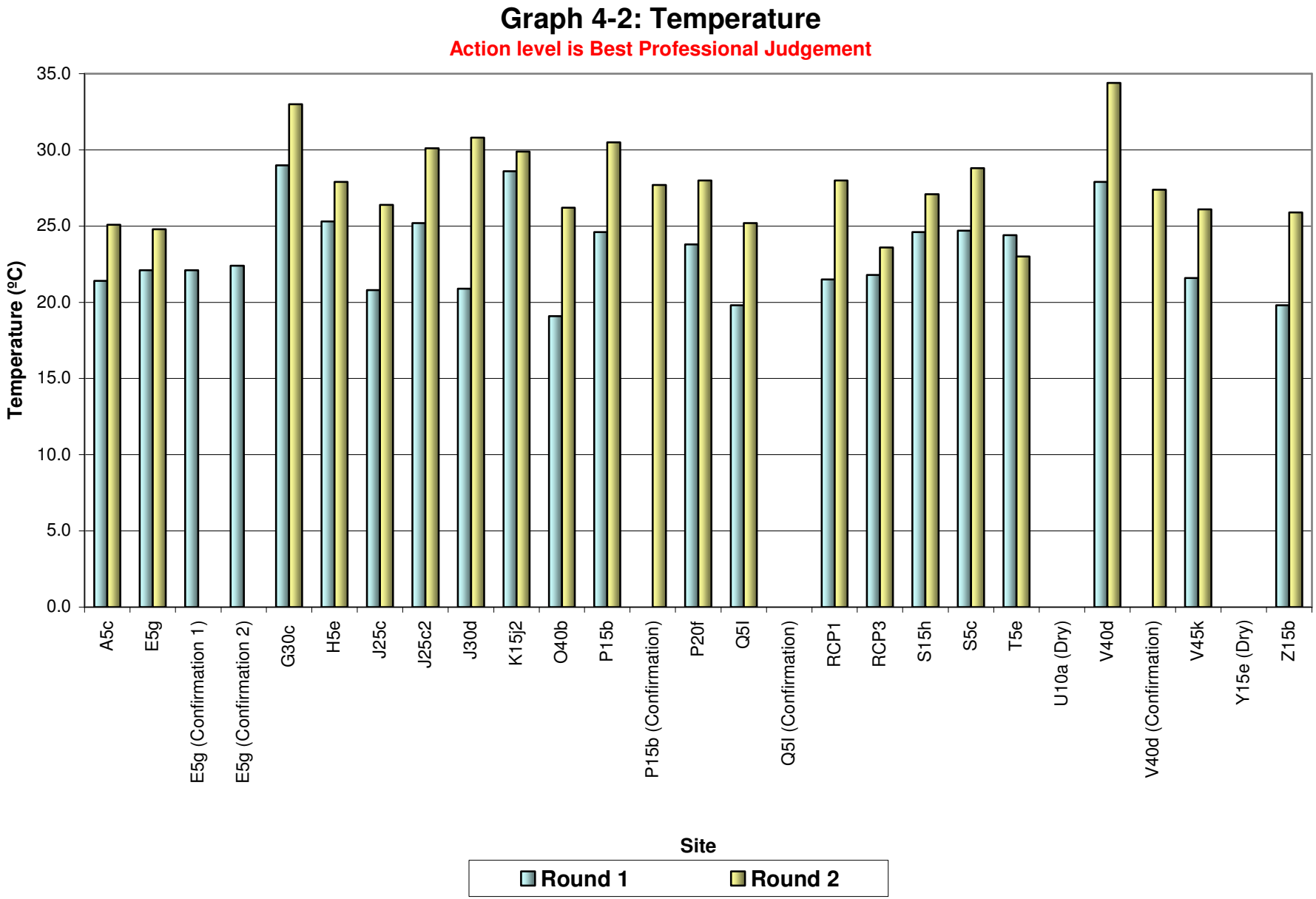
Graph 4-2: Temperature
Action level is Best Professional Judgement
Temperature (ºC)
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5l
Q5l (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

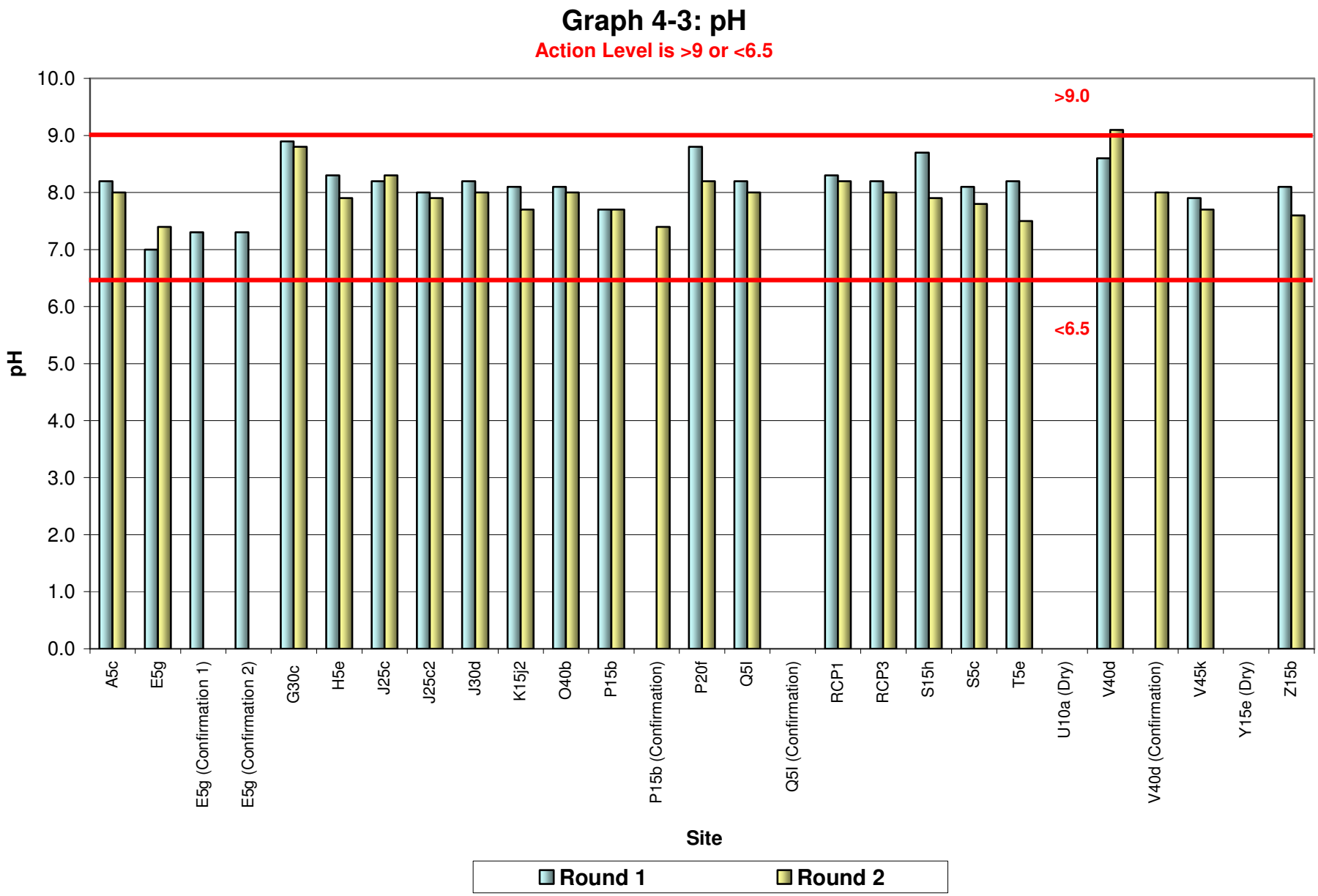
Graph 4-3: pH
Action Level is >9 or <6.5
>9.0
<6.5
pH
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5l
Q5l (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

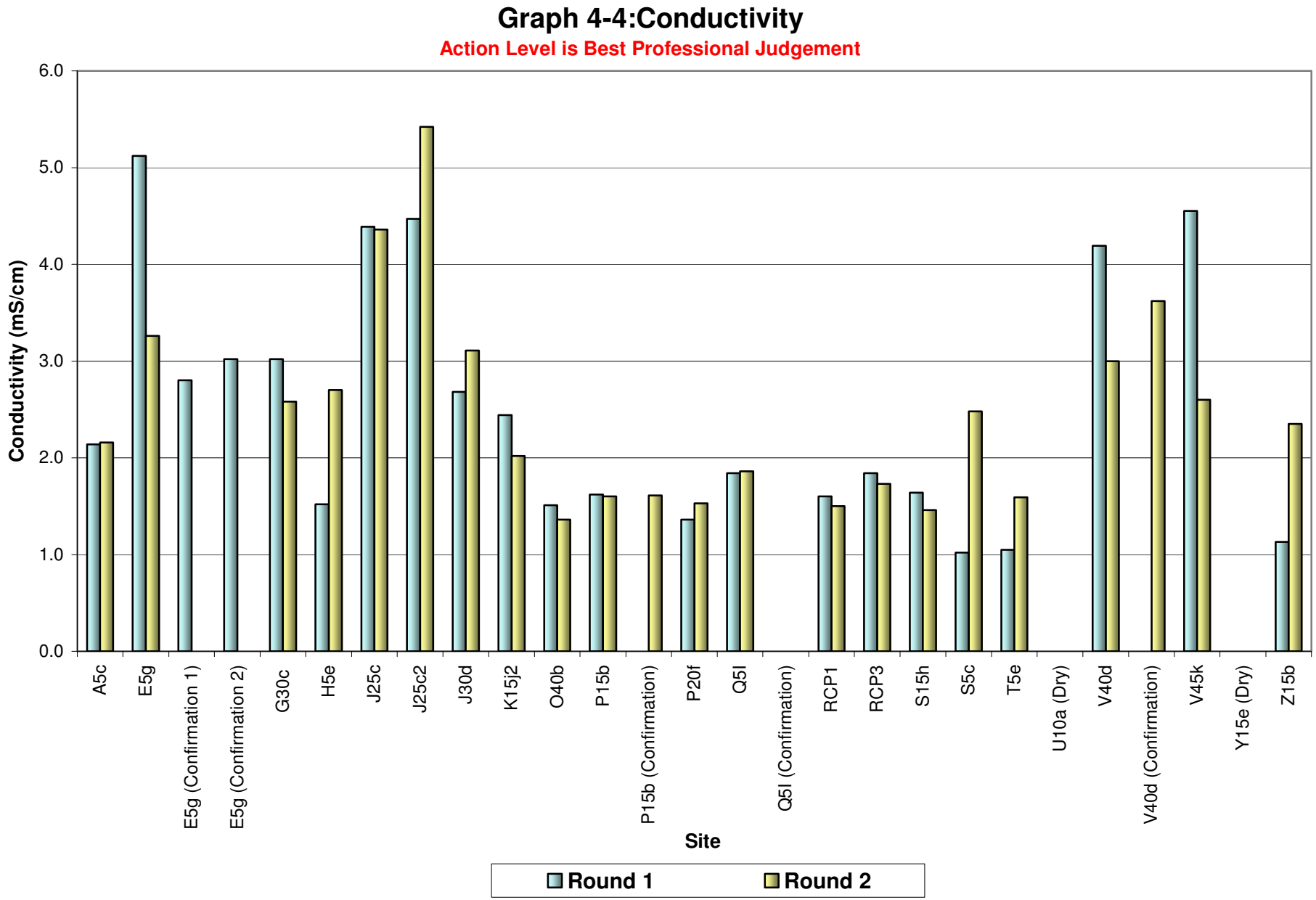
Graph 4-4:Conductivity
Action Level is Best Professional Judgement
Conductivity (mS/cm)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5l
Q5l (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

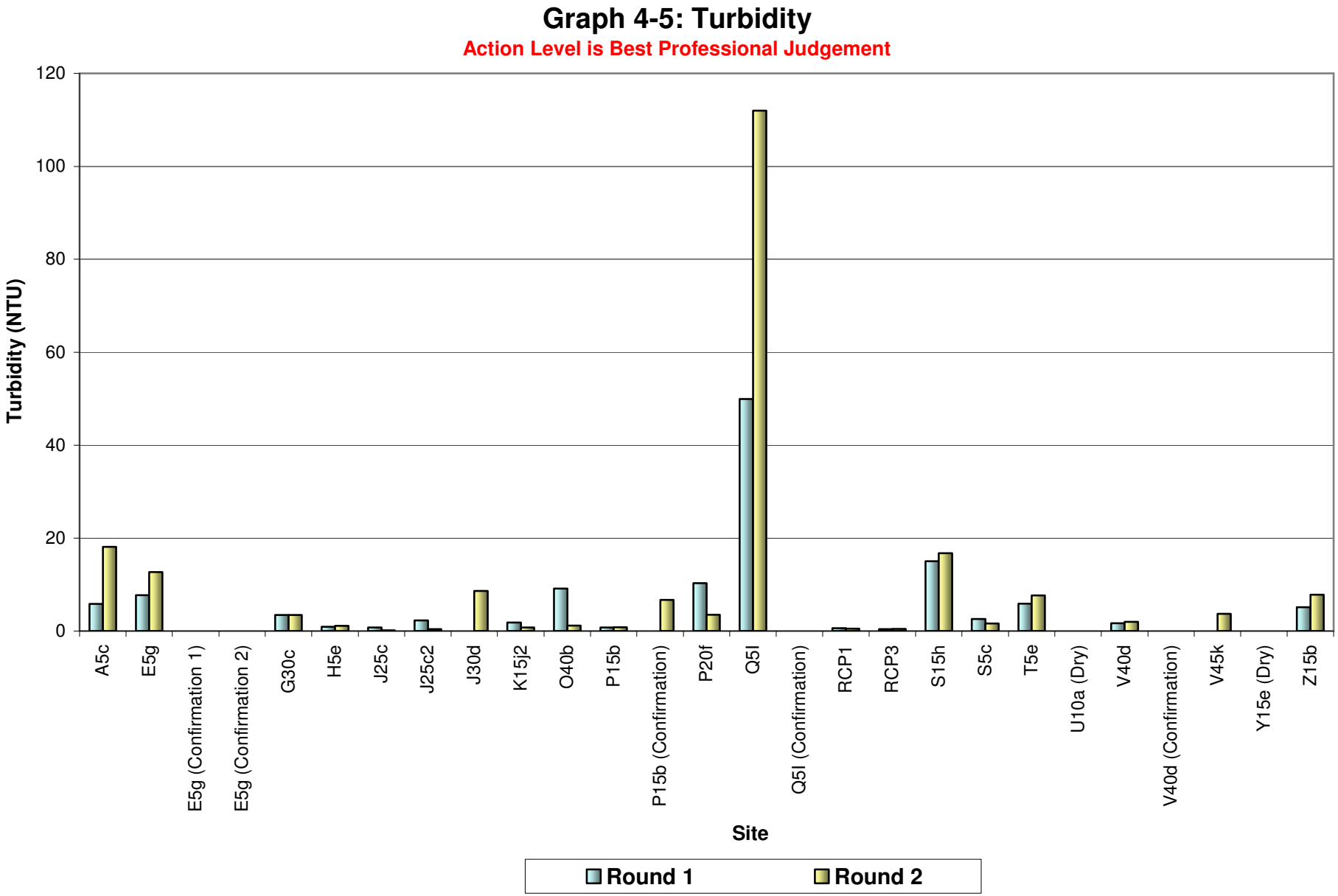
Graph 4-5: Turbidity
Action Level is Best Professional Judgement
Turbidity (NTU)
120
100
80
60
40
20
0
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5l
Q5l (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

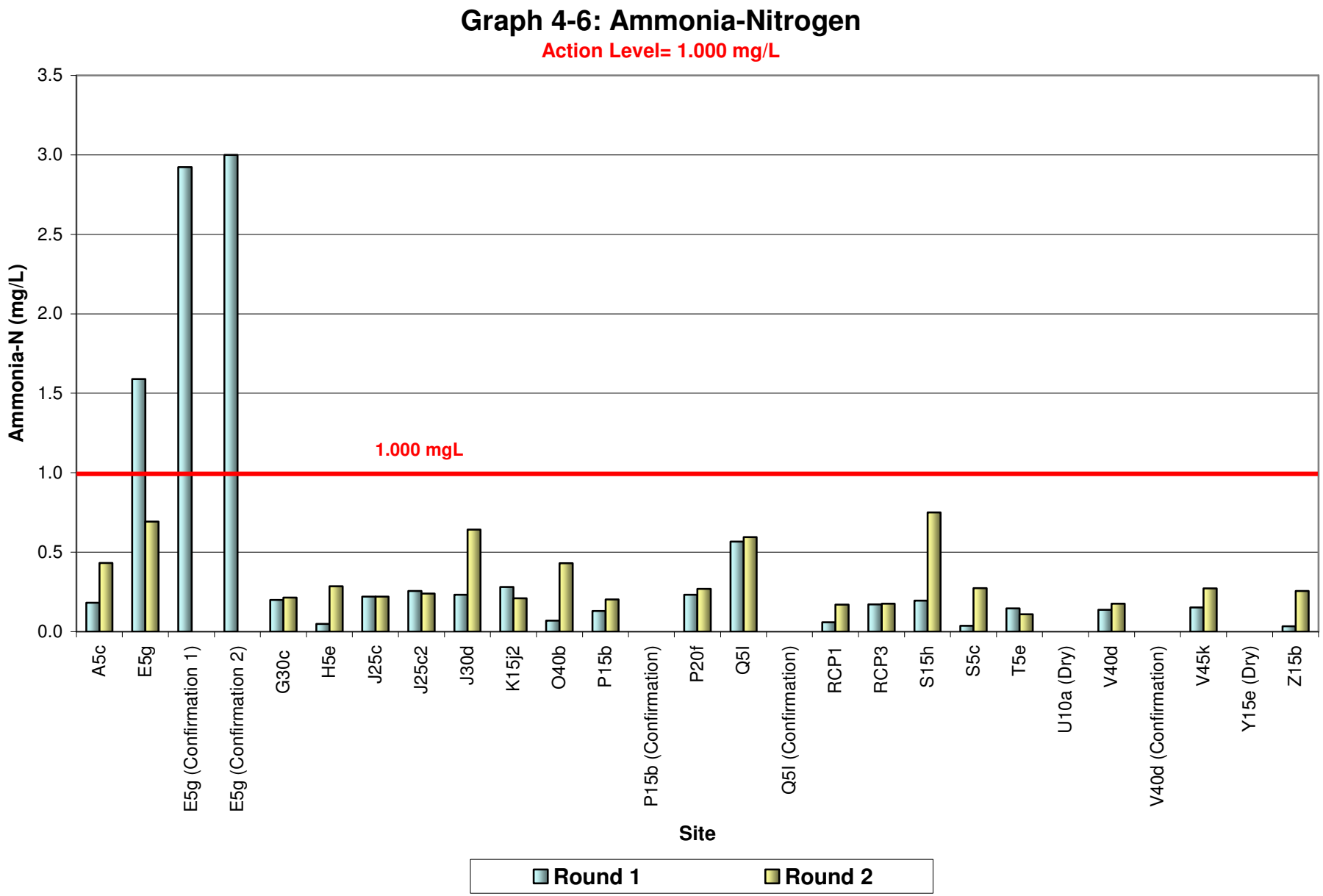
Graph 4-6: Ammonia-Nitrogen
Action Level= 1.000 mg/L
Ammonia-N (mg/L)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1.000 mgL
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5I
Q5I (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

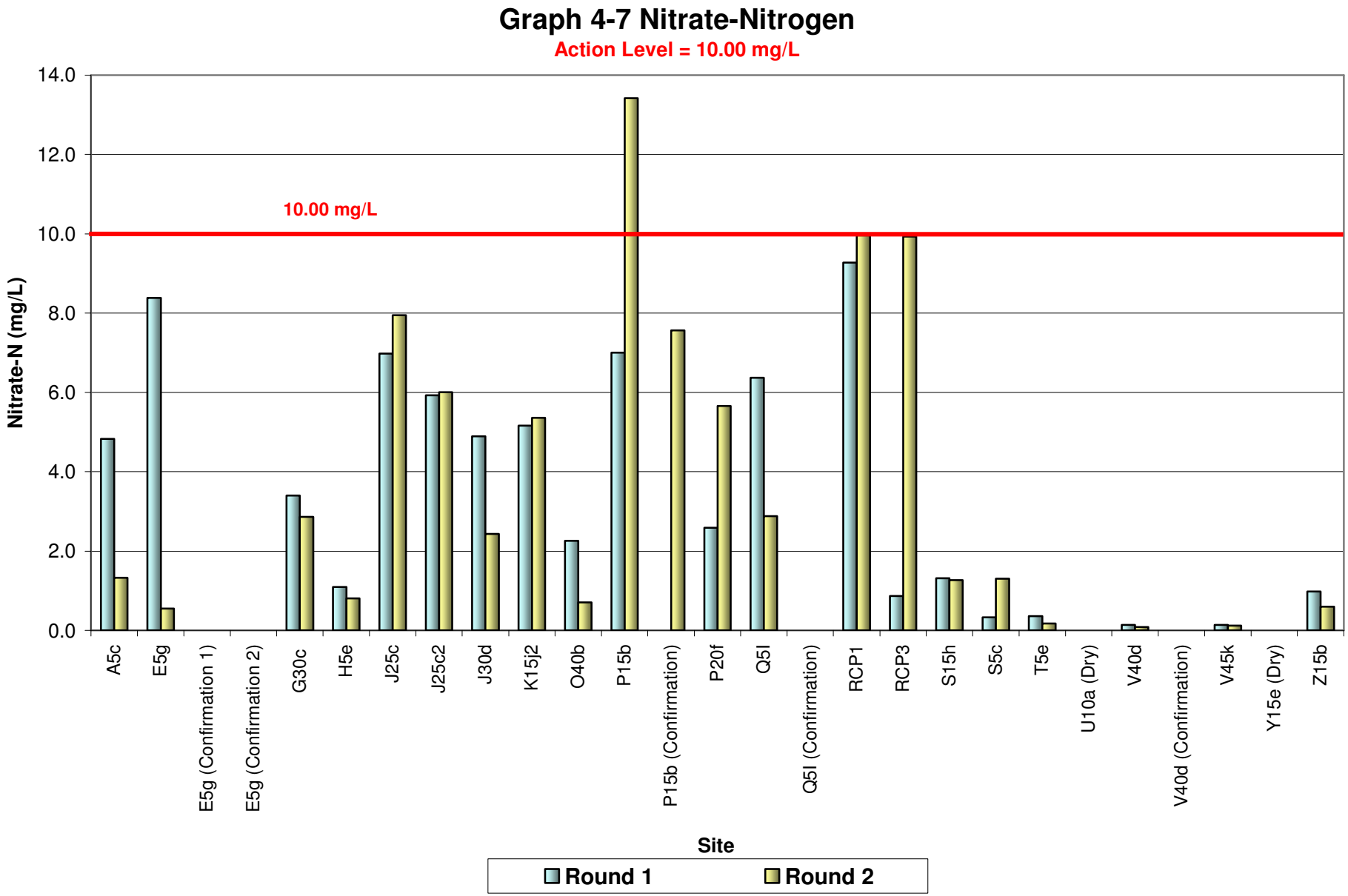
Graph 4-7 Nitrate-Nitrogen
Action Level = 10.00 mg/L
10.00 mg/L
Nitrate-N (mg/L)
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5l
Q5l (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

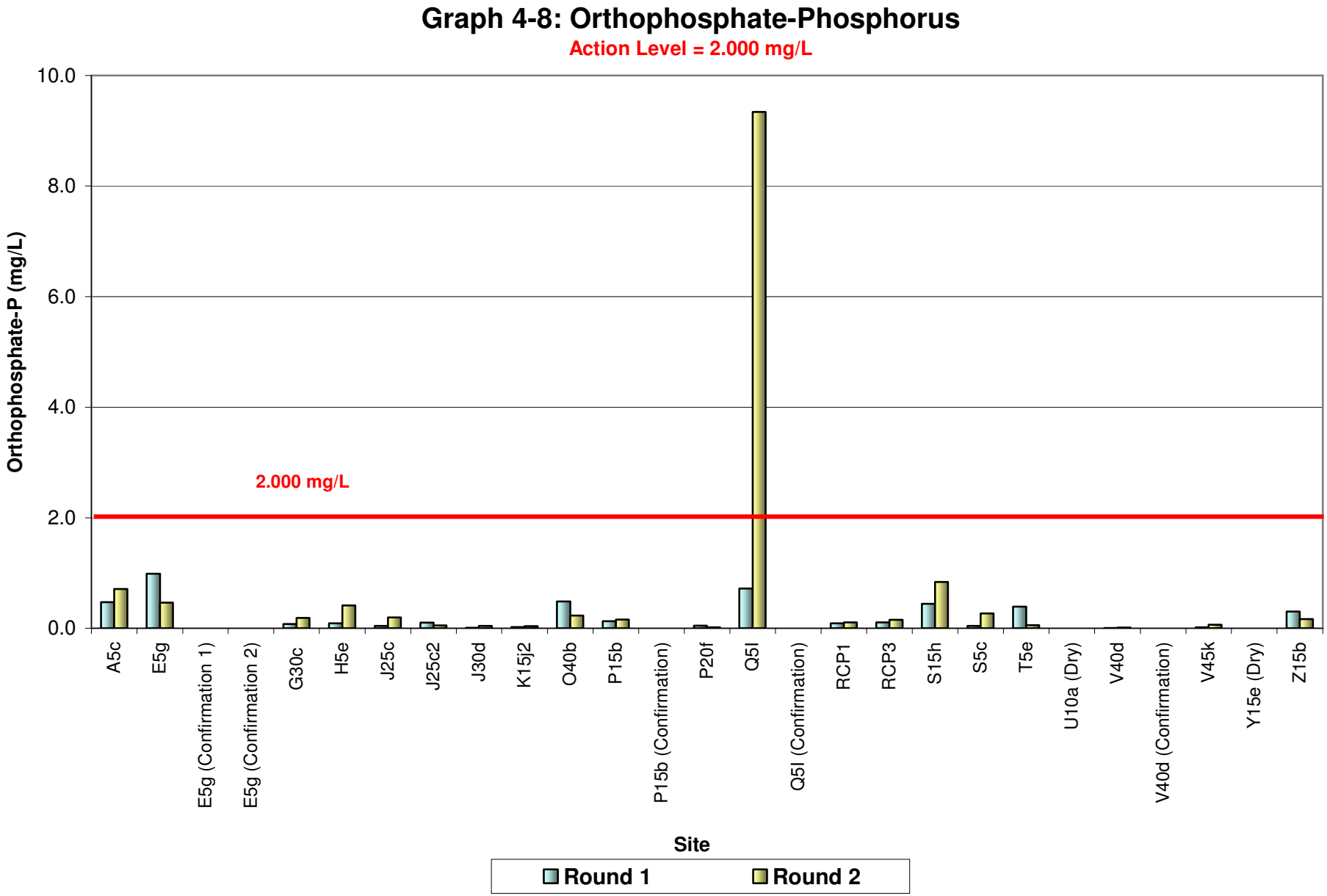
Graph 4-8: Orthophosphate-Phosphorus
Action Level = 2.000 mg/L
Orthophosphate-P (mg/L)
10.0
8.0
6.0
4.0
2.0
0.0
2.000 mg/L
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5I
Q5I (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

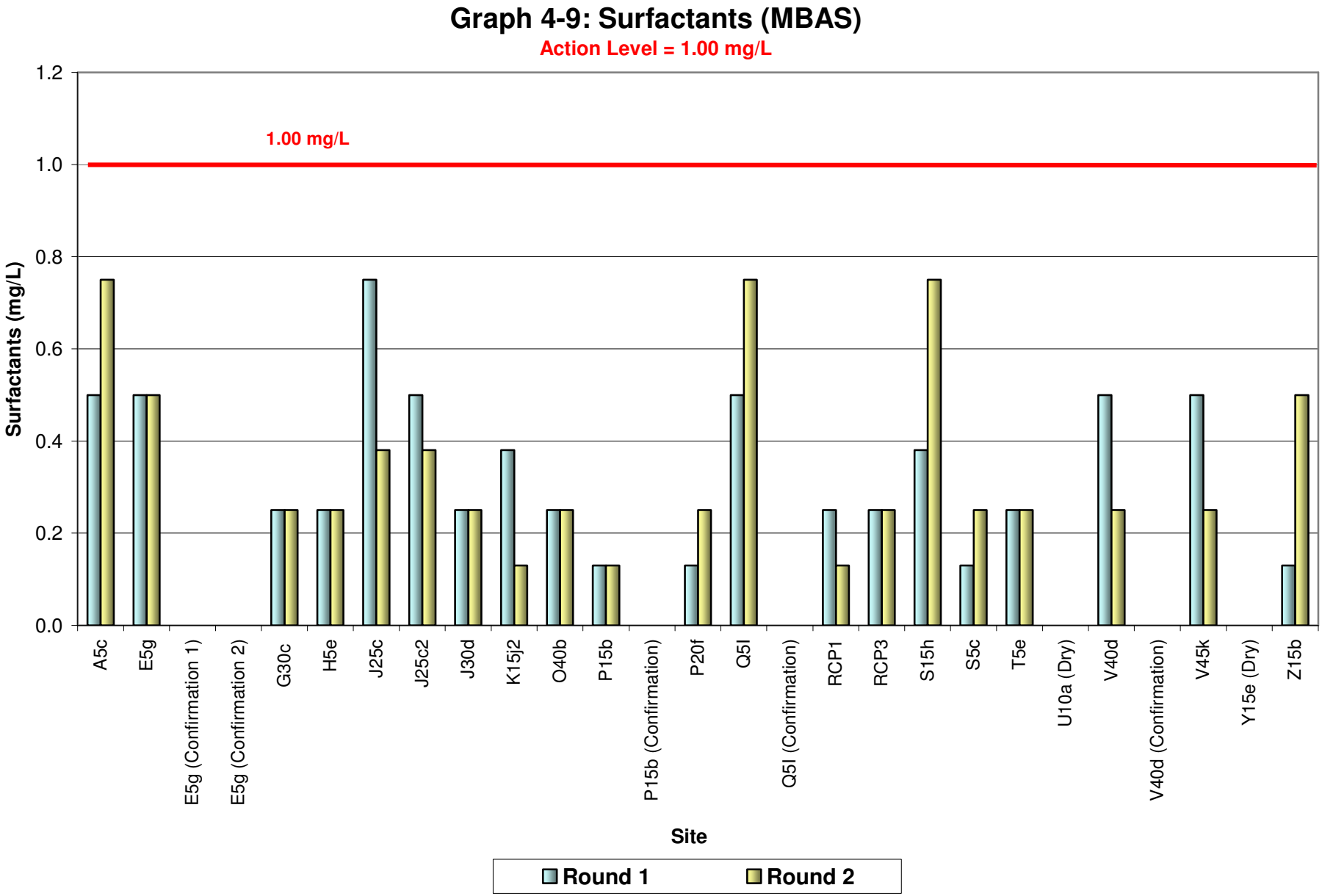
Graph 4-9: Surfactants (MBAS)
Action Level = 1.00 mg/L
1.00 mg/L
Surfactants (mg/L)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
A5c
E5g
E5g (Confirmation 1)
E5g (Confirmation 2)
G30c
H5e
J25c
J25c2
J30d
K15j2
O40b
P15b
P15b (Confirmation)
P20f
Q5l
Q5l (Confirmation)
RCP1
RCP3
S15h
S5c
T5e
U10a (Dry)
V40d
V40d (Confirmation)
V45k
Y15e (Dry)
Z15b
Site
Round 1
Round 2

5 TRASH ASSESSMENT

5.1 Regulatory Requirements

Section II.B.3.C.(7) of the Municipal Permit's Receiving Waters and Urban Runoff Monitoring and Reporting Program requires all Copermittees, including the City of Santee, to assess the presence of trash in receiving waters and urban runoff at each dry weather monitoring site. This trash assessment program is designed to provide information on the spatial extent and relative amount of trash present, as well at the nature and origin of the trash at the site.

5.2 Procedure and Definitions

The San Diego Copermittee Dry Weather Monitoring Workgroup developed a Trash Assessment Form to document the amount and extent of trash at each evaluated site. The form categorizes the site into one of five trash categories: optimal, suboptimal, marginal, submarginal, or poor. The form also addresses any potential threats that the trash may pose to human or aquatic health. For sites rating submarginal or poor, the form includes a section to record types, prevalence, potential routes, and sources of trash.

- A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form's five categories are primarily qualitative descriptions of the amount and extent of trash although a number of trash pieces is also included in each category as a rough guideline. The five categories are defined as follows.
- Optimal: On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
- Suboptimal: On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
- Marginal: Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
- Submarginal: Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (~100-400 pieces). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
- Poor: Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

The threat to human health and threat to aquatic health is assessed at each site using the following definitions:

- *Threat to Human Health* – Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment.

- *Threat to Aquatic Health* – Large amount (50 pieces or more) of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amounts of settleable, degradable, and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence of large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment.

In the event that a site is noted as potentially posing a threat to human or aquatic health, additional descriptive comments are recorded in the "Comments" section of the Trash Assessment Form.

If a site is labeled as submarginal or poor, it is assessed for types of trash present (e.g., automotive, biohazard, food waste), which are ranked based on their prevalence and the potential threat to water quality they pose. Lastly, the potential mechanism through which trash reached the site (e.g., dumping, littering, upstream sources) and the potential source of the trash (e.g., construction, commercial, transient) are identified.

5.2 Trash Assessment Results

During both Round One and Round Two, the majority of sites in the City of Santee were rated optimal or suboptimal. None of the sites were considered submarginal or poor, or were determined to pose a threat to aquatic health. During round one, Site E5g received a marginal trash assessment rating and was determined to pose a potential threat to human health due to the probable presence of human waste. The City was notified of the conditions at the site, and promptly removed all trash and debris from the site and surrounding area.

Tables 5-1 and 5-2 and Graph 5-1 summarize the trash assessment results for both rounds of monitoring. Figures 5-1 and 5-2 are maps of sampling sites and their corresponding trash assessment in Round One and Round Two, respectively.

TABLE 5-1
TRASH ASSESSMENT RESULTS – ROUND ONE

Optimal (18 Sites)			Suboptimal (3 Sites)	Marginal (1 Site)	Submarginal (0 Sites)	Poor (0 Sites)
G30c H5e J25c J25c2 J30d K15j2	O40b P15b P20f Q5l RCP1 S15h	S5c T5e U10a V40d V45k Z15b	A5c RCP3 Y15e	E5g	(None)	(None)

TABLE 5-2
TRASH ASSESSMENT RESULTS – ROUND TWO

Optimal (11 Sites)		Suboptimal (9 Sites)		Marginal (2 Sites)	Submarginal (0 Sites)	Poor (0 Sites)
A5c E5g G30c J25c J30d K15j2	P15b RCP1 S5c T5e V45k	H5e J25c2 O40b Q5l S15h	U10a V40d Y15e Z15b	P20f RCP3	(None)	(None)

GRAPH 5-1
TRASH ASSESSMENT SUMMARY

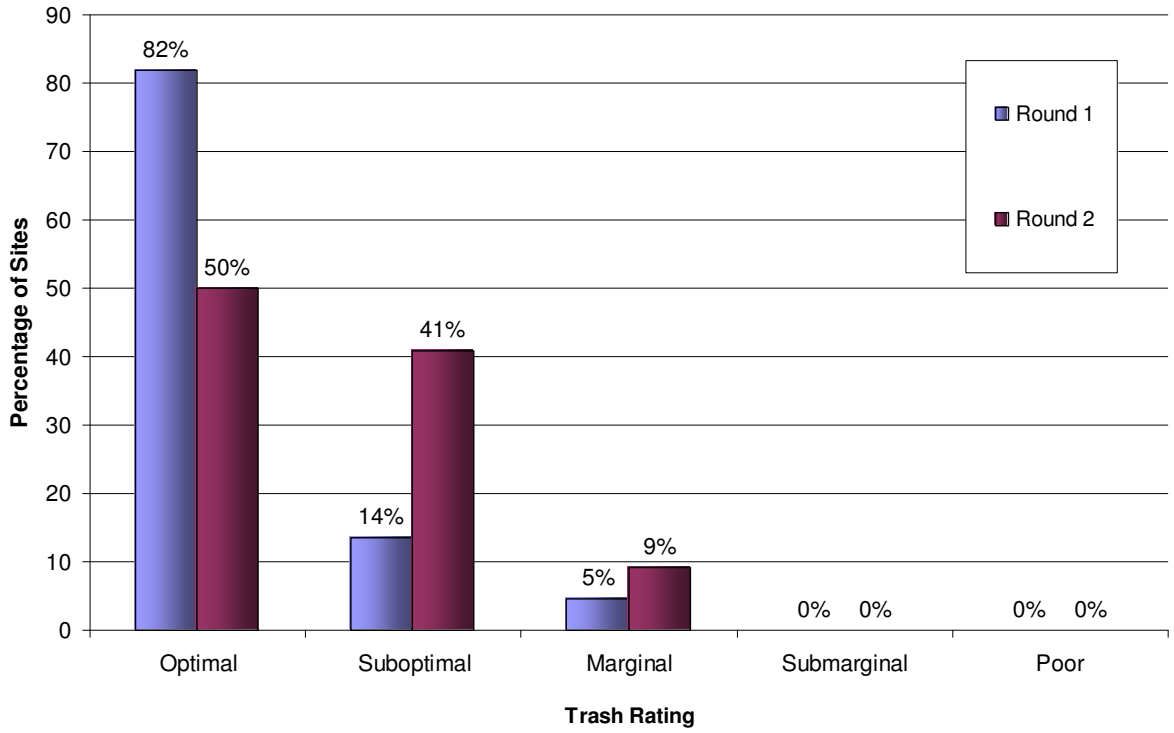

FIGURE 5-1
ROUND ONE TRASH ASSESSMENT GIS MAP

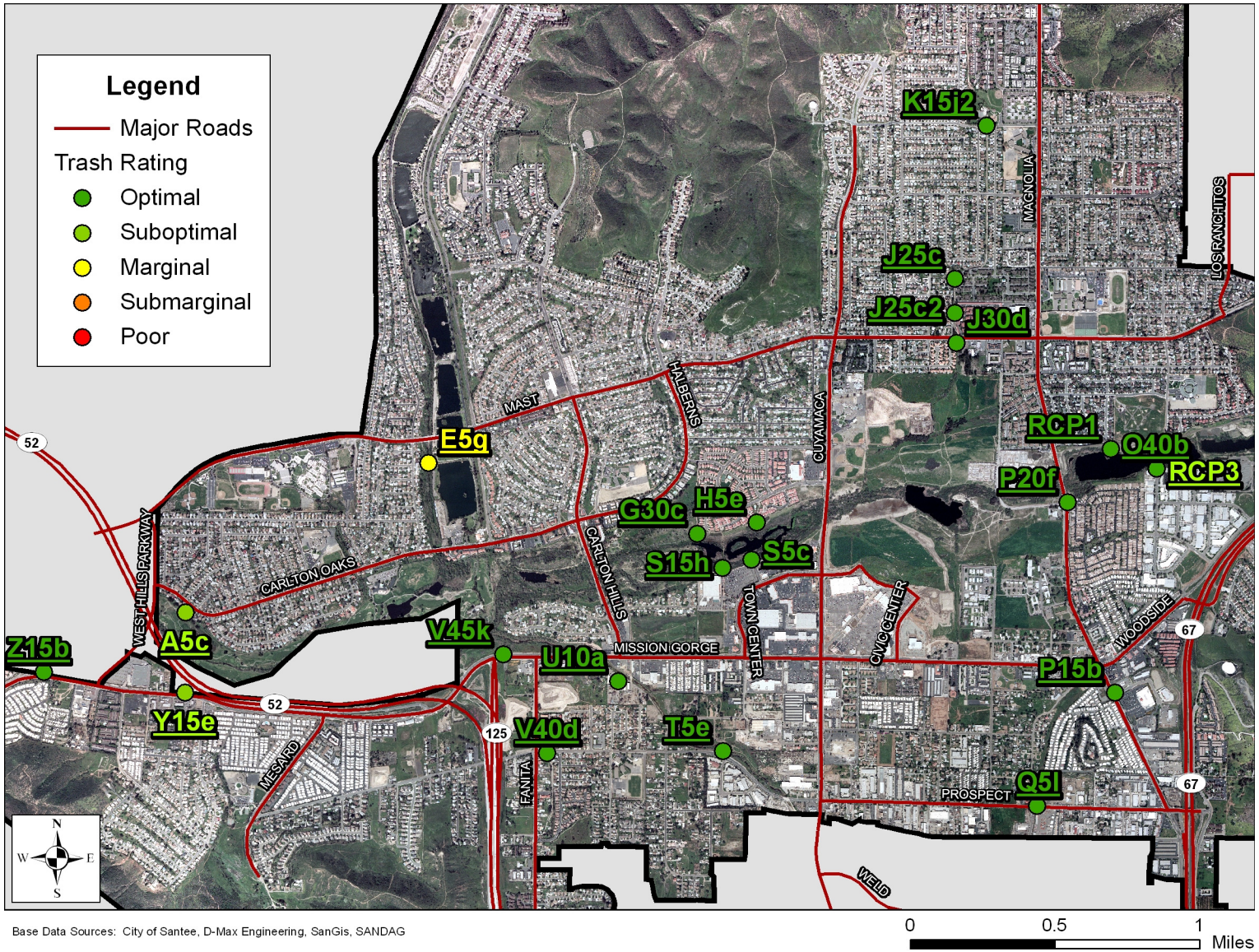

Base Data Sources: City of Santee, D-Max Engineering, SanGis, SANDAG

0 0.5 1 Miles

FIGURE 5-2
ROUND TWO TRASH ASSESSMENT GIS MAP

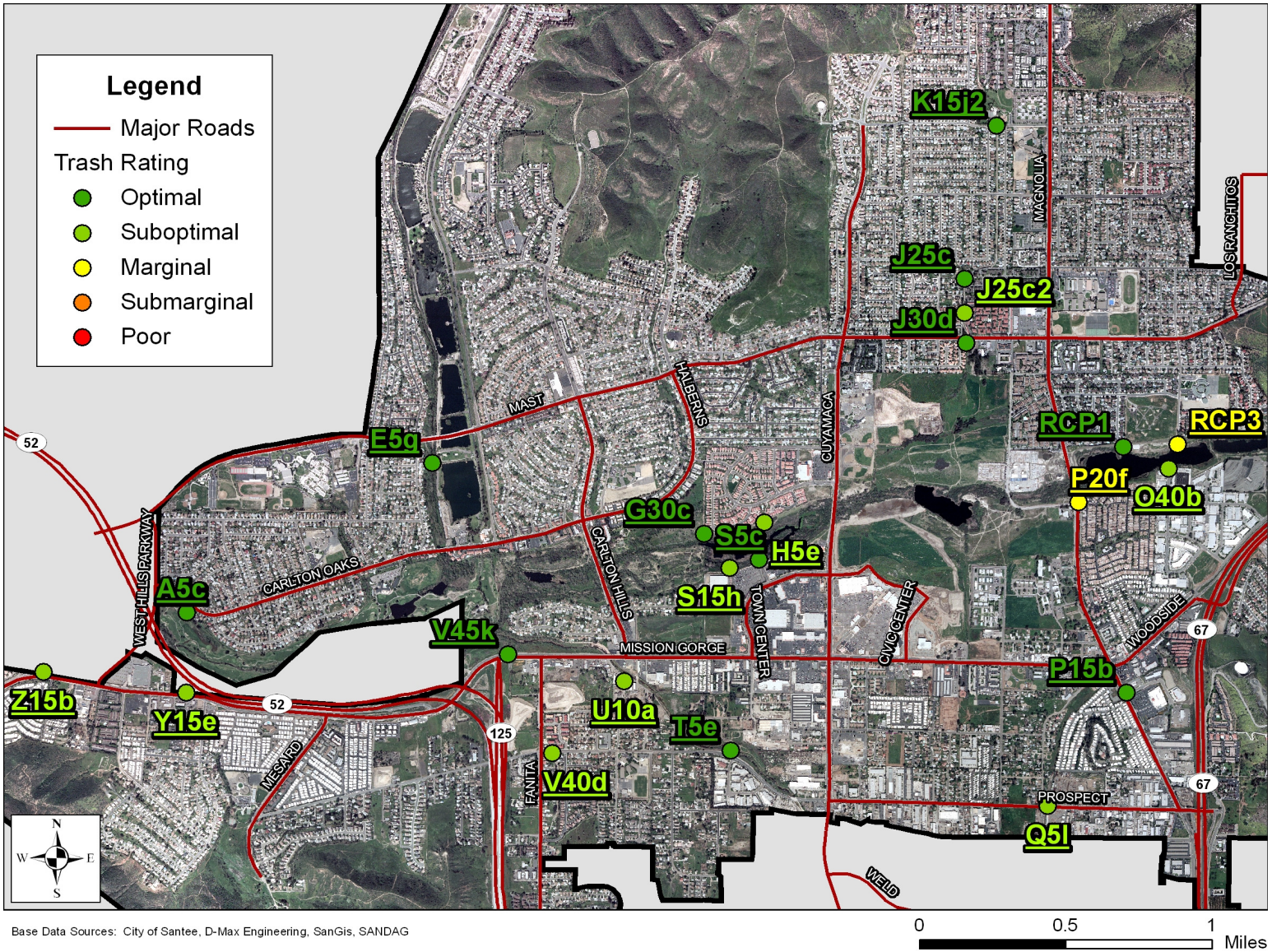

Base Data Sources: City of Santee, D-Max Engineering, SanGis, SANDAG

0 0.5 1 Miles

6 LABORATORY ANALYTICAL RESULTS

6.1 Summary

Laboratory analyses were conducted at five sites in each of the two rounds, representing over 25 percent of all sites with ponded or flowing water. The laboratory constituents measured are defined below.

Oil and grease analysis is used to detect hydrocarbon pollution from a variety of sources, including parking lots and streets, washing activities, illegal discharges, and automobile repair facilities.

Total hardness measures the amount of calcium and magnesium ions in a water sample, with the result expressed in mg/L of $CaCO_3$. Hardness itself is not considered a pollutant, but is measured to calculate CTR limits for dissolved metals. Hardness affects the solubility of dissolved metals as well as other minerals and ions.

Diazinon and **chlorpyrifos** are organophosphate pesticides that are highly toxic to insects, birds, and mammals, freshwater fish, and invertebrates. In 2005, the Environmental Protection Agency banned the sale of diazinon in the United States and tightened restrictions on chlorpyrifos use.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts, most surface waters, and soils. Testing water samples for total coliform bacteria is a standard practice in public health. Total coliform is measured as an indicator of other more harmful pathogens, since these pathogens are generally present in much smaller quantities and are difficult to detect.

Fecal coliform, a subset of coliform bacteria, and ***Enterococcus*** are found primarily in the gastro intestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. Without the use of significantly more expensive methods, such as ribotyping, it is not possible to determine whether the source of fecal material is human or animal. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain.

Metal contamination of water can arise from a variety of sources, including automobile operation, automobile repair, vehicle washing, galvanizing of metal, and electronics manufacturing. Certain dissolved metals are toxic pollutants that are hazardous to the survival and development of aquatic organisms.

The California Toxics Rule for Dissolved Metals in Fresh Waters defines metal toxicity as a function of water hardness. As hardness increases, so does the Criterion Maximum Concentration (CMC), a concentration limit in which aquatic life can be sustained. CMC values differ for various metals. Dry weather monitoring laboratory samples are analyzed for the presence of dissolved cadmium, copper, lead, and zinc.

6.2 Results

Tables 6-1 and 6-2 present the statistical summaries of the laboratory results from Round One and Round Two samples, respectively. Table 6-3 shows the sites with metal concentrations during each round, the measured total hardness of the sample, and the associated CMC. Laboratory reports are included in Appendix C.

TABLE 6-1
LABORATORY ANALYSIS STATISTICAL SUMMARY – ROUND ONE

Parameter (units)	Maximum	Minimum	Number of Exceedances
Total Hardness (mg/L $CaCO_3$)	1,020	356	*
Oil and grease (mg/L)	nd	nd	0
Diazinon (µg/L)	nd	nd	0
Chlorpyrifos (µg/L)	nd	nd	0
Cadmium (dissolved, mg/L)	nd	nd	0
Copper (dissolved, mg/L)	0.006	nd	0
Lead (dissolved, mg/L)	nd	nd	0
Zinc (dissolved, mg/L)	nd	nd	0
Total Coliforms (MPN/100 mL)	11,000	1,700	0
Fecal Coliforms (MPN/100 mL)	3,000	70	0
Enterococci (MPN/100 mL)	3,000	300	0

Notes:
nd = not detected
*Total hardness is not considered a pollutant and does not have an established action level.
Calculations include complete routine visit data only. Confirmation visits, follow-up visits and dry sites not incorporated.

TABLE 6-2
LABORATORY ANALYSIS STATISTICAL SUMMARY – ROUND TWO

Parameter (units)	Maximum	Minimum	Number of Exceedances
Total Hardness (mg/L $CaCO_3$)	931	534	*
Oil and grease (mg/L)	nd	nd	0
Diazinon (µg/L)	nd	nd	0
Chlorpyrifos (µg/L)	nd	nd	0
Cadmium (dissolved, mg/L)	nd	nd	0
Copper (dissolved, mg/L)	0.021	0.002	0
Lead (dissolved, mg/L)	nd	nd	0
Zinc (dissolved, mg/L)	nd	nd	0
Total Coliforms (MPN/100 mL)	300,000	2,300	1
Fecal Coliforms (MPN/100 mL)	90,000	300	1
Enterococci (MPN/100 mL)	30,000	110	1

Notes:
nd = not detected
*Total hardness is not considered a pollutant and does not have an established action level.
Calculations include complete routine visit data only. Confirmation visits, follow-up visits and dry sites not incorporated.

TABLE 6-3
CTR – CMC FOR DISSOLVED METALS

Dissolved Copper			
Site	**Total Hardness (mg/L)**	**CMC (mg/L)**	**Concentration (mg/L)**
Round One			
J25c	780	0.050	0.006
Round Two			
J25c	931	0.050	0.021
J30d	834	0.050	0.004
P20f	534	0.050	0.003
RCP1	553	0.050	0.002
V40d	773	0.050	0.005

Note: Cadmium, lead, and zinc were not detected in any of the samples.

TABLE 6-4
LABORATORY ANALYTICAL RESULTS

Site	Date	Time	Oil & Grease (mg/L)	Total Hardness (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Lead (mg/L)	Zinc (mg/L)	Diazinon (µg/L)	Chlorpyrifos (µg/L)	Total Coliforms (MPN/100 mL)	Fecal Coliforms (MPN/100 mL)	Enterococci (MPN/100 mL)
Round One													
J25c	5/21/09	12:15	nd	780	nd	0.006	nd	nd	nd	nd	8,000	170	1,300
J30d	5/22/09	9:50	nd	685	nd	nd	nd	nd	nd	nd	11,000	3,000	3,000
P20f	5/21/09	11:40	nd	356	nd	nd	nd	nd	nd	nd	11,000	400	500
RCP1	5/21/09	10:45	nd	520	nd	nd	nd	nd	nd	nd	8,000	70	2,300
V40d	5/22/09	11:10	nd	1,020	nd	nd	nd	nd	nd	nd	1,700	500	300
Round Two													
J25c	9/3/09	11:10	nd	931	nd	0.021	nd	nd	nd	nd	13,000	13,000	5,000
J30d	9/4/09	11:30	nd	834	nd	0.004	nd	nd	nd	nd	**300,000**	**90,000**	**30,000**
J30d** (Confirmation 1)	9/15/09	14:45	na	na	na	na	na	na	na	na	**173,000**	1,200*	1,414
J30d (Confirmation 2)	9/21/09	14:00	na	na	na	na	na	na	na	na	**242,000**	2518	na
J30d (Confirmation 3)	9/23/09	16:00	na	na	na	na	na	na	na	na	**242,000**	434	na
P20f	9/4/08	10:40	nd	534	nd	0.003	nd	nd	nd	nd	22,000	17,000	110
RCP1	9/3/09	12:00	nd	553	nd	0.002	nd	nd	nd	nd	13,000	8,000	800
V40d	9/3/09	12:40	nd	773	nd	0.005	nd	nd	nd	nd	2,300	300	130
Analytical Reporting Limits			**5**	**10**	**0.001**	**0.001**	**0.001**	**0.020**	**0.05**	**0.05**	**20**	**20**	**20**
Action Levels			**15**	*****	**CTR**	**CTR**	**CTR**	**CTR**	**0.50**	**0.50**	**50,000**	**20,000**	**10,000**

Notes:
nd = not detected
na = not analyzed
Red values were at or above the measured constituent's action level
denotes a confirmation visit
* Number of fecal coliforms for confirmation samples are derived from *E. coli* count. Number of fecal coliforms = (Number of *E. coli*) / 0.85
** Bacteria confirmation samples are analyzed using the Colilert and Enterolert methods described in Table 3-2, which have a reporting limit of 10 MPN/100 mL.
*** = Total hardness is not considered a pollutant (see Section 3.4), and thus has no established action level for the purposes of dry weather monitoring. Total hardness is measured because the CTR action levels for metals are dependent on the total hardness value of the water sample.

7 DATA ANALYSIS

This section provides an overall evaluation of test results of the 2009 Dry Weather Monitoring Program, as well as a discussion of historical trends for various constituent exceedances.

7.1 2009 Results

Of the 40 routine field screening visits performed in 2009, eight exceedances were observed. This is significantly fewer than the 18 exceedances detected in the 2008 program. A summary of 2009 exceedances is presented in Table 7-1.

TABLE 7-1
2009 EXCEEDANCES SUMMARY

Site	pH	Turbidity	Ammonia -N	Nitrate-N	Ortho-phosphate-P	Total Coliforms	Fecal Coliforms	Enterococci
Round One								
E5g			✓					
Round Two								
J30d						✓	✓	✓
P15b				✓				
Q5l		✓			✓			
V40d	✓							

Note: Table reflects exceedances occurring during routine visits only, not confirmation or follow-up visits.

7.2 Previous Results

Historical exceedance results are presented in Table 7-2, and graphs 7-1, 7-2, 7-3, and 7-4. Table 7-2 shows the percentage of sampled sites that have had exceedances each year and round of the Dry Weather Monitoring Program. Graphs 7-1 and 7-2 illustrate the percentage of exceedances by year and round for field screening, and graphs 7-3 and 7-4 present the percentage exceedances by year for laboratory analyses.

Since the time that testing began in accordance with Order 2001-01, no exceedances have been measured in temperature, cadmium, lead, zinc, or chlorpyrifos. Thus, these constituents have not been included in the following table and graphs.

The historical data for the results of field analyses indicate a decreasing trend in ammonia-nitrogen exceedances. No discernable trend is apparent for pH, turbidity, nitrate-nitrogen, or orthophosphate-phosphorus. Surfactants have not been in exceedance since 2007.

Historical data for laboratory analyses indicate that total coliform exceedance rates have decreased somewhat in the last few years. In general, there are more fecal coliform exceedances during the second round of sampling each year. There have been no diazinon exceedances in the last three years and no oil and grease or copper exceedances since 2003.

TABLE 7-2
PERCENT OF SITES WITH EXCEEDANCES BY YEAR AND ROUND

Year and Round	Field Screening								Laboratory Analysis						
	Number of Field Screening Sites	pH	Turbidity	Conductivity*	Surfactants	Ammonia-N	Nitrate-N	Orthophosphate-P	**Number of Laboratory Analysis Sites**	Oil & Grease	Copper	Diazinon	Total Coliforms	Fecal Coliforms	Enterococci
2002	20	10	5	0	5	25	10	0	6	0	0	0	17	17	17
2003-1	20	5	0	0	0	5	5	0	5	20	0	0	20	20	0
2003-2	20	0	0	10	5	15	25	0	5	0	20	0	80	80	0
2004-1	20	5	5	0	5	5	5	0	6	0	0	17	50	0	0
2004-2	20	0	5	0	5	15	10	0	5	0	0	0	80	20	40
2005-1	20	5	0	0	0	15	25	5	5	0	0	0	0	0	0
2005-2	20	0	5	0	5	5	15	0	5	0	0	0	100	20	20
2006-1	20	5	5	0	5	0	10	0	5	0	0	0	80	0	20
2006-2	20	10	0	0	5	5	10	0	5	0	0	20	60	20	40
2007-1	20	10	0	0	10	0	10	0	5	0	0	0	20	0	0
2007-2	20	0	0	0	0	0	10	5	5	0	0	0	40	40	20
2008-1	20	5	0	0	0	5	20	0	5	0	0	0	0	0	0
2008-2	20	15	5	0	0	5	5	5	5	0	0	0	40	20	60
2009-1	20	0	0	0	0	5	0	0	5	0	0	0	0	0	0
2009-2	20	5	5	0	0	0	5	5	5	0	0	0	20	20	20

Notes:
Results based on complete routine visits only. Confirmation visits, follow-up visits, and dry sites not included.
na = not analyzed
* By regional consensus, the action level for conductivity has been changed during past years from numeric values to best professional judgment in order to account for sites in which salt water and groundwater increase conductivity. High conductivity levels at these sites are not necessarily exceedances or considered to be a water quality concern.

GRAPH 7-1
PERCENT OF SITES WITH FIELD SCREENING EXCEEDANCES BY YEAR AND ROUND – PART 1

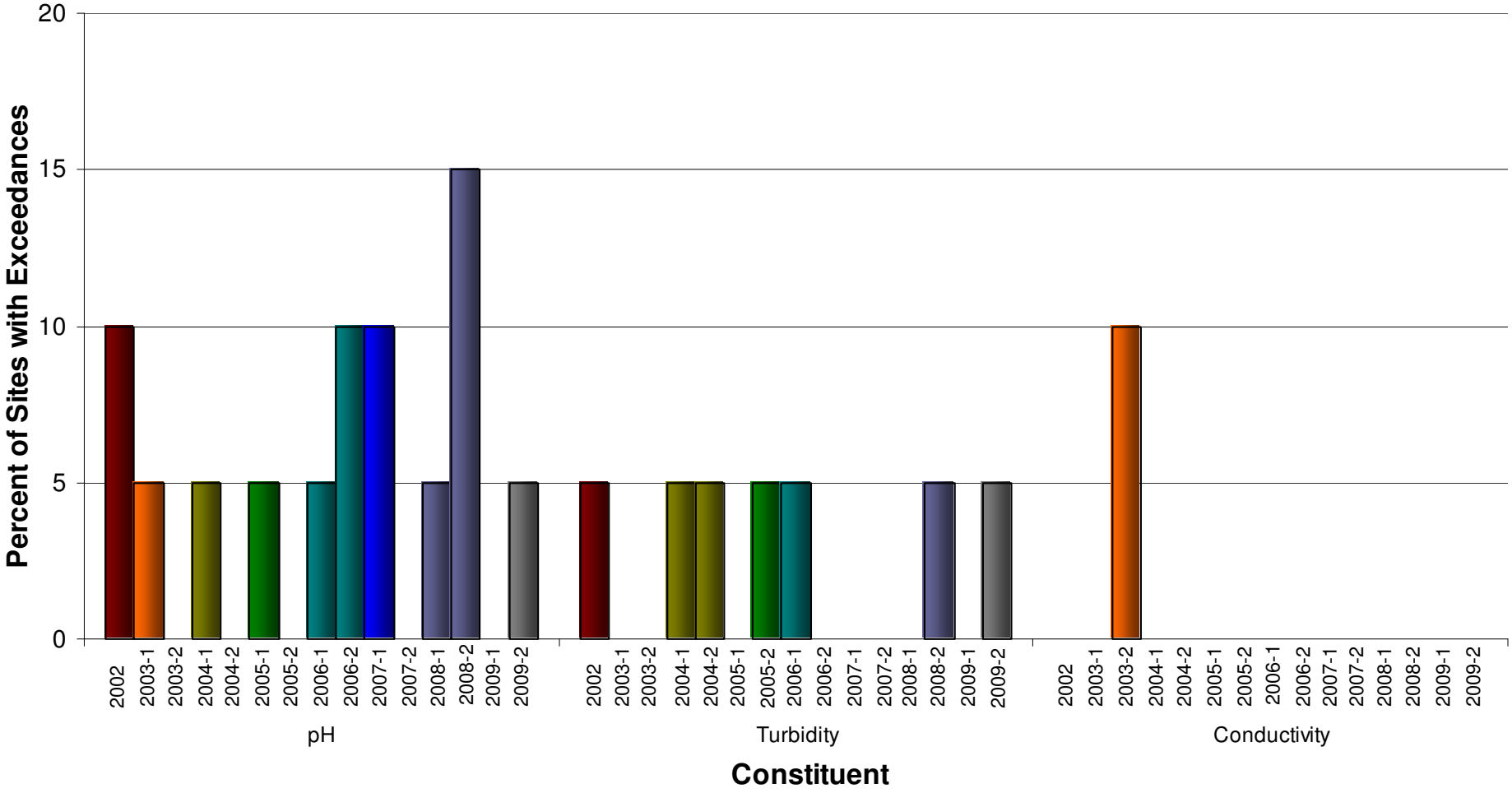

GRAPH 7-2
PERCENT OF SITES WITH FIELD SCREENING EXCEEDANCES BY YEAR AND ROUND – PART 2

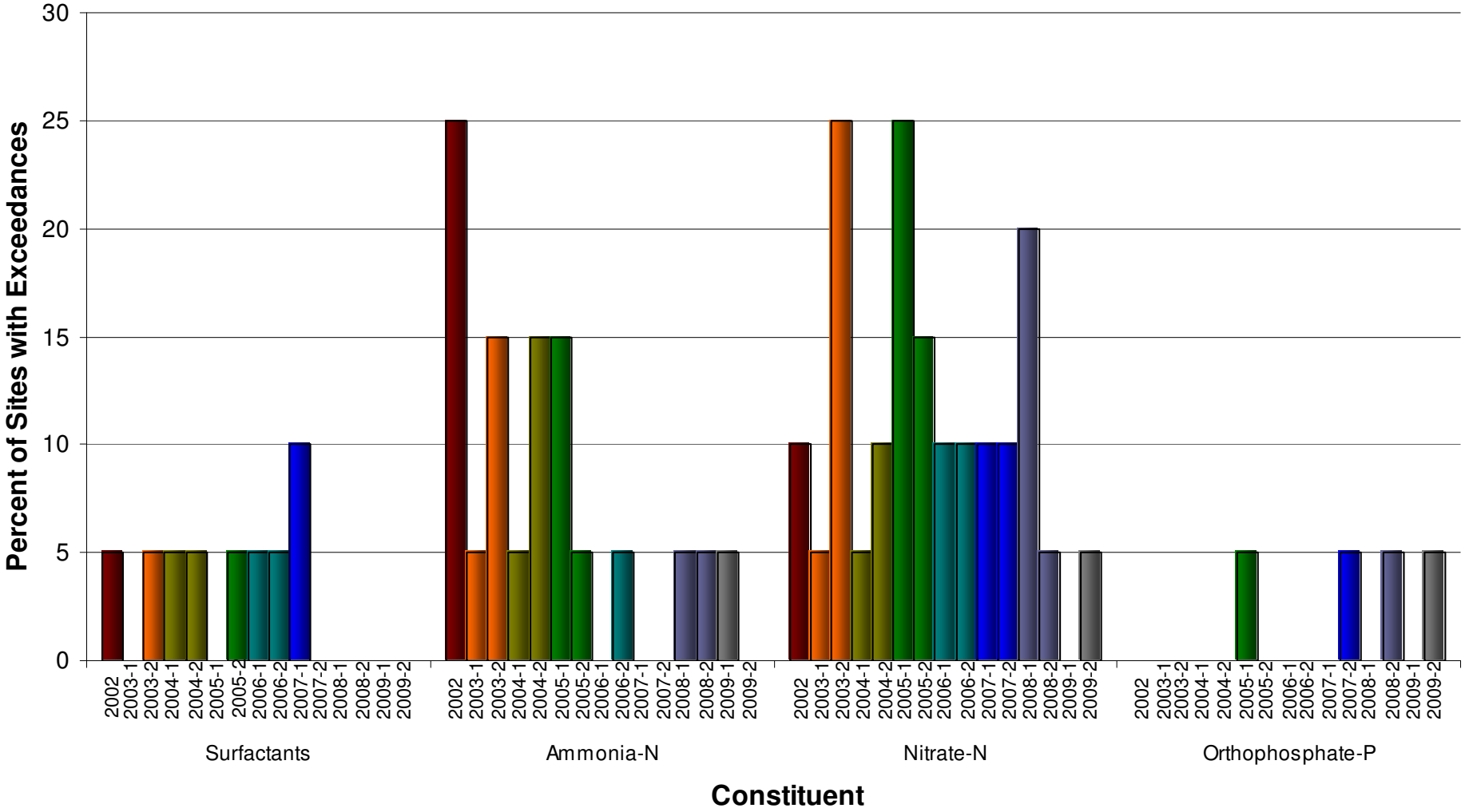

GRAPH 7-3
PERCENT OF SITES WITH LABORATORY CONSTITUENT EXCEEDANCES BY YEAR AND ROUND – PART 1

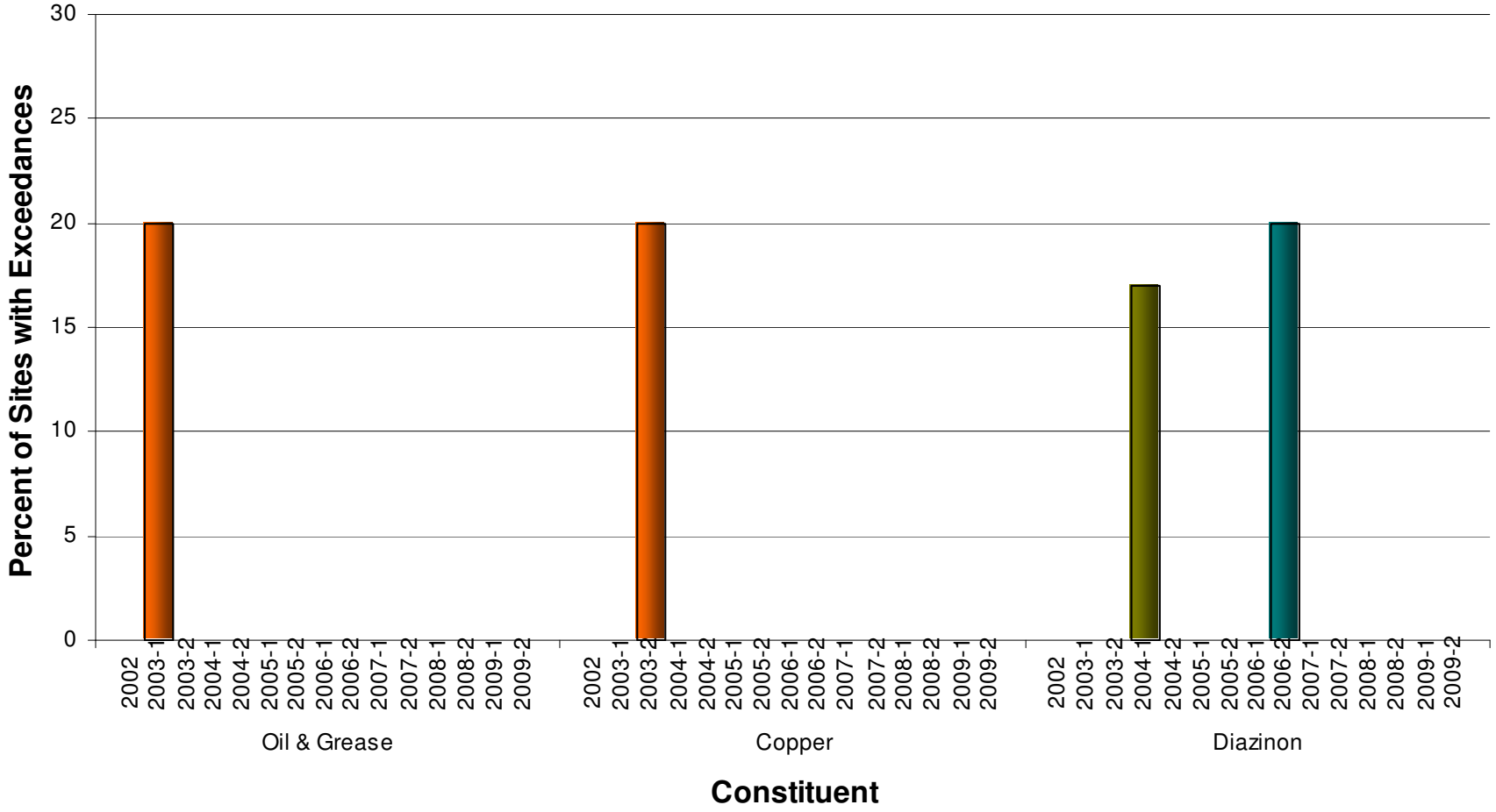

GRAPH 7-4
PERCENT OF SITES WITH LABORATORY CONSTITUENT EXCEEDANCES BY YEAR AND ROUND – PART 2

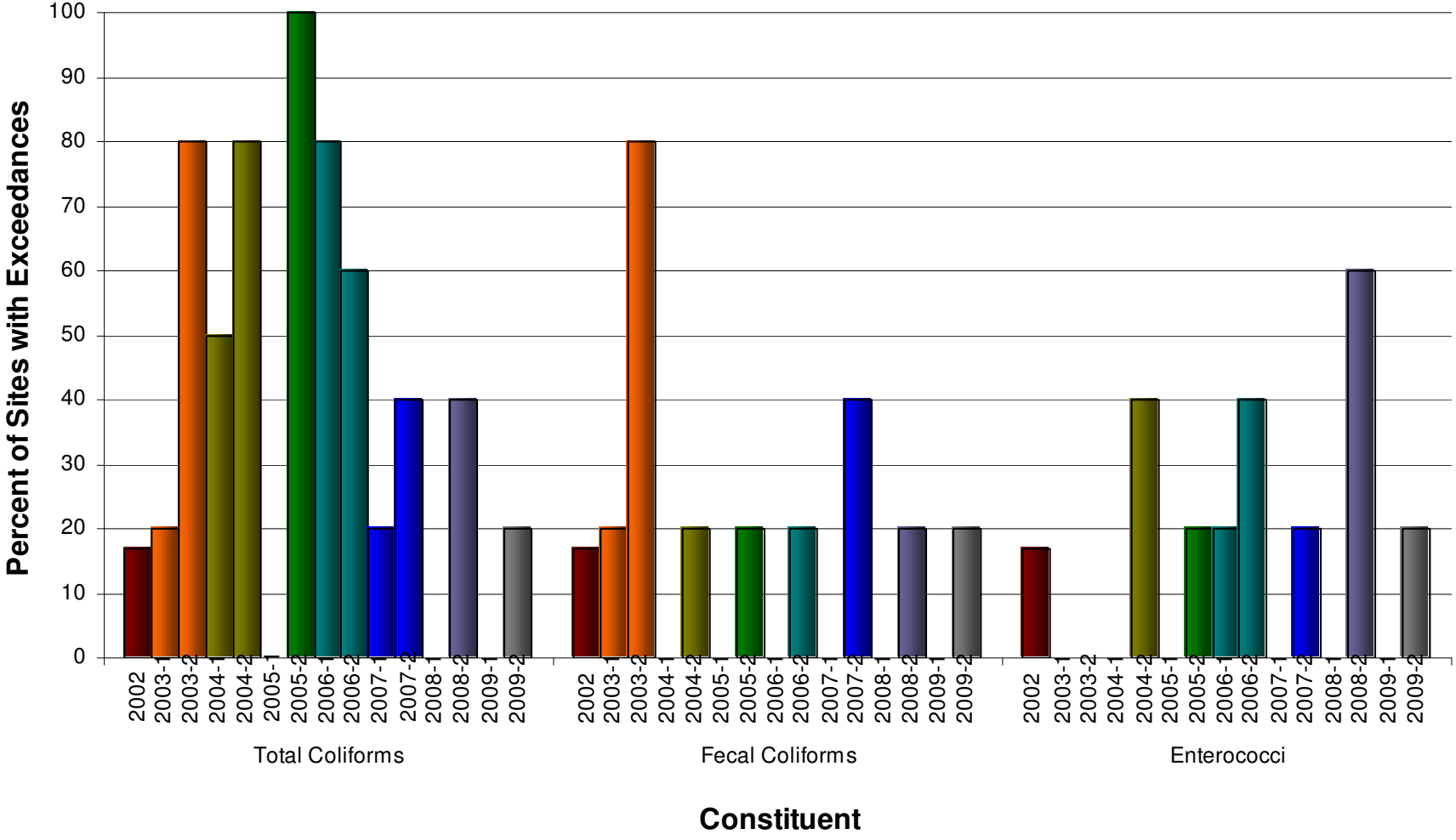

8 FOLLOW-UP INVESTIGATIONS

One of the primary purposes of the Dry Weather Monitoring Program is to identify IC/IDs. Both field screening and laboratory analytical results are compared to regionally developed action levels (Table 3-4). When parameters are measured at or above action levels, it is possible that IC/IDs are present, and further investigation is performed. Procedures for such investigations are described below, followed by a discussion of the follow-up investigations performed in 2009.

8.1 Investigation Procedures

Follow-up investigations are conducted in two rounds. The first follow-up investigations are for the sites at which field tests indicate action level exceedances. These investigations are in the form of additional field testing and are conducted within one business day of the initial findings. Any observations of gross pollution (substantial oil sheen, foam, odor, etc.) are immediately investigated. The second round of follow-up investigations are carried out for the sites at which laboratory testing shows elevated constituent levels. These investigations are conducted within two business days of receiving the laboratory test results.

During the follow-up investigations, flow rates are measured, visual observations are performed, and field testing is conducted. Visual observations, such as water color, clarity, odor, floatable materials, deposits, vegetation, and biology are recorded on field data sheets at each site. Field data sheets are included in Appendix D.

Source identification investigations begin by testing the water at the site again. This is referred to as a “confirmation” visit, as its purpose is to confirm the initial findings. If confirmation testing results in constituent concentrations below specified action levels, the exceedance found during the initial sampling may have been due to a transient flow. If confirmation testing at a site finds constituent concentrations again above the specified action levels, an upstream investigation will be conducted. The field crew will progress upstream to isolate and identify potential pollutant sources.

Upstream investigations are also referred to as “IC/ID follow-up” visits, as the purpose is to identify illicit connections and illegal discharges. They are conducted by examining a number of upstream branches for any potential sources of the constituent of concern. The estimated flow rate in each branch and any relevant observations are recorded. Depending upon the constituent(s) under investigation, laboratory samples may be collected for analysis.

The laboratory test for investigating upstream bacteria sources differs from routine bacteria testing by using the IDEXX Colilert and IDEXX Enterolert tests. Information about these methods is provided in Table 3-2. Results for the Colilert and Enterolert tests are typically available within 24 hours, as opposed to the five business days needed for routine testing. The quicker turnaround time allows for additional upstream investigations as needed.

8.2 Investigated Sites

In the 2009 Dry Weather Monitoring Program, one site in Round One and four sites in Round Two had action level exceedances. A brief description of each site, analytical results, photographs of selected upstream locations, and the results of the investigations are discussed in this section.

Site E5g

Round One

Site E5g is located at a concrete outlet adjacent to the Santee Recreational Lakes Preserve, west of the southern lake and east of Sycamore Creek. During the initial visit to the site, a flow of 2 gpm was observed. The ammonia-nitrogen concentration was found to be 1.590 mg/L, above the action level of 1.000 mg/L. The area surrounding the site was vegetated and had significant amounts of leaf litter on the ground as well as in the water (Photo 8-1). Evidence of human habitation was noted in and around the water, including clothing, food wrappings, beverage containers, backpacks, and wood pallets. The area had an overall musty smell, however the water sample had no discernable odor.

A confirmation visit was performed the following day, and the flow rate was observed to be 1 gpm, half that of the previous day. The ammonia-nitrogen level of the sample was measured at 2.924 mg/L. Upstream areas were visually assessed for potential sources of ammonia; however no obvious sources were identified.

Photo 8-1: Decomposing leaves and trash at Site E5g

The site was revisited the following day to recheck the ammonia-nitrogen levels and flow rate prior to continuing the upstream investigation. The flow rate at the sample site was observed to be less than 1 gpm, and the ammonia-nitrogen level was greater than 3 mg/L. An upstream investigation was initiated to determine if the area upstream of the site was contributing to the elevated ammonia-nitrogen levels. A channel north of Mast Street on Fanita Parkway was visited, where both lateral storm drain lines were found to be damp; no flowing or standing water was observed. A manhole across the street from the recreational lake entrance on the east side of Fanita Parkway was found to be completely dry. A manhole in the grassy area immediately east of Site E5g, on the west side of the entrance road and approximately 100 feet south of the entrance toll booth (location E5g-1), was sampled and had a flow of less than 1 gpm, the same as at Site E5g on the same day. The ammonia-nitrogen level of the sample was measured at 0.319 mg/L, below the action level. This evidence indicates that upstream flows were not the source of the elevated ammonia-nitrogen levels. It seems likely that the decomposition of organic material at the site, as well as the apparent use of the area by humans, is responsible for the high ammonia-nitrogen levels at Site E5g. The fact that lower ammonia-nitrogen levels were recorded when higher flow rates from upstream were observed, and vice versa, also supports this conclusion.

As a result of the exceedances found and the designation of the site as a potential threat to human health due to the probable presence of human waste, the City removed all trash and debris from the area around the outlet of Site E5g. A table summarizing the upstream investigation for Site E5g is presented in Table 8-1, and a map of sampling locations is provided in Figure 8-1.

TABLE 8-1
SITE E5G AMMONIA-NITROGEN UPSTREAM INVESTIGATION

Site	Location	Flow (gpm)	Ammonia-N (mg/L)
E5g	Santee Recreation Lakes, west of the Southern Lake, east of Sycamore Creek	2	**1.590**
E5g (Confirmation)	*Same as above*	1	**2.924**
E5g (Confirmation 2)	*Same as above*	< 1	**> 3.000**
E5g-1	Santee Recreation Lakes, west side of entrance road, 100 feet south of entrance toll booth in grassy area	< 1	0.319

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-1
SITE E5G AMMONIA-NITROGEN UPSTREAM INVESTIGATION MAP

Round Two

No exceedances were observed at Site E5g during Round Two of the Dry Weather Monitoring Program.

Site J30d

Round One

No exceedances were observed at Site J30d during Round One of the Dry Weather Monitoring Program.

Round Two

Site J30d is located where the Woodglen Vista concrete channel turns into a natural creek, south of Mast Boulevard. The areas upstream of Site J30d are primarily residential. Laboratory analyses indicated that total coliform, fecal coliform, and *Enterococcus* bacteria were all above their respective action levels. Total coliform bacteria was measured at 300,000 MPN/100 mL, over the action level of 50,000 MPN/100 mL; fecal coliform bacteria was measured at 90,000 MPN/100 mL, over the action level of 20,000 MPN/100 mL; and *Enterococcus* bacteria was measured at 30,000 MPN/100 mL, over the action level of 10,000 MPN/100 mL. During the confirmation visit, fecal coliform and *Enterococcus* bacteria were measured below action levels, while total coliform bacteria measured 173,000 MPN/100 mL, above the action level.

An upstream investigation was conducted in three stages. During the first stage, locations immediately upstream of the site were sampled. Locations J30d-1 and J30d-2 (also known as primary sites J25c2 and J25c, respectively) are outlets that receive flow from the neighborhoods to the northwest of Site J30d. Total coliforms were below action levels at both locations, indicating that high levels of bacteria were not entering the channel from these sources. Further upstream, the flow within the Woodglen Vista Channel was sampled where it crosses the west end of Carefree Drive. This location (J30d-3) had total coliforms measuring above the action level at 54,800 MPN/100 mL, indicating that upstream of this site was a source of bacteria. Further investigation was needed since no clear source of bacteria was identified.

Photo 8-2: Excessive irrigation runoff upstream of location J30d-4

During this second stage of sampling, Site J30d was resampled, and the total coliform bacteria level was elevated at 242,000 MPN/100 mL. Locations further upstream than those visited during the first stage were sampled. Location J30d-4, an outlet that receives flow from the area northwest of the Beck Drive and Woodrose Avenue intersection, had a total coliform level measuring above the action level at 2,420,000 MPN/100 mL. Flow from this outlet was traced to a home on Beck Drive, where the resident had mistakenly left an irrigation system running for approximately four hours. The discharge was stopped once the resident was made aware of the runoff. The water flowed along the gutter of Beck Drive, as seen in Photo 8-2, where decomposing grass clippings were observed. Catch basins in the area contained decomposing leaves and trash. Flow through these catch basins over the span of several hours is likely to transport bacteria downstream, where it enters the Woodglen Vista channel. The City maintenance division was informed of the issue and subsequently cleaned out the area catch basins and inlets.

Further north the channel flows through a park, and the flow within the Woodglen Vista channel was sampled just south of the park at location J30d-5 (also known as primary Site K15j). The total coliform level of the sample was measured at 51,700 MPN/100 mL. Decomposing organic debris was present in the channel immediately upstream of the sampling location, as seen in Photo 8-3, which is likely to be contributing to the elevated bacteria levels within the channel.

Photo 8-3: Sediment and decomposing vegetation in the channel upstream of location J30d-5. Note: The channel was cleaned and underwent restoration shortly after this photograph was taken.

The third stage of testing included another confirmation visit to Site J30d, which continued to have elevated total coliforms, measured at 242,000 MPN/100 mL. Several outlets contributing flow to the channel were sampled, including the previously sampled location J30d-4. Elevated total coliform levels were no longer found at this location, likely because the overirrigation observed upstream had ceased, eliminating the source of flow. Further upstream along the main MS4 line, and located just downstream of location J30d-5, three additional outlets to the channel were sampled. These locations are referred to as locations J30d-6, J30d-7 and J30d-8, and receive flow from the neighborhood to the west. None of the samples from these locations had total coliforms above the action level. Decomposing leaves were observed in the channel at this location, as seen in Photo 8-4. Upstream of this area, the channel flows through the park, and upstream of the park the channel is dry. Outlets to the channel from other portions of the drainage area were not contributing flow to the channel during the upstream investigation.

During the three stages of testing, elevated total coliform levels were found almost exclusively within the channel itself, with the exception of one transient exceedance from residential outlet J30d-4. Bacteria levels in this outlet were not elevated the following sampling day. Since bacteria levels were high at Site J30d on the day that they were below the action level at location J30d-4, the primary source of bacteria to Site J30d is not from location J30d-4. Additionally, fecal coliform and *Enteroccus* bacteria counts were measured above respective action levels during the initial visit only. Since no sources of fecal coliform or Enteroccus bacteria were observed during the investigation, it was concluded that the exceedances were the result of a transient flow.

Throughout the stages of sampling, total coliform levels within the channel were consistently high, while flow from outlets of lateral lines did not have consistently high bacteria levels. This indicates that conditions within the channel itself were most likely responsible for the elevated bacteria levels at Site J30d. Organic debris was noted within the channel in multiple locations, which is likely to encourage bacterial growth as it decomposes. Also, the warm, slow-moving water observed in the channel upstream of Site J30d is an environment conducive to bacterial growth.

Photo 8-4: Decomposing leaves in the channel where multiple outlets were discharging

The City removed organic debris and sediment from the channel, as well as restoring sections of the channel, following the results of this investigation. A table

summarizing the upstream investigation for Site J30d is presented in Table 8-2, and a map of sampling locations is provided in Figure 8-2.

TABLE 8-2
SITE J30D BACTERIA UPSTREAM INVESTIGATION

Site	Location	Total Coliforms (MPN/100 mL)	Fecal Coliforms (MPN/100 mL)	Enterococci (MPN/100 mL)
	9/04/09			
J30d	In the Woodglen Vista Channel on the south side of Mast Boulevard	**300,000**	**90,000**	**30,000**
	9/15/09			
J30d (Confirmation)	In the Woodglen Vista Channel on the south side of Mast Boulevard	**173,000**	1,200	1,414
J30d-1	Primary Site J25c2, outlet at the east end of Country Scenes, east of Conejo Road	24,200	418	404
J30d-2	Primary Site J25c. West end of Carefree Drive, outlet on the west side of channel	15,500	35	355
J30d-3	In Woodglen Vista channel, at the west end of Carefree Drive	**54,800**	546	785
	9/21/09			
J30d (Confirmation 2)	In the Woodglen Vista Channel on the south side of Mast Boulevard	**242,000**	2,518	na
J30d-4	Outlet on the west side of Woodglen Vista channel, southeast of the Beck Drive and Woodrose Avenue intersection	**2,420,000**	521	na
J30d-5	Primary Site K15j2, in Woodglen Vista Channel, on the north side of Woodglen Vista Drive, south of the park	**51,700**	88	na
	9/23/09			
J30d (Confirmation 3)	In Woodglen Vista Channel on the south side of Mast Boulevard	**242,000**	434	na
J30d-4	Outlet on the west side of Woodglen Vista channel, southeast of the Beck Drive and Woodrose Avenue intersection	34,500	nd	na
J30d-6	24 inch outlet pipe on west side of Woodglen Vista channel, south of Woodglen Vista Drive	41,100	868	na
J30d-7	Small outlet on the west side of Woodglen Vista channel under the Woodglen Vista Drive bridge	12,000	98	na
J30d-8	Small outlet on the west side of Woodglen Vista channel, next to J30d-6, South of Woodglen Vista Drive	4,570	12	na

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-2
SITE J30D BACTERIA UPSTREAM INVESTIGATION MAP

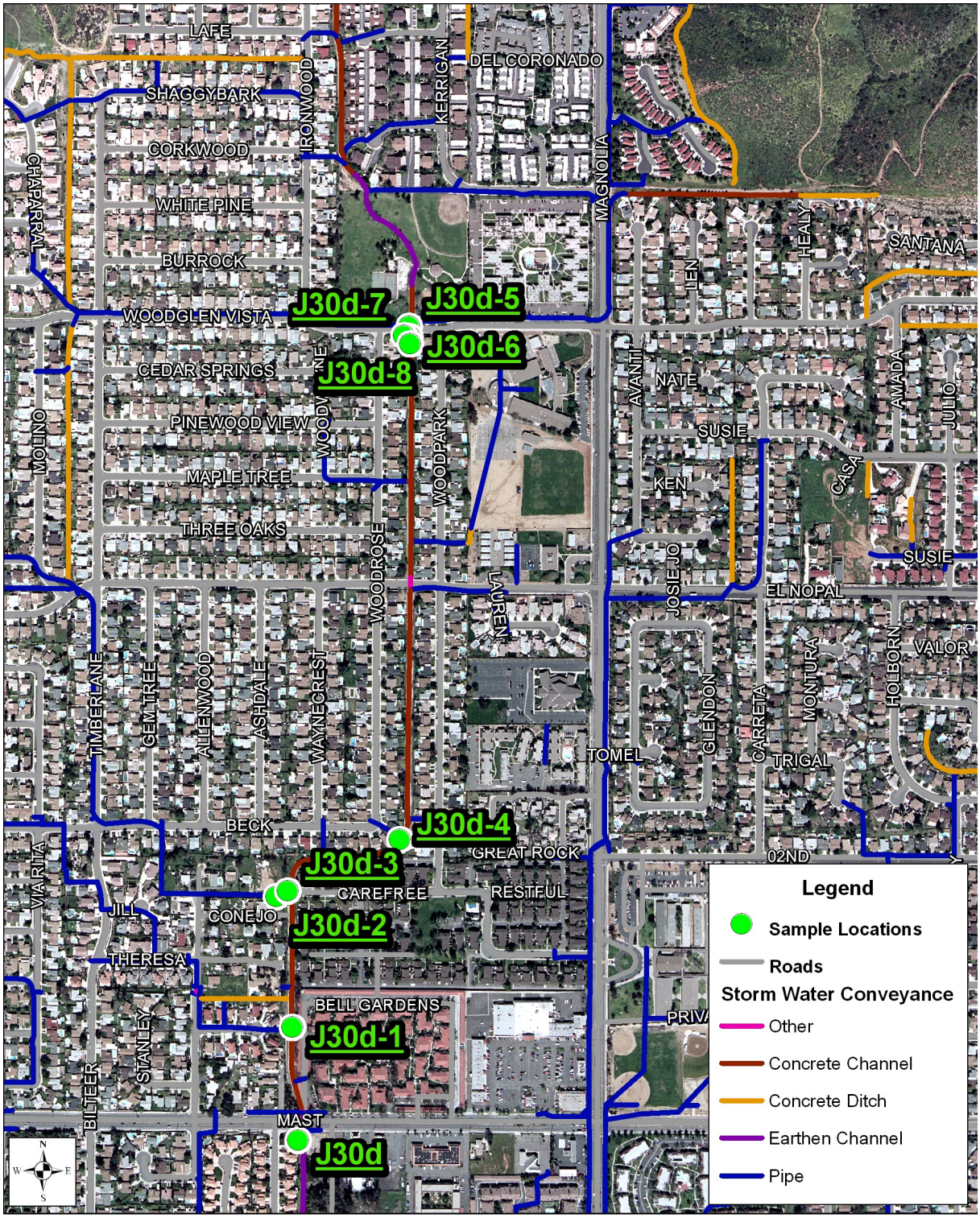

Base Data Sources: City of Santee, SanGis, SANDAG, USGS

Site P15b

Round One

No exceedances were observed at Site P15b during Round One of the Dry Weather Monitoring Program.

Round Two

Site P15b is located within a manhole at the intersection of Magnolia Avenue and Rockville Street. At the time of the initial visit, the nitrate-nitrogen concentration of the sample measured above the action level of 10.00 mg/L at 13.42 mg/L. Upstream areas were visually assessed for potential sources; however upstream conveyances were dry and no source of nitrates was apparent.

At the confirmation visit the following day, the nitrate-nitrogen concentration of the sample was measured below the action level at 7.56 mg/L. Flows from each of the two pipes contributing to the site, an eastern and a southern line, were also sampled separately. Both samples had nitrate-nitrogen concentrations below the action level: 7.26 mg/L from the southern line and 8.93 mg/L from the eastern line. Conveyances further upstream were dry.

Elevated nitrate-nitrogen values have consistently been measured at Site P15b since nitrate testing began in 2002. In 2008 the pipes upstream of the site were videoed by Padre Dam Municipal Water District. During this investigation water was observed seeping into the pipe at multiple underground locations. In addition, the MS4 lines further upstream were typically observed to be dry, and no consistent sources of overland flow have been observed. It was concluded that the nitrate-containing flow to Site P15b was the result of groundwater infiltration. In June of 2008, the City submitted a Letter Report on Nitrates in Groundwater with the findings of this investigation to the Regional Water Quality Control Board. The results of this year's follow-up investigation are consistent with previous findings. Table 8-3 provides the investigation results for Site P15b.

TABLE 8-3
SITE P15B NITRATE-NITROGEN UPSTREAM INVESTIGATION

Site	Location	Flow (gpm)	Nitrate-N (mg/L)
P15b	Northeast of Magnolia Avenue and Rockville Street intersection	3	**13.42**
P15b (Confirmation)	Same as above	3	7.564
P15b-1	South line to P15b	2	7.259
P15b-2	East line to P15b	1	8.925

Note: **Red Bold Type** = value exceeds action level

Site Q5I

Round One

No exceedances were observed at Site Q5I during Round One of the Dry Weather Monitoring Program.

Round Two

Site Q5I is located in a catch basin on the north side of Prospect Avenue, east of Railroad Avenue. At the time of the initial visit, a small amount of water was ponded with an orthophosphate-phosphorus concentration measured at 9.343 mg/L, over the action level of 2.000 mg/L. Turbidity was also elevated, measuring 112 NTU. The source of water was traced to a catch basin on the corner of Prospect Avenue and Tumbleweed Terrace (location Q5I-1), where water was dripping very slowly from a PVC pipe to the northeast. No additional sources of flow were observed entering the catch basin, or at any other point on the conveyance, upstream of Site Q5I.

At the confirmation visit the following day, Site Q5I was dry. Upstream of the site, a sample was collected from the PVC pipe at location Q5I-1, where the water was again flowing at a slow drip. The orthophosphate-phosphorus concentration of the sample measured 11.75 mg/L, and turbidity measured 148 NTU. The pipe was coming from the direction of a business complex to the northeast. As reported by property management and presented in building plans, the PVC pipe connects to storm drains in the northeastern portion of the business complex. Building plans reviewed by the City, however, did not show any underground drains in the area. The business area was examined, but no storm drains or overland flow was observed. Only a very small portion of the area was landscaped, indicating that improper fertilizer use was not a likely source of orthophosphate-phosphorus to the site.

When Site Q5I was revisited it was observed to be dry. Upstream, the PVC pipe at location Q5I-1 still had a slow drip, and the water was sampled. Orthophosphate-phosphorus was measured at 20.86 mg/L, and turbidity was measured at 201 NTU.

A nearby groundwater monitoring well (OW3) is located at 8510 Railroad Avenue. Monitoring records from November 2006 indicate that the groundwater level in the area was 7 to 8 feet below grade; it is therefore a possibility that the shallow groundwater is seeping into the pipe upstream of location Q5I-1.

Photo 8-5: Ponded water within soil depressions in a non-irrigated area (location Q5I-2)

Further north, between Tumbleweed Terrace and Siesta Road (location Q5I-2), water was observed to be ponded within depressions in the soil during multiple visits (Photo 8-5). This area is upgradient to Site Q5I, and is currently a CalTrans worksite for SR52 construction. Since this area was not irrigated, no surface flow to the location was visible, and the area appeared to be perpetually wet, it is possible that the water at Q5I-2 is groundwater. It is also possible that the dampness in the area is due to overwatering at the CalTrans construction site. This location is not directly connected to Site Q5I's upstream MS4 conveyance, as no pipeline exists between the two areas. The orthophosphate-phosphorus concentration of a sample measured here was only 0.080 mg/L. However, the likely presence of groundwater may suggest a high water table in the general area.

The owner of the building to the northeast of location Q5I-1 reported that the area had historically been used for agricultural purposes. It is possible that fertilizer use during this period may have affected the nutrient concentrations of groundwater in the area. Since

2002, nitrate-nitrogen exceedances have been measured during four Dry Weather Monitoring Programs. Orthophosphate-phosphorus has been measured above the action level during one Dry Weather Monitoring Program; although orthophosphate-phosphorus concentrations were below the action level in other years, the levels were still relatively high, measuring over 1.0 mg/L during four years of the program.

The City is conducting further research into the sources of water, orthophosphate, and elevated turbidity to location Q5l-1. Table 8-4 presents the current dry weather sampling results, and a map detailing sampling locations is provided in Figure 8-3.

TABLE 8-4
SITE Q5L ORTHOPHOSPHATE-PHOSPHORUS AND TURBIDITY UPSTREAM INVESTIGATION

Site	Location	Flow (gpm)	Turbidity (NTU)	Orthophosphate-P (mg/L)
Q5l	North side of Prospect Avenue, 50 feet east of Railroad Avenue	Ponded	**112**	**9.343**
Q5l (Confirmation)	Same as above	Dry	ns	ns
Q5l-1	Northeast corner of the Prospect Avenue and Tumbleweed Terrace intersection, flow from PVC pipe	<1	**148**	**11.75**
Q5l-1 (Second visit)	Northeast corner of the Prospect Avenue and Tumbleweed Terrace intersection, flow from PVC pipe	<1	**201**	**20.86**
Q5l-2	North of Prospect Ave, between Tumbleweed Terrace and Siesta Rd. Water coming out of ground near fence in Caltrans worksite.	Ponded	na	0.080

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-3
SITE Q5L ORTHOPHOSPHATE-PHOSPHORUS AND TURBIDITY UPSTREAM INVESTIGATION

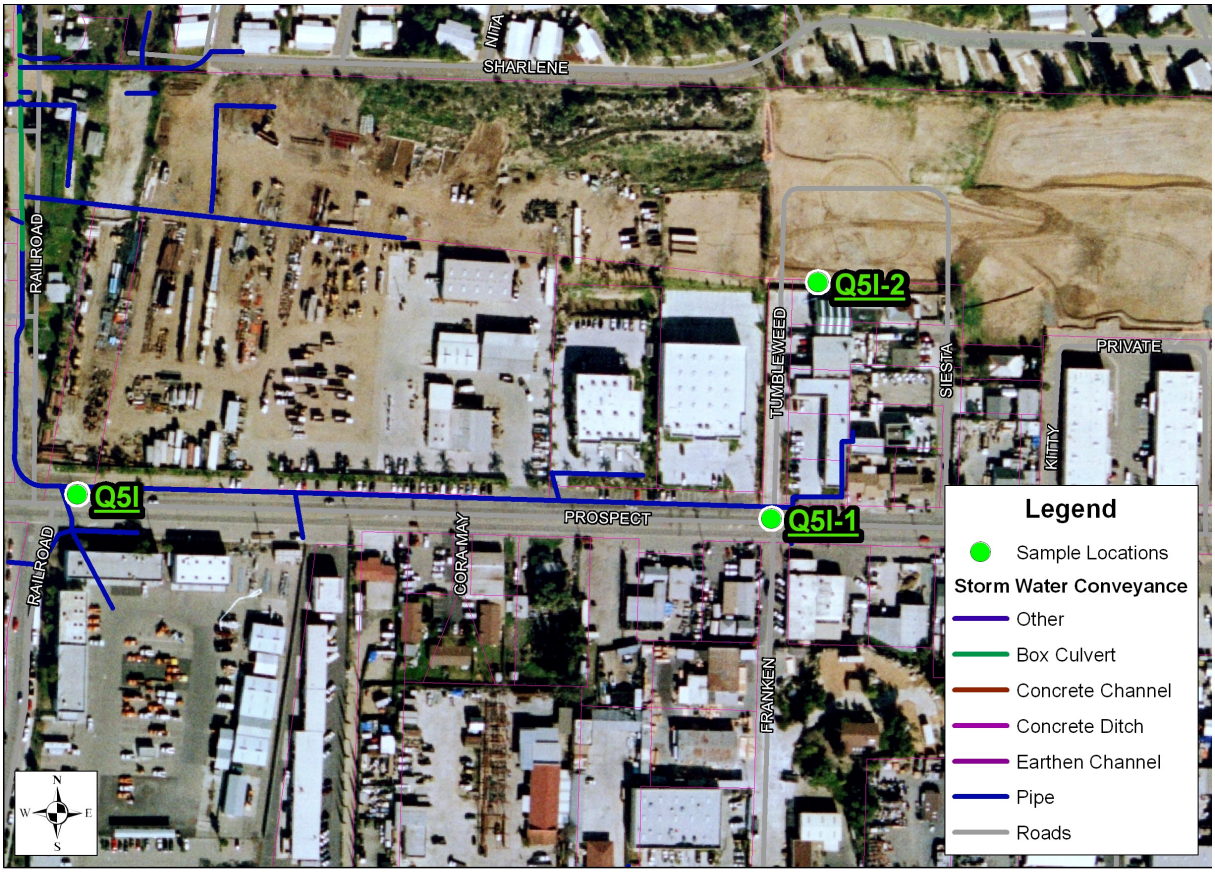

Base Data Sources: City of Santee, SanGis, SANDAG, USGS

0 0.05 0.1 Miles

Site V40d

Round One

No exceedances were observed at Site V40d during Round One of the Dry Weather Monitoring Program.

Round Two

Site V40d is located in a concrete channel east of Fanita Drive and south of Prospect Avenue. The initial visit took place during the afternoon, when the water temperature was measured at 34.4°C. The pH was measured at 9.1, above the action level of 9.0. The site receives ample sunlight throughout the day, warming the water and promoting algal growth. A confirmation visit was performed the following morning, and the pH of the sample was measured at 8.0, and temperature at 27.4°C.

High pH readings are often associated with algal photosynthesis and high temperatures, which removes carbon dioxide from the water. Because carbon dioxide forms carbonic acid when dissolved in water, removal of carbon dioxide from water makes the water more basic and results in higher pH readings. Typically, pH will increase during daylight hours as sunlight stimulates algal photosynthesis and carbon dioxide is removed. During the night when algae is not photosynthesizing, the carbon dioxide level in the water increases due to

biological respiration and physical diffusion of carbon dioxide from air into water, decreasing pH. Additionally, because the solubility of gas in water is inversely proportional to the water temperature, carbon dioxide is less soluble in warmer water. Sunlight heats the shallow water in concrete channels, resulting in lower solubility for carbon dioxide later in the day when the water is warmer. The effects of temperature and algal photosynthesis lead to lower pH values in the morning and higher values in the afternoon. This situation is consistent with the conditions at Site V40d.

9 SUMMARY AND RECOMMENDATIONS

9.1 Summary of Field Screening and Laboratory Analysis Data

Two rounds of dry weather monitoring were conducted during the 2009 Dry Weather Monitoring Program. In each round, twenty sites were sampled for field screening analysis, five of which were also evaluated for laboratory constituents. Two sites in each round were dry, and were replaced by alternative sites RCP3 and T5e. No sites in either round were rated submarginal or poor in the trash assessment, and no sites were determined to pose a threat to human or aquatic health. One site in Round One and four sites in Round Two had action level exceedances for tested constituents. Table 9-1 provides a summary of action level exceedances.

TABLE 9-1
SUMMARY OF ACTION LEVEL EXCEEDANCES

Field Screening (20 samples)						
Analyte	**Number of Exceedances**		**Percentage of Sites with Exceedance**		**Site Exceeding Action Level**	
	R1	*R2*	*R1*	*R2*	*R1*	*R2*
pH	0	1	0	5	---	V40d
Conductivity	0	0	0	0	---	---
Turbidity	0	1	0	5	---	Q5l
Surfactants	0	0	0	0	---	---
Ammonia-N	1	0	5	0	E5g	---
Nitrate-N	0	1	0	5	---	P15b
Orthophosphate-P	0	1	0	5	---	Q5l
Laboratory Analyses (5 samples)						
Analyte	**Number of Exceedances**		**Percentage of Sites with Exceedance**		**Site Exceeding Action Level**	
	R1	*R2*	*R1*	*R2*	*R1*	*R2*
Oil & Grease	0	0	0	0	---	---
Cadmium	0	0	0	0	---	---
Copper	0	0	0	0	---	---
Lead	0	0	0	0	---	---
Zinc	0	0	0	0	---	---
Diazinon	0	0	0	0	---	---
Chlorpyrifos	0	0	0	0	---	---
Total Coliforms	0	1	0	20	---	J30d
Fecal Coliforms	0	1	0	20	---	J30d
Enterococci	0	1	0	20	---	J30d

Note: Data is from the routine site visits only.

9.2 Summary of Follow-Up Investigation Data

In 2009, no sites had exceedances during both rounds of dry weather monitoring. Two exceedances were transient and did not require upstream investigations. Table 9-2 and Table 9-3 present conclusions based on the results of confirmation visits and upstream investigations conducted during Round One and Round Two, respectively, of the 2009 Dry Weather Monitoring Program.

TABLE 9-2
ROUND ONE SUMMARY OF FOLLOW-UP INVESTIGATIONS

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
E5g	Ammonia-N	---	Organic material decomposition and human use of the site

TABLE 9-3
ROUND TWO SUMMARY OF FOLLOW-UP INVESTIGATIONS

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
J30d	---	Total Coliforms, Fecal Coliforms, Enterococci	Fecal coliforms and Enterococci: transient flow Total coliforms: decomposing organic debris within the channel upstream
P15b	Nitrate-N	---	Groundwater seepage into conveyance
Q5l	Orthophosphate-P, Turbidity	---	Historical agricultural activity and groundwater seepage are the most probable sources, additional research is underway
V40d	pH	---	Transient; algal photosynthesis and increased temperature removing carbon dioxide from the water, which increases pH

9.3 Recommendations

Based on the results of the City of Santee 2009 Dry Weather Monitoring Program, the following actions are recommended for consideration. Note that some of the recommendations have already been completed.

9.3.1 Inspection and Maintenance

- After the completion of Round One, the City removed trash and debris from marginal Site E5g, which was identified as a potential threat to human health and an exceedance of ammonia-nitrogen had been noted. Round Two observations indicated the City's action was effective; no exceedances were noted at Site E5g, and the site received an optimal trash assessment rating.
- Upstream of Site J30d, decomposing vegetation in the channel north of Woodglen Vista Drive, and leaves and debris in the gutters and catch basins on Beck Drive were the most likely sources of bacteria to Site J30d. The vegetation and debris were removed from gutters, catch basins and the channel as part of routine maintenance prior to the beginning of the rainy season.
- Trash and debris was removed by public works crews from sites P20f and RCP3, which received marginal trash assessment ratings during Round Two.

9.3.2 Additional Investigation

- The City is currently researching the sources of elevated orthophosphate-phosphorus and turbidity to Site Q5l and upstream location Q5l-1. Specifically, a consultant who conducts groundwater monitoring and sampling at a well on Siesta Road has been contacted to obtain data on turbidity (or related parameters) and phosphate.

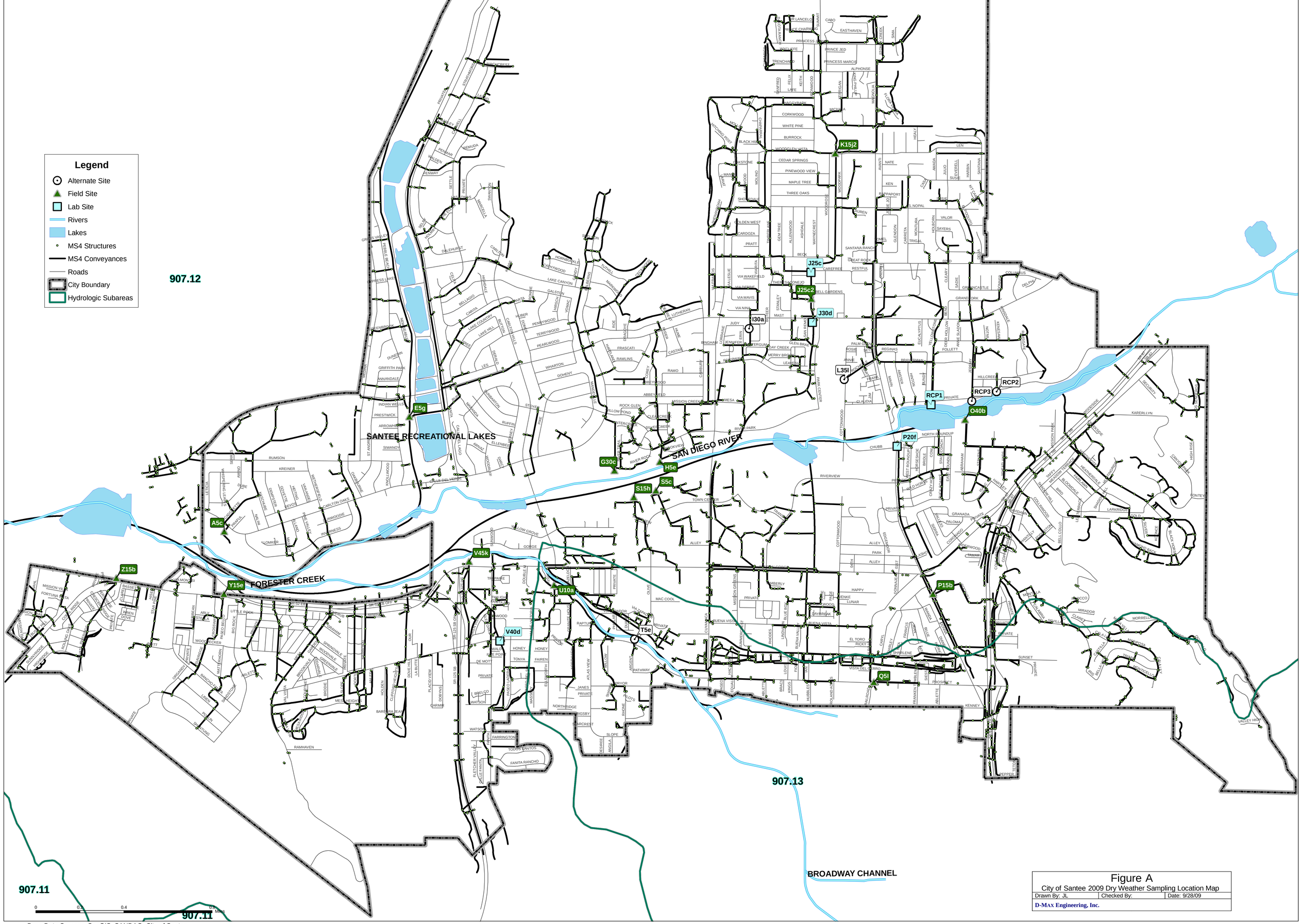

Base Data Sources: SanGIS, SANDAG, City of Santee

Figure A
City of Santee 2009 Dry Weather Sampling Location Map

Drawn By: JL	Checked By:	Date: 9/28/09

D-MAX Engineering, Inc.

FIGURE B
WATERSHED MAP OF THE SANTEE AREA SHOWING THE HYDROLOGIC SUBAREAS

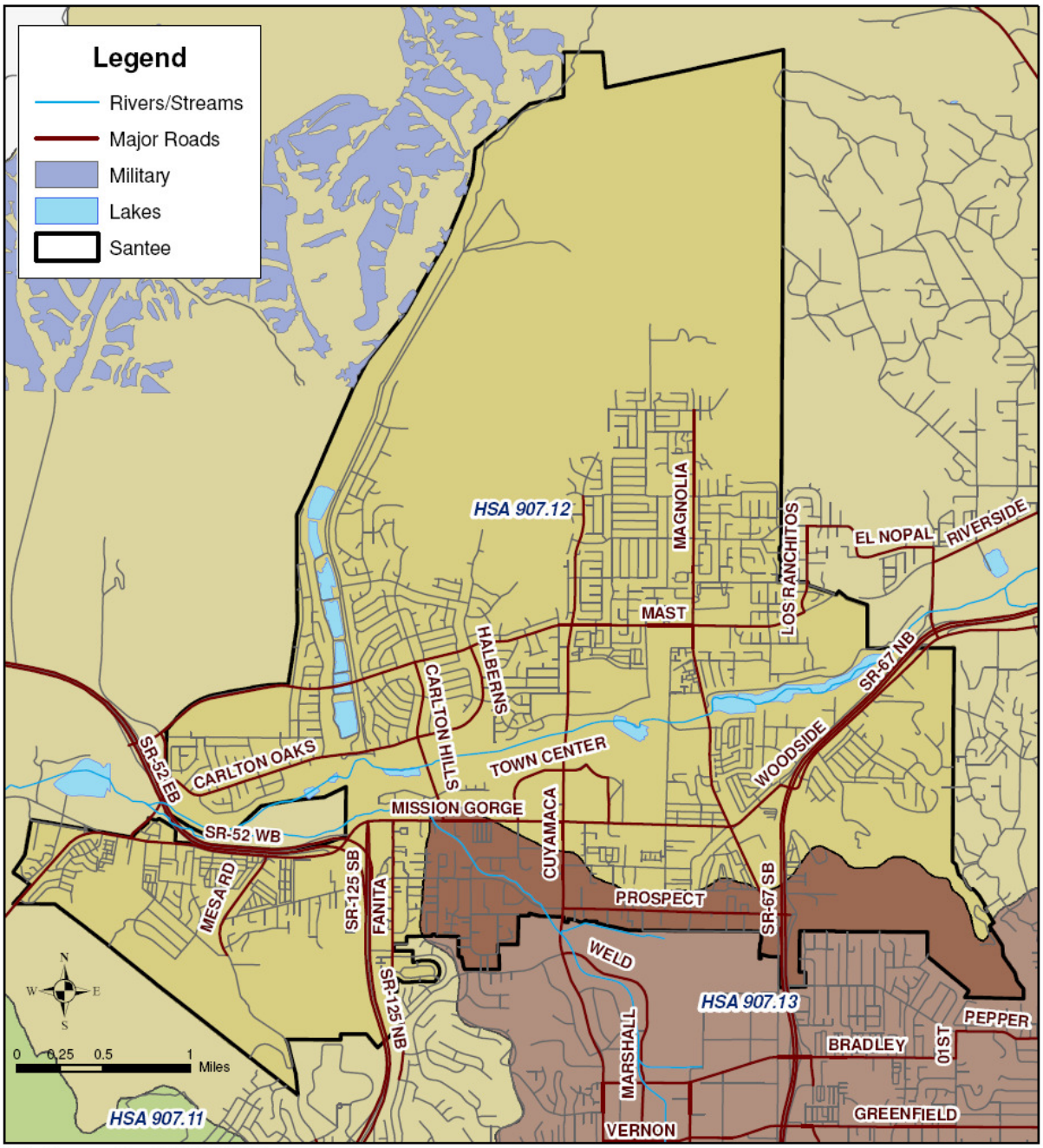

Data Sources: SanGIS, SANDAG

Appendix A

Historical Dry Weather Monitoring Data

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
1996 First Visit																														
Phenols (mg/L)			ns	0.1	ns			nd			ns		nd		ns					ns	0.1		ns		ns					
Detergents (mg/L)			ns	0.50	ns			nd			ns		0.50		ns					ns	0.25		ns		ns					
Chlorine (mg/L)			ns	nd	ns			nd			ns		0.05		ns					ns	nd		ns		ns					
Copper (mg/L)			ns	nd	ns			nd			ns		nd		ns					ns	nd		ns		ns					
Ammonia (mg/L)			ns	nd	ns			nd			ns		nd		ns					ns	nd		ns		ns					
1996 Second Visit																														
Phenols (mg/L)				0.2				nd					nd								0.1									
Detergents (mg/L)				0.25				0.25					0.25								0.50									
Chlorine (mg/L)				0.20				nd					nd								nd									
Copper (mg/L)				nd				nd					nd								nd									
Ammonia (mg/L)				nd				nd					nd								nd									
1997 Round One First Visit																														
Phenols (mg/L)		nd	ns	ns	ns			nd		ns	0.1		nd		ns					ns	nd		ns	0.2			nd	nd		
Detergents (mg/L)		0.25	ns	ns	ns			0.50		ns	0.85		0.20		ns					ns	1.00		ns	0.60			0.30	0.25		
Chlorine (mg/L)		nd	ns	ns	ns			0.25		ns	0.50		0.25		ns					ns	0.15		ns	nd			0.20	0.30		
Copper (mg/L)		nd	ns	ns	ns			nd		ns	nd		nd		ns					ns	nd		ns	nd			nd	0.05		
Ammonia (mg/L)		0.40	ns	ns	ns			0.40		ns	3.00		0.35		ns					ns	0.30		ns	2.50			0.15	0.35		
1997 Round One Second Visit																														
Phenols (mg/L)		nd						nd			nd		nd								nd			0.2			nd	0.1		
Detergents (mg/L)		0.35						0.35			1.75		0.25								0.25			>3.0			0.35	0.25		
Chlorine (mg/L)		0.05						0.15			0.40		nd								0.20			nd			0.20	0.35		
Copper (mg/L)		nd						nd			nd		nd								nd			nd			nd	nd		
Ammonia (mg/L)		1.50						0.40			2.50		0.30								0.60			5.50			0.60	0.50		
1997 Round Two First Visit																														
Phenols (mg/L)		nd	nd	nd	ns			nd		ns	ns		nd		ns					ns	nd		ns	ns			nd	nd		
Detergents (mg/L)		0.20	0.20	0.20	ns			0.20		ns	ns		0.20		ns					ns	0.90		ns	ns			0.30	0.20		
Chlorine (mg/L)		nd	0.40	0.70	ns			0.25		ns	ns		0.25		ns					ns	0.50		ns	ns			0.25	0.80		
Copper (mg/L)		nd	nd	nd	ns			nd		ns	ns		nd		ns					ns	0.10		ns	ns			nd	nd		
Ammonia (mg/L)		0.70	0.40	0.30	ns			0.60		ns	ns		0.10		ns					ns	1.50		ns	ns			0.90	0.90		
1997 Round Two Second Visit																														
Phenols (mg/L)		nd	nd	nd				nd					nd								nd						nd	nd		
Detergents (mg/L)		0.20	0.25	0.20				0.20					0.20								0.20						0.30	0.20		
Chlorine (mg/L)		nd	0.50	0.70				0.50					0.25								0.25						0.50	0.80		
Copper (mg/L)		nd	nd	nd				nd					nd								nd						nd	nd		
Ammonia (mg/L)		0.80	0.35	0.50				0.60					0.30								0.20						0.60	0.60		
1998 Round One First Visit																														
Phenols (mg/L)		nd	nd	nd	nd			nd			0.2		nd		nd	nd				nd	nd		ns	0.2			nd	nd		
Detergents (mg/L)		0.25	0.25	0.25	0.25			0.25			0.25		0.25		0.50	0.25				0.25	0.25		ns	0.13			0.25	0.25		
Chlorine (mg/L)		0.30	0.10	0.20	0.20			0.30			nd		0.10		0.30	0.40				0.10	0.15		ns	nd			nd	0.05		
Copper (mg/L)		nd	nd	nd	nd			nd			nd		nd		nd	nd				nd	nd		ns	nd			nd	nd		
Ammonia (mg/L)		0.10	0.10	0.60	0.60			0.60			0.20		0.10		2.00	nd				0.10	nd		ns	0.60			0.20	0.20		
1998 Round One Second Visit																														
Phenols (mg/L)		nd		nd	ns			nd			0.2		nd			nd				nd	nd			nd			nd	nd		
Detergents (mg/L)		nd		0.25	ns			0.25			0.25		0.50			0.25				0.50	0.25			0.50			0.25	0.25		
Chlorine (mg/L)		0.10		nd	ns			2.50			0.30		0.20			nd				0.10	0.15			0.15			0.10	0.05		
Copper (mg/L)		nd		nd	ns			nd			nd		nd			nd				nd	nd			nd			nd	nd		
Ammonia (mg/L)		0.10		0.60	ns			nd			0.60		0.20			nd				0.80	0.60			0.40			0.10	0.20		
1998 Round Two First Visit																														
Phenols (mg/L)		nd	nd	nd	ns			nd			0.1		nd		ns	ns			nd	nd	nd		ns	nd			nd	nd		
Detergents (mg/L)		0.13	0.13	0.38	ns			0.38			1.00		0.13		ns	ns			0.13	0.25	>3.0		ns	0.25			1.00	0.25		
Chlorine (mg/L)		nd	nd	0.10	ns			nd			0.10		nd		ns	ns			0.10	0.10	nd		ns	nd			0.10	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			nd		nd		ns	ns			nd	nd	nd		ns	nd			nd	nd		
Ammonia (mg/L)		0.30	0.60	0.40	ns			0.60			0.60		0.30		ns	ns			1.50	12.30	3.00		ns	0.80			0.40	0.60		
1998 Round Two Second Visit																														
Phenols (mg/L)		nd	nd	nd	ns			nd			nd		nd						nd	nd	nd			ns			nd	nd		
Detergents (mg/L)		0.38	0.13	0.13	ns			0.13			0.38		0.13						1.00	0.13	>3.0			ns			1.50	0.13		
Chlorine (mg/L)		0.10	nd	nd	ns			nd			nd		nd						0.10	nd	nd			ns			nd	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			nd		nd						nd	nd	nd			ns			nd	nd		
Ammonia (mg/L)		0.60	0.60	1.00	ns			0.35			0.10		0.20						>10.00	1.50	3.00			ns			2.53	0.40		
1999 Round One First Visit																														
Phenols (mg/L)		nd	nd	nd	ns			nd			0.1		nd		ns	0.1				ns	nd		ns	1.0			nd	nd		
Detergents (mg/L)		0.25	0.25	0.25	ns			0.25			0.75		0.25		ns	0.75				ns	0.25		ns	>3.0			1.50	0.75		
Chlorine (mg/L)		<0.10	0.10	0.40	ns			0.30			0.30		0.10		ns	nd				ns	0.10		ns	0.20			0.10	0.20		
Copper (mg/L)		0.10	nd	nd	ns			nd			nd		nd		ns	0.10				ns	nd		ns	0.10			0.10	nd		
Ammonia (mg/L)		0.80	0.50	0.30	ns			5.00			0.40		0.20		ns	0.60				ns	0.20		ns	6.00			0.60	0.40		

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
1999 Round One Second Visit																														
Phenols (mg/L)		0.1	nd	nd				nd			ns		nd			<0.1					nd			1.0			nd	nd		
Detergents (mg/L)		0.25	3.00	0.75				1.50			ns		0.50			1.50					0.25			>3.0			1.00	0.25		
Chlorine (mg/L)		<0.10	nd	0.40				<0.10			ns		0.10			<0.10					0.10			nd			0.10	0.30		
Copper (mg/L)		nd	nd	nd				nd			ns		nd			0.10					nd			0.10			0.10	nd		
Ammonia (mg/L)		1.00	1.00	0.80				1.00			ns		3.00			1.00					0.20			1.00			1.00	0.40		
1999 Round Two First Visit																														
Phenols (mg/L)		0.1	0.1	nd	ns			0.1			ns		0.1		0.1	nd				ns	0.1		ns	ns			nd	nd		
Detergents (mg/L)		0.25	0.50	0.25	ns			0.50			ns		0.25		0.75	0.50				ns	0.50		ns	ns			0.25	0.25		
Chlorine (mg/L)		nd	0.20	nd	ns			0.20			ns		0.40		nd	nd				ns	0.10		ns	ns			nd	0.10		
Copper (mg/L)		0.10	0.20	0.10	ns			0.10			ns		nd		nd	0.10				ns	0.20		ns	ns			nd	nd		
Ammonia (mg/L)		0.60	0.60	0.40	ns			0.90			ns		0.20		1.00	0.70				ns	0.40		ns	ns			0.20	0.10		
1999 Round Two Second Visit																														
Phenols (mg/L)		nd	0.1	nd				nd					nd		ns	ns					nd						nd	nd		
Detergents (mg/L)		0.25	0.75	0.25				0.25					0.25		ns	ns					0.25						0.25	0.25		
Chlorine (mg/L)		nd	nd	0.10				nd					nd		ns	ns					0.30						nd	0.10		
Copper (mg/L)		0.10	0.20	0.10				nd					nd		ns	ns					nd						nd	0.10		
Ammonia (mg/L)		0.40	0.40	0.30				0.90					0.10		ns	ns					nd						0.10	0.20		
2000 Round One First Visit																														
Phenols (mg/L)		nd	0.1	0.1	ns			nd			ns		nd		ns	nd	nd	0.1		ns	nd			0.1			0.1	nd		
Detergents (mg/L)		0.25	0.25	0.25	ns			0.50			ns		0.25		ns	0.25	0.25	0.50		ns	0.25			3.00			0.50	0.25		
Chlorine (mg/L)		nd	0.20	0.20	ns			nd			ns		0.20		ns	0.10	nd	0.10		ns	0.10			0.20			nd	0.10		
Copper (mg/L)		nd	nd	0.10	ns			nd			ns		nd		ns	0.10	nd	0.10		ns	nd			nd			nd	nd		
Ammonia (mg/L)		0.80	0.40	0.20	ns			0.30			ns		0.10		ns	0.60	0.10	2.50		ns	0.30			1.00			0.20	0.50		
2000 Round One Second Visit																														
Phenols (mg/L)		nd	nd	nd				nd					nd			ns	nd	nd			0.1			0.1			nd	nd		
Detergents (mg/L)		0.25	0.25	0.75				1.50					0.25			ns	0.25	0.25			0.25			0.75			0.50	0.25		
Chlorine (mg/L)		nd	0.20	0.20				nd					nd			ns	0.20	nd			0.10			nd			nd	nd		
Copper (mg/L)		nd	0.10	0.10				nd					nd			ns	0.10	nd			nd			nd			nd	nd		
Ammonia (mg/L)		0.80	0.50	0.40				0.80					0.10			ns	0.10	2.50			0.60			0.20			0.20	0.30		
2000 Round Two First Visit																														
Phenols (mg/L)		0.1	nd	nd	ns			nd			nd		0.1		nd	nd	nd	nd		ns	nd			ns			nd	nd		
Detergents (mg/L)		0.50	0.25	0.25	ns			0.25			0.25		0.50		1.50	1.00	0.25	0.50		ns	0.25			ns			1.00	0.25		
Chlorine (mg/L)		nd	nd	nd	ns			nd			nd		nd		nd	nd	0.10	nd		ns	nd			ns			nd	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			nd		nd		nd	nd	nd	nd		ns	nd			ns			nd	nd		
Ammonia (mg/L)		0.80	0.20	0.20	ns			0.50			0.30		0.80		1.00	0.80	0.10	2.00		ns	0.40			ns			0.80	0.30		
2000 Round Two Second Visit																														
Phenols (mg/L)		nd	nd	nd				nd			ns		nd		nd	nd	nd	nd			nd						nd	nd		
Detergents (mg/L)		0.50	0.25	0.25				0.50			ns		0.50		1.00	0.25	0.25	0.25			0.25						0.25	0.50		
Chlorine (mg/L)		nd	nd	nd				nd			ns		nd		nd	nd	0.10	nd			nd						nd	nd		
Copper (mg/L)		nd	nd	nd				nd			ns		nd		nd	nd	nd	nd			nd						nd	nd		
Ammonia (mg/L)		0.70	0.20	0.30				0.80			ns		0.80		0.70	0.30	0.10	2.00			0.20						0.30	0.70		
2001 Round One First Visit																														
Phenols (mg/L)		nd	nd	nd	ns			nd			nd		nd		ns	nd	nd	nd		nd	nd			nd			nd	nd		
Detergents (mg/L)		0.25	0.25	0.25	ns			0.25			0.25		0.25		ns	0.25	0.25	0.50		0.25	0.25			0.25			0.25	0.25		
Chlorine (mg/L)		nd	nd	nd	ns			nd			nd		nd		ns	nd	nd	nd		nd	nd			nd			nd	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			nd		nd		ns	nd	nd	nd		nd	nd			nd			nd	nd		
Ammonia (mg/L)		0.10	0.50	0.50	ns			0.80			0.20		0.20		ns	0.80	0.60	0.10		0.20	0.40			0.80			0.50	0.10		
2001 Round One Second Visit																														
Phenols (mg/L)		nd	nd	nd				nd			nd		nd			ns	nd	nd		nd	nd			nd			nd	nd		
Detergents (mg/L)		0.25	0.25	0.25				0.25			0.25		0.25			ns	0.25	0.25		0.25	0.25			0.25			0.25	0.25		
Chlorine (mg/L)		nd	nd	nd				nd			nd		nd			ns	nd	nd		nd	nd			nd			nd	nd		
Copper (mg/L)		nd	nd	nd				nd			nd		nd			ns	nd	nd		nd	nd			nd			nd	nd		
Ammonia (mg/L)		0.50	0.30	0.20				0.60			0.70		0.10			ns	0.40	0.80		0.30	0.40			0.50			0.30	0.20		
2001 Round Two First Visit																														
Phenols (mg/L)		nd	nd	nd	ns			nd			ns		nd		ns	ns	nd	nd		ns	nd			ns			nd	nd		
Detergents (mg/L)		0.25	<0.25	0.25	ns			0.50			ns		<0.25		ns	ns	<0.25	0.75		ns	<0.25			ns			<0.25	<0.25		
Chlorine (mg/L)		0.10	0.50	0.50	ns			nd			ns		0.10		ns	ns	0.10	nd		ns	0.10			ns			nd	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			ns		nd		ns	ns	nd	nd		ns	nd			ns			nd	nd		
Ammonia (mg/L)		0.40	0.40	0.50	ns			0.60			ns		0.20		ns	ns	0.10	2.00		ns	0.40			ns			0.10	0.20		
2001 Round Two Second Visit																														
Phenols (mg/L)		nd	nd	nd				nd					nd				nd	nd			nd						nd	nd		
Detergents (mg/L)		0.25	<0.25	<0.25				0.50					<0.25				<0.25	0.50			0.25						<0.25	<0.25		
Chlorine (mg/L)		0.10	0.10	0.80				0.10					0.10				0.10	0.10			0.10						nd	nd		
Copper (mg/L)		nd	nd	nd				nd					nd				nd	nd			nd						nd	nd		
Ammonia (mg/L)		0.40	0.20	0.20				0.60					0.20				0.10	2.00			0.50						0.20	0.30		

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2002																														
Temp.°C	24.0	25.0	31.0	26.0		23.0	23.5	30.0	25.0		23.5	26.5	23.0	26.0			23.0				26.0	25.0			ns	26.0	22.0	22.0	23.5	22.0
pH	7.8	7.9	8.5	8.5		8.8	8.3	9.4	7.5		7.9	8.2	8.8	8.8			8.6				8.3	8.4			ns	8.4	9.2	8.1	7.9	8.0
Conductivity (µmhos/cm)	1,070	2,500	1,550	1,231		3,250	875	2,470	1,596		957	1,483	1,750	2,840			1,474				1,191	1,933			ns	1,174	2,270	2,590	1,142	1,426
Turbidity (NTU)	14.18	12.77	2.89	1.99		3.34	5.17	8.04	5.59		33.51	1.67	2.79	104			2.53				3.47	15.37			ns	7.42	6.68	6.94	7.76	23.55
Ammonia-N (mg/L)	2.5	2.0	0.6	0.2		0.4	0.3	0.4	0.1		1.0	0.1	0.3	2.0			0.4				0.6	1.5			ns	0.4	0.2	0.6	0.6	2.0
Nitrate-N (mg/L)	0.3	2.0	nd	1.0		4.0	2.0	0.1	8.0		1.0	24.0	1.0	1.5			20.0				nd	0.2			ns	0.3	nd	0.2	0.5	1.5
Orthophosphate (mg/L)	2.0	2.0	3.0	1.5		2.5	0.6	0.5	0.2		1.5	0.6	0.2	5.5			0.6				4.0	4.5			ns	2.5	0.6	0.3	0.8	4.5
Orthophosphate-P (mg/L)	0.65	0.65	0.98	0.49		0.82	0.20	0.03	0.05		0.49	0.20	0.07	1.79			0.20				1.30	1.47			ns	0.82	0.20	0.10	0.26	1.47
Surfactants (mg/l MBAS)Field test	0.75	0.50	0.25	0.25		0.25	< 0.25	0.50	0.25		0.50	0.50	0.25	3.00			0.25				0.50	0.25			ns	0.25	0.25	0.25	0.50	1.00
Surfactants (mg/l MBAS)Lab test			< 0.50			< 0.50		< 0.50					< 0.50				< 0.50										< 0.50			
Oil and Grease (mg/L)			1.0			2.0		8.0					2.0				3.0										12.0			
Total Hardness (mg/L)			349			579		391					429				422										495			
Cadmium-diss (mg/L)			< 0.10			< 0.10		< 0.10					< 0.10				< 0.10										< 0.10			
Copper-diss (mg/L)			< 0.10			< 0.10		< 0.10					< 0.10				< 0.10										< 0.10			
Lead-diss (mg/L)			< 0.10			< 0.10		< 0.10					< 0.10				< 0.10										< 0.10			
Zinc-diss (mg/L)			< 0.10			< 0.10		< 0.10					< 0.10				< 0.10										< 0.10			
Diazinon (µg/L)			< 1.0			< 0.50		< 0.50					< 0.50				< 0.50										< 0.50			
Chlorpyrifos (µg/L)			< 1.0			< 0.50		< 0.50					< 0.50				< 0.50										< 0.50			
Total Coliform (MPN/100mL)			17,000			3,000		13,000					1,700				50,000										5,000			
Fecal Coliform (MPN/100mL)			13,000			1,700		8,000					1,100				50,000										5,000			
Enterococcus (MPN/100mL)			2,300			17,000		2,300					3,000				230										3,000			
2003 Round One																														
Temp.°C	20.0	20.0	18.0	25.0		20.0	23.0	28.0	31.0		16.0	23.0	26.0	23.0			19.5				22.0	21.0		24.0	ns	ns	21.0	19.0	18.0	23.0
pH	9.0	7.4	8.9	9.0		8.5	8.4	9.7	8.8		8.4	7.8	9.0	8.4			8.7				8.3	8.1		7.9	ns	ns	8.9	8.5	7.7	8.2
Conductivity (µmhos/cm)	2,030	3,310	2,230	1,270		4,160	4,650	3,010	2,350		1,750	2,150	1,810	2,240			1,860				1,820	1,820		1,030	ns	ns	2,960	3,840	1,470	1,080
Turbidity (NTU)	6.11	14.94	3.6	2.91		3.05	0.04	6.46	2.27		2.03	1.33	4.69	36.48			10.81				61	2.67		0.98	ns	ns	0.96	0.98	2.89	25.2
Ammonia-N (mg/L)	0.4	0.6	1.0	0.3		0.2	0.2	0.4	0.3		2.5	0.1	0.2	0.2			0.1				1.0	0.3		0.3	ns	ns	0.2	0.4	0.8	0.8
Nitrate-N (mg/L)	0.6	0.6	1.0	3.2		5.0	8.0	0.8	1.0		4.0	8.0	3.5	24.0			8.0				nd	0.4		0.2	ns	ns	0.1	0.8	1.5	0.8
Orthophosphate (mg/L)	0.3	0.8	2.5	1.5		0.2	0.2	0.1	0.1		4.0	0.4	0.1	0.4			0.4				1.5	1.5		0.6	ns	ns	0.1	0.1	1.5	0.8
Orthophosphate-P (mg/L)	0.10	0.26	0.82	0.49		0.07	0.07	0.03	0.03		1.30	0.13	0.03	0.13			0.13				0.49	0.49		0.20	ns	ns	0.03	0.03	0.49	0.26
Surfactants (mg/l MBAS)Field test	0.25	0.25	0.25	0.50		0.25	0.25	0.25	0.25		0.25	0.25	0.25	0.25			0.75				0.75	0.25		0.25	ns	ns	0.25	0.25	0.25	0.25
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				0.7										nd			
Oil and Grease (mg/L)						nd		2.00					nd				nd										18.00			
Total Hardness (mg/L)						1,030		449					450				414										609			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						0.01		0.012					nd				0.008										nd			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						0.026		nd					nd				0.033										0.022			
Diazinon (µg/L)						nd		0.09					nd				nd										0.26			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						50,000		1,700					1,400				11,000										2,300			
Fecal Coliform (MPN/100mL)						22,000		1,300					700				7,000										1,300			
Enterococcus (MPN/100mL)						8,000		500					300				1,100										80			
2003 Round Two																														
Temp.°C	28.5	22.5	20.5	24.5		21.5	24.0	25.0	24.5		25.5	26.0	27.5	27.0			24.0				25.0	22.0			ns	26.0	19.5	24.0	21.5	20.0
pH	8.8	7.4	8.3	8.3		8.3	8.8	9.0	7.4		8.1	8.2	8.8	7.8			8.5				8.1	7.5			ns	7.3	8.3	7.9	7.6	7.8
Conductivity (µmhos/cm)	1,560	3,130	1,340	1,360		3,690	6,610	3,060	2,340		970	1,830	1,390	1,110			1,840				13,650	1,490			ns	1,020	1,990	2,150	1,160	1,350
Turbidity (NTU)	502.0	20.0	8.9	16.9		2.3	0.7	4.5	3.2		20.5	4.0	3.0	262.0			1.2				17.3	5.5			ns	6.8	2.6	13.9	10.6	17.8
Ammonia-N (mg/L)	0.4	0.8	0.4	0.4		0.4	0.4	1.0	0.3		0.3	0.2	0.3	0.8			0.2				0.8	0.6			ns	1.0	0.2	0.4	0.6	3.0
Nitrate-N (mg/L)	2.0	0.4	0.6	4.0		10.0	16.0	0.6	4.0		2.4	16.0	5.0	3.2			24.0				28.0	0.8			ns	0.4	0.1	0.2	0.8	1.0
Orthophosphate (mg/L)	2.0	3.0	2.0	1.5		0.6	0.2	0.3	0.1		2.0	0.8	nd	1.0			0.2				2.0	1.5			ns	2.5	0.1	0.3	2.5	3.0
Orthophosphate-P (mg/L)	0.65	0.98	0.65	0.49		0.20	0.07	0.10	0.03		0.65	0.26	nd	0.33			0.07				0.65	0.49			ns	0.82	0.03	0.10	0.82	0.98
Surfactants (mg/l MBAS)Field test	0.13	0.25	0.25	0.13		0.25	0.25	0.25	0.13		0.13	0.25	0.13	3.00			0.25				0.50	0.25			ns	0.50	0.13	0.25	0.25	0.50
Surfactants (mg/l MBAS)Lab test			nd			nd						nd															nd			nd
Oil and Grease (mg/L)			nd			1.00						2.00															nd			2.00
Total Hardness (mg/L)			396			739						539															488			330
Cadmium-diss (mg/L)			0.006			nd						nd															nd			nd
Copper-diss (mg/L)			0.097			0.005						0.007															nd			0.012
Lead-diss (mg/L)			nd			nd						0.005															nd			nd
Zinc-diss (mg/L)			0.056			nd						nd															nd			0.077
Diazinon (µg/L)			0.10			nd						nd															nd			nd
Chlorpyrifos (µg/L)			nd			nd						nd															nd			nd
Total Coliform (MPN/100mL)			90,000			50,000						13,000															50,000			90,000
Fecal Coliform (MPN/100mL)			30,000			24,000						5,000															24,000			30,000
Enterococcus (MPN/100mL)			8,000			2,200						5,000															700			8,000

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2004 Round One																														
Temp.°C	32	26	24	24		24	26	30	27		27	28	25	24			24				26	26			ns	31	32	29	26	22
pH	8.4	7.0	7.4	8.6		8.5	7.7	8.9	6.9		7.5	7.4	8.6	8.5			8.3				7.9	8.0			ns	7.5	9.2	8.6	7.8	8.2
Conductivity (µmhos/cm)	1,930	2,620	1,920	1,350		2,950	1,820	1,950	1,780		910	1,610	1,260	1,430			1,280				1,589	1,390			ns	1,320	1,480	1,450	2,560	1,280
Turbidity (NTU)	8.52	27.66	3.15	2.23		8.85	0.12	5.05	4.95		1.98	7.56	1.14	101			3.97				9.32	3.55			ns	18.48	4.14	3.43	4.82	7.82
Ammonia-N (mg/L)	1.5	0.8	0.7	0.3		0.8	0.1	0.6	0.1		0.8	0.5	0.1	0.8			0.2				0.6	0.6			ns	0.8	0.6	0.2	0.8	0.8
Nitrate-N (mg/L)	1.25	1.25	2.5	2.5		6.75	2.5	2.5	5		2.5	20	3.75	1.25			5				2.5	1.25			ns	1.25	1.25	1.25	3.75	2.5
Orthophosphate (mg/L)	0.60	2.00	4.50	1.50		0.70	0.10	0.10	0.30		1.50	0.40	0.10	0.10			0.20				2.00	0.60			ns	1.50	0.20	0.30	1.50	3.50
Orthophosphate-P (mg/L)	0.20	0.65	1.47	0.49		0.23	0.03	0.03	0.10		0.49	0.13	0.03	0.03			0.07				0.70	0.20			ns	0.49	0.07	0.10	0.49	1.14
Surfactants (mg/l MBAS)Field test	0.75	0.25	0.25	0.25		0.50	0.25	0.25	0.25		0.25	0.25	0.25	3.00			0.25				0.25	0.25			ns	0.50	0.25	0.25	0.50	0.50
Surfactants (mg/l MBAS)Lab test			nd			nd		nd					nd				nd										nd			
Oil and Grease (mg/L)			nd			1		nd					nd				nd										nd			
Total Hardness (mg/L)			461			669		346					355				397										368			
Cadmium-diss (mg/L)			nd			nd		nd					nd				nd										nd			
Copper-diss (mg/L)			nd			0.021		0.008					0.010				0.013										0.005			
Lead-diss (mg/L)			nd			nd		nd					nd				nd										nd			
Zinc-diss (mg/L)			0.024			nd		nd					nd				0.02										nd			
Diazinon (µg/L)			4.05			nd		nd					nd				nd										nd			
Chlorpyrifos (µg/L)			nd			nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)			22,000			110,000		30,000					170,000				50,000										4,000			
Fecal Coliform (MPN/100mL)			8,000			2,600		2,200					17,000				800										40			
Enterococcus (MPN/100mL)			5,000			7,000		800					200				3,000										220			
2004 Round Two																														
Temp.°C	20	22	19	23		21	25	25	25		23	27	23	25			22				22	21			ns	20	22	20	22	23
pH	8.0	7.4	7.6	7.9		8.2	7.9	8.9	7.4		7.8	7.8	8.7	8.3			8.3				7.8	8.0			ns	7.4	8.8	7.7	7.6	7.6
Conductivity (µmhos/cm)	2,150	2,860	2,570	2,130		2,940	5,680	2,490	1,990		850	1,670	1,610	2,490			1,670				970	1,860			ns	1,770	1,420	1,490	1,270	1,180
Turbidity (NTU)	2.35	28.87	3.86	18.87		2.35	1.48	11.59	1.22		4.55	11.34	2.26	143			0.67				5.55	33.76			ns	3.36	4.08	8.32	10.15	12.73
Ammonia-N (mg/L)	3.0	0.6	0.1	6.0		0.3	0.1	0.4	0.2		0.1	0.1	0.1	0.8			0.2				0.1	0.7			ns	0.6	0.2	0.2	0.3	1.0
Nitrate-N (mg/L)	7.50	2.50	2.50	15.00		5.00	8.75	2.50	5.00		1.25	15.00	3.75	1.25			8.75				1.25	3.75			ns	3.75	1.25	1.25	3.75	3.75
Orthophosphate (mg/L)	3.0	3.0	1.0	5.0		0.4	0.2	0.2	0.8		1.0	0.6	0.1	4.0			0.4				1.0	3.0			ns	1.0	0.3	0.3	0.6	5.0
Orthophosphate-P (mg/L)	0.98	0.98	0.33	1.63		0.13	0.07	0.07	0.26		0.33	0.20	0.03	1.30			0.13				0.33	0.98			ns	0.33	0.10	0.10	0.20	1.63
Surfactants (mg/l MBAS)Field test	0.38	0.75	0.25	0.25		0.50	0.25	0.38	0.25		0.38	0.38	0.38	3.00			0.25				0.50	0.50			ns	0.25	0.13	0.13	0.50	0.75
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd										nd			
Oil and Grease (mg/L)						nd		nd					nd				1										nd			
Total Hardness (mg/L)						572		473					421				508										356			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						0.008		0.005					nd				nd										nd			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						0.023		nd					nd				nd										nd			
Diazinon (µg/L)						nd		nd					nd				0.33										0.12			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						300,000		300,000					240,000				160,000										17,000			
Fecal Coliform (MPN/100mL)						1,300		800					500				30,000										1,400			
Enterococcus (MPN/100mL)						7,000		7,000					80				24,000										13,000			
2005 Round One																														
Temp.°C	21.1	21.3	24.2	19.4		20.5	23.6	27.4	22.7		19.4	24.2	20.4	24.5			20.3				20.0	19.7			ns	21.5	22.9	24.7	20.5	17.0
pH	8.4	7.3	8.9	8.5		8.4	8.0	9.1	7.7		7.9	7.8	8.8	7.9			8.4				7.4	7.7			ns	8.3	8.8	8.4	7.7	8.1
Conductivity (µmhos/cm)	2,020	2,290	2,070	2,240		4,500	5,320	2,540	2,030		930	1,740	1,630	1,990			1,900				1,190	1,550			ns	2,240	2,530	2,270	1,460	1,260
Turbidity (NTU)	3.11	8.15	2.15	1.23		4.62	0.33	4.24	2.02		6.88	1.11	0.70	2.67			0.46				6.05	5.73			ns	18.34	2.50	2.06	3.92	37.4
Ammonia-N (mg/L)	0.2	0.8	0.2	0.2		0.1	0.2	0.4	0.3		2.0	nd	0.2	0.1			0.1				1.0	0.8			ns	0.2	0.1	0.2	0.4	1.5
Nitrate-N (mg/L)	5.00	1.25	2.50	2.50		8.75	6.25	5.00	3.75		6.25	20.00	10.00	25.00			15.00				2.50	5.00			ns	20.00	1.25	2.50	2.50	5.00
Orthophosphate (mg/L)	1.0	2.0	0.4	1.5		0.3	0.2	0.1	0.1		7.0	0.6	nd	0.6			0.3				0.2	0.8			ns	0.8	0.1	0.2	0.2	3.5
Orthophosphate-P (mg/L)	0.33	0.65	0.13	0.50		0.98	0.07	0.03	0.03		2.28	0.20	nd	0.20			0.98				0.07	0.26			ns	0.26	0.03	0.07	0.06	1.14
Surfactants (mg/l MBAS)Field test	0.13	0.38	0.25	0.25		0.50	0.50	0.38	0.25		0.13	0.25	0.38	0.63			0.38				0.75	0.75			ns	0.50	0.25	0.25	0.25	0.50
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd										nd			
Oil and Grease (mg/L)						nd		nd					nd				nd										nd			
Total Hardness (mg/L)						907		545					486				584										566			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						nd		0.014					nd				nd										nd			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						nd		nd					nd				nd										nd			
Diazinon (µg/L)						nd		nd					nd				nd										nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						24,000		30,000					23,000				13,000										23,000			
Fecal Coliform (MPN/100mL)						70		270					2,300				170										1,700			
Enterococcus (MPN/100mL)						1,300		2,300					1,700				2,300										2,200			

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2005 Round Two																														
Temp.℃	22.9	23.0	24.5	23.6		23.1	25.3	25.4	23.7		23.0	26.9	24.1	30.1			21.8				24.0	22.6			ns	23.0	19.1	24.8	21.7	18.7
pH	8.5	7.3	8.4	8.7		8.4	8.1	8.9	8.3		8.0	7.6	8.9	8.2			8.5				8.3	8.2			ns	7.6	8.8	8.2	7.9	8.4
Conductivity (µmhos/cm)	1,840	2,040	2,490	1,550		3,450	5,380	2,150	1,800		1,090	1,680	1,530	1,000			1,760				1,310	1,400			ns	1,330	1,740	1,970	1,250	1,010
Turbidity (NTU)	14.94	28.68	1.47	3.31		4.96	0.65	3.14	4.71		4.77	3.79	1.45	444.00			0.44				2.89	5.30			ns	3.04	7.03	1.78	4.55	3.20
Ammonia-N (mg/L)	0.8	2.5	0.3	0.6		0.3	0.2	0.4	0.6		0.4	0.1	0.2	0.3			0.1				0.1	0.3			ns	0.3	0.1	0.2	0.8	0.4
Nitrate-N (mg/L)	2.50	1.25	2.50	1.25		7.50	8.75	3.75	1.25		2.50	25.00	10.00	2.50			20.00				2.50	1.25			ns	1.25	1.25	2.50	2.50	2.50
Orthophosphate (mg/L)	3.0	0.8	1.0	2.0		0.6	0.2	0.1	0.3		1.0	0.6	nd	0.3			0.1				0.8	1.0			ns	1.0	0.1	nd	1.0	2.0
Orthophosphate-P (mg/L)	0.98	0.26	0.33	0.65		0.20	0.07	0.03	0.01		0.33	0.20	nd	0.10			0.03				0.26	0.33			ns	0.33	0.03	nd	0.33	0.63
Surfactants (mg/l MBAS)Field test	0.50	2.00	0.25	0.25		0.50	0.75	0.25	0.63		0.75	0.25	0.38	0.13			0.25				0.25	0.50			ns	0.25	0.13	0.13	0.38	0.75
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd										nd			
Oil and Grease (mg/L)						nd		nd					nd				nd										nd			
Total Hardness (mg/L)						585		510					401				702										494			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						nd		nd					nd				nd										nd			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						nd		nd					nd				nd										nd			
Diazinon (µg/L)						nd		nd					nd				nd										nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						300,000		900,000					130,000				110,000										1,600,000			
Fecal Coliform (MPN/100mL)						22,000		7,000					8,000				11,000										5,000			
Enterococcus (MPN/100mL)						2,300		30,000					500				2,300										2,300			
2006 Round One																														
Temp.℃	18.8	21.1	23.1	21.7		20.4	23.2	28.2	23.0		21.5	24.9	24.1	23.8			20.0				22.1	23.6			ns	23.0	26.6	22.3	19.3	17.7
pH	8.2	7.2	8.1	8.3		8.3	8.0	9.2	7.1		7.5	7.6	8.8	8.1			8.4				7.8	7.8			ns	7.4	8.9	7.6	7.5	8.2
Conductivity (µmhos/cm)	1,950	2,080	3,350	1,590		3,990	5,440	2,270	1,860		1,020	1,620	1,300	1,960			1,660				1,070	1,160			ns	1,320	2,760	2,970	1,240	940
Turbidity (NTU)	2.50	19.29	2.55	1.81		3.89	1.86	1.34	0.91		2.14	2.33	2.05	53.00			1.94				0.79	6.44			ns	57.00	4.27	2.00	20.12	4.26
Ammonia-N (mg/L)	0.8	0.8	0.2	0.3		0.3	0.2	0.4	0.1		0.8	0.1	0.2	0.2			0.1				0.1	0.6			ns	0.7	0.2	0.1	0.2	0.1
Nitrate-N (mg/L)	3.75	1.25	1.25	1.25		5.00	7.50	3.75	5.00		1.25	15.00	2.50	5.00			15.00				1.25	2.50			ns	1.25	1.25	2.50	7.50	3.75
Orthophosphate (mg/L)	3.5	2.0	0.4	0.6		0.3	0.3	0.1	0.2		0.6	0.7	0.1	2.5			0.2				0.4	1.5			ns	2.0	0.3	0.3	0.7	0.6
Orthophosphate-P (mg/L)	1.14	0.65	0.13	0.20		0.10	0.10	0.03	0.07		0.20	0.23	0.03	0.82			0.07				0.13	0.49			ns	0.65	0.10	0.10	0.23	0.20
Surfactants (mg/l MBAS)Field test	0.75	0.50	0.50	0.75		0.50	0.50	0.25	0.25		0.25	0.50	0.25	>3.0			0.25				0.25	0.50			ns	0.25	0.50	0.50	0.50	0.25
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd										nd			
Oil and Grease (mg/L)						nd		nd					nd				nd										nd			
Total Hardness (mg/L)						826		563					366				574										709			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						0.012		0.008					0.009				nd										0.010			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						nd		nd					0.024				0.021										nd			
Diazinon (µg/L)						nd		nd					nd				nd										nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						1,600,000		900,000					220,000				5,000										240,000			
Fecal Coliform (MPN/100mL)						14,000		1,400					3,000				230										800			
Enterococcus (MPN/100mL)						130,000		500					5,000				130										800			
2006 Round Two																														
Temp.℃	24.3	23.2	22.3	22.3		21.6	24.0	26.5	23.9		20.6	26.2	20.2	27.1			21.6				24.7	22.8			ns	19.9	19.0	20.8	21.5	19.0
pH	8.8	7.9	7.7	8.8		8.4	8.1	9.4	7.7		8.7	8.0	9.2	8.2			8.6				7.9	7.9			ns	8.4	8.5	8.0	8.2	8.5
Conductivity (µmhos/cm)	1,840	1,150	1,690	1,550		2,660	5,370	2,140	1,860		1,440	1,570	1,280	2,100			1,610				1,000	1,530			ns	900	2,610	2,650	1,400	930
Turbidity (NTU)	12.20	4.58	15.54	2.08		2.42	1.20	5.98	3.90		6.38	2.15	3.89	29.59			2.91				6.38	6.96			ns	8.27	4.15	1.77	26.66	4.11
Ammonia-N (mg/L)	0.4	0.4	0.1	0.2		0.3	0.2	0.2	0.1		0.2	0.1	0.1	1.3			0.1				0.1	0.6			ns	0.6	0.2	0.2	0.3	0.2
Nitrate-N (mg/L)	3.75	1.25	3.75	1.25		3.75	6.25	2.50	2.50		6.25	10.00	3.75	3.75			10.00				3.75	1.25			ns	2.50	1.25	2.50	5.00	2.50
Orthophosphate (mg/L)	3.0	0.2	0.6	2.0		0.6	0.4	nd	0.1		1.5	0.4	0.2	3.5			0.2				0.4	2.0			ns	1.5	0.4	0.3	0.6	1.5
Orthophosphate-P (mg/L)	0.98	0.07	0.20	0.65		0.20	0.13	nd	0.03		0.49	0.13	0.07	1.14			0.07				0.13	0.65			ns	0.49	0.13	0.10	0.20	0.49
Surfactants (mg/l MBAS)Field test	0.25	0.25	0.75	0.25		0.25	0.25	0.25	0.13		0.25	0.13	0.50	3.00			0.25				0.25	0.50			ns	0.25	0.75	0.25	0.67	0.25
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd										nd			
Oil and Grease (mg/L)						nd		nd					nd				nd										nd			
Total Hardness (mg/L)						580		475					385				531										707			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						0.011		0.006					0.008				nd										nd			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						0.022		nd					0.027				nd										0.024			
Diazinon (µg/L)						3.91		0.28					nd				nd										nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						170,000		80,000					130,000				30,000										22,000			
Fecal Coliform (MPN/100mL)						24,000		13,000					5,000				8,000										5,000			
Enterococcus (MPN/100mL)						30,000		24,000					500				300										2,300			

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2007 Round One																														
Temp.℃	18.0	18.9	18.3	17.6		20.0	19.3	24.4	18.8		21.3	22.0	21.8	21.0			19.3				22.2	22.1				28.7	18.1	22.0	19.4	16.8
pH	8.2	7.5	9.2	8.3		8.3	8.2	8.9	8.5		8.1	7.9	9.2	8.2			8.5				7.8	8.2				8.8	8.7	7.8	7.5	8.2
Conductivity (mS/cm)	1.57	2.52	1.60	1.92		3.81	5.37	2.27	1.95		1.33	1.57	1.11	2.17			1.57				1.04	1.44				1.26	2.27	2.46	1.29	1.02
Turbidity (NTU)	4.78	5.22	4.93	4.15		3.31	1.26	3.32	1.77		5.56	11.79	3.45	48.79			0.25				2.01	9.08				10.86	3.32	2.53	7.32	3.04
Ammonia-N (mg/L)	nd	0.4	nd	0.1		0.2	0.1	0.4	0.1		0.8	nd	0.1	0.3			0.1				nd	0.3				0.4	0.1	0.2	0.1	nd
Nitrate-N (mg/L)	6.90	0.95	0.97	2.37		4.75	9.65	3.00	3.53		4.00	11.50	1.29	26.20			8.10				1.08	9.40				0.70	0.50	0.23	2.78	2.03
Orthophosphate (mg/L)	1.4	0.9	1.2	1.8		0.4	0.2	1.0	0.1		1.6	0.6	0.1	2.3			0.5				1.0	3.8				1.9	0.1	0.3	0.7	0.7
Orthophosphate-P (mg/L)	0.46	0.29	0.39	0.59		0.13	0.07	0.03	0.03		0.52	0.20	0.03	0.75			0.16				0.33	1.24				0.62	0.03	0.10	0.23	0.23
Surfactants (mg/l MBAS)Field test	0.50	0.50	0.75	0.50		1.00	0.75	0.38	0.25		0.50	0.25	0.38	3.00			0.25				0.50	0.75				0.50	0.38	0.25	0.50	0.38
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd										nd			
Oil and Grease (mg/L)						nd		nd					nd				nd										nd			
Total Hardness (mg/L)						808		573					358				577										662			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						0.009		0.007					nd				0.010										nd			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						nd		nd					nd				nd										nd			
Diazinon (µg/L)						nd		nd					nd				nd										nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						13,000		23,000					23,000				13,000										50,000			
Fecal Coliform (MPN/100mL)						5,000		800					330				1,700										1,100			
Enterococcus (MPN/100mL)						1,300		800					800				2,800										1,300			
2007 Round Two																														
Temp.℃	23.5	20.2	21.5	20.1		23.4	24.9	24.5	21.0		20.9	27.4	17.7	24.5			22.0				24.8	19.8				26.8	20.8	22.7	18.3	17.5
pH	8.3	7.4	8.1	8.5		8.2	7.9	8.4	7.5		7.8	7.8	8.1	8.2			8.1				7.6	7.5				8.9	8.7	7.8	7.4	8.0
Conductivity (mS/cm)	1.81	2.20	1.49	1.27		3.33	4.60	2.17	1.75		1.26	1.48	1.34	1.73			1.44				1.13	1.51				1.55	2.04	2.09	1.44	0.87
Turbidity (NTU)	3.73	2.03	0.10	4.38		0.10	0.10	0.10	0.12		0.90	0.82	0.82	16.09			0.10				2.46	2.14				1.85	0.10	0.10	4.71	0.10
Ammonia-N (mg/L)	0.2	0.2	nd	0.1		0.2	0.2	0.4	0.2		nd	0.1	nd	0.6			nd				nd	0.1				0.1	0.1	0.1	0.3	nd
Nitrate-N (mg/L)	3.19	0.97	0.88	0.66		5.31	7.46	3.28	4.54		2.71	15.37	3.71	4.29			13.10				0.41	5.88				0.90	0.63	0.66	1.08	1.06
Orthophosphate (mg/L)	3.0	2.2	0.7	2.6		0.6	0.5	0.2	0.2		2.3	0.6	0.6	4.2			0.6				6.7	2.8				1.5	0.2	0.4	2.9	0.9
Orthophosphate-P (mg/L)	0.98	0.72	0.23	0.85		0.20	0.16	0.07	0.07		0.75	0.20	0.20	1.37			0.20				2.18	0.91				0.49	0.07	0.13	0.95	0.29
Surfactants (mg/l MBAS)Field test	0.50	0.63	0.13	0.50		0.50	0.50	0.25	0.38		0.75	0.13	0.50	0.50			0.25				0.75	0.75				0.38	0.50	0.25	0.75	0.13
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd										nd			
Oil and Grease (mg/L)						nd		nd					nd				nd										nd			
Total Hardness (mg/L)						765		629					479				436										606			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						0.012		0.005					nd				nd										nd			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						nd		nd					nd				nd										nd			
Diazinon (µg/L)						nd		nd					nd				nd										nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						50,000		13,000					50,000				23,000										30,000			
Fecal Coliform (MPN/100mL)						24,000		13,000					5,000				23,000										500			
Enterococcus (MPN/100mL)						8,000		5,000					2,300				24,000										230			
2008 Round One																														
Temp.℃	24.8	21.8	19.9	20.4		19.5	21.3	26.2	21.4		18.9	23.7	22.7	23.3			18.6				21.2	21.2				19.2	21.5	23.4	20.5	15.8
pH	8.3	7.4	8.2	8.1		8.2	7.8	9.1	7.0		8.2	7.5	7.8	8.0			8.2				7.6	8.2				7.8	8.4	7.8	7.5	7.7
Conductivity (mS/cm)	1.94	2.66	1.38	2.36		4.29	5.20	2.38	2.21		1.95	1.67	1.26	1.89			1.63				1.37	1.65				1.45	2.89	3.03	1.57	1.20
Turbidity (NTU)	1.14	0.01	0.01	0.27		0.01	0.01	0.52	0.01		0.01	1.41	0.74	0.87			0.01				1.04	1.35				0.01	0.20	0.01	0.01	0.04
Ammonia-N (mg/L)	0.1	1.4	nd	0.3		0.2	0.1	0.4	0.1		0.2	0.1	0.1	0.2			nd				0.1	0.1				nd	0.2	0.2	0.1	nd
Surfactants (mg/l MBAS)	0.38	0.50	0.13	0.75		0.50	0.50	0.38	0.25		0.63	0.38	0.13	0.50			0.25				0.38	0.50				0.75	0.50	0.50	0.50	0.38
Nitrate-N (mg/L)	1.0	3.5	1.4	1.8		9.1	8.7	2.2	8.0		17.9	14.7	0.8	22.6			15.4				2.0	9.0				0.6	0.7	0.7	3.5	3.1
Orthophosphate-P (mg/L)	0.30	0.16	0.07	0.40		0.13	0.20	0.07	0.50		0.20	0.20	0.20	0.30			0.10				0.13	0.50				0.30	nd	0.07	0.13	0.20
Oil and Grease (mg/L)						nd		nd					nd				nd										nd			
Total Hardness (mg/L)						822		617					408				557										748			
Cadmium-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						0.008		0.005					nd				nd										nd			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						nd		nd					nd				nd										nd			
Diazinon (µg/L)						nd		nd					nd				nd										nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						600		11,000					13,000				7,000										1,300			
Fecal Coliform (MPN/100mL)						400		3,000					300				500										130			
Enterococcus (MPN/100mL)						800		8,000					500				480										3,000			

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2008 Round Two																														
Temp.℃	23.4	24.8	33.3	26.4		27.8	27.3	27.4	25.5		27.1	27.8	29.0	29.5			25.3				23.8	27.4				27.2	33.2	27.0	25.3	28.1
pH	8.3	7.6	9.4	8.4		8.4	7.9	8.3	7.8		7.8	7.8	8.9	7.7			8.5				8.3	8.0				9.3	9.2	7.8	7.6	7.5
Conductivity (mS/cm)	1.76	2.88	2.11	2.15		2.79	4.84	2.16	2.09		1.23	1.58	1.23	2.09			1.73				1.26	1.44				1.56	3.05	3.38	1.42	1.37
Turbidity (NTU)	190.00	10.63	11.58	0.01		0.82	0.01	1.69	0.01		3.24	0.01	0.90	239.00			0.01				1.29	6.80				11.74	0.50	3.34	1.24	3.85
Ammonia-N (mg/L)	0.179	0.424	0.446	0.244		0.222	0.303	0.311	0.245		0.554	0.191	0.236	1.760			0.212				0.026	0.216				0.523	0.279	0.278	0.116	0.348
Surfactants (mg/l MBAS)	0.13	0.25	0.25	0.13		0.25	0.38	0.25	0.13		0.13	0.13	0.25	0.75			0.25				0.13	0.38				0.25	0.25	0.25	0.25	0.25
Nitrate-N (mg/L)	2.32	1.40	1.13	3.02		4.00	7.18	2.46	4.08		0.74	12.06	0.64	0.95			9.50				1.89	1.06				1.20	0.72	0.73	1.55	1.61
Orthophosphate-P (mg/L)	1.172	0.315	0.329	0.510		0.384	0.295	0.056	nd		0.005	0.165	0.053	2.925			0.080				0.562	0.401				0.474	0.011	0.177	0.180	0.377
Oil and Grease (mg/L)						nd		nd					nd				nd										nd			
Total Hardness (mg/L)						614		590					372				587										749			
Cadmiu-diss (mg/L)						nd		nd					nd				nd										nd			
Copper-diss (mg/L)						0.01600		0.00673					0.00319				0.00413										0.00737			
Lead-diss (mg/L)						nd		nd					nd				nd										nd			
Zinc-diss (mg/L)						0.0188		0.0172					0.0173				0.0226										0.0135			
Diazinon (µg/L)						nd		nd					nd				nd										nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd										nd			
Total Coliform (MPN/100mL)						140,000		240,000					5,000				14,000										800			
Fecal Coliform (MPN/100mL)						5,000		28,000					800				9,000										300			
Enterococcus (MPN/100mL)						13,000		160,000					20				14,000										500			

Appendix B

Photographs of Sampling Locations

Site A5c	
Site E5g	
Site G30c	

Site H5e	
Site J25c	
Site J25c2	

Site J30d	
Site K15j2	
Site O40b	

Site P15b	
Site P20f	
Site Q5l	

Site RCP1	
Site RCR3	
Site S5c	

Site S15h	
Site T5e	
Site U10a	

Site V40d	
Site V45k	
Site Y15e	

Site Z15b	

Appendix C

Laboratory Analytical Reports

Round One

EnviroMatrix Analytical, Inc.

29 May 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0905606

Project Name: Santee Dry Weather
Project Desc./#:200919W-1 Round One

Enclosed are the results of analyses for samples received by the laboratory on 05/21/09 13:29. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
RCP1	0905606-01	Water	05/21/09 10:45	05/21/09 13:29
P2of	0905606-02	Water	05/21/09 11:40	05/21/09 13:29
J25C	0905606-03	Water	05/21/09 12:15	05/21/09 13:29

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

Metals (Dissolved) by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (0905606-01) Water Sampled: 05/21/09 10:45 Received: 05/21/09 13:29									
Cadmium	ND	0.005	mg/l	1	9052308	05/23/09	05/23/09	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
P2of (0905606-02) Water Sampled: 05/21/09 11:40 Received: 05/21/09 13:29									
Copper	ND	0.005	mg/l	1	9052308	05/23/09	05/23/09	EPA 6020	
Cadmium	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
J25C (0905606-03) Water Sampled: 05/21/09 12:15 Received: 05/21/09 13:29									
Zinc	ND	0.020	mg/l	1	9052308	05/23/09	05/23/09	EPA 6020	
Lead	ND	0.005	"	"	"	"	"	"	
Copper	**0.006**	0.005	"	"	"	"	"	"	
Cadmium	ND	0.005	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (0905606-01) Water Sampled: 05/21/09 10:45 Received: 05/21/09 13:29									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9052205	05/21/09	05/29/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*92 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*80 %*	*60-130*		"	"	"	"	
P2of (0905606-02) Water Sampled: 05/21/09 11:40 Received: 05/21/09 13:29									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9052205	05/21/09	05/29/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*88 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*92 %*	*60-130*		"	"	"	"	
J25C (0905606-03) Water Sampled: 05/21/09 12:15 Received: 05/21/09 13:29									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9052205	05/21/09	05/29/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*76 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*60 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (0905606-01) Water Sampled: 05/21/09 10:45 Received: 05/21/09 13:29									
Hardness (Total)	**520**	100	mg CaCO3/L	10	9052651	05/26/09	05/27/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9052746	05/27/09	05/27/09	EPA 1664A	
P2of (0905606-02) Water Sampled: 05/21/09 11:40 Received: 05/21/09 13:29									
Hardness (Total)	**356**	100	mg CaCO3/L	10	9052651	05/26/09	05/28/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9052746	05/27/09	05/27/09	EPA 1664A	
J25C (0905606-03) Water Sampled: 05/21/09 12:15 Received: 05/21/09 13:29									
Hardness (Total)	**780**	100	mg CaCO3/L	10	9052651	05/26/09	05/28/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9052746	05/27/09	05/27/09	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (0905606-01) Water Sampled: 05/21/09 10:45 Received: 05/21/09 13:29									
Total Coliforms	**8000**	200	MPN/100 ml	100	9052622	05/21/09	05/25/09	SM 9221 B, E	
Fecal Coliforms	**70**	20	"	10	"	"	05/24/09	"	
Enterococcus	**2300**	200	"	100	9052623	"	05/25/09	SM 9230 A, B	
P2of (0905606-02) Water Sampled: 05/21/09 11:40 Received: 05/21/09 13:29									
Total Coliforms	**11000**	200	MPN/100 ml	100	9052622	05/21/09	05/25/09	SM 9221 B, E	
Fecal Coliforms	**400**	20	"	10	"	"	05/24/09	"	
Enterococcus	**500**	20	"	"	9052623	"	05/25/09	SM 9230 A, B	
J25C (0905606-03) Water Sampled: 05/21/09 12:15 Received: 05/21/09 13:29									
Total Coliforms	**8000**	200	MPN/100 ml	100	9052622	05/21/09	05/25/09	SM 9221 B, E	
Fecal Coliforms	**170**	20	"	10	"	"	05/24/09	"	
Enterococcus	**1300**	20	"	"	9052623	"	05/25/09	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052308										
Blank (9052308-BLK1)				Prepared & Analyzed: 05/23/09						
Cadmium	ND	0.005	mg/l							
Copper	ND	0.005	"							
Lead	ND	0.005	"							
Zinc	ND	0.020	"							
LCS (9052308-BS1)				Prepared & Analyzed: 05/23/09						
Zinc	0.050	0.020	mg/l	0.0500		101	75-125			
Lead	0.052	0.005	"	0.0500		104	75-125			
Copper	0.051	0.005	"	0.0500		103	75-125			
Cadmium	0.051	0.005	"	0.0500		101	75-125			
LCS Dup (9052308-BSD1)				Prepared & Analyzed: 05/23/09						
Zinc	0.051	0.020	mg/l	0.0500		101	75-125	0.8	20	
Cadmium	0.051	0.005	"	0.0500		102	75-125	0.7	20	
Lead	0.049	0.005	"	0.0500		99	75-125	5	20	
Copper	0.052	0.005	"	0.0500		103	75-125	0.5	20	
Duplicate (9052308-DUP1)		**Source: 0905606-01**		Prepared & Analyzed: 05/23/09						
Copper	0.002	0.005	mg/l		0.002			6	20	
Cadmium	ND	0.005	"		ND				20	
Lead	ND	0.005	"		ND				20	
Zinc	ND	0.020	"		ND				20	
Matrix Spike (9052308-MS1)		**Source: 0905606-01**		Prepared & Analyzed: 05/23/09						
Zinc	0.052	0.020	mg/l	0.0500	ND	104	75-125			
Cadmium	0.048	0.005	"	0.0500	ND	96	75-125			
Copper	0.048	0.005	"	0.0500	0.002	93	75-125			
Lead	0.053	0.005	"	0.0500	ND	105	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052308										
Matrix Spike Dup (9052308-MSD1)		**Source: 0905606-01**		Prepared & Analyzed: 05/23/09						
Lead	0.052	0.005	mg/l	0.0500	ND	104	75-125	2	20	
Zinc	0.052	0.020	"	0.0500	ND	104	75-125	0.06	20	
Cadmium	0.048	0.005	"	0.0500	ND	96	75-125	0.7	20	
Copper	0.048	0.005	"	0.0500	0.002	93	75-125	0.7	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052205										
Blank (9052205-BLK1)				Prepared: 05/21/09 Analyzed: 05/29/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.210*		*"*	*0.250*		*84*	*60-130*			
Surrogate: Tribuytlphosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
LCS (9052205-BS1)				Prepared: 05/21/09 Analyzed: 05/29/09						
Bolstar	0.38	0.10	ug/l	0.500		76	60-130			
Diazinon	0.46	0.05	"	0.500		92	60-130			
Ethoprop	0.39	0.05	"	0.500		78	60-130			
Mevinphos	0.38	0.25	"	0.500		76	60-130			
Methyl parathion	0.37	0.10	"	0.500		74	60-130			
Phorate	0.35	0.05	"	0.500		70	60-130			
Ronnel	0.44	0.25	"	0.500		88	60-130			
Trichlorinate	0.44	0.05	"	0.500		88	60-130			
Surrogate: Triphenyl phosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			
Surrogate: Tribuytlphosphate	*0.200*		*"*	*0.250*		*80*	*60-130*			
LCS Dup (9052205-BSD1)				Prepared: 05/21/09 Analyzed: 05/29/09						
Bolstar	0.37	0.10	ug/l	0.500		74	60-130	3	30	
Diazinon	0.45	0.05	"	0.500		90	60-130	2	30	
Ethoprop	0.38	0.05	"	0.500		76	60-130	3	30	
Mevinphos	0.39	0.25	"	0.500		78	60-130	3	30	
Methyl parathion	0.35	0.10	"	0.500		70	60-130	6	30	
Phorate	0.37	0.05	"	0.500		74	60-130	6	30	
Ronnel	0.42	0.25	"	0.500		84	60-130	5	30	
Trichlorinate	0.42	0.05	"	0.500		84	60-130	5	30	
Surrogate: Triphenyl phosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			
Surrogate: Tribuytlphosphate	*0.180*		*"*	*0.250*		*72*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905606

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052651										
Blank (9052651-BLK1)				Prepared: 05/26/09	Analyzed: 05/27/09					
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (9052651-DUP1)		**Source: 0905606-01**		Prepared: 05/26/09	Analyzed: 05/27/09					
Hardness (Total)	525	100	mg CaCO3/L		520			1	20	
Batch 9052746										
Blank (9052746-BLK1)				Prepared & Analyzed: 05/27/09						
Oil & Grease	ND	5	mg/l							
LCS (9052746-BS1)				Prepared & Analyzed: 05/27/09						
Oil & Grease	33	5	mg/l	40.0		84	78-114			
LCS Dup (9052746-BSD1)				Prepared & Analyzed: 05/27/09						
Oil & Grease	32	5	mg/l	40.0		80	78-114	4	20	
Matrix Spike (9052746-MS1)		**Source: 0905606-01**		Prepared & Analyzed: 05/27/09						
Oil & Grease	34	5	mg/l	40.0	ND	84	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 09 05606

Client: D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr / Annika
Address: 7220 Trade street, suite 119
San Diego, CA 92121
Phone: (858) 586-6600 Fax: (858) 586-6644
Email:
Billing Address: Same
Santee Dry weather Round One
Project ID:
Project #: 200919W-1 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 ☒ 413.2 ☒ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	(8141) (Organophosphorus Pesticides) Dir/Chlor	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn ☒ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total Hardness				
1	RCP1	5/21/09	10:45	water	3/4 G/p	X						X						X	X		X		X				
2	P20F	"	11:40	"	2/4 G/p	X						X						X	X		X		X				
3	J25C	"	12:15	"	2/4 G/p	X						X						X	X		X		X				
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	5-21-09 1315	Signature:
Print: Manouchehr Dadkhah		Print: Danny Huerta
Company: D-Max Engr.		Company: EMA
Signature:	5-21-09 1329	Signature:
Print: Danny Huerta		Print: Sean Flum
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

6° on Ice

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

01 June 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0905626

Project Name: Santee Dry Weather
Project Desc./#:200919W-1 Round One

Enclosed are the results of analyses for samples received by the laboratory on 05/22/09 13:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J30d	0905626-01	Water	05/22/09 09:50	05/22/09 13:20
V40d	0905626-02	Water	05/22/09 11:10	05/22/09 13:20

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Metals (Dissolved) by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
J30d (0905626-01) Water Sampled: 05/22/09 09:50 Received: 05/22/09 13:20									
Zinc	ND	0.020	mg/l	1	9052308	05/23/09	05/23/09	EPA 6020	
Cadmium	ND	0.005	"	"	"	"	"	"	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
V40d (0905626-02) Water Sampled: 05/22/09 11:10 Received: 05/22/09 13:20									
Zinc	ND	0.020	mg/l	1	9052308	05/23/09	05/23/09	EPA 6020	
Lead	ND	0.005	"	"	"	"	"	"	
Copper	ND	0.005	"	"	"	"	"	"	
Cadmium	ND	0.005	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
J30d (0905626-01) Water Sampled: 05/22/09 09:50 Received: 05/22/09 13:20									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9052648	05/26/09	05/29/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*88 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*76 %*	*60-130*		"	"	"	"	
V40d (0905626-02) Water Sampled: 05/22/09 11:10 Received: 05/22/09 13:20									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9052648	05/26/09	05/29/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*88 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*84 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
J30d (0905626-01) Water Sampled: 05/22/09 09:50 Received: 05/22/09 13:20									
Hardness (Total)	**685**	100	mg CaCO3/L	10	9052651	05/26/09	05/28/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9052746	05/27/09	05/27/09	EPA 1664A	
V40d (0905626-02) Water Sampled: 05/22/09 11:10 Received: 05/22/09 13:20									
Hardness (Total)	**1020**	100	mg CaCO3/L	10	9052651	05/26/09	05/28/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9052746	05/27/09	05/27/09	EPA 1664A	

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Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
J30d (0905626-01) Water Sampled: 05/22/09 09:50 Received: 05/22/09 13:20									
Total Coliforms	**11000**	200	MPN/100 ml	100	9052853	05/22/09	05/26/09	SM 9221 B, E	
Fecal Coliforms	**3000**	200	"	"	"	"	05/25/09	"	
Enterococcus	**3000**	200	"	"	9052854	"	05/26/09	SM 9230 A, B	
V40d (0905626-02) Water Sampled: 05/22/09 11:10 Received: 05/22/09 13:20									
Total Coliforms	**1700**	20	MPN/100 ml	10	9052853	05/22/09	05/26/09	SM 9221 B, E	
Fecal Coliforms	**500**	20	"	"	"	"	05/25/09	"	
Enterococcus	**300**	20	"	"	9052854	"	05/26/09	SM 9230 A, B	

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Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052308										
Blank (9052308-BLK1)				Prepared & Analyzed: 05/23/09						
Copper	ND	0.005	mg/l							
Lead	ND	0.005	"							
Zinc	ND	0.020	"							
Cadmium	ND	0.005	"							
LCS (9052308-BS1)				Prepared & Analyzed: 05/23/09						
Cadmium	0.051	0.005	mg/l	0.0500		101	75-125			
Copper	0.051	0.005	"	0.0500		103	75-125			
Lead	0.052	0.005	"	0.0500		104	75-125			
Zinc	0.050	0.020	"	0.0500		101	75-125			
LCS Dup (9052308-BSD1)				Prepared & Analyzed: 05/23/09						
Cadmium	0.051	0.005	mg/l	0.0500		102	75-125	0.7	20	
Zinc	0.051	0.020	"	0.0500		101	75-125	0.8	20	
Copper	0.052	0.005	"	0.0500		103	75-125	0.5	20	
Lead	0.049	0.005	"	0.0500		99	75-125	5	20	
Duplicate (9052308-DUP1)		**Source: 0905606-01**		Prepared & Analyzed: 05/23/09						
Zinc	ND	0.020	mg/l		ND				20	
Cadmium	ND	0.005	"		ND				20	
Copper	0.002	0.005	"		0.002			6	20	
Lead	ND	0.005	"		ND				20	
Matrix Spike (9052308-MS1)		**Source: 0905606-01**		Prepared & Analyzed: 05/23/09						
Zinc	0.052	0.020	mg/l	0.0500	ND	104	75-125			
Lead	0.053	0.005	"	0.0500	ND	105	75-125			
Cadmium	0.048	0.005	"	0.0500	ND	96	75-125			
Copper	0.048	0.005	"	0.0500	0.002	93	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052308										
Matrix Spike Dup (9052308-MSD1)		**Source: 0905606-01**		Prepared & Analyzed: 05/23/09						
Cadmium	0.048	0.005	mg/l	0.0500	ND	96	75-125	0.7	20	
Copper	0.048	0.005	"	0.0500	0.002	93	75-125	0.7	20	
Lead	0.052	0.005	"	0.0500	ND	104	75-125	2	20	
Zinc	0.052	0.020	"	0.0500	ND	104	75-125	0.06	20	

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Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052648										
Blank (9052648-BLK1)				Prepared: 05/26/09 Analyzed: 05/28/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			
Surrogate: Tribuytlphosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
LCS (9052648-BS1)				Prepared: 05/26/09 Analyzed: 05/28/09						
Bolstar	0.39	0.10	ug/l	0.500		78	60-130			
Diazinon	0.44	0.05	"	0.500		88	60-130			
Ethoprop	0.42	0.05	"	0.500		84	60-130			
Mevinphos	0.42	0.25	"	0.500		84	60-130			
Methyl parathion	0.43	0.10	"	0.500		86	60-130			
Phorate	0.40	0.05	"	0.500		80	60-130			
Ronnel	0.45	0.25	"	0.500		90	60-130			
Trichlorinate	0.43	0.05	"	0.500		86	60-130			
Surrogate: Triphenyl phosphate	*0.270*		*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS Dup (9052648-BSD1)				Prepared: 05/26/09 Analyzed: 05/28/09						
Bolstar	0.33	0.10	ug/l	0.500		66	60-130	17	30	
Diazinon	0.43	0.05	"	0.500		86	60-130	2	30	
Ethoprop	0.34	0.05	"	0.500		68	60-130	21	30	
Mevinphos	0.41	0.25	"	0.500		82	60-130	2	30	
Methyl parathion	0.40	0.10	"	0.500		80	60-130	7	30	
Phorate	0.37	0.05	"	0.500		74	60-130	8	30	
Ronnel	0.42	0.25	"	0.500		84	60-130	7	30	
Trichlorinate	0.40	0.05	"	0.500		80	60-130	7	30	
Surrogate: Triphenyl phosphate	*0.270*		*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052648										
Duplicate (9052648-DUP1)		**Source: 0904552-03**		Prepared: 05/26/09	Analyzed: 05/28/09					
Bolstar	ND	0.10	ug/l		ND				30	
Diazinon	18.0	0.25	"		19.1			6	30	
Ethoprop	16.8	0.25	"		17.2			2	30	
Mevinphos	ND	0.25	"		ND				30	
Methyl parathion	10.5	0.50	"		11.4			8	30	
Phorate	5.47	0.05	"		4.70			15	30	
Ronnel	3.64	0.25	"		3.30			10	30	
Trichlorinate	ND	0.05	"		ND				30	
Surrogate: Triphenyl phosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			
Surrogate: Tribuytlphosphate	*0.360*		*"*	*0.250*		*144*	*60-130*			*S-02, S-04*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905626

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052651										
Blank (9052651-BLK1)				Prepared: 05/26/09	Analyzed: 05/27/09					
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (9052651-DUP1)		**Source: 0905606-01**		Prepared: 05/26/09	Analyzed: 05/27/09					
Hardness (Total)	525	100	mg CaCO3/L		520			1	20	
Batch 9052746										
Blank (9052746-BLK1)				Prepared & Analyzed: 05/27/09						
Oil & Grease	ND	5	mg/l							
LCS (9052746-BS1)				Prepared & Analyzed: 05/27/09						
Oil & Grease	33	5	mg/l	40.0		84	78-114			
LCS Dup (9052746-BSD1)				Prepared & Analyzed: 05/27/09						
Oil & Grease	32	5	mg/l	40.0		80	78-114	4	20	
Matrix Spike (9052746-MS1)		**Source: 0905606-01**		Prepared & Analyzed: 05/27/09						
Oil & Grease	34	5	mg/l	40.0	ND	84	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0905626

Client: D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr / Annika
Address: 7220 Trade Street, Suite 919
San Diego, CA 92121
Phone (858) 586-6600 Fax: (858) 586-6688
Email:
Billing Address: Same
Santee Dry Weather Round One
Project ID:
Project #: 200919W-1 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 ☒ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	(8141) (Organophosphorus Pesticides) Dia/Chlor	TBT (Organotin Compounds)	□ pH □ EC □ TSS □ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	(Cd) Cr (Cu) (Pb) Ni Ag (Zn) ☒ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total Hardness				
1	J30d	5/22/09	9:50	Water	2/4 G/p	X						X						X	X		X		X				
2	V40d	"	11:10	"	" "	X						X						X	X		X		X				
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	5/22/09 1305	Signature:
Print: Manouchehr Dadkhah		Print: Jenny Huerta
Company: D-Max Engr		Company: EMA
Signature:	5/22/09 1320	Signature:
Print: Jenny Huerta		Print: Louis Luce
Company: EMA		Company: Emp
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

8° on Ice

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.
NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

Round Two

EnviroMatrix Analytical, Inc.

14 September 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0909098

Project Name: Santee 2009 Dry Weather Round 2 200919W-5

Enclosed are the results of analyses for samples received by the laboratory on 09/03/09 14:57. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Site-J25c	0909098-01	Stormwater	09/03/09 11:10	09/03/09 14:57
Site-RCP1	0909098-02	Stormwater	09/03/09 12:00	09/03/09 14:57
Site-V40d	0909098-03	Stormwater	09/03/09 12:40	09/03/09 14:57

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Site-J25c (0909098-01) Stormwater Sampled: 09/03/09 11:10 Received: 09/03/09 14:57									
Cadmium	ND	0.001	mg/l	1	9091046	09/10/09	09/10/09	EPA 200.8	
Copper	**0.021**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
Site-RCP1 (0909098-02) Stormwater Sampled: 09/03/09 12:00 Received: 09/03/09 14:57									
Cadmium	ND	0.001	mg/l	1	9091046	09/10/09	09/10/09	EPA 200.8	
Copper	**0.002**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
Site-V40d (0909098-03) Stormwater Sampled: 09/03/09 12:40 Received: 09/03/09 14:57									
Cadmium	ND	0.001	mg/l	1	9091046	09/10/09	09/10/09	EPA 200.8	
Copper	**0.005**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Site-J25c (0909098-01) Stormwater Sampled: 09/03/09 11:10 Received: 09/03/09 14:57									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9090802	09/08/09	09/09/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*104 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*80 %*	*60-130*		"	"	"	"	
Site-RCP1 (0909098-02) Stormwater Sampled: 09/03/09 12:00 Received: 09/03/09 14:57									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9090802	09/08/09	09/09/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*96 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*96 %*	*60-130*		"	"	"	"	
Site-V40d (0909098-03) Stormwater Sampled: 09/03/09 12:40 Received: 09/03/09 14:57									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9090802	09/08/09	09/09/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*112 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*92 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Site-J25c (0909098-01) Stormwater Sampled: 09/03/09 11:10 Received: 09/03/09 14:57									
Hardness (Total)	**931**	100	mg CaCO3/L	10	9090834	09/08/09	09/10/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9090831	09/08/09	09/08/09	EPA 1664A	
Site-RCP1 (0909098-02) Stormwater Sampled: 09/03/09 12:00 Received: 09/03/09 14:57									
Hardness (Total)	**553**	100	mg CaCO3/L	10	9090834	09/08/09	09/10/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9090831	09/08/09	09/08/09	EPA 1664A	
Site-V40d (0909098-03) Stormwater Sampled: 09/03/09 12:40 Received: 09/03/09 14:57									
Hardness (Total)	**773**	100	mg CaCO3/L	10	9090834	09/08/09	09/10/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9090831	09/08/09	09/08/09	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Site-J25c (0909098-01) Stormwater Sampled: 09/03/09 11:10 Received: 09/03/09 14:57									
Total Coliforms	**13000**	200	MPN/100 ml	100	9090417	09/03/09	09/07/09	SM 9221 B, E	
Fecal Coliforms	**13000**	200	"	"	"	"	09/06/09	"	
Enterococcus	**5000**	200	"	"	9090418	"	09/07/09	SM 9230 A, B	
Site-RCP1 (0909098-02) Stormwater Sampled: 09/03/09 12:00 Received: 09/03/09 14:57									
Total Coliforms	**13000**	200	MPN/100 ml	100	9090417	09/03/09	09/07/09	SM 9221 B, E	
Fecal Coliforms	**8000**	200	"	"	"	"	09/06/09	"	
Enterococcus	**800**	20	"	10	9090418	"	09/07/09	SM 9230 A, B	
Site-V40d (0909098-03) Stormwater Sampled: 09/03/09 12:40 Received: 09/03/09 14:57									
Total Coliforms	**2300**	200	MPN/100 ml	100	9090417	09/03/09	09/07/09	SM 9221 B, E	
Fecal Coliforms	**300**	20	"	10	"	"	09/06/09	"	
Enterococcus	**130**	20	"	"	9090418	"	09/07/09	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9091046										
Blank (9091046-BLK1)				Prepared & Analyzed: 09/10/09						
Copper	ND	0.001	mg/l							
Cadmium	ND	0.001	"							
Zinc	ND	0.020	"							
Lead	ND	0.001	"							
LCS (9091046-BS1)				Prepared & Analyzed: 09/10/09						
Cadmium	0.051	0.001	mg/l	0.0500		103	85-115			
Copper	0.049	0.001	"	0.0500		97	85-115			
Lead	0.050	0.001	"	0.0500		100	75-125			
Zinc	0.051	0.020	"	0.0500		102	85-115			
LCS Dup (9091046-BSD1)				Prepared & Analyzed: 09/10/09						
Copper	0.049	0.001	mg/l	0.0500		97	85-115	0.2	20	
Lead	0.050	0.001	"	0.0500		101	75-125	0.2	20	
Zinc	0.051	0.020	"	0.0500		101	85-115	0.1	20	
Cadmium	0.051	0.001	"	0.0500		103	85-115	0.04	20	
Duplicate (9091046-DUP1)		**Source: 0909098-01**		Prepared & Analyzed: 09/10/09						
Zinc	0.003	0.020	mg/l		0.003			0.6	20	
Lead	ND	0.001	"		ND				20	
Cadmium	ND	0.001	"		ND				20	
Copper	0.021	0.001	"		0.021			0.7	20	
Matrix Spike (9091046-MS1)		**Source: 0909098-01**		Prepared & Analyzed: 09/10/09						
Zinc	0.044	0.020	mg/l	0.0500	0.003	81	70-130			
Lead	0.052	0.001	"	0.0500	ND	105	75-125			
Cadmium	0.042	0.001	"	0.0500	ND	85	70-130			
Copper	0.059	0.001	"	0.0500	0.021	76	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9091046										
Matrix Spike Dup (9091046-MSD1)		**Source: 0909098-01**		Prepared & Analyzed: 09/10/09						
Copper	0.061	0.001	mg/l	0.0500	0.021	81	70-130	4	20	
Lead	0.048	0.001	"	0.0500	ND	96	75-125	8	20	
Zinc	0.045	0.020	"	0.0500	0.003	84	70-130	3	20	
Cadmium	0.044	0.001	"	0.0500	ND	88	70-130	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090802										
Blank (9090802-BLK1)				Prepared: 09/08/09 Analyzed: 09/09/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.230*		*"*	*0.250*		*92*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS (9090802-BS1)				Prepared: 09/08/09 Analyzed: 09/09/09						
Bolstar	0.38	0.10	ug/l	0.500		76	60-130			
Diazinon	0.39	0.05	"	0.500		78	60-130			
Ethoprop	0.41	0.05	"	0.500		82	60-130			
Mevinphos	0.42	0.25	"	0.500		84	60-130			
Methyl parathion	0.38	0.10	"	0.500		76	60-130			
Phorate	0.38	0.05	"	0.500		76	60-130			
Ronnel	0.41	0.25	"	0.500		82	60-130			
Trichlorinate	0.42	0.05	"	0.500		84	60-130			
Surrogate: Triphenyl phosphate	*0.280*		*"*	*0.250*		*112*	*60-130*			
Surrogate: Tribuytlphosphate	*0.280*		*"*	*0.250*		*112*	*60-130*			
LCS Dup (9090802-BSD1)				Prepared: 09/08/09 Analyzed: 09/09/09						
Bolstar	0.34	0.10	ug/l	0.500		68	60-130	11	30	
Diazinon	0.38	0.05	"	0.500		76	60-130	3	30	
Ethoprop	0.38	0.05	"	0.500		76	60-130	8	30	
Mevinphos	0.38	0.25	"	0.500		76	60-130	10	30	
Methyl parathion	0.36	0.10	"	0.500		72	60-130	5	30	
Phorate	0.35	0.05	"	0.500		70	60-130	8	30	
Ronnel	0.38	0.25	"	0.500		76	60-130	8	30	
Trichlorinate	0.38	0.05	"	0.500		76	60-130	10	30	
Surrogate: Triphenyl phosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			
Surrogate: Tribuytlphosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee 2009 Dry Weather Round 2 200919W-5

EMA Log #: 0909098

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090831										
Blank (9090831-BLK1)				Prepared & Analyzed: 09/08/09						
Oil & Grease	ND	5	mg/l							
LCS (9090831-BS1)				Prepared & Analyzed: 09/08/09						
Oil & Grease	33	5	mg/l	40.0		83	78-114			
LCS Dup (9090831-BSD1)				Prepared & Analyzed: 09/08/09						
Oil & Grease	34	5	mg/l	40.0		84	78-114	0.9	20	
Matrix Spike (9090831-MS1)		**Source: 0909200-01**		Prepared & Analyzed: 09/09/09						
Oil & Grease	32	5	mg/l	40.0	ND	79	78-114			
Batch 9090834										
Blank (9090834-BLK1)				Prepared: 09/08/09 Analyzed: 09/10/09						
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (9090834-DUP1)		**Source: 0908793-01**		Prepared: 09/08/09 Analyzed: 09/10/09						
Hardness (Total)	515	100	mg CaCO3/L		547			6	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0909098

Client: D-Max Engineering
Attn: Arsalan Dad Khah
Samplers(s): JL/MD
Address: 7220 Trade Street Suite 119
San Diego CA 92121
Phone: 858-586-6660 Fax:
Email:
Billing Address: same

Project ID: Santee 2009 Dry Weather Round 2
Project #: 200919W-5 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease ☐ 413.1 ☐ 413.2 ☒ 1664	8015B (TPH) ☐ Gas ☐ Diesel ☐ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) ☐ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	☐ pH ☐ EC ☐ TSS ☐ TDS	☐ Nitrate ☐ Nitrite ☐ TKN ☐ NH3	CAC Title 22/CAM17 Metals ☐ TTLC ☐ STLC	TCLP (RCRA) ☐ Metals ☐ Organics	Cd Cr Cu (Pb) Ni Ag (Zn) ☒ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli ☐ P/A ☐ Enumeration	Enterococcus, ☒ MTF ☐ Enterolert	Heterotrophic Plate Count (HPC)	Total Hardness				
1	Site-J25L	9/3/09	11:10	SW	3P/2G	X						X						X	X		X		X				
2	Site-RCP1	↓	12:00	↓	↓	X						X						X	X		X		X				
3	Site-V40D	↓	12:40	↓	↓	X						X						X	X		X		X				
4																											
5																											
6																											
7																											
8																											
9																											
10																											

SEP 3'09 13:53

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid
Shipped By: ☐ Courier ☐ UPS ☐ FedEx ☐ USPS ☐ Client Drop Off ☐ Other
[1]**Turn-Around-Time:** ☐ Same Day ☐ 24 hr ☐ 48 hr ☐ 3 day ☐ 4 day ☒ 5 day ☐ STD (7 day)
[1]**Reporting Requirements:** ☐ Fax ☐ PDF ☐ Excel ☐ Geotracker/EDF ☐ Hard Copy ☐ EDT
[1]**Sample Disposal:** ☐ By Laboratory ☐ [2]Return to Client: P/U or Delivery ☐ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:_____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: [signature]	9/3/09 13:6	Signature: [signature]
Print: Joe Leonard		Print: Sean Flum
Company: D-Max		Company: EMA
Signature: [signature]	9/3/09 1332	Signature: [signature]
Print: Sean Flum		Print: Lance Lincoln
Company: EMA		Company: EMA
Signature:		Signature:
Print:		Print:
Company:		Company:

Project/Sample Comments:

T=4°C on ice

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.
NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

14 September 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0909127

Project Name: Santee Dry Weather
Project Desc./#:200919W-5 Round 2

Enclosed are the results of analyses for samples received by the laboratory on 09/04/09 12:31. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Site-P20f	0909127-01	Stormwater	09/04/09 10:40	09/04/09 12:31
Site-J30d	0909127-02	Stormwater	09/04/09 11:30	09/04/09 12:31

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Site-P20f (0909127-01) Stormwater Sampled: 09/04/09 10:40 Received: 09/04/09 12:31									
Cadmium	ND	0.001	mg/l	1	9091046	09/10/09	09/10/09	EPA 200.8	
Copper	**0.003**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
Site-J30d (0909127-02) Stormwater Sampled: 09/04/09 11:30 Received: 09/04/09 12:31									
Cadmium	ND	0.001	mg/l	1	9091046	09/10/09	09/10/09	EPA 200.8	
Copper	**0.004**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Site-P20f (0909127-01) Stormwater Sampled: 09/04/09 10:40 Received: 09/04/09 12:31									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9090802	09/08/09	09/09/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*100 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*100 %*	*60-130*		"	"	"	"	
Site-J30d (0909127-02) Stormwater Sampled: 09/04/09 11:30 Received: 09/04/09 12:31									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9090802	09/08/09	09/09/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*112 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*92 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Site-P20f (0909127-01) Stormwater Sampled: 09/04/09 10:40 Received: 09/04/09 12:31									
Hardness (Total)	**534**	100	mg CaCO3/L	10	9090834	09/08/09	09/10/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9090831	09/08/09	09/08/09	EPA 1664A	
Site-J30d (0909127-02) Stormwater Sampled: 09/04/09 11:30 Received: 09/04/09 12:31									
Hardness (Total)	**834**	100	mg CaCO3/L	10	9090834	09/08/09	09/10/09	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	9090831	09/08/09	09/08/09	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Site-P20f (0909127-01) Stormwater Sampled: 09/04/09 10:40 Received: 09/04/09 12:31									
Total Coliforms	**22000**	200	MPN/100 ml	100	9090944	09/04/09	09/08/09	SM 9221 B, E	
Fecal Coliforms	**17000**	200	"	"	"	"	09/07/09	"	
Enterococcus	**110**	20	"	10	9090945	"	09/08/09	SM 9230 A, B	
Site-J30d (0909127-02) Stormwater Sampled: 09/04/09 11:30 Received: 09/04/09 12:31									
Total Coliforms	**300000**	2000	MPN/100 ml	1000	9090944	09/04/09	09/08/09	SM 9221 B, E	
Fecal Coliforms	**90000**	200	"	100	"	"	09/07/09	"	
Enterococcus	**30000**	200	"	"	9090945	"	09/08/09	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9091046										
Blank (9091046-BLK1)				Prepared & Analyzed: 09/10/09						
Cadmium	ND	0.001	mg/l							
Copper	ND	0.001	"							
Zinc	ND	0.020	"							
Lead	ND	0.001	"							
LCS (9091046-BS1)				Prepared & Analyzed: 09/10/09						
Zinc	0.051	0.020	mg/l	0.0500		102	85-115			
Cadmium	0.051	0.001	"	0.0500		103	85-115			
Lead	0.050	0.001	"	0.0500		100	75-125			
Copper	0.049	0.001	"	0.0500		97	85-115			
LCS Dup (9091046-BSD1)				Prepared & Analyzed: 09/10/09						
Cadmium	0.051	0.001	mg/l	0.0500		103	85-115	0.04	20	
Copper	0.049	0.001	"	0.0500		97	85-115	0.2	20	
Lead	0.050	0.001	"	0.0500		101	75-125	0.2	20	
Zinc	0.051	0.020	"	0.0500		101	85-115	0.1	20	
Duplicate (9091046-DUP1)		**Source: 0909098-01**		Prepared & Analyzed: 09/10/09						
Copper	0.021	0.001	mg/l		0.021			0.7	20	
Cadmium	ND	0.001	"		ND				20	
Zinc	0.003	0.020	"		0.003			0.6	20	
Lead	ND	0.001	"		ND				20	
Matrix Spike (9091046-MS1)		**Source: 0909098-01**		Prepared & Analyzed: 09/10/09						
Cadmium	0.042	0.001	mg/l	0.0500	ND	85	70-130			
Copper	0.059	0.001	"	0.0500	0.021	76	70-130			
Lead	0.052	0.001	"	0.0500	ND	105	75-125			
Zinc	0.044	0.020	"	0.0500	0.003	81	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9091046										
Matrix Spike Dup (9091046-MSD1)		**Source: 0909098-01**		Prepared & Analyzed: 09/10/09						
Cadmium	0.044	0.001	mg/l	0.0500	ND	88	70-130	4	20	
Zinc	0.045	0.020	"	0.0500	0.003	84	70-130	3	20	
Lead	0.048	0.001	"	0.0500	ND	96	75-125	8	20	
Copper	0.061	0.001	"	0.0500	0.021	81	70-130	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090802										
Blank (9090802-BLK1)				Prepared: 09/08/09 Analyzed: 09/09/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.230*		*"*	*0.250*		*92*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS (9090802-BS1)				Prepared: 09/08/09 Analyzed: 09/09/09						
Bolstar	0.38	0.10	ug/l	0.500		76	60-130			
Diazinon	0.39	0.05	"	0.500		78	60-130			
Ethoprop	0.41	0.05	"	0.500		82	60-130			
Mevinphos	0.42	0.25	"	0.500		84	60-130			
Methyl parathion	0.38	0.10	"	0.500		76	60-130			
Phorate	0.38	0.05	"	0.500		76	60-130			
Ronnel	0.41	0.25	"	0.500		82	60-130			
Trichlorinate	0.42	0.05	"	0.500		84	60-130			
Surrogate: Triphenyl phosphate	*0.280*		*"*	*0.250*		*112*	*60-130*			
Surrogate: Tribuytlphosphate	*0.280*		*"*	*0.250*		*112*	*60-130*			
LCS Dup (9090802-BSD1)				Prepared: 09/08/09 Analyzed: 09/09/09						
Bolstar	0.34	0.10	ug/l	0.500		68	60-130	11	30	
Diazinon	0.38	0.05	"	0.500		76	60-130	3	30	
Ethoprop	0.38	0.05	"	0.500		76	60-130	8	30	
Mevinphos	0.38	0.25	"	0.500		76	60-130	10	30	
Methyl parathion	0.36	0.10	"	0.500		72	60-130	5	30	
Phorate	0.35	0.05	"	0.500		70	60-130	8	30	
Ronnel	0.38	0.25	"	0.500		76	60-130	8	30	
Trichlorinate	0.38	0.05	"	0.500		76	60-130	10	30	
Surrogate: Triphenyl phosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			
Surrogate: Tribuytlphosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909127

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090831										
Blank (9090831-BLK1)				Prepared & Analyzed: 09/08/09						
Oil & Grease	ND	5	mg/l							
LCS (9090831-BS1)				Prepared & Analyzed: 09/08/09						
Oil & Grease	33	5	mg/l	40.0		83	78-114			
LCS Dup (9090831-BSD1)				Prepared & Analyzed: 09/08/09						
Oil & Grease	34	5	mg/l	40.0		84	78-114	0.9	20	
Matrix Spike (9090831-MS1)		**Source: 0909200-01**		Prepared & Analyzed: 09/09/09						
Oil & Grease	32	5	mg/l	40.0	ND	79	78-114			
Batch 9090834										
Blank (9090834-BLK1)				Prepared: 09/08/09 Analyzed: 09/10/09						
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (9090834-DUP1)		**Source: 0908793-01**		Prepared: 09/08/09 Analyzed: 09/10/09						
Hardness (Total)	515	100	mg CaCO3/L		547			6	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0909177

Client: D-Max Engineering
Attn: Arsalan Dadkhah
Samplers(s): JL/MD
Address: 7220 Trade Street Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax:
Email:
Billing Address: same

Project ID: Santee 2009 Dry Weather Round 2
Project #: 200919W-5 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 ☒ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn ✓ Dissolved	Coliform, ✓ Total (MTF) ✓ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ✓ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total Hardness	SEP 4 '09 12:52			
1	Site-P20f	9/4/09	10:40	SW	2 G 4P	X						X						X	X		X	X					
2	Site-J30d	↓	11:30	SW	2 G 4P	X						X						X	X		X	X					
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:_____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature [signature]	9/4/09 1215	Signature [signature]
Print Joe Leonard		Print Louis Luna
Company: D-Max		Company: EMA
Signature [signature]	9-4-09 12:31	Signature
Print Louis Luna		Print
Company: EMA		Company:
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: 3°C on ice

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

21 September 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0909460

Project Name: Santee Dry Weather
Project Desc./#: 200919W-6 Round 2 Follow-Up

Enclosed are the results of analyses for samples received by the laboratory on 09/15/09 16:16. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909460

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Site-J30d	0909460-01	Stormwater	09/15/09 14:45	09/15/09 16:16
Site-J30d-1	0909460-02	Stormwater	09/15/09 15:05	09/15/09 16:16
Site-J30d-2	0909460-03	Stormwater	09/15/09 15:20	09/15/09 16:16
Site-J30d-3	0909460-04	Stormwater	09/15/09 15:35	09/15/09 16:16

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909460

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Date Prepared Date Analyzed	Method	Notes
Site-J30d (0909460-01) Stormwater Sampled: 09/15/09 14:45 Received: 09/15/09 16:16								
Total Coliforms	**173000**	100	MPN/100 ml	100	9091627	09/15/09 17:30 09/16/09 17:35	SM9223	
E. Coli	**1020**	10	"	10	"	09/15/09 17:30 09/16/09 17:35	"	
Enterococcus	**1414**	10	"	"	9091628	09/15/09 17:30 09/16/09 17:35	Idexx	
Site-J30d-1 (0909460-02) Stormwater Sampled: 09/15/09 15:05 Received: 09/15/09 16:16								
Total Coliforms	**24200**	10	MPN/100 ml	10	9091627	09/15/09 17:30 09/16/09 17:35	SM9223	
E. Coli	**355**	10	"	"	"	09/15/09 17:30 09/16/09 17:35	"	
Enterococcus	**404**	10	"	"	9091628	09/15/09 17:30 09/16/09 17:35	Idexx	
Site-J30d-2 (0909460-03) Stormwater Sampled: 09/15/09 15:20 Received: 09/15/09 16:16								
Total Coliforms	**15500**	10	MPN/100 ml	10	9091627	09/15/09 17:30 09/16/09 17:35	SM9223	
E. Coli	**30**	10	"	"	"	09/15/09 17:30 09/16/09 17:35	"	
Enterococcus	**355**	10	"	"	9091628	09/15/09 17:30 09/16/09 17:35	Idexx	
Site-J30d-3 (0909460-04) Stormwater Sampled: 09/15/09 15:35 Received: 09/15/09 16:16								
Total Coliforms	**54800**	100	MPN/100 ml	100	9091627	09/15/09 17:30 09/16/09 17:35	SM9223	
E. Coli	**464**	10	"	10	"	09/15/09 17:30 09/16/09 17:35	"	
Enterococcus	**785**	10	"	"	9091628	09/15/09 17:30 09/16/09 17:35	Idexx	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909460

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0909460

Client: D-Max Engineering
Attn: Arsalan Badkhah
Samplers(s): JL/MD
Address: 7220 Trade Street Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax:
Email:
Billing Address: Same

Project ID: Santee DW 2009 Round 2 Follow-Up
Project #: 200919W-6 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A ✓ Enumeration	Enterococcus, □ MTF ✓ Enterolert	Heterotrophic Plate Count (HPC)					
1	Site-J30d	9/15	14:45	SW	2P															X	X						
2	Site-J30d-1	↓	15:05	↓	↓															X	X						
3	Site-J30d-2		15:20																	X	X						
4	Site-J30d-3		15:35																	X	X						
5																											
6																											
7																											
8																											
9																											
10																											

SEP 15 '09 16:28

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A
Custody Seals Intact: Yes No N/A
COC/Labels Agree: Yes No N/A
Containers Properly Preseved: Yes No N/A
Temp @ Receipt:_____
Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature	9/15/09 16:16	Signature
Print: Joe Leonard		Print: Sean Flores
Company: D-Max		Company: EMA
Signature		Signature
Print		Print
Company:		Company:
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

T=6.0 on ice

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.
NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

25 September 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0909596

Project Name: Santee Dry Weather
Project Desc./#: 200919W-6 Round 2 Follow Up

Enclosed are the results of analyses for samples received by the laboratory on 09/21/09 14:46. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909596

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Site-J30d-4	0909596-01	Stormwater	09/21/09 11:30	09/21/09 14:46
Site-J30d-5	0909596-02	Stormwater	09/21/09 12:05	09/21/09 14:46
Site-J30d	0909596-03	Stormwater	09/21/09 14:00	09/21/09 14:46

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909596

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Date Prepared Date Analyzed	Method	Notes
Site-J30d-4 (0909596-01) Stormwater	**Sampled: 09/21/09 11:30**		**Received: 09/21/09 14:46**					
Total Coliforms	**2420000**	1000	MPN/100 ml	1000	9092224	09/21/09 15:45 09/22/09 15:50	SM9223	
E. Coli	**443**	10	"	10	"	09/21/09 15:45 09/22/09 15:50	"	
Site-J30d-5 (0909596-02) Stormwater	**Sampled: 09/21/09 12:05**		**Received: 09/21/09 14:46**					
Total Coliforms	**51700**	100	MPN/100 ml	100	9092224	09/21/09 15:45 09/22/09 15:50	SM9223	
E. Coli	**75**	10	"	10	"	09/21/09 15:45 09/22/09 15:50	"	
Site-J30d (0909596-03) Stormwater	**Sampled: 09/21/09 14:00**		**Received: 09/21/09 14:46**					
Total Coliforms	**242000**	100	MPN/100 ml	100	9092224	09/21/09 15:45 09/22/09 15:50	SM9223	
E. Coli	**2140**	10	"	10	"	09/21/09 15:45 09/22/09 15:50	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909596

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0909596

Client: D-Max Engineering
Attn: Arselan Dadkhah
Samplers(s): SL/MD
Address: 7220 Trade Street Suite 119
San Diego CA 92121
Phone: 858-586-6600 Fax:
Email:
Billing Address: same

Project ID: Santee 2009 DW Round 2 Follow Up
Project #: 200919W-6 PO #:

SEP 21 '09 14:72

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A ☒ Enumeration	Enterococcus, □ MTF □ Enterolert	Heterotrophic Plate Count (HPC)					
1	Site-J30d-4	9.21	11:30	SW	1P															X							
2	Site-J30d-5	↓	12:05	↓	↓															X							
3	Site-J30d	↓	14:00	↓	↓															X							
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:_____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY		DATE/TIME	RECEIVED BY	
Signature	[signature]	9/21/09 14:46	Signature	[signature]
Print	Joe Leonard		Print	Sean Flory
Company:	D-Max		Company:	EMA Inc.
Signature			Signature	
Print			Print	
Company:			Company:	
Signature			Signature	
Print			Print	
Company:			Company:	

Project/Sample Comments:

T=4° on ice

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

29 September 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0909676

Project Name: Santee Dry Weather
Project Desc./#: 200919W-6 Round 2 Follow Up

Enclosed are the results of analyses for samples received by the laboratory on 09/23/09 16:28. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909676

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Site-J30d-6	0909676-01	Stormwater	09/23/09 15:10	09/23/09 16:28
Site-J30d-7	0909676-02	Stormwater	09/23/09 15:20	09/23/09 16:28
Site-J30d-8	0909676-03	Stormwater	09/23/09 15:30	09/23/09 16:28
Site-J30d-4-2	0909676-04	Stormwater	09/23/09 15:40	09/23/09 16:28
Site-J30d	0909676-05	Stormwater	09/23/09 16:00	09/23/09 16:28

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0909676

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Date Prepared Date Analyzed	Method	Notes
Site-J30d-6 (0909676-01) Stormwater Sampled: 09/23/09 15:10 Received: 09/23/09 16:28								
Total Coliforms	**41100**	100	MPN/100 ml	100	9092424	09/23/09 17:32 09/24/09 17:32	SM9223	
E. Coli	**738**	10	"	10	"	09/23/09 17:32 09/24/09 17:32	"	
Site-J30d-7 (0909676-02) Stormwater Sampled: 09/23/09 15:20 Received: 09/23/09 16:28								
Total Coliforms	**12000**	10	MPN/100 ml	10	9092424	09/23/09 17:32 09/24/09 17:32	SM9223	
E. Coli	**83**	10	"	"	"	09/23/09 17:32 09/24/09 17:32	"	
Site-J30d-8 (0909676-03) Stormwater Sampled: 09/23/09 15:30 Received: 09/23/09 16:28								
Total Coliforms	**4570**	10	MPN/100 ml	10	9092424	09/23/09 17:32 09/24/09 17:32	SM9223	
E. Coli	**10**	10	"	"	"	09/23/09 17:32 09/24/09 17:32	"	
Site-J30d-4-2 (0909676-04) Stormwater Sampled: 09/23/09 15:40 Received: 09/23/09 16:28								
Total Coliforms	**34500**	100	MPN/100 ml	100	9092424	09/23/09 17:32 09/24/09 17:32	SM9223	
E. Coli	ND	10	"	10	"	09/23/09 17:32 09/24/09 17:32	"	
Site-J30d (0909676-05) Stormwater Sampled: 09/23/09 16:00 Received: 09/23/09 16:28								
Total Coliforms	**242000**	100	MPN/100 ml	100	9092424	09/23/09 17:32 09/24/09 17:32	SM9223	
E. Coli	**369**	10	"	10	"	09/23/09 17:32 09/24/09 17:32	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0909676

Client: D-Max Engineering
Attn: Arsalan Dadkhah
Samplers(s): JL/MD
Address: 7220 Trade Street Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax:
Email:
Billing Address: same

Project ID: Santee DW 2009 Round 2 Follow Up
Project #: 200919W-6 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A ✓Enumeration	Enterococcus, □ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	SEP 23 '09 16:49
1	Site-J30d-6	9/23	15:10	SW	1P															X			
2	Site-J30d-7	↓	15:20	↓	↓															X			
3	Site-J30d-8	↓	15:30	↓	↓															X			
4	Site-J30d-4-2	↓	15:40	↓	↓															X			
5	Site-J30d	↓	16:00	↓	↓															X			
6																							
7																							
8																							
9																							
10																							

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A
Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A
Temp @ Receipt:_____
COC/Labels Agree: Yes No N/A
Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: [signature]	9/23/09 16:28	Signature: [signature]
Print: Joe Leonard		Print: Sam Flores
Company: D-Max		Company: EMA Inc
Signature:		Signature:
Print:		Print:
Company:		Company:
Signature:		Signature:
Print:		Print:
Company:		Company:

Project/Sample Comments:

T= 7.0 on ice

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

Appendix D

Field Data and Trash Assessment Sheets

Round One

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

✓

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	A5c		Latitude	32.84081	Watershed	Hydrologic Unit	907
Location	Carlton Oaks Drive, across from Cuderette Avenue, next to 8335		Longitude	-117.02160		Hydrologic Area	907.1
			TB Page	1230, H6		Hydrologic Subarea (Optional)	907.12
Date	05/26/2009	Time 1145	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects ☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No **Photo #** 66, 67

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.4	NH_3-N (mg/L)	0.183	NO_3 (mg/L)	5.055	Ortho-PO_4 (mg/L)	1.447
pH (pH units)	8.2	TURB (NTU)	5.83	NO_3-N (mg/L)	4.829	Ortho-PO_4-P (mg/L)	0.472
COND (mS/cm)	2.14	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow		gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ASC

DATE: 08/26/2009

LOCATION: ~~ASC~~ Carlton Oaks Drive, across from Cadoretti Ave., next to 8335

TIME: 11:45

OBSERVER: MV/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30x30

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	E5a	Latitude	32.84854	Watershed	Hydrologic Unit	907
Location	Santee Recreation Lakes, West of the Southern Lake, east of Sycamore Creek	Longitude	-117.00723		Hydrologic Area	907.1
		TB Page	1231, A5		Hydrologic Subarea (Optional)	907.12
Date	05/20/2009	Time	1600	Observer	MD/AK	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ~~☐ Open~~ ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☒ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☒ Sheen - Dust (Dust)	☐ Fecal Matter	~~☒ Other Leaves~~
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	~~☒ Algae~~	☐ Fish ☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 29, 30

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.1	NH_3-N (mg/L)	1.590	NO_3 (mg/L)	37.08	Ortho-PO_4 (mg/L)	3.022
pH (pH units)	7.0	TURB (NTU)	7.72	NO_3-N (mg/L)	8.38	Ortho-PO_4-P (mg/L)	0.985
COND (mS/cm)	5.12	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	2	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ESa **DATE:** 05/20/2009

LOCATION: Santee Recreation Lakes, West of the Southern lake, east of Sycamore Creek **TIME:** 1600

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Marginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☒ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☒ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For NH_3-N ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	E5g		Latitude	32.84854	Watershed	Hydrologic Unit	907
Location	Santee Recreation Lakes, west of the Southern Lake, East of Sycamore Creek		Longitude	-117.00723		Hydrologic Area	907.1
			TB Page	1231, A5		Hydrologic Subarea (Optional)	907.12
Date	05/21/2009	Time 1345	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☐ Trash ☐ Bubbles/Foam ☒ Sheen (Dust) ☐ Fecal Matter ~~☒ Other leaves~~

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 43,44

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.1	NH_3-N (mg/L)	2.924	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.3	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.80	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For 2nd for Ammonia ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	E5g		Latitude	32.84894	Watershed	Hydrologic Unit	907
Location	Santee Recreation Lakes, West of the Southern Lake, East of Sycamore Creek		Longitude	-117.00723		Hydrologic Area	907.1
			TB Page	1231, A5		Hydrologic Subarea (Optional)	907.12
Date	05/22/2009	Time 1440	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☐ Trash ☐ Bubbles/Foam ☒ Sheen (Dust) ☐ Fecal Matter ~~☒ Other (leaves)~~

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** 57

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.4	NH_3-N (mg/L)	>3	NO_2 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.3	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	3.02	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Ammonia

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	ESg-1		**Latitude**	32.84887	**Watershed**	**Hydrologic Unit**	907
Location	Santee Recreational Lakes, West side of entrance road, ~100 feet South of entrance toll booth in grassy area		**Longitude**	-117.004166		**Hydrologic Area**	907.1
			TB Page	1231-A5		**Hydrologic Subarea** (Optional)	907.12
Date	05/22/2009	**Time** 15:30	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 57, 58

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	NA	NH_3-N (mg/L)	0.319	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	G30c		Latitude	32.84501	Watershed	Hydrologic Unit	907
Location	North of San Diego River, Silver Creek Dr. South of River Trail Place		Longitude	-116.97122		Hydrologic Area	907.1
			TB Page	1231-C5		Hydrologic Subarea (Optional)	907.12
Date	05/20/2009	Time 11:45	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 23, 24

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	29.0	NH_3-N (mg/L)	0.199	NO_3 (mg/L)	15.05	Ortho-PO_4 (mg/L)	0.245
pH (pH units)	8.9	TURB (NTU)	3.49	NO_3-N (mg/L)	3.40	Ortho-PO_4-P (mg/L)	0.080
COND (mS/cm)	3.02	MBAS (mg/L)	0.25	DO (mg/L)	8.33		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: G30c **DATE:** 05/20/2009

LOCATION: North of San Diego River, Silver Creek Dr., South of River Trail Pl. **TIME:** 11:45

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optional

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	H5e		Latitude	32.84561	Watershed	Hydrologic Unit	907
Location	North of San Diego River, Silver Creek Dr., South of River Trail Place		Longitude	-116.98769		Hydrologic Area	907.1
			TB Page	1231-C5		Hydrologic Subarea (Optional)	907.12
Date	05/20/2009	Time 12:50 pm	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects ☒ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 27, 28

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	25.3	NH_3-N (mg/L)	0.049	NO_3 (mg/L)	4.848	Ortho-PO_4 (mg/L)	0.275
pH (pH units)	8.3	TURB (NTU)	0.92	NO_3-N (mg/L)	1.096	Ortho-PO_4-P (mg/L)	0.090
COND (mS/cm)	1.52	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: H5e **DATE:** 05/20/2009

LOCATION: North of San Diego River, Silver Creek Dr., South of River Trail Pl. **TIME:** 1450

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Marginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 7

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J25c		Latitude	32.85813	Watershed	Hydrologic Unit	907
Location	West end of Caretree Dr. at the west side of channel		Longitude	-116.97601		Hydrologic Area	907.1
			TB Page	1231, D4		Hydrologic Subarea (Optional)	907.12
Date	05/21	Time 1215	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ~~☒ No~~ ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 38, 39

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	20.8	NH_3-N (mg/L)	0.220	NO_2 (mg/L)	30.89	Ortho-PO_4 (mg/L)	0.134
pH (pH units)	8.2	TURB (NTU)	0.78	NO_3-N (mg/L)	6.98	Ortho-PO_4-P (mg/L)	0.044
COND (mS/cm)	4.39	MBAS (mg/L)	0.75	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	2	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: J25c **DATE:** 05/21/2009

LOCATION: West end of Caretree Dr, at the West side of channel **TIME:** 1215

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Marginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 8 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

✓

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J25c2		Latitude	32.85639	Watershed	Hydrologic Unit	907
Location	Conejo rd, at the end of Country Scenes		Longitude	-116.97598		Hydrologic Area	907.1
			TB Page	1231, D4		Hydrologic Subarea (Optional)	907.12
Date	05/19/2009	Time 3:25	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 16,17

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	25.2	NH_3-N (mg/L)	0.257	NO_3 (mg/L)	26.25	Ortho-PO_4 (mg/L)	0.301
pH (pH units)	8.0	TURB (NTU)	2.26	NO_3-N (mg/L)	5.93	Ortho-PO_4 -P (mg/L)	0.098
COND (mS/cm)	4.47	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: J25c2 **DATE:** 05/19/2009

LOCATION: Conejo road, at the end of Country Scenes **TIME:** 3:25pm

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): ~~Optimal~~ Suboptimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 5x3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

✓

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d		Latitude	32.89485	Watershed	Hydrologic Unit	907
Location	Woodglen Vista Channel, South of Mast Boulevard		Longitude	-116.97588		Hydrologic Area	907.1
			TB Page	1231-D4		Hydrologic Subarea (Optional)	907.12
Date	05/22/2009	Time 0950	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☒ Algae	☒ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 47, 48

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.9	NH_3-N (mg/L)	0.233	NO_3 (mg/L)	21.63	Ortho-PO_4 (mg/L)	0.032
pH (pH units)	8.2	TURB (NTU)	0.01	NO_3-N (mg/L)	4.89	Ortho-PO_4-P (mg/L)	0.010
COND (mS/cm)	2.68	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	30	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	23	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: J30d **DATE:** 05/22/2009

LOCATION: Woodglen Vista Channel, South Side of Mast Blvd. **TIME:** 9:50

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	K15j2		Latitude	32.86596	Watershed	Hydrologic Unit	907
Location	Woodglen Vista Drive, east of Woodrose Ave. South side of the park		Longitude	-116.97418		Hydrologic Area	907.1
			TB Page	1231, D2		Hydrologic Subarea (Optional)	907.12
Date	05/19/2009	Time 2:10pm	Observer	MD / AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	~~☒ Other leaf litter~~
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 14, 15

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	28.6	NH_3-N (mg/L)	0.281	NO_3 (mg/L)	22.83	Ortho-PO_4 (mg/L)	0.061
pH (pH units)	8.1	TURB (NTU)	1.8	NO_3-N (mg/L)	5.16	Ortho-PO_4-P (mg/L)	0.02
COND (mS/cm)	2.44	MBAS (mg/L)	0.38	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: K15 j2 **DATE:** 05/19/2009

LOCATION: Woodglen Vista Drive east of Woodrose Ave, south side of the park **TIME:** 2:10 pm

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 8

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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✓

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	0406		Latitude	32.84851	Watershed	Hydrologic Unit	907
Location	Abraham Way, South of San Diego River		Longitude	-116.96392		Hydrologic Area	907.1
			TB Page	1231-F5		Hydrologic Subarea (Optional)	907.12
Date	05/20/2009	Time 9:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☐ None ☒ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ~~☒ Insects~~ ~~☒ Algae~~ ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 18-20

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.1	NH_3-N (mg/L)	0.069	NO_3 (mg/L)	9.99	Ortho-PO_4 (mg/L)	1.487
pH (pH units)	8.1	TURB (NTU)	9.17	NO_3-N (mg/L)	2.26	Ortho-PO_4-P (mg/L)	0.485
COND (mS/cm)	1.51	MBAS (mg/L)	0.25	DO (mg/L)	5.36		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: 040b

DATE: 05/20/2009

LOCATION: Abraham way, South of San Diego River

TIME: 9:20

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
~~☒ Suboptimal~~	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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☐ Field Screening ☒ Confirmation For Bacteria ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	040b		Latitude	32.84851	Watershed	Hydrologic Unit	907
Location	Abraham Way, South of San Diego River		Longitude	-116.96397		Hydrologic Area	907.1
			TB Page	1231-F5		Hydrologic Subarea (Optional)	907.12
Date	06/02/2009	Time 9:50	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ~~☒ No~~ **Photo #** ~~22-23~~ 72,73

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.1	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.2	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.68	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Small amount of trash in area. Surrounding location

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	P15b		Latitude	32.83704	Watershed	Hydrologic Unit	907
Location	Northeast of Magnolia Avenue and Rockvill Street intersection		Longitude	-116.96633		Hydrologic Area	907.1
			TB Page	1231 E6		Hydrologic Subarea (Optional)	907.12
Date	05/21/2009	Time 1515	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ~~☒ None~~ ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other cockroach

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # 3 40-42

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	~~25.1~~ 24.6	NH_3-N (mg/L)	0.130	NO_3 (mg/L)	30.97	Ortho-PO_4 (mg/L)	0.386
pH (pH units)	7.07	TURB (NTU)	0.79	NO_3-N (mg/L)	7.00	Ortho-PO_4-P (mg/L)	0.126
COND (mS/cm)	1.62	MBAS (mg/L)	0.13	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	4	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: P15b **DATE:** 05/21/2009

LOCATION: Northeast of Magnolia Avenue and Rockvill street intersection **TIME:** 1515

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 8 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	P20f		Latitude	32.84674	Watershed	Hydrologic Unit	907
Location	Magnolia Ave, East of Chubb Lane		Longitude	-116.96920		Hydrologic Area	907.1
			TB Page	1231-E5		Hydrologic Subarea (Optional)	907.12
Date	05/21/2009	Time 1140	Observer	MD/AK		Discharge Area (Optional)	~~907.12~~

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 36,37

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.8	NH_3-N (mg/L)	0.232	NO_3 (mg/L)	11.47	Ortho-PO_4 (mg/L)	0.149
pH (pH units)	8.8	TURB (NTU)	10.3	NO_3-N (mg/L)	2.59	Ortho-PO_4-P (mg/L)	0.049
COND (mS/cm)	1.36	MBAS (mg/L)	0.13	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	20	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	15.5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: P 20f **DATE:** 05/21/2009

LOCATION: Magnolia Ave, East of Chubb Lane **TIME:** 1140

OBSERVER: MD / AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 20 x 12

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Q5l		Latitude	32.83121	Watershed	Hydrologic Unit	907
Location	Northside of Prospect Ave, East of Railroad ave.		Longitude	-116.97090		Hydrologic Area	907.1
			TB Page	1231, E7		Hydrologic Subarea (Optional)	907.13
Date	05/21/09	Time 0925	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ~~☒ Ponded~~ ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 31-32

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.8	NH_3-N (mg/L)	0.568	NO_3 (mg/L)	28.17	Ortho-PO_4 (mg/L)	2.214
pH (pH units)	8.2	TURB (NTU)	49.91	NO_3-N (mg/L)	6.37	Ortho-PO_4-P (mg/L)	0.722
COND (mS/cm)	1.84	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: Q5L **DATE:** 05/21/2009

LOCATION: North side of Prospect Ave, East of Railroad Ave. **TIME:** 0925

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 6 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

✓

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	RCP1		Latitude	32.84949	Watershed	Hydrologic Unit	907
Location	North bank of the San Diego River, in the RCP brick factory South of an open field with radio antenna		Longitude	-116.96666		Hydrologic Area	907.1
			TB Page	1231-E5		Hydrologic Subarea (Optional)	907.12
Date	05/21/2009	Time 1045	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☐ Trash ☒ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No Photo # 33-35 (3)

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.5	NH_3-N (mg/L)	0.059	NO_3 (mg/L)	41.41	Ortho-PO_4 (mg/L)	0.29
pH (pH units)	8.3	TURB (NTU)	0.64	NO_3-N (mg/L)	9.27	Ortho-PO_4-P (mg/L)	0.09
COND (mS/cm)	1.60	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: RCP1 **DATE:** 05/21/2009

LOCATION: North bank of the San Diego River in the RCP brick factory, South of an open field with radio antennae **TIME:** 1045

OBSERVER: MD / AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 6

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

✓

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	RCP3		Latitude	32.84982	Watershed	Hydrologic Unit	907
Location	North bank of the San Diego River, in the RCP brick factory, across from the southeast corner of the Antennae field		Longitude	-116.96342		Hydrologic Area	907.1
			TB Page	1231. E5		Hydrologic Subarea (Optional)	907.12
Date	05/26/2009	Time 10:25	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: ____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor: ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color: ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity: ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables: ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits: ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation: ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology: ☐ None ☒ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow: ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No Photo # 3 6163

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.8	NH_3-N (mg/L)	0.172	NO_3 (mg/L)	3.828	Ortho-PO_4 (mg/L)	0.316
pH (pH units)	8.2	TURB (NTU)	0.42	NO_3-N (mg/L)	0.865	Ortho-PO_4-P (mg/L)	0.103
COND (mS/cm)	1.84	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	10	in
Depth	0.25	m
Velocity	10/10	ft/sec
Flow	7.7	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: RCP3 **DATE:** 05/26/2009

LOCATION: North bank of the San Diego River, in the RCP brick factory, across from the southeast corner of Antennae field **TIME:** 10:25

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): ~~Suboptimal~~ N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	S15h		Latitude	32.84324	Watershed	Hydrologic Unit	907
Location	Mission Gorge Road, Town center Pkwy, North of Walmart west of trail		Longitude	-116.98969		Hydrologic Area	907.1
			TB Page	1231, 66		Hydrologic Subarea (Optional)	907.12
Date	05/26/2009	Time 1410	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 70, 71

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.6	NH_3-N (mg/L)	0.194	NO_3 (mg/L)	5.823	Ortho-PO_4 (mg/L)	1.363
pH (pH units)	8.7	TURB (NTU)	15.00	NO_3-N (mg/L)	1.316	Ortho-PO_4-P (mg/L)	0.444
COND (mS/cm)	1.64	MBAS (mg/L)	0.38	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	<1	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: S15h **DATE:** 05/26/2009

LOCATION: Mission Gorge rd. Town Center Pkwy, North of Walmart, west of trail **TIME:** 1410

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	S5c		Latitude	32.84371	Watershed	Hydrologic Unit	907
Location	Mission Gorge Rd, Town Center Parkway, West of Michael's		Longitude	-116.98798		Hydrologic Area	907.1
			TB Page	1231, C6		Hydrologic Subarea (Optional)	907.12
Date	05/20/2009	Time 12:45	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 25, 26

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	~~25.7~~ 24.7	NH_3-N (mg/L)	0.038	NO_3 (mg/L)	1.449	Ortho-PO_4 (mg/L)	0.132
pH (pH units)	8.1	TURB (NTU)	2.59	NO_3-N (mg/L)	0.327	Ortho-PO_4 -P (mg/L)	0.043
COND (mS/cm)	1.02	MBAS (mg/L)	0.13	DO (mg/L)	6.53		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: S5c **DATE:** 05/20/2009

LOCATION: Mission Gorge Rd., Town Center Parkway, West of Michael's **TIME:** 12:45

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Submarginal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 20 x 6

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	T5e		Latitude	32.83392	Watershed	Hydrologic Unit	907
Location	Prospect Avenue, across the street from Argent street, south of Forester creek		Longitude	-116.98960		Hydrologic Area	907.1
			TB Page	1231,07		Hydrologic Subarea (Optional)	907.12
Date	05/26/2009	Time 1300	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/~~Gravel~~	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 69

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.4	NH_3-N (mg/L)	0.146	NO_3 (mg/L)	1.585	Ortho-PO_4 (mg/L)	1.195
pH (pH units)	8.2	TURB (NTU)	5.89	NO_3-N (mg/L)	0.358	Ortho-PO_4-P (mg/L)	0.390
COND (mS/cm)	1.05	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: T5e **DATE:** 05/26/2009

LOCATION: Prospect Avenue, across the Street from Argent st., South of Forester creek **TIME:** 1300

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 12 x 6

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	U10a		Latitude	32.83745	Watershed	Hydrologic Unit	907
Location	South bank of Forester Creek ~200 yards south of Mission Gorge rd. and Carlton Hill intersection		Longitude	-116.99586		Hydrologic Area	907.1
			TB Page	1231, B6		Hydrologic Subarea (Optional)	907.12
Date	05/22/2009	Time 0910	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other N/A
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other N/A
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other N/A
Floatables	☒ ~~None~~	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other N/A
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 45, 46

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NS		

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: U10a **DATE:** 05/22/2009

LOCATION: South bank of Forester creek, ~200 yards south of Mission Gorge & Carlton Hill intersection **TIME:** 0910

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	V40d		Latitude	32.83375	Watershed	Hydrologic Unit	907
Location	Prospect Avenue, East of Fanita Drive		Longitude	-117.00005		Hydrologic Area	907.1
			TB Page	1231, B7		Hydrologic Subarea (Optional)	907.12
Date	05/22/2009	Time 11:10	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 49, 50

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.9	NH_3-N (mg/L)	0.138	NO_3 (mg/L)	0.626	Ortho-PO_4 (mg/L)	0.011
pH (pH units)	8.16	TURB (NTU)	1.68	NO_3-N (mg/L)	0.141	Ortho-PO_4-P (mg/L)	0.004
COND (mS/cm)	4.19	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	43	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	33.5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: V40d **DATE:** 05/22/2009

LOCATION: Prospect Avenue, East of Fanita Drive **TIME:** 11:10

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 40 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

✓

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	V45k		Latitude	32.83878	Watershed	Hydrologic Unit	907
Location	North of Mission Gorge rd, East of Freeway 125		Longitude	-117.00268		Hydrologic Area	907.1
			TB Page	1231, A6		Hydrologic Subarea (Optional)	907.12
Date	05/22/2009	Time 12:00	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other crayfish

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 51-56

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.6	NH_3-N (mg/L)	0.152	NO_3 (mg/L)	~~7.5~~ 0.617	Ortho-PO_4 (mg/L)	0.058
pH (pH units)	7.8	TURB (NTU)	0.01	NO_3-N (mg/L)	0.139	Ortho-PO_4-P (mg/L)	0.019
COND (mS/cm)	4.55	MBAS (mg/L)	0.5	DO (mg/L)	7.51		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	6	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: V45k **DATE:** 05/22/2009

LOCATION: South of Mission Gorge Rd, East of Freeway 125 **TIME:** 12:00

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Y15e		Latitude	32.83670	Watershed	Hydrologic Unit	907
Location	Mission Gorge rd, West of Big Rock rd across from a shopping center		Longitude	-117.02156		Hydrologic Area	907.1
			TB Page	1230, H7		Hydrologic Subarea (Optional)	907.12
Date	05/26/2009	Time 1235	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other N/A
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other N/A
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other N/A
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other N/A
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 68

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: Y 15e **DATE:** 05/26/2009

LOCATION: ~~MD/AK~~ Mission Gorge Rd., West of Big Rock Rd. across from a shopping center **TIME:** 1235

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Marginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): ~~10~~ 20 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

✓

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Z156		Latitude	32.83370	Watershed	Hydrologic Unit	907
Location	North of Mission Gorge Road, East of Father Junipero Serra Trail		Longitude	-117.02997		Hydrologic Area	907.1
			TB Page	1230, G7		Hydrologic Subarea (Optional)	907.12
Date	05/26/2009	Time 9:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae ☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 59, 60

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.8	NH_3-N (mg/L)	0.034	NO_3 (mg/L)	4.332	Ortho-PO_4 (mg/L)	0.929
pH (pH units)	8.1	TURB (NTU)	5.14	NO_3-N (mg/L)	0.979	Ortho-PO_4-P (mg/L)	0.303
COND (mS/cm)	1.13	MBAS (mg/L)	0.13	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	<1	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: 215 **DATE:** 05/26/2009

LOCATION: North of Mission Gorge Rd., East of Father Junipero Serra Trail **TIME:** 9:20

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 8

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

Round Two

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	A5c		Latitude	32.84081	Watershed	Hydrologic Unit	907
Location	Carlton Oaks Drive across from Cadorette Avenue, next to 8335		Longitude	-117.02160		Hydrologic Area	907.1
			TB Page	1230-H6		Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time 12:30	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 43,44

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	25.1	NH_3-N (mg/L)	0.432	NO_3 (mg/L)	5.878	Ortho-PO_4 (mg/L)	2.184
pH (pH units)	8.0	TURB (NTU)	18.10	NO_3-N (mg/L)	1.328	Ortho-PO_4-P (mg/L)	0.712
COND (mS/cm)	2.16	MBAS (mg/L)	0.75	DO (mg/L)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	<1	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: A5c **DATE:** 9/8/09

OBSERVER: JL/MD **TIME:** 12:30

LOCATION: Carlton Oaks Drive across from Cardorette Avenue, next to 8335

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25x25

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	E59		Latitude	32.84854	Watershed	Hydrologic Unit	907
Location	Santee Recreation Lakes, west of the Southern Lake, east of Sycamore Creek		Longitude	-117.00723		Hydrologic Area	907.1
			TB Page	1231-A5		Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time 16:00	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other Frogs

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 46,47

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.8	NH_3-N (mg/L)	0.693	NO_3 (mg/L)	2.419	Ortho-PO_4 (mg/L)	1.427
pH (pH units)	7.4	TURB (NTU)	12.68	NO_3-N (mg/L)	0.547	Ortho-PO_4-P (mg/L)	0.465
COND (mS/cm)	3.26	MBAS (mg/L)	0.50	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: E5g DATE: 9/8/09

OBSERVER: JL/MD TIME: 14:00

LOCATION: Santee Recreation Lakes, west of the Southern Lake, east of Sycamore Creek

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20x20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	G30c ~~G30E~~	**Latitude**	32.84501	**Watershed**	**Hydrologic Unit**	907
Location	North of San Diego River, Silver Creek Drive, south of River Trail Place	**Longitude**	-116.99122		**Hydrologic Area**	907.1
		TB Page	1231-B5		**Hydrologic Subarea** (Optional)	907.12
Date	9/2/09	**Time**	15:50	**Observer**	JL/MD	**Discharge Area** (Optional)

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☑ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 11, 12

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	33.0	NH_3-N (mg/L)	0.214	NO_3 (mg/L)	12.67	Ortho-PO_4 (mg/L)	0.570
pH (pH units)	8.8	TURB (NTU)	3.46	NO_3-N (mg/L)	2.863	Ortho-PO_4 -P (mg/L)	0.186
COND (mS/cm)	2.58	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ~~G30E~~ G30c **DATE:** 9/2/09

OBSERVER: JL/MD **TIME:** 15:50

LOCATION: North of San Diego River, Silver Creek Drive, south of River Trail Place

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15x15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	H5e		Latitude	32.84561	Watershed	Hydrologic Unit	907
Location	North of San Diego River, 100 feet west of Whispering Willow Drive and River Park Place intersection		Longitude	-116.98769		Hydrologic Area	907.1
			TB Page	1231-C5		Hydrologic Subarea (Optional)	907.12
Date	9/4/09	Time 14:50	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☑ Snails	☐ Mussels/ Barnacles ☑ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 33

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	27.9	NH_3-N (mg/L)	0.285	NO_3 (mg/L)	3.597	Ortho-PO_4 (mg/L)	1.271
pH (pH units)	7.9	TURB (NTU)	1.14	NO_3-N (mg/L)	0.813	Ortho-PO_4-P (mg/L)	0.414
COND (mS/cm)	2.70	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: H5e DATE: 9/4/09

OBSERVER: JL/MD TIME: 14:50

LOCATION: North of SD River, 100 feet west of Whispering Willow Drive and River Park Place intersection

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20x20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	~~J25C~~ J25c	**Latitude**	32.85813	**Watershed**	**Hydrologic Unit**	907
Location	West end of Carefree Drive, at the west side of channel	**Longitude**	-116.97601		**Hydrologic Area**	907.1
		TB Page	1231-D4		**Hydrologic Subarea** (Optional)	907.12
Date	9/3/09 **Time** 11:10	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☒ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 15, 16

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	26.4	NH_3-N (mg/L)	0.221	NO_3 (mg/L)	35.14	Ortho-PO_4 (mg/L)	0.600
pH (pH units)	8.3	TURB (NTU)	0.18	NO_3-N (mg/L)	7.942	Ortho-PO_4 -P (mg/L)	0.196
COND (mS/cm)	4.36	MBAS (mg/L)	0.38	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow		gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ~~J25C~~ J25c **DATE:** 9/3/09

OBSERVER: JL/MD **TIME:** 11:10

LOCATION: West end of Carefree Drive, at the west side of channel

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J25c2 ~~J25E2~~	**Latitude**	32.85639	**Watershed**	**Hydrologic Unit**	907
Location	Conejo Road, at the end of Country Scenes	**Longitude**	-116.97598		**Hydrologic Area**	907.1
		TB Page	1231-D4		**Hydrologic Subarea** (Optional)	907.12
Date	9/2/09 **Time** 15:00	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☑ Algae	☐ Fish	☑ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 9,10

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	30.1	NH_3-N (mg/L)	0.240	NO_3 (mg/L)	26.58	Ortho-PO_4 (mg/L)	0.165
pH (pH units)	7.9	TURB (NTU)	0.41	NO_3-N (mg/L)	6.007	Ortho-PO_4 -P (mg/L)	0.054
COND (mS/cm)	5.42	MBAS (mg/L)	0.38	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ~~J25C2~~ J25c2 **DATE:** 9/2/09

OBSERVER: JL/MD **TIME:** 15:00

LOCATION: Conejo Road, at the end of Country Scenes

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15x15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J30d		Latitude	32.85485	Watershed	Hydrologic Unit	907
Location	Woodglen Vista Channel, south of Mast Blvd		Longitude	-116.97588		Hydrologic Area	907.1
			TB Page	1231-D4		Hydrologic Subarea (Optional)	907.12
Date	9/4/09	Time 11:30	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☑ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 29, 30

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	30.8	NH_3-N (mg/L)	0.643	NO_3 (mg/L)	10.76	Ortho-PO_4 (mg/L)	0.135
pH (pH units)	8.0	TURB (NTU)	8.66	NO_3-N (mg/L)	2.432	Ortho-PO_4-P (mg/L)	0.044
COND (mS/cm)	3.11	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	10	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: J30d DATE: 9/4/09

OBSERVER: JL/MD TIME: 11:30

LOCATION: Woodglen Vista channel, south of Mast Blvd

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20x20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Bacteria ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d		Latitude	32.85485	Watershed	Hydrologic Unit	907 ~~12~~
Location	Woodglen Vista Channel, South of Mast Blvd		Longitude	-116.97588		Hydrologic Area	907.1
			TB Page	1231-D4		Hydrologic Subarea (Optional)	907.12
Date	9/15/09	Time 14:45	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☒ Fish ☒ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 60, 61

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	29.9	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.9	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	2.82	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Bacteria ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d		Latitude	32.85485	Watershed	Hydrologic Unit	907
Location	Woodglen Vista channel, South of Mast Blvd		Longitude	-116.97588		Hydrologic Area	907.1
			TB Page	1231-D4		Hydrologic Subarea (Optional)	907.12
Date	9/21/09	Time 14:00	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☒ Snails ☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	29.5	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.7	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	2.45	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Bacteria ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d		Latitude	32.85485	Watershed	Hydrologic Unit	907
Location	In the Woodglen Vista channel, south of Mast Blvd, 100 feet east of San Remo Road		Longitude	-116.97588		Hydrologic Area	907.1
			TB Page	1231-D4		Hydrologic Subarea (Optional)	907.12
Date	9/23/09	Time 16:00	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.4	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.6	TURB (NTU)	15.65	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	2.92	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d-1		**Latitude**	32.85639	**Watershed**	**Hydrologic Unit**	907
Location	Primary site J25c2, Conejo Road, at the end of Country Scenes		**Longitude**	-116.97598		**Hydrologic Area**	907.1
			TB Page	1231-D4		**Hydrologic Subarea** (Optional)	907.12
Date	9/15/09	**Time** 15:05	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d-2		**Latitude**	32.85817	**Watershed**	**Hydrologic Unit**	907
Location	Primary site J25c, West end of Carefree Drive, at the west side of channel		**Longitude**	-116.97604		**Hydrologic Area**	907.1
			TB Page	1231-D4		**Hydrologic Subarea** (Optional)	907.12
Date	9/15/09	**Time** 15:20	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d-3		**Latitude**	32.85820	**Watershed**	**Hydrologic Unit**	907
Location	West end of Carefree Drive, channel from the north		**Longitude**	-116.97607		**Hydrologic Area**	907.1
			TB Page	1231-D4		**Hydrologic Subarea** (Optional)	907.12
Date	9/15/09	**Time** 15:35	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d-4		**Latitude**	32.85896	**Watershed**	**Hydrologic Unit**	907
Location	Outlet from Beck Drive and Woodrose Avenue area to channel. Access via apartment complex at Carefree Drive and Woodpark Dr.		**Longitude**	-116.97427		**Hydrologic Area**	907.1
			TB Page	1231-D3		**Hydrologic Subarea** (Optional)	907.12
Date	9/21/09	**Time** 11:30	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 62-65

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d-4-2		Latitude	32.85896	Watershed	Hydrologic Unit	907
Location	Outlet from Beck Drive and Woodrose Avenue area to channel. Access via apartment complex @ Carefree Drive/Woodpark Drive		Longitude	-116.97427		Hydrologic Area	907.1
			TB Page	1231-D3		Hydrologic Subarea (Optional)	907.12
Date	9/23/09	Time 15:40	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J30d-5		**Latitude**	32.86596	**Watershed**	**Hydrologic Unit**	907
Location	Woodglen Vista Drive, east of Woodrose Avenue south side of park. Primary Site K15;2		**Longitude**	-116.97418		**Hydrologic Area**	907.1
			TB Page	1231-D2		**Hydrologic Subarea** (Optional)	907.12
Date	9/21/09	**Time** 12:05	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☒ No **Photo #** 66, 67

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d-6		**Latitude**	32.86572	**Watershed**	**Hydrologic Unit**	907
Location	24 inch outlet pipe on west side of channel, south of Woodglen Vista Drive		**Longitude**	-116.97416		**Hydrologic Area**	907.1
			TB Page	1231-D2		**Hydrologic Subarea** (Optional)	907.12
Date	9/23/09	**Time** 15:10	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d-7		**Latitude**	32.86583	**Watershed**	**Hydrologic Unit**	907
Location	Small outlet under bridge, under Woodglen Vista Drive		**Longitude**	-116.97426		**Hydrologic Area**	907.1
			TB Page	1231-D2		**Hydrologic Subarea** (Optional)	907.12
Date	9/23/09	**Time** 15:20	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Bacteria

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J30d-8		**Latitude**	32.86582	**Watershed**	**Hydrologic Unit**	907
Location	Small outlet next to J30d-6. South of Woodglen Vista Drive		**Longitude**	-116.97417		**Hydrologic Area**	907.1
			TB Page	1231-D2		**Hydrologic Subarea** (Optional)	907.12
Date	9/23/09	**Time** 15:30	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	K15J2 ~~K15J2~~		**Latitude**	32.86596	**Watershed**	**Hydrologic Unit**	907
Location	Woodglen Vista Drive, east of Woodrose Avenue south side of the park		**Longitude**	-116.97418		**Hydrologic Area**	907.1
			TB Page	1231-D2		**Hydrologic Subarea** (Optional)	907.12
Date	9/3/09	**Time** 14:40	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☑ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 21, 22

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	29.9	NH_3-N (mg/L)	0.210	NO_3 (mg/L)	23.72	Ortho-PO_4 (mg/L)	0.115
pH (pH units)	7.7	TURB (NTU)	0.80	NO_3-N (mg/L)	5.361	Ortho-PO_4 -P (mg/L)	0.037
COND (mS/cm)	2.02	MBAS (mg/L)	0.13	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ~~K15J2~~ K15j2 **DATE:** 9/3/09

OBSERVER: JL/MD **TIME:** 14:40

LOCATION: Woodglen Vista Drive, east of Woodrose Avenue, south side of park

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10x10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	O40b		Latitude	32.84851	Watershed	Hydrologic Unit	907
Location	Abraham Way, south of San Diego River		Longitude	-116.96392		Hydrologic Area	907.1
			TB Page	1231-F5		Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time 14:15	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 45

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	26.2	NH_3-N (mg/L)	0.430	NO_3 (mg/L)	3.125	Ortho-PO_4 (mg/L)	0.700
pH (pH units)	8.0	TURB (NTU)	1.21	NO_3-N (mg/L)	0.706	Ortho-PO_4-P (mg/L)	0.228
COND (mS/cm)	1.36	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: 040b DATE: 9/8/09

OBSERVER: JL/MD TIME: 14:15

LOCATION: Abraham Way, south of San Diego River

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10x10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☐ MS4 ☐ RECEIVING WATER ☑ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	P15b		Latitude	32.83704	Watershed	Hydrologic Unit	907
Location	Northeast of Magnolia Avenue and Rockvill Street intersection		Longitude	-116.96633		Hydrologic Area	907.1
			TB Page	1231-E6		Hydrologic Subarea (Optional)	907.12
Date	9/4/09	Time 13:45	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 31, 32

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	30.5	NH_3-N (mg/L)	0.202	NO_3 (mg/L)	59.38	Ortho-PO_4 (mg/L)	0.480
pH (pH units)	7.7	TURB (NTU)	0.82	NO_3-N (mg/L)	13.42	Ortho-PO_4-P (mg/L)	0.156
COND (mS/cm)	1.60	MBAS (mg/L)	0.13	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: P15b DATE: 9/4/09

OBSERVER: JL/MD TIME: 13:45

LOCATION: Northeast of Magnolia Avenue and Rockwell Street intersection

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	P15b		Latitude	32.83704	Watershed	Hydrologic Unit	907
Location	Northeast of Magnolia Avenue and Rockvill Street intersection		Longitude	-116.96633		Hydrologic Area	907.1
			TB Page	1231-E6		Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time 15:00	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.7	NH_3-N (mg/L)	na	NO_3 (mg/L)	33.47	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.4	TURB (NTU)	6.70	NO_3-N (mg/L)	7.564	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	1.61	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	P15b-1			Latitude	32.83704	Watershed: Hydrologic Unit	907
Location	South line to P15b			Longitude	-116.96633	Hydrologic Area	907.1
				TB Page	1231-E6	Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time	15:20	Observer	JL/MD	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	32.12	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	7.259	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	2	gpm				Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	P15b-2		Latitude	32.83704	Watershed	Hydrologic Unit	907
Location	East line to P15b		Longitude	-116.96633		Hydrologic Area	907.1
			TB Page	1231-E6		Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time 15:40	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	39.49	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	8.925	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	P20f		Latitude	32.84674	Watershed	Hydrologic Unit	907
Location	Magnolia Avenue, east of Chubb Lane		Longitude	-116.96920		Hydrologic Area	907.1
			TB Page	1231-E5		Hydrologic Subarea (Optional)	907.12
Date	9/4/09	Time 10:40	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 27, 28

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	28.0	NH_3-N (mg/L)	0.268	NO_3 (mg/L)	25.04	Ortho-PO_4 (mg/L)	0.049
pH (pH units)	8.2	TURB (NTU)	3.50	NO_3-N (mg/L)	5.659	Ortho-PO_4 -P (mg/L)	0.016
COND (mS/cm)	1.53	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: P20f DATE: 9/4/09

OBSERVER: JL/MD TIME: 10:40

LOCATION: Magnolia Avenue, east of Chubb Lane

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20x20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☑ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☑ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Q51		Latitude	32.83121	Watershed	Hydrologic Unit	907
Location	North side of Prospect Avenue, east of Railroad Avenue		Longitude	-116.97090		Hydrologic Area	907.1
			TB Page	1231-E7		Hydrologic Subarea (Optional)	907.13
Date	9/8/09	Time 11:20	Observer	JC/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☒ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other ~~Trash~~ Decomposing organic waste
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☒ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 37-42

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	25.2	NH_3-N (mg/L)	0.595	NO_3 (mg/L)	12.75	Ortho-PO_4 (mg/L)	28.66
pH (pH units)	8.0	TURB (NTU)	112	NO_3-N (mg/L)	2.882	Ortho-PO_4-P (mg/L)	9.343
COND (mS/cm)	1.86	MBAS (mg/L)	0.75	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: Q51 **DATE:** 9/8/09

OBSERVER: JL/MD **TIME:** 11:20

LOCATION: North side of Prospect Avenue, east of Railroad Avenue

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15x15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Phosphorus ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Q51			Latitude	32.83121	Watershed: Hydrologic Unit	907
Location	North side of Prospect Avenue, east of Railroad Avenue			Longitude	-116.97090	Hydrologic Area	907.1
				TB Page	1231-E7	Hydrologic Subarea (Optional)	907.13
Date	9/9/09	Time	10:35	Observer	JL/MD	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other Decomposing organic waste ~~Trash~~
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☒ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	26.1	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	36.05
pH (pH units)	8.2	TURB (NTU)	148	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	11.75
COND (mS/cm)	1.79	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow ponded		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Phosphorus

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Q51-1		Latitude	32.83211	Watershed	Hydrologic Unit	907
Location	North of Prospect Ave, between Tumbleweed Terrace and Siesta Rd, water coming out of ground near fence in Caltrans worksite		Longitude	-116.96727		Hydrologic Area	907.1
			TB Page	1231-E7		Hydrologic Subarea (Optional)	907.13
Date	9/9/09	Time 11:00	Observer	JC/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) Other ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 50-52

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	0.244
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	0.080
COND (mS/cm)	na	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	RCP1		Latitude	32.84959	Watershed	Hydrologic Unit	907
Location	North bank of the San Diego River in the RCP Brick Factory, south of an open field with radio antennae		Longitude	-116.96659		Hydrologic Area	907.1
			TB Page	1231-E5		Hydrologic Subarea (Optional)	907.12
Date	9/3/09	Time 12:00	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☑ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 17, 18

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	28.0	NH_3-N (mg/L)	0.170	NO_3 (mg/L)	44.05	Ortho-PO_4 (mg/L)	0.317
pH (pH units)	8.2	TURB (NTU)	8.50	NO_3-N (mg/L)	9.96	Ortho-PO_4 -P (mg/L)	0.103
COND (mS/cm)	1.50	MBAS (mg/L)	0.13	DO (mg/L)	na		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: RCP1 **DATE:** 9/3/09

OBSERVER: JL/MD **TIME:** 12:00

LOCATION: North bank of SD River, inside RCP Brick Factory, south of an open field with radio antennae

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 5x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	RCP3		Latitude	32.84975	Watershed	Hydrologic Unit	907
Location	North bank of the San Diego River in the RCP Brick Factory, across from the southeast corner of the antennae field		Longitude	-116.96341		Hydrologic Area	907.1
			TB Page	1231-E5		Hydrologic Subarea (Optional)	907.12
Date	9/9/09	Time 9:45	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 48, 49

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.6	NH_3-N (mg/L)	0.177	NO_3 (mg/L)	43.94	Ortho-PO_4 (mg/L)	0.466
pH (pH units)	8.0	TURB (NTU)	0.49	NO_3-N (mg/L)	9.93	Ortho-PO_4-P (mg/L)	0.152
COND (mS/cm)	1.73	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: ~~[illegible]~~ by people ~~[illegible]~~ Inhabited

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

2009 Trash Assessment Form

SITE ID: RCP 3 DATE: 9/9/09

OBSERVER: JL/MD TIME: 9:45

LOCATION: North bank of SD River in RCP Brick Factory, across from southeast corner of antennae field

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25x25

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☐ MS4 ☐ RECEIVING WATER ☒ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☒ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	S15h		Latitude	32.84326	Watershed	Hydrologic Unit	907
Location	Mission Gorge Rd, Town Center Pkwy, north of Walmart, west of trail		Longitude	-116.98969		Hydrologic Area	907.1
			TB Page	1231-C6		Hydrologic Subarea (Optional)	907.12
Date	9/9/09	Time 11:20	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☒ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No **Photo #** 53,54

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.1	NH_3-N (mg/L)	0.750	NO_3 (mg/L)	5.609	Ortho-PO_4 (mg/L)	2.573
pH (pH units)	7.9	TURB (NTU)	16.76	NO_3-N (mg/L)	1.268	Ortho-PO_4-P (mg/L)	0.839
COND (mS/cm)	1.46	MBAS (mg/L)	0.75	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2009 Trash Assessment Form

SITE ID: S15h DATE: 9/9/09

OBSERVER: JL/MD TIME: 11:20

LOCATION: Mission Gorge Rd, Town Center Pkwy, north of Walmart, west of trail

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15x15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	~~S5E~~ S5c		**Latitude**	32.84371	**Watershed**	**Hydrologic Unit**	907
Location	Mission Gorge Rd, Town Center Pkwy, west of Michaels		**Longitude**	-116.98798		**Hydrologic Area**	907.1
			TB Page	1231-C6		**Hydrologic Subarea** (Optional)	907.12
Date	9/3/09	**Time** 16:10	**Observer**	JL/MD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☑ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 23, 24

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	28.8	NH_3-N (mg/L)	0.273	NO_3 (mg/L)	5.765	Ortho-PO_4 (mg/L)	0.818
pH (pH units)	7.8	TURB (NTU)	1.60	NO_3-N (mg/L)	1.303	Ortho-PO_4 -P (mg/L)	0.267
COND (mS/cm)	2.48	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ~~S5C~~ S5c **DATE:** 9/3/09

OBSERVER: JL/MD **TIME:** 16:10

LOCATION: Mission Gorge Rd, Town Center Parkway, west of Michaels

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	T5e		Latitude	32.83393	Watershed	Hydrologic Unit	907
Location	Prospect Avenue, across from Argent Street, south of Forester Creek		Longitude	-116.98956		Hydrologic Area	907.1
			TB Page	1231-L7		Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time 10:05	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 35

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.0	NH_3-N (mg/L)	0.110	NO_3 (mg/L)	0.783	Ortho-PO_4 (mg/L)	0.175
pH (pH units)	7.5	TURB (NTU)	7.68	NO_3-N (mg/L)	0.177	Ortho-PO_4-P (mg/L)	0.057
COND (mS/cm)	1.59	MBAS (mg/L)	0.25	DO (mg/L)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	ponded	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: TSe **DATE:** 9/8/09

OBSERVER: JL/MD **TIME:** 10:05

LOCATION: Prospect Avenue, across from Argent Street, south of Forester Creek

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20x20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☐ MS4 ☐ RECEIVING WATER ☑ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	U10a	Latitude	32.83745	Watershed	Hydrologic Unit	907
Location	South bank of Forester Creek, ~200 yards south of the Mission Gorge Rd and Carlton Hill intersection	Longitude	-116.99586		Hydrologic Area	907.1
		TB Page	1231-B6		Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time	~~10:00~~ 10:50	Observer	JL/MD	Discharge Area (Optional)

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other	na
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other	na
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other	na
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other	na
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other	
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No **Photo #** 36

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	ns	NH_3-N (mg/L)	ns	NO_3 (mg/L)	ns	Ortho-PO_4 (mg/L)	ns
pH (pH units)	ns	TURB (NTU)	ns	NO_3-N (mg/L)	ns	Ortho-PO_4-P (mg/L)	ns
COND (mS/cm)	ns	MBAS (mg/L)	ns	DO (mg/L)	ns		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	dry	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: U10a **DATE:** 9/8/09

OBSERVER: JL/MD **TIME:** 10:50

LOCATION: South Bank of Forester Creek, 200 yds south of the Mission Gorge Rd and Carlton Hill intersection

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20x20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☐ MS4 ☐ RECEIVING WATER ☑ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	V400		Latitude	32.83375	Watershed	Hydrologic Unit	907
Location	Prospect Avenue, east of Fanita Drive		Longitude	-117.00005		Hydrologic Area	907.1
			TB Page	1231-B7		Hydrologic Subarea (Optional)	907.12
Date	9/3/09	Time 12:40	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☑ Snails	☐ Mussels/ Barnacles ☑ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 19, 20

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	34.4	NH_3-N (mg/L)	0.177	NO_3 (mg/L)	0.374	Ortho-PO_4 (mg/L)	0.045
pH (pH units)	9.1	TURB (NTU)	1.95	NO_3-N (mg/L)	0.085	Ortho-PO_4-P (mg/L)	0.015
COND (mS/cm)	3.00	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	30	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	25	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ~~V40D~~ V40d **DATE:** 9/3/09

OBSERVER: JL/MD **TIME:** 12:40

LOCATION: Prospect Avenue, east of Fanita Drive

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15x15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☒ Confirmation For pH ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	V40D		Latitude	32.83375	Watershed	Hydrologic Unit	907
Location	Prospect Avenue, east of Fanita Drive		Longitude	-117.00005		Hydrologic Area	907.1
			TB Page	1231-B7		Hydrologic Subarea (Optional)	907.12
Date	9/4/09	Time 10:05	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.4	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.0	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	3.62	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	40	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	31	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

4N

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	V45k		Latitude	32.83878	Watershed	Hydrologic Unit	907
Location	North of Mission Gorge Rd, east of Freeway 125		Longitude	-117.00268		Hydrologic Area	907.1
			TB Page	1231-A6		Hydrologic Subarea (Optional)	907.12
Date	9/9/09	Time 12:30	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☒ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 55-59

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	26.1	NH_3-N (mg/L)	0.271	NO_3 (mg/L)	0.528	Ortho-PO_4 (mg/L)	0.197
pH (pH units)	7.7	TURB (NTU)	3.70	NO_3-N (mg/L)	0.119	Ortho-PO_4-P (mg/L)	0.064
COND (mS/cm)	2.60	MBAS (mg/L)	0.25	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: V45k DATE: 9/9/09

OBSERVER: JL/MD TIME: 12:30

LOCATION: North of Mission Gorge Rd, east of Freeway 125

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15x15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Y15e			Latitude	32.83670	Watershed: Hydrologic Unit	907
Location	West of Big Rock Road, across from a shopping center			Longitude	-117.02158	Hydrologic Area	907.1
				TB Page	1230-H7	Hydrologic Subarea (Optional)	907.12
Date	9/8/09	Time	9:35	Observer	JL/MD	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other na	
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other na	
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other na	
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other na	
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other	
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 34

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	ns	NH_3-N (mg/L)	ns	NO_3 (mg/L)	ns	Ortho-PO_4 (mg/L)	ns
pH (pH units)	ns	TURB (NTU)	ns	NO_3-N (mg/L)	ns	Ortho-PO_4-P (mg/L)	ns
COND (mS/cm)	ns	MBAS (mg/L)	ns	DO (mg/L)	ns		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: Y15e DATE: 9/8/09

OBSERVER: JL/MD TIME: 9:35

LOCATION: West of Big Rock Road, across from a shopping center

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15x15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	~~Z15B~~ Z15b			Latitude	32.83770	Watershed: Hydrologic Unit	907
Location	North of Mission Gorge Rd, east of Father Junipero Serra Trail			Longitude	-117.02997	Hydrologic Area	907.1
				TB Page	1230-G7	Hydrologic Subarea (Optional)	907.12
Date	9/4/09	Time	9:20	Observer	JL/MD	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☒ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 25, 26

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	25.9	NH_3-N (mg/L)	0.256	NO_3 (mg/L)	2.654	Ortho-PO_4 (mg/L)	0.499
pH (pH units)	7.6	TURB (NTU)	7.79	NO_3-N (mg/L)	0.600	Ortho-PO_4 -P (mg/L)	0.163
COND (mS/cm)	2.35	MBAS (mg/L)	0.50	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	<1	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: ~~Z15B~~ Z15b **DATE:** 9/4/09

OBSERVER: JL/MD **TIME:** 9:20

LOCATION: North of Mission Gorge Rd, east of Father Junipero Serra Trail

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10x10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

CITY OF SANTEE

Jurisdictional Urban Runoff Management Program

Annual Report 2009-2010

CERTIFICATION STATEMENT

Date: September 2010

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Pedro Orso Delgado, P.E.
Deputy City Manager/Director of Development Services

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EXECUTIVE SUMMARY

The City of Santee (City) has been actively developing and implementing storm water pollution prevention measures since 1990. The City's Jurisdictional Urban Runoff Management Program (JURMP) was updated and submitted to the San Diego Regional Water Quality Control Board (RWQCB) in March 2008. The JURMP update was required by the re-issued storm water permit, RWQCB Order No. R9-2007-0001 (Municipal Permit). The Municipal Permit was jointly issued to 18 municipalities in San Diego County, including the City; the County of San Diego; the San Diego County Regional Airport Authority; and the San Diego Unified Port District (collectively referred to as "Copermittees").

The City's JURMP includes Best Management Practices (BMP) standards for businesses, construction and development projects, residents, and the City's own activities. The JURMP also includes programs for water quality monitoring and educational outreach.

This JURMP Annual Report presents the City's activities to implement its JURMP during the 2009/2010 fiscal year (Reporting Period), which began on July 1, 2009 and ended on June 30, 2010. Each section of this JURMP Annual Report discusses how the City's efforts during the Reporting Period met the requirements of the Municipal Permit. Key actions taken for the major components of the City's storm water program are summarized in the table below.

Component	Key Actions
Development Planning	• Stormwater Program Manager reviewed grading permit applications to determine applicable storm water requirements, to ensure the appropriate submittals were made prior to permit issue. • Inspected 24 sites with treatment control BMPs installed and required annual verification letters to be completed for at least a year. • Prompt notification of responsible parties for newly-complete projects of the BMP treatment control maintenance and verification program. • Followed up with responsible parties at inspected site and saw resulting improvements in BMP maintenance. • City was active in the development, review and approval process for the model Standard Urban Runoff Mitigation Plan (SUSMP) and hydromodification plan. • The City's SUSMP was updated and is available with related

Component	Key Actions
	forms on the City's website.
Construction	• The City conducted plan checks of erosion control plans to ensure construction projects proposed appropriate BMPs that met the City's minimum requirements. • Active construction sites were inspected to assess BMP implementation during the Reporting Period; a total of 275 construction inspections were completed at 23 sites. • The City continued its program of inspecting sites prior to predicted rain events and during rain events, when appropriate, to foster BMP implementation when the highest potential for pollutant discharge is present. • The City participated in the regional Construction subworkgroup.
Municipal	• The City inspected all high threat to water quality municipal fixed facilities and continued its street sweeping and storm drain (MS4) maintenance programs. • A total of 675 tons of trash and debris was removed from street sweeping activities. • 559 tons of debris was removed from standard MS4 maintenance. • City personnel and contractors were trained regarding storm water pollution prevention concepts and practices.
Industrial and Commercial	• During the Reporting Period the City inspected 291 businesses, which exceeded the Municipal Permit requirement to inspect at least 25 percent of the inventoried stationary industrial and commercial business. • During the inspections, the City notified industrial and commercial businesses of the City's new BMP requirements and provided applicable outreach materials. • Each facility's compliance with the State of California General Industrial Permit (Industrial Permit) was also assessed during inspections. • City personnel participated in regional workgroups relating to industrial and commercial activities.
Residential	• During the Reporting Period the City hosted a variety of waste disposal and clean-up events and encouraged residents to participate in these events.

Component	Key Actions
	• The City also responded to 46 complaints made to the City storm water hotline regarding residential areas. The complaint investigations were used as opportunities to enforce BMP requirements and to educate residents. • The City's *Santee Review* newsletter, which included storm water-related articles, was made available to all residents during the Reporting Period. • City personnel participated in regional workgroups relating to residential activities.
Illicit Discharge Detection and Elimination	• To comply with Addendum No. 2 of the Municipal Permit, the full section will not be submitted until after September 30, 2010, the City did still implement its IDDE program component during the Reporting Period. • During this period, the City responded to and resolved 68 complaints made to its storm water hotline and to the City website, as well as referrals from City staff. • The City completed its 2009 Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program). The recommendations in the final report for the Dry Weather Monitoring Program were addressed during the Reporting Period.
Education	• The City continued to conduct various education and outreach activities throughout the Reporting Period as a means to raise storm water awareness in various communities in the City. • The City continued to circulate the *Santee Review* newsletter, which included storm water-related articles aimed at both residents and businesses in the City. • The City finalized its updated stormwater pages to better inform the public of relevant stormwater requirements. • The City continued to distribute activity-specific fact sheets during industrial and commercial inspections as well as during residential complaint investigations; • Over 2,142 copies of various educational materials were distributed during the Reporting Period. • City personnel participated in regional workgroups relating to education and outreach activities.
Public	• During the Reporting Period, the City provided a variety of

Component	Key Actions
Participation	opportunities for individuals in the City to participate in the City's storm water program. • The City hosted clean-up events along Forester Creek and the San Diego River; volunteers removed approximately 24,840 pounds of trash and debris. • Individuals were also encouraged to participate in activities such as storm drain stenciling.
Fiscal Analysis	• Itemized expenditures for the Reporting Period are presented in this section.
Effectiveness Assessment	• The City has identified significant activities within each program component and metrics to assess each one. Standard tables to report this information have been created and included in Section 11 of this JURMP Annual Report.
Special Investigations	• The City conducted ambient water quality monitoring in the San Diego River, Forester Creek, and Sycamore Creek as part of an additional study conducted concurrently with the Dry Weather Monitoring Program.

Conclusions and Recommendations

The results of our additional study of the receiving waters in Santee demonstrate that water quality in both Forester Creek and the San Diego River tend to improve as these flow through Santee and an assessment of water quality trends also shows improvement. These observations demonstrate that the stormwater program has been effective.

The City will continue to implement the new and updated programs in its JURMP during the 2010/2011 Fiscal Year; it is anticipated that some program refinements will be made as implementation progresses. The City will also collaborate with the other Copermittees to improve the efficiency of its program and to develop updated methods of assessing program effectiveness.

1.0 INTRODUCTION

1.1 BACKGROUND

This Jurisdictional Urban Runoff Management Plan (JURMP) Annual Report presents a summary of the activities of the City of Santee (City) during the 2009/2010 fiscal year (Reporting Period). Preparation and submittal of the JURMP Annual Report is required by San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit).

1.1.1 REGULATORY BACKGROUND

The 1987 amendments to the Federal Water Pollution Control Act (also known as the Clean Water Act, or CWA) established a framework for regulating MS4 discharges under the National Pollutant Discharge Elimination System (NPDES). The RWQCB issued the first regional National Pollutant Discharge Elimination System (NPDES) permit for municipalities in the San Diego Region in 1990, followed by a revised permit in 2001. The revised permit, RWQCB Order No. 2001-01 was replaced by the current Municipal Permit R9-2007-0001, in 2007.

Like all the other municipalities in the San Diego region regulated by R9-2007-0001, collectively referred to as Copermittees, the City developed and submitted a JURMP to the RWQCB in 2002. As required by the Municipal Permit, the City submitted an updated JURMP in March 2008. The JURMP includes management measures for a variety of different sectors and activity types such as municipal, industrial, commercial, construction, and significant development and re-development activities.

Annual reports on the implementation of the JURMP are required to be submitted to the RWQCB on September 30 of each year. This JURMP Annual Report presents information for the 2009/2010 fiscal year (July 1, 2009 to June 30, 2010).

1.1.2 CITY SETTING

The City of Santee is located in central San Diego County and is bordered by the City of San Diego to the west, the City of El Cajon to the south, and unincorporated portions of San Diego County. The City itself includes approximately 16 square miles and an estimated population of 58,000. Land use within the City is mainly residential; other land uses in the City include municipal facilities, industrial and commercial facilities, streets, highways, and undeveloped open spaces. Land use categories with the corresponding acreage percentage of the total area are included in Table 1-1, below.

Table 1-1
City of Santee Land Use Breakdown

Land Use	Total Area (Acres)	Percentage
Vacant	4,478	42%
Single Family Residential	2,328	22%
Transportation	1,152	11%
Open	542	5%
Public Facilities and Utilities	380	4%
Commercial	373	4%
Other Residential	322	3%
Industrial	315	3%
Parks	279	3%
Multi-Family Residential	234	2%
Water	111	1%
Office	21	<1%
Recreation	20	<1%
Construction	13	<1%
Agriculture	5	<1%
Total	**10,574**	**100%**

Source: 2007 SANDAG land use data

The City of Santee is located entirely in the San Diego River Watershed, Hydrologic Unit (HU) 907. Specifically, the entire City of Santee is located within the Lower San Diego River Hydrologic Area (HA), 907.1. While a significant portion of the City drains directly to San Diego River (which flows from east to west across the City), some sections of the City drain first to other receiving waterbodies within the City that then ultimately discharge into San Diego River. Forester Creek enters the City of Santee from the southeast, eventually merging with San Diego River west of Carlton Hills Boulevard. Sycamore Creek enters the City from the north, flows south, eventually merging with the San Diego River west of Santee Recreation Lakes (Santee Lakes). Refer to Figure 1-1 for information on land use and drainage basins in the City.

Both Forester Creek and the San Diego River are listed as impaired waterbodies on the 2006 Clean Water Act (CWA) 303(d) list. The portion of Forester Creek within the City of Santee is impaired for fecal coliform, low dissolved oxygen, phosphorus, and total dissolved solids (TDS). The upper three miles of Forester Creek, which are upstream of the City, are also listed for a pH impairment. The last six miles of the San Diego River is impaired for fecal coliform. The lower San Diego River, including the portion that flows through Santee, is listed as being impaired for low dissolved oxygen, phosphorus, and

TDS. Sycamore Creek is listed as having a RARE beneficial use. Rare beneficial use is defined as water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered. Additional impairments are proposed in the draft 2010 Integrated Report. These impairments will be included in future annual reports when they have been approved by the Office of Administrative Law.

Figure 1-1
City of Santee Land Use and Drainage Basins

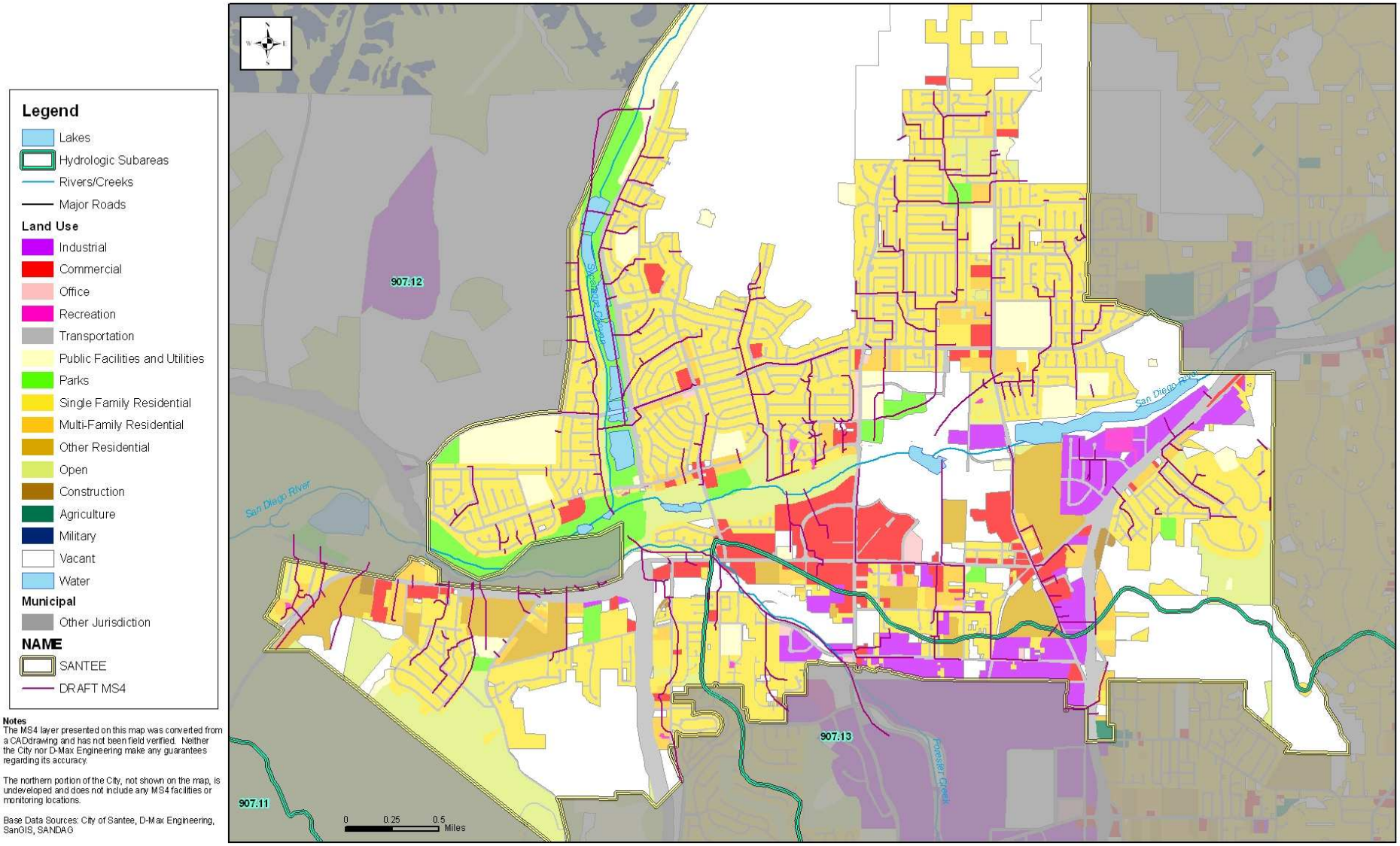

1.2 PURPOSE AND OBJECTIVES

The City's JURMP presents a strategy to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP). The JURMP includes a variety of programs intended to minimize or eliminate the potential effects of urban runoff from the City on receiving water bodies. This JURMP Annual Report has been prepared to document the City's implementation of its JURMP during the 2009/2010 reporting period.

1.3 REPORT ORGANIZATION

This report follows the standard reporting outline jointly developed by the Copermittees and submitted to the RWQCB in July 2007. The following sections are included in the JURMP Annual Report.

Section 1	**Introduction**
Section 2	**Development Planning Component**
Section 3	**Construction Component**
Section 4	**Municipal Component**
Section 5	**Industrial and Commercial Component**
Section 6	**Residential Component**
Section 7	**Illicit Discharge Detection and Elimination Component**
Section 8	**Education Component**
Section 9	**Public Participation Component**
Section 10	**Fiscal Analysis Component**
Section 11	**Effectiveness Assessment Component**
Section 12	**Special Investigations**
Section 13	**Non-Emergency Fire Fighting**
Section 14	**JURMP Revisions**
Section 15	**Conclusions and Recommendations**
Section 16	**References**

Each section includes all the elements required by the standard JURMP Annual Report format. In some cases, additional subsections within the standardized sections have been added to provide a clearer explanation of the City's activities during the reporting period. For example, in this introduction section, the standard reporting format only includes subsections 1.1 and 1.2. Subsection 1.1, Background, has been divided into subsections 1.1.1, Regulatory Background, and 1.1.2, City Setting, for the sake of clarity.

2.0 DEVELOPMENT PLANNING COMPONENT

2.1 INTRODUCTION

The development planning component of the City's JURMP aims to improve overall storm water quality by reducing the discharge of pollutants from development projects to the MEP and managing potential increases in runoff from development projects that have the potential to negatively affect downstream water bodies. During the Reporting Period, the City accomplished these goals through implementation of its JURMP document.

The City implemented new Municipal Permit requirements for development planning throughout this Reporting Period. The City's SUSMP (Standard Urban Stormwater Mitigation Plan) requirements were updated to incorporate the March 2009 Model SUSMP.

City staff participated in development and review of this Model SUSMP and the regional Hydromodification Plan (HMP) that was approved on July 14, 2010.

2.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the development planning component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the Reporting Period.

- The City revised development review processes to incorporate the updated Model SUSMP. Additionally, the updated SUSMP and development review forms were uploaded to the City's website to facilitate the incorporation of these changes in development design.
- Conducted maintenance inspections of treatment control BMPs at 24 completed development projects throughout the City.
- Provided information about the annual maintenance verification program, including an example certification letter, on the City's website.
- Conducted trainings for City staff regarding new SUSMP requirements.

2.2 LAND USE PLANNING

2.2.1 BACKGROUND

The City's General Plan was last updated in 2003 and contains water quality and watershed protection principles in the plan's Conservation Element. The comprehensive principles established in 2003 provide an ample framework for implementing the

requirements of the Municipal Permit, and no changes to these policies were necessary during the reporting period.

2.2.2 Source Characterization

The City's General Plan contains established restrictions on the types of new development projects based on the planned land uses to ensure public safety and limit negative impacts to the surrounding environment. No changes to development restrictions in the City's General Plan for storm water purposes were necessary during the reporting period. However there has been a revision to require new trash enclosure areas to be covered with a roof.

2.2.3 Best Management Practice Requirements

Please refer to the City's updated JURMP document for a list of the water protection policies included in the City's General Plan. These policies remained the same throughout the reporting period.

2.2.4 Program Implementation

The City implemented its water protection related land-use policies during the reporting period mainly through the City's Municipal Code. Complete copies of these documents, can be found in the City's updated JURMP. Details on how the City implemented its established water protection policies through its environmental review process and its development project approval and verification processes during the reporting period are provided in Sections 2.3 and 2.4 of this JURMP Annual Report document.

The City's Municipal Code is written to incorporate the most current Model SUSMP as a requirement for development and re-development subject to SUSMP requirements; therefore, it was not necessary for the City to update its Municipal Code to include the newly adopted updated Model SUSMP. The City SUSMP was revised and adopted prior to the March 25, 2010 deadline.

2.3 Environmental Review Process

Stormwater requirements for a project are reviewed during the pre-application stage. As described in the JURMP, the project proponent is required to complete the updated Project Applicability, LID and Source Control Checklist so that these requirements can be evaluated. Preliminary designs are required to incorporate the placement and description of BMPs to be used, so that an assessment can be made to determine whether it is feasible for the project to comply with applicable stormwater requirements. The project approval document incorporates the conditions needed to comply with these applicable stormwater requirements (for example, filing an NOI to comply with the State Construction Permit, development of a SWPPP, development of a SWMP, use of treatment control BMPs which have medium removal efficiency for applicable pollutants, execution of a BMP maintenance agreement, etc.). No modifications to the

City's environmental review process have been made since the submittal of the updated JURMP.

2.4 Development Project Approval and Verification Process

2.4.1 Background

During the Reporting Period, the City implemented the watershed protection principles in the City's General Plan through various aspects of the City's development project approval and verification process, as detailed below. BMP selection and verification followed the process described in the City's JURMP.

2.4.2 Source Characterization

The different priority pollutants, sources, and activities associated with development projects within the City are addressed through the implementation of the City's SUSMP requirements.

2.4.3 Best Management Practice Requirements

The City's BMP requirements mirror those in the regionally-developed Model SUSMP. The City is encouraging the incorporation of BMPs within landscape features (such as bioretention facilities and bioswales) over proprietary products that are typically installed in catch basins or at the end of a pipe. The bioswales and bioretention facilities are more likely to remove priority pollutants in the City at the required efficiency ensuring Municipal Permit compliance and need less intensive maintenance by the property owner. These features can also provide an aesthetic benefit to the property.

2.4.4 Program Implementation

During the Reporting Period, the City required implementation of its BMPs for development projects through education, a comprehensive development project approval process, and the treatment control BMP inspection and maintenance verification program.

2.4.4.1 Outreach and Staff Training

The City regularly trains staff involved in the planning and review of development projects within the City and works closely with the development community to communicate its development requirements throughout the entire approval process. During the Reporting Period, staff and industry training was focused on changes being made to the City's SUSMP requirements. Details on trainings conducted and educational materials developed and distributed related to the new development during the reporting period can be found in Section 8 of this JURMP Annual Report. Additionally, distribution of maintenance verification letters to parties responsible for

maintenance of treatment control BMPs at completed projects continues to increase the level of knowledge of regulated parties.

2.4.4.2 Urban Runoff Approval Process for Development Projects

All development projects that met the SUSMP definition for high priority projects were required to complete the City's urban runoff approval process as detailed in the City's JURMP. Forms and reports completed by project applicants are kept with the project's file at the City for future reference. The City thoroughly examines all development applications to determine what documents related to storm water compliance are required. Development projects determined to be Priority Projects after completing the Project Applicability, LID and Source Control Checklist are required to prepare a Storm Water Management Plan (SWMP). The City completed updating its model SWMP and development review forms to aid Priority Projects in meeting these new requirements during the 2009/2010 fiscal year. The completed documents have been uploaded to the City's website for easy reference. The City will continue to work closely with development proponents to ensure compliance with the City's SUSMP requirements.

Table 2-1 lists the Priority Projects subject to the City's SUSMP requirements during the Reporting Period, the number of document reviews for each project, and the date each was approved.

Table 2-1
Development Projects Subject to SUSMP Requirements During 2009/2010

#	Project Name	Location	Number of Reviews	Approval date
1	Santee Affordable	APN 386-192-36, -37, -39, 42	4	12/14/09
2	AT&T Storage Yard	APN 384-190-54	2	3/22/10
3	Lunar Lane Industrial Building	APN 384-091-38, -39	4	3/24/10
4	Cabins at Lake 7	APN 376-010-07, 378-020-49	3	6/15/10

One example of how a project was conditioned to meet SUSMP requirements is the development of Santee Affordable Apartments. The proposed project was a multi-family affordable housing development. The initial submittal demonstrated some confusion between Site Design LID BMPs and treatment control BMPs, did not include an analysis of the primary pollutants of concern, and referred to documents associated with other jurisdictions.

The City educated the design engineer on how to incorporate Site Design LID BMPs into the proposed design. This resulted in the direction of roof drains into landscaped areas and the raising of catch basins above grade in landscaped areas to allow water to be retained.

The design engineer was directed to use a treatment control BMP that would treat the primary pollutants of concern to at least medium removal efficiency. This resulted in the bioswale initially proposed being substituted with a more effective bioretention facility. The City reviewers worked closely with the design engineer to ensure that an adequate area was incorporated into the biorentention facility. The design engineer was also required to justify why various BMP options were not used in the design. Four design reviews were required before the proposed design was accepted.

The City will continue to monitor the review process and provide ways to educate project proponents as needed. Not only have example inspection and maintenance documents been provided to project proponents, but the revised SUSMP includes an attachment describing what is required in a design submittal.

The City SUSMP adopted during March 2010 requires the implementation of LID strategies to treat discrete drainage management areas (DMAs). These strategies include self treatment, self retention, infiltration, pervious pavement, bioretention, flow-through planters, dry wells and cisterns. This is a move away from using low, medium or high removal efficiencies.

During the reporting period, no projects received a SUSMP waiver for implementation of treatment control BMPs. The City has never issued a SUSMP waiver in the past, and at this time the City has no plans to develop a SUSMP waiver mitigation program.

Hydromodification Management Plan

During the Reporting Period the Copermittee hydromodification management workgroup met regularly to discuss key HMP development issues and provide updates on the status of consultant work products. The City regularly participated in the Land Development Workgroup, which was responsible for the development of the Hydromodification Management Plan (HMP) during the Reporting Period. The City's current SWMP guidance document contains detailed Interim Hydromodification Criteria (IHC), which the City will continue to implement until the HMP is finalized. None of the development projects undergoing the City's review process during the reporting period were subject to the IHC. The City's next large scale development project, Fanita Ranch, had its vested tentative map and agreement approved by the City Council prior to the City's interim hydromodification criteria going into effect, and is therefore not subject to the City's hydromodification requirements. Additionally, this project received a separate individual permit from the Regional Board.

The final HMP was approved by the Regional Board on July 14, 2010, and the City will incorporate the HMP requirements into the City's SUSMP within 180 days of approval, as specified in the Municipal Permit. This will be reported on in the Annual Report for the 2010-2011 fiscal year.

BMP Installation Verification

Three Priority Projects under construction during the 2009/2010 fiscal year were completed prior to the end of the Reporting Period. Verification that the BMPs proposed in the project's SWMPs were installed in accordance with approved

documents was performed during the final project inspection prior to occupancy of the site. Project engineers conducting these checks are aware that checks for permanent storm water BMPs should be performed during the final inspection. Responsible parties are promptly notified of the requirements to maintain the BMPs after occupancy, and newly installed BMPs are typically inspected during the first summer after occupancy, whether or not they are prioritized as high priority.

The RWQCB conducted an audit of three Priority Projects, Walgreens 2, Sonic Restaurant and Toyota, on October 30, 2009 and March 17, 2010. The audit comprised of a review of the SWMP for each project (October 2009) and a site visit to assess how the BMPs were implemented (March 2010). The review of all the SWMPs and site visits to Walgreens 2 and Sonic restaurant concluded that these SWMPs and BMP installations were in compliance with the City's SUSMP requirements.

Based on the site visit to Toyota it was agreed that the installation of the Site Design LIDs (the landscaped areas where the runoff from the parking lots would initially drain) could be improved. These swales were improved by removing soil in the center of these areas, producing a gentle u-shape across the planter. The area around catch basins in these drainage areas was graded so that water would be retained in these areas, rather than draining straight into the catch basin. These areas were then replanted. Based on an initial review by the RWQCB, these adjustments are considered to be satisfactory, subject to confirmation during rain events (i.e., verifying that the runoff drains as planned).

All completed Priority Projects have been assigned TTWQ priorities using the prioritization flow chart presented in the City's JURMP, and the projects have been added to the City's treatment control BMP inventory included as Attachment A.1 of this document. Projects completed during the Reporting Period have been noted with an asterisk.

2.4.4.3 Treatment Control BMP Inspection and Maintenance Verification Program

The City uses information included in the City's treatment control BMP database to determine what BMPs should be present at the individual project sites. Each BMP was visually inspected, and the inspector documented the findings for each site visited. Table 2-2 summarizes how inspections conducted corresponded with the relevant Municipal Permit requirements.

Table 2-2
Assessment of Compliance with Required Inspection Frequencies

Class	Number of Sites	Inspections	Percent Inspected	Permit Requirement	Requirement Met
All Inventoried Sites	29	24	83%	20%	**Yes**

Class	Number of Sites	Inspections	Percent Inspected	Permit Requirement	Requirement Met
Sites with Drainage Inserts	20	18	90%	50%	**Yes**
High TTWQ Sites	9	9	100%	100%	**Yes**

Treatment control inspections were conducted during May and June 2010. Based on these inspections, notices regarding maintenance requirements were sent and follow up inspections conducted. Table 2-3 provides more detailed information about the inspections. The table includes the development projects inspected, the BMPs installed at each site, the BMPs inspected, brief descriptions of inspection findings, and a discussion of how any issues noted were resolved. Public Priority Projects are marked as Capital Improvement Projects (CIP) in the table.

Table 2-3
Summary of Treatment Control BMP Inspection Results

#	Project Name	BMP(s)	Inspection Notes
1	Altair	Hydrodynamic separator, drainage inserts (7)	Inspected on 12/22/09. Drainage inserts missing and hydrodynamic separator needs maintenance. Reinspected on 1/6/10 and BMPs acceptable.
2	Aubrey Glen	Hydrodynamic Separator	Inspected on 6/1/10, BMPs need maintenance. Contacted HOA who provided certification (invoice for maintenance) that this was completed.
3	Autowerks	Grassy swale, drainage inserts (2)	Inspected on 6/1/10, BMPs need maintenance. Owner has conducted maintenance and has scheduled reinspection with City.
4	Blackhorse Estates (CIP)*	Detention basin, drainage filters (7)	Inspected 06/01/10, basin needs cleaning and four inserts need cleaning. City crews have scheduled maintenance to be completed at beginning of October.
5	Cameron II	Grassy Swale, drainage insert (1)	Inspected 09/22/09, BMPs in acceptable condition.
6	Cuyamaca Town Commons*	Drainage inserts (4)	Inspected 6/1/10, two filters need maintenance. Certification of maintenance has been provided (including manifests provided by contractor).
7	Express Performance	Drainage inserts (2) and media filter	Inspected 6/3/10, filters need maintenance. Spoke to owner who had filters maintained. Reinspected 6/7/10 filters maintained and in an acceptable condition.
8	Farrington Court	Drainage insert (1)	Inspected 9/16/09, BMPs in acceptable condition. Reinspected 6/1/10, BMPs in acceptable condition.
9	Fred's Fences	Swales, drainage insert (1)	Inspected 09/21/09 channel needs cleaning. Spoke to owner who had filters maintained. Reinspected 10/11/10, channel cleaned, BMPs in acceptable condition.

#	Project Name	BMP(s)	Inspection Notes
10	Hartford Insurance*	Vegetated swale, rocky swale, and drainage inserts (3)	Inspected 6/1/10, BMPs in acceptable condition.
11	Marketplace	Infiltration trench, grass swale, water quality inlet (4), and drainage insert (2).	Inspected 9/16/09, BMPs did not need maintenance. . Inspected 6/10/10 BMPs need maintenance, sent letter and copy of inspection form to owner. Sent notice to comply to owner requiring verification of maintenance.
12	Michael Stoff Property	Grass swale	Inspected on 06/2/10, BMPs in acceptable condition.
13	Morningside	Hydrodynamic Separator (1)	Inspected 09/22/09, BMPs in acceptable condition.
14	Padre Dam Service Center*	Drainage Inserts (6)	Inspected 06/2/10, maintenance needed, verification of maintenance provided stating BMPs were maintained during August 2010.
15	Prospect Glen*	Drainage Inserts (3)	Inspected 6/2/10, BMPs in acceptable condition.
16	Rayo Wholesale*, Rayo II	Grass swale, grassy detention basin with sand cone filter (1)	Inspected 6/2/10, BMPs acceptable.
17	Sonic Car Wash	Vegetated swale, drainage inserts (3)	Inspected 09/17/10, BMPs acceptable.
18	Sonic Restaurant	Grass swale	Inspected 09/16/10, NOV issued for not maintaining BMP per City direction. Reinspected 10/21/09, maintenance completed, BMP in acceptable condition. Inspected during RWQCB audit on 3/17/10, BMPs in acceptable condition. Inspected 6/2/10 BMPs in acceptable condition.
19	Toyota	Extended detention basin, bioretention facilities and drainage inserts (7)	Inspected on January 13, 2010 and March 17, 2010. Based on RWQCB audit the bioretention facilities were recontoured. This was re-inspected on May 18, 2010 and the bioretention facility was deemed acceptable. This will be confirmed during a future rain event.
20	Treviso	Hydrodynamic separator (1), drainage inserts (2)	Inspected 06/3/10, BMPs require maintenance sent letter and copy of inspection form to property manager. Sent notice to comply to property manager requiring verification of maintenance.
21	Santee Trolley Square*	Drainage inserts (12)	Inspected 7/14/09 BMPs in acceptable condition. Inspected 6/3/10, maintenance required. Received certification of maintenance (service log from contractor was attached stating that BMPs had been maintained during August 2010). Reinspected during September 2010, evidence that BMPs were being maintained, although some material had been collected during the intervening month.
22	Vista Este*	Drainage inserts (2)	Inspected 06/3/10, BMPs acceptable acceptable condition.

#	Project Name	BMP(s)	Inspection Notes
23	Walgreens 1	Media filter	Inspected 6/3/10 BMPs need maintenance.
24	Walgreens 2	Bioswale and media filter	Inspected 6/3/10 BMPs in acceptable condition.

Notes
* Project approved prior to development of the City's SUSMP requirements
- Boys and Girls Club, and Ciraolo Family were inspected just prior to the beginning of 2008/2009 and found to have BMPs in acceptable condition; American Sheet Metal, Sky Business Park and Autumnwood II were inspected prior to 2009/10 and were also in acceptable condition. These four facilities were therefore not inspected in 2009/2010.
Certifications, usually accompanied with an invoice, manifest or other information from a contractor are generally accepted as evidence that BMPs that needed maintenance, were serviced.

Eight of the development sites inspected during the Reporting Period were approved prior to development of the City's SUSMP which requires installation of treatment control BMPs. These sites are marked with an asterisk both in the table above and in the City's Treatment Control BMP Inventory in Appendix A.1. While the City is aware that treatment control BMPs exist on these project sites, no maintenance agreements or SWMPs were required for these sites when they were approved. Consequently, the City does not have a mechanism to require maintenance and annual maintenance certification for the treatment control BMPs at these locations. The City still conducted inspections of the treatment control BMPs at these sites during the Reporting Period to educate the sites on proper inspection and maintenance of their treatment control BMPs. The City will continue to periodically monitor the status of treatment control BMPs at these locations.

Follow-up letters will be sent to the responsible party for all projects needing maintenance prior to 10/1/10 and the City will conduct follow-up inspections and enforcement as necessary. Issues for other properties were discussed in person with the property owner. City follow-up actions and the resolutions for these cases are described above in Table 2-3. During the reporting period, none of the inspected sites were observed to present a significant threat to human health or the environment during inspections; therefore none were reported to the RWQCB.

In addition to City-conducted maintenance inspections, the Municipal Permit requires annual verification of operation and maintenance of treatment control BMPs installed within the City's jurisdiction. Annual verification must be provided by the party responsible for treatment control BMP maintenance and must be returned to the City prior to the start of the rainy season (October 1st). The City notified operators of the facilities within the inventory of the need to provide annual BMP maintenance verifications for the 2009/2010 fiscal year. Annual verification of maintenance was received for all applicable properties during 2009/2010 fiscal year.

Of those required to provide annual verification, many provided annual verification prior to October 1st. Others (Ciraolo Industrial Building, Cuyamaca Town Commons, Fred's Fences, and Prospect Glen) provided annual verification during October and

early November in response to telephone calls and notices of violation issued by the City.

The City has developed procedures for development projects which should lead to timely submittal of maintenance certifications:

- A BMP Maintenance Agreement that is signed by the developer and recorded with the property.
- Procedures to notify responsible parties of their obligations as a project is completed have been developed to allow property owners to budget for maintenance.
- Standard forms and letters have been developed to routinely notify and remind property owners of their responsibility to maintain and submit certifications.
- Information on treatment control BMP maintenance and verification on the City's website, including an example annual verification letter that can be downloaded.

Protecting water quality is the overall objective of ensuring the maintenance of treatment control BMPs. Through the BMP Maintenance Agreement that the City uses on Priority Projects, the City has the right to maintain treatment control BMPs on private property and to recoup the costs from the responsible party. The City will use this tool when appropriate and feasible.

Enforcement Summary

The City took action to resolve issues observed during both field inspections and the maintenance verification program, as described above. A total of five notices of violation were issued during the reporting period. The City's approach was effective at bringing about compliance with its requirements, as shown in the more detailed discussions included earlier in this section.

2.5 Development Planning Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

2.6 Program Review and Modification

The City's JURMP was recently updated in March 2008. No changes to the City's development planning component have been made since that time.

3.0 CONSTRUCTION

3.1 INTRODUCTION

The City's construction program has been designed to prevent illicit discharges from construction sites. Projects subject to the General Construction Permit are not issued permits until they have demonstrated that they have filed a notice of intent and developed a SWPPP. The City has developed a database and procedures to ensure that construction sites are prioritized and inspected at the frequencies required by the Municipal Permit. In addition, the City is an active participant in the Land Development Workgroup, which addresses developments in project design and construction.

All staff associated with construction projects are aware of the stormwater requirements and take appropriate follow-up action when potential violations are observed. This allows the City to leverage the staff currently working on construction projects to ensure that compliance is consistently achieved. Stormwater program staff ensure that the requirements of the municipal permit are met and assist in ensuring that compliance is achieved at each site.

3.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the construction component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

- Prepared individual rainy season notification letters which identified what individual BMP improvements are needed at each construction site prior to the rainy season, in addition to summarizing the requirements for all construction sites. The information in these letters was used as a cross-reference during pre - and early rainy season inspections.
- Developers were required to submit a form describing how they intended to manage site runoff and BMPs during the upcoming rainy season. The rainy season form also included a section for the developer to provide contact information to be used during rain events. (Attachment 3-1).
- Conducted plan checks of erosion control plans and SWPPPs to ensure construction projects planned to comply with the City's minimum BMP requirements.
- Conducted training for applicable City staff regarding the construction requirements in the City's JURMP.
- Conducted 275 construction inspections at 23 sites per the frequencies set forth in

the JURMP. During the wet season, high TTWQ sites were inspected bi-weekly, medium TTWQ sites monthly, and at least one inspection was conducted at low TTWQ sites with grading activity.

- Conducted 24 follow-up inspections, issued 9 written warnings, 15 NOVs, and 1 administrative citation to construction sites in response to violations of the City's minimum BMP requirements.

3.2 Source Characterization

An inventory of active construction projects during the reporting period is presented in Appendix A of this JURMP Annual Report document. The City's inventory was maintained throughout the reporting period. New construction projects were added to the inventory at the start of construction, and projects were removed from the inventory after construction was completed. Since construction projects were continually being added and removed throughout the fiscal year, inventory updates were usually performed more frequently than the minimum once per month.

3.3 Updates to Ordinances and Approval Processes

The City updated its Grading and Storm Water Management and Discharge Control ordinances during the previous reporting period as part of the City's JURMP update in 2008. Details on these revisions can be found in Section 5 of the City's JURMP. Details of any changes to the City's approval process during the reporting period are discussed in Section 3.5 of this document.

3.4 Best Management Practice Requirements

The City's construction and grading project requirements are described in the City's BMP Manual, which was included as Appendix C of the City's updated JURMP document. These BMP requirements were implemented starting in March 2008.

Note that in response to a letter from the RWQCB to the City dated February 27, 2009 the maximum disturbed area for hillside developments (as defined on the City of Santee Landuse Map) will be limited to 17 acres. Hillside sites as defined by the City's Land Use Map, which originates from the General Plan, that are in compliance with applicable storm water regulations and have adequate control practices implemented to prevent storm water pollution may expand their maximum grading area on the approval of the City Engineer to allow a balanced cut-and-fill approach. The 50-acre maximum grading area will still apply to non-hillside developments.

3.5 Program Implementation

The City implemented the construction component of its JURMP throughout the reporting period through:

- Education and staff training;

- A comprehensive construction and grading approval process; and
- A construction inspection program.

This program is described below.

3.5.1 EDUCATION AND STAFF TRAINING

Education and staff training implemented during the 2009/2010 fiscal year focused on the new State General Construction Permit and on communicating the City's construction requirements to both City staff and the construction community. Please see Section 8 of this JURMP Annual Report document for details on training performed and educational materials distributed related to construction and grading activities.

3.5.2 CONSTRUCTION AND GRADING APPROVAL PROCESS

During the reporting period, City personnel verified that all construction projects planned to implement BMPs to meet the City's minimum requirements prior to issuing any building or grading permits. The City's grading approval process is described thoroughly in Section 5 of the City's updated JURMP. While some of the City's minimum BMP requirements have been updated, the overall approval process remained similar to that of previous years.

No projects in Santee that began construction after October 1, 2007 were larger than 50 acres. Note that while none of the City's construction sites were subject to the 50 acre grading limitation, all construction sites were still required to limit exposed cleared or graded areas to the amount of area that could be protected prior to a rain event, as prescribed in the City's seasonal BMP requirements. Also note that a smaller maximum disturbed area limit of 17 acres will be applied to hillside projects, however no projects to date have met this criterion.

The City also began implementing advanced treatment requirements during the Reporting Period. Criteria for determining when advanced treatment is required are detailed in the City's BMP Manual (Appendix C of the JURMP). During the Reporting Period, the City's minimum BMP requirements were generally adequate at controlling sediment discharges at all of the active construction sites within the City's jurisdiction. During this reporting period advanced treatment methods were not required at any construction sites.

3.5.3 INSPECTION OF CONSTRUCTION SITES

Appendix A.2 of this JURMP Annual Report contains a list of construction projects that were active during the reporting period, along with their assigned TTWQ priorities, the number of weeks the site was active within the rainy season, the numbers of inspections conducted during the wet and dry seasons, the number of follow-up and complaint inspections, and the total number of inspections for each site. In total, 275 construction inspections were performed for 23 construction sites.

Construction inspections conducted during the reporting period were performed as described in the City's JURMP. Key components of the inspections include checks for coverage under the General Construction Permit during the initial inspection and assessments of compliance with the City's BMP and discharge requirements during all inspections. Responsible parties at the sites are educated as needed during inspections. Copies of the inspection forms are kept on file at the City. The City conducts inspections at high TTWQ construction sites bi-weekly during the wet season and monthly for medium TTWQ sites. While the Municipal Permit only requires construction inspections at low TTWQ sites on an "as needed" basis year round, the City conducts at least one inspection at active low TTWQ construction projects with grading activities during the wet season. The number of weeks each site was open during the wet season and the number of inspections completed at each site are presented in Appendix A.2.

When any violations were noted during routine or follow-up inspections, these violations were documented on the project's inspection form, and the sites were given a list of corrective actions necessary to address the observed violation. When necessary, a written notice was issued for the violation, and the City inspector followed up with the site until compliance was achieved. In most cases, violations were corrected while the inspector was still at the site, and follow-up visits were not necessary. Details on the enforcement actions taken for construction sites during the implementation period are described below.

3.5.4 ENFORCEMENT MEASURES

During inspections, violations of the City's BMP requirements were noted. In such instances, City inspectors took enforcement actions as necessary to bring about compliance. Table 3-1 presents the number of enforcement actions taken during the reporting period in response to violations of the City's minimum construction BMP requirements. Enforcement actions are administered in an escalating manner as described in the City's updated JURMP.

Table 3-1
Total Number of Enforcement Actions Taken

Written Warnings	Follow-Up Inspections	Administrative Citations	NOVs	Stop Work Orders
9	24	1	15	0

On December 7, 2009 the City issued an NOV to the developer of Sky Ranch based on observations made during a rain event. A newly-graded trail on the north side of the development had not been properly stabilized, resulting in a discharge of sediment-bearing water. The RWQCB were notified of the discharge, however, the developer immediately responded to the situation by cleaning up the discharge and stabilizing it

prior to the next rain (forecast within 72 hours).

On December 17, 2009 the City issued an administrative citation to the developer of Altair for repeated observations of similar violations (discharges from cleaning activities to the storm drain system). The RWQCB was notified of this higher level of enforcement.

Other than the incidents above, none of the violations observed at construction sites during the Reporting Period were found to endanger human health or the environment. The City was able to address these violations through the City's established enforcement process.

3.6 Construction Activities Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

3.7 Program Review and Modification

The City's JURMP was recently updated in March 2008. With the exception of the change in maximum grading area for hillside development, no changes to the City's construction component have been made since that time.

4.0 MUNICIPAL COMPONENT

4.1 INTRODUCTION

Throughout the Reporting Period, the City of Santee continued to manage municipal areas and activities to reduce the potential for municipal discharges of pollutants to the MS4 to the MEP. As discussed in detail in the City's JURMP, the City owns and operates a variety of municipal facilities and activities. Public parks and recreation facilities, administrative buildings, fire stations, and public works facilities make up the bulk of the municipal areas in the City. Municipal activities conducted by the City include but are not limited to graffiti removal, building maintenance, landscaping activities, street sweeping, street and sidewalk repair, and MS4 maintenance. Note that the City is not responsible for water supply or wastewater conveyance and treatment. These activities are the responsibility of Padre Dam Municipal Water District (PDMWD).

4.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the municipal component during the 2009/2010 Reporting Period are presented in the following bulleted list. Additional details about the City's implementation of the municipal component and of its storm water program during the reporting period are provided in the remainder of Section 4.

- The City inspected all high TTWQ fixed municipal facilities.
- The City provided in-house training sessions for 33 municipal staff members.
- The City removed a total of 675 tons of debris from street sweeping activities.
- The City removed a total of 559 tons of debris from MS4 cleaning activities.
- City personnel continued to restock the pet waste bag dispensers in City parks, a total of 240,000 pet waste bags were used during 2009/2010.
- The City continued its sustainability program, complementing current environmental programs, such as stormwater, with additional programs to reduce consumption of energy from non-renewable resources, promoting the development of green buildings, and reducing consumption of water and energy.

4.2 FIXED FACILITIES

4.2.1 BACKGROUND

The City owns and operates a variety of municipal fixed facilities. As mentioned in the City's JURMP, municipal fixed facilities have been grouped under one category, fixed facilities, because these facilities receive routine inspections as part of the City's municipal program, making program implementation generally similar. For the

purposes of organization, municipal fixed facilities are divided into the following categories: Parks and Recreational Facilities, Public Works Facilities, Fire Stations, and Other Fixed Facilities, which includes fixed facilities that could not be placed into another category.

4.2.2 SOURCE CHARACTERIZATION

All fixed facilities are included on the City's municipal inventory, which was revised during the JURMP update in early 2008. The JURMP includes detailed descriptions of each of the categories mentioned in the previous subsection and a discussion of activities beyond what is suggested by the facility's category or facility name. There were no changes to the City's municipal inventory nor were there any updates to the discussions of any fixed facilities on the City's inventory. The City's inventory is included as Appendix A.3.

4.2.3 BEST MANAGEMENT PRACTICE REQUIREMENTS

The City continues to implement and assess the effectiveness of BMPs at all fixed municipal facilities. As mentioned in the City's JURMP, the City uses the CASQA Municipal BMP Handbook to establish appropriate BMPs for fixed municipal facilities. Table 6-2 in the City's JURMP describes the CASQA fact sheets that are used for specific facility types.

The City continues to implement strict minimum BMP requirements for the use and management of pesticides, herbicides, and fertilizers, as described in the City's JURMP. BMP implementation for parks and recreational facilities, as described in the City's JURMP, have been updated to reflect the appropriate use of certain herbicides and is presented in Attachment 4-1.

City public works employees, fire station employees, and employees at other fixed facilities in the City continue to implement BMPs appropriate to the facility type, as described in the City's JURMP. City fire response personnel continue to be trained in implementing BMPs for non-emergency fire fighting activities as described in Section 3 of the City's JURMP. There have been no changes in BMP requirements for public works facilities, fire stations, and other fixed facilities.

4.2.4 PROGRAM IMPLEMENTATION

As mentioned above, with the exception of the updated herbicide BMPs, the City's BMP requirements have not changed since the development of the revised JURMP. Some notable examples of implementation of those BMPs are provided below.

Parks and Recreational Facilities

During 2009/2010, City parks personnel continued to maintain pet waste bag dispensers throughout six City parks. Additional pet waste dispensers have been installed at Woodglen Vista Park (2 dispensers), Big Rock Park (1 dispenser), Mast Park (4 dispensers), West Hills Park (1 dispenser) and on the intersection of Princess JoAnn and

Magnolia Avenue. The bag dispensers are made available to park patrons to encourage them to pick up after their pets. A total of 240,000 pet waste bags were used during 2009/2010.

Public Works Facilities, Fire Stations, Other Fixed Facilities
As previously mentioned, City personnel continued to implement appropriate BMPs for municipal fixed facilities as described in the City's JURMP. BMPs are also implemented during regular maintenance (i.e. landscaping, building maintenance, etc.) as necessary. Parking facilities associated with fixed municipal facilities are maintained as part of the regular maintenance activities and are swept every month during the Reporting Period.

Municipal Inspections
All 12 high TTWQ fixed municipal facilities received an annual routine inspection during the Reporting Period. The City's inspection approach, as described in the JURMP, was implemented for all municipal inspections conducted during the Reporting Period.

Recommended corrective actions at fixed municipal facilities were generally minor, and applicable facility personnel were notified of any deficiencies. Violations were noted at the Public Works Operation Center and at Shadow Hill Park. It was observed that the valve for the strip drain in the vehicle washing area was incorrectly turned to discharge to the storm drain system, instead of the sanitary sewer. Public works management were informed and directed to cease discharges to the MS4 and to clean the MS4. This was done. Public works staff members were trained to ensure that the valve is properly turned to direct drainage to the sanitary sewer prior to using the vehicle wash facility.

Also, City Staff observed and stopped illegal powerwashing of the parking lot by the City Contractor (Steven Smith Landscaping). Public works personnel were immediately notified and they mobilized to the scene where they directed the contractor to remove the residue of the discharge and explained why this activity was not acceptable.

In addition, stormwater program staff has contacted Public Works staff regarding chemical application on landscaping. Based on ensuing discussions, BMPs for chemical application and use have been revised and are presented in Attachment 4-1.

4.3 Roads, Streets, Highways, and Parking Facilities

4.3.1 Background

Roads, streets, highways, and parking facilities are often one of the first components of the City's MS4 to collect and convey runoff. These areas can collect a variety of pollutants due to routine vehicle use and use of the surrounding areas. The City conducts regular maintenance of roads, streets, highways, and parking facilities in the City to control pollutants such as sediment, metals, and litter and debris that may accumulate and then be discharged with runoff.

4.3.2 SOURCE CHARACTERIZATION

The City maintains roads streets, and public parking lots within the City limits; roads and streets are included as one entity on the City's municipal inventory, which is included in Appendix A.3.

4.3.3 BEST MANAGEMENT PRACTICES

The City's primary BMP for roads, streets and parking facilities is street sweeping. Other BMPs are chosen as needed based on the CASQA Municipal Handbook. The City's sweeping frequency is outlined in the JURMP and an updated frequency was presented in the 2007/2008 Annual Report. The frequency for sweeping municipal parking lot facilities has been changed from twice per month to once per month. There were no other changes to the BMPs implemented for roads, streets, and parking facilities during the Reporting Period.

4.3.4 PROGRAM IMPLEMENTATION

During the Reporting Period, the City swept a total of 10,212 curb miles, removing approximately 648 tons of debris. Table 4-1, on the following page, describes the areas assigned high, medium, and low sweeping priorities, and the associated sweeping frequency for each. The City met the sweeping frequency requirements of the high, medium, and low priority streets as described in Table 4-1, on the following page.

As a means to address priority pollutants in the San Diego River Watershed, the City conducted additional sweepings of some City streets. Designated residential areas that are low priority and some medium priority streets were swept twice per month during the Reporting Period.

Table 4-1
Street Sweeping Prioritization and Frequency

Category	Description	Approximate Mileage Swept (Cumulative)	Minimum Sweeping Frequency	Sweeping Frequency July 2009 through June 2010
High	Carlton Hills Boulevard, Carlton Oaks Drive (West of Carlton Hills Boulevard), Civic Center Drive Cuyamaca Street, Magnolia Avenue Mast Boulevard (Between Magnolia Avenue and Carlton Hills Boulevard), Mission Gorge Road (Between West Hills Parkway and Big Rock Road, and between Carlton Hills Boulevard and Magnolia Drive), Prospect Avenue (East of Fanita Drive), Town Center Parkway	1,500	Twice per month	Twice per month
Medium	Select other streets in the City	8,652	Monthly	Twice per month
Low	Select other streets in the City	60	As needed	Twice per month
Fixed Facilities	Parking lots associated with municipal fixed facilities	N/A**	Once per month	Twice per month

* Mileage data is not available for the swept area of parking facilities associated with municipal facilities. Mileage accrued while sweeping these facilities is included in the total mileage.

In addition, the City has been developing projects to reduce water use within landscape maintenance districts (LMDs). For example, a pilot project has been developed to change some medians on Mission Gorge to low water-use plants. The objective of this project was to demonstrate that low water-use plants could be used in medians; reducing the amount of water used to maintain the medians while ensuring that they remained attractive. A second project included a study of the various LMDs around the City, how they could be replanted to reduce water consumption and to estimate the resulting water and cost savings.

4.4 MS4

4.4.1 Background

The City's extensive storm water conveyance system is designed to collect and convey surface runoff to receiving waters to prevent flooding during a rain event. The City's MS4 consists of 21 segments of natural or concrete channels, and approximately 820 curb inlets and catch basins. A Capital Improvements Project to prepare a GIS layer of the MS4 has been completed.

4.4.2 SOURCE CHARACTERIZATION

The City's MS4 as one complete entity is included on the City's high TTWQ municipal inventory.

4.4.3 BEST MANAGEMENT PRACTICES

The City maintains a strict MS4 maintenance and cleaning schedule. Maintenance and cleaning are conducted to keep the MS4 in good operating condition and remove any trash or debris that may otherwise be carried to receiving waters. As described in the City's JURMP, BMPs for MS4 maintenance activities are chosen based on the CASQA Municipal Handbook and have not changed during the Reporting Period.

4.4.4 PROGRAM IMPLEMENTATION

During the Reporting Period, the City continued to implement an MS4 inspection and cleaning schedule, removing approximately 559 tons of debris from the City's MS4. The actual weight of the material was not recorded, but it was estimated based on the number of cubic yards and the composition of the material removed. The approximate weight of the material removed is based on City maintenance staff's estimate that each cubic yard removed weighed about one ton.

City personnel inspected 100% MS4 facilities between May 1 and September 30. A total of 33,106 linear feet of open channels in the City were inspected and found that 31,230 feet required some degree of cleaning, which was done by City personnel. Additionally, City personnel inspected all 820 catch basins and found that 43 required some degree of cleaning. No structures were observed at least 33% of capacity during the reporting period. However, the City cleans out any structures, including self-cleaning structures, in which trash and debris is observed at the time of inspection.

The City's Stormwater Program Manager has worked closely with City personnel responsible for MS4 maintenance to improve the reporting and tracking of cleaning activities for the 2009/2010 reporting period. These procedures are being further refined based on verbal feedback from the RWQCB and a letter from the RWQCB dated February 27, 2009. In addition to improvements made to the program, the City has developed a GIS system so that the locations of all facilities are known to ensure that all MS4 inspection and cleaning requirements are met.

In addition to routine maintenance activities, City staff conducted the following:

- Replaced 27 linear feet of corrugated metal pipe (CMP) on Fanita Parkway.
- Replaced 41 linear feet of CMP with high density polyethylene (HDPE) on South Woodside Avenue near Shadow Hill Drive and replaced 25 linear feet of CMP with HDPE on Prospect Avenue at Placid View Drive.

City staff also cleaned up after a garage fire on Flora Verde Court. The resident had accumulated an excessive amount of possessions, including hazardous materials such as

paints. The fire had resulted in the discharge of material into the storm drain system and eventually Woodglen Vista Creek. Public works staff mobilized to promptly remove this material and charged the resident for the costs of this clean-up.

4.5 SANITARY SEWER SYSTEM

4.5.1 BACKGROUND

As described in the City's JURMP, Padre Dam Municipal Water District (MWD) is responsible for wastewater operations within the City. The City and Padre Dam MWD collaboratively respond to sanitary sewer overflows to reduce or eliminate the amount of untreated sewage that reaches the MS4.

Based on the reported response to a lateral sewer pipe leak at 8450 Fanita Drive (see Appendix B for further details), City staff met with a Padre Dam official to discuss their policy on responding to blocked sewer lateral pipes. According to the Padre Dam official they unblock the facility located on private property, but require that the property owner subsequently clean-up.

In response to this, the City has developed a factsheet providing information for property owners on the requirements for property owners when cleaning up a sewer spill. These factsheets will be provided to Public Works staff to provide to residents when they respond to an incident involving a blocked sewer lateral pipe. These factsheets will also be made available to Padre Dam MWD to use when they respond to these types of incidents.

4.5.2 SOURCE CHARACTERIZATION

Padre Dam MWD is responsible for the sanitary sewer system within the City of Santee.

4.5.3 BEST MANAGEMENT PRACTICES

As discussed in the City's JURMP, the City coordinates with Padre Dam MWD to implement pollution prevention techniques and BMPs to reduce or eliminate the amount of pollutants generated from sanitary sewer maintenance activities. The City coordinates with Padre Dam MWD to ensure all applicable CASQA BMPs are implemented. There have been no changes to these BMPs during the Reporting Period.

4.5.4 PROGRAM IMPLEMENTATION

Padre Dam MWD continues to clean-out or repair the sanitary sewer system as necessary to prevent seepage from the sanitary sewer system to the MS4. City personnel also notified Padre Dam MWD whenever it received information that a certain segment of the sanitary sewer system may need maintenance.

Padre Dam MWD has also worked to develop a Fats, Oils, and Grease (FOG) program that targets grease-producing facilities, such as eating establishments. The goal of the

program is to reduce grease buildup in the sanitary sewer system, which can cause or contribute to sanitary sewer overflows (SSO). In case of an SSO, the City works with Padre Dam MWD to respond appropriately to the overflow. In addition, the City collaborates when appropriate with FOG program staff, to ensure that facilities with grease traps or clarifiers are maintained.

The City was notified of two sanitary sewer overflows during the Reporting Period. One spill occurred during the evening of 09/09/09 on Woodpecker near Big Rock Road. Approximately 20 gallons of sewage leaked due to grease and rag build-up in the pipe (it had been previously inspected during March 2009). Sand bags were used to slow the flow of water, the water was vacuumed up and the area was disinfected. Approximately 220 gallons of water (including the discharged sewage) were generated during the clean-up. A discharge to a storm drain inlet was prevented due to prompt mobilization and control of the situation.

The second incident occurred at 9203 Bird Street on 01/05/10. The spill was promptly reported by the resident resulting in the spill being contained to within 10 feet of the sewer manhole. Approximately 30 gallons of spill and clean-up water was generated in response to this incident. None of the spill entered a storm drain inlet.

4.6 MOBILE MUNICIPAL ACTIVITIES

4.6.1 BACKGROUND

The City conducts a variety of different mobile municipal activities, typically involving infrastructure maintenance, landscape maintenance, and graffiti removal. The City does not conduct power washing as part of any municipal activities.

4.6.2 SOURCE CHARACTERIZATION

Graffiti removal, infrastructure maintenance, and landscaping are listed on the City's high TTWQ municipal inventory.

4.6.3 BEST MANAGEMENT PRACTICES

The City implements BMPs for mobile activities as described in the City's JURMP and as applicable to the activity. City personnel are trained to implement BMPs for the specific activity in which they are involved. For example, City personnel conducting graffiti removal are trained to store and handle any chemicals properly. A more detailed discussion of BMPs for specific mobile activities is included in the City's JURMP; these BMPs did not change during the Reporting Period.

4.6.4 PROGRAM IMPLEMENTATION

The City hires several contractors to conduct mobile activities in the City. Contractors are frequently reminded of the level of BMP implementation expected by the City. With

the exception of the previously-noted incident in Shadow Hill Park, there were no complaints received by the City's storm water hotline or any other indication that City personnel and City contractors conducting any mobile activities were not properly implementing the appropriate BMPs.

During the Reporting Period, the City's Stormwater Program Manager observed City maintenance activities at West Hills Park. Personnel were observed cleaning up large debris in hard-to-access areas to allow the street sweeper to remove the material. No BMP deficiencies were observed during these activities.

4.7 Special Events

4.7.1 Background

As detailed in the City's JURMP, a variety of different special events are hosted within the City. Special events range from summer concerts and the Santreefest to the 4th of July celebration.

4.7.2 Source Characterization

As required by the Municipal Permit, special events are included on the City's high TTWQ municipal inventory.

4.7.3 Best Management Practices

As detailed in the City's JURMP, the City has selected BMPs for special events hosted in the City. In general, the goal of the City's special event BMPs are to properly manage trash and litter generated by the event, keep catch basins and other nearby MS4 facilities free of litter/debris from the event, and raise storm water awareness among the vendors and patrons of the event, as applicable.

4.7.4 Program Implementation

The City hosted a number of special events during the Reporting Period. During each event, the City implemented the following BMPs:

- Trash/recycling bins were used.
- Spill kits were accessible.
- Street sweeping and parking lot sweeping was conducted following the event.

In addition, the Santee Farmers' Market organized by a private citizen, continued on the former Santee Elementary School site; and the second Santee Street Fair on Riverview Parkway was organized by the Santee Chamber of Commerce.

Both of these events was subject to a temporary use permit and comprehensive conditions, based on the standard special events conditions and the specific location and activities associated with the event. The operators of these events were required to

document that appropriate BMPs were implemented during the events using a City-provided checklist and to inspect after the event to ensure that all corrective action (including removal of trash and debris, and cleaning of storm drain inlets as appropriate). City staff inspected these events as appropriate during the Reporting Period and confirmed that BMPs were being implemented appropriately.

4.8 EDUCATION AND OUTREACH

During the Reporting Period, the City continued to educate municipal personnel regarding proper BMP implementation and other storm water and watershed concepts. A total of 33 municipal personnel and contractors were provided formal in-house storm water training during the Reporting Period. A detailed discussion of the City's education and outreach activities is included in Section 8 of this Annual Report.

4.9 SPILL REPORTING, RESPONSE, AND PREVENTION

As detailed in the City's JURMP, the City's sanitary sewer system is managed and maintained by the Padre Dam MWD. Padre Dam MWD has documented procedures for preventing and responding to sanitary SSOs. The City provides assistance during SSO response when necessary. The City responds to all other spills in the City as needed.

The City uses the City's storm water hotline as the main mechanism for being notified of spills; spills may also be discovered during routine inspections or other complaint investigations. Individuals in the City are encouraged to report any spills, including SSOs and any spills from private sewer laterals or septic systems, to the City's storm water hotline. The City notifies Padre Dam MWD regarding any calls made to the hotline regarding SSOs.

During the Reporting Period, there were two SSOs, which were described earlier in this section. There were no other spills during the Reporting Period.

4.10 PUBLIC REPORTING OF ILLICIT DISCHARGES AND CONNECTIONS

Reporting and Response

Public and municipal involvement are crucial to preventing and eliminating illicit connections and illegal discharges (IC/IDs) from the storm water conveyance system. The Storm Water Hotline provides an effective means for individuals in the City to report suspected IC/IDs. The hotline number is provided on the City's website, in distributed storm water educational material, and in storm water articles in *Santee Review*. All complaints received through the hotline are logged for documentation and tracking. Each logged complaint is investigated by City personnel to determine if an IC/ID is present. Responsible parties for any confirmed IC/ID are sought out and

educated and/or cited as necessary and required to stop or clean up any and all illegal discharges.

Complaints received by the City during the Reporting Period and the City's response to each are listed in Appendix B. Sixty-eight complaints were documented and responded to this year.

Enforcement

As previously stated, complaints received via the storm water hotline are included in a table in Appendix B. The table also includes a description of how each complaint was resolved during the reporting period. Resolutions to investigated complaints included clean-up, providing educational material and discussing storm water concepts with individuals involved in the complaint. In some cases courtesy notices and notices of violation (NOV) were issued. The City issued 26 courtesy notices and seven NOVs in response to complaints received by the City's storm water hotline.

4.11 Municipal Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

4.12 Program Modification and Review

The City's JURMP was updated in March 2008, and the street sweeping and special events requirements were updated as reported in the 2007/2008 Annual Report. During 2008/2009, Public Works Staff developed procedures to document in more detail MS4 cleaning observations. With the exception of refining the BMPs for herbicide applications and the change in the frequency of sweeping of municipal parking lots, no other changes to the City's municipal component have been made.

5.0 INDUSTRIAL AND COMMERCIAL

5.1 INTRODUCTION

During the Reporting Period, the City continued to implement a program to mitigate urban runoff pollution from the areas and activities of industrial and commercial businesses. The City aims to reduce the amount of pollutants discharged from these industrial and commercial facilities through the implementation of this program component.

5.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the industrial and commercial component during the Reporting Period are presented in the following bulleted list. Additional details about the City's implementation of the industrial and commercial component and of its storm water program during the reporting period are provided in the remainder of Section 5.

- The City met the Municipal Permit requirement of inspecting at least 25 percent of its stationary industrial and commercial inventory
- The City inspected 100 percent of the inventoried high TTWQ stationary industrial and commercial facilities
- Based on inspection findings and complaints made to the hotline, the City issued eight written courtesy notices informing businesses of BMP deficiencies and 16 NOVs to stationary industrial and commercial businesses.
- The City sent notices to inspected industrial businesses that had not filed Notices of Intent (NOI) or submitted Notice of Non-Applicability/No Exposure Certification (NONA/NEC) paperwork in connection with the State of California General Industrial Permit (Industrial Permit), as appropriate.
- One courtesy notice and five NOVs were issued to mobile businesses within the City

5.2 STATIONARY INDUSTRIAL AND COMMERCIAL SITES / SOURCES ELEMENT

5.2.1 BACKGROUND

The City's industrial and commercial inventory, which can be found in Appendix A, includes all stationary facilities known to be operating in the City that are required to be included on the City's inventories. Stationary facilities in the City include, but are not limited to, manufacturing facilities, auto repair shops, restaurants, wholesalers, and contractors. As discussed in the following subsections, the City requires industrial and

commercial businesses to implement pollution prevention measures and designated minimum BMPs to mitigate the impacts of business activities on water quality.

5.2.2 Source Characterization

As previously mentioned, the City's industrial and commercial inventories are included in Appendix A. The inventories include both stationary and mobile businesses, as required by the Municipal Permit. The inventories were continuously updated throughout the Reporting Period using field observations and information gathered from the City's business licensing process.

Information on how the City prioritizes the industrial and commercial inventories based on TTWQ is discussed in detail in the City's JURMP. The City considers factors including those listed below when prioritizing the inventories:

- Coverage under the Industrial Permit
- Consideration of downstream waterbody and whether the business is likely to discharge pollutants for which the waterbody is impaired
- Results from previous inspections and institutional knowledge
- Proximity to the receiving waterbody

The City's updated inventory includes 897 stationary industrial and commercial facilities.

5.2.3 Best Management Practice Requirements

Industrial and commercial businesses in the City are required to implement pollution prevention methods and other BMPs to reduce or potentially eliminate the generation of pollutants from business areas/activities. The City has established a set of minimum BMPs based on the CASQA Industrial and Commercial Handbook. The requirements include BMPs applicable to all facilities as well as activity-specific BMPs. The City's BMP requirements are described in more detail in the City's BMP Manual, which is an attachment to the City's JURMP. BMP requirements for stationary industrial and commercial businesses did not change during the Reporting Period.

5.2.4 Program Implementation

Industrial and Commercial Inspections

During the Reporting Period, the City conducted storm water compliance inspections at selected stationary industrial and commercial facilities. The purpose of the inspections is to confirm that the City's minimum BMPs are being implemented at stationary industrial and commercial facilities. The City inspected 100 percent of the inventoried stationary high TTWQ sites, which is a Municipal Permit requirement. The City also met the Municipal Permit requirement that 25 percent of the total number of stationary facilities on the City's inventory be inspected.

Facility inspections were conducted in accordance with the protocol set forth in the City's JURMP. Inspections involved a thorough examination of the facility and all

outdoor activities. BMP deficiencies and corrective actions were recorded on the City's industrial and commercial inspection form and discussed with facility personnel present during the inspection. During the inspection process, the City checked Industrial Permit compliance status, and reviewed storm water pollution prevention plans (SWPPP) and monitoring results, when applicable. Businesses observed to be in violation of the Industrial Permit are included in Table 5-1. A list of facilities visited as part of the City's routine inspection program during the Reporting Period is provided at the end of this section in Table 5-2. Table 5-2 also includes the results of follow-up results, where applicable.

The City selected sites for inspection based on the industrial and commercial inventory of 1,131 stationary industrial and commercial businesses (as of July 1, 2009). The City conducted full inspections of a total of 291 stationary industrial and commercial facilities, which is more than 25 percent of the City's industrial and commercial inventory. Businesses were selected for inspection using the following criteria:

- High priority sites
- New businesses that might have the potential for illicit discharges
- New businesses that may require coverage by the Industrial Permit
- Medium priority businesses that had no previous inspection record
- Businesses that had previously resolved compliance issues and not been inspected recently

During the Reporting Period, the City continued to update its industrial and commercial inventory, many businesses were found to be closed. When this was observed, the inspector verified that there were no outstanding issues relating to stormwater (such as storage of materials outside without BMPs) and made a note of the new occupant, if any. The current stationary industrial and commercial inventory (as of September 17, 2010, after an extensive review and update during the summer of 2010) includes 897 facilities (down from 1,139 facilities). Note that as the inventory is continuously updated, and for practical budgeting reasons, the City will continue to determine the number of inspections necessary based on the inventory it has at the beginning of each fiscal year.

The City did not rely on third party inspections to satisfy its industrial and commercial inspection requirements during the reporting period. The City does not presently maintain a third party inspection program.

Inspection Findings

Most BMP-related deficiencies observed during the inspection process were minor. Some of the more common issues include uncontained litter, debris, and sediment around the site and in the parking lot and dumpster area. Another common BMP deficiency was open dumpster lids. Additionally, many industrial and commercial facilities could not provide any sort of documentation that storm water training had been provided to appropriate personnel. Written notices and other forms of enforcement were used when more significant BMP deficiencies were observed during

the inspections; a discussion of industrial and commercial enforcement actions is included later in this subsection.

General Industrial Permit

Industrial Permit compliance status was evaluated during the industrial and commercial inspection process. If the business was new and had not previously been inspected, or if the business had recently changed activities, the inspector gathered information about the business activities that occur on site and assigned or reassigned the business' standard industrial classification (SIC) code(s). The inspector then determined subjectivity to the Industrial Permit based on SIC code. Violations of any aspect of Industrial Permit requirements were recorded on the standard industrial and commercial inspection form and are presented in Table 5-1 at the end of this section. The table also includes facilities that could potentially gain exemption from Industrial Permit requirements by completing Notice of Non-Applicability/No Exposure Certification (NONA/NEC) paperwork.

Each business was notified of any Industrial Permit-related non-compliance by the inspector and through written correspondence to the business. During the Reporting Period, the City's Stormwater Program Manager maintained correspondence with businesses in violation of any aspect of the Industrial Permit, notifying them of the steps that need to be taken to ensure compliance with Industrial Permit requirements.

In addition, the City coordinated industrial permit compliance with Mr. Dat Quach of the RWQCB. Activities included:

- Copying the RWQCB on Industrial Permit-related notices to comply, or notices of violation sent to businesses.
- Providing local knowledge on facilities filing NONA/NEC paperwork.

Education and Outreach

In addition to checking for compliance with the City's requirements and the Industrial Permit, inspections provide a venue to provide site-specific one-on-one education regarding storm water concepts and BMPs. Before industrial and commercial inspections began, the City sent businesses selected for inspection a letter notifying them of the upcoming inspection as well as a fact sheet with BMPs for industrial and commercial businesses. The City has 18 different storm water-related fact sheets, which are included in Attachment 4.1. During the inspections, inspectors used a variety of educational material to provide watershed concepts and activity-specific BMP recommendations, which were provided to industrial and commercial businesses as appropriate. Inspected facilities were also informed of the City's new BMP requirements, as applicable. More information about the types of educational material used by the City is provided in Section 9 of this Annual Report.

The City worked with Leslie's Pools, a pool and spa supply store, to distribute pool and spa maintenance fact sheets to its customers at the Santee store. This fact sheet is included in Attachment 4.1.

Enforcement

Some industrial and commercial facilities were observed to be out of compliance with the City's municipal storm water ordinance and/or the Industrial Permit during inspections conducted in 2009/2010. The City followed-up with these facilities as necessary through follow-up site visits and mail and telephone correspondence to bring about compliance with applicable requirements. Follow-up inspections, including resolution status, are included in Table 5-2 at the end of this section, some issues (three out of 291 facilities inspected) are ongoing, but are expected to be resolved through our established enforcement process. Enforcement actions were taken as necessary; numbers of enforcement actions taken are presented in the bulleted list later in this subsection.

During the course of the Reporting Period, the City received complaints through the City's storm water hotline regarding stationary industrial and commercial facilities. Based on the results of the complaint investigations the City took enforcement action as necessary. Details of the industrial and commercial complaint investigations are included in Appendix B of this Annual Report.

In response to both the findings of the industrial and commercial inspection program and complaint investigations at stationary industrial and commercial facilities, the City issued the following enforcement actions:

- Eight courtesy notices/onsite conversations with discharger
- Thirteen NOVs
- Notices were sent to each business that had not filed to comply with the Industrial Permit

Overall, the City's enforcement actions were effective in bringing about compliance with the City's requirements. Although issues at one percent of the facilities inspected are ongoing and are expected to be resolved through our established enforcement process. There were no instances of noncompliance at stationary businesses found to present a significant threat to human health or the environment observed during the Reporting Period, so none were reported to the RWQCB.

5.3 Mobile Sources

5.3.1 Background

Due to the nature of activities of most mobile businesses, a major area of concern tends to be illegal discharges. In general, mobile businesses can be hard to identify, as many may not have City business licenses. Additionally, because many mobile businesses may be home-based and activities do not occur in one fixed location, inspections of such facilities are impractical.

5.3.2 SOURCE CHARACTERIZATION

Known mobile industrial and commercial businesses, as described in the City's JURMP, are included on the City's inventory and are marked as mobile. As of September 17, 2010, a total of 53 mobile businesses are included on the City's industrial and commercial inventory.

5.3.3 BEST MANAGEMENT PRACTICE REQUIREMENTS

BMPs for stationary industrial and commercial facilities, as discussed earlier in this section, are required to be implemented for mobile activities. BMPs for mobile businesses, including key principles, such as proper collection and disposal of any discharge, are discussed in the City's JURMP. There have been no updates to the BMP requirements as described in the City's JURMP.

5.3.4 PROGRAM IMPLEMENTATION

Throughout the course of the Reporting Period, the City responded to two calls to the City's storm water hotline regarding mobile businesses. In each case the City responded to investigate and verify the complaint. Enforcement action was taken and educational material was distributed as applicable. More detail about the complaints made to the City's storm water hotline regarding mobile businesses is included later in this subsection.

In addition, City staff are aware of mobile business operations, specifically automotive detailing operations in industrial areas, and verify that appropriate BMPs are being implemented when these operations are observed.

Education and Outreach and Enforcement

During the Reporting Period, the City took proactive steps to identify and educate mobile businesses in the City by seeking out such businesses. In addition to the educational information provided by the Finance Department during business license processing, the City sent a notice to new business licensees who operate activities that are typically associated with illicit discharges in Santee. These Information Notices were sent to seven carpet cleaning, two automotive detailing, three handyman/landscaping/ property maintenance, and one pool service company that received new business licenses in Santee during the Reporting Period.

As previously mentioned, City personnel drove by areas known to be frequented by mobile businesses, specifically mobile car detailers. If any mobile businesses were observed, City personnel stopped to provide educational material and ensure that no discharges were occurring. Operators who are not implementing BMPs are required to stop, and remove the discharge. Typically a notice is sent to the mobile business owner if such an incident occurs. During the Reporting Period, a total of three NOVs were issued to mobile businesses as a result of these drive-by inspections. Details about the City's education program for mobile businesses are included in Section 9 of this Annual

Report. The City did not receive any complaints to the storm water hotline regarding mobile businesses.

There were no instances of noncompliance of mobile businesses that were believed to present potential threats to human health or the environment observed during the Reporting Period, so none were reported to the RWQCB.

5.4 Industrial and Commercial Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

5.5 Program Review and Modification

The City's JURMP was recently updated in March 2008. No changes to the City's industrial and commercial component have been made since that time.

Table 5-1
Violations of the General Industrial Permit

#	Business Name	Street Address	SIC	Subjectivity	Principal Activity/Comments	Action to Correct Violation				
						File NOI	Develop SWPPP	Develop / Implement Storm Water Monitoring	Complete NONA/ NEC	Other/Comments
1	Artistic Marble & Granite	9323 Stevens Road	3281	Mandatory	Marble countertop manufacturing					Facility had developed SWPPP, but still had challenges with achieving compliance, specifically relating to monitoring and reporting.
2	Marjan Stone Company	9746 Prospect	3281	Mandatory	Granite and marble countertop fabrication					Lack of BMPs during rain event observed. City sent notice to business owner to advise of deficiencies.
3	Specialty Metals	11222 Woodside Ave.	3444	Conditional	Sheet metal work, no outdoor exposure	✓	✓	✓	✓	Based on most recent inspection of site, facility should file NOI, not NONA/NEC.
4	Westline Woodcraft	9435 Wheatlands Ct. #F	2511	Conditional	Custom wood kitchen cabinet manufacturing, no outdoor exposure				✓	

Table 5-2
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
1	7-Eleven	9111 Mission Gorge Road			
2	7-Eleven	9251 Carlton Hills Boulevard	✓	Provided additional training materials per operator request	Resolved
3	7-Eleven	9750 Cuyamaca Street			
4	8-5 Corp./Artisan's Gallery	10928 Wheatlands Avenue # A			
5	A I M Plastics Inc.	9326 Abraham Way			
6	A Woodpecker Fence	10338 Carreta Court			
7	A&I Services	8665 Argent Street # A			
8	AA Budget Transmissions	8637 Cuyamaca Street # B			
9	Advanced Automotive	7945 Mission Gorge Road			
10	Advanced Electromagnetics	9311 Stevens Road			
11	Affordable Auto Wholesale	10764 2nd Street			
12	Al Max Sanitation	10023 Prospect Avenue			
13	Alberto's Mexican Food	9535 Mission Gorge Road # A & B			
14	Albertsons	9870 Magnolia Avenue			
15	Aloha Pet Grooming	8011 Mission Gorge Road # G			
16	Alumi Craft Inc.	10815 Wheatlands Avenue # I			
17	American Fence Company	9944 Prospect Avenue			
18	Anderson Distributing	9730 Cuyamaca Street # A			
19	Angus Asphalt Inc.	9959 Prospect Avenue			
20	Antonios Mexican Food	235 Town Center Parkway # H			
21	Artistic Marble & Granite Inc	9323 Stevens Road	✓	Met with operator to review new SWPPP and discuss strategy for compliance. Observed site during rain event, and followed up with notice.	Resolved

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
22	Ascend Manufacturing	10217 Buena Vista Avenue # G			
23	Auto Perfect	9937 Prospect Avenue # 11			
24	Automobile Lube & Service	10806 Prospect Avenue # 1			
25	A-Z Patio	8055 Linen Drive			
26	B & A Wire	8402 Magnolia Avenue			
27	Banny's Auto Repair	7945 Mission Gorge Road # 111			
28	Ban's Auto Repair	8871 Fanita Drive			
29	Ban's Auto Repair II	8625 Cuyamaca Street	✓	Followed up within specified timeframe to ensure that trash had been removed.	Resolved
30	Bennett's Transmissions	9220 Ruffin Road			
31	Bilcan Inc. DBA El Camino Rental	8795 Cuyamaca Street			
32	Blue Moon Pools	8606 Argent Street # H			
33	BMC Mobile Welding	10801 Woodside Avenue # 181			
34	BMW MC Service of San Diego Inc.	7945 Mission Gorge Road # 109			
35	BNB Flooring and Granite	9344 Wheatlands Road	✓	Observed facility during rain event and followed up with notice to operator. Facility closing down, followed up to verify that no materials stored outside had been removed.	Resolved
36	Bob's Trans Shop	10223 Mast Boulevard			
37	Bow & Lever	8622 Argent Street # G			
38	BP West Coast Prod.	9009 Carlton Hills Boulevard			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
39	BP West Coast Prod. DBA Arco #9567	9811 Mission Gorge Road	✓	Returned after a prescribed amount of time to verify that trash in dumpster enclosure had been removed.	Resolved
40	Bradshaw Engineering Corp.	8645 Argent Street # B			
41	Brake Depot	10438 Mission Gorge Road			
42	Bright Tech Auto Service	10438 Mission Gorge Road # 8			
43	Buggy World	10350 Mission Gorge Road			
44	Builders Fence Company	10641 Prospect Avenue			
45	Burger King	9714 Mission Gorge Road			
46	Busecks Mobile Auto Repair	9937 Jeremy Street			
47	C & H Auto Body	10996 Woodside Avenue			
48	Cabral Metal Fab & Fence, Inc.	10020 Prospect Avenue # B18			
49	Cactus Grill Mexican Food	9725 Mission Gorge Road			
50	Cal Waterjet	10139 Prospect Avenue			
51	California Stone Works	9440 Wheatlands Court # 14			
52	Carl's Jr. # 385	10009 Mission Gorge Road			
53	Carlton Oaks Country Club	9200 Inwood Drive	✓	Met with facility operator to discuss requirements from June 2009 inspection. Verified which items had been addressed. Contacted City of San Diego (property owner) regarding issues at the facility.	In progress
54	Carter Collision Service	8835 Cuyamaca Street			
55	Cazadores Mexican Food	9331Mission Gorge Road # 111			
56	CCM Enterprises	10848 Wheatlands Avenue			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
57	CCM Enterprises	9366 Abraham Way			
58	Centennial Batteries	9465 Mission Park Place			
59	ChiTown Pizza Co.	8528 North Magnolia Avenue			
60	Chuck Wilson Construction	9731 Abbeyfield Road			
61	Cinda's Toffee	9320 Praful Court			
62	Circle K	10219 Mast Boulevard			
63	Cohen's Knishes	9730 Cuyamaca Street # A			
64	Collision Repair Specialists	10806 Prospect Avenue			
65	Coltrane Fire Protection	8620 Big Rock Road			
66	Computer Integrated Machining Inc	10960 Wheatlands Avenue			
67	Conn's Machining	10207 Buena Vista Avenue # B			
68	Costco Wholesale	101 Town Center Parkway			
69	Cotijas	9121 Mission Gorge Road			
70	Country Time Food Market	9613 Carlton Hills Boulevard	✓	Returned after prescribed timeframe to verify that trash had been removed.	Resolved
71	Crossman Landscaping	8617 Cuyamaca Street			
72	Cura Pharm	10054 Prospect Avenue # F			
73	Custom Craft Construction	8546 Graham Terrace # 18			
74	Cuyamaca Animal Hospital	8802 Cuyamaca Street # B			
75	D & R Automotive	10517 Prospect Avenue			
76	D S Fibertech Corp.	11015 Mission Park Place			
77	Dairy Queen	70 Town Center Parkway # A			
78	Dale's Custom Woodworking	10407 Santana Street			
79	Dan Krivitz Landscape Architect	8265 Prospect Avenue			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
80	Dan Wheeler Trucking	9437 Willowgrove Avenue			
81	Dan's Hauling Service	7735 Mission Gorge Road # 46			
82	Daves Auto Tech	8615 Mission Gorge Road			
83	Day & Night Restoration Inc.	10728 Prospect Avenue # G			
84	DCXcavation	8614 Siesta Road			
85	DeCrescente's Drywall & Texture	8748 Wahl Street			
86	DeCrescente's Landscaping	8748 Wahl Street			
87	Dion And Sons, Inc.	11427 Woodside Avenue			
88	Discount Tire Co.	9750 Mission Gorge Road			
89	DJ's Auto Service	10147 Mission Gorge Road			
90	Doggie Station	8951 Carlton Hills Boulevard			
91	Domo Sushi	9625 Mission Gorge Road			
92	Don A Vee Jeep	8835 Cuyamaca Street # A			
93	Don Lucio Taco Shop	9740 Mission Gorge Road # D			
94	Dons Automotive Center	10227 Prospect Avenue # A			
95	Dooley's Carburetors	10147 Mission Gorge Road # B2			
96	Double Double Fine Burger	9862 Mission Gorge Road			
97	E.C. Cabinets	8402 Magnolia Avenue # H			
98	East County Lube Center	7945 Mission Gorge Road # 161			
99	East County Transmissions	10227 Prospect Avenue # B	✓	Provided additional training materials per operator request.	Resolved
100	EcoGreen Recycling	9540 Pathway Street # 105			
101	EDM Business	9539 Maureen Court			
102	El Sombrero Cookie Co.	8301 Mission Gorge Road # 169			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
103	Electra Motorsports	10928 Wheatlands Avenue # A			
104	Eliminator Motorsports	11418 Woodside Avenue			
105	Elliott's Woods	9576 Rawlins Place			
106	Enterprise Rent-A-Car	10330 Mission Gorge Road	✓	Conducted follow-up to verify that improvements had been made per our NOV. Discussed stormwater requirements with manager.	Resolved
107	Essential Grooming	9225 Carlton Hills Boulevard # 7			
108	Estradas	9630 Carlton Hills Boulevard			
109	Estradas	9292 Carlton Hills Boulevard # B			
110	Estradas	8528 Magnolia Avenue # 107			
111	European Company	10051 Prospect Avenue			
112	Express Automotive Enterprise	8711 Magnolia Avenue # 300			
113	Express Tire	9535 Mission Gorge Road			
114	Fanita Liquor & Market	8663 Fanita Drive			
115	Fiberwerx	8400 Magnolia Avenue # H			
116	Firestone Tire & Service	9763 Mission Gorge Road			
117	Flaming Wok Restaurant	9888 Magnolia Avenue			
118	Four Wheel Direct	10731 Woodside Avenue			
119	Frontier CNC	10728 Prospect Avenue # C & D			
120	Frontier Motors	10335 Julio Place			
121	Furry Friends Resort	8802 Cuyamaca Street # A			
122	Future Green Recycling	11459 Woodside Avenue			
123	Garvin Industries	8404 Magnolia Avenue			
124	Giant New York Pizza	8933 Carlton Hills Bouelvard			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
125	Giles Construction	10131 Ashdale Lane			
126	Gillespie Rental Equipment	10414 Prospect Avenue			
127	GTM Discount Store	8967 Carlton Hills Boulevard # A & B			
128	Gumball Graphics	9419 Carlton Oaks Drive	✓		
129	Haf Industries Inc.	10221 Buena Vista Avenue # D			
130	Harrison Trucking Inc.	8801 Olive Lane			
131	HCM Customs	11421 Woodside Avenue			
132	Helton Cabinets & Construction	9221 Security Way			
133	Hilbertos	9805 Prospect Avenue # F			
134	Horsman Automotive	8891 Railroad Avenue			
135	HP Automotive	8663 Magnolia Avenue			
136	Import Auto Service	7945 Mission Gorge Road # 111			
137	Industrial Metal Processing	10145 Prospect Avenue			
138	Institutional Cabinets & Millwork Inc.	10770 Rockvill Street # B			
139	Interstate Striping of California	8511 Ablette Road # B			
140	Italia Pizza	8918 Carlton Hills Boulevard	✓	Verified that large trash accumulation in dumpster area had been removed.	Resolved
141	J & J Cabinets	30 Town Center Parkway # C			
142	J & K Automotive	10027 Prospect Avenue # D			
143	J D Motorsports	10659 Prospect Avenue # B			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
144	J P Design	11421 Woodside Avenue # C			
145	Jack in the Box # 20	9337 Mission Gorge Road	✓	Verified that accumulation of trash and grease in dumpster area had been removed.	Resolved
146	Jack in the Box # 3007	10330 Mast Boulevard	✓	Verified that accumulation of trash and grease in dumpster area had been removed.	Resolved
147	Jack Randalls Automotive	10845 Wheatlands Avenue # F			
148	Jack Williams Auto Body & Paint	10223 Mast Boulevard			
149	Jamba Juice	9828 Mission Gorge Road			
150	Janet's Café & Deli	9225 Carlton Hills Boulevard # 20			
151	JCMS Landscape	10638 Prospect Avenue			
152	Jerames Tool & Manufacturing	9424 Abraham Way			
153	JG Auto Repair	10468 Mission Gorge Road			
154	Jimmy's Family Restaurant	9635 Mission Gorge Road			
155	JT Diesel Truck Service	9851 Prospect Avenue # E			
156	Kaylien Inc.	8520 Railroad Avenue			
157	KC's Truck & Trailer Parts	10441 Cadwell Road			
158	Ke-Burgmann	10035 Prospect Avenue # 202			
159	Kirin Sushi	8790 Cuyamaca Street	✓	Verified that grease trap had been maintained and discharge removed.	Resolved

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
160	Kleinsmith Stair & Trim Inc.	9435 Wheatlands Court # H			
161	KW Cages Advanced Design	9565 Pathway Street # B			
162	L and P Auto Repair	8630 Railroad Avenue			
163	La Salsa	9828 Mission Gorge Road			
164	Langer Datsun Repair	10468 Mission Gorge Road			
165	Lloyd's Collision Care	9936 Buena Vista Avenue			
166	M & J Restoration	10223 Mast Boulevard			
167	Maaco Collision Repair	8745 Magnolia Avenue			
168	Manzanita Brewing Company	9962 Prospect Avenue # E			
169	Marietas	8915 Carlton Hills Boulevard			
170	Marjan Stone Company	9746 Prospect Avenue	✓	Checked that sweeping of the facility had improved. Observed BMP implementation during rain event and sent NOV to operator. Followed up with a reinspection during December. Inspected again during June to discuss BMP requirements, monitoring data and state reporting requirements.	Resolved
171	Mary's Donuts	9031 Mission Gorge Road			
172	Mathy Machine	9315 Wheatlands Road			
173	Maxima Racing Oils	9266 Abraham Way			
174	Mayan Trade Inc.	9437 Wheatlands Avenue # H			
175	McDonalds (in Walmart)	170 Town Center Parkway			
176	McKay Roofing Co Inc.	10622 Kenney Street	✓	Provided additional materials for staff training.	Resolved

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
177	Meineke	9551 Magnolia Avenue # B			
178	Metrix Autobody	10438 Mission Gorge Road # C			
179	Metro Steel	10520 Kenney Street # A			
180	MGY Auto Sale & Body	9937 Prospect Avenue # 5			
181	Mike's Recycling	11459 Woodside Avenue			
182	Mirage Racing Products	10806 Prospect Avenue # 1			
183	Mission Carlton Vet Hospital	9302 Carlton Hills Boulevard			
184	Mission Gorge Automotive	10332 Mission Gorge Road			
185	Mission Gorge Market	7757 Mission Gorge Road			
186	Mobil Oil Corp.	9750 Magnolia Avenue	✓	Verified that drums from groundwater monitoring have been removed.	Resolved
187	Montgomery Landscaping, SN	11366 Woodside Avenue # B			
188	Most Truck Sales	8017 Mission Gorge Road			
189	Nam Long Restaurants	9828 Magnolia Avenue			
190	National Spring	8745 Magnolia Avenue # A			
191	Oggi's Pizza & Brewing Company	9828 Mission Gorge Road			
192	Oishii Japanese - Thai Restaurant	10251 Mast Boulevard			
193	Okawa Steak House and Sushi	9720 Mission Gorge Road # A			
194	Omelette Factory	7941 Mission Gorge Road			
195	One Stop Auto Tech	9605 Carlton Hills Boulevard			
196	Opportunity Transmissions DBA Factory Transmissions	10806 Prospect Avenue	✓	Verified that spill prevention/cleanup materials have been purchased and are available onsite.	Resolved

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
197	Original Roadhouse Grill	9816 Mission Gorge Road			
198	P P Wynns Auto Repair	10659 Prospect Avenue # A			
199	Pacific Tire & Brake	10806 Prospect Avenue # 1			
200	Padre Dam Water Recycling Facility	9300 Fanita Parkway			
201	Penguin Yogurt Factory	9621 Mission Gorge Road # A			
202	Pep Boys Manny Moe & Jack	10041 Mission Gorge Road			
203	Phantastic Auto Repair	10223 Mast Boulevard			
204	Philip Thearle's Autowerks	8809 Mission Gorge Road			
205	Pinnacle Peak Steak House	7927 Mission Gorge Road	✓	Verified that pest repellent had been removed from external areas.	Resolved
206	Pizza Hut	9420 Cuyamaca Street # 100			
207	P-M Machining Inc.	8630 Argent Street			
208	Pool Covers Unlimited	8606 Argent Street # E			
209	Precision Water Jetting Inc.	10031 Prospect Avenue # B & C			
210	Prime Time Concrete Pumping	9451 Hornbuckle Drive			
211	Pure-Flo	7737 Mission Gorge Road			
212	Quality Foreign Auto	10806 Prospect Avenue # 1			
213	Qwik Korner	9035 Mission Gorge Road			
214	R C Automotive	10735 Woodside Avenue # A			
215	Rafael Gardening	8843 Cottonwood Avenue			
216	Ranch House Restaurant	11510 Woodside Avenue # F			
217	RCI Reinforcing Steel Contractor	9409 Abraham Way			
218	RCP Block and Brick Inc	9631 Magnolia Avenue			
219	Reed Sport Buggies	9745 Airport Vista Road			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
220	Renaissance Mechanical	9819 Pebble Beach Drive			
221	Retro Truck Parts	9518 Cecilwood Drive			
222	Richardson Cabinets	9201 Isaac Street			
223	Ricks Machine Shop	11448 Woodside Avenue	✓	Verified that BMPs were being implemented in vehicle washing area. Further improvements could still be made.	In progress
224	RJA Masonry	10057 Pebble Beach Drive			
225	Rush Motorsport	10148 Mission Gorge Road			
226	Russo's Auto Body Inc.	10410 Mission Gorge Road			
227					
228	San Diego Classic Volkswagen	9440 Wheatlands Court # 7			
229	San Diego Floodbusters	9943 Prospect Avenue			
230	San Diego Hot Rods	9851 Prospect Avenue # A			
231	San Diego Subs & Salads	9713 Mission Gorge Road			
232	Sands Automotive	9219 Mission Gorge Road			
233	Santee Market	11007 Woodside Avenue	✓	Verified that cigarette butts had been removed from around dumpster within prescribed timeframe.	Resolved
234	Santee Pet Hospital	8936 Carlton Hills Boulevard			
235	Santee Roofing Company	8035 Smokewood Drive			
236	Santee Transmission	10806 Prospect Avenue # 7			
237	Satin Stone Manufacturing	9937 Prospect Avenue			
238	Scantibodies Clinical	9336 Abraham Way			
239	Scantibodies Shipping & Receiving	9343 Wheatlands Court			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
240	ScooterBug	9260 Issac Street # C			
241	Select Cabinets	9937 Prospect Avenue			
242	Senor Pancho Mexican Grill	10320 Mission Gorge Road			
243	Smog Center of CA	8665 Mission Gorge Road # A-3			
244	Smoking Joe's Intl. BarBQue	205 Town Center Parkway # A	✓	Issues with outside cooking arrangements. Visit to facility with fire and planning staff focused solely on this and outside storage. Future inspections will address all issues typically covered during an inspection	Resolved
245	Socal Concrete Pumping	10216 Peaceful Court			
246	Solid Surface Sollutions	10704 Prospect Avenue			
247	Sonic Burger	10515 Mission Gorge Road			
248	Sparks Auto Care	8663 Magnolia Avenue # C-D			
249	Sparks Computerized Car Care	10735 Woodside Avenue			
250	Sparky's Transmission	10410 Mission Gorge Road			
251	Specialty Metals Fabrication	11222 Woodside Avenue	✓	Provided information on complying with State Industrial Permit.	In progress
252	Speedee Mart	8011 Mission Gorge Road # A	✓	Conducted follow-up inspections until dumpster enclosure had been cleared of trash.	Resolved
253	Speedo Shop, The	10027 Prospect Avenue # E			
254	Spivey Auto Enterprises	10555 Prospect Avenue			
255	Steagall's Custom Cabinets	10911 Wheatlands Avenue # H			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
256	Subway	7757 Mission Gorge Road			
257	Subway	50 Town Center Parkway # D			
258	Subway	9890 Magnolia Avenue			
259	Subway	10538 Mission Gorge Road	✓	Conducted follow-up inspection to verify that grease trap had been maintained and cigarette butts had been removed from around back entrance.	Resolved
260	Sunset Roofing Company Inc.	8721 Magnolia Avenue # C			
261	Superframe MFG Co.	10308 Mission Gorge Road			
262	Taco Loco	8667 Fanita Drive			
263	TC Construction Co Inc	10540 Prospect Avenue			
264	Terry Allens Auto Body	8665 Mission Gorge Road			
265	The Dyno Shop	10042 Prospect Avenue			
266	The Home Depot	255 Town Center Parkway			
267	Total Performance Machine	10133 Prospect Avenue			
268	Toyotalift Inc	11446 Woodside Avenue			
269	Toyota Certified of Santee	9135 Mission Gorge Road	✓	Observed storage of drums and maintenance-related material during a post-construction BMP inspection, notified owner. Verified that material had been removed.	Resolved
270	Truly Nolen	8400 Magnolia Avenue # M & N			
271	Valley Auto Detailing	7945 Mission Gorge Road # 107			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
272	Valley Box Co.	8544 Tumbleweed Drive			
273	Valley Tractor	11478 Woodside Avenue			
274	VDAB Corp. dba East County Tire & Brake	7945 Mission Gorge Road # 102			
275	Vee-Tech	9851 Prospect Avenue			
276	VGCC Management dba Volkers	7953 Mission Gorge Road			
277	Viking Battery	10759 Woodside Avenue # B			
278	Vons Companies	9643 Mission Gorge Road	✓	Reinspected to verify that sump in dock and dock area were cleaned prior to seasonal rain.	Resolved
279	Wal-Mart Stores # 1917	170 Town Center Parkway	✓	Provided Spanish and English outreach information to assist with training requirement.	Resolved
280	WC's Wagon Wheel	8861 Magnolia Avenue			
281	Western Construction Components Inc.	9484 Mission Park Place			
282	Westline Woodcraft	9435 Wheatlands Court # F-G	✓	Provided facility operator with information to complete NONA/NEC	Resolved
283	Whaley Enterprises	9565 Pathway Street # B			
284	Wheels on Wheels LLC	9225 Carlton Hills Boulevard # 28			
285	Wienerschnitzel	9650 Mission Gorge Road			
286	Wildside Custom Cycles	7949 Mission Gorge Road			
287	Woodmaster Windows	10965 Hartley Road # Q			

Table 5-2 (Continued)
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
288	Woody's Auto Repair	10965 Hartley Road # M			
289	Wright Automotive	8625 Cuyamaca Street			
290	Ye Village Inn	8929 Carlton Hills Boulevard			
291	Yogurt World	9331 Mission Gorge Road # 110			

*Follow-ups were also conducted at the IHOP restaurant and Panda Garden Buffet based on Reporting Period 08-09 inspections, concentrating on outside storage areas. These were conducted as a watershed activity and will be described in more detail in the FY09-10 San Diego River WURMP report.

** A follow-up was conducted at Suncraft Shutters to observe how BMPs were implemented during a rain event. Based on observations made during the rain event a notice was sent to the business operator. This facility will be reinspected again during future rain events.

6.0 RESIDENTIAL

6.1 INTRODUCTION

Residential land use comprises a significant portion of the City, so residential activities can have a considerable effect on the water quality of receiving waters. The City has developed an extensive program that aims to reduce pollutant runoff from residential areas and activities to the MEP.

6.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the residential component during the Reporting Period are presented in the following bulleted list. Additional details about the City's implementation of the residential component and of its storm water program during the reporting period are provided in the remainder of Section 6.

- On 5/1/2010 Santreefest was held at Town Center Community Park and attended by 500 volunteers. Participants removed 100 pounds of trash from around the river, planted trees and received education on environmental issues.
- Completion of study on pet waste management behavior.
- Presentation to approximately 60 children attending a City of Santee summer camp.
- Presentation to Sky Ranch Homeowners Association.

6.2 SOURCE CHARACTERIZATION

The City has designated one high TTWQ residential area within the City and has also designated a number of high TTWQ residential activities. Based on discussions with the RWQCB during November 2008 and their letter dated February 27, 2009, the high TTWQ residential areas can be adapted based on the most current information available. For example, education and BMP implementation can focus on a specific area based on data, observations, and complaints regarding that area. When these focused activities have been completed, then a different area can be designated as high TTWQ and be subject to similar efforts.

Based on this understanding, the City updated its high TTWQ area during the Reporting Period. The area identified as a high TTWQ area is listed below.

- The area surrounding Cecilwood Drive, east of Halberns Boulevard

This area was selected based on the number and types of complaints recently received in this area. Based on dry weather findings, the area around Woodglen Vista Channel will be a high TTWQ area during the 2010-2011 Reporting Period.

High TTWQ residential activities include:

- Home and Garden Care Activities and Product Use; Including Disposal
- Disposal of Trash and Pet Waste
- Automobile Repair, Maintenance, Washing, and Parking

6.3 BEST MANAGEMENT PRACTICE REQUIREMENTS

The City continues to encourage the implementation of pollution prevention measures and encourage or require the implementation of BMPs for residential areas and activities, whether or not the residential area or activity has been designated as being high TTWQ. If particular BMPs are not feasible for any specific site or source, the City requires implementation of other equivalent BMPs. Designated BMPs or their equivalent were implemented or were required to be implemented for residential areas and activities.

Education and outreach aimed at residents helps to facilitate the implementation of BMPs, including pollution prevention methods. Residents are encouraged, and in some cases required, to implement BMPs and pollution prevention techniques when performing the high TTWQ activities listed in the previous subsection. Residential BMPs are listed in the BMP Manual, Appendix C of the JURMP. These BMPs did not change during 2009/2010.

6.4 PROGRAM IMPLEMENTATION

The residential program is implemented through outreach and education, operation of a complaint hotline, and complaint investigation and enforcement procedures as discussed in the following subsections.

6.4.1 OUTREACH AND EDUCATION

Outreach was implemented through the preparation and dissemination of outreach materials including the fact sheet series discussed in Section 9 of this Annual Report. A summary of specific Outreach and Education events for residents is presented in the following table:

Table 6-1
Summary of Outreach and Education Activities

Date	Activity Description	Description of Outreach and Education Component
07/30/09	Presentation of stormwater concepts to approximately 60 children at a City Summer Camp.	The City presented a model of the storm drain system and San Diego River which allowed the children to experiment with the impact of various types of pollutant. Representatives from the San Diego River Park Foundation brought samples of benthic macroinvertebrates from Forester Creek for the children to observe.
9/14/09	Presentation on stormwater ordinance compliance for residents at a Sky Ranch Homeowners Association Meeting (HOA).	Presentation to 15 homeowners on BMPs that might be applicable when moving into a new home, prior to the rainy season and in daily life. Provided factsheets relevant to residential uses. Answered questions on stormwater compliance from homeowners.
December 2010	Dissemination of Stormwater Calendars Providing Information on Residential BMPs.	Copies of calendars left at the City library, at City buildings serving residents, provided to City staff and at Santee School District. The remainder were distributed at subsequent outreach events. Approximately 500 calendars were distributed by the City.
January 2010	Development of Outreach Information on Stormwater.	Photographs and text provided for the development of information boards that were to be placed by Woodglen Vista Creek in the Town Center Community Park development. Information covered included stormwater impacts on water quality and the water quality benefits of creek restoration.
02/20/10	Provision of outreach information at public participation event near the Old Edgemore Site.	City representative present during the event to provide outreach to residents participating in the event.
04/26/10	Provision of outreach information to residents participating in a trash clean-up event at Forester Creek.	Factsheets relating to residential activities were made available to participants.
05/01/10	Santreefest event in Town Center Community Park.	City staff provided outreach information on residential activities and Integrated Pest Management (IPM) information at the City booth.
05/16/10	River Days Event in Mission Trails Park (just outside of City limits).	Provided outreach information on residential activities and IPM at the City booth at this event.
05/27/10	Petco Presentation	One of two scheduled presentations to attendees at a class at the Petco store on pet waste management. Attendees completed a pre- and post-presentation survey. Another event was scheduled, but not completed as the class had been cancelled.

Table 6-1
Summary of Outreach and Education Activities

Date	Activity Description	Description of Outreach and Education Component
05/29/10	Residential survey and outreach at Santee Street Fair.	Surveys of residential understanding of stormwater issues were conducted at the City booth. Outreach on residential activities and IPM were also provided.
06/19/10	Regional Outreach at San Diego County Fair.	The City of Santee provided staff to provide outreach at the regional educational booth at the San Diego Fair. A residential survey was completed and educational information for residents was disseminated.
Throughout 2009/2010	Provide swimming pool maintenance information to Leslie's pools to provide to their customers.	Leslie's Pools is a swimming pool maintenance supplier in Santee. A total of 50 copies of factsheet 9 were provided to patrons of this business.
June 2010	Residential education postcards	Residential education postcards mailed to the high TTWQ area.

The City worked with an intern during Reporting Period 2008-2009 to review how community-based social marketing techniques can be better incorporated into the outreach and education program. The report on this review was prepared during Reporting Period 2009-2010 and is presented in Attachment 6.1. The scope of this work was examining the demographics of the City, conducting observations and surveys to assess current behavior and to identify potential barriers to behavior change. The findings of this study were:

- Respondents to the survey most commonly responded that pet waste dissolves and fertilizes the ground.
- Middle-aged males were the group that most commonly left pet waste on the ground.
- Owners of unleashed pets, and those who walked their dogs in perimeter areas or where there was a fair amount of undergrowth were less likely to pick up after their pets.
- Solo walkers were less likely to pick up after the pets. Those who walked their dogs less frequently were also less likely to pick up after their pets.
- Pet waste was more commonly observed at Woodglen Vista Park.

Based on these findings the following conclusions can be made: outreach should emphasize that pet waste is polluting, not a fertilizer; it could be beneficial to install pet waste dispensers in the peripheral areas of parks. Opportunities to reach out to middle-aged males should be used, where available. Woodglen Vista Park should be selected for future pilot studies or outreach.

During the Fiscal Year 2008-2009 (after data had been collected for the study) dog park facilities were made available in response to requests from residents. These facilities are located in Woodglen Vista Park and Mast Park at specific times of day. Signs advising residents of the rules for use of the dog park facility, including picking up pet waste have been posted. Additional pet waste bag dispensers were also installed.

It is possible that peer pressure from other dog park users will encourage owners to pick up after their pets. Future surveys of pet waste at these facilities will be compared with the baseline information collected by in this study to assess if the installation of these dog parks has affected the level of pet waste observed at these locations.

6.4.2 Used Oil and Waste Collection Services

The City provides free used oil disposal facilities to residents. Approximately 309 gallons of waste oil were disposed of through City-provided facilities. The City also contracts with two Household Hazardous Waste (HHW) facilities for the disposal of other HHW (leftover paints, automobile fluids, drain opener and any unused products containing toxic chemicals for home or automobile maintenance). Based on the available data, approximately 31,168 pounds of paint, 605 pounds of batteries, and 211 pounds of fluorescent tubes were collected through City-provided facilities.

6.4.3 Hotlines and Websites

The City continues to operate its stormwater hotline in accordance with the requirements of the Municipal Permit. The stormwater pages of the City of Santee's website were redesigned to make them more user-friendly and additional factsheets were added. Separate pages were being developed for each type of user group, for example, there was one page for residents. Reference documents and links to other sources of information are provided on the different pages. The redesign was uploaded to the website during the Reporting Period.

6.4.4 Complaint Investigation

As previously mentioned, complaints are received by the City's stormwater hotline regarding discharges in various areas of the City, including residential properties. During the Reporting Period, the City received a total of 46 complaints regarding residential areas and activities in the City. A summary of all complaint investigations, including residential complaint investigations, is included as Appendix B to this Annual Report.

A stormwater fact sheet, which is included in Attachment 4.1, relating to construction activities has been prepared and is distributed whenever any request for building permit application information is made. In addition it is provided online and in the stormwater information center at the City. Disseminating information on the controls for the most basic of projects should make project proponents aware of and plan for the storm water controls needed for any storm water activity. Other avenues for outreach (such as the

Santee Review Newsletter) will continue to be used to educate homeowners about their responsibilities when undertaking minor construction work at their properties.

During the Reporting Period complaints were received regarding fire abatement activities that had resulted in discharges of sediment during the more intense storms of Winter 2009/2010. A factsheet was developed in response to these observations to allow residents to implement appropriate fire prevention measures on their property without exposing their property to erosion. This factsheet was developed in conjunction with code compliance and fire safety staff. In addition, storm water program staff met with the contractor responsible for fire abatement activities in the City to discuss how the two entities could collaborate to prevent discharges of sediment from properties that had been subject to fire abatement.

As discussed in Section 4.0 of this Annual Report, during the Reporting Period a complaint was received regarding the handling of discharges from sewer lateral pipes. City staff met with a representative from Padre Dam to discuss how they handle the response to these incidents. Padre Dam unblocks the pipe, but any work subsequent to that (such as clean-up) is the responsibility of the homeowner. Padre Dam staff may inform the resident of their responsibilities relating to the clean-up, but there is no verification that this is done. The City has developed a factsheet for residents to be provided during an incident. This factsheet describes the responsibilities of the property owner and describes the types of BMPs that will be required. This factsheet is presented in Attachment 4.1.

During the Reporting Period, City staff working on the Abandoned Vehicle Abatement Program (AVA) opened 221 cases, which relate to at least one car each, and issued 10 administrative citations. The activities of this program reduce the likelihood of these vehicles generating stormwater violations in the future.

Violations relating to sediment discharges were responsible for approximately nine of the complaints received by the City about residential areas and activities. Approximately nine complaints related to powerwashing or hosing down and nine related to construction activity. Landscaping maintenance activities were responsible for approximately five complaints and four complaints relating to pool maintenance were received.

Based on the summary above, outreach and education efforts should continue to focus on the following topics:

- Power washing or hosing down (including automotive detailing)
- Maintenance of swimming pools and spas
- BMPs for landscaping, including sediment control
- Residential maintenance activities

6.4.5 ENFORCEMENT

In response to the complaints received by the City's stormwater hotline regarding residential areas and activities, the City took the following enforcement actions:

- 23 courtesy notices/onsite conversations with discharger
- Seven notices of violation

One notable case related to Greenbrier Mobile Home Park for which two complaints were received via the County Hotline. The first complaint was received in December 2009 and related to construction activities on the property for which insufficient BMPs were being deployed. This construction (construction of retaining walls), being on property under the jurisdiction of the State, did not require City permits, therefore it had not been subject to City inspection. The City visited the location, confirmed that insufficient BMPs were being deployed and there was a discharge to the curb and gutter. The City representative provided the property manager with a courtesy notice directing them to remove the discharge and to implement better BMPs. The City confirmed that this was done.

Another complaint about Greenbrier Mobile Home Park was received during April 2010. The City visited the site, confirmed the complaint and prepared a notice of violation to the Property Manager for the continued violations. The Property Manager responded promptly and thoroughly to the notice, providing documentation on training of his staff and assuring the City that this would not be allowed to reoccur. A follow-up inspection indicated that the construction debris observed in the gutter had been removed and adequate BMPs had been implemented.

6.4.6 REGIONAL RESIDENTIAL EDUCATION PROGRAM

The City continues to contribute to the Regional Residential Education Program. The City anticipates using the regional materials, such as branding templates, in the jurisdictional program as they become available.

6.4.7 METHODS EVALUATION

As described in the City's JURMP, the City uses a number of methods to maintain oversight for residential activities and areas, including the following:

- Complaint referrals
- Observations of City staff during routine activities
- Dry weather monitoring and upstream investigations

These methods provide effective oversight of residential activities within the City. The City promptly responds to complaint referrals, and any discharges observed during routine or monitoring activities using an escalating enforcement mechanism. These incidents are monitored, and if a pattern of behavior is observed in a certain area of the

City or associated with a particular type of activity, then additional education efforts will be made to reduce the likelihood of this reoccurring within the community. Repeated violations associated with an address or person result in a higher level of enforcement response, as these individuals have now been educated regarding storm water requirements.

Padre Dam MWD passed a drought ordinance on June 24, 2008 prohibiting certain activities that are consistent with the objectives of the storm water program. In particular, over-irrigation and hosing down of driveways, except when required by sanitary or safety conditions, have been prohibited. Although the City will continue to enforce its ordinances, there is an emphasis on data-sharing with Padre Dam MWD to encourage water conservation and to improve water quality through the reduction of nuisance flows.

6.5 EFFECTIVENESS ASSESSMENT

The effectiveness of the residential component is assessed in Section 11 of this Annual Report.

6.6 PROGRAM REVIEW AND MODIFICATION

The City's JURMP was updated in March 2008. With the exception of the reassignment of the high TTWQ area for the 2009/1010 Reporting Period, no changes to the City's residential component have been made since that time.

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION

7.1 INTRODUCTION

In accordance with the September 10, 2008 RWQCB adoption of Addendum No. 2 to Order No. R9-2007-0001, the City will submit the 2009/2010 illicit discharge detection and elimination section and attachments to the RWQCB no later than December 15, 2010.

8.0 EDUCATION COMPONENT

8.1 INTRODUCTION

During the Reporting Period, the City continued to provide education and outreach to a variety of audiences within the City. The City's education program targets municipal personnel, industrial and commercial businesses, construction site owners and operators, residents, and audiences that may generally be underserved. The City aims to reduce storm water pollution by increasing awareness about storm water and promoting the implementation of pollution prevention measures and BMPs. Through education and outreach, the City works to foster change in both the attitude and behaviors of the regulated community.

8.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the education component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the Reporting Period.

- During the Reporting Period, the City's community newsletter, the *Santee Review*, featured articles highlighting storm water topics aimed at City businesses and residents.
- Various educational materials were made available to project proponents, industrial and commercial facility personnel, and City staff through the City's storm water information center, interactions and training with Stormwater Program Staff, the City Website, facility inspections and project reviews.
- The City completed redevelopment of the stormwater website pages.
- The City used its website to remind property owners how to prepare properties for the rainy season and notify citizens of the availability of free sandbags during an intense storm period.
- The City was proactive in notifying construction project proponents within Santee of regional stormwater training opportunities. A City representative made a presentation at an Association of General Contractors' construction stormwater training event.
- The City provided educational materials in English and Spanish to provide outreach to a wider audience.

8.2 STAFF TRAINING ELEMENT

The City has provided extensive training and educational outreach to its municipal personnel. Many municipal personnel are out in the field on a daily basis, so it is

important that they understand the importance of implementing BMPs. Municipal personnel are encouraged to report any IC/IDs observed to the appropriate City staff and to educate other municipal personnel and the general public about storm water pollution prevention. During the Reporting Period, the City provided the following in-house training/educational outreach events aimed at municipal personnel:

- Nine public works staff, the Deputy City Manager and Safety Officer attended a training where the video "After the Storm" was presented. Afterwards there was a discussion of pertinent items relating to the City of Santee.
- Code compliance staff were trained on how to recognize and respond to illegal discharges.
- The building inspector was trained on how to ensure stormwater requirements are being implemented properly during construction activities.
- Eight members of DDS attended training on construction site inspection and complaint response procedures.
- Ten members of DDS attended a comprehensive internal training on stormwater requirements relating to the design and construction of new development and redevelopment.
- A stormwater inspector was trained to conduct business inspections. This comprehensive training was conducted over a period of three months.

In addition to the in-house training opportunities, outside training opportunities, focusing on areas of the stormwater program that were evolving were made available to staff. See Table 8.1, on the following page, for details about these training events.

Table 8.1 Outside Staff Training Opportunities FY 2009-2010

Date	Training	Description
9/10/2009	CASQA webcast training on the new Construction Permit.	Three members of the Department of Development Services (DDS) attended.
9/24/2009	Bacteria TMDL seminar presented by Weston Solutions.	Stormwater Program Manager attended.
9/30/2009	Online EPA course on Illicit Discharge and Elimination.	Stormwater Program Manager attended.
11/02/09 – 11/05/09	CASQA Annual Conference	Stormwater Program Manager attended.
03/03/10	APWA SUSMP Training	Eleven members of DDS (engineers, planners, and stormwater program staff) attended a regional training on the new SUSMP requirements.
3/11 and 3/12/10	Sustainable Urban Landscape Conference at Cuyamaca College	Parks and Landscape Coordinator attended.
3/23/10	CAL-EPA Enforcement Training	Stormwater Program Manager attended training.
5/4/2010	State Training on Construction Permit	Two members of DDS attended this training at the RWQCB's offices.
6/23/2010	CASQA webcast training on the Construction BMP portal.	Five members of DDS viewed this training.

In addition to the formal training sessions conducted for City personnel presented in Table 8.1; the JURMP reporting process and interactions with colleagues during daily activities provided the City's Stormwater Program Manager with a forum to discuss the City's storm water program with various City personnel involved in implementing the City's JURMP.

8.3 EDUCATIONAL OUTREACH ELEMENT

In addition to municipal staff, the City has continued to provide education and outreach to industrial and commercial businesses, construction site owners and developers, residential areas, and underserved audiences. These efforts promote storm water awareness and BMP implementation.

8.3.1 INDUSTRIAL AND COMMERCIAL BUSINESSES

As required by the Municipal Permit, the City inspects its inventoried businesses to evaluate compliance with the City's BMP requirements and provides site-specific education outreach to business owners and operators. Violations of the City's BMP requirements are corrected through enforcement actions as necessary. Facility inspectors provided site-specific discussions on necessary BMPs at all inspected facilities. These discussions help facility personnel gain a better understanding of the storm drain system and activities that pose a high threat to water quality.

In addition to site-specific discussions, industrial and commercial facility owners and operators were provided a variety of fact sheets and other educational materials. The City distributed the following general and activity-specific fact sheets during industrial and commercial inspections and during complaint investigations, as applicable. The fact sheets are included in Attachment 4.1.

- Fact Sheet 1: What is Stormwater?
- Fact Sheet 2: Water Quality Impacts
- Fact Sheet 3: Wet Weather Checklist
- Fact Sheet 4: Restaurants
- Fact Sheet 5: Automotive
- Fact Sheet 6: Mobile Auto Detailing
- Fact Sheet 7: Power Washing
- Fact Sheet 8: Industrial/Commercial
- Fact Sheet 9: Pool Maintenance
- Fact Sheet 10: Residents
- Fact Sheet 11: Demolition/Construction
- Fact Sheet 12: Special Events
- Fact Sheet 13: Carpet Cleaning
- Fact Sheet 14: Community Organizations
- Fact Sheet 15: Site Design LID BMPs
- Fact Sheet 16: Yard and Garden Maintenance

- Fact Sheet 17: Fire Prevention & Erosion
- Fact Sheet 18: Responding to Sewage Spills

A letter and Fact Sheet 8, the Industrial/Commercial fact sheet, was mailed to businesses selected for inspections during the Reporting Period. During the inspection process, the City also distributed the "Green Wrench Guide" and the "What's Cookin'" brochure, both in English and Spanish, to auto shops and restaurants, as applicable.

In addition to educational materials provided during license applications, inspections and complaint investigations, the City's newsletter, the *Santee Review*, is available by email to industrial and commercial addresses in the City. The newsletter often contains storm water articles and relevant information on public participation opportunities. The storm water-related articles published during the reporting period are included as Attachment 8.1. Note that the *Santee Review* was not issued on a quarterly basis, as has been typical in previous years. Instead issues were prepared during the Summer and Fall of 2009 only.

8.3.1.1 Mobile Businesses

Mobile businesses, specifically mobile car detailers or power washers, are considered a high threat to water quality due to the nature of the business activities and the likelihood of prohibited non-storm water discharges. Mobile businesses are not confined to a single area, and many do not have City business licenses, making them difficult to identify. Individuals applying for businesses licenses for mobile car washing activities meet with the City's Stormwater Program Manager to discuss BMPs before a business license is issued. In addition, businesses applying for licenses to operate carpet cleaning, landscaping, or pool maintenance services received factsheets on these subjects. The City takes proactive steps in identifying and educating mobile businesses in the City during the Reporting Period, namely conducting drive-by investigations of areas known to be frequented by mobile businesses and providing applicable educational material and/or enforcement actions.

Additionally, the City continues to provide copies of the carpet cleaning factsheet to a facility that maintains machinery used for carpet cleaning (A & I). The facility owner distributes these factsheets to their clients.

8.3.2 Construction Site Owners and Developers

Construction sites have the potential to discharge sediment and other pollutants to receiving waters if not managed properly. Construction site owners, contractors, and developers visit the City's Engineering Division to apply for necessary permits. The review process raises storm water awareness through the grading permit approval, development review, environmental review, SUSMP review, and/or other meetings prior to the issue of permits. In addition to these interactions with City staff, information on the General Construction Stormwater Permit (where applicable), the City's Website, brochures, and construction-specific materials are provided for all

construction affiliates. Anyone applying for a building permit is provided Fact Sheet 11, which includes BMPs for construction and demolition activities. Education is also provided after permits have been obtained during the City's site inspections.

A City representative made a presentation at an Association of General Contractors (AGC) construction stormwater training event. The presentation focused on the requirements of the municipal permit for construction sites.

The City has also continued its requirement for contractors and developers to watch "Hold Onto Your Dirt," an informational video on construction BMPs, at meetings prior to obtaining grading permits.

8.3.3 Residential Areas

Due to the potential threat to water quality posed by residential activities, the City understands the importance of reaching this particular audience through educational outreach programs. The City continued to send the *Santee Review* Community Newsletter (Attachment 8.1) to residents in the City. Several storm water articles were included in the newsletters distributed during the Reporting Period. The following is an outline of storm water related articles and announcements published in the newsletter during the Reporting Period:

- "Volunteers Assist with Creek Clean Up" describes how volunteers from the San Diego River Park Foundation worked with City crews to remove trash washed down to Forester Creek. It provided contact information for the River Park Foundation.
- "Debris Recycled into Construction Material" described how sediment washed into Forester Creek from the upstream lined channel was removed and used in the Town Center Community Park project.
- "Kids, Water and Bugs" described outreach to children at a City of Santee camp. There a simplified model of the storm drain system and river were used to demonstrate how pollution discharged onto our streets affects the San Diego River. Afterwards the children had an opportunity to examine some of the benthic macroinvertebrates that live in Forester Creek. This event was conducted in collaboration with the San Diego River Park Foundation.

Copies of Factsheet 09 (Swimming Pool and Spa Maintenance) were provided to Leslie Pools, a vendor of home pool and spa supplies to distribute to their customers, most of which are residents. The City website, www.ci.santee.ca.us, is another way in which City residents can become familiar with the design and intended use of the storm drain system, household hazardous waste (HHW) disposal, information regarding volunteer opportunities, information on how to report pollution, stormwater factsheets for various activities, Stormwater Program documents and applicable City contact information.

On September 14, 2009 City staff conducted a presentation on stormwater compliance for residents at the Sky Ranch Homeowners' Association meeting. Outreach materials were provided directly to the residents and additional copies were left for distribution to other residents.

An article was uploaded to the City's website prior to the first rain to advise residents on how they can prepare their properties for the rainy season to minimize discharges of pollutants. During a period of intense storms the City also had a notice on its website advising residents where they can get free sandbags.

During the Reporting Period a redesign of the stormwater web pages was launched. The business section provides links to information on the State Industrial Permit; the residential section provides links to information on residential BMPs; the section for developers provides links to the City's SUSMP, and various project screening forms. It is anticipated that this will help streamline compliance for website users, and will also help leverage existing resources on the internet.

During the 2010/2011 Reporting Period, a selection of one line statements providing information on stormwater issues (such as the need to sweep up, not hose down patios and driveways) will be developed for use on the City's Facebook page.

8.3.4 UNDERSERVED COMMUNITIES

As discussed in the JURMP, the City has defined underserved communities, as required by the Municipal Permit, as residents who engage in certain high-risk to water quality behaviors. This behavior is not restricted to any particular demographic group within the City. High-risk to water quality behaviors include incorrect use and disposal of home and garden care products, incorrect disposal of vehicle fluids, use and maintenance of off-road recreational vehicles, and incorrect disposal of pet waste, over-application of chemicals, over-irrigation, trash accumulation, oil spills, and home improvement projects. To generate educational outreach to those who may engage in high risk to water quality behaviors, the City has continued to maintain a HHW and used oil collection program as well as providing educational material regarding HHW and used oil. Pet waste bags are available in City parks and at popular dog walking areas in the City. The City website also includes information on BMPs for chemical management and vehicle washing. The City plans to continue outreach to those who may engage in high risk to water quality behaviors through its education program.

If high-risk behaviors are observed to be prevalent in any particular demographic group, then the education program will be adjusted to provide more focused outreach to the group. During the Reporting Period a report was prepared regarding the knowledge and attitudes of pet owners relating to pet waste management.

Major trends observed during the study included the following:

- An expectation that pet waste will fertilize the ground.
- Middle-aged males were the least likely to pick up after their pets.

- Those who walk their dogs less frequently were less likely to pick up after their pets.
- It was less likely that the waste would be picked up if dogs defecated when they were off-leash.

These trends will be used to tailor outreach activities and materials to improve the rate at which pet waste is removed by owners.

8.3.5 COMPLAINT INVESTIGATIONS

To further aid the process of identifying illicit discharges, the City encourages the public and City staff to report IC/IDs. If a representative for the business, residential area, or construction site is present, the inspector will provide site-specific information regarding storm water issues including applicable educational materials. Educational material was distributed as necessary during complaint investigations. In addition to the City's storm water hotline, Public Works also receives complaints regarding issues with MS4 maintenance. These complaints are followed up by Public Works personnel and mainly involve drainage system maintenance, but storm water staff is notified when necessary.

8.3.6 EDUCATIONAL MATERIAL DISTRIBUTED

Table 8-1, below, describes the approximate number of educational material distributed during the Reporting Period.

Table 8-2
Educational Material Distributed

Educational Material	Approximate Number Distributed
Ind/Com Inspection Notification Letter	300
Fact sheet 1: What is Stormwater?	104
Fact sheet 2: Water Quality Impacts	5
Fact sheet 3: Carpet Cleaning	22
Fact sheet 4: Restaurants	34
Fact sheet 5: Automotive	31
Fact sheet 6: Mobile Auto Detailing	23
Fact sheet 7: Power Washing	27
Fact sheet 8: Industrial/Commercial	336
Fact sheet 9: Pool Maintenance	174
Fact sheet 10: Residences	82
Fact sheet 11: Construction	28
Fact sheet 12: Special Events	13
Fact sheet 13: Carpet Cleaning	14
Fact sheet 14: Community Organizations	5
Fact sheet 15: Site Design LID BMPs	20

Educational Material	Approximate Number Distributed
Fact sheet 16: Yard and Garden	45
Fact sheet 17: Fire Prevention	138
IPM Cards: English	109
IPM Cards: Spanish	15
Knowledge Assessment Surveys	75
What's Cookin' - English	17
What's Cookin' - Spanish	13
Green Wrench Guide - English	1
Green Wrench Guide - Spanish	2
Volunteer Activities Outreach	26
Regional Calendars	450
Training Info/Sign-in	29
CASQA BMPs for Landscape Maintenance, Outdoor Container Storage and Erosion Control Related.	1
CASQA BMPs for Food Service Facilities and Mobile Cleaning – Food Service Related.	3

8.4 Outreach Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the effectiveness assessment for this program component.

8.5 Program Review and Modification

The City's JURMP was updated in March 2008. No changes to the City's education component have been made since that time.

9.0 PUBLIC PARTICIPATION

9.1 INTRODUCTION

The City continues to explore ways to encourage public participation in the City's storm water program. Collaboration between the City and the community should help foster a sense of shared responsibility in protecting water quality both locally and regionally.

9.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the public participation component during the Reporting Period includes the collection of over 12.4 tons of trash and debris during eleven cleanup events held for the San Diego River, Forester Creek, Mast Park, Town Center Park and other locations throughout the City. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

9.2 EVENTS AND PROGRAMS

California Clean-Up Day

The City collaborated with the San Diego River Park Foundation to provide a location for the annual California Clean-up day. The Santee location was along the San Diego River to the east of Cuyamaca Street (meeting at Town Center Park**).** Approximately 372 volunteer hours were spent collecting 3,000 lbs of trash prior to the rainy season.

Santree Fest

The City hosted the Santree Fest at the newly-developed Town Center Park. This was attended by approximately 500 volunteers who participated in a number of activities to enhance Town Center Park including the removal of 100 pounds of trash and debris, as described in Table 9-1. In addition to the trash removal activities, trees were planted in the area. The event provided an opportunity for educational outreach to the participants of the event. Various educational outreach materials, including IPM cards in both English and Spanish, storm water fact sheets, residential fact sheets, and waste management information were provided. City personnel discussed pollution prevention techniques with event attendees who visited the City Booth.

Creek and Waterway Cleanups

The City actively collaborates with the San Diego River Park Foundation to organize public participation events to raise awareness and appreciation of the San Diego River. The City also collaborates with other community groups to facilitate trash removal activities. Cleanup events are described in Table 9-1, on the following page.

Table 9-1
Summary of Cleanup Events

Date	Amount of Trash Removed (lbs)	Description
09/12/09	3,500	56 volunteers participated in an event organized with the San Diego River Park Foundation at Mast Park.
09/19/09	3,000	California Clean Up Day event attended by 124 volunteers.
09/26/09	3,500	144 volunteers participated in an event organized with the San Diego River Park Foundation at Mast Park.
12/12/09	2,000	18 volunteers participated in an event organized with the San Diego River Park Foundation at Forester Creek.
01/29/10	100	Two volunteers associated with the San Diego River Park Foundation conducted a clean-up at Mast Park West (location of future trailhead, west of Carlton Hills Boulevard).
02/05/10	300	Four volunteers associated with the San Diego River Park Foundation conducted a clean-up at the river at Big Rock Road.
02/20/10	7,700	Event organized by the County of San Diego Department of Watershed Protection and attended by City Staff. Trash was removed from property along the river owned by the County. City Department of Public Works assisted in the removal of larger items retrieved during the event.
03/10/10	540	Seven volunteers associated with San Diego River Park Foundation removed material from along Forester Creek.
4/24/10	1,600	Creek to Bay Clean-Up organized by City consultant D-Max Engineering with assistance from the San Diego River Park Foundation and City staff. Approximately 93 people participated in the removal of trash along Forester Creek.
04/30/10	2,500	Thirty-six volunteers associated with the San Diego River Park Foundation removed debris from the river at Big Rock Road.
05/01/10	100	Santreefest event where the San Diego River Park Foundation organized volunteers to remove trash from the river near Cuyamaca Street.

Public Reporting

The City encourages citizens to report any observed illicit connections, illegal discharges or other activity that contributes pollutants to the City's MS4 through the City's Storm Water Hotline. The number for this hotline is presented in all outreach materials, on the website and in each edition of the Santee Review.

Roadside Pride

This ongoing program, where community youth separate recyclable materials from collected debris, was promoted in the Fall 2008 edition of the Santee Review.

Storm Drain Stenciling Program
This ongoing program provides opportunities for members of the community to stencil storm drains to remind the public not to discharge materials to the storm drain system. No stenciling projects were conducted during the Reporting Period; however, the City continues to offer this program to youth groups and other volunteer organizations as a way to participate in improving water quality.

Hazardous Waste Collection and Used Oil Recycling
Citizens are required to properly dispose of household hazardous waste, used oil, bulk items and electronic waste. Residents are informed of the services available to them through outreach at community events, information provided through the storm water program (such as the Residential Fact Sheet), information at various City departments, and the City's website. The amount of used oil and other HHW collected during 2009/2010 is reported in Section 6.4.2 of this Annual Report.

Encourage Responsible Cleanup
Citizens using municipal facilities are encouraged to keep their community clean by properly disposing of all waste. Trash and recycling bins are provided at City parks. Pet waste bags are available at City parks and along popular dog-walking routes. Additional pet waste bag dispensers are being installed as part of an on-going program.

Responsible cleanup procedures are encouraged at special events within the City. A Special Event fact sheet is provided to applicants for relevant permits which require specific BMPs at all special events. Detailed conditions are used for special events in Santee.

In addition to the activities listed above, the City continues to encourage public participation through Project Clean Water and related activities.

9.3 Public Participation Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

9.4 Program Review and Modification

No changes to the public participation component of the JURMP are proposed at this time.

11.0 EFFECTIVENESS ASSESSMENT

11.1 INTRODUCTION

The City regularly evaluates its storm water program to make it as effective as possible at reducing discharges of urban runoff related pollution to the MEP. The overall structure of the City's storm water program is composed of three primary components:

- Program Planning
- Program Implementation
- Effectiveness Assessment

The process typically proceeds from planning to implementation to assessment, although in practice all three may be in progress at the same time. The initial step is program planning, which requires identifying potential pollutant sources, establishing BMP requirements, and establishing targeted outcomes and ways to measure those outcomes. Next, the program developed during the planning step is implemented. Program implementation is assessed each year using the methods developed in the program planning stage and reported in JURMP annual reports. The conclusions from these assessments are used during the next round of program planning to incorporate improvements to the program and refine the assessment technique.

Based on participation in regional efforts and experience implementing its JURMP, the City has identified a variety of metrics to assess progress toward targeted outcomes. At the end of each reporting year, the City uses selected metrics to assess the effectiveness of its program implementation. Example metrics were provided in Section 13 of the City's 2008 JURMP, and the City has refined those metrics in the reporting periods since then.

The effectiveness assessment approach developed by the Copermittees during the last permit cycle includes six different levels of targeted outcomes. Each successive level represents a step up from more easily measured, activity-based outcomes to more difficult to measure, quality-based outcomes. The levels are listed below.

Level 1: Compliance with Activity-Based Permit Requirements
Level 2: Changes in Knowledge/Awareness
Level 3: Behavioral Change/BMP Implementation
Level 4: Load Reductions
Level 5: Changes in Discharge Quality
Level 6: Changes in Receiving Water Quality

11.2 EFFECTIVENESS ASSESSMENT RESULTS

The Municipal Permit requires the City to assess the effectiveness of each significant activity for each program component, for each program component as a whole, and for the storm water program as a whole. Level 1, Level 5, and Level 6 outcomes are

discussed in Section 11.2.1. At this time the City is not able to fully assess Level 5 or Level 6 outcomes for individual program activities or individual programs. As has been noted in CASQA effectiveness assessment guidance, methods for integrated assessment—assessment that combines both monitoring data and program data—are still under development at regional and statewide levels (CASQA, 2007).

11.2.1 Outcome Level Assessments

Level 1

Level 1 outcomes essentially are measures of Municipal Permit compliance. The component-specific sections in this JURMP Annual Report provide details of programmatic actions taken to comply with the applicable Municipal Permit requirements. Appendix C of this JURMP Annual Report also includes a checklist that provides the location within this report where each provision of the Municipal Permit's annual reporting requirements is addressed.

Levels 2 and 3

See the tables 11-1 through 11-8 at the end of this section for discussions of Level 2 and Level 3 outcomes for significant activities within each program component. Please note that only a Level 1 assessment applies to fiscal analysis, so no table for fiscal analysis is included.

Level 4

The tables at the end of this section provide information for Level 4 assessments where feasible. Assessment of Level 4 outcomes is feasible for some programs that directly measure the amounts of pollutant removal, such as MS4 cleaning. For most other programs reliable load estimation methods have not yet been developed.

Level 5

One of the City's primary mechanisms for measuring the quality of discharges is the Dry Weather Monitoring Program. Graphs presenting the historical Dry Weather Monitoring Program exceedances are provided at the end of this section as figures 11-1 and 11-2.

Nitrate-nitrogen exceedances have been common over the years and have been attributed to groundwater seepage into the MS4. Exceedances in conductivity, orthophosphate-phosphorus, oil and grease, copper, and diazinon have been infrequent in the history of the program. In Round One of the 2010 Dry Weather Monitoring Program, two sites had confirmed nitrate-nitrogen exceedances. These sites have regularly exceeded nitrate-nitrogen objectives as a result of groundwater sources. Transient exceedances of turbidity, surfactants, ammonia-nitrogen, orthophosphate-phosphorus, and *Enterococcus* bacteria were measured. Additionally, by best professional judgment, one site was investigated for a chemical odor and sheen.

Total coliform exceedances have generally been decreasing over time. Note that dry weather action levels for bacterial indicators were revised in 2010. In figure 11-2, constituents have been compared to action levels in effect at the time of sampling to

identify exceedances. In comparison to either set of action levels, no total or fecal coliform exceedances were detected in Round One of the 2010 Dry Weather Monitoring Program.

In addition to dry weather monitoring, the City continues to conduct the MS4 Outfall Monitoring Program implemented in 2009. This program examines water quality at targeted MS4 outfalls in order to characterize pollutant discharges to receiving waters. The data is used to assess whether these discharges contribute to the overall receiving water quality.

Level 6

No Regional Monitoring Program stations have been located within or close to the City of Santee in the past. As part of the updated regional monitoring program, two Temporary Watershed Assessment Stations (TWAS) in the San Diego River Watershed will be located in the Santee area, one at the eastern side of the City, and one farther to the west, close to the junction of Forester Creek and the San Diego River. Data collected at these stations may prove useful in evaluating receiving water quality in the City of Santee once the data becomes available. The data was collected in 2009/2010 and will be provided to the City as part of the San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Report, which will be finalized in January 2011.

Since 2002, the City has performed an additional study of water quality at five receiving water body locations: two sites in the San Diego River, two sites in Forester Creek, and one site in Sycamore Creek. Samples have been collected under ambient conditions twice per year at each site. Although a portion of Forester Creek outside the City of Santee has been listed as impaired for pH, none of the samples in any water body in Santee's additional study have exceeded the Basin Plan water quality objectives (WQO) for pH (Figure 11-3). Figures 11-4, 1-5, and 11-6 show fecal coliform levels measured in upstream and downstream receiving water locations, with downstream measurements typically being lower. In general, fecal coliform levels demonstrate a decreasing trend.

Data collected generally shows that water quality improves through the City of Santee. Pollutant levels are consistently lower in the downstream reach compared to upstream. Samples collected in 2010 from Site J30d1, located downstream of a restored portion of Woodglen Vista Channel, had relatively low bacteria counts, with fecal coliform below the detection level. This is evidence that the City's recently completed projects to revegetate and improve open channels such as Forester Creek and Woodglen Vista Creek results in improved water quality. More rounds of data will be needed to identify trends in these analyte concentrations with a greater degree of certainty.

11.2.2 Overall Component Assessments

Development Planning

The City's review process for development projects effectively requires higher removal efficiency BMPs. City interaction with responsible parties during the reporting period has resulted in BMP installation and a greater level of awareness of the need for regular

treatment control BMP maintenance within the City. During 2009/2010 the City prepared a SWMP forms for developers to use for SUSMP submittals, which should help reduce the number of reviews needed through providing additional clarity on requirements to project proponents. The City's treatment control BMP inspection program exceeded Municipal Permit requirements during 2009/2010.

Construction

The available data indicate that on the whole the City's construction program effectively requires BMP implementation. The City also inspected many sites more frequently than required by the Municipal Permit and sent construction BMP reminders prior to the beginning of the wet season. Additionally, the City conducted inspections at several inactive sites to ensure continued compliance with the City's BMP requirements. The City took enforcement actions when necessary to bring about compliance. These practices appear to have improved BMP implementation both in general and during rain events, which is when construction activities have the highest potential to discharge pollutants.

Municipal

The City's municipal activities effectively implement BMPs and reduce pollutant loading. The City's municipal staff are regularly trained on storm water issues, and the City's MS4 cleaning and street sweeping programs meet or exceed minimum Municipal Permit frequency requirements. The City sweeps its streets more often than Municipal Permit requirements to aid in WURMP efforts. The City coordinates with Padre Dam MWD to prevent and respond to any SSOs in the City. The City also distributes pet waste bags through dispensers in its parks, and distributed over 180,000 more bags than during the 2008/2009 Reporting Period.

Additionally, the City continued its sustainability program, complementing current environmental programs, such as stormwater, with additional programs to reduce consumption of energy from non-renewable resources, promoting the development of green buildings, and reducing consumption of water and energy.

Industrial and Commercial

The City has a comprehensive inspection program, and the City's Stormwater Program Manager personally conducts many of the inspections. The Stormwater Program Manager follows up with the responsible parties of inspected businesses where significant corrections are needed to ensure corrective actions are implemented properly and within a timely manner. The City also follows-up with businesses observed to be out of compliance with the Industrial Permit to ensure appropriate actions are taken to bring about compliance.

Additionally, the City has taken proactive steps to identify and educate mobile businesses in the City by driving by areas known to be frequented by mobile businesses, specifically mobile car detailers. If any mobile businesses were observed, City personnel stopped to provide educational material and ensure that no discharges were occurring.

Residential

The City's residential component achieves BMP implementation through complaint response, education, and routine monitoring to detect IC/IDs. The City also encourages residential participation in clean up and other events to help foster a sense of shared responsibility in keeping the community clean. These activities may promote a sense of awareness in the residential community, which has the potential to mitigate residential sources of pollution. Additionally, residents in the City attended several training sessions focused on residential topics.

IDDE

The City's IDDE program has effectively responded to hotline calls and quickly responded to address any identified IC/IDs. A total of 68 referrals were received during the Reporting Period, which is an increase from the 59 received during the 2008/2009 reporting period. This may indicate that members of the public are more aware of when and how to report potential storm water issues when observed. Actions were taken in response to the recommendations from the 2009 Dry Weather Monitoring Program Report. The City will continue to take action to prevent and eliminate IC/IDs during Fiscal Year 2010/2011.

Education

During the Reporting Period, the City completed a re-design of the City's storm water website to more effectively provide information to various audiences in the City. The City was proactive in its outreach to mobile businesses and worked to identify carpet cleaners, pool maintenance businesses, and landscapers during the business license application process. These businesses were provided activity-specific educational materials. Additionally, the City continued its innovative methods of distributing educational material to hard-to-reach audiences in the City; for example, the City's Stormwater Program Manager worked with local businesses to distribute activity specific fact sheets for pool maintenance and carpet cleaning at facilities that are frequently patronized by residents in the City.

Public Participation

The City has held several clean up events, typically in partnership with community organizations such as the San Diego River Park Foundation. The City also encouraged ongoing community participation through smaller-scale activities such as proper pet-waste disposal.

11.3 Program Review and Modification

No significant changes to the effectiveness assessment approach presented in the City's March 2008 JURMP have been made since the submittal of that document.

Table 11-1
Development Planning Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Review and approve project plans	External Based on meetings with applicants and BMPs proposed, it appears that the level of knowledge is increasing. Internal The City's Stormwater Program Manager and Project Engineers work closely to ensure SUSMP requirements are met.	Overall SWMP approval rate during reporting period	33%	N/A, addressed through other significant activities for this component
		Number of projects requiring three or more reviews prior to SWMP approval	3	
		Percent of approved projects implementing BMPs with high or medium removal efficiencies for key pollutants of concern	100%	
Verify proposed BMPs are implemented	External N/A, knowledge is evaluated by appropriate implementation of BMPs as shown in Level 3 Internal The City's Stormwater Program Manager provides training to staff responsible for verifying BMPs are installed prior to occupancy.	Percent of projects implementing proposed BMPs	100%	Installation of BMPs likely contributed to pollutant load reductions.
		Resolution status of enforcement actions	100%	
Verify BMPs are properly maintained	External Owners notified of requirement to maintain treatment control BMPs Internal The City's Stormwater Program Manager is familiar with BMP maintenance requirements.	Percent of sites with properly maintained BMPs on October 1st	96%	Proper maintenance of BMPs likely contributed to pollutant load reductions.
		Resolution status of enforcement actions	100%	
		Percent of sites submitting verification forms	100%	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-2
Construction Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Review proposed plans and BMPs	External Projects submit plans for construction BMP implementation for their projects; the level of awareness of construction BMP requirements is fairly high. Internal Training for City staff is described in Section 8. City staff are familiar with relevant construction BMPs.	BMPs proposed for construction projects generally meet requirements; no significant problems have been noted.		Proper pre-project planning is likely to have reduced pollutant loading.
Verify proposed BMPs are implemented	External Grading projects implement BMPs as required by their permits, and contractors are familiar with the City's requirements. Construction projects are notified through inspection notices and letters of requirements. Internal Training for City staff is described in Section 8. City inspectors are familiar with relevant construction BMPs.	Percent of inspections during which projects were in compliance with all applicable BMP requirements	91%	Proper BMP implementation is likely to have reduced pollutant loading.
		Resolution status of enforcement actions	100%	
		Number of dry weather monitoring exceedances traced to construction sources	0	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-3
Municipal Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Verify proposed BMPs are implemented at facilities	City staff are regularly trained on BMP implementation; see sections 4 and 8.	Percent of inspected facilities/activities in compliance with BMP requirements	92%	Proper BMP implementation is likely to have reduced pollutant loading.	
		Resolution status of sites requiring follow-up inspections	100%	Amount of pet waste collected	24 tons*
		Number of dry weather monitoring exceedances traced to municipal sites	1**		
Sweep streets and parking facilities		N/A, streets and parking facilities are swept as often as directed by management and Municipal Permit requirements.		Amount of sediment and debris removed (weight or volume)	648 tons
				Amount of sediment and debris removed per length of street swept (weight or volume per curb mile)	0.06 tons/ curb mile
Maintain and clean out MS4		N/A, MS4 structures are maintained as often as directed by management and in compliance with permit requirements.		Amount of sediment and debris removed (weight or volume)	559 tons
Maintain sanitary sewer system		N/A, the sanitary sewer system is maintained by Padre Dam MWD.		Total volume of SSO discharge to MS4 (gallons)	0
Maintain municipal treatment control BMPs		N/A, treatment control BMPs are maintained as often as directed by management.		BMP effectiveness studies	N/A
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only	

* Amount of pet waste collected is based on an estimate of 0.2 pounds of pet waste per bag. This conversion rate was developed by the County of San Diego based on the results of a 2004 study and included in the 2006/2007 WURMP Annual Report. A total of 240,000 pet waste bags were distributed in 2009/2010.

** This exceedance was linked to emergency fire fighting activities associated with a car accident.

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-4
Industrial and Commercial Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Require BMP implementation	Business owners and operators were educated in variety of ways during the Reporting Period; see sections 5 and 8 for details.	Percent of inspected sites in compliance with discharge prohibitions	99%	Proper BMP implementation is likely to have reduced pollutant loading.	
		Percent of sites not requiring a follow-up	92%		
		Resolution status of enforcement actions	99%		
		Number of dry weather monitoring exceedances traced to industrial or commercial sources	1	Number of IC/IDs eliminated (inspections and complaint investigations)	15
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only	

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-5
Residential Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Require BMP implementation	External Residents were educated through articles in the *Santee Review*, targeted mailers, and in variety of other ways during the Reporting Period; see sections 6 and 8 for details. Internal The City's Stormwater Program Manager is heavily involved in the implementation of the residential component. Other City staff involved in the program also have a good understanding of the goals of the storm water program.	Number of residential incidents reported to storm water hotline	46	Resolution of residential incidents reported to the hotline likely resulted in a decrease in pollutant loading through improved BMP implementation.
		Resolution of enforcement actions	100%	
		Number of dry weather monitoring exceedances traced to residential sources	1	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-6
Illicit Discharge Detection and Elimination Component Assessment Measures

Significant Activity	Level 2	Level 3	Level 4
Conduct Dry Weather Monitoring Program	The City contracts with a qualified consultant to perform its Dry Weather Monitoring Program.	N/A, personnel conduct monitoring as directed by management.	No significant, long term IC/IDs were found or eliminated, so a reliable estimate of load reduction cannot be made.
Respond to incidents reported to storm water hotline	The City's Stormwater Program Manager trains City staff as needed. See sections 4 and 8. City staff were responsible for many of the reports made to the hotline, as shown in Section 4.	N/A, personnel respond to incidents as directed by management. Note that some non-stormwater staff have chosen to respond to observed incidents in their private lives. This is indicative of staff awareness and sense of responsibility.	Resolution of the incidents reported to the hotline and listed in Section 4 are likely to have resulted a pollutant loading reduction.
Respond to and clean up SSOs	City staff are thoroughly trained on how to respond to SSOs.	N/A, the sanitary sewer system is maintained by Padre Dam MWD.	There were two SSOs during the reporting period, each spill was entirely reclaimed.

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-7
Education Component Assessment Measures

Significant Activity	Level 2	Level 3	Level 4
Provide storm water education to the public	External The City actively educates the various audiences in its jurisdiction. See Section 8 for details.	See Level 3 outcomes for other program components for information about behavior change.	Sufficient data to estimate load reductions due to educational efforts is not available for the Reporting Period.

Notes
Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-8
Public Participation Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Involve the public in activities that relate to storm water protection	External The City and its partners held a number of opportunities for the public to participate. See Section 9 for details. There were more complaints/referrals during Fiscal Year 2009/2010 (68) than during Fiscal Year 2008/2009 (59).	Number of attendees at events	1,338	Amount of trash and debris collected at cleanup events	12.4 tons
		Number of calls received to the storm water hotline	68	Amount of HHW collected	584 collections of HHW, 309 gallons of used oil

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Figure 11-1
Dry Weather Monitoring Historical Exceedance Summary: Field Screening Tests

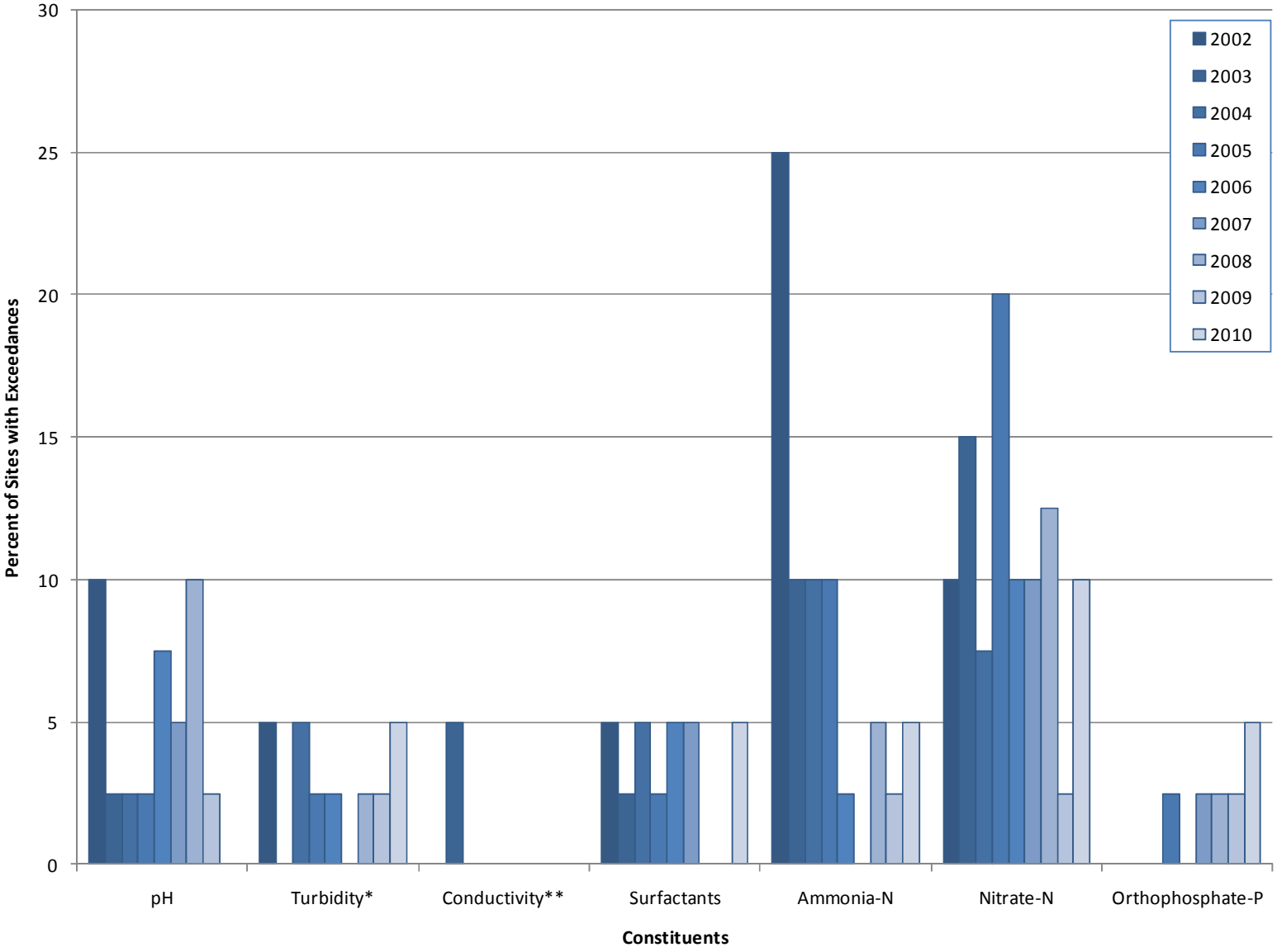

Notes:
* Turbidity action level is based on best professional judgment.
** Conductivity action levels were numeric in the past and transitioned to best professional judgment in recent years.

Figure 11-2
Dry Weather Monitoring Historical Exceedance Summary: Laboratory Analytical Tests

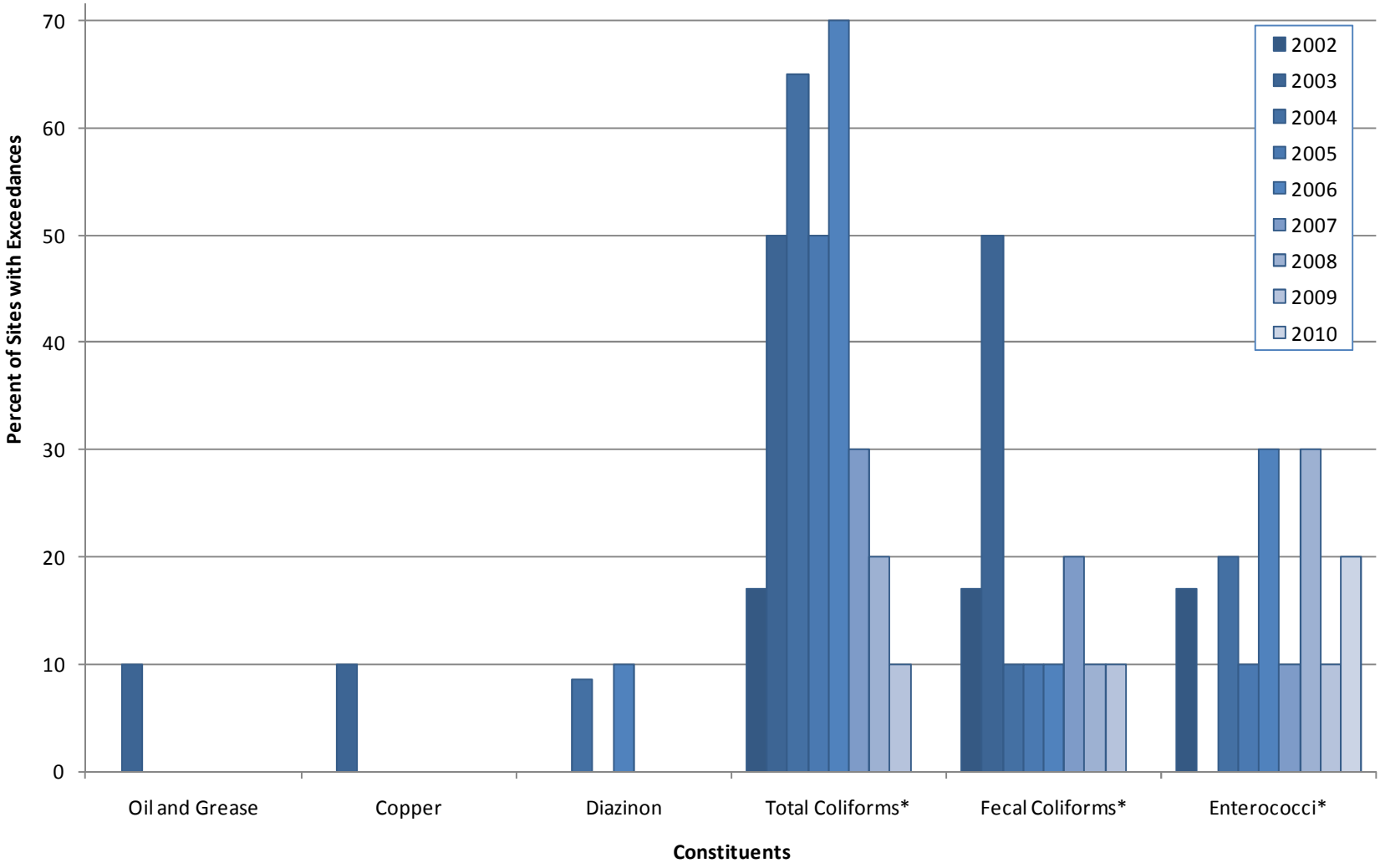

Notes:
*Action levels for bacteria were updated in 2010. Data from 2002-2009 has been compared to action levels in effect at that time. 2010 data has been compared to the updated action levels.
Cadmium, lead, zinc, surfactants, and chlorpyrifos have never exceeded the action level and are therefore not included on the above graph.

Figure 11-3
Additional Study Data: pH

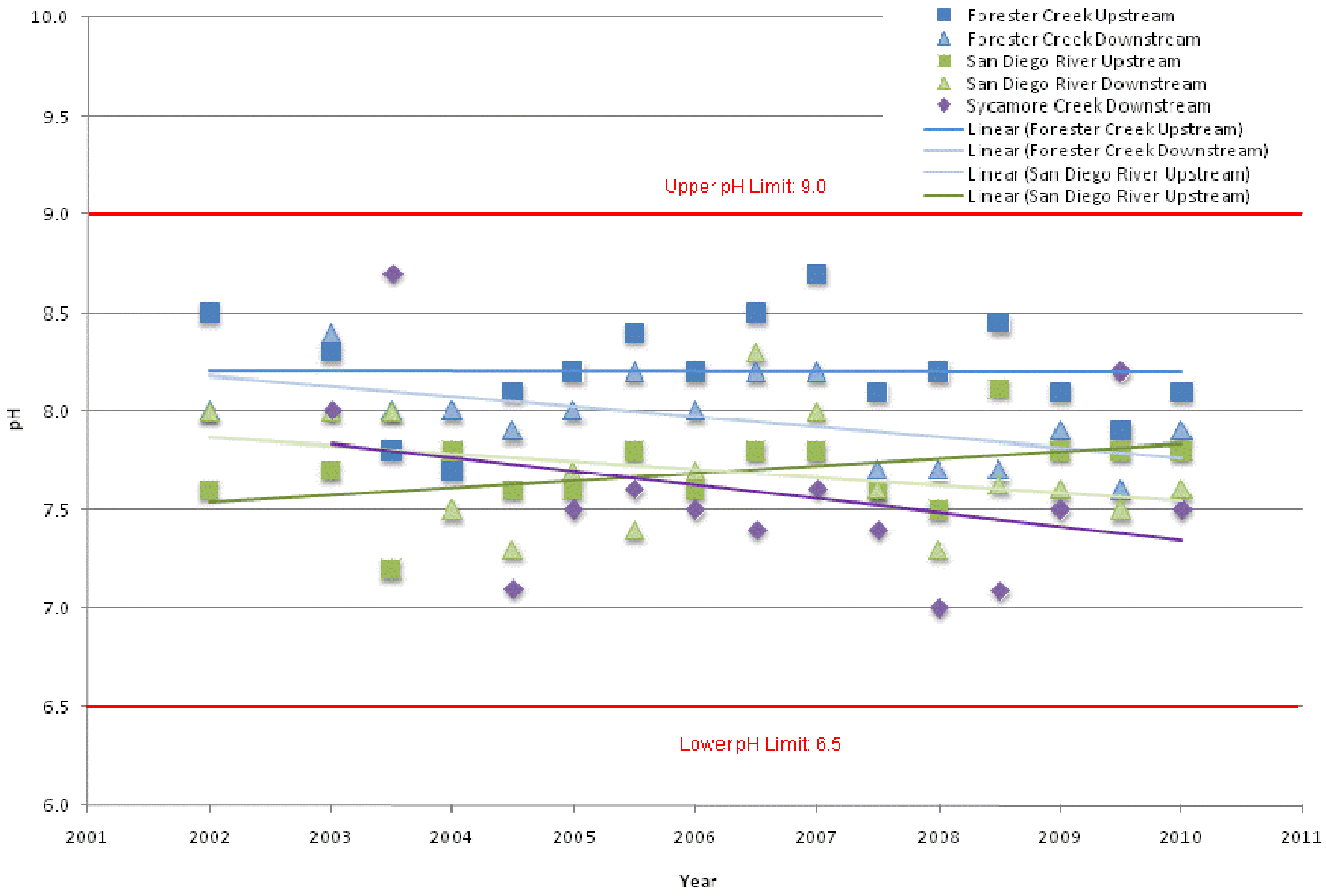

Figure 11-4
Additional Study Data: Fecal Coliform, Forester Creek

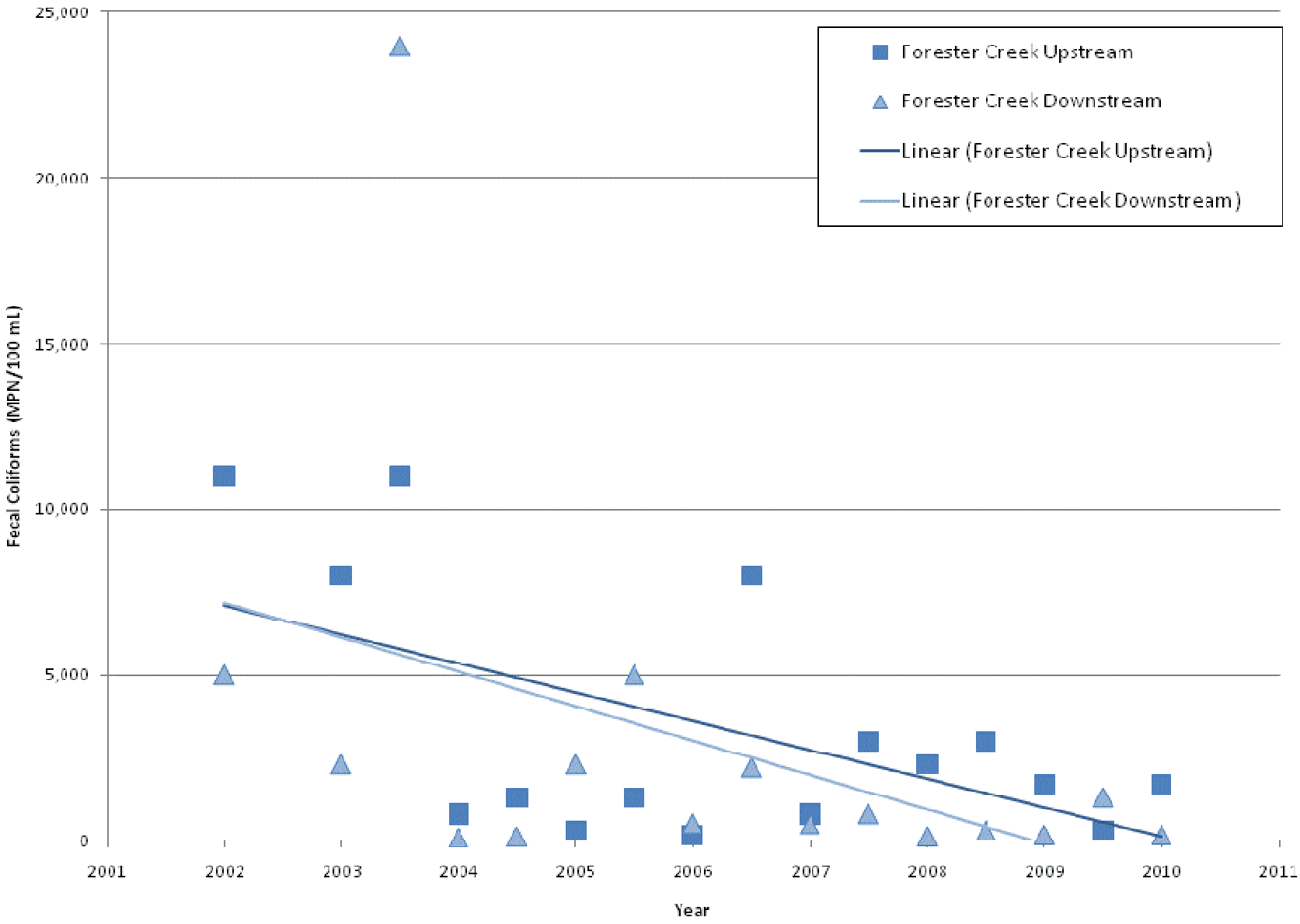

Figure 11-5
Additional Study Data: Fecal Coliform, San Diego River

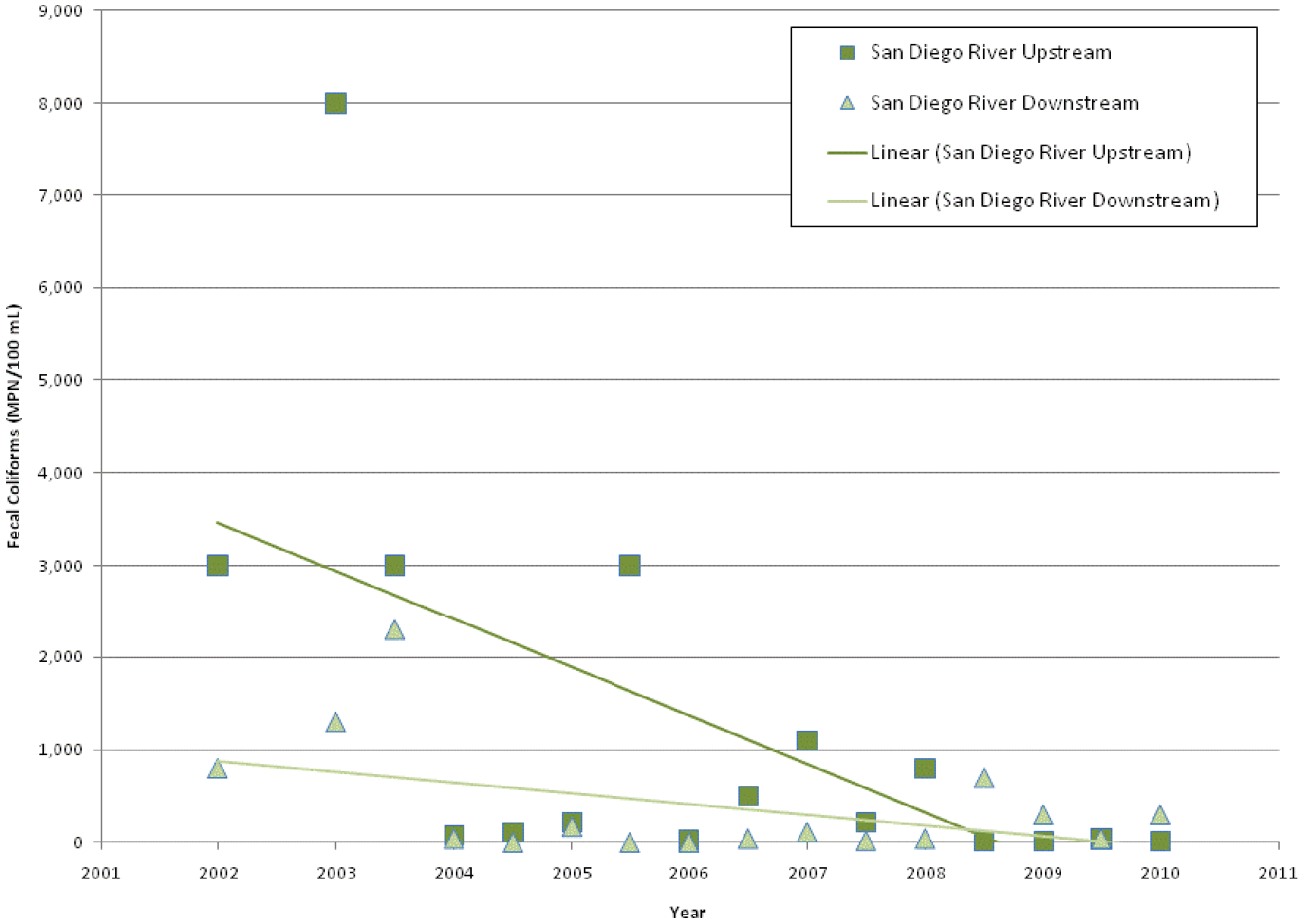

Figure 11-6
Additional Study Data: Fecal Coliform, Sycamore Creek

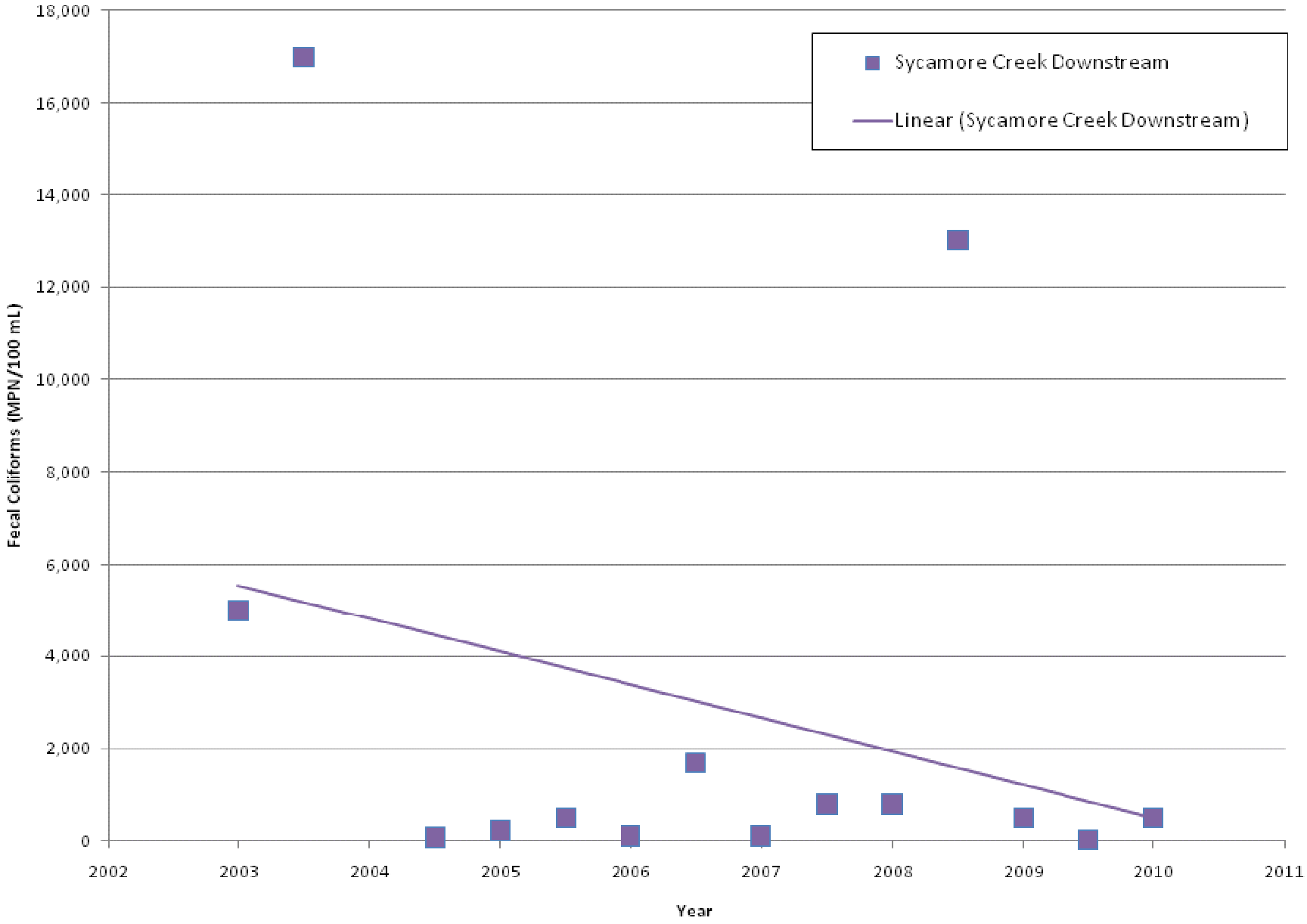

10.0 FISCAL ANALYSIS

10.1 INTRODUCTION

During 2009/2010, a fiscal analysis reporting template was developed collectively by the Copermittees. Fiscal information is reported in the tables below, which follow the standard format adopted by the Copermittees.

Table 10-1
Expenditure Summary

JURISDICTIONAL COMPONENTS	
Administration	$140,997
Development Planning	$7,747
Construction	$44,096
Municipal	$437,999
Industrial and Commercial	$33,899
Residential	$54,357
IDDE	$63,296
Education	$19,740
Public Participation	$1,188
Special Investigations	$20,706
Non-Emergency Firefighting (incorporated into routine fire safety costs)	$0
Jurisdictional Total	**$824,025**

WATERSHED	
San Diego River	$317,493
Watershed Total	**$317,493**

REGIONAL	**$96,105**

TOTAL COSTS	**$1,237,623**

Table 10-2
Fund Summary

FUNDING BY SOURCE	
General Fund	$938,344
Storm Water Fee	$0
Developer Deposits and Fees	$23,401
Registration and Inspection Fees	$0
Grant Funds	$7048
Zone 2 Flood Control	$268,830
Total	**$1,237,623**

Table 10-3
Watershed Urban Runoff Management Program (WURMP) Expenses

	San Diego River
Administration (1)	$14,310
Cost Share Contribution	$3,628
Watershed Activities	$298,054
Other	$1,501
TOTAL	**$317,493**

(1) Administration – includes Watershed strategic planning, management, mapping, assessment, and reporting.

Table 10-4
Regional Urban Runoff Management Program (RURMP) Expenses

Regional Programs	Jurisdictional Cost
Administration (1)	$35,873
Cost Share Contribution	$60,232
Other (2)	$0
TOTAL	**$96,105**

(1) Administration – includes assessment, reporting, management, etc.
(2) Other – examples include regional and special studies.

11.0 EFFECTIVENESS ASSESSMENT

11.1 INTRODUCTION

The City regularly evaluates its storm water program to make it as effective as possible at reducing discharges of urban runoff related pollution to the MEP. The overall structure of the City's storm water program is composed of three primary components:

- Program Planning
- Program Implementation
- Effectiveness Assessment

The process typically proceeds from planning to implementation to assessment, although in practice all three may be in progress at the same time. The initial step is program planning, which requires identifying potential pollutant sources, establishing BMP requirements, and establishing targeted outcomes and ways to measure those outcomes. Next, the program developed during the planning step is implemented. Program implementation is assessed each year using the methods developed in the program planning stage and reported in JURMP annual reports. The conclusions from these assessments are used during the next round of program planning to incorporate improvements to the program and refine the assessment technique.

Based on participation in regional efforts and experience implementing its JURMP, the City has identified a variety of metrics to assess progress toward targeted outcomes. At the end of each reporting year, the City uses selected metrics to assess the effectiveness of its program implementation. Example metrics were provided in Section 13 of the City's 2008 JURMP, and the City has refined those metrics in the reporting periods since then.

The effectiveness assessment approach developed by the Copermittees during the last permit cycle includes six different levels of targeted outcomes. Each successive level represents a step up from more easily measured, activity-based outcomes to more difficult to measure, quality-based outcomes. The levels are listed below.

Level 1: Compliance with Activity-Based Permit Requirements
Level 2: Changes in Knowledge/Awareness
Level 3: Behavioral Change/BMP Implementation
Level 4: Load Reductions
Level 5: Changes in Discharge Quality
Level 6: Changes in Receiving Water Quality

11.2 EFFECTIVENESS ASSESSMENT RESULTS

The Municipal Permit requires the City to assess the effectiveness of each significant activity for each program component, for each program component as a whole, and for the storm water program as a whole. Level 1, Level 5, and Level 6 outcomes are

discussed in Section 11.2.1. At this time the City is not able to fully assess Level 5 or Level 6 outcomes for individual program activities or individual programs. As has been noted in CASQA effectiveness assessment guidance, methods for integrated assessment—assessment that combines both monitoring data and program data—are still under development at regional and statewide levels (CASQA, 2007).

11.2.1 Outcome Level Assessments

Level 1

Level 1 outcomes essentially are measures of Municipal Permit compliance. The component-specific sections in this JURMP Annual Report provide details of programmatic actions taken to comply with the applicable Municipal Permit requirements. Appendix C of this JURMP Annual Report also includes a checklist that provides the location within this report where each provision of the Municipal Permit's annual reporting requirements is addressed.

Levels 2 and 3

See the tables 11-1 through 11-8 at the end of this section for discussions of Level 2 and Level 3 outcomes for significant activities within each program component. Please note that only a Level 1 assessment applies to fiscal analysis, so no table for fiscal analysis is included.

Level 4

The tables at the end of this section provide information for Level 4 assessments where feasible. Assessment of Level 4 outcomes is feasible for some programs that directly measure the amounts of pollutant removal, such as MS4 cleaning. For most other programs reliable load estimation methods have not yet been developed.

Level 5

One of the City's primary mechanisms for measuring the quality of discharges is the Dry Weather Monitoring Program. Graphs presenting the historical Dry Weather Monitoring Program exceedances are provided at the end of this section as figures 11-1 and 11-2.

Nitrate-nitrogen exceedances have been common over the years and have been attributed to groundwater seepage into the MS4. Exceedances in conductivity, orthophosphate-phosphorus, oil and grease, copper, and diazinon have been infrequent in the history of the program. In Round One of the 2010 Dry Weather Monitoring Program, two sites had confirmed nitrate-nitrogen exceedances. These sites have regularly exceeded nitrate-nitrogen objectives as a result of groundwater sources. Transient exceedances of turbidity, surfactants, ammonia-nitrogen, orthophosphate-phosphorus, and *Enterococcus* bacteria were measured. Additionally, by best professional judgment, one site was investigated for a chemical odor and sheen.

Total coliform exceedances have generally been decreasing over time. Note that dry weather action levels for bacterial indicators were revised in 2010. In figure 11-2, constituents have been compared to action levels in effect at the time of sampling to

identify exceedances. In comparison to either set of action levels, no total or fecal coliform exceedances were detected in Round One of the 2010 Dry Weather Monitoring Program.

In addition to dry weather monitoring, the City continues to conduct the MS4 Outfall Monitoring Program implemented in 2009. This program examines water quality at targeted MS4 outfalls in order to characterize pollutant discharges to receiving waters. The data is used to assess whether these discharges contribute to the overall receiving water quality.

Level 6

No Regional Monitoring Program stations have been located within or close to the City of Santee in the past. As part of the updated regional monitoring program, two Temporary Watershed Assessment Stations (TWAS) in the San Diego River Watershed will be located in the Santee area, one at the eastern side of the City, and one farther to the west, close to the junction of Forester Creek and the San Diego River. Data collected at these stations may prove useful in evaluating receiving water quality in the City of Santee once the data becomes available. The data was collected in 2009/2010 and will be provided to the City as part of the San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Report, which will be finalized in January 2011.

Since 2002, the City has performed an additional study of water quality at five receiving water body locations: two sites in the San Diego River, two sites in Forester Creek, and one site in Sycamore Creek. Samples have been collected under ambient conditions twice per year at each site. Although a portion of Forester Creek outside the City of Santee has been listed as impaired for pH, none of the samples in any water body in Santee's additional study have exceeded the Basin Plan water quality objectives (WQO) for pH (Figure 11-3). Figures 11-4, 1-5, and 11-6 show fecal coliform levels measured in upstream and downstream receiving water locations, with downstream measurements typically being lower. In general, fecal coliform levels demonstrate a decreasing trend.

Data collected generally shows that water quality improves through the City of Santee. Pollutant levels are consistently lower in the downstream reach compared to upstream. Samples collected in 2010 from Site J30d1, located downstream of a restored portion of Woodglen Vista Channel, had relatively low bacteria counts, with fecal coliform below the detection level. This is evidence that the City's recently completed projects to revegetate and improve open channels such as Forester Creek and Woodglen Vista Creek results in improved water quality. More rounds of data will be needed to identify trends in these analyte concentrations with a greater degree of certainty.

11.2.2 Overall Component Assessments

Development Planning

The City's review process for development projects effectively requires higher removal efficiency BMPs. City interaction with responsible parties during the reporting period has resulted in BMP installation and a greater level of awareness of the need for regular

treatment control BMP maintenance within the City. During 2009/2010 the City prepared a SWMP forms for developers to use for SUSMP submittals, which should help reduce the number of reviews needed through providing additional clarity on requirements to project proponents. The City's treatment control BMP inspection program exceeded Municipal Permit requirements during 2009/2010.

Construction

The available data indicate that on the whole the City's construction program effectively requires BMP implementation. The City also inspected many sites more frequently than required by the Municipal Permit and sent construction BMP reminders prior to the beginning of the wet season. Additionally, the City conducted inspections at several inactive sites to ensure continued compliance with the City's BMP requirements. The City took enforcement actions when necessary to bring about compliance. These practices appear to have improved BMP implementation both in general and during rain events, which is when construction activities have the highest potential to discharge pollutants.

Municipal

The City's municipal activities effectively implement BMPs and reduce pollutant loading. The City's municipal staff are regularly trained on storm water issues, and the City's MS4 cleaning and street sweeping programs meet or exceed minimum Municipal Permit frequency requirements. The City sweeps its streets more often than Municipal Permit requirements to aid in WURMP efforts. The City coordinates with Padre Dam MWD to prevent and respond to any SSOs in the City. The City also distributes pet waste bags through dispensers in its parks, and distributed over 180,000 more bags than during the 2008/2009 Reporting Period.

Additionally, the City continued its sustainability program, complementing current environmental programs, such as stormwater, with additional programs to reduce consumption of energy from non-renewable resources, promoting the development of green buildings, and reducing consumption of water and energy.

Industrial and Commercial

The City has a comprehensive inspection program, and the City's Stormwater Program Manager personally conducts many of the inspections. The Stormwater Program Manager follows up with the responsible parties of inspected businesses where significant corrections are needed to ensure corrective actions are implemented properly and within a timely manner. The City also follows-up with businesses observed to be out of compliance with the Industrial Permit to ensure appropriate actions are taken to bring about compliance.

Additionally, the City has taken proactive steps to identify and educate mobile businesses in the City by driving by areas known to be frequented by mobile businesses, specifically mobile car detailers. If any mobile businesses were observed, City personnel stopped to provide educational material and ensure that no discharges were occurring.

Residential

The City's residential component achieves BMP implementation through complaint response, education, and routine monitoring to detect IC/IDs. The City also encourages residential participation in clean up and other events to help foster a sense of shared responsibility in keeping the community clean. These activities may promote a sense of awareness in the residential community, which has the potential to mitigate residential sources of pollution. Additionally, residents in the City attended several training sessions focused on residential topics.

IDDE

The City's IDDE program has effectively responded to hotline calls and quickly responded to address any identified IC/IDs. A total of 68 referrals were received during the Reporting Period, which is an increase from the 59 received during the 2008/2009 reporting period. This may indicate that members of the public are more aware of when and how to report potential storm water issues when observed. Actions were taken in response to the recommendations from the 2009 Dry Weather Monitoring Program Report. The City will continue to take action to prevent and eliminate IC/IDs during Fiscal Year 2010/2011.

Education

During the Reporting Period, the City completed a re-design of the City's storm water website to more effectively provide information to various audiences in the City. The City was proactive in its outreach to mobile businesses and worked to identify carpet cleaners, pool maintenance businesses, and landscapers during the business license application process. These businesses were provided activity-specific educational materials. Additionally, the City continued its innovative methods of distributing educational material to hard-to-reach audiences in the City; for example, the City's Stormwater Program Manager worked with local businesses to distribute activity specific fact sheets for pool maintenance and carpet cleaning at facilities that are frequently patronized by residents in the City.

Public Participation

The City has held several clean up events, typically in partnership with community organizations such as the San Diego River Park Foundation. The City also encouraged ongoing community participation through smaller-scale activities such as proper pet-waste disposal.

11.3 Program Review and Modification

No significant changes to the effectiveness assessment approach presented in the City's March 2008 JURMP have been made since the submittal of that document.

Table 11-1
Development Planning Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Review and approve project plans	External Based on meetings with applicants and BMPs proposed, it appears that the level of knowledge is increasing. Internal The City's Stormwater Program Manager and Project Engineers work closely to ensure SUSMP requirements are met.	Overall SWMP approval rate during reporting period	33%	N/A, addressed through other significant activities for this component
		Number of projects requiring three or more reviews prior to SWMP approval	3	
		Percent of approved projects implementing BMPs with high or medium removal efficiencies for key pollutants of concern	100%	
Verify proposed BMPs are implemented	External N/A, knowledge is evaluated by appropriate implementation of BMPs as shown in Level 3 Internal The City's Stormwater Program Manager provides training to staff responsible for verifying BMPs are installed prior to occupancy.	Percent of projects implementing proposed BMPs	100%	Installation of BMPs likely contributed to pollutant load reductions.
		Resolution status of enforcement actions	100%	
Verify BMPs are properly maintained	External Owners notified of requirement to maintain treatment control BMPs Internal The City's Stormwater Program Manager is familiar with BMP maintenance requirements.	Percent of sites with properly maintained BMPs on October 1st	96%	Proper maintenance of BMPs likely contributed to pollutant load reductions.
		Resolution status of enforcement actions	100%	
		Percent of sites submitting verification forms	100%	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-2
Construction Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Review proposed plans and BMPs	External Projects submit plans for construction BMP implementation for their projects; the level of awareness of construction BMP requirements is fairly high. Internal Training for City staff is described in Section 8. City staff are familiar with relevant construction BMPs.	BMPs proposed for construction projects generally meet requirements; no significant problems have been noted.		Proper pre-project planning is likely to have reduced pollutant loading.
Verify proposed BMPs are implemented	External Grading projects implement BMPs as required by their permits, and contractors are familiar with the City's requirements. Construction projects are notified through inspection notices and letters of requirements. Internal Training for City staff is described in Section 8. City inspectors are familiar with relevant construction BMPs.	Percent of inspections during which projects were in compliance with all applicable BMP requirements	91%	Proper BMP implementation is likely to have reduced pollutant loading.
		Resolution status of enforcement actions	100%	
		Number of dry weather monitoring exceedances traced to construction sources	0	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-3
Municipal Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Verify proposed BMPs are implemented at facilities	City staff are regularly trained on BMP implementation; see sections 4 and 8.	Percent of inspected facilities/activities in compliance with BMP requirements	92%	Proper BMP implementation is likely to have reduced pollutant loading.	
		Resolution status of sites requiring follow-up inspections	100%	Amount of pet waste collected	24 tons*
		Number of dry weather monitoring exceedances traced to municipal sites	1**		
Sweep streets and parking facilities		N/A, streets and parking facilities are swept as often as directed by management and Municipal Permit requirements.		Amount of sediment and debris removed (weight or volume)	648 tons
				Amount of sediment and debris removed per length of street swept (weight or volume per curb mile)	0.06 tons/ curb mile
Maintain and clean out MS4		N/A, MS4 structures are maintained as often as directed by management and in compliance with permit requirements.		Amount of sediment and debris removed (weight or volume)	559 tons
Maintain sanitary sewer system		N/A, the sanitary sewer system is maintained by Padre Dam MWD.		Total volume of SSO discharge to MS4 (gallons)	0
Maintain municipal treatment control BMPs		N/A, treatment control BMPs are maintained as often as directed by management.		BMP effectiveness studies	N/A
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only	

* Amount of pet waste collected is based on an estimate of 0.2 pounds of pet waste per bag. This conversion rate was developed by the County of San Diego based on the results of a 2004 study and included in the 2006/2007 WURMP Annual Report. A total of 240,000 pet waste bags were distributed in 2009/2010.

** This exceedance was linked to emergency fire fighting activities associated with a car accident.

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-4
Industrial and Commercial Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Require BMP implementation	Business owners and operators were educated in variety of ways during the Reporting Period; see sections 5 and 8 for details.	Percent of inspected sites in compliance with discharge prohibitions	99%	Proper BMP implementation is likely to have reduced pollutant loading.	
		Percent of sites not requiring a follow-up	92%		
		Resolution status of enforcement actions	99%		
		Number of dry weather monitoring exceedances traced to industrial or commercial sources	1	Number of IC/IDs eliminated (inspections and complaint investigations)	15
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only	

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-5
Residential Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Require BMP implementation	External Residents were educated through articles in the *Santee Review*, targeted mailers, and in variety of other ways during the Reporting Period; see sections 6 and 8 for details. Internal The City's Stormwater Program Manager is heavily involved in the implementation of the residential component. Other City staff involved in the program also have a good understanding of the goals of the storm water program.	Number of residential incidents reported to storm water hotline	46	Resolution of residential incidents reported to the hotline likely resulted in a decrease in pollutant loading through improved BMP implementation.
		Resolution of enforcement actions	100%	
		Number of dry weather monitoring exceedances traced to residential sources	1	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-6
Illicit Discharge Detection and Elimination Component Assessment Measures

Significant Activity	Level 2	Level 3	Level 4
Conduct Dry Weather Monitoring Program	The City contracts with a qualified consultant to perform its Dry Weather Monitoring Program.	N/A, personnel conduct monitoring as directed by management.	No significant, long term IC/IDs were found or eliminated, so a reliable estimate of load reduction cannot be made.
Respond to incidents reported to storm water hotline	The City's Stormwater Program Manager trains City staff as needed. See sections 4 and 8. City staff were responsible for many of the reports made to the hotline, as shown in Section 4.	N/A, personnel respond to incidents as directed by management. Note that some non-stormwater staff have chosen to respond to observed incidents in their private lives. This is indicative of staff awareness and sense of responsibility.	Resolution of the incidents reported to the hotline and listed in Section 4 are likely to have resulted a pollutant loading reduction.
Respond to and clean up SSOs	City staff are thoroughly trained on how to respond to SSOs.	N/A, the sanitary sewer system is maintained by Padre Dam MWD.	There were two SSOs during the reporting period, each spill was entirely reclaimed.

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-7
Education Component Assessment Measures

Significant Activity	Level 2	Level 3	Level 4
Provide storm water education to the public	External The City actively educates the various audiences in its jurisdiction. See Section 8 for details.	See Level 3 outcomes for other program components for information about behavior change.	Sufficient data to estimate load reductions due to educational efforts is not available for the Reporting Period.

Notes
Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-8
Public Participation Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Involve the public in activities that relate to storm water protection	External The City and its partners held a number of opportunities for the public to participate. See Section 9 for details. There were more complaints/referrals during Fiscal Year 2009/2010 (68) than during Fiscal Year 2008/2009 (59).	Number of attendees at events	1,338	Amount of trash and debris collected at cleanup events	12.4 tons
		Number of calls received to the storm water hotline	68	Amount of HHW collected	584 collections of HHW, 309 gallons of used oil

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Figure 11-1
Dry Weather Monitoring Historical Exceedance Summary: Field Screening Tests

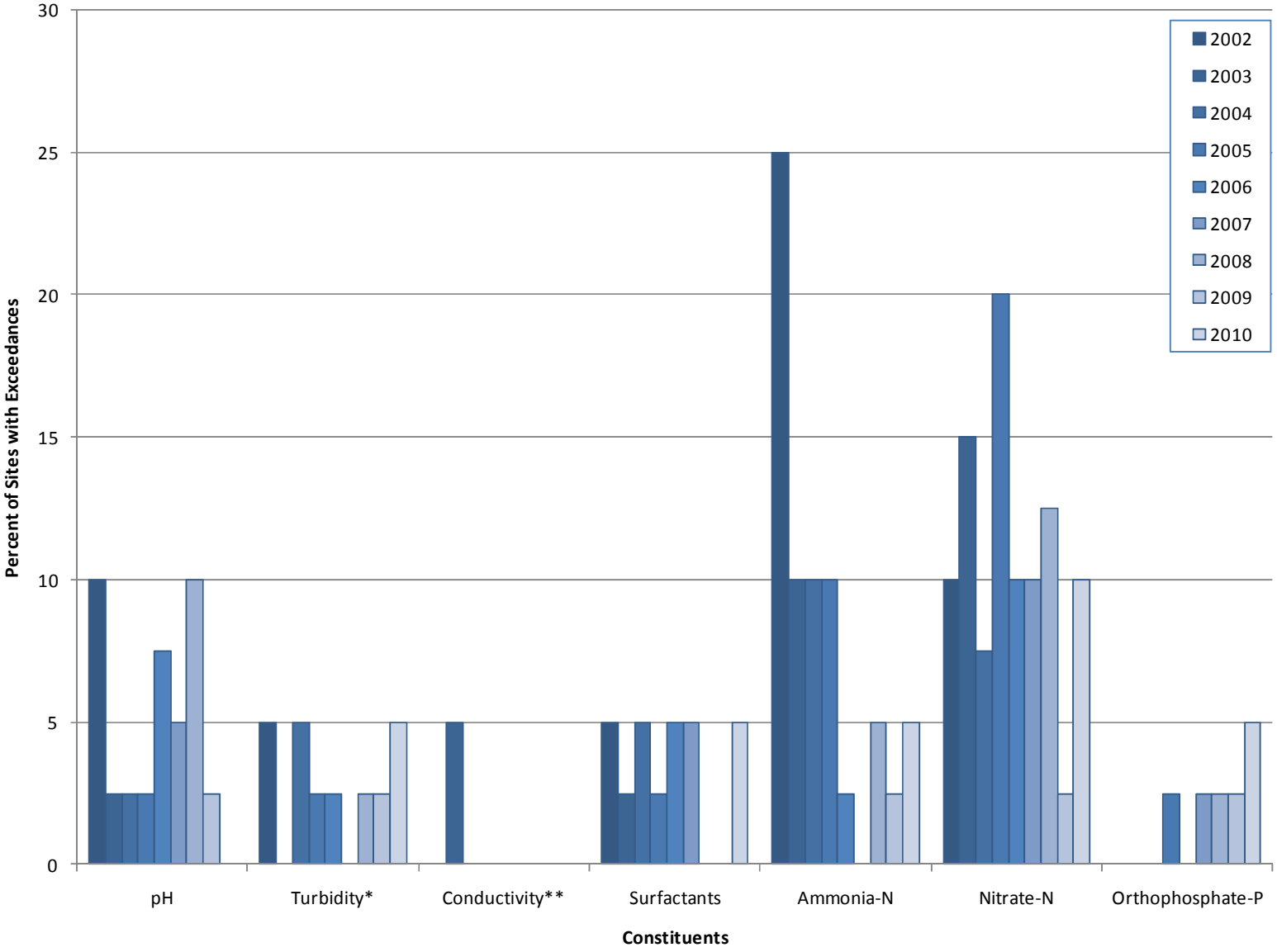

Notes:
* Turbidity action level is based on best professional judgment.
** Conductivity action levels were numeric in the past and transitioned to best professional judgment in recent years.

Figure 11-2
Dry Weather Monitoring Historical Exceedance Summary: Laboratory Analytical Tests

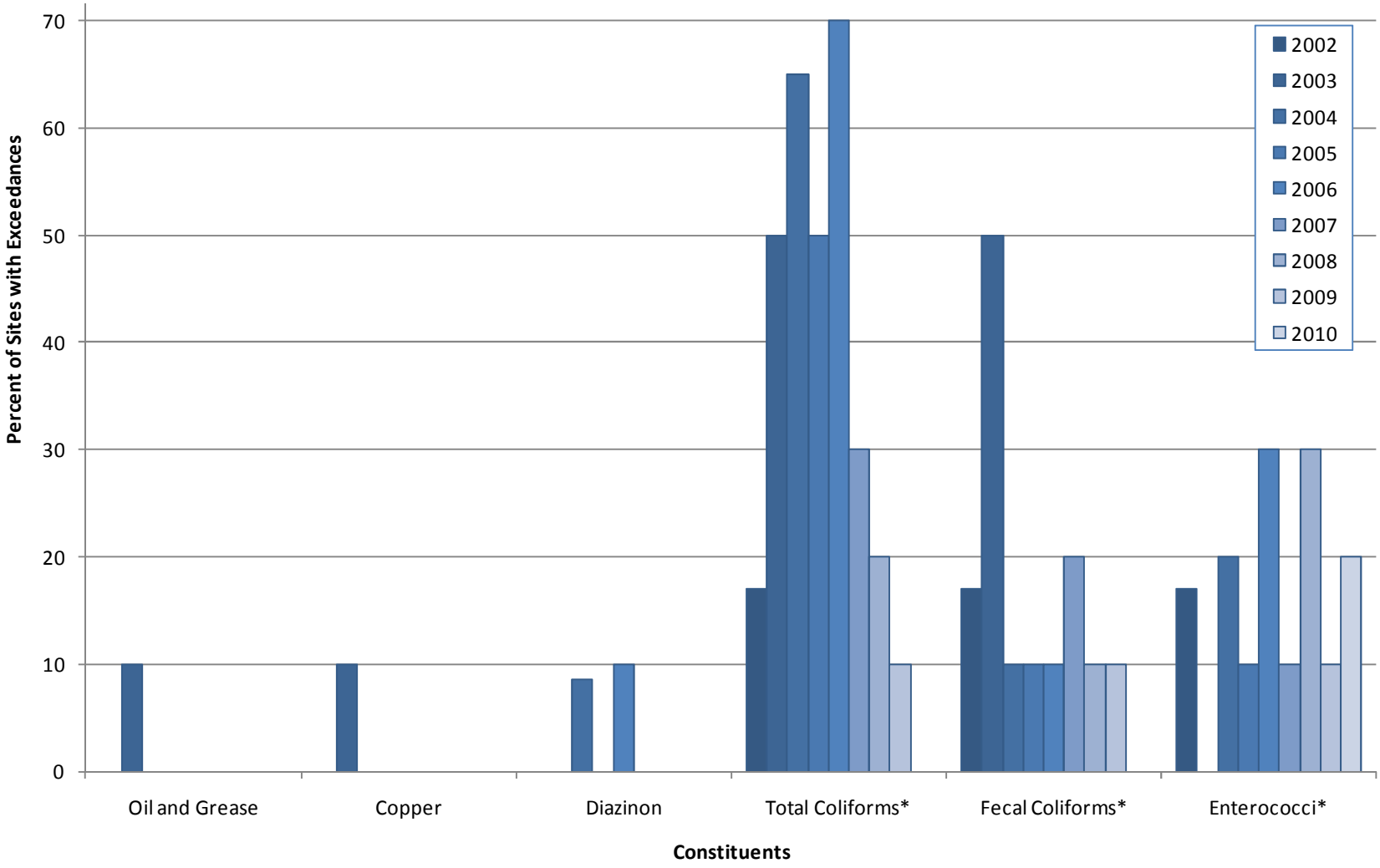

Notes:
*Action levels for bacteria were updated in 2010. Data from 2002-2009 has been compared to action levels in effect at that time. 2010 data has been compared to the updated action levels.
Cadmium, lead, zinc, surfactants, and chlorpyrifos have never exceeded the action level and are therefore not included on the above graph.

Figure 11-3
Additional Study Data: pH

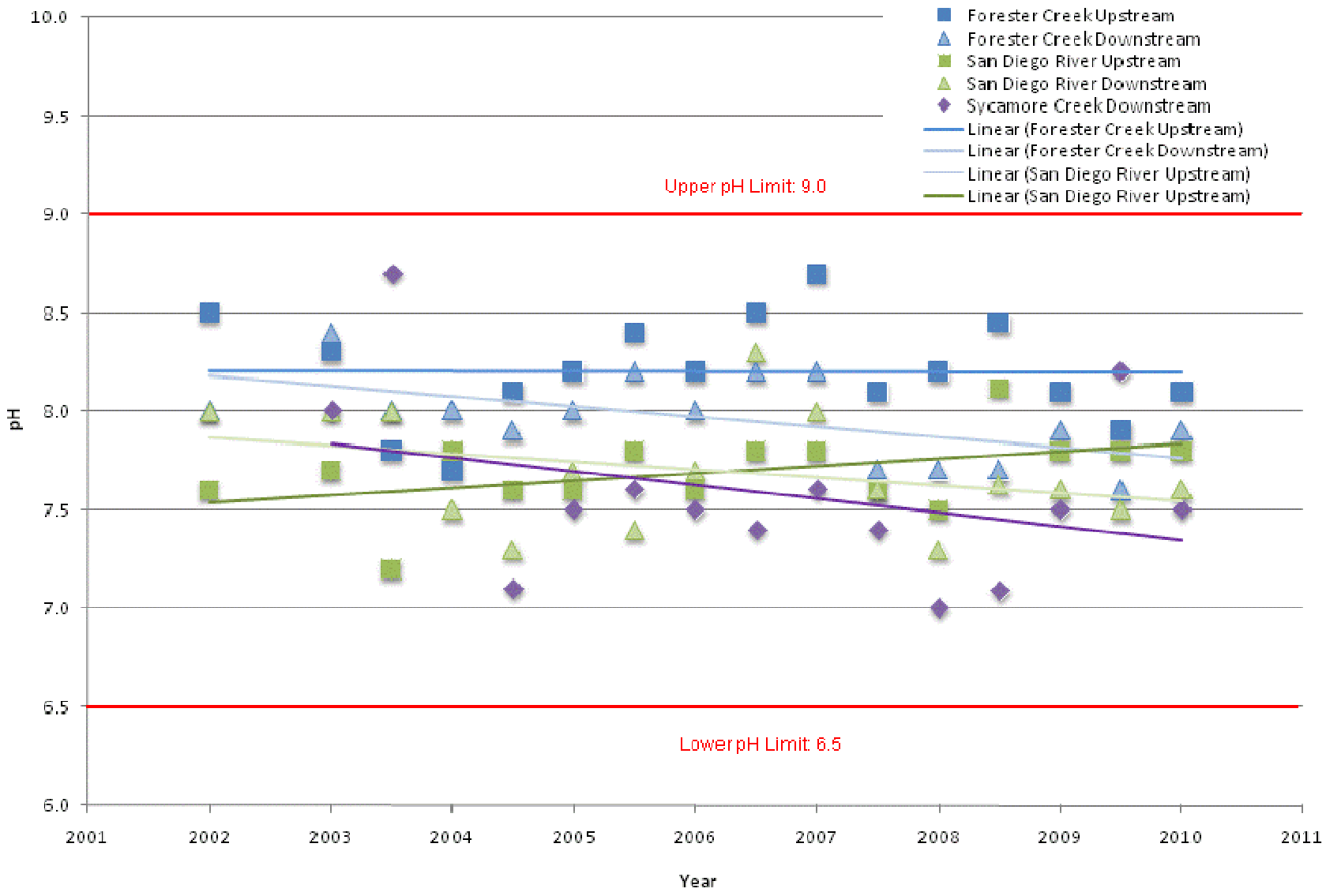

Figure 11-4
Additional Study Data: Fecal Coliform, Forester Creek

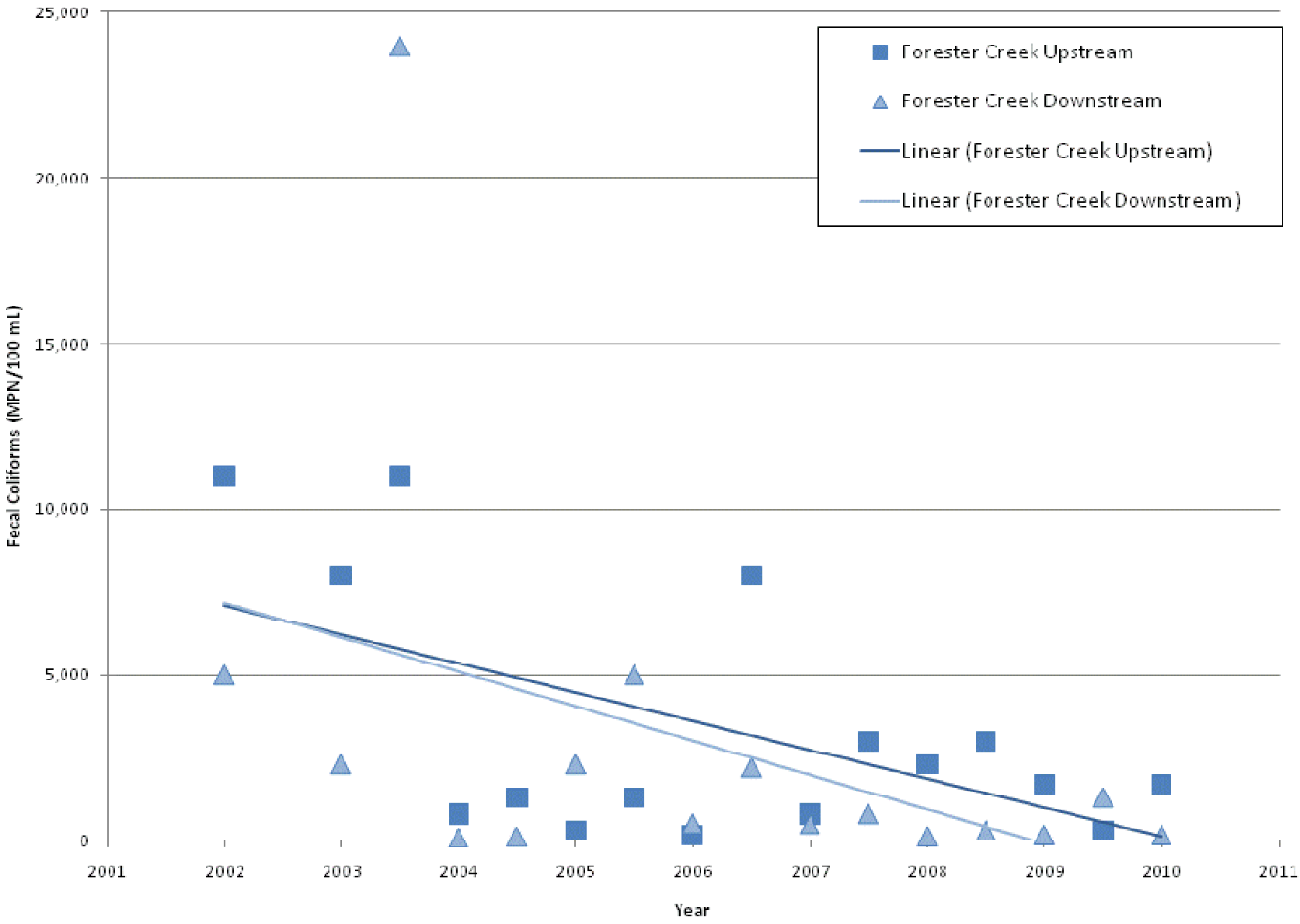

Figure 11-5
Additional Study Data: Fecal Coliform, San Diego River

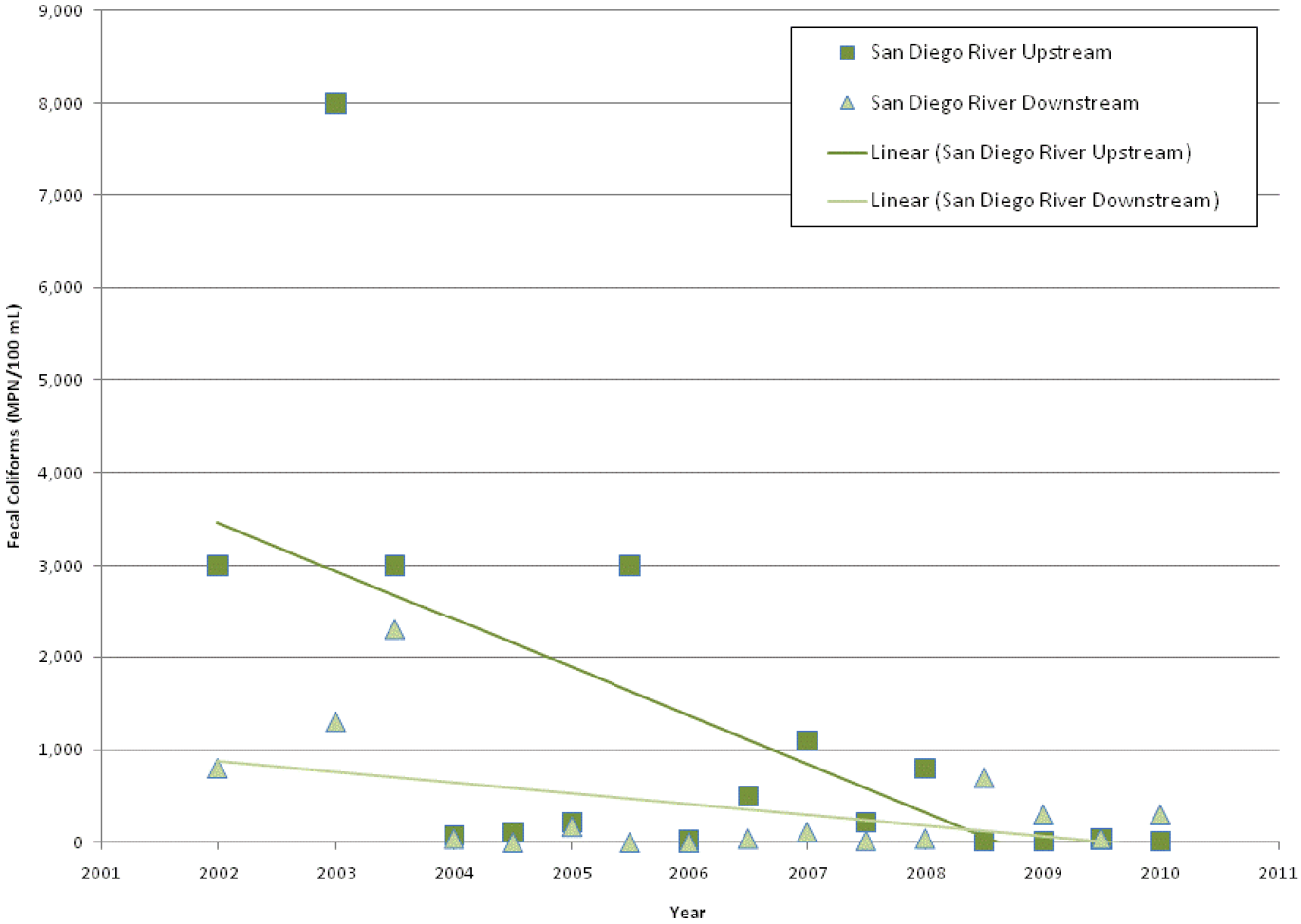

Figure 11-6
Additional Study Data: Fecal Coliform, Sycamore Creek

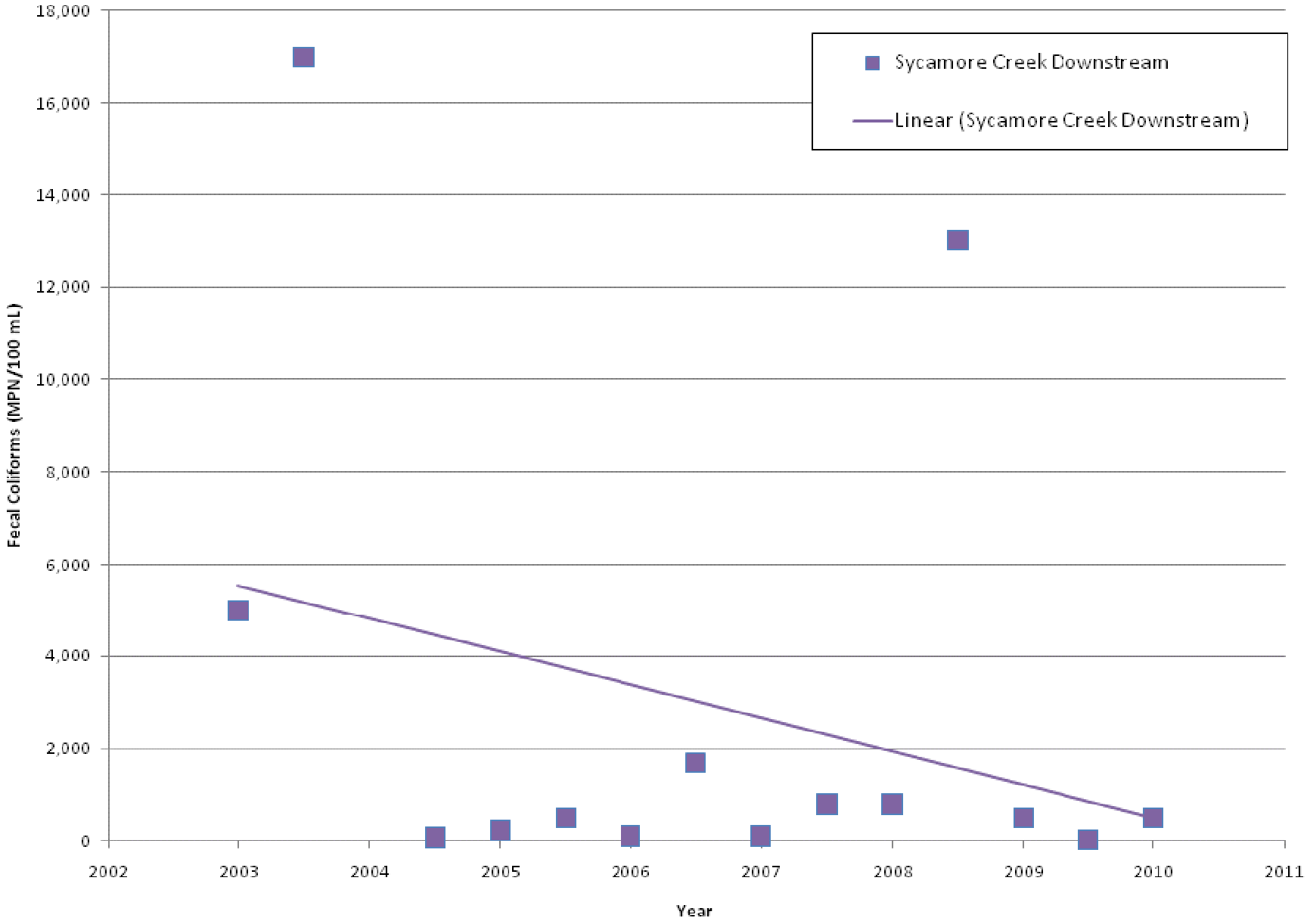

12.0 SPECIAL INVESTIGATIONS

12.1 SURFACE WATER QUALITY MONITORING

The City has completed an additional study that includes sampling and analysis under ambient conditions at five sites in receiving water bodies in the City since 2002. The study includes two sites in the San Diego River, two sites in Forester Creek, and one site in Sycamore Creek. These sites are sampled twice per year, concurrently with the two rounds of the City's Dry Weather Monitoring Program. The findings of the additional study can be found in Attachment 12.1.

13.0 NON-EMERGENCY FIRE FIGHTING

Please reference Section 4.2.3 of this JURMP Annual Report for information about BMPs and procedures associated with non-emergency fire fighting activities.

14.0 JURMP REVISIONS

The City's JURMP was rewritten in the spring of 2008 in response to new Municipal Permit requirements. Section 14 of the updated JURMP document includes a list of the changes made to the JURMP at that time. Any other changes to the JURMP made since the overall JURMP update in the spring of 2008 are discussed in the individual "Program Review and Modification" subsections in the preceding sections in this JURMP Annual Report.

15.0 CONCLUSIONS AND RECOMMENDATIONS

During the Reporting Period, the City continued to implement the programs in its updated Jurisdictional Urban Runoff Management Plan (JURMP). A checklist matching the JURMP annual reporting requirements in the Municipal Permit with the portion(s) of this JURMP Annual Report and showing where those requirements are addressed is provided as Appendix C. The checklist demonstrates the City's compliance with applicable Municipal Permit regulations during the Reporting Period. Some notable achievements during the Reporting Period are listed below.

- The City completed 775 construction inspections. Pre-rain inspections were regularly completed at construction sites, and overall the construction inspection frequencies met and in some cases exceeded the required frequencies.
- The City conducted 291 business inspections, which is more than 25 percent of its inventory.
- Responsible parties for newly-completed priority projects are notified shortly after project completion of the requirements relating to treatment control BMP maintenance and certification.
- The City spent $298,054 to widen and revegetate a portion of Woodglen Vista Creek and to establish vegetation in recently improved Forester Creek.
- The City spent over $26,000 replacing approximately 93 lineal feet of deteriorated corrugated metal storm drain pipes.
- The City responded to 68 complaints made to its storm water hotline, to the City website, or by City staff members.
- Over 12 tons of trash and debris were collected and removed during eleven community clean-up events. Over 900 individuals participated in these events.
- The City removed 675 tons of debris from City streets and parking lots and 559 tons from the storm drain system.
- The City adopted a revised SUSMP, based on the Model Standard Urban Stormwater Mitigation Plan (SUSMP).
- The City had a proactive role in the development of the Model SUSMP and the hydromodification plan that was adopted shortly after the Reporting Period.
- The City updated its storm water webpages and posted the revised SUSMP, Applicability Checklists and other forms on the website.
- Four development projects were conditioned to comply with the new permit requirements.

- The City participated in an Association of General Contractors' training on construction requirements and has provided formalized training for contractors during pre-grading meetings.
- City streets were swept more frequently than required by the Municipal Permit.
- Residents and businesses were educated through the City's updated stormwater pages and articles including storm water pollution prevention information in the *Santee Review*. The City is currently finalizing the update of its stormwater website pages to make it more useful to viewers.
- The City completed two rounds of additional monitoring at five locations in receiving waters in the City.

The City will continue to implement its JURMP in future reporting periods. Key components of City's plans for future program implementation include the following.

- Ensure that HMP requirements are updated in accordance with Municipal Permit requirements.
- Continue to train inspectors and contractors on BMP implementation and maintenance during construction activities.
- Continue to complete inspections before rain events, including inspections immediately preceding the rainy season, for active construction sites.
- Meet the inspection frequency requirements as stated in the Municipal Permit for the development planning (treatment control BMP), construction, and industrial and commercial components.
- Continue prompt and thorough follow-up for sites at which BMP implementation deficiencies are noted as a means to bring about improved compliance.
- Develop new methods of outreach for the residential, industrial and commercial, development planning, and construction communities.
- Continue to document and respond to complaints reported to the City's storm water hotline.
- Continue to complete the City's Dry Weather Monitoring Program and to investigate any exceedances noted during routine testing.
- Continue to complete additional studies of receiving water quality in the City and to participate in assessments within the San Diego River watershed, as appropriate.
- Increase the number of opportunities for public participation and facilitate participation in such events.

The Copermittees have created several regional workgroups to facilitate sharing of information about how best to run these programs and to provide regional guidance on

standardized implementation where applicable. The City will continue to work collaboratively with the other Copermittees in this process and continue to refine its program implementation as needed to improve its ability to reduce or eliminate the potential for pollutant discharges and meet regulatory requirements.

16.0 REFERENCES

California Regional Water Quality Control Board, 2007. Order No. R9-2007-0001. *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Construction.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Industrial & Commercial.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Municipal.*

California Storm Water Quality Association, 2007. *Municipal Stormwater Program Effectiveness Assessment Guidance.*

Caltrans Storm Water Quality Handbooks, 2003. *Construction Site Best Management Practices Manual.*

City of Santee, 2008. *Jurisdictional Urban Runoff Management Program.*

County of San Diego, 2007. *Standardized Format for Jurisdictional Urban Runoff Management Plan Annual Report.*

PBS&J, 2009. *Standardized Fiscal Analysis Method and Format.*

APPENDIX A.1 PERMANENT TREATMENT CONTROL BMP INVENTORY

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
1	Altair**	384-120-40	907.12	G963	12/22/09	Hydrodynamic separator, inlet filters (7)	Altair HOA	c/o Adriana Machuca, 3944 Murphy Canyon Rd, San Diego, CA 92123	High
2	American Sheet Metal	8674 Railroad Avenue	907.12	G-1003	4/4/08	Grassy swale	Ron Burner Jr.	8674 Railroad Avenue, Santee, CA 92071	Low
3	Aubrey Glen	Hiser Road and Mission Gorge Road	907.12	G-942	06/20/08	Hydrodynamic Separator System	Aubrey Glen HOA	c/o N. N. Jaeskchay 9610 Waples Street San Diego, CA 92121	Medium
4	Autowerks	383-112-53	907.12	DR-02-10 / G818	12/15/04	Drainage inserts and grass swales	Philip H. Thearle II	8890 Mission Gorge Road, Santee CA 92071-3718	Medium
5	Autumnwood II	381-681-20	907.12	TM02-03	11/15/05	Hydrodynamic Separator System (2)	Kingsman LLC	11459 Woodside Avenue, Santee CA 92071-4729	Medium
6	Black Horse Estates*	385-010-34, -35	907.12	TM 2000-02	12/13/06	Filter inserts (5), detention basin.	City of Santee	NA	Medium
7	Boys and Girls Club	8820 Tamberley Way	907.12	G-907	06/16/08	Grassy swale, drainage inserts.	Boys and Girls Club	8820 Tamberley Way, Santee, CA 92071	Medium
8	Cameron II	10580 Prospect	907.13	G-947	1/23/08	Grassy swale, drainage insert (1)	Cameron Brothers Construction	10580 Prospect Avenue, Santee, CA 92071	Medium
9	Ciraolo Industrial Building	381-540-10 and 11	907.12	G-905/DR04-09	1/5/06	Inlet filters, grass swale, downspout filters	Ciraolo Family Partners	9327 Wheatlands Road, Santee, CA 92071-2860	Medium

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
10	Cuyamaca Town Common	APN 381-051-01	907.12	G-873	09/05	Drainage inserts	Property Owner	c/o Treitler and Hager LLP, 3737 Camino Del Rio South, Suite 109, San Diego CA 92108-4007	Medium
11	Express Performance	APN 384-141-03	907.12	G1021	5/29/08	Media filter and drainage inserts (2)	Scott and Barbara Young	8711 Magnolia Avenue, Santee, CA 92071	Medium
12	Farrington Court	Farrington Drive, west of Fanita	907.12	G-910	8/16/07	Drainage insert	Brian Snow	LUCA Inc., 8534 Hubbles Lane, Santee, CA 92071	High
13	Fred's Fences	384-250-24	907.13	G-951	10/28/07	Swale and drainage inserts	Fadi Khouri	Fred's Fencing, 10546-60 Kenney Street, Santee, CA 92071	Medium
14	Hartford Insurance*	381-050-59	907.12	DR 2002-04	12/17/03	Vegetated swale, rocky swale, and drainage inserts (3).	Hartford	101 Civic Center Dr, Santee CA 92071	Medium
15	Marketplace	Hazeldon Drive and Mission Gorge Road	907.13	G-1052	12/12/08	Grassy swale, infiltration trench, water quality inlets (4), drainage inserts (2).	Tony Gentry	Sudberry Properties Inc., 5465 Morehouse Drive, Suite 260, San Diego, CA 92121	High
16	Michael Stoff Property	9242 Abraham Way	907.12	G-1003	7/28/08	Grass swale	9424 AW LLC	6749 Top Gun Street Suite 104 San Diego, CA 92121-4151	Medium

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
17	Morningside	384-081-16	907.12	G-851	12/14/05	Hydrodynamic Separator System	Property Owner	Walters Management, 9665 Chesapeake Drive, Suite 300, San Diego, CA 92123	Medium
18	Padre Dam Service Center*	9300 Fanita Parkway	907.12	G-704	1/5/06	Drainage inserts (6)	Padre Dam Municipal Water District	John Dedonato PO Box 719003, Santee, CA 92072-9003	High
19	Prospect Glen*	Northwest corner of Fanita and Prospect	907.12	G-739	11/19/07	Drainage inserts (3)	Prospect Glen HOA	c/o Harland Associates, 8580 La Mesa Boulevard, Suite 105, La Mesa CA 91941	High
20	Rayo Wholesale*, Rayo II***	11495 Woodside Avenue (382-310-16, -17, -18)	907.12	IP 2001-04, G-1041	12/30/02, 06/24/08	Grass swale, Grassy detention basin with sand cone filter	Kingsmen LLC	11495 Woodside Avenue, Santee CA 92071	Medium
21	Santee Trolley Square*	381-052-02	907.12	P2001-06	12/17/03	Inlet filters (12)	Vestar Property Management	9884 Mission Gorge Rd, Santee, CA	High
22	Sky Business Park	384-091-45	907.12	G-1062	03/23/09	Grass swale, media filter, drainage insert.	Sky Investments Ltd Partnership	Mr. Charles P. Sampson Jr., 8779 Cottonwood Avenue, Santee, CA 92071	Medium
23	Sonic Car Wash	383-121-44	907.12	G-974	8/29/07	Vegetated swale and drainage insert (3)	Kalasho Inc.	Ghazwan Kalasho, 9312 Mission Gorge Road, Santee, CA 92071	Medium

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
24	Sonic Restaurant	384-091-65, -07	907.12	G-1088	04/02/09	Grass swale	Sonic Restaurant	Ms. Laura Hamelin Sonic Restaurant, 10515 Mission Gorge Road, Santee, CA 92071	Medium
25	Toyota**	383-124-11	907.12	G1067	10/14/09	Extended detention basin, bioretention, inlet filters (8)	Toyota of Santee	Eric Axford, 9135 Mission Gorge Rd, Santee, CA 92071	Medium
26	Treviso	Northeast corner Mission Gorge Road and Westhills Parkway	907.12	G-857	10/8/08	Hydrodynamic separator and drainage inserts (2)	Treviso HOA	c/o Melanie Hudson, 3944 Murphy Canyon Road, Suite C205, San Diego CA 92123	High
27	Vista Este*	386-192-18	907.12	G-736/ TM200-03	9/20/06	Inlet filters (2)	Vista Este HOA	c/o The Daniels Company	High
28	Walgreens 1	9305 Mission Gorge Road	907.13	G987	6/3/09	Media filter	Walgreens	Not available	High
29	Walgreens 2**	10512 Mission Gorge Road	907.12	G1066	12/31/09	Vegetated swale, media filter	Walgreens	Not available	Low

Notes

* Project approved prior to development of the City's SUSMP requirements

** Priority Projects that were completed during the 2009/2010 fiscal year

*** These two projects were combined into one listing on the inventory since they are located on the same property and share the same responsible party.

APPENDIX A.2 CONSTRUCTION INVENTORY

APPENDIX A.2
CONSTRUCTION INVENTORY AND INSPECTION SUMMARY

#	Project Name	Watershed	TTWQ	Weeks Active (Wet Season)	#of Insp. (Wet Season)	# of Insp. (Dry Season)	Follow Up Insp.	Complaint Investigation Insp.	Total Insp.
1	8458 Mesa Terrace Road	San Diego River	Low	3	1	1	0	0	2
2	Aleto*	San Diego River	Medium	0	8	1	0	0	9
3	Altair	San Diego River	High	11	8	3	3	0	14
4	AT&T Fleet Storage	San Diego River	Medium	5	2	5	1	0	8
5	Chaparrel/Mission View Estates	San Diego River	High	30	18	5	1	0	24
6	D'Lazio*	San Diego River	Low	0	8	2	1	0	11
7	Elias*	San Diego River	Low	0	8	2	1	0	11
8	Ladera*	San Diego River	High	0	17	6	1	0	24
9	Las Brisas*	San Diego River	Medium	0	8	1	2	0	11
10	Liberty High School*	San Diego River	High	0	16	4	1	0	21
11	Mission Trails Villas*	San Diego River	Low	0	7	1	3	0	11

APPENDIX A.2
CONSTRUCTION INVENTORY AND INSPECTION SUMMARY

#	Project Name	Watershed	TTWQ	Weeks Active (Wet Season)	#of Insp. (Wet Season)	# of Insp. (Dry Season)	Follow Up Insp.	Complaint Investigation Insp.	Total Insp.
12	O'Connel*	San Diego River	Low	0	1	1	0	0	2
13	Prospect Avenue/ Fanita	San Diego River	Low	0	0	2	0	0	2
14	Pryor*	San Diego River	Low	0	1	1	0	0	2
15	Riverview*	San Diego River	Medium	0	17	4	1	0	22
16	Riverwalk	San Diego River	High	30	15	5	4	0	24
17	Santee Affordable	San Diego River	Low	14	6	1	1	0	8
18	Shadow Hill Estates*	San Diego River	Low	0	9	2	1	2	14
19	Sky Ranch	San Diego River	High	30	17	5	2	0	24
20	TCCP	San Diego River	High	30	16	6	0	0	22
21	Tower Glass	San Diego River	High	1	1	3	0	0	4
22	Toyota	San Diego River	Medium	2	1	1	1	0	3

APPENDIX A.2
CONSTRUCTION INVENTORY AND INSPECTION SUMMARY

#	Project Name	Watershed	TTWQ	Weeks Active (Wet Season)	#of Insp. (Wet Season)	# of Insp. (Dry Season)	Follow Up Insp.	Complaint Investigation Insp.	Total Insp.
23	Walgreens II	San Diego River	Medium	13	3	1	0	0	4

Note
*Projects that were inactive during the Reporting Period.

ATTACHMENT A.3 MUNICIPAL INVENTORY

APPENDIX A.3
MUNICIPAL INVENTORY

#	Facility Name	Facility Address	TTWQ	Watershed	Facility Category
1	Big Rock Park	8125 Arlette Street	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
2	Fire Station No. 4	8950 Cottonwood Avenue	High	San Diego River	Fire Stations
3	Fire Station No. 5	9130 Carlton Oaks Drive	High	San Diego River/Forester Creek	Fire Stations
4	Graffiti Removal	Throughout City	High	All	Mobile Municipal Activities
5	Infrastructure Maintenance	Throughout City	High	All	Mobile Municipal Activities
6	Landscaping	Throughout City	High	All	Mobile Municipal Activities
7	Mast Park	9125 Carlton Hills Boulevard	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
8	Municipal Separate Storm Sewer	Throughout City	High	All	MS4
9	Public Services Operations Center	9534 Via Zapador	High	San Diego River/Forester Creek	Public Works Facilities
10	Roads, Streets, Highways	Throughout City	High	All	Roads, Streets, Highways, and Parking Facilities
11	Santee Mini Park	10446 Mission Gorge Road	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
12	Shadow Hill Park	9161 Shadow Hill Road	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
13	Sky Ranch Park	Southeast corner of Sevilla Street and Cala Lilly Street	High	All	Parks, Recreational Facilities, and Other Landscaped Areas
14	Special Events	Throughout City	High	All	Special Events
15	Town Center Community Park	9545 Cuyamaca Street	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
16	Vehicle Maintenance Facility	8950 Cottonwood Avenue	High	San Diego River	Public Works Facilities

APPENDIX A.3
MUNICIPAL INVENTORY

#	Facility Name	Facility Address	TTWQ	Watershed	Facility Category
17	West Hills Park	8751 Mast Boulevard	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
18	Woodglen Vista Park	10250 Woodglen Vista Drive	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
19	City Activity Building #1	8115 Arlette Street	Low	San Diego River	Other Fixed Facilities
20	City Activity Building #2	10335 Mission Gorge Road	Low	San Diego River	Other Fixed Facilities
21	Santee City Hall and Civic Center	10601 Magnolia Avenue	Low	San Diego River/Woodglen Vista Channel	Other Fixed Facilities
22	Santee Teen Center	9310 Fanita Parkway	Low	San Diego River	Other Fixed Facilities

A.4 INDUSTRIAL/COMMERCIAL INVENTORY

City of Santee
Active Business List Report

9/17/2010

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
High							
A&I Services	8665 Argent A		7538	907.13		☐	☐
Advanced Electromagnetics	9311 Stevens		3812	907.12		☐	☐
AL MAX SANITATION (AMS)	10023 PROSPECT AVENUE		4953	907.13		☐	☐
Artistic Marble and Granite, Inc.	9323 Stevens		3281	907.12	937I021810	☐	☐
BONDS AUTOMOTIVE SALES	11420 Woodside		5521	907.12		☐	☐
Bradshaw Engineering Corp.	8645 Argent B		3498	907.13	937I020468	☐	☐
C C M ENTERPRISES	10848 WHEATLANDS		3281	907.12	937I018541	☐	☐
C C M ENTERPRISES	9366 ABRAHAM		3281	907.12	937I018540	☐	☐
CALIFORNIA ACRYLIC & GLASS MIRROR PLATE COMPANY	10658 Prospect C		3231			☐	☐
CARLS JUNIOR #385	10009 MISSION GORGE ROAD		5812	907.12		☐	☐
CARLTON OAKS COUNTRY CLUB	9200 INWOOD DRIVE		7992	907.12		☐	☐
Cazadores Mexican Food	9331 Mission Gorge 111		5812	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Cotijas	9121 Mission Gorge		5812	907.12		☐	☐
Estradas	8528 Magnolia 107		5812	907.13		☐	☐
Estradas Mexican Food	9292 Carlton Hills B		5812	907.13		☐	☐
Estrada's Mexican Food	9630 Carlton Hills		5812	907.12		☐	☐
European Company	10051 Prospect		3281	907.12	937I016521	☐	☐
Harrison Trucking Inc.	8801 Olive		4213	907.13	937I003651	☐	☐
Hilbertos Mexican Food	9805 Prospect F		5812	907.13		☐	☐
JACK IN THE BOX #20	9337 MISSION GORGE		5812	907.13		☐	☐
JACK IN THE BOX #3007	10330 MAST		5812	907.12		☐	☐
Ke-Burgmann	8575 Roland Acres		3494	907.13	937I022304	☐	☐
KIRIN SUSHI	8790 CUYAMACA K		5812	907.13		☐	☐
MARIETAS #4	8915 Carlton Hills		5812	907.13		☐	☐
MARJAN STONE COMPANY	9746 PROSPECT		3281	907.13	937I020456	☐	☐
MARYS DONUTS	9031 MISSION GORGE		5812	907.12		☐	☐
Metro Steel	10520 Kenney A		3441	907.13		☐	☐
ORIGINAL ROADHOUSE GRILL	9816 MISSION GORGE		5812	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
PADRE DAM WATER RECYCLING FACILITY	9300 FANITA		4952	907.12	937I005752	☐	☐
R C P BLOCK & BRICK INC	9631 MAGNOLIA		3271	907.12	937I002459	☐	☐
RICKS MACHINE SHOP	11448 WOODSIDE		7538	907.12		☐	☐
Sab-E-Lee	9159 Mission Gorge		5812	907.13		☐	☐
San Diego Classic Restoration	9440 Wheatlands #7		7532	907.12		☐	☐
Solid Surface Solutions	10704 Prospect		3281	907.13		☐	☐
Specialty Metals Fabrication	11222 Woodside		3444	907.12		☐	☐
T C CONSTRUCTION CO INC	10540 PROSPECT		1623	907.13		☐	☐
Valley Box Co. Inc.	8544 Tumbleweed		2441	907.13	937I017881	☐	☐
Valley Tractor & Equipment	11478 Woodside		7699	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Low							
7-Eleven 19006D	9111 Mission Gorge		5411	907.12		☐	☐
7-Eleven 2121-20321D	9750 Cuyamaca		5411	907.12		☐	☐
7-Eleven-2121-13661C	9251 Carlton Hills		5411	907.12		☐	☐
8-5 Corp. / Artisan Gallery	10928 Wheatlands A		5199	907.12		☐	☐
A - Z Patio	8055 Linen		1799	907.12		☑	☐
A & B A/C & Heating	8701 Mesa 117		1711	907.12		☐	☐
A & D Fire Protection	11465 Woodside 1		1799	907.12		☐	☐
A & E Moving & Storage	9263 Abraham F		4214	907.12		☐	☐
A C L Electric	9315 Cadorette		1731	907.12		☑	☐
A J Audio	7467 Mission Gorge 64		3669	907.12		☐	☐
A Woodpecker Fence	10338 Carreta		7359	907.12		☑	☐
A-1 Stor-it	11493 Woodside		4226	907.12		☐	☐
A-Advanced Electrical & Communications Cabling Company	8710 Ruocco		1731	907.12		☐	☐
Abler Fabrication	10325 Amada		3444	907.12		☑	☐
Absolute Exhaust Coatings	10020 Prospect B14		7533			☐	☐
Accu-Tap LLC	9625 Mission Gorge B2-305		3541	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Aces Electrical Contractors Inc.	8616 Atlas View		1731	907.13		☑	☐
Action Turbo Repair Inc	10722 Kenney A		3714	907.13		☐	☐
Acuhon	8665 Mission Gorge B1		7538	907.12		☐	☐
Adona Grinding a Divisions of	11478 Woodside		7699	907.12		☐	☐
Adopt the Environment, Inc.	9767 Castaic		7389	907.12		☑	☐
Advanced Automotive Center	7945 Mission Gorge 108		7539	907.12		☐	☐
Advanced Copying Systems	9944 Cleary		7629	907.12		☑	☐
Aeromach	11423 Woodside B		3751	907.12		☐	☐
Affordable Auto Wholesale	10764 2nd		5511	907.12		☑	☐
A-I-M Plastics Inc.	9326 Abraham		3089	907.12		☐	☐
AKENSON ELECTRIC	8843 PROSPECT		1731	907.12		☐	☐
ALL CITIES BEE & PEST CONTROL	10201 BUENA VISTA		7342	907.12		☐	☐
ALLEN MECHANICAL Inc.	11030 SUMMIT		1711	907.12		☑	☐
ALLIANCE HEATING AND AIR CONDITIONING	10281 PEBBLE BEACH		1711	907.12		☑	☐
Almondzies Gourmet Nut Brittle	10230 Palm Glen 85		2064	907.12		☑	☐
Aloha Pet Grooming	8011 Mission Gorge G		752	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Altech Machining	11000 Woodside		3492	907.12		☐	☐
Alternative Bathtub	9428 Leticia		1799	907.12		☑	☐
Alternative Energy Technologies	9465 Mission Park B		3674	907.12		☐	☐
Alumi Craft Inc.	10815 Wheatlands I		3799	907.12		☐	☐
American Automatic Fire	9510 Pathway B		1731	907.13		☐	☐
AMERICAN EAGLE SELF STORAGE	8810 CUYAMACA		4225	907.12		☐	☐
American Fence Co.	9944 Prospect		1799	907.13		☐	☐
AMERICAN SHEET METAL	8710 RAILROAD		3444	907.12		☐	☐
AMOREE DESIGNS, INC.	9360 LETICIA			907.12		☑	☐
Anny'S Fine Burger	9862 Mission Gorge		5812			☐	☐
APOMTEC SERVICES	9214 BIRD		7699	907.12		☑	☐
AQUA VINYL & PLASTER POOLS	10127 WOODROSE		1799	907.12		☑	☐
A-QUALITY GARAGE DOORS	8803 PEBBLE BEACH		1799	907.12		☑	☐
ARC LIGHTING AND ELECTRIC	10054 PROSPECT I		1731	907.13		☐	☐
ARC PAINT	10925 HARTLEY G		3914	907.12		☐	☐
ARCE ENTERPRISES	9944 Cleary		7538	907.13		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
ARGEE CORPORATION	9550 PATHWAY		3089	907.13		☐	☐
ARROW AUTOMATIC FIRE SPRINKLER	9520 PATHWAY		1711	907.13		☐	☐
ART JOURNEYS	10230 JULIO		7389	907.12		☑	☐
Ascend Manufacturing	10217 Buena Vista G		3599	907.12		☐	☐
ASHWOOD CABINETS	8733 MAGNOLIA 137		1751	907.12		☐	☐
AUDIO VIDEO INSTALLS	10171 SWANTON		1731	907.12		☑	☐
AUSTIN CONSTRUCTION, JAMES F	9540 PATHWAY 103		1522	907.13		☐	☐
AUSTIN HEALEY MOTOR WORKS	9440 WHEATLANDS COURT		7538	907.12		☐	☐
AUTO CORRAL	11440 WOODSIDE		5541	907.12		☐	☐
AUTO PERFECT	9937 PROSPECT 11		7538	907.13		☐	☐
AUTOFAB	10996 WOODSIDE		7538	907.12		☐	☐
AUTOZONE #3347	285 TOWN CENTER		3714	907.12		☐	☐
AWNING PRODUCTS UNLIMITED	8540 ABLETTE B		1799	907.13		☐	☐
AYMAR ENGINEERING	9434 ABRAHAM 1		3499	907.12		☐	☐
B SMITH ARTISTRY BY DESIGN	8701 MESA ROAD		2771	907.12		☑	☐
B.J.'S Lawn Care	8680 Wahl		782			☑	☑

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
BABCOCK ELECTRICAL SERVICE	8521 MASSERY		1731	907.13		☑	☐
BAGZ 4 GAMEZ	9348 NALINIE		3949	907.12		☑	☐
BAILEY ELECTRIC AND SUPPLY	9819 SCOTTSBLUFF		1731	907.12		☑	☐
BAKER OFFSET PRINTING	8781 CUYAMACA T		2752	907.13		☐	☐
BARE ROOTS	9711 HUBER		1799	907.12		☑	☐
BARNER ELECTRIC	9435 WHEATLANDS K		1731	907.12		☐	☐
Battery Systems	9465 Mission Park		5013	907.12		☐	☐
Bella Tazza Gourmet Coffee Services	10792 SUSIE		5046	907.12		☑	☐
BENHAM CORPORATION DBA:, D	10969 WHEATLANDS A		2752	907.12		☐	☐
BENNETT'S TRANSMISSIONS	9220 RUFFIN ROAD		7538	907.12		☑	☐
Bert W. Salas, Inc.	10767 Woodside		1521	907.12		☐	☐
BJ Metal & Refinishing	10416 Len		7692	907.12		☑	☐
BLACK HAWK ELECTRIC COMPANY	8404 MAGNOLIA I		1731	907.13		☐	☐
BLACK WIRE	9711 HUBER COURT		1731	907.12		☑	☐
Blind Installations By John Irwin	365 Whispering Wil		2591	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Blue Deuce Cycles	10739 Woodside		5571	907.12		☐	☐
Blue Moon Pools	8606 Argent H		1771	907.13		☐	☐
Blue Star Steel Inc.	11322 Woodside		1791	907.12		☐	☐
BMC MOBILE WELDING	10801 WOODSIDE AVENUE		1799	907.12		☐	☑
BMW MC Service of S.D., Inc.	7945 Mission Gorge 109		7699	907.12		☐	☐
BOB'S FIRE EQUIPMENT COMPANY	9366 GOYETTE		7389	907.12		☑	☐
BOBS POOL'S	8545 MISSION GORGE ROAD		7389	907.12		☐	☑
BOCK COMPANY	8510 RAILROAD		1623	907.13		☐	☐
BOND CONSTRUCTION	7819 RANCHO FANITA F		1521	907.12		☑	☐
BOONES POOL SERVICE	8414 BIG ROCK ROAD		7389	907.12		☐	☑
Bow & Lever	8622 Argent C		3499	907.13		☐	☐
BOWEN & WARENGO INC	10723 PROSPECT		3444	907.13		☐	☐
BOYCE CORPORATION dba FREEDOM ELECTRIC	10744 ROCKVILL 101		1731	907.12		☐	☐
BP West Coast Prod. DBA Arco #9567	9811 Mission Gorge		5541	907.12		☐	☐
Bradley Electric	10861 El Nopal		4911			☑	☐
Brainard Construction	113 Rock Glen		1521			☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Bright Tech Auto Service	10438 Mission Gorge B		7538	907.12		☐	☐
BRON DEVELOPMENT COMPANY	10035 PROSPECT		1521	907.13		☐	☐
BTI PERFORMANCE PRODUCTS	9525 Pathway		3544	907.13		☐	☐
BUGGY WORKS	11421 WOODSIDE		3799	907.12		☐	☐
BUILDIT CONSTRUCTION	9228 FAIREN		1521	907.13		☐	☐
Burness Flooring	10018 Three Oaks		1752	907.12		☑	☐
BUTLER'S WEED ABATEMENT	9430 GALSTON		782	907.12		☑	☐
C & H AUTO BODY	10996 WOODSIDE		7532	907.12		☐	☐
C & L ELECTRIC	9065 INVERNESS ROAD		1731	907.12		☑	☐
C H C DIST. CO.	10925 WHEATLANDS M		5013	907.12		☐	☐
C. DALTON FLOORING	10811 LEN STREET		1752	907.12		☑	☐
Cabral Metal Fab & Fence, Inc.	10020 Prospect		1799	907.13		☐	☐
CARL'S TRIM & REMODELING SUPPLY	9524 GALSTON		1521	907.12		☑	☐
CARPET CLEANER (ALAN)	10233 MISSION GORGE ROAD		7217	907.12		☑	☐
CARPET INSTALLERS, INC	10208 STRATHMORE		1752	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
CARROLL BUSINESS SUPPLY, INC.	10223 PROSPECT		5112	907.13		☐	☐
CARTER COLLISION SERVICE	8835 CUYAMACA STREET		7538	907.12		☐	☐
CED (Contour Technology)	8406 MAGNOLIA H		5211	907.13		☐	☐
CHARLES ENGINEERING COMPANY	8733 MAGNOLIA 107		3823	907.12		☐	☐
CHEAPOS PRINTING	10215 BUENA VISTA C		2759	907.12		☐	☐
CHEVRON STATION INC #1741	8888 MAGNOLIA		5989	907.12		☐	☐
ChiTown Pizza Company	8528 N. Magnolia		5812	907.12		☐	☐
CHOICE LOCKSMITHING & SECURITY, INC.	10117 CARRIE ELLEN		7699	907.12		☑	☐
CHRIS MONTOYA HEATING & AIR	8581 ATLAS VIEW		1711	907.13		☑	☐
Chuck Wilson Construction	9731 Abbeyfield		1521	907.12		☑	☐
CIN CLEARLY	1910 Montilla		7349			☑	☑
Cinda's Toffee	9320 Praful		2064	907.12		☑	☐
CITY ELECTRIC SUPPLY	10729 WHEATLANDS A		5063	907.12		☐	☐
CLASSIC ELECTRIC	8531 ABLETTE		1731	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
CLEAN WATER POOL SERVICE	10123 THREE OAKS WAY		7389	907.12		☐	☑
CLEANDAY CARPET CARE	9122 FARRINGTON DRIVE		7217	907.12		☑	☑
Cliff'S Poolside Service	9031 Calle Del Verde		7389			☑	☐
COASTAL SUPPLY CO INC	8650 ARGENT		5099	907.13		☐	☐
CODE 3 ELECTRICAL	10934 GREEN CASTLE		1731	907.12		☑	☐
Cohesive Screen Printing	9405 Carlton Oaks		2269			☑	☐
COLE HILL SYSTEMS	10756 VALOR		1799	907.12		☑	☐
Coltrane Fire Protection	8620 Big Rock		1711	907.12		☑	☐
COMFORT MECHANICAL INC	10740 KENNEY 404		1711	907.13		☐	☐
COMFORT PLUMBING	9330 GOYETTE		1711	907.12		☑	☑
COMMERCIAL OPENINGS	8630 ARGENT A		1751	907.13		☐	☐
COMPETITION BOBCAT	9587 MAVIN		7699	907.12		☑	☐
COMPUCRAFT INDUSTRIES INC	8787 OLIVE		3999	907.13		☐	☐
Computer Integrated Machining Inc.	10960 WHEATLANDS		3599	907.12		☐	☐
Conn's Machining	10207 Buena Vista B		3444	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
CONSOLIDATED ELECTRICAL DIST	8406 MAGNOLIA H		5211	907.13		☐	☐
CONTOUR TECHNOLOGY	8406 MAGNOLIA E		3599	907.13		☐	☐
Cookies By Design	30 Town Center B		5812			☐	☐
COOL MASTER	8501 ABLETTE B		7538	907.13		☐	☐
Cooptec Weld Manufacturing	9526 Saint Andrews		3548	907.12		☑	☐
COPPER ELECTRIC	10054 PROSPECT T		1731	907.13		☐	☐
CORONADO CONTRACTORS	10101 GEM TREE		1521	907.12		☑	☐
Costco Wholesale #403	101 Town Center		5999	907.12		☐	☐
COUNTY FLEET SERVICE	10053 PROSPECT		7538	907.13		☐	☐
COUNTY HEATING AND AIR CONDITIONING	10020 PROSPECT		1711	907.13		☐	☐
COUNTY RV SERVICE CENTER	10229 PROSPECT		7699	907.13		☐	☐
CRAFTERS FENCE	8606 ARGENT A		1799	907.13		☐	☐
Creative Metals Industries Inc.	10039 Prospect E		3479	907.13		☐	☐
CROWN SIGNS	9937 PROSPECT 10		3993	907.13		☐	☐
CS MUSIC COMPANY	8606 ARGENT B		7699	907.13		☐	☐
Current Ways	10221 Buena Vista		8731			☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
CURRIER STUCCO	8820 PRESTWICK		1742	907.12		☑	☐
CURTIS AIR CONDITIONING AND HEATING	10290 PEBBLE BEACH		1711	907.12		☑	☐
CUSTOM AIR SYSTEMS	9772 CASTAIC		1711	907.12		☑	☐
CUSTOM CRAFT CONSTRUCTION	8546 GRAHAM 18		1521	907.12		☑	☐
CUSTOM WHEEL INDUSTRIES INC	10221 PROSPECT		5013	907.13		☐	☐
CUYAMACA CONSTRUCION INC	10763 WOODSIDE D		1751	907.12		☐	☐
D & G WINDOW	10114 WEST GLENDON		1793	907.12		☑	☐
D BENHAM CORP	10969 WHEATLANDS A		2752	907.12		☐	☐
D C R CONSTRUCTION SERVICES	9440 WHEATLANDS 4		1521	907.12		☐	☐
D R W TRANSMISSION SPECIALTIES	10728 KENNEY B		7537	907.13		☐	☐
D S Fibertech Corp	11015 Mission Park		2899	907.12	937I019826	☐	☐
Dale's Custom Woodworking	10407 Santana		2599	907.12		☑	☐
DALTON & SON PAINT & BODY	10439 PROSPECT AVENUE		7532	907.13		☐	☐
DAN WHEELER TRUCKING	9437 WILLOWGROVE		4213	907.12		☑	☐
DANIELS ALIGNMENT, ROGER	8517 ABLETTE F		7539	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
DANOS SIGNS GRAPHICS & DESIGN	9950 SAPPINGTON		7389	907.12		☑	☐
DAN'S HAULING SERVICE	7735 MISSION GORGE ROAD		4212	907.12		☑	☐
DARKSIDE CUSTOMS	11420 WOODSIDE		5571	907.12		☐	☐
Dave's Pool Services	9912 Via Nina		7349	907.12		☑	☑
DAVIC CONSTRUCTION GENERAL CONTRACTOR	10925 WHEATLANDS N		3444	907.12		☐	☐
DAVIS GREGG ENTERPRISES	10139 PROSPECT		3499	907.13		☐	☐
DAVIS ROOFING	10027 BECK		1761	907.12		☑	☐
DAWSON LEASING INC., G M	11220 WOODSIDE		5511	907.12		☐	☐
Day & Night Restoration Inc.	10728 Prospect G		1521	907.13		☐	☐
Decker's Custom Carpentry	9244 Bird		1522	907.12		☑	☐
DeCrescente's Drywall & Texture	8748 WAHL		1742	907.12		☑	☐
DeCrescente's Landscaping	8748 WAHL STREET		782	907.12		☑	☐
DELTATRAK TECHNOLOGIES	9260 ISAAC D		3823	907.12		☐	☐
DESIGNER'S TOUCH BUILDERS	9953 LOS RANCHITOS		1521	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
DIAMOND PAINTING	8301 MISSION GORGE 52		1721	907.12		☐	☐
DIMOND CONSTRUCTION	10112 GEM TREE		1522	907.12		☑	☐
DISCFLO CORPORATION	10850 HARTLEY		3561	907.12		☐	☐
DISPLAY CASE MANUFACTURING (previously Case It)	8645 ARGENT A		2541	907.13		☐	☐
DKA3 INDUSTRIES	9435 LAKE CANYON			907.12		☑	☐
DLOUHY DOORS	8813 ELLSWORTH		3442	907.13		☑	☐
DLS CYCLES	10176 SWANTON		7699	907.12		☑	☐
Don Lincoln Lath and Plaster	9235 Birchcrest		1742	907.12		☑	☐
Double Double Fine Burger	9862 Mission Gorge		5812	907.12		☐	☐
Dr. Mary Jungman	8306 Courtney		8011			☐	☐
DUNCAN RACING/DANNYS MACHINE	10734 KENNEY STREET		5531	907.13		☐	☐
DYNO SHOP, THE	10042 PROSPECT		7538	907.13		☐	☐
E.C. CABINETS	8402 MAGNOLIA H		1751	907.13		☐	☐
Eagle Fence	8065 Shantung		1799	907.12		☑	☐
EAST COUNTY ALIGNMENT	10741 WOODSIDE		7539	907.12		☐	☐
East County Lube Center	7945 Mission Gorge 161		7549	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
East County Tile & Marble	9855 Prospect		1743	907.13		☐	☐
East County Transmission	10227 Prospect B		7537	907.13		☐	☐
EcoGreen Recycling	9540 Pathway 105		1731	907.13		☐	☐
EDM Business	9539 Maureen		1799	907.12		☑	☐
EL CAJON NAMEPLATE	10054 PROSPECT K		3479	907.13		☐	☐
El Sombrero Cookie Co.	8301 Mission Gorge 169		5441	907.12		☑	☐
ELECTRONIC SHEET METAL PRODUCTS	9560 PATHWAY 5		3444	907.13		☐	☐
Elliott's Woods	9576 Rawlins		2434	907.12		☑	☐
EVENTZ	9412 MAST		7999	907.12		☑	☐
Executives Garage Inc	10438 Mission Gorge D		7549			☐	☐
EXOTIC MOTOR SPORTS	10079 SILVERADO COURT		5531	907.12		☑	☐
Express Automotive Enterprises	8711 Magnolia 300		7533	907.13		☐	☐
Express Tire	9535 Mission Gorge		5531	907.12		☐	☐
Fairway Cart Services	8622 Argent A		5962			☐	☑
Falcon Landscape	8707 LINDVERN COURT		1799	907.13		☑	☐
Fanita Liquor & Market	8663 Fanita		5921	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
FARACE ENTERPRISES, INC.	10759 WOODSIDE H		2269	907.12		☐	☐
FARRIS CONSTRUCTION COMPANY	8758 BUSHY HILL		1521	907.12		☑	☐
FEATHER ROCK DESIGNS	11316 WOODSIDE B		3911	907.12		☐	☐
FIBER-TECH AUTO PARTS INC	10809 PROSPECT		5531	907.13		☐	☐
FIBER-TECH ENGINEERING INC	10735 PROSPECT AVENUE		5531	907.13		☐	☐
Fiberwerx	8400 Magnolia H		3714	907.12		☐	☐
FICK & SON PLUMBING INC, R L	10740 KENNEY 405		1711	907.13		☐	☐
FINEST CITY WINDOW CLEANING	10032 MEADOW		7349	907.13		☑	☐
FLEXABLE CABLE	10314 PARK		1731	907.12		☑	☐
Flexdex Skateboards LLC	8534 Hubbles		3949			☐	☐
Ford Roofing	10009 Gem Tree		1761	907.12		☑	☐
FORDYCE CONSTRUCTION	9926 PROSPECT 122		1542	907.13		☐	☐
FORM FAB	11478 WOODSIDE		7699	907.12		☐	☐
Fox Racing Shox	10943 Wheatlands		3714	907.12		☐	☐
FRED PERRY	9211 BELLAGIO		1521	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
FREDDIE CASTLEMAN CONSTRUCTION	9312 CARITA		1521	907.12		☑	☐
FREEDOM VENDING	9554 DOMER		3581	907.12		☑	☐
FREEMAN'S CARPETS AND BINDING	10205 PROSPECT		1752	907.13		☐	☐
Frontier CNC	10728 Prospect C & D		3549	907.13		☐	☐
Frontier Motors	10335 Julio		7538	907.12		☑	☐
Frubble	9628 Carlton Hills		5812	907.12		☐	☐
FRUIT SMART MARKETING, INC.	8876 OLIVE LANE		5159	907.13		☑	☐
FRY SPECIALTY COMPANY	11316 WOODSIDE G		1521	907.12		☐	☐
FUEL ATV	8858 PASEO DE LOS CASTILLOS		5561	907.13		☑	☐
FUTURE MACHINE	9440 WHEATLANDS 2		3714	907.12		☐	☐
G A ELECTRIC CORP	10520 KENNEY		1731	907.13		☐	☐
G G Landscaping, Inc.	9737 Jeremy		782			☑	☐
GANDER COMPANY INC, THE	8665 MISSION GORGE B-2		1799	907.12		☐	☐
Generic Lift Parts (GLP)	9431 PROSPECT AVENUE		5015	907.13		☑	☐
GENTUE & SONS	9802 SETTLE		7217	907.12		☑	☐
GIAMANCO & SONS	8742 ATLAS VIEW		1731	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Giant Paintball	11125 Woodside B		5941			☐	☐
GOLDEN STATE GARAGE DOORS	10540 KENNEY STREET		1799	907.13		☐	☐
GOLDSTEIN ELECTRICAL	8502 ORGANDY		1731	907.12		☑	☐
GORDON-PRILL SAN DIEGO INC.	8400 MAGNOLIA F		1521	907.13		☐	☐
GOULD MASONRY, THOMAS	8633 HACIENDA		1741	907.13		☑	☐
GRAPHICRETE (Q=Mila's Signs)	11571 WOODSIDE AVENUE		3993	907.12		☐	☐
GT DOOR, Inc.	10728 PROSPECT E		1751	907.13		☐	☐
Gumball Graphics	9419 Carlton Oaks		7336	907.12		☑	☐
HAAG RACING	10308 WOODPARK		7948	907.12		☑	☐
HACIENDA BUILDERS	10648 TRIGAL		1521	907.12		☑	☐
HAF Industries Inc.	10221 Buena Vista D		7336	907.12		☐	☐
HALE & SONS INC	8626 SIESTA		1711	907.13		☐	☐
HANSON MACHINE	10969 WHEATLANDS B		7353	907.12		☐	☐
HARPER CONSTRUCTION	7819 RANCHO FANITA C		1521	907.12		☐	☐
Healthy Family Carpet Cleaning	8445 Graves		7217			☑	☐
HELIX SPECIALTIES	11220 WOODSIDE AVENUE			907.12		☐	☐
HI-TECH CUSTOMS	9962 PROSPECT G		7538	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
HOME CARE BIOMEDICAL SERVICES	8406 MAGNOLIA C		7629	907.13		☐	☐
HOME DEPOT #673, THE	255 Town Center		5211	907.12		☐	☐
Horsman Automotive	8891 Railroad		7538	907.12		☐	☐
HOUSE OF BUGGIES	10308 MISSION GORGE D		5531	907.12		☐	☐
HOWLAND ENTERPRISES	10112 MAST		1731	907.12		☐	☐
HP WIRING	7341 PARK VIEW		7539	907.12		☑	☐
Hurn Mechanical Heating & Cooling	8711 Magnolia 200		1711	907.13		☐	☐
Husted Racing Fabrication	9011 WILLOWGROVE		3499	907.12		☑	☐
HUTTER'S POOL SERVICE	10534 FLORA VERDE COURT		7389	907.12		☑	☑
HYDRAULIC ELECTRIC	9938 PROSPECT 145		3714	907.13		☐	☐
IDEAL MECHANICAL	8524 ABLETTE		1711	907.13		☐	☐
Import Auto Service	7945 Mission Gorge 111		7538	907.12		☐	☐
Industrial Metal Processing	10145 Prospect		3471	907.13		☐	☐
INFUSED	9215 HOLMBY		3231	907.12		☑	☐
IN-MINUTES	10217 BUENA VISTA E		2759	907.12		☐	☐
INSTANT SIGNS OF SANTEE	10769 WOODSIDE 103		7389	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
INSTITUTIONAL CABINET & MILLWORK INC	10770 ROCKVILL B		2531	907.12		☐	☐
INTEGRITY COMMERCIAL FLOORING INC	9885 PROSPECT A		1752	907.13		☐	☐
Interstate Striping of California	8511 Ablette #B		1611	907.13		☐	☐
J & F MOBILE TIRE	9450 HORNBUCKLE DRIVE		7538	907.12		☑	☐
J & J Cabinets	30 Town Center C		1751	907.12		☐	☐
J & J DRAPERY WORKROOM	10054 PROSPECT L		2391	907.13		☐	☐
J & J FUMIGATION INC	10744 ROCKVILL 101		7342	907.12		☐	☐
J & M Mobile Detailing	9565 Tuthill		7542	907.12		☑	☑
J & M POWER WASH	7953 WOODPECKER WAY		8999	907.12		☐	☑
J A G CONSTRUCTION COMPANY	9602 WEST HARTLAND		1521	907.12		☐	☐
J G AUTO REPAIR	10468 MISSION GORGE		7538	907.12		☐	☐
J P Designs (Desert Fabrications dba ,)	11421 Woodside		3799	907.12		☐	☐
J.R. ELECTRONICS	10744 ROCKVILL 102		1731	907.12		☐	☐
Jack Randalls Automotive	10845 Wheatlands F		7536	907.12		☐	☐
JACKSON PUBLICATIONS	9209 DUNBARTON		2759	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
JACOR CONSTRUCTION	8614 SIESTA		1521	907.13		☐	☐
JAFCO BUILDING SERVICES INC	10728 PROSPECT 109		1511	907.13		☐	☐
JAMAR ELECTRIC	9830 PROSPECT D		1731	907.13		☐	☐
James A Miller Gardening	8515 Ellsworth		781	907.12		☑	☑
Jaw Industries	9410 Pike		7539			☑	☐
JAY MATHY ENGINEERING	9315 WHEATLANDS		3559	907.12		☐	☐
JCMS Landscape	10638 Prospect		781	907.13		☐	☐
Jeff's Superior Restoration	9321 Cadorette		1521	907.12		☑	☐
JENSEN ELECTRIC	9101 HEATHERDALE		1731	907.12		☑	☐
JENSEN SWING PRODUCTS	9327 WHEATLANDS		3949	907.12		☐	☐
JERRY'S HEATING AND AIR CONDITIONING	9717 AIRPORT VISTA		1711	907.13		☐	☐
Jim Blazen	10445 Mast		1711	907.12		☑	☐
JIM THOMAS WELDING	11005 HILLCREEK		1799	907.12		☑	☑
JIMCO RACING INC.	9426 WHEATLANDS		3711	907.12		☐	☐
JK DOORS & WINDOWS	10150 PALM GLEN 39		5211	907.12		☑	☐
JL Watson Distributing	10250 Prospect		7389	907.13		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
John Barwig Graphics	8618 Carlton Oaks		7319	907.12		☑	☐
Johnny's Lawn Service	10062 Woodpark		782	907.12		☑	☐
JOHN'S CUSTOM BLINDS	10800 WOODSIDE 201		1799	907.12		☐	☐
JOYCE'S EQUIPMENT SERVICE	10143 MARCELLA		7359	907.12		☑	☐
JV STEEL BUILDING	9619 MAST		1541	907.12		☐	☐
JWG CONSTRUCTION COMPANY	10925 HARTLEY H		1521	907.12		☐	☐
K C ARCHITECTURAL RESTORATIONS	8507 ABLETTE		1751	907.13		☐	☐
K C M CONSTRUCTION	10749 LEN		1521	907.12		☑	☐
K J GOLF INC	9899 MOLLIE		5091	907.12		☐	☐
Kack Plumbing	10368 Kerrigan		1711			☑	☐
KALIN ENTERPRISES INC	9540 PATHWAY 201		1542	907.13		☐	☐
KANGAROO VIDEO PRODUCTS	10845 WHEATLANDS C		2389	907.12		☐	☐
Kaylien Inc.	8520 Railroad		3999	907.13		☐	☐
KC'S Truck & Trailer Parts	10441 Cadwell		5961	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
KELLY'S CONCRETE PUMPING	10025 PINEWOOD		1771	907.12		☑	☐
Ken'S Pool Supply Inc	9218 Dalehurst		7389			☑	☐
KENVIK RESOURCES	9328 WHISPERING WILLOW		3669	907.12		☑	☐
K-KAR CENTER	8931 MAGNOLIA		7542	907.12		☐	☐
KRAGEN AUTO PARTS #727	9750 MISSION GORGE		3714	907.12		☐	☐
KRAGEN AUTOWORKS #1419/CSK Auto Parts	9675 MISSION GORGE ROAD		3714	907.12		☐	☐
KTM COATING TECHNOLOGIES, Inc	10020 PROSPECT A33-34		3479	907.13		☐	☐
L & S PRECISION CUTTER SERVICE	10925 WHEATLANDS O		7699	907.13		☐	☐
L.R. KNIGHT PAINTING	9744 VOMAC		1721	907.12		☑	☐
LA JOLLA BRASS	10911 WHEATLANDS C		7699	907.12		☐	☐
LARSON METERCRAFT INC	9328 WHEATLANDS A		3823	907.12		☐	☐
Le Caramel LLC	11220 Woodside		5812	907.12		☐	☐
LEW'S WOOD WORKS	9255 MAGNOLIA AVENUE		2499	907.12		☑	☐
LIBERTY BACKHOE	10612 STRATHMORE		7353	907.12		☑	☐
Living Water	235 Town Center G		5999	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Lloyd's Collision Care	9936 Buena Vista		7532	907.12		☐	☐
Lock'S Lawn Care	10775 Tamar C		782			☑	☐
Logan Detailing	9670 Maccool 1		7532			☑	☐
Lotta Hardwood Floors & Const	10436 Cadwell		1752			☑	☐
LUHRS CUSTOM UPHOLSTERY, MARK	10557 PROSPECT		7549	907.13		☐	☐
M & J Restoration	10223 Mast		7532	907.12		☐	☐
M Z SHEET METAL	8520 ABLETTE ROAD		1761	907.13		☐	☐
MADRIDS AUTO BODY REPAIRS	10559 PROSPECT AVENUE		7532	907.13		☐	☐
MAGNOLIA MINI STORAGE	10805 KENNEY		4225	907.13		☐	☐
MAGNOLIA TEST ONLY STATION	8931 MAGNOLIA AVENUE		7533	907.12		☐	☐
MAJOR PERFORMANCE	10722 KENNEY C		3714	907.13		☐	☐
MANZANITA BREWING COMPANY	9962 Prospect E		5812	907.13		☐	☐
MARTEL ELECTRIC INC	9932 PROSPECT 140		1731	907.13		☐	☐
Mastercraft Inc.	11433 Woodside		7532	907.12		☐	☐
Mathy Machine Inc.	9315 Wheatlands		3559	907.12		☐	☐
Matt Gyvers Custom Werks	8733 Magnolia #117		3679	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
MAXIMA RACING OILS	9266 ABRAHAM		5172	907.12		☐	☐
Mayan Trade Inc.	9437 Wheatlands H		5199	907.12		☐	☐
MB CUSTOMS	11115 SUMMIT CREST		1521	907.12		☑	☐
MCCOY M1 MATCH CONDITIONING	9632 RYDER		7699	907.12		☑	☐
MCGUIRE ELECTRIC	9330 STEVENS A		1731	907.12		☐	☐
McKay Roofing Co. Inc.	10622 Kenney		1761	907.13		☐	☐
MCLEAN DOOR & TRIM	9260 ISAAC E		7542	907.12		☐	☐
MCLEAN POOL SERVICE	10147 Lakeland		7389			☐	☑
MEDICAL SOLUTIONS INC	8406 MAGNOLIA A		5047	907.13		☐	☐
Meet Me At The Park Grooming	8011 Mission Gorge G		752			☐	☐
METAL MAGIC OF SAN DIEGO	7932 POPLIN		7629	907.12		☑	☐
METAL TEK	11350 WOODSIDE		3444	907.12		☐	☐
METRIX AUTOBODY	10438 MISSION GORGE C		7532	907.12		☐	☐
MICHAGO'S BUILDING MAINTENANCE	8512 PASEO LADERA		1799	907.12		☐	☐
MIKE'S MOBILE REPAIR	10018 SHAGGYBARK DRIVE		7538	907.13		☐	☑
Mill Brothers Fine Woodworking	9356 Wheatlands C		2434	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Misiano's Custom Cabinetry	9201 Isaac C		2434	907.12		☐	☐
MISSION GORGE AUTOMOTIVE	10332 MISSION GORGE		7538	907.12		☐	☐
MISSION VALLEY ROOFING INC	9908 PROSPECT		1761	907.13		☐	☐
Mobil Oil Corp	9750 Magnolia		5541	907.12		☐	☐
Mom's Sign Shop	7945 Mission Gorge 106		3993	907.12		☐	☐
MONTOYA HEATING & AIRCONDITIONIN G	8581 ATLAS VIEW		1711	907.13		☐	☐
MORELLO CONCRETE CONST. INC.	8534 HUBBLES		1771	907.13		☐	☐
MORELY & SONS SIGNS	10735 GREENCASTLE		3993	907.12		☑	☐
Most Truck Sales	8017 Mission Gorge		5511	907.12		☐	☐
MR. FIX IT HANDYMAN	9538 MEDINA DRIVE		1521	907.12		☑	☑
MT INSULATION, Inc.	10612 PROSPECT 105		1742	907.13		☐	☐
MUELLERS TRUCK & EQUIP SERV.	8500 ABLETTE		7538	907.13		☐	☐
MURL BRUTON RACING ENGINES	10728 KENNEY STREET		7538	907.13		☐	☐
NAILERS INC	10845 WHEATLANDS C		2389	907.12		☐	☐
NEO TECH IMPORTS	9962 PROSPECT I		5015	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
NEW CREATION FLOORING COMPANY	8543 ELLSWORTH		1752	907.13		☑	☐
NEW IMAGE EMBROIDERY & SIGNS	10659 PROSPECT B		7389	907.12		☐	☐
NEW IMAGE PAINTING DESIGN	10744 ROCKVILL 105		1721	907.12		☐	☐
NICHOLS CONCRETE	9506 DOMER		1771	907.12		☑	☐
NORTHWEST DEVELOPMENT COMPANY	10765 WOODSIDE A		1521	907.12		☐	☐
NOVA SECURITY	10744 ROCKVILL 104		1731	907.12		☐	☐
Oaks Market and Deli/Raini EH Enterprises, Inc	9266 CARLTON OAKS		5411	907.12		☐	☐
Ocean Supply and Manufacturing	10850 Hartley		3991	907.12		☐	☐
OLD SWEDE REPAIRS	8500 ABLETTE		1522	907.13		☐	☐
OLSON IRRIGATION SYSTEMS	10910 WHEATLANDS 39449		3069	907.12		☐	☐
ON THE BALL HANDYMAN SERVICES	9530 MANDEVIL ROAD		1521	907.12		☐	☑
PACIFIC COAST BUILDING ERECTION	9962 PROSPECT C		1521	907.13		☐	☐
PACIFIC COAST VALVE & SUPPLY	8614 ARGENT B		5074	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Pacifica Glass Company Inc	10731 Woodside		5231			☐	☐
PACKAGING SOLUTIONS FOR TODAY'S INDUSTRY	9402 WHEATLANDS A		5113	907.12		☐	☐
PAMUS CONSTRUCTION	9915 BECK		1521	907.12		☑	☐
Papa Jims' BBQ	8595 Mesa 21		5812			☑	☐
PAPERCRAFT INC	9225 ISAAC		5113	907.12		☐	☐
PARADISE MECHANICAL, Inc. DBA PMI HEATING & AIR	9260 ISAAC STREET		1711	907.12		☐	☐
PECHTELS CUSTOM WOODWORKS	8733 MAGNOLIA 142		2511	907.12		☐	☐
Penguin Yogurt Factory	9621 Mission Gorge A		5812	907.13		☐	☐
Pep Boys Manny Moe & Jack	10041 Mission Gorge		5531	907.12		☐	☐
PERFECT SHINE AUTO DETAIL	10541 PROSPECT AVENUE		7542	907.13		☐	☑
PERFORMANCE TRANSMISSION	8501 ABLETTE ROAD		7537	907.13		☐	☐
Phantastic Auto Repair	10223 Mast		7538	907.12		☐	☐
PHENNYS PRINTING & MAILING SE	8402 MAGNOLIA F		2759	907.13		☐	☐
PHILIP THEARLES AUTOWERKS	8809 MISSION GORGE		7532	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
PLA-COR INC	10207 Buena Vista C-D		3089	907.12		☐	☐
Plex Products Unlimited	10744 Prospect C		3089	907.13		☐	☐
P-M Machining Inc.	8630 Argent C		3549	907.13		☐	☐
Pool Covers Unlimited	8606 Argent E		7389	907.13		☐	☐
Pool Dog And Spa Services	10800 Woodside		7389	907.12		☑	☐
POPP CONSTRUCTION, JIM"	9425 MANDEVILLE		1521	907.12		☑	☐
Pops Road Gear	445 Whispering Willow D		5699	907.12		☑	☐
PRAXAIR	10728 PROSPECT A		5084	907.13		☐	☐
PRECISION EXCAVATION	9713 MAST		1629	907.12		☐	☐
PRECISION PROJECTS KITCHEN & BATH	10235 PRINCE JED		1711	907.12		☑	☐
Precision Water Jetting, Inc.	10031 Prospect B & C		3499	907.13		☐	☐
Preferred Pump & Equipment	9201 Isaac A		5084	907.12		☐	☐
Prime Time Concrete Pumping	9451 Hornbuckle		1771	907.12		☑	☐
PRIMO GRAPHICS	9263 ABRAHAM B		2389	907.12		☐	☐
PRO CON CONCRETE INC	10638 PROSPECT		1771	907.13		☐	☐
Pro Filter Inc.	9266 Abraham		5085	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
PRO LINE FLOORING	11110 MEADOW TERRACE		1752	907.12		☑	☐
PRODUCTION TRUSS	9925 PROSPECT		3443	907.13		☐	☐
Pure-Flo	7737 Mission Gorge		4941	907.12		☐	☐
P-Wa's General Maintenance Services	9851 Mission Viejo		7699	907.13		☑	☐
Quality Floors Inc.	9206 Birchcrest		1752	907.12		☑	☐
QUALITY ROOTER'S PLUMBING	1798 PEPPER VILLA		1711	907.13		☐	☑
Qualpro Performance Inc. DBA Fuel ATV	9513 Paseo De Los Castillos		3714	907.13		☑	☐
R & D ENGINEERING	10704 PROSPECT C		3444	907.13		☐	☐
R B INDUSTRIES	9919 PROSPECT		3993	907.12		☐	☐
R H A	11425 WOODSIDE		7699	907.12		☐	☐
R H J HI-TECH AIR CONDITIONING	10107 PROSPECT B		1711	907.13		☐	☐
R J M DELIVERY SERVICES	10720 IRONWOOD		4215	907.12		☑	☐
R L FICK & SON PLUMBING INC	10740 KENNEY 405		1711	907.13		☐	☐
R L ROBLES DRYWALL	8625 RUMSON		1731	907.12		☑	☐
R M B CONSTRUCTION	9902 VIA NINA		1521	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
R S R PRECISION MACHINE	10020 PROSPECT G & H		3444	907.13		☐	☐
R T S ENTERPRISES	10965 HARTLEY U & V & X		5599	907.12		☐	☐
R.A. ENTERPRISES	9703 VOMAC		2499	907.12		☑	☐
R.E.S. Enterprises	10965 Hartley U		7532			☐	☐
RACER X MOTORSPORTS	10815 WHEATLANDS K		2396	907.12		☐	☐
RACEWAY ELECTRIC	10027 GEM TREE		1731	907.12		☑	☐
RADIANT BLINDS	10225 DAYBREAK 5		2591	907.12		☑	☐
Rafael Gardening	8843 Cottonwood		782	907.12		☑	☐
RAFA'S MOBILE AUTO ELECTRIC	10658 LEN		1731	907.12		☐	☑
RALLS PRECISION MACHINE	10027 PROSPECT C		3444	907.13		☐	☐
RCI Reinforcing Steel Contractor	9409 Abraham		1791	907.12		☐	☐
REBEL IRON WORKS	11521 WOODSIDE		7699	907.12		☐	☐
Reed Sports Buggies, Greg	9745 Airport Vista		7699	907.13		☑	☐
REFLEX INDUSTRIES INC	9530 PATHWAY 105		2834	907.13		☐	☐
Remsy's Inc. DBA Santy Auto Sales	10559 Prospect		5521	907.13		☐	☐
Renaissance Mechanical	9819 Pebble Beach		7629	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
REO Trash Out And Clean Out	10627 Sanfred		7349			☑	☐
REPUBLIC ITS	9932 PROSPECT 134		3646	907.13		☐	☐
RETRO TRUCK PARTS	9518 CECILWOOD		7538	907.12		☑	☐
REVOLUTION RACING SHOCKS	9434 ABRAHAM		7948	907.12		☐	☐
RGB Liquidators	8795 Railroad		0	907.12		☑	☐
RHINE AIR INC	10744 PROSPECT A		3334	907.13		☐	☐
RICE ELECTRIC	8747 GRAVES		1731	907.12		☑	☐
RICHARD'S CHEM DRY	9764 SAN REMO		7217	907.12		☑	☐
Richardson Cabinets	9201 Isaac		2434	907.12		☐	☐
RLB STABILIZERS	8616 MATTERHORN		3089	907.12		☑	☐
RN Pool Service	1237 Graves		7389	907.12		☐	☑
ROBERT A.PRATHER	10024 VIA LESLIE			907.12		☑	☐
ROBS R.V. APPLIANCE REPAIR	11366 WOODSIDE		5561	907.12		☐	☐
Rock Rental Inc.	10925 Wheatlands		7999	907.12		☐	☐
ROCK SOLID BRICK TILE AND MASONRY	9358 BURNING TREE		1521	907.12		☑	☐
ROELOF CONSTRUCTION CO	8781 CUYAMACA G		1799	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
ROGER DANIEL'S ALIGNMENT & BRAKE	8517 ABLETTE F		7539	907.13		☐	☐
RONS PLUMBING	9962 PROSPECT D		1711	907.13		☐	☐
ROSNER PUBLICATIONS	10329 PRINCESS MARCIE		2741	907.12		☑	☐
ROSSMAN ELECTRIC	10840 EL NOPAL		1731	907.12		☐	☑
Royal Handyman & Landscaping Services	9233 Ruffin		782			☑	☐
ROZENDAL ASSOCIATES INC	9530 PATHWAY 101		3812	907.13		☐	☐
RUBBER DUCKY POOL COMPANY	10201 Woodpark		7389			☑	☑
RUSH MOTORSPORT	10147 MISSION GORGE		7538	907.12		☐	☐
RUSSELL GLASS	9440 WHEATLANDS 13		1793	907.12		☐	☐
Russos Auto Body Inc	10410 Mission Gorge		7532	907.12		☐	☐
S & H ALL DAY CYCLES	9925 PROSPECT		5571	907.13		☐	☐
S & H ALLDAY HARLEY PARTS &SVC	9925 PROSPECT A		5571	907.13		☐	☐
S & J BUILDERS AND RESTORATION	10815 WHEATLANDS		1521	907.12		☐	☐
S & S WOODCRAFTS	8733 MAGNOLIA 128		2511	907.12		☐	☐
S M L INDUSTRIES	10965 HARTLEY P		3599	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
SAN DIEGO ELECTRIC COMPANY	7906 LINEN		1731	907.12		☑	☐
SAN DIEGO ELECTRIC WORKS	9135 CANYON PARK		1731	907.12		☐	☐
San Diego Flood Busters	9943 Prospect		7217	907.13		☐	☐
SAN DIEGO GLASS & PAINT AT0638	8828 CUYAMACA STREET		7532	907.12		☐	☐
SAN DIEGO PLUMBING AND HEATING	8775 RAILROAD		1711	907.12		☐	☐
SAN DIEGO POOL SERVICES	9221 FENWAY ROAD		1799	907.12		☐	☑
SAN DIEGO PROTECTIVE COATINGS	9344 WHEATLANDS A		3479	907.12		☐	☐
SAN DIEGO RV CENTER	8629 TUMBLEWEED		7538	907.13		☐	☐
SAN DIEGO SUPPLY SERVICES	8402 MAGNOLIA E		5113	907.13		☐	☐
SANDIA ENTERPRISES	10046 WOODGLEN VISTA		3479	907.12		☐	☐
Santana Liquor	8959 Carlton Hills		5921	907.12		☐	☐
SANTEE BUILDERS	9230 WETHERSFIELD		1521	907.12		☑	☐
SANTEE CAR WASH	8868 FANITA		7542	907.12		☐	☐
SANTEE CEILING SPECIALTIES	9221 FENWAY		1742	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Santee Discount Market	11541 Woodside		5411	907.12		☐	☐
SANTEE FOREIGN CAR REPAIR	7969 MISSION GORGE		7539	907.12		☐	☐
SANTEE HEATING & AIR	8523 CHERUB		1711	907.12		☑	☐
Santee Landscape	9327 Whispering Leaves		782			☑	☐
SANTEE MINI STORAGE DEPOT	10835 WOODSIDE		4225	907.12		☐	☐
SANTEE PET HOSPITAL	8936 CARLTON HILLS		742	907.13		☐	☐
SANTEE POOLS	10015 BILTEER COURT		7999	907.12		☐	☑
Santee Roofing Co.	8035 Smokewood		1761	907.12		☑	☐
SANTEE SELF STORAGE	10336 BUENA VISTA		4225	907.12		☐	☐
SANTEE SMOG TEST ONLY	10529 MISSION GORGE		7549	907.12		☐	☐
SANTEE WELDING	9937 PROSPECT 4		7692	907.13		☐	☐
SCANTIBODIES CLINICAL	9236 ABRAHAM		2899	907.12		☐	☐
SCANTIBODIES LAB INC	9336 ABRAHAM		2835	907.12		☐	☐
SCHILLING CORPORATION	8634 HACIENDA 518		1629	907.13		☐	☐
SCHOONMAKER HEATING & AIR CONDITIONER	8733 MAGNOLIA 121		1711	907.12		☐	☐
SCMES, INC.	9625 MISSION GORGE ROAD		7629	907.13		☐	☑

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Scooterbug Inc.	9260 Isaac C		7699	907.12		☐	☐
SEA VIEW GLASS	10307 CAREFREE		1793	907.12		☑	☐
SEAL ELECTRIC INC	9216 ABRAHAM C		1731	907.12		☐	☐
SEALTITE INC	10225 PROSPECT		3081	907.13		☐	☐
SEAMAN, JIM MOBILE AUTO REPAIR	10296 LARIAT DRIVE		7538	907.12		☐	☑
SECURITY LOCK & SAFE	10123 PEACEFUL		7699	907.12		☑	☐
SELECT CABINETS	9937 PROSPECT 8		2434	907.13		☐	☐
Senor Pancho Mexican Grill	10320 Mission Gorge		5812	907.12		☐	☐
SHAWZ METAL FABRICATION INC	10925 WHEATLANDS AVENUE		3444	907.12		☐	☐
SHAY BACKHOE SERVICE	9182 VIA DE AMOR		7353	907.12		☑	☐
SILVER STAR ENTERPRISES INC	8634 SIESTA		5511	907.13		☐	☐
SIMUNEC CONSTRUCTION INC	10208 PROSPECT		1521	907.13		☐	☐
Smith Yard Removal	10355 Lairwood		782			☑	☐
SMOKER'S HEAVEN	9882 MAGNOLIA		5993	907.12		☐	☐
Snoke Air Conditioning	9783 Medina		1711			☑	☐

TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
	1521	907.13		☐	☐
	5999			☐	☐
	1771	907.12		☑	☐
	1731	907.12		☐	☐
	7538	907.13		☐	☐
	1711	907.13		☐	☐
	5812	907.12		☐	☐
	3446	907.12		☐	☐
	5039	907.13		☐	☐
	7389			☑	☐
	7538	907.12		☐	☐
	7537	907.12		☐	☐
	5541	907.12		☐	☐
	3694	907.13		☐	☐
	1521	907.13		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business?
SPIRAL ASSEMBLY SYSTEMS	10658 PROSPECT A		3499	907.13		☐	☐
STANDARD ELECTRONICS	9340 STEVENS		1731	907.12		☐	☐
STAR ELECTRIC	9559 HINTON		1731	907.12		☐	☑
STAT PHARMACEUTICALS	9545 PATHWAY		5122	907.13		☐	☐
Steagall's Custom Cabinets	10911 Wheatlands #H		2434	907.12		☐	☐
Steve'S Mobile Auto Service	7949 Wistful Vista		7538			☑	☐
STEWARTS RACE WORKS	9419 ABRAHAM		3999	907.12		☐	☐
STONE HEAD COUNTER TOP	9851 MISSION GORGE ROAD		3281	907.12		☑	☐
STONEWORK TECHNOLOGIES	8754 GLEN VISTA		3281	907.12		☑	☐
SUNCRAFT SHUTTERS	9344 WHEATLANDS C		2591	907.12		☐	☐
SUPERIOR CONTRACTING	9529 HARTLAND		1521	907.12		☑	☐
SWAIN ENTERPRISES	10017 PROSPECT		1711	907.13		☐	☐
SYNERGY ELECTRIC INC	10740 KENNEY 401		1731	907.13		☐	☐
T M COBB CO	9175 MISSION GORGE		2431	907.12		☐	☐
T R E COMPANY	8733 MAGNOLIA 140		1731	907.12		☐	☐
T S C RESTORATION	8402 MAGNOLIA C		1521	907.13		☐	☐

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TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
	3599	907.13		☐	☐
	3679	907.13		☐	☐
	7699	907.12		☑	☐
	1623	907.13		☐	☐
	8811	907.12		☑	☐
	1731	907.12		☐	☐
	3499	907.12		☐	☐
	3499	907.13		☐	☐
	1711	907.12		☐	☑
	4731	907.12		☐	☐
	3535	907.12		☐	☐
	7538	907.12		☐	☐
	7699			☑	☐
	5812			☐	☐
	7359	907.12		☐	☐
	7532	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business
THUNDERWORKS	10729 WHEATLANDS C		7538	907.12		☐	☐
TIMBER RIDGE FRAMING INC	10744 ROCKVILL 109		1521	907.12		☐	☑
TINASSY'S K-9 SPLASH-R-CISE INC.	10925 Hartley E		8999	907.12		☐	☐
TL Services, Inc.	405 Whispering Willow		1711	907.12		☑	☑
TLC ELECTRIC	9227 BIRD		1731	907.12		☑	☐
TOLESAKES	8025 LINEN		3999	907.12		☑	☐
Tony's Landscaping	9941 Lake Canyon		781	907.12		☑	☐
Top Notch Painting	9371 Starcrest		1721	907.13		☑	☐
TOTAL PERFORMANCE MACHINE	10133 PROSPECT		3859	907.13		☐	☐
TOTTEN TUBES INC	8540 ROLAND ACRES		3312	907.13		☐	☐
TOWN & COUNTRY CUSTOM POOLS	9926 PROSPECT 121		8811	907.13		☐	☐
TOWN & COUNTRY PRINTERS INC	9448 MISSION PARK		2759	907.13		☐	☐
Tri-City Locksmith	8781 Cuyamaca P		7699	907.13		☐	☐
Triple S Electric	8851 Prospect		1731	907.12		☐	☐
Tsunami Cables	9942 Halberns		3651	907.12		☑	☐
Ty & Bud Hitches & Welding	10229 Prospect		3799	907.13		☐	☐

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TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
	1711	907.12		☑	☐
	1731	907.13		☑	☐
	7336			☑	☐
	7533	907.12		☐	☐
	1752	907.13		☐	☐
	4213	907.12		☐	☐
	3931	907.12		☑	☐
	7538	907.12		☐	☐
	5511	907.13		☐	☐
	3714	907.12		☐	☐
	3993	907.13		☐	☐
	3559	907.12		☐	☐
	5399	907.12		☐	☐
	1761	907.13		☐	☐
	2391	907.12		☐	☐
	3993	907.12		☑	☐
	3541	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business
Wayne Miller's Mobile Tire Inc.	11424 Woodside		7538	907.12		☐	☑
Waynes Harley & Mavhine Shop	10020 Prospect A12		7699	907.13		☐	☐
Weekend Appliance Repair	10424 Second		7629	907.12		☑	☐
West Coast Appliance Co.	10728 Prospect B		7699	907.13		☐	☐
Western Innovated Services	10388 ROCHELLE		3446	907.12		☑	☐
Westline Woodcraft	9435 Wheatlands F-G		2511	907.12		☐	☐
Westwind Mechanical	10439 Prospect M		1711	907.13		☐	☐
William's Racing Developments	10928 WHEATLANDS A		7948	907.12		☐	☐
Woodmaster Windows	10965 Hartley Q		2439	907.12		☐	☐
Ye Village Inn	8929 Carlton Hills		5813	907.13		☐	☐
Zarick, Rob A	8520 Ablette		1711	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Medium							
619 HYDROPONICS	7949 Mission Gorge		5261			☐	☐
7-Eleven 20611	9805 Prospect		5411	907.13		☐	☐
A1 Customs LLC	11491 Woodside		7532	907.12		☐	☐
A1 Performance Transmission	8501 Ablette		7537	907.13		☐	☐
Advertising Edge Inc.	9840 Prospect		2299	907.13		☐	☐
Albert Remolina	10020 Prospect		3993	907.13		☐	☐
Alberto's Mexican Food	9535 Mission Gorge A & B		5812	907.13		☐	☐
Albertsons #6727	9870 Magnolia		5411	907.12		☐	☐
ALL STAR POOL AND SPA	9358 BURNING TREE WAY		8811	907.12		☐	☑
Alloy Studios	9435 Wheatlands G		3711	907.12		☐	☐
Always Sparkling Pool & Spa	10158 Carefree		7389	907.12		☐	☑
AMY'S FINE BURGER	9862 Mission Gorge		5812	907.12		☐	☐
ANCHORS AWAY POOL SERVICE	10135 LAUREN WAY		7389	907.12		☐	☑
ANGLERS MARINE	10960 WHEATLANDS		5941	907.12		☐	☐
Angus Asphalt Inc.	9959 Prospect		1771	907.13		☐	☐
Anthony Lauren & Co., Inc.	8747 Magnolia		2511	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Aquatic Expressions	8770 Blue Boy Lane		5092	907.12		☐	☑
B & A WIRE EDM	8402 MAGNOLIA AVENUE		3549	907.13		☐	☐
B& A Wire EDM	8402 MAGNOLIA		3549	907.13		☐	☐
Ban's Auto Repair II	8625 Cuyamaca		7538	907.13		☐	☐
BC Wire Rope And Rigging Inc.	10580 Prospect 102		5051	907.12		☐	☐
BEHLMAN ENTERPRISES	11002 LARKRIDGE		3999	907.12		☑	☐
Bilcan Inc. DBA El Camino Rentals	8795 Cuyamaca		7353	907.13		☐	☐
BOURGEOIS INC	9406 VIA ZAPADOR		782	907.13		☑	☐
BP West Coast Prod. DBA Arco	9009 Carlton Hills		5541	907.12		☐	☐
Buggy World	10350 Mission Gorge		5599	907.12		☐	☐
Burger King	9714 Mission Gorge		5812	907.12		☐	☐
C DALTON FLOORING	10811 LEN		1752	907.12		☑	☐
Casa Nueva Mexican Restaurant	10757 WOODSIDE		5812	907.12		☐	☐
Cascade Drilling LP	11440 North Woodside		1799			☐	☐
CHEVRON KALASHO	9312 MISSION GORGE		5989	907.13		☐	☐
CHILI'S GRILL & BAR	9804 MISSION GORGE		5813	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
CIRCLE K/76 #2702955/KAYO Oil CK	10219 Mast		5541	907.12		☐	☐
Coffee Corner, The	9608 Carlton Hills		5812	907.12		☐	☐
Cohen's Knishes	9730 Cuyamaca A		5812	907.12		☐	☐
COLD STONE CREAMERY	9868 MISSION GORGE A		5812	907.12		☐	☐
Collision Repair Specialists	10806 Prospect		7532	907.13		☐	☐
CONEN'S POOL SERVICE	10232 Buena Vista		7389			☐	☑
Countertops 4 Less	10704 Prospect B		1799			☐	☑
COUNTRY TIME FOOD MARKET	9613 CARLTON HILLS		5812	907.12		☐	☐
COUVRETTE BUILDING SYSTEMS	8665 ARGENT D		1542	907.13		☐	☐
COYOTE SERVICES LLC	8745 Magnolia		7532	907.12		☐	☐
CROSSMAN LANDSCAPE	8617 CUYAMACA		782	907.13		☐	☐
CURTIS LAND PATROL	8652 MAGNOLIA 16		781	907.13		☐	☐
Cuyamaca Animal Hospital	8802 Cuyamaca B		742	907.12		☐	☐
D & R AUTOMOTIVE	10517 PROSPECT		7538	907.13		☐	☐
DADDY'S LAWNS AND MAINTENANCE	9009 Fanita Rancho		782			☑	☑
DAIRY QUEEN	70 TOWN CENTER A		5812	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
DAN KRIVITZ LANDSCAPE ARCHITECT	8265 PROSPECT		781	907.13		☑	☐
Daphne's Greek Café	9828 Mission Gorge B		5812	907.12		☐	☐
DCXcavation	8614 Siesta		7353	907.13		☐	☐
DEL TACO #109	9822 MAGNOLIA AVENUE		5812	907.12		☐	☐
DENNYS RESTAURANT	140 TOWN CENTER PARKWAY		5812	907.12		☐	☐
DFM POOL & SPA SERVICE	8602 Paseo Del Rey		7389			☑	☑
Dion And Sons, Inc.	11427 Woodside		5541	907.12		☐	☐
DISCOUNT TIRE CO OF SAN DIEGO	9750 MISSION GORGE		7539	907.12		☐	☐
DIY Yogurt	9292 CARLTON HILLS D		5812	907.12		☐	☐
Doan Gardeners	9550 MAVIN DRIVE		782	907.12		☑	☑
Doggie Station	8951 Carlton Hills		752	907.12		☐	☐
DOGGIE-DOO DISPOSAL SERVICE	9717 RAMSGATE WAY		4959	907.12		☑	☐
Domo Sushi	9625 Mission Gorge		5812	907.13		☐	☐
Don Lucio's Taco Shop	9740 Mission Gorge D		5812	907.12		☐	☐
Don's Handy Service	9751 Vomac		782			☑	☑
Dragon Machine Shop	9435 Wheatlands G		3599			☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
EAST COUNTY FEED AND SUPPLY	10845 WOODSIDE		5999	907.12		☐	☐
Eccentric International Chefs	8925 CARLTON HILLS BOULEVARD		5812	907.13		☐	☐
EINSTEIN BROS BAGELS #3325	9872 MISSION GORGE		5812	907.12		☐	☐
El Ranchito Taco Shop	9225 Carlton Hills 21		5812	907.12		☐	☐
Eliminator Motorsports	11418 Woodside		5012	907.12		☐	☐
Emma's Mexican Food	8781 Cuyamaca L		5812	907.13		☐	☐
Enterprise Rent-A-Car	10330 Mission Gorge		7514	907.12		☐	☐
Essential Grooming	9225 Carlton Hills 7		752	907.12		☐	☐
EXTRA SPACE STORAGE	10115 MISSION GORGE		4225	907.12		☐	☐
Factory Transmissions	10806 Prospect		7537	907.13		☐	☐
Filippi'S Pizza Grotto	10767 Woodside		5812	907.12		☐	☐
FOOD 4 LESS #349	9430 CUYAMACA		5411	907.12		☐	☐
Fortina Chocolate	172 River Rock		2066	907.12		☑	☐
Four Season Gardening & Landscaping	9328 ST ANDREWS DRIVE		782	907.12		☑	☐
Four Wheel Direct	10731 Woodside		7538	907.12		☐	☐
Fox's Pizza Den	8011 Mission Gorge		5812	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Friendly Grounds Inc.	9225 Carlton Hills		5812	907.12		☐	☐
Full Throttle Powersports	9143 MISSION GORGE		7948	907.12		☐	☐
FUN IN THE SUN POOLS	10340 SANTANA STREET		7699	907.12		☑	☐
Furry Friends Resort	8802 Cuyamaca A		752	907.12		☐	☐
G COLE LABORING	9345 CADORETTE		1521	907.12		☑	☐
G E LUDWIG POOLS	9944 CARLTON PLACE PLACE		8811	907.12		☑	☐
GENSCHAW'S TREE SERVICE	10744 SAYERS		782	907.12		☑	☐
GEORGES SALOON	9179 MISSION GORGE		5813	907.12		☐	☐
GIANT NEW YORK PIZZA	8933 CARLTON HILLS		5812	907.13		☐	☐
GIANT PIZZA KING #10	9614 CARLTON HILLS		5812	907.12		☐	☐
GILES CONSTRUCTION CO	10131 ASHDALE		1511	907.12		☑	☐
GO GET YOGURT	9802 MAGNOLIA 1		5812	907.12		☐	☐
GOLDEN SPOON FROZEN YOGOURT	9640 MISSION GORGE C		5812	907.12		☐	☐
GRANNY GROZA'S HANDMADE ORIG.	10666 BRAVERMAN		5812	907.12		☑	☐
Grindz Coffee Co.	9608 Carlton Hills		5812	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
GTM Discount General Store	8967 CARLTON HILLS A & B		5411	907.12		☐	☐
HAMMER & NAILS HANDYMAN	9121 INVERNESS		1799	907.12		☑	☐
HCM Customs	11421 Woodside B		3714	907.12		☐	☐
Healthy Future 101	8631 CLIFFORD HEIGHTS		5411	907.12		☑	☐
HENRY'S FARMER'S MARKET	9361 MISSION GORGE		5411	907.12		☐	☐
HI-C-ERA	11541 WOODSIDE D		5812	907.12		☐	☐
HOMETOWN BUFFET #720	275 TOWN CENTER		5812	907.12		☐	☐
HONEY DONUTS	10718 WOODSIDE AVENUE		5812	907.12		☐	☐
INTER VALLEY POOL SUPPLY, INC.	8656 CUYAMACA STREET		7389	907.13		☐	☐
INTERNATIONAL AUTOREPAIR	10031 Prospect D		7538	907.13		☐	☐
INTERNATIONAL HOUSE OF PANCAKES	9708 MISSION GORGE		5812	907.12		☐	☐
Italia Ristorante	8918 Carlton Hills		5812	907.12		☐	☐
J S Bluing and Metal Refinishing	10416 LEN COURT		2899	907.12		☑	☐
J&M Mobile Detailing	9565 Tuthill		7542			☑	☑
JACK IN THE BOX #3056	8500 MAGNOLIA		5812	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Jamba Juice Company #517	9828 MISSION GORGE		5812	907.12		☐	☐
JAMES A ZIEGLER	4055 CALLE DEL VERDE		4215	907.12		☑	☐
JAMES F. AUSTIN CONSTRUCTION	9540 PATHWAY 103		1521	907.13		☐	☐
Janet's Café & Deli	9225 Carlton Hills 20		5812	907.12		☐	☐
JERRY'S GOURMET JERKY	9950 MAGNOLIA AVENUE		2099	907.12		☑	☐
JIMMYS FAMILY RESTAURANT	9635 MISSION GORGE		5812	907.12		☐	☐
JIM'S MAINTENANCE	8015 WOODPECKER WAY			907.12		☑	☐
JP'S PERSONAL CHEF SERVICE	445 WHISPERING WILLOW F		5812	907.12		☑	☐
JR'S Jack Of All Trades	9440 Wheatlands		7699	907.12		☐	☐
Justin Herrera Carpet Cleaning	8063 Poplin		7217			☐	☑
KFC CORPORATION	8890 CUYAMACA		5812	907.12		☐	☐
Kleinsmith Stair & Trim Inc.	9435 Wheatlands H		1751	907.12		☐	☑
KW Cages Advanced Design	9565 Pathway		3496	907.13		☐	☐
L Seven 'n' Company, Inc.	8775 RAILROAD		1711	907.13		☐	☐
L&L Hawaiian BBQ	9621 Mission Gorge		5812	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
LA COSTA LANDSCAPE MAINT CO	10320 PROSPECT AVENUE		181	907.13		☑	☐
La Salsa	9828 Mission Gorge		5812	907.12		☐	☐
Lakes Market and Deli	9266 CARLTON OAKS		5921	907.12		☐	☐
LHV Power Corporation	10221 Buena Vista		3677	907.12		☐	☐
LITTLE CAESER'S PIZZA	9720 MISSION GORGE		5812	907.12		☐	☐
Loftin GTS	8500 Ablette		3089	907.13		☐	☐
LOS NACHOS TACO SHOP	9740 CUYAMACA C		5812	907.12		☐	☐
Lowland Services	10220 PRINCE JED		4953	907.12		☑	☐
LUCKY CHINESE FAST FOOD	9740 MISSION GORGE B		5812	907.12		☐	☐
MANUEL AND SON	10342 PARK		782	907.12		☐	☐
MARINE LIFE AQUATICS	11061 LEA TERRACE		1799			☑	☑
MAST BLVD PET CARE CENTER	9740 MAGNOLIA		742	907.12		☐	☐
MCDONALDS #2441	8876 CUYAMACA		5812	907.12		☐	☐
MCDONALD'S #29484	170 TOWN CENTER		5812	907.12		☐	☐
MEINEKE 1711	9551 Mission Gorge B		7538	907.12		☐	☐
MELLER LANDSCAPE INC.	10925 Wheatlands L		782			☐	☑

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
MICHAEL WAYNE FARRIL CONSTRUCTION CO	8758 BUSHY HILL		1521	907.12		☐	☐
MICHAELS GRILL	9621 MISSION GORGE 5		5812	907.12		☐	☐
Mikes Auto Body	10737 Woodside		7538	907.12		☐	☐
MIMI'S CAFÉ #86	9812 MISSION GORGE		5812	907.12		☐	☐
MISSION GORGE CARWASH	7751 MISSION GORGE		7542	907.12		☐	☐
Mission Gorge Market	7757 Mission Gorge		5812	907.12		☐	☐
MTS Sheet Metal & Fabrication Inc.	8400 Magnolia E		3444	907.12		☐	☐
Mueller's Machine Tool rebuilders	10945 Magnolia		7699	907.12		☑	☐
Nam Long Restaurants	9828 Magnolia		5812	907.12		☐	☐
O.R.G. RESTAURANT	9816 MISSION		5812	907.12		☐	☐
Oggi's Pizza & Brewing Co.	9828 Mission Gorge		5812	907.12		☐	☐
OISHII JAPANESE-THAI RESTAURANT	10251 MAST		5812	907.12		☐	☐
Okawa Steak House And Sushi	9720 Mission Gorge A		5812	907.12		☐	☐
OLIVE GARDEN	9800 MISSION GORGE		5812	907.12		☐	☐
OMELETTE FACTORY, THE	7941 MISSION GORGE		5812	907.12		☐	☐
ONE STOP AUTO TECH	9605 CARLTON HILLS BOULEVARD		7539	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Osso Miller Pacific	8400 MAGNOLIA G		1521	907.13		☐	☐
PANDA COUNTRY RESTAURANT	9621 MISSION GORGE 104		5812	907.12		☐	☐
PANDA EXPRESS #739	9862 MISSION GORGE		5812	907.12		☐	☐
PANDA GARDEN BUFFET	70 TOWN CENTER C		5812	907.12		☐	☐
PAPA JOHN'S PIZZA #2255	9490 CUYAMACA		5812	907.12		☐	☐
PAT MARTIN CONSTRUCTION	9743 PEBBLE BEACH		1521	907.12		☑	☐
PAX WEST IMPORTS	7735 MISSION GORGE 59		181	907.12		☑	☐
PERPETUAL TREE CARE	9376 STARCREST		782	907.13		☑	☐
PETE HURTUBISE CONSTRUCTION	9464 PIKE		1521	907.12		☑	☐
PINNACLE PEAK STEAK HOUSE	7927 MISSION GORGE		5812	907.12		☐	☐
Pizza Hut / Wing Street	9420 Cuyamaca 100		5812	907.12		☐	☐
Precision Interiors	10612 Prospect 102		1742	907.13		☐	☐
PRIME CUT MOWING & EDGING	8957 NEW SEABURY DRIVE		782	907.12		☑	☑
PROFORMANCE ENGINEERING	10744 Rockville		7538	907.12		☐	☐
PROSCAPE	9440 LETICIA		782	907.12		☑	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
QUIZNO'S CLASSIC SUBS	9862 MISSION GORGE 3F		5812	907.12		☐	☐
Qwik Korner	9035 Mission Gorge		5541	907.12		☐	☐
R J A MASONRY	10057 PEBBLE BEACH		1521	907.12		☑	☐
Ranch House Restaurant	11510 Woodside #F		5812	907.12		☐	☐
Rodder's Choice	9217 Security		7532	907.12		☐	☐
Roger's Biomedical Solutions LLC	11316 Woodside Suite D		7629	907.12		☐	☐
ROUND TABLE PIZZA	9824 MAGNOLIA		5812	907.12		☐	☐
Rubber Ducky Pool Company	10201 Woodpark		7389			☐	☐
Rubios Fresh Mexican Grill	130 Town Center		5812	907.12		☐	☐
RV Discount Center - Santee	8837 Magnolia		5561	907.12		☐	☐
RV EXPERT MOBILE SERVICE	208 PARKSIDE PLACE		7699	907.12		☐	☑
San Diego Custom Iron	8733 Magnolia 134		1799			☐	☑
SANTEE DONUTS	9740 CUYAMACA J		5812	907.12		☐	☐
Santee Market	11007 WOODSIDE AVENUE		5411	907.12		☐	☐
Santee Mini Market	8781 CUYAMACA I		5921	907.13		☐	☐
SANTEE MOTORCYCLE SUPPLY	9805 PROSPECT E		5571	907.13		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
SANTEE SMOKIN' JOE'S BBQ	9414 Kaschube		5963			☑	☑
SHOT BLASTERS INC.	9962 Prospect B		1799			☐	☐
SIGN AGE IDENTITY SYSTEMS	9962 PROSPECT J & K		1611	907.13		☐	☐
Smith Backflow	10113 Waynecrest		3432			☑	☐
Smoking Joe's Intl. BarBQue	205 Town Center A		5812	907.12		☐	☐
Smoothie King	9802 MAGNOLIA #2		5812	907.12		☐	☐
Sonic Car Wash	9015 Mission Gorge		7542	907.12		☐	☐
SORIANA'S MEXICAN FOOD	9470 CUYAMACA #130		5812	907.12		☐	☐
Southridge Builders Inc.	9540 Pathway		1521	907.13		☐	☐
Starbucks Coffee #14489	9325 Mission Gorge		5812	907.13		☐	☐
Starbucks Coffee #5912	9802 MAGNOLIA		5812	907.12		☐	☐
Starbucks Coffee #6636	9868 MISSION GORGE B		5812	907.12		☐	☐
Subway Sandwiches	9890 Magnolia		5812	907.12		☐	☐
Subway Sandwiches	7757 Mission Gorge		5812	907.12		☐	☐
Subway Sandwiches	50 Town Center D		5812	907.12		☐	☐
Subway Sandwiches	10538 Mission Gorge 130		5812	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
SUPERIOR ASPHALT	9211 SECURITY		1611	907.12		☐	☐
TACO BELL #9417	9825 MISSION GORGE		5812	907.12		☐	☐
Taco Loco	8667 Fanita		5812	907.12		☐	☐
Target Stores T-1485	9846 MISSION GORGE		5411	907.12		☐	☐
TASTY DONUTS	9802 MAGNOLIA 3		5812	907.12		☐	☐
TEAL PIPE AND SUPPLY, INC.	9489 MISSION PARK		5074	907.12		☐	☐
THE HAY GUY	10932 GRAND FORK		782	907.12		☑	☐
THE RED LOTUS	9888 Magnolia		5812	907.12		☐	☐
The Sandwich Bags	10769 WOODSIDE 108		5812	907.12		☐	☐
TOP NOTCH LANDSCAPE	8613 MATTERHORN DRIVE		1799	907.12		☑	☑
Tornell Motors	10554 Prospect		5521			☐	☐
TOTAL ELECTRONIC ASSEMBLY	9005 INVERNESS		7629	907.12		☑	☐
TOWER GLASS INC	9570 PATHWAY A		1793	907.13		☐	☐
Toyota Certified Of Santee	8891 Fanita		7538	907.12		☐	☐
TOYOTALIFT INC	11446 WOODSIDE		7353	907.12		☐	☐
Truly Nolen	8400 Magnolia M & N		7342	907.13		☐	☐
VIP Auto Sales	9207 Mission Gorge		5521	907.12		☐	☐
Vons #1897	9643 Mission Gorge		5411	907.12		☐	☐

Facility Name:	Address:	TTWQ:	SIC Code:	HSA:	WDID:	Home Base Business? :	Mobile Business? :
Wal-Mart Stores #1917	170 TOWN CENTER		5411	907.12		☐	☐
WC'S Wagon Wheel	8861 Magnolia		5812	907.12		☐	☐
Webb Designs Inc.	9920 Prospect 102		2591	907.13		☐	☐
Wendy's	9655 Mission Gorge		5812	907.12		☐	☐
Wienerschnitzel #424	9650 Mission Gorge		5812	907.12		☐	☐
William Capehart-Gidney Plumbing	9824 Shirley Gardens		1711			☑	☐
Woodruffs Trenching Inc	9735 Prospect		1623	907.13		☐	☐
Woodside Deli	10925 Hartley B		5812	907.12		☐	☐
Yogurt World	9331 Mission Gorge 110		5812	907.13		☐	☐

APPENDIX B SUMMARY OF DOCUMENTED COMPLAINTS

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
1	7/2/2009	Residential	Automotive Products	Northeast of Summit Avenue	Complaint about a motorhome leaking onto parking lot. Left courtesy notice directing owner to remove spill. On reinspection spill had been removed and motorhome was no longer there.
2	7/13/2009	Residential	Undetermined Discharge	10225 Molino Rd	Complaint about neighbor who leaves full trash bags on back fence near channel. Confirmed that this was occurring and code compliance sent a notice. Verified corrective action was completed.
3	7/20/2009	Residential	Power Washing	9713 Abbeyfield Rd	Complaint about remodel at this address. Specifically washing down stucco and other construction material into gutter. Observed residue and power washing equipment. Spoke to owner and directed him to remove the residue, which was done.
4	7/22/2009	Residential	Sediment	10363 Molino Rd	Complaint about discharge of swimming pool water into channel at rear of property. Discharge resulted in erosion of bank and discharge of sediment into channel. Property owner given a courtesy notice and told to remove it, which he did.
5	7/23/2009	Residential	Automotive Products	9529 Tuthill Wy	Call about a man washing an auto engine on his driveway. Visited site immediately. Activity had ceased. Resident said that he was just washing some dust from the inside of his car, not an engine. Gave him a courtesy notice advising him that it was a violation to allow discharges from

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
					engine cleaning to street.
6	7/31/2009	Residential	Pet Waste	9952 El Nopal Rd	City Staff observed water in gutter. Spoke to resident at origin. Had rinsed out pet boxes, as one had had an accident. Explained why this was unacceptable, described an alternative method of disposing the water and provided a courtesy notice.
7	8/10/2009	Residential	Construction Material	9644 Cecilwood Dr	Complaint about resident washing out concrete and colored concrete into gutter. City staff immediately went out to the address and verified that it was not occurring. However there was residue of colored concrete material downgradient of the address. A courtesy notice was left at the address explaining that this was an illegal discharge. Public works were contacted to ensure that the minor amount of debris remaining was removed, which it was.
8	8/18/2009	Residential	Oil	9960 El Nopal Rd	Complaint about vehicles parked on driveway and street. Some vehicles claimed to be inoperable. Some reported to be leaking oil onto the street. Visited location and spoke to resident about repairing any leaks and cleaning up leaks using absorbent. On reinspection treatment of these leaks was observed.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
9	08/20/09	Commercial	Sediment	10023 Prospect Avenue	Concern expressed by City staff member regarding dust at this location. Facility operator advised of concern and requested to add more gravel to parking lot. City staff observed addition of more gravel.
10	8/24/2009	Commercial	Power Washing	10122 Buena Vista Ave	Call to public works from resident on Buena Vista Avenue concerned about powerwashing of eastern drive by Waste Management's contractor (Jaybright Environmental). Resident had approached contractor, but was unresponsive to concerns. Water running into storm drain. Visited property manager and contacted Jay Bright. Obtained documentation of training on spill clean up procedures from Waste Management and Jaybright Environmental.
11	8/28/10	Residential	Oil	10429 Prospect	Complaint from sheriff regarding RV leaking sewage onto the right-of-way. RV was immediately moved and public works removed the spill.
12	08/31/09	Residential	Swimming pool maintenance	Brelco Road and Elliott Lane	Complaint regarding discharge of swimming pool water Confirmed discharge of diatomaceous earth. Called property manager and sent NOV.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
13	9/3/2009	Residential	Landscaping Activities	7213 Ocotillo St	Observed stockpile of soil/mulch on driveway. Left courtesy notice directing homeowner to remove or cover. Sweep after removal. This was verified during a follow up inspection.
14	9/3/2009	Residential	Construction Material	6012 Cala Lily	Observed stockpile of gravel on street. Left courtesy notice with resident directing them to remove it and to sweep up any residue. Notified code compliance too. Stockpile was removed.
15	9/3/10	Commercial	Hosing Down	9915 Magnolia Ave	Observed contractor hosing down at front of school. Contacted manager to advise him of incident and to ensure that contractors use BMPS.
16	9/4/2009	Commercial	Hosing Down	8501 Ablette Rd	Complaint about business owner washing his car down. Photos on cell phone shown, but not conclusively linking person, location, violation. Visited location. No fresh oil spills observed. Business owner said that he cleaned his windshield, should not have caused discharge.
17	09/11/10	Resident	Sewage	Corner of Heatherdale and Lea Terrace.	Complaint about RV discharging into "hole in sidewalk" at corner of Heatherdale and Lea Terrace. Hole was sewer cleanout in drive. No illicit connection to storm drain. Notified Padre Dam and Code Compliance.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
18	9/16/2009	Residential	Grey Water	9228 Ruffin Rd	Complaint from Charlie Setter (Padre Dam) regarding this address. He had already talked to the residents and apparently the sheriff had stopped by the day before regarding the discharge of washing machine water to the street. Immediately visited site, told the resident that the discharge from the washing machine needed to be redirected to sanitary sewer and the discharge on the street needed to be cleaned up. Reinspected site to confirm that this was done.
19	9/17/2009	Commercial	Hosing Down	8795 Cuyamaca St	Observed water running off El Camino Rental property. Observed tank of water discharging through hose at back of yard. Spoke to manager, who said that they had been dealing with a swarm of bees in their equipment (bees had been observed). Explained that this was unacceptable and asked manager to switch off water, which he did.
20	9/17/2009	Residential	Swimming Pool Maintenance	9236 Ruffin Rd	City staff observed discharge of diatomaceous earth from swimming pool maintenance at this property. Spoke to resident and left a courtesy notice requesting that the debris be swept up. This was done.
21	9/25/09	Construction	Stored groundwater	Carlton Hills near Willowgrove Ave	Complaint from City of San Diego Industrial Wastewater Department.

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Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
					Release of pumped ground water during sewer line replacement by County of San Diego. Went to site after speaking to Don Meier of Padre Dam. Float problem in baker tank caused overflow. Spoke to foreman who was aware of stormwater regulations. Reminded him of need to implement BMPs, particularly by October 1st. He could not say if water reached storm drain, or how much, because he was focussed on the tank. Inspected path to storm drain. Small amount of sediment observed. Called Richard Diaz at the County of San Diego. Requested that curb and gutter and catch basin be cleaned. Said that BMPs (covering stockpiles, sweeping etc) needed at site. County staff responded to ensure that corrective action was completed.
22	9/29/2009	Commercial	Automotive Detailing (Mobile)	10806 Prospect Ave #5	Call regarding a number of code compliance issues, including illegal powerwashing. Code compliance officer immediately mobilized and stopped discharge. New business owner subsequently installed car washing facility at site, which was inspected by Stormwater staff and deemed acceptable.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
23	10/12/2009	Residential	Construction Material	7249 Ocotillo St	Complaint about discharge from property. Visited location and spoke to new property owner. Had landscaping and swimming pool contractor working at property. Will speak to contractors, and ensure that materials are covered before rain. This was done.
24	10/26/2009	Residential	Paint	8684 Magnolia Ave	Complaint that individual was rinsing paint into storm drain. Immediately mobilized to location. No evidence of recent rinsing (wet patches in storm drain etc). Spoke to resident and explained appropriate method to dispose of paint rinsate and how storm drains are connected to the river.
25	11/05/09	Commercial	Auto Detailing	10601/10701 Magnolia Ave	Complaint regarding illegal carwashing in parking lot. Activity stopped.
26	11/10/2009	Residential	Sediment	9313 Galston Dr	Complaint about sandblasting of wrought iron fence at this location from various neighbors. Left courtesy notice. Reinspected. Had swept sediment on Carlton Hills side into landscaping, not removed on Galston Drive. Sent notice of violation and final notice of violation. Sediment was removed after final notice of violation had been sent.

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Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
27	11/30/2009	Residential	Power Washing	7108 Mariposa St	Complaint about contractors working at this address. Went to site, observed Artisan Landscaping employees hosing down hardscape. They stopped and cleaned up residue. Spoke to business owner who committed to using proper BMPs in future.
28	12/3/2009	Residential	Concrete	8701 Mesa Rd	Complaint via County website about construction crew working at the mobile home park and allowing concrete slurry to drain to storm drain. Visited location. Spoke with manager (Carlos Camacho 619 449-3300). He agreed to get it cleaned up without allowing it to be discharged into the storm drain system.
29	12/5/2009	Commercial	Hosing Down	11495 Woodside Ave	Contractors observed washing down the driveway at this location before 7 am on a Saturday morning. Site owner checked with contractor (Hamman) who reported that they had used BMPs.
30	12/8/2009	Residential	Landscaping Activities	9250 Bird St	Observed large stockpile of soil at front of property. Spoke to resident who said that it was needed for the demolition of a pool. Advised him that BMPs were needed. Left a courtesy notice. Stockpiles were removed.
31	12/8/2009	Residential	Hosing Down	9260 Shadow Hill Rd	Observed resident hosing down sidewalk after rain. Told him to stop, provided him with a courtesy notice and explained why this was unacceptable.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
32	12/08/10	Residential	Sediment	8951 Diamondback Place	Complaint from resident about neighbor's yards washing into his residence. Cross-boundary dispute which neighbors need to resolve between them, however issue seemed to originate from excessive fire prevention measures. Contacted neighbors about their fire prevention activities and educated them on a more appropriate way to do it.
33	12/10/2009	Residential	Power Washing	9124 Shadow Hill Rd	Call about oily water running down Bird Street. Followed water up to this address. Person at residence said that there had been a powerwashing crew cleaning up after the storm. Left a courtesy notice.
34	12/14/09	Residential	Sediment	Mesa Road	Complaint about sediment on sidewalk. Investigated location and identified minor amount on sidewalk. Advised public works of issue as it appeared to originate from an area for which the City is responsible.
35	12/23/2009	Residential	Hosing Down	10384 Seth Way	Complaint about kids washing down an engine on a car in lot 160. Inspector immediately mobilized. Minor amount of water generated washing off after changing a tire. Water did not discharge to storm drain. City staff provided a courtesy notice and educated those present on how this type of discharge could affect water quality and how BMPs

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
					should be used when undertaking this type of activity.
36	12/29/10	Residential	Gravel	9234 Carita Road	Complaint about gravel deposited outside this address, claim that it was from a neighbor, likely mobilized from various locations during rain. City staff checked location and concluded that it did not come from neighbor. Notified Public Works that extra street sweeping efforts were needed in that area when it was swept that week.
37	01/04/10	Commercial	Oil	Highland Park	Call from resident regarding ongoing complaint regarding waste management trucks. Photographs provided show minor spotting. Advised City contractor manager on need to avoid discharges to the street by using well-maintained vehicles. City contract manager to continue to try to resolve the situation by monitoring service at this location and working with contractor.
38	01/06/10	Commercial	Auto Detailing	Pathway St	City staff observed illegal auto-detailing in industrial area. Stopped activities and directed operator to clean up material. Educated operator on what BMPs are needed for this activity and why.

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Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
39	1/14/2010	Residential	Undetermined Discharge	8544 Rumson Dr	Complaint regarding open code compliance case regarding swimming pool water being discharged through trash stored at site. Visited site, small amount of packaging on ground in front of apparent discharge pipe, some minor sediment further down the drive. Left courtesy notice explaining that swimming pool discharges should not include sediment or be discharged through trash. Follow up inspections were included as part of the code compliance case.
40	01/15/10	Residential	Soil	9456 Cathywood	Neighbor inquired about permits for remodel and stated that there was soil stockpiled in the street. Immediately visited site. Resident had talked to building and engineering counter officials to verify whether permits were needed. No soil in street. Educated resident on preparation for rains next week to prevent any discharges.
41	01/22/10	Residential	Soil	8655 Graves Ave	Complaint about soil washing from adjacent property onto this address. City engineering and stormwater staff mobilized to site to assess situation. Discharge appeared to occur due to high volume of recent rain, resulting in the bank of a channel being cut and soil being discharged. City notified upgradient property owner of issue and provided

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
					contact information to property management company at 8655 Graves Avenue. Property management company educated on need to prevent discharges of soil to storm drain. Multiple inspections were conducted and a courtesy notice issued to ensure that the property management company complied with this requirement.
42	02/16/10	Resident	Potable water	9753 Settle	Complaint about water running across sidewalk. Investigated and concluded that it was likely a leaking lateral pipe. Referred complaint to Padre Dam.
43	02/24/10	Commercial	Powerwashing	Trolley Square	Inquiry regarding powerwashing activities near Jamba Juice (no specific discharge to storm drain observed). Contacted property manager who assured City staff member that proper powerwashing procedures were followed. Referred City staff to superintendent so that powerwashing activities could be observed. These procedures were deemed satisfactory and complainant was notified of outcome of inquiry.
44	2/5/2010	Residential	Sediment	7213 Ocotillo St	Complaint regarding stockpiles of soil on driveway. Spoke to tenant, who said that soil should have been removed. Agreed to have the soil covered or removed. City verified that this had occurred.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
45	2/15/2010	Residential	Hosing Down	10121 Woodrose Ave	Complaint about hosing down RV and desert vehicles. Stench of gasoline and rainbow sheen on water. Neighbor approached resident who was unresponsive to the complaint. Went to site and left courtesy notice at residence, no evidence of discharge during site visit.
46	2/17/2010	Residential	Hosing Down	9115 Canyon Park Terrace	City staff observed water running down the curb and gutter. Traced it back to this address. Resident rinsed off bike in sideyard and water drained to street. Notified resident that discharge should be avoided and that debris on driveway and sidewalk should be swept up. Resident agreed to do this, City verified that this was done.
47	02/19/10	Construction	Sediment	North of Wenatchee	Complaint routed from County regarding erosion downgradient of the Sky Ranch development. Area investigated and complaint forwarded on to Lennar (developer at Sky Ranch). Developer met with resident and implemented corrective action. Call received from another County employee on 02/25/10 relating to this area.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
48	02/25/10	Resident	Sediment	Mariposa Street	Complaint regarding residents with insufficient erosion prevention and sediment control measures. Incorrect addresses provided, however City staff left courtesy notices where appropriate. On reinspection, it was observed that fiber rolls had been installed where needed.
49	2/26/2010	Residential	Landscaping Activities	5156 Iris St	Observed what appeared to be pool construction activities at rear of property. Excavated soil being thrown on slope that drains down hillside. Rain imminent. Lennar also forwarded complaint regarding materials stored on driveway. Left a courtesy notice with the resident advising them of corrections that needed to be made before rain. Corrections were made.
50	2/26/2010	Residential	Construction Material	7105 Mariposa St	Most of materials on driveway covered. Small area that needed stabilization (less than 3 feet wide). Left courtesy notice. Spoke to homeowner who agreed to make corrections before rain.
51	3/23/2010	Residential	Swimming Pool Maintenance	10015 Beck Dr	Complaint about discharge to street and storm drain system. Visited location, explained to resident why this was an issue. She agreed to remove the residue (likely diatomaceous earth) from the street. City verified that this residue was

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
					removed.
52	03/23/10	Residential	Waste oil	8727 Granite House Lane	Complaint referred to code complaint regarding storage of oil and water in 30-40 gallon containers that could spill into the stormdrain. Code compliance referred the complainant to County Department of Environmental Health. Stormwater staff immediately visited location, but could not find containers meeting the description at the address.
53	04/21/10	Commercial	Sediment	11385 Woodside Avenue	Complaint from City director regarding a property used for truck parking that did not have any BMPs and was tracking sediment onto Woodside Avenue. Sent a courtesy notice to the property owner who installed BMPs to prevent tracking and removed the sediment at the property entrance.
54	4/5/2010	Residential	Sediment	9627 Cecilwood Dr	Complaint about landscaping work with no BMPs. Visited location, spoke to resident, told them to apply BMPs and to sweep their discharge from street/sidewalk, which they agreed to do.
55	4/22/10	Construction	Sediment	9126 Shadow Hill Road	Complaint regarding sediment tracking from construction site. Site inspected and superintendent directed to remove the small amount of soil on driveway.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
56	04/29/10	Residential	Construction Waste	8701 Mesa Road	Complaint referred from County regarding construction waste being discharged to the storm drain. City staff visited site, confirmed observations and wrote a notice to the property manager requiring that the material be cleaned up. A similar complaint had been made during December 2009, therefore a NOV was sent to the property manager advising him of the multiple complaints and requiring that staff be trained in relevant stormwater BMPS. The training was completed and the material removed.
57	05/05/10	Construction	Construction Waste	Intersection of Graves and Prospect Avenues	City staff observed debris (concrete/asphalt) on property. Unlikely to enter storm drain system, but inconsistent with City ordinance. Sent courtesy notice to property owner advising them to remove material or use BMPs.
59	5/11/2010	Residential	Power Washing	9573 Mast Blvd	City staff observed someone hosing the sidewalk. Stopped, spoke to property owner who was hosing off grass clippings from his lawn. Explained why this is illegal and asked him to sweep it up. The resident agreed to do so.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
60	5/12/2010	Residential	Swimming Pool Maintenance	9464 Pryor Dr	Complaint from residents on private road adjacent to this address. Strong smell of chemicals and white material in discharge. Contractor had left. Property owner called and agreed to clean up material using sweeping or mopping. Sent NOVs to property owner and contractor requiring them to provide evidence of training in stormwater compliance. Notified City of Escondido of incident, as contractor based there.
61	5/19/10	Construction	Irrigation Runoff	9126 Shadow Hill Road	Complaint regarding running sprinklers. There had been a break on a sprinkler head which had been repaired when it was discovered. No evidence of a discharge (such as sediment) observed. Complaint appears to be result of neighborhood dispute.
62	5/21/2010	Residential	Paint	9425 Mandeville Rd	Complaint routed from County of San Diego. Visited location, spoke to resident who explained that they were emptying their jacuzzi and accidentally knocked over a can of paint. They tried to clean up the spill at the time. Directed homeowner to clean up the residue, which they did.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
63	5/26/2010	Residential	Landscaping Activities	10152 Holborn St	Complaint from anonymous caller regarding washing of concrete into gutter. Visited site, met contractor Brewer's Concrete, contractor's license number 669988, telephone (858) 271-4091. Looked like discharge was mostly soil. Contractor agreed to clean up residue, which they did.
64	5/28/2010	Residential	Landscaping Activities	5519 Claret St	Complaint regarding stockpiles of gravel and soil associated with landscaping being stored in the street. City staff visited the location and spoke to occupant requesting that the stockpiles be removed prior to the end of day. Revisited to confirm that this was done.
65	5/31/2010	Residential	Construction Material	17 Via Montisi	Complaint about person wet-cutting tile in garage and washing into storm drain. Visited site, educated occupant. He started removing debris immediately.
66	6/16/2010	Commercial	Grey Water	9155 Mission Gorge Rd	Call regarding a County DEH inspection. Concerns about grease trap and mop bucket water disposal. Visited location. Confirmed that mop bucket water was disposed of to sink. Grease trap overtopping with liquid, but was being corrected that day. Referred concern relating to grease trap to Padre Dam FOG inspector.
67	6/24/2010	Residential	Sediment	10528 Santana St	Stockpiles on street. Inspector directed them to remove them and sweep them up.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
					This was done.
68	6/27/2010	Residential	Automotive Products	10504 Santana St	Complaint from neighbors about oil spill and smell. Code compliance and stormwater staff visited the location and left a courtesy notice with resident advising them to use absorbent on minimal spill. City reinspected to verify that this was done. Property subject of ongoing dispute with neighbors.

APPENDIX C JURMP ANNUAL REPORT REQUIREMENTS CHECKLIST

Appendix C
JURMP Annual Report Requirements Checklist

Development Planning Component

Permit Annual Reporting Requirement—Section J.3.a.(3).(a)	Location in Report
i. A description of any amendments to the General Plan, the environmental review process, development project approval processes, or development project requirements.	2.2, 2.3
ii. Confirmation that all development projects were required to undergo the Copermittee's urban runoff approval process and meet the applicable project requirements, including a description of how this information was tracked.	2.4.4
iii. A listing of the development projects to which SUSMP requirements were applied.	Table 2-1
iv. Confirmation that all applicable SUSMP BMP requirements were applied to all priority development projects, including a description of how this information was tracked.	2.4.4.2
v. At least one example of a priority development project that was conditioned to meet SUSMP requirements and a description of the required BMPs.	2.4.4.2
vi. A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.	2.4.4.2
vii. An updated treatment control BMP inventory.	Appendix A (inventory)
viii. The number of treatment control BMPs inspected, including a summary of inspection results and findings.	2.4.4.3, Table 2-2, and 2-3
ix. A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.	2.4.4.3
x. Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.	2.4.4.2
xi. A listing of any projects which received a SUSMP waiver.	2.4.4.2
xii. A description of implementation of any SUSMP waiver mitigation program.	2.4.4.2
xiii. A description of Hydromodification Management Plan (HMP) development collaboration and participation.	2.4.4.2
xiv. A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.	2.4.4.2
xv. A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.	2.4.4.2

Development Planning Component

Permit Annual Reporting Requirement—Section J.3.a.(3).(a)	**Location in Report**
xvi. A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.	2.4.4.2
xvii. The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	2.4.4.3, Table 2-3
xviii. A description of notable activities conducted to manage urban runoff from development projects.	2.1.1

Construction

Permit Annual Reporting Requirement—Section J.3.a.(3).(b)	**Location in Report**
i. Confirmation that all construction sites were required to undergo the Copermittee's construction urban runoff approval process and meet the applicable construction requirements, including a description of how this information was tracked.	3.5
ii. Confirmation that a regularly updated construction site inventory was maintained, including a description of how the inventory was managed.	3.2
iii. A description of modifications made to the construction and grading ordinances and approval processes.	3.3
iv. Confirmation that the designated BMPs were implemented, or required to be implemented, for all construction sites.	3.5.2
v. Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.	3.5.2
vi. A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.	3.5
vii. For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.	3.5, Appendix A (inventory)
viii. A description of the general results of the inspections.	3.5
ix. Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	3.5
x. The number of violations and enforcement actions (including types) taken for construction sites, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	3.5 Table 3-1
xi. A description of notable activities conducted to manage urban runoff from construction sites.	3.1.1

Municipal

Permit Annual Reporting Requirement—Section J.3.a.(3).(c)	**Location in Report**
i. Any updates to the municipal inventory and prioritization.	Appendix A (inventory)
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	4.2.4, 4.3.4, 4.4.4, 4.5.4, 4.6.4, 4.7.4
iii. A description of inspections and maintenance conducted for municipal treatment controls.	2.4.4.3
iv. Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	4.4.4
v. Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	4.4.4
vi. Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.	4.4.4
vii. Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.	4.4.4
viii. Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding.	(N/A for 09-10)
ix. Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	4.2.3
x. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3.4 Table 4-1
xi. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3.4 Table 4-1
xii. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3.4 Table 4-1
xiii. Identification of the total distance of curb-miles swept.	4.3.4

Municipal

Permit Annual Reporting Requirement—Section J.3.a.(3).(c)	**Location in Report**
xiv. Identification of the number of municipal parking lots, the number of municipal parking lots swept, and the frequency of sweeping.	4.3.4
xv. Amount of material (tons) collected from street and parking lot sweeping.	4.3.4
xvi. A description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4	4.5.4
xvii. Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of the inspections.	4.2.4, 4.3.4
xviii. A description of the general results of the inspections.	4.2.4
xix. Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	4.2.4
xx. The number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	4.2.4
xxi. A description of notable activities conducted to manage urban runoff from municipal areas and activities.	Throughout Section

Industrial and Commercial

Permit Annual Reporting Requirement—Section J.3.a.(3).(d)	**Location in Report**
i. Any updates to the industrial and commercial inventory.	5.2.2 (stationary), 5.3.2 (mobile), Appendix A (inventory)
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	5.2.4, 5.3.4
iii. A description of efforts taken to notify owners/operators of industrial and commercial sites/sources of BMP requirements, including mobile businesses.	5.2.4, 5.3.4
iv. Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	5.2.2, 5.3.2; 5.2.4, 5.3.4; Table 5-2
v. Justification and rationale for why the industrial and commercial sites/sources inspected were chosen for inspection.	5.2.4
vi. Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	5.2.4
vii. Identification of the number of third party inspections conducted.	5.2.4 (will be N/A)
viii. Identification of efforts conducted to verify third party inspection effectiveness.	5.2.4 (will be N/A)
ix. A description of efforts implemented to address mobile businesses.	5.3.4
x. The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	5.2.4, 5.3.4 , Tables 5-1 and 5-2
xi. A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	5.2.4, Table 5-1
xii. A description of notable activities conducted to manage urban runoff from industrial and commercial sites/sources.	Throughout Section

Residential

Permit Annual Reporting Requirement—Section J.3.a.(3).(e)	**Location in Report**
i. Identification of the high threat to water quality residential areas and activities that were focused on.	6.2
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for residential areas and activities.	6.4
iii. A description of efforts implemented to facilitate proper management and disposal of used oil and other household hazardous materials.	6.4
iv. Types and amounts of household hazardous wastes collected, if applicable.	6.4.2
v. A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.	6.4 (see discussion in JURMP)
vi. The number of violations and enforcement actions (including types) taken for residential areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	6.4
vii. A description of collaboration efforts taken to develop and implement the Regional Residential Education Program.	6.4
viii. A description of notable activities conducted to manage urban runoff from residential areas and activities.	6.4 and Table 6-1

IDDE – Will be presented in the Report Due December 2009

Education

Permit Annual Reporting Requirement—Section J.3.a.(3).(g)	Location in Report
i. A description of education efforts conducted for each target community.	8.3
ii. A description of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.	8.3
iii. A description of education efforts conducted for municipal departments and personnel.	8.2
iv. A description of education efforts conducted for the new development and construction communities.	8.3
v. A description of jurisdictional education efforts conducted for residents, the general public, and school children.	8.3

Public Participation

Permit Annual Reporting Requirement—Section J.3.a.(3).(h)	Location in Report
i. A description of public participation efforts conducted.	9.2

Effectiveness Assessment

Permit Annual Reporting Requirement—Section J.3.a.(3).(i)	Location in Report
i. An assessment of the effectiveness of the Jurisdictional Urban Runoff Management Program which meets all requirements of section I.1 of this Order.	11

Fiscal Analysis

Permit Annual Reporting Requirement—Section J.3.a.(3).(j)	Location in Report
i. A fiscal analysis of the Copermittee's urban runoff management programs which meets all requirements of section G of this Order. (For 2007-2008, the requirements that apply are essentially the same as those found in Order No. 2001-01)	10

Same as old Permit for 2007-2008

Special Investigations

Permit Annual Reporting Requirement—Section J.3.a.(3).(k)	Location in Report
i. A description of any special investigations conducted.	12

Non-Emergency Firefighting

Permit Annual Reporting Requirement—Section J.3.a.(3).(l)	Location in Report
i. A description of efforts conducted to reduce pollutant discharges from non-emergency fire fighting flows.	4.2.3, 13

JURMP Revisions

Permit Annual Reporting Requirement—Section J.3.a.(3).(m)	Location in Report
i. A description of any proposed revisions to the JURMP.	14 and each program component section

ATTACHMENT 3.1 ADDENDUM TO RAINY SEASON LETTER

Addendum to Rainy Season Notification Letter

To ensure effective communication with the City during the rainy season, all operators of construction sites are required to complete this form and return to Helen Perry by **October 1st.**

Fax: (619) 562-9376 Telephone: (619) 258-4100 x177
Mailing Address: 10601 Magnolia Avenue, Santee, CA 92071.

Grading Permit Number: _____ Project Name:_____

☐ My site is covered under the State Construction Permit. *Note that there are specific requirements including completion of annual certification of compliance (due July 1); designated inspection rates before, during and after rain events; a requirement to report any discharges to the RWQCB within a designated timeframe; and a requirement to collect samples of runoff for laboratory analysis.* ***Please review your SWPPP to ensure that you are prepared to meet these requirements.***

Routine Inspection and Maintenance

Contact information for person responsible for overseeing inspection and maintenance of stormwater best management practices (BMPs):

Name _____

Office Telephone: _____

Cell Phone: _____

Email: _____

Alternative contact for overseeing inspection and maintenance of BMPs (to be used when primary contact is unavailable):

Name _____

Office Telephone: _____

Cell Phone: _____

Email: _____

Contact information for contractor or laborer responsible for day-to-day maintenance of BMPs:

Name _____

Cell Phone: _____

Management of Runoff

Will water be detained onsite? Yes ☐ No ☐

What type of detention structure will be used (check those that apply)?

Temporary structure _____ Concrete-lined _____

Permanent Structure _____ Unlined _____

Other _____

Note that calculations need to be provided by a licensed Engineer demonstrating that the proposed detention structure is sufficient to retain water onsite. Note that this applies to permanent structures which are typically designed for post-construction flow capacities.

How will water in the detention facility be managed? Note that detention facilities are required to be drained and cleaned after each rain event.. The need for dust control will be limited after a rain event, therefore alternatives for cleaning the basin are required:

_____

_____

_____

Advanced Treatment will be used: Yes ☐ No ☐
(chemical treatment of runoff)

Note that discharges of sediment-bearing water to the storm drain system (including the curb and gutter) are prohibited. If water is to be released from the site (such as from a detention basin), then the construction site operator needs to monitor the discharge closely as conditions can quickly change.

The condition of the discharge needs to be documented using a mixture of photographs, field analysis and laboratory sampling and analysis. This information should be provided on request of the City.

Contact information for person responsible for monitoring the discharge of runoff from the site:

Name _____

Cell Phone: _____

Email: _____

The information provided is current to the best of my knowledge. I have read and understood the contents of this form. I will update the City on this information as soon as any change is made.

Signed: _____

Print Name: _____

Date: _____

ATTACHMENT 4.1 SANTEE FACTSHEET SERIES

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 01

What is Stormwater Pollution?

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

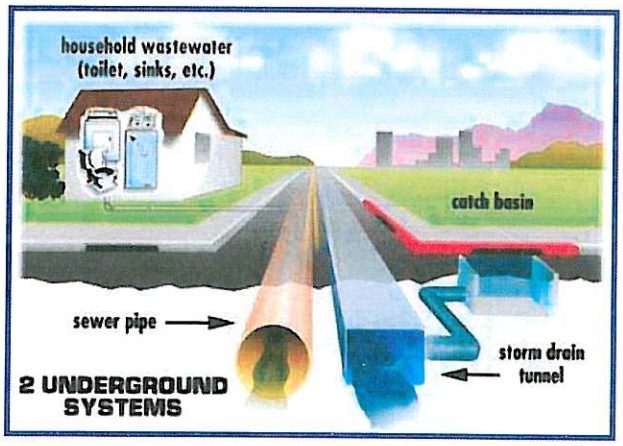

WHY IS IT A PROBLEM?

It is important to remember that the City of Santee is host to the San Diego River as it flows towards the Pacific Ocean. The River offers tremendous biological resources within its reach through Santee and beyond, supporting a diverse population of plant and animal life. The health and the beauty of the San Diego River is directly dependent on the actions of all Santee residents, and deserving of our protection from stormwater pollution!

WHAT CAN I DO TO HELP?

Everyone can be part of the solution to stormwater pollution. We can have a positive impact on water quality by changing the way we go about some of our most basic day to day activities.

- Pick Up After Your Pets
- NO DUMPING!
- Sweep It, Don't Hose It Down.
- Wash Paint Brushes in the Sink
- Properly Dispose of Trash
- Report Illegal Dumping.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 02

Water Quality Impacts

POLLUTANT TYPE	POLLUTANT SOURCES AND IMPACTS
SEDIMENT	Sediment is a common component of stormwater, and can be a significant pollutant. Sources of sediment in stormwater include construction activities and slope erosion. Sediment can be detrimental to aquatic life by impeding such natural functions as photosynthesis, respiration, growth, reproduction and oxygen exchange in the water column. Additionally, sediment in stormwater will carry other pollutants such as oil, grease, and metals.
NUTRIENTS	Nutrients including nitrogen and phosphorous are commonly found in fertilizers used in landscaping. Nutrients are found in stormwater through over irrigation of lawns and other landscaped areas. Nutrients in local water bodies will result in excessive growth of aquatic vegetation such as algae, and a rapid reduction in oxygen that supports fish populations.
BACTERIA & VIRUSES	Sources of bacteria and viruses in stormwater include improperly disposed pet waste, illegal sewer connections, and sanitary sewer overflows. High levels of indicator bacteria lead to the closure of beaches, lakes, rivers, and bays throughout the County of San Diego.
OIL & GREASE	Oil and grease compounds may be toxic to aquatic environments, compromising the survival of aquatic plant and animal species. Sources of oil and grease include illegal dumping, oil spills, automotive fluid leaks, and restaurant grease.
METALS	Metals including lead, zinc, cadmium, copper, chromium, and nickel are commonly found in stormwater runoff. Materials such as galvanized metal, brake pads, corroded paints, and automobiles contribute to the metals found in stormwater. Heavy metals are of concern to the aquatic environment as they can be potentially toxic to organisms, and accumulate to toxic levels in fish.
PESTICIDES	Including herbicides, fungicides, rodenticides, and insecticides are frequently detected in stormwater at toxic levels. Excessive use of these chemicals at home or in commercial settings, will have a detrimental impact on human as well as environmental health.

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 03

Wet Weather...Are You Ready?

What is stormwater pollution?
Stormwater pollution is the untreated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Stormwater runoff containing pollutants can contaminate our local creeks, rivers, streams and ultimately the Pacific Ocean.

REMEMBER

The Rainy Season lasts from October 1 - April 30

Is your home or business ready for wet weather?
Use the following wet weather checklist to prepare for the rain, and to do your part to prevent pollution in runoff.

WET WEATHER CHECKLIST

- ☑ COVER exposed material stockpiles including soil, sand, gravel, fertilizers, auto parts, tires, batteries, storage containers, etc.
- ☑ CLEAN significant fluid spills (oil, grease, paint, solvents) from drive ways, parking lots, parking spaces, and sidewalks. Use a mop and bucket and dispose of the water in a sanitary sewer drain (sink, toilet, floordrain).
- ☑ CLEAR earthen channels, culverts, brow ditches, and other drainage structures within and surrounding your property.
- ☑ REMOVE and PROPERLY DISPOSE of waste materials.
- ☑ INSPECT the property for potential sources of pollution.
- ☑ AVOID using chemicals (pesticides, herbicides, and fertilizers) and irrigation when rain is forecast within 48 hours.
- ☑ CALL the City of Santee at (619) 248-4100 x177 with any questions.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 04

Restaurants & Bars

RESTAURANTS & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with food establishments include grease, food waste, cleaners, trash and debris. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of minimum Best Management Practices that are required at all food establishments in the City of Santee.

- ☑ Employee Training.
- ☑ Clean Floor Mats Inside.
- ☑ Maintain Outdoor Grease Bins.
- ☑ Keep Dumpster Lids Closed.
- ☑ Maintain Dumpster Areas Using Dry Cleanup Techniques.
- ☑ Use a Mop and Bucket for Outdoor Cleaning Activities. Dispose of Mop Water in a Sanitary Drain. (sink, toilet)
- ☑ Sweep It, Never Hose It Down.
- ☑ Keep Absorbent Material or Other Spill Response Materials On Site.
- ☑ Maintain Good Housekeeping Practices.
- ☑ Contain, Control & Capture All Water Used in Cleaning Activities.
- ☑ Dispose of All Wastewater into a Sanitary Sewer Connection. (Sink, Floor Drain, Toilet)
- ☑ Adjust Sprinklers to Avoid Overspray from Irrigation of Landscaped Areas.
- ☑ Ensure that Pressure Washing of Sidewalks, Drive Thrus, or Parking Lots is Conducted with Adequate Controls in Place.
- ☑ Direct Runoff to Landscaped Areas.
- ☑ Clean Outdoor Spills Immediately.
- ☑ Properly Maintain Sinks and Drains to Avoid Sewer Overflows.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 05

Automotive Industry

AUTOMOTIVE INDUSTRY & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with automotive maintenance and repair include antifreeze, fuels, waste oils, solvents and paints. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of minimum Best Management Practices that are required at all automotive repair, servicing, and maintenance facilities in the City of Santee.

- ☑ Employee Training.
- ☑ Service Indoors When Applicable.
- ☑ Ensure that Floor Drains Are Plumbed to the Sanitary Sewer.
- ☑ Place Drip Pans Under Vehicles in Exposed Outdoor Areas.
- ☑ Keep Absorbent Materials / Pads Readily Accessible at All Times.
- ☑ Properly Dispose of Hazardous Wastes.
- ☑ Drain all Fluids Indoors.
- ☑ Wash Equipment & Vehicles in Designated Areas to Avoid Discharge to the storm drain.
- ☑ Maintain Good Housekeeping Practices.
- ☑ Utilize "Dry" Cleanup Methods. (Sweep, Vacuum)
- ☑ Dry Sweep All Work Areas Before Mopping.
- ☑ Use a Mop and Bucket to Clean Shop Floors and/or Outdoor Areas. Dispose of mop water in a sanitary drain.
- ☑ Collect All Dust, Grindings and Shavings at Work Stations.
- ☑ Remove or Cover All Materials Stored in Outdoor Areas.
- ☑ Recycle Oil, Antifreeze, Batteries, etc.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 06

Mobile Auto Detailing

MOBILE AUTO DETAILING & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with mobile auto detailing include oil, grease, heavy metals (brake dust), and detergents. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of minimum Best Management Practices that are required at all mobile auto detailing activities in the City of Santee.

- ☑ Contain, Control and Capture ALL Wash Water.
- ☑ Train Employees to Use Practices that will Eliminate Discharge to a Storm Drain.
- ☑ Locate and Protect All Nearby Storm Drains or Water Bodies.
- ☑ Utilize a "Shop Vacuum" to Capture all Wash Water.
- ☑ Service Vehicles on or Near Vegetated Areas.
- ☑ Minimize or Eliminate the Use of Soaps or Detergents.
- ☑ Confine Washing and Cleaning Activities within a burmed Area.

REMEMBER

- **Biodegradable Soaps Only Degrade Faster, And May Be Detrimental to Water Quality.**
- **Curbs, Gutters, Drainage Channels, Curb Inlets, Brow Ditches, Channels and Culverts are ALL Connected to the San Diego River and Ultimately the Pacific Ocean.**
- **ONLY RAIN BELONGS IN THE STORM DRAIN!**

STORMWATER INFORMATION

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 07

Power Washing Activities

POWER / PRESSURE WASHING & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with power washing activities include sediment, grease, oil, food waste, and trash. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of Minimum Best Management Practices that are required at all power washing activities in the City of Santee.

POWER WASHING REQUIREMENTS

The following BMPs are REQUIRED for ALL Power Washing Activities including but not limited to vehicle maintenance & fuel dispensing areas, power washing buildings, sidewalks, parking lots, loading docks and common areas.

1. Block all storm drain inlets and collect water/waste for disposal to the sanitary sewer. No water can drain to the street or catch basins.
2. Prior to washing activities, clean and/or sweep all loose debris from the area.
3. Clean any significant oil / auto fluid spills with an appropriate dry method prior to cleaning.
4. If possible, direct divert runoff to a vegetated area where water can absorb into the ground.
5. If visual observation of runoff indicates contamination (cloudy, discolored, presence of suspended materials), stop activities immediately, and use additional BMPs (i.e. filtration) to eliminate polluted runoff to vegetation.

REMEMBER THE THREE C's

Contain , Control , & Capture
All Waste & Wash Water

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 08

Industrial & Commercial Activities

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, and other maintenance activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

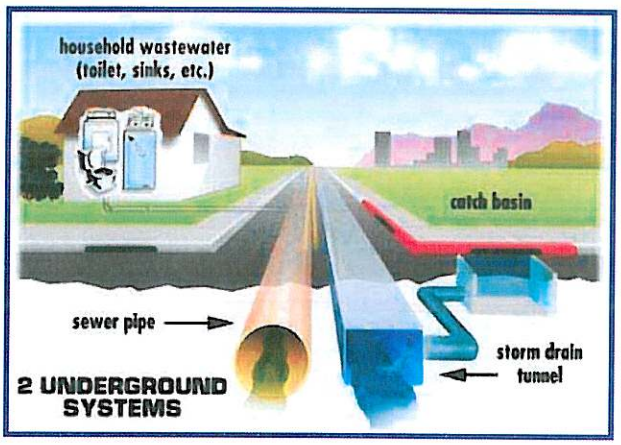

WHAT IS REQUIRED OF INDUSTRIAL & COMMERCIAL FACILITIES?

Essentially, the use of applicable Best Management Practices (BMPs) are required of all industrial and commercial activities in the City. As such activities are varied, a set of minimum BMPs have been established in order to minimize polluted runoff. Additionally, activity-specific BMPs have been established for various business sectors, which will be reviewed and/or recommended through the industrial and commercial facility inspection process.

MINIMUM BEST MANAGEMENT PRACTICES (BMP)

Minimum BMPs for industrial and commercial activities in the City are broken into 3 categories. The following list provides a summary of required BMPs:

1. **Good Housekeeping BMPs**: Regular Sweeping, Dry Cleanup, Proper Waste Disposal, Employee Training, Spill Cleanup.

2. **Materials Handling BMPs**: Hazardous Materials Storage, Outdoor Material Storage, Proper Labeling, Spill Prevention.

3. **Equipment Maintenance BMPs**: Perform Work Indoors, Repair Leaks, Designated Wash Areas, Drip Pan Use, Proper Cleaning Techniques.

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 09

Swimming Pool & Spa Maintenance

SWIMMING POOL DISCHARGE

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with swimming pool and spa maintenance activities include chlorine, pH, organic matter (decaying plants & algae), and copper.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean, completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

CAN IT BE DISCHARGED INTO THE STORM DRAIN?

If it is not a saline pool, you can discharge water with NO chemicals into the storm drain. The water must:

1. Be water only (no debris)
2. Be de-chlorinated
3. Have a pH range of 7-8.
4. Have no algae present
5. Be a controlled flow to avoid erosion problems or cause a traffic hazard.

Can I get rid of chlorine?

Chlorine will naturally dissipate, and pool water will become de-chlorinated over time. Monitor the pool over a period of 3-5 days until NO chlorine is detected.

How do I Clean Pool Filters?

It's best to clean pool filters over a lawn, dirt, planter box, vegetated hillside, or something to absorb the discharge. Collect materials on filter cloth, then throw the filter cloth away. Rinse cartridge and diatomaceous earth material onto a dirt area, and spade filter residue into soil.

If you retain a pool company to take care of your pool, please make sure that they comply with these regulations. By doing your part, you will help reduce the pollution problems in the community where your family lives, works and plays.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CALL PADRE DAM MUNICIPAL WATER DISTRICT ON (619) 258-4664 FOR INFORMATION ON DISCHARGES TO SEWER.

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 10

Residences

Although many residents may not realize it, everyday activities that we conduct at home have the potential to impact the quality of water which drains from the street into our municipal storm drain. This eventually discharges UNTREATED into the San Diego River. The cumulative impact of discharges from each residence has the potential to directly impact the San Diego River. Here are some examples of common household activities of concern:

PET WASTE

This may be considered "natural," but did you know that the water quality of San Diego River is considered to be impaired due to the presence of bacteria from fecal discharges? *ALWAYS pick up after your pet, even at home, and dispose of pet waste in the trash.* Don't throw pet waste in any drainage channel, culvert, gutter or drain.

AUTOMOTIVE

Reduce or eliminate the release of motor oil from leaking cars, detergents from washing and gasoline from fuel drips. Do not maintain your vehicle in the street and clean up fluid spills and leaks immediately. *Use drip pans under leaking vehicles and properly dispose of automotive fluids.*

HOME IMPROVEMENT AND GARDEN CARE

Many home improvement projects may involve the use of hazardous materials (paints, solvents etc.). Powder materials (e.g.,concrete, sand, and grout) can form harmful sediment if washed into the San Diego River via the storm drain. Rinse concrete or grout residue into a hole dug into a dirt area. Let the water infiltrate into the ground and throw away the residue. *Sweep, do not hose down* when cleaning and *do not blow plant debris into the storm drain.* Dispose of household hazardous wastes including paint, cleaners, and batteries for FREE at one of the following locations:

Clean Harbors Environmental Services, 12325 Crosthwaite Circle, Poway, CA 92064. 1-800-444-4244. Saturdays 9 am to 3 pm.

Waste Management, City of El Cajon, end of O' Conner Street, El Cajon CA 619-596-5100. Household pickup by appointment.

- Pick Up After Your Pets
- NO DUMPING!
- Sweep It, Don't Hose It Down.
- Wash Paint Brushes in the Sink
- Do not overwater
- Report illegal dumping

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 11

Demolition & Construction

Non-rainwater discharges from demolition and construction sites are illegal and could be subject to clean up costs, as well as fines and other penalties. With a few simple steps contractors on these sites can prevent illegal discharges.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks enters the storm drain and is discharged into the San Diego River completely untreated!

KEEP YOUR SOIL ON YOUR PROPERTY

It is illegal to allow soil discharges into the street. Plan to use measures to prevent erosion (for example, preservation of current landscaping, expedited planting, blankets, hydroseeding, or bonded fiber matrix); and sediment control measures (silt fence, gravel bags, and fiber rolls) to prevent discharges, particularly between the months of October and May. Use silt-free gravel, not sand, in gravel bags. Be prepared to stop liquid discharges during demolition.

MANAGE A TIDY SITE

It is a violation of City ordinance to discharge airborne dust or allow the tracking of soil onto the street. Sweep or vacuum, DO NOT HOSE DOWN, any material that strays onto the street. Keep liquid materials in a covered second container. Do not discard waste materials to the ground. Instead, immediately place it into a trash container. Order an extra trash pickup if more waste is generated than usual. Dispose of hazardous materials properly. Use drip pans under vehicles and promptly remove spills.

CONCRETE AND POWDER MATERIALS

The pH content of cement mix can be high enough to classify it as hazardous waste! When concrete waste gets into a gutter and then the storm drain, it eventually ends up in the San Diego River. If allowed to dry in gutters or catch basins, it can disrupt the proper flow of rainwater. Other powdery material (stone dust, grout, and masonry), if discharged to the storm drain, will result in increased sediment in the San Diego River, having a negative effect on aquatic life. Place concrete waste into a container, and let it dry before disposal.

KEEP OUT OF THE GUTTER!

The gutter is not the place to clean any piece of equipment, large or small. It is a violation of the City's ordinance to park heavy vehicles in the street.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 12

Pollution Prevention at Special Events

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

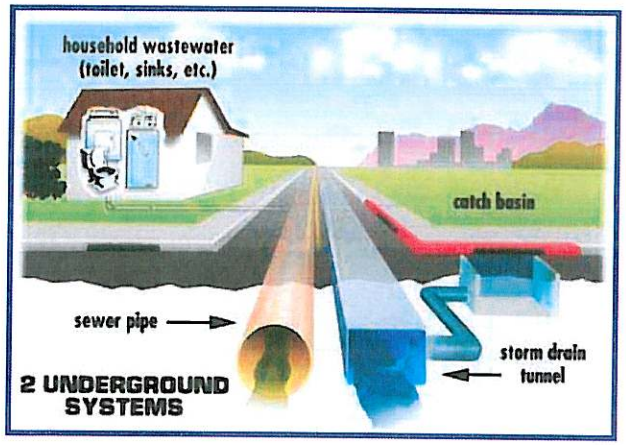

HOW CAN A SPECIAL EVENT CAUSE STORMWATER POLLUTION?

An event can result in the generation of a large amount of litter. Plastic bags and other light material may be blown into creeks and channels. Other items may enter curb inlets, either blocking the structure, or being washed via runoff through the stormdrain system into nearby rivers and creeks. Food and pet waste can be sources of bacteria and nutrients. Protect water quality by using the following best management practices:

- Portable toilets shall have secondary containment.
- Have materials available (cloths, paper towels, a dustpan and brush, etc.) to promptly remove spills as they occur.
- Install temporary fencing to prevent trash from being dispersed.
- Use temporary screens on catch basins and storm drain inlets.
- Provide plenty of trash and recycling bins. Promptly dispose of trash into dumpsters with lids and do not allow dumpsters to overfill.
- Sweep the area after the event. Clean catch basins as necessary.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 13

Carpet and Upholstery Cleaning

Carpets and upholstery are regularly cleaned in homes and commercial businesses to prolong the life of carpets and furniture, and to ensure a hygienic living and working space. Wastewater from carpet cleaning usually contains detergents, other potentially hazardous chemicals and extracted carpet residues, some of which are known pollutants.

It is illegal to discharge wastewater from these cleaning activities to the storm drain.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks enters the storm drain and is discharged into the San Diego River completely untreated!

- Any wastewater poured into streets, gutters, or stormdrain inlets will make its way into sensitive waterways that support aquatic plants and animals. Carpet cleaning chemicals and other residues in carpet cleaning wastewater may damage fragile ecosystems.
- Many carpet cleaning agents are toxic to aquatic plant and animal life.
- Residues from carpet cleaning can contribute to nutrient loadings that will result in explosive algal growth and deplete waterbodies of oxygen.

WHAT ARE THE REQUIREMENTS?

Wastewater and residue from carpet cleaning must NEVER be discharged to any roadside gutter, parking lot drain, stormdrain, curb inlet, drainage channel, or watercourse.

- Wastewater and residue from carpet cleaning should be discharged to a sanitary sewer connection such as a sink, floor drain, toilet sewer cleanout, or septic tank.
- Clean or flush hoses to a vegetated or dirt area and let the water infiltrate the ground.
- Contain, control, and capture all wastewater or chemicals.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 14

Pollution Prevention during Community Activities

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

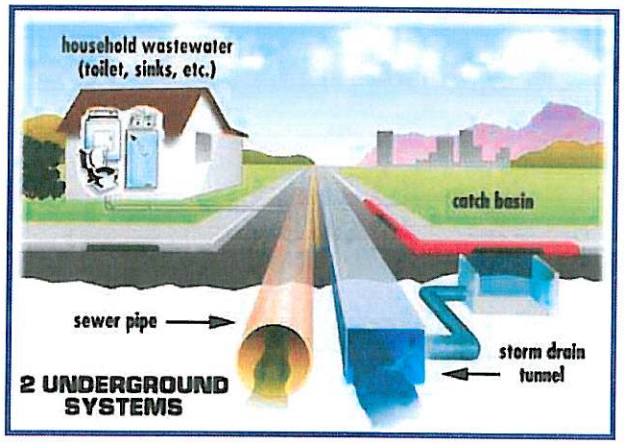

HOW CAN COMMUNITY ACTIVITIES CAUSE STORMWATER POLLUTION?

Any activity that results in runoff discharging into catch basins on private property or into the street (such as washing cars or cleaning up after an event) can cause stormwater pollution. These types of discharges are illegal. In addition, community events can result in the generation of litter which can get into the storm drain system. Simple steps can be take to prevent pollution and protect **a valuable community resource — our river.**

- Use trays under portable toilets (secondary containment).
- Have materials available at an outdoor event (cloths, paper towels, a dustpan and brush, etc.) to promptly remove spills as they occur.
- Promptly dispose of trash into dumpsters with lids and do not allow dumpsters to overfill.
- Sweep after an outdoor event and clean catch basins as needed.
- Contact the City for pollution prevention methods during special events and car washing activities (look at www.ci.santee.ca.us/For Residents).

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 15

Benefits of Low Impact Development and Site Design Practices

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system. The storm drain system discharges this water directly to our creeks, rivers, and ultimately the Pacific Ocean UNTREATED.

HOW DOES DEVELOPMENT AFFECT THIS?

The addition of impervious area removes the natural absorption and infiltration abilities of the land. This results in a greater volume, velocity, rate and duration of runoff from the property, than in its predevelopment condition. It can result in the mobilization of a wide range of pollutants that would normally remain on the property and transport these pollutants to surface waters. *This cocktail of pollutants can destroy aquatic life.*

WHAT IS THE SOLUTION?

Since 2002, all major development incorporated a mixture of best management practices (BMPs) to reduce its impact on stormwater quality. Site Design BMPs and Low Impact Development BMPs include the following:

- Reduce directly connected paved areas.
- Direct runoff to landscaping to reduce runoff from the property.
- Use grassed swales to facilitate infiltration.
- Use drought tolerant or native vegetation
- Conserve natural areas.
- Protect slopes (i.e. with vegetation) to prevent erosion.

The objective of this is to mimic the natural hydrologic conditions of the site to minimize the increase in volume, velocity, rate and duration of the property after development.

Please preserve these features on your property and protect our river! Do not destroy these features and maintain them to remain effective.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 16

YARD & GARDEN MAINTENANCE

HOW CAN GARDENING HARM OUR WATERWAYS?

Yard maintenance can directly impact the quality of our local surface waters. When soil, organic wastes, dirt, leaves, grass clippings, and chemicals leave your yard, they flow directly into creeks and the ocean harming the health of humans and wildlife that swim in the waters, impacting the environment and water quality.

BEST MANAGEMENT PRACTICES (BMPs)

Whether you take care of your own yard or contract a professional service, you are responsible for ensuring that BMP's are implemented to reduce storm water pollution, protect water quality and conserve our valuable water and natural resources. By implementing the simple solutions in this fact sheet you can take part in protecting our local waterways and beaches.

- Use fertilizers sparingly and possibly consider using an organic fertilizer.
- Use an efficient irrigation method and try to avoid over-watering.
- Break watering down into five minute intervals, or less. This will allow water to soak in before the next application.
- Rather than applying a temporary, chemical only approach, try a natural method such as hand weeding and planting diverse native plants. This will result in a safer long term solution to weed and insect problems.
- Improve the health of your soil by adding compost and using organic mulches. You'll reduce the need for fertilizers and your plants will be healthier. You will also prevent soil erosion.

REMEMBER : When using a professional landscaping service

- **Make sure they sweep up clippings and dispose of them properly, rather than blowing them out into the street.**
- **If you decide to use pesticides, check to make sure the service is properly trained and licensed to apply them.**
- **Know how often fertilizers are used. Even professionals over-fertilize.**
- **The property owner is responsible for violations of the Clean Water Act.**

STORMWATER INFORMATION

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 17

Fire Prevention and Erosion

During dry and hot seasons, vegetation can pose a fire risk, and requires proper management.

WHICH FIRE PREVENTION MEASURES ARE RECOMMENDED?

Vegetation on open lots should be *mowed* to a height of approximately four inches. The clippings can be left on top of the stubble, providing additional fire suppression. Dead shrubs, dead trees or limbs, and rubbish should be removed. The City's Municipal Code requires property owners to mow and/or clear a distance of one hundred feet from any structure and up to thirty feet along each side of roadways or driveways. Fire prevention measures should be implemented during late spring and early summer.

When a rare, threatened, or endangered plant or wildlife may be present on the property to be cleared, it is the responsibility of the owner, occupant or person in charge of the property to obtain all required permits or approvals from all other governmental agencies prior to removal of the nuisance. This includes California State Fish and Game and the U.S. Fish and Wildlife Service can be contacted at (760) 4341-9440). If you have questions contact City Development Services at (619) 258-4100 x168 with any questions.

WHY SHOULDN'T I JUST CLEAR THE GROUND OF VEGETATION?

Not only is this unattractive and unnecessary, but you risk losing the most valuable component of your ground through erosion. The top layer of soil tends to be rich in organic matter providing nutrients and a soil matrix hospitable to plant life. Once that has been removed, it will be difficult for plants to grow in this soil without the addition of expensive soil amendments.

Cutting vegetation allows the plant roots to help hold the soil in place minimizing erosion. Erosion prevention is important to prevent loss of land, damage of property downgradient of the erosion and potential pollution through the discharge of sediment to the storm drain system. The storm drain system conveys runoff from streets and private property to the river *untreated*. Blockages of the storm drain system may result in property damage and are costly to remove. Sediment discharged into our creeks and rivers is harmful to river life, including plants, insects and fish. If you are concerned about potential erosion, install erosion prevention measures (see http://www.cabmphandbooks.com/Construction.asp for more information).

Call Fire Prevention at (619) 258-4100 x184 for additional information.

Area of eroded soil versus a slope stabilized with erosion prevention measures.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 18

Responding to Sewage Spills

Many people mistakenly believe that storm drains are connected to Padre Dam's sanitary sewer system and that any wastewater dumped into an alley, street or storm drain is treated at Padre Dam's sewage treatment plant. This is not the case. Any material discharged or washed into the street ends up in the San Diego River.

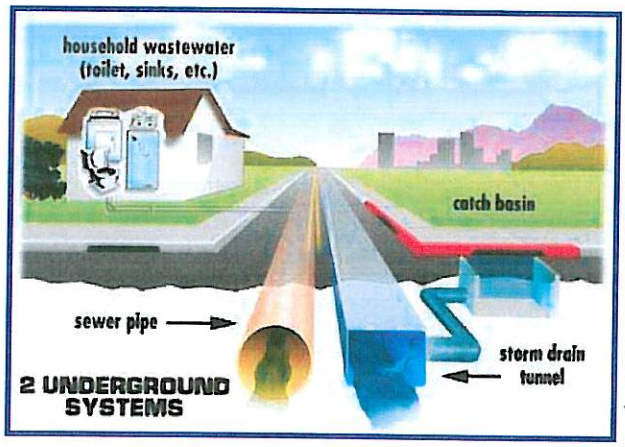

Raw sewage is a biohazard to people, and adds pollutants such as sediment and nutrients to the environment. The source of any sewage spill must be immediately stopped, and the spill must be contained. The affected area must be isolated to keep the public from exposure to the hazard. Sewage must be removed and the area disinfected by a properly trained person. Raw sewage may be discharged into the wastewater system with permission from Padre Dam.

Any sewage discharge into the storm water conveyance system, even from a blocked lateral line, is a violation of federal, state and local laws. These laws apply to individuals, businesses and public agencies. There are no exceptions.

Please ensure that any contractor you hire to respond to a sewage spill understands these regulations and has the ability to comply with them. By doing this you help to protect your family, and the environment from exposure to the sewage spill.

STORMWATER INFORMATION

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

ATTACHMENT 4.2 JURMP UPDATE TO PESTICIDE, HERBICIDE AND FERTILIZER HANDLING

Pesticide, Herbicide and Fertilizer Application and Handling

The federal Pesticide, Fungicide and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling. This Act also specifies training, annual refresher, and testing requirements. The regulations generally include: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. The following BMPs are implemented to reduce pollutants from pesticides, herbicides and fertilizers:

- City personnel who participate in the application of pesticides are trained and licensed (Qualified Applicator License) and follow guidelines set by the California Department of Pesticide Regulations and the County Agricultural Commission.
- Agricultural pest control businesses working for the City are supervised by a Qualified Applicator Licensee who holds a current Qualified Applicator Certificate.
- Every two years, Qualified Applicator Certificate holders must show proof that they have secured a minimum of 20 hours of continuing education.
- City staff records the applications of all chemical agents by noting the locations, type, and quantity of chemicals used. Records are added to the annual report submitted to the Department of Agriculture.
- The Qualified Applicator Certificate holder conducts monthly inspections to monitor storage, handling, and disposal of the pesticides.
- Personnel who participate in the application of herbicides for the City are trained and follow guidelines set by the County Agricultural Commission.
- Fertilizers are applied during the growing seasons: spring, summer, and fall.
- Trained City personnel perform irrigation of landscaped areas.
- Drip irrigation and overhead irrigation methods using timers are implemented, where appropriate, to avoid runoff from over-irrigation.
- The City upgrades the irrigation system as technology improves.
- The City identifies locations where over-spraying occurs and rearrange the sprinklers to minimize the runoff as needed.
- The City follows written recommendations prepared by a State Pesticide Advisor during pesticide application.
- Employees are trained to follow pesticide, herbicide, and fertilizer labels, and the material safety data sheet(s) (MSDS).
- All federal, state, and local regulations are followed in the use of pesticides, herbicides, and fertilizers.
- Pesticides, herbicides, and fertilizers are not applied during or directly prior to storm events unless specifically designed for application prior to rain (Oust for example).
- Only pesticides that are quickly absorbed into the soil or plants are used.

- Whenever practicable, integrated pest management techniques are implemented.
- Pesticides are not sprayed when there is a high possibility of the spray drifting into non-target areas or onto non-target vegetation, insects, or animals.
- The City maintains compliance with county and state reporting requirements for pesticide use.
- The City continues to minimize product use by using non-chemical methods to control weeds such as weeding by and by mechanical means.
- The City plants native vegetation, when applicable.

ATTACHMENT 6.1 STUDY ON PET WASTE MANAGEMENT BY RESIDENTS

Baseline Assessment of Current Residential Activities and Behavior Towards Pet Waste

City of Santee, Department Development Services-Stormwater Department
Study October 2008 through May 2009

Deven O'Neil

Abstract

A baseline assessment of current residential activities and knowledge was performed to help create guidelines for an educational outreach program. The study was conducted using both observations and surveys. The results found that middle-aged males are the most common group to not pick up after their pet. Many of the residents currently think that pet waste dissolves and fertilizes the grass at the park. The results will be used to determine an appropriate education outreach program that will increase the amount of people that do pick up after their pet.

Introduction

The San Diego based organization Think Blue performed a residential knowledge base survey concerning resident's current opinions about storm drains and explored different motivations and barriers that can reduce regular storm water pollution. The results of the survey showed that more than 75% of San Diego residents feel that pollution of the ocean, beaches, and bays are a "very important" issue that their city faces. Residents have a strong willingness to make changes to help prevent and limit storm water pollution. On a scale of 1 to 10 (10 being very serious) the Think Blue survey found that people gave that pet waste an average score of 6.94. The most important correlation to my study is that residents feel while they themselves care, that

their neighbors do not care if they directly impact and cause storm water pollution (Think Blue Survey 2008).

My internship involved working for the City of Santee, Department of Development Services-Stormwater Department to obtain a baseline assessment of current residential knowledge and behavior relating to activities that may impact water quality. The activities studied were those that increased bacteria, a high priority pollutant in San Diego River watershed, where Santee is located. The data collected will be used in developing a Community Based Social Marketing (CBSM)-type program. Specifically, I assessed the types of behavior associated with pet waste disposal and the perceived barriers and benefits of disposing pet waste appropriately.

The purpose of the assessment was to determine the present activities and knowledge of Santee pet-owning residents relating to pet waste management. This information will be used to determine an appropriate approach for implementing an environmental outreach program for pet owners in Santee. This baseline assessment will be compared with future studies to assess if any improvement has been made after the outreach has been implemented. An education "intervention" employed DePaul University in June 1980 resulted in a increase from the baseline assessment. The "intervention" was casually greeting the dog walker and asking them "If they knew it is illegal to not pick up after their pet" and then handed a dog waste bag and educational pamphlet. After the educational outreach was implemented many residents shifted from their normal behavior (Leonard et al 1980). The educational outreach program created by the City of Santee is anticipated to have a similar impact.

Storm drains are not linked to the sewer system and any contaminants or bacteria that are discharged into the drains will deposit into the watershed untreated. During the winter when southern California receives the majority of its rainfall, the water flowing into the rivers and creeks picks up bacteria, industrial waste, and other contaminants. The contaminants that drain into the watershed flow to the nearby oceans. The bacterial contaminants including fecal coliform and Esterococcus can exceed water quality levels set by the State of California and result in beach closures (Lee & He 2008). An estimated average of approximately one million gastrointenstinal illnesses occur every year due to increased bacteria levels in the ocean which is a burden on the healthcare system and effect recreational economic profits (Lee & He 2008). In San Diego alone there are six lagoons that discharge directly into popular beaches (Lee & He 2008). A program developed to better educate residents about watershed health and pet waste management will need to be designed in the future to determine the effectiveness of the outreach, which is mandated by municipal permit (r9-2007-0001).

A bacteria total maximum daily load (TDML) regulation has already been adopted by the San Diego Regional Water Quality Control Boards (RWQCB), although it may still be subject to revision in the future. This regulation, which would be addressed at the watershed level, will require affected municipalities to reduce the bacteria loading from their municipal separate sanitary sewer system (MS4s) to effectively zero. Therefore it is essential that all the tools available, including behavior change through education, be used to their full extent to reduce bacteria load runoff. During the course of the internship I learned the different methods that are employed by a city to improve environmental concerns through education practices. The two main parks that I focused

on were Big Rock Park (Figure 1)

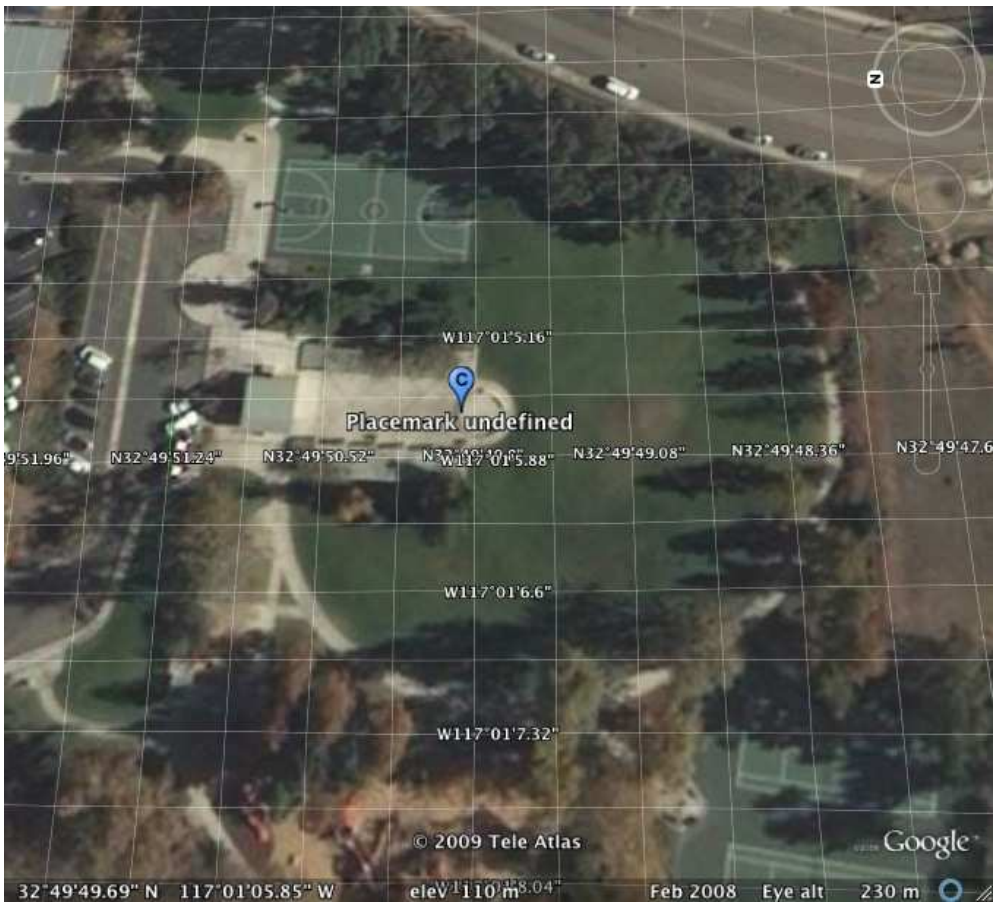

Figure 1. Big Rock Park

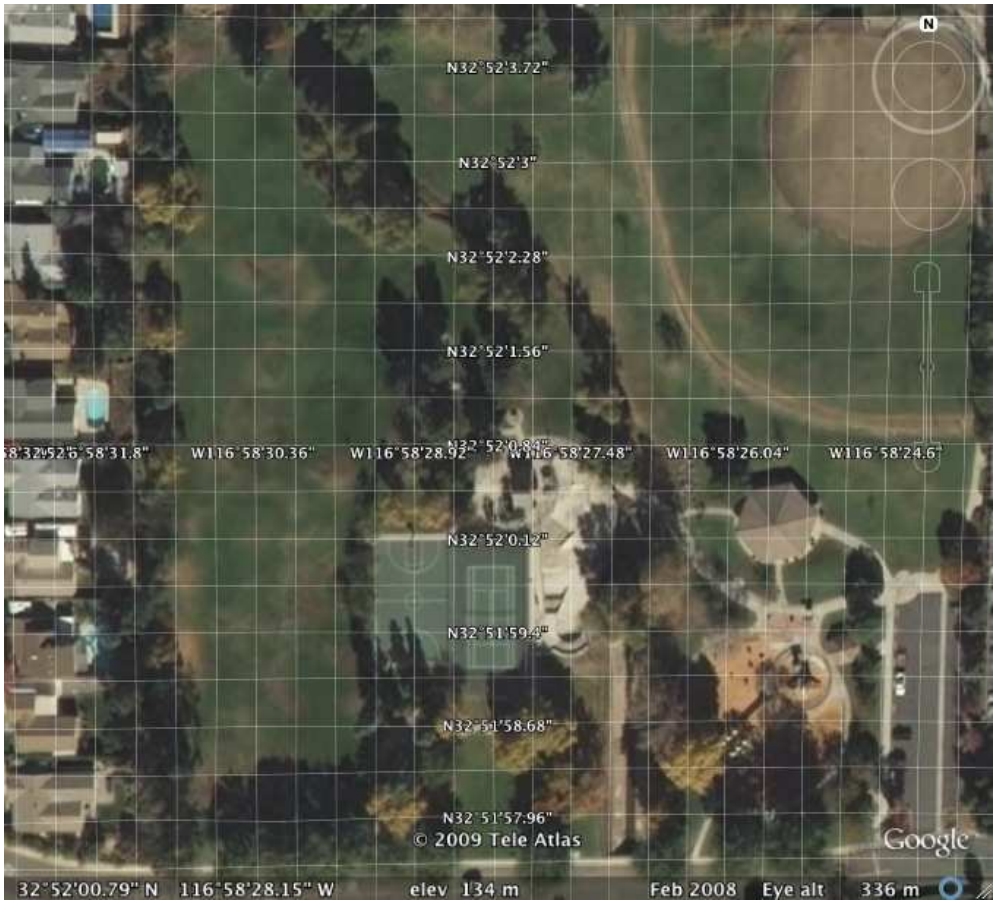

Figure 2. Woodglen Vista Park

and Woodglen Vista Park (Figure 2). These parks are on opposite sides of Santee and are surrounded by socioeconomic communities of different socioeconomic status (SES). Condominiums, apartments, and newer developed houses surround Woodglen Vista Park. There were younger, affluent people at Woodglen Vista Park then at Big Rock Park. Big Rock Park has many older houses and a large trailer park, and had more elderly people. Big Rock Park is edged by Mission Trails at the southern end of the park. Both parks have an episodic flowing creek through them. Big Rock Park's creek was dry more often than the small creek running through Woodglen Vista Park. This project was designed to

identify any barriers to owners who do not pick up after their pets and to assess if there are any identifiable characteristics in those who tend to not pick up after their pets. I looked at differences of dogs being leashed or offleash, size of dog, location within the park, age/gender, and the geography of the park.

Study Sites

The population of the City of Santee is about 57,000 people, comprised of 18,500 households, and 14,000 families. The city has 7 total parks not including Santee Lakes and Mission Trails (part of San Diego City). My focus was on a much smaller scale and focused on two parks. The parks that were assessed were Big Rock Park and Woodglen Vista Park. The creek running through Woodglen Vista has a cement channel running along a portion of the creek. Woodglen Vista Park has a large grass area on which many dog owners will play with their dog while Big Rock Park has a much smaller grass area and more of a circular path around the perimeter of the park. Big Rock Park is adjacent to Mission Trails Reserve with hills right on the edge of the park.

Previous dry weather monitoring studies had occasionally reported counts of indicator bacteria above the action level in samples collected in Woodglen Vista Creek. These counts had been attributed partly to pet waste generated by pets being walked inside and around Woodglen Vista Park (City of Santee, Stormwater Reports 2008).

Research Methods

I used two methods for sampling: observational surveys and individual interviews. The following variables were surveyed: geographic areas, time of day, age and sex of the residents, housing surrounding park, and weather. For the observational studies I would comment on a estimated age and sex of the owner, dog size, number of dogs, leashed or unleashed dogs, activity during walk, and if the owner picked up after the pet. Observations were conducted a total of 46 times at Woodglen Vista Park and Big Rock Park during the months of November through March. Each observational survey was conducted for about one and a half hours and every resident with a dog was commented on. A total amount of 135 people were observed during this time period. Actually witnessing an owner picking up versus not picking up after their pet was fairly troublesome because the parks had some visibility issues due to buildings, people, trees, and distance as well as trying to keep a low profile so that people in the park did not really notice me. The second method of obtaining data was from a survey conducted with people at the park. The survey included answering the same questions that were observed but also included questions about their current knowledge of stormwater pollution. Over a one month period a total of 117 surveys were completed and used. The survey had discrete answers and was not replicated, so no statistical deviation was able to be derived from the answers. I did encounter many people who did not want to fill out the survey, but many of the people that did fill out the survey would comment on a few other aspects of the park that they liked/disliked. The different answers were compared against

age, gender, and current knowledge of storm water issues, as well as the physical differences between dogs and leashes. A final method of sampling was making plots of observations of pet fecal material of a grid map of Big Rock Park and Woodglen Vista Park. The plots are going to be used to determine where more pet waste occurs. This can be used to determine what further action, if any, needs to be taken to prevent an abundance of bacteria in the streams running through the park.

Results

During observation studies it was noted that many of the people in the park would not pick up after their dogs when the dogs were not leashed. At Woodglen Vista Park the ratio of dogs leashed to unleashed was 1:5. Many times at Woodglen Vista Park, owners would play with their dogs or just let them roam within the large grass area off leash. This may have led to the owners not paying enough attention to the dogs defecating. When people were accompanied while walking their dogs, they were more likely to pick up after their pet, possibly due to peer pressure influencing their decision to pick up after their dog. Out of a total of 135 different people observed, 32 groups of two or more people picked up their dog's waste (23%). Out of the other 103 people that walked their dogs alone, 17 of them did not pick up after their pet (17%). Extra activities such as talking on a cell phone, having a child with them, or running for exercise did not show an increase in owners not picking up after their pet. During the observations the current weather was noted. The observations were completed in the winter from November to February. During the morning when it was much colder, there were very few, if any, people walking their dogs. Cloud covered days with persistent south winds had fewer

people compared to nice and sunny weather. The time of the day was also noted, and the majority of people were seen during the weekends and mid morning to the middle of the day. In the early morning to mid morning I never observed an owner not picking up after their pet. People of 30-40 years old were the most common group observed. This age group was also the most common group to not pick up after their pets. Owners that did not pick up after their pet occurred more often at Woodglen Vista Park then Big Rock Park. Out of the 135 different people observed, I only witnessed 17 people not picking up after their pet. Out of the 17 people, 13 of them were at Woodglen Vitsa and 4 of them were at Big Rock Park. The amount of people not picking up after their pets was only about 13% of the total amount observed, about 76% of the total amount of people that did not pick up after their pet were at Woodglen Vista Park.

The results in figures 3 through 13 are cumulative of the total answers received. The answers were compared to what a respondent stated for one answer while answering for another. For example, when a respondent answered that they always pick up after their dog it was compared to how many times they stated they would lease their dog while in the park.

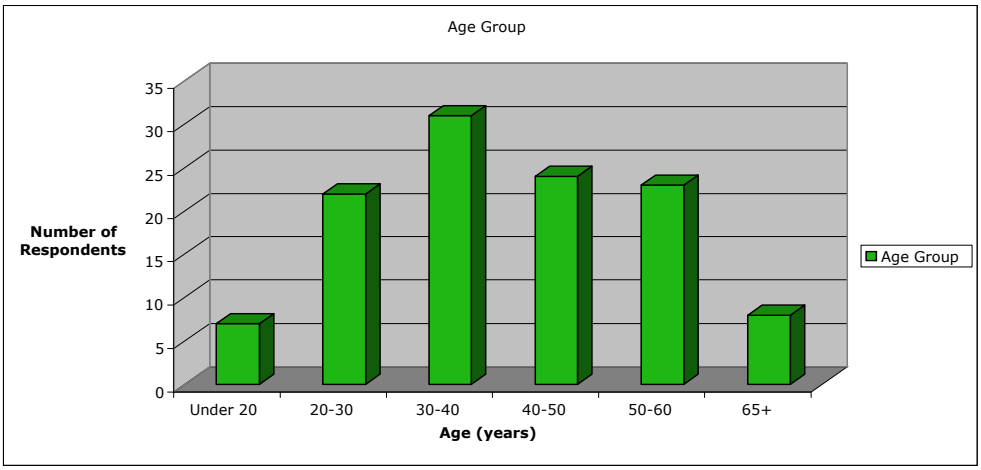

Figure 3. Distribution of all respondents (n = 115) across both parks

Figure 3 represents the age demographic that was sampled during the surveys. The most common age surveyed was between the ages 30 to 40.

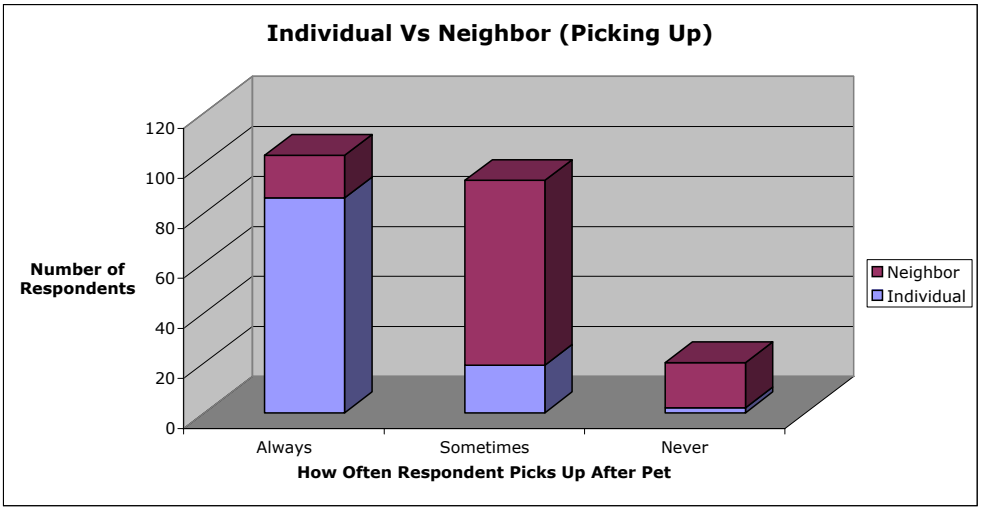

Figure 4. Individual answered how often they personally pick up after their pet versus how often the individual answered others at the park pick up after their pet.

Figure 4 shows the difference between how often respondents personally pick up after their pet compared to how often they notice others picking up after their pet. When answering how often people personally pick up after their pets 80 % answered always, 19% answered sometimes, and 1% people answered never, but when people answered how often others at the park picked up after their pets many only 10% people answered always, 67% people answered sometimes, and 23% people answered never.

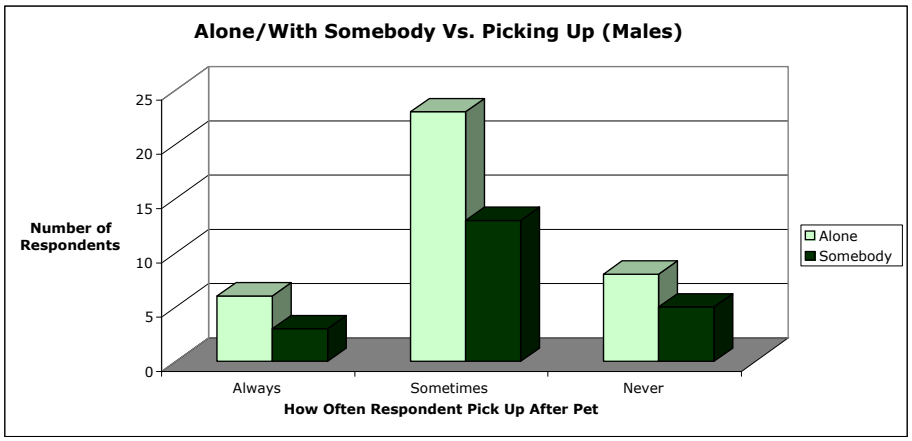

Figure 5. How often a male respondent answered they pick up after their pet when walking alone or with somebody.

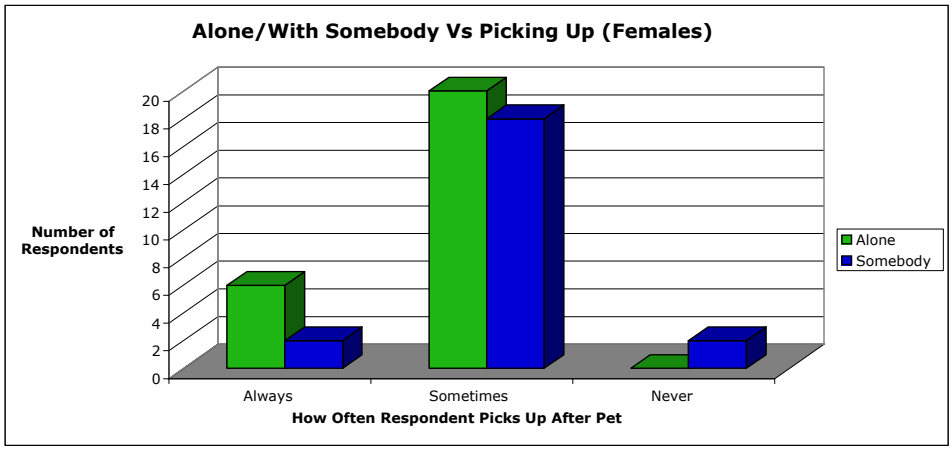

Figure 6. How often a female respondent answered they picked after their pet when walking alone or with someone

Figure 5 and Figure 6 show the difference of how respondents answered to the question: of whether they pick up after their pet if they walk their pet alone or with someone? Figure 5 represents how males responded and Figure 6 represents how females responded. When walking alone 10% of males and 13% of female respondents answered that they always pick up after their pet.

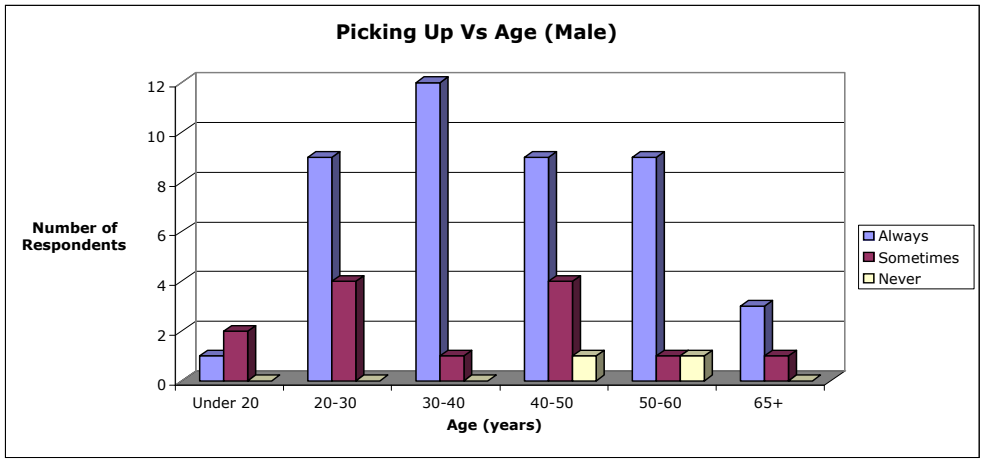

Figure 7 Distribution of age versus how often a male respondent states they pick up after their dog.

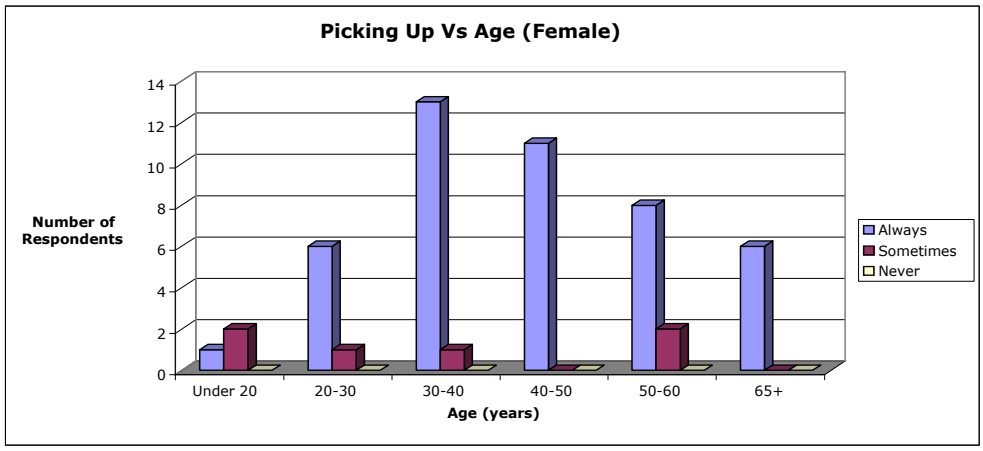

Figure 8 Distribution of age versus how often a female respondent states they pick up after their dog.

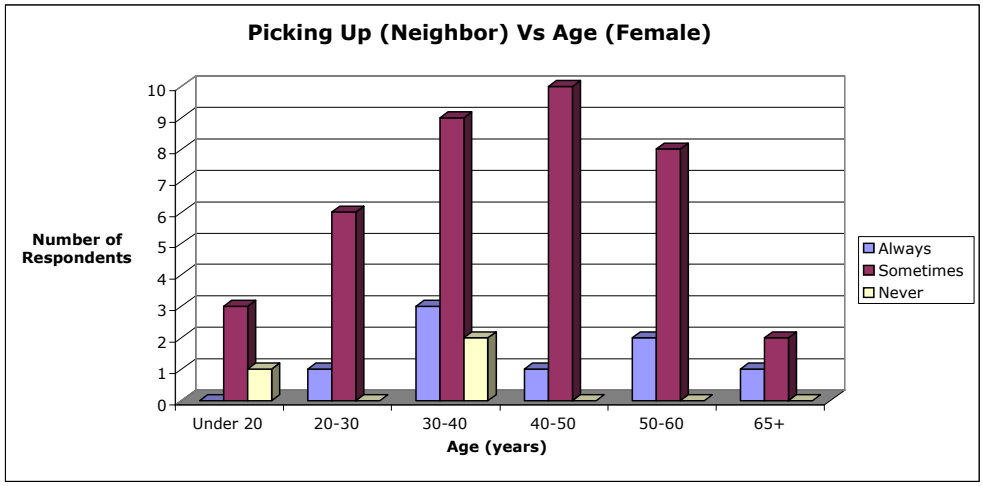

Figure 9 Distribution of ages versus how often a female states others at the park pick up after their dog.

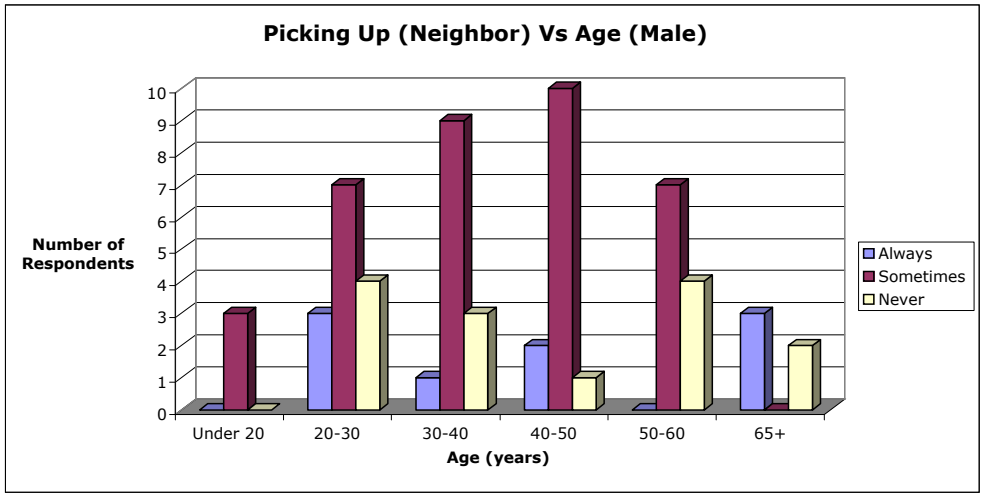

Figure 10 Distribution of ages versus how often a male respondent states others at the park pick up after their dog.

Figures 7 and 8 are showing how respondents answered how often they pick up after their pet according to their age. In figure 7 a total of 56 males filled out the survey. For males 20 and under that completed the survey, 33% "always" pick up after their pet and 60% "sometimes" pick up after their pet. For males between the ages of 20 to 30 years 69% answered "always" and 31 % answered "sometimes". Between the ages of 30 to 40 years male respondents answered "always" 92% times and answered "sometimes" 8%. Males between the ages of 40 to 50 years answered "always" 64%, "sometimes" 29% , and "never" 7%. Males between the ages 50 to 60 answered "always" 82%, "sometimes" 9%, and "never 9%. For males over the age of 65, 75% answered "always" and 25% answered "sometimes". In figure 8 a total of the 51 females completed the survey. Females under the age of 20 answered "always" 33% and "sometimes" 66%. Females between the ages of 20 to 30 years answered "always 86% and "sometimes" 14%. For females ages between the ages of 40 to 50 100% answered "always". Females between the ages of 50 to 60 years, 80% answered " always" and 20% answered "sometimes". Females over the age of 65 answered "always" 100%.

Figures 9 and 10 represent how respondents answered how often they see other people at the park pick up after their pet according to age. In Figure 9 a total of 49 females completed the survey. Under the age of 20 years 75% of females answered "sometimes" and 25% answered "never". Between the ages of 20 to 30, female respondents answered "always" 14% and answered "sometimes" 86%. Females between the ages 30 to 40 answered "always" 21%, "sometimes" 64% , and "never" 14%. For females between the ages of 40 to 50 9% answered "always" and 91% answered "sometimes". Ages 50 to 60 answered "always" 20% and answered "sometimes" 80%.

Females over the age of 65 answered “always” 33% and “sometimes” 66%. In figure 10 a total of 59 males completed the survey[1]. The majority of people who stated that they sometimes picked up after their pets were mostly male (Figures 7-8). Females picked up after their dogs twice as often than males in the sometimes category (Figures 7-8). When noticing what others do at the park both ages and gender are pretty even except in the “never” category where women stated that they noticed fewer people never picking up compared to men. Men stated they noticed “never” about 4 times as much (Figures 9-10).

The majority of people who stated that they sometimes picked up after their pets were mostly male (Figures 7-8). Females picked up after their dogs twice as often than males in the sometimes category (Figures 7-8). When noticing what others do at the park both ages and gender are pretty even except in the “never” category where women stated that they noticed fewer people never picking up compared to men. Men stated they noticed “never” about 4 times as much (Figures 9-10).

[1] There is a discrepancy between the amount of completed surveys in figures 7 –10 because some respondents answered no to having a dog (hence not answering how often they personally pick up) but still answered how often they noticed others picking up after their pet.

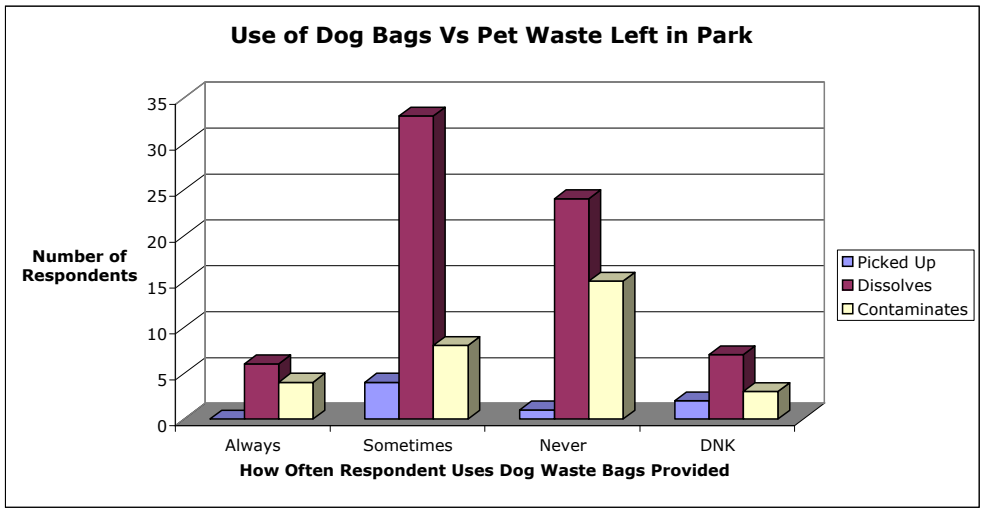

Figure 11 How often a respondent uses the dog waste bags provided by the City of Santee versus the what the respondent thinks happens to pet waste that is left in the park. DNK represents the answer "did not know the city provided bags." The choices are if the pet waste is "Picked Up" by a city employee, the pet waste "Dissolves" and fertilizes the park, or if the pet waste "Contaminates" local streams

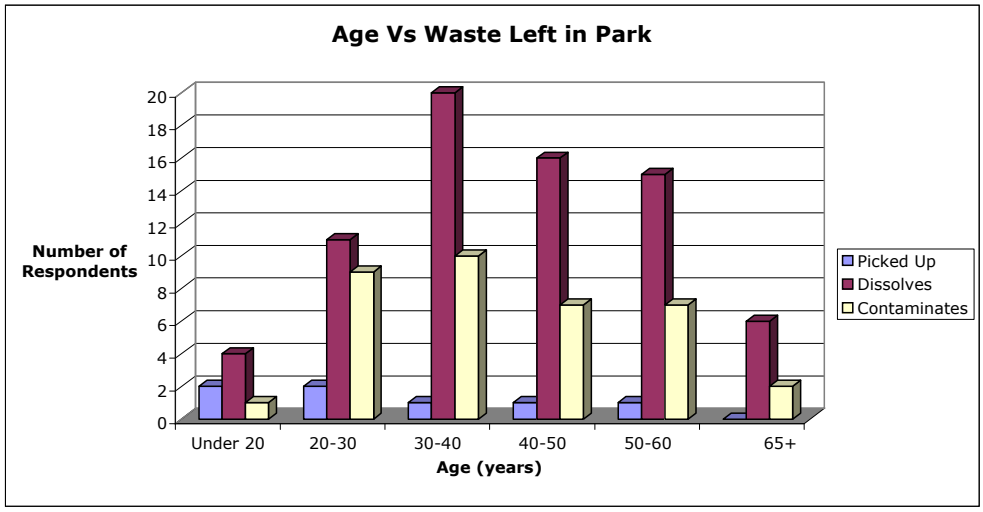

Figure 12 Distribution of age versus what a respondent thinks happens to pet waste left in the park. The choices are if the pet waste is "Picked Up" by a city employee, the pet waste "Dissolves" and fertilizes the park, or if the pet waste "Contaminates" local streams

Figure 11 and Figure 12 present current residential knowledge of what happens to pet waste left in the park. Figure 11 compares the how often the respondents use the dog waste bags provided at the park and what they think happens to pet waste that is left in the park. Respondents answered if they “always”, “sometimes”, “never”, or “did not know that the city provided bags” for the use of the provided dog waste bags in the park. This answer was compared to what they think happens to pet waste left in the park, of the choices: “being picked up by the city”, “dissolving and fertilizing the park”, and “ contaminating local streams”. Pet waste dissolving was the most common answer (65%), contaminating local streams (28%), and the city picking up the pet waste (7%). Respondents that answered that pet waste dissolves and fertilizes also answered that they “sometimes” use the dog bags 47%. Others answered “never” 24%. Figure 12 compares the age of the respondent to what they think happens to pet waste left in the park. The ages of 30 to 40 answered pet waste dissolves 65% while only 50% of the people with ages between 20 to 30 answered pet waste dissolves. Respondents between the ages of 20 to 30 also answered pet waste contaminates streams 41%. Current knowledge of water quality differed. People that believe pet waste dissolves and fertilizes the grass in the park were more likely to not pick up after their pet with a ratio of about 4:1 (Always/Sometimes) while people that believe the pet waste left in the park contaminates local water streams had about a 7:1 ratio of picking up after their pet (Figure 11). Also use of city-provided dog waste bags impacts how many times a respondent picks up after their pet (Figure 11). Dog owners that answered they always use the bags provided had a 9:1 ratio (Always:Sometimes) of picking up after their dog while people that stated they

sometimes or never use the bags had a smaller ratio of about 5:1 (Figure 11). People that do not use the bags on regular bases were two times less likely to pick up after their dog (Figure 11). Current knowledge was also different throughout age groups. Residents between the ages of 20-30 are evenly dispersed between believing pet waste dissolves or contaminates, while those aged 30-60 have an almost 2:1 ratio of thinking waste dissolves/contaminates (Figure 12). Males were more evenly dispersed between answering that pet wastes dissolves or contaminates. Women aged 30 to 60 had a 3:1 and 4:1 ratio between thinking pet waste dissolves and fertilizes the park, or contaminates local streams (Figure 12).

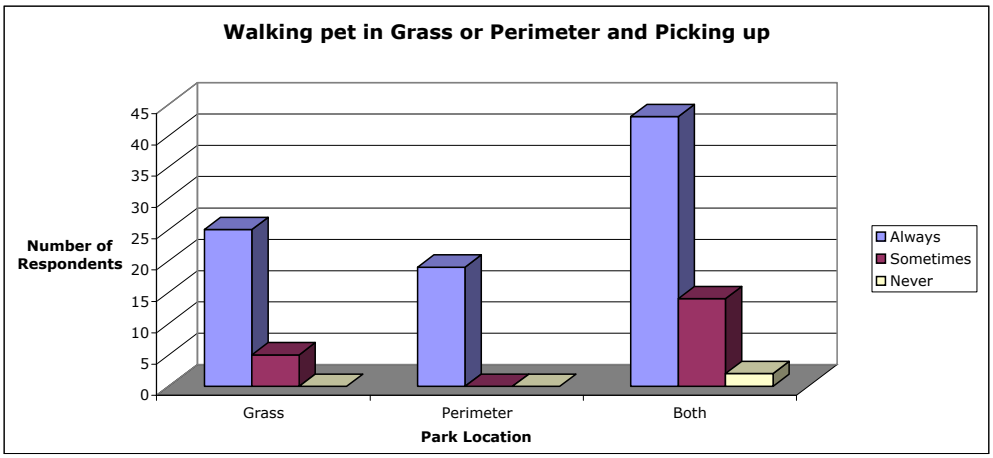

Figure 13. Represents how often a respondent stated they picked up after their dog versus where in the park they walk their dog.

Comment:

Both parks have signs in front of the park that say dogs must be on leashes at all times. However, owners walking their dogs without a leash occurred at a 5:1 ratio (both Woodglen Vista and Big Rock Park). The grass versus perimeter comparison did provide evidence that people walking their dog in the large grass area are less likely to pick up after their pets (Figure 13). Respondents that answered that they walk their dog in the

large grass area answered “sometimes” 5 times to whether they picked up their pet waste. Respondents that walk their dog along the perimeter never answered “sometimes” or “never” to whether they picked up the pet waste up. The density map of pet waste shows that people will leave their pet waste along the edges of the park near bushes and fence lines more often (Figures 14 and 15)

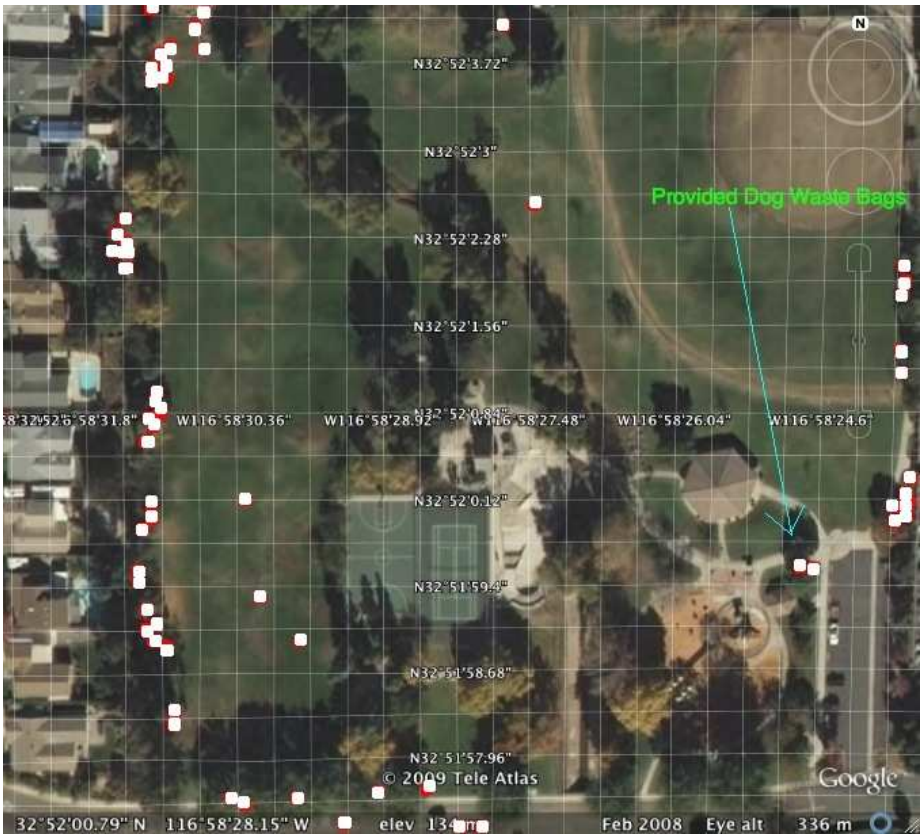

Figure 14. Woodglen Vista Density Pet Waste Map. The white markings represent the sites at the park where pet waste was witnessed.

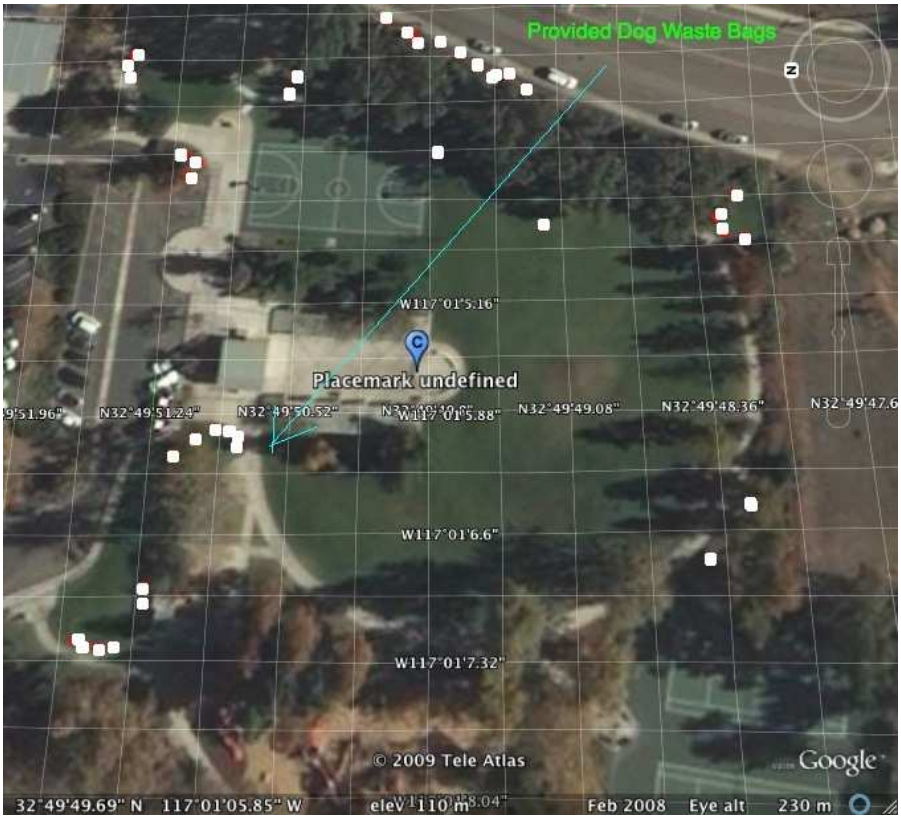

Figure 15. Big Rock Park Density Pet Waste Map. The white markings represent the sites at the park where pet waste was witnessed.

The more often an individual walked their dog the more likely they were to pick up after their pet. When people stated that they walked their dogs once per week the ratio of "always" picking up versus "sometimes" picking up was 33:10, 16:5 for two times per week, and 37:4 when they stated three or more times a week. People that walk their dog three or more times a week are nine times more likely to always pick up after their pet (Figure 16).

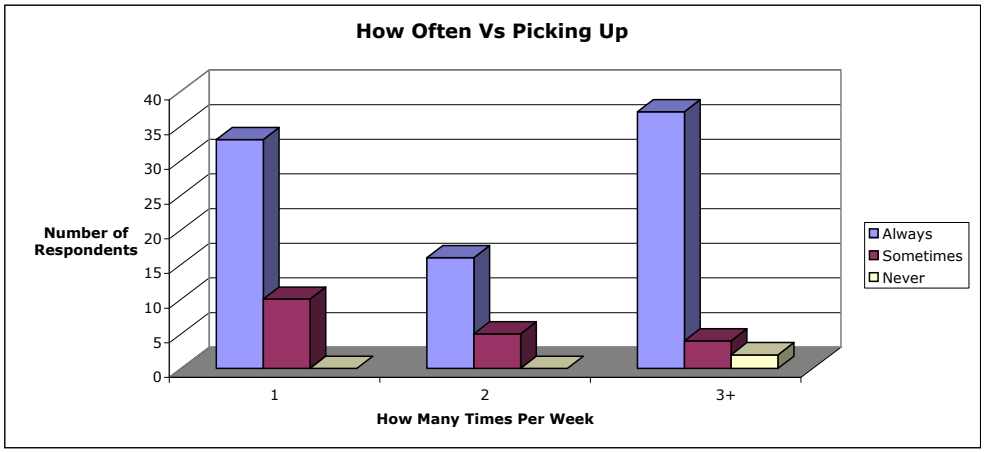

Figure 16. How often an owner will walk their dog per week versus how the owner answered they pick up after their dog. The choices are they pick up "always", "sometime", or "never".

After plotting the pet wastes left in both Woodglen Vista Park and Big Rock Park, there was almost a 2:1 difference in the amount between pet waste left in Woodglen Vista over Big Rock Park (Figures 14 and 15). The density of events increases near the edges of the park and on the outside the park (Figures 14 and 15). For example, at the east edge of Big Rock Park on along the sidewalk on the fence line, there was more pet waste left than anywhere else in the park. At Woodglen Vista Park, there was more pet waste left along the bushes and trees on the large grass area. At Woodglen Vista Park, this could be because owners did not notice their dog defecating as much along the bushes as if they would if their dog was in the center of the park. At Big Rock Park there was more pet waste left outside the park.

Discussion

The results from both the observation study and the individual surveys do not provide a single conclusive reason for having an increased amount of pet waste left in the park. Noticing the age demographic most of the people that were surveyed were between the ages of 30-40 (26% people surveyed) and 40-50 (20% people surveyed). It is interesting to note that the only group to say that they never picked up after their pets were males in this middle aged range.

When respondents commented on how often they noticed other people in the park picking up their pet waste, the most common answer was “sometimes” people pick up after their pets. This could be due the fact that what people say and what they actually do tends to differ when self-reporting in a survey. They may feel that they need to answer that they would always pick up after their pet. There is cognitive research studying how people will answer a survey even if it is completely anonymous. A book titled “Do People Mean What They Say?” by Marianna Bertrand comments on this cognitive study. Social nature plays a major role in how a respondent may choose to answer questions in front of an interviewer. In the case of this survey, respondents may have wanted to avoid looking like an irresponsible pet owner in front of the interviewer. Many respondents avoid stating opinions about an issue that affects people. Another problem with some surveys is that respondents take little mental effort in answering questions addressed. Respondents will not always take the time recalling specific events that are pertinent to the survey (Bertand and Mullainathan 2001). The survey conducted showed a massive discrepancy between what respondents said they did personally compared to what they said others in the park do. The majority respondents answered that they personally pick

up after their pet “always” but answered others rarely “always” pick up after their pet. The answer relating to what others do may better relate to what the respondent actually does. The observations and pet waste density map suggest that few people “always” pick up after their pet.

From the observations, one of reasons that was concluded to have an impact on owners not picking up after their pet was having dogs unleashed in the park, however the data received in the survey portion did not fully confirm this observation. The surveys show that having a dog unleashed resulted about a 4:1 ratio (picking up:not picking up) and having your dog always leashed resulted about a 5:1 ratio. With the park dog-leashing laws being changed at the end of June 2009 (after the survey portion of this project was completed) this will need to be looked at again to determine if there is a shift in observed data. People that always leash their dogs but do not pick up after their pet could be taking advantage of going unnoticed by other park users. People that leash their dogs were more likely to always walk on the pathway or the perimeter of the park. Both pathways and perimeters at Woodglen Vista Park and Big Rock Park have areas that are not as visible, so this could lead owners to not care as much because they are less visible. People that never leash their dogs are more likely to be in the large grass areas of the parks. These grass areas are more visible to others in the park and could make owners believe that someone would notice them if they did not pick up after their dog.

There appears to be some correlation between the time of the day and people’s behavior. During my observations in the early to mid morning I did not see as many people walking their dogs and did not see any owners leave pet waste behind. A routine of always walking their pet at certain time of the day seems to make people more likely

to pick up after their pet. This can be seen in the data on how often owners walk their dogs per week. The owners that stated that they would walk their dogs 3+ times per week were 9 times more likely to always pick up after their dog, compared to owners that only walk their dog once or twice a week. These data suggest that having a routine of walking your dog constantly at a certain time or amount of times per week does play a role in whether owners pick up after their pet (Figure 16).

The water quality knowledge of residents had an important role in the decision to pick up pet waste. Owners that stated pet waste left in the park contaminates streams were about seven times more likely to pick up after their pet than not, while owners that thought that pet waste dissolves and fertilizes the grass were only about five times more likely to pick up after their pet (Figures 11 and 12). It is intuitive that people who believe that pet waste will contaminate local streams would be more likely to want to always pick up after their pet. According to the survey data, females stated that pet waste dissolves three to four times more often compared to males, who were more evenly split between thinking pet waste contaminates local streams or that it dissolves and fertilizes the grass.

Many residents that answered the survey stated that others in the park do not pick up after their dogs. This corresponds to the data received during a Think Blue Survey (2008). Many residents of San Diego believed that their neighbor does not care if they are directly adding to water pollution. This is either because of the social nature of the survey where the respondent does not want to look irresponsible in front of the interviewer or because they actually notice more people besides themselves not taking an action to reduce residential impact on water pollution. Although residents in San Diego feel that pet waste is an above average concern in terms of impacting water quality, the

majority of the people that were surveyed for my study believed that pet waste dissolves into the grass. The residents that responded to the Think Blue survey stated that "seeing pet waste on the sidewalk" was the second most common observance of polluting behavior in San Diego. Pet waste left on the sidewalks adjoining the park was commonly observed while I was making the pet waste density maps.

A similar pet waste study in Hillsborough County Florida concluded some of the same results as my study. The study utilized focus groups and determined that the most common reason residents do not pick up after their pet is because they do not care or they do not know it is a problem. A similar conclusion in the Hillsborough County Florida to my study was the most important issue that led to picking up after their pet. On a scale of 1 to 5 with 1 being the most important pollution was numbered 4 and aesthetics was numbered 1. This correlates with my study because more of the respondents believed that pet waste dissolves and fertilizes the grass than contaminates local streams (HC pet waste study 2009),

Many respondents to the Think Blue Survey believe that water quality is something that the government should take care of or feel that they do not have the time be involved in local activities to reduce water pollution. Residents also feel that they would have a small impact and would not make a difference in the larger scale (Think Blue Survey 2008). My survey disagreed with these findings. Only 7% answered that they believed that city workers picked up after the pet waste that was left in the park. The survey did not address if respondents would be more involved in better practices if they had more time.

Conclusion

From the data presented the following conclusions can be made.

- Woodglen Vista Park has a greater problem with people not picking up after their pets
- Although I did not indentify a single significant group or activity that leads to an increase in pet waste left in the park, the density pet waste maps show that residents do not pick up after their pets in the parks.
- The leashed:unleashed ratios from both the observation study and surveys conducted indicated that when a residents dog is unleashed, they are less likely to pick up after their dog.
- Males stated more often that they sometimes do not pick up after their dog, but when males walked with another person this ratio was cut in half.
- Males were evenly split between thinking pet waste dissolves and fertilizes the grass or instead contaminates local streams while females stated that pet waste dissolves and fertilizes more often.
- People who walk their dogs more often are more likely to pick up after their pet waste.
- Residents that do not pick up after their pet will usually walk the large perimeter of the park next to the overgrowth of bushes.

Recommendations

Based on this study the following recommendations can be made:

- Better advertisement of provided pet waste bags at Woodglen Vista Park and Big Rock Park. Provide the free waste bags in more areas of the parks.
- There is a need for an education program for the residents of the City of Santee about pet waste management.

References

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ATTACHMENT 8.1 SANTEE REVIEW ARTICLES

Santee Review

Your quarterly update for City news

Summer 2009

Santee Budget & State of City Update

Environmental Impact Report for Fanita Ranch Revised

Progress Continues at Town Center Community Park

We're going Green! As part of the City's effort to implement more sustainable business practices and to cut costs the Santee Review will no longer be printed in magazine format. Instead, an electronic version will be available online. Please visit www.ci.santee.ca.us to view and down load your e-copy today!

City Enhances Environmental Impact Report for Fanita Ranch

The City has enhanced a wildland fire safety report for Fanita Ranch.

Fire safety was analyzed as part of the Environmental Impact Report (EIR) approved for the Fanita Ranch project in December 2007. The use of prescribed burning and grazing of Fanita's natural open space preserve was ruled out as unnecessary, potentially unsafe, and environmentally unsound.

While a court upheld the EIR on all issues, it advised the City to expand upon a fire protection analysis prepared by fire safety experts. The City consulted with the original authors of the fire protection plan, and also requested two additional experts respected in the fire science field to conduct an independent review. Each of the fire safety experts concluded that the Fanita Ranch fire protection design for wildfire is sound.

The analysis found that prescribed burning and grazing in Fanita's natural open space preserve pose real problems. Prescribed burning close to residents has potential health risks from pollution. Grazing methods are unpredictable because herbivores are not selective and could eat sensitive plant species along with invasive plants.

The enhanced fire safety report is included in the revised EIR, and includes information on the City's existing regulations for wildland fire protection which continue to be some of the most protective regulations in the State.

The Revised EIR for public and fire safety can be found on the City's website at www.ci.santee.ca.us.

Volunteers Assist with Creek Clean Up

Rain storms last winter washed unsightly trash into the newly-restored Forester Creek that runs through Santee. Thanks to volunteers from the San Diego River Park Foundation who assisted city staff in removing 1.5 tons of unsightly trash along a one-mile section of the creek before it could be washed further downstream into the San Diego River.

For further information on the San Diego River Park Foundation or information about volunteering at future creek and river clean up events visit *http://www.sandiegoriver.org*. To report storm water pollution contact the Stormwater Program Manager at (619) 258-4100 ext. 177.

The Sustainability Project

"Community in Balance"

The City of Santee has committed to an effort to promote energy efficiency and reduce our local government's reliance on costly business practices through energy and water conservation, reduced demand and use of sustainable workplace practices.

The purpose of this effort, known as *The Sustainability Project*, is to:

1. Respond to legislative mandates to reduce greenhouse gas emissions.
2. Save taxpayer money through improved energy and water conservation.
3. Do the right thing for the environment and our future by becoming more sustainable.

Over the next year, the City of Santee will focus on developing and adopting an *Energy Road Map*, which will identify opportunities and prioritize actions to reduce energy use and become more environmentally responsible.

The Energy Road Map will focus on:

- Energy efficient building retrofits, upgrades and workplace practices;
- Opportunities for renewable energy uses, such as solar power;
- Energy efficient transportation improvements, such as street light and traffic signal upgrades;
- Sustainable land-use planning practices, such as development of green building policies, codes and incentives;
- Public education and outreach programs to assist residents and businesses in using less energy;
- Economic development opportunities;
- Partnerships, grants and incentive programs to assist residents and businesses in obtaining energy rebates and financing opportunities; and
- Clean transportation practices to reduce City vehicle carbon emissions.

In partnership with San Diego Gas & Electric (SDG&E), the City has begun to perform comprehensive energy assessments of 23 City facilities, including Santee City Hall, Santee Fire Stations, Public Services Operations Center, Sheriff's Station, Aquatics Center, Teen Center and other park and recreation facilities. Results of these assessments will be included in the Energy Road Map.

As part of this effort, the City has also partnered with several agencies in the Santee region, including Padre Dam Municipal Water District, Santee School District, Grossmont Union High School District, U.C. San Diego, SDG&E, SANDAG and CleanTECH San Diego[1].

This ambitious, community-wide effort is focused on developing regional energy efficiency and renewable energy opportunities to benefit the entire region. Beneficiaries will include the City of Santee, municipal agencies, local businesses and residents.

The City of Santee is on the verge of becoming a model for our citizens and our future. Through this project and our partnerships with other agencies, our vision is to make the Santee community as efficient and environmentally responsible as possible.

(1) CleanTECH San Diego is a non-profit membership organization formed to stimulate innovation and accelerate the adoption of clean technologies and sustainable industry practices for economic, environmental and social benefit.

Water Conservation Efforts Continue

Water Conservation is more important than ever. To combat California's third consecutive year of drought, Governor Arnold Schwarzenegger recently proclaimed a level 2 state of emergency and has directed all state and local agencies to utilize their resources, implement emergency conservation plans, and provide assistance for people, communities and businesses impacted by the drought.

Using recycled water for irrigation saves precious potable water for drinking, bathing and cleaning.

Most of the City of Santee's public property landscaping is already irrigated with recycled water. This includes parks, medians, rights-of-way, and landscaping around City buildings.

In addition to using recycled water, the City uses "Smart Irrigation Controllers" which are currently installed on approximately 50% of the City's irrigation systems. The City's goal is to retrofit the entire system to these water efficient controllers. The controllers use weather data and plant type to adjust watering times and frequency for maximum efficiency. The water wise controllers also detect and control leaks, reduce water use and improve overall system efficiency.

As required under drought conditions, all City systems are scheduled to water only between the hours of 10:00 p.m. and 6:00 a.m.

To help customers become more water efficient, Padre Dam Municipal Water District offers a variety of programs to assist customers in reducing water use. Please visit their website at *www.padredam.org* to get more information on water conservation, drought and water resources.

To report irrigation leaks or problems with any City irrigation system please call (619) 258-4100 ext. 188, call the Public Services Operation Center at (619) 258-4195, or visit the City website at *www.ci.santee.ca.us*.

Help Santee Recycle

Is there something in your garbage that isn't really garbage? Chances are, yes. Over half of what you put in the trash can be recycled, reused or transformed into new consumer products.

Waste prevention and recycling programs have been in place for several years with state laws requiring cities and counties to reduce waste by 50%. For several years, the City of Santee has met and exceeded the 50% diversion requirement. The City looks to residents and businesses to help in continuing to meet this goal and help make our community more sustainable.

The following items can be put into your blue household commingled recycling bin:

- Newspapers
- Mixed papers
- Cardboard
- Empty aerosol cans
- Frozen food boxes
- Glass
- Paper bags
- Plastic beverage bottles (#1-7)
- Plastic containers (#1-2)

Items not accepted for recycling:

- Paper towels
- Styrofoam
- Paper plates or napkins
- Aluminum foil
- Food Waste
- Plastic Utensils

Even yard waste, which makes up a large part of California's waste stream, can be recycled right in your own backyard through the simple practice of grasscycling, mulching and composting. In addition to saving landfill space, you'll save on buying fertilizer for your yard. Vegetable food scraps in a compost bin can also reduce a large percentage of garbage.

Think green and make recycling a habit at home and at work. To learn more about what can be recycled, call Waste Management (the City's franchise hauler) at (619) 596-5100, City Hall at (619) 258-4100 ext. 128 or visit *http://www.wastemanagementsd.com*.

SanTree Fest Improved Park through Interactive Outdoor Fun

The 4th annual *SanTree Fest...an Earth Day Celebration* recently took place in conjunction with the City receiving a "Tree City USA" designation.

The City and Waste Management partnered together to host the event at Mast Park where participants planted 110 native trees in the park and removed 40 yards of invasive plants from the San Diego River. In addition, the event provided a variety of environmental information booths, food sampling opportunities and live entertainment by the bluegrass band, Virtual Strangers.

This free community event was made possible through the generous support of Waste Management, community partner Henry's Marketplace and hosts of employee volunteer groups, neighborhood volunteer organizations and community members.

City Employees Honored

City employees gathered in February for the annual Employee Service Awards Ceremony where twenty-five employees who have dedicated between five and twenty-five years of service to the City of Santee were honored. The City Manager presented individuals with a plaque and City pin in recognition of their years of service to the City of Santee.

The following employees were honored for twenty or more years of service to the City of Santee: Juan Cobas, Engineering Inspector, Brett Eldridge, Fire Division Chief, Rick Williams, Fire Captain, Cory Christensen, IT Manager, Linda Christensen, Buyer, Mike Collicott, Firefighter, Tim Dibsie, Fire Captain, Hap Nowakowski, Fire Engineer, Larry Roberts, Fire Captain and John Thornton, Fire Engineer.

City employees with 25 years of service (L-R) Juan Cobas, Brett Eldridge and Rick Williams.

Certified Farmers' Market in Santee

Check out local farm fresh produce and great food at the Santee Farmers' Market.

Open every Wednesday afternoon from 3:00 to 7:00 p.m., rain or shine.

Located at 10445 Mission Gorge Road (old Santee School site). Free on site parking is available.

For more info contact Andrea Hankins at *santeecertifiedfarmersmarket@gmail.com* or (619) 933-8427.

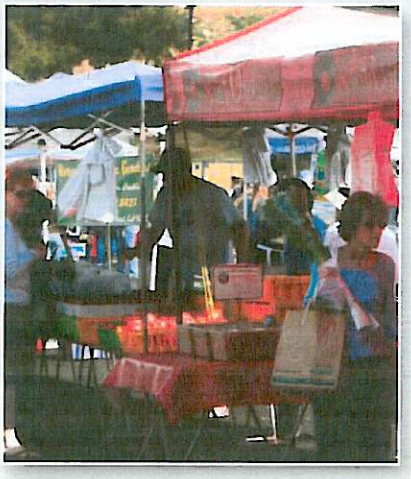

Santee Review

Your quarterly update for City news

Fall 2009

2009 in Review

Town Center Community Park Takes Shape

Santee's Conservation Plan

Upcoming Events

CITY OF SANTEE, CALIFORNIA · INCORPORATED 1980 ·

4

Debris Recycled into Construction Material

As a result of natural erosion and scouring from rain storms in 2009, approximately 2,500 tons of silt and sand were washed from neighboring communities downstream into the cement lined portion of the Forester Creek channel, north of the Mission Gorge Road Bridge. Public Services Division crews are mandated by the State of California Water Quality Control Board to clean out all channels, culverts and catch basins throughout the City annually in order to maintain required water quality.

Instead of hauling the debris to the landfill, ten cubic yard dump trucks hauled over 230 loads of silt and sand to the Town Center Community park construction site to be used as backfill along the base of two large retaining walls, one along the east side of Cuyamaca Street and the other separating the new park from Rio Seco School.

This sustainable project helped improve water quality in the San Diego River, reduced park project construction costs and diverted materials from the landfill.

Crews removed 2,500 tons of natural sand and silt debris from the Forrester Creek Channel.

Recycled silt and sand materials were used as back fill for retaining walls at Town Center Community Park

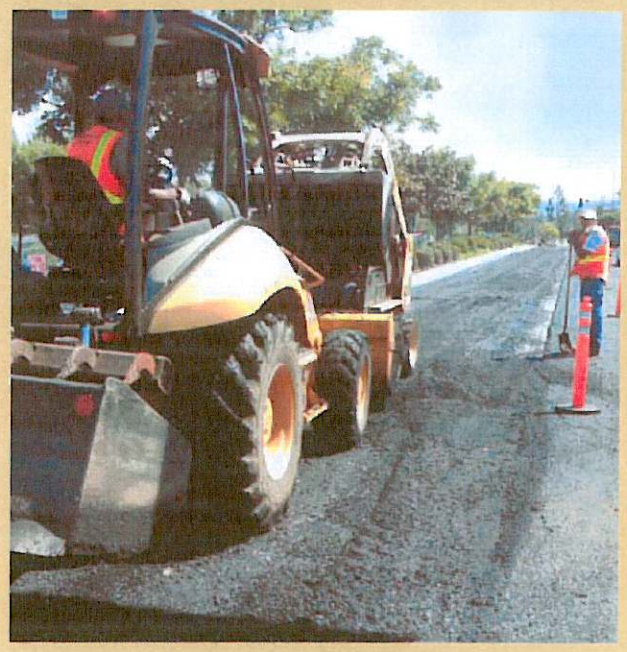

Stimulus Funds Help Improve City Roads

The City of Santee secured stimulus funding through the American Recovery and Reinvestment Act (ARRA) and is quickly putting it to good use on Santee roads. In total, the City was awarded $918,000 for transportation projects in Santee.

Funding will be used for the rehabilitation of Mission Gorge Road from Fanita Drive to Town Center Parkway and Magnolia Avenue from Mast Boulevard to El Nopal for much needed repairs to these heavily traveled roads.

These efforts were made possible with help from the San Diego Association of Governments (SANDAG). This funding is a welcomed addition, especially as the cost for paving materials continues to rise.

Kids, Water and Bugs!

Sixty children attending the City of Santee summer day camp enjoyed a hands-on experience on the connection between neighborhood pollution, the storm drain system and river water quality. The children poured different types of "pollution" down a model of the storm drain system into the "river." They learned how streets discharge directly into the river, and the importance of not dropping trash or disposing of waste liquids into the street.

After seeing what pollution can look like in the river, they were introduced to some of the wildlife that live in Forester Creek. Gary and Laqueta Strawn, and Shannon Quigley of the San Diego River Park Foundation brought along bugs for the children to observe.

You can help keep the river and creeks clean by reporting illegal discharges to the Stormwater Program Manager at (619) 258-4100 ext. 177.

Recycle Old Batteries

In California, discarded batteries of all sizes are considered hazardous waste. This includes single use alkaline AAA, AA, C, D, button cell, and 9 Volt as well as lithium and rechargeable batteries. Batteries must be recycled or taken to an appropriate waste disposal facility. They should not be disposed of in the trash.

Batteries are considered hazardous because of the metals and other toxic and corrosive materials they contain. But did you know they are also a potentially valuable source of recyclable metal? It makes sense to reprocess the metal for use in new products.

The Waste Management Recycling Center located in El Cajon will recycle your old batteries. For more information contact the Recycling Center at (619) 596-5100 or call Ed Ruiz, Santee Community Services Department, at (619) 258-4100 ext. 128.

Remember, batteries do not belong in the trash!

Free Classes for California-Friendly Landscaping Available

Home gardeners and landscape professionals can learn the latest ways to reduce water use in landscapes by taking classes online or in-person. Classes are free and cover information on irrigation systems, watering, fertilizing, basic landscape design and plant identification.

For online classes visit www.bewaterwise.com and click on the "Classes" tab at the top of the page. The Cuyamaca College Conservation Garden and Padre Dam Municipal Water District also offer classes at their locations. For information on class times and locations visit www.thegarden.org or www.padredam.org.

Reducing Energy and Water Use Concurrently

The San Diego Gas & Electric Company (SDG&E) is currently offering free home-energy saving kits to help residents save energy and water. These easy to install kits include three faucet aerators and a low-flow showerhead.

Low-flow showerheads and faucet aerators are a great way to save energy and water use at the same time. These devices allow air to enter into the water stream, maintaining a high-pressure flow while reducing water use by up to 11%.

Remember, when you're saving water, you're also saving energy. For more information or to request your free kit, log on to www.sdge.com/residential/energyefficiencykit.

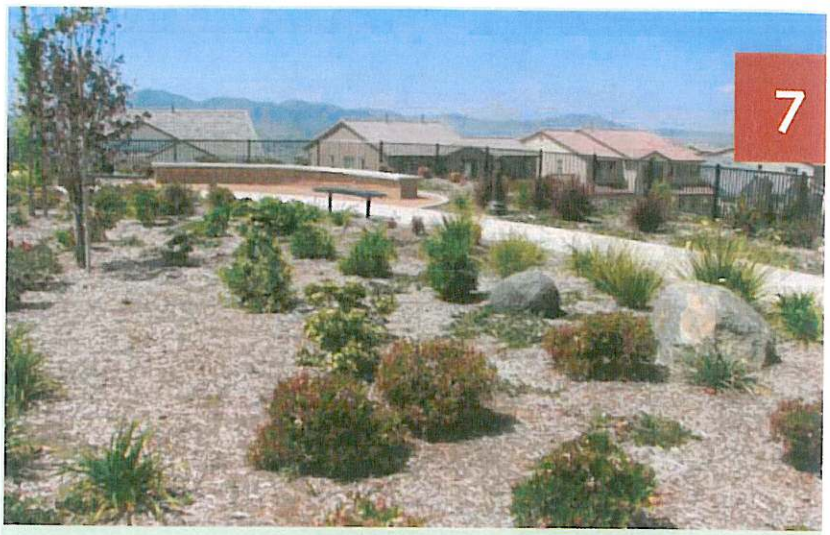

Water Efficient Landscape Ordinance Takes Effect

Southern California is currently experiencing an extended period of drought combined with a reduced supply of imported water from Northern California. The State of California has recently adopted legislation that requires the California Department of Water Resources to update its existing water efficient landscape ordinance. The new legislation also requires that all cities and counties adopt water efficient landscape ordinances by January 2010 that are at least as effective at conserving water as the State model. The new standards are important to landscape and irrigation maintenance in Santee because they restrict water use, thereby requiring more careful monitoring and maintenance of irrigation systems.

The key points of the new state ordinance are to establish a maximum water allocation for most new development and large existing development projects through a "maximum allowable water allocation". This allocation is determined based on the type and size of landscaping and irrigation, and the climate type that applies to each project. A water allocation will be established for all new and rehabilitated commercial, industrial, public, and developer initiated residential developments with landscape areas exceeding 2,500 square feet, and individual homeowner installed single family residential landscapes exceeding 5,000 square feet. The new standards also apply to existing landscapes for properties exceeding one acre in size.

The City of Santee is participating in a working group with other east county cities, the County of San Diego, Helix Water District, and Padre Dam Municipal Water District to develop consistent landscape regulations among these municipalities while meeting the requirements of the new state landscape ordinance. Uniformity of regulations will make the landscape and irrigation approval process more user friendly for both residents and the development community.

Santee's water efficient landscape ordinance will be presented to the City Council for consideration later this year. For further information, contact Mark Brunette, Senior Planner at (619) 258-4100 ext. 158 or mbrunette@ci.santee.ca.us.

ATTACHMENT 12.1 ADDITIONAL STUDY

City of Santee
2009 Additional Study
Rivers and Creeks

Submitted to:

City of Santee
Development Services
10601 Magnolia Avenue
Santee, CA 92071-1266

Prepared by:

D-Max Engineering, Inc.
7220 Trade Street, Suite 119
San Diego, CA 92121
Tel: (858) 586-6600
Fax: (858) 586-6644

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

January 20, 2010
Project No. 200919W-3

Ms. Helen Perry
Storm Water Program Manager
City of Santee
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: City of Santee 2009 Additional Study, Rivers and Creeks

Dear Ms. Perry:

Enclosed please find our final report for the City of Santee 2009 Additional Study. This report presents the results of the monitoring conducted at five river and creek locations in the City of Santee during both rounds of the 2009 dry weather season. The contents include field screening data and analytical laboratory test results, historical data, and photographs of sampling locations.

Review comments from the draft report submitted to the City have been incorporated into this final report. It has been our pleasure working with the City of Santee on this project. If you have any questions regarding this report, please call me at (858) 586-6600 ext. 22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

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A Historical Dry Weather Monitoring Data
B Photographs of Sampling Locations
C Laboratory Analytical Reports
D Field Data and Trash Assessment Sheets

1 ADDITIONAL STUDY

1.1 Introduction

Concurrent with the 2009 Dry Weather Monitoring Program, two rounds of monitoring were conducted as part of an additional study for the City of Santee (City). The objective of the Additional Study is to evaluate water quality in the San Diego River, Forester Creek, and Sycamore Creek, and to assess any change in water quality as they flow through urbanized areas of the City. The City has conducted an additional study of its receiving water bodies twice each year since 2002. Historical monitoring data is included as Appendix A. Round One and Round Two of the 2009 Additional Study were conducted in May and September of 2009, respectively.

The five monitoring sites selected for the Additional Study are described below.

- Forester Creek, Upstream: located beneath the Prospect Avenue bridge, west of Cuyamaca Street.
- Forester Creek, Downstream: located approximately 200 feet north of the Mission Gorge Road and Fanita Drive intersection, east of Fanita Creek.
- San Diego River, Downstream: located beneath the West Hills Parkway bridge.
- San Diego River, Upstream: located approximately 200 feet downstream of the rock dam at the east end of the RCP service road.
- Sycamore Creek, Downstream: located beneath the Carlton Oaks Drive bridge, west of the Santee Recreation Lakes.

Table 1-1 provides the site number, location, conveyance configuration, land uses, hydrologic subarea, and GPS coordinates of the sampling locations. A map of sampling locations is included as Figure A. Photographs of sampling locations are included in Appendix B.

During both rounds of monitoring, flow rates and visual observations were recorded, field testing was performed, and samples were collected for laboratory analysis, at all five sites. Laboratory reports for both rounds are included in Appendix C. Field data sheets for both rounds of monitoring are included in Appendix D.

TABLE 1-1
2009 RIVER AND CREEK MONITORING STATIONS

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
Forester Creek Downstream	Approximately 200 feet north of the Mission Gorge Road and Fanita Drive intersection, east of Fanita Creek	Natural Creek	Open	Commercial	907.12	32.83953	-117.00241
Forester Creek Upstream	Beneath the Prospect Avenue bridge, west of Cuyamaca Street	Concrete Channel	Industrial	Commercial	907.13	32.83093	-116.98543
San Diego River, Downstream	Beneath the West Hills Parkway bridge	Natural Creek	Open	Residential	907.12	32.83936	-117.02450
San Diego River Upstream	Approximately 200 feet downstream of the rock dam at the east end of the RCP service road.	Natural Creek	Open	Industrial	907.12	32.85282	-116.95281
Sycamore Creek Downstream	Beneath the Carlton Oaks Drive bridge, west of the Santee Recreation Lakes	Natural Creek	Open	Residential	907.12	32.84441	-117.00652

2 FIELD AND LABORATORY ANALYTICAL METHODS

2.1 Field Screening Procedures

Field screening techniques consist of qualitative field observations, flow measurement, and quantitative field analyses of selected water quality parameters. Weather conditions, time since last rainfall, and the type of stormwater conveyance are recorded as well. Specific observations and results of the field water quality analyses are documented on field data sheets, which serve as a record of the field visit and are included in Appendix D.

Field screening and analyses were conducted according to the following procedures and methods.

Qualitative Observations

Qualitative field observations are made during each site visit. These observations include a general site assessment and description of water odor, clarity, the presence of floatable materials, visible deposits or stains, and organisms. Evidence of present or past illicit connections and illegal discharges to the storm drain system can also be discovered through careful field observations. Each field screening location is photographed to document site conditions. Photographs are included in Appendix B.

Flow Measurement

Flow measurements can be used to estimate pollutant mass loading and to identify any significant changes in discharge that may indicate an illegal discharge upstream. Various field methods are used in formulas to estimate the flow rate, but the most common used in this study consisted of measuring the velocity, depth, and width of the flowing water. Low levels of flow may also be assessed visually.

Field Water Quality Analyses

At each site, water samples were collected and analyzed in the field for the following constituents:

- Temperature
- pH
- Specific Conductance
- Turbidity
- Dissolved Oxygen

The methods used to perform the above field analyses, along with the reporting limit, range, and accuracy of each method, are listed in Table 2-1.

TABLE 2-1
FIELD ANALYTICAL METHODS

Parameter	Method	Reporting Limit	Range	Accuracy
Specific Conductance	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.01 mS/cm	0 – 20 mS/cm	± 2% of functional sensitivity[1]
Temperature	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.1℃	0.0℃ – 60.0℃	± 0.5℃
pH	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.01	0.00 – 14.00	± 0.01 pH
Turbidity	Hanna Instruments HI 93703 Portable Turbidity Meter*	0.01 NTU	0.01 – 50.00 NTU and 50 – 1000 NTU	± 0.5 NTU or 5% of reading (whichever is greater)
Dissolved Oxygen	Hanna Instruments HI 9145 Portable Dissolved Oxygen Meter	0.00 mg/L	0.00 to 45.00 mg/L	± 1.5% of range

Notes:
EC = electrical conductivity
TDS = total dissolved solids
NTU = nephelometric turbidity unit
mS/cm = millisiemens per centimeter
℃ = Degrees Celsius
[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.
*Test method information taken from Hanna Instruments and CHEMetrics manuals, available online at www.hannainst.com and www.chemetrics.com.

2.2 Laboratory Analytical Methods

At each site, samples were collected in sterile bottles for transport to the laboratory for analysis. Samples were submitted to EnviroMatrix Analytical, Inc, a laboratory certified by the California Department of Health Services, for analysis of the following constituents:

- Total Kjeldahl Nitrogen
- Total Nitrogen
- Nitrate/Nitrite as N
- Orthophosphate as P
- Total Phosphorus
- Total Dissolved Solids
- Total Coliforms
- Fecal Coliforms
- Enterococci

The methods used to perform each of the above analyses along with method reporting limits and holding times are listed in Table 2-2. Water samples were collected, placed on ice in a cooler, and then submitted to the analytical laboratory within four hours of sampling to ensure that water samples for total coliform, fecal coliform, and *Enterococcus* tests met standard holding time requirements for bacteria samples.

TABLE 2-2
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Reporting Limit	Maximum Holding Time
Nitrate/Nitrite as N	SM4500 NO3 E	0.05 mg/L	48 hours
Total Kjeldahl Nitrogen	SM4500 N C	0.5 mg/L	28 days
Total Nitrogen	Calculation*	0.5 mg/L	na
Orthophosphate as P	SM4500 P E	0.05 mg/L	48 hours
Total Phosphorus	SM4500 P B, E	0.05 mg/L	28 days
Total Dissolved Solids	SM2540 C	20 mg/L	7 days
Total Coliforms	SM 9221 B, E	** 20 – 1,600,000 MPN/100 mL	6 hours
Fecal Coliforms	SM 9221 B, E	** 20 – 160,000 MPN/100 mL	6 hours
Enterococcus	SM 9230 A, B	** 20 – 160,000 MPN/100 mL	6 hours

Notes:
MPN/100 mL = most probable number (of colony-forming units) per 100 milliliters
na = not applicable
* Total Nitrogen is calculated as the sum of Nitrate/Nitrite as N and Total Kjeldahl Nitrogen.
** For D-Max's Dry Weather Monitoring Program, EnviroMatrix Analytical, Inc. (EMA) performs standard dilutions for total coliforms to quantify from 20-1,600,000 most probable number per 100 milliliters (MPN/100 mL). For fecal coliforms and Enterococci, EMA performs standard dilutions to quantify from 20-160,000 MPN/100 mL. During the analysis and interpretation of the results, the number of tubes used to quantify the sample must fit the MPN index table from Standard Method 9221. The dilution set used will determine the detection limit. A standard dilution analysis is set up with 15 tubes at different concentrations. The reporting limit will always be adjusted depending on the dilution factor used for quantifying the actual results based on the MPN table. If the result for the analysis was less than 16,000 MPN/100 mL, the reporting limit will always be 20, and the dilution factor will be 10. As the dilution factor goes up, the reporting limit listed in the results from EMA will also go up based on the calculation made with EMA's data system. However, the lowest quantifiable number or reporting limit would still be 20 based on how the standard tubes for the sample is set up.

3 FIELD SCREENING RESULTS

3.1 Qualitative Observations

3.1.1 Round One

During Round One, all site visits were performed under partly cloudy conditions. Water collected at the Forester Creek upstream location had a musty odor, and no vegetation or deposits were observed, while all other sites had odorless water samples, normal vegetation and some type of deposits. Water samples from the San Diego River upstream and Sycamore Creek downstream locations were yellow in color, while all other samples were colorless. The Forester Creek downstream location had slightly cloudy water, with trash and leaf debris on the surface and no biological organisms present, while all other water samples were clear, had no floatable materials, and algae or other aquatic biota were observed. Organisms observed during Round One included algae, insects and snails.

Qualitative observations made during Round One are presented in Table 3-1.

3.1.2 Round Two

Light conditions were sunny during all site visits in Round Two. All sites had clear, odorless and colorless water samples, with one exception of yellow water at the Sycamore Creek downstream location. All sites contained sediment, gravel, and/or fine particulate deposits. Aquatic organisms were present at all sites and included various combinations of insects, algae, snails, fish, crayfish, frogs, and birds.

Qualitative observations made during Round Two are presented in Table 3-2.

TABLE 3-1
FIELD OBSERVATIONS – ROUND ONE

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
Forester Creek Downstream	5/19/09	11:45	Partly Cloudy	None	None	Slightly Cloudy	Trash, Leaves	Sediment/ Gravel, Fine Particulates	Normal	Insect/Algae
Forester Creek Upstream	5/19/09	10:40	Partly Cloudy	Musty	None	Clear	None	None	None	Algae, Snails
San Diego River, Downstream	5/19/09	12:30	Partly Cloudy	None	None	Clear	None	Sediment/ Gravel	Normal	Insect/Algae
San Diego River Upstream	5/19/09	9:30	Partly Cloudy	None	Yellow	Clear	None	Sediment	Normal	Insect/Algae
Sycamore Creek Downstream	5/20/09	10:50	Partly Cloudy	None	Yellow	Clear	None	Fine Particulates	Normal	Insect/Algae

TABLE 3-2
FIELD OBSERVATIONS – ROUND TWO

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
Forester Creek Downstream	9/2/09	12:20	Sunny	None	None	Clear	Trash	Sediment/ Gravel, Fine Particulates	Normal	Insect/Algae, Snails
Forester Creek Upstream	9/2/09	11:30	Sunny	None	None	Clear	Trash	Fine Particulates	None	Insect/Algae, Snails
San Diego River, Downstream	9/2/09	13:10	Sunny	None	None	Clear	Trash	Sediment/ Gravel, Fine Particulates	Normal	Insect/Algae, Fish, Crayfish
San Diego River Upstream	9/2/09	10:30	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	Insect/Algae, Snails, Fish, Frogs, Birds
Sycamore Creek Downstream	9/3/09	10:35	Sunny	None	Yellow	Clear	Trash	Sediment/ Gravel, Fine Particulates	Normal	Insect/Algae

3.2 Field Analytical Results

Descriptions of the field constituents measured during field monitoring are provided below.

Flow measurements can help estimate pollutant mass loading. Field methods include measuring the velocity, depth, and width of the flowing water to calculate the flow rate.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Also, the aquatic habitat must remain within a certain temperature range in order to sustain sensitive aquatic life.

The **pH** is an expression of acidity or alkalinity of a water sample. The pH of an aquatic system will affect a variety of chemical reactions, including the availability of nutrients and the solubility of chemical substances, particularly heavy metals.

Specific Conductance (Conductivity) measurements indicate the total concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially indicate the presence of dissolved pollutants.

Turbidity describes the clarity or cloudiness of a water sample, or the degree to which light is blocked by suspended material in the water. Turbid waters not only limit the amount of light that reaches submerged vegetation, thus reducing photosynthetic capacity, but excessive suspended particles can also absorb heat and increase water temperatures.

Dissolved Oxygen measurements indicate the amount of gaseous oxygen (O_2) dissolved in the water. Photosynthesis by aquatic biota and diffusion from the surrounding air are the processes responsible for oxygen input. Oxygen depletion can be detrimental to aquatic life and is often caused by the decomposition of organic material. Excessive algal growth due to nutrient enrichment is frequently the source of decomposing material. Higher values of dissolved oxygen often correspond with lower temperatures.

Statistical summaries of field analytical data are presented in Table 3-3 for Round One data and 3-4 for Round Two data. Complete field analytical results are presented in Table 3-5 for Round One data and Table 3-6 for Round Two data.

TABLE 3-3
STATISTICAL SUMMARY OF FIELD ANALYTICAL RESULTS – ROUND ONE

Parameter	Maximum	Minimum	Average	Median
Flow (gpm)*	1392	355	274	355
Temperature (°C)	27.9	20.5	23.8	23.8
pH	8.1	7.5	7.8	7.8
Conductivity (mS/cm)	2.84	1.34	2.22	2.60
Turbidity (NTU)	31.55	4.41	11.75	6.14
Dissolved Oxygen (mg/L)	8.86	5.25	6.82	6.28

Note: * The flow rate of the San Diego River upstream location is reported as unmeasurable, and therefore is not included in the flow statistics

TABLE 3-4
STATISTICAL SUMMARY OF FIELD ANALYTICAL RESULTS – ROUND TWO

Parameter	Maximum	Minimum	Average	Median
Flow (gpm)*	135	78	93	94
Temperature (° Celsius)	31.5	26.6	28.0	27.5
pH	8.2	7.5	7.8	7.8
Conductivity (mS/cm)	2.98	1.88	2.53	2.81
Turbidity (NTU)	10.30	2.80	6.09	5.83
Dissolved Oxygen (mg/L)	8.73	5.21	6.66	5.89

Note: * The flow rate of the San Diego River upstream location is reported as unmeasurable, and therefore is not included in the flow statistics

TABLE 3-5
FIELD ANALYTICAL RESULTS – ROUND ONE

Site	Date	Time	Flow (gpm)	Temp. (ºC)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Forester Creek Downstream	5/19/09	11:45	468	23.8	7.9	2.60	31.55	5.76
Forester Creek Upstream	5/19/09	10:40	355	27.9	8.1	2.84	6.14	8.86
San Diego River Downstream	5/19/09	12:30	1,392*	22.0	7.6	2.60	5.89	6.28
San Diego River Upstream	5/19/09	9:30	Unmeasureable*	24.6	7.8	1.73	10.76	7.95
Sycamore Creek Downstream	5/20/09	10:50	Ponded	20.5	7.5	1.34	4.41	5.25
Water Quality Objective (WQO)			**	**	**> 6.5, < 9.0**	**20**	***	**5.0**

Notes:
* The accuracy of manual flow estimation techniques decreases as flow volume increases. Because of high flow rates in the San Diego River, the United States Geological Service (USGS) flow gauge data has been used in this report. The USGS flow gauge is located in proximity to the San Diego River downstream sampling location; however no gauge exists near the San Diego River upstream sampling location. Thus the upstream flow has been reported as unmeasurable.
** No established limit
*** There is no clear WQO in the Basin Plan, but a comparison is not necessary since TDS has been measured directly. See the laboratory data tables for TDS results.
Source: Basin Plan

TABLE 3-6
FIELD ANALYTICAL RESULTS – ROUND TWO

Site	Date	Time	Flow (gpm)	Temp. (ºC)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
Forester Creek Downstream	9/2/09	12:20	94	26.6	7.6	2.97	7.61	5.56
Forester Creek Upstream	9/2/09	11:30	107	31.5	7.9	2.81	3.90	8.73
San Diego River Downstream	9/2/09	13:10	135*	26.8	7.5	2.98	2.80	5.89
San Diego River Upstream	9/2/09	10:30	Unmeasurable*	27.5	7.8	1.88	10.30	7.91
Sycamore Creek Downstream	9/3/09	10:35	78	27.7	8.2	1.99	5.83	5.21
Water Quality Objective (WQO)			**	**	**> 6.5, < 9.0**	**20**	***	**5.0**

Notes:
* The accuracy of manual flow estimation techniques decreases as flow volume increases. Because of high flow rates in the San Diego River, the United States Geological Service (USGS) flow gauge data has been used in this report. The USGS flow gauge is located in proximity to the San Diego River downstream sampling location; however no gauge exists near the San Diego River upstream sampling location. Thus the upstream flow has been reported as unmeasurable.
** No established limit
*** There is no clear WQO in the Basin Plan, but a comparison is not necessary since TDS has been measured directly. See the laboratory data tables for TDS results.
Source: Basin Plan

4 LABORATORY ANALYTICAL RESULTS

4.1 Summary

Descriptions of the laboratory constituents for analytical monitoring conducted during both rounds are shown below.

Total Nitrogen is the sum of nitrate/nitrite as N and total Kjeldahl nitrogen, described below. High levels of nitrogen may be indicative of nutrient pollution from agricultural or household fertilizer runoff. High nitrate levels can contribute to excessive algal growth, resulting in oxygen depletion as algae decomposes, and may eventually suffocate other aquatic life.

Nitrate/Nitrite as N is the form of nitrogen most available for uptake in chemical reactions. Nitrate/nitrite as N is a component of the total nitrogen.

Total Kjeldahl Nitrogen (TKN) is composed of organic nitrogen, ammonia, and ammonium and encompasses all components of the total nitrogen not available as nitrate or nitrite.

Total Phosphorus is the total amount of phosphorus, including both orthophosphate and less reactive forms.

Orthophosphate-phosphorus (orthophosphate-P) can also be an indicator of nutrient pollution from agricultural or household fertilizer runoff. Similar to nitrate/nitrite as N, orthophosphate-P pollution can cause nutrient enrichment, stimulate algal growth, and thus deplete oxygen in the water to levels that are dangerous for aquatic life. Even low levels of orthophosphate-P can cause significant algal growth, as it is commonly the limiting nutrient in plant growth.

Total Dissolved Solids (TDS) measurements quantify the amount of dissolved minerals, cations, anions, and salts in the water. TDS is often related to conductivity and hardness. It can originate from natural sources, sewage runoff, urban runoff, and/or industrial wastewater. In southern California, imported water may also be a source of TDS. In drinking water, it can affect the taste and aesthetic quality. In storm water, it can to some extent affect the lives of aquatic species, although only in high amounts.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts, most surface waters, and soils. Testing water samples for total coliform bacteria is a standard practice in public health. Total coliform is measured as an indicator of other more harmful pathogens, since these pathogens are generally present in much smaller quantities and are difficult to detect.

Fecal coliform, a subset of coliform bacteria, and ***Enterococcus*** are found primarily in the gastro-intestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. Without the use of significantly more expensive methods, such as ribotyping, it is not possible to determine whether the source of fecal material is human or animal. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain.

Complete laboratory analytical results are presented in Table 3-7 for Round One data and Table 3-8 for Round Two data. Laboratory reports are included in Appendix C.

TABLE 4-1
LABORATORY ANALYTICAL RESULTS – ROUND ONE

Site	Date	Time	Nitrate/Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solid (mg/L)	Total Coliform (MPN/100ml)	Fecal Coliform (MPN/100ml)	*Enterococcus* (MPN/100ml)
Forester Creek Downstream	5/19/09	11:45	0.7	0.8	1.4	0.66	0.67	1,560	2,800	170	500
Forester Creek Upstream	5/19/09	10:40	4.93	1.1	6	0.33	0.34	1,830	3,500	1,700	800
San Diego River, Downstream	5/19/09	12:30	1.93	0.8	2.7	0.09	0.1	1,680	30,000	300	130
San Diego River Upstream	5/19/09	9:30	nd	2.5	2.5	0.13	0.32	1,230	1,300	nd	20
Sycamore Creek Downstream	5/20/09	10:50	0.23	3.9	4.1	0.19	0.28	767	11,000	500	1,400
Reporting Limit			**0.05**	**0.5**	**0.5**	**0.05**	**0.05**	**20.0**	**20**	**20**	**20**
WQO			**10***	*	*	*	*	**1,500 / 1,000****	***	**400******	**151**

Notes:
nd = not detected
* Regional guidance suggests using the EPA's nutrient endpoint tool to determine the WQO. This tool requires more data than what has been collected within the scope of this study.
** WQO varies by watershed. WQO for Forester Creek and San Diego River Upstream is 1,500 mg/L. WQO for San Diego River Downstream and Sycamore Creek Downstream is 1,000 mg/L.
*** No established limit.
**** All sites have a REC-1 beneficial use.
Source: Basin Plan

TABLE 4-2
LABORATORY ANALYTICAL RESULTS – ROUND TWO

Site	Date	Time	Nitrate/Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solid (mg/L)	Total Coliform (MPN/100ml)	Fecal Coliform (MPN/100ml)	*Enterococcus* (MPN/100ml)
Forester Creek Downstream	9/2/09	12:20	1.32	nd	1.6	0.12	0.25	1900	11,000	1,300	500
Forester Creek Upstream	9/2/09	11:30	3.36	0.6	4.0	0.05	0.28	1850	2,300	300	40
San Diego River, Downstream	9/2/09	13:10	0.44	0.6	1.0	0.12	0.14	1920	2,300	40	80
San Diego River Upstream	9/2/09	10:30	0.43	0.8	1.2	nd	0.20	1240	600	40	20
Sycamore Creek Downstream	9/3/09	10:35	nd	3.3	3.3	0.10	0.27	1230	8,000	20	220
Reporting Limit			**0.05**	**0.5**	**0.5**	**0.05**	**0.05**	**20.0**	**20**	**20**	**20**
WQO			*	*	*	*	*	**1,500 / 1,000****	***	**400****	**151**

Notes:
nd = not detected
* Regional guidance suggests using the EPA's nutrient endpoint tool to determine the WQO. This tool requires more data than what has been collected within the scope of this study.
** WQO varies by watershed. WQO for Forester Creek and San Diego River Upstream is 1,500 mg/L. WQO for San Diego River Downstream and Sycamore Creek Downstream is 1,000 mg/L.
*** No established limit.
**** All sites have a REC-1 beneficial use.
Source: Basin Plan

5 DATA ANALYSIS

This section provides an overall evaluation of historical trends for the City of Santee Receiving Waters Additional Study.

A portion of Forester Creek outside the City of Santee has been listed as impaired for pH; however none of the samples in any water body in Santee's additional study have exceeded the Basin Plan WQO for pH (Figure 5-1).

Figures 5-2, 5-3, and 5-4 depict fecal coliform levels measured in upstream and downstream receiving water locations, and measurements are generally lower in downstream locations. In general, fecal coliform levels demonstrate a decreasing trend in all receiving water locations.

The data indicates that the water quality of Forester Creek and San Diego River is improved after traveling through the City of Santee, since pollutant levels are consistently lower in the downstream reach compared to upstream.

Figure 5-1
Additional Study Data: pH

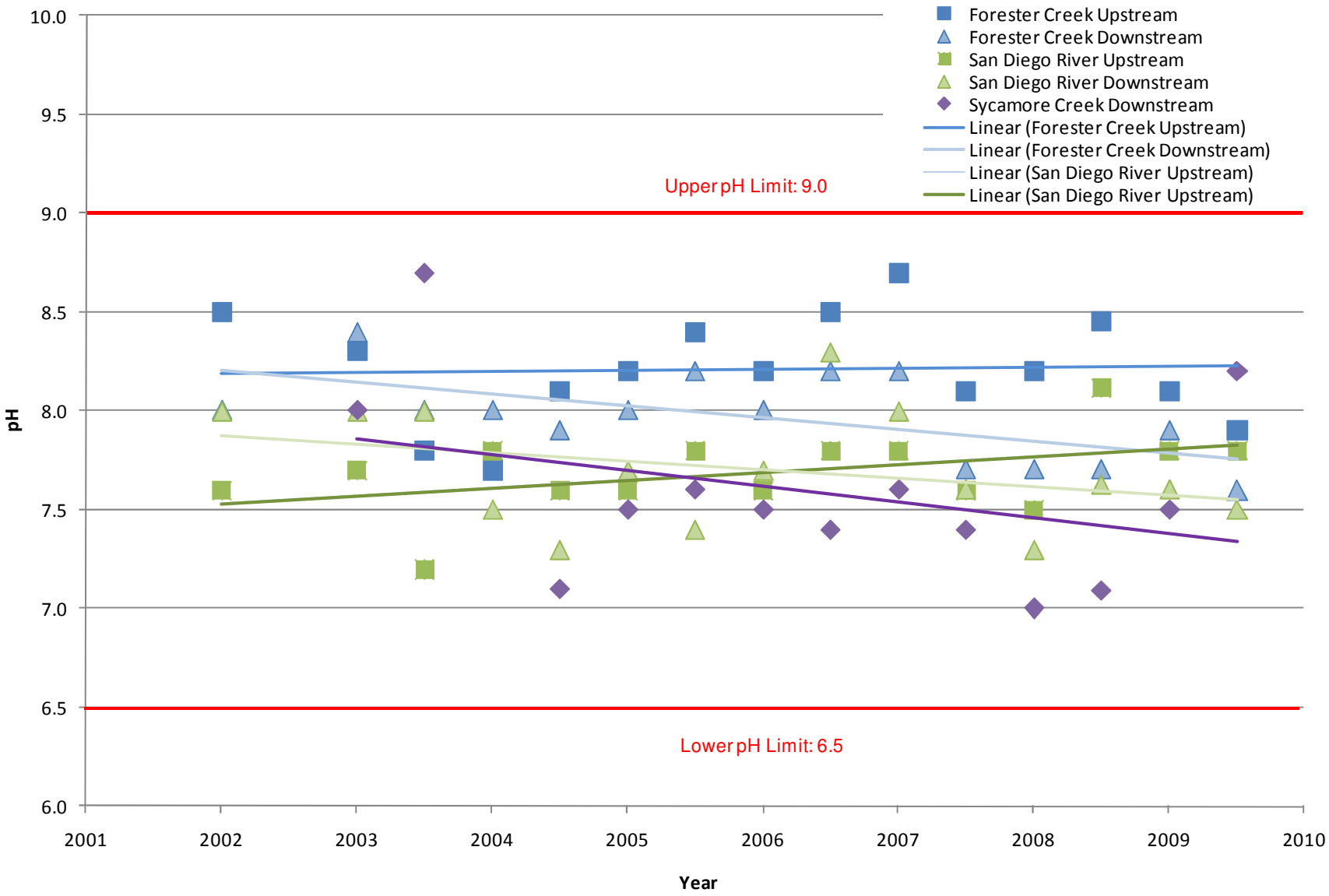

Figure 5-2
Additional Study Data: Fecal Coliform, Forester Creek

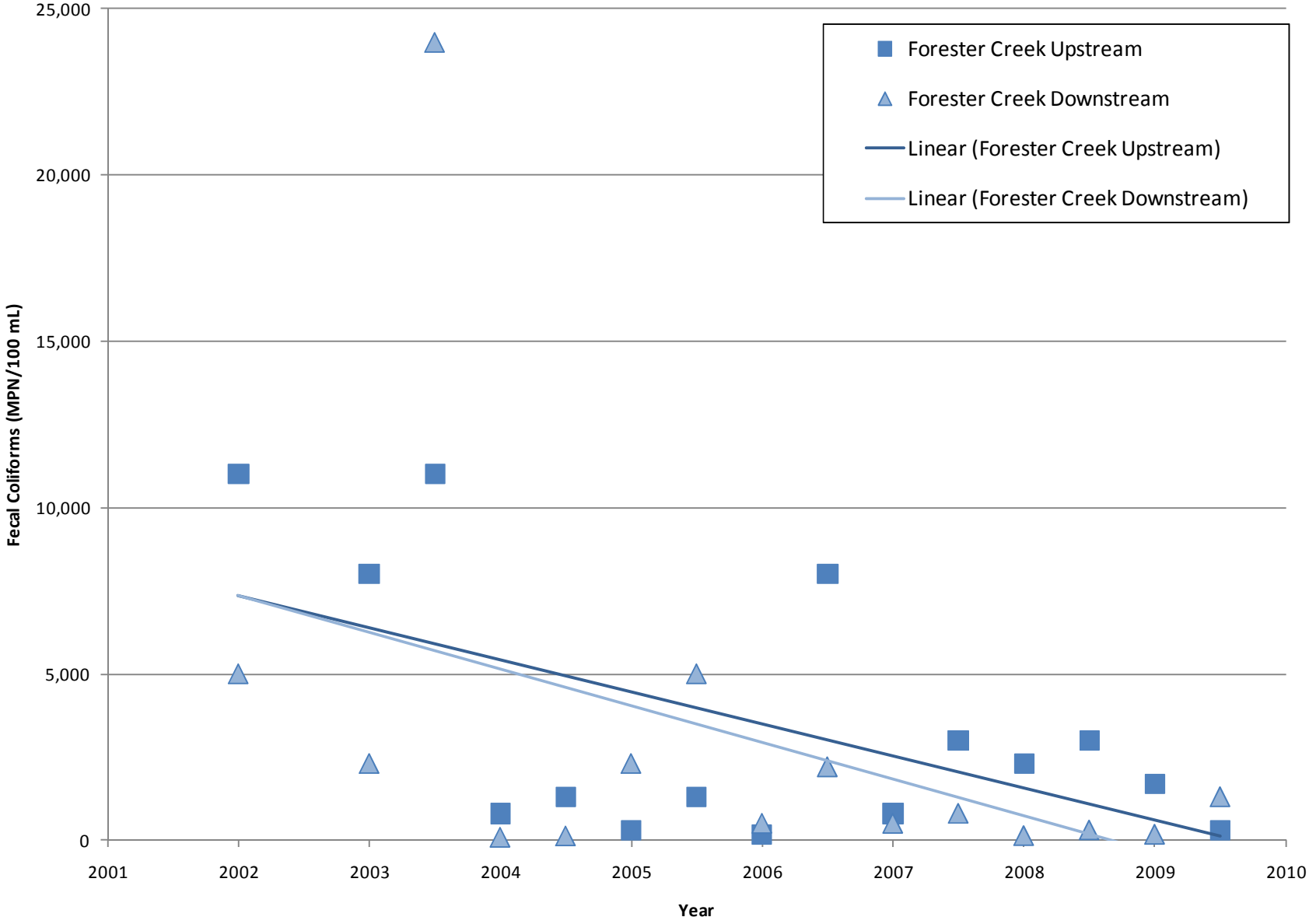

Figure 5-3
Additional Study Data: Fecal Coliform, San Diego River

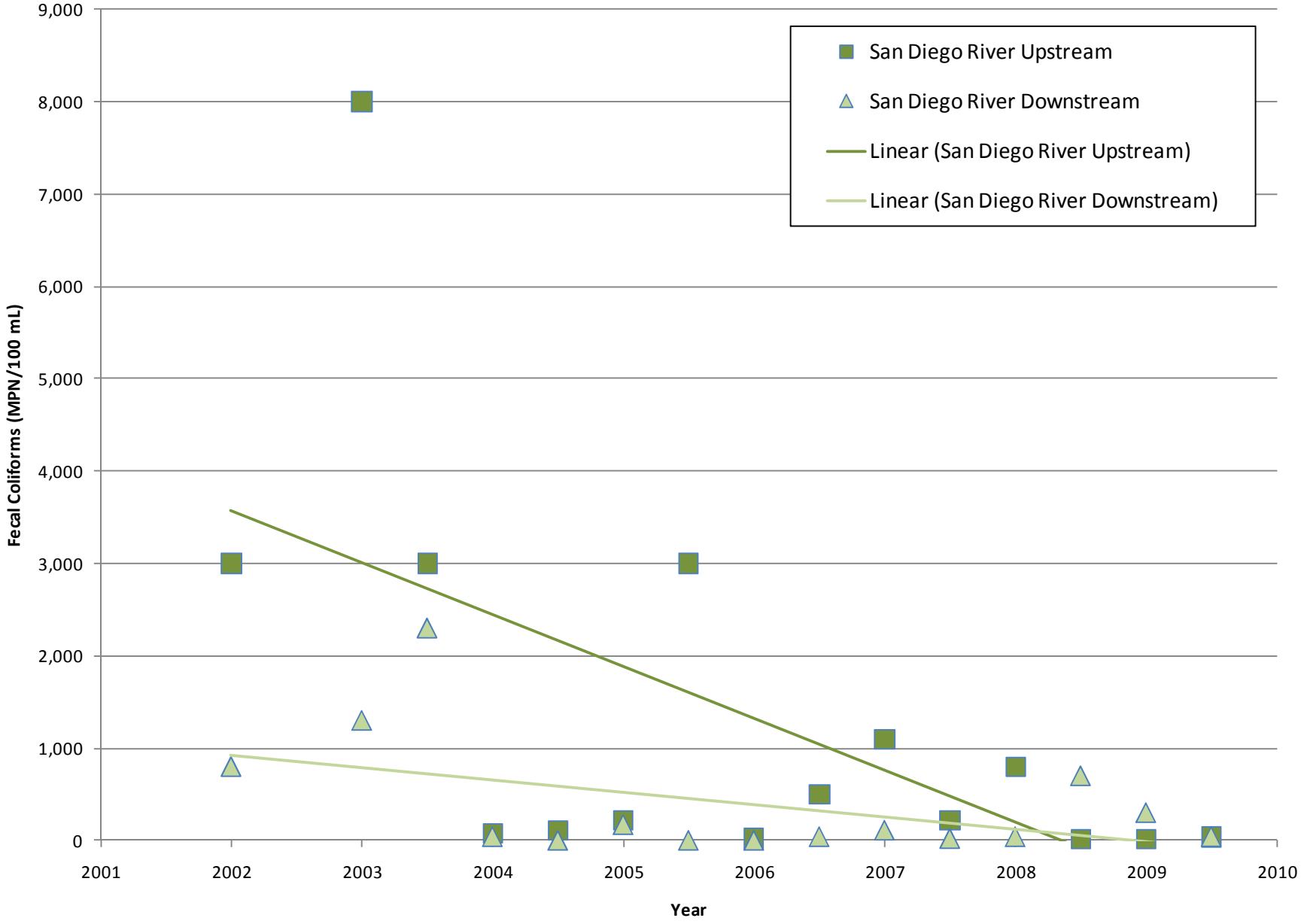

Figure 5-4
Additional Study Data: Fecal Coliform, Sycamore Creek

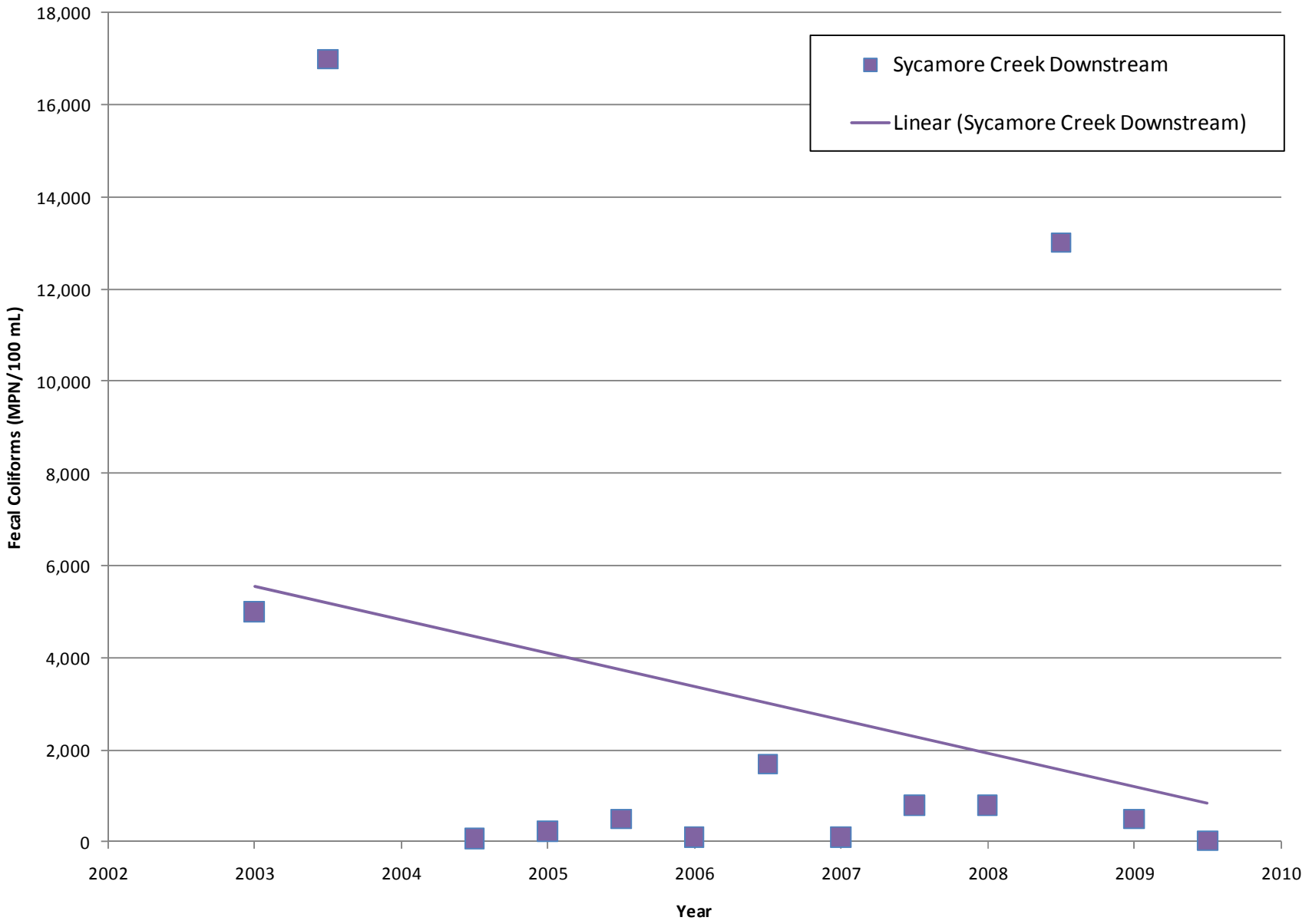

6 REFERENCE

San Diego Regional Water Quality Control Board. 1994. *Water Quality Control Plan for the San Diego Basin*.

FIGURE A
CITY OF SANTEE 2009 RECEIVING WATERBODIES SAMPLING LOCATION MAP

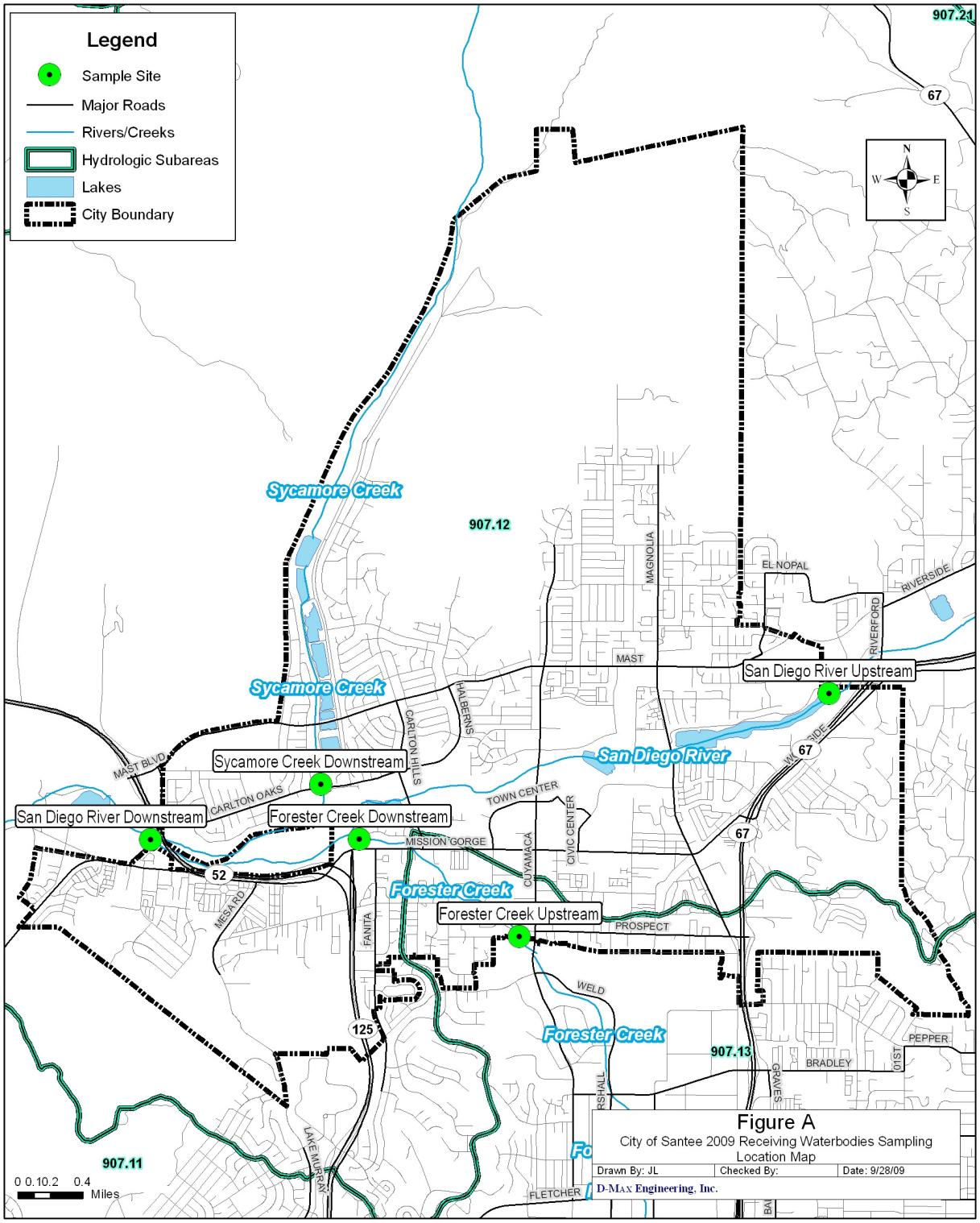

Data Sources: SanGIS, SANDAG, City of Santee

Appendix A

Historical Monitoring Data

Site	Date	Flow* gpm	Temp. °C	pH	Conductivity mS/cm	Turbidity NTU	Ammonia mg/L NH_3-N	Nitrate mg/L NO_3-N	Orthophosphate mg/L PO_4	Orthophosphate-Phosphorus mg/L PO_4-P	Surfactants (Field test) mg/L MBAS	Dissolved Oxygen mg/L	Surfactants (Lab test) mg/L MBAS	Oil and Grease mg/L	Total Hardness mg/L $CaCO_3$
2002															
Forester Creek Downstream	9/3/2002	na	27.0	8.0	2.84	na	na	na	na	na	na		nd	21.0	668
Forester Creek Upstream	9/3/2002	233	32.0	8.5	2.67	na	na	na	na	na	na		nd	14.0	587
San Diego River Downstream	9/3/2002	144	25.0	8.0	2.79	na	na	na	na	na	na		nd	22.0	709
San Diego River Upstream	9/3/2002	unmeasurable	25.5	7.6	2.11	na	na	na	na	na	na		nd	4.00	557
Sycamore Creek Downstream	9/4/2002	dry	ns	ns	ns	ns	ns	ns	ns	ns	ns		ns	ns	ns
2003 Round 1															
Forester Creek Downstream	5/22/2003	unmeasurable	23	8.4	3.34	3.2	0.3	2	0.1	0.03	0.5		nd	nd	585
Forester Creek Upstream	5/22/2003	548	21	8.3	3.60	0.92	0.2	4	0.1	0.03	0.25		nd	nd	690
San Diego River Downstream	5/22/2003	3008	21	8	2.65	3.48	0.2	0.3	0.3	0.10	0.25		nd	nd	549
San Diego River Upstream	5/22/2003	unmeasurable	21	7.7	2.25	2.05	nd	0.2	0.2	0.07	0.25		nd	nd	436
Sycamore Creek Downstream	5/21/2003	100	25	8	1.77	0.11	0.1	0.2	0.2	0.07	0.25		nd	15	299
2003 Round 2															
Forester Creek Downstream	9/17/2003	457	24	8.0	2.98	9.65	0.6	2.4	0.2	0.07	0.13		nd	1	612
Forester Creek Upstream	9/17/2003	254	21	7.8	2.96	3.98	0.3	8	0.1	0.03	0.25		nd	nd	723
San Diego River Downstream	9/17/2003	673	22.5	8.0	2.94	3.89	0.3	0.6	0.4	0.13	0.13		nd	4	662
San Diego River Upstream	9/17/2003	unmeasurable	23.5	7.2	2.24	16.66	0.3	0.2	2.0	0.65	0.13		nd	2	609
Sycamore Creek Downstream	9/18/2003	187	20	8.7	2.21	4.82	0.3	0.2	0.1	0.03	0.25		nd	2	430
2004 Round 1															
Forester Creek Downstream	7/15/2004	172	28	8.0	2.66	3.42	0.6	2.5	0.10	0.03	0.25		nd	nd	709.0
Forester Creek Upstream	7/15/2004	269	32	7.7	2.47	8.06	0.2	2.5	0.10	0.03	0.25		nd	nd	660
San Diego River Downstream	7/15/2004	400	29	7.5	1.75	2.47	0.1	1.25	1.50	0.49	0.25		nd	nd	596
San Diego River Upstream	7/15/2004	unmeasurable	26	7.8	2.45	9.88	0.80	1.25	0.30	0.10	0.25		nd	nd	694.00
Sycamore Creek Downstream	7/16/2004	Dry	ns	ns	ns	ns	ns	ns	ns	ns	ns		ns	ns	ns
2004 Round 2															
Forester Creek Downstream	9/24/2004	203	21	7.9	2.87	17.79	0.3	2.5	0.2	0.07	0.25		nd	nd	662
Forester Creek Upstream	9/24/2004	226	23	8.1	2.63	2.04	0.1	5	0.1	0.03	0.38		nd	nd	645
San Diego River Downstream	9/24/2004	269	20	7.3	2.00	6.3	0.1	nd	3	0.98	0.25		nd	2	610
San Diego River Upstream	9/24/2004	unmeasurable	20	7.6	2.64	5.03	0.3	1.25	0.6	0.2	0.25		nd	1	650
Sycamore Creek Downstream	9/27/2004	20	20	7.1	2.09	4.46	0.3	nd	0.1	0.03	0.5		nd	1	404
2005 Round 1															
Forester Creek Downstream	5/18/2005	na	21.3	8.0	2.56	7.85	0.2	7.50	0.10	0.03	0.25		nd	nd	805
Forester Creek Upstream	5/18/2005	na	20.6	8.2	2.86	1.48	0.2	6.25	0.10	0.03	0.25		nd	nd	881
San Diego River Downstream	5/18/2005	3861	24.0	7.7	1.44	5.70	0.1	1.25	0.10	0.03	0.25		nd	nd	613
San Diego River Upstream	5/18/2005	unmeasurable	21.7	7.6	2.22	4.59	0.10	2.50	0.60	0.20	0.25		nd	nd	567
Sycamore Creek Downstream	5/17/2005	na	22.9	7.5	1.61	8.76	0.2	1.25	0.1	0.03	0.25		nd	nd	282
2005 Round 2															
Forester Creek Downstream	9/22/2005	468	23.4	8.2	2.66	6.68	0.3	5.00	0.10	0.03	0.38		nd	nd	727
Forester Creek Upstream	9/22/2005	316	24.2	8.4	2.65	5.24	0.3	7.5	nd	nd	0.5		nd	nd	772
San Diego River Downstream	9/22/2005	763	20.7	7.4	2.11	8.58	0.1	1.25	2.00	0.65	0.25		nd	nd	653
San Diego River Upstream	9/22/2005	unmeasurable	22.4	7.8	2.60	2.27	0.20	1.25	0.40	0.13	0.50		nd	nd	733
Sycamore Creek Downstream	9/26/2005	50	21.4	7.6	1.83	4.59	0.3	1.25	nd	nd	0.25		nd	nd	373

Notes:

nd = not detected

ns = not sampled

* The accuracy of manual flow estimation techniques decreases as flow volume increases. Because of high flow rates in the San Diego River, the United States Geological Service (USGS) flow gauge data has been used in this report. The USGS flow gauge is located in proximity to the San Diego River downstream sampling location; however no gauge exists near the San Diego River upstream sampling location. Thus the upstream flow has been reported as unmeasurable.

Site	Date	Dissolved Cadmium mg/L	Dissolved Copper mg/L	Dissolved Lead mg/L	Dissolved Zinc mg/L	Diazinon µg/L	Chlorpyrifos µg/L	Total Coliform MPN/100mL	Fecal Coliform MPN/100mL	*Enterococcus* MPN/100mL	Nitrate/ Nitrite as N mg/L	Total Kjeldahl Nitrogen mg/L	Total Nitrogen mg/L	Orthophosphate as P mg/L	Total Phosphorus mg/L	Total Dissolved Solids mg/L
2002																
Forester Creek Downstream	9/3/2002	nd	nd	nd	nd	nd	nd	8,000	5,000	130						
Forester Creek Upstream	9/3/2002	nd	nd	nd	nd	nd	nd	22,000	11,000	170						
San Diego River Downstream	9/3/2002	nd	nd	nd	0.27	nd	nd	1,700	800	1,700						
San Diego River Upstream	9/3/2002	nd	nd	nd	nd	nd	nd	5,000	3,000	80						
Sycamore Creek Downstream	9/4/2002	ns	ns	ns	ns	ns	ns	ns	ns	ns						
2003 Round 1																
Forester Creek Downstream	5/22/2003	nd	nd	nd	0.03	nd	nd	5,000	2,300	130						
Forester Creek Upstream	5/22/2003	nd	nd	nd	0.021	nd	nd	17,000	8,000	130						
San Diego River Downstream	5/22/2003	nd	nd	nd	nd	nd	nd	2,200	1,300	210						
San Diego River Upstream	5/22/2003	nd	nd	nd	nd	nd	nd	13,000	8,000	20						
Sycamore Creek Downstream	5/21/2003	nd	nd	nd	nd	nd	nd	8,000	5,000	70						
2003 Round 2																
Forester Creek Downstream	9/17/2003	nd	nd	nd	nd	nd	nd	50,000	24,000	1,300						
Forester Creek Upstream	9/17/2003	nd	nd	nd	nd	nd	nd	30,000	11,000	8,000						
San Diego River Downstream	9/17/2003	nd	nd	nd	nd	nd	nd	3,000	2,300	800						
San Diego River Upstream	9/17/2003	0.006	nd	nd	nd	nd	nd	8,000	3,000	800						
Sycamore Creek Downstream	9/18/2003	nd	nd	nd	nd	nd	nd	30,000	17,000	1,700						
2004 Round 1																
Forester Creek Downstream	7/15/2004	nd	nd	nd	0.030	nd	nd	9000.0	80.0	40.0						
Forester Creek Upstream	7/15/2004	nd	nd	nd	nd	nd	nd	8000	800	110						
San Diego River Downstream	7/15/2004	nd	nd	nd	nd	nd	nd	2600	40	nd						
San Diego River Upstream	7/15/2004	nd	nd	nd	nd	nd	nd	1700.00	80.00	40.00						
Sycamore Creek Downstream	7/16/2004	ns	ns	ns	ns	ns	ns	ns	ns	ns						
2004 Round 2																
Forester Creek Downstream	9/24/2004	nd	nd	nd	0.026	nd	nd	11,000	120	300						
Forester Creek Upstream	9/24/2004	nd	nd	nd	nd	nd	nd	14,000	1,300	270						
San Diego River Downstream	9/24/2004	nd	nd	nd	0.031	nd	nd	700	nd	nd						
San Diego River Upstream	9/24/2004	nd	nd	nd	nd	nd	nd	16,000	110	80						
Sycamore Creek Downstream	9/27/2004	nd	nd	nd	nd	nd	nd	30,000	80	3,000						
2005 Round 1																
Forester Creek Downstream	5/18/2005	nd	nd	nd	nd	nd	nd	9,000	2,300	1,100						
Forester Creek Upstream	5/18/2005	nd	nd	nd	nd	nd	nd	5,000	300	300						
San Diego River Downstream	5/18/2005	nd	nd	nd	nd	nd	nd	1,700	170	20						
San Diego River Upstream	5/18/2005	nd	nd	nd	nd	nd	nd	9,000	220	1,300						
Sycamore Creek Downstream	5/17/2005	nd	nd	nd	nd	nd	nd	11,000	230	500						
2005 Round 2																
Forester Creek Downstream	9/22/2005	nd	nd	nd	nd	nd	nd	1,600,000	5,000	500						
Forester Creek Upstream	9/22/2005	nd	nd	nd	nd	nd	nd	240,000	1,300	230						
San Diego River Downstream	9/22/2005	0.005	nd	nd	nd	nd	nd	240,000	nd	500						
San Diego River Upstream	9/22/2005	nd	nd	nd	nd	nd	nd	80,000	3,000	40						
Sycamore Creek Downstream	9/26/2005	nd	nd	nd	nd	nd	nd	130,000	500	500						

Notes:

nd = not detected

ns = not sampled

Site	Date	Flow (D-Max) gpm	Temp. °C	pH	Conductivity mS/cm	Turbidity NTU	Ammonia mg/L NH_3-N	Nitrate mg/L NO_3-N	Orthophosphate mg/L PO_4	Orthophosphate-Phosphorus mg/L PO_4-P	Surfactants (Field test) mg/L MBAS	Dissolved Oxygen mg/L	Surfactants (Lab test) mg/L MBAS	Oil and Grease mg/L	Total Hardness mg/L $CaCO_3$
2006 Round 1															
Forester Creek Downstream	5/18/2006	608	21.3	8.0	2.56	7.85	0.2	7.50	0.10	0.03	0.25		nd	nd	740
Forester Creek Upstream	5/18/2006	561	20.6	8.2	2.86	1.48	0.2	6.25	0.10	0.03	0.25		nd	nd	692
San Diego River Downstream	5/19/2006	2514	24.0	7.7	1.44	5.70	0.1	1.25	0.10	0.03	0.25		nd	nd	448
San Diego River Upstream	5/19/2006	unmeasurable	21.7	7.6	2.22	4.59	0.10	2.50	0.60	0.20	0.25		nd	nd	608
Sycamore Creek Downstream	5/19/2006	133	22.9	7.5	1.61	8.76	0.2	1.25	0.1	0.03	0.25		nd	nd	370
2006 Round 2															
Forester Creek Downstream	9/25/2006	624	22.6	8.2	2.58	30.23	0.2	5.00	nd	nd	0.25		nd	nd	683
Forester Creek Upstream	9/25/2006	467	24.4	8.5	2.49	4.37	0.2	5	nd	nd	0.25		nd	nd	641
San Diego River Downstream	9/22/2006	1392	22.3	8.3	1.86	9.28	0.2	1.25	0.30	0.10	0.13		nd	nd	528
San Diego River Upstream	9/22/2006	unmeasurable	20.2	7.8	2.47	4.30	0.20	2.50	0.40	0.14	0.25		nd	nd	614
Sycamore Creek Downstream	9/22/2006	20	20.4	7.4	1.85	9.14	0.2	2.5	nd	nd	0.25		nd	nd	345
2007 Round 1															
Forester Creek Downstream	5/22/2007	655	18.1	8.2	2.45	25.94	0.5	4.57	0.30	0.10	0.25		nd	nd	827
Forester Creek Upstream	5/22/2007	585	19.3	8.7	2.49	2.55	0.1	4.93	nd	nd	0.25		nd	nd	715
San Diego River Downstream	5/22/2007	1392	20.8	8.0	1.69	3.94	nd	0.2	0.30	0.10	0.25		nd	nd	601
San Diego River Upstream	5/22/2007	unmeasurable	18.2	7.8	2.31	8.29	0.20	1.88	0.30	0.10	0.25		nd	nd	673
Sycamore Creek Downstream	5/23/2007	156	19.7	7.6	1.48	9.57	0.1	0.16	0.2	0.07	0.25		nd	nd	332
2007 Round 2															
Forester Creek Downstream	10/31/2007	234	17.7	7.7	2.66	10.21	0.3	2.31	0.50	0.16	0.38		nd	nd	664
Forester Creek Upstream	10/31/2007	148	16.5	8.1	2.65	1.58	0.1	4.72	0.10	0.03	0.5		nd	nd	758
San Diego River Downstream	10/30/2007	584	20.6	7.6	1.94	0.79	0.1	0.38	1.00	0.33	0.13		nd	nd	567
San Diego River Upstream	10/30/2007	unmeasurable	18.8	7.6	2.59	2.06	0.2	1.20	0.80	0.26	0.38		nd	nd	626
Sycamore Creek Downstream	10/31/2007	156	17.2	7.4	2.17	4.07	0.1	0.59	0.2	0.07	0.25		nd	nd	448
2008 Round 1															
Forester Creek Downstream	5/28/2008	281	19.9	7.7	2.77	1.25						6.76			
Forester Creek Upstream	5/28/2008	213	23.0	8.2	2.53	16.20						9.30			
San Diego River Downstream	5/28/2008	1212	20.5	7.5	2.46	0.01						6.60			
San Diego River Upstream	5/28/2008	unmeasurable	18.2	7.3	1.84	2.40						7.44			
Sycamore Creek Downstream	5/29/2008	56	15.1	7.0	1.40	0.69						7.42			
2008 Round 2															
Forester Creek Downstream	9/9/2008	359	22.9	7.7	2.78	7.98						6.46			
Forester Creek Upstream	9/4/2008	397	31.5	8.5	2.73	4.71						7.00			
San Diego River Downstream	9/4/2008	449	25.9	7.6	2.79	2.03						5.94			
San Diego River Upstream	9/4/2008	unmeasurable	30.8	8.1	1.87	7.62						8.56			
Sycamore Creek Downstream	9/9/2008	Ponded	28.4	7.1	2.70	31.71						5.51			

Notes:
nd = not detected
ns = not sampled

* The accuracy of manual flow estimation techniques decreases as flow volume increases. Because of high flow rates in the San Diego River, the United States Geological Service (USGS) flow gauge data has been used in this report. The USGS flow gauge is located in proximity to the San Diego River downstream sampling location; however no gauge exists near the San Diego River upstream sampling location. Thus the upstream flow has been reported as unmeasurable.

Site	Date	Cadmium (diss) mg/L	Copper (diss) mg/L	Lead (diss) mg/L	Zinc (diss) mg/L	Diazinon µg/L	Chlorpyrifos µg/L	Total Coliform MPN/100mL	Fecal Coliform MPN/100mL	*Enterococcus* MPN/100mL	Nitrate/ Nitrite as N mg/L	Total Kjeldahl Nitrogen mg/L	Total Nitrogen mg/L	Orthophosphate as P mg/L	Total Phosphorus mg/L	Total Dissolved Solids mg/L
2006 Round 1																
Forester Creek Downstream	5/18/2006	nd	nd	nd	nd	nd	nd	80,000	500	170						
Forester Creek Upstream	5/18/2006	nd	nd	nd	nd	nd	nd	6,000	170	20						
San Diego River Downstream	5/19/2006	nd	nd	nd	nd	nd	nd	13,000	nd	nd						
San Diego River Upstream	5/19/2006	nd	nd	nd	nd	nd	nd	50,000	20	40						
Sycamore Creek Downstream	5/19/2006	nd	nd	nd	nd	nd	nd	170,000	110	700						
2006 Round 2																
Forester Creek Downstream	9/25/2006	nd	nd	nd	nd	nd	nd	80,000	2,200	1,700						
Forester Creek Upstream	9/25/2006	nd	nd	nd	nd	nd	nd	30,000	8000	2300						
San Diego River Downstream	9/22/2006	nd	nd	nd	nd	nd	nd	800	40	20						
San Diego River Upstream	9/22/2006	nd	nd	nd	nd	nd	nd	13,000	500	230						
Sycamore Creek Downstream	9/22/2006	nd	nd	nd	0.024	nd	nd	50,000	1,700	500						
2007 Round 1																
Forester Creek Downstream	5/22/2007	nd	nd	nd	nd	nd	nd	8,000	500	500						
Forester Creek Upstream	5/22/2007	nd	nd	nd	nd	nd	nd	3,000	800	80						
San Diego River Downstream	5/22/2007	nd	nd	nd	nd	nd	nd	1,700	110	nd						
San Diego River Upstream	5/22/2007	nd	nd	nd	nd	nd	nd	5,000	1,100	800						
Sycamore Creek Downstream	5/23/2007	nd	nd	nd	nd	nd	nd	23,000	110	230						
2007 Round 2																
Forester Creek Downstream	10/31/2007	nd	nd	nd	nd	nd	nd	5,000	800	800						
Forester Creek Upstream	10/31/2007	nd	nd	nd	nd	nd	nd	11,000	3,000	3,000						
San Diego River Downstream	10/30/2007	nd	nd	nd	nd	nd	nd	1,300	20	40						
San Diego River Upstream	10/30/2007	nd	nd	nd	nd	nd	nd	1,300	220	700						
Sycamore Creek Downstream	10/31/2007	nd	nd	nd	nd	nd	nd	5,000	800	300						
2008 Round 1																
Forester Creek Downstream	5/28/2008							17,000	130	700	3.24	1.9	5.2	0.11	0.11	1760
Forester Creek Upstream	5/28/2008							30,000	2,300	500	5.16	2.7	7.8	0.05	0.06	1590
San Diego River Downstream	5/28/2008							5,000	800	700	0.84	1.9	2.8	0.16	0.16	1510
San Diego River Upstream	5/28/2008							500	40	nd	nd	1.5	1.5	0.18	0.19	1130
Sycamore Creek Downstream	5/29/2008							5,000	800	5,000	0.13	2.2	2.4	0.11	0.11	941
2008 Round 2																
Forester Creek Downstream	9/9/2008							13,000	300	2,300	0.99	2.1	3.1	0.32	0.33	1690
Forester Creek Upstream	9/4/2008							17,000	3,000	70	3.72	2.2	5.9	0.32	0.36	1650
San Diego River Downstream	9/4/2008							13,000	700	500	0.42	2.5	3.0	0.25	0.30	1790
San Diego River Upstream	9/4/2008							300	nd	20	nd	2.9	2.9	0.08	0.08	1180
Sycamore Creek Downstream	9/9/2008							130,000	80	130,000	nd	7.6	7.6	0.36	0.42	1700

Notes:

nd = not detected

ns = not sampled

Appendix B

Photographs of Sampling Locations

Forester Creek Downstream	
Forester Creek Upstream	
San Diego River Downstream	

San Diego River Upstream	
Sycamore Creek Downstream	

Appendix C

Laboratory Analytical Reports

Round One

EnviroMatrix Analytical, Inc.

29 May 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0905522

Project Name: Santee Dry Weather
Project Desc./#:200919 W-3 Round One

Enclosed are the results of analyses for samples received by the laboratory on 05/19/09 13:15. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905522

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
San Diego R. Upstream	0905522-01	Water	05/19/09 09:30	05/19/09 13:15
Forester Cr. Upstream	0905522-02	Water	05/19/09 10:40	05/19/09 13:15
Forester Cr. Downstream	0905522-03	Water	05/19/09 11:45	05/19/09 13:15
San Diego R. Downstream	0905522-04	Water	05/19/09 12:30	05/19/09 13:15

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905522

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego R. Upstream (0905522-01) Water Sampled: 05/19/09 09:30 Received: 05/19/09 13:15									
Nitrate/Nitrite as N	ND	0.05	mg/l	1	9052222	05/22/09	05/22/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**2.5**	0.5	"	"	9052019	05/21/09	05/21/09	SM4500 N C	
Total Nitrogen	**2.5**	0.5	"	"	9052920	05/22/09	05/22/09	Calculation	
Orthophosphate as P	**0.13**	0.05	"	"	9052111	05/21/09	05/21/09	SM4500 P E	
Phosphorus, Total	**0.32**	0.05	"	"	9052739	05/27/09	05/27/09	SM4500 P B, E	
Total Dissolved Solids	**1230**	20.0	"	"	9052218	05/22/09	05/23/09	SM2540 C	
Forester Cr. Upstream (0905522-02) Water Sampled: 05/19/09 10:40 Received: 05/19/09 13:15									
Nitrate/Nitrite as N	**4.93**	0.50	mg/l	10	9052222	05/22/09	05/22/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.1**	0.5	"	1	9052019	05/21/09	05/21/09	SM4500 N C	
Total Nitrogen	**6.0**	0.5	"	"	9052920	05/22/09	05/22/09	Calculation	
Orthophosphate as P	**0.33**	0.05	"	"	9052111	05/21/09	05/21/09	SM4500 P E	
Phosphorus, Total	**0.34**	0.05	"	"	9052739	05/27/09	05/27/09	SM4500 P B, E	
Total Dissolved Solids	**1830**	20.0	"	"	9052218	05/22/09	05/23/09	SM2540 C	
Forester Cr. Downstream (0905522-03) Water Sampled: 05/19/09 11:45 Received: 05/19/09 13:15									
Nitrate/Nitrite as N	**0.65**	0.25	mg/l	5	9052222	05/22/09	05/22/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.8**	0.5	"	1	9052019	05/21/09	05/21/09	SM4500 N C	
Total Nitrogen	**1.4**	0.5	"	"	9052920	05/22/09	05/22/09	Calculation	
Orthophosphate as P	**0.66**	0.05	"	"	9052111	05/21/09	05/21/09	SM4500 P E	
Phosphorus, Total	**0.67**	0.05	"	"	9052739	05/27/09	05/27/09	SM4500 P B, E	
Total Dissolved Solids	**1560**	20.0	"	"	9052630	05/26/09	05/27/09	SM2540 C	
San Diego R. Downstream (0905522-04) Water Sampled: 05/19/09 12:30 Received: 05/19/09 13:15									
Nitrate/Nitrite as N	**1.93**	0.50	mg/l	10	9052222	05/22/09	05/22/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.8**	0.5	"	1	9052019	05/21/09	05/21/09	SM4500 N C	
Total Nitrogen	**2.7**	0.5	"	"	9052920	05/22/09	05/22/09	Calculation	
Orthophosphate as P	**0.09**	0.05	"	"	9052111	05/21/09	05/21/09	SM4500 P E	
Phosphorus, Total	**0.10**	0.05	"	"	9052739	05/27/09	05/27/09	SM4500 P B, E	
Total Dissolved Solids	**1680**	20.0	"	"	9052630	05/26/09	05/27/09	SM2540 C	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905522

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego R. Upstream (0905522-01) Water Sampled: 05/19/09 09:30 Received: 05/19/09 13:15									
Total Coliforms	**1300**	20	MPN/100 ml	10	9052507	05/19/09	05/23/09	SM 9221 B, E	
Fecal Coliforms	ND	20	"	"	"	"	05/22/09	"	
Enterococcus	**20**	20	"	"	9052508	"	05/23/09	SM 9230 A, B	
Forester Cr. Upstream (0905522-02) Water Sampled: 05/19/09 10:40 Received: 05/19/09 13:15									
Total Coliforms	**3500**	20	MPN/100 ml	10	9052507	05/19/09	05/23/09	SM 9221 B, E	
Fecal Coliforms	**1700**	20	"	"	"	"	05/22/09	"	
Enterococcus	**800**	20	"	"	9052508	"	05/23/09	SM 9230 A, B	
Forester Cr. Downstream (0905522-03) Water Sampled: 05/19/09 11:45 Received: 05/19/09 13:15									
Total Coliforms	**2800**	20	MPN/100 ml	10	9052507	05/19/09	05/23/09	SM 9221 B, E	
Fecal Coliforms	**170**	20	"	"	"	"	05/22/09	"	
Enterococcus	**500**	20	"	"	9052508	"	05/23/09	SM 9230 A, B	
San Diego R. Downstream (0905522-04) Water Sampled: 05/19/09 12:30 Received: 05/19/09 13:15									
Total Coliforms	**30000**	2000	MPN/100 ml	1000	9052507	05/19/09	05/23/09	SM 9221 B, E	
Fecal Coliforms	**300**	20	"	10	"	"	05/22/09	"	
Enterococcus	**130**	20	"	"	9052508	"	05/23/09	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905522

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052019										
Blank (9052019-BLK1)				Prepared & Analyzed: 05/20/09						
Total Kjeldahl Nitrogen	ND	0.5	mg/l							
LCS (9052019-BS1)				Prepared & Analyzed: 05/20/09						
Total Kjeldahl Nitrogen	4.6	0.5	mg/l	4.10		113	80-120			
LCS Dup (9052019-BSD1)				Prepared & Analyzed: 05/20/09						
Total Kjeldahl Nitrogen	4.7	0.5	mg/l	4.10		115	80-120	2	20	
Duplicate (9052019-DUP1)		**Source: 0905469-01**		Prepared & Analyzed: 05/20/09						
Total Kjeldahl Nitrogen	1.4	0.5	mg/l		1.7			15	20	
Matrix Spike (9052019-MS1)		**Source: 0905469-01**		Prepared & Analyzed: 05/20/09						
Total Kjeldahl Nitrogen	6.6	0.5	mg/l	4.10	1.7	119	80-120			
Matrix Spike Dup (9052019-MSD1)		**Source: 0905469-01**		Prepared & Analyzed: 05/20/09						
Total Kjeldahl Nitrogen	5.5	0.5	mg/l	4.10	1.7	93	80-120	17	20	
Batch 9052111										
Blank (9052111-BLK1)				Prepared & Analyzed: 05/21/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9052111-BS1)				Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.50	0.05	mg/l	0.500		101	80-120			
LCS Dup (9052111-BSD1)				Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.56	0.05	mg/l	0.500		113	80-120	11	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905522

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052111										
Duplicate (9052111-DUP1)		**Source: 0905522-01**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.14	0.05	mg/l		0.13			7	20	
Duplicate (9052111-DUP2)		**Source: 0905443-04**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	5.05	0.25	mg/l		5.18			3	20	
Duplicate (9052111-DUP3)		**Source: 0905443-04**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	5.18	0.25	mg/l		5.18			0.2	20	
Matrix Spike (9052111-MS1)		**Source: 0905522-01**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500	0.13	85	80-120			
Matrix Spike Dup (9052111-MSD1)		**Source: 0905522-01**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500	0.13	84	80-120	0.9	20	
Batch 9052218										
Blank (9052218-BLK1)				Prepared: 05/22/09 Analyzed: 05/23/09						
Total Dissolved Solids	ND	20.0	mg/l							
Duplicate (9052218-DUP1)		**Source: 0905469-01**		Prepared: 05/22/09 Analyzed: 05/23/09						
Total Dissolved Solids	1100	20.0	mg/l		1100			0.5	20	
Reference (9052218-SRM1)				Prepared: 05/22/09 Analyzed: 05/23/09						
Total Dissolved Solids	172	20.0	mg/l	178		97	7.08-112.9			
Batch 9052222										
Blank (9052222-BLK1)				Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							

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Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905522

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052222										
LCS (9052222-BS1)				Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		101	80-120			
LCS Dup (9052222-BSD1)				Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.52	0.05	mg/l	0.500		105	80-120	3	20	
Duplicate (9052222-DUP1)		**Source: 0905543-01**		Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	ND	0.05	mg/l		ND				20	
Matrix Spike (9052222-MS1)		**Source: 0905543-01**		Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.45	0.05	mg/l	0.500	ND	89	80-120			
Matrix Spike Dup (9052222-MSD1)		**Source: 0905543-01**		Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.47	0.05	mg/l	0.500	ND	94	80-120	5	20	
Reference (9052222-SRM1)				Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.69	0.05	mg/l	0.688		100	8.81-109.0			
Batch 9052630										
Blank (9052630-BLK1)				Prepared: 05/26/09 Analyzed: 05/27/09						
Total Dissolved Solids	ND	20.0	mg/l							
Duplicate (9052630-DUP1)		**Source: 0905522-03**		Prepared: 05/26/09 Analyzed: 05/27/09						
Total Dissolved Solids	1540	20.0	mg/l		1560			1	20	
Reference (9052630-SRM1)				Prepared: 05/26/09 Analyzed: 05/27/09						
Total Dissolved Solids	164	20.0	mg/l	178		92	7.08-112.9			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905522

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052739										
Blank (9052739-BLK1)				Prepared & Analyzed: 05/27/09						
Phosphorus, Total	ND	0.05	mg/l							
LCS (9052739-BS1)				Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.56	0.05	mg/l	0.500		111	80-120			
LCS Dup (9052739-BSD1)				Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.58	0.05	mg/l	0.500		117	80-120	5	20	
Duplicate (9052739-DUP1)		**Source: 0905421-01**		Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.16	0.05	mg/l		0.14			12	20	
Matrix Spike (9052739-MS1)		**Source: 0905421-01**		Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.59	0.05	mg/l	0.500	0.14	90	80-120			
Matrix Spike Dup (9052739-MSD1)		**Source: 0905421-01**		Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.59	0.05	mg/l	0.500	0.14	90	80-120	0.5	20	
Batch 9052920										
Duplicate (9052920-DUP1)		**Source: 0905469-01**		Prepared & Analyzed: 05/20/09						
Total Nitrogen	5.1	0.5	mg/l		5.5			8	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0905522

Client: D-Max Engineering
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr / Annika
Address: 7220 Trade street suite 119
San Diego, CA 92121
Phone: (858) 586-6600 Fax: (858) 586-6644
Email:
Billing Address: Same

Project ID: Santee Dry Weather - Round One
Project #: 200919 W-3 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS X TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, X Total (MTF) X Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, X MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total Phosphorus	Total Nitrogen	orthophosphate phosphorus		
1	San Diego R. Upstream	5/19/09	9:30	Water	4/p 1/G									X					X		X		X	X	X		
2	Forester Cr. Upstream	"	10:40	"	4/p 1/G									X					X		X		X	X	X		
3	Forester Cr. Downstream	"	11:45	"	" "									X					X		X		X	X	X		
4	San Diego R. Downstream	"	12:30	"	" "									X					X		X		X	X	X		
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: X Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ~~□ 5~~ day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	5-19-09	Signature: [signature]
Print: Manouchehr Dadkhah	1:15	Print: Louis Luna
Company: D-Max Engineering		Company: EMA
Signature: [signature]	5/19/09	Signature: [signature]
Print: Louis Luna	13:45	Print: Sean Flory
Company: EMA		Company: Fast Inc
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: 7 L on Ice

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

01 June 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0905569

Project Name: Santee Dry Weather
Project Desc./#:200919W-3

Enclosed are the results of analyses for samples received by the laboratory on 05/20/09 14:52. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905569

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Sycamore Cr. Downstream	0905569-01	Water	05/20/09 10:50	05/20/09 14:52

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905569

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore Cr. Downstream (0905569-01) Water Sampled: 05/20/09 10:50 Received: 05/20/09 14:52									
Nitrate/Nitrite as N	**0.23**	0.05	mg/l	1	9052222	05/22/09	05/22/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**3.9**	0.5	"	"	9052649	05/26/09	05/26/09	SM4500 N C	
Total Nitrogen	**4.1**	0.5	"	"	9052920	05/26/09	05/26/09	Calculation	
Orthophosphate as P	**0.19**	0.05	"	"	9052111	05/21/09	05/21/09	SM4500 P E	
Phosphorus, Total	**0.28**	0.05	"	"	9052739	05/27/09	05/27/09	SM4500 P B, E	
Total Dissolved Solids	**767**	20.0	"	"	9052752	05/27/09	05/28/09	SM2540 C	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905569

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore Cr. Downstream (0905569-01) Water Sampled: 05/20/09 10:50 Received: 05/20/09 14:52									
Total Coliforms	**11000**	200	MPN/100 ml	100	9052612	05/20/09	05/24/09	SM 9221 B, E	
Fecal Coliforms	**500**	20	"	10	"	"	05/23/09	"	
Enterococcus	**1400**	20	"	"	9052613	"	05/24/09	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905569

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052111										
Blank (9052111-BLK1)				Prepared & Analyzed: 05/21/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9052111-BS1)				Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.50	0.05	mg/l	0.500		101	80-120			
LCS Dup (9052111-BSD1)				Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.56	0.05	mg/l	0.500		113	80-120	11	20	
Duplicate (9052111-DUP1)		**Source: 0905522-01**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.14	0.05	mg/l		0.13			7	20	
Duplicate (9052111-DUP2)		**Source: 0905443-04**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	5.05	0.25	mg/l		5.18			3	20	
Duplicate (9052111-DUP3)		**Source: 0905443-04**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	5.18	0.25	mg/l		5.18			0.2	20	
Matrix Spike (9052111-MS1)		**Source: 0905522-01**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500	0.13	85	80-120			
Matrix Spike Dup (9052111-MSD1)		**Source: 0905522-01**		Prepared & Analyzed: 05/21/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500	0.13	84	80-120	0.9	20	
Batch 9052222										
Blank (9052222-BLK1)				Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							

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Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905569

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052222										
LCS (9052222-BS1)				Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		101	80-120			
LCS Dup (9052222-BSD1)				Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.52	0.05	mg/l	0.500		105	80-120	3	20	
Duplicate (9052222-DUP1)		**Source: 0905543-01**		Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	ND	0.05	mg/l		ND				20	
Matrix Spike (9052222-MS1)		**Source: 0905543-01**		Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.45	0.05	mg/l	0.500	ND	89	80-120			
Matrix Spike Dup (9052222-MSD1)		**Source: 0905543-01**		Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.47	0.05	mg/l	0.500	ND	94	80-120	5	20	
Reference (9052222-SRM1)				Prepared & Analyzed: 05/22/09						
Nitrate/Nitrite as N	0.69	0.05	mg/l	0.688		100	8.81-109.0			
Batch 9052649										
Blank (9052649-BLK1)				Prepared & Analyzed: 05/26/09						
Total Kjeldahl Nitrogen	ND	0.5	mg/l							
LCS (9052649-BS1)				Prepared & Analyzed: 05/26/09						
Total Kjeldahl Nitrogen	3.9	0.5	mg/l	4.10		96	80-120			
LCS Dup (9052649-BSD1)				Prepared & Analyzed: 05/26/09						
Total Kjeldahl Nitrogen	4.2	0.5	mg/l	4.10		102	80-120	6	20	

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Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905569

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052649										
Duplicate (9052649-DUP1)		**Source: 0905568-01**		Prepared & Analyzed: 05/26/09						
Total Kjeldahl Nitrogen	3.5	0.5	mg/l		4.0			13	20	
Matrix Spike (9052649-MS1)		**Source: 0905568-01**		Prepared & Analyzed: 05/26/09						
Total Kjeldahl Nitrogen	11.6	1.0	mg/l	8.20	4.0	93	80-120			
Matrix Spike Dup (9052649-MSD1)		**Source: 0905568-01**		Prepared & Analyzed: 05/26/09						
Total Kjeldahl Nitrogen	13.4	1.0	mg/l	8.20	4.0	115	80-120	15	20	
Batch 9052739										
Blank (9052739-BLK1)				Prepared & Analyzed: 05/27/09						
Phosphorus, Total	ND	0.05	mg/l							
LCS (9052739-BS1)				Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.56	0.05	mg/l	0.500		111	80-120			
LCS Dup (9052739-BSD1)				Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.58	0.05	mg/l	0.500		117	80-120	5	20	
Duplicate (9052739-DUP1)		**Source: 0905421-01**		Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.16	0.05	mg/l		0.14			12	20	
Matrix Spike (9052739-MS1)		**Source: 0905421-01**		Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.59	0.05	mg/l	0.500	0.14	90	80-120			
Matrix Spike Dup (9052739-MSD1)		**Source: 0905421-01**		Prepared & Analyzed: 05/27/09						
Phosphorus, Total	0.59	0.05	mg/l	0.500	0.14	90	80-120	0.5	20	

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Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 0905569

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9052752										
Blank (9052752-BLK1)				Prepared: 05/26/09	Analyzed: 05/27/09					
Total Dissolved Solids	ND	20.0	mg/l							
Duplicate (9052752-DUP1)		**Source: 0905568-01**		Prepared: 05/26/09	Analyzed: 05/27/09					
Total Dissolved Solids	957	20.0	mg/l		985			3	20	
Reference (9052752-SRM1)				Prepared: 05/26/09	Analyzed: 05/27/09					
Total Dissolved Solids	192	20.0	mg/l	178		108	7.08-112.9			
Batch 9052920										
Duplicate (9052920-DUP1)		**Source: 0905469-01**		Prepared & Analyzed: 05/20/09						
Total Nitrogen	5.1	0.5	mg/l		5.5			8	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering Project Name: Santee Dry Weather	**EMA Log #: 0905569**

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0905569

Client: D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr / Annika
Address: 7220 Trade Street, Suite 119
San Diego, CA 92121
Phone: (858) 586-6600 Fax: (858) 586-6644
Email:
Billing Address: Same
Project ID: Santee Dry Weather Round One
Project #: 200919 W-3 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS ☒ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total phosphorus	Total Nitrogen	Orthophosphate Phosphorus			
1	Sycamore Cr. Downstream	5/20/09	10:50	Water	4/P 1/G									X					X		X		X	X	X			
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid
Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other
[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day □ STD (7 day)
[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT
[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	5/20/09 13:33	Signature: Kelly Leyden
Print: Manouchehr Dadkhah		Print: Kelly Leyden
Company: D-Max Eng.		Company: EMA
Signature: Kelly Leyden	5/20/09 14:52	Signature:
Print: Kelly Leyden		Print: Sean Flores
Company: EMA		Company: First Lab
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T= 6°C On Ice

Round Two

EnviroMatrix Analytical, Inc.

11 September 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0909056

Project Name: Santee Recieving Water Bodies Round 2 200919W-3

Enclosed are the results of analyses for samples received by the laboratory on 09/02/09 13:52. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909056

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
San Diego River Upstream	0909056-01	Stormwater	09/02/09 10:30	09/02/09 13:52
Forester Creek Upstream	0909056-02	Stormwater	09/02/09 11:30	09/02/09 13:52
Forester Creek Downstream	0909056-03	Stormwater	09/02/09 12:20	09/02/09 13:52
San Diego River Downstream	0909056-04	Stormwater	09/02/09 13:10	09/02/09 13:52

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909056

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Upstream (0909056-01) Stormwater Sampled: 09/02/09 10:30 Received: 09/02/09 13:52									
Nitrate/Nitrite as N	**0.43**	0.05	mg/l	1	9090204	09/03/09	09/03/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.8**	0.5	"	"	9091002	09/10/09	09/10/09	SM4500 N C	
Total Nitrogen	**1.2**	0.5	"	"	9091048	09/10/09	09/10/09	Calculation	
Orthophosphate as P	ND	0.05	"	"	9090341	09/03/09	09/03/09	SM4500 P E	
Phosphorus, Total	**0.20**	0.05	"	"	9090340	09/03/09	09/03/09	SM4500 P B, E	
Total Dissolved Solids	**1240**	20.0	"	"	9090329	09/03/09	09/04/09	SM2540 C	
Forester Creek Upstream (0909056-02) Stormwater Sampled: 09/02/09 11:30 Received: 09/02/09 13:52									
Nitrate/Nitrite as N	**3.36**	0.25	mg/l	5	9090204	09/03/09	09/03/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.6**	0.5	"	1	9091002	09/10/09	09/10/09	SM4500 N C	
Total Nitrogen	**4.0**	0.5	"	"	9091048	09/10/09	09/10/09	Calculation	
Orthophosphate as P	**0.05**	0.05	"	"	9090341	09/03/09	09/03/09	SM4500 P E	
Phosphorus, Total	**0.28**	0.05	"	"	9090340	09/03/09	09/03/09	SM4500 P B, E	
Total Dissolved Solids	**1850**	20.0	"	"	9090329	09/03/09	09/04/09	SM2540 C	
Forester Creek Downstream (0909056-03) Stormwater Sampled: 09/02/09 12:20 Received: 09/02/09 13:52									
Nitrate/Nitrite as N	**1.32**	0.10	mg/l	2	9090204	09/03/09	09/03/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	ND	0.5	"	1	9091002	09/10/09	09/10/09	SM4500 N C	
Total Nitrogen	**1.6**	0.5	"	"	9091048	09/10/09	09/10/09	Calculation	
Orthophosphate as P	**0.12**	0.05	"	"	9090341	09/03/09	09/03/09	SM4500 P E	
Phosphorus, Total	**0.25**	0.05	"	"	9090340	09/03/09	09/03/09	SM4500 P B, E	
Total Dissolved Solids	**1900**	20.0	"	"	9090329	09/03/09	09/04/09	SM2540 C	
San Diego River Downstream (0909056-04) Stormwater Sampled: 09/02/09 13:10 Received: 09/02/09 13:52									
Nitrate/Nitrite as N	**0.44**	0.05	mg/l	1	9090204	09/03/09	09/03/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.6**	0.5	"	"	9091002	09/10/09	09/10/09	SM4500 N C	
Total Nitrogen	**1.0**	0.5	"	"	9091048	09/10/09	09/10/09	Calculation	
Orthophosphate as P	**0.12**	0.05	"	"	9090341	09/03/09	09/03/09	SM4500 P E	
Phosphorus, Total	**0.14**	0.05	"	"	9090340	09/03/09	09/03/09	SM4500 P B, E	
Total Dissolved Solids	**1920**	20.0	"	"	9090329	09/03/09	09/04/09	SM2540 C	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909056

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Upstream (0909056-01) Stormwater Sampled: 09/02/09 10:30 Received: 09/02/09 13:52									
Total Coliforms	**600**	20	MPN/100 ml	10	9090318	09/02/09	09/06/09	SM 9221 B, E	
Fecal Coliforms	**40**	20	"	"	"	"	09/05/09	"	
Enterococcus	**20**	20	"	"	9090319	"	09/06/09	SM 9230 A, B	
Forester Creek Upstream (0909056-02) Stormwater Sampled: 09/02/09 11:30 Received: 09/02/09 13:52									
Total Coliforms	**2300**	200	MPN/100 ml	100	9090318	09/02/09	09/06/09	SM 9221 B, E	
Fecal Coliforms	**300**	20	"	10	"	"	09/05/09	"	
Enterococcus	**40**	20	"	"	9090319	"	09/06/09	SM 9230 A, B	
Forester Creek Downstream (0909056-03) Stormwater Sampled: 09/02/09 12:20 Received: 09/02/09 13:52									
Total Coliforms	**11000**	200	MPN/100 ml	100	9090318	09/02/09	09/06/09	SM 9221 B, E	
Fecal Coliforms	**1300**	20	"	10	"	"	09/05/09	"	
Enterococcus	**500**	20	"	"	9090319	"	09/06/09	SM 9230 A, B	
San Diego River Downstream (0909056-04) Stormwater Sampled: 09/02/09 13:10 Received: 09/02/09 13:52									
Total Coliforms	**2300**	200	MPN/100 ml	100	9090318	09/02/09	09/06/09	SM 9221 B, E	
Fecal Coliforms	**40**	20	"	10	"	"	09/05/09	"	
Enterococcus	**80**	20	"	"	9090319	"	09/06/09	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909056

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090204										
Blank (9090204-BLK1)				Prepared & Analyzed: 09/02/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9090204-BS1)				Prepared & Analyzed: 09/02/09						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		102	80-120			
LCS Dup (9090204-BSD1)				Prepared & Analyzed: 09/02/09						
Nitrate/Nitrite as N	0.53	0.05	mg/l	0.500		105	80-120	3	20	
Duplicate (9090204-DUP1)		**Source: 0908793-01**		Prepared & Analyzed: 09/02/09						
Nitrate/Nitrite as N	1.71	0.50	mg/l		1.56			9	20	
Duplicate (9090204-DUP2)		**Source: 0908762-01**		Prepared & Analyzed: 09/02/09						
Nitrate/Nitrite as N	1.48	0.50	mg/l		1.46			0.7	20	
Matrix Spike (9090204-MS1)		**Source: 0908793-01**		Prepared & Analyzed: 09/02/09						
Nitrate/Nitrite as N	6.62	0.50	mg/l	5.00	1.56	101	80-120			
Matrix Spike Dup (9090204-MSD1)		**Source: 0908793-01**		Prepared & Analyzed: 09/02/09						
Nitrate/Nitrite as N	7.05	0.50	mg/l	5.00	1.56	110	80-120	6	20	
Reference (9090204-SRM1)				Prepared & Analyzed: 09/02/09						
Nitrate/Nitrite as N	0.47	0.05	mg/l	0.442		106	4.16-115.1			
Batch 9090329										
Blank (9090329-BLK1)				Prepared: 09/03/09 Analyzed: 09/04/09						
Total Dissolved Solids	ND	20.0	mg/l							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909056

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090329										
Duplicate (9090329-DUP1)		**Source: 0908793-01**		Prepared: 09/03/09		Analyzed: 09/04/09				
Total Dissolved Solids	1080	20.0	mg/l		1020			6	20	
Reference (9090329-SRM1)				Prepared: 09/03/09		Analyzed: 09/04/09				
Total Dissolved Solids	298	20.0	mg/l	283		105	6.93-113.0			
Batch 9090340										
Blank (9090340-BLK1)				Prepared & Analyzed: 09/03/09						
Phosphorus, Total	ND	0.05	mg/l							
LCS (9090340-BS1)				Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.46	0.05	mg/l	0.500		92	80-120			
LCS Dup (9090340-BSD1)				Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.52	0.05	mg/l	0.500		103	80-120	11	20	
Duplicate (9090340-DUP1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.22	0.05	mg/l		0.20			9	20	
Matrix Spike (9090340-MS1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.72	0.05	mg/l	0.500	0.20	103	80-120			
Matrix Spike Dup (9090340-MSD1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.69	0.05	mg/l	0.500	0.20	98	80-120	4	20	
Batch 9090341										
Blank (9090341-BLK1)				Prepared & Analyzed: 09/03/09						
Orthophosphate as P	ND	0.05	mg/l							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909056

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090341										
LCS (9090341-BS1)				Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.50	0.05	mg/l	0.500		100	80-120			
LCS Dup (9090341-BSD1)				Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.48	0.05	mg/l	0.500		97	80-120	4	20	
Duplicate (9090341-DUP1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.03	0.05	mg/l		0.02			48	20	QR-04
Matrix Spike (9090341-MS1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500	0.02	107	80-120			
Matrix Spike Dup (9090341-MSD1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.52	0.05	mg/l	0.500	0.02	100	80-120	6	20	
Batch 9091002										
Blank (9091002-BLK1)				Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	ND	0.5	mg/l							
LCS (9091002-BS1)				Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	4.0	0.5	mg/l	4.10		98	80-120			
LCS Dup (9091002-BSD1)				Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	3.5	0.5	mg/l	4.10		86	80-120	13	20	
Duplicate (9091002-DUP1)		**Source: 0909056-01**		Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	0.7	0.5	mg/l		0.8			14	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909056

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9091002										
Matrix Spike (9091002-MS1)		**Source: 0909056-01**		Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	4.1	0.5	mg/l	4.10	0.8	80	80-120			
Matrix Spike Dup (9091002-MSD1)		**Source: 0909056-01**		Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	4.3	0.5	mg/l	4.10	0.8	85	80-120	5	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 0909056

Client: D-Max Engineering
Attn: Arsalan Dadkhah
Samplers(s): JL/MD
Address: 7220 Trade Street Suite 119
San Diego CA 92121
Phone: 858-586-6600 Fax:
Email:
Billing Address: same

Project ID: Santee Receiving Water Bodies Round 2
Project #: 200919W-3 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS ☒ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total Phosphate	Total Nitrogen	Orthophosphate	09	13:39	
1	San Diego River Upstream	9/2/09	10:30	SW	4P									X					X		X		X	X	X			
2	Forester Creek Upstream	↓	11:30	↓	↓									X					X		X		X	X	X			
3	Forester Creek Downstream		12:20											X					X		X		X	X	X			
4	San Diego River Downstream		13:10											X					X		X		X	X	X			
5																												
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A
Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A
Temp @ Receipt:_____
COC/Labels Agree: Yes No N/A
Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature [signature]	9/2/09 13:34	Signature [signature]
Print Joe Leonard		Print Seem Flora
Company: D-Max		Company: EMA Inc
Signature [signature]	9/2/09 1352	Signature
Print Seem Flora		Print
Company: EMA Inc		Company:
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

T=4° on ice

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

11 September 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0909099

Project Name: Santee Recieving Water Bodies Round 2 200919W-3

Enclosed are the results of analyses for samples received by the laboratory on 09/03/09 13:32. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909099

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Sycamore Creek Downstream	0909099-01	Stormwater	09/03/09 10:35	09/03/09 13:32

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909099

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore Creek Downstream (0909099-01) Stormwater Sampled: 09/03/09 10:35 Received: 09/03/09 13:32									
Nitrate/Nitrite as N	ND	0.05	mg/l	1	9090403	09/04/09	09/04/09	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**3.3**	0.5	"	"	9091002	09/11/09	09/11/09	SM4500 N C	
Total Nitrogen	**3.3**	0.5	"	"	9091131	09/11/09	09/11/09	Calculation	
Orthophosphate as P	**0.10**	0.05	"	"	9090341	09/03/09	09/03/09	SM4500 P E	
Phosphorus, Total	**0.27**	0.05	"	"	9090340	09/03/09	09/03/09	SM4500 P B, E	
Total Dissolved Solids	**1230**	20.0	"	"	9091024	09/09/09	09/10/09	SM2540 C	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909099

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore Creek Downstream (0909099-01) Stormwater Sampled: 09/03/09 10:35 Received: 09/03/09 13:32									
Total Coliforms	**8000**	200	MPN/100 ml	100	9090417	09/03/09	09/07/09	SM 9221 B, E	
Fecal Coliforms	**20**	20	"	10	"	"	09/06/09	"	
Enterococcus	**220**	20	"	"	9090418	"	09/07/09	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909099

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090340										
Blank (9090340-BLK1)				Prepared & Analyzed: 09/03/09						
Phosphorus, Total	ND	0.05	mg/l							
LCS (9090340-BS1)				Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.46	0.05	mg/l	0.500		92	80-120			
LCS Dup (9090340-BSD1)				Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.52	0.05	mg/l	0.500		103	80-120	11	20	
Duplicate (9090340-DUP1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.22	0.05	mg/l		0.20			9	20	
Matrix Spike (9090340-MS1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.72	0.05	mg/l	0.500	0.20	103	80-120			
Matrix Spike Dup (9090340-MSD1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Phosphorus, Total	0.69	0.05	mg/l	0.500	0.20	98	80-120	4	20	
Batch 9090341										
Blank (9090341-BLK1)				Prepared & Analyzed: 09/03/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9090341-BS1)				Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.50	0.05	mg/l	0.500		100	80-120			
LCS Dup (9090341-BSD1)				Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.48	0.05	mg/l	0.500		97	80-120	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909099

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090341										
Duplicate (9090341-DUP1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.03	0.05	mg/l		0.02			48	20	QR-04
Matrix Spike (9090341-MS1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500	0.02	107	80-120			
Matrix Spike Dup (9090341-MSD1)		**Source: 0909056-01**		Prepared & Analyzed: 09/03/09						
Orthophosphate as P	0.52	0.05	mg/l	0.500	0.02	100	80-120	6	20	
Batch 9090403										
Blank (9090403-BLK1)				Prepared & Analyzed: 09/04/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9090403-BS1)				Prepared & Analyzed: 09/04/09						
Nitrate/Nitrite as N	0.52	0.05	mg/l	0.500		105	80-120			
LCS Dup (9090403-BSD1)				Prepared & Analyzed: 09/04/09						
Nitrate/Nitrite as N	0.53	0.05	mg/l	0.500		106	80-120	2	20	
Duplicate (9090403-DUP1)		**Source: 0909076-04**		Prepared & Analyzed: 09/04/09						
Nitrate/Nitrite as N	0.61	0.05	mg/l		0.56			8	20	
Matrix Spike (9090403-MS1)		**Source: 0909076-04**		Prepared & Analyzed: 09/04/09						
Nitrate/Nitrite as N	2.96	0.25	mg/l	2.50	0.56	96	80-120			
Matrix Spike Dup (9090403-MSD1)		**Source: 0909076-04**		Prepared & Analyzed: 09/04/09						
Nitrate/Nitrite as N	3.05	0.25	mg/l	2.50	0.56	100	80-120	3	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909099

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9090403										
Reference (9090403-SRM1)				Prepared & Analyzed: 09/04/09						
Nitrate/Nitrite as N	0.46	0.05	mg/l	0.442		104	4.16-115.1			
Batch 9091002										
Blank (9091002-BLK1)				Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	ND	0.5	mg/l							
LCS (9091002-BS1)				Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	4.0	0.5	mg/l	4.10		98	80-120			
LCS Dup (9091002-BSD1)				Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	3.5	0.5	mg/l	4.10		86	80-120	13	20	
Duplicate (9091002-DUP1)		**Source: 0909056-01**		Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	0.7	0.5	mg/l		0.8			14	20	
Matrix Spike (9091002-MS1)		**Source: 0909056-01**		Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	4.1	0.5	mg/l	4.10	0.8	80	80-120			
Matrix Spike Dup (9091002-MSD1)		**Source: 0909056-01**		Prepared & Analyzed: 09/10/09						
Total Kjeldahl Nitrogen	4.3	0.5	mg/l	4.10	0.8	85	80-120	5	20	
Batch 9091024										
Blank (9091024-BLK1)				Prepared: 09/09/09 Analyzed: 09/10/09						
Total Dissolved Solids	ND	20.0	mg/l							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Recieving Water Bodies Round 2 200919W-3

EMA Log #: 0909099

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9091024										
Duplicate (9091024-DUP1)		**Source: 0909201-01**		Prepared: 09/09/09		Analyzed: 09/10/09				
Total Dissolved Solids	ND	20.0	mg/l		ND				20	
Reference (9091024-SRM1)				Prepared: 09/09/09		Analyzed: 09/10/09				
Total Dissolved Solids	296	20.0	mg/l	283		105	6.93-113.0			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

– EnviroMatrix Analytical, Inc. –
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 09090991

Client: D-Max Engineering
Attn: Arsalan Pedkhah
Samplers(s): JL/MD
Address: 7220 Trade Street Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax:
Email:
Billing Address: Same

Project ID: Santee Receiving Water Bodies Round 2
Project #: 200919W-3 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS ☒ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total Nitrogen	Total Phosphorus	Orthophosphate-phosphorus	09	13:55	
1	Sycamore Creek Downstream	9/3/09	10:35	SW	4P									X					X		X		X	X	X			
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: [signature]	9/3/09 13:16	Signature: [signature]
Print: Joe Leonard		Print: Sean Flory
Company: D-Max		Company: EMA Inc
Signature: [signature]	9/3/09 1332	Signature: [signature]
Print: Sean Flory		Print: Louis Lunch
Company: EMA Inc		Company: EMA
Signature:		Signature:
Print:		Print:
Company:		Company:

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:_____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

T=4° on ice

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

Appendix D

Field Data Sheets

Round One

ICW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	San Diego River Upstream		Latitude	32.8526582	Watershed	Hydrologic Unit	907
Location	~200ft downstream of Riverford bridge		Longitude	-116.9523~~58~~		Hydrologic Area	907.1
			TB Page	1231-G4		Hydrologic Subarea (Optional)	907.12
Date	5/19/09	Time 9:30 am	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ~~☒ N/A~~

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 1, 2

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.6	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.8	TURB (NTU)	10.76	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.73	MBAS (mg/L)	NA	DO (mg/L)	7.95 ~~NA~~ 8.10		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	40	in
Depth	0.5	in
Velocity	10/10	ft/sec
Flow	62	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

AK

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	Forester Creek Upstream		Latitude	32.83093	Watershed	Hydrologic Unit	907
Location	Prospect Avenue Bridge, West of Big Cuyamaca Street		Longitude	-166.98543		Hydrologic Area	907.1
			TB Page	1231-C7		Hydrologic Subarea (Optional)	907.13
Date	05/19/2009	Time 10:40	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No **Photo #** 3,4,5

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.9	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.1	TURB (NTU)	6.14	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	2.94	MBAS (mg/L)	NA	DO (mg/L)	8.86		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	19	in
Depth	4	in
Velocity	15/10	ft/sec
Flow	355	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

AK

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	Forester Creek Downstream	Latitude	32.83953	Watershed	Hydrologic Unit	907
Location	200 ft North of Mission Gorge rd, across from Fanita Dr, East of Fanita Creek	Longitude	-117.00241		Hydrologic Area	907.1
		TB Page	1231-C7 B6		Hydrologic Subarea (Optional)	907.12
Date	05/19/2009	Time	11:45	Observer	MD/AK	Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	~~☒ Yellow~~	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other ~~Organics~~ Leaf Debris
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	~~☒ None~~	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 6-11

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.8	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.9	TURB (NTU)	31.55	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	2.60	MBAS (mg/L)	NA	DO (mg/L)	5.76		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	50	in
Depth	3	in
Velocity	10/10.	ft/sec
Flow	468.	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

AK

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	San Diego River Downstream		Latitude	32.83936	Watershed	Hydrologic Unit	907
Location	West Hills Parkway Bridge		Longitude	-117.02450		Hydrologic Area	907.1
			TB Page	1230-A6		Hydrologic Subarea (Optional)	907.12
Date	05/19/2009	Time 12:30	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	~~☒ Insects~~ ~~☒ Algae~~	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 12-13

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.0	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.6	TURB (NTU)	5.89	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.60	MBAS (mg/L)	NA	DO (mg/L)	6.28		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	90	in
Depth	2	in
Velocity	10/10	ft/sec
Flow	561	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

AK

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	Sycamore Creek Downstream	Latitude	32.84441	Watershed	Hydrologic Unit	907
Location	Downstream of Sycamore Creek, at Carlton Oaks Dr.	Longitude	-117.00652		Hydrologic Area	907.1
		TB Page	1231-A6		Hydrologic Subarea (Optional)	907.12
Date	05/20/2009	Time	10:50	Observer	MD/AK	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ~~☒ Insects~~ ~~☒ Algae~~ ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ~~☒ Flowing~~ ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No **Photo #** 21, 22

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.5	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.5	TURB (NTU)	4.41	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	~~1.29~~ 1.34	MBAS (mg/L)	NA	DO (mg/L)	5.25		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	~~5~~ ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Round Two

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☑ Receiving Water

Site ID	San Diego River Upstream		Latitude	32.85282	Watershed	Hydrologic Unit	907
Location	200 feet downstream of Riverford bridge		Longitude	-116.95281		Hydrologic Area	907.1
			TB Page	1231-G4		Hydrologic Subarea (Optional)	907.12
Date	9/2/09	Time 10:30	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☒ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☒ Other Birds, Frogs

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 1, 2

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.5	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.8	TURB (NTU)	10.30	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	1.88	MBAS (mg/L)	na	DO (mg/L)	7.91		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	20	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☑ Receiving Water

Site ID	Forester Creek Upstream		Latitude	32.83093	Watershed	Hydrologic Unit	907
Location	Prospect Avenue bridge, west of Cuyamaca Street		Longitude	-116.98513		Hydrologic Area	907.1
			TB Page	1231-L7		Hydrologic Subarea (Optional)	907.13
Date	9/2/09	Time 11:30	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 3,4

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	31.5	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.9	TURB (NTU)	3.90	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	2.81	MBAS (mg/L)	na	DO (mg/L)	8.73		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	19	in
Depth	1.5	in
Velocity	1.2	ft/sec
Flow	107	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☑ Receiving Water

Site ID	Forester Creek Downstream		Latitude	32.83953	Watershed	Hydrologic Unit	907
Location	200 feet north of Mission Gorge Rd, across from Fanita Dr, east of Fanita Creek		Longitude	-117.00241		Hydrologic Area	907.1
			TB Page	1231-B6		Hydrologic Subarea (Optional)	907.12
Date	9/2/09	Time 12:20	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☒ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 5, 6

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	26.6	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.6	TURB (NTU)	7.61	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	2.97	MBAS (mg/L)	na	DO (mg/L)	5.56		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	30	in
Depth	1	in
Velocity	1	ft/sec
Flow	94	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☑ Receiving Water

Site ID	San Diego River Downstream	Latitude	32.83936	Watershed	Hydrologic Unit	907
Location	West Hills Parkway Bridge	Longitude	-117.02450		Hydrologic Area	907.1
		TB Page	1230-H6 ~~1231-H6~~		Hydrologic Subarea (Optional)	907.12
Date	9/2/09	Time	13:10	Observer	JL/MD	Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open

Land Use (Secondary) (Optional, greater than 10%) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☑ Fish ☐ Snails ☐ Mussels/ Barnacles ☑ Insect/ Algae ☐ Insect/ Snail ☑ Other Crawfish

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 7, 8

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	26.8	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.5	TURB (NTU)	2.80	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	2.98	MBAS (mg/L)	na	DO (mg/L)	5.89		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	60	in
Depth	1.5	in
Velocity	1	ft/sec
Flow	281	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☑ Receiving Water

Site ID	Sycamore Creek Downstream		Latitude	32.844~~4~~41	Watershed	Hydrologic Unit	907
Location	Carlton Oaks Drive		Longitude	-117.00652		Hydrologic Area	907.1
			TB Page	1231-A6		Hydrologic Subarea (Optional)	907.12
Date	9/3/09	Time 10:35	Observer	JL/MD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 13, 14

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.7	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.2	TURB (NTU)	5.83	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	1.99	MBAS (mg/L)	na	DO (mg/L)	5.21		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	25	in
Depth	1	in
Velocity	1	ft/sec
Flow	78	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

CITY OF SANTEE

2009/2010 JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

IDDE SECTION

DECEMBER 2010

PREPARED BY:

D-MAX ENGINEERING, INC.
7220 TRADE STREET, SUITE 119
SAN DIEGO, CALIFORNIA 92121
858.586.6600

CITY OF SANTEE

2009/2010
JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

IDDE SECTION

DECEMBER 2010

PREPARED BY:

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858.586.6600

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Pedro Orso Delgado
Deputy City Manager/Director of Development Services

INTRODUCTION AND CONTENTS

Introduction

Section 7 of the Annual Report discusses the implementation of the illicit discharge detection and elimination (IDDE) component of the City's storm water program. This program component includes both dry weather monitoring activities and other activities to prevent and respond to illicit connections and illegal discharges, such as operating a storm water hotline. The Reporting Period for the portions of this section that discuss dry weather monitoring activities extends through September 30, 2010, but the Reporting Period for other activities described in the section extends through June 30, 2010, the same Reporting Period as applies to the rest of the JURMP Annual Report. Because the field work for the dry weather monitoring program is not required to be completed until September 30, 2010, the same day that the JURMP Annual Report is to be submitted, the RWQCB extended the submittal deadline for all of Section 7 of the 2009/2010 JURMP Annual Report until December 15, 2010.

Contents

This submittal includes a certification statement, the text of Section 7 of the 2009/2010 JURMP Annual Report, and the attachments associated with that section. For clarity, the items included in this submittal are listed below.

- Certification statement for Section 7 submittal
- Introduction and Contents
- Section 7 (IDDE component) of the 2009/2010 JURMP Annual Report
- JURMP Annual Report Requirements Checklist (for Section 7 only)
- Attachment 7.1, City of Santee Dry Weather Field Screening and Analytical Monitoring Program 2010

Please note that the complaint log, referenced as Appendix B in Section 7, was already submitted with the main JURMP Annual Report submittal in September 2010 and is not included again with this submittal.

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION

7.1 INTRODUCTION

The City maintains several programs to prevent and to seek out and eliminate illicit connections and illegal discharges (IC/IDs), which can be significant sources of pollutants to the City's MS4. Illicit connections include improper links to the MS4, typically of conveyances that should be plumbed to the sanitary sewer system, such as car wash facility drains. Illegal discharges may result from activities such as vehicle washing or equipment cleaning without the use of proper BMPs. City storm water personnel work with residents, businesses, and City staff to make them aware of BMPs to prevent IC/IDs and to encourage reporting of IC/IDs. The following activities are the primary components of the City's program to combat IC/IDs:

- Inspecting local businesses, construction sites, and municipal facilities;
- Conducting the Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program);
- Operating a public complaint hotline.

These activities enable the City to provide a comprehensive system to improve the quality of storm water and urban runoff throughout the City through detection and elimination of IC/IDs.

7.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the illicit discharge detection and elimination component during the 2009/2010 Reporting Period are presented in the following bulleted list. Please note that per Addendum No. 2 to the Municipal Permit, the Reporting Period for the Dry Weather Monitoring Program extends through September 30, 2010. The Reporting Period for all other components of the City's illicit discharge detection and elimination (IDDE) program ended on June 30, 2010.

- The City continued to operate a storm water hotline; the City received and responded to 67 complaints during the Reporting Period.
- Thirty-three IC/IDs were discovered through reports to the storm water hotline during the 2009/2010 Reporting Period. City personnel followed up and eliminated all IC/IDs, applying enforcement measures as necessary.
- The City performed all of the recommended corrective actions proposed in the 2009 Dry Weather Monitoring Program Report to prevent possible pollutants from entering the storm drain system.
- The City conducted two rounds of monitoring during the 2010 Dry Weather Monitoring Program, and performed the recommended corrective actions based on Round One results.

7.2 Public Reporting of Illicit Discharges and Connections

Reporting and Response

Public and municipal involvement is crucial to preventing and eliminating illicit connections and illegal discharges (IC/IDs) from the storm water conveyance system. The Storm Water Hotline provides an effective means for individuals in the City to report suspected IC/IDs. The hotline number is provided on the City's website, in distributed storm water educational material, and in storm water articles in *Santee Review*. All complaints received through the hotline are logged for documentation and tracking. Each logged complaint is investigated by City personnel to determine if an IC/ID is present. Responsible parties for any confirmed IC/ID are sought out and educated and/or cited as necessary and required to stop and clean up any and all illegal discharges.

Complaints received by the City during the Reporting Period and the City's response to each are listed in Appendix B. Sixty-eight complaints were documented and responded to this year, an increase from 59 that were recorded last year. This may indicate that Santee residents are becoming more aware of the City's Storm Water Pollution Prevention Program. The City responded to and resolved all 67 complaints during the 2009/2010 Reporting Period.

Enforcement

As previously stated, complaints received via the storm water hotline are included in a table in Appendix B. The table also includes a description of how each complaint was resolved during the Reporting Period. Resolutions to investigated complaints included clean-up, providing educational material and discussing storm water concepts with individuals involved in the complaint, and in some cases issuing courtesy notices and notices of violation (NOV).

7.3 Spill Reporting, Response, and Prevention

See Section 4.9 of this JURMP Annual Report, which was submitted in September 2010.

7.4 Urban Runoff Monitoring

The City has continued to conduct a Dry Weather Monitoring Program, as required by the Municipal Permit. This program assists the City in detecting and eliminating IC/IDs to the storm drain system. There are three major components to the Dry Weather Monitoring Program:

- Field observations, which include site descriptions and qualitative observations
- Field screening, which includes flow estimation and sample testing using meters and test kits at the site

- Analytical monitoring, which involves submittal of collected samples from selected sites, constituting 25 percent of all flowing or ponded sites, to an analytical laboratory for additional testing

The City visits all designated primary monitoring stations each year between May 1 and September 30 to collect dry weather monitoring data. When a primary monitoring station is found to be dry, the City visits designated alternate monitoring stations.

For both the 2009 and 2010 Dry Weather Monitoring Programs, the City visited 20 monitoring stations with ponded or flowing water to collect Dry Weather Monitoring Program data. The City conducts two rounds of dry weather monitoring each season, one early in the season and one near the end.

Numeric action levels are used as the primary approach for the interpretation of most constituent concentrations measured in the field and laboratory. Action levels for dissolved metals follow the California Toxics Rule (CTR) Criteria Maximum Concentration (CMC). Temperature, turbidity, and conductivity parameters are evaluated using best professional judgment to determine if further investigation is needed. The action levels for pH, surfactants, ammonia-nitrogen, nitrate-nitrogen, orthophosphate-phosphorus, oil and grease, diazinon, and chlorpyrifos were adopted in 2003 and were based on statistical analyses of previous Dry Weather Monitoring Program data, established water quality benchmarks from the Basin Plan, and the United States Environmental Protection Agency Multi-Sector General Permit.

The Regional Monitoring Workgroup in November 2008 requested the Dry Weather Monitoring Sub-workgroup to evaluate dry weather action levels that were submitted in April 2003 by the County of San Diego on behalf of the Copermittees. The Dry Weather Monitoring Sub-workgroup determined that the bacterial indicators action levels required additional analysis. The Dry Weather Monitoring Sub-workgroup contracted the services of D-MAX Engineering (D-MAX) to evaluate historical bacterial data collected from dry weather monitoring from 2002 through 2007. Details of their evaluation are posted on the Project Clean Water Website at http://www.projectcleanwater.org/pdf/science_mon/dry_weather_2009bacteria_action_level_report_draft.pdf. The Regional Monitoring Workgroup on May 19, 2009 evaluated the recommendations of the Dry Weather Monitoring Sub-workgroup and selected the 80th percentile values to be the dry weather action levels for bacterial indicators beginning on May 1, 2010. The previous and current action levels (effective as of May 1, 2010) are presented in Table 7-1.

Table 7-1
Bacterial Indicators Action Levels for Dry Weather Monitoring Program

	Total Coliform (MPN/100 mL)	Fecal Coliform (MPN/100 mL)	*Enterococcus* (MPN/100 mL)
2003 - 2009 Action Levels	50,000	20,000	10,000
2010 - 2012 Action Levels	130,000	13,000	7,000

7.4.1 2009 Dry Weather Monitoring Program

Both rounds of the City's 2009 Dry Weather Monitoring Program were conducted during the 2009 dry season. For information about how the City addressed issues discovered during the 2009 Dry Weather Monitoring Program and responded to the resulting recommendations, see Section 7.5.1 of this report.

7.4.2 2010 Dry Weather Monitoring Program

Both rounds of the 2010 Dry Weather Monitoring Program were completed as scheduled during the 2010 dry season. Twenty-two routine site visits were made in Round One, and twenty-one site visits were conducted in Round Two.

If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days. Upstream investigations are performed when exceedances are verified during confirmation visits. See the City's JURMP for a complete discussion of upstream investigation procedures.

Table 7-2 presents a summary of the action level exceedances observed in 2010. Tables 7-3 and 7-4 present the results of confirmation visits and, where necessary, upstream investigations conducted during Round One and Round Two, respectively. A list of all the monitoring stations visited is displayed in Table 7-5. At the end of this section, tables 7-6 and 7-7 provide the complete field analytical results and laboratory analytical results, respectively, from both rounds of the 2010 Dry Weather Monitoring Program.

Table 7-2
Summary of 2010 Action Level Exceedances

Field Screening (20 samples)						
Analyte	**Number of Exceedances**		**Percentage of Sites with Exceedance**		**Site Exceeding Action Level**	
	R1	**R2**	**R1**	**R2**	**R1**	**R2**
Odor	1	0	5	0	RCP3	---
Sheen	1	0	5	0	RCP3	---
pH	0	0	0	0	---	---
Conductivity	0	0	0	0	---	---
Turbidity	1	0	5	0	W30c	---
Surfactants	1	1	5	5	W30c*	O15f
Ammonia-N	1	2	5	10	W30c*	O15f and S15h
Nitrate-N	2	2	10	10	O40b and Q20a	Q20a and RCP1
Orthophosphate-P	1	0	5	0	W30c*	---
Laboratory Analyses (5 samples)						
Analyte	**Number of Exceedances**		**Percentage of Sites with Exceedance**		**Site Exceeding Action Level**	
	R1	**R2**	**R1**	**R2**	**R1**	**R2**
Oil & Grease	0	0	0	0	---	---
Cadmium	0	0	0	0	---	---
Copper	0	0	0	0	---	---
Lead	0	0	0	0	---	---
Zinc	0	0	0	0	---	---
Diazinon	0	0	0	0	---	---
Chlorpyrifos	0	0	0	0	---	---
Total Coliforms	0	1	0	20	---	J25c
Fecal Coliforms	0	1	0	20	---	J25c
Enterococci	1	1	20	20	J25c	V40d

Note: Table data is based on routine visits only. Confirmation, follow-up, and dry site visits not included. *Note possible false readings based on turbidity interference.

Follow-up investigations conducted in response to action level exceedances are summarized in Section 7.5.2 of this report.

A formal trash assessment was performed in 2010 in accordance with the Municipal Permit requirements. A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form's five categories are primarily qualitative descriptions of the amount and extent of trash although a number of trash pieces is also included in each category as a rough guideline. The five categories are defined as follows.

- Optimal: On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
- Suboptimal: On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
- Marginal: Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
- Submarginal: Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (~100-400 pieces). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
- Poor: Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

The threat to human health and threat to aquatic health is also assessed at each site using the following definitions:

- *Threat to Human Health* – Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment.
- *Threat to Aquatic Health* – Large amount (50 pieces or more) of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amounts of settleable, degradable, and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence of large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment.

Twenty-two sites in Round One and twenty-one sites in Round Two were assessed for trash. Most of the sites were rated optimal or suboptimal, having little or no trash. One site in Round One and three sites in Round Two received a marginal trash assessment rating. One site in Round Two received a submarginal rating. No sites in either round

were ranked as poor, and no sites were considered to pose a threat to human or aquatic health.

The 2010 Dry Weather Monitoring Program Report, which includes results of field screening and analytical monitoring, can be found as Attachment 7.1.

Note that no substantive changes were made to the City's MS4 map as a result of the 2010 Dry Weather Monitoring Program.

7.5 Follow-up and Enforcement

7.5.1 Actions Taken in Response to the 2009 Dry Weather Monitoring Program Findings

Based on the 2009 Dry Weather Monitoring Program results, recommendations were made. All the additional inspection and maintenance recommendations were implemented. The City continues to research the sources of elevated orthophosphate-phosphorus and turbidity at the location upstream of Site Q5l. A consultant who conducts groundwater monitoring and sampling at a well on Siesta Road was contacted to obtain data for turbidity (or related parameters) and phosphate, but no data has been made available to date.

7.5.2 2010 Dry Weather Monitoring Follow-Up Investigations

If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days. Upstream investigations are performed when exceedances are verified during confirmation visits. See the City's JURMP for a complete discussion of upstream investigation procedures.

Tables 7-3 and 7-4, below, present conclusions based on the results of confirmation visits and, where necessary, upstream investigations conducted during Round One and Round Two, respectively, of the 2010 Dry Weather Monitoring Program.

Table 7-3
Round One Summary of Follow-Up Investigations

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
J25c	---	*Enterococcus*	Exceedance not confirmed
O40b	Nitrate-N	---	Landscape fertilization and overwatering
Q20a	Nitrate-N	---	Nitrate-containing groundwater seeping into the MS4 conveyance
RCP3	Odor, Sheen, Nitrate-N	---	Odor and sheen exceedances traced to automobile accident. Nitrate-N exceedance due to nitrate-containing groundwater seeping into the MS4 conveyance
W30c	Turbidity, Surfactants, Ammonia-N, and Nitrate-N	---	Exceedances not confirmed, possible field test kit interferences

Table 7-4
Round Two Summary of Follow-Up Investigations

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
J25c	---	Total Coliforms, Fecal Coliforms	Fecal coliform exceedance not confirmed, total coliforms likely due to algal decomposition in warm, ponded water at upstream location
O15f	Surfactants, Ammonia-N	---	Surfactants possibly due to washing activities in residential neighborhood, Ammonia-N exceedance likely due to decomposing leaves in ponded water
Q20a	Nitrate-N	---	Nitrate-containing groundwater seeping into the MS4 conveyance
RCP1	Nitrate-N	---	Nitrate-containing groundwater seeping into the MS4 conveyance
S15h	Ammonia-N	---	Exceedance not confirmed
V40d	---	*Enterococcus*	Exceedance not confirmed

The City took the following actions during and following the 2010 Dry Weather Monitoring results:

- The City's Stormwater Program Manager was on-site during the clean-up of an automobile accident near Site RCP3 to ensure no discharges to the storm drain inlets. City public works cleaned the MS4 after the confirmation visit to Site RCP3 to remove any pollutants remaining in the system.
- Contacted the property management company for Maderaldo Industrial Park and provided landscaping best management practice education since improper fertilizer application and over-irrigation likely contributed to nitrate-N exceedances at Site O40b.
- Removed trash and debris from Site I10c, the only site which received a marginal trash assessment rating during Round One. City staff have been directed to remove trash and debris from Sites I10c, G30c, O40b, and V40d which received submarginal and marginal ratings during Round Two. In addition, the City contacted the Sheriff to advise them of the concern relating to the area around I10c, to ensure that any issues (such as dumping of shopping carts) relating to transient activity can be eliminated.

- City mailed residential storm water factsheets to 71 addresses upgradient of Site W30c where exceedances in turbidity, surfactants, ammonia-N, and orthophosphate-P were measured. The City has mailed residential factsheets to 278 addresses upgradient of O15f where exceedence in ammonia and surfactants were measured.

These actions and any other actions taken with respect to the City's Dry Weather Monitoring Program during the remainder of 2010/2011 will be described in the 2010/2011 JURMP Annual Report.

7.5.3 IC/IDs Identified

During the Reporting Period, 33 IC/IDs were identified and eliminated based on investigations of reports made to the City's public complaint hotline. Details of all storm water complaints made to the City's public complaint hotline are included in the City's complaint log, included with the September 2010 JURMP Annual Report submittal as Appendix B.

7.5.4 Enforcement

The enforcement actions taken by the City of Santee during the 2009/2010 Reporting Period are discussed in sections 4, 5 and 6 of this JURMP Annual Report, which was submitted in September 2010.

7.6 Illicit Discharge Detection and Elimination Component Effectiveness Assessment

The effectiveness assessment of this program component is provided in Section 11 of this JURMP Annual Report, which was submitted in September 2010.

7.7 Program Review and Modification

No changes to the City's illicit discharge detection and elimination component were made during the Reporting Period.

Table 7-5
2010 Dry Weather Monitoring Locations

Site	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
A5c	Next to 8335 Carlton Oaks Drive, between Cadorette Avenue and Praful Street	Outlet	Residential	None	907.12	32.84081	-117.02160
E5g1	Santee Recreational Lakes, West side of entrance road, approximately 100 feet South of entrance toll booth in grassy area	Manhole	Residential	None	907.12	32.84885	-117.00471
G30c	South end of River Trail Place, north of San Diego River, down trail to the west	Outlet	Residential	Open	907.12	32.84501	-116.99122
H5e	South of River Park Drive, at end of walkway between Brookview Court and River Rock Court, north of San Diego River	Outlet	Residential	None	907.12	32.84561	-116.98769
I10c	South bank of the San Diego River, East of Cuyamaca Street, under bridge, westernmost outfalls	Outlet	Commercial	Residential	907.12	32.84561	-116.98340
J25c	West end of Carefree Drive, on the west side of channel	Outlet	Residential	None	907.12	32.85813	-116.97601
J25c2**	At the east end of Country Scenes, east of Conejo Road	Outlet	Residential	None	907.12	32.85639	-116.97598
J30d1	In the Woodglen Vista Channel at the Riverwalk Drive and Park Center Drive Intersection, on the north side of the bridge	Natural Creek	Residential	None	907.12	32.85175	-116.97606
O15f	North Side of Northcote Road, between Woodside Avenue and Via Madonna	Manhole	Residential	None	907.12	32.84653	-116.95520
O40b	At the north end of Abraham Way, south of San Diego River	Outlet	Commercial	Industrial	907.12	32.84851	-116.96392
P10a*	Manhole in the northbound lane of Graves Ave; in front of the northernmost gate of the Greystone Ridge Townhouses	Manhole	Residential	None	907.12	32.83647	-116.96145
P20f	East of North Magnolia Avenue, at the east end of Chubb Lane	Concrete Channel	Residential	Commercial	907.12	32.84674	-116.96920

Table 7-5 (Continued)
2010 Dry Weather Monitoring Locations

Site	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
Q20a	In front of 10220 Buena Vista Avenue	Manhole	Residential	Commercial	907.12	32.83494	-116.97509
RCP1	North bank of the San Diego River in the RCP Brick Factory, across from the southwest corner of the antennae field	Outlet	Residential	None	907.12	32.84959	-116.96659
RCP3*	North bank of the San Diego River in the RCP Brick Factory, across from the southeast corner of the antennae field	Outlet	Residential	None	907.12	32.84975	-116.96341
S15h	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, north of Wal-Mart, west of trail	Outlet	Commercial	None	907.12	32.84326	-116.98969
S5c	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, northwest of Michael's	Outlet	Commercial	None	907.12	32.84363	-116.98795
T5e**	Northwest of the Prospect Avenue and Argent Street intersection, south of Forester Creek	Outlet	Commercial	Industrial	907.12	32.83393	-116.98956
V40d	On the south side of Prospect Avenue, east of Fanita Drive	Concrete Channel	Residential	None	907.12	32.83375	-117.00005
V45k	On the north side of Mission Gorge Road, at the north end of freeway 125	Natural Creek	Commercial	Open	907.12	32.83895	-117.00251
W30c	In the southbound lane of Mesa Road, at the intersection of Mesa Road and Graham Terrace	Manhole	Residential	None	907.12	32.83468	-117.01383
Z15a1	On the south side of Mission Gorge Road, east of Father Junipero Serra Trail	Manhole	Residential	None	901.12	32.83737	-117.03005

Notes:
*Alternate site RCP3 replaced primary dry site P10a in both sampling rounds.
**Site J25c2 was sampled during Round One only and replaced by alternate site T5e in Round Two.

Table 7-6
Field Analytical Results from the 2010 Dry Weather Monitoring Program

Site	Date	Time	Flow (gpm)	Temp (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
Round One											
A5c	5/18/10	15:40	<1	20.2	8.5	0.79	2.09	0.25	0.10 J	3.00	0.97
E5g1	5/18/10	14:40	1	20.7	8.1	2.62	2.62	0.38	0.23	2.12	0.89
G30c	5/18/10	11:20	1	20.8	8.3	2.54	3.64	0.25	0.14 J	5.70	0.06 J
H5e	5/20/10	11:40	<1	20.8	8.2	10.1	2.78	0.25	0.20	0.99 J	1.08
I10c	5/21/10	15:00	5	22.6	7.9	1.15	1.66	0.25	0.18 J	9.40	0.12
J25c	5/19/10	12:10	3	20.4	8.2	4.79	4.32	0.50	0.28	5.60	0.38
J25c	6/02/10	9:40	3	18.6	8.3	na	4.64	na	na	na	na
J25c2	5/21/10	13:55	1	22.7	7.9	2.57	4.42	0.50	0.15 J	6.17	0.39
J30d1	5/19/10	14:10	5	21.6	7.6	2.48	2.93	0.25	0.17 J	1.62	0.11
O15f	5/21/10	12:00	0	21.0	7.8	5.35	0.99	0.25	0.06 J	0.68 J	0.86
O40b	5/18/10	9:45	<1	18.3	8.2	2.23	2.45	0.50	0.14 J	**23.6**	0.72
O40b	5/19/10	9:30	<1	18.7	8.3	na	2.32	na	na	**12.6**	na
O40b	5/21/10	9:30	<1	19.3	8.3	na	2.35	na	na	**16.4**	na
P10a	5/21/10	12:50	Dry	ns	ns	ns	ns	ns	ns	ns	ns
P20f	5/20/10	10:10	13	23.0	8.3	0.98	1.43	0.25	0.11 J	4.31	0.07 J
Q20a	5/21/10	10:00	<1	22.4	8.2	2.25	1.98	0.25	0.16 J	**11.6**	0.87
Q20a	5/21/10	15:40	<1	23.9	8.2	na	2.02	na	na	**12.5**	na

Table 7-6(Continued)
Field Analytical Results from the 2010 Dry Weather Monitoring Program

Site	Date	Time	Flow (gpm)	Temp (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
Q20a	5/21/10	15:40	<1	25.0	8.3	na	1.86	na	na	6.32	na
RCP1	5/19/10	11:15	3	21.1	8.2	1.67	1.58	0.25	0.15 J	7.84	0.71
RCP3	5/20/10	15:00	13	22.8	7.9	1.55	5.07	0.50	0.21	9.57	0.36
RCP3	5/21/10	14:25	11	22.2	8.1	na	1.86	na	na	na	na
RCP3	6/02/10	12:20	8	22.2	8.2	na	1.82	na	na	na	na
S15h	5/20/10	13:30	<1	21.3	8.0	3.54	2.22	0.38	0.16 J	4.03	0.73
S5c	5/18/10	12:15	<1	20.1	7.7	4.04	0.87	0.25	0.03 J	7.73	0.14
T5e	5/20/10	14:10	Dry	ns	ns	ns	ns	ns	ns	ns	ns
V40d	5/20/10	9:15	28	20.1	8.3	0.50	4.24	0.50	0.16 J	nd	0.04 J
V45k	5/18/10	13:00	13	20.4	7.8	1.76	3.95	0.50	0.17 J	0.19 J	0.23
W30c	5/19/10	15:15	2	23.0	7.8	**147**	4.27	**>3**	**3.05**	0.88 J	**49.7**
W30c	5/19/10	15:15	<1	24.3	8.3	3.48	4.81	0.50	0.18 J	na	0.47
Z15a1	5/21/10	9:00	1	17.1	7.8	6.43	1.21	0.25	0.66	2.12	0.60
Round Two											
A5c	9/21/10	11:00	<1	18.1	8.1	1.08	1.43	0.25	0.10 J	2.21	0.08 J
E5g1	9/15/10	15:30	<1	23.2	7.9	3.66	2.82	0.50	0.16 J	1.35	0.31
G30c	9/20/10	14:30	Ponded	25.8	8.2	2.93	2.65	0.25	0.33	0.81 J	0.28
H5e	9/14/10	14:35	Ponded	23	7.7	1.55	1.92	0.13	0.13 J	0.30 J	0.21

Table 7-6(Continued)
Field Analytical Results from the 2010 Dry Weather Monitoring Program

Site	Date	Time	Flow (gpm)	Temp (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
I10c	9/21/10	12:10	4	24.1	7.8	0.29	1.10	0.13	0.06 J	5.06	0.01 J
J25c	9/17/10	12:50	7	23.1	8.2	1.58	1.60	0.25	0.19 J	0.71 J	0.03 J
J25c	9/27/10	12:20	2	24.2	8.3	na	4.19	na	na	na	na
J30d1	9/16/10	12:10	3	19.4	7.6	0.01	3.04	0.25	0.28	0.26 J	0.03 J
O15f	9/16/10	14:15	Ponded	24	7.4	16.1	1.58	**2.50**	**3.68**	0.20 J	0.94
O15f	9/17/10	14:30	Ponded	24.8	7.4	23.5	1.35	1.50	**3.30**	na	na
O15f	9/20/10	13:30	Ponded	24.4	7.2	7.98	2.98	0.50	**2.23**	na	na
O40b	9/21/10	10:10	Ponded	17.8	8.1	18.6	2.00	0.75	0.52	9.02	0.54
P10a	9/21/10	9:20	Dry	ns	ns	ns	ns	ns	ns	ns	ns
P20f	9/17/10	12:15	5	29.7	8.7	0.22	1.38	0.25	0.18 J	4.42	0.03 J
Q20a	9/20/10	15:20	Ponded	25.3	8.3	2.90	2.08	0.50	0.19 J	**10.6**	0.39
Q20a	9/21/10	13:45	Dry	ns	ns	ns	ns	ns	ns	ns	ns
RCP1	9/16/10	10:50	3	21.8	8.2	0.25	1.65	0.25	0.15 J	**10.6**	0.07 J
RCP1	9/17/10	11:00	4	22.0	8.2	14.1	1.41	na	na	6.90	na
RCP3	9/14/10	13:45	4	24.6	7.9	4.29	1.84	0.25	0.17 J	9.89	0.13
S15h	9/15/10	14:15	<1	23.8	7.4	3.31	2.13	0.50	**1.06**	0.30 J	0.32
S15h	9/16/10	10:15	<1	19.9	8	na	2.20	na	0.36	na	na
S5c	9/16/10	15:20	<1	23.7	7.9	1.37	1.24	0.13	0.08 J	1.41	0.07 J

Table 7-6(Continued)
Field Analytical Results from the 2010 Dry Weather Monitoring Program

Site	Date	Time	Flow (gpm)	Temp (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
T5e	9/20/10	11:00	Ponded	21.7	7.2	21.9	0.92	0.13	0.28	0.85 J	0.32
V40d	9/17/10	10:10	20	23.5	8.3	3.35	3.84	0.50	0.46	0.48 J	0.01 J
V40d	9/27/10	9:45	17	26.3	8.2	na	3.00	na	na	na	na
V45k	9/14/10	15:40	2	22.0	7.7	4.53	4.24	0.25	0.35	1.21	0.06 J
W30c	9/20/10	16:15	<1	24.4	8.2	2.73	4.71	0.50	0.25	0.61 J	0.08 J
Z15a1	9/17/10	9:10	<1	17.5	7.8	9.69	1.19	0.50	0.15 J	2.81	0.44
REPORTING LIMIT				**0.1**	**0.01**	**0.00**	**0.01**	**0.13**	**0.20**	**1.13**	**0.10**
ACTION LEVEL				**BPJ**	**9.0**	**BPJ**	**BPJ**	**1.0**	**1.0**	**10.0**	**2.0**

Notes:
na = not analyzed; nd = not detected; ns = not sampled (dry site)
J = Value reported is below the reporting limit; measurements have an increased percent error.
Red values exceed action level.

Table 7-7
Laboratory Analytical Results from the 2010 Dry Weather Monitoring Program

Site	Date	Time	Oil & Grease (mg/L)	Total Hardness (mg/L)	Cadmium (µg/L)	Copper (µg/L)	Lead (µg/L)	Zinc (µg/L)	Diazinon (µg/L)	Chlorpyrifos (µg/L)	Total Coliforms (MPN/100 mL)	Fecal Coliforms (MPN/100 mL)	Enterococci (MPN/100 mL)
Round One													
J25c	5/19/10	12:10	nd	757	0.4 J	9 J	nd	nd	nd	nd	23,000	1,700	**50,000**
J25c	6/2/10	9:40	na	na	na	na	na	na	na	na	na	na	3,448
J30d1	5/19/10	14:10	nd	785	0.2 J	2 J	nd	nd	nd	nd	5,000	nd	500
P20f	5/20/10	10:10	nd	467	0.3 J	2 J	nd	1 J	nd	nd	30,000	500	500
RCP1	9/16/10	10:50	nd	496	0.3 J	17	nd	20	nd	nd	3,000	20	2,300
V40d	5/20/10	9:15	nd	1130	0.3 J	2 J	nd	nd	nd	nd	1,700	1,300	170
Round Two													
J25c	9/17/10	12:50	nd	339	nd	10	nd	3 J	nd	nd	**130,000**	**50,000**	3,000
J25c	9/27/10	12:20	na	na	na	na	na	na	na	na	**130,000**	5,118*	na
J30d1	9/16/10	12:10	nd	777	0.2 J	1 J	nd	5 J	nd	nd	1,400	210	40
P20f	9/17/10	12:15	nd	893	nd	4 J	nd	3 J	nd	nd	3,000	800	60
RCP1	9/16/10	10:50	nd	572	nd	nd	nd	3 J	nd	nd	8,000	1,700	170
V40d	9/17/10	10:10	nd	749	nd	3 J	nd	2 J	nd	nd	17,000	3,000	**17,000**
V40d	9/27/10	9:45	na	na	na	na	na	na	na	na	na	na	1,396
ANALYTICAL REPORTING LIMITS			**5**	**10**	**1**	**10**	**5**	**20**	**0.05**	**0.05**	**20****	**20****	**20****
ACTION LEVELS			**15**	*******	**CTR**	**CTR**	**CTR**	**CTR**	**0.50**	**0.50**	**130,000**	**13,000**	**7,000**

Notes:
nd = not detected; na = not analyzed.
Red values are at or exceed action level
J = Value reported is below the reporting limit; measurements have an increased percent error.
CTR = California Toxics Rule; CTR action levels for metals are calculated based upon on the total hardness value of the water sample.
* Number of fecal coliforms is derived from *E. coli* count. Number of fecal coliforms = (Number of *E. coli*) / 0.85.
** Reporting limit is 10 MPN/100 mL for IDEXX tests used during confirmation and upstream testing.
*** Total hardness is not considered a pollutant, and thus has no established action level for the purposes of dry weather monitoring. Total hardness is measured because the CTR action levels for metals are dependent on the total hardness value of the water sample.

IDDE

Permit Annual Reporting Requirement—Section J.3.a.(3).(f)	Location in Report
i. Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.	7.4
ii. Reporting of all dry weather field screening and analytical monitoring results. The data should be presented in tabular and graphical form. The reporting shall include station locations, all dry weather field screening and analytical monitoring results, identification of sites where results exceeded action levels, follow-up and elimination activities for potential illicit discharges and connections, the rationale for why follow-up investigations were not conducted at sites where action levels were exceeded, any Copermittee or consultant program recommendations/changes resulting from the monitoring, and documentation that these recommendations/changes have been implemented. Dry weather field screening and analytical monitoring reporting shall comply with all monitoring and standard reporting requirements in Attachment B of Order No. R9-2007-0001 and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001.	7.4, 7.5; Tables 7-2 through 7-7; Attachment 7.1
iii. Any dry weather field screening and analytical monitoring consultant reports generated, to be provided as an attachment to the annual report.	Attachment 7.1
iv. A brief description of any other investigations and follow-up activities for illicit discharges and connections.	7.5; Appendix B
v. The number and brief description of illicit discharges and connections identified.	7.5; Appendix B
vi. The number of illicit discharges and connections eliminated.	7.5; Appendix B
vii. Identification and description of all spills to the MS4 and response to the spills.	4.9, 7.3; Appendix B
viii. A description of activities implemented to prevent sewage and other spills from entering the MS4.	4.9, 7.3
ix. A description of the mechanism whereby notification of sewage spills from private laterals and septic systems is received.	4.9, 7.3
x. Number of times the hotline was called, as compared to previous reporting periods, and a summary of the calls.	4.10, 7.2, Appendix B
xi. A description of efforts to publicize and facilitate public reporting of illicit discharges.	4.10, 7.2
xii. The number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	4.10, 7.5, Table 7-1, Appendix B
xiii. A description of notable activities conducted to manage illicit discharges and connections.	7.1, 7.5

IDDE—Additional Dry Weather Monitoring Program Requirements

Permit Annual Reporting Requirement—Attachment B and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001, Section II.B.3.c,d	Location in Report
Meets applicable standard monitoring and reporting requirements listed in Municipal Permit Attachment B.	Attachment 7.1
c. (1) Determining Sampling Frequency: Dry weather field screening and analytical monitoring shall be conducted at each identified station at least once between May 1st and September 30th of each year or as often as the Copermittee determines is necessary to comply with the requirements of section D.4 of Order No. R9-2007-0001.	7.4; Attachment 7.1
c. (2) If flow or ponded runoff is observed at a dry weather field screening or analytical monitoring station and there has been at least seventy-two (72) hours of dry weather, make observations and collect at least one (1) grab sample. Record general information such as time since last rain, quantity of last rain, site descriptions (i.e., conveyance type, dominant watershed land uses), flow estimation (i.e., width of water surface, approximate depth of water, approximate flow velocity, flow rate), and visual observations (i.e., odor, color, clarity, floatables, deposits/stains, vegetation condition, structural condition, and biology).	7.4; Attachment 7.1
c. (3) At a minimum, collect samples for analytical laboratory analysis of the following constituents for at least twenty five percent (25%) of the dry weather monitoring stations where water is present: (a) Total Hardness, (b) Oil and Grease, (c) Diazinon and Chlorpyrifos, (d) Cadmium (Dissolved), (e) Lead (Dissolved), (f) Zinc (Dissolved), (g) Copper (Dissolved), (h) Enterococcus bacteria, (i) Total Coliform bacteria, (j) Fecal Coliform bacteria	7.4; Table 7-7; Attachment 7.1
c.(4) At a minimum, conduct field screening analysis of the following constituents at all dry weather monitoring stations where water is present:	(see below)
c. (a) Specific conductance (calculate estimated Total Dissolved Solids), (b) Turbidity, (c) pH, (d) Reactive Phosphorus, (e) Nitrate Nitrogen, (f) Ammonia Nitrogen, (g) Surfactants (MBAS)	7.4; Table 7-6; Attachment 7.1
c. (5) If the station is dry (no flowing or ponded runoff), make and record all applicable observations and select another station from the list of alternate stations for monitoring.	7.4; Attachment 7.1
c. (6) Develop and/or update criteria for dry weather field screening and analytical monitoring results whereby exceedance of the criteria will require follow-up investigations to be conducted to identify and eliminate the source causing the exceedance of the criteria.	7.4; Attachment 7.1
c. (7) Assess the presence of trash in receiving waters and urban runoff at each dry weather field screening or analytical monitoring station. Assessments of trash shall provide information on the spatial extent and amount of trash present, as well as the nature of the types of trash present.	7.4; Attachment 7.1

IDDE—Additional Dry Weather Monitoring Program Requirements

Permit Annual Reporting Requirement—Attachment B and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001, Section II.B.3.c,d	Location in Report
c. (8) Dry weather field screening and analytical monitoring stations identified to exceed dry weather monitoring criteria for any constituents shall continue to be screened in subsequent years.	7.4; Attachment 7.1
c. (9) Develop and/or update procedures for source identification follow up investigations in the event of exceedance of dry weather field screening and analytical monitoring result criteria. These procedures shall be consistent with procedures required in section D.4.d of Order No. R9-2007-0001.	7.5; Attachment 7.1
c. (10) Develop and/or update procedures to eliminate detected illicit discharges and connections. These procedures shall be consistent with each Copermittees Illicit Discharge and Elimination component of its Jurisdictional Urban Runoff Management Plan as discussed in section D.4 of Order No. R9-2007-0001.	7.5; Attachment 7.1
d. The Copermittees shall commence implementation of dry weather field screening and analytical monitoring under the requirements of this Order by May 1, 2008. Each Copermittee shall conduct dry weather analytical and field screening monitoring in accordance with its storm water conveyance system map and dry weather analytical and field screening monitoring procedures as described in section II.B.3 above. If monitoring indicates an illicit connection or illegal discharge, conduct the follow-up investigation and elimination activities as described in submitted dry weather field screening and analytical monitoring procedures and sections D.4.d and D.4.e of Order No. R9-2007-0001. Until the dry weather field screening and analytical monitoring program is implemented under the requirements of this Order, each Copermittee shall continue to implement dry weather field screening and analytical monitoring as it was most recently implemented pursuant to Order No. 2001-01.	7.4, 7.5; Attachment 7.1

ATTACHMENT 7.1

CITY OF SANTEE DRY WEATHER FIELD SCREENING AND ANALYTICAL MONITORING PROGRAM 2010

City of Santee
Dry Weather Field Screening and Analytical Monitoring Program
2010

Submitted to:

City of Santee
Development Services
10601 Magnolia Avenue
Santee, CA 92071-1266

Prepared by:

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D-MAX Engineering, Inc.

Consultants in Water & Environmental Sciences

December 3, 2010
Project No. 201022W-6

Ms. Helen Perry
Storm Water Program Manager
City of Santee
Department of Development Services
10601 Magnolia Avenue
Santee, CA 92071-1266

Re: 2010 Dry Weather Field Screening and Analytical Monitoring Program
City of Santee, California

Dear Ms. Perry:

Enclosed please find our final report for the City of Santee 2010 Dry Weather Field Screening and Analytical Monitoring Program.

This report presents the results from both rounds of the monitoring program conducted in the City of Santee during the 2010 dry weather season. The contents include field screening data, analytical laboratory test results, trash assessments, analyses of the collected data, and photographs of sampling locations. The report also presents the results of follow-up investigations conducted to identify the sources of pollutants detected and our recommendations for additional actions.

Review comments from the draft report submitted to the City have been incorporated into this final report. It has been our pleasure working with the City of Santee on this project. If you have any questions regarding this report, please feel free to contact us.

Sincerely,
D-MAX Engineering Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

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C LABORATORY ANALYTICAL REPORTS
D FIELD DATA AND TRASH ASSESSMENT SHEETS

ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
µg/L	Micrograms per Liter
Basin Plan	Water Quality Control Plan for the San Diego Basin
CFR	Code of Federal Regulations
City	City of Santee
CMC	Criterion Maximum Concentration
COC	Constituent of Concern
Copermittees	The 18 cities within San Diego County, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority
CTR	California Toxics Rule
CV	Coefficient of Variance
D-MAX	D-MAX Engineering, Inc.
E. coli	*Escherichia coli*
EC	Electrical Conductivity
EMA	EnviroMatrix Analytical, Inc.
FS	Functional Sensitivity
gpm	Gallons per Minute
GPS	Global Positioning System
HSA	Hydrologic Subarea
HU	Hydrologic Unit
IC/ID	Illicit Connection/Illegal Discharge
JURMP	Jurisdictional Urban Runoff Management Program
LED	Light-Emitting Diode
MBAS	Methylene Blue Active Substances
mg/L	Milligrams per Liter
MPN/100 mL	Most Probable Number (of colony-forming units) per 100 Milliliters
mS/cm	Millisiemens per Centimeter
MS4	Municipal Separate Storm Sewer System
Municipal Permit	San Diego Regional Water Quality Control Board Order No. R9-2007-0001
na	Not Analyzed
nd	Not Detected
ns	Not Sampled (dry site)
NTU	Nephelometric Turbidity Unit
PDL	Practical Detection Limit
ppb	Parts per Billion
QA/QC	Quality Assurance/Quality Control
RWQCB	Regional Water Quality Control Board
TDS	Total Dissolved Solids
USEPA	United States Environmental Protection Agency
WQO	Water Quality Objective
WURMP	Watershed Urban Runoff Management Program

EXECUTIVE SUMMARY

The Dry Weather Field Screening and Analytical Monitoring Program is conducted by the City of Santee (City) to find and eliminate illegal discharges and illicit connections within the City's storm drain system. Two rounds of monitoring are conducted at 20 locations between the months of May and September.

During recent years, the number of exceedances of water quality standards has decreased. While this shows an improvement in water quality within the City, the intent of the program is to identify illegal discharges. Therefore some monitoring locations for 2010 were adjusted to assess different locations while still having extensive coverage of the City. As a result of this adjustment, more exceedances were observed during 2010 than during 2009. Each exceedance was confirmed through a follow up visit, and where appropriate, an upstream investigation was conducted to ascertain the source of the exceedance and to eliminate it. When visible evidence of contamination was present at a site (e.g., substantial petroleum sheen, extremely high ammonia-N concentration, etc), then an immediate upstream investigation was conducted.

In two instances, (sites O15f and W30c, both new sampling locations), evidence of discharges were observed, but no definitive source identified. In these instances, educational information was provided to all the addresses where the discharge may have potentially occurred.

The City's Dry Weather Field Screening and Analytical Monitoring Program continues to provide information on the location and characteristics of dry weather flows within the storm drain system. This provides the City with an opportunity to eliminate any illegal discharges that occur and to adjust other program components (education, commercial, residential) to prevent future discharges.

1 INTRODUCTION

1.1 Hydrologic Setting

The City of Santee (City) is located entirely within the San Diego River Watershed. The largest receiving waterbody in the City is the San Diego River, which enters the City in the east and flows west towards the Pacific Ocean. Other major receiving waterbodies include Forester Creek and Sycamore Creek, both of which eventually drain to the San Diego River. Forester Creek enters the City from the southeast and drains into the San Diego River at a location west of Carlton Hills Boulevard. Sycamore Creek enters the City from the north, flows southward, entering the San Diego River just west of Santee Recreation Lakes. All storm water drainage in the City of Santee is routed either directly or indirectly to these creeks and ultimately to the San Diego River. The entire City of Santee, along with portions of the unincorporated area and cities of La Mesa, El Cajon, San Diego, and Poway, lie within the Lower San Diego River Hydrologic Area (HA) 907.1.

1.2 Regulatory Requirements

In accordance with the San Diego County Municipal Storm Water Permit Order R9-2007-001 (Municipal Permit), each of the Copermittees is required to annually perform dry weather monitoring of discharges into its storm water conveyance system. During the dry weather season, May 1 through September 30, selected locations along the storm drain conveyance system are evaluated. The City of Santee conducts two rounds of monitoring during this period. Round One occurs near the beginning of this time frame, while Round Two occurs near the end of this time frame. This provides a wider data spread. This procedure allows the City to make necessary improvements following Round One, and to evaluate the effectiveness of their actions when sites are revisited during Round Two.

Dry Weather Monitoring procedure includes recording field observations, estimating observed flow rates, and conducting field testing. The Municipal Permit also necessitates that the Copermittees conduct laboratory analyses for at least 25 percent of the visited sites with flowing or ponded water. If a sampling location is dry, meaning there is no flowing or ponded water, an alternative sampling station is selected. If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days.

1.3 Program Overview

The purpose of the Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program) is to detect and eliminate illicit connections and illegal discharges (IC/ID) to the storm water conveyance system, minimizing the negative impact of human activities on receiving waterbodies. The Dry Weather Monitoring Program consists of the following components:

- Field visual observations
- Field sampling
- Trash assessments
- Laboratory analytical monitoring

The City of Santee has elected to perform two rounds of monitoring during each dry weather season. These two rounds typically occur near the beginning and end of the season. The data gathered from dry weather monitoring is used to characterize discharges to the storm

drain system and identify conveyances that are discharging elevated levels of pollutants. Follow-up studies and source investigations are conducted as needed to detect and eliminate the sources of these pollutants. This report presents the results of both rounds of the 2010 Dry Weather Monitoring Program conducted by D-MAX.

1.4 Previous Work

The City has conducted Dry Weather Monitoring Programs since 1996 at several locations within the City's storm water conveyance system. These programs are conducted in two rounds during each year, with the exception of 1996 and 2002. A summary of the number of sites sampled each year and round is displayed in Table 1-1. Historical dry weather monitoring data is included in Appendix A.

TABLE 1-1
SUMMARY OF HISTORICAL DRY WEATHER SITES

Year	Number of Sites Screened [1]		Number of Flowing Sites		Number of Ponded Sites		Number of Dry Sites		Number of Lab Analysis Sites [2]	
	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2
1996 [3]	12		Data not available [4]				0		---	
1997	8	8	6	7	2	1	7	7	---	---
1998	14	12	11	7	3	5	1	4	---	---
1999	10	10	6	6	4	4	5	5	---	---
2000	12	12	9	10	3	2	4	4	---	---
2001	14	10	10	8	4	2	2	6	---	---
2002 [3]	20		13		7		1		6	
2003	20	20	17	17	3	3	2	0	5	5
2004	20	20	17	17	3	3	1	1	5	5
2005	20	20	19	18	1	2	1	1	5	5
2006	20	20	18	17	2	3	1	1	5	5
2007	20	20	17	17	3	3	1	1	5	5
2008	20	20	18	16	2	4	0	0	5	5
2009	20	20	18	16	2	4	2	2	5	5

Notes:
[1] Number of Sites Screened = Number Flowing + Number Ponded. Field screening cannot be conducted at sites found to be dry. Dry sites are replaced by either a flowing or ponded site.
[2] Laboratory analyses commenced in 2002 as required by RWQCB Order 2001-001.
[3] The City conducted one round of the field screening program for this year.
[4] Available information does not distinguish between flowing and ponded sites during this period.

1.5 Report Outline

This report is presented in the following order:

Section 1, Introduction, includes a discussion of the City's hydrologic setting, regulatory background, program overview, a summary of previous dry weather monitoring, and the report outline.

Section 2, **Sampling Locations,** describes the sampling locations and site selection criteria.

Section 3, Field and Laboratory Analytical Methods, includes field screening and laboratory analytical procedures, quality assurance protocols, and follow-up action levels.

Section 4, Field Screening Results, presents qualitative observations of the sampling locations and quantitative results of the field screening analyses.

Section 5, Trash Assessment, discusses the procedure and results of the trash assessment.

Section 6, Laboratory Analytical Results, presents results of the laboratory analyses.

Section 7, Data Analysis, provides an analysis of this year's field and laboratory data, as well as a comparison of past results.

Section 8, Follow-up Investigations, details the results of follow-up investigations undertaken to isolate the sources of action level exceedances measured during the monitoring program.

Section 9, Summary and Recommendations, provides a summary of the program results and recommendations for follow-up actions.

Appendix A Historical Dry Weather Monitoring Data

Appendix B Photographs of Sampling Locations

Appendix C Laboratory Analytical Reports

Appendix D Field Data and Trash Assessment Sheets

2 SAMPLING LOCATIONS

Twenty primary monitoring stations have been identified for the City's Dry Weather Monitoring Program. A set of alternative sites are also available for monitoring in the event that a primary station did not have flowing or ponded water. All primary and alternative sampling sites are located in San Diego HU 907.

In 2010, 20 primary sites were visited during both Round One and Round Two of dry weather monitoring. Site P10a was dry during both sampling rounds and replaced by alternative Site RCP3. Alternative Site J25c2 was sampled in Round One but was replaced by alternative Site T5e in Round Two. Eight sampling locations where exceedances were not being observed were substituted for nearby locations which were still representative of the area, but might allow other discharges to be identified and eliminated.

Table 2-1 provides the site name, location, conveyance configuration, land uses, hydrologic subarea, and GPS coordinates of the sampling locations that were visited. New sampling locations are indicated in Table 2-1 by italic and bold font. Photographs of sampling locations are included in Appendix B. A complete map of the Municipal Separate Storm Sewer System (MS4), including sampling locations and drainage basins, is presented in Figure A at the end of this report. A map of the watersheds in and around Santee, shown by Hydrologic Subareas (HSAs), is presented in Figure B.

TABLE 2-1
2010 DRY WEATHER MONITORING STATIONS

Site	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
A5c	Next to 8335 Carlton Oaks Drive, between Cadorette Avenue and Praful Street	Outlet	Residential	None	907.12	32.84081	-117.02160
E5g1	Santee Recreational Lakes, west side of entrance road, approximately 100 feet south of entrance toll booth in grassy area	Manhole	Residential	None	907.12	32.84885	-117.00471
G30c	South end of River Trail Place, north of San Diego River, down trail to the west	Outlet	Residential	Open	907.12	32.84501	-116.99122
H5e	South of River Park Drive, at end of walkway between Brookview Court and River Rock Court, north of San Diego River	Outlet	Residential	None	907.12	32.84561	-116.98769
I10c	South bank of the San Diego River, east of Cuyamaca Street, under bridge, westernmost outfall	Outlet	Commercial	Residential	907.12	32.84561	-116.98340
J25c	West end of Carefree Drive, on the west side of channel	Outlet	Residential	None	907.12	32.85813	-116.97601
J25c2**	At the east end of Country Scenes, east of Conejo Road	Outlet	Residential	None	907.12	32.85639	-116.97598
J30d1	In the Woodglen Vista Channel at the Riverwalk Drive and Park Center Drive intersection, on the north side of the bridge	Natural Creek	Residential	None	907.12	32.85175	-116.97606
O15f	North side of Northcote Road, between Woodside Avenue and Via Madonna	Manhole	Residential	None	907.12	32.84653	-116.95520
O40b	At the north end of Abraham Way, south of San Diego River	Outlet	Commercial	Industrial	907.12	32.84851	-116.96392
P10a*	Manhole in the northbound lane of Graves Ave, in front of the northernmost gate of the Greystne Ridge Townhouses	Manhole	Residential	None	907.12	32.83647	-116.96145
P20f	East of North Magnolia Avenue, at the east end of Chubb Lane	Concrete Channel	Residential	Commercial	907.12	32.84674	-116.96920

TABLE 2-1
2010 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
Q20a	In front of 10220 Buena Vista Avenue	Manhole	Residential	Commercial	907.12	32.83494	-116.97509
RCP1	North bank of the San Diego River in the RCP Brick Factory, across from the southwest corner of the antennae field	Outlet	Residential	None	907.12	32.84959	-116.96659
RCP3*	North bank of the San Diego River in the RCP Brick Factory, across from the southeast corner of the antennae field	Outlet	Residential	None	907.12	32.84975	-116.96341
S15h	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, north of Walmart, west of trail	Outlet	Commercial	None	907.12	32.84326	-116.98969
S5c	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, northwest of Michael's store	Outlet	Commercial	None	907.12	32.84363	-116.98795
T5e**	Northwest of the Prospect Avenue and Argent Street intersection, south of Forester Creek	Outlet	Commercial	Industrial	907.12	32.83393	-116.98956
V40d	On the south side of Prospect Avenue, east of Fanita Drive	Concrete Channel	Residential	None	907.12	32.83375	-117.00005
V45k	On the north side of Mission Gorge Road, at the north end of freeway 125	Natural Creek	Commercial	Open	907.12	32.83895	-117.00251
W30c	In the southbound lane of Mesa Road, at the intersection of Mesa Road and Graham Terrace	Manhole	Residential	None	907.12	32.83468	-117.01383
Z15a1	On the south side of Mission Gorge Road, east of Father Junipero Serra Trail	Manhole	Residential	None	901.12	32.83737	-117.03005

Notes:
Italicized and bold font indicates sites that are new to the Dry Weather Monitoring Program.
*Alternative Site RCP3 replaced primary dry Site P10a in both sampling rounds.
**J25c2 is an alternative site that was sampled in Round One. T5e is an alternative site that was sampled in Round Two.
Denotes a dry weather location sampled for both field screening and laboratory analysis

3 FIELD AND LABORATORY ANALYTICAL METHODS

3.1 Field Screening Procedures and Methods

Field screening techniques consist of flow measurements, qualitative field observations, and quantitative field analyses of selected water quality parameters. Weather conditions, time since last rainfall, and the type of storm water conveyance are recorded as well. Specific observations and results of the field water quality analyses are documented on field data sheets, which also serve as a record of the field visit. Data sheets are completed for every site visit whether or not samples were collected. Check boxes on the data sheets indicate if the visit is for routine field screening, confirmation of an exceedance, or an IC/ID follow-up visit. A confirmation visit is a revisit of the original site, whereas an IC/ID follow-up is an upstream investigation. Data sheets from the 2010 Dry Weather Monitoring Program are included as Appendix D.

Field screening and analyses were conducted according to the following procedures and methods:

Qualitative Observations

Qualitative field observations are made during each site visit. These observations include a general site assessment and description of water odor, clarity, the presence of floatable materials, visible deposits or stains, and organisms. Evidence of present or past IC/IDs to the storm drain system can also be discovered through careful field observations. Each field screening location is photographed to document site conditions. Photographs of each site visited are included in Appendix B.

Flow Measurement

Flow measurements can help estimate pollutant mass loading, prioritize storm drains for future investigation, and identify significant changes in discharge that may be indicative of the elimination of discharges or an illegal discharge. Various field methods are used in formulas to estimate the flow rate. These include measuring the velocity, depth, and width of the flowing water; recording the amount of time required to fill a bottle of known volume with sample water; or, if measuring flow within a cylindrical pipe, measuring the pipe diameter as well as the depth and velocity of the flow. Low levels of flow may also be assessed visually.

Field Water Quality Analyses

At each site with ponded or flowing water, water samples were collected and analyzed in the field for the following constituents:

- Specific Conductance
- Temperature
- pH
- Turbidity
- Nitrate-Nitrogen (Nitrate-N)
- Ammonia-Nitrogen (Ammonia-N)
- Orthophosphate-Phosphorus (Orthophosphate-P)
- Surfactants, measured as methylene blue active substances (MBAS)

The methods used to perform the above field analyses, along with the reporting limit, range, and accuracy of each method, are listed in Table 3-1.

TABLE 3-1
FIELD ANALYTICAL METHODS

Parameter	Method	Method Reporting Limit	Range	Accuracy
Specific Conductance	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.01 mS/cm	0 – 20 mS/cm	± 2% of FS[1]
Temperature	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.1 ℃	0.0 ℃ – 60.0 ℃	± 0.5 ℃
pH	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.01	0.00 – 14.00	± 0.01
Turbidity	Hanna Instruments HI 93703 Portable Turbidity Meter*	0.00 NTU	0.00 – 50.00 NTU and 50 – 1000 NTU	± 0.5 NTU or 5% of reading (whichever is greater)
Ammonia-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Ammonia 3 Vacu-vials® (K-1403) Salicylate*	0.20 mg/L**	0.20 mg/L – 3.00 mg/L***	Varies with measured concentration[2]
Nitrate-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Nitrate 3 Vacu-vials® (K-6933) Cadmium reduction[3]*	1.13 mg/L**	1.13 mg/L – 113 mg/L***	± 30% of PDL[2]
Ortho-phosphate-P	CHEMetrics V-2000 Multi-Analyte LED Photometer – Phosphate 2 Vacu-vials® (K-8513) Stannous chloride chemistry[4]*	0.10 mg/L**	0.10 mg/L – 2.61 mg/L***	Varies with measured concentration[2]
Surfactants	CHEMetrics CHEMets Kit (K-9400) methylene blue active substances*	0.13 mg/L	0.00 mg/L – 3.00 mg/L***	± 0.13 & ± 0.5 mg/L[5]

Notes:

EC = electrical conductivity
mS/cm = millisiemens per centimeter
℃ = degrees Celsius
NTU = nephelometric turbidity unit
mg/L = milligrams per liter
LED = light-emitting diode

[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.

[2] The Practical Detection Limit (PDL), also known as the reporting limit, is defined as the lower limit of the stated test range. Percent error adjusts as follows: ±30% at PDL, ±20% for 25% of full range, ±10% for 75% of full range, ±10% for 120% of full range.

[3] This method determines the concentration of nitrate in mg/L NO_3. To determine the amount of nitrate-N, the concentration of nitrogen must be adjusted for the presence of oxygen in the NO_3 molecule. Therefore, the result is multiplied by a conversion factor of 0.226, the ratio of the molecular weight of N (14g/mol) to NO_3 (62 g/mol). The PDL for nitrate is 5.0 mg/L; however, the PDL for nitrate-N is lower due to the conversion.

[4] This method determines the concentration of orthophosphate in mg/L PO_4. To determine the amount of orthophosphate-P, the concentration of phosphate must be adjusted for the presence of oxygen in the PO_4 molecule. Oxygen is 67.4% of phosphate by mass but is not a plant nutrient in this form. Therefore, the result is multiplied by a conversion factor of 0.326, the ratio of the molecular weight of P (31g/mol) to PO_4 (95 g/mol). The PDL for orthophosphate is 0.3 mg/L; however, the PDL for orthophosphate-P is lower due to the conversion.

[5] ± 0.13 for the range of 0.0 to 1.0 mg/L, ± 0.25 mg/L for the range of 1.0 to 2.0 mg/L and 0.5 mg/L for the range of 2.0 to 3.0 mg/L.

*Test method information taken from Hanna Instruments and CHEMetrics manuals, available online at www.hannainst.com and www.chemetrics.com.

** Readings below the PDL have increased percent error; measurements are reported, but are flagged as being below the PDL.

***Extended ranges in chemical analyses can be achieved through dilutions. Accuracies decrease proportionally with further dilutions.

3.2 Laboratory Analytical Methods

In accordance with the Municipal Permit, laboratory samples were collected at 5 sites, representing 25 percent of the sites where ponded or flowing water was observed. Samples were submitted to EnviroMatrix Analytical (EMA), Inc, a laboratory certified by the California Department of Health Services, for analysis of the following constituents:

- Oil and grease
- Total hardness
- Diazinon
- Chlorpyrifos
- Dissolved Cadmium
- Dissolved Copper
- Dissolved Lead
- Dissolved Zinc
- Total Coliform bacteria
- Fecal Coliform bacteria
- *Enterococcus* bacteria

The methods used to perform each of the above analyses along with method reporting limits and holding times are listed in Table 3-2.

3.3 Quality Assurance and Quality Control

The Quality Assurance and Quality Control (QA/QC) Plan used for this project includes the Environmental Protection Agency (EPA) approved test methods for the field and laboratory analysis of water samples, calibration of test equipment, and pre- and post-rinsing of sample collection containers and test vials. Key components of the QA/QC Plan are described below.

3.3.1 Field Sampling and Analysis QA/QC

The pH meters, turbidity meter, and conductivity meter are tested daily before field screening begins. The pH meters are calibrated as needed with sodium/potassium phosphate, monobasic buffer solutions with pH values equal to 4.00 ± 0.01, 7.00 ± 0.01, and 10.00 ± 0.01 units. The glass electrode tube is kept moist to preserve the meter's accuracy during fieldwork. The turbidity meter and conductivity meter are calibrated as needed using standard solutions.

Field sample collection containers are rinsed first with distilled water and then with the sample water prior to sample collection. Upon completion of sampling and testing at each site, sample collection containers, test vials, and ion-sensitive electrodes are rinsed twice with distilled water and dried.

Field test kit accuracy is assessed prior to commencing sampling. Each lot, or batch, of Chemetrics ampoules is analyzed against standard solutions of known concentrations of ammonia-N, nitrate, orthophosphate, and surfactants. The results of these tests are shown in Table 3-3.

TABLE 3-2
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Reporting Limit	Method Detection Limit	Maximum Holding Time [1]
Oil and Grease	EPA 1664	5 mg/L	5 mg/L	28 days
Total Hardness	EPA 200.7	10 mg/L	10 mg/L	14 days
Dissolved Cadmium	EPA 200.8	1 µg/L	0.2 µg/L	24 hours
Dissolved Copper	EPA 200.8	10 µg/L	1 µg/L	24 hours
Dissolved Lead	EPA 200.8	5 µg/L	1 µg/L	24 hours
Dissolved Zinc	EPA 200.8	20 µg/L	0.3 µg/L	24 hours
Diazinon	EPA 8141A	0.05 µg/L	0.04 µg/L	7 days
Chlorpyrifos	EPA 8141A	0.05 µg/L	0.04 µg/L	7 days
Total Coliforms[2]	SM 9221	20 – 1,600,000 MPN/100 mL	20 MPN/100 mL	6 hours
Fecal Coliforms[2]	SM 9221	20 – 160,000 MPN/100 mL	20 MPN/100 mL	6 hours
Enterococci[2]	SM 9230	20 – 160,000 MPN/100 mL	20 MPN/100 mL	6 hours
Total Coliforms	SM 9223 (IDEXX Colilert)[3]	10 – 2,419,600 MPN/100 mL	10 MPN/100 mL	6 hours
Escherichia coli (E. coli) [4]	SM 9223 (IDEXX Colilert)[3]	10 – 2,419,600 MPN/100 mL	10 MPN/100 mL	6 hours
Enterococci	IDEXX Enterolert[3]	10 – 241,960 MPN/100 mL	10 MPN/100 mL	6 hours

Notes:
µg/L = micrograms per liter
MPN/100 mL = most probable number (of colony-forming units) per 100 milliliters
[1] Maximum Holding Time values listed apply to samples collected and preserved in accordance with the quality assurance and quality control procedures listed in Section 3.3.2.
[2] For D-MAX's Dry Weather Monitoring Program, EMA performs standard dilutions for total coliforms to quantify from 20-1,600,000 most probable number per 100 milliliters (MPN/100 mL). For fecal coliforms and Enterococci, EMA performs standard dilutions to quantify from 20-160,000 MPN/100 mL. During the analysis and interpretation of the results, the number of tubes used to quantify the sample must fit the MPN index table from Standard Method 9221. The dilution set used will determine the detection limit. A standard dilution analysis is set up with 15 tubes at different concentrations. The reporting limit will always be adjusted depending on the dilution factor used for quantifying the actual results based on the MPN table. If the result for the analysis was less than 16,000 MPN/100 mL, the reporting limit will always be 20, and the dilution factor will be 10. As the dilution factor goes up, the reporting limit listed in the results from EMA will also go up based on the calculation made with EMA's data system. However, the lowest quantifiable number or reporting limit would still be 20 based on how the standard tubes for the sample is set up.
[3] IDEXX Colilert and Enterolert tests are performed by EMA. This test is used during upstream investigations only.
[4] Number of fecal coliforms is derived from number of *E. coli* through the following formula:
Fecal Coliforms = *E. coli* / 0.85. The converted fecal coliform count, not the number of *E. coli*, is reported in this report's data tables.

TABLE 3-3
FIELD ANALYSIS QA/QC RESULTS

Analyte	Known Concentration (mg/L)	Acceptable Range* (mg/L)	Lot Number	Date	Field Test Kit Results (mg/L)
Ammonia-N	0.85	0.68 - 1.02	73707/2	5/17/2010	0.811
			74559/8	5/27/2010	0.821
			75425/13	6/30/2010	0.811
			75608/7	8/27/2010	0.691
Nitrate**	44.3	31.0 - 57.6	75362/2	5/17/2010	42.77
			73960/4	5/17/2010	41.02
			75655/6	6/30/2010	38.56
			75655/8	6/30/2010	36.49
			75998/8	8/6/2010	46.63
Orthophosphate**	6.13	4.29 - 7.97	75263/4	5/17/2010	6.023
			73677/4	5/17/2010	5.265
			75756/4	6/30/2010	5.015
Surfactants	1.0	0.75 - 1.25	75440/75293/12	5/17/2010	1.0
			74268/74253/2	5/17/2010	1.0
			75638/75460/12	6/30/2010	1.0
			75638/75631/2	6/30/2010	1.0
			75928/75791/6	7/28/2010	1.0
			75928/75937/2	8/27/2010	1.0

Notes: *Acceptable range is calculated based on the error associated with the methods as listed in Table 3-1. **Nitrate and orthophosphate are converted to nitrate-N and orthophosphate-P, respectively, when conducting standard field screening. This is accomplished by multiplying the results by 0.226 for nitrate and 0.326 for orthophosphate. To simplify the calibration process, the unconverted numbers are used when calibrating the instruments.

3.3.2 Laboratory Sampling and Analysis QA/QC

Samples for laboratory analysis are collected concurrently with field samples and use the same sampling procedures. Pre-sterilized sample bottles are obtained from the laboratory and thus do not require rinsing with sample water prior to sample collection. After sample collection, all laboratory samples are kept in a cooler on ice until picked up by the lab. Strict chain of custody procedures are followed, and samples are delivered and analyzed within the appropriate holding times listed in Table 3-2. Completed chain of custody forms are included in Appendix C.

3.4 Follow-up Action Levels

Based on dry weather field screening results, immediate follow-up investigations are sometimes necessary to identify and eliminate pollutant sources. In order to determine whether an immediate source investigation is necessary, numeric action levels and best professional judgment are used to interpret the field screening results. If visual and/or analytical evidence of gross contamination are present at a site (e.g., substantial petroleum sheen, extremely high ammonia-N concentration, evidence of a sewage release, etc.), then

an immediate source identification investigation is initiated. For sites that exceed numeric action levels but are not perceived as an immediate threat to water quality, a confirmation visit is conducted within two business days. An upstream pollutant source investigation is conducted thereafter if elevated concentrations persist and no sources can be identified in the immediate vicinity of the monitoring station. If elevated levels of pollutants are detected by the laboratory analyses, a comprehensive follow-up pollutant source investigation is initiated within two business days of receiving the laboratory results. A discussion of follow-up investigations is included in Section 8.

The following three methods are employed to determine whether immediate or comprehensive follow-up investigations are necessary: (1) Numeric Action Levels; (2) California Toxics Rule (CTR); and (3) Best Professional Judgment (BPJ). The three approaches are described below and presented with associated constituents in Table 3-4.

Numeric Action Levels

Numeric action levels are used as the primary approach for interpreting pH, orthophosphate-P, nitrate-N, ammonia-N, surfactants, oil and grease, diazinon, chlorpyrifos, total coliforms, fecal coliforms, and *Enterococcus* analytical results. Prior to the 2003 dry weather season, no standard action levels had been adopted for use throughout San Diego County. D-MAX calculated the current set of numeric action levels based on county-wide sampling data. These action levels have been used by all San Diego County Copermittees since the 2003 dry weather season. For implementation in 2010, D-MAX performed statistical analysis on county-wide data to update action levels for bacterial indicators.

California Toxics Rule

The CTR criterion maximum concentration (CMC) is a short term concentration limit in which aquatic life can be sustained. The CMC is used to determine appropriate action levels for dissolved trace metals, including cadmium, copper, lead, and zinc. The CTR equations, as provided in EPA Federal Register Doc. 40 Code of Federal Regulations (CFR) Part 131, are used to calculate benchmarks based on the total hardness of the sampled water, with the action levels increasing as hardness increases. More information on the CTR is available at http://www.epa.gov/region09/water/ctr.

Best Professional Judgment

Best professional judgment is used as the primary approach for interpreting turbidity, water temperature, and conductivity and as a secondary approach for interpreting the results of all other field and laboratory analyses. Under BPJ, the need for a follow-up investigation is left to the discretion of the D-MAX field crew. BPJ may indicate that results which either exceed certain action levels or are statistical outliers may be the result of natural or background factors.

TABLE 3-4
ACTION LEVELS FOR FIELD SCREENING AND LABORATORY PARAMETERS

Field Screening Analytes	Action Levels[1]	Source/ Notes
Conductivity (mS/cm)	BPJ	Conductivity may be highly elevated in some regions due to high TDS, groundwater exfiltration to surface water, mineral dissolution, drought, and seawater intrusion. Normal source ID and discharge elimination work is not effective in these situations. Knowledge of area background conditions is important. Values <0.75 may indicate excessive potable water discharge or flushing.
Temperature (°C)	BPJ	Base judgment on season, air temperature, channel type, shading, etc.
pH	<6.5 or >9.0	Basin Plan[2], with allowance for elevated pH due to excessive photosynthesis. Elevated pH is especially problematic in combination with high ammonia.
Turbidity (NTU)	BPJ	WQOs relevant to inland surface waters are not available. Base judgment on channel type and bottom, time since last rain, background levels, and most importantly visual observation (e.g. unusual colors and lack of clarity) and unusual odors.
Ammonia-N (mg/L)	1.0	Based on Sub-Workgroup experience. May also consider unionized ammonia fraction.
Nitrate-N (mg/L)	10.0	Basin Plan and drinking water standards
Orthophosphate-P (mg/L)	2.0	EPA Multi-sector General Permit
Surfactants (MBAS) (mg/L)	1.0	Basin Plan, with allowance based on Sub-Workgroup field experience and possible field reagent interferences.
Laboratory Analytes	**Action Levels**	**Source/ Notes**
Oil and Grease (mg/L)	15	EPA Multi-sector General Permit. If petroleum sheen is observed, the sample should be collected from the water surface. Visual observations may justify immediate investigation.
Diazinon (µg/L)	0.5	Response to diazinon and chlorpyrifos levels above 0.5 µg/L should focus on education and outreach to potential dischargers in the target drainage basin. Highly elevated levels should be investigated aggressively as with other potential IC/IDs.
Chlorpyrifos (µg/L)	0.5	
Dissolved Cadmium (µg/L)	CTR	Use California Toxics Rule, 1-hour criteria to determine appropriate action level for individual samples. Table provides benchmarks based on hardness and dissolved metals concentration. For example, at 300 mg/L hardness the following action levels would apply: Cd – 14 ppb; Cu – 38 ppb; Pb – 209 ppb; and Zn – 297 ppb.
Dissolved Copper (µg/L)		
Dissolved Lead (µg/L)		
Dissolved Zinc (µg/L)		
Total Coliforms (MPN/100 mL)	130,000	Bacteria action levels were updated for implementation in 2010 by the Dry Weather Monitoring Sub-Workgroup. Bacteria levels in many storm drains are likely to exceed public health guidance criteria. Use confidence interval test and best professional judgment to identify conveyances for source ID.
Fecal Coliforms (MPN/100 mL)	13,000	
Enterococci (MPN/100 mL)	7,000	

Notes:
BPJ = Best Professional Judgment
WQO = Water Quality Objective
ppb = parts per billion
[1] The referenced action levels should not be the sole criteria for initiating a source identification investigation. Dry weather monitoring data should be interpreted using a variety of available information, including within-site and between-site sample variability.
[2] Basin Plan = Water Quality Control Plan for the San Diego Basin

4 FIELD SCREENING RESULTS

4.1 Round One

Round One of the Dry Weather Monitoring Program began in May 2010. Field visits were conducted at 20 primary sites and two alternative sites.

4.1.1 Qualitative Observations

Qualitative observations for all Round One routine field screening visits are summarized below. Routine field screening and confirmation visit observations are presented in Table 4-1.

Light Conditions
The weather was sunny during the majority of Round One routine visits; six site visits occurred under partly cloudy conditions, and the weather was overcast during one visit.

Odor
Water samples collected from two sites had a chemical odor; all other samples were odorless.

Color
Water at one site was yellow in color; one additional site had gray water. All other samples were colorless.

Clarity
Water at one site had a slightly cloudy appearance; all other samples were clear.

Floatable Materials
Dust was observed on the water's surface at one site. A second site had a chemical/oil sheen. No other types of floatable materials were observed.

Deposits
Sediment, gravel, and/or fine particulates were observed at all sites. No other types of deposits were noted.

Vegetation
Most sites contained normal or no vegetation, appropriate to the amount of sunlight exposure and soil at the site. One site had limited vegetation.

Biology
The presence of organisms can be an indication of healthy waters. The presence of algae often indicates that flow is persistent, though an overabundance of algae may imply high levels of nutrients in the water and can have negative effects on aquatic life. No sites had excessive algal growth this year. Insects and algae were prevalent at most sites. Some sites were also host to snails, crayfish, and/or fish.

TABLE 4-1
FIELD OBSERVATIONS - ROUND ONE

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
A5c	5/18/10	15:40	Sunny	None	None	Clear	None	Fine Particulates	Limited	Algae
E5g1	5/18/10	14:40	Partly Cloudy	None	None	Clear	None	Fine Particulates	None	None
G30c	5/18/10	11:20	Partly Cloudy	None	None	Clear	None	Sediment/ Gravel	Normal	Insects, Algae, Fish, Snails
H5e	5/20/10	11:40	Sunny	None	None	Clear	Sheen (Dust)	Fine Particulates	Normal	Insects, Algae
I10c	5/21/10	15:00	Sunny	None	None	Clear	None	Sediment/ Gravel, Fine Particulates	Normal	Insects, Frog
J25c	5/19/10	12:10	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae
J25c	6/02/10	9:40	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae
J25c2	5/21/10	13:55	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae
J30d1	5/19/10	14:10	Sunny	None	None	Clear	None	Sediment/ Gravel, Fine Particulates	Normal	Insects, Fish, Crayfish
O15f	5/21/10	12:00	Sunny	None	None	Clear	None	Sediment/ Gravel	None	None
O40b	5/18/10	9:45	Partly Cloudy	None	None	Clear	None	Fine Particulates	Normal	Insects, Algae

TABLE 4-1
FIELD OBSERVATIONS - ROUND ONE (CONTINUED)

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
O40b	5/19/10	9:30	Partly Cloudy	None	None	Clear	None	Fine Particulates	Normal	Insects, Algae
O40b	5/21/10	9:30	Sunny	None	None	Clear	None	Fine Particulates	Normal	Insects, Algae
P10a	5/21/10	12:50	Sunny	ns	ns	ns	ns	Sediment/ Gravel	None	None
P20f	5/20/10	10:10	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae, Snails
Q20a	5/21/10	10:00	Sunny	None	None	Clear	None	Sediment/ Gravel	None	None
Q20a	5/21/10	15:40	Sunny	None	None	Clear	None	Sediment/ Gravel	None	None
Q20a	6/02/10	14:20	Sunny	None	None	Clear	None	Sediment	None	Insects
RCP1	5/19/10	11:15	Sunny	None	None	Clear	None	Sediment/ Gravel, Fine Particulates	Normal	Insects, Algae, Crayfish
RCP3	5/20/10	15:00	Sunny	Chemical	None	Clear	Sheen	Sediment/ Gravel, Fine Particulates	Normal	Insects, Algae, Snails
RCP3	5/21/10	14:25	Sunny	Chemical	None	Clear	Sheen	Sediment/ Gravel, Fine Particulates	Normal	Insects, Algae, Snails
RCP3	6/02/10	12:20	Sunny	Chemical	None	Clear	Sheen	Sediment/ Gravel, Fine Particulates	Normal	Insects, Algae, Snails

TABLE 4-1
FIELD OBSERVATIONS - ROUND ONE (CONTINUED)

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
S15h	5/20/10	13:30	Sunny	None	Yellow	Clear	None	Fine Particulates	Normal	Insects, Algae
S5c	5/18/10	12:15	Partly Cloudy	None	None	Clear	None	Sediment/ Gravel, Fine Particulates	Normal	Insects
T5e	5/20/10	14:10	Sunny	ns	ns	ns	ns	None	Normal	None
V40d	5/20/10	9:15	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae, Snails
V45k	5/18/10	13:00	Partly Cloudy	None	None	Clear	None	Sediment/ Gravel, Fine Particulates	Normal	Insects, Algae
W30c	5/19/10	15:15	Sunny	Chemical	Gray	Slightly Cloudy	None	Fine Particulates	None	None
W30c	5/20/10	11:00	Sunny	None	None	Clear	None	Fine Particulates	None	None
Z15a1	5/21/10	9:00	Overcast	None	None	Clear	None	Sediment/ Gravel	None	None

Notes:
Denotes a confirmation visit
ns = not sampled (dry site)

4.1.2 Field Analytical Results

Field analyses are conducted at all sites with flowing or ponded water. The measured constituents are described below.

Flow rate quantifies the volume of fluid passing across a given surface per unit time. Flow rate measurements are needed to calculate the load or particular amount of a pollutant discharged.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Also, the aquatic habitat must remain within a certain temperature range in order to sustain sensitive aquatic life. In the field, water temperature is measured immediately upon sample collection at each site.

The **pH** is an expression of acidity or alkalinity of a water sample. The pH of an aquatic system will affect a variety of chemical reactions, including the availability of nutrients and the solubility of chemical substances, particularly heavy metals.

Turbidity describes the clarity or cloudiness of a water sample, or the degree to which light is blocked by suspended material in the water. Turbid waters not only limit the amount of light that reaches submerged vegetation, thus reducing photosynthetic capacity, but excessive suspended particles can also absorb heat and increase water temperatures.

Specific conductance (conductivity) measurements indicate the total concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially help indicate the presence of dissolved pollutants.

Surfactant concentrations in water samples often reflect illegal discharges from industrial, commercial, or residential sources. Pollution resulting from surfactants alters the surface tension of water and disrupts the breathing mechanisms of fish gills and other aquatic organisms.

Ammonia-nitrogen (ammonia-N) is an indicator of pollution from decomposing organic matter, agricultural or household fertilizer runoff, or the presence of sewage. Ammonia occurs naturally in the environment; however, in higher quantities it can become toxic to fish and other organisms.

Nitrate-nitrogen (nitrate-N) is a common sign of nutrient pollution from agricultural or household fertilizer runoff. Nitrate pollution can cause excessive algal growth, resulting in oxygen depletion as algae decomposes and may eventually suffocate other aquatic life. During the field analysis, nitrate is measured and converted into nitrate-N using a conversion factor of 0.226. This process is explained in Note 3 of Table 3-1.

Orthophosphate-phosphorus (orthophosphate-P) is also an indicator of nutrient pollution from agricultural or household fertilizer runoff. Similar to nitrate-N, orthophosphate-P pollution can cause nutrient enrichment, stimulate algal growth, and thus deplete oxygen in the water to levels that are dangerous for aquatic life. Even low levels of orthophosphate-P can cause significant algal growth, as it is commonly the limiting nutrient in plant growth. During the field analysis, orthophosphate is measured and converted into orthophosphate-P using a conversion factor of 0.326. This process is explained in Note 4 of Table 3-1.

A statistical summary of the routine field analytical results for Round One data is presented in Table 4-2. Table 4-3 shows the results of all field analyses conducted at each dry weather monitoring station during Round One. Graphs of the various parameters and appropriate action levels for follow-up investigations are included at the end of this section.

TABLE 4-2
FIELD ANALYSIS STATISTICAL SUMMARY – ROUND ONE

Parameter (units)	Maximum	Minimum	Average	Median	Standard Deviation	Number of Exceedances	Graph
Flow Rate (gpm)	28	ponded	4.7	1.0	7.1	---	4-1
Temperature (ºC)	23.0	17.1	21.0	20.9	1.5	0	4-2
pH	8.5	7.6	8.0	8.1	0.25	0	4-3
Turbidity (NTU)	147	0.50	10.22	2.51	32.28	1	4-4
Conductivity (mS/cm)	5.07	0.87	2.74	2.54	1.30	0	4-5
Surfactants (mg/L)	>3	0.25	0.48	0.25	0.60	1	4-6
Ammonia-N (mg/L)	3.05	0.03 J	0.32	0.16	0.65	1	4-7
Nitrate-N (mg/L)	23.6	nd	5.36	4.17	5.51	2	4-8
Orthophosphate-P (mg/L)	16.21	0.01 J	0.96	0.16	3.59	1	4-9

Notes:
The data used in statistical calculations in this table are from routine visits only; data for confirmation visits and upstream investigations have not been incorporated.
nd = not detected; considered to be half of detection limit in statistical calculations.
J = Value reported is below the reporting limit; measurements have an increased percent error.

TABLE 4-3
FIELD ANALYTICAL RESULTS - ROUND ONE

Site	Date	Time	Flow (gpm)	Temp. (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia-N (mg/L NH_3-N)	Nitrate-N (mg/L NO_3-N)	Orthophosphate-P (mg/L PO_4-P)
A5c	5/18/10	15:40	<1	20.2	8.5	0.79	2.09	0.25	0.10 J	3.00	0.32
E5g1	5/18/10	14:40	1	20.7	8.1	2.62	2.62	0.38	0.23	2.12	0.29
G30c	5/18/10	11:20	1	20.8	8.3	2.54	3.64	0.25	0.14 J	5.70	0.02 J
H5e	5/20/10	11:40	<1	20.8	8.2	10.07	2.78	0.25	0.20	0.99 J	0.35
I10c	5/21/10	15:00	5	22.6	7.9	1.15	1.66	0.25	0.18 J	9.40	0.04 J
J25c	5/19/10	12:10	3	20.4	8.2	4.79	4.32	0.50	0.28	5.60	0.13
J25c	6/02/10	9:40	3	18.6	8.3	na	4.64	na	na	na	na
J25c2	5/21/10	13:55	1	22.7	7.9	2.57	4.42	0.50	0.15 J	6.17	0.09 J
J30d1	5/19/10	14:10	5	21.6	7.6	2.48	2.93	0.25	0.17 J	1.62	0.04 J
O15f	5/21/10	12:00	0	21.0	7.8	5.35	0.99	0.25	0.06 J	0.68 J	0.29
O40b	5/18/10	9:45	<1	18.3	8.2	2.23	2.45	0.50	0.14 J	**23.6**	0.24
O40b	5/19/10	9:30	<1	18.7	8.3	na	2.32	na	na	**12.6**	na
O40b	5/21/10	9:30	<1	19.3	8.3	na	2.35	na	na	**16.4**	na
P10a	5/21/10	12:50	Dry	ns	ns	ns	ns	ns	ns	ns	na
P20f	5/20/10	10:10	13	23.0	8.3	0.98	1.43	0.25	0.11 J	4.31	0.02 J
Q20a	5/21/10	10:00	<1	22.4	8.2	2.25	1.98	0.25	0.16 J	**11.6**	0.29
Q20a	5/21/10	15:40	<1	23.9	8.2	na	2.02	na	na	**12.5**	na
Q20a	6/02/10	14:20	<1	25.0	8.3	na	1.86	na	na	6.32	na
RCP1	5/19/10	11:15	3	21.1	8.2	1.67	1.58	0.25	0.15 J	7.84	0.23

TABLE 4-3
FIELD ANALYTICAL RESULTS - ROUND ONE

Site	Date	Time	Flow (gpm)	Temp. (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia-N (mg/L NH_3-N)	Nitrate-N (mg/L NO_3-N)	Orthophosphate-P (mg/L PO_4-P)
RCP3	5/20/10	15:00	13	22.8	7.9	1.55	5.07	0.50	0.21	9.57	0.12
RCP3	5/21/10	14:25	11	22.2	8.1	na	1.86	na	na	na	na
RCP3	6/02/10	12:20	8	22.2	8.2	na	1.82	na	na	na	na
S15h	5/20/10	13:30	<1	21.3	8.0	3.54	2.22	0.38	0.16 J	4.03	0.24
S5c	5/18/10	12:15	<1	20.1	7.7	4.04	0.87	0.25	0.03 J	7.73	0.04 J
T5e	5/20/10	14:10	Dry	ns	ns	ns	ns	ns	ns	ns	ns
V40d	5/20/10	9:15	28	20.1	8.3	0.50	4.24	0.50	0.16 J	nd	0.01 J
V45k	5/18/10	13:00	13	20.4	7.8	1.76	3.95	0.50	0.17 J	0.19 J	0.08 J
W30c	5/19/10	15:15	2	23.0	7.8	**147**	4.27	**>3**	**3.05**	0.88 J	**16.21**
W30c	5/20/10	11:00	<1	24.3	8.3	3.48	4.81	0.50	0.18 J	na	0.15
Z15a1	5/21/10	9:00	1	17.1	7.8	6.43	1.21	0.25	0.66	2.12	0.20
REPORTING LIMIT			**0**	**0.1**	**0.01**	**0.00**	**0.01**	**0.13**	**0.20**	**1.13**	**0.10**
ACTION LEVEL			**	**BPJ**	**<6.5, >9.0**	**BPJ**	**BPJ**	**1.0**	**1.0**	**10.0**	**2.0**

Notes:
J = Value reported is below the reporting limit; measurements have an increased percent error.
na = not analyzed; nd = not detected; ns = not sampled (dry site)
Red values exceed action level.
Denotes a confirmation visit

4.2 Round Two

Round Two was conducted in September 2010. Nineteen primary sites and two alternative sites were visited.

4.2.1 Qualitative Observations

Qualitative observations for all Round Two routine field screening visits are summarized below. Routine field screening and confirmation visit observations are presented in Table 4-4.

Light Conditions
The weather was mostly sunny during Round Two routine visits; there were only four samples collected during overcast conditions.

Odor
The water sample at one site had a musty odor; all other water samples were odorless.

Color
The water at three sites was yellow in color; all other samples were colorless.

Clarity
Water collected from all sites was clear.

Floatable Materials
Trash was observed in the water at three sites. One of these sites also had dust on the water's surface. One additional site had bubbles and foam floating on the surface of the water. No other floatable materials were observed.

Deposits
Sediment, gravel, and/or fine particulates were observed at all sites. No other types of deposits were noted.

Vegetation
All sites contained vegetation appropriate to the amount of sunlight exposure and soil at the site. One site had limited vegetation, while all other sites had either normal or no vegetation.

Biology
Insects and algae were prevalent at most sites; some sites were also host to snails.

TABLE 4-4
FIELD OBSERVATIONS - ROUND TWO

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
A5c	9/21/10	11:00	Overcast	None	None	Clear	Sheen, Trash	Sediment, Fine Particulates	None	Algae, Snails
E5g1	9/15/10	15:30	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	None
G30c	9/20/10	14:30	Sunny	None	Yellow	Clear	Trash	Sediment, Fine Particulates	Normal	Insects
H5e	9/14/10	14:35	Sunny	None	None	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Insects, Algae, Snails
I10c	9/21/10	12:10	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	Normal	Insects
J25c	9/17/10	12:50	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	Algae
J25c	9/27/10	12:20	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	Algae
J30d1	9/16/10	12:10	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	None
O15f	9/16/10	14:15	Sunny	Musty	Yellow	Clear	None	Sediment, Fine Particulates	None	None
O15f	9/17/10	14:30	Sunny	None	Yellow	Clear	None	Sediment, Fine Particulates	None	None
O15f	9/20/10	13:30	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	None
O40b	9/21/10	10:10	Overcast	None	None	Clear	None	Sediment, Fine Particulates	None	Algae
P10a	9/21/10	9:20	Overcast	ns	ns	ns	ns	Sediment, Fine Particulates	None	None
P20f	9/17/10	12:15	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	Algae
Q20a	9/20/10	15:20	Sunny	None	None	Clear	Bubbles, Foam	Sediment, Fine Particulates	None	None
Q20a	9/21/10	13:45	Sunny	ns	ns	ns	ns	Sediment, Fine Particulates	None	None

TABLE 4-4
FIELD OBSERVATIONS - ROUND TWO (CONTINUED)

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
RCP1	9/16/10	10:50	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	Algae
RCP1	9/17/10	11:00	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	Algae
RCP3	9/14/10	13:45	Sunny	None	None	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Insects, Algae
S15h	9/15/10	14:15	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	Insects, Algae
S15h	9/16/10	10:15	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	Insects, Algae
S5c	9/16/10	15:20	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	Insects, Algae
T5e	9/20/10	11:00	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	None
V40d	9/17/10	10:10	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Limited	Algae, Snails
V40d	9/27/10	9:45	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Limited	Insects, Algae, Snails
V45k	9/14/10	15:40	Sunny	None	None	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Insects, Algae
W30c	9/20/10	16:15	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	None
Z15a1	9/17/10	9:10	Overcast	None	Yellow	Clear	None	Sediment, Fine Particulates	None	None

Notes:
Denotes a confirmation visit
ns = not sampled (dry site)

4.2.2 Field Analytical Results

Field analyses for Round Two of the Dry Weather Monitoring Program were conducted at all sites with flowing or ponded water. The measured constituents are described in Section 4.1.2 of this report.

A statistical summary of the routine field analytical results for Round Two data is presented in Table 4-5. Table 4-6 shows the results of all field analyses conducted at the sampled sites during Round Two. Graphs of the various parameters and appropriate action levels for follow-up investigations are included at the end of this section.

TABLE 4-5
FIELD ANALYSIS STATISTICAL SUMMARY – ROUND TWO

Parameter (units)	Maximum	Minimum	Average	Median	Standard Deviation	Number of Exceedances	Graph
Flow Rate (gpm)	20	ponded	2.6	0.5	4.6	---	4-1
Temperature (ºC)	29.7	17.5	22.8	23.4	2.9	0	4-2
pH	8.7	7.2	7.9	7.9	0.4	0	4-3
Turbidity (NTU)	22	0.01	5.01	2.92	6.41	0	4-4
Conductivity (mS/cm)	4.71	0.92	2.17	1.88	1.07	0	4-5
Surfactants (mg/L)	2.50	0.13	0.44	0.25	0.51	1	4-6
Ammonia-N (mg/L)	3.68	0.06 J	0.44	0.19	0.79	2	4-7
Nitrate-N (mg/L)	10.60	0.20 J	3.15	1.28	3.77	2	4-8
Orthophosphate-P (mg/L)	0.94	0.01 J	0.22	0.11	0.23	0	4-9

Notes:
The data used in statistical calculations in this table are from routine visits only; data for confirmation visits and upstream investigations have not been incorporated.
nd = not detected; considered to be half of detection limit in statistical calculations.
J = Value reported is below the reporting limit; measurements have an increased percent error.

TABLE 4-6
FIELD ANALYTICAL RESULTS - ROUND TWO

Site	Date	Time	Flow (gpm)	Temp (ºC)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
A5c	9/21/10	11:00	<1	18.1	8.1	1.08	1.43	0.25	0.10 J	2.21	0.08 J
E5g1	9/15/10	15:30	<1	23.2	7.9	3.66	2.82	0.50	0.16 J	1.35	0.31
G30c	9/20/10	14:30	Ponded	25.8	8.2	2.93	2.65	0.25	0.33	0.81 J	0.28
H5e	9/14/10	14:35	Ponded	23.0	7.7	1.55	1.92	0.13	0.13 J	0.30 J	0.21
I10c	9/21/10	12:10	4	24.1	7.8	0.29	1.10	0.13	0.06 J	5.06	0.01 J
J25c	9/17/10	12:50	7	23.1	8.2	1.58	1.60	0.25	0.19 J	0.71 J	0.03 J
J25c	9/27/10	12:20	2	24.2	8.3	na	4.19	na	na	na	na
J30d1	9/16/10	12:10	3	19.4	7.6	0.01	3.04	0.25	0.28	0.26 J	0.03 J
O15f	9/16/10	14:15	Ponded	24.0	7.4	16.1	1.58	**2.50**	**3.68**	0.20 J	0.94
O15f	9/17/10	14:30	Ponded	24.8	7.4	23.5	1.35	**1.50**	**3.30**	na	na
O15f	9/20/10	13:30	Ponded	24.4	7.2	7.98	2.98	0.50	**2.23**	na	na
O40b	9/21/10	10:10	Ponded	17.8	8.1	18.6	2.00	0.75	0.52	9.02	0.54
P10a	9/21/10	9:20	Dry	ns	ns	ns	ns	ns	ns	ns	ns
P20f	9/17/10	12:15	5	29.7	8.7	0.22	1.38	0.25	0.18 J	4.42	0.03 J
Q20a	9/20/10	15:20	Ponded	25.3	8.3	2.90	2.08	0.50	0.19 J	**10.6**	0.39
Q20a	9/21/10	13:45	Dry	ns	ns	ns	ns	ns	ns	ns	ns
RCP1	9/16/10	10:50	3	21.8	8.2	0.25	1.65	0.25	0.15 J	**10.6**	0.07 J
RCP1	9/17/10	11:00	4	22.0	8.2	14.1	1.41	na	na	6.90	na
RCP3	9/14/10	13:45	4	24.6	7.9	4.29	1.84	0.25	0.17 J	9.89	0.13

TABLE 4-6
FIELD ANALYTICAL RESULTS - ROUND TWO (CONTINUED)

Site	Date	Time	Flow (gpm)	Temp (ºC)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Ortho-phosphate-P (mg/L)
S15h	9/15/10	14:15	<1	23.8	7.4	3.31	2.13	0.50	**1.06**	0.30 J	0.32
S15h	9/16/10	10:15	<1	19.9	8.0	na	2.20	na	0.36	na	na
S5c	9/16/10	15:20	<1	23.7	7.9	1.37	1.24	0.13	0.08 J	1.41	0.07 J
T5e	9/20/10	11:00	Ponded	21.7	7.2	21.9	0.92	0.13	0.28	0.85 J	0.32
V40d	9/17/10	10:10	20	23.5	8.3	3.35	3.84	0.50	0.46	0.48 J	0.01 J
V40d	9/27/10	9:45	17	26.3	8.2	na	3.00	na	na	na	na
V45k	9/14/10	15:40	2	22.0	7.7	4.53	4.24	0.25	0.35	1.21	0.06 J
W30c	9/20/10	16:15	<1	24.4	8.2	2.73	4.71	0.50	0.25	0.61 J	0.08 J
Z15a1	9/17/10	9:10	<1	17.5	7.8	9.69	1.19	0.50	0.15 J	2.81	0.44
REPORTING LIMIT			**0**	**0.1**	**0.01**	**0.00**	**0.01**	**0.13**	**0.20**	**1.13**	**0.10**
ACTION LEVEL			**	**BPJ**	**<6.5, >9.0**	**BPJ**	**BPJ**	**1.0**	**1.0**	**10.0**	**2.0**

Notes:
J = Value reported is below the reporting limit; measurements have an increased percent error.
na = not analyzed; nd = not detected; ns = not sampled (dry site)
Red values exceed action level.
Denotes a confirmation visit

GRAPH 4-1: FLOW

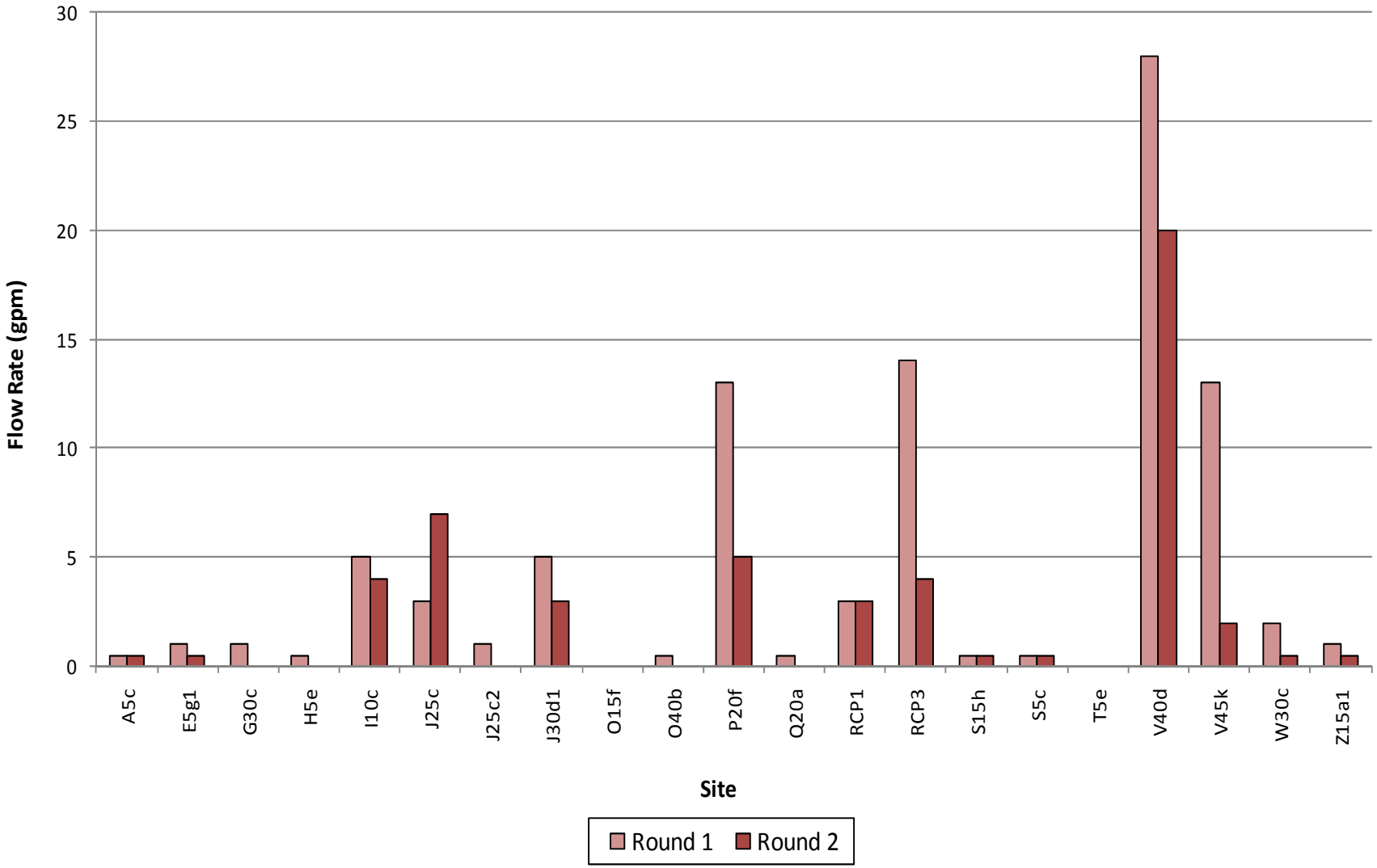

GRAPH 4-2: TEMPERATURE

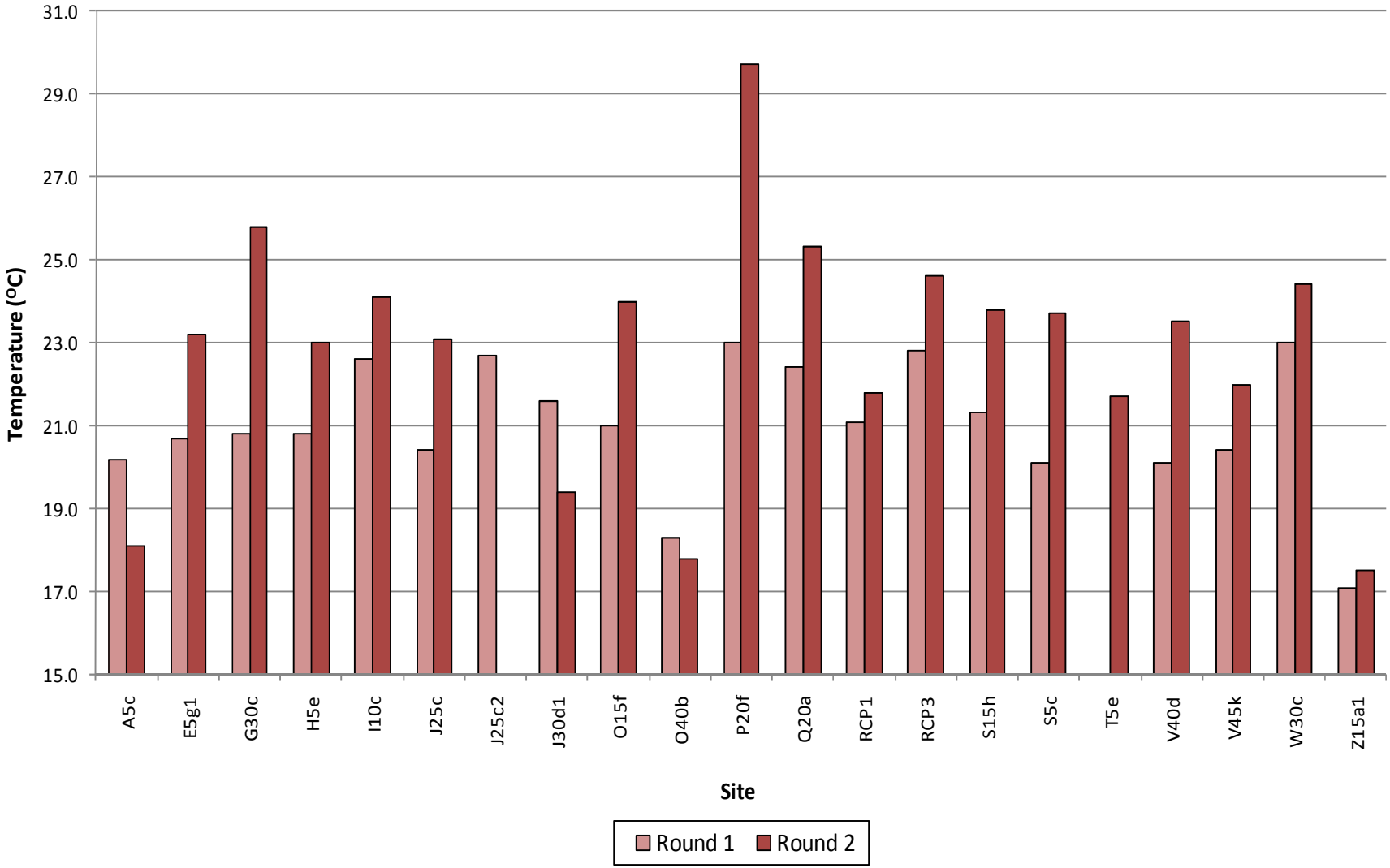

GRAPH 4-3: pH

Action Level is < 6.5 or > 9.0

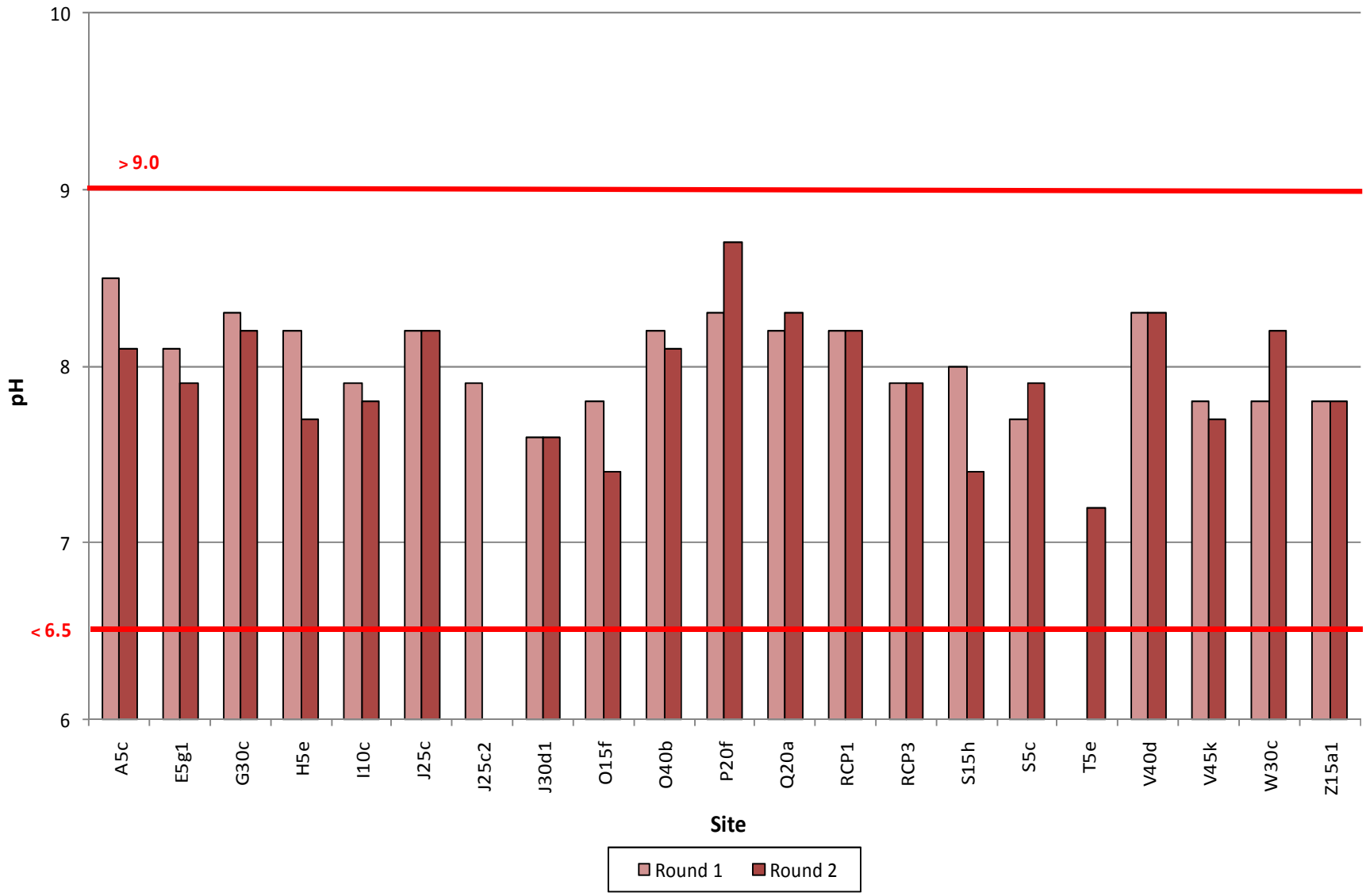

GRAPH 4-4: TURBIDITY

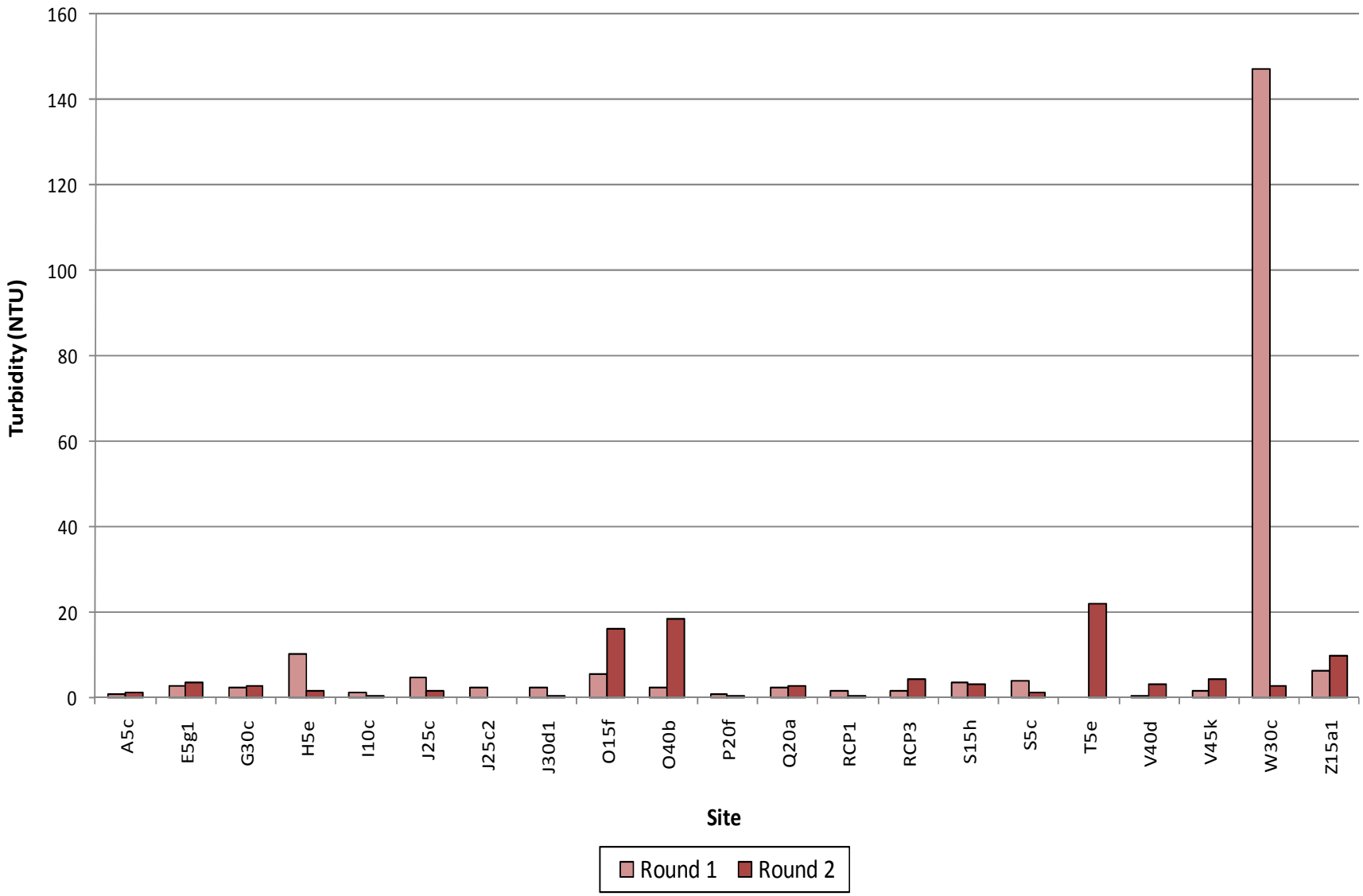

GRAPH 4-5: CONDUCTIVITY

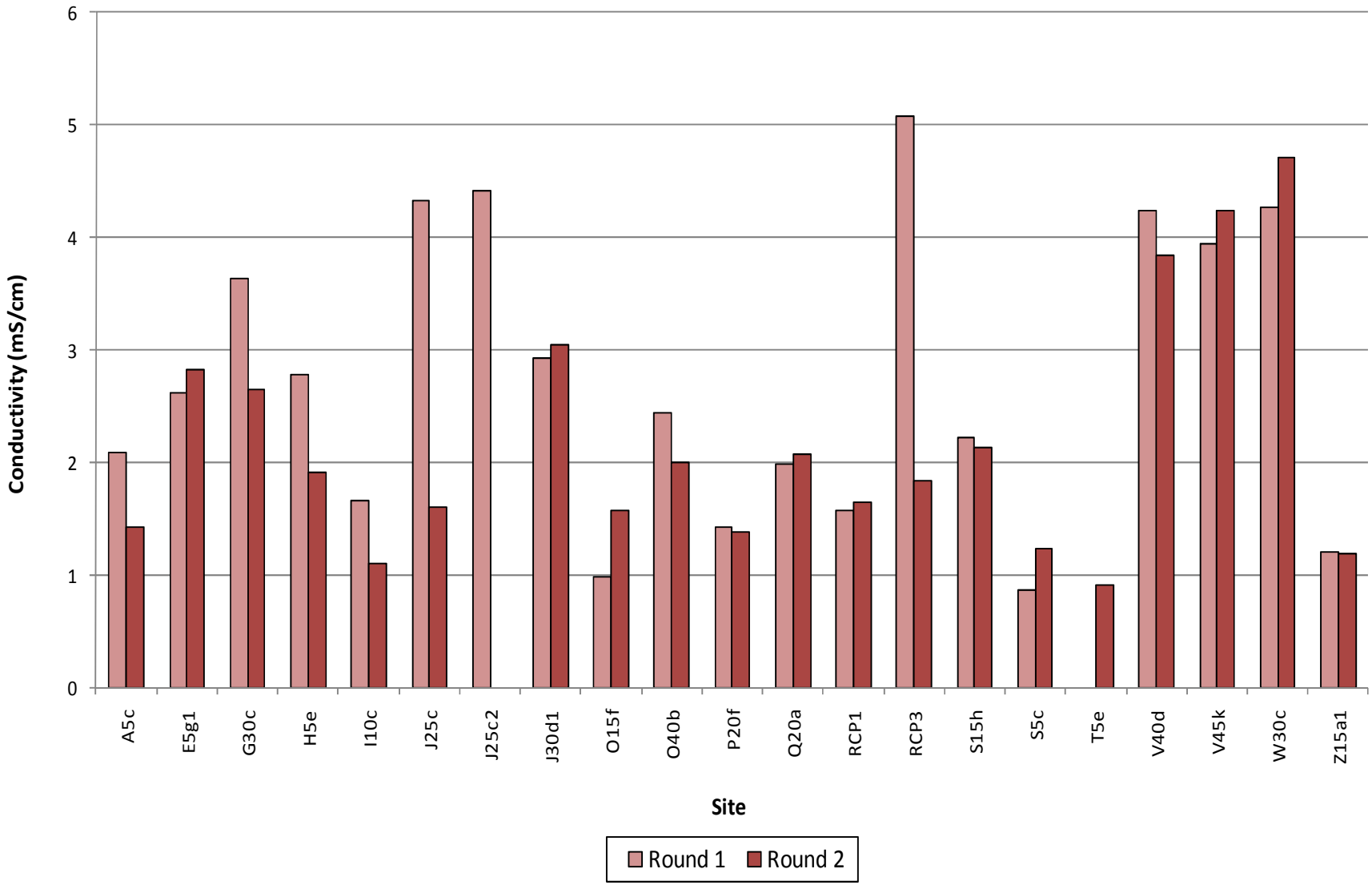

GRAPH 4-6: SURFACTANTS

Action Level = 1.0 mg/L

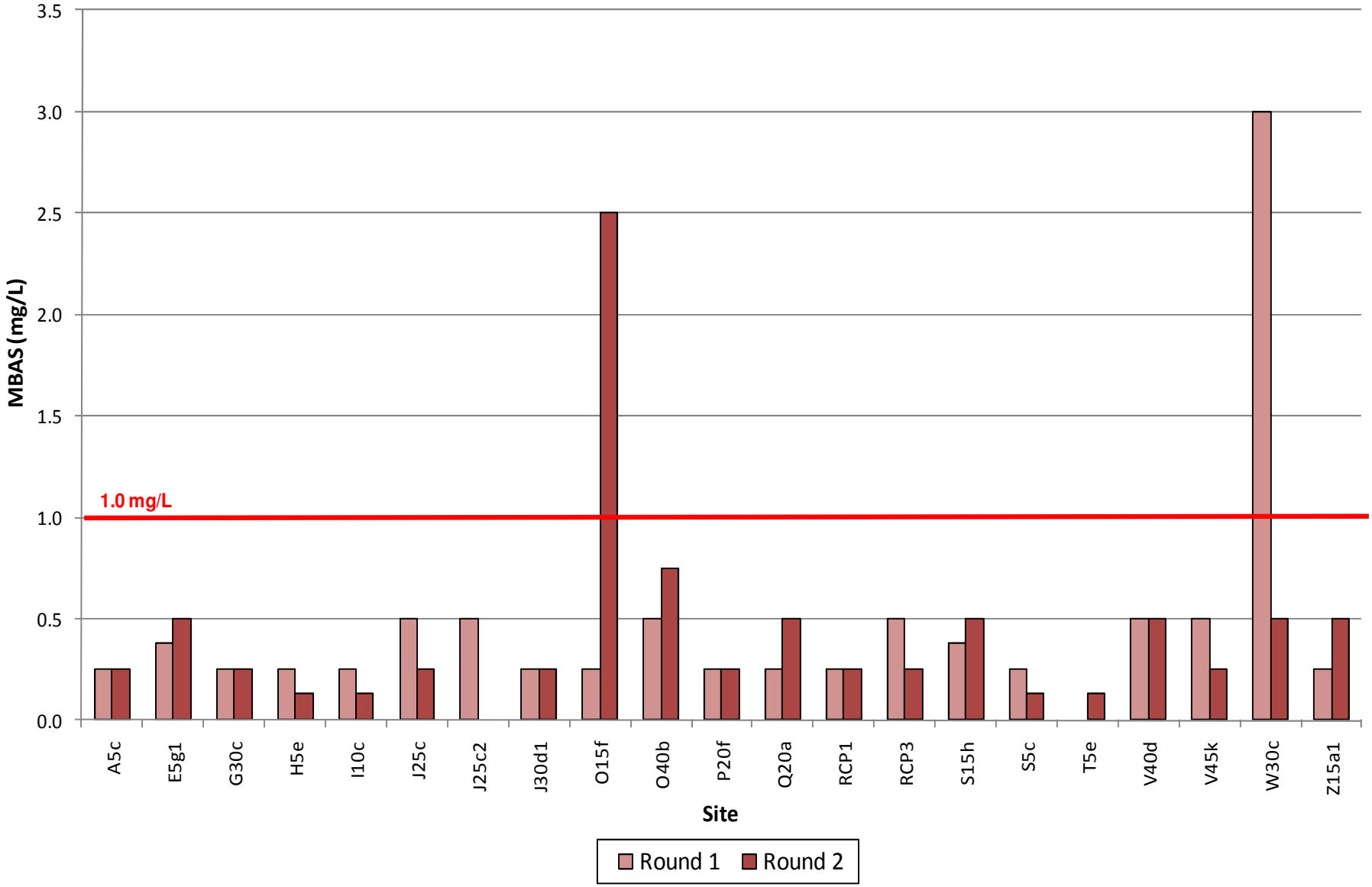

GRAPH 4-7: AMMONIA-N

Action Level = 1.0 mg/L

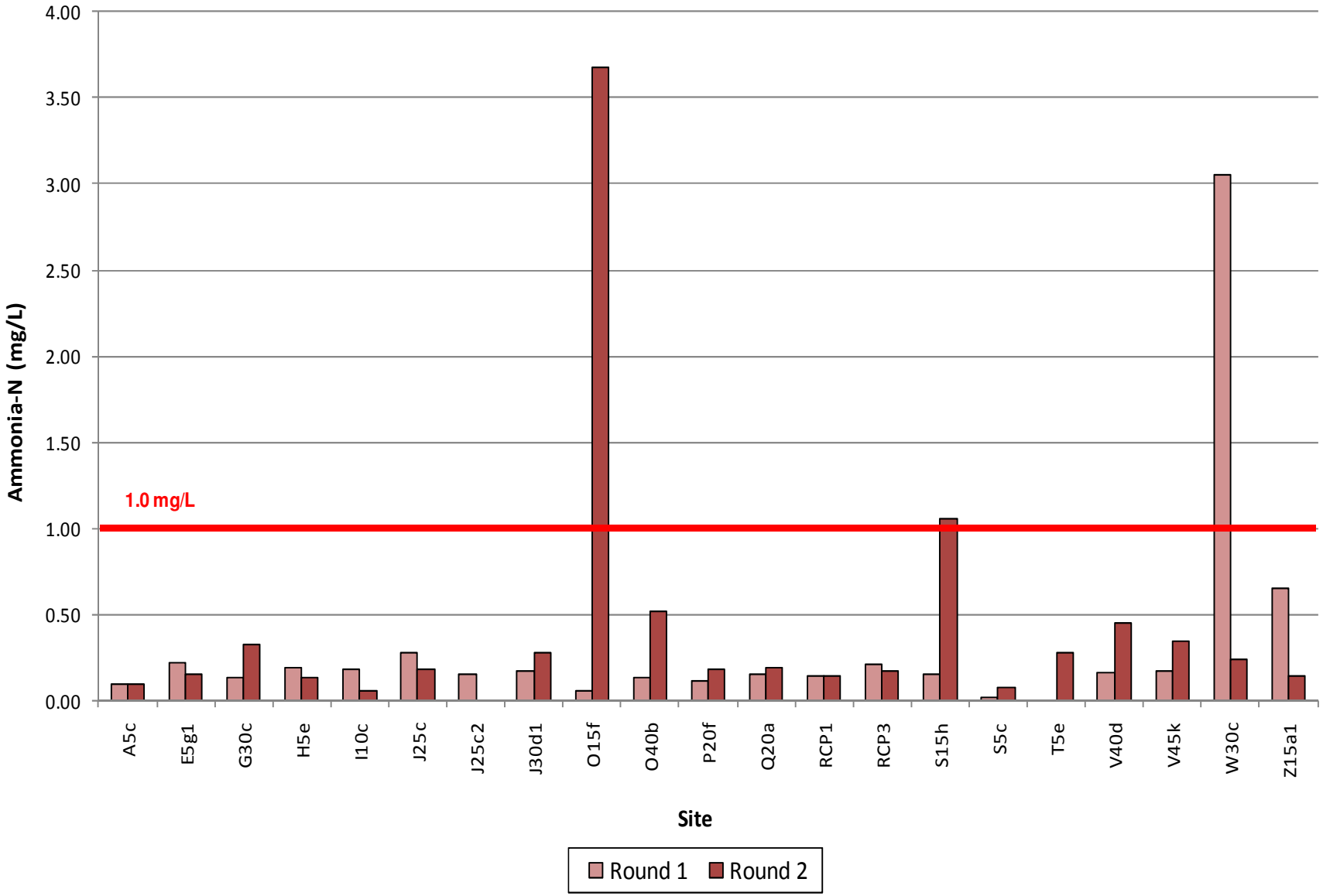

GRAPH 4-8: NITRATE-N

Action Level = 10.0 mg/L

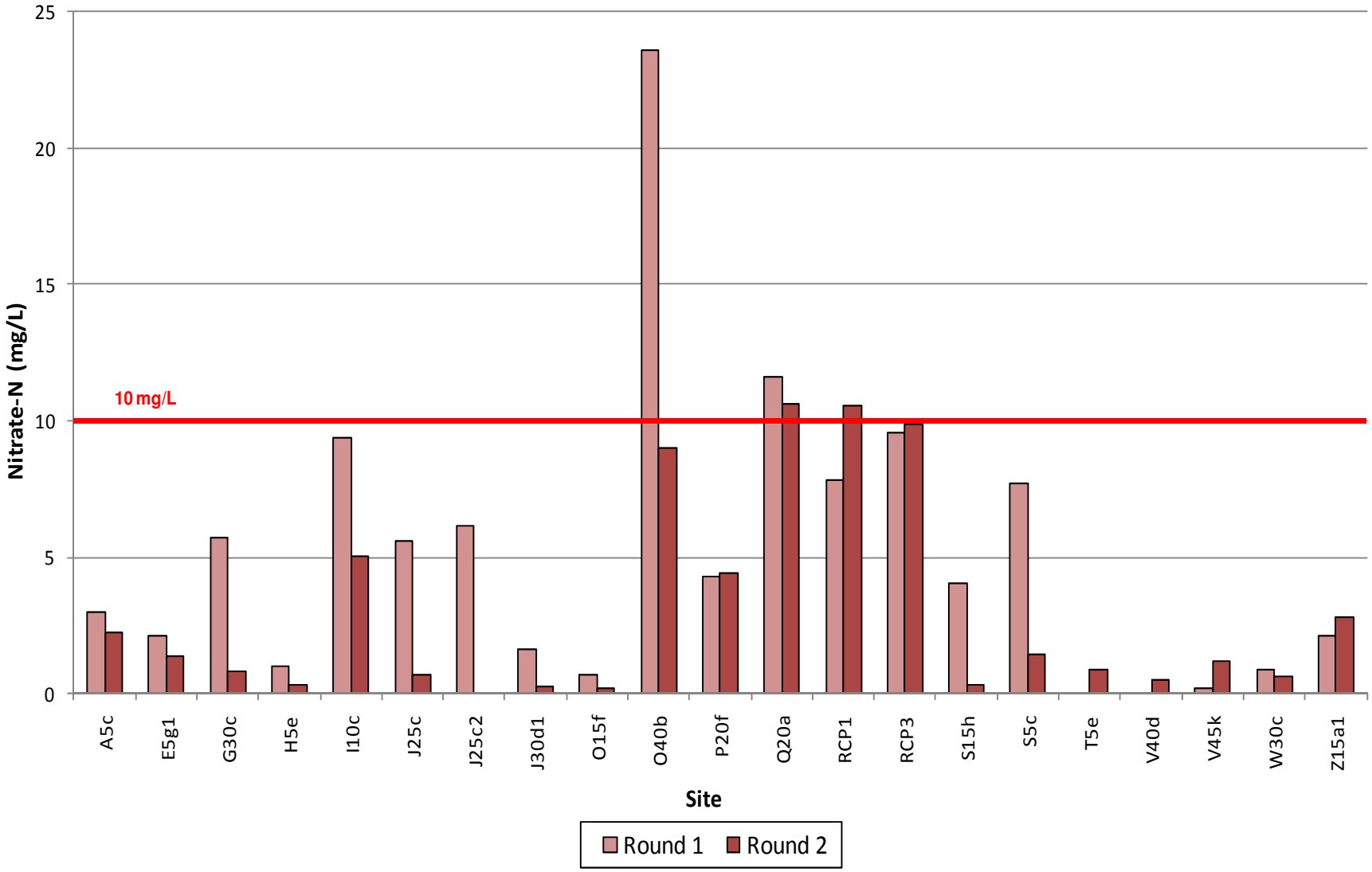

GRAPH 4-9: ORTHOPHOSPHATE-P

Action Level = 2.0 mg/L

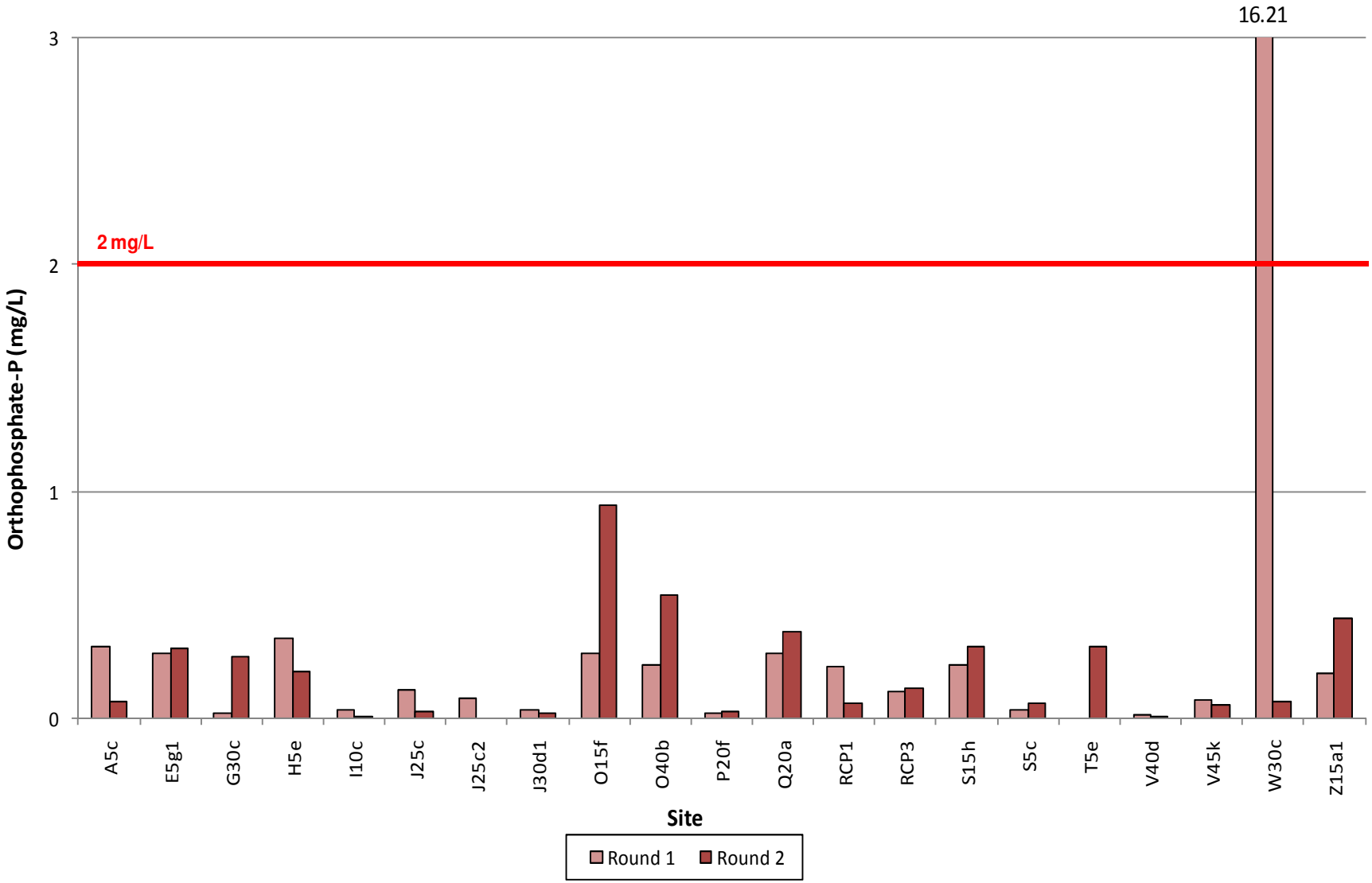

5 TRASH ASSESSMENT

5.1 Regulatory Requirements

Section II.B.3.C.(7) of the Municipal Permit's Receiving Waters and Urban Runoff Monitoring and Reporting Program requires all Copermittees, including the City of Santee, to assess the presence of trash in receiving waters and urban runoff at each dry weather monitoring site. This trash assessment program is designed to provide information on the spatial extent and relative amount of trash present, as well at the nature and origin of the trash at the site.

5.2 Procedure and Definitions

The San Diego Copermittee Dry Weather Monitoring Sub-Workgroup developed a Trash Assessment Form to document the amount and extent of trash at each evaluated site. The form categorizes the site into one of five trash categories: optimal, suboptimal, marginal, submarginal, or poor. The form also addresses any potential threats that the trash may pose to human or aquatic health. For sites rating submarginal or poor, the form includes a section to record types, prevalence, potential routes, and sources of trash.

- A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form's five categories are primarily qualitative descriptions of the amount and extent of trash although a number of trash pieces is also included in each category as a rough guideline. The five categories are defined as follows.
- Optimal: On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
- Suboptimal: On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
- Marginal: Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
- Submarginal: Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (~100-400 pieces). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
- Poor: Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

The threat to human health and threat to aquatic health is assessed at each site using the following definitions:

- *Threat to Human Health* – Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment.

- *Threat to Aquatic Health* – Large amount (50 pieces or more) of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amounts of settleable, degradable, and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence of large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment.

In the event that a site is noted as potentially posing a threat to human or aquatic health, additional descriptive comments are recorded in the "Comments" section of the Trash Assessment Form.

If a site is labeled as submarginal or poor, it is assessed for types of trash present (e.g., automotive, biohazard, food waste), which are ranked based on their prevalence and the potential threat to water quality they pose. Lastly, the potential mechanism through which trash reached the site (e.g., dumping, littering, upstream sources) and the potential source of the trash (e.g., construction, commercial, transient) are identified.

5.2 Trash Assessment Results

During both Round One and Round Two, the majority of sites in the City of Santee were rated optimal or suboptimal. One of the sites was rated submarginal in Round 2. No sites were rated poor or were determined to pose a threat to human or aquatic health.

Tables 5-1 and 5-2 and Graph 5-1 summarize the trash assessment results for both rounds of monitoring. Figures 5-1 and 5-2 are maps of sampling sites and their corresponding trash assessment in Round One and Round Two, respectively. Trash Assessment Forms completed at each site are included in Appendix D.

TABLE 5-1
TRASH ASSESSMENT RESULTS – ROUND ONE

Optimal (19 Sites)			Suboptimal (2 Sites)	Marginal (1 Site)	Submarginal (0 Sites)	Poor (0 Sites)
A5c E5g1 G30c H5e J25c J25c2 J30d1	O15f P10a P20f Q20a RCP1 RCP3 S5c	T5e V40d V45k W30c Z15a1	O40b S15h	I10c	(None)	(None)

TABLE 5-2
TRASH ASSESSMENT RESULTS – ROUND TWO

Optimal (12 Sites)		Suboptimal (5 Sites)	Marginal (3 Sites)	Submarginal (1 Site)	Poor (0 Sites)
E5g1 H5e J25c J30d1 O15f P10a	Q20a RCP1 RCP3 V45k W30c Z15a1	A5c P20f S15h S5c T5e	G30c O40b V40d	I10c	(None)

GRAPH 5-1
TRASH ASSESSMENT SUMMARY

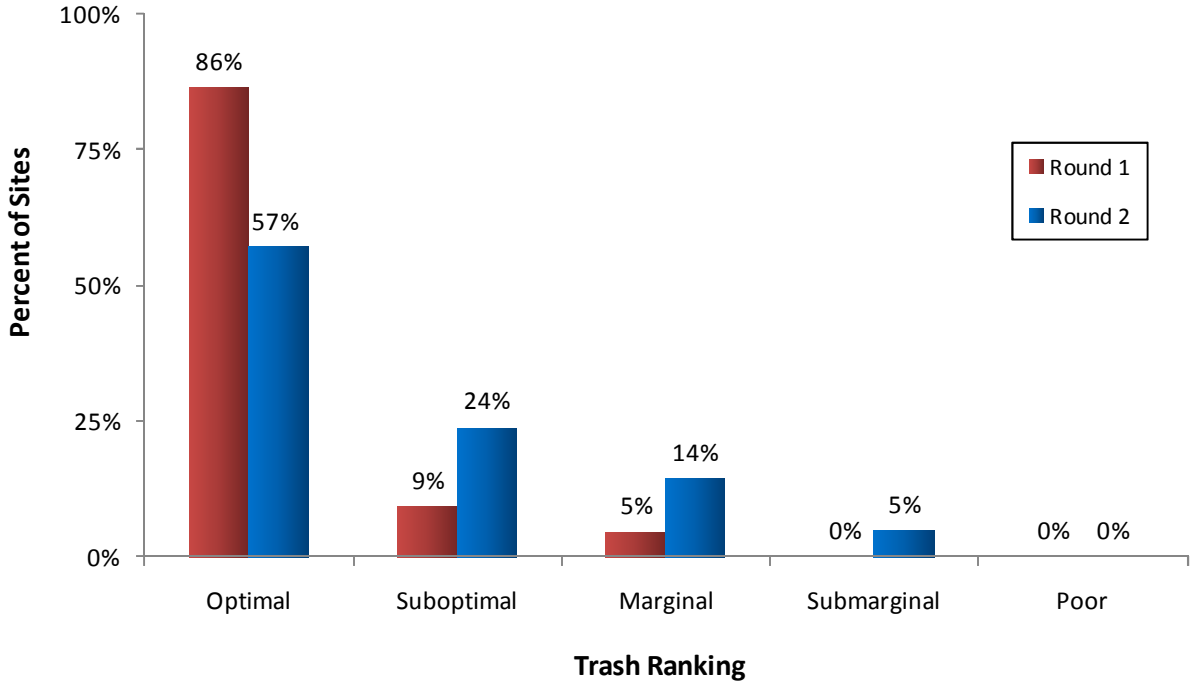

FIGURE 5-1
ROUND ONE TRASH ASSESSMENT GIS MAP

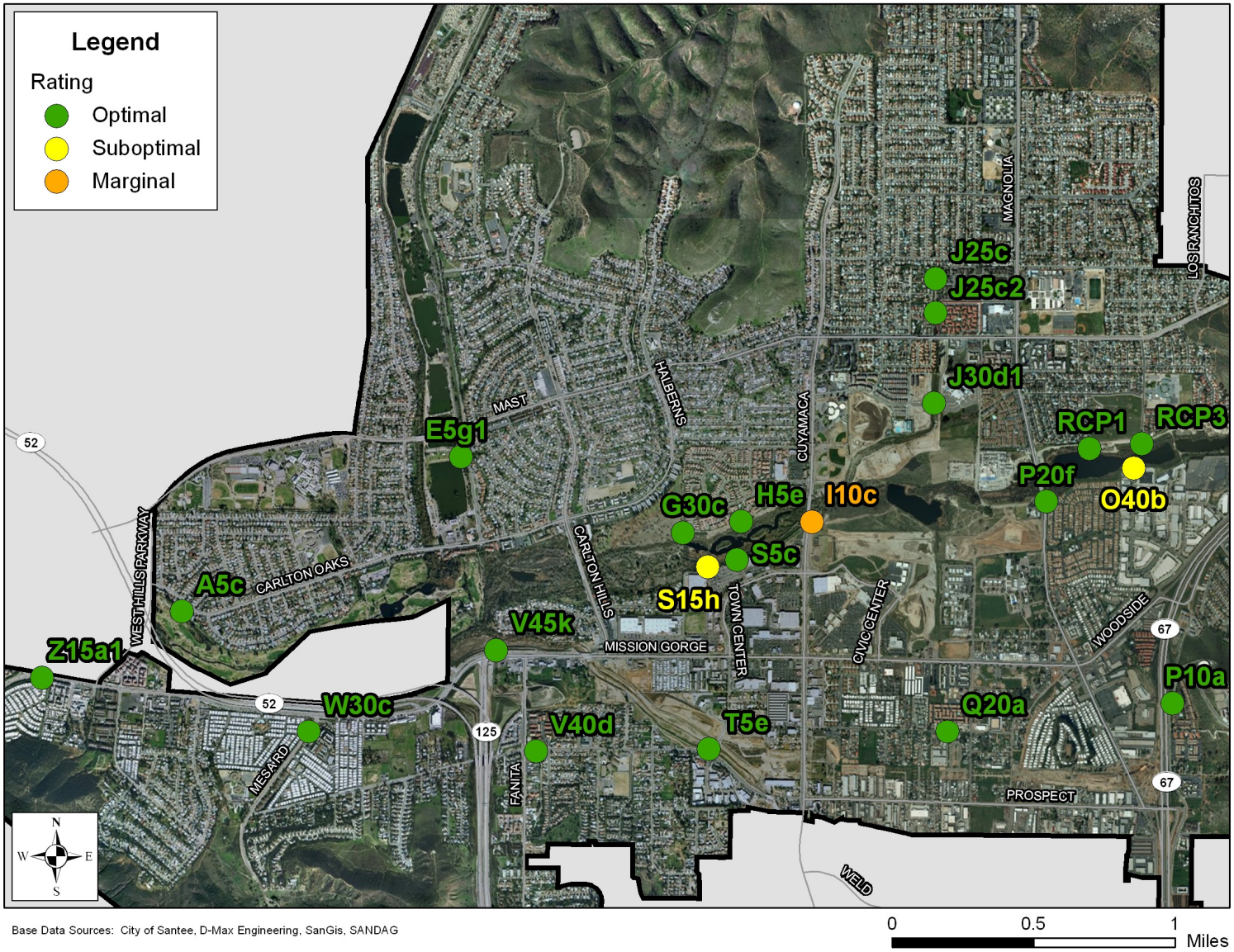

FIGURE 5-2
ROUND TWO TRASH ASSESSMENT GIS MAP

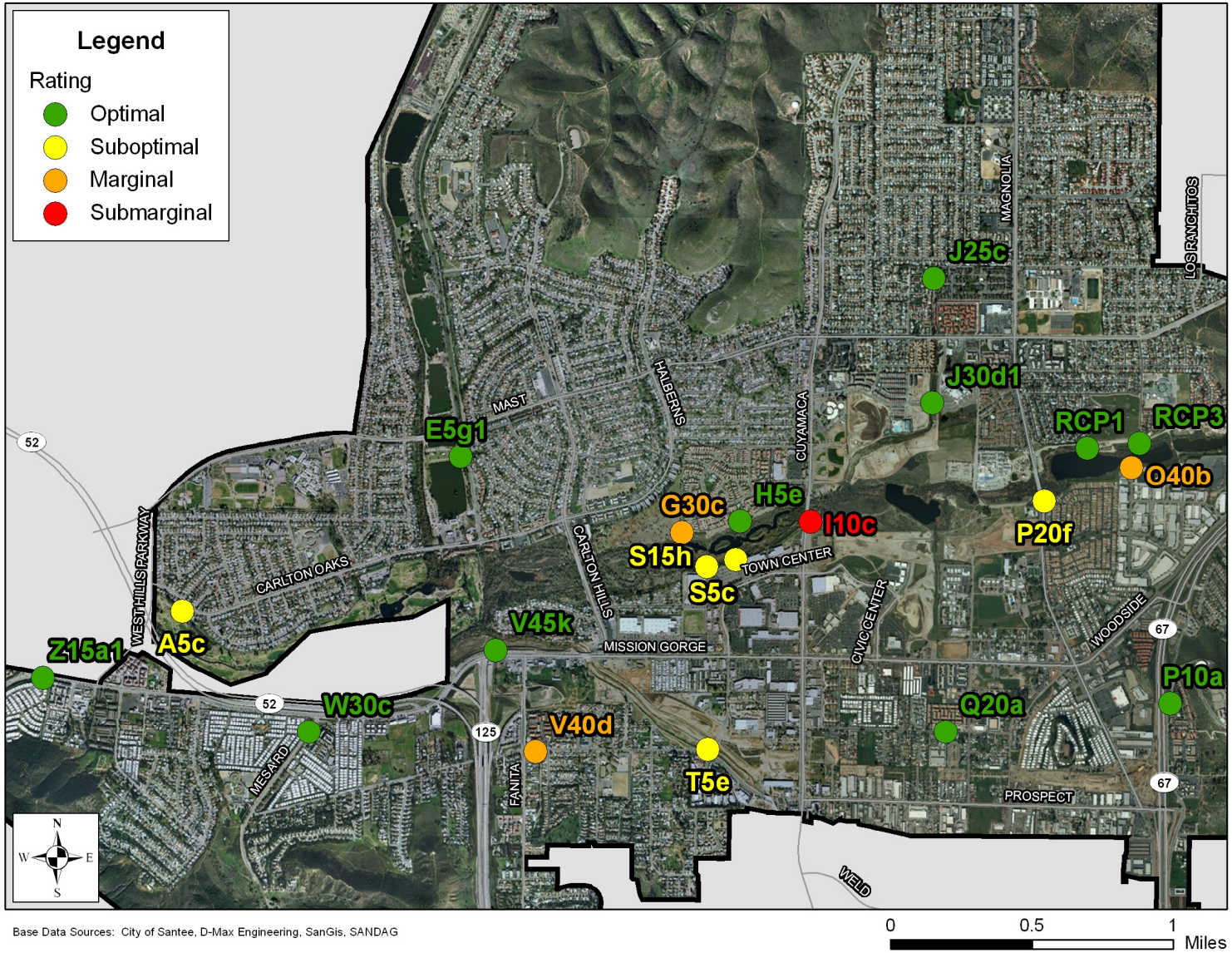

6 LABORATORY ANALYTICAL RESULTS

6.1 Summary

Laboratory analyses were conducted at five sites in each of the two rounds, representing over 25 percent of all sites with ponded or flowing water. The laboratory constituents measured are defined below.

Oil and grease analysis is used to detect hydrocarbon pollution from a variety of sources, including parking lots and streets, washing activities, illegal discharges, and automobile repair facilities.

Total hardness measures the amount of calcium and magnesium ions in a water sample, with the result expressed in mg/L of $CaCO_3$. Hardness itself is not considered a pollutant, but is measured to calculate CTR limits for dissolved metals. Hardness affects the solubility of dissolved metals as well as other minerals and ions.

Diazinon and **chlorpyrifos** are organophosphate pesticides that are highly toxic to insects, birds, and mammals, freshwater fish, and invertebrates. In 2005, the Environmental Protection Agency banned the sale of diazinon in the United States and tightened restrictions on chlorpyrifos use.

Metal contamination of water can arise from a variety of sources, including automobile operation, automobile repair, vehicle washing, galvanizing of metal, and electronics manufacturing. Certain dissolved metals are toxic pollutants that are hazardous to the survival and development of aquatic organisms.

The California Toxics Rule for Dissolved Metals in Fresh Waters defines metal toxicity as a function of water hardness. As hardness increases, so does the Criterion Maximum Concentration (CMC), a concentration limit in which aquatic life can be sustained. CMC values differ for various metals. Dry weather monitoring laboratory samples are analyzed for the presence of dissolved cadmium, copper, lead, and zinc.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts, most surface waters, and soils. Testing water samples for total coliform bacteria is a standard practice in public health. Total coliform is measured as an indicator of other more harmful pathogens, since these pathogens are generally present in much smaller quantities and are difficult to detect.

Fecal coliform, a subset of coliform bacteria, and ***Enterococcus*** are found primarily in the gastro intestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. Without the use of significantly more expensive methods, such as ribotyping, it is not possible to determine whether the source of fecal material is human or animal. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain.

6.2 Results

Tables 6-1 and 6-2 present the statistical summaries of the laboratory results from Round One and Round Two samples, respectively. Table 6-3 shows the sites with metal concentrations during each round, the measured total hardness of the sample, and the associated CMC. Dissolved lead was not detected during either Round One or Round Two and is, therefore, not included in Table 6-3. Laboratory reports are included in Appendix C.

TABLE 6-1
LABORATORY ANALYSIS STATISTICAL SUMMARY – ROUND ONE

Parameter (units)	Maximum	Minimum	Number of Exceedances
Oil and Grease (mg/L)	nd	nd	0
Total Hardness (mg/L CaCo3)	1130	467	*
Dissolved Cadmium (µg/L)	0.4	0.2	0
Dissolved Copper (µg/L)	17	2	0
Dissolved Lead (µg/L)	nd	nd	0
Dissolved Zinc (µg/L)	20	nd	0
Diazinon (µg/L)	nd	nd	0
Chlorpyrifos (µg/L)	nd	nd	0
Total Coliform (MPN/100 mL)	30,000	1,700	0
Fecal Coliform (MPN/100 mL)	1,700	nd	0
Enterococcus (MPN/100 mL)	50,000	170	1

Notes:
Calculations include complete routine visit data only. Confirmation visits, follow-up visits and dry sites not incorporated.
nd = not detected
*Total hardness is not considered a pollutant and does not have an established action level.

TABLE 6-2
LABORATORY ANALYSIS STATISTICAL SUMMARY – ROUND TWO

Parameter (units)	Maximum	Minimum	Number of Exceedances
Oil and Grease (mg/L)	nd	nd	0
Total Hardness (mg/L CaCo3)	893	339	*
Dissolved Cadmium (µg/L)	0.2	nd	0
Dissolved Copper (µg/L)	10	nd	0
Dissolved Lead (µg/L)	nd	nd	0
Dissolved Zinc (µg/L)	5	2	0
Diazinon (µg/L)	nd	nd	0
Chlorpyrifos (µg/L)	nd	nd	0
Total Coliform (MPN/100 mL)	130,000	1,400	1
Fecal Coliform (MPN/100 mL)	50,000	210	1
Enterococcus (MPN/100 mL)	17,000	40	1

Notes:
Calculations include complete routine visit data only. Confirmation visits, follow-up visits and dry sites not incorporated.
nd = not detected
*Total hardness is not considered a pollutant and does not have an established action level.

TABLE 6-3
CTR – CMC FOR DISSOLVED METALS

Dissolved Copper			
Site	**Total Hardness (mg/L)**	**CMC (µg/L)**	**Concentration (µg/L)**
Round One			
J25c	757	49.6	9
J30d1	785	49.6	2
P20f	467	49.6	2
RCP1	496	49.6	17
V40d	1130	49.6	2
Round Two			
J25c	339	42.5	10
J30d1	777	49.6	1
P20f	893	49.6	4
V40d	749	49.6	3
Dissolved Zinc			
Site	**Total Hardness (mg/L)**	**CMC (µg/L)**	**Concentration (µg/L)**
Round One			
P20f	467	379.3	1
RCP1	496	379.3	20
Round Two			
J25c	339	329.7	3
J30d1	777	379.3	5
P20f	893	379.3	3
RCP1	572	379.3	3
V40d	749	379.3	2
Dissolved Cadmium			
Site	**Total Hardness (mg/L)**	**CMC (µg/L)**	**Concentration (µg/L)**
Round One			
J25c	757	19.1	0.4
J30d1	785	19.1	0.2
P20f	467	19.1	0.3
RCP1	496	19.1	0.3
V40d	1130	19.1	0.3
Round Two			
J30d1	785	19.1	0.2

Note:
Only those sites where a particular dissolved metal was detected are listed. Dissolved lead was not detected in any samples. For equations and constants used in California Toxics Rule calculations, see http://www.epa.gov/ost/standards/ctr/toxic.pdf.

TABLE 6-4
LABORATORY ANALYTICAL RESULTS

Site	Date	Time	Oil & Grease (mg/L)	Total Hardness (mg/L)	Dissolved Cadmium (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Diazinon (µg/L)	Chlorpyrifos (µg/L)	Total Coliforms (MPN/100 mL)	Fecal Coliforms (MPN/100 mL)	Enterococci (MPN/100 mL)
Round One													
J25c	5/19/10	12:10	nd	757	0.4 J	9 J	nd	nd	nd	nd	23,000	1,700	**50,000**
J25c	6/2/10	9:40	na	na	na	na	na	na	na	na	na	na	3,448
J30d1	5/19/10	14:10	nd	785	0.2 J	2 J	nd	nd	nd	nd	5,000	nd	500
P20f	5/20/10	10:10	nd	467	0.3 J	2 J	nd	1 J	nd	nd	30,000	500	500
RCP1	9/16/10	10:50	nd	496	0.3 J	17	nd	20	nd	nd	3,000	20	2,300
V40d	5/20/10	9:15	nd	1130	0.3 J	2 J	nd	nd	nd	nd	1,700	1,300	170
Round Two													
J25c	9/17/10	12:50	nd	339	nd	10	nd	3 J	nd	nd	**130,000**	**50,000**	3,000
J25c	9/27/10	12:20	na	na	na	na	na	na	na	na	**130,000**	5,118*	na
J30d1	9/16/10	12:10	nd	777	0.2 J	1 J	nd	5 J	nd	nd	1,400	210	40
P20f	9/17/10	12:15	nd	893	nd	4 J	nd	3 J	nd	nd	3,000	800	60
RCP1	9/16/10	10:50	nd	572	nd	nd	nd	3 J	nd	nd	8,000	1,700	170
V40d	9/17/10	10:10	nd	749	nd	3 J	nd	2 J	nd	nd	17,000	3,000	**17,000**
V40d	9/27/10	9:45	na	na	na	na	na	na	na	na	na	na	1,396
Reporting Limits			**5**	**10**	**1**	**10**	**5**	**20**	**0.05**	**0.05**	**20****	**20****	**20****
Action Levels			**15**	*****	**CTR**	**CTR**	**CTR**	**CTR**	**0.50**	**0.50**	**130,000**	**13,000**	**7,000**

Notes:
nd = not detected; na = not analyzed.
J = Value reported is below the reporting limit; measurements have an increased percent error.
Red values are at or exceed action level
Denotes a confirmation visit
* Number of fecal coliforms for confirmation samples is derived from *E. coli* count. Number of fecal coliforms = (Number of *E. coli*) / 0.85.
** Reporting limit is 10 MPN/100 mL for IDEXX tests used during confirmation and upstream testing.
*** Total hardness is not considered a pollutant (see section 3.4), and thus has no established action level for the purposes of dry weather monitoring.
CTR = California Toxics Rule; CTR action levels for metals are calculated based upon the total hardness value of the water sample.

7 DATA ANALYSIS

This section provides an overall evaluation of test results of the 2010 Dry Weather Monitoring Program, as well as a discussion of historical trends for various constituent exceedances.

7.1 2010 Results

Of the 40 routine field screening visits performed for 370 constituents in 2010, 15 exceedances were observed, three of which were likely due to interference from turbidity. A summary of 2010 exceedances is presented in Table 7-1.

TABLE 7-1
2010 EXCEEDANCES SUMMARY

Site	Turbidity	Surfactants	Ammonia-N	Nitrate-N	Ortho-phosphate-P	Total Coliforms	Fecal Coliforms	Enterococci
Round One								
J25c								✓
O40b				✓				
Q20a				✓				
W30c	✓	✓*	✓*		✓*			
Round Two								
J25c						✓	✓	
O15f		✓	✓					
Q20a				✓				
RCP1				✓				
S15h			✓					
V40d								✓

Note: Table reflects exceedances occurring during routine visits only, not confirmation or follow-up visits.
* Possible false positives due to interference from turbidity reading.

7.2 Previous Results

Historical exceedance results are presented in Table 7-2, and graphs 7-1, 7-2, 7-3, and 7-4. Table 7-2 shows the percentage of sampled sites that have had exceedances each year and round of the Dry Weather Monitoring Program. Graphs 7-1 and 7-2 illustrate the percentage

of exceedances for field screening, and graphs 7-3 and 7-4 present the percentage exceedances for laboratory analyses.

Since the time that testing began in accordance with Order 2001-01, no exceedances have been measured in temperature, dissolved cadmium, dissolved lead, dissolved zinc, or chlorpyrifos. Thus, these constituents have not been included in the following table and graphs.

Based on current and historical dry weather data, the following observations have been made:

- Total coliform exceedances have decreased in the last few years. No exceedances have occurred during Round One sampling since 2007. [1]
- No fecal coliform exceedances have occurred during Round One sampling since 2003. No apparent trend exists in Round Two fecal coliform data. [1]
- *Enterococcus* exceedances have generally been less frequent in the first round of monitoring in most years.[1]
- Conductivity has not exceeded the action level since 2003. The action level for conductivity was changed from a numeric value to BPJ to account for sites which contain salt water or groundwater which increases conductivity.
- Ammonia-N and nitrate-N exceedances have been consistently lower than their peak exceedance levels in 2002 and 2003/2004, respectively.
- No apparent trend is seen in data for pH, turbidity, surfactants, or orthophosphate-P.
- There have been no diazinon exceedances since 2006 and no oil and grease or copper exceedances since 2003.

[1]Note that dry weather action levels for bacterial indicators were revised in 2010. Constituents have been compared to action levels in effect at the time of sampling to identify exceedances.

TABLE 7-2
PERCENT OF SITES WITH EXCEEDANCES BY YEAR AND ROUND

Year and Round	Field Screening								Laboratory Analysis						
	Number of Field Screening Sites	pH	Turbidity	Conductivity*	Surfactants	Ammonia-N	Nitrate-N	Orthophosphate-P	**Number of Laboratory Analysis Sites**	Oil & Grease	Dissolved Copper	Diazinon	Total Coliforms**	Fecal Coliforms**	Enterococci**
2002	20	10	5	0	5	25	10	0	6	0	0	0	17	17	17
2003-1	20	5	0	0	0	5	5	0	5	20	0	0	20	20	0
2003-2	20	0	0	10	5	15	25	0	5	0	20	0	80	80	0
2004-1	20	5	5	0	5	5	5	0	6	0	0	17	50	0	0
2004-2	20	0	5	0	5	15	10	0	5	0	0	0	80	20	40
2005-1	20	5	0	0	0	15	25	5	5	0	0	0	0	0	0
2005-2	20	0	5	0	5	5	15	0	5	0	0	0	100	20	20
2006-1	20	5	5	0	5	0	10	0	5	0	0	0	80	0	20
2006-2	20	10	0	0	5	5	10	0	5	0	0	20	60	20	40
2007-1	20	10	0	0	10	0	10	0	5	0	0	0	20	0	0
2007-2	20	0	0	0	0	0	10	5	5	0	0	0	40	40	20
2008-1	20	5	0	0	0	5	20	0	5	0	0	0	0	0	0
2008-2	20	15	5	0	0	5	5	5	5	0	0	0	40	20	60
2009-1	20	0	0	0	0	5	0	0	5	0	0	0	0	0	0
2009-2	20	5	5	0	0	0	5	5	5	0	0	0	20	20	20
2010-1	20	0	5	0	5	5	10	5	5	0	0	0	0	0	20
2010-2	20	0	0	0	5	10	10	0	5	0	0	0	20	20	20

Notes:
Results based on complete routine visits only. Confirmation visits, follow-up visits and dry sites not included.
* By regional consensus, the action level for conductivity has been changed during past years from numeric values to best professional judgment in order to account for sites in which salt water and groundwater increase conductivity. High conductivity levels at these sites are not necessarily exceedances or considered to be a water quality concern.
** Note that dry weather action levels for bacterial indicators were revised in 2010. Constituents have been compared to action levels in effect at the time of sampling to identify exceedances.

GRAPH 7-1
PERCENT OF SITES WITH FIELD SCREENING EXCEEDANCES BY YEAR AND ROUND – PART 1

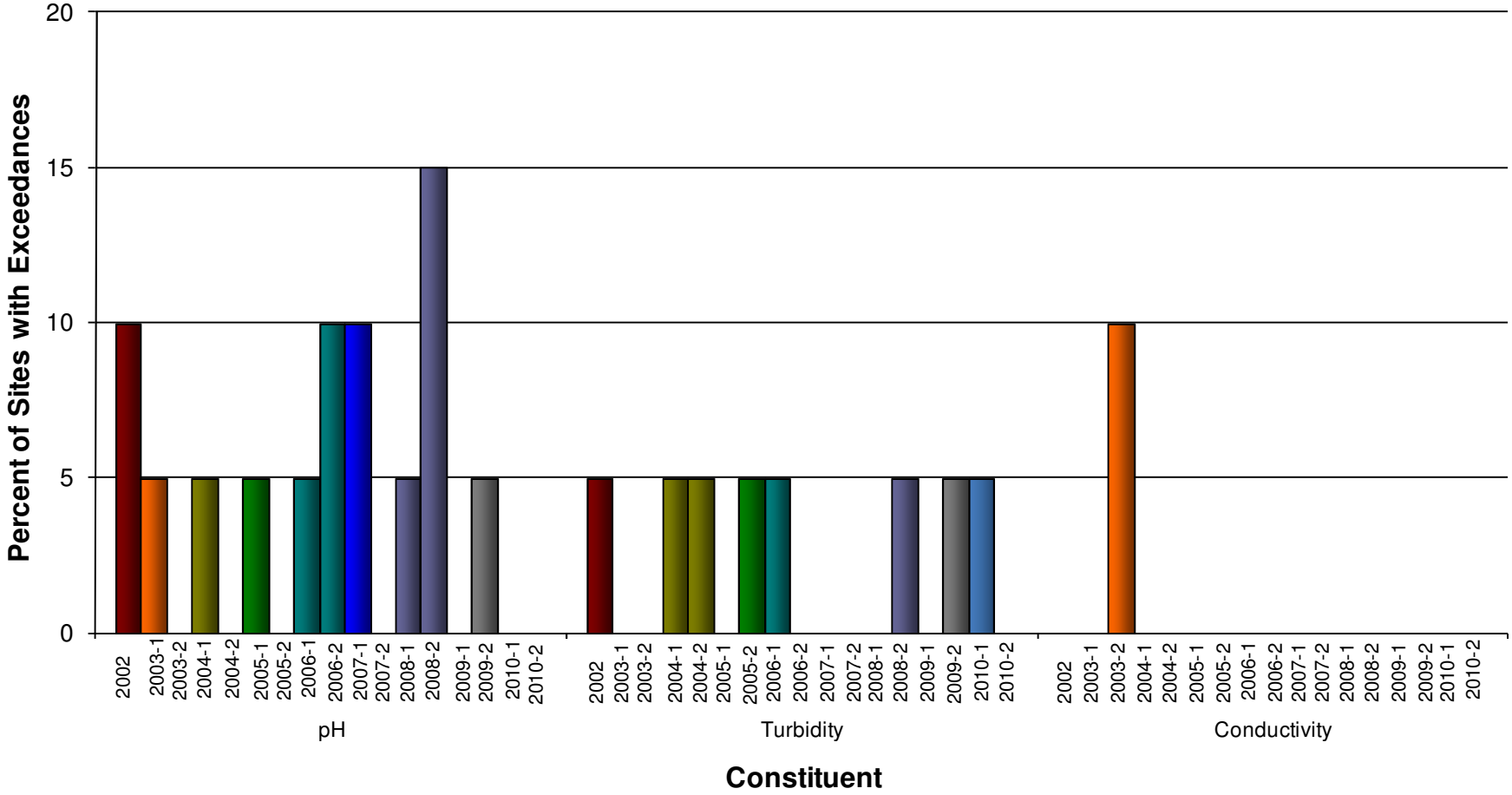

Note: Presented data are from routine visits only. Confirmation visits, follow-up visits and dry sites not included.

GRAPH 7-2
PERCENT OF SITES WITH FIELD SCREENING EXCEEDANCES BY YEAR AND ROUND – PART 2

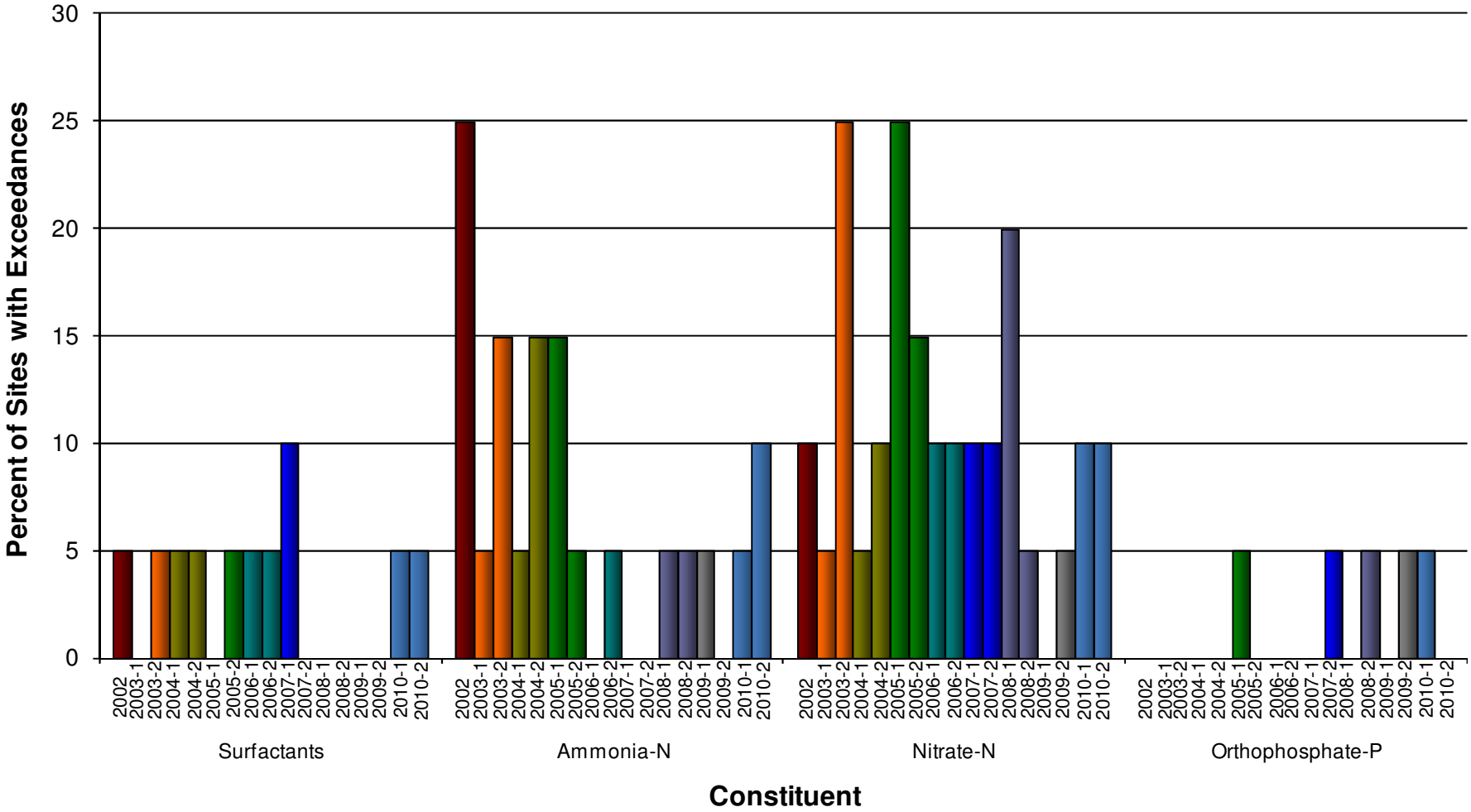

Note: Presented data are from routine visits only. Confirmation visits, follow-up visits and dry sites not included.

GRAPH 7-3
PERCENT OF SITES WITH LABORATORY CONSTITUENT EXCEEDANCES BY YEAR AND ROUND – PART 1

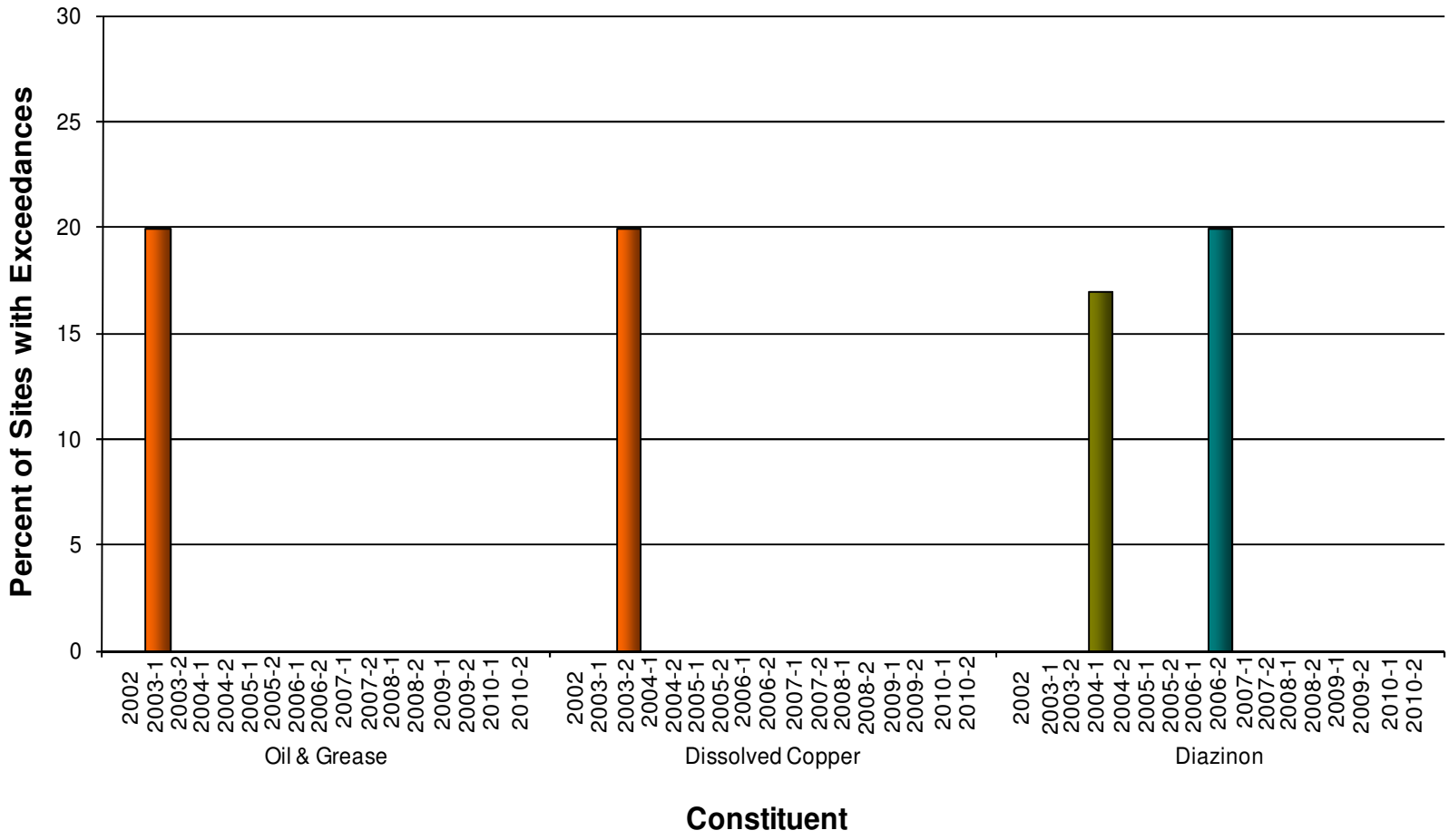

Note: Presented data are from routine visits only. Confirmation visits, follow-up visits and dry sites not included.

GRAPH 7-4
PERCENT OF SITES WITH LABORATORY CONSTITUENT EXCEEDANCES BY YEAR AND ROUND – PART 2

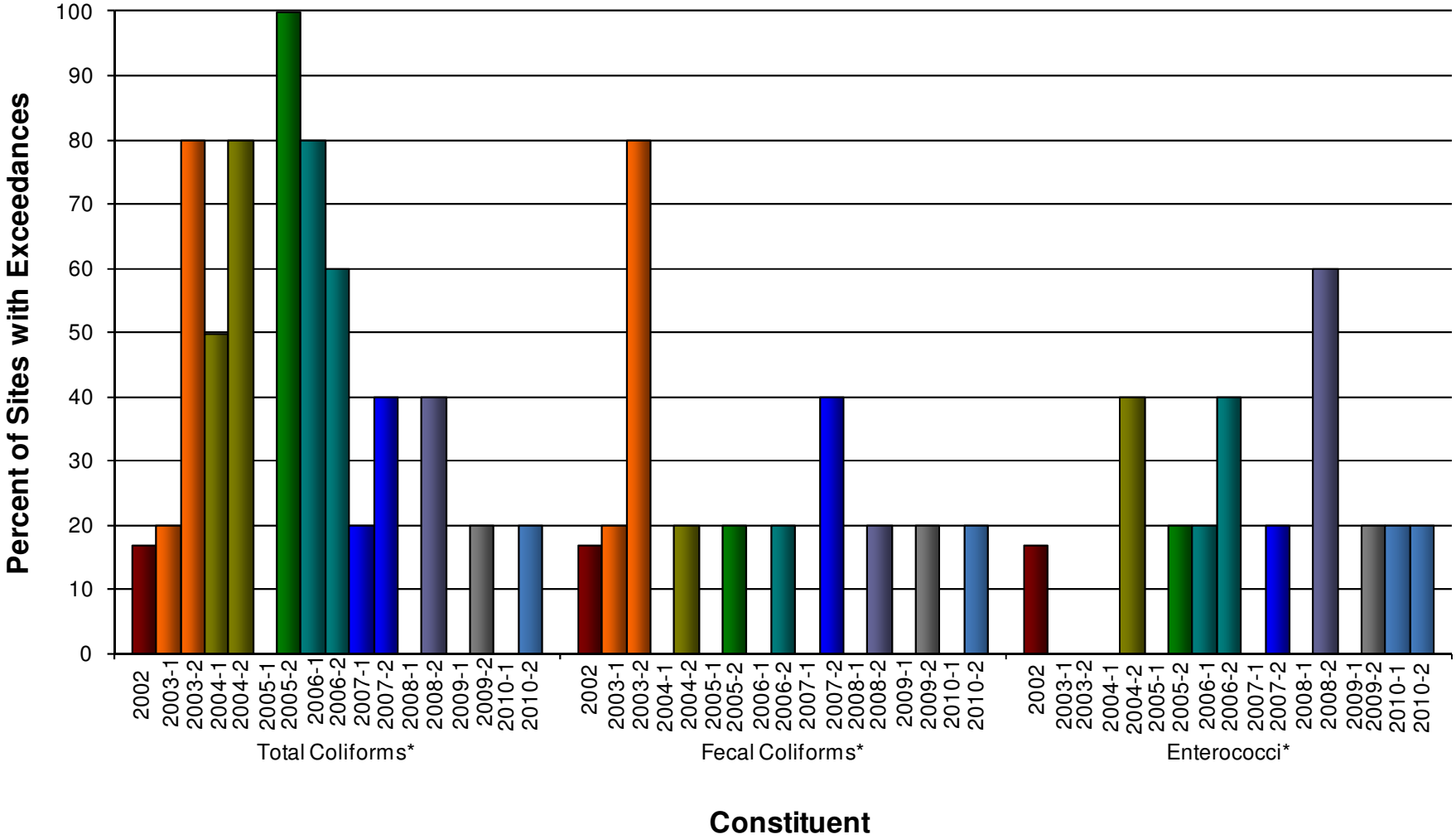

Notes: Presented data are from routine visits only. Confirmation visits, follow-up visits and dry sites not included.
*Dry weather action levels for bacterial indicators were revised in 2010. Constituents have been compared to action levels in effect at the time of sampling to identify exceedances.

8 FOLLOW-UP INVESTIGATIONS

One of the primary purposes of the Dry Weather Monitoring Program is to identify IC/IDs. When a parameter is measured at or above the regionally accepted action level, it is possible that an IC/ID is present and further investigation is performed. Procedures for such investigations are described below, followed by a discussion of the 2010 investigations.

8.1 Investigation Procedures

In the event that a constituent measurement is above the associated action level during the routine visit, a confirmation visit is conducted within two business days of receiving the result. The purpose of the confirmation visit is to verify whether the initial exceedance is persistent. The visit includes returning to the site to retest the parameters initially in exceedance.

If the constituent measures below specified action levels during the confirmation visit, the initial exceedance may have been due to a transient flow. If, however, the constituent concentration is found to exceed the action level during the confirmation visit, an upstream investigation is performed. In this case, the field crew progresses upstream to isolate and identify potential pollutant sources.

Follow-up investigations include visual observations of areas upstream of the routine site and collection of samples for field or lab analysis. Flow rates of branches contributing to the site are measured and visual observations are recorded on field data sheets. Field data sheets are included in Appendix D.

8.2 Investigated Sites

In the 2010 Dry Weather Monitoring Program, four sites in Round One and six sites in Round Two had action level exceedances. A brief description of each site, analytical results, photographs of selected upstream locations, and the results of the investigations are discussed in this section.

Site J25c is located at an outlet to the Woodglen Vista Channel, at the west end of Carefree Drive.

Round One

Enterococcus bacteria were measured at 50,000 MPN/100 mL during the routine site visit, above the action level of 7,000 MPN/100 mL. At the time of the confirmation visit, samples were taken at Site J25c as well as upstream locations J25c-1, J25c-2, J25c-3 and J25c-4. All samples had *Enterococcus* counts below the action level, with the exception of location J25c-2 which had a count of 19,863 MPN/100 mL. Location J25c-2 is in a concrete channel where warm, slow moving water, decomposing trash and organic debris, and an abundance of algae provide a favorable environment for bacterial growth.

PHOTO 8-1: Site J30d1, in the naturalized portion of the Woodglen Vista Channel, downstream of Site J25c

The City recently naturalized a portion of Woodglen Vista Channel downstream of Site J25c (Photo 8-1). A sample collected in this channel at Site J30d1, two hours after the initial sampling at Site J25c, did not have bacteria measuring above the action level. This indicates that the portion of vegetated earthen channel effectively reduces bacteria, and that the higher levels of bacteria noted during the initial visit to Site J25c were not likely to reach receiving waters.

PHOTO 8-2: Location J25c-2

Round Two

Both total coliform and fecal coliform were in exceedance at Site J25c during the routine visit, measuring 130,000 MPN/100 mL (at the 130,000 MPN/100 mL action level) and 50,000 MPN/100 mL (above the 13,000 MPN/100 mL action level), respectively. Total coliform was measured at the action level during the confirmation visit, while fecal coliform was below the action level. Since the fecal coliform exceedance was not confirmed and no significant sources were observed, it was concluded that the exceedance had been a result of a transient flow.

An upstream investigation identified total coliform exceedances at additional locations. A sample taken from the ponded water in a concrete channel upstream (location J25c-2) had the highest total coliform count. The exceedances in total coliforms upstream are likely the result of decomposing algae observed in the warm and stagnant channel at location J25c-2 (Photo 8-2) and in the sedimentation basin at location J25c-4 (Photo 8-3).

PHOTO 8-3: Location J25c-4

The monitoring results of the investigation are presented in Table 8-1, and a map of sampling locations is provided in Figure 8-1.

The City of Santee has been nominated for Proposition 84 funding for a pilot project to introduce infiltration strips in concrete channels. The channelized portion of Woodglen Vista Creek has been identified as a prime location to be used in this pilot study to reduce flows and reduce bacteria exceedances in the channel. If the funds are awarded, this project is likely to take place during 2012.

TABLE 8-1
SITE J25C BACTERIA UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Total Coliform (MPN/100 mL)	Fecal Coliform (MPN/100 mL)
J25c	9/17/10	Outlet on west end of Carefree Drive on the west side of the channel	7	**130,000**	**50,000**
J25c *(Confirmation)*	9/27/10	*Same as above*	2	**130,000**	5,118
J25c-1	9/27/10	Manhole at El Nopal and Molino Road on the west side	<1	**72,700**	**35,176**
J25c-2	9/27/10	Concrete channel upstream of J25c-1, at El Nopal and Molino Road on the west side	Ponded	**>2,420,000***	nd
J25c-3	9/27/10	Outlet to the sedimentation basin at west end of Shoredale Drive	<1	**173,000**	1,541
J25c-4	9/27/10	Downstream of sedimentation basin at the west end of Shoredale Drive	<1	**1,990,000**	1,388

Notes:
Red values were at or above the measured constituent's action level.
nd = not detected
* Value is above the upper limit of the test.

FIGURE 8-1
SITE J25C BACTERIA UPSTREAM INVESTIGATION MAP

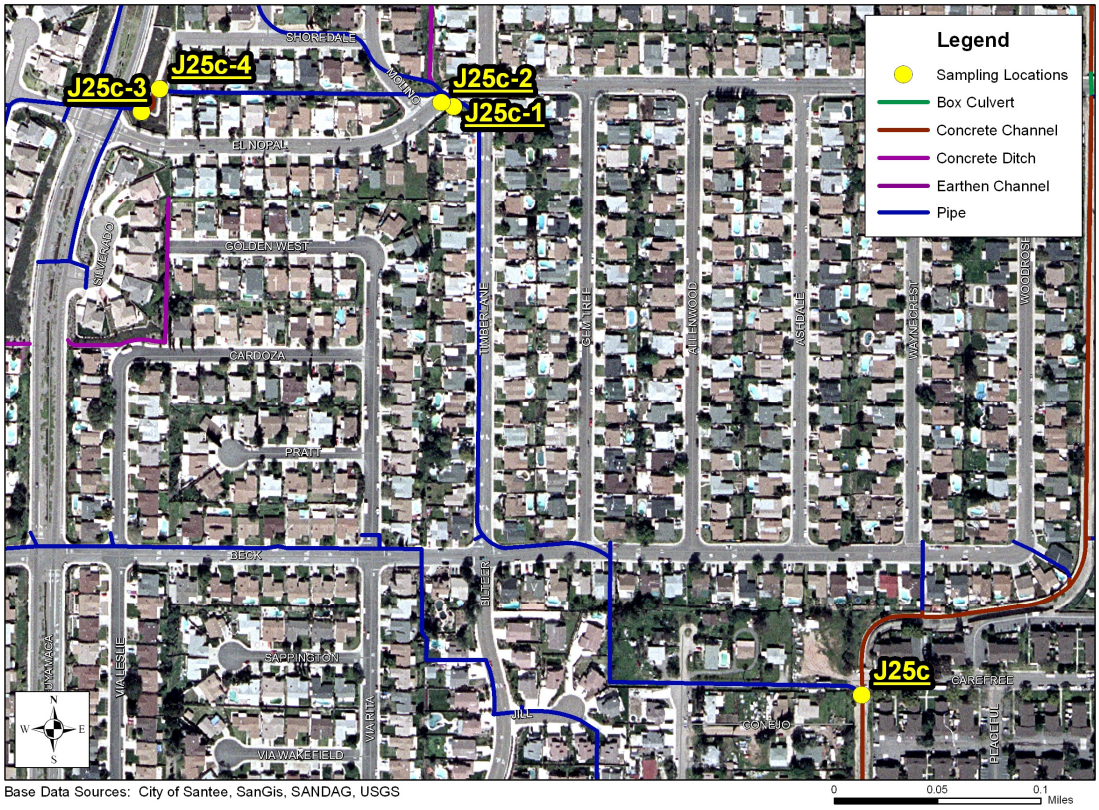

Base Data Sources: City of Santee, SanGis, SANDAG, USGS

Site O15f is a manhole located on the north side of Northcote Road between Woodside Avenue and Via Madonna.

Round One

No exceedances were observed at Site O15f during Round One of the Dry Weather Monitoring Program.

Round Two

Ponded water collected from Site O15f was yellow in color and had a musty odor. Decomposing leaves were observed in and around the water. During both the routine and confirmation visits, ammonia-N and surfactants were measured above the respective action levels. Ammonia-N was measured above the action level during a second confirmation visit when the water was clear and had no odor. It is likely that the elevated levels of ammonia-N were the result of decomposing leaves in the ponded water.

No sources of surfactants were observed in the residential area upstream of the site along Northcote Road or along Meadow Terrace Drive. No active flow was contributing to the site and no damp pavement was observed in the area. Therefore, it was concluded that the surfactants exceedance was likely the result of washing activities that had previously occurred. The City is undertaking outreach in the area draining to this location to advise residents about appropriate best management practices to use during washing activities.

The test results of the investigation are presented in Table 8-2.

TABLE 8-2
SITE O15F SURFACTANTS AND AMMONIA-N INVESTIGATION

Site	Date	Location	Flow (gpm)	Surfactants (mg/L)	Ammonia-N (mg/L)
O15f	9/16/10	North Side of Northcote Road, between Woodside Avenue and Via Madonna	ponded	**2.50**	**3.68**
O15f *(Confirmation 1)*	9/17/10	*Same as above*	ponded	**1.50**	**3.30**
O15f *(Confirmation 2)*	9/20/10	*Same as above*	ponded	0.50	**2.23**

Note: **Red** values were at or above the measured constituent's action level.

Site O40b is located at an outlet on the south side of the San Diego River, at the north end of Abraham Way.

Round One

An exceedance of nitrate-N was noted at Site O40b. Landscape fertilization and overwatering in upstream Maderaldo Industrial Park were the likely cause of the exceedance. This conclusion was supported by:

- Fertilizer granules were observed in the landscaping (Photo 8-4) and directly in the curb gutter (Photo 8-5) in an upstream industrial park. The granules were dissolved in water and tested, and found to contain nitrate-N.

PHOTO 8-4: Upstream location O40b-2b, where fertilizer granules in the landscaping of Maderaldo Industrial Park were observed

PHOTO 8-5: Fertilizer granules in the curb gutter where irrigation runoff has ponded, in front of Maderaldo Industrial Park

- Irrigation runoff likely transported nitrate-N to the storm drain system. Irrigation water that had pooled in the curb gutter was sampled and found to contain nitrate-N (Photo 8-6). Irrigation runoff was the only source of flow observed.
- Portions of the landscaping had green-stained soil, which appeared to be disintegrated fertilizer granules (Photo 8-7). A sample of this soil was mixed with distilled water and tested and found to contain nitrate-N.

PHOTO 8-6: Upstream location O40b-2a, where ponded irrigation runoff in the curb gutter of Maderaldo Industrial Park was sampled

PHOTO 8-7: Upstream location O40b-2c, where soil was. Note green staining, believed to be fertilizer

Other considerations are discussed below:

- The nitrate-N concentration was greater at Site O40b than recorded at upstream locations on each day of sampling.
    - Since the flow rate at Site O40b was relatively low and the area was warm due to shallow depth and sunlight exposure, it is possible that some of the runoff water upstream evaporated as it flowed toward Site O40b, thereby increasing the concentration of nitrate-N in the discharge.

- Irrigation water had collected in the gutter after irrigation had ceased. This water was likely to have evaporated over the course of the day and created a high concentration of nitrogen in the gutter. Subsequent overwatering could have transported this into the MS4, which caused downstream concentrations to be higher than the active irrigation discharge.

City staff contacted the property manager who informed them that the property was irrigated using groundwater. Based on data reported for groundwater in Santee, groundwater may be a source of higher levels of nitrate-N in samples. However, City staff explained that fertilizer granules were observed in the curb and gutter during dry weather monitoring and directed the property manager to advise his landscaping contractor of the issue and to ensure that fertilizer applications and irrigation practices are revised to prevent further discharges.

The test results of the upstream investigation are presented in Table 8-3, and a map of the location with corresponding sample locations is provided in Figure 8-2.

TABLE 8-3
SITE O40B NITRATE-N UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Nitrate-N (mg/L)
O40b	5/18/10	At the north end of Abraham Way, south of the San Diego River	<1	**23.57**
O40b *(Confirmation 1)*	5/19/10	*Same as above*	<1	**12.64**
O40b-1	5/19/10	Manhole at the corner of Stevens Road and Hartley Road	Trickling	**17.02**
O40b *(Confirmation 2)*	5/21/10	At the north end of Abraham Way, south of the San Diego River	<1	**16.37**
O40b-2a	5/21/10	Irrigation runoff collected in curb gutter in front of 10965 Hartley Road	Ponded	**12.88**
O40b-2b	5/21/10	Fertilizer granules collected from the landscaping in front of 10965 Hartley Road, dissolved in water	Not applicable	1.09*
O40b-2c	5/21/10	Soil sample from landscaping in front of 10965 Hartley Road	Not applicable	2.90*

Notes:
Red values were at or above the measured constituent's action level.
*These tests were intended to indicate only whether nitrate-N was present in the fertilizer granules and soil, actual concentration is not significant as the tests were performed by diluting the substances with distilled water.

FIGURE 8-2
SITE O40B NITRATE-N UPSTREAM INVESTIGATION MAP

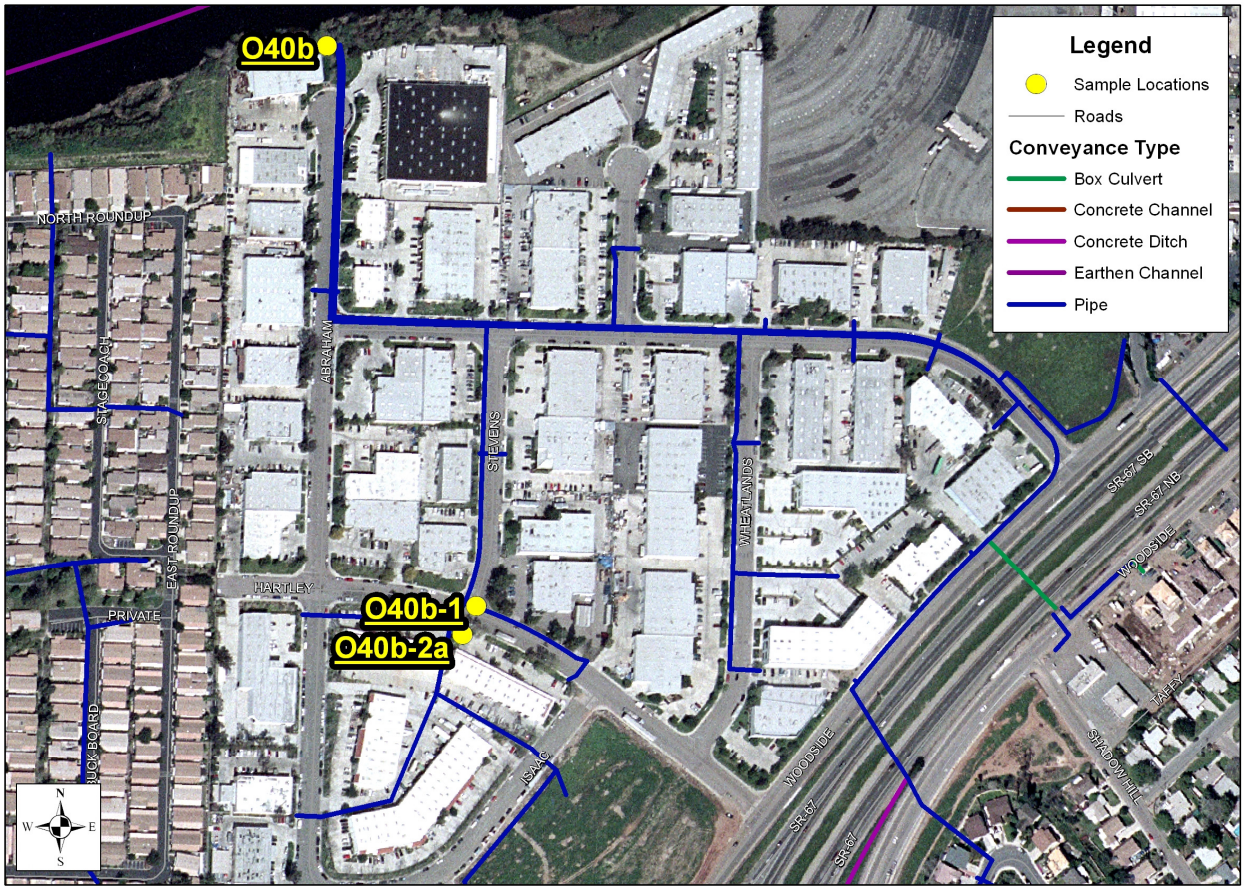

Base Data Sources: City of Santee, SanGis, SANDAG, USGS

0 0.05 0.1 Miles

Round Two

No exceedances were observed at Site O40b during Round Two of the Dry Weather Monitoring Program, indicating that the follow-up actions after Round One were sufficient to eliminate the discharge.

Site Q20a is located in a manhole in front of 10220 Buena Vista Avenue, downstream of the former dry weather monitoring location, Site Q5l. Upstream land uses include residential and commercial areas and a large Caltrans construction area during the first round of this year's dry weather monitoring.

Round One

A nitrate-N exceedance was noted at this location during Round One. Historical data for upstream Site Q5l and evidence acquired during the current upstream investigation suggest that the exceedance was due to groundwater seepage into the storm drain system. This conclusion was supported by the following factors:

- Seepage water appeared to be the only source of flow to the site.
    - Flow rates increased from trickling at the furthest upstream point to nearly 1 gpm only a few hundred feet downstream without any visible surface flow.
    - The storm drain pipe depth coincided with reported ground water levels in the area. Helix water district's historical data show that the groundwater level in

this area consistently measured between 3 and 11 feet below ground level between 1994 and 2000. Data for more recent years were not available, however, given the above average rainfall during the 2009-2010 rainy season, groundwater in this area was likely to have been shallow. These data were confirmed by local property owners during previous years, who encountered shallow groundwater during construction site activities. Water quality testing confirmed that the groundwater in this area is high in nitrate-N, ranging up to 17.8 mg/L.[2]

    - No surface flow was observed at any point upstream of Site Q20a during the upstream investigation.
- The vicinity has a history of nitrate-N exceedances.
    - Exceedances that have been attributed to groundwater seepage have occurred upstream of Site Q5l during Round One sampling of 2003, 2005, 2007, and 2008.
    - Groundwater levels were likely to be higher during Round One, earlier in the dry weather season, than in Round Two after less precipitation has occurred. Nitrate-N exceedances have historically been detected more frequently in this area during Round One of the dry weather program. In other words, nitrate-N exceedances tend to occur in this area around the time that the water table is higher. This may indicate that earlier in the year, groundwater is at a level that can seep into MS4 pipes, but the water table typically subsides later in the season and less frequently infiltrates the MS4.

Other considerations are discussed below:

- The nitrate-N level at Site Q20a on the day of the upstream investigation was lower than at upstream sample points, without a discernable change in flow rate.
    - A large amount of sediment was present within the MS4 between Site Q5l and Site Q20a. This sediment may have extracted some of the nitrate-N from the water as it passed through. Note that City crews have since removed this sediment.
    - Flow rates measured in this investigation were all less than 1 gpm, which encompassed the range from just greater than 0 to just under 1 gpm. It was possible for flow to double (e.g., from 0.4 gpm to 0.8 gpm) but still be considered "less than 1 gpm". In the scenario of doubling the flow, the concentration of a pollutant would be halved when the same amount of pollutant is present. Therefore, even though the downstream measurement of nitrate-N could be lower, at such low levels of flow, changes in the actual amount of pollutant may not be reflected accurately by changes in pollutant concentrations.

As stated above, all flows measured during this investigation were less than 1 gpm. These low levels of flow were not likely to reach or significantly impact receiving waterbodies.

The results of the field investigation are presented in Table 8-4, and a map of sample locations is provided in Figure 8-3, below.

[2] http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/groundwater/PDFs/SanDiegoCountyBasins/SouthSanDiegoCountyBasins.pdf

TABLE 8-4
SITE Q20A NITRATE-N UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Nitrate-N (mg/L)
Q20a	5/21/10	Manhole in front of 10220 Buena Vista Avenue	<1	**11.61**
Q20a *(Confirmation 1)*	5/21/10	*Same as above*	<1	**12.54**
Q20a *(Confirmation 2)*	6/2/10	*Same as above*	<1	6.32
Q20a-1	6/2/10	Former dry weather site Q5l; in the catch basin on the north side of Prospect Avenue, 50 feet east of Railroad Avenue	<1	**13.80**
Q20a-2	6/2/10	In the parking area in front of 10612 Prospect Avenue	Trickling	9.45

Note: **Red** values were at or above the measured constituent's action level.

FIGURE 8-3
SITE Q20A NITRATE-N UPSTREAM INVESTIGATION MAP

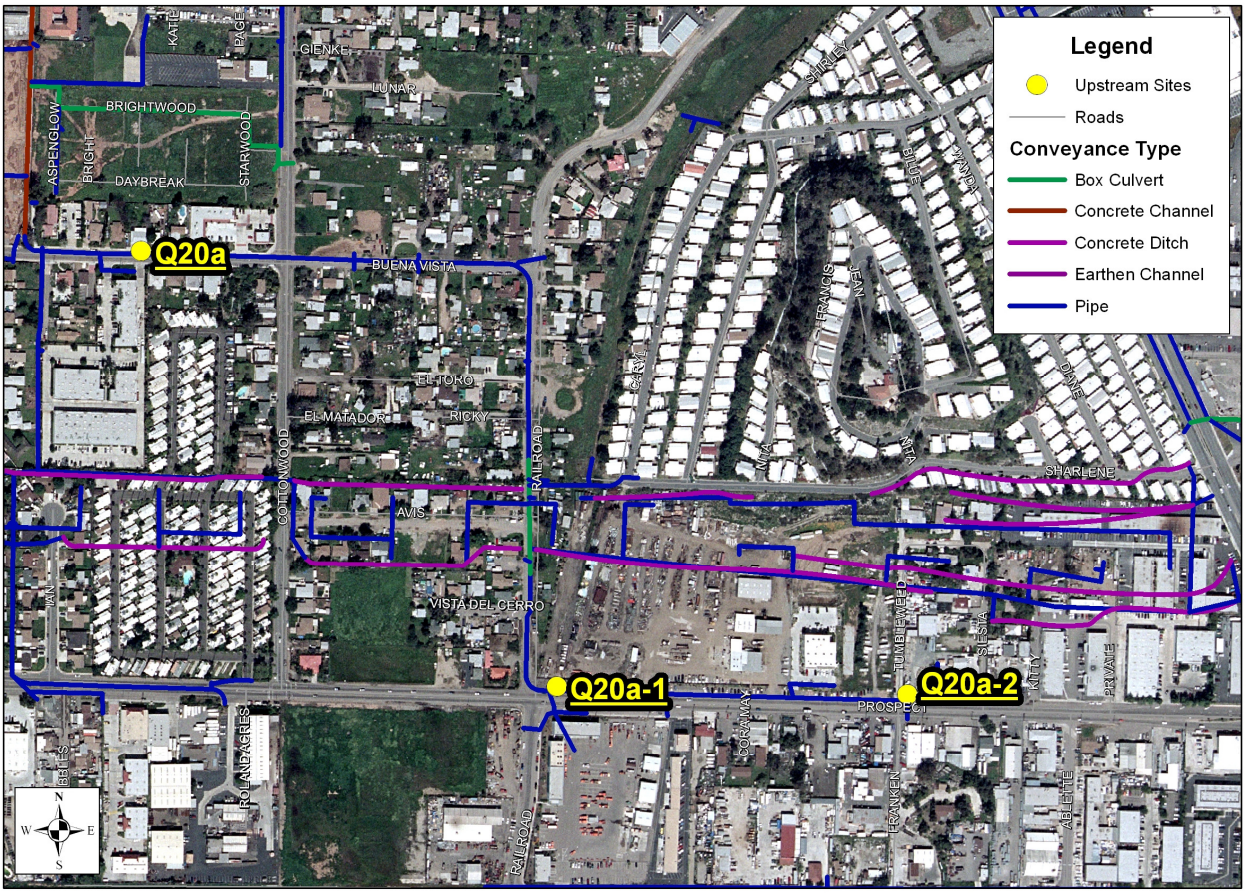

Base Data Sources: City of Santee, SanGis, SANDAG, USGS

0 0.1 0.2 Miles

Round Two
During the routine site visit a nitrate-N exceedance of 10.6 mg/L was measured from the ponded water. The manhole was dry and could not be sampled during a confirmation visit on the following day. As discussed in Round One, upstream investigations have concluded that nitrate-containing groundwater seepage is likely the source of nitrate-N to the area.

Site RCP1 is a concrete outlet located inside the RCP Block and Brick factory on the northern bank of the San Diego River.

Round One
No exceedances were observed at Site RCP1 during Round One of the Dry Weather Monitoring Program.

Round Two
During the routine site visit a nitrate-N exceedance of 10.6 mg/L was measured from flowing water at RCP1. Nitrate-N was measured below the action level in the confirmation sample. Historically, nitrate-N concentrations have been measured close to or above the action level at this site. Previous investigations have indicated nitrate-containing groundwater likely infiltrates the MS4 conveyance between the area upstream of Site RCP1 and the northern end of the Santana High School athletic fields.

Site RCP3 is located at an outlet on the north bank of the San Diego River.

Round One
During the routine site visit, a chemical odor comparable to paint thinner or gasoline was noted in the sample water, and a clear residue was visible on the surface. Information gathered from City personnel and through the upstream investigation indicated the exceedances were likely the result of firefighting activities at the scene of an automobile accident in a neighborhood upstream. This conclusion was supported by the following factors:

- The odor and residue were traced to the neighborhood where the accident took place.
    - Prior to contacting City personnel, the D-MAX field crew performed an upstream investigation which traced the odor and residue to the neighborhood north of El Nopal, adjacent to Julio Place.
    - City personnel recognized the area described by the field crew as the location of the accident, which had occurred a few days prior to sampling. The accident involved an overturned vehicle that had also caught on fire.
- The accident and subsequent firefighting efforts were likely to have introduced chemicals to the storm drain system.
    - City personnel observed staining and residual water flow in the curb and gutter from the initial firefighting activities (as soon as they were able, firefighters placed berms in the curb and gutter to prevent further discharge); however the presence of any chemical residue was not observed at the time by them.

The storm water program manager was on-site at the clean-up and observed that the entire area was covered in absorbent, before the car was removed from the scene of the accident. According to the environmental manager at SDG&E, this absorbent would be removed after

the scene had been cleared and the area powerwashed to remove residue. Powerwashing would only be conducted after storm drain inlets had been sealed.

City staff contacted SDG&E, whose transformer had been damaged during the car accident and was likely a source of hydrocarbons, to advise them of the observations made at Site RCP3 and to request that they evaluate their clean-up procedures to ensure that discharges are cleaned up in a manner that prevents releases to the storm drain system. City public works staff cleaned the MS4 after the second visit to RCP3 to remove any reservoirs of contamination remaining in the system.

A map detailing the investigation area is included as Figure 8-4.

FIGURE 8-4
SITE RCP3 CHEMICAL RESIDUE INVESTIGATION MAP

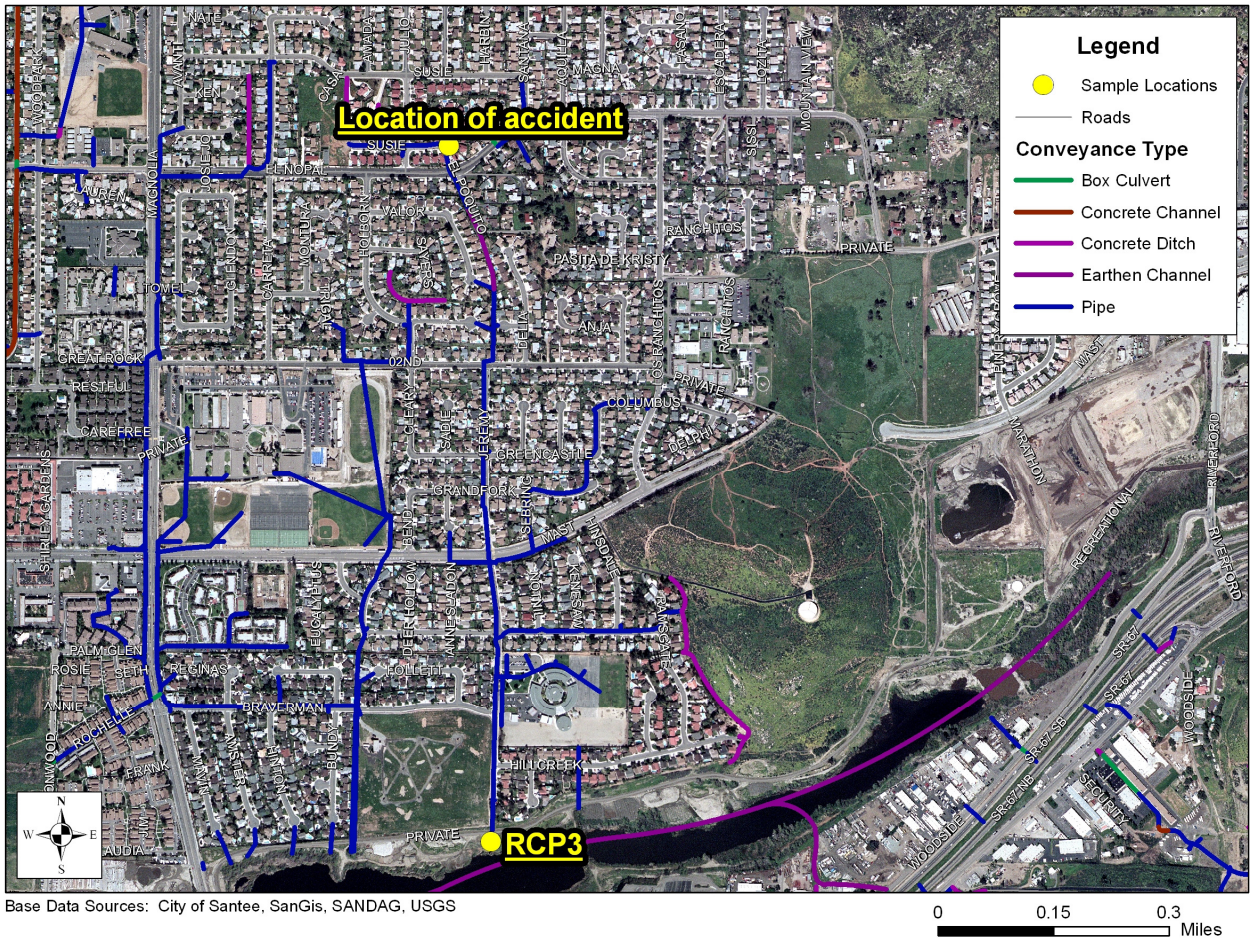

In addition, the concentration of nitrate-N was relatively higher at Site RCP3, but did not exceed the action level during the routine visit. Although not considered to be an exceedance, nitrate-N was measured again during the confirmation visit and was found to exceed the action level. During the third site visit, the level of nitrate-N was measured below the action level. No sources of nitrate-N were observed during the investigation. Due to its proximity to Site RCP1, it is likely that the elevated nitrate-N level measured at Site RCP3 is also due to groundwater infiltration. The results of this supplemental investigation are presented in Table 8-5.

TABLE 8-5
SITE RCP3 NITRATE-N SUPPLEMENTAL INVESTIGATION

Site	Date	Location	Flow (gpm)	Nitrate-N (mg/L)
RCP3	5/20/10	North bank of the San Diego River, in the RCP brick factory across from the southeast corner of the antennae field.	13	9.57
RCP3 *(Confirmation 1)*	5/21/10	*Same as above*	11	**11.51**
RCP3 *(Confirmation 2)*	6/2/10	*Same as above*	8	5.15

Note: **Red** values were at or above the measured constituent's action level.

Round Two
No exceedances were observed at Site RCP3 during Round Two of the Dry Weather Monitoring Program.

Site S15h is a concrete outlet located north of Town Center Parkway between Mission Gorge Road and Cuyamaca Street.

Round One
No exceedances were observed at Site S15h during Round One of the Dry Weather Monitoring Program.

Round Two
An ammonia-N exceedance of 1.06 mg/L was measured in the trickling water during the routine visit to Site S15h. Ammonia-N was measured below the action level during the confirmation visit on the following day. The exceedance was transient and may have been the result of decomposing leaves in the water (Photo 8-8).

PHOTO 8-8: Decomposing leaves observed at Site S15h

Site V40d is located in a concrete channel east of Fanita Drive and south of Prospect Avenue.

Round One
No exceedances were observed at Site V40d during Round One of the Dry Weather Monitoring Program.

Round Two
An *Enterococcus* exceedance of 17,000 MPN/100 mL was measured during the routine visit. During the confirmation visit, *Enterococcus* was measured below the action level. An additional sample from upstream location V40d-1, in a natural creek at Farrington Drive, was collected that day. *Enterococcus* was also measured below the action level at location V40d-1. Fecal matter from wildlife was observed along the edges of both the concrete channel at

V40d and at location V40d-1, which may have contributed to the initial bacteria excedance. No other significant sources of bacteria were observed, and it was concluded that the *Enterococcus* exceedance was a result of a transient flow possibly coming from wildlife sources.

Site W30c is located in a manhole in the southbound lane of Mesa Road, at the intersection of Mesa Road and Graham Terrace. Upstream land use in the area is mainly residential.

Round One

Exceedances of ammonia-N, orthophosphate-P, turbidity, and surfactants were noted at this location when the flow rate was measured at 2 gpm. The water sample was also cloudy, gray, and had a chemical odor. An immediate upstream investigation did not identify an active source of flow or pollutants. All measured constituents were within the normal range at the confirmation visit, and the flow rate was less than 1 gpm.

It is possible that the high turbidity (147 NTU) measured during the routine visit interfered with the test kits, giving false positive results for other pollutants. Tests that are run using a photometer are sensitive to suspended particles in the water. The high turbidity measured could have caused interference with photometer reading and visual test results. It was concluded that the initial exceedances were due to a transient flow and likely test kit interferences.

City staff followed up on the issue by mailing residential storm water factsheets (Factsheet 10) to 71 addresses upgradient of Site W30c to educate residents on how to eliminate discharges from residential activities.

Round Two

No exceedances were observed at Site W30c during Round Two of the Dry Weather Monitoring Program. Based on this observation, it can be concluded that the follow-up after Round One was sufficient to prevent the discharge from reoccurring.

9 SUMMARY AND RECOMMENDATIONS

9.1 2010 Dry Weather Monitoring Program Summary

Two rounds of dry weather monitoring were conducted during the 2010 Dry Weather Monitoring Program. In each round, 20 sites were sampled for field screening analysis, five of which were also evaluated for laboratory constituents. New locations were selected to replace locations where, based on previous monitoring, exceedances were unlikely to be encountered. Most sites were rated optimal or suboptimal in the trash assessment during both rounds of sampling; only four sites between the two rounds were rated as marginal. One site in Round Two was rated submarginal. No sites were considered poor or were determined to pose a threat to human or aquatic health. Five sites in Round One and six sites in Round Two had action level exceedances. A summary of these exceedances is presented in Table 9-1.

TABLE 9-1
SUMMARY OF ACTION LEVEL EXCEEDANCES

Field Screening (20 samples)						
Analyte	**Number of Exceedances**		**Percentage of Sites with Exceedance**		**Site Exceeding Action Level**	
	R1	*R2*	*R1*	*R2*	*R1*	*R2*
Odor	1	0	5	0	RCP3	---
Sheen	1	0	5	0	RCP3	---
pH	0	0	0	0	---	---
Conductivity	0	0	0	0	---	---
Turbidity	1	0	5	0	W30c	---
Surfactants	1	1	5	5	W30c	O15f
Ammonia-N	1	2	5	10	W30c	O15f, S15h
Nitrate-N	2	2	10	10	O40b, Q20a	Q20a, RCP1
Orthophosphate-P	1	0	5	0	W30c	---
Laboratory Analyses (5 samples)						
Analyte	**Number of Exceedances**		**Percentage of Sites with Exceedance**		**Site Exceeding Action Level**	
	R1	*R2*	*R1*	*R2*	*R1*	*R2*
Oil & Grease	0	0	0	0	---	---
Cadmium	0	0	0	0	---	---
Copper	0	0	0	0	---	---
Lead	0	0	0	0	---	---
Zinc	0	0	0	0	---	---
Diazinon	0	0	0	0	---	---
Chlorpyrifos	0	0	0	0	---	---
Total Coliforms	0	1	0	20	---	J25c
Fecal Coliforms	0	1	0	20	---	J25c
Enterococci	1	1	20	20	J25c	V40d

Note: Table data is based on routine visits only. Confirmation, follow-up and dry site visits not included.

9.2 Summary of Follow-Up Investigation Data

In 2010, nine exceedances at five sites were transient. Two sites (Q20a and J25c) had exceedances during both rounds of dry weather monitoring. Table 9-2 and Table 9-3 present conclusions based on the results of confirmation visits and upstream investigations conducted during Round One and Round Two, respectively, of the 2010 Dry Weather Monitoring Program.

TABLE 9-2
ROUND ONE SUMMARY OF FOLLOW-UP INVESTIGATIONS

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
J25c	---	*Enterococcus*	Exceedance not confirmed
O40b	Nitrate-N	---	Landscape fertilization and overwatering
Q20a	Nitrate-N	---	Nitrate-containing groundwater seeping into the MS4 conveyance
RCP3	Odor, Sheen, Nitrate-N	---	Odor and sheen exceedances traced to automobile accident, Nitrate-N exceedance due to nitrate-containing groundwater seeping into the MS4 conveyance
W30c	Turbidity, Surfactants, Ammonia-N, and Nitrate-N	---	Exceedances not confirmed, possible field test kit interferences

TABLE 9-3
ROUND TWO SUMMARY OF FOLLOW-UP INVESTIGATIONS

Site	Follow-Up Investigation Target Constituent		Results / Probable Sources
	Field	Laboratory	
J25c	---	Total Coliforms, Fecal Coliforms	Fecal coliform exceedance not confirmed, total coliforms likely due to algal decomposition in warm, ponded water at upstream location
O15f	Surfactants, Ammonia-N	---	Surfactants possibly due to washing activities in residential neighborhood, Ammonia-N exceedance likely due to decomposing leaves in ponded water
Q20a	Nitrate-N	---	Nitrate-containing groundwater seeping into the MS4 conveyance
RCP1	Nitrate-N	---	Nitrate-containing groundwater seeping into the MS4 conveyance
S15h	Ammonia-N	---	Exceedance not confirmed
V40d	---	*Enterococcus*	Exceedance not confirmed

9.3 Recommendations and Follow-up Actions

Based on the results of the City of Santee 2010 Dry Weather Monitoring Program, the following actions have been recommended. Follow-up actions taken by the City are also described.

9.3.1 Inspection and Maintenance

- Contacted the property management company for Maderaldo Industrial Park and provided landscaping best management practice education since improper fertilizer application and over-irrigation likely contributed to nitrate-N exceedances at Site O40b. No exceedances were observed at this location during Round 2.
- The City's Stormwater Program Manager was on-site during the clean-up of an automobile accident near Site RCP3 to ensure no discharges to the storm drain inlets. City public works cleaned the MS4 after the confirmation visit to Site RCP3 to remove any pollutants remaining in the system.
- City mailed residential storm water factsheets to 71 addresses upgradient of Site W30c where exceedances in turbidity, surfactants, ammonia-N, and orthophosphate-P were measured. The City is taking similar action to address the likely discharge observed at O15f.
- Groundwater monitoring data for well OW3, located close to areas upstream of Site Q20a, was reported in a letter report to the RWQCB dated July 14, 2008. This data shows that nitrate in groundwater is elevated and is likely the cause of high nitrate concentrations in samples collected from the nearby storm drain system.
- Upstream of Site J25c, remove decomposing algae and vegetation from the concrete channel and manhole at El Nopal and Molino Road. Remove decomposing algae, leaves and debris from sedimentation basin on Shoredale Drive. These locations had total coliform bacteria exceedances. The City is currently reviewing cleaning procedures at the Shoredale Basin to ensure that they are as effective as possible.
- Public Works removed trash from Site I10c, which received a marginal trash rating during Round One. City staff have been directed to remove trash and debris from Sites I10c, G30c, O40b, and V40d which received submarginal and marginal ratings during Round Two. In addition, the City contacted the Sheriff to advise them of the concern relating to the area around I10c, to ensure that any issues (such as dumping of shopping carts) relating to transient activity can be eliminated.

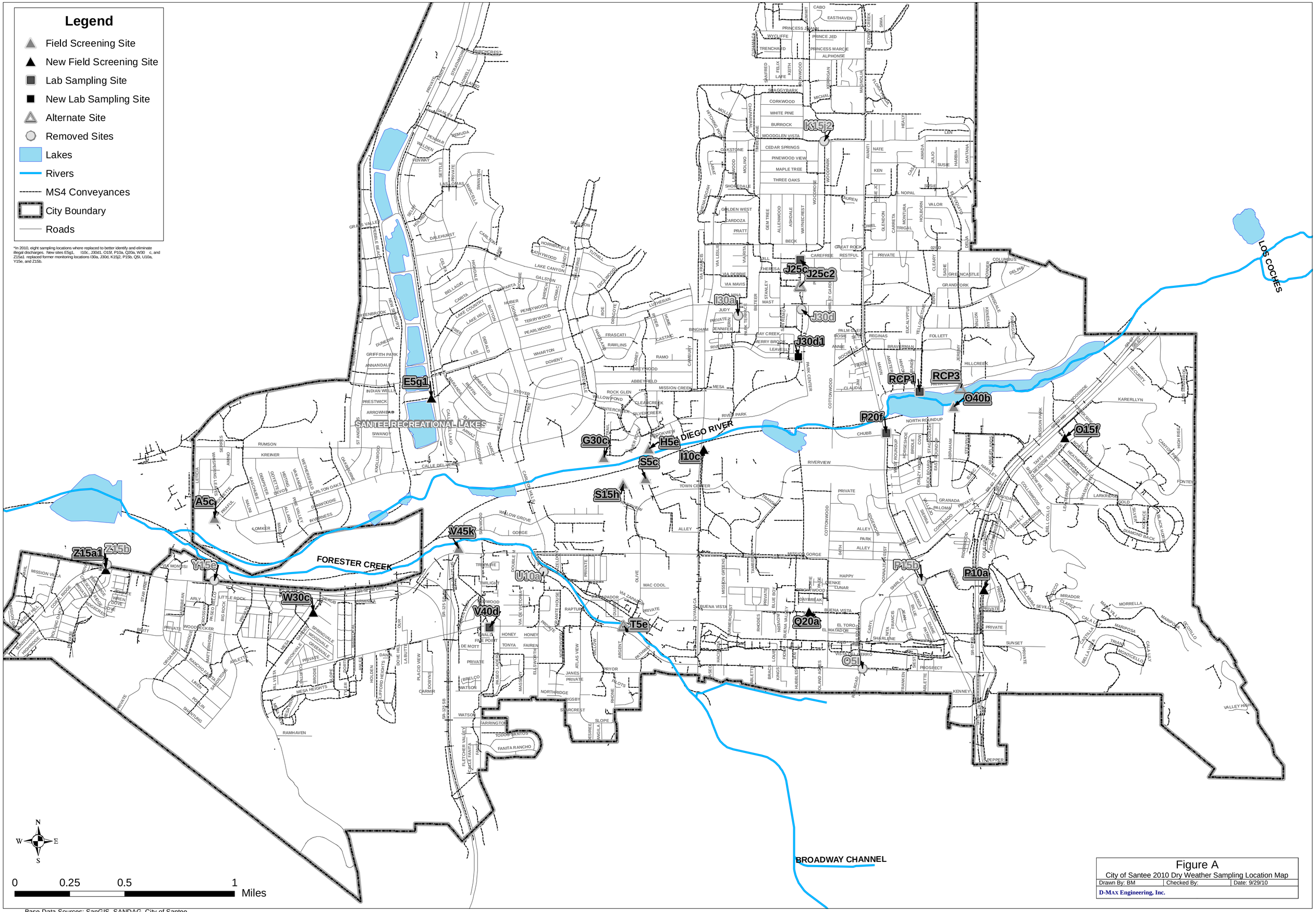

Figure A
City of Santee 2010 Dry Weather Sampling Location Map

Drawn By: BM	Checked By:	Date: 9/29/10

D-MAX Engineering, Inc.

Base Data Sources: SanGIS, SANDAG, City of Santee

FIGURE B
WATERSHED MAP OF THE SANTEE AREA SHOWING THE HYDROLOGIC SUBAREAS

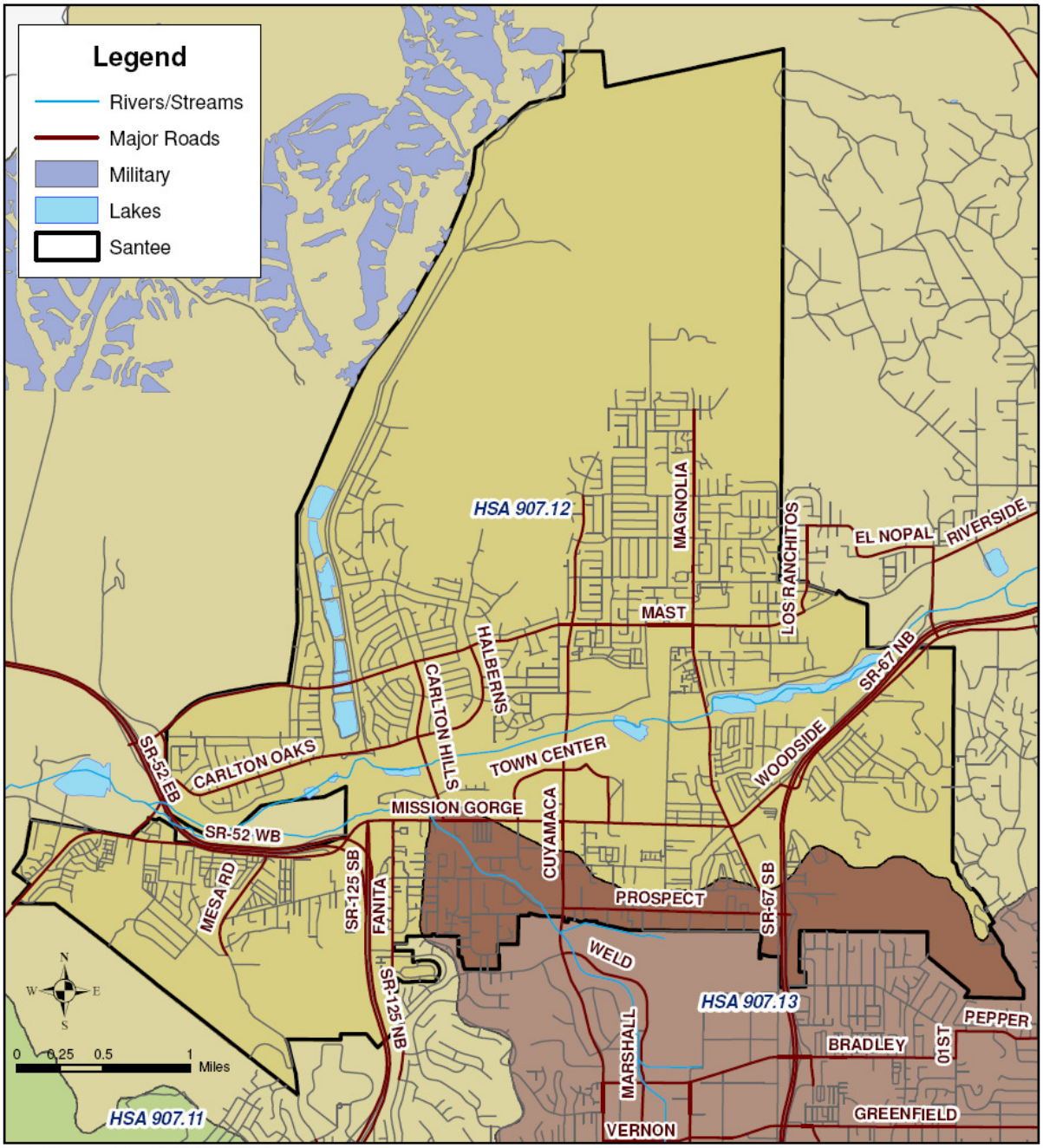

Data Sources: SanGIS, SANDAG

Appendix A

Historical Dry Weather Monitoring Data

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	RCP3	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
1996 First Visit																															
Phenols (mg/L)			ns	0.1	ns			nd			ns		nd		ns						ns	0.1		ns		ns					
Detergents (mg/L)			ns	0.50	ns			nd			ns		0.50		ns						ns	0.25		ns		ns					
Chlorine (mg/L)			ns	nd	ns			nd			ns		0.05		ns						ns	nd		ns		ns					
Copper (mg/L)			ns	nd	ns			nd			ns		nd		ns						ns	nd		ns		ns					
Ammonia (mg/L)			ns	nd	ns			nd			ns		nd		ns						ns	nd		ns		ns					
1996 Second Visit																															
Phenols (mg/L)				0.2				nd					nd									0.1									
Detergents (mg/L)				0.25				0.25					0.25									0.50									
Chlorine (mg/L)				0.20				nd					nd									nd									
Copper (mg/L)				nd				nd					nd									nd									
Ammonia (mg/L)				nd				nd					nd									nd									
1997 Round One First Visit																															
Phenols (mg/L)		nd	ns	ns	ns			nd		ns	0.1		nd		ns						ns	nd		ns	0.2			nd	nd		
Detergents (mg/L)		0.25	ns	ns	ns			0.50		ns	0.85		0.20		ns						ns	1.00		ns	0.60			0.30	0.25		
Chlorine (mg/L)		nd	ns	ns	ns			0.25		ns	0.50		0.25		ns						ns	0.15		ns	nd			0.20	0.30		
Copper (mg/L)		nd	ns	ns	ns			nd		ns	nd		nd		ns						ns	nd		ns	nd			nd	0.05		
Ammonia (mg/L)		0.40	ns	ns	ns			0.40		ns	3.00		0.35		ns						ns	0.30		ns	2.50			0.15	0.35		
1997 Round One Second Visit																															
Phenols (mg/L)		nd						nd			nd		nd									nd			0.2			nd	0.1		
Detergents (mg/L)		0.35						0.35			1.75		0.25									0.25			>3.0			0.35	0.25		
Chlorine (mg/L)		0.05						0.15			0.40		nd									0.20			nd			0.20	0.35		
Copper (mg/L)		nd						nd			nd		nd									nd			nd			nd	nd		
Ammonia (mg/L)		1.50						0.40			2.50		0.30									0.60			5.50			0.60	0.50		
1997 Round Two First Visit																															
Phenols (mg/L)		nd	nd	nd	ns			nd		ns	ns		nd		ns						ns	nd		ns	ns			nd	nd		
Detergents (mg/L)		0.20	0.20	0.20	ns			0.20		ns	ns		0.20		ns						ns	0.90		ns	ns			0.30	0.20		
Chlorine (mg/L)		nd	0.40	0.70	ns			0.25		ns	ns		0.25		ns						ns	0.50		ns	ns			0.25	0.80		
Copper (mg/L)		nd	nd	nd	ns			nd		ns	ns		nd		ns						ns	0.10		ns	ns			nd	nd		
Ammonia (mg/L)		0.70	0.40	0.30	ns			0.60		ns	ns		0.10		ns						ns	1.50		ns	ns			0.90	0.90		
1997 Round Two Second Visit																															
Phenols (mg/L)		nd	nd	nd				nd					nd									nd						nd	nd		
Detergents (mg/L)		0.20	0.25	0.20				0.20					0.20									0.20						0.30	0.20		
Chlorine (mg/L)		nd	0.50	0.70				0.50					0.25									0.25						0.50	0.80		
Copper (mg/L)		nd	nd	nd				nd					nd									nd						nd	nd		
Ammonia (mg/L)		0.80	0.35	0.50				0.60					0.30									0.20						0.60	0.60		
1998 Round One First Visit																															
Phenols (mg/L)		nd	nd	nd	nd			nd			0.2		nd		nd	nd					nd	nd		ns	0.2			nd	nd		
Detergents (mg/L)		0.25	0.25	0.25	0.25			0.25			0.25		0.25		0.50	0.25					0.25	0.25		ns	0.13			0.25	0.25		
Chlorine (mg/L)		0.30	0.10	0.20	0.20			0.30			nd		0.10		0.30	0.40					0.10	0.15		ns	nd			nd	0.05		
Copper (mg/L)		nd	nd	nd	nd			nd			nd		nd		nd	nd					nd	nd		ns	nd			nd	nd		
Ammonia (mg/L)		0.10	0.10	0.60	0.60			0.60			0.20		0.10		2.00	nd					0.10	nd		ns	0.60			0.20	0.20		
1998 Round One Second Visit																															
Phenols (mg/L)		nd		nd	ns			nd			0.2		nd			nd					nd	nd			nd			nd	nd		
Detergents (mg/L)		nd		0.25	ns			0.25			0.25		0.50			0.25					0.50	0.25			0.50			0.25	0.25		
Chlorine (mg/L)		0.10		nd	ns			2.50			0.30		0.20			nd					0.10	0.15			0.15			0.10	0.05		
Copper (mg/L)		nd		nd	ns			nd			nd		nd			nd					nd	nd			nd			nd	nd		
Ammonia (mg/L)		0.10		0.60	ns			nd			0.60		0.20			nd					0.80	0.60			0.40			0.10	0.20		
1998 Round Two First Visit																															
Phenols (mg/L)		nd	nd	nd	ns			nd			0.1		nd		ns	ns				nd	nd	nd		ns	nd			nd	nd		
Detergents (mg/L)		0.13	0.13	0.38	ns			0.38			1.00		0.13		ns	ns				0.13	0.25	>3.0		ns	0.25			1.00	0.25		
Chlorine (mg/L)		nd	nd	0.10	ns			nd			0.10		nd		ns	ns				0.10	0.10	nd		ns	nd			0.10	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			nd		nd		ns	ns				nd	nd	nd		ns	nd			nd	nd		
Ammonia (mg/L)		0.30	0.60	0.40	ns			0.60			0.60		0.30		ns	ns				1.50	12.30	3.00		ns	0.80			0.40	0.60		
1998 Round Two Second Visit																															
Phenols (mg/L)		nd	nd	nd	ns			nd			nd		nd							nd	nd	nd			ns			nd	nd		
Detergents (mg/L)		0.38	0.13	0.13	ns			0.13			0.38		0.13							1.00	0.13	>3.0			ns			1.50	0.13		
Chlorine (mg/L)		0.10	nd	nd	ns			nd			nd		nd							0.10	nd	nd			ns			nd	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			nd		nd							nd	nd	nd			ns			nd	nd		
Ammonia (mg/L)		0.60	0.60	1.00	ns			0.35			0.10		0.20							>10.00	1.50	3.00			ns			2.53	0.40		
1999 Round One First Visit																															
Phenols (mg/L)		nd	nd	nd	ns			nd			0.1		nd		ns	0.1					ns	nd		ns	1.0			nd	nd		
Detergents (mg/L)		0.25	0.25	0.25	ns			0.25			0.75		0.25		ns	0.75					ns	0.25		ns	>3.0			1.50	0.75		
Chlorine (mg/L)		<0.10	0.10	0.40	ns			0.30			0.30		0.10		ns	nd					ns	0.10		ns	0.20			0.10	0.20		
Copper (mg/L)		0.10	nd	nd	ns			nd			nd		nd		ns	0.10					ns	nd		ns	0.10			0.10	nd		
Ammonia (mg/L)		0.80	0.50	0.30	ns			5.00			0.40		0.20		ns	0.60					ns	0.20		ns	6.00			0.60	0.40		

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	RCP3	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
1999 Round One Second Visit																															
Phenols (mg/L)		0.1	nd	nd				nd			ns		nd			<0.1						nd			1.0			nd	nd		
Detergents (mg/L)		0.25	3.00	0.75				1.50			ns		0.50			1.50						0.25			>3.0			1.00	0.25		
Chlorine (mg/L)		<0.10	nd	0.40				<0.10			ns		0.10			<0.10						0.10			nd			0.10	0.30		
Copper (mg/L)		nd	nd	nd				nd			ns		nd			0.10						nd			0.10			0.10	nd		
Ammonia (mg/L)		1.00	1.00	0.80				1.00			ns		3.00			1.00						0.20			1.00			1.00	0.40		
1999 Round Two First Visit																															
Phenols (mg/L)		0.1	0.1	nd	ns			0.1			ns		0.1		0.1	nd					ns	0.1		ns	ns			nd	nd		
Detergents (mg/L)		0.25	0.50	0.25	ns			0.50			ns		0.25		0.75	0.50					ns	0.50		ns	ns			0.25	0.25		
Chlorine (mg/L)		nd	0.20	nd	ns			0.20			ns		0.40		nd	nd					ns	0.10		ns	ns			nd	0.10		
Copper (mg/L)		0.10	0.20	0.10	ns			0.10			ns		nd		nd	0.10					ns	0.20		ns	ns			nd	nd		
Ammonia (mg/L)		0.60	0.60	0.40	ns			0.90			ns		0.20		1.00	0.70					ns	0.40		ns	ns			0.20	0.10		
1999 Round Two Second Visit																															
Phenols (mg/L)		nd	0.1	nd				nd					nd		ns	ns						nd						nd	nd		
Detergents (mg/L)		0.25	0.75	0.25				0.25					0.25		ns	ns						0.25						0.25	0.25		
Chlorine (mg/L)		nd	nd	0.10				nd					nd		ns	ns						0.30						nd	0.10		
Copper (mg/L)		0.10	0.20	0.10				nd					nd		ns	ns						nd						nd	0.10		
Ammonia (mg/L)		0.40	0.40	0.30				0.90					0.10		ns	ns						nd						0.10	0.20		
2000 Round One First Visit																															
Phenols (mg/L)		nd	0.1	0.1	ns			nd			ns		nd		ns	nd	nd	0.1			ns	nd			0.1			0.1	nd		
Detergents (mg/L)		0.25	0.25	0.25	ns			0.50			ns		0.25		ns	0.25	0.25	0.50			ns	0.25			3.00			0.50	0.25		
Chlorine (mg/L)		nd	0.20	0.20	ns			nd			ns		0.20		ns	0.10	nd	0.10			ns	0.10			0.20			nd	0.10		
Copper (mg/L)		nd	nd	0.10	ns			nd			ns		nd		ns	0.10	nd	0.10			ns	nd			nd			nd	nd		
Ammonia (mg/L)		0.80	0.40	0.20	ns			0.30			ns		0.10		ns	0.60	0.10	2.50			ns	0.30			1.00			0.20	0.50		
2000 Round One Second Visit																															
Phenols (mg/L)		nd	nd	nd				nd					nd			ns	nd	nd				0.1			0.1			nd	nd		
Detergents (mg/L)		0.25	0.25	0.75				1.50					0.25			ns	0.25	0.25				0.25			0.75			0.50	0.25		
Chlorine (mg/L)		nd	0.20	0.20				nd					nd			ns	0.20	nd				0.10			nd			nd	nd		
Copper (mg/L)		nd	0.10	0.10				nd					nd			ns	0.10	nd				nd			nd			nd	nd		
Ammonia (mg/L)		0.80	0.50	0.40				0.80					0.10			ns	0.10	2.50				0.60			0.20			0.20	0.30		
2000 Round Two First Visit																															
Phenols (mg/L)		0.1	nd	nd	ns			nd			nd		0.1		nd	nd	nd	nd			ns	nd			ns			nd	nd		
Detergents (mg/L)		0.50	0.25	0.25	ns			0.25			0.25		0.50		1.50	1.00	0.25	0.50			ns	0.25			ns			1.00	0.25		
Chlorine (mg/L)		nd	nd	nd	ns			nd			nd		nd		nd	nd	0.10	nd			ns	nd			ns			nd	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			nd		nd		nd	nd	nd	nd			ns	nd			ns			nd	nd		
Ammonia (mg/L)		0.80	0.20	0.20	ns			0.50			0.30		0.80		1.00	0.80	0.10	2.00			ns	0.40			ns			0.80	0.30		
2000 Round Two Second Visit																															
Phenols (mg/L)		nd	nd	nd				nd			ns		nd		nd	nd	nd	nd				nd						nd	nd		
Detergents (mg/L)		0.50	0.25	0.25				0.50			ns		0.50		1.00	0.25	0.25	0.25				0.25						0.25	0.50		
Chlorine (mg/L)		nd	nd	nd				nd			ns		nd		nd	nd	0.10	nd				nd						nd	nd		
Copper (mg/L)		nd	nd	nd				nd			ns		nd		nd	nd	nd	nd				nd						nd	nd		
Ammonia (mg/L)		0.70	0.20	0.30				0.80			ns		0.80		0.70	0.30	0.10	2.00				0.20						0.30	0.70		
2001 Round One First Visit																															
Phenols (mg/L)		nd	nd	nd	ns			nd			nd		nd		ns	nd	nd	nd			nd	nd			nd			nd	nd		
Detergents (mg/L)		0.25	0.25	0.25	ns			0.25			0.25		0.25		ns	0.25	0.25	0.50			0.25	0.25			0.25			0.25	0.25		
Chlorine (mg/L)		nd	nd	nd	ns			nd			nd		nd		ns	nd	nd	nd			nd	nd			nd			nd	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			nd		nd		ns	nd	nd	nd			nd	nd			nd			nd	nd		
Ammonia (mg/L)		0.10	0.50	0.50	ns			0.80			0.20		0.20		ns	0.80	0.60	0.10			0.20	0.40			0.80			0.50	0.10		
2001 Round One Second Visit																															
Phenols (mg/L)		nd	nd	nd				nd			nd		nd			ns	nd	nd			nd	nd			nd			nd	nd		
Detergents (mg/L)		0.25	0.25	0.25				0.25			0.25		0.25			ns	0.25	0.25			0.25	0.25			0.25			0.25	0.25		
Chlorine (mg/L)		nd	nd	nd				nd			nd		nd			ns	nd	nd			nd	nd			nd			nd	nd		
Copper (mg/L)		nd	nd	nd				nd			nd		nd			ns	nd	nd			nd	nd			nd			nd	nd		
Ammonia (mg/L)		0.50	0.30	0.20				0.60			0.70		0.10			ns	0.40	0.80			0.30	0.40			0.50			0.30	0.20		
2001 Round Two First Visit																															
Phenols (mg/L)		nd	nd	nd	ns			nd			ns		nd		ns	ns	nd	nd			ns	nd			ns			nd	nd		
Detergents (mg/L)		0.25	<0.25	0.25	ns			0.50			ns		<0.25		ns	ns	<0.25	0.75			ns	<0.25			ns			<0.25	<0.25		
Chlorine (mg/L)		0.10	0.50	0.50	ns			nd			ns		0.10		ns	ns	0.10	nd			ns	0.10			ns			nd	nd		
Copper (mg/L)		nd	nd	nd	ns			nd			ns		nd		ns	ns	nd	nd			ns	nd			ns			nd	nd		
Ammonia (mg/L)		0.40	0.40	0.50	ns			0.60			ns		0.20		ns	ns	0.10	2.00			ns	0.40			ns			0.10	0.20		
2001 Round Two Second Visit																															
Phenols (mg/L)		nd	nd	nd				nd					nd				nd	nd				nd						nd	nd		
Detergents (mg/L)		0.25	<0.25	<0.25				0.50					<0.25				<0.25	0.50				0.25						<0.25	<0.25		
Chlorine (mg/L)		0.10	0.10	0.80				0.10					0.10				0.10	0.10				0.10						nd	nd		
Copper (mg/L)		nd	nd	nd				nd					nd				nd	nd				nd						nd	nd		
Ammonia (mg/L)		0.40	0.20	0.20				0.60					0.20				0.10	2.00				0.50						0.20	0.30		

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	RCP3	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2002																															
Temp. ºC	24.0	25.0	31.0	26.0		23.0	23.5	30.0	25.0		23.5	26.5	23.0	26.0			23.0					26.0	25.0			ns	26.0	22.0	22.0	23.5	22.0
pH	7.8	7.9	8.5	8.5		8.8	8.3	9.4	7.5		7.9	8.2	8.8	8.8			8.6					8.3	8.4			ns	8.4	9.2	8.1	7.9	8.0
Conductivity (µmhos/cm)	1,070	2,500	1,550	1,231		3,250	875	2,470	1,596		957	1,483	1,750	2,840			1,474					1,191	1,933			ns	1,174	2,270	2,590	1,142	1,426
Turbidity (NTU)	14.18	12.77	2.89	1.99		3.34	5.17	8.04	5.59		33.51	1.67	2.79	104			2.53					3.47	15.37			ns	7.42	6.68	6.94	7.76	23.55
Ammonia-N (mg/L)	2.5	2.0	0.6	0.2		0.4	0.3	0.4	0.1		1.0	0.1	0.3	2.0			0.4					0.6	1.5			ns	0.4	0.2	0.6	0.6	2.0
Nitrate-N (mg/L)	0.3	2.0	nd	1.0		4.0	2.0	0.1	8.0		1.0	24.0	1.0	1.5			20.0					nd	0.2			ns	0.3	nd	0.2	0.5	1.5
Orthophosphate (mg/L)	2.0	2.0	3.0	1.5		2.5	0.6	0.5	0.2		1.5	0.6	0.2	5.5			0.6					4.0	4.5			ns	2.5	0.6	0.3	0.8	4.5
Orthophosphate-P (mg/L)	0.65	0.65	0.98	0.49		0.82	0.20	0.03	0.05		0.49	0.20	0.07	1.79			0.20					1.30	1.47			ns	0.82	0.20	0.10	0.26	1.47
Surfactants (mg/l MBAS)Field test	0.75	0.50	0.25	0.25		0.25	< 0.25	0.50	0.25		0.50	0.50	0.25	3.00			0.25					0.50	0.25			ns	0.25	0.25	0.25	0.50	1.00
Surfactants (mg/l MBAS)Lab test			< 0.50			< 0.50		< 0.50					< 0.50				< 0.50											< 0.50			
Oil and Grease (mg/L)			1.0			2.0		8.0					2.0				3.0											12.0			
Total Hardness (mg/L)			349			579		391					429				422											495			
Cadmium-diss (mg/L)			< 0.10			< 0.10		< 0.10					< 0.10				< 0.10											< 0.10			
Copper-diss (mg/L)			< 0.10			< 0.10		< 0.10					< 0.10				< 0.10											< 0.10			
Lead-diss (mg/L)			< 0.10			< 0.10		< 0.10					< 0.10				< 0.10											< 0.10			
Zinc-diss (mg/L)			< 0.10			< 0.10		< 0.10					< 0.10				< 0.10											< 0.10			
Diazinon (µg/L)			< 1.0			< 0.50		< 0.50					< 0.50				< 0.50											< 0.50			
Chlorpyrifos (µg/L)			< 1.0			< 0.50		< 0.50					< 0.50				< 0.50											< 0.50			
Total Coliform (MPN/100mL)			17,000			3,000		13,000					1,700				50,000											5,000			
Fecal Coliform (MPN/100mL)			13,000			1,700		8,000					1,100				50,000											5,000			
Enterococcus (MPN/100mL)			2,300			17,000		2,300					3,000				230											3,000			
2003 Round One																															
Temp. ºC	20.0	20.0	18.0	25.0		20.0	23.0	28.0	31.0		16.0	23.0	26.0	23.0			19.5					22.0	21.0		24.0	ns	ns	21.0	19.0	18.0	23.0
pH	9.0	7.4	8.9	9.0		8.5	8.4	9.7	8.8		8.4	7.8	9.0	8.4			8.7					8.3	8.1		7.9	ns	ns	8.9	8.5	7.7	8.2
Conductivity (µmhos/cm)	2,030	3,310	2,230	1,270		4,160	4,650	3,010	2,350		1,750	2,150	1,810	2,240			1,860					1,820	1,820		1,030	ns	ns	2,960	3,840	1,470	1,080
Turbidity (NTU)	6.11	14.94	3.6	2.91		3.05	0.04	6.46	2.27		2.03	1.33	4.69	36.48			10.81					61	2.67		0.98	ns	ns	0.96	0.98	2.89	25.2
Ammonia-N (mg/L)	0.4	0.6	1.0	0.3		0.2	0.2	0.4	0.3		2.5	0.1	0.2	0.2			0.1					1.0	0.3		0.3	ns	ns	0.2	0.4	0.8	0.8
Nitrate-N (mg/L)	0.6	0.6	1.0	3.2		5.0	8.0	0.8	1.0		4.0	8.0	3.5	24.0			8.0					nd	0.4		0.2	ns	ns	0.1	0.8	1.5	0.8
Orthophosphate (mg/L)	0.3	0.8	2.5	1.5		0.2	0.2	0.1	0.1		4.0	0.4	0.1	0.4			0.4					1.5	1.5		0.6	ns	ns	0.1	0.1	1.5	0.8
Orthophosphate-P (mg/L)	0.10	0.26	0.82	0.49		0.07	0.07	0.03	0.03		1.30	0.13	0.03	0.13			0.13					0.49	0.49		0.20	ns	ns	0.03	0.03	0.49	0.26
Surfactants (mg/l MBAS)Field test	0.25	0.25	0.25	0.50		0.25	0.25	0.25	0.25		0.25	0.25	0.25	0.25			0.75					0.75	0.25		0.25	ns	ns	0.25	0.25	0.25	0.25
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				0.7											nd			
Oil and Grease (mg/L)						nd		2.00					nd				nd											18.00			
Total Hardness (mg/L)						1,030		449					450				414											609			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.01		0.012					nd				0.008											nd			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						0.026		nd					nd				0.033											0.022			
Diazinon (µg/L)						nd		0.09					nd				nd											0.26			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						50,000		1,700					1,400				11,000											2,300			
Fecal Coliform (MPN/100mL)						22,000		1,300					700				7,000											1,300			
Enterococcus (MPN/100mL)						8,000		500					300				1,100											80			
2003 Round Two																															
Temp. ºC	28.5	22.5	20.5	24.5		21.5	24.0	25.0	24.5		25.5	26.0	27.5	27.0			24.0					25.0	22.0			ns	26.0	19.5	24.0	21.5	20.0
pH	8.8	7.4	8.3	8.3		8.3	8.8	9.0	7.4		8.1	8.2	8.8	7.8			8.5					8.1	7.5			ns	7.3	8.3	7.9	7.6	7.8
Conductivity (µmhos/cm)	1,560	3,130	1,340	1,360		3,690	6,610	3,060	2,340		970	1,830	1,390	1,110			1,840					13,650	1,490			ns	1,020	1,990	2,150	1,160	1,350
Turbidity (NTU)	502.0	20.0	8.9	16.9		2.3	0.7	4.5	3.2		20.5	4.0	3.0	262.0			1.2					17.3	5.5			ns	6.8	2.6	13.9	10.6	17.8
Ammonia-N (mg/L)	0.4	0.8	0.4	0.4		0.4	0.4	1.0	0.3		0.3	0.2	0.3	0.8			0.2					0.8	0.6			ns	1.0	0.2	0.4	0.6	3.0
Nitrate-N (mg/L)	2.0	0.4	0.6	4.0		10.0	16.0	0.6	4.0		2.4	16.0	5.0	3.2			24.0					28.0	0.8			ns	0.4	0.1	0.2	0.8	1.0
Orthophosphate (mg/L)	2.0	3.0	2.0	1.5		0.6	0.2	0.3	0.1		2.0	0.8	nd	1.0			0.2					2.0	1.5			ns	2.5	0.1	0.3	2.5	3.0
Orthophosphate-P (mg/L)	0.65	0.98	0.65	0.49		0.20	0.07	0.10	0.03		0.65	0.26	nd	0.33			0.07					0.65	0.49			ns	0.82	0.03	0.10	0.82	0.98
Surfactants (mg/l MBAS)Field test	0.13	0.25	0.25	0.13		0.25	0.25	0.25	0.13		0.13	0.25	0.13	3.00			0.25					0.50	0.25			ns	0.50	0.13	0.25	0.25	0.50
Surfactants (mg/l MBAS)Lab test			nd			nd						nd																nd			nd
Oil and Grease (mg/L)			nd			1.00						2.00																nd			2.00
Total Hardness (mg/L)			396			739						539																488			330
Cadmium-diss (mg/L)			0.006			nd						nd																nd			nd
Copper-diss (mg/L)			0.097			0.005						0.007																nd			0.012
Lead-diss (mg/L)			nd			nd						0.005																nd			nd
Zinc-diss (mg/L)			0.056			nd						nd																nd			0.077
Diazinon (µg/L)			0.10			nd						nd																nd			nd
Chlorpyrifos (µg/L)			nd			nd						nd																nd			nd
Total Coliform (MPN/100mL)			90,000			50,000						13,000																50,000			90,000
Fecal Coliform (MPN/100mL)			30,000			24,000						5,000																24,000			30,000
Enterococcus (MPN/100mL)			8,000			2,200						5,000																700			8,000

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	RCP3	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2004 Round One																															
Temp.°C	32	26	24	24		24	26	30	27		27	28	25	24			24					26	26			ns	31	32	29	26	22
pH	8.4	7.0	7.4	8.6		8.5	7.7	8.9	6.9		7.5	7.4	8.6	8.5			8.3					7.9	8.0			ns	7.5	9.2	8.6	7.8	8.2
Conductivity (µmhos/cm)	1,930	2,620	1,920	1,350		2,950	1,820	1,950	1,780		910	1,610	1,260	1,430			1,280					1,589	1,390			ns	1,320	1,480	1,450	2,560	1,280
Turbidity (NTU)	8.52	27.66	3.15	2.23		8.85	0.12	5.05	4.95		1.98	7.56	1.14	101			3.97					9.32	3.55			ns	18.48	4.14	3.43	4.82	7.82
Ammonia-N (mg/L)	1.5	0.8	0.7	0.3		0.8	0.1	0.6	0.1		0.8	0.5	0.1	0.8			0.2					0.6	0.6			ns	0.8	0.6	0.2	0.8	0.8
Nitrate-N (mg/L)	1.25	1.25	2.5	2.5		6.75	2.5	2.5	5		2.5	20	3.75	1.25			5					2.5	1.25			ns	1.25	1.25	1.25	3.75	2.5
Orthophosphate (mg/L)	0.60	2.00	4.50	1.50		0.70	0.10	0.10	0.30		1.50	0.40	0.10	0.10			0.20					2.00	0.60			ns	1.50	0.20	0.30	1.50	3.50
Orthophosphate-P (mg/L)	0.20	0.65	1.47	0.49		0.23	0.03	0.03	0.10		0.49	0.13	0.03	0.03			0.07					0.70	0.20			ns	0.49	0.07	0.10	0.49	1.14
Surfactants (mg/l MBAS)Field test	0.75	0.25	0.25	0.25		0.50	0.25	0.25	0.25		0.25	0.25	0.25	3.00			0.25					0.25	0.25			ns	0.50	0.25	0.25	0.50	0.50
Surfactants (mg/l MBAS)Lab test			nd			nd		nd					nd				nd											nd			
Oil and Grease (mg/L)			nd			1		nd					nd				nd											nd			
Total Hardness (mg/L)			461			669		346					355				397											368			
Cadmium-diss (mg/L)			nd			nd		nd					nd				nd											nd			
Copper-diss (mg/L)			nd			0.021		0.008					0.010				0.013											0.005			
Lead-diss (mg/L)			nd			nd		nd					nd				nd											nd			
Zinc-diss (mg/L)			0.024			nd		nd					nd				0.02											nd			
Diazinon (µg/L)			4.05			nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)			nd			nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)			22,000			110,000		30,000					170,000				50,000											4,000			
Fecal Coliform (MPN/100mL)			8,000			2,600		2,200					17,000				800											40			
Enterococcus (MPN/100mL)			5,000			7,000		800					200				3,000											220			
2004 Round Two																															
Temp.°C	20	22	19	23		21	25	25	25		23	27	23	25			22					22	21			ns	20	22	20	22	23
pH	8.0	7.4	7.6	7.9		8.2	7.9	8.9	7.4		7.8	7.8	8.7	8.3			8.3					7.8	8.0			ns	7.4	8.8	7.7	7.6	7.6
Conductivity (µmhos/cm)	2,150	2,860	2,570	2,130		2,940	5,680	2,490	1,990		850	1,670	1,610	2,490			1,670					970	1,860			ns	1,770	1,420	1,490	1,270	1,180
Turbidity (NTU)	2.35	28.87	3.86	18.87		2.35	1.48	11.59	1.22		4.55	11.34	2.26	143			0.67					5.55	33.76			ns	3.36	4.08	8.32	10.15	12.73
Ammonia-N (mg/L)	3.0	0.6	0.1	6.0		0.3	0.1	0.4	0.2		0.1	0.1	0.1	0.8			0.2					0.1	0.7			ns	0.6	0.2	0.2	0.3	1.0
Nitrate-N (mg/L)	7.50	2.50	2.50	15.00		5.00	8.75	2.50	5.00		1.25	15.00	3.75	1.25			8.75					1.25	3.75			ns	3.75	1.25	1.25	3.75	3.75
Orthophosphate (mg/L)	3.0	3.0	1.0	5.0		0.4	0.2	0.2	0.8		1.0	0.6	0.1	4.0			0.4					1.0	3.0			ns	1.0	0.3	0.3	0.6	5.0
Orthophosphate-P (mg/L)	0.98	0.98	0.33	1.63		0.13	0.07	0.07	0.26		0.33	0.20	0.03	1.30			0.13					0.33	0.98			ns	0.33	0.10	0.10	0.20	1.63
Surfactants (mg/l MBAS)Field test	0.38	0.75	0.25	0.25		0.50	0.25	0.38	0.25		0.38	0.38	0.38	3.00			0.25					0.50	0.50			ns	0.25	0.13	0.13	0.50	0.75
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd											nd			
Oil and Grease (mg/L)						nd		nd					nd				1											nd			
Total Hardness (mg/L)						572		473					421				508											356			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.008		0.005					nd				nd											nd			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						0.023		nd					nd				nd											nd			
Diazinon (µg/L)						nd		nd					nd				0.33											0.12			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						300,000		300,000					240,000				160,000											17,000			
Fecal Coliform (MPN/100mL)						1,300		800					500				30,000											1,400			
Enterococcus (MPN/100mL)						7,000		7,000					80				24,000											13,000			
2005 Round One																															
Temp.°C	21.1	21.3	24.2	19.4		20.5	23.6	27.4	22.7		19.4	24.2	20.4	24.5			20.3					20.0	19.7			ns	21.5	22.9	24.7	20.5	17.0
pH	8.4	7.3	8.9	8.5		8.4	8.0	9.1	7.7		7.9	7.8	8.8	7.9			8.4					7.4	7.7			ns	8.3	8.8	8.4	7.7	8.1
Conductivity (µmhos/cm)	2,020	2,290	2,070	2,240		4,500	5,320	2,540	2,030		930	1,740	1,630	1,990			1,900					1,190	1,550			ns	2,240	2,530	2,270	1,460	1,260
Turbidity (NTU)	3.11	8.15	2.15	1.23		4.62	0.33	4.24	2.02		6.88	1.11	0.70	2.67			0.46					6.05	5.73			ns	18.34	2.50	2.06	3.92	37.4
Ammonia-N (mg/L)	0.2	0.8	0.2	0.2		0.1	0.2	0.4	0.3		2.0	nd	0.2	0.1			0.1					1.0	0.8			ns	0.2	0.1	0.2	0.4	1.5
Nitrate-N (mg/L)	5.00	1.25	2.50	2.50		8.75	6.25	5.00	3.75		6.25	20.00	10.00	25.00			15.00					2.50	5.00			ns	20.00	1.25	2.50	2.50	5.00
Orthophosphate (mg/L)	1.0	2.0	0.4	1.5		0.3	0.2	0.1	0.1		7.0	0.6	nd	0.6			0.3					0.2	0.8			ns	0.8	0.1	0.2	0.2	3.5
Orthophosphate-P (mg/L)	0.33	0.65	0.13	0.50		0.98	0.07	0.03	0.03		2.28	0.20	nd	0.20			0.98					0.07	0.26			ns	0.26	0.03	0.07	0.06	1.14
Surfactants (mg/l MBAS)Field test	0.13	0.38	0.25	0.25		0.50	0.50	0.38	0.25		0.13	0.25	0.38	0.63			0.38					0.75	0.75			ns	0.50	0.25	0.25	0.25	0.50
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd											nd			
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						907		545					486				584											566			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						nd		0.014					nd				nd											nd			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						nd		nd					nd				nd											nd			
Diazinon (µg/L)						nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						24,000		30,000					23,000				13,000											23,000			
Fecal Coliform (MPN/100mL)						70		270					2,300				170											1,700			
Enterococcus (MPN/100mL)						1,300		2,300					1,700				2,300											2,200			

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	RCP3	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2005 Round Two																															
Temp.℃	22.9	23.0	24.5	23.6		23.1	25.3	25.4	23.7		23.0	26.9	24.1	30.1			21.8					24.0	22.6			ns	23.0	19.1	24.8	21.7	18.7
pH	8.5	7.3	8.4	8.7		8.4	8.1	8.9	8.3		8.0	7.6	8.9	8.2			8.5					8.3	8.2			ns	7.6	8.8	8.2	7.9	8.4
Conductivity (µmhos/cm)	1,840	2,040	2,490	1,550		3,450	5,380	2,150	1,800		1,090	1,680	1,530	1,000			1,760					1,310	1,400			ns	1,330	1,740	1,970	1,250	1,010
Turbidity (NTU)	14.94	28.68	1.47	3.31		4.96	0.65	3.14	4.71		4.77	3.79	1.45	444.00			0.44					2.89	5.30			ns	3.04	7.03	1.78	4.55	3.20
Ammonia-N (mg/L)	0.8	2.5	0.3	0.6		0.3	0.2	0.4	0.6		0.4	0.1	0.2	0.3			0.1					0.1	0.3			ns	0.3	0.1	0.2	0.8	0.4
Nitrate-N (mg/L)	2.50	1.25	2.50	1.25		7.50	8.75	3.75	1.25		2.50	25.00	10.00	2.50			20.00					2.50	1.25			ns	1.25	1.25	2.50	2.50	2.50
Orthophosphate (mg/L)	3.0	0.8	1.0	2.0		0.6	0.2	0.1	0.3		1.0	0.6	nd	0.3			0.1					0.8	1.0			ns	1.0	0.1	nd	1.0	2.0
Orthophosphate-P (mg/L)	0.98	0.26	0.33	0.65		0.20	0.07	0.03	0.01		0.33	0.20	nd	0.10			0.03					0.26	0.33			ns	0.33	0.03	nd	0.33	0.63
Surfactants (mg/l MBAS)Field test	0.50	2.00	0.25	0.25		0.50	0.75	0.25	0.63		0.75	0.25	0.38	0.13			0.25					0.25	0.50			ns	0.25	0.13	0.13	0.38	0.75
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd											nd			
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						585		510					401				702											494			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						nd		nd					nd				nd											nd			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						nd		nd					nd				nd											nd			
Diazinon (µg/L)						nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						300,000		900,000					130,000				110,000											1,600,000			
Fecal Coliform (MPN/100mL)						22,000		7,000					8,000				11,000											5,000			
Enterococcus (MPN/100mL)						2,300		30,000					500				2,300											2,300			
2006 Round One																															
Temp.℃	18.8	21.1	23.1	21.7		20.4	23.2	28.2	23.0		21.5	24.9	24.1	23.8			20.0					22.1	23.6			ns	23.0	26.6	22.3	19.3	17.7
pH	8.2	7.2	8.1	8.3		8.3	8.0	9.2	7.1		7.5	7.6	8.8	8.1			8.4					7.8	7.8			ns	7.4	8.9	7.6	7.5	8.2
Conductivity (µmhos/cm)	1,950	2,080	3,350	1,590		3,990	5,440	2,270	1,860		1,020	1,620	1,300	1,960			1,660					1,070	1,160			ns	1,320	2,760	2,970	1,240	940
Turbidity (NTU)	2.50	19.29	2.55	1.81		3.89	1.86	1.34	0.91		2.14	2.33	2.05	53.00			1.94					0.79	6.44			ns	57.00	4.27	2.00	20.12	4.26
Ammonia-N (mg/L)	0.8	0.8	0.2	0.3		0.3	0.2	0.4	0.1		0.8	0.1	0.2	0.2			0.1					0.1	0.6			ns	0.7	0.2	0.1	0.2	0.1
Nitrate-N (mg/L)	3.75	1.25	1.25	1.25		5.00	7.50	3.75	5.00		1.25	15.00	2.50	5.00			15.00					1.25	2.50			ns	1.25	1.25	2.50	7.50	3.75
Orthophosphate (mg/L)	3.5	2.0	0.4	0.6		0.3	0.3	0.1	0.2		0.6	0.7	0.1	2.5			0.2					0.4	1.5			ns	2.0	0.3	0.3	0.7	0.6
Orthophosphate-P (mg/L)	1.14	0.65	0.13	0.20		0.10	0.10	0.03	0.07		0.20	0.23	0.03	0.82			0.07					0.13	0.49			ns	0.65	0.10	0.10	0.23	0.20
Surfactants (mg/l MBAS)Field test	0.75	0.50	0.50	0.75		0.50	0.50	0.25	0.25		0.25	0.50	0.25	>3.0			0.25					0.25	0.50			ns	0.25	0.50	0.50	0.50	0.25
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd											nd			
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						826		563					366				574											709			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.012		0.008					0.009				nd											0.010			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						nd		nd					0.024				0.021											nd			
Diazinon (µg/L)						nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						1,600,000		900,000					220,000				5,000											240,000			
Fecal Coliform (MPN/100mL)						14,000		1,400					3,000				230											800			
Enterococcus (MPN/100mL)						130,000		500					5,000				130											800			
2006 Round Two																															
Temp.℃	24.3	23.2	22.3	22.3		21.6	24.0	26.5	23.9		20.6	26.2	20.2	27.1			21.6					24.7	22.8			ns	19.9	19.0	20.8	21.5	19.0
pH	8.8	7.9	7.7	8.8		8.4	8.1	9.4	7.7		8.7	8.0	9.2	8.2			8.6					7.9	7.9			ns	8.4	8.5	8.0	8.2	8.5
Conductivity (µmhos/cm)	1,840	1,150	1,690	1,550		2,660	5,370	2,140	1,860		1,440	1,570	1,280	2,100			1,610					1,000	1,530			ns	900	2,610	2,650	1,400	930
Turbidity (NTU)	12.20	4.58	15.54	2.08		2.42	1.20	5.98	3.90		6.38	2.15	3.89	29.59			2.91					6.38	6.96			ns	8.27	4.15	1.77	26.66	4.11
Ammonia-N (mg/L)	0.4	0.4	0.1	0.2		0.3	0.2	0.2	0.1		0.2	0.1	0.1	1.3			0.1					0.1	0.6			ns	0.6	0.2	0.2	0.3	0.2
Nitrate-N (mg/L)	3.75	1.25	3.75	1.25		3.75	6.25	2.50	2.50		6.25	10.00	3.75	3.75			10.00					3.75	1.25			ns	2.50	1.25	2.50	5.00	2.50
Orthophosphate (mg/L)	3.0	0.2	0.6	2.0		0.6	0.4	nd	0.1		1.5	0.4	0.2	3.5			0.2					0.4	2.0			ns	1.5	0.4	0.3	0.6	1.5
Orthophosphate-P (mg/L)	0.98	0.07	0.20	0.65		0.20	0.13	nd	0.03		0.49	0.13	0.07	1.14			0.07					0.13	0.65			ns	0.49	0.13	0.10	0.20	0.49
Surfactants (mg/l MBAS)Field test	0.25	0.25	0.75	0.25		0.25	0.25	0.25	0.13		0.25	0.13	0.50	3.00			0.25					0.25	0.50			ns	0.25	0.75	0.25	0.67	0.25
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd											nd			
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						580		475					385				531											707			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.011		0.006					0.008				nd											nd			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						0.022		nd					0.027				nd											0.024			
Diazinon (µg/L)						3.91		0.28					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						170,000		80,000					130,000				30,000											22,000			
Fecal Coliform (MPN/100mL)						24,000		13,000					5,000				8,000											5,000			
Enterococcus (MPN/100mL)						30,000		24,000					500				300											2,300			

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	RCP3	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2007 Round One																															
Temp.℃	18.0	18.9	18.3	17.6		20.0	19.3	24.4	18.8		21.3	22.0	21.8	21.0			19.3					22.2	22.1				28.7	18.1	22.0	19.4	16.8
pH	8.2	7.5	9.2	8.3		8.3	8.2	8.9	8.5		8.1	7.9	9.2	8.2			8.5					7.8	8.2				8.8	8.7	7.8	7.5	8.2
Conductivity (mS/cm)	1.57	2.52	1.60	1.92		3.81	5.37	2.27	1.95		1.33	1.57	1.11	2.17			1.57					1.04	1.44				1.26	2.27	2.46	1.29	1.02
Turbidity (NTU)	4.78	5.22	4.93	4.15		3.31	1.26	3.32	1.77		5.56	11.79	3.45	48.79			0.25					2.01	9.08				10.86	3.32	2.53	7.32	3.04
Ammonia-N (mg/L)	nd	0.4	nd	0.1		0.2	0.1	0.4	0.1		0.8	nd	0.1	0.3			0.1					nd	0.3				0.4	0.1	0.2	0.1	nd
Nitrate-N (mg/L)	6.90	0.95	0.97	2.37		4.75	9.65	3.00	3.53		4.00	11.50	1.29	26.20			8.10					1.08	9.40				0.70	0.50	0.23	2.78	2.03
Orthophosphate (mg/L)	1.4	0.9	1.2	1.8		0.4	0.2	1.0	0.1		1.6	0.6	0.1	2.3			0.5					1.0	3.8				1.9	0.1	0.3	0.7	0.7
Orthophosphate-P (mg/L)	0.46	0.29	0.39	0.59		0.13	0.07	0.03	0.03		0.52	0.20	0.03	0.75			0.16					0.33	1.24				0.62	0.03	0.10	0.23	0.23
Surfactants (mg/l MBAS)Field test	0.50	0.50	0.75	0.50		1.00	0.75	0.38	0.25		0.50	0.25	0.38	3.00			0.25					0.50	0.75				0.50	0.38	0.25	0.50	0.38
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd											nd			
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						808		573					358				577											662			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.009		0.007					nd				0.010											nd			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						nd		nd					nd				nd											nd			
Diazinon (µg/L)						nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						13,000		23,000					23,000				13,000											50,000			
Fecal Coliform (MPN/100mL)						5,000		800					330				1,700											1,100			
Enterococcus (MPN/100mL)						1,300		800					800				2,800											1,300			
2007 Round Two																															
Temp.℃	23.5	20.2	21.5	20.1		23.4	24.9	24.5	21.0		20.9	27.4	17.7	24.5			22.0					24.8	19.8				26.8	20.8	22.7	18.3	17.5
pH	8.3	7.4	8.1	8.5		8.2	7.9	8.4	7.5		7.8	7.8	8.1	8.2			8.1					7.6	7.5				8.9	8.7	7.8	7.4	8.0
Conductivity (mS/cm)	1.81	2.20	1.49	1.27		3.33	4.60	2.17	1.75		1.26	1.48	1.34	1.73			1.44					1.13	1.51				1.55	2.04	2.09	1.44	0.87
Turbidity (NTU)	3.73	2.03	0.10	4.38		0.10	0.10	0.10	0.12		0.90	0.82	0.82	16.09			0.10					2.46	2.14				1.85	0.10	0.10	4.71	0.10
Ammonia-N (mg/L)	0.2	0.2	nd	0.1		0.2	0.2	0.4	0.2		nd	0.1	nd	0.6			nd					nd	0.1				0.1	0.1	0.1	0.3	nd
Nitrate-N (mg/L)	3.19	0.97	0.88	0.66		5.31	7.46	3.28	4.54		2.71	15.37	3.71	4.29			13.10					0.41	5.88				0.90	0.63	0.66	1.08	1.06
Orthophosphate (mg/L)	3.0	2.2	0.7	2.6		0.6	0.5	0.2	0.2		2.3	0.6	0.6	4.2			0.6					6.7	2.8				1.5	0.2	0.4	2.9	0.9
Orthophosphate-P (mg/L)	0.98	0.72	0.23	0.85		0.20	0.16	0.07	0.07		0.75	0.20	0.20	1.37			0.20					2.18	0.91				0.49	0.07	0.13	0.95	0.29
Surfactants (mg/l MBAS)Field test	0.50	0.63	0.13	0.50		0.50	0.50	0.25	0.38		0.75	0.13	0.50	0.50			0.25					0.75	0.75				0.38	0.50	0.25	0.75	0.13
Surfactants (mg/l MBAS)Lab test						nd		nd					nd				nd											nd			
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						765		629					479				436											606			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.012		0.005					nd				nd											nd			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						nd		nd					nd				nd											nd			
Diazinon (µg/L)						nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						50,000		13,000					50,000				23,000											30,000			
Fecal Coliform (MPN/100mL)						24,000		13,000					5,000				23,000											500			
Enterococcus (MPN/100mL)						8,000		5,000					2,300				24,000											230			
2008 Round One																															
Temp.℃	24.8	21.8	19.9	20.4		19.5	21.3	26.2	21.4		18.9	23.7	22.7	23.3			18.6					21.2	21.2				19.2	21.5	23.4	20.5	15.8
pH	8.3	7.4	8.2	8.1		8.2	7.8	9.1	7.0		8.2	7.5	7.8	8.0			8.2					7.6	8.2				7.8	8.4	7.8	7.5	7.7
Conductivity (mS/cm)	1.94	2.66	1.38	2.36		4.29	5.20	2.38	2.21		1.95	1.67	1.26	1.89			1.63					1.37	1.65				1.45	2.89	3.03	1.57	1.20
Turbidity (NTU)	1.14	0.01	0.01	0.27		0.01	0.01	0.52	0.01		0.01	1.41	0.74	0.87			0.01					1.04	1.35				0.01	0.20	0.01	0.01	0.04
Ammonia-N (mg/L)	0.1	1.4	nd	0.3		0.2	0.1	0.4	0.1		0.2	0.1	0.1	0.2			nd					0.1	0.1				nd	0.2	0.2	0.1	nd
Surfactants (mg/l MBAS)	0.38	0.50	0.13	0.75		0.50	0.50	0.38	0.25		0.63	0.38	0.13	0.50			0.25					0.38	0.50				0.75	0.50	0.50	0.50	0.38
Nitrate-N (mg/L)	1.0	3.5	1.4	1.8		9.1	8.7	2.2	8.0		17.9	14.7	0.8	22.6			15.4					2.0	9.0				0.6	0.7	0.7	3.5	3.1
Orthophosphate-P (mg/L)	0.30	0.16	0.07	0.40		0.13	0.20	0.07	0.50		0.20	0.20	0.20	0.30			0.10					0.13	0.50				0.30	nd	0.07	0.13	0.20
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						822		617					408				557											748			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.008		0.005					nd				nd											nd			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						nd		nd					nd				nd											nd			
Diazinon (µg/L)						nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						600		11,000					13,000				7,000											1,300			
Fecal Coliform (MPN/100mL)						400		3,000					300				500											130			
Enterococcus (MPN/100mL)						800		8,000					500				480											3,000			

City of Santee Dry Weather Historical Data

Site ID	A5c	E5g	G30c	H5e	I10d	J25c	J25c2	J30d	K15j2	O20b	O40b	P15b	P20f	Q5l	Q25k	Q26d	RCP1	RCP2	RCP3	R10b	R20a	S5c	S15h	T5d	T5e	T30b	U10a	V40d	V45k	Y15e	Z15b
2008 Round Two																															
Temp.°C	23.4	24.8	33.3	26.4		27.8	27.3	27.4	25.5		27.1	27.8	29.0	29.5			25.3					23.8	27.4				27.2	33.2	27.0	25.3	28.1
pH	8.3	7.6	9.4	8.4		8.4	7.9	8.3	7.8		7.8	7.8	8.9	7.7			8.5					8.3	8.0				9.3	9.2	7.8	7.6	7.5
Conductivity (mS/cm)	1.76	2.88	2.11	2.15		2.79	4.84	2.16	2.09		1.23	1.58	1.23	2.09			1.73					1.26	1.44				1.56	3.05	3.38	1.42	1.37
Turbidity (NTU)	190.00	10.63	11.58	0.01		0.82	0.01	1.69	0.01		3.24	0.01	0.90	239.00			0.01					1.29	6.80				11.74	0.50	3.34	1.24	3.85
Ammonia-N (mg/L)	0.179	0.424	0.446	0.244		0.222	0.303	0.311	0.245		0.554	0.191	0.236	1.760			0.212					0.026	0.216				0.523	0.279	0.278	0.116	0.348
Surfactants (mg/l MBAS)	0.13	0.25	0.25	0.13		0.25	0.38	0.25	0.13		0.13	0.13	0.25	0.75			0.25					0.13	0.38				0.25	0.25	0.25	0.25	0.25
Nitrate-N (mg/L)	2.32	1.40	1.13	3.02		4.00	7.18	2.46	4.08		0.74	12.06	0.64	0.95			9.50					1.89	1.06				1.20	0.72	0.73	1.55	1.61
Orthophosphate-P (mg/L)	1.172	0.315	0.329	0.510		0.384	0.295	0.056	nd		0.005	0.165	0.053	2.925			0.080					0.562	0.401				0.474	0.011	0.177	0.180	0.377
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						614		590					372				587											749			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.01600		0.00673					0.00319				0.00413											0.00737			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						0.0188		0.0172					0.0173				0.0226											0.0135			
Diazinon (µg/L)						nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						140,000		240,000					5,000				14,000											800			
Fecal Coliform (MPN/100mL)						5,000		28,000					800				9,000											300			
Enterococcus (MPN/100mL)						13,000		160,000					20				14,000											500			
2009 Round One																															
Temp.°C	21.4	22.1	29.0	25.3		20.8	25.2	20.9	28.6	19.1		24.6	23.8	19.8			21.5		21.8			24.7	24.6		24.4		ns	27.9	21.6	ns	19.8
pH	8.2	7.0	8.9	8.3		8.2	8.0	8.2	8.1	8.1		7.7	8.8	8.2			8.3		8.2			8.1	8.7		8.2		ns	8.6	7.9	ns	8.1
Conductivity (mS/cm)	2.14	5.12	3.02	1.52		4.39	4.47	2.68	2.44	1.51		1.62	1.36	1.84			1.60		1.84			1.02	1.64		1.05		ns	4.19	4.55	ns	1.13
Turbidity (NTU)	5.83	7.72	3.49	0.92		0.78	2.26	0.01	1.80	9.17		0.79	10.30	49.91			0.64		0.42			2.59	15.00		5.89		ns	1.68	0.01	ns	5.14
Ammonia-N (mg/L)	0.2	1.6	0.2	0.0		0.2	0.3	0.2	0.3	0.1		0.1	0.2	0.6			0.1		0.2			0.0	0.2		0.1		ns	0.1	0.2	ns	0.0
Surfactants (mg/l MBAS)	0.50	0.50	0.25	0.25		0.75	0.50	0.25	0.38	0.25		0.13	0.13	0.50			0.25		0.25			0.13	0.38		0.25		ns	0.50	0.50	ns	0.13
Nitrate-N (mg/L)	4.8	8.4	3.4	1.1		7.0	5.9	4.9	5.2	2.3		7.0	2.6	6.4			9.3		0.9			0.3	1.3		0.4		ns	0.1	0.1	ns	1.0
Orthophosphate-P (mg/L)	0.47	0.99	0.08	0.09		0.04	0.10	0.01	0.02	0.49		0.13	0.05	0.72			0.09		0.10			0.04	0.44		0.39		ns	0.00	0.02	ns	0.30
Oil and Grease (mg/L)						ND		ND					ND				ND											ND			
Total Hardness (mg/L)						780		685					356				520											1020			
Cadmium-diss (mg/L)						ND		ND					ND				ND											ND			
Copper-diss (mg/L)						0.006		ND					ND				ND											ND			
Lead-diss (mg/L)						ND		ND					ND				ND											ND			
Zinc-diss (mg/L)						ND		ND					ND				ND											ND			
Diazinon (µg/L)						ND		ND					ND				ND											ND			
Chlorpyrifos (µg/L)						ND		ND					ND				ND											ND			
Total Coliform (MPN/100mL)						8,000		11,000					11,000				8,000											1,700			
Fecal Coliform (MPN/100mL)						170		3,000					400				70											500			
Enterococcus (MPN/100mL)						1,300		3,000					500				2,300											300			
2009 Round Two																															
Temp.°C	25.1	24.8	33.0	27.9		26.4	30.1	30.8	29.9	26.2		30.5	28.0	25.2			28.0		23.6			28.8	27.1		23.0		ns	34.4	26.1	ns	25.9
pH	8.0	7.4	8.8	7.9		8.3	7.9	8.0	7.7	8.0		7.7	8.2	8.0			8.2		8.0			7.8	7.9		7.5		ns	9.1	7.7	ns	7.6
Conductivity (mS/cm)	2.16	3.26	2.58	2.70		4.36	5.42	3.11	2.02	1.36		1.60	1.53	1.86			1.50		1.73			2.48	1.46		1.59		ns	3.00	2.60	ns	2.35
Turbidity (NTU)	18.10	12.68	3.46	1.14		0.18	0.41	8.66	0.80	1.21		0.82	3.50	112.00			0.50		0.49			1.60	16.76		7.68		ns	1.95	3.70	ns	7.79
Ammonia-N (mg/L)	0.432	0.693	0.214	0.285		0.221	0.240	0.643	0.210	0.430		0.202	0.268	0.595			0.170		0.177			0.273	0.750		0.110		ns	0.177	0.271	ns	0.256
Surfactants (mg/l MBAS)	0.75	0.50	0.25	0.25		0.38	0.38	0.25	0.13	0.25		0.13	0.25	0.75			0.13		0.25			0.25	0.75		0.25		ns	0.25	0.25	ns	0.50
Nitrate-N (mg/L)	1.33	0.55	2.86	0.81		7.94	6.01	2.43	5.36	0.71		13.42	5.66	2.88			9.96		9.93			1.30	1.27		0.18		ns	0.09	0.12	ns	0.60
Orthophosphate-P (mg/L)	0.712	0.465	0.186	0.414		0.196	0.054	0.044	0.037	0.228		0.156	0.016	9.343			0.103		0.152			0.267	0.839		0.057		ns	0.015	0.064	ns	0.163
Oil and Grease (mg/L)						nd		nd					nd				nd											nd			
Total Hardness (mg/L)						931		834					534				553											773			
Cadmium-diss (mg/L)						nd		nd					nd				nd											nd			
Copper-diss (mg/L)						0.02100		0.004					0.003				0.002											0.005			
Lead-diss (mg/L)						nd		nd					nd				nd											nd			
Zinc-diss (mg/L)						nd		nd					nd				nd											nd			
Diazinon (µg/L)						nd		nd					nd				nd											nd			
Chlorpyrifos (µg/L)						nd		nd					nd				nd											nd			
Total Coliform (MPN/100mL)						13,000		300,000					22,000				13,000											2,300			
Fecal Coliform (MPN/100mL)						13,000		90,000					17,000				8,000											300			
Enterococcus (MPN/100mL)						5,000		30,000					110				800											130			

Appendix B

Photographs of Sampling Locations

Site A5c	
Site E5g1	
Site G30c	

Site H5e	
Site I10c	
Site J25c	

Site J25c2	
Site J30d1	
Site O15f	

Site O40b	
Site P10a	
Site P20f	

Site Q20a	
Site RCP1	
Site RCP3	

Site S5c	
Site S15h	
Site T5e	

Site V40d	
Site V45k	
Site W30C	

Site Z15a1		

Appendix C

Laboratory Analytical Reports

Round One

EnviroMatrix Analytical, Inc.

01 June 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10E0523

Project Name: Santee Dry Weather
Project Desc./#: 201022W-2

Enclosed are the results of analyses for samples received by the laboratory on 05/19/10 15:18. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
RCP1	10E0523-01	Stormwater	05/19/10 11:15	05/19/10 15:18
J25c	10E0523-02	Stormwater	05/19/10 12:10	05/19/10 15:18
J30d1	10E0523-03	Stormwater	05/19/10 14:10	05/19/10 15:18

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (10E0523-01) Stormwater Sampled: 05/19/10 11:15 Received: 05/19/10 15:18										
Cadmium	**0.0003**	0.0002	0.001	mg/l	1	0052434	05/24/10	05/25/10	EPA 200.8	J
Copper	**0.017**	0.001	0.010	"	"	"	"	"	"	
Lead	ND	0.001	0.005	"	"	"	"	"	"	
Zinc	**0.020**	0.0003	0.020	"	"	"	"	"	"	
J25c (10E0523-02) Stormwater Sampled: 05/19/10 12:10 Received: 05/19/10 15:18										
Copper	**0.009**	0.001	0.010	mg/l	1	0052434	05/24/10	05/25/10	EPA 200.8	J
Cadmium	**0.0004**	0.0002	0.001	"	"	"	"	"	"	J
Lead	ND	0.001	0.005	"	"	"	"	"	"	
Zinc	ND	0.0003	0.020	"	"	"	"	"	"	
J30d1 (10E0523-03) Stormwater Sampled: 05/19/10 14:10 Received: 05/19/10 15:18										
Zinc	ND	0.0003	0.020	mg/l	1	0052434	05/24/10	05/25/10	EPA 200.8	
Lead	ND	0.001	0.005	"	"	"	"	"	"	
Copper	**0.002**	0.001	0.010	"	"	"	"	"	"	J
Cadmium	**0.0002**	0.0002	0.001	"	"	"	"	"	"	J

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (10E0523-01) Stormwater	**Sampled: 05/19/10 11:15**		**Received: 05/19/10 15:18**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0052501	05/25/10	05/26/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*120 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*112 %*	*60-130*			"	"	"	"	
J25c (10E0523-02) Stormwater	**Sampled: 05/19/10 12:10**		**Received: 05/19/10 15:18**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0052501	05/25/10	05/30/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*132 %*	*60-130*			"	"	"	"	*S-02, S-04*
Surrogate: Tribuytlphosphate		*128 %*	*60-130*			"	"	"	"	
J30d1 (10E0523-03) Stormwater	**Sampled: 05/19/10 14:10**		**Received: 05/19/10 15:18**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0052501	05/25/10	05/30/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*124 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*120 %*	*60-130*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (10E0523-01) Stormwater Sampled: 05/19/10 11:15 Received: 05/19/10 15:18										
Hardness (Total)	**496**	100	100	mg CaCO3/L	10	0052621	05/25/10	05/27/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0052543	05/25/10	05/25/10	EPA 1664A	
J25c (10E0523-02) Stormwater Sampled: 05/19/10 12:10 Received: 05/19/10 15:18										
Hardness (Total)	**757**	100	100	mg CaCO3/L	10	0052621	05/25/10	05/27/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0052543	05/25/10	05/25/10	EPA 1664A	
J30d1 (10E0523-03) Stormwater Sampled: 05/19/10 14:10 Received: 05/19/10 15:18										
Hardness (Total)	**785**	100	100	mg CaCO3/L	10	0052621	05/25/10	05/27/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0052543	05/25/10	05/25/10	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (10E0523-01) Stormwater Sampled: 05/19/10 11:15 Received: 05/19/10 15:18										
Total Coliforms	**3000**	200	200	MPN/100 ml	100	0052024	05/19/10	05/23/10	SM 9221 B, E	
Fecal Coliforms	**20**	20	20	"	10	"	"	05/22/10	"	
Enterococcus	**2300**	200	200	"	100	0052025	"	05/23/10	SM 9230 A, B	
J25c (10E0523-02) Stormwater Sampled: 05/19/10 12:10 Received: 05/19/10 15:18										
Total Coliforms	**23000**	2000	2000	MPN/100 ml	1000	0052024	05/19/10	05/23/10	SM 9221 B, E	
Fecal Coliforms	**1700**	20	20	"	10	"	"	05/22/10	"	
Enterococcus	**50000**	200	200	"	100	0052025	"	05/23/10	SM 9230 A, B	
J30d1 (10E0523-03) Stormwater Sampled: 05/19/10 14:10 Received: 05/19/10 15:18										
Total Coliforms	**5000**	200	200	MPN/100 ml	100	0052024	05/19/10	05/23/10	SM 9221 B, E	
Fecal Coliforms	ND	20	20	"	10	"	"	05/22/10	"	
Enterococcus	**500**	20	20	"	"	0052025	"	05/23/10	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052434											
Blank (0052434-BLK1)					Prepared & Analyzed: 05/24/10						
Copper	ND	0.001	0.010	mg/l							
Lead	ND	0.001	0.005	"							
Zinc	ND	0.0003	0.020	"							
Cadmium	ND	0.0002	0.001	"							
LCS (0052434-BS1)					Prepared & Analyzed: 05/24/10						
Cadmium	0.047	0.0002	0.001	mg/l	0.0500		94	75-125			
Copper	0.046	0.001	0.010	"	0.0500		93	75-125			
Lead	0.050	0.001	0.005	"	0.0500		99	75-125			
Zinc	0.047	0.0003	0.020	"	0.0500		95	75-125			
LCS Dup (0052434-BSD1)					Prepared & Analyzed: 05/24/10						
Cadmium	0.048	0.0002	0.001	mg/l	0.0500		95	75-125	2	20	
Copper	0.047	0.001	0.010	"	0.0500		94	75-125	2	20	
Lead	0.049	0.001	0.005	"	0.0500		98	75-125	1	20	
Zinc	0.048	0.0003	0.020	"	0.0500		96	75-125	1	20	
Duplicate (0052434-DUP1)			**Source: 10E0547-01**		Prepared: 05/24/10	Analyzed: 05/25/10					
Cadmium	ND	0.0002	0.001	mg/l		ND				20	
Zinc	ND	0.0003	0.020	"		ND				20	
Copper	ND	0.001	0.010	"		ND				20	
Lead	ND	0.001	0.005	"		ND				20	
Matrix Spike (0052434-MS1)			**Source: 10E0547-01**		Prepared: 05/24/10	Analyzed: 05/25/10					
Cadmium	0.048	0.0002	0.001	mg/l	0.0500	ND	97	75-125			
Copper	0.048	0.001	0.010	"	0.0500	ND	96	75-125			
Lead	0.046	0.001	0.005	"	0.0500	ND	92	75-125			
Zinc	0.044	0.0003	0.020	"	0.0500	ND	87	75-125			

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Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052434											
Matrix Spike Dup (0052434-MSD1)			**Source: 10E0547-01**		Prepared: 05/24/10	Analyzed: 05/25/10					
Cadmium	0.050	0.0002	0.001	mg/l	0.0500	ND	100	75-125	3	20	
Copper	0.049	0.001	0.010	"	0.0500	ND	97	75-125	1	20	
Lead	0.045	0.001	0.005	"	0.0500	ND	91	75-125	1	20	
Zinc	0.044	0.0003	0.020	"	0.0500	ND	88	75-125	1	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052501											
Blank (0052501-BLK1)					Prepared: 05/25/10	Analyzed: 05/30/10					
Chlorpyrifos	ND	0.04	0.05	ug/l							
Diazinon	ND	0.04	0.05	"							
Malathion	ND	0.05	0.05	"							
Surrogate: Triphenyl phosphate	*0.290*			*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*			*"*	*0.250*		*116*	*60-130*			
LCS (0052501-BS1)					Prepared: 05/25/10	Analyzed: 05/30/10					
Bolstar	0.45	0.09	0.10	ug/l	0.500		90	60-130			
Diazinon	0.53	0.04	0.05	"	0.500		106	60-130			
Ethoprop	0.58	0.05	0.05	"	0.500		116	60-130			
Mevinphos	0.55	0.21	0.25	"	0.500		110	60-130			
Methyl parathion	0.55	0.07	0.10	"	0.500		110	60-130			
Phorate	0.48	0.03	0.05	"	0.500		96	60-130			
Ronnel	0.55	0.16	0.25	"	0.500		110	60-130			
Trichlorinate	0.56	0.05	0.05	"	0.500		112	60-130			
Surrogate: Triphenyl phosphate	*0.300*			*"*	*0.250*		*120*	*60-130*			
Surrogate: Tribuytlphosphate	*0.310*			*"*	*0.250*		*124*	*60-130*			
LCS Dup (0052501-BSD1)					Prepared: 05/25/10	Analyzed: 05/30/10					
Bolstar	0.46	0.09	0.10	ug/l	0.500		92	60-130	2	30	
Diazinon	0.55	0.04	0.05	"	0.500		110	60-130	4	30	
Ethoprop	0.57	0.05	0.05	"	0.500		114	60-130	2	30	
Mevinphos	0.56	0.21	0.25	"	0.500		112	60-130	2	30	
Methyl parathion	0.56	0.07	0.10	"	0.500		112	60-130	2	30	
Phorate	0.48	0.03	0.05	"	0.500		96	60-130	0	30	
Ronnel	0.55	0.16	0.25	"	0.500		110	60-130	0	30	
Trichlorinate	0.56	0.05	0.05	"	0.500		112	60-130	0	30	
Surrogate: Triphenyl phosphate	*0.310*			*"*	*0.250*		*124*	*60-130*			
Surrogate: Tribuytlphosphate	*0.320*			*"*	*0.250*		*128*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0523

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052543											
Blank (0052543-BLK1)					Prepared & Analyzed: 05/25/10						
Oil & Grease	ND	5	5	mg/l							
LCS (0052543-BS1)					Prepared & Analyzed: 05/25/10						
Oil & Grease	35	5	5	mg/l	40.0		88	78-114			
LCS Dup (0052543-BSD1)					Prepared & Analyzed: 05/25/10						
Oil & Grease	33	5	5	mg/l	40.0		84	78-114	5	20	
Batch 0052621											
Blank (0052621-BLK1)					Prepared: 05/25/10 Analyzed: 05/27/10						
Hardness (Total)	ND	10	10	mg CaCO3/L							
Duplicate (0052621-DUP1)			**Source: 10E0520-03**		Prepared: 05/25/10 Analyzed: 05/27/10						
Hardness (Total)	1160	100	100	mg CaCO3/L		1150			1	20	

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Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 10E0523

Client: D-Max Engineering, INC
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr Dadkhah / Annika Kubischta
Address: 7220 Trade St Ste 119
San Diego, CA 92121
Phone: (858) 586-6600 Fax: (858) 586-6644
Email:
Billing Address: Same

Project ID: Santee Dry Weather Monitoring
Project #: 201022W-2 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 X 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn X Dissolved	Coliform, X Total (MTF) X Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, X MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total Hardness				
1	RCP1	5/19/10	11:15	SW	2/g 4/p	X						X						X	X		X		X				
2	J25c	"	12:10	"	"	X						X						X	X		X		X				
3	J30d1	"	14:10	"	"	X						X						X	X		X		X				
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: X Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day X 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature [signature]	5/19/10 3:02	Signature [signature]
Print Annika Kubischta		Print Louis Luna
Company: D-Max Engineering		Company: EMA
Signature [signature]	5-19-10 3:18	Signature [signature]
Print Louis Luna		Print Matt Cloyd
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: 3'c or ice

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

01 June 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10E0530

Project Name: Santee Dry Weather
Project Desc./#: 201022W-2

Enclosed are the results of analyses for samples received by the laboratory on 05/20/10 11:08. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
V40d	10E0530-01	Stormwater	05/20/10 09:15	05/20/10 11:08
P20f	10E0530-02	Stormwater	05/20/10 10:10	05/20/10 11:08

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V40d (10E0530-01) Stormwater Sampled: 05/20/10 09:15 Received: 05/20/10 11:08										
Zinc	ND	0.0003	0.020	mg/l	1	0052434	05/24/10	05/25/10	EPA 200.8	
Cadmium	**0.0003**	0.0002	0.001	"	"	"	"	"	"	J
Copper	**0.002**	0.001	0.010	"	"	"	"	"	"	J
Lead	ND	0.001	0.005	"	"	"	"	"	"	
P20f (10E0530-02) Stormwater Sampled: 05/20/10 10:10 Received: 05/20/10 11:08										
Zinc	**0.001**	0.0003	0.020	mg/l	1	0052434	05/24/10	05/25/10	EPA 200.8	J
Lead	ND	0.001	0.005	"	"	"	"	"	"	
Copper	**0.002**	0.001	0.010	"	"	"	"	"	"	J
Cadmium	**0.0003**	0.0002	0.001	"	"	"	"	"	"	J

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V40d (10E0530-01) Stormwater	**Sampled: 05/20/10 09:15**		**Received: 05/20/10 11:08**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0052501	05/25/10	05/30/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*108 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*124 %*	*60-130*			"	"	"	"	
P20f (10E0530-02) Stormwater	**Sampled: 05/20/10 10:10**		**Received: 05/20/10 11:08**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0052501	05/25/10	05/30/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*88 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*120 %*	*60-130*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V40d (10E0530-01) Stormwater Sampled: 05/20/10 09:15 Received: 05/20/10 11:08										
Hardness (Total)	**1130**	100	100	mg CaCO3/L	10	0052534	05/24/10	05/25/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0060107	05/28/10	05/28/10	EPA 1664A	
P20f (10E0530-02) Stormwater Sampled: 05/20/10 10:10 Received: 05/20/10 11:08										
Hardness (Total)	**467**	100	100	mg CaCO3/L	10	0052534	05/24/10	05/25/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0060107	05/28/10	05/28/10	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V40d (10E0530-01) Stormwater Sampled: 05/20/10 09:15 Received: 05/20/10 11:08										
Total Coliforms	**1700**	20	20	MPN/100 ml	10	0052102	05/20/10	05/24/10	SM 9221 B, E	
Fecal Coliforms	**1300**	20	20	"	"	"	"	05/23/10	"	
Enterococcus	**170**	20	20	"	"	0052103	"	05/24/10	SM 9230 A, B	
P20f (10E0530-02) Stormwater Sampled: 05/20/10 10:10 Received: 05/20/10 11:08										
Total Coliforms	**30000**	2000	2000	MPN/100 ml	1000	0052102	05/20/10	05/24/10	SM 9221 B, E	
Fecal Coliforms	**500**	20	20	"	10	"	"	05/23/10	"	
Enterococcus	**500**	20	20	"	"	0052103	"	05/24/10	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052434											
Blank (0052434-BLK1)					Prepared & Analyzed: 05/24/10						
Copper	ND	0.001	0.010	mg/l							
Lead	ND	0.001	0.005	"							
Zinc	ND	0.0003	0.020	"							
Cadmium	ND	0.0002	0.001	"							
LCS (0052434-BS1)					Prepared & Analyzed: 05/24/10						
Cadmium	0.047	0.0002	0.001	mg/l	0.0500		94	75-125			
Copper	0.046	0.001	0.010	"	0.0500		93	75-125			
Lead	0.050	0.001	0.005	"	0.0500		99	75-125			
Zinc	0.047	0.0003	0.020	"	0.0500		95	75-125			
LCS Dup (0052434-BSD1)					Prepared & Analyzed: 05/24/10						
Cadmium	0.048	0.0002	0.001	mg/l	0.0500		95	75-125	2	20	
Copper	0.047	0.001	0.010	"	0.0500		94	75-125	2	20	
Lead	0.049	0.001	0.005	"	0.0500		98	75-125	1	20	
Zinc	0.048	0.0003	0.020	"	0.0500		96	75-125	1	20	
Duplicate (0052434-DUP1)			**Source: 10E0547-01**		Prepared: 05/24/10	Analyzed: 05/25/10					
Cadmium	ND	0.0002	0.001	mg/l		ND				20	
Zinc	ND	0.0003	0.020	"		ND				20	
Copper	ND	0.001	0.010	"		ND				20	
Lead	ND	0.001	0.005	"		ND				20	
Matrix Spike (0052434-MS1)			**Source: 10E0547-01**		Prepared: 05/24/10	Analyzed: 05/25/10					
Cadmium	0.048	0.0002	0.001	mg/l	0.0500	ND	97	75-125			
Copper	0.048	0.001	0.010	"	0.0500	ND	96	75-125			
Lead	0.046	0.001	0.005	"	0.0500	ND	92	75-125			
Zinc	0.044	0.0003	0.020	"	0.0500	ND	87	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052434											
Matrix Spike Dup (0052434-MSD1)			**Source: 10E0547-01**		Prepared: 05/24/10	Analyzed: 05/25/10					
Cadmium	0.050	0.0002	0.001	mg/l	0.0500	ND	100	75-125	3	20	
Copper	0.049	0.001	0.010	"	0.0500	ND	97	75-125	1	20	
Lead	0.045	0.001	0.005	"	0.0500	ND	91	75-125	1	20	
Zinc	0.044	0.0003	0.020	"	0.0500	ND	88	75-125	1	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052501											
Blank (0052501-BLK1)					Prepared: 05/25/10	Analyzed: 05/30/10					
Chlorpyrifos	ND	0.04	0.05	ug/l							
Diazinon	ND	0.04	0.05	"							
Malathion	ND	0.05	0.05	"							
Surrogate: Triphenyl phosphate	*0.290*			*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*			*"*	*0.250*		*116*	*60-130*			
LCS (0052501-BS1)					Prepared: 05/25/10	Analyzed: 05/30/10					
Bolstar	0.45	0.09	0.10	ug/l	0.500		90	60-130			
Diazinon	0.53	0.04	0.05	"	0.500		106	60-130			
Ethoprop	0.58	0.05	0.05	"	0.500		116	60-130			
Mevinphos	0.55	0.21	0.25	"	0.500		110	60-130			
Methyl parathion	0.55	0.07	0.10	"	0.500		110	60-130			
Phorate	0.48	0.03	0.05	"	0.500		96	60-130			
Ronnel	0.55	0.16	0.25	"	0.500		110	60-130			
Trichlorinate	0.56	0.05	0.05	"	0.500		112	60-130			
Surrogate: Triphenyl phosphate	*0.300*			*"*	*0.250*		*120*	*60-130*			
Surrogate: Tribuytlphosphate	*0.310*			*"*	*0.250*		*124*	*60-130*			
LCS Dup (0052501-BSD1)					Prepared: 05/25/10	Analyzed: 05/30/10					
Bolstar	0.46	0.09	0.10	ug/l	0.500		92	60-130	2	30	
Diazinon	0.55	0.04	0.05	"	0.500		110	60-130	4	30	
Ethoprop	0.57	0.05	0.05	"	0.500		114	60-130	2	30	
Mevinphos	0.56	0.21	0.25	"	0.500		112	60-130	2	30	
Methyl parathion	0.56	0.07	0.10	"	0.500		112	60-130	2	30	
Phorate	0.48	0.03	0.05	"	0.500		96	60-130	0	30	
Ronnel	0.55	0.16	0.25	"	0.500		110	60-130	0	30	
Trichlorinate	0.56	0.05	0.05	"	0.500		112	60-130	0	30	
Surrogate: Triphenyl phosphate	*0.310*			*"*	*0.250*		*124*	*60-130*			
Surrogate: Tribuytlphosphate	*0.320*			*"*	*0.250*		*128*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10E0530

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052534											
Blank (0052534-BLK1)					Prepared: 05/24/10	Analyzed: 05/25/10					
Hardness (Total)	ND	10	10	mg CaCO3/L							
Duplicate (0052534-DUP1)			**Source: 10E0469-01**		Prepared: 05/24/10	Analyzed: 05/25/10					
Hardness (Total)	857	100	100	mg CaCO3/L		803			7	20	
Batch 0060107											
Blank (0060107-BLK1)					Prepared & Analyzed: 05/28/10						
Oil & Grease	ND	5	5	mg/l							
LCS (0060107-BS1)					Prepared & Analyzed: 05/28/10						
Oil & Grease	37	5	5	mg/l	40.0		92	78-114			
LCS Dup (0060107-BSD1)					Prepared & Analyzed: 05/28/10						
Oil & Grease	38	5	5	mg/l	40.0		95	78-114	3	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 1020530

Client: D-Max Engineering, INC
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr Dadkhah / Annika Kubischta
Address: 7220 Trade St Ste 114
San Diego, CA 92121
Phone: (858) 586-6600 Fax: (858) 586-6644
Email:
Billing Address: Same

Project ID: Santee Dry Weather Monitoring
Project #: 2010220W-2 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 ☒ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn ☒ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Total Hardness				
1	V40d	5/20/10	9:15	SW	3/g 4/p	X						X						X	X		X		X				
2	P20f	"	10:10	SW	"	X						X						X	X		X		X				
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature [signature]	5/20/10 1050	Signature [signature]
Print Annika Kubischta		Print Louis Lunch
Company: D-Max Engineering		Company: EMA
Signature [signature]	5-20-10 11:08	Signature [signature]
Print Louis Luna		Print [signature]
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: 5°C on Ice

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

09 June 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10F0093

Project Name: Santee Dry Weather
Project Desc./#: 201022W-3

Enclosed are the results of analyses for samples received by the laboratory on 06/02/10 12:57. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10F0093

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J25c	10F0093-01	Stormwater	06/02/10 09:40	06/02/10 12:57
J25c-1	10F0093-02	Stormwater	06/02/10 10:30	06/02/10 12:57
J25c-2	10F0093-03	Stormwater	06/02/10 10:35	06/02/10 12:57
J25c-3	10F0093-04	Stormwater	06/02/10 10:55	06/02/10 12:57
J25c-4	10F0093-05	Stormwater	06/02/10 11:00	06/02/10 12:57

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10F0093

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Date Prepared Date Analyzed	Method	Notes
J25c (10F0093-01) Stormwater Sampled: 06/02/10 09:40 Received: 06/02/10 12:57								
Enterococcus	**3448**	10	MPN/100 ml	10	0060320	06/02/10 14:15 06/03/10 14:21	Idexx	
J25c-1 (10F0093-02) Stormwater Sampled: 06/02/10 10:30 Received: 06/02/10 12:57								
Enterococcus	**109**	10	MPN/100 ml	10	0060320	06/02/10 14:15 06/03/10 14:21	Idexx	
J25c-2 (10F0093-03) Stormwater Sampled: 06/02/10 10:35 Received: 06/02/10 12:57								
Enterococcus	**19863**	10	MPN/100 ml	10	0060320	06/02/10 14:15 06/03/10 14:21	Idexx	
J25c-3 (10F0093-04) Stormwater Sampled: 06/02/10 10:55 Received: 06/02/10 12:57								
Enterococcus	**262**	10	MPN/100 ml	10	0060320	06/02/10 14:15 06/03/10 14:21	Idexx	
J25c-4 (10F0093-05) Stormwater Sampled: 06/02/10 11:00 Received: 06/02/10 12:57								
Enterococcus	**1616**	10	MPN/100 ml	10	0060320	06/02/10 14:15 06/03/10 14:21	Idexx	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10F0093

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

– EnviroMatrix EMA Analytical, Inc. –
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 10E0093

Client: D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr Dadkhah / Annika Kubischta
Address: 7220 Trade St Ste 119
San Diego, CA 92121
Phone: (858) 586-6600 Fax: (858) 586-6644
Email:
Billing Address: Same

Project ID: Santee Dry Weather Follow-Up
Project #: 20022W-3 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform. □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, □ MTF X Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide				
1	J25c	6/2/10	9:40	SW	1/p																X						
2	J25c-1	"	10:30	"	"																X						
3	J25c-2	"	10:35	"	"																X						
4	J25c-3	"	10:55	"	"																X						
5	J25c-4	"	11:00	"	"																X						
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: X Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day X 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A — Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A — Temp @ Receipt: .....
COC/Labels Agree: Yes No N/A — Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature [signature]	6/2/10 12:57	Signature [signature]
Print Annika Kubischta		Print [signature]
Company: D-Max Engineering		Company: EMA
Signature		Signature
Print		Print
Company:		Company:
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: 3°C on ice

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

Round Two

EnviroMatrix Analytical, Inc.

23 September 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10I0395

Project Name: Santee Dry Weather
Project Desc./#: 201022W-2

Enclosed are the results of analyses for samples received by the laboratory on 09/16/10 13:13. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
RCP1	10I0395-01	Stormwater	09/16/10 10:50	09/16/10 13:13
J30d1	10I0395-02	Stormwater	09/16/10 12:10	09/16/10 13:13

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (10I0395-01) Stormwater Sampled: 09/16/10 10:50 Received: 09/16/10 13:13										
Zinc	**0.003**	0.0003	0.020	mg/l	1	0092119	09/21/10	09/21/10	EPA 200.8	J
Cadmium	ND	0.0002	0.001	"	"	"	"	"	"	
Copper	ND	0.001	0.010	"	"	"	"	"	"	
Lead	ND	0.001	0.005	"	"	"	"	"	"	
J30d1 (10I0395-02) Stormwater Sampled: 09/16/10 12:10 Received: 09/16/10 13:13										
Zinc	**0.005**	0.0003	0.020	mg/l	1	0092119	09/21/10	09/21/10	EPA 200.8	J
Lead	ND	0.001	0.005	"	"	"	"	"	"	
Copper	**0.001**	0.001	0.010	"	"	"	"	"	"	J
Cadmium	**0.0002**	0.0002	0.001	"	"	"	"	"	"	J

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (10I0395-01) Stormwater	**Sampled: 09/16/10 10:50**		**Received: 09/16/10 13:13**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0092001	09/19/10	09/20/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*120 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*104 %*	*60-130*			"	"	"	"	
J30d1 (10I0395-02) Stormwater	**Sampled: 09/16/10 12:10**		**Received: 09/16/10 13:13**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0092001	09/19/10	09/20/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*116 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*116 %*	*60-130*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (10I0395-01) Stormwater Sampled: 09/16/10 10:50 Received: 09/16/10 13:13										
Hardness (Total)	**572**	100	100	mg CaCO3/L	10	0092104	09/20/10	09/21/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0092225	09/22/10	09/22/10	EPA 1664A	
J30d1 (10I0395-02) Stormwater Sampled: 09/16/10 12:10 Received: 09/16/10 13:13										
Hardness (Total)	**777**	100	100	mg CaCO3/L	10	0092104	09/20/10	09/21/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0092225	09/22/10	09/22/10	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RCP1 (10I0395-01) Stormwater	**Sampled: 09/16/10 10:50**		**Received: 09/16/10 13:13**							
Total Coliforms	**8000**	200	200	MPN/100 ml	100	0091716	09/16/10	09/20/10	SM 9221 B, E	
Fecal Coliforms	**1700**	20	20	"	10	"	"	09/19/10	"	
Enterococcus	**170**	20	20	"	"	0091717	"	09/20/10	SM 9230 A, B	
J30d1 (10I0395-02) Stormwater	**Sampled: 09/16/10 12:10**		**Received: 09/16/10 13:13**							
Total Coliforms	**1400**	20	20	MPN/100 ml	10	0091716	09/16/10	09/20/10	SM 9221 B, E	
Fecal Coliforms	**210**	20	20	"	"	"	"	09/19/10	"	
Enterococcus	**40**	20	20	"	"	0091717	"	09/20/10	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092119											
Blank (0092119-BLK1)					Prepared & Analyzed: 09/21/10						
Cadmium	ND	0.0002	0.001	mg/l							
Copper	ND	0.001	0.010	"							
Lead	ND	0.001	0.005	"							
Zinc	ND	0.0003	0.020	"							
LCS (0092119-BS1)					Prepared & Analyzed: 09/21/10						
Zinc	0.050	0.0003	0.020	mg/l	0.0500		101	75-125			
Lead	0.050	0.001	0.005	"	0.0500		101	75-125			
Cadmium	0.051	0.0002	0.001	"	0.0500		101	75-125			
Copper	0.050	0.001	0.010	"	0.0500		101	75-125			
LCS Dup (0092119-BSD1)					Prepared & Analyzed: 09/21/10						
Lead	0.051	0.001	0.005	mg/l	0.0500		102	75-125	1	20	
Copper	0.051	0.001	0.010	"	0.0500		101	75-125	0.4	20	
Cadmium	0.051	0.0002	0.001	"	0.0500		103	75-125	1	20	
Zinc	0.051	0.0003	0.020	"	0.0500		102	75-125	1	20	
Duplicate (0092119-DUP1)		**Source: 10I0326-01**			Prepared & Analyzed: 09/21/10						
Cadmium	0.0008	0.0002	0.001	mg/l		0.0008			5	20	J
Copper	0.023	0.001	0.010	"		0.023			2	20	
Zinc	0.144	0.0003	0.020	"		0.146			2	20	
Lead	0.003	0.001	0.005	"		0.003			1	20	J
Matrix Spike (0092119-MS1)		**Source: 10I0326-01**			Prepared & Analyzed: 09/21/10						
Cadmium	0.049	0.0002	0.001	mg/l	0.0500	0.0008	96	75-125			
Copper	0.067	0.001	0.010	"	0.0500	0.023	87	75-125			
Lead	0.057	0.001	0.005	"	0.0500	0.003	107	75-125			
Zinc	0.186	0.0003	0.020	"	0.0500	0.146	81	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092119											
Matrix Spike Dup (0092119-MSD1)			**Source: 10I0326-01**		Prepared & Analyzed: 09/21/10						
Zinc	0.185	0.0003	0.020	mg/l	0.0500	0.146	77	75-125	1	20	
Cadmium	0.047	0.0002	0.001	"	0.0500	0.0008	93	75-125	3	20	
Lead	0.053	0.001	0.005	"	0.0500	0.003	100	75-125	7	20	
Copper	0.066	0.001	0.010	"	0.0500	0.023	85	75-125	1	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092001											
Blank (0092001-BLK1)					Prepared: 09/19/10	Analyzed: 09/20/10					
Chlorpyrifos	ND	0.04	0.05	ug/l							
Diazinon	ND	0.04	0.05	"							
Malathion	ND	0.05	0.05	"							
Surrogate: Triphenyl phosphate	*0.270*			*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.250*			*"*	*0.250*		*100*	*60-130*			
LCS (0092001-BS1)					Prepared: 09/19/10	Analyzed: 09/20/10					
Bolstar	0.44	0.09	0.10	ug/l	0.500		88	60-130			
Diazinon	0.43	0.04	0.05	"	0.500		86	60-130			
Ethoprop	0.42	0.05	0.05	"	0.500		84	60-130			
Mevinphos	0.42	0.21	0.25	"	0.500		84	60-130			
Methyl parathion	0.41	0.07	0.10	"	0.500		82	60-130			
Phorate	0.44	0.03	0.05	"	0.500		88	60-130			
Ronnel	0.44	0.16	0.25	"	0.500		88	60-130			
Trichlorinate	0.42	0.05	0.05	"	0.500		84	60-130			
Surrogate: Triphenyl phosphate	*0.270*			*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.250*			*"*	*0.250*		*100*	*60-130*			
LCS Dup (0092001-BSD1)					Prepared: 09/19/10	Analyzed: 09/20/10					
Bolstar	0.43	0.09	0.10	ug/l	0.500		86	60-130	2	30	
Diazinon	0.45	0.04	0.05	"	0.500		90	60-130	5	30	
Ethoprop	0.43	0.05	0.05	"	0.500		86	60-130	2	30	
Mevinphos	0.46	0.21	0.25	"	0.500		92	60-130	9	30	
Methyl parathion	0.43	0.07	0.10	"	0.500		86	60-130	5	30	
Phorate	0.42	0.03	0.05	"	0.500		84	60-130	5	30	
Ronnel	0.45	0.16	0.25	"	0.500		90	60-130	2	30	
Trichlorinate	0.44	0.05	0.05	"	0.500		88	60-130	5	30	
Surrogate: Triphenyl phosphate	*0.270*			*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.250*			*"*	*0.250*		*100*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0395

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092104											
Blank (0092104-BLK1)					Prepared: 09/20/10	Analyzed: 09/21/10					
Hardness (Total)	ND	10	10	mg CaCO3/L							
Duplicate (0092104-DUP1)		**Source: 10I0471-01**			Prepared: 09/20/10	Analyzed: 09/21/10					
Hardness (Total)	280	10	10	mg CaCO3/L		274			2	20	
Batch 0092225											
Blank (0092225-BLK1)					Prepared & Analyzed: 09/22/10						
Oil & Grease	ND	5	5	mg/l							
LCS (0092225-BS1)					Prepared & Analyzed: 09/22/10						
Oil & Grease	40	5	5	mg/l	40.0		100	78-114			
LCS Dup (0092225-BSD1)					Prepared & Analyzed: 09/22/10						
Oil & Grease	34	5	5	mg/l	40.0		86	78-114	15	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 1070395

Client: D-Max Engineering Inc.
Attn: Arsalan Dadkhah
Samplers(s): MD/JR
Address: 7220 Trade Street, Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax: 858-586-6644
Email:
Billing Address: Same

Project ID: Santee Dry Weather R2
Project #: 2010022W-2 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 ☒ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn ☒ Dissolved	Coliform. ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide	Total Hardness			
1	RCP1	9/16/10	10:50	SW	2/G/P	X						X						X	X		X			X			
2	JSOD1	"	12:10	"	4/P	X						X						X	X		X			X			
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

SEP 16 '10 13:26

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	9/16/10 13:00	Signature: Kelly Leyden
Print: Manouchehr Dadkhah		Print: Kelly Leyden
Company: D-Max Engr		Company: EMA
Signature: Kelly Leyden	9/16/10 13:13	Signature: [illegible]
Print: Kelly Leyden		Print: [illegible]
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

T=5 °C on ice

EnviroMatrix Analytical, Inc.

23 September 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10I0423

Project Name: Santee Dry Weather
Project Desc./#: 201022W-2

Enclosed are the results of analyses for samples received by the laboratory on 09/17/10 14:02. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
V40d	10I0423-01	Stormwater	09/17/10 10:10	09/17/10 14:02
P20f	10I0423-02	Stormwater	09/17/10 12:15	09/17/10 14:02
J25c	10I0423-03	Stormwater	09/17/10 12:50	09/17/10 14:02

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V40d (10I0423-01) Stormwater Sampled: 09/17/10 10:10 Received: 09/17/10 14:02										
Cadmium	ND	0.0002	0.001	mg/l	1	0092119	09/21/10	09/21/10	EPA 200.8	
Copper	**0.003**	0.001	0.010	"	"	"	"	"	"	J
Lead	ND	0.001	0.005	"	"	"	"	"	"	
Zinc	**0.002**	0.0003	0.020	"	"	"	"	"	"	J
P20f (10I0423-02) Stormwater Sampled: 09/17/10 12:15 Received: 09/17/10 14:02										
Copper	**0.004**	0.001	0.010	mg/l	1	0092119	09/21/10	09/21/10	EPA 200.8	J
Cadmium	ND	0.0002	0.001	"	"	"	"	"	"	
Lead	ND	0.001	0.005	"	"	"	"	"	"	
Zinc	**0.003**	0.0003	0.020	"	"	"	"	"	"	J
J25c (10I0423-03) Stormwater Sampled: 09/17/10 12:50 Received: 09/17/10 14:02										
Zinc	**0.003**	0.0003	0.020	mg/l	1	0092119	09/21/10	09/21/10	EPA 200.8	J
Lead	ND	0.001	0.005	"	"	"	"	"	"	
Copper	**0.010**	0.001	0.010	"	"	"	"	"	"	
Cadmium	ND	0.0002	0.001	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V40d (10I0423-01) Stormwater	**Sampled: 09/17/10 10:10**		**Received: 09/17/10 14:02**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0092001	09/19/10	09/20/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*124 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*124 %*	*60-130*			"	"	"	"	
P20f (10I0423-02) Stormwater	**Sampled: 09/17/10 12:15**		**Received: 09/17/10 14:02**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0092001	09/19/10	09/20/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*120 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*116 %*	*60-130*			"	"	"	"	
J25c (10I0423-03) Stormwater	**Sampled: 09/17/10 12:50**		**Received: 09/17/10 14:02**							**GC-05**
Chlorpyrifos	ND	0.04	0.05	ug/l	1	0092001	09/19/10	09/20/10	EPA 8141A	
Diazinon	ND	0.04	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*112 %*	*60-130*			"	"	"	"	
Surrogate: Tribuytlphosphate		*112 %*	*60-130*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V40d (10I0423-01) Stormwater Sampled: 09/17/10 10:10 Received: 09/17/10 14:02										
Hardness (Total)	**749**	100	100	mg CaCO3/L	10	0092104	09/20/10	09/21/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0092225	09/23/10	09/23/10	EPA 1664A	
P20f (10I0423-02) Stormwater Sampled: 09/17/10 12:15 Received: 09/17/10 14:02										
Hardness (Total)	**893**	100	100	mg CaCO3/L	10	0092104	09/20/10	09/21/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0092225	09/23/10	09/23/10	EPA 1664A	
J25c (10I0423-03) Stormwater Sampled: 09/17/10 12:50 Received: 09/17/10 14:02										
Hardness (Total)	**339**	100	100	mg CaCO3/L	10	0092104	09/20/10	09/21/10	EPA 200.7	
Oil & Grease	ND	5	5	mg/l	1	0092225	09/23/10	09/23/10	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V40d (10I0423-01) Stormwater Sampled: 09/17/10 10:10 Received: 09/17/10 14:02										
Total Coliforms	**17000**	200	200	MPN/100 ml	100	0091807	09/17/10	09/21/10	SM 9221 B, E	
Fecal Coliforms	**3000**	200	200	"	"	"	"	09/20/10	"	
Enterococcus	**17000**	200	200	"	"	0091808	"	09/21/10	SM 9230 A, B	
P20f (10I0423-02) Stormwater Sampled: 09/17/10 12:15 Received: 09/17/10 14:02										
Total Coliforms	**3000**	200	200	MPN/100 ml	100	0091807	09/17/10	09/21/10	SM 9221 B, E	
Fecal Coliforms	**800**	20	20	"	10	"	"	09/20/10	"	
Enterococcus	**60**	2	2	"	1	0091808	"	09/21/10	SM 9230 A, B	
J25c (10I0423-03) Stormwater Sampled: 09/17/10 12:50 Received: 09/17/10 14:02										
Total Coliforms	**130000**	2000	2000	MPN/100 ml	1000	0091807	09/17/10	09/21/10	SM 9221 B, E	
Fecal Coliforms	**50000**	200	200	"	100	"	"	09/20/10	"	
Enterococcus	**3000**	200	200	"	"	0091808	"	09/21/10	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092119											
Blank (0092119-BLK1)					Prepared & Analyzed: 09/21/10						
Cadmium	ND	0.0002	0.001	mg/l							
Copper	ND	0.001	0.010	"							
Lead	ND	0.001	0.005	"							
Zinc	ND	0.0003	0.020	"							
LCS (0092119-BS1)					Prepared & Analyzed: 09/21/10						
Zinc	0.050	0.0003	0.020	mg/l	0.0500		101	75-125			
Lead	0.050	0.001	0.005	"	0.0500		101	75-125			
Cadmium	0.051	0.0002	0.001	"	0.0500		101	75-125			
Copper	0.050	0.001	0.010	"	0.0500		101	75-125			
LCS Dup (0092119-BSD1)					Prepared & Analyzed: 09/21/10						
Lead	0.051	0.001	0.005	mg/l	0.0500		102	75-125	1	20	
Copper	0.051	0.001	0.010	"	0.0500		101	75-125	0.4	20	
Cadmium	0.051	0.0002	0.001	"	0.0500		103	75-125	1	20	
Zinc	0.051	0.0003	0.020	"	0.0500		102	75-125	1	20	
Duplicate (0092119-DUP1)		**Source: 10I0326-01**			Prepared & Analyzed: 09/21/10						
Cadmium	0.0008	0.0002	0.001	mg/l		0.0008			5	20	J
Copper	0.023	0.001	0.010	"		0.023			2	20	
Zinc	0.144	0.0003	0.020	"		0.146			2	20	
Lead	0.003	0.001	0.005	"		0.003			1	20	J
Matrix Spike (0092119-MS1)		**Source: 10I0326-01**			Prepared & Analyzed: 09/21/10						
Cadmium	0.049	0.0002	0.001	mg/l	0.0500	0.0008	96	75-125			
Copper	0.067	0.001	0.010	"	0.0500	0.023	87	75-125			
Lead	0.057	0.001	0.005	"	0.0500	0.003	107	75-125			
Zinc	0.186	0.0003	0.020	"	0.0500	0.146	81	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092119											
Matrix Spike Dup (0092119-MSD1)			**Source: 10I0326-01**		Prepared & Analyzed: 09/21/10						
Zinc	0.185	0.0003	0.020	mg/l	0.0500	0.146	77	75-125	1	20	
Cadmium	0.047	0.0002	0.001	"	0.0500	0.0008	93	75-125	3	20	
Lead	0.053	0.001	0.005	"	0.0500	0.003	100	75-125	7	20	
Copper	0.066	0.001	0.010	"	0.0500	0.023	85	75-125	1	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092001											
Blank (0092001-BLK1)					Prepared: 09/19/10	Analyzed: 09/20/10					
Chlorpyrifos	ND	0.04	0.05	ug/l							
Diazinon	ND	0.04	0.05	"							
Malathion	ND	0.05	0.05	"							
Surrogate: Triphenyl phosphate	*0.270*			*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.250*			*"*	*0.250*		*100*	*60-130*			
LCS (0092001-BS1)					Prepared: 09/19/10	Analyzed: 09/20/10					
Bolstar	0.44	0.09	0.10	ug/l	0.500		88	60-130			
Diazinon	0.43	0.04	0.05	"	0.500		86	60-130			
Ethoprop	0.42	0.05	0.05	"	0.500		84	60-130			
Mevinphos	0.42	0.21	0.25	"	0.500		84	60-130			
Methyl parathion	0.41	0.07	0.10	"	0.500		82	60-130			
Phorate	0.44	0.03	0.05	"	0.500		88	60-130			
Ronnel	0.44	0.16	0.25	"	0.500		88	60-130			
Trichlorinate	0.42	0.05	0.05	"	0.500		84	60-130			
Surrogate: Triphenyl phosphate	*0.270*			*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.250*			*"*	*0.250*		*100*	*60-130*			
LCS Dup (0092001-BSD1)					Prepared: 09/19/10	Analyzed: 09/20/10					
Bolstar	0.43	0.09	0.10	ug/l	0.500		86	60-130	2	30	
Diazinon	0.45	0.04	0.05	"	0.500		90	60-130	5	30	
Ethoprop	0.43	0.05	0.05	"	0.500		86	60-130	2	30	
Mevinphos	0.46	0.21	0.25	"	0.500		92	60-130	9	30	
Methyl parathion	0.43	0.07	0.10	"	0.500		86	60-130	5	30	
Phorate	0.42	0.03	0.05	"	0.500		84	60-130	5	30	
Ronnel	0.45	0.16	0.25	"	0.500		90	60-130	2	30	
Trichlorinate	0.44	0.05	0.05	"	0.500		88	60-130	5	30	
Surrogate: Triphenyl phosphate	*0.270*			*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.250*			*"*	*0.250*		*100*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0423

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092104											
Blank (0092104-BLK1)					Prepared: 09/20/10	Analyzed: 09/21/10					
Hardness (Total)	ND	10	10	mg CaCO3/L							
Duplicate (0092104-DUP1)		**Source: 10I0471-01**			Prepared: 09/20/10	Analyzed: 09/21/10					
Hardness (Total)	280	10	10	mg CaCO3/L		274			2	20	
Batch 0092225											
Blank (0092225-BLK1)					Prepared & Analyzed: 09/22/10						
Oil & Grease	ND	5	5	mg/l							
LCS (0092225-BS1)					Prepared & Analyzed: 09/22/10						
Oil & Grease	40	5	5	mg/l	40.0		100	78-114			
LCS Dup (0092225-BSD1)					Prepared & Analyzed: 09/22/10						
Oil & Grease	34	5	5	mg/l	40.0		86	78-114	15	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 10J0423

Client: D-Max Engineering
Attn: Arsalan Dadkhah
Samplers(s): MD/JR
Address: 7220 Trade street, Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax: 858-586-6644
Email:
Billing Address: Same

Project ID: Santee Dry Weather R2
Project #: 201022W-2 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 ☒ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn ☒ Dissolved	Coliform. ☒ Total (MTF) ☒ Fecal (MTF)	Collert, T+E.Coli □ P/A □ Enumeration	Enterococcus. ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide	Total Hardness				
1	V40d	9/17/10	10:10	SW	2/4 G/P	X						X						X	X		X			X				
2	P20f	"	12:15	"	"	X						X						X	X		X			X				
3	J25C	"	12:50	"	"	X						X						X	X		X			X				
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	13:45 9/17/10	Signature: Kelly Leyden
Print: Manouchehr Dadkhah		Print: Kelly Leyden
Company: D-Max Eng.		Company: EMA
Signature: Kelly Leyden	9/17/10 14:02	Signature: [illegible]
Print: Kelly Leyden		Print: [illegible]
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

T= 4 °C on ice

30 September 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10I0629

Project Name: Santee Dry Weather
Project Desc./#: 201022W-3

Enclosed are the results of analyses for samples received by the laboratory on 09/27/10 12:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0629

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
V 40d	10I0629-01	Stormwater	09/27/10 09:45	09/27/10 12:20
V 40d-1	10I0629-02	Stormwater	09/27/10 10:50	09/27/10 12:20

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0629

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
V 40d (10I0629-01) Stormwater Sampled: 09/27/10 09:45 Received: 09/27/10 12:20										
Enterococcus	**1396**	10	10	MPN/100 ml	10	0092818	09/27/10	09/28/10	Idexx	
V 40d-1 (10I0629-02) Stormwater Sampled: 09/27/10 10:50 Received: 09/27/10 12:20										
Enterococcus	**5794**	10	10	MPN/100 ml	10	0092818	09/27/10	09/28/10	Idexx	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0629

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 10F0629

Client: D.Max Engineering Inc.
Attn: Arsalan Dadkhah
Samplers(s): MD/JR
Address: 7220 Trade Street, suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax: 858-586-6644
Email:
Billing Address: Same
Project ID: Santee Dry Weather R-2 F-up
Project #: 201022W-3 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform. □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, □ MTF ☒ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide					
1	V40d	9/27/10	9:45	SW	1P																X							
2	V40d-1	~	10:50	~	~																X							
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid
Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other
[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day □ STD (7 day)
[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT
[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manoucheher Dadkhah	9-27-10 12:00	Signature:
Print: Manoucheher Dadkhah		Print: Tony Luna
Company: D-Max Eng		Company: EMA
Signature:	9-27-10 12:20	Signature:
Print: Tavil Luna		Print: Matt Snyder
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: 8°C on Ice

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.
NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

30 September 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10I0646

Project Name: Santee Dry Weather
Project Desc./#: 201022W-3

Enclosed are the results of analyses for samples received by the laboratory on 09/27/10 16:07. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0646

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J25C	10I0646-01	Stormwater	09/27/10 12:20	09/27/10 16:07
J25C-1	10I0646-02	Stormwater	09/27/10 14:10	09/27/10 16:07
J25C-3	10I0646-03	Stormwater	09/27/10 14:40	09/27/10 16:07
J25C-4	10I0646-04	Stormwater	09/27/10 14:50	09/27/10 16:07
J25C-2	10I0646-05	Stormwater	09/27/10 15:30	09/27/10 16:07

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0646

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
J25C (10I0646-01) Stormwater Sampled: 09/27/10 12:20 Received: 09/27/10 16:07										
Total Coliforms	**130000**	100	100	MPN/100 ml	100	0092824	09/27/10	09/28/10	SM9223	
E. Coli	**4350**	10	10	"	10	"	"	"	"	
J25C-1 (10I0646-02) Stormwater Sampled: 09/27/10 14:10 Received: 09/27/10 16:07										
Total Coliforms	**72700**	100	100	MPN/100 ml	100	0092824	09/27/10	09/28/10	SM9223	
E. Coli	**29900**	100	100	"	"	"	"	"	"	
J25C-3 (10I0646-03) Stormwater Sampled: 09/27/10 14:40 Received: 09/27/10 16:07										
Total Coliforms	**173000**	100	100	MPN/100 ml	100	0092824	09/27/10	09/28/10	SM9223	
E. Coli	**1310**	10	10	"	10	"	"	"	"	
J25C-4 (10I0646-04) Stormwater Sampled: 09/27/10 14:50 Received: 09/27/10 16:07										
Total Coliforms	**1990000**	1000	1000	MPN/100 ml	1000	0092824	09/27/10	09/28/10	SM9223	
E. Coli	**1180**	10	10	"	10	"	"	"	"	
J25C-2 (10I0646-05) Stormwater Sampled: 09/27/10 15:30 Received: 09/27/10 16:07										
Total Coliforms	**2420000**	1000	1000	MPN/100 ml	1000	0092824	09/27/10	09/28/10	SM9223	A-01
E. Coli	ND	100	100	"	10	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Dry Weather

EMA Log #: 10I0646

Notes and Definitions

A-01	MPN > 2,419,600
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 10I0646

Client: D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
Samplers(s): MD/JR
Address: 7220 Trade street, suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax: 858-586-6644
Email:
Billing Address: Same

Project ID: Santee Dry Weather R-2 F.up
Project #: 201022W-3 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform. □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A ☒ Enumeration	Enterococcus, □ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide					
1	J25C	9/27/10	12:20	SW	1 P															X								
2	J25C-1	~	14:10	~	~															X								
3	J25C-~~2~~ 3	~	14:40	~	~															X								
4	J25C-~~3~~ 4	~	14:50	~	~															X								
5	J25C-~~4~~ 2		15:30	~	~															X								
6	DW																											
7	RE Sent D-Max 9/30/10																											
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS ☒ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	9/27/10 1607	Signature:
Print: Manouchehr Dadkhah		Print: Matt Leyden
Company: D-Max Eng.		Company: EMA
Signature		Signature
Print		Print
Company:		Company:
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

YE

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

Appendix D

Field Data and Trash Assessment Sheets

Round One

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	A5e		Latitude	32.84081	Watershed	Hydrologic Unit	907
Location	Next to 8335 Carlton Oaks Drive, between Cadorette Avenue and Prafrl Street		Longitude	-117.02160		Hydrologic Area	907.1
			TB Page	1230 H6		Hydrologic Subarea (Optional)	907.12
Date	5/18/10	Time 1540	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	**Tide Height:**_____ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No **Photo #** 2 27-28

Field Screening Samples Collected? Yes No

Water Temp (°C)	20.2	NH3-N (mg/L)	0.101	NO3 (mg/L)	13.27	Ortho-PO4 (mg/L)	0.972
pH (pH units)	8.5	TURB (NTU)	0.79	NO3-N (mg/L)	3.009	Ortho-PO4 -P (mg/L)	0.320
COND (mS/cm)	2.09	MBAS (mg/L)	0.25	DO (mg/L)	N/A		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: A5a DATE: 5/18/10

OBSERVER: MD/AK TIME: 1540

LOCATION: Next to 8335 Carlton Oaks Drive, between Cadorette Avenue and Pratful Street

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): ~~Sub~~optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	ES 4		Latitude	32.84885	Watershed	Hydrologic Unit	907
Location	Santee Recreational Lakes, west side of entrance road, approximately 100 feet south of entrance toll booth in grassy area		Longitude	-117.00471		Hydrologic Area	907.1
			TB Page	123-A5		Hydrologic Subarea (Optional)	90712
Date	5/18/10	Time 1440	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather: Sunny Partly Cloudy Overcast Fog

Tide: N/A Low Incoming High Outgoing **Tide Height:** _____ ft.

Last Rain: > 72 hours < 72 hours

Rainfall: None < 0.1" > 0.1"

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage		Other
Color	None	Yellow	Brown	White	Gray		Other
Clarity	Clear		Slightly Cloudy	Opaque			Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter		Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits		Other
Vegetation	None	Limited	Normal	Excessive			Other
Biology	None	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow: Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No **Photo #** 25-26

Field Screening Samples Collected? Yes No

Water Temp (°C)	20.7	NH_3-N (mg/L)	0.226	NO_3 (mg/L)	0.369	Ortho-PO_4 (mg/L)	0.894
pH (pH units)	8.1	TURB (NTU)	2.62	NO_3-N (mg/L)	2.120	Ortho-PO_4-P (mg/L)	0.290
COND (mS/cm)	2.62	MBAS (mg/L)	0.38	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: E5g-1 DATE: 5/18/10

OBSERVER: MD/AK TIME: 1440

LOCATION: Santee Recreational Lakes, west side of entrance road, approximately 100 feet south of entrance toll booth in grassy area

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): ~~Marginal~~ Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	G30c		Latitude	32.84501	Watershed	Hydrologic Unit	907
Location	South end of River Trail Place, north of San Diego River, down trail to the West		Longitude	-116.99122		Hydrologic Area	907.1
			TB Page	1231 C5		Hydrologic Subarea (Optional)	907.12
Date	5/18/10	Time 11:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	Tide Height: ____ ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects, Algae	Fish, Snails	Mussels/ Barnacles	Insect/ Algae, Insect/ Snail	Other

Water Flow: Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken: Yes No Photo # 18-19

Field Screening Samples Collected? Yes No

Water Temp (°C)	20.8	NH3-N (mg/L)	0.138	NO3 (mg/L)	25.20	Ortho-PO4 (mg/L)	0.062
pH (pH units)	8.3	TURB (NTU)	2.54	NO3-N (mg/L)	5.695	Ortho-PO4 -P (mg/L)	0.020
COND (mS/cm)	3.64	MBAS (mg/L)	0.25	DO (mg/L)	10.10		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: G30c DATE: 5/18/10

OBSERVER: MD/AK TIME: 11:20

LOCATION: South end of River Trail place, north of San Diego River, down trail to the west

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

(Field Screening) Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) (MS4) Receiving Water

Site ID	H5e		Latitude	32.84561	Watershed	Hydrologic Unit	907
Location	South of River Park Drive, at the end of walkway between Brookview Court and River Rock Court, north of San Diego River		Longitude	-116.98769		Hydrologic Area	907.1
			TB Page	1231-C5		Hydrologic Subarea (Optional)	907.12
Date	8/20/10	Time 11:40	Observer	MD / AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): (Residential) Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open (None)

Conveyance (Check one only): Manhole Catch Basin (Outlet) Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	(Sunny)	Partly Cloudy	Overcast	Fog		
Tide	(N/A)	Low	Incoming	High	Outgoing	Tide Height: ____ ft.
Last Rain	(> 72 hours)	< 72 hours				
Rainfall	(None)	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	(None)	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	(None)	Yellow	Brown	White	Gray	Other
Clarity	(Clear)		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	(Sheen) ~~Dust~~	Fecal Matter	Other
Deposits	None	Sediment/Gravel	(Fine Particulates)	Stains	Oily Deposits	Other
Vegetation	None	Limited	(Normal)	Excessive		Other
Biology	None	(Insects) (Algae)	Fish Snails	Mussels/ Barnacles	(Insect/ Algae) Insect/ Snail	Other

Water Flow (Flowing) Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? (Yes) No (N/A)

Evidence of Overland Flow? Yes (No) Irrigation Runoff Other: _____

Photo Taken (Yes) No **Photo #** 56-57

Field Screening Samples Collected? (Yes) No

Water Temp (°C)	20.8	NH3-N (mg/L)	0.195	NO3 (mg/L)	4.400	Ortho-PO4 (mg/L)	1.082
pH (pH units)	8.2	TURB (NTU)	10.07	NO3-N (mg/L)	0.994	Ortho-PO4 -P (mg/L)	0.353
COND (mS/cm)	2.78	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	< 1	gpm				Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: H5e DATE: 5/20/10

OBSERVER: MD/AK TIME: 11:40

LOCATION: South of River Park Drive, at the end of walkway between Brookview Court and River Rock Court, north of San Diego River

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Sub Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	I 10c		**Latitude**	32.84561	**Watershed**	**Hydrologic Unit**	907
Location	South bank of the San Diego River, East of Cuyamaca Street, under bridge. Westernmost outfalls		**Longitude**	-116.983340		**Hydrologic Area**	907.1
			TB Page	1231 - C5		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time** 1500	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other Frog

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 87-90

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.6	NH_3-N (mg/L)	0.181	NO_3 (mg/L)	41.60	Ortho-PO_4 (mg/L)	0.115
pH (pH units)	7.9	TURB (NTU)	1.15	NO_3-N (mg/L)	9.401	Ortho-PO_4-P (mg/L)	0.037
COND (mS/cm)	1.66	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Shopping cart, household & food packaging trash

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: I 10c DATE: 5/21/10

OBSERVER: MD/AK TIME: 1500

LOCATION: South bank of the San Diego River, east of Cuyamaca Street under bridge - westernmost outfalls

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 20x20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☒ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

MPM

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	J25c		Latitude	32.85813	Watershed	Hydrologic Unit	907
Location	West end of Carefree Drive, on the west side of channel		Longitude	-116.97601		Hydrologic Area	907.1
			TB Page	1231-D4		Hydrologic Subarea (Optional)	907.12
Date	5/19/10	Time 12:10	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	Tide Height: ____ ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other
Water Flow	Flowing	Ponded	Dry	Tidal		

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No Photo # 41-43

Field Screening Samples Collected? Yes No

Water Temp (°C)	20.4	NH3-N (mg/L)	0.275	NO3 (mg/L)	24.80	Ortho-PO4 (mg/L)	0.354
pH (pH units)	8.2	TURB (NTU)	4.79	NO3-N (mg/L)	5.60	Ortho-PO4 -P (mg/L)	0.125
COND (mS/cm)	4.32	MBAS (mg/L)	0.50	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	4	in
Depth	0.25	in
Velocity	10/9	ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: J25c DATE: 5/19/10

OBSERVER: MD/AK TIME: 12:10

LOCATION: West end of Caretree Drive, on the west side of channel

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☒ Confirmation For Enterococcus ☒ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 **Receiving Water**

Site ID	J25c	**Latitude**	32.88813	**Watershed**	**Hydrologic Unit**	907
Location	West end of Carefree Drive, on the west side of channel	**Longitude**	-116.97601		**Hydrologic Area**	907.1
		TB Page	1231 - D4		**Hydrologic Subarea** (Optional)	907.12
Date	6/2/10	**Time**	9:40	**Observer**	MD/AK	**Discharge Area** (Optional)

Land Use (Primary) (Check one only): ☒ Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open ☒ None

Conveyance (Check one only): Manhole Catch Basin ☒ Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	Partly Cloudy	Overcast	Fog		
Tide	☒ N/A	Low	Incoming	High	Outgoing	**Tide Height:** ____ ft.
Last Rain	☒ > 72 hours	< 72 hours				
Rainfall	☒ None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	☒ None	Yellow	Brown	White	Gray	Other
Clarity	☒ Clear		Slightly Cloudy	Opaque		Other
Floatables	☒ None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	☒ Fine Particulates	Stains	Oily Deposits	Other
Vegetation	☒ None	Limited	Normal	Excessive		Other

Biology None ☒ Insects ☒ Algae Fish Snails Mussels/ Barnacles ☒ Insect/ Algae Insect/ Snail Other

Water Flow ☒ Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No ☒ N/A

Evidence of Overland Flow? Yes ☒ No Irrigation Runoff Other: _____

Photo Taken Yes ☒ No **Photo #** 89

Field Screening Samples Collected? (Yes) No

Water Temp (°C)	18.6	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.3	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	4.64	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6	in
Depth	0.25	in
Velocity	5/7	ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

MRL

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For Enterococcus

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) X MS4 Receiving Water

Site ID	J25c-1		Latitude	32.86227	Watershed	Hydrologic Unit	907
Location	East of Molina Road on El Nopal,		Longitude	-117.97945		Hydrologic Area	907.1
			TB Page	1231-D3		Hydrologic Subarea (Optional)	907.12
Date	6/2/10	Time 10:30	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): X Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open X None

Conveyance (Check one only): X Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	X Sunny	Partly Cloudy	Overcast	Fog		
Tide	X N/A	Low	Incoming	High	Outgoing	**Tide Height:** _____ ft.
Last Rain	X > 72 hours	< 72 hours				
Rainfall	X None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	X None	Yellow	Brown	White	Gray	Other
Clarity	X Clear		Slightly Cloudy	Opaque		Other
Floatables	X None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	X Fine Particulates	Stains	Oily Deposits	Other
Vegetation	X None	Limited	Normal	Excessive		Other
Biology	X None	Insects Algae	Fish Snails	Mussels/ Barnacles	Insect/ Algae Insect/ Snail	Other

Water Flow X Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No X N/A

Evidence of Overland Flow? Yes X No Irrigation Runoff Other: _____

Photo Taken X Yes No **Photo #** 91-92

Field Screening Samples Collected? Yes X No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? X Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

MKM

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ X IC/ID Follow-Up For Enterococcus

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) X MS4 Receiving Water

Site ID	J25c-2	Latitude	32.862230	Watershed	Hydrologic Unit	907
Location	In the channel just west of Molino Road on El Nopal	Longitude	-116.97185		Hydrologic Area	907.1
		TB Page	1231-D3		Hydrologic Subarea (Optional)	907.12
Date	6/2/10	Time	10:35	Observer	MD/AK	Discharge Area (Optional)	

Land Use (Primary) (Check one only): X Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open X None

Conveyance (Check one only): Manhole Catch Basin Outlet X Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather: X Sunny Partly Cloudy Overcast Fog

Tide: X N/A Low Incoming High Outgoing **Tide Height:** _____ ft.

Last Rain: X > 72 hours < 72 hours

Rainfall: X None < 0.1" > 0.1"

RUNOFF CHARACTERISTICS

Odor	None	X Musty	Rotten Eggs	Chemical	Sewage	Other
Color	X None	Yellow	Brown	White	Gray	Other
Clarity	X Clear		Slightly Cloudy	Opaque		Other
Floatables	X None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	X Sediment/Gravel	X Fine Particulates	Stains	Oily Deposits	Other
Vegetation	X None	Limited	Normal	Excessive		Other

Biology: None X Insects X Algae Fish Snails Mussels/Barnacles X Insect/Algae Insect/Snail Other

Water Flow: X Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No X N/A

Evidence of Overland Flow? Yes X No Irrigation Runoff Other: _____

Photo Taken X Yes No **Photo #** 90

Field Screening Samples Collected? Yes X No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? X Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	<1	gpm				Flow		gpm

COMMENTS: Minor trash, major algae, pockets of sediment

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

MRM

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ ☒ IC/ID Follow-Up For Enterococcus

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 Receiving Water

Site ID	J25e-3		Latitude	32.86222	Watershed	Hydrologic Unit	907
Location	~~Sedimentation basin~~ Outlet to sedimentation basin at the west end of Shoreline Drive		Longitude	-116.98205		Hydrologic Area	907.1
			TB Page	1231 - D3		Hydrologic Subarea (Optional)	907.12
Date	6/2/10	Time 10:55	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open ☒ None

Conveyance (Check one only): Manhole Catch Basin ☒ Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	Partly Cloudy	Overcast	Fog		
Tide	☒ N/A	Low	Incoming	High	Outgoing	**Tide Height:**_____ft.
Last Rain	☒ > 72 hours	< 72 hours				
Rainfall	☒ None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	☒ None	Yellow	Brown	White	Gray	Other
Clarity	☒ Clear		Slightly Cloudy	Opaque		Other
Floatables	☒ None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	☒ Fine Particulates	Stains	Oily Deposits	Other
Vegetation	☒ None	Limited	Normal	Excessive		Other

Biology: None ☒ Insects ☒ Algae Fish Snails Mussels/ Barnacles ☒ Insect/ Algae Insect/ Snail Other

Water Flow: ☒ Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No ☒ N/A

Evidence of Overland Flow? Yes ☒ No Irrigation Runoff Other: _____

Photo Taken ☒ Yes No **Photo #** 93

Field Screening Samples Collected? Yes ☒ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	<1	gpm				Flow		gpm

COMMENTS: Leaves

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

MRM

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ X IC/ID Follow-Up For Enterococcus

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) X MS4 Receiving Water

Site ID	J25c-4		Latitude	32.86238	Watershed	Hydrologic Unit	907
Location	~~Sedimentation basin~~ Downstream of sedimentation basin at the west end of Shoredale Dr.		Longitude	-116.98190		Hydrologic Area	907.1
			TB Page	1231-D3		Hydrologic Subarea (Optional)	907.12
Date	6/2/10	Time 11:00	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): X Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open X None

Conveyance (Check one only): Manhole Catch Basin Outlet X Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	X Sunny	Partly Cloudy	Overcast	Fog		
Tide	X N/A	Low	Incoming	High	Outgoing	**Tide Height:** ____ ft.
Last Rain	X > 72 hours	< 72 hours				
Rainfall	X None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	X None	Musty	Rotten Eggs	Chemical	Sewage			Other
Color	X None	Yellow	Brown	White	Gray			Other
Clarity	X Clear		Slightly Cloudy	Opaque				Other
Floatables	X None	Trash	Bubbles/Foam	Sheen	Fecal Matter			Other
Deposits	None	X Sediment/Gravel	X Fine Particulates	Stains	Oily Deposits			Other
Vegetation	None	X Limited	Normal	Excessive				Other
Biology	None	X Insects	X Algae	Fish	X Snails	Mussels/ Barnacles	X Insect/ Algae	Insect/ Snail	Other

Water Flow X Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No X N/A

Evidence of Overland Flow? Yes X No Irrigation Runoff Other: _____

Photo Taken X Yes No **Photo #** 94-96

Field Screening Samples Collected? Yes X No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? X Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	<1	gpm				Flow		gpm

COMMENTS: Trash, sediment, leaves, animal feces on driveway (not in contact w/ water)

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

1C

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	J25C2		Latitude	32.856 ~~40~~ 39	Watershed	Hydrologic Unit	907
Location	At the east end of Country Scenes, east of Conejo Road		Longitude	-116.97 ~~600~~ 598		Hydrologic Area	907.1
			TB Page	1231-D4		Hydrologic Subarea (Optional)	907.12
Date	5/21/10	Time 1355	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 84-86

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.7	NH_3-N (mg/L)	0.153	NO_3 (mg/L)	27.28	Ortho-PO_4 (mg/L)	0.388
pH (pH units)	7.9	TURB (NTU)	2.57	NO_3-N (mg/L)	6.165	Ortho-PO_4-P (mg/L)	0.088
COND (mS/cm)	4.42	MBAS (mg/L)	0.50	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: J25C2 DATE: 5/21/10

OBSERVER: MD/AK TIME: 1355

LOCATION: At the east end of Country Scenes, east of Conejo Road

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Sub Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 8 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

VC

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	J3081		Latitude	32.85175	Watershed	Hydrologic Unit	907
Location	In the Woodglen Vista Channel at the ~~inter~~ Riverwalk Drive and Park Center Drive intersection, on the north side of the bridge		Longitude	-116.97606		Hydrologic Area	907.1
			TB Page	1231-D5		Hydrologic Subarea (Optional)	907.12
Date	5/19/10	Time 1410	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	**Tide Height:** _____ ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects Algae	Fish Snails	Mussels/ Barnacles	Insect/ Algae Insect/ Snail	Other Crayfish

Water Flow: Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No **Photo #** 44-47

Field Screening Samples Collected? Yes No

Water Temp (°C)	21.6	NH_3-N (mg/L)	0.171	NO_3 (mg/L)	7.186	Ortho-PO_4 (mg/L)	0.111
pH (pH units)	7.6	TURB (NTU)	2.48	NO_3-N (mg/L)	1.624	Ortho-PO_4 -P (mg/L)	0.036
COND (mS/cm)	2.93	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: J3021 DATE: 5/19/10

OBSERVER: MD/AK TIME: 1410

LOCATION: In the Woodglen Vista Channel, at the Riverwalk Drive and Park Center Drive intersection, on the north side of the bridge

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	015P		**Latitude**	32.84653	**Watershed**	**Hydrologic Unit**	907
Location	North side of Northcote Road, between Woodside Avenue and Via Madonna		**Longitude**	-116.95520		**Hydrologic Area**	907.1
			TB Page	1231-G5		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time** 12:00	**Observer**	MDIAK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 81-82

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.0	NH_3-N (mg/L)	0.060	NO_3 (mg/L)	3.018	Ortho-PO_4 (mg/L)	0.855
pH (pH units)	7.8	TURB (NTU)	5.39	NO_3-N (mg/L)	0.682	Ortho-PO_4 -P (mg/L)	0.289
COND (mS/cm)	0.99	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: 015P DATE: 5/21/10

OBSERVER: MD/AK TIME: 12:00

LOCATION: North side of Northcote Road, between Woodside Avenue and Via Madonna

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

MRK

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	040b		Latitude	32.84851	Watershed	Hydrologic Unit	907
Location	At the north end of Abraham Way, south of San Diego River		Longitude	-116.96392		Hydrologic Area	907.1
			TB Page	1231-F5		Hydrologic Subarea (Optional)	907.12
Date	5/18/10	Time 9:45	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	Tide Height: ____ ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects Algae	Fish Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail Other
Water Flow	Flowing	Ponded	Dry	Tidal		

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No Photo # 15 - 17

Field Screening Samples Collected? Yes No

Water Temp (°C)	18.3	NH_3-N (mg/L)	0.136	NO_3 (mg/L)	104.3	Ortho-PO_4 (mg/L)	0.720
pH (pH units)	8.2	TURB (NTU)	2.23	NO_3-N (mg/L)	23.57	Ortho-PO_4 -P (mg/L)	0.235
COND (mS/cm)	2.45	MBAS (mg/L)	0.50	DO (mg/L)	6.63		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: 040b **DATE:** 5/18/10

OBSERVER: MD/AK **TIME:** 9:45

LOCATION: At the north end of Abraham Way, south of San Diego River

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

MRM

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For Nitrate IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	040b		Latitude	32.84881	Watershed	Hydrologic Unit	907
Location	At the north end of Abraham Way, south of San Diego River		Longitude	-116.96392		Hydrologic Area	907.1
			TB Page	1231-F8		Hydrologic Subarea (Optional)	907.12
Date	5/19/10	Time 9:30	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	**Tide Height:**_____ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects, Algae	Fish	Snails	Mussels/ Barnacles, Insect/ Algae	Insect/ Snail, Other

Water Flow: Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No **Photo #** _____

Field Screening Samples Collected? Yes No

Water Temp (°C)	18.7	NH_3-N (mg/L)	NA	NO_3 (mg/L)	55.92	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.3	TURB (NTU)	NA	NO_3-N (mg/L)	12.64	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.32	MBAS (mg/L)	NA	DO (mg/L)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

MPW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ 2nd Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	040b		**Latitude**	32.84851	**Watershed**	**Hydrologic Unit**	907
Location	At the north end of Abraham Way, south of the San Diego River		**Longitude**	-116.96392		**Hydrologic Area**	907.1
			TB Page	1231-F5		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time** 10:40	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects ☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.3	NH_3-N (mg/L)	NA	NO_3 (mg/L)	72.42	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.3	TURB (NTU)	NA	NO_3-N (mg/L)	16.37	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.35	MBAS (mg/L)	NA	DO (mg/L)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

MRM

San Diego Stormwater Copermittees
City of Santee
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Field Screening Confirmation For _____ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	0906-1		Latitude	32.84498	Watershed	Hydrologic Unit	907
Location	Manhole at the corner of Stevens Road and Hartley Road		Longitude	116.96278		Hydrologic Area	907.1
			TB Page	1231-F5		Hydrologic Subarea (Optional)	907.12
Date	5/19/10	Time 10:35	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial (Industrial) Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open (None)

Conveyance (Check one only): (Manhole) Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	(Sunny)	Partly Cloudy	Overcast	Fog		
Tide	(N/A)	Low	Incoming	High	Outgoing	Tide Height: ____ ft.
Last Rain	(> 72 hours)	< 72 hours				
Rainfall	(None)	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	(None)	Musty	Rotten Eggs	Chemical	Sewage			Other
Color	(None)	Yellow	Brown	White	Gray			Other
Clarity	(Clear)		Slightly Cloudy	Opaque				Other
Floatables	(None)	Trash	Bubbles/Foam	Sheen	Fecal Matter			Other
Deposits	None	Sediment/Gravel	(Fine Particulates)	Stains	Oily Deposits			Other
Vegetation	(None)	Limited	Normal	Excessive				Other
Biology	(None)	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow: (Flowing) Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No (N/A)

Evidence of Overland Flow? Yes (No) Irrigation Runoff Other: _____

Photo Taken (Yes) No Photo # 29-37

Field Screening Samples Collected? (Yes) No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	75.29	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	17.02	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity	trickling	ft/sec
Flow	~~trickling~~	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

MRM

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☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	040b-2a	Latitude	32.84505	Watershed	Hydrologic Unit	907
Location	Gutter in front of 10965 Hartley Road	Longitude	-116.96297		Hydrologic Area	907.1
		TB Page	1231-F5		Hydrologic Subarea (Optional)	907.12
Date	5/21/10	Time	10:55	Observer	MD/AK	Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☒ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 71-77

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	56.98	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	12.88	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

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☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	0406-2b		**Latitude**	32.84506	**Watershed**	**Hydrologic Unit**	907
Location	Landscaping in front of 10965 ~~Soil Sample~~ Hartley Road		**Longitude**	-116.96296		**Hydrologic Area**	907.1
			TB Page	1231-F5		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time** 10:55	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) N/A ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☒ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ~~N/A~~
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other N/A
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other N/A
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other N/A
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other N/A

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: N/A

Photo Taken ☒ Yes ☐ No **Photo #** 78

Field Screening Samples Collected? ☒ Yes ☒ No

Water Temp (°C)	NA	NH_3-N (mg/L)	~~0.01~~ NA	NO_3 (mg/L)	0.91	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	0.20	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	NA	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Dissolved fertilizer granules - NO_3 increased to 4.82 Lo after full dissolution (N=1.09)

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

City of Santee

Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	040b-2c		Latitude	32.84480	Watershed	Hydrologic Unit	907
Location	Next to manhole in front of 10695 Hartley Road		Longitude	-116.9628		Hydrologic Area	907.1
			TB Page	1231-F5		Hydrologic Subarea (Optional)	907.12
Date	5/21/10	Time 11:00	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) N/A ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other	
Color	☐ None	☐ Yellow	☒ Brown	☐ White	☐ Gray	☐ Other	
Clarity	☐ Clear		☐ Slightly Cloudy	☒ Opaque		☐ Other	
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other	N/A
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	N/A
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other	N/A
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other N/A

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other: N/A

Photo Taken ☒ Yes ☐ No **Photo #** 79-80

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	12.84	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	2.90	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	NA	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Soil sample

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

LC

San Diego Stormwater Copermittees
City of Santee
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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	P10a		**Latitude**	32.83647	**Watershed**	**Hydrologic Unit**	907
Location	Manhole in the northbound lane of Graves Avenue in front of the northernmost gate of the Greystone Ridge Townhomes		**Longitude**	-116.96145		**Hydrologic Area**	907.1
			TB Page	1231-F6		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time** 12:30	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other N/A
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other N/A
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other N/A
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other N/A
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	N/A	NH_3-N (mg/L)	N/A	NO_3 (mg/L)	N/A	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	N/A	TURB (NTU)	N/A	NO_3-N (mg/L)	N/A	Ortho-PO_4-P (mg/L)	N/A
COND (mS/cm)	N/A	MBAS (mg/L)	N/A	DO (mg/L)	N/A		~~N/A~~

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: P10a DATE: 5/21/10

OBSERVER: MD/AK TIME: 12:30

LOCATION: Manhole in the northbound lane of Graves Avenue, in front of the northernmost gate of the Greystone Ridge Townhomes

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

HN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	P20A	Latitude	32.84674	Watershed	Hydrologic Unit	907
Location	East of North Magnolia Avenue, at the east end of Chubb Lane	Longitude	-116.96920		Hydrologic Area	907.1
		TB Page	1231-E5		Hydrologic Subarea (Optional)	907.12
Date	5/20/10	Time	10:10	Observer	MD/AK	Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	**Tide Height:**_____ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other
Water Flow	Flowing	Ponded	Dry	Tidal		

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No **Photo #** 53-55

Field Screening Samples Collected? Yes No

Water Temp (°C)	23.0	NH_3-N (mg/L)	0.114	NO_3 (mg/L)	19.08	Ortho-PO_4 (mg/L)	0.068
pH (pH units)	8.3	TURB (NTU)	0.98	NO_3-N (mg/L)	4.309	Ortho-PO_4 -P (mg/L)	0.022
COND (mS/cm)	1.43	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	15	in
Depth	.25	in
Velocity	n/a	ft/sec
Flow	13	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: P20F DATE: 5/20/10

OBSERVER: MD/AK TIME: 10:10

LOCATION: East of North Magnolia Avenue, at the east end of Chubb Lane

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 8

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

MAK

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Q20a		**Latitude**	32.83494	**Watershed**	**Hydrologic Unit**	907
Location	In front of 10220 Buena Vista Avenue		**Longitude**	-116.97509		**Hydrologic Area**	907.1
			TB Page	1231 - D7		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time** 10:00	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 69 - 70

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.4	NH_3-N (mg/L)	0.155	NO_3 (mg/L)	51.36	Ortho-PO_4 (mg/L)	0.873
pH (pH units)	8.2	TURB (NTU)	2.25	NO_3-N (mg/L)	11.61	Ortho-PO_4 -P (mg/L)	0.285
COND (mS/cm)	1.98	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: Q20a DATE: 5/21/10

OBSERVER: MD/AK TIME: 10:00

LOCATION: In front of 10220 Buena Vista Avenue

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	Q20a	**Latitude**	32.83494	**Watershed**	**Hydrologic Unit**	907
Location	In front of 10220 Buena Vista Avenue	**Longitude**	-116.97509		**Hydrologic Area**	907.1
		TB Page	1231-D7		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time**	15:40	**Observer**	MD/AK	**Discharge Area** (Optional)

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae ☐ Fish ☐ Snails		☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.9	NH_3-N (mg/L)	NA	NO_3 (mg/L)	59.49	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.2	TURB (NTU)	NA	NO_3-N (mg/L)	12.54	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.02	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

MRM

Field Screening X 2nd Confirmation For Nitrate IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) X MS4 Receiving Water

Site ID	Q20a		Latitude	32.83494	Watershed	Hydrologic Unit	907
Location	In front of 10220 Buena Vista Avenue		Longitude	-116.97509		Hydrologic Area	907.1
			TB Page			Hydrologic Subarea (Optional)	907.12
Date	6/2/10	Time 1420	Observer	MDIAK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): X Residential | Commercial | Industrial | Agricultural | Parks | Open

Land Use (Secondary) (Optional, greater than 10%): Residential | X Commercial | Industrial | Agricultural | Parks | Open | None

Conveyance (Check one only): X Manhole | Catch Basin | Outlet | Concrete Channel | Natural Creek | Earthen Channel | Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	X Sunny	Partly Cloudy	Overcast	Fog		
Tide	X N/A	Low	Incoming	High	Outgoing	**Tide Height:** _____ ft.
Last Rain	X > 72 hours	< 72 hours				
Rainfall	X None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	X None	Musty	Rotten Eggs	Chemical	Sewage				Other
Color	X None	Yellow	Brown	White	Gray				Other
Clarity	X Clear		Slightly Cloudy	Opaque					Other
Floatables	X None	Trash	Bubbles/Foam	Sheen	Fecal Matter				Other
Deposits	None	X Sediment/Gravel	Fine Particulates	Stains	Oily Deposits				Other
Vegetation	X None	Limited	Normal	Excessive					Other
Biology	None	X Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow X Flowing | Ponded | Dry | Tidal

Does the storm drain flow reach the Receiving Water? Yes | No | X N/A

Evidence of Overland Flow? Yes | X No | Irrigation Runoff | Other: _____

Photo Taken Yes | X No **Photo #** _____

Field Screening Samples Collected? X Yes | No

Water Temp (°C)	25.0	NH_3-N (mg/L)	NA	NO_3 (mg/L)	27.98	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.3	TURB (NTU)	NA	NO_3-N (mg/L)	6.32	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.86	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ X IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) X MS4 Receiving Water

Site ID	Q20a-1		Latitude	32.83128	Watershed	Hydrologic Unit	907
Location	Former dry weather site Q5e; in the catch basin on the north side of Prospect Avenue 50 feet east of Railroad Avenue		Longitude	-116.97090		Hydrologic Area	907.1
			TB Page	1231-E7		Hydrologic Subarea (Optional)	907.12
Date	6/2/10	Time 1510	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial X Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential X Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole X Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	X Sunny	Partly Cloudy	Overcast	Fog		
Tide	X N/A	Low	Incoming	High	Outgoing	**Tide Height:** ____ ft.
Last Rain	X > 72 hours	< 72 hours				
Rainfall	X None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	X None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	X None	Yellow	Brown	White	Gray	Other
Clarity	X Clear		X Slightly Cloudy	Opaque		Other
Floatables	X None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	X Fine Particulates	Stains	Oily Deposits	Other
Vegetation	X None	Limited	Normal	Excessive		Other
Biology	X None	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow X Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No X N/A

Evidence of Overland Flow? Yes X No Irrigation Runoff Other: _____

Photo Taken Yes X No **Photo #** _____

Field Screening Samples Collected? X Yes No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	61.04	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	13.80	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Former DW site Q5e

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

MPN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ X IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) X MS4 Receiving Water

Site ID	Q20a - #2		Latitude	32.83123	Watershed	Hydrologic Unit	907
Location	In the parking area in front of 10612 Prospect Avenue		Longitude	-116.96739		Hydrologic Area	907.1
			TB Page	1231 - E7		Hydrologic Subarea (Optional)	907.12
Date	6/2/10	Time 15:18	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial X Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open X None

Conveyance (Check one only): Manhole X Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	X Sunny	Partly Cloudy	Overcast	Fog		
Tide	X N/A	Low	Incoming	High	Outgoing	**Tide Height:** ____ ft.
Last Rain	X > 72 hours	< 72 hours				
Rainfall	X None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	X None	Musty	Rotten Eggs	Chemical	Sewage			Other
Color	X None	Yellow	Brown	White	Gray			Other
Clarity	X Clear		Slightly Cloudy	Opaque				Other
Floatables	X None	Trash	Bubbles/Foam	Sheen	Fecal Matter			Other
Deposits	None	X Sediment/Gravel	X Fine Particulates	Stains	Oily Deposits			Other
Vegetation	X None	Limited	Normal	Excessive				Other
Biology	None	X Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow X Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No X N/A

Evidence of Overland Flow? Yes X No Irrigation Runoff Other: _____

Photo Taken Yes X No **Photo #** _____

Field Screening Samples Collected? X Yes No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	41.83	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	9.45	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes X No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	trickling	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	RCP 1		Latitude	32.84959	Watershed	Hydrologic Unit	907
Location	North bank of the San Diego River in the RCP Brick factory, across from the southwest corner of the antennae field		Longitude	-116.96659		Hydrologic Area	907.1
			TB Page	1231 - E5		Hydrologic Subarea (Optional)	907.12
Date	5/19/10	Time 11:15	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	Tide Height: _____ ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects Algae	Fish Snails	Mussels/ Barnacles	Insect/ Algae Insect/ Snail	Other crayfish

Water Flow: Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken: Yes No Photo # 38 - 40

Field Screening Samples Collected? Yes No

Water Temp (°C)	21.1	NH3-N (mg/L)	0.146	NO3 (mg/L)	34.70	Ortho-PO4 (mg/L)	0.713
pH (pH units)	8.2	TURB (NTU)	1.67	NO3-N (mg/L)	7.839	Ortho-PO4 -P (mg/L)	0.232
COND (mS/cm)	1.58	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	3	gpm				Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: RCP1 DATE: 8/19/10

OBSERVER: MD/AK TIME: 11:15

LOCATION: North bank of the San Diego River in the RCP brick factory, across from the southwest corner of the antennae field

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	RCP3		Latitude	32.84975	Watershed	Hydrologic Unit	907
Location	North bank of the San Diego River in the RCP Brick Factory across from the southeast corner of the antennae field		Longitude	-116.96341		Hydrologic Area	907.1
			TB Page	1231-E5		Hydrologic Subarea (Optional)	907.12
Date	5/20/10	Time 1500	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☒ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☒ Sheen clear residue	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects ☒ Algae	☐ Fish ☒ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 61-63

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.8	NH_3-N (mg/L)	0.214	NO_3 (mg/L)	42.33	Ortho-PO_4 (mg/L)	0.364
pH (pH units)	7.9	TURB (NTU)	1.55	NO_3-N (mg/L)	9.539	Ortho-PO_4 -P (mg/L)	0.119
COND (mS/cm)	5.07	MBAS (mg/L)	0.50	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	14	in
Depth	.25	in
Velocity	1.8	ft/sec
Flow	14	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Odor/film of paint thinner/gasoline

2010 Trash Assessment Form

SITE ID: RCP3 DATE: 5/20/10

OBSERVER: MD/AK TIME: 1500

LOCATION: North bank of the San Diego River, in the RCP Brick Factory, across from the southeast corner of the antennae field

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For chemical odor & sheen ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	RCP3		**Latitude**	32.84975	**Watershed**	**Hydrologic Unit**	907
Location	North bank of the San Diego River, in the RCP Brick Factory across from the southeast corner of the antennae field		**Longitude**	-116.96341		**Hydrologic Area**	907.1
			TB Page	1231-E5		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time** 1425	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☒ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☒ Sheen chemical residue	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles ☒ Insect/ Algae ☒ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	~~50.45~~ NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.1	TURB (NTU)	~~[illegible]~~ NA	NO_3-N (mg/L)	~~11.51~~ NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.86	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	12	in
Depth	.25	in
Velocity	10/8	ft/sec
Flow	12	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening 2nd X Confirmation For Chemical Odor & Sheen IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) X MS4 Receiving Water

Site ID	RCP3		Latitude	32.84975	Watershed	Hydrologic Unit	907
Location	North bank of the San Diego River in the RCP brick factory, across from the southeast corner of the antennae field		Longitude	-116.96341		Hydrologic Area	907.1
			TB Page	1231 - E5		Hydrologic Subarea (Optional)	907.12
Date	6/2/10	Time 12:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): X Residential | Commercial | Industrial | Agricultural | Parks | Open

Land Use (Secondary) (Optional, greater than 10%): Residential | Commercial | Industrial | Agricultural | Parks | Open | X None

Conveyance (Check one only): Manhole | Catch Basin | X Outlet | Concrete Channel | Natural Creek | Earthen Channel | Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	X Sunny	Partly Cloudy	Overcast	Fog		
Tide	X N/A	Low	Incoming	High	Outgoing	**Tide Height:** ____ ft.
Last Rain	X > 72 hours	< 72 hours				
Rainfall	X None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	X None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	X None	Yellow	Brown	White	Gray	Other
Clarity	X Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	X Sheen (oil)	Fecal Matter	Other
Deposits	None	X Sediment/Gravel	X Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	X Normal	Excessive		Other
Biology	None	X Insects	X Algae	Fish	X Snails	Mussels/ Barnacles	X Insect/ Algae	X Insect/ Snail	Other

Water Flow X Flowing | Ponded | Dry | Tidal

Does the storm drain flow reach the Receiving Water? X Yes | No | N/A

Evidence of Overland Flow? Yes | X No | Irrigation Runoff | Other: _____

Photo Taken Yes | X No **Photo #** _____

Field Screening Samples Collected? X Yes | No

Water Temp (°C)	22.2	NH3-N (mg/L)	NA	NO3 (mg/L)	~~22.50~~ NA	Ortho-PO4 (mg/L)	NA
pH (pH units)	8.2	TURB (NTU)	NA	NO3-N (mg/L)	NA	Ortho-PO4 -P (mg/L)	NA
COND (mS/cm)	1.62	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	10	in
Depth	.25	in
Velocity	10/10	ft/sec
Flow	8	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Post City cleanup, Minor oil sheen at edges of earthen channel banks.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	S5c		Latitude	32.843463	Watershed	Hydrologic Unit	907
Location	North of Town Center Parkway between Mission Gorge Road and Cuyamaca Street, north-west of Michaels		Longitude	-116.98795		Hydrologic Area	907.1
			TB Page	1231 C6		Hydrologic Subarea (Optional)	907.12
Date	5/18/10	Time 12:15	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential | Commercial | Industrial | Agricultural | Parks | Open

Land Use (Secondary) (Optional, greater than 10%): Residential | Commercial | Industrial | Agricultural | Parks | Open | None

Conveyance (Check one only): Manhole | Catch Basin | Outlet | Concrete Channel | Natural Creek | Earthen Channel | Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog			
Tide	N/A	Low	Incoming	High	Outgoing	**Tide Height:** _____ ft.	
Last Rain	> 72 hours	< 72 hours					
Rainfall	None	< 0.1"	> 0.1"				

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other		
Color	None	Yellow	Brown	White	Gray	Other		
Clarity	Clear		Slightly Cloudy	Opaque	Other			
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other		
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other		
Vegetation	None	Limited	Normal	Excessive	Other			
Biology	None	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow Flowing | Ponded | Dry | Tidal

Does the storm drain flow reach the Receiving Water? Yes | No | N/A

Evidence of Overland Flow? Yes | No | Irrigation Runoff | Other: _____

Photo Taken Yes | No **Photo #** 20-21

Field Screening Samples Collected? Yes | No

Water Temp (°C)	20.1	NH_3-N (mg/L)	0.025	NO_3 (mg/L)	34.19	Ortho-PO_4 (mg/L)	0.135
pH (pH units)	7.7	TURB (NTU)	4.04	NO_3-N (mg/L)	7.739	Ortho-PO_4-P (mg/L)	0.040
COND (mS/cm)	0.87	MBAS (mg/L)	0.25	DO (mg/L)	5.34		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: S5c DATE: 5/18/10

OBSERVER: MD/AK TIME: 12:15

LOCATION: North of Town Center Parkway between Mission Gorge Road and Cuyamaca Street, northwest of Michael's

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

(Field Screening) Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) (MS4) Receiving Water

Site ID	S15b		Latitude	32.84326	Watershed	Hydrologic Unit	907
Location	North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, north of Walmart, west of trail		Longitude	-116.98969		Hydrologic Area	907.1
			TB Page	1231-C6		Hydrologic Subarea (Optional)	907.12
Date	5/20/10	Time 1330	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential, (Commercial), Industrial, Agricultural, Parks, Open

Land Use (Secondary) (Optional, greater than 10%): Residential, Commercial, Industrial, Agricultural, Parks, Open, (None)

Conveyance (Check one only): Manhole, Catch Basin, (Outlet), Concrete Channel, Natural Creek, Earthen Channel, Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	(Sunny)	Partly Cloudy	Overcast	Fog		
Tide	(N/A)	Low	Incoming	High	Outgoing	Tide Height: ____ ft.
Last Rain	(> 72 hours)	< 72 hours				
Rainfall	(None)	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	(None)	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	(Yellow)	Brown	White	Gray	Other
Clarity	(Clear)		Slightly Cloudy	Opaque		Other
Floatables	(None)	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	(Fine Particulates)	Stains	Oily Deposits	Other
Vegetation	None	Limited	(Normal)	Excessive		Other
Biology	None	(Insects) (Algae)	Fish	Snails	Mussels/ Barnacles	(Insect/ Algae) Insect/ Snail Other

Water Flow: (Flowing) Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? (Yes) No (N/A)

Evidence of Overland Flow? Yes (No) Irrigation Runoff Other: _____

Photo Taken (Yes) No Photo # 58-59

Field Screening Samples Collected? (Yes) No

Water Temp (°C)	21.3	NH3-N (mg/L)	0.155	NO3 (mg/L)	17.82	Ortho-PO4 (mg/L)	0.732
pH (pH units)	8.0	TURB (NTU)	3.54	NO3-N (mg/L)	4.029	Ortho-PO4 -P (mg/L)	0.239
COND (mS/cm)	2.22	MBAS (mg/L)	0.38	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: S15h DATE: 5/20/10

OBSERVER: MD/AK TIME: 1530

LOCATION: North of Town Center Parkway, between Mission Gorge Road and Cuyamaca Street, north of Walmart, west of trail

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LW

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	TSe		Latitude	32.83393	Watershed	Hydrologic Unit	907
Location	Northwest of the Prospect Avenue and Argent Street intersection, South of Forester Creek		Longitude	-116.98986		Hydrologic Area	907.1
			TB Page	1231 - C7		Hydrologic Subarea (Optional)	907.12
Date	8/20/10	Time 1410	Observer	MD / AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	Tide Height: ____ ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other	N/A
Color	None	Yellow	Brown	White	Gray	Other	N/A
Clarity	Clear		Slightly Cloudy	Opaque		Other	N/A
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other	N/A
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other	
Vegetation	None	Limited	Normal	Excessive		Other	
Biology	None	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow: Flowing Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No **Photo #** 60m

Field Screening Samples Collected? Yes No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: TSe DATE: 5/20/10

OBSERVER: MD/AK TIME: 1410

LOCATION: Northwest of the Prospect Avenue and Argent Street intersection, South of Forester Creek

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LR

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

(Field Screening) Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) (MS4) Receiving Water

Site ID	V402		**Latitude**	32.83375	Watershed	**Hydrologic Unit**	907
Location	On the South side of Prospect Avenue, east of Fanita Drive		**Longitude**	-117.00005		**Hydrologic Area**	907.1
			TB Page	1231-B7		**Hydrologic Subarea** (Optional)	907.12
Date	5/20/10	**Time** 9:15	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): (Residential) Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open (None)

Conveyance (Check one only): Manhole Catch Basin Outlet (Concrete Channel) Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather (Sunny) Partly Cloudy Overcast Fog

Tide (N/A) Low Incoming High Outgoing **Tide Height:**_____ft.

Last Rain (> 72 hours) < 72 hours

Rainfall (None) < 0.1" > 0.1"

RUNOFF CHARACTERISTICS

Odor	(None)	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	(None)	Yellow	Brown	White	Gray	Other
Clarity	(Clear)		Slightly Cloudy	Opaque		Other
Floatables	(None)	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	(Fine Particulates)	Stains	Oily Deposits	Other
Vegetation	(None)	Limited	Normal	Excessive		Other
Biology	None	(Insects) (Algae)	Fish (Snails)	Mussels/ Barnacles	(Insect/ Algae) (Insect/ Snail)	Other
Water Flow	(Flowing)	Ponded	Dry	Tidal		

Does the storm drain flow reach the Receiving Water? Yes No (N/A)

Evidence of Overland Flow? Yes (No) Irrigation Runoff Other: _____

Photo Taken (Yes) No **Photo #** 50-52

Field Screening Samples Collected? (Yes) No

Water Temp (°C)	20.1	NH3-N (mg/L)	0.161	NO3 (mg/L)	0.000	Ortho-PO4 (mg/L)	0.042
pH (pH units)	8.3	TURB (NTU)	0.50	NO3-N (mg/L)	0.000	Ortho-PO4 -P (mg/L)	0.014
COND (mS/cm)	4.24	MBAS (mg/L)	0.50	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	25	in
Depth	.25	in
Velocity	10/7	ft/sec
Flow	28	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: One Shopping cart

2010 Trash Assessment Form

SITE ID: V402 DATE: 5/20/10

OBSERVER: MD/AK TIME: 9:15

LOCATION: On the south side of Prospect Avenue, east of Fanita Drive

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

X Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	V45k		Latitude	32.88895	Watershed	Hydrologic Unit	907
Location	On the north side of Mission Gorge Road, at the north end of freeway 125		Longitude	-117.00281		Hydrologic Area	907.1
			TB Page	1231-A6		Hydrologic Subarea (Optional)	907.12
Date	5/18/10	Time 1300	Observer	MD / AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential, Commercial, Industrial, Agricultural, Parks, Open

Land Use (Secondary) (Optional, greater than 10%): Residential, Commercial, Industrial, Agricultural, Parks, Open, None

Conveyance (Check one only): Manhole, Catch Basin, Outlet, Concrete Channel, Natural Creek, Earthen Channel, Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	Tide Height: ____ ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits	Other
Vegetation	None	Limited	Normal	Excessive		Other
Biology	None	Insects, Algae	Fish	Snails	Mussels/ Barnacles, Insect/ Algae	Insect/ Snail, Other

Water Flow: Flowing, Ponded, Dry, Tidal

Does the storm drain flow reach the Receiving Water? Yes, No, N/A

Evidence of Overland Flow? Yes, No, Irrigation Runoff, Other: _____

Photo Taken: Yes, No Photo # 22-24

Field Screening Samples Collected? Yes, No

Water Temp (°C)	20.4	NH3-N (mg/L)	0.169	NO3 (mg/L)	0.856	Ortho-PO4 (mg/L)	0.233
pH (pH units)	7.8	TURB (NTU)	1.76	NO3-N (mg/L)	0.189	Ortho-PO4 -P (mg/L)	0.080
COND (mS/cm)	3.95	MBAS (mg/L)	0.50	DO (mg/L)	7.95		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	10	in
Depth	5	in
Velocity	10/12	ft/sec
Flow	13	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: V45K DATE: 5/18/10

OBSERVER: MD/AK TIME: 1300

LOCATION: On the north side of Mission Gorge Road, at the North end of freeway 125

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 30

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LN

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) MS4 Receiving Water

Site ID	W30c		Latitude	32.834668	Watershed	Hydrologic Unit	907
Location	In the southbound lane of Mesa Road, at the intersection of Mesa Road and Graham Terrace		Longitude	-117.01383		Hydrologic Area	907.1
			TB Page	1230-J7		Hydrologic Subarea (Optional)	907.12
Date	5/19/10	Time 15:15	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): Residential Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open None

Conveyance (Check one only): Manhole Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog			
Tide	N/A	Low	Incoming	High	Outgoing	Tide Height: _____ ft.	
Last Rain	> 72 hours	< 72 hours					
Rainfall	None	< 0.1"	> 0.1"				

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage			Other
Color	None	Yellow	Brown	White	Gray			Other
Clarity	Clear		Slightly Cloudy	Opaque				Other
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter			Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposits			Other
Vegetation	None	Limited	Normal	Excessive				Other
Biology	None	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other
Water Flow	Flowing	Ponded	Dry	Tidal				

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No Photo # 48-49

Field Screening Samples Collected? Yes No

Water Temp (°C)	23.0	NH_3-N (mg/L)	3.052	NO_3 (mg/L)	3.895	Ortho-PO_4 (mg/L)	49.73
pH (pH units)	7.8	TURB (NTU)	147	NO_3-N (mg/L)	0.880	Ortho-PO_4-P (mg/L)	16.21
COND (mS/cm)	4.27	MBAS (mg/L)	>3	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: W30c DATE: 5/19/10

OBSERVER: MD/AK TIME: 1515

LOCATION: In the south bound lane of Mesa Road, at the intersection of Mesa Road and Graham Terrace

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

Field Screening X Confirmation For Ammonia, Turbidity, MBAS, Phosphate; IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) (MS4) Receiving Water

Site ID	W30c	Latitude	32.83468	Watershed	Hydrologic Unit	907
Location	In the southbound lane of Mesa Road, at the intersection of Mesa Road and Carnham Terrace	Longitude	-117.01383		Hydrologic Area	907.1
		TB Page	1230-J7		Hydrologic Subarea (Optional)	907.12
Date	5/20/10	Time	~~5:15~~ 11:00	Observer	MD/AK	Discharge Area (Optional)	

Land Use (Primary) (Check one only): (Residential) Commercial Industrial Agricultural Parks Open

Land Use (Secondary) (Optional, greater than 10%): Residential Commercial Industrial Agricultural Parks Open (None)

Conveyance (Check one only): (Manhole) Catch Basin Outlet Concrete Channel Natural Creek Earthen Channel Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	(Sunny)	Partly Cloudy	Overcast	Fog		
Tide	(N/A)	Low	Incoming	High	Outgoing	Tide Height: _____ ft.
Last Rain	(> 72 hours)	< 72 hours				
Rainfall	(None)	< 0.1"	> 0.1"			

RUNOFF CHARACTERISTICS

Odor	(None)	Musty	Rotten Eggs	Chemical	Sewage	Other		
Color	(None)	Yellow	Brown	White	Gray	Other		
Clarity	(Clear)		Slightly Cloudy	Opaque	Other			
Floatables	(None)	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other		
Deposits	None	Sediment/Gravel	(Fine Particulates)	Stains	Oily Deposits	Other		
Vegetation	(None)	Limited	Normal	Excessive	Other			
Biology	(None)	Insects	Algae	Fish	Snails	Mussels/ Barnacles	Insect/ Algae	Insect/ Snail	Other

Water Flow (Flowing) Ponded Dry Tidal

Does the storm drain flow reach the Receiving Water? Yes No (N/A)

Evidence of Overland Flow? Yes (No) Irrigation Runoff Other: _____

Photo Taken Yes (No) **Photo #** _____

Field Screening Samples Collected? (Yes) No

Water Temp (°C)	24.8	NH_3-N (mg/L)	0.175	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	0.470
pH (pH units)	8.3	TURB (NTU)	3.48	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	0.153
COND (mS/cm)	4.81	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

4

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	215a1		**Latitude**	32.83737	**Watershed**	**Hydrologic Unit**	907
Location	On the South side of Mission Gorge Road, east of Father Junipero Serra Trail		**Longitude**	-117.03005		**Hydrologic Area**	907.1
			TB Page	1230 - G7		**Hydrologic Subarea** (Optional)	907.12
Date	5/21/10	**Time** 9:00	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 67-68

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	17.1	NH_3-N (mg/L)	0.657	NO_3 (mg/L)	9.385	Ortho-PO_4 (mg/L)	0.601
pH (pH units)	7.8	TURB (NTU)	6.43	NO_3-N (mg/L)	2.121	Ortho-PO_4-P (mg/L)	0.197
COND (mS/cm)	1.21	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: 215-1 DATE: 5/21/10

OBSERVER: MD/AK TIME: 9:00

LOCATION: On the south side of Mission Gorge Road, east of Father Junipero Serra Trail

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

Round Two

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	A5c		**Latitude**	32.84081	Watershed	**Hydrologic Unit**	907
Location	Next to 8335 Carlton Oaks Dr, b/w Cadorette Ave and Prairie St.		**Longitude**	-117.02160		**Hydrologic Area**	907.1 JVR
			TB Page	1230 H6		**Hydrologic Subarea** (Optional)	907.12
Date	9/21/10	**Time** 11:00	**Observer**	MD/JVR		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☑ Sheen DUST	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☑ Algae	☐ Fish	☑ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☑ Yes ☐ No **Photo #** 96-97.

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	18.1	NH_3-N (mg/L)	0.096	NO_3 (mg/L)	9.789	Ortho-PO_4 (mg/L)	0.234
pH (pH units)	8.1	TURB (NTU)	1.08	NO_3-N (mg/L)	2.212	Ortho-PO_4-P (mg/L)	0.076
COND (mS/cm)	1.43	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: A5c DATE: 9/21/10

OBSERVER: MD/JK TIME: 11:00

LOCATION: Next to 8335 Carlton Oaks Dr, b/w Cadorette Ave and Praful St

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees

City of Santee

Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	E5g1		Latitude	32.84885	Watershed	Hydrologic Unit	907
Location	Santee Recreational Lakes, West side of entrance road approx. 100 feet south of entrance toll booth in grassy area		Longitude	-117.00471		Hydrologic Area	907.12
			TB Page	1231 A5		Hydrologic Subarea (Optional)	907.12
Date	9/15/10	Time 3:30	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☑ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 40/41/42

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.2	NH_3-N (mg/L)	0.157	NO_3 (mg/L)	5.988	Ortho-PO_4 (mg/L)	0.956
pH (pH units)	7.9	TURB (NTU)	3.06	NO_3-N (mg/L)	1.353	Ortho-PO_4-P (mg/L)	0.312
COND (mS/cm)	2.82	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: ESg 1 DATE: 9/15/10

OBSERVER: MD/JK TIME: 3:30

LOCATION: Santee Recreation lakes, west side of entrance road approx. 100 ft south of toll booth in grassy area

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	G30C		**Latitude**	32.84501	Watershed	**Hydrologic Unit**	907
Location	South end of River Trail Place, north of SD River, down trail to the west (14:30)		**Longitude**	-116.99122		**Hydrologic Area**	907.12
			TB Page	1231 C5		**Hydrologic Subarea** (Optional)	907.12
Date	9/20/10	**Time** 2:30	**Observer**	MD / JK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☐ None ☑ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☑ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☑ Other water lilies

Deposits ☐ None ☑ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other algae

Vegetation ☐ None ☐ Limited ☑ Normal ☐ Excessive ☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 79-86

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	25.8	NH_3-N (mg/L)	0.331	NO_3 (mg/L)	3.585	Ortho-PO_4 (mg/L)	0.843
pH (pH units)	8.2	TURB (NTU)	2.93	NO_3-N (mg/L)	0.810	Ortho-PO_4-P (mg/L)	0.275
COND (mS/cm)	2.65	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: G30c DATE: 9/20/10

OBSERVER: MD/LK TIME: 2:30 (14:30)

LOCATION: south end of River Trail place, north of SD River, down trail to west

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☑ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present. shopping cart
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	Site H5e		Latitude	32.84561	Watershed	Hydrologic Unit	907
Location	S of River Park Dr., at end of walkway between Brookview Ct & River Walk Ct, N of San Diego River		Longitude	-116.98769		Hydrologic Area	907.1
			TB Page	1231-C5		Hydrologic Subarea (Optional)	907.12
Date	9/14/10	Time 14:35	Observer	MO/TT		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☑ Algae	☐ Fish	☑ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☐ No **Photo #** 23-24

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.0	NH_3-N (mg/L)	0.133	NO_3 (mg/L)	1.315	Ortho-PO_4 (mg/L)	0.632
pH (pH units)	7.7	TURB (NTU)	1.55	NO_3-N (mg/L)	0.297	Ortho-PO_4 -P (mg/L)	0.206
COND (mS/cm)	1.92	MBAS (mg/L)	0.13	DO (mg/L)			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: Site #5e DATE: 9/14/10

OBSERVER: MO/CT TIME: 14:35

LOCATION: S of River Park Dr., at end of walkway between Bonkview Ct & River Rock Ct., N of San Diego River

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	I10c		Latitude	32.84561	Watershed	Hydrologic Unit	907
Location	South bank of the San Diego River, East of Cuyamaca St, under bridge, Westernmost outfall		Longitude	-116.98340		Hydrologic Area	907.1
			TB Page	1231 C5		Hydrologic Subarea (Optional)	907.12
Date	9/21/10	Time 12:10	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☑ Yes ☐ No **Photo #** 98-100

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.1	NH_3-N (mg/L)	0.060	NO_3 (mg/L)	22.38	Ortho-PO_4 (mg/L)	0.030
pH (pH units)	7.8	TURB (NTU)	0.29	NO_3-N (mg/L)	5.058	Ortho-PO_4-P (mg/L)	0.010
COND (mS/cm)	1.10	MBAS (mg/L)	0.13	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	7	in
Depth	0.25	in
Velocity	5/7	ft/sec
Flow	4	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: I10C DATE: 9/21/10

OBSERVER: MD/JK TIME: 12:10

LOCATION: South bank of the San Diego River, East of Cuyamaca St, under bridge, westernmost outfalls,

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): ~~N/A~~ Marginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25 x 8

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☑ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

SITE ID: I10 c

*** Complete the following section for Submarginal, and Poor Evaluations ONLY ***

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging	1		✓	✓				✓			✓	
Food Waste												
Household	3		✓	✓				✓			✓	
Shopping Carts (1)	2	✓						✓			✓	
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J25c		Latitude	32.85813	Watershed	Hydrologic Unit	907
Location	West end of Caretree Drive on the west side of the channel		Longitude	-116.97601		Hydrologic Area	907.12
			TB Page	1231 D4		Hydrologic Subarea (Optional)	907.12
Date	9/17/10	Time 12:50	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 108-70

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.1	NH_3-N (mg/L)	0.197	NO_3 (mg/L)	3.151	Ortho-PO_4 (mg/L)	0.095
pH (pH units)	8.2	TURB (NTU)	1.58	NO_3-N (mg/L)	0.712	Ortho-PO_4-P (mg/L)	0.031
COND (mS/cm)	1.60	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	7	in
Depth	0.25	in
Velocity	5/4	ft/sec
Flow	7	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: J25C DATE: 9/17/10

OBSERVER: MD/JK TIME: 12:50

LOCATION: West end of Carefree Drive on the west side of the channel

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LC

San Diego Stormwater Copermittees

City of Santee

Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For Bacteria (Total and fecal) ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J25c			Latitude	32.85813	Watershed	Hydrologic Unit 907
Location	West end of Carefree Drive on the west side of the channel			Longitude	-116.97601		Hydrologic Area 907.1
				TB Page	1231 D4		Hydrologic Subarea (Optional) 907.12
Date	9/27/10	Time	12:20	Observer	MD / JK	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 8-9

Field Screening Samples Collected? ☑ Yes ☑ No JK

Water Temp (°C)	24.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.3	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	4.19	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	5	in
Depth	0.25	in
Velocity	5/8	ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

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San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For Bacteria (Total and Fecal)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J25c-1		**Latitude**	32.86248	**Watershed**	**Hydrologic Unit**	907
Location	El Nopal and Molino Rd on west side		**Longitude**	-116.97963		**Hydrologic Area**	907.1
			TB Page	1231 D3		**Hydrologic Subarea** (Optional)	907.12
Date	9/27/10	**Time** 2:10	**Observer**	MD/JR		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 10-14 (with channel) PMO

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

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San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For Bacteria (Total and Fecal)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J25c-2	**Latitude**	32.86275	**Watershed**	**Hydrologic Unit**	907
Location	channel at El Nopal and Molino Rd on west side	**Longitude**	-116.97967		**Hydrologic Area**	907.1
		TB Page	1231 D3		**Hydrologic Subarea** (Optional)	907.12
Date	9/27/10	**Time**	3:30 (15:30)	**Observer**	MD/JR	**Discharge Area** (Optional)

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☑ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☑ Other larvae

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☑ Yes ☐ No **Photo #** 10 - 14 (with manhole pics)

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: dry near manhole downstream and farther upstream in concrete channel, sampled with syringe
animal waste in channel / on edges, minor trash
decomposing algae and other vegetation

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

VC

☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For Bacteria (Total and fecal)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J25C-3		**Latitude**	32.86227	**Watershed**	**Hydrologic Unit**	907
Location	outlet to sedimentation basin at west end of Shoredale Dr.		**Longitude**	-116.98203		**Hydrologic Area**	907.1
			TB Page	1231 D3		**Hydrologic Subarea** (Optional)	907.12
Date	9/27/10	**Time** 2:40 (14:40)	**Observer**	MD/JR		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 15-16

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	4	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: outlet drain inside detention basin

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For Bacteria (Total and Fecal)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	J25c-4		**Latitude**	32.862388	**Watershed**	**Hydrologic Unit**	907
Location	Downstream of sedimentation basin at the west end of Shoredale Dr.		**Longitude**	-116.98193		**Hydrologic Area**	907.1
			TB Page	1231 D3		**Hydrologic Subarea** (Optional)	907.12
Date	9/27/10	**Time** 2:50 (1450)	**Observer**	MD/JK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects ☑ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 17-18

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: outflow from catch basin

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☐ MS4 ☑ Receiving Water

Site ID	J30d1			Latitude	32.85175	Watershed: Hydrologic Unit	907
Location	In Woodglen Vista Channel at Riverwalk Dr and Park Center Dr intersection, north side of bridge			Longitude	-116.97606	Hydrologic Area	907.12
				TB Page	1231 D4	Hydrologic Subarea (Optional)	907.12
Date	9/16/10	Time	12:10	Observer	MD/JK	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☑ Yes ☐ No **Photo #** 48/49/50

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	19.4	NH_3-N (mg/L)	0.270	NO_3 (mg/L)	1.130	Ortho-PO_4 (mg/L)	0.078
pH (pH units)	7.6	TURB (NTU)	0.01	NO_3-N (mg/L)	0.255	Ortho-PO_4-P (mg/L)	0.025
COND (mS/cm)	3.04	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Due to dense vegetation, width/depth could not be measured so flow was estimated.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: J30d1 DATE: 9/16/10

OBSERVER: MD/JK TIME: 12:10

LOCATION: In Woodglen Vista channel at Riverwalk Dr and Park Center Dr intersection, north side of bridge

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☐ MS4 ☑ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	015f		Latitude	32.84653	Watershed	Hydrologic Unit	907
Location	North side of Northcote Road, between Woodside Avenue and Via Madonna		Longitude	-116.95520		Hydrologic Area	907.1 ~~JK~~
			TB Page	1231 G5		Hydrologic Subarea (Optional)	907.12
Date	9/16/10	Time (14:15) 2:15	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☑ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☑ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ~~☐ No~~ ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 51/52

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.0	NH_3-N (mg/L)	3.08	NO_3 (mg/L)	0.884	Ortho-PO_4 (mg/L)	2.885
pH (pH units)	7.4	TURB (NTU)	16.016	NO_3-N (mg/L)	0.200	Ortho-PO_4 -P (mg/L)	0.941
COND (mS/cm)	1.58	MBAS (mg/L)	2.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: 015f DATE: 9/16/10

OBSERVER: MD/JR TIME: 2:15 (14:15)

LOCATION: North side of Northcote Rd, between Woodside Ave and Via Madonna

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): ~~N/A~~ Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees

City of Santee

Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For Ammonia and Detergent (MBAS) ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	015f		Latitude	32.84653	Watershed	Hydrologic Unit	907
Location	North side of Northcote Road, between Woodside Ave. and Via Madonna		Longitude	-116.95520		Hydrologic Area	907.1
			TB Page	1231 G5		Hydrologic Subarea (Optional)	907.12
Date	9/17/10	Time 14:30	Observer	MD DR		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.8	NH_3-N (mg/L)	3.30	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.4	TURB (NTU)	23.49	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.35	MBAS (mg/L)	1.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ 2nd Confirmation For Ammonia and Detergent (MBAS) ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	015 f		Latitude	32.84653	Watershed	Hydrologic Unit	907
Location	Northside of Northcote Rd between Woodside Ave and Via Madonna		Longitude	-116.95520		Hydrologic Area	907.1
			TB Page	1231 G5		Hydrologic Subarea (Optional)	907.12
Date	9/20/10	Time 1:30 (13:30)	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.4	NH_3-N (mg/L)	2.227	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.2	TURB (NTU)	7.98	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.98	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	040b		Latitude	32.84851	Watershed	Hydrologic Unit	907
Location	At the north end of Abraham Way, south of San Diego River		Longitude	-116.96392		Hydrologic Area	907.1/JR
			TB Page	1231 F5		Hydrologic Subarea (Optional)	907.12
Date	9/21/10	Time 10:10	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage			☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray			☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque				☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter			☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits			☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive				☐ Other
Biology	☐ None	☐ Insects	☑ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 94-95

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	17.8	NH_3-N (mg/L)	0.515	NO_3 (mg/L)	34.70	Ortho-PO_4 (mg/L)	1.664
pH (pH units)	8.1	TURB (NTU)	18.56	NO_3-N (mg/L)	9.022	Ortho-PO_4-P (mg/L)	0.542
COND (mS/cm)	2.00	MBAS (mg/L)	0.75	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: 040b DATE: 9/21/10

OBSERVER: MD/JR TIME: 10:10

LOCATION: At the north end of Abraham Way, south of San Diego River

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☑ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	P10a		Latitude	32.83647	Watershed	Hydrologic Unit	907
Location	Northbound lane of Graves Ave., in front of northwest gate at Greystone Ridge Townhouses		Longitude	-116.96145		Hydrologic Area	907.1
			TB Page	1231 F7		Hydrologic Subarea (Optional)	907.12
Date	9/21/10	Time 9:20	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other	NA
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other	NA
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other	NA
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other	NA
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other	

Biology ☑ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 92-93

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 -P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NS		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	DRY	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: P10a DATE: 9/21/10

OBSERVER: MD/JK TIME: 9:20

LOCATION: Northbound lane of Graves Ave, in front of northernmost gate of Greystone Ridge townhouses

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): ~~N/A~~ Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	P20f		Latitude	32.84674	Watershed	Hydrologic Unit	907
Location	Magnolia Avenue, east of Chubb Lane		Longitude	-116.96920		Hydrologic Area	907.1 JK
			TB Page	1231 E5		Hydrologic Subarea (Optional)	907.12
Date	9/17/10	Time 12:15	Observer	MD/JK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☑ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 66-67

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	29.7	NH_3-N (mg/L)	0.179	NO_3 (mg/L)	19.54	Ortho-PO_4 (mg/L)	0.105
pH (pH units)	8.7	TURB (NTU)	0.22	NO_3-N (mg/L)	4.416	Ortho-PO_4-P (mg/L)	0.034
COND (mS/cm)	1.38	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	10	in
Depth	0.25	in
Velocity	5/8	ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: P20f DATE: 9/17/10

OBSERVER: MD/JR TIME: 9/ 12:15

LOCATION: Magnolia Avenue, east of Chubb Lane

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): marginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	Q20a	Latitude	32.83499	Watershed	Hydrologic Unit	907
Location	In front of 10220 Buena Vista Avenue	Longitude	-116.97509		Hydrologic Area	907.1/JK
		TB Page	1231 D7		Hydrologic Subarea (Optional)	907.12
Date	9/20/10 Time 3:20 (15:20)	Observer	MD/JK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☑ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 81-84

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	25.3	NH_3-N (mg/L)	0.190	NO_3 (mg/L)	46.90	Ortho-PO_4 (mg/L)	1.182
pH (pH units)	8.3	TURB (NTU)	2.90	NO_3-N (mg/L)	10.599	Ortho-PO_4-P (mg/L)	0.385
COND (mS/cm)	2.08	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: sediment build up

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: Q20a

DATE: 9/20/10

OBSERVER: MD/JK

TIME: 3:20 (15:20)

LOCATION: In front of 10220 Buena Vista Avenue

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): ~~N/A~~ Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	Q200a		Latitude	32.83494	Watershed	Hydrologic Unit	907
Location	In front of 10220 Buena Vista Ave.		Longitude	-116.97509		Hydrologic Area	907.12 JK
			TB Page	1231 D7		Hydrologic Subarea (Optional)	907.12
Date	9/21/10	Time 13:45	Observer	MD / JK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other NA
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other NA
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other NA
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other NA.
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☑ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NS		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	DRY	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	RCP1			Latitude	32.84959	Watershed: Hydrologic Unit	907
Location	North bank of San Diego River in BCP Brick Factory, across from SW corner of ankennae he			Longitude	-116.96659	Hydrologic Area	907.12 JR
				TB Page	1231 E5	Hydrologic Subarea (Optional)	907.12
Date	9/16/10	Time	10:50	Observer	MD/JR	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☑ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/Barnacles ☐ Insect/Algae ☐ Insect/Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☑ Yes ☐ No **Photo #** 46/47

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	21.8	NH_3-N (mg/L)	0.149	NO_3 (mg/L)	46.81	Ortho-PO_4 (mg/L)	0.209
pH (pH units)	8.2	TURB (NTU)	0.25	NO_3-N (mg/L)	10.579	Ortho-PO_4-P (mg/L)	0.068
COND (mS/cm)	1.65	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6	in
Depth	0.25	in
Velocity	5/7	ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS:

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: RCP 1 DATE: 9/16/10

OBSERVER: MD/JK TIME: 10:00

LOCATION: North bank of San Diego River in RCP Brick Factory, across from SW corner of antennae field

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

MEM

☐ Field Screening ☑ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	RCP 1		Latitude	32.84959	Watershed	Hydrologic Unit	907
Location	North bank of San Diego River in RCP Brick factory, across from SW corner of antennae field		Longitude	-116.96659		Hydrologic Area	907.12
			TB Page	1231 E5		Hydrologic Subarea (Optional)	
Date	9/17/10	Time 11:00	Observer	MD/JK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	22.0	NH_3-N (mg/L)	NA	NO_3 (mg/L)	30.52	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.2	TURB (NTU)	14.016	NO_3-N (mg/L)	6.898	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.41	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	7	in
Depth	0.25	in
Velocity	5.7	ft/sec
Flow	4	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	RCP-03		Latitude	32.84959	Watershed	Hydrologic Unit	907
Location	N. bank of the San Diego River in the RCP Brick Factory, across from the SE corner of the antenna field		Longitude	-116.96859		Hydrologic Area	907.1
			TB Page	1231-E5		Hydrologic Subarea (Optional)	907.12
Date	9/14/10	Time 13:45	Observer	MB/IT	Discharge Area (Optional)		

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 20-22

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.6	NH_3-N (mg/L)	0.171	NO_3 (mg/L)	43.78	Ortho-PO_4 (mg/L)	0.410
pH (pH units)	7.9	TURB (NTU)	4.29	NO_3-N (mg/L)	9.894	Ortho-PO_4-P (mg/L)	0.134
COND (mS/cm)	1.84	MBAS (mg/L)	0.25	DO (mg/L)			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	8	in
Depth	.25	in
Velocity	5/8	ft/sec
Flow	4	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: Site RCP-03 DATE: 9/14/10

OBSERVER: MD/IT TIME: 13:45

LOCATION: N. bank of the San Diego River in the RCP Back Factory, across from SE corner of antennae field

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Marginal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 15X10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	S5c		Latitude	32.84363	Watershed	Hydrologic Unit	907
Location	North of Town Center Pkwy, b/w Mission Gorge Rd and Cuyamaca st, NW of Michaels		Longitude	-116.98795		Hydrologic Area	907.12
			TB Page	1231 C6		Hydrologic Subarea (Optional)	907.12
Date	9/16/10	Time 3:20	Observer	MD/JK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☑ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☑ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☑ Yes ☐ No **Photo #** 53/54, 55-61

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.7	NH_3-N (mg/L)	0.079	NO_3 (mg/L)	0.226	Ortho-PO_4 (mg/L)	0.213
pH (pH units)	7.9	TURB (NTU)	1.37	NO_3-N (mg/L)	1.407	Ortho-PO_4-P (mg/L)	0.069
COND (mS/cm)	1.24	MBAS (mg/L)	0.13	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: evidence of human inhabitants - tents and belongings

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: S5c

DATE: 9/16/10

OBSERVER: MD/JR

TIME: 3:20

LOCATION: North of Town Center Pkwy, b/w Mission Gorge Rd and Cuyamaca St, NW of Michael's

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	S15h		Latitude	32.84326	Watershed	Hydrologic Unit	907
Location	North of Town Center Pkwy between Mission Gorge Rd and Cuyamaca St, north of Walmart West of Trail		Longitude	-116.98969		Hydrologic Area	907.1 JR
			TB Page	1231 C6		Hydrologic Subarea (Optional)	907.12
Date	9/15/10	Time 2:15	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☑ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 38/39

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.8	NH_3-N (mg/L)	1.060	NO_3 (mg/L)	1.332	Ortho-PO_4 (mg/L)	0.972
pH (pH units)	7.4	TURB (NTU)	3.31	NO_3-N (mg/L)	0.301	Ortho-PO_4-P (mg/L)	0.317
COND (mS/cm)	2.13	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1 (trickle)	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: 915h

DATE: 9/15/10

OBSERVER: MD/JR

TIME: 2:15

LOCATION: North of Town Centr Pkwy between Mission Gorge Rd and Cuyamaca St, north of Walmart east of trail

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

HRM

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For Ammonia ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	S15h		**Latitude**	32.84326	**Watershed**	**Hydrologic Unit**	907
Location	North of Town Centr Pkwy between Mission Gorge Rd and Cuyamaca St, north of Walmart west of trail		**Longitude**	-116.98969		**Hydrologic Area**	907.12
			TB Page	1231 C6		**Hydrologic Subarea** (Optional)	
Date	9/16/10	**Time** 10:15	**Observer**	MD/JR		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☑ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☑ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	19.9	NH_3-N (mg/L)	0.355	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.0	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	2.20	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	T5e		Latitude	32.83393	Watershed	Hydrologic Unit	907
Location	NW of the Prospect Ave and Argent St. intersection, south of Forester Creek		Longitude	-116.98956		Hydrologic Area	907.1 ~~JK~~
			TB Page	1231 C7		Hydrologic Subarea (Optional)	907.12
Date	9/20/10	Time 11:00	Observer	MD/JK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 77-78

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	21.7	NH_3-N (mg/L)	0.279	NO_3 (mg/L)	3.742	Ortho-PO_4 (mg/L)	0.967
pH (pH units)	7.2	TURB (NTU)	~~27.52~~ 21.88	NO_3-N (mg/L)	0.846	Ortho-PO_4-P (mg/L)	0.315
COND (mS/cm)	0.92	MBAS (mg/L)	0.13	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Turbidity was due to sampling within rocks. Water was disturbed.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: TSe DATE: 9/20/10

OBSERVER: MD/JK TIME: 11:00

LOCATION: NW of the Prospect Ave and Argent St Intersection, south of Forester Creek

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	V40d			Latitude	32.83375	Watershed: Hydrologic Unit	907
Location	on south side of Prospect Ave, east of Fanita Drive			Longitude	-117.00005	Hydrologic Area	907.17
				TB Page	1231 B7	Hydrologic Subarea (Optional)	907.12
Date	9/17/10	Time	10:10	Observer	MD/JK	Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☐ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/~~Gravel~~ ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☑ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☑ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 64-65

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.5	NH_3-N (mg/L)	0.455	NO_3 (mg/L)	2.132	Ortho-PO_4 (mg/L)	0.022
pH (pH units)	8.3	TURB (NTU)	3.35	NO_3-N (mg/L)	0.482	Ortho-PO_4-P (mg/L)	0.007
COND (mS/cm)	3.84	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	20	in
Depth	0.25	in
Velocity	10/8	ft/sec
Flow	20	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: V40d

DATE: ~~10/10~~ 9/17/10

OBSERVER: MD/JR

TIME: 10:10

LOCATION: On South side of Prospect Ave, east of Fanita Drive

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☑ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present. Shopping cart
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For Bactena (Enterococcus) ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	V40d			Latitude	32.83375	Watershed: Hydrologic Unit	907
Location	on south side of Prospect Ave, east of Fanita Drive			Longitude	-117.00005	Hydrologic Area	907.1
				TB Page	1231 B7	Hydrologic Subarea (Optional)	907.12
Date	9/27/10	Time	9:45	Observer	MD/JR	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☑ Algae	☐ Fish	☑ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 1-5

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	26.3	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.2	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	3.00	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	18	in
Depth	0.25	in
Velocity	10/8	ft/sec
Flow	17	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: animal waste along edges

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

VC

☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For Bacteria (Entero coc)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	V40d-1		Latitude	32.82719	Watershed	Hydrologic Unit	907
Location	Natural creek in Farrington ~~Court~~ Drive.		Longitude	117.00134		Hydrologic Area	907.1
			TB Page	1251 B1		Hydrologic Subarea (Optional)	907.12
Date	9/27/10	Time 10:50	Observer	MD / JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 6-7

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	35	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	27	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: animal waste along edges

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	Site V45k		Latitude	32.83895	Watershed	Hydrologic Unit	907
Location	On the N side of Mission Gorge Rd, at the N end of freeway 125		Longitude	-117.00251		Hydrologic Area	907.1
			TB Page	1231-A6		Hydrologic Subarea (Optional)	907.12
Date	9/14/10	Time ~~9/14/10~~ 15:40	Observer	MD/TT		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☑ Normal ☐ Excessive ☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☑ Yes ☐ No **Photo #** 25-27

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	22.0	NH_3-N (mg/L)	0.345	NO_3 (mg/L)	5.350	Ortho-PO_4 (mg/L)	0.177
pH (pH units)	7.7	TURB (NTU)	4.53	NO_3-N (mg/L)	1.209	Ortho-PO_4-P (mg/L)	0.058
COND (mS/cm)	4.24	MBAS (mg/L)	0.25	DO (mg/L)			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	5	in
Depth	.25	in
Velocity	5/8	ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: Site V45k **DATE:** 9/14/10

OBSERVER: MD/IT **TIME:** 15:40

LOCATION: On the N side of Mission Gorge Rd, at the W end of Freeway 125

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 20x15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	W30c	Latitude	32.83468	Watershed	Hydrologic Unit	907
Location	In southbound lane of Mesa Rd, at the intersection of Mesa Rd and Graham Terrace	Longitude	-117.01383		Hydrologic Area	907.12 JK
		TB Page	1230 J7		Hydrologic Subarea (Optional)	907.12
Date	9/20/10	Time	4:15 (16:15)	Observer	MD / JK	Discharge Area (Optional)

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 87-91

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.4	NH_3-N (mg/L)	0.245	NO_3 (mg/L)	2.092	Ortho-PO_4 (mg/L)	0.238
pH (pH units)	8.2	TURB (NTU)	2.73	NO_3-N (mg/L)	0.608	Ortho-PO_4-P (mg/L)	0.078
COND (mS/cm)	4.71	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: smell from animal waste when manhole opened.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: W30c DATE: 9/20/10

OBSERVER: MD / JK TIME: 4:15 (16:15)

LOCATION: In the southbound lane of Mesa Rd, at the intersection of Mesa Rd and Graham Terrace

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
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San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	215a1		Latitude	32.83737	Watershed	Hydrologic Unit	907
Location	on southside of Mission Gorge Road, east of Father Junipero Serra Trail		Longitude	-117.03005		Hydrologic Area	907.1 ~~/JK~~
			TB Page	1230 G7		Hydrologic Subarea (Optional)	907.12
Date	9/17/10	Time 9:10	Observer	MD / JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/~~Gravel~~	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☑ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 62-63

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	17.5	NH_3-N (mg/L)	0.149	NO_3 (mg/L)	12.44	Ortho-PO_4 (mg/L)	1.348
pH (pH units)	7.8	TURB (NTU)	9.69	NO_3-N (mg/L)	2.811	Ortho-PO_4-P (mg/L)	0.439
COND (mS/cm)	1.19	MBAS (mg/L)	0.5	DO (mg/L)	N/A		

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2010 Trash Assessment Form

SITE ID: 215a1 DATE: 9/17/10

OBSERVER: MD/JR TIME: 9:10

LOCATION: On southside of Mission Gorge Road, east of Father Junipero Serra Trail

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
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* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

CITY OF SANTEE

Jurisdictional Urban Runoff Management Program

Annual Report 2010-2011

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CERTIFICATION STATEMENT

Date: September 2011

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Pedro Orso Delgado, P.E.
Deputy City Manager/Director of Development Services

EXECUTIVE SUMMARY

The City of Santee (City) has been actively developing and implementing storm water pollution prevention measures since 1990. The City's Jurisdictional Urban Runoff Management Program (JURMP) was updated and submitted to the San Diego Regional Water Quality Control Board (RWQCB) in March 2008. The JURMP update was required by the re-issued storm water permit, RWQCB Order No. R9-2007-0001 (Municipal Permit). The Municipal Permit was jointly issued to 18 municipalities in San Diego County, including the City; the County of San Diego; the San Diego County Regional Airport Authority; and the San Diego Unified Port District (collectively referred to as "Copermittees").

The City's JURMP includes Best Management Practices (BMP) standards for businesses, construction, development projects, residents, and the City's own activities. The JURMP also includes programs for water quality monitoring and educational outreach.

This JURMP Annual Report presents the City's activities to implement its JURMP during the 2010/2011 fiscal year (Reporting Period), which began on July 1, 2010 and ended on June 30, 2011. Each section of this JURMP Annual Report discusses how the City's efforts during the Reporting Period met the requirements of the Municipal Permit. Key actions taken for the major components of the City's storm water program are summarized in the table below.

Component	Key Actions
Development Planning	• Stormwater Management Plans and grading plans were reviewed prior to project entitlement and grading plan issue. • Inspected 27 sites with treatment control BMPs installed and required annual verification letters to be completed. • City was active in the development, review and approval process for the model Standard Urban Runoff Mitigation Plan (SUSMP) and hydromodification plan. • The City's SUSMP was updated to incorporate hydromodification requirements and is available with related forms on the City's website.
Construction	• Active construction sites were inspected to assess BMP implementation during the Reporting Period; a total of 142 construction inspections were completed at 13 sites. •The City conducted plan checks of erosion control plans to ensure construction projects proposed appropriate BMPs that met the City's minimum requirements.

Component	Key Actions
	• The City continued its program of inspecting sites prior to predicted rain events and during rain events, when appropriate, to foster BMP implementation when the highest potential for pollutant discharge is present. • The City participated in the regional Construction subworkgroup.
Municipal	• The City inspected all high threat to water quality municipal fixed facilities and continued its street sweeping and storm drain (MS4) maintenance programs. • A total of 671 tons of trash and debris was removed from street sweeping activities and 445 tons of debris was removed from standard MS4 maintenance. • The City has a grant proposal in a San Diego Integrated Regional Water Management Plan (IRWMP) application for Proposition 84 funding. This will be a pilot project for installing infiltration measures in concrete channels, eliminating dry weather flows and improving water quality.
Industrial and Commercial	• During the Reporting Period the City inspected 262 businesses, which exceeded the Municipal Permit requirement to inspect at least 25 percent of the inventoried stationary industrial and commercial business. • Each facility's compliance with the State of California General Industrial Permit (Industrial Permit) was also assessed during inspections.
Residential	• The City also responded to 44 complaints made to the City storm water hotline regarding residential areas. The complaint investigations were used as opportunities to enforce BMP requirements and to educate residents. • The City's *Santee Review* newsletter, which included storm water-related articles, was made available to residents online during the Reporting Period.
Illicit Discharge Detection and Elimination	• During this period, the City responded to and resolved 67 complaints made to its storm water hotline and to the City website, as well as referrals from City staff. • The City completed its 2010 Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program). The recommendations in the final report for the Dry

Component	Key Actions
	Weather Monitoring Program were addressed during the Reporting Period.
Education	• Over 1,689 copies of various educational materials were distributed during the Reporting Period. • The City continued to conduct various education and outreach activities throughout the Reporting Period as a means to raise storm water awareness in various communities in the City. • The City now circulates the *Santee Review* newsletter online, it has included storm water-related articles aimed at both residents and businesses in the City.
Public Participation	• During the Reporting Period, the City provided a variety of opportunities for individuals in the City to participate in the City's storm water program, including trash removal activities. • The City hosted clean-up events along Forester Creek and the San Diego River; volunteers removed approximately 23,100 pounds of trash and debris. • The San Diego River Park Foundation donated 20 new San Diego River Trail markers for Mast Park West, which were then installed by local Boy Scouts for an Eagle Scout project.
Fiscal Analysis	• Itemized expenditures for the Reporting Period are presented in this section.
Effectiveness Assessment	• The City has identified significant activities within each program component and metrics to assess each one. Standard tables to report this information have been created and included in Section 11 of this JURMP Annual Report.
Special Investigations	• The City conducted ambient water quality monitoring in the San Diego River, Forester Creek, and Sycamore Creek as part of an additional study conducted concurrently with the Dry Weather Monitoring Program.

Conclusions and Recommendations

The results of the City's study of the receiving waters in Santee show fecal coliform bacteria levels from the most recent round of sampling at the Forester Creek and San Diego River downstream sites were 94 percent and 89 percent lower than they were in the first year of the program, 2002. The City has completed a major stream restoration project in Forester Creek, and monitoring after project completion has shown an 87 percent reduction in fecal coliform bacteria from the upstream to downstream end of the

project area. These observations indicate that the stormwater program has been effective.

The City will continue to implement the new and updated programs in its JURMP during the 2011/2012 Fiscal Year. Additionally, in response to the bacteria TMDL adopted in 2010/2011, the City and other jurisdictions within the San Diego River Watershed have begun developing a TMDL implementation plan. It is anticipated that some program refinements will be made as implementation progresses.

1.0 INTRODUCTION

1.1 BACKGROUND

This Jurisdictional Urban Runoff Management Plan (JURMP) Annual Report presents a summary of the activities of the City of Santee (City) during the 2010/2011 fiscal year (Reporting Period). Preparation and submittal of the JURMP Annual Report is required by San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit).

1.1.1 REGULATORY BACKGROUND

The 1987 amendments to the Federal Water Pollution Control Act (also known as the Clean Water Act, or CWA) established a framework for regulating MS4 discharges under the National Pollutant Discharge Elimination System (NPDES). The RWQCB issued the first regional NPDES permit for municipalities in the San Diego Region in 1990, followed by a revised permit in 2001. The revised permit, RWQCB Order No. 2001-01 was replaced by the current Municipal Permit R9-2007-0001, in 2007.

Like all the other municipalities in the San Diego region regulated by R9-2007-0001, collectively referred to as Copermittees, the City developed and submitted a JURMP to the RWQCB in 2002. As required by the Municipal Permit, the City submitted an updated JURMP in March 2008. The JURMP includes management measures for a variety of different sectors and activity types such as municipal, industrial, commercial, construction, and significant development and re-development activities.

Annual reports on the implementation of the JURMP are required to be submitted to the RWQCB September 30 of each year. This JURMP Annual Report presents information for the 2010/2011 fiscal year (July 1, 2010 to June 30, 2011).

1.1.2 CITY SETTING

The City of Santee is located in central San Diego County and is bordered by the City of San Diego to the west, the City of El Cajon to the south, and unincorporated portions of San Diego County. The City itself includes approximately 16 square miles and an estimated population of 58,000. Land use within the City is mainly residential; other land uses in the City include municipal facilities, industrial and commercial facilities, streets, highways, and undeveloped open spaces. Land use categories with the corresponding acreage percentage of the total area are included in Table 1-1, below.

Table 1-1
City of Santee Land Use Breakdown

Land Use	Total Area (Acres)	Percentage
Vacant	4,478	42%
Single Family Residential	2,328	22%
Transportation	1,152	11%
Open	542	5%
Public Facilities and Utilities	380	4%
Commercial	373	4%
Other Residential	322	3%
Industrial	315	3%
Parks	279	3%
Multi-Family Residential	234	2%
Water	111	1%
Office	21	<1%
Recreation	20	<1%
Construction	13	<1%
Agriculture	5	<1%
Total	**10,574**	**100%**

Source: 2007 SANDAG land use data

The City of Santee is located entirely in the San Diego River Watershed, Hydrologic Unit (HU) 907. Specifically, the entire City of Santee is located within the Lower San Diego River Hydrologic Area (HA), 907.1. While a significant portion of the City drains directly to San Diego River (which flows from east to west across the City), some sections of the City drain first to other receiving waterbodies within the City that then ultimately discharge into San Diego River. Forester Creek enters the City of Santee from the southeast, eventually merging with San Diego River west of Carlton Hills Boulevard. Sycamore Creek enters the City from the north, flows south, eventually merging with the San Diego River west of Santee Recreation Lakes (Santee Lakes).

Both Forester Creek and the lower San Diego River have bacteria impairments on the 2010 Clean Water Act (CWA) 303(d) list, and a regional bacteria Total Maximum Daily Load (TMDL) adopted in 2010/2011 specifically names both of these water bodies as subject to its requirements. The City and other jurisdictions are preparing a TMDL implementation plan during 2011/2012. In addition to bacteria, the lower San Diego River is listed as being impaired for low dissolved oxygen, phosphorus, nitrogen, manganese and toxicity, and the portion of Forester Creek within the City of Santee is impaired for selenium, phosphorus, and total dissolved solids (TDS). Forester Creek upstream of the City is also listed for a pH impairment. Sycamore Creek is listed as having a RARE beneficial use and does not have any 303(d) listed impairments.

Figure 1-1
City of Santee Land Use and Drainage Basins

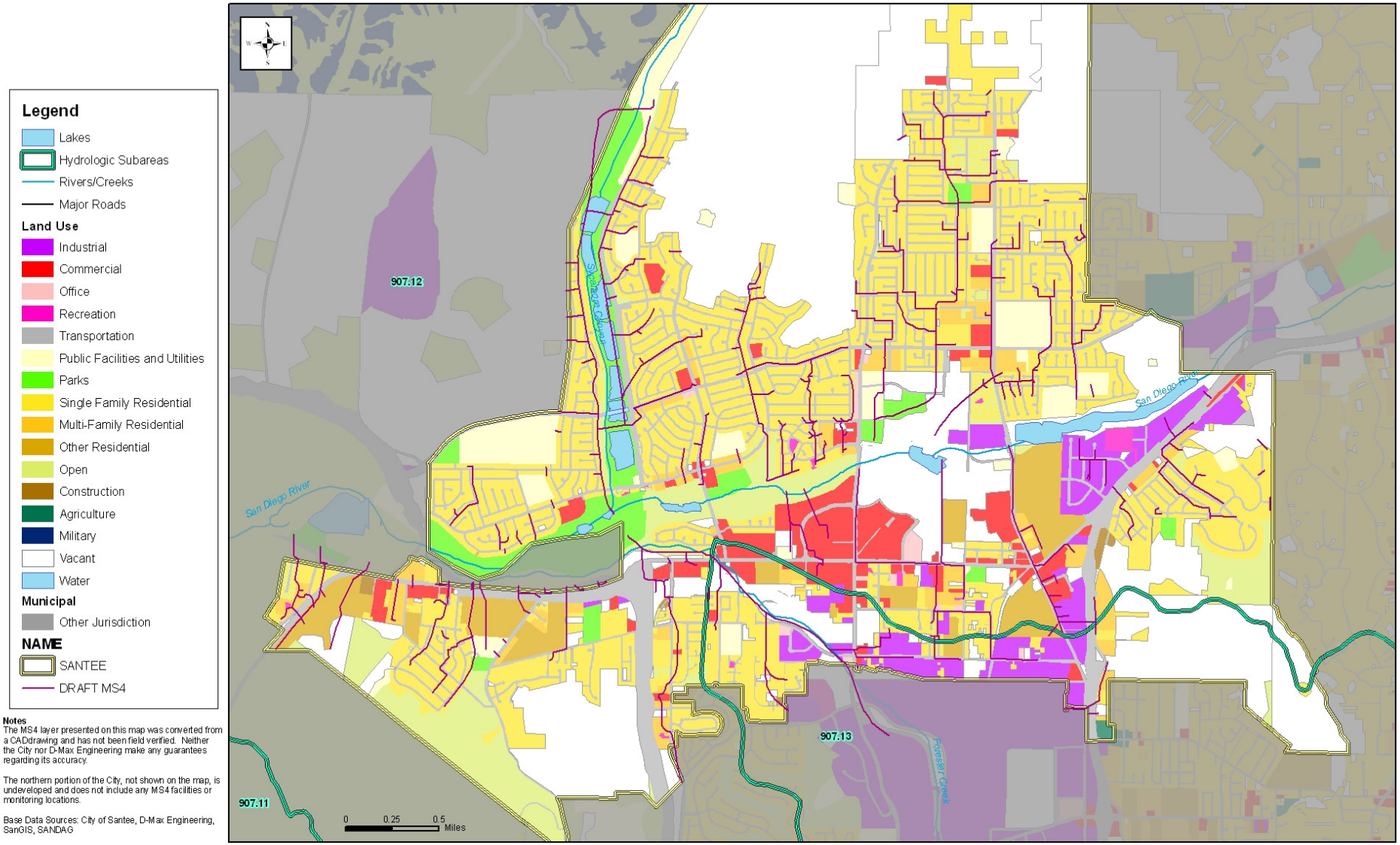

Notes
The MS4 layer presented on this map was converted from a CADdrawing and has not been field verified. Neither the City nor D-Max Engineering make any guarantees regarding its accuracy.

The northern portion of the City, not shown on the map, is undeveloped and does not include any MS4 facilities or monitoring locations.

Base Data Sources: City of Santee, D-Max Engineering, SanGIS, SANDAG

1.2 PURPOSE AND OBJECTIVES

The City's JURMP presents a strategy to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP). The JURMP includes a variety of programs intended to minimize or eliminate the effects of urban runoff from the City on receiving water bodies. This JURMP Annual Report has been prepared to document the City's implementation of its JURMP during the 2010/2011 reporting period.

1.3 REPORT ORGANIZATION

This report follows the standard reporting outline jointly developed by the Copermittees and submitted to the RWQCB in July 2007. The following sections are included in the JURMP Annual Report.

Section 1	**Introduction**
Section 2	**Development Planning Component**
Section 3	**Construction Component**
Section 4	**Municipal Component**
Section 5	**Industrial and Commercial Component**
Section 6	**Residential Component**
Section 7	**Illicit Discharge Detection and Elimination Component**
Section 8	**Education Component**
Section 9	**Public Participation Component**
Section 10	**Fiscal Analysis Component**
Section 11	**Effectiveness Assessment Component**
Section 12	**Special Investigations**
Section 13	**Non-Emergency Fire Fighting**
Section 14	**JURMP Revisions**
Section 15	**Conclusions and Recommendations**
Section 16	**References**

Each section includes all the sections required by the standard JURMP Annual Report format. In some cases, additional subsections within the standardized sections have been added to provide a clearer explanation of the City's activities during the reporting period. For example, in this introduction section, the standard reporting format only includes subsections 1.1 and 1.2. Subsection 1.1, Background, has been divided into subsections 1.1.1, Regulatory Background, and 1.1.2, City Setting, for the sake of clarity.

2.0 DEVELOPMENT PLANNING COMPONENT

2.1 INTRODUCTION

The development planning component of the City's JURMP aims to improve overall storm water quality by reducing the discharge of pollutants from development projects to the MEP and managing potential increases in runoff from development projects that have the potential to negatively affect downstream water bodies. During the Reporting Period, the City accomplished these goals through implementation of its JURMP.

The City implemented new Municipal Permit requirements for development planning during this Reporting Period. The City's SUSMP (Standard Urban Stormwater Mitigation Plan) requirements were updated to incorporate the July 2010 Model SUSMP and regional Hydromodification Management Plan (HMP).

City staff participated in the development and review of this Model SUSMP and regional Hydromodification Management Plan.

2.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the development planning component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the Reporting Period.

- Updated the City's Stormwater Ordinance to reflect state-of-the-art language, clarify requirements and be more cohesive.
- Updated the City's Standard Urban Storm Water Mitigation Plan (SUSMP), incorporating the regional Hydromodification Management Plan.
- Ensured that the updated SUSMP/HMP were made available on the City's website.
- Conducted maintenance inspections of treatment control BMPs at 14 completed development projects throughout the City.
- Trained City staff in the updated SUSMP/HMP requirements.

2.2 LAND USE PLANNING

2.2.1 BACKGROUND

The City's General Plan was last updated in 2003 and contains water quality and watershed protection principles in the plan's Conservation Element. The comprehensive principles established in 2003 provide an ample framework for implementing the

requirements of the Municipal Permit, and no changes to these policies were necessary during the reporting period.

2.2.2 Source Characterization

The City's General Plan contains established restrictions on the types of new development projects based on their planned land uses to ensure public safety and limit negative impacts to the surrounding environment. No changes to development restrictions in the City's General Plan for storm water purposes were necessary during the reporting period.

2.2.3 Best Management Practice Requirements

Please refer to the City's updated JURMP document for a list of the water protection policies included in the City's General Plan. These policies remained the same throughout the Reporting Period.

2.2.4 Program Implementation

The City implemented its water protection related land-use policies during the reporting period mainly through the City's Municipal Code. During the Reporting Period the City's Storm Water Ordinance was updated to reflect state-of-the-art language and current developments in stormwater, and to clarify some requirements. For example, the language was updated to include reference to TMDL requirements. Although this update did not expand the requirements of the ordinance, it improved the ease of use of the original document that had been subjected to two revisions. A copy of the ordinance can be obtained at www.ci.santee.ca.us.

Details on how the City implemented its established water protection policies through its environmental review process and its development project approval and verification processes during the reporting period are provided in Sections 2.3 and 2.4 of this JURMP Annual Report document.

2.3 Environmental Review Process

Stormwater requirements for a project are reviewed during the pre-application stage. As described in the JURMP, the project proponent is required to complete the updated Project Applicability, LID and Source Control Checklist so that these requirements can be evaluated. Preliminary designs are required to incorporate the placement and description of BMPs to be used, so that an assessment can be made to determine whether it is feasible for the project to comply with applicable stormwater requirements. The project approval document incorporates the conditions needed to comply with these applicable stormwater requirements (for example, filing an NOI to comply with the State Construction Permit, development of a SWPPP, development of a SWMP, use of treatment control BMPs which have a high or medium removal efficiency for applicable pollutants, execution of a BMP maintenance agreement, etc.). No modifications to the

City's environmental review process have been made since the submittal of the updated JURMP.

2.4 Development Project Approval and Verification Process

2.4.1 Background

During the Reporting Period, the City implemented the watershed protection principles in the City's General Plan through various aspects of the City's development project approval and verification process, as detailed below. BMP selection and verification followed the process described in the City's JURMP.

2.4.2 Source Characterization

The different priority pollutants, sources, and activities associated with development projects within the City are addressed through the implementation of the City's SUSMP requirements.

2.4.3 Best Management Practice Requirements

The City's BMP requirements mirror those in the regionally-developed Model SUSMP. The City is encouraging the incorporation of BMPs within landscape features (such as bioretention facilities) over proprietary products that are typically installed in catch basins or at the end of a pipe. Bioretention facilities are more likely to remove priority pollutants in the City at the required efficiency ensuring Municipal Permit compliance and need less intensive maintenance by the property owner. These features can also provide an aesthetic benefit to the property. The one Priority Project reviewed and approved during the Reporting Period proposed bioretention.

2.4.4 Program Implementation

During the Reporting Period, the City required implementation of its BMPs for development projects through education, a comprehensive development project approval process, and the treatment control BMP inspection and maintenance verification program.

2.4.4.1 Outreach and Staff Training

The City regularly trains staff involved in the planning and review of development projects within the City and works closely with the development community to communicate its development requirements throughout the entire approval process. During the Reporting Period, staff and industry training was focused on changes being made to the City's SUSMP and HMP requirements. Details on trainings conducted and educational materials developed and distributed related to the new development during the reporting period can be found in Section 8 of this JURMP Annual Report document.

Distribution of maintenance verification letters to parties responsible for maintenance of treatment control BMPs at completed projects continues to increase the level of knowledge of regulated parties.

2.4.4.2 URBAN RUNOFF APPROVAL PROCESS FOR DEVELOPMENT PROJECTS

All development projects that met the SUSMP definition for high priority projects were required to complete the City's urban runoff approval process as detailed in the City's JURMP. Forms and reports completed by project applicants are kept with the project's file at the City for future reference. The City thoroughly examines all development applications to determine what documents related to storm water compliance are required. Development projects determined to be Priority Projects after completing the Project Applicability, LID and Source Control Checklist are required to prepare a Storm Water Management Plan (SWMP). The City uploaded a copy of the most recent SUSMP and HMP to its website so that project proponents can easily access them. The City will continue to work closely with development proponents to ensure compliance with the City's SUSMP requirements.

Table 2-1 lists the Priority Project subject to the City's SUSMP requirements during the Reporting Period, the number of document reviews for it, and the date it was approved. This project proposed a BMP with a high or medium removal efficiency for the pollutants of concern, so no feasibility analysis was required, and no SUSMP waiver was issued.

Table 2-1
Development Project Subject to SUSMP Requirements During 2010/2011

#	Project Name	Location	Number of Reviews	Approval date
1	Vidovich Subdivision	8645 Fanita Drive	3	8/6/10*

*As of this writing, grading has not commenced on Vidovich Subdivision. Based on City review of grandfathering requirements, it is possible that this project will be now subject to HMP requirements. Therefore additional reviews are required on this project during 2011/2012.

An example of a project conditioned to meet SUSMP requirements is Vidovich Subdivision, which involved splitting a single parcel into four parcels.

- The original SWMP incorporated a bioretention facility that addressed the majority of the BMP requirements for the development. However there was some uncertainty over how the bioretention facility and Site Design LID BMPs would be maintained and who would be responsible for maintenance. This is being clarified through discussions with the developer.
- The developer was required to clarify the inlet and outlet points and their elevations to confirm that the bioretention facility had been appropriately designed.

- The developer originally proposed standard vegetated swales. Based on City review, this was changed to bioretention swales or areas, which should provide more effective treatment of runoff.

The City will continue to monitor the review process and provide ways to educate project proponents as needed. Not only have example inspection and maintenance documents been provided to project proponents, but the SWMP guidance document and example SWMP have been updated for ease of use. The example SWMP includes the HSAs and beneficial uses applicable for Santee.

During the reporting period, no projects received a SUSMP waiver for implementation of treatment control BMPs. The City has never issued a SUSMP waiver in the past, and at this time the City has no plans to develop a SUSMP waiver mitigation program.

Hydromodification Management Plan

During the reporting period the Copermittee Land Development Workgroup met regularly to discuss key HMP development issues and provide updates on the status of consultant work products. The City regularly participated in the Land Development Workgroup during the Reporting Period.

The City incorporated the regional HMP into its SUSMP prior to the required deadline. Only one Priority Project was reviewed and approved during the Reporting Period. That project, Vidovich Subdivision, was approved before the new requirements were adopted and is less than 50 acres, so neither the Interim Hydromodification Criteria nor the final HMP requirements applied to the project. As described in the footnote to Table 2-1 earlier in this section though, because the project has still not started grading, Vidovich Subdivision will be required to update its design to incorporate HMP requirements in 2011/2012.

BMP Installation Verification

Five Priority Projects under construction during the 2010/2011 fiscal year were completed prior to the end of the reporting period. Verification that the BMPs proposed in the projects' SWMPs were installed in accordance with approved documents was performed during the final project inspection prior to occupancy of the site. Project engineers conducting these checks are aware that checks for permanent storm water BMPs should be performed during the final inspection. The information from the inspection is then relayed to the City's Stormwater Program Manager, who updates the treatment control BMP inventory accordingly. Responsible parties are promptly notified of the requirements to maintain the BMPs after occupancy, and newly installed BMPs are typically inspected during the fist summer after occupancy, whether or not they are prioritized as high priority.

The Toyota project was the subject of a RWQCB Audit during the 2008/2009 fiscal year. Based on the audit, the developer was directed to implement improvements to the contours of the biofilter strips on the project. These improvements were made. However during a follow-up inspection during a rain event further improvements were identified. Although the water was observed to be able to flow through the bioretention

strip, water was observed to accumulate at the curb cuts to the strips. The developer was directed to install a cobble surface at the curb cuts to the Site Design LID BMPs (landscaped areas) to facilitate water ingress. This correction was implemented.

All completed Priority Projects have been assigned TTWQ priorities using the prioritization flow chart presented in the City's JURMP, and the projects have been added to the City's treatment control BMP inventory included as Attachment A.1 of this document. Projects completed during the Reporting Period have been noted with an asterisk.

2.4.4.3 Treatment Control BMP Inspection and Maintenance Verification Program

Table 2-2 below provides a summary of the sites inspected and inspection frequency.

Table 2-2
Assessment of Compliance with Required Inspection Frequencies

Class	Number of Sites	Inspections	Percent Inspected*	Permit Requirement	Requirement Met
All Inventoried Sites	35	27	77	20%	**Yes**
Sites with Drainage Inserts	21	19	90	50%	**Yes**
High TTWQ Sites	10	10	100	100%	**Yes**

*Inspections of post-construction BMPs are typically completed by the end of June each year. This year, due to rescheduling of program tasks to accommodate staff absences, inspections were completed approximately one month later (i.e., in FY2011-12). The table above shows the number of inspections completed during FY2010-11 and early FY2011-12, as they are largely part of the same effort (ensuring maintenance is completed prior to Fall 2011. Fourteen sites were inspected during FY2010-11, which comprises 40 percent of the inventory.

During inspections City staff used information included in the City's treatment control BMP database to determine what BMPs should be present at the individual project sites. Each BMP was visually inspected, and the inspector documented the findings for each site visited.

Treatment control inspections were conducted during June, July and August 2011. Based on these inspections, notices regarding maintenance requirements were sent and follow-up inspections conducted. Table 2-3 provides more detailed information about the inspections. The table includes the development projects inspected, the BMPs installed at each site, the BMPs inspected, brief descriptions of inspection findings, and a discussion of how any issues noted were resolved. Public Priority Projects are marked as Capital Improvement Projects (CIP) in the table.

Table 2-3
Summary of Treatment Control BMP Inspection Results

#	Project Name	BMP(s)	Inspection Date(s)	Inspection and Follow-Up Notes
1	Altair[1]	Hydrodynamic separator, drainage inserts (7)	7/18/11, 7/19/11	The BMPs were in acceptable condition.
2	AT&T Storage Yard	Grass swale	10/20/10	Swale in acceptable condition.
3	Autowerks	Grassy swale, drainage inserts (2)	5/26/10, 10/07/10	BMP required maintenance during routine inspection. Reinspected 10/07/10, BMPs in acceptable condition.
4	Autumnwood II	Hydrodynamic Separators (2)	7/18/11	BMPs in acceptable condition.
5	Boys and Girls Club	Vegetated Swale, drainage insert (2)	6/22/11	Drainage inserts needed maintenance, other BMPs in acceptable condition. The responsible party was notified of these findings
6	Cameron II	Grassy Swale, drainage insert (1)	7/19/11	Drainage insert and swale need maintenance. Property owner notified of findings.
7	Ciraolo Family	Grassy Swale, drainage insert (1)	6/29/11	Drainage inserts need maintenance. Property owner notified of findings.
8	Cuyamaca Town Commons	Drainage inserts (4)	6/22/11	BMPs in acceptable condition.
9	Farrington Court[1]	Drainage insert (1)	6/22/11	Filter needs maintenance. The responsible party was notified of these findings.
10	Fred's Fences	Grassy swale, drainage insert (2)	7/19/11	Vegetated swale acceptable, drain inserts need maintenance. Property owner notified of findings.
11	Lunar Lane	Cobble swale	4/18/11, 5/16/11, 5/18/11	This facility was constructed during the Reporting Period and was inspected during April and May 2011 to verify that the BMPs were constructed to plan and appeared to be functioning.
12	Marketplace[1]	Infiltration trench, grass swale, water quality inlet (4), and drainage insert (2).	8/2/11	All BMPs required maintenance. The property owner was notified of findings.

Table 2-3
Summary of Treatment Control BMP Inspection Results

#	Project Name	BMP(s)	Inspection Date(s)	Inspection and Follow-Up Notes
13	Mission View Estates (Chapparel)	Vegetated buffer strips (2) and media filter	7/28/11	This facility was constructed during the Reporting Period. BMPs were deemed to be in acceptable condition, with the exception of one vegetated buffer strip which required maintenance. The HOA was notified of these findings.
14	Morningside	Hydrodynamic Separator (1)	7/18/11	BMP was in acceptable condition..
15	Padre Dam Service Center[1, 2]	Drainage Inserts (6)	8/2/11	BMPs were in acceptable condition.
16	Prospect Glen[1, 2]	Drainage Inserts (3)	6/30/11	BMPs needed maintenance. Property owner was notified of these findings..
17	Rayo Wholesale[1], Rayo II	Grassy Swale, Grassy detention basin with sand cone filter (1)	4/17/11	The facility was inspected on 4/17/11 to verify that the BMPs at Rayo II were functioning after reinstallation.
18	Santee Affordable (Cedar Creek Appartments)	Bioretention facility	7/25/11	This facility was completed during the Reporting Period. Facility inspected 7/25/11 and requires maintenance. Property owner was notified of these findings.
19	Sky Business Park	Grassy swale, media filter and drain insert (1)	6/30/11	This project was completed during the 2008/2009 reporting period. Inspected on 6/30/11, BMPs were deemed to be in acceptable condition, with the exception of the drain insert, which required maintenance. The facility should be checked during rain to ensure that it properly drains. The property owner was informed of the findings.

Table 2-3
Summary of Treatment Control BMP Inspection Results

#	Project Name	BMP(s)	Inspection Date(s)	Inspection and Follow-Up Notes
20	Sonic Car Wash	Grassy swale, drainage inserts (2)	10/20/10, 7/29/11	The facility was inspected on 10/20/10 as annual certification was not received. The drainage inserts required maintenance. Certification of maintenance was received on 10/27/10. The facility was inspected on 7/29/11. One filter insert required maintenance and swale needed maintenance. The property owner was informed of the findings.
21	Sonic Restaurant	Grass swale	6/23/11	The BMPs were in acceptable condition.
22	Town Center Community Park	Media Filter, bioswales (5), buffer strips (2), inlet filters (5)	8/2/11	Swales, insert filters, and media filter needed maintenance. Party responsible for maintenance notified of findings; maintenance has been scheduled to be completed before start of rainy season.
23	Toyota	Extended detention basin, bioretention facilities and drainage inserts (7)	7/25/11	The opening to the detention facility had been secured with a cap (per the direction from a previous inspection) which the inspector could not remove. The inspector notified the responsible party that access to the facility was required, and an inspection date is being coordinated.
24	Treviso[1]	Hydrodynamic Separator (1), drainage inserts (2)	7/18/11	The drainage inserts required maintenance. The property manager was informed of the findings.
25	Santee Trolley Square[1, 2]	Drainage inserts (12)	9/20/10, 7/25/11	Some of the drainage inserts required maintenance. The property manager was informed of the findings.
26	Vista Este[1, 2]	Drainage inserts (2)	6/22/11	BMPs required maintenance. The property manager was informed of the findings.
27	Walgreens 1	Media filter	9/28/10, 7/18/11	The facility was maintained and certification of maintenance was received on 4/19/11. BMPs were in acceptable condition.

Notes
1. Site also inspected in the summer of 2010, prior to the 2010/2011 wet season. Please refer to the City's 2009/2010 JURMP Annual Report for details of the inspection findings.
2. Project approved prior to development of the City's SUSMP requirements.

Three of the development sites inspected during the Reporting Period were approved prior to development of the City's SUSMP which requires installation of treatment control BMPs. These sites are marked with an asterisk in the table above, and are included in a separate table with the City's Treatment Control BMP Inventory in Appendix A.1. While the City is aware that treatment control BMPs exist on these project sites, no maintenance agreements or SWMPs were required for these sites when they were approved. Consequently, the City does not have a written agreement to require maintenance and annual maintenance certification for the treatment control BMPs at these locations. However the City still provided inspection reports to owners of the treatment control BMPs at these sites and followed up to see that maintenance was performed. The City will continue to periodically monitor the status of treatment control BMPs at these locations.

After inspection, follow-up letters were sent to the responsible party for all projects needing maintenance prior to 10/1/10, and the City conducted follow-up inspections and enforcement as necessary. City follow-up actions and the resolutions for these cases are described above in Table 2-3. During the Reporting Period, none of the inspected sites were observed to present a significant threat to human health or the environment during inspections; therefore none were reported to the RWQCB.

In addition to City-conducted maintenance inspections, the Municipal Permit requires annual verification of operation and maintenance of treatment control BMPs installed within the City's jurisdiction. Annual verification must be provided by the party responsible for treatment control BMP maintenance and must be required prior to the start of the rainy season (October 1st). The City notified operators of the facilities within the inventory of the need to provide annual BMP maintenance verifications for the 2010/2011 fiscal year prior to October 1, 2010. Annual verification of maintenance was received for all applicable properties during the 2010/2011 fiscal year.

Walgreens 1 and 2 were completed during 2009. However the property is leased from a company called Interra Development. It was challenging to identify the person who is responsible for BMP maintenance. The City sent letters to various individuals at three addresses and left voicemails, with no response. The store managers were unable to provide the information, as they do not have contact with the leasing company. The City contacted other jurisdictions who have recently-developed Walgreens facilities to find a contact name and telephone number. Contact was made with a representative of the maintenance company during a site visit at Walgreens 2. The BMPs at both Walgreens 1 and 2 were maintained, and certification of maintenance was received on April 19, 2011. Annual certifications for both of the Walgreens facilities should be received in a more timely manner in the future.

The following actions have been taken to ensure maintenance of post-construction treatment control BMPs:

- A BMP Maintenance Agreement that is signed by the developer and recorded with the property.

- Procedures to notify responsible parties of their obligations as a project is completed have been developed to allow property owners to budget for maintenance.
- Standard forms and letters have been developed to routinely notify and remind property owners of their responsibility to maintain and submit certifications.
- Information on treatment control BMP maintenance and verification letters that can be downloaded.

Protecting water quality is the overall objective of ensuring the maintenance of treatment control BMPs. Through the BMP Maintenance Agreement that the City uses on Priority Projects, the City has the right to maintain treatment control BMPs on private property and to recoup the costs from the responsible party. The City will use this tool when appropriate and feasible.

Enforcement Summary

The City took action to resolve issues observed during both field inspections and the maintenance verification program, as described above. A total of 13 follow-up letters instructing responsible parties to correct deficiencies noted during inspections were sent during 2010/2011. No notices of violation were issued during the Reporting Period, as compliance was largely achieved through experiences from earlier years, notices to comply and telephone calls. The City's approach was effective at bringing about compliance with its requirements, as shown in the more detailed discussions included earlier in this section.

2.5 Development Planning Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

2.6 Program Review and Modification

The City's JURMP was recently updated in March 2008. No changes to the City's development planning component have been made since that time.

3.0 CONSTRUCTION

3.1 INTRODUCTION

The City's construction program has been designed to prevent illicit discharges from construction sites. Projects subject to the General Construction Permit are not issued permits until they have demonstrated that they have filed a notice of intent (NOI) and developed a SWPPP. The City has developed a database and procedures to ensure that construction sites are prioritized and inspected at the frequencies required by the Municipal Permit. In addition, the City is an active participant in the Land Development Workgroup, which addresses developments in project design and construction.

All staff associated with construction projects are aware of the stormwater requirements and take appropriate follow-up action when potential violations are observed. This allows the City to leverage the staff currently working on construction projects to ensure that compliance is consistently achieved. Stormwater program staff ensure that the requirements of the municipal permit are met and assist in ensuring that compliance is achieved at each site.

3.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the construction component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

- Prepared individual rainy season notification letters which identified what individual BMP improvements are needed at each construction site prior to the rainy season, in addition to summarizing the requirements for all construction sites. The information in these letters was used as a cross-reference during pre- and early rainy season inspections.
- Developers were required to submit a form describing how they intended to manage site runoff and BMPs during the upcoming rainy season. The rainy season form also included a section for the developer to provide contact information to be used during rain events.
- Conducted plan checks of erosion control plans and SWPPPs to ensure construction projects planned to comply with the City's minimum BMP requirements.
- Conducted 142 construction inspections at 13 sites per the frequencies in the JURMP. During the wet season, high TTWQ sites were inspected bi-weekly, medium TTWQ sites monthly, and at least once for low TTWQ sites with grading activity.
- Conducted 46 follow-up inspections, issued 10 written warnings, 10 NOVs, and

no administrative citation to construction sites in response to violations of the City's minimum BMP requirements.

3.2 Source Characterization

An inventory of active construction projects during the Reporting Period is presented in Appendix A of this JURMP Annual Report document; all sites are located within the San Diego River Watershed. The City's inventory was maintained throughout the reporting period. New construction projects were added to the inventory at the start of construction, and projects were removed from the inventory after construction was completed. Since construction projects were continually being added and removed throughout the fiscal year, inventory updates were usually performed more frequently than the minimum once per month.

3.3 Updates to Ordinances and Approval Processes

The City updated its Grading and Storm Water Management and Discharge Control ordinances during the Reporting Period. However the changes were solely made to clarify the Ordinance and did not result in any change in the requirements for construction sites. No changes have been made in City's approval process for construction site during the Reporting Period.

3.4 Best Management Practice Requirements

The City's construction and grading project requirements are described in the City's BMP Manual, which was included as Appendix C of the City's updated JURMP document. These BMP requirements were implemented starting in March 2008.

Note that in response to a letter from the RWQCB to the City dated February 27, 2009 the maximum disturbed area for hillside developments (as defined on the City of Santee Landuse Map) is now limited to 17 acres. Hillside sites as defined by the City's Land Use Map, which originates from the General Plan. Sites that are in compliance with applicable storm water regulations and have adequate control practices implemented to prevent storm water pollution may expand their maximum grading area on the approval of the City Engineer to allow a balanced cut-and-fill approach. The 50-acre maximum grading area will still apply to non-hillside developments.

3.5 Program Implementation

The City implemented the construction component of its JURMP throughout the reporting period through:

- Education and staff training; and
- A comprehensive construction and grading approval process; and
- A construction inspection program.

This program is described below.

3.5.1 EDUCATION AND STAFF TRAINING

Education and staff training implemented during the 2010/2011 fiscal year focused on the new State General Construction Permit and on communicating the City's construction requirements to both City staff and the construction community. Please see Section 8 of this JURMP Annual Report document for details on training performed and educational materials distributed related to construction and grading activities.

3.5.2 CONSTRUCTION AND GRADING APPROVAL PROCESS

During the reporting period, City personnel verified that all construction projects planned to implement BMPs to meet the City's minimum requirements prior to issuing any building or grading permits. The City's grading approval process is described thoroughly in Section 5 of the City's JURMP.

No projects in Santee that began construction after October 1, 2007 were larger than 50 acres. Note that while none of the City's construction sites were subject to the 50 acre grading limitation, all construction sites were still required to limit exposed cleared or graded areas to the amount of area that could be protected prior to a rain event, as prescribed in the City's seasonal BMP requirements. Also note that a smaller maximum disturbed area limit of 17 acres will be applied to hillside projects, however, no projects to date have met this criterion.

Criteria for determining when advanced treatment is required are detailed in the City's BMP Manual (Appendix C of the JURMP). During the Reporting Period, the City's minimum BMP requirements were generally adequate at controlling sediment discharges at all of the active construction sites within the City's jurisdiction. During this Reporting Period advanced treatment methods were not required at any construction sites.

3.5.3 INSPECTION OF CONSTRUCTION SITES

Appendix A.2 of this JURMP Annual Report contains a list of construction projects that were active during the Reporting Period, along with their assigned TTWQ priorities, the number of weeks the site was active within the rainy season, the numbers of inspections conducted during the wet and dry seasons, the number of follow-up and complaint inspections, and the total number of inspections for each site. In total, 142 construction inspections were performed for 13 construction sites.

Construction inspections conducted during the reporting period were performed as described in the City's updated JURMP. Key components of the inspections include checks for coverage under the General Construction Permit during the initial inspection and assessments of compliance with the City's minimum BMPs and discharge requirements during all inspections. Responsible parties at the sites are educated as needed during inspections. Copies of the inspection forms are kept on file at the City.

The City conducted inspections at high TTWQ construction sites bi-weekly during the wet season and monthly for medium TTWQ sites. While the Municipal Permit only requires construction inspections at low TTWQ on an "as needed" basis year round, the City conducted at least one inspection at active low TTWQ construction projects with grading activities during the wet season. The number of weeks each site was open during the wet season and the number of inspections completed at each site are presented in Appendix A.2.

When any violations were noted during routine or follow-up inspections, these violations were documented on the project's inspection form, and the sites were given a list of corrective actions necessary to address the observed violation. When necessary, a written notice was issued for the violation, and the City inspector followed up with the site until compliance was achieved. In most cases, violations were corrected while the inspector was still at the site, and follow-up visits were not necessary. Details on the enforcement actions taken for construction sites during the implementation period are described below.

3.5.4 ENFORCEMENT MEASURES

During inspections, violations of the City's BMP requirements were noted. In such instances, City inspectors took enforcement actions as necessary to bring about compliance. Table 3-1 presents the number of enforcement actions taken during the reporting period in response to violations of the City's minimum construction BMP requirements. Enforcement actions are administered in an escalating manner as described in the City's updated JURMP.

Table 3-1
Total Number of Enforcement Actions Taken

Written Warnings	Follow-Up Inspections	Administrative Citations	NOVs	Stop Work Orders
10	42	0	10	0

During the Reporting Period, no Stop Work Orders were issued nor were there other high levels of enforcement used. This is due to a combination of an effective construction oversight program and due to a low number of active construction projects. Morning View (Ladera) can be used as an example of a construction project that was brought into compliance. This site had been inactive for over a year and was purchased by a new owner. The City met with the developer, communicated the BMP requirements of the City, and shared previous experience with managing the construction site during the rainy season. However during the City's pre-rainy season checks, City staff were alerted to the lack of preparation for the rainy season (for example, slopes were not stabilized by mid-September with no scheduled date for stabilization to be completed).

City staff met with the responsible party to discuss the need to complete pre-rainy season preparations prior to October 1st and to agree to a schedule for completion. The developer began implementing the required BMPs within the agreed schedule. However there was rain early in the rainy season, and erosion occurred on the site. The City issued a Notice of Violation for inadequate implementation of BMPs prior to the rainy season. The developer reduced the schedule for BMP implementation, so that the site was ready for the rainy season earlier than projected.

None of the violations observed at construction sites during the Reporting Period were found to endanger human health or the environment. The City was able to address these violations through the City's established enforcement process, and it was not necessary to report any of these sites to the RWQCB.

3.6 Construction Activities Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

3.7 Program Review and Modification

The City's JURMP was updated in March 2008. No changes to the City's construction component have been made since that time.

4.0 MUNICIPAL COMPONENT

4.1 INTRODUCTION

Throughout the Reporting Period, the City of Santee continued to manage municipal areas and activities to reduce municipal discharges of pollutants to the MS4 to the MEP. As discussed in detail in the City's JURMP, the City owns and operates a variety of municipal facilities and activities. Public parks and recreation facilities, administrative buildings, fire stations, and public works facilities make up the bulk of the municipal areas in the City. Municipal activities conducted by the City include street sweeping, street and sidewalk repair, and MS4 maintenance. Note that the City is not responsible for water supply or wastewater conveyance and treatment. These activities are the responsibility of Padre Dam Municipal Water District (PDMWD).

4.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the municipal component during the 2010/2011 reporting period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with both the previous permit and the new Municipal Permit during the reporting period.

- The City inspected all high TTWQ fixed municipal facilities.
- The City provided formal training sessions for 26 municipal staff members.
- The City removed a total of 671 tons of debris from street sweeping activities.
- The City removed a total of 445 cubic yards of debris from standard MS4 cleaning activities.
- City personnel continued to restock the pet waste bag dispensers in City parks, using 360,000 pet waste bags during 2010/2011.
- The City prepared a grant proposal to install infiltration features in concrete channels to address water quality, among other issues. This has been approved by the Integrated Regional Water Management Plan committee for the San Diego Region and included in the region's application for Prop 84 funding.
- Provided over 2,000 gravel bags to residents over the rainy season to prevent soil erosion.
- The City replaced 412 linear feet of storm drain pipe during 2010/2011, and 60 feet of storm drain were replaced with a box culvert structure.

4.2 FIXED FACILITIES

4.2.1 BACKGROUND

The City owns and operates a variety of municipal fixed facilities. As mentioned in the City's JURMP, municipal fixed facilities have been grouped under one category, fixed facilities, because these facilities receive routine inspections as part of the City's municipal program, making program implementation generally similar. For the purposes of organization, municipal fixed facilities are divided into the following categories: Parks and Recreational Facilities, Public Works Facilities, Fire Stations, and Other Fixed Facilities, which includes fixed facilities that could not be placed into another category.

4.2.2 SOURCE CHARACTERIZATION

All fixed facilities are included on the City's municipal inventory, which was revised during the JURMP update in early 2008. The JURMP includes detailed descriptions of each of the categories mentioned in the previous subsection and a discussion of activities beyond what is suggested by the facility's category or facility name. With the exception of the addition of the recently-completed Mast Park West, there were no changes to the City's municipal inventory nor were there any updates to the discussions of any fixed facilities on the City's inventory. The City's inventory is included as Appendix A.3.

4.2.3 BEST MANAGEMENT PRACTICE REQUIREMENTS

The City continues to implement and assess the effectiveness of BMPs at all fixed municipal facilities. As mentioned in the City's JURMP, the City uses the CASQA Municipal BMP Handbook to establish appropriate BMPs for fixed municipal facilities. Table 6-2 in the City's JURMP describes the CASQA fact sheets that are used for specific facility types.

The City continues to implement strict minimum BMP requirements for the use and management of pesticides, herbicides, and fertilizers, as described in the City's JURMP. BMP implementation for parks and recreational facilities, as described in the City's JURMP, has not changed during the Reporting Period.

City public works employees, fire station employees, and employees at other fixed facilities in the City continue to implement BMPs appropriate to the facility type, as described in the City's JURMP. City fire response personnel continue to be trained in implementing BMPs for non-emergency fire fighting activities as described in Section 3 of the City's JURMP. There have been no changes in BMP requirements for public works facilities, fire stations, and other fixed facilities.

4.2.4 PROGRAM IMPLEMENTATION

As mentioned above, the City's BMP requirements have not changed during the Reporting Period. Some notable examples of implementation of those BMPs are provided below.

Parks and Recreational Facilities

During 2010/2011, City parks personnel continued to maintain pet waste bag dispensers throughout six City parks, and at other popular dogwalking locations. Additional pet waste dispensers have been installed at Woodglen Vista Park (2), Mast Park (2), Town Center Community Park (3) and West Hills Park (1). A total of 360,000 pet waste bags were used during 2010/2011. Also note that routine treatment control BMP maintenance was completed for Town Center Community Park, the only completed municipal SUSMP project. See Section 2 of this JURMP Annual Report for additional detail on treatment control BMP maintenance tracking.

Public Works Facilities, Fire Stations, Other Fixed Facilities

As previously mentioned, City personnel continued to implement appropriate BMPs for municipal fixed facilities as described in the City's JURMP. BMPs are also implemented during regular maintenance (i.e. landscaping, building maintenance, etc.) as necessary. Parking facilities associated with fixed municipal facilities are maintained as part of the regular sweeping activities and were swept every month during the Reporting Period.

Municipal Inspections

All 12 high TTWQ fixed municipal facilities received an annual routine inspection during the Reporting Period. The City's inspection approach, as described in the JURMP, was implemented for all municipal inspections conducted during the Reporting Period.

A summary of deficiencies noted during inspections and corrective actions taken is provided below:

- During inspection, one deficiency was noted at the Public Works Operations Center, due to the valve for the truck washing area not being set correctly. This was promptly corrected and the catch basin connected to the truck washing area was cleaned. An inquiry was received during late 2010 regarding BMP implementation at the facility. Specifically there were concerns about covering of materials stored in the pervious areas of the site, surrounded by gravel. City staff reinspected the facility to assess BMP implementation and returned two additional times to ensure that BMP implementation was adequate. Stockpiles were covered and contained, litter was removed and discharge points at the site were maintained.
- During inspection a concern was raised at Fire Station 5 where evidence was observed that the truck was not properly placed in the truck washing area. This was corrected through repainting the area delineating where the truck should be parked and by reminding staff of the requirement. In addition, City staff

observed a training session at Fire Station 5 which involved placing used fire hoses on Carlton Oaks and Fanita Parkway (around the facility). City staff observed that water had run out of the pipes and contacted the Fire Chief responsible for the station. Fire Station 5 staff were reminded of the requirement to avoid discharging water, even potable water as in this instance, to the storm drain system.

- A complaint was also received regarding a temporary storage area at the east end of Mast Boulevard. This area was used for staging materials used for or arising from road maintenance work. The stockpiles were covered and City staff inspected to verify that this had been done.

4.3 Roads, Streets, Highways, and Parking Facilities

4.3.1 Background

Roads, streets, highways, and parking facilities are often one of the first components of the City's MS4 to collect and convey runoff. These areas can collect a variety of pollutants due to routine vehicle use and use of the surrounding areas. The City conducts regular maintenance of roads, streets, highways, and parking facilities in the City to control pollutants such as sediment, metals, and litter and debris that may accumulate and then be discharged with runoff.

4.3.2 Source Characterization

The City maintains roads, streets, and highways in the City; roads, streets, and highways are included as one entity on the City's municipal inventory, which is included in Appendix A.3.

4.3.3 Best Management Practices

The City's primary BMP for roads, streets, highways, and parking facilities is street sweeping. Other BMPs are chosen as needed based on the CASQA Municipal Handbook. The City's sweeping frequency is outlined in the JURMP, and an updated frequency was presented in the 2007/2008 Annual Report. Parking lot facilities are swept once per month. There were no changes to the BMPs implemented for roads, streets, highways, and parking facilities during the Reporting Period.

4.3.4 Program Implementation

During the Reporting Period, the City swept a total of 10,212 curb miles, removing approximately 671 tons of debris. Table 4-1, on the following page, describes the areas assigned high, medium, and low sweeping priorities, and the associated sweeping frequency for each. The City met the sweeping frequency requirements of the high, medium, and low priority streets as described in Table 4-1, on the following page.

As a means to address priority pollutants in the San Diego River Watershed, the City conducted additional sweepings of some City streets. The average sweeping frequency across all streets in the City exceeded even the stringent Municipal Permit requirement for high priority streets..

Table 4-1
Street Sweeping Prioritization and Frequency

Category	Description	Route Length (Curb Miles)	Approximate Curb Mileage Swept (Cumulative)	Minimum Sweeping Frequency	Sweeping Frequency July 2010 through June 2011
High	Carlton Hills Boulevard, Carlton Oaks Drive (West of Carlton Hills Boulevard), Riverview Center Drive, Cuyamaca Street, Magnolia Avenue, Mast Boulevard (Between Magnolia Avenue and Carlton Hills Boulevard), Mission Gorge Road, Prospect Avenue (East of Fanita Drive), Town Center Parkway	66	1,716	Twice per month	Twice per month
Medium	Select other streets in the City	292	8,496	Monthly	Twice per month
Fixed Facilities	Parking lots associated with municipal fixed facilities	10 lots	N/A*	Once per month	Once per month

* Mileage data is not available for the swept area of parking facilities associated with municipal facilities. Mileage accrued while sweeping these facilities is included in the total mileage. All 10 lots were swept during the Reporting Period.

4.4 MS4

4.4.1 Background

The City's extensive storm water conveyance system is designed to collect and convey surface runoff to receiving waters to prevent flooding during a rain event. The City's MS4 consists of 27 segments of natural or concrete channels, and approximately 839 curb inlets and catch basins.

4.4.2 Source Characterization

The City's MS4 as one complete entity is included on the City's high TTWQ municipal inventory.

4.4.3 Best Management Practices

The City maintains a strict MS4 maintenance and cleaning schedule. Maintenance and cleaning are conducted to keep the MS4 in good operating condition and remove any trash or debris that may otherwise be carried to receiving waters. As described in the

City's JURMP, BMPs for MS4 maintenance activities are chosen based on the CASQA Municipal Handbook and have not changed during the Reporting Period.

4.4.4 PROGRAM IMPLEMENTATION

During the Reporting Period, the City continued to implement an MS4 inspection and cleaning schedule. Maintenance staff removed 393 tons of material from open channels, 48 tons from pipes and culverts, and 4 tons from catch basins, for an overall total of 445 tons. The actual weight of the material was not recorded, but it was estimated based on the number of cubic yards and the composition of the material removed. The approximate weight of the material removed is based on City maintenance staff's estimate that each cubic yard removed weighed about one ton.

City personnel inspected all 25,620 linear feet of open channels in the City and found that 17,400 feet required some degree of cleaning. Additionally, City personnel inspected all catch basins in the City's MS4. Twenty structures were observed to be full of material at a level of at least 33 percent of capacity during the reporting period; all of these structures were cleaned out in a timely manner. City staff have not identified any specific MS4 facilities as receiving especially high or low volumes of trash and debris relative to the rest of the MS4. The City replaced 412 linear feet of storm drain pipe during 2010/2011, and 60 feet of storm drain were replaced with a box culvert structure.

During the Reporting Period, the City recognized some segments of the City's MS4 in need of replacement. In addition to the replacement of these portions of the MS4, the City has conducted a survey of the portions of the MS4 constructed with CMP. This survey was funded using drainage fees and will be used to prioritize improvements in the MS4.

Also, to prepare for televising pipelines, the City's public services staff conducted aggressive cleaning of pipelines to be televised (in excess of permit requirements) including hiring a contractor to assist with cleaning activities. The data for this activity is included in the summary of cleaning activities.

In addition to this survey, the City has also been exploring ideas to reduce pollutants in concrete channels in a sustainable manner. Although the City has been successful in achieving water quality benefits through several creek restoration projects, there are smaller, more densely-developed drainage areas where concrete channels are installed. It is not feasible to remove these channels without compromising the surrounding property. City staff have been considering how the concrete channels can be re-engineered to mimic the natural hydrologic processes in the channel before development. One idea has been to introduce infiltration areas at the base of the channel using a porous material without eliminating flood control capability.

A pilot study to explore this concept was submitted to the San Diego Integrated Regional Water Management Plan advisory committee for incorporation into the San Diego region's application for Prop 84 funding. The project was accepted and

incorporated into the application submitted during the Reporting Period. The pilot study will be implemented if funding is awarded through Prop 84.

4.5 SANITARY SEWER SYSTEM

4.5.1 BACKGROUND

As described in the City's JURMP, Padre Dam Municipal Water District (MWD) is responsible for wastewater operations within the City. The City and Padre Dam MWD collaboratively respond to sanitary sewer overflows to reduce or eliminate the amount of untreated sewage that reaches the MS4.

4.5.2 SOURCE CHARACTERIZATION

Padre Dam MWD is responsible for the sanitary sewer system within the City of Santee.

4.5.3 BEST MANAGEMENT PRACTICES

As discussed in the City's JURMP, the City coordinates with Padre Dam MWD to implement pollution prevention techniques and BMPs to reduce or eliminate the amount of pollutants generated from sanitary sewer maintenance activities. The City coordinates with Padre Dam MWD to ensure all applicable CASQA BMPs are implemented. There have been no changes to these BMPs during the Reporting Period.

4.5.4 PROGRAM IMPLEMENTATION

Padre Dam MWD continues to clean out or repair the sanitary sewer system as necessary to prevent seepage from the sanitary sewer system to the MS4. City personnel also notified Padre Dam MWD whenever it received information that a certain segment of the sanitary sewer system may need maintenance.

Padre Dam MWD has also worked to develop a Fats, Oils, and Grease (FOG) program that targets grease-producing facilities, such as eating establishments. The goal of the program is to reduce grease buildup in the sanitary sewer system, which can cause or contribute to sanitary sewer overflows (SSOs). In case of an SSO, the City works with Padre Dam MWD to respond appropriately to the overflow. In addition, the City collaborates when appropriate with FOG program staff, to ensure that facilities with grease traps or clarifiers are maintained. The City was notified of one sanitary sewer overflow during the Reporting Period. The overflow reportedly occurred on Atlas View Drive and did not result in a discharge to the storm drain system.

4.6 MOBILE MUNICIPAL ACTIVITIES

4.6.1 BACKGROUND

The City conducts a variety of different mobile municipal activities, typically involving infrastructure maintenance, landscape maintenance, and graffiti removal. The City does not conduct power washing as part of any municipal activities.

4.6.2 SOURCE CHARACTERIZATION

Graffiti removal, infrastructure maintenance, and landscaping are listed on the City's high TTWQ municipal inventory.

4.6.3 BEST MANAGEMENT PRACTICES

The City implements BMPs for mobile activities as described in the City's JURMP and as applicable to the activity. City personnel are trained to implement BMPs for the specific activity in which they are involved. For example, City personnel conducting graffiti removal are trained to store and handle any chemicals properly. A more detailed discussion of BMPs for specific mobile activities is included in the City's JURMP; these BMPs did not change during the Reporting Period.

4.6.4 PROGRAM IMPLEMENTATION

The City hires several contractors to conduct mobile activities in the City. Contractors are frequently reminded of the level of BMP implementation expected by the City. There were no complaints received by the City's storm water hotline or any other indication that City personnel and City contractors conducting any mobile activities were not properly implementing the appropriate BMPs.

4.7 SPECIAL EVENTS

4.7.1 BACKGROUND

As detailed in the City's JURMP, a variety of different special events are hosted within the City. Special events range from summer concerts and the Santreefest to the 4th of July celebration.

4.7.2 SOURCE CHARACTERIZATION

As required by the Municipal Permit, special events are included on the City's high TTWQ municipal inventory.

4.7.3 BEST MANAGEMENT PRACTICES

As detailed in the City's JURMP, the City has selected BMPs for special events hosted in the City. In general, the goal of the City's special event BMPs are to properly manage

trash and litter generated by the event, keep catch basins and other nearby MS4 facilities free of litter/debris from the event, and raise storm water awareness among the vendors and patrons of the event, as applicable.

4.7.4 PROGRAM IMPLEMENTATION

The City hosted a number of special events during the Reporting Period. During each event, the City implemented the following BMPs:

- Trash/recycling bins were used.
- Spill kits were accessible.
- Street sweeping and parking lot sweeping was conducted following the event.

In addition, the Santee Farmers' Market organized by a private citizen, continued on the former Santee Elementary School site; and the Santee Street Fair and the Santee Car Show on Riverview Parkway were organized by the Santee Chamber of Commerce.

All three of these events was subject to a temporary use permit and comprehensive conditions, based on the standard special events conditions and the specific location and activities associated with the event. The operators of these events were required to document that appropriate BMPs were implemented during the events using a City-provided checklist and to inspect after the event to ensure that all corrective action (including removal of trash and debris, and cleaning of storm drain inlets as appropriate). City staff inspected these events as appropriate during the Reporting Period and confirmed that BMPs were being implemented appropriately.

4.8 EDUCATION AND OUTREACH

During the Reporting Period, the City continued to educate municipal personnel regarding proper BMP implementation and other storm water and watershed concepts. A total of 26 municipal personnel were provided formal storm water training during the Reporting Period. A detailed discussion of the City's education and outreach activities is included in Section 8 of this Annual Report.

4.9 SPILL REPORTING, RESPONSE, AND PREVENTION

As detailed in the City's JURMP, the City's sanitary sewer system is managed and maintained by the Padre Dam MWD. Padre Dam MWD has documented procedures for preventing and responding to sanitary SSOs. The City provides assistance during SSO response when necessary. The City responds to all other spills within its jurisdiction as needed.

The City uses the City's storm water hotline as the main mechanism for being notified of spills; spills may also be discovered during routine inspections or other complaint investigations. Individuals in the City are encouraged to report any spills, including SSOs and any spills from private sewer laterals or septic systems, to the City's storm

water hotline. The City notifies Padre Dam MWD regarding any calls made to the hotline regarding SSOs.

During the Reporting Period, there was one SSO, which was described earlier in this section. There were no other spills during the Reporting Period.

4.10 Public Reporting of Illicit Discharges and Connections

Reporting and Response

Public and municipal involvement are crucial to preventing and eliminating illicit connections and illegal discharges (IC/IDs) from the storm water conveyance system. The Storm Water Hotline provides an effective means for individuals in the City to report suspected IC/IDs. The hotline number is provided on the City's website, in distributed storm water educational material, and in storm water articles in *Santee Review.* All complaints received through the hotline are logged for documentation and tracking. Each logged complaint is investigated by City personnel to determine if an IC/ID is present. Responsible parties for any confirmed IC/ID are sought out and educated and/or cited as necessary and required to stop or clean-up any and all illegal discharges.

Complaints received by the City during the Reporting Period and the City's response to each are listed in Appendix B. Sixty-seven complaints were documented and responded to this year.

Enforcement

As previously stated, complaints received via the storm water hotline are included in a table in Appendix B. The table also includes a description of how each complaint was resolved during the Reporting Period. Resolutions to investigated complaints included clean-up, providing educational material and discussing storm water concepts with individuals involved in the complaint. In some cases courtesy notices and and notices of violation (NOV) were issued. The City issued 12 courtesy notices and 3 NOVs in response to complaints received by the City's storm water hotline.

4.11 Municipal Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

4.12 Program Modification and Review

The City's JURMP was updated in March 2008, and the street sweeping and special events requirements were updated as reported in the 2007/2008 Annual Report. Additional facilities (Sky Ranch Park and Mast Park West) were added as the City took responsibility for maintenance. Refinements to the BMPs for herbicide applications and

a change in the frequency of sweeping of municipal parking lots were both identified in the 2009-2010 annual report. During 2010/2011, all of Mission Gorge Road was designated as high priority for street sweeping; previously some segments were high priority and some were medium priority.

5.0 INDUSTRIAL AND COMMERCIAL

5.1 INTRODUCTION

During the Reporting Period, the City continued to implement a program to mitigate urban runoff pollution from the areas and activities of industrial and commercial businesses. The City aims to reduce the amount of pollutants discharged from these industrial and commercial facilities through the implementation of this program component.

5.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the industrial and commercial component during the Reporting Period are presented in the following bulleted list. Additional details about the City's implementation of the industrial and commercial component and of its storm water program during the Reporting Period are provided in the remainder of Section 5. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

- Extensively reviewed and updated the inventory to remove businesses that were no longer operating.
- The City met the Municipal Permit requirement of inspecting at least 25 percent of its stationary industrial and commercial inventory
- The City inspected 100 percent of the inventoried high TTWQ stationary industrial and commercial facilities
- Based on inspection findings and complaints made to the hotline, the City issued four written courtesy notices informing businesses of BMP deficiencies and six Notices of Violation (NOV) to stationary industrial and commercial businesses
- The City sent notices to each business that had not filed Notices of Intent (NOI) or submitted Notice of Non-Applicability/No Exposure Certification (NONA/NEC) paperwork in connection with the State of California General Industrial Permit (Industrial Permit), as appropriate.
- Three courtesy notices and two NOVs were issued to a mobile business within the City

5.2 STATIONARY INDUSTRIAL AND COMMERCIAL SITES / SOURCES ELEMENT

5.2.1 BACKGROUND

The City's industrial and commercial inventory, which can be found in Appendix A, includes all stationary facilities known to be operating in the City that are required to be

included on the City's inventories. Stationary facilities in the City include, but are not limited to, manufacturing facilities, auto repair shops, restaurants, wholesalers, and contractors. As discussed in the following subsections, the City requires industrial and commercial businesses to implement pollution prevention measures and designated minimum BMPs to mitigate the impacts of business activities on water quality.

5.2.2 Source Characterization

As previously mentioned, the City's industrial and commercial inventories are included in Appendix A. The inventories include both stationary and mobile businesses, as required by the Municipal Permit. The inventories were continuously updated throughout the Reporting Period using field observations and information gathered from the City's business licensing process. In addition, the business inventory was carefully reviewed in detail during the summer of 2010 to eliminate businesses that were no longer operating in Santee. Although it is relatively simple to screen and add new businesses through the business licensing process, it is not possible to track and eliminate businesses that are no longer active. This can lead to the inventory showing more active businesses than exist. The business licensing database, site visits and other local knowledge were used to extensively update the inventory.

Information on how the City prioritizes the industrial and commercial inventories based on TTWQ is discussed in detail in the City's JURMP. The City considers factors including those listed below when prioritizing the inventories:

- Coverage under the Industrial Permit
- Consideration of downstream waterbody and whether the business is likely to discharge pollutants for which the waterbody is impaired
- Results from previous inspections and institutional knowledge
- Proximity to the receiving waterbody

The City's updated inventory includes 656 stationary industrial and commercial facilities as of August 2011.

5.2.3 Best Management Practice Requirements

Industrial and commercial businesses in the City are required to implement pollution prevention methods and other BMPs to reduce or potentially eliminate the generation of pollutants from business areas/activities. The City has established a set of minimum BMPs based on the CASQA Industrial and Commercial Handbook. The requirements include BMPs applicable to all facilities as well as activity-specific BMPs. The City's BMP requirements are described in more detail in the City's BMP Manual, which is an attachment to the City's JURMP. BMP requirements for stationary industrial and commercial businesses did not change during the Reporting Period.

5.2.4 PROGRAM IMPLEMENTATION

Industrial and Commercial Inspections

During the Reporting Period, the City conducted storm water compliance inspections at selected stationary industrial and commercial facilities. The purpose of the inspections is to confirm that the City's minimum BMPs are being implemented at stationary industrial and commercial facilities.

Facility inspections were conducted in accordance with the protocol set forth in the City's JURMP. Inspections involved a thorough examination of the facility and all outdoor activities. BMP deficiencies and corrective actions were recorded on the City's industrial and commercial inspection form, and discussed with facility personnel present during the inspection. During the inspection process, the City checked Industrial Permit compliance status, and reviewed storm water pollution prevention plans (SWPPP) and monitoring results, when applicable. Businesses observed to be in violation of the Industrial Permit are included in Table 5-1. A list of facilities visited as part of the City's routine inspection program during the Reporting Period is provided at the end of this section in Table 5-2. Table 5-2 also includes the results of follow-up results, where applicable.

The City selected sites for inspection based on the inventory included in the City's updated JURMP, which included 842 stationary industrial and commercial businesses. Although the inventory was revised later in the year to remove businesses that are no longer active, as described in Section 5.2.2, the number of sites selected for inspection during the Reporting Period was based on this larger original inventory. The City inspected a total of 262 stationary industrial and commercial facilities. Businesses were selected for inspection using the following criteria:

- High priority sites
- New businesses that might have the potential for illicit discharges
- New businesses that may require coverage by the Industrial Permit
- Businesses that had no previous inspection record

Many of the facilities inspected were home-based businesses, which form a large proportion of the business inventory. The main issues that might be associated with home-based businesses are outside storage of materials. Many of the businesses were observed from the perimeter of the property. If the property looked like it was a typical residence, then the observations were noted. If issues, such as the potential exposure of pollutants to rainwater from the operation of the business were noted, then the business owner was contacted to advise them of the necessary BMPs, and followed up as appropriate. If, based on the inspection and available information it was considered appropriate, the inventory was updated to eliminate businesses that do not need to be inventoried. Note that as the inventory is continuously updated, and for practical budgeting reasons, the City will continue to determine the number of inspections necessary based on the inventory it has at the beginning of each fiscal year.

Other non-homebased facility inspections were conducted in accordance with the protocol set in the City's JURMP. Inspections involved a thorough examination of the facility and all outdoor activities. BMP deficiencies and corrective actions were recorded on the City's industrial and commercial inspection form, which is included in the City's JURMP, and discussed with facility personnel present during the inspection. A list of facilities visited during the Reporting Period is provided at the end of this section in Table 5-2.

The City did not rely on third party inspections to satisfy its industrial and commercial inspection requirements during the reporting period. The City does not presently maintain a third party inspection program.

Inspection Findings

Most BMP-related deficiencies observed during the inspection process were minor. Some of the more common issues include uncontained litter, debris, and sediment around the site and in the parking lot and dumpster area. Another common BMP deficiency included open dumpster lids. Many industrial and commercial facilities could not provide any sort of documentation that storm water training had been provided to appropriate personnel. Written notices and other forms of enforcement were used when more significant BMP deficiencies were observed during the inspections; a discussion of industrial and commercial enforcement actions is included later in this subsection.

General Industrial Permit

Industrial Permit compliance status was evaluated during the industrial and commercial inspection process. If the business was new and had not previously been inspected, or if the business had recently changed activities, the inspector gathered information about the business activities that occur on site and assigned or reassigned the business' standard industrial classification (SIC) code(s). The inspector then determined coverage under the Industrial Permit based on SIC code. Violations of any aspect of Industrial Permit requirements were recorded on the standard industrial and commercial inspection form and are presented in Table 5-1. The table also includes facilities that could potentially gain exemption from Industrial Permit requirements by completing notice of non-applicability/no exposure certification (NONA/NEC) paperwork.

Table 5-1
Violations of the Industrial Permit

#	Business Name	Street Address	Action to Correct Violation				
			File NOI	Develop SWPPP	Develop / Implement Storm Water Monitoring	Complete NONA/ NEC	Other/Comments
1	C & M Relocation Systems	11433 Woodside Avenue	✓	✓	✓		A NOI has been filed since the inspection.
2	Rainbow Steel	9484 Mission Park Place	✓	✓	✓		A NOI has been filed since the inspection
3	Specialty Metals	11222 Woodside Avenue	✓	✓	✓		None

Each business was notified of any Industrial Permit-related non-compliance by the inspector and through written correspondence to the business. During the Reporting Period, the City's Stormwater Program Manager maintained correspondence with businesses in violation of any aspect of the Industrial Permit, notifying them of the steps that need to be taken to ensure compliance with Industrial Permit requirements.

In addition, the City coordinated industrial permit compliance with Mr. Dat Quach (and now Ms. Whitney Ghoram) of the RWQCB. Activities included:

- Copying the RWQCB on Industrial Permit-related notices to comply, or notices of violation sent to businesses.
- Providing local knowledge on facilities filing NONA/NEC paperwork.

Education and Outreach

In addition to checking for compliance with the City's requirements and the Industrial Permit, inspections provide a venue to provide site-specific one-on-one education regarding storm water concepts and BMPs. Before industrial and commercial inspections began, the City sent businesses selected for inspection a letter notifying them of the upcoming inspection as well as a fact sheet with BMPs for industrial and commercial businesses. The City has 18 different storm water-related fact sheets, which are included in Attachment 5.1. During the inspections, inspectors used a variety of educational material to provide watershed concepts and activity-specific BMP recommendations, which were provided to industrial and commercial businesses as appropriate. Inspected facilities were also informed of the City's BMP requirements during the Reporting Period, as applicable. Also note that the City completed BMP requirement notification efforts, which the Municipal Permit requires within the first three years of implementing the updated (2008) JURMP, for its entire inventory as reported in the City's 2008/2009 JURMP Annual Report. More information about the types of educational material used by the City is provided in Section 9 of this Annual Report.

The City worked with A & I Services, a carpet and upholstery cleaning business in the City, to distribute carpet cleaning fact sheets to patrons of the business. Similarly, the City worked with Leslie's Pools, a pool and spa supply store, to distribute pool and spa maintenance fact sheets to its customers at the Santee store. These fact sheets are included in Attachment 5.1.

Enforcement

Some industrial and commercial facilities were observed to be out of compliance with the City's municipal storm water ordinance and/or the Industrial Permit during inspections conducted in 2010/2011. The City followed-up with these facilities as necessary through follow-up site visits and mail and telephone correspondence to bring about compliance with applicable requirements. Follow-up inspections, including resolution status, are included in Table 5-2 at the end of this section. As detailed in Table 5-2, a small number of issues are ongoing, but are expected to be resolved through our established enforcement process. Enforcement actions were taken as necessary; numbers of enforcement actions taken are presented in the bulleted list later in this subsection.

During the course of the Reporting Period, the City also received complaints through the City's storm water hotline regarding stationary industrial and commercial facilities. Based on the results of investigations the City took enforcement action as necessary.

Overall, the City issued the following enforcement actions to stationary industrial and commercial businesses during the Reporting Period:

- Four courtesy notices/onsite conversations with discharger
- Six NOVs
- Notices were sent to each business that had not filed to comply with the Industrial Permit

Overall, the City's enforcement actions were effective in bringing about compliance with the City's requirements. The City continues to work on issues relating with Carlton Oaks Golf Course in collaboration with the City of San Diego. As this ongoing work is considered to be a watershed activity, this activity will be reported in the San Diego River WURMP in January 2012.

There were no instances of noncompliance at stationary businesses found to present a significant threat to human health or the environment observed during the Reporting Period, so none were reported to the RWQCB.

5.3 Mobile Sources

5.3.1 Background

Due to the nature of activities of most mobile businesses, a major area of concern tends to be illegal discharges. In general, mobile businesses can be hard to identify, as many may not have City business licenses. Additionally, because many mobile businesses

may be home-based and activities do not occur in one fixed location, inspections of such facilities are impractical.

5.3.2 Source Characterization

Known mobile industrial and commercial businesses, as described in the City's JURMP, are included on the City's inventory (Appendix A) and are marked as mobile. As of August 23, 2011, a total of 33 mobile businesses are included on the City's inventory.

5.3.3 Best Management Practice Requirements

BMPs for stationary industrial and commercial facilities, as discussed earlier in this section, are required to be implemented for mobile activities. BMPs for mobile businesses, including key principles, such as proper collection and disposal of any discharge, are discussed in the City's JURMP. There have been no updates to the BMP requirements as described in the JURMP.

5.3.4 Program Implementation

During the Reporting Period, the City received and responded to three calls to the City's storm water hotline regarding mobile businesses. In each case the City responded to investigate and verify the complaint. Enforcement action was taken and educational material was distributed as applicable. More detail about the complaints made to the City's storm water hotline regarding mobile businesses is included in Section 7 of this Annual Report.

In addition, City staff are aware of mobile business operations (particularly automotive detailing operations in industrial areas), and verify that appropriate BMPs are being implemented when these operations are observed.

Education and Outreach and Enforcement

During the Reporting Period, the City took proactive steps to identify and educate mobile businesses in the City by seeking out such businesses. City personnel drove by areas known to be frequented by mobile businesses, specifically mobile car detailers. If any mobile businesses were observed, City personnel stopped to provide educational material and ensure that no discharges were occurring. Operators who are not implementing BMPs are required to stop, and remove the discharge. Typically a notice is sent to the mobile business owner if such an incident occurs. During the Reporting Period, a total of three Courtesy Notices and two NOVs were issued to mobile businesses. In each instance, City personnel discussed the BMP requirements of mobile businesses with business personnel. Typically the City requires the owner of the business to provide documentation (such as a completed training sign-in sheet) showing that field staff have been trained in the relevant BMP requirements. Also note that the City completed BMP requirement notification efforts, which the Municipal Permit requires within the first three years of implementing the updated (2008) JURMP, for its entire inventory, including mobile businesses, as reported in the City's 2008/2009

JURMP Annual Report. Details about the City's education program for mobile businesses are included in Section 9 of this Annual Report.

There were no instances of noncompliance of mobile businesses that were believed to present potential threats to human health or the environment observed during the Reporting Period, so none were reported to the RWQCB.

5.4 Industrial and Commercial Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

5.5 Program Review and Modification

The City's JURMP was recently updated in March 2008. No changes to the City's industrial and commercial component have been made since that time.

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
1	619 (SANTEE) HYDROPONICS	7949 MISSION GORGE ROAD			
2	A & B A/C & HEATING	8701 MESA ROAD*			
3	A & D FIRE PROTECTION	11465 WOODSIDE AVENUE	✓	To be checked during rain.	Ongoing
	A & E MOVING & STORAGE	9263 ABRAHAM			
4	A&I SERVICES	8665 ARGENT ST SUITE A			
5	A-1 STOR-IT	11493 WOODSIDE AVENUE			
6	ACCU-TAP LLC	9625 MISSION GORGE ROAD			
7	ACES ELECTRICAL CONTRACTORS	8616 ATLAS VIEW DRIVE*			
8	ACL ELECTRIC	9315 CADORETTE AVENUE*			
9	ACUHON	8665 MISSION GORGE ROAD			
10	ADVANCED COPYING SYSTEMS	9944 CLEARLY STREET*			
11	ADVANCED ELECTROMAGNETICS*	9311 STEVENS RD			
12	AFFORDABLE AUTO WHOLESALE	10764 2ND STREET			
13	AKENSON ELECTRIC	8843 PROSPECT AVENUE			
14	AL MAX SANITATION (AMS)	10023 PROSPECT AVE.			
15	ALLEN MECHANICAL INC	11030 SUMMIT AVENUE*			
16	ALLIANCE HEATING & AIRCONDITIONING	10281 PEBBLE BEACH DRIVE*			
17	ALMONDIZES GOURMET NUT BRITTLE	10230 PALM GLEN DRIVE*			
18	ALTERNATIVE BATHTUB	9428 LETICIA DRIVE*			
19	AMERICAN FENCE COMPANY	9944 PROSPECT AVENUE			
20	AMOREE DESIGNS INC	9360 LETICIA DRIVE*			
21	AMY'S FINE BURGER	9862 MISSION GORGE ROAD			
22	APOMTEC SERVICES	9214 BIRD STREET*			
23	ART JOURNEYS	10230 JULIO PLACE			
24	ARTISTIC MARBLE AND GRANITE, INC.	9323 STEVENS ROAD			
25	BAGZ 4 GAMEZ	9348 NALINIE COURT*			
26	BAILEY ELECTRIC & SUPPLY	9819 SCOTTSBLUFF COURT*			
27	BARNER ELECTRIC	9435 WHEATLANDS COURT			
28	BEHLMAN ENTERPRISES	110022 LARKRIDGE STREET			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
29	BERT W. SALAS INC	10767 WOODSIDE AVENUE			
30	BJ METAL & REFINISHING	10416 LEN COURT*			
31	BLACK HAWK ELECTRIC COMPANY	8404 MAGNOLIA AVENUE			
32	BLIND INSTALLATIONS BY JOHN IRWIN	365 WHISPERING WILLOWS DRIVE*			
33	BLUE STAR STEEL INC.	11322 WOODSIDE AVENUE			
34	BLUEWATER	10520 KENNEY STREET			
35	BOB'S FIRE EQUIPMENT COMPANY	9366 GOYETTE PLACE*	✓	Recheck for exposures	Resolved
36	BOYCE CORPORATION DBA FREEDOM ELECTRIC	10744 ROCKVILLE STREET			
37	BRADLEY ELECTRIC	10861 EL NOPAL			
38	BRADSHAW ENGINEERING CORP.	8645 ARGENT ST. SUITE B			
39	BRAINARD CONSTRUCTION	113 ROCK GLEN WAY*			
40	BRON DEVELOPMENT COMPANY	10035 PROSPECT AVENUE			
41	BUILDIT CONSTRUCTION	9228 FAIREN LANE*			
42	BUTLER'S WEED ABATEMENT	9430 GALSTON DRIVE			
43	C & L ELECTRIC	9065 INVERNESS ROAD*			
44	C & M RELOCATION SYSTEMS	1143 WOODSIDE AVENUE			
45	C DALTON FLOORING	10811 LEN STREET*			
46	CALIFORNIA ACRYLIC & MIRROR PLATE COMPANY	10658 PROSPECT AVENUE			
47	CARLS JUNIOR #385	10009 MISSION GORGE ROAD			
48	CARLTON OAKS COUNTRY CLUB	9200 INWOOD DRIVE	✓	Reinspection of facility with City of San Diego. Investigation of sewage disposal at remote locations. Research other areas of concern.	Ongoing
49	CARPET INSTALLERS	10208 STRATHMORE DRIVE*			
50	CASCADE DRILLING LP	9331 MISSION GORGE ROAD			
51	CAZADORES MEXICAN FOOD	9333 MISSION GORGE RD.			
52	C C M ENTERPRISES	9366 ABRAHAM WAY			
53	C C M ENTERPRISES	10848 WHEATLANDS AVE.			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
54	CED (CONTOUR TECHNOLOGY)	8406 MAGNOLIA AVENUE.			
55	CHARLES ENGINEERING COMPANY	8733 MAGNOLIA AVENUE			
56	CHOICE LOCKSMITHING & SECURITY INC.	10117 CARRIE ELLEN COURT*			
57	CIN CLEARLY	1910 MONTILLA STREET*			
58	CINDA'S TOFFEE	9320 PRAFUL COURT*			
59	CITY ELECTRIC SUPPLY	10729 WHEATLANDS AVENUE			
60	CLASSIC ELECTRIC	8531 ABLETTE ROAD			
61	COASTAL SUPPLY CO INC	8650 ARGENT STREET			
62	CODE 3 ELECTRIC	10934 GREEN CASTLE STREET*			
63	COLTRANE FIRE PROTECTION	8620 BIG ROCK ROAD*			
64	COMFORT MECHANICAL	10740 KENNEY STREET			
65	COMFORT PLUMBING	9330 GOYETTE PLACE*			
66	COMPETITION BOBCAT	9587 MAVIN DRIVE*			
67	CONTOUR TECHNOLOGY	8406 MAGNOLIA AVENUE			
68	COOPTEC WELD MANUFACTURING	9526 SAINT ANDREWS DRIVE*			
69	COPPER ELECTRIC	10054 PROSPECT AVENUE	✓	Check storage during rain	Ongoing
70	COTIJAS	9121 MISSION GORGE RD			
71	COYOTE SERVICES LLC	8745 MAGNOLIA AVENUE	✓	Check cleaning done.	Ongoing
72	CRAFTER'S FENCE	8606 ARGENT STREET			
73	CREATIVE METALS INDUSTRIES INC	10039 PROSPECT AVENUE			
74	CURRENT WAYS	10221 BUENA VISTA AVENUE*			
75	CURRIER STUCCO	8820 PRESTWICK WAY*			
76	CUSTOM AIR SYSTEMS	9772 CASTAIC COURT*			
77	CUYAMACA CONSTRUCTION INC.	10763 WOODSIDE AVENUE	✓	Check irrigation system adjusted.	Done
78	D & G WINDOW	10114 WEST GLENDON CIRCLE*			
79	DALE'S CUSTOM WOODWORKING	10407 SANTANA STREET*			
80	DAN WHEELER TRUCKING	9437 WILLOWGROVE AVENUE			
81	DAVIC CONSTRUCTION GENERAL CONTRACTOR	10925 WHEATLANDS AVENUE*			
82	DECRESENTE'S LANDSCAPING	8748 WAHL STREET*			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
83	DESIGNERS TOUCH BUILDERS	9953 LOS RANCHITOS ROAD			
84	DKA3 INDUSTRIES	9435 LAKE CANYON ROAD*			
85	DLOUHY DOORS	8813 ELLSWORTH COURT*			
86	DLS CYCLES	10176 SWANTON DRIVE*			
87	DON LINCOLN LATH & PLASTER	9235 BIRCHCREST BOULEVARD*			
88	DRAGON MACHINE SHOP	9435 WHEATLANDS COURT, SUITE G			
89	EASY AUTO GLASS	10739 WOODSIDE AVENUE, SUITE B	✓	Check on trash bins	Resolved
90	ECOGREEN RECYCLING	9540 PATHWAY STREET, SUITE 105			
91	EDM BUSINESS	9539 MAUREEN COURT*			
92	EL CAJON NAMEPLATE	10054 PROSPECT AVENUE, SUITE K			
93	ELLIOTT'S WOODS	9576 RAWLINS WAY*			
94	ENTERPRISE RENT-A-CAR	10330 MISSION GORGE ROAD			
95	ESSENTIAL GROOMING	9225 CARLTON HILLS BOULEVARD			
96	ESTRADA'S	8528 MAGNOLIA AVE. SUITE 107			
97	ESTRADA'S MEXICAN FOOD	9292 CARLTON HILLS BOULEVARD, SUITE B			
98	ESTRADA'S MEXICAN FOOD	9630 CARLTON HILLS BOULEVARD			
99	EUROPEAN COMPANY	10051 PROSPECT AVE.			
100	EXTRA SPACE STORAGE	10115 MISSION GORGE ROAD			
101	FARRIS CONSTRUCTION COMPANY	8758 BUSHY HILL DRIVE*			
102	FINEST CITY WINDOW CLEANING	10032 MEADOW TERRACE*			
103	FLEXABLE CABLE	10314 PARK AVENUE*			
104	FLEXDEX SKATEBOARDS	8534 HUBBLES LANE*			
105	FRED PERRY	9211 BELLAGIO ROAD*			
106	FREEDOM VENDING	9554 DOMER ROAD*			
107	FUEL ATV	8858 PASEO DE LOS CASTILLOS*			
108	GA ELECTRIC CORPORATION	10520 KENNEY STREET			
109	GG LANDSCAPING	9737 JEREMY STREET*			
110	GIAMANCO & SONS	8742 ATLAS VIEW DRIVE*			
111	GIANT PAINTBALL	11125 WOODSIDE AVENUE, SUITE B			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
112	GOLDSTEIN ELECTRICAL	8502 ORGANDY LANE*			
113	GORDON-PRILL SAN DIEGO INC	8400 MAGNOLIA AVENUE, SUITE F			
114	HARRISON TRUCKING INC.	8801 OLIVE LANE.	✓	Check monitoring reports	Resolved
115	HILBERTOS MEXICAN FOOD	9805 PROSPECT AVE SUITE F			
116	HOWLAND ENTERPRISES	10112 MAST BOULEVARD*			
117	HP WIRING	7341 PARK VIEW COURT*			
118	HUSTED RACING FABRICATION	9011 WILLOWGROVE PLACE*			
119	HYDRAULIC ELECTRIC	9938 PROSPECT AVENUE, SUITE 145			
120	INFUSED	9215 HOLMBY WAY*			
121	INTEGRITY COMMERCIAL FLOORING INC	9885 PROSPECT AVENUE, SUITE A			
122	INTERNATIONAL AUTOREPAIR	10031 PROSPECT AVENUE, SUITE D			
123	JACK IN THE BOX #20	9337 MAST BOULEVARD*			
124	JACK IN THE BOX #3007	10330 MAST BOULEVARD*			
125	JAG CONSTRUCTION COMPANY	9602 WEST HARTLAND CIRCLE*			
126	JAMES A MILLER GARDENING	8515 ELLSWORTH LANE*			
127	JAMES A. ZIEGLER	9055 VALLE DE VERDE*			
128	JAW INDUSTRIES	9410 PIKE ROAD*			
129	JEFF'S SUPERIOR RESTORATION	9321 CADORETTE AVENUE*			
130	JENSEN ELECTRIC	9101 HEATHERDALE STREET*			
131	JIM THOMAS WELDING	11005 HILLCREEK*			
132	JOHN BARWIG GRAPHICS	8618 CARLTON OAKS DRIVE			
133	JOYCE'S EQUIPMENT SERVICE	10143 MARCELLA COURT*			
134	JP'S PERSONAL CHEF SERVICE	445 WHISPERING WILLOWS DRIVE, SUITE F*			
135	JR ELECTRONICS	10744 ROCKVILLE STREET, SUITE 102			
136	JWG CONSTRUCTION COMPANY	10925 HARTLEY ROAD, SUITE H			
137	KACK PLUMBING	10368 KERRIGAN*			
138	KANGEROO VIDEO PRODUCTS	10845 WHEATLANDS AVENUE SUITE C			
139	KC'S TRUCK & TRAILER PARTS	10441 CADWELL ROAD*			
140	KE BURGMANN	8575 ROLAND ACRES DRIVE,			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
141	KELLY'S CONCRETE PUMPING	10025 PINEWOOD VIEW*			
142	KITTYHAWK ENERGY	9484 MISSION PARK PLACE	✓	Follow up on biofuel storage	Ongoing
143	K-KAR CENTER	8931 MAGNOLIA AVENUE	✓	Verify water does not discharge from property	Resolved
144	LR KNIGHT PAINTING	9744 VOMAC ROAD*			
145	L SEVEN 'N' COMPANY INC	8775 RAILROAD AVENUE*			
146	LE CARAMEL LLC	11220 WOODSIDE AVENUE			
147	LLOYD'S COLLISION CARE	9936 BUENA VISTA AVENUE	✓	Check on storage	Resolved
148	LOCK'S LAWN CARE	10775 TAMAR TERRACE, SUITE C*			
149	LOTTA HARDWOOD FLOORS & CONSTRUCTION	10436 CADWELL ROAD*			
150	MADRIDS AUTO BODY REPAIRS	10559 PROSPECT AVENUE			
151	MANUEL & SON	10342 PARK AVENUE*			
152	MARIETAS #4	8915 CARLTON HILLS BOULEVARD			
153	MARINE LIFE AQUATICS	11061 LEA TERRACE DRIVE*			
154	MARJAN STONE	9746 PROSPECT AVENUE			
155	MARTEL ELECTRIC INC	9932 PROSPECT AVENUE, SUITE 140			
156	MARY'S DONUTS	9031 MISSION GORGE RD.			
157	MAYAN TRADE INC	9437 WHEATLANDS AVENUE, SUITE H			
158	MAYHEM MOTOCYCLE SHOP	8733 MAGNOLIA AVENUE, SUITE 113			
159	MCCOY M1 MACH CONDITIONING	9632 RYDER COURT*			
160	MCGUIRE ELECTRIC	9330 STEVENS ROAD, SUITE A			
161	METRO STEEL	10520 KENNEY STREET, SUITE A			
162	MICHAGO'S BUILDING MAINTENANCE	8512 PASEO LADERA*			
163	MOM'S SIGN SHOP	7945 MISSION GORGE ROAD, SUITE 106			
164	MONTOYA HEATING & AIRCONDITIOING	8581 ATLAS VIEW DRIVE*			
165	MORELY & SONS SIGNS	10735 GREENCASTLE STREET*			
166	MOST TRUCK SALES	8017 MISSION GORGE ROAD			
167	MT INSULATION INC	10612 PROSPECT AVENUE, SUITE 105			
168	MURL BRUTON RACING ENGINES	10728 KENNEY STREET			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
169	NEW CREATION FLOORING COMPANY	8543 ELLSWORTH LANE*			
170	NICHOLS CONCRETE	9506 DOMER ROAD*			
171	NORTHWEST DEVELOPMENT COMPANY	10765 WOODSIDE AVENUE, SUITE A			
172	OCEAN SUPPLY AND MANAUFACTURING	10850 HARTLEY ROAD			
173	ORIGINAL ROADHOUSE GRILL	9816 MISSION GORGE ROAD			
174	OSSO MILLER PACIFIC	8400 MAGNOLIA AVENUE, SUITE G			
175	OZZIE'S KUSTOM WORKS	10658 PROSPECT AVENUE, SUITE B			
176	PACIFIC COAST BUILDING ERECTION	9962 PROSPECT AVENUE, SUITE B			
177	PACIFI SPORTS WAREHOUSE	10746 KENNEY STREET, SUITE 303	✓	Check to see if sand was cleaned up	Ongoing
178	PACIFICA GLASS COMPANY	10731 WOODSIDE AVENUE			
179	PADRE DAM WATER RECYCLING FACILITY & SANTEE LAKES	12001 N. FANITA PKY.		Padre Dam requested a follow-up inspection to confirm that corrections were acceptable.	Resolved
180	PAMUS CONSTRUCTION	9915 BECK DRIVE*			
181	PAPA JIMS'BBQ	8595 MESA ROAD, SUITE 21*			
182	PAPERCRAFT INC	9225 ISAAC STREET			
183	PAT MARTIN CONSTRUCTION	9743 PEBBLE BEACH DRIVE			
184	PENGUIN YOGURT FACTORY	9621 MISSION GORGE ROAD			
185	PHENNYS PRINTING & MAILING SE	8402 MAGNOLIA AVENUE, SUITE F			
186	PHO SANTEE	8790 CUYAMACA STREET, SUITE K			
187	POOL DOG AND SPA SERVICES	10800 WOODSIDE AVENUE			
188	POPP CONSTRUCTION	9425 MANDEVILLE ROAD*			
189	PROFORMANCE ENGINEERING	10744 ROCKVILLE STREET			
190	PROVOST IN DBA TRAFFIC TECH	11366 WOODSIDE AVENUE, SUITE B	✓	Check during rain conditions	Ongoing
191	QUALITY CONTROLLED MANUFACTURING	9429 ABRAHAM WAY	✓	Check up on SWPPP progress	Pending
192	R & D ENGINEERING	10704 PROSPECT AVENUE, SUITE C			
193	R.E.S. ENTERPRISES	10965 HARTLEY ROAD, SUITE U			
194	RACEWAY ELECTRIC	10027 GEM TREE WAY*			
195	RAFA'S MOBILE AUTO ELECTRIC	10658 LEN			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
196	RAINBOW STEEL INC	9484 MISSION PARK PLACE	✓	Sent information on filing for State Industrial Permit.	Ongoing
197	RCP BLOCK & BRICK INC.	9631 MAGNOLIA AVE.			
198	REDLINE	10845 WHEATLANDS AVENUE, SUITE B			
199	RICHARD'S CHEM DRY	9764 SAN REMO COURT*			
200	RICKS MACHINE SHOP	11448 WOODSIDE AVENUE	✓	Needs to improve outside storage and use BMPs in cleaning area. Reinspected during rain.	Resolved
201	RJA MASONRY	10057 PEBBLE BEACH DRIVE			
202	RJM DELIVERY SERVICES	10720 IRONWOOD			
203	RLB STABILIZERS	8616 MATTERHORN DRIVE*			
204	RL ROBLES	8625 RUMSON*			
205	RL FICK & SON PLUMPING INC	10740 KENNEY STREET, SUITE 405			
206	ROGERS DANIELS ALIGNMENT	8625 RUMSON DRIVE *			
207	ROGER'S BIOMEDICAL SOLUTIONS LLC	8517 ABLETTE ROAD, SUITE F			
208	RONS PLUMBING	9962 PROSPECT AVENUE, SUITE D			
209	ROSNER PUBLICATIONS	10329 PRINCESS MARCIE DRIVE			
210	S&J BUILDERS & RESTORATION	10815 WHEATLANDS AVENUE			
211	SAB-E-LEE	9159 MISSION GORGE ROAD			
212	SAN DIEGO CLASSIC RESTORATION	9440 WHEATLANDS AVENUE, SUITE 14	✓	Check to make sure cleaning is being done correctly	Ongoing
213	SAN DIEGO CUSTOM IRON	8733 MAGNOLIA AVENUE, SUITE 134			
214	SAN DIEGO ELECTRIC WORKS	9135 CANYON PARK TERRACE*			
215	SANDIA ENTERPRISES	10046 WOODGLEN VISTA DRIVE*			
216	SANTEE BUILDERS	9230 WETHERSFIELD BOULEVARD*			
217	SANTEE CEILING SPECIALTIES	9221 FENWAY			
218	SANTEE ROOFING COMPANY	8035 SMOKEWOOD DRIVE*			
219	SANTEE SMOKIN' JOE'S BBQ	9414 KASCHUBE WAY*			
220	SCANTIBODIES CLINICAL	9336 ABRAHAM WAY			
221	SCHILLING CORPORATION	8634 HACIENDA ROAD, SUITE 518*			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
222	SDXRAY & LAB INC	8772 CUYAMACA STREET			
223	SEAL ELECTRIC INC	9216 ABRAHAM WAY, SUITE C			
224	SEVILLE CLEANERS	9225 CARLTON HILLS BOULEVARD			
225	SHOT BLASTERS INC	9962 PROSPECT AVENUE, SUITE B			
226	SIGN AGE IDENTITY SYSTEMS	9962 PROSPECT AVE SUITE M	✓	Recheck shared dumpster area	Resolved
227	SIMUNEC CONSTRUCTION INC	10208 PROSPECT AVENUE			
228	SMITH YARD REMOVAL	10355 LAIRWOOD DRIVE*			
229	SNOKE AIR CONDITIONING	9783 MEDINA*			
230	SNOW CONSTRUCTION	10107 PROSPECT AVENUE, SUITE A			
231	SOCAL CONCRETE PUMPING	10216 PEACEFUL COURT*			
232	SOCAL ELECTRIC	10965 HARTLEY ROAD, SUITE N			
233	SOLID SURFACE SOLUTIONS	10704 PROSPECT AVENUE			
234	SONIC CAR WASH	9015 MISSION GORGE ROAD			
235	SOUTHRIDGE BUILDERS INC.	9540 PATHWAY STREET			
236	SPECIALTY METALS FABRICATION	11222 WOODSIDE AVENUE	✓	Confirm NOI filed.	Ongoing
237	SPEICHER DEVELOPMENT INC	8742 GRANITE HOUSE LANE*			
238	STANDARD ELECTRONICS	9340 STEVENS ROAD			
239	STAR ELECTRIC	9559 HINTON DRIVE*			
240	STAT PHARMACEUTICALS	9545 PATHWAY STREET			
241	STONE HEAD COUNTER TOP	9851 MISSION GORGE RD			
242	STONEWORK TECHNOLOGIES	8754 GLEN VISTA WAY*			
243	SUPERIOR CONTRACTING	9529 HARTLAND CIRCLE*			
244	SYNERGY ELECTRIC INC	10740 KENNEY STREET, SUITE 401			
245	T C CONSTRUCTION CO INC*	10510 PROSPECT AVE			
246	TD CONSTRUCTION	319 RIVER TRAIL PLACE*			
247	TEDDERS METAL PRODUCTS	9937 PROSPECT AVENUE			
248	TEMPERATURE CONTROL	9486 DOHENY ROAD			
249	THE RED LOTUS	9888 MAGNOLIA AVENUE			
250	TINASSY'S K-9 SPLASH-R-CISE INC	10925 HARTLEY ROAD, SUITE E			
251	TLC ELECTRIC	9227 BIRD STREET*			

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
252	TORRES CONSTRUCTION	9484 MISSION PARK PLACE			
253	TOTAL ELECTRONIC ASSEMBLY	9005 INVERNESS ROAD*			
254	TRIPLE S ELECTRIC	8851 PROSPECT AVENUE			
255	TSUNAMI CABLES	9942 HALBERN BOULEVARD*			
256	UNIFIED ELECTRIC	8434 ANGILA DRIVE*			
257	VALLEY BOX CO INC.	10611 PROSPECT AVE.			
258	VALLEY TRACTOR & EQUIPMENT	11478 WOODSIDE AVENUE			
259	WALTER STRAUSS ROOFING	8510 RHONE ROAD			
260	WEBB DESIGNS INC	9920 PROSPECT AVENUE, SUITE 102			
261	WILLIAM CAPEHART-GIDNEY PLUMBING	9824 SHIRLEY GARDENS DRIVE*			
262	ZARICK, ROB A	8520 ABLETTE ROAD			

* Home based business

** A follow up inspection was also conducted at Rubios at the beginning of July 2010 in response to previous observations made at this restaurant.

6.0 RESIDENTIAL

6.1 INTRODUCTION

Residential land use comprises a significant portion of the City, so residential activities can have a considerable effect on the water quality of receiving waters. The City has developed an extensive program that aims to reduce pollutant runoff from residential areas and activities to the MEP.

6.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the residential component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

- On 3/1/2011 Santreefest was held at Town Center Community Park and attended by 500 volunteers. Participants removed trash around the park, planted trees and were provided with educational material covering storm water concepts.
- On 4/30/2011 the City of Santee provided a Site Captain for the Forester Creek site of the annual California Creek to Bay Clean-Up, attended by over 70 volunteers who removed trash from the channel.

6.2 SOURCE CHARACTERIZATION

The City has designated one high TTWQ residential area within the City. The area around Woodglen Vista Channel has been designated as a high TTWQ area due to dry weather monitoring findings in the channel. Outreach and related activities were conducted for the area previously listed as high priority in 2009/2010, surrounding Cecilwood Drive east of Halberns Boulevard, and because incidences of IC/IDs and other indications of pollutant discharge potential were not frequent during 2010/2011, the area is no longer listed as high threat to water quality. The City has also designated a number of high TTWQ residential activities.

High TTWQ residential activities include:

- Home and Garden Care Activities and Product Use; Including Disposal
- Disposal of Trash and Pet Waste
- Automobile Repair, Maintenance, Washing and Parking

6.3 BEST MANAGEMENT PRACTICE REQUIREMENTS

The City continues to encourage the implementation of pollution prevention measures and encourage or require the implementation of BMPs for residential areas and activities, whether or not the residential area or activity has been designated as being

high TTWQ. If particular BMPs are not feasible for any specific site or source, the City requires implementation of other equivalent BMPs. Designated BMPs or their equivalent were implemented or were required to be implemented for residential areas and activities.

Education and outreach aimed at residents helps to facilitate the implementation of BMPs, including pollution prevention methods. Residents are encouraged, and in some cases required, to implement BMPs and pollution prevention techniques when performing the high TTWQ activities listed in the previous subsection. Residential BMPs are also listed in the BMP Manual, Appendix C of the JURMP. These BMPs did not change during 2010/2011.

6.4 PROGRAM IMPLEMENTATION

The residential program is implemented through outreach and education, operation of a complaint hotline, and complaint investigation and enforcement procedures as discussed in the following subsections.

6.4.1 OUTREACH AND EDUCATION

Outreach was implemented through the preparation and dissemination of outreach materials including the fact sheet series discussed in Section 8 of this Annual Report. A summary of specific Outreach and Education events for residents is presented in the following table:

Table 6-1
Summary of Outreach and Education Activities

Date	Activity Description	Description of Outreach and Education Component
7/12/10	Response to observations during dry weather monitoring activity	A residential factsheet was sent to each of 71 residences within the sub-drainage area on Mesa Road.
8/25/10	Presentation to members of City of Santee's Senior Center	Presentation using a model of the storm drain system and San Diego River to demonstrate the impact of various types of pollutants. Answered questions from the Seniors on water quality issues.
9/20/10	Response to observations during dry weather monitoring activity	Mailed 22 residential factsheets to addresses on Ironwood where dog waste appeared to have been thrown over the fence into Woodglen Vista Creek at several locations (10451 to 10643).
9/25/10	California Coastal Clean Up Day	Residents participated in trash removal activities in Forester Creek. Factsheets on residential activities and volunteer information was available.

Table 6-1
Summary of Outreach and Education Activities

Date	Activity Description	Description of Outreach and Education Component
9/25/10	Lakeside Fire Station Event	City staff participated in a watershed activity. Outreach at a community event educating pet owners on appropriate pet waste management.
10/14/10	Factsheet on response to sewer lateral spills.	Provided copies of factsheet to Padre Dam to provide to residents (and other property owners) when responding to sewer lateral spills. The factsheet explains that discharges cannot be allowed to drain to the storm drain and provides advice on how to remove the discharge.
2/28/11	Outreach at High Tech Fair, San Diego County Fairgrounds	Approximately 2,500 attendees. City staff participated in outreach with other Copermittees, specifically demonstrating the watershed model and the impact of storm drains on rivers.
2/28/11	Factsheet on swimming pool and spa maintenance.	Approximately 50 factsheets were provided to Leslie Pools to provide to residential customers as they purchased supplies to maintain their swimming pools.
3/5/11	Santreefest	City event at Town Center Community Park. Event incorporated tree planting, trash removal and environmental education. Santreefest was attended by approximately 500 volunteers.
3/15/11	Factsheet on residential activities and pet licensing flyers.	Twenty copies of each item were provided to a mobile home park on Mesa Road after complaints were received regarding the accumulation of pet waste. Mobile home park management to use materials in educating residents about appropriate pet waste management.
3/15/11	A pet licensing flyer, a portion of the watershed pet waste presentation, and factsheet 1 were provided to a resident at Santana Ranch Estates.	A resident had complained about pet waste accumulation at the development where he lived. City staff provided him with information to help him educate his neighbors to pick up after their pets.
4/27/11	Factsheets on residential activities	Provided factsheets to addresses on Strathmore Drive where a resident had reported stormwater issues.
4/30/11	Creek to Bay Clean-Up	City staff captained a clean-up at Forester Creek, attending a pre-event training and helping to raise awareness of the event. Approximately 70 volunteers removed approximately 300 pounds of trash.

Table 6-1
Summary of Outreach and Education Activities

Date	Activity Description	Description of Outreach and Education Component
5/11/11	Factsheet on residential activities and pet licensing flyers	Provided information to addresses on Stanley Court after a resident complained about residents allowing their pets to roam about the street and not picking up after them.
5/13/11	Mission Trails Day	Provided outreach on stormwater (factsheets on residential use, swimming pools and spas) at community event.
5/26/11	Santee Patch	City staff observed a question on the Santee Patch (a local news website) on whether residents could wash their cars on their driveways. City staff responded, quoting the code, explaining that water drains directly to the river untreated, and advising the resident to redirect the water onto landscaping. This was a prompt and public response to a resident's question that others can observe.
5/28/11	Santee Street Fair	Provided outreach on stormwater (factsheets on residential use, swimming pools and spas, yard and landscaping). Conducted residential survey and discussed survey with residents.

The City continues to use opportunities to educate residents (or facilitate residents to assist others), on how their actions can help prevent the discharge of pollutants to the storm drain system. If residents understand the consequences of their actions, they can choose to find an alternative means to conduct their activities.

6.4.2 Used Oil and Waste Collection Services

The City provides free used oil disposal facilities to residents. Approximately 36 gallons of waste oil were disposed of through City-provided facilities. The City also contracts with two HHW facilities for the disposal of other HHW (leftover paints, automobile fluids, drain opener and any unused products containing toxic chemicals for home or automobile maintenance). Based on the available data, approximately 1150 pounds of paint, 349 pounds of batteries, and 51 pounds of fluorescent tubes were collected through City-provided facilities.

6.4.3 Hotlines and Websites

The City continues to operate its stormwater hotline in accordance with the requirements of the Municipal Permit. The stormwater pages of the City of Santee's website were redesigned to make them more user-friendly and separate pages are available for each type of user group (for example, resident, business, etc.). Reference

documents and links to other sources of information are provided on the different pages.

6.4.4 COMPLAINT INVESTIGATION

As previously mentioned, complaints are received by the City's stormwater hotline regarding discharges in various areas of the City, including residential properties. During the Reporting Period, the City received a total of 24 complaints regarding residential areas and activities in the City. A summary of all complaint investigations, including residential complaint investigations, is included as Appendix B to this Annual Report.

A storm water fact sheet, which is included in Attachment 5.1, relating to construction activities has been prepared and is distributed whenever any request for building permit application information is made. In addition it is provided online and in the storm water information center at the City. Disseminating information on the controls for the most basic of projects should make project proponents aware of and plan for the storm water controls needed for any construction activity. Other avenues for outreach (such as the *Santee Review Newsletter*) will continue to be used to educate homeowners about their responsibilities when undertaking minor construction work at their properties.

During the Reporting Period, City staff working on the Abandoned Vehicle Abatement Program (AVA) opened 207 cases, which relate to at least one car each, and issued 4 administrative citations. The activities of this program reduce the likelihood of these vehicles generating stormwater violations in the future.

The major topics of complaints are provided below. Based on this summary, outreach and education efforts should continue to focus on the following topics:

- Power washing or hosing down (including automotive detailing)
- Construction material management
- Maintenance of swimming pools and spas
- BMPs for landscaping, including sediment control
- Pet waste management

6.4.5 ENFORCEMENT

The residential complaints and violations data were reviewed to assess what enforcement methods were used for residential properties. Enforcement can be summarized as follows:

- Twenty one courtesy notices/onsite conversations with discharger
- Two notices of violation
- One administrative citation

One notable incident involved a property on Columbus Street, a residential street in Santee, at a location where complaints had been received during 2006. It was evident during both periods that there was some friction between the neighbors. Specifically, one neighbor would complain about sediment tracking from the adjoining property; the neighbor on the adjoining property would complain about the drainage on the complainant's property.

The City took appropriate action as necessary and made suggestions to the property owners on how to resolve the issue. However, the property on Columbus was the subject of several complaints during the fall of 2010.

During the winter of 2011 complaints were received from other residents located on Columbus Street. On inspection, the property that had been the subject of earlier complaints was observed to be undergoing grading without a permit. Violations of the stormwater ordinance, grading ordinance and other ordinances were observed. A stop work order was issued, and a deadline was given for the resident to correct the most pressing issues and to apply for a grading permit.

The incident resulted in a collaborative response by stormwater staff, engineering, code compliance, public works and the sheriff. This collaboration was effective in getting the code compliance issues resolved and in assisting the resident to achieve his goals. The resident was able to eliminate this source of friction with his neighbor by regrading portions of his property. The resident did receive an administrative citation and fine for not fully complying with the City's requirements after receiving their first notice.

6.4.6 Regional Residential Education Program

The City continues to contribute to the Regional Residential Education Program. For example, the City provided personnel to assist with a joint regional event at the High Tech Fair.

6.4.7 Methods Evaluation

As described in our JURMP, the City uses a number of methods to maintain oversight for residential activities and areas, including the following:

- Complaint referrals
- Observations of all City staff during routine activities
- Dry weather monitoring and upstream investigations

These methods provide effective oversight of residential activities within the City. The City promptly responds to complaint referrals, and any discharges observed during routine or monitoring activities using an escalating enforcement mechanism. These incidents are monitored, and if a pattern of behavior is observed in a certain area of the City or associated with a particular type of activity, then additional education efforts will be made to reduce the likelihood of this reoccurring within the community.

Repeated violations associated with an address or person result in a higher level of enforcement response, as it is expected that they are already aware of storm water requirements.

Padre Dam MWD passed a drought ordinance on June 24, 2008 prohibiting certain activities that are consistent with the objectives of the storm water program. In particular, over-irrigation and hosing down of driveways, except when required by sanitary or safety conditions, have been prohibited. City staff report incidences of over-irrigation and similar circumstances to Padre Dam MWD when noted.

6.5 EFFECTIVENESS ASSESSMENT

The effectiveness of the residential component is assessed in Section 11 of this Annual Report.

6.6 PROGRAM REVIEW AND MODIFICATION

The City's JURMP was recently updated in March 2008. With the exception of the reassignment of the high TTWQ residential area for the 2010/2011 Reporting Period, no changes to the City's residential component have been made since that time.

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION

7.1 INTRODUCTION

In accordance with the September 10, 2008 RWQCB adoption of Addendum No. 2 to Order No. R9-2007-0001, the City will submit the 2010/2011 illicit discharge detection and elimination section and attachments to the RWQCB no later than December 15, 2011.

8.0 EDUCATION COMPONENT

8.1 INTRODUCTION

During the Reporting Period, the City continued to provide education and outreach to a variety of audiences within the City. The City's education program targets municipal personnel, industrial and commercial businesses, construction site owners and operators, residents, and audiences that may generally be underserved. The City aims to reduce storm water pollution by increasing awareness about storm water and promoting the implementation of pollution prevention measures and BMPs. Through education and outreach, the City works to foster change in both the attitude and behaviors of the regulated community.

8.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the education component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the new Municipal Permit during the Reporting Period.

- During the Reporting Period, the City's community newsletter, the *Santee Review*, featured several articles highlighting storm water topics aimed at City businesses and residents.
- Various educational materials were made available to project proponents, industrial and commercial facility personnel, and City staff through the City's storm water information center, interactions and training with Stormwater Program Staff, the City Website, facility inspections and project reviews.
- The City used its website to cover issues relating to stormwater, for example educating the public about storm drain and creek maintenance.
- The City provided educational materials in English and Spanish to provide outreach to a more extensive audience.
- City staff presented information at the CASQA conference, a Qualified SWPPP Developer/Qualified SWPPP Practioner (QSD/QSP) training and at a League of California Cities Conference.

8.2 STAFF TRAINING ELEMENT

The City has provided extensive training and educational outreach to its municipal personnel. Many municipal personnel are out in the field on a daily basis, so it is important that they understand the importance of implementing BMPs. Municipal personnel are encouraged to report any IC/IDs observed to the appropriate City staff and to educate other municipal personnel and the general public about storm water

pollution prevention. During the Reporting Period, the City provided the following training/educational outreach events aimed at municipal personnel:

- Twelve public works staff were trained on how their work directly affects water quality using data obtained through a watershed source investigation.
- City Development Services staff attended two BMP Sizing Calculator Training events (four people attended one, two people attended the other). This training will assist in ensuring development projects comply with the Hydromodification Plan (HMP).
- Five City Development Services staff have attended QSP training; three have attended QSD training.
- Two City staff attended the BMP Inspection and Maintenance Workshop hosted by the City of San Diego, which was focused on LID measures.
- A City staff member attended the CASQA conference and presented a paper on the benefits of the Forester Creek Restoration Project.
- Two City staff have taken QSD/QSP or QSP qualifying exams. One City staff member attended a Certified Professional in Stormwater Quality (CPSWQ) exam review and completed the examination for CPSWQ.

In addition to the formal training sessions conducted for City personnel presented above; the JURMP reporting process and interactions with colleagues during daily activities provided the City's Stormwater Program Manager with a forum to discuss the City's storm water program with various City personnel involved in implementing the City's JURMP.

8.3 EDUCATIONAL OUTREACH ELEMENT

In addition to municipal staff, the City has continued to provide education and outreach to industrial and commercial businesses, construction site owners and developers, residential areas, and underserved audiences. These efforts promote storm water awareness and BMP implementation.

8.3.1 INDUSTRIAL AND COMMERCIAL BUSINESSES

As required by the Municipal Permit, the City inspects its inventoried businesses to evaluate compliance with the City's BMP requirements and provides site-specific education outreach to business owners and operators. Violations of the City's BMP requirements are corrected through enforcement actions as necessary. Facility inspectors provided site-specific information on necessary BMPs at all inspected facilities. This information helps facility personnel gain a better understanding of the storm drain system and activities that pose a high threat to water quality.

In addition to site-specific discussions, industrial and commercial facility owners and operators were provided a variety of fact sheets and other educational materials. The

City distributed the following general and activity-specific fact sheets during industrial and commercial inspections and during complaint investigations, as applicable. The fact sheets are included in Attachment 5.1.

- Fact Sheet 1: What is Stormwater?
- Fact Sheet 2: Water Quality Impacts
- Fact Sheet 3: Wet Weather Checklist
- Fact Sheet 4: Restaurants
- Fact Sheet 5: Automotive
- Fact Sheet 6: Mobile Auto Detailing
- Fact Sheet 7: Power Washing
- Fact Sheet 8: Industrial/Commercial
- Fact Sheet 9: Pool Maintenance
- Fact Sheet 10: Residents
- Fact Sheet 11: Demolition/Construction
- Fact Sheet 12: Special Events
- Fact Sheet 13: Carpet Cleaning
- Fact Sheet 14: Community Organizations
- Fact Sheet 15: Site Design LID BMPs
- Fact Sheet 16: Yard and Garden Maintenance
- Fact Sheet 17: Fire Prevention & Erosion
- Fact Sheet 18: Responding to Sewage Spills

A letter and Fact Sheet 8, the Industrial/Commercial fact sheet, was mailed to businesses selected for inspections during the Reporting Period. During the inspection process, the City also distributed the "Green Wrench Guide" and the "What's Cookin'" brochure, both in English and Spanish, to auto shops and restaurants, as applicable.

In addition to educational materials provided during inspections and complaint investigations, the City's newsletter, the *Santee Review*, is available by email to industrial and commercial addresses in the City. The newsletter often contains storm water articles and relevant information on public participation opportunities. The stormwater-related articles published during the Reporting Period are included as Attachment 8.1. Note that the *Santee Review* was not issued on a quarterly basis. Instead an issue was prepared during Fall 2010 only.

8.3.1.1 Mobile Businesses

Mobile businesses, specifically mobile car detailers or power washers, are considered a high threat to water quality due to the nature of the business activities and the likelihood of prohibited non-storm water discharges. Mobile businesses are not confined to a single area, and many do not have City business licenses, making them difficult to identify. Individuals applying for businesses licenses for mobile car washing activities meet with the City's Stormwater Program Manager to discuss BMPs before a business license is issued. In addition, businesses applying for licenses to operate carpet cleaning, landscaping, or pool maintenance services received factsheets on these subjects. The City took proactive steps in identifying and educating mobile businesses in the City during the Reporting Period, namely conducting drive-by investigations of areas known to be frequented by mobile businesses and providing applicable educational material and/or enforcement actions.

Additionally, the City continues to provide copies of the carpet cleaning factsheet to a facility that maintains machinery used for carpet cleaning (A & I). The facility owner distributes these factsheets to their clients.

8.3.2 Construction Site Owners and Developers

Construction sites have the potential to discharge sediment and other pollutants to receiving waters if not managed properly. Construction site owners, contractors, and developers visit the City's Engineering Division to apply for necessary permits. The review process raises storm water awareness through the grading permit approval, development review, environmental review, SUSMP review, and/or other meetings prior to the issue of permits. In addition to these interactions with City staff, information on the General Construction Stormwater Permit (where applicable), the City's Website, brochures, and construction-specific materials are provided for all construction affiliates. Anyone applying for a building permit is provided Fact Sheet 11, which includes BMPs for construction and demolition activities. Education is also provided after permits have been obtained during the City's site inspections.

The City has also continued its requirement for project proponents to watch "Hold Onto Your Dirt," an informational video on construction BMPs, at meetings prior to obtaining grading permits.

8.3.3 Residential Areas

Due to the threat to water quality posed by residential activities, the City understands the importance of reaching this particular audience through educational outreach programs. The City continued to send the *Santee Review* Community Newsletter (Attachment 8.1) to residents in the City, mainly via email. The following is an outline of storm water related articles and announcements published in the newsletter during the Reporting Period:

- "Protecting Your Property from Fire and Erosion", which provided residents with information on how to protect their properties from fire without exposing it to erosion. For example, residents are encouraged to cut vegetation so that it is a few inches high, rather than removing the plants and exposing the underlying soil to erosion. This article was prepared in response to incidents that occurred during the previous winter's rains.
- "Friends of Santee's River Park Day of Community Service" described how a volunteer group improved the area between the river and Town Center Community Park. Trash, debris and invasive species were removed. The article also informed readers how trash along the coast and in the ocean largely originates from a land source, and is transported via rivers and creeks to the ocean.
- "Community Native Planting Event" described collaboration between the Friends of Santee's River Park and the Historical Society at the Polo Barn.

Two of the articles were prepared in collaboration with the San Diego River Park Foundation to raise awareness of its local chapter (Friends of Santee's River Park). Many stormwater public participation activities in Santee are hosted by this organization, so this was a mutually beneficial collaboration.

The City website, www.ci.santee.ca.us, is another way in which City residents can become familiar with the design and intended use of the storm drain system, household hazardous waste (HHW) disposal, information regarding volunteer opportunities, information on how to report pollution, stormwater factsheets for various activities, Stormwater Program documents and applicable City contact information.

8.3.4 UNDERSERVED COMMUNITIES

As discussed in the JURMP, the City has defined underserved communities, as listed in the Permit, as residents who engage in certain high-risk to water quality behaviors. This behavior is not restricted to any particular demographic group within the City. High-risk to water quality behaviors include incorrect use and disposal of home and garden care products, incorrect disposal of vehicle fluids, use and maintenance of off-road recreational vehicles, incorrect disposal of pet waste, over-application of chemicals, over-irrigation, trash accumulation, oil spills, and home improvement projects. To generate educational outreach to those who may engage in high risk to water quality behaviors, the City has continued to maintain a HHW and used oil collection program as well as educational material regarding HHW and used oil. Pet waste bags are available in City parks and at popular dog walking areas in the City. The City website also includes information on BMPs for chemical management and vehicle washing. The City plans to continue outreach to those who may engage in high risk to water quality behaviors through this educational program.

If high-risk behaviors are observed to be prevalent in any particular demographic group, then the education program will be adjusted to provide more focused outreach to the

group. A recent study conducted on behalf of the City of Santee identified that middle-aged males were the least likely to pick up after their pets. Therefore opportunities will be sought to conduct outreach on pet waste management to this group.

8.3.5 COMPLAINT INVESTIGATIONS

To further aid the process of identifying illicit discharges, the City encourages the public and City staff to report IC/IDs. If a representative for the business, residential area, or construction site is present, the inspector will provide site-specific information regarding storm water issues including applicable educational materials. Educational material was distributed as necessary during complaint investigations. In addition to the City's storm water hotline, Public Works also receives complaints regarding issues with MS4 maintenance . These complaints are followed up by Public Works personnel and mainly involve drainage system maintenance, but storm water staff are notified when necessary.

8.3.6 EDUCATIONAL MATERIAL DISTRIBUTED

Table 8-1, below, describes the approximate number of educational materials distributed during the Reporting Period.

Table 8-1
Educational Material Distributed

Educational Material	Approximate Number Distributed
Ind/Com Inspection Notification Letter	245
Fact sheet 1: What is Stormwater?	53
Fact sheet 2: Water Quality Impacts	3
Fact sheet 3: Carpet Cleaning	4
Fact sheet 4: Restaurants	18
Fact sheet 5: Automotive	15
Fact sheet 6: Mobile Auto Detailing	17
Fact sheet 7: Power Washing	154
Fact sheet 8: Industrial/Commercial	248
Fact sheet 9: Pool Maintenance	86
Fact sheet 10: Residences	526
Fact sheet 11: Construction	31
Fact sheet 12: Special Events	15
Fact sheet 13: Carpet Cleaning	17
Fact sheet 14: Community Organizations	1
Fact sheet 15: Site Design LID BMPs	0
Fact sheet 16: Yard and Garden Maintenance	75
Fact sheet 17: Fire Prevention and Erosion	4
Fact sheet 18: Responding Sewage Spills	20

Table 8-1
Educational Material Distributed

Educational Material	Approximate Number Distributed
IPM Cards: English	16
IPM Cards: Spanish	0
Pet Waste Cards	41
Business Flyer (WURMP activity)	32
Knowledge Assessment Surveys	40
What's Cookin' - English	5
What's Cookin' - Spanish	6
Green Wrench Guide - English	14
Green Wrench Guide - Spanish	3

8.4 Outreach Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the effectiveness assessment for this program component.

8.5 Program Review and Modification

The City's JURMP was recently updated in March 2008. No changes to the City's education component have been made since that time.

9.0 PUBLIC PARTICIPATION

9.1 INTRODUCTION

The City continues to explore ways to encourage public participation in the City's storm water program. Collaboration between the City and the community should help foster a sense of shared responsibility in protecting water quality both locally and regionally.

9.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the public participation component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

- Collected over 11 tons of trash and debris during seven cleanup events held for the San Diego River, Forester Creek, and Town Center Community Park.
- Worked with the Environmental Trust, the River Conservancy and the San Diego River Park Foundation to acquire a stretch of land along the river and construct a trail (Mast Park West) to open up additional areas along the San Diego River for public enjoyment.
- Collaboration with Lakeside River Conservancy to apply for a grant to purchase land adjacent to the San Diego River east of Magnolia Avenue (Walker Hanlin Property). This land is also intended to provide public access to the river.

9.2 EVENTS AND PROGRAMS

Santreefest

The City hosted the Santree Fest at the newly-developed Town Center Park. This was attended by approximately 500 volunteers who participated in a number of activities to enhance Town Center Community Park including the removal of 1 cubic yards of trash and debris, as described in Table 9-1. In addition to the trash removal activities, trees were planted in the area. The event provided an opportunity for educational outreach to the participants of the event. Various educational outreach materials, including IPM cards in both English and Spanish, storm water fact sheets, residential fact sheets, and waste management information were provided. City personnel discussed pollution prevention techniques with event attendees who visited the City Booth.

Creek and Waterway Cleanups

The City provided a Site Captain and set-up a clean-up site (Forester Creek) for the California Creek to Bay Cleanup on April 30, 2011. Educational information on residential activities was provided during the event. Approximately 73 volunteers removed approximately 300 pounds of trash during the event. One hundred eighty two

volunteers also picked up approximately 1,000 pounds of trash from Forester Creek on September 25, 2010 as part of California Coastal Cleanup Day.

Table 9-1
Summary of Cleanup Events

Date	Amount of Trash Removed (lbs)	Description
9/25/10	1,000	182 volunteers collected 1,000 pounds of trash and two tires from Forester Creek.
4/23/11	4,000	50 volunteers collected 4,000 lbs of trash in an area close to the San Diego River north of Big Rock Road.
4/23/11	7,200* (18 cubic yards)	One hundred and thirty five people picked up trash, weeded and spread mulch at the former Santee Elementary School site.
4/30/11	300	The City captained a Creek to Bay Clean-up at Forester Creek attended by 73 volunteers.
5/5/11	400* (1 cubic yard)	500 volunteers attended this event which incorporated the planting of 54 trees, trash removal, and environmental education.
5/5/11	200* (0.5 cubic yards)	A Rotarian group picked up trash, removed weeds and spread mulch at West Hills Park.
5/12/11	8,000* (20 cubic yards)	Approximately 50 volunteers from the San Diego River Park Foundation conducted a clean-up event just east of West Hills Parkway.
5/28/11	2,000	Thirty-seven collected trash from the area around Cottonwood Avenue/Chubb Lane.

* Based on conversion factor of 400 pounds per cubic yard for trash.

Regional Events

The City participated in the Copermittee outreach activities at the High Tech Fair at the San Diego County Fairgrounds. City staff helped to present the watershed model and talked to students about the connection between storm drain system and water quality.

Storm Drain Stenciling

This ongoing program provides opportunities for members of the community to stencil storm drains to remind the public not to discharge materials to the storm drain system. No stenciling projects were conducted during the Reporting Period; however, the City

continues to offer this program to youth groups and other volunteer organizations as a way to participate in improving water quality.

Roadside Pride
This ongoing program, where community youth separate recyclable materials from collected debris, has been previously promoted in the *Santee Review*.

Hazardous Waste Collection and Used Oil Recycling
Citizens are required to properly dispose of household hazardous waste, used oil, bulk items and electronic waste. Residents are informed of the services available to them through outreach at community events, information provided through the storm water program (such as the Residential Fact Sheet), information at various City departments, and the City's website. The amount of used oil and other HHW collected during 2010/2011 is reported in Section 6.4.2 of this Annual Report.

Encourage Responsible Cleanup
Citizens using municipal facilities are encouraged to keep their community clean by properly disposing of all waste. Trash and recycling bins are provided at City parks. Pet waste bags are available at City parks and along popular dog-walking routes. Additional pet waste bag dispensers are to be installed as part of an on-going program.

Responsible cleanup procedures are encouraged at special events within the City. A Special Event fact sheet is provided to applicants for relevant permits which require specific BMPs at all special events. Detailed conditions are used for special events in Santee.

In addition to the activities listed above, the City continues to encourage public participation through Project Clean Water and related activities.

Eagle Scout Project
The San Diego River Park Foundation donated 20 new San Diego River Trail markers for Mast Park West, constructed during the fiscal year. A group of scouts installed these trail markers as part of an Eagle Scout Project. Installing these markers will heighten awareness of the public, including the scouts, of the river and the value of constructing a park adjacent to the river.

9.3 Public Participation Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

9.4 Program Review and Modification

No changes to the public participation component of the JURMP are proposed at this time.

10.0 FISCAL ANALYSIS

10.1 INTRODUCTION

During 2009/2010, a fiscal analysis reporting template was developed collectively by the Copermittees. Fiscal information for 2010/2011 is reported in the tables below, which follow the standard format adopted by the Copermittees.

Table 10-1
Expenditure Summary

JURISDICTIONAL COMPONENTS	
Administration	$97,155
Development Planning	$11,010
Construction	$10,696
Municipal	$483,424
Industrial and Commercial	$23,519
Residential	$7,978
IDDE	$55,736
Education	$18,539
Public Participation	$2,027
Special Investigations	$32,573
Non-Emergency Firefighting (incorporated into routine fire safety costs)	$0
Jurisdictional Total	**$742,657**

WATERSHED	
San Diego River	$224,440
Watershed Total	**$224,440**

REGIONAL	**$94,276**

TOTAL COSTS	**$1,061,373**

Table 10-2
Fund Summary

FUNDING BY SOURCE	
General Fund	$772,486
Storm Water Fee	$0
Developer Deposits and Fees	$15,142
Registration and Inspection Fees	$0
Grant Funds	$4,915
Zone 2 Flood Control	$268,830
Total	**$1,061,373**

Table 10-3
Watershed Urban Runoff Management Program (WURMP) Expenses

	San Diego River
Administration (1)	$4,298
Cost Share Contribution	$2,536
Watershed Activities	$205,606
Other	$12,000
TOTAL	**$224,440**

(1) Administration – includes Watershed strategic planning, management, mapping, assessment, and reporting.

Table 10-4
Regional Urban Runoff Management Program (RURMP) Expenses

Regional Programs	Jurisdictional Cost
Administration (1)	$39,737
Cost Share Contribution	$54,539
Other (2)	$0
TOTAL	**$94,276**

(1) Administration – includes assessment, reporting, management, etc.
(2) Other – examples include regional and special studies.

11.0 EFFECTIVENESS ASSESSMENT

11.1 INTRODUCTION

The City regularly evaluates its storm water program to make it as effective as possible at reducing discharges of urban runoff related pollution to the MEP. The overall structure of the City's storm water program is composed of three primary components:

- Program Planning
- Program Implementation
- Effectiveness Assessment

The process typically proceeds from planning to implementation to assessment, although in practice all three may be in progress at the same time. The initial step is program planning, which requires identifying potential pollutant sources, establishing BMP requirements, and establishing targeted outcomes and ways to measure those outcomes. Next, the program developed during the planning step is implemented. Program implementation is assessed each year using the methods developed in the program planning stage and reported in JURMP annual reports. The conclusions from these assessments are used during the next round of program planning to incorporate improvements to the program and refine the assessment technique.

Based on participation in regional efforts and its experience implementing its JURMP, the City has identified a variety of metrics to assess progress toward targeted outcomes. At the end of each reporting year, the City uses selected metrics to assess the effectiveness of its program implementation. Example metrics were provided in Section 13 of the City's 2008 JURMP, and the City has refined those metrics in the reporting periods since then.

The effectiveness assessment approach developed by the Copermittees during the last permit cycle includes six different levels of targeted outcomes. Each successive level represents a step up from more easily measured, activity-based outcomes to more difficult to measure, quality-based outcomes. The levels are listed below.

Level 1: Compliance with Activity-Based Permit Requirements
Level 2: Changes in Knowledge/Awareness
Level 3: Behavioral Change/BMP Implementation
Level 4: Load Reductions
Level 5: Changes in Discharge Quality
Level 6: Changes in Receiving Water Quality

11.2 EFFECTIVENESS ASSESSMENT RESULTS

The Municipal Permit requires the City to assess the effectiveness of each significant activity for each program component, for each program component as a whole, and for the storm water program as a whole. Level 1, Level 5, and Level 6 outcomes are

discussed in Section 11.2.1. At this time the City is not able to assess Level 5 or Level 6 outcomes for individual program activities or individual programs. As has been noted in CASQA effectiveness assessment guidance, methods for integrated assessment—assessment that combines both monitoring data and programmatic data—are still under development at regional and statewide levels (CASQA, 2007).

11.2.1 Outcome Level Assessments

Level 1

Level 1 outcomes essentially are measures of Municipal Permit compliance. The component-specific sections in this JURMP Annual Report provide details of programmatic actions taken to comply with the applicable Municipal Permit requirements. Appendix C of this JURMP Annual Report also includes a checklist that matches the Municipal Permit's annual reporting requirements with the section(s) or appendix of this report that addresses each requirement.

Levels 2 and 3

See the tables 11-1 through 11-8 at the end of this section for discussions of Level 2 and Level 3 outcomes for significant activities within each program component. Please note that only a Level 1 assessment applies to fiscal analysis, so no table for fiscal analysis is included.

Level 4

The tables at the end of this section provide information for Level 4 assessments where feasible. Assessment of Level 4 outcomes is feasible for some programs that directly measure the amounts of pollutant removal, such as MS4 cleaning. For most other programs reliable load estimation methods have not yet been developed.

Level 5

One of the City's primary mechanisms for measuring the quality of discharges is the Dry Weather Monitoring Program. Graphs presenting the historical Dry Weather Monitoring Program exceedances are provided at the end of this section as figures 11-1 and 11-2.

Nitrate-nitrogen exceedances have been common over the years and have been attributed to groundwater seepage into the MS4. Exceedances for other constituents measured by field tests have been relatively rare. Laboratory data, collected from 25 percent of the City's sites per Municipal Permit requirements, have shown some exceedances in bacterial indicators. No bacteria exceedances were recorded in 2011, and the exceedance rates have generally decreased in recent years compared to the earlier years of the program. Exceedances for other constituents measured via laboratory analysis, such as diazinon, chlorpyrifos, oil and grease, and heavy metals, have rarely been observed.

In addition to dry weather monitoring, the City continues to conduct the MS4 Outfall Monitoring Program implemented in 2009. This program examines water quality at targeted MS4 outfalls in order to characterize pollutant discharges to receiving waters.

The data is used to assess whether these discharges contribute to the overall receiving water quality on a regional basis; the analysis is presented in the regional Copermittee annual monitoring report, which is submitted to the RWQCB each January.

Level 6

The Copermittees' regional monitoring program sited and monitored two Temporary Watershed Assessment Stations (TWAS) in the San Diego River in 2009/2010, with data provided in January 2011 as part of the regional annual monitoring report. One station was at the eastern side of the City (SDR-TWAS-3), close to the City's jurisdictional boundary with the County of San Diego, and one farther to the west, close to the boundary between the City of Santee and the City of San Diego (SDR-TWAS-2).

Dry weather data from these sites both showed nutrients (nitrogen and phosphorus), bacteria (Enterococci), and TDS as high or medium priority constituents. Synthetic pyrethroids were detected in the sediment at the upstream site (SDR-TWAS-3), but not at the downstream site (SDR-TWAS-2). Wet weather data identified synthetic pyrethroid pesticides (Bifenthrin at both sites, and Permethrin at TWAS-2), sediment (both TSS and turbidity at TWAS-2, but only turbidity at TWAS-3), and bacteria (fecal coliform) as high priority constituents. Dry weather toxicity to *S. capricornitum*, often associated with high TDS, was observed at TWAS-3, and wet weather toxicity to *H. azteca*, often associated with synthetic pyrethroids, was observed at TWAS-2. These results are generally consistent with watershed assessments previously conducted in the San Diego River Watershed and presented in the San Diego River WURMP.

Since 2002, the City has performed an additional study of water quality at five receiving water body locations: upstream and downstream sites in the San Diego River, upstream and downstream sites in Forester Creek, and one site in Sycamore Creek. Samples have been collected under ambient conditions twice per year at each site. Although a portion of Forester Creek outside the City of Santee has been listed as impaired for pH, none of the samples in any water body in Santee's additional study have exceeded the Basin Plan water quality objectives (WQO) for pH at any point during the program's history (Figure 11-3). Figures 11-4, 11-5, and 11-6 show fecal coliform levels measured in upstream and downstream receiving water locations, with downstream measurements typically being lower. In general, fecal coliform levels in recent years are lower than the levels recorded in the earlier years of the program.

Fecal coliform counts are typically lower at the downstream Forester Creek site than the upstream site, and samples collected in 2010 and 2011 from Site J30d1, located downstream of a restored portion of Woodglen Vista Channel, have had relatively low bacteria counts. Assessment data from Forester Creek after project completion presented at the 2010 CASQA Conference showed an 87 percent reduction in fecal coliform bacteria from the upstream to downstream end of the project area. These data are evidence that the City's work to revegetate and improve open channels such as Forester Creek and Woodglen Vista Creek results in improved water quality.

11.2.2 Overall Component Assessments

Development Planning

The City's review process for development projects effectively requires higher removal efficiency BMPs. City interaction with responsible parties during the reporting period has resulted in BMP installation and a greater level of awareness of the need for regular treatment control BMP maintenance within the City. City staff have been educated on updated hydromodification management requirements, and information about the new requirements is easily accessible via the City's website. The City has implemented a strong system to verify proper installation of maintenance at the conclusion of construction and notify property owners of the need to implement a maintenance program.

Construction

The City inspected many sites more frequently than required by the Municipal Permit and sent construction BMP reminders prior to the beginning of the wet season. The pre-rainy season notices detailed site specific recommendations from each project, increasing their effectiveness over a standard letter sent out to all projects. The City required grading permit applicants to view the "Hold on to Your Dirt" educational video, and City staff helped educate the development community by presenting at a QSD training. These practices appear to have improved BMP implementation both in general and during rain events, which is when construction activities have the highest potential to discharge pollutants.

Municipal

The City's municipal activities effectively implement BMPs and reduce pollutant loading. The City's municipal staff are regularly trained on storm water issues. The City's Stormwater Program Manager surveyed municipal maintenance staff before and after a training event. Maintenance staff scored highly on both the pre- and post-tests, with slightly higher scores on the post-test. The City sweeps its streets more often than Municipal Permit requirements to aid in WURMP efforts, and the City regularly inspects and cleans out its MS4. The City coordinates with Padre Dam MWD to prevent and respond to any SSOs in the City. The City also distributes pet waste bags through dispensers in its parks; over 120,000 more bags were dispensed in 2010/2011 than during the 2009/2010 Reporting Period.

Industrial and Commercial

A major data management project to update the inventory, involving records research and physical site visits, was completed during the Reporting Period. This effort resulted in removing many businesses that are no longer operating in the City and adding newly discovered businesses. Most inspected businesses did not require follow-up inspections. The City's Stormwater Program Manager followed up with those that did to resolve the deficiencies, and most were resolved by the end of the Reporting Period. Although the Municipal Permit does not require the City to go beyond reporting Industrial Permit

deficiencies to the RWQCB, the City also followed up with businesses observed to be out of compliance with the Industrial Permit.

Additionally, the City has taken proactive steps to identify and educate mobile businesses in the City by identifying them via business licenses and providing education. City staff also regularly drove by areas known to be frequented by mobile businesses, particularly mobile car detailers, during the Reporting Period. Whenever mobile businesses were observed, City personnel stopped to provide educational material and ensure that no discharges were occurring.

Residential

Education, compliant receipt and response via the stormwater hotline, and routine monitoring to detect IC/IDs are the main components of the City's residential stormwater program. The City also encourages residential participation in clean up and other events to help foster a sense of shared responsibility in keeping the community clean. Several cleanup events were held during the Reporting Period. Additionally, several *Santee Review* articles provided stormwater education to City residents. City staff surveyed residents at the Santee Street Fair in May 2011, and the results indicated the respondents were well-educated on storm water issues. Over 93 percent of those surveyed knew that water flowing through the storm drain system is not treated, and the same percentage knew that landscape irrigation runoff from their yard could affect water quality in the San Diego River. Over 96 percent knew that hosing or sweeping trash and debris into a curb and gutter or storm drain is illegal.

IDDE

The City's IDDE program has effectively responded to hotline calls and quickly responded to address any identified IC/IDs. A total of 67 reports to the hotline were received during the Reporting Period, which is not significantly different from the 68 received during the previous reporting period. Actions were also taken in response to the recommendations from the 2010 Dry Weather Monitoring Program Report.

Education

The City continued to make education materials for a variety of audiences, including residents, businesses, developers, and contractors, available on its website. The City also proactively worked to identify carpet cleaners, pool maintenance businesses, and landscapers during the business license application process; such businesses were provided activity-specific educational materials. The City continued its innovative methods of distributing educational material to hard-to-reach audiences in the City; for example, the City's Stormwater Program Manager worked with a local carpet cleaning equipment rental business to distribute activity specific fact sheets for carpet cleaning.

Public Participation

The City has held several clean up events, typically in partnership with community organizations such as the San Diego River Park Foundation. Creek cleanups were held in the City as part of Coastal Cleanup Day and the Creek to Bay Cleanup. These events

helped remove trash and debris and also increased public involvement in protecting the City's waterways.

11.3 Program Review and Modification

No significant changes to the effectiveness assessment approach presented in the City's March 2008 JURMP have been made since the submittal of that document.

Table 11-1
Development Planning Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Review and approve project plans	External Based on meetings with applicants and BMPs proposed, it appears that the level of knowledge is increasing. Internal The City's Stormwater Program Manager and Project Engineers work closely to ensure SUSMP requirements are met.	Overall WQTR approval rate during reporting period	33%	N/A, addressed through other significant activities for this component
		Number of projects requiring three or more reviews prior to WQTR approval	1	
		Percent of approved projects implementing BMPs with high or medium removal efficiencies for key pollutants of concern	100%	
Verify proposed BMPs are implemented	External N/A, knowledge is evaluated by appropriate implementation of BMPs as shown in Level 3 Internal The City's Stormwater Program Manager provides training to staff responsible for verifying BMPs are installed prior to occupancy.	Percent of projects implementing proposed BMPs	100%	Installation of BMPs likely contributed to pollutant load reductions.
		Resolution status of enforcement actions	See Section 2	
Verify BMPs are properly maintained	External Owners notified of requirement to maintain treatment control BMPs Internal The City's Stormwater Program Manager is familiar with BMP maintenance requirements.	Percent of sites certifying BMPs properly maintained before October 1	93%	Proper maintenance of BMPs likely contributed to pollutant load reductions.
		Resolution status of enforcement actions	See Section 2.4.4.2	
		Percent of sites submitting verification forms	100%	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-2
Construction Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Review proposed plans and BMPs	External Projects submit plans for construction BMP implementation for their projects; the level of awareness of construction BMP requirements is fairly high. Internal Training for City staff is described in Section 8. City staff are familiar with relevant construction BMPs.	BMPs proposed for construction projects generally meet requirements; no significant problems have been noted.		Proper pre-project planning is likely to have reduced pollutant loading.
Verify proposed BMPs are implemented	External Grading projects implement BMPs as required by their permits, and contractors are familiar with the City's requirements. Construction projects are notified through inspection notices and letters of requirements. Internal Training for City staff is described in Section 8. City inspectors are familiar with relevant construction BMPs.	Percent of inspections requiring written notices, NOVs, citations, or stop work orders	14%	Proper BMP implementation is likely to have reduced pollutant loading.
		Resolution status of enforcement actions	See Section 3	
		Number of dry weather monitoring exceedances traced to construction sources	0	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-3
Municipal Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Verify proposed BMPs are implemented at facilities	City staff are regularly trained on BMP implementation; see sections 4 and 8.	Percent of inspected facilities/activities in compliance with BMP requirements	83%	Proper BMP implementation is likely to have reduced pollutant loading.	
		Resolution status of sites requiring follow-up inspections	See Section 4	Amount of pet waste collected	36 tons*
		Number of dry weather monitoring exceedances traced to municipal sites	0		
Sweep streets and parking facilities		N/A, streets and parking facilities are swept as often as directed by management and Municipal Permit requirements.		Amount of sediment and debris removed (weight or volume)	671 tons
				Amount of sediment and debris removed per length of street swept (weight or volume per curb mile)	0.066 tons/ curb mile
Maintain and clean out MS4		N/A, MS4 structures are maintained as often as directed by management and in compliance with permit requirements.		Amount of sediment and debris removed (weight or volume)	445 tons
Maintain sanitary sewer system		N/A, the sanitary sewer system is maintained by Padre Dam MWD.		Total volume of SSO discharge to MS4 (gallons)	0
Maintain municipal treatment control BMPs		N/A, treatment control BMPs are maintained as often as directed by management.		BMP effectiveness studies	N/A
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only	

* Amount of pet waste collected is based on an estimate of 0.2 pounds of pet waste per bag. This conversion rate was developed by the County of San Diego based on the results of a 2004 study and included in the 2006/2007 WURMP Annual Report. A total of 360,000 pet waste bags were distributed in 2009/2010.

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-4
Industrial and Commercial Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Require BMP implementation	Business owners and operators were educated in variety of ways during the Reporting Period; see sections 5 and 8 for details.	Percent of inspected sites in compliance with discharge prohibitions	99%	Proper BMP implementation is likely to have reduced pollutant loading.	
		Percent of sites not requiring a follow-up	93%		
		Resolution status of enforcement actions	See Section 5		
		Number of dry weather monitoring exceedances traced to industrial or commercial sources	2	Number of IC/IDs eliminated (inspections and complaint investigations)	12
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only	

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-5
Residential Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Require BMP implementation	External Residents were educated through articles in the *Santee Review*, targeted mailers, and in variety of other ways during the Reporting Period; see sections 6 and 8 for details. Internal The City's Stormwater Program Manager is heavily involved in the implementation of the residential component and works closely with code compliance in addressing residential stormwater issues. Other City staff involved in the program also have a good understanding of the goals of the storm water program.	Number of residential incidents reported to storm water hotline	44	Resolution of residential incidents reported to the hotline likely resulted in a decrease in pollutant loading through improved BMP implementation.
		Resolution of enforcement actions	See Section 6	
		Number of dry weather monitoring exceedances traced to residential sources	0	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-6
Illicit Discharge Detection and Elimination Component Assessment Measures

Significant Activity	Level 2	Level 3	Level 4
Conduct Dry Weather Monitoring Program	The City contracts with a qualified consultant to perform its Dry Weather Monitoring Program.	N/A, personnel conduct monitoring as directed by management.	No significant, long term IC/IDs were eliminated, so a reliable estimate of load reduction cannot be made.
Respond to incidents reported to storm water hotline	The City's Stormwater Program Manager trains City staff as needed. See sections 4 and 8. City staff were responsible for many of the reports made to the hotline, as shown in Section 4.	N/A, personnel respond to incidents as directed by management. Note that some non-stormwater staff have chosen to respond to observed incidents in their private lives. This is indicative of staff awareness and sense of responsibility.	Resolution of the incidents reported to the hotline and listed in Section 4 are likely to have resulted a pollutant loading reduction.
Respond to and clean up SSOs	City staff are thoroughly trained on how to respond to SSOs.	N/A, the sanitary sewer system is maintained by Padre Dam MWD.	There was one SSO during the reporting period, but it did not result in discharge to the MS4

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-7
Education Component Assessment Measures

Significant Activity	Level 2	Level 3	Level 4
Provide storm water education to the public	External The City actively educates the various audiences in its jurisdiction. See Section 8 for details.	See Level 3 outcomes for other program components for information about behavior change.	Sufficient data to estimate load reductions due to educational efforts is not available for the Reporting Period.

Notes
Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-8
Public Participation Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Involve the public in activities that relate to storm water protection	External The City and City partners put on a number of opportunities for the public to participate. See Section 9 for details. There were roughly the same number of complaints/ referrals during 2010/2011 (67) as during 2009/2010 (68).	Number of attendees at events	1,027	Amount of trash and debris collected at cleanup events	11 tons
		Number of stormwater complaints received	67	Amount of HHW collected	1150 pounds of HHW, 36 gallons of used oil

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Figure 11-1
Dry Weather Monitoring Historical Exceedance Summary: Field Screening Tests

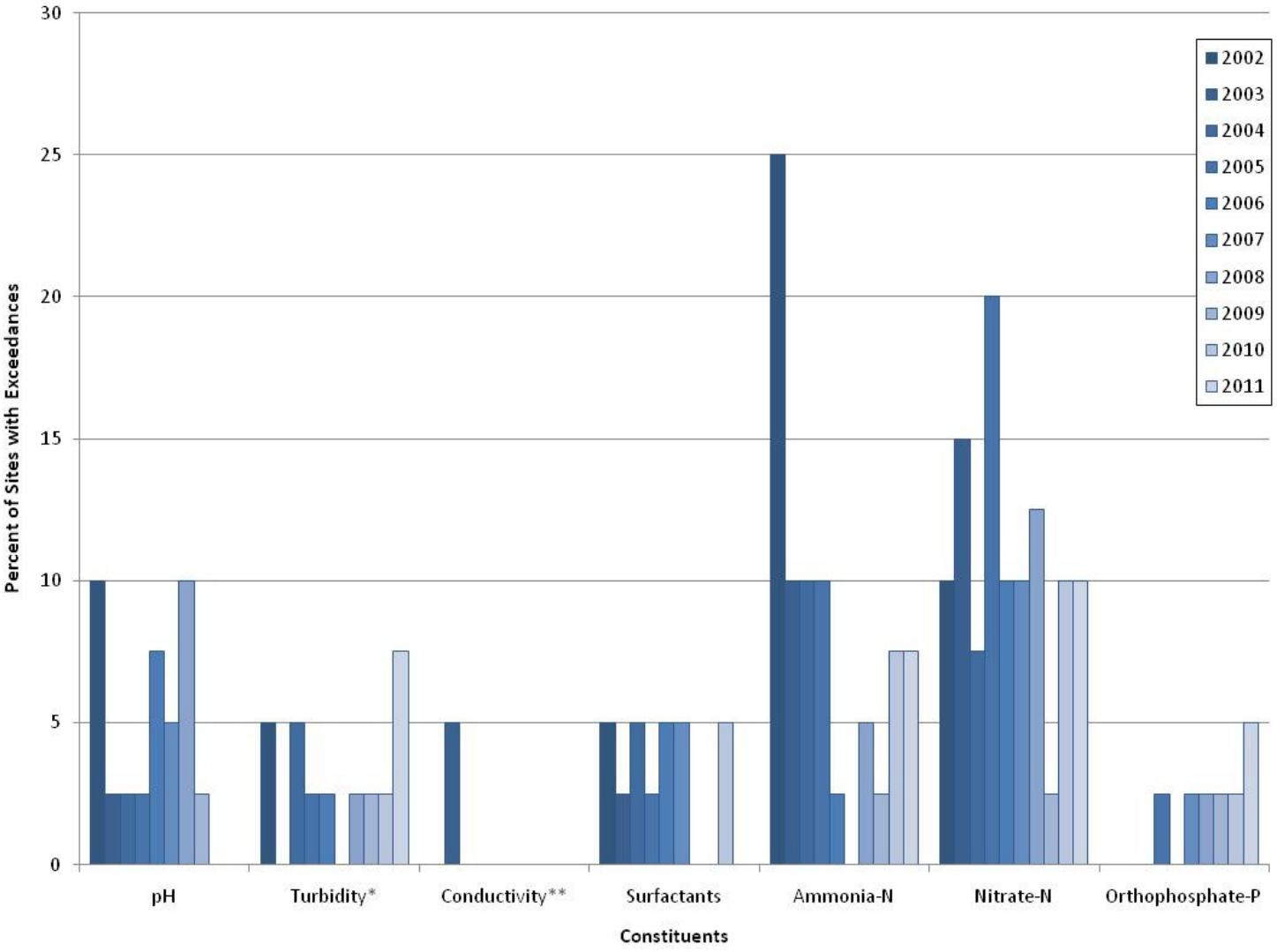

Notes:
* Turbidity action level is based on best professional judgment.
** Conductivity action levels were numeric in the past and transitioned to best professional judgment in recent years.

Figure 11-2
Dry Weather Monitoring Historical Exceedance Summary: Laboratory Analytical Tests

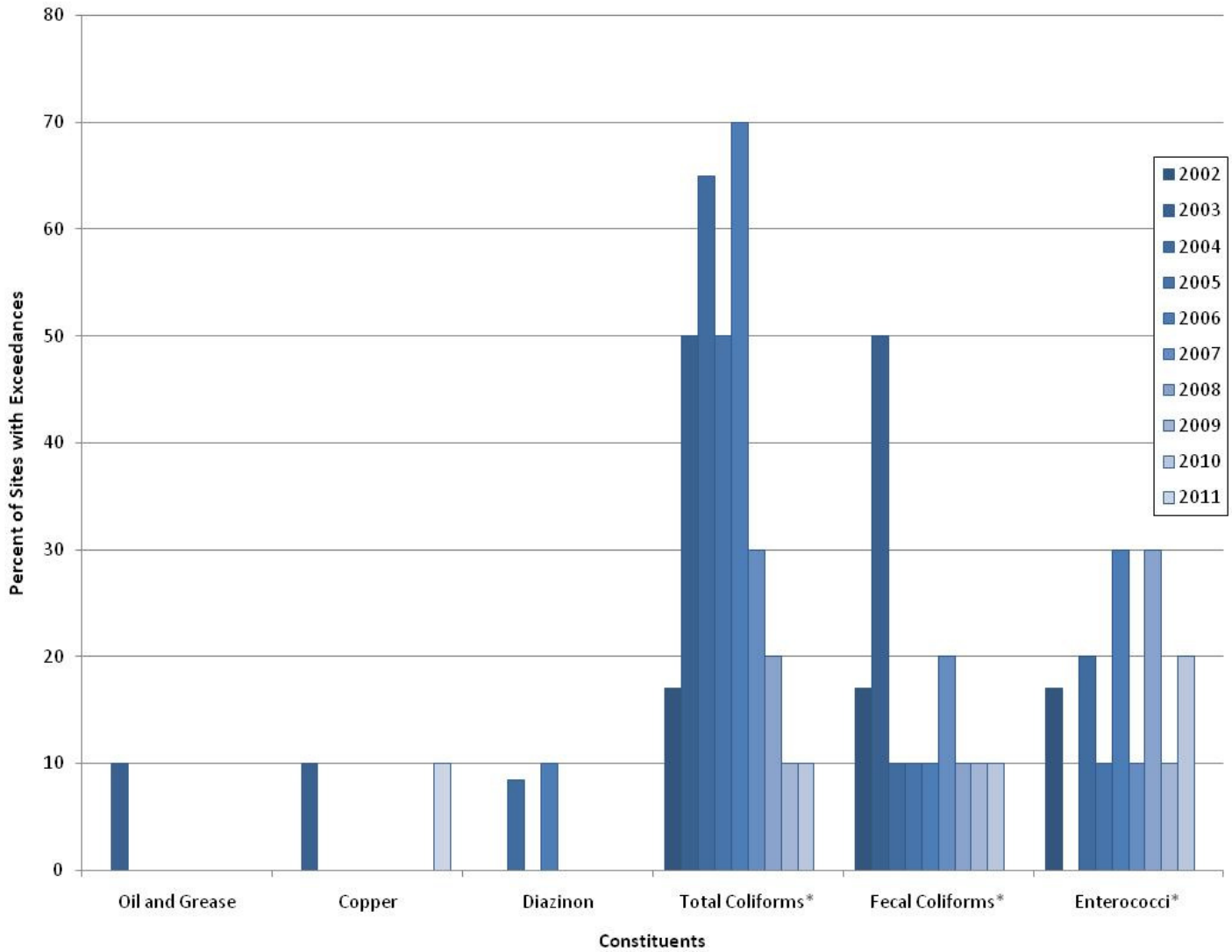

Notes:
*Action levels for bacteria were updated in 2010. Data from 2002-2009 has been compared to action levels in effect at that time. 2010 data has been compared to the updated action levels.
Cadmium, lead, zinc, surfactants, and chlorpyrifos have never exceeded the action level and are therefore not included on the above graph.

Figure 11-3
Additional Study Data: pH

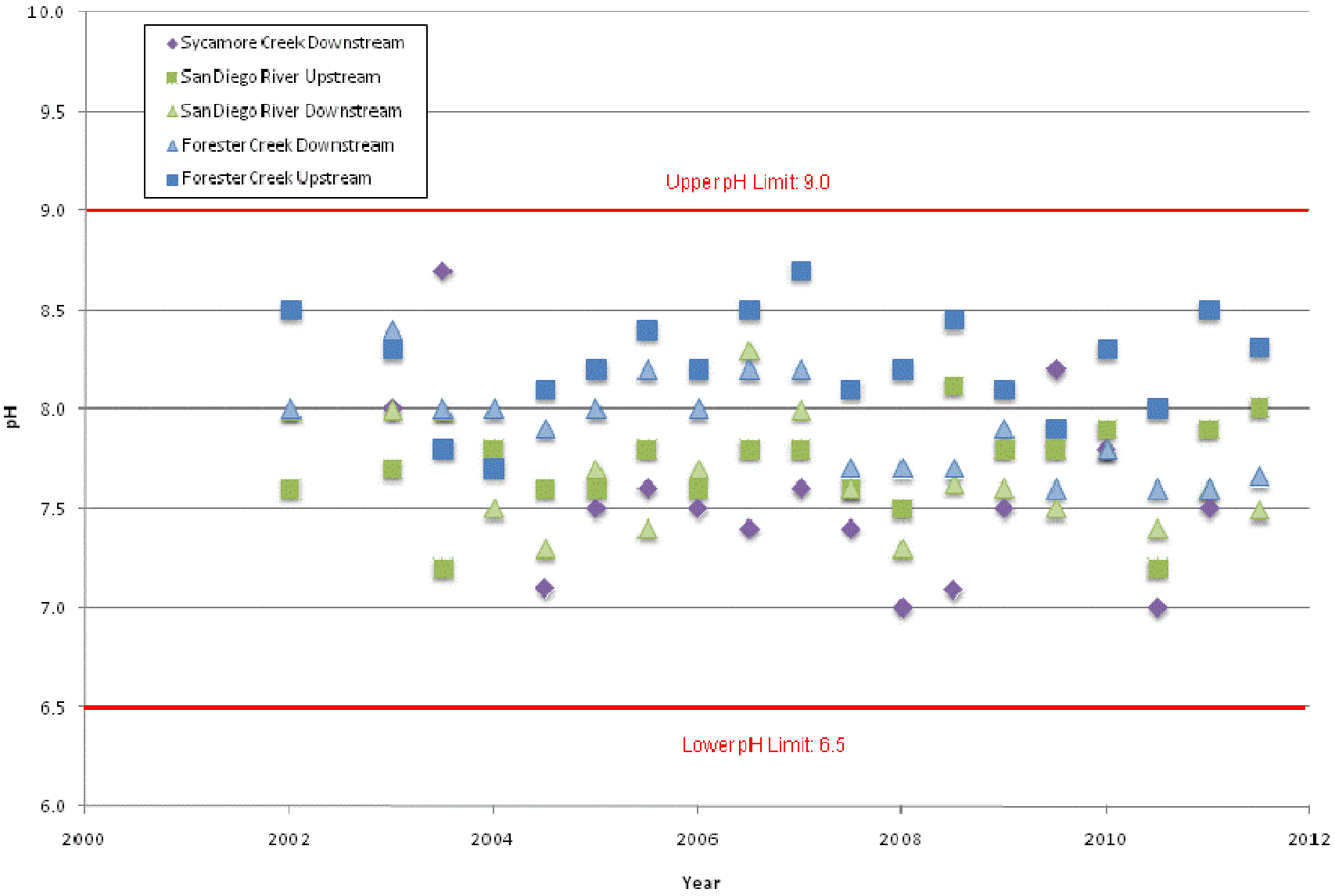

Figure 11-4
Additional Study Data: Fecal Coliform, Forester Creek

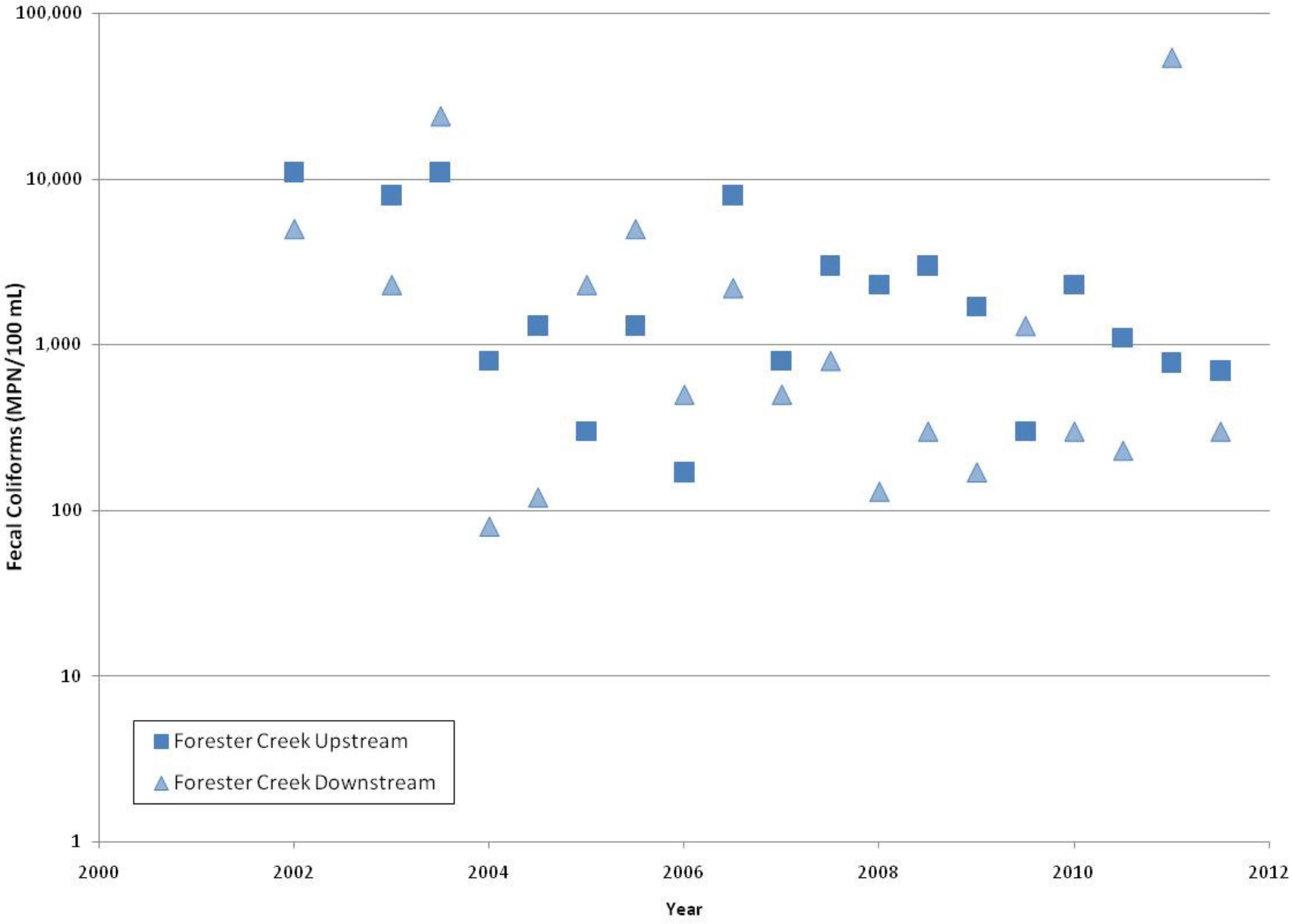

Figure 11-5
Additional Study Data: Fecal Coliform, San Diego River

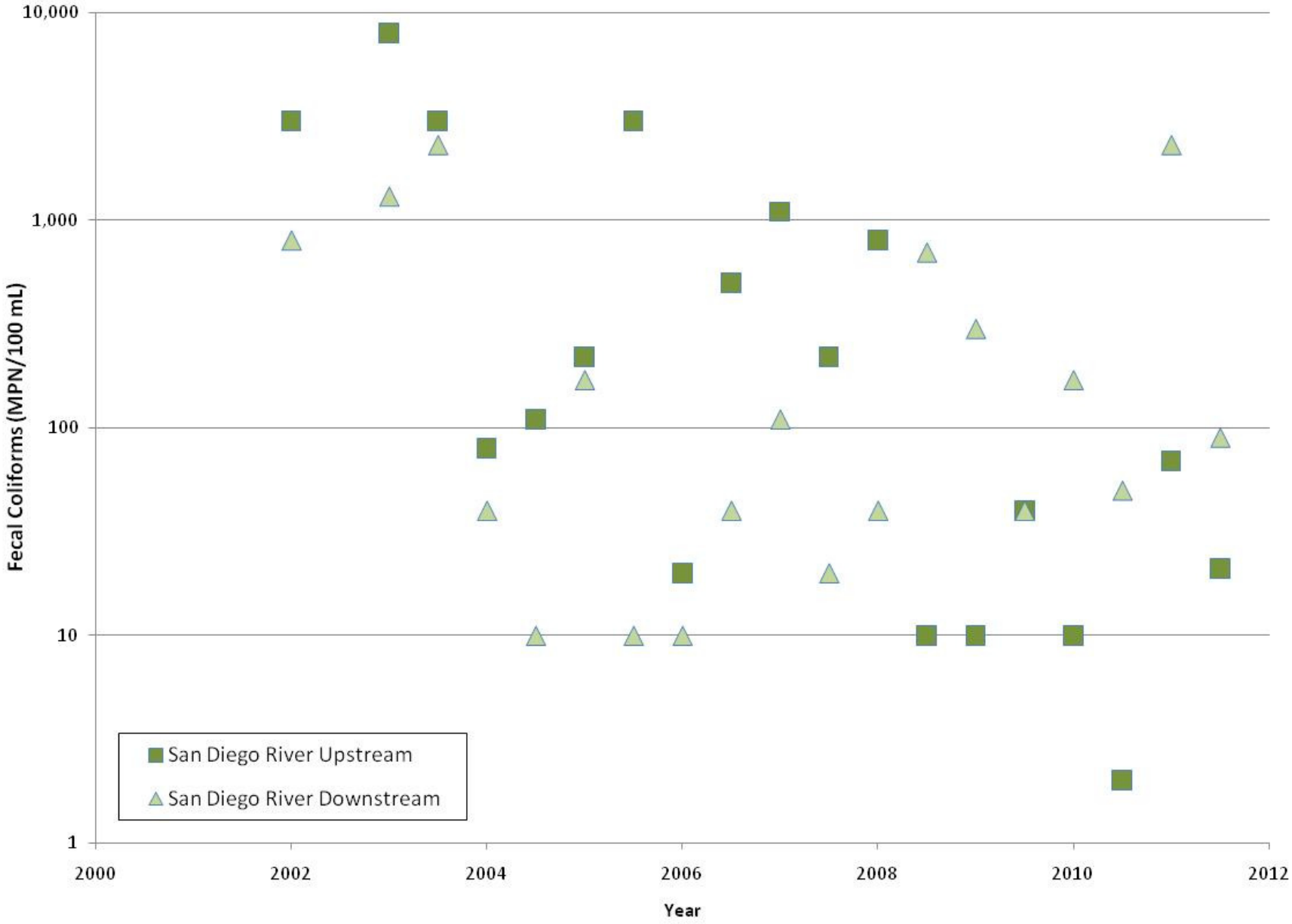

Figure 11-6
Additional Study Data: Fecal Coliform, Sycamore Creek

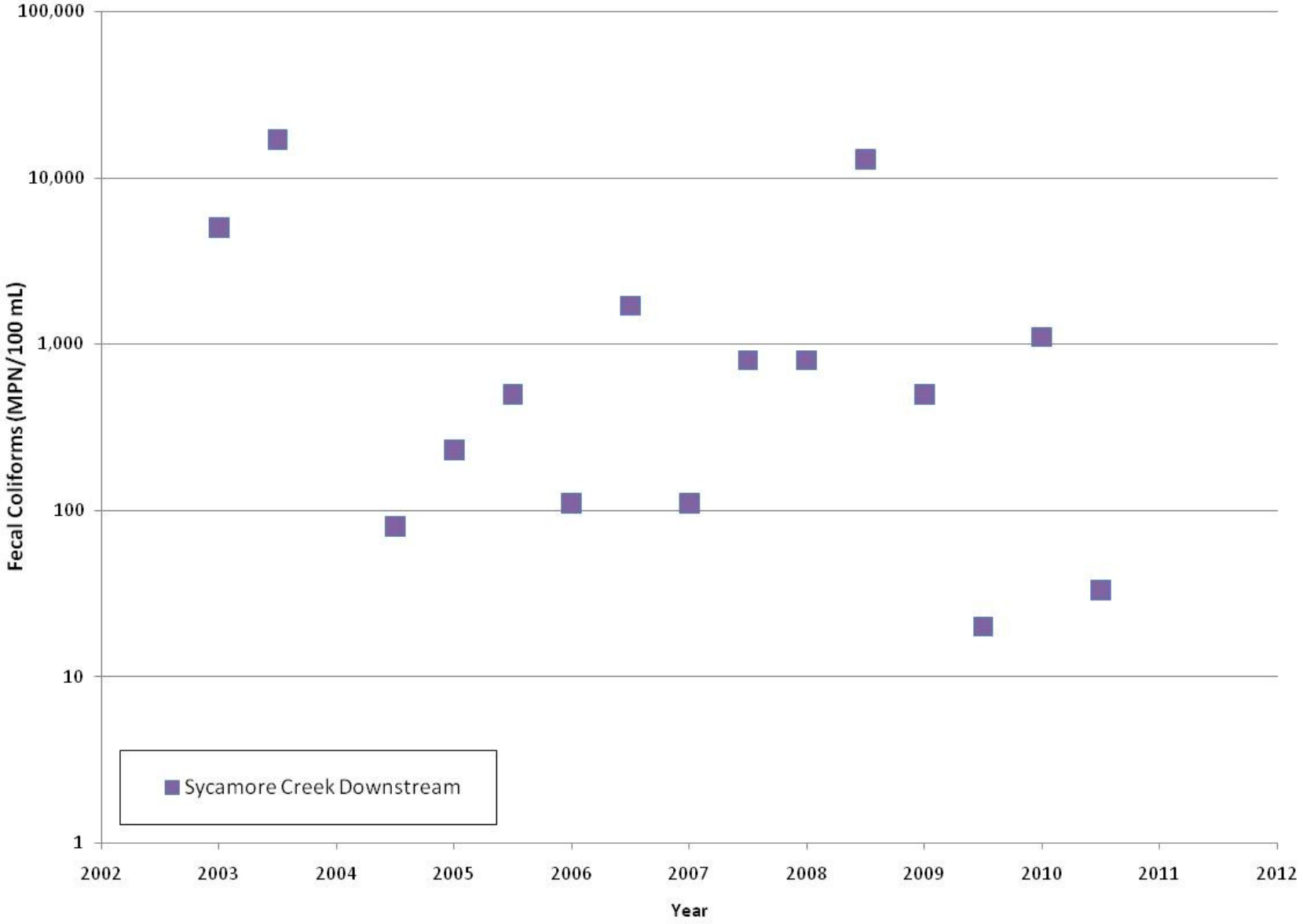

Note: Sycamore Creek was dry during Round One and Round Two visits in the summer of 2011. Because no testing could be done, results are not shown on the graph, but the bacteria level was effectively zero since the creek was dry.

12.0 SPECIAL INVESTIGATIONS

12.1 SURFACE WATER QUALITY MONITORING

The City has completed a study that includes sampling and analysis under ambient conditions at five sites in receiving water bodies in the City since 2002. The study includes two sites in the San Diego River, two sites in Forester Creek, and one site in Sycamore Creek. These sites are sampled twice per year, concurrently with the two rounds of the City's Dry Weather Monitoring Program. The findings of the additional study can be found in Attachment 12.1.

Notable findings from the two rounds of monitoring in 2010 included the following:

- Total dissolved solids (TDS) exceeded the WQO at both Forester Creek sites and at the San Diego River Downstream site during the both rounds of sampling. Sycamore Creek Downstream also had a TDS exceedance during Round Two.
- *Enterococcus* and fecal coliform bacteria were above the single sample WQOs at Forester Creek Upstream during both rounds of sampling, but below the WQOs at Forester Creek Downstream during Round One. During Round Two, fecal coliform was again below the WQO at the downstream site, but *Enterococcus* was above the WQO. Bacteria levels typically decrease in Forester Creek after traveling through the City of Santee.
- Consistent with historical findings, no pH values exceeded WQOs at any of the water bodies assessed.
- Bacteria levels have generally shown decreasing trends over time at all sites monitored.

12.2 ENVIRONMENTAL PROTECTION AGENCY QUESTIONNAIRE

The City completed a comprehensive questionnaire prepared by the Environmental Protection Agency during August and September 2010. The questions covered a range of topics including development design, construction, illicit discharges, retrofitting BMPs and post construction BMPs. The questions related to the period between 2005 and 2009. The objective of this survey was to collect data to inform new rulemaking by the EPA.

13.0 NON-EMERGENCY FIRE FIGHTING

Please reference Section 4.2.3 of this JURMP Annual Report for information about BMPs and procedures associated with non-emergency fire fighting activities.

14.0 JURMP REVISIONS

The City's JURMP was rewritten in the spring of 2008 in response to new Municipal Permit requirements. Section 14 of the updated JURMP document includes a list of the changes made to the JURMP at that time. Any other changes to the JURMP made since the overall JURMP update in the spring of 2008 are discussed in the individual "Program Review and Modification" subsections in the preceding sections in this JURMP Annual Report.

15.0 CONCLUSIONS AND RECOMMENDATIONS

During the Reporting Period, the City continued to implement the programs in its updated Jurisdictional Urban Runoff Management Plan (JURMP). A checklist matching the JURMP annual reporting requirements in the Municipal Permit with the portion(s) of this JURMP Annual Report and showing where those requirements are addressed is provided as Appendix C. The checklist demonstrates the City's compliance with applicable Municipal Permit regulations during the Reporting Period. Some notable achievements during the Reporting Period are listed below.

- The City completed 142 construction inspections. Pre-rain inspections were regularly completed at construction sites, and overall the construction inspection frequencies met and in some cases exceeded the required frequencies.
- The City conducted 262 business inspections, which is more than 25 percent of its inventory.
- Responsible parties for newly-completed priority projects are notified shortly after project completion of the requirements relating to treatment control BMP maintenance and certification.
- The City spent $203,424 to establish vegetation in the recently improved Forester Creek and Woodglen Vista Creek.
- The City implemented an extensive CMP storm drain survey to asses the condition of the pipes and to prioritize replacement.
- The City responded to 67 complaints made to its storm water hotline, to the City website, or by City staff members.
- Over 11 tons of trash and debris were collected and removed during seven community clean-up events. Over 840 individuals participated in these events.
- The City removed 671 tons of debris from City streets and parking lots and 462 tons from the storm drain system.
- The City adopted a revised SUSMP, based on the Model Standard Urban Stormwater Mitigation Plan (SUSMP) that incorporated the requirements of the final Hydromodification Managmenet Plan (HMP).
- The City had a proactive role in the development of the Model SUSMP and the HMP.
- The City posted the revised SUSMP and HMP on the website.
- One development project was determined to be subject to and was conditioned to comply with SUSMP requirements.
- The City provided a presentation at a qualified SWPPP practitioner training and has provided formalized training for contractors during pre-grading meetings.

- City streets were swept more frequently than required by the Municipal Permit.
- Residents and businesses were educated through the City's updated stormwater pages and articles including storm water pollution prevention information in the *Santee Review*.
- The City completed two rounds of additional monitoring at five locations in receiving waters in the City.

The City will continue to implement its JURMP in future reporting periods. Key components of City's plans for future program implementation include the following.

- Continue to train inspectors and contractors on BMP implementation and maintenance during construction activities.
- Continue to complete inspections before rain events, including inspections immediately preceding the rainy season, for active construction sites.
- Meet the inspection frequency requirements as stated in the Municipal Permit for the development planning (treatment control BMP), construction, municipal, and industrial and commercial components.
- Continue prompt and thorough follow-up for sites at which BMP implementation deficiencies are noted as a means to bring about improved compliance.
- Develop new methods of outreach for the residential, industrial and commercial, development planning, and construction communities.
- Continue to document and respond to complaints reported to the City's storm water hotline.
- Continue to complete the City's Dry Weather Monitoring Program and to investigate any exceedances noted during routine testing.
- Continue to complete additional studies of receiving water quality in the City and to participate in assessments within the San Diego River watershed, as appropriate.
- Increase the number of opportunities for public participation and facilitate participation in such events.

The Copermittees have created several regional workgroups to facilitate sharing of information about how best to run stormwater programs and to provide regional guidance on standardized implementation where applicable. Additionally, in response to the bacteria TMDL adopted in 2010/2011, the City and other jurisdictions within the San Diego River Watershed have begun developing a TMDL implementation plan. The City will continue to work collaboratively with the other jurisdictions on both the standard Municipal Permit requirements and TMDL requirements and continue to refine its program implementation as needed to improve its ability to reduce or eliminate the potential for pollutant discharges and meet regulatory requirements.

16.0 REFERENCES

California Regional Water Quality Control Board, 2007. Order No. R9-2007-0001. *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Construction.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Industrial & Commercial.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Municipal.*

California Storm Water Quality Association, 2007. *Municipal Stormwater Program Effectiveness Assessment Guidance.*

Caltrans Storm Water Quality Handbooks, 2003. *Construction Site Best Management Practices Manual.*

City of Santee, 2008. *Jurisdictional Urban Runoff Management Program.*

County of San Diego, 2007. *Standardized Format for Jurisdictional Urban Runoff Management Plan Annual Report.*

PBS&J, 2009. *Standardized Fiscal Analysis Method and Format.*

APPENDIX A.1

PERMANENT TREATMENT CONTROL BMP INVENTORY

APPENDIX A.1

INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
1	Altair	384-120-40	907.12	G963	12/22/09	Hydrodynamic separator, inlet filters (7)	Altair HOA	c/o Adriana Machuca, 3944 Murphy Canyon Rd, San Diego, CA 92123	High
2	American Sheet Metal	8674 Railroad Avenue	907.12	G-1003	4/4/08	Grassy swale	Ron Burner Jr.	8674 Railroad Avenue, Santee, CA 92071	Low
3	AT&T Fleet Storage**	10111 Prospect Avenue	097.13	G-1124	9/23/10	Grassy swale	Perry and Shaw Inc.	475 West Bradley, El Cajon CA 92020	Medium
4	Aubrey Glen	Hiser Road and Mission Gorge Road	907.12	G-942	06/20/08	Hydrodynamic Separator System	Aubrey Glen HOA	c/o N. N. Jaeskchay 9610 Waples Street San Diego, CA 92121	Medium
5	Autowerks	383-112-53	907.12	DR-02-10 / G818	12/15/04	Drainage inserts and grass swales	Philip H. Thearle II	8890 Mission Gorge Road, Santee CA 92071-3718	Medium
6	Autumnwood II	381-681-20	907.12	TM02-03	11/15/05	Hydrodynamic Separator System (2)	Kingsman LLC	11459 Woodside Avenue, Santee CA 92071-4729	Medium
7	Black Horse Estates*	385-010-34, -35	907.12	TM 2000-02	12/13/06	Filter inserts (5), detention basin.	City of Santee	NA	Medium
8	Boys and Girls Club	8820 Tamberley Way	907.12	G-907	06/16/08	Grassy swale, drainage inserts.	Boys and Girls Club	8820 Tamberley Way, Santee, CA 92071	Medium
9	Cabins at Lake 7**	378 020 49, 376 010 07	907.12	G-1126	02/16/11	Wet pond	Padre Dam Municipal Water District	9300 Fanita Parkway, Santee, CA 92071	Low

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
10	Cameron II	10580 Prospect	907.13	G-947	1/23/08	Grassy swale, drainage insert (1)	Cameron Brothers Construction	10580 Prospect Avenue, Santee, CA 92071	Medium
11	Chapparel (Mission View Estates)**	West of Mesa Road.	907.12	G-1043	10/11/10	Bioswales (2) and media filter.	PHOAC	8181 Mission Gorge Road, Suite E, San Diego 92120	Medium
12	Ciraolo Industrial Building	381-540-10 and 11	907.12	G-905/DR04-09	1/5/06	Inlet filters, grass swale, downspout filters	Ciraolo Family Partners	9327 Wheatlands Road, Santee, CA 92071-2860	Medium
13	Cuyamaca Town Common	APN 381-051-01	907.12	G-873	09/05	Drainage inserts	Property Owner	c/o Treitler and Hager LLP, 3737 Camino Del Rio South, Suite 109, San Diego CA 92108-4007	Medium
14	Express Performance	APN 384-141-03	907.12	G1021	5/29/08	Media filter and drainage inserts (2)	Scott and Barbara Young	8711 Magnolia Avenue, Santee, CA 92071	Medium
15	Farrington Court	Farrington Drive, west of Fanita	907.12	G-910	8/16/07	Drainage insert	Brian Snow	LUCA Inc., 8534 Hubbles Lane, Santee, CA 92071	High
16	Fred's Fences	384-250-24	907.13	G-951	10/28/07	Swale and drainage inserts	Fadi Khouri	Fred's Fencing, 10546-60 Kenney Street, Santee, CA 92071	Medium
17	Hartford Insurance*	381-050-59	907.12	DR 2002-04	12/17/03	Vegetated swale, rocky swale, and drainage inserts (3).	Hartford	101 Civic Center Dr, Santee CA 92071	Medium

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
18	Lunar Lane Industrial Building**	384-091-38, -39	907.12	G-1118	05/16/11	Bioretention area and cobble swale	Sunset Glazing	8834 La Mesa Boulevard, La Mesa, CA 91942	Low
19	Marketplace	Hazeldon Drive and Mission Gorge Road	907.13	G-1052	12/12/08	Grassy swale, infiltration trench, water quality inlets (4), drainage inserts (2).	Tony Gentry	Sudberry Properties Inc., 5465 Morehouse Drive, Suite 260, San Diego, CA 92121	High
20	Michael Stoff Property	9242 Abraham Way	907.12	G-1003	7/28/08	Grass swale	9424 AW LLC	6749 Top Gun Street Suite 104 San Diego, CA 92121-4151	Medium
21	Morningside	384-081-16	907.12	G-851	12/14/05	Hydrodynamic Separator System	Property Owner	Walters Management, 9665 Chesapeake Drive, Suite 300, San Diego, CA 92123	Medium
22	Padre Dam Service Center*	9300 Fanita Parkway	907.12	G-704	1/5/06	Drainage inserts (6)	Padre Dam Municipal Water District	John Dedonato PO Box 719003, Santee, CA 92072-9003	High
23	Prospect Glen*	Northwest corner of Fanita and Prospect	907.12	G-739	11/19/07	Drainage inserts (3)	Prospect Glen HOA	c/o Harland Associates, 8580 La Mesa Boulevard, Suite 105, La Mesa CA 91941	High
24	Rayo Wholesale*, Rayo II***	11495 Woodside Avenue (382-310-16, -17, -18)	907.12	IP 2001-04, G-1041	12/30/02, 06/24/08	Grass swale, Grassy detention basin with sand cone filter	Kingsmen LLC	11495 Woodside Avenue, Santee CA 92071	Medium

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
25	Santee Affordable (Cedar Creek Apartments)**	386-192-39	907.12	G-1114	09/24/10	Bioretention facility	Fanita 48 L.P. c/o Chelsea Development Incorporated	Mr. Bob Haskins, 5993 Avenida Encinas, Suite 100, Carlsbad, CA 92056	Low
26	Santee Trolley Square*	381-052-02	907.12	P2001-06	12/17/03	Inlet filters (12)	Vestar Property Management	Ms. Dana Duncan, 2907 Shelter Island Drive, San Diego, CA 92106	High
27	Sky Business Park	384-091-45	907.12	G-1062	03/23/09	Grass swale, media filter, drainage insert.	Sky Investments Ltd Partnership	Mr. Charles P. Sampson Jr., 8779 Cottonwood Avenue, Santee, CA 92071	Medium
28	Sonic Car Wash	383-121-44	907.12	G-974	8/29/07	Vegetated swale and drainage insert (3)	Kalasho Inc.	Ghazwan Kalasho, 9312 Mission Gorge Road, Santee, CA 92071	Medium
29	Sonic Restaurant	384-091-65, -07	907.12	G-1088	04/02/09	Grass swale	Sonic Restaurant	Ms. Laura Hamelin Sonic Restaurant, 10515 Mission Gorge Road, Santee, CA 92071	Medium
30	Town Center Community Park	381-050-51, 52, and 381-051-06, 07	907.12	2005185	6/29/2010	Media Filter, bioswales (5), buffer strips (2), inlet filters (5)	Sportsplex USA – Santee (media filter only), City of Santee	Mr. Eddie Vandiver, PO Box 711900, Santee, CA 92072	High

APPENDIX A.1

INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
31	Toyota	383-124-11	907.12	G1067	10/14/09	Extended detention basin, bioretention, inlet filters (8)	Toyota of Santee	Mr. Jeremy Cadwell, 965 Arnele Avenue, El Cajon CA 92020	Medium
32	Treviso	Northeast corner Mission Gorge Road and Westhills Parkway	907.12	G-857	10/8/08	Hydrodynamic separator and drainage inserts (2)	Treviso HOA	c/o Melanie Hudson, 3944 Murphy Canyon Road, Suite C205, San Diego CA 92123	High
33	Vista Este*	386-192-18	907.12	G-736/ TM200-03	9/20/06	Inlet filters (2)	Vista Este HOA	c/o The Daniels Company Mr. Jim Daniels, 843 Jamacha Road, El Cajon CA 92019	High
34	Walgreens 1	9305 Mission Gorge Road	907.13	G987	6/3/09	Media filter	Walgreens	Chris Mylek 12298 Pipeline Avenue Chino, CA 91710	High
35	Walgreens 2	10512 Mission Gorge Road	907.12	G1066	12/31/09	Vegetated swale, media filter	Walgreens	Chris Mylek 12298 Pipeline Avenue Chino, CA 91710	Low

Notes

* Project approved prior to development of the City's SUSMP requirements

** Priority Projects that were completed during the 2010/2011 fiscal year

*** These two projects were combined into one listing on the inventory since they are located on the same property and share the same responsible party.

APPENDIX A.2

CONSTRUCTION INVENTORY

APPENDIX A.2
CONSTRUCTION INVENTORY AND INSPECTION SUMMARY

#	Project Name	Watershed	TTWQ	Weeks Active (Wet Season)	#of Insp. (Wet Season)	# of Insp. (Dry Season)	Follow Up Insp.	Complaint Investigation Insp.	Total Insp.
1	AT&T Fleet Storage	907.13	Medium	0	0	0	2	0	2
2	Cabins at Lake 7	907.12	Low	20	5	1	3	0	9
3	Chaparrel/Mission View Estates*	907.12	High	0	0	3	0	0	3
4	Ladera/Morning View	907.12	High	30	19	5	16	0	40
5	Lunar Lane Industrial Building	907.12	Low	28	7	0	4	0	11
6	Mast Park West	907.12	Medium	19	5	0	0	0	5
7	Mission Trail Villas	907.12	Low	16	4	2	4	0	10
8	Prospect Avenue/Fanita	907.12	Low	0	0	1	0	0	1
9	Riverwalk	907.12	Low	30	7	4	3	0	14
10	Santee Affordable (Cedar Creek Apartments)	907.12	Low	0	1**	3	5	0	9
11	Shadow Hill Estates	907.12	Low	0	0	1	1	0	2

APPENDIX A.2
CONSTRUCTION INVENTORY AND INSPECTION SUMMARY

#	Project Name	Watershed	TTWQ	Weeks Active (Wet Season)	#of Insp. (Wet Season)	# of Insp. (Dry Season)	Follow Up Insp.	Complaint Investigation Insp.	Total Insp.
12	Sky Ranch	907.12	High	30	15	5	4	0	25
13	Sunset Trails (Lanterncrest III)	907.12	High	10	5	2	4	0	11

* This project filed an NOT on July 1, 2010. However, minor punchlist type items were completed in early 2010/2011, so the City continued to monitor the site to ensure proper BMPs were in place during that time.

** This project had completed construction prior to the start of the 2010/2011 wet season. City staff visited it during the wet season to verify that construction was in fact complete and no further construction storm water threat existed.

APPENDIX A.3

MUNICIPAL INVENTORY

APPENDIX A.3
MUNICIPAL INVENTORY

#	Facility Name	Facility Address	TTWQ	Watershed	Facility Category
1	Big Rock Park	8125 Arlette Street	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
2	Fire Station No. 4	8950 Cottonwood Avenue	High	San Diego River	Fire Stations
3	Fire Station No. 5	9130 Carlton Oaks Drive	High	San Diego River/Forester Creek	Fire Stations
4	Graffiti Removal	Throughout City	High	All	Mobile Municipal Activities
5	Infrastructure Maintenance	Throughout City	High	All	Mobile Municipal Activities
6	Landscaping	Throughout City	High	All	Mobile Municipal Activities
7	Mast Park including Mast Park West	9125 Carlton Hills Boulevard and west of 9125 Carlton Hills Boulevard	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
8	Municipal Separate Storm Sewer	Throughout City	High	All	MS4
9	Public Services Operations Center	9534 Via Zapador	High	San Diego River/Forester Creek	Public Works Facilities
10	Roads, Streets, Highways	Throughout City	High	All	Roads, Streets, Highways, and Parking Facilities
11	Santee Mini Park	10446 Mission Gorge Road	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
12	Shadow Hill Park	9161 Shadow Hill Road	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
13	Sky Ranch Park	Southeast corner of Sevilla Street and Cala Lilly Street	High	All	Parks, Recreational Facilities, and Other Landscaped Areas
14	Special Events	Throughout City	High	All	Special Events
15	Town Center Community Park	9545 Cuyamaca Street	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas

APPENDIX A.3
MUNICIPAL INVENTORY

#	Facility Name	Facility Address	TTWQ	Watershed	Facility Category
16	Vehicle Maintenance Facility	8950 Cottonwood Avenue	High	San Diego River	Public Works Facilities
17	West Hills Park	8751 Mast Boulevard	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
18	Woodglen Vista Park	10250 Woodglen Vista Drive	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
19	City Activity Building #1	8115 Arlette Street	Low	San Diego River	Other Fixed Facilities
20	City Activity Building #2	10335 Mission Gorge Road	Low	San Diego River	Other Fixed Facilities
21	Santee City Hall and Civic Center	10601 Magnolia Avenue	Low	San Diego River/Woodglen Vista Channel	Other Fixed Facilities
22	Santee Teen Center	9310 Fanita Parkway	Low	San Diego River	Other Fixed Facilities

APPENDIX A.4

INDUSTRIAL/COMMERCIAL INVENTORY

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	LA COSTA LANDSCAPE MAINT CO	10320		PROSPECT AVENUE	Santee	92071	907.13	0181	Floriculture production, no outside storage observed during inspection.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	PAX WEST IMPORTS	7735	59	MISSION GORGE ROAD	Santee	92071	907.12	0181	Nursery and tree production, homebased, may just be an office.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	SANTEE PET HOSPITAL	8936		CARLTON HILLS BOULEVARD	Santee	92071	907.12	0742	Animal hospital services all indoors.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Cuyamaca Animal Hospital	8802	B	Cuyamaca Street	Santee	92071	907.12	0742	Indoor services for domestic pets, outside gravel area for walking area.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	MAST BOULEVARD BLVD PET CARE CENTER	9740		MAST AVENUE	Santee	92071	907.12	0742	Indoor services for domestic pets.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Furry Friends Resort	8802	A	Cuyamaca Street	Santee	92071	907.12	0752	Dog and cat grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Doggie Station	8951		CARLTON HILLS BOULEVARD	Santee	92071	907.12	0752	Dog and cat grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Essential Grooming	9225	7	CARLTON HILLS BOULEVARD	Santee	92071	907.12	0752	Pet grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Aloha Pet Grooming	8011	G	MISSION GORGE ROAD	Santee	92071	907.12	0752	Pet grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Meet Me At The Park Grooming	8011	G	MISSION GORGE ROAD	Santee	92071	907.12	0752	Pet grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	CURTIS LAND PATROL	8652	16	MAST AVENUE	Santee	92071	907.12	0781	Landscape architectural company, possible outside storage of landscaping materials and waste.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Tony's Landscaping*	9941		Lake Canyon	Santee	92071	907.12	0781	Homebased gardening and landscaping company, outdoor storage of materials, equipment and waste a possibility.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	JCMS Landscape*	10638		PROSPECT AVENUE	Santee	92071	907.13	0781	Base for landscape contracting business, verified that all materials are stored under cover.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	BOURGEOIS INC*	9406		VIA ZAPADOR	Santee	92071	907.13	0782	Base for landscaping company. No outside storage or c	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	CROSSMAN LANDSCAPE*	8617		CUYAMACA STREET	Santee	92071	907.13	0782	Base for landscaping company (residential and commercial sites). Some outside storage of landscaping materials and wastes on gravel or asphalt-covered areas. Drains to sump that pumps to street.	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Medium	Yes
SA	BUTLER'S WEED ABATEMENT*	9430		GALSTON DRIVE	Santee	92071	907.12	0782	Homebased business of tree, shrub and weed abatement. Potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	DeCrescente's Landscaping*	8748		WAHL STREET	Santee	92071		0782	Home-based lawncare maintenance service. Any materials stored outside observed to be covered.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Four Season Gardening & Landscaping*	9328	DRIVE	ST ANDREWS DRIVE	Santee	92071	907.12	0782	Homebased gardening business where work is conducted offsite.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	GENSCHAW'S TREE SERVICE*	10744		SAYERS COURT	Santee	92071	907.12	0782	Homebased business of tree and shrubery trimming. Potential for outdoor storage, could be reprioritized to low.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	PERPETUAL TREE CARE*	9376		STARCREST DRIVE	Santee	92071	907.13	0782	Tree maintenance (trimming, removals, stump grinding) residen & comm	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	PROSCAPE*	9440		Leticia Drive	Santee	92071	907.12	0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Rafael Gardening*	8843		COTTONWOOD AVENUE	Santee	92071	907.12	0782	Homebased company providing offsite landscaping services, gravel yard onsite, any storage indoors.	No	No	No	No	No	No	No	No	No	No	Low	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	THE HAY GUY*	10932		Grand Fork Drive	Santee	92071	907.12	0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Johnny's Lawn Service*	10062		Woodpark Drive	Santee	92071	907.12	0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Santee Landscape*	9327		Whispering Leaves Lane	Santee	92071		0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Royal Handyman & Landscaping Services*	9233		RUFFIN ROAD	Santee	92071		0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	JAFCO BUILDING SERVICES INC	10728	109	PROSPECT AVENUE	Santee	92071	907.13	1511	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	GILES CONSTRUCTION CO	10131		ASHDALE LANE	Santee	92071	907.12	1511	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	BOND CONSTRUCTION	7819	F	RANCHO FANITA DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	CARL'S TRIM & REMODELING SUPPLY	9524		GALSTON DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Chuck Wilson Construction	9731		ABBEYFIELD ROAD	Santee	92071	907.12	1521	Homebased office for construction contractor, no outside exposures observed during inspection.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	CORONADO CONTRACTORS	10101		GEM TREE WAY	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	CUSTOM CRAFT CONSTRUCTION	8546	18	GRAHAM TERRACE	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	D C R CONSTRUCTION SERVICES	9440	4	WHEATLANDS	Santee	92071	907.12	1521	Base for construction contractor. No outdoor exposures. Some indoor storage, minimal work done onsite, as space mostly used for administrative purposes.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	DESIGNER'S TOUCH BUILDERS	9953		LOS RANCHITOS ROAD	Santee	92071	907.12	1521	Homebased office for construction contractor, no outside exposures (i.e., storage) observed during inspection	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	FARRIS CONSTRUCTION COMPANY	8758		BUSHY HILL DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, no outside exposures (i.e., storage) observed during inspection	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	FRED PERRY	9211		BELLAGIO DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, no outside exposures (i.e., storage) observed during inspection	No	No	No	No	No	No	No	No	No	No	Low	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
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SA	FREDDIE CASTLEMAN CONSTRUCTION	9312		CARITA	Santee	92071	907.12	1521	Homebased office for construction contractor, potential	No	No	No	No	No	No	No	No	No	No	Low	No
SA	FRY SPECIALTY COMPANY	11316	G	WOODSIDE AVENUE	Santee	92071	907.12	1521	Used for administrative purposes for construction contr	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	GORDON-PRILL SAN DIEGO INC.	8400	F	MAGNOLIA AVENUE	Santee	92071		1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	HACIENDA BUILDERS	10648		TRIGAL WAY	Santee	92071	907.12	1521	Homebased office for construction contractor, potential	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	HARPER CONSTRUCTION	7819	C	RANCHO FANITA DRIVE	Santee	92071	907.12	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	JACOR CONSTRUCTION	8614		SIESTA ROAD	Santee	92071	907.13	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	JWG CONSTRUCTION COMPANY	10910		COLLINWOOD DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	K C M CONSTRUCTION	10749		LEN	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	MB CUSTOMS	11115		SUMMIT CREST DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	R M B CONSTRUCTION	9902		VIA NINA	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	ROCK SOLID BRICK TILE AND MASONRY	9358		BURNING TREE WAY	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	SNOW CONSTRUCTION (also R.E. SNOW)	10107	A	PROSPECT AVENUE	Santee	92071	907.13	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	T S C RESTORATION	8402	C	MAGNOLIA AVENUE	Santee	92071	907.13	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	TIMBER RIDGE FRAMING INC	10744	109	ROCKVILL STREET	Santee	92071	907.12	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	G COLE LABORING	9345		CADORETTE STREET	Santee	92071	907.12	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	PAT MARTIN CONSTRUCTION	9743		PEBBLE BEACH DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, no outside exposures (i.e., storage) observed during inspection	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	PETE HURTUBISE CONSTRUCTION	9464		PIKE ROAD	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	R J A MASONRY	10057		PEBBLE BEACH DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, no outside exposures (i.e., storage) observed during inspection	No	No	No	No	No	No	No	No	No	No	Low	Yes

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Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
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SA	MICHAEL WAYNE FARRIL CONSTRUCTION CO	8758		BUSHY HILL DRIVE	Santee	92071	907.12	1521	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Day & Night Restoration Inc.	10728	G	PROSPECT AVENUE	Santee	92071	907.13	1521	Used for administrative purposes for construction contractor. No outdoor exposures (i.e., storage) observed during inspection.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	A Revitalized Bath And Kitchen	9435	D	Wheatlands	Santee	92071	907.12	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	AUSTIN CONSTRUCTION, JAMES F	9540	103	PATHWAY STREET	Santee	92071	907.13	1522	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	Decker's Custom Carpentry	9244		Bird Street	Santee	92071	907.12	1522	Home base for contractor working on landscape carpentry, decks and patio covers.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	DIMOND CONSTRUCTION	10112		GEM TREE WAY	Santee	92071	907.12	1522	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	OLD SWEDE REPAIRS	8500		ABLETTE ROAD	Santee	92071	907.13	1522	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	JV STEEL BUILDING	9619		MAST BOULEVARD	Santee	92071	907.12	1541	Homebased office for construction contractor, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	FORDYCE CONSTRUCTION	9926	122	PROSPECT AVENUE	Santee	92071	907.13	1542	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	KALIN ENTERPRISES INC	9540	201	PATHWAY STREET	Santee	92071	907.13	1542	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	COUVRETTE BUILDING SYSTEMS	8665	D	ARGENT STREET	Santee	92071	907.13	1542	Base for contractor installing ATM kiosks, some outside storage of equipment observed.	No	Yes	Yes	No	Yes	No	No	No	Yes	No	Low	Yes
SA	Interstate Striping of California	8511	#B	ABLETTE ROAD	Santee	92071	907.13	1611	Base for contractor installing road striping, some outside storage of equipment observed.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	SUPERIOR ASPHALT	9211		SECURITY WAY	Santee	92071	907.12	1611	Base for contractor installing streets and roads, office, outside storage of equipment and materials.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	Yes
SA	Provost Inc Dba Traffic Tech	11366	B	WOODSIDE AVENUE	Santee	92071	907.12	1611	Base for street and parking lot contractor, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	High	No
SA	T C CONSTRUCTION CO INC	10540		PROSPECT AVENUE	Santee	92071	907.13	1623	Base for contractor installing sewer and water infrastructure. Outside storage of materials, wastes and equipment. Largely gravel or soil surface. Indoor equipment washing facility.	No	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Medium	Yes
SA	BOCK COMPANY	8510		RAILROAD AVENUE	Santee	92071	907.12	1623	Base for underground Utility contractor. Outside storage of equipment. Yard permeable (soil or gravel).	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	TAYLOR INC DBA:, K.	8614	D	ARGENT STREET	Santee	92071	907.13	1623	Base for contractor installing sewer and water infrastructure. Potential for outside storage of materials, wastes and equipment.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes

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SA	Woodruffs Trenching Inc	9735		PROSPECT AVENUE	Santee	92071	907.13	1623	Base for trenching contractor used for storage of excavation equipment. Yard permeable (soil or gravel).	No	No	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	PRECISION EXCAVATION	9713		MAST BOULEVARD	Santee	92071	907.12	1629	Base for contractor in heavy construction. Potential for outside storage of materials, wastes and equipment.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Bluewater Marine & Dock Specialties	10520		KENNEY STREET	Santee	92071	907.13	1629	Base for contractor for marine dock fabrication.	No	Yes	Yes	No	Yes	No	No	No	Yes	No	Medium	Yes
SA	ALLEN MECHANICAL Inc.	11030		SUMMIT AVENUE	Santee	92071	907.12	1711	Homebase for commercial air conditioning and heating contractor, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	ALLIANCE HEATING AND AIR CONDITIONING	10281		PEBBLE BEACH DRIVE	Santee	92071	907.12	1711	Homebase for residential air conditioning and repair contractor, no outside exposures observed during inspection	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	ARROW AUTOMATIC FIRE SPRINKLER	9520		PATHWAY STREET	Santee	92071	907.13	1711	Base for contractor who designs, fabricate and install automatic fire sprinklers.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Coltrane Fire Protection	8620		BIG ROCK ROAD	Santee	92071	907.12	1711	Homebased sales and service fire sprinklers fire extinguishers and kitchen systems. No outside exposures (i.e., storage) observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	COMFORT MECHANICAL INC	10740	404	KENNEY STREET	Santee	92071	907.13	1711	Base for contractor working in plumbing, heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	COUNTY HEATING AND AIR CONDITIONING	10020		PROSPECT AVENUE	Santee	92071	907.13	1711	Base for contractor working in heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	CURTIS AIR CONDITIONING AND HEATING	10290		PEBBLE BEACH DRIVE	Santee	92071	907.12	1711	Home base for contractor working on air conditioning and heating, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	FICK & SON PLUMBING INC, R L	10740	405	KENNEY STREET	Santee	92071	907.13	1711	Base for contractor working in plumbing, heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	HALE & SONS INC	8626		SIESTA ROAD	Santee	92071	907.13	1711	Base for contractor working in plumbing, heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	IDEAL MECHANICAL	8524		ABLETTE ROAD	Santee	92071	907.13	1711	Base for contractor working in plumbing, heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	JERRY'S HEATING AND AIR CONDITIONING	9717		AIRPORT VISTA WAY	Santee	92071	907.13	1711	Contractor installing and service heaters and airconditioners, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	PARADISE MECHANICAL, Inc. DBA PMI HEATING & AIR	9260		ISAAC STREET	Santee	92071	907.12	1711	Contractor installing heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	PRECISION PROJECTS KITCHEN & BATH	10235		PRINCE JED COURT	Santee	92071	907.12	1711	Homebase for air conditioning and heating contractor, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	R H J HI-TECH AIR CONDITIONING	10107	B	PROSPECT AVENUE	Santee	92071	907.13	1711	Homebase for air conditioning and heating contractor, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	R L FICK & SON PLUMBING INC	10740	405	KENNEY STREET	Santee	92071	907.13	1711	Contractor installing heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	RONS PLUMBING	8521		RUMSON ROAD	Santee	92071	907.13	1711	Home base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	SAN DIEGO PLUMBING AND HEATING	8775		RAILROAD AVENUE	Santee	92071	907.12	1711	Contractor installing plumbing, heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No

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SA	SANTEE HEATING & AIR	8523		CHERUB COURT	Santee	92071	907.12	1711	Home base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	SCHOONMAKER HEATING & AIR CONDITIONER	8733	121	MAGNOLIA AVENUE	Santee	92071	907.12	1711	Base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	SOCAL PLUMBING HEATING DRAINS	10027	F	PROSPECT AVENUE	Santee	92071	907.13	1711	Base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	SWAIN ENTERPRISES	10017		PROSPECT AVENUE	Santee	92071	907.13	1711	Base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Under Pressure Testing	10786	C	JEANNE TERRACE	Santee	92071	907.12	1711	Home base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Westwind Mechanical	10439	M	PROSPECT AVENUE	Santee	92071	907.13	1711	Base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	L Seven 'n' Company, Inc.	8775		RAILROAD AVENUE	Santee	92071	907.13	1711	Base for contractor who services hoods and ducts, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	Snoke Air Conditioning	9783		MEDINA DRIVE	Santee	92071	907.12	1711	Home base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Kack Plumbing	10368		Kerrigan	Santee	92071	907.12	1711	Home base for contractor working on plumbing, air conditioning and heating, no outside storage observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Hurn Mechanical Heating & Cooling	8711	200	MAGNOLIA AVENUE	Santee	92071	907.12	1711	Contractor installing heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Interpipe Contracting Inc	10870		HARTLEY ROAD	Santee	92071	907.12	1711	Contractor installing plumbing, heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	DIAMOND PAINTING	8301	52	MISSION GORGE ROAD	Santee	92071	907.12	1721	Painting contractor, possible homebase, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	L.R. KNIGHT PAINTING	9744		VOMAC ROAD	Santee	92071	907.12	1721	Home-base for painting contractor, all materials held in trailer, no outside exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	NEW IMAGE PAINTING DESIGN	10744	105	ROCKVILL STREET	Santee	92071	907.12	1721	Painting and paper hanging contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Top Notch Painting	9371		STARCREST DRIVE	Santee	92071	907.13	1721	Home-base for painting contractor, some storage in garage, no outside exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	A-Advanced Electrical & Communications Cabling Company	8710		RUOCCO ROAD	Santee	92071	907.12	1731	Home-base for electrical contractor, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	American Automatic Fire	9510	B	PATHWAY STREET	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	ARC LIGHTING AND ELECTRIC	10054	I	PROSPECT AVENUE	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	AUDIO VIDEO INSTALLS	10171		SWANTON ROAD	Santee	92071	907.12	1731	Base for installer of audiovisual equipment at offsite locations, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	BABCOCK ELECTRICAL SERVICE	8521		MASSERY LANE	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	BARNER ELECTRIC	9435	K	WHEATLANDS	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
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SA	BLACK HAWK ELECTRIC COMPANY	8404	I	MAGNOLIA AVENUE	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	BLACK WIRE	9711		HUBER COURT	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	CLASSIC ELECTRIC	8531		ABLETTE ROAD	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	CODE 3 ELECTRICAL	10934		GREENCASTLE STREET	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	COPPER ELECTRIC	10054	T	PROSPECT AVENUE	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	G A ELECTRIC CORP	10520		KENNEY STREET	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	GIAMANCO & SONS	8742		ATLAS VIEW	Santee	92071	907.13	1731	Home base for electrical maintenance and repairs of residential and industrial buildings, no outside storage observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	JAMAR ELECTRIC	9830	D	PROSPECT AVENUE	Santee	92071	907.13	1731	Base (possibly home) for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	MCGUIRE ELECTRIC	9330	A	STEVENS ROAD	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	NOVA SECURITY	10744	104	ROCKVILL STREET	Santee	92071	907.12	1731	Base for fire alarm and security system installation contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	SAN DIEGO ELECTRIC COMPANY	7906		LINEN DRIVE	Santee	92071	907.12	1731	Home-base for electrical contractor, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	SEAL ELECTRIC INC	9216	C	ABRAHAM WAY	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	STANDARD ELECTRONICS	9340		STEVENS ROAD	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	T R E COMPANY	8733	140	MAGNOLIA AVENUE	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	EcoGreen Recycling	9540	105	PATHWAY STREET	Santee	92071	907.13	1731	Electronic recycling and shipping facility. Electronics collected and packed onto pallets prior to shipping. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	GOULD MASONRY, THOMAS	8633		HACIENDA DRIVE	Santee	92071	907.13	1741	Home base for stone and masonry contractor working offsite. Potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Paving Stone Of San Diego	9440	6	Wheatlands	Santee	92071	907.12	1741	Base for paving contractor, likely working offsite, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	Don Lincoln Lath and Plaster	9235		BIRCHCREST BOULEVARD	Santee	92071	907.12	1742	Home base for contractor working offsite in plastering, drywall, acoustical, and insulation work. No outside exposures observed at this address.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	MT INSULATION, Inc.	10612	105	PROSPECT AVENUE	Santee	92071	907.13	1742	Base for subcontractor working offsite in insulation, materials & equipment. No outside exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes

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SA	SANTEE CEILING SPECIALTIES	9221		FENWAY ROAD	Santee	92071	907.12	1742	Base for subcontractor working offsite in insulation, materials & equipment. No outside exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	DeCrescente's Drywall & Texture	8748		WAHL STREET	Santee	92071	907.12	1742	Home base for contractor working offiste in drywall patch & repair (residential). All outside storage is contained under cover.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Precision Interiors	10612	102	PROSPECT AVENUE	Santee	92071	907.13	1742	Base for subcontractor working offsite in drywall, t-bar celings and demolition. Potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	East County Tile & Marble	9855		PROSPECT AVENUE	Santee	92071	907.13	1743	Base for commercial subcontractor working in ceramic tile & marble installation. Office and indoor storage of materials.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	ASHWOOD CABINETS	8733	137	MAGNOLIA AVENUE	Santee	92071	907.12	1751	Base for carpentry contractor. Some woodworking and spray booth onsite. No outdoor exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	COMMERCIAL OPENINGS	8630	A	ARGENT STREET	Santee	92071	907.13	1751	Base for contractor who supplies and installs doors, frames and hardware for commercial use. Potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	E.C. CABINETS	8402	H	MAGNOLIA AVENUE	Santee	92071	907.13	1751	Base for carpentry work (garage, closets and kitchen cabinets), all work done indoors, no outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	GT DOOR, Inc.	10728	E	PROSPECT AVENUE	Santee	92071	907.13	1751	Base for commercial door, frank & hardware supplier. Potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	K C ARCHITECTURAL RESTORATIONS	8507		ABLETTE ROAD	Santee	92071	907.13	1751	Base for construction contractor, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	FREEMAN'S CARPETS AND BINDING	10205		PROSPECT AVENUE	Santee	92071	907.13	1752	Base for floor laying and other floor work, potential for outside storage.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	No
SA	PRO LINE FLOORING	11110		MEADOW TERRACE	Santee	92071	907.12	1752	Home base for carpet installation, potential for outside storage.											Low	No
SA	Valley Floor Covering	9945		PROSPECT AVENUE	Santee	92071	907.13	1752	Sales and installation of carpet, sheet vinyl, ceramic tile. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	No
SA	Burness Flooring	10018		THREE OAKS WAY	Santee	92071	907.12	1752	Home base for contractor working in floor laying and other floor work, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Quality Floors Inc.	9206		BIRCHCREST BOULEVARD	Santee	92071	907.12	1752	Home base for contractor working in floor laying and other floor work, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Lotta Hardwood Floors & Const	10436		CADWELL ROAD	Santee	92071	907.12	1752	Home base for contractor working in floor laying and other floor work, large metal bin observed in driveway.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	DAVIS ROOFING	10027		BECK DRIVE	Santee	92071	907.12	1761	Home base for contractor working in roofing, siding, and sheet metal work.	No	No	N	No	No	No	No	No	No	No	Low	No
SA	Ford Roofing	10009		GEM TREE WAY	Santee	92071	907.12	1761	Home base for contractor working in roofing, siding, and sheet metal work.	No	No	No	No	No	No	No	No	No	No	Low	No

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SA	McKay Roofing Co. Inc.	10622		KENNEY STREET	Santee	92071	907.13	1761	Base for contractor working in roofing, siding and sheet metal. Vehicles parked in gravel area, roofing materials stored on pallets in gravel area, but most materials usually delivered directly to jobsite.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	Yes
SA	MISSION VALLEY ROOFING INC	9908		PROSPECT AVENUE	Santee	92071	907.13	1761	Base for contractor working in roofing, siding and sheet metal. Potential for outside storage.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	Prime Time Concrete Pumping	9451		HORNBUCKLE STREET	Santee	92071	907.12	1771	Home base for contractor in concrete work. No outside exposures (storage of materials and waste etc) observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Blue Moon Pools	8606	H	ARGENT STREET	Santee	92071	907.13	1771	Base for contractor working in pool and spa renovation. Outside storage of materials, spills likely during loading/unloading activities.	No	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Low	Yes
SA	MORELLO CONCRETE CONST. INC.	8534		HUBBLES LANE	Santee	92071	907.13	1771	Base for concrete contractor, facility hardscaped and used for vehicle parking and equipment storage.	No	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Low	No
SA	Angus Asphalt Inc.	9959		PROSPECT AVENUE	Santee	92071	907.13	1771	Base for asphalt and concrete construction. Vehicle fueling and maintenance Is performed onsite. All hazardous materials kept under cover / contained. Drip pans are under all vehicles.	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Medium	Yes
SA	Blue Star Steel Inc.	11322		WOODSIDE AVENUE	Santee	92071	907.12	1791	Base for contractor working in structural steel erection. Area either gravel or soil. Outside storage of materials.	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Medium	Yes
SA	RCI Reinforcing Steel Contractor	9409		ABRAHAM WAY	Santee	92071	907.12	1791	Base for steel work contractor, office and indoor storage. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	RUSSELL GLASS	9440	13	WHEATLANDS	Santee	92071	907.12	1793	Base for glass and glazing work. Most storage indoors, some glass stored outside on racks.	No	No	No	No	No	Yes	No	No	No	No	Low	No
SA	SEA VIEW GLASS	10307		CAREFREE DRIVE	Santee	92071	907.12	1793	Home base for glass and glazing contractor, potential for outside storage	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	TOWER GLASS INC	9570	A	PATHWAY STREET	Santee	92071	907.13	1793	Specialty contractor for glass and glazing, some outside storage of glass and frames.	No	No	Yes	No	No	Yes	No	No	Yes	No	Medium	Yes
SA	A & D Fire Protection	11465	1	WOODSIDE AVENUE	Santee	92071	907.12	1799	Base for fire protection installation contractor. Some outside storage and potential for oil leaks on unpaved yard. No storm drain inlet adjacent to property.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	Yes
SA	American Fence Co.	9944		PROSPECT AVENUE	Santee	92071	907.13	1799	Temporary fence installation company, base for office and outside storage of temporary fence panels. Property paved.	No	Yes	Yes	No	No	Yes	No	Yes	No	No	Low	Yes
SA	AQUA VINYL & PLASTER POOLS*	10127		WOODROSE AVENUE	Santee	92071	907.12	1799	Home base for contractor involved in the service and repair of pools and spas, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	A-QUALITY GARAGE DOORS	8803		PEBBLE BEACH DRIVE	Santee	92071	907.12	1799	Home base for contractor installing garage doors, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	AWNING PRODUCTS UNLIMITED	8540	B	ABLETTE ROAD	Santee	92071	907.13	1799	Base for manufacture and installation of fabric awnings. Office and yard. Potential for outside storage.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	COLE HILL SYSTEMS	10756		VALOR PLACE	Santee	92071	907.12	1799	Home base for low voltage wiring audio and video contractor. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No

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SA	CRAFTERS FENCE	8606	A	ARGENT STREET	Santee	92071	907.13	1799	Base (office) for fence contractor.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	GANDER COMPANY INC, THE	8665	B-2	MISSION GORGE ROAD	Santee	92071	907.12	1799	Base (office/indoor storage) for refrigeration of equipment/supplies.	No	Yes	Yes	No	No	Yes	No	No	No	No	Low	No
SA	GOLDEN STATE GARAGE DOORS	10540		KENNEY STREET	Santee	92071	907.13	1799	Base for contractor installing garage doors, potential for outside storage	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	JOHN'S CUSTOM BLINDS	10800	201	WOODSIDE AVENUE	Santee	92071	907.12	1799	Base for contractor working in blind installation	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Low	No
SA	ROELOF CONSTRUCTION CO	8781	G	CUYAMACA STREET	Santee	92071	907.12	1799	Base for special trade contractor.	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Low	No
SA	Falcon Landscape	8707		LIND VERN COURT	Santee	92071	907.13	1799	Home base for landscape maintenance contractor. No outdoor exposures (such as storage) observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Cabral Metal Fab & Fence, Inc.	10020		PROSPECT AVENUE	Santee	92071	907.13	1799	Base for fencing contractor. No outdoor exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	SHOT BLASTERS INC.	9962	B	PROSPECT AVENUE	Santee	92071	907.13	1799	Shot blasting company, office and shop indoors. Potential for blast powder to be tracked out of facility.	No	No	Yes	No	No	No	No	Yes	Yes	No	Low	Yes
SA	Cascade Drilling LP	11440		North Woodside	Santee	92071	907.12	1799	Base for drilling company. Storage of rig and equipment in yard. Cleaned prior returning to facility.	No	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Medium	Yes
SA	Guardian Waterproofing Inc	8622	D	ARGENT STREET	Santee	92071	907.13	1799	Base for contractor working in construction waterproofing and caulking. Potential for outside storage.	No	Yes	No	No	Yes	Yes	No	No	No	No	Medium	No
SA	Le Caramel LLC	11220		WOODSIDE AVENUE	Santee	92071	907.12	2064	Manufacturing and selling of caramel products. Some outside storage of pallets and empty containers.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Fortina Chocolate	172		RIVER ROCK COURT	Santee	92071	907.12	2066	Home based chocolate and cocoa products preparation, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	MANZANITA BREWING COMPANY	9962	E	PROSPECT AVENUE	Santee	92071	907.13	2082	Microbrewery facility with office and tasting room. Brewing conducted indoors. No outdoor storage or consumption.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	FARACE ENTERPRISES, INC.	10759	H	WOODSIDE AVENUE	Santee	92071	907.12	2269	Silkscreening clothing, screens observed drying outside, some outside storage too.	No	Yes	No	No	No	Yes	No	No	No	No	Low	Yes
SA	Advertising Edge Inc.	9840		PROSPECT AVENUE	Santee	92071	907.13	2299	Silk screening company, office and screening shop in building. No outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	NAILERS INC	10845	C	WHEATLANDS	Santee	92071	907.12	2389	Manufacture of other apparel accessories. Office and workshop in building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	PRIMO GRAPHICS	9263	B	ABRAHAM WAY	Santee	92071	907.12	2389	Manufacture of other apparel accessories. Office and workshop in building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	J & J DRAPERY WORKROOM	10054	L	PROSPECT AVENUE	Santee	92071	907.13	2391	Drapery Manufacturing. Office and workshop in building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	Waren Drapery Service	8733	138	MAGNOLIA AVENUE	Santee	92071	907.12	2391	Drapery Manufacturing. Office and workshop in building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	RACER X MOTORSPORTS	10815	K	WHEATLANDS	Santee	92071	907.12	2396	Safety/Communication distributor for off road market. Office and storage inside building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	T M COBB CO	9175		MISSION GORGE ROAD	Santee	92071	907.12	2431	Base for wood window and door manufacturing.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	Mill Brothers Fine Woodworking	9356	C	Wheatlands	Santee	92071	907.12	2434	Manufacturer of wood kitchen cabinets, office and workshop inside building. No outside storage.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes

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SA	Misiano's Custom Cabinetry	9201	C	ISAAC STREET	Santee	92071	907.12	2434	Cabinet fabrication contractor. Office and workshop inside building, most work done offsite. No outdoor exposures observed.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Richardson Cabinets	9201		ISAAC STREET	Santee	92071	907.12	2434	Manufacturer of wood kitchen cabinets, office, workshop and spray booth inside building. No outside storage.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	SELECT CABINETS	9937	8	PROSPECT AVENUE	Santee	92071	907.13	2434	Woodworking shop and office. No outdoor exposures.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Steagall's Custom Cabinets	10911	#H	Wheatlands	Santee	92071	907.12	2434	Woodworking shop and office. No outdoor exposures.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	WoodMAST BOULEVARDer Windows	10965	Q	HARTLEY ROAD	Santee	92071	907.12	2439	Woodworking shop and office. No outdoor exposures.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Valley Box Co. Inc.	10625		PROSPECT AVENUE	Santee	92071	907.13	2441	Wooden box manufacturing. Metalworking area and woodworking area under canopies, some temporary outside storage of boxes/wood.	No	Yes	Yes	No	No	No	No	No	Yes	No	High	No
SA	PECHTELS CUSTOM WOODWORKS	8733	142	MAGNOLIA AVENUE	Santee	92071	907.12	2511	Fabrication of wood household furniture within building.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	No
SA	S & S WOODCRAFTS	8733	128	MAGNOLIA AVENUE	Santee	92071	907.12	2511	Fabrication of games, toys and children's vehicles in building.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	No
SA	Westline Woodcraft	9435	F-G	Wheatlands	Santee	92071	907.12	2511	Custom wood kitchen cabinet manufacturing inside building. No outdoor exposures observed.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Anthony Lauren & Co., Inc.	8747		MAGNOLIA AVENUE	Santee	92071	907.12	2511	Furniture manufacturing inside building. No outdoor exposures observed.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	INSTITUTIONAL CABINET & MILLWORK INC	10770	B	ROCKVILL STREET	Santee	92071	907.12	2531	Cabinet fabrication, no painting or finishing. Materials stored outside under cover.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	DISPLAY CASE MANUFACTURING (previously Case It)	8645	A	ARGENT STREET	Santee	92071	907.13	2541	Woodworking shop used for fabrication of display cases. No outside exposures.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	SUNCRAFT SHUTTERS	9344	C	WHEATLANDS	Santee	92071	907.12	2591	Office and workshop in building involved in shutter fabrication and some painting or staining. Temporary storage outside.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	BAKER OFFSET PRINTING	8781	T	CUYAMACA STREET	Santee	92071	907.12	2752	Commercial printing operation, outside exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	BENHAM CORPORATION DBA:; D	10969	A	WHEATLANDS	Santee	92071	907.12	2752	Commercial lithographic printing operation, outside exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	CHEAPOS PRINTING	10215	C	BUENA VISTA AVENUE	Santee	92071	907.12	2759	Commercial quick printing operation, outside exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	IN-MINUTES	10217	E	BUENA VISTA AVENUE	Santee	92071	907.12	2759	Commercial quick printing operation, outside exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	TOWN & COUNTRY PRINTERS INC	9448		MISSION PARK PLACE	Santee	92071	907.12	2759	Commercial printing operation, outside exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	REFLEX INDUSTRIES INC	9530	105	PATHWAY STREET	Santee	92071	907.13	2834	Pharmaceutical preparation, outside exposures (storage, operations) unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	SCANTIBODIES LAB INC	9336		ABRAHAM WAY	Santee	92071	907.12	2835	Development of antibody testing kits. Laboratory activities conducted within building. Outdoor storage under cover, some outside picnic benches for staff.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	D S Fibertech Corp	11015		MISSION PARK PLACE	Santee	92071	907.12	2899	Operation using silica. All processing conducting indoors where dust collectors are operational. Outside storage is under cover.	No	Yes	No	No	Yes	Yes	No	No	No	No	Low	Yes
SA	J S Bluing and Metal Refinishing	10416		LEN COURT	Santee	92071	907.12	2899	Home base for bluing and refinishing business. Outdoor exposures are unlikely.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	SCANTIBODIES CLINICAL	9236		ABRAHAM WAY	Santee	92071	907.12	2899	Development of antibody testing kits. Activities conducted within building. Outdoor storage under cover, some outside picnic benches for staff.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	OLSON IRRIGATION SYSTEMS	10910	39449	WHEATLANDS	Santee	92071	907.12	3069	Irrigation installation company. Offices and storage in building. Minor activities in hardscaped yard.	No	Yes	No	No	Yes	Yes	No	No	No	No	Low	No
SA	SEALTITE INC	10225		PROSPECT AVENUE	Santee	92071	907.13	3081	Wholesale Distributor of Packaging Materials. Office and storage within building. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	A-I-M Plastics Inc.	9326		ABRAHAM WAY	Santee	92071	907.12	3089	Industrial mold manufacturing operation, conducted inside building. Outside cooling operation in enclosure and bermed. Outside area used for extensive storage although many items covered.	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	ARGEE CORPORATION	9550		PATHWAY STREET	Santee	92071	907.13	3089	ndustrial mold manufacturing operation, conducted inside building. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	PLA-COR INC	10207	C-D	BUENA VISTA AVENUE	Santee	92071	907.12	3089	Manufacture of plastic product inside building. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	Plex Products Unlimited	10744	C	PROSPECT AVENUE	Santee	92071	907.13	3089	Manufacture of plastic product inside building. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	Red Line	10845		Wheatlands	Santee	92071	907.12	3089	Manufacture of plastic product inside building. No outdoor exposures (storage/operations).	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	Loftin GTS	8500		ABLETTE ROAD	Santee	92071	907.13	3089	Assembly and shipping of plastic parts/tools, potential for outdoor storage.	No	Yes	No	No	Yes	No	No	No	No	No	Medium	No
SA	Landmark Glass Co.	9851		PROSPECT AVENUE	Santee	92071	907.13	3211	Fabrication glass, mirrors & windows, potential for outside storage.	No	No	No	No	No	No	No	No	Yes	No	Medium	No
SA	CALIFORNIA ACRYLIC & GLASS MIRROR PLATE COMPANY	10658	C	PROSPECT AVENUE	Santee	92071	907.13	3231	Facility for cutting and polishing mirrors. All activities conducted indoors, no outside storage observed.	No	No	No	No	No	No	No	No	Yes	No	Medium	Yes
SA	R C P BLOCK & BRICK INC	9631		MAGNOLIA AVENUE	Santee	92071	907.12	3271	Concrete block and brick manufacturing. Storage of aggregate on unpaved areas. Operations conducted indoors. Above ground fuel tank and dispenser.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	High	Yes
SA	Artistic Marble and Granite, Inc.	9323		STEVENS ROAD	Santee	92071	907.12	3281	Granite and marble countertop fabrication & Installation. Fabrication conducted within workshop, installation offsite. Storage of slabs outside of building.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	C C M ENTERPRISES	10848		WHEATLANDS	Santee	92071	907.12	3281	Manufacturing counter tops, shower pans & tubs from cultured marble. All work done indoors. No storage done outside. Catch basin observed in yard.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes
SA	European Company	10051		PROSPECT AVENUE	Santee	92071	907.13	3281	Granite and marble countertop fabrication & Installation. Fabrication conducted within workshop, installation offsite. Storage of slabs and equipment outside of building. Cover over catch basin in yard.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes
SA	MARJAN STONE COMPANY	9746		PROSPECT AVENUE	Santee	92071	907.13	3281	Granite and marble countertop fabrication & Installation. Fabrication conducted within workshop, installation offsite. Storage of slabs outside of building. Catch basin in yard.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes
SA	Solid Surface Solutions	10704		PROSPECT AVENUE	Santee	92071	907.13	3281	Countertop fabrication & Installation. Fabrication conducted within workshop, installation offsite. No outdoor exposures (storage/operations). Shares unit with other company.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	No
SA	C C M ENTERPRISES	9366		ABRAHAM WAY	Santee	92071	907.12	3281	Fabrication of natural stone and quartz counter tops. Operations conducted indoors, storage of slabs outside has been observed. Minor vehicle maintenance onsite.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes
SA	TOTTEN TUBES INC	8540		ROLAND ACRES	Santee	92071	907.13	3312	Temporary storage of iron and steel tubes prior to shipping.	No	No	Yes	No	No	No	No	No	No	No	Low	Yes
SA	RHINE AIR INC	10744	A	PROSPECT AVENUE	Santee	92071	907.13	3334	Indoor manufacturing facility, potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Rainbow Steel Inc	9484		MISSION PARK PLACE	Santee	92071	907.12	3399	Metal fabrication, potential for outdoor storage and operations.	No	Yes	Yes	No	Yes	No	No	No	No	No	High	Yes
SA	Metro Steel	10520	A	KENNEY STREET	Santee	92071	907.13	3441	Fabricated structural metalworking, installation done offsite. Offices, warehouse. Some metalworking done under canopy, outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	High	Yes
SA	PRODUCTION TRUSS	9925		PROSPECT AVENUE	Santee	92071	907.13	3443	Fabricated plate work (boiler shop). Potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Abler Fabrication	10325		AMADA PLACE	Santee	92071	907.12	3444	Home base for sheet metal worker, possible outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	AMERICAN SHEET METAL	8710		RAILROAD AVENUE	Santee	92071	907.12	3444	Roofing, siding & sheet metal fabrication facility. Installation ofsite. Operations restricted to building. Grassy swale onsite.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	BOWEN & WARENGO INC	10723		PROSPECT AVENUE	Santee	92071	907.13	3444	Heating equipment manufacturing facility. Some outside storage observed.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Conn's Machining	10207	B	BUENA VISTA AVENUE	Santee	92071	907.12	3444	Sheet metal working shop. No outdoor exposures (storage/operations).	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	DAVIC CONSTRUCTION GENERAL CONTRACTOR	10925	N	WHEATLANDS	Santee	92071	907.12	3444	Sheet metal working shop. Potential for outdoor exposures (storage).	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	ELECTRONIC SHEET METAL PRODUCTS	9560	5	PATHWAY STREET	Santee	92071	907.13	3444	Custom metal fabrication facility. Operations indoors, potential for outdoor storage.	No	Yes	No	No	No	No	No	No	No	No	Low	No

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										Potential pollutants that may be generated by the facility.											
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SA	METAL TEK	11350		WOODSIDE AVENUE	Santee	92071	907.12	3444	Sheet metal working facility, potential for outdoor storage	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	R S R PRECISION MACHINE	10020	G & H	PROSPECT AVENUE	Santee	92071	907.13	3444	Machine shop, potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	RALLS PRECISION MACHINE	10027	C	PROSPECT AVENUE	Santee	92071	907.13	3444	Sheet metal working facility, potential for outdoor storage	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	SHAWZ METAL FABRICATION INC	10925		WHEATLANDS AVENUE	Santee	92071	907.12	3444	Sheet metal working facility, no outdoor exposures (storage) observed.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Specialty Metals Fabrication	11222		WOODSIDE AVENUE	Santee	92071	907.12	3444	Sheet metal working facility, extensive outside storage of materials. Parking for vehicles. Sump in parking lot.	No	Yes	Yes	No	Yes	No	No	No	No	No	High	Yes
SA	MTS Sheet Metal & Fabrication Inc.	8400	E	MAGNOLIA AVENUE	Santee	92071	907.13	3444	Sheet metal working facility, potential for outdoor storage	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	SOUTH BAY FOUNDRY, INC.	9444		ABRAHAM WAY	Santee	92071	907.12	3446	Grind, weld (to customize) and distribution of metal products imported from China. Welding and grinding conducted indoors. Outdoor storage of product and equipment.	No	Yes	Yes	No	No	No	No	Yes	Yes	No	Low	Yes
SA	Aluminess Products Inc	9402	A	Wheatlands	Santee	92071	907.12	3465	Automotive stamping shop. Potential for outside storage.	No	Yes	Yes	No	No	No	No	Yes	Yes	No	Low	No
SA	Industrial Metal Processing	10145		PROSPECT AVENUE	Santee	92071	907.13	3471	Industrial painting, plating, and powdercoating, all operations indoors. Some outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Creative Metals Industries Inc.	10039	E	PROSPECT AVENUE	Santee	92071	907.13	3479	Custom metal etching & finishing. All operations indoors. No outdoor storage except for pallets during the day.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	EL CAJON NAMEPLATE	10054	K	PROSPECT AVENUE	Santee	92071	907.13	3479	Engraving trophies, plaques & signs in shop. No outside exposures (i.e., storage) observed.	Yes	Yes	No	No	Yes	No	No	No	Yes	No	Low	Yes
SA	KTM COATING TECHNOLOGIES, Inc	10020	A33-34	PROSPECT AVENUE	Santee	92071	907.13	3479	Metal coating and allied services conducted indoor. Potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	SAN DIEGO PROTECTIVE COATINGS	9344	A	WHEATLANDS	Santee	92071	907.12	3479	Rust preventative coating conducted indoors. Coated items may be left outside to dry on racks. No other outside stoage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Altech Machining	11000		WOODSIDE AVENUE	Santee	92071	907.12	3492	Manufacture aerospace parts inside building, potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Ke-Burgmann	8575		Roland Acres	Santee	92071	907.13	3494	Manufacturing of metal joints for refineries. Operations (including testing of joints) indoors. Sand blasting operation. Some outside storage.	No	Yes	Yes	No	Yes	No	No	Yes	No	No	High	Yes
SA	KW Cages Advanced Design	9565		PATHWAY STREET	Santee	92071	907.13	3496	Fabrication and sales of wire cages for small household pets. No outdoor exposures.	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	Bradshaw Engineering Corp.	8645	B	ARGENT STREET	Santee	92071	907.13	3498	Pipe fabrication for fire sprinkler systems. Outside storage of pipes on racks. Company vehicles park onsite.	No	Yes	Yes	No	Yes	No	No	No	No	No	High	Yes
SA	AYMAR ENGINEERING	9434	1	ABRAHAM WAY	Santee	92071	907.12	3499	Precision sheet metal fabrication for aerospace and defense. Operations conducted indoor, potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes

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SA	DAVIS GREGG ENTERPRISES	10139		PROSPECT AVENUE	Santee	92071	907.13	3499	Metal fabrication facility, workshop and office inside building. Potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Precision Water Jetting, Inc.	10031	B & C	PROSPECT AVENUE	Santee	92071	907.13	3499	Cut out various parts from metal, wood, plastic, glass using water. No outdoor storage or operations.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	SPIRAL ASSEMBLY SYSTEMS	10658	A	PROSPECT AVENUE	Santee	92071	907.13	3499	Metal work and welding conducted inside building. Supplies stored indoors. No outdoor exposures (storage/operations).	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	TECHMAST BOULEVARDER	10744	106	ROCKVILL STREET	Santee	92071	907.12	3499	Machinery fabrication shop, all work indoors. No outside storage observed.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	TERRA NOVA TECHNOLOGIES, Inc.	10770		ROCKVILL STREET	Santee	92071	907.12	3535	Design conveying equipment for mines. Activities within building, outdoor exposures unlikely.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Accu-Tap LLC	9625	B2-305	MISSION GORGE ROAD	Santee	92071	907.12	3541	Business involved with machine tools, and metal cutting types. No outdoor exposures observed.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Watts Engineering	9920	106	PROSPECT AVENUE	Santee	92071	907.13	3541	design & machining prototypes & tool making. Activities restricted to building.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	BTI PERFORMANCE PRODUCTS	9525		PATHWAY STREET	Santee	92071	907.13	3544	Tooling for turbine engines. Work conducted indoors, outside storage under roofed areas.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	B & A WIRE EDM	8402		MAGNOLIA AVENUE	Santee	92071	907.13	3549	Machine shop for aerospace industry, all work done indoors. No outdoor exposures (storage).	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	No
SA	Frontier CNC	10728	C & D	PROSPECT AVENUE	Santee	92071	907.13	3549	Machine shop, all work done indoors, no outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	P-M Machining Inc.	8630	C	ARGENT STREET	Santee	92071	907.13	3549	Precision metal shop. No outdoor exposures.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	JAY MATHY ENGINEERING	9315		WHEATLANDS	Santee	92071	907.12	3559	Commercial and industrial machinery fabrication. All work is done indoors. Old coolant is kept in sealed drums in locked and partially covered area. Facility shared with Mathy Machine.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Vortex Engineering	9425		Wheatlands	Santee	92071	907.12	3559	Custom drilling equipment company, all operations indoors. Outdoor storage under cover.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Mathy Machine Inc.	9315		Wheatlands	Santee	92071	907.12	3559	Commercial and industrial machinery fabrication. All work is done indoors. Old coolant is kept in sealed drums in locked and partially covered area. Facility shared with Jay Mathy Engineering.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	DISCFLO CORPORATION	10850		HARTLEY ROAD	Santee	92071	907.12	3561	Manufacture and testing of pumps and pumping equipment. Indoor operations, some storage outdoors.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Accurate Air Engineering Inc	9356		ABRAHAM WAY	Santee	92071	907.12	3563	Manufacture of air and gas compressors.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Quality Controlled Manufacturing	9429		ABRAHAM WAY	Santee	92071	907.12	3569	Precision machine shop, all operations indoors. Sump in yard.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Computer Integrated Machining Inc.	10960		WHEATLANDS	Santee	92071	907.12	3599	Computerized machine fabrication conducted indoors. Some outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Ascend Manufacturing	10217	G	BUENA VISTA AVENUE	Santee	92071	907.12	3599	Machine shop, all work done indoors, no outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	CONTOUR TECHNOLOGY	8406	E	MAGNOLIA AVENUE	Santee	92071	907.13	3599	Machine shop working in brass. All work done indoors, no outdoor exposures.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	S M L INDUSTRIES	10965	P	HARTLEY ROAD	Santee	92071	907.12	3599	Manufacture of plastic products. Potential for outside storage.	No	Yes	Yes	No	No	No	No	Yes	Yes	No	Low	No
SA	TACKETT MACHINE	10728	D	KENNEY STREET	Santee	92071	907.12	3599	Manufacture of industrial and commercial machinery. Potential for outdoor storage and activities.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Dragon Machine Shop	9435	G	Wheatlands	Santee	92071	907.12	3599	Family owned machine shop, all activities conducted indoors, no outdoor exposures.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Dornfeld Inc	9435	B	Wheatlands	Santee	92071	907.12	3599	Industrial and commercial machinery, activities conducted indoors, potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	No
SA	REPUBLIC ITS	9932	134	PROSPECT AVENUE	Santee	92071	907.13	3646	Traffic signal maintenance company. Potential for outdoor storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Alternative Energy Technologies	9465	B	MISSION PARK PLACE	Santee	92071	907.12	3674	Solar energy sales and installation, potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	LHV Power Corporation	10221		BUENA VISTA AVENUE	Santee	92071	907.12	3677	Manufacture of electronic coils, transformers, and other inductors. Potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	No
SA	Taco Magnetics	10020	B-12	PROSPECT AVENUE	Santee	92071	907.13	3679	Manufacture of electronic components. Potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Matt Gyvers Custom Werks	8733	#117	MAGNOLIA AVENUE	Santee	92071	907.12	3679	Car electrical/stereo services. Potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Speedo Shop, The	10027	E	PROSPECT AVENUE	Santee	92071	907.13	3694	Motor vehicle electrical services. No outdoor exposures (work/storage) observed.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	JIMCO RACING INC.	9426		WHEATLANDS	Santee	92071	907.12	3711	Customized manufacture of offroad vehicles. Manufacturing conducted indoors, some outdoor storage, all under cover.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Alloy Studios	9435	G	Wheatlands	Santee	92071	907.12	3711	Off road vehicle fabrication, work done indoors, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No
SA	Action Turbo Repair Inc	10722	A	KENNEY STREET	Santee	92071	907.13	3714	Rebuilding of turbo chargers, all work conducted indoors. No outdoor exposures observed.	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Low	Yes
SA	AUTOZONE #3347	285		TOWN CENTER PARKWAY	Santee	92071	907.12	3714	Automotive supply store, no maintenance.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	Fox Racing Shox	10943		Wheatlands	Santee	92071	907.12	3714	Motor vehicle steering company. Conducted indoors, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	FUTURE MACHINE	9440	2	WHEATLANDS	Santee	92071	907.12	3714	Non automotive machine shop, operations conducted indoors. Potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	HYDRAULIC ELECTRIC	9938	145	PROSPECT AVENUE	Santee	92071	907.13	3714	Assembly of commercial business parts conducted indoors. No outdoor exposures.	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Low	Yes
SA	KRAGEN AUTO PARTS #727	9750		MISSION GORGE ROAD	Santee	92071	907.12	3714	Automotive supply store, no maintenance, or outdoor exposures.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	KRAGEN AUTOWORKS #1419/CSK Auto Parts	9675		MISSION GORGE ROAD	Santee	92071	907.12	3714	Automotive supply and accessory store, no maintenance, or outdoor exposures.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	MAJOR PERFORMANCE	10722	C	KENNEY STREET	Santee	92071	907.13	3714	Performance engine building, all work done indoors, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
SA	Viking Battery	10759	B	WOODSIDE AVENUE	Santee	92071	907.12	3714	Battery wholesale company, all work and storage is indoors. No outdoor exposures.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	Yes
SA	Fiberwerx	8400	H	MAGNOLIA AVENUE	Santee	92071	907.13	3714	Installation of motor vehicle parts and accessories. All work is done indoors, no outdoor exposures.	No	No	No	No	No	Yes	No	No	No	No	Low	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

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										Potential pollutants that may be generated by the facility.											
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SA	HCM Customs	11421	B	WOODSIDE AVENUE	Santee	92071	907.12	3714	Installation of automotive repair and accessories, body work is primary function. All work is done indoors. No Outdoor Exposures.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Medium	No
SA	Aeromach	11423	B	WOODSIDE AVENUE	Santee	92071	907.12	3751	Manufacturing / machining of motorcycle parts and accessories. Potential for outdoor storage.	No	No	No	No	No	Yes	No	No	No	No	Low	No
SA	Seki'S Cycles	9932	135	PROSPECT AVENUE	Santee	92071	907.13	3751	Installation of motorcycle parts and accessories. Potential for outdoor storage.	No	No	No	No	No	Yes	No	No	No	No	Low	No
SA	J P Designs (Desert Fabrications dba ,)	11421		WOODSIDE AVENUE	Santee	92071	907.12	3799	Metal fabrication of offroad vehicles. Work conducted inside building. Minor storage in outside unpaved area.	No	No	Yes	No	No	No	No	No	No	No	Low	Yes
SA	Alumi Craft Inc.	10815	I	Wheatlands	Santee	92071	907.12	3799	Metal fabrication of offroad vehicles. Work conducted inside building. No outdoor exposures.	No	No	Yes	No	No	Yes	No	No	No	No	Low	Yes
SA	BUGGY WORKS	11421		WOODSIDE AVENUE	Santee	92071	907.12	3799	Dune buggy repair and fabrication facility. Potential for outdoor exposures (storage).	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
SA	Ty & Bud Hitches & Welding	10229		PROSPECT AVENUE	Santee	92071	907.13	3799	Installation of vehicle hitches. Potential for outdoor exposures (storage).	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
SA	Advanced Electromagnetics	9311		STEVENS ROAD	Santee	92071	907.12	3812	Manufacturing of foam/rubber deflecting material for military purposes. Storage of finished product outside ready for shipping and potential for black ink to be spilled outside. Catch basin in parking lot, away from operational area.	No	No	No	No	Yes	Yes	No	Yes	Yes	No	High	Yes
SA	ROZENDAL ASSOCIATES INC	9530	101	PATHWAY STREET	Santee	92071	907.13	3812	Manufacturing of search detection equipment.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	DELTATRAK TECHNOLOGIES	9260	D	ISAAC STREET	Santee	92071	907.12	3823	Manufacturing of instruments and related products. Potential for outside storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	LARSON METERCRAFT INC	9328	A	WHEATLANDS	Santee	92071	907.12	3823	Manufacturing of instruments and related products. Potential for outside storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	TOTAL PERFORMANCE MACHINE	10133		PROSPECT AVENUE	Santee	92071	907.13	3859	Automotive machine shop, work done indoors, some outside storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	FEATHER ROCK DESIGNS	11316	B	WOODSIDE AVENUE	Santee	92071	907.12	3911	Design & fabrication of metal arts & jewelry. Potential for outside storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	ARC PAINT	10925	G	HARTLEY ROAD	Santee	92071	907.12	3914	Silverware manufacturers, all operations indoors. Potential for outdoor storage.	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	JENSEN SWING PRODUCTS	9327		WHEATLANDS	Santee	92071	907.12	3949	Wholesale manufacturing and distribution of playground component parts. No outdoor storage observed.	No	No	No	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	CROWN SIGNS	9937	10	PROSPECT AVENUE	Santee	92071	907.13	3993	Signs and advertising specialties, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	GRAPHICRETE (Q=Mila's Signs)	11571		WOODSIDE AVENUE	Santee	92071	907.12	3993	Sign painting, vinyl lettering, permanent & temporary signs, graphics, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	R B INDUSTRIES	9919		PROSPECT AVENUE	Santee	92071	907.13	3993	Sign manufatering for hotels, resorts, casinos. Potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	Visual Marketing Associates	9560	39452	PATHWAY STREET	Santee	92071	907.13	3993	Sign manufacturing, operations indoors, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No

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SA	Albert Remolina	10020		PROSPECT AVENUE	Santee	92071	907.13	3993	Sign installation, no fabrication, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Medium	No
SA	COMPUCRAFT INDUSTRIES INC	8787		OLIVE LANE	Santee	92071	907.13	3999	Aerospace sheet metal & machining processing. Operations indoors, potential for outdoor storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Kaylien Inc.	8520		RAILROAD AVENUE	Santee	92071	907.13	3999	Manufacturing facility, exposures at rear (resins, fiber glass dust, etc.), but unlikely to impact MS4. Paintbooth indoors.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	STEWARTS RACE WORKS	9419		ABRAHAM WAY	Santee	92071	907.12	3999	Servicing of offroad racing vehicles. Work done in shop, outside storage observed.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Tred 'N Water	10641		PROSPECT AVENUE	Santee	92071	907.13	4212	Trucking facility. Potential for outside storage of equipment	No	No	Yes	No	Yes	No	No	No	No	No	High	No
SA	Harrison Trucking Inc.	8801		OLIVE LANE	Santee	92071	907.13	4213	Base for trucks involved in local hauling. Area where vehicles enter/exit is covered in gravel. Truck maintenance conducted under cover, truck washing water drains to a sump, underground fuel tank and dispenser onsite.	No	Yes	No	No	Yes	No	No	No	No	No	High	Yes
SA	Vanguard Trucking, Inc.	8712	136	MAGNOLIA AVENUE	Santee	92071	907.12	4213	Hauler for residential & business. Potential for outside storage of vehicles.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	C & M Relocation Systems	11433		WOODSIDE AVENUE	Santee	92071	907.12	4214	Business relocation services. Trucks stored onsite. Facility sometimes used for temporary storage of client's equipment.	No	Yes	No	No	Yes	No	No	No	No	No	High	Yes
SA	AMERICAN EAGLE SELF STORAGE	8810		CUYAMACA STREET	Santee	92071	907.12	4225	Self storage facility, units rented to individuals. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	MAST AVENUEMINI STORAGE	10805		KENNEY STREET	Santee	92071	907.13	4225	Self storage facility, units rented to individuals. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	SANTEE MINI STORAGE DEPOT	10835		WOODSIDE AVENUE	Santee	92071	907.12	4225	Self storage facility, units rented to individuals. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	SANTEE SELF STORAGE	10336		BUENA VISTA AVENUE	Santee	92071	907.12	4225	Self storage facility, units rented to individuals. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	EXTRA SPACE STORAGE	10115		MISSION GORGE ROAD	Santee	92071	907.12	4225	Self storage facility, units rented to individuals. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	A-1 Stor-it	11493		WOODSIDE AVENUE	Santee	92071	907.12	4226	Self storage facility, units rented to individuals. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	TERMINALLIFT LLC	9201	C	ISAAC STREET	Santee	92071	907.12	4731	Freight forwarding facility, potential for vehicle storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Pure-Flo	7737		MISSION GORGE ROAD	Santee	92071	907.12	4941	Water purification and distribution facility. Groundwater held in above ground tanks, connected to sanitary sewer. Fleet parking and maintenance onsite, but under cover. Facility for clients to collect their own drinking water.	No	No	No	No	No	No	No	No	No	No	Low	No

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SA	PADRE DAM WATER RECYCLING FACILITY	9300		FANITA PARKWAY	Santee	92071	907.12	4952	Water recycling plant (sewage), treated water drains into a series of lakes used for recreational purposes and surrounding by camping facilities. Operations yard and customer service facility. Vehicle maintenance facility (maintenance conducted indoor), underground fuel tank and fuel dispensers.	No	Yes	Yes	Yes	No	Yes	No	No	No	Yes	High	No
SA	AL MAX SANITATION (AMS)	10023		PROSPECT AVENUE	Santee	92071	907.13	4953	Pumping of residential septic tanks and restaurant grease traps. All materials stored under cover. Tankers stored in gravel yard. No direct connection to storm drain, runoff from rain drains to sump, then pumped to street. Filter on pump.	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	High	Yes
SA	Lowland Services	10220		PRINCE JED COURT	Santee	92071	907.12	4953	Home base for litter control & trash removal. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Eliminator Motorsports	11418		WOODSIDE AVENUE	Santee	92071	907.12	5012	Custom boat and truck shop. All work is done indoors or under cover. Some vehicle washing onsite.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	C H C DIST. CO.	10925	M	WHEATLANDS	Santee	92071	907.12	5013	Motor vehicle supplies and parts, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Low	No
SA	Battery Systems	9465		MISSION PARK PLACE	Santee	92071	907.12	5013	Wholesale distribution of automotive batteries. All storage is kept under cover or indoors. Dead batteries are kept on pallets and picked up weekly	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	CUSTOM WHEEL INDUSTRIES INC	10221		PROSPECT AVENUE	Santee	92071	907.13	5013	Facility sells wheels, tires, lug nuts, value stems, lock sets, wheel wax for cars. Some storage outdoors.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Cal Parts Connection	10658	D	PROSPECT AVENUE	Santee	92071	907.13	5013	Facility sells vehicle parts. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	DG Custom Auto Inc	10728	G	PROSPECT AVENUE	Santee	92071	907.13	5013	Facility sells vehicle parts. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	Generic Lift Parts (GLP)	9431		PROSPECT AVENUE	Santee	92071	907.13	5015	Home base for business that buys forklist parts and sells them to businesses that use forklifts.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	NEO TECH IMPORTS	9962	I	PROSPECT AVENUE	Santee	92071	907.13	5015	Wholesale Japanese engine importer.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Southwest Entrances	8733		MAGNOLIA AVENUE	Santee	92071	907.12	5039	Repair & installation of commercail doors. Address used for storage of materials.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	MEDICAL SOLUTIONS INC	8406	A	MAGNOLIA AVENUE	Santee	92071	907.13	5047	Sales of medical equipment.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	BC Wire Rope And Rigging Inc.	10580	102	PROSPECT AVENUE	Santee	92071	907.13	5051	Processing of metal wires and ropes indoors. No outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	PACIFIC COAST VALVE & SUPPLY	8614	B	ARGENT STREET	Santee	92071	907.13	5074	Plumbing and heating supplies, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	TEAL PIPE AND SUPPLY, INC.	9489		MISSION PARK PLACE	Santee	92071	907.12	5074	Plumbing wholesale supply, outside storage of plastic pipes, and storage of company vehicles.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	PRAXAIR	10728	A	PROSPECT AVENUE	Santee	92071	907.13	5084	Provider of welding supplies & industrial gas products. Potential for outside storage.	No	Yes	No	No	No	No	No	No	No	No	Low	No
SA	Preferred Pump & Equipment	9201	A	ISAAC STREET	Santee	92071	907.12	5084	Wholesale industrial machinery and equipment (pumps), warehouse and office, potential for outside storage.	No	Yes	No	No	No	No	No	No	No	No	Low	No

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SA	Pro Filter Inc.	9266		ABRAHAM WAY	Santee	92071	907.12	5085	Selling filtration systems through wholesale distribution. Warehouse and office, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	IMS Recycling Services Inc	9465		MISSION PARK PLACE	Santee	92071	907.12	5093	Recycling and scrap facility. Potential for outside storage and operations.	No	No	Yes	No	No	No	No	No	Yes	No	Medium	No
SA	COASTAL SUPPLY CO INC	8650		ARGENT STREET	Santee	92071	907.13	5099	Distribute sign & screen printing supplies & equipment. All work done indoors, no outdoor exposures (storage).	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	CARROLL BUSINESS SUPPLY, INC.	10223		PROSPECT AVENUE	Santee	92071	907.13	5112	Office supply delivery, office and warehouse. Potential for fleet storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	PACKAGING SOLUTIONS FOR TODAY'S INDUSTRY	9402	A	WHEATLANDS	Santee	92071	907.12	5113	Distributors of industrial packaging products & design.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	SAN DIEGO SUPPLY SERVICES	8402	E	MAGNOLIA AVENUE	Santee	92071	907.13	5113	Distribution of paper products & related supplies for restrooms/buildings. Office, warehouse, potential for outside storage.	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
SA	STAT PHARMACEUTICALS	9545		PATHWAY STREET	Santee	92071	907.13	5122	Drugs, drug proprietaries, and druggists' Sundries. Some storage outside building. Debris (including from landscaping) observed.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	MAXIMA RACING OILS	9266		ABRAHAM WAY	Santee	92071	907.12	5172	Wholesale distribution of lubricating oil, all processing and storage indoors. No outdoor exposures.	No	No	No	No	Yes	No	No	No	Yes	No	Low	Yes
SA	Mayan Trade Inc.	9437	H	Wheatlands	Santee	92071	907.12	5199	Wholesale of orthorehabilitation nondurable goods to hospitals. All storage indoors. No outdoor exposures.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	8-5 Corp. / Artisan Gallery	10928	A	Wheatlands	Santee	92071	907.12	5199	Warehouse storage and distribution. No outdoor exposures observed.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	CONSOLIDATED ELECTRICAL DIST	8406	H	MAGNOLIA AVENUE	Santee	92071	907.13	5211	Distribution of building material, potential for outside storage.	No	No	Yes	No	No	No	No	No	Yes	No	Low	No
SA	HOME DEPOT #673, THE	255		TOWN CENTER PARKWAY	Santee	92071	907.12	5211	Home maintenance and gardening supplies retailer. Outside area for gardening supplies storage. Catch basins in parking lot. Compactor and truck loading bay at rear of property.	No	No	No	No	Yes	No	Yes	No	Yes	No	Low	Yes
SA	619 HYDROPONICS	7949		MISSION GORGE ROAD	Santee	92071	907.12	5261	Gardening consulting and equipment sales. Office and storage in building. No outdoor exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Walgreens #09817	9305		MISSION GORGE ROAD	Santee	92071	907.13	5399	Drive-through pharmacy and general store. No outdoor exposures observed. Swales and filtration installed at facility.	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	Walgreens #11406	10512		MISSION GORGE ROAD	Santee	92071	907.12	5399	Drive-through pharmacy and general store. No outdoor exposures observed. Filtration system installed at facility.	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	7-Eleven 19006D	9111		MISSION GORGE ROAD	Santee	92071	907.12	5411	Convenience store and gas station in shared commercial facility.	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	7-Eleven 20611	9805		PROSPECT AVENUE	Santee	92071	907.13	5411	Convenience store in shared commercial facility.	No	Yes	No	No	Yes	No	No	No	Yes	No	Medium	No
SA	7-Eleven-2121-13661C	9251		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5411	Convenience store and gas station in shared commercial facility.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	GTM Discount General Store	8967	A & B	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5411	General store including food, customer parking and loading dock.	No	Yes	No	No	Yes	No	No	No	No	No	Medium	Yes
SA	7-Eleven 2121-20321D	9750		CUYAMACA STREET	Santee	92071	907.12	5411	Convenience store and gas station in shared commercial facility.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	Yes
SA	Albertsons #6727	9870		MAGNOLIA AVENUE	Santee	92071	907.12	5411	Grocery store in shared commercial facility, loading docks, clarifier.	No	Yes	No	No	Yes	No	No	No	No	No	Medium	Yes
SA	FOOD 4 LESS #349	9430		CUYAMACA STREET	Santee	92071	907.12	5411	Grocery store in shared commercial facility, loading docks.	No	Yes	No	No	Yes	No	No	No	No	No	Medium	Yes
SA	Oaks Market and Deli/Raini EH Enterprises, Inc	9266		CARLTON OAKS	Santee	92071	907.12	5411	Small convenience store with delicatessan. Grease trap, no outdoor exposures.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	Yes
SA	Santee Market	11007		WOODSIDE AVENUE	Santee	92071	907.12	5411	Convenience store and customer parking. Storm drain located at front of facility.	No	Yes	No	No	Yes	No	No	No	Yes	No	Medium	Yes
SA	Target Stores T-1485	9846		MISSION GORGE ROAD	Santee	92071	907.12	5411	General store including food, and garden supplies. Restaurant, grease trap, loading/unloading area. No outdoor storage, garden area drains to sanitary sewer.	No	Yes	No	No	Yes	No	No	No	Yes	No	Medium	Yes
SA	Vons #1897	9643		MISSION GORGE ROAD	Santee	92071	907.12	5411	Grocery store located in shopping center. Grease trap and rendering drum, loading dock with sump at base. Catch basins located in driveway at rear of building as well as in customer parking area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Wal-Mart Stores #1917	170		TOWN CENTER PARKWAY	Santee	92071	907.12	5411	General store including food. McDonald's restaurant inside store, grease trap, rendering bin stored indoors. Car repair facility, all work and storage indoors. Trash for store and restaurant disposed of in compactor fed through portal in building. Gravel area at rear of facility used for temporary storage during holidays. Catch basins in parking lot and around facility.	No	Yes	No	No	Yes	No	No	No	Yes	No	Medium	Yes
SA	SPROUTS	9361		MISSION GORGE ROAD	Santee	92071	907.13	5411	Grocery store with delicatessan and loading dock at rear. Part of SUSMP project.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Santee Discount Market	11541		WOODSIDE AVENUE	Santee	92071	907.12	5411	General store selling beer, wine, liquor, and groceries. No food service, no outdoor exposures.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	Yes
SA	DAWSON LEASING INC., G M	11220		WOODSIDE AVENUE	Santee	92071	907.12	5511	New car dealers, repair unlikely, potential for car cleaning.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	SILVER STAR ENTERPRISES INC	8634		SIESTA ROAD	Santee	92071	907.13	5511	Motor vehicle dealer, potential for repair and car cleaning.	No	Yes	Yes	No	No	No	No	Yes	Yes	No	Low	No
SA	Victory Auto Supply	10439	E	PROSPECT AVENUE	Santee	92071	907.13	5511	Automotive supply & delivery store, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	Most Truck Sales	8017		MISSION GORGE ROAD	Santee	92071	907.12	5511	Truck Sales. Trucks and other vehicles stored on gravel lot. Only electrical, no mechanical work is done onsite. Vehicle batteries stored under cover.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	VIP Auto Sales	9207		MISSION GORGE ROAD	Santee	92071	907.12	5521	Used car Dealers. Car repair conducted under cover. Potential for car washing and outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	Yes
SA	BONDS AUTOMOTIVE SALES	11420		WOODSIDE AVENUE	Santee	92071	907.12	5521	Automotive sales, potential for repair and car cleaning.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No

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										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	Tornell Motors	10554		PROSPECT AVENUE	Santee	92071	907.13	5521	Used car dealers, potential for car washing and outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No
SA	DUNCAN RACING/DANNYS MACHINE	10734		KENNEY STREET	Santee	92071	907.13	5531	Auto parts and accessory store for offroad motorcycles. No outdoor storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	FIBER-TECH AUTO PARTS INC	10809		PROSPECT AVENUE	Santee	92071	907.13	5531	Auto parts and accessory store, potential for offsite storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	FIBER-TECH ENGINEERING INC	10735		PROSPECT AVENUE	Santee	92071	907.13	5531	Auto and home supply stores, potential for outside storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	HOUSE OF BUGGIES	10308	D	MISSION GORGE ROAD	Santee	92071	907.12	5531	Retail and service of dune buggies. Potential for outside storage and operations. Area drains to unpaved alley at rear.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Pep Boys Manny Moe & Jack	10041		MISSION GORGE ROAD	Santee	92071	907.12	5531	Auto parts and accessories store. Maintenance conducted in building. No outdoor storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Express Tire	9535		MISSION GORGE ROAD	Santee	92071	907.12	5531	Retail tire facility, all work is done indoors. Containment for used oil and coolant is stored indoors. Water used for testing tires disposed of to sanitary sewer.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	AUTO CORRAL	11440		WOODSIDE AVENUE	Santee	92071	907.12	5541	Gasoline station.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	CIRCLE K/76 #2702955/KAYO Oil CK	10219		MAST BOULEVARD	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Mobil Oil Corp	9750		MAGNOLIA AVENUE	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Speedee Mart	8011	A	MISSION GORGE ROAD	Santee	92071	907.12	5541	Convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	BP West Coast Prod. DBA Arco	9009		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Qwik Korner	9035		MISSION GORGE ROAD	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Dion And Sons, Inc.	11427		WOODSIDE AVENUE	Santee	92071	907.12	5541	Gasoline station with no convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	BP West Coast Prod. DBA Arco #9567	9811		MISSION GORGE ROAD	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	ROBS R.V. APPLIANCE REPAIR	11366		WOODSIDE AVENUE	Santee	92071	907.12	5561	Recreational vehicle dealers and repair, potential for outside storage and operations.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	RV Discount Center - Santee	8837		MAGNOLIA AVENUE	Santee	92071	907.12	5561	Recreational trailer sales, potential for outside storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Medium	No
SA	DARKSIDE CUSTOMS	11420		WOODSIDE AVENUE	Santee	92071	907.12	5571	Motorcycle dealership, potential for outside storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	S & H ALL DAY CYCLES	9925		PROSPECT AVENUE	Santee	92071	907.13	5571	Sales & service of motorcycle accessories and parts. Potential for outside storage and operations.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	S & H ALLDAY HARLEY PARTS &SVC	9925	A	PROSPECT AVENUE	Santee	92071	907.13	5571	Sales & service of motorcycles. Potential for outside storage and operations.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	SANTEE MOTORCYCLE SUPPLY	9805	E	PROSPECT AVENUE	Santee	92071	907.13	5571	Sales & service of motorcycles. No outdoor operations, potential for outdoor storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Medium	No
SA	Blue Deuce Cycles	10739		WOODSIDE AVENUE	Santee	92071	907.12	5571	Sales motorcycles. Potential for outside storage and operations.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	Buggy World	10350		MISSION GORGE ROAD	Santee	92071	907.12	5599	Dune buggy parts, sales and service. Potential for outside operations and storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Medium	No
SA	R T S ENTERPRISES	10965	U & V &	HARTLEY ROAD	Santee	92071	907.12	5599	Automotive dealers, potential for outside storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	Royalty Wood	9437	A	Wheatlands	Santee	92071	907.12	2511	Cabinet shop, potential for outdoor storage and operations.	No	Yes	No	No	No	No	No	No	Yes	No	Medium	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
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SA	Cotijas	9121		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored at rear, grease trap. No outside eating area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	DIY Yogurt	9292	D	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Yogurt parlor in shared commercial complex, no outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Eccentric International Chefs	8925		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Bakery & delicatessan, no outdoor eating or rendering bin, grease trap installed.	No	No	No	No	No	No	No	No	No	No	Medium	Yes
SA	GIANT NEW YORK PIZZA	8933		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Fast food restaurant, grease trap, rendering bin under cover. No outdoor eating. Spill mats not used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Hilbertos Mexican Food	9805	F	PROSPECT AVENUE	Santee	92071	907.13	5812	Fast food restaurant, grease trap. Rendering bin outside. No outdoor eating. Spill mats not used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	JACK IN THE BOX #20	9337		MISSION GORGE ROAD	Santee	92071	907.13	5812	Fast food restaurant, grease trap. Rendering bin outside. No outdoor eating. Spill mats not used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	MARIETAS #4	8915		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Full service restaurant, grease trap. Rendering bin outside. No outdoor eating. Spill mats changed by contractor.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	MARYS DONUTS	9031		MISSION GORGE ROAD	Santee	92071	907.12	5812	Donut sales & restaurant. Deck used for outside consumption. Grease trap, rendering bin stored inside. Spill mats washed either in mop sink (interior mats) or car wash (exterior mats).	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Estradas	8528	107	MAGNOLIA AVENUE	Santee	92071	907.13	5812	Full service restaurant, grease trap. Rendering bin outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Burger King	9714		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast food restaurant and drive through in commercial complex, rendering bin and trash area under roofed area, grease trap. No spill mats. Outdoor eating area.	No	No	No	No	No	No	No	No	No	No	Medium	Yes
SA	CARLS JUNIOR #385	10009		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast food restaurant and drive through in commercial complex, storm drains located in drive through and parking area. Rendering bin outside. Grease trap. No spill mats. Outdoor eating area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Casa Nueva Mexican Restaurant	10757		WOODSIDE AVENUE	Santee	92071	907.12	5812	Full service restaurant, no outdoor eating areas. Grease trap. Rendering bin is outside. Spill mats used and cleaned indoors.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Cohen's Knishes	9730	A	CUYAMACA STREET	Santee	92071	907.12	5812	Contract kitchen facilities, no outdoor exposures (i.e., rendering bin).	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	COUNTRY TIME FOOD MARKET	9613		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant and market, no food preparation onsite.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	DAIRY QUEEN	70	A	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant in shared commercial complex, no food preparation onsite. No rendering bin or grease trap, no outdoor exposures.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	Daphne's Greek Café	9828	B	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats not used, rendering bin stored inside. Grease trap. Outdoor dining area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes

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SA	DEL TACO #109	9822		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats not used, rendering bin stored outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	DENNYS RESTAURANT	140		TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats used, rendering bin stored outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Dominos	10251	A	MAST BOULEVARD	Santee	92071	907.12	5812	Pizza restaurant in shared commercial complex, no outdoor dining, rendering bin or grease trap.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Don Lucio's Taco Shop	9740	D	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats not used, rendering bin stored outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	EINSTEIN BROS BAGELS #3325	9872		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant and bakery. Grease trap. No rendering bin or outside dining. Spill mats not used.	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	El Ranchito Taco Shop	9225	21	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Full service restaurant, no spill mats used. Grease trap. Rendering bin outside.	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Medium	Yes
SA	Emma's Mexican Food	8781	L	CUYAMACA STREET	Santee	92071	907.12	5812	Full service restaurant. Grease trap. Rendering bin outside.	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Medium	Yes
SA	Estradas Mexican Food	9292	B	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats used, rendering bin stored outside. Grease trap.	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	GIANT PIZZA KING #10	9614		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats not used, rendering bin stored outside. Grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	GO GET YOGURT	9802	1	MAGNOLIA AVENUE	Santee	92071	907.12	5812	Yogurt shop. No outdoor exposures. No spill mats, no grease trap, no food preparation onsite.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	GOLDEN SPOON FROZEN YOGOURT	9640	C	MISSION GORGE ROAD	Santee	92071	907.12	5812	Frozen yogurt sales. Spill mats are used, but cleaned by offsite service. No grease trap, no rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Grindz Coffee Co.	9608		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Full service restaurant, spill mats used. Grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	HI-C-ERA	11541	D	WOODSIDE AVENUE	Santee	92071	907.12	5812	Bar, no food preparation, no outdoor consumption.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	HOMETOWN BUFFET #720	275		TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Full service restaurant, no spill mats used. Grease trap. Rendering bin outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	HONEY DONUTS	10718		WOODSIDE AVENUE	Santee	92071	907.12	5812	Donut & muffin sales, no rendering bin. Grease trap, no outdoor dining	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	INTERNATIONAL HOUSE OF PANCAKES	9708		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats used, rendering bin stored outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	JACK IN THE BOX #3007	10330		MAST BOULEVARD	Santee	92071	907.12	5812	Fast food restaurant in commercial complex, grease trap, rendering bin outside. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	JACK IN THE BOX #3056	8500		MAGNOLIA AVENUE	Santee	92071	907.13	5812	Fast food restaurant in commercial complex, grease trap, rendering bin inside. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Jamba Juice Company #517	9828		MISSION GORGE ROAD	Santee	92071	907.12	5812	Vendor of fresh juice smoothies and sandwiches . Food prepared offsite, no rendering bin or grease trap. No outdoor dining. Spill mats used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	JIMMYS FAMILY RESTAURANT	9635		MISSION GORGE ROAD	Santee	92071	907.12	5812	Full service restaurant in commercial complex. Rendering bin outside. Spill mats used. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	KFC CORPORATION	8890		CUYAMACA STREET	Santee	92071	907.12	5812	Fast food restaurant, no spill mats used. Grease trap, rendering bin kept in contained area. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	LITTLE CAESER'S PIZZA	9720		MISSION GORGE ROAD	Santee	92071	907.12	5812	Take out pizza restaurant, no outdoor dining. Grease trap, no rendering bin, no spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	LOS NACHOS TACO SHOP	9740	C	CUYAMACA STREET	Santee	92071	907.12	5812	Restaurant in commercial complex, grease trap, no outdoor dining. Rendering bin stored outside. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	LUCKY CHINESE FAST FOOD	9740	B	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial complex, grease trap, no outdoor dining. Rendering bin stored outside. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MCDONALDS #2441	8876		CUYAMACA STREET	Santee	92071	907.12	5812	Fast food restaurant, grease trap, used oil stored indoors. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MCDONALD'S #29484	170		TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Fast food restaurant within Walmart, no outdoor exposures.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MICHAELS GRILL	9621	5	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial complex, grease trap. Rendering bin stored outside. Spill mats used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MIMI'S CAFÉ #86	9812		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored indoors, grease trap, spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MISSION GORGE MARKET	7757		MISSION GORGE ROAD	Santee	92071	907.12	5812	Convenience store hosting Subway sandwich counter. No rendering bin, no grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Oggi's Pizza & Brewing Co.	9828		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored outdoors, grease trap, spill mats used. Outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	OISHII JAPANESE-THAI RESTAURANT	10251		MAST BOULEVARD	Santee	92071	907.12	5812	Restaurant, rendering bin stored outdoors, grease trap, no spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	OLIVE GARDEN	9800		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored outdoors, grease trap, no spill mats used. No outdoor dining. Dumpster area connected to grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	OMELETTE FACTORY, THE	7941		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored outdoors, grease trap, spill mats used. No outdoor dining, catch basin at rear of restaurant.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	PANDA COUNTRY RESTAURANT	9621	104	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial facility, rendering bin stored under cover, grease trap, no spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	PANDA EXPRESS #739	9862		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial facility, rendering bin stored outdoors, grease trap, no spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	PAPA JOHN'S PIZZA #2255	9490		CUYAMACA STREET	Santee	92071	907.12	5812	Take out pizza restaurant, no outdoor dining. Grease trap, no rendering bin, spill mats, no outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	PINNACLE PEAK STEAK HOUSE	7927		MISSION GORGE ROAD	Santee	92071	907.12	5812	Full service restaurant, no outdoor dining. Grease trap, spill mats, no rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Pizza Hut / Wing Street	9420	100	CUYAMACA STREET	Santee	92071	907.12	5812	Full service restaurant and take out in commercial facility. No outdoor dining. No rendering bin and spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes

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Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
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SA	QUIZNO'S CLASSIC SUBS	9862	3F	MISSION GORGE ROAD	Santee	92071	907.12	5812	Grilled sandwich restaurant in commercial complex. Grease trap, no rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Ranch House Restaurant	11510	#F	WOODSIDE AVENUE	Santee	92071	907.12	5812	Full service restaurant with outdoor rendering bin and grease trap. No outdoor storage.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	ROUND TABLE PIZZA	9824		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Full service restaurant with grease trap, no rendering bin or spill mats, no outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	SANTEE DONUTS	9740	J	CUYAMACA STREET	Santee	92071	907.12	5812	Food preparation and service in commercial complex. No rendering bin or spill mats. Grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Smoothie King	9802	#2	MAGNOLIA AVENUE	Santee	92071	907.12	5812	Selling smoothies, no rendering bin, no grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	SORIANA'S MEXICAN FOOD	9470	#130	CUYAMACA STREET	Santee	92071	907.12	5812	Restaurant in commercial facility, rendering bin stored outdoors, grease trap, spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Starbucks Coffee #5912	9802		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Coffee shop in commercial complex, no food preparation onsite, grease trap. Outdoor dining area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Starbucks Coffee #6636	9868	B	MISSION GORGE ROAD	Santee	92071	907.12	5812	Coffee shop in commercial complex, no food preparation onsite, spill mats in service area. Outdoor dining area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Subway Sandwiches	7757		MISSION GORGE ROAD	Santee	92071	907.12	5812	Subway shop operating in Mission Gorge Market. No outdoor dining, spill mats, rendering bin or grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Subway Sandwiches	9890		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Sandwich shop in commercial facility, outside dining, grease trap. No rendering bin, no spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Subway Sandwiches	50	D	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Sandwich shop in commercial facility, no grease trap or rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	TACO BELL #9417	9825		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast foot restaurant and drive through. Uses spill mats and grease trap. Rendering bin outside. No outdoor eating area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	TASTY DONUTS	9802	3	MAGNOLIA AVENUE	Santee	92071	907.12	5812	Donut shop, grease trap, but no rendering bin. No outside dining. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	The Sandwich Bags	10769	108	WOODSIDE AVENUE	Santee	92071	907.12	5812	Sandwich shop (with delivery service) in commercial facility, spill mats, grease trap. No rendering bin, no outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	Wendy's	9655		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast food restaurant. Uses spill mats and grease trap. Used oil stored indoors.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Wienerschnitzel #424	9650		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast food restaurant. Uses spill mats and grease trap. Rendering bin outdoors. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Woodside Deli	10925	B	HARTLEY ROAD	Santee	92071	907.12	5812	Sandwich shop in industrial area. No grease trap, or rendering bin. Spill mats used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	L&L Hawaiian BBQ	9621		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial facility. Spill mats and grease trap. Rendering bin shared, and stored outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Frubble	9628		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant, no rendering bin or spill mats, grease trap installed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	ChiTown Pizza Company	8528		N. Magnolia	Santee	92071	907.13	5812	Restaurant, used oil stored indoors, grease trap.	No	No	No	No	No	No	No	No	No	No	Low	Yes

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Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
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SA	Starbucks Coffee #14489	9325		MISSION GORGE ROAD	Santee	92071	907.12	5812	Coffee shop in commercial complex, no food preparation onsite, grease trap. Outdoor dining area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Cookies By Design	30	B	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Food preparation facility, grease trap. No outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Subway Sandwiches	10538	130	MISSION GORGE ROAD	Santee	92071	907.12	5812	Sandwich shop in commercial facility, no grease trap or rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	WC'S Wagon Wheel	8861		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Restaurant, grease trap, rendering bin stored outside. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Cazadores Mexican Food	9331	111	MISSION GORGE ROAD	Santee	92071	907.13	5812	Restaurant, grease trap, rendering bin stored indoors.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Rubios Fresh Mexican Grill	130		TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant in commercial complex. Rendering bin stored outside, grease trap, outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Filippi'S Pizza Grotto	10767		WOODSIDE AVENUE	Santee	92071	907.12	5812	Restaurant, grease trap, spill mats used, rendering bin outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Friendly Grounds Inc.	9225		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Coffee shop, no rendering bin or grease trap. Outdoor dining.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	Alberto's Mexican Food	9535	A & B	MISSION GORGE ROAD	Santee	92071	907.13	5812	Restaurant with grease trap and outdoor rendering bin. No spill mats.	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Medium	Yes
SA	Fox's Pizza Den	8011		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, grease trap installed, no rendering bin.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	Estrada's Mexican Food	9630		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant, grease trap, used oil stored inside. Spill mats used.	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	High	Yes
SA	Domo Sushi	9625		MISSION GORGE ROAD	Santee	92071	907.13	5812	Restaurant, no spill mats, grease trap installed, rendering bin outside.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	Coffee Corner, The	9608		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Coffee Shop, potential for outside dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	Janet's Café & Deli	9225	20	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant with grease trap and outdoor rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Penguin Yogurt Factory	9621	A	MISSION GORGE ROAD	Santee	92071	907.13	5812	Yogurt shop, no rendering bin or grease trap.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Double Double Fine Burger	9862		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, grease trap, used oil stored inside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Sonic Drive-In	10515		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored under cover, grease trap. Property subject to SUSMP.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Senor Pancho Mexican Grill	10320		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, grease trap, rendering bin stored outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Italia Ristorante	8918		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant - spill mats are used, rendering bin outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Nam Long Restaurants	9828		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Restaurant, grease trap, rendering bin outside. Spill mats not used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Smoking Joe's Intl. BarBQue	205	A	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant in commercial facility, outdoor smoker used to prepare food.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Okawa Steak House And Sushi	9720	A	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant with grease trap. Used oil disposed of offsite.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Yogurt World	9331	110	MISSION GORGE ROAD	Santee	92071	907.13	5812	Yogurt shop, no food preparation onsite, no grease trap or rendering bin. No outdoor exposures	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Taco Loco	8667		FANITA DRIVE	Santee	92071	907.12	5812	Taco shop, grease trap and rendering bin outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	THE RED LOTUS	9888		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Restaurant, rendering bin outside, grease trap, no outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes

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SA	AMY'S FINE BURGER	9862		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, no outdoor storage, spill mat by drinks dispenser, grease trap, rendering bin stored indoors.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Sab-E-Lee	9159		MISSION GORGE ROAD	Santee	92071	907.13	5812	Restauarant, no outdoor dining, no spill mats, grease trap, rendering bin in secondary containment.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	The Coffee Brake	9161		MISSION GORGE ROAD	Santee	92071	907.13	5812	Coffee vendor in booth in parking lot. Spills only potential outside exposure.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Pho Santee	8790	K	CUYAMACA STREET	Santee	92071	907.12	5812	Restaurant in commercial complex, grease trap, no outdoor dining. Rendering bin stored outside. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Iwamoto'S Cafe Con Fusion	235	C	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant, potential for outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	K 39 Taco Shop	235	H	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant, potential for outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	Rancho Viejo	8001		MISSION GORGE ROAD	Santee	92071	907.12	5812	Mexican restaurant, potential for outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	GEORGES SALOON	9179		MISSION GORGE ROAD	Santee	92071	907.12	5813	Bar, no food preparation, no outdoor dining. Spill mats used.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Ye Village Inn	8929		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5813	Bar, no food preparation, no outdoor dining. Spill mats used.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	CHILI'S GRILL & BAR	9804		MISSION GORGE ROAD	Santee	92071	907.12	5813	Restaurant, spill mats used, grease trap, rendering bin outside. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Landre'S Sports Bar & Grill	70	C	TOWN CENTER PARKWAY	Santee	92071	907.12	5813	Sports bar type restaurant, potential for outside rendering bin and dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Via Moto	9331	103	MISSION GORGE ROAD	Santee	92071	907.13	5813	Restaurant with outdoor dining. Potential for outdoor rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Lacey J'S Roadhouse Saloon & Grille	8861		MAGNOLIA AVENUE	Santee	92071	907.12	5813	Sports bar type restaurant, potential for outside rendering bin and dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Lakes Market and Deli	9266		CARLTON OAKS	Santee	92071	907.12	5921	Liquor store, grease trap, no rendering bin, spill mats, or outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Santee Mini Market	8781	I	CUYAMACA STREET	Santee	92071	907.12	5921	Liquor store, no grease trap, no rendering bin, spill mats, or outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Santana Liquor	8959		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5921	Liquor store, no food preparation, no outdoor exposures.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	Fanita Liquor & Market	8663		FANITA DRIVE	Santee	92071	907.12	5921	Liquor store, grease trap, no rendering bin, spill mats, or outdoor dining.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	Belvedere Liquor	10769	101	WOODSIDE AVENUE	Santee	92071	907.12	5921	Liquor store, grease trap, no rendering bin, spill mats, or outdoor dining.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	ANGLERS MARINE	10960		WHEATLANDS	Santee	92071	907.12	5941	Retail boating and fishing and service center. Work conducted indoors, potential for vehicle washing. Catch basin located in yard.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Pacific Sports Warehouse	10746	303	KENNEY STREET	Santee	92071	907.13	5961	Retail boating and fishing and service center. Work conducted indoors, potential for vehicle washing.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	CHEVRON STATION INC #1741	8888		MAGNOLIA AVENUE	Santee	92071	907.12	5989	Gasoline station with convenience store. Dispenser area has overhead canopy.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	CHEVRON KALASHO	9312		MISSION GORGE ROAD	Santee	92071	907.13	5989	Gasoline station with convenience store. Dispenser area has overhead canopy.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	SMOKER'S HEAVEN	9882		MAGNOLIA AVENUE	Santee	92071	907.12	5993	Tobacco stores, unlikely to have outdoor exposures.	No	No	No	No	No	No	No	No	Yes	Yes	Low	Yes

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

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SA	Costco Wholesale #403	101		TOWN CENTER PARKWAY	Santee	92071	907.12	5999	Club warehouse with vehicle maintenance facility, two grease traps, used oil kept indoors, loading dock, gas pumps located under cover.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	EAST COUNTY FEED AND SUPPLY	10845		WOODSIDE AVENUE	Santee	92071	907.12	5999	Animal feed supply, paved facility, all materials stored under cover.	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
SA	Living Water	235	G	TOWN CENTER PARKWAY	Santee	92071	907.12	5999	Retail store, outdoor exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	So Calif Equipment	9925		PROSPECT AVENUE	Santee	92071	907.13	5999	Equipment company, potential for outdoor storage and maintenance.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Padre Dam Santee Lakes	9310		FANITA PARKWAY	Santee	92071	907.12	7033	Campground and recreation facility. Largely unpaved, area drains to lakes which discharge to river under permit.	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High	No
SA	San Diego Flood Busters*	9943		PROSPECT AVENUE	Santee	92071	907.13	7217	Carpet and upholstery cleaning, cleaning water disposed of to sanitary sewer, chemicals stored indoors. Fleet parking.	No	Yes	No	No	No	Yes	No	No	No	No	Low	Yes
SA	CARPET CLEANER (ALAN)*	10233		MISSION GORGE ROAD	Santee	92071	907.12	7217	Home base for carpet cleaner.	No	Yes	No	No	No	Yes	No	No	No	No	Low	No
SA	GENTUE & SONS*	9802		SETTLE ROAD	Santee	92071	907.12	7217	Home base for carpet cleaner.	No	Yes	No	No	No	Yes	No	No	No	No	Low	No
SA	ALL CITIES BEE & PEST CONTROL	10201		BUENA VISTA AVENUE	Santee	92071	907.12	7342	Rat Abatement, exterminate bees, remove honey from structures. Pesticides stored inside building. Fleet parking.	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Low	Yes
SA	J & J FUMIGATION INC	10744	101	ROCKVILL STREET	Santee	92071	907.12	7342	Pest control, chemicals likely stored inside building.	No	Yes	Yes	No	No	Yes	Yes	No	No	No	Low	No
SA	Truly Nolen	8400	M & N	MAGNOLIA AVENUE	Santee	92071	907.13	7342	Pest control. Chemicals stored inside building. Fleet parking.	No	Yes	Yes	No	No	Yes	Yes	No	No	No	Medium	Yes
SA	HANSON MACHINE	10969	B	WHEATLANDS	Santee	92071	907.12	7353	Construction equipment rental, potential for outside storage of equipment, equipment maintenance and cleaning.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	TOYOTALIFT INC	11446		WOODSIDE AVENUE	Santee	92071	907.12	7353	Construction equipment rental, some outside storage of equipment on paved areas.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	Bilcan Inc. DBA El Camino Rentals	8795		CUYAMACA STREET	Santee	92071	907.12	7353	Equipment rental and leasing. Repair under roofed areas. Equipment washwater drains through clarifier through sanitary sewer.	No	Yes	Yes	No	Yes	No	No	No	No	Yes	Medium	Yes
SA	DCXcavation	8614		SIESTA ROAD	Santee	92071	907.13	7353	Equipment leasing and rental, storage of equipment onsite. Equipment repair under cover.	No	Yes	Yes	No	Yes	No	No	No	No	Yes	Medium	Yes
SA	THE MAST BOULEVARDER JUMPS	10342		PARK AVENUE	Santee	92071	907.12	7359	Homebased jump rental, chairs & tables for parties. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	INSTANT SIGNS OF SANTEE	10769	103	WOODSIDE AVENUE	Santee	92071	907.12	7389	Sign services, storage inside building. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	NEW IMAGE EMBROIDERY & SIGNS	10659	B	PROSPECT AVENUE	Santee	92071	907.13	7389	Embroidery & signs, storage inside building. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	INTER VALLEY POOL SUPPLY, INC.	8656		CUYAMACA STREET	Santee	92071	907.13	7389	Swimming pool supplies, potential for outside storage.	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Medium	No
SA	JL Watson Distributing	10250		PROSPECT AVENUE	Santee	92071	907.13	7389	Homebased sales, possible outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Pool Covers Unlimited	8606	E	ARGENT STREET	Santee	92071	907.13	7389	Building used for storage of pool covers. No outdoor exposures.	No	No	No	No	Yes	Yes	No	No	No	No	Low	Yes

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Santee Stormwater Industrial/Commercial Inventory, September 2011

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SA	Petersen's Pool & Spa Service*	8674		WAHL STREET	Santee	92071	907.12	7389	Homebase pool and spa maintenance service. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Paradise Pools Service And Repair*	10906		GREENCASTLE STREET	Santee	92071	907.12	7389	Homebase pool and spa maintenance service. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Enterprise Rent-A-Car	10330		MISSION GORGE ROAD	Santee	92071	907.12	7514	Car rental facility, storage of fleet on paved area. Car washing conducted onsite.	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Medium	Yes
SA	C & H AUTO BODY	10996		WOODSIDE AVENUE	Santee	92071	907.12	7532	Auto Body repair & painting. Larger vehicles worked on outside. Vehicle washing.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	DALTON & SON PAINT & BODY	10439		PROSPECT AVENUE	Santee	92071	907.13	7532	Auto body repair and painting. All work conducted indoors. Painting done in booth.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	M & J Restoration	10223		MAST BOULEVARD	Santee	92071	907.12	7532	Custom paint and body work on vintage cars. All work done indoors. Outside washing of vehicles occasionally occurs.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MADRIDS AUTO BODY REPAIRS	10559		PROSPECT AVENUE	Santee	92071	907.13	7532	Top, Body, and Upholstery Repair Shops and Paint Shops, potential for outside exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	METRIX AUTOBODY	10438	C	MISSION GORGE ROAD	Santee	92071	907.12	7532	Automotive collision repair, some work conducted under cover. Potential for outside exposures (repairs, detailing etc).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	PHILIP THEARLES AUTOWERKS	8809		MISSION GORGE ROAD	Santee	92071	907.12	7532	Auto body repair, all work conducted indoors. Hazardous materials stored under cover and in secondary containment. Subject to SUSMP.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Russos Auto Body Inc	10410		MISSION GORGE ROAD	Santee	92071	907.12	7532	Auto body and paint, no mechanical. All work conducted indoors, paintbooths onsite.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	SAN DIEGO GLASS & PAINT	8828		CUYAMACA STREET	Santee	92071	907.12	7532	Top, body, and upholstery repair shops and paint shops. Potential for outside operations and storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Lloyd's Collision Care	9936		BUENA VISTA AVENUE	Santee	92071	907.12	7532	Top, body repair and paint shop. All work conducted indoors, hazardous materials stored indoors. Potential for spills from vehicles.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	MAST BOULEVARDercraft Inc.	11433		WOODSIDE AVENUE	Santee	92071	907.12	7532	Top, body, and upholstery repair and paint shop. Potential for outside exposures (operations and storage).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	A1 Customs LLC	11491		WOODSIDE AVENUE	Santee	92071	907.12	7532	Auto repair and body work. Potential for outside exposures (storage or operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Medium	No
SA	Rodder's Choice	9217		SECURITY WAY	Santee	92071	907.12	7532	Automobile restoration, potential for outside exposures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Collision Repair Specialists	10806		PROSPECT AVENUE	Santee	92071	907.13	7532	Automotive paint and body repair conducted indoors. Car detailing water disposed of to sewer.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	San Diego Classic Restoration	9440	#14	Wheatlands	Santee	92071	907.12	7532	Auto restoration, work conducted indoors, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	High	No
SA	COYOTE SERVICES LLC	8745		MAGNOLIA AVENUE	Santee	92071	907.12	7532	Repair vehicle dents, paint, dry and clean. Potential for outdoor exposures (storage, operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Logan Detailing*	9670	1	MACCOOL LANE	Santee	92071	907.13	7542	Homebase for mobile auto detailer.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	R.E.S. Enterprises	10965	U	HARTLEY ROAD	Santee	92071	907.12	7532	Autobody work, all work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Ozzie'S Kustom Works	10658	B	PROSPECT AVENUE	Santee	92071	907.13	7532	Autobody work, all work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No

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SA	Star A Autobody & Paint	10737		WOODSIDE AVENUE	Santee	92071	907.12	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Deep'S Garage	10911	E	Wheatlands	Santee	92071	907.12	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Bumper Doc	8711	100	MAGNOLIA AVENUE	Santee	92071	907.12	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	John's Collision Center	10806	3	PROSPECT AVENUE	Santee	92071	907.13	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Hard Core Muscle Motorsports	11421	D	WOODSIDE AVENUE	Santee	92071	907.13	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Express Automotive Enterprises	8711	300	MAGNOLIA AVENUE	Santee	92071	907.12	7533	Automotive aftermarket parts and exhaust systems, all work conducted indoors. Property subject to SUSMP.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MAST AVENUETEST ONLY STATION	8931		MAGNOLIA AVENUE	Santee	92071	907.12	7533	Automotive exhaust system repair shops, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Absolute Exhaust Coatings	10020	B14	PROSPECT AVENUE	Santee	92071	907.13	7533	Automotive exhaust system repair, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Jack Randalls Automotive	10845	F	Wheatlands	Santee	92071	907.12	7536	Automotive glass replacement shop, no outdoor exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	D R W TRANSMISSION SPECIALTIES	10728	B	KENNEY STREET	Santee	92071	907.13	7537	Automotive transmission repair, potential for outdoor exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	East County Transmission	10227	B	PROSPECT AVENUE	Santee	92071	907.13	7537	Automotive transmission repair, all work conducted indoors, outdoor storage under cover.	No	Yes	No	No	No	No	No	No	Yes	No	Low	Yes
SA	PERFORMANCE TRANSMISSION	8501		ABLETTE ROAD	Santee	92071	907.13	7537	Transmission installation and repair, potential for storage of vehicles outdoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Sparkys Transmissions	10410		MISSION GORGE ROAD	Santee	92071	907.12	7537	Automotive transmission repair, all work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Factory Transmissions	10806		PROSPECT AVENUE	Santee	92071	907.13	7537	Removing and installing transmissions, all work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	A&I Services	8665	A	ARGENT STREET	Santee	92071	907.13	7538	Carpet cleaning supplies and equipment rental.. All work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	High	No
SA	Acuhon	8665	B1	MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair all work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	AUSTIN HEALEY MOTOR WORKS	9440		WHEATLANDS	Santee	92071	907.12	7538	General automotive repair shop, potential for outdoor exposures (storage or operations)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	AUTO PERFECT	9937	11	PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	AUTOFAB	10996		WOODSIDE AVENUE	Santee	92071	907.12	7538	General automotive repair shop, potential for outdoor exposures (storage or operations)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	SAN DIEGO RV CENTER	8629		TUMBLEWEED	Santee	92071	907.13	7538	Recreational and trailer repair, potential for outdoor exposures (storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Bright Tech Auto Service	10438	B	MISSION GORGE ROAD	Santee	92071	907.12	7538	Owner operated automotive repair, outdoor operations observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes

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SA	CARTER COLLISION SERVICE	8835		CUYAMACA STREET	Santee	92071	907.12	7538	General automotive repair, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	COOL MAST BOULEVARDER	8501	B	ABLETTE ROAD	Santee	92071	907.13	7538	Automotive repair and maintenance. All work conducted indoors, some outdoor storage observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	COUNTY FLEET SERVICE	10053		PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair shop, potential for outdoor exposures (storage or operations)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	D & R AUTOMOTIVE	10517		PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair shop, all work conducted indoors or under cover. Stormwater drains through sump and pump which is regularly cleaned.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	DYNO SHOP, THE	10042		PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair shop, only those vehicles too large to enter maintenance bays are maintained outside. Drip pans and other BMPs deployed for outside work.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	HI-TECH CUSTOMS	9962	G	PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair shop, potential for outdoor expsoures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Horsman Automotive	8891		RAILROAD AVENUE	Santee	92071	907.12	7538	General automotive repair, all work conducted indoors, vehicles stored outdoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Import Auto Service	7945	111	MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair shop, all work conducted indoors. Storm drain in parking lot.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	J G AUTO REPAIR	10468		MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MEINEKE 1711	9551	B	MISSION GORGE ROAD	Santee	92071	907.13	7538	General automotive repair, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	MISSION GORGE AUTOMOTIVE	10332		MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair, no outdoor exposures observed..	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MUELLERS TRUCK & EQUIP SERV.	8500		ABLETTE ROAD	Santee	92071	907.13	7538	Repair trucks & equipment, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Phantastic Auto Repair	10223		MAST BOULEVARD	Santee	92071	907.12	7538	General automotive repair shop, outdoor storage of vehicles. Area does not drain to the storm drain system.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	RICKS MACHINE SHOP	11448		WOODSIDE AVENUE	Santee	92071	907.12	7538	General automotive repair facility, outside storage of parts under plastic sheeting. Wash area under cover and bermed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	High	Yes
SA	RUSH MOTORSPORT	10147		MISSION GORGE ROAD	Santee	92071	907.12	7538	Automotive service, repair conducted indoors. Vehicles stored outside, BMPs used in vehicle washing area. Water drains to sump that is pumped.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	SOCAL PAINT WORKS	10009		PROSPECT AVENUE	Santee	92071	907.13	7538	Automotive repair and restoration, potential for outside exposures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Sparks Computerized Car Care	10735		WOODSIDE AVENUE	Santee	92071	907.12	7538	General automotive repair shops, work conducted indoors, outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	TERRA TRAILERS & TRUCK SALES	11424		WOODSIDE AVENUE	Santee	92071	907.12	7538	Recreational vehicle repair and trailer sales. Potential for outdoor exposures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	THUNDERWORKS	10729	C	WHEATLANDS	Santee	92071	907.12	7538	General automotive repair shops, work conducted indoors, potential for outdoor exposures (storage and vehicle detailing).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	VGCC Management dba Volkers	7953		MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair, all work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Mikes Auto Body	10737		WOODSIDE AVENUE	Santee	92071	907.12	7538	Auto body paint & repair, maintenance. Potential for outdoor exposures (operations and storage).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Four Wheel Direct	10731		WOODSIDE AVENUE	Santee	92071	907.12	7538	General automotive repair shop, all work conducted indoors. Tires stored outside temporarily prior to pick-up.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Ban's Auto Repair II	8625		CUYAMACA STREET	Santee	92071	907.13	7538	General automotive repair, all work conducted indoors, outside storage observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Toyota Certified Of Santee	8891		FANITA PARKWAY	Santee	92071	907.12	7538	Automotive dealer and service center. Operations and storage conducted indoors. Property subject to SUSMP.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	INTERNATIONAL AUTOREPAIR	10031	D	PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair, all work conducted indoors, outside storage observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Mayhem Motorcycle Shop	8733	113	MAGNOLIA AVENUE	Santee	92071	907.12	7538	Motorcycle sales and service, all work conducted indoors, no outdoor exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Alba Racing	10806	1	PROSPECT AVENUE	Santee	92071	907.13	7538	Motorcycle sales, potential for outside exposures (storage / operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Lemon Grove Cycle Supply	10704	B	PROSPECT AVENUE	Santee	92071	907.13	7538	Motorcyle sales and service, potential for outdoor exposures (storage / operations)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Advanced Automotive Center	7945	108	MISSION GORGE ROAD	Santee	92071	907.12	7539	General automotive repair, all work conducted indoors, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	DISCOUNT TIRE CO OF SAN DIEGO	9750		MISSION GORGE ROAD	Santee	92071	907.12	7539	Automotive parts and accessory store. All work conducted indoors, no outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	EAST COUNTY ALIGNMENT	10741		WOODSIDE AVENUE	Santee	92071	907.12	7539	Automotive mechnical and electronic repair shop. Potential for outdoor exposures (storage / operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	HP WIRING	7341		PARK VIEW COURT	Santee	92071	907.12	7539	Service electrical wiring of offroad vehicles. No outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	ROGER DANIEL'S ALIGNMENT & BRAKE	8517	F	ABLETTE ROAD	Santee	92071	907.13	7539	Automotive alignment & brake repair shop, most work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	SANTEE FOREIGN CAR REPAIR	7969		MISSION GORGE ROAD	Santee	92071	907.12	7539	Other automotive mechanical & electronic repair. All work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	ONE STOP AUTO TECH	9605		CARLTON HILLS BOULEVARD	Santee	92071	907.12	7539	Automotive repair shop. All work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	AUTO SPA DETAILING*	9538		CARLTON HILLS BOULEVARD	Santee	92071	907.12	7542	Homebase for mobile auto detailer.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	K-KAR CENTER	8931		MAGNOLIA AVENUE	Santee	92071	907.12	7542	Car wash and general automotive repair. Potential for runoff from washing operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MCLEAN DOOR & TRIM	9260	E	ISAAC STREET	Santee	92071	907.12	7542	Window, door & trim shop & installation. Potential for outdoor exposures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	MISSION GORGE CARWASH	7751		MISSION GORGE ROAD	Santee	92071	907.12	7542	Full service car wash, water discharged to 3 chamber clarifier system.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	SANTEE CAR WASH	8868		FANITA DRIVE	Santee	92071	907.12	7542	Coin operated self serve car wash, all washing conducted under cover in bermed area.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Sonic Car Wash	9015		MISSION GORGE ROAD	Santee	92071	907.12	7542	Car wash under cover. Finishing conducted outside. Property subject to SUSMP.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	East County Lube Center	7945	161	MISSION GORGE ROAD	Santee	92071	907.12	7549	Automotive repair and maintenance. All work conducted indoors, no outside storage.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	LUHRS CUSTOM UPHOLSTERY, MARK	10557		PROSPECT AVENUE	Santee	92071	907.13	7549	Automotive upholsterer. Potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	SANTEE SMOG TEST ONLY	10529		MISSION GORGE ROAD	Santee	92071	907.12	7549	Smog test only for automobiles, conducted in service bays.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Unlimited Smog - Test Only	10659	D	PROSPECT AVENUE	Santee	92071	907.13	7549	Smog test only for automobiles, conducted in service bays.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Executives Garage Inc	10438	D	MISSION GORGE ROAD	Santee	92071	907.12	7549	Auotmotive repair and maintenance. Potential for outside exposures (storage / operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	HOME CARE BIOMEDICAL SERVICES	8406	C	MAGNOLIA AVENUE	Santee	92071	907.13	7629	Medical equipment repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Weekend Appliance Repair	10424		SECOND AVENUE	Santee	92071	907.12	7629	Base for in -home appliance repair, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	METAL MAGIC OF SAN DIEGO	7932		POPLIN DRIVE	Santee	92071	907.12	7629	Electrical and electronic repair shops, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Mr. Fix-It Appliance Repair	8614	H	ARGENT STREET	Santee	92071	907.13	7629	Appliance repair - household appliances, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	SANTEE WELDING	9937	4	PROSPECT AVENUE	Santee	92071	907.13	7692	Welding repair, all work conducted indoors, no outdoor storage observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Adona Grinding a Divisions of	11478		WOODSIDE AVENUE	Santee	92071	907.12	7699	Repair shop, potential for outdoor storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	BMW MC Service of S.D., Inc.	7945	109	MISSION GORGE ROAD	Santee	92071	907.12	7699	Motorcycle repair, all work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	COMPETITION BOBCAT	9587		MAVIN DRIVE	Santee	92071	907.12	7699	Home base for repair services, no outside exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	COUNTY RV SERVICE CENTER	10229		PROSPECT AVENUE	Santee	92071	907.13	7699	R.V. repair & service, R.V.s stored in gravel-covered area.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	CS MUSIC COMPANY	8606	B	ARGENT STREET	Santee	92071	907.13	7699	Storage & repair of coin operated machines. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	FORM FAB	11478		WOODSIDE AVENUE	Santee	92071	907.12	7699	Other services to buildings & homes, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	L & S PRECISION CUTTER SERVICE	10925	O	WHEATLANDS	Santee	92071	907.12	7699	Tool & cutters sharpening service, outdoor exposures unlikely.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	LA JOLLA BRASS	10911	C	WHEATLANDS	Santee	92071	907.12	7699	Other personal and household goods, all work conducted indoors.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	R H A	11425		WOODSIDE AVENUE	Santee	92071	907.12	7699	Commercial & industrial repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No

Appendix A.4
Santee Stormwater Industrial/Commercial Inventory, September 2011

Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Potential Pollutants									Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
										Potential pollutants that may be generated by the facility.											
Jurisdiction responsible for inspection of facility (Copermittee)	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number or letter, if needed.	Name of street facility is located on	City where facility is located	Zip code where facility is located	Hydrologic sub-area in which facility located (all San Diego River Watershed)	Standard Industrial Classification code of facility determined by US Department of Labor - OSHA.	A narrative description which best reflects the principle products or services provided by the facility.	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Is facility a tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired?	Does the facility those a high threat to water quality?	Has the threat to water quality been confirmed through inspection or other means of verification?
SA	REBEL IRON WORKS	11521		WOODSIDE AVENUE	Santee	92071	907.12	7699	Commercial & industrial repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	Reed Sports Buggies, Greg	9745		AIRPORT VISTA WAY	Santee	92071	907.13	7699	Commercial & industrial repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	TAPERS REPAIRED	9316		LAKE COUNTY DRIVE	Santee	92071	907.12	7699	Homebase for repair of drywall tools.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Tri-City Locksmith	8781	P	CUYAMACA STREET	Santee	92071	907.12	7699	Locksmith, outdoor exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Valley Tractor & Equipment	11478		WOODSIDE AVENUE	Santee	92071	907.12	7699	Sales and services of tractors. Outside storage of vehicles.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	High	Yes
SA	Waynes Harley & Machine Shop	10020	A12	PROSPECT AVENUE	Santee	92071	907.13	7699	Sales and services of equipment. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	West Coast Appliance Co.	10728	B	PROSPECT AVENUE	Santee	92071	907.13	7699	Commercial & industrial machine repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	FUN IN THE SUN POOLS*	10340		SANTANA	Santee	92071	907.12	7389	Home base for swimming pool & spa repair, potential for outdoor storage.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Mueller's Machine Tool rebuilders	10945		MAGNOLIA AVENUE	Santee	92071	907.12	7699	Repair shops for machine tools, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No
SA	P-Wa's General Maintenance Services	9851		Mission Viejo Court	Santee	92071	907.13	7699	Repair shops, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	JR'S Jack Of All Trades	9440		Wheatlands	Santee	92071	907.12	7699	General handyman and basic mechanic service, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Scooterbug Inc.	9260	C	ISAAC STREET	Santee	92071	907.12	7699	Repair & maintenance of mobility equipment, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Full Throttle Powersports	9143		MISSION GORGE ROAD	Santee	92071	907.12	7948	Sale & minor repair of motorcycles, no outdoor exposures observed, storm drain in parking lot.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	Yes
SA	REVOLUTION RACING SHOCKS	9434		ABRAHAM WAY	Santee	92071	907.12	7948	Racing, including track operation, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	William's Racing Developments	10928	A	WHEATLANDS	Santee	92071	907.12	7948	Race car transmission servicing, potential for outside exposures (storage / operations).	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	CARLTON OAKS COUNTRY CLUB	9200		INWOOD	Santee	92071	907.12	7992	Public golf course with restaurant. Storage of fuel in above ground tank.	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	High	Yes
SA	Rock Rental Inc.	10925		Wheatlands	Santee	92071	907.12	7999	Amusement and recreation services, potential for outdoor storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Bryans Racing Enterprises	9260	A	ISAAC STREET	Santee	92071	907.12	3799	Racing vehicle fabrication, no outdoor exposures.	No	No	Yes	No	No	No	No	No	No	No	Low	Yes
SA	Kittyhawk Energy LLC	9484		MISSION PARK PLACE	Santee	92071	907.12	8734	Biofuels facility for electricity generation, storage of woodchips outside..	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Medium	Yes
SA	TAYLOR MADE POOLS*	9723		HUBER COURT	Santee	92071	907.12	8811	Home base for pool maintenance company, potential for outdoor storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	TOWN & COUNTRY CUSTOM POOLS	9926	121	PROSPECT AVENUE	Santee	92071	907.13	8811	Base for pool maintenance company, potential for outdoor storage.	No	Yes	No	No	Yes	No	No	Yes	Yes	No	Low	No
SA	G E LUDWIG POOLS	9944		CARLTON PLACE	Santee	92071	907.12	8811	Home base for pool maintenance company, potential for outdoor storage.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	TINASSY'S K-9 SPLASH-R-CISE INC.	10925	E	HARTLEY ROAD	Santee	92071	907.12	8999	Dog exercise therapy conducted in indoor pools, no outdoor exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes

* Mobile business. It is unlikely that mobile businesses will be discharging pollutants at their home locations, as their work will be conducted at offsite locations. Therefore no pollutant generating potential is shown. However these are inventoried to comply with permit requirements.

APPENDIX B

SUMMARY OF DOCUMENTED COMPLAINTS

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
1	7/6/2010	Municipal	Street sweepings	East end of Mast Boulevard	City staff received a complaint about the disposal of "street sweepings" at the east end of Mast Boulevard. This area is closed to the public and was being used to stage materials for street maintenance. City stormwater staff inspected the location and did not identify any material from street sweeping. However, recommendations were made for BMP implementation and were implemented by Public Works.
2	7/12/2010	Residential	Pet waste	8015 Poplin Drive	Referral from County hotline. Number of issues at property, including keeping three dogs on the property and not cleaning up after them. Addressed within a code compliance case.
3	7/22/2010	Residential	Unknown	San Diego River	Complaint to City website regarding odor in river. City staff investigated after reviewing storm drain plan to assess areas draining to relevant portion of river (largely residential). A few (less than ten) dead fish observed in river east of Walmart Bridge in Mast Park. Traced storm drain back through drainage, opening manholes and assessing potential sources of pollution. No potential source of pollution was observed. Could be naturally-occurring low oxygen conditions in river, although it appeared earlier than usual (typically observed late summer/early fall).
4	8/6/2010	Commercial	Food Waste	130 Town Center Parkway	City staff observed liquid material oozing from trash enclosure. Spoke to manager of food outlet responsible for the material. Material was cleaned up and manager sent in evidence of staff training.
5	8/10/2010	Residential	Sediment	11055 Columbus Street	Complaint about neighbor laying sod on cul-de-sac, watering, cutting and removing it without cleaning up afterwards. Visited site four times until corrected.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
6	8/25/2010	Residential	Vehicle fluids	Magnolia Avenue	Call from Fire Department regarding collision of RV with another vehicle resulting in the release of a small amount of fuel oil, and transmission fluid. Approximately 5 gallons estimated to go into 2 inlet boxes. No indication of reaching further downstream. Public works already on scene cleaning up. Fire dept installed soil berm during initial response. Sand used to soak up liquid. Public works used a vactor truck to powerwash affected drains and reclaim water.
7	8/30/2010	Residential	Water	10518 Princess Jo Ann	Complaint about water flowing down curb and gutter "attracting wasps." Investigated, concluded to be groundwater seeping out of the hillside. Not a stormwater violation.
8	8/31/2010	Municipal	Water	Fire Station 5	City staff observed fire personnel working with pipes on Fanita Parkway and Carlton Oaks. Water was observed to have leaked from pipes. Contacted staff member responsible for Fire Station 5 who explained that it had been a training activity, which due to staffing circumstances could not be done offsite. City stormwater staff explained that this type of discharge was prohibited and that in future similar training should be conducted at an appropriate facility.
9	9/8/2010	Residential	Pet Waste	10643 Ironwood Avenue	Complaint forwarded by public works during channel maintenance. Resident throwing pet waste in channel. Left courtesy notice advising resident of appropriate ways to dispose of pet waste.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
10	9/20/2010	Construction	Sewage	1308 Calabria	Padre Dam notified the City about a sewer overflow at this address during the previous night. The liquid oozed out of a manhole. Padre Dam removed the blockage and cleaned up the area affected by the discharge. The City's dry weather monitoring consultant was working in the area and investigated the area, confirming that the clean-up had been completed. This is described further in the 2010 dry weather monitoring report submitted December 2010. Padre Dam complained that there was construction debris in the manhole which contributed to the blockage. The sewer system had not been accepted by Padre Dam. A notice of violation was issued to the developer, as this had resulted from practices during construction.
11	9/20/2010	Residential	Sediment	11055 Columbus Street	Complaint about sediment tracking from property. Very minor, but left courtesy notice with resident.
12	9/27/2010	Residential	Swimming pool discharge	Medina Drive	Reported discharge of swimming pool water on Medina Drive. Verified that it was a legal discharge.
13	10/6/2010	Residential	Pet Waste	10358 Timber lane Way	Complaint forwarded by public works during routine maintenance. Resident throwing pet waste in concrete drainage ditch. Left courtesy notice advising resident of appropriate ways to dispose of pet waste. Pet waste removed during routine maintenance.
14	10/8/2010	Residential	Swimming pool discharge	9424 Pebble Beach Drive	Complaint about swimming pool discharge. City staff investigated, however the discharge was compliant with the stormwater ordinance.
15	10/14/2010	Residential	Sewage	8526 Atlas Drive	Referral from Padre Dam, which had been called to this address after the blockage of a lateral; it was reported that there was no discharge to the storm drain system. City staff visited location to verify report. No violation observed.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
16	10/14/2010	Commercial	Potable water	Morning View/Ladera Construction site	Complaint from developer regarding discharge of water through brow ditches on the perimeter of their property and entering their offsite detention basin. Source appeared to be from permitted flushing activities from Padre Dam Municipal Water District. Explained to developer that they were obliged to accept and manage this runon. Provided contact information for Padre Dam to discuss issue. Padre Dam tried in future to discharge at alternative locations.
17	10/24/2010	Residential	Construction Material	11031 Larkridge Street	Complaint about pink paint being discharged down gutter from address. Pink chalky material observed on pavement, but not in curb and gutter. Left courtesy notice with resident to remove material. This was done.
18	11/10/2010	Commercial	Undetermined Discharge	8919 Edgemore Drive	Complaint about pool of water in alley at rear of property. Spoke to facility operator at this address. A portion of the water may have originated from rain, but based on washing undergoing at site, plus staining observed in drainage structures on property, it was concluded that residues from the site's activities had been washed off the property. The facility operator was educated on how and why discharges can be prevented from the site.
19	11/10/2010	Residential	Feces	Alley behind 8919 Edgemore	Feces (possibly human) observed in alley during complaint investigation. Removed by public works.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
20	11/20/2011	Commercial	Unknown material	9015 Mission Gorge Road (Sonic Car Wash)	Complaint referred via City Manager's office. It was alleged that a black material was being deposited on the ground at the rear of the property. Contacted County Department of Environmental Health (DEH) as it appeared to be illegal deposit of waste. City also inspected facility for stormwater concerns and verified that a manifest for the emptying of the sludge tank was available (last done 2/23/09). It was not obvious that material had been deposited (material seemed to have been dug into the soil), but DEH collected samples and analyzed samples to assess if they could be classified as hazardous waste. It was concluded that the material was not hazardous.
21	11/30/2010	Residential	Sediment	10054 Waynecrest Lane	Complaint about activities at this address. Laying irrigation pipes, no stormwater violation observed.
22	11/30/2010	Residential	Over-irrigation	5580 Dracena Street	Complaint from Lennar regarding homeowner over-irrigating their yard. Referred to Padre Dam Municipal Water District to address under their drought ordinance.
23	12/8/2010	Commercial	Grey Water	8931 Carlton Hills Boulevard	Complaint about Giant New York Pizza dumping kitchen grease in alley during early morning. Visited location to investigate and discussed with facility operator. No obvious sign of discharge, but cleaning manifest not available for grease trap. Referred to fats, oils and grease (FOG) inspector for Padre Dam.
24	12/13/2010	Commercial	Automotive Detailing (Mobile)	8861 Magnolia Avenue	Car washing observed at El Cajon Ford without BMPs. Spoke to manager and provided educational information on car washing. Call from corporate office to follow-up. Referred to City of El Cajon, as other facilities located there.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
25	12/13/2010	Municipal	Unspecified	9534 Via Zapador	Received inquiry regarding BMP implementation at the public works facility. Followed up with inspection of facility. Although BMPs were being implemented at the facility, some additional improvements (covering some items stored outside and removal of litter) were made. City stormwater staff followed up periodically over the next few months to monitor the facility.
26	12/14/2010	Commercial	Automotive Detailing (Mobile)	10731 Woodside Avenue	Observed car washing behind Mike's autobody. Provided educational information on car washing and advised facility operator that this needed to be immediately stopped and cleaned up. This was done.
27	1/3/2011	Residential	Fire residue	8564 Clifford Heights Road	Referral from Fire Department, which had responded to a fire here. Fire Department tried to minimize discharge to storm drain. Vactor truck mobilized to clean storm drains. Gravel bags placed on perimeter of property prior to rain (rained on 1/3/11). City staff member visited property on morning of 1/3/11 to assess BMPs and verified that storm drain had been sufficiently cleaned (which it had). Followed up with property owner to ensure appropriate BMPs implemented at property.
28	1/3/2011	Residential	Swimming Pool Discharge	Linen Drive	Complaint by Public Works about swimming pool discharge (including backwashed filter) on 7900 block of Linen Drive (south side of road, no specific address given). City staff investigated and could not find source of discharge (no residue remaining, even though responded on receipt of the complaint, but it was a rainy morning). Sent swimming pool factsheets to each address on south side of Linen Drive in 7900 block.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
29	1/18/2011	Industrial	Construction residue	South Woodside Avenue	Complaint about discharge of white material to Woodside Avenue. Observed small amount of white material on street, observed nearby facilities to assess if they were a potential source and contacted relevant facility operators. Unable to identify a definitive source. Asked complainant to call in if the issue was observed again, although contact with inspector during investigation may prevent further discharges.
30	1/20/2011	Residential	Oil	9521 Pryor Road	Complaint about oil staining from vehicles. City staff investigated, no stormwater ordinance violation; however, referred to code compliance for resolution of other issues.
31	1/24/2011	Residential	Over-irrigation	Ellsworth Circle	Complaint about water and algae on sidewalk. Water appeared to have originated from irrigation within El Cajon. Public works removed algae and sediment that had accumulated in the right-of-way.
32	1/24/2011	Residential	Sewage	8081 Poplin Drive	Complaint about a trailer being used as a residence. No evidence of a stormwater violation. Referred to code compliance for resolution of other issues.
33	1/27/2011	Residential	Sediment	7297 Ocotillo Street	Complaint from Lennar regarding the construction of a dirt bridge over the curb and gutter to bring in equipment for pool construction. Contractor removed material on direction, and confirmed with City inspector. Followed up with company requiring training on stormwater which was done.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
34	2/2/2011	Commercial	Powerwashing	Sky Ranch	Discharge opposite Club House on Calabria by Valleycrest landscaper hosing down area of street (around 2-3pm, cleaning up at end of day). Spoke to him; his supervisor said that it was just water. Explained that it was still an illegal discharge and pointed out sediment in water. They switched the water off and swept the water away from the gutter. Followed up with business owner requiring staff be trained in stormwater requirements. This was complied with.
35	2/2/2011	Commercial	Yard debris	9200 Inwood Drive	Complaint from City staff regarding debris (wooden pallets and other yard debris) deposited on side of drainage channel. Contacted facility operator and directed him to remove and properly dispose of the material. Verified that this was done.
36	2/8/2011	Industrial	Powerwashing	9426 Wheatlands Court	Observed discharge at side of building. Spoke to business operator who directed staff to clean-up discharge. Provided education information and required documentation be provided that staff had been trained. This was complied with. Observed a mobile detailing contractor working on facility and not using appropriate BMPs, followed-up with NOV for contractor.
37	2/15/2011	Municipal	Sand	City Hall	Contacted public works about sand used to seal work in parking lot. Rain was forecast. Sand immediately removed.
38	2/16/2011	Residential	Sediment	7072 Mariposa Street	Observed soil stockpile on driveway. Spoke to resident who said that soil was being actively carried into rear of property. No evidence of actual work. Advised homeowner that soil needed to be removed or covered before rain. Confirmed that this was done.
39	2/16/2011	Residential	Undetermined discharge	8723 Lind Vern Court	Complaint about burnt out truck on street. Referred to abandoned vehicle abatement specialist who contacted sheriff. Returned a few days later, vehicle removed and area cleaned up.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
40	2/23/2011	Industrial	Undetermined discharge	9316 Wheatlands Road	Observed water running off property into street, which was traced back to a pipe under a roll-up door. Condensate from ice machine, employee agreed to stop discharge to street. Revisited area to confirm that this was done.
41	2/28/2011	Residential	Undetermined Discharge	7297 Ocotillo Street	Complaint about pumping of sediment-bearing water to street. Immediately mobilized on receipt of complaint, but active pumping not occurring. However it had recently rained and there were open trenches at the back of the property. Spoke to representative of contractor, sent courtesy notice to business owner with requirement to provide documentation on training on stormwater. Copied residents on notice. Revisited next day, BMPs had been installed at property. Property subsequently subject to periodic inspections.
42	3/2/2011	Residential	Sediment	7252 Ocotillo Street	Observed sediment on sidewalk and evidence of erosion on property. Left courtesy notice at property. Observed area had been cleaned by next day.
43	3/2/2011	Commercial	Undetermined Discharge	9200 Inwood Drive (Carlton Oaks Golf Course)	City staff reported that they had observed water being pumped from the golf course into the river and provided photographs. City stormwater staff followed up with a joint inspection with the City of San Diego stormwater department, however evidence of the pumping (pipes, pump etc) had been removed. Issued a notice of violation as no BMPs (such as a filter on the pipe) had been observed by City staff and advised business owner that they needed to obtain a permit from the RWQCB before they did any further pumping into the river.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
44	3/7/2011	Residential	Sediment	7273 Ocotillo Street	Observed no BMPs were being implemented by contractors at home. Left courtesy notice. Observed worker hosing down driveway during follow-up inspection. Advised him of violation and he stopped. Water removed and area cleaned up. City reinspected twice to ensure clean-up sufficient. Sent notice to business owner with requirement to provide evidence of stormwater training.
45	3/7/2011	Residential	Pet Waste	Santana Ranch Estates	Complaint from new homeowner regarding dog run for development. Verified location, contacted HOA giving a timeframe to remove the pet waste and to inform residents on proper pet waste management measures. Provided educational information for resident to use, as they had offered to educate their neighbors on the issue. Reinspected dog run and confirmed that the material had been removed and notices posted advising residents to clean up after their pets.
46	3/7/2011	Residential	Sediment	11055 Columbus Street	Complaint about neighbor tracking sediment onto street. Visited location and observed that resident was illegally grading his yard and not using BMPs. Number of significant code violations, including stormwater ordinance. Coordinated response across several staff members to direct resident to remove sediment on street, debris from property, and obtain grading permit. Issued administrative citation when timeframe not complied with. Resident trying to improve water drainage across his property, which had been the cause of previous complaints. Work was completed according to permit conditions.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
47	3/10/2011	Residential	Pet Waste	Meadowbrook Mobile Home Park	Complaint via website regarding residents walking their dogs on the Mesa Road / Mission Gorge Road intersection and not picking up after their pet. Contacted manager of mobile home park and provided them with educational information to notify their dog-owning residents of the appropriate way to dispose of their pet waste. City staff removed the debris from Mesa Road/Mission Gorge Road.
48	3/18/2011	Municipal	Over-irrigation	Calle Del Lago/Via Del Lago intersection	Complaint regarding irrigation leak at intersection of Calle Del Lago and Via Del Lago. City-maintained landscaping. Was already being addressed by contractor that day. Referred to public works.
49	3/21/2011	Commercial	Hosing Down	8890 Cuyamaca Street	Complaint regarding dirty water being discharged in driveway through area at KFC. Advised manager that this was an illegal discharge and needed to be stopped and cleaned up. Sent courtesy notice with educational information and a requirement for training.
50	3/23/2011	Residential	Sediment	10209 Woodrose Avenue	Complain received about illegal grading activities. An engineering inspector visited the location and left a courtesy notice with the contractor and homeowner to implement BMPs and obtain a grading permit. This was done.
51	4/4/2011	Residential	Sewage	7957 Shantung Drive	Resident complained to County hotline and City about his neighbors discharging their RV waste to the "storm drain" Investigated and found that the RV was being discharged to a permitted sewer cleanout. No evidence of a discharge to the stormdrain system observed. Complaint part of wider conflict between neighbors.
52	4/5/2011	Residential	Sediment	7261 Ocotillo Street	Observed tracking on street arising from contractor working at home. Directed contractor to remove sediment and left courtesy notice for homeowner and contractor. Confirmed that clean-up was done.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
53	4/8/2011	Residential	Sediment	11055 Columbus Street	Complaint about how work was being done at this address. No additional tracking observed. Assisted resident with rerouting access.
54	4/8/2011	Residential	Sediment	10117 Three Oaks Way	Complaint regarding grading without permit or BMPs. Inspector visited site, informed resident, who promptly deployed BMPs and applied for a grading permit.
55	4/11/2011	Residential	Sediment	7066 Mariposa	Complaint from community developer's superintendent regarding a resident's contractor staging equipment on a stabilized pad adjacent to the resident's property. Recommended that he contact the homeowner directly as Lennar still has control over the pad.
56	4/12/2011	Residential	Oil	10703 Strathmore	Complaint about oily material being discharged onto street and tracked onto his property. Inspected location, however could not identify any specific source of the oil (most likely from the street). Followed up with complainant to establish if they had further information (an activity at a specific address that may have caused a discharge). Provided educational information on residential BMPs to each address in immediate vicinity to help residents understand how they can help prevent pollution.
57	4/18/2011	Residential	Powerwashing	10352 Timberline Way	Observed resident washing down RV on street. Gave him educational information and advised him to stop and clean up. Resident stopped and said he would borrow a wet vacuum from his neighbor.
58	5/5/2011	Residential	Swimming Pool Discharge	10284 Lariat Drive	Complaint about discharge from swimming pool during maintenance. Visited address, pool clearly not recently maintained. Visited adjacent address also with pool. Possible source of discharge (pool maintained). Spoke to resident and provided them with educational information on pool maintenance.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
59	5/6/2011	Municipal	Homeless encampment	Forester Creek	Complaint about homeless person sleeping in storm drain at Forester Creek. Investigated, did not find anyone in storm drain system, however observed an encampment in the channel. Contacted Sheriff, who removed camper, and public works removed encampment.
60	5/10/2011	Residential	Pet Waste	Stanley Court	Complaint about neighbors allowing their dogs to run uncontrolled around the area and not picking up after their pets (no specific address of source of problem provided). Provided educational information to every address on Stanley Court.
61	5/31/2011	Residential	Concrete	9482 Medina Way	Complaint about washing of concrete down curb and gutter. Appeared to be a contractor working at address. Left courtesy notice with resident and contractor directing them to clean up. Based on reinspection, this was done. Sent NOV to contractor requiring that they show evidence of employee training in stormwater. Notified City in which contractor was based.
62	6/1/2011	Industrial	Powerwashing	9419 Abraham Way	Complaint referred by consultant conducting dry weather monitoring. Observed evidence of runoff from powerwashing. BMPs deployed inadequate to prevent water from running off. Consultant met with business owner to explain why BMPs inadequate. City scheduled facility for inspection.
63	6/3/2011	Residential	Swimming Pool Discharge	9801 Halberns	Complaint about water being discharged from address, likely from swimming pool. Verified that there is a swimming pool at this address. Inspected the curb and gutter and verified that there was no visual residue from discharge. Appears not to be a violation.

Appendix B
Summary of Documented Complaints

#	Date	Category	Type/Pollutant	Location	Notes
64	6/7/2011	Residential	Sediment	9791 Roe Drive	City staff observed that a portion of the curb and sidewalk had been cut to allow a pipe to be placed across the sidewalk. The void around the pipe was backfilled with soil and stones. Code compliance sent a notice of violation requiring the property owners to obtain permits and correct the various issues associated with this construction, as well as to remove any residue in the curb and gutter.
65	6/10/2011	Residential	Construction Material	6000 Cala Lily Street	Complaint from Lennar regarding a resident who was installing a driveway and had deposited concrete washings onto the adjacent lot. Courtesy notice and conversation with resident, who agreed to remove the material.
66	6/13/2011	Commercial	Mobile Auto Detailing	Isaac Street	City staff observed a powerwashing company preparing to work in street with inadequate BMPs (a single absorbent roll on the ground). Notified operator that washing vehicles in the street was illegal and advised him of how BMPs were to be implemented to prevent any discharge to the storm drain system.
67	6/16/2011	Residential	Gravel	9590 Halberns Boulevard	Complaint about man throwing gravel into stormdrain inlet box. Visited location, resident trying to maintain private corrugated metal pipe on his property. Will move gravel into pipeline and pour concrete to maintain pipe. Not a violation.

APPENDIX C

JURMP ANNUAL REPORT REQUIREMENTS CHECKLIST

Appendix C
JURMP Annual Report Requirements Checklist

Development Planning Component

Permit Annual Reporting Requirement—Section J.3.a.(3).(a)	Location in Report
i. A description of any amendments to the General Plan, the environmental review process, development project approval processes, or development project requirements.	2.2, 2.3
ii. Confirmation that all development projects were required to undergo the Copermittee's urban runoff approval process and meet the applicable project requirements, including a description of how this information was tracked.	2.4.4.2
iii. A listing of the development projects to which SUSMP requirements were applied.	2.4.4.2, Table 2-1
iv. Confirmation that all applicable SUSMP BMP requirements were applied to all priority development projects, including a description of how this information was tracked.	2.4.3, 2.4.4.2
v. At least one example of a priority development project that was conditioned to meet SUSMP requirements and a description of the required BMPs.	2.4.4.2
vi. A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.	2.4.4.2
vii. An updated treatment control BMP inventory.	Appendix A.1
viii. The number of treatment control BMPs inspected, including a summary of inspection results and findings.	2.4.4.3, Table 2-2 and 2-3
ix. A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.	2.4.4.3
x. Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.	2.4.4.2
xi. A listing of any projects which received a SUSMP waiver.	2.4.4.2
xii. A description of implementation of any SUSMP waiver mitigation program.	2.4.4.2
xiii. A description of Hydromodification Management Plan (HMP) development collaboration and participation.	2.4.4.2
xiv. A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.	2.4.4.2
xv. A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.	2.4.4.2

Development Planning Component

Permit Annual Reporting Requirement—Section J.3.a.(3).(a)	**Location in Report**
xvi. A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.	2.4.4.2
xvii. The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	2.4.4.3
xviii. A description of notable activities conducted to manage urban runoff from development projects.	Throughout Section 2

Construction

Permit Annual Reporting Requirement—Section J.3.a.(3).(b)	**Location in Report**
i. Confirmation that all construction sites were required to undergo the Copermittee's construction urban runoff approval process and meet the applicable construction requirements, including a description of how this information was tracked.	3.5
ii. Confirmation that a regularly updated construction site inventory was maintained, including a description of how the inventory was managed.	3.2
iii. A description of modifications made to the construction and grading ordinances and approval processes.	3.3, 3.4, 3.5
iv. Confirmation that the designated BMPs were implemented, or required to be implemented, for all construction sites.	3.5
v. Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.	3.5
vi. A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.	3.5
vii. For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.	3.5, Appendix A.2
viii. A description of the general results of the inspections.	3.5
ix. Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	3.5
x. The number of violations and enforcement actions (including types) taken for construction sites, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	3.1.1, 3.5 Table 3-1
xi. A description of notable activities conducted to manage urban runoff from construction sites.	Throughout Section 3

Municipal

Permit Annual Reporting Requirement—Section J.3.a.(3).(c)	Location in Report
i. Any updates to the municipal inventory and prioritization.	4.2.2, Appendix A.3
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	4.2.3, 4.2.4, 4.3.4, 4.4.4, 4.5.4, 4.6.4, 4.7.4
iii. A description of inspections and maintenance conducted for municipal treatment controls.	2.4, 4.2.4
iv. Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	4.4
v. Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	4.4
vi. Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.	4.4
vii. Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.	4.4
viii. Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding.	N/A
ix. Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	4.2.3
x. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3 Table 4-1
xi. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3 Table 4-1

Municipal

Permit Annual Reporting Requirement—Section J.3.a.(3).(c)	**Location in Report**
xii. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3 Table 4-1
xiii. Identification of the total distance of curb-miles swept.	4.3 Table 4-1
xiv. Identification of the number of municipal parking lots, the number of municipal parking lots swept, and the frequency of sweeping.	4.3 Table 4-1
xv. Amount of material (tons) collected from street and parking lot sweeping.	4.3
xvi. A description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4	4.5
xvii. Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of the inspections.	4.2.4, 4.7.4
xviii. A description of the general results of the inspections.	4.2.4, 4.7.4
xix. Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	4.2.4
xx. The number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	4.2.4, 4.10
xxi. A description of notable activities conducted to manage urban runoff from municipal areas and activities.	Throughout Section

Industrial and Commercial

Permit Annual Reporting Requirement—Section J.3.a.(3).(d)	**Location in Report**
i. Any updates to the industrial and commercial inventory.	5.2.2 (stationary), 5.3.2 (mobile), Appendix A (inventories)
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	5.2.4, 5.3.4
iii. A description of efforts taken to notify owners/operators of industrial and commercial sites/sources of BMP requirements, including mobile businesses.	5.2.4, 5.3.4
iv. Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	5.2.2, 5.3.2; 5.2.4, 5.3.4
v. Justification and rationale for why the industrial and commercial sites/sources inspected were chosen for inspection.	5.2.4
vi. Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	5.2.4
vii. Identification of the number of third party inspections conducted.	5.2.4
viii. Identification of efforts conducted to verify third party inspection effectiveness.	5.2.4
ix. A description of efforts implemented to address mobile businesses.	5.3.4
x. The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	5.1.1, 5.2.4, 5.3.4 , Table 5-2
xi. A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	5.2.4, Table 5-1
xii. A description of notable activities conducted to manage urban runoff from industrial and commercial sites/sources.	Throughout Section

Residential

Permit Annual Reporting Requirement—Section J.3.a.(3).(e)	**Location in Report**
i. Identification of the high threat to water quality residential areas and activities that were focused on.	6.2
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for residential areas and activities.	6.3, 6.4
iii. A description of efforts implemented to facilitate proper management and disposal of used oil and other household hazardous materials.	6.4
iv. Types and amounts of household hazardous wastes collected, if applicable.	6.4
v. A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.	6.4 (see discussion in JURMP)
vi. The number of violations and enforcement actions (including types) taken for residential areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	6.4
vii. A description of collaboration efforts taken to develop and implement the Regional Residential Education Program.	6.4
viii. A description of notable activities conducted to manage urban runoff from residential areas and activities.	6.1, 6.4

IDDE*

Permit Annual Reporting Requirement—Section J.3.a.(3).(f)	Location in Report
* Section 7, the Illicit Discharge Detection and Elimination component, of the 2009/2010 Annual Report, will be submitted to the RWQCB no later than December 15, 2010.	

IDDE—Additional Dry Weather Monitoring Program Requirements*

Permit Annual Reporting Requirement—Attachment B and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001, Section II.B.3.c,d	Location in Report
* Section 7, the Illicit Discharge Detection and Elimination component, of the 2009/2010 Annual Report, will be submitted to the RWQCB no later than December 15, 2010.	

Education

Permit Annual Reporting Requirement—Section J.3.a.(3).(g)	Location in Report
i. A description of education efforts conducted for each target community.	8.3
ii. A description of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.	8.3
iii. A description of education efforts conducted for municipal departments and personnel.	8.2
iv. A description of education efforts conducted for the new development and construction communities.	8.3
v. A description of jurisdictional education efforts conducted for residents, the general public, and school children.	8.3

Public Participation

Permit Annual Reporting Requirement—Section J.3.a.(3).(h)	Location in Report
i. A description of public participation efforts conducted.	9.2 and 9.3

Effectiveness Assessment

Permit Annual Reporting Requirement—Section J.3.a.(3).(i)	Location in Report
i. An assessment of the effectiveness of the Jurisdictional Urban Runoff Management Program which meets all requirements of section I.1 of this Order.	11

Fiscal Analysis

Permit Annual Reporting Requirement—Section J.3.a.(3).(j)	Location in Report
i. A fiscal analysis of the Copermittee's urban runoff management programs which meets all requirements of section G of this Order. (For 2007-2008, the requirements that apply are essentially the same as those found in Order No. 2001-01)	10

Same as old Permit for 2007-2008

Special Investigations

Permit Annual Reporting Requirement—Section J.3.a.(3).(k)	Location in Report
i. A description of any special investigations conducted.	12

Non-Emergency Firefighting

Permit Annual Reporting Requirement—Section J.3.a.(3).(l)	Location in Report
i. A description of efforts conducted to reduce pollutant discharges from non-emergency fire fighting flows.	4.2.3, 13

JURMP Revisions

Permit Annual Reporting Requirement—Section J.3.a.(3).(m)	Location in Report
i. A description of any proposed revisions to the JURMP.	14 and each program component section

ATTACHMENT 5.1

STORMWATER FACTSHEETS

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 02

Water Quality Impacts

POLLUTANT TYPE	POLLUTANT SOURCES AND IMPACTS
SEDIMENT	Sediment is a common component of stormwater, and can be a significant pollutant. Sources of sediment in stormwater include construction activities and slope erosion. Sediment can be detrimental to aquatic life by impeding such natural functions as photosynthesis, respiration, growth, reproduction and oxygen exchange in the water column. Additionally, sediment in stormwater will carry other pollutants such as oil, grease, and metals.
NUTRIENTS	Nutrients including nitrogen and phosphorous are commonly found in fertilizers used in landscaping. Nutrients are found in stormwater through over irrigation of lawns and other landscaped areas. Nutrients in local water bodies will result in excessive growth of aquatic vegetation such as algae, and a rapid reduction in oxygen that supports fish populations.
BACTERIA & VIRUSES	Sources of bacteria and viruses in stormwater include improperly disposed pet waste, illegal sewer connections, and sanitary sewer overflows. High levels of indicator bacteria lead to the closure of beaches, lakes, rivers, and bays throughout the County of San Diego.
OIL & GREASE	Oil and grease compounds may be toxic to aquatic environments, compromising the survival of aquatic plant and animal species. Sources of oil and grease include illegal dumping, oil spills, automotive fluid leaks, and restaurant grease.
METALS	Metals including lead, zinc, cadmium, copper, chromium, and nickel are commonly found in stormwater runoff. Materials such as galvanized metal, brake pads, corroded paints, and automobiles contribute to the metals found in stormwater. Heavy metals are of concern to the aquatic environment as they can be potentially toxic to organisms, and accumulate to toxic levels in fish.
PESTICIDES	Including herbicides, fungicides, rodenticides, and insecticides are frequently detected in stormwater at toxic levels. Excessive use of these chemicals at home or in commercial settings, will have a detrimental impact on human as well as environmental health.

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 03

STORMWATER INFORMATION

Wet Weather...Are You Ready?

What is stormwater pollution?
Stormwater pollution is the untreated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Stormwater runoff containing pollutants can contaminate our local creeks, rivers, streams and ultimately the Pacific Ocean.

REMEMBER

The Rainy Season lasts from October 1 - April 30

Is your home or business ready for wet weather?
Use the following wet weather checklist to prepare for the rain, and to do your part to prevent pollution in runoff.

WET WEATHER CHECKLIST

- ☑ COVER exposed material stockpiles including soil, sand, gravel, fertilizers, auto parts, tires, batteries, storage containers, etc.
- ☑ CLEAN significant fluid spills (oil, grease, paint, solvents) from drive ways, parking lots, parking spaces, and sidewalks. Use a mop and bucket and dispose of the water in a sanitary sewer drain (sink, toilet, floordrain).
- ☑ CLEAR earthen channels, culverts, brow ditches, and other drainage structures within and surrounding your property.
- ☑ REMOVE and PROPERLY DISPOSE of waste materials.
- ☑ INSPECT the property for potential sources of pollution.
- ☑ AVOID using chemicals (pesticides, herbicides, and fertilizers) and irrigation when rain is forecast within 48 hours.
- ☑ CALL the City of Santee at (619) 248-4100 x177 with any questions.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 04

Restaurants & Bars

RESTAURANTS & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with food establishments include grease, food waste, cleaners, trash and debris. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of minimum Best Management Practices that are required at all food establishments in the City of Santee.

- ☑ Employee Training.
- ☑ Clean Floor Mats Inside.
- ☑ Maintain Outdoor Grease Bins.
- ☑ Keep Dumpster Lids Closed.
- ☑ Maintain Dumpster Areas Using Dry Cleanup Techniques.
- ☑ Use a Mop and Bucket for Outdoor Cleaning Activities. Dispose of Mop Water in a Sanitary Drain. (sink, toilet)
- ☑ Sweep It, Never Hose It Down.
- ☑ Keep Absorbent Material or Other Spill Response Materials On Site.
- ☑ Maintain Good Housekeeping Practices.
- ☑ Contain, Control & Capture All Water Used in Cleaning Activities.
- ☑ Dispose of All Wastewater into a Sanitary Sewer Connection. (Sink, Floor Drain, Toilet)
- ☑ Adjust Sprinklers to Avoid Overspray from Irrigation of Landscaped Areas.
- ☑ Ensure that Pressure Washing of Sidewalks, Drive Thrus, or Parking Lots is Conducted with Adequate Controls in Place.
- ☑ Direct Runoff to Landscaped Areas.
- ☑ Clean Outdoor Spills Immediately.
- ☑ Properly Maintain Sinks and Drains to Avoid Sewer Overflows.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 05

Automotive Industry

AUTOMOTIVE INDUSTRY & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with automotive maintenance and repair include antifreeze, fuels, waste oils, solvents and paints. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of minimum Best Management Practices that are required at all automotive repair, servicing, and maintenance facilities in the City of Santee.

- ☑ Employee Training.
- ☑ Service Indoors When Applicable.
- ☑ Ensure that Floor Drains Are Plumbed to the Sanitary Sewer.
- ☑ Place Drip Pans Under Vehicles in Exposed Outdoor Areas.
- ☑ Keep Absorbent Materials / Pads Readily Accessible at All Times.
- ☑ Properly Dispose of Hazardous Wastes.
- ☑ Drain all Fluids Indoors.
- ☑ Wash Equipment & Vehicles in Designated Areas to Avoid Discharge to the storm drain.
- ☑ Maintain Good Housekeeping Practices.
- ☑ Utilize "Dry" Cleanup Methods. (Sweep, Vacuum)
- ☑ Dry Sweep All Work Areas Before Mopping.
- ☑ Use a Mop and Bucket to Clean Shop Floors and/or Outdoor Areas. Dispose of mop water in a sanitary drain.
- ☑ Collect All Dust, Grindings and Shavings at Work Stations.
- ☑ Remove or Cover All Materials Stored in Outdoor Areas.
- ☑ Recycle Oil, Antifreeze, Batteries, etc.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 06

Mobile Auto Detailing

MOBILE AUTO DETAILING & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with mobile auto detailing include oil, grease, heavy metals (brake dust), and detergents. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of minimum Best Management Practices that are required at all mobile auto detailing activities in the City of Santee.

- ☑ Contain, Control and Capture ALL Wash Water.
- ☑ Train Employees to Use Practices that will Eliminate Discharge to a Storm Drain.
- ☑ Locate and Protect All Nearby Storm Drains or Water Bodies.
- ☑ Utilize a "Shop Vacuum" to Capture all Wash Water.
- ☑ Service Vehicles on or Near Vegetated Areas.
- ☑ Minimize or Eliminate the Use of Soaps or Detergents.
- ☑ Confine Washing and Cleaning Activities within a burmed Area.

REMEMBER

- **Biodegradable Soaps Only Degrade Faster, And May Be Detrimental to Water Quality.**
- **Curbs, Gutters, Drainage Channels, Curb Inlets, Brow Ditches, Channels and Culverts are ALL Connected to the San Diego River and Ultimately the Pacific Ocean.**
- **ONLY RAIN BELONGS IN THE STORM DRAIN!**

STORMWATER INFORMATION

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 07

Power Washing Activities

POWER / PRESSURE WASHING & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with power washing activities include sediment, grease, oil, food waste, and trash. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of Minimum Best Management Practices that are required at all power washing activities in the City of Santee.

POWER WASHING REQUIREMENTS

The following BMPs are REQUIRED for ALL Power Washing Activities including but not limited to vehicle maintenance & fuel dispensing areas, power washing buildings, sidewalks, parking lots, loading docks and common areas.

1. Block all storm drain inlets and collect water/waste for disposal to the sanitary sewer. No water can drain to the street or catch basins.
2. Prior to washing activities, clean and/or sweep all loose debris from the area.
3. Clean any significant oil / auto fluid spills with an appropriate dry method prior to cleaning.
4. If possible, direct divert runoff to a vegetated area where water can absorb into the ground.
5. If visual observation of runoff indicates contamination (cloudy, discolored, presence of suspended materials), stop activities immediately, and use additional BMPs (i.e. filtration) to eliminate polluted runoff to vegetation.

REMEMBER THE THREE C's

Contain , Control , & Capture

All Waste & Wash Water

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 08

Industrial & Commercial Activities

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervi-

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 01

What is Stormwater Pollution?

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

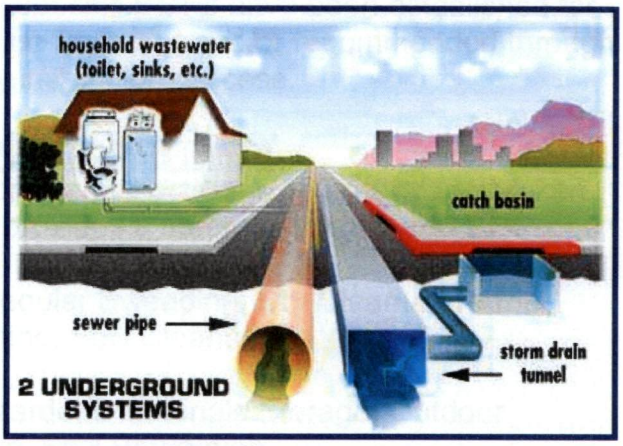

WHY IS IT A PROBLEM?

It is important to remember that the City of Santee is host to the San Diego River as it flows towards the Pacific Ocean. The River offers tremendous biological resources within its reach through Santee and beyond, supporting a diverse population of plant and animal life. The health and the beauty of the San Diego River is directly dependent on the actions of all Santee residents, and deserving of our protection from stormwater pollution!

WHAT CAN I DO TO HELP?

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 09

STORMWATER INFORMATION

Swimming Pool & Spa Maintenance

SWIMMING POOL DISCHARGE

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with swimming pool and spa maintenance activities include chlorine, pH, organic matter (decaying plants & algae), and copper.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean, completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

CAN IT BE DISCHARGED INTO THE STORM DRAIN?

If it is not a saline pool, you can discharge water with NO chemicals into the storm drain. The water must:

1. Be water only (no debris)
2. Be de-chlorinated
3. Have a pH range of 7-8.
4. Have no algae present
5. Be a controlled flow to avoid erosion problems or cause a traffic hazard.

Can I get rid of chlorine?

Chlorine will naturally dissipate, and pool water will become de-chlorinated over time. Monitor the pool over a period of 3-5 days until NO chlorine is detected.

How do I Clean Pool Filters?

It's best to clean pool filters over a lawn, dirt, planter box, vegetated hillside, or something to absorb the discharge. Collect materials on filter cloth, then throw the filter cloth away. Rinse cartridge and diatomaceous earth material onto a dirt area, and spade filter residue into soil.

If you retain a pool company to take care of your pool, please make sure that they comply with these regulations. By doing your part, you will help reduce the pollution problems in the community where your family lives, works and plays.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CALL PADRE DAM MUNICIPAL WATER DISTRICT ON (619) 258-4664 FOR INFORMATION ON DISCHARGES TO SEWER.

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 10

STORMWATER INFORMATION

Residences

Although many residents may not realize it, everyday activities that we conduct at home have the potential to impact the quality of water which drains from the street into our municipal storm drain. This eventually discharges UNTREATED into the San Diego River. The cumulative impact of discharges from each residence has the potential to directly impact the San Diego River. Here are some examples of common household activities of concern:

PET WASTE

This may be considered "natural," but did you know that the water quality of San Diego River is considered to be impaired due to the presence of bacteria from fecal discharges? *ALWAYS pick up after your pet, even at home, and dispose of pet waste in the trash.* Don't throw pet waste in any drainage channel, culvert, gutter or drain.

AUTOMOTIVE

Reduce or eliminate the release of motor oil from leaking cars, detergents from washing and gasoline from fuel drips. Do not maintain your vehicle in the street and clean up fluid spills and leaks immediately. *Use drip pans under leaking vehicles and properly dispose of automotive fluids.*

HOME IMPROVEMENT AND GARDEN CARE

Many home improvement projects may involve the use of hazardous materials (paints, solvents etc.). Powder materials (e.g.,concrete, sand, and grout) can form harmful sediment if washed into the San Diego River via the storm drain. Rinse concrete or grout residue into a hole dug into a dirt area. Let the water infiltrate into the ground and throw away the residue. *Sweep, do not hose down* when cleaning and *do not blow plant debris into the storm drain.* Dispose of household hazardous wastes including paint, cleaners, and batteries for FREE at one of the following locations:

Clean Harbors Environmental Services, 12325 Crosthwaite Circle, Poway, CA 92064. 1-800-444-4244. Saturdays 9 am to 3 pm.

Waste Management, City of El Cajon, end of O' Conner Street, El Cajon CA 619-596-5100. Household pickup by appointment.

- Pick Up After Your Pets
- NO DUMPING!
- Sweep It, Don't Hose It Down.
- Wash Paint Brushes in the Sink
- Do not overwater
- Report illegal dumping

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 11

Demolition & Construction

Non-rainwater discharges from demolition and construction sites are illegal and could be subject to clean up costs, as well as fines and other penalties. With a few simple steps contractors on these sites can prevent illegal discharges.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks enters the storm drain and is discharged into the San Diego River completely untreated!

KEEP YOUR SOIL ON YOUR PROPERTY

It is illegal to allow soil discharges into the street. Plan to use measures to prevent erosion (for example, preservation of current landscaping, expedited planting, blankets, hydroseeding, or bonded fiber matrix); and sediment control measures (silt fence, gravel bags, and fiber rolls) to prevent discharges, particularly between the months of October and May. Use silt-free gravel, not sand, in gravel bags. Be prepared to stop liquid discharges during demolition.

MANAGE A TIDY SITE

It is a violation of City ordinance to discharge airborne dust or allow the tracking of soil onto the street. Sweep or vacuum, DO NOT HOSE DOWN, any material that strays onto the street. Keep liquid materials in a covered second container. Do not discard waste materials to the ground. Instead, immediately place it into a trash container. Order an extra trash pickup if more waste is generated than usual. Dispose of hazardous materials properly. Use drip pans under vehicles and promptly remove spills.

CONCRETE AND POWDER MATERIALS

The pH content of cement mix can be high enough to classify it as hazardous waste! When concrete waste gets into a gutter and then the storm drain, it eventually ends up in the San Diego River. If allowed to dry in gutters or catch basins, it can disrupt the proper flow of rainwater. Other powdery material (stone dust, grout, and masonry), if discharged to the storm drain, will result in increased sediment in the San Diego River, having a negative effect on aquatic life. Place concrete waste into a container, and let it dry before disposal.

KEEP OUT OF THE GUTTER!

The gutter is not the place to clean any piece of equipment, large or small. It is a violation of the City's ordinance to park heavy vehicles in the street.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 12

Pollution Prevention at Special Events

STORMWATER INFORMATION

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

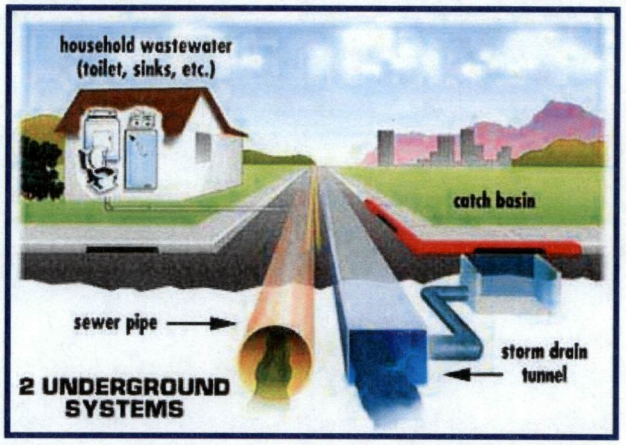

HOW CAN A SPECIAL EVENT CAUSE STORMWATER POLLUTION?

An event can result in the generation of a large amount of litter. Plastic bags and other light material may be blown into creeks and channels. Other items may enter curb inlets, either blocking the structure, or being washed via runoff through the stormdrain system into nearby rivers and creeks. Food and pet waste can be sources of bacteria and nutrients. Protect water quality by using the following best management practices:

- Portable toilets shall have secondary containment.
- Have materials available (cloths, paper towels, a dustpan and brush, etc.) to promptly remove spills as they occur.
- Install temporary fencing to prevent trash from being dispersed.
- Use temporary screens on catch basins and storm drain inlets.
- Provide plenty of trash and recycling bins. Promptly dispose of trash into dumpsters with lids and do not allow dumpsters to overfill.
- Sweep the area after the event. Clean catch basins as necessary.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 13

Carpet and Upholstery Cleaning

Carpets and upholstery are regularly cleaned in homes and commercial businesses to prolong the life of carpets and furniture, and to ensure a hygienic living and working space. Wastewater from carpet cleaning usually contains detergents, other potentially hazardous chemicals and extracted carpet residues, some of which are known pollutants.

It is illegal to discharge wastewater from these cleaning activities to the storm drain.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks enters the storm drain and is discharged into the San Diego River completely untreated!

- Any wastewater poured into streets, gutters, or stormdrain inlets will make its way into sensitive waterways that support aquatic plants and animals. Carpet cleaning chemicals and other residues in carpet cleaning wastewater may damage fragile ecosystems.
- Many carpet cleaning agents are toxic to aquatic plant and animal life.
- Residues from carpet cleaning can contribute to nutrient loadings that will result in explosive algal growth and deplete waterbodies of oxygen.

WHAT ARE THE REQUIREMENTS?

Wastewater and residue from carpet cleaning must NEVER be discharged to any roadside gutter, parking lot drain, stormdrain, curb inlet, drainage channel, or watercourse.

- Wastewater and residue from carpet cleaning should be discharged to a sanitary sewer connection such as a sink, floor drain, toilet sewer cleanout, or septic tank.
- Clean or flush hoses to a vegetated or dirt area and let the water infiltrate the ground.
- Contain, control, and capture all wastewater or chemicals.

STORMWATER INFORMATION

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 14

Pollution Prevention during Community Activities

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

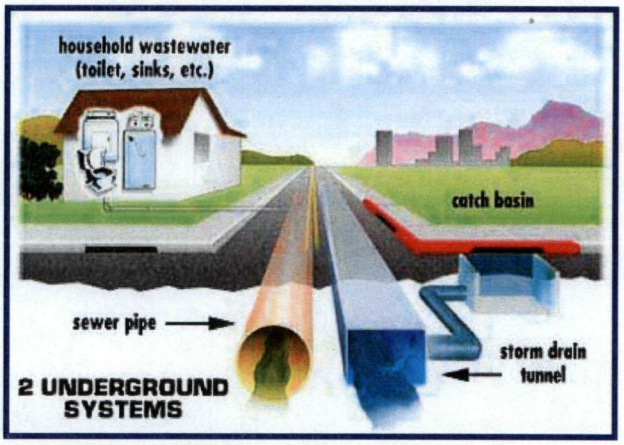

HOW CAN COMMUNITY ACTIVITIES CAUSE STORMWATER POLLUTION?

Any activity that results in runoff discharging into catch basins on private property or into the street (such as washing cars or cleaning up after an event) can cause stormwater pollution. These types of discharges are illegal. In addition, community events can result in the generation of litter which can get into the storm drain system. Simple steps can be take to prevent pollution and protect **a valuable community resource — our river**.

- Use trays under portable toilets (secondary containment).
- Have materials available at an outdoor event (cloths, paper towels, a dustpan and brush, etc.) to promptly remove spills as they occur.
- Promptly dispose of trash into dumpsters with lids and do not allow dumpsters to overfill.
- Sweep after an outdoor event and clean catch basins as needed.
- Contact the City for pollution prevention methods during special events and car washing activities (look at www.ci.santee.ca.us/For Residents).

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 15

Benefits of Low Impact Development and Site Design Practices

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system. The storm drain system discharges this water directly to our creeks, rivers, and ultimately the Pacific Ocean UNTREATED.

HOW DOES DEVELOPMENT AFFECT THIS?

The addition of impervious area removes the natural absorption and infiltration abilities of the land. This results in a greater volume, velocity, rate and duration of runoff from the property, than in its predevelopment condition. It can result in the mobilization of a wide range of pollutants that would normally remain on the property and transport these pollutants to surface waters. *This cocktail of pollutants can destroy aquatic life.*

WHAT IS THE SOLUTION?

Since 2002, all major development incorporated a mixture of best management practices (BMPs) to reduce its impact on stormwater quality. Site Design BMPs and Low Impact Development BMPs include the following:

- Reduce directly connected paved areas.
- Direct runoff to landscaping to reduce runoff from the property.
- Use grassed swales to facilitate infiltration.
- Use drought tolerant or native vegetation
- Conserve natural areas.
- Protect slopes (i.e. with vegetation) to prevent erosion.

The objective of this is to mimic the natural hydrologic conditions of the site to minimize the increase in volume, velocity, rate and duration of the property after development.

Please preserve these features on your property and protect our river! Do not destroy these features and maintain them to remain effective.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 16

YARD & GARDEN MAINTENANCE

HOW CAN GARDENING HARM OUR WATERWAYS?

Yard maintenance can directly impact the quality of our local surface waters. When soil, organic wastes, dirt, leaves, grass clippings, and chemicals leave your yard, they flow directly into creeks and the ocean harming the health of humans and wildlife that swim in the waters, impacting the environment and water quality.

BEST MANAGEMENT PRACTICES (BMPs)

Whether you take care of your own yard or contract a professional service, you are responsible for ensuring that BMP's are implemented to reduce storm water pollution, protect water quality and conserve our valuable water and natural resources. By implementing the simple solutions in this fact sheet you can take part in protecting our local waterways and beaches.

- Use fertilizers sparingly and possibly consider using an organic fertilizer.
- Use an efficient irrigation method and try to avoid over-watering.
- Break watering down into five minute intervals, or less. This will allow water to soak in before the next application.
- Rather than applying a temporary, chemical only approach, try a natural method such as hand weeding and planting diverse native plants. This will result in a safer long term solution to weed and insect problems.
- Improve the health of your soil by adding compost and using organic mulches. You'll reduce the need for fertilizers and your plants will be healthier. You will also prevent soil erosion.

REMEMBER : When using a professional landscaping service

- Make sure they sweep up clippings and dispose of them properly, rather than blowing them out into the street.
- If you decide to use pesticides, check to make sure the service is properly trained and licensed to apply them.
- Know how often fertilizers are used. Even professionals over-fertilize.
- The property owner is responsible for violations of the Clean Water Act.

STORMWATER INFORMATION

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 17

Fire Prevention and Erosion

During dry and hot seasons, vegetation can pose a fire risk, and requires proper management.

WHICH FIRE PREVENTION MEASURES ARE RECOMMENDED?

Vegetation on open lots should be *mowed* to a height of approximately four inches. The clippings can be left on top of the stubble, providing additional fire suppression. Dead shrubs, dead trees or limbs, and rubbish should be removed. The City's Municipal Code requires property owners to mow and/or clear a distance of one hundred feet from any structure and up to thirty feet along each side of roadways or driveways. Fire prevention measures should be implemented during late spring and early summer.

When a rare, threatened, or endangered plant or wildlife may be present on the property to be cleared, it is the responsibility of the owner, occupant or person in charge of the property to obtain all required permits or approvals from all other governmental agencies prior to removal of the nuisance. This includes California State Fish and Game and the U.S. Fish and Wildlife Service can be contacted at (760) 4341-9440). If you have questions contact City Development Services at (619) 258-4100 x168 with any questions.

WHY SHOULDN'T I JUST CLEAR THE GROUND OF VEGETATION?

Not only is this unattractive and unnecessary, but you risk losing the most valuable component of your ground through erosion. The top layer of soil tends to be rich in organic matter providing nutrients and a soil matrix hospitable to plant life. Once that has been removed, it will be difficult for plants to grow in this soil without the addition of expensive soil amendments.

Cutting vegetation allows the plant roots to help hold the soil in place minimizing erosion. Erosion prevention is important to prevent loss of land, damage of property downgradient of the erosion and potential pollution through the discharge of sediment to the storm drain system. The storm drain system conveys runoff from streets and private property to the river *untreated*. Blockages of the storm drain system may result in property damage and are costly to remove. Sediment discharged into our creeks and rivers is harmful to river life, including plants, insects and fish. If you are concerned about potential erosion, install erosion prevention measures (see http://www.cabmphandbooks.com/Construction.asp for more information).

Call Fire Prevention at (619) 258-4100 x184 for additional information.

Area of eroded soil versus a slope stabilized with erosion prevention measures.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 18

Responding to Sewage Spills

Many people mistakenly believe that storm drains are connected to Padre Dam's sanitary sewer system and that any wastewater dumped into an alley, street or storm drain is treated at Padre Dam's sewage treatment plant. This is not the case. Any material discharged or washed into the street ends up in the San Diego River.

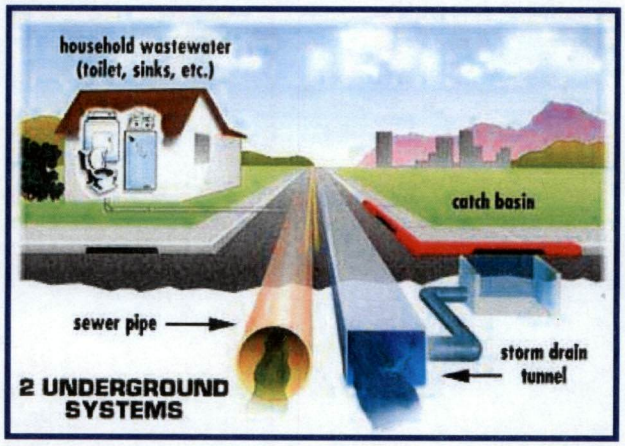

Raw sewage is a biohazard to people, and adds pollutants such as sediment and nutrients to the environment. The source of any sewage spill must be immediately stopped, and the spill must be contained. The affected area must be isolated to keep the public from exposure to the hazard. Sewage must be removed and the area disinfected by a properly trained person. Raw sewage may be discharged into the wastewater system with permission from Padre Dam.

Any sewage discharge into the storm water conveyance system, even from a blocked lateral line, is a violation of federal, state and local laws. These laws apply to individuals, businesses and public agencies. There are no exceptions.

Please ensure that any contractor you hire to respond to a sewage spill understands these regulations and has the ability to comply with them. By doing this you help to protect your family, and the environment from exposure to the sewage spill.

STORMWATER INFORMATION

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

ATTACHMENT 8.1

SANTEE REVIEW ARTICLES

Santee Review

Your quarterly update for City news

Fall 2010

Sportsplex Now Open

Off Leash Dog Areas

Sustainable Santee Project

1980-2010 CITY OF SANTEE, CALIFORNIA INCORPORATED 1980 Celebrating 30 years of Progress

The City of
Santee

INSIDE

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Vice Mayor Brian W. Jones
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City Manager	ext. 100
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Para información en Español llame a (619) 258-4100 ex. 128.

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Cover: Town Center Community Park

Santee's New Sports Complex Opens With a Home Run!

Santee's new 15-acre sports complex within the 55-acre Town Center Community Park is now open to the community. The facility provides for local and regional adult softball and soccer leagues, youth and adult tournaments, sports camps, high school and college games, corporate events and other special events. It is slated to draw over 350,000 visitors annually.

Touted as "San Diego's premier recreational sports facility," the complex features three lighted softball fields, four batting cages, two lighted arena soccer fields, spectator seating, parking and a sports themed restaurant offering food, beer and wine with indoor and outdoor seating to view games. Sportsplex USA will operate the complex under a public-private agreement with the City.

Santee City Manager Keith Till explains, "This is far more than a community recreational amenity… it is an economic boost for Santee." A 2005 economic impact analysis noted that the complex could generate $5.5 million annually in

"Far more than a community recreational amenity..."

local expenditures, and create demand for 80 additional hotel rooms. At 1,000 visitors a day for tournaments, that translates into a significant benefit for local businesses. Under conservative estimates, the facility could reach 100% capacity by 2012, hosting 1000 softball teams and 500 soccer teams annually.

Sportsplex USA Santee seems well on its way to reaching those goals. According to Chris Vertrees, the Director of Marketing and Development, there are already 163 softball teams and 52 soccer teams signed up with every available weekend booked for games and out-of-region tournaments through the end of the year. The facility has recently been identified as the host of the 2012 National Police and Firefighter Olympics which will attract over 7,000 players.

In keeping with the City's "Sustainable Santee" program, there are several eco-friendly features as well. Three ball fields and two soccer arenas incorporate synthetic turf and all landscaping is served by reclaimed water from Padre

Dam Municipal Water District. The restaurant is also equipped with a photovoltaic (solar) power system.

The remainder of the Town Center Community Park construction, funded in part by a $100,000 grant from the National Football League and the San Diego Chargers, is nearing final completion. Features will include an outdoor performance stage, a lighted synthetic turf football/soccer field, a lighted synthetic turf soccer field, two lighted youth grass turf soccer fields, five shade structures, a large themed play structure, a USMC memorial, a human sundial, connecting walking trails, the new Park Center Drive and a restroom and concession building.

Improvements to the western portion of the park included new sidewalks, parking lots and landscaping. The final amenity will include a grass picnic area in front of the City of Santee Aquatics Center/Cameron Family YMCA on River Walk Drive.

The Santee Ravens and Santee AYSO have already begun using the synthetic fields for the fall season and the Santee Park and Recreation Committee hosted the first concert event on the large lawn with the Santee Bluegrass Festival. A community event is scheduled in the fall to celebrate the completion of the entire park. For additional information on the park, contact the Department of Community Services at (619) 258-4100 ext. 222 or visit www.ci.santee.ca.us.

Santee Invests $1.7 Million for Street Maintenance

A total budget of $1.7 million is currently being used to fund several street repaving and rehabilitation projects in the following neighborhoods: Vomac Road north of Mast Boulevard; Crystal Springs Road neighborhood south of Woodside Avenue; Calle Del Lago neighborhood; Holburn Street north of Second Street; and Pebble Beach Drive south of Mast Boulevard.

Using rubber from old tires, the current repair method is very innovative. This type of material has proven very successful and has a life expectancy of over 10 years. It is also cost effective as repairs are almost half the normal cost.

Funding for the repairs has been made possible through the use of TransNet and Proposition 1B Local Streets and Roads funding. The TransNet funding used is the half cent sales tax for local transportation projects that was first approved by voters in 1988 and extended in 2004 for another 40 years. Proposition 1B funding was a 2006 general election proposition approved by voters to authorize general obligation bonds for improvements to transportation facilities to reduce congestion and deterioration.

TRANSNET

Reevaluation of the Sycamore Landfill Expansion Plan Required

When the City of San Diego certified the Environmental Impact Report (EIR) in 2008 for an expansion of the Sycamore Landfill, the City of Santee promptly filed a lawsuit in San Diego Superior Court challenging San Diego's compliance with the California Environmental Quality Act (CEQA).

The EIR permitted a greater landfill height and allowed an increased amount of trash to be accepted without full disclosure or analysis of the issues associated with the larger than proposed expansion project. Moreover, San Diego failed to adopt "Findings of Fact and Statement of Overriding Considerations" as required by CEQA to support the approval of this environmentally inferior project.

In July 2010, a judge confirmed that San Diego had improperly adopted a larger project than originally proposed and analyzed in the environmental document. The court ruling will likely lead to the de-certification of the EIR and the annulment of other approvals made by the City of San Diego.

Santee will continue its active engagement in the proposed Sycamore Landfill expansion to ensure that effective controls are implemented to minimize further impacts on our community, such as visual effects, traffic and odor.

Off Leash Dog Program Receives Favorable Response

In June 2009, the City Council approved a pilot program allowing off-leash dog areas within designated City parks subject to certain rules and regulations. Off-leash areas were established at Woodglen Vista Park, Mast Park and Big Rock Park during specific days and times to allow dogs to exercise and socialize in designated areas without being constricted by a leash. Signs are posted at each park identifying the areas, days and time for off-leash use or you can visit the City's web site at *www.ci.santee.ca.us* to review this information.

Overall, the response to the off-leash program has been very favorable. Many of the users of the off-leash areas have expressed appreciation for providing an area for their pets to exercise and commingle with other pets and have requested dedicated off-leash parks with additional hours of availability. In response, off leash hours were increas ed at the three parks in January 2010. Many users requested clearer notification to better define the off-leash area within each park. In response, additional signs with maps were installed identifying the areas that are allowed for off-leash uses.

While most of the feedback has been favorable, some park users have voiced concerns about persons not removing or placing pet feces into proper receptacles in accordance with the City Municipal Code and as required for use of the off-leash area. Additional dog waste bag dispensers have been installed at each park. Most users have been cooperative about removing feces and have offered assistance when others do not.

Unfortunately, there have also been reports of irresponsible behavior by dog owners, such as dogs walking off-leash with their owners beyond the boundaries of the off-leash areas. Off-leash dogs have approached walkers, runners and other on-leash dogs who are traveling on the park's sidewalks, trails or play areas. Other concerns are off-leash activities outside the designated hours or days. This type of unauthorized use puts the success and future of the off-leash program at risk. The Sheriff's Department and Animal Control have increased their surveillance of the parks for unauthorized off-leash use.

At their meeting on August 25, the City Council approved to continue the off leash program for an additional six months and requested a dog park stewardship plan be put into place to help ensure all users are following the rules.

If you are a user of the off-lease pet areas, please help to make this program successful by reminding other users of the designated off-leash boundaries and rules.

Off-leash use is subject to the following rules:

- Dogs must be licensed
- Dogs must be under effective voice control
- Owner must clean up after pet
- Dogs must be prevented from biting or harassing any person or another animal
- Dogs must be kept out of playground and landscape areas, sports courts and picnic areas

As a reminder, dogs are not permitted to be off-leash at any time at Shadow Hill, West Hills, Sky Ranch, Santee Mini or Town Center Parks. In addition, dogs are not permitted at any time (on or off-leash) on any school properties. If you witness irresponsible pet behavior, contact the County of San Diego Department of Animal Services at (619) 236-4250.

A community dog park forum will be held at 7:00 p.m. on Thursday, October 7 at Santee City Hall, building 2, for those interested in being a part of the new dog park committee. For additional information regarding off-leash areas, please call (619) 258-4100 ext. 126 or visit the City Parks page on the "For Residents" tab at *www.ci.santee.ca.us*.

Cedar Creek Apartments Provide Affordable Housing Opportunity

The Chelsea Investment Corporation is bringing a unique, affordable multifamily development to the City called "Cedar Creek Apartments" which will include 48 dwelling units located on Fanita Drive.

The Cedar Creek Apartments will advance Santee's housing goal to provide a diverse mix of housing for residents. The gated community has units ranging in size from one-bedroom to three-bedrooms within four multiplex buildings.

The development includes market-rate amenities, such as a landscaped courtyard with a protected children's play area and a central barbeque patio. A key feature for residents is the multiuse facility where residents are able to host social gatherings or meetings as well as participate in the computer lab, exercise facility, and enjoy supervised after school programs for kids.

Meeting Santee's interest in sustainable communities, the development uses eco-friendly design features such as solar water heating, low water use strategies, and methods to protect water quality.

Santee Disposal Rate Surpasses State Requirements

The Santee community continues to excel in diverting trash from the landfills and meeting the State's recycling requirements. Since 2003, the City of Santee has met or exceeded the State's solid waste disposal requirements.

Santee's reported disposal rate for 2009 was 4.3 pounds-per-person-per-day, which is lower than the State's requirement of 6.5 pounds-per-person-per-day. This equates to a 66% diversion rate.

Thank you to all Santee residents for continuing to recycle household items and construction waste and keeping it out of our landfills. For recycling information please visit Santee's web site at www.ci.santee.ca.us or call (619) 258-4100 ext. 128.

Santee Generates Savings Through Street Light Upgrades

The City of Santee will be among the first in the region to achieve savings and reduce energy use through its progressive Street Lighting Upgrade Project. As part of the City's sustainability efforts, more than half of the city-owned street lights will be replaced with more energy efficient lighting, saving $75,000 and reducing energy use by more than 600,000 kilowatt hours each year. The new street lights will not only be cost effective, they will be environmentally responsible.

The replacement of the street lights will reduce Santee's reliance on costly business practices, save taxpayer dollars through energy efficiency and maintain long-term benefits for the environment. "It's a win-win for the environment and the Santee taxpayers," said Santee Mayor, Randy Voepel. In addition to annual savings, San Diego Gas & Electric will be awarding the City $47,900 in energy efficiency rebates for installing the new lights.

While the goal in Santee is to replace all of the street lights, the current plan will replace 933 of the 1,700 city-owned high pressure sodium and mercury vapor streetlights with lower wattage induction lights, which use up to 40% less energy. This first phase will replace all of the higher wattage lights on the arterial and collector streets and some lower wattage lights in residential areas. The project is expected to be completed by the end of 2010.

Through the use of a federal energy grant and an interest free loan through SDG&E, which will be repaid through energy cost savings, there is no impact to the City's General Fund. In fact, the City's Streetlight Maintenance budget will benefit from this action through the cost savings and rebates. The City is working on obtaining additional funding to replace the remaining street lights in the near future.

While some energy retrofit projects can take years to see a return on investment, the City will see an almost immediate payback from the replacement of its street lights, which in turn benefits the taxpayers and the environment.

Solar Panels Produce Electricity for Town Center Community Park

The City of Santee will soon benefit from the installation of its first photovoltaic energy system. In an effort to reduce our local government's energy use, save taxpayer dollars and promote energy efficiency, solar panels were recently installed on the roof of the Sports Complex in Town Center Community Park (TCCP). The panels, known as a solar or photovoltaic (PV) energy system, will produce electricity to help power the restaurant.

The system allows the City to produce electricity during the day by converting sunlight into power through the use of photovoltaic cells. Santee offers a great location for solar power generation with mostly sunny, cloud free days, which will allow the system to deliver electricity for many years.

As part of the City's Sustainability Project, additional sites throughout the City are currently being evaluated for installation of PV systems.

Deputy City Manager Receives SDSU Monty Award

The Monty Awards are a time-honored tradition at San Diego State University. The award is a symbol of achievement and success presented to distinguished alumni who have made significant contributions to San Diego State University, the San Diego community or California, nationally or internationally.

Pedro Orso-Delgado, the Deputy City Manager/ Director of Development Services for the City of Santee, was recently presented the Monty from the College of Engineering where he graduated in 1983 with a degree in civil engineering. A former District Director at CALTRANS, he is credited with significant contributions to the field of civil engineering through innovations in his district that received world-wide recognition. He also currently serves on several SDSU boards and committees.

(L) Pedro Orso-Delgado, Deputy City Manager/Director of Development Services and SDSU President Stephen Weber.

Captain Ed Musgrove

Santee Welcomes New Santee Sheriff Captain

Santee welcomes a new Sheriff in town . . . Captain Ed Musgrove, who comes from the Vista Station where he was the Lieutenant in charge of field operations, patrol and traffic. During his 22-years of service in the Sheriff's Department, Captain Musgrove has worked in a wide variety of law enforcement assignments including the Emergency Planning Detail in the Sheriff's Emergency Services Division at Gillespie Field.

Captain Musgrove is a California native, born in Sacramento, but raised in San Diego. After graduating from Poway High School in 1980, he served seven years in the United States Army. He later earned a Bachelor of Science degree in Business Management and a Master of Arts in Organizational Leadership. In 2009, Captain Musgrove attended the FBI National Academy. He is married to retired Sheriff's Deputy Carole Musgrove and has two daughters, 16 year-old Cailin, and 14 year-old Brooke.

As he begins his first assignment as a Captain, he looks forward to the challenges and rewards of leading a patrol station as Santee's "Chief of Police." Captain Musgrove believes problem solving in modern policing is best achieved by marrying traditional law-enforcement processes with critical, non-traditional thinking and involving the community to achieve success. His challenge to the station staff is to provide Santee the best law enforcement service in the county by working with the community to keep this a great place to live, work and enjoy.

Santee Bluegrass Festival

Wine, Dine & let the Bluegrass shine

Photo by Ron Cooks

Photo by Steve Prendergast

Photo by Ron Cooks

Photo by Steve Prendergast

Blue Grass Festival Offered a Taste of Santee

The Santee Park and Recreation Committee hosted the first ever Santee Bluegrass Festival on Saturday, September 25. The fund-raising event was the first event to be held at the new Town Center Community Park off Park Center Drive.

Live bluegrass music performed by Gone Tomorrow and The Shirthouse Band added ambiance to the festival as approximately 400 attendees enjoyed a variety of wines from throughout California and sampled award winning and local beers in commemorative glasses. Restaurants from Santee and East County provided a delicious selection of food tastes and desserts throughout the night.

The event offered a chance for community members to gather close to home and enjoy the company of friends. "Many thanks to the restaurants, wineries, breweries, businesses and volunteers who supported this great event that benefit Santee families" said Ken Fox, Festival and SPARC Chairperson.

Proceeds from the festival will benefit municipal park enhancements, community programs and the *Voucher Incentive Program* which provides financial assistance to qualifying Santee families to participate in recreation activities.

The Santee Park and Recreation Committee is made up of community volunteers that act in an advisory capacity to the City Council on matters pertaining to municipal recreation programs and City park development.

New Community Services Director

After a nationwide search, the City of Santee welcomed a new Director of Community Services starting June 28, 2010. Bill Maertz (pronounced Mertz) was previously the Parks and Recreation Director for Elk River, Minnesota, a city of 25,000 located about 45 minutes from Minneapolis. Bill had been in this position for six years and facilitated construction of a new library, several trail systems and 10 new parks. Prior to that he served as Parks and Public Works Director in Falcon Heights, a smaller community close to the University of Minnesota. Bill has a B.A. degree from the University of Minnesota and a Masters in Public Administration from Hamline University in Minneapolis.

Bill, Maertz, Director of Community Services

Bill and his wife of more than 20 years, have a son in his freshman year of high school and a daughter starting her freshman year in college.

Santee Sheriff Rolls Out Campaign to Educate Teen Drivers

A teenage driver's first year behind the wheel is the most dangerous. While a teenager is killed in a traffic collision every 70 minutes nationwide, approximately 375,000 teenagers are injured in traffic collisions annually, either while driving or as a passenger. Developed for new drivers, ages 15½ to 20 years old, the Start Smart Program focuses on the responsibilities and consequences of driving. The free, two-hour course is offered by the San Diego County Sheriff's Department. Santee Traffic Deputy Dan Wilson will instruct local classes at the Santee station.

Descriptions, testimonies and video of actual tragic situations set the serious tone of the class, as students develop safe driving habits and tips to avoid collisions. Participants learn the often devastating consequences of making a poor choice behind the wheel. Many parents who accompany their children have expressed that they also learn important facts.

Complementing the Start Smart Program is the County Teen Drinking and Driving Campaign which promotes alcohol and substance-free driving.

In conjunction with the trainings, School Resource Officers and Traffic Deputies have joined forces to conduct traffic details at local high schools to help integrate the message of safe driving in the schools.

The goal of these efforts is to eliminate deaths and injuries caused by teen drivers who are inattentive, inexperienced, or under the influence of alcohol or drugs. By emphasizing the responsibilities of both parents and teen drivers, this goal can come closer to reality with support from law enforcement, the community and schools.

Don't Text and Drive

The use of cell phones and text messaging has grown exponentially in recent years. Unfortunately, the dangers of texting while driving have also grown.

Texting has increasingly become the way to communicate for many people and the impulse to quickly read and respond to messages, even while driving, can be tempting. The statistics on the risks of texting and driving are clear -- when drivers send electronic text messages while driving, their attention is diverted from the road, making them 23 times more likely to be involved in an accident, according to the Virginia Tech Transportation Institute. A recent study found that 26% of American teen drivers admit they have texted while driving, and 48% of teens ages 12 to 17 say they have been a passenger while a driver has sent a text message.[1]

Texting while driving not only poses a hazard to other drivers, passengers and pedestrians, it is illegal. The message to all wireless users is simple: Don't text and drive! The City of Santee encourages everyone to take the following pledge:

- **Be smart.** Don't text and drive. No text message is worth getting into an accident.
- **Be in control.** You decide if and when to send and read a text message so take control. Consider turning off your phone, setting it to silent or set it aside before hitting the road.
- **Be caring.** Don't send a text message to someone who you know is driving.
- **Be an example.** Don't send the wrong signal by texting while you drive. Others will follow your example.

[1] Mary Madden and Amanda Lenhart, "Teens and Distracted Drivers," Pew Internet & American Life Project, November 2009. Available at: http://www.pewinternet.org/Reports/2009/Teens-and-Distracted-Driving.aspx

Social Host Ordinance Designed to Prevent Underage Drinking

Underage drinking can have devastating consequences, including alcohol-related traffic crashes, assaults and violence. Unfortunately, many of these incidents occur at private parties or when teenagers get in their cars to drive home after leaving a party where alcohol was consumed.

The City of Santee recently adopted a new social host ordinance, which imposes a duty on any person, parent or guardian who hosts a party or gathering to take reasonable steps to ensure that minors are not consuming alcohol, using marijuana or taking any other controlled substances.

This means adults will be cited if they furnish alcohol to minors at a gathering or if they observe minors drinking alcohol or using marijuana and do nothing to stop it. If someone shows up to your home with alcohol, marijuana or another controlled substance, or is intoxicated, you should contact the Sheriff's Department immediately by calling the dispatch center at (858) 565-5200.

Awards Recognize Community Assistance in Crime Prevention

Members of the City's Community Oriented Policing Committee (COMPOC) regularly acknowledge community members within Santee who demonstrate a strong commitment toward crime prevention. Certificates of appreciation over the past year have been awarded to:

- The City's Public Services Division who quickly respond and are dedicated to working with the Sheriff's Department on graffiti abatement.
- The Santee Costco for diligent enforcement of rules by employees regarding the sale of cigarettes and alcohol to individuals under the legal age.
- Michaels' Arts & Crafts store for adhering to requirements for securing spray paint to assist with preventing graffiti.
- Buck Wise Pawn Shop for assisting the Sheriff's Department in apprehending suspects of a stolen property investigation.
- Devan Henselmeier and Wyatt Smith, 5th grade students at Cajon Park Middle School, for their initiative to volunteer over spring break assisting the City in its efforts to identify and mitigate graffiti.

The City of Santee and COMPOC encourage citizens to be proactive and help prevent crime. For more information about COMPOC, visit the City's web page at www.ci.santee.ca.us. To report grafitti or vandalim in public spaces call (619) 258-4195.

12th Annual Pancake Breakfast

Hosted by the Santee Firefighters and San Diego County Sheriff's Department.

November 5-6 • 7:00 to 10:30 a.m.

Santee Fire Station 4 • 8950 Cottonwood Avenue

$4 for adults • $3 for Seniors 65+ and children under 10

Breakfast includes pancakes, sausage, eggs, coffee and juice

Proceeds go towards Santee families in need

door prizes!

Protecting Your Property from Fire and Erosion

With fire season upon us, the City needs your help in minimizing the risk of major wild fires. Vegetation on open lots should be mowed to a height of approximately four inches, with clippings left on top of the stubble to provide additional fire suppression. Dead shrubs, trees or limbs, and debris should be removed. Property owners should implement these measures a distance of one hundred feet from any structure and up to thirty feet along each side of roadways or driveways.

Completely removing vegetation is unattractive and unnecessary. Bare soil will wash away (erode) during winter storms causing loss of the top layer of rich organic matter that provides nutrients to plant life. Once topsoil has been removed, it will be difficult for plants to grow without the addition of soil amendments. Additionally, erosion can result in damage of property downgradient and potential pollution through the discharge of sediment to the river through the storm drain system. Blockages of the storm drain system may result in property damage and are costly to remove.

Mowing vegetation allows the plant roots to help hold the soil in place minimizing erosion. Protect your property from fire and erosion by ensuring that vegetation is mowed and not completely removed.

Warm Weather Brings Out Rattlesnakes

The warm temperatures in Santee means rattlesnakes are out of hibernation and most likely resting in bushes. Watch your step, especially when hiking near bushes and rocks, because startled rattlesnakes will strike.

To prevent snakebites keep children close by and dogs on a leash, especially when walking on trails. Never attempt to pick up a snake even if it looks dead.

Rattlesnakes are important members of the ecosystem as they help reduce the amount of mice, rats and other small animals. If they are disrupted or cornered, they will defend themselves, so give them space and respect.

Some interesting facts about rattlesnakes:

- They do not lay eggs like other snakes, but have their babies live.
- They are known to strike at distances of up to two-thirds their body length.
- If a rattlesnakes rattle absorbs enough water in wet weather, it will not make noise, which makes them even more dangerous.

Remember a bite from a rattlesnake is life threatening. If bitten, seek medical care immediately.

Hypodermic Needles Must be Properly Disposed

Since September 2008, home generated hypodermic needles, or sharps, have been forbidden in waste containers. The law prohibits the disposal of needles in any household trash can, including recycling or green waste bins. All home-generated sharps waste must be transported in an approved container and managed by a permitted hazardous or medical waste facility, or managed as part of a mail back program.

Waste Management, the City's franchise trash collector, has authorized containers at the Buyback Center in El Cajon for Santee residents to drop off sharps/needles free of charge. The Buyback Center is located at 925 O'Connor Street, located just southwest of the intersection of Bradley Avenue and Johnson Avenue. Residents can transport these items in their own containers to this location and then place them into the authorized containers during normal business hours, Monday through Friday, 8:00 a.m. to 2:00 p.m. Waste Management employees are not authorized or allowed to handle the sharps.

Another option of disposal is through a mail back system. Sharps mail-back programs provide individuals with a safe and convenient way of disposing used hypodermic needles through prepaid postage shipping containers delivered safely by the United States Postal Service to a certified medical waste facility where it is destroyed. Check with your local pharmacy or drug store for containers.

For more information, call Ed Ruiz, Senior Management Analyst at (619) 258-4100 ext. 128.

200 Cars, Food & Vendor Booths

Music by The Corvettes

Beer Garden

& RAMSHACKLE

www.SanteeCarShow.com

Presented by Santee Chamber of Commerce

Local Youth Participated in Major League Baseball Competition

This past spring, 55 boys and girls ages 7 to 14 years old participated in the City of Santee Aquafina Pitch, Hit & Run competition at West Hills Park. The program is the official skills competition of Major League Baseball and is designed to provide youth with an opportunity to be recognized for the individual excellence in core baseball skills.

Thirteen finalists advanced from the local Santee competition, including Keegan Valdisera, Liam Dougherty, Abby Farr, Andrew Ritayik, Joseph Lopez, Matthew Ireland, Paul Anderson, Bradley Harris, Jared Bryant, Cody Pedrero, Nathan Temple, Shane Whittaker and Spencer Moyer.

A special congratulation goes out to Matthew Ireland and Nathan Temple who went on to finish first and third respectively, in their age divisions at the Padres Team Championship held at PETCO Park!

The local Aquafina Pitch, Hit & Run competition is hosted by the City of Santee Community Services Department each spring. For more information, contact (619) 258-4100 ext. 258.

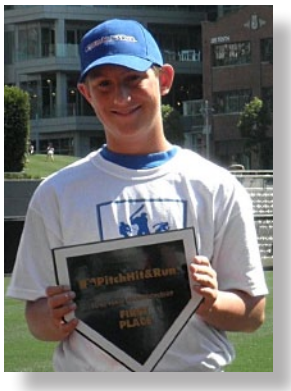

First place winner Matthew Ireland

City and School District Work Together to Improve Chet F. Harritt Ball Field

The Santee School District recently completed the first phase of improvements on the Chet F. Harritt ball field complex in anticipation of the Santee Pioneer Little League move from the old Santee School site.

The project constructed a new ball field with sports field lighting that allows for a seamless connection to Chet F. Harritt School and diagonal parking off Mesa Road. The City contributed $274,000 towards the project through Community Development Block Grant funds. Following the completion of future phases to improve the existing ball fields and for school modernization, the facility will be linked to the adjacent Big Rock Park with accessible paths of travel providing access to recreational experiences not currently available at Big Rock Park.

The City of Santee and Waste Management Present

Community Holiday Lighting Celebration

Friday November 19 • 5:30 to 8:30 p.m.

Santee Trolley Square

9884 Mission Gorge Road • Santee, CA 92071

City of Santee Holiday Lighting & 30th Anniversary Celebration

Join us in celebrating the City's 30th anniversary at the 8th annual Holiday Lighting Celebration at Santee Trolley Square. The event will be held on Friday, November 19 from 5:30 to 8:30 p.m. The event will include a tree lighting ceremony, ice skating attraction, a variety of free holiday festivities and entertainment for the entire family.

FREE!

For more information call the Special Event Hotline at **(619) 258-4100 ext. 201** or visit our website at **www.ci.santee.ca.us**.

Friends of Santee's River Park Day of Community Service

The Friends of Santee's River Park, a chapter of The San Diego River Park Foundation, hosted a conservation project and river cleanup at Town Center Community Park as part of the National Public Lands Day and Coastal Cleanup Day on September 25.

Tamarisk, also known as Salt Cedar, is an invasive nonnative tree that is damaging to our local ecosystem and provides little benefit to the birds and wildlife that live along the river. Tamarisk also poses a fire risk with its highly combustible needles and branches. At past events, volunteers have worked towards removing Tamarisk from the riverbed in Mast Park. This year efforts focused on the new Town Center Community Park.

At the same time, river clean up took place. According to Rob Hutsel, Executive Director of the River Park Foundation, "nearly 80% of the trash and debris found in the ocean or along the coast originates from a land based source. Trash and debris can enter into a creek or a river and eventually wash down to the ocean. Trash not only negatively affects our water quality but also degrades our quality of life and the overall health of our community."

East County residents joined the event to help remove detrimental invasive plants, trash and debris from the San Diego River in Santee.

About The San Diego River Park Foundation

The San Diego River Park Foundation's mission is to engage people to work toward a better future for the San Diego River and the creation of a 52 mile river parkway from the mountains to the ocean. The River Park Foundation is a non-profit community-based organization that was founded in 2001. Since its founding, it has grown in membership to more than 3,000 people and annually organizes volunteers who contribute more than 20,000 hours of service to the San Diego River corridor.

For more information please call the River Park Foundation office at (619) 297-7380 or email volunteer@sandiegoriver.org.

Community Native Planting Event

The Friends of Santee's River Park and the Santee Historical Society are asking for the community's help in planting a native plant garden on Saturday, November 20th at the Historic Edgemoor Polo Barn. Using plants and shrubs donated by Recon Native Plant Nursery, participants can help to improve the site with plantings that were commonly used by Santee's original residents and our local Native American tribes.

During San Diego River Days last May, over 300 volunteers worked to clear weeds and dead vegetation from the Barn property and prepare the site for a fall planting event.

The Historical Society is in the process of creating a museum, in the barn that is dedicated to the fascinating and colorful history of Santee. Through a partnership with the Santee Historical Society, the County of San Diego and City of Santee, the Friends of Santee's River Park will also utilize the barn as a meeting and community space, in return for helping to care for and maintain the grounds and landscaping around the Barn.

This fun, family friendly event will help preserve and enhance an important piece of our local history. All East County residents are welcomed to join in. To RSVP or for more information please call (619) 297-7380 or email richard@sandiegoriver.org.

The City of Santee is here to serve you. If you need information or have concerns, please feel free to contact us, either by phone or via the website.

Also, plan on attending a Council meeting. Santee's City Council typically meets the second and fourth Wednesday of every month at 7 p.m. in the Council Chamber located at City Hall. Meetings will be held on the second Wednesday in November and December.

The City of
Santee

City Hall
10601 Magnolia Ave.
Santee, CA 92071
(619) 258-4100
www.ci.santee.ca.us

We honor the public trust and inspire pride in our community by providing quality services and programs to promote economic prosperity, safety, social well being and a healthy environment.

The City of Santee does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, disability, marital status, pregnancy, or age with regard to admission, access to, treatment, or employment in City programs or activities.

City Council Highlights

February through July 2010

- Appointed Frank Bathrick to the Manufactured Home Fair Practices Commission, and Jessica Engelman to the Santee Park and Recreation Committee.
- Adopted a new Social Host Ordinance which requires hosts at all parties or gatherings to take all reasonable steps to ensure that minors do not consume alcoholic beverages, use marijuana or other controlled substances. The new ordinance also increases the penalties per violation to a minimum fine of $1,000 for first offense.
- Approved the following public service agencies for Community Development Block Grant (CDBG) funding: Santee Food Bank, Meals-on-Wheels, ElderHelp, YMCA, Crisis House, AYSO, Project Safe House, Santee Boys and Girls Club, Santee Santas, and Youth Football and Cheer.
- Adjourned in memory of Ken Collier, Santee Sheriff's Deputy, who died in the line of duty.
- Approved construction improvements adding concrete pathways, picnic table concrete pads, and a complete irrigation system for Town Center Community Park West.
- Adjourned in memory of Pastor Donald C. Hamer, Chairman of the Santee Human Relations Advisory Board.
- Presented a Proclamation to the Santana High School Academic League Varsity Team and West Hills High School Academic League Junior Varsity Team for each achieving a perfect record of ten wins and zero losses for the 2009-2010 season.
- Introduced 2010 Miss Santee Kimberly Swank and Miss Santee Teen Taylor Shelton.
- Received a Proclamation from the California Department of Forestry and Fire Protection recognizing the City of Santee as a Tree City USA for 2009, making it the eighth year Santee has received this national recognition.
- Proclaimed May as Drowning Prevention Month.
- Designated the week of May 17, 2010 as Bike to Work Week and May 21, 2010 as Bike to Work Day.
- Adopted an amendment to the juvenile curfew Ordinance changing curfew hours to 10:00 p.m. year round.
- Adjourned in memory of Carole Elizabeth Montague.
- Adopted a Resolution promoting safe driving in the City of Santee and educating the public about the dangers of texting while driving.
- Approved the installation of stop signs on Crystal Springs Road at Collinwood Drive; De Vos Drive at Wethersfield Road and Kaschube Way; and Settle Road at Carrie Ellen Court, Fenway Road, and Penmar Road.
- Proclaimed July as Parks and Recreation month.
- Adopted an Ordinance extending an interim Urgency Ordinance, which imposes a moratorium on the establishment and operation of medical marijuana dispensaries for an additional 12 months.

ATTACHMENT 12.1

ADDITIONAL STUDY

CITY OF SANTEE
2010 ADDITIONAL STUDY
RIVERS AND CREEKS

Submitted to:

City of Santee
Development Services
10601 Magnolia Avenue
Santee, CA 92071-1266

Prepared by:

D-MAX Engineering, Inc.
7220 Trade Street, Suite 119
San Diego, CA 92121
Tel: (858) 586-6600
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D-MAX Engineering, Inc.

Consultants in Water & Environmental Sciences

March 7, 2011
Project No. 201022W-4

Ms. Helen Perry
Storm Water Program Manager
City of Santee
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: City of Santee 2010 Additional Study, Rivers and Creeks

Dear Ms. Perry:

Enclosed please find our report for the City of Santee 2010 Additional Study. This report presents the results of two round of monitoring conducted at five river and creek locations in the City of Santee during the 2010 dry weather season. The contents include field screening data and analytical laboratory test results, historical data, and photographs of sampling locations.

Review comments from the draft report submitted to the City have been incorporated into this final report. It has been our pleasure working with the City of Santee on this project.

Sincerely,
D-MAX Engineering, Inc.

Sara Dadkhah
Assistant Project Scientist

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

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- A Historical Monitoring Data
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EXECUTIVE SUMMARY

The purpose of the City of Santee Rivers and Creeks Additional Study is to evaluate water quality in the City's major receiving waters, and to assess changes in water quality as flow passes through urbanized areas. The City has monitored five receiving water sites, including Forester Creek Downstream and Upstream, San Diego River Downstream and Upstream, and Sycamore Creek Downstream, twice per year since 2002.

Several enhancements were made to the program in 2010:

- A project-specific Quality Assurance Project Plan was developed to ensure compatibility of collected data with the State's Surface Water Ambient Monitoring Program.
- In light of proposed Clean Water Act Section 303(d) listings, the City elected to monitor receiving waters for selenium. Water samples from each site were analyzed for total selenium concentrations using two different methods. Results from all selenium analyses were below San Diego Basin Plan water quality objective (WQO).
- Sulfate testing was also added to the program based on findings that sulfate concentrations displaying an effect on the availability and toxicity of selenium in water. All sulfate results were below the WQO.

Notable findings from this year's program include:

- Total dissolved solids (TDS) exceeded the WQO at both Forester Creek sites and at the San Diego River Downstream site during the two rounds of sampling. Sycamore Creek Downstream also had a TDS exceedance during Round Two.
- *Enterococcus* and fecal bacteria were above WQOs at Forester Creek Upstream during both rounds of sampling. Only Enterococcus was elevated at Forester Creek Downstream during one round of sampling. These data indicate that bacteria levels decrease in Forester Creek after traveling through the City of Santee.
- Concurrent with historical findings, no pH values exceeded WQOs at any of the water bodies assessed.

1 INTRODUCTION

1.1 Objective

The objective of the City of Santee Rivers and Creeks Additional Study (Additional Study) is to evaluate water quality in the San Diego River, Forester Creek, and Sycamore Creek within the City of Santee (City) and to assess any changes in water quality as the waterbodies flow through urbanized areas of the City. This Additional Study is not performed in response to any specific regulatory requirement. However, water samples taken from these receiving waterbodies will be compared to the pertinent water quality objectives (WQO), as listed in the Water Quality Control Plan for the San Diego Basin 9 (Basin Plan)

The City has conducted a study of its receiving waterbodies twice each year since 2002 to establish a baseline historical data set against which to compare future monitoring results to help comply with total maximum daily loads and other applicable requirements. Historical monitoring data is included as Appendix A to this report. Two rounds of Additional Study monitoring were conducted concurrently with the 2010 Dry Weather Field Screening and Analytical Monitoring Program in May and September of 2010.

1.2 Geographical Setting

The City of Santee is located entirely within the San Diego River Watershed, Hydrologic Unit (HU) 907. The largest receiving waterbody in the City is the San Diego River, which enters the City in the east and flows west towards the Pacific Ocean. Other major receiving waterbodies include Forester Creek and Sycamore Creek, both of which eventually drain to the San Diego River. Forester Creek enters the City from the southeast and drains into the San Diego River at a location west of Carlton Hills Boulevard. Sycamore Creek enters the City from the north, flows southward, entering the San Diego River just west of Santee Recreation Lakes. All storm water drainage in the City of Santee is routed either directly or indirectly to these creeks and ultimately to the San Diego River. The entire City of Santee, along with the whole of the City of El Cajon and portions of the cities of La Mesa, San Diego, and Poway, lie within the Lower San Diego River Hydrologic Area (HA) 907.1.

1.3 303(d) Listings

Portions of the San Diego River and Forester Creek have been placed on the Clean Water Act Section 303(d) list of impaired waters. In November 2010, the State Water Resources Control Board adopted the 2008 Section 303(d) list identifying parts of the lower San Diego River as impaired for *Enterococcus*, fecal coliform, low dissolved oxygen, manganese, nitrogen, phosphorus, total dissolved solids, and toxicity. Portions of Forester Creek have been listed for fecal coliform, selenium, total dissolved solids, and pH. These listings still require approval by the Environmental Protection Agency.

1.4 Monitoring Locations

The five monitoring sites selected for the Additional Study are presented in Table 1-1. The table provides the site number, location, conveyance configuration, land uses, hydrologic subarea, and GPS coordinates of each sampling locations. A map of sampling locations is included as Figure 1-1. Photographs of sampling locations are included in Appendix B.

TABLE 1-1
2010 RIVER AND CREEK MONITORING STATIONS

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
Forester Creek Downstream	Approximately 200 feet north of the Mission Gorge Road and Fanita Drive intersection, east of Fanita Creek	Natural Creek	Open	Commercial	907.12	32.83953	-117.00241
Forester Creek Upstream	Beneath the Prospect Avenue bridge, west of Cuyamaca Street	Concrete Channel	Industrial	Commercial	907.13	32.83093	-116.98543
San Diego River Downstream	Beneath the West Hills Parkway bridge	Natural Creek	Open	Residential	907.12	32.83936	-117.02450
San Diego River Upstream	Approximately 200 feet downstream of the rock dam at the east end of the RCP service road.	Natural Creek	Open	Industrial	907.12	32.85282	-116.95281
Sycamore Creek Downstream	Beneath the Carlton Oaks Drive bridge, west of the Santee Recreation Lakes	Natural Creek	Open	Residential	907.12	32.84441	-117.00652

FIGURE 1-1
CITY OF SANTEE 2010 ADDITIONAL STUDY SAMPLING LOCATION MAP

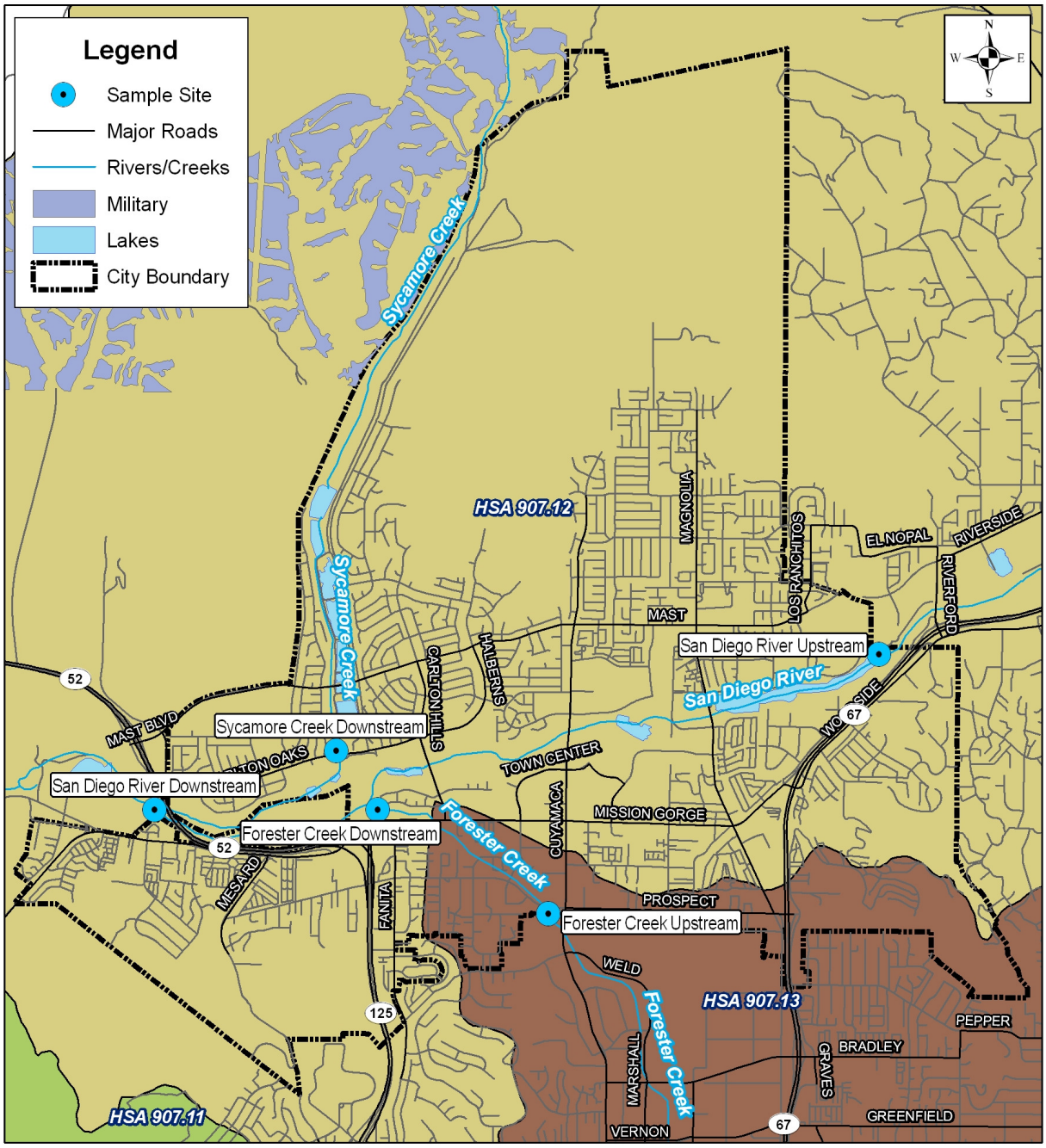

Data Sources: SanGIS, SANDAG

0 0.25 0.5 1 Miles

2 FIELD AND LABORATORY ANALYTICAL METHODS

2.1 Field Screening Procedures

Field screening techniques consist of qualitative field observations, flow measurement, and quantitative field analyses of selected water quality parameters. Weather conditions and time since last rainfall are recorded as well. Specific observations and results of the field water quality analyses are documented on field data sheets, which serve as a record of the field visit and are included in Appendix D.

A Quality Assurance Project Plan (QAPP) was developed in 2010 describing the Quality Assurance/Quality Control (QA/QC) procedures associated with the project. The QAPP helps ensure that sampling is compatible with the State of California Surface Waters Ambient Monitoring Program (SWAMP) requirements for data quality.

Field screening and analyses were conducted according to the following procedures and methods.

Qualitative Observations

Qualitative field observations include a general site assessment and description of water odor, clarity, the presence of floatable materials, visible deposits or stains, and organisms. Each field screening location is photographed to document site conditions. Photographs are included in Appendix B.

Flow Measurement

Flow measurements can be used to estimate pollutant mass loading. The field method used to estimate the flow rate in this study will consist of measuring the velocity, depth, and width of the flowing water, where feasible.

Field Water Quality Analyses

At each site, water samples were collected and analyzed in the field for the following constituents:

- Temperature
- pH
- Specific Conductance
- Dissolved Oxygen

The methods used to perform the above field analyses, along with the reporting limit, range, and accuracy of each method, are listed in Table 2-1.

TABLE 2-1
FIELD ANALYTICAL METHODS

Parameter	Method*	Method Reporting Limit	Range	Accuracy
Temperature	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter	0.1°C	0.0°C – 60.0°C	± 0.5°C
pH	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter	0.01	0.00 – 14.00	± 0.01
Specific Conductance	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter	0.01 mS/cm	0 – 20 mS/cm	± 2% of FS[1]
Dissolved Oxygen	Hanna Instruments HI 9145 Portable Dissolved Oxygen Meter	0.00 mg/L	0.00 to 45.00 mg/L	± 1.5% of range

Notes:
EC = electrical conductivity
TDS = total dissolved solids
mS/cm = millisiemens per centimeter
°C = Degrees Celsius
[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.
*Test method information taken from Hanna Instruments manuals, available online at www.hannainst.com.

2.2 Laboratory Analytical Methods

At each site, samples were collected in sterile bottles for transport to the laboratory for analysis. Samples were submitted to EnviroMatrix Analytical, Inc, a laboratory certified by the California Department of Health Services, for analysis of the following constituents:

- Nitrate/Nitrite as N
- Total Kjeldahl Nitrogen
- Total Nitrogen
- Orthophosphate as P
- Total Phosphorus
- Total Dissolved Solids
- Sulfate
- Total Selenium
- Total Coliform bacteria
- Fecal Coliform bacteria
- *Enterococcus* bacteria

The methods used to perform each of the above analyses along with method reporting limits and holding times are listed in Table 2-2. Water samples were collected, placed on ice in a cooler, and then submitted to the analytical laboratory within four hours of sampling to ensure that water samples for total coliform, fecal coliform, and *Enterococcus* tests met standard bacteria holding time requirements.

TABLE 2-2
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Reporting Limit	Maximum Holding Time
Nitrate/Nitrite as N	SM4500 NO_3 E	0.05 mg/L	48 hours
Total Kjeldahl Nitrogen	SM4500 N C	0.5 mg/L	28 days
Total Nitrogen	Calculation*	0.5 mg/L	na
Orthophosphate as P	SM4500 P E	0.05 mg/L	48 hours
Total Phosphorus	SM4500 P B, E	0.05 mg/L	28 days
Total Dissolved Solids	SM2540 C	20 mg/L	7 days
Sulfate	SM4500 SO_4 E	5.0 mg/L	28 days
Total Selenium	EPA 200.8	0.5 µg/L	6 months
Total Coliforms	SM 9221 B, E	2 MPN/100 mL	6 hours
Fecal Coliforms	SM 9221 B, E	2 MPN/100 mL	6 hours
Enterococcus	SM 9230 A, B	2 MPN/100 mL	6 hours

Notes:
MPN/100 mL = most probable number (of colony-forming units) per 100 milliliters
na = not applicable
EPA = Environmental Protection Agency
* Total Nitrogen is calculated as the sum of Nitrate/Nitrite as N and Total Kjeldahl Nitrogen

For the 2010 Additional Study, total selenium was prepared, digested, and analyzed twice: once per standard EPA Method 200.8 and once using a modified method in which only nitric acid is used in the digestion (i.e., without hydrochloric acid). An analysis was conducted to identify if differences between the methods were statistically significant. The results of this analysis are discussed in Section 5.

3 FIELD SCREENING RESULTS

3.1 Qualitative Observations

Round One

During Round One, all site visits were performed under overcast conditions. All water samples collected were clear, odorless, and colorless. Trash was only observed floating on the surface of the water at Forester Creek Downstream. Normal vegetation was observed at all sites except Forester Creek Upstream, which is concrete-lined and therefore lacks vegetation. Algae were present at Forester Creek Upstream and at Sycamore Creek Downstream, and insects were observed at San Diego River Upstream. No additional biota was observed during Round One.

Qualitative observations made during Round One are presented in Table 3-1.

Round Two

Light conditions were sunny during all site visits in Round Two. Again, all water samples were clear, odorless, and colorless. Forester Creek Upstream was the only site with bubbles/foam floating on the surface of the water. Normal vegetation was observed at all sites except Forester Creek Upstream (lined with concrete) and San Diego River Downstream, which both lacked vegetation. Aquatic organisms were present at all sites and included combinations of insects, algae, fish, and crayfish.

Qualitative observations made during Round Two are presented in Table 3-2.

TABLE 3-1
FIELD OBSERVATIONS – ROUND ONE

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
Forester Creek Downstream	5/17/10	14:50	Overcast	None	None	Clear	Trash	Sediment, Fine Particulates	Normal	None
Forester Creek Upstream	5/17/10	12:30	Overcast	None	None	Clear	None	Fine Particulates	None	Algae
San Diego River Downstream	5/17/10	13:45	Overcast	None	None	Clear	None	Sediment, Gravel	Normal	None
San Diego River Upstream	5/17/10	10:50	Overcast	None	None	Clear	None	Sediment, Gravel	Normal	Insects
Sycamore Creek Downstream	5/17/10	15:40	Overcast	None	None	Clear	None	Sediment, Gravel	Normal	Algae

TABLE 3-2
FIELD OBSERVATIONS – ROUND TWO

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
Forester Creek Downstream	9/15/10	11:50	Sunny	None	None	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Algae, Fish
Forester Creek Upstream	9/15/10	11:00	Sunny	None	None	Clear	Bubbles, Foam	Sediment, Gravel, Fine Particulates	None	Algae, Crayfish
San Diego River Downstream	9/15/10	12:30	Sunny	None	None	Clear	None	Sediment, Gravel, Fine Particulates	None	Insects, Algae
San Diego River Upstream	9/15/10	9:50	Sunny	None	None	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Insects, Algae
Sycamore Creek Downstream	9/16/10	9:25	Sunny	None	None	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Insects, Algae

3.2 Field Analytical Results

Descriptions of the field constituents measured during field monitoring are provided below.

Flow measurements can help estimate pollutant mass loading. Field methods include measuring the velocity, depth, and width of the flowing water to calculate the flow rate.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Also, the aquatic habitat must remain within a certain temperature range in order to sustain sensitive aquatic life.

The **pH** is an expression of acidity or alkalinity of a water sample. The pH of an aquatic system will affect a variety of chemical reactions, including the availability of nutrients and the solubility of chemical substances, particularly heavy metals.

Specific Conductance (Conductivity) measurements indicate the total concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially indicate the presence of dissolved pollutants.

Dissolved Oxygen measurements indicate the amount of gaseous oxygen (O_2) dissolved in the water. Photosynthesis by aquatic biota and diffusion from the surrounding air are the processes responsible for oxygen input. Oxygen depletion can be detrimental to aquatic life and is often caused by the decomposition of organic material. Excessive algal growth due to nutrient enrichment is frequently the source of decomposing material. Higher values of dissolved oxygen often correspond with lower temperatures.

Statistical summaries of field analytical data are presented in Table 3-3 for Round One data and 3-4 for Round Two data. Complete field analytical results are presented in Table 3-5 for Round One data and Table 3-6 for Round Two data.

TABLE 3-3
STATISTICAL SUMMARY OF FIELD ANALYTICAL RESULTS – ROUND ONE

Parameter	Maximum	Minimum	Mean	Median
Flow (gpm)	1212	166	575.6	586.0
Temperature (°C)	21.0	19.0	20.3	20.5
pH	8.3	7.8	7.9	7.8
Specific Conductance (mS/cm)	2.76	1.09	2.03	2.05
Dissolved Oxygen (mg/L)	9.68	6.10	7.78	7.89

TABLE 3-4
STATISTICAL SUMMARY OF FIELD ANALYTICAL RESULTS – ROUND TWO

Parameter	Maximum	Minimum	Mean	Median
Flow (gpm)	188.5	25	78	58
Temperature (°C)	28.9	20.1	23.0	21.3
pH	8.0	7.0	7.4	7.4
Specific Conductance (mS/cm)	2.83	1.89	2.42	2.71
Dissolved Oxygen (mg/L)	7.72	5.12	6.28	5.66

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TABLE 3-5
FIELD ANALYTICAL RESULTS – ROUND ONE

Site	Date	Time	Flow (gpm)	Temp. (ºC)	pH	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
Forester Creek Downstream	5/17/10	14:50	654	20.5	7.8	2.76	7.89
Forester Creek Upstream	5/17/10	12:30	586	20.2	8.3	2.73	9.68
San Diego River Downstream	5/17/10	13:45	1212	19.0	7.8	2.05	6.95
San Diego River Upstream	5/17/10	10:50	166	21.0	7.9	1.50	8.27
Sycamore Creek Downstream	5/17/10	15:40	260	20.7	7.8	1.09	6.10
Water Quality Objective (WQO)			*	*	**> 6.5, < 9.0**	**20**	**5.0**

Note: * No established WQO

TABLE 3-6
FIELD ANALYTICAL RESULTS – ROUND TWO

Site	Date	Time	Flow (gpm)	Temp. (ºC)	pH	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
Forester Creek Downstream	9/15/10	11:50	69	20.8	7.6	2.75	5.66
Forester Creek Upstream	9/15/10	11:00	49	28.9	8.0	2.71	7.72
San Diego River Downstream	9/15/10	12:30	188.5	21.3	7.4	2.83	5.12
San Diego River Upstream	9/15/10	9:50	25	23.8	7.2	1.89	7.68
Sycamore Creek Downstream	9/16/10	9:25	58	20.1	7.0	1.93	5.21
Water Quality Objective			*	*	**> 6.5, < 9.0**	**20**	**5.0**

Note: * No established WQO

4 LABORATORY ANALYTICAL RESULTS

4.1 Summary

Descriptions of the laboratory constituents for analytical monitoring conducted during both rounds are shown below.

Nitrate/Nitrite as N is the form of nitrogen most available for uptake in chemical reactions. Nitrate/nitrite as N is a component of the total nitrogen.

Total Kjeldahl Nitrogen (TKN) is composed of organic nitrogen, ammonia, and ammonium and encompasses all components of the total nitrogen not available as nitrate or nitrite.

Total Nitrogen is the sum of nitrate/nitrite as N and total Kjeldahl nitrogen, described above. High levels of nitrogen may be indicative of nutrient pollution from agricultural or household fertilizer runoff. High nitrate levels can contribute to excessive algal growth, resulting in oxygen depletion as algae decomposes, and may eventually suffocate other aquatic life.

Orthophosphate-phosphorus (orthophosphate-P) can also be an indicator of nutrient pollution from agricultural or household fertilizer runoff. Similar to nitrate/nitrite as N, orthophosphate-P pollution can cause nutrient enrichment, stimulate algal growth, and thus deplete oxygen in the water to levels that are dangerous for aquatic life. Even low levels of orthophosphate-P can cause significant algal growth, as it is commonly the limiting nutrient in plant growth.

Total Phosphorus is the total amount of phosphorus, including both orthophosphate and less reactive forms.

Total Dissolved Solids (TDS) measurements quantify the amount of dissolved minerals in water. Dissolved solids may originate from natural sources or be indicative of anthropogenic contribution. High levels of TDS can be toxic to aquatic life. In southern California, imported water may also be a source of TDS.

Sulfate is naturally occurring in most waterbodies. Within the San Diego region, sulfate primarily originates from the gypsiferous deposits and sulfide minerals associated with crystalline rocks. Sulfate is also a component of TDS.

Selenium is a naturally occurring element that can be toxic to aquatic life at high concentrations. Fish and invertebrates are primarily exposed to selenium through their diet, which bioaccumulates and can be passed to higher trophic levels, such as birds.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts, most surface waters, and soils. Testing water samples for total coliform bacteria is a standard practice in public health. Total coliform is measured as an indicator of other more harmful pathogens, since these pathogens are generally present in much smaller quantities and are difficult to detect.

Fecal coliform, a subset of coliform bacteria, and ***Enterococcus*** are found primarily in the gastro-intestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. Without the use of significantly more expensive methods, such as ribotyping, it is not possible to determine whether the source of fecal material is human or animal. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain.

Complete laboratory analytical results are presented in Table 3-7 for Round One data and Table 3-8 for Round Two data. Laboratory reports are included in Appendix C.

TABLE 4-1
LABORATORY ANALYTICAL RESULTS – ROUND ONE

Site	Date	Time	Nitrate/Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solid (mg/L)	Sulfate (mg/L)	Total Selenium* (µg/L)	Total Selenium Modified* (µg/L)	Total Coliform (MPN/100 mL)	Fecal Coliform (MPN/100 mL)	*Enterococcus* (MPN/100 mL)
Forester Creek Downstream	5/17/10	14:50	4.3	1.2	5.5	0.09	0.21	**1,710**	446	2	2	17,000	300	40
Forester Creek Upstream	5/17/10	12:30	7.36	0.8	8.2	0.34	0.35	**1,660**	383	2	2	3,000	**2,300**	**500**
San Diego River Downstream	5/17/10	13:45	1.12	0.5	1.6	0.11	0.27	**1,280**	248	0.7	0.5	5,000	170	20
San Diego River Upstream	5/17/10	10:50	0.16	0.7	0.9	0.17	0.61	891	188	2	1	500	nd	20
Sycamore Creek Downstream	5/17/10	15:40	0.18	1.0	1.2	0.08	0.2	645	157	0.1 J	0.1 J	3,000	**1,100**	**170**
Reporting Limit			0.05	0.5	0.5	0.05	0.05	20	5.0	0.5	0.5	20[1]	20[1]	20[1]
Water Quality Objective			**10[2]**	[2]	[2]	[2]	[2]	**1,500/ 1,000[3]**	**500**	**5**	**5**	[4]	**400[5]**	**151**

Notes:
Bold font = at or above WQO
*Total selenium was analyzed twice: once per EPA Method 200.8 and once per EPA Method 200.8 modified. The modified EPA method did not use hydrochloric acid.
nd = not detected
J = Value reported is below the reporting limit; measurements have an increased percent error.
[1] The reporting limit for bacterial indicators was 20 MPN/100 mL (not 2 MPN/100 mL) during Round One only due to a laboratory miscommunication.
[2] Regional guidance suggests using the EPA's nutrient endpoint tool to determine the Water Quality Objective (WQO). This tool requires more data than what has been collected within the scope of this study.
[3] WQO varies by watershed. WQO for Forester Creek and San Diego River Upstream is 1,500 mg/L. WQO for San Diego River Downstream and Sycamore Creek Downstream is 1,000 mg/L.
[4] No established limit.
[5] All sites have a REC-1 beneficial use.

TABLE 4-2
LABORATORY ANALYTICAL RESULTS – ROUND TWO

Site	Date	Time	Nitrate/Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solid (mg/L)	Sulfate (mg/L)	Total Selenium* (µg/L)	Total Selenium Modified* (µg/L)	Total Coliform (MPN/100 mL)	Fecal Coliform (MPN/100 mL)	*Enterococcus* (MPN/100 mL)
Forester Creek Downstream	9/15/10	11:50	2.7	1.7	4.4	0.36	0.37	**1,740**	170	1	2	2,200	230	**800**
Forester Creek Upstream	9/15/10	11:00	6.28	1.8	8.1	0.1	0.12	**1,720**	165	2	2	5,000	**1,100**	**500**
San Diego River Downstream	9/15/10	12:30	0.93	1.7	2.6	0.21	0.22	**1,740**	354	0.7	0.6	5,000	50	13
San Diego River Upstream	9/15/10	9:50	0.1	1.1	1.2	0.1	0.2	1,150	265	2	3	170	2	2
*San Diego River ** Upstream Duplicate*	*9/15/10*	*10:00*	*0.12*	*1.3*	*1.4*	*0.09*	*0.15*	*1,190*	*264*	*2*	*3*	*800*	*nd*	*4*
Sycamore Creek Downstream	9/16/10	9:25	0.08	0.8	0.9	0.06	0.11	**1,140**	349	0.2 J	0.3 J	23,000	33	130
Reporting Limit			0.05	0.5	0.5	0.05	0.05	20	5.0	0.5	0.5	2	2	2
Water Quality Objective			**10[1]**	[1]	[1]	[1]	[1]	**1,500/ 1,000[2]**	**500**	**5**	**5**	[3]	**400[4]**	**151**

Notes:
Bold font = at or above WQO
QA/QC duplicate sample
*Total selenium was analyzed twice: once per EPA Method 200.8 and once per EPA Method 200.8 modified. The modified EPA method did not use hydrochloric acid.
**Relative percent differences (RPD) for all laboratory constituents were within 25% RPD as indicated in the QAPP, with the exception of total phosphorus at 28.6%
nd = not detected
J = Value reported is below the reporting limit; measurements have an increased percent error.
[1] Regional guidance suggests using the EPA's nutrient endpoint tool to determine the WQO. This tool requires more data than what has been collected within the scope of this study.
[2] WQO varies by watershed. WQO for Forester Creek and San Diego River Upstream is 1,500 mg/L. WQO for San Diego River Downstream and Sycamore Creek Downstream is 1,000 mg/L.
[3] No established limit.
[4] All sites have a REC-1 beneficial use.

5 DATA ANALYSIS

This section provides an overall evaluation of historical trends for the Additional Study.

A portion of Forester Creek outside of the City of Santee has been listed as impaired for pH; however, no samples in the history of the Additional Study have had pH values exceeding the Basin Plan WQO. A graph of historical pH results at the receiving water locations is provided in Figure 5-1.

Figures 5-2, 5-3, and 5-4 present historical fecal coliform measurements for Forester Creek, San Diego River, and Sycamore Creek collected as part of the Additional Study. The measurements illustrate a decreasing trend in fecal coliform bacteria at all receiving water sites, with lower levels generally measured at downstream locations. These data indicate that the water quality of Forester Creek and San Diego River is improved after traveling through the City of Santee, since pollutant levels are consistently lower in the downstream reach compared to upstream.

Total Selenium Methods

Total selenium results were obtained using the EPA 200.8 method and the modified method. Results from all analyses indicated selenium levels below WQOs at all sampled sites. The differences between results obtained using the two methods were analyzed for statistical significance using the Wilcoxon Signed-Rank Test, a non-parametric statistical analysis, and a paired t-test. Based on the results of 11 paired samples, the statistical analyses identified the differences between samples as not considered statistically significant.

Figure 5-1
Additional Study Data: pH

Figure 5-2
Additional Study Data: Fecal Coliform, Forester Creek

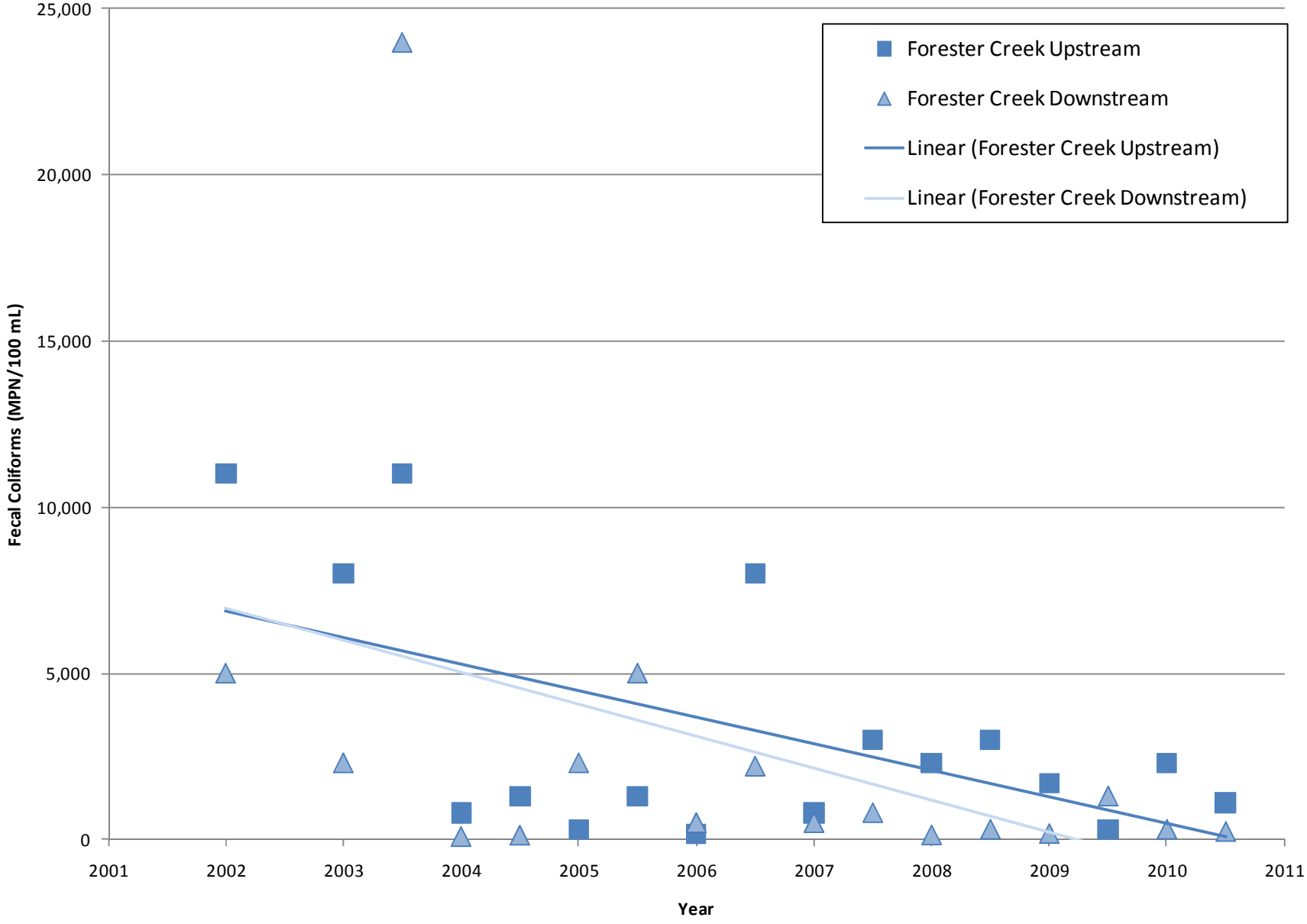

Figure 5-3
Additional Study Data: Fecal Coliform, San Diego River

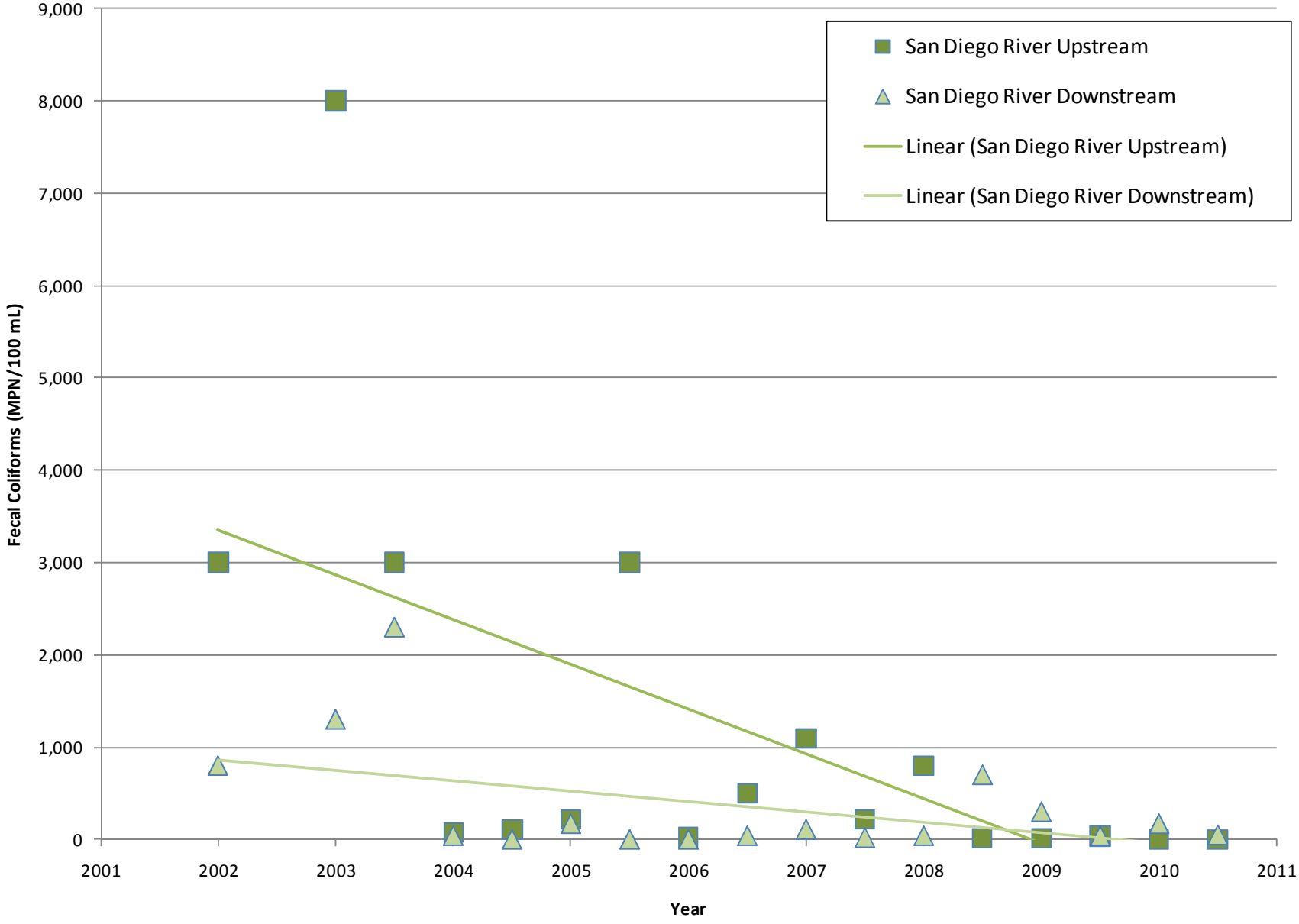

Figure 5-4
Additional Study Data: Fecal Coliform, Sycamore Creek

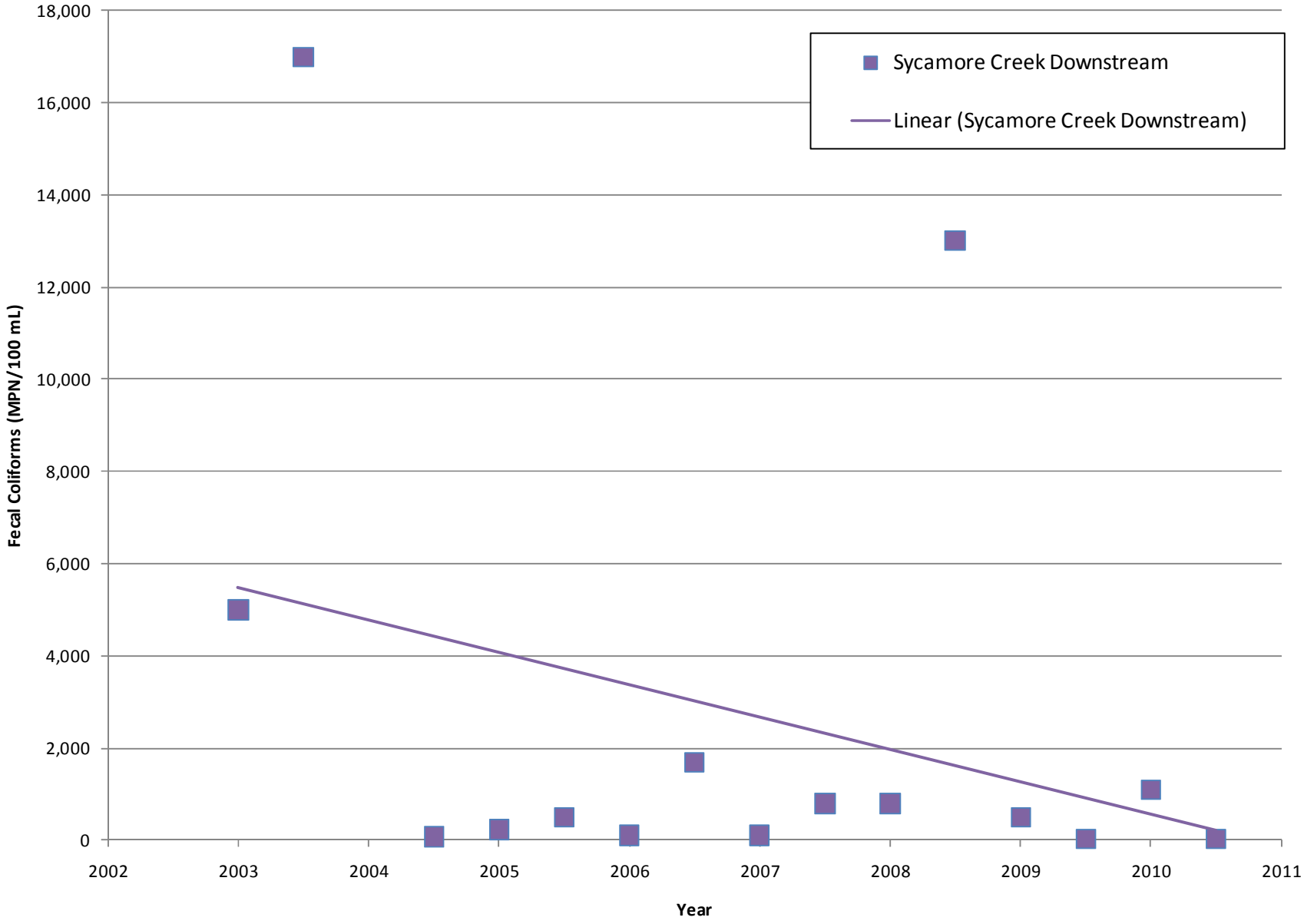

6 REFERENCES

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VassarStats: Website for Statistical Computation. http://faculty.vassar.edu/lowry/wilcoxon.html.

Appendix A

Historical Monitoring Data

Historical Monitoring Data

Site	Date	Flow* (gpm)	Temp.	pH (°C)	Conductivity (mS/cm)	Turbidity (NTU)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Orthophosphate (mg/L mg/L PO4)	Orthophosphate-Phosphorus (mg/L PO4-P)	Surfactants- field test (mg/L MBAS)	Oil and Grease (mg/L)	Total Hardness (mg/L CaCO3)	Dissolved Cadmium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Zinc (mg/L)	Diazinon (µg/L)	Chlorpyrifos (µg/L)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	*Enterococcus* (MPN/100mL)	Surfactants - Lab test (mg/L MBAS)
2002																							
Forester Creek Downstream	9/3/2002	na	27.0	8.0	2.84	na	na	na	na	na	na	21.0	668	nd	nd	nd	nd	nd	nd	8,000	5,000	130	nd
Forester Creek Upstream	9/3/2002	233	32.0	8.5	2.67	na	na	na	na	na	na	14.0	587	nd	nd	nd	nd	nd	nd	22,000	11,000	170	nd
San Diego River Downstream	9/3/2002	144	25.0	8.0	2.79	na	na	na	na	na	na	22.0	709	nd	nd	nd	0.27	nd	nd	1,700	800	1,700	nd
San Diego River Upstream	9/3/2002	unmeasurable	25.5	7.6	2.11	na	na	na	na	na	na	4.00	557	nd	nd	nd	nd	nd	nd	5,000	3,000	80	nd
Sycamore Creek Downstream	9/4/2002	dry	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2003 Round 1																							
Forester Creek Downstream	5/22/2003	unmeasurable	23	8.4	3.34	3.2	0.3	2	0.1	0.03	0.5	nd	585	nd	nd	nd	0.03	nd	nd	5,000	2,300	130	nd
Forester Creek Upstream	5/22/2003	548	21	8.3	3.60	0.92	0.2	4	0.1	0.03	0.25	nd	690	nd	nd	nd	0.021	nd	nd	17,000	8,000	130	nd
San Diego River Downstream	5/22/2003	3008	21	8	2.65	3.48	0.2	0.3	0.3	0.10	0.25	nd	549	nd	nd	nd	nd	nd	nd	2,200	1,300	210	nd
San Diego River Upstream	5/22/2003	unmeasurable	21	7.7	2.25	2.05	nd	0.2	0.2	0.07	0.25	nd	436	nd	nd	nd	nd	nd	nd	13,000	8,000	20	nd
Sycamore Creek Downstream	5/21/2003	100	25	8	1.77	0.11	0.1	0.2	0.2	0.07	0.25	15	299	nd	nd	nd	nd	nd	nd	8,000	5,000	70	nd
2003 Round 2																							
Forester Creek Downstream	9/17/2003	457	24	8.0	2.98	9.65	0.6	2.4	0.2	0.07	0.13	1	612	nd	nd	nd	nd	nd	nd	50,000	24,000	1,300	nd
Forester Creek Upstream	9/17/2003	254	21	7.8	2.96	3.98	0.3	8	0.1	0.03	0.25	nd	723	nd	nd	nd	nd	nd	nd	30,000	11,000	8,000	nd
San Diego River Downstream	9/17/2003	673	22.5	8.0	2.94	3.89	0.3	0.6	0.4	0.13	0.13	4	662	nd	nd	nd	nd	nd	nd	3,000	2,300	800	nd
San Diego River Upstream	9/17/2003	unmeasurable	23.5	7.2	2.24	16.66	0.3	0.2	2.0	0.65	0.13	2	609	0.006	nd	nd	nd	nd	nd	8,000	3,000	800	nd
Sycamore Creek Downstream	9/18/2003	187	20	8.7	2.21	4.82	0.3	0.2	0.1	0.03	0.25	2	430	nd	nd	nd	nd	nd	nd	30,000	17,000	1,700	nd
2004 Round 1																							
Forester Creek Downstream	7/15/2004	172	28	8.0	2.66	3.42	0.6	2.5	0.10	0.03	0.25	nd	709.0	nd	nd	nd	0.030	nd	nd	9000.0	80.0	40.0	nd
Forester Creek Upstream	7/15/2004	269	32	7.7	2.47	8.06	0.2	2.5	0.10	0.03	0.25	nd	660	nd	nd	nd	nd	nd	nd	8000	800	110	nd
San Diego River Downstream	7/15/2004	400	29	7.5	1.75	2.47	0.1	1.25	1.50	0.49	0.25	nd	596	nd	nd	nd	nd	nd	nd	2600	40	nd	nd
San Diego River Upstream	7/15/2004	unmeasurable	26	7.8	2.45	9.88	0.80	1.25	0.30	0.10	0.25	nd	694.00	nd	nd	nd	nd	nd	nd	1700.00	80.00	40.00	nd
Sycamore Creek Downstream	7/16/2004	Dry	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2004 Round 2																							
Forester Creek Downstream	9/24/2004	203	21	7.9	2.87	17.79	0.3	2.5	0.2	0.07	0.25	nd	662	nd	nd	nd	0.026	nd	nd	11,000	120	300	nd
Forester Creek Upstream	9/24/2004	226	23	8.1	2.63	2.04	0.1	5	0.1	0.03	0.38	nd	645	nd	nd	nd	nd	nd	nd	14,000	1,300	270	nd
San Diego River Downstream	9/24/2004	269	20	7.3	2.00	6.3	0.1	nd	3	0.98	0.25	2	610	nd	nd	nd	0.031	nd	nd	700	nd	nd	nd
San Diego River Upstream	9/24/2004	unmeasurable	20	7.6	2.64	5.03	0.3	1.25	0.6	0.2	0.25	1	650	nd	nd	nd	nd	nd	nd	16,000	110	80	nd
Sycamore Creek Downstream	9/27/2004	20	20	7.1	2.09	4.46	0.3	nd	0.1	0.03	0.5	1	404	nd	nd	nd	nd	nd	nd	30,000	80	3,000	nd
2005 Round 1																							
Forester Creek Downstream	5/18/2005	na	21.3	8.0	2.56	7.85	0.2	7.50	0.10	0.03	0.25	nd	805	nd	nd	nd	nd	nd	nd	9,000	2,300	1,100	nd
Forester Creek Upstream	5/18/2005	na	20.6	8.2	2.86	1.48	0.2	6.25	0.10	0.03	0.25	nd	881	nd	nd	nd	nd	nd	nd	5,000	300	300	nd
San Diego River Downstream	5/18/2005	3861	24.0	7.7	1.44	5.70	0.1	1.25	0.10	0.03	0.25	nd	613	nd	nd	nd	nd	nd	nd	1,700	170	20	nd
San Diego River Upstream	5/18/2005	unmeasurable	21.7	7.6	2.22	4.59	0.10	2.50	0.60	0.20	0.25	nd	567	nd	nd	nd	nd	nd	nd	9,000	220	1,300	nd
Sycamore Creek Downstream	5/17/2005	na	22.9	7.5	1.61	8.76	0.2	1.25	0.1	0.03	0.25	nd	282	nd	nd	nd	nd	nd	nd	11,000	230	500	nd
2005 Round 2																							
Forester Creek Downstream	9/22/2005	468	23.4	8.2	2.66	6.68	0.3	5.00	0.10	0.03	0.38	nd	727	nd	nd	nd	nd	nd	nd	1,600,000	5,000	500	nd
Forester Creek Upstream	9/22/2005	316	24.2	8.4	2.65	5.24	0.3	7.5	nd	nd	0.5	nd	772	nd	nd	nd	nd	nd	nd	240,000	1,300	230	nd
San Diego River Downstream	9/22/2005	763	20.7	7.4	2.11	8.58	0.1	1.25	2.00	0.65	0.25	nd	653	0.005	nd	nd	nd	nd	nd	240,000	nd	500	nd
San Diego River Upstream	9/22/2005	unmeasurable	22.4	7.8	2.60	2.27	0.20	1.25	0.40	0.13	0.50	nd	733	nd	nd	nd	nd	nd	nd	80,000	3,000	40	nd
Sycamore Creek Downstream	9/26/2005	50	21.4	7.6	1.83	4.59	0.3	1.25	nd	nd	0.25	nd	373	nd	nd	nd	nd	nd	nd	130,000	500	500	nd
2006 Round 1																							
Forester Creek Downstream	5/18/2006	608	21.3	8.0	2.56	7.85	0.2	7.50	0.10	0.03	0.25	nd	740	nd	nd	nd	nd	nd	nd	80,000	500	170	nd
Forester Creek Upstream	5/18/2006	561	20.6	8.2	2.86	1.48	0.2	6.25	0.10	0.03	0.25	nd	692	nd	nd	nd	nd	nd	nd	6,000	170	20	nd
San Diego River Downstream	5/19/2006	2514	24.0	7.7	1.44	5.70	0.1	1.25	0.10	0.03	0.25	nd	448	nd	nd	nd	nd	nd	nd	13,000	nd	nd	nd
San Diego River Upstream	5/19/2006	unmeasurable	21.7	7.6	2.22	4.59	0.10	2.50	0.60	0.20	0.25	nd	608	nd	nd	nd	nd	nd	nd	50,000	20	40	nd
Sycamore Creek Downstream	5/19/2006	133	22.9	7.5	1.61	8.76	0.2	1.25	0.1	0.03	0.25	nd	370	nd	nd	nd	nd	nd	nd	170,000	110	700	nd
2006 Round 2																							
Forester Creek Downstream	9/25/2006	624	22.6	8.2	2.58	30.23	0.2	5.00	nd	nd	0.25	nd	683	nd	nd	nd	nd	nd	nd	80,000	2,200	1,700	nd
Forester Creek Upstream	9/25/2006	467	24.4	8.5	2.49	4.37	0.2	5	nd	nd	0.25	nd	641	nd	nd	nd	nd	nd	nd	30,000	8000	2300	nd
San Diego River Downstream	9/22/2006	1392	22.3	8.3	1.86	9.28	0.2	1.25	0.30	0.10	0.13	nd	528	nd	nd	nd	nd	nd	nd	800	40	20	nd
San Diego River Upstream	9/22/2006	unmeasurable	20.2	7.8	2.47	4.30	0.20	2.50	0.40	0.14	0.25	nd	614	nd	nd	nd	nd	nd	nd	13,000	500	230	nd
Sycamore Creek Downstream	9/22/2006	20	20.4	7.4	1.85	9.14	0.2	2.5	nd	nd	0.25	nd	345	nd	nd	nd	0.024	nd	nd	50,000	1,700	500	nd
2007 Round 1																							
Forester Creek Downstream	5/22/2007	655	18.1	8.2	2.45	25.94	0.5	4.57	0.30	0.10	0.25	nd	827	nd	nd	nd	nd	nd	nd	8,000	500	500	nd
Forester Creek Upstream	5/22/2007	585	19.3	8.7	2.49	2.55	0.1	4.93	nd	nd	0.25	nd	715	nd	nd	nd	nd	nd	nd	3,000	800	80	nd
San Diego River Downstream	5/22/2007	1392	20.8	8.0	1.69	3.94	nd	0.2	0.30	0.10	0.25	nd	601	nd	nd	nd	nd	nd	nd	1,700	110	nd	nd
San Diego River Upstream	5/22/2007	unmeasurable	18.2	7.8	2.31	8.29	0.20	1.88	0.30	0.10	0.25	nd	673	nd	nd	nd	nd	nd	nd	5,000	1,100	800	nd
Sycamore Creek Downstream	5/23/2007	156	19.7	7.6	1.48	9.57	0.1	0.16	0.2	0.07	0.25	nd	332	nd	nd	nd	nd	nd	nd	23,000	110	230	nd
2007 Round 2																							
Forester Creek Downstream	10/31/2007	234	17.7	7.7	2.66	10.21	0.3	2.31	0.50	0.16	0.38	nd	664	nd	nd	nd	nd	nd	nd	5,000	800	800	nd
Forester Creek Upstream	10/31/2007	148	16.5	8.1	2.65	1.58	0.1	4.72	0.10	0.03	0.5	nd	758	nd	nd	nd	nd	nd	nd	11,000	3,000	3,000	nd
San Diego River Downstream	10/30/2007	584	20.6	7.6	1.94	0.79	0.1	0.38	1.00	0.33	0.13	nd	567	nd	nd	nd	nd	nd	nd	1,300	20	40	nd
San Diego River Upstream	10/30/2007	unmeasurable	18.8	7.6	2.59	2.06	0.2	1.20	0.80	0.26	0.38	nd	626	nd	nd	nd	nd	nd	nd	1,300	220	700	nd
Sycamore Creek Downstream	10/31/2007	156	17.2	7.4	2.17	4.07	0.1	0.59	0.2	0.07	0.25	nd	448	nd	nd	nd	nd	nd	nd	5,000	800	300	nd

Historical Monitoring Data

Site	Date	Flow* (gpm)	Temp.	pH (°C)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	*Enterococcus* (MPN/100mL)	Nitrate/ Nitrite as N	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solids (mg/L)
2008 Round 1																
Forester Creek Downstream	5/28/2008	281	19.9	7.7	2.77	1.25	6.76	17,000	130	700	3.24	1.9	5.2	0.11	0.11	1760
Forester Creek Upstream	5/28/2008	213	23.0	8.2	2.53	16.20	9.30	30,000	2,300	500	5.16	2.7	7.8	0.05	0.06	1590
San Diego River Downstream	5/28/2008	1212	20.5	7.5	2.46	0.01	6.60	5,000	800	700	0.84	1.9	2.8	0.16	0.16	1510
San Diego River Upstream	5/28/2008	unmeasurable	18.2	7.3	1.84	2.40	7.44	500	40	nd	nd	1.5	1.5	0.18	0.19	1130
Sycamore Creek Downstream	5/29/2008	56	15.1	7.0	1.40	0.69	7.42	5,000	800	5,000	0.13	2.2	2.4	0.11	0.11	941
2008 Round 2																
Forester Creek Downstream	9/9/2008	359	22.9	7.7	2.78	7.98	6.46	13,000	300	2,300	0.99	2.1	3.1	0.32	0.33	1690
Forester Creek Upstream	9/4/2008	397	31.5	8.5	2.73	4.71	7.00	17,000	3,000	70	3.72	2.2	5.9	0.32	0.36	1650
San Diego River Downstream	9/4/2008	449	25.9	7.6	2.79	2.03	5.94	13,000	700	500	0.42	2.5	3	0.25	0.3	1790
San Diego River Upstream	9/4/2008	unmeasurable	30.8	8.1	1.87	7.62	8.56	300	nd	20	nd	2.9	2.9	0.08	0.08	1180
Sycamore Creek Downstream	9/9/2008	Ponded	28.4	7.1	2.70	31.71	5.51	130,000	80	130,000	nd	7.6	7.6	0.36	0.42	1700
2009 Round 1																
Forester Creek Downstream	5/19/2009	468	23.8	7.9	2.60	31.55	5.76	2,800	170	500	0.7	0.8	1.4	0.66	0.67	1560
Forester Creek Upstream	5/19/2009	355	27.9	8.1	2.84	6.14	8.86	3,500	1700	800	4.93	1.1	6	0.33	0.34	1830
San Diego River Downstream	5/19/2009	1,392*	22.0	7.6	2.60	5.89	6.28	30,000	300	130	1.93	0.8	2.7	0.09	0.1	1680
San Diego River Upstream	5/19/2009	Unmeasureable*	24.6	7.8	1.73	10.76	7.95	1,300	nd	20	nd	2.5	2.5	0.13	0.32	1230
Sycamore Creek Downstream	5/20/2009	Ponded	20.5	7.5	1.34	4.41	5.25	11,000	500	1,400	0.23	3.9	4.1	0.19	0.28	767
2009 Round 2																
Forester Creek Downstream	9/2/2009	94	26.6	7.6	2.97	7.61	5.56	11,000	1300	500	1.32	nd	1.6	0.12	0.25	1900
Forester Creek Upstream	9/2/2009	107	31.5	7.9	2.81	3.9	8.73	2,300	300	40	3.36	0.6	4	0.05	0.28	1850
San Diego River Downstream	9/2/2009	135*	26.8	7.5	2.98	2.8	5.89	2,300	40	80	0.44	0.6	1	0.12	0.14	1920
San Diego River Upstream	9/2/2009	Unmeasurable*	27.5	7.8	1.88	10.3	7.91	600	40	20	0.43	0.8	1.2	nd	0.2	1240
Sycamore Creek Downstream	9/3/2009	78	27.7	8.2	1.99	5.83	5.21	8,000	20	220	nd	3.3	3.3	0.1	0.27	1230

Notes:
nd = not detected
ns = not sampled (dry site)
na = not analyzed

* The accuracy of manual flow estimation techniques decreases as flow volume increases. Because of high flow rates in the San Diego River, the United States Geological Service (USGS) flow gauge data has been used in this report. The USGS flow gauge is located in proximity to the San Diego River downstream sampling location; however no gauge exists near the San Diego River upstream sampling location. Thus the upstream flow has been reported as unmeasurable.

Appendix B

Photographs of Sampling Locations

Forester Creek Downstream	
Forester Creek Upstream	
San Diego River Downstream	

San Diego River Upstream	
Sycamore Creek Downstream	

Appendix C

Laboratory Analytical Reports

Round One

EnviroMatrix Analytical, Inc.

26 May 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10E0433

Project Name: Santee Receiving Waters/201022W-4

Enclosed are the results of analyses for samples received by the laboratory on 05/17/10 14:28. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
San Diego River Upstream	10E0433-01	Stormwater	05/17/10 10:50	05/17/10 14:28
Forester Creek Upstream	10E0433-02	Stormwater	05/17/10 12:30	05/17/10 14:28
San Diego River Downstream	10E0433-03	Stormwater	05/17/10 13:45	05/17/10 14:28

NOTE: Per client request Selenium was prepared/digested/analyzed twice; once per EPA Method 200.8 (seen as RE1, Batched in #0052114) and once per EPA Method 200.8 modified (seen as RE2, Batched in #0052535). Modified EPA 200.8 method deleted all use of HCl.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Upstream (10E0433-01RE1) Stormwater Sampled: 05/17/10 10:50 Received: 05/17/10 14:28										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0052114	05/21/10	05/24/10	EPA 200.8	
San Diego River Upstream (10E0433-01RE2) Stormwater Sampled: 05/17/10 10:50 Received: 05/17/10 14:28										
Selenium	**0.001**	0.00005	0.0005	mg/l	1	0052535	05/24/10	05/25/10	EPA 200.8	
Forester Creek Upstream (10E0433-02RE1) Stormwater Sampled: 05/17/10 12:30 Received: 05/17/10 14:28										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0052114	05/21/10	05/24/10	EPA 200.8	
Forester Creek Upstream (10E0433-02RE2) Stormwater Sampled: 05/17/10 12:30 Received: 05/17/10 14:28										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0052535	05/24/10	05/25/10	EPA 200.8	
San Diego River Downstream (10E0433-03RE1) Stormwater Sampled: 05/17/10 13:45 Received: 05/17/10 14:28										
Selenium	**0.0007**	0.00005	0.0005	mg/l	1	0052114	05/21/10	05/24/10	EPA 200.8	
San Diego River Downstream (10E0433-03RE2) Stormwater Sampled: 05/17/10 13:45 Received: 05/17/10 14:28										
Selenium	**0.0005**	0.00005	0.0005	mg/l	1	0052535	05/24/10	05/25/10	EPA 200.8	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Upstream (10E0433-01) Stormwater Sampled: 05/17/10 10:50 Received: 05/17/10 14:28										
Nitrate/Nitrite as N	**0.16**	0.009	0.05	mg/l	1	0051719	05/18/10	05/18/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.7**	0.3	0.5	"	"	0052004	05/21/10	05/21/10	SM4500 N C	
Total Nitrogen	**0.9**	0.5	0.5	"	"	0052125	05/21/10	05/21/10	Calculation	
Orthophosphate as P	**0.17**	0.007	0.05	"	"	0051930	05/19/10	05/19/10	SM4500 P E	
Phosphorus, Total	**0.61**	0.02	0.05	"	"	0051940	05/19/10	05/19/10	SM4500 P B, E	
Total Dissolved Solids	**891**	1.0	20.0	"	"	0052120	05/21/10	05/24/10	SM2540 C	
Sulfate as SO4	**188**	10.0	50.0	"	10	0051846	05/19/10	05/19/10	SM4500 SO4 E	
Forester Creek Upstream (10E0433-02) Stormwater Sampled: 05/17/10 12:30 Received: 05/17/10 14:28										
Nitrate/Nitrite as N	**7.36**	0.09	0.50	mg/l	10	0051719	05/18/10	05/18/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.8**	0.3	0.5	"	1	0052004	05/21/10	05/21/10	SM4500 N C	
Total Nitrogen	**8.2**	0.5	0.5	"	"	0052125	05/21/10	05/21/10	Calculation	
Orthophosphate as P	**0.34**	0.007	0.05	"	"	0051930	05/19/10	05/19/10	SM4500 P E	
Phosphorus, Total	**0.35**	0.02	0.05	"	"	0051940	05/19/10	05/19/10	SM4500 P B, E	
Total Dissolved Solids	**1660**	1.0	20.0	"	"	0052120	05/21/10	05/24/10	SM2540 C	
Sulfate as SO4	**383**	10.0	50.0	"	10	0051846	05/19/10	05/19/10	SM4500 SO4 E	
San Diego River Downstream (10E0433-03) Stormwater Sampled: 05/17/10 13:45 Received: 05/17/10 14:28										
Nitrate/Nitrite as N	**1.12**	0.04	0.25	mg/l	5	0051719	05/18/10	05/18/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.5**	0.3	0.5	"	1	0052004	05/21/10	05/21/10	SM4500 N C	
Total Nitrogen	**1.6**	0.5	0.5	"	"	0052125	05/21/10	05/21/10	Calculation	
Orthophosphate as P	**0.11**	0.007	0.05	"	"	0051930	05/19/10	05/19/10	SM4500 P E	
Phosphorus, Total	**0.27**	0.02	0.05	"	"	0051940	05/19/10	05/19/10	SM4500 P B, E	
Total Dissolved Solids	**1280**	1.0	20.0	"	"	0052120	05/21/10	05/24/10	SM2540 C	
Sulfate as SO4	**248**	10.0	50.0	"	10	0051846	05/19/10	05/19/10	SM4500 SO4 E	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Upstream (10E0433-01) Stormwater Sampled: 05/17/10 10:50 Received: 05/17/10 14:28										
Total Coliforms	**500**	20	20	MPN/100 ml	10	0051831	05/17/10	05/21/10	SM 9221 B, E	
Fecal Coliforms	ND	20	20	"	"	"	"	05/20/10	"	
Enterococcus	**20**	20	20	"	"	0051832	"	05/21/10	SM 9230 A, B	
Forester Creek Upstream (10E0433-02) Stormwater Sampled: 05/17/10 12:30 Received: 05/17/10 14:28										
Total Coliforms	**3000**	200	200	MPN/100 ml	100	0051831	05/17/10	05/21/10	SM 9221 B, E	
Fecal Coliforms	**2300**	200	200	"	"	"	"	05/20/10	"	
Enterococcus	**500**	20	20	"	10	0051832	"	05/21/10	SM 9230 A, B	
San Diego River Downstream (10E0433-03) Stormwater Sampled: 05/17/10 13:45 Received: 05/17/10 14:28										
Total Coliforms	**5000**	200	200	MPN/100 ml	100	0051831	05/17/10	05/21/10	SM 9221 B, E	
Fecal Coliforms	**170**	20	20	"	10	"	"	05/20/10	"	
Enterococcus	**20**	20	20	"	"	0051832	"	05/21/10	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052114											
Blank (0052114-BLK1)					Prepared: 05/21/10		Analyzed: 05/22/10				
Selenium	ND	0.00005	0.0005	mg/l							
LCS (0052114-BS1)					Prepared: 05/21/10		Analyzed: 05/22/10				
Selenium	0.099	0.00005	0.0005	mg/l	0.100		99	75-125			
LCS Dup (0052114-BSD1)					Prepared: 05/21/10		Analyzed: 05/22/10				
Selenium	0.094	0.00005	0.0005	mg/l	0.100		94	75-125	5	20	
Duplicate (0052114-DUP1)			**Source: 10E0361-01RE1**		Prepared: 05/21/10		Analyzed: 05/24/10				
Selenium	0.005	0.00005	0.0005	mg/l		0.005			4	20	
Matrix Spike (0052114-MS1)			**Source: 10E0361-01RE1**		Prepared: 05/21/10		Analyzed: 05/24/10				
Selenium	0.090	0.00005	0.0005	mg/l	0.100	0.005	84	75-125			
Matrix Spike (0052114-MS2)			**Source: 10E0361-02RE1**		Prepared: 05/21/10		Analyzed: 05/24/10				
Selenium	0.094	0.00005	0.0005	mg/l	0.100	0.005	89	75-125			
Matrix Spike Dup (0052114-MSD1)			**Source: 10E0361-01RE1**		Prepared: 05/21/10		Analyzed: 05/24/10				
Selenium	0.091	0.00005	0.0005	mg/l	0.100	0.005	86	75-125	2	20	
Batch 0052535											
Blank (0052535-BLK1)					Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	ND	0.00005	0.0005	mg/l							
LCS (0052535-BS1)					Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.091	0.00005	0.0005	mg/l	0.100		91	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052535											
LCS Dup (0052535-BSD1)					Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.100	0.00005	0.0005	mg/l	0.100		100	75-125	9	20	
Duplicate (0052535-DUP1)			**Source: 10E0433-02RE2**		Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.002	0.00005	0.0005	mg/l		0.002			17	20	
Matrix Spike (0052535-MS1)			**Source: 10E0433-02RE2**		Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.097	0.00005	0.0005	mg/l	0.100	0.002	94	75-125			
Matrix Spike Dup (0052535-MSD1)			**Source: 10E0433-02RE2**		Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.097	0.00005	0.0005	mg/l	0.100	0.002	95	75-125	0.7	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0051719											
Blank (0051719-BLK1)					Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	ND	0.009	0.05	mg/l							
LCS (0051719-BS1)					Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.54	0.009	0.05	mg/l	0.500		107	80-120			
LCS Dup (0051719-BSD1)					Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.53	0.009	0.05	mg/l	0.500		105	80-120	2	20	
Duplicate (0051719-DUP1)			**Source: 10E0376-04**		Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.02	0.009	0.05	mg/l		0.02			4	20	J
Matrix Spike (0051719-MS1)			**Source: 10E0376-04**		Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.55	0.009	0.05	mg/l	0.500	0.02	104	80-120			
Matrix Spike Dup (0051719-MSD1)			**Source: 10E0376-04**		Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.56	0.009	0.05	mg/l	0.500	0.02	108	80-120	3	20	
Reference (0051719-SRM1)					Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.39	0.009	0.05	mg/l	0.375		104	91.4-106.9			
Batch 0051846											
Blank (0051846-BLK1)					Prepared & Analyzed: 05/18/10						
Sulfate as SO4	ND	1.0	5.0	mg/l							
LCS (0051846-BS1)					Prepared & Analyzed: 05/18/10						
Sulfate as SO4	8.4	1.0	5.0	mg/l	10.0		84	80-120			

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0051846											
LCS Dup (0051846-BSD1)					Prepared & Analyzed: 05/18/10						
Sulfate as SO4	8.9	1.0	5.0	mg/l	10.0		89	80-120	6	20	
Duplicate (0051846-DUP1)			**Source: 10E0244-01**		Prepared & Analyzed: 05/18/10						
Sulfate as SO4	210	10.0	50.0	mg/l		206			1	20	
Matrix Spike (0051846-MS1)			**Source: 10E0244-01**		Prepared & Analyzed: 05/18/10						
Sulfate as SO4	294	10.0	50.0	mg/l	100	206	87	80-120			
Matrix Spike Dup (0051846-MSD1)			**Source: 10E0244-01**		Prepared & Analyzed: 05/18/10						
Sulfate as SO4	297	10.0	50.0	mg/l	100	206	91	80-120	1	20	
Batch 0051930											
Blank (0051930-BLK1)					Prepared & Analyzed: 05/19/10						
Orthophosphate as P	ND	0.007	0.05	mg/l							
LCS (0051930-BS1)					Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.58	0.007	0.05	mg/l	0.500		115	80-120			
LCS Dup (0051930-BSD1)					Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.57	0.007	0.05	mg/l	0.500		114	80-120	0.9	20	
Duplicate (0051930-DUP1)			**Source: 10E0469-01**		Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.16	0.007	0.05	mg/l		0.14			10	20	
Matrix Spike (0051930-MS1)			**Source: 10E0469-01**		Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.72	0.007	0.05	mg/l	0.500	0.14	116	80-120			

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0051930											
Matrix Spike Dup (0051930-MSD1)			**Source: 10E0469-01**		Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.71	0.007	0.05	mg/l	0.500	0.14	113	80-120	2	20	
Batch 0051940											
Blank (0051940-BLK1)					Prepared & Analyzed: 05/19/10						
Phosphorus, Total	ND	0.02	0.05	mg/l							
LCS (0051940-BS1)					Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.59	0.02	0.05	mg/l	0.500		117	80-120			
LCS Dup (0051940-BSD1)					Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.57	0.02	0.05	mg/l	0.500		114	80-120	3	20	
Duplicate (0051940-DUP1)			**Source: 10E0437-01**		Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.18	0.02	0.05	mg/l		0.18			2	20	
Matrix Spike (0051940-MS1)			**Source: 10E0437-01**		Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.74	0.02	0.05	mg/l	0.500	0.18	111	80-120			
Matrix Spike Dup (0051940-MSD1)			**Source: 10E0437-01**		Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.76	0.02	0.05	mg/l	0.500	0.18	116	80-120	4	20	
Batch 0052004											
Blank (0052004-BLK1)					Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	ND	0.3	0.5	mg/l							

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0433

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052004											
LCS (0052004-BS1)					Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	4.7	0.3	0.5	mg/l	4.10		114	80-120			
LCS Dup (0052004-BSD1)					Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	4.8	0.3	0.5	mg/l	4.10		117	80-120	2	20	
Duplicate (0052004-DUP1)			**Source: 10E0482-01**		Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	ND	0.5	0.5	mg/l		0.3				20	
Matrix Spike (0052004-MS1)			**Source: 10E0482-01**		Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	4.6	0.5	0.5	mg/l	4.10	0.3	103	80-120			
Matrix Spike Dup (0052004-MSD1)			**Source: 10E0482-01**		Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	4.4	0.5	0.5	mg/l	4.10	0.3	100	80-120	2	20	
Batch 0052120											
Blank (0052120-BLK1)					Prepared: 05/21/10 Analyzed: 05/24/10						
Total Dissolved Solids	ND	1.0	20.0	mg/l							
Duplicate (0052120-DUP1)			**Source: 10E0433-02**		Prepared: 05/21/10 Analyzed: 05/24/10						
Total Dissolved Solids	1650	1.0	20.0	mg/l		1660			0.5	20	
Reference (0052120-SRM1)					Prepared: 05/21/10 Analyzed: 05/24/10						
Total Dissolved Solids	288	1.0	20.0	mg/l	269		107	87-113			

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Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 10E0433

Client: D-Max Engineering, Inc
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr Dadkhah / Annika Kubischta
Address: 7220 Trade St Ste 119
San Diego, CA 92121
Phone: (858) 586-6600 Fax: (858) 586-6614
Email:
Billing Address: Same

Project ID: Santee Receiving Waters
Project #: 201022W-4 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS ☒ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Sulfate	Total Selenium (See note)	Total Phosphorus	Orthophosphate - Phosphorus	Total Nitrogen
1	San Diego River Upstream	5/17/10	10:50	SW	6/p									X					X		X		X	X	X	X	X
2	Forester Creek Upstream	5/17/10	12:30	SW	6/p									X					X		X		X	X	X	X	X
3	San Diego River Downstream	5/17/10	13:45	SW	6/p									X					X		X		X	X	X	X	X
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Annika Kubischta	5/17/10 14:15	Signature: Louis Lewis
Print: Annika Kubischta		Print: Louis Lewis
Company: D-Max Engineering		Company: EMA
Signature: Louis Lewis	5-17-10 14:28	Signature: [illegible]
Print: Louis Lewis		Print: [illegible]
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

Please run selenium tests twice:
1) once using **EPA 200.8**
2) once using a **modified method in which only nitric acid is used in the digestion**

Zionie

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

[1]Additional costs may apply, consult a
[2]EMA reserves the right to return any

NOTE: By relinquishing samples to EMA, client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

26 May 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10E0446

Project Name: Santee Receiving Waters/201022W-4

Enclosed are the results of analyses for samples received by the laboratory on 05/17/10 16:19. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0446

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Forester Creek Downstream	10E0446-01	Stormwater	05/17/10 14:50	05/17/10 16:19
Sycamore Creek Downstream	10E0446-02	Stormwater	05/17/10 15:40	05/17/10 16:19

NOTE: Per client request Selenium was prepared/digested/analyzed twice; once per EPA Method 200.8 (designated as RE1, Batched in #0052114) and once per EPA Method 200.8 modified (designated as RE2, Batched in #0052535). Modified EPA 200.8 method deleted all use of HCl.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0446

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Forester Creek Downstream (10E0446-01RE1) Stormwater Sampled: 05/17/10 14:50 Received: 05/17/10 16:19										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0052114	05/21/10	05/24/10	EPA 200.8	
Forester Creek Downstream (10E0446-01RE2) Stormwater Sampled: 05/17/10 14:50 Received: 05/17/10 16:19										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0052535	05/24/10	05/25/10	EPA 200.8	
Sycamore Creek Downstream (10E0446-02RE1) Stormwater Sampled: 05/17/10 15:40 Received: 05/17/10 16:19										
Selenium	**0.0001**	0.00005	0.0005	mg/l	1	0052114	05/21/10	05/24/10	EPA 200.8	J
Sycamore Creek Downstream (10E0446-02RE2) Stormwater Sampled: 05/17/10 15:40 Received: 05/17/10 16:19										
Selenium	**0.0001**	0.00005	0.0005	mg/l	1	0052535	05/24/10	05/25/10	EPA 200.8	J

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0446

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Forester Creek Downstream (10E0446-01) Stormwater Sampled: 05/17/10 14:50 Received: 05/17/10 16:19										
Nitrate/Nitrite as N	**4.30**	0.04	0.25	mg/l	5	0051719	05/18/10	05/18/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.2**	0.3	0.5	"	1	0052004	05/21/10	05/21/10	SM4500 N C	
Total Nitrogen	**5.5**	0.5	0.5	"	"	0052125	05/21/10	05/21/10	Calculation	
Orthophosphate as P	**0.09**	0.007	0.05	"	"	0051930	05/19/10	05/19/10	SM4500 P E	
Phosphorus, Total	**0.21**	0.02	0.05	"	"	0051940	05/19/10	05/19/10	SM4500 P B, E	
Total Dissolved Solids	**1710**	1.0	20.0	"	"	0052120	05/21/10	05/24/10	SM2540 C	
Sulfate as SO4	**446**	25.0	125	"	25	0051846	05/19/10	05/19/10	SM4500 SO4 E	
Sycamore Creek Downstream (10E0446-02) Stormwater Sampled: 05/17/10 15:40 Received: 05/17/10 16:19										
Nitrate/Nitrite as N	**0.18**	0.009	0.05	mg/l	1	0051719	05/18/10	05/18/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.0**	0.3	0.5	"	"	0052004	05/21/10	05/21/10	SM4500 N C	
Total Nitrogen	**1.2**	0.5	0.5	"	"	0052125	05/21/10	05/21/10	Calculation	
Orthophosphate as P	**0.08**	0.007	0.05	"	"	0051930	05/19/10	05/19/10	SM4500 P E	
Phosphorus, Total	**0.20**	0.02	0.05	"	"	0051940	05/19/10	05/19/10	SM4500 P B, E	
Total Dissolved Solids	**645**	1.0	20.0	"	"	0052120	05/21/10	05/24/10	SM2540 C	
Sulfate as SO4	**157**	10.0	50.0	"	10	0051846	05/19/10	05/19/10	SM4500 SO4 E	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0446

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Forester Creek Downstream (10E0446-01) Stormwater Sampled: 05/17/10 14:50 Received: 05/17/10 16:19										
Total Coliforms	**17000**	200	200	MPN/100 ml	100	0051834	05/17/10	05/21/10	SM 9221 B, E	
Fecal Coliforms	**300**	20	20	"	10	"	"	05/20/10	"	
Enterococcus	**40**	20	20	"	"	0051835	"	05/21/10	SM 9230 A, B	
Sycamore Creek Downstream (10E0446-02) Stormwater Sampled: 05/17/10 15:40 Received: 05/17/10 16:19										
Total Coliforms	**3000**	200	200	MPN/100 ml	100	0051834	05/17/10	05/21/10	SM 9221 B, E	
Fecal Coliforms	**1100**	20	20	"	10	"	"	05/20/10	"	
Enterococcus	**170**	20	20	"	"	0051835	"	05/21/10	SM 9230 A, B	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0446

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052114											
Blank (0052114-BLK1)					Prepared: 05/21/10		Analyzed: 05/22/10				
Selenium	ND	0.00005	0.0005	mg/l							
LCS (0052114-BS1)					Prepared: 05/21/10		Analyzed: 05/22/10				
Selenium	0.099	0.00005	0.0005	mg/l	0.100		99	75-125			
LCS Dup (0052114-BSD1)					Prepared: 05/21/10		Analyzed: 05/22/10				
Selenium	0.094	0.00005	0.0005	mg/l	0.100		94	75-125	5	20	
Duplicate (0052114-DUP1)			**Source: 10E0361-01RE1**		Prepared: 05/21/10		Analyzed: 05/24/10				
Selenium	0.005	0.00005	0.0005	mg/l		0.005			4	20	
Matrix Spike (0052114-MS1)			**Source: 10E0361-01RE1**		Prepared: 05/21/10		Analyzed: 05/24/10				
Selenium	0.090	0.00005	0.0005	mg/l	0.100	0.005	84	75-125			
Matrix Spike (0052114-MS2)			**Source: 10E0361-02RE1**		Prepared: 05/21/10		Analyzed: 05/24/10				
Selenium	0.094	0.00005	0.0005	mg/l	0.100	0.005	89	75-125			
Matrix Spike Dup (0052114-MSD1)			**Source: 10E0361-01RE1**		Prepared: 05/21/10		Analyzed: 05/24/10				
Selenium	0.091	0.00005	0.0005	mg/l	0.100	0.005	86	75-125	2	20	
Batch 0052535											
Blank (0052535-BLK1)					Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	ND	0.00005	0.0005	mg/l							
LCS (0052535-BS1)					Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.091	0.00005	0.0005	mg/l	0.100		91	75-125			

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EMA Log #: 10E0446

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052535											
LCS Dup (0052535-BSD1)					Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.100	0.00005	0.0005	mg/l	0.100		100	75-125	9	20	
Duplicate (0052535-DUP1)			**Source: 10E0433-02RE2**		Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.002	0.00005	0.0005	mg/l		0.002			17	20	
Matrix Spike (0052535-MS1)			**Source: 10E0433-02RE2**		Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.097	0.00005	0.0005	mg/l	0.100	0.002	94	75-125			
Matrix Spike Dup (0052535-MSD1)			**Source: 10E0433-02RE2**		Prepared: 05/24/10		Analyzed: 05/25/10				
Selenium	0.097	0.00005	0.0005	mg/l	0.100	0.002	95	75-125	0.7	20	

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Project Name: Santee Receiving Waters/201022W-4

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Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0051719											
Blank (0051719-BLK1)					Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	ND	0.009	0.05	mg/l							
LCS (0051719-BS1)					Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.54	0.009	0.05	mg/l	0.500		107	80-120			
LCS Dup (0051719-BSD1)					Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.53	0.009	0.05	mg/l	0.500		105	80-120	2	20	
Duplicate (0051719-DUP1)			**Source: 10E0376-04**		Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.02	0.009	0.05	mg/l		0.02			4	20	J
Matrix Spike (0051719-MS1)			**Source: 10E0376-04**		Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.55	0.009	0.05	mg/l	0.500	0.02	104	80-120			
Matrix Spike Dup (0051719-MSD1)			**Source: 10E0376-04**		Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.56	0.009	0.05	mg/l	0.500	0.02	108	80-120	3	20	
Reference (0051719-SRM1)					Prepared & Analyzed: 05/17/10						
Nitrate/Nitrite as N	0.39	0.009	0.05	mg/l	0.375		104	91.4-106.9			
Batch 0051846											
Blank (0051846-BLK1)					Prepared & Analyzed: 05/18/10						
Sulfate as SO4	ND	1.0	5.0	mg/l							
LCS (0051846-BS1)					Prepared & Analyzed: 05/18/10						
Sulfate as SO4	8.4	1.0	5.0	mg/l	10.0		84	80-120			

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EMA Log #: 10E0446

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0051846											
LCS Dup (0051846-BSD1)					Prepared & Analyzed: 05/18/10						
Sulfate as SO4	8.9	1.0	5.0	mg/l	10.0		89	80-120	6	20	
Duplicate (0051846-DUP1)			**Source: 10E0244-01**		Prepared & Analyzed: 05/18/10						
Sulfate as SO4	210	10.0	50.0	mg/l		206			1	20	
Matrix Spike (0051846-MS1)			**Source: 10E0244-01**		Prepared & Analyzed: 05/18/10						
Sulfate as SO4	294	10.0	50.0	mg/l	100	206	87	80-120			
Matrix Spike Dup (0051846-MSD1)			**Source: 10E0244-01**		Prepared & Analyzed: 05/18/10						
Sulfate as SO4	297	10.0	50.0	mg/l	100	206	91	80-120	1	20	
Batch 0051930											
Blank (0051930-BLK1)					Prepared & Analyzed: 05/19/10						
Orthophosphate as P	ND	0.007	0.05	mg/l							
LCS (0051930-BS1)					Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.58	0.007	0.05	mg/l	0.500		115	80-120			
LCS Dup (0051930-BSD1)					Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.57	0.007	0.05	mg/l	0.500		114	80-120	0.9	20	
Duplicate (0051930-DUP1)			**Source: 10E0469-01**		Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.16	0.007	0.05	mg/l		0.14			10	20	
Matrix Spike (0051930-MS1)			**Source: 10E0469-01**		Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.72	0.007	0.05	mg/l	0.500	0.14	116	80-120			

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0446

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0051930											
Matrix Spike Dup (0051930-MSD1)			**Source: 10E0469-01**		Prepared & Analyzed: 05/19/10						
Orthophosphate as P	0.71	0.007	0.05	mg/l	0.500	0.14	113	80-120	2	20	
Batch 0051940											
Blank (0051940-BLK1)					Prepared & Analyzed: 05/19/10						
Phosphorus, Total	ND	0.02	0.05	mg/l							
LCS (0051940-BS1)					Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.59	0.02	0.05	mg/l	0.500		117	80-120			
LCS Dup (0051940-BSD1)					Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.57	0.02	0.05	mg/l	0.500		114	80-120	3	20	
Duplicate (0051940-DUP1)			**Source: 10E0437-01**		Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.18	0.02	0.05	mg/l		0.18			2	20	
Matrix Spike (0051940-MS1)			**Source: 10E0437-01**		Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.74	0.02	0.05	mg/l	0.500	0.18	111	80-120			
Matrix Spike Dup (0051940-MSD1)			**Source: 10E0437-01**		Prepared & Analyzed: 05/19/10						
Phosphorus, Total	0.76	0.02	0.05	mg/l	0.500	0.18	116	80-120	4	20	
Batch 0052004											
Blank (0052004-BLK1)					Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	ND	0.3	0.5	mg/l							

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Project Name: Santee Receiving Waters/201022W-4

EMA Log #: 10E0446

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0052004											
LCS (0052004-BS1)					Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	4.7	0.3	0.5	mg/l	4.10		114	80-120			
LCS Dup (0052004-BSD1)					Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	4.8	0.3	0.5	mg/l	4.10		117	80-120	2	20	
Duplicate (0052004-DUP1)			**Source: 10E0482-01**		Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	ND	0.5	0.5	mg/l		0.3				20	
Matrix Spike (0052004-MS1)			**Source: 10E0482-01**		Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	4.6	0.5	0.5	mg/l	4.10	0.3	103	80-120			
Matrix Spike Dup (0052004-MSD1)			**Source: 10E0482-01**		Prepared & Analyzed: 05/20/10						
Total Kjeldahl Nitrogen	4.4	0.5	0.5	mg/l	4.10	0.3	100	80-120	2	20	
Batch 0052120											
Blank (0052120-BLK1)					Prepared: 05/21/10 Analyzed: 05/24/10						
Total Dissolved Solids	ND	1.0	20.0	mg/l							
Duplicate (0052120-DUP1)			**Source: 10E0433-02**		Prepared: 05/21/10 Analyzed: 05/24/10						
Total Dissolved Solids	1650	1.0	20.0	mg/l		1660			0.5	20	
Reference (0052120-SRM1)					Prepared: 05/21/10 Analyzed: 05/24/10						
Total Dissolved Solids	288	1.0	20.0	mg/l	269		107	87-113			

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Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

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CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

MAY 17 '10 16:32

EMA LOG #: 1010446

Client: D-Max Engineering, INC
Attn: Arsalan Dadkhah
Samplers(s): Manouchehr Dadkhah / Annika Kubischta
Address: 7220 Trade St Ste 119
San Diego, CA 92121
Phone: (858) 586-6600 Fax (858) 586-6644
Email:
Billing Address: Same

Project ID: Santee Receiving Waters
Project #: 201022W-4 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS ☒ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, ☒ Total (MTF) ☒ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	Sulfate	Total Selenium (see note)	Total Phosphorus	Orthophosphate-Phosphorus	Total Nitrogen
1	Forester Creek Downstream	5/17/10	14:50	SW	6/p									X					X		X		X	X	X	X	X
2	Sycamore Creek Downstream	5/17/10	15:40	SW	6/p									X					X		X		X	X	X	X	X
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS ☒ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature [signature]	5/17/10 1619	Signature [signature]
Print Annika Kubischta		Print Matt Geyden
Company: D-Max Engineering		Company: EMA
Signature		Signature
Print		Print
Company:		Company:
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments:

Please **run selenium tests twice**:
1) once using **EPA 200.8**
2) once using a **modified method in which only nitric acid is used in the digestion**

11°C on ice

[1]Additional costs may apply, consult
[2]EMA reserves the right to return an

White- EMA Canary - Accounting Pink - Client (w/report) Gold - Client (Relinquish)

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

Round Two

EnviroMatrix Analytical, Inc.

23 September 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10I0362

Project Name: Santee Receiving Waters Study
Project Desc./#: 201022W-4

Enclosed are the results of analyses for samples received by the laboratory on 09/15/10 13:14. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
San Diego R. Upstream	10I0362-01	Stormwater	09/15/10 09:50	09/15/10 13:14
San Diego R. Upstream-1	10I0362-02	Stormwater	09/15/10 10:00	09/15/10 13:14
Forester CR. Upstream	10I0362-03	Stormwater	09/15/10 11:00	09/15/10 13:14
Forester CR. Downstream	10I0362-04	Stormwater	09/15/10 11:50	09/15/10 13:14
San Diego R. Downstream	10I0362-05	Stormwater	09/15/10 12:30	09/15/10 13:14

NOTE: Per client request Selenium was prepared/digested/analyzed twice; once per EPA Method 200.8 (Batched in #0092020) and once per EPA Method 200.8 modified (seen as RE1, Batched in #0092021). Modified EPA 200.8 method deleted all use of HCl.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego R. Upstream (10I0362-01) Stormwater Sampled: 09/15/10 09:50 Received: 09/15/10 13:14										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0092020	09/20/10	09/21/10	EPA 200.8	
San Diego R. Upstream (10I0362-01RE1) Stormwater Sampled: 09/15/10 09:50 Received: 09/15/10 13:14										
Selenium	**0.003**	0.00005	0.0005	mg/l	1	0092021	09/20/10	09/21/10	EPA 200.8	
San Diego R. Upstream-1 (10I0362-02) Stormwater Sampled: 09/15/10 10:00 Received: 09/15/10 13:14										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0092020	09/20/10	09/21/10	EPA 200.8	
San Diego R. Upstream-1 (10I0362-02RE1) Stormwater Sampled: 09/15/10 10:00 Received: 09/15/10 13:14										
Selenium	**0.003**	0.00005	0.0005	mg/l	1	0092021	09/20/10	09/21/10	EPA 200.8	
Forester CR. Upstream (10I0362-03) Stormwater Sampled: 09/15/10 11:00 Received: 09/15/10 13:14										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0092020	09/20/10	09/21/10	EPA 200.8	
Forester CR. Upstream (10I0362-03RE1) Stormwater Sampled: 09/15/10 11:00 Received: 09/15/10 13:14										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0092021	09/20/10	09/21/10	EPA 200.8	
Forester CR. Downstream (10I0362-04) Stormwater Sampled: 09/15/10 11:50 Received: 09/15/10 13:14										
Selenium	**0.001**	0.00005	0.0005	mg/l	1	0092020	09/20/10	09/21/10	EPA 200.8	
Forester CR. Downstream (10I0362-04RE1) Stormwater Sampled: 09/15/10 11:50 Received: 09/15/10 13:14										
Selenium	**0.002**	0.00005	0.0005	mg/l	1	0092021	09/20/10	09/21/10	EPA 200.8	
San Diego R. Downstream (10I0362-05) Stormwater Sampled: 09/15/10 12:30 Received: 09/15/10 13:14										
Selenium	**0.0007**	0.00005	0.0005	mg/l	1	0092020	09/20/10	09/21/10	EPA 200.8	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego R. Downstream (10I0362-05RE1) Stormwater Sampled: 09/15/10 12:30 Received: 09/15/10 13:14										
Selenium	**0.0006**	0.00005	0.0005	mg/l	1	0092021	09/20/10	09/21/10	EPA 200.8	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego R. Upstream (10I0362-01) Stormwater Sampled: 09/15/10 09:50 Received: 09/15/10 13:14										
Nitrate/Nitrite as N	**0.10**	0.009	0.05	mg/l	1	0091602	09/16/10	09/16/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.1**	0.3	0.5	"	"	0092201	09/22/10	09/22/10	SM4500 N C	
Total Nitrogen	**1.2**	0.5	0.5	"	"	0092337	09/22/10	09/22/10	Calculation	
Orthophosphate as P	**0.10**	0.007	0.05	"	"	0091626	09/16/10	09/16/10	SM4500 P E	
Phosphorus, Total	**0.20**	0.02	0.05	"	"	0091627	09/16/10	09/16/10	SM4500 P B, E	
Total Dissolved Solids	**1150**	1.0	20.0	"	"	0091725	09/18/10	09/20/10	SM2540 C	
Sulfate as SO4	**265**	10.0	50.0	"	10	0091625	09/17/10	09/17/10	SM4500 SO4 E	
San Diego R. Upstream-1 (10I0362-02) Stormwater Sampled: 09/15/10 10:00 Received: 09/15/10 13:14										
Nitrate/Nitrite as N	**0.12**	0.009	0.05	mg/l	1	0091602	09/16/10	09/16/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.3**	0.3	0.5	"	"	0092201	09/22/10	09/22/10	SM4500 N C	
Total Nitrogen	**1.4**	0.5	0.5	"	"	0092337	09/22/10	09/22/10	Calculation	
Orthophosphate as P	**0.09**	0.007	0.05	"	"	0091626	09/16/10	09/16/10	SM4500 P E	
Phosphorus, Total	**0.15**	0.02	0.05	"	"	0091627	09/16/10	09/16/10	SM4500 P B, E	
Total Dissolved Solids	**1190**	1.0	20.0	"	"	0091725	09/18/10	09/20/10	SM2540 C	
Sulfate as SO4	**264**	10.0	50.0	"	10	0091625	09/17/10	09/17/10	SM4500 SO4 E	
Forester CR. Upstream (10I0362-03) Stormwater Sampled: 09/15/10 11:00 Received: 09/15/10 13:14										
Nitrate/Nitrite as N	**6.28**	0.09	0.50	mg/l	10	0091602	09/16/10	09/16/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.8**	0.3	0.5	"	1	0092201	09/22/10	09/22/10	SM4500 N C	
Total Nitrogen	**8.1**	0.5	0.5	"	"	0092337	09/22/10	09/22/10	Calculation	
Orthophosphate as P	**0.10**	0.007	0.05	"	"	0091626	09/16/10	09/16/10	SM4500 P E	
Phosphorus, Total	**0.12**	0.02	0.05	"	"	0091627	09/16/10	09/16/10	SM4500 P B, E	
Total Dissolved Solids	**1720**	1.0	20.0	"	"	0091725	09/18/10	09/20/10	SM2540 C	
Sulfate as SO4	**165**	10.0	50.0	"	10	0091625	09/17/10	09/17/10	SM4500 SO4 E	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Forester CR. Downstream (10I0362-04) Stormwater Sampled: 09/15/10 11:50 Received: 09/15/10 13:14										
Nitrate/Nitrite as N	**2.70**	0.09	0.50	mg/l	10	0091602	09/16/10	09/16/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.7**	0.3	0.5	"	1	0092201	09/22/10	09/22/10	SM4500 N C	
Total Nitrogen	**4.4**	0.5	0.5	"	"	0092337	09/22/10	09/22/10	Calculation	
Orthophosphate as P	**0.36**	0.007	0.05	"	"	0091626	09/16/10	09/16/10	SM4500 P E	
Phosphorus, Total	**0.37**	0.02	0.05	"	"	0091627	09/16/10	09/16/10	SM4500 P B, E	
Total Dissolved Solids	**1740**	1.0	20.0	"	"	0091725	09/18/10	09/20/10	SM2540 C	
Sulfate as SO4	**170**	10.0	50.0	"	10	0091625	09/17/10	09/17/10	SM4500 SO4 E	
San Diego R. Downstream (10I0362-05) Stormwater Sampled: 09/15/10 12:30 Received: 09/15/10 13:14										
Nitrate/Nitrite as N	**0.93**	0.09	0.50	mg/l	10	0091602	09/16/10	09/16/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.7**	0.3	0.5	"	1	0092201	09/22/10	09/22/10	SM4500 N C	
Total Nitrogen	**2.6**	0.5	0.5	"	"	0092337	09/22/10	09/22/10	Calculation	
Orthophosphate as P	**0.21**	0.007	0.05	"	"	0091626	09/16/10	09/16/10	SM4500 P E	
Phosphorus, Total	**0.22**	0.02	0.05	"	"	0091627	09/16/10	09/16/10	SM4500 P B, E	
Total Dissolved Solids	**1740**	1.0	20.0	"	"	0091725	09/18/10	09/20/10	SM2540 C	
Sulfate as SO4	**354**	10.0	50.0	"	10	0091625	09/17/10	09/17/10	SM4500 SO4 E	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego R. Upstream (10I0362-01) Stormwater Sampled: 09/15/10 09:50 Received: 09/15/10 13:14										
Total Coliforms	**170**	2	2	MPN/100 ml	1	0091614	09/15/10	09/19/10	SM 9221 B, E	
Fecal Coliforms	**2**	2	2	"	"	"	"	09/18/10	"	
Enterococcus	**2**	2	2	"	"	0091615	"	09/19/10	SM 9230 A, B	
San Diego R. Upstream-1 (10I0362-02) Stormwater Sampled: 09/15/10 10:00 Received: 09/15/10 13:14										
Total Coliforms	**800**	20	20	MPN/100 ml	10	0091614	09/15/10	09/19/10	SM 9221 B, E	
Fecal Coliforms	ND	2	2	"	1	"	"	09/18/10	"	
Enterococcus	**4**	2	2	"	"	0091615	"	09/19/10	SM 9230 A, B	
Forester CR. Upstream (10I0362-03) Stormwater Sampled: 09/15/10 11:00 Received: 09/15/10 13:14										
Total Coliforms	**5000**	200	200	MPN/100 ml	100	0091614	09/15/10	09/19/10	SM 9221 B, E	
Fecal Coliforms	**1100**	20	20	"	10	"	"	09/18/10	"	
Enterococcus	**500**	20	20	"	"	0091615	"	09/19/10	SM 9230 A, B	
Forester CR. Downstream (10I0362-04) Stormwater Sampled: 09/15/10 11:50 Received: 09/15/10 13:14										
Total Coliforms	**2200**	20	20	MPN/100 ml	10	0091614	09/15/10	09/19/10	SM 9221 B, E	
Fecal Coliforms	**230**	20	20	"	"	"	"	09/18/10	"	
Enterococcus	**800**	20	20	"	"	0091615	"	09/19/10	SM 9230 A, B	
San Diego R. Downstream (10I0362-05) Stormwater Sampled: 09/15/10 12:30 Received: 09/15/10 13:14										
Total Coliforms	**5000**	200	200	MPN/100 ml	100	0091614	09/15/10	09/19/10	SM 9221 B, E	
Fecal Coliforms	**50**	2	2	"	1	"	"	09/18/10	"	
Enterococcus	**13**	2	2	"	"	0091615	"	09/19/10	SM 9230 A, B	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092020											
Blank (0092020-BLK1)					Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	ND	0.00005	0.0005	mg/l							
LCS (0092020-BS1)					Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.095	0.00005	0.0005	mg/l	0.100		95	75-125			
LCS Dup (0092020-BSD1)					Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.095	0.00005	0.0005	mg/l	0.100		95	75-125	0.7	20	
Duplicate (0092020-DUP1)			**Source: 10I0362-01**		Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.003	0.00005	0.0005	mg/l		0.002			9	20	
Matrix Spike (0092020-MS1)			**Source: 10I0362-01**		Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.098	0.00005	0.0005	mg/l	0.100	0.002	95	75-125			
Matrix Spike Dup (0092020-MSD1)			**Source: 10I0362-01**		Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.100	0.00005	0.0005	mg/l	0.100	0.002	97	75-125	2	20	
Batch 0092021											
Blank (0092021-BLK1)					Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	ND	0.00005	0.0005	mg/l							
LCS (0092021-BS1)					Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.093	0.00005	0.0005	mg/l	0.100		93	75-125			
LCS Dup (0092021-BSD1)					Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.112	0.00005	0.0005	mg/l	0.100		112	75-125	19	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092021											
Duplicate (0092021-DUP1)			**Source: 10I0362-02RE1**		Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.002	0.00005	0.0005	mg/l		0.003			9	20	
Matrix Spike (0092021-MS1)			**Source: 10I0362-02RE1**		Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.096	0.00005	0.0005	mg/l	0.100	0.003	93	75-125			
Matrix Spike Dup (0092021-MSD1)			**Source: 10I0362-02RE1**		Prepared: 09/20/10		Analyzed: 09/21/10				
Selenium	0.100	0.00005	0.0005	mg/l	0.100	0.003	98	75-125	4	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0091602											
Blank (0091602-BLK1)					Prepared & Analyzed: 09/16/10						
Nitrate/Nitrite as N	ND	0.009	0.05	mg/l							
LCS (0091602-BS1)					Prepared & Analyzed: 09/16/10						
Nitrate/Nitrite as N	0.50	0.009	0.05	mg/l	0.500		101	80-120			
LCS Dup (0091602-BSD1)					Prepared & Analyzed: 09/16/10						
Nitrate/Nitrite as N	0.51	0.009	0.05	mg/l	0.500		103	80-120	2	20	
Duplicate (0091602-DUP1)			**Source: 10I0362-01**		Prepared & Analyzed: 09/16/10						
Nitrate/Nitrite as N	0.11	0.009	0.05	mg/l		0.10			12	20	
Matrix Spike (0091602-MS1)			**Source: 10I0362-01**		Prepared & Analyzed: 09/16/10						
Nitrate/Nitrite as N	0.59	0.009	0.05	mg/l	0.500	0.10	98	80-120			
Matrix Spike Dup (0091602-MSD1)			**Source: 10I0362-01**		Prepared & Analyzed: 09/16/10						
Nitrate/Nitrite as N	0.62	0.009	0.05	mg/l	0.500	0.10	105	80-120	6	20	
Reference (0091602-SRM1)					Prepared & Analyzed: 09/16/10						
Nitrate/Nitrite as N	0.45	0.009	0.05	mg/l	0.442		102	4.16-115.1			
Batch 0091625											
Blank (0091625-BLK1)					Prepared & Analyzed: 09/16/10						
Sulfate as SO4	ND	1.0	5.0	mg/l							
LCS (0091625-BS1)					Prepared & Analyzed: 09/16/10						
Sulfate as SO4	10.9	1.0	5.0	mg/l	10.0		109	80-120			

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0091625											
LCS Dup (0091625-BSD1)					Prepared & Analyzed: 09/16/10						
Sulfate as SO4	10.4	1.0	5.0	mg/l	10.0		104	80-120	4	20	
Duplicate (0091625-DUP1)			**Source: 10I0349-01**		Prepared & Analyzed: 09/16/10						
Sulfate as SO4	279	10.0	50.0	mg/l		284			2	20	
Matrix Spike (0091625-MS1)			**Source: 10I0349-01**		Prepared & Analyzed: 09/16/10						
Sulfate as SO4	387	10.0	50.0	mg/l	100	284	104	80-120			
Matrix Spike Dup (0091625-MSD1)			**Source: 10I0349-01**		Prepared & Analyzed: 09/16/10						
Sulfate as SO4	380	10.0	50.0	mg/l	100	284	96	80-120	2	20	
Batch 0091626											
Blank (0091626-BLK1)					Prepared & Analyzed: 09/16/10						
Orthophosphate as P	ND	0.007	0.05	mg/l							
LCS (0091626-BS1)					Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.42	0.007	0.05	mg/l	0.500		83	80-120			
LCS Dup (0091626-BSD1)					Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.45	0.007	0.05	mg/l	0.500		90	80-120	7	20	
Duplicate (0091626-DUP1)			**Source: 10I0366-01**		Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.10	0.007	0.05	mg/l		0.10			2	20	
Matrix Spike (0091626-MS1)			**Source: 10I0366-01**		Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.57	0.007	0.05	mg/l	0.500	0.10	94	80-120			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0091626											
Matrix Spike Dup (0091626-MSD1)			**Source: 10I0366-01**		Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.57	0.007	0.05	mg/l	0.500	0.10	94	80-120	0.4	20	
Batch 0091627											
Blank (0091627-BLK1)					Prepared & Analyzed: 09/16/10						
Phosphorus, Total	ND	0.02	0.05	mg/l							
LCS (0091627-BS1)					Prepared & Analyzed: 09/16/10						
Phosphorus, Total	0.48	0.02	0.05	mg/l	0.500		96	80-120			
LCS Dup (0091627-BSD1)					Prepared & Analyzed: 09/16/10						
Phosphorus, Total	0.48	0.02	0.05	mg/l	0.500		95	80-120	0.8	20	
Duplicate (0091627-DUP1)			**Source: 10I0367-02**		Prepared & Analyzed: 09/16/10						
Phosphorus, Total	0.24	0.02	0.05	mg/l		0.24			1	20	
Matrix Spike (0091627-MS1)			**Source: 10I0367-02**		Prepared & Analyzed: 09/16/10						
Phosphorus, Total	0.65	0.02	0.05	mg/l	0.500	0.24	82	80-120			
Matrix Spike Dup (0091627-MSD1)			**Source: 10I0367-02**		Prepared & Analyzed: 09/16/10						
Phosphorus, Total	0.68	0.02	0.05	mg/l	0.500	0.24	89	80-120	5	20	
Batch 0091725											
Blank (0091725-BLK1)					Prepared: 09/18/10 Analyzed: 09/20/10						
Total Dissolved Solids	ND	1.0	20.0	mg/l							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0362

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0091725											
Duplicate (0091725-DUP1)			**Source: 10I0362-01**		Prepared: 09/18/10		Analyzed: 09/20/10				
Total Dissolved Solids	1140	1.0	20.0	mg/l		1150			0.7	20	
Reference (0091725-SRM1)					Prepared: 09/18/10		Analyzed: 09/20/10				
Total Dissolved Solids	348	1.0	20.0	mg/l	288		121	75-125			
Batch 0092201											
Blank (0092201-BLK1)					Prepared & Analyzed: 09/22/10						
Total Kjeldahl Nitrogen	ND	0.3	0.5	mg/l							
LCS (0092201-BS1)					Prepared & Analyzed: 09/22/10						
Total Kjeldahl Nitrogen	4.8	0.3	0.5	mg/l	4.10		118	80-120			
LCS Dup (0092201-BSD1)					Prepared & Analyzed: 09/22/10						
Total Kjeldahl Nitrogen	4.2	0.3	0.5	mg/l	4.10		102	80-120	14	20	
Duplicate (0092201-DUP1)			**Source: 10I0362-05**		Prepared & Analyzed: 09/22/10						
Total Kjeldahl Nitrogen	2.0	0.3	0.5	mg/l		1.7			16	20	
Matrix Spike (0092201-MS1)			**Source: 10I0362-05**		Prepared & Analyzed: 09/22/10						
Total Kjeldahl Nitrogen	5.2	0.3	0.5	mg/l	4.10	1.7	85	80-120			
Matrix Spike Dup (0092201-MSD1)			**Source: 10I0362-05**		Prepared & Analyzed: 09/22/10						
Total Kjeldahl Nitrogen	5.6	0.3	0.5	mg/l	4.10	1.7	96	80-120	8	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

– EnviroMatrix EMA Analytical, Inc. ——

4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 10I0316 2

Client: D-Max Engineering Inc.
Attn: Arsalan Dadkhah
Samplers(s): MD/JR
Address: 7220 Trade street, Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax: 858-586-6644
Email:
Billing Address: Same

Project ID: Santee Receiving Water study
Project #: 201022W-4 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS ☒ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform. ☒ Total (MTF) ☒ Fecal (MTF)	Collert, T+E.Coli □ P/A □ Enumeration	Enterococcus. ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide	Total Nitrogen	Total Phosphorus	Total selenium	Sulfate	Orthophosphate-Phosphorus
1	San Diego R. Upstream	9/15/10	9:50	SW	6P									X					X		X			X	X	X	X	X
2	San Diego R. Upstream-1	~	10:00	SW	~									X					X		X			X	X	X	X	X
3	Forester Cr. upstream	~	11:00	SW	~									X					X		X			X	X	X	X	X
4	Forester Cr. downstream	~	11:50	SW	~									X					X		X			X	X	X	X	X
5	San Diego R downstream	~	12:30	SW	~									X					X		X			X	X	X	X	X
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid
Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other
[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day □ STD (7 day)
[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT
[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A — Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A — Temp @ Receipt:
COC Labels Agree: Yes No N/A — Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	9/15/10 1:00	Signature: Heidi Thompson
Print: Manouchehr Dadkhah		Print: Heidi Thompson
Company: D-Max Eng.		Company: EMA
Signature: Heidi Thompson	9/15/10 13:14	Signature
Print: Heidi Thompson		Print
Company: EMA		Company:
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: Please run selenium Tests Twice:
1) Once using EPA 200.8
2) Once using a modified method in which only nitric acid is used in the digestion

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

8°C

01 October 2010

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 10I0394

Project Name: Santee Receiving Waters Study
Project Desc./#: 201022W-4

Enclosed are the results of analyses for samples received by the laboratory on 09/16/10 13:12. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Sycamore CR. Downstream	10I0394-01	Stormwater	09/16/10 09:25	09/16/10 13:12

NOTE: Per client request Selenium was prepared/digested/analyzed twice; once per EPA Method 200.8 (Batched in #0092323) and once per EPA Method 200.8 modified (seen as RE1, Batched in #0092324). Modified EPA 200.8 method deleted all use of HCl.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore CR. Downstream (10I0394-01) Stormwater Sampled: 09/16/10 09:25 Received: 09/16/10 13:12										
Selenium	**0.0002**	0.00005	0.0005	mg/l	1	0092323	09/22/10	09/23/10	EPA 200.8	J
Sycamore CR. Downstream (10I0394-01RE1) Stormwater Sampled: 09/16/10 09:25 Received: 09/16/10 13:12										
Selenium	**0.0003**	0.00005	0.0005	mg/l	1	0092324	09/22/10	09/23/10	EPA 200.8	J

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore CR. Downstream (10I0394-01) Stormwater Sampled: 09/16/10 09:25 Received: 09/16/10 13:12										
Nitrate/Nitrite as N	**0.08**	0.009	0.05	mg/l	1	0091701	09/17/10	09/17/10	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**0.8**	0.3	0.5	"	"	0093001	09/27/10	09/27/10	SM4500 N C	
Total Nitrogen	**0.9**	0.5	0.5	"	"	0100117	09/27/10	09/27/10	Calculation	
Orthophosphate as P	**0.06**	0.007	0.05	"	"	0091626	09/17/10	09/17/10	SM4500 P E	
Phosphorus, Total	**0.11**	0.02	0.05	"	"	0092224	09/22/10	09/22/10	SM4500 P B, E	
Total Dissolved Solids	**1140**	1.0	20.0	"	"	0091725	09/18/10	09/20/10	SM2540 C	
Sulfate as SO4	**349**	10.0	50.0	"	10	0091625	09/17/10	09/17/10	SM4500 SO4 E	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore CR. Downstream (10I0394-01) Stormwater Sampled: 09/16/10 09:25 Received: 09/16/10 13:12										
Total Coliforms	**23000**	2000	2000	MPN/100 ml	1000	0091713	09/16/10	09/20/10	SM 9221 B, E	
Fecal Coliforms	**33**	2	2	"	1	"	"	09/19/10	"	
Enterococcus	**130**	2	2	"	"	0091714	"	09/20/10	SM 9230 A, B	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092323											
Blank (0092323-BLK1)					Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	ND	0.00005	0.0005	mg/l							
LCS (0092323-BS1)					Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.095	0.00005	0.0005	mg/l	0.100		95	75-125			
LCS Dup (0092323-BSD1)					Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.099	0.00005	0.0005	mg/l	0.100		99	75-125	4	20	
Duplicate (0092323-DUP1)			**Source: 10I0394-01**		Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.0002	0.00005	0.0005	mg/l		0.0002			36	20	QR-04, J
Matrix Spike (0092323-MS1)			**Source: 10I0394-01**		Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.106	0.00005	0.0005	mg/l	0.100	0.0002	106	75-125			
Batch 0092324											
Blank (0092324-BLK1)					Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	ND	0.00005	0.0005	mg/l							
LCS (0092324-BS1)					Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.097	0.00005	0.0005	mg/l	0.100		97	75-125			
LCS Dup (0092324-BSD1)					Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.100	0.00005	0.0005	mg/l	0.100		100	75-125	3	20	
Duplicate (0092324-DUP1)			**Source: 10I0394-01RE1**		Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.0001	0.00005	0.0005	mg/l		0.0003			73	20	QR-04, J

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0092324											
Matrix Spike (0092324-MS1)			**Source: 10I0394-01RE1**		Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.098	0.00005	0.0005	mg/l	0.100	0.0003	97	75-125			
Matrix Spike Dup (0092324-MSD1)			**Source: 10I0394-01RE1**		Prepared: 09/22/10		Analyzed: 09/23/10				
Selenium	0.096	0.00005	0.0005	mg/l	0.100	0.0003	95	75-125	2	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0091625											
Blank (0091625-BLK1)					Prepared & Analyzed: 09/16/10						
Sulfate as SO4	ND	1.0	5.0	mg/l							
LCS (0091625-BS1)					Prepared & Analyzed: 09/16/10						
Sulfate as SO4	10.9	1.0	5.0	mg/l	10.0		109	80-120			
LCS Dup (0091625-BSD1)					Prepared & Analyzed: 09/16/10						
Sulfate as SO4	10.4	1.0	5.0	mg/l	10.0		104	80-120	4	20	
Duplicate (0091625-DUP1)			**Source: 10I0349-01**		Prepared & Analyzed: 09/16/10						
Sulfate as SO4	279	10.0	50.0	mg/l		284			2	20	
Matrix Spike (0091625-MS1)			**Source: 10I0349-01**		Prepared & Analyzed: 09/16/10						
Sulfate as SO4	387	10.0	50.0	mg/l	100	284	104	80-120			
Matrix Spike Dup (0091625-MSD1)			**Source: 10I0349-01**		Prepared & Analyzed: 09/16/10						
Sulfate as SO4	380	10.0	50.0	mg/l	100	284	96	80-120	2	20	
Batch 0091626											
Blank (0091626-BLK1)					Prepared & Analyzed: 09/16/10						
Orthophosphate as P	ND	0.007	0.05	mg/l							
LCS (0091626-BS1)					Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.42	0.007	0.05	mg/l	0.500		83	80-120			
LCS Dup (0091626-BSD1)					Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.45	0.007	0.05	mg/l	0.500		90	80-120	7	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0091626											
Duplicate (0091626-DUP1)			**Source: 10I0366-01**		Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.10	0.007	0.05	mg/l		0.10			2	20	
Matrix Spike (0091626-MS1)			**Source: 10I0366-01**		Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.57	0.007	0.05	mg/l	0.500	0.10	94	80-120			
Matrix Spike Dup (0091626-MSD1)			**Source: 10I0366-01**		Prepared & Analyzed: 09/16/10						
Orthophosphate as P	0.57	0.007	0.05	mg/l	0.500	0.10	94	80-120	0.4	20	
Batch 0091701											
Blank (0091701-BLK1)					Prepared & Analyzed: 09/17/10						
Nitrate/Nitrite as N	ND	0.009	0.05	mg/l							
LCS (0091701-BS1)					Prepared & Analyzed: 09/17/10						
Nitrate/Nitrite as N	0.51	0.009	0.05	mg/l	0.500		103	80-120			
LCS Dup (0091701-BSD1)					Prepared & Analyzed: 09/17/10						
Nitrate/Nitrite as N	0.50	0.009	0.05	mg/l	0.500		100	80-120	3	20	
Duplicate (0091701-DUP1)			**Source: 10I0394-01**		Prepared & Analyzed: 09/17/10						
Nitrate/Nitrite as N	0.08	0.009	0.05	mg/l		0.08			4	20	
Matrix Spike (0091701-MS1)			**Source: 10I0394-01**		Prepared & Analyzed: 09/17/10						
Nitrate/Nitrite as N	0.53	0.009	0.05	mg/l	0.500	0.08	90	80-120			
Matrix Spike Dup (0091701-MSD1)			**Source: 10I0394-01**		Prepared & Analyzed: 09/17/10						
Nitrate/Nitrite as N	0.56	0.009	0.05	mg/l	0.500	0.08	98	80-120	7	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0091725											
Blank (0091725-BLK1)					Prepared: 09/18/10		Analyzed: 09/20/10				
Total Dissolved Solids	ND	1.0	20.0	mg/l							
Duplicate (0091725-DUP1)			**Source: 10I0362-01**		Prepared: 09/18/10		Analyzed: 09/20/10				
Total Dissolved Solids	1140	1.0	20.0	mg/l		1150			0.7	20	
Reference (0091725-SRM1)					Prepared: 09/18/10		Analyzed: 09/20/10				
Total Dissolved Solids	348	1.0	20.0	mg/l	288		121	75-125			
Batch 0092224											
Blank (0092224-BLK1)					Prepared & Analyzed: 09/22/10						
Phosphorus, Total	ND	0.02	0.05	mg/l							
LCS (0092224-BS1)					Prepared & Analyzed: 09/22/10						
Phosphorus, Total	0.51	0.02	0.05	mg/l	0.500		102	80-120			
LCS Dup (0092224-BSD1)					Prepared & Analyzed: 09/22/10						
Phosphorus, Total	0.50	0.02	0.05	mg/l	0.500		99	80-120	3	20	
Duplicate (0092224-DUP1)			**Source: 10I0500-01**		Prepared & Analyzed: 09/22/10						
Phosphorus, Total	0.53	0.02	0.05	mg/l		0.53			0.8	20	
Matrix Spike (0092224-MS1)			**Source: 10I0500-01**		Prepared & Analyzed: 09/22/10						
Phosphorus, Total	1.04	0.02	0.05	mg/l	0.500	0.53	102	80-120			
Matrix Spike Dup (0092224-MSD1)			**Source: 10I0500-01**		Prepared & Analyzed: 09/22/10						
Phosphorus, Total	1.00	0.02	0.05	mg/l	0.500	0.53	95	80-120	3	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 10I0394

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0093001											
Blank (0093001-BLK1)					Prepared & Analyzed: 09/27/10						
Total Kjeldahl Nitrogen	ND	0.3	0.5	mg/l							
LCS (0093001-BS1)					Prepared & Analyzed: 09/27/10						
Total Kjeldahl Nitrogen	4.0	0.3	0.5	mg/l	4.10		96	80-120			
LCS Dup (0093001-BSD1)					Prepared & Analyzed: 09/27/10						
Total Kjeldahl Nitrogen	3.5	0.3	0.5	mg/l	4.10		86	80-120	12	20	
Duplicate (0093001-DUP1)			**Source: 10I0375-05**		Prepared & Analyzed: 09/27/10						
Total Kjeldahl Nitrogen	0.6	0.3	0.5	mg/l		0.5			16	20	
Matrix Spike (0093001-MS1)			**Source: 10I0375-05**		Prepared & Analyzed: 09/27/10						
Total Kjeldahl Nitrogen	3.9	0.3	0.5	mg/l	4.10	0.5	84	80-120			
Matrix Spike Dup (0093001-MSD1)			**Source: 10I0375-05**		Prepared & Analyzed: 09/27/10						
Total Kjeldahl Nitrogen	4.3	0.3	0.5	mg/l	4.10	0.5	94	80-120	10	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.

4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 10I0394

Client: D. Max Engineering Inc.

Attn: Arsalan Dadkhah

Samplers(s): MD/JR

Address: 7220 Trade street, Suite 119
San Diego, CA 92121

Phone: 858-586-6600 Fax: 858-586-6644

Email:

Billing Address: Same

Project ID: Santee Receiving water study

Project #: 201022W-4 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform. Total (MTF) Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide	Total Nitrogen	Total Phosphorus	Total Selenium	Sulfate	Orthophosphate-Phosphorus
1	Sycamore Cr. downstream	9/16/10	9:25	SW	6P									X						X		X			X	X	X	X	X
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												

SEP 16 '10 13:26

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:.....
COC Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	9/16/10 13:00	Signature: Kelly Leyden
Print: Manouchehr Dadkhah		Print: Kelly Leyden
Company: D. Max Eng		Company: EMA
Signature: Kelly Leyden	9/16/10 13:12	Signature: [illegible]
Print: Kelly Leyden		Print: [illegible]
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: Please run selenium Test Twice:
1-once using EPA 200.8
2-once using a modified method in which only nitric acid is used in the digestion

Dont run an initial dilution on Sycamore Creek bacteria tests (RL=2 MPN/100mL)

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

T= 5 °C on ice

Appendix D

Field Data Sheets

Round One

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	Forester Creek Downstream		Latitude	32.83953	Watershed	Hydrologic Unit	907
Location	Approximately 200 feet north of the Mission Gorge Road and Fanita Drive intersection, east of Fanita Creek		Longitude	-117.00241		Hydrologic Area	907.1
			TB Page	1231-B6		Hydrologic Subarea (Optional)	907.12
Date	5/17/10	Time 14:50	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae ☐ Fish ☐ Snails		☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 8-11

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.5	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.8	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.76	MBAS (mg/L)	NA	DO (mg/L)	7.89		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	70	in
Depth	10	in
Velocity	0.30	ft/sec
Flow	654	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	Forester Creek Upstream		Latitude	32.83093	Watershed	Hydrologic Unit	907
Location	Beneath the Prospect Avenue bridge, west of Cuyamaca Street		Longitude	-116.98543		Hydrologic Area	907.1
			TB Page	1251-C7		Hydrologic Subarea (Optional)	907.13
Date	5/17/10	Time 12:30	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 4-5

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.3	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.73	MBAS (mg/L)	NA	DO (mg/L)	9.68		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	30	in
Depth	4	in
Velocity	1.57	ft/sec
Flow	586	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

ic

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	San Diego River Downstream		Latitude	32.83936	Watershed	Hydrologic Unit	907
Location	Beneath the West Hills Parkway bridge		Longitude	-117.02450		Hydrologic Area	907.1
			TB Page	1230-H6		Hydrologic Subarea (Optional)	907.12
Date	5/17/10	Time 1345	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 6-7

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.0	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.8	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	2.05	MBAS (mg/L)	NA	DO (mg/L)	6.95		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	* 1212	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: *Flow data from USGS flow gauge

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	San Diego River Upstream		Latitude	32.85282	Watershed	Hydrologic Unit	907
Location	Approximately 200 feet downstream of the rock dam at the east end of the RCP service road		Longitude	-116.95281		Hydrologic Area	907.1
			TB Page	1231 - G4		Hydrologic Subarea (Optional)	907.12
Date	5/17/10	Time 10:50	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 1-3

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.0	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.9	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	1.50	MBAS (mg/L)	NA	DO (mg/L)	8.27		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	54	in
Depth	4.5	in
Velocity	0.22	ft/sec
Flow	160	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: 160

LC

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	Sycamore Creek Downstream		Latitude	32.84441	Watershed	Hydrologic Unit	907
Location	Beneath the Carlton Oaks Drive bridge, west of the Santee Recreation Lakes		Longitude	-117.00652		Hydrologic Area	907.1
			TB Page	1231-A6		Hydrologic Subarea (Optional)	907.12
Date	5/17/10	Time 1540	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☒ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 12-14

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.7	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.8	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	1.09	MBAS (mg/L)	NA	DO (mg/L)	6.10		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	48	in
Depth	3	in
Velocity	0.58	ft/sec
Flow	260	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Round Two

JR

San Diego Stormwater Copermittees

City of Santee

Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☑ Receiving Water

Site ID	Forester Creek Downstream		Latitude	32.83953	Watershed	Hydrologic Unit	907.
Location	approx. 200ft north of the Mission Gorge Rd and Fanita Dr. intersection, east of Fanita Creek		Longitude	-117.00241		Hydrologic Area	907.1
			TB Page	1231 A6		Hydrologic Subarea (Optional)	907.12
Date	9/15/10	Time 11:50	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☑ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 32-35

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	20.8	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.6	TURB (NTU)	5.64	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.75	MBAS (mg/L)	NA	DO (mg/L)	5.66		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	60	in
Depth	1.5	in
Velocity	3.7/15	ft/sec
Flow	69	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Significant amounts of trash including styrofoam peels, food packaging and wood planks

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

JR

San Diego Stormwater Copermittees

City of Santee

Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☑ Receiving Water

Site ID	Forester Creek Upstream		Latitude	32.83093	Watershed	Hydrologic Unit	907
Location	Beneath the Prospect Avenue bridge, west of Cuyamaca Street		Longitude	-116.98543		Hydrologic Area	907.1
			TB Page	1231 C7		Hydrologic Subarea (Optional)	907.13
Date	9/15/10	Time 11:00	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☑ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☑ Other crayfish

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 30-31

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	28.9	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.0	TURB (NTU)	4.09	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	2.71	MBAS (mg/L)	NA	DO (mg/L)	7.72		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	19	in
Depth	1.5	in
Velocity	5.6/10	ft/sec
Flow	49	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

JK

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☑ Receiving Water

Site ID	San Diego River Downstream		Latitude	32.83936	Watershed	Hydrologic Unit	907
Location	Beneath the West Hills Parkway Bridge		Longitude	-117.02450		Hydrologic Area	907.1
			TB Page	1230 H6		Hydrologic Subarea (Optional)	907.12
Date	9/15/10	Time 12:30	Observer	MD/JK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open

Land Use (Secondary) (Optional, greater than 10%): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 36-37

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	21.3	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.4	TURB (NTU)	1.82	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.83	MBAS (mg/L)	NA	DO (mg/L)	5.12		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	50	in
Depth	2.5	in
Velocity	3.718	ft/sec
Flow	180	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Flow = 188.5 gpm per USGS flow gauge

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

JR

San Diego Stormwater Copermittees

City of Santee

Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☑ Receiving Water

Site ID	San Diego River upstream		Latitude	32.85282	Watershed	Hydrologic Unit	907
Location	Approximately 200 ft downstream of the rock dam at east end of RCP service road		Longitude	-116.95281		Hydrologic Area	907.1
			TB Page	1231 E5		Hydrologic Subarea (Optional)	907.12
Date	9/15/10	Time 9:50	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 28 - 29

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.8	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.2	TURB (NTU)	5.53	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.89	MBAS (mg/L)	NA	DO (mg/L)	7.68		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	35	in
Depth	0.5	in
Velocity	3.718	ft/sec
Flow	25	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

JR

San Diego Stormwater Copermittees
City of Santee
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☑ Receiving Water

Site ID	Sycamore Creek Downstream		Latitude	32.84441	Watershed	Hydrologic Unit	907
Location	Beneath the Carlton Oaks Dr. bridge, west of Santee Recreation Lakes		Longitude	-117.00652		Hydrologic Area	907.1
			TB Page	1231 A6		Hydrologic Subarea (Optional)	907.12
Date	9/16/10	Time 9:25	Observer	MD/JR		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☑ Open

Land Use (Secondary) (Optional, greater than 10%) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 43-45

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	20.1	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.0	TURB (NTU)	0.87	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	1.93	MBAS (mg/L)	NA	DO (mg/L)	5.21		

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	40	in
Depth	1.0	in
Velocity	3.7/8	ft/sec
Flow	58	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

CITY OF SANTEE

Jurisdictional Urban Runoff Management Program

Annual Report 2011-2012

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CERTIFICATION STATEMENT

Date: September 2012

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Pedro Orso Delgado, P.E.
Deputy City Manager/Director of Development Services

EXECUTIVE SUMMARY

The City of Santee (City) has been actively developing and implementing storm water pollution prevention measures since 1990. In January 2007, a Municipal Permit (Permit) was jointly issued to 18 municipalities in San Diego County, including the City; the County of San Diego; the San Diego County Regional Airport Authority; and the San Diego Unified Port District (collectively referred to as "Copermittees"). The Permit requires that the City develop and maintain a Jurisdictional Urban Runoff Management Program (JURMP) that describes the programs and standards that the City will use to meet the requirements of the Permit and to submit Annual Reports on its activities.

Originally developed in 2002, the City's JURMP was updated and submitted to the San Diego Regional Water Quality Control Board (RWQCB) in March 2008. The JURMP includes Best Management Practice (BMP) standards for businesses, construction, development projects, residents, and the City's own activities. The JURMP also includes programs for water quality monitoring and educational outreach.

This JURMP Annual Report presents the City's activities to implement its JURMP during the 2011/2012 fiscal year (Reporting Period), which began on July 1, 2011 and ended on June 30, 2012. Each section of this JURMP Annual Report discusses how the City's efforts during the Reporting Period met the requirements of the Municipal Permit. Key actions taken for the major components of the City's storm water program are summarized in the table below.

Component	Key Actions
Development Planning	• Stormwater Management Plans and grading plans were reviewed prior to project entitlement and grading plan issue. • Inspected 22 sites with treatment control BMPs installed and required annual verification letters to be completed.
Construction	• Active construction sites were inspected to assess BMP implementation during the Reporting Period; a total of 171 construction inspections were completed at 9 sites. • The City continued its program of inspecting sites prior to predicted rain events and during rain events, when appropriate, to foster BMP implementation when the highest potential for pollutant discharge is present.
Municipal	• The City inspected all high threat to water quality municipal fixed facilities and continued its street sweeping and storm drain (MS4) maintenance programs. • A total of 784 tons of trash and debris was removed from street

Component	Key Actions
	sweeping activities and 483 tons of debris was removed from standard MS4 maintenance.
Industrial and Commercial	• During the Reporting Period the City inspected 185 businesses, which exceeded the Municipal Permit requirement to inspect at least 25 percent of the inventoried stationary industrial and commercial business.
Residential	• The City responded to 22 complaints made to the City storm water hotline regarding residential areas. The complaint investigations were used as opportunities to educate residents on the importance of water quality protection and BMP requirements.
Illicit Discharge Detection and Elimination	• During this period, the City responded to and resolved 53 complaints made to its storm water hotline and to the City website, as well as referrals from City staff. • The City completed its 2010 Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program). The recommendations in the final report for the Dry Weather Monitoring Program were addressed during the Reporting Period.
Education	• Over 1,150 copies of various educational materials were distributed during the Reporting Period. • The City continued to conduct various education and outreach activities throughout the Reporting Period as a means to raise storm water awareness in various communities in the City. • The City now circulates the *Santee Review* newsletter online, it has included storm water-related articles aimed at both residents and businesses in the City.
Public Participation	• The City hosted clean-up events along Forester Creek and the San Diego River; volunteers removed approximately 41 tons of trash and debris. • The City of Santee partnered with the San Diego River Park Foundation to promote their community activities located in Santee.

Component	Key Actions
Special Investigations	• The City conducted ambient water quality monitoring in the San Diego River, Forester Creek, and Sycamore Creek during Fall 2011 as part of an additional study conducted concurrently with the Dry Weather Monitoring Program. • The City of Santee collaborated with other San Diego River copermittees to develop a comprehensive load reduction plan for the San Diego River to comply with the Bacteria TMDL. • The City of Santee participated in the regional Bacteria Reference Study designed to support activities associated with the Bacteria TMDL.

Conclusions and Recommendations

The City has completed a major stream restoration project in Forester Creek, and monitoring after project completion has shown an 87 percent reduction in fecal coliform bacteria from the upstream to downstream end of the project area. In addition, annual dry weather monitoring has found that sampled sites generally have low rates of water quality action level exceedances and that non-storm water flow rates in the City's storm drain system have been decreasing, indicating lower levels of non-storm water discharges. A review of the outfall monitoring data collected over the past four years has shown a decreasing trend in flow rates and decreasing trends in loading rates for most pollutants measured. While longer term trends are a better indicator of success, a comparison between 2010/2011 and 2011/2012 shows flow rates and pollutant loads are lower in the current Reporting Period.These observations indicate that the stormwater program has been effective.

The City will continue to implement the new and updated programs in its JURMP during the 2012/2013 Fiscal Year and to constructively participate in the development of the regional Municipal Permit.

1.0 INTRODUCTION

1.1 BACKGROUND

This Jurisdictional Urban Runoff Management Plan (JURMP) Annual Report presents a summary of the activities of the City of Santee (City) during the 2011/2012 fiscal year (Reporting Period). Preparation and submittal of the JURMP Annual Report is required by San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit).

1.1.1 REGULATORY BACKGROUND

The 1987 amendments to the Federal Water Pollution Control Act (also known as the Clean Water Act, or CWA) established a framework for regulating MS4 discharges under the National Pollutant Discharge Elimination System (NPDES). The RWQCB issued the first regional NPDES permit for municipalities in the San Diego Region in 1990, followed by a revised permit in 2001. The revised permit, RWQCB Order No. 2001-01 was replaced by the current Municipal Permit R9-2007-0001, in 2007.

Like all the other municipalities in the San Diego region regulated by R9-2007-0001, collectively referred to as Copermittees, the City developed and submitted a JURMP to the RWQCB in 2002. As required by the Municipal Permit, the City submitted an updated JURMP in March 2008. The JURMP includes management measures for a variety of different sectors and activity types such as municipal, industrial, commercial, construction, and significant development and re-development activities.

Annual reports on the implementation of the JURMP are required to be submitted to the RWQCB September 30 of each year. This JURMP Annual Report presents information for the 2011/2012 fiscal year (July 1, 2011 to June 30, 2012).

1.1.2 CITY SETTING

The City of Santee is located in central San Diego County and is bordered by the City of San Diego to the west, the City of El Cajon to the south, and unincorporated portions of San Diego County. The City itself includes approximately 16 square miles and an estimated population of 58,000. Land use within the City is mainly residential; other land uses in the City include municipal facilities, industrial and commercial facilities, streets, highways, and undeveloped open spaces. Land use categories with the corresponding acreage percentage of the total area are included in Table 1-1, below.

Table 1-1
City of Santee Land Use Breakdown

Land Use	Total Area (Acres)	Percentage
Vacant	4,478	42%
Single Family Residential	2,328	22%
Transportation	1,152	11%
Open	542	5%
Public Facilities and Utilities	380	4%
Commercial	373	4%
Other Residential	322	3%
Industrial	315	3%
Parks	279	3%
Multi-Family Residential	234	2%
Water	111	1%
Office	21	<1%
Recreation	20	<1%
Construction	13	<1%
Agriculture	5	<1%
Total	**10,574**	**100%**

Source: 2007 SANDAG land use data

The City of Santee is located entirely in the San Diego River Watershed, Hydrologic Unit (HU) 907. Specifically, the entire City of Santee is located within the Lower San Diego River Hydrologic Area (HA), 907.1. While a significant portion of the City drains directly to San Diego River (which flows from east to west across the City), some sections of the City drain first to other receiving waterbodies within the City that then ultimately discharge into San Diego River. Forester Creek enters the City of Santee from the southeast, eventually merging with San Diego River west of Carlton Hills Boulevard. Sycamore Creek enters the City from the north, flows south, eventually merging with the San Diego River west of Santee Recreation Lakes (Santee Lakes).

1.1.3 Water Quality Impairments

Sycamore Creek is listed as having a RARE beneficial use and does not have any 303(d) listed impairments. Both Forester Creek and the lower San Diego River have bacteria impairments on the 2010 CWA 303(d) list, and a regional bacteria Total Maximum Daily Load (TMDL) adopted in 2010/2011 specifically names both of these water bodies as subject to its requirements. The City and other jurisdictions have been preparing a TMDL implementation plan during 2011/2012. In addition to bacteria, the lower San Diego River is listed as being impaired for total dissolved solids (TDS), low dissolved oxygen, phosphorus, nitrogen, manganese and toxicity, and Forester Creek is also listed as impaired for pH, selenium, and TDS. Note that the pH impairment is listed for the upper three miles of the creek, which is upstream of the City of Santee.

Figure 1-1
City of Santee Land Use and Drainage Basins

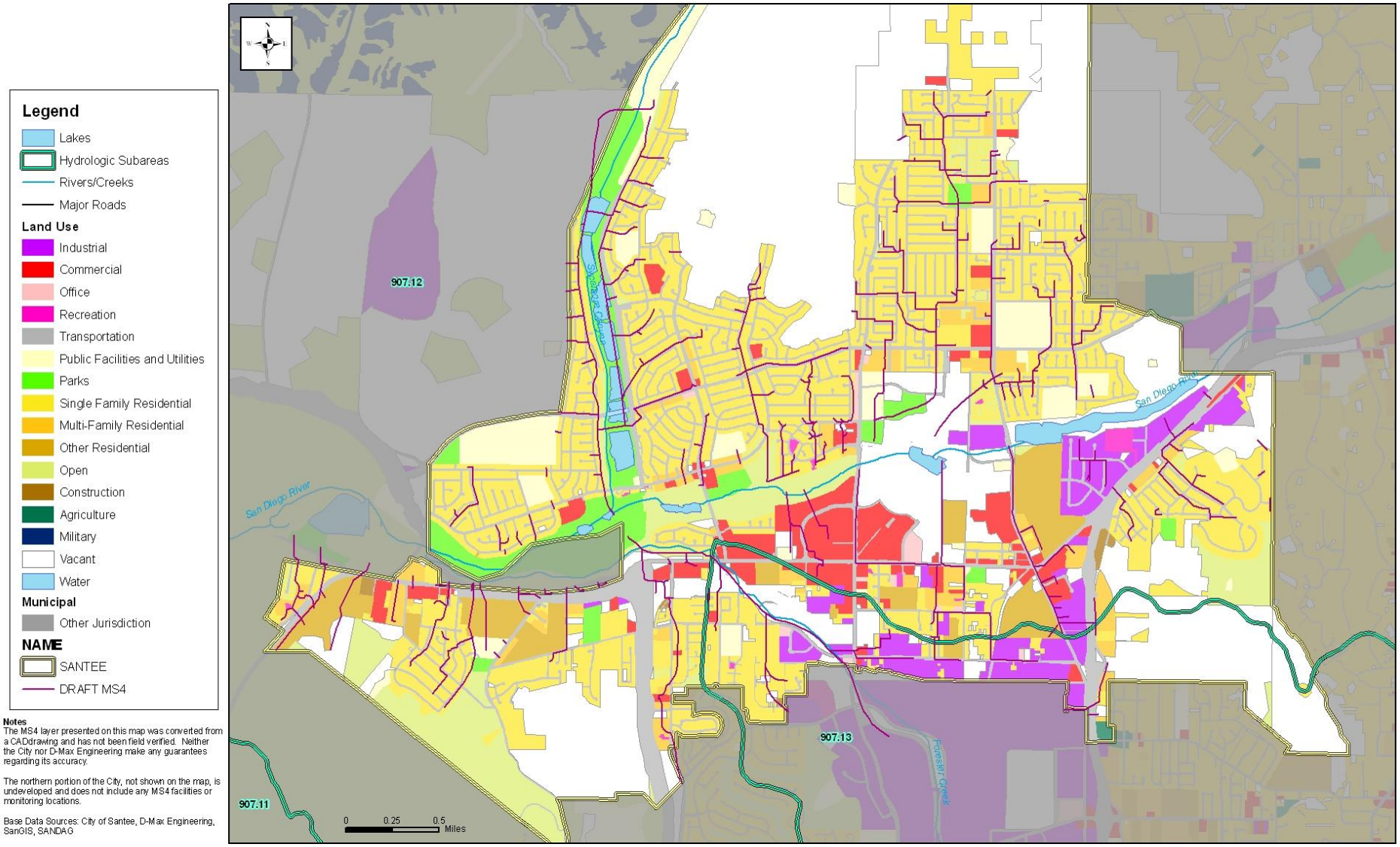

1.2 PURPOSE AND OBJECTIVES

The City's JURMP presents a strategy to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP). The JURMP includes a variety of programs intended to minimize or eliminate the effects of urban runoff from the City on receiving water bodies. This JURMP Annual Report has been prepared to document the City's implementation of its JURMP during the 2011/2012 reporting period.

1.3 REPORT ORGANIZATION

This report follows the standard reporting outline jointly developed by the Copermittees and submitted to the RWQCB in July 2007. The following sections are included in the JURMP Annual Report.

Section 1	**Introduction**
Section 2	**Development Planning Component**
Section 3	**Construction Component**
Section 4	**Municipal Component**
Section 5	**Industrial and Commercial Component**
Section 6	**Residential Component**
Section 7	**Illicit Discharge Detection and Elimination Component**
Section 8	**Education Component**
Section 9	**Public Participation Component**
Section 10	**Fiscal Analysis Component**
Section 11	**Effectiveness Assessment Component**
Section 12	**Special Investigations**
Section 13	**Non-Emergency Fire Fighting**
Section 14	**JURMP Revisions**
Section 15	**Conclusions and Recommendations**
Section 16	**References**

Each section includes all the sections required by the standard JURMP Annual Report format. In some cases, additional subsections within the standardized sections have been added to provide a clearer explanation of the City's activities during the reporting period. For example, in this introduction section, the standard reporting format only includes subsections 1.1 and 1.2. Subsection 1.1, Background, has been divided into subsections 1.1.1, Regulatory Background, and 1.1.2, City Setting, for the sake of clarity.

2.0 DEVELOPMENT PLANNING COMPONENT

2.1 INTRODUCTION

The development planning component of the City's JURMP aims to improve overall storm water quality by reducing the discharge of pollutants from development projects to the MEP and managing potential increases in runoff from development projects that have the potential to negatively affect downstream water bodies. During the Reporting Period, the City accomplished these goals through implementation of its SUSMP and HMP.

2.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the development planning component during the Reporting Period are presented in the following bulleted list. The following sections provide more details on how the City complied with the Municipal Permit during the Reporting Period.

- Conducted maintenance inspections of treatment control BMPs at 22 completed development projects throughout the City.
- Updated website resources to provide the most recent (2010) 303(d) list applicable to Santee for project designers to review.
- Actively participated in the development of the monitoring activities in the regional Hydromodification Management Plan (HMP).

2.2 LAND USE PLANNING

2.2.1 BACKGROUND

The City's General Plan was last updated in 2003 and contains water quality and watershed protection principles in the plan's Conservation Element. The comprehensive principles established in 2003 provide an ample framework for implementing the requirements of the Municipal Permit, and no changes to these policies were necessary during the reporting period.

2.2.2 SOURCE CHARACTERIZATION

The City's General Plan contains established restrictions on the types of new development projects based on their planned land uses to ensure public safety and limit negative impacts to the surrounding environment. No changes to development restrictions in the City's General Plan for storm water purposes were necessary during the reporting period.

2.2.3 Best Management Practice Requirements

Please refer to the City's updated JURMP document for a list of the water protection policies included in the City's General Plan. These policies remained the same throughout the Reporting Period.

2.2.4 Program Implementation

The City implemented its water protection related land-use policies during the reporting period mainly through the City's Municipal Code. A copy of the ordinance can be obtained at www.ci.santee.ca.us.

Details on how the City implemented its established water protection policies through its environmental review process and its development project approval and verification processes during the reporting period are provided in Sections 2.3 and 2.4 of this JURMP Annual Report document.

2.3 Environmental Review Process

Storm water requirements for a project are reviewed during the pre-application stage. As described in the JURMP, the project proponent is required to complete the updated Project Applicability, LID and Source Control Checklist so that these requirements can be evaluated. Preliminary designs are required to incorporate the placement and description of BMPs to be used, so that an assessment can be made to determine whether it is feasible for the project to comply with applicable storm water requirements. The project approval document incorporates the conditions needed to comply with these applicable storm water requirements (for example, filing an NOI to comply with the State Construction Permit, development of a SWPPP, development of a SWMP, use of treatment control BMPs which have a high or medium removal efficiency for applicable pollutants, execution of a BMP maintenance agreement, etc.). No modifications to the City's environmental review process have been made since the submittal of the updated JURMP.

2.4 Development Project Approval and Verification Process

2.4.1 Background

During the Reporting Period, the City implemented the watershed protection principles in the City's General Plan through various aspects of the City's development project approval and verification process, as detailed below. BMP selection and verification followed the process described in the City's JURMP.

2.4.2 Source Characterization

The different priority pollutants, sources, and activities associated with development projects within the City are addressed through the implementation of the City's SUSMP requirements.

2.4.3 Best Management Practice Requirements

The City's BMP requirements mirror those in the regionally-developed Model SUSMP and HMP. The City is encouraging the incorporation of BMPs within landscape features (such as bioretention facilities) over proprietary products that are typically installed in catch basins or at the end of a pipe. Bioretention facilities are more likely to remove priority pollutants in the City at the required efficiency ensuring Municipal Permit compliance and need less intensive maintenance by the property owner. These features can also provide an aesthetic benefit to the property.

2.4.4 Program Implementation

During the Reporting Period, the City required implementation of its BMPs for development projects through education, a comprehensive development project approval process, and the treatment control BMP inspection and maintenance verification program.

2.4.4.1 Outreach and Staff Training

The City regularly trains staff involved in the planning and review of development projects within the City and works closely with the development community to communicate its development requirements throughout the entire approval process. During the Reporting Period, staff training was focused on changes being made to the City's HMP requirements. Details on trainings conducted and educational materials developed and distributed related to the new development during the reporting period can be found in Section 8 of this JURMP Annual Report document. Distribution of maintenance verification letters to parties responsible for maintenance of treatment control BMPs at completed projects continues to increase the level of knowledge of regulated parties.

2.4.4.2 Urban Runoff Approval Process for Development Projects

All development projects that met the SUSMP definition for high priority projects were required to complete the City's development approval process as detailed in the City's JURMP. Forms and reports completed by project applicants are kept with the project's file at the City for future reference. The City thoroughly examines all development applications to determine what documents related to storm water compliance are required. Development projects determined to be Priority Projects after completing the Project Applicability, LID and Source Control Checklist are required to prepare a Storm

Water Management Plan (SWMP). The City uploaded a copy of the most recent SUSMP, HMP and 303(d) list applicable to Santee to its website so that project proponents can easily access them. The City will continue to work closely with development proponents to ensure compliance with the City's SUSMP requirements.

Table 2-1 lists the Priority Projects subject to the City's SUSMP requirements during the Reporting Period and the number of document reviews and approval date for each project. Since projects proposed BMPs with high or medium removal efficiency for the pollutants of concern, no feasibility analysis was required, and no SUSMP waivers were issued.

Table 2-1
Development Projects Subject to SUSMP Requirements During 2011/2012

#	Project Name	Location	Number of Reviews	Approval date
1	El Nopal Estates II	APN 381-750-01 through -10	3	6/27/11*
2	Vidovich	APN 386-050-46	1	7/20/11**
3	Sunset Trails (Lanterncrest III)	Parcel to east of Prospect Avenue and Graves Avenue intersections.	3	9/8/11
4	Forester Square	APN 384-020-05, -50, and -54	2	10/26/11
5	Chick Fil-A	APN 381-040-43	3	1/30/12
6	In-N-Out	APN 381-040-44	2	5/29/12

*El Nopal Estates II was approved after the draft section 2.0 for the 2010-2011 Annual Report was drafted (right at the end of the fiscal year). Therefore it was not presented in the list in last year's Annual Report.
**Vidovich was reviewed to ensure that it complied with HMP requirements.

The hydromodification management subjectivity for each of the above projects and associated control measures proposed for subject projects are listed below:

- El Nopal Estates II. Exempt from HMP requirements, direct discharge to exempt waterbody.
- Vidovich: Subject to HMP, bioretention facility sized for both water quality and HMP requirements.
- Sunset Trails (Lanterncrest III). Exempt from HMP requirements, direct discharge to exempt waterbody.
- Forester Square. Subject to HMP, underground chamber and bioretention facilities sized for both water quality and HMP requirements.
- Chick Fil-A. Exempt from HMP requirements, direct discharge to exempt waterbody.
- In-N-Out. Exempt from HMP requirements, direct discharge to exempt waterbody.

An example of a Priority Project conditioned to meet SUSMP requirements is Forester Square, an affordable housing redevelopment project which drains to Forester Creek.

- The original SWMP did not include acceptable BMPs for the courtyard area in the center of the project. The City encouraged the designers to use more LID in these areas to provide a BMP that was a minimum of medium efficiency level for the pollutants of concern. The designers countered that LID BMPs would be inappropriate for the type of soils present and the site and the density of building and utility structures. In addition, limitations due to the grades at the site (flat, small parcel with existing development surrounding it) made it impossible to direct the flow from the central courtyard area to proposed bioretention facilities on the periphery of the site. A modular wetland facility was proposed for the courtyard area and was accepted as it met the medium efficiency level for the pollutants of concern based on data provided.
- The project discharges to the Forester Creek, an unlined channel which is subject to HMP. The BMP Sizing Calculator was used to set basic design parameters for hydrologic controls. Underground detention basins with capacity and orifice size meeting the requirements dictated by the BMP Sizing Calculator were incorporated into the project design.

In addition, the City has provided comments on Castlerock, a project proposed in the City of San Diego. The project is located adjacent to the City of Santee, north of Mast Boulevard and is proposed to be annexed into the City of Santee after development. City of Santee staff have provided constructive comments and local information (such as correcting the description of Sycamore Creek to reflect its unlined condition) to help ensure that the design meets current SUSMP and HMP conditions. Discussions on this project are ongoing.

The City will continue to monitor the review process and provide ways to educate project proponents as needed. Example inspection and maintenance documents have been provided to project proponents.

During the reporting period, no projects received a SUSMP waiver for implementation of treatment control BMPs. The City has never issued a SUSMP waiver in the past, and at this time the City has no plans to develop a SUSMP waiver mitigation program.

Hydromodification Management Plan

During the reporting period the Copermittee Land Development Workgroup and the HMP Monitoring Subworkgroup met regularly to discuss key HMP development issues and provide updates on the status of work products. The City regularly participated in this Workgroup and Subworkgroup during the Reporting Period.

BMP Installation Verification

Three Priority Projects under construction during the 2011/2012 fiscal year were completed prior to the end of the reporting period. Verification that the BMPs proposed in the projects' SWMPs were installed in accordance with approved documents was performed during the final project inspection prior to acceptance of the site. City staff conducting these checks are aware that checks for permanent storm water BMPs should

be performed during the final inspection. The information from the inspection is then relayed to the City's Stormwater Program Manager, who updates the treatment control BMP inventory accordingly. Responsible parties are promptly notified of the requirements to maintain the BMPs after occupancy, and newly installed BMPs are typically inspected during the first summer after occupancy, whether or not they are prioritized as high priority.

All completed Priority Projects have been assigned TTWQ priorities using the prioritization flow chart presented in the City's JURMP, and the projects have been added to the City's treatment control BMP inventory included as Appendix A.1 of this document. Projects completed during the Reporting Period have been noted with a double asterisk in the inventory appendix.

2.4.4.3 Treatment Control BMP Inspection and Maintenance Verification Program

Table 2-2 below provides a summary of the sites inspected and inspection frequency.

Table 2-2
Assessment of Compliance with Required Inspection Frequencies

Class	Number of Sites	Inspections	Percent Inspected*	Permit Requirement	Requirement Met
All Inventoried Sites	36	22	61	20%	**Yes**
Sites with Drainage Inserts	22	16	73	50%	**Yes**
High TTWQ Sites	11	11	100	100%	**Yes**

*Inspections of post-construction BMPs are typically completed by the end of June each year. During 2010-2011, due to rescheduling of program tasks to accommodate staff absences, inspections were completed approximately one month later (i.e., in FY2011-12). The table above excludes the number of inspections completed during the first month of FY2011-12, so that inspections are not doublecounted. Two of the projects completed during FY2011-12 are not included in the summary above as they were completed late in FY2011-12 and were inspected as part of construction completion, not a post-construction maintenance program.

During inspections City staff used information included in the City's treatment control BMP database to determine what BMPs should be present at the individual project sites. Each BMP was visually inspected, and the inspector documented the findings for each site visited.

Treatment control inspections were conducted mainly during March, April and June, 2012. Based on these inspections, notices regarding maintenance requirements were sent and follow-up inspections conducted. Table 2-3 provides more detailed information about the inspections. The table includes the development projects inspected, the BMPs installed at each site, the BMPs inspected, brief descriptions of inspection findings, and a discussion of how any issues noted were resolved. Public Priority Projects are marked as Capital Improvement Projects (CIP) in the table.

Table 2-3
Summary of Treatment Control BMP Inspection Results

#	Project Name	BMP(s)	Inspection Date(s)	Inspection and Follow-Up Notes
1	Altair	Hydrodynamic separator, drainage inserts (7)	5/14/12	The BMPs were in acceptable condition.
2	American Sheet Metal	Vegetated swale	10/11/11 and 12/27/11	Housekeeping poor. Advised business owner. BMPs improved and acceptable during reinspection.
3	AT&T Storage Yard	Vegetated swale	5/1/12	Swale needs reseeding, notified responsible person, who has since notified City that maintenance was completed.
4	Aubrey Glen	Vortex separator	5/14/12	The BMP was in an acceptable condition.
5	Blackhorse Estates*	Detention basin, drainage inserts (5)	3/27/12	BMPs need maintenance, responsible party notified Responsible party has since notified City that maintenance was completed
6	Cuyamaca Town Commons	Drainage inserts (4)	3/26/12	BMPs in acceptable condition.
7	Express Performance	Media filters (2) and drainage inserts (2)	5/8/12	Northern filter needs maintenance. Car detailing water needs to be contained and disposed of to sanitary sewer. Based on subsequent inspection, the BMPs have been maintained and carwashing procedures now include BMPs designed to prevent a discharge to the storm drain system.
8	Farrington Court	Drainage insert (1)	3/27/12	BMPs in acceptable condition
9	Hartford Insurance*	Vegetated swale, drainage insert (3)	3/26/12	BMPs need maintenance, responsible party notified. Responsible party has since notified City that maintenance was completed.
10	Marketplace	Infiltration trench, grass swale, water quality inlet (4), and drainage insert (2)	5/8/12	BMPs need maintenance, responsible party notified. City is following up during the subsequent Reporting Period to verify the corrections were completed.
11	Michael Stoff Property	Vegetated swale	5/1/12	BMPs need maintenance, responsible party notified. Responsible party has since notified City that maintenance was completed.

Table 2-3
Summary of Treatment Control BMP Inspection Results

#	Project Name	BMP(s)	Inspection Date(s)	Inspection and Follow-Up Notes
12	Padre Dam Customer Service Center*	Drainage Insert (6)	2/14/12	BMPS were in an acceptable condition.
13	Prospect Glen*	Drainage Inserts (3)	4/5/12	BMPS were in an acceptable condition.
14	Riverwalk	Vegetated Swales (5), Drainage Inserts (25)	9/15/11, 1/27/12, 3/28/12, 6/15/12	The BMPs were acceptable during the closeout inspection for the project in September 2011. Deficiencies in drainage insert maintenance were observed during January 2012, but had been corrected during a subsequent inspection (March 2012). An inspection during June 2012 indicated that the drainage inserts needed maintenance and the responsible party was informed. City is following up during the subsequent Reporting Period to verify the corrections were completed.
15	Santee Trolley Square*	Drainage Inserts (12)	5/7/12	The BMPs were in acceptable condition.
16	Sonic Carwash	Vegetated Swale, Drainage Inserts (3)	2/7/12	The BMPs were not in an acceptable condition, responsible party notified. City is following up during the subsequent Reporting Period to verify the corrections were completed.
17	Town Center Community Park	Vegetated Swales (5), vegetated buffer strip (2), media filter, and drainage inserts (5)	11/7/11, 12/12/11, and 5/14/12	The BMPs were not in an acceptable condition, responsible parties notified. City is following up during the subsequent Reporting Period to verify the corrections were completed.
18	Toyota	Extended detention basin, vegetated buffer strip, and drainage inserts (8)	10/21/11	Follow up inspection with responsible party to identify the location of the extended detention basin and to discuss maintenance This was to assist the new manager to set up a system to ensure compliance at the Site. Maintenance was completed during the Reporting Period.

Table 2-3
Summary of Treatment Control BMP Inspection Results

#	Project Name	BMP(s)	Inspection Date(s)	Inspection and Follow-Up Notes
19	Treviso	Hydrodynamic Separator (1), drainage inserts (2)	5/14/12	The drainage inserts required maintenance. The property manager was informed of the findings. City is following up during the subsequent Reporting Period to verify the corrections were completed.
20	Vista Este*	Drainage inserts (2)	4/9/12	The BMPs were in acceptable condition.
21	Walgreens #1	Media filter	5/14/12	The filter chamber required maintenance. The property manager was informed of the findings. City is following up during the subsequent Reporting Period to verify the corrections were completed.
22	Walgreens #2	Vegetated swale, media filter	5/14/12	The filter chamber required maintenance. The property manager was informed of the findings. City is following up during the subsequent Reporting Period to verify the corrections were completed.

Note: * Project approved prior to development of the City's SUSMP requirements

Six of the development sites inspected during the Reporting Period were approved prior to development of the City's SUSMP, which requires installation of treatment control BMPs. These sites are marked with an asterisk in the table above, and in the City's Treatment Control BMP Inventory in Appendix A.1. While the City is aware that treatment control BMPs exist on these project sites, no maintenance agreements or SWMPs were required for these sites when they were approved. Consequently, the City does not have a written agreement to require maintenance and annual maintenance certification for the treatment control BMPs at these locations. However, the City still provided inspection reports to owners of the treatment control BMPs at these sites and followed up to see that maintenance was performed. As demonstrated in Table 2-3, these owners were responsive to the City's actions. The City will continue to periodically monitor the status of treatment control BMPs at these locations.

After inspection, follow-up letters were sent to the responsible party for all projects needing maintenance prior to 10/1/11, and the City conducted follow-up inspections and enforcement as necessary. City follow-up actions and the resolutions for these cases are described above in Table 2-3. During the Reporting Period, none of the inspected sites were observed to present a significant threat to human health or the environment during inspections; therefore none were reported to the RWQCB.

In addition to City-conducted maintenance inspections, the Municipal Permit requires annual verification of operation and maintenance of treatment control BMPs installed within the City's jurisdiction. Annual verification must be provided by the party responsible for treatment control BMP maintenance and must be required prior to the start of the rainy season (October 1st). The City notified operators of the facilities within the inventory of the need to provide annual BMP maintenance verifications for the 2011/2012 fiscal year prior to October 1, 2010. With the exception of Walgreens I and II, described below, annual verification of maintenance was received for all applicable properties during the 2011/2012 fiscal year.

Walgreens I and II were recently constructed by Interra Corporation who are responsible for the maintenance of both Walgreens stores. The City had contact information for maintenance on completion of the projects, but notification letters were returned for this contact. During 2010 the City diligently continued to find the appropriate contact through telephone calls, letters and by talking to the manager at each facility. During one such visit the City staff member spoke to a contractor who was able to schedule maintenance and provide certification of maintenance. This was received during the Spring of 2011. Due to the short timeframe between this and the beginning of the next rainy season in October 2011, it was not deemed appropriate to pursue another certification of maintenance during the summer of 2011, as the certification would effectively be the same as that received during Spring 2011.

The following actions have been taken to ensure maintenance of post-construction treatment control BMPs:

- A BMP Maintenance Agreement that is signed by the developer and recorded with the property.
- Procedures to notify responsible parties of their obligations as a project is completed have been developed to allow property owners to budget for maintenance.
- Standard forms and letters have been developed to routinely notify and remind property owners of their responsibility to maintain and submit certifications.
- Information on treatment control BMP maintenance and verification letters that can be downloaded.

Protecting water quality is the overall objective of ensuring the maintenance of treatment control BMPs. Through the BMP Maintenance Agreement that the City uses on Priority Projects, the City has the right to maintain treatment control BMPs on private property and to recoup the costs from the responsible party. The City will use this tool when appropriate and feasible.

Enforcement Summary

The City took action to resolve issues observed during both field inspections and the maintenance verification program, as described above. The majority of projects submitted certification of BMP maintenance before October 1, 2011, and all but one certified maintenance by October 14, 2011. The one remaining project certified its maintenance in December after being issued an Notice of Violation (NOV). A total of 10 follow-up letters instructing responsible parties to correct deficiencies noted during inspections were sent during 2011/2012. One Notice of Violation (NOV) was issued during the Reporting Period, as described above. Compliance with this program has been achieved largely through education and reminder notices to responsible parties during previous years. As a result responsible parties are familiar with, and more likely to comply with the maintenance and certification process., particularly on receipt of notices to comply and telephone calls from the City. The City's approach was effective at bringing about compliance with its requirements, as shown in the more detailed discussions included earlier in this section.

2.5 Development Planning Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

2.6 Program Review and Modification

The City's JURMP was updated in March 2008. Beyond the Municipal Permit-required updates to hydromodification management and SUSMP requirements that all

Copermittees have been required to make since the JURMP update, no changes to the City's development planning component have been made.

3.0 CONSTRUCTION

3.1 INTRODUCTION

The City's construction program has been designed to prevent illicit discharges from construction sites. Projects subject to the General Construction Permit are not issued permits until they have demonstrated that they have filed a notice of intent (NOI) and developed a SWPPP. The City has developed a database and procedures to ensure that construction sites are prioritized and inspected at the frequencies required by the Municipal Permit. In addition, the City is an active participant in the Land Development Workgroup, which addresses developments in project design and construction.

All staff associated with construction projects are aware of the storm water requirements and take appropriate follow-up action when potential violations are observed. This allows the City to leverage the staff currently working on construction projects to ensure that compliance is consistently achieved. Stormwater Program staff ensures that the requirements of the Municipal Permit are met and assists in ensuring that compliance is achieved at each site.

3.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the construction component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the Reporting Period.

- Prepared and distributed individual wet season notification letters which identified what individual BMP improvements are needed at each construction site prior to the rainy season, in addition to summarizing the requirements for all construction sites. The information in these letters was used as a cross-reference during pre- and early rainy season inspections.
- Required developers to submit a form describing how they intended to manage site runoff and BMPs during the upcoming rainy season. The rainy season form also included a section for the developer to provide contact information to be used during rain events.
- Conducted plan checks of erosion control plans and SWPPPs to ensure construction projects planned to comply with the City's minimum BMP requirements.
- Conducted 171 construction inspections at 9 sites per the frequencies in the JURMP. During the wet season, high TTWQ sites were inspected bi-weekly, medium TTWQ sites monthly, and at least once for low TTWQ sites with grading activity.
- Conducted 28 follow-up inspections, issued 14 written warnings, 6 NOVs, two

stop work orders and one administrative citation to construction sites in response to violations of the City's minimum BMP requirements.

3.2 Source Characterization

An inventory of active construction projects during the Reporting Period is presented in Appendix A.2 of this JURMP Annual Report document; all sites are located within the San Diego River Watershed. The City's inventory was maintained throughout the Reporting Period. New construction projects were added to the inventory at the start of construction, and projects were removed from the inventory after construction was completed. Since construction projects were continually being added and removed throughout the fiscal year, inventory updates were usually performed more frequently than the minimum once per month.

3.3 Updates to Ordinances and Approval Processes

No changes have been made in City's approval process for construction sites during the Reporting Period.

3.4 Best Management Practice Requirements

The City's construction and grading project requirements are described in the City's BMP Manual, which was included as Appendix C of the City's updated JURMP document. These BMP requirements were implemented starting in March 2008.

Note that in response to a letter from the RWQCB to the City dated February 27, 2009 the maximum disturbed area for hillside developments is limited to 17 acres. Hillside sites are defined by the City's Land Use Map, which originates from the General Plan. Sites that are in compliance with applicable storm water regulations and have adequate control practices implemented to prevent storm water pollution may expand their maximum grading area on the approval of the City Engineer to allow a balanced cut-and-fill approach. The 50-acre maximum grading area still applies to non-hillside developments.

3.5 Program Implementation

The City implemented the construction component of its JURMP throughout the Reporting Period through:

- Education and staff training; and
- A comprehensive construction and grading approval process; and
- A construction inspection program.

This program is described below.

3.5.1 EDUCATION AND STAFF TRAINING

Education and staff training implemented during the 2011/2012 fiscal year focused on the new State General Construction Permit and on communicating the City's construction requirements to both City staff and the construction community. Please see Section 8 of this JURMP Annual Report document for details on training performed and educational materials distributed related to construction and grading activities.

3.5.2 CONSTRUCTION AND GRADING APPROVAL PROCESS

During the Reporting Period, City personnel verified that all construction projects planned to implement BMPs to meet the City's minimum requirements prior to issuing any building or grading permits. The City's grading approval process is described thoroughly in Section 5 of the City's JURMP.

No projects in Santee that began construction after October 1, 2007 have been larger than 50 acres. Note that while none of the City's construction sites were subject to the 50 acre grading limitation, all construction sites were still required to limit exposed cleared or graded areas to the amount of area that could be protected prior to a rain event, as prescribed in the City's seasonal BMP requirements. Also note that a smaller maximum disturbed area limit of 17 acres is applied to hillside projects, however, no projects to date have met this criterion.

Criteria for determining when advanced treatment is required are detailed in the City's BMP Manual (Appendix C of the JURMP). During the Reporting Period, the City's minimum BMP requirements were generally adequate at controlling sediment discharges at all of the active construction sites within the City's jurisdiction. During this Reporting Period advanced treatment methods were not required at any construction sites.

3.5.3 INSPECTION OF CONSTRUCTION SITES

Appendix A.2 of this JURMP Annual Report contains a list of construction projects that were active during the Reporting Period, along with their assigned TTWQ priorities, the number of weeks the site was active within the rainy season, the numbers of inspections conducted during the wet and dry seasons, the number of follow-up and complaint inspections, and the total number of inspections for each site. In total, 171 construction inspections were performed at nine construction sites.

Construction inspections conducted during the Reporting Period were performed as described in the City's updated JURMP. Key components of the inspections include checks for coverage under the General Construction Permit during the initial inspection and assessments of compliance with the City's minimum BMPs and discharge requirements during all inspections. Responsible parties at the sites are educated as needed during inspections. Copies of the inspection forms are kept on file at the City. The City conducted inspections at high TTWQ construction sites bi-weekly during the

wet season and monthly for medium TTWQ sites. While the Municipal Permit only requires construction inspections at low TTWQ sites on an "as needed" basis year round, the City conducted at least one inspection at active low TTWQ construction projects with grading activities during the wet season.

When any violations were noted during routine or follow-up inspections, these violations were documented on the project's inspection form, and the sites were given a list of corrective actions necessary to address the observed violation. When necessary, a written notice was issued for the violation, and the City inspector followed up with the site until compliance was achieved. In many cases, violations were corrected while the inspector was still at the site, and follow-up visits were not necessary. Details on the enforcement actions taken for construction sites during the implementation period are described below.

3.5.4 ENFORCEMENT MEASURES

During inspections, violations of the City's BMP requirements were noted. In such instances, City inspectors took enforcement actions as necessary to bring about compliance. Table 3-1 presents the number of enforcement actions taken during the Reporting Period in response to violations of the City's minimum construction BMP requirements. Enforcement actions are administered in an escalating manner as described in the City's updated JURMP.

Table 3-1
Total Number of Enforcement Actions Taken

Written Warnings	Follow-Up Inspections	Administrative Citations	NOVs	Stop Work Orders
14	28	1	6	2

During the Reporting Period, two stop work orders were issued. These stop work orders were issued to Sunset Trails (Lanterncrest III) for not adequately deploying BMPs prior to forecasted rain events. Sunset Trails is located at the bottom of a canyon and BMPs were needed to stabilize the area at the bottom of the canyon to prevent sediment mobilization. City staff met with the responsible party to discuss the need to complete pre-rainy season preparations prior to October 1st and to agree to a schedule for completion. However, the responsible party did not deploy the BMPs satisfactorily. The City of Santee contacted the RWQCB for assistance with compliance issues at the Site at the beginning of the rainy season when the Site had not been adequately prepared for the rainy season. RWQCB staff visited the Site with City staff. RWQCB staff discussed the issues with City staff and suggested how BMPs may be deployed to better control the Site. RWQCB staff also talked about these issues with the Site Superintendent and encouraged him to pay attention to City direction, as the consequences of non-compliance could be considerable.

This Site visit by RWQCB was helpful in drawing attention to the issue of preparation for the rainy season. However, a stop work order was required during October 2011 (directly relating to preparation prior to the rainy season) and was corrected by October 7, 2011. Another stop work order was issued on March 6, 2012 as BMPs needed maintenance, followed by an Administrative Citation. The deficiencies were corrected by March 12, 2012. The RWQCB was notified about these stop work orders.

None of the violations observed at construction sites during the Reporting Period were found to endanger human health or the environment. The City was able to address these violations through the City's established enforcement process, and it was not necessary to report any additional sites to the RWQCB.

3.6 Construction Activities Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

3.7 Program Review and Modification

The City's JURMP was updated in March 2008. No changes to the City's construction component have been made since that time.

4.0 MUNICIPAL COMPONENT

4.1 INTRODUCTION

Throughout the Reporting Period, the City of Santee continued to manage municipal areas and activities to reduce municipal discharges of pollutants to the MS4 to the MEP. As discussed in detail in the City's JURMP, the City owns and operates a variety of municipal facilities and activities. Public parks and recreation facilities, administrative buildings, fire stations, and public works facilities make up the bulk of the municipal areas in the City. Municipal activities conducted by the City include street sweeping, street and sidewalk repair, and MS4 maintenance. Note that the City is not responsible for water supply or wastewater conveyance and treatment. These activities are the responsibility of Padre Dam Municipal Water District (PDMWD).

4.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the municipal component during the 2011/2012 reporting period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with both the previous permit and the new Municipal Permit during the reporting period.

- The City inspected all high TTWQ fixed municipal facilities.
- The City provided formal training sessions for 28 municipal staff members.
- The City removed a total of 784 tons of debris from street sweeping activities.
- The City removed a total of 483 cubic yards of debris from standard MS4 cleaning activities.
- City personnel continued to restock the pet waste bag dispensers in City parks, using 250,000 pet waste bags during 2011/2012.
- The City replaced 490 linear feet of storm drain pipe during 2011/2012.

4.2 FIXED FACILITIES

4.2.1 BACKGROUND

The City owns and operates a variety of municipal fixed facilities. As mentioned in the City's JURMP, municipal fixed facilities have been grouped under one category, fixed facilities, because these facilities receive routine inspections as part of the City's municipal program, making program implementation generally similar. For the purposes of organization, municipal fixed facilities are divided into the following categories: Parks and Recreational Facilities, Public Works Facilities, Fire Stations, and Other Fixed Facilities, which includes fixed facilities that could not be placed into another category.

4.2.2 SOURCE CHARACTERIZATION

All fixed facilities are included on the City's municipal inventory, which was revised during the JURMP update in early 2008. The JURMP includes detailed descriptions of each of the categories mentioned in the previous subsection and a discussion of activities beyond what is suggested by the facility's category or facility name. There were no changes to the City's municipal inventory nor were there any updates to the discussions of any fixed facilities on the City's inventory. The City's inventory is included as Appendix A.3.

4.2.3 BEST MANAGEMENT PRACTICE REQUIREMENTS

The City continues to implement and assess the effectiveness of BMPs at all fixed municipal facilities. As mentioned in the City's JURMP, the City uses the CASQA Municipal BMP Handbook to establish appropriate BMPs for fixed municipal facilities. Table 6-2 in the City's JURMP describes the CASQA fact sheets that are used for specific facility types.

The City continues to implement minimum BMP requirements for the use and management of pesticides, herbicides, and fertilizers, as described in the City's JURMP. BMP implementation for parks and recreational facilities, as described in the City's JURMP, has not changed during the Reporting Period.

City Public Works employees, fire station employees, and employees at other fixed facilities in the City continue to implement BMPs appropriate to the facility type, as described in the City's JURMP. City fire response personnel continue to be trained in implementing BMPs for non-emergency fire fighting activities as described in Section 3 of the City's JURMP. There have been no changes in BMP requirements for public works facilities, fire stations, and other fixed facilities.

4.2.4 PROGRAM IMPLEMENTATION

As mentioned above, the City's BMP requirements have not changed during the Reporting Period. Some notable examples of implementation of those BMPs are provided below.

Parks and Recreational Facilities

During 2011/2012, City parks personnel continued to maintain pet waste bag dispensers throughout six City parks, and at other popular dog walking locations. Additional pet waste dispensers have been installed at the Mission Creek Landscape Maintenance District, and Magnolia Avenue. A total of 250,000 pet waste bags were used during 2011/2012. Also note that routine treatment control BMP maintenance and inspection was completed for Town Center Community Park, the only completed municipal SUSMP project. See Section 2 of this JURMP Annual Report for additional detail on treatment control BMP maintenance tracking.

Public Works Facilities, Fire Stations, Other Fixed Facilities

As previously mentioned, City personnel continued to implement appropriate BMPs for municipal fixed facilities as described in the City's JURMP. BMPs are also implemented during regular maintenance (i.e. landscaping, building maintenance, etc.) as necessary. Parking facilities associated with fixed municipal facilities are maintained as part of the regular sweeping activities and were swept every month during the Reporting Period.

Municipal Inspections

All 13 high TTWQ fixed municipal facilities received an annual routine inspection during the Reporting Period. The City's inspection approach, as described in the JURMP, was implemented for all municipal inspections conducted during the Reporting Period.

A summary of BMP deficiencies noted during inspections and corrective actions taken is provided below:

- The trash enclosures at Town Center Community Park needed to be cleaned. This was referred to Public Works to complete prior to October 1st.
- Trash needed to be removed from the dumpsters at Santee Mini-Park. This was referred to Public Works to complete.
- Brow ditches needed to be maintained at various parks around the City; this was completed before the rainy season commenced.

All deficiencies noted above were resolved during the Reporting Period by directing the issues to the attention of City maintenance staff.

Beyond the issues noted above, City stormwater program staff observed tracking of sediment from the maintenance compound at the Sportsplex facility at Town Center Community Park, which is operated by a private company. The facility had been recently inspected, therefore a notice of violation was sent to the operator, requiring that the sediment be removed and best management practices implemented at the maintenance yard. City staff met with the manager and the supervisor in charge of the compound to conduct one-on-one training on BMPs for stockpile management, rendering oil management and other related BMPs.

In addition, the RWQCB inquired about maintenance activities in the recently-restored Forester Creek. The City was able to respond that the restored area is maintained weekly by a contractor and provided a description of how the trash barrier at the upstream end of the project is operated. City storm water staff inspected the area and observed specific areas where additional maintenance was needed, which included the Caltrans easement where SR-52 passes over Forester Creek. The City contacted Caltrans, advised them of the need for maintenance and inquired about their maintenance schedule for this area, which was reported to be not yet developed. Caltrans agreed to maintain this area, and the City will continue to advise Caltrans of maintenance needs as appropriate.

The City is working with the Sheriff's department to monitor for signs of homeless activity in the Forester Creek. Also, a San Diego State University (SDSU) professor (Dr. Matt Rahn) is hoping to site a water quality monitoring station in Forester Creek. The City is encouraging Dr. Rahn to place the station in the restored area, not only because of the value in collecting the information from this location, but also to encourage more foot traffic in the area, which will discourage the development of homeless encampments.

4.3 Roads, Streets, Highways, and Parking Facilities

4.3.1 Background

Roads, streets, highways, and parking facilities are often one of the first components of the City's MS4 to collect and convey runoff. These areas can collect a variety of pollutants due to routine vehicle use and use of the surrounding areas. The City conducts regular maintenance of roads, streets, highways, and parking facilities in the City to control pollutants such as sediment, metals, and litter and debris that may accumulate and then be discharged with runoff.

4.3.2 Source Characterization

The City maintains roads, streets, and highways in the City; roads, streets, and highways are included as one entity on the City's municipal inventory, which is included in Appendix A.3.

4.3.3 Best Management Practices

The City's primary BMP for roads, streets, highways, and parking facilities is street sweeping. Other BMPs are chosen as needed based on the CASQA Municipal Handbook. The City's sweeping frequency is outlined in the JURMP, and an updated frequency was presented in the 2007/2008 Annual Report. Parking lot facilities are swept once per month. There were no changes to the BMPs implemented for roads, streets, highways, and parking facilities during the Reporting Period.

4.3.4 Program Implementation

During the Reporting Period, the City swept a total of 10,212 curb miles, removing approximately 784 tons of debris. Table 4-1, on the following page, describes the areas assigned high, medium, and low sweeping priorities, and the associated sweeping frequency for each. The City met the sweeping frequency requirements of the high, medium, and low priority streets as described in Table 4-1, on the following page.

As a means to address priority pollutants in the San Diego River Watershed, the City conducted additional sweepings of some City streets. The average sweeping frequency (once every 1.8 weeks)_ across all streets in the City exceeded even the stringent Municipal Permit requirement for high priority streets.

Table 4-1
Street Sweeping Prioritization and Frequency

Category	Description	Route Length (Curb Miles)	Approximate Curb Mileage Swept (Cumulative)	Minimum Sweeping Frequency	Sweeping Frequency July 2011 through June 2012
High	Carlton Hills Boulevard, Carlton Oaks Drive (West of Carlton Hills Boulevard), Riverview Center Drive, Cuyamaca Street, Magnolia Avenue, Mast Boulevard (Between Magnolia Avenue and Carlton Hills Boulevard), Mission Gorge Road, Prospect Avenue (East of Fanita Drive), Town Center Parkway	66	1,716	Twice per month	Twice per month
Medium	Select other streets in the City	292	8,496	Monthly	Twice per month
Fixed Facilities	Parking lots associated with municipal fixed facilities	10 lots	N/A*	Once per month	Once per month

* Mileage data is not available for the swept area of parking facilities associated with municipal facilities. Mileage accrued while sweeping these facilities is included in the total mileage. All 10 of the City's parking lots were swept during the Reporting Period.

4.4 MS4

4.4.1 Background

The City's extensive storm water conveyance system is designed to collect and convey surface runoff to receiving waters to prevent flooding during a rain event. The City's MS4 consists of 27 segments of natural or concrete channels, and approximately 844 curb inlets and catch basins. The total length of the City's MS4 infrastructure is approximately 78 miles.

4.4.2 Source Characterization

The City's MS4 as one complete entity is included on the City's high TTWQ municipal inventory.

4.4.3 Best Management Practices

The City maintains a strict MS4 maintenance and cleaning schedule. Maintenance and cleaning are conducted to keep the MS4 in good operating condition and remove any trash or debris that may otherwise be carried to receiving waters. As described in the City's JURMP, BMPs for MS4 maintenance activities are chosen based on the CASQA Municipal Handbook and have not changed during the Reporting Period.

4.4.4 PROGRAM IMPLEMENTATION

During the Reporting Period, the City continued to implement an MS4 inspection and cleaning schedule. Maintenance staff removed 393 tons of material from open channels, 27 tons from pipes and culverts, and 4 tons from catch basins, for an overall total of 456 tons. The actual weight of the material was not recorded, but it was estimated based on the number of cubic yards and the composition of the material removed. The approximate weight of the material removed is based on City maintenance staff's estimate that each cubic yard removed weighed about one ton.

City personnel inspected all 25,620 linear feet of open channels in the City and maintained the 17,400 feet that required cleaning. Additionally, City personnel inspected all catch basins in the City's MS4; the City inspects its MS4 at these cleanout access points and other visually accessible portions of its MS4 Eight structures were observed to be full of material at a level of at least 33 percent of capacity during the reporting period; all of these structures were cleaned out in a timely manner. City staff have not identified any specific MS4 facilities as receiving especially high or low volumes of trash and debris relative to the rest of the MS4. The City continues to build on the CMP televising project that identified and prioritized areas for infrastructure replacement. As a result, the City replaced 490 linear feet of storm drain pipe during 2011/2012.

In addition to this survey, the City has also been exploring ideas to reduce pollutants in concrete channels in a sustainable manner. Although the City has been successful in achieving water quality benefits through several creek restoration projects, there are smaller, more densely-developed drainage areas where concrete channels are installed. It is not feasible to remove these channels without compromising the surrounding property. City staff have been considering how the concrete channels can be re-engineered to mimic the natural hydrologic processes in the channel before development. One idea has been to introduce infiltration areas at the base of the channel using a porous material without eliminating flood control capability.

A pilot study to explore this concept was submitted to the San Diego Integrated Regional Water Management Plan advisory committee for incorporation into the San Diego region's application for Prop 84 funding. The project was accepted and incorporated into the application submitted during the 2010-2011 Reporting Period. The pilot study will be implemented if funding is awarded through Prop 84.

The City assisted California Department of Fish and Game, and the County Department of Environmental Health in the clean-up of a reported act of vandalism on private property (Harrison Trucking, Olive Lane). The incident occurred on a Sunday morning (3/18/12) when the tanks of a number of diesel trucks were drilled into and an estimated 1,100 gallons of fuel released. The fuel discharged into the street and into the drainage ditch running around the east and north boundary of the City Public Works facility. Public Works staff provided access to the facility to allow for the discharge to be detained prior to reaching Forester Creek and to assist in the clean-up activities. The

City notified the RWQCB of this discharge and associated corrective action. The Department of Fish and Game managed the clean-up, which was completed on 3/30/12.

The City of Santee also assisted San Diego Gas and Electric (SDG&E) in the response to a discharge of transformer oil to the MS4. A transformer on Cuyamaca Street south of Mast Boulevard was struck by a vehicle during a rainy Sunday morning, and SDG&E hazmat crews responded to the incident, removing hydrocarbon-bearing soil and cleaning any discharge to the sidewalk, curb and gutter. SDG&E notified the City of the incident, and City Stormwater Program staff inspected the MS4 downgradient of the transformer.

During inspection, an oily sheen was observed on the water where the storm drain daylights east of Rio Seco school. Public works staff deployed oil absorbant booms to absorb the oil. SDG&E were contacted, and they collected a sample of the water for analysis in their laboratory. The sample was reported to be non-detectable for total petroleum hydrocarbons in the carbon range for transformer oil. SDG&E staff and City Stormwater Program staff inspected the area around the transformer and observed a minor area of soil which needed removal. SDG&E removed this soil. The City notified the RWQCB of this discharge and associated corrective action.

4.5 Sanitary Sewer System

4.5.1 Background

As described in the City's JURMP, PDMWD is responsible for wastewater operations within the City. The City and PDMWD collaboratively respond to sanitary sewer overflows to reduce or eliminate the amount of untreated sewage that reaches the MS4.

4.5.2 Source Characterization

PDMWD is responsible for the sanitary sewer system within the City of Santee.

4.5.3 Best Management Practices

As discussed in the City's JURMP, the City coordinates with PDMWD to implement pollution prevention techniques and BMPs to reduce or eliminate the amount of pollutants generated from sanitary sewer maintenance activities. The City coordinates with PDMWD to ensure all applicable CASQA BMPs are implemented. There have been no changes to these BMPs during the Reporting Period.

4.5.4 Program Implementation

PDMWD continues to clean out or repair the sanitary sewer system as necessary to prevent seepage from the sanitary sewer system to the MS4. City personnel also notified PDMWD whenever it received information that a certain segment of the sanitary sewer system may need maintenance.

PDMWD has also worked to develop a Fats, Oils, and Grease (FOG) program that targets grease-producing facilities, such as eating establishments. The goal of the program is to reduce grease buildup in the sanitary sewer system, which can cause or contribute to sanitary sewer overflows (SSOs). In case of an SSO, the City works with PDMWD to respond appropriately to the overflow. In addition, the City collaborates when appropriate with FOG program staff, to ensure that facilities with grease traps or clarifiers are maintained. The City was notified of three SSOs during the Reporting Period. In each instance, PDMWD responded to the spill. Of the three SSOs, one is believed to have reached a receiving water body. Each spill is listed in Table 4-2.

Table 4-2
Reported Sewer Spill Releases

Date	Location	Description Including RWQCB Incident Number
8/19/11	8861 Magnolia Ave	SSO Event #770265, estimated 76 gallons released. Blow out of lateral during work on sewer main. PDMWD onsite, and able to promptly respond.
3/24/12	8717 Graves Ave	SSO Event 779141, estimated 475 gallons released during the installation of an additional facility. Construction crews were already onsite, so the water was diverted to a trench until it could be removed and disposed of properly.
5/10/12	9360 Creekside Court	SSO Event 781313, estimated 33 gallons. Blocked lateral on multi-family development. City staff contacted property manager to advise them that that the blockage needed to be fully removed and cleaned up. City public works staff conducted additional clean-up based on the City inspector's recommendations.

4.6 MOBILE MUNICIPAL ACTIVITIES

4.6.1 BACKGROUND

The City conducts a variety of different mobile municipal activities, typically involving infrastructure maintenance, landscape maintenance, and graffiti removal. The City does not conduct power washing as part of any municipal activities.

4.6.2 SOURCE CHARACTERIZATION

Graffiti removal, infrastructure maintenance, and landscaping are listed on the City's high TTWQ municipal inventory.

4.6.3 BEST MANAGEMENT PRACTICES

The City implements BMPs for mobile activities as described in the City's JURMP and as applicable to the activity. City personnel are trained to implement BMPs for the specific activity in which they are involved. For example, City personnel conducting graffiti removal are trained to store and handle any chemicals properly. A more detailed discussion of BMPs for specific mobile activities is included in the City's JURMP; these BMPs did not change during the Reporting Period.

The City received a complaint from a resident regarding the removal of red paint on a curb. The resident was concerned at the lack of BMPs used by the City crew and had spoken to the City crew and supervisor. The resident did not immediately call the storm water hotline to file a complaint, however an inspector went out to the location on receipt of the complaint. The inspector observed some residue remaining on the sidewalk and curb and gutter from the paint removal activities. The Public Works Manager was contacted about the issue and advised of the need for additional clean-up. A crew that does not typically conduct this type of activity was conducting the work and had omitted to fully deploy BMPs. Storm water program staff had observed these activities being conducted by other crews during a previous Reporting Period and had confirmed that appropriate BMPs were being deployed. The Public Works Manager ensured that the crew responsible was advised of the BMP requirements, and the residue was removed from the sidewalk and curb and gutter.

4.6.4 PROGRAM IMPLEMENTATION

The City hires several contractors to conduct mobile activities in the City. Contractors are frequently both required by contract and trained on the level of BMP implementation expected by the City. There were no complaints received by the City's storm water hotline or any other indication that City contractors conducting any mobile activities were not properly implementing the appropriate BMPs.

4.7 SPECIAL EVENTS

4.7.1 BACKGROUND

As detailed in the City's JURMP, a variety of different special events are hosted within the City. Special events range from summer concerts and the Santreefest to the 4th of July celebration.

4.7.2 SOURCE CHARACTERIZATION

As required by the Municipal Permit, special events are included on the City's high TTWQ municipal inventory.

4.7.3 BEST MANAGEMENT PRACTICES

As detailed in the City's JURMP, the City has selected BMPs for special events hosted in the City. In general, the goal of the City's special event BMPs are to properly manage trash and litter generated by the event, keep catch basins and other nearby MS4 facilities free of litter/debris from the event, and raise storm water awareness among the vendors and patrons of the event, as applicable.

4.7.4 PROGRAM IMPLEMENTATION

The City hosted a number of special events during the Reporting Period. During each event, the City implemented the following BMPs:

- Trash/recycling bins were used.
- Spill kits were accessible.
- Street sweeping and parking lot sweeping was conducted following the event.

The City applied for and obtained a waiver from the RWQCB for the presentation of a fireworks display on July 4, 2011. The City provided a post-event report to the RWQCB in accordance with the conditions of the waiver. Special Events include the Santee Farmers' Market organized by a private citizen, continued on the former Santee Elementary School site; and the Santee Street Fair and the Santee Car Show on Riverview Parkway were organized by the Santee Chamber of Commerce. All three of these events were subject to a temporary use permit and comprehensive conditions, based on the standard special events conditions and the specific location and activities associated with the event. The operators of these events were required to document that appropriate BMPs were implemented during the events using a City-provided checklist and to inspect after the event to ensure that all corrective action (including removal of trash and debris, and cleaning of storm drain inlets as appropriate). City staff inspected these events as appropriate during the Reporting Period and confirmed that BMPs were being implemented appropriately.

4.8 EDUCATION AND OUTREACH

During the Reporting Period, the City continued to educate municipal personnel regarding proper BMP implementation and other storm water and watershed concepts. A total of 28 municipal personnel were provided formal storm water training during the Reporting Period. A detailed discussion of the City's education and outreach activities is included in Section 8 of this Annual Report.

4.9 SPILL REPORTING, RESPONSE, AND PREVENTION

As detailed in the City's JURMP, the City's sanitary sewer system is managed and maintained by the PDMWD. PDMWD has documented procedures for preventing and responding to sanitary SSOs. The City provides assistance during SSO response when necessary. The City responds to all other spills within its jurisdiction as needed.

The City uses the City's storm water hotline as the main mechanism for being notified of spills; spills may also be discovered during routine inspections or other complaint investigations. Individuals in the City are encouraged to report any spills, including SSOs and any spills from private sewer laterals or septic systems, to the City's storm water hotline. The City notifies PDMWD regarding any calls made to the hotline regarding SSOs. During the Reporting Period, there were three SSOs, which were described earlier in this section. There were no other spills during the Reporting Period.

4.10 Public Reporting of Illicit Discharges and Connections

Reporting and Response

Public and municipal involvement are crucial to preventing and eliminating illicit connections and illegal discharges (IC/IDs) from the storm water conveyance system. The Storm Water Hotline provides an effective means for individuals in the City to report suspected IC/IDs. The hotline number is provided on the City's website, in distributed storm water educational material, and on the City's website. All complaints received through the hotline are logged for documentation and tracking. Each logged complaint is investigated by City personnel to determine if an IC/ID is present. Responsible parties for any confirmed IC/ID are sought out and educated and/or cited as necessary and required to stop or clean-up any and all illegal discharges.

Complaints received by the City during the Reporting Period and the City's response to each are listed in Appendix B. Forty-nine complaints were documented and responded to this year.

Enforcement

As previously stated, complaints received via the storm water hotline are included in a table in Appendix B. The table also includes a description of how each complaint was resolved during the Reporting Period. Resolutions to investigated complaints included clean-up, providing educational material and discussing storm water concepts with individuals involved in the complaint. In some cases courtesy notices and NOVs were issued. The City issued 20 courtesy notices and 8 NOVs in response to complaints received by the City's storm water hotline.

4.11 Municipal Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

4.12 Program Modification and Review

The City's JURMP was updated in March 2008, and the street sweeping and special events requirements were updated as reported in the 2007/2008 Annual Report. Additional facilities (Sky Ranch Park, Forester Creek and Mast Park West) were added

as the City took responsibility for maintenance. Refinements to the BMPs for herbicide applications and a change in the frequency of sweeping of municipal parking lots were both identified in the 2009/2010 Annual Report.

5.0 INDUSTRIAL AND COMMERCIAL

5.1 INTRODUCTION

During the Reporting Period, the City continued to implement a program to mitigate urban runoff pollution from the areas and activities of industrial and commercial businesses. The City aims to reduce the amount of pollutants discharged from these industrial and commercial facilities through the implementation of this program component.

5.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the industrial and commercial component during the Reporting Period are presented in the following bulleted list. Additional details about the City's implementation of the industrial and commercial component and of its storm water program during the Reporting Period are provided in the remainder of Section 5. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

- The City met the Municipal Permit requirement of inspecting at least 25 percent of its stationary industrial and commercial inventory.
- The City inspected 100 percent of the inventoried high TTWQ stationary industrial and commercial facilities.
- Based on inspection findings and complaints made to the hotline, the City issued 10 written courtesy notices or notices to comply informing stationary businesses of BMP deficiencies and State Industrial Permit requirements, and 10 Notices of Violation (NOV) to stationary industrial and commercial businesses. Two courtesy notices were also sent to a commercial shopping center property.
- The City sent notices to each business that had not filed Notices of Intent (NOI) or submitted Notice of Non-Applicability/No Exposure Certification (NONA/NEC) paperwork in connection with the State of California General Industrial Permit (Industrial Permit), as appropriate.
- Four courtesy notices, six NOVs, and one administrative citation were issued to mobile businesses within the City.

5.2 STATIONARY INDUSTRIAL AND COMMERCIAL SITES / SOURCES ELEMENT

5.2.1 BACKGROUND

The City's industrial and commercial inventory, which can be found in Appendix A.4, includes all stationary facilities known to be operating in the City that are required to be

included on the City's inventories. Stationary facilities in the City include, but are not limited to, manufacturing facilities, auto repair shops, restaurants, wholesalers, and contractors. As discussed in the following subsections, the City requires industrial and commercial businesses to implement pollution prevention measures and designated minimum BMPs to mitigate the impacts of business activities on water quality.

5.2.2 Source Characterization

As previously mentioned, the City's industrial and commercial inventory is included in Appendix A.4. The inventory includes both stationary and mobile businesses, as required by the Municipal Permit. The inventory was continuously updated throughout the Reporting Period using field observations and information gathered from the City's business licensing process.

Information on how the City prioritizes the industrial and commercial inventories based on TTWQ is discussed in detail in the City's JURMP. The City considers factors including those listed below when prioritizing the inventories:

- Coverage under the Industrial Permit
- Consideration of the downstream waterbody and whether the business is likely to discharge pollutants for which the waterbody is impaired
- Results from previous inspections and institutional knowledge
- Proximity to the receiving waterbody

The City's updated inventory includes 570 stationary industrial and commercial facilities as of September 2012.

5.2.3 Best Management Practice Requirements

Industrial and commercial businesses in the City are required to implement pollution prevention methods and other BMPs to reduce or potentially eliminate the generation of pollutants from business areas/activities. The City has established a set of minimum BMPs based on the CASQA Industrial and Commercial Handbook. The requirements include BMPs applicable to all facilities as well as activity-specific BMPs. The City's BMP requirements are described in more detail in the City's BMP Manual, which is an attachment to the City's JURMP. BMP requirements for stationary industrial and commercial businesses did not change during the Reporting Period.

5.2.4 PROGRAM IMPLEMENTATION

Industrial and Commercial Inspections

During the Reporting Period, the City conducted storm water compliance inspections at selected stationary industrial and commercial facilities. The purpose of the inspections is to confirm that the City's minimum BMPs are being implemented at stationary industrial and commercial facilities.

Facility inspections were conducted in accordance with the protocol set forth in the City's JURMP. Inspections involved a thorough examination of the facility and all outdoor activities. BMP deficiencies and corrective actions were recorded on the City's industrial and commercial inspection form, and discussed with facility personnel present during the inspection. During the inspection process, the City checked Industrial Permit compliance status, and reviewed storm water pollution prevention plans (SWPPP) and monitoring results, when applicable. Businesses observed to be in violation of the Industrial Permit are included in Table 5-1. A list of facilities visited as part of the City's routine inspection program during the Reporting Period is provided at the end of this section in Table 5-2. Table 5-2 also includes the follow-up results, where applicable.

The City selected sites for inspection based on the inventory included in the City's updated JURMP, which included stationary industrial and commercial businesses. Although the inventory was revised later in the year to remove businesses that are no longer active, as described in Section 5.2.2, the number of sites selected for inspection during the Reporting Period was based on this larger original inventory. The City inspected a total of 185 stationary industrial and commercial facilities. Businesses were selected for inspection using the following criteria:

- High priority sites
- New businesses that might have the potential for illicit discharges
- New businesses that may require coverage by the Industrial Permit
- Businesses that had no previous inspection record

Many of the facilities inspected were home-based businesses, which form a large proportion of the business inventory. The main issues that might be associated with home-based businesses are outside storage of materials. Many of the businesses were observed from the perimeter of the property. If the property looked like it was a typical residence, then the observations were noted. If issues, such as the potential exposure of pollutants to rainwater from the operation of the business were noted, then the business owner was contacted to advise them of the necessary BMPs, and followed up as appropriate. If, based on the inspection and available information, it was considered appropriate, the inventory was updated to eliminate businesses that do not need to be inventoried. Note that as the inventory is continuously updated, and for practical budgeting reasons, the City will continue to determine the number of inspections necessary based on the inventory it has at the beginning of each fiscal year.

Other non-homebased facility inspections were conducted in accordance with the protocol set in the City's JURMP. Inspections involved a thorough examination of the facility and all outdoor activities. BMP deficiencies and corrective actions were recorded on the City's industrial and commercial inspection form, which is included in the City's JURMP, and discussed with facility personnel present during the inspection. A list of facilities visited during the Reporting Period is provided at the end of this section in Table 5-2.

The City did not rely on third party inspections to satisfy its industrial and commercial inspection requirements during the reporting period. The City does not presently maintain a third party inspection program.

Inspection Findings

Most BMP-related deficiencies observed during the inspection process were minor. Some of the more common issues include uncontained litter, debris, and sediment around the site and in the parking lot and dumpster area. Another common BMP deficiency included open dumpster lids. Many industrial and commercial facilities could not provide any sort of documentation that storm water training had been provided to appropriate personnel. Written notices and other forms of enforcement were used when more significant BMP deficiencies were observed during the inspections; a discussion of industrial and commercial enforcement actions is included later in this subsection.

General Industrial Permit

Industrial Permit compliance status was evaluated during the industrial and commercial inspection process. If the business was new and had not previously been inspected, or if the business had recently changed activities, the inspector gathered information about the business activities that occur on site and assigned or reassigned the business' standard industrial classification (SIC) code(s). The inspector then determined coverage under the Industrial Permit based on SIC code. Violations of any aspect of Industrial Permit requirements were recorded on the standard industrial and commercial inspection form and are presented in Table 5-1. The table also includes facilities that could potentially gain exemption from Industrial Permit requirements by completing NONA/NEC paperwork.

Table 5-1
Violations of the Industrial Permit

#	Business Name	Street Address	Action to Correct Violation				
			File NOI	Develop SWPPP	Develop / Implement Storm Water Monitoring	Complete NONA/ NEC	Other/Comments
1	American Sheet Metal	8710 Railroad Avenue				✔	Outside exposures observed during post-construction BMP inspection. Facility operator advised to file to enroll with State permit or to file NONA/NEC
2	C & M Relocation Systems	11433 Woodside Avenue	✔	✔	✔		New business in Santee. Advised of State Industrial Permit requirements and conditioned to comply as part of business licensing process.
3	Cook Enviro Recycle	10502 Kenney Street, Suite 5	✔	✔	✔		Based on inspection findings, facility considered to be subject to State Industrial Permit. Advised facility owner, however business left the City and therefore did not need to enroll.
4	J. E. Stone	10911 Wheatlands Road, Unit N	✔	✔	✔	✔	Business observed during inspection activities in area. Advised of requirement to enroll under State Industrial Permit and added to inventory.
5	Rainbow Steel	9484 Mission Park Place		✔	✔		Business enrolled under State Industrial Permit, advised operator of activities that needed to be incorporated in the management of the facility (visual observations, monitoring etc) and to be reported on each year.
6	Specialty Metals	11222 Woodside Avenue				✔	Facility needs to control it's exposures and file for NONA/NEC, or file to enroll with State Industrial Permit.

Each business was notified of any Industrial Permit-related non-compliance by the inspector and through written correspondence to the business. During the Reporting Period, the City's Stormwater Program Manager maintained correspondence with

businesses in violation of any aspect of the Industrial Permit, notifying them of the steps that need to be taken to ensure compliance with Industrial Permit requirements.

In addition, the City coordinated Industrial Permit compliance with RWQCB staff. City staff copyied the RWQCB on Industrial Permit-related notices to comply or notices of violation sent to businesses.

Education and Outreach

In addition to checking for compliance with the City's requirements and the Industrial Permit, inspections provide a venue to provide site-specific one-on-one education regarding storm water concepts and BMPs. Before conducting industrial and commercial inspections, the City sent businesses selected for inspection a letter notifying them of the upcoming inspection as well as a fact sheet with BMPs for industrial and commercial businesses. The City has 18 different storm water-related fact sheets, which are included in Attachment 5.1. During the inspections, inspectors used a variety of educational material to provide watershed concepts and activity-specific BMP recommendations, which were provided to industrial and commercial businesses as appropriate. Inspected facilities were also informed of the City's BMP requirements during the Reporting Period, as applicable. Also note that the City completed BMP requirement notification efforts, which the Municipal Permit requires within the first three years of implementing the updated (2008) JURMP, for its entire inventory as reported in the City's 2008/2009 JURMP Annual Report. More information about the types of educational material used by the City is provided in Section 9 of this Annual Report.

The City worked with A & I Services, a carpet and upholstery cleaning business in the City, to distribute carpet cleaning fact sheets to patrons of the business. Similarly, the City worked with Leslie's Pools, a pool and spa supply store, to distribute pool and spa maintenance fact sheets to its customers at the Santee store. These fact sheets are included in Attachment 5.1.

Enforcement

Some industrial and commercial facilities were observed to be out of compliance with the City's municipal storm water ordinance and/or the Industrial Permit during inspections conducted in 2011/2012. The City followed-up with these facilities as necessary through follow-up site visits and mail and telephone correspondence to bring about compliance with applicable requirements. Follow-up inspections, including resolution status, are included in Table 5-2 at the end of this section. As detailed in Table 5-2, a small number of issues are ongoing, but are expected to be resolved through our established enforcement process. Enforcement actions were taken as necessary; numbers of enforcement actions taken are presented in the bulleted list later in this subsection. During the course of the Reporting Period, the City also received complaints through the City's storm water hotline regarding stationary industrial and commercial facilities. Based on the results of complaint investigations, the City took enforcement action as necessary. Applicable information regarding follow-up and enforcement actions are included in Appendix B.

Overall, the City issued the following enforcement actions to stationary industrial and commercial businesses during the Reporting Period:

- Ten courtesy notices or notices to comply
- Ten NOVs
- Notices were sent to each business that had not filed to comply with the Industrial Permit

Additionally, two courtesy notices were sent to a commercial shopping center, Santana Village, as described in the complaint log (Appendix B). Overall, the City's enforcement actions were effective in bringing about compliance with the City's requirements. An additional tool developed during the Reporting Period was the development of a summary of the storm water BMPs required as part of the business licensing process. The business owner is required to review and sign the summary as part of the business licensing process. This tool has been used for businesses identified as being subject to the State Industrial Permit and will be expanded to be used for other new applications for industrial facilities that are potentially polluting.

There were no instances of noncompliance at stationary businesses found to present a significant threat to human health or the environment observed during the Reporting Period, so none were reported to the RWQCB.

5.3 Mobile Sources

5.3.1 Background

Due to the nature of activities of most mobile businesses, a major area of concern tends to be illegal discharges. In general, mobile businesses can be hard to identify, as many may not have City business licenses. Additionally, because many mobile businesses may be home-based and activities do not occur in one fixed location, inspections of such facilities are generally impractical. One mobile business, Fun in the Sun Pools, was inspected during the Reporting Period. This business is based in Santee. Based on observations of another, similar company (Blue Moon Pools) in the past, it was deemed appropriate to inspect the location to assess whether the business operation is a potential source of pollutants. The business is home-based and no exposed equipment or materials, and no discharge was observed during the inspection.

5.3.2 Source Characterization

Known mobile industrial and commercial businesses, as described in the City's JURMP, are included on the City's inventory (Appendix A.4) and are denoted with an asterisk. As of September 2012, a total of 40 mobile businesses are included on the City's inventory.

5.3.3 BEST MANAGEMENT PRACTICE REQUIREMENTS

BMPs for stationary industrial and commercial facilities, as discussed earlier in this section, are required to be implemented for mobile activities. BMPs for mobile businesses, including key principles, such as proper collection and disposal of any discharge, are discussed in the City's JURMP. There have been no updates to the BMP requirements as described in the JURMP.

5.3.4 PROGRAM IMPLEMENTATION

During the Reporting Period, the City received and responded to five calls to the City's storm water hotline regarding mobile businesses. In each case the City responded to investigate and verify the complaint. Enforcement action was taken and educational material was distributed as applicable. More detail about the complaints made to the City's storm water hotline regarding mobile businesses is included in Appendix B of this Annual Report.

In addition, City staff are aware of mobile business operations (particularly automotive detailing operations in industrial areas), and verify that appropriate BMPs are being implemented when these operations are observed.

Education and Outreach and Enforcement

During the Reporting Period, the City took proactive steps to identify and educate mobile businesses in the City by seeking out such businesses. City personnel drove by areas known to be frequented by mobile businesses, specifically mobile car detailers. If any mobile businesses were observed, City personnel stopped to provide educational material and ensure that no discharges were occurring. Operators who are not implementing BMPs are required to stop, and remove the discharge. Typically a notice is sent to the mobile business owner if such an incident occurs.

During the Reporting Period, a total of four Courtesy Notices, six NOVs, and one administrative citation were issued to mobile businesses. In each instance, City personnel discussed the BMP requirements of mobile businesses with business personnel. Typically the City requires the owner of the business to provide documentation (such as a completed training sign-in sheet) showing that field staff have been trained in the relevant BMP requirements. Also note that the City completed BMP requirement notification efforts, which the Municipal Permit requires within the first three years of implementing the updated (2008) JURMP, for its entire inventory, including mobile businesses, as reported in the City's 2008/2009 JURMP Annual Report. Details about the City's education program for mobile businesses are included in Section 8 of this Annual Report.

There were no instances of noncompliance of mobile businesses that were believed to present potential threats to human health or the environment observed during the Reporting Period, so none were reported to the RWQCB. City staff confirmed with the

RWQCB that a complaint originating from RWQCB staff regarding a mobile business was addressed.

5.4 Industrial and Commercial Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

5.5 Program Review and Modification

The City's JURMP was updated in March 2008. With the exception of the addition of the requirement for selected business owners to sign a document listing the BMPs required at their facility, no changes to the City's industrial and commercial component have been made since that time.

Table 5-2
Industrial and Commercial Sites Inspected During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
1	A & I SERVICES	8665 ARGENT STREET	No	None Required	Complete
2	A-ACCURATE MOVING	9328 WHEATLANDS	No	None Required	Complete
3	ABLER FABRICATION	10325 AMADA	No	None Required	Complete
4	ACCURATE AIR ENGINEERING INC.	9356 ABRAHAM WAY	No	None Required	Complete
5	ADVANCED ELECTROMAGNETICS	9311 STEVENS	No	None Required	Complete
6	AL MAX SANITATION	10023 PROSPECT AVENUE	No	None Required	Complete
7	ALBA RACING	10806 PROSPECT AVENUE	No	None Required	Complete
8	ALLEN MECHANICAL INC.	11030 SUMMIT	No	None Required	Complete
9	ALLIANCE HEATING AND AIR CONDITIONING	10281 PEBBLE BEACH DRIVE	No	None Required	Complete
10	ALUMINESS PRODUCTS INC.	9402 WHEATLANDS	No	None Required	Complete
11	AQUA VINY & PLASTER POOLS	10127 WOODROSE	No	None Required	Complete
12	A-QUALITY GARAGE DOORS	8803 PEBBLE BEACH DRIVE	No	None Required	Complete
13	A REVITALIZED BATH & KITCHEN	9435 WHEATLANDS COURT, SUITE D	No	None Required	Complete
14	ARGEE CORPORATION	9550 PATHWAY STREET	No	None Required	Complete
15	ARTISTIC MARBLE AND GRANITE INC.	9323 STEVENS	No	None Required	Complete
16	AUDIO VIDEO INSTALLS	10171 SWANTON	No	None Required	Complete
17	BABOCK ELECTRICAL SERVICE	8521 MASSERY	No	None Required	Complete
18	BATTERY SYSTEMS	9465 MISSION PARK PLACE	No	None Required	Complete
19	BILCAN INC DBS EL CAMINO RENTALS	8795 CUYAMACA STREET	No	None Required	Complete
20	BLACK WIRE	9711 HUBER COURT	No	None Required	Complete
21	BOND CONSTRUCTION	7819 RANCHO FANITA	No	None Required	Complete
22	BRADSHAW ENGINEERING CORPORATION	8645 ARGENT STREET	No	None Required	Complete
23	BRYANS RACING ENTERPRISES	9260 ISAAC STREET	No	None Required	Complete
24	BUMPER DOC	8711 MAGNOLIA AVENUE	No	None Required	Complete
25	BUTLER'S WEED ABATEMENT	9430 GALSTON DRIVE	No	None Required	Complete
26	C&M RELOCATION SYSTEMS	11433 WOODSIDE AVENUE	No	None Required	Complete
27	C C M ENTERPRISES	10848 WHEATLANDS	No	None Required	Complete
28	C C M ENTERPRISES	9366 ABRAHAM WAY	No	None Required	Complete
29	CAL PARTS CONNECTION	10658 PROSPECT AVENUE	No	None Required	Complete

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
30	CARLS JUNIOR #385	10009 MISSION GORGE ROAD	No	None Required	Complete
31	CARL'S TRIM & REMODELING SUPPLY	9524 GALSTON DRIVE	No	None Required	Complete
32	CARLTON OAKS COUNTRY CLUB	9200 INWOOD	**YES**	Verified that eastern restroomconnected to sanitary sewer. Presence of septic tank at western restroomconfirmed. Verified that staff training conducted and removal of stockpileof soil and vegetation completed.	Resolved
33	CAZADORES MEXICAN FOOD	9331 MISSION GORGE ROAD	No	None Required	Complete
34	CHUCK WILSON CONSTRUCTION	9731 ABBEYFIELD	No	None Required	Complete
35	CODE 3 ELECTRICAL	10934 GREENCASTLE	No	None Required	Complete
36	COLE HILL SYSTEMS	10756 VALOR	No	None Required	Complete
37	COLTRANE FIRE PROTECTION	8620 BIG ROCK ROAD	No	None Required	Complete
38	COMPETITION BOBCAT	9587 MAVIN DRIVE	No	None Required	Complete
39	COOK ENVIRO RECYCLE	10502 KENNEY STREET #5	**YES**	Sent notice to file for industrial permit. Business owner moved business outof Santee, inspector checked that no exposures remain.	Resolved
40	CORONADO CONSTRUCTION	10101 GEM TREE WAY	No	None Required	Complete
41	COTIJAS	9121 MISSION GORGE ROAD	No	None Required	Complete
42	CURTIS AIR CONDITIONING & HEATING	10290 PEBBLE BEACH DRIVE	No	None Required	Complete
43	CUSTOM CRAFT CONSTRUCTION	8546 GRAHAM	No	None Required	Complete
44	DAVIS ROOFING	10027 BECK DRIVE	No	None Required	Complete
45	DECKER'S CUSTOM CARPENTRY	9244 BIRD STREET	No	None Required	Complete
46	DCXCAVATION	10641 PROSPECT AVENUE	No	None Required	Complete
47	DECKER'S CUSTOM CARPENTRY	9244 BIRD STREET	No	None Required	Complete
48	DECRESCENTE'S LANDSCAPING	8748 WAHL STREET	No	None Required	Complete
49	DEEP'S GARAGE	10911 WHEATLANDS	No	None Required	Complete
50	DESIGNER'S TOUCH BUILDERS	9953 LOS RANCHITOS	No	None Required	Complete

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
51	DG CUSTOM AUTO INC.	10728 PROSPECT AVENUE, SUITE G	No	None Required	Complete
52	DIAMOND PAINTING	8301 MISSION GORGE ROAD, #52	No	None Required	Complete
53	DIMOND CONSTRUCTION	10112 GEM TREE WAY	No	None Required	Complete
54	DON LINCOLN LATH AND PLASTER	9235 BIRCHCREST	No	None Required	Complete
55	DORNFELD INC.	9435 WHEATLANDS	No	None Required	Complete
56	DRAGON MACHINE SHOP	9435 WHEATLANDS COURT, #G	No	None Required	Complete
57	(THE) DYNO SHOP	10042 PROSPECT AVENUE	No	None Required	Complete
58	EAST COUNTY TIRE AND BRAKE	7945 MISSION GORGE ROAD #102	No	None Required	Complete
59	ECO GREEN RECYCLING	9540 PATHWAY STREET, #105	No	None Required	Complete
60	EL MONTE RV (SANTEE RENTS)	8665 MISSION GORGE ROAD #A1	No	None Required	Complete
61	ESTRADA'S	9292 CARLTON HILLS BOULEVARD	No	None Required	Complete
62	ESTRADA'S	8528 MAGNOLIA AVENUE, #107	No	None Required	Complete
63	ESTRADA'S MEXICAN FOOD	9630 CARLTON HILLS BOULEVARD	No	None Required	Complete
64	EUROPEAN NATURAL STONE	10051 PROSPECT AVENUE	No	None Required	Complete
65	EXPRESS TIRE	9535 MISSION GORGE ROAD	No	None Required	Complete
66	FARRIS CONSTRUCTION COMPANY	8758 BUSHY HILL DRIVE	No	None Required	Complete
67	FORD ROOFING	10009 GEM TREE WAY	No	None Required	Complete
68	FORDYCE CONSTRUCTION	9926 PROSPECT AVENUE, #122	No	None Required	Complete
69	FOUR SEASON GARDENING & LANDSCAPING	9328 ST ANDREWS	No	None Required	Complete
70	FRED PERRY	9211 BELLAGIO	No	None Required	Complete
71	FREDDIE CASTLEMAN CONSTRUCTION	9312 CARITA	No	None Required	Complete
72	FRONTIER CNC	10728 PROSPECT AVENUE, #C	No	None Required	Complete
73	FUN IN THE SUN POOLS*	10340 SANTANA	No	None Required	Complete
74	G COLE LABORING	9345 CADORETTE	No	None Required	Complete
75	GARCIA'S WINDOW TINT	9484 MISSION PARK PLACE	No	None Required	Complete
76	GENSCHAW'S TREE SERVICE	10744 SAYERS	No	None Required	Complete
77	GIAMANCO & SONS	8742 ATLAS VIEW DRIVE	No	None Required	Complete

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
78	GILES CONSTRUCTION	101031 ASHDALE	No	None Required	Complete
79	GOULD MASONRY, THOMAS	8633 HACIENDA	No	None Required	Complete
80	GUARDIAN WATERPROOFING	8622 ARGENT STREET, #D	No	None Required	Complete
81	HACIENDA BUILDERS	10648 TRIGAL	No	None Required	Complete
82	HARD CORE MUSCLE MOTORSPORTS	11421 WOODSIDE AVENUE, #D	No	None Required	Complete
83	HARPER CONSTRUCTION	7819 RANCHO FANITA DRIVE, #C	No	None Required	Complete
84	HARRISON TRUCKING INC.	8801 OLIVE LANE	No	None Required	Complete
85	HILBERTO'S MEXICAN FOOD	9805 PROSPECT AVENUE, #F	No	None Required	Complete
86	IMS RECYCLING SERVICES, INC.	9465 MISSION PARK DRIVE	No	None Required	Complete
87	INDUSTRIAL METAL PROCESSING	10145 PROSPECT AVENUE	No	None Required	Complete
88	INTERPIPE CONTRACTING INC.	10870 HARTLEY STREET	No	None Required	Complete
89	JACK IN THE BOX #20	9337 MISSION GORGE ROAD	No	None Required	Complete
90	JACK IN THE BOX #3007	10330 MAST BOULEVARD	No	None Required	Complete
91	JACOR CONSTRUCTION	8614 SIESTA ROAD	No	None Required	Complete
92	JAFCO BUILDING SERVICES, INC.	10728 PROSPECT AVENUE, #109	No	None Required	Complete
93	JAMES AUSTIN CONSTRUCTION	9540 PATHWAY STREET, #103	No	None Required	Complete
94	JL WATSON DISTRIBUTING	10250 PROSPECT AVENUE	No	None Required	Complete
95	JOE'S OLD FASHIONED BBQ	205 TOWN CENTER PARKWAY	No	None Required	Complete
96	JOHNNY'S LAWN SERVICE	10062 WOODPARK	No	None Required	Complete
97	JOHN'S COLLISION CENTER	10806 PROSPECT AVENUE	No	None Required	Complete
98	JR'S JACK OF ALL TRADES	9440 WHEATLANDS COURT	No	None Required	Complete
99	JV STEEL BUILDING	9619 MAST BOULEVEARD	No	None Required	Complete
100	JWG CONSTRUCTION COMPANY	10910 COLLINWOOD	No	None Required	Complete
101	KCM CONSTRUCTION	10749 LEN	No	None Required	Complete
102	KE-BURGMANN	8575 ROLAND ACRES DRIVE	No	None Required	Complete
103	KING S & C	10925 WHEATLANDS AVENUE, SUITE E	No	None Required	Complete
104	K39 TACO SHOP	235 TOWN CENTER PARKWAY	No	None Required	Complete
105	L R KNIGHT PAINTING	9744 VOMAC	No	None Required	Complete
106	LACEY J'S ROADHOUSE SALOON & GRILLE	8861 MAGNOLIA AVENUE	No	None Required	Complete

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
107	LANDMARK GLASS CO.	9851 PROSPECT AVENUE	No	None Required	Complete
108	LANDRE'S SPORTS BAR AND GRILL	70 TOWN CENTER PARKWAY	No	None Required	Complete
109	LEMON GROVE CYCLE SUPPLY	10704 PROSPECT AVENUE	No	None Required	Complete
110	LOTTA HARDWOOD FLOORS & CONSTRUCTION	10436 CADWELL	No	None Required	Complete
111	LOWLAND SERVICES	10220 PRINCE JED COURT	No	None Required	Complete
112	MANGO TECH USA LLC	11316 WOODSIDE AVENUE	No	None Required	Complete
113	MANZANITA BREWING COMPANY	9962 PROSPECT AVENUE	No	None Required	Complete
114	MARIETAS #4	8915 CARLTON HILLS BOULEVARD	**YES**	Verified that pool of brown water at rear of facility was removed.	Resolved
115	MARJAN STONE COMPANY	9746 PROSPECT AVENUE	**YES**	Ensure property properly vacated.	Resolved
116	MARYS DONUTS	9031 MISSION GORGE ROAD	No	None Required	Complete
117	MB CUSTOMS	11115 SUMMIT CREST	No	None Required	Complete
118	MEDICAL SOLUTIONS INC.	8406 MAGNOLIA AVENUE, SUITE A	No	None Required	Complete
119	METRO STEEL	10520 KENNEY STREET	No	None Required	Complete
120	MIKES AUTO BODY	10737 WOODSIDE AVENUE	No	None Required	Complete
121	NOVA SECURITY	10744 ROCKVILL STREET	No	None Required	Complete
122	ORIGINAL ROADHOUSE GRILL	9816 MISSION GORGE ROAD	No	None Required	Complete
123	OZZIE'S KUSTOM WORKS	10658 PROSPECT AVENUE, SUITE B	No	None Required	Complete
124	PACIFIC DOOR & TRIM INC.	10911 WHEATLANDS	No	None Required	Complete
125	PADRE DAM WATER RECYCLING FACILITY AND SANTEE LAKES	9300, 9310 FANITA PARKWAY	No	None Required	Complete
126	PARADISE POOLS SERVICE AND REPAIR	10906 GREENCASTLE	No	None Required	Complete
127	PAT MARTIN CONSTRUCTION	9743 PEBBLE BEACH DRIVE	No	None Required	Complete
128	PAVING STONE OF SAN DIEGO	9440 WHEATLANDS	No	None Required	Complete
129	PERPETUAL TREE CARE	9376 STARCREST	No	None Required	Complete
130	PETE HURTUBISE CONSTRUCTION	9464 PIKE	No	None Required	Complete
131	PETERSON'S POOL AND SPA SERVICES	8674 WAHL STREET	No	None Required	Complete
132	PHO SANTEE	8790 CUYAMACA STREET	No	None Required	Complete

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
133	PLEX PRODUCTS UNLIMITED	10744 PROSPECT AVENUE	No	None Required	Complete
134	PRECISION EXCAVATION	9713 MAST BOULEVARD	No	None Required	Complete
135	PRECISION PROJECTS KITCHEN & BATH	10235 PRINCE JED	No	None Required	Complete
136	PRO CON CONCRETE INC.	9925 PROSPECT AVENUE	No	None Required	Complete
137	PRO LINE FLOORING	11110 MEADOW TERRACE	No	None Required	Complete
138	PROSCAPE	9440 LETICIA DRIVE	No	None Required	Complete
139	PROVOST INC DBA TRAFFIC TECH	11366 WOODSIDE AVENUE	No	None Required	Complete
140	QUALITY CONTROLLED MANUFACTURING	9429 ABRAHAM WAY	No	None Required	Complete
141	QUALITY FLOORS INC.	9206 BIRCHCREST	No	None Required	Complete
142	RCP BLOCK & BRICK INC.	9631 MAGNOLIA AVENUE	No	None Required	Complete
143	RJA MASONRY	10057 PEBBLE BEACH DRIVE	No	None Required	Complete
144	RMB CONSTRUCTION	9902 VIA NINA	No	None Required	Complete
145	RAFAEL GARDENING	8843 COTTONWOOD AVENUE	No	None Required	Complete
146	RAINBOW STEEL INC.	9484 MISSION PARK PLACE	**YES**	Specific deficiences noted during inspection were resolved. Per conversations with the property owner, the property may be transitioning to additional uses in the future. City Stormwater and Planning staff have been actively engaged in conversations and correspondence with the owner to address issues applicable to the property as a whole.	Resolved
147	RANCHO VIEJO	8001 MISSION GORGE ROAD	No	None Required	Complete
148	RHJ HI-TECH AIR CONDITIONING	10107 PROSPECT AVENUE, SUITE B	No	None Required	Complete
149	RICKS MACHINE SHOP	11448 WOODSIDE AVENUE	No	None Required	Complete
150	ROCK SOLID BRICK TILE & MASONRY	9358 BURNING TREE WAY	No	None Required	Complete
151	ROELOF CONSTRUCTION COMPANY	8781 CUYAMACA STREET	No	None Required	Complete
152	RONS PLUMBING	8521 RUMSON	No	None Required	Complete

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
153	ROYAL HANDYMAN & LANDSCAPING SERVICES	9233 RUFFIN	No	None Required	Complete
154	ROYALTY WOOD	9437 WHEATLANDS COURT, #A	No	None Required	Complete
155	SAB-E-LEE	9159 MISSION GORGE ROAD	No	None Required	Complete
156	SAN DIEGO CLASSIC RESTORATION	9440 WHEATLANDS COURT, #14	No	None Required	Complete
157	SAN DIEGO ELECTRIC COMPANY	7906 LINEN DRIVE	No	None Required	Complete
158	SAN DIEGO PLUMBING & HEATING	8775 RAILROAD AVENUE	No	None Required	Complete
159	SANTEE FOREIGN CAR REPAIR	7969 MISSION GORGE ROAD	No	None Required	Complete
160	SANTEE HEATING & AIR	8523 CHERUB	No	None Required	Complete
161	SANTEE LANDSCAPE	9327 WHISPERING LEAVES	No	None Required	Complete
162	SCANTIBODIES CLINICAL	9336 ABRAHAM WAY	No	None Required	Complete
163	SEA VIEW GLASS	10307 CAREFREE DRIVE	No	None Required	Complete
164	SEKI'S CYCLES	9932 PROSPECT AVENUE	No	None Required	Complete
165	SNOKE AIR CONDITIONING	9783 MEDINA DRIVE	No	None Required	Complete
166	SOLID SURFACE SOLUTIONS	10704 PROSPECT AVENUE	No	None Required	Complete
167	SONIC CAR WASH	9015 MISSION GORGE	**YES**	Trash management deficiencies were observed to have been resolved during follow-up inspection. Discharge was observed during follow-up, as detailed in complaint log. The discharge issue was also resolved.	Resolved
168	SPARKS COMPUTERIZED CAR CARE	10735 WOODSIDE AVENUE	No	None Required	Complete
169	SPECIALTY METALS FABRICATION	11222 WOODSIDE AVENUE	No	None Required	Complete
170	STAR A AUTOBODY & PAINT	10737 WOODSIDE AVENUE	No	None Required	Complete
171	STEWARTS RACE WORKS	9419 ABRAHAM WAY	No	None Required	Complete
172	T C CONSTRUCTION CO INC	10540 PROSPECT AVENUE	No	None Required	Complete
173	TAC WELDING	9440 WHEATLANDS	No	None Required	Complete
174	THE HAY GUY	10932 GRAND FORK DRIVE	No	None Required	Complete
175	TIMBER RIDGE FRAMING	10744 ROCKVILL ST, SUITE 109	No	None Required	Complete
176	TONY'S LANDSCAPING	9941 LAKE CANYON DRIVE	No	None Required	Complete

Table 5-2 (Continued)
Industrial and Commercial Sites Visited During the Reporting Period

#	Business Name	Address	Recommended for Follow-Up	Description of Follow-Up Actions	Resolution Status
177	TOP NOTCH PAINTING	9371 STARCREST LANE	No	None Required	Complete
178	TRED N WATER	10641 PROSPECT AVENUE	No	None Required	Complete
179	TSC RESTORATION	8402 MAGNOLIA AVENUE	No	None Required	Complete
180	VALLEY BOX COMPANY INC.	10625 PROSPECT AVENUE	No	None Required	Complete
181	VALLEY TRACTOR & EQUIPMENT	11478 WOODSIDE AVENUE	No	None Required	Complete
182	VGCC MANAGEMENT DBA VOLKERS	7953 MISSION GORGE ROAD	No	None Required	Complete
183	VIA MOTO	9331 MISSION GORGE ROAD	No	None Required	Complete
184	WAYNE MILLER'S MOBILE TIRE, INC.	11350 WOODSIDE AVENUE	No	None Required	Complete
185	WEITZEL MOTORSPORTS	9437 WHEATLANDS	No	None Required	Complete
186	3-D SIGNS	9440 WHEATLANDS COURT, UNIT 10	No	None Required	Complete

*Mobile business

6.0 RESIDENTIAL

6.1 INTRODUCTION

Residential land use comprises a significant portion of the City, so residential activities can have a considerable effect on the water quality of receiving waters. The City has developed an extensive program that aims to reduce pollutant runoff from residential areas and activities to the MEP.

6.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the residential component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

- On 3/17/2012 Santreefest was held at Town Center Community Park and attended by 250 volunteers. Participants removed trash from Woodglen Vista Creek, created a rock swale at the Aquatics Center and were provided with educational material covering storm water concepts.
- On 5/20/12 City staff conducted surveys and education in collaboration with County Staff at a pet licensing event located in a high TTWQ residential area.
- Conducted outreach and follow-up inspections at locations identified by Public Works staff where residents were inappropriately disposing of pet waste.

6.2 SOURCE CHARACTERIZATION

The City has designated one high TTWQ residential area within the City. The area around Woodglen Vista Channel has been designated as a high TTWQ area due to dry weather monitoring findings in the channel. The City has also designated a number of high TTWQ residential activities. This area was the focus of outreach activities during channel maintenance to educate residents on appropriate pet waste management. This included follow-up with specific residents based on observations made by public works staff during channel cleaning in Woodglen Vista Creek and outreach at a pet licensing event at Woodglen Vista Park on 5/20/12. The pet licensing event was attended by City and County storm water staff who conducted surveys with pet owners and provided educational information and portable doggie bag dispensers. This was implemented as a watershed activity and will be described in further detail in the San Diego River watershed report due in January 2012.

High TTWQ residential activities include:

- Home and Garden Care Activities and Product Use; Including Disposal
- Disposal of Trash and Pet Waste

- Automobile Repair, Maintenance, Washing and Parking

6.3 BEST MANAGEMENT PRACTICE REQUIREMENTS

The City continues to encourage the implementation of pollution prevention measures and encourage or require the implementation of BMPs for residential areas and activities, whether or not the residential area or activity has been designated as being high TTWQ. If particular BMPs are not feasible for any specific site or source, the City requires implementation of other equivalent BMPs. Designated BMPs or their equivalent were implemented or were required to be implemented for residential areas and activities.

Education and outreach aimed at residents helps to expand the implementation of BMPs, including pollution prevention methods. Residents are encouraged, and in some cases required, to implement BMPs and pollution prevention techniques when performing the high TTWQ activities listed in the previous subsection. Residential BMPs are also listed in the BMP Manual, Appendix C of the JURMP. These BMPs did not change during 2011/2012.

6.4 PROGRAM IMPLEMENTATION

The residential program is implemented through outreach and education, operation of a complaint hotline, and complaint investigation and enforcement procedures as discussed in the following subsections.

6.4.1 OUTREACH AND EDUCATION

Outreach was implemented through the preparation and dissemination of outreach materials including the fact sheet series discussed in Section 8 of this Annual Report. A summary of specific Outreach and Education events for residents is presented in the following table:

Table 6-1
Summary of Outreach and Education Activities

Date	Activity Description	Description of Outreach and Education Component
9/24/11	Participated in watershed activity providing outreach at the Lakeside Firehouse event. Lakeside, located in the unincorporated area, is adjacent to Santee, and was likely attended by some Santee residents.	Conducted pet waste surveys and educated attendees on proper pet waste management.
10/24/11	Mailed 12 factsheets to area in Meadow Terrace where a complaint had been received and identified.	Residential factsheets were sent to each of the 12 addresses.

Table 6-1
Summary of Outreach and Education Activities

Date	Activity Description	Description of Outreach and Education Component
10/24/11	Mailed 17 factsheets to addresses on Stoney Creek Court after evidence of illegal swimming pool discharges were observed on the street.	Swimming pool and spa maintenance factsheets were sent to each of the 17 addresses. One resident called the City requesting to speak to the Deputy City Manager to discuss this activity and to express concern at receiving this mailing (intrusive). The Deputy City Manager and Stormwater Program Manager informed the resident about the Clean Water Act and its requirements.
12/7/11	500 English Stormwater Calendars developed as part of the regional outreach program.	247 calendars were provided to beneficiaries of the Santee Santas Program (which focuses on the economically disadvantaged); 110 went to the Santee Chamber of Commerce to distribute at their offices and meetings; 143 were distributed through City facilities, the Sheriff's office and the local public library. The City attached prepaid survey cards to 53 calendars, per the request of the Regional Outreach Workgroup, to facilitate recipients to provide survey feedback on the calendars.
3/17/12	Santreefest	Santreefest is a community event focused on the environment. Participants have the opportunity to plant trees, build a rocky swale, remove trash from Woodglen Vista Creek and receive educational information on storm water and other environmental issues.
5/20/12	Pet licensing event	City Staff and County staff collaborated in conducting surveys on pet waste management, educating attendees at the event, and distributing portable pet waste dispensers.
5/26/12	Santee Street Fair	Provided outreach on storm water (factsheets on residential use, swimming pools and spas, yard and landscaping). Conducted residential survey and discussed survey with residents.
5/29/12	Stormwater Coloring Books developed as part of the regional outreach program.	200 coloring books were provided to the Community Services department to distribute to residents and children during the Santee Summer Concert Series.

The City continues to use opportunities to educate residents (or facilitate residents to assist others), on how their actions can help prevent the discharge of pollutants to the storm drain system. If residents understand the consequences of their actions, they can choose to find an alternative means to conduct their activities.

6.4.2 USED OIL AND WASTE COLLECTION SERVICES

The City provides free used oil disposal facilities to residents. Approximately 438 gallons of waste oil were disposed of through City-provided facilities. The City also contracts with two HHW facilities for the disposal of other HHW (leftover paints, automobile fluids, drain opener and any unused products containing toxic chemicals for home or automobile maintenance). Based on the available data, approximately 3,916 pounds of paint, 462 pounds of batteries, and 97 pounds of fluorescent tubes were collected through City-provided facilities.

6.4.3 HOTLINES AND WEBSITES

The City continues to operate its storm water hotline in accordance with the requirements of the Municipal Permit. The storm water pages of the City of Santee's website were redesigned to make them more user-friendly and separate pages are available for each type of user group (for example, resident, business, etc.). Reference documents and links to other sources of information are provided on the different pages. Minor updates were conducted during the Reporting Period to maintain the relevance of the information and the website was used to distribute articles relating to storm water.

6.4.4 COMPLAINT INVESTIGATION

As previously mentioned, complaints are received by the City's stormwater hotline regarding discharges in various areas of the City, including residential properties. Over half of the complaints the City received via its hotline concerned residential areas and activities in the City. A summary of all complaint investigations, including residential complaint investigations, is included as Appendix B to this Annual Report.

A storm water fact sheet, which is included in Attachment 5.1, relating to construction activities has been prepared and is distributed whenever any request for building permit application information is made. In addition it is provided online and in the storm water information center at the City. Disseminating information on the controls for the most basic of projects should make project proponents aware of and plan for the storm water controls needed for any construction activity. Other avenues for outreach (such as the Santee website) will continue to be used to educate homeowners about their responsibilities when undertaking minor construction work at their properties.

During the Reporting Period, City staff working on the Abandoned Vehicle Abatement Program (AVA) opened 183 cases, which related to 236 vehicles, and issued 5 administrative citations. Due to decisions made at a regional and state level, the funding for Abandoned Vehicle Abatement has been eliminated. Future vehicle abatement activities will be conducted as part of a response to code complaints.

The major topics of complaints are provided below. Based on this summary, outreach and education efforts should continue to focus on the following topics:

- Power washing or hosing down (including automotive detailing)
- Construction material management
- Maintenance of swimming pools and spas
- BMPs for landscaping, including sediment control
- Pet waste management

6.4.5 ENFORCEMENT

The residential complaints and violations data were reviewed to assess what enforcement methods were used for residential properties. Enforcement can be summarized as follows:

- Twenty one courtesy notices/onsite conversations with discharger
- Six notices of violation

One notable incident involved a location adjacent to Mast Park. Public works staff had received a reoccurring complaint about pet waste accumulation on the boundary of the park. The complainant claimed that a neighbor was disposing of their dog waste by throwing it (or encouraging their children to throw it) over the fence into the park. This is of concern as this is inconsistent with Santee Municipal Code, and the Mast Park is located adjacent to the San Diego River which is subject to 303(d) listings for bacteria. Stormwater staff inspected the area and confirmed that there was one location where pet waste had accumulated. This location was documented and Public Works staff cleared the material and sent photo documentation confirming that the material had been removed.

City storm water staff sent a letter and educational information to the residents at the subject property advising them of the complaint and of the proper way to dispose of pet waste. Follow-up inspections one month and a few months later confirmed that this activity had ceased. The findings of these inspections were communicated to the Public Works contact with the invitation to advise if this issue reoccurred. This example demonstrates how City departments work together to identify and resolve storm water issues within the City.

6.4.6 REGIONAL RESIDENTIAL EDUCATION PROGRAM

The City continues to contribute to the Regional Residential Education Program. For example, the City provided personnel to assist with a joint regional event at the High Tech Fair.

6.4.7 METHODS EVALUATION

As described in our JURMP, the City uses a number of methods to maintain oversight for residential activities and areas, including the following:

- Complaint referrals
- Observations by all City staff during routine activities
- Dry weather monitoring and upstream investigations

These methods provide effective oversight of residential activities within the City. The City promptly responds to complaint referrals, and any discharges observed during routine or monitoring activities using an escalating enforcement mechanism. These incidents are monitored, and if a pattern of behavior is observed in a certain area of the City or associated with a particular type of activity, then additional education efforts will be made to reduce the likelihood of this reoccurring within the community. Repeated violations associated with an address or person result in a higher level of enforcement response, as it is expected that they are already aware of storm water requirements.

PDMWD passed a drought ordinance on June 24, 2008 prohibiting certain activities that are consistent with the objectives of the storm water program. In particular, over-irrigation and hosing down of driveways, except when required by sanitary or safety conditions, have been prohibited. City staff report incidences of over-irrigation and similar circumstances to PDMWD when noted. As discussed in more detail in Section 11, reductions in dry weather flow rates have been observed at key locations in the City's storm drain system over the past few years.

6.5 Effectiveness Assessment

The effectiveness of the residential component is assessed in Section 11 of this Annual Report.

6.6 Program Review and Modification

The City's JURMP was recently updated in March 2008. With the exception of the reassignment of the high TTWQ residential area for the 2010/2011 Reporting Period, no changes to the City's residential component have been made since that time.

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION

7.1 INTRODUCTION

In accordance with the September 10, 2008 RWQCB adoption of Addendum No. 2 to Order No. R9-2007-0001, the City will submit the 2011/2012 illicit discharge detection and elimination section and attachments to the RWQCB no later than December 15, 2012.

8.0 EDUCATION COMPONENT

8.1 INTRODUCTION

During the Reporting Period, the City continued to provide education and outreach to a variety of audiences within the City. The City's education program targets municipal personnel, industrial and commercial businesses, construction site owners and operators, residents, and audiences that may generally be underserved. The City aims to reduce storm water pollution by increasing awareness about storm water and promoting the implementation of pollution prevention measures and BMPs. Through education and outreach, the City works to foster change in both the attitude and behaviors of the regulated community.

8.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the education component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the new Municipal Permit during the Reporting Period.

- Various educational materials were made available to project proponents, industrial and commercial facility personnel, and City staff through the City's storm water information center, interactions and training with Stormwater Program Staff, the City website, facility inspections and project reviews.
- The City used its website to cover issues relating to storm water, for example educating the public about creek maintenance and BMPs that can be used at residences.
- The City provided educational materials in English and Spanish to provide outreach to a more extensive audience.

8.2 STAFF TRAINING ELEMENT

The City has provided extensive training and educational outreach to its municipal personnel. Many municipal personnel are out in the field on a daily basis, so it is important that they understand the importance of implementing BMPs. Municipal personnel are encouraged to report any IC/IDs observed to the appropriate City staff and to educate other municipal personnel and the general public about storm water pollution prevention. During the Reporting Period, the City provided the following training/educational outreach events aimed at municipal personnel:

- Ten Public Works staff were trained on how their work directly affects water quality using a regionally-developed training video.

- Eighteen City Development Services staff were provided with refresher training in appropriate IC/ID response procedures.
- One City staff member took QSD/QSP qualifying exams

In addition to the formal training sessions conducted for City personnel presented above; the JURMP reporting process and interactions with colleagues during daily activities provided the City's Stormwater Program Manager with a forum to discuss the City's storm water program with various City personnel involved in implementing the City's JURMP.

8.3 EDUCATIONAL OUTREACH ELEMENT

In addition to municipal staff, the City has continued to provide education and outreach to industrial and commercial businesses, construction site owners and developers, residential areas, and underserved audiences. These efforts promote storm water awareness and BMP implementation.

8.3.1 INDUSTRIAL AND COMMERCIAL BUSINESSES

As required by the Municipal Permit, the City inspects its inventoried businesses to evaluate compliance with the City's BMP requirements and provides site-specific education outreach to business owners and operators. Violations of the City's BMP requirements are corrected through enforcement actions as necessary. Facility inspectors provided site-specific information on necessary BMPs at all inspected facilities. This information helps facility personnel gain a better understanding of the storm drain system and activities that pose a high threat to water quality.

In addition to site-specific discussions, industrial and commercial facility owners and operators were provided a variety of fact sheets and other educational materials. The City distributed the following general and activity-specific fact sheets during industrial and commercial inspections and during complaint investigations, as applicable. The fact sheets are included in Attachment 5.1.

- Fact Sheet 1: What is Stormwater?
- Fact Sheet 2: Water Quality Impacts
- Fact Sheet 3: Wet Weather Checklist
- Fact Sheet 4: Restaurants
- Fact Sheet 5: Automotive
- Fact Sheet 6: Mobile Auto Detailing
- Fact Sheet 7: Power Washing
- Fact Sheet 8: Industrial/Commercial
- Fact Sheet 9: Pool Maintenance

- Fact Sheet 10: Residents
- Fact Sheet 11: Demolition/Construction
- Fact Sheet 12: Special Events
- Fact Sheet 13: Carpet Cleaning
- Fact Sheet 14: Community Organizations
- Fact Sheet 15: Site Design LID BMPs
- Fact Sheet 16: Yard and Garden Maintenance
- Fact Sheet 17: Fire Prevention & Erosion
- Fact Sheet 18: Responding to Sewage Spills

A letter and Fact Sheet 8, the Industrial/Commercial fact sheet, was mailed to businesses selected for inspections during the Reporting Period. During the inspection process, the City also distributed the "Green Wrench Guide" and the "What's Cookin'" brochure, both in English and Spanish, to auto shops and restaurants, as applicable.

A tip card was developed for response to reports of leaking cars parked on the street. This card (presented in Attachment 8.1) educates the recipient on how oil leaks can affect water quality and how spills can be cleaned up. In addition to educational materials provided during inspections and complaint investigations, the City's website is used to educate the public using articles accompanied with illustrations which are also posted via the City's Facebook and Twitter accounts. Storm water-related articles published during the Reporting Period are included as Attachment 8.2.

8.3.1.1 Mobile Businesses

Mobile businesses, specifically mobile car detailers or power washers, are considered a high threat to water quality due to the nature of the business activities and the likelihood of prohibited non-storm water discharges. Mobile businesses are not confined to a single area, and many do not have City business licenses, making them difficult to identify. Individuals applying for businesses licenses for mobile car washing activities meet with the City's Stormwater Program Manager to discuss BMPs before a business license is issued. In addition, businesses applying for licenses to operate carpet cleaning, landscaping, or pool maintenance services received factsheets on these subjects. The City took proactive steps in identifying and educating mobile businesses in the City during the Reporting Period, namely conducting drive-by investigations of areas known to be frequented by mobile businesses and providing applicable educational material and/or enforcement actions.

During 2011/2012, the City provided Fact Sheet 9, the Pool Maintenance fact sheet, to a local pool supply company. Additionally, the City continues to provide copies of Fact Sheet 13, the carpet cleaning factsheet, to a carpet cleaning equipment rental facility (A & I) that distributes these factsheets to their clients.

8.3.2 CONSTRUCTION SITE OWNERS AND DEVELOPERS

Construction sites have the potential to discharge sediment and other pollutants to receiving waters if not managed properly. Construction site owners, contractors, and developers visit the City's Engineering Division to apply for necessary permits. The review process raises storm water awareness through the grading permit approval, development review, environmental review, SUSMP review, and/or other meetings prior to the issue of permits. In addition to these interactions with City staff, information on the General Construction Stormwater Permit (where applicable), the City's website, brochures, and construction-specific materials are provided for all construction affiliates. Active developers in Santee were notified of an APWA training on Construction BMP Training presented on September 22, 2011. It is not known if any of these developers took advantage of this training opportunity.

Anyone applying for a building permit is provided Fact Sheet 11, which includes BMPs for construction and demolition activities. Education is also provided after permits have been obtained during the City's site inspections.

The City has also continued its requirement for project proponents to watch "Hold Onto Your Dirt," an informational video on construction BMPs, at meetings prior to obtaining grading permits.

8.3.3 RESIDENTIAL AREAS

Due to the threat to water quality posed by certain residential activities, the City understands the importance of reaching this particular audience through educational outreach programs. The City now posts articles on the City website (Attachment 8.2) and notifies residents via Twitter and Facebook. The following is an outline of storm water related articles and announcements published on the website during the Reporting Period:

- "Trash: Keep a Lid on it." This article educated readers on proper trash and recycling bin management and reminded them that it is better to "reduce (trash), recycle (waste materials) and reuse (discarded items)."
- "Only Rain in the Storm Drain" educated readers on the connection of the storm drain system to the river. It described BMPs that residents can use to prevent discharges to the storm drain system.
- "Spring Cleaning at Forester Creek" described Public Works' efforts to maintain Forester Creek free of trash.
- "Keep Pesticides and Fertilizers Out of Our River" educated readers about the proper application of these chemicals to prevent discharges to the storm drain system. It advised on the appropriate disposal method for pesticide and fertilizer containers.

- "Got HHW?" described household hazardous waste (HHW) and how it is potentially harmful to people and the environment. It educated residents on how to access the free HHW disposal service available in the City.
- "Keeping the River Clean: Consider Compost" talked about the benefits of using yard waste for compost. It described the potential impact on river water quality from improper disposal of yard waste. It provided a link to a video showing on how to make compost.

Additional content on the City website, www.ci.santee.ca.us, provides further opportunities for City residents to become familiar with the design and intended use of the storm drain system, household hazardous waste (HHW) disposal, information regarding volunteer opportunities, information on how to report pollution, storm water factsheets for various activities, Stormwater Program documents and applicable City contact information. Development/construction and business pages on the storm water pages were updated during the Reporting Period.

As shown in Table 8-1, the City has also distributed a number of hard copy educational materials, some of which were directed to residents. the regionally-developed stormwater calendar and stormwater coloring book were both primarily targeted at residents, and many of the factsheets are also applicable to residential activities. The regional stormwater coloring book in particular is designed for school children.

8.3.4 UNDERSERVED COMMUNITIES

As discussed in the JURMP, the City has defined underserved communities, as listed in the Permit, as residents who engage in certain high-risk to water quality behaviors. This behavior is not restricted to any particular demographic group within the City. High-risk to water quality behaviors include incorrect use and disposal of home and garden care products, incorrect disposal of vehicle fluids, use and maintenance of off-road recreational vehicles, incorrect disposal of pet waste, over-application of chemicals, over-irrigation, trash accumulation, oil spills, and home improvement projects. To generate educational outreach to those who may engage in high risk to water quality behaviors, the City has continued to maintain a HHW and used oil collection program as well as educational material regarding HHW and used oil. Pet waste bags are available in City parks and at popular dog walking areas in the City. The City website also includes information on BMPs for chemical management and vehicle washing. The City plans to continue outreach to those who may engage in high risk to water quality behaviors through this educational program.

The City participated in the County Pet Licensing Clinic at Woodglen Vista Park in Santee during May to educate dog owners about appropriate pet waste management procedures. This was a watershed activity conducted with the County of San Diego Department of Watershed Protection and will be reported on in detail in the San Diego River WURMP.

If high-risk behaviors are observed to be prevalent in any particular demographic group, then the education program will be adjusted to provide more focused outreach to the group.

8.3.5 COMPLAINT INVESTIGATIONS

To further aid the process of identifying illicit discharges, the City encourages the public and City staff to report IC/IDs. If a representative for the business, residential area, or construction site is present, the inspector will provide site-specific information regarding storm water issues including applicable educational materials. Educational material was distributed as necessary during complaint investigations. In addition to the City's storm water hotline, Public Works also receives complaints regarding issues with MS4 maintenance. These complaints are followed up by Public Works personnel and mainly involve drainage system maintenance, but storm water staff are notified when necessary.

8.3.6 EDUCATIONAL MATERIAL DISTRIBUTED

Table 8-1, below, describes the approximate number of educational materials distributed during the Reporting Period.

Table 8-1
Educational Material Distributed

Educational Material	Approximate Number Distributed
Ind/Com Inspection Notification Letter	103
Fact sheet 1: What is Stormwater?	28
Fact sheet 2: Water Quality Impacts	1
Fact sheet 3: Carpet Cleaning	2
Fact sheet 4: Restaurants	12
Fact sheet 5: Automotive	3
Fact sheet 6: Mobile Auto Detailing	2
Fact sheet 7: Power Washing	12
Fact sheet 8: Industrial/Commercial	104
Fact sheet 9: Pool Maintenance	30
Fact sheet 10: Residences	16
Fact sheet 11: Construction	8
Fact sheet 12: Special Events	3
Fact sheet 13: Carpet Cleaning	8
Fact sheet 14: Community Organizations	0
Fact sheet 15: Site Design LID BMPs	4
Fact sheet 16: Yard and Garden Maintenance	27
Fact sheet 17: Fire Prevention and Erosion	22
Fact sheet 18: Responding Sewage Spills	0

Table 8-1
Educational Material Distributed

Educational Material	Approximate Number Distributed
Regional Stormwater Calendar	500
Regional Stormwater Coloring Book	200
IPM Cards: Spanish	1
Pet Waste Cards	39
Knowledge Assessment Surveys	47
What's Cookin' - English	0
What's Cookin' - Spanish	0
Green Wrench Guide - English	0
Green Wrench Guide - Spanish	0

8.4 Outreach Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the effectiveness assessment for this program component.

8.5 Program Review and Modification

The City's JURMP was recently updated in March 2008. No changes to the City's education component have been made since that time.

9.0 PUBLIC PARTICIPATION

9.1 INTRODUCTION

The City continues to explore ways to encourage public participation in the City's storm water program. Collaboration between the City and the community should help foster a sense of shared responsibility in protecting water quality both locally and regionally.

9.1.1 SUMMARY OF NOTABLE ACCOMPLISHMENTS

Some notable achievements for the public participation component during the Reporting Period are presented in the following bulleted list. The following subsections of this section provide more details on how the City complied with the Municipal Permit during the reporting period.

- Collected over 41 tons of trash and debris during seven cleanup events held for the San Diego River, Forester Creek, and Town Center Community Park.
- Disseminated information on San Diego River Park Foundation community activities in Santee via the City of Santee website.

9.2 EVENTS AND PROGRAMS

Santreefest

The City hosted the Santreefest at the Town Center Park. This was attended by approximately 250 volunteers who participated in a number of activities to enhance Town Center Community Park including the removal of five cubic yards of trash and debris, as described in Table 9-1. In addition to the trash removal activities, trees were planted in the area and a rock swale was constructed. The event provided an opportunity for educational outreach to the participants of the event. Various educational outreach materials, including IPM cards in both English and Spanish, storm water fact sheets, residential fact sheets, and waste management information were provided. City personnel discussed pollution prevention techniques with event attendees who visited the Watershed Booth operated in conjunction with the County of San Diego Department of Watershed Protection. This watershed activity will be described in further detail in the San Diego River WURMP annual report.

Creek and Waterway Cleanups

The City supported a number of creek and waterway cleanups summarized in the table below. Support typically included notifying the public of the upcoming event on the City's website and providing waste disposal facilities as needed. With the exception of Santree Fest and Helping Hands Beautification Day, representatives from the San Diego River Park Foundation took the lead in organizing these events.

Table 9-1
Summary of Cleanup Events

Date	Amount of Trash Removed (lbs)*	Description
7/6/11	600	20 volunteers removed trash from West Hills Parkway.
8/5/11	540	18 volunteers removed trash from Mast Park.
8/17/11	660	22 volunteers removed trash from Mast Park.
9/21/11	960	32 volunteers removed trash from Magnolia Avenue.
9/24/11	8,000	National Public Lands Day – Santee Town Center Park, attended by approximately 30 participants.
10/5/11	630	21 volunteers removed trash from the area near the river at Big Rock Road.
10/19/11	690	23 volunteers removed trash from the area near the river at Big Rock Road.
11/12/11	2,760	39 volunteers removed trash from Town Center Community Park.
12/10/11	1,120	Forester Creek Clean-up attended by approximately 85 participants.
12/21/11	270	9 volunteers removed trash from Mast Park West.
1/13/12	600	10 volunteers removed trash from Mast Park West
2/25/12	2,000	Chubb Lane River Clean-up attended by approximately 70 participants.
3/7/12	700	10 volunteers removed trash from Chubb Lane and Old Man's Pond along the San Diego River.
3/17/12	200	Santreefest attended by approximately 250 people who participated in a variety of activities. Eight volunteers helped with the trash removal.
4/21/12	4,180	Earth Day: River Cleanup at Big Rock Road attended by 64 volunteers.
4/28/12	56,000	Helping Hands Beautification Day at Mast Park attended by 300 participants.
5/16/12	240	8 volunteers removed trash from the area near the river at Big Rock Road.
5/20/12	250	20 volunteers removed trash from Mast Park West.
6/9/12	1,600	Forester Creek clean-up attended by approximately 25 participants.
Total	82,000	

* Based on conversion factor of 400 pounds per cubic yard for trash.

Storm Drain Stenciling

This ongoing program provides opportunities for members of the community to stencil storm drains to remind the public not to discharge materials to the storm drain system.

No stenciling projects were conducted during the Reporting Period; however, the City continues to offer this program to youth groups and other volunteer organizations as a way to participate in improving water quality.

Roadside Pride
This ongoing program, where community youth separate recyclable materials from collected debris, has been previously promoted in the *Santee Review*.

Hazardous Waste Collection and Used Oil Recycling
Citizens are required to properly dispose of household hazardous waste, used oil, bulk items and electronic waste. Residents are informed of the services available to them through outreach at community events, information provided through the storm water program (such as the Residential Fact Sheet), information at various City departments, and the City's website. The amount of used oil and other HHW collected during 2011/2012 is reported in Section 6.4.2 of this Annual Report.

Encourage Responsible Cleanup
Citizens using municipal facilities are encouraged to keep their community clean by properly disposing of all waste. Trash and recycling bins are provided at City parks. Pet waste bags are available at City parks and along popular dog-walking routes. Additional pet waste bag dispensers are to be installed as part of an on-going program.

Responsible cleanup procedures are encouraged at special events within the City. A Special Event fact sheet is provided to applicants for relevant permits which require specific BMPs at all special events. Detailed conditions are used for special events in Santee.

In addition to the activities listed above, the City continues to encourage public participation through Project Clean Water and related activities.

Eagle Scout Project
A group of scouts delineated a trail under the Carlton Hills Bridge linking Mast Park with Mast Park West. The buttresses of the bridge were painted in a bright mural showing the context of the location in the San Diego River watershed. These improvements enhanced this resource by the river and will also give walkers a greater sense of security when using this pathway.

9.3 Public Participation Component Effectiveness Assessment

Please refer to Section 11 of this JURMP Annual Report for the assessment of program effectiveness.

9.4 Program Review and Modification

No changes to the public participation component of the JURMP are proposed at this time.

10.0 FISCAL ANALYSIS

10.1 INTRODUCTION

During 2009/2010, a fiscal analysis reporting template was developed collectively by the Copermittees. Fiscal information for 2011/2012 is reported in the tables below, which follow the standard format adopted by the Copermittees.

Table 10-1
Expenditure Summary

JURISDICTIONAL COMPONENTS	
Administration	$99,431
Development Planning	$14,836
Construction	$13,335
Municipal	$392,555
Industrial and Commercial	$16,182
Residential	$5,863
IDDE	$58,242
Education	$4,215
Public Participation	$500
Special Investigations	$86,382
Non-Emergency Firefighting (incorporated into routine fire safety costs)	$0
Jurisdictional Total	**$691,541**

WATERSHED	
San Diego River	$128,531
Watershed Total	**$128,531**

REGIONAL	**$62,677**

TOTAL COSTS	**$882,749**

Table 10-2
Fund Summary

FUNDING BY SOURCE	
General Fund	$642,414
Storm Water Fee	$0
Developer Deposits and Fees	$19,935
Registration and Inspection Fees	$0
Grant Funds	$0
Zone 2 Flood Control	$220,400
Total	**$882,749**

Table 10-3
Watershed Urban Runoff Management Program (WURMP) Expenses

	San Diego River
Administration (1)	$5,349
Cost Share Contribution	$3,628
Watershed Activities	$119,554
Other	$0
TOTAL	**$128,531**

(1) Administration – includes Watershed strategic planning, management, mapping, assessment, and reporting.

Table 10-4
Regional Urban Runoff Management Program (RURMP) Expenses

Regional Programs	Jurisdictional Cost
Administration (1)	$9,225
Cost Share Contribution	$53,452
Other (2)	$0
TOTAL	**$62,677**

(1) Administration – includes assessment, reporting, management, etc.
(2) Other – examples include regional and special studies.

11.0 EFFECTIVENESS ASSESSMENT

11.1 INTRODUCTION

The City regularly evaluates its storm water program to make it as effective as possible at reducing discharges of urban runoff related pollution to the MEP. The overall structure of the City's JURMP contains three major components: Program Planning, Program Implementation, and Effectiveness Assessment.

Program Planning
The initial step is program planning, which requires identifying potential pollutant sources, establishing BMP requirements, and identifying of targeted outcomes and ways to measure those outcomes. Next, the program developed during the planning step is implemented.

Program Implementation
Program implementation is assessed each year using the methods developed in the program planning stage and reported in JURMP annual reports. The conclusions from these assessments are used during the next round of program planning to incorporate improvements to the program and refine the assessment technique.

Effectiveness Assessment
Results of the program implementation phase of the JURMP provide the City with various metrics used to interpret the overall effectiveness of the program in achieving progress toward targeted outcomes. Example metrics were provided in Section 13 of the City's 2008 JURMP, and the City has refined those metrics in the reporting periods since then. The effectiveness assessment approach developed by the Copermittees during the last permit cycle includes six different levels of targeted outcomes. Each successive level represents a step up from more easily measured, activity-based outcomes (Level 1) to more difficult to measure, quality-based outcomes (Level 6). The levels are listed below.

Level 1: Compliance with Activity-Based Permit Requirements
Level 2: Changes in Knowledge/Awareness
Level 3: Behavioral Change/BMP Implementation
Level 4: Load Reductions
Level 5: Changes in Discharge Quality
Level 6: Changes in Receiving Water Quality

The Municipal Permit requires the City to assess the effectiveness of each significant activity for each program component, as a whole, and for the storm water program as a whole. Level 1, Level 5, and Level 6 outcomes are discussed in Section 11.2.1. At this time the City is not able to assess Level 5 or Level 6 outcomes for individual program activities or individual programs. As noted in the CASQA effectiveness assessment guidance, methods for integrated assessment—assessment that combines both

monitoring data and programmatic data—are still under development at regional and statewide levels (CASQA, 2007).

11.1.1 Outcome Level Assessments

Level 1

Level 1 outcomes essentially are measures of Municipal Permit compliance. The component-specific sections in this JURMP Annual Report provide details of programmatic actions taken to comply with the applicable Municipal Permit requirements. Appendix C of this JURMP Annual Report also includes a checklist that matches the Municipal Permit's annual reporting requirements with the section(s) or appendix of this report that addresses each requirement.

Levels 2 and 3

See the tables 11-1 through 11-8 at the end of this section for discussions of Level 2 and Level 3 outcomes for significant activities within each program component. Please note that only a Level 1 assessment applies to fiscal analysis, so no table for fiscal analysis is included.

Level 4

The tables at the end of this section provide information for Level 4 assessments where feasible. Assessment of Level 4 outcomes is feasible for some programs that directly measure the amounts of pollutant removal, such as MS4 cleaning. For most other programs reliable load estimation methods have not yet been developed.

Figures 11-1 and 11-2, at the end of this section, display historical flow rates for seven routine monitoring sites within the City. These sites were selected since they are major outfalls of the City's MS4 and/or have had the highest recorded flow rates of the City's monitoring sites in its storm drain system from 2002-2012. All flow rates were recorded during the dry season. For years in which multiple measurements were taken in one year's dry season, the average value is shown. These locations are shown on a map in Figure 11-3.

Each graph illustrates a slightly decreasing trend in dry weather flows, and the flow rates recorded in 2011 and 2012 are among the lowest recorded within the past 10 years for all seven sites. While many factors may contribute to flow rates in the City's MS4, including largely uncontrollable sources such as groundwater infiltration, the lower flow rates seem to indicate that the City's efforts to reduce non-storm water discharges to its MS4 are having a positive impact. Since pollutant loads are calculated using flow rates and pollutant concentrations, a decrease in flow rate will generally result in a decrease of pollutant loads.

Level 5

The City continues to conduct the MS4 Outfall Monitoring Program implemented in 2009. This program examines water quality at four targeted major MS4 outfalls in order to characterize pollutant discharges to receiving waters. The data is used to assess whether these discharges contribute to the overall receiving water quality on a regional

basis; the analysis is presented in the regional Copermittee annual monitoring report, which is submitted to the RWQCB each January.

Since four years of MS4 Outfall Monitoring data is now available for Santee, an additional City-specific analysis of the data has been conducted for this report. Figure 11-4, at the end of this section, includes graphs of key laboratory analytical results and pollutant loading rates for these sites for 2009 through 2012, the four years for which data was collected. Note that loading rates are based on instantaneous flow rates measured at the time of sample collection. In general, loading rates calculated for Site V45k have been relatively higher than other monitoring sites since flow rates, likely due to groundwater ingress, have been greater at this site.

Over the past four years, nutrient (total nitrogen and total phosphorus) loading rates have generally decreased, reflecting the decrease in flow rates over the same period. Although TDS concentrations have remained relatively consistent, a decrease in loading rates has been noted at each monitoring site since their respective flow rates have declined since 2009. Additionally, because indicator bacteria levels have been variable throughout the MS4 Outfall Monitoring Program, no clear trend has been noted in bacteria concentrations or loading rates.

One of the City's primary mechanisms for measuring the quality of discharges is the Dry Weather Monitoring Program. Graphs presenting the historical Dry Weather Monitoring Program exceedances are provided at the end of this section as figures 11-5 and 11-6. From 2002-2012, nitrate-nitrogen exceedances have been somewhat frequent and have been attributed to the infiltration of groundwater into the MS4. No discernible trend in exceedances for other field constituents has been observed. Laboratory data, collected from 25 percent of the City's sites, per Municipal Permit requirements, have shown a generally decreasing trend in total coliform bacteria exceedances. Exceedances for other constituents measured via laboratory analysis, such as diazinon, chlorpyrifos, oil and grease, and heavy metals, have rarely been observed.

Level 6

The Copermittees' regional monitoring program sited and monitored two Temporary Watershed Assessment Stations (TWAS) in the San Diego River Watershed in 2010/2011, with data provided in January 2011 as part of the regional annual monitoring report. One sampled station was at the eastern side of the City (SDR-TWAS-3), close to the City's jurisdictional boundary with the County of San Diego, and one farther to the west, close to the boundary between the City of Santee and the City of San Diego (SDR-TWAS-2).

Dry weather data from these sites both showed nutrients, bacteria, and TDS as high or medium priority constituents. These results are generally consistent with watershed assessments conducted in 2011/2012 and in previous years in the San Diego River Watershed and presented in the San Diego River WURMP. Due to the rotational schedule of the regional monitoring program, no new data was collected for the San Diego River watershed in 2011/2012.

From 2002-2011, the City performed an additional study of water quality at five receiving water body locations: upstream and downstream sites in the San Diego River, upstream and downstream sites in Forester Creek, and one site in Sycamore Creek. Samples have been collected under ambient conditions twice per year at each site. Although a portion of Forester Creek outside the City of Santee has been listed as impaired for pH, none of the samples in any water body in Santee's additional study have exceeded the Basin Plan WQOs for pH at any point during the program's history (Figure 11-7). Figures 11-8, 11-9, and 11-10 show fecal coliform bacteria levels measured in upstream and downstream receiving water locations, with downstream measurements typically being lower. In general, fecal coliform bacteria levels in recent years are lower than the levels recorded in the earlier years of the program.

Fecal coliform bacteria counts were typically lower at the downstream Forester Creek site than the upstream site, and samples collected in 2010 and 2011 from Site J30d1, located downstream of a restored portion of Woodglen Vista Channel, have had relatively low indicator bacteria counts. Assessment data from Forester Creek after project completion presented at the 2010 CASQA Conference showed an 87 percent reduction in fecal coliform bacteria from the upstream to downstream end of the project area. These data are evidence that the City's work to revegetate and improve open channels such as Forester Creek and Woodglen Vista Creek has resulted in improved water quality.

11.1.2 Overall Component Assessments

Development Planning

The City's review process for development projects effectively requires high and medium removal efficiency BMPs. City interaction with responsible parties during the reporting period has resulted in BMP installation and a greater level of awareness of the need for regular treatment control BMP maintenance within the City. As a result of diligent follow-up, verification of proper maintenance was received from all projects. City staff have been educated on updated hydromodification management requirements, and information about the new requirements is easily accessible via the City's website. The City has implemented a strong system to verify proper installation and maintenance at the conclusion of construction and notify property owners of the need to implement a maintenance program.

Construction

The City inspected many sites more frequently than required by the Municipal Permit and sent construction BMP reminders prior to the beginning of the wet season. The pre-rainy season notices detailed site specific recommendations from each project, increasing their effectiveness over a standard letter sent out to all projects. The City required grading permit applicants to view the "Hold on to Your Dirt" educational video, and City staff helped educate the development community by presenting at a QSD training. These practices appear to have improved BMP implementation both in general and

during rain events, which is when construction activities have the highest potential to discharge pollutants.

Municipal

The City's municipal activities effectively implement BMPs and reduce pollutant loading. The City's municipal staff are regularly trained on storm water issues. The City's Stormwater Program Manager surveyed municipal maintenance staff before and after a training event. Maintenance staff scored highly on the post-test, displaying the effectiveness of the training.

The City sweeps its streets more often than Municipal Permit requirements to reduced pollutants, and the City regularly inspects and cleans out its MS4. As a result, 113 more tons of sediment and debris were removed from streets and parking facilities than during the previous Reporting Period. The City coordinates with PDMWD, which is responsible for the sanitary sewer system, to prevent and respond to any SSOs in the City. The City also continued to distribute pet waste bags through dispensers in its parks during 2011/2012.

Industrial and Commercial

In 2011/2012, the majority of inspected businesses did not require follow-up inspections (97%); which is greater than the percentage of sites that did not require follow-up inspections in 2010/2011 (93%). The City's Stormwater Program Manager followed up with businesses with high priority BMP deficiencies, and most were resolved by the end of the Reporting Period. Although the Municipal Permit does not require the City to go beyond reporting Industrial Permit deficiencies to the RWQCB, the City also followed-up with businesses observed to be out of compliance with the Industrial Permit. An additional tool developed during the current Reporting Period was the development of a summary of the City's storm water BMPs required as part of the business licensing process. It is expected that increased education for businesses, particularly new businesses, will help improve industrial and commercial BMP implementation rates.

The City has taken proactive steps to identify and educate mobile businesses in the City by identifying them via business licenses and providing education. City staff also regularly drove by areas known to be frequented by mobile businesses, particularly mobile car detailers, during the Reporting Period. Whenever mobile businesses were observed, City personnel stopped to provide educational material and ensure that no discharges were occurring.

Residential

The main components of the City's residential storm water program include education, complaint receipt and response via the storm water hotline, and routine monitoring to detect IC/IDs. The City also encourages residential participation in clean up and other events to help foster a sense of shared responsibility in keeping the community clean. Several cleanup events were held during the Reporting Period. Additionally, several online *Santee Review* articles provided storm water education to City residents. City staff surveyed residents at the Santee Street Fair in May 2012, and the results indicated the

respondents were well-educated on storm water issues. Over 81 percent of those surveyed knew that water flowing through the storm drain system is not treated, and the same percentage knew that hosing or sweeping trash and debris into a gutter or storm drain is illegal.

IDDE

The City's IDDE program has effectively responded to complaints and responded to any identified IC/IDs. During 2011/2012, three SSOs occurred, all of which were responded to by PDMWD. No IC/IDs were identified during the 2012 Dry Weather Monitoring Program. Follow up actions were also taken in response to the recommendations from the 2011 Dry Weather Monitoring Program Report. The City will continue to take action to prevent and eliminate IC/IDs.

Education

The City continued to provide educational materials for a variety of audiences, including residents, businesses, developers, and contractors, available on its website. The City also proactively worked to identify carpet cleaners, pool maintenance businesses, and landscapers during the business license application process; such businesses were provided activity-specific educational materials. The City continued its innovative methods of distributing educational material to hard-to-reach audiences in the City; for example, the City's Stormwater Program Manager worked with a local pool supply company and a carpet cleaning equipment rental business to distribute activity specific fact sheets.

Public Participation

A total of 53 reports to the hotline were received during the Reporting Period, which is less than but still at a similar order of magnitude as the 67 complaints received during the previous Reporting Period. It is possible that the decrease in hotline calls indicates a decreased incidence of storm water problems, but it is difficult to make definitive statement given the relatively small difference in values between the two years.

The City continued to facilitate used oil and HHW disposal centers in 2011/2012. The City has held several clean up events, typically in partnership with community organizations such as the San Diego River Park Foundation. Creek cleanups were held in the City as part of Coastal Cleanup Day and the Creek to Bay Cleanup. These events helped remove trash and debris and also increased public involvement in protecting the City's waterways. Approximately 30 more tons of trash and debris were removed by volunteers at events in 2011/2012 than that removed during the previous Reporting Period. The City will continue looking for new opportunities for public involvement, while continuing existing clean-up and recycling programs and events.

11.2 Program Review and Modification

No significant changes to the effectiveness assessment approach presented in the City's March 2008 JURMP have been made since the submittal of that document.

Table 11-1
Development Planning Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Review and approve project plans	External Based on meetings with applicants and BMPs proposed, it appears that the level of knowledge is increasing. Internal The City's Stormwater Program Manager and Project Engineers work closely to ensure SUSMP requirements are met.	Overall WQTR approval rate during reporting period	43%	N/A, addressed through other significant activities for this component
		Number of projects requiring three or more reviews prior to WQTR approval	3	
		Percent of approved projects implementing BMPs with high or medium removal efficiencies for key pollutants of concern	100%	
Verify proposed BMPs are implemented	External N/A, knowledge is evaluated by appropriate implementation of BMPs as shown in Level 3 Internal The City's Stormwater Program Manager provides training to staff responsible for verifying BMPs are installed prior to occupancy.	Percent of projects implementing proposed BMPs	100%	Installation of BMPs likely contributed to pollutant load reductions.
		Resolution status of enforcement actions	Complete, see Section 2	
Verify BMPs are properly maintained	External Owners notified of requirement to maintain treatment control BMPs Internal The City's Stormwater Program Manager is familiar with BMP maintenance requirements.	Percent of sites certifying BMPs properly maintained	100%	Proper maintenance of BMPs likely contributed to pollutant load reductions.
		Resolution status of enforcement actions as of October 1, 2011	84% Completed, see Section 2.4.4	
		Percent of sites submitting verification forms	100%	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-2
Construction Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Review proposed plans and BMPs	External Projects submit plans for construction BMP implementation for their projects; the level of awareness of construction BMP requirements is fairly high. Internal Training for City staff is described in Section 8. City staff are familiar with relevant construction BMPs.	BMPs proposed for construction projects generally meet requirements; no significant problems have been noted.		Proper pre-project planning is likely to have resulted in BMPs that reduced pollutant loading.
Verify proposed BMPs are implemented	External Grading projects implement BMPs as required by their permits, and contractors are familiar with the City's requirements. Construction projects are notified of requirements through inspection notices and letters. Internal Training for City staff is described in Section 8. City inspectors are familiar with relevant construction BMPs.	Percent of inspections requiring written notices, NOVs, citations, or stop work orders	13%	Proper BMP implementation is likely to have reduced pollutant loading.
		Resolution status of enforcement actions	Complete, see Section 3	
		Number of dry weather monitoring exceedances traced to construction sources	0	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-3
Municipal Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Verify proposed BMPs are implemented at facilities	City staff are regularly trained on BMP implementation; see sections 4 and 8.	Percent of inspected facilities/activities in compliance with BMP requirements	85%	Proper BMP implementation is likely to have reduced pollutant loading.	
		Resolution status of sites requiring follow-up inspections	Complete, see Section 4	Amount of pet waste collected	25 tons*
		Number of dry weather monitoring exceedances traced to municipal sites	0		
Sweep streets and parking facilities		N/A, streets and parking facilities are swept as often as directed by management and Municipal Permit requirements.		Amount of sediment and debris removed (weight or volume)	784 tons
				Amount of sediment and debris removed per length of street swept (weight or volume per curb mile)	0.077 tons/ curb mile
Maintain and clean out MS4		N/A, MS4 structures are maintained as often as directed by management and in compliance with permit requirements.		Amount of sediment and debris removed (weight or volume)	483 cubic yards
Maintain sanitary sewer system		N/A, the sanitary sewer system is maintained by Padre Dam MWD.		Total volume of SSO discharge to MS4 (gallons)	109
Maintain municipal treatment control BMPs		N/A, treatment control BMPs are maintained as often as directed by management.		BMP effectiveness studies	N/A
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only	

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

*Amount of pet waste collected is based on an estimate of 0.2 pounds of pet waste per bag. This conversion rate was developed by the County of San Diego based on the results of a 2004 study and included in the 2006/2007 WURMP Annual Report. A total of 250,000 pet waste bags were distributed in 2011/2012.

Table 11-4
Industrial and Commercial Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Require BMP implementation	Business owners and operators were educated in a variety of ways during the Reporting Period; see sections 5 and 8 for details.	Percent of inspected sites in compliance with discharge prohibitions	100%	Proper BMP implementation is likely to have reduced pollutant loading.	
		Percent of sites not requiring a follow-up	97%		
		Resolution status of enforcement actions	Majority completed, see Section 5		
		Number of dry weather monitoring exceedances traced to industrial or commercial sources	0	Number of IC/IDs eliminated (inspections and complaint investigations)	15
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only	

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-5
Residential Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4
Require BMP implementation	External Residents were educated through articles in the online *Santee Review*, targeted mailers, and in variety of other ways during the Reporting Period; see sections 6 and 8 for details. Internal The City's Stormwater Program Manager is heavily involved in the implementation of the residential component and works closely with code compliance in addressing residential storm water issues. Other City staff involved in the program also have a good understanding of the goals of the storm water program.	Number of residential incidents reported to storm water hotline	36	Resolution of residential incidents reported to the hotline likely resulted in a decrease in pollutant loading through improved BMP implementation.
		Resolution of enforcement actions	Complete, see Section 6	
		Number of dry weather monitoring exceedances traced to residential sources	0	
Maintain an accurate inventory	N/A, data management only	N/A, data management only		N/A, data management only

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-6
Illicit Discharge Detection and Elimination Component Assessment Measures

Significant Activity	Level 2	Level 3	Level 4
Conduct Dry Weather Monitoring Program	The City contracts with a qualified consultant to perform its Dry Weather Monitoring Program.	N/A, personnel conduct monitoring as directed by management.	No significant, long term IC/IDs were eliminated, so a reliable estimate of load reduction cannot be made.
Respond to incidents reported to storm water hotline	The City's Stormwater Program Manager trains City staff as needed. See sections 4 and 8. City staff were responsible for many of the reports made to the hotline, as shown in Section 4.	N/A, personnel respond to incidents as directed by management. Note that some non-stormwater staff have chosen to respond to observed incidents in their private lives. This is indicative of staff awareness and sense of responsibility.	Resolution of the incidents reported to the hotline and listed in Section 4 are likely to have resulted in pollutant loading reduction.
Respond to and clean up SSOs	City staff are thoroughly trained on how to respond to SSOs.	N/A, the sanitary sewer system is maintained by PDMWD.	PDMWD reported three SSOs during the reporting period, one of which was reported as reaching a receiving waterbody. All SSOs were responded to by PDMWD.

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-7
Education Component Assessment Measures

Significant Activity	Level 2	Level 3	Level 4
Provide storm water education to the public	External The City actively educates the various audiences in its jurisdiction. See Section 8 for details.	See Level 3 outcomes for other program components for information about behavior change.	Sufficient data to estimate load reductions due to educational efforts is not available for the Reporting Period.

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Table 11-8
Public Participation Component Assessment Measures

Significant Activity	Level 2	Level 3		Level 4	
Involve the public in activities that relate to storm water protection	The City and City partners host a number of opportunities for the public to participate in the City's JURMP. See Section 9 for details. The amount of trash and debris collected at cleanup events during this Reporting Period was almost four times greater than that removed during 2010/2011 (11 tons).	Number of attendees at events	1,056	Amount of trash and debris collected at cleanup events	41 tons
	There were slightly fewer complaints/ referrals during 2011/2012 (53) than during 2010/2011 (67).	Number of storm water complaints received	4953	Amount of HHW collected	4,475 pounds of HHW, 438 gallons of used oil

Notes: Level 2 - Changes in Knowledge/Awareness; Level 3 - Behavioral Change/BMP Implementation; Level 4 - Load Reductions; N/A – Not Applicable

Figure 11-1
Historical Flow Rates of Key Monitoring Sites in the MS4 (2002-2012)

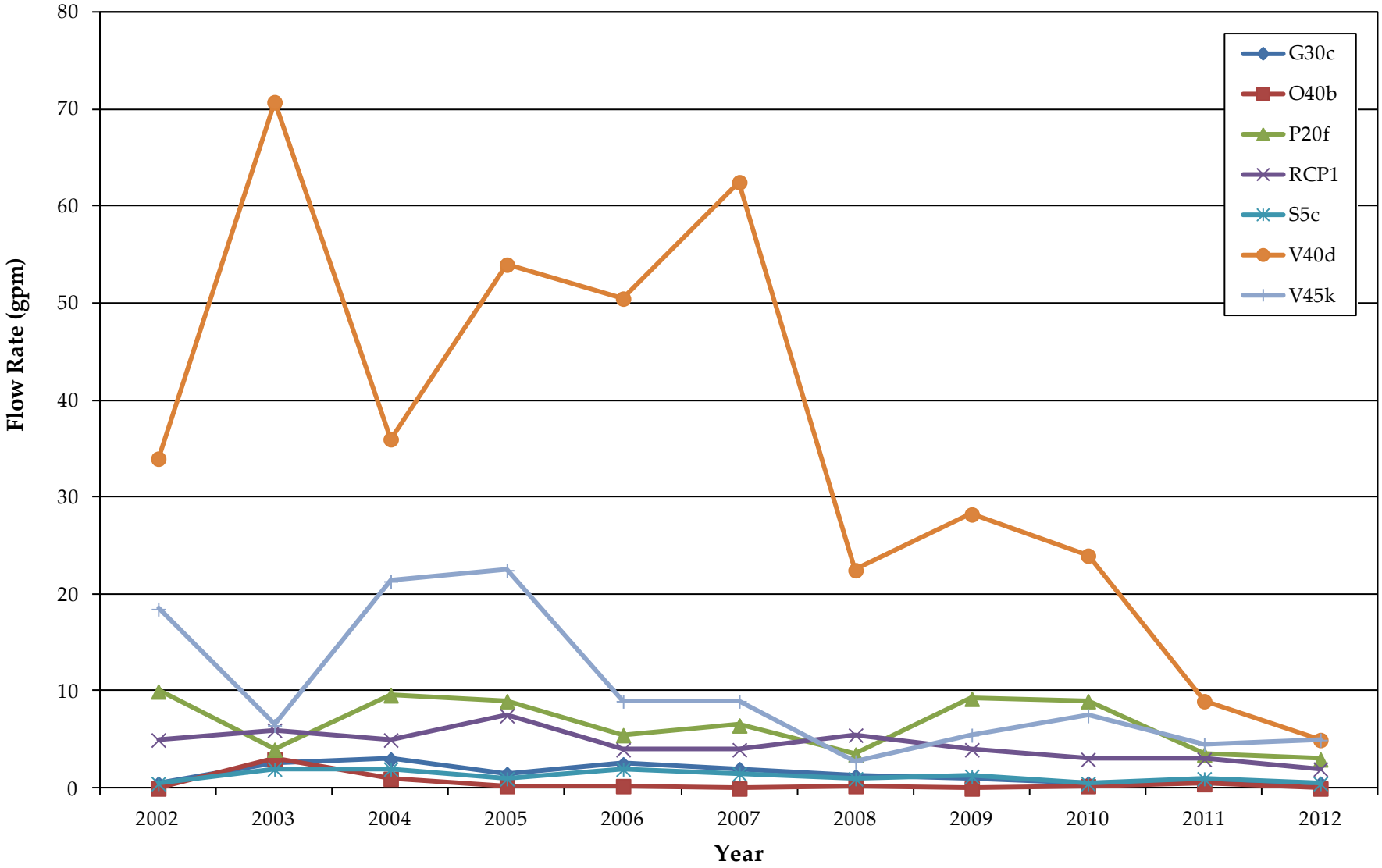

Notes: All flow rates were recorded during the dry season. For years in which multiple measurements were taken in one year's dry season, the average value is shown
gpm = gallons per minute

Figure 11-2
Individual Historical Flow Rates for Key Monitoring Sites in the MS4 (2002-2012)

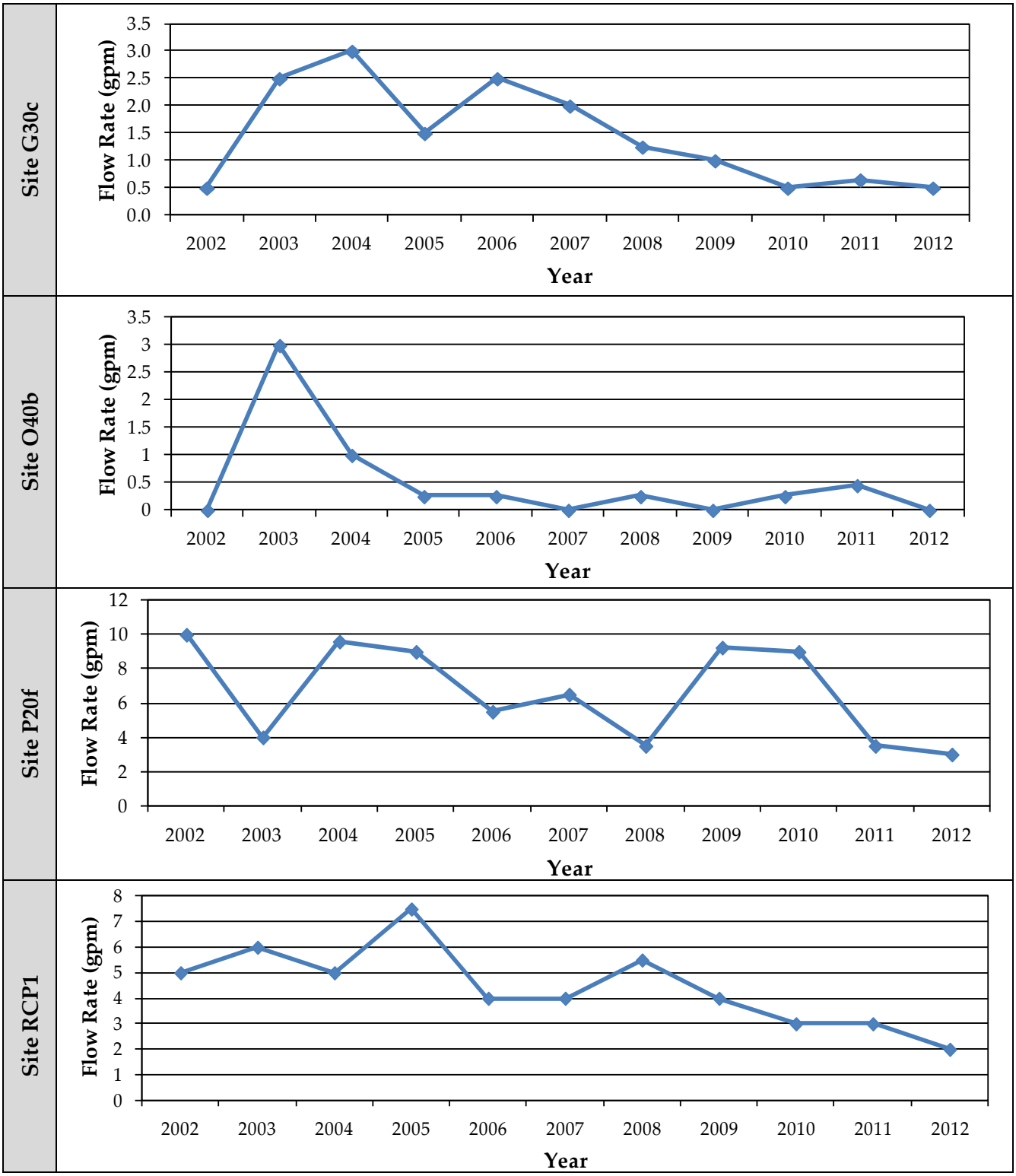

Figure 11-2
Individual Historical Flow Rates for Key Monitoring Sites in the MS4 (2002-2012)

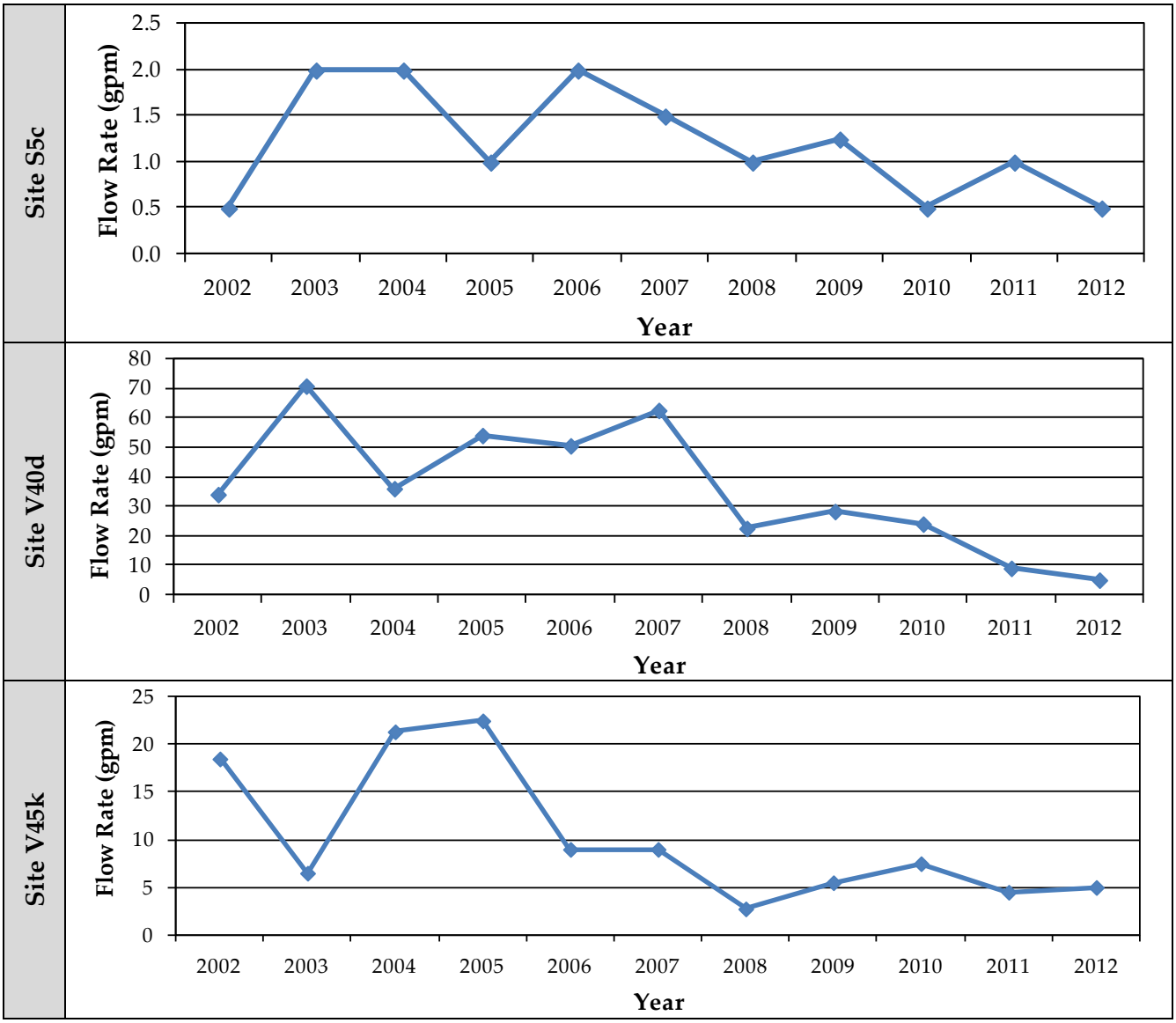

Notes: All flow rates were recorded during the dry season. For years in which multiple measurements were taken in one year's dry season, the average value is shown.
gpm = gallons per minute

Figure 11-3
Map of Key Monitoring Sites in the MS4

Figure 11-4: Key Constituent Concentrations and Loading Rates of MS4 Outfall Monitoring Sites (2009-2012)

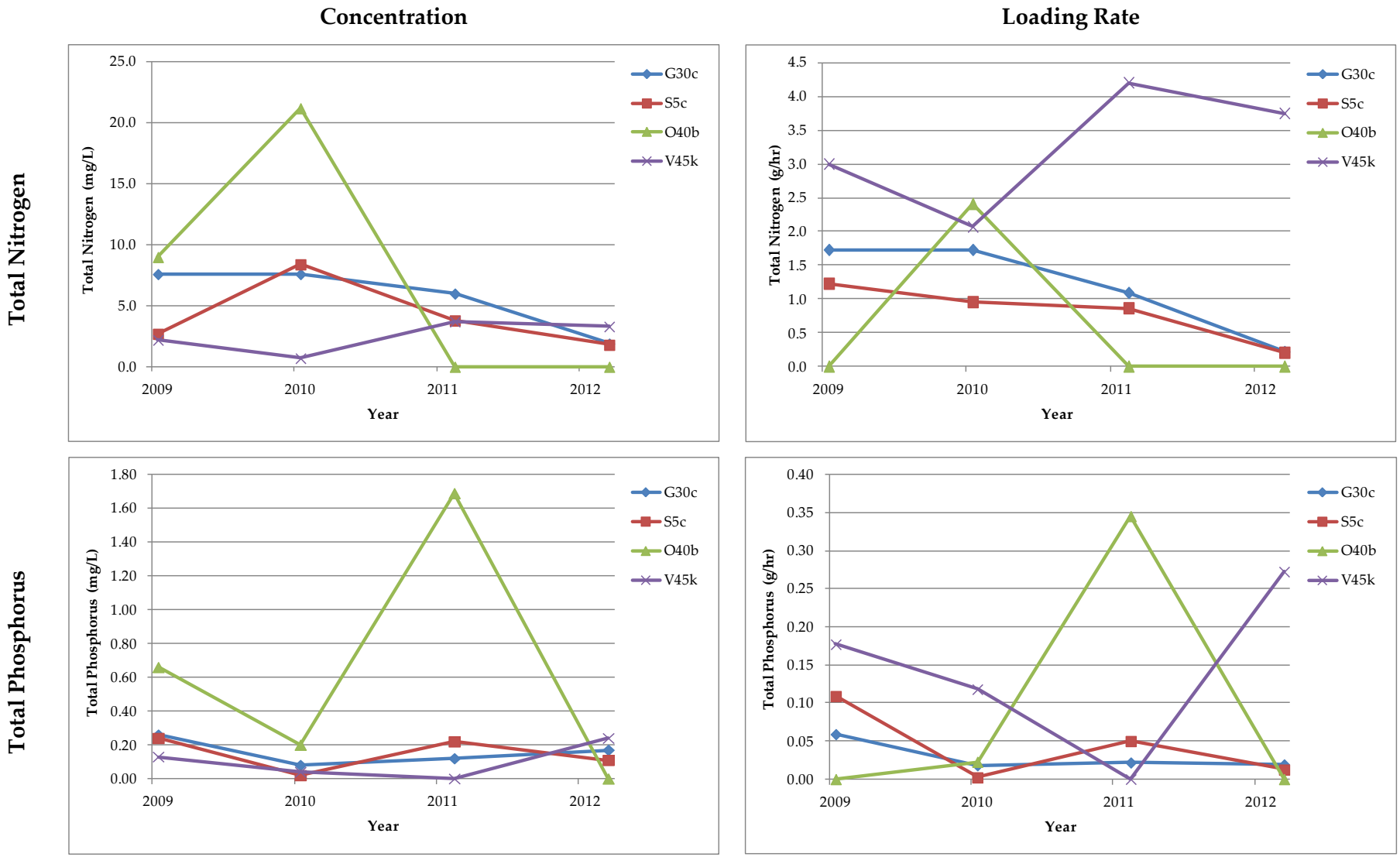

Figure 11-4: Key Constituent Concentrations and Loading Rates of MS4 Outfall Monitoring Sites (2009-2012)

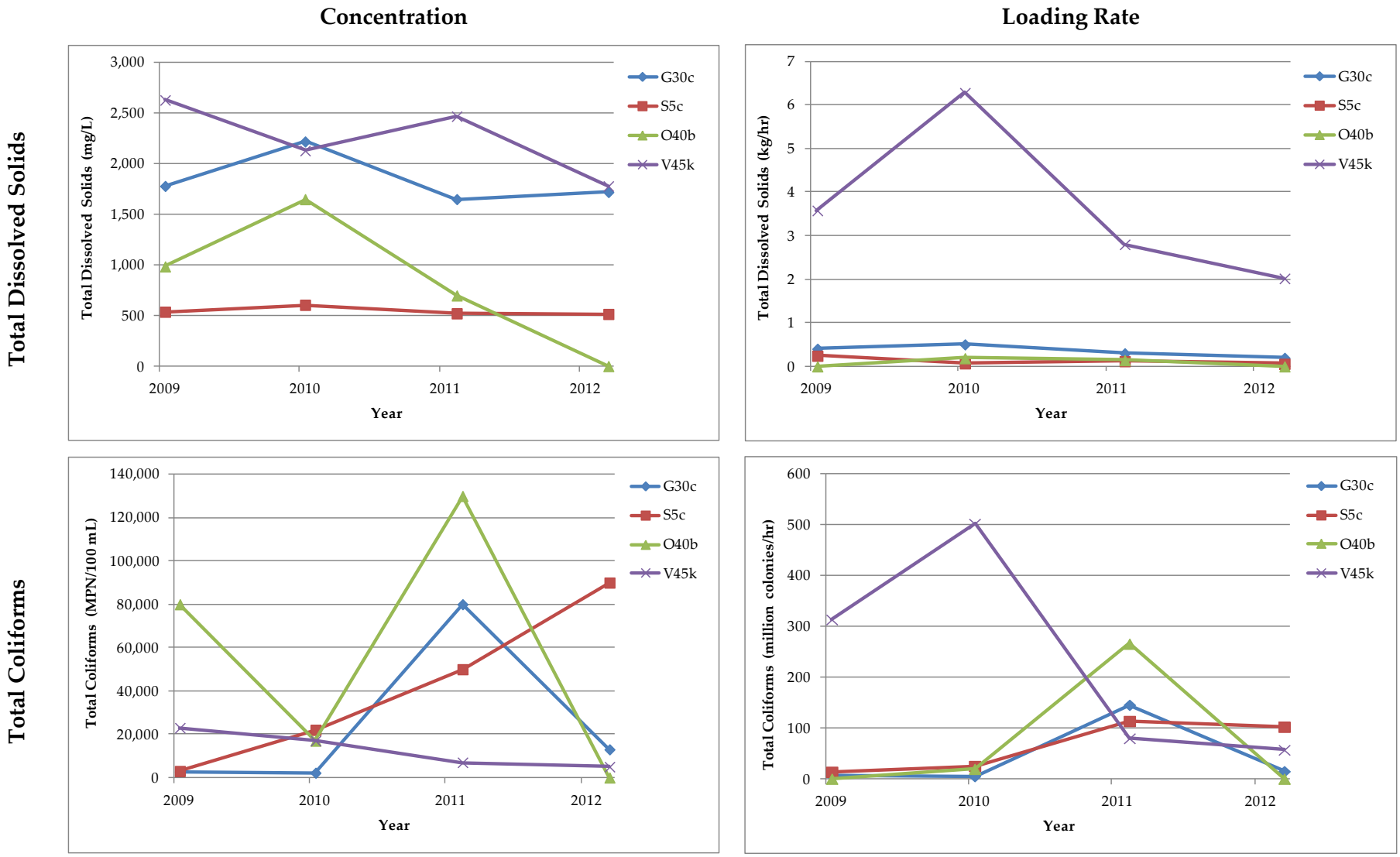

Figure 11-4: Key Constituent Concentrations and Loading Rates of MS4 Outfall Monitoring Sites (2009-2012)

Figure 11-5
Dry Weather Monitoring Historical Exceedance Summary: Field Screening Tests

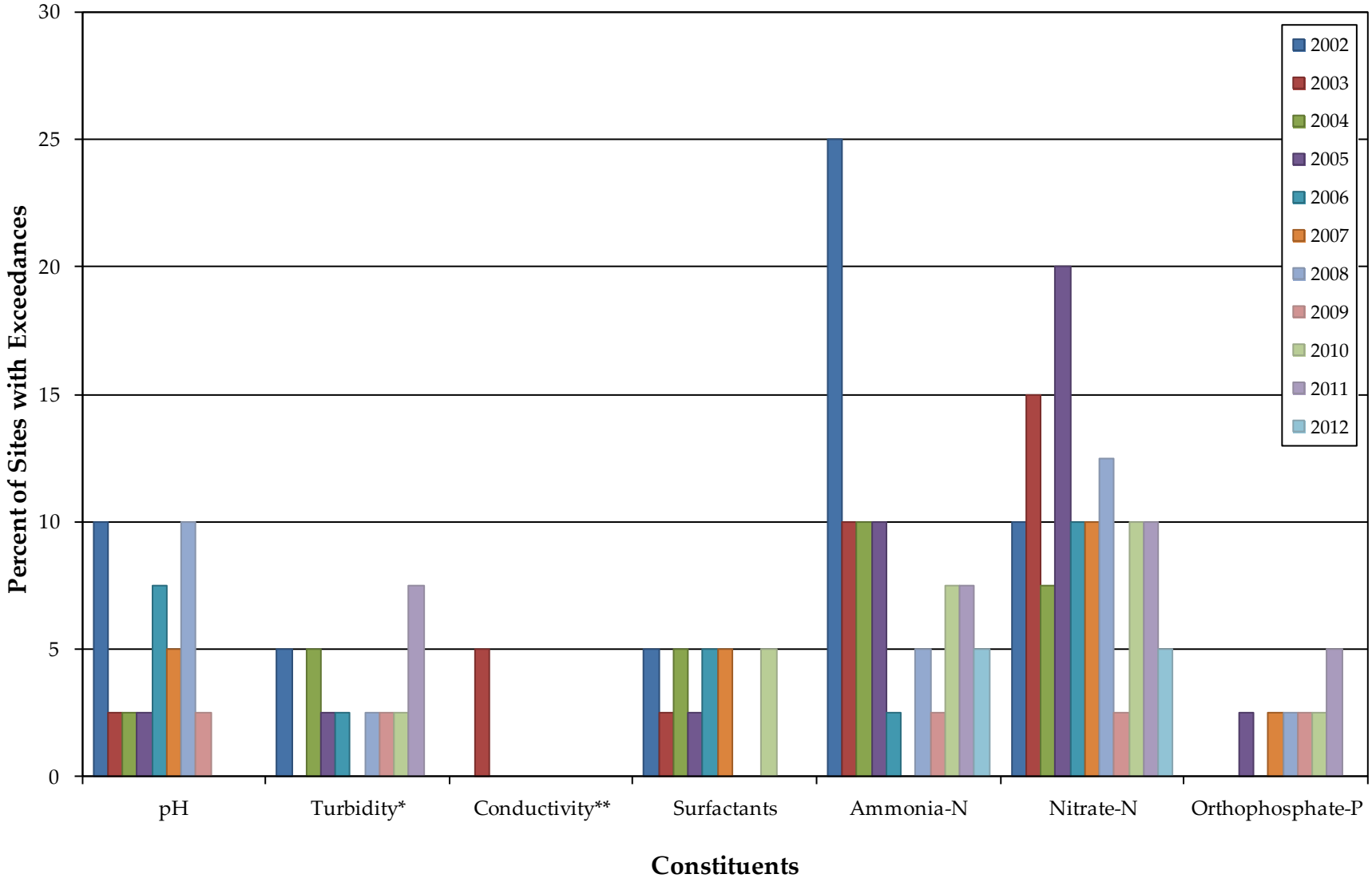

Notes:
* Turbidity action level is based on best professional judgment.
** Conductivity action levels were numeric in the past and transitioned to best professional judgment in recent years.

Figure 11-6
Dry Weather Monitoring Historical Exceedance Summary: Laboratory Analytical Tests

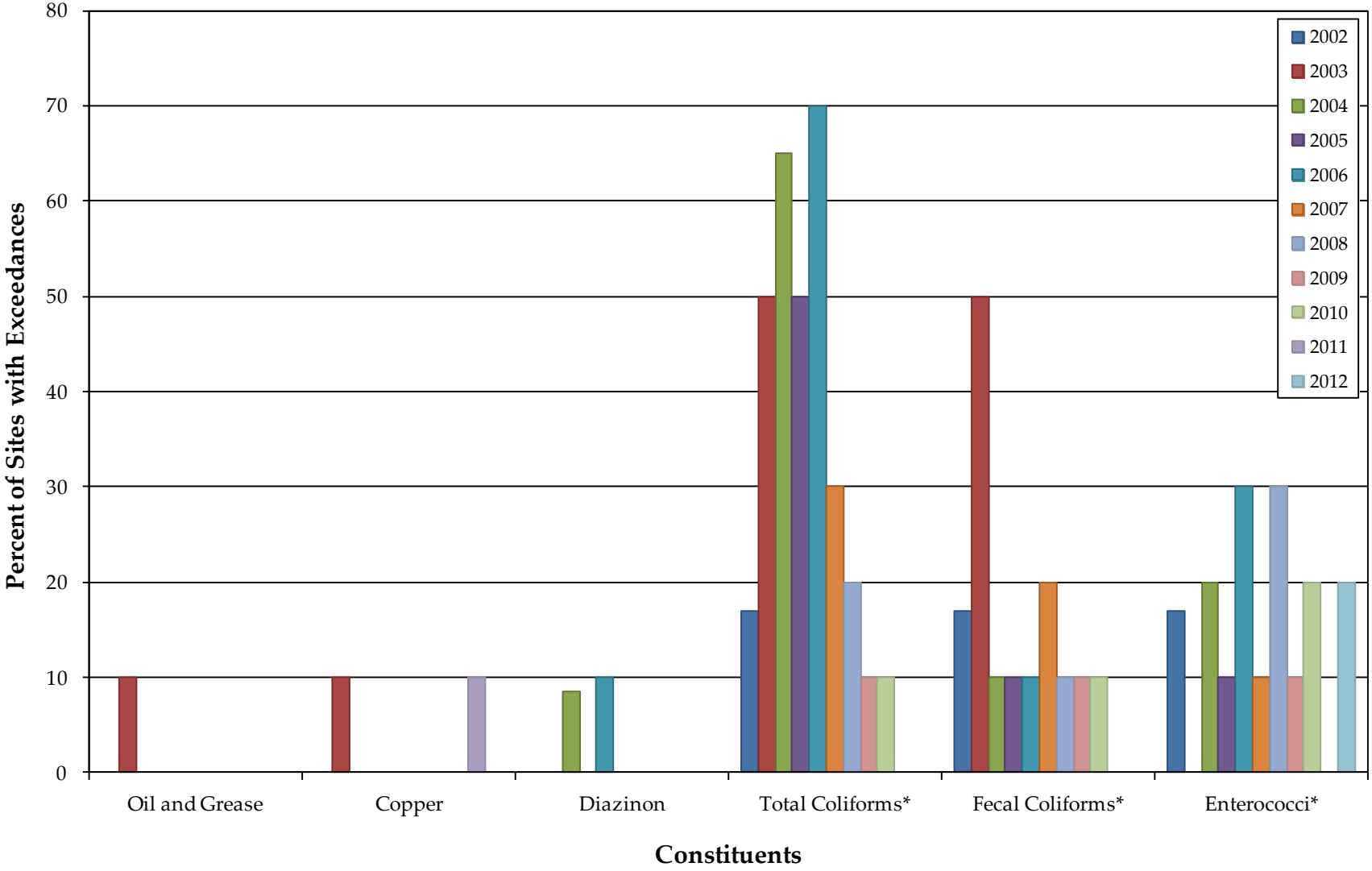

Notes: Dissolved cadmium, lead, zinc, laboratory surfactants, and chlorpyrifos have never exceeded the action level and are therefore not included on the above graph.
*Action levels for bacteria were updated in 2010. Data from 2002-2009 has been compared to action levels in effect at that time. 2010 data has been compared to the updated action levels.

Figure 11-7
Additional Study Data: pH

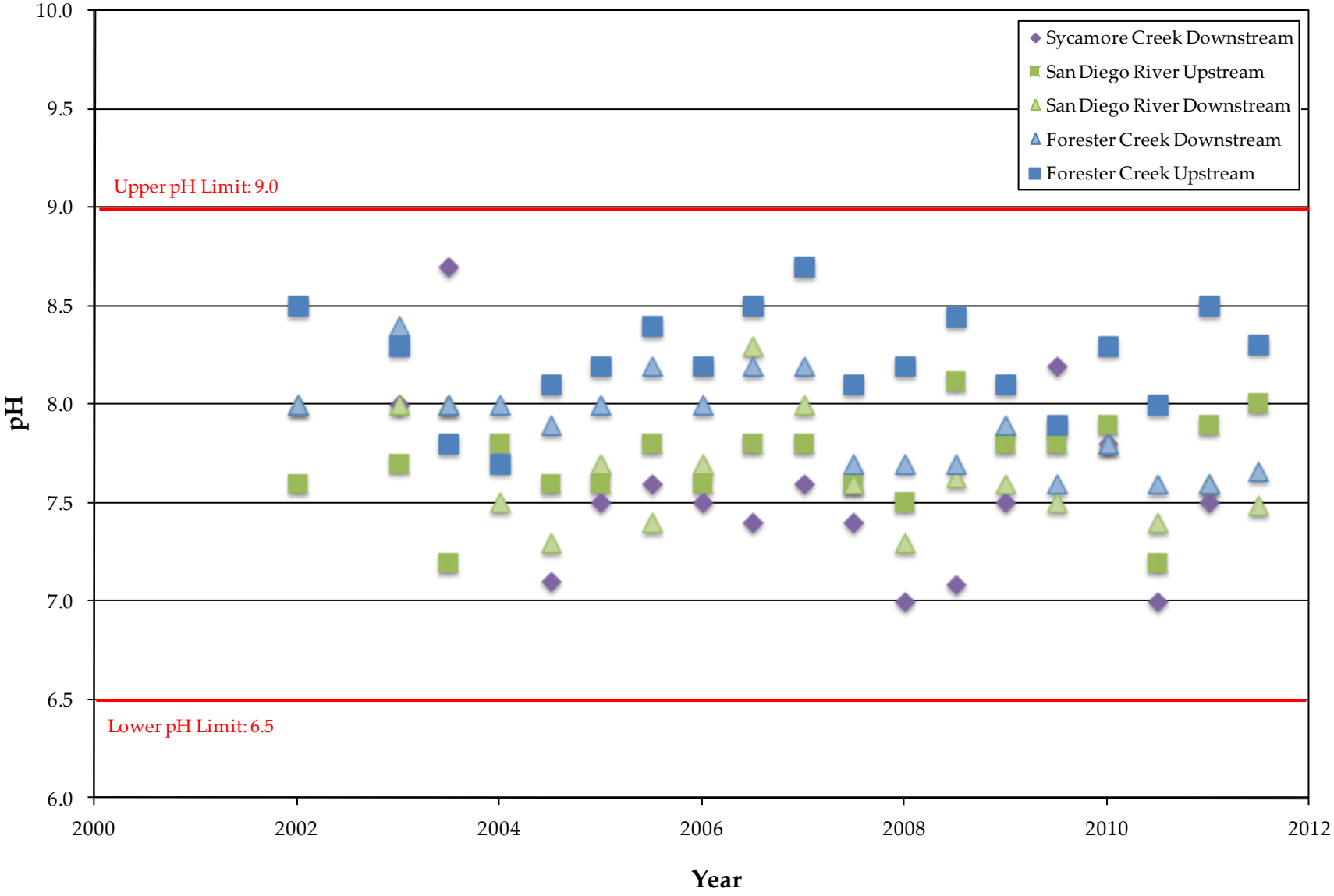

Figure 11-8
Additional Study Data: Fecal Coliforms, Forester Creek

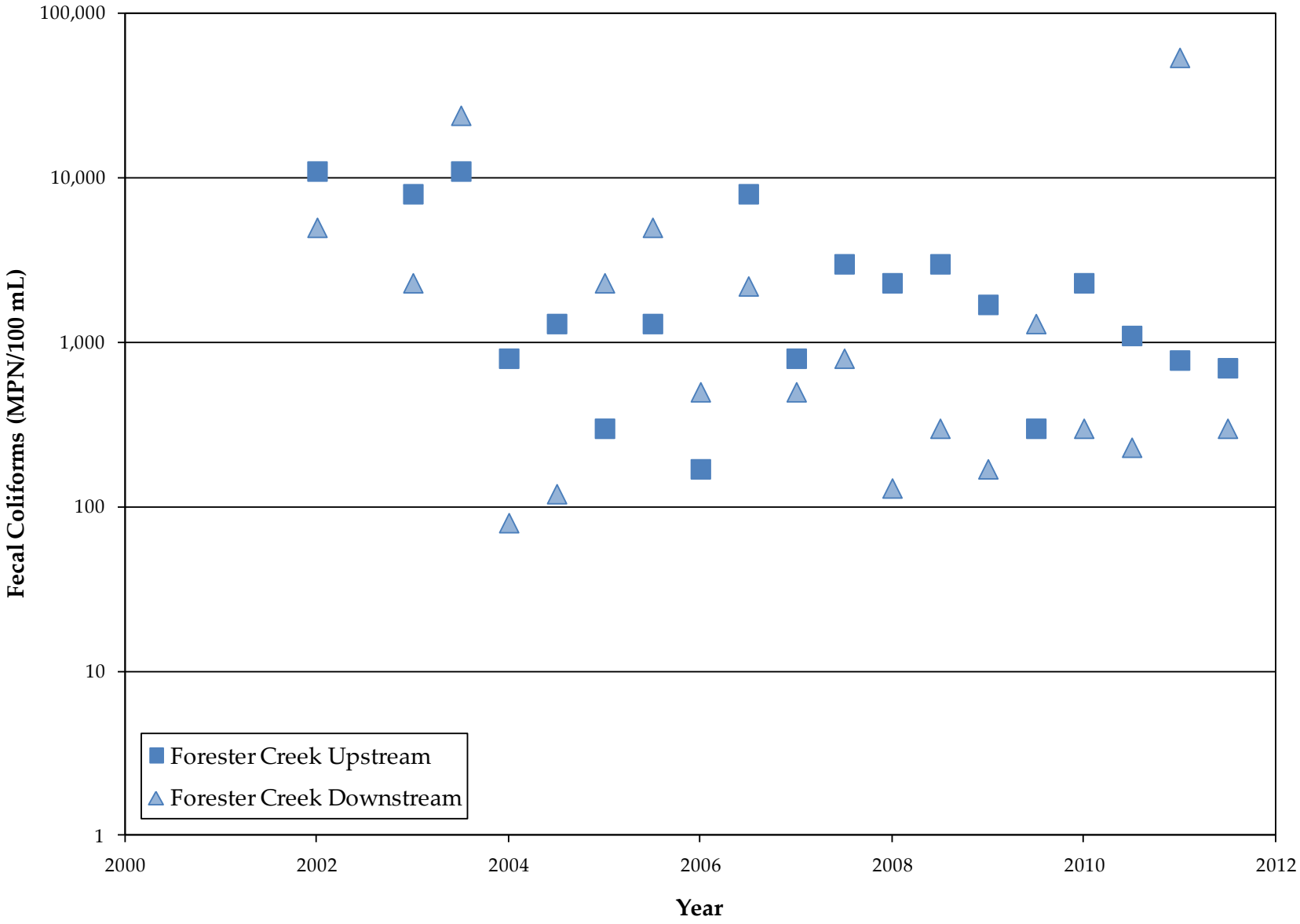

Figure 11-9
Additional Study Data: Fecal Coliforms, San Diego River

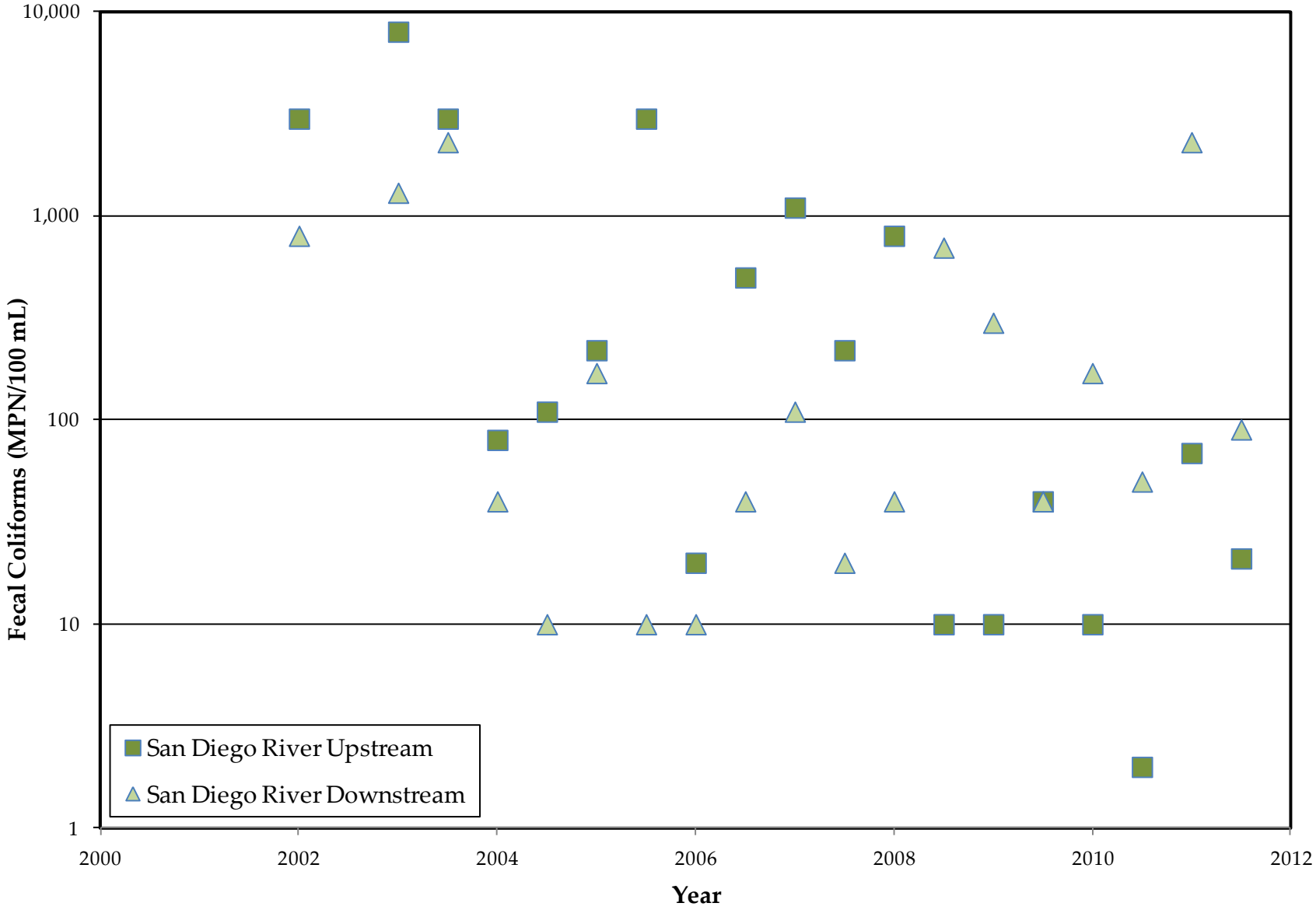

Figure 11-10
Additional Study Data: Fecal Coliforms, Sycamore Creek

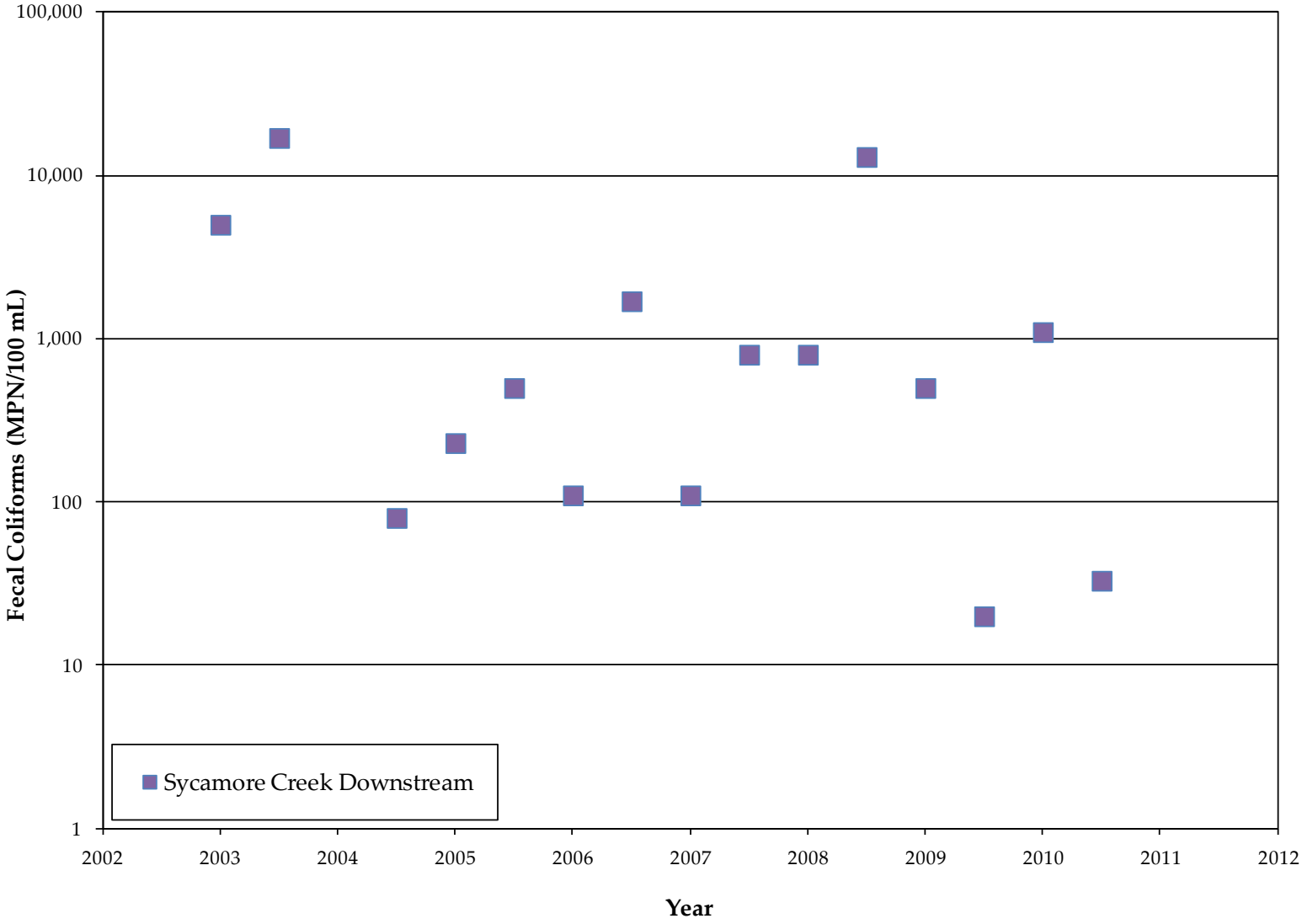

Notes: Sycamore Creek was dry during Round One and Round Two visits in the summer of 2011. Because no testing could be done, results are not shown on the graph, but the bacteria level was effectively zero since the creek was dry.

12.0 SPECIAL INVESTIGATIONS

12.1 SURFACE WATER QUALITY MONITORING

The City has completed a study that includes sampling and analysis under ambient conditions at five sites in receiving water bodies in the City from 2002 through 2011. The study includes two sites in the San Diego River, two sites in Forester Creek, and one site in Sycamore Creek. Through 2011, these sites were sampled twice per year, concurrently with the two rounds of the City's Dry Weather Monitoring Program, with the most recent round completed in late August 2011. The findings of the additional study can be found in Attachment 12.1.

Notable findings from the two rounds of monitoring in 2011 included the following:

- The majority of constituents met San Diego Basin Plan Water Quality Objectives (WQO).
- Concurrent with historical findings, no pH values exceeded WQOs at any of the water bodies assessed.
- Several bacteria results were above WQOs during Round One, which was likely a consequence of a preceding rain event (0.08 inch of rain). This rain event would not be considered to trigger wet weather conditions under *Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region, including Tecolote Creek* (Bacteria TMDL). During Round Two, bacteria levels were substantially lower. Overall, bacteria results display a decreasing trend over the course of this program.
- TDS and sulfate concentrations exceeded WQOs at the Forester Creek sites during Round 2. The TDS concentration at San Diego River Downstream was above the WQO during both rounds.
- Sycamore Creek was dry during both rounds of sampling.

12.2 COMPREHENSIVE LOAD REDUCTION PLAN (CLRP)

The City of Santee, along with other San Diego River Watershed Copermittees is listed as a discharger in the Bacteria TMDL. The City of Santee contributed to the development of the CLRP by participating in a cost-share agreement for the development of the CLRP by Geosyntec Consultants; providing data on the City, as well as completed and proposed projects; hosting and participating in CLRP development meetings and providing review comments. The CLRP and monitoring plan will be finalized during the summer of 2012 for submittal to the RWQCB during October 2012. Future storm water program efforts in the City will be primarily informed by this CLRP, as well as Municipal Permit requirements.

12.2 Regional Bacteria Reference Study

The City of Santee has contributed to the bacteria reference study that has been developed by the San Diego and Orange County Copermittees in conjunction with Southern California Coastal Water Research Project (SCCWRP) and with input from RWQCB staff. This study has been developed to assess pollutant loadings in reference conditions (i.e., unimpacted from anthropogenic activities). This data can be used to refine the requirements of the Bacteria TMDL, as they are currently developed based on data for beaches outside of the region. The data is being developed for inland waterbodies, as well as beaches. This is the first year of the multi-year study and the City will continue to contribute to this study as funds allow.

13.0 NON-EMERGENCY FIRE FIGHTING

Please reference Section 4.2.3 of this JURMP Annual Report for information about BMPs and procedures associated with non-emergency fire fighting activities.

14.0 JURMP REVISIONS

The City's JURMP was rewritten in the spring of 2008 in response to new Municipal Permit requirements. Section 14 of the updated JURMP document includes a list of the changes made to the JURMP at that time. Any other changes to the JURMP made since the overall JURMP update in the spring of 2008 are discussed in the individual "Program Review and Modification" subsections in the preceding sections in this JURMP Annual Report.

15.0 CONCLUSIONS AND RECOMMENDATIONS

During the Reporting Period, the City continued to implement the programs in its updated Jurisdictional Urban Runoff Management Plan (JURMP). A checklist matching the JURMP annual reporting requirements in the Municipal Permit with the portion(s) of this JURMP Annual Report and showing where those requirements are addressed is provided as Appendix C. The checklist demonstrates the City's compliance with applicable Municipal Permit regulations during the Reporting Period. Some notable achievements during the Reporting Period are listed below.

- The City completed 171 construction inspections. Pre-rain inspections were regularly completed at construction sites, and overall the construction inspection frequencies met and in some cases exceeded the required frequencies.
- The City conducted 185 business inspections, which is more than 25 percent of its inventory.
- Responsible parties for newly-completed priority projects are notified shortly after project completion of the requirements relating to treatment control BMP maintenance and certification.
- The City spent $116,879 to establish and maintain vegetation in the recently improved Forester Creek and Woodglen Vista Creek.
- The City has commenced a multi-year CMP storm drain replacement project.
- The City responded to 53 complaints made to its storm water hotline, to the City website, or by City staff members.
- Forty-one (41) tons of trash and debris were collected and removed during nineteen community clean-up events.
- The City removed 784 tons of debris from City streets and parking lots and 483 tons from the storm drain system.
- City streets were swept more frequently than required by the Municipal Permit.
- Residents and businesses were educated through the City's updated stormwater pages and articles including storm water pollution prevention information in the online *Santee Review*.
- The City completed one round of additional monitoring at five locations in receiving waters in the City.
- The City participated in the Bacteria Reference Study developed by copermittees in San Diego and Orange Counties.
- The City participated in the development of Comprehensive Load Reduction Plan (CLRP) for the San Diego River watershed to comply with the bacteria TMDL.

The City will continue to implement its JURMP in future reporting periods. Key components of City's plans for future program implementation include the following.

- Continue to train inspectors and contractors on BMP implementation and maintenance during construction activities.
- Continue to complete inspections before rain events, including inspections immediately preceding the rainy season, for active construction sites.
- Meet the inspection frequency requirements as stated in the Municipal Permit for the development planning (treatment control BMP), construction, municipal, and industrial and commercial components.
- Continue prompt and thorough follow-up for sites at which BMP implementation deficiencies are noted as a means to bring about improved compliance.
- Continue to develop new methods of outreach for the residential, industrial and commercial, development planning, and construction communities.
- Continue to document and respond to complaints reported to the City's storm water hotline.
- Continue to complete the City's Dry Weather Monitoring Program and to investigate any exceedances noted during routine testing.
- Increase the number of opportunities for public participation and facilitate participation in such events.
- Implement the CLRP and monitoring plan for the bacteria TMDL.
- Participate in the regional reference study, as funds allow.

The City will continue to work collaboratively with the RWQCB and other jurisdictions on both the development of the draft Municipal Permit and the TMDL requirements. The City will and continue to refine its program implementation as needed to improve its ability to reduce or eliminate the potential for pollutant discharges and meet regulatory requirements. As this Annual Report demonstrates, the City continues to contribute substantial efforts to improve water quality in the San Diego River watershed.

16.0 REFERENCES

California Regional Water Quality Control Board, 2007. Order No. R9-2007-0001. *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Construction.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Industrial & Commercial.*

California Storm Water Quality Association, 2003. *California Storm Water BMP Handbook – Municipal.*

California Storm Water Quality Association, 2007. *Municipal Stormwater Program Effectiveness Assessment Guidance.*

Caltrans Storm Water Quality Handbooks, 2003. *Construction Site Best Management Practices Manual.*

City of Santee, 2008. *Jurisdictional Urban Runoff Management Program.*

County of San Diego, 2007. *Standardized Format for Jurisdictional Urban Runoff Management Plan Annual Report.*

PBS&J, 2009. *Standardized Fiscal Analysis Method and Format.*

APPENDIX A.1

PERMANENT TREATMENT CONTROL BMP INVENTORY

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
1	Altair	384-120-40	907.12	G963	12/22/09	Hydrodynamic separator, inlet filters (7)	Altair HOA	c/o Adriana Machuca, 3944 Murphy Canyon Rd, San Diego, CA 92123	High
2	American Sheet Metal	8674 Railroad Avenue	907.12	G-1003	4/4/08	Grassy swale	Ron Burner Jr.	8674 Railroad Avenue, Santee, CA 92071	Low
3	AT&T Fleet Storage**	10111 Prospect Avenue	097.13	G-1124	9/23/10	Grassy swale	Perry and Shaw Inc.	475 West Bradley, El Cajon CA 92020	Medium
4	Aubrey Glen	Hiser Road and Mission Gorge Road	907.12	G-942	06/20/08	Hydrodynamic Separator System	Aubrey Glen HOA	c/o N. N. Jaeskchay 9610 Waples Street San Diego, CA 92121	Medium
5	Autowerks	383-112-53	907.12	DR-02-10 / G818	12/15/04	Drainage inserts and grass swales	Philip H. Thearle II	8890 Mission Gorge Road, Santee CA 92071-3718	Medium
6	Autumnwood II	381-681-20	907.12	TM02-03	11/15/05	Hydrodynamic Separator System (2)	Kingsman LLC	11459 Woodside Avenue, Santee CA 92071-4729	Medium
7	Black Horse Estates*	385-010-34, -35	907.12	TM 2000-02	12/13/06	Filter inserts (5), detention basin.	City of Santee	NA	Medium
8	Boys and Girls Club	8820 Tamberley Way	907.12	G-907	06/16/08	Grassy swale, drainage inserts.	Boys and Girls Club	8820 Tamberley Way, Santee, CA 92071	Medium
9	Cabins at Lake 7	378 020 49, 376 010 07	907.12	G-1126	02/16/11	Wet pond	Padre Dam Municipal Water District	9300 Fanita Parkway, Santee, CA 92071	Low
10	Cameron II	10580 Prospect	907.13	G-947	1/23/08	Grassy swale, drainage insert (1)	Cameron Brothers Construction	10580 Prospect Avenue, Santee, CA 92071	Medium

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
11	Chapparel (Mission View Estates)	West of Mesa Road.	907.12	G-1043	10/11/10	Bioswales (2) and media filter.	PHOAC	8181 Mission Gorge Road, Suite E, San Diego 92120	Medium
12	Ciraolo Industrial Building	381-540-10 and 11	907.12	G-905/DR04-09	1/5/06	Inlet filters, grass swale, downspout filters	Ciraolo Family Partners	9327 Wheatlands Road, Santee, CA 92071-2860	Medium
13	Cuyamaca Town Common	APN 381-051-01	907.12	G-873	09/05	Drainage inserts (4)	Property Owner	c/o Treitler and Hager LLP, 3737 Camino Del Rio South, Suite 109, San Diego CA 92108-4007	Medium
14	Express Performance	APN 384-141-03	907.12	G1021	5/29/08	Media filter and drainage inserts (2)	Scott and Barbara Young	8711 Magnolia Avenue, Santee, CA 92071	Medium
15	Farrington Court	Farrington Drive, west of Fanita	907.12	G-910	8/16/07	Drainage insert	Brian Snow	LUCA Inc., 8534 Hubbles Lane, Santee, CA 92071	High
16	Fred's Fences	384-250-24	907.13	G-951	10/28/07	Swale and drainage inserts	Fadi Khouri	Fred's Fencing, 10546-60 Kenney Street, Santee, CA 92071	Medium
17	Hartford Insurance*	381-050-59	907.12	DR 2002-04	12/17/03	Vegetated swale, rocky swale, and drainage inserts (3).	Hartford	101 Civic Center Dr, Santee CA 92071	Medium
18	Ladera (Morning View)**	South Woodside Terrace	907.12	G-920	5/24/12	Detention Basin	City of Santee	NA	High
19	Lunar Lane Industrial Building	384-091-38, -39	907.12	G-1118	05/16/11	Bioretention area and cobble swale	Sunset Glazing	8834 La Mesa Boulevard, La Mesa, CA 91942	Low

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
20	Marketplace	Hazeldon Drive and Mission Gorge Road	907.13	G-1052	12/12/08	Grassy swale, infiltration trench, water quality inlets (4), drainage inserts (2).	Tony Gentry	Sudberry Properties Inc., 5465 Morehouse Drive, Suite 260, San Diego, CA 92121	High
21	Michael Stoff Property	9242 Abraham Way	907.12	G-1003	7/28/08	Grass swale	9424 AW LLC	6749 Top Gun Street Suite 104 San Diego, CA 92121-4151	Medium
22	Morningside	384-081-16	907.12	G-851	12/14/05	Hydrodynamic Separator System	Property Owner	Walters Management, 9665 Chesapeake Drive, Suite 300, San Diego, CA 92123	Medium
23	Padre Dam Service Center*	9300 Fanita Parkway	907.12	G-704	1/5/06	Drainage inserts (6)	Padre Dam Municipal Water District	John Dedonato PO Box 719003, Santee, CA 92072-9003	High
24	Prospect Glen*	Northwest corner of Fanita and Prospect	907.12	G-739	11/19/07	Drainage inserts (3)	Prospect Glen HOA	c/o Harland Associates, 8580 La Mesa Boulevard, Suite 105, La Mesa CA 91941	High
25	Rayo Wholesale*, Rayo II***	11495 Woodside Avenue (382-310-16, -17, -18)	907.12	IP 2001-04, G-1041	12/30/02, 06/24/08	Grass swale, Grassy detention basin with sand cone filter	Kingsmen LLC	11495 Woodside Avenue, Santee CA 92071	Medium
26	Riverwalk**	381-051-08	907.12	G924	9/15/11	Grassy swales (5) drainage inserts (25)	Allegis Residential Services	7857 Convoy Court, San Diego, CA 92111	High

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
27	Santee Affordable (Cedar Creek Apartments)	386-192-39	907.12	G-1114	09/24/10	Bioretention facility	Fanita 48 L.P. c/o Chelsea Development Incorporated	Mr. Bob Haskins, 5993 Avenida Encinas, Suite 100, Carlsbad, CA 92056	Low
28	Santee Trolley Square*	381-052-02	907.12	P2001-06	12/17/03	Inlet filters (12)	Vestar Property Management	Ms. Dana Duncan, 2907 Shelter Island Drive, San Diego, CA 92106	High
29	Sky Business Park	384-091-45	907.12	G-1062	03/23/09	Grass swale, media filter, drainage insert.	Sky Investments Ltd Partnership	Mr. Charles P. Sampson Jr., 8779 Cottonwood Avenue, Santee, CA 92071	Medium
30	Sonic Car Wash	383-121-44	907.12	G-974	8/29/07	Vegetated swale and drainage insert (3)	Kalasho Inc.	Ghazwan Kalasho, 9312 Mission Gorge Road, Santee, CA 92071	Medium
31	Sonic Restaurant	384-091-65, -07	907.12	G-1088	04/02/09	Grass swale	Sonic Restaurant	Ms. Laura Hamelin Sonic Restaurant, 10515 Mission Gorge Road, Santee, CA 92071	Medium
32	Sunset Trails (Lanterncrest III)**	11010 Sunset Trails	907.12	G-1141	5/23/12	Bioretention Facility	Santee Senior Retirement Communities	Michael Grant, 110 Town Center Parkway, Santee, 92071	High
33	Town Center Community Park	381-050-51, 52, and 381-051-06, 07	907.12	2005185	6/29/2010	Media Filter, bioswales (5), buffer strips (2), inlet filters (5)	Sportsplex USA – Santee (media filter only), City of Santee	Mr. Eddie Vandiver, PO Box 711900, Santee, CA 92072	High

APPENDIX A.1
INVENTORY OF DEVELOPMENT PROJECTS WITH APPROVED TREATMENT CONTROL BMPS

#	Project Name	Address or APN	Watershed	Project Number	Date Completed	BMP Description	Responsible Party	Responsible Party Mailing Address	TTWQ Priority
34	Toyota	383-124-11	907.12	G1067	10/14/09	Extended detention basin, bioretention, inlet filters (8)	Toyota of Santee	Mr. Jeremy Cadwell, 965 Arnele Avenue, El Cajon CA 92020	Medium
35	Treviso	Northeast corner Mission Gorge Road and Westhills Parkway	907.12	G-857	10/8/08	Hydrodynamic separator and drainage inserts (2)	Treviso HOA	c/o Melanie Hudson, 3944 Murphy Canyon Road, Suite C205, San Diego CA 92123	High
36	Vista Este*	386-192-18	907.12	G-736/ TM200-03	9/20/06	Inlet filters (2)	Vista Este HOA	c/o The Daniels Company Mr. Jim Daniels, 843 Jamacha Road, El Cajon CA 92019	High
37	Walgreens 1	9305 Mission Gorge Road	907.13	G987	6/3/09	Media filter	Walgreens	Chris Mylek 12298 Pipeline Avenue Chino, CA 91710	High
38	Walgreens 2	10512 Mission Gorge Road	907.12	G1066	12/31/09	Vegetated swale, media filter	Walgreens	Chris Mylek 12298 Pipeline Avenue Chino, CA 91710	Low

Notes

* Project approved prior to development of the City's SUSMP requirements

** Priority Projects that were completed during the 2011/2012 fiscal year

*** These two projects were combined into one listing on the inventory since they are located on the same property and share the same responsible party.

APPENDIX A.2

CONSTRUCTION INVENTORY

APPENDIX A.2
CONSTRUCTION INVENTORY AND INSPECTION SUMMARY

#	Project Name	Watershed	TTWQ	Weeks Active (Wet Season)	# of Insp. (Wet Season)	# of Insp. (Dry Season)	Follow Up Insp.	Complaint Investigation Insp.	Total Insp.
1	Forester Square	907.13	Low	8	3	2	0	0	5
2	Ladera/Morning View	907.12	High	29	25	4	3	0	29
3	Las Brisas	907.12	Medium	19	10	1	0	0	11
4	Mission Trails Villas	907.12	Low	30	16	4	2	0	20
5	Riverwalk	907.12	Low	0	0	3	1	0	3
6	Ryan Residence	907.12	Low	30	21	1	5	1	22
7	Sky Ranch	907.12	High	30	22	6	2	0	28
8	Sunset Trails (Lanterncrest III)	907.12	High	28	32	6	15	0	38
9	Woodside Properties	907.12	High	12	12	3	0	0	15

APPENDIX A.3

MUNICIPAL INVENTORY

APPENDIX A.3
MUNICIPAL INVENTORY

#	Facility Name	Facility Address	TTWQ	Watershed	Facility Category
1	Big Rock Park	8125 Arlette Street	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
2	Fire Station No. 4	8950 Cottonwood Avenue	High	San Diego River	Fire Stations
3	Fire Station No. 5	9130 Carlton Oaks Drive	High	San Diego River/Forester Creek	Fire Stations
4	Forester Creek Trail	West side of creek between Mission Gorge Road and Prospect Avenue	High	Forester Creek	Parks, Recreational Facilities and Other Landscaped Areas
5	Graffiti Removal	Throughout City	High	All	Mobile Municipal Activities
6	Infrastructure Maintenance	Throughout City	High	All	Mobile Municipal Activities
7	Landscaping	Throughout City	High	All	Mobile Municipal Activities
8	Mast Park including Mast Park West	9125 Carlton Hills Boulevard and west of 9125 Carlton Hills Boulevard	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
9	Municipal Separate Storm Sewer	Throughout City	High	All	MS4
10	Public Services Operations Center	9534 Via Zapador	High	San Diego River/Forester Creek	Public Works Facilities
11	Roads, Streets, Highways	Throughout City	High	All	Roads, Streets, Highways, and Parking Facilities
12	Santee Mini Park	10446 Mission Gorge Road	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
13	Shadow Hill Park	9161 Shadow Hill Road	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
14	Sky Ranch Park	Southeast corner of Sevilla Street and Cala Lilly Street	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
15	Special Events	Throughout City	High	All	Special Events

APPENDIX A.3
MUNICIPAL INVENTORY

#	Facility Name	Facility Address	TTWQ	Watershed	Facility Category
16	Town Center Community Park	9545 Cuyamaca Street	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
17	Vehicle Maintenance Facility	8950 Cottonwood Avenue	High	San Diego River	Public Works Facilities
18	West Hills Park	8751 Mast Boulevard	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
19	Woodglen Vista Park	10250 Woodglen Vista Drive	High	San Diego River	Parks, Recreational Facilities, and Other Landscaped Areas
20	City Activity Building #1	8115 Arlette Street	Low	San Diego River	Other Fixed Facilities
21	City Activity Building #2	10335 Mission Gorge Road	Low	San Diego River	Other Fixed Facilities
22	Santee City Hall and Civic Center	10601 Magnolia Avenue	Low	San Diego River/Woodglen Vista Channel	Other Fixed Facilities
23	Santee Teen Center	9310 Fanita Parkway	Low	San Diego River	Other Fixed Facilities

APPENDIX A.4

INDUSTRIAL/COMMERCIAL INVENTORY

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	JAFCO BUILDING SERVICES INC	10728	109	PROSPECT AVENUE	Santee	92071	907.13	1511	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	D C R CONSTRUCTION SERVICES	9440	4	WHEATLANDS	Santee	92071	907.12	1521	Base for construction contractor. No outdoor exposures. Some indoor storage, minimal work done onsite, as space mostly used for administrative purposes.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	FRY SPECIALTY COMPANY	11316	G	WOODSIDE AVENUE	Santee	92071	907.12	1521	Used for administrative purposes for construction contracto	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	GORDON-PRILL SAN DIEGO INC.	8400	F	MAGNOLIA AVENUE	Santee	92071		1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	HARPER CONSTRUCTION	7819	C	RANCHO FANITA DRIVE	Santee	92071	907.12	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	JACOR CONSTRUCTION	8614		SIESTA ROAD	Santee	92071	907.13	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	SNOW CONSTRUCTION (also R.E. SNOW)	10107	A	PROSPECT AVENUE	Santee	92071	907.13	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	T S C RESTORATION	8402	C	MAGNOLIA AVENUE	Santee	92071	907.13	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	TIMBER RIDGE FRAMING INC	10744	109	ROCKVILL STREET	Santee	92071	907.12	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	A Revitalized Bath And Kitchen	9435	D	Wheatlands	Santee	92071	907.12	1521	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	AUSTIN CONSTRUCTION, JAMES F	9540	103	PATHWAY STREET	Santee	92071	907.13	1522	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	OLD SWEDE REPAIRS	8500		ABLETTE ROAD	Santee	92071	907.13	1522	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	FORDYCE CONSTRUCTION	9926	122	PROSPECT AVENUE	Santee	92071	907.13	1542	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Low	No
SA	KALIN ENTERPRISES INC	9540	201	PATHWAY STREET	Santee	92071	907.13	1542	Base for construction contractor, office, potential for outside storage of equipment, materials and waste.	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	COUVRETTE BUILDING SYSTEMS	8665	D	ARGENT STREET	Santee	92071	907.13	1542	Base for contractor installing ATM kiosks, some outside storage of equipment observed.	No	Yes	Yes	No	Yes	No	No	No	Yes	No	Low	Yes
SA	Interstate Striping of California	8511	#B	ABLETTE ROAD	Santee	92071	907.13	1611	Base for contractor installing road striping, some outside storage of equipment observed.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	SUPERIOR ASPHALT	9211		SECURITY WAY	Santee	92071	907.12	1611	Base for contractor installing streets and roads, office, outside storage of equipment and materials.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	Yes
SA	Provost Inc Dba Traffic Tech	11366	B	WOODSIDE AVENUE	Santee	92071	907.12	1611	Base for street and parking lot contractor, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	High	No
SA	T C CONSTRUCTION CO INC	10540		PROSPECT AVENUE	Santee	92071	907.13	1623	Base for contractor installing sewer and water infrastructure. Outside storage of materials, wastes and equipment. Largely gravel or soil surface. Indoor equipment washing facility.	No	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Medium	Yes
SA	BOCK COMPANY	8510		RAILROAD AVENUE	Santee	92071	907.12	1623	Base for underground Utility contractor. Outside storage of equipment. Yard permeable (soil or gravel).	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	TAYLOR INC DBA:, K.	8614	D	ARGENT STREET	Santee	92071	907.13	1623	Base for contractor installing sewer and water infrastructure. Potential for outside storage of materials, wastes and equipment.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Woodruffs Trenching Inc	9735		PROSPECT AVENUE	Santee	92071	907.13	1623	Base for trenching contractor used for storage of excavation equipment. Yard permeable (soil or gravel).	No	No	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	PRECISION EXCAVATION	9713		MAST BOULEVARD	Santee	92071	907.12	1629	Base for contractor in heavy construction. Potential for outside storage of materials, wastes and equipment.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Bluewater Marine & Dock Specialties	10520		KENNEY STREET	Santee	92071	907.13	1629	Base for contractor for marine dock fabrication.	No	Yes	Yes	No	Yes	No	No	No	Yes	No	Medium	Yes
SA	COMFORT MECHANICAL INC	10740	404	KENNEY STREET	Santee	92071	907.13	1711	Base for contractor working in plumbing, heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	COUNTY HEATING AND AIR CONDITIONING	10020		PROSPECT AVENUE	Santee	92071	907.13	1711	Base for contractor working in heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	FICK & SON PLUMBING INC, R L	10740	405	KENNEY STREET	Santee	92071	907.13	1711	Base for contractor working in plumbing, heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	HALE & SONS INC	8626		SIESTA ROAD	Santee	92071	907.13	1711	Base for contractor working in plumbing, heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	IDEAL MECHANICAL	8524		ABLETTE ROAD	Santee	92071	907.13	1711	Base for contractor working in plumbing, heating and air conditioning, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	JERRY'S HEATING AND AIR CONDITIONING	9717		AIRPORT VISTA WAY	Santee	92071	907.13	1711	Contractor installing and service heaters and airconditioners, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	PARADISE MECHANICAL, Inc. DBA PMI HEATING & AIR	9260		ISAAC STREET	Santee	92071	907.12	1711	Contractor installing heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	R H J HI-TECH AIR CONDITIONING*	10107	B	PROSPECT AVENUE	Santee	92071	907.13	1711	Homebase for air conditioning and heating contractor, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	R L FICK & SON PLUMBING INC	10740	405	KENNEY STREET	Santee	92071	907.13	1711	Contractor installing heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	SAN DIEGO PLUMBING AND HEATING	8775		RAILROAD AVENUE	Santee	92071	907.12	1711	Contractor installing plumbing, heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	SCHOONMAKER HEATING & AIR CONDITIONER	8733	121	MAGNOLIA AVENUE	Santee	92071	907.12	1711	Base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	SOCAL PLUMBING HEATING DRAINS	10027	F	PROSPECT AVENUE	Santee	92071	907.13	1711	Base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	SWAIN ENTERPRISES	10017		PROSPECT AVENUE	Santee	92071	907.13	1711	Base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Under Pressure Testing*	10786	C	JEANNE TERRACE	Santee	92071	907.12	1711	Home base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Westwind Mechanical	10439	M	PROSPECT AVENUE	Santee	92071	907.13	1711	Base for contractor working on plumbing, air conditioning and heating, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	L Seven 'n' Company, Inc.	8775		RAILROAD AVENUE	Santee	92071	907.13	1711	Base for contractor who services hoods and ducts, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	Hurn Mechanical Heating & Cooling	8711	200	MAGNOLIA AVENUE	Santee	92071	907.12	1711	Contractor installing heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Interpipe Contracting Inc	10870		HARTLEY ROAD	Santee	92071	907.12	1711	Contractor installing plumbing, heating and airconditioning systems, potential for outside storage.	No	No	Yes	No	No	No	No	No	Yes	Yes	Low	No
SA	Peterson Drain Services	11017	1	WOODSIDE AVENUE	Santee	92071	907.12	1711	Service and repair of drains.	Yes	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Medium	No
SA	DIAMOND PAINTING*	8301	52	MISSION GORGE ROAD	Santee	92071	907.12	1721	Painting contractor, possible homebase, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	L.R. KNIGHT PAINTING*	9744		VOMAC ROAD	Santee	92071	907.12	1721	Home-base for painting contractor, all materials held in trailer, no outside exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	NEW IMAGE PAINTING DESIGN	10744	105	ROCKVILL STREET	Santee	92071	907.12	1721	Painting and paper hanging contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	A-Advanced Electrical & Communications Cabling Company*	8710		RUOCCO ROAD	Santee	92071	907.12	1731	Home-base for electrical contractor, potential for outside storage	No	No	No	No	No	No	No	No	No	No	Low	No
SA	American Automatic Fire	9510	B	PATHWAY STREET	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	ARC LIGHTING AND ELECTRIC	10054	I	PROSPECT AVENUE	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	BARNER ELECTRIC	9435	K	WHEATLANDS	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	CLASSIC ELECTRIC	8531		ABLETTE ROAD	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	COPPER ELECTRIC	10054	T	PROSPECT AVENUE	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	Yes
SA	G A ELECTRIC CORP	10520		KENNEY STREET	Santee	92071	907.13	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	JAMAR ELECTRIC*	9830	D	PROSPECT AVENUE	Santee	92071	907.13	1731	Base (possibly home) for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	STANDARD ELECTRONICS	9340		STEVENS ROAD	Santee	92071	907.12	1731	Base for electrical contractor, potential for outside storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	EcoGreen Recycling	9540	105	PATHWAY STREET	Santee	92071	907.13	1731	Electronic recycling and shipping facility. Electronics collected and packed onto pallets prior to shipping. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Paving Stone Of San Diego	9440	6	Wheatlands	Santee	92071	907.12	1741	Base for paving contractor, likely working offsite, potential for outside storage.	No	No	Yes	No	No	No	No	Yes	Yes	No	Medium	No

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	DeCrescente's Drywall & Texture*	8748		WAHL STREET	Santee	92071	907.12	1742	Home base for contractor working offiste in drywall patch & repair (residential). All outside storage is contained under cover.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Precision Interiors	10612	102	PROSPECT AVENUE	Santee	92071	907.13	1742	Base for subcontractor working offsite in drywall, t-bar celings and demolition. Potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	East County Tile & Marble	9855		PROSPECT AVENUE	Santee	92071	907.13	1743	Base for commercial subcontractor working in ceramic tile & marble installation. Office and indoor storage of materials.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	ASHWOOD CABINETS	8733	137	MAGNOLIA AVENUE	Santee	92071	907.12	1751	Base for carpentry contractor. Some woodworking and spray booth onsite. No outdoor exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	COMMERCIAL OPENINGS	8630	A	ARGENT STREET	Santee	92071	907.13	1751	Base for contractor who supplies and installs doors, frames and hardware for commercial use. Potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	E.C. CABINETS	8402	H	MAGNOLIA AVENUE	Santee	92071	907.13	1751	Base for carpentry work (garage, closets and kitchen cabinets), all work done indoors, no outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	GT DOOR, Inc.	10728	E	PROSPECT AVENUE	Santee	92071	907.13	1751	Base for commercial door, frank & hardware supplier. Potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	K C ARCHITECTURAL RESTORATIONS	8507		ABLETTE ROAD	Santee	92071	907.13	1751	Base for construction contractor, potential for outside storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	FREEMAN'S CARPETS AND BINDING	10205		PROSPECT AVENUE	Santee	92071	907.13	1752	Base for floor laying and other floor work, potential for outside storage.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	No
SA	Valley Floor Covering	9945		PROSPECT AVENUE	Santee	92071	907.13	1752	Sales and installation of carpet, sheet vinyl, ceramic tile. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	No
SA	Burness Flooring*	10018		THREE OAKS WAY	Santee	92071	907.12	1752	Home base for contractor working in floor laying and other floor work, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	McKay Roofing Co. Inc.	10622		KENNEY STREET	Santee	92071	907.13	1761	Base for contractor working in roofing, siding and sheet metal. Vehicles parked in gravel area, roofing materials stored on pallets in gravel area, but most materials usually delivered directly to jobsite.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	Yes
SA	MISSION VALLEY ROOFING INC	9908		PROSPECT AVENUE	Santee	92071	907.13	1761	Base for contractor working in roofing, siding and sheet metal. Potential for outside storage.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	Blue Moon Pools	8606	H	ARGENT STREET	Santee	92071	907.13	1771	Base for contractor working in pool and spa renovation. Outside storage of materials, spills likely during loading/unloading activities.	No	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Low	Yes
SA	MORELLO CONCRETE CONST. INC.	8534		HUBBLES LANE	Santee	92071	907.13	1771	Base for concrete contractor, facility hardscaped and used for vehicle parking and equipment storage.	No	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Low	No
SA	Angus Asphalt Inc.	9959		PROSPECT AVENUE	Santee	92071	907.13	1771	Base for asphalt and concrete construction. Vehicle fueling and maintenance Is performed onsite. All hazardous materials kept under cover / contained. Drip pans are under all vehicles.	No	Yes	No	No	Yes	Yes	No	Yes	No	No	Medium	Yes
SA	RCI Reinforcing Steel Contractor	9409		ABRAHAM WAY	Santee	92071	907.12	1791	Base for steel work contractor, office and indoor storage. No outside exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	RUSSELL GLASS	9440	13	WHEATLANDS	Santee	92071	907.12	1793	Base for glass and glazing work. Most storage indoors, some glass stored outside on racks.	No	No	No	No	No	Yes	No	No	No	No	Low	No
SA	SEA VIEW GLASS*	10307		CAREFREE DRIVE	Santee	92071	907.12	1793	Home base for glass and glazing contractor, potential for outside storage	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	TOWER GLASS INC	9570	A	PATHWAY STREET	Santee	92071	907.13	1793	Specialty contractor for glass and glazing, some outside storage of glass and frames.	No	No	Yes	No	No	Yes	No	No	Yes	No	Medium	Yes
SA	A & D Fire Protection	11465	1	WOODSIDE AVENUE	Santee	92071	907.12	1799	Base for fire protection installation contractor. Some outside storage and potential for oil leaks on unpaved yard. No storm drain inlet adjacent to property.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	Yes
SA	American Fence Co.	9944		PROSPECT AVENUE	Santee	92071	907.13	1799	Temporary fence installation company, base for office and outside storage of temporary fence panels. Property paved.	No	Yes	Yes	No	No	Yes	No	Yes	No	No	Low	Yes
SA	AWNING PRODUCTS UNLIMITED	8540	B	ABLETTE ROAD	Santee	92071	907.13	1799	Base for manufacture and installation of fabric awnings. Office and yard. Potential for outside storage.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	CRAFTERS FENCE	8606	A	ARGENT STREET	Santee	92071	907.13	1799	Base (office) for fence contractor.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	GANDER COMPANY INC, THE	8665	B-2	MISSION GORGE ROAD	Santee	92071	907.12	1799	Base (office/indoor storage) for refrigeration of equipment/supplies.	No	Yes	Yes	No	No	Yes	No	No	No	No	Low	No

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SA	GOLDEN STATE GARAGE DOORS	10540		KENNEY STREET	Santee	92071	907.13	1799	Base for contractor installing garage doors, potential for outside storage	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	JOHN'S CUSTOM BLINDS	10800	201	WOODSIDE AVENUE	Santee	92071	907.12	1799	Base for contractor working in blind installation	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Low	No
SA	Falcon Landscape*	8707		LIND VERN COURT	Santee	92071	907.13	1799	Home base for landscape maintenance contractor. No outdoor exposures (such as storage) observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Cabral Metal Fab & Fence, Inc.	10020		PROSPECT AVENUE	Santee	92071	907.13	1799	Base for fencing contractor. No outdoor exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	SHOT BLASTERS INC.	9962	B	PROSPECT AVENUE	Santee	92071	907.13	1799	Shot blasting company, office and shop indoors. Potential for blast powder to be tracked out of facility.	No	No	Yes	No	No	No	No	Yes	Yes	No	Low	Yes
SA	Cascade Drilling LP	11440		North Woodside	Santee	92071	907.12	1799	Base for drilling company. Storage of rig and equipment in yard. Cleaned prior returning to facility.	No	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Medium	Yes
SA	Guardian Waterproofing Inc	8622	D	ARGENT STREET	Santee	92071	907.13	1799	Base for contractor working in construction waterproofing and caulking. Potential for outside storage.	No	Yes	No	No	Yes	Yes	No	No	No	No	Medium	No
SA	Le Caramel LLC	11220		WOODSIDE AVENUE	Santee	92071	907.12	2064	Manufacturing and selling of caramel products. Some outside storage of pallets and empty containers.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Fortina Chocolate	172		RIVER ROCK COURT	Santee	92071	907.12	2066	Home based chocolate and cocoa products preparation, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	MANZANITA BREWING COMPANY	9962	E	PROSPECT AVENUE	Santee	92071	907.13	2082	Microbrewery facility with office and tasting room. Brewing conducted indoors. No outdoor storage or consumption.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	FARACE ENTERPRISES, INC.	10759	H	WOODSIDE AVENUE	Santee	92071	907.12	2269	Silkscreening clothing, screens observed drying outside, some outside storage too.	No	Yes	No	No	No	Yes	No	No	No	No	Low	Yes
SA	NAILERS INC	10845	C	WHEATLANDS	Santee	92071	907.12	2389	Manufacture of other apparel accessories. Office and workshop in building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	PRIMO GRAPHICS	9263	B	ABRAHAM WAY	Santee	92071	907.12	2389	Manufacture of other apparel accessories. Office and workshop in building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	J & J DRAPERY WORKROOM	10054	L	PROSPECT AVENUE	Santee	92071	907.13	2391	Drapery Manufacturing. Office and workshop in building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	Waren Drapery Service	8733	138	MAGNOLIA AVENUE	Santee	92071	907.12	2391	Drapery Manufacturing. Office and workshop in building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	RACER X MOTORSPORTS	10815	K	WHEATLANDS	Santee	92071	907.12	2396	Safety/Communication distributor for off road market. Office and storage inside building.	No	Yes	No	No	No	Yes	No	No	Yes	No	Low	No
SA	T M COBB CO	9175		MISSION GORGE ROAD	Santee	92071	907.12	2431	Base for wood window and door manufacturing.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	Mill Brothers Fine Woodworking	9356	C	Wheatlands	Santee	92071	907.12	2434	Manufacturer of wood kitchen cabinets, office and workshop inside building. No outside storage.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Misiano's Custom Cabinetry	9201	C	ISAAC STREET	Santee	92071	907.12	2434	Cabinet fabrication contractor. Office and workshop inside building, most work done offsite. No outdoor exposures observed.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Richardson Cabinets	9201		ISAAC STREET	Santee	92071	907.12	2434	Manufacturer of wood kitchen cabinets, office, workshop and spray booth inside building. No outside storage.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	SELECT CABINETS	9937	8	PROSPECT AVENUE	Santee	92071	907.13	2434	Woodworking shop and office. No outdoor exposures.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Steagall's Custom Cabinets	10911	#H	Wheatlands	Santee	92071	907.12	2434	Woodworking shop and office. No outdoor exposures.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	WoodMAST BOULEVARDer Windows	10965	Q	HARTLEY ROAD	Santee	92071	907.12	2439	Woodworking shop and office. No outdoor exposures.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Valley Box Co. Inc.	10625		PROSPECT AVENUE	Santee	92071	907.13	2441	Wooden box manufacturing. Metalworking area and woodworking area under canopies, some temporary outside storage of boxes/wood.	No	Yes	Yes	No	No	No	No	No	Yes	No	High	No
SA	VIKING LINE CELLARS	9221		SECURITY WAY	Santee	92071	907.12	2452	Building wine rooms and saunas. No outside exposures observed. May be contractor, if so, SIC will change.	No	No	No	No	No	No	No	No	No	No	High	No
SA	PECHTELS CUSTOM WOODWORKS	8733	142	MAGNOLIA AVENUE	Santee	92071	907.12	2511	Fabrication of wood household furniture within building.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	No
SA	S & S WOODCRAFTS	8733	128	MAGNOLIA AVENUE	Santee	92071	907.12	2511	Fabrication of games, toys and children's vehicles in building.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	No
SA	Westline Woodcraft	9435	F-G	Wheatlands	Santee	92071	907.12	2511	Custom wood kitchen cabinet manufacturing inside building. No outdoor exposures observed.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	Anthony Lauren & Co., Inc.	8747		MAGNOLIA AVENUE	Santee	92071	907.12	2511	Furniture manufacturing inside building. No outdoor exposures observed.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	Royalty Wood	9437	A	Wheatlands	Santee	92071	907.12	2511	Cabinet shop, potential for outdoor storage and operations.	No	Yes	No	No	No	No	No	No	Yes	No	Medium	Yes
SA	INSTITUTIONAL CABINET & MILLWORK INC	10770	B	ROCKVILL STREET	Santee	92071	907.12	2531	Cabinet fabrication, no painting or finishing. Materials stored outside under cover.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	DISPLAY CASE MANUFACTURING (previously Case It)	8645	A	ARGENT STREET	Santee	92071	907.13	2541	Woodworking shop used for fabrication of display cases. No outside exposures.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	SUNCRAFT SHUTTERS	9344	C	WHEATLANDS	Santee	92071	907.12	2591	Office and workshop in building involved in shutter fabrication and some painting or staining. Temporary storage outside.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	SCANTIBODIES LAB INC	9216		ABRAHAM WAY	Santee	92071	907.12	2835	Development of antibody testing kits. Laboratory activities conducted within building. Outdoor storage under cover, some outside picnic benches for staff.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	D S Fibertech Corp	11015		MISSION PARK PLACE	Santee	92071	907.12	2899	Operation using silica. All processing conducting indoors where dust collectors are operational. Outside storage is under cover.	No	Yes	No	No	Yes	Yes	No	No	No	No	Low	Yes
SA	J S Bluing and Metal Refinishing*	10416		LEN COURT	Santee	92071	907.12	2899	Home base for bluing and refinishing business. Outdoor exposures are unlikely.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	SCANTIBODIES CLINICAL	9236		ABRAHAM WAY	Santee	92071	907.12	2899	Development of antibody testing kits. Activities conducted within building. Outdoor storage under cover, some outside picnic benches for staff.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	OLSON IRRIGATION SYSTEMS	10910	39449	WHEATLANDS	Santee	92071	907.12	3069	Irrigation installation company. Offices and storage in building. Minor activities in hardscaped yard.	No	Yes	No	No	Yes	Yes	No	No	No	No	Low	No
SA	SEALTITE INC	10225		PROSPECT AVENUE	Santee	92071	907.13	3081	Wholesale Distributor of Packaging Materials. Office and storage within building. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	A-I-M Plastics Inc.	9326		ABRAHAM WAY	Santee	92071	907.12	3089	Industrial mold manufacturing operation, conducted inside building. Outside cooling operation in enclosure and bermed. Outside area used for extensive storage although many items covered.	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	ARGEE CORPORATION	9550		PATHWAY STREET	Santee	92071	907.13	3089	ndustrial mold manufacturing operation, conducted inside building. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	PLA-COR INC	10207	C-D	BUENA VISTA AVENUE	Santee	92071	907.12	3089	Manufacture of plastic product inside building. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	Plex Products Unlimited	10744	C	PROSPECT AVENUE	Santee	92071	907.13	3089	Manufacture of plastic product inside building. Potential for outside storage.	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
SA	Red Line	10845		Wheatlands	Santee	92071	907.12	3089	Manufacture of plastic product inside building. No outdoor exposures (storage/operations).	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	Loftin GTS	8500		ABLETTE ROAD	Santee	92071	907.13	3089	Assembly and shipping of plastic parts/tools, potential for outdoor storage.	No	Yes	No	No	Yes	No	No	No	No	No	Medium	No
SA	Landmark Glass Co.	9851		PROSPECT AVENUE	Santee	92071	907.13	3211	Fabrication glass, mirrors & windows. No outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	CALIFORNIA ACRYLIC & GLASS MIRROR PLATE COMPANY	10658	C	PROSPECT AVENUE	Santee	92071	907.13	3231	Facility for cutting and polishing mirrors. All activities conducted indoors, no outside storage observed.	No	No	No	No	No	No	No	No	Yes	No	Medium	Yes
SA	R C P BLOCK & BRICK INC	9631		MAGNOLIA AVENUE	Santee	92071	907.12	3271	Concrete block and brick manufacturing. Storage of aggregate on unpaved areas. Operations conducted indoors. Above ground fuel tank and dispenser.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	High	Yes
SA	Artistic Marble and Granite, Inc.	9323		STEVENS ROAD	Santee	92071	907.12	3281	Granite and marble countertop fabrication & Installation. Fabrication conducted within workshop, installation offsite. Storage of slabs outside of building.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes
SA	C C M ENTERPRISES	10848		WHEATLANDS	Santee	92071	907.12	3281	Manufacturing counter tops, shower pans & tubs from cultured marble. All work done indoors. No storage done outside. Catch basin observed in yard.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes
SA	European Company	10051		PROSPECT AVENUE	Santee	92071	907.13	3281	Granite and marble countertop fabrication & Installation. Fabrication conducted within workshop, installation offsite. Storage of slabs and equipment outside of building. Cover over catch basin in yard.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	C C M ENTERPRISES	9366		ABRAHAM WAY	Santee	92071	907.12	3281	Fabrication of natural stone and quartz counter tops. Operations conducted indoors, storage of slabs outside has been observed. Minor vehicle maintenance onsite.	No	Yes	No	No	No	No	No	Yes	Yes	No	High	Yes
SA	RHINE AIR INC	10744	A	PROSPECT AVENUE	Santee	92071	907.13	3334	Indoor manufacturing facility, potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Rainbow Steel Inc	9484		MISSION PARK PLACE	Santee	92071	907.12	3399	Metal fabrication, potential for outdoor storage and operations.	No	Yes	Yes	No	Yes	No	No	No	No	No	High	Yes
SA	Metro Steel	10520	A	KENNEY STREET	Santee	92071	907.13	3441	Fabricated structural metalworking, installation done offsite. Offices, warehouse. Some metalworking done under canopy, outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	High	Yes
SA	PRODUCTION TRUSS	9925		PROSPECT AVENUE	Santee	92071	907.13	3443	Fabricated plate work (boiler shop). Potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	AMERICAN SHEET METAL	8710		RAILROAD AVENUE	Santee	92071	907.12	3444	Roofing, siding & sheet metal fabrication facility. Installation ofsite. Operations restricted to building. Grassy swale onsite.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	BOWEN & WARENGO INC	10723		PROSPECT AVENUE	Santee	92071	907.13	3444	Heating equipment manufacturing facility. Some outside storage observed.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Conn's Machining	10207	B	BUENA VISTA AVENUE	Santee	92071	907.12	3444	Sheet metal working shop. No outdoor exposures (storage/operations).	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	DAVIC CONSTRUCTION GENERAL CONTRACTOR	10925	N	WHEATLANDS	Santee	92071	907.12	3444	Sheet metal working shop. Potential for outdoor exposures (storage).	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	ELECTRONIC SHEET METAL PRODUCTS	9560	5	PATHWAY STREET	Santee	92071	907.13	3444	Custom metal fabrication facility. Operations indoors, potential for outdoor storage.	No	Yes	No	No	No	No	No	No	No	No	Low	No
SA	WAYNE MILLER'S MOBILE TIRE, INC	11350		WOODSIDE AVENUE	Santee	92071	907.12	3444	Onsite and mobile vehicle maintenance. Onsite work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	R S R PRECISION MACHINE	10020	G & H	PROSPECT AVENUE	Santee	92071	907.13	3444	Machine shop, potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	RALLS PRECISION MACHINE	10027	C	PROSPECT AVENUE	Santee	92071	907.13	3444	Sheet metal working facility, potential for outdoor storage	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	SHAWZ METAL FABRICATION INC	10925		WHEATLANDS AVENUE	Santee	92071	907.12	3444	Sheet metal working facility, no outdoor exposures (storage) observed.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Specialty Metals Fabrication	11222		WOODSIDE AVENUE	Santee	92071	907.12	3444	Sheet metal working facility, extensive outside storage of materials. Parking for vehicles. Sump in parking lot.	No	Yes	Yes	No	Yes	No	No	No	No	No	High	Yes
SA	MTS Sheet Metal & Fabrication Inc.	8400	E	MAGNOLIA AVENUE	Santee	92071	907.13	3444	Sheet metal working facility, potential for outdoor storage	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	SOUTH BAY FOUNDRY, INC.	9444		ABRAHAM WAY	Santee	92071	907.12	3446	Grind, weld (to customize) and distribution of metal products imported from China. Welding and grinding conducted indoors. Outdoor storage of product and equipment.	No	Yes	Yes	No	No	No	No	Yes	Yes	No	Low	Yes
SA	Aluminess Products Inc	9402	A	Wheatlands	Santee	92071	907.12	3465	Automotive stamping shop. Potential for outside storage.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	No
SA	Industrial Metal Processing	10145		PROSPECT AVENUE	Santee	92071	907.13	3471	Industrial painting, plating, and powdercoating, all operations indoors. Some outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Creative Metals Industries Inc.	10039	E	PROSPECT AVENUE	Santee	92071	907.13	3479	Custom metal etching & finishing. All operations indoors. No outdoor storage except for pallets during the day.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	EL CAJON NAMEPLATE	10054	K	PROSPECT AVENUE	Santee	92071	907.13	3479	Engraving trophies, plaques & signs in shop. No outside exposures (i.e., storage) observed.	No	Yes	No	No	No	No	No	No	Yes	No	Low	Yes
SA	KTM COATING TECHNOLOGIES, Inc	10020	A33-34	PROSPECT AVENUE	Santee	92071	907.13	3479	Metal coating and allied services conducted indoor. Potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	SAN DIEGO PROTECTIVE COATINGS	9344	A	WHEATLANDS	Santee	92071	907.12	3479	Rust preventative coating conducted indoors. Coated items may be left outside to dry on racks. No other outside stoage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Altech Machining	11000		WOODSIDE AVENUE	Santee	92071	907.12	3492	Manufacture aerospace parts inside building, potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Ke-Burgmann	8575		Roland Acres	Santee	92071	907.13	3494	Manufacturing of metal joints for refineries. Operations (including testing of joints) indoors. Sand blasting operation. Some outside storage.	No	Yes	Yes	No	Yes	No	No	Yes	No	No	High	Yes
SA	KW Cages Advanced Design	9565		PATHWAY STREET	Santee	92071	907.13	3496	Fabrication and sales of wire cages for small household pets. No outdoor exposures.	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	Bradshaw Engineering Corp.	8645	B	ARGENT STREET	Santee	92071	907.13	3498	Pipe fabrication for fire sprinkler systems. Outside storage of pipes on racks. Company vehicles park onsite.	No	Yes	Yes	No	Yes	No	No	No	No	No	High	Yes

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	AYMAR ENGINEERING	9434	1	ABRAHAM WAY	Santee	92071	907.12	3499	Precision sheet metal fabrication for aerospace and defense. Operations conducted indoor, potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	DAVIS GREGG ENTERPRISES	10139		PROSPECT AVENUE	Santee	92071	907.13	3499	Metal fabrication facility, workshop and office inside building. Potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Precision Water Jetting, Inc.	10031	B & C	PROSPECT AVENUE	Santee	92071	907.13	3499	Cut out various parts from metal, wood, plastic, glass using water. No outdoor storage or operations.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	TECHMAST BOULEVARDER	10744	106	ROCKVILL STREET	Santee	92071	907.12	3499	Machinery fabrication shop, all work indoors. No outside storage observed.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	TERRA NOVA TECHNOLOGIES, Inc.	10770		ROCKVILL STREET	Santee	92071	907.12	3535	Design conveying equipment for mines. Activities within building, outdoor exposures unlikely.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Accu-Tap LLC	9625	B2-305	MISSION GORGE ROAD	Santee	92071	907.12	3541	Business involved with machine tools, and metal cutting types. No outdoor exposures observed.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Watts Engineering	9920	106	PROSPECT AVENUE	Santee	92071	907.13	3541	design & machining prototypes & tool making. Activities restricted to building.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	BTI PERFORMANCE PRODUCTS	9525		PATHWAY STREET	Santee	92071	907.13	3544	Tooling for turbine engines. Work conducted indoors, outside storage under roofed areas.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	B & A WIRE EDM	8402		MAGNOLIA AVENUE	Santee	92071	907.13	3549	Machine shop for aerospace industry, all work done indoors. No outdoor exposures (storage).	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	No
SA	Frontier CNC	10728	C & D	PROSPECT AVENUE	Santee	92071	907.13	3549	Machine shop, all work done indoors, no outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	P-M Machining Inc.	8630	C	ARGENT STREET	Santee	92071	907.13	3549	Precision metal shop. No outdoor exposures.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	JAY MATHY ENGINEERING	9315		WHEATLANDS	Santee	92071	907.12	3559	Commercial and industrial machinery fabrication. All work is done indoors. Old coolant is kept in sealed drums in locked and partially covered area. Facility shared with Mathy Machine.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Vortex Engineering	9425		Wheatlands	Santee	92071	907.12	3559	Custom drilling equipment company, all operations indoors. Outdoor storage under cover.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Mathy Machine Inc.	9315		Wheatlands	Santee	92071	907.12	3559	Commercial and industrial machinery fabrication. All work is done indoors. Old coolant is kept in sealed drums in locked and partially covered area. Facility shared with Jay Mathy Engineering.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	DISCFLO CORPORATION	10850		HARTLEY ROAD	Santee	92071	907.12	3561	Manufacture and testing of pumps and pumping equipment. Indoor operations, some storage outdoors.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Accurate Air Engineering Inc	9356		ABRAHAM WAY	Santee	92071	907.12	3563	Distrubution, servicing of air and gas compressors.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	ARROW AUTOMATIC FIRE SPRINKLER	9520		PATHWAY STREET	Santee	92071	907.13	3569	Base for contractor who designs, fabricate and install automatic fire sprinklers.	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	Quality Controlled Manufacturing	9429		ABRAHAM WAY	Santee	92071	907.12	3569	Precision machine shop, all operations indoors. Sump in yard.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Computer Integrated Machining Inc.	10960		WHEATLANDS	Santee	92071	907.12	3599	Computerized machine fabrication conducted indoors. Some outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Ascend Manufacturing	10217	G	BUENA VISTA AVENUE	Santee	92071	907.12	3599	Machine shop, all work done indoors, no outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	CONTOUR TECHNOLOGY	8406	E	MAGNOLIA AVENUE	Santee	92071	907.13	3599	Machine shop working in brass. All work done indoors, no outdoor exposures.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	S M L INDUSTRIES	10965	P	HARTLEY ROAD	Santee	92071	907.12	3599	Manufacture of plastic products. Potential for outside storage.	No	Yes	Yes	No	No	No	No	Yes	Yes	No	Low	No
SA	TACKETT MACHINE	10728	D	KENNEY STREET	Santee	92071	907.12	3599	Manufacture of industrial and commercial machinery. Potential for outdoor storage and activities.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Dragon Machine Shop	9435	G	Wheatlands	Santee	92071	907.12	3599	Family owned machine shop, all activities conducted indoors, no outdoor exposures.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	Dornfeld Inc	9435	B	Wheatlands	Santee	92071	907.12	3599	Industrial and commercial machinery, activities conducted indoors, potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	No
SA	REPUBLIC ITS	9932	134	PROSPECT AVENUE	Santee	92071	907.13	3646	Traffic signal maintenance company. Potential for outdoor storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Alternative Energy Technologies	9465	B	MISSION PARK PLACE	Santee	92071	907.12	3674	Solar energy sales and installation, potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	LHV Power Corporation	10221		BUENA VISTA AVENUE	Santee	92071	907.12	3677	Manufacture of electronic coils, transformers, and other inductors. Potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	No
SA	Taco Magnetics	10020	B-12	PROSPECT AVENUE	Santee	92071	907.13	3679	Manufacture of electronic components. Potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No

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SA	Matt Gyvers Custom Werks	8733	#117	MAGNOLIA AVENUE	Santee	92071	907.12	3679	Car electrical/stereo services. Potential for outside storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Speedo Shop, The	10027	E	PROSPECT AVENUE	Santee	92071	907.13	3694	Motor vehicle electrical services. No outdoor exposures (work/storage) observed.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	JIMCO RACING INC.	9426		WHEATLANDS	Santee	92071	907.12	3711	Customized manufacture of offroad vehicles. Manufacturing conducted indoors, some outdoor storage, all under cover.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Alloy Studios	9435	G	Wheatlands	Santee	92071	907.12	3711	Off road vehicle fabrication, work done indoors, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No
SA	Action Turbo Repair Inc	10722	A	KENNEY STREET	Santee	92071	907.13	3714	Rebuilding of turbo chargers, all work conducted indoors. No outdoor exposures observed.	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Low	Yes
SA	Fox Racing Shox	10943		Wheatlands	Santee	92071	907.12	3714	Motor vehicle steering company. Conducted indoors, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	FUTURE MACHINE	9440	2	WHEATLANDS	Santee	92071	907.12	3714	Non automotive machine shop, operations conducted indoors. Potential for outdoor storage.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No
SA	HYDRAULIC ELECTRIC	9938	145	PROSPECT AVENUE	Santee	92071	907.13	3714	Assembly of commercial business parts conducted indoors. No outdoor exposures.	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Low	Yes
SA	MAJOR PERFORMANCE	10722	C	KENNEY STREET	Santee	92071	907.13	3714	Performance engine building, all work done indoors, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
SA	Viking Battery	10759	B	WOODSIDE AVENUE	Santee	92071	907.12	3714	Battery wholesale company, all work and storage is indoors. No outdoor exposures.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Low	Yes
SA	Fiberwerx	8400	H	MAGNOLIA AVENUE	Santee	92071	907.13	3714	Installation of motor vehicle parts and accessories. All work is done indoors, no outdoor exposures.	No	No	No	No	No	Yes	No	No	No	No	Low	Yes
SA	HCM Customs	11421	B	WOODSIDE AVENUE	Santee	92071	907.12	3714	Installation of automotive repair and accessories, body work is primary function. All work is done indoors. No Outdoor Exposures.	No	Yes	Yes	No	No	Yes	No	No	Yes	No	Medium	No
SA	Aeromach	11423	B	WOODSIDE AVENUE	Santee	92071	907.12	3751	Manufacturing / machining of motorcycle parts and accessories. Potential for outdoor storage.	No	No	No	No	No	Yes	No	No	No	No	Low	No
SA	Seki'S Cycles	9932	135	PROSPECT AVENUE	Santee	92071	907.13	3751	Bicycle manufacturing and sales. Potential for outdoor storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	J P Designs (Desert Fabrications dba ,)	11421		WOODSIDE AVENUE	Santee	92071	907.12	3799	Metal fabrication of offroad vehicles. Work conducted inside building. Minor storage in outside unpaved area.	No	No	Yes	No	No	No	No	No	No	No	Low	Yes
SA	Alumi Craft Inc.	10815	I	Wheatlands	Santee	92071	907.12	3799	Metal fabrication of offroad vehicles. Work conducted inside building. No outdoor exposures.	No	No	Yes	No	No	Yes	No	No	No	No	Low	Yes
SA	BUGGY WORKS	11421		WOODSIDE AVENUE	Santee	92071	907.12	3799	Dune buggy repair and fabrication facility. Potential for outdoor exposures (storage).	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
SA	Ty & Bud Hitches & Welding	10229		PROSPECT AVENUE	Santee	92071	907.13	3799	Installation of vehicle hitches. Potential for outdoor exposures (storage).	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
SA	Bryans Racing Enterprises	9260	A	ISAAC STREET	Santee	92071	907.12	3799	Racing vehicle fabrication, no outdoor exposures.	No	No	Yes	No	No	No	No	No	No	No	Low	Yes
SA	Advanced Electromagnetics	9311		STEVENS ROAD	Santee	92071	907.12	3812	Manufacturing of foam/rubber deflecting material for military purposes. Storage of finished product outside ready for shipping and potential for black ink to be spilled outside. Catch basin in parking lot, away from operational area.	No	No	No	No	Yes	Yes	No	Yes	Yes	No	High	Yes
SA	ROZENDAL ASSOCIATES INC	9530	101	PATHWAY STREET	Santee	92071	907.13	3812	Manufacturing of search detection equipment.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	DELTATRAK TECHNOLOGIES	9260	D	ISAAC STREET	Santee	92071	907.12	3823	Manufacturing of instruments and related products. Potential for outside storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	LARSON METERCRAFT INC	9328	A	WHEATLANDS	Santee	92071	907.12	3823	Manufacturing of instruments and related products. Potential for outside storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	TOTAL PERFORMANCE MACHINE	10133		PROSPECT AVENUE	Santee	92071	907.13	3859	Automotive machine shop, work done indoors, some outside storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	FEATHER ROCK DESIGNS	11316	B	WOODSIDE AVENUE	Santee	92071	907.12	3911	Design & fabrication of metal arts & jewelry. Potential for outside storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	ARC PAINT	10925	G	HARTLEY ROAD	Santee	92071	907.12	3914	Silverware manufacturers, all operations indoors. Potential for outdoor storage.	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	JENSEN SWING PRODUCTS	9327		WHEATLANDS	Santee	92071	907.12	3949	Wholesale manufacturing and distribution of playground component parts. No outdoor storage observed.	No	No	No	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	CROWN SIGNS	9937	10	PROSPECT AVENUE	Santee	92071	907.13	3993	Signs and advertising specialties, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	GRAPHICRETE (Q=Mila's Signs)	11571		WOODSIDE AVENUE	Santee	92071	907.12	3993	Sign painting, vinyl lettering, permanent & temporary signs, graphics, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	R B INDUSTRIES	9919		PROSPECT AVENUE	Santee	92071	907.13	3993	Sign manufatering for hotels, resorts, casinos. Potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	Visual Marketing Associates	9560	39452	PATHWAY STREET	Santee	92071	907.13	3993	Sign manufacturing, operations indoors, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	Albert Remolina	10020		PROSPECT AVENUE	Santee	92071	907.13	3993	Sign installation, no fabrication, potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Medium	No
SA	MEACOR SIGNS	10039	J	PROSPECT AVENUE	Santee	92071	907.13	3993	Sign design and manufacturing. Potential for outside storage.	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
SA	3 D LETTERS	9440	10	WHEATLANDS COURT	Santee	92071	907.12	3993	Wholesale fabricator of dimensional letters and braille signage for sign and graphics industry. All work done indoors. Scrap bins (one for plastic, one for aluminium) stored outside.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	COMPUCRAFT INDUSTRIES INC	8787		OLIVE LANE	Santee	92071	907.13	3999	Aerospace sheet metal & machining processing. Operations indoors, potential for outdoor storage.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Kaylien Inc.	8520		RAILROAD AVENUE	Santee	92071	907.13	3999	Manufacturing facility, exposures at rear (resins, fiber glass dust, etc.), but unlikely to impact MS4. Paintbooth indoors.	No	No	Yes	No	Yes	No	No	No	No	No	Low	Yes
SA	STEWARTS RACE WORKS	9419		ABRAHAM WAY	Santee	92071	907.12	3999	Servicing of offroad racing vehicles. Work done in shop, outside storage observed.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Harrison Trucking Inc.	8801		OLIVE LANE	Santee	92071	907.13	4213	Base for trucks involved in local hauling. Area where vehicles enter/exit is covered in gravel. Truck maintenance conducted under cover, truck washing water drains to a sump, underground fuel tank and dispenser onsite.	No	Yes	No	No	Yes	No	No	No	No	No	High	Yes
SA	C & M Relocation Systems	11433		WOODSIDE AVENUE	Santee	92071	907.12	4214	Business relocation services. Trucks stored onsite. Facility sometimes used for temporary storage of client's equipment.	No	Yes	No	No	Yes	No	No	No	No	No	High	Yes
SA	TERMINALLIFT LLC	9201	C	ISAAC STREET	Santee	92071	907.12	4731	Freight forwarding facility, potential for vehicle storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Pure-Flo	7737		MISSION GORGE ROAD	Santee	92071	907.12	4941	Water purification and distribution facility. Groundwater held in above ground tanks, connected to sanitary sewer. Fleet parking and maintenance onsite, but under cover. Facility for clients to collect their own drinking water.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	PADRE DAM WATER RECYCLING FACILITY	9300		FANITA PARKWAY	Santee	92071	907.12	4952	Water recycling plant (sewage), treated water drains into a series of lakes used for recreational purposes and surrounding by camping facilities. Operations yard and customer service facility. Vehicle maintenance facility (maintenance conducted indoor), underground fuel tank and fuel dispensers.	No	Yes	Yes	Yes	No	Yes	No	No	No	Yes	High	No
SA	AL MAX SANITATION (AMS)	10023		PROSPECT AVENUE	Santee	92071	907.13	4953	Pumping of residential septic tanks and restaurant grease traps. All materials stored under cover. Tankers stored in gravel yard. No direct connection to storm drain, runoff from rain drains to sump, then pumped to street. Filter on pump.	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	High	Yes
SA	Lowland Services*	10220		PRINCE JED COURT	Santee	92071	907.12	4953	Home base for litter control & trash removal. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Eliminator Motorsports	11418		WOODSIDE AVENUE	Santee	92071	907.12	5012	Custom boat and truck shop. All work is done indoors or under cover. Some vehicle washing onsite.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	C H C DIST. CO.	10925	M	WHEATLANDS	Santee	92071	907.12	5013	Motor vehicle supplies and parts, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Low	No
SA	Battery Systems	9465		MISSION PARK PLACE	Santee	92071	907.12	5013	Wholesale distribution of automotive batteries. All storage is kept under cover or indoors. Dead batteries are kept on pallets and picked up weekly	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	CUSTOM WHEEL INDUSTRIES INC	10221		PROSPECT AVENUE	Santee	92071	907.13	5013	Facility sells wheels, tires, lug nuts, value stems, lock sets, wheel wax for cars. Some storage outdoors.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Cal Parts Connection	10658	D	PROSPECT AVENUE	Santee	92071	907.13	5013	Facility sells vehicle parts. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	DG Custom Auto Inc	10728	G	PROSPECT AVENUE	Santee	92071	907.13	5013	Facility sells vehicle parts. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	NEO TECH IMPORTS	9962	I	PROSPECT AVENUE	Santee	92071	907.13	5015	Wholesale Japanese engine importer.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	TOTTEN TUBES INC	8540		ROLAND ACRES	Santee	92071	907.13	5039	Temporary storage of iron and steel tubes prior to shipping.	No	No	Yes	No	No	No	No	No	No	No	Low	Yes

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	Southwest Entrances	8733		MAGNOLIA AVENUE	Santee	92071	907.12	5039	Repair & installation of commercail doors. Address used for storage of materials.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	MEDICAL SOLUTIONS INC	8406	A	MAGNOLIA AVENUE	Santee	92071	907.13	5047	Sales of medical equipment.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	BC Wire Rope And Rigging Inc.	10580	102	PROSPECT AVENUE	Santee	92071	907.13	5051	Processing of metal wires and ropes indoors. No outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	PACIFIC COAST VALVE & SUPPLY	8614	B	ARGENT STREET	Santee	92071	907.13	5074	Plumbing and heating supplies, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	TEAL PIPE AND SUPPLY, INC.	9489		MISSION PARK PLACE	Santee	92071	907.12	5074	Plumbing wholesale supply, outside storage of plastic pipes, and storage of company vehicles.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	PRAXAIR	10728	A	PROSPECT AVENUE	Santee	92071	907.13	5084	Provider of welding supplies & industrial gas products. Potential for outside storage.	No	Yes	No	No	No	No	No	No	No	No	Low	No
SA	Preferred Pump & Equipment	9201	A	ISAAC STREET	Santee	92071	907.12	5084	Wholesale industrial machinery and equipment (pumps), warehouse and office, potential for outside storage.	No	Yes	No	No	No	No	No	No	No	No	Low	No
SA	Pro Filter Inc.	9266		ABRAHAM WAY	Santee	92071	907.12	5085	Selling filtration systems through wholesale distribution. Warehouse and office, potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	IMS Recycling Services Inc	9465		MISSION PARK PLACE	Santee	92071	907.12	5093	Recycling and scrap facility. Potential for outside storage and operations.	No	No	Yes	No	No	No	No	No	Yes	No	Medium	No
SA	COASTAL SUPPLY CO INC	8650		ARGENT STREET	Santee	92071	907.13	5099	Distribute sign & screen printing supplies & equipment. All work done indoors, no outdoor exposures (storage).	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	CARROLL BUSINESS SUPPLY, INC.	10223		PROSPECT AVENUE	Santee	92071	907.13	5112	Office supply delivery, office and warehouse. Potential for fleet storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	PACKAGING SOLUTIONS FOR TODAY'S INDUSTRY	9402	A	WHEATLANDS	Santee	92071	907.12	5113	Distributors of industrial packaging products & design.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	SAN DIEGO SUPPLY SERVICES	8402	E	MAGNOLIA AVENUE	Santee	92071	907.13	5113	Distribution of paper products & related supplies for restrooms/buildings. Office, warehouse, potential for outside storage.	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
SA	STAT PHARMACEUTICALS	9545		PATHWAY STREET	Santee	92071	907.13	5122	Drugs, drug proprietaries, and druggists' Sundries. Some storage outside building. Debris (including from landscaping) observed.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	THE WEST BEAN COFFEE ROASTERS	10054		PROSPECT AVENUE	Santee	92071	907.13	5149	Coffee roasting and wholesalers. Potential for outdoor exposures low. Will like have trash enclosure.	No	No	No	No	No	No	No	No	Yes	No	Low	No
SA	MAXIMA RACING OILS	9266		ABRAHAM WAY	Santee	92071	907.12	5172	Wholesale distribution of lubricating oil, all processing and storage indoors. No outdoor exposures.	No	No	No	No	Yes	No	No	No	Yes	No	Low	Yes
SA	Mayan Trade Inc.	9437	H	Wheatlands	Santee	92071	907.12	5199	Wholesale of orthorehabilitation nondurable goods to hospitals. All storage indoors. No outdoor exposures.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	8-5 Corp. / Artisan Gallery	10928	A	Wheatlands	Santee	92071	907.12	5199	Warehouse storage and distribution. No outdoor exposures observed.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	CONSOLIDATED ELECTRICAL DIST	8406	H	MAGNOLIA AVENUE	Santee	92071	907.13	5211	Distribution of building material, potential for outside storage.	No	No	Yes	No	No	No	No	No	Yes	No	Low	No
SA	HOME DEPOT #673, THE	255		TOWN CENTER PARKWAY	Santee	92071	907.12	5211	Home maintenance and gardening supplies retailer. Outside area for gardening supplies storage. Catch basins in parking lot. Compactor and truck loading bay at rear of property.	No	No	No	No	Yes	No	Yes	No	Yes	No	Low	Yes
SA	PACIFIC DOOR AND TRIM	10911	C	WHEATLANDS	Santee	92071	907.12	5211	Wholesale doors and trim. Outdoor exposures unlikely	No	No	No	No	No	No	No	No	Yes	No	Low	No
SA	619 HYDROPONICS	7949		MISSION GORGE ROAD	Santee	92071	907.12	5261	Gardening consulting and equipment sales. Office and storage in building. No outdoor exposures observed.	No	No	No	Yes	No	No	Yes	No	No	No	Low	No
SA	NEW GENERATION HYDROPONICS	10658	A	PROSPECT AVENUE	Santee	92071	907.13	5261	Retail of hydroponic and organic gardening supplies. Potential for outdoor exposures.	No	No	No	Yes	No	No	Yes	No	No	No	Medium	No
SA	Walgreens #09817	9305		MISSION GORGE ROAD	Santee	92071	907.13	5399	Drive-through pharmacy and general store. No outdoor exposures observed. Swales and filtration installed at facility.	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	Walgreens #11406	10512		MISSION GORGE ROAD	Santee	92071	907.12	5399	Drive-through pharmacy and general store. No outdoor exposures observed. Filtration system installed at facility.	No	Yes	No	No	Yes	No	No	No	No	No	Low	Yes
SA	7-Eleven 19006D	9111		MISSION GORGE ROAD	Santee	92071	907.12	5411	Convenience store and gas station in shared commercial facility.	No	Yes	No	No	Yes	No	No	No	No	Yes	Low	Yes

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										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	7-Eleven 20611	9805		PROSPECT AVENUE	Santee	92071	907.13	5411	Convenience store in shared commercial facility.	No	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	7-Eleven-2121-13661C	9251		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5411	Convenience store and gas station in shared commercial facility.	No	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	Yes
SA	GTM Discount General Store	8967	A & B	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5411	General store including food, customer parking and loading dock.	No	Yes	No	No	Yes	No	No	No	No	No	Medium	Yes
SA	7-Eleven 2121-20321D	9750		CUYAMACA STREET	Santee	92071	907.12	5411	Convenience store and gas station in shared commercial facility.	No	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	Yes
SA	Albertsons #6727	9870		MAGNOLIA AVENUE	Santee	92071	907.12	5411	Grocery store in shared commercial facility, loading docks, clarifier.	No	Yes	No	No	Yes	No	No	No	No	No	Medium	Yes
SA	FOOD 4 LESS #349	9430		CUYAMACA STREET	Santee	92071	907.12	5411	Grocery store in shared commercial facility, loading docks.	No	Yes	No	No	Yes	No	No	No	No	No	Medium	Yes
SA	Oaks Market and Deli/Raini EH Enterprises, Inc	9266		CARLTON OAKS	Santee	92071	907.12	5411	Small convenience store with delicatessan. Grease trap, no outdoor exposures.	No	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	Yes
SA	Santee Market	11007		WOODSIDE AVENUE	Santee	92071	907.12	5411	Convenience store and customer parking. Storm drain located at front of facility.	No	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Target Stores T-1485	9846		MISSION GORGE ROAD	Santee	92071	907.12	5411	General store including food, and garden supplies. Restaurant, grease trap, loading/unloading area. No outdoor storage, garden area drains to sanitary sewer.	No	Yes	No	No	Yes	No	No	No	Yes	No	Medium	Yes
SA	Vons #1897	9643		MISSION GORGE ROAD	Santee	92071	907.12	5411	Grocery store located in shopping center. Grease trap and rendering drum, loading dock with sump at base. Catch basins located in driveway at rear of building as well as in customer parking area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Wal-Mart Stores #1917	170		TOWN CENTER PARKWAY	Santee	92071	907.12	5411	General store including food. McDonald's restaurant inside store, grease trap, rendering bin stored indoors. Car repair facility, all work and storage indoors. Trash for store and restaurant disposed of in compactor fed through portal in building. Gravel area at rear of facility used for temporary storage during holidays. Catch basins in parking lot and around facility.	No	Yes	No	No	Yes	No	No	No	Yes	No	Medium	Yes
SA	SPROUTS	9361		MISSION GORGE ROAD	Santee	92071	907.13	5411	Grocery store with delicatessan and loading dock at rear. Part of SUSMP project.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Santee Discount Market	11541		WOODSIDE AVENUE	Santee	92071	907.12	5411	General store selling beer, wine, liquor, and groceries. No food service, no outdoor exposures.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	Yes
SA	Fresh and Easy Neighborhood Market	9751		MISSION GORGE ROAD	Santee	92071	907.12	5411	General store mainly selling groceries. Potential for outdoor storage of dumpsters/rendering bin	Yes	Yes	No	No	Yes	No	No	No	Yes	No	Medium	No
SA	DAWSON LEASING INC., G M	11220		WOODSIDE AVENUE	Santee	92071	907.12	5511	New car dealers, repair unlikely, potential for car cleaning.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	SILVER STAR ENTERPRISES INC	8634		SIESTA ROAD	Santee	92071	907.13	5511	Motor vehicle dealer, potential for repair and car cleaning.	No	Yes	Yes	No	No	No	No	Yes	Yes	No	Low	No
SA	Victory Auto Supply	10439	E	PROSPECT AVENUE	Santee	92071	907.13	5511	Automotive supply & delivery store, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	Most Truck Sales	8017		MISSION GORGE ROAD	Santee	92071	907.12	5511	Truck Sales. Trucks and other vehicles stored on gravel lot. Only electrical, no mechanical work is done onsite. Vehicle batteries stored under cover.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	VIP Auto Sales	9207		MISSION GORGE ROAD	Santee	92071	907.12	5521	Used car Dealers. Car repair conducted under cover. Potential for car washing and outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	Yes
SA	BONDS AUTOMOTIVE SALES	11420		WOODSIDE AVENUE	Santee	92071	907.12	5521	Automotive sales, potential for repair and car cleaning.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No
SA	Tornell Motors	10554		PROSPECT AVENUE	Santee	92071	907.13	5521	Used car dealers, potential for car washing and outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No
SA	DUNCAN RACING/DANNYS MACHINE	10734		KENNEY STREET	Santee	92071	907.13	5531	Auto parts and accessory store for offroad motorcycles. No outdoor storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	FIBER-TECH AUTO PARTS INC	10809		PROSPECT AVENUE	Santee	92071	907.13	5531	Auto parts and accessory store, potential for offsite storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	FIBER-TECH ENGINEERING INC	10735		PROSPECT AVENUE	Santee	92071	907.13	5531	Auto and home supply stores, potential for outside storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	HOUSE OF BUGGIES	10308	D	MISSION GORGE ROAD	Santee	92071	907.12	5531	Retail and service of dune buggies. Potential for outside storage and operations. Area drains to unpaved alley at rear.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Pep Boys Manny Moe & Jack	10041		MISSION GORGE ROAD	Santee	92071	907.12	5531	Auto parts and accessories store. Maintenance conducted in building. No outdoor storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	Express Tire	9535		MISSION GORGE ROAD	Santee	92071	907.12	5531	Retail tire facility, all work is done indoors. Containment for used oil and coolant is stored indoors. Water used for testing tires disposed of to sanitary sewer.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	USA Mobile Tire Service Inc	8017		MISSION GORGE ROAD	Santee	92071	907.12	5531	Sales and repair of tires. Alignment and truck repair. Potential for outdoor working and storage.	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	AUTO CORRAL	11440		WOODSIDE AVENUE	Santee	92071	907.12	5541	Gasoline station.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	CIRCLE K/76 #2702955/KAYO Oil CK	10219		MAST BOULEVARD	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Circle K #2709450	9750		MAGNOLIA AVENUE	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Speedee Mart	8011	A	MISSION GORGE ROAD	Santee	92071	907.12	5541	Convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	BP West Coast Prod. DBA Arco	9009		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Qwik Korner	9035		MISSION GORGE ROAD	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Dion And Sons, Inc.	11427		WOODSIDE AVENUE	Santee	92071	907.12	5541	Gasoline station with no convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	BP West Coast Prod. DBA Arco #9567	9811		MISSION GORGE ROAD	Santee	92071	907.12	5541	Gasoline station with convenience store.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	ROBS R.V. APPLIANCE REPAIR	11366		WOODSIDE AVENUE	Santee	92071	907.12	5561	Recreational vehicle dealers and repair, potential for outside storage and operations.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	RV Discount Center - Santee	8837		MAGNOLIA AVENUE	Santee	92071	907.12	5561	Recreational trailer sales, potential for outside storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Medium	No
SA	DARKSIDE CUSTOMS	11420		WOODSIDE AVENUE	Santee	92071	907.12	5571	Motorcycle dealership, potential for outside storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	S & H ALL DAY CYCLES	9925		PROSPECT AVENUE	Santee	92071	907.13	5571	Sales & service of motorcycle accessories and parts. Potential for outside storage and operations.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	S & H ALLDAY HARLEY PARTS &SVC	9925	A	PROSPECT AVENUE	Santee	92071	907.13	5571	Sales & service of motorcycles. Potential for outside storage and operations.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	SANTEE MOTORCYCLE SUPPLY	9805	E	PROSPECT AVENUE	Santee	92071	907.13	5571	Sales & service of motorcycles. No outdoor operations, potential for outdoor storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Medium	No
SA	Blue Deuce Cycles	10739		WOODSIDE AVENUE	Santee	92071	907.12	5571	Sales motorcycles. Potential for outside storage and operations.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	Buggy World	10350		MISSION GORGE ROAD	Santee	92071	907.12	5599	Dune buggy parts, sales and service. Potential for outside operations and storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Medium	No
SA	R T S ENTERPRISES	10965	U & V & X	HARTLEY ROAD	Santee	92071	907.12	5599	Automotive dealers, potential for outside storage.	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
SA	Cotijas	9121		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored at rear, grease trap. No outside eating area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	DIY Yogurt	9292	D	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Yogurt parlor in shared commercial complex, no outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Eccentric International Chefs	8925		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Bakery & delicatessan, no outdoor eating or rendering bin, grease trap installed.	No	No	No	No	No	No	No	No	No	No	Medium	Yes
SA	GIANT NEW YORK PIZZA	8933		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Fast food restaurant, grease trap, rendering bin under cover. No outdoor eating. Spill mats not used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Hilbertos Mexican Food	9805	F	PROSPECT AVENUE	Santee	92071	907.13	5812	Fast food restaurant, grease trap. Rendering bin outside. No outdoor eating. Spill mats not used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	JACK IN THE BOX #20	9337		MISSION GORGE ROAD	Santee	92071	907.13	5812	Fast food restaurant, grease trap. Rendering bin outside. No outdoor eating. Spill mats not used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	MARIETAS #4	8915		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Full service restaurant, grease trap. Rendering bin outside. No outdoor eating. Spill mats changed by contractor.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	MARYS DONUTS	9031		MISSION GORGE ROAD	Santee	92071	907.12	5812	Donut sales & restaurant. Deck used for outside consumption. Grease trap, rendering bin stored inside. Spill mats washed in mop sink.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Estradas	8528	107	MAGNOLIA AVENUE	Santee	92071	907.13	5812	Full service restaurant, grease trap. Rendering bin outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Burger King	9714		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast food restaurant and drive through in commercial complex, rendering bin and trash area under roofed area, grease trap. No spill mats. Outdoor eating area.	No	No	No	No	No	No	No	No	No	No	Medium	Yes
SA	CARLS JUNIOR #385	10009		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast food restaurant and drive through in commercial complex, storm drains located in drive through and parking area. Rendering bin outside. Grease trap. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Casa Nueva Mexican Restaurant	10757		WOODSIDE AVENUE	Santee	92071	907.12	5812	Full service restaurant, no outdoor eating areas. Grease trap. Rendering bin is outside. Spill mats used and cleaned indoors.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Cohen's Knishes	9730	A	CUYAMACA STREET	Santee	92071	907.12	5812	Contract kitchen facilities, no outdoor exposures (i.e., rendering bin).	No	No	No	No	No	No	No	No	No	No	Medium	No

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SA	COLD STONE	9868	A	MISSION GORGE ROAD	Santee	92071	907.12	5812	Ice cream sales, potential for outdoor exposures (dining, storage).	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	No
SA	COUNTRY TIME FOOD MARKET	9613		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant and market, no food preparation onsite.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	DAIRY QUEEN	70	A	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant in shared commercial complex, no food preparation onsite. No rendering bin or grease trap, no outdoor exposures.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	Daphne's Greek Café	9828	B	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats not used, rendering bin stored inside. Grease trap. Outdoor dining area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	DEL TACO #109	9822		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats not used, rendering bin stored outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	DENNYS RESTAURANT	140		TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats used, rendering bin stored outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Dominos	10251	A	MAST BOULEVARD	Santee	92071	907.12	5812	Pizza restaurant in shared commercial complex, no outdoor dining, rendering bin or grease trap.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Don Lucio's Taco Shop	9740	D	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats not used, rendering bin stored outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	EINSTEIN BROS BAGELS #3325	9872		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant and bakery. Grease trap. No rendering bin or outside dining. Spill mats not used.	No	No	Yes	No	No	No	No	No	No	No	Medium	No
SA	El Ranchito Taco Shop	9225	21	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Full service restaurant, no spill mats used. Grease trap. Rendering bin outside.	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Medium	Yes
SA	Emma's Mexican Food	8781	L	CUYAMACA STREET	Santee	92071	907.12	5812	Full service restaurant. Grease trap. Rendering bin outside.	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Medium	Yes
SA	Estradas Mexican Food	9292	B	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats used, rendering bin stored outside. Grease trap.	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	GIANT PIZZA KING #10	9614		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats not used, rendering bin stored outside. Grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	GO GET YOGURT	9802	1	MAGNOLIA AVENUE	Santee	92071	907.12	5812	Yogurt shop. No outdoor exposures. No spill mats, no grease trap, no food preparation onsite.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	GOLDEN SPOON FROZEN YOGOURT	9640	C	MISSION GORGE ROAD	Santee	92071	907.12	5812	Frozen yogurt sales. Spill mats are used, but cleaned by offsite service. No grease trap, no rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Grindz Coffee Co.	9608		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Full service restaurant, spill mats used. Grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	HI-C-ERA	11541	D	WOODSIDE AVENUE	Santee	92071	907.12	5812	Bar, no food preparation, no outdoor consumption.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	HOMETOWN BUFFET #720	275		TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Full service restaurant, no spill mats used. Grease trap. Rendering bin outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	HONEY DONUTS	10718		WOODSIDE AVENUE	Santee	92071	907.12	5812	Donut & muffin sales, no rendering bin. Grease trap, no outdoor dining	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	INTERNATIONAL HOUSE OF PANCAKES	9708		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in shared commercial complex, spill mats used, rendering bin stored outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	JACK IN THE BOX #3007	10330		MAST BOULEVARD	Santee	92071	907.12	5812	Fast food restaurant in commercial complex, grease trap, rendering bin outside. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	JACK IN THE BOX #3056	8500		MAGNOLIA AVENUE	Santee	92071	907.13	5812	Fast food restaurant in commercial complex, grease trap, rendering bin inside. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Jamba Juice Company #517	9828		MISSION GORGE ROAD	Santee	92071	907.12	5812	Vendor of fresh juice smoothies and sandwiches . Food prepared offsite, no rendering bin or grease trap. No outdoor dining. Spill mats used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	JIMMYS FAMILY RESTAURANT	9635		MISSION GORGE ROAD	Santee	92071	907.12	5812	Full service restaurant in commercial complex. Rendering bin outside. Spill mats used. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	KFC CORPORATION	8890		CUYAMACA STREET	Santee	92071	907.12	5812	Fast food restaurant, no spill mats used. Grease trap, rendering bin kept in contained area. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	LITTLE CAESER'S PIZZA	9720		MISSION GORGE ROAD	Santee	92071	907.12	5812	Take out pizza restaurant, no outdoor dining. Grease trap, no rendering bin, no spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	LOS NACHOS TACO SHOP	9740	C	CUYAMACA STREET	Santee	92071	907.12	5812	Restaurant in commercial complex, grease trap, no outdoor dining. Rendering bin stored outside. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	LUCKY CHINESE FAST FOOD	9740	B	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial complex, grease trap, no outdoor dining. Rendering bin stored outside. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes

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SA	MCDONALDS #2441	8876		CUYAMACA STREET	Santee	92071	907.12	5812	Fast food restaurant, grease trap, used oil stored indoors. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MCDONALD'S #29484	170		TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Fast food restaurant within Walmart, no outdoor exposures.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MICHAELS GRILL	9621	5	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial complex, grease trap. Rendering bin stored outside. Spill mats used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MIMI'S CAFÉ #86	9812		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored indoors, grease trap, spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	MISSION GORGE MARKET	7757		MISSION GORGE ROAD	Santee	92071	907.12	5812	Convenience store hosting Subway sandwich counter. No rendering bin, no grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Oggi's Pizza & Brewing Co.	9828		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored outdoors, grease trap, spill mats used. Outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	OISHII JAPANESE-THAI RESTAURANT	10251		MAST BOULEVARD	Santee	92071	907.12	5812	Restaurant, rendering bin stored outdoors, grease trap, no spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	OLIVE GARDEN	9800		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored outdoors, grease trap, no spill mats used. No outdoor dining. Dumpster area connected to grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	OMELETTE FACTORY, THE	7941		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored outdoors, grease trap, spill mats used. No outdoor dining, catch basin at rear of restaurant.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	PANDA COUNTRY RESTAURANT	9621	104	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial facility, rendering bin stored under cover, grease trap, no spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	PANDA EXPRESS #739	9862		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial facility, rendering bin stored outdoors, grease trap, no spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	PAPA JOHN'S PIZZA #2255	9490		CUYAMACA STREET	Santee	92071	907.12	5812	Take out pizza restaurant, no outdoor dining. Grease trap, no rendering bin, spill mats, no outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	PHO CA DAO RESTAURANT	9535	A	MISSION GORGE ROAD	Santee	92071	907.13	5812	Full service restaurant, potential for outdoor exposures (rendering storage).	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	PINNACLE PEAK STEAK HOUSE	7927		MISSION GORGE ROAD	Santee	92071	907.12	5812	Full service restaurant, no outdoor dining. Grease trap, spill mats, no rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Pizza Hut / Wing Street	9420	100	CUYAMACA STREET	Santee	92071	907.12	5812	Full service restaurant and take out in commercial facility. No outdoor dining. No rendering bin and spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	QUIZNO'S CLASSIC SUBS	9862	3F	MISSION GORGE ROAD	Santee	92071	907.12	5812	Grilled sandwich restaurant in commercial complex. Grease trap, no rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Ranch House Restaurant	11510	#F	WOODSIDE AVENUE	Santee	92071	907.12	5812	Full service restaurant with outdoor rendering bin and grease trap. No outdoor storage.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	ROUND TABLE PIZZA	9824		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Full service restaurant with grease trap, no rendering bin or spill mats, no outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	SANTEE DONUTS	9740	J	CUYAMACA STREET	Santee	92071	907.12	5812	Food preparation and service in commercial complex. No rendering bin or spill mats. Grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Smoothie King	9802	#2	MAGNOLIA AVENUE	Santee	92071	907.12	5812	Selling smoothies, no rendering bin, no grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	SORIANA'S MEXICAN FOOD	9470	#130	CUYAMACA STREET	Santee	92071	907.12	5812	Restaurant in commercial facility, rendering bin stored outdoors, grease trap, spill mats used. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Starbucks Coffee #5912	9802		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Coffee shop in commercial complex, no food preparation onsite, grease trap. Outdoor dining area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Starbucks Coffee #6636	9868	B	MISSION GORGE ROAD	Santee	92071	907.12	5812	Coffee shop in commercial complex, no food preparation onsite, spill mats in service area. Outdoor dining area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Subway Sandwiches	7757		MISSION GORGE ROAD	Santee	92071	907.12	5812	Subway shop operating in Mission Gorge Market. No outdoor dining, spill mats, rendering bin or grease trap.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Subway Sandwiches	9890		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Sandwich shop in commercial facility, outside dining, grease trap. No rendering bin, no spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Subway Sandwiches	50	D	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Sandwich shop in commercial facility, no grease trap or rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	TACO BELL #9417	9825		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast foot restaurant and drive through. Uses spill mats and grease trap. Rendering bin outside. No outdoor eating area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes

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SA	TASTY DONUTS	9802	3	MAGNOLIA AVENUE	Santee	92071	907.12	5812	Donut shop, grease trap, but no rendering bin. No outside dining. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	The Sandwich Bags	10769	108	WOODSIDE AVENUE	Santee	92071	907.12	5812	Sandwich shop (with delivery service) in commercial facility, spill mats, grease trap. No rendering bin, no outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	Wendy's	9655		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast food restaurant. Uses spill mats and grease trap. Used oil stored indoors.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Wienerschnitzel #424	9650		MISSION GORGE ROAD	Santee	92071	907.12	5812	Fast food restaurant. Uses spill mats and grease trap. Rendering bin outdoors. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Woodside Deli	10925	B	HARTLEY ROAD	Santee	92071	907.12	5812	Sandwich shop in industrial area. No grease trap, or rendering bin. Spill mats used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	L&L Hawaiian BBQ	9621		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant in commercial facility. Spill mats and grease trap. Rendering bin shared, and stored outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Frubble	9628		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant, no rendering bin or spill mats, grease trap installed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	ChiTown Pizza Company	8528		N. Magnolia	Santee	92071	907.13	5812	Restaurant, used oil stored indoors, grease trap.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Starbucks Coffee #14489	9325		MISSION GORGE ROAD	Santee	92071	907.12	5812	Coffee shop in commercial complex, no food preparation onsite, grease trap. Outdoor dining area.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Cookies By Design	30	B	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Food preparation facility, grease trap. No outdoor exposures.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Subway Sandwiches	10538	130	MISSION GORGE ROAD	Santee	92071	907.12	5812	Sandwich shop in commercial facility, no grease trap or rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Cazadores Mexican Food	9331	111	MISSION GORGE ROAD	Santee	92071	907.13	5812	Restaurant, grease trap, rendering bin stored indoors.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Rubios Fresh Mexican Grill	130		TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant in commercial complex. Rendering bin stored outside, grease trap, outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Filippi'S Pizza Grotto	10767		WOODSIDE AVENUE	Santee	92071	907.12	5812	Restaurant, grease trap, spill mats used, rendering bin outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Friendly Grounds Inc.	9225		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Coffee shop, no rendering bin or grease trap. Outdoor dining.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	Fox's Pizza Den	8011		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, grease trap installed, no rendering bin.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	Estrada's Mexican Food	9630		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant, grease trap, used oil stored inside. Spill mats used.	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	High	Yes
SA	Domo Sushi	9625		MISSION GORGE ROAD	Santee	92071	907.13	5812	Restaurant, no spill mats, grease trap installed, rendering bin outside.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	Coffee Corner, The	9608		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Coffee Shop, potential for outside dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	Janet's Café & Deli	9225	20	CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant with grease trap and outdoor rendering bin.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Penguin Yogurt Factory	9621	A	MISSION GORGE ROAD	Santee	92071	907.13	5812	Yogurt shop, no rendering bin or grease trap.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Double Double Fine Burger	9862		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, grease trap, used oil stored inside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Sonic Drive-In	10515		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, rendering bin stored under cover, grease trap. Property subject to SUSMP.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Senor Pancho Mexican Grill	10320		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, grease trap, rendering bin stored outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Italia Ristorante	8918		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5812	Restaurant - spill mats are used, rendering bin outside. Grease trap. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Nam Long Restaurants	9828		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Restaurant, grease trap, rendering bin outside. Spill mats not used.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Smoking Joe's Intl. BarBQue	205	A	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant in commercial facility, outdoor smoker used to prepare food.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Okawa Steak House And Sushi	9720	A	MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant with grease trap. Used oil disposed of offsite.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Yogurt World	9331	110	MISSION GORGE ROAD	Santee	92071	907.13	5812	Yogurt shop, no food preparation onsite, no grease trap or rendering bin. No outdoor exposures	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Taco Loco	8667		FANITA DRIVE	Santee	92071	907.12	5812	Taco shop, grease trap and rendering bin outside.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	THE RED LOTUS	9888		MAGNOLIA AVENUE	Santee	92071	907.12	5812	Restaurant, rendering bin outside, grease trap, no outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	AMY'S FINE BURGER	9862		MISSION GORGE ROAD	Santee	92071	907.12	5812	Restaurant, no outdoor storage, spill mat by drinks dispenser, grease trap, rendering bin stored indoors.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Sab-E-Lee	9159		MISSION GORGE ROAD	Santee	92071	907.13	5812	Restauarant, no outdoor dining, no spill mats, grease trap, rendering bin in secondary containment.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	The Coffee Brake	9161		MISSION GORGE ROAD	Santee	92071	907.13	5812	Coffee vendor in booth in parking lot. Spills only potential outside exposure.	No	No	No	No	No	No	No	No	No	No	Low	Yes

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	Pho Santee	8790	K	CUYAMACA STREET	Santee	92071	907.12	5812	Restaurant in commercial complex, grease trap, no outdoor dining. Rendering bin stored outside. No spill mats.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
SA	Iwamoto'S Cafe Con Fusion	235	C	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant, potential for outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	K 39 Taco Shop	235	H	TOWN CENTER PARKWAY	Santee	92071	907.12	5812	Restaurant, potential for outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	Rancho Viejo	8001		MISSION GORGE ROAD	Santee	92071	907.12	5812	Mexican restaurant, potential for outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
SA	WANNA SAMMICH	9312		MISSION GORGE ROAD	Santee	92071	907.13	5812	Delicatessan in gas station. Outdoor exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	GEORGES SALOON	9179		MISSION GORGE ROAD	Santee	92071	907.12	5813	Bar, no food preparation, no outdoor dining. Spill mats used.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Ye Village Inn	8929		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5813	Bar, no food preparation, no outdoor dining. Spill mats used.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	CHILI'S GRILL & BAR	9804		MISSION GORGE ROAD	Santee	92071	907.12	5813	Restaurant, spill mats used, grease trap, rendering bin outside. No outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Landre'S Sports Bar & Grill	70	C	TOWN CENTER PARKWAY	Santee	92071	907.12	5813	Sports bar type restaurant, potential for outside rendering bin and dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Lacey J'S Roadhouse Saloon & Grille	8861		MAGNOLIA AVENUE	Santee	92071	907.12	5813	Sports bar type restaurant, potential for outside rendering bin and dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Lakes Market and Deli	9266		CARLTON OAKS	Santee	92071	907.12	5921	Liquor store, grease trap, no rendering bin, spill mats, or outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Santee Mini Market	8781	I	CUYAMACA STREET	Santee	92071	907.12	5921	Liquor store, no grease trap, no rendering bin, spill mats, or outdoor dining.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	Santana Liquor	8959		CARLTON HILLS BOULEVARD	Santee	92071	907.12	5921	Liquor store, no food preparation, no outdoor exposures.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	Fanita Liquor & Market	8663		FANITA DRIVE	Santee	92071	907.12	5921	Liquor store, grease trap, no rendering bin, spill mats, or outdoor dining.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	Belvedere Liquor	10769	101	WOODSIDE AVENUE	Santee	92071	907.12	5921	Liquor store, grease trap, no rendering bin, spill mats, or outdoor dining.	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
SA	ANGLERS MARINE	10960		WHEATLANDS	Santee	92071	907.12	5941	Retail boating and fishing and service center. Work conducted indoors, potential for vehicle washing. Catch basin located in yard.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Pacific Sports Warehouse	10746	303	KENNEY STREET	Santee	92071	907.13	5961	Distribution center for sporting goods. Internet and catalog sales.	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	No
SA	CHEVRON STATION INC #1741	8888		MAGNOLIA AVENUE	Santee	92071	907.12	5989	Gasoline station with convenience store. Dispenser area has overhead canopy.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	CHEVRON KALASHO	9312		MISSION GORGE ROAD	Santee	92071	907.13	5989	Gasoline station with convenience store. Dispenser area has overhead canopy.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	SMOKER'S HEAVEN	9882		MAGNOLIA AVENUE	Santee	92071	907.12	5993	Tobacco stores, unlikely to have outdoor exposures.	No	No	No	No	No	No	No	No	Yes	Yes	Low	Yes
SA	Costco Wholesale #403	101		TOWN CENTER PARKWAY	Santee	92071	907.12	5999	Club warehouse with vehicle maintenance facility, two grease traps, used oil kept indoors, loading dock, gas pumps located under cover.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	EAST COUNTY FEED AND SUPPLY	10845		WOODSIDE AVENUE	Santee	92071	907.12	5999	Animal feed supply, paved facility, all materials stored under cover.	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
SA	Living Water	235	G	TOWN CENTER PARKWAY	Santee	92071	907.12	5999	Retail store, outdoor exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	So Calif Equipment	9925		PROSPECT AVENUE	Santee	92071	907.13	5999	Equipment company, potential for outdoor storage and maintenance.	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
SA	Padre Dam Santee Lakes	9310		FANITA PARKWAY	Santee	92071	907.12	7033	Campground and recreation facility. Largely unpaved, area drains to lakes which discharge to river under permit.	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High	No
SA	San Diego Flood Busters*	9943		PROSPECT AVENUE	Santee	92071	907.13	7217	Carpet and upholstery cleaning, cleaning water disposed of to sanitary sewer, chemicals stored indoors. Fleet parking.	No	Yes	No	No	No	Yes	No	No	No	No	Low	Yes
SA	CARPET CLEANER (ALAN)*	10233		MISSION GORGE ROAD	Santee	92071	907.12	7217	Home base for carpet cleaner.	No	Yes	No	No	No	Yes	No	No	No	No	Low	No
SA	GENTUE & SONS*	9802		SETTLE ROAD	Santee	92071	907.12	7217	Home base for carpet cleaner.	No	Yes	No	No	No	Yes	No	No	No	No	Low	No
SA	ALL CITIES BEE & PEST CONTROL	10201		BUENA VISTA AVENUE	Santee	92071	907.12	7342	Rat Abatement, exterminate bees, remove honey from structures. Pesticides stored inside building. Fleet parking.	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Low	Yes
SA	J & J FUMIGATION INC	10744	101	ROCKVILL STREET	Santee	92071	907.12	7342	Pest control, chemicals likely stored inside building.	No	Yes	Yes	No	No	Yes	Yes	No	No	No	Low	No
SA	Truly Nolen	8400	M & N	MAGNOLIA AVENUE	Santee	92071	907.13	7342	Pest control. Chemicals stored inside building. Fleet parking.	No	Yes	Yes	No	No	Yes	Yes	No	No	No	Medium	Yes
SA	HANSON MACHINE	10969	B	WHEATLANDS	Santee	92071	907.12	7353	Construction equipment rental, potential for outside storage of equipment, equipment maintenance and cleaning.	No	Yes	Yes	No	Yes	No	No	No	No	No	Low	No

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	TOYOTALIFT INC	11446		WOODSIDE AVENUE	Santee	92071	907.12	7353	Construction equipment rental, some outside storage of equipment on paved areas.	No	Yes	Yes	No	Yes	No	No	No	No	No	Medium	Yes
SA	Bilcan Inc. DBA El Camino Rentals	8795		CUYAMACA STREET	Santee	92071	907.12	7353	Equipment rental and leasing. Repair under roofed areas. Equipment washwater drains through clarifier through sanitary sewer.	No	Yes	Yes	No	Yes	No	No	No	No	Yes	Medium	Yes
SA	DCXcavation	8614		SIESTA ROAD	Santee	92071	907.13	7353	Equipment leasing and rental, storage of equipment onsite. Equipment repair under cover.	No	Yes	Yes	No	Yes	No	No	No	No	Yes	Medium	Yes
SA	INSTANT SIGNS OF SANTEE	10769	103	WOODSIDE AVENUE	Santee	92071	907.12	7389	Sign services, storage inside building. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	NEW IMAGE EMBROIDERY & SIGNS	10659	B	PROSPECT AVENUE	Santee	92071	907.13	7389	Embroidery & signs, storage inside building. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	INTER VALLEY POOL SUPPLY, INC.	8656		CUYAMACA STREET	Santee	92071	907.13	7389	Swimming pool supplies, potential for outside storage.	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Medium	No
SA	JL Watson Distributing*	10250		PROSPECT AVENUE	Santee	92071	907.13	7389	Homebased sales, possible outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	CLEAR WATER SAN DIEGO	7967		POPLIN DRIVE	Santee	92701	907.12	7389	Water feature maintenance and repair. No exposures observed.	No	No	No	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Pool Covers Unlimited	8606	E	ARGENT STREET	Santee	92071	907.13	7389	Building used for storage of pool covers. No outdoor exposures.	No	No	No	No	Yes	Yes	No	No	No	No	Low	Yes
SA	Petersen's Pool & Spa Service*	8674		WAHL STREET	Santee	92071	907.12	7389	Homebase pool and spa maintenance service. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Paradise Pools Service And Repair*	10906		GREENCASTLE STREET	Santee	92071	907.12	7389	Homebase pool and spa maintenance service. Potential for outside storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	FUN IN THE SUN POOLS*	10340		SANTANA	Santee	92071	907.12	7389	Home base for swimming pool & spa repair, potential for outdoor storage.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Enterprise Rent-A-Car	10330		MISSION GORGE ROAD	Santee	92071	907.12	7514	Car rental facility, storage of fleet on paved area. Car washing conducted onsite.	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Medium	Yes
SA	C & H AUTO BODY	10996		WOODSIDE AVENUE	Santee	92071	907.12	7532	Auto Body repair & painting. Larger vehicles worked on outside. Vehicle washing.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	DALTON & SON PAINT & BODY	10439		PROSPECT AVENUE	Santee	92071	907.13	7532	Auto body repair and painting. All work conducted indoors. Painting done in booth.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	M & J Restoration	10223		MAST BOULEVARD	Santee	92071	907.12	7532	Custom paint and body work on vintage cars. All work done indoors. Outside washing of vehicles occasionally occurs.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MADRIDS AUTO BODY REPAIRS	10559		PROSPECT AVENUE	Santee	92071	907.13	7532	Top, Body, and Upholstery Repair Shops and Paint Shops, potential for outside exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	METRIX AUTOBODY	10438	C	MISSION GORGE ROAD	Santee	92071	907.12	7532	Automotive collision repair, some work conducted under cover. Potential for outside exposures (repairs, detailing etc).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	PHILIP THEARLES AUTOWERKS	8809		MISSION GORGE ROAD	Santee	92071	907.12	7532	Auto body repair, all work conducted indoors. Hazardous materials stored under cover and in secondary containment. Subject to SUSMP.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Russos Auto Body Inc	10410		MISSION GORGE ROAD	Santee	92071	907.12	7532	Auto body and paint, no mechanical. All work conducted indoors, paintbooths onsite.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	SAN DIEGO GLASS & PAINT	8828		CUYAMACA STREET	Santee	92071	907.12	7532	Top, body, and upholstery repair shops and paint shops. Potential for outside operations and storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Lloyd's Collision Care	9936		BUENA VISTA AVENUE	Santee	92071	907.12	7532	Top, body repair and paint shop. All work conducted indoors, hazardous materials stored indoors. Potential for spills from vehicles.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	MAST BOULEVARDercraft Inc.	11433		WOODSIDE AVENUE	Santee	92071	907.12	7532	Top, body, and upholstery repair and paint shop. Potential for outside exposures (operations and storage).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	A1 Customs LLC	11491		WOODSIDE AVENUE	Santee	92071	907.12	7532	Auto repair and body work. Potential for outside exposures (storage or operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Medium	No
SA	Rodder's Choice	9217		SECURITY WAY	Santee	92071	907.12	7532	Automobile restoration, potential for outside exposures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Collision Repair Specialists	10806		PROSPECT AVENUE	Santee	92071	907.13	7532	Automotive paint and body repair conducted indoors. Car detailing water disposed of to sewer.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	San Diego Classic Restoration	9440	#14	Wheatlands	Santee	92071	907.12	7532	Auto restoration, work conducted indoors, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	High	No
SA	COYOTE SERVICES LLC	8745		MAGNOLIA AVENUE	Santee	92071	907.12	7532	Repair vehicle dents, paint, dry and clean. Potential for outdoor exposures (storage, operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	R.E.S. Enterprises	10965	U	HARTLEY ROAD	Santee	92071	907.12	7532	Autobody work, all work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Ozzie'S Kustom Works	10658	B	PROSPECT AVENUE	Santee	92071	907.13	7532	Autobody work, all work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No

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Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	Star A Autobody & Paint	10737		WOODSIDE AVENUE	Santee	92071	907.12	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Deep'S Garage	10911	E	Wheatlands	Santee	92071	907.12	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Bumper Doc	8711	100	MAGNOLIA AVENUE	Santee	92071	907.12	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	John's Collision Center	10806	3	PROSPECT AVENUE	Santee	92071	907.13	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Hard Core Muscle Motorsports	11421	D	WOODSIDE AVENUE	Santee	92071	907.13	7532	Autobody work, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	DEEP'S GARAGE	10911	E	WHEATLANDS AVENUE	Santee	92071	907.12	7532	Office and shop with roll-up door. Outdoor exposures - oily staining observed outside.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Express Automotive Enterprises	8711	300	MAGNOLIA AVENUE	Santee	92071	907.12	7533	Automotive aftermarket parts and exhaust systems, all work conducted indoors. Property subject to SUSMP.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MAST AVENUETEST ONLY STATION	8931		MAGNOLIA AVENUE	Santee	92071	907.12	7533	Automotive exhaust system repair shops, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Absolute Exhaust Coatings	10020	B14	PROSPECT AVENUE	Santee	92071	907.13	7533	Automotive exhaust system repair, potential for outside storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Jack Randalls Automotive	10845	F	Wheatlands	Santee	92071	907.12	7536	Automotive glass replacement shop, no outdoor exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	ONE STOP AUTO GLASS	9605		CARLTON HILLS BOULEVARD	Santee	92071	907.12	7536	Automotive glass replacement shop, potential for outdoor exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	D R W TRANSMISSION SPECIALTIES	10728	B	KENNEY STREET	Santee	92071	907.13	7537	Automotive transmission repair, potential for outdoor exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	East County Transmission	10227	B	PROSPECT AVENUE	Santee	92071	907.13	7537	Automotive transmission repair, all work conducted indoors, outdoor storage under cover.	No	Yes	No	No	No	No	No	No	Yes	No	Low	Yes
SA	PERFORMANCE TRANSMISSION	8501		ABLETTE ROAD	Santee	92071	907.13	7537	Transmission installation and repair, potential for storage of vehicles outdoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Sparkys Transmissions	10410		MISSION GORGE ROAD	Santee	92071	907.12	7537	Automotive transmission repair, all work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Factory Transmissions	10806		PROSPECT AVENUE	Santee	92071	907.13	7537	Removing and installing transmissions, all work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	A&I Services	8665	A	ARGENT STREET	Santee	92071	907.13	7538	Carpet cleaning supplies and equipment rental.. All work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	High	No
SA	Acuhon	8665	B1	MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair all work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	AUSTIN HEALEY MOTOR WORKS	9440		WHEATLANDS	Santee	92071	907.12	7538	General automotive repair shop, potential for outdoor exposures (storage or operations)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	AUTO PERFECT	9937	11	PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	AUTOFAB	10996		WOODSIDE AVENUE	Santee	92071	907.12	7538	General automotive repair shop, potential for outdoor exposures (storage or operations)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	SAN DIEGO RV CENTER	8629		TUMBLEWEED	Santee	92071	907.13	7538	Recreational and trailer repair, potential for outdoor exposures (storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Bright Tech Auto Service	10438	B	MISSION GORGE ROAD	Santee	92071	907.12	7538	Owner operated automotive repair, outdoor operations observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	CARTER COLLISION SERVICE	8835		CUYAMACA STREET	Santee	92071	907.12	7538	General automotive repair, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	CERTIFIED CAR CARE	11370		WOODSIDE AVENUE	Santee	92071	907.12	7538	Automotive repair and maintenance. Potential for outdoor exposures (outside storage or operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	COOL MAST BOULEVARDER	8501	B	ABLETTE ROAD	Santee	92071	907.13	7538	Automotive repair and maintenance. All work conducted indoors, some outdoor storage observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	COUNTY FLEET SERVICE	10053		PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair shop, potential for outdoor exposures (storage or operations)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	D & R AUTOMOTIVE	10517		PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair shop, all work conducted indoors or under cover. Stormwater drains through sump and pump which is regularly cleaned.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	DYNO SHOP, THE	10042		PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair shop, only those vehicles too large to enter maintenance bays are maintained outside. Drip pans and other BMPs deployed for outside work.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	HI-TECH CUSTOMS	9962	G	PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair shop, potential for outdoor expsoures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	Horsman Automotive	8891		RAILROAD AVENUE	Santee	92071	907.12	7538	General automotive repair, all work conducted indoors, vehicles stored outdoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Import Auto Service	7945	111	MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair shop, all work conducted indoors. Storm drain in parking lot.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	J G AUTO REPAIR	10468		MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MEINEKE 1711	9551	B	MISSION GORGE ROAD	Santee	92071	907.13	7538	General automotive repair, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	MISSION GORGE AUTOMOTIVE	10332		MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair, no outdoor exposures observed..	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MUELLERS TRUCK & EQUIP SERV.	8500		ABLETTE ROAD	Santee	92071	907.13	7538	Repair trucks & equipment, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Phantastic Auto Repair	10223		MAST BOULEVARD	Santee	92071	907.12	7538	General automotive repair shop, outdoor storage of vehicles. Area does not drain to the storm drain system.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	RICKS MACHINE SHOP	11448		WOODSIDE AVENUE	Santee	92071	907.12	7538	General automotive repair facility, outside storage of parts under plastic sheeting. Wash area under cover and bermed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	High	Yes
SA	RUSH MOTORSPORT	10147		MISSION GORGE ROAD	Santee	92071	907.12	7538	Automotive service, repair conducted indoors. Vehicles stored outside, BMPs used in vehicle washing area. Water drains to sump that is pumped.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	SOCAL PAINT WORKS	10009		PROSPECT AVENUE	Santee	92071	907.13	7538	Automotive repair and restoration, potential for outside exposures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Sparks Computerized Car Care	10735		WOODSIDE AVENUE	Santee	92071	907.12	7538	General automotive repair shops, work conducted indoors, outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	TERRA TRAILERS & TRUCK SALES	11424		WOODSIDE AVENUE	Santee	92071	907.12	7538	Recreational vehicle repair and trailer sales. Potential for outdoor exposures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	THUNDERWORKS	10729	C	WHEATLANDS	Santee	92071	907.12	7538	General automotive repair shops, work conducted indoors, potential for outdoor exposures (storage and vehicle detailing).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	TJM Enterprises	10027	A	PROSPECT AVENUE	Santee	92071	907.13	7538	Body shop and vehicle repair. No painting. Potential for outdoor exposures (storage and vehicle detailing)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	VGCC Management dba Volkers	7953		MISSION GORGE ROAD	Santee	92071	907.12	7538	General automotive repair, all work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Star A Autobody & Paint	10737		WOODSIDE AVENUE	Santee	92071	907.12	7538	Auto body paint & repair, maintenance. Potential for outdoor exposures (operations and storage).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Four Wheel Direct	10731		WOODSIDE AVENUE	Santee	92071	907.12	7538	General automotive repair shop, all work conducted indoors. Tires stored outside temporarily prior to pick-up.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Ban's Auto Repair II	8625		CUYAMACA STREET	Santee	92071	907.13	7538	General automotive repair, all work conducted indoors, outside storage observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Toyota Certified Of Santee	9135		MISSION GORGE ROAD	Santee	92071	907.12	7538	Automotive dealer and service center. Operations and storage conducted indoors. Property subject to SUSMP.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	GEORGE'S AFFORDABLE ON THE SPOT	10031	D	PROSPECT AVENUE	Santee	92071	907.13	7538	General automotive repair, all work conducted indoors. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Mayhem Motorcycle Shop	8733	113	MAGNOLIA AVENUE	Santee	92071	907.12	7538	Motorcycle sales and service, all work conducted indoors, no outdoor exposures.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Alba Racing	10806	1	PROSPECT AVENUE	Santee	92071	907.13	7538	Motorcycle & ATV repair, service and parts. Potential for outside exposures (storage / operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Lemon Grove Cycle Supply	10704	B	PROSPECT AVENUE	Santee	92071	907.13	7538	Motorcyle parts, equipment and service, potential for outdoor exposures (storage / operations)	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Advanced Automotive Center	7945	108	MISSION GORGE ROAD	Santee	92071	907.12	7539	General automotive repair, all work conducted indoors, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	DISCOUNT TIRE CO OF SAN DIEGO	9750		MISSION GORGE ROAD	Santee	92071	907.12	7539	Automotive parts and accessory store. All work conducted indoors, no outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	EAST COUNTY ALIGNMENT	10741		WOODSIDE AVENUE	Santee	92071	907.12	7539	Automotive mechnical and electronic repair shop. Potential for outdoor exposures (storage / operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	HP WIRING	7341		PARK VIEW COURT	Santee	92071	907.12	7539	Service electrical wiring of offroad vehicles. No outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	ROGER DANIEL'S ALIGNMENT & BRAKE	8517	F	ABLETTE ROAD	Santee	92071	907.13	7539	Automotive alignment & brake repair shop, most work conducted indoors.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	SANTEE FOREIGN CAR REPAIR	7969		MISSION GORGE ROAD	Santee	92071	907.12	7539	Other automotive mechanical & electronic repair. All work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	ONE STOP AUTO TECH	9605		CARLTON HILLS BOULEVARD	Santee	92071	907.12	7539	Automotive repair shop. All work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	Yes
SA	Logan Detailing*	9670	1	MACCOOL LANE	Santee	92071	907.13	7542	Homebase for mobile auto detailer.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	D&H RU Cleaning*	9811		PEBBLE BEACH DRIVE	Santee	92071	907.12	7542	Homebase for mobile auto detailer.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	AUTO SPA DETAILING*	9538		CARLTON HILLS BOULEVARD	Santee	92071	907.12	7542	Homebase for mobile auto detailer.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	K-KAR CENTER	8931		MAGNOLIA AVENUE	Santee	92071	907.12	7542	Car wash and general automotive repair. Potential for runoff from washing operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MCLEAN DOOR & TRIM	9260	E	ISAAC STREET	Santee	92071	907.12	7542	Window, door & trim shop & installation. Potential for outdoor exposures (storage and operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	MISSION GORGE CARWASH	7751		MISSION GORGE ROAD	Santee	92071	907.12	7542	Full service car wash, water discharged to 3 chamber clarifier system.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	SANTEE CAR WASH	8868		FANITA DRIVE	Santee	92071	907.12	7542	Coin operated self serve car wash, all washing conducted under cover in bermed area.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	Sonic Car Wash	9015		MISSION GORGE ROAD	Santee	92071	907.12	7542	Car wash under cover. Finishing conducted outside. Property subject to SUSMP.	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
SA	East County Lube Center	7945	161	MISSION GORGE ROAD	Santee	92071	907.12	7549	Automotive repair and maintenance. All work conducted indoors, no outside storage.	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	Yes
SA	LUHRS CUSTOM UPHOLSTERY, MARK	10557		PROSPECT AVENUE	Santee	92071	907.13	7549	Automotive upholsterer. Potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	AAA Smog Center	8781	O	CUYAMACA STREET	Santee	92071	907.12	7549	Smog test only for automobiles, conducted in service bays.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	SANTEE SMOG TEST ONLY	10529		MISSION GORGE ROAD	Santee	92071	907.12	7549	Smog test only for automobiles, conducted in service bays.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Unlimited Smog - Test Only	10659	D	PROSPECT AVENUE	Santee	92071	907.13	7549	Smog test only for automobiles, conducted in service bays.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Executives Garage Inc	10438	D	MISSION GORGE ROAD	Santee	92071	907.12	7549	Auotmotive repair and maintenance. Potential for outside exposures (storage / operations).	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	HOME CARE BIOMEDICAL SERVICES	8406	C	MAGNOLIA AVENUE	Santee	92071	907.13	7629	Medical equipment repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Weekend Appliance Repair	10424		SECOND AVENUE	Santee	92071	907.12	7629	Base for in -home appliance repair, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	METAL MAGIC OF SAN DIEGO	7932		POPLIN DRIVE	Santee	92071	907.12	7629	Electrical and electronic repair shops, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	Mr. Fix-It Appliance Repair	8614	H	ARGENT STREET	Santee	92071	907.13	7629	Appliance repair - household appliances, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	SANTEE WELDING	9937	4	PROSPECT AVENUE	Santee	92071	907.13	7692	Welding repair, all work conducted indoors, no outdoor storage observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	WEITZEL MOTORSPORTS	9437	C	WHEATLANDS COURT	Santee	92071	907.12	7692	Welding repair, all work conducted indoors, potential for outdoor storage.	No	No	Yes	No	No	No	No	No	No	No	Low	No
SA	Adona Grinding a Divisions of	11478		WOODSIDE AVENUE	Santee	92071	907.12	7699	Repair shop, potential for outdoor storage and operations.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	No
SA	BMW MC Service of S.D., Inc.	7945	109	MISSION GORGE ROAD	Santee	92071	907.12	7699	Motorcycle repair, all work conducted indoors, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Low	Yes
SA	COUNTY RV SERVICE CENTER	10229		PROSPECT AVENUE	Santee	92071	907.13	7699	R.V. repair & service, R.V.s stored in gravel-covered area.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	CS MUSIC COMPANY	8606	B	ARGENT STREET	Santee	92071	907.13	7699	Storage & repair of coin operated machines. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	FORM FAB	11478		WOODSIDE AVENUE	Santee	92071	907.12	7699	Other services to buildings & homes, potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	L & S PRECISION CUTTER SERVICE	10925	O	WHEATLANDS	Santee	92071	907.12	7699	Tool & cutters sharpening service, outdoor exposures unlikely.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	R H A	11425		WOODSIDE AVENUE	Santee	92071	907.12	7699	Commercial & industrial repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	REBEL IRON WORKS	11521		WOODSIDE AVENUE	Santee	92071	907.12	7699	Commercial & industrial repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	Reed Sports Buggies, Greg	9745		AIRPORT VISTA WAY	Santee	92071	907.13	7699	Commercial & industrial repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	TAPERS REPAIRED*	9316		LAKE COUNTY DRIVE	Santee	92071	907.12	7699	Homebase for repair of drywall tools.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Tri-City Locksmith	8781	P	CUYAMACA STREET	Santee	92071	907.12	7699	Locksmith, outdoor exposures unlikely.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Valley Tractor & Equipment	11478		WOODSIDE AVENUE	Santee	92071	907.12	7699	Sales and services of tractors. Outside storage of vehicles.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	High	Yes

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	Waynes Harley & Machine Shop	10020	A12	PROSPECT AVENUE	Santee	92071	907.13	7699	Sales and services of equipment. Potential for outside storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	West Coast Appliance Co.	10728	B	PROSPECT AVENUE	Santee	92071	907.13	7699	Commercial & industrial machine repair, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	Mueller's Machine Tool rebuilders	10945		MAGNOLIA AVENUE	Santee	92071	907.12	7699	Repair shops for machine tools, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No
SA	P-Wa's General Maintenance Services	9851		Mission Viejo Court	Santee	92071	907.13	7699	Repair shops, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	JR'S Jack Of All Trades	9440		Wheatlands	Santee	92071	907.12	7699	General handyman and basic mechanic service, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Medium	No
SA	Scooterbug Inc.	9260	C	ISAAC STREET	Santee	92071	907.12	7699	Repair & maintenance of mobility equipment, no outdoor exposures observed.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	Yes
SA	TLR Hydraulic and Machine	11366		WOODSIDE AVENUE	Santee	92071	907.12	7699	Hydraulic repair and machine shop. Potential for outdoor exposures, such as storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	No
SA	Full Throttle Powersports	9143		MISSION GORGE ROAD	Santee	92071	907.12	7948	Sale & minor repair of motorcycles, no outdoor exposures observed, storm drain in parking lot.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Medium	Yes
SA	REVOLUTION RACING SHOCKS	9434		ABRAHAM WAY	Santee	92071	907.12	7948	Racing, including track operation, potential for outdoor storage.	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	William's Racing Developments	10928	A	WHEATLANDS	Santee	92071	907.12	7948	Race car transmission servicing, potential for outside exposures (storage / operations).	No	Yes	Yes	No	Yes	Yes	No	No	No	No	Low	No
SA	CARLTON OAKS COUNTRY CLUB	9200		INWOOD	Santee	92071	907.12	7992	Public golf course with restaurant. Storage of fuel in above ground tank.	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	High	Yes
SA	Rock Rental Inc.	10925		Wheatlands	Santee	92071	907.12	7999	Amusement and recreation services, potential for outdoor storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Kittyhawk Energy LLC	9484		MISSION PARK PLACE	Santee	92071	907.12	8734	Biofuels facility for electricity generation, storage of woodchips outside..	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Medium	Yes
SA	TAYLOR MADE POOLS*	9723		HUBER COURT	Santee	92071	907.12	8811	Home base for pool maintenance company, potential for outdoor storage.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	TOWN & COUNTRY CUSTOM POOLS	9926	121	PROSPECT AVENUE	Santee	92071	907.13	8811	Base for pool maintenance company, potential for outdoor storage.	No	Yes	No	No	Yes	No	No	Yes	Yes	No	Low	No
SA	G E LUDWIG POOLS*	9944		CARLTON PLACE	Santee	92071	907.12	8811	Home base for pool maintenance company, potential for outdoor storage.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	TINASSY'S K-9 SPLASH-R-CISE INC.	10925	E	HARTLEY ROAD	Santee	92071	907.12	8999	Dog exercise therapy conducted in indoor pools, no outdoor exposures observed.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	LA COSTA LANDSCAPE MAINT CO	10320		PROSPECT AVENUE	Santee	92071	907.13	0181	Floriculture production, no outside storage observed during inspection.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	PAX WEST IMPORTS*	7735	59	MISSION GORGE ROAD	Santee	92071	907.12	0181	Nursery and tree production, homebased, may just be an office.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	SANTEE PET HOSPITAL	8936		CARLTON HILLS BOULEVARD	Santee	92071	907.12	0742	Animal hospital services all indoors.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Cuyamaca Animal Hospital	8802	B	Cuyamaca Street	Santee	92071	907.12	0742	Indoor services for domestic pets, outside gravel area for walking area.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	MAST BOULEVARD BLVD PET CARE CENTER	9740		MAST AVENUE	Santee	92071	907.12	0742	Indoor services for domestic pets.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Furry Friends Resort	8802	A	Cuyamaca Street	Santee	92071	907.12	0752	Dog and cat grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Doggie Station	8951		CARLTON HILLS BOULEVARD	Santee	92071	907.12	0752	Dog and cat grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Essential Grooming	9225	22	CARLTON HILLS BOULEVARD	Santee	92071	907.12	0752	Pet grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Aloha Pet Grooming	8011	G	MISSION GORGE ROAD	Santee	92071	907.12	0752	Pet grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Meet Me At The Park Grooming	8011	G	MISSION GORGE ROAD	Santee	92071	907.12	0752	Pet grooming services conducted indoors.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Tony's Landscaping*	9941		Lake Canyon	Santee	92071	907.12	0781	Homebased gardening and landscaping company, outdoor storage of materials, equipment and waste a possibility.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	JCMS Landscape*	10638		PROSPECT AVENUE	Santee	92071	907.13	0781	Base for landscape contracting business, verified that all materials are stored under cover.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	BOURGEOIS INC*	9406		VIA ZAPADOR	Santee	92071	907.13	0782	Base for landscaping company. No outside storage or other	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	BUTLER'S WEED ABATEMENT*	9430		GALSTON DRIVE	Santee	92071	907.12	0782	Homebased business of tree, shrub and weed abatement.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	DeCrescente's Landscaping*	8748		WAHL STREET	Santee	92071		0782	Home-based lawncare maintenance service. Any materials stored outside observed to be covered.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	Four Season Gardening & Landscaping*	9328	DRIVE	ST ANDREWS DRIVE	Santee	92071	907.12	0782	Homebased gardening business where work is conducted offsite.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	GENSCHAW'S TREE SERVICE*	10744		SAYERS COURT	Santee	92071	907.12	0782	Homebased business of tree and shrubery trimming.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	PERPETUAL TREE CARE*	9376		STARCREST DRIVE	Santee	92071	907.13	0782	Tree maintenance (trimming, removals, stump grinding) residen & comm	No	No	No	No	No	No	No	No	No	No	Low	No

Appendix A.4 Industrial/Commercial Inventory

										Potential Pollutants Generated											
Agency	Facility Name	Address Number	Suite Number	Street Name	City	Zip Code	Watershed	SIC Code	Principal Products / Services	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303(d) Listed	Threat to Water Quality	Threat Confirmed?
SA	PROSCAPE*	9440		Leticia Drive	Santee	92071	907.12	0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Rafael Gardening*	8843		COTTONWOOD AVENUE	Santee	92071	907.12	0782	Homebased company providing offsite landscaping services, gravel yard onsite, any storage indoors.	No	No	No	No	No	No	No	No	No	No	Low	Yes
SA	THE HAY GUY*	10932		Grand Fork Drive	Santee	92071	907.12	0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Medium	No
SA	Johnny's Lawn Service*	10062		Woodpark Drive	Santee	92071	907.12	0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Santee Landscape*	9327		Whispering Leaves Lane	Santee	92071		0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No
SA	Royal Handyman & Landscaping Services*	9233		RUFFIN ROAD	Santee	92071		0782	Homebased company providing offsite landscaping services, potential for outside storage of materials and waste.	No	No	No	No	No	No	No	No	No	No	Low	No

Notes:

*Mobile business

"Tributary to 303(d) Listed" means both tributary to a 303(d) listed waterbody and generating one or more of the pollutants associated with the listing.

APPENDIX B

SUMMARY OF DOCUMENTED COMPLAINTS AND STAFF OBSERVATIONS OF VIOLATIONS

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
1	8/12/11	Residential	Oil	Avanti Avenue	Complaint from neighbor regarding cars parked on street. Resolved through sheriff and code compliance.
2	08/16/11	Commercial	Hosing Down	9740 Cuyamaca Street	Complaint about hosing down at 7-11. Mobilized to location, observed area around facility was wet. Operator claimed that it was cleaning up after a spilt drink, but seemed excessive. Sent NOV to business owner as business had been subject to inspection and training. NOV required business owner train employees in stormwater requirements and to provide evidence of training. Business owner complied.
3	08/23/11	Residential	Pet Waste	10557 Ironwood Avenue	Resident had thrown pet waste over fence into area adjacent to Woodglen Vista Channel. Public works removed material. Courtesy notice left at residence with educational information.
4	08/23/11	Residential	Pet Waste	10563 Ironwood Avenue	Resident had thrown pet waste and landscaping waste over fence into area adjacent to Woodglen Vista Channel. Public works removed the material. Spoke to resident and left courtesy notice educating them on why this should not be done.
5	8/30/11	Residential	Landscaping activities	9812 Halberns Boulevard	Landscaping waste had been disposed of adjacent to a drainage channel. City staff removed it during routine maintenance activities. Spoke to resident and left courtesy notice explaining why this should not be done.
6	9/9/11	Residential	Sediment	9626 Cambury Drive	Complaint made about construction work at address. City staff advised homeowner to remove stockpiles from the street and to use BMPs in construction area at the rear of the property. The homeowner complied.
7	9/22/11	Industrial	Undetermined discharge	8634 Siesta Road	Complaint about water at edge of property that "smelled like an open sewer." City staff immediately deployed to location, no water observed and no source of any illegal discharge. Complaint not substantiated.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
8	9/23/11	Residential	Sewer	8616 Big Rock Road	Complaint about RV parked in yard at front of home and being used for additional living space. Complaint included claim that sewage was being discharged down the cleanout into the storm drain system. Code compliance visited location to inspect various issues, including those applicable to stormwater. There was no sign of any discharge to the street or storm drain system. The use of the RV as living space was eliminated.
9	9/26/11	Municipal	Trash	Jeremy Street	Fire department called to put out fire in trash truck. Trash had to be removed for fire to be put out. No discharge reached the storm drain inlet. Public works swept street. City Stormwater Program Manager verified that discharge had not occurred.
10	9/30/11	Residential	Swimming pool maintenance	10843 Stoney Creek Court	City staff observed discharge that appeared to include diatomaceous earth. Traced it back to residence, spoke to occupant who agreed to remove material. City staff verified that this was done.
11	10/7/11	Commercial	Over-irrigation	9802-9866 Magnolia Avenue	Observation from RWQCB staff member that over-irrigation occurring at Santana Village at around 9 am. Contacted property manager who notified contractor of issue. Issue corrected based on driveby inspection within following week.
12	10/7/11	Residential	Auto repair	11050 Meadow Terrace Drive	Complaint about auto repair activity at this address and pouring chemicals in street. Joint code compliance/stormwater investigation. Could not trace any activity to address. No adjacent driveway from address onto Meadow Terrace. Discoloration and much leaf matter observed in curb and gutter. Public works removed debris and residential factsheet sent to addresses in area (as source could not be identified).
13	10/17/11	Commercial	Powerwashing	Intersection of Hartley/Abraham	Complaint about white liquid in right-of-way. City Fire Department and County Environmental Health responded to complaint. Based on investigation it was concluded that it was likely a product like Armoral. It was concluded that it was from a mobile auto detailer operating over the weekend. City crews removed the discharge.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
14	11/11/11	Commercial	Carpet cleaning	9808 Mission Gorge Road	RWQCB employee observed carpet cleaner operating at this location allowing the wash water to drain to the storm drain. The RWQCB employee told the operator that this was an illegal discharge and presented his credentials. The operator ignored the RWQCB employee. The incident was reported to the City of Santee. City staff contacted the contractor and the facility manager who hired the contractor. The company hiring the contractor was issued an NOV. The contractor was issued an NOV and an administrative citation. The contractor also had to provide evidence of staff training on appropriate BMPs for carpet cleaning. The contractor was required to sign a contract and provide a bond to continue to work in the City. The property manager for Trolley Square where the facility was located was contacted and informed of the incident. The property manager confirmed that tenants are required to comply with stormwater requirements.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
15	11/17/11	Commercial	Hosing Down	9850 Mission Gorge Road	Complaint about power washing within Trolley Square. Photograph provided showing that the water was draining to a small circular 2-inch drain that was not blocked off. Informed the property owner of Trolley Square about this violation. A meeting was arranged between the property owner, the maintenance company and City of Santee staff to discuss this incident and the incident on 11/11/11. The Property Manager explained what they had done over recent years in response to similar complaints. Staff are trained to block off storm drain inlets and to collect water. City staff have observed these methods being used. The issue seemed to arise around the lack of understanding of where the smaller circular drain was connected to. City staff explained that any drain in the open will drain to the storm drain and therefore this drain would eventually connect to the storm drain system, not the sanitary sewer. Based on this information the maintenance company will revise their training and procedures. Attendees at the meetings discussed the issue with the carpet cleaner on 11/11/11 (described above). The Property Manager stated that she would follow up with tenants on the issue. City staff offered to help with training materials and/or a presentation as the Property Manager desired.
16	11/21/11	Residential	Automotive Repair	9144 Willowgrove Avenue	Complaint about resident hoarding HHW and dumping oil in the storm drain. Code compliance and stormwater staff visited the location and observed large amount of storage at residence and dark staining in adjacent channel. A code compliance case was opened and the material was removed by the homeowner.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
17	12/2/11	Residential	Stucco	8616 Fiona Way	Complaint via County Hotline regarding contractor working on home and washing out cement mixer in gutter. Inspection did not confirm that this had occurred, although a contractor was working at the address. A courtesy notice was left with the homeowner and contractor advising them of the complaint. The location was revisited several times during the duration of this project to verify that there was no illegal discharge and that BMPs were being appropriately deployed.
18	12/13/11	Residential	Sediment	6116 Castilla Street	Complaint about sediment breaching fiber rolls during rain at recently occupied new home. Left courtesy notice at residence advising them of issue and telling them to sweep it up and to prevent it from reoccurring. Contacted HOA about this and the following complaint to ensure that they encourage homeowners to install landscaping in a timely manner.
19	12/13/11	Residential	Sediment	6104 Castilla Street	Complaint about sediment breaching fiber rolls during rain at recently occupied new home. Visited location, spoke to homeowner and left courtesy notice advising them to sweep sediment up and prevent it from reoccurring. Contacted HOA about this and the previous complaint to ensure that they encourage homeowners to install landscaping in a timely manner.
20	12/21/11	Residential	Sewer	9642 Maccool Lane	Complaint about RV at rear of apartments discharging to storm drain system. No storm drain system on Maccool Lane. Visited location, observed pipes (water/sewer) and electricity connected to RV. No sign of a discharge, not a stormwater issue. Referred to code compliance and fire to resolve other issues.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
21	12/21/11	Residential	Sediment	10009 Via Francis	City staff observed what appeared to be illegal grading of a residential lot. Plant debris and soil was observed on the sidewalk. Soil observed in curb and gutter. Left courtesy notice advising homeowner of need to remove soil/plant matter immediately and possible need for a grading permit. Compliance (including clean up of the curb and gutter and slope stabilization) was achieved through a grading permit enforcement process.
22	1/4/12	Residential	Pet waste	326 River Trail Place	Complaint about resident throwing pet waste over yard fence into City easement in Mast Park. Visited location, observed accumulation of pet waste. Left courtesy notice and residential factsheet at address. Public Works removed waste. Sent courtesy letter to residents advising them that it was a violation and that we would reinspect area. Reinspected twice to confirm that activity had ceased.
23	1/5/12	Residential	Landscaping activities	9616 St Andrews Drive	Complaint about neighbor with son who sweeps the street outside his home and brushes the debris into a storm drain inlet. Visited address and spoke to parent about how this is illegal.
24	1/17/12	Residential	Automotive products	9779 Lutheran Way	Complaint about car leaking oil onto the street. Inspector confirmed presence of oily marks on the street and left a courtesy notice at the address advising the owner to repair the leak.
25	1/27/12	Residential	Hosing Down	9945 Watergum Trail	City staff observed a discharge from inside a garage. Appeared to have hosed inside the garage and allowed water to drain out. Left courtesy notice at address.
26	2/6/12	Commercial	Undetermined discharge	9035 Mission Gorge Road	City staff observed a pipe protruding under metal plates from which water periodically pulsed. Operator of facility unable to explain cause. Property owner said that there was a water line leak and said that he was waiting for PDMWD to correct it. Issued NOV and confirmed with PDMWD that they were not responsible for the discharge. It was from a lateral, which the property owner was responsible to repair. Pipe and discharge was removed.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
27	2/8/12	Residential	Homeless Encampment	West of West Hills Parkway Bridge	Complaint from County staff working on flood control gauge who observed a homeless encampment and a pile of spray paint cans by San Diego River. Notified Sheriff and Public Works to remove encampment and trash. Encampment located on City of San Diego land, removal coordinated with their Public Works Department.
28	2/17/12	Residential	Swimming pool maintenance	10048 Cedar Springs Drive	Complaint regarding pool company discharging blue chemicals to storm drain. Immediately mobilized to site where inspector observed contractor hosing down driveway. Blue material observed on the driveway. Discharge stopped, informed contractor why it was illegal and alternative clean-up methods. Checked storm drain downgradient of the discharge and verified that it was clean. Wrote courtesy notice and left copy with homeowner. Followed up with NOV to business owner with requirement for training. Business owner complied. Entered violation on regional mobile business database.
29	2/27/12	Residential	Construction material	9220 Mast Boulevard	A contractor had placed construction materials in the street with rain imminent. Observed by code enforcement team who tried to located contractor. Public Works removed the materials and the associated equipment was ticketed. A NOV was sent to the HOA who had hired the contractor.
30	2/29/12	Commercial	Over irrigation	9802-9866 Magnolia Avenue	Observed pools of water in parking lot at Santana Village in early morning. Contacted property manager about apparent over-irrigation, who verbally confirmed that this issue would be addressed, City staff will continue to monitor this facility, as this seems to be a reoccurring issue..
31	3/2/11	Municipal	Hydraulic Oil	Cambury and Lutheran	Complaint about hydraulic oil leak from trash truck. Referred to Waste Management for clean-up, which was done.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
32	3/8/12	Residential	Automotive Products	10500 Princess Joann Road	City staff observed a fresh pool of oil on the street at this address. A courtesy notice was left at the address advising the resident that they may have a leak from their car that needs to be repaired and its potential impact to water quality. Resident used absorbent to remove the spill.
33	3/14/12	Municipal	Trash	Forester Creek	Inquiry from RWQCB regarding maintenance issues at Forester Creek and potential for trash accumulation and establishment of homeless camps. Inspected location and identified areas for specific clean-up, in addition to the routine weekly maintenance. Contacted Caltrans about need to maintain specific areas relating to SR52 flyover. Maintenance activities reported on Santee website to educate residents not to drop trash.
34	3/15/12	Residential	Landscaping activities	8668 Atlas View Drive	Complaint that resident does not remove grass clippings from sidewalk when mowing lawn. City staff mobilized to location, observed grass clippings and left courtesy notice with educational information. Tenant (duplex) volunteered to remove grass clippings before rain.
35	3/16/12	Commercial	Paint	9440 Wheatlands Court, Suite 104	Discharge of paint from building, did not reach curb and gutter. Code compliance sent Courtesy notice to tenant, included stormwater issues. Told property owner that it is ultimately their responsibility. Follow-up visit confirmed paint no longer present.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
36	33/22/12	Municipal	Sand Blasting	Ironwood at intersection of Woodglen Vista	Complaint that City staff were conducting sandblasting activities the day before without using BMPS. Went to location and observed residue on sidewalk and in gutter, likely from an incomplete clean-up. Contacted Public Works Manager who confirmed that there had been an issue and the resident had been confrontational. The crew who had been conducting the sand blasting did not normally conduct that work and was reminded of the BMP requirements. This will also be reinforced during future stormwater training of public works staff. Public works remobilized to the location to remove the remaining residue.
37	3/27/12	Commercial	Trash	8918 Carlton Hills Boulevard	Complaint from neighbor about restaurant that appeared to have stopped paying for trash service. Cardboard observed by dumpster, generated by delivery that day, advised business owner to get additional pickup for cardboard. Owner complied.
38	3/29/12	Residential	Construction material	10148 Lakeland Drive	Complaint from neighbor regarding trash and unprotected slopes at the site. City staff notified contractor and owner of violations. These were corrected within 24 hours.
39	3/29/12	Residential	Construction material	10126 Lakeland Drive	Complaint about contractor who had stockpiles of concrete and soil in the right-of-way during driveway work. Needed to clean-up and use BMPs. City staff notified contractor and stormwater issues were addressed within 24 hours.
40	4/18/12	Residential	Automotive products	10711 Valor Place	Complaint about a vehicle leaking excessive oil. Visited location and spoke to vehicle owner to advise them that the leak needed to be corrected. Advised Public Works of the leak that needed to be cleaned up from the street; Public Works responded and performed cleanup.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
41	4/18/12	Residential	Irrigation	10008 Burrock Drive	Observed water running down street, traced it to this address. Leak apparently from irrigation. No one home, property for sale. Left courtesy notice, called PDMWD (regarding water waste) and code compliance (possible foreclosure property management issue).
42	4/18/12	Commercial	Car washing	9015 Mission Gorge Road	Observed vehicle washing outside of car wash facility. Stopped washing, directed manager to remove water. This was done. Sent NOV with training requirement.
43	5/3/12	Residential	Swimming Pool Water	Padre Lane	Complaint from resident about neighbor discharging swimming pool water. Based on description of discharge, the water complied with storm water requirements; rather it was the volume that concerned the resident. Not a storm water violation.
44	5/9/12	Residential	Swimming Pool Water	Sheriff's Office	Complaint routed from Sheriff's office regarding swimming pool discharge. Investigated on receipt of the complaint. No water or swimming pool debris observed on street. Not a storm water violation.
45	5/9/12	Residential	Landscaping activities	9753 Settle Road	City staff observed debris in street from landscaping activities. Spoke to resident who said it was her husband. Advised her and she agreed to get him to sweep it up.
46	5/14/12	Commercial	Hosing down	9820 Mission Gorge Road	Observed water across sidewalk and parking lot near unit being renovated (former La Salsa location). Hosepipe observed. Spoke to contractor who agreed to remove the discharge via wet vacuum and to prevent it from reoccurring. Followed up with property manager and notified them of the issue. Contractor called to confirm that they were aware of the incident and of the need to prevent it from reoccurring.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
47	5/16/12	Commercial	Potable water	10850 Hartley Road	A resident complained that they had observed water being discharged from this address occupied by Discflo Corporation on a Saturday morning. Discflo had been contacted about this activity over recent years. Discflo was notified that the complaint had been filed and that the discharge was not allowed. A copy of the previous Notice of Violation was attached. The Sheriff's unit was advised of the complaint and requested to patrol this area on Saturday mornings. The complainant was invited to notify the City if they observe the issue again.
48	5/21/12	Residential	Construction material	3153 Mirador Street	Observed construction material on street and cage used by landscapers to store materials that could result in a discharge. Left a courtesy notice with the homeowner and called the contractor advising them that the material needed to be removed. Based on a follow up inspection, this was removed.
49	5/22/12	Residential	Construction material	6107 Cala Lily Street	City staff observed a stockpile of construction material on street. Associated with Rivers Landscape working at this address. Spoke to occupant, left courtesy notice and called contractor. Still present on 5/30/12. Sent NOV to contractor and courtesy notice to owner and HOA. Stockpile had been removed by 5/31/12.
50	5/30/12	Residential	Construction material	3159 Mirador Street	Observed stockpile of construction material on street. Notified homeowner and contractor (Mission Pools) and left courtesy notice with homeowner. Sent NOV to contractor. Removed by 5/31/12.
51	6/1/12	Residential	Carpet & fabric care	9806 Medina Drive	Complaint about carpet cleaner based at this address, liquid being discharged from van. Investigated, spoke to resident and left factsheet. Business owner called back to say that they already had a laminated copy of the factsheet in their field vehicle and did not discharge wastewater. City staff verified by conducting driveby checks at various times.

Appendix B
Summary of Documented Complaints and Staff Observations of Violations

#	Date	Category	Type/Pollutant	Location	Notes
52	6/12/12	Residential	Automotive Products	8048 Linen Drive	Complaint via County Hotline regarding vehicle leaking oil on driveway and street at this address. Mobilized to location immediately on receipt of referral, spoke to resident. Upon investigation, found that the subject vehicle had been removed prior to receipt of the notification from the County. No evidence of fresh oil at location. Educated resident about why discharges of oil to the storm drain system were not acceptable.
53	6/28/12	Residential	Landscaping waste	10168 Montura Avenue	Complaint received about person at this address throwing leaf litter into street. City staff mobilized to location and could not find evidence of this activity. Called complainant back to ask for clarification, but the resident did not respond. Based on a conversation with code compliance this is part of a neighborhood dispute. No storm water violation observed.

APPENDIX C

JURMP ANNUAL REPORT REQUIREMENTS CHECKLIST

Appendix C
JURMP Annual Report Requirements Checklist

Development Planning Component

Permit Annual Reporting Requirement—Section J.3.a.(3).(a)	Location in Report
i. A description of any amendments to the General Plan, the environmental review process, development project approval processes, or development project requirements.	2.2, 2.3, 2.4
ii. Confirmation that all development projects were required to undergo the Copermittee's urban runoff approval process and meet the applicable project requirements, including a description of how this information was tracked.	2.4.4.2
iii. A listing of the development projects to which SUSMP requirements were applied.	2.4.4.2, Table 2-1
iv. Confirmation that all applicable SUSMP BMP requirements were applied to all priority development projects, including a description of how this information was tracked.	2.4.3, 2.4.4.2
v. At least one example of a priority development project that was conditioned to meet SUSMP requirements and a description of the required BMPs.	2.4.4.2
vi. A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.	2.4.4.2
vii. An updated treatment control BMP inventory.	Appendix A.1
viii. The number of treatment control BMPs inspected, including a summary of inspection results and findings.	2.4.4.3, Table 2-2 and 2-3
ix. A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.	2.4.4.3
x. Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.	2.4.4.2
xi. A listing of any projects which received a SUSMP waiver.	2.4.4.2
xii. A description of implementation of any SUSMP waiver mitigation program.	2.4.4.2
xiii. A description of Hydromodification Management Plan (HMP) development collaboration and participation.	2.4.4.2
xiv. A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.	2.4.4.2
xv. A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.	2.4.4.2

Development Planning Component

Permit Annual Reporting Requirement—Section J.3.a.(3).(a)	**Location in Report**
xvi. A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.	N/A, IHC no longer applicable
xvii. The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	2.4.4.3
xviii. A description of notable activities conducted to manage urban runoff from development projects.	Throughout Section 2

Construction

Permit Annual Reporting Requirement—Section J.3.a.(3).(b)	**Location in Report**
i. Confirmation that all construction sites were required to undergo the Copermittee's construction urban runoff approval process and meet the applicable construction requirements, including a description of how this information was tracked.	3.5
ii. Confirmation that a regularly updated construction site inventory was maintained, including a description of how the inventory was managed.	3.2
iii. A description of modifications made to the construction and grading ordinances and approval processes.	3.3, 3.4, 3.5
iv. Confirmation that the designated BMPs were implemented, or required to be implemented, for all construction sites.	3.5
v. Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.	3.5
vi. A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.	3.5
vii. For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.	3.5, Appendix A.2
viii. A description of the general results of the inspections.	3.5
ix. Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	3.5
x. The number of violations and enforcement actions (including types) taken for construction sites, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	3.1.1, 3.5 Table 3-1
xi. A description of notable activities conducted to manage urban runoff from construction sites.	Throughout Section 3

Municipal

Permit Annual Reporting Requirement—Section J.3.a.(3).(c)	Location in Report
i. Any updates to the municipal inventory and prioritization.	4.2.2, Appendix A.3
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	4.2.3, 4.2.4, 4.3.4, 4.4.4, 4.5.4, 4.6.4, 4.7.4
iii. A description of inspections and maintenance conducted for municipal treatment controls.	Table 2-3, 4.2.4
iv. Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	4.4
v. Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	4.4
vi. Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.	4.4
vii. Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.	4.4
viii. Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding.	N/A
ix. Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	4.2.3
x. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3 Table 4-1
xi. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3 Table 4-1

Municipal

Permit Annual Reporting Requirement—Section J.3.a.(3).(c)	**Location in Report**
xii. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	4.3 Table 4-1
xiii. Identification of the total distance of curb-miles swept.	4.3
xiv. Identification of the number of municipal parking lots, the number of municipal parking lots swept, and the frequency of sweeping.	4.3 Table 4-1
xv. Amount of material (tons) collected from street and parking lot sweeping.	4.3
xvi. A description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4	4.5
xvii. Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of the inspections.	4.2.4, 4.7.4
xviii. A description of the general results of the inspections.	4.2.4, 4.7.4
xix. Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	4.2.4
xx. The number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	4.2.4, 4.10
xxi. A description of notable activities conducted to manage urban runoff from municipal areas and activities.	Throughout Section

Industrial and Commercial

Permit Annual Reporting Requirement—Section J.3.a.(3).(d)	**Location in Report**
i. Any updates to the industrial and commercial inventory.	5.2.2 (stationary), 5.3.2 (mobile), Appendix A.4
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	5.2.3, 5.2.4, 5.3.3
iii. A description of efforts taken to notify owners/operators of industrial and commercial sites/sources of BMP requirements, including mobile businesses.	5.2.4, 5.3.4
iv. Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	5.2.2, 5.3.2; 5.2.4, 5.3.4
v. Justification and rationale for why the industrial and commercial sites/sources inspected were chosen for inspection.	5.2.4
vi. Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	5.2.4
vii. Identification of the number of third party inspections conducted.	5.2.4
viii. Identification of efforts conducted to verify third party inspection effectiveness.	5.2.4
ix. A description of efforts implemented to address mobile businesses.	5.3.4
x. The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	5.1.1, 5.2.4, 5.3.4 , Table 5-2, Appendix B
xi. A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	5.2.4, Table 5-1
xii. A description of notable activities conducted to manage urban runoff from industrial and commercial sites/sources.	Throughout Section

Residential

Permit Annual Reporting Requirement—Section J.3.a.(3).(e)	Location in Report
i. Identification of the high threat to water quality residential areas and activities that were focused on.	6.2
ii. Confirmation that the designated BMPs were implemented, or required to be implemented, for residential areas and activities.	6.3, 6.4
iii. A description of efforts implemented to facilitate proper management and disposal of used oil and other household hazardous materials.	6.4
iv. Types and amounts of household hazardous wastes collected, if applicable.	6.4
v. A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.	6.4 (see discussion in JURMP)
vi. The number of violations and enforcement actions (including types) taken for residential areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	6.4, Appendix B
vii. A description of collaboration efforts taken to develop and implement the Regional Residential Education Program.	6.4
viii. A description of notable activities conducted to manage urban runoff from residential areas and activities.	6.1, 6.4

IDDE*

Permit Annual Reporting Requirement—Section J.3.a.(3).(f)	Location in Report
* Section 7, the Illicit Discharge Detection and Elimination component, of the 2011/2012 JURMP Annual Report will be submitted to the RWQCB no later than December 15, 2012.	

IDDE—Additional Dry Weather Monitoring Program Requirements*

Permit Annual Reporting Requirement—Attachment B and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001, Section II.B.3.c,d	Location in Report
* Section 7, the Illicit Discharge Detection and Elimination component, of the 2011/2012 JURMP Annual Report will be submitted to the RWQCB no later than December 15, 2012.	

Education

Permit Annual Reporting Requirement—Section J.3.a.(3).(g)	Location in Report
i. A description of education efforts conducted for each target community.	8.3
ii. A description of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.	8.3
iii. A description of education efforts conducted for municipal departments and personnel.	8.2
iv. A description of education efforts conducted for the new development and construction communities.	8.3
v. A description of jurisdictional education efforts conducted for residents, the general public, and school children.	8.3

Public Participation

Permit Annual Reporting Requirement—Section J.3.a.(3).(h)	Location in Report
i. A description of public participation efforts conducted.	9.2 and 9.3

Effectiveness Assessment

Permit Annual Reporting Requirement—Section J.3.a.(3).(i)	Location in Report
i. An assessment of the effectiveness of the Jurisdictional Urban Runoff Management Program which meets all requirements of section I.1 of this Order.	11

Fiscal Analysis

Permit Annual Reporting Requirement—Section J.3.a.(3).(j)	Location in Report
i. A fiscal analysis of the Copermittee's urban runoff management programs which meets all requirements of section G of this Order. (For 2007-2008, the requirements that apply are essentially the same as those found in Order No. 2001-01)	10

Same as old Permit for 2007-2008

Special Investigations

Permit Annual Reporting Requirement—Section J.3.a.(3).(k)	Location in Report
i. A description of any special investigations conducted.	12

Non-Emergency Firefighting

Permit Annual Reporting Requirement—Section J.3.a.(3).(l)	Location in Report
i. A description of efforts conducted to reduce pollutant discharges from non-emergency fire fighting flows.	4.2.3, 13

JURMP Revisions

Permit Annual Reporting Requirement—Section J.3.a.(3).(m)	Location in Report
i. A description of any proposed revisions to the JURMP.	14 and each program component section

ATTACHMENT 5.1

STORMWATER FACTSHEETS

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 01

STORMWATER INFORMATION

What is Stormwater Pollution?

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

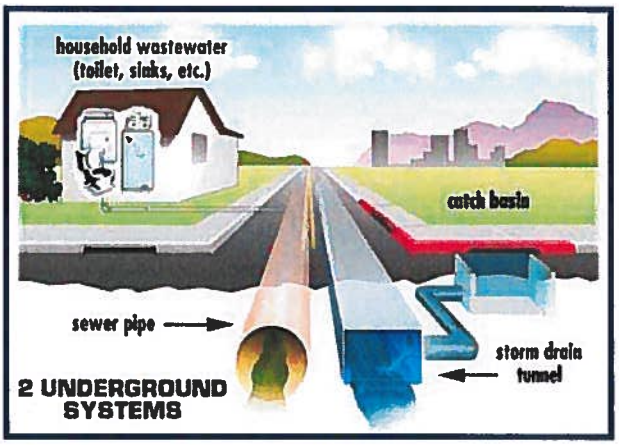

WHY IS IT A PROBLEM?

It is important to remember that the City of Santee is host to the San Diego River as it flows towards the Pacific Ocean. The River offers tremendous biological resources within its reach through Santee and beyond, supporting a diverse population of plant and animal life. The health and the beauty of the San Diego River is directly dependent on the actions of all Santee residents, and deserving of our protection from stormwater pollution!

WHAT CAN I DO TO HELP?

Everyone can be part of the solution to stormwater pollution. We can have a positive impact on water quality by changing the way we go about some of our most basic day to day activities.

- Pick Up After Your Pets
- NO DUMPING!
- Sweep It, Don't Hose It Down.
- Wash Paint Brushes in the Sink
- Properly Dispose of Trash
- Report Illegal Dumping.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 02

Water Quality Impacts

POLLUTANT TYPE	POLLUTANT SOURCES AND IMPACTS
SEDIMENT	Sediment is a common component of stormwater, and can be a significant pollutant. Sources of sediment in stormwater include construction activities and slope erosion. Sediment can be detrimental to aquatic life by impeding such natural functions as photosynthesis, respiration, growth, reproduction and oxygen exchange in the water column. Additionally, sediment in stormwater will carry other pollutants such as oil, grease, and metals.
NUTRIENTS	Nutrients including nitrogen and phosphorous are commonly found in fertilizers used in landscaping. Nutrients are found in stormwater through over irrigation of lawns and other landscaped areas. Nutrients in local water bodies will result in excessive growth of aquatic vegetation such as algae, and a rapid reduction in oxygen that supports fish populations.
BACTERIA & VIRUSES	Sources of bacteria and viruses in stormwater include improperly disposed pet waste, illegal sewer connections, and sanitary sewer overflows. High levels of indicator bacteria lead to the closure of beaches, lakes, rivers, and bays throughout the County of San Diego.
OIL & GREASE	Oil and grease compounds may be toxic to aquatic environments, compromising the survival of aquatic plant and animal species. Sources of oil and grease include illegal dumping, oil spills, automotive fluid leaks, and restaurant grease.
METALS	Metals including lead, zinc, cadmium, copper, chromium, and nickel are commonly found in stormwater runoff. Materials such as galvanized metal, brake pads, corroded paints, and automobiles contribute to the metals found in stormwater. Heavy metals are of concern to the aquatic environment as they can be potentially toxic to organisms, and accumulate to toxic levels in fish.
PESTICIDES	Including herbicides, fungicides, rodenticides, and insecticides are frequently detected in stormwater at toxic levels. Excessive use of these chemicals at home or in commercial settings, will have a detrimental impact on human as well as environmental health.

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 03

STORMWATER INFORMATION

Wet Weather...Are You Ready?

What is stormwater pollution?
Stormwater pollution is the untreated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Stormwater runoff containing pollutants can contaminate our local creeks, rivers, streams and ultimately the Pacific Ocean.

REMEMBER

The Rainy Season lasts from October 1 - April 30

Is your home or business ready for wet weather?
Use the following wet weather checklist to prepare for the rain, and to do your part to prevent pollution in runoff.

WET WEATHER CHECKLIST

- ☑ COVER exposed material stockpiles including soil, sand, gravel, fertilizers, auto parts, tires, batteries, storage containers, etc.
- ☑ CLEAN significant fluid spills (oil, grease, paint, solvents) from drive ways, parking lots, parking spaces, and sidewalks. Use a mop and bucket and dispose of the water in a sanitary sewer drain (sink, toilet, floordrain).
- ☑ CLEAR earthen channels, culverts, brow ditches, and other drainage structures within and surrounding your property.
- ☑ REMOVE and PROPERLY DISPOSE of waste materials.
- ☑ INSPECT the property for potential sources of pollution.
- ☑ AVOID using chemicals (pesticides, herbicides, and fertilizers) and irrigation when rain is forecast within 48 hours.
- ☑ CALL the City of Santee at (619) 248-4100 x177 with any questions.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 04

Restaurants & Bars

RESTAURANTS & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with food establishments include grease, food waste, cleaners, trash and debris. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of Minimum Best Management Practices that are required at all Food Establishments in the City of Santee.

- ☑ Employee Training.
- ☑ Clean Floor Mats Inside.
- ☑ Maintain Outdoor Grease Bins.
- ☑ Keep Dumpster Lids Closed.
- ☑ Maintain Dumpster Areas Using Dry Cleanup Techniques.
- ☑ Use a Mop and Bucket for Outdoor Cleaning Activities. Dispose of mop water in a sanitary drain. (Sink, Toilet)
- ☑ Sweep It, Never Hose It Down.
- ☑ Keep Absorbent Material or Other Spill Response Materials On Site.
- ☑ Maintain Good Housekeeping Practices.
- ☑ Contain, Control & Capture All Water Used in Cleaning Activities.
- ☑ Dispose of All Wastewater into a Sanitary Sewer Connection. (Sink, Floor Drain, Toilet)
- ☑ Adjust Sprinklers to Avoid Overspray from Irrigation of Landscaped Areas.
- ☑ Ensure that Pressure Washing of Sidewalks, Drive Thrus, or Parking Lots is Conducted with Adequate Controls in Place.
- ☑ Direct Runoff to Landscaped Areas.
- ☑ Clean Outdoor Spills Immediately.
- ☑ Properly Maintain Sinks and Drains to Avoid Sewer Overflows.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x177

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 05

Automotive Industry

AUTOMOTIVE INDUSTRY & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with automotive maintenance and repair include antifreeze, fuels, waste oils, solvents and paints. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of Minimum Best Management Practices that are required at all Automotive repair, servicing, and maintenance facilities in the City of Santee.

- ☑ Employee Training.
- ☑ Service Indoors When Applicable.
- ☑ Ensure that Floor Drains Are Plumbed to the Sanitary Sewer.
- ☑ Place Drip Pans Under Vehicles in Exposed Outdoor Areas.
- ☑ Keep Absorbent Materials / Pads Readily Accessible at All Times.
- ☑ Properly Dispose of Hazardous Wastes.
- ☑ Drain all Fluids Indoors.
- ☑ Wash Equipment & Vehicles in Designated Areas to Avoid Discharge to the storm drain.
- ☑ Maintain Good Housekeeping Practices.
- ☑ Utilize "Dry" Cleanup Methods. (Sweep, Vacuum)
- ☑ Dry Sweep All Work Areas Before Mopping.
- ☑ Use a Mop and Bucket to Clean Shop Floors and/or Outdoor Areas. Dispose of mop water in a sanitary drain.
- ☑ Collect All Dust, Grindings and Shavings at Work Stations.
- ☑ Remove or Cover All Materials Stored in Outdoor Areas.
- ☑ Recycle oil, antifreeze, batteries, etc.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 06

Mobile Auto Detailing

MOBILE AUTO DETAILING & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with mobile auto detailing include oil, grease, heavy metals (brake dust), and detergents. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of minimum Best Management Practices that are required at all mobile auto detailing activities in the City of Santee.

- ☑ Contain, Control and Capture ALL Wash Water.
- ☑ Train Employees to Use Practices that will Eliminate Discharge to a Storm Drain.
- ☑ Locate and Protect All Nearby Storm Drains or Water Bodies.
- ☑ Utilize a "Shop Vacuum" to Capture all Wash Water.
- ☑ Service Vehicles on or Near Vegetated Areas.
- ☑ Minimize or Eliminate the Use of Soaps or Detergents.
- ☑ Confine Washing and Cleaning Activities within a burmed Area.

REMEMBER

- Biodegradable Soaps Only Degrade Faster, And May Be Detrimental to Water Quality.
- Curbs, Gutters, Drainage Channels, Curb Inlets, Brow Ditches, Channels and Culverts are ALL Connected to the San Diego River and Ultimately the Pacific Ocean.
- ONLY RAIN BELONGS IN THE STORM DRAIN!

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 07

STORMWATER INFORMATION

Power Washing Activities

POWER / PRESSURE WASHING & WATER QUALITY IMPACTS

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with power washing activities include sediment, grease, oil, food waste, and trash. As a business owner or operator, you are legally responsible for ensuring that stormwater pollutants are properly managed.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices are practical and cost effective approaches to day to day business operations that reduce, control, or prevent water pollution. The following is a list of Minimum Best Management Practices that are required at all power washing activities in the City of Santee.

POWER WASHING REQUIREMENTS

The following BMPs are REQUIRED for ALL Power Washing Activities including but not limited to vehicle maintenance & fuel dispensing areas, power washing buildings, sidewalks, parking lots, loading docks and common areas.

1. Block all storm drain inlets and collect water/waste for disposal to the sanitary sewer. No water can drain to the street or catch basins.
2. Prior to washing activities, clean and/or sweep all loose debris from the area.
3. Clean any significant oil / auto fluid spills with an appropriate dry method prior to cleaning.
4. If possible, direct divert runoff to a vegetated area where water can absorb into the ground.
5. If visual observation of runoff indicates contamination (cloudy, discolored, presence of suspended materials), stop activities immediately, and use additional BMPs (i.e. filtration) to eliminate polluted runoff to vegetation.

REMEMBER THE THREE C's

Contain , Control , & Capture

All Waste & Wash Water

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 08

STORMWATER INFORMATION

Industrial & Commercial Activities

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, and other maintenance activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

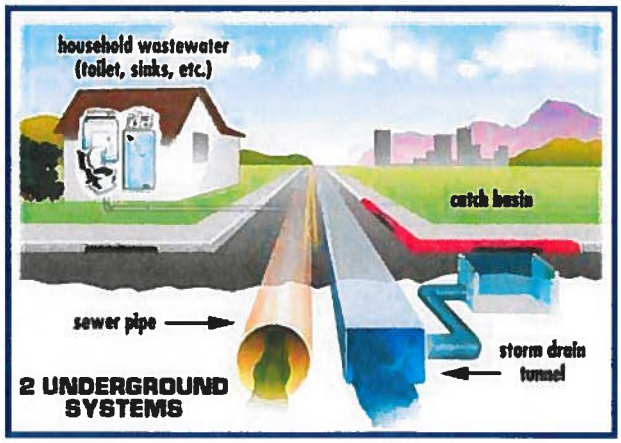

WHAT IS REQUIRED OF INDUSTRIAL & COMMERCIAL FACILITIES?

Essentially, the use of applicable Best Management Practices (BMPs) are required of all industrial and commercial activities in the City. As such activities are varied, a set of minimum BMPs have been established in order to minimize polluted runoff. Additionally, activity-specific BMPs have been established for various business sectors, which will be reviewed and/or recommended through the industrial and commercial facility inspection process.

MINIMUM BEST MANAGEMENT PRACTICES (BMP)

Minimum BMPs for industrial and commercial activities in the City are broken into 3 categories. The following list provides a summary of required BMPs:

1. **Good Housekeeping BMPs**: Regular Sweeping, Dry Cleanup, Proper Waste Disposal, Employee Training, Spill Cleanup.

2. **Materials Handling BMPs**: Hazardous Materials Storage, Outdoor Material Storage, Proper Labeling, Spill Prevention.

3. **Equipment Maintenance BMPs**: Perform Work Indoors, Repair Leaks, Designated Wash Areas, Drip Pan Use, Proper Cleaning Techniques.

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 09

Swimming Pool & Spa Maintenance

SWIMMING POOL DISCHARGE

The City of Santee has adopted the Stormwater Management and Discharge Control Ordinance (SMC 13.42) to regulate the discharge of pollutants to the storm drain system. Pollutants typically associated with swimming pool and spa maintenance activities include chlorine, pH, organic matter (decaying plants & algae), and copper.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean, completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

CAN IT BE DISCHARGED INTO THE STORM DRAIN?

If it is not a saline pool, you can discharge water with NO chemicals into the storm drain. The water must:

1. Be water only (no debris)
2. Be de-chlorinated
3. Have a pH range of 7-8.
4. Have no algae present
5. Be a controlled flow to avoid erosion problems or cause a traffic hazard.

Can I get rid of chlorine?

Chlorine will naturally dissipate, and pool water will become de-chlorinated over time. Monitor the pool over a period of 3-5 days until NO chlorine is detected.

How do I Clean Pool Filters?

It's best to clean pool filters over a lawn, dirt, planter box, vegetated hillside, or something to absorb the discharge. Collect materials on filter cloth, then throw the filter cloth away. Rinse cartridge and diatomaceous earth material onto a dirt area, and spade filter residue into soil.

If you retain a pool company to take care of your pool, please make sure that they comply with these regulations. By doing your part, you will help reduce the pollution problems in the community where your family lives, works and plays.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CALL PADRE DAM MUNICIPAL WATER DISTRICT ON (619) 258-4664 FOR INFORMATION ON DISCHARGES TO SEWER.

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 10

STORMWATER INFORMATION

Residences

Although many residents may not realize it, everyday activities that we conduct at home have the potential to impact the quality of water which drains from the street into our municipal storm drain. This eventually discharges UNTREATED into the San Diego River. The cumulative impact of discharges from each residence has the potential to directly impact the San Diego River. Here are some examples of common household activities of concern:

PET WASTE

This may be considered "natural," but did you know that the water quality of San Diego River is considered to be impaired due to the presence of bacteria from fecal discharges? *ALWAYS pick up after your pet, even at home, and dispose of pet waste in the trash.* Don't throw pet waste in any drainage channel, culvert, gutter or drain.

AUTOMOTIVE

Reduce or eliminate the release of motor oil from leaking cars, detergents from washing and gasoline from fuel drips. Do not maintain your vehicle in the street and clean up fluid spills and leaks immediately. *Use drip pans under leaking vehicles and properly dispose of automotive fluids.*

HOME IMPROVEMENT AND GARDEN CARE

Many home improvement projects may involve the use of hazardous materials (paints, solvents etc.). Powder materials (e.g.,concrete, sand, and grout) can form harmful sediment if washed into the San Diego River via the storm drain. Rinse concrete or grout residue into a hole dug into a dirt area. Let the water infiltrate into the ground and throw away the residue. *Sweep, do not hose down* when cleaning and *do not blow plant debris into the storm drain.* Dispose of household hazardous wastes including paint, cleaners, and batteries for FREE at one of the following locations:

Clean Harbors Environmental Services, 12325 Crosthwaite Circle, Poway, CA 92064. 1-800-444-4244. Saturdays 9 am to 3 pm.

Waste Management, City of El Cajon, end of O' Conner Street, El Cajon CA 619-596-5100. Household pickup by appointment.

- Pick Up After Your Pets
- NO DUMPING!
- Sweep It, Don't Hose It Down.
- Wash Paint Brushes in the Sink
- Do not overwater
- Report illegal dumping

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 11

Demolition & Construction

Non-rainwater discharges from demolition and construction sites are illegal and could be subject to clean up costs, as well as fines and other penalties. With a few simple steps contractors on these sites can prevent illegal discharges.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks enters the storm drain and is discharged into the San Diego River completely untreated!

KEEP YOUR SOIL ON YOUR PROPERTY

It is illegal to allow soil discharges into the street. Plan to use measures to prevent erosion (for example, preservation of current landscaping, expedited planting, blankets, hydroseeding, or bonded fiber matrix); and sediment control measures (silt fence, gravel bags, and fiber rolls) to prevent discharges, particularly between the months of October and May. Use silt-free gravel, not sand, in gravel bags. Be prepared to stop liquid discharges during demolition.

MANAGE A TIDY SITE

It is a violation of City ordinance to discharge airborne dust or allow the tracking of soil onto the street. Sweep or vacuum, DO NOT HOSE DOWN, any material that strays onto the street. Keep liquid materials in a covered second container. Do not discard waste materials to the ground. Instead, immediately place it into a trash container. Order an extra trash pickup if more waste is generated than usual. Dispose of hazardous materials properly. Use drip pans under vehicles and promptly remove spills.

CONCRETE AND POWDER MATERIALS

The pH content of cement mix can be high enough to classify it as hazardous waste! When concrete waste gets into a gutter and then the storm drain, it eventually ends up in the San Diego River. If allowed to dry in gutters or catch basins, it can disrupt the proper flow of rainwater. Other powdery material (stone dust, grout, and masonry), if discharged to the storm drain, will result in increased sediment in the San Diego River, having a negative effect on aquatic life. Place concrete waste into a container, and let it dry before disposal.

KEEP OUT OF THE GUTTER!

The gutter is not the place to clean any piece of equipment, large or small. It is a violation of the City's ordinance to park heavy vehicles in the street.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 12

Pollution Prevention at Special Events

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

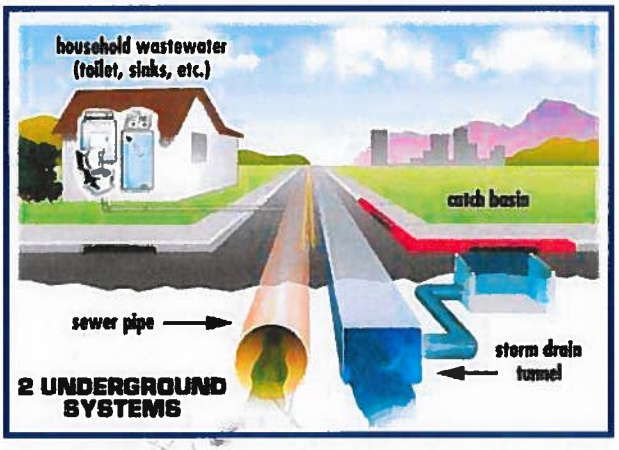

HOW CAN A SPECIAL EVENT CAUSE STORMWATER POLLUTION?

An event can result in the generation of a large amount of litter. Plastic bags and other light material may be blown into creeks and channels. Other items may enter curb inlets, either blocking the structure, or being washed via runoff through the stormdrain system into nearby rivers and creeks. Food and pet waste can be sources of bacteria and nutrients. Protect water quality by using the following best management practices:

- Portable toilets shall have secondary containment.
- Have materials available (cloths, paper towels, a dustpan and brush, etc.) to promptly remove spills as they occur.
- Install temporary fencing to prevent trash from being dispersed.
- Use temporary screens on catch basins and storm drain inlets.
- Provide plenty of trash and recycling bins. Promptly dispose of trash into dumpsters with lids and do not allow dumpsters to overfill.
- Sweep the area after the event. Clean catch basins as necessary.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 13

Carpet and Upholstery Cleaning

Carpets and upholstery are regularly cleaned in homes and commercial businesses to prolong the life of carpets and furniture, and to ensure a hygienic living and working space. Wastewater from carpet cleaning usually contains detergents, other potentially hazardous chemicals and extracted carpet residues, some of which are known pollutants.

It is illegal to discharge wastewater from these cleaning activities to the storm drain.

WHERE DOES IT GO?

All water that drains off of the streets, parking lots, driveways and sidewalks enters the storm drain and is discharged into the San Diego River completely untreated!

- Any wastewater poured into streets, gutters, or stormdrain inlets will make its way into sensitive waterways that support aquatic plants and animals. Carpet cleaning chemicals and other residues in carpet cleaning wastewater may damage fragile ecosystems.
- Many carpet cleaning agents are toxic to aquatic plant and animal life.
- Residues from carpet cleaning can contribute to nutrient loadings that will result in explosive algal growth and deplete waterbodies of oxygen.

WHAT ARE THE REQUIREMENTS?

Wastewater and residue from carpet cleaning must NEVER be discharged to any roadside gutter, parking lot drain, stormdrain, curb inlet, drainage channel, or watercourse.

- Wastewater and residue from carpet cleaning should be discharged to a sanitary sewer connection such as a sink, floor drain, toilet sewer cleanout, or septic tank.
- Clean or flush hoses to a vegetated or dirt area and let the water infiltrate the ground.
- Contain, control, and capture all wastewater or chemicals.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 14

Pollution Prevention during Community Activities

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system.

WHERE DOES IT GO?

The storm drain system is made up of a series of curbs, gutters, drainage channels, culverts, inlets and pipes. All water that drains off of the streets, parking lots, driveways and sidewalks, and through the storm drain system ends up in our creeks, rivers, and ultimately the Pacific Ocean completely untreated! Just remember, the storm drain system is SEPARATE from the sanitary sewer system.

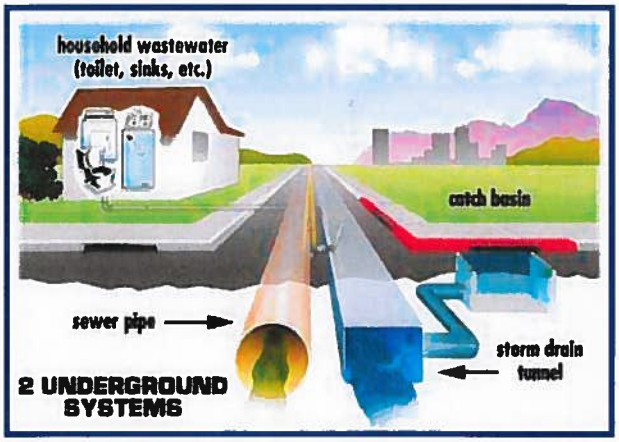

HOW CAN COMMUNITY ACTIVITIES CAUSE STORMWATER POLLUTION?

Any activity that results in runoff discharging into catch basins on private property or into the street (such as washing cars or cleaning up after an event) can cause stormwater pollution. These types of discharges are illegal. In addition, community events can result in the generation of litter which can get into the storm drain system. Simple steps can be take to prevent pollution and protect **a valuable community resource — our river**.

- Use trays under portable toilets (secondary containment).
- Have materials available at an outdoor event (cloths, paper towels, a dustpan and brush, etc.) to promptly remove spills as they occur.
- Promptly dispose of trash into dumpsters with lids and do not allow dumpsters to overfill.
- Sweep after an outdoor event and clean catch basins as needed.
- Contact the City for pollution prevention methods during special events and car washing activities (look at www.ci.santee.ca.us/For Residents).

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

STORMWATER INFORMATION

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 15

Benefits of Low Impact Development and Site Design Practices

STORMWATER INFORMATION

WHAT IS STORMWATER POLLUTION?

Stormwater pollution is the untreated, contaminated water that drains from streets, parking lots, industrial yards, driveways, sidewalks and other impervious surfaces. Water from such sources as rain, hoses, power washers, sprinklers, and car-washing activities carry pollutants to the storm drain system. The storm drain system discharges this water directly to our creeks, rivers, and ultimately the Pacific Ocean UNTREATED.

HOW DOES DEVELOPMENT AFFECT THIS?

The addition of impervious area removes the natural absorption and infiltration abilities of the land. This results in a greater volume, velocity, rate and duration of runoff from the property, than in its predevelopment condition. It can result in the mobilization of a wide range of pollutants that would normally remain on the property and transport these pollutants to surface waters. *This cocktail of pollutants can destroy aquatic life.*

WHAT IS THE SOLUTION?

Since 2002, all major development incorporated a mixture of best management practices (BMPs) to reduce its impact on stormwater quality. Site Design BMPs and Low Impact Development BMPs include the following:

- Reduce directly connected paved areas.
- Direct runoff to landscaping to reduce runoff from the property.
- Use grassed swales to facilitate infiltration.
- Use drought tolerant or native vegetation
- Conserve natural areas.
- Protect slopes (i.e. with vegetation) to prevent erosion.

The objective of this is to mimic the natural hydrologic conditions of the site to minimize the increase in volume, velocity, rate and duration of the property after development.

Please preserve these features on your property and protect our river! Do not destroy these features and maintain them to remain effective.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 16

STORMWATER INFORMATION

YARD & GARDEN MAINTENANCE

HOW CAN GARDENING HARM OUR WATERWAYS?

Yard maintenance can directly impact the quality of our local surface waters. When soil, organic wastes, dirt, leaves, grass clippings, and chemicals leave your yard, they flow directly into creeks and the ocean harming the health of humans and wildlife that swim in the waters, impacting the environment and water quality.

BEST MANAGEMENT PRACTICES (BMPs)

Whether you take care of your own yard or contract a professional service, you are responsible for ensuring that BMP's are implemented to reduce storm water pollution, protect water quality and conserve our valuable water and natural resources. By implementing the simple solutions in this fact sheet you can take part in protecting our local waterways and beaches.

- Use fertilizers sparingly and possibly consider using an organic fertilizer.
- Use an efficient irrigation method and try to avoid over-watering.
- Break watering down into five minute intervals, or less. This will allow water to soak in before the next application.
- Rather than applying a temporary, chemical only approach, try a natural method such as hand weeding and planting diverse native plants. This will result in a safer long term solution to weed and insect problems.
- Improve the health of your soil by adding compost and using organic mulches. You'll reduce the need for fertilizers and your plants will be healthier. You will also prevent soil erosion.

REMEMBER : When using a professional landscaping service

- **Make sure they sweep up clippings and dispose of them properly, rather than blowing them out into the street.**
- **If you decide to use pesticides, check to make sure the service is properly trained and licensed to apply them.**
- **Know how often fertilizers are used. Even professionals over -fertilize.**
- **The property owner is responsible for violations of the Clean Water Act.**

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 X167

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 17

Fire Prevention and Erosion

During dry and hot seasons, vegetation can pose a fire risk, and requires proper management.

WHICH FIRE PREVENTION MEASURES ARE RECOMMENDED?

Vegetation on open lots should be *mowed* to a height of approximately four inches. The clippings can be left on top of the stubble, providing additional fire suppression. Dead shrubs, dead trees or limbs, and rubbish should be removed. The City's Municipal Code requires property owners to mow and/or clear a distance of one hundred feet from any structure and up to thirty feet along each side of roadways or driveways. Fire prevention measures should be implemented during late spring and early summer.

When a rare, threatened, or endangered plant or wildlife may be present on the property to be cleared, it is the responsibility of the owner, occupant or person in charge of the property to obtain all required permits or approvals from all other governmental agencies prior to removal of the nuisance. This includes California State Fish and Game and the U.S. Fish and Wildlife Service can be contacted at (760) 4341-9440). If you have questions contact City Development Services at (619) 258-4100 x168 with any questions.

WHY SHOULDN'T I JUST CLEAR THE GROUND OF VEGETATION?

Not only is this unattractive and unnecessary, but you risk losing the most valuable component of your ground through erosion. The top layer of soil tends to be rich in organic matter providing nutrients and a soil matrix hospitable to plant life. Once that has been removed, it will be difficult for plants to grow in this soil without the addition of expensive soil amendments.

Cutting vegetation allows the plant roots to help hold the soil in place minimizing erosion. Erosion prevention is important to prevent loss of land, damage of property downgradient of the erosion and potential pollution through the discharge of sediment to the storm drain system. The storm drain system conveys runoff from streets and private property to the river *untreated*. Blockages of the storm drain system may result in property damage and are costly to remove. Sediment discharged into our creeks and rivers is harmful to river life, including plants, insects and fish. If you are concerned about potential erosion, install erosion prevention measures (see http://www.cabmphandbooks.com/Construction.asp for more information).

Call Fire Prevention at (619) 258-4100 x184 for additional information.

Area of eroded soil versus a slope stabilized with erosion prevention measures.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x167

CITY OF SANTEE

STORMWATER INFORMATION

STORMWATER FACT SHEET 18

STORMWATER INFORMATION

Responding to Sewage Spills

Many people mistakenly believe that storm drains are connected to Padre Dam's sanitary sewer system and that any wastewater dumped into an alley, street or storm drain is treated at Padre Dam's sewage treatment plant. This is not the case. Any material discharged or washed into the street ends up in the San Diego River.

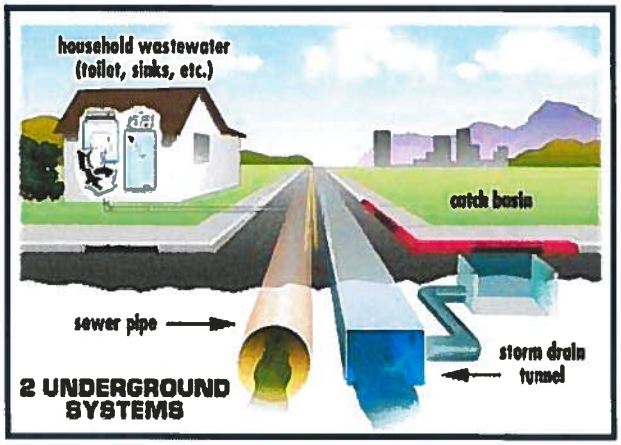

Raw sewage is a biohazard to people, and adds pollutants such as sediment and nutrients to the environment. The source of any sewage spill must be immediately stopped, and the spill must be contained. The affected area must be isolated to keep the public from exposure to the hazard. Sewage must be removed and the area disinfected by a properly trained person. Raw sewage may be discharged into the wastewater system with permission from Padre Dam.

Any sewage discharge into the storm water conveyance system, even from a blocked lateral line, is a violation of federal, state and local laws. These laws apply to individuals, businesses and public agencies. There are no exceptions.

Please ensure that any contractor you hire to respond to a sewage spill understands these regulations and has the ability to comply with them. By doing this you help to protect your family, and the environment from exposure to the sewage spill.

TO REPORT STORMWATER POLLUTION IN SANTEE CALL (619) 258-4100 x168

ATTACHMENT 8.1

OIL LEAK PREVENTION TIP CARD

PREVENT OIL LEAKS

HELPFUL TIPS

Promptly repair leaks as you discover them.
Use a tray or similar to "catch" the spill until repairs are completed.
Kitty litter can be used as an asborbant to remove spills.
Do not forget to sweep it up immediately after use, or it will end up in the storm drain system anyway.
Avoid washing the residue into the storm drain system.

HELP PROTECT OUR RIVER!

Oil spills on the street are not only unsightly, they pollute our river.
When it rains, the residue is washed into the curb and gutter transporting hydrocarbons and metals into the storm drain system.
The storm drains system discharges runoff into the river UNTREATED.

PREVENT POLLUTION AND SHOW NEIGHBORHOOD PRIDE BY PROMPTLY REPAIRING LEAKS AND CLEANING UP SPILLS.

ATTACHMENT 8.2

SANTEE WEBSITE ARTICLES

Santee

Santee Review · Post

Keep Pesticides and Fertilizers Out of Our River

Update | Revert to draft | Preview

Compose | HTML | Normal | Link

Many folks don't make the connection between the health of the San D
they apply to their lawns, gardens and landscaping.

The fact is, rain transports fertilizers and pesticides to the nearest creek or storm drain, and it ends up in the river where it can harm wildlife.

To protect the river's water quality, please do not fertilize your garden or landscaping within three days of a weather forecast predicting rain. When applying pesticides, follow the manufacturer's directions and use only the amount your plants need.

Unused fertilizer cannot be tossed in the trash. It must be taken to a household hazardous waste facility. Call the Waste Management customer service department at (619) 596-5100 to set up an appointment.

Thank you for helping to protect our river.

Post settings

Labels

Hazardous Waste, Stormwater

Published on

3/8/12 8:06 AM
Pacific Daylight Time

Links

Location

Options

Send feedback

Santee Review

Your update for city news and activities

Tuesday, May 15, 2012

Keeping the River Clean: Consider Compost

Little known fact: Yard waste such as cut grass that ends up in your local storm drain can adversely affect water quality in the San Diego River and other local waterways.

As it decomposes, rotting yard waste releases nutrients that promote the growth of algae, which can lower the river's dissolved oxygen level. It can also promote bacteria growth. The result is a triple-whammy of low dissolved oxygen, high nutrients and elevated bacteria levels that can cause problems for fish and other creatures in the river. Also, these stagnant conditions make the river less attractive for recreational use. Residents can prevent yard waste from reaching waterways by adding leaves and clippings to a compost pile or placing it in a curbside yard waste recycling container.

You can make a backyard compost pile by mixing grass clippings with leaves. Compost can return nutrients to the soil and help conserve water. Click here to watch a video on how to make your own compost.

This message is brought to you by the clean water team at Santee City Hall.

POSTED BY SANTEE AT 5/15/2012 08:48:00 AM

Recommend this on Google

LABELS: CLEAN WATER; STORM WATER

No comments:

Post a Comment

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Note: Only a member of this blog may post a comment.

City of Santee, California

SANTEE

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Santee Review · Post

Spring Cleaning at Forester Creek

Update | Revert to draft | Preview

Compose | HTML | Normal | Link

A crew of about a dozen workers, including Public Services Manager Bob Stein, (shown here), removed more than 15 cubic yards of trash and debris from Forester Creek Thursday.

Santee routinely cleans the concrete-lined channel to protect water quality in the San Diego River, which receives the flow from the tributary creek.

"We try to clean out the channel after every storm with city crews, volunteers and our contractors," Stein said.

Most of the trash, which includes tons of plastics, is transported by rai of El Cajon and gets flushed downstream to Santee, Stein explained.

Santee's stream cleaning effort is necessary to fulfill requirements of i permit, which is aimed at enforcing the federal Clean Water Act.

"To promote better water quality in the San Diego River, we regularly drainage channels and hire a contractor to perform street sweeping," S

Post settings

Labels

Forester Creek, Public Services Division

Published on

3/15/12 3:28 PM
Pacific Daylight Time

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Location

Options

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Santee Review

Your update for city news and activities

Thursday, February 2, 2012

No ifs, ands or butts, please

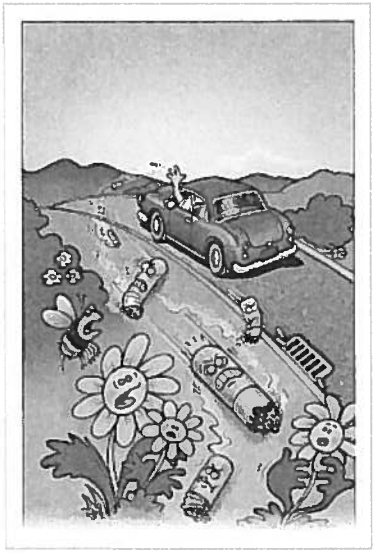

There's a simple solution to keeping cigarette butts out of our waterways: Don't toss them on the ground.

Seems like a no-brainer, right? The message is worth reinforcing because there are still too many cigarette butts that end up along our rivers and beaches.

Last year, cigarette butts were the most common item collected along the county's beaches, with more than 50,000 reported in 2011 compared to about 35,000 five years ago.

Cigarette filters are made from cellulose acetate, a hardy plastic that takes 15 to 20 years to decompose. Discarded filters contain chemicals that can harm aquatic life. They often end up on beaches because they're flicked out of moving vehicles or dropped on sidewalks then travel to storm drains and streams.

So if you're a smoker, please use portable ashtrays to store cigarette butts until they can be properly disposed of in a trash can.

POSTED BY SANTEE AT 2/02/2012 11:24:00 AM

+1 Recommend this on Google

LABELS: DEVELOPMENT SERVICES, STORMWATER

No comments:

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Post a Comment

Note: Only a member of this blog may post a comment.

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Santee Review

Your update for city news and activities

Wednesday, January 4, 2012

Only Rain in the Storm Drain

Please help the city of Santee keep trash and other waste out of our municipal storm drains.

Many folks don't realize that our storm drains are not connected to sewage treatment plants, where solids are screened out and liquids are treated.

This means that everything that finds its way into a city storm drain ends up in a creek or drainage channel that flows into the San Diego River. Much of the material that gets into the river, including plastic bags, eventually finds its way to the ocean.

Harm can occur even if you use a blower to push leaves into the storm drain. Leaves can not only clog a storm drain, they also decompose and promote bacteria growth, which can affect water quality in the river. Instead of using a blower, rake your leaves and bag them for disposal on the green waste trash pickup days.

And of course, never dispose of used oils, paints or household cleaners by dumping them into a storm drain. Those are toxic substances that can harm wildlife. The city provides a free disposal service to residents with household hazardous waste. To learn more, visit the city's website.

Hey, it's easy if you remember this: Only rain in the storm drain.

This message is brought to you by the clean water folks at Santee City Hall.

POSTED BY SANTEE AT 1/04/2012 03:54:00 PM

Recommend this on Google

LABELS: HAZARDOUS WASTE

No comments:

Post a Comment

City of Santee, California

SANTEE

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ATTACHMENT 12.1

ADDITIONAL STUDY

CITY OF SANTEE
2011 ADDITIONAL STUDY
RIVERS AND CREEKS

Submitted to:

City of Santee
Development Services
10601 Magnolia Avenue
Santee, CA 92071-1266

Prepared by:

D-MAX Engineering, Inc.
7220 Trade Street, Suite 119
San Diego, CA 92121
Tel: (858) 586-6600
Fax: (858) 586-6644

D-MAX Engineering, Inc.

Consultants in Water & Environmental Sciences

December 14, 2011
Project No. 201122W-4

Ms. Helen Perry
Storm Water Program Manager
City of Santee
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: City of Santee 2011 Additional Study, Rivers and Creeks

Dear Ms. Perry:

Enclosed please find our final report for the City of Santee 2011 Additional Study. This report presents the results of the two rounds of monitoring conducted at five river and creek locations in the City of Santee during the 2011 dry weather season. The contents include field screening data and analytical laboratory test results, historical data, and photographs of sampling locations.

Review comments from the draft report submitted to the City have been incorporated into this final report. It has been our pleasure working with the City of Santee on this project.

Sincerely,
D-MAX Engineering, Inc.

Sara Dadkhah
Assistant Project Scientist

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

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EXECUTIVE SUMMARY

The City of Santee Rivers and Creeks Additional Study is conducted in order to evaluate water quality in the city's major receiving waters, and to assess changes in water quality as flow passes through urbanized areas. The City of Santee (City) has monitored five receiving water sites twice per year since 2002. These include Forester Creek Downstream and Upstream, San Diego River Downstream and Upstream, and Sycamore Creek Downstream.

In 2011, the program was updated to include the analysis of *Escherichia coli* (*E. coli*) bacteria. In addition, all enhancements made to the program in 2010 were retained, which included the following:

- A project-specific Quality Assurance Project Plan was followed to ensure compatibility of collected data with the State's Surface Water Ambient Monitoring Program.
- In light of Clean Water Act Section 303(d) listings, the City elected to monitor receiving waters for selenium. Water samples from each site were analyzed for total selenium concentrations using two different methods. Inaccuracies have been reported with the standard method for selenium; therefore samples have been analyzed using another method to assess the data generated by the standard method.
- Sulfate testing was also added to the program based on findings that sulfate affects the availability and toxicity of selenium in water.

Notable findings from this year's program include:

- The majority of constituents met San Diego Basin Plan Water Quality Objectives (WQO).
- Concurrent with historical findings, no pH values exceeded WQOs at any of the water bodies assessed.
- Several bacteria results were above WQOs during Round One, which was likely a consequence of a preceding rain event (0.08 inch of rain). This rain event would not be considered to trigger wet weather conditions under *Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region, including Tecolote Creek* (Bacteria TMDL). During Round Two, bacteria levels were substantially lower. Overall, bacteria results display a decreasing trend over the course of this program.
- Total dissolved solids (TDS) and sulfate concentrations exceeded WQOs at the Forester Creek sites during Round 2. The TDS concentration at San Diego River Downstream was above the WQO during both rounds.
- Sycamore Creek was dry during both rounds of sampling.

1 INTRODUCTION

1.1 Objective

The objective of the City of Santee Rivers and Creeks Additional Study (Additional Study) is to evaluate water quality in the San Diego River, Forester Creek, and Sycamore Creek within the City of Santee (City) and to assess any changes in water quality as the waterbodies flow through urbanized areas of the City. This Additional Study is not required by any specific regulatory measure. However, water samples taken from these receiving waterbodies will be compared to the pertinent water quality objectives (WQO), as listed in the Water Quality Control Plan for the San Diego Basin 9 (Basin Plan).

The City has conducted this additional study of its receiving waterbodies twice each year since 2002. The data collected will serve to establish a baseline historical data set against which future monitoring results can be compared. This may prove especially useful in the City's efforts to comply with total maximum daily loads and other applicable requirements. Historical monitoring data is included as Appendix A to this report. Two rounds of Additional Study monitoring were conducted concurrently with the 2011 Dry Weather Field Screening and Analytical Monitoring Program in June, July, and August of 2011.

1.2 Geographical Setting

The City of Santee is located entirely within the San Diego River Watershed, Hydrologic Unit (HU) 907. The largest receiving waterbody in the City is the San Diego River, which enters the City in the east and flows west towards the Pacific Ocean. Other major receiving waterbodies include Forester Creek and Sycamore Creek, both of which eventually drain to the San Diego River. Forester Creek enters the City from the southeast and drains into the San Diego River at a location west of Carlton Hills Boulevard. Sycamore Creek enters the City from the north, flows southward, entering the San Diego River just west of Santee Recreation Lakes. All storm water drainage in the City of Santee flows either directly or indirectly to these creeks and ultimately to the San Diego River. The entire City of Santee, along with the whole of the City of El Cajon and portions of the cities of La Mesa, San Diego, and Poway, lie within the Lower San Diego River Hydrologic Area (HA) 907.1.

1.3 303(d) Listings

Portions of the San Diego River and Forester Creek have been placed on the Clean Water Act Section 303(d) list of impaired waters. In October 2011, the Environmental Protection Agency (EPA) approved the California 2008-2010 Section 303(d) List identifying parts of the lower San Diego River as impaired for *Enterococcus*, fecal coliform, low dissolved oxygen, manganese, nitrogen, phosphorus, total dissolved solids, and toxicity. Portions of Forester Creek have been listed for fecal coliform, selenium, total dissolved solids, and pH.

1.4 Monitoring Locations

The five monitoring sites selected for the Additional Study are presented in Table 1-1. The table provides the site number, location, conveyance configuration, land uses, hydrologic subarea, and GPS coordinates of each sampling locations. A map of sampling locations is included as Figure 1-1. Photographs of sampling locations are included in Appendix B.

TABLE 1-1
2011 RIVER AND CREEK MONITORING STATIONS

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
Forester Creek Downstream	Approximately 200 feet north of the Mission Gorge Road and Fanita Drive intersection, east of Fanita Creek	Natural Creek	Open	Commercial	907.12	32.83953	-117.00241
Forester Creek Upstream	Beneath the Prospect Avenue bridge, west of Cuyamaca Street	Concrete Channel	Industrial	Commercial	907.13	32.83093	-116.98543
San Diego River Downstream	Beneath the West Hills Parkway bridge	Natural Creek	Open	Residential	907.12	32.83936	-117.02450
San Diego River Upstream	Approximately 200 feet downstream of the rock dam at the east end of the RCP service road.	Natural Creek	Open	Industrial	907.12	32.85282	-116.95281
Sycamore Creek Downstream	Beneath the Carlton Oaks Drive bridge, west of the Santee Recreation Lakes	Natural Creek	Open	Residential	907.12	32.84441	-117.00652

FIGURE 1-1
CITY OF SANTEE 2011 ADDITIONAL STUDY SAMPLING LOCATION MAP

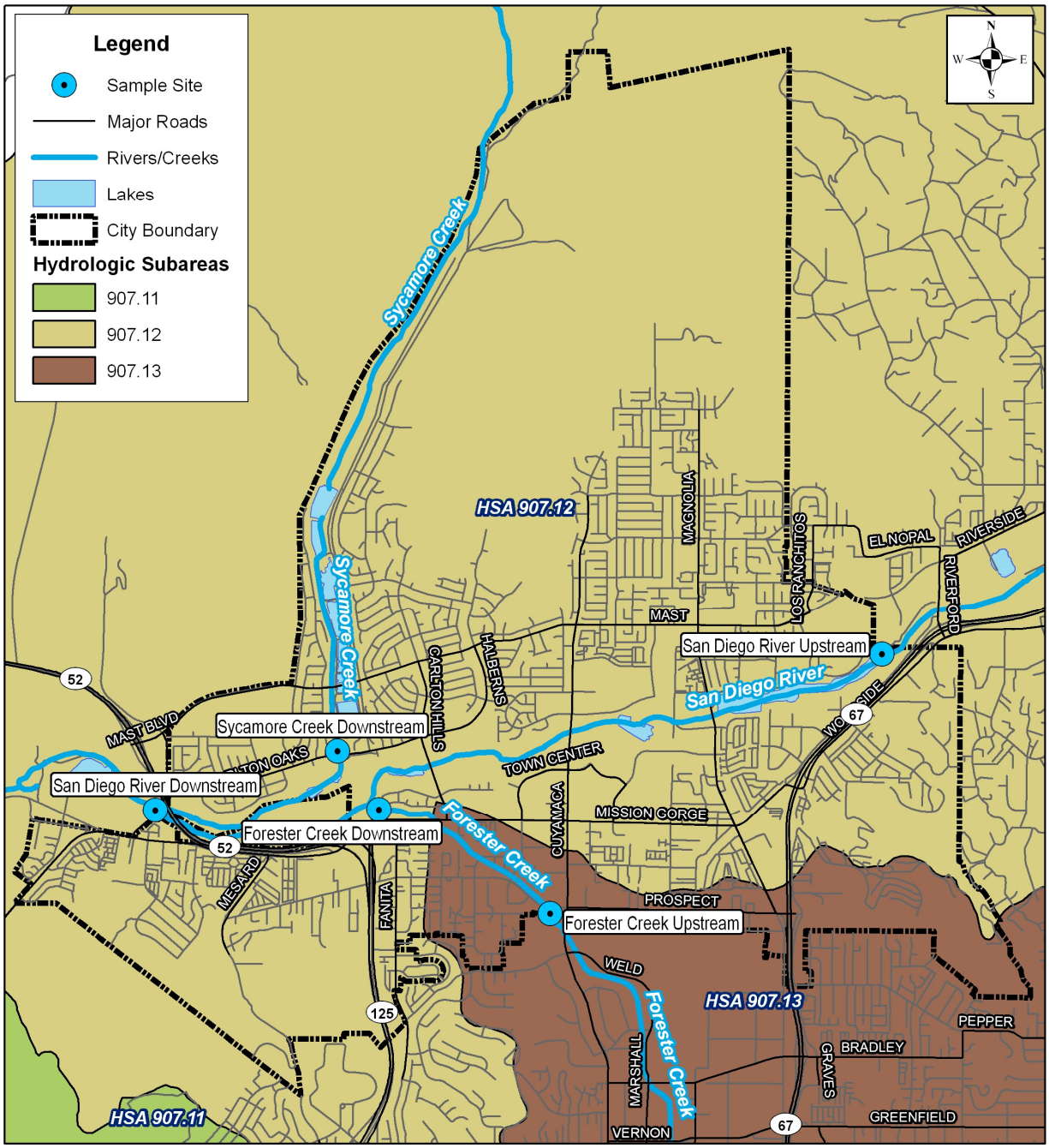

2 FIELD AND LABORATORY ANALYTICAL METHODS

2.1 Field Screening Procedures

Field screening techniques consist of qualitative field observations, flow measurements, and quantitative field analyses of selected water quality parameters. Weather conditions and time since last rainfall are also recorded. Specific observations and results of the field water quality analyses are documented on field data sheets, which serve as a record of the field visit and are included in Appendix D.

A Quality Assurance Project Plan (QAPP) was developed in 2010 describing the Quality Assurance/Quality Control (QA/QC) procedures associated with the project. The QAPP helps ensure that sampling is compatible with the State of California Surface Waters Ambient Monitoring Program (SWAMP) requirements for data quality.

Field screening and analyses were conducted according to the following procedures and methods.

Qualitative Observations

Qualitative field observations include a general site assessment and description of water odor, clarity, the presence of floatable materials, visible deposits or stains, and organisms. Each field screening location is photographed to document site conditions. Photographs are included in Appendix B.

Flow Measurement

Flow measurements can be used to estimate pollutant mass loading. The field method used to estimate the flow rate in this study consisted of measuring the velocity, depth, and width of the flowing water. The flow rate for the San Diego River Downstream location was taken from the Unites States Geological Survey (USGS) flow gauge.

Field Water Quality Analyses

At each site, water samples were collected and analyzed in the field for the following constituents:

- Temperature
- pH
- Specific Conductance
- Dissolved Oxygen

The methods used to perform the above field analyses, along with the reporting limit, range, and accuracy of each method, are listed in Table 2-1.

TABLE 2-1
FIELD ANALYTICAL METHODS

Parameter	Method*	Method Reporting Limit	Range	Accuracy
Temperature	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter	0.1°C	0.0°C – 60.0°C	± 0.5°C
pH	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter	0.01	0.00 – 14.00	± 0.01
Specific Conductance	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter	0.01 mS/cm	0 – 20 mS/cm	± 2% of FS[1]
Dissolved Oxygen	Hanna Instruments HI 9145 Portable Dissolved Oxygen Meter	0.00 mg/L	0.00 to 45.00 mg/L	± 1.5% of range

Notes:
EC = electrical conductivity; TDS = total dissolved solids; mS/cm = millisiemens per centimeter; °C = Degrees Celsius
[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.
*Test method information taken from Hanna Instruments manuals, available online at www.hannainst.com.

2.2 Laboratory Analytical Methods

At each site, samples were collected in sterile bottles for transport to the laboratory for analysis. Samples were submitted to laboratories certified by the California Department of Health Services. The laboratories were EnviroMatrix Analytical, Inc. (EMA), Sierra Analytical Labs, Inc. (Sierra), and Institute for Environmental Health, Environmental Engineering Laboratory, Inc. (IEH-EEL). The following constituents were analyzed:

- Nitrate/Nitrite as N
- Total Kjeldahl Nitrogen
- Total Nitrogen
- Orthophosphate as P
- Total Phosphorus
- Total Dissolved Solids
- Sulfate
- Total Selenium
- Total Coliform bacteria
- Fecal Coliform bacteria
- *Enterococcus* bacteria
- *E. coli* bacteria

The methods used to perform each of the above analyses along with method reporting limits and holding times are listed in Table 2-2. Water samples were collected, placed on ice in a cooler, and then submitted to the analytical laboratory within four hours of sampling to ensure that water samples for total coliform, fecal coliform, *Enterococcus,* and *E. coli* tests met standard bacteria holding time requirements.

TABLE 2-2
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Reporting Limit	Method Detection Limit	Maximum Holding Time
Institute for Environmental Health – Environmental Engineering Laboratory, Inc. (IEH-EEL)				
Total Coliform (MTF)	SM 9221B	2-1,600,000 MPN/100 mL	2 MPN/100 mL	6 hours
Fecal Coliform (MTF)	SM 9221E	2-160,000 MPN/100 mL	2 MPN/100 mL	6 hours
E. Coli (MTF)	SM 9221F	2-160,000 MPN/100 mL	2 MPN/100 mL	6 hours
EnviroMatrix Analytical, Inc. (EMA)				
Enterococcus (MTF)	SM 9230A,B	2-160,000 MPN/100 mL	2 MPN/100 mL	6 hours
Nitrate/Nitrite as N	SM4500 NO_3 E	0.05 mg/L	0.009 mg/L	48 hours
Total Kjeldahl Nitrogen	SM4500 N C	0.5 mg/L	0.3 mg/L	28 days
Total Nitrogen	Calculation*	0.5 mg/L	0.5 mg/L	na
Orthophosphate as P	SM4500 P E	0.05 mg/L	0.007 mg/L	48 hours
Total Phosphorus	SM4500 P B, E	0.05 mg/L	0.02 mg/L	28 days
Total Dissolved Solids	SM2540 C	20.0 mg/L	1.0 mg/L	7 days
Sulfate	SM4500 SO_4 E	50.0 mg/L	10.0 mg/L	28 days
Total Selenium	EPA 200.8	1 µg/L	0.5 µg/L	6 months
Total Selenium	EPA 200.8 modified**	1 µg/L	0.5 µg/L	6 months
Sierra Analytical Labs, Inc. (Sierra)				
Total Coliform (MTF)	SM 9221B	2-1,600,000 MPN/100 mL	2 MPN/100 mL	6 hours
Fecal Coliform (MTF)	SM 9221E	2-160,000 MPN/100 mL	2 MPN/100 mL	6 hours
Enterococcus (MTF)	SM 9230B	2-1,600,000 MPN/100 mL	2 MPN/100 mL	6 hours
E. Coli (MTF)	SM 9221E/F	2-160,000 MPN/100 mL	2 MPN/100 mL	6 hours
Nitrate/Nitrite as N	EPA 353.3/ SM4500 NO_2 B	0.02 mg/L	0.02 mg/L	48 hours
Total Kjeldahl Nitrogen	EPA 351.3	0.1 mg/L	0.1 mg/L	28 days
Total Nitrogen	SM4500-N	0.10 mg/L	0.10 mg/L	na
Orthophosphate as P, Total Phosphorus	EPA 365.2	0.05 mg/L	0.05 mg/L	48 hours
Total Dissolved Solids	EPA 160.1	1.0 mg/L	1.0 mg/L	7 days
Sulfate	EPA 375.4	0.5 mg/L	0.5 mg/L	28 days

Notes:
MTF = Multiple Tube Fermentation
MPN/100 mL = most probable number (of colony-forming units) per 100 milliliters
na = not applicable; µg/L = micrograms per liter
* Total Nitrogen is calculated as the sum of Nitrate/Nitrite as N and Total Kjeldahl Nitrogen
** Only nitric acid is used in the digestion (i.e., without hydrochloric acid) prior to analysis in accordance with EPA 200.8

2.3 Program Enhancements

Beginning in 2011, the Additional Study was updated to include *E. coli* monitoring. In light of Clean Water Act Section 303(d) listings, since 2010 the City elected to monitor receiving waters for selenium. Total selenium was prepared, digested, and analyzed twice: once per standard EPA Method 200.8 and once using a modified method in which only nitric acid is used in the digestion (i.e., without hydrochloric acid) prior to analysis in accordance with EPA 200.8. These different digest methods were used to compare the data generated, as the digest method has been reported to influence the final result. A statistical analysis was conducted to identify if differences between the methods were significant. The results of this analysis are discussed in Section 5. Sulfate testing was also added to the program based on findings that sulfate effects the availability and toxicity of selenium in water.

3 FIELD SCREENING RESULTS

3.1 Qualitative Observations

Round One

During Round One, all site visits were performed under partly cloudy or sunny conditions. During Round One, the Sycamore Creek monitoring location was dry. All water samples collected were clear, odorless, and yellow in color. No floatables were observed on the surface of the water at any site. Normal vegetation was observed at all sites. Algae were present at Forester Creek Upstream and at San Diego River Downstream. Insects were observed at all sites except Forester Creek Upstream, and ducks and fish were observed at several locations.

Qualitative observations made during Round One are presented in Table 3-1.

Round Two

Light conditions were sunny during all site visits in Round Two. As in Round One, the Sycamore Creek monitoring location was dry. All water samples collected were clear, odorless, and colorless with no floating materials present. Normal vegetation was observed at all sites. Insects were present at all sites, and a few sites also supported algae or fish.

Qualitative observations made during Round Two are presented in Table 3-2.

TABLE 3-1
FIELD OBSERVATIONS – ROUND ONE

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
Forester Creek Downstream	6/6/11	10:40	Partly Cloudy	None	Yellow	Clear	None	Sediment	Normal	Insects, ducks
Forester Creek Upstream	6/6/11	11:25	Partly Cloudy	None	Yellow	Clear	None	Sediment, Gravel, Fine Particulates	None	Algae
San Diego River Downstream	6/7/11	10:45	Sunny	None	Yellow	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Insects, Algae
San Diego River Upstream	6/7/11	11:40	Sunny	None	Yellow	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Insects, Fish
Sycamore Creek Downstream	7/19/11	8:15	Sunny	ns	ns	ns	ns	Sediment, Gravel, Fine Particulates	Normal	Insects

TABLE 3-2
FIELD OBSERVATIONS – ROUND TWO

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
Forester Creek Downstream	8/31/11	10:00	Sunny	None	None	Clear	None	Fine Particulates	Normal	Insects
Forester Creek Upstream	8/31/11	11:15	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae
San Diego River Downstream	8/30/11	10:00	Sunny	None	None	Clear	None	Sediment, Gravel, Fine Particulates	Normal	Insects, Algae
San Diego River Upstream	8/30/11	11:10	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	Insects, Fish
Sycamore Creek Downstream	8/29/11	11:00	Sunny	ns	ns	ns	ns	Sediment, Gravel, Fine Particulates	Normal	Insects

Note: ns = not sampled, dry site

3.2 Field Analytical Results

Descriptions of the field constituents measured during field monitoring are provided below.

Flow rate quantifies the volume of fluid passing across a given surface per unit time. Flow rate measurements are needed to calculate the load or particular amount of a pollutant discharged.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Also, the aquatic habitat must remain within a certain temperature range in order to sustain sensitive aquatic life. In the field, water temperature is measured immediately upon sample collection at each site.

The **pH** is an expression of acidity or alkalinity of a water sample. The pH of an aquatic system will affect a variety of chemical reactions, including the availability of nutrients and the solubility of chemical substances, particularly heavy metals.

Specific conductance (conductivity) measurements indicate the total concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially help indicate the presence of dissolved pollutants.

Dissolved Oxygen measurements indicate the amount of gaseous oxygen (O_2) dissolved in the water. Oxygen is added to water through photosynthesis by aquatic biota and diffusion from the surrounding air. The decomposition of organic material depletes oxygen levels, which can be detrimental to aquatic life. Excessive algal growth due to nutrient enrichment is frequently the source of decomposing material. In addition, higher values of dissolved oxygen often correspond with lower temperatures.

Statistical summaries of field analytical data are presented in Table 3-3 for Round One results and 3-4 for Round Two results. Data from field duplicate or dry sites has not been included in statistical summaries. Complete field analytical results are presented in Table 3-5 for Round One data and Table 3-6 for Round Two data.

TABLE 3-3
STATISTICAL SUMMARY OF FIELD ANALYTICAL RESULTS – ROUND ONE*

Parameter	Maximum	Minimum	Mean	Median
Flow (gpm)	3142	525	1199	565
Temperature (°C)	27.3	19.7	23.0	22.4
pH	8.5	7.6	7.9	7.8
Specific Conductance (mS/cm)	1.91	1.79	1.86	1.87
Dissolved Oxygen (mg/L)	8.79	5.54	6.89	6.62

TABLE 3-4
STATISTICAL SUMMARY OF FIELD ANALYTICAL RESULTS – ROUND TWO*

Parameter	Maximum	Minimum	Mean	Median
Flow (gpm)	807.9	155	404.0	326.5
Temperature (°C)	31.2	21.8	26.4	26.3
pH	8.31	7.49	7.87	7.84
Specific Conductance (mS/cm)	2.91	1.90	2.55	2.70
Dissolved Oxygen (mg/L)	7.84	5.27	6.35	6.15

Note: *All parameters met Basin Plan Water Quality Objectives

TABLE 3-5
FIELD ANALYTICAL RESULTS – ROUND ONE

Site	Date	Time	Flow[1] (gpm)	Temp. (ºC)	pH	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
Forester Creek Downstream	6/6/11	10:40	603	19.7	7.6	1.91	5.91
*Forester Creek Downstream Duplicate**	*6/6/11*	*10:50*	603	*19.5*	*7.7*	*1.92*	*5.83*
Forester Creek Upstream	6/6/11	11:25	525	27.3	8.5	1.85	8.79
San Diego River Downstream	6/7/11	10:45	3142[2]	19.8	7.6	1.89	5.54
San Diego River Upstream	6/7/11	11:40	527	25.0	7.9	1.79	7.32
Sycamore Creek Downstream	7/19/11	8:15	Dry	ns	ns	ns	ns
Water Quality Objective			**	**	**> 6.5, < 9.0**	**20**	**5.0**

Notes: [1] Flow could not be assessed on the sampling date due to equipment malfunction. Flow was measured with a flow meter during an additional site visit.
[2] Flow measurement was taken directly from the USGS Stream flow data at http://waterdata.usgs.gov/ca/nwis/current/?type=flow&group_key=huc_cd.
* Field duplicate data as required by the Quality Assurance Project Plan are reported.
** No established WQO
ns = not sampled, dry site

TABLE 3-6
FIELD ANALYTICAL RESULTS – ROUND TWO

Site	Date	Time	Flow (gpm)	Temp. (ºC)	pH	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
Forester Creek Downstream	8/31/11	10:00	317	21.8	7.66	2.91	5.56
Forester Creek Upstream	8/31/11	11:15	336	31.2	8.31	2.6	7.84
San Diego River Downstream	8/30/11	10:00	807.9[1]	22.4	7.49	2.79	5.27
San Diego River Upstream	8/30/11	11:10	155	30.2	8.01	1.9	6.73
*San Diego River Upstream Duplicate**	*8/30/11*	*11:20*	*155*	*30.5*	*8.04*	*1.9*	*6.73*
Sycamore Creek Downstream	8/29/11	11:00	Dry	ns	ns	ns	ns
Water Quality Objective			**	**	**> 6.5, < 9.0**	**20**	**5.0**

Note: [1] Flow measurement was taken directly from the USGS Stream flow data at http://waterdata.usgs.gov/ca/nwis/current/?type=flow&group_key=huc_cd.
* Field duplicate data in accordance with the project QAPP
** No established WQO
ns = not sampled, dry site

4 LABORATORY ANALYTICAL RESULTS

4.1 Summary

Descriptions of the laboratory constituents for analytical monitoring conducted during both rounds are shown below.

Total Nitrogen is the sum of nitrate/nitrite as N and total Kjeldahl nitrogen. **Nitrate-N** is a common sign of nutrient pollution from agricultural or household fertilizer runoff. Nitrate pollution can cause excessive algal growth, resulting in oxygen depletion as algae decomposes and may eventually suffocate other aquatic life. **Total Kjeldahl Nitrogen** (TKN) is composed of organic nitrogen, ammonia, and ammonium and encompasses all components of the total nitrogen not available as nitrate or nitrite.

Total Phosphorus is the total amount of phosphorus, including both orthophosphate and less reactive forms. **Orthophosphate-P** is also an indicator of nutrient pollution from agricultural or household fertilizer runoff. Similar to nitrate-N, orthophosphate-P pollution can cause nutrient enrichment, stimulate algal growth, and thus deplete oxygen in the water to levels that are dangerous for aquatic life. Even low levels of orthophosphate-P can cause significant algal growth, as it is commonly the limiting nutrient in plant growth.

Total Dissolved Solids (TDS) measurements quantify the amount of dissolved minerals in water. Dissolved solids may originate from natural sources or be indicative of anthropogenic contribution. High levels of TDS can be toxic to aquatic life. In southern California, imported water may also be a source of TDS.

Sulfate is naturally occurring in most waterbodies. Within the San Diego region, sulfate primarily originates from the gypsiferous deposits and sulfide minerals associated with crystalline rocks. Sulfate is also a component of TDS.

Selenium is a naturally occurring element that can be toxic to aquatic life at high concentrations. Fish and invertebrates are primarily exposed to selenium through their diet, which bioaccumulates and can be passed to higher trophic levels, such as birds.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts, most surface waters, and soils. Testing water samples for total coliform bacteria is a standard practice in public health. Total coliform is measured as an indicator of other more harmful pathogens, since these pathogens are generally present in much smaller quantities and are difficult to detect.

Fecal coliform, a subset of coliform bacteria, ***E. coli***, and ***Enterococcus*** are found primarily in the gastrointestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. Recent studies have shown that Enterococci may also be associated with non-fecal sources such as plants. Without the use of significantly more sophisticated methods, such as ribotyping, it is not possible to determine the precise origin of these bacteria. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain.

Complete laboratory analytical results are presented in Table 4-1 for Round One data and Table 4-2 for Round Two data. Laboratory reports are included in Appendix C.

TABLE 4-1
LABORATORY ANALYTICAL RESULTS – ROUND ONE

Site	Date	Time	Nitrate/Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solid (mg/L)	Sulfate (mg/L)	Total Selenium* (µg/L)	Total Selenium Modified* (µg/L)	Total Coliform (MPN/100 mL)	Fecal Coliform (MPN/100 mL)	*Enterococcus* (MPN/100 mL)	*E. coli* (MPN/100 mL)
Forester Creek Downstream	6/6/11	10:40	3.37	2.4	5.8	0.06	0.16	1,180	267	1	2	160,000	**54,000**	**9,000**	**54,000**
Forester Creek Upstream	6/6/11	11:25	4.06	1.8	5.9	0.04 J	0.05	1,150	246	2	1	54,000	**780**	**220**	490
San Diego River Downstream	6/7/11	10:45	0.79	1.8	2.6	0.15	0.19	**1,200**	246	0.6 J	nd	160,000	**2,300**	**1,300**	490
San Diego River Upstream	6/7/11	11:40	0.03 J	1.4	1.4	0.06	0.15	1,100	239	2	2	13,000	69	50	69
Sycamore Creek Downstream**	7/19/11	8:15	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Reporting Limit			0.05	0.5	0.5	0.05	0.05	20	50	1	1	2	2	2	2
Water Quality Objective			**10**[1]	[1]	[1]	[1]	[1]	**1,500/ 1,000**[2]	**500**	**5**	**5**	[3]	**400**[4]	**151**[4]	**576**[4]

Notes:
Bold font = at or above WQO
*Total selenium was analyzed twice: once per EPA Method 200.8 and once per EPA Method 200.8 modified. The modified EPA method did not use hydrochloric acid.
** Additional data exists for a visit on 6/6/2011; however bacteria was analyzed past the holding time and the data is therefore invalid. Upon the 7/19/2011 revisit the site was dry.
nd = not detected; ns = not sampled, dry site; J = Value reported is below the reporting limit; measurements have an increased percent error.
[1] Regional guidance suggests using the EPA's nutrient endpoint tool to determine the Water Quality Objective (WQO). This tool requires more data than what has been collected within the scope of this study.
[2] WQO varies by watershed. WQO for Forester Creek and San Diego River Upstream is 1,500 mg/L. WQO for San Diego River Downstream and Sycamore Creek Downstream is 1,000 mg/L.
[3] No established limit.
[4] All sites are listed as REC-1 beneficial use, although they are not intensively used for this purpose.

TABLE 4-2
LABORATORY ANALYTICAL RESULTS – ROUND TWO

Site	Date	Time	Nitrate/Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solid (mg/L)	Sulfate (mg/L)	Total Selenium* (µg/L)	Total Selenium Modified* (µg/L)	Total Coliform (MPN/100 mL)	Fecal Coliform (MPN/100 mL)	*Enterococcus* (MPN/100 mL)	*E. coli* (MPN/100 mL)
Forester Creek Downstream	8/31/11	10:00	2.00	1.30	3.3	0.66	0.69	**1,970**	**550**	1	1	900	300	**300**	300
Forester Creek Upstream	8/31/11	11:15	4.40	1.25	5.65	0.69	0.73	**1,690**	**600**	2	2	1,500	**700**	**600**	350
San Diego River Downstream	8/30/11	10:00	1.30	1.45	2.75	0.32	0.34	**1,930**	400	0.8	0.8	8,000	90	80	70
San Diego River Upstream	8/30/11	11:10	1.40	1.28	2.68	0.33	0.35	1,280	275	2	2	3,300	21	40	14
San Diego River Upstream Duplicate	8/30/11	11:20	*1.50*	*1.24*	*2.74*	*0.34*	*0.37*	*1,270*	*285*	*2*	*2*	*3,000*	*40*	*70*	*24*
Sycamore Creek Downstream	8/29/11	11:00	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Reporting Limit			0.05	0.5	0.5	0.05	0.05	20	5.0	0.5	0.5	2	2	2	2
Water Quality Objective			**10**[1]	[1]	[1]	[1]	[1]	**1,500/ 1,000**[2]	**500**	**5**	**5**	[3]	**400**[4]	**151**[4]	**576**[4]

Notes:
Bold font = at or above WQO
QA/QC duplicate sample
*Total selenium was analyzed twice: once per EPA Method 200.8 and once per EPA Method 200.8 modified. The modified EPA method did not use hydrochloric acid.
nd = not detected; ns = not sampled, dry site; J = Value reported is below the reporting limit; measurements have an increased percent error.
[1] Regional guidance suggests using the EPA's nutrient endpoint tool to determine the WQO. This tool requires more data than what has been collected within the scope of this study.
[2] WQO varies by watershed. WQO for Forester Creek and San Diego River Upstream is 1,500 mg/L. WQO for San Diego River Downstream and Sycamore Creek Downstream is 1,000 mg/L.
[3] No established limit.
[4] All sites are listed as REC-1 beneficial use, although they are not intensively used for this purpose.

5 DATA ANALYSIS

This section provides an overall evaluation of historical trends for the Additional Study.

A portion of Forester Creek outside of the City of Santee has been listed as impaired for pH; however, no samples in the history of the City of Santee Additional Study have had pH values outside of the Basin Plan WQO. A graph of historical pH results at the receiving water locations is provided in Figure 5-1.

Bacteria Analysis

Figures 5-2, 5-3, and 5-4 present historical fecal coliform measurements for Forester Creek, San Diego River, and Sycamore Creek, respectively, collected as part of the Additional Study. In general, fecal coliform levels in recent years are lower than the levels recorded in the earlier years of the program.

In comparison to historical data, bacteria levels measured at Forester Creek Upstream, Forester Creek Downstream, and San Diego River Downstream monitoring locations were relatively higher during the first round of sampling in 2011. Site conditions did not appear substantially different than previous years. It is likely that the elevated measurements were a result of the 0.08 inch rain event that occurred one day prior to sampling, although it was expected to have minimal to no impact on water quality. This data is significant as it demonstrates that even rain events smaller than 0.2 inch, which are counted as “dry weather” conditions in the Bacteria TMDL to which the City is subject, can result in significant increases in bacteria levels when compared to true dry weather conditions—no runoff within the last 72 hours. Considering small rain events “dry weather” makes compliance more difficult because the Bacteria TMDL has a built in allowable exceedance frequency for wet weather conditions but does not allow exceedances for dry weather conditions.

It is also important to note that single sample maximum water quality objectives were used to calculate bacteria exceedances in this report, as is appropriate when only one sample is taken at a site over a period of a month or more. The Bacteria TMDL, however, requires compliance with even lower standards that are applicable to 30-day calculated geometric means. This means that Bacteria TMDL monitoring requires more sampling and also applies stricter limits. For example, the single sample maximum standards for fecal coliforms and Enterococci are 400 MPN/100 mL and 151 MPN/100 mL, respectively. The 30-day geometric mean standards are much lower: 200 MPN/100 mL and 33 MPN/100 mL.

Bacteria levels were significantly lower during the second round of monitoring, which is consistent with typical results for the receiving waterbodies.

Total Selenium Methods

Total selenium results were obtained using the EPA 200.8 method and the modified method. Results from all analyses indicated selenium levels below WQOs at all sampled sites. The differences between results obtained during the 2010 and 2011 programs using the two methods were analyzed for statistical significance using the Wilcoxon Signed-Rank Test, a non-parametric statistical analysis, and a paired t-test. Based on the results of the 20 paired samples (two years of data), the statistical analyses identified the differences between samples as not statistically significant.

Figure 5-1
Additional Study Data: pH

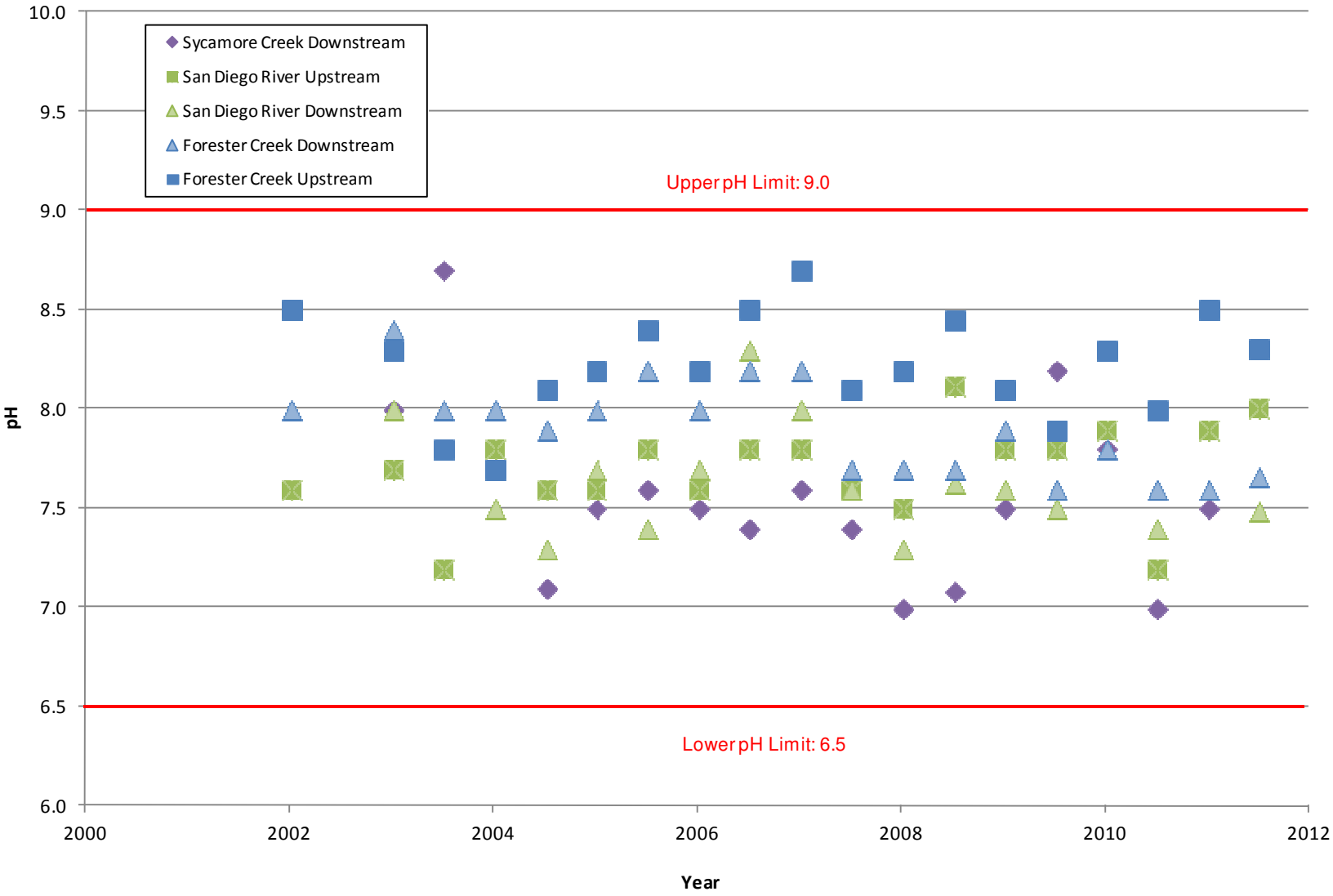

Figure 5-2
Additional Study Data: Fecal Coliform, Forester Creek

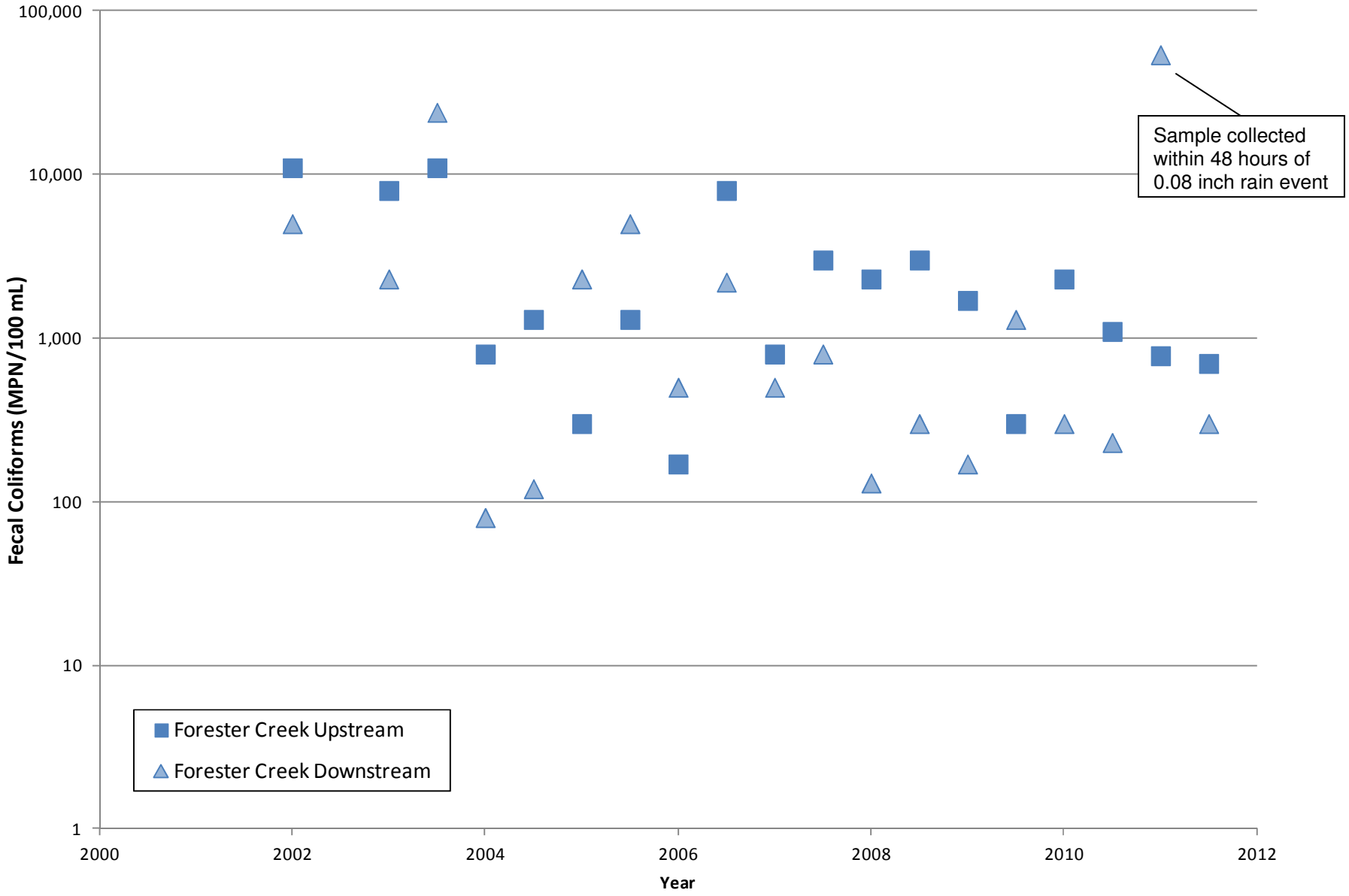

Figure 5-3
Additional Study Data: Fecal Coliform, San Diego River

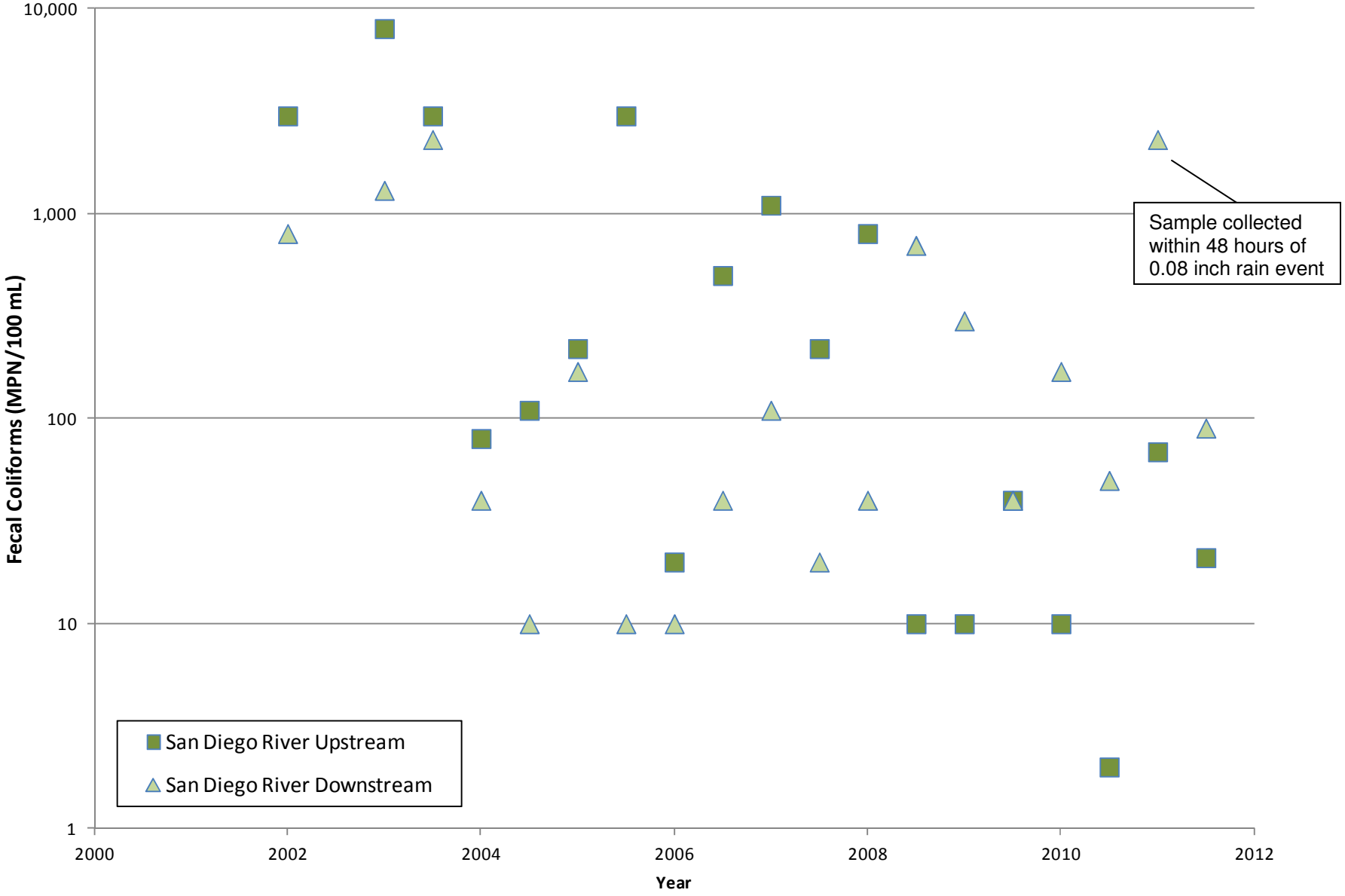

Figure 5-4
Additional Study Data: Fecal Coliform, Sycamore Creek

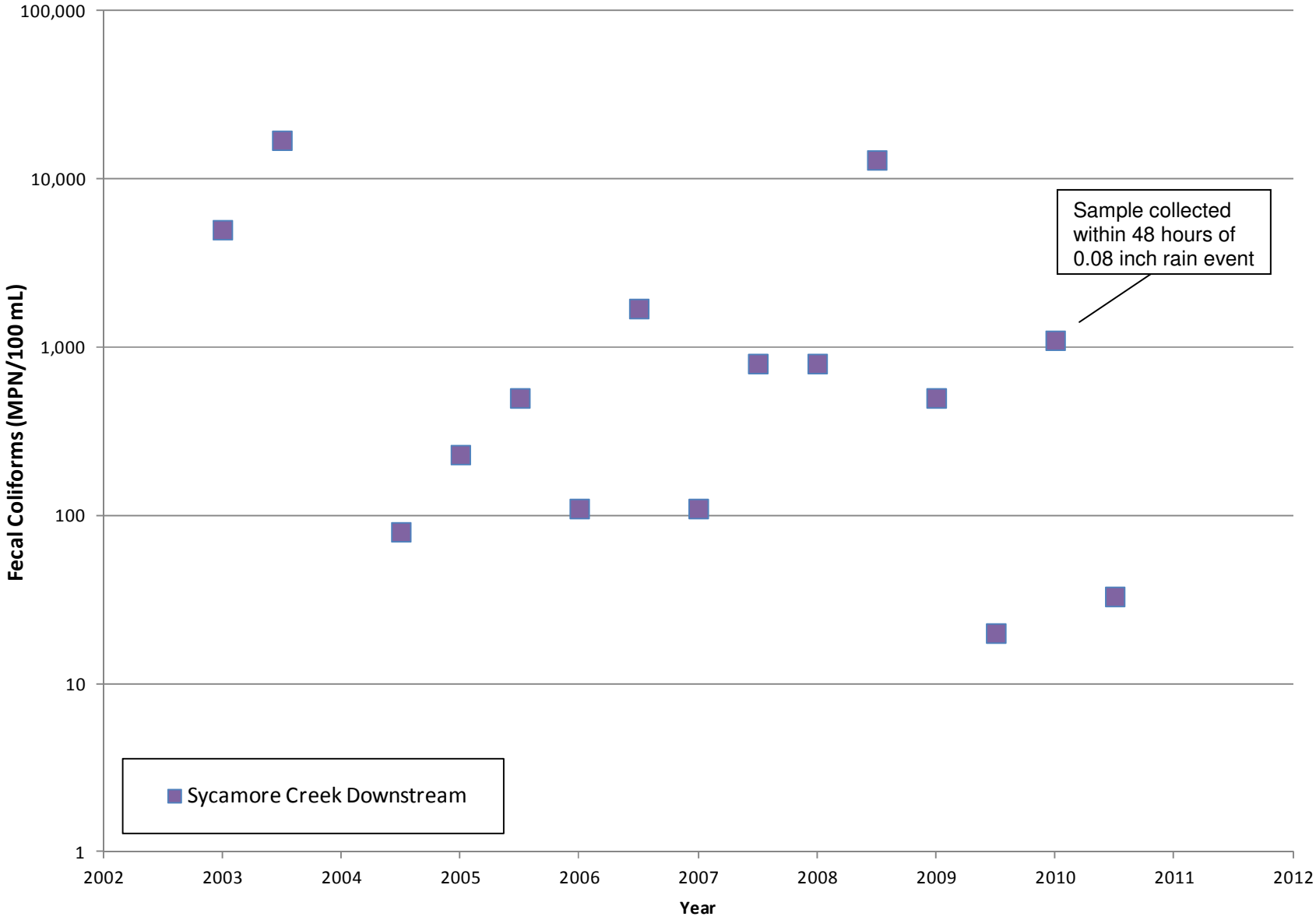

6 CONCLUSIONS

Based on the findings from, the study for 2011, the following conclusions can be made:

- The majority of constituents met San Diego Basin Plan WQOs.
- Concurrent with historical findings, no pH values exceeded WQOs at any of the water bodies assessed.
- Several bacteria results were above WQOs during Round One, which was likely a consequence of a preceding rain event (0.08 inch of rain). This rain event would not be considered to trigger wet weather conditions under the Bacteria TMDL. During Round Two, bacteria levels were substantially lower. Overall, bacteria results display a decreasing trend over the course of this program.
- Total dissolved solids and sulfate concentrations exceeded WQOs at the Forester Creek sites during Round 2. The TDS concentration at San Diego River Downstream was above the WQO during both rounds.
- Sycamore Creek was dry during both rounds of sampling.
- No significant difference was observed between selenium samples digested using a mixture of acids, or using nitric acid only.

7 REFERENCES

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VassarStats: Website for Statistical Computation. http://faculty.vassar.edu/lowry/wilcoxon.html.

Appendix A

Historical Monitoring Data

Site	Date	Flow* (gpm)	Temp.	pH (°C)	Conductivity (mS/cm)	Turbidity (NTU)	Ammonia-N (mg/L)	Nitrate-N (mg/L)	Orthophosphate (mg/L mg/L PO4)	Orthophosphate-Phosphorus (mg/L PO4-P)	Surfactants- field test (mg/L MBAS)	Oil and Grease (mg/L)	Total Hardness (mg/L CaCO3)	Dissolved Cadmium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Zinc (mg/L)	Diazinon (µg/L)	Chlorpyrifos (µg/L)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	*Enterococcus* (MPN/100mL)	Surfactants - Lab test (mg/L MBAS)
2002																							
Forester Creek Downstream	9/3/2002	na	27.0	8.0	2.84	na	na	na	na	na	na	21.0	668	nd	nd	nd	nd	nd	nd	8,000	5,000	130	nd
Forester Creek Upstream	9/3/2002	233	32.0	8.5	2.67	na	na	na	na	na	na	14.0	587	nd	nd	nd	nd	nd	nd	22,000	11,000	170	nd
San Diego River Downstream	9/3/2002	144	25.0	8.0	2.79	na	na	na	na	na	na	22.0	709	nd	nd	nd	0.27	nd	nd	1,700	800	1,700	nd
San Diego River Upstream	9/3/2002	unmeasurable	25.5	7.6	2.11	na	na	na	na	na	na	4.00	557	nd	nd	nd	nd	nd	nd	5,000	3,000	80	nd
Sycamore Creek Downstream	9/4/2002	dry	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2003 Round 1																							
Forester Creek Downstream	5/22/2003	unmeasurable	23	8.4	3.34	3.2	0.3	2	0.1	0.03	0.5	nd	585	nd	nd	nd	0.03	nd	nd	5,000	2,300	130	nd
Forester Creek Upstream	5/22/2003	548	21	8.3	3.60	0.92	0.2	4	0.1	0.03	0.25	nd	690	nd	nd	nd	0.021	nd	nd	17,000	8,000	130	nd
San Diego River Downstream	5/22/2003	3008	21	8	2.65	3.48	0.2	0.3	0.3	0.10	0.25	nd	549	nd	nd	nd	nd	nd	nd	2,200	1,300	210	nd
San Diego River Upstream	5/22/2003	unmeasurable	21	7.7	2.25	2.05	nd	0.2	0.2	0.07	0.25	nd	436	nd	nd	nd	nd	nd	nd	13,000	8,000	20	nd
Sycamore Creek Downstream	5/21/2003	100	25	8	1.77	0.11	0.1	0.2	0.2	0.07	0.25	15	299	nd	nd	nd	nd	nd	nd	8,000	5,000	70	nd
2003 Round 2																							
Forester Creek Downstream	9/17/2003	457	24	8.0	2.98	9.65	0.6	2.4	0.2	0.07	0.13	1	612	nd	nd	nd	nd	nd	nd	50,000	24,000	1,300	nd
Forester Creek Upstream	9/17/2003	254	21	7.8	2.96	3.98	0.3	8	0.1	0.03	0.25	nd	723	nd	nd	nd	nd	nd	nd	30,000	11,000	8,000	nd
San Diego River Downstream	9/17/2003	673	22.5	8.0	2.94	3.89	0.3	0.6	0.4	0.13	0.13	4	662	nd	nd	nd	nd	nd	nd	3,000	2,300	800	nd
San Diego River Upstream	9/17/2003	unmeasurable	23.5	7.2	2.24	16.66	0.3	0.2	2.0	0.65	0.13	2	609	0.006	nd	nd	nd	nd	nd	8,000	3,000	800	nd
Sycamore Creek Downstream	9/18/2003	187	20	8.7	2.21	4.82	0.3	0.2	0.1	0.03	0.25	2	430	nd	nd	nd	nd	nd	nd	30,000	17,000	1,700	nd
2004 Round 1																							
Forester Creek Downstream	7/15/2004	172	28	8.0	2.66	3.42	0.6	2.5	0.10	0.03	0.25	nd	709.0	nd	nd	nd	0.030	nd	nd	9000.0	80.0	40.0	nd
Forester Creek Upstream	7/15/2004	269	32	7.7	2.47	8.06	0.2	2.5	0.10	0.03	0.25	nd	660	nd	nd	nd	nd	nd	nd	8000	800	110	nd
San Diego River Downstream	7/15/2004	400	29	7.5	1.75	2.47	0.1	1.25	1.50	0.49	0.25	nd	596	nd	nd	nd	nd	nd	nd	2600	40	nd	nd
San Diego River Upstream	7/15/2004	unmeasurable	26	7.8	2.45	9.88	0.80	1.25	0.30	0.10	0.25	nd	694.00	nd	nd	nd	nd	nd	nd	1700.00	80.00	40.00	nd
Sycamore Creek Downstream	7/16/2004	Dry	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2004 Round 2																							
Forester Creek Downstream	9/24/2004	203	21	7.9	2.87	17.79	0.3	2.5	0.2	0.07	0.25	nd	662	nd	nd	nd	0.026	nd	nd	11,000	120	300	nd
Forester Creek Upstream	9/24/2004	226	23	8.1	2.63	2.04	0.1	5	0.1	0.03	0.38	nd	645	nd	nd	nd	nd	nd	nd	14,000	1,300	270	nd
San Diego River Downstream	9/24/2004	269	20	7.3	2.00	6.3	0.1	nd	3	0.98	0.25	2	610	nd	nd	nd	0.031	nd	nd	700	nd	nd	nd
San Diego River Upstream	9/24/2004	unmeasurable	20	7.6	2.64	5.03	0.3	1.25	0.6	0.2	0.25	1	650	nd	nd	nd	nd	nd	nd	16,000	110	80	nd
Sycamore Creek Downstream	9/27/2004	20	20	7.1	2.09	4.46	0.3	nd	0.1	0.03	0.5	1	404	nd	nd	nd	nd	nd	nd	30,000	80	3,000	nd
2005 Round 1																							
Forester Creek Downstream	5/18/2005	na	21.3	8.0	2.56	7.85	0.2	7.50	0.10	0.03	0.25	nd	805	nd	nd	nd	nd	nd	nd	9,000	2,300	1,100	nd
Forester Creek Upstream	5/18/2005	na	20.6	8.2	2.86	1.48	0.2	6.25	0.10	0.03	0.25	nd	881	nd	nd	nd	nd	nd	nd	5,000	300	300	nd
San Diego River Downstream	5/18/2005	3861	24.0	7.7	1.44	5.70	0.1	1.25	0.10	0.03	0.25	nd	613	nd	nd	nd	nd	nd	nd	1,700	170	20	nd
San Diego River Upstream	5/18/2005	unmeasurable	21.7	7.6	2.22	4.59	0.10	2.50	0.60	0.20	0.25	nd	567	nd	nd	nd	nd	nd	nd	9,000	220	1,300	nd
Sycamore Creek Downstream	5/17/2005	na	22.9	7.5	1.61	8.76	0.2	1.25	0.1	0.03	0.25	nd	282	nd	nd	nd	nd	nd	nd	11,000	230	500	nd
2005 Round 2																							
Forester Creek Downstream	9/22/2005	468	23.4	8.2	2.66	6.68	0.3	5.00	0.10	0.03	0.38	nd	727	nd	nd	nd	nd	nd	nd	1,600,000	5,000	500	nd
Forester Creek Upstream	9/22/2005	316	24.2	8.4	2.65	5.24	0.3	7.5	nd	nd	0.5	nd	772	nd	nd	nd	nd	nd	nd	240,000	1,300	230	nd
San Diego River Downstream	9/22/2005	763	20.7	7.4	2.11	8.58	0.1	1.25	2.00	0.65	0.25	nd	653	0.005	nd	nd	nd	nd	nd	240,000	nd	500	nd
San Diego River Upstream	9/22/2005	unmeasurable	22.4	7.8	2.60	2.27	0.20	1.25	0.40	0.13	0.50	nd	733	nd	nd	nd	nd	nd	nd	80,000	3,000	40	nd
Sycamore Creek Downstream	9/26/2005	50	21.4	7.6	1.83	4.59	0.3	1.25	nd	nd	0.25	nd	373	nd	nd	nd	nd	nd	nd	130,000	500	500	nd
2006 Round 1																							
Forester Creek Downstream	5/18/2006	608	21.3	8.0	2.56	7.85	0.2	7.50	0.10	0.03	0.25	nd	740	nd	nd	nd	nd	nd	nd	80,000	500	170	nd
Forester Creek Upstream	5/18/2006	561	20.6	8.2	2.86	1.48	0.2	6.25	0.10	0.03	0.25	nd	692	nd	nd	nd	nd	nd	nd	6,000	170	20	nd
San Diego River Downstream	5/19/2006	2514	24.0	7.7	1.44	5.70	0.1	1.25	0.10	0.03	0.25	nd	448	nd	nd	nd	nd	nd	nd	13,000	nd	nd	nd
San Diego River Upstream	5/19/2006	unmeasurable	21.7	7.6	2.22	4.59	0.10	2.50	0.60	0.20	0.25	nd	608	nd	nd	nd	nd	nd	nd	50,000	20	40	nd
Sycamore Creek Downstream	5/19/2006	133	22.9	7.5	1.61	8.76	0.2	1.25	0.1	0.03	0.25	nd	370	nd	nd	nd	nd	nd	nd	170,000	110	700	nd
2006 Round 2																							
Forester Creek Downstream	9/25/2006	624	22.6	8.2	2.58	30.23	0.2	5.00	nd	nd	0.25	nd	683	nd	nd	nd	nd	nd	nd	80,000	2,200	1,700	nd
Forester Creek Upstream	9/25/2006	467	24.4	8.5	2.49	4.37	0.2	5	nd	nd	0.25	nd	641	nd	nd	nd	nd	nd	nd	30,000	8000	2300	nd
San Diego River Downstream	9/22/2006	1392	22.3	8.3	1.86	9.28	0.2	1.25	0.30	0.10	0.13	nd	528	nd	nd	nd	nd	nd	nd	800	40	20	nd
San Diego River Upstream	9/22/2006	unmeasurable	20.2	7.8	2.47	4.30	0.20	2.50	0.40	0.14	0.25	nd	614	nd	nd	nd	nd	nd	nd	13,000	500	230	nd
Sycamore Creek Downstream	9/22/2006	20	20.4	7.4	1.85	9.14	0.2	2.5	nd	nd	0.25	nd	345	nd	nd	nd	0.024	nd	nd	50,000	1,700	500	nd
2007 Round 1																							
Forester Creek Downstream	5/22/2007	655	18.1	8.2	2.45	25.94	0.5	4.57	0.30	0.10	0.25	nd	827	nd	nd	nd	nd	nd	nd	8,000	500	500	nd
Forester Creek Upstream	5/22/2007	585	19.3	8.7	2.49	2.55	0.1	4.93	nd	nd	0.25	nd	715	nd	nd	nd	nd	nd	nd	3,000	800	80	nd
San Diego River Downstream	5/22/2007	1392	20.8	8.0	1.69	3.94	nd	0.2	0.30	0.10	0.25	nd	601	nd	nd	nd	nd	nd	nd	1,700	110	nd	nd
San Diego River Upstream	5/22/2007	unmeasurable	18.2	7.8	2.31	8.29	0.20	1.88	0.30	0.10	0.25	nd	673	nd	nd	nd	nd	nd	nd	5,000	1,100	800	nd
Sycamore Creek Downstream	5/23/2007	156	19.7	7.6	1.48	9.57	0.1	0.16	0.2	0.07	0.25	nd	332	nd	nd	nd	nd	nd	nd	23,000	110	230	nd
2007 Round 2																							
Forester Creek Downstream	10/31/2007	234	17.7	7.7	2.66	10.21	0.3	2.31	0.50	0.16	0.38	nd	664	nd	nd	nd	nd	nd	nd	5,000	800	800	nd
Forester Creek Upstream	10/31/2007	148	16.5	8.1	2.65	1.58	0.1	4.72	0.10	0.03	0.5	nd	758	nd	nd	nd	nd	nd	nd	11,000	3,000	3,000	nd
San Diego River Downstream	10/30/2007	584	20.6	7.6	1.94	0.79	0.1	0.38	1.00	0.33	0.13	nd	567	nd	nd	nd	nd	nd	nd	1,300	20	40	nd
San Diego River Upstream	10/30/2007	unmeasurable	18.8	7.6	2.59	2.06	0.2	1.20	0.80	0.26	0.38	nd	626	nd	nd	nd	nd	nd	nd	1,300	220	700	nd
Sycamore Creek Downstream	10/31/2007	156	17.2	7.4	2.17	4.07	0.1	0.59	0.2	0.07	0.25	nd	448	nd	nd	nd	nd	nd	nd	5,000	800	300	nd

Site	Date	Flow* (gpm)	Temp.	pH (°C)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	*Enterococcus* (MPN/100mL)	Nitrate/ Nitrite as N	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	Total Selenium (µg/L)	Total Selenium Modified (µg/L)
2008 Round 1																			
Forester Creek Downstream	5/28/2008	281	19.9	7.7	2.77	1.25	6.76	17,000	130	700	3.24	1.9	5.2	0.11	0.11	1760	na	na	na
Forester Creek Upstream	5/28/2008	213	23.0	8.2	2.53	16.20	9.30	30,000	2,300	500	5.16	2.7	7.8	0.05	0.06	1590	na	na	na
San Diego River Downstream	5/28/2008	1212	20.5	7.5	2.46	0.01	6.60	5,000	800	700	0.84	1.9	2.8	0.16	0.16	1510	na	na	na
San Diego River Upstream	5/28/2008	unmeasurable	18.2	7.3	1.84	2.40	7.44	500	40	nd	nd	1.5	1.5	0.18	0.19	1130	na	na	na
Sycamore Creek Downstream	5/29/2008	56	15.1	7.0	1.40	0.69	7.42	5,000	800	5,000	0.13	2.2	2.4	0.11	0.11	941	na	na	na
2008 Round 2																			
Forester Creek Downstream	9/9/2008	359	22.9	7.7	2.78	7.98	6.46	13,000	300	2,300	0.99	2.1	3.1	0.32	0.33	1690	na	na	na
Forester Creek Upstream	9/4/2008	397	31.5	8.5	2.73	4.71	7.00	17,000	3,000	70	3.72	2.2	5.9	0.32	0.36	1650	na	na	na
San Diego River Downstream	9/4/2008	449	25.9	7.6	2.79	2.03	5.94	13,000	700	500	0.42	2.5	3	0.25	0.3	1790	na	na	na
San Diego River Upstream	9/4/2008	unmeasurable	30.8	8.1	1.87	7.62	8.56	300	nd	20	nd	2.9	2.9	0.08	0.08	1180	na	na	na
Sycamore Creek Downstream	9/9/2008	Ponded	28.4	7.1	2.70	31.71	5.51	130,000	80	130,000	nd	7.6	7.6	0.36	0.42	1700	na	na	na
2009 Round 1																			
Forester Creek Downstream	5/19/2009	468	23.8	7.9	2.60	31.55	5.76	2,800	170	500	0.7	0.8	1.4	0.66	0.67	1560	na	na	na
Forester Creek Upstream	5/19/2009	355	27.9	8.1	2.84	6.14	8.86	3,500	1700	800	4.93	1.1	6	0.33	0.34	1830	na	na	na
San Diego River Downstream	5/19/2009	1,392*	22.0	7.6	2.60	5.89	6.28	30,000	300	130	1.93	0.8	2.7	0.09	0.1	1680	na	na	na
San Diego River Upstream	5/19/2009	Unmeasureable*	24.6	7.8	1.73	10.76	7.95	1,300	nd	20	nd	2.5	2.5	0.13	0.32	1230	na	na	na
Sycamore Creek Downstream	5/20/2009	Ponded	20.5	7.5	1.34	4.41	5.25	11,000	500	1,400	0.23	3.9	4.1	0.19	0.28	767	na	na	na
2009 Round 2																			
Forester Creek Downstream	9/2/2009	94	26.6	7.6	2.97	7.61	5.56	11,000	1300	500	1.32	nd	1.6	0.12	0.25	1900	na	na	na
Forester Creek Upstream	9/2/2009	107	31.5	7.9	2.81	3.9	8.73	2,300	300	40	3.36	0.6	4	0.05	0.28	1850	na	na	na
San Diego River Downstream	9/2/2009	135*	26.8	7.5	2.98	2.8	5.89	2,300	40	80	0.44	0.6	1	0.12	0.14	1920	na	na	na
San Diego River Upstream	9/2/2009	Unmeasurable*	27.5	7.8	1.88	10.3	7.91	600	40	20	0.43	0.8	1.2	nd	0.2	1240	na	na	na
Sycamore Creek Downstream	9/3/2009	78	27.7	8.2	1.99	5.83	5.21	8,000	20	220	nd	3.3	3.3	0.1	0.27	1230	na	na	na
2010 Round 1																			
Forester Creek Downstream	5/17/2010	654	20.5	7.8	2.76	na	7.89	17,000	300	40	4.3	1.2	5.5	0.09	0.21	1,710	446	2	2
Forester Creek Upstream	5/17/2010	586	20.2	8.3	2.73	na	9.68	3,000	2,300	500	7.36	0.8	8.2	0.34	0.35	1,660	383	2	2
San Diego River Downstream	5/17/2010	1212	19	7.8	2.05	na	6.95	5,000	170	20	1.12	0.5	1.6	0.11	0.27	1,280	248	0.7	0.5
San Diego River Upstream	5/17/2010	166	21	7.9	1.5	na	8.27	500	nd	20	0.16	0.7	0.9	0.17	0.61	891	188	2	1
Sycamore Creek Downstream	5/17/2010	260	20.7	7.8	1.09	na	6.1	3,000	1,100	170	0.18	1	1.2	0.08	0.2	645	157	0.1	0.1
2010 Round 2																			
Forester Creek Downstream	9/15/2010	69	20.8	7.6	2.75	na	5.66	2,200	230	800	2.7	1.7	4.4	0.36	0.37	1,740	170	1	2
Forester Creek Upstream	9/15/2010	49	28.9	8	2.71	na	7.72	5,000	1,100	500	6.28	1.8	8.1	0.1	0.12	1,720	165	2	2
San Diego River Downstream	9/15/2010	188.5	21.3	7.4	2.83	na	5.12	5,000	50	13	0.93	1.7	2.6	0.21	0.22	1,740	354	0.7	0.6
San Diego River Upstream	9/15/2010	25	23.8	7.2	1.89	na	7.68	170	2	2	0.1	1.1	1.2	0.1	0.2	1,150	265	2	3
Sycamore Creek Downstream	9/16/2010	58	20.1	7	1.93	na	5.21	23,000	33	130	0.08	0.8	0.9	0.06	0.11	1,140	349	0.2	0.3

Notes:

nd = not detected

ns = not sampled (dry site)

na = not analyzed

* The accuracy of manual flow estimation techniques decreases as flow volume increases. Because of high flow rates in the San Diego River, the United States Geological Service (USGS) flow gauge data has been used in this report. The USGS flow gauge is located in proximity to the San Diego River downstream sampling location; however no gauge exists near the San Diego River upstream sampling location. Thus the upstream flow has been reported as unmeasurable.

Appendix B

Photographs of Sampling Locations

Forester Creek Downstream	
Forester Creek Upstream	
San Diego River Downstream	

San Diego River Upstream	
Sycamore Creek Downstream	

Appendix C

Laboratory Analytical Reports

Round One

EnviroMatrix Analytical, Inc.

14 June 2011

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 11F0139

Project Name: Santee Receiving Waters Study
Project Desc./#: 201022W-4

Enclosed are the results of analyses for samples received by the laboratory on 06/06/11 12:54. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Sycamore Cr. Downstream	11F0139-01	Stormwater	06/06/11 09:30	06/06/11 12:54
Forester Cr. downstream	11F0139-02	Stormwater	06/06/11 10:40	06/06/11 12:54
Forester Cr. upstream	11F0139-03	Stormwater	06/06/11 11:25	06/06/11 12:54

NOTE: Per client request Selenium was prepared/digested/analyzed twice; once per EPA Method 200.8 (Batched in #1060804) and once per EPA Method 200.8 modified (seen as RE1, Batched in #1060825). Modified EPA 200.8 method deleted all use of HCl.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore Cr. Downstream (11F0139-01) Stormwater Sampled: 06/06/11 09:30 Received: 06/06/11 12:54										
Selenium	ND	0.0005	0.001	mg/l	1	1060804	06/07/11	06/13/11	EPA 200.8	
Sycamore Cr. Downstream (11F0139-01RE1) Stormwater Sampled: 06/06/11 09:30 Received: 06/06/11 12:54										
Selenium	ND	0.005	0.010	mg/l	1	1060825	06/08/11	06/09/11	EPA 200.8	
Forester Cr. downstream (11F0139-02) Stormwater Sampled: 06/06/11 10:40 Received: 06/06/11 12:54										
Selenium	**0.001**	0.0005	0.001	mg/l	1	1060804	06/07/11	06/13/11	EPA 200.8	
Forester Cr. downstream (11F0139-02RE1) Stormwater Sampled: 06/06/11 10:40 Received: 06/06/11 12:54										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1060825	06/08/11	06/09/11	EPA 200.8	
Forester Cr. upstream (11F0139-03) Stormwater Sampled: 06/06/11 11:25 Received: 06/06/11 12:54										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1060804	06/07/11	06/13/11	EPA 200.8	
Forester Cr. upstream (11F0139-03RE1) Stormwater Sampled: 06/06/11 11:25 Received: 06/06/11 12:54										
Selenium	**0.001**	0.0005	0.001	mg/l	1	1060825	06/08/11	06/09/11	EPA 200.8	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore Cr. Downstream (11F0139-01) Stormwater Sampled: 06/06/11 09:30 Received: 06/06/11 12:54										
Nitrate/Nitrite as N	**0.18**	0.009	0.05	mg/l	1	1060802	06/08/11	06/08/11	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**2.2**	0.3	0.5	"	"	1060905	06/10/11	06/10/11	SM4500 N C	
Total Nitrogen	**2.4**	0.5	0.5	"	"	1061025	06/10/11	06/10/11	Calculation	
Orthophosphate as P	**0.06**	0.007	0.05	"	"	1060708	06/07/11	06/07/11	SM4500 P E	
Phosphorus, Total	**0.06**	0.02	0.05	"	"	1060749	06/09/11	06/09/11	SM4500 P B, E	
Total Dissolved Solids	**673**	1.0	20.0	"	"	1060748	06/09/11	06/09/11	SM2540 C	
Sulfate as SO4	**154**	10.0	50.0	"	10	1061323	06/13/11	06/13/11	SM4500 SO4 E	
Forester Cr. downstream (11F0139-02) Stormwater Sampled: 06/06/11 10:40 Received: 06/06/11 12:54										
Nitrate/Nitrite as N	**3.37**	0.09	0.50	mg/l	10	1060802	06/08/11	06/08/11	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**2.4**	0.3	0.5	"	1	1060905	06/10/11	06/10/11	SM4500 N C	
Total Nitrogen	**5.8**	0.5	0.5	"	"	1061025	06/10/11	06/10/11	Calculation	
Orthophosphate as P	**0.06**	0.007	0.05	"	"	1060708	06/07/11	06/07/11	SM4500 P E	
Phosphorus, Total	**0.16**	0.02	0.05	"	"	1060749	06/09/11	06/09/11	SM4500 P B, E	
Total Dissolved Solids	**1180**	1.0	20.0	"	"	1060748	06/09/11	06/09/11	SM2540 C	
Sulfate as SO4	**267**	25.0	125	"	25	1061323	06/13/11	06/13/11	SM4500 SO4 E	
Forester Cr. upstream (11F0139-03) Stormwater Sampled: 06/06/11 11:25 Received: 06/06/11 12:54										
Nitrate/Nitrite as N	**4.06**	0.09	0.50	mg/l	10	1060802	06/08/11	06/08/11	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.8**	0.3	0.5	"	1	1060905	06/10/11	06/10/11	SM4500 N C	
Total Nitrogen	**5.9**	0.5	0.5	"	"	1061025	06/10/11	06/10/11	Calculation	
Orthophosphate as P	**0.04**	0.007	0.05	"	"	1060708	06/07/11	06/07/11	SM4500 P E	J
Phosphorus, Total	**0.05**	0.02	0.05	"	"	1060749	06/09/11	06/09/11	SM4500 P B, E	
Total Dissolved Solids	**1150**	1.0	20.0	"	"	1060748	06/09/11	06/09/11	SM2540 C	
Sulfate as SO4	**246**	10.0	50.0	"	10	1061323	06/13/11	06/13/11	SM4500 SO4 E	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sycamore Cr. Downstream (11F0139-01) Stormwater Sampled: 06/06/11 09:30 Received: 06/06/11 12:54										
Enterococcus	**170**	2	2	MPN/100 ml	1	1060726	06/06/11	06/10/11	SM 9230 A, B	
Forester Cr. downstream (11F0139-02) Stormwater Sampled: 06/06/11 10:40 Received: 06/06/11 12:54										
Enterococcus	**9000**	20	20	MPN/100 ml	10	1060726	06/06/11	06/10/11	SM 9230 A, B	
Forester Cr. upstream (11F0139-03) Stormwater Sampled: 06/06/11 11:25 Received: 06/06/11 12:54										
Enterococcus	**220**	2	2	MPN/100 ml	1	1060726	06/06/11	06/10/11	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060804											
Blank (1060804-BLK1)					Prepared: 06/07/11		Analyzed: 06/09/11				
Selenium	ND	0.0005	0.001	mg/l							
LCS (1060804-BS1)					Prepared: 06/07/11		Analyzed: 06/09/11				
Selenium	0.104	0.0005	0.001	mg/l	0.100		104	75-125			
LCS Dup (1060804-BSD1)					Prepared: 06/07/11		Analyzed: 06/09/11				
Selenium	0.096	0.0005	0.001	mg/l	0.100		96	75-125	8	20	
Duplicate (1060804-DUP1)			**Source: 11E0757-01**		Prepared: 06/07/11		Analyzed: 06/09/11				
Selenium	ND	0.0005	0.001	mg/l		ND				20	
Matrix Spike (1060804-MS1)			**Source: 11E0757-01**		Prepared: 06/07/11		Analyzed: 06/09/11				
Selenium	0.106	0.0005	0.001	mg/l	0.100	ND	106	75-125			
Matrix Spike (1060804-MS2)			**Source: 11E0757-02**		Prepared: 06/07/11		Analyzed: 06/09/11				
Selenium	0.102	0.0005	0.001	mg/l	0.100	ND	102	75-125			
Matrix Spike Dup (1060804-MSD1)			**Source: 11E0757-01**		Prepared: 06/07/11		Analyzed: 06/09/11				
Selenium	0.099	0.0005	0.001	mg/l	0.100	ND	99	75-125	6	20	
Batch 1060825											
Blank (1060825-BLK1)					Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	ND	0.0005	0.001	mg/l							
LCS (1060825-BS1)					Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	0.086	0.0005	0.001	mg/l	0.100		86	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060825											
LCS Dup (1060825-BSD1)					Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	0.109	0.0005	0.001	mg/l	0.100		109	75-125	23	20	QL-02
Duplicate (1060825-DUP1)			**Source: 11F0139-01RE1**		Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	ND	0.005	0.010	mg/l		ND				20	
Matrix Spike (1060825-MS1)			**Source: 11F0139-01RE1**		Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	1.02	0.005	0.010	mg/l	1.00	ND	102	75-125			
Matrix Spike Dup (1060825-MSD1)			**Source: 11F0139-01RE1**		Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	0.979	0.005	0.010	mg/l	1.00	ND	98	75-125	5	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060708											
Blank (1060708-BLK1)					Prepared & Analyzed: 06/07/11						
Orthophosphate as P	ND	0.007	0.05	mg/l							
LCS (1060708-BS1)					Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.50	0.007	0.05	mg/l	0.500		100	80-120			
LCS Dup (1060708-BSD1)					Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.50	0.007	0.05	mg/l	0.500		100	80-120	0.4	20	
Duplicate (1060708-DUP1)			**Source: 11F0147-01**		Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.39	0.007	0.05	mg/l		0.43			9	20	
Matrix Spike (1060708-MS1)			**Source: 11F0147-01**		Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.90	0.007	0.05	mg/l	0.500	0.43	95	80-120			
Matrix Spike Dup (1060708-MSD1)			**Source: 11F0147-01**		Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.84	0.007	0.05	mg/l	0.500	0.43	83	80-120	7	20	
Batch 1060748											
Blank (1060748-BLK1)					Prepared: 06/08/11 Analyzed: 06/09/11						
Total Dissolved Solids	ND	1.0	20.0	mg/l							
Duplicate (1060748-DUP1)			**Source: 11F0104-05**		Prepared: 06/08/11 Analyzed: 06/09/11						
Total Dissolved Solids	1040	1.0	20.0	mg/l		1030			0.8	20	
Duplicate (1060748-DUP2)			**Source: 11F0151-01**		Prepared & Analyzed: 06/09/11						
Total Dissolved Solids	999	1.0	20.0	mg/l		1050			5	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060748											
Reference (1060748-SRM1)					Prepared: 06/08/11	Analyzed: 06/09/11					
Total Dissolved Solids	298	1.0	20.0	mg/l	340		88	75.6-124.4			
Batch 1060749											
Blank (1060749-BLK1)					Prepared & Analyzed: 06/09/11						
Phosphorus, Total	ND	0.02	0.05	mg/l							
LCS (1060749-BS1)					Prepared & Analyzed: 06/09/11						
Phosphorus, Total	0.44	0.02	0.05	mg/l	0.500		88	80-120			
LCS Dup (1060749-BSD1)					Prepared & Analyzed: 06/09/11						
Phosphorus, Total	0.47	0.02	0.05	mg/l	0.500		94	80-120	7	20	
Duplicate (1060749-DUP1)		**Source: 11F0166-03**			Prepared & Analyzed: 06/09/11						
Phosphorus, Total	1.60	0.02	0.05	mg/l		1.55			3	20	
Matrix Spike (1060749-MS1)		**Source: 11F0166-03**			Prepared & Analyzed: 06/09/11						
Phosphorus, Total	1.47	0.02	0.05	mg/l	0.500	1.55	NR	80-120			QM-05
Matrix Spike Dup (1060749-MSD1)		**Source: 11F0166-03**			Prepared & Analyzed: 06/09/11						
Phosphorus, Total	1.38	0.02	0.05	mg/l	0.500	1.55	NR	80-120	6	20	QM-05
Batch 1060802											
Blank (1060802-BLK1)					Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	ND	0.009	0.05	mg/l							

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060802											
LCS (1060802-BS1)					Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	0.47	0.009	0.05	mg/l	0.500		94	80-120			
LCS Dup (1060802-BSD1)					Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	0.49	0.009	0.05	mg/l	0.500		98	80-120	4	20	
Duplicate (1060802-DUP1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	1.18	0.04	0.25	mg/l		1.31			10	20	
Matrix Spike (1060802-MS1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	3.61	0.04	0.25	mg/l	2.50	1.31	92	80-120			
Matrix Spike Dup (1060802-MSD1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	3.69	0.04	0.25	mg/l	2.50	1.31	95	80-120	2	20	
Reference (1060802-SRM1)					Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	0.32	0.009	0.05	mg/l	0.338		94	0.05-109.9			
Batch 1060905											
Blank (1060905-BLK1)					Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	ND	0.3	0.5	mg/l							
LCS (1060905-BS1)					Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	4.7	0.3	0.5	mg/l	4.10		114	80-120			
LCS Dup (1060905-BSD1)					Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	4.8	0.3	0.5	mg/l	4.10		118	80-120	4	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060905											
Duplicate (1060905-DUP1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	2.2	0.3	0.5	mg/l		1.8			17	20	
Matrix Spike (1060905-MS1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	5.4	0.3	0.5	mg/l	4.10	1.8	86	80-120			
Matrix Spike Dup (1060905-MSD1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	5.6	0.3	0.5	mg/l	4.10	1.8	91	80-120	4	20	
Batch 1061025											
Duplicate (1061025-DUP1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/10/11						
Total Nitrogen	3.4	0.5	0.5	mg/l		3.1			9	20	
Batch 1061323											
Blank (1061323-BLK1)					Prepared & Analyzed: 06/13/11						
Sulfate as SO4	ND	1.0	5.0	mg/l							
LCS (1061323-BS1)					Prepared & Analyzed: 06/13/11						
Sulfate as SO4	10.7	1.0	5.0	mg/l	10.0		107	80-120			
LCS Dup (1061323-BSD1)					Prepared & Analyzed: 06/13/11						
Sulfate as SO4	10.2	1.0	5.0	mg/l	10.0		102	80-120	5	20	
Duplicate (1061323-DUP1)			**Source: 11F0062-01**		Prepared & Analyzed: 06/13/11						
Sulfate as SO4	242	10.0	50.0	mg/l		240			0.8	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0139

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1061323											
Matrix Spike (1061323-MS1)			**Source: 11F0062-01**		Prepared & Analyzed: 06/13/11						
Sulfate as SO4	339	10.0	50.0	mg/l	100	240	98	80-120			
Matrix Spike Dup (1061323-MSD1)			**Source: 11F0062-01**		Prepared & Analyzed: 06/13/11						
Sulfate as SO4	345	10.0	50.0	mg/l	100	240	104	80-120	2	20	

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Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QL-02	The RPD between the LCS and LCSD did not meet the acceptance criteria, however both have acceptable recoveries. Sample data not affected.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 11F0139

Client: D-Max Engineering
Attn: Arsalan Dadkhah
Samplers(s): MD/KC
Address: 7220 Trade Street, Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax: 858-586-6644
Email:
Billing Address: Same
Project ID: Santee Receiving Water
Project #: 201122W-4 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS ☒ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform. □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, ☒ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide	Total Nitrogen	Total Phosphorus	Total Selenium	Sulfate	ortho phosphate - P
1	Sycamore Cr. downstream	6/6/11	9:30	SW	4P									X							X			X	X	X	X	X
2	Forester Cr. downstream	6/6/11	10:40	SW	4P									X							X			X	X	X	X	X
3	Forester Cr. upstream	6/6/11	11:25	~	~									X							X			X	X	X	X	X
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid
Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other
[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)
[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT
[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manouchehr Dadkhah	6/6/11 12:40	Signature: Heidi Thompson
Print: Manouchehr Dadkhah		Print: Heidi Thompson
Company: D-Max Eng.		Company: EMA
Signature: Heidi Thompson	6/6/11 12:54	Signature: Eric Hurt
Print: Heidi Thompson		Print: Eric Hurt
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: - Run Selenium Twice (once w/o HCL in digest, and once normally)
- Reduce the Bacteria RLs by a factor of 10 on the high and low ends by not doing the initial dilution

3.C

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.
NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

15 June 2011

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 11F0170

Project Name: Santee Receiving Waters Study
Project Desc./#: 201122W-4

Enclosed are the results of analyses for samples received by the laboratory on 06/07/11 13:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
San Diego River Downstream	11F0170-01	Stormwater	06/07/11 10:45	06/07/11 13:20
San Diego River Upstream	11F0170-02	Stormwater	06/07/11 11:40	06/07/11 13:20

NOTE: Per client request Selenium was prepared/digested/analyzed twice; once per EPA Method 200.8 (Batched in #1060824) and once per EPA Method 200.8 modified (seen as RE1, Batched in #1060825). Modified EPA 200.8 method deleted all use of HCl.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Downstream (11F0170-01) Stormwater Sampled: 06/07/11 10:45 Received: 06/07/11 13:20										
Selenium	**0.0006**	0.0005	0.001	mg/l	1	1060824	06/09/11	06/14/11	EPA 200.8	J
San Diego River Downstream (11F0170-01RE1) Stormwater Sampled: 06/07/11 10:45 Received: 06/07/11 13:20										
Selenium	ND	0.0005	0.001	mg/l	1	1060825	06/08/11	06/09/11	EPA 200.8	
San Diego River Upstream (11F0170-02) Stormwater Sampled: 06/07/11 11:40 Received: 06/07/11 13:20										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1060824	06/09/11	06/14/11	EPA 200.8	
San Diego River Upstream (11F0170-02RE1) Stormwater Sampled: 06/07/11 11:40 Received: 06/07/11 13:20										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1060825	06/08/11	06/09/11	EPA 200.8	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Downstream (11F0170-01) Stormwater Sampled: 06/07/11 10:45 Received: 06/07/11 13:20										
Nitrate/Nitrite as N	**0.79**	0.009	0.05	mg/l	1	1060802	06/08/11	06/08/11	SM4500 NO3 E	
Total Kjeldahl Nitrogen	**1.8**	0.3	0.5	"	"	1060905	06/10/11	06/10/11	SM4500 N C	
Total Nitrogen	**2.6**	0.5	0.5	"	"	1061025	06/10/11	06/10/11	Calculation	
Orthophosphate as P	**0.15**	0.007	0.05	"	"	1060708	06/07/11	06/07/11	SM4500 P E	
Phosphorus, Total	**0.19**	0.02	0.05	"	"	1060749	06/09/11	06/09/11	SM4500 P B, E	
Total Dissolved Solids	**1200**	1.0	20.0	"	"	1061102	06/11/11	06/13/11	SM2540 C	
Sulfate as SO4	**246**	10.0	50.0	"	10	1061323	06/13/11	06/13/11	SM4500 SO4 E	
San Diego River Upstream (11F0170-02) Stormwater Sampled: 06/07/11 11:40 Received: 06/07/11 13:20										
Nitrate/Nitrite as N	**0.03**	0.009	0.05	mg/l	1	1060802	06/08/11	06/08/11	SM4500 NO3 E	J
Total Kjeldahl Nitrogen	**1.4**	0.3	0.5	"	"	1060905	06/10/11	06/10/11	SM4500 N C	
Total Nitrogen	**1.4**	0.5	0.5	"	"	1061025	06/10/11	06/10/11	Calculation	
Orthophosphate as P	**0.06**	0.007	0.05	"	"	1060708	06/07/11	06/07/11	SM4500 P E	
Phosphorus, Total	**0.15**	0.02	0.05	"	"	1060749	06/09/11	06/09/11	SM4500 P B, E	
Total Dissolved Solids	**1100**	1.0	20.0	"	"	1061102	06/11/11	06/13/11	SM2540 C	
Sulfate as SO4	**239**	10.0	50.0	"	10	1061323	06/13/11	06/13/11	SM4500 SO4 E	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Downstream (11F0170-01) Stormwater Sampled: 06/07/11 10:45 Received: 06/07/11 13:20										
Enterococcus	**1300**	20	20	MPN/100 ml	10	1060810	06/07/11	06/11/11	SM 9230 A, B	
San Diego River Upstream (11F0170-02) Stormwater Sampled: 06/07/11 11:40 Received: 06/07/11 13:20										
Enterococcus	**50**	2	2	MPN/100 ml	1	1060810	06/07/11	06/11/11	SM 9230 A, B	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060824											
Blank (1060824-BLK1)					Prepared: 06/13/11		Analyzed: 06/14/11				
Selenium	ND	0.0005	0.001	mg/l							
LCS (1060824-BS1)					Prepared: 06/13/11		Analyzed: 06/14/11				
Selenium	0.104	0.0005	0.001	mg/l	0.100		104	75-125			
LCS Dup (1060824-BSD1)					Prepared: 06/13/11		Analyzed: 06/14/11				
Selenium	0.102	0.0005	0.001	mg/l	0.100		102	75-125	1	20	
Duplicate (1060824-DUP1)			**Source: 11F0294-01**		Prepared: 06/13/11		Analyzed: 06/14/11				
Selenium	ND	0.002	0.005	mg/l		ND				20	
Matrix Spike (1060824-MS1)			**Source: 11F0294-01**		Prepared: 06/13/11		Analyzed: 06/14/11				
Selenium	0.088	0.002	0.005	mg/l	0.100	ND	88	75-125			
Matrix Spike Dup (1060824-MSD1)			**Source: 11F0294-01**		Prepared: 06/13/11		Analyzed: 06/14/11				
Selenium	0.084	0.002	0.005	mg/l	0.100	ND	84	75-125	5	20	
Batch 1060825											
Blank (1060825-BLK1)					Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	ND	0.0005	0.001	mg/l							
LCS (1060825-BS1)					Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	0.086	0.0005	0.001	mg/l	0.100		86	75-125			
LCS Dup (1060825-BSD1)					Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	0.109	0.0005	0.001	mg/l	0.100		109	75-125	23	20	QL-02

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060825											
Duplicate (1060825-DUP1)			**Source: 11F0139-01RE1**		Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	ND	0.005	0.010	mg/l		ND				20	
Matrix Spike (1060825-MS1)			**Source: 11F0139-01RE1**		Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	1.02	0.005	0.010	mg/l	1.00	ND	102	75-125			
Matrix Spike Dup (1060825-MSD1)			**Source: 11F0139-01RE1**		Prepared: 06/08/11		Analyzed: 06/09/11				
Selenium	0.979	0.005	0.010	mg/l	1.00	ND	98	75-125	5	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060708											
Blank (1060708-BLK1)					Prepared & Analyzed: 06/07/11						
Orthophosphate as P	ND	0.007	0.05	mg/l							
LCS (1060708-BS1)					Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.50	0.007	0.05	mg/l	0.500		100	80-120			
LCS Dup (1060708-BSD1)					Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.50	0.007	0.05	mg/l	0.500		100	80-120	0.4	20	
Duplicate (1060708-DUP1)			**Source: 11F0147-01**		Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.39	0.007	0.05	mg/l		0.43			9	20	
Matrix Spike (1060708-MS1)			**Source: 11F0147-01**		Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.90	0.007	0.05	mg/l	0.500	0.43	95	80-120			
Matrix Spike Dup (1060708-MSD1)			**Source: 11F0147-01**		Prepared & Analyzed: 06/07/11						
Orthophosphate as P	0.84	0.007	0.05	mg/l	0.500	0.43	83	80-120	7	20	
Batch 1060749											
Blank (1060749-BLK1)					Prepared & Analyzed: 06/09/11						
Phosphorus, Total	ND	0.02	0.05	mg/l							
LCS (1060749-BS1)					Prepared & Analyzed: 06/09/11						
Phosphorus, Total	0.44	0.02	0.05	mg/l	0.500		88	80-120			
LCS Dup (1060749-BSD1)					Prepared & Analyzed: 06/09/11						
Phosphorus, Total	0.47	0.02	0.05	mg/l	0.500		94	80-120	7	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060749											
Duplicate (1060749-DUP1)			**Source: 11F0166-03**		Prepared & Analyzed: 06/09/11						
Phosphorus, Total	1.60	0.02	0.05	mg/l		1.55			3	20	
Matrix Spike (1060749-MS1)			**Source: 11F0166-03**		Prepared & Analyzed: 06/09/11						
Phosphorus, Total	1.47	0.02	0.05	mg/l	0.500	1.55	NR	80-120			QM-05
Matrix Spike Dup (1060749-MSD1)			**Source: 11F0166-03**		Prepared & Analyzed: 06/09/11						
Phosphorus, Total	1.38	0.02	0.05	mg/l	0.500	1.55	NR	80-120	6	20	QM-05
Batch 1060802											
Blank (1060802-BLK1)					Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	ND	0.009	0.05	mg/l							
LCS (1060802-BS1)					Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	0.47	0.009	0.05	mg/l	0.500		94	80-120			
LCS Dup (1060802-BSD1)					Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	0.49	0.009	0.05	mg/l	0.500		98	80-120	4	20	
Duplicate (1060802-DUP1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	1.18	0.04	0.25	mg/l		1.31			10	20	
Matrix Spike (1060802-MS1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	3.61	0.04	0.25	mg/l	2.50	1.31	92	80-120			
Matrix Spike Dup (1060802-MSD1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	3.69	0.04	0.25	mg/l	2.50	1.31	95	80-120	2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1060802											
Reference (1060802-SRM1)					Prepared & Analyzed: 06/08/11						
Nitrate/Nitrite as N	0.32	0.009	0.05	mg/l	0.338		94	0.05-109.9			
Batch 1060905											
Blank (1060905-BLK1)					Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	ND	0.3	0.5	mg/l							
LCS (1060905-BS1)					Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	4.7	0.3	0.5	mg/l	4.10		114	80-120			
LCS Dup (1060905-BSD1)					Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	4.8	0.3	0.5	mg/l	4.10		118	80-120	4	20	
Duplicate (1060905-DUP1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	2.2	0.3	0.5	mg/l		1.8			17	20	
Matrix Spike (1060905-MS1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	5.4	0.3	0.5	mg/l	4.10	1.8	86	80-120			
Matrix Spike Dup (1060905-MSD1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/10/11						
Total Kjeldahl Nitrogen	5.6	0.3	0.5	mg/l	4.10	1.8	91	80-120	4	20	
Batch 1061025											
Duplicate (1061025-DUP1)			**Source: 11F0151-01**		Prepared & Analyzed: 06/10/11						
Total Nitrogen	3.4	0.5	0.5	mg/l		3.1			9	20	

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Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11F0170

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1061102											
Blank (1061102-BLK1)					Prepared: 06/11/11		Analyzed: 06/13/11				
Total Dissolved Solids	ND	1.0	20.0	mg/l							
Duplicate (1061102-DUP1)			**Source: 11F0187-01**		Prepared: 06/11/11		Analyzed: 06/13/11				
Total Dissolved Solids	1870	1.0	20.0	mg/l		1870			0.3	20	
Reference (1061102-SRM1)					Prepared: 06/11/11		Analyzed: 06/13/11				
Total Dissolved Solids	380	1.0	20.0	mg/l	340		112	75.6-124.4			
Batch 1061323											
Blank (1061323-BLK1)					Prepared & Analyzed: 06/13/11						
Sulfate as SO4	ND	1.0	5.0	mg/l							
LCS (1061323-BS1)					Prepared & Analyzed: 06/13/11						
Sulfate as SO4	10.7	1.0	5.0	mg/l	10.0		107	80-120			
LCS Dup (1061323-BSD1)					Prepared & Analyzed: 06/13/11						
Sulfate as SO4	10.2	1.0	5.0	mg/l	10.0		102	80-120	5	20	
Duplicate (1061323-DUP1)			**Source: 11F0062-01**		Prepared & Analyzed: 06/13/11						
Sulfate as SO4	242	10.0	50.0	mg/l		240			0.8	20	
Matrix Spike (1061323-MS1)			**Source: 11F0062-01**		Prepared & Analyzed: 06/13/11						
Sulfate as SO4	339	10.0	50.0	mg/l	100	240	98	80-120			
Matrix Spike Dup (1061323-MSD1)			**Source: 11F0062-01**		Prepared & Analyzed: 06/13/11						
Sulfate as SO4	345	10.0	50.0	mg/l	100	240	104	80-120	2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QL-02	The RPD between the LCS and LCSD did not meet the acceptance criteria, however both have acceptable recoveries. Sample data not affected.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix EMA Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 11F0170

Client: D-Max Engineering
Attn: Arsalan Dadkhah
Samplers(s): MD/KC
Address: 7220 Trade Street, Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax: 858-586-6644
Email:
Billing Address: same

Project ID: Santee Receiving Waters
Project #: 2011 22W-4 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform. □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide	Total Nitrogen	Total Phosphorus	Total Selenium	Sulfate	Orthophosphate-P
1	San Diego River downstream	6/7/11	10:45	SW	4P									X							X			X	X	X	X	X
2	San Diego River Upstream	"	11:40	"	4P									X							X			X	X	X	X	X
3	~~Pzcp~~	~~"~~	~~12:10~~	~~"~~	~~2CTUP~~																							
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid
Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other
[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day ☒ 5 day □ STD (7 day)
[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT
[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature Manoucher Dadkhah	6/7/11 1:00	Signature Heidi Thompson
Print Manoucher Dadkhah		Print Heidi Thompson
Company: D-Max Engineering		Company: EMA
Signature Heidi Thompson	6/7/11 1320	Signature Eric Hunt
Print Heidi Thompson		Print Eric Hunt
Company: EMA		Company: EMA
Signature		Signature
Print		Print
Company:		Company:

Project/Sample Comments: Run selenium twice (once w/o HCL in digest, and once normally)
- Reduce the bacteria RLs by a factor of 10 on the high and low ends by not doing the initial dilution

[1]Additional costs may apply, consult a project manager for details.
[2]EMA reserves the right to return any samples that do not match our waste profile.
NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

Institute for Environmental Health
Environmental Engineering Laboratory, Inc.
3538 Hancock St. San Diego, CA 92110 | P: (619) 298-6131 | F: (619) 298-6141

TEST REPORT

Recipient: Sara Dadkhah
D-MAX ENGINEERING,
7220 Trade St. # 119
SAN DIEGO, CA 92121
Reference: 1145323
Lab ID: 1145323-001
Sample #: San Diego River Downstream
Project#:
Comment: Santee Reciving Waters Study

Report Date: 06/13/2011
Matrix: WATER
Sampled: 06/07/2011 10:45
Received: 06/07/2011 13:00
Collection Address:
Sample Location: San Diego River Sample
Description:
Date Started: 06/07/2011
Date Completed: 06/13/2011
PS Code:

Coliform, Total & Fecal (p)

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
Coliform, Fecal	2,300	MPN/100ml	2	0	1	SM9221E	06/07/2011 14:54	HD
Coliform, Total	160,000	MPN/100ml	2	0	1	SM9221B	06/07/2011 14:54	HD

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
E. coli MTF	490	MPN/100ml	2	0	1	SM9221F	06/07/2011 14:54	HD

Recipient: Sara Dadkhah
D-MAX ENGINEERING,
7220 Trade St. # 119
SAN DIEGO, CA 92121
Reference: 1145323
Lab ID: 1145323-002
Sample #: San Diego River Upstream
Project#:
Comment: Santee Receiving Waters Study

Report Date: 06/13/2011
Matrix: WATER
Sampled: 06/07/2011 11:40
Received: 06/07/2011 13:00
Collection Address:
Sample Location: San Diego River Sample
Description:
Date Started: 06/07/2011
Date Completed: 06/13/2011
PS Code:

Coliform, Total & Fecal (p)

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
Coliform, Fecal	69	MPN/100ml	2	0	1	SM9221E	06/07/2011 14:54	XZ
Coliform, Total	13,000	MPN/100ml	2	0	1	SM9221B	06/07/2011 14:54	XZ

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
E. coli MTF	69	MPN/100ml	2	0	1	SM9221F	06/07/2011 14:54	XZ

Approval: _____ _____
QA/QC Officer **Director**

RL = Reporting Limit MCL = Maximum Contaminant Level N/A = Not Applicable ExL = External Laboratory

Unless otherwise noted, samples were received in acceptable condition. The results in this report relate only to the portion of the samples tested.
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Institute for Environmental Health
Environmental Engineering Laboratory, Inc.
3538 Hancock St. San Diego, CA 92110

CHAIN OF CUSTODY

Page 1 of 1

T: (619) 298-6131
F: (619) 298-6141
Info@ieheel.com

IEEL Analytical

CLIENT INFORMATION New [ ] Existing [X]	BILLING INFORMATION	Temperature: 7.9°C
Client: D-Max Engineering, Inc	Billing Address: (same)	Temperature requirement met? Yes [X] No [ ]
Contact: Sara Dadkhah		Holding Time met? Yes [X] No [ ]
Address: 7220 Trade St. #119		Continue with the Analysis: Yes [ ] No [ ] Initials:
San Diego CA 92121	P.O.#: 20112ZW-4	Send Result(s) by[b]:
	Comments: Santee Receiving Waters Study Request copy of QC with results	E-Mail[c] ($1.00 fee) [X] Fax ($2.00 fee) [ ] Send to CDPH ($2.00 fee) [ ] EDT ($5.00 fee) [ ] Report to County ($2.00 fee) [ ]
Phone: 858 586 6606		
Fax: 858 586 6644		
E-Mail: admin@dmaxinc.com		

Do we have a persmission to Sub-Contract your sample to another laboratory? YES [X] NO [ ] Initials: SD

Turnaround Time: STANDARD [X] RUSH [ ] WEEKEND/HOLIDAY Fee [ ] Initials: SD

Discard Sample(s) after analysis is done: YES [ ] NO [X][a] Initials: SD

SAMPLE DESIGNATION(s)

ANALYSIS REQUESTED

CLIENT SAMPLE I.D.	DATE	TIME	SAMPLE DESCRIPTION(s)	Matrix	# of Containers	Total Coliform (MTF)	Fecal Coliform (MTF)	E Coli (MTF)						Preservative(s)
San Diego River Downstream	6/7/11	10:45	San Diego River Sample	Storm water	1	X	X	X						
San Diego River Upstream	6/7/11	11:40	San Diego River Sample	Storm water	1	X	X	X						

	Date:	Time:		Date:	Time:
1- Sample(s) Collected By: Kimberly Corbilla (Sign and Print) KM	6/7/11	~~6/7/11~~ 10:45	2- Sample(s) Transported By: (Sign and Print) KT	6/7/11	13:00
3- Relinquished By: Kimberly Corbilla (Sign and Print) KM	6/7/11	1:00	4- Received By: (Sign and Print) KT	6/7/11	13:00

Extra charges may apply for rush analysis, special sample preparation, non-typical report format, or other non-typical customer request or needs. [a]Unclaimed samples will be discarded after 90 days without customer notification. [b]All the results will be mailed through USPS. [c]Emailed results will be in PDF format and do not have any signatures.

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Environmental Engineering Laboratory, Inc.
3538 Hancock St. San Diego, CA 92110 | P: (619) 298-6131 | F: (619) 298-6141

TEST REPORT

Recipient: Sara Dadkhah
D-MAX ENGINEERING,
7220 Trade St. Suite 119
SAN DIEGO, CA 92121
Reference: 1145302
Lab ID: 1145302-001
Sample #: Sycamore Cr. Downstream
Project#:
Comment: Santee Receiving Waters Study

Report Date: 06/10/2011
Matrix: WATER
Sampled: 06/06/2011 9:30
Received: 06/06/2011 13:05
Collection Address:
Sample Location: Creek Sample
Description:
Date Started: 06/06/2011
Date Completed: 06/10/2011
PS Code:

Coliform, Total & Fecal (p)

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
Coliform, Fecal	1,300	MPN/100ml	2	0	1	SM9221E	06/06/2011 16:15	BD
Coliform, Total	2,600	MPN/100ml	2	0	1	SM9221B	06/06/2011 16:15	BD

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
E. coli MTF	490	MPN/100ml	2	0	1	SM9221F	06/06/2011 16:15	BD

Recipient: Sara Dadkhah
D-MAX ENGINEERING,
7220 Trade St. Suite 119
SAN DIEGO, CA 92121
Reference: 1145302
Lab ID: 1145302-002
Sample #: Forester Cr. Downstream
Project#:
Comment: Santee Receiving Wters Study

Report Date: 06/10/2011
Matrix: WATER
Sampled: 06/06/2011 10:40
Received: 06/06/2011 13:05
Collection Address:
Sample Location: Creek Sample
Description:
Date Started: 06/06/2011
Date Completed: 06/10/2011
PS Code:

Coliform, Total & Fecal (p)

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
Coliform, Fecal	54,000	MPN/100ml	2	0	1	SM9221E	06/06/2011 16:15	BD
Coliform, Total	160,000	MPN/100ml	2	0	1	SM9221B	06/06/2011 16:15	BD

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
E. coli MTF	54,000	MPN/100ml	2	0	1	SM9221F	06/06/2011 16:15	BD

RL = Reporting Limit MCL = Maximum Contaminant Level N/A = Not Applicable ExL = External Laboratory

Unless otherwise noted, samples were received in acceptable condition. The results in this report relate only to the portion of the samples tested.
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TEST REPORT

Recipient: Sara Dadkhah
D-MAX ENGINEERING,
7220 Trade St. Suite 119
SAN DIEGO, CA 92121
Reference: 1145302
Lab ID: 1145302-003
Sample #: Forester Cr. Upstream
Project#:
Comment: Santee Receiving Waters Study

Report Date: 06/10/2011
Matrix: WATER
Sampled: 06/06/2011 11:25
Received: 06/06/2011 13:05
Collection Address:
Sample Location: Creek Sample
Description:
Date Started: 06/06/2011
Date Completed: 06/10/2011
PS Code:

Coliform, Total & Fecal (p)

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
Coliform, Fecal	780	MPN/100ml	2	0	1	SM9221E	06/06/2011 16:15	BD
Coliform, Total	54,000	MPN/100ml	2	0	1	SM9221B	06/06/2011 16:15	BD

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Analyzed	Analyst
E. coli MTF	490	MPN/100ml	2	0	1	SM9221F	06/06/2011 16:15	BD

Approval: _____ _____
QA/QC Officer **Director**

RL = Reporting Limit MCL = Maximum Contaminant Level N/A = Not Applicable ExL = External Laboratory

Unless otherwise noted, samples were received in acceptable condition. The results in this report relate only to the portion of the samples tested.
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Institute for Environmental Health
Environmental Engineering Laboratory, Inc.
3538 Hancock St. San Diego, CA 92110

CHAIN OF CUSTODY

Page 1 of 1

T: (619) 298-6131
F: (619) 298-6141
Info@ieheel.com

IEEL Analytical

CLIENT INFORMATION New [X] Existing [ ]	BILLING INFORMATION	Temperature:
Client: D-Max Engineering, Inc.	Billing Address: (Same)	Temperature requirement met? Yes [ ] No [ ]
Contact: Sara Dadkhah		Holding Time met? Yes [ ] No [ ]
Address: 7220 Trade St. Suite 119		Continue with the Analysis: Yes [ ] No [ ] Initials:
San Diego, CA 92121	P.O.#: 2011 22W-4	Send Result(s) by[b]:
	Comments: Santee Receiving Waters Study	E-Mail[c] ($1.00 fee) [X] Fax ($2.00 fee) [ ]
Phone: 858 586 6600	Please email COC with results.	Send to CDPH ($2.00 fee) [ ] EDT ($5.00 fee) [ ]
Fax: 858 586 6644		Report to County ($2.00 fee) [ ]
E-Mail: admin@dmaxinc.com		ANALYSIS REQUESTED

Do we have a persmission to Sub-Contract your sample to another laboratory? YES [X] NO [ ] Initials: SD

Turnaround Time: STANDARD [X] RUSH [ ] WEEKEND/HOLIDAY Fee [ ] Initials: SD

Discard Sample(s) after analysis is done: YES [ ] NO [X][a] Initials: SD

SAMPLE DESIGNATION(s)

CLIENT SAMPLE I.D.	DATE	TIME	SAMPLE DESCRIPTION(s)	Matrix	# of Containers	Total Coliform (MTF)	Fecal Coliform (MTF)	E. Coli (MTF)						Preservative(s)
Sycamore Cr. Downstream	6/6/11	9:30	Creek Sample	storm water	1	X	X	X						
Forester Cr. downstream	6/6/11	10:40	Creek Sample	~	1	X	X	X						
Forester Cr upstream	6/6/11	11:25	Creek Sample.	~	1	X	X	X						

	Date:	Time:		Date:	Time:
1- Sample(s) Collected By: Manouchehr Dadkhah (Sign and Print) Manouchehr Dadkhah	6/6/11	9:30	2- Sample(s) Transported By: (Sign and Print) [signature]	6/6/11	13:06
3- Relinquished By: Manouchehr Dadkhah (Sign and Print) Manouchehr Dadkhah	6/6/11	13:05	4- Received By: (Sign and Print) [signature]	6/6/11	13:05

Extra charges may apply for rush analysis, special sample preparation, non-typical report format, or other non-typical customer request or needs. [a]Unclaimed samples will be discarded after 90 days without customer notification. [b]All the results will be mailed through USPS. [c]Emailed results will be in PDF format and do not have any signatures.

Round Two

23 November 2011

Arsalan Dadkhah
D-Max Engineering Inc.
7220 Trade Street Suite 119
San Diego, CA 92121

RE:201122W-4
Work Order No.: 1108546

Attached are the results of the analyses for samples received by the laboratory on 08/30/11 13:00.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K. Forsyth

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS), Environmental Laboratory Accredidation Program (ELAP) No. 2320.

D-Max Engineering Inc.	Project:	201122W-4	
7220 Trade Street Suite 119	Project Number:	Santee Recieving Waters	**Reported:**
San Diego CA, 92121	Project Manager:	Arsalan Dadkhah	11/23/11 12:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
San Diego R. Downstream	1108546-01	Liquid	08/30/11 10:00	08/30/11 13:00
San Diego R. Upstream	1108546-02	Liquid	08/30/11 11:10	08/30/11 13:00
San Diego R. Upstream	1108546-03	Liquid	08/30/11 11:20	08/30/11 13:00

CASE NARRATIVE

SAMPLE RECEIPT: Samples were received intact, at 4°C, and accompanied by chain of custody documentation.
PRESERVATION: Samples requiring preservation were verified prior to sample preparation and analysis.
HOLDING TIMES: All holding times were met, unless otherwises noted in the report with data qualifiers.
QA/QC CRITERIA: All quality objective criteria were met, except as noted in the report with data qualifiers.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

D-Max Engineering Inc.	Project: 201122W-4	
7220 Trade Street Suite 119	Project Number: Santee Recieving Waters	**Reported:**
San Diego CA, 92121	Project Manager: Arsalan Dadkhah	11/23/11 12:08

Microbiological Parameters by APHA Standard Methods
Sierra Analytical Labs, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego R. Downstream (1108546-01) Liquid Sampled: 08/30/11 10:00 Received: 08/30/11 13:00										
E. Coli	**70**	2.0	2.0	MPN/100 mL	1	B1I1619	08/30/11	08/30/11 15:05	SM 9221E/F	
Enterococcus	**80**	2.0	2.0	"	"	"	"	"	SM 9230B	
Fecal Coliforms	**90**	2.0	2.0	"	"	"	"	"	SM 9221E	
Total Coliforms	**8000**	2.0	2.0	"	"	"	"	"	SM 9221B	
San Diego R. Upstream (1108546-02) Liquid Sampled: 08/30/11 11:10 Received: 08/30/11 13:00										
E. Coli	**14**	2.0	2.0	MPN/100 mL	1	B1I1619	08/30/11	08/30/11 15:05	SM 9221E/F	
Enterococcus	**40**	2.0	2.0	"	"	"	"	"	SM 9230B	
Fecal Coliforms	**21**	2.0	2.0	"	"	"	"	"	SM 9221E	
Total Coliforms	**3300**	2.0	2.0	"	"	"	"	"	SM 9221B	
San Diego R. Upstream (1108546-03) Liquid Sampled: 08/30/11 11:20 Received: 08/30/11 13:00										
E. Coli	**24**	2.0	2.0	MPN/100 mL	1	B1I1619	08/30/11	08/30/11 15:05	SM 9221E/F	
Enterococcus	**70**	2.0	2.0	"	"	"	"	"	SM 9230B	
Fecal Coliforms	**40**	2.0	2.0	"	"	"	"	"	SM 9221E	
Total Coliforms	**3000**	2.0	2.0	"	"	"	"	"	SM 9221B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

D-Max Engineering Inc.	Project: 201122W-4	
7220 Trade Street Suite 119	Project Number: Santee Recieving Waters	Reported:
San Diego CA, 92121	Project Manager: Arsalan Dadkhah	11/23/11 12:08

Conventional Chemistry Parameters by APHA/EPA Methods
Sierra Analytical Labs, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego R. Downstream (1108546-01) Liquid Sampled: 08/30/11 10:00 Received: 08/30/11 13:00										
Nitrite as N	ND	0.0200	0.0200	mg/L	1	B1I1620	08/30/11	08/30/11 15:05	SM4500-NO2 B	
Nitrate as N	**1.30**	0.0200	0.0200	"	"	"	"	"	EPA 353.3	
Orthophosphate as P	**0.320**	0.0500	0.0500	"	"	"	"	"	EPA 365.2	
Phosphorus	**0.340**	0.0500	0.0500	"	"	"	"	"	"	
Sulfate as SO4	**400**	0.500	0.500	"	"	"	"	"	EPA 375.4	
Total Dissolved Solids	**1930**	1.00	1.00	"	"	"	"	"	EPA 160.1	
Total Kjeldahl Nitrogen	**1.45**	0.10	0.10	"	"	"	"	"	EPA 351.3	
Total Nitrogen	**2.75**	0.10	0.10	"	"	"	"	"	SM 4500-N	
San Diego R. Upstream (1108546-02) Liquid Sampled: 08/30/11 11:10 Received: 08/30/11 13:00										
Nitrite as N	ND	0.0200	0.0200	mg/L	1	B1I1620	08/30/11	08/30/11 15:05	SM4500-NO2 B	
Nitrate as N	**1.40**	0.0200	0.0200	"	"	"	"	"	EPA 353.3	
Orthophosphate as P	**0.330**	0.0500	0.0500	"	"	"	"	"	EPA 365.2	
Phosphorus	**0.350**	0.0500	0.0500	"	"	"	"	"	"	
Sulfate as SO4	**275**	0.500	0.500	"	"	"	"	"	EPA 375.4	
Total Dissolved Solids	**1280**	1.00	1.00	"	"	"	"	"	EPA 160.1	
Total Kjeldahl Nitrogen	**1.28**	0.10	0.10	"	"	"	"	"	EPA 351.3	
Total Nitrogen	**2.68**	0.10	0.10	"	"	"	"	"	SM 4500-N	
San Diego R. Upstream (1108546-03) Liquid Sampled: 08/30/11 11:20 Received: 08/30/11 13:00										
Nitrite as N	ND	0.0200	0.0200	mg/L	1	B1I1620	08/30/11	08/30/11 15:05	SM4500-NO2 B	
Nitrate as N	**1.50**	0.0200	0.0200	"	"	"	"	"	EPA 353.3	
Orthophosphate as P	**0.340**	0.0500	0.0500	"	"	"	"	"	EPA 365.2	
Phosphorus	**0.370**	0.0500	0.0500	"	"	"	"	"	"	
Sulfate as SO4	**285**	0.500	0.500	"	"	"	"	"	EPA 375.4	
Total Dissolved Solids	**1270**	1.00	1.00	"	"	"	"	"	EPA 160.1	
Total Kjeldahl Nitrogen	**1.24**	0.10	0.10	"	"	"	"	"	EPA 351.3	
Total Nitrogen	**2.74**	0.10	0.10	"	"	"	"	"	SM 4500-N	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL LABS, INC.
WET CHEM QA/QC
WORKSHEET

Project No.: 1108563 and 1108546
Client: D-Max Engineering

Date Received: 8/30 and 08/31/11
Date Analyzed: 8/31/2011

TEST PARAMETER	RESULT	DUPLICATE RESULT	%DEVIATION (0 - 15)	BLANK	SPIKE CONC.	EXP. RESULTS	RESULTS	%RECOVERY (85 - 115)	CK STD.	STD. RESULTS	INITIALS
Sulfate	550	525	4.8	0.50	50	600	618	103	10	9.3	RF
TDS	1970	1988	1	1.0	100	2070	2012	97.1	100	105	RF
Ammonia-N	1.3	1.36	4.5	0.10	0.5	1.8	1.71	95	1	0.94	RF
PO4-P, TOTAL	0.69	0.72	4.3	0.05	0.50	1.19	1.27	107	1.0	0.97	RF
Nitrate-N	2	1.85	7.5	0.05	0.50	2.5	2.7	108	1.0	1.03	RF

Notes:

Project No.:
Client:

Date Received:
Date Analyzed:

TEST PARAMETER	RESULT	DUPLICATE RESULT	%DEVIATION (0 - 15)	BLANK	SPIKE CONC.	EXP. RESULTS	RESULTS	%RECOVERY (85 - 115)	CK STD.	STD. RESULTS	INITIALS
NO2-N											
TSS											
Nitrate-N											
Ammonia-N											
PO4-P, TOTAL											
PO4-P, TOTAL											
T.S.S./TDS											

Notes:

CHAIN OF CUSTODY RECORD

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

Date: 8/30/11 Page 1 of 1

Lab Project No.: 1108546

Client: D-Max Engineering Inc
Client Address: 7220 Trade street, suite 119
San Diego, CA 92121

Client Tel. No.: 858-586-6600
Client Fax. No.: 858-586-6644
Client Proj. Mgr.: Arsalan Dadkhah

Client Project ID: Santee Receiving Waters
2011 22W-4

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☒ 5 Day ☐ Normal ☐ Mobile

Geotracker EDD Info:

Client LOGCODE

Site Global ID

Analysis Requested

Client Sample ID.	Sierra No.	Date	Time	Matrix	Preservative	Container Type	No. of Containers	Enterococcus bacteria	Total + Fecal Coliform	E. Coli	Total Nitrogen	Total Phosphorus	orthophosphate-Phosphorus	TDS	Sulfate					Field Point Names/ Comments
San Diego R. downstream	01	8/30/11	10:00	SW	yes	P	5	X	X	X	X	X	X	X	X					
San Diego R. upstream	02	8/30/11	11:10	SW	yes	P	5	X	X	X	X	X	X	X	X					
~~Duplicate~~	03	8/30/11	11:20	SW	"	"	5	X	X	X	X	X	X	X	X					
San Diego R. upstream																				

1 Sampled By: Manouchehr Dadkhah		Shipped Via:	
Printed Name: Manouchehr Dadkhah		(Carrier/Waybill No.)	
2 Relinquished By: Manouchehr Dadkhah	8/30/11 Date	Received By: Tom Fox	8-30-11 Date
Company: D-Max Eng	13:00 Time:	Company: SA	13:00 Time:
3 Relinquished By: Tom Fox	8-30-11 Date	Received By: [illegible]	8-30-11 Date
Company: SA	14:50 Time:	Company: Sierra	1450 Time:
4 Relinquished By:	Date	Received By:	Date:
Company:	Time:	Company:	Time:

Special Instructions:
Bacteria RL of 2 MPN/100mL needed QAPP

(15) Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

(15) Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☐ Lab Disposal*
☐ Archive _____ mos.
☐ Other _____

FOR LABORATORY USE ONLY - Sample Receipt Conditions:

☒	Intact	☒	Chilled - Temp. (°C) 4.0
☐	Sample Seals	☐	Preservatives - Verified By
☒	Properly Labelled	☐	Other
☒	Appropriate Sample Container	☒	Storage Location Micro-walkin

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

Rev: 102005

EnviroMatrix Analytical, Inc.

08 September 2011

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 11H0838

Project Name: Santee Receiving Waters Study
Project Desc./#: 201122W-4

Enclosed are the results of analyses for samples received by the laboratory on 08/31/11 15:44. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11H0838

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
San Diego River Downstream	11H0838-01	Stormwater	08/30/11 10:00	08/31/11 15:44
San Diego River Upstream	11H0838-02	Stormwater	08/30/11 11:10	08/31/11 15:44
San Diego River Upstream	11H0838-03	Stormwater	08/30/11 11:20	08/31/11 15:44

NOTE: Per client request Selenium was prepared/digested/analyzed twice; once per EPA Method 200.8 (Batched in #1090723) and once per EPA Method 200.8 modified (seen as RE1, Batched in #1090725). Modified EPA 200.8 method deleted all use of HCl.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11H0838

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
San Diego River Downstream (11H0838-01) Stormwater Sampled: 08/30/11 10:00 Received: 08/31/11 15:44										
Selenium	**0.0008**	0.0005	0.001	mg/l	1	1090723	09/06/11	09/07/11	EPA 200.8	J
San Diego River Downstream (11H0838-01RE1) Stormwater Sampled: 08/30/11 10:00 Received: 08/31/11 15:44										
Selenium	**0.0008**	0.0005	0.001	mg/l	1	1090725	09/06/11	09/07/11	EPA 200.8	J
San Diego River Upstream (11H0838-02) Stormwater Sampled: 08/30/11 11:10 Received: 08/31/11 15:44										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1090723	09/06/11	09/07/11	EPA 200.8	
San Diego River Upstream (11H0838-02RE1) Stormwater Sampled: 08/30/11 11:10 Received: 08/31/11 15:44										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1090725	09/06/11	09/07/11	EPA 200.8	
San Diego River Upstream (11H0838-03) Stormwater Sampled: 08/30/11 11:20 Received: 08/31/11 15:44										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1090723	09/06/11	09/07/11	EPA 200.8	
San Diego River Upstream (11H0838-03RE1) Stormwater Sampled: 08/30/11 11:20 Received: 08/31/11 15:44										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1090725	09/06/11	09/07/11	EPA 200.8	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11H0838

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1090723											
Blank (1090723-BLK1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	ND	0.0005	0.001	mg/l							
LCS (1090723-BS1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.098	0.0005	0.001	mg/l	0.100		98	75-125			
LCS Dup (1090723-BSD1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.110	0.0005	0.001	mg/l	0.100		110	75-125	12	20	
Duplicate (1090723-DUP1)			**Source: 11H0838-01**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.0007	0.0005	0.001	mg/l		0.0008			13	20	J
Matrix Spike (1090723-MS1)			**Source: 11H0838-01**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.095	0.0005	0.001	mg/l	0.100	0.0008	94	75-125			
Matrix Spike (1090723-MS2)			**Source: 11H0838-02**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.099	0.0005	0.001	mg/l	0.100	0.002	97	75-125			
Matrix Spike Dup (1090723-MSD1)			**Source: 11H0838-01**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.094	0.0005	0.001	mg/l	0.100	0.0008	93	75-125	0.9	20	
Batch 1090725											
Blank (1090725-BLK1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	ND	0.0005	0.001	mg/l							
LCS (1090725-BS1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.107	0.0005	0.001	mg/l	0.100		107	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11H0838

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1090725											
LCS Dup (1090725-BSD1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.104	0.0005	0.001	mg/l	0.100		104	75-125	3	20	
Duplicate (1090725-DUP1)			**Source: 11I0036-01RE1**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.001	0.0005	0.001	mg/l		0.001			4	20	
Matrix Spike (1090725-MS1)			**Source: 11I0036-01RE1**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.092	0.0005	0.001	mg/l	0.100	0.001	91	75-125			
Matrix Spike Dup (1090725-MSD1)			**Source: 11I0036-01RE1**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.089	0.0005	0.001	mg/l	0.100	0.001	88	75-125	3	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: 11H0535

Client: D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
Samplers(s): MD / BN
Address: 7220 Trade St. #119
San Diego, CA 92121
Phone: 858 586 6000 Fax: 858 586 6044
Email: admin@dmaxinc.com
Billing Address:

Project ID: Santee Receiving Waters
Project #: 201122W-4 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, □ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide	Total Selenium (2 tests)				
1	San Diego River Downstream	8/30/11	10:00	SW	2P																		X					
2	San Diego River Upstream	↓	11:10	↓	↓																		X					
3	San Diego River Upstream	↓	11:20	↓	↓																		X					
4																												
5																												
6																												
7																												
8																												
9																												
10																												

AUG 31 11 15:73

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: X Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day X 5 day □ STD (7 day) DMAX STD

[1]**Reporting Requirements:** □ Fax X PDF X Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** X By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature [signature]	8/30/11 4:45pm	Signature [signature]
Print Brian Newman		Print Sara Dadkhah
Company: D-Max		Company: D-Max
Signature [signature]	8/31/11 15:04	Signature [signature]
Print Sara Dadkhah		Print MARK FARMER
Company: D-Max		Company: EMA
Signature [signature]	8/31/11 1549	Signature [signature]
Print MARK GARNER		Print Eric Hunt
Company: EMA.		Company: EMA

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:_____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:
Please run selenium twice - once without HCl in the digest and once normally.

10°C

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

23 November 2011

Manouchehr Dadkhah
D-Max Engineering Inc.
7220 Trade Street Suite 119
San Diego, CA 92121

RE:201122W-4
Work Order No.: 1108563

Attached are the results of the analyses for samples received by the laboratory on 08/31/11 13:00.

The samples were received by Sierra Analytical Labs, Inc. with a chain of custody record attached or completed at the submittal of the samples.

The analyses were performed according to the prescribed method as outlined by EPA, Standard Methods, and A.S.T.M.

The remaining portions of the samples will be disposed of within 30 days from the date of this report.
If you require any additional retaining time, please advise us.

Sincerely,

Richard K. Forsyth

Richard K. Forsyth

Laboratory Director

Sierra Analytical Labs, Inc. is certified by the California Department of Health Services (DOHS), Environmental Laboratory Accredidation Program (ELAP) No. 2320.

D-Max Engineering Inc.	Project:	201122W-4	
7220 Trade Street Suite 119	Project Number:	Santee Recieving Waters	**Reported:**
San Diego CA, 92121	Project Manager:	Manouchehr Dadkhah	11/23/11 12:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Forester Cr. Downstream	1108563-01	Liquid	08/31/11 10:00	08/31/11 13:00
Forester Cr. Upstream	1108563-02	Liquid	08/31/11 11:15	08/31/11 13:00

CASE NARRATIVE

SAMPLE RECEIPT: Samples were received intact, at 4°C, and accompanied by chain of custody documentation.
PRESERVATION: Samples requiring preservation were verified prior to sample preparation and analysis.
HOLDING TIMES: All holding times were met, unless otherwises noted in the report with data qualifiers.
QA/QC CRITERIA: All quality objective criteria were met, except as noted in the report with data qualifiers.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

26052 MERIT CIRCLE SUITE 105, LAGUNA HILLS, CALIFORNIA 92653
TELEPHONE: (949) 348-9389 FAX: (949) 348-9115
E-MAIL: SIERRALABS @ SIERRALABS.NET

D-Max Engineering Inc.	Project: 201122W-4	
7220 Trade Street Suite 119	Project Number: Santee Recieving Waters	**Reported:**
San Diego CA, 92121	Project Manager: Manouchehr Dadkhah	11/23/11 12:09

Microbiological Parameters by APHA Standard Methods
Sierra Analytical Labs, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Forester Cr. Downstream (1108563-01) Liquid Sampled: 08/31/11 10:00 Received: 08/31/11 13:00										
E. Coli	**300**	2.0	2.0	MPN/100 mL	1	B1I1612	08/31/11	08/31/11 16:45	SM 9221E/F	
Enterococcus	**300**	2.0	2.0	"	"	"	"	"	SM 9230B	
Fecal Coliforms	**300**	2.0	2.0	"	"	"	"	"	SM 9221E	
Total Coliforms	**900**	2.0	2.0	"	"	"	"	"	SM 9221B	
Forester Cr. Upstream (1108563-02) Liquid Sampled: 08/31/11 11:15 Received: 08/31/11 13:00										
E. Coli	**350**	2.0	2.0	MPN/100 mL	1	B1I1612	08/31/11	08/31/11 16:45	SM 9221E/F	
Enterococcus	**600**	2.0	2.0	"	"	"	"	"	SM 9230B	
Fecal Coliforms	**700**	2.0	2.0	"	"	"	"	"	SM 9221E	
Total Coliforms	**1500**	2.0	2.0	"	"	"	"	"	SM 9221B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

D-Max Engineering Inc.	Project: 201122W-4	
7220 Trade Street Suite 119	Project Number: Santee Recieving Waters	**Reported:**
San Diego CA, 92121	Project Manager: Manouchehr Dadkhah	11/23/11 12:09

Conventional Chemistry Parameters by APHA/EPA Methods
Sierra Analytical Labs, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Forester Cr. Downstream (1108563-01) Liquid Sampled: 08/31/11 10:00 Received: 08/31/11 13:00										
Nitrite as N	ND	0.0200	0.0200	mg/L	1	B1I1614	08/31/11	08/31/11 17:28	SM4500-NO2 B	
Nitrate as N	**2.00**	0.0200	0.0200	"	"	"	"	"	EPA 353.3	
Orthophosphate as P	**0.660**	0.0500	0.0500	"	"	"	"	"	EPA 365.2	
Phosphorus	**0.690**	0.0500	0.0500	"	"	"	"	"	"	
Sulfate as SO4	**550**	0.500	0.500	"	"	"	"	"	EPA 375.4	
Total Dissolved Solids	**1970**	1.00	1.00	"	"	"	"	"	EPA 160.1	
Total Kjeldahl Nitrogen	**1.30**	0.10	0.10	"	"	"	"	"	EPA 351.3	
Total Nitrogen	**3.30**	0.10	0.10	"	"	"	"	"	SM 4500-N	
Forester Cr. Upstream (1108563-02) Liquid Sampled: 08/31/11 11:15 Received: 08/31/11 13:00										
Nitrite as N	ND	0.0200	0.0200	mg/L	1	B1I1614	08/31/11	08/31/11 17:28	SM4500-NO2 B	
Nitrate as N	**4.40**	0.0200	0.0200	"	"	"	"	"	EPA 353.3	
Orthophosphate as P	**0.690**	0.0500	0.0500	"	"	"	"	"	EPA 365.2	
Phosphorus	**0.730**	0.0500	0.0500	"	"	"	"	"	"	
Sulfate as SO4	**600**	0.500	0.500	"	"	"	"	"	EPA 375.4	
Total Dissolved Solids	**1690**	1.00	1.00	"	"	"	"	"	EPA 160.1	
Total Kjeldahl Nitrogen	**1.25**	0.10	0.10	"	"	"	"	"	EPA 351.3	
Total Nitrogen	**5.65**	0.10	0.10	"	"	"	"	"	SM 4500-N	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SIERRA ANALYTICAL LABS, INC.
WET CHEM QA/QC
WORKSHEET

Project No.: 1108563 and 1108546
Client: D-Max Engineering

Date Received: 8/30 and 08/31/11
Date Analyzed: 8/31/2011

TEST PARAMETER	RESULT	DUPLICATE RESULT	%DEVIATION (0 - 15)	BLANK	SPIKE CONC.	EXP. RESULTS	RESULTS	%RECOVERY (85 - 115)	CK STD.	STD. RESULTS	INITIALS
Sulfate	550	525	4.8	0.50	50	600	618	103	10	9.3	RF
TDS	1970	1988	1	1.0	100	2070	2012	97.1	100	105	RF
Ammonia-N	1.3	1.36	4.5	0.10	0.5	1.8	1.71	95	1	0.94	RF
PO4-P, TOTAL	0.69	0.72	4.3	0.05	0.50	1.19	1.27	107	1.0	0.97	RF
Nitrate-N	2	1.85	7.5	0.05	0.50	2.5	2.7	108	1.0	1.03	RF

Notes:

Project No.:
Client:

Date Received:
Date Analyzed:

TEST PARAMETER	RESULT	DUPLICATE RESULT	%DEVIATION (0 - 15)	BLANK	SPIKE CONC.	EXP. RESULTS	RESULTS	%RECOVERY (85 - 115)	CK STD.	STD. RESULTS	INITIALS
NO2-N											
TSS											
Nitrate-N											
Ammonia-N											
PO4-P, TOTAL											
PO4-P, TOTAL											
T.S.S./TDS											

Notes:

CHAIN OF CUSTODY RECORD

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle• Suite 105•Laguna Hills, CA•92653

Date: 8/31/11 Page 1 of 1

Lab Project No.: 1108563

Client: D-Max Engineering, Inc.
Client Address: 7220 Trade street, Suite 119
San Diego, CA 92121

Client Tel. No.: 858-586-6600
Client Fax. No.: 858-586-6644
Client Proj. Mgr.: Arsalan Dadkhah

Client Project ID: 201122W-4
Santee Receiving water

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☒ 5 Day ☐ Normal ☐ Mobile

Geotracker EDD Info:

Client LOGCODE

Site Global ID

Analysis Requested

Client Sample ID.	Sierra No.	Date	Time	Matrix	Preservative	Container Type	No. of Containers	Enterococcus bacteria	Total + Fecal Coliform	E-Coli	Total Nitrogen	Total Phosphorus	Orthophosphate Phosphorus	TDS	Sulfate					Field Point Names/ Comments
Forester Cr. downstream	01	8/31/11	10:00	SW	yes	P	5	X	X	X	X	X	X	X	X					
Forester Cr. upstream	02	8/31/11	11:15	"	"	"	5	X	X	X	X	X	X	X	X					

1 Sampled by: Mansouchehr Dadkhah
Printed Name: Mansouchehr Dadkhah
Shipped Via:
(Carrier/Waybill No.)

Total Number of Containers Submitted to Laboratory

2 Relinquished By: Mansouchehr Dadkhah Date: 8/31/11 Received By: SA Date: 8-31-11
Company: D-Max Eng. Time: 1pm Company: SA Time: 1pm

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analysis specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

3 Relinquished By: Date: 8-31-11 Received By: Date: 8-31-11
Company: SA Time: 4:37pm Company: Sierra Time: 1657

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☐ Lab Disposal*
☐ Archive _____ mos.
☐ Other _____

4 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Special Instructions:
Bacteria RL of 2 MPN/100mL needed QAPP

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☒ Intact ☒ Chilled - Temp. (°C) 1.0
☐ Sample Seals ☐ Preservatives - Verified By
☒ Properly Labelled ☐ Other
☒ Appropriate Sample Container ☒ Storage Location M-cuo-02023

Rev: 102005

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

EnviroMatrix Analytical, Inc.

08 September 2011

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 11I0036

Project Name: Santee Receiving Waters Study
Project Desc./#: 201122W-4

Enclosed are the results of analyses for samples received by the laboratory on 09/01/11 16:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11I0036

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Forester Cr. downstream	11I0036-01	Stormwater	08/31/11 10:00	09/01/11 16:00
Forester Cr. Upstream	11I0036-02	Stormwater	08/31/11 10:00	09/01/11 16:00

NOTE: Per client request Selenium was prepared/digested/analyzed twice; once per EPA Method 200.8 (Batched in #1090723) and once per EPA Method 200.8 modified (seen as RE1, Batched in #1090725). Modified EPA 200.8 method deleted all use of HCl.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11I0036

Total Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Forester Cr. downstream (11I0036-01) Stormwater Sampled: 08/31/11 10:00 Received: 09/01/11 16:00										
Selenium	**0.001**	0.0005	0.001	mg/l	1	1090723	09/06/11	09/07/11	EPA 200.8	
Forester Cr. downstream (11I0036-01RE1) Stormwater Sampled: 08/31/11 10:00 Received: 09/01/11 16:00										
Selenium	**0.001**	0.0005	0.001	mg/l	1	1090725	09/06/11	09/07/11	EPA 200.8	
Forester Cr. Upstream (11I0036-02) Stormwater Sampled: 08/31/11 10:00 Received: 09/01/11 16:00										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1090723	09/06/11	09/07/11	EPA 200.8	
Forester Cr. Upstream (11I0036-02RE1) Stormwater Sampled: 08/31/11 10:00 Received: 09/01/11 16:00										
Selenium	**0.002**	0.0005	0.001	mg/l	1	1090725	09/06/11	09/07/11	EPA 200.8	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11I0036

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1090723											
Blank (1090723-BLK1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	ND	0.0005	0.001	mg/l							
LCS (1090723-BS1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.098	0.0005	0.001	mg/l	0.100		98	75-125			
LCS Dup (1090723-BSD1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.110	0.0005	0.001	mg/l	0.100		110	75-125	12	20	
Duplicate (1090723-DUP1)			**Source: 11H0838-01**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.0007	0.0005	0.001	mg/l		0.0008			13	20	J
Matrix Spike (1090723-MS1)			**Source: 11H0838-01**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.095	0.0005	0.001	mg/l	0.100	0.0008	94	75-125			
Matrix Spike (1090723-MS2)			**Source: 11H0838-02**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.099	0.0005	0.001	mg/l	0.100	0.002	97	75-125			
Matrix Spike Dup (1090723-MSD1)			**Source: 11H0838-01**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.094	0.0005	0.001	mg/l	0.100	0.0008	93	75-125	0.9	20	
Batch 1090725											
Blank (1090725-BLK1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	ND	0.0005	0.001	mg/l							
LCS (1090725-BS1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.107	0.0005	0.001	mg/l	0.100		107	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Santee Receiving Waters Study

EMA Log #: 11I0036

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1090725											
LCS Dup (1090725-BSD1)					Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.104	0.0005	0.001	mg/l	0.100		104	75-125	3	20	
Duplicate (1090725-DUP1)			**Source: 11I0036-01RE1**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.001	0.0005	0.001	mg/l		0.001			4	20	
Matrix Spike (1090725-MS1)			**Source: 11I0036-01RE1**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.092	0.0005	0.001	mg/l	0.100	0.001	91	75-125			
Matrix Spike Dup (1090725-MSD1)			**Source: 11I0036-01RE1**		Prepared: 09/06/11		Analyzed: 09/07/11				
Selenium	0.089	0.0005	0.001	mg/l	0.100	0.001	88	75-125	3	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SEP 1 '11 15:00

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #: ~~1100 55~~ 1110036

Client: D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
Samplers(s): MD/BN
Address: 7220 Trade street, Suite 119
San Diego, CA 92121
Phone: 858-586-6600 Fax: 858-586-6644
Email:
Billing Address: Same
Project ID: Santee Receiving water
Project #: 201122W-4 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, □ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide	X Total selenium (Two Tests)				
1	Forester Cr. downstream	8/31/11	10:00	SW	2 P																		X					
2	Forester Cr. Upstream	8/31/11	11:15	"	3 P																		X					
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: X Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day X 5 day □ STD (7 day)

[1]**Reporting Requirements:** □ Fax X PDF X Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** X By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: Manoucheher Dadkhah	8/31/2011 17:05	Signature: [illegible]
Print: Manoucheher Dadkhah		Print: Sara Dadkhah
Company: D-Max Eng		Company: D-Max
Signature: [illegible]	9/1/2011 15:10	Signature: [illegible]
Print: Sara Dadkhah		Print: MARK FRIES
Company: DMEV		Company: EMA
Signature: [illegible]	9-1-11 1600	Signature: [illegible]
Print: MARK BRUE		Print: Eric Hunt
Company: EMA		Company: EMA

Project/Sample Comments:

Please Run selenium Twice (once w/o HCL in The digest, and once normally)

6°C

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

Appendix D

Field Data Sheets

Round One

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	Forester Creek Downstream		**Latitude**	32.83953	**Watershed**	**Hydrologic Unit**	907
Location	Approximately 200 feet north of the Mission Gorge Road and Fanita Drive intersection, east of Fanita Creek		**Longitude**	-117.00241		**Hydrologic Area**	907.1
			TB Page	1231 B6		**Hydrologic Subarea** (Optional)	907.12
Date	6/6/11	**Time** 10:40	**Observer**	MD/KC	**Discharge Area** (Optional)		

Land Use (Primary) Open

Land Use (Secondary) Commercial

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☐ > 72 hours ☒ < 72 hours

Rainfall ☐ None ☒ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☐ None ☒ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☐ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Other ducks ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 168-169

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.7	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.6	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	1.91	MBAS (mg/L)	NA	DO (ppm)	5.91		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Flow could not be determined due to technical difficulties.

Program:
☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

DW Station Class:
☐ Field-only Site
☒ Lab Site
☐ Alternate ☐ ICID

Visit Type: ☐ Routine ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____ ☒ Duplicate ☐ Blank

Site ID	Forester Creek Downstream		**Latitude**	32.83953	**Watershed**	**Hydrologic Unit**	907
Location	Approximately 200 ft north of the Mission Gorge and Fanita Drive intersection, east of Fanita Creek		**Longitude**	-117.00241		**Hydrologic Area**	907.1
			TB Page	1231 - B10		**Hydrologic Subarea** (Optional)	907.12
Date	10/10/11	**Time** 10:50	**Observer**	MD/KC		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☐ > 72 hours ☒ < 72 hours

Rainfall ☐ None ☒ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage		☐ Other	☐ ns (dry) ☐ na
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray		☐ Other	☐ ns (dry) ☐ na
Clarity	☒ Clear	☐ Slightly Cloudy		☐ Opaque			☐ Other	☐ ns (dry) ☐ na
Floatables	☒ None	☐ Trash	☐ Bubbles	☐ Foam	☐ Sheen	☐ Fecal Matter	☐ Other	☐ ns (dry) ☐ na
Deposits	☐ None	☒ Sediment	☐ Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	☐ na
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive			☐ Other	☐ na
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☒ Other ducks	☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 1168-1169

Field Screening Samples Collected? ☒ Yes ☐ No **Analytical Lab Samples Collected?** ☐ Yes ☒ No

Water Temp (°C)	19.5	NH_3-N (mg/L)	N-A	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.7	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	1.92	MBAS (mg/L)	NA	DO (ppm)	5.83		

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	NA	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Flow could not be determined due to technical difficulties.

Program:
☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

DW Station Class:
☐ Field-only Site
☐ Lab Site
☐ Alternate Site

Visit Type: ☒ Routine ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____ ☐ Duplicate ☐ Blank

Site ID	Forester Creek Downstream		**Latitude**	32.83953	**Watershed**	**Hydrologic Unit**	907
Location	Approximately 200 ft north of the Mission Gorge Rd and Fanita Dr intersection, east of Fanita Creek		**Longitude**	-117.00241		**Hydrologic Area**	907.1
			TB Page	1231-B6		**Hydrologic Subarea** (Optional)	907.12
Date	6/16/11	**Time** 13:10	**Observer**	CK, KS		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog
Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.
Last Rain ☒ > 72 hours ☐ < 72 hours
Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☒ na
Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☒ na
Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☒ na
Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na
Deposits ☐ None ☒ Sediment ☐ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na
Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na
Biology ☐ None ☒ Insects ☒ Algae ☒ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Other turtle ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No **Analytical Lab Samples Collected?** ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na				

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	603 ~~84~~	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

City of Santee

Supplemental Flow Measurement Worksheet

If the stream width is greater than 10 ft use this supplemental flow measurement worksheet.

GENERAL SITE DESCRIPTION

Site ID	Forester Creek Downstream	**Date**	6/16/11	**(Include the latitude and longitude of flow**	**Latitude**	32.83968
Observer(s)	CK, KS	**Time**	13:10	**measurement location if different than site.)**	**Longitude**	-117.00273

FLOW MEASUREMENT WORKSHEET

Measurements	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Width (inch)															
Width (ft)	0.5	0.5	0.5	0.5	0.5	0.5	~~0.5~~	~~0.5~~							
Depth (inch)	1.5	3.5	6	6.5	9.5	3									
Depth (ft)															
Velocity (ft/sec)	0.992	0.9	1.1	1.3	1.1	0.7									
Leaf float correction factor (A)															
Flow (cfs)	0.062	0.131	0.275	0.352	0.435	0.087									

Measurements	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Leaf float correction factor (A)															
Flow (cfs)															

Calculations	Sum of all sections
Flow (cfs)	1.34
Flow (gpm)	602.89

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec)

$Q = [(W_1 * D_1 * V_1) + (W_2 * D_2 * V_2) + \ldots\ldots (W_n * D_n * V_n)]$

1 cfs (ft x ft x ft/sec) = 448.83 gpm

A = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)

Note "**A**" is only used where surface velocity is estimated (e.g., leaf float).

Calculated flow should be reported to one or two significant figures.

COMMENTS: _____

Revised 6/9/2011

2e

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	Forester Creek Upstream			**Latitude**	32.83093	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the Prospect Avenue bridge, west of Cuyamaca Street			**Longitude**	-116.98543		**Hydrologic Area**	907.1
				TB Page	1231 C7		**Hydrologic Subarea** (Optional)	907.13
Date	6/6/11	**Time**	11:25	**Observer**	MD/KC	**Discharge Area** (Optional)		

Land Use (Primary) Industrial

Land Use (Secondary) Commercial

Conveyance Concrete Channel

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☐ > 72 hours ☒ < 72 hours

Rainfall ☐ None ☒ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☐ None ☒ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☒ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:*_____

Photo # 170-171

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.3	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.5	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	1.85	MBAS (mg/L)	NA	DO	8.79		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Flow could not be determined due to technical difficulties.

JR

Program:
☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

DW Station Class:
☐ Field-only Site
☐ Lab Site
☐ Alternate Site

Visit Type: ☒ Routine ☒ Confirmation for _____ ☐ IC/ID Follow-Up for _____ ☐ Duplicate ☐ Blank

Site ID	Forestem Creek Upstream	**Latitude**	32.83093	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the Prospect Avenue Bridge, west of Cuyamaca	**Longitude**	-116.98543		**Hydrologic Area**	907.1
		TB Page	1231 C7		**Hydrologic Subarea** (Optional)	907.13
Date	6/16/11 **Time** ~~6:20~~ 18:20	**Observer**	CK/KS		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog
Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.
Last Rain ☒ > 72 hours ☐ < 72 hours
Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage		☐ Other	☐ ns (dry)	☒ na
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray		☐ Other	☐ ns (dry)	☒ na
Clarity	☐ Clear	☐ Slightly Cloudy		☐ Opaque			☐ Other	☐ ns (dry)	☒ na
Floatables	☐ None	☐ Trash	☒ Bubbles	☐ Foam	☐ Sheen	☐ Fecal Matter	☐ Other	☐ ns (dry)	☐ na
Deposits	☒ None	☐ Sediment	☐ Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other		☐ na
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive			☐ Other		☐ na
Biology	☐ None	☐ Insects	☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☒ Other birds		☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No **Analytical Lab Samples Collected?** ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3 (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		NO_3-N (mg/L)		Ortho-PO_4 -P (mg/L)	
COND (mS/cm)		MBAS (mg/L)					

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	525.04	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

City of Santee
Supplemental Flow Measurement Worksheet

If the stream width is greater than 10 ft use this supplemental flow measurement worksheet.

GENERAL SITE DESCRIPTION

Site ID	Forester Creek Upstream	**Date**	6/16/11	**(Include the latitude and longitude of flow**	**Latitude**	32.83115
Observer(s)	CK/KS	**Time**	6:20	**measurement location if different than site.)**	**Longitude**	116.98562

FLOW MEASUREMENT WORKSHEET

Measurements	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Width (inch)															
Width (ft)	0.5	0.5	0.5												
Depth (inch)	3	3.25	3.5												
Depth (ft)															
Velocity (ft/sec)	2.6	2.9	3.1												
Leaf float correction factor (A)															
Flow (cfs)															

Measurements	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Leaf float correction factor (A)															
Flow (cfs)															

Calculations	Sum of all sections
Flow (cfs)	1.17
Flow (gpm)	525.04

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec)
$\mathbf{Q} = [(\mathbf{W}_1 * \mathbf{D}_1 * \mathbf{V}_1) + (\mathbf{W}_2 * \mathbf{D}_2 * \mathbf{V}_2) + \ldots\ldots (\mathbf{W}_n * \mathbf{D}_n * \mathbf{V}_n)]$
1 cfs (ft x ft x ft/sec) = 448.83 gpm

A = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)
Note "**A**" is only used where surface velocity is estimated (e.g., leaf float).
Calculated flow should be reported to one or two significant figures.

COMMENTS: The flow appeared to slightly increase during the time of site visit.

Revised 6/9/2011

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	San Diego River Downstream		**Latitude**	32.83936	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the West Hills Parkway Bridge		**Longitude**	-117.02450		**Hydrologic Area**	907.1
			TB Page	1230 H6		**Hydrologic Subarea** (Optional)	907.12
Date	6/7/11	**Time**	~~1140~~ 10:45	**Observer**	MD/KC	**Discharge Area** (Optional)	

Land Use (Primary) Open

Land Use (Secondary) Residential

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☐ > 72 hours ☒ < 72 hours

Rainfall ☐ None ☒ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☐ None ☒ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☒ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☒ Algae ☒ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 178~~8~~-179

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.8	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.4	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	1.89	MBAS (mg/L)	NA	DO (ppm)	5.54		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3141.6	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Flow Taken from USGS website (www.usgs.gov)

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	San Diego River Upstream		**Latitude**	32.85282	**Watershed**	**Hydrologic Unit**	907
Location	Approximately 200 feet downstream of the rock dam at the east end of the RCP service road		**Longitude**	-116.95281		**Hydrologic Area**	907.1
			TB Page	1231 G4		**Hydrologic Subarea** (Optional)	907.12
Date	6/7/11	**Time** 11:40	**Observer**	MD/KC	**Discharge Area** (Optional)		

Land Use (Primary) Open

Land Use (Secondary) Industrial

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☐ > 72 hours ☒ < 72 hours

Rainfall ☐ None ☒ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☐ None ☒ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☒ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☐ Algae ☒ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 186-187

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	25.0	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.9	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.79	MBAS (mg/L)	NA	DO (ppm)	7.32		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Flow could not be determined due to technical difficulties.

2

Program:
☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

DW Station Class:
☐ Field-only Site
☐ Lab Site
☐ Alternate Site

Visit Type: ☐ Routine ☒ Confirmation for _____ ☐ IC/ID Follow-Up for _____ ☐ Duplicate ☐ Blank

Site ID	San Diego River Upstream	**Latitude**	32.85282	**Watershed**	**Hydrologic Unit**	907
Location	Approximately 200 feet downstream of the rock dam at the east end of the RCP service road.	**Longitude**	-116.95281		**Hydrologic Area**	907.1
		TB Page	1231 G4		**Hydrologic Subarea** (Optional)	907.12
Date	6/16/11 **Time** 17:40	**Observer**	CK, KS		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other	☐ ns (dry)	☒ na
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other	☐ ns (dry)	☒ na
Clarity	☐ Clear	☐ Slightly Cloudy		☐ Opaque		☐ Other	☐ ns (dry)	☒ na
Floatables	☐ None	☒ Trash	☐ Bubbles	☐ Foam	☐ Sheen ☐ Fecal Matter	☐ Other	☐ ns (dry)	☐ na
Deposits	☐ None	☒ Sediment	☐ Gravel	☒ Fine Particulates	☐ Stains ☐ Oily Deposits	☐ Other		☐ na
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other		☐ na
Biology	☐ None	☒ Insects	☒ Algae	☐ Fish	☐ Snails ☐ Mussels/ Barnacles	☐ Other		☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No **Analytical Lab Samples Collected?** ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3 (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		NO_3-N (mg/L)		Ortho-PO_4 -P (mg/L)	
COND (mS/cm)		MBAS (mg/L)					

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	527 ~~526.91~~	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

City of Santee
Supplemental Flow Measurement Worksheet

If the stream width is greater than 10 ft use this supplemental flow measurement worksheet.

GENERAL SITE DESCRIPTION

Site ID	San Diego River Upstream	**Date**	6/16/11	**(Include the latitude and longitude of flow measurement location if different than site.)**	**Latitude**	32.85666
Observer(s)	CK, KS	**Time**	17:40		**Longitude**	-116.94755

FLOW MEASUREMENT WORKSHEET

Measurements	1	2	3	4	5	6	7	8 CK	9	10	11	12	13	14	15
Width (inch)	~~4~~	~~4.5~~	~~4.5~~	~~4.5~~	~~3.75~~	~~4.75~~	~~3.25~~	~~2.75~~							
Width (ft)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5							
Depth (inch)	4	4.5	4.5	4.5	3.75	4.75	3.25	2.75							
Depth (ft)															
Velocity (ft/sec)	0.9	1.0	1.0	1.0	0.7	0.7	0.9	0.8							
Leaf float correction factor (A)															
Flow (cfs)	0.15	0.187	0.187	0.187	0.109	0.138	0.121	0.091							

Measurements	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Leaf float correction factor (A)															
Flow (cfs)															

Calculations	Sum of all sections
Flow (cfs)	1.17
Flow (gpm)	~~516.91~~ 527 CK

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec)

$\mathbf{Q} = [(\mathbf{W}_1 * \mathbf{D}_1 * \mathbf{V}_1) + (\mathbf{W}_2 * \mathbf{D}_2 * \mathbf{V}_2) + \ldots\ldots (\mathbf{W}_n * \mathbf{D}_n * \mathbf{V}_n)]$

1 cfs (ft x ft x ft/sec) = 448.83 gpm

A = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)

Note "**A**" is only used where surface velocity is estimated (e.g., leaf float).

Calculated flow should be reported to one or two significant figures.

COMMENTS: _____

Revised 6/9/2011

LC

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	Sycamore Creek Downstream		**Latitude**	32.84441	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the Carlton Oaks Drive bridge, west of the Santee Recreation Lakes		**Longitude**	-117.00652		**Hydrologic Area**	907.1
			TB Page	1231 A6		**Hydrologic Subarea** (Optional)	907.12
Date	6/6/11	**Time** 9:30	**Observer**	MD/KC.	**Discharge Area** (Optional)		

Land Use (Primary) Open

Land Use (Secondary) Residential

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☐ > 72 hours ☒ < 72 hours

Rainfall ☐ None ☒ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☐ None ☒ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☒ Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 166-167

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.50	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.15	MBAS (mg/L)	NA	DO (ppm)	6.49		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Flow could not be determined due to technical difficulties.

LC

Program:
☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

DW Station Class:
☐ Field-only Site
☐ Lab Site
☐ Alternate Site

Visit Type: ☒ Routine ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____ ☐ Duplicate ☐ Blank

Site ID	Sycamore Creek Downstream			**Latitude**	32.84441	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the Carlton Oaks Drive bridge west of the Santee Recreation Lakes			**Longitude**	-117.00652		**Hydrologic Area**	907.1
				TB Page	1231-H6		**Hydrologic Subarea** (Optional)	907.12
Date	6/16/11	**Time**	10:45	**Observer**	CK, KS	**Discharge Area** (Optional)		

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☒ na

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☒ na

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☒ na

Floatables ☐ None ☒ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☒ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No **Analytical Lab Samples Collected?** ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na				

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	115 CK	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Stream was braided so flow measurements taken in two places.

City of Santee

Supplemental Flow Measurement Worksheet

If the stream width is greater than 10 ft use this supplemental flow measurement worksheet.

GENERAL SITE DESCRIPTION

Site ID	Sycamore Creek Downstream	**Date**	6/16/11	**(Include the latitude and longitude of flow**	**Latitude**	32.84420
Observer(s)	CK, KS	**Time**	10:45	**measurement location if different than site.)**	**Longitude**	-117.00645

FLOW MEASUREMENT WORKSHEET

Measurements	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Width (inch)															
Width (ft)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	~~0~~						
Depth (inch)	2	2.5	.5	.25	1	3.5	3	2.5							
Depth (ft)	.166	0.208	0.041	0.020	0.083	0.291	0.25	0.208							
Velocity (ft/sec)	0.561	0.469	2/10	0	2/5	.235	.575	.391							
Leaf float correction factor (A)			.8		.8			~~.8~~							
Flow (cfs)	0.046	0.048	0.003	0	0.013	0.034	0.071	0.040							

Measurements	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Leaf float correction factor (A)															
Flow (cfs)															

Calculations	Sum of all sections
Flow (cfs)	0.255
Flow (gpm)	114.7

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec)

$\mathbf{Q} = [(\mathbf{W}_1 * \mathbf{D}_1 * \mathbf{V}_1) + (\mathbf{W}_2 * \mathbf{D}_2 * \mathbf{V}_2) + \ldots\ldots (\mathbf{W}_n * \mathbf{D}_n * \mathbf{V}_n)]$

1 cfs (ft x ft x ft/sec) = 448.83 gpm

A = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)

Note "**A**" is only used where surface velocity is estimated (e.g., leaf float).

Calculated flow should be reported to one or two significant figures.

COMMENTS: _____

Revised 6/9/2011

16

City of Santee
Dry Weather Monitoring Field Datasheet

~~Acute Study~~ Recieving Waters

☒ Routine Investigation ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

Site ID	Sycamore Creek Downstream		**Latitude**	32.84441	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the Carlton Oaks Drive bridge, west of the Santee Recreation Lakes		**Longitude**	-117.00652		**Hydrologic Area**	907.1
			TB Page	1231 A6		**Hydrologic Subarea** (Optional)	907.12
Date	7/19/11	**Time** 8:15	**Observer**	MD	**Discharge Area** (Optional)		

Land Use (Primary) Open

Land Use (Secondary) Residential

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☒ ns (dry) ☐ na

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☒ ns (dry) ☐ na

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☒ ns (dry) ☐ na

Floatables ☐ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☒ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☒ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 147 – 154

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS				

Analytical Lab Samples Collected? ☐ **Yes** ☒ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Round Two

2

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet 2

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	Forester Creek Downstream		**Latitude**	32.83953	**Watershed**	**Hydrologic Unit**	907
Location	Approximately 200 feet north of the Mission Gorge Road and Fanita Drive intersection, east of Fanita Creek		**Longitude**	-117.00241		**Hydrologic Area**	907.1
			TB Page	1231 B6		**Hydrologic Subarea** (Optional)	907.12
Date	8/31/11	**Time** 10:00	**Observer**	MD/BN	**Discharge Area** (Optional)		

Land Use (Primary) Open

Land Use (Secondary) Commercial

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☐ Sediment ☐ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 29-30

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.8	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.66	TURB (NTU)	12.76	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.91	MBAS (mg/L)	NA	DO (mg/L)	5.56		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	317 gpm	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

City of Santee
Supplemental Flow Measurement Worksheet

If the stream width is greater than 10 ft use this supplemental flow measurement worksheet.

GENERAL SITE DESCRIPTION

Site ID	Forester Creek, downstream	**Date**	9/1/11	**(Include the latitude and longitude of flow measurement location if different than site.)**	**Latitude**	32.83847
Observer(s)	MD/BN	**Time**	15:50		**Longitude**	-116.99701

FLOW MEASUREMENT WORKSHEET

Measurements	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Width (inch)	12	12	12	12	12										
Width (ft)	1	1	1	1	1										
Depth (inch)	1.5	1.5	1.5	1.5	1.5										
Depth (ft)	0.125	0.125	0.125	0.125	0.125										
Velocity (ft/sec)	0.88	0.97	0.94	1.67	1.83										
Leaf float correction factor (A)	0.9	0.9	0.9	0.9	0.9										
Flow (cfs)	0.099	0.109	0.105	0.188	0.205										

Measurements	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Leaf float correction factor (A)															
Flow (cfs)															

Calculations	**Sum of all sections**
Flow (cfs)	0.706
Flow (gpm)	317 ~~99~~ BM

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec)

$Q = [(W_1 * D_1 * V_1) + (W_2 * D_2 * V_2) + \ldots\ldots (W_n * D_n * V_n)]$

1 cfs (ft x ft x ft/sec) = 448.83 gpm

A = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)

Note "**A**" is only used where surface velocity is estimated (e.g., leaf float).

Calculated flow should be reported to one or two significant figures.

COMMENTS: _____

Revised 6/9/2011

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet 2

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	Forester Creek Upstream		**Latitude**	32.83093	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the Prospect Avenue bridge, west of Cuyamaca Street		**Longitude**	-116.98543		**Hydrologic Area**	907.1
			TB Page	1231 C7		**Hydrologic Subarea** (Optional)	907.13
Date	8/31/11	**Time** 11:15	**Observer**	MD/BN	**Discharge Area** (Optional)		

Land Use (Primary) Industrial

Land Use (Secondary) Commercial

Conveyance Concrete Channel

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☐ Sediment ☐ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? (☒ Yes) ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:*

Photo # 31-32

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	31.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.31	TURB (NTU)	10.38	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.60	MBAS (mg/L)	NA	DO (mg/L)	7.84		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	~~330~~ 336	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

City of Santee
Supplemental Flow Measurement Worksheet

If the stream width is greater than 10 ft use this supplemental flow measurement worksheet.

GENERAL SITE DESCRIPTION

Site ID	Forester Creek Upstream	**Date**	9/1/11	**(Include the latitude and longitude of flow measurement location if different than site.)**	**Latitude**	
Observer(s)	MD/BN	**Time**	15:00		**Longitude**	

FLOW MEASUREMENT WORKSHEET

Measurements	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Width (inch)	9.5	9.5													
Width (ft)	0.79	0.79													
Depth (inch)	3	3													
Depth (ft)	0.25	0.25													
Velocity (ft/sec)	2.1	2.1													
Leaf float correction factor (A)	0.9	0.9													
Flow (cfs)	0.374	0.374													

Measurements	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Leaf float correction factor (A)															
Flow (cfs)															

Calculations	Sum of all sections
Flow (cfs)	0.748
Flow (gpm)	336

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec)

$\mathbf{Q} = [(W_1 * D_1 * V_1) + (W_2 * D_2 * V_2) + \ldots\ldots (W_n * D_n * V_n)]$

1 cfs (ft x ft x ft/sec) = 448.83 gpm

A = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)

Note "**A**" is only used where surface velocity is estimated (e.g., leaf float).

Calculated flow should be reported to one or two significant figures.

COMMENTS: _____

Revised 6/9/2011

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	San Diego River Downstream		**Latitude**	32.83936	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the West Hills Parkway Bridge		**Longitude**	-117.02450		**Hydrologic Area**	907.1
			TB Page	1230 H6		**Hydrologic Subarea** (Optional)	907.12
Date	8/30/11	**Time** 10:00	**Observer**	MD/BN	**Discharge Area** (Optional)		

Land Use (Primary) Open

Land Use (Secondary) Residential

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☒ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 20-21

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.4	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.49	TURB (NTU)	14.08	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	2.79	MBAS (mg/L)	NA	DO (mg/L)	5.27		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	907.9	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Flow measurement was obtained from waterdata.usgs.gov

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet 2

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	San Diego River Upstream		**Latitude**	32.85282	**Watershed**	**Hydrologic Unit**	907
Location	Approximately 200 feet downstream of the rock dam at the east end of the RCP service road		**Longitude**	-116.95281		**Hydrologic Area**	907.1
			TB Page	1231 G4		**Hydrologic Subarea** (Optional)	907.12
Date	8/30/11	**Time** 11:10	**Observer**	MD/BN	**Discharge Area** (Optional)		

Land Use (Primary) Open

Land Use (Secondary) Industrial

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☐ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☐ Algae ☒ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 22-23

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	30.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.01	TURB (NTU)	23.45	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.90	MBAS (mg/L)	NA	DO (mg/L)	0.73		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	154.7	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2e

Program:
☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet 2

DW Station Class:
☐ Field-only Site
☐ Lab Site
☐ Alternate ☐ ICID

Visit Type: ☐ Routine ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____ ☒ Duplicate ☐ Blank

Site ID	San Diego River Upstream		**Latitude**	32.85282	**Watershed**	**Hydrologic Unit**	907
Location	Approximately 200 feet downstream of the rock dam at the east end of the RCP service road		**Longitude**	-116.95281		**Hydrologic Area**	907.1
			TB Page	1231, G4		**Hydrologic Subarea** (Optional)	907.12
Date	8/30/11	**Time** 11:20	**Observer**	MD/BN		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☐ ns (dry) ☐ na

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☐ ns (dry) ☐ na

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☐ ns (dry) ☐ na

Floatables ☒ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☐ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☐ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other ☐ na

Biology ☐ None ☒ Insects ☐ Algae ☒ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No **Analytical Lab Samples Collected?** ☒ Yes ☐ No

Water Temp (°C)	30.5	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.04	TURB (NTU)	23.45	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.90	MBAS (mg/L)	NA	DO (mg/L)	6.73		

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	154.7	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

City of Santee

Supplemental Flow Measurement Worksheet

If the stream width is greater than 10 ft use this supplemental flow measurement worksheet.

GENERAL SITE DESCRIPTION

Site ID	San Diego River Upstream	**Date**	8/30/11	**(Include the latitude and longitude of flow measurement location if different than site.)**	**Latitude**	
Observer(s)	MD/BN	**Time**	15:00		**Longitude**	

FLOW MEASUREMENT WORKSHEET

Measurements	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Width (inch)	13	13													
Width (ft)	1.08	1.08													
Depth (inch)	2.0	2.0													
Depth (ft)	0.17	0.17													
Velocity (ft/sec)	1.2	0.92													
Leaf float correction factor (A)	0.9	0.9													
Flow (cfs)	0.195	0.150													

Measurements	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Leaf float correction factor (A)															
Flow (cfs)															

Calculations	**Sum of all sections**
Flow (cfs)	0.344
Flow (gpm)	154.7

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec)

$\mathbf{Q} = [(\mathbf{W}_1 * \mathbf{D}_1 * \mathbf{V}_1) + (\mathbf{W}_2 * \mathbf{D}_2 * \mathbf{V}_2) + \ldots\ldots (\mathbf{W}_n * \mathbf{D}_n * \mathbf{V}_n)]$

1 cfs (ft x ft x ft/sec) = 448.83 gpm

A = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)

Note "**A**" is only used where surface velocity is estimated (e.g., leaf float).

Calculated flow should be reported to one or two significant figures.

COMMENTS: _____

Revised 6/9/2011

1C

☐ Dry Weather
☐ MS4 Outfall Monitoring
☒ Additional Study

City of Santee
Dry Weather Monitoring Field Datasheet

☒ **Routine Investigation** ☐ **Confirmation for** _____ ☐ **IC/ID Follow-Up for** _____

Site ID	Sycamore Creek Downstream		**Latitude**	32.84441	**Watershed**	**Hydrologic Unit**	907
Location	Beneath the Carlton Oaks Drive bridge, west of the Santee Recreation Lakes		**Longitude**	-117.00652		**Hydrologic Area**	907.1
			TB Page	1231 A6		**Hydrologic Subarea** (Optional)	907.12
Date	8/29/11	**Time** 11:00	**Observer**	MD/BN	**Discharge Area** (Optional)		

Land Use (Primary) Open

Land Use (Secondary) Residential

Conveyance Natural Creek

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other ☒ ns (dry) ☐ na

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other ☒ ns (dry) ☐ na

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other ☒ ns (dry) ☐ na

Floatables ☐ None ☐ Trash ☐ Bubbles ☐ Foam ☐ Sheen ☐ Fecal Matter ☐ Other ☒ ns (dry) ☐ na

Deposits ☐ None ☒ Sediment ☒ Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other ☐ na

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive SD 09/02/11 ☐ Other ☐ na

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Other ☐ na

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ No ☐ *Yes:* ☐ *Irrigation Runoff* ☐ *Other:* _____

Photo # 3-5

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NS		

Analytical Lab Samples Collected? ☐ **Yes** ☒ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

CITY OF SOLANA BEACH

JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM (JURMP) ANNUAL REPORT

JANUARY 2008

Reporting Period:
July 1, 2006 to June 30, 2007

Respectfully Submitted to:
San Diego Regional Water Quality Control Board
In compliance with:
Order No. 2001-01, NPDES Permit No. CAS0108758

CITY OF SOLANA BEACH
ANNUAL REPORT
STORM WATER PROGRAM
JANUARY 2008

Copermittee:	City of Solana Beach
Contact Person:	Dan Goldberg, P.E. Interim City Engineer (858) 720-2470
Day-to-Day Contact	Danny King Environmental Programs Manager (858) 720-2477
Emergency Contact	Public Works Emergency Phone Line (858) 720-2479
Stormwater Hotline	24-hour message service (858) 720-4424
Address:	635 South Highway 101 Solana Beach, CA 92075
Reporting Period:	July 1, 2006 to June 30, 2007
Report Prepared by:	Danny King Environmental Programs Manager

ACKNOWLEDGEMENTS

The City of Solana Beach wishes to expressly thank each Copermittee Storm Water Program Manager/Coordinator and their staff for their efforts during the Regional Stormwater Management Committee meetings and the workgroups and their development of model program components, the sharing of ideas and willingness to cultivate program consistency throughout San Diego County as an effective means of improving water quality in the Region. The level of collaboration among agencies and across jurisdictional boundaries is unique and a credit to the professionalism and efforts of the San Diego County Copermittees.

The activities described in this report are not merely *written words on a page*, but are the result of *tremendous efforts* of City staff to integrate many new activities into their daily routines and tasks. The City's FY 06/07 Storm Water Program Coordinator wishes to thank the Storm Water Team for their assistance, dedication and collaboration to make the City's FY 06/07 storm water program successful *and meaningful.*

Storm Water Team:

- Code Enforcement Officer, Tom Warden
- City Manager/Fire Chief/Director of Public Safety, David Ott
- Operations Manager, Steve Kerr
- City Inspector, Hector Ezquerro
- Interim City Engineer, Dan Goldberg
- Community Services Director, Steve Apple
- Associate Engineer, Jim Greenstein
- Assistant Planner, Kathy Johnson
- Assistant Planner, Corey Johnson
- Engineering Technician, Robert Martinez

A big thank-you also to the Public Works Crew for all their hard work!

- Maintenance Worker, Bill Stedman
- Maintenance Worker, Dave Thomas
- Maintenance Worker, Bruce Gentry
- Lead Maintenance Worker, Danny Hernandez

CITY OF SOLANA BEACH
ANNUAL REPORT/ STORM WATER PROGRAM
JANUARY 2008

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ACRONYMS

Acronym	Description
BMP	Best Management Practices: minimum standards that everyone and every business must adopt to reduce or eliminate urban runoff. BMPs are part of all storm water programs.
DWMP	Dry weather monitoring program: the procedures, requirements and program to collect samples during the dry season each year. Samples are typically collected over a one-two day period and then sent to the lab for analysis.
HHW	Household Hazardous Waste
IC/ID	Illegal Connection and Illicit Discharge: the term used to discuss connections to the MS4 that are not approved (illegal) or non-storm water (illicit) discharges.
JURMP	Jurisdictional Urban Runoff Management Program: Program has 11 components and requires new procedures for ensuring storm water compliance within its jurisdictional boundaries.
MEP	Maximum Extent Practical: A term used by the RWQCB, and Copermittees to refer to the "best efforts," or "as much as possible."
MS4	Municipal Separate Storm Sewer System: references the City's storm water drainage system and the City's wastewater conveyance system.
NPDES	National Pollution Discharge Elimination System: the Federal program created by the 1972 Clean Water Act that governs State water quality / storm water programs.
Permit	Order 2001-01 issued by the RWQCB, which requires cities to adopt and implement the JURMP, WURMP, and SUSMP.
PPM	Pollution Prevention Measure: a method, procedure, and/or process to control, reduce, prevent, or eliminate pollution.
RWQCB	Regional Water Quality Control Board. The Board is a California board, but for the *purposes of this report,* RWQCB represents the local water quality board (San Diego Regional Water Quality Control Board).
SUSMP	Standard Urban Storm water Mitigation Plan: a plan as to how the City will alter its review of construction plan (public and private) and estimate the extent of pollutant contributions from the site; the plan must specify BMPs that the City will require.
WURMP	Watershed Urban Runoff Management Program: programs that focus on urban water runoff from a larger point-of-view, which is the entire watershed (a watershed is aka a hydrological unit). Programs must specify how cities will work together on planning urban projects and solving water quality problems.
WWMP	Wet weather monitoring program: the procedures, requirements and program to collect samples during the wet season each year. Samples are collected on a monthly basis, depending on weather.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

During this reporting period, the City worked with other Copermittees of Order 2001-01 to continue developing model guideline programs and implementing all the requirements of the Permit (Order 2001-01). The City implemented its Jurisdictional Urban Runoff Management Program (JURMP) that was developed and submitted on February 21, 2002. In a relatively short time frame, the City was able to create a storm water team consisting of staff from various departments, implemented all of the components of the JURMP and trained all of its staff as to the expectations of the Permit.

Accomplishments to prevent and reduce pollution, eliminate contamination and improve water quality include the following:

- *The City successfully implemented comprehensive educational, inspection and enforcement procedures for municipal, commercial, residential, industrial and construction component activities as described in the City's JURMP.*
- *The City maintains a storm water team approach that integrates staff from various departments, bringing diverse expertise and strengths to the program.*
- *The City monitors a Storm Water Hotline and email address to receive complaints, questions, and general information 24 hours a day, seven days a week, 365 days a year.*
- *The City provided recurring training for all staff regarding general Best Management Practices and specific department-related BMPs.*
- *The City maintains an inventory of all commercial properties in the City, including prioritization of those that pose a threat to water quality.*
- *The City inspected a majority of high priority businesses and notified all high-priority businesses of specific BMPs related to each type of business.*
- *The City collaborated with neighboring jurisdictions within their respective watersheds to develop educational brochures, surveys, and host community events and distributed hundreds of brochures to residents and the business community.*
- *The City continues to modify plan-check review processes to include a requirement for Erosion Control Plans, BMPs, structural change and runoff mitigation alterations in project proposals and/or construction activities.*
- *The City participated in the 2006/2007 San Diego County Wet Weather Monitoring Program.*

- *The City investigated about 47 complaints regarding urban runoff. These complaints only include the ones in which follow-up actions were required. On average the City receives approximately 3-4 calls a week from residents reporting a potential violation.*
- *The City continues to enforce a smoking ban at all local beaches and parks, the first jurisdiction in the nation to do so.*
- *The City provided several opportunities for public participation including educational workshops/classes, Beach Clean-up Day, Copermittee meetings and Household Hazardous Waste drop-off collection sites.*
- *The City continues to implement the new "Environmental" review to ALL building/grading permit applications to ensure every project that gets approved by the City is reviewed for storm water management.*
- *The City Council lowered the grading threshold from 200 cubic yards to 50 cubic yards for all projects within the City. This caused more projects to be assessed by the City engineers to implement pre, during, and post construction BMPs than previously.*
- *The City co-sponsored the second annual "Beach Blanket Movie Night" that provided residents a night of free movies and environmental education. The City had a booth co-sponsored by the Solana Center for Environmental Innovation that contained educational materials and games for attendees, and one of the films shown was dedicated to environmental protection of our ocean resources.*
- *The City authorized a part-time Code Enforcement Officer to continue weekend patrols for storm water violations.*
- *The City added storm water specific language and reporting duties to new "standard" street sweeping contract to be used in all current and future contracts.*

CERTIFICATION STATEMENT

CERTIFICATION STATEMENT

I certify that the work performed, and the report prepared herein, was conducted under the supervision and guidance of the City of Solana Beach Public Works/ Engineering Department to meet the requirements of the *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County and the San Diego Unified Port District* (NPDES No. CAS0108758). I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

Dan Goldberg, P.E. **Date**
Interim City Engineer
City of Solana Beach

CHAPTER 1
Introduction

CHAPTER 1: INTRODUCTION

The City of Solana Beach (hereinafter, referred to as "City") has prepared this report in compliance with Order No. 2001-01, NPDES Permit No. CAS0108758, *Water Discharge Requirements for Discharges of Urban Runoff From Municipal Separate Storm Sewer Systems Draining Watersheds of the County of San Diego, the Incorporated Cities of San Diego and The San Diego Unified Port District* (hereinafter referred to as "Permit"). The California Regional Water Quality Control Board, San Diego Region (hereinafter, referred to as "RWQCB") issued the Permit on February 21, 2001 to all Copermittees (all Cities of San Diego County, the County of San Diego, the Airport Authority and the Port District).

Under the Permit, each Copermittee is required to submit an Annual Report in January of each year describing its jurisdictional program for the previous fiscal year (July 1 to June 30). The purpose of the report is to document to the RWQCB the City's progress and program accomplishments during the reporting period.

On February 21, 2002, Copermittees were required to implement a new comprehensive storm water program (Jurisdictional Urban Runoff Management Program [JURMP]) and submit a copy of the new program to the RWQCB. The implementation of this program occurred during the reporting period July 1, 2006 to June 30, 2007 for this 2008 Annual Report. This Annual Report will cover the fifth and final full year of implementation under the Permit.

The scope of the City's storm water program was significantly expanded by the requirements of the new Permit. The Permit also requires a more comprehensive Annual Report of the City's activities to reduce urban runoff than had been submitted in previous years (prior to 2001). This 2008 Annual Report covers the City's storm water program activities throughout the entire 2006/2007 fiscal year reporting period.

1.1 Report Organization

This report contains a description of all activities conducted to meet the requirements of the Permit. The information will be discussed in chapters applicable to each component of the JURMP, which occurred during this reporting period.

The organization of this report follows the outline of the JURMP and includes the following sections:

- Municipal (Existing Development) Component
- Industrial (Existing Development) Component
- Commercial (Existing Development) Component
- Residential (Existing Development) Component
- Land Use Planning for New Development Component
- Construction Component
- Illicit Discharges Detection and Elimination Component
- Education Component
- Public Participation Component
- Assessment of JURMP Effectiveness Component
- Fiscal Analysis Component
- Special Investigations
- Conclusions and Recommendations

This report will also include a discussion about the sections of the City's JURMP that have been altered or updated, if any occurred during the respective reporting period. A complete copy of the City's JURMP is available upon request or can be viewed and downloaded from the City's Website at www.ci.solana-beach.ca.us (click on "Environmental Programs").

1.2 Common Activities

The City participated with the Copermittees of Order 2001-01 in several common activities (workshops, educational program component elements, model programs, etc.) that allowed for a sharing of resources and knowledge, which will provide a more cohesive message to the community. The common activities are described in the Copermittee Unified Urban Runoff Management Program (URMP) Annual Report, submitted with this report by the County of San Diego and incorporated herein by reference.

In addition, the Copermittee Unified Urban Runoff Management Program (URMP) Annual Report includes a "common response" to letters received by Copermittees from the RWQCB.

The City of Solana Beach supports the common response approach to the above issues, as it will help bring consistency to the various jurisdictional programs, reduce confusion among communities and agency staff, and improve program coordination among agencies. Where appropriate, this report will reference the Copermittee common response to these activities.

1.3 Report Content

The content of this report includes the activities associated with implementing the storm water program (JURMP). The development of the City's JURMP required the City to inventory and prioritize its municipal facilities, commercial and industrial businesses, develop a method to educate the business and residential community about the new requirements, evaluate existing municipal ordinances, and adopt new laws if needed to ensure enforcement action was available, develop a method for educating agency staff, and develop a commercial, industrial and construction site inspection program.

The content of this report will include discussions about the programs and activities that occurred during this reporting period (July 1, 2006 to June 30, 2007). The City presumes that the reader recognizes that significant activity has occurred subsequent to the end of the reporting period for this report. As a result, throughout this report a summary of post-reporting period activities will be discussed (where appropriate) to assist the RWQCB in understanding the City's efforts to reduce urban runoff and pollution and to comply with the Permit.

One significant addition to this report is the "Response to Comments" to the September 26, 2007 letter titled, "Review of 2005-2006 Jurisdictional Urban Runoff Management Program Annual Report for the City of Solana Beach, Order R9-2001-01." That letter requested written responses to comments regarding the FY 2005-2006 Annual Report. These comments will be addressed in the chapters that the comments were issued in.

1.4 Program Goals

The primary goal of the City's JURMP is to reduce or eliminate pollutant discharge into the City's MS4 (municipal separate sewer storm system) and receiving water bodies, including the Pacific Ocean, thus improving the quality of water in the City, neighboring jurisdictions, and region-wide.

The City recognizes that a *scientifically measurable* change in water quality is a long-term goal that would require many years of data collection, research and analysis, extending beyond the life of the current Permit (which expires in 2007). As a result, the City's program includes short-term goals expected to focus the City's program on permit compliance as well as water quality improvements.

The following summarizes the City's current short-term annual program goals:

FY 02/03: Integration of WURMP(s), SUSMP and JURMP activities
FY 03/04: Complete assessment of JURMP (using regional strategy)
FY 04/05: Complete overall assessment of Regional Programs JURMP, WURMP and SUSMP; prepare for new Permit from RWQCB
FY 05/06: Assessment of JURMP, WURMP and SUSMP in preparation of new Permit anticipated to be adopted in early 2007. This involves the assessment of water quality data to focus on the sources of high priority pollutants locally as well as watershed and regionally.
FY 06/07 Further assessment of JURMP, WURMP and SUSMP to effectively develop new programs for incorporation in the new JURMP, WURMP and SUSMP that will be required by the new Permit (adopted January 2007). The complete program will be assessed to determine the effectiveness of existing programs and to develop better, more efficient programs to include in the next Permit cycle.

CHAPTER 2
Municipal Component

CHAPTER 2: MUNICIPAL COMPONENT (EXISTING DEVELOPMENT)

In accordance with Permit Section F.3.a, this section of the report describes the City's efforts to prevent or reduce pollutants in runoff from municipal land use areas and activities.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of municipal facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement BMPs at municipal facilities, program accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Municipal facilities and areas within the City of Solana Beach include public parks, public buildings, streets, roads, and parking lots, a public works yard, and the MS4 system. During this reporting period, the City conducted a comprehensive re-evaluation of its municipal sites to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from its facilities by implementing Best Management Practices (BMPs). This was accomplished through inspections of all public facilities.

2.1 Inventory of Municipal Facilities

During this reporting period, in response to the requirements of the Permit and in an effort to improve the quality of water in the region, the City once again inventoried its municipal sites and activities. Table 2-1 presents the City's municipal facilities, by prioritization level. *There is one change in the City's inventory of municipal sites from those submitted to the RWQCB in the City's 2007 Annual Report.* The change is the addition of the Del Mar Shores Beach Access. In past reporting periods, the City included the two adjacent parking lots to Del Mar Shores but not the access itself. The City felt it prudent to include the access as well to be consistent with the other beach accesses in the City.

The City's municipal facilities include five public buildings (City Hall, one Fire Station, the Marine Safety Center and the Community Centers at La Colonia Park and Fletcher Cove), one Public Works Yard, six public parking lots, City

streets and roads, the Municipal Separate Storm Sewer System (MS4) and the beach (which consists of four access locations: Del Mar Shores, Seascape Sur, Tide Beach Park, and Fletcher Cove).

Table 2-1
Existing Municipal Facilities, By Priority Level

Facility Name	Facility Address	Type of Activity	Priority
Public Works Department	1764 Highland Drive	Materials storage, fleet parking, administration	High
North Seascape Sur Surf Park	Public beach access west of Highway 101	Public beach	High
Roads, streets	Citywide	Circulation	High
MS4 System	City-wide	Storm-water conveyance system	High
Fletcher Cove Parking Lot	North end of Plaza St.	Parking	High
Distillery Parking Lot	Sierra and Lomas Santa Fe		
Solana Beach and Tennis Club	West end of Dahlia St.		
Seascape Sur Parking Lot	Seascape Sur Easement		
Del Mar Shores Parking Lot	Sierra Ave. near Del Mar Terrace		
Del Mar Beach Club East Parking Lot	Sierra Ave. east of Del Mar Beach Club Dr.		
City of Solana Beach Fire Department	500 Lomas Santa Fe	Public Building - Fire Station, fleet and fire equipment storage	Medium
City of Solana Beach City Hall	635 S. Highway 101	Public Building -Administrative	Low
Marine Safety Department, Fletcher Cove	111 S. Sierra Ave.	Public Building Administrative, marine safety equipment storage	Low
Fletcher Cove Community Center	111 S. Sierra Ave.	Public Building – Community Center	Low
La Colonia Park and Community Center	715 Valley Ave	Public Park and Building – Community Center, administrative, park	Low
Tide Beach Park	302 Solana Vista Drive	Public beach	Low
Del Mar Shores	190 Del Mar Shores	Public beach	Low

2.1.1 Inspection Frequency of Municipal Sites

The City inspects all of its municipal sites listed above on a continuous basis. Every winter, prior to the wet season, the Public Works Yard (Yard) is given a complete inspection and all Public Works employees are given a complete storm

water refresher training seminar. Also, the Public Works Crew is put through a practice run of the Weather Triggered Action Plan to prepare for the upcoming wet season. At this annual inspection, the current inventory of the storm water BMPs kept on-site (gravel bags, bio-filter rolls, straw rolls, etc) is documented and additional supplies are ordered if necessary. Additionally, every Wednesday, the Public Works Yard is inspected by the Environmental Specialist during the "weekly safety meetings." All storm water issues are discussed and the Yard is thoroughly cleaned, if necessary. Visual inspections are conducted on a daily basis by the Public Works Crew. Here are the specific dates and numbers of inspections for the City's municipal areas:

Public Works Yard: Weekly on Wednesdays and every October to prepare for wet season. Inspection and training conducted last year on 6/26/07.

Roads and Streets: Continuous visual inspections daily. Every street is swept at least once per month. Main arterial streets are swept once per week and collector streets are swept every other week.

Parking Lots: Visual inspections weekly. Every City parking lot is swept once per month.

MS4 System: Continuous visual inspections weekly. Highest priority catch basins cleaned annually (those with accumulated debris inside). Approximately seven (7) cubic yards of debris was removed from the MS4 system during this reporting period.

Fire Department: Continuous visual inspection by City Staff. Last inspection was conducted on June 26, 2007.

City Hall: Continuous visual inspection by City Staff. Last inspection was conducted on June 26, 2007.

Marine Safety: Continuous visual inspection by City Staff. Last inspection was conducted on June 26, 2007.

Parks and Recreation Department (La Colonia Community Center): Continuous visual inspection by City Staff. Last inspection was conducted on June 26, 2007.

Beaches: Daily inspection by City Staff (Marine Safety Department).

2.1.2. Follow-up Activities

The City did not have any follow-up activities as a result of municipal inspections. All facilities were implementing the necessary BMPs and all employees were properly trained. The Public Works Yard required no corrective action as everything remained in compliance. The Wet-Weathered Action Plan was successfully implemented and the employees were trained again and had a practice run prior to the beginning of the wet season.

2.1.3 Implementation of Pesticides, Herbicides and Fertilizer BMPs

The City has implemented all the appropriate pesticide, herbicide and fertilizer BMPs that are listed in the JURMP. The City's Public Works Department only handles approximately 10% of pesticide, herbicide, and fertilizer application for the City. There is a small amount of Round-Up kept on-site at the Public Works Yard that is stored and locked indoors. All employees of the Public Works Department are registered with the County of San Diego Department of Agriculture and are inspected on an annual basis. As part of the Integrated Pest Management Program, Public Works Staff has switched from using harmful pesticide Dursdan to a more environmentally friendly insecticidal latex coating to control the roach problems in City sewer manholes.

2.2 Pollutant Source Identification

To assist the City in determining the source of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, the municipal facilities were also identified by Watershed in the City JURMP*. There are no changes to report in the municipal facility by watershed classification.*

During this reporting period, staff continued to evaluate the possible types of pollution that could be generated from each municipal facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Any additional activities that may affect water quality such as additional storage or new materials kept on-site

Results from the evaluation indicate that most City facilities are a low threat to water quality (as discussed in report Section 2.3). Parking lots, streets and roads, and the Public Works Yard are the highest priority of municipal facilities as they

could introduce pollutants into the conveyance system, which could impact water quality.

The City is committed to implementing BMPs that will reduce pollutants from parking lots, streets and roads and the Public Works Yard in particular. The City has installed and maintains a BioClean filter in one of the upstream catch basins that lead to the problem Seascape Sur pipe. Also, the Yard is visually inspected weekly and BMPs are maintained and reinforced as needed. In addition, the City utilizes results from its dry-weather-monitoring program to determine if pollutants are entering the system from its municipal facilities.

During this reporting period, the results from the City's 2006 Dry-Weather-Monitoring Program (DRMP) were completed and presented to the City in January 2007. The results indicated a concern at Seascape Sur, which has been an ongoing problem in the City for more than six years (see discussion in Chapter 13, Special Investigations) where elevated levels of bacteria were detected. An investigation into the identification of the pollutant source is ongoing, and the City is looking into alternatives ways to address the situation. No municipal facilities were found to be contributing the pollutants.

The City utilized the information from the 2002, 2003, 2004, 2005 and 2006 dry-weather-monitoring programs and the criteria established by the Permit (Order 2001-01) to further develop its 2007 Dry-Weather-Monitoring Program. Although the results from the 2007 program were presented to the City after this reporting period (in December 2007), they are noteworthy to include in this report. The City results indicate that the City's municipal facilities are not a likely contributor of pollutants.

2.3 Threat to Water Quality Prioritization

The City utilized the criteria prescribed in Permit Section F.3.a. (3)(a) and (b) to prioritize the facilities based on their potential threat water quality from storm water runoff. In addition, dry-weather monitoring data and previous complaint records were included in the evaluation. As noted in the City's JURMP, results from the dry-weather monitoring program indicated that there were no illegal discharges or illicit connections associated with existing municipal facilities. However, the City still classified its public parking lots, MS4 system, streets and roads and the Public Works Yard as *high priority* using the criteria of the Permit. As also noted in the JURMP, the City classified the beach at Seascape Sur as a *high priority* because results from the dry-weather monitoring program indicated

elevated levels of bacteria (see Chapter 13, Special Investigations).

The Fire Department facility was the only municipal site classified as medium-priority. The City Hall building, the Community Center at La Colonia Park, Tide Beach Park, Fletcher Cove Community Center and the Marine Safety Center facility were classified as low priority primarily due to the activities conducted at those sites.

There are no changes to report in the City's prioritization of its municipal facilities. As stated in the 2003 Annual Report, the results of the 2003 Wet Weather Monitoring Program revealed very high levels of the pesticide Diazinon within the watershed. The City focused its efforts on reducing the use of Diazinon within the City and by municipal landscaping contractors through educational activities. The City is happy to report that Diazinon was not found in any of the samples analyzed by the lab for our 2004, 2005, 2006 or 2007 dry weather programs. This is consistent with the overall trend region-wide showing that diazinon levels have been steadily decreasing. The City can now focus on other pesticides or high priority pollutants in the ongoing effort to improve water quality in the region.

2.4 Pollution Prevention Methods

As described throughout the Municipal Component Section of the JURMP, the City has established pollution prevention methods that focus on municipal operations, including operation and maintenance of its MS4 system with the goal of preventing and reducing pollutants in runoff. The following is a list of some of the methods in place to accomplish this goal:

- Annual Cleaning of the City's entire MS4 system
- Routine street sweeping (schedule is on the City's web site and available upon request)
- Daily trash removal from streets and parks
- Sediment and erosion control methods (application of Visqueen, materials coverage, silt fences, etc.)
- Facility and ground maintenance conducted in a manner that would not contribute pollutants to a conveyance systems and expected to reduce pollutant runoff during storm events
- The use of bio-filter roll(s) as a PPM at municipal facilities
- Maintenance of the MS4 including routine inspections, annual cleaning and proper disposal of captured materials
- Spill response procedures (street and road spills, facility spills)

- Household Hazardous Waste Collection (Note: the City participated in a reciprocal use agreement with the Cities of Vista, Poway and Escondido for use by Solana Beach residents to recycle their household waste materials.) The City also offers a door-to-door program (more on this later in the Report).
- Installation and maintenance of catch basin inlet filter at ongoing problem area directly upstream from beach outfall.

In the City's JURMP, the above pollution prevention methods were expanded for implementation at all Cities' municipal facilities, depending on the type of activities conducted at each facility. To assist in developing appropriate BMPs, the facilities were categorized into the following types:

- Landscape and recreational facilities
- Roads and streets maintenance
- Public buildings
- Public Works Yard
- Parking facilities
- Storm Drain Conveyance System (MS4)

Specific BMPs were then developed for each category type identified and presented in the City's JURMP. For example, BMPs for the Public Works Yard (JURMP, Table 2-7) include:

- Materials storage alterations
- Visual inspections
- Improved operations and maintenance
- Good housekeeping procedures
- Preventative maintenance
- Spill prevention
- Sediment and erosion control
- Employee training
- Vehicle and equipment maintenance operation alterations
- Waste disposal and recycling
- Vehicle equipment and washing
- Storage tanks
- Outside storage

During this reporting period, the City implemented pollution prevention methods (BMPs) for each facility type based on what was presented in the City's JURMP. The BMPs were discussed at citywide staff meetings, handouts were created for general housekeeping for all staff to implement, and municipal facilities were inspected by City staff to ensure the implementation of BMPs was occurring.

2.4.1 Proactive Approach to Pollution Prevention

Because of the City's proximity to the Pacific Ocean, the City has been proactive in its approach to urban runoff and pollutant mitigation and reduction, not only during this reporting period but also prior to the implementation of the JURMP.

Annual Cleaning of Storm Drain System

The City conducts an annual cleaning of its storm drain system – citywide. Public Works Staff visit every catch basin in the City and prioritize each based on the severity of sedimentation and trash build-up**.** Any catch basin that shows signs of trash or sediment build-up will be cleaned using a Vactor truck. During this reporting period, the City removed seven (7) cubic yards of material from the storm drain system (which includes open channels, etc.). Samples of the material, primarily sediment and debris, were properly disposed of as a non-hazardous material. The City had the debris tested by Enviromatrix Analytical Inc and received a five year exemption from the local landfill.

Pet Waste Bag Dispensers

The City installed Pet Waste Bag Dispensers and actively maintains the dispensers to encourage proper pet waste disposal. The City posted these dispensers and signs along both sides of Sierra Avenue to encourage their use (Sierra Avenue is the street closest to the beach, and runs parallel to Highway 101). The City implemented this BMP in response to results from its dry weather and coastal outfall monitoring, which indicated the presence of fecal bacteria at Seascape Sur. In an effort to educate the community about pet waste, the City included a discussion about its Dog Ordinance (Municipal Code 11.12.020X), which prohibits dogs in some locations of the City and on some beaches, in its Summer 2001 City newsletter and recreation guide *Shorelines* Vol. 14. No.1). In addition, City staff met with property managers of the condominiums along Sierra Avenue and educated them on storm water regulations and solicited their help in educating their residents.

The City recently completed its much anticipated Coastal Rail Trail. This trail runs parallel to Highway 101 the length of the City, and has become a popular

walking/jogging spot for not only the residents, but their pets as well. The City required the project to include additional pet waste dispensers, and have found them to be used very frequently. This shows the City's proactive approach to protecting the integrity of the local waterways. This practice of requiring pet waste dispensers at all new public projects will continue as it has been received very well by the community.

As part of the Public Works Department routine tasks, the bag dispensers are refilled daily. The amount of material that is prevented from entering the City's MS4 system as a result of this PPM is unknown and there is no acceptable method of estimating it, however, the City's Public Works Crew refilled approximately 1,298 bags per week in this reporting period, up from 775 last reporting period, 625 the year before that, and 550 the first year this was documented. The increase this reporting year is most likely due to the additional education and outreach and the residents changing their behaviors. The total amount comes out to approximately 67,500 total bags at a cost of approximately $2,700 (4 cents per bag). Those numbers are up from 37,800 bags and approximately $1,590 from last reporting period.

Solana Center for Environmental Innovation

The City is proud to be associated with the Solana Center for Environmental Innovation (formerly Solana Recyclers), hereinafter referred to as Solana Center. Due in large part to the efforts of this group, the City was the first city in San Diego County to have a comprehensive *curbside* recycling program. In addition, to help educate the community, the Solana Center routinely writes articles for the City *Shorelines*. For a complete listing of articles written in the *Shorelines,* please see Chapter 5, Residential Component.

Recycling Efforts

The total amount of material recycled throughout the City during this reporting period is unknown at the time of this report (numbers will be available after March 15, 2008). However, the last reporting period ending in 2006 showed the City at a 56% recycling rate, which is on the upper tier of cities in the county and in compliance with the 50% rate required by Assembly Bill 939 (AB939). Additionally, on September 16, 2006, the City hosted its annual beach and lagoon clean-up day and 118 volunteers (up from 71 a year ago) collected over 245 pounds of trash and 80 pounds of recyclable materials that might have otherwise ended up in the landfill or worse, City streets and possibly the City's MS4. The rise in participants and fall in pounds of trash and recycling can both be described as successes for the City. The rise in participants shows the

excitement and pride that the residents have for their City as well as demonstrating that the City's education and outreach programs are successful. The decline in trash and recycling numbers show that the area is getting cleaner, which is another major success.

The City also implemented a new residential solid waste and recycling automated single stream commingled collection program. This will be described in greater detail later in this report, but it should be noted that as of the first nine months of implementation, residential recycling increased by 22%, which is pretty remarkable.

Hazardous Materials Management Team

The City Fire Department contracts with San Diego County Hazardous Materials Management Division and established an Emergency Response Program to contain hazardous materials that result from automobile accidents, spills, illegal dumping or any other activities within the City of Solana Beach. Generally, the County's Hazardous Materials Team handles recovery and disposal of the materials, although work crews from the City's Public Works Department also contain some small spills and are on call 24 hours a day, 7 days a week to respond to all spills that occur within City limits.

Storm Drain Inventory and Stenciling

The City has inventoried all of its storm drain conveyance structures (inlets and catch basins). The inventory list includes addresses, cross streets and a bit-map. This information was then utilized to implement a program that affixed a stenciled tile at each location that reads, *"No Dumping! This drains to the ocean."* The City has successfully completed application of the tiles at *each* storm drain inlet or catch basin. In addition, the City now requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the a stenciled tile. The City constantly monitors the catch basins and if a tile is broken or has been removed, another one is immediately installed.

The City also participated with the non-profit group I Love A Clean San Diego (ILACSD) to sponsor an ongoing Tile Stenciling Program in which the City provides volunteers with a GIS map of all catch basins in the City and a box of tiles so they can compass the City and replace any tiles that are damaged or missing. This was a highly successful program/partnership that the City will continue to ensure all catch basins have tiles permanently affixed to them.

Street Sweeping

The City already had a comprehensive street sweeping program prior to the Permit and the implementation of the JURMP. The residential streets are swept once each month, while major arterial streets are swept once each week. In response to the comments received from the RWQCB on the FY 02/03 annual report, the City developed a form to characterize and measure the amount of material collected by the street sweeper (Appendix A). The driver of the street sweeper completes the form after every trip and it is verified by the appropriate Public Works employee.

As reported in last year's Annual Report, the City was having major problems with its contracted street sweeping company. The contractor was not performing up to contract specifications, and the City was having a difficult time getting the proper reports from the drivers. A contractual battle ensued and documentation was not submitted. The City eventually relieved the street sweeping company of their duties and selected another contractor. The new contractor has been much more effective and responsive. This reporting year, the amount of debris collected by the street sweeper totals 188, which is a decrease over last year's total of 299.1 cubic yards.

To demonstrate the City's commitment to documenting the amount of debris collected by the street sweeper, and to ensure that all activities were conducted in compliance with the storm water regulations, the City included specific language in its new street sweeping contract. This language will be used in every subsequent street sweeping contract to ensure all contractors are adhering to all storm water regulations, which was a comment made by the RWQCB in its JURMP Annual Report Review.

Spill Prevention

The City's Public Works Department maintains on-site at the Public Works Yard, a 55-gallon drum and specially equipped vacuum to handle small hazardous materials spills. The drum and vacuum are small enough to travel with the work crews and have been utilized to contain oil from an automobile accident, spillage of work-related materials (paint and debris), and collection of minor hazardous materials. In the event the material exceeds the amount that can be collected by the work crews, the City Fire Department initiates its spill response plan (discussed above). Work crews used the new spill-vacuum on several occasions to collect hazardous waste material. However, City work crews do not have the resources to weigh the amount of material collected or to track and document the

amount of material collected. Significant spills for which the work crews responded to are discussed in Chapter 8: Illicit Discharges Detection and Elimination.

Staff Trainings

The City implemented a citywide staff-training program. Each month the City Hall hosts an all-hands meeting, which was determined to be the appropriate location to conduct the storm water training. Employees are educated about the Permit requirements, informed regarding expectations of staff, provided General Housekeeping handouts, facility-specific designated BMPs (from the City's JURMP), and instructed on the use of the Storm Water Hotline (see below). Staff trainings regarding storm water are routinely included in the monthly all-hands meeting when deemed appropriate.

The City anticipates that the new Permit adopted January 2007 will require additional intensive departmental trainings. The City anticipates another series of staff trainings to discuss the new aspects of the Permit and how each one relates to different departments within the City. This will also serve as an opportunity to review and refresh City staff responsibilities as they pertain to elements in the newly adopted Permit.

Storm water Hotline

To assist the public in directing their calls for complaints and service, the City maintains and responds to a storm water hotline 24-hour telephone recording (858) 720-4424. When the number was first established, it was checked twice each day. However, to facilitate a quicker, more effective response time, the City now links all calls to the direct extension of the City's Environmental Specialist. Therefore, all calls that are made to the City regarding storm water issues will be handled immediately. This has been proven very successful, as the issues are addressed immediately. This leads to much quicker responses, which result in more efficient spill response and enforcement actions. The City informs the public about the hotline number at City Council meetings, on flyers and handouts at workshops, on business cards, on educational materials and during inspections.

Materials Storage

Although only minor quantities of hazardous materials are stored at municipal facilities (as noted in the City's JURMP), the City stores those materials indoors when feasible. Only non-hazardous materials, such as Class 2 gravel, temporary stockpiles of topsoil, etc., are stored outdoors for short periods of time. When

this does occur, City Staff ensures all storm water BMPs are installed around the piles and they are covered, if necessary, to ensure nothing leaves the Public Works Yard.

Sediment and Erosion Control

The City Public Works Department augmented the City's supply of Visqueen as a method to reduce or prevent sediment and erosion control. The Visqueen is utilized at the Public Works Yard on the sand and soil that is kept on-site. In addition, the work crews utilize bio-filter rolls to catch runoff. As added insurance, the City's Operations Manager always orders extra erosion control BMPs before the wet season to store on-site for emergency situations. Most of these practices were instituted as a result of suggestions made by the RWQCB during their inspection in August 2002.

Storm Drain Inlet/Catch Basin Insert

The City is currently participating in an ongoing experimental application of a catch basin insert in one of its MS4 curb inlets. The insert is being studied to determine its effect on the elevated levels of bacteria in the inlet. Although early results from the pilot program are inconclusive regarding bacteria, the catch basin filter has been extremely effective in eliminating large quantities of trash and organic matter from the MS4 system. Public Work Crews empty the filter on a scheduled weekly basis and routinely remove about half a trash bag full of debris. Additionally, inspection of the catch basin insert has revealed occasional violations of the adjacent landscapers as a large amount of grass clippings were found in the catch basin. An investigation resulted in a Notice of Violation (NOV) to the landscaping company and a discussion with the property management company. No additional violations have been reported.

2.4.2 New Municipal Pollution Prevention Methods

Smoking Ban on Public Beaches and Parks

During a previous reporting period (December 2003), the City of Solana Beach jumped to the forefront of pollution prevention, on a nation-wide scale. The City was the first city in the nation to ban smoking at its public beaches and parks. The ordinance (Ordinance 316, see Appendix B) bans smoking at all public beaches and parks, and is actively enforced by the Marine Safety Department and Code Enforcement Department. The public has been very responsive to this

ordinance, and the City has had many requests from other jurisdictions, as far away as Australia. The City appears to be a trend setter, as the City of Los Angeles and other Orange County cities are following suit with their own ordinances in the works. More locally, the City of Del Mar and San Diego have followed with their own ordinances and other cities such as Oceanside are investigating the possibility. This is a significant pollution prevention action the City has undertaken, as cigarette butts are routinely found as the most abundant type of debris collected in beach clean-ups. The impact on the local beaches will be extremely beneficial, and the City is proud to be the trend setter in another environmental arena (the City was the first jurisdiction in San Diego County to provide curbside recycling).

Recycling/Trash Containers

One of the priorities of the Environmental Specialist was to improve the recycling program throughout the City. When the Environmental Specialist took over, there were no public recycling receptacles located anywhere in the City. If someone wanted to recycle, they would have to do so at home, but since this is a popular tourist location, it seemed necessary to provide recycling opportunities in high traffic areas. It's well known that people will recycle if it's made convenient and efficient for them, but since there were no opportunities available, it can only be assumed that everything was being discarded into the trash, or worse, finding its way into the storm drain system. This was a high priority for the Environmental Specialist, but initially the money was not there to purchase any new receptacles.

However, during a previous reporting period (December 2004), the opportunity presented itself when the City received its Department of Conservation (DOC) monies to be used toward the City's environmental program. In the past, this money was used to purchase picnic benches and tables made from recycled plastic. The Environmental Specialist managed to redirect this money into purchasing four new trash cans that have a separate container for recyclables. The new receptacles were placed at Fletcher Cove, two bus stops and at the community center. They have been very well received by the public and are very effective in separating recyclables from trash. The City has been so impressed with the results that the next round of DOC money is already earmarked for more of these receptacles and more money is being sought to purchase as many as possible to be placed throughout the City.

During the last reporting period, the DOC funds were approved to be used on additional recycling containers. The Environmental Specialist met with a

Councilmember to come up with a recycling "master plan" to help prioritize the City's recycling needs. It was agreed upon that the best location for the new recycling containers would be along the recently completed Coastal Rail Trail (CRT). Five (5) new containers were placed out on the CRT and are highly utilized by the community. The City had to add an additional recycling dumpster at the Public Works Yard to accommodate the increase in recyclable materials from these new containers. In addition, the City included nine (9) of these containers to be installed in the new Fletcher Cove Community Park.

Ensuring Implementation

To ensure that the PPMs are implemented, City staff meets periodically with all Department Directors to review the BMPs, Permit requirements and program expectations. Department Directors are responsible for ensuring that their staff carries out the BMPs for their facilities. The City Engineer meets every Wednesday with the Operation Manager and his crew, the Environmental Specialist, and the City Inspector at the Public Works Yard for safety meetings. It was decided that at these meetings, storm water issues, including BMPs, should be discussed and the Yard will be inspected to ensure compliance. The Environmental Specialist will also conduct random compliance inspections. During this reporting period, there were no violations observed at the City's municipal facilities and all appropriate BMPs were being properly installed and maintained.

2.5 Pollution Prevention Strategy Effectiveness

One of the issues that the City faces is developing an appropriate process to determine the effectiveness of the pollution prevention methods and strategies, (BMPs). The City is committed to developing a consistent approach that could be agreed upon by all Copermittees. It is important to collect data and analyze results in a consistent manner – county/region wide – in order to be able to share results and draw conclusions across agencies, particularly given that water is not restricted by jurisdictional boundaries.

To address this issue, the Copermittees met several times in the fall of 2002 and in 2003 to work out a more appropriate strategy. A guidance document was prepared by the Copermittees and submitted to the RWQCB on October 16, 2003, titled *"A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs".* This guideline presents a comprehensive assessment strategy that initially focuses on programmatic assessments and

moves toward water quality-based assessments to determine program effectiveness. More specifically, it addresses six levels of assessment:

- Compliance with Activity-based Permit Requirements
- Changes in Knowledge/Awareness
- Behavioral Changes
- Load Reductions
- Changes in Discharge Quality
- Changes in Receiving Water Quality

The City implemented this assessment program during the last reporting period, which is described in more detail in the Effectiveness of JURMP Assessment Component of this report.

2.6 2005/2006 JURMP Comments from RWQCB

As discussed in the Introduction, the City received one comment on its 2005/2006 JURMP Annual Report regarding the Municipal Section. This comment claims the City did not adequately report on Municipal Separate Storm Sewer System (MS4) maintenance activities. The following table contains the information for 2005/2006 and 2006/2007 as requested.

Table 2-2
2005/2006 MS4 Maintenance Activities

Type	Frequency	Date	Total Number	Number Inspected	Comments
Inspection and Cleaning of MS4	Annual	10/17/05	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	All catch basins and unimproved storm drains inspected, 4 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15	15	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.

Table 2-3
2006/2007 MS4 Maintenance Activities

Type	Frequency	Date	Total Number	Number Inspected	Comments
Inspection and Cleaning of MS4	Annual	11/29/06	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	All catch basins and unimproved storm drains inspected, 35 catch basins cleaned, 7 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15	15	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.
Inspection and Cleaning of City MS4 after Rain Events	After Rain Events	10/18/06 1/30/07 2/20/07	15	15	No debris removed, MS4 clean

The tables above represent the inspection and cleaning activities related to the City's MS4. As you can see, the City conducts the annual inspections of the entire MS4 as the Permit requires, but goes above and beyond the inspection and cleaning requirement with monthly unimproved storm drain (brow ditches, channels, etc) inspections and "after rain event" inspections. Currently, just the dates that these activities take place are being recorded, but the City will begin recording and documenting the amount of debris removed so that a better assessment can be made on the Municipal Programs. It should be noted that these activities are above and beyond the Permit requirements, but it shows the City's dedication and pro-active approach in maintaining a functional MS4 system.

2.7 New Activities and Improvements for FY 07/08

The City anticipates continuing the activities of the Municipal Component as specified in the JURMP. The focus will on continuing the cooperation among different departments, ensuring municipal facilities are in compliance with the Permit, and collaborating with other Copermittees. The City Department Directors were required to integrate more responsibilities into positions in order to implement the Watershed Urban Runoff Management Program (WURMP) and Standard Urban Storm Water Mitigation Plan (SUSMP). Because of our team approach, this transition occurred rather seamlessly. The Planning Department and Engineering Department worked closely together in implementing the SUSMP requirements.

As mentioned previously in this Chapter, the new Storm Water Permit was adopted in January 2007. This contained new elements that will require additional/modified requirements/duties of different Departments within the City. Additional staff trainings will be required to ensure that all Staff activities will be in compliance with the new Permit and some job duties will have to be altered. Since the new Permit has now been adopted, the majority of the City's efforts will be spent developing programs to meet the requirements of the new Permit. A significant amount of time will be spent updating old programs such as the SUSMP, JURMP and WURMPs in anticipation of implementing this new programs beginning January 2008. These changes will have to be implemented on the fly, and will require all Departments within the City to work collaboratively to accomplish the goals within the new Permit. The City is confident that the infrastructure of the City as a whole will allow for a relatively seamless transition to the requirements of the new Permit.

2.8 Summary

The City has been successful at implementing the Municipal Component of the JURMP, establishing BMPs for its municipal facilities and providing informative and meaningful staff trainings. The City made significant advancements in the manner in which its storm water program is integrated into the routine tasks of various staff and has developed an effective interdepartmental working relationship. The Environmental Specialist position has greatly enhanced the coordination and implementation of the Permit, as well as other environmental programs (solid waste, HHW, etc.)

Highlights of the accomplishments of the City's Municipal Program Component include:

- Implementation of two comprehensive WURMPs
- Creation of an effective inspection process
- Implementing storm water issues and inspections of Public Works Yard at weekly safety meetings between the City Engineer and Public Works Supervisor and crew
- Annual cleaning of the City's storm drains resulting in seven cubic yards of debris diverted from receiving water bodies
- Implementation of street sweeping tracking form that now allows the City to evaluate the effectiveness of the street sweeping program.
- Provision of public pet waste bag dispensers (67,500 bags were utilized by the community during this year at a total cost of $2,700 (4 cents per bag)
- Addition of new trash/recycling receptacles in high traffic area of City to promote recycling and prevent trash from entering storm drain system
- Enforcement of Smoking Ban on Public Beaches and Parks Ordinance which has significantly reduced amount if pollution on local beaches and parks.
- Implementation of weekly task for Public Works Crew to self inspect the Public Works Yard
- Implemented scheduled cleaning of Fletcher Cove Low Flow Diverter
- Maintenance of Biofilter at La Colonia Community Center
- Maintenance of City-owned CDS units
- Maintenance of filter basket at upstream catch basin of Seascape Sur outfall

CHAPTER 3
Industrial Component

CHAPTER 3: INDUSTRIAL COMPONENT (EXISTING DEVELOPMENT)

In accordance with Permit Section F.3.b, this section of the report describes the City's efforts to prevent or reduce contaminants in urban runoff originating from existing industrial facilities. In compliance with the Permit, the City evaluated businesses within the City and categorized them as commercial or industrial, as noted in JURMP sections 3.0 (Industrial) and 4.0 (Commercial).

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of industrial facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement and enforce BMPs at industrial sites, related accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

During the last reporting period (July 1 2006 to June 30, 2007), the City conducted an evaluation of the industrial facilities doing business within the City. Facilities were identified as industrial sites based on criterion required by the Permit, which included activities conducted on site, SIC codes and also included a site visit. The City prepared an inventory of the industrial sites in order to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from the facilities by implementing Best Management Practices (BMPs). The City reviewed the list from last reporting period and visited all existing and potential new sites to determine if there would be any changes or additions to the inventory.

3.1 Inventory of Industrial Facilities

There is currently one industrial site operating within the City (Baker Iron Works). Table 3-1 presents the City's industrial facility, including its prioritization level. *There is no change in the City's inventory of industrial sites from those submitted in last year's Annual Report. The City's other industrial site, submitted to the RWQCB in the City's original JURMP (February 21, 2002), (Blalock Cabinet Shop) is no longer in business in Solana Beach*. It relocated to the City of Vista.

Table 3-1
Existing Industrial Facilities

Facility Name	Facility Address	Narrative Description	SIC Code	Priority
Baker Iron Works	710 Valley Ave	Iron works / metal fabrication	3441	High

3.2 Pollutant Source Identification

To assist the City in identifying potential sources of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, City staff evaluated the possible types of pollution that could be generated from each industrial facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Watershed location

Results from the evaluation concluded that the City's only industrial facility could be a potential source of pollutants (Baker Iron Works),

The conclusion that Baker Iron Works could be a potential source of pollutant discharge was due to the fact that the facility generally uses metal materials in the fabrication of structural devices; most of their work is performed outdoors, which is exposed to storm water, and runoff from the property can potentially enter the City's conveyance system. However, the City has worked closely with Baker Iron Works to minimize the potential for pollutants to run off their property and into the City's MS4 system. Baker Iron Works has been more than willing to work with the City to ensure compliance with the Permit, and has completed numerous tasks suggested by the City. These include:

- Permanently covering all stock piles of metal materials kept outside to shield it from rain events.

- Cleaning of yard as needed but no less than weekly with a magnetic device to pick up all loose metal shavings.

- Moving all chemicals indoors to ensure that they will not run off the property and into the City's MS4 system.

- Training all staff on proper storm water BMPs and general housekeeping

for all activities that may impact the City's MS4 system.

- Installation of low flow sump/infiltration structure at the northwest corner of the facility to handle all low flows from the entire facility. The low flows will enter a small drain that extends across the driveway and enters into a small infiltration well structure to prevent the water from entering the MS4. This structure has worked very well in eliminating all low flows from leaving the site. Baker Iron Works employees routinely monitor and maintain the infiltration well to ensure proper functionality.

- Permanently sealing a trench drain near office building that used to drain directly to street. Now the runoff bypasses the drain and travels down to the low flow sump/infiltration structure mentioned above.

The results of the 2006 dry weather program indicate that no related pollutants were found downstream from this industrial facility. This is consistent with the 2001, 2002, 2003, 2004 and 2005 dry-weather-monitoring program results which also indicated that no related pollutants were found downstream from this facility. The City will continue to inspect and monitor these locations in the future to further ensure that they are not contributing to downstream pollution. In addition, Baker Iron Works has agreed to forward all results from their required water quality monitoring under the Statewide General Industrial Permit to City staff, upon request, for review during rain events.

The City utilized the information from the 2006 dry-weather-monitoring program, the criteria established by the Permit, and the evaluation of the potential sources of pollutants (discussed in this chapter and Chapter 3 of the City's JURMP) to develop its 2007 dry weather monitoring program. Similar to last year, one site downstream and one site upstream from Baker Iron were selected for testing. Although the results from the 2007 program were obtained by the City post this reporting period (in December 2007), it is important to note that no significant pollutants of concern were found downstream from Baker Iron Works. However, the City will continue to monitor runoff downstream from that facility over the next few years.

3.3 Threat to Water Quality Prioritization

In the City's JURMP, the industrial sites were classified as a high, medium or low priority, based on their potential threat to water quality from storm water runoff. The classification utilized criteria prescribed in Permit Section F.3.a. (3)(a), (b).

There are no changes to report in the City's classification of its industrial facilities from last year's Annual Report. Baker Iron Works is still classified as a high priority industrial site.

3.4 Pollution Prevention Methods

The City realized that since Baker Iron Works is the only high priority industrial site in the City, it would be prudent and feasible to monitor their site frequently. Although the Permit requires only annual inspections, the City dedicated more time to ensure that the site was always in compliance. This pro-active approach that occurred in the beginning of this Permit cycle has proved to be well worth the effort. By spending the extra time and effort the first couple of years of this Permit to get this facility into compliance have built a strong working relationship between the owners and the City. This facility has had no violations the last couple of years and continues to stay in compliance.

As reported in last year's Annual Report, this facility was attempting to come into coverage under the statewide General Industrial Storm Water Permit (GISW). The reason they were not already covered was because of a major fire in the office of this facility during the reporting period, and all the documents were lost. However, the City has confirmed that Baker Iron Works is *now fully compliant* with the state GISW and is currently adhering to all requirements.

Baker Iron Works employees use a large magnet to clean their entire yard as often as needed but no less than once per week. This magnet is very effective in cleaning up small steel waste products that result from daily activities. The parking lot is swept and water is never used. All chemicals are kept in a locked storage shed that has secondary containment and is kept above ground, which was a recommendation of RWQCB staff.

3.5 New Activities and Improvements for FY 07/08

City staff will continue to work closely with the proprietors of Baker Iron Works to 1) ensure functionality and maintenance of the filtration device, 2) ensure compliance with the City's storm water regulations and 3) educate the business owners and employees about the importance of protecting the community's water resources.

During FY 07/08, the City will continue to inspect Baker Iron Works, using the City's Storm Water Compliance Checklist (Appendix C) as often as necessary to

ensure total compliance to the Permit. The City will also continue to visually inspect the facility at least once a month, and always before the wet season and during rain events. If the City observes a non-compliant facility, the City will inform its appropriate representative at the RWQCB.

3.6 Summary

The City has been effective at working with owners of the one industrial site to ensure compliance with Permit and City regulations. The owners have installed and properly maintained the filtration system at the northwest corner of the property to collect and infiltrate all on-site low flow runoff before it enters the MS4 system. The City has established a great working relationship with the owners/operators of the site and they have made drastic strides to maintain compliance. City Staff will continue to monitor and inspect the facility frequently to ensure compliance with the Permit. Baker Iron Works have been very responsive and immediately remedy any problems encountered during inspections. They have gone above and beyond what is required to ensure they are in compliance with the Permit.

CHAPTER 4
Commercial Component

CHAPTER 4: COMMERCIAL COMPONENT (EXISTING DEVELOPMENT)

In accordance with Permit Section F.3.c, this section of the report describes the City's efforts to prevent or reduce pollutants in runoff from existing commercial properties.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of commercial facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement BMPs at commercial sites, significant program accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

During this reporting period, the City continued inspections of the high priority facilities (excluding restaurants). As discussed in last year's Annual Report, inspections during this reporting period were meant to be more compliance related, with follow-up activities based upon the initial educational inspections initially conducted in FY 03/04.

4.1 Inventory of Commercial Facilities

As a result of the compliance inspections, the City's inventory of commercial facilities that were inspected *had no changes*. The City's Environmental Specialist visited selected locations based on higher priorities such as automotive servicing, gas stations, repair and fueling, commercial rental yards, and golf courses but did not have to make any changes to the list shown on Table 4-1. The City will continue to update the inventory list as new businesses apply for permits or site inspections reveal changes.

Table 4-1

Changes to High Priority Commercial Facilities

Category	Address	303(D)	Discharges Pollutant Of Concern?
Automobile Servicing And Repair	136 N Cedros Ave	Ocean	No
	371 N Highway 101	Ocean	No
	421 N Hwy 101	Ocean	No
	126 N Cedros Ave	Ocean	No
	637 Valley Avenue E	San Dieguito	No

Category	Address	303(D)	Discharges Pollutant Of Concern?
	201 S Hwy 101	Ocean	No
	146 N Cedros Ave	Ocean	No
	301 N Hwy 101	Ocean	No
Automobile/Vehicle Washing	435 N. Highway 101	Ocean	No
	615 S Hwy 101	Ocean	No
Retail Or Wholesale Fueling	660 Via De La Valle	San Dieguito	Yes
	705 Lomas Santa Fe	San Dieguito	Yes
Eating And Drinking Establishments	731 S. Highway 101 #1-B	Ocean	Yes
	905 Lomas Santa Fe Dr	San Dieguito	Yes
	159 S Hwy 101	Ocean	Yes
	524 Stevens Ave 11	San Dieguito	Yes
	667 San Rodolfo Dr 133	San Dieguito	Yes
	437 S Hwy 101 601	Ocean	Yes
	106 Solana Hills Drive South	San Dieguito	Yes
	124 Lomas Santa Fe Dr 108	San Dieguito	Yes
	437 S Hwy 101 118	Ocean	Yes
	512 Via De La Valle 102	San Dieguito	Yes
	650 Valley Avenue	San Dieguito	Yes
	607 Valley Avenue	San Dieguito	Yes
	640 Via De La Valle	San Dieguito	Yes
	166 Solana Hills Dr South	San Dieguito	Yes
	150 S Acacia Ave	Ocean	Yes
	243 Highway 101 North 8	Ocean	Yes
	280 Lomas Santa Fe Drive	San Dieguito	Yes
	145 S Hwy 101	Ocean	Yes
	647 South Highway 101	Ocean	Yes
	315 S Hwy 101 #A	Ocean	Yes
	437 S Hwy 101 112	Ocean	Yes
	514 Via De La Valle 100	San Dieguito	Yes
	937 Lomas Santa Fe D Out of business	San Dieguito	Yes
	117 West Plaza	Ocean	Yes
	106 S Sierra Ave	Ocean	Yes
	945 Lomas Santa Fe Dr	San Dieguito	Yes
	135 Highway 101 North	Ocean	Yes
	689 Lomas Santa Fe D	San Dieguito	Yes
	524 Stevens Avenue	San Dieguito	Yes
	731 S Hwy 101 #1-A	Ocean	Yes
	550 Via De La Valle	San Dieguito	Yes
	445 N Hwy 101	Ocean	Yes
	126 S Solana Hills Dr	San Dieguito	Yes
	437 Highway 101 South #117	Ocean	Yes
	141lomas Santa Fe	San Dieguito	Yes
	979 Lomas Santa Fe Drive	San Dieguito	Yes

Category	Address	303(D)	Discharges Pollutant Of Concern?
	124 Lomas Santa Fe Dr #102	San Dieguito	Yes
	124 Lomas Santa Fe Drive 105	San Dieguito	Yes
	691 Lomas Santa Fe	San Dieguito	Yes
	125 N Hwy 101	Ocean	Yes
	124 Lomas Santa Fe Drive 101	Ocean	Yes
	123 W Plaza St	Ocean	Yes
	689 Lomas Santa Fe #A	San Dieguito	Yes
	315 S Hwy 101 D	Ocean	Yes
	315 S Hwy 101 # G	Ocean	Yes
	221 N Hwy 101	Ocean	Yes
	691 Lomas Santa Fe Drive A	San Dieguito	Yes
	621 Valley Ave	San Dieguito	Yes
	665 San Rodolfo Drive 123	San Dieguito	Yes
	271 N Highway 101	Ocean	Yes
	143 S. Cedros # V	Ocean	Yes
	132 S Cedros Ave	Ocean	Yes
	524 Stevens Ave #1	Ocean	Yes
	437 S Hwy 101 #501	Ocean	Yes
	124 Lomas Santa Fe #209	Ocean	Yes
	911 Lomas Santa Fe	Ocean	Yes
Cement Mixing Or Cutting	659 Marsolan Ave *	Ocean	Yes
Mobil Carpet, Drape, Or Upholstery	214 S. Nardo *	Ocean	No
Landscaping	618 Sonrisa St *	San Dieguito	Yes
	339 Barbara Avenue *	Carlsbad	Yes
	906 Santa Florencia *	Carlsbad	Yes
	426 N. Cedros Ave	Ocean	No
	301 Santa Helena *	Carlsbad	Yes
	944 Santa Estella *	Carlsbad	Yes
Nurseries	355 N Hwy 101	Ocean	No
	330 S Cedros Ave	Ocean	No
	170 Nardo Avenue *	Ocean	Yes
Golf Courses	1500 Lomas Santa Fe Dr	San Dieguito	Yes
	1580 Sun Valley Road	Carlsbad	Yes

* Denotes “residence.”

The commercial property inventory was utilized to identify potential sources of pollution, prioritize the businesses and to develop an inspection frequency program, as noted in the City's JURMP.

4.2 Pollutant Source Identification

Eight percent (8%) of the City's 2,211 total drainage acres (roughly 177 acres) are zoned for commercial use. Some of the areas within the City zoned for commercial use drain to environmentally sensitive water bodies and 303(d) listed waters (impaired water bodies), as noted in the City's JURMP. Some of the 303(d) listed water bodies have been identified as having *constituents of concern (COC)* or pollutants that are of particular concern to those water bodies. Table 4-2 identifies the 303(d) water bodies and COCs that are impacted by drainage from the City of Solana Beach. There is *no change* to report in the City's source identification of pollution. As reported in last year's Annual Report, based on water quality data analysis of the past few years, Diazinon has been removed from the San Elijo Lagoon COC list.

Table 4-2

303(d) Water Bodies and COCs

303(d) Water Body	Constituent(s) of Concern
San Elijo Lagoon and Ecological Reserve	Coliform, sediment, nutrients
San Dieguito Lagoon (and its tributary, Stevens Creek)	Coliform, TDS
Pacific Ocean	Coliform

Using the inventory list, businesses were classified by types of activities conducted on the property in order to identify potential sources of pollution in accordance with Permit section F.3.c.(2). The Permit specified 25 possible high-priority businesses for each Copermittee. Upon review of the City's business license inventory, the high priority business categories applicable to the City of Solana Beach include automobile servicing and repair; automobile/vehicle washing; retail or wholesale fueling; pest control services; eating and drinking establishments; mobile carpet, drape, or upholstery cleaning; cement mixing or cutting; landscaping; nurseries; and golf courses.

Potential pollutants for each of the eleven (10) categories identified above include, but are not limited to the following.

- *Automobile servicing and repair facilities have the potential to generate pollutants such as heavy metals (Cu, Zn, Cr, Ni, Pb), oil, grease, engine and transmission fluids, antifreeze, brake fluids, suspended solids, phosphates, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust, sand and broken glass.*
- *Automobile/vehicle washing facilities have the potential to generate pollutants such as suspended solid(s), pH, oil, grease, phosphates, heavy metals, detergents, engine and transmission fluids, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust and sand.*
- *Retail or wholesale fueling facilities (gas stations) have the potential to generate pollutants such as detergents, oil, grease, engine fluids, suspended solids, phosphates, litter, organic debris, fluids and sediments.*
- *Pest control services have the potential to generate pollutants such as harmful chemicals, pesticides, fertilizers, herbicides, nitrogen salts, and phosphorus and in particular, the chemical "Diazinon."*
- *Eating and drinking establishments have the potential to generate pollutants that occur due to improper waste disposal of oil and grease, improper application of pesticides, litter along sidewalks and parking lots, and sediments from equipment cleaning.*
- *Mobile carpet, drape, or upholstery cleaning businesses have the potential to generate pollutants such as BOD, COD, suspended solids, organic matter, cleaning solutions, animal-related wastes, litter and organic debris along sidewalks and parking lots.*
- *Cement mixing or cutting facilities have the potential to generate pollutants such as suspended solids, oil and grease, heavy metals, hydrocarbons, solvents, and metals*
- *Landscaping and maintenance activities have the potential to generate pollutants such as sediments, oil, grease, organic matter, fertilizers, herbicides, pesticides, nitrogen salts, nitrogen and phosphorus.*
- *Nursery (greenhouse) facilities have the potential to generate pollutants such as sediments, fertilizers, herbicides, pesticides, suspended solids (roof coating), nitrogen salts, phosphorus, oil, grease and organic matter.*
- *Golf courses conduct activities that may produce pollutants associated with landscaping and maintenance activities including litter, BOD, COD, sediment, bacteria/viruses, oil/grease, heavy metals, manure, pesticides, fertilizers and detergents.*

4.2.1 2006 Dry Weather Monitoring Results

Results from the 2006 Dry Weather Monitoring Program (DWMP) were collected and analyzed by the City in October 2006 (but are already outdated at the time of

this report). The 2006 program utilized the criteria established by the Permit (and the Copermittee Monitoring subcommittee). The City reviewed the results from the 2006 Dry Weather Monitoring Program looking for the pollutants listed above, and in particular, COCs described in Table 4-1. The results indicated that the bacterial levels at Seascape Sur outfall (which drains to the Pacific Ocean) continued to exceed the action levels established in the Permit and the IC/ID investigation continued (see Chapter 13).

The City continues the non-point source investigation (See Chapter 13), and utilized the results to help design its 2007 dry-weather monitoring program. Although the results from the 2007 monitoring program will be presented to the City after the writing of this report, preliminary results did not indicate any exceeded levels of COCs that would cause great concern, except the bacteria levels at Seascape Sur, which is described in Chapter 13.

4.3 Threat to Water Quality Prioritization

The inventory of businesses for the City included identifying those that potentially posed a high threat to water quality as set forth in the Permit section F. 3.c.(2). As noted above, the City also categorized its businesses by the potential to generate the pollutants described. A detailed inventory of the high priority commercial businesses was provided in the JURMP, Table 4-1.

As shown on Table 4-3, the City has identified 88 commercial sites as high priority. *There are no changes to report in the prioritization of types of commercial businesses within the City, from the JURMP Annual Report submitted in January* 2007*.* Site inspections at all locations listed in Table 4-1 revealed no changes in the City's inventory.

However, it is important to note, many commercial businesses change very frequently, especially restaurant facilities. Of the facilities inspected during this reporting period, there are no changes to report. The City will make inventory adjustments as inspections reveal changes are necessary. This is an ongoing procedure that will continue into further reporting periods. So, although the inventory was accurate at the time of writing this report, it may be different next time inspections are conducted.

Table 4-3

High Priority Commercial Facilities by Type of Business

Type of Business	Number
Automobile servicing and repair	8
Automobile/vehicle washing	2
Cement mixing or cutting	2
Eating and drinking establishments	60
Golf courses	2
Landscaping	8
Mobile carpet, drape, or upholstery cleaning	1
Nurseries	3
Retail or wholesale fueling	2
Total	**88**

4.3.1 Business Community Education Campaign

City staff has implemented an aggressive education campaign for the business community. As stated in previous annual reports, education is conducted during the annual storm water inspections. The City, along with the North County Storm Water Program (the cities of Carlsbad, Encinitas, Escondido, Oceanside, Solana Beach, San Marcos, and Vista) developed two commercial BMP posters. The first is aimed toward automobile repair shops and the second toward restaurants. These posters are distributed by City staff during inspections. The business owners are required to place the posters in a noticeable location for all employees to see. On subsequent follow-up inspections, City staff checks to see if they comply.

Additional educational/training tools developed to be distributed to the local businesses are the “Green Wrench Guide” and the “What’s Cookin’ Guide” developed by the Regional Outreach Workgroup. These guides are also distributed during site inspections as an extra training tool to help these businesses come into compliance. These guides have a couple pages in the back for employee to sign after they read the material to show educational compliance.

The City believes that distributing these educational tools directly to the businesses during inspections will have the greatest impact. Not only will we have their undivided attention, but we can also guarantee delivery and track who

has received the informational guides. Therefore, when it comes to compliance issues, we can easily determine who has and has not been informed of the regulations. These education tools will be discussed further in the Educational Component of this Annual Report.

By the time this inspection program was fully implemented, Code Enforcement Officers found that a majority of business owners were "aware" or had some "basic knowledge" of storm water requirements. City staff believes this is due in large part to the education campaign aimed at business owners. Although the jurisdictional business workshops have been postponed temporarily due to lack of attendance, the City understands the importance of these activities. Therefore, if the demand increases in the business community or if modifications of the Permit regulations or City regulations occur, the City is committed to resuming the business workshops.

4.4 Pollution Prevention Methods

4.4.1 Proactive Approach to Pollution Prevention / Commercial Property

Because of the City's proximity to the Pacific Ocean, the City has been proactive in its approach to reducing urban runoff, not only during this reporting period, but prior to the implementation of this Permit as well. For example, prior to the implementation of the JURMP, the City had several pollution prevention methods (PPMs) in place for commercial properties, which continues during this reporting period and included, but were not limited to:

- Prohibition of all non-storm water discharges to the City's storm water conveyance system (SBMC 13.10.060).
- Measures to reduce pollutants to the maximum extent practicable (MEP) were required of business owners (SBMC §13.10.090).
- Persons owning or operating a parking lot (or impervious surface) were *required* to "clean those structure thoroughly as is necessary to prevent the discharge of pollutants to the City of Solana Beach storm water conveyance system to the maximum extent practicable, but not less than once prior to each wet season" (SBMC 13.10.090).
- The City maintained by municipal code the authority to inspect business properties for compliance with the provisions of Solana Beach Municipal Code, Chapter 13 (SBMC 13.10.110).
- Required maintenance of commercial property (trash cans covered, litter removal, etc.) and appropriate waste disposal.

- Routine articles in the citywide community newsletter, *Shorelines* to educate the community about pollution prevention (see Chapter 9).

4.4.2 New Pollution Prevention Methods

In the City's JURMP, the above pollution prevention methods were expanded for commercial facilities, depending on the type of activities conducted at each business. Numerous activity-specific BMPs were also developed for each business type identified. Complete tables describing the BMPs in detail were included and presented in the City's JURMP, which was submitted to the RWQCB on February 21, 2002. *There are **no changes** to report with respect to BMPs designated for existing commercial properties.*

A) Common Commercial Property BMPs

Many of the BMPs provided to commercial property owners/managers were activity-specific to the type of business conducted on-site. However, there are several BMPs common to all commercial properties, which are described below.

- *Employee Training*: The training of employees on proper business practices to prevent or reduce urban runoff is listed as a BMP for all businesses. Knowledge of pollution prevention methods requires instruction from one person to another, particularly as the requirements are new to many employees and given that employees handle the majority of tasks at a commercial business, staff has explained to proprietors the importance of adequate employee training.

- *Good housekeeping* pollution prevention BMPs are required of most commercial facilities. Good housekeeping includes the proper disposal of waste materials and proper coverage over waste dispensers, dry sweep outdoor areas, keeping the facility in generally good repair and maintained in good operating condition to prevent deterioration of materials.

- A *Spill Response Plan* (SRP) is required of most commercial facilities as noted in the JURMP. An effective SRP should prevent on-site hazardous materials from leaving the private commercial property and entering the City's storm drain conveyance system. Commercial property proprietors are being educated about an SRP and are now required during inspections by City staff.

- *Minimize Use of Water for Washing / Cleaning:* The BMPs associated with a reduction in the use of water for washing and cleaning is suggested for most commercial facilities operating within the City. It has been common practice for many years to use power-washing methods to clean the outside of buildings, windows, and out-door eating areas at restaurants. In addition, it has been common practice by commercial property owners (and their contractors) to hose-down the sidewalks in front of their businesses to collect trash, debris, and landscaping remnants. These types of cleaning procedures use a lot of water and it is likely that the water will run off of the property and into the City streets or storm drain system, bringing with the water a significant amount of pollutants. For that reason, commercial property owners are requested to find new methods of cleaning, reduce the amount of water used, and prevent the runoff from leaving their property.

- Various other activity-specific BMPs are required or suggested to commercial property owners and are listed in the City's JURMP.

B) Other Pollution Prevention Methods Affecting Commercial Properties

Municipal Code and General Plan Amendments

There were *no changes* to the Municipal Code or General Plan Amendments during this reporting period.

Brochures

The City worked collaboratively with other North County cities (see Chapter 9, Education Component) to jointly develop brochures in order to provide a consistent message to the community, and in particular, commercial property owners/managers. The brochures were utilized by City staff to inform and educate the community, including commercial businesses. Public works crews, Code Enforcement Officers, Planning and Engineering staff passed out brochures when an educational opportunity presented itself. Staff also visited many businesses and distributed the brochure, "*Only Rain in the Drain"* and spoke to business owners about the need for pollution prevention.

4.4.3 Ensuring Implementation through Commercial Property Inspections

One effective pollution prevention method is to ensure that commercial property owners are implementing the required BMPs (as stated in the JURMP) by

inspecting facilities for compliance. To ensure that the BMPs are implemented, the City developed a two-tiered inspection program in 2004. The two-tiered method is different than proposed in the City's JURMP. The two-tiered method included two inspections (Advisory and Compliance) and was meant to provide another means of educating the high-priority businesses and developing a cooperative working relationship. As previously described in this report, (Section 4.3.1 *"Business Community Education Campaign")*, City staff utilized various methods to educate the business community about new and existing storm water pollution prevention requirements. Most importantly, *all* businesses identified in the JURMP have been notified in writing of the required BMPs according to the type of business conducted at their property site.

Prior to Inspection

Code Enforcement Officers developed a schedule to inspect all high priority businesses by the end of 2002 (medium and low priority by the end of 2003) and verified the businesses listed in the City's JURMP. As previously reported in last year's Annual Report, several of the businesses that were initially listed as high-priority were actually residential addresses. City staff verified that those businesses with a residential address were not conducting the activities associated with that business on-site (most of these were landscaping businesses that listed the owner's home address). In an effort to educate everyone, City staff mailed the appropriate BMP to each address, whether or not the address was in a residential neighborhood.

Advisory Inspections

To measure the business owners' knowledge, in 2002, staff utilized a survey during the Advisory Inspections. The survey was also used as a tool to educate the business owner and/or store manager about what would be expected during a Compliance Inspection. Further, staff used the survey to verify that the business had received the BMP letter; any brochures or visits from other staff and determine how well the community education campaign was working. Staff also informed the business owners/managers about the workshops in which they could learn more about the storm water regulations. City staff also distributed the BMP posters and educational/training guides discussed previously in *Section 4.3.1, Business Community Education Campaign.*

1. By the end of December 2005, staff visited almost all (about 95%) of the high-priority facilities operating within the City. There were a couple of sites that did not respond to a request for inspection or that were closed at

time of inspection. City staff visited every site, but a couple places were either closed or could not meet at time of inspection.

2. By the end of June *2007*, staff visited *all high priority facilities* operating within the City. The inspection focus during *06/07* was to ensure complete compliance of those types of businesses that have a high potential to discharge pollutants of concern within the City. These businesses include automotive repair shops, gas stations, heavy equipment rental shops and golf courses located adjacent to environmentally sensitive areas.

Compliance Inspections

A second inspection was used to determine if the facility is "in compliance" with the storm water regulations, hence, it is called a Compliance Inspection. Staff would schedule a "Date for Compliance" at all sites that required a follow up compliance inspection at the time of the advisory inspection. City staff would then conduct the compliance inspection unannounced after the "Date for Compliance" to ensure that the corrections were being carried out at all times, not just on the date it is required.

All inspections during this reporting period were "Compliance Inspections" because staff determined that the high priority businesses have had adequate time to bring their facilities into compliance since the beginning of this Permit cycle. All high priority sites in the City have remained constant for at least the last three (3) years, so Advisory Inspections are not warranted. If Staff determined that a new commercial facility has opened in the City, then an Advisory Inspection would be conducted initially. However, all current high priority facilities in the City have remained constant for the last few years (restaurants excluded).

Inspection Procedures

The City has made some minor modifications to its procedures for conducting inspections, from what was reported in the City's JURMP. The procedures, including modifications are briefly described below.

Pre-Inspection: The City had planned to conduct the inspections unannounced so as to properly observe the BMP implementation and effectiveness (City JURMP, Section 4.4). Although most of the advisory inspections were unannounced, City staff was not able to spend adequate time with business owners/managers during the unannounced visit. Therefore, staff now schedules the inspections in advance. City staff has developed a standard form letter notifying the business of the upcoming inspection and giving them an option of

setting up an appointment time. This gives the owner the ability to set aside some time to discuss their practices and show the Environmental Specialist around. However, City staff still inspects sites unannounced on occasion to ensure that the proper BMPs are being implemented (especially for high priority facilities). Additionally, if the City receives a call regarding a possible storm water violation, Code Enforcement Officers and/or the Environmental Specialist immediately respond and inspect the facility.

Documentation: The City developed an Inspection form that addressed several issues identified during the Advisory Inspections. First, business owners/managers wanted a copy of the Inspection form. Secondly, the form needed to be comprehensive, but not burdensome. And finally, the form needed to be tailored to commercial property, with a small space for the City's Industrial Sites. The form that the City developed was modeled after the forms used by the City of San Diego and the City of Vista. The form has been reproduced in duplicate so that the business owners receive a copy immediately after the inspection to keep on-site at the facility.

A significant addition to the inspection program occurred during this reporting period. The City further modified its inspection form, along with the other North County Cities, to include two assessment questions. This was done so that the cities in North County could get a better grasp of the knowledge of the particular business community. Up until this point, there was no way of assessing the inspection program, as inspections would only take into account what was seen at that particular time. With the addition of these questions, the North County Cities could now better understand the general knowledge of the business community to assess whether the overall program is successful.

Non-Compliance Citations: Subsequent to the City's submission of its JURMP, the City adopted an administrative fine procedure, which includes storm water violations. Storm water violators may now be fined up to $1,000 by the City for a significant failure to comply with the regulations, and/or for repeated warnings. *Four fines were issued* for storm water violations during this reporting period. The City had moved from the advisory/educational inspection mode of inspection into the compliance inspection mode during this reporting period. The City prefers voluntary compliance but will not hesitate to levy a fine if a site continues to be non-compliant.

The City has discovered that most violations are caused by mobile businesses such as mobile detailers, concrete pumpers, pressure washers, etc., that come

into town for a quick job and then immediately leave. These mobile businesses appear to cause most of the violations within the City, maybe because they don't think they will get caught or in rare cases, have no knowledge of the regulations. The majority of permanent Solana Beach business owners are very sympathetic to storm water issues and are more than willing to do what it takes to comply with the Permit. This is a very progressive and proactive environmentally conscious community and the businesses reflect that in the way they conduct business.

Post-inspection Processing: Information obtained during inspections was used to update the inventory database (see report section 4.1). It was not necessary to make any referrals or to report any non-compliant sites to the RWQCB.

4.5 Enforcement

To ensure the City Code Enforcement Officers have sufficient legal authority to enforce the new storm water regulations required by the Permit, the Solana Beach City Council revised its Municipal Code Chapter 13, Storm Water Management.

In addition, to facilitate more effective and timely remedies to enforce the Municipal Code, an administrative fine process was adopted by the City Council on June 18, 2002. The administrative fine process allows Code Enforcement Officers to issue administrative citations and penalties in between $100 and $1,000 for each day the offense / violation occurs.

However**,** the Administrative fine process makes provisions for Code Compliance to issue citations for violations of the City's ***storm water*** ordinance, in the amount of **$1,000.**

Table 4-4

Administrative Fine Assessments

Violation[1]	**Amount**
First violation	$100
Second violation within one year of first [2]	$200
Third violation within one year of first [2]	$500-1,000

[1] *Each day a violation exists.*

[2] *The second and third violation must be of the same ordinance, term or condition and occur within one year of the first violation.*

However, as described in last year's Annual Report, City staff found itself limited by this method of enforcement and developed a new Civil Penalty Matrix (Matrix) that is much more detailed than the previous method (Appendix D). City staff encountered different scenarios in the field that were not addressed in the previous method. The Matrix was patterned after the City of San Diego's Penalty Matrix with a few modifications that were necessary for the City of Solana Beach.

The Matrix proved very successful when it was utilized in the field because it gave City staff a reliable, unbiased approach to resolving violations onsite. Staff did not have to return to the office to consult with each other or their superiors before issuing the proper citation because the Matrix showed them action to take. It proved very difficult in the past to try and track down the violator after the fact to issue the citation. With the Matrix, Staff could issue the citation onsite and have the responsible party sign it to ensure they would pay. This is a much more efficient process than what was in place previously, and the Matrix will continue to be used in the years to come.

4.5.1 Citations

City staff tracks reports of violations of the Municipal Code on a daily basis. In FY 06/07, Code Enforcement Officers issued 15 written NOVs and 13 verbal warnings regarding violations of the City's storm water ordinance. In addition, four (4) violations required a citation for illegally discharging activities. It should be noted that no citations were given to permanent commercial facilities in the City, but to commercial activities taking place such as construction activities and illegal discharges from contractors and residents to the City's storm drain conveyance system. The following table describes the type of violation and the action taken by the City:

Table 4-5
Violations Requiring Citations

Responsible Party	Date	Violation	Amount
Kathie Eileen	11/14/06	Illegal discharge allowed to enter San Elijo Lagoon	$500
Del Mar Beach Club	4/26/07	Illegal discharge due to construction activities.	$500
Genaro Antonio Pacheco	5/3/07	Illegal discharge to storm water conveyance system	$100
Daniel Allen Welsh	5/9/07	Illegal discharge of red paint into storm water conveyance system	$200

4.5.2 Multifaceted Approach

The City recognizes that it was able to implement the aforementioned multifaceted approach to educate commercial property owners and conduct two inspections primarily because of the relatively few numbers of high-priority business facilities operating within the City. The City is aware that many other cities have not been able to implement such an aggressive education and enforcement campaign, but the City wishes to acknowledge the other Copermittees for their assistance in developing the program.

4.6 2005/2006 JURMP Comments from RWQCB

The 2005/2006 JURMP comment letter consisted of three comments for the Commercial component. They will be answered for both 05/06 and 06/07 under the same comment heading. They are as follows:

Comment 1 (Commercial):

The first comment requests the number of commercial facilities that received compliance inspections during the 05/06 reporting period. There seems to be a little confusion with how the City reports commercial NOVs. The 37 NOVs issued to commercial companies are for IC/ID violations, and none of them resulted from City permanent commercial facilities. The majority of these NOVs were for mobile businesses, such as mobile detailers, concrete pumpers, minor construction violations (drywallers, tile cutters, etc.) and power washing activities. *No NOVs were issued as a result of commercial facility inspections*. There were minor infractions such as loose trash on the ground and open trash dumpsters, but nothing that warranted a NOV on the spot.

The number of commercial inspections that occurred FY 05/06 was eleven. These included the higher priority sites such as gas stations, automotive repair facilities, golf courses, equipment rental yards and construction yards. The City inspected *all* of these facilities in its inventory. The City inspected these same eleven facilities during the FY 06/07 reporting period. The City decided to focus the inspections on higher priority facilities that have the most potential for discharging pollutants into the MS4. All of these facilities conduct activities that have a high potential for discharging pollutants, and most of them conduct business outside. *No NOVs were issued as a result of commercial facility inspections during the FY 06/07 reporting period.*

The majority of facilities that make up the City's inventory are restaurants, but the City has determined through restaurant inspections in the past that they do not

present a high probability of discharging pollutants into the MS4. Most of the restaurants in Solana Beach are self-contained, with very little outside activities. The highest probability locations for pollutant loading are the trash enclosures, which are routinely monitored by City staff drive-bys. If a particular location is identified as a frequent violator of trash enclosure BMPs (open lids, loose trash on the ground, evidence of spills, etc), then they will be inspected immediately and added to the inspection list.

Comment 2 (Commercial)

The second comment under the Commercial component pertains to the incorporation of the City's Grease Trap Ordinance into compliance inspections. Although not a requirement of the Permit, the City has actively enforced the ordinance on new as well as existing restaurants. The City has also developed a Grease Trap/Interceptor Waiver for the smaller eating and drinking establishments if the City determines they are exempt from this requirement. The goal of the ordinance was to require some older, heavy grease disposing restaurants to install a device to prevent grease build-up in sewer lines that may lead to sewer spills.

The City employed a very aggressive but cooperative strategy to gain compliance from the restaurant community. City staff visited every eating establishment in the City and informed them of the new regulations. A waiver was developed for those smaller establishments that would not expect to discharge significant amounts of grease, oils or fats to the sewer system, but still tied them to future improvements if those elements are found in the line at a future date. The City decided that it would focus its resources on those larger restaurants that are known to contribute heavy amounts of grease to the City's sewer system. City staff visited the larger restaurants (Fidel's, Don Chuy's, Tony Jacal's and the Fish Market) and walked them through the entire permitting process with the City and the County. The City is proud to announce that all those restaurants have active grease interceptors installed and functioning.

The City has not conducted storm water inspections at restaurants the last two reporting periods. As stated above, restaurants have not been identified as a high pollutant source in Solana Beach. All restaurants were inspected by the end of the second year of this Permit cycle as required by the Permit and stated in the City's JURMP. After that, they were to be inspected as needed. However, our Public Works Crew has confirmed that there is a significant decrease in the amount of grease found in the sewer lines downstream from these restaurants,

which was observed during annual sewer cleaning. So, it appears this program is working. Additionally, the City expects to ramp back up the restaurant inspections with the implementation of the new Permit. Restaurants will once again become a priority and will be inspected.

Comment 3 (Commercial)

The third comment regarding the Commercial component states that the City did not provide a complete account of commercial enforcement and follow-up actions. The City contains an extensive database of all complaints and violations that includes all follow-up activities. The list is pretty extensive but is available upon request. The following table is an excerpt/sample from the database but gives a good reference as to what the table consists of. All subsequent Annual Reports will include these tables for a quick summary of the reporting period's enforcement actions.

Table 4-6
Sample from Complaint/Contact Spreadsheet

Violation	Date	Responsible Party	Enforcement	Follow-Up Action
Washing down driveway with a hose and broom into street. No containment.	8/19/2006	663 Circle Dr. (Shedley Masonry and Concrete	Written NOV	Frank stopped the violation and educated the RPs. Homeowners came out to discuss as well and were concerned. Violation stopped, written NOV sent to RPs company
Run off from car washing into storm water system	10/2/06	825 Santa Regina	Written NOV	Written NOV sent to RP
Dan noticed a paint-like substance flowing down street and	10/20/2006	Las Brisas Condos	Written NOV	Dan made contact with RP and notified him of violation. The employee of

into Fletcher Cove parking lot. He traced it back to Las Brisas Condos where a company was performing maintenance on tennis courts.				Ferandell Tennis Courts Inc knew of the regulations, and he dumped two buckets into landscaping. However, he was unaware that there was an area drain in landscaped area and the paint discharged to the street. He cleaned up discharge. Written NOV sent.
Power washing the driveway and allowing the runoff to enter the San Elijo Lagoon. There was no containment attempt at all.	11/14/2006	368 Holmwood Lane	$500 citation	I investigated immediately and made contact with the RP. I confirmed that there were no BMPs in place and no attempt was made to contain the washwater. A toxic substance was allowed to enter a drain and empty into a canyon in the lagoon. I stopped work immediately and we got Code Enforcement onsite. The RP was a day laborer and there was no company or licensed contractor on-site. We tried unsuccessfully to

				contact the homeowner. OES was contacted about the toxic spill in lagoon. It did not reach RW, and OES notified the necessary agencies. The homeowner was finally contacted, a meeting will be held tomorrow afternoon with all agencies involved. A fine will be issued and cleanup and abatement order. $500 fine issued.
Asphalt cutting for sewer line	2/1/07	505 Glenmont Dr.	Written NOV	Violation cleaned up and verbal warning issued
Employees washing parking lot with no containment	3/28/2007	Parioli Restaurant	Written NOV	I investigated the complaint and detected the recently washed parking lot. I spoke to the owner who admitted to his employees washing water. I explained the regulations and he promised to comply. A written NOV was sent
Employee washing down sidewalk in	3/28/2007	240 South Cedros (Leaping Lotus)	Written NOV	Frank stopped the violation and educated the violator. Written

front of business				NOV sent
Frank witnessed an employee washing down sidewalk in front of business	3/28/2007	107 South Cedros (Carizma)	Written NOV	Frank stopped the violation and educated the violator. Written NOV sent
Water discharge at the DMBC due to some construction activities.	4/26/2007	Del Mar Beach Club	$500 citation	I investigated and noticed the discharge. RP was no longer onsite. I surveyed the area and there was a red discharge onto Highway 101 from RP construction activities. I contacted the property management and set up a meeting with RP. RP did not show up. Investigation followed with contractor and Board of Directors. Discharge was cleaned on 4/28/07. RP issued $500 citation.
Employee washing down outside entry and not recovering	5/3/2007	530 Lomas Santa Fe	Verbal Warning	I investigated and made contact with the RP. He stated he was not aware of the regulations

water.				and would comply in future. Verbal Warning issued.
Red paint water was discharged into street.	5/9/07	834 S. Highway 101	$200 citation	$200 citation was issued.
Washing down the street in front of 208 Barbara Ave with a hose, not containing the wash water.	6/22/2007	208 Barbara Ave	Verbal Warning	I stopped to investigate and spoke with property owner. Apparently there was a large stain in front of residence that he wanted to get rid of and he stated he was not aware of storm water regulations. I educated him and he instructed his contractors to stop washing the street. The wash water did not go far and was directed to a dirt area just west of residence. No water reached storm drain and his contractors will clean up mess. Verbal Warning issued.

Table 4-7
Breakdown of Enforcement Actions Taken

Type	Number
Written NOVs	15
Verbal warnings	13
Citations	4
Total contacts	47

4.7 New Activities and Improvements for FY 07/08

The City believes that the inspection activities for commercial sites are working very well, with all the kinks worked out within the last couple of years. There most likely will not be any new activities regarding the inspection process, although the City is committed to re-inventory every year because businesses do leave and change frequently. The City will continue to actively enforce the storm water regulations with all commercial facilities, with the goal of inspecting every high priority commercial facility annually (excluding restaurants).

The City will look to improve educational materials for commercial facilities. The City is committed to working with the other North County Cities (as well as the Regional Outreach Workgroup) to collectively put together educational materials with a consistent message. Additionally, the City will work with the respective Watershed Groups to alter inspection forms or processes if a consensus is met within the group. One new addition that was agreed upon by the Carlsbad Watershed Group was the inclusion of two assessment questions at the end of the inspection to gauge the knowledge and/or behaviors of the facility owner/manager. This was included to gain a better understanding of the level of knowledge of the responsible employees and see if their behavior changes over time. Hopefully, this will give the Copermittees a better assessment tool to analyze program strengths and weaknesses.

4.8 Summary

The City has successfully identified commercial facilities that pose a threat to water quality, devised a two-tiered inspection method to focus on education of the business owners first and has inspected all high priority businesses at least once (over the life of the Permit). The City has also developed an effective enforcement process and notified all high-priority businesses of required BMPs. For the most part, the businesses in this community have willingly adapted their

practices to meet the storm water regulations of the Permit.

The City's proactive approach of patrolling the City daily and stopping at sites where work is being conducted to discuss potential violations before there are discharges has greatly reduced the amount of NOVs and citations issued. The City has discovered that it is much more efficient and worthwhile to put forth the effort to stop a potential violation before it occurs rather than wait and deal with the consequences. So far, this proactive approach has been very successful, as most contractors appreciate City staff working with them, instead of the normal practice of regulating them.

CHAPTER 5
Residential Component

CHAPTER 5: RESIDENTIAL COMPONENT (EXISTING DEVELOPMENT)

In accordance with Permit Section F.3.d, this section of the report describes the City's efforts to prevent or reduce pollutants in runoff from existing residential development. There are *no changes* to this Component in the City's JURMP.

In each Annual Report to the RWQCB, this section will include any proposed modifications to the City's JURMP (Section 5.0, Residential Component) including prioritization of residential areas and pollutant source identification. Results from the City's efforts to implement BMPs will also be included. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The City conducted numerous community education discussions, distributed flyers and door-hangers and published articles in the City newsletter. The City also operated a 24-hour hotline for the community to be able to report any suspected violations or contact City staff. In addition, the City conducted its Household Hazardous Waste (HHW) collection and recycling program, which includes door-to-door services.

5.1 Pollution Prevention Methods

Polluted urban runoff in residential areas stem from activities associated with the following: automobile use, maintenance, cleaning, and repair; home and garden care; outdoor pets; outdoor washing activities; landscaping and home maintenance. The pollutants that can be generated by these activities (bacteria, detergents, heavy metals, grease, oil, herbicides and pesticides) are important to prevent from entering the City's MS4 to the best extent practical

The City continued several pollution prevention methods that reduce, prevent or mitigate the harmful pollutants in urban residential runoff. The City continued its HHW collection program, operated a 24-hour hotline for reporting violations and passed out flyers and brochures.

5.1.1 Hazardous Waste Collection and Recycling

Under the 1989 California Integrated Waste Management Act (AB939), cities are required to provide Household Hazardous Waste (HHW) collection programs to residents in order to limit the volume of HHW (paint, household cleaners, pesticides, car batteries, automobile waste) that might otherwise find their way

into a landfill, or worse, illegally dumped. For San Diego County, the HHW program had been funded by a tipping fee until 1997, when the County of San Diego sold the landfill system to private companies.

During the FY 06/07, the City of Solana Beach continued its partnership and the reciprocal use agreements with the cities of Vista, Poway and Escondido to provide permanent HHW drop-off service to City residents at a cost of $55 per vehicle. To encourage participation, the cost is picked up by the City of Solana Beach which was utilized by 118 participants this reporting period. Additionally, the City operates a door-to-door program where, for a small co-payment of $10 per visit, a service will come directly to the resident's house to pick up the Household Hazardous Waste so that residents do not have to drive to Poway, Vista or Escondido. The door-to-door home pickup program was utilized by 261 participants this year and the permanent facility was used by 118 participants for a total of 379. The City also has a program for senior citizens and homebound residents where the door-to-door service is provided free of charge, with the City paying for the service. These programs are offered to encourage the proper disposal of hazardous wastes to prevent it from entering and polluting our sensitive waterways. The program also includes the disposal of e-wastes, including TVs, computers, VCRs, etc.

The City keeps records of how many people utilized the program throughout the FY06/07. Records indicate that 379 participants utilized this program in FY06/07. In addition, a questionnaire is provided to the participants at the time of disposal to acquire useful information such as how they heard of the program and what types of wastes were disposed. Many respondents listed local programs such as the City's newsletter "*Shorelines*" and educational brochures as the source of their knowledge of this program. Other sources include the two local trash haulers (EDCO and Coast Waste), Solana Center for Environmental Innovation, searching the internet, and basic word of mouth. Obviously, this bodes well for the educational work of City staff and is a good indication that the City's educational program is effective at getting the word out to the community about environmental concerns, water quality, and opportunities to participate as the program continues to grow. Additionally, it shows the beneficial cooperation efforts between the City and its contractors. .

The City is a member of the Regional Solid Waste Association (RSWA). As a member, the City participates in a multi-city agreement with EDCO Waste and Recycling Services, Inc. (EDCO). As reported earlier, the agreement resulted in a very successful program for elderly and homebound City residents to dispose of HHW at their door, *at no charge to the residents*.

This agreement is necessary because the City of Solana Beach does not have the capacity to operate its own HHW facility within its jurisdictional boundaries. Without this RSWA agreement, the residents would have very limited options in dealing with the proper disposal of HHW. This would ultimately lead to the improper disposal of HHW, which would threaten the local waterways and sensitive environment. However, due to the foresight of the City government, the formation and participation in groups such as RSWA lead to increased opportunities for the community to protect the local environment. It also allows the City to subsidize the costs of disposal to assist the residents in properly disposing their HHW.

Recycling

As noted in the Introduction of this report, the City is a proactive agency working to improve the environment along with its partner in this effort, Solana Center (formerly known as Solana Recyclers). The City was the first city in the county to initiate a curbside recycling program.

Another component of AB939 requires cities to divert at least 50% of their total solid waste away from landfills, and the best way to accomplish this is through recycling. The percentage of waste that the residents of Solana Beach recycled in 2005 (the latest known total as of this reporting period) is 56%. This shows that the City's programs are working and the awareness of the residents is very high, as many of the cities in the region failed to reach 50%. The process of writing the 2006 AB939 report is underway, but not completed before this report was submitted. These numbers will be included in next year's report.

One significant modification to the City's solid waste and recycling collection occurred during this reporting period. As stated in last year's Annual Report, the City was participating in a pilot study to determine the feasibility of transitioning from manual trash and recycling collection to automated collection. Studies have shown that automated collection drastically improves recycling rates by providing more efficient "single stream commingled recycling." The large-scale transition resulted in a 22% increase in residential recycling, which is a huge success.

In addition, the residents received new trash and recycling containers that are more durable and have lids attached. This has drastically cut down on the amount of loose trash that frequently escaped the old resident supplied containers that were much lighter and easier to tip over, and frequently had no lids. This allowed for the animals and birds to get into the cans and spread trash around the neighborhoods, which can enter the City's MS4 system.

5.1.2 Annual Clean-up Day

Each October, the City hosts an Annual Clean-up day. The City's waste hauler provides roll-off containers for the collection of large appliances, yard waste, and scrap metal. Residents only need to bring their trash to La Colonia Community Center to drop off anything that they have, to save them a trip to the landfill, and it's *free of charge*. Additionally, Solana Beach residents who call the City's trash hauler can set up an appointment for *free curbside pick-up* and disposal of up to three bulky items up to three weeks prior to the event. It is well documented that the easier and more efficient it is for people to recycle or dispose of large items the more often they will do it. By offering this convenient, local and free of charge event, the less likely residents will dispose of their large items illegally, and keeping them out of our local waterways.

Each September, the City of Solana Beach participates in the annual Beach Clean-Up Day sponsored by the California Coastal Commission and I Love A Clean San Diego. The City hosted two sites again this year, one at Fletcher Cove and one in the San Elijo Lagoon, where residents came and spent the morning beautifying the local community. This event was another huge success with a combined 118 volunteers collecting 245 pounds of trash, and 80 pounds of recyclables.

5.1.3 24-hour Hotline

To assist residents in obtaining information, reporting suspected storm water violations or to report illegal dumping, the City operates a 24-hour "storm water hotline" during this reporting period. The hotline (858-720-4424) is available 24 hours a day, seven days a week, 365 days a year. The hotline is linked directly to the voice mail of the City's Environmental Specialist to increase efficiency and ensure prompt responses. This way, calls can be immediately fielded and handled in the appropriate manner.

5.1.4 Community Workshops

As previously discussed in last year's Annual Report, the City initiated monthly workshops in March of 2002 to educate the local community about the requirements of the Permit and the various storm water programs managed by the City. Workshops were scheduled and advertised in the North County Times, at City Council meetings, and flyers were distributed around town, including the local library. Unfortunately, only a handful of people attended the first few workshops.

City staff tried various methods to generate interest, including mailing flyers to "high priority" residential areas and hand delivering flyers to affected businesses, however few people attended. The City last hosted a community workshop in April 2003, and not one resident attended. It was decided at this time to suspend the community workshops and concentrate our efforts on outreach that has proven successful, such as; education during compliance inspections, education during daily driving rounds throughout the City and mailers with specific BMPs to specialized businesses.

During previous reporting periods, city staff met with local HOA groups to talk with them regarding storm water issues to bring back to their respective members. Staff developed additional handouts that some HOA's incorporated into their newsletters that are distributed to all members. Also, City staff wrote an article regarding the proper handling and disposal of grease in a local HOA newsletter that also included an article on picking up after pets. This particular HOA has had problems in the past and it is located directly adjacent to the Seascape storm drain outfall, a historically bad pipe with very high levels of bacteria. The City has worked closely with this particular HOA and property management staff to educate the residents to prevent bacteria from entering the City's storm drain system. More will be discussed about this relationship in the IC/ID Investigation chapter. These types of activities prove to be much a more effective and efficient use of Staff's limited time as opposed to holding poorly attended community workshops.

5.1.5 Pet Waste Bag Dispensers

The City installed and maintains Pet Waste Bag Dispensers to reduce the potential of pollution stemming from residents (and visitors) not collecting waste from their pets while walking. This was a measure added to hopefully help the high levels of fecal coliform detected at the Seascape Outfall revealed during wet and dry weather monitoring. The City has posted dispensers and signs to encourage their use. The program appears to be working very well because, during this reporting period, approximately 67,500 waste bags (up from 37,800 last year, 30,000 the year before that and 26,400 the first year this was documented) were utilized by the community.

5.1.7 Education and Outreach

The City's entire education and outreach program is provided in Chapter 9 of this report. Activities associated with the educating of residents are addressed in this

section, which may also be repeated in Chapter 9.

Shorelines articles:

The *Shorelines* is the City's Newsletter and Recreation Guide for community information. The newsletter is now distributed four times a year (Spring, Summer, Fall and Winter) to each resident and business within the City (up from twice annually in the past). It is one of the best methods to get information to the public about a variety of issues.

In the Summer 2006 issue (Appendix F), the City published articles relating to environmental education. These articles included:

- "New Local Recycling Options for Alkaline Batteries and Electronic Waste" This article discussed HHW and e-waste disposal options for local residents which now includes alkaline batteries.

- "San Elijo Reserve Receives National Wildlife Federation Certification"

- City of Solana Beach Department of Parks and Recreation Summer Camp Program Schedule, including "Fantastic Rain Forest" and "Ecology and Lagoon Exploration."

o In the *Shorelines* for Fall 2006 (Appendix F), the City published a variety of articles relating to environmental education and storm water activities. These articles included:

    - "Clean Oceans and Waterways or Clean Cars?"

    - "Solana Center FREE Watershed Presentations"

    - "Solana Beach Annual Bulky Item Clean-Up Day"

    - "Annual Coastal Clean-Up Day 2006"

    - "Beach Blanket Movie Night"

- In the *Shorelines* for Winter 2006 (Appendix E), the City published a variety of issues relating to environmental education and storm water activities. These articles included:

- ”San Elijo Lagoon Conservancy, 20 Years of Watershed Moments”
- “New Wastewater Pipeline Across Lagoon”
- “Solana Beach Welcomes: Automated Trash and Recycling”
- “Holiday Tree Recycling/Collection Program”
- “San Dieguito River Park”

- In the *Shorelines* for Spring 2007 (Appendix G), the City published a variety of issues relating to environmental education and storm water activities. These articles included:
    - ”San Elijo Lagoon Conservancy, 20 Years of Watershed Moments”
- In the *Shorelines* for Summer 2007 (Appendix H), the City published a variety of issues relating to environmental education and storm water activities. These articles included:
    - “The City of Solana Beach Water Quality Program”
    - “Sewer Forcemain Replacement Project”
    - “City Streets Make A Clean Sweep”
    - “Residential Automated Trash and Recycling Program Update”
    - “San Elijo Lagoon Lecture Series”
    - “City of Solana Beach Department of Parks and Recreation Summer Day Camps”
        - Oceans Week
        - Ecology and Our Environment
        - Rainforest Exploration

Brochures and Door hangers

In 2002/2003, the City collaborated with neighboring Copermittees (the cities of Del Mar, Encinitas, Oceanside, Vista, San Marcos, Escondido and Carlsbad) to develop several educational brochures. One particular brochure is referred to as the "door-hanger." The door-hanger is an excellent tool to inform groups or individual residents about pollutants that were found in their area, but may or may not have been contributed by them specifically. The door-hanger has a place for staff to leave their business card, indicate the types of pollution found (from landscaping to pet waste) and lists various specific BMPs for eliminating street and gutter debris in their area. Staff hopes that by placing the brochures around the entire neighborhood, residents will report to the City where the discharge came from or alter their behavior to prevent the discharge from occurring again.

Also in 2002/2003, the City collaborated with the other North County cities and created a brochure "*Only Rain in the Drain*," which is distributed at local community events and to visitors at City Hall, the Fire Department and Community Center. The brochure is also available at many community businesses. The brochure reviews Best Management Practices for residents and the need to prevent or mitigate pollution to the best extent practical. The brochure also provides a consistent message because all cities in the North County use it.

Staff distributed the door hangers and brochures to residents and business owners throughout the community. These educational materials have been used by Public Works staff, Code Enforcement Officers, and others and have been found to be an informative and effective tool. This includes those given out to neighborhoods during IC/ID and source tracking investigations, those given out individually during routine rounds around the City and any community fairs (Fiesta Del Sol) or regional workshops/events (about 2 a week on average for all activities, totaling approximately 104 distributed).

School Presentations

The Solana Center conducts school presentations for the City to local schools within the City's jurisdiction. As part of both trash haulers' contracts (EDCO and Coast Waste) with the City, they are required to provide funds for public outreach and education. Both haulers have chosen to contract out this work to Solana Center. Therefore, Solana Center provides school presentations regarding storm water issues to the local schools. These presentations include discussions about

the importance of preventing pollution from entering the streets, gutters and storm drains. The Enviroscape model is also used during these presentations. Details regarding the school presentations that Solana Center conducted during this reporting period can be found in Chapter 10, Public Participation.

Additionally, the City's Park and Recreation staff conducts a summer "ecology camp" for local children to educate them on various environmental issues, including stormwater and recycling. The children go on field trips and have classroom discussions. It is a very interactive classroom setting where the children are encouraged to participate and really engage in the various activities. The ecology camp is an annual program that will be utilized to educate the children in all environmental issues.

These are reported on in further detail in Chapter 10, Public Participation Component.

Tile Stenciling

All storm drain catch basins in the City currently have tile markers already installed. The construction standard described in the City's JURMP, with respect to the requirement that all curb inlets have a tile marker permanently affixed on the face side, continues to be enforced. All new development/construction projects are required to install tile markers on all new curb inlets. City staff also document broken or missing tiles when detected in the field and report back to the Environmental Specialist to install.

Web site

The City's Web site (http://www.ci.solana-beach.ca.us/) is another tool that can be utilized by residents to obtain information about the City's storm water programs. The Web site address is printed on most educational and outreach materials, printed in the City's newsletter, and linked to other storm water programs (such as thinkblue.org; ProjectCleanWater.org; and the County's Department of Environmental Health).

5.2 Threat to Water Quality Prioritization

During this reporting period, the City re-evaluated the drainage areas to identify those areas that potentially posed a high threat to water quality as set forth in the Permit section F.3.a.(3)(b). A detailed inventory of the high priority residential areas was provided in the JURMP, Table 5-1.

*There are **no changes** to report in the City's prioritization of high-priority residential areas from those submitted to the RWQCB in the City's JURMP (February 21, 2002).*

5.3 Implementation of BMPs

As noted in this report, Section 5.1 (Pollution Prevention), the City has implemented various methods to prevent pollution to the Maximum Extent Practical (MEP) standard from entering the City's MS4. The City indicated in its JURMP (Submitted February 21, 2002) the designation of several BMPs for the High Priority Residential Areas and Activities (see JURMP, Table 5-2).

The City has informed its residents, visitors, and business owners of the BMPs through the various methods described in Section 5.1 of this report.

One of the most significant differences between the City and other local agencies, is that runoff from residential automobile washing *is strictly enforced* by Solana Beach Code Enforcement Officials. City staff is often dispatched to reports of people washing their cars, and City procedures allow for several warnings before a citation is given, except in the case of mobile-car-washing businesses. In that instance, mobile car detailers are informed to cease their activity and immediately clean up the resulting discharge. Mobile detailers are cited for failure to comply if they refuse to discontinue or remedy the discharge. City staff records all violators and if they encounter them violating the Permit again within the City, they are immediately given an administration citation and fine.

Other BMPs that the City has informed residents about (besides those described in the JURMP) include those identified on Table 5.2, Household BMPs:

Table 5-2
Household BMPs

Potential Pollutant Activity	Description of BMP for Households
Water Runoff	Redirect water so that it does not leave private property. Adjust sprinklers to run for a shorter period of time.
Lawn and Garden Care	Use a nutrient test kit to eliminate unnecessary products and reduce the possibility of pesticides and fertilizers entering the storm drain.
Pet Waste	Dispose of pet waste properly (trash or toilet).

Gutter Debris	Clean out rain gutters, particularly, prior to the first rainfall and divert the rain gutter from roof onto landscaped areas.
Car Washing	Wash car at car-washing facility.
Household Hazardous Waste	Never wash paintbrushes, cans, or paint trays in a manner that will produce water runoff that enters the streets and storm water catch basins. Dispose of fertilizers, chemicals, herbicides, motor oil, and non-water based paint at a hazardous materials collection center:

5.4 New Activities and Improvement for FY 07/08

The City will continue implementing the activities described in the Residential Component of the City's JURMP. The focus will continue to be education through brochures, flyers, public announcements, community fairs and one-on-one contact. The City will look for ways to generate interest in community workshops although the results of a recent survey indicate that a very high proportion of residents are knowledgeable about storm water issues. Additionally, the Civil Penalty Matrix will continue to be implemented and analyzed to determine the effectiveness of it and make changes if necessary.

The new Permit adopted in January 2007 contains increased requirements for the residential sector. This is one key area that the Permit focuses on; so new programs will have to be developed by the City to address these requirements. There is also a focus on regional programs to address the residential sector, so the City anticipates working with the other Copermittees to develop these programs cooperatively to express a consistent message. The City will be working to develop these programs for implementation in FY 07/08.

5.5 Summary

The City has been successful at implementing the Residential Component of the JURMP including among other things:

- Provision of public pet waste bag dispensers (approximately 67,500 bags were utilized by the community during this year).

- Collaborating with neighboring jurisdictions (NCSWP) to develop several brochures, which have been distributed at local events, to City Hall visitors, and in neighborhoods.
- Using the City's Web site to post informative information about the City's storm water programs.
- Operating a 24-hour, 7 day a week storm water hotline that residents can report any storm water violations.
- Operating a community-wide hazardous waste collection program that offers door-to-door service for all residents.
- Implementing a new community-wide curbside single stream commingled recycling program for all residents.
- Providing opportunities for local school presentations regarding storm water issues.

CHAPTER 6
Land-Use Planning Component

CHAPTER 6: LAND-USE PLANNING COMPONENT (NEW DVLPMT)

In accordance with Permit Section F.1, this section of the report describes the City's efforts to prevent or reduce the water quality impacts from new and redevelopment projects through revisions to land-use planning processes. There are no significant changes to the City's JURMP to report in this component.

In each Annual Report to the RWQCB, this section will include new modifications to the City's General Plan (if any), review process for new and redevelopment projects, inventory of current public and private projects and activities associated with the Standard Urban Storm Water Mitigation Plan (SUSMP). Activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The JURMP (Section 6.0: Land-Use Planning for New Development and Redevelopment) describes the City's plans to integrate new project review processes to require mitigation of urban runoff. In addition, the City adopted a SUSMP and submitted it to the RWQCB on December 13, 2002.

6.1 Assessment and Modification of General Plan

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. As such, the General Plan is crucial to the long-term success of its water quality and environmental programs.

There were *no changes* to the General Plan during this reporting period.

6.2 Project Approval and Environmental Review Process Modifications

As noted in the City's JURMP, during this reporting period the City continued to evaluate its project approval process and planned to, or made some modifications to the process for approving new and redevelopment projects. As noted in last year's Annual Report, the plan check routing sheet was further modified to include additional information regarding storm water management. The intent of the modifications is to ensure that pollutants and runoff from development will be reduced to the maximum extent practicable (MEP) standard and/or will not contribute to an exceedance of receiving water quality objectives.

Project Applicants (Applicants) are required to submit a detailed project application, which addresses a variety of concerns, including urban runoff and environmental impacts. The project application provides an opportunity for City staff and/or City Council to determine whether or not the project will be exempt from the California Environmental Quality Act (CEQA) process. If the project is subject to CEQA, the environmental impacts of the project must be reviewed and depending on the potential impacts, a more substantial environmental impact report (EIR) may be required.

As reported in previous Annual Reports, every applicant who inquires about a particular project at the City Hall counter will be given a copy of the City's Construction BMP Brochure (Appendix M). This is being done to ensure that every person will have received a copy of the City's educational guide, many times more than once. Additionally, the plan check routing sheet was previously modified to include a separate box to check when the applicant receives the BMP guide. The project will not be approved until the box is checked. This was done not only to ensure that all applicants receive the guide, but as well as helping the Code Enforcement Department enforce violations much more efficiently. For example, if there is a storm water violation at a particular project, staff can now go back and check the plan check routing slip to see if the applicant received the BMP guide. If the box is checked, then staff knows that they have the guide and should be aware of the proper regulations, therefore increased enforcement can be taken.

As reported in last year's Annual Report, a significant addition occurred to the plan check process during FY 05/06. Any project that increases the impervious area of a site by a minimum of 1,000 square feet must complete a Storm Water Plan Check Comment Form (Appendix J). This sheet requires a variety of information to ensure that there will be no additional run-off as a result of the project. The first requirement is the preparation of an Erosion Control Plan. Also, the applicant must demonstrate that the project *does not increase stormwater runoff*. Lastly, the applicant must demonstrate that they are implementing and maintaining all precautionary measures necessary to ensure that pollutant discharges from the site *will be reduced to the maximum extent practicable*. All additional storm water must be completely contained and treated onsite. This is not required by the Permit, but the City believes that it would be prudent to address this issue on such a small scale because of the relative abundance of these smaller projects within the jurisdiction and the lack of larger scale projects that would otherwise be dealt with through the SUSMP process. Instead of

ignoring these projects all together, the City felt it would be in its best interests to review these “minor” projects to ensure that most new construction and redevelopment would address these storm water concerns.

During this reporting period, another significant modification to the plan check process occurred. The plan check routing sheet was further modified to include another section titled *Environmental* (Appendix K). This section was included to ensure that *all* plans submitted would be reviewed for storm water implications, no matter how small or relatively insignificant. Previously, plans would be routed through the Engineering Department and if the Engineering Technician determined that it warranted further review, the plans would be passed through to the Environmental Specialist. The process was modified to ensure that all plans would be reviewed just in case something was missed or overlooked. The City believes that plan review is essential to ensuring storm water compliance, so we are doing everything possible to make sure it is done thoroughly and accurately. This new and improved process resulted in the Environmental Specialist reviewing 286 plans during this reporting period.

In addition to the CEQA review process, all applicants must obtain a permit from the California Coastal Commission (CCC) because the City does not have a Local Coastal Plan. The City also has strict environmental standards requiring compliance and governing land-use planning and construction.

The application includes some of the following questions:

- Financial interest of all parties who own, or intend to own the property.
- Proof that all owners of record within 300 feet of the exterior boundaries of the property have been noticed of the intent to develop (this allows opportunity for public participation in the process).
- Present use of property and proposed development description (commercial, residential, mixed use, etc.).
- Current floor area ratio (FAR) and proposed (this allows review of the proposed change in impervious to pervious surface area). The City has a strict FAR and prohibits development within 40 feet of the western edge of the coastal bluffs.
- Proposed area to be graded (this allows the Engineering Department to

assess potential erosion and runoff).

- Environmental condition of property (vegetation, drainage, noise, etc.) and neighboring properties.

- Business Applicants are required to submit information pertaining to the types of hazardous materials, whether or not industrial wastewater will be discharged in the property *and/or* off the property.

6.2.1 Project Requirements

As mentioned above, applicants are required to submit plans for all new and redevelopment of current structures to both the Planning and Engineering Department prior to approval. The Engineering Department reviews the project's grading and construction plans for potentiality of contributing to urban runoff. The City Engineering Department also determines the appropriate BMP requirements for each project and attaches the Storm Water Plan Check Comment form to the project plans and returns the plans to the applicant for modification, if required. Applications may be required to submit one or more of the following:

- An Erosion Control Plan (which requires BMPs to manage storm water and non-storm water discharges from the site at all time and shall emphasize sediment control).

- Evidence that the project will not increase storm water runoff.

- Storm Water and Non-Storm Water Runoff Control (this requirement address long-term control of runoff and may require structural modifications to direct discharges into permeable areas such as landscaping).

In addition, all grading projects are required at a minimum to include the following:

- Source control BMPs for all projects expecting to generate runoff.

- Implementation of site design/landscape measures to reduce and/slow runoff, minimize impervious to previous ratio, maximize infiltration and promote alternative driveways and parking lots to include pervious land surfaces (as described in detail in the City's JURMP).

- Implementation of buffer zones for natural water bodies, where feasible and if

not, trees, lighting and access restrictions are required.

- Industrial applicants are also required to provide evidence of coverage under the California General NPDES Permit for Storm Water Discharges Associated with Industrial Activities.

- Applicants are required to be in compliance with the City's current grading and storm water management ordinances, inspection requirements, general requirements for construction activities during the wet and dry season and implementation of appropriate BMPs to control erosion and runoff.

6.2.2 SUSMP

The City participated with other Copermittees in the development of the model Standard Urban Storm Water Mitigation Plan (SUSMP), which was approved by the RWQCB on June 13, 2002. The Solana Beach City Council adopted the City's SUSMP on December 3, 2002, which was submitted to the RWQCB on December 13, 2002.

The SUSMP addresses post-construction urban runoff pollution from new development and redevelopment projects that are designated as "priority projects" under the Permit. Most of the criterion that specifies which projects will be priority projects will not be applicable to the majority of City projects. The reason for this is that the City of Solana Beach is more than 95% "built-out" and primarily a residential community with small-business commercial properties (there are a few large commercial sites in the City). As a result, the City made few modifications to the Model SUSMP that was developed collectively by the Copermittees for its SUSMP. Over time, City staff will evaluate the effectiveness of the SUSMP and discuss changes to the Plan in this section of the Annual Report.

During this reporting period, the City of Solana Beach had *two projects* approved subject to the SUSMP requirements. These will be described in the following Construction Chapter.

However, the City's Planning Department (also referred to as Community Development Department) is well aware of the SUSMP requirements and is consistently on the look out for potential projects that may fall under the SUSMP requirements. The Engineering Department handles all of the BMP review for the City, however, the Planning Department is the first department to review

applicant plans.

6.3 Education

Municipal Staff Education

The City of Solana Beach is a very intimate, cooperative group. All departments work very well with one another because they are forced to do so on a daily basis to serve the relatively small community. This makes training and education a much easier task.

The previous formation of the storm water team brought together the directors of all the different departments (Planning, Engineering, Public Works, Assistant City Manager, Public Safety Chief, Code Enforcement Officers, Environmental Specialist, City Attorney and City Inspector) and forced them to discuss storm water issues and come up with solutions collectively. In turn, the directors would educate their respective employees on the specific tasks they were to perform. This was a very effective and efficient way to educate the Municipal Staff when the Permit was first adopted and the JURMPs were initially being implemented.

City staff welcomes additional training opportunities and often seeks outside training opportunities to keep up with the ever-changing storm water universe. Part of the City's budget is specifically earmarked for training expenses to encourage Staff participation. Additionally, numerous consultants have made presentations to City staff regarding the latest technologies in the protection of water resources, including techniques to reduce erosion, bacteria and other COCs in urban runoff. City staff is always seeking new training opportunities to stay on top of this rapidly evolving field. The City's budget specifically allocated $1,700 for training and conferences in the Environmental Services budget for the FY 06/07.

Owner / Developer Education

The City has developed a counter handout, *Stormwater Best Management Practice (BMP) Guide for Construction and Building Activities* (see Appendix L). The handout explains how to control erosion and urban runoff during pre and post-construction activities and provides a description of General Construction BMPs. In addition, the City suggests that Applicants consult the California Construction Stormwater BMP Handbook and the Caltrans Stormwater Quality Handbook for technical assistance.

Also, as reported in last year's Annual Report, the City collaborated with the

other North County cities to develop and distribute the Construction BMP Brochure (Appendix M). These brochures are distributed at the counter, at pre-construction meetings and in the field during inspections.

In addition, the City sends a “Rainy Season Reminder” to all current and active private projects within the City as a tool to educate and remind project owners and developers about the need to strictly adhere to the erosion control requirements during the rainy season.

Inspections are another opportunity staff utilizes to educate owners and developers about City and State runoff and erosion requirements. During inspections, the City Inspector points out problem areas and requires mitigation compliance immediately. If an owner or developer fails to comply, increased enforcement including fines can be levied and the City Inspector has the authority to halt construction practices.

The City has implemented similar procedures for public projects as those utilized for private projects. That is, during pre-construction meetings (for grading projects) the requirements for erosion control and runoff management are discussed; the City Inspector makes daily inspections of the construction site to ensure appropriate BMPs are implemented and verifies effectiveness; and if necessary, the City Inspector will require modification of practices and activities to reduce runoff or control erosion.

6.4 New Activities and Improvement for FY 07/08

The City will continue implementing the activities described in the Land-Use Planning Component of the City’s JURMP. In addition, with the implementation of the SUSMP, the focus for FY 07/08 will include the continued implementation and education of planning staff, builders, residents, and the community at-large as to how regulations of the SUSMP will impact construction. A more streamlined and effective approach will be implemented during permit application to ensure that all applicants are fully aware of the storm water regulations and the consequences of not adhering to them.

In addition, the new Permit will require updates to the City’s municipal code that will significantly affect this component. The new Permit will necessitate ordinance changes, specifically to the Stormwater Management section (13.10) and the Grading Ordinance (15.40). These changes will be described in more detail in next year’s Annual Report.

6.5 Summary

The City has successfully implemented the Land-use Planning Component of the JURMP. Some of the key accomplishments include:

- Education of planning staff, owners/developers and the community regarding changes in planning processes.
- Implementation of new procedures to ensure new and redevelopment projects do not contribute to an exceedance in water quality standards.
- Addition of Environmental section of permit routing sheet to ensure *all* plans/projects are reviewed by Environmental Specialist for storm water issues.
- Increased cooperation between City departments in implementing SUSMP requirements.

CHAPTER 7
Construction Component

CHAPTER 7: CONSTRUCTION COMPONENT

In accordance with Permit Section F.2, this section of the report describes the City's efforts to prevent or reduce water quality impacts from construction site activities. Some portions of the City's JURMP for this Component have been modified in response to the Best Professional Judgment (BPJ) of City staff. Noteworthy modifications to the program will be discussed within this section of the report.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of active construction sites (private and public), modifications to the City's policies or Municipal Code with respect to construction activities, modifications to identified potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to require BMPs at construction sties and program accomplishments. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

During this reporting period, the City conducted an evaluation of its construction practices and inventoried existing construction sites in an effort to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from these construction sties by requiring BMPs.

7.1 Modification of Grading Ordinance

There were *no modifications* of the Grading Ordinance during this reporting period. The last significant modification occurred June 30, 2005 in which the grading threshold was lowered from 200 cubic yards to 50 cubic yards for all construction projects, meaning much smaller projects that would not normally be scrutinized for storm water management would now be required to go through the grading permit process. This gave City staff more discretion on smaller projects to require storm water mitigation, and with it, gave Staff more power to enforce the installation and/or site design modifications to that would not have been required if a grading permit were not necessary.

7.2 Modification of Construction and Grading Approval Process

The modifications to the City's processes for project approvals are described in detail in the previous chapter of this report (Chapter 6). Although Chapter 6 specifically addresses Land-use Planning, the discussion included a description of various processes that Project Applicants must proceed with in order to obtain approval of their construction plans. Chapter 6 also describes the improvements made to the plan check routing slips as well as the increased education efforts City staff has made to ensure Permit compliance.

The Storm Water Plan Check Comment Form (see Appendix J) may require the Applicant to submit an Erosion Control Plan, proof that the project does not increase runoff from the property and/or implementation of structural changes to redirect runoff onto impervious surfaces.

The City also continued implementation of the SUSMP process during this reporting period, and there were *two projects that required the SUSMP process review* (see Table 7-1 below for more information on these projects). The City does not anticipate many projects that will fall under the SUSMP guidelines, since the City is 95% "built out." However, any project that may be proposed that fall under the guidelines will be put through the process. Planning staff and Engineering staff have been trained and are aware of the SUSMP requirements, and will implement the program when appropriate.

As reported in last year's Annual Report, a significant improvement to the building permit routing sheet that occurred this reporting period was the addition of the *Environmental* section (Appendix K). As noted in Chapter 6, the routing sheet was modified to ensure *all* permit applications were thoroughly reviewed by the Environmental Specialist. Last year's revision was necessary to bring the Environmental Specialist into the review process for larger projects, but the City felt it necessary to completely involve the Environmental Specialist in *all plan reviews* to bring consistency to the process.

7.3 Construction Site Inventory

This section of each Annual Report will include an inventory of construction sites active during this reporting period. Given that the reporting period for these Annual Reports ends approximately six months prior to the submittal of the report, the inventory will most likely be outdated by the time the report is reviewed by the RWQCB. However, the City maintains an inventory of current

construction project sites, which is always available for review. In addition, the Planning Department maintains an inventory of proposed sites and projects. Large private project (commercial sites, multi-unit housing, etc.) may remain on the “active” inventory for a significant period of time.

As shown on Table 7-1, there are currently seven major construction sites active within the City. In addition, City Engineers are in constant discussions with private project property owners during the plan check process to ensure their projects include an Erosion Control Plan, modify drainage alterations to re-route runoff to pervious surface areas, proof that the project would not result in an increase in runoff from the site or other various structural BMPs, and require all projects to control and mitigate all run-off before it reaches the City’s MS4 system (Table 7-2). Also, all grading permits require an Erosion Control Plan.

Table 7-3 is a list of all *new* grading projects that required an erosion control plan and proof that the project would not result in an increase in runoff from the site. Table 7-4 is a list of all follow-up activity to construction site inspections. As you can see, most construction sites within the City are in compliance due to the fact that there are relatively few sites and City staff can work with the contractors on an individual basis and spend more time with them in the field. The advisory notices described in this table are the result of visual inspections pre and post storm events where City staff visit all sites and list any problems detected prior to a storm and right after the storm is over. This is performed prior to a rain event to ensure that all sites have proper erosion control BMPs installed and post rain event to see if any deficiencies are detected that need to be addressed.

Table 7-1

Construction Site Inventory- Large Grading Projects 2006/2007

Project Name and Location	Priority Category	Current Zoning	Type of Construction	Project Size	Hydrologic Unit	Drainage	Draining to 303(d) listed water?	303(d) Pollutants of Concern	Required BMPs
Rosa Pedestrian Bridge	Medium	Commercial	Pedestrian Bridge	<1 acre (Ped Bridge)	San Dieguito	NCTD private drainage, to San Dieguito Lagoon	Yes	Coliform	Storm Water Management Plan. Erosion Control Plan
Santa Fe Christian School 838 Academy Dr.	Medium	Medium/High Density Residential	Redevelopment and Expansion of School Facility.	15.65 Acres (Entire Site)	San Dieguito	Stevens Creek, which drains to San Dieguito Lagoon.	Yes	Coliform	Erosion Control Plan pre/post construction. Low flow drainage diverted to playing fields—acts as constructed biofilter as required by City
Fletcher Cove Community Park	High (Public)	Park	Construction of community park	> 1 acre	Pacific Ocean	Runoff drains to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean – Coliform	SWPPP required; Erosion Control Plan; pre/post construction runoff mitigation. Installation of CDS Unit, shower drains to sewer through existing Low-Flow diverter, increased landscaping for infiltration
140 North Rios	Medium	Residential	4-unit subdivision	< 1 acre	San Dieguito	Runoff drains to San Dieguito Lagoon	Yes	San Dieguito-Coliform	Erosion Control Plan; pre/post construction runoff mitigation.
Boys and Girls Club – 537 Lomas Santa Fe	High	Public Institution	Construction of New Pool, Retaining wall, Etc	2.96 acres	San Dieguito	Runoff drains to Steven's Creek- Then to San Dieguito Lagoon in the south.	Yes	San Dieguito-Coliform	SUSMP required. SWPPP required; pre/post construction runoff mitigation. Installation of CDS unit and catch basin insert filters

American Assets Commercial Property Remodel – Including Parking Lot	High	Commercial	Construction of Additional Retail – Reconfiguring of Parking Lot	.8 acres	San Dieguito	Runoff drains to Steven's Creek- Then to San Dieguito Lagoon in the south.	Yes	San Dieguito-Coliform	SUSMP required. pre/post construction runoff mitigation. Installation of CDS unit
Solana Beach Sewer Forcemain Project	High	Open Space	Replacement of existing 45 year old sewer forcemain underneath San Elijo Lagoon	1.1 miles underneath San Elijo Lagoon	Carlsbad	Runoff drains to San Elijo Lagoon	Yes	Carlsbad-Coliform, Sediment, Nutrients	Primarily underground trenchless work. Erosion Control Plan required. Daily inspections due to highly sensitive location. Spill response plan required.

Table 7-2

Construction Site Inventory

Small Private Projects Requiring Plan Review/Modifications

Address	Type / Priority	General Storm Water Comments	Storm Water Plan Check Comment Form	Comments
787 Avocado Ct.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
723 Barbara Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
339 Barbara Ave.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
720 Barbara Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
319 Barbara Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
440 Canyon Dr.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
136 S. Cedros Ave.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.

200 N.	N. Cedros Ave,	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
228	S. Cedros Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
337 + 341	S. Cedros Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
205	Estrella Street	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
651	North Granados Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
218	N. Helix	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
228	S. Helix	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
915	Highlander Drive	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
1426	Highland Drive	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
1445	Highland Drive	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
445	N. Highway 101	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off

973	Jeffery Rd.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
817	Juanita St,	Residence / Lowe	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
200	Marine View.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
454	Palmitas	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
760	Ramona Pl.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
624	Ridgeline Pl.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
208	S. Rios Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
217	S. Rios Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
508	N. Rios Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
510	N. Rios Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
701	N. Rios Ave.	Residence / Low	Yeas	Yes	Erosion Control Plan Needed. Proof runoff not increased.

					Location of Impervious drainage required to be shown on plans.
949	San Lorenzo Ct.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
313	San Lucas Dr.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
404	San Lucas Dr.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
493	Santa Dominga St.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
972	Santa Estella	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
1107	Santa Gabriella	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
1032	Santa Queta	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
443	Seabright Lane	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
515	Seabright Lane	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.

533	S. Sierra	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
305-307	W. Solana Circle	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
1530	Uno Verde Ct.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
505	Via De La Valle	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
400	Marine View	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
127	S Rios	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.

Table 7-3
Construction Site Inventory
Small Grading Permit Projects 2006/2007

Project Name and Location	Priority Category	Current Zoning	Type of Construction	Watershed	Required BMPs
825 Gonzales St.	Medium	Residential	SFR	San Dieguito	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
347-355 Pacific Ave.	Low	Residential	Upper bluff reconstruction	San Dieguito	Storm Water BMPs required throughout project, no discharges allowed off
228 S. Cedros Ave.	Medium	Special commercial	Office Building	San Dieguito	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
208 S. Rios Ave.	Medium	Low residential	SFR	San Dieguito	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
339 Barbara Ave.	Medium	Med/high residential	SFR	San Dieguito	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
734 Ida Ave.	Medium	Medium residential	SFR	San Dieguito	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.

Table 7-4

Public Projects Pre-Construction Meetings 2006/2007

DATE	PROJECT	DETAILS
8/4/06	Soil for grading permit	Erosion Control/Storm Water requirements discussed.
8/4/06	Import fill for bluff repair project	Erosion Control/Storm Water requirements discussed.
8/10/06	2006 Street Repair and Slurry Seal project	Erosion Control/Storm Water requirements discussed.
8/31/07	Fletcher Cove park improvements	Erosion Control/Storm Water requirements discussed.
9/7/06	Distillery Parking Lot Improvements	Erosion Control/Storm Water requirements discussed.
9/7/06	Solana Beach Forcemain Replacement Final Design	Erosion Control/Storm Water requirements discussed.
11/27/06	Temporary Use Permit for construction staging areas	Erosion Control/Storm Water requirements discussed.
2/6/07	Cliff Street bicycle/pedestrian bridge	Erosion Control/Storm Water requirements discussed.
6/26/07	Highway 101 rubberized asphalt overlay	Erosion Control/Storm Water requirements discussed.

**Table 7-4 is not meant to be part of the Construction Inventory. This table is simply to demonstrate that the City conducts Pre-Construction Meetings prior to public projects and that storm water issues are discussed. The projects that require storm water inspection oversight from this table are included in their respective tables (Table 7-1, 7-2 and 7-3).*

Table 7-5

CONSTRUCTION FOLLOW-UP ACTIVITIES 2006/2007

DATE	PROJECT	Violation Type	TYPE OF FOLLOW UP
12/14/2006	505 Glenmont	BMP Installation Incomplete	Verbal Warning
12/14/2006	825 Gonzales	BMP Installation Incomplete	Verbal Warning
1/8/2007	Solana Beach Forcemain	Perimeter Protection BMP Installation	Written NOV
1/30/2007	602 Glenmont	General BMP Installation and Maintenance	Written NOV
1/30/2007	454 Palmitas	General BMP Installation and Maintenance	Written NOV

Construction Follow-Up Activities:

The City is very aggressive with its follow-up activities, and unless otherwise stated, all follow-up activities were properly addressed and corrected within seven (7) working days. Many times the corrections are made immediately, however the City's policy is to allow the responsible party seven days to correct the violation. However, if there is an immediate threat to public health or safety, the City can require immediate corrective actions. All five violations above were corrected within the seven (7) day window.

7.3.1 Capital Improvement Projects Inventory

In addition to the inventory for private projects, City staff believes it is equally important to discuss both public (Capital Improvement Projects [CIPs]) and private projects under construction.

CIPs are held to the same *or stricter* standards for reducing runoff as private projects. BMPs, Erosion Control Plans, and structural changes to reduce or mitigate runoff pre and post-construction are required. Most, if not all, CIPs in Solana Beach are constructed by private contractors selected through the standard public bid process. Contractors are informed *prior to submitting a bid,* that the City requires adherence to RWQCB standards, Permit and City storm water regulations. To ensure compliance the City Inspector conducts a daily inspection of each CIP site during construction. Stop Notices are issued if the contractor fails to comply with any storm water / erosion control regulations.

Additionally, the Environmental Specialist is included in pre-construction meetings that are required for *all* public projects. A line item discussing NPDES regulations and requirements is standard for all public project agendas (Appendix N). This is just another way to ensure that all contractors are aware of the requirements before the project begins, and to help with possible enforcement actions.

In FY 06/07, the City Inspector did not issue any Stop Notices to contractors for failing to comply with storm water/erosion control regulations.

7.4 Threat to Water Quality Prioritization

In accordance with Permit Section F.2.e., the City described the criterion for designation of construction projects as high, medium, or low priority, in its JURMP. *There are **no changes** to report in the City's criterion for determining a project's impact or threat to water quality.*

Of the active projects currently under construction, *there are no changes to report with respect to the potential threat to water quality*. The City is 95% "built out" which does not leave much room for major development projects. The only projects that would fall under the high priority would be significant redevelopment projects, which there were none of during this reporting period. The City is closely monitoring three potential projects that may fall under the high priority in the next reporting period, pending permit approval. It is important to note that

City staff is currently working with the prospective developers to ensure they integrate beneficial storm water designs during the design phase. The following projects are being closely monitored by City staff:

1) Multiple plans have been submitted to the City to build a hotel/restaurant and condos on the east side of Highway 101 at the northern tip of the City (commonly referred to as the Magellan site), however it has been met with some opposition within the community and a compromise is being sought. Plans still have not been adopted by the City Council at the time of this report. If a project is accepted for development in that area during the next reporting period, it will be a high priority project subject to the SUSMP process because of its proximity to the San Elijo Lagoon, a 303 (d) listed water body.

2) Another *potential* high priority project that is being discussed is a large multi-use residential/commercial development on what is currently the North County Transit District's (NCTD) train station property. This proposed project has also come under heavy scrutiny from the public and no plans have been approved by the City. If a project is accepted for development on this site during the next reporting period, it will be a high priority project because of its size. It will be subject to the SUSMP requirements much like the project mentioned above.

3) A potential high priority project that is still in the planning stage is the significant redevelopment of a portion of a commercial property located just east of Interstate 5 at Lomas Santa Fe. Currently, there exists a large commercial site consisting of multiple large stores, including Vons, Marshalls and a Big 5 Sporting Goods store. The site contains a large parking lot and conceptual plans have been discussed that would add another large store to the complex and redevelop another portion of the existing buildings. This project would be significant for Solana Beach and is being closely monitored through the beginning stages of the design.

The City's Capital Improvement Projects, available upon request, will be considered at least a medium priority for several reasons. First, priority categories may only result in a change in the frequency of oversight and the City Inspector visits each public construction site on a daily basis, which therefore eliminates the need for delineation in priority. Second, given the City's proximity to the Pacific Ocean, all erosion, sediment and runoff control practices are very important and are expected to be very beneficial to the community. Therefore, the designation of "medium or high priority," improves the likelihood that CIPs will not contribute to an exceedance of water quality standards. It doesn't make

sense to categorize a CIP project as low priority since the City holds itself to a higher standard than the rest of the community. The City strongly feels it should lead by example, and since the City Inspector is onsite everyday at CIP projects, storm water issues are addressed daily.

Two highly visible and much anticipated public projects were occurring during this reporting period. First, the much anticipated public Coastal Rail Trail project continued during this reporting period. Due to the size and location of the project, the City felt it prudent to hire an independent inspector just for this project. The City does not have the resources to dedicate a full time employee to this project, so it was necessary to hire some outside help. Included in the duties of the inspector was storm water compliance. The inspector was required to complete weekly reports on storm water compliance and submit them to the City's Environmental Specialist for review. This project has been completed and is no longer in the City's inventory.

The other highly anticipated project that was started during this reporting period was the Fletcher Cove Community Park redevelopment. This project consisted of turning a large, completely impervious parking lot into a multiuse community park with large areas of grass and landscaping. The park is located directly adjacent to the ocean which meant that extra care was given during the planning phase to ensure there would be no negative impacts to the environment. Some highlights of the park include:

- Turning approximately half of the parking lot into a large grassy area for the community to enjoy

- Planting native, drought tolerant plants to increase the amount of landscaping and pervious areas

- Creating a small patch of artificial turf located adjacent to the coastal bluff to eliminate irrigation and prevent bluff failures

- Installing a new shower that no longer drains to the ocean but instead is redirected into the sewer system. The shower also contains a sand trap to remove sand before it can impact the sewer system

- The installation of a CDS unit to treat all the runoff from the site prior to discharge to the sewer system

- The installation of nine (9) new dual trash/recycling containers to provide recycling options for the visitors

- The installation of a new, pervious asphalt low flow infiltration system to a parking lot across the street to compensate for the loss of parking as a result of this redevelopment. The City installed this system to treat runoff from an existing parking lot.

This new park will be a testament to the community's passion for the environment. The park will have an environmental theme throughout and will not drain any runoff towards the ocean. New catch basins are going to be installed at the front of the site to capture runoff from up the street and divert it into the sewer system.

7.5 BMPs and Pollution Prevention Methods

As noted in the City's JURMP, the City requires general and specific BMPs for construction sites and with the modifications in the development review process; the City is able to require site design, source control and treatment BMPs prior to construction. Owners and developers are provided a BMP Construction Brochure (see Appendix M), and they meet with engineering staff to develop methods to ensure that runoff is not increased as a result of their proposed project. The City believes that working with the contractors during the plan approval process is the most critical time period to ensure that appropriate BMPs (structural, pre-and post-development) are built into the project *before* pollutants are allowed to enter the storm drain conveyance system.

BMP Selection

The City does not require a specific or certain type of BMP (except for SUSMP projects) for all projects similarly designed. Instead, staff members evaluate each project on its own merit and determine if modifications to the plans are required to control erosion and/or reduce runoff. City staff works together with property owners and developers to find satisfactory solutions to project problems.

Pollution Prevention Methods (PPM)

- Construction limitations – the City limits construction during the wet season when construction plans warrant and when it is feasible. Implementation of this PPM reduces the potential for pollution.

- Education – the City sends out letters to all active public and private construction projects at the start of the wet season to remind them of the importance of implementing the required BMPs (see City JURMP for a description) and the importance to take precautions during storm events. Additionally, a BMP Construction Brochure is attached to all permit approvals and distributed at City Hall Engineering and Planning counters to all prospective developers and interested members of the community.

- Inspections – as discussed below and elsewhere in this report, the City Inspector and Environmental Specialist visit construction sites and keep a record of BMP implementation and effectiveness. When a developer does not comply with the City Inspector's request to modify practices to reduce runoff or erosion, construction activities can be halted at the site and fines may be levied.

7.6 Enforcement and Inspections

Enforcement of the City's Municipal Code is conducted by the City's Code Enforcement Officers. The City Inspector and Environmental Specialist conduct inspections of construction site BMPs, but if enforcement actions above written NOVs are necessary, Code Enforcement Officers are notified.

Code Compliance

The City has developed procedures to track and monitor citations issued to property and business owners, visitors, and developers. These procedures include the adoption of an Administrative Fine process which was adopted by the City Council on June 18, 2002. This process allows Code Enforcement Officers to issue administrative citations and penalties in between $100 and $1,000 for each day the violation occurs; this applies to construction sites, public and private.

In addition to the administrative fine process, the City adopted a Civil Penalty Matrix (Matrix). This is a very significant tool that has greatly enhanced the enforcement of storm water violations. The City felt it was necessary to develop a matrix to evaluate each violation in the field, and to respond to them in a consistent and appropriate manner. The Matrix was designed so that anybody in the field who witnesses a violation can apply the parameters of the Matrix to decide the appropriate way to respond. This greatly enhanced the efficiency of the storm water program, as now not all violations would require multiple staff to respond or, if a fine was necessary, staff did not have to wait for approval from

upper management to issue it. This would sometimes take as long as month, but with the Matrix, this could happen instantaneously in the field.

The Matrix was modeled after the City of San Diego's Civil Penalty Matrix. The Matrix was scaled down and modified for the type of violations most often encountered in Solana Beach, but the foundations are very similar. The Matrix basically breaks down the violation into two categories, Environmental Significance and Compliance Significance. These two categories are further broken down into Moderate, Major, and Severe. According to the type of violation and the history of the violator, the penalties will be placed in the appropriate section of the Matrix. This ensures that all violations are treated consistently, and the feelings of the investigating officer do not interfere, so the enforcement actions do not vary. This, according to our Code Enforcement Department, is extremely important if a fine gets challenged in court. The Matrix is currently being used, and a fine has not been successfully challenged yet. The Matrix was developed in cooperation between the City's Environmental Specialist and Code Enforcement Officer, further showing the great working relationship between City Departments.

The Matrix is used for all violations, not just construction related offenses. It can be applied to municipal, commercial, and residential offenses. For the complete Civil Penalty Matrix, see Appendix D.

The City also purchased seven radios to be used by the Engineering/Public Works Department that are used to communicate between Staff to report storm water violations. The radios were purchased so communication can be made at all times with appropriate staff, in the case of a storm water violation. The radios also can connect with the City's Code Enforcement Department, Fire Department, and Marine Safety Department, as well as the City of Del Mar Code, Fire, and Marine Safety Departments. This allows for immediate contact with appropriate staff to respond to any situation, including storm water. Before the radios, people either had to be paged or had to be at their desks, which proved to be very inefficient. The delays would often cause staff to miss violations because they did not get the information in time. The radios have allowed for much better communication and increased enforcement, as violators are often contacted while the violation is occurring.

Site Inspections

All construction sites that have a potential to discharge pollutants are inspected

by the City Inspector and Environmental Specialist; this includes public and private development projects. As stated in the City's JURMP, it was anticipated that private development projects would be inspected by the City's Building Department, which is shared with the City of Encinitas. However, a partnership to handle inspections did not develop. As a result, the City Inspector and Environmental Specialist have been visiting all development projects in the City, unless the project is an indoor remodel. In that case, the City Inspector would only visit the property if time and resources permit, and if prohibited activity is noticed, a letter is sent to the property owner.

With the addition of the Environmental Specialist, the City is often times able to inspect construction sites more frequently than required by the Permit. Both the City Inspector and Environmental Specialist devote time out of their schedule to visually monitor all construction sites. Sometimes this is done in tandem, but often times it is simply a drive by of all sites. They meet at the end of the day and discuss any problems observed, if any. This has been very successful in preventing pollution from leaving construction sites, as most problems are fixed before any illegal discharges leave the property. Since there are not too many projects in the City, this type of monitoring is highly successful, as private project managers and city staff communicate very effectively.

In addition to the visual inspections discussed above, more thorough on-site inspections are conducted in accordance to the City's JURMP. These inspections are conducted by both the City Inspector and Environmental Specialist in conjunction with the project superintendent. These inspections are set-up beforehand to ensure that the project superintendent has time set aside to walk the site with City staff and discuss storm water compliance. As reported in the JURMP, all high priority construction sites will be inspected on a weekly basis and more frequently when deemed necessary during both wet and dry seasons. All medium priority sites will be inspected at least once per month and more frequently when deemed necessary during both wet and dry seasons. All low priority sites will be visited at least once during both the wet and dry seasons, with more inspections likely during the wet season months.

If any possible violations are noticed during either the visual inspections or on-site inspections, City staff may stop and talk with the property owner, write a letter, request Code Compliance to issue a citation, issue a "stop work notice" or a combination of these activities. The City's new adopted Civil Penalty Matrix, discussed previously, is also used for construction related violations.

In addition, City staff conducts inspections at all medium and high priority construction sites prior to a rain event to ensure all BMPs are installed correctly and working properly. A follow-up site inspection is then conducted after the rain event to monitor how effective the installed BMPs were and if any modifications need to be done. Construction sites are constantly evolving and require constant monitoring, which the City staff understands and enforces.

Enforcement of BMPs

During inspection of construction sites, City staff verifies that appropriate BMPs have been implemented and are effective (sediment is on-site, erosion control methods in place, runoff mitigated or not leaving property, etc.). In addition, City staff has the authority to immediately require new BMPs if erosion control, runoff, or other activity is taking place that contributes pollutants into the City's MS4.

During this reporting period, the City staff conducted daily inspections of all CIPs and mandatory inspections of private projects within the City's jurisdiction and did not need to report any non-compliant sites to the RWQCB. Any site that was determined to be out of compliance was immediately notified and the problems were resolved within the time frame specified by the City.

Educational Activities

The education activities conducted for construction sites consisted mainly of verbal conversations between the contractor/developer and City staff. Because of the relatively few projects in the City, it is possible and practical to discuss issues on-site with the contractors. Also, they are given either the "Stormwater Best Management Practice (BMP) Guide for Construction and Building Activities (see below) or the Construction BMP brochure and storm water issues were specifically brought up. The City believes that it is much more effective to talk with the contractor face-to-face about these concerns and, since we are a small city, it has been and continues to be very effective.

City staff previously developed an educational Construction BMP guide (Appendix L) that is available to actual and prospective developers/contractors at City Hall. This BMP Guide provides some background on the storm water regulations and provides examples of proper storm water management for construction sites. These BMP Guides are available at the City Hall Engineering/Planning Departments to anyone that inquires about projects or storm water issues in general. This used to be the primary tool used to

disseminate information/guidelines to the development/construction community. However, as discussed briefly before in this report, a new and improved tool has been developed by the North County Storm Water Program and is now being distributed to all prospective and active construction applicants.

The new tool that was developed and discussed in last year's Annual Report is the Construction BMP Brochure (Appendix M). This was developed by the North County Storm Water Program to provide a consistent message/requirements to all contractors/developers in the region, regardless of where they are doing work. This brochure was meant to supplement each individual cities educational outreach to ensure that the development community was receiving a consistent message regarding proper construction practices. This brochure has been very well received by the development community and in Solana Beach has replaced the Construction BMP Guide as the primary educational tool distributed to the development community. The Construction BMP Guide is still readily available at the Planning/Engineering counter, but the Construction Brochure is now attached to all permit plans routed through the City.

Additionally, as discussed previously, the recent addition of the *Environmental* section to the building permit checklist has afforded the City another opportunity to educate the applicant/contractor on the storm water regulations. Every project that has the potential to discharge pollutants to the MS4, regardless of size or type, is reviewed by the Environmental Specialist and commented on. The Environmental Specialist always includes a statement on the routing sheet to remind the applicant/developer, "No discharges permitted off-site during the construction process and erosion control BMPs must be utilized and maintained throughout the life of the project." This statement varies slightly depending on the project but is always included to remind the applicant/contractor of their responsibilities. It is just another reminder that they must adhere to the storm water regulations, and sometimes, it will result in a conversation between the applicant and City staff in the beginning of the project phase that can become very beneficial in establishing a good working relationship that carries throughout the project.

Another educational tool utilized by the City to get the word out to our residents was a series of articles published in the bi-annual newsletter "Shorelines" put out by the City. The newsletter is received by everyone in the community and is very popular and eagerly anticipated. A variety of storm water topics are touched upon, including construction. These articles are intended for smaller projects

such as remodeling and single home construction, but it is still very important nonetheless. These smaller projects hold a much higher priority in our City because of the lack of larger projects; so educating the individual homeowners is extremely vital. Also, the City has found that the smaller projects have the most potential violations, as most are owner/contractor situations where they are not aware of the storm water regulations. The larger projects often have erosion control specialists and employees who are required to attend storm water education classes. The newsletter comes out four times a year, and are included as Appendices and described in previous Chapters of this Report.

Special Project BMP Education

A new tool developed during this reporting period was the development of a specialized BMP notice given to a specific type of construction activity. During this reporting period, a large scale effort was made to underground overhead power lines for view impact reductions around the City. These were special projects that did not go through the normal permitting process. Therefore, these plans would not have been reviewed by the normal parties, and since the City is dedicated to storm water protection, City staff developed a special "Undergrounding Utility District Construction Best Management Practices" handout (Appendix W). This was a one page handout to be included in every permit application submitted by those participating in this program. Since the process of undergrounding utilities involves moving a lot of dirt, the City felt it prudent to take this extra precaution to ensure the proper BMPs are in place.

If any special projects in the future require project specific BMPs, the City is dedicated to developing materials to distribute to the applicants.

Four-Tiered Approach

As mentioned in previous Annual Reports, the City has implemented a four-tiered approach to construction education/inspection to ensure compliance with the Permit. This approach is for all high priority projects that consist of those requiring grading permits and all CIP projects. The aspects of the approached have been touched on briefly in this chapter, but a more concise description is discussed below:

- First Tier- The first tier is the distribution of the Construction BMP Guide and/or Brochure. As discussed previously, this Guide and/or Brochure are given to all prospective and actual applicants at the City Hall counter as well as in the field during inspections.

- Second Tier- The second tier is the pre-construction meeting and forms that are completed prior to the start of construction (Appendix O).
- Third Tier- The third tier is the actual construction inspection and form to be completed on-site with the project superintendent (Appendix P).
- Fourth Tier- The fourth tier is the Wet-Weather Triggered Action Plan that is required to be completed and kept on-site by all project superintendents. The form is to be updated as needed and must be available for review during site inspections (Appendix Q).

Post Construction BMP Inspection

Another major change that occurred during this reporting period is the ability to ensure that all post construction BMPs are installed and maintained by the contractor and/or property owner. The *Environmental* review section on the routing sheet contains a section that can be marked for inspection required prior to installation or prior to final approval of the project. This was done to ensure post construction BMPs required on the plans are actually installed and ensures maintenance through a special agreement that is recorded through the County of San Diego. The City found in some cases that the post construction BMP(s) are sometimes buried in the ground before inspection, thereby making it impossible to inspect and ensure it was actually installed. So, there is now a spot on the routing sheet that will put the onus on the contractor to call for an inspection during the installation to ensure it is actually being done. This way it can be more efficiently documented and inspection required before the permit gets final approval. In addition, with the adoption of the new Permit, this activity of inspecting post construction BMPs will now be required. So, the City is now slightly ahead of the game and will use this tool to track and inventory new post construction BMPs for future inspection.

7.7 2005/2006 JURMP Comments from RWQCB

There were five comments regarding the Construction component of last year's Annual Report. They are as follows:

Comment 1 (Construction)

The first comment is in regards to the prioritization of Table 7-2 and 7-3. Table 7.2 is low priority projects and Table 7.3 is medium priority projects.

Comment 2 (Construction)

The second comment is in reference to Table 7-4. These projects are listed

separately simply because they are public CIP projects. While not all of the projects require construction inspections (slurry seal projects for example), they are listed to demonstrate the high level of over-site the City places on all public projects. All of these Pre-Construction meetings are attended by City staff and storm water issues are an agendized item that is discussed. The priority rankings for these projects are listed in the appropriate tables that contain their respective information. They can be found in Table 7-1, 7-2 and 7-3.

Comment 3 (Construction)
The number of high priority projects was actually three during FY 05/06 reporting period. The City regrets the mistake made in the Assessment Table of last year's Annual Report and will ensure accuracy in future Annual Reports.

Comment 4 (Construction)
The fourth comment is in reference to the frequency of construction site inspections. Construction sites, at a minimum, were inspected according to their respective frequencies. High priority sites are inspected weekly by the City Inspector, medium priority sites are inspected monthly by the Environmental Specialist and low priority sites are inspected one time during the wet season and one time during the dry season annually. Many times these sites are inspected more frequently during the wet season and prior to rain events through drive-by inspections to ensure BMPs are installed and maintained, but this is above Permit requirements. These activities were conducted for both reporting periods (FY 05/06 and FY 06/07).

7.8 New Activities and Improvements in FY 07/08

City staff will continue to enforce BMPs (site, source and treatment), conduct inspections and keep an accurate inventory of the private and public projects. The City has now transitioned into the enforcement stage of the inspection process, away from education. Although all new construction applicants will be provided adequate educational information prior to construction commencement, the City expects to continue implementation of the four-tiered compliance procedure with all new and existing construction projects to ensure compliance.

Additionally, the North County Storm Water Program has developed the region-wide (north county) construction brochure that is now distributed in the respective communities. This brochure combines the basic educational messages of each jurisdiction and includes a diagram of a successful BMP approach for a small

construction site. The purpose of this brochure is to bring consistency to the region regarding BMPs and requirements so that developers/contractors will be receiving same message and direction from all participating cities. It has been received well in the construction community as the requirements throughout jurisdictions will become consistent.

The City is committed to working with the other cities within its respective watersheds (Carlsbad and San Dieguito) to ensure compliance with all storm water regulations. Some activities for next reporting period will focus on construction projects to target sediment, which is a high priority pollutant in both watersheds.

In addition, the City anticipates developing new programs to comply with the new Permit. Although implementation of the new programs will most likely not occur until after FY 07/08, the development of the new programs will have to begin. Two major programs that will affect this section will be the updating of the SUSMP and the development of the new Low Impact Development (LID) programs. These will be discussed in more detail in next year's Annual Report as they will most likely be either developed or in the process of development and the status will be updated in next year's report.

Another significant development that occurred after this reporting period but should be noted is the development of a Building Department at the City of Solana Beach. Historically, Building Department services were provided to the City by a private company, EsGil. EsGil provided building services to the cities of Solana Beach, Encinitas and Del Mar on a contractual basis. In December 2007, the cities of Solana Beach and Del Mar decided to end that contractual relationship and develop a Building Department in-house. This will provide many benefits to the City of Solana Beach, such as:

- Bringing the Building Department (including staff) in-house, meaning the staff will have offices at the Solana Beach City Hall and will be full time staff members of the City.

- Bringing all plans, review and inspections in-house. This will allow the City more control over the plan review process and inspection process. Previously, EsGil determined the amount and extent of review and inspections, and was not willing to accommodate storm water into their processes. This left the review of plans and inspections up to existing staff, straining already limited resources. With the advertisement for these

new positions, the job descriptions included storm water plan review and inspections, so it's anticipated that the storm water program will greatly benefit from this new department.

Since the development and implementation of this new department will take some time and adjustments, it is not anticipated that it will be fully integrated until probably the FY 08/09 reporting period. However, City staff is very excited about this new development, as more staff will be available to assist in the storm water program. Additionally, as the SUSMP is updated and LID program implemented, it will be important to have the input and guidance from a dedicated Building Department staff in house. This way, all departments will be on board during the development stages to ensure buy-in and support of the new programs.

7.9 Summary

The City has been effective at implementing a plan-check process that has resulted in the implementation of BMPs, site design modifications, structural changes and runoff mitigation activities in project proposals and/or construction activities. Both public and private construction projects are subject to the City's strict standards, which provide a consistent approach to reducing urban runoff from construction activities. The City has effectively integrated the new stricter standards of the Permit, including the SUSMP, into its plan-check review process. Additionally, the City has successfully implemented the Four-Tier Approach which has been very successful during education and inspection procedures. The City has also begun developing project specific construction BMPs for large-scale specialized construction activities such as the Undergrounding Utility Districts that are forming around the community.

The City will continue to actively analyze the construction program and make necessary improvements/modifications to ensure the protection and enhancement of the local water quality. An example was the addition of the Environmental review section of the permit routing sheet. The City felt like some smaller projects, although not specifically required to be plan reviewed and inspected by the Permit, may have the potential to be overlooked. Therefore, now *all* plans are reviewed by the Environmental Specialist and necessary changes can be made before plans are approved. Also, the reduced grading ordinance modification demonstrates the City's commitment to reviewing as many projects as possible and integrating storm water management requirements to projects that would have been overlooked in the past.

The City is very excited and eagerly anticipating the creation of the new Building Department. As reported above, the City anticipates many benefits as a result of hiring full time staff and not contracting out the services. An update on the progress will be included in next year's Annual Report as this activity officially occurred after this reporting period; however the City feels it important to report in this Annual Report.

CHAPTER 8

Illicit Discharge Detection and Elimination Component

CHAPTER 8: ILLICIT DISCHARGES DETECTION AND ELIMINATION COMPONENT

In accordance with Permit Sections B and F.5, this section of the report describes the City's efforts to detect and eliminate illicit discharges (ID) and illegal connections (IC) into and from the City's storm drain conveyance system.

In each Annual Report to the RWQCB, this section will include results from efforts to eliminate and prevent IC/IDs, results from the Dry-Weather and Wet-Weather Monitoring Programs and Coastal Outfall Monitoring Program. Also, this section of the report will include any changes to the City's *Action Levels for Field Screening and Laboratory Parameters*. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

The City's JURMP outlines in descriptive detail the City's plans for detecting and eliminating IC/IDs, which would be redundant to repeat in this Report. However, the City's IC/ID program that was in place *prior to the JURMP,* directed the procedures for conducting the 2001 dry-weather monitoring program (DWMP), while the procedures identified in the JURMP, directed the 2002 DWMP. This report will discuss the results of the 2006 DWMP.

8.1 IC/ID Program History and Current Prohibitions

The City implemented its first IC/ID program in 1993, which included dry weather screening, annual storm water conveyance system inspections, and prompt responsiveness to complaints.

Between 1993 and 2002, the City's IC/ID program did not indicate any significant problems, except for occasionally high levels of bacteria at a curb inlet or manhole leading up to the Seascape Sur outfall. A complete discussion about the activities of this problem, including its history, can be found in Section 13: Special Investigations.

Over the years, the City has responded to complaints and results from its dry weather monitoring reports to detect IC/IDs. The City's efforts have been successful, but in response to the requirements of the Permit, the City expanded its program as described in the JURMP, Section 8.

Prohibitions

As noted in the City's JURMP, most non-storm water discharges are prohibited by Solana Beach Municipal Code (see JURMP Section 8.1.1). The City modified its Municipal Code and General Plan to ensure the City has sufficient legal authority to enforce the prohibitions of non-storm water discharges. The Solana Beach City Council adopted the amended Municipal Code and General Plan on February 19, 2002.

8.1.1 Significant Spills

The City operates a storm water hotline and email address that the community can use to report any violations or suspicious behavior they may encounter. This hotline can also be used to notify City staff of any significant spills that have occurred. Additionally, the City's website has a link to directly e-mail the Environmental Specialist to report violations or spills. The residents can also directly call City Hall and talk to the appropriate Staff member to report any significant spills.

There were *two significant spills* reported during this reporting period. The first spill occurred on November 24, 2006 and was the result of a blockage of a private lateral shared by a Long's Drugstore and Nobu, a sushi restaurant. The second spill occurred January 22, 2007 and was the result of a construction project installing an incorrect fitting on a sewer pipeline replacement project. These spills are described below in more detail.

The first spill that occurred at the Long's Drugstore was the result of a blockage in the pipe from paper towels/rags. Approximately 2,000 gallons of sewage spilled before the blockage was removed. The good news is that the sewage eventually traveled to the City's Low Flow Diverter, and was diverted back into the sewer system. The drainage was above ground surface flow and all the residual sewage was re-captured and the street sanitized with a bleach/water solution. So, no sewage reached the storm drain system or receiving water.

Unfortunately, another smaller spill occurred at the same location seven months later, and released 150 gallons into the environment. The City decided it was time to take a stronger approach with the commercial project and set up a series of meetings with the property management company. It was discovered that a new property management company was hired from the time the first spill happened to the time the second one occurred. Therefore, the City decided a cooperative approach with the threat of fines and further enforcement would be

the proper way to address the situation. The new property management company was very cooperative and addressed all the City's concerns and additional requirements.

The City required the commercial property to completely clean the problem line and then CCTV/video the line to inspect for structural problems to determine what the cause of the blockages might be. The CCTV showed that the pipe has a structural deficiency in the design which may be contributing to the blockages. Apparently, the pipes coming from Long's Drugstore and NOBU restaurant join before entering the City's main line, and this joint could be the point where the blockage is occurring. When the property was developed decades ago (before City incorporation), the developer did not have separate pipes for the facilities, and this could be causing the problems.

The property management had two options, completely tear up the sewer system and re-align the pipes, or develop a much more intense cleaning schedule and frequency and risk another sewer spill and enforcement actions that would follow. The property management company opted to go with the higher frequency cleaning, and submitted the contract to the City to prove they had obtained the services of a plumber. They are well aware of the consequences if there is another spill, and there will be swift action by the City. However, the City believes that the issue has been addressed adequately and will continue working with the property management to ensure another spill will not occur.

The second major spill that occurred was the result of a construction project. The project was a CIP project and consisted of replacing a 45 year old sewer forcemain pipe underneath the San Elijo Lagoon. The contractor installed the wrong connection valve which resulted in a 23,500 gallon spill. Fortunately, the City took extra precaution to prevent spills from entering the environmentally sensitive lagoon and prepared for an accident like this during the design of the project. The City hired a construction management company to take all the necessary precautions to ensure that if a spill occurred, it would be contained onsite and there would be no discharge into the lagoon. The City would have preferred that no spills would occur in the first place, but had the foresight to plan for one just in case. Because of this extra planning and precaution, the spill was redirected into a spill containment basin specifically designed for a sewer overflow adjacent to the pump station with a specialized clay lining. Therefore, all the sewage was contained and recovered with no gallons escaping into the lagoon. The valve was replaced with the correct one and no other problems occurred with this project.

8.1.2 HHW Program

The City manages an extensive HHW Program that is discussed in detail in the Residential Component of this report. As reported previously in this report, 379 participants utilized the City's HHW program during this reporting period, up from 319 participants the year before.

8.1.3 Grease Trap Ordinance

In October 2004, the City Council adopted a grease trap ordinance that requires new, remodeled, and even *existing* restaurants to install a properly designed grease trap/interceptor. Previously, the City's Building Department would require all new and significantly remodeled restaurants to install a grease trap/interceptor, but it was simply a policy, not an ordinance. The City realized the need for an enforceable ordinance that would grant the City the power to inspect the traps to ensure proper installation and maintenance. These inspections will now be part of the annual storm water inspections and City staff will check maintenance records to ensure the traps/interceptors are being properly maintained. The ordinance allowed existing restaurants eighteen (18) months to install the grease traps/interceptors and enforcement began in April 2006.

8.2 Dry Weather Monitoring Program (DWMP)

The dry weather field screening data is an important part of the City's IC/ID detection program. The results provide information on whether pollutants are detected in the storm drain system, which can be used to identify potential illegal discharges or connections.

The specific purpose of this program is to detect by system inspection and by field screening and lab water quality testing the existence of either illicit connections to the storm drainage system or the use of the storm drainage system for illegal discharges. The basic requirements for the program are described in the Permit.

The purpose behind conducting tests of storm drains during dry periods is that illicit connections and illegal discharges are most apparent when they are not being masked by storm flows or ground water discharges. Theoretically, there should be no flow in the storm drains during dry periods, except for the limited amount of exemptions listed in the JURMP Section 8.1.1. Therefore, if flow is

present, an investigation must be conducted to determine where the flow is coming from to determine if there is an IC/ID violation.

Prior to the implementation of the JURMP (from 1993 to 2001), the City completed eight years of dry weather testing, primarily with the services of Kinnetic Laboratories/Cooper Engineering Associates, which collected the field samples and conducted the testing and analysis. The City's program was based on a systematic and comprehensive approach.

In 1993, the City inspected selected outfalls within the City limits and monitored selected sites along Stevens Creek. In 1994, major outlets from the City were tested, in addition to the sites monitored in 1993. The primary objectives in the 1995 through 1999 dry weather field screening programs were to target strategic locations where the potential existed for possible pollutant discharges or illicit connections, as well as carry out a comprehensive monitoring of the City.

For completeness and consistency in reporting, the City will briefly summarize the results from the DWMP over the past few years.

8.2.1 Historical Results

The 1995 dry weather field screening data characterized outfalls, identifying areas of non-storm water, non-permitted discharges as well as the identification of problem or potential problem areas. Sampling points were selected in an effort to survey in-line flow as well as inflow and outflow at the City limits. As a result of the 1995 field screening, dumping of grease into Stevens Creek was discovered at a local restaurant. The City notified the property owner, as well as the business owner, to cease such activity, which occurred.

The 1996 dry weather field screening data continued to characterize outfalls, identifying areas of non-storm water, non-permitted discharges as well as the identification of problem or potential problem areas. Results from the 1996 program indicated elevated bacteria levels at the Fletcher Cove Outfall (O-03A). Subsequently, the City constructed a low flow diverter (in 1998), which diverts the flow to the City's sanitary sewer system. The diverter pumps 40 gallons per minute, year round, 24-hours a day. Runoff is only discharged at Fletcher Cove outfall during storm runoff events that exceed 40 gallons per minute. The diverter helps eliminate the contamination at the Fletcher Cove Outfall caused by storm water runoff.

The 1997 dry weather field screening data included several sites that had been screened in previous years, two new sites and an independent study. The new sites were added upstream of two previously monitored sites in Stevens Creek to try to isolate the sources of pollutants that had been detected at those sites during screening in several past years. The independent study was conducted to isolate the source of bacteria that the San Diego County Department of Environmental Health indicated had been found at a commercial site contributing to Seascape Sur Outfall. Additional investigations were conducted in Stevens Creek and the cleaning of the commercial site was ordered. Results indicated no significant problems had occurred during this reporting period.

The 1998 dry weather field screening data included further investigation of locations with consistent evidence of possible pollutant discharges (high pH) in Stevens Creek, the continual monitoring and bacterial testing of Seascape Sur Outfall, and the continual monitoring of representative areas in the City. The samples from Stevens Creek Outfall were collected while the Del Mar Racetrack was in operation to determine if that location (and its activities) was having an effect on the elevated levels bacteria. The results indicated that the pH phenomena in Stevens Creek were due to leachate migrating through the concrete structure. However, the effects of the Del Mar Racetrack were found to be inconclusive, but several outfalls were cleaned of trash and debris.

The 1999 dry weather field screening data continued to screen the same sites as in the previous year and again included the Fletcher Cove Outfall. The 1999 DWMP was again conducted during the early part of the racing season in Del Mar to build on the data collected in the previous years. Fletcher Cove was added back to monitor the bacteria and the effectiveness of the City's structural Best Management Practices for the low flow diverter. Results from the testing did not indicate any significant problem areas and the effects of the Race Track were again inconclusive.

The 2000 dry weather field screening data continued to build on the database the City has established. The report identified two locations with high levels of coliform (both flowing to the Seascape Sur Outfall). The City conducted an investigation and sealed off an old leaking sewer lateral that was found to be located near the curb inlet of the upstream site with elevated bacteria counts. The City contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during the follow-up tests. The 2000 report recommended that the City clean several sites of trash and debris, which was done.

The 2001 DWMP included ten sites for testing, including the same two sites that had elevated bacteria counts in 2000, and Fletcher Cove Outfall (where the diverter is in operation). Site S-13A and S-13 were also included to detect the effects of the Del Mar Race Track during racing season. Seven of the ten sites had at least some flow or ponded water; and one site (S-02) required a follow-up investigation based on elevated levels of fecal and coliform bacteria. Although the S-02 site had elevated bacteria levels, they were lower than the previous year, which led City staff to believe that the problem (for which repairs had been recently completed), was simply residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be cleaned.

The 2002 DWMP increased the number of sites from 10 to thirty-one, with a representation of all five watershed sub-basins in the City. Sites were selected ensuring that historical problem areas, drainage to sensitive water bodies and sites with potential discharge from commercial areas were all represented. This was the first year of dry-weather monitoring under the new Permit, which included specific rules and guidelines developed by the Copermittees to ensure consistency. Some of the keys findings include the following:

- Water clarity at all but one site was clear.
- Floating trash was observed at four sites and sedimentation was observed at four sites.
- At the majority of sites, there was no biological activity noted.
- One site had excessive algae growth, while four had some vegetation and algae growth.
- All sites had pH levels below the action levels agreed upon by the Copermittees.
- Several sites had elevated levels of Ammonia, which triggered a follow-up investigation.
- Elevated levels of detergents were found at one site; as a result, staff has scheduled some time to pass out “door-hanger” flyers to educate the surrounding community as to the cause of this result (which is likely due to car washing, which is prohibited in the City).
- Levels of the all of the following were below the Copermittee action levels: oil and grease, surfactants, Diazinon[1], Chlorphyrifos and dissolved cadmium, copper, lead and zinc.

[1] *Results from the San Diego County Co-permittee 2001-02 Urban Runoff Monitoring Program, conducted by MEC Analytical indicated that the chemical Diazinon routinely exceeded water quality objectives in “nearly every watershed,” (page 8-1).*

8.2.2 Results from the 2003 DWMP

The 2003 DWMP was the first year the City staff has conducted the program in-house. The new Environmental Specialist took over the duties from the City's consultant. However, the consultant provided assistance when needed and still performed the lab analysis of the samples. The City basically took the previous year's program and followed it to ensure consistency. The results were fairly consistent, with the same problem area that has plagued the City for many years. Again, this report will summarize the results and include a detailed discussion (in Chapter 13) about the Special Investigation conducted to isolate this on-going problem.

Key findings from the 2003 DWMP include the following:

- There was only one site of major concern in the City, and that is at Seascape Sur. This problem, and the actions the City is taking to find the solution, is described in detail in Chapter 13, Special Investigations.

8.2.3 Results from the 2004 DWMP

The 2004 Dry Weather Monitoring Program found only one storm water conveyance line with an indication of illegal discharges to the City of Solana Beach's storm water system. The majority of the other sites visited were dry or damp. With the exception of the Seascape Sur area, sites that had water present did not have parameter concentrations high enough to cause great concern. For more information on this, please see the City's 2004 Dry Weather Monitoring Report (Appendix V).

8.2.4 Results from the 2005 DWMP

The 2005 Dry Weather Monitoring Program was conducted in September 2005 analyzed by the City in January 2006. The 2005 program utilized the criteria established by the Permit (and the Copermittee Monitoring subcommittee). The City reviewed the results from the 2005 dry-weather monitoring program looking for the pollutants listed above, and in particular, COCs described in Table 4-1. The results indicated that the bacterial levels at Seascape Sur outfall (which drains to the Pacific Ocean) continued to exceed the action levels established in the Permit and the IC/ID investigation continued (see Chapter 13).

8.2.4 Results from the 2006 DWMP

The 2006 Dry Weather Monitoring Program (DWMP) was conducted in September 2006. The DWMP found only one storm water conveyance line with an indication of illegal discharges to the City of Solana Beach's storm water system. The majority of the other sites visited were dry or damp, with some sites showing evidence of some over-irrigation and/or car washing discharges. With the exception of the Seascape Sur area, sites that had water present did not have parameter concentrations high enough to cause great concern. All necessary follow up activities did not reveal a dominant source, as the catch basins were either damp or dry. For a complete report of the activities conducted during the 2006 DWP, please see Appendix V.

The following is a brief summary table showing the locations and analytes that had exceeded the Copermittees Action Levels as requested in the September 26, 2007 Response to Annual Report Comments.

Table 8-1
2006 Dry Weather Exceedances

Location	Date Sampled	Analyte	Analyte Result	Action Level	Follow Up Date	Results
Site 3 (Santa Inez)	9/28/2006	Orthophosphate-P	5.5	2	9/29/2006	Over-irrigation upstream catch basi dry
	9/28/2006	Total Coliform	220,000	50,000	10/10/2006	Over-irrigation upstream catch basi dry
Site 9 (Santa Luisa)	9/28/2006	Total Coliform	70,000	50,000	10/10/2006	Over-irrigation a nature o outfall, vegetatio creates stagnan water, upstream catch basi dry

	9/28/2006	Fecal Coliform	30,000	20,000	10/10/2006	Over-irrigation a nature o outfall, vegetatio creates stagnan water, upstream catch basi dry
Site 14 (Genevieve/Stevens Ave)	9/27/2006	Orthophosphate-P	2.5	2	9/28/2006	Inconclusiv result min and not a reasonab potential f IC/ID
Site 25 (Seascape Sur)	9/21/2006	Total Coliform	16,000,000	50,000	10/5/2006	Ongoing IC/ID, mo likely structura problem i pipe
	9/21/2006	Fecal Coliform	80,000	20,000	10/5/2006	Ongoing IC/ID, mo likely structura problem i pipe
	9/21/2006	Enterococci	10,168	10,000	10/5/2006	Ongoing IC/ID, mo likely structura problem i pipe
	9/21/2006	Ammonia	2.5	1	9/22/2006	Over-irrigation upstream catch basi dry

The follow up actions were undertaken the following day after receiving the results for all four sites. Since the lab analysis takes longer to receive than the field screening, the follow up actions for bacteria took place a few weeks after the actual sample date.

8.3 Interim Action Levels to Trigger Follow-up Investigations

The City collaborates with the other Copermittees of Order 2001-01 in developing the standardized responses, procedures, processes, policies and programs by participating in the Dry Weather Monitoring Workgroup. This helps by providing

consistency in messages, requirements and community expectations.

It should be noted that the City's 2006 DWMP was guided by the common response for interim action levels developed by the Dry Weather Monitoring Program Workgroup.

8.4 Complaints, Reports, and Investigations of IC/IDs

Prior to the implementation of the City's JURMP, the City Engineering Department handled the complaints regarding possible IC/IDs and/or urban runoff as they occurred. Complaints were investigated by the Principal Engineer, the Storm Water Intern, the Code Enforcement Officers and/or the Public Works Crew. As noted in the City's JURMP, the City conducted non-point source investigations when a discharge is noticed and reported by City staff, Public Works Crews, the public, or during routine inspections. The City continued one "Special Investigation," which is described in Chapter 13. The City's Code Enforcement Officers worked hand-in-hand with the Engineering Department to respond to the calls reporting potential IC/ID violations.

In an effort to reduce the number of violations that occur on the weekends, the City has authorized a Code Enforcement Officer to work on various Saturdays throughout the year. It has come to the City's attention that a significant amount of violations are occurring on the weekends, when people know that no City staff is available for enforcement. The City hopes to monitor this situation and hopefully stop it altogether.

8.4.1 Complaint-Tracking Modification

The City developed a Contact/Complaint Excel database (Appendix R) to track daily reports of storm water contacts/complaints from the public, other city departments, or other regulatory agencies.

8.5 Coastal Monitoring Program

The purpose of the City's Coastal Outfall Monitoring program is to detect IC/IDs through monitoring of the City's coastal outfalls. Prior to 2002, the San Diego County Department of Environmental Health designed and conducted the Coastal Outfall Monitoring Program. In 2002, the City utilized its own staff to conduct an inventory of its outfalls and design the monitoring program, which is currently being implemented.

During this reporting period, the Coastal Monitoring Workgroup, comprised of the cities that have storm drains that flow into the ocean and lagoons, met periodically to discuss pertinent issues and establish monitoring guidelines and reporting limits. Here is a brief description of the City's Coastal Monitoring Program for FY 06/07.

The Permit requires cities to monitor all flowing coastal and lagoon outfalls located within the City. The sampling frequency is once per month required during the wet season, and twice per month required during the dry season (two samples at each location, one at storm drain, one at receiving waters). The samples are taken to a State-certified laboratory for analysis of three parameters; Total Coliform, Fecal Coliform, and Enterococcus. The reporting limits for these parameters are different for samples taken at storm drains and samples taken in the receiving waters. Here is the breakdown:

Location	Total Coliform	Fecal Coliform	Enterococcus
Storm Drain	160,000 MPN	24,000 MPN	20,000 MPN
Receiving Water	10,000 MPN	400 MPN	104 MPN

The City monitors one coastal outfall (Seascape Outfall) and eight lagoon outfalls. The results for the outfalls are as following:

- Seascape Outfall (Coastal Outfall): There were no receiving water violations for this outfall. The storm drain outfall frequently exceeds the water quality parameters and an ongoing IC/ID investigation is being conducted to identify the source of the bacteria (Chapter 13).

- Highway 101 North Outfall (Lagoon Outfall): There were no samples taken because the outfall was always dry. This outfall continues to be monitored even though there has never been flow.

- East Side Railroad Tracks Outfall (Lagoon Outfall): Same as above.

- Rios Access Road Outfall (Lagoon Outfall): Same as above.

- Rios Road Outfall (Lagoon Outfall): There were no samples taken from this outfall due to its inaccessibility. In order to access this outfall, it would require the monitor to track over environmentally sensitive habitats in the

San Elijo Lagoon. In talking with the San Diego County Park Rangers, it was determined that this would not be a good area to disturb because of the sensitive habitat. The area around the outfall was monitored to determine if anything looked suspicious.

- Santa Inez Outfall (Lagoon Outfall): This outfall is routinely damp and sometimes has ponded water. Since there is no detectable flow coming out, it is not sampled as part of the Coastal Outfall Monitoring Program. However, it is included in the City's Dry Weather Monitoring Program which requires the testing of ponded water.

- Santa Carina Outfall (Lagoon Outfall): There were no samples taken from this outfall due to its inaccessibility. The outfall is located at the bottom of a steep canyon. The brush was removed for fire concerns, therefore making it impossible to scale. This site was also still monitored to determine if anything looked suspicious.

- Santa Helena Outfall (Lagoon Outfall): Inaccessible.

- Santa Luisa Outfall (Lagoon Outfall): Same as Santa Inez Outfall.

Although no samples were taken at the lagoon sites, they were all still visited and monitored according to Permit standards. These sites will continue to be monitored for the FY 07/08 to determine if anything needs to be altered in this Monitoring Program. The Seascape Outfall has had historical problems and is the current target of an ongoing IC/ID investigation. This is discussed in detail in Chapter 13. For complete results, please see the Coastal Outfall Monitoring Annual Report submitted with the County Unified URMP.

It should be noted that the Lagoon Monitoring Program that is a part of the Coastal Monitoring Program is no longer included in the new Permit. Although the new Permit was adopted after this reporting period, it should be noted that once the new Permit is implemented, there will no longer be a Lagoon Monitoring component of the Coastal Monitoring Program. Additionally, the sampling frequency for the dry season will be reduced to one time per month to be more consistent with the wet season sampling protocol.

8.6 Wet Weather Monitoring

The Copermittees of Order 2001-01 collectively hired MEC Analytical again to

continue the regional Wet Weather Monitoring Program (WWMP) for 2006/07. For the results of the regional WWMP, please see the complete report included with the Unified Urban Runoff Report submitted by the County of San Diego.

8.7 Public Education

To educate the public about the need to improve water quality and the vast requirements of the Permit, the City passed out brochures, published articles in the City's newsletter (*Shorelines*), placed "door-hangers" on selected residential and business properties, operated a storm-water-hotline ([858] 720-4424) and email address, and required compliance of private and public construction sites. Details about these various activities can be found extensively in Chapter 9 (Education Component) of this report and in the City's JURMP.

8.8 2005/2006 JURMP Comments from RWQCB

There were two comments regarding the Illicit Discharges Detection and Elimination Component of last year's Annual Report. They are as follows:

Comment 1:

The first comment relates to the Dry Weather Monitoring Program (DWMP) and requests the dates of monitoring and a description of the extent and timing of follow-up actions. The letter also requested a summary table of exceedances be included in future Annual Reports. This table has been included in section 8.2.4 (Table 8-1) and will continue to be included in future Annual Reports.

Comment 2:

The second comment refers to the ongoing IC/ID at Seascape Sur and requests a summarization of the City's follow-up efforts at this site during 2005/2006 reporting period. As stated in last year's Annual Report and this one as well, the ongoing problem does not appear to be an IC/ID situation. The problem is most likely a result of a structural deficiency in the pipe that is harboring existing bacteria and promoting re-growth. As mentioned before, the City has CCTV'd the line on numerous occasions and detected a large sag in the pipe that collects sediment and debris. This is an ideal location for bacteria to survive and replicate, as evident in the bacteria levels being much greater at the end of the pipe than at the upstream catch basin. The City can continue to clean the pipe (which is budgeted for every year) but that has proven to only be a temporary fix and after a few months the bacteria levels are back up to normal levels. The City is now dedicated to developing a long-term permanent solution, which include:

- Repairing sag in the outfall pipe
- Blocking off connections from adjacent residential complexes and making them drain to street so that discharges can be sampled
- Installing permanent BMP such as a low flow diverter
- Conducting further tests to determine if source of bacteria can be identified.

All of these options are described in greater detail in Chapter 13 of this Report.

All standard IC/ID follow-up actions have been exhausted by City staff with no remedy for the ongoing problem. Increased inspections, investigations, monitoring and education have all taken place with no solution to this mystery. Therefore, City staff has redirected their efforts into finding a long term structural fix to the pipe which will hopefully lead to the conclusion of this problem.

8.9 New Activities and Improvements in FY 07/08

The City will analyze its 2007 DWMP in FY 07/08, review the results in detail and integrate the findings into program activities. City staff will evaluate the results to determine areas within the city (residential and commercial etc.) that need additional education to improve the water quality in the region. The City will use the results from the previous DWMP to design the 2007 DWMP and attempt to conclude the special investigation (see Chapter 13). The ongoing problem at Seascape Sur, which was detected again in this reporting period's Coastal Monitoring and Dry-Weather Monitoring Programs, will be discussed in greater detail in Chapter 13 (Special Investigations).

Additionally, City staff will continue enforcing the Grease Trap Ordinance on both new and existing restaurants. Staff will inspect the grease traps/interceptors during annual storm water inspections to ensure that proper maintenance is being conducted and records kept on-site.

8.10 Summary

As evidenced by the Copermittee WWMP, the City's DWMP, the City's "team approach" in responding to complaints, and the improvements made citywide in procedures and investigative processes, the City is proficient and effective at detecting and eliminating IC/IDs, and working to change the human behavior that

has caused negative impacts on water quality.

Recognizing that human behavior is the basis of many non-point source pollution problems, the City quickly acts on reports from residents, City staff, and other agencies to follow up on problems as soon as they are reported. The City altered the storm water hotline to link directly to the new Environmental Specialist's voice mail box so that calls can be consistently monitored and acted upon. The City has effectively utilized the administrative fine process which has proven to be a very efficient and timely procedure in issuing citations, which will reduce the potential for pollution into the City's MS4.

Some of the City's key accomplishments for this component include:

- Continued to promptly investigate complaints and reports of IC/IDs.
- Participated in the 2006 San Diego County WWMP.
- Operated a storm water hotline and email account 24/7/365 to report IC/IDs.
- Continued implementing the Coastal Monitoring Program testing outfall pipes once per month for IC/IDs
- Continued implementation of the Grease Trap Ordinance that requires all new, remodeled and existing restaurants to install a grease trap/ interceptor.
- Implemented the Contact/Complaint Excel database to track daily reports of storm water contacts/complaints
- Continued to investigate the continued bacteria problem at the Seascape Sur outfall, refocusing efforts to develop a long term structural fix to the pipe

CHAPTER 9
Education Component

CHAPTER 9: EDUCATION COMPONENT

In accordance with Permit Section F.4, this section of the report describes the City's efforts to implement a community education program, as described in the City's JURMP.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. In addition, this section of the report will include the City's planned educational efforts for the following fiscal year.

During this reporting period, the City continued the comprehensive Education Component of the JURMP (Section 9) that was developed and implemented during the last four reporting periods. The activities were expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City. The City developed the program based on the requirements of the Permit and continued implementation during this reporting period.

During this reporting period, the cities of Carlsbad, Del Mar, Oceanside, Escondido, Vista, San Marcos, Encinitas and Solana Beach continued the North County Education Group that was formed to develop strategies and programs to provide consistent messages to the communities of San Diego North County. This basis for this group is to have a more effective educational program than would be if the cities offered divergent messages. The group consists of storm water program managers, assistants and staff members who all bring individual talents, experience and interests to the program.

As a collaborative, the group is able to obtain lower cost for educational tools (such as brochures, flyers, handouts, small tokens [pens, keys, etc.]), which provides a financial benefit to the agencies and thus, the community.

The North County Education Group has continued meeting through this reporting period, in which the City has been an active participant (for a summary of meeting dates, jurisdictions in attendance, and topics discussed, please reference the Carlsbad WURMP Annual Report).

The group has been able to assist each other in developing a consistent

message incorporating the interests and concerns of each agency. When brochures and handouts have been created, flexibility among the agencies was required.

The collective decision-making process has also generated cooperative working relationships among the agencies, which was extremely beneficial when the development of the Watershed Urban Runoff Management Program(s) began and in working together to complete various storm-water-related tasks. The community also benefits from the consistent “one message” approach rather than six or seven different rules and regulations.

9.1 Pollution Prevention through Education – Jurisdictional Activities

The City’s storm water program is comprehensive. Not only are there many components to administer, there are many different programs going on simultaneously throughout the County. The City participates in jurisdictional, watershed and regional activities. Each of these has separate and distinct educational components. The watershed activities have been recently defined and are in the early stages of implementation; since this is a jurisdictional report, there will not be much discussion about those in this Annual Report (For more detailed information on WURMP related activities, please see the WURMP Annual Reports for Carlsbad and San Dieguito). The regional activities have been primarily described in the Copermittee *Unified Urban Runoff Management Program Annual Report for Fiscal Year 2006-07,* which has been submitted by the County and incorporated herein by reference. However, some of the activities will be summarized in this section of the report (see Regional Activities).

9.1.1 Staff Training

One of the most important aspects of the City’s educational program is to educate its staff members. This turns out to be a relatively easy task for this City in that there are only about 70 full time staff members. All staff members are required to attend an all-hands citywide staff meeting each month. Staff determined that the best opportunity for training would be at the monthly staff meetings.

The City’s Environmental Specialist prepared several different training sessions. These include:

- Delivered presentations at City Council meetings regarding several

different aspects of the storm water program. Council meetings are televised throughout the City and meeting minutes and action agendas posted online and available at the City Clerk Department.

- Delivered Sewer Overflow Response Plan training to the Public Works Staff to emphasize proper detection, prevention, clean-up and reporting practicing to reduce number of sewage spills that enter the City's MS4 System.

- Distributing handouts describing general BMPs.

The City believes that all current staff are adequately aware of the storm water issues, and all new staff will be trained as appropriate upon arrival. However, due to the constantly evolving storm water field, the City will continue the periodic educational trainings at future City all-hands staff meetings and department specific trainings as appropriate.

9.1.2 Annual Beach Cleanup Days

Based on the results of the baseline survey; workshops, brochures, flyers, and articles were developed to promote understanding about storm drain pollution.

The City of Solana Beach, in cooperation with I Love a Clean San Diego County, Inc. coordinates an annual "Beach Cleanup Day". These events are volunteer beach clean ups. As noted in this report, in September 2006, the City hosted its annual clean-up day and 118 volunteers collected 245 pounds of trash 80 pounds of recyclable glass and plastic materials that might have otherwise ended up in the landfill or worse, local waterways.

9.1.3 Storm Drain Tile Marker Installation

The City inventoried all of its storm drains (inlets and catch basins) and has the locations in GIS format. The inventory list includes addresses, cross streets and a GIS bit-map. Stenciled tiles are affixed to each storm drain inlet or catch basin location, which reads, *"No Dumping! This drains to the ocean."* The City now requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the stenciled tile. An extra supply of tile markers is kept at the City's Public Works Yard for all City projects as well as for private contractors to install on their projects to provide a consistent message throughout the City.

9.1.4 Local Community Events

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting to the participants no dumping or littering and to keep our beaches clean. The City also coordinates with Solana Center with their booth promoting proper disposal of HHW and recycling (oil included) in the City. The City passes out "*Only Rain in the Drain*" brochures, community surveys, and displays the watershed poster, "We All Live in a Watershed…" Staff discusses with residents the importance of protecting the water resources and educated them on the new storm water regulations. This reporting year's Fiesta Del Sol occurred on June 2 and 3, 2007. There were approximately 50,000 visitors during this year's event, and City staff distributed storm water brochures and informational flyers to those who visited the City's booth.

The City also partnered with a local community group to put on the second annual Beach Blanket Movie Night on 8/26/2006 (Appendix S). This was the second year this community event was held and was once again a huge success. The City worked closely with the event organizers and provided recycling containers, environmental educational material pertaining to storm water issues, and used oil recycling information. The event was very well attended and a huge success, and will continue to occur annually. This is a great way to promote environmental awareness at a free event to the community.

9.1.5 School Programs

The Solana Center is a local organization that writes articles for the City Newsletter (*Shorelines*) and presents educational programs in the City schools regarding storm drain pollution using the watershed model (Enviroscape) and fun handouts and items for the kids. Solana Center is paid through the City's solid waste contract, as well as a HHW grant, to provide educational opportunities to the community. City staff is in regular contact with the Solana Center and is confident that their program(s) is educational and informative for the children. The presentations are provided free to the local schools, and the information provided is invaluable.

The following table shows what school/community education has taken place during this reporting period:

School / Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
July 10-14, 2006	Fantastic Rain Forest	21	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)	Solana Beach
July 24-28, 2006	Ecology and Lagoon Exploration	21	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)	Solana Beach

The Summer Camp Program is for children entering 1st grade to junior high. This camp is filled with games and crafts that enlighten children's awareness of the environment and include special field trips to immerse the children in the local environment and teach environmental stewardship. For more information on the classes, please see Appendix T.

9.1.6 Workshops

As discussed in previous Annual Reports, the City made a decision to discontinue local workshops due to non-interest from the community. The City is very small and does not contain many businesses. Therefore, the City has found that education is more efficient and effective if done on a more personal level. Staff often interacts with the public out in the field, where they can educate them at the time a violation is witnessed. Additionally, Staff educates the businesses during the annual inspection process, where we have their undivided attention. This has proven to be a very effective tool in educating the public, along with the quarterly newsletter articles and periodic mail-outs. Additionally, the City is very involved in the watershed groups and during this reporting period there was a conscientious effort to standardize the public education to bring a more consistent message throughout the region. It was decided that collaboration on regional workshops focusing on watershed specific activities and issues would be a much more efficient use of the limited resources in various cities. If staff could develop larger workshops to target specific audiences, it was decided that this, than it would be much more effective in targeting specific pollutant sources. We figured we could get more "bang for our buck" than individual workshops held in single jurisdictions that attracted one or two participants from the community.

The City also believed that participating in the regional program (at an even higher level than watershed) would be another efficient, effective approach to community educational workshops. If, in the future, the City notices an increased desire in the community to resume the workshops, the will be immediately resumed. In the meantime, the City will continue to participate in the Watershed

and Regional Outreach Programs, helping to promote a consistent message throughout the region.

9.1.7 Educational Brochures

The City has participated with the North County Educational Group to develop many effective educational materials. The handouts and brochures are included in the Carlsbad WURMP Annual Report.

- "*Only Rain in the Drain*!" describes the importance of protecting the valuable water resources and the problems that can be caused by storm water pollution. It also provides a list of BMPs to help prevent pollution. The brochure also provides valuable resource numbers: *a direct number for each jurisdiction* is provided, as well as the County's Storm water hotline. The brochure is available at City Hall, the City Fire Department and Marine Safety, each staff member was provided a brochure and brochures were personally distributed to local businesses. The City's Public Works Crew and Code Enforcement Officers deliver these every day to the community when small violations are observed. Since these staff members are out in the community everyday, this has proven to be an effective means of public education. Larger infractions are reported to the Engineering Department or Code Enforcement Department for follow-up.
- The door-hanger *"Help!"* provides a method for staff members to indicate to residents that pollutants were found near their home. The brochure is in English and Spanish, which is helpful to residents. It is typically hung on a resident's door, provides a place for business cards and under the cards, (should they become misplaced) the brochure lists a contact number for *each jurisdiction*. The back of the brochure provides BMPs for vehicle maintenance, car washing, hazardous materials handling, recycling, litter, and sidewalk/driveway debris.
- To assist the public in directing their calls for complaints and service, the City operated a 24-hour storm water hotline telephone recording (858) 720-4424. The number is connected directly to the Environmental Specialist's voice mail (so it can still remain anonymous, if necessary), so that violations can be investigated immediately and the proper action taken *while the violation is occurring*. The City informs the public about the hotline number at City Council meetings, on flyers and handouts, and on business cards and on brochures.

9.1.8 City Newsletter (Shorelines)

Chapter 2 contains all the information regarding the *Shorelines* newsletter and gives a brief description of the articles included during this reporting period. The articles are also included in Appendices E, F, G and H.

9.1.9 Web Site

The City continues to utilize all the benefits of recent technological breakthroughs to educate the community about the various environmental programs, including the storm water program. On the City's Web site (www.ci.solana-beach.ca.us), there is a page "Environmental Services" that is dedicated to the environmental programs in the City, including storm water management.

As mentioned in last years Report, the complete overhaul of the City's website has been finalized. The website is much more user friendly and staff has the ability to make instantaneous changes to individual web pages as necessary. This allows City staff to update the storm water page as things develop and documents/forms become available. This is much more efficient and effective than the previous design as requests to the IT department do not have to be made and processed, greatly reducing waiting time. Additionally, important forms can be accessed online by the public reducing the need to come to City Hall to pick up documents and forms.

In local articles in the North County Times, the City's *Shorelines* Newsletter, all brochures and handouts and on all business cards, the City's Web site is listed. Although the educational success of the Web site it not measurable at this time, staff is certain that the community has opportunity to learn about the various requirements of the Permit.

9.1.10 Business Community

The City has initiated several methods to educate the business community about storm water pollution prevention.

First, the City prepared a letter explaining BMPs, storm water regulations, and business community responsibilities. The letter has been sent to each high-priority business in the City, along with the appropriate business-type BMPs. During inspections, Staff checks to see that the BMP list and/or the BMP poster are posted in a highly visible area. If not, then Staff will reissue the list and require it to be posted at all times. Businesses are subject to enforcement if the

list is not posted during re-inspection.

Second, the City conducts a two-tiered inspection program (see Commercial Component, Section 4.4.3, for more details). Through the Advisory Inspections, which have already taken place prior to this reporting period, staff members educated the business owners about the requirements of the Permit and the City's various storm water programs. Given the City's close proximity to the Pacific Ocean and sensitive lagoons on either side, staff is able to show a direct link between commercial activities and impact on water quality. Next, Staff conducted Enforcement Inspections, to ensure that the businesses are using the proper Best Management Practices to protect the City's waterways. These inspections were much more thorough and increased enforcement actions, including fines, if necessary. During this reporting period, approximately *all* businesses that were inspected were inspected under the Enforcement Inspection protocol. Although some businesses had minor issues (trash lids not closed, parking lot not swept, etc.), there were no major infractions to report and no fines were issued.

Finally, the staff members have visited various businesses and left brochures, including door hangers, when pollutants have been found. In addition, staff members, including Code Enforcement Officers target educational messages (letters, visits, etc.,) to businesses when pollution is found in their area. Staff has been proactive in their approach to educating the business community.

9.1.11 Additional Signage at Seascape Sur Outfall

The City was notified by the Marine Safety Department that people have been washing their hands in the discharge from the Seascape Sur Outfall. Since this outfall has had historically high levels of bacteria, the City wanted to prevent this from happening for public health/safety reasons. The outfall already had a warning sign attached to it; however, the City Engineer ordered another warning sign be placed directly in front of the outfall sticking out of the sand. This will hopefully prevent people from doing this again, and it appears to be working so far, as there have been no more reports from the Marine Safety Department.

9.1.12 Special Events Permit

As reported in previous Annual Reports, the City adopted a Special Events Permit that is required for group events (Triathlons, Block Parties, Birthday Parties, etc.) of over 25 people on public property. A storm water section is included in the Permit, with requirements regarding the event and adhering to all

storm water regulations. This has proven to be a great educational tool, as most applicants tend to ask questions about this. It is a great tool to educate the public about storm water regulations. For an example of the Special Events Permit Conditions of Approval see Appendix U.

9.2 Pollution Prevention through Education – Regional Activities

The regional activities of the Copermittees of Order 2001-01 are for the most part, described in the Regional Unified Annual Report. However, for purposes of completeness, some of the activities that the City has participated in are described in this section of the report.

9.2.1 Regional Monitoring

As noted in Chapter 8, the City participated with the Copermittees of Order 2001-01 in conducting a region-wide wet-weather monitoring program. Although no mass loading stations were located within the City, one of the testing sites (San Dieguito Lagoon) is a receiving water body from the City's drainage.

The 2006-07 program is described in detail in the Regional Unified Annual Report and in the report issued by the consultant, MEC Analytical. MEC's report will be submitted with the Unified URMP, and any data collected will be reported and discussed in that report.

9.2.2 Model Programs

One of the most important regional educational components is the ability the Copermittees have developed to help educate each other. This has been accomplished through routine meetings, sharing of project assignments, and most significantly, the development of model guidelines for the JURMP, SUSMP, and WURMP(s). Not only have the model guidelines produced a fairly consistent message to educate the community, the model guidelines have established collaborative working relationships among municipal, county, and state agencies, which is remarkable.

9.2.3 Linking to Regional Resources

The City posts links to the regional Web sites (Project Clean Water and Think Blue). In addition, the City posts information on reporting storm water violations to the County's Regional Storm water Hotline on various educational materials. Linking the community together provides continuity, extension of resources, and

economies of scale for the community and the agencies, and contributes to a greater understanding that we are all one-part of impact on water quality. It's important to educate the community that water-quality program should not and do not stop at jurisdictional (or watershed) boundaries.

Through the www.projectcleanwater.org Web site, San Diego County has been able to link many community members to various storm-water/urban-runoff-related programs of interest. In addition, the website contains meeting information (dates, times, agendas) that are open to the public if interested.

9.3 Pollution Prevention through Education – Watershed Activities

In accordance with Order No. 2001-01, Section J, each municipality is required to participate in the development and implementation of a Watershed Urban Runoff Management Program (WURMP) for each hydrological unit in which the City's jurisdictional boundaries lie. The northern portion (~10%) of the City resides within the Carlsbad Hydrological Unit and the rest of the City resides within the San Dieguito River Hydrological Unit. As such, the City is required to participate in the development and implementation of two WURMPs addressing the runoff concerns of each watershed.

During this reporting period, the City actively participated in the development and implementation of the Carlsbad and San Dieguito WURMPs.

In short, each WURMP contains the following 1) a time schedule for developing a comprehensive map of the entire Watershed including all land uses, the storm drain systems, and inventories of all commercial, construction, industrial, municipal and residential areas, 2) a plan to ascertain the types of pollutants that exist in the water bodies throughout the watershed and a prioritization schedule to eliminate the pollutants; 3) a program to educate the entire community about issues related to urban runoff; 4) methods to provide the community opportunities to participate in the program; 5) plans to collaborate with Copermittee agencies to strategize, review and analyze information; and 6) an effective program effectiveness strategy and methods to conduct annual evaluations.

The City has been actively involved in the implementation of both WURMPs, and has brought materials developed in each WURMP to the residents of Solana Beach. The Carlsbad WURMP workgroup has been extremely effective in implementing almost all aspects of the WURMP, and are way ahead of the schedule developed for the WURMPs. The following list is a brief description of

all the notable accomplishments of the Carlsbad WURMP workgroup during this reporting period:

- Developed materials for public distribution providing a consistent message to all residents in the North County Watershed.
- Pursued funding for projects involving multi-agency participation that assist us in raising watershed and storm water pollution prevention awareness.
- Maintained inter-jurisdictional collaboration focused on creation and implementation of cost effective watershed awareness and storm water pollution prevention education projects.
- Distribution of an informational door hanger on storm water pollution prevention for residents.
- Storm water “click message” pens.
- Put Toxic Waste in its Place booklet.
- Pet Waste Bacterial Load Reduction Survey and pet waste bag dispenser distribution to target high priority pollutant – bacteria.
- Integrated Pest Management Landscaping and Gardening Workshops.
- SUSMP development workshop.
- Revised education/awareness surveys.

The San Dieguito WURMP has also been very effective in implementing the required activities established in the WURMP. The following is the four-pronged education and outreach approach developed during the reporting period:

- Incorporate core watershed principles into existing educational programs.
- Promote watershed stewardship in communities.
- Develop educational strategies to target priority pollutants within the watershed.

- Achieve milestones as determined through annual assessments.

For more information on these particular activities, please refer to the City's individual WURMPs Annual Reports.

9.3.1 Change in Direction for WURMPs…

The Carlsbad and San Dieguito Watershed URMP Copermittees focused their efforts on the high priority water quality issues in the watershed during the 2004-05 reporting period. The Copermittees received two enforcement letters from the RWQCB, 13267 Directive (October 8, 2004) and the Watershed URMP NOVs (June 2005), for not implementing watershed activities adequately. These letters have focused the Watershed URMP program; forcing the Copermittees to re-evaluate and expand their watershed activities. The RWQCB's 13267 Directive provided a list of potential watershed activities. Based on this list, the Copermittees revised their definition of a Watershed Activity and expanded the list of activities implemented within the watershed.

For more information on these particular activities, please refer to the City's individual WURMPs Annual Reports.

9.4 New Activities and Improvements for FY 07/08

The City will continue to educate the community through participation in the North County Education Group, the Regional Education Group, and using brochures, flyers, the *Shorelines*, and community/regional events. The City will also use the results from its DWMP to inform residents in areas that the data showed elevated levels of constituents of concern or materials that degrade the quality of water. The City plans to develop additional educational brochures that will be industry specific. The City also anticipates working more with the San Dieguito Watershed to develop educational materials specifically for that watershed. The City does currently use all educational materials developed by the Carlsbad Watershed throughout the City (not just the section actually in the Carlsbad Watershed), however, there are a few slight differences in the watersheds that will require specific materials. For example, the COCs for the San Dieguito Watershed are slightly different than in Carlsbad, therefore the materials should reflect this.

As a result of the 13267 Directive Letter discussed above, the cities have changed their approach to watershed issues and plan on taking a more direct approach in implementing activities that address specific pollutants of concern and their respective sources within the watershed. Following the direction of the

RWQCB, the watersheds have changed their approach slightly to integrate more pollutant based activities in an attempt to reduce COCs in the watershed and improve water quality. This appears to be the direction the RWQCB wants to go and the Copermittee's are eager to work with the RWQCB to improve the water quality throughout the region.

As discussed later in this Report (Fiscal Analysis Component), the City developed a NPDES Solid Waste Fee (Fee) that was voted and approved by the community of Solana Beach. As part of this Fee development, extensive outreach was conducted to educate the community on the benefits of this program and the necessity of a funding source to implement a successful program. City staff conducted many presentations and workshops for the community that educated them on pollution issues. Although these activities were conducted post-reporting period, it is worth noting in this Report. More information on these outreach and education activities will be given in next year's Annual Report.

A new activity that occurred after this reporting period but is worth mentioning is the development of a City operated cable access television channel that will be utilized by City staff to inform the community about upcoming events and educate the community on various topics. City staff will take this opportunity to place educational material on storm water issues/regulations to be broadcast through the television community-wide. The channel will run 24 hours a day, 7 days a week and is expected to become a significant public outreach and educational tool. This will be discussed in more detail in next year's Annual Report.

As mentioned in previous sections of this Annual Report, the new Storm Water Permit was adopted during this reporting period. This will most likely have strong implications and ramifications to the watershed activities listed above. It is anticipated that minimum activity levels will be established and more acutely described. Activities will be required to address high priority pollutants, and more directly, their sources within the watershed. This will require working closer and more collaboratively with neighboring jurisdictions, which the City is willing and enthusiastic about. The development of these programs will be the main focus during FY 07/08, with the implementation to follow in FY 08/09. This will be a very important year as the programs that are developed will be the guiding document for the next five year cycle of the Permit.

9.5 Summary

The City has been successful at implementing a jurisdictional program, collaborating to implement a regional program, and developing a watershed-focused educational program. The City is certain that with its strong messages, meaningful content and integrated program, the community will become more knowledgeable about pollution prevention methods. The City eagerly anticipates working collaboratively with the RWQCB in developing and implementing the educational component of the new Permit, which will guide the next five years of the program.

The City generally relies on educational material developed by the watershed and regional groups, as it has been agreed upon that a consistent message should be implemented whenever possible. However, much like the differences in the watersheds throughout San Diego County, there are slight differences in how individual cities implement and enforce the Permit. Therefore, it will always be necessary to develop some jurisdictionally specific educational materials for the benefit of the community.

CHAPTER 10
Public Participation Component

CHAPTER 10: PUBLIC PARTICIPATION COMPONENT

In accordance with Permit Section F.6, this section of the report describes the City's efforts to involve the public in the City's storm water program(s) by providing opportunities in which the public can participate. In each Annual Report to the RWQCB, this section will include modifications to the City's plans to provide opportunities in which the public can participate. In addition, this section of the Annual Report will describe the City's efforts during the reporting period. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Prior to the implementation of the JURMP (February 2002), the City did not have a specific "public participation program." However, many members of the community have taken an active role in environmental issues over the years, which is most likely due to the City's proximity to the Environmentally Sensitive Areas (ESA) such as the ocean and lagoons. As a result, the City was the first city in San Diego County to have curbside recycling (due in large part to the efforts of Solana Recyclers). The City has also been proactive in its approach to urban runoff and pollutant mitigation and reduction, by implementing a strict Municipal Code regarding Storm Water Management (adopted in 1993) and Grading and Excavation regulations to prevent erosion during construction.

As a result of Order 2001-01 (Permit), the City was required to design a specific program to ensure that the public had ample opportunities to learn about controlling urban runoff and assist the City in "spreading-the-word."

The Public Participation Component is closely related to the Educational Component. However, while the educational program describes activities the City engaged to educate the public, public participation will describe activities the Public engaged in (or were provided an opportunity to do so).

During this reporting period, the City continued the comprehensive Public Participation Component for the JURMP (Section 10) developed during the previous reporting periods. The program included activities that complemented the educational program with a goal of providing opportunities to ensure that residents, business owners, and those who do business (such as contractors) within the City, have an opportunity to learn about the negative impacts of urban runoff, understand the City's regulations relating to protecting the environment,

and participate in the development of storm water program involving the community. The City developed the program based on the requirements of the Permit and continued implementation during this reporting period.

Chapter Content

It is important that the reader understand that much of the public participation program is integrated into other program components and as such, much of the information within this chapter has been presented elsewhere in this report. However, to provide consistency in reporting, to ensure Permit compliance, and to present stand-alone chapters in this report, this section will include all opportunities for public participation, even if those same events were described in other chapters. However, for purposes of reducing redundancy, some events may be summarized in this chapter with a reference to other chapters for details.

10.1 Community Events

10.1.1 Fiesta Del Sol

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting no dumping or littering and keeping our beaches clean. The event was held on June 2 and 3, 2007. The City also passes out "*Only Rain in the Drain*" brochures and talks with residents about the importance of protecting the water resources. Solana Center also hosts a booth through the City of Solana Beach and promotes environmental stewardship, including used oil recycling and HHW information. Approximately 50,000 people attended the event this year and City staff handed out storm water brochures to those that visited the City booth.

10.1.2 Beach Clean Up Opportunities

During this reporting period, Coastkeepers and the nonprofit group I Love A Clean San Diego (ILACSD) hosted the 22nd Annual California Coastal Cleanup Day in September 2006. The City hosts two locations, one at Fletcher Cove to clean the beach, and another at San Elijo Lagoon to clean up the lagoon.

10.1.3 Adopt-A-Beach Program

The City works collaboratively with I Love A Clean San Diego in the Adopt-A-Beach Program. The Program consisted of local businesses sponsoring a beach and agreeing to clean up the beach at least 3 times a year (1 time for schools).

The City thought this was a great idea and extremely beneficial to the community, so approved our beaches being included in the program. So, four beaches (Tide Beach Park, Fletcher Cove, Del Mar Shores and Seascape Sur are all "adopted" and are cleaned at least three times a year. The signs are updated each year with new "adoptees" and City staff installs the new placards on the signs. This has been a very positive experience, as the City's beaches are each cleaned three times a year, resulting in at least 12 beach cleanups per year.

10.1.4 Beach Blanket Movie Night

As mentioned in the previous Chapter, the City co-sponsors, with a local community group, a free community event called the Beach Blanket Movie Night. This event consists of placing a large movie screen at Fletcher Cove and showing environmentally themed movies for the community to enjoy. City staff took this opportunity to distribute storm water educational materials and promote recycling efforts throughout the City. Additionally, Solana Center attends and has educational material for the community as well. This was a very well attended and received event and will continue in the years to come.

10.2 Community Workshops

As discussed in previous years' Annual Reports, the City has discontinued the "community workshops," due to lack of interest within the community. City staff attempted to promote interest within the community in a variety of ways, however the workshops hosted prior to this reporting period were not well attended. City staff decided to postpone the workshops until more interest is shown by the community. However, watershed and regional workshops are still being conducted and Solana Beach will continue to be actively involved and volunteer locations within the City to host some of the workshops.

10.3 City Council Meetings and Workshops

The Solana Beach City Council meetings are televised, which provides an excellent opportunity for the public to participate in local government. In addition, the City's Agenda is published *online* (available on its Web site), which provides the public an opportunity to readily access the upcoming Council reports.

Another development discussed in last year's Annual Report is the implementation of scrolling messages during televised City Council Meetings.

Staff has taken advantage of this new tool to place storm water messages and notifications for upcoming presentations, events, etc. This has proved very valuable and will continue to be utilized by City staff.

10.4 Copermittee Meetings

Most Copermittee meetings are open to the public to provide them an opportunity to participate in the process of developing the regional and local programs. Most Copermittee meetings are announced on the Project Clean Water Web site (projectcleanwater.org) and the City's Web site also links to the regional sites.

10.5 Collaborative Community Partnerships

The City has developed collaborative partnerships with various local organizations, which provide the public an opportunity to participate in improving water quality and/or the City's storm water program(s).

The City works closely with the Solana Center, which provides instruction to local school children on the harmful effects of pollution, the positive impacts of pollution prevention and the need to keep pollution out of the City's storm drains. Solana Center also provides the following services for the City:

Referral Phone Calls:

Solana Center staff provided recycling telephone referral services for residents on the Cities of Carlsbad, Del Mar and Solana Beach. Solana Center staff spent time educating the community about CRV updates, composting information, and how they easily incorporate recycling activities into their daily lifestyle. Community phone inquiries included:

- The locations of local recycling centers and hours of operation.
- Redemption values of materials.
- Basic information of what materials can be or cannot be recycled in curbside recycling programs.
- General recycling information for commercial businesses.
- Services on commercial recycling carts.

- RotLine – Answering community questions regarding composting an vermicomposting.

Less Toxic Yard and Garden Workshops:

Solana Center staff conducts presentations throughout the community on alternative gardening tips that reduce the use of pesticides and herbicides. These workshops also promote the benefits of composting, further reducing the amount of trash generated and shipped to landfills as well as reducing the need for harmful chemicals/fertilizers.

Community / Recycling Events

Event Dates	Name of Event(s)	Attendance at Event(s)	Description and Summary of Event(s)
June 2 and 3, 2007	Fiesta Del Sol	50,000	Annual event for the City of Solana Beach. Recycling services were coordinated in conjunction with Coast Waste Management and EDCO Disposal Inc
August 26, 2006	Beach Blanket Movie Night	~1,000	Annual event put on by a partnership between the City and local community group to provide a free night of environmentally themed movies. Educational materials were distributed at event.

School / Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Topic
July 10-14, 2006	Fantastic Rain Forrest	21	1st Grade - Jr High	La Colonia Community Center (Field Trips Included)	See Appendix T
July 24-28, 2006	Ecology and Lagoon Exploration	21	1st Grade - Jr High	La Colonia Community Center (Field Trips Included)	See Appendix T
7/20/2006	School presentation	20	Montessori School (Elementary)	Fletcher Cove Community Center	Identifying a Watershed, pollutio and erosion. Polluti Prevention
4/23/2007	School presentation	75	Montessori School (Elementary)	Santa Fe Montessori School	Identifying a Watershed, pollutio and erosion. Polluti Prevention
4/24/2007	School presentation	50	Montessori School (Elementary)	Santa Fe Montessori School	Identifying a Watershed, pollutio and erosion. Polluti Prevention

Community Workshops

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
September 6, 2006	Landscape Design Basics	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
September 13, 2006	Plants for Southern California	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
September 20, 2006	Landscape Sprinkler Systems	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
September 27, 2006	Landscape Watering and Fertilizing	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
October 5, 2006	Design, Plants, Sprinklers, Watering and Fertilizing	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
November 8, 2006	Weather Based Irrigation Controller Workshop	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
January 27, 2007	Design, Plants, Sprinklers, Watering and Fertilizing	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
February 6, 2007 (In Spanish)	Irrigation Principles & Adjustments & Repair	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
February 13, 2007 (In Spanish)	Irrigation System Troubleshooting	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
February 20, 2007 (In Spanish)	Controlling Programming	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
March 10, 2007	Design, Plants, Sprinklers, Watering and Fertilizing	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach
March 27, 2007 (In Spanish)	Irrigation Scheduling	25	Business/ Residential	Fletcher Cove Community Center	Solana Beach

The above workshops are conducted by the City's private water company Santa Fe Irrigation District (SFID). However, the City provides the space to conduct the workshops and promotes the workshops at City Hall and with the landscaping contractors known throughout the community. The City also requires the municipal landscaping company to attend the workshops for educational purposes. This shows another great collaborative success between the City and its private water company. There is a great relationship between the two entities which extends beyond these workshops. The City and SFID work together to combat residential over-watering and ensure daily tasks and repair work are conducted in compliance with the Permit. In addition, pre-construction meetings for CIP projects include SFID and storm water issues are discussed. The City and SFID are committed to working together and maintaining this great working relationship since most of the work conducted by SFID (trenching, pipe laying, water testing) are all done within the City limits.

Down 2 E.A.R.T.H. Newsletter:

Solana Center produces an annual newsletter entitled Down 2 E.A.R.T.H. It has a Circulation 41,000 and is mailed directly to residents in the Cities of Del Mar, Encinitas and Solana Beach. The newsletter provides large outreach to residents about the need to recycle, curbside recycling referral phone numbers, used motor oil and filter recycling and household hazardous waste collection information.

Articles for the City of Solana Beach's newsletter:

Solana Center writes regular articles for the City of Solana Beach on a wide range of topics, including E-waste, recycling, composting and buying recycled. The topic is coordinated between the City's Environmental Specialist and the Executive Director of the Solana Center. The articles are included in the Appendices and described in more detail in other sections of this Report.

10.6 Other Opportunities

10.6.1 City Storm water Hotline

The City operates a storm water hotline, (858-720-4424) which is dependant on public participation to report suspected violations of IC/IDs and to inquire about workshop information or other storm water-related needs. The hotline provides 24/7/365 access to the public so that they can report potential violations and/or call for information as soon as they are thinking about it, rather than having to wait for normal business hours. The hotline is sent directly to the Environmental

Specialist's voice mail (it can still be anonymous) to ensure quicker and more efficient response to the public inquiries, as well as providing an outlet for the public to discuss issues directly with City staff.

10.6.2 Web Site

In this day of high-technology, the City uses its Web site (www.ci.solana-beach.ca.us) to provide opportunities for the public to get involved, learn about the various storm water programs, or send email messages to the Environmental Specialist (stormwater@cosb.org). The City's JURMP, SUSMP, and WURMP reports have been posted and requests for comments have been solicited. The City also provides links to www.projectcleanwater.org, the City of San Diego's Think Blue Campaign, the San Diego Regional Water Quality Control Board, the San Elijo Lagoon Conservancy and others.

10.6.3 Local Media

As described in detail in Chapter 9 (please refer to that chapter for more information), the City utilized the local media to inform and educate the public. Although this is not a public-participation activity, the information provided in the articles describes the ways in which the public can get involved, if they so choose. The City has a great working relationship with the local newspapers (Solana Beach Sun and Coast News) and has many articles published with environmental themes, including storm water related issues.

The City also published several articles in the *Shorelines* Newsletter (also described in Chapter 9) inviting the public to get involved, providing details on how they can participate in protecting the region's water resources.

10.7 New Activities and Improvements for FY 07/08

The City will continue to implement the elements of the public participation component as described in the City JURMP. The focus will be on expanding the collaborative partnerships to include more frequent opportunities for public involvement (clean up days, sampling days, etc.). Staff will continue to look for more opportunities to work with neighboring cities to host pollution prevention community events through its watershed programs (Large HHW event). Additionally, the City is working with the other Copermittee's in possibly putting together more large scale community educational events.

With the adoption of the new Permit, there is an added emphasis on developing

a Regional Educational Program. This will be a main focus for the Copermittees during FY 07/08, and will be expected to implement a comprehensive regional program that will provide a consistent message to the entire region. As most of the new programs are geared towards improved watershed programs, this is one key area that was identified as a Regional program.

10.8 Summary

The City has been successful at implementing numerous methods to encourage public participation. The City makes every effort to encourage the public to participate in improving water quality, recognizing that it's up to all of us.

Key opportunities for public participation included the following:

- Regional Copermittee Outreach Events
- Fiesta Del Sol
- Coastal Clean Up Day
- Regional Workshops
- City Council Meetings
- Copermittee meetings
- Collaborative community partnerships (SFID)
- Contacts through the City's Storm water hotline, City Web site
- Beach Blanket Movie Night

CHAPTER 11

Assessment of JURMP Effectiveness Component

CHAPTER 11: ASSESSMENT OF JURMP EFFECTIVENESS

In accordance with Section F.7.a of the Permit, each Copermittee is required to develop a long-term strategy for assessing the effectiveness of the various components of the its Jurisdictional and Watershed Urban Runoff Management Programs (URMPs).

During this reporting period, the City has continued implementation of all components of the Permit. This section will assess the effectiveness of the JURMP, and discuss all strengths and weaknesses of the City's program.

11.1 "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs

During FY 03/04, the Copermittees developed an assessment document titled, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs." This document was prepared after discussions with the RWQCB in which the Board stated that the Copermittees needed a better method to assess the effectiveness of the JURMP. This document was approved by the Board and will be used to assess all future programs, or until another method is agreed upon. The document addresses six levels of assessment:

1. Compliance with Activity-Based Permit Requirements
2. Changes in Knowledge/Awareness
3. Behavioral Changes
4. Load Reductions
5. Changes in Discharge Quality
6. Changes in Receiving Water Quality

The levels of assessment have been combined into three rather than six categories for this reporting period because it is easier to assess the programs when they are combined into these three categories. Level 1 includes modified assessment tables from the JURMP. Level 2 and 3 are combined and discuss the program strengths (accomplishments and outcomes) for each component. Level 4, Load Reductions, is still being assessed as to the proper way to address

this (possibly TMDLs) and so is only briefly discussed, and Level 5 and 6 are combined to attempt presenting a water quality assessment.

The strategy uses both quantitative and qualitative measures of program effectiveness.

In addition, during the development of the WURMPs, the cities worked tirelessly to develop a meaningful method to assess *that* program for its impact on water quality – not just whether or not the program components were implemented, but more importantly, the ability to find a way to measure the link between activities and improved water quality, if it exists.

The WURMP program effectiveness strategy incorporated all of the elements of a meaningful method to assess impact, incorporated public comments, collaborative writing, thinking and designing, and in the end, is a good start at learning how to meaningfully determine the value of the storm water program activities. The City anticipates that over time, the results of a well-thought-out meaningful assessment will provide the region important information from which program activities can be designed and modified, rather than implementing program activities and hoping the activities have the expected impact. The individual WURMP program assessments can be found in the submitted WURMP Annual Reports.

11.2 Level 1: Compliance with Activity-Based Permit Requirements

A table that summarizes the activities tracked by City staff, which demonstrates compliance with the requirements of the Permit, can be found in Appendix Y, Additionally, narratives explaining the City's efforts regarding compliance can be found in the individual components of this Annual Report.

11.3 Levels 2&3: Changes in Knowledge/Awareness and Behavioral Changes

This section is broken up into each component of the JURMP and presents a summary of the changes in knowledge/awareness and behavioral changes. Each section discusses the accomplishments for the component and discusses future improvements.

The assessment forms (worksheets) developed by the Copermittees were created to establish a consistent method of tracking program actions and

accomplishments between agencies. The City's JURMP included the expectation that the forms would be utilized and as a result, the City will report the information as requested in the following sub-sections. However, some of the information is best reported in a narrative format, while some is best presented in tabular. All relevant information will be reported. For complete discussion of each program component, please refer to its corresponding Chapter of this Report.

Municipal Component

Program Strengths: During this reporting period, City staff again inspected *all the City's catch basins* and cleaned every one that appeared to have trash or sediment accumulated in the basins. Public Works staff removed approximately 7 cubic yards of material from its storm drains. The City also manages an active Beach Cleaning Schedule and maintains several different permanent BMPs throughout the City (the most significant structural BMPs being the biofilter located at La Colonia Community Center, the Low-Flow Diverter at Fletcher Cove and the CDS Unit at the north end of North Cedros).

For a discussion regarding the qualitative accomplishments of the City's Municipal Component (major accomplishments, educational and outreach activities, new activities or improvements to be implemented next year) see Chapter 2 of this report.

Table 11-1

Municipal Inspections

Activity	Quantity	Units	Comments
Number of high priority municipal facilities (*buildings*)	1	n/a	Inspected high priority facility (PW Yard) weekly at Engineering Safety Meeting held at Public Works Yard. Annual inspection conducted on 6/26/07 and facility also inspected prior to rainy season. See Chapter 2 of this Report, and Section Two of the City's JURMP.
Number of high priority municipal facilities (*parking lots*)	6	n/a	Visually Inspected weekly by PW staff. Cleaned monthly by street sweeper. See Chapter 2 of this Report, Section Two of the City's JURMP.
Number of high priority municipal facilities (*other*)	3	n/a	One park, all city streets and roads, and the MS4.

Number of high priority municipal facilities targeted for inspection (buildings and parking lots)	10	n/a	See above.
Number of high priority municipal facilities inspected	10	n/a	The Public Works Yard and all parking lots.
Number of medium and low priority municipal facilities inspected	5	n/a	Fire Department, Marine Safety Center, Fletcher Cove Community Center, City Hall and La Colonia Community Center inspected annually. All inspections occurred on 6/26/07.
Quantity of material removed from MS4 and beach	7	Cubic Yards	This is the amount of material the City collected from its annual cleaning of the MS4 and the beach.
Quantity of debris removed that could have enter MS4 (i.e. street sweeping, litter removal)	188	Cubic yards	As stated in this Report, the City had some significant issues with the street sweeping company, and documentation was one key area. There was a two month period (July-August 2006) where no information was available due to previous contractor not abiding by contract requirements. The City has since replaced its contractor and has a new company onboard that has resumed providing this information in a timely and correct manner.

The City's Public Works Crew is immensely knowledgeable when it comes to storm water issues. Since the crew is only five people, it is very easy to educate them on an ongoing basis. They are all very aware and conscientious of the storm water regulations and are eager to report any violations in the field to the appropriate staff. The Public Works Crew also hands out educational material to the community whenever the opportunity presents itself, and they are more than willing (and encouraged by their supervisors) to stop and talk to the community regarding these issues. The Public Works Crew is a vital part of the Storm Water Team, because they are always out in the field, and they have become the eyes and ears of the program. They have weekly meetings with the City Engineer, City Inspector and Environmental Specialist at the Public Works Yard where they discuss, among other things, the storm water regulations and they visually inspect the Yard.

The amount of cooperation between the various City departments has proven to be very successful, with each department willing to implement the storm water regulations into their program.

As reported in last years Annual Report, one of the improvement areas for this component would be to conduct more department specific educational presentations. This will continue to be a high priority activity and an area to improve upon. This has proven to be very successful and is highly encouraged by the Department Directors. It is anticipated with the development and implementation of the new Permit that more education of City staff will be required. This will most likely occur with more department specific presentations to detail any changes or additions to department specific activities required in the Permit. Most new programs included in the new Permit will not be required to be implemented until after this reporting period to allow for proper development, the department specific trainings will most likely occur in FY 08/09. The Environmental Specialist will analyze the new requirements and develop appropriate presentations to City staff, and will report on these in next year's Annual Report.

Additionally, as a result of the RWQCBs response letter to FY 03/04 Annual Report, the City now calculates and tracks the total amount of material collected by their street sweeping activities. The City contracts out the street sweeping to a private company, but after some discussions with both the RWQCB staff and the contractor, a solution was worked out. The amount of loads is now documented weekly by the street sweeper, and is verified by the City's Public Works Crew. This information is reported in this Annual Report and will be documented in the years to follow to see if a trend can be verified to assess the effectiveness of the program. Additionally, as reported in last year's Annual Report, City staff ensured that the new street sweeping contract contained language that mandates that this be done on a continuous basis. So far, the activity has been very successful as data that is quantifiable is now collected and will be useful in load reduction calculations in the future (as enough data is collected).

Improvement Areas: City staff is confident that all aspects of the Municipal Component are being adequately addressed, although they realize that things could always be improved. Some improvement areas may be additional educational sessions with City staff, to reinforce the importance of the Permit and how it affects their everyday activities (especially with the adoption of the new Permit). Increased inspections on Municipal facilities may be conducted to ensure compliance at all times. And lastly, a more detailed look at the "problem"

catch basins, if any, which may require cleaning every year. If any of these catch basins exist, then a more aggressive litter/trash campaign may be conducted to nearby residences or businesses in hopes of a load reduction in the catch basin. Additionally, the Environmental Specialist will commit to ensuring all new employees are educated as soon as they start employment. This will help them in adjusting their daily activities immediately to comply with the requirements of the Permit.

Industrial Component

Program Strengths: Since the City has only one industrial site (down from two originally reported in JURMP), it had been decided that a strong pro-active approach to compliance would be adopted. The one site (Baker Iron Works) has been incorporated into the routine inspection schedule of the commercial sites dictated in the Permit, thereby allowing the City to ensure that the site is up to code on all storm water issues. This is an increased activity over the requirements of the Permit as inspection of this industrial site is only required bi-annually (it meets all the requirements of the Permit for bi-annual inspection). Since the one site was elevated to a high priority site, the City has taken an active approach in ensuring that the site will be in compliance at all times.

The City has developed a strong working relationship with the owners of Baker Iron Works. City staff have visited the site multiple times and worked cooperatively with them to come into compliance. The owners have responded well to the City's educational efforts and compliance requests. The City has successfully worked with Baker Iron Works to help them come into compliance by instituting several BMPs throughout the property. Although there are no indications from any of the Dry Weather Programs throughout the years that this site has contributed to pollutants to the City's MS4, the mere fact that there is a possibility of this occurring in the future prompted the City to request that a few BMPs be installed onsite. A couple of very successful accomplishments occurred that are worth noting.

1. The first accomplishment was the sealing up of a small storm drain located on the property that drained directly away from the property and into street.

2. The second BMP installed was the daily dry sweeping of the property to ensure that no sediment/gravel got into the street by automobile traffic.

3. The third BMP integrated into their normal routine was the use of a magnet on the grounds outside where some work is conducted using steel. The magnet is used to sweep the entire yard and collect miscellaneous scrap metals that may have collected on the ground. This activity is conducted on an as needed basis, but no less than once per week.

4. The fourth, and most important, BMP was the installation of the storm drain sump/infiltration pit at the northwest corner of the property that was designed to catch all low flow dry-weather runoff from the property and filter it before it left the property. These BMPs have been successfully implemented by the owners and are currently in place and functioning.

An improvement area listed in previous annual reports involves ensuring that Baker Iron Works is complying with all requirements of the State Industrial General Permit, even though this is not a requirement of the storm water Permit. However, Baker Iron Works asked for the City's assistance in compliance and so City staff has worked with Baker Iron Works to implement the necessary elements for compliance. This has further helped the relationship grow between the City and its industrial partner, furthering the great working relationship.

As mentioned in last year's Annual Report, a devastating fire broke out in the office of Baker Iron Works. Most documents were destroyed, making it very difficult to send in all necessary paperwork to the State under the General Industrial Storm Water (GISW) Permit. Baker Iron Works staff worked with staff from the State regarding this issue and everything was worked out between them. Additionally, the employee training manual was destroyed, however this year's inspection confirmed that another one was developed and is available onsite.

City staff also worked with Baker Iron Works to come into compliance under the GISW. Baker employees requested help with the monitoring requirements so City staff trained them in the proper sampling techniques and offered options on where to take the samples for analysis. This just proves the healthy working relationship between City staff and Baker Iron Works.

Improvement Areas: For the next reporting period, City staff will revisit Baker Iron Works to conduct additional inspections and reevaluate their current practices. City staff believes that this industrial site is working well within the regulations of the Permit and is satisfied with the current situation. City staff will look to continue the open communication with Baker Iron Works and conduct further inspections

to ensure that all new employees are aware of and compliant with the storm water regulations. Also, City staff will ensure that Baker Iron Works is aware of any new regulations coming down from the State (new Permit) and work with them to ensure compliance.

Commercial Component

Program Strengths: During this reporting period, The City decided to disseminate between high, medium, and low sites, in order to focus on the high priority commercial facilities. The City decided it would be more effective to concentrate on the high priority sites to ensure compliance, as they would be most likely be the highest contributor of priority pollutants. As mentioned in previous reports, all the commercial sites were scheduled to be inspected on an annual basis, which is above and beyond what the Permit requires. However, the City decided to be more aggressive with the thoroughness of inspections at high priority facilities, since all commercial facilities have been inspected at least once during the life of this Permit.

During this reporting period, all of the high priority facilities were inspected (excluding restaurants). This includes all automotive repair, fueling, and washing facilities, equipment rental yards, golf courses and facilities that store heavy equipment, supplies, and machinery. There were fewer inspections this reporting period than in the last couple of years because the City decided to focus more time and effort on the high priority commercial businesses that have a higher potential to discharge pollutants than the smaller, exclusively indoor facilities such as restaurants and retail establishments. Since all commercial facilities have been inspected at least once (a majority of facilities have been inspected multiple times) during this Permit cycle, the City shifted its focus on the larger, more risky facilities. City staff decided to focus more on detailed inspections of the facilities listed above as well as restaurants that have a history of problems, if any. So, inspections occurred at 100% of all golf courses, automotive repair shops, gas stations, and equipment rental yards located around environmentally sensitive areas. These inspections were very successful and all facilities were in compliance, and no follow-up activities were required. This activity is more in line with the priorities established by the watersheds and regionally in switching priorities to high priority pollutants and their sources. By aggressively monitoring and enforcing high priority sources (facilities), it is anticipated that sources will be abated,

Another program strength is the implementation of the City's grease

management ordinance. The City is happy to report that a grease management ordinance was passed by City Council on September 7, 2004. Staff introduced the proposal to City Council on February 17, 2004, and got the approval to move forward with the education of local restaurants and the public about the pending ordinance. A condition of the resolution once the proposal passed was to give restaurants 18 months to install a grease trap/interceptor, or receive an approved waiver from the City. Therefore, all restaurants in the City (even existing restaurants) must have a functioning grease trap/interceptor by March 2006. This is a huge accomplishment by City staff as it is well documented that most major sewer spills are the result of grease related problems. Inspection of the grease traps and maintenance will be accomplished in conjunction with the storm water inspections.

Improvement Areas: In previous annual reports, one improvement that was mentioned was the inspection of 100% of all commercial facilities in one reporting period. All commercial facilities have been inspected, however not in the same reporting period. Staff decided to focus more efforts on those commercial facilities that have a higher potential to discharge pollutants of concern into the watershed. As mentioned before, this approach is more aligned with the watershed and regional approach of targeting high priority pollutants, and more specifically, their respective sources. The City will most likely need to adjust commercial facility activities with the adoption of the new Permit, but this will be addressed when the permit is implemented.

Residential Component

Program Strengths: The City provides a wide range of programs for its residents to allow for convenient implementation of pollution prevention activities. Among the many programs the City provides are:

- Curbside recycling (first in the County to provide this service)
- Greenwaste collection
- Aggressive Household Hazardous Waste collection program (described in detail in Residential Component)
- Community Education Program (described in Residential Component)
- The development and maintenance of the City's website regarding the

Storm Water Program

The City Council meetings are also televised to all the residents of Solana Beach. Many times storm water issues are discussed during these meetings. Other positive aspects of the program are the direct mailings of education materials and the articles placed in the community newsletter, "*Shorelines*." Tallying the amount of phone calls to the City's Storm Water Hotline does not appear to be a good assessment of the City's program. The City, because of its relative small size, prefers to conduct business on a more personal level. This has proven to be a much more effective way to work with the public. Therefore, although the hotline is still publicized, City staff distributes their direct telephone numbers to the public when dealing with storm water issues. This allows direct, immediate contact with a Staff member, which ensures immediate, effective response to storm water issues.

As stated in last year's Annual Report, the Environmental Specialist documents contacts (phone call, visit to City Hall, etc.) with the public regarding storm water issues to help assess the effectiveness of the program over time. The only calls documented are ones that required staff action on some level. The community of Solana Beach is very unique in that the residents are actively involved. Staff receives numerous phone calls every day that must be addressed immediately. Therefore, it would be unreasonable to document every contact made by the public, only the ones that pertain to storm water and where action is needed.

The table is substantial, so a brief summarization of the data is below. The complete table listing the caller, date, problem/issue, mode of contact (email, phone, counter, etc), and City action, is available for review at City Hall upon you request.

- There were 47 contacts made from the public that required follow-up activities
- There were 25 phone contacts
- There were 4 direct contacts from the community
- There were 11 emails received from the public
- There were 2 calls from the City's hotline number

- There were 5 contacts made through the radio system that instantly connects the Environmental Specialist to the Public Works Crew and Code Enforcement Department

Another area of improvement mentioned in previous annual reports was to develop additional educational materials for the residential community. This activity is constantly being addressed by the North County Storm Water Program (NCSWP) discussed previously in Chapter 8. The City feels that it is much more effective and efficient to address these issues collaboratively with the cities in the NCSWP. This allows for a consistent message to be disseminated to a large population of people throughout the North County, as well as resulting in a significant cost savings for the City.

Additionally, as discussed previously in this report, a major program component of the new Permit is to establish a Regional Educational Program in collaboration with all other Copermittees. This regional program will hopefully provide a more consistent educational message for the entire County, so that conflicting messages will not be disseminated throughout the region. This should drastically improve the educational outreach materials developed regionally; however watershed specific materials will still need to be developed based on high priority COCs and their sources within the watershed.

Improvement Areas: For the next reporting period, City staff will evaluate this component and make any necessary alterations to the program. The City will continue to develop educational materials for the residential community. All educational activities and materials that were produced by the NCSWP are described in detail in the Carlsbad WURMP Annual Report as well as summarized in Chapter 8 of this report.

Land-Use Planning for New Development Component

Program Strengths: The City continued its implementation of the local Standard Urban Storm Water Mitigation Plan (SUSMP) program. The City worked on implementing the SUSMP into all plan check processes. Although there will not be many projects within the City subject to this new requirement (the City is 90% built-out), the appropriate departments are still very aware of the requirements.

The Planning Department is actively involved in the City's Storm Water Program, and often notifies the Environmental Specialist when a proposed project may have storm water implications, including possible SUSMP projects. Although, as

mentioned above, the City is almost completely built-out, the Planning Department has, as a result of this Permit, developed a list of possible proposed projects that may require a SUSMP. These projects have not been approved, but Planning Department staff have surveyed the City and put this list together to warn other staff as these projects may be proposed soon. This gives staff a "heads up" before the projects are submitted that they will probably be subject to the SUSMP requirements and so the process can begin when, if ever, these projects are proposed.

Another extremely important activity that was implemented during this reporting period was the new addition to the Building Permit approval sheet to include an *Environmental* review section for the Environmental Specialist. Since the City does not have its own Building Department located within the City, (it shares its building department with the City of Encinitas located in Encinitas' City Hall) it has been difficult in the past to effectively communicate on building projects recently approved. Therefore, the Planning Department agreed to revise the routing sheet to include a new section titled *Environmental* so that storm water issues will be included in all plan reviews. This has been extremely effective especially for smaller single family home remodels and additions that would otherwise go undetected under the previous system. This also allows for a mechanism to require inspection of all proposed structural post construction BMPs before final approval of the project. This is an extremely effective development as now Staff has an opportunity to ensure that all post construction BMPs are installed according to plan, before they are covered up in the construction process, which occur a majority of the time.

The City has also participated with the North County Storm Water Program (NCSWP) to develop a SUSMP Tracking Table that helps identify any SUSMP projects that have the potential to impact a neighboring jurisdiction. This table contains information such as address, project type, post-BMPs, maintenance requirements, etc., that will help jurisdictions notify other jurisdictions of projects that may impact their cities. This is just another example of the beneficial collaborative working arrangements between the City and its neighboring jurisdictions.

Another success during this reporting period was the development of educational materials to distribute to prospective applicants prior to submitting their plans. Staff addressed this issue by putting together a "SUSMP Binder" at the Engineering/Planning Department counter that holds the adopted SUSMP as well as a couple "information sheets" (implemented 10/1/2004) that give a basic

description of the SUSMP and its requirements that prospective applicants can look at if they have questions. Additionally, City staff is available to discuss any issues or questions that they may have. Additionally, the City worked with the other cities in North County Storm Water Program to develop a construction brochure that is distributed to all prospective and actual permit applicants. This is discussed in more detail in the Construction section of this Report.

Improvement Areas: The City will continue to educate prospective applicants regarding the SUSMP if their respective projects will be subject to the new regulations. The City is very confident that its Land Use Planning component is very effective; however, it will continue to be modified in the future when necessary.

Construction Component

Program Strengths: The City Inspector and Environmental Specialist are responsible for conducting construction site inspections. The City Inspector is responsible for all public projects, whereas the Environmental Specialist deals with all private projects. However, they often team up and visit all sites together, which have proven to be very successful as they both bring in special expertise to the inspection process.

All construction sites were inspected for storm water issues on a frequency much higher than described in the City's JURMP. Since there are relatively few construction sites in the City, staff can visit the sites very frequently. Additionally, since the City only has one "City Inspector" for the whole City, he is responsible for monitoring all construction sites for all various issues. Therefore, he spends his whole day out in the field, and upon visits to construction sites for any issue (storm water related or not), he is able to monitor the BMPs on a daily basis. If the City Inspector notices a problem related to storm water, he notifies the Environmental Specialist immediately. The Environmental Specialist then investigates further, taking any necessary corrective or enforcement actions. This program has worked very well due to the already established relationship between the contractors and the City staff. Because of this pre-established relationship, the transition into storm water compliance was virtually seamless. The Inspector keeps a daily log of all his activities, and storm water related issues are included. The City also mailed out a wet-season reminder to all active construction sites reminding them of their obligations under the Permit. Therefore, the City is assured that all contractors are aware of the regulations, making enforcement much easier for the City.

The City's "Four-Tiered Approach," discussed previously in Chapter 7, has been a major improvement in the Construction Component. This approach has allowed the City to keep a much better handle on the construction contractors and their sites, as each building permit application is now reviewed by the Environmental Specialist and comments placed where appropriate. Additionally, for CIP projects, the applicant/contractor is required to have a Pre-Construction Meeting with City staff in which storm water issues are discussed. At these meetings, contractors are required to sign a Pre-Construction Inspection Checklist, are given a sample copy of the Site Inspection Checklist, and they are required to fill out a Wet-Weather Triggered Action Plan. All of these measures are taken to ensure that all contractors are aware of the storm water regulations, and it helps the enforcement aspect of the Permit as staff can be assured that all contractors have been educated and cannot claim ignorance of storm water issues. Appropriate enforcement actions (corrective, stop work, fines, etc.) can be enforced without fear of being challenged by violator.

Another activity that has proven very successful in regards to construction activities was the distribution of a colorful, informative BMP Construction Brochure. This brochure was developed by the NCSWP and delivers a consistent message for all North County Cities. The brochure is a tri-fold that gives background information on the storm water program and regulations and on the reverse side is a large diagram of a common construction site with the general BMPs shown and described. This brochure has been a huge success with the construction/developers world as they can post this brochure at their site to remind their employees of proper BMPs. These brochures are distributed along with the BMP Guides that accompany all permit applications.

The City believes that any opportunity to educate the community should be taken advantage of. So, during this reporting period, 521 BMP Guides and BMP Brochures were distributed to the public, as compared to 509 during FY 05/06 and 416 during FY 04/05, further verifying the City's commitment to education.

An area of improvement discussed in last year's Annual Report was the development and tracking of SUSMP long-term BMP maintenance agreements. The City is happy to report that this task has been completed and the City now has implemented a new Long Term BMP Maintenance Agreement that requires the applicant to submit a recorded document from the County of San Diego which includes the maintenance activities required and gives the City the legal authority to inspect the BMP to ensure compliance. This is an extremely helpful tool in ensuring that the post construction BMP is not only installed, but is being

properly maintained to remain effective.

The City's primary Engineer who reviews grading plans and post construction BMP requirements was an active participant in the Carlsbad Watershed SUSMP workshop developed to assist not only the developers in the region, but to promote consistency among fellow plan reviewers in the respective jurisdictions. The Carlsbad Watershed Copermittees felt it prudent to collaborate amongst each other to try and develop a consistent review process that each city could implement to make it easier for developers to design projects that would be approved throughout the watershed. This is discussed in more detail in the Carlsbad WURMP, but it is worth mentioning here to illustrate the City's willingness to participate in watershed activities for the betterment of the region. Although not many projects in Solana Beach fall into SUSMP requirements, the City still felt it necessary to participate in this activity to develop a consistent message for all developers in the region.

Improvement Areas: During the next reporting period, the City is committed to improving and modifying the construction program if any deficiencies are detected. The City is confident in its improvement during this reporting period, as the Four-Tiered Approach has continued to be highly successful, The City is also committed to developing more educational materials to distribute to the public, and contractors in particular. The Construction BMP Brochure has been a major success, and the contractors/developers are constantly looking to us for more information and guidance.

It is anticipated with the adoption of the new Permit, additional construction activities and programs will need to be developed and implemented. The City will continue to work with the Copermittees to develop these programs for implementation in the coming years. The significant activities included in the new Permit are the development and implementation of the Hydromodification Plan and the update to the SUSMP model. These are major tasks that the City will be active participants, and will be discussed in greater detail in next year's Annual Report.

Illicit Discharge Detection and Elimination Component

Program Strengths: The City continued to implement its IC/ID program by responding to complaints and investigating potential violations promptly and thoroughly. The City now serves the community much more effectively and efficiently by bypassing the storm water hotline and connecting the

Environmental Specialist directly to the community. The program has proven to be very successful as the community of Solana Beach is very intimate and prefers to do business face-to-face and see immediate results. The City has a very customer service focused atmosphere, and the residents demand instant and effective action on relevant issues. This has, in turn, been very beneficial to the storm water program because many times, in order to effectively deal with a violation or IC/ID, it has to be investigated immediately. This has led to many violations and violators being discovered while it is occurring, rather than long afterwards which leads to a lengthy and complex IC/ID investigation that often yields no results.

The Dry Weather Program was conducted by the City staff. The program was modeled after the initial report conducted by MEC Analytical, and the complete report is included in this report. In summary, there was one location that had the potential to be an IC/ID situation. This location has been a problem area in the City for a couple of years and the solution has proven elusive and is still being investigated.

An improvement area discussed in last year's Annual Report was stepping up the effort in solving this historic bacteria problem. The City commits a large sum of money in every annual budget to completely flush out the problem pipe with the hopes of eliminating any residual bacteria in the pipe. The City continues to work with the neighboring condominium complexes to attack the over-watering issues that may be contributing to the problem. City staff works very well in communicating possible IC/ID situations around the outfall, as the Marine Safety Department has a lifeguard station located directly in front of the outfall (during summer months). Whenever there is a noticeable increase in flow or odor, the lifeguards are instructed to contact the Environmental Specialist to investigate. This has led to a couple of violations at the residential complexes from individual contractors performing work, and necessary enforcement has been taken. This will continue to occur until a remedy is found for the problem outfall. More information on this problem area can be found in Chapter 13 of this Report.

Improvement Areas: During the next reporting period, the City is committed to eliminating the historical bacteriological problem at Seascape Sur. More aggressive actions may have to be taken to determine the ultimate source of the problem. The IC/ID investigations discussed in previous annual reports have turned out to be inconclusive; so the City may have to look at alternate solutions, such as a permanent BMP structure installation or the possibility of blocking off the connections to the storm drain and rerouting the site drainage of the

neighboring condominiums to the street before entering the catch basin. These solutions would be very expensive, and since the receiving water is not being affected yet, the City will continue to pursue the elimination of the bacteria at its source. Additionally, the City will continue to gather and analyze additional data from the wet weather and dry weather programs and compare the datasets to determine potential IC/ID problems.

Education Component

Program Strength: The City feels very strongly that the current education program being implemented by City staff has been very effective. The amount, and quality, of educational materials developed by the City and through collaboration with the other Copermittees, has proven to be very successful. The complete educational program is discussed thoroughly in the Educational Component of this report.

Improvement Areas: The City is very satisfied with its current educational program. The North County Storm Water Group has gone above and beyond the requirements of the WURMP's educational component, and has delivered many quality items to the resident's of Solana Beach. The only area of improvement for the City would be to resume the community workshops when the demand is great enough from within the community. Additionally, the City will work more diligently on promoting the free classroom presentations provided by the Solana Center. The City, through its local contacts, will be more aggressive in contacting the schools to set these valuable presentations up. This is an area that has been somewhat underutilized, and is a focus point for improvement in the future.

Public Participation Component

Program Strengths: The residents of Solana Beach have multiple opportunities to interact with City staff through the hotline, website, and direct interaction. All City staff are available to discuss any issues with the community if they come into City Hall, and most all literature distributed currently has the Environmental Specialist's direct telephone number listed on it. The City staff prides itself on dealing with the community on a personal basis, and as a result has established many key relationships with members of the community. The City continued to host the annual Coastal Clean-Up Day that allowed the community to get involved as well as distributing educational brochures at the annual community event, Fiesta Del Sol. Some additional opportunities include:

- *Numerous Copermittee meetings*
- *Adopt-A-Beach Program*
- *Fiesta Del Sol*
- *Shorelines Articles*
- *Down 2 E.A.R.T.H. Newsletter,*
- *Opportunities to work with local Partnerships/Collaboratives*
- *City Hotline*
- *City Web site*
- *Community Beach Blanket Movie Night*

Improvement Areas: The City realizes its responsibility to get the community involved in the storm water program. The City has given the residents ample opportunity to get involved in implementing the program, however the City is committed to resuming the community workshops if the demand is great enough. City staff is very visible throughout the community on a daily basis and routinely has discussions with residents regarding storm water issues. The feedback given to City staff has been overwhelmingly positive, and the City looks forward to continuing this personal relationship with the community.

11.4 Level 4: Load Reductions

Level 4 load reduction is a key assessment measure for the storm water program. Ultimately, the goal of the storm water management programs are to reduce pollutant loads and by doing so, improve the discharge and receiving water quality. However, load reductions are very difficult to quantify, and the Copermittees as a whole are struggling to develop methods to achieve this task. This being said, the City will continue to analyze any data received that may be able to show a load reduction with the hope that it will somehow be linked to improvements in discharge and receiving water quality.

As a result of the Regional Water Quality Control Board's comments on the City's FY 02/03 Annual Report, the City has adapted its street sweeping program. The City now requires the private street sweeper to document all load information on a weekly basis. This includes an estimated amount of debris collected. This information was collected initially in FY 05/06 and continued into this reporting period as well. The total amount of street sweeping debris collected in FY 05/06 was 299.1 and it was reduced in FY 06/07 to 188. This shows a definite reduction in loads, however it should be cautioned that the City went through a difficult transition between contracted street sweeping companies and

the estimated loads were not fully complete. The City is confident that the new street sweeping company is performing well above expectations and so the analysis in next year's Annual Report will be much more statistically valid. That being said, the load reduction show in the data that we do have bodes well for the load reduction assessment. The decrease in debris being collected from the streets indicates that people may be handling their landscaping and green waste disposal much better with increased education.

This may be an effective way to calculate load reductions, which would be a good assessment of the program's effectiveness. Although, most of the debris collected by the street sweeper in the City of Solana Beach is organics (leaves, grasses, etc.), so therefore, this may not be a good indicator of load reductions. However, the information will be collected and analyzed and any trend will be documented for future use.

Another possible load reduction calculation could be documenting the amount of material collected and removed from the various BMPs throughout the City. These BMPs include:

- Annual inspection and cleaning of MS4 system
- Maintenance of CDS Unit(s)
- Maintenance of detention basin adjacent to San Elijo Lagoon
- Load reduction calculation for the Low Flow Diverter at Fletcher Cove and the filtration basket located upstream from Seascape Sur Outfall
- Load reduction calculation for the Biofilter maintained at La Colonia Community Center
- Maintenance records of permanent treatment BMPs required as part of SUSMP projects (privately owned)

All of these activities may not be feasible, however they all warrant further consideration. It has been generally agreed upon the Copermittees are not capable at this point to perform complete load reduction calculations and assessments, but we are committed to working towards this goal. The Copermittees have decided that this Level (4) should be attacked at a regional level, and not jurisdictionally. A major push coming up that should force us in this

direction are the impending TMDLs that will be developed and implemented shortly by the RWQCBs

11.5 Levels 5&6: Changes in Discharge and Receiving Water Quality

The City has been collecting and analyzing monitoring data received through the dry-weather and coastal monitoring programs. The City will continue to analyze the data to better understand the collective water quality picture in the City. The data will be assessed to determine the potential water quality problems within the City. Data collected by the City will be analyzed independently as well as collectively with the regional monitoring programs. Although it is generally accepted that it will take many years to develop a trend in water quality, the City will nonetheless analyze its data on a continuous basis to see if anything develops. There are no glaring deficiencies in the water quality in the City, but the situation at Seascape Sur will continue to be monitored to ensure that the storm drain does not have an impact on the quality of the receiving water (Pacific Ocean).

The Regional Monitoring Program currently conducts trend analyses for the Wet Weather Monitoring Program. The goal of the WWMP is to collect data and analyze the data to determine if there are in fact improvements in the receiving water quality throughout the region. The City participates in this workgroup and will continue to assist the Copermittees in determining if we have obtained levels 5 and 6 of the assessment strategy.

11.5.1. Dry Weather Monitoring Data

2006 Summary

The 2006 Dry Weather Monitoring Program found only one storm water conveyance line with an indication of illegal discharges to the City's storm water system (Seascape Sur). The majority of other sites visited were damp or dry. With the exception of the Seascape Sur area, sites that had water present did not have parameter concentrations high enough and follow-up investigations were inconclusive (dry upstream catch basins) to cause great concern.

The City will continue with its efforts to educate the Beachwalk business complex about the City's pollution prevention programs and continue its efforts to eliminate the discharge at Seascape Sur. Commercial educational programs should continue and include both the proprietors and their employees.

Residential programs should include building owners and residents. An informed public will provide support for new and already existing prevention programs.

11.5.2 Coastal Water Quality

The Pacific Ocean is the ultimate receiving water for the City although there are other intermediate receiving waters, such as the San Elijo Lagoon and the San Dieguito Lagoon. To measure the quality of the coastal receiving waters and assess the JURMP effectiveness, the City has monitored its one coastal storm drain outfall (Seascape Sur). The City used to monitor another outfall at Fletcher Cove; however, a low-flow diverter was installed in 1998 to divert dry-weather flows into the sewer system. This was done because of historically high levels of bacteria detected in that area.

Coastal and Lagoon Storm Drain Outfalls

The coastal outfall monitoring program reporting period is a little different than the reporting period for this report. The coastal monitoring program reporting period runs from November through October. All cities with flowing coastal storm drains met regularly (Coastal Monitoring Workgroup) to develop and implement this program to promote regional consistency.

The Coastal Monitoring Workgroup developed an adaptive monitoring approach. This approach was developed to theoretically allow the individual cities to adapt their program to concentrate their limited resources on problematic locations and ease up on consistently non-problematic areas. The City had *no receiving water exceedances* for bacteria during this reporting period, which was consistent with the results of last reporting period. So, it appears that the increased educational and oversight of the vendors at the Fiesta Del Sol was successful as there were no exceedances after the event for the third year in a row, as there had been in the previous two years. City staff made this a priority during this reporting period to meet again with the event organizers and discuss BMPs with them to relay to the individual vendors and provided them with more educational materials. In addition, City staff monitored the Food Court during the event to ensure all vendors were abiding by the storm water regulations. This was mentioned in previous annual reports as an improvement area because of the consistent exceedances after the Fiesta Del Sol that had occurred in the past.

The storm drain at Seascape Sur had multiple exceedances for total coliform, fecal coliform and enterococcus. This is a storm drain that has a history of high

bacteria counts and is currently the focus of an IC/ID investigation. The program is being implemented by City staff, and the complete results are presented in the Coastal Monitoring Annual Report.

The adaptive monitoring program also incorporated lagoon outfalls. City staff monitored eight lagoon outfalls, none of which had any samples taken. Although these outfalls were not required to be monitored because they either had no flowing water or were inaccessible due to sensitive habitat or dangerous conditions, City staff made the decision to monitor them anyway (when possible), to gather a complete picture of what was occurring at the City's outfalls.

Beach Posting Data

The County Department of Environmental Health has monitored beach water quality for bacteria since the 1950's. This sampling is used to assess the health of the beaches. When bacteria levels exceed State standards, the County posts the beaches with signs warning and advises the public not to enter the water. In 2000, there was a significant change in protocol as a result of the passage of AB411, which required additional testing, incorporating testing for enterococcus, and required the beach be posted when only one sample exceeded the standard.

During this reporting period, there were ***no beach closures***.

CHAPTER 12
Fiscal Analysis Component

CHAPTER 12: FISCAL ANALYSIS

In accordance with Permit Section F.8, this section of the report describes the resources that the City utilizes to finance the various storm water programs. The Fiscal Analysis Component of the JURMP (Section Twelve) has not been modified.

In each Annual Report to the RWQCB, this section will report on any changes in the revenue sources that finance the City's storm water programs, a *general* description of the expenditures during the reporting period, the budget adopted for the following reporting period and any changes known at the time of the writing of the report (to keep the document as current as possible).

12.1 Revenue Sources

The City finances its Storm Water Management Department via revenues from an NPDES solid waste fee. The City recently went through a long, arduous process to establish a long-term funding source to ensure the program would be sufficiently financed. This is an area that the Copermittees have struggled with and the City is very proud of the fact that it has secured a voter approved fee to ensure the long term future of the program. The City believes it is the only Proposition 218 voter approved fee in the State, and that further shows the commitment level of the community to preserve and protect the local environment. The following is a brief history and timeline of significant events that led to the vote and approval of the City's NPDES Solid Waste Fee:

- June 15, 2004- Council Authorization of Consultant to Develop NPDES Fee Report
- May 3, 2005- City-Wide Mail Out Announcing Community Workshop and Background for the NPDES Solid Waste Fee
- May 11, 2005- Introduction of NPDES Solid Waste Fee-City Council Meeting
- May 11, 2005- Scroll Information About Community Workshop on Television Broadcast During City Council Meeting
- May 19, 2005- Community Workshop
- June 15, 2005- First Reading of NPDES Solid Waste Fee Ordinance- City Council Meeting
- June 22, 2005- Second Reading (Adoption) of Ordinance- City Council Meeting
- September 1, 2005- Included Insert in both WM and EDCO Bills That Explained Extra NPDES Solid Waste Fee

- December 12, 2006- Staff Report to request Public Hearing to present updated NPDES Fee Study and rate structure – City Council Meeting
- January 2007- Proposition 218 notifications for Public Hearing sent out City-wide to all property owners – City-wide mail-out
- February 28, 2007- Public Hearing to consider adoption of updated NPDES Fee Study Report (protest hearing) and introduce Ordinance 362 implementing new rate structure– City Council Meeting
- July 11, 2007- Staff Report to set Public Hearing on September 26, 2007 to announce results of Mail-In Ballot Election

For more information on the City's NPDES Solid Waste Fee, please see the City's website at www.ci.solana-beach.ca.us.

FY 2006/2007 Expenditures

The storm water budget for the FY 06/07 Storm Water Department and other departments that support the storm water program are shown on Table 12-1. In addition to the budget below, the City also incurs significant costs associated with tasks that supplement pollution control such as routine street cleaning (trash pick up) performed by the public works department, cleaning of the parks and community centers, and beach clean ups.

Table 12-1

FY 06/07 Storm Water Budget

Expenditure	**Amount**
Salaries[2]	$150,100
Cleaning of Storm Drain System	$ 24,000
Permit Fees (County of S.D., RWQCB. SWRCB)	$ 20,000
Public Education, Investigations	$ 1,000
HHW Program	$ 15,200
Lab Testing	$ 14,000
Preparation and Consultant Fees for Watershed URMPs	$ 5,500
Maintenance of Steven's Creek Channel	$ 20,000
Training(Travel, Conferences, Meetings)	$ 1,700

[2] *Salaries for City personnel that handle storm water responsibilities were divided between various departments, depending on the amount of staff time allocated to that department. Salaries include anticipated overtime and benefits.*

Small Tools	$ 800
Misc. Items	$ 12,000
Seascape Storm Drain Cleaning	$ 15,300
Total	**$ 279,600**

12.2 FY 2007/2008 Proposed Budget

Table 12-3 presents the City's Proposed Budget for the FY 07/08 Storm Water Management Department.

Table 12-2
FY 07/08 Storm Water Management Proposed Budget

Line Item	Budgeted
Salaries	$ 157,500
Storm Drain Cleaning	$ 25,000
Permit Fees Paid to County & RWQCB	$ 15,000
Lab Testing	$ 15,000
Investigations, brochures, public education	$ 3,000
Steven's Creek Cleaning	$ 15,000
HHW Program	$ 16,200
Watershed URMP Shared Costs	$ 6,000
State Water Control Board Fees	$ 7,000
Training (Travel, Conferences, Meetings)	$ 1,700
Misc. Items (Including small tools)	$ 13,000
Seascape Storm Drain Cleaning	$ 16,300
Total	**$ 290,700**

The City is committed to allocating enough resources to effectively implement the components of the Permit. During the NPDES Solid Waste Fee Study analysis, a complete assessment of the program was conducted to determine how much money is being spent performing the duties of the Permit. This was the basis for the NPDES Fee, and the City is committed to reassessing the Program on a continuous basis to ensure the NPDES Fee is collecting enough money to offset the costs of the Program. The City must take special care to ensure the NPDES Fee is not collecting more than the costs to run the Program, so this reassessment is necessary for this reason as well.

The City will periodically assess the costs of the Program and make necessary adjustments to the NPDES Fee to ensure the City is recovering the costs of implementation. This will ensure a long term funding source which is paramount to a successful program. The City anticipates a significant increase in costs to develop and implement the new programs adopted with the new Permit, and will reassess the NPDES Fee in future years to reflect the increases in the Program.

CHAPTER 13
Special Investigations

CHAPTER 13: SPECIAL INVESTIGATIONS

In accordance with Permit Section F.5., this section of each Annual Report will expand on the City's efforts to prevent and eliminate illegal connections and illicit discharges (IC/ID) into and from the City's MS4 as discussed in Chapter 8. The City's IC/ID program is designed to identify, prohibit, and eliminate discharges that are a significant source of pollutants with the goal of protecting receiving water quality. This section of each Annual Report will provide the results of any special investigations conducted during the reporting period. However, the City also responded to many other complaints of possible IC/IDs, which resulted in rapid compliance, but did not warrant or require a comprehensive special investigation.

"The Mystery of the Bacteria at Seascape Sur…Still Going…"

13.1 Introduction

As reported in FY 2002/2003 Annual Report, there has been as ongoing, historical problem occurring at one particular location in the City. The location, Seascape Sur, has had historically high levels of bacteria, often times exceeding limits at the storm drain and occasionally in the receiving water (*no exceedances during this reporting period*). Previous annual reports go into deep detail regarding the history of this problem and the City's efforts to remedy it. Since the history is important in describing the situation, this report will include much of what was written last year. Any added information that was discovered during this reporting period will be included in this report. Next years report will include the City's additional efforts that were undertaken during the FY 07/08.

Prior to and during this reporting period, the City began a concerted effort to determine what was causing the elevated levels of bacteria at Seascape Sur outfall (based on results from the Dry Weather and Coastal Monitoring Programs). The problem was thought to be resolved early on, but then monitoring results in subsequent years indicated the problem had either returned or persisted. In 2000, the City Engineering/Public Works Department was fairly certain that the problem had finally been corrected; particularly when the 2001 DWMP indicated the bacteria elevated levels had *decreased* (although they were still elevated above the normal range).

However, preliminary results from the 2002 DWMP revealed that the bacterial

levels had risen from the previous year to a troublesome level (see 2002 DWMP, available at City Hall upon request). As a result, the City "went back to the drawing board," and with the help of MEC Analytical (consultant for the 2002 DWMP), began an upstream investigation that continued through the end of calendar year 2002.

13.2 Background

The City began its DWMP in 1993, with no significant problems reported until 1996 when elevated bacteria levels were noted at the Fletcher Cove Outfall. Subsequently, the City constructed a low flow diverter (in 1998), which corrected the problem by diverting dry weather flow to the City's sanitary sewer system.

Between 1997 and 1999 results from the DWMP revealed some minor issues that were readily resolved, but nothing significant at Seascape Sur or Fletcher Cove Outfalls.

However, results from the 2000 DWMP identified two locations with high levels of coliform bacteria, which was of significant concern because both locations flowed directly to the beach via the Seascape Sur Outfall and were in fact, just a short distance from the outfall. The City conducted an extensive investigation and eventually found an old leaking sewer lateral that was buried under the ground near the site of the catch basins used for testing. The lateral was dug up, examined, and staff determined that cementing over the pipe would be the best method to ensure it was completely sealed off (investigation confirmed that the pipe was no longer in use). Because the leaking lateral was located quite close to the curb inlet, City staff, plumbing contractors and the consultant were fairly certain that the pipe was the cause of the elevated bacteria counts.

To confirm that the pipe was the cause of the suspected pollution, the City contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during several follow-up tests. At that point, staff was optimistic that their efforts had been successful.

The 2001 DWMP included ten sites for testing. To ensure the problem from the previous year had been corrected, the program included the same two sites that had elevated bacteria counts in 2000. Surprisingly, the site had elevated bacteria levels, but because they were much lower than the previous year, staff believed that the problem might be residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be televised in 2002 (the report for the

2001 program was delivered to the City in January 2002). The televising of the lines was scheduled during the routine cleaning of the storm drains later that year. Due to various issues, the televising of the lines did not take place prior to the implementation of the 2002 DWMP, which was under the regulations of the new Permit.

The City requested proposals from consultants to design and conduct the 2002 DWMP. The contract was awarded to MEC Analytical in late spring, early summer 2002. The City requested that the same two monitoring sites from 2000 and 2001 be included in the program, regardless of the new sampling procedures required of the Permit. The City included those sites to ensure continual monitoring of the area.

13.3 The 2002 Investigation

Samples for the 2002 program were collected on August 6th and 7th, 2002 throughout the City by MEC Analytical (MEC). Shortly thereafter, MEC contacted the City and informed the Storm Water Coordinator that significantly high levels of bacteria had been found at the locations of the year 2000 and 2001. As shown on Table 13-1, the amounts were troublesome.

Table 13-1

DWMP Initial Results (Sampled August 6-7, 2002)

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
1	West Side of Sierra Ave	700,000	30,000	24,000
2	Manhole between sites 1 and 2.	900,000	50,000	28,000
3	Seascape Sur Outfall (downstream from sites 1 and 2)	800,000	21,000	35,000

Results are reported in MPN/100 mL.

Based on the above results, it appeared that the problem, whatever the cause, was more pronounced at Site 2, the manhole, than at either Site 1 or 3. Therefore, the City immediately requested that the conveyance system be televised. At the same, the City authorized MEC to conduct an upstream investigation, accompanied by City staff. MEC indicated to staff that the elevated levels of bacteria, combined with the results from previous years, were a sign that an illegal sanitary wastewater connection may be the cause of the problem.

However, subsequent inspection by City staff (including public works crews that inspected various locations of the line) did not reveal any expected accompanying waste solids. A somewhat consistent drip was noticed, which was traced back to nearby condo complex that was discharging their pool (the process was discontinued and the complex changed their procedures to drain into the sewer system). Other causes of the slow drip appeared to be over-watering of the many condominium complexes on Sierra Avenue.

Staff sent letters to all HOAs on Sierra Avenue that drain to the Seascape Sur outfall to eliminate the slow drip. Staff received calls from some of the HOAs in response to the letters and discussed the issue in more detail and received positive responses.

The results of the televised line were viewed by the City Engineer, which revealed a dip in the line approximately at the location of the manhole (with the elevated bacteria) and two possible illegal connections just west of the curb inlet. However, additional investigation indicated that the connections were not a problem, but staff thought that the dip in line could be harboring residual bacteria, and possibly re-growth.

13.3.1 More Testing

In an attempt to pinpoint the source of the contamination, MEC and City staff began the upstream investigation on August 19, 2002. Samples were collected from Site 1, and at a curb inlet catch basin on the *eastside* of Sierra Avenue, directly upstream from Site 3 (named Site IE).

Staff was surprised when the results of the second round of sampling revealed *higher levels of total coliform (2,400,000), fecal coliform (50,000) and Enterococcus (500,000)* at Site 1E, than the previous results from Sites 1 and 3. Further, the results were surprising given that the dip in the line at Site 2 was thought to be the source of the contamination. *The results seemed to indicate that the source of the bacteria was coming upstream from Site 1E.*

13.3.2 Traveling Further Upstream

The curb-inlet catch basin on the east side of Sierra Ave (Site IE) receives street runoff and runoff from the Beachwalk Business Complex (Beachwalk). Beachwalk is a collection of various businesses located at 437 South Highway 101 in Solana Beach. Beachwalk businesses, at that time, included several restaurants (Pacific Coast Grill, California Pizza Kitchen, Rubios), several small

food facilities (ColdStone Creamery, Solana Beach Coffee Company, VitaFit, etc.,) several professional offices, a bike shop and others. Beachwalk was constructed approximately 13 years ago and at the time of construction, an on-site storm drain system, that collects on-site runoff from the property, was lawfully connected to the City's MS4.

Based on the results of the second round of testing, City staff thought that the source of the contamination must somehow come (or significantly contribute) from Beachwalk. Upon speaking with the Management Group that oversees the property, staff made several visits to look for possible non-point source explanations and speak with business owners to discuss BMPs (see Timeline below for more details).

On August 27th, 2002, City staff went to Beachwalk and personally delivered educational brochures to *all of the businesses,* educating business owners about storm water regulations and BMPs. To ensure that all the businesses were addressed, door hangers were left at the businesses that were not open at the time of the visit and additional property visits were scheduled. City staff also spoke with the person responsible for maintenance of the property and provided detailed information about pollution prevention, storm water regulations, and BMPs and how to report violations. Many of the business owners were extremely helpful and all were cooperative. Some business owners went out of their way to show staff potential problem areas, discuss BMPs and provide access to private restroom facilities (staff were looking for overflow problems and unusual construction or evidence of recent repairs).

Staff conducted another visit on September 3rd, 2002 in response to a call from one of the business owner's that staff had contacted on August 27th, 2002. City staff confirmed that foul smelling odors were coming from catch basins on-site. Further inspection revealed excess watering occurring on the patio of the Pacific Coast Grill restaurant. A manager at the restaurant was contacted and educated regarding BMPs and the new storm water regulations. During this visits, staff determined that samples were needed at various storm drains throughout the complex to try and pinpoint and eliminate the problem. City staff identified several locations that should be tested and requested permission to collect the samples from the property owners.[3]

[3] *Although the City's Municipal Code does provide sufficient legal authority to order testing of the sites, rapid remedies are more likely to occur through solving problems in collaborative manner. For that*

On September 4th, 2002, City staff accompanied MEC to conduct additional testing and investigation. The process confirmed staff's suspicion that the bacteria levels were coming from Beachwalk. Various samples were collected at locations throughout the complex. An outdoor floor drain just outside the kitchen of Pacific Coast Grill appeared to have dark brown, stagnate water in it. On-site ammonia tests were also consistent with elevated bacterial numbers (60 mg/L). A sample (Site 32) was then collected for further lab analysis. Sites IE and 3 were also sampled again for additional information. As shown on Table 13-2, Site 32 confirmed that the contamination was coming from Beachwalk and most likely, the source was near or in, the floor drain outside Pacific Coast Grill Restaurant.

Table 13-2
Upstream Testing Results

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
32	Beachwalk floor drain	>16,000,000	300,000	>241,960
1E	East Side of Sierra Ave	3,000,000	50,000	3,550
3	West Side of Sierra Ave	800,000	70,000	24,950

Results are reported in MPN/100 mL.

13.3.3 Just When We Thought the Problem was Solved…

After the lab results came back and confirmed what was suspected, the property owners were notified of the severity of the situation and were eager to remedy the problem and work with the City to find a solution.

The property owners worked together with the City's Public Works Supervisor and a local plumber experienced in storm drain cleaning to correct the problem. The east side catch basin was temporarily sealed, the pipe was flushed and a specially equipped trucked was placed at the catch basin to vacuum out the resulting sludge for proper disposal. As soon as the procedure was complete, on September 18th, 2002, City staff collected additional samples from all three sites (32, 1E and 3), *expecting the results to show a decrease in bacteria levels*. The residual water in the pipes was clear of the brown, stagnate water, which also contributed to the hope that the problem was *surely* resolved. However, while results from Site 32 indicated *reduced bacterial levels*, downstream sample *again* indicated *high bacteria levels*! (the sample on the west side of the street).

reason, City staff requested permission from the property owners to conduct some testing and received immediate access and cooperation.

13.3.4 Brainstorming

At first, these results seemed a bit perplexing (maybe it was the dip in the line?, etc.), but then, while staff continued to brainstorm ideas to solve the problem, some engineers thought was that the flushing of the system might have loosen some bacteria, which escaped collection by the Vactor truck. The City decided to wait a few weeks to see if the problem was alleviated after the system had time to completely flush out.

In the meantime City staff met with the property owners and 1) reviewed old construction plans for the property to look for potential areas of cross contamination; 2) discussed possible options that may help alleviate the situation, including training and education of business owners, television activities that might occur near the catch basin; and 3) it was decided that a temporary cap would be placed on the floor drain of Site 32 to secure it from contamination for 30 days (the cap could be removed during rain to prevent flooding).

After 30 days (and two rain events), staff requested that the plumbing contractor remove the temporary cap to allow further testing, which was agreed to.

13.3.5 Not again!

Surprisingly, results from this last round of testing indicated that there was still a significant problem on the property. An immediate meeting was scheduled with the property owners, who were informed of the test results and that the City now required them to remedy the problem through televising the lines, locating the illegal connection and reconstruction, or face serious fines by the RWQCB and the City. The property owners were concerned, responsive, cooperative and resolute in their attempts to do just that.

In addition, the City agreed to purchase a storm drain inlet filter to be placed in the catch basin just downstream from the complex, leading to the ocean outfall. It was installed the first week of December, and is maintained by the City's Public Works Staff. Although it does not filter the water passing through from Beachwalk, it does help alleviate the problem by filtering out the water coming from the street. The City hopes that this will help reduce the high bacteria numbers found in the catch basin.

13.3.6 Action Taken By Property Owners During FY 03/04 Annual Reporting Period

By the end of December 2002, Beachwalk property owners had done the following to remedy the problem.

While attempting to televise the lines, a significant amount of sludge built up in the pipe prevented the camera from penetrating the pipes (which is likely the source of the problem, City staff also reviewed the small amount of footage that was performed in the pipes)

- An extensive flushing out of the entire system was conducted, which took quite some time to accomplish amidst the rain events in December and the amount of material in the pipes.

- The lines were televised and detected a large dip in the pipe where sediment and sludge were building up, possibly providing a breeding haven for re-growth of bacteria.

- No illegal connections or sanitary waste connections were detected. There were a few pipes connected to the outfall pipe coming from the adjacent condos, however these lines were proven to be outdoor area drains. Beachwalk property owners and condo associations are completely aware of the responsibility to rectify the situation.

The City decided that they must increase their efforts to rectify this continuous problem to ensure the integrity of the receiving waters at Seascape Sur. The bacteria levels were still consistently high, often exceeding standard limits for the outfall, but, fortunately, not yet affecting the receiving waters. Growing increasingly frustrated, City staff decided that an increased effort, and the high costs that come with it, were necessary to finding the cause, and solution, to the problem at Seascape Sur.

On March 4, 2004, City staff televised the Seascape Sur storm drain line for maintenance purposes. The video showed a significant amount of sediment accumulated at the end of the pipe coming from the Beachwalk Business Complex. Staff met with the Beachwalk property management and mandated that they clean the sediment from the line. The Beachwalk management complied to our request and immediately cleaned the pipe, and City staff supervised to ensure all Best Management Practices were used and abided by at

all times.

Laboratory results were still coming back consistently high, so the City decided to take on the cost of completely cleaning the storm drain pipe with the hopes that it would remove any residual bacteria that may be contributing to the problem. The problem the City faced was that this had never been done before, and the dimensions of the pipe made it very difficult to develop a plan of attack. The pipe starts at the curb inlet on Sierra Avenue, then travels completely underground and slopes downward until it empties out onto the beach. The distance from the street to the outfall is approximately 550 feet and dips to 30 feet below the surface, so access is very difficult. The City was able to gain access from the neighboring condominium complex to place a vactor truck to ensure that no excess water would escape containment and empty onto the beach. The project took 5 entire days to complete (ending on Friday, May 5, 2004), with City staff working with its private contractor, and cost approximately $10,000. The City removed 4 cubic yards of sediment from the pipe, and used over 5,000 gallons of water. The City was confident that the next lab results would come back spotless.

13.3.7 What Happens Next…?

On the following Monday (May 10, 2004), City staff received a phone call from the County of San Diego Department of Environmental Health advising them that samples they took in the receiving water adjacent to the Seascape Sur outfall had failed AB 911 standards. The exact opposite had happened from what staff was expecting. It appeared that all the effort and money spent to clean the pipe had actually made it worse. However, Staff immediately began an IC/ID investigation and discovered that an adjacent condominium complex had a sewer spill that weekend and raw sewage had entered into the Seascape Sur storm drain. City staff was relieved that they found the cause of the high bacteria, but highly disappointed that all of their work, time, and money had been wasted by a small sewer backup, and it was back to square one.

Because the sewage was traced back to a private lateral, the City was determined to put the pressure on the condominium complex to clean the pipe again. Staff met with the HOA representative and a deal was worked out to have the pipe cleaned again, at the HOA's expense. Additionally, the City took this opportunity to once again educate the HOA and wrote an article regarding the proper handling and disposal of grease for the HOA's monthly newsletter The City then set the HOA up with a plan of attack and supervised the process, but the effort was stepped up a bit. Staff worked with the Regional Water Quality

Control Board to allow the City to use a small concentration of bleach mixed with the water to make sure that the pipe was completely sterilized at the end. This cleaning was done on September 24, 2004.

13.3.8 Where We Were in FY 04/05

The results of the cleaning performed on September 24, 2004 proved it to be very successful. The bacteria levels were reduced significantly and the City hoped that the sterilization would be a permanent fix. However, the results in the resulting few months showed that the bacteria was slowly increasing back to its historical levels, further frustrating City staff. This may be due to City staff's worst fear that the dip in the pipe could be harboring and resulting in re-growth of bacteria that may enter by way of decomposing organic debris and/or illegal dumping.

Since this did not permanently solve the problem, the City continued to explore other options. In March 2005, the City was discussing the situation with its contract lab, Weston Solutions, and jumped at the opportunity to participate in a pilot study aimed at refining a new lab analysis that would potentially categorize the generic coliform and enterococcus bacteria indicators as deriving from human or animal origins. This would be an extremely significant discovery because the City could further identify where the bacteria was coming from, human (IC/ID) or from animals (dogs, possums, raccoons, etc.), to help direct what steps to take in the future. The City could further refine its source identification and, in theory, stop wasting limited resources on sources that don't exist.

The pilot program is completed; however, the results did not come back revealing anything substantial. Only one sample came back positive for human bacteria (and this was somewhat inconclusive), and samples collected after this positive result all came back negative. Therefore, the City can conclude with relative certainty that the source of the bacterial contamination is not human. This one positive result may be caused by a single illegal dumping occurrence or by laboratory error. The resulting negative results show that there is not a continuous inflow of sewage, as would result if there were an illegal connection. Although the pilot program is complete, one early, important conclusion would be that the bacteria is not coming from human origins, which would allow the City to eliminate this from source identification and focus its efforts on non-human origins.

13.4 Timeline of Significant Actions

August 27, 2002- City staff distributed storm water brochures to all the businesses located in the Beachwalk complex. Staff toured the mall, visually inspected on site catch basins, outdoor floor drains, restroom facilities, and inspected several restaurants and discussed pollution prevention BMPs.

September 4, 2002- Based on feedback from the testing, staff spoke with the managers of Pacific Coast Grill, reviewed the storm water regulations, spoke about prohibited activities and distributed storm water brochures.

September 4, 2002- City staff and an employee from MEC conducted upstream investigation. A small outdoor floor drain contained brown, stagnate water with a very pungent odor. The drain cover was removed and the material was sampled. MEC called a few days later and reported that the results were consistent with the numbers for raw sewage for total and fecal coliform and *Enterococcus*.

September 18, 2002 - The Beachwalk storm drains were flushed out using clean, fresh water and the sludge was vacuumed out into a Vactor truck at Site 3. Results from follow-up samples indicated that a problem still existed.

October 24, 2002- Additional samples were taken to see if the problem had been eliminated. Results from the lab showed that the problem had not been solved. City staff continued to meet with property owners to pinpoint the source.

November 2002- The City installed a specialized catch basin filter unit that is designed to catch all debris (trash, organics, etc.) from the street before it reached the MS4 system. It also has specialized bio-filter rolls to filter out the hydrocarbons.

November 13, 2002- a semi-permanent cap was placed on the floor drain that seemed to be the source of the bacteria. A follow-up sample was scheduled for 30 days.

December 13, 2002- Samples were taken after the cap was removed and preliminary results indicate that the problem has not been resolved. More extensive investigation was ordered.

December 14-31, 2002- All property drains were cleaned and televised.

January through June- Increased monitoring and sampling through Coastal Monitoring Program to try and determine if the steps taken previously had successfully remedied the problem. An intensive educational program to the HOA's and the Business Complex was also implemented to assure compliance under the Permit.

March 4, 2004- Mandated and required the Beachwalk Business Complex to clean out storm drain system that leads to the City's Seascape Sur storm drain due to accumulation of debris (sediment, trash, etc.).

May 5, 2004- Completed cleaning of entire Seascape Sur storm drain line from Sierra Avenue to the beach outfall. A sewer spill occurred that following weekend from a private lateral connected to the Seascape line.

May 20, 2004- Wrote two articles for *Seascape Sur News,* the monthly newsletter distributed to the Seascape Sur condos, educating the residents on activities that may reduce bacteria that could be a possible source into the problem at Seascape Sur outfall. The first article was titled, "Sewer Clean-Outs," and it describes the proper way to dispose of grease (not down sink) to prevent sewer blockages and spills. The second article was titled, "Walk Dogs Off The Property and Clean Up After Them," which is pretty self-explanatory.

September 24, 2004- Completed cleaning again with the addition of bleach to counteract the sewer spill that occurred on May 5, 2004. Access issues during the summer months prevented the cleaning from occurring earlier.

November 2004- Samples showed a dramatic decrease in bacterial indicators, proving the cleaning was successful. However, future results showed the bacteria increasing back to historically high numbers.

March 1, 2005- Started participating in contract lab's pilot program to differentiate bacteria into human and animal origins.

May 30, 2007 – Conducted a thorough investigation with our lab (Weston) to detect any possible sources of the ongoing pollution (see below). Results of the investigation revealed that bacteria levels were in fact higher at the outfall than the catch basin; further reinforcing what City staff believes is a structural deficiency in the pipe that is leading to bacteria re-growth.

13.3.8 Where We Are Now (FY 05/06 & 06/07)

The City continues to struggle with this ongoing situation, and is running out of options to try and eliminate the high bacteria counts. The budget continues to include money for cleaning out the line once per year, but this is merely a temporary band-aid to the problem, whereas the City is looking for a permanent fix. The one positive to take from this is that the discharge is not affecting the water quality of the receiving water (Pacific Ocean) yet, but there is no guarantee that this will not change in the future. Here are some options the City is now looking at to hopefully solve this reoccurring situation:

- Repairing sag in the outfall pipe: This option is being actively researched as re-growth in the pipe is now the most suspected culprit. Our new Public Works Operation Manager is researching this option with other City staff. In addition, City staff is looking into other options such as re-lining the pipe or "pipe-blasting", which may help reduce the sag and improve flow through the pipe.

- Blocking off connections from adjacent residential complexes and making them drain to street so that discharge can be sampled: This option is seen as a last ditch effort, as it would be very expensive and politically charged. This would only be considered if outfall started affecting receiving water quality.

- Installing permanent BMP such as a low flow diverter: This option is also seen as a last ditch effort as it would be expensive and has not been fully researched to check the feasibility. City engineers would have to check the locations of the sewer main and the capacity to determine if this would be feasible. Funding may be available through grants for water quality, but again this option is a long term effort. City staff will continue to look into various funding options, one being the recent grant that allowed the City of Imperial Beach to install a low-flow diverter. Staff will monitor that project closely and may seek the same grant to place a diverter in this location.

- Conducting further tests to determine if source of bacteria can be pinpointed: This option is most feasible at this point. Our lab, Weston Solutions, has recently contacted the City again to be a part of another pilot program, this time with a study that will hopefully give us more results than the previous study. At this point, the City is open to any study that may assist us in finding the elusive source to the bacteria problem.

- The City's lab (Weston Solutions) did come out and visit the site once again on 5/30/07 with City staff to investigate the surrounding areas to see if they could detect anything that may be contributing. Weston has performed similar investigations in other cities with very positive results. They are as interested in finding the source as the City, as we have been partners now for years on this. The results were very interesting and reconfirmed the City's belief that there is substantial re-growth occurring in the pipe as the bacteria results were much lower in the catch basins than at the outfall. The results are as follows:

	East Side Catch Basin (MPN/100mL)	Outfall (MPN/100mL)
Total Coliform	700,000	16,000,000
Fecal Coliform	80	50,000
Enterococci	41	483

The City will continue cooperating with Weston and their professional staff to investigate this ongoing mystery until a resolution is found.

13.5 Future Activities

The City is committed to finding the solution of the bacteria problem at Seascape Sur. During last reporting period, the City was involved with its lab, MEC Analytical Systems, in investigating upstream to find potential sources of the bacteria (see above). Although this investigation did not give the City the results it had hoped for, it nonetheless was an attempt to solve the dilemma. As discussed above, the City is now looking at other structural options with its engineering staff to hopefully look at another angle in this seemingly unending battle. The investigations and studies have proven inconclusive and so now the City must investigate other more expensive options, more specifically fixing the structural deficiencies in the pipe.

The City has committed to setting money aside in its CIP budget to undertake some major projects to help solve the problem. As stated in the Fiscal Analysis Chapter, the FY 06/07 budget has $16,300 set aside specifically for the Seascape Sur storm drain cleaning. The City is committed to thoroughly cleaning

the pipe annually if need be, or until a long-term solution is found. The City is currently investigating other structural options and may find it better financially to undertake a large CIP project than continually spending $16,000 a year for a temporary fix. However, the location and depth of this particular pipe make it very difficult to work on, so it is taking some time to develop a sound engineering plan to fix the pipe or divert the flows. If this is the option the City ultimately takes, it will be very prudent to take the time to do it correctly, so the City is committed to taking the time to develop a plan to ensure its effectiveness.

Additionally, the City actively monitors the outfall pipe and all surrounding areas for any unusual occurrences, and the Marine Safety Department will continue to notify the Environmental Specialist whenever there seems to be unusual spikes or odors coming from the outfall pipe, as one of the lifeguard towers is located directly in front of the outfall (during summer months). Lastly, City staff will continue to work with the neighboring condo associations to educate the residents as well as perform inspections of upstream businesses.

13.6 Summary

The City has thoroughly utilized the results from its DWMPs during the last several years to identify and attempt to eliminate the source of bacteria that was exposed through testing and upstream investigations. With the efforts of City staff, and the cooperation of the Beachwalk property owners/managers and neighboring condominium complexes, the sources of these unknown and pesky bacteria has almost been solved. Unfortunately, with the structural deficiencies (the sag) in the pipe, it may only take a small amount of bacteria entering the pipe to remain in the sag and promulgate (re-growth). Fortunately, the elevated bacteria levels do not seem to be affecting the receiving waters (no exceedances the past two years) yet, but the City desires to stay ahead of the game and wants to take care of the situation before it becomes a problem. Therefore, the City is currently examining other options such as re-lining the pipe, "pipe-blasting" or installing a low-flow diverter. In the very near future, the City is confident it will close the book on the *Mystery of Seascape Sur Bacteria*.

CHAPTER 14
Conclusions and Recommendations

CHAPTER 14: CONCLUSION AND RECOMMENDATIONS

14.1 Conclusion

During the FY 2006/2007 reporting period, the City was able to successfully implement the many requirements of the Permit. Although the City has been required to have a storm water program under previous Orders issued by the RWQCB, this Permit greatly expanded the types of activities and documentation efforts required of the cities. This was the fifth and final year of implementation under Permit No. 2001-01, and looking back, the City is very satisfied with the progress of the program.

The City continued its "team approach" to implementing the JURMP by integrating the ever-evolving requirements of the Permit into specific tasks that each member would be responsible for implementing in their respective departments. The Environmental Specialist was responsible for bringing the group together and updating the respective departments on any changes that may affect their department's daily activities. Additionally, the Environmental Specialist was responsible for ensuring that all requirements of the Permit were being addressed and satisfied. This collaborative method allowed the City to more rapidly modify procedures and handle the increased workload quickly and efficiently.

The City's accomplishments during this final year of the JURMP implementation provide evidence of the City's pro-active approach to improving water quality. The requirements under Order 2001-01 expanded the previous Order (90-42) significantly and have altered many of the daily routines of staff at the City.

During the next reporting period, the City expects to build on the accomplishments of FY 06/07, and determine the most effective and meaningful program activities as to their impact on water quality (pollutant specific) collaboratively with the other Copermittees, and implement the approved program assessment strategy. Since the new Permit (Order No. 2007-0001) was adopted during the next reporting period (January 2007), the City anticipates working together with the RWQCB to implement the new regulations of the impending Permit. The City is confident that it accomplished the goals set out under Permit No. 2001-01 and is looking forward to continuing the successful programs of Permit 2001-01 and developing new and improved programs for Permit 2007-0001. This will be a very important year for the Copermittees as they

will have to evaluate and assess their programs and accomplishments over the last five years of the old Permit as well as develop and begin implementation of the newly adopted Permit 2007-0001. Although the adoption of the new Permit occurred post this reporting period, it is important to note that significant new programs were incorporated into the adopted Permit. These include but are not limited to:

- Hydromodification Plan
- SUSMP Model Update
- Low Impact Development (LID)
- Minimum inspection and street sweeping frequencies
- Post Construction BMP Inspections

The City eagerly anticipates working collaboratively with the other Copermittees in developing these significant programs for implementation in the next five year cycle. The City is confident that the Copermittees will continue to develop and implement these programs to meet the requirements and goals of the new Permit. The City understands that all parties' involved (Copermittees and RWQCB staff) are in this together to improve the discharge and receiving waters in the region and we will continue to support and work collaboratively with all parties to accomplish this goal.

*14.1.1 2006/*2007 *Accomplishments*

The following is a small list of notable accomplishments achieved during the 2006/2007 reporting period. All of these activities are described in more detail throughout this report. They are the following:

- Addition of two assessment questions on commercial facility inspection forms to help better assess the knowledge of the business community on storm water regulations. This was done in cooperation with all North County cities to develop a meaningful and consistent assessment of the north county region.
- Implementation of residential solid waste and recycling automated single stream commingled collection. This transition not only increased the City's

residential recycling rate by 22%, but also greatly reduced the amount of trash and debris in the City's MS4. The new program consisted of giving all residents new highly stable trash and recycling containers with attached lids so that they cannot be tipped over or picked through by animals. This was a problem with the old collection system because the cans most often did not have lids and could be knocked over easily, resulting in loose trash and debris that could enter the MS4.

- Modification of the Building Plan Check Form to include a new *Environmental* section that requires all plans to route through the Environmental Specialist for review. No permits can be issued without the Environmental Specialist signing of for approval. This is an obvious accomplishment since all plans will be reviewed for storm water issues.

- Developed and adopted a NPDES Solid Waste Fee to fund the programs necessary to comply with the Permit. The Fee funds pollution prevention activities and will provide a long term funding source which is paramount to a successful program.

- Cooperated with an extensive landscape and irrigation educational series for public and private landscapers. This cooperation between the City and its private water company Santa Fe Irrigation District proved very successful. The classes were given in both English and Spanish and taught the participants proper landscaping and irrigation practices. The City is dedicated to continuing its public/private cooperation's in the future.

14.2 Recommendations

Since the new Permit was adopted in January 2007, the majority of FY 2007/2008 will be dedicated to developing new programs and fine tuning existing programs to comply with the new requirements. The City is committed to working cooperatively with the other Copermittees to develop and implement the new required programs to provide a consistent and recognizable message for the region. However, the City still must develop jurisdictional specific programs to address the specific pollutants of concern and their respective sources. So, in an effort to implement a successful and meaningful program, the following are recommendations to improve the City's storm water program:

- *Resume the community workshops as soon as the demand is great enough.*

- *Continue to educate new and existing City staff to ensure compliance in the ever-changing storm water world.*
- *Complete the special investigation to uncover and eliminate the root cause of reoccurring problems upstream from Seascape Sur Outfall.*
- *Evaluate staffing needs and program responsibilities.*
- *Continue Implementation of SUSMP requirements and ensure all plans are in compliance.*
- *Develop the new JURMP program plan and implement measures to comply with Permit requirements*
- *Increase the education of residential sector which is a main focus of the new Permit. These programs will be addressed cooperatively at the regional level, but the City is committed to helping develop the materials and distribute to our residents.*
- *Continue to collect and analyze monitoring data to establish a long-term assessment of the City's water quality.*
- *Develop additional industry specific educational materials to distribute to the community.*
- *Develop and implement pollutant specific activities to address high priority COCs (Constituents of Concern).*

REFERENCES

City of Solana Beach. *"Adopted Budget for Fiscal Year 2002/2003."*

City of Solana Beach. *"Adopted Budget for Fiscal Year 2003/2004."*

City of Solana Beach. *"Environmental News."* Shorelines Newsletter. Vol.16. No.2. Fall/Winter 2003/2004.

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MEC Analytical Systems, Inc. *"San Diego County Municipal Copermittees 2002-2003 Urban Runoff Monitoring Report."* September 2003.

APPENDICES

APPENDIX A: STREET SWEEPING MATERIALS FORM

Employee Name and Organization (below)

Date (above) use N/S below if not scheduled

1st 2nd 3rd 4th Tuesday	Time in: Time out:	Time in: Time out:	Equipment Number: Year, Make & Model

OBSTRUCTIONS (identify as vegetation, vehicle, etc. and provide description).

Reference previous date(s) reported (no entry above required):

End of day Volumn in Cubic Yards: _____
% (percentage) Sediment: _____
%(percentage) Organics: _____
Litter (describe-or-enter –0-) _____

Operator enter reason(s) for not following schedule or other comments: _____

C.O.S.B. Initial _____

Forward to R.W.Q.C.B. (C.O.S.B. Initial on Sending) City of Solana Beach 2004(adinf)

APPENDIX B: SMOKING BAN ORDINANCE

ORDINANCE NO. 316

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Findings and Purpose. The City Council of the City of Solana Beach hereby finds and declares that:

A. The City of Solana Beach is committed to keeping its beaches and parks clean, safe, healthy and pleasant for everyone.

B. Smoking is hazardous to health. Numerous studies have shown that second-hand smoke is a significant public health hazard. The U.S. Environmental Protection Agency has classified second-hand smoke as a group A carcinogen, the most dangerous class of carcinogen. Smoking in parks and beaches endangers children and others by exposing them to second-hand smoke. Moreover, children and youth who observe smoking and tobacco use in public beaches and parks may model the behavior.

C. The U.S. Centers For Disease Control and Prevention (CDC) estimates that second-hand smoke causes 3,000 lung cancer deaths per year among adult non-smokers in the U.S. The California Environmental Protection Agency has concluded that second-hand smoke causes coronary heart disease in non-smokers. Second-hand smoke is especially hazardous to particular groups, including those with chronic health problems, the elderly and children. The CDC has found that second-hand smoke causes children to suffer from lower respiratory tract illness, such as bronchitis and pneumonia, exacerbates childhood asthma, and increases the risk of acute chronic middle ear infection in children.

D. Additionally, discarding cigarettes and cigar butts and tobacco onto the ground in City parks and beaches is unsightly, unclean and particularly hazardous to small children who handle and sometimes ingest them. The City must collect tobacco litter in parks and beaches or it will be collected by stormwater and washed directly into our ocean waters in violation of the City's stormwater pollution prevention permit and to the detriment of ocean life and all ocean users.

E. The City Council therefore determines that banning smoking and the improper disposal of tobacco products in City parks is necessary to protect the health, safety and welfare of Solana Beach residents and visitors.

SECTION 2. Section 11.12.020 A. of the Solana Beach Municipal Code is hereby amended to read as follows:

A. To dump or deposit any trash, specifically including cigarette and cigar butts and tobacco, refuse, rubbish, litter, or other kind of waste materials, except in approved containers specifically placed and designated to receive such waste materials. No person shall dispose of any animal carcass in or on any beach or park.

SECTION 3. Section 11.12.020 EE of the Solana Beach Municipal Code is hereby added to read as follows:

EE. No person shall smoke within the boundaries of any public beach or park unless the City has designated a specific temporary or permanent signed smoking area.

SECTION 4. If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.

SECTION 5. This ordinance shall become effective thirty (30) days following its adoption. Within fifteen (15) days after its adoption, the City Clerk shall publish this ordinance, or the title hereof as a summary, in a newspaper of general circulation within the City of Solana Beach as required by law.

INTRODUCED at a regular meeting of the City Council of the City of Solana Beach, California held on the 7th day of October, 2003, and thereafter

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, held on the 21st day of October 21, 2003, by the following vote:

AYES: Councilmembers – Golich, Kellejian, Campbell, Sheres, Powell

NOES: Councilmembers – None

ABSENT: Councilmembers – None

ABSTAIN: Councilmembers – None

THOMAS S. GOLICH, Mayor

APPROVED AS TO FORM:

CELIA A. BREWER, City Attorney

ATTEST:

JAN UHLMAN, Acting City Clerk

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) ss.
CITY OF SOLANA BEACH)

I, JAN UHLMAN, Acting City Clerk of the City of Solana Beach, California, DO HEREBY CERTIFY that the foregoing is the original of Ordinance No. 316 duly passed and adopted by the City Council of the City of Solana Beach, California, at a Regular meeting thereof held on the 21st day of October, 2003.

That, in compliance with the laws of the State of California, Ordinance No. 316 being:

> AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

A certified copy of the full text of Ordinance No. 316 along with the names of those City Councilmembers voting for and against said Ordinance was caused to be posted in the office of the City Clerk.

Executed the 23rd day of October, 2003.

(SEAL)

CITY OF SOLANA BEACH INCORPORATED JULY 1 1988 CALIFORNIA

Jan Uhlman
JAN UHLMAN, Acting City Clerk

Published: North County Times: October 28, 2003

APPENDIX C: STORM WATER FACILITY INSPECTION FORM

City of Solana Beach - Urban Runoff Management Program
STORM WATER COMPLIANCE INSPECTION CHECKLIST
Page 1 of 2

Inspector: _____
Date / Time of Inspection: _____
Type of Inspection: Routine Follow-up Complaint Investigation

I. FACILITY INFORMATION

Facility Name		
Street Address		Zip Code
Facility Contact Person		Phone
Type of Business Commercial Industrial	JUMRP Prioritization level *(circle one)* High Medium Low	Standard Industrial Classification Code (SIC) if any

II. GENERAL SITE CONDITIONS

	S*	U*	N/A	Comments
General Observations				
Awareness of storm water related issues?				
Prior contact by a City employee for storm water?				
Employees trained in storm water pollution prevention practices?				
Common areas of yard reasonably clean and free of litter and debris?				
Are parking areas generally clean and swept as needed?				
Are storm drain inlets reasonably clean and free of debris?				
Is there evidence of discharges, spills, and or leaks in any areas?				
Trash storage areas				
Is area reasonably clean and uncluttered?				
Are trashcans and garbage bins kept covered?				
Fueling areas				
Is there a roof on fueling area?				
Is there a mechanism in place for spill overflow protection?				
Vehicle/equipment maintenance area				
Area reasonably clean and free of spills, leaks, or any other pollutant-causing materials?				
Dry clean up methods implemented? (sweeping vs hosing)				
Are there drip pans readily available for use?				
Spill containment and cleanup kits readily available?				
Storage areas covered and properly maintained?				
Are related activities contained within designated area?				
Hazardous materials/liquids stored above ground?				

* S = Satisfactory, U = Unsatisfactory

City of Solana Beach - Urban Runoff Management Program
STORM WATER COMPLIANCE INSPECTION CHECKLIST
Page 2 of 2

II. General Site Conditions (con't)	S*	U*	N/A	Comments
Materials loading and storage areas				
Area reasonably clean and free of litter and debris?				
Designated area covered overhead?				
Chemical handling areas				
Areas reasonably clean and organized?				
Is area indoors or properly covered?				
Spill containment cleanup kits readily available?				
If outdoors, is water from surrounding areas prevented from reaching chemical handling areas?				
Hazardous materials/liquids stored above ground?				
Dry clean up methods implemented?				

III. BUSINESS PRACTICES

	S	U	N/A	Comments
BMPs				
Implemented minimum BMPs for this type of facility?				
Employees trained in BMP practices?				
Posted list of BMPs to assist employees in remembering?				
Ensures employees comply with BMPs?				
Record keeping				
Any available records to indicate storm water training?				
Any available records to indicate storm water compliance?				
Reporting Violations				
Aware of City's storm water hotline?				
Aware of County reporting hotline?				

IV. STATE PERMITS

Is this facility required to have at State Water Pollution Prevention Plan (SWPPP)?	Yes	No
Is facility subject to CA Statewide General Industrial Permit?	Yes	No
If yes, has facility filed a Notice of Intent (NOI) to comply?	Yes	No
If no, does facility have No Exposure Certification (NEC)?	Yes	No

V. Additional Comments

- ASSESSMENT (CIRCLE APPROPRIATE LEVEL "5" IS HIGH LEVEL)
- LEVEL OF KNOWLEDGE REGARDING STORM WATER ISSUES: 1 2 3 4 5
- LEVEL OF CLEANLINESS, BMP IMPLEMENTATION, ORDERLINESS OF SITE: 1 2 3 4 5

SOLANA BEACH

CIVIL PENALTIES MATRIX

The following factors will be considered in determining the amount of civil penalties from the Solana Beach Municipal Code 13.10.140 A. any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day** such a violation exists and will be assessed: (1) The seriousness of the violation (2) the duration of the violation; (3) the frequency or recurrence of the violation; (4) the history of the violation; (5) the Responsible Party's conduct after issuance of the Notice and Order; (6) the good faith efforts of the Responsible Party to comply; (7) the impact of the violation upon the community.

*** Criminal Penalties.**

These factors are assigned to two categories, "**Environmental Significance**" and "**Compliance Significance**," in order to easily present them in a graphical form in the matrix chart.

Environmental Significance includes the following factor: Seriousness of the violation.

Compliance Significance includes the remaining factors: The duration of the violation, frequency or recurrence of the violation, the history of the violation, the Responsible Party's conduct after issuance of the Notice and Order; the good faith efforts of the Responsible Party to comply and the impact of the violation on the community.

	Environmental Significance		
Compliance Significance	Moderate	Major	Severe
Moderate	*NOV-$100	$100 - $200	$500

Major	$100- $200	$500	$1,000
Severe	$500-$1,000	$1,000	$1,000-Referral to Regulating Agency

* Notice of Violation

The list below gives examples of issues specific to storm water violations that could be considered under each of the factors.

- Increased Penalties will be factored as Notice of Violation to Moderate, Moderate to Major or Major to Severe.
- Decreased Penalties could be Severe to Major, Major to Moderate or Moderate to Notice of Violation.

Environmental Significance

Seriousness of the Violation

- Relatively inert discharges (e.g., soil, sediment, cement residue, stucco residue**,** etc.) **[Moderate Environmental Impact]**

- Moderate toxicity / moderate health threat discharges (e.g., cleaning products with no specific hazard, i.e. detergent, latex paint) **[Major Environmental Impact]**

- Significant toxicity / significant health threat discharges (e.g., sewage, hazardous materials/wastes, etc.) **[Severe Environmental Impact]**

SOLANA BEACH

CIVIL PENALTIES MATRIX

Compliance Significance

Duration of Violation

Extent of discharge as determined by volume, area covered, how long it continued **[Greater Discharge Can Lead to Increased Penalty]**

Number of days the discharge remained unabated in the conveyance system **[Unabated Discharge Can Lead to Increased Penalty]**

Impact on the Community

Results in damage, degradation, or obstruction of the storm water conveyance system **[Can lead to Increased Penalties]**

Results in actual degradation of aquatic habitat in receiving waters **[Can lead to Increased Penalties]**

Results in actual impact on wildlife including benthic communities **[Can lead to Increased Penalties]**

Results in algal bloom, discoloration or odor in receiving waters **[Can lead to Increased Penalties]**

Discharge of constituent of concern within a watershed that leads to a 303 (d) listed water body **[Can lead to Increased Penalties]**

Regulated industry (e.g., subject to OSHA chemical right-to-know requirements or subject to Hazardous Material / Hazardous Waste Permit) **[Can lead to Increased Penalties]**

Recurrence of Violation

No prior administrative enforcement penalty can be a factor for officer's discretion in lowering penalties.

Prior administrative penalties action can lead to increased penalties.

Prior administrative enforcement within the last year maybe a factor in determining higher penalties leading up to a **criminal citation**.

Intentional discharge will be a factor to increase penalties leading up to a criminal citation.

SOLANA BEACH

CIVIL PENALTIES MATRIX

History of Violation

Prior violations or warnings issued by other regulatory or City agencies (e.g., County Dept. of Health, County Dept. of Env. Health, RWQCB, FEWD, MWWD) **[Can lead to Increased Penalties]**

Prior warnings (letter or Notice of Violation) from Storm Water Pollution Prevention Program **[Can lead to Increased Penalties]**

Good Faith Efforts to Comply

Responsible Party failed to implement BMPs and should have known of requirement for BMPs (e.g., gasoline service station or construction industry) **[Can lead to Increased Penalties]**

Existing BMPs failed to prevent discharge (e.g., employee failed to comply with documented training and procedures or structural BMP failed to perform to design) **[Can lead to Reduced Penalties]**

Rapid and appropriate response to discharge **[Can lead to Reduced Penalties]**

The Solana Beach Municipal Code 13.10.140 A States the following:

> *13.10.140 Penalties for violation.*
>
> A. Civil Penalties. Any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day such a violation exists**, and all pollution detection and mitigation costs (if applicable).
>
> B. Criminal Penalties. Any person who knowingly or intentionally violates any provision of this chapter shall be subject to liability for a misdemeanor, punishable by imprisonment for a period not to exceed one year, or a fine not to exceed $10,000 for each day such a violation exists, or both.
>
> C. Any monetary penalties collected by the city of Solana Beach pursuant to violations of this chapter shall be returned to the storm

water management program to be used for storm water pollution monitoring and management practices. (Ord. 184 § 1, 1993)

13.10.150 Continuing violation.

Unless otherwise provided, a person, firm, corporation or organization shall be deemed to have committed a separate offense for each and every day during any portion of which a violation of this chapter is committed, continued or permitted by the person, firm, corporation or organization and shall be punishable accordingly as herein provided. (Ord. 184 § 1, 1993)

13.10.160 Concealment.

Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter shall constitute a violation of such provision. (Ord. 184 § 1, 1993)

13.10.170 Acts potentially resulting in violation of Federal Clean Water Act and/or Porter-Cologne Act.

Any person who violates any provision of this chapter, any provision of any permit issued pursuant to this chapter, or who discharges waste or wastewater which causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, may also be in violation of the Federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts including civil and criminal liability. Any enforcement action authorized under this chapter should also include notice to the violator of such potential liability. (Ord. 184 § 1, 1993)

13.10.180 Violations deemed a public nuisance.

A. In addition to the penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to the public health, safety and welfare and is declared and deemed a public nuisance and to impact storm water quality, and such nuisance may be summarily abated and/or restored by any authorized enforcement official. Civil action to abate, enjoin or otherwise compel the cessation of such nuisance may be taken by the city attorney.

B. The cost of such abatement and restoration shall be borne by the owner of the property and the cost thereof shall be a lien upon and

against the property and such lien shall continue in existence until the same shall be paid. If the lien is not satisfied by the owner of the property within three months after the completion by the authorized enforcement official of the removal of the nuisance and the restoration of the property to its original condition, the property may be sold in satisfaction thereof in a like manner as other real property is sold under execution.

C. If any violation of this chapter constitutes a seasonal and recurrent nuisance, the city of Solana Beach shall so declare. Thereafter such seasonal and recurrent nuisance shall be abated every year without the necessity of any further hearing. (Ord. 184 § 1, 1993)

13.10.190 Civil actions.

In addition to any other remedies provided in this section, any violation of this chapter may be enforced by civil action brought by the city of Solana Beach. In any such action, the city of Solana Beach may seek, and the court shall grant, as appropriate, any or all of the following remedies:

A. Injunctive relief;

B. Assessment of the violator for the costs of any investigation, inspection, or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing legal action under this subsection;

C. Costs incurred in removing, correcting, or terminating the adverse effects resulting from the violation;

D. Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life. Assessments under this subsection shall be paid to the city of Solana Beach to be used for costs associated with monitoring and establishing storm water discharge pollution control systems and/or implementing or enforcing the provisions of this chapter. (Ord. 184 § 1, 1993)

APPENDIX E: SHORELINES NEWSLETTER WINTER 2006

Lomas Santa Fe and I-5 Modification

The Interchange Modification alternative approved by City Council in 1999 is getting closer to being constructed. Previously considered a City project, the modifications will be constructed by Caltrans under the direction of SANDAG as part of the initial I-5 widening improvements. The project will be constructed in two phases:

Phase I - Auxiliary lanes, Via de la Valle to Lomas Santa Fe Drive

An $11 Million project to add an auxiliary lane in each direction from Via de la Valle to Lomas Santa Fe is scheduled to start in February 2007. Auxiliary lanes reduce freeway congestion associated with motorists entering and exiting the freeway. The southbound auxiliary lane should be open by the end of June 2007 with the northbound lane opening a few months later. This project will include improvements to Ida Avenue and Genevieve such as curbs, sidewalks and storm drain improvements. In conjunction with the auxiliary lanes, Caltrans will be realigning the northbound on-ramps at Via de la Valle to merge with the new auxiliary lane, reducing the northbound I-5 bottleneck at Via de la Valle.

Phase 2 - Lomas Santa Fe Drive Interchange Modification and HOV extension

The Interchange Modification at Lomas Santa Fe Drive has been combined with another project that will extend the northbound and southbound carpool lanes an additional two miles from Via de la Valle to Manchester Avenue. The interchange modification will add two looping on-ramps, eliminating left turns to enter the freeway from Lomas Santa Fe Drive. The northbound off-ramp will be shifted east, permanently closing Marine View Drive north of San Andres and eliminating one signalized intersection. Traffic flows on Lomas Santa Fe Drive will be greatly improved.

Construction is anticipated to begin summer of 2007 with completion in mid-2009. Construction of Interchange related improvements fronting the Lomas Santa Fe Plaza ("Vons shopping center") will occur in early 2007. These include landscaped medians, an enlarged and signalized main entry, addition of right-in only entrance near Starbucks, Las Banderas Drive golf cart and pedestrian crossing and Marine View at San Andres improvements. For more information, please contact the Engineering Department at (858) 720-2470.

Solana Beach Welcomes:

AUTOMATED TRASH & RECYCLING

This summer, after a successful pilot project in Solana Beach, the City Council approved the Waste Management's automated residential collection program. This program will provide the same service as in the past, in a new, more efficient manner. The two large carts, gray and blue, will replace old trash cans and recycling crates. The gray cart will hold trash and the blue cart will hold the recycling, eliminating the requirement to segregate the various recyclable materials. One blue and one gray cart will be supplied by Waste Management at no cost to residents. This exciting new program is scheduled to begin in late November, 2006. Look for more information coming in your mail and on the city website. If you have questions, please call 1-800-386-7783 to speak with Waste Management customer service.

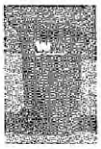

Holiday Tree Lighting

The Solana Beach Parks and Recreation Commission will be holding its annual Holiday Tree Lighting event on Friday, December 8th. Festivities start at 6:30 p.m. and will go on until the last child (3rd grade and under) has shared with Santa his special wish. The free event will be at the northwest corner of Lomas Santa Fe and Cedros Avenue (by the Train Station). The evening will feature festive holiday music and entertainment. Delicious refreshments, cookies, and cupcakes will be provided for all. The highlight of the evening will be the arrival of Santa at 7:15. You are also invited to bring an unwrapped children's gift that will be distributed to deserving children by St. Leo's Church. This Tree Lighting event is a wonderful tradition and this year's celebration promises to be a great kickoff to our holiday season.

Congressman Bilbray to Speak at VETERAN'S DAY CEREMONY

The City of Solana Beach and Veterans of Foreign Wars Post 5431 will jointly host a Veteran's Day ceremony at the La Colonia Community Center, located at 715 Valley Avenue in Solana Beach, on Saturday, November 11, 2006. The ceremony will take place from 11:00 a.m. until 12:00 noon.

During the ceremony, the Santa Fe Christian School Performing Band will play favorite patriotic songs and the Camp Pendleton Young Marines will conduct the presentation of colors. The ceremony will begin with words of welcome from Solana Beach City Council members. Randy Treadway, past Post Commander for VFW Post 5431, will address the attendees and introduce veterans and other special guests. United States Congressman, Brian P. Bilbray will be the featured speaker for the ceremony.

Mr. Bilbray, a native San Diegan, was elected to serve in the 109th Congress in June of 2006. He currently serves on the House Armed Services Committee, the Veteran's Affairs Committee, and the Committee on Government Reform.

Additionally, the Veteran's Memorial wall at the La Colonia Community Center will be available for viewing, and docents from the Civic and Historical Society will be on hand to conduct tours of the Historical Museum. Light refreshments will be served by Boy Scouts of America, Cub Pack 782. The event is free and always a memorable occasion.

The VFW and City of Solana Beach are proud to have Congressman Bilbray as the guest speaker and encourage everyone to attend.

Holiday Safety Tips

The Encinitas Sheriff's Station's Crime Prevention Unit works directly with residents, business owners, and schools to educate the community about crime prevention. The busy holiday season means added opportunities for crime to occur. Below are a few suggestions to help everyone stay safe during the holidays.

ADULTS

- Lock car doors and windows. Keep packages out of sight.
- NEVER drink and drive. Designate a driver, eat before consuming alcohol, and know your alcohol limit.
- Stay alert when shopping. The holidays are hectic and it only takes a second for a purse to be taken.
- Do not carry large amounts of cash.
- Keep the outside of your home well lit with all doors and windows locked. Place lights inside and out on staggered timers.
- Never place valuables or gifts under a tree that is visible through a window.
- Make sure your children understand that ANYONE they do not know is a stranger, and to never talk to strangers.

CHILDREN

- Children need to know their parent's names. Everyone has a "Mommy" or "Daddy." If lost, children should go to a store clerk to help locate the adult.
- Practice the "buddy system," never go to the restroom alone.
- Take a friend, do not go holiday shopping alone. Make sure you have parent permission.
- Do not take anything from strangers without a parent's permission.
- When home alone, keep all doors locked. and do not have unplanned visitors. Never tell anyone that you are home alone, have a phone to call a trusted adult for any concerns.
- If approached by a stranger, yell "NO STRANGER" and run away to a trusted adult.
- Have an "In Case of Emergency (ICE)" phone number programmed in cell phones. That way, in case of an accident, a first responder can find someone to call.

The Crime Prevention Unit performs Residential Security Consultations to homeowners who request them. Other services offered are Business Watch meetings, Neighborhood Watch meetings, school presentations, and crime prevention techniques for seniors. To take advantage of these services or to get more information, please contact Kyle Jones, Crime Prevention Specialist, at (760) 966-3588.

Pet Safe Holidays

Around the holidays our lives tend to become very hectic and this will have an impact on our pets. Here are several things you can do to make the holidays safe for our pets.

- Keep pets on their regular diet; do not share holiday food, poultry bones and chocolate are dangerous.
- Parties and large gatherings can frighten pets; if needed, place your pet in a quiet safe area during the event.
- Loud sounds and fireworks can frighten pets; they can panic and run away.
- **Please keep your pet indoors on New Years Eve!**

If your pet does get lost, check the neighborhood and visit area animal shelters as soon as possible. Solana Beach receives animal services from the County of San Diego Department of Animal Services located in Carlsbad. The shelter maintains a "Lost and Found" book that can assist you in finding your pet.

Microchip Clinics

Identify your pet with a collar and an identification tag with your address and phone number, as well as a current license tag. The Department of Animal Services offers a microchip clinic for your dog, cat, or rabbit every Thursday from 1:00 - 3:00 p.m. at the Carlsbad shelter. The cost is $20 and includes national registration. We ask that dogs be on a leash and cats or rabbits be in a carrier. County dog licenses are also available. Ask about our $50 coupon (DAS jurisdiction only) for those whose animal is unaltered.

Spay/Neuter Your Pets

The County of San Diego Department of Animal Services wants to remind the public to have their pets spayed and neutered. Animal shelters throughout the county, are filled with the offspring of unintended breeding. This is particularly true of cats. Every year, shelters fill with unwanted cats and kittens. By having your pet altered, you will prevent the birth of these unwanted animals. The County of San Diego Department of Animal Services shelter is located in Carlsbad at 2481 Palomar Airport Rd. **For more information about these programs call (760) 438-2312 or visit the website at: www.sddac.com.**

Holiday Tree Recycling/Collection Program

The City of Solana Beach, in partnership with Coast Waste Management, Inc. has a holiday tree recycling and collection program that allows residents to drop off their trees, free of charge, starting December 26, 2006 through January 14, 2007.

Holiday Tree RECYCLING

There will be two recycling locations for residents to drop off their trees. They are behind the Longs Drug Store on South Sierra Avenue and at the La Colonia Community Center at 715 Valley Avenue. Flocked trees are not accepted. Trees do not have to be cut down but all decorations and stands must be removed.

Holiday Tree CURB COLLECTION

All trees must be cut into 4-foot sections and placed out on the curb for pick-up during the scheduled trash day. All decorations and tree stands must be removed. Flocked trees will be collected by the trash drivers.

Sheriff's Volunteer Patrol Seeks Seniors to Serve

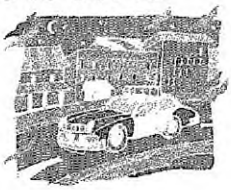

The Senior Volunteer Patrol working out of the Encinitas Sheriff's Department station is seeking men and women to participate in a unique volunteering experience. Volunteer teams conduct home vacation checks, operate the *You Are Not Alone* program (YANA) for the elderly living by themselves, assist Deputies with traffic control operations, and enforce Disabled Parking Regulations. The Volunteer Patrol provides these and other services in the cities of Encinitas and Solana Beach as well as surrounding unincorporated areas.

The Volunteer Patrol offers an opportunity to give back to the community by participating in an elite unit devoted to public service. Candidates must be age 50 and over, hold U.S. citizenship and in good health. They must attend a 2-week long training academy and agree to devote at least one daytime shift per week and attend an afternoon training session once a month. The Sheriff furnishes uniforms and badges, the white patrol cars and communications equipment. Interested parties should contact Volunteer Administrator Jim Hughes at the Encinitas Sheriff's Station: call (760) 966-3579 (please leave a message) or send an email with the title "Volunteer Information" (james.hughes@sdsheriff.org).

San Dieguito River Park

The San Dieguito River Valley Conservancy hosts monthly hikes and habitat restoration events at the western end of the River Park in the San Dieguito Lagoon and invites you to get involved! We need volunteers to help remove invasive non-native plants, repair erosion damage, and improve trails. Tools, training, and refreshments are provided and all ages and groups are welcome. Our next volunteer work party is scheduled for Sunday, Nov. 26, from 1:00–3:30 p.m. at Crest Canyon, off Racetrack View Drive in Del Mar.

Contact the Conservancy at (858) 755-6956 or SDRVC@san.rr.com for directions and more information about our upcoming events. Visit us on the Web at www.sdrvc.org. See you out in the River Park!

La Colonia Park Improvement Plan

Community Workshop – All Solana Beach residents are welcome and encouraged to provide their comments and suggestions on how to make La Colonia Park a safer, more attractive, and fun place to be. The La Colonia Park Master Plan Committee will also share some of their park improvement ideas.

Thursday, November 30, 6 to 8 p.m.
La Colonia Park, 715 Valley Avenue

Child Care and Refreshments Provided

For more information, please call (858) 793-2564

Solana Beach Community Senior Center

The Best Kept Secret in Town!

Perhaps the best gift you can give yourself this holiday season is at the Solana Beach Community Senior Center! Celebrating their 20th Anniversary, the Senior Center is for some a very regular, important part of life, for others perhaps, the best kept secret in town! The Solana Beach Community Senior Center is located at 120 Stevens Avenue, at the Solana Beach Presbyterian Church. The Senior Center is sponsored by SBPC and is opened to everyone in the community regardless of church affiliation (or city of residence).

The Solana Beach Community Senior Center has a variety of regularly scheduled activities including Fitness activities, Bridge, Canasta, Discussion Groups, Driving Classes, Computer Classes, Bible Study, Volunteer opportunities, Daytrips, and much more! The Senior Center does not receive any city, county, state or federal funds, it operates solely on memberships ($15 annually) and donations. It's a friendly environment with something for everyone!

Highlights of the special events coming soon include:

November 15	Presentation about our 2007 "Unpack Once" Trips
November 15	Thanksgiving Potluck Lunch
November 29	The Covenant Players Theater Group
December 2	Lamb's Players Theater Trip
December 20	Christmas Potluck Lunch
Coming in 2007	Getty Villas (Malibu) Trip

Why not give yourself a great gift this holiday season and check out the Solana Beach Community Senior Center! To receive more information or our printed newsletter, *The Foghorn*, please contact Cindy Wright at (858) 509-2580 ext. 1400.

APPENDIX F: SHORELINE NEWSLETTER SUMMER 2006 AND FALL 2006

The City's Aging Sewer System

is long overdue for upgrades. A few years ago a sewer master plan was prepared that evaluated the existing system and made recommendations for improvements and replacements. Three major facilities recommended to be replaced are the Solana Beach Force Main, the Eden Gardens Pump Station and Solana Beach Pump Station, which are all over 40 years old. These facilities were built by the County in the 1960's and the City took control of these facilities upon incorporation in 1986. Construction costs have been estimated at approximately $16 million for all three projects.

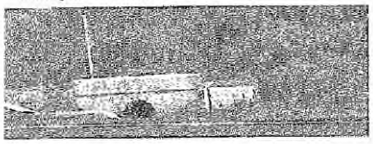

The City has completed some upgrades to the sewer system and installed 7800 lineal feet of new 24" diameter sewer trunk line at a cost of approximately $1 million in conjunction with the Lomas Santa Fe Grade Separation project. In 2000 the City constructed a siphon control facility on the San Elijo Lagoon at a cost of $1.7 million.

SOLANA BEACH FORCE MAIN is a pipe that carries 90% of the City's sewage underneath the San Elijo Lagoon from the Solana Beach Pump Station, located at the north end of the City, east of the railroad tracks, to the San Elijo Joint Powers Authority wastewater treatment facility on Manchester Avenue in Cardiff.

When sewage cannot flow downhill (by gravity) due to topography, then pump stations are used to lift sewer flows from a low point to a higher point through a force main which is a sewer line that flows under pressure (similar to water lines) instead of gravity.

The Solana Beach Force Main is an existing 12-inch diameter asbestos cement pipe installed in the mid-60's under the San Elijo Lagoon which has been identified as the top priority for replacement. Design of the new Force Main is currently 80% complete. State and Federal environmental approvals have been granted with a condition that restricts construction to a period between September and March, thus construction is anticipated to begin in the fall of 2006. The new 16" pipe will be installed using a trenchless Horizontal Directional Drilling (HDD) construction method. Construction cost is estimated to be about $6 million, of which one third of the funding has been identified through grant funds.

EDEN GARDENS PUMP STATION, located at the south end of the City on Valley Avenue near Via de la Valle, pumps approximately half of the City's sewage north to the Solana Beach Pump Station. The Eden Gardens Pump Station was originally constructed in 1960. A complete replacement of the facility has been designed, including architectural treatments, improved landscaping, street curbs and a sidewalk from the corner of Highland and Valley to the adjacent bus stop. A bus stop canopy and bench is also included. The project was recently advertised for bids and the low bid was about $4.6 million, an amount well over the budgeted cost. Due to funding shortfalls and the Force Main being the top priority, this project will be postponed until funding is available.

SOLANA BEACH PUMP STATION
Re-design of the Solana Beach Pump Station has not begun. The City's budget identifies initial funding for this project in fiscal year 2008/2009. The City is pursuing grant funds for design and construction of the Solana Beach Pump Station.

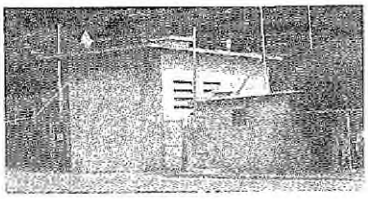

NEW Local Recycling Options for Alkaline Batteries and Electronic Waste

Effective February 9, 2006, a new California law took effect which prohibits the disposal of household "universal waste" items such as batteries, old cell phones and fluorescent tubes and bulbs in residential trash. Products such as these contain low levels of hazardous materials such as lead, mercury, cadmium and chromium which can potentially contaminate soil and groundwater if disposed in the trash and subsequently deposited into landfills.

The new universal waste regulations now join electronic waste and household hazardous waste to specify a range of consumer products that may not be disposed of in the regular trash. With the new regulations come new recycling options for Solana Beach residents:

- Del Mar and Solana Beach residents can bring household alkaline batteries (AA, AAA, C and D cells, and button batteries) to Waste Managements Del Mar Recycling Center at 2265 Jimmy Durante Boulevard. Batteries are accepted free on Tuesday - Saturday, between 8 a.m. and 4 p.m. (the center is closed for lunch from 1:00 - 1:40 p.m.).
- The Del Mar Recycling Center also accepts electronic waste including computers, monitors, television and cell phones. Monitors, televisions and laptop computers can be dropped off at no charge, a fee is charged on all other electronic waste at $.50 per pound. For more information on battery and electronic waste recycling, call Waste Management at (800) 386-7783.

For other household hazardous waste, such as unused paint, pesticides, used motor oil, car batteries, florescent tubes and mercury thermometers, residents of Del Mar and Solana Beach may dispose of these items for free on Saturdays only at the Poway and Vista household hazardous waste collection facilities. See the listing below for the location and hours of operation for these facilities.

Solana Beach residents may also receive collection of household hazardous waste, electronic and universal waste items at their home for a $10 co-payment. This service is free to senior citizens and homebound residents. For more information on home pick-up, please call (800) 444-4244.

Summer Stroke, July 4th Blues and Pet News

Summer Stroke: Every year hundreds of pets are placed in serious threat of death because people do not realize how hot and how quickly the inside of a car can get on a sunny day. Even when the outside temperature is relatively low, closed cars can become dangerously hot in a short time. Never leave your pet in a parked car, even for a short time. Cracked windows won't protect your pet from overheating or suffering from heat stroke during hot summer days. Leave your pet at home – it will be safer there.

Also keep in mind that sidewalks and roadways can become very hot and can even cause burns on the pads of their feet.

Fourth of July: Every year, around the Fourth of July, pets experience a period that can be very frightening to them. Fireworks can cause your dog or cat to panic and try to escape. The best advice is to PLEASE - Keep Your Pet Indoors on the Fourth of July. To help them feel safe and secure place them in a quiet and isolated room with covered windows, or the garage where there are no windows. Keeping a radio or television on to help dampen the sound of fireworks will provide familiar indoor sounds and may help soothe the animal if alone on this noisy holiday. Never take your pet to a fireworks display. If you know your pet is extremely sensitive to loud noises you may want to discuss this with your veterinarian who could provide other suggestions or prescribe anti-anxiety medication.

Pet News: Microchip ID (microchip pet identification) is available every Thursday from 1:00–3:00 p.m. for dogs, cats, and rabbits at least eight weeks of age (or older) at any County of San Diego Department of Animal Services (DAS) shelter. There is a one-time fee of $20 that includes national registration.

While you're there, ask about the free $50 Spay/Neuter coupon if your pet is unaltered (available for DAS service area residents only). For an additional cost, rabies vaccinations and dog licenses are also available. All dogs four months of age and older must be licensed.

Solana Beach receives animal sheltering services from the County of San Diego Department of Animal Services shelter located at 2481 Palomar Airport Road in Carlsbad. The shelter maintains a "Lost and Found" book for public use. The telephone number is 760-438-2312. Further information is available at the web site **www.sddac.com.**

San Elijo Reserve Receives National Wildlife Federation Certification

The San Elijo Lagoon Ecological Reserve has been certified by the National Wildlife Federation's (NWF) Backyard Wildlife Habitat program. The San Elijo Reserve was awarded this national recognition for its role in providing extensive and valuable natural wildlife habitat in the midst of a largely urban setting.

The San Elijo Reserve is the first wildlife preserve in California to have its entire land holdings certified by NWF, and is one of only a handful of preserves across the nation so honored. National Wildlife Federation's Backyard Wildlife Habitat program is an effort to educate property owners and communities on the need to plant and maintain landscapes with wildlife in mind.

A plaque, designating the honor, is on permanent display at the Manchester Nature Trailhead. The plaque was unveiled in a ceremony attended by representatives of the National Wildlife Federation, San Diego County Supervisor Pam Slater-Price, officials of the cities of Encinitas and Solana Beach, and representatives of the San Diego County Parks and Recreation Department.

"San Elijo Lagoon represents wonderful natural open space in our community," said Davi Huffman, a NWF Habitat Steward, in a press release about the award. "Visiting the Lagoon gives community members a chance to experience nature firsthand, and we hope they'll be motivated to try to create a bit of wildlife habitat in their own backyard."

For more information on the National Wildlife Federation Backyard Wildlife Habitat program visit **www.nwf.org/backyardwildlifehabitat**. Additional information on San Elijo Ecological Reserve can be found on its redesigned Web site at **www.sanelijo.org**.

Friends of the Solana Beach Library

Open House at the Library
on Saturday, July 1, 2006 at 1:00 pm
20th Anniversary of our City
5th year Anniversary of our Library

We are very fortunate that a group of devoted residents recognized the value a new and larger library would add to our community. They did the work and raised the money to make it become a reality. We now have a beautiful shared-use Library, making information accessible in multiple formats for people of all ages. It is indeed a wonderful feeling to walk into the Solana Beach Library and observe the many youngsters and adults making use of the Library.

On July 1, 2006, we will celebrate the 5th year anniversary and honor the group of citizens who played a central role in building our Library. All are invited to join us for the Open House and presentation of awards to our honorees.

Please Join Us for the Open House and Refreshments at 1:00 p.m.

City of Solana Beach
Department of Parks and Recreation
2006 Summer Camp Program Schedule

Summer Session: June 19 - August 11, 2006

ALL of the Summer Day Camps are for children ages 6-12 years.
(Kids entering 1st grade - Jr. High)

Awesome Astronomy

Session 1, June 26 - 30, 2006

This delightful camp will explore the fascinating world above our heads. Activities will include a variety of theme related games and craft projects as well as several projects that will enlighten children's awareness and knowledge of the Solar System and its affects on Earth. A field trip to the Ruben H. Fleet Space Theater and Science Center is part of this interesting summer camp. The camp meets Monday through Thursday from 9:00 a.m. to 2:00 p.m. at San Dieguito Park and on Friday at Fletcher Cove. The fee is $90.00 per child.

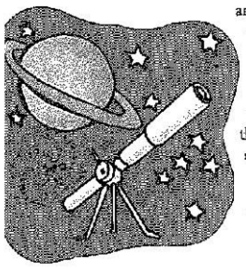

Fantastic Rain Forest

Session 2, July 10 - 14, 2006

The Fantastic Rain Forest Camp will be filled with activities to enlighten children's awareness of the wonderful world hidden in the Earth's Rain Forests. The program includes theme related crafts and games as well as a visit from the Park Ranger, a cook out, and a special field trip to the Natural History Museum in Balboa Park. The camp meets Monday through Thursday from 9:00 a.m. to 2:00 p.m. at San Dieguito Park and on Friday at Fletcher Cove. The fee is $90.00 per child.

Solana Beach Department of Parks and Recreation
Kids Summer 2006 Day Camp - REGISTRATION FORM

Register for:

____ Session I, Awesome Astronomy - June 26 - 30, 2006
____ Session II, Fantastic Rain Forest - July 10 - 14, 2006
____ Session III, Ecology & Lagoon Exploration - July 24 - 28, 2006
____ Session IV, Awesome Olympics - August 7 - 11, 2006
____ Special Session, Dance To the Stars - June 19 - 29, 2006

Child's Name _____ Grade in Fall _____ Age _____

Address _____

City _____ Zip _____

School child attends _____

Daytime Phone _____ Emergency Phone No. _____

Day Camps I-IV fee: $90.00
(Scholarships available for Solana Beach Students)

Circle T-shirt size:
Child: S M L
Adult: S M L XL

(Cancellation fee $20.00)

A detailed information sheet will be mailed to you with your confirmation.
For more information contact the Recreation Department at: 858-793-2564.

Release of Liability
I will not hold the instructors, sponsors, officials or members of the City of Solana Beach Department of Parks & Recreation responsible for any injury that any participant might incur while in the program.

Parent/or Guardian _____

Please mail or deliver with your payment to: City of Solana Beach, Dept. of Parks & Recreation
635 South Highway 101, Solana Beach, CA 92075

Ecology and Lagoon Exploration

Session 3, July 24 – 28, 2006

The Ecology and Lagoon Exploration Summer Day Camp will investigate the ocean, lagoon, and park environments of Solana Beach. This exciting camp will be filled with fantastic activities and crafts that heighten children's awareness of the ecological opportunities around us. Field trips to the Monarch Butterfly Ranch and San Elijo Lagoon Nature Reserve are part of the exploration planned. The camp meets Monday through Thursday from 9:00 a.m. to 2:00 p.m. at San Dieguito Park and on Friday at Fletcher Cove. The fee is $90.00 per child.

Awesome Olympics

Session 4, August 7 – 11, 2006

Our very own Summer Olympic Celebration will include Olympic style events that everyone can enjoy and be successful. Individual events as well as team competitions are planned. A terrific field trip to the Ray and Joan Kroc Community Center is planned, where campers can climb the rock tower and ice skate in the Olympic size rink. The camp meets Monday through Thursday from 9:00 a.m. to 2:00 p.m. at San Dieguito Park and on Friday at Fletcher Cove. The fee is $90.00 per child.

Dance to the Stars

Special Session, June 19-June 29, 2006

Monday through Thursday 2:00-4:30 p.m.

This class is intended to introduce 5th, 6th and 7th grade students to the basic elements of Ballroom Dancing from the 20th and 21st centuries. Students will gain an appreciation of the music of the times, as well as the manners and customs of a past era, along with the traditions of the present. The instructor, Marsi Weigand, teaches Dance and Physical Education at La Costa Canyon High School. The class meets Monday through Thursday from 2:00 - 4:30 p.m. at the La Colonia Community Center. The fee is $40.00 per student.

ARTS ALIVE BANNER AUCTION

Date: Thursday, July 20,2006

Location: Timmons Gallery
202 North Cedros Ave.
Solana Beach , CA

Time: 5:30 - 9:30 PM

Hosted by: Public Arts Advisory Commission

Polite Children Welcome

Wine Tasting/Live Music

Cocktail Attire

Benefits Public Art in Solana Beach

Facts and Silent Bids: 858-523-0058

Special *Thanks* to Anne Clark and the Cedros Merchants

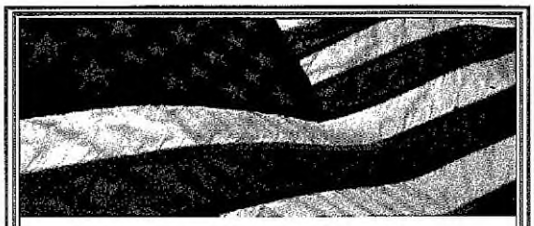

The City of Solana Beach
and
Veterans of Foreign Wars POST 5431
Host the

2006 Memorial Day Ceremony

On Monday, May 29, 2006, the City of Solana Beach and the Veterans of Foreign Wars Post 5431 will jointly host a Memorial Day Ceremony at the Veterans' Memorial at La Colonia Community Park, located at 715 Valley Avenue in Solana Beach. The ceremony will take place from 11:00 a.m. until 12 noon. Some highlights of the ceremony include the Young Marines Color Guard, the Santa Fe Christian School band providing patriotic songs, and special guest speaker, Captain Sandra A. Holmes, NC, Retired United States Navy, who will address the community. City dignitaries and representatives from all branches of the Armed Forces will also be present. Light refreshments will be served. For more information, please contact the Solana Beach Parks & Recreation Department at (858) 793-2564.

The 2006 Memorial Day Ceremony is an annual community special event and the public is encouraged to attend!

Clean Oceans and Waterways or Clean Cars?

Washing your car at home can be detrimental to the water quality of our wetlands and oceans. When rain water or water from your hose or bucket runs across dry ground, pavement or concrete, it flows right into the storm water conveyance system which leads directly to the ocean.

Runoff water often carries debris and contaminants (like oil, metals, landscape chemicals and pet waste) from your vehicle, driveway and street to its ultimate destination: the lagoons and ocean.

According to the latest research, water quality begins to deteriorate when more than ten percent of a coastal watershed is covered in impermeable surfaces. Urban runoff is considered the biggest contributor to coastal water pollution.

In an effort to reduce and eliminate the discharge of vehicle wash water to storm drains, the cities of Carlsbad, Del Mar, Encinitas and Solana Beach recommend the use of Best Management Practices (BMPs) when washing vehicles on private property. The washing of vehicles on public property is prohibited and a finable offense. BMPs include:

- ✔ never washing vehicles in the street (this is prohibited)
- ✔ diversion of washwater to landscaped areas
- ✔ don't let excess wash water leave your property and enter City sewers
- ✔ using a hose with a nozzle trigger to save water
- ✔ wringing washrags into buckets, not on the ground
- ✔ always emptying buckets into the sewer system by pouring into sinks or toilets, not down the driveway
- ✔ avoiding the use of chemical cleaners and degreasers

- ✔ a soap free wash is best for the environment; soaps contain phosphates which contributes to destruction of fish populations and habitats. The safest products for the environment are citrus or vegetable based products. Using biodegradable soap does not lessen the immediate environmental impact
- ✔ if you use mobile detailers make sure they abide by City ordinance and capture wash water and chemicals, or take your business elsewhere
- ✔ take your car to a commercial car wash, most reuse wash water before sending it to the water treatment facility

If you are planning to hold a fundraising carwash, first contact your city offices to learn what your local policies are.

By making simple changes in our everyday routines we can wash our cars the environmentally responsible way by following these Best Management Practices and help prevent pollution from reaching our waters.

Solana Center
FREE Watershed Presentations!

FREE Watershed Education presentations are available through the Solana Center. These presentations are appropriate for children in grades 2 through 6 and are designed to enhance understanding of how pollution moves through our waterways. Educators utilize a hands-on, interactive Enviroscape model and eco-puppets to empower kids to protect our ecosystem!

To schedule a free presentation for your community group or classroom, please contact Laura at the Solana Center at 760-436-7986 x213, laura@solanacenter.org.

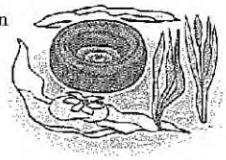

Solana Beach Annual Bulky Item Clean-Up Day

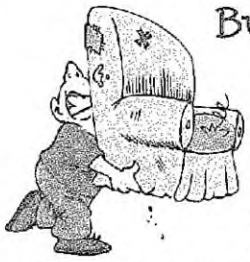

This year's Annual Bulky Item Clean-Up Day is scheduled for Saturday, October 7th, 2006 from 9am to 3pm in the La Colonia Community Center parking lot at the Valley Avenue entrance. Waste Management, WM, will provide roll-off containers for easy drop off items such as, furniture, scrap metal, mattresses and yard waste. (Hazardous Waste or E-Waste is not included in this collection event). Solana Beach residents may call WM between September 20th through October 2nd to receive free curbside pickup and disposal of up to three bulky items. Items need to be curbside by 7am on October 7th.

If you have any questions regarding the Annual Bulky Item Clean-Up Day or the free curbside pick-up, please contact Danny King at (858) 720-2477.

Annual Coastal Clean-up Day 2006

The City of Solana Beach is once again partnering with the California Coastal Commission, I Love A Clean San Diego (ILACSD), and San Diego Coastkeeper to clean up the beaches and lagoons that surround our beautiful City during the annual California Coastal Clean-Up Day to be held on Saturday, September 16, 2006.

The City sponsors two locations, one at Fletcher Cove and the other in the San Elijo Lagoon at the North Rios Trailhead. Each site will be staffed and have all necessary materials available (trash bags, recycling bags, gloves, etc.) for participants to use. All you have to do is show up! Bring your family and enjoy a day by the water while helping to clean up our local waterways.

For more information, visit the official website at http://www.coastal.ca.gov/publiced/ccd/ccd.html or call Danny King at (858) 720-2477.

Solana Beach City Hall Gallery Schedule 2006

July 17 to August 31
Todd Gomes-Aviv
PAINTER

September 1 to October 12
Cynthia LiCalsi
PAINTER

October 16 to November 30
North County Photographic Society

Solana Beach Chamber of Commerce *Mark Your Calendar!*

Upcoming Sundowners: The first Wednesday of each month

Solana Beach CHAMBER OF COMMERCE

Wednesday, SEP. 6, 2006
5:00 – 7:00 pm
Beach Grass Cafe
159 S. Highway 101,
Solana Beach
858-509-0632

Wednesday, OCT. 4, 2006
5:00 – 7:00 pm
Brigantine
Villa de la Valle & Hwy. 101,
Solana Beach
858-481-1166

Wednesday, NOV. 1, 2006
5:00 – 7:00 pm
24-Hour Fitness
975 Lomas Santa Fe Drive,
Solana Beach
858-523-9060

Back to Bacharach and David

Music by Burt Bacharach and lyrics by Hal David

Conceived by Steve Gunderson and Kathy Najimy

Don't Miss Our Summer Musical Revue!

August 4 – 20, 2006

Featuring the lyrics and music of Burt Bacharach and Hal David, relive their hits from the sixties and seventies, including *Raindrops Keep Falling on My Head, The Look of Love, Walk on By,* and many more. This show features San Diego favorites Steve Gunderson and Melinda Gilb.

For tickets call 858.481.1055 or visit our web site northcoastrep.org

North Coast Repertory Theatre is located in Solana Beach just east of the 5 on Lomas Santa Fe Dr.

"Share the Dream" Soon a Reality

1966 - 2006 40th Anniversary The Positive Place For Kids

The Boys & Girls Clubs of San Dieguito, which is celebrating its 40th anniversary, is pleased to report the construction of the new Barbara Harper Branch and Pardee Aquatics Center are on schedule for completion in Spring 2007. The new pool is scheduled to open September 2006.

The "Share the Dream" campaign has made significant headway toward our new $8 million goal. As of Spring 2006, over 206 generous individuals, corporations and foundations have contributed a combined $5,965,575 to the Boys & Girls Clubs of San Dieguito "Share the Dream" Campaign. Thank you very much to all of you who have so charitably contributed! "The Boys & Girls Clubs of San Dieguito is looking forward to providing the community with a valuable resource," said Keith Padgett, BGCSDTO, President/CEO.

The expansion project includes a new clubhouse, new computer lab, new games room, new homework room, renovated gym, new workout facility, mentoring center, Center for Healthy Lifestyles, and the Doug & Marianne Pardee Aquatics Center with two pools. The new facilities will be available for the entire community.

Impact of Project:

YOUTH SERVED:	Prior - 831	Expansion - 1,000+
AQUATICS YOUTH SERVED:	Prior - 2,280	Expansion - 5,000+
ATHLETES SERVED:	Prior - 2,287	Expansion - 2,787

For more information on the "Share The Dream" campaign, please visit www.bgcsdto.org/sharethedream.htm

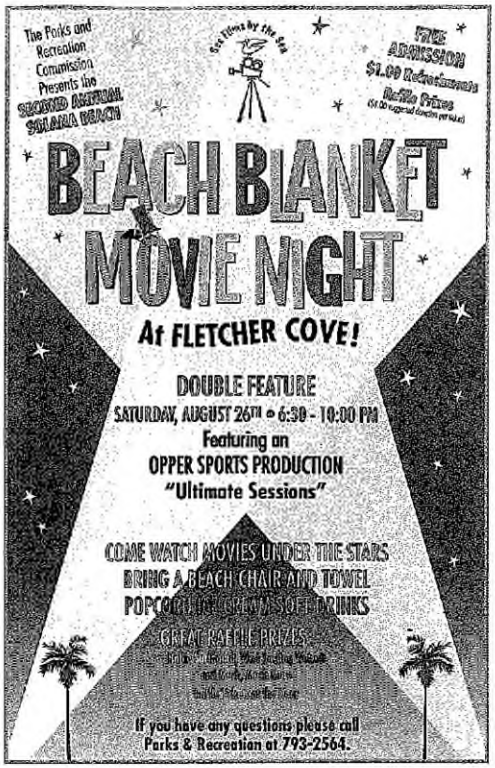

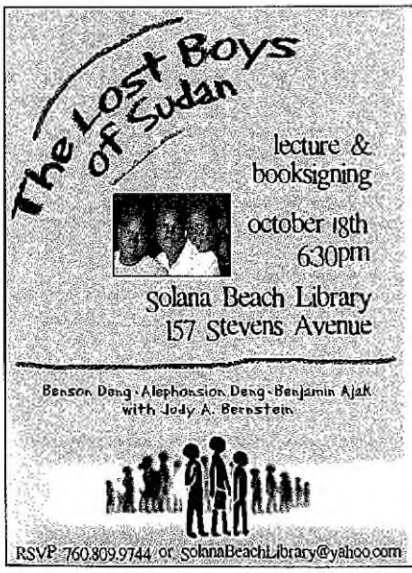

Library to Host *"Lost Boys of Sudan"*

The Solana Beach Library will present a cultural and educational event for teenagers and adults on Wednesday evening, October 18, from 6:30 - 8:00 pm. The authors of "They Poured Fire on Us From the Sky," a book by three African men who detail their childhood experiences in dealing with the atrocities of civil war in their native Sudan.

The authors, along with thousands of other boys, came to be known as "The Lost Boys of Sudan" during the 1990's when they were separated from their parents, expelled from their villages and left to manage on their own, some as young as 4 or 5 years old. Several Lost Boys, including the authors, were relocated to the San Diego area in 2000-2001.

The evening will be a multi-sensory experience with questions and answers with the authors, book signing, and viewing of the award winning documentary film "Lost Boys of Sudan."

For more information and to RSVP, please call Josephine at (760) 809-9744 or email to solanabeachlibrary@yahoo.com.

APPENDIX G: SHORELINES NEWSLETTER SPRING 2007

SAN ELIJO LAGOON CONSERVANCY

20 Years of Watershed Moments

In 2007, the San Elijo Lagoon Conservancy (SELC) observes its 20th anniversary as a citizen-supported, non-profit organization dedicated to protect, preserve, and enhance the natural resources of the San Elijo Ecological Reserve and its watershed.

This milestone will be celebrated under the theme "20 Years of Watershed Moments" with a number of exciting new and expanded member and public events.

For example, the City of Solana Beach Public Arts Advisory Commission has chosen the San Elijo Lagoon as the theme for the 2007 Arts Alive Banner program. In January, the unfurling of 53 lagoon-inspired banners along Lomas Santa Fe and Coast Highway will mark the kick off of the SELC anniversary year.

Another highlight of its 20th anniversary observance is a lecture series with Mira Costa College. The series consists of six lectures all with a lagoon theme. The public is invited to learn more about the history, ecology, and future of this valuable coastal habitat. All lectures take place on Friday evenings at 7:00 pm in Room 201 at the San Elijo Campus and admission is free. The spring lectures are:

"Lagoon Geology: Earth's History Revealed"

February 9 – Chris Metzler, Ph.D., Professor of Geology and Oceanography

"Environment and Cultural Impacts on Ancient Shell Fish Harvests"

March 16 – Betsy Pain, Associate Professor of Anthropology

"Bountiful Botany – a Six-Part Tale"

May 4 – Denise Stillinger, Associate Faculty and San Elijo Lagoon Conservancy Board

For information on the lectures contact Denise Stillinger: dstillinger@miracosta.edu

Other activities include the dedication of the Nature Center Boardwalk and Lagoon Appreciation Day at the Manchester Nature Center on Saturday, May 12, 2007. For more information on these and other events visit: www.sanelijo.org.

City of Solana Beach Seeks New Entry Sign

Request for Proposal (RFP)

The City of Solana Beach has distributed an RFP looking for an artist qualified to design and create an artistic sign announcing the entrance to the City. The entry sign will be placed at the City's eastern entrance on the northwest corner of Highland and Lomas Santa Fe Drive.

Once the proposals are received, they will be reviewed by the Public Arts Advisory Commission, who may select one or more of the designs for a thirty day public review process to gather community input on the sign proposals. The City Council will then consider the recommendations for final approval of the project.

The RFP is available on the City website at: www.ci.solana-beach.ca.us or you can contact Anita Edman, Community Services Coordinator, at 858-720-2454.

Special Opportunity to Experience Lagoon Wetlands

The San Dieguito River Valley stretches for 55 miles from the beach at Del Mar to the foothills of Volcan Mountain near Julian. Each area of the Coast-to-Crest Trail provides a different experience for visitors!

We invite you to explore your backyard!

The San Dieguito Lagoon Wetland Restoration Project is underway!

To celebrate the restoration efforts and the work in progress the Friends of the San Dieguito River Valley are offering free bus tours on these dates: March 17, April 14, May 19, and June 16

The tour will take participants around 700 acres of public lands owned by the San Dieguito River Park and will make six stops. Tour Times are 9:00AM and 11:00AM and last approximately two hours. Seating is very limited and you must reserve in advance. Call (858) 674-2275 extension 14 for more information and to leave your name, phone number, and preferred schedule. Or email Barbara at Barbara@sdrp.org.

Location: San Dieguito Lagoon/Strawberry Stand Wetland Learning Center

Directions: Exit I-5 Via de la Valle and go east. Turn right on San Andres Drive and enter Park at gate. Off street parking is also available on San Andres Drive.

$1,000 REWARD

A $1,000 Reward is offered to the first person providing information leading to the identification of any person(s) vandalizing or knocking down story poles on or about December 7, 2006 on the vacant property at the north end of Highway 101 overlooking San Elijo Lagoon also known as the site of the proposed Gateway Project.

If you have information, call Maria with the City of Solana Beach at 858-720-2431 or Sgt. Mike McClain, with the Sheriff's Department at 760-966-3500.

APPENDIX H: SHORELINES NEWSLETTER SUMMER 2007

The City of Solana Beach Water Quality Program

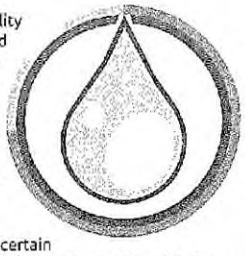

The City of Solana Beach has an extensive water quality program aimed at ensuring a clean and healthy ocean and lagoons. The program consists of a variety of activities conducted to reduce and eliminate urban runoff before it enters the City's storm drain system. Once this runoff (and the pollutants contained in it) enters the storm drain system, it empties onto the beaches and into the lagoons untreated. The system is completely separate than the sewer system, which is connected to a wastewater treatment plant where the pollutants are removed before discharging into the ocean.

The City is under a state mandate (Permit) to comply with certain regulations that govern water quality and urban runoff. The City, along with all other 17 cities in San Diego County, the County of San Diego, the Port District and the Airport Authority, are all required to comply with the same Permit, and adhere to the same regulations. The following is a brief outline of the activities required under the Permit that City staff is currently responsible for.

1) New Construction and Redevelopment Activities: City staff reviews all building plans submitted to ensure additional runoff associated with the project will be mitigated onsite. This usually involves the of installation post-construction Best Management Practices (BMPs) including infiltration pits but can involve installation of structural devices that target infiltration and pollutant removal. Plans are also reviewed to ensure erosion and sediment control BMPs such as silt fences and sand bags are used during construction to prevent pollutants from leaving the site.

2)Municipal/Commercial/Industrial/ Construction Inspections: City staff inspects all municipal, commercial, and industrial sites within the City to ensure potential pollutants are safely stored and employees are conducting their activities in accordance with the water quality regulations. This includes the proper onsite storage of hazardous materials, pesticides, herbicides, etc., as well as ensuring employees are not using excessive amount of water to clean outside eating areas, trash dumpsters, cooking mats, etc. No water should be leaving these sites at any time, with a few minor exceptions. Additionally, staff checks the maintenance records of the restaurant grease trap/interceptors to ensure they are functioning properly to reduce grease build up in the sewer pipes and prevent sewer spills.

3) Education/Outreach: City staff routinely educates municipal/commercial/industrial employees about these regulations during inspections and special mail outs. The City has information for the community on its website and in community newsletters, and is available for presentations to schools regarding urban runoff. Information is available at City Events such as Fiesta Del Sol and a beach and lagoon cleanup is held every year in September.

4) Violation Investigations: The City has a "Storm Water Hotline" where violations can be anonymously reported if witnessed in the community. If you witness someone dumping anything into the City's storm drains, a restaurant washing down its parking lot, a construction site discharging anything into the street, etc., then please call this number and report it for City follow-up. The City relies on the community to be its "eyes and ears" whenever something like this occurs, and appropriate follow-up will occur. The number is (858) 720-2400 ext. 2512, and remember, it can be anonymous if desired.

5) Water Quality Monitoring: City staff currently monitors all storm drain outfalls that empty out into either the ocean or lagoons. These outfalls are all tested for bacteria indicators on a routine basis (at a minimum monthly). Once a year, a more comprehensive monitoring program is conducted at more than thirty sites throughout the City and tested for many more pollutants, including dissolved metals, oil and grease, ammonia, nutrients, detergents, and orthophosphates. This data helps assess the overall health of the local waters and also alerts the City if an illegal discharge or connection has occurred upstream. If any violations are identified, then an upstream investigation is conducted to locate the source of pollutants.

These are just a few activities conducted by City staff to stay in compliance with the Permit and ensure a clean and healthy environment. If you would like additional information on any of the items listed above, or would like to find out more about additional activities not listed above, please contact Danny King at (858) 720-2477.

City of Solana Beach PUBLIC MEETING SCHEDULE

The Budget & Finance Committee meets the third Thursday of each month at 6:00 p.m. in the City Hall Council Chambers.

The Parks & Recreation Commission meets every second Thursday at 4:00 p.m. at La Colonia Park, 715 Valley Avenue, Solana Beach. ***NOTE: NEW TIME***

The Public Arts Advisory Commission meets the second Tuesday of each month at 3:30 p.m. in the City Hall Council Chambers.

The Public Safety Commission meets the second Tuesday of each month at 6:30 p.m. in the City Council Chambers.

The View Assessment Committee meets the third Tuesday of each month at 6:00 p.m. in the City Council Chambers.

These times and days are the regular meeting schedule unless otherwise noted. Please check the City website for current information at: **www.ci.solana-beach.ca.us.**

Regular meetings of the Solana Beach City Council are held at 6:00 p.m. on the second and fourth Wednesdays of each month in the Council Chambers at City Hall, 635 S. Highway 101, Solana Beach, CA 92075. Meetings are broadcast live on Cox (Channel 19) and Time Warner (Channel 66). For more information, please contact the City Clerk's Office at (858) 720-2400.

Sewer Forcemain Replacement Project

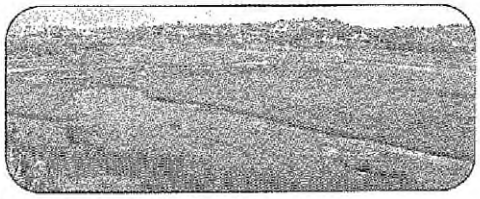

The City has recently completed the 3.2 million dollar sewer pipeline replacement project underneath the San Elijo Lagoon. The project was immensely complex due to the location and sensitivity of the pipeline, which runs underneath the environmentally sensitive Lagoon. The City and contractor had to manage complex construction activities around tremendous environmental restrictions to complete the project within an allotted timeframe and not interfere with the breeding season of migratory birds within the Lagoon.

The existing forcemain was installed in 1965 and conveys sewage approximately 1.1 miles underneath the lagoon to the San Elijo Joint Powers Agency Water Reclamation Facility in Encinitas. The pipe was nearing its life expectancy and needed to be replaced to prevent sewer spills into the environmentally sensitive Lagoon. The project was funded and spearheaded by the City of Solana Beach. The City of Encinitas, the County of San Diego and the San Elijo Lagoon Conservancy provided their support to have necessary easements in the Lagoon. The City obtained over half of the 3.2 million dollars in grant funds from the Environmental Protection Agency. The City will continue to attempt to secure these grant funds to provide sewer infrastructure repair throughout the City.

Sewer spills can have catastrophic effects on the plants and animals that inhabit the Lagoon as well as those who recreate in the nearby ocean. Major fines can be issued to responsible parties if sewer spills occur, so the City has taken a very proactive approach in analyzing the current sewage infrastructure and rehabilitating the aging system. In the very near future, the City will be replacing the Eden Gardens Pump Station and the Solana Beach Pump Station. As mentioned above, the City takes a very proactive approach to rehabilitating the aging system to prevent sewer spills and the devastating effects that they can cause to human health, property and the environment.

City Streets *Make a Clean Sweep*

Sreet sweeping is scheduled on Tuesday of each week, excluding any 5th Tuesday of a month. The City is divided into four sections as follows:

1. Northwest section, north of Lomas Santa Fe, west of I-5.
2. Southwest section, south of Lomas Santa Fe, west of I-5.
3. Northeast section, north of Lomas Santa Fe, east of I-5.
4. Southeast section, south of Lomas Santa Fe, east of I-5.

The northwest section is swept on the first Tuesday of each month.

The southwest section is swept on the second Tuesday of each month.

The northeast section is swept on the third Tuesday of each month.

The southeast section is swept on the fourth Tuesday of each month.

South Sierra Avenue is swept twice each month. The west side is swept the first and third Tuesday of the month, and the east side is swept the second and fourth Tuesday of the month.

Sweeping includes median curbs on Highway 101 and Lomas Santa Fe Drive, north-south curbs and gutters and east-west curbs and gutters to be swept on the first and third Tuesday of each month.

Residential Automated Trash and Recycling Program Update

The new residential automated trash and recycling program has just completed its fourth month of implementation, and early indications point to a dramatic increase in recycling rates for the City. As you may recall, the City approved Waste Management's proposal to switch residential trash and recycling from manual to automated and new containers were distributed to all residents in November, 2006.

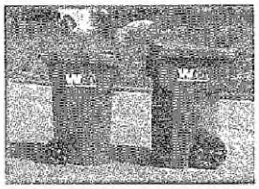

One of the main incentives for the City was to increase the recycling rates throughout the City to reduce the amount of materials entering our local landfills. This program has proven in other jurisdictions to have a major impact on this diversion, and early results have shown the same results here in Solana Beach. According to Waste Management, the recycling rates have increased 23% since the implementation of the new program. This has proven to be a very successful program so far, and the City commends you, the community, for making it happen. Please remember to recycle all you can, as the local landfills have a limited capacity and recycling has a dramatic effect on preserving our natural resources.

The Community Singalong Celebrates 20 Years

As our Solana Beach Community Sing-along reaches its 20th year in July, how many of you have attended one of these delightful evenings? "For some reason, many of our residents have the impression that they can't sing. Nonsense! For instance, at last years First Annual Solana Beach Holiday Singalong, folks didn't hesitate to sing out their favorites. Don't be shy," says Dr. Ed Siegel, founder and pianist for this free weekly event. This enjoyable family event is held each Thursday at the Fletcher Cove Community Center. Doors open at 7:30 p.m. Folks come and go until 9:00 p.m.

San Elijo Lagoon Lecture Series

All lectures take place on Friday at 7 PM

MiraCosta College/San Elijo Campus

Admission is free

The San Elijo Lagoon Conservancy (SELC) lectures series with MiraCosta College has been wildly popular with standing-room attendance. Part of SELC's year-long 20th anniversary observance, the series continues this summer and offers the public the chance to learn more about the history, ecology, and future of the San Elijo Lagoon.

"Early Occupation of the San Elijo Lagoon Region"

June 22, 2007

Dennis Gallegos, Archaeologist & President, Gallegos & Associates

Two final lectures will be offered this fall. For more information on the series contact: Denise Stillinger, dstillinger@miracosta.edu

San Elijo Lagoon Conservancy is a citizen-supported, non-profit organization dedicated to protect, preserve, and enhance the natural resources of the San Elijo Ecological Reserve and its watershed. During its 2007 anniversary year, SELC is offering a number of public events under the theme "20 Years of Watershed Moments." For more information visit www.sanelijo.org.

North Coast Repertory Theatre's Summer Schedule! 2007

Baby

by Sybille Pearson
directed by Paula Kalustian

Three couples from three generations all want the same thing – procreation. Enjoy great songs, zest and humor in this light-hearted production. A big Broadway success!

Previews May 23 - 25

May 26 - June 24

The Theatre School at North Coast Rep Presents:

Student-Written, Student-Directed One Acts

June 4 - June 6

NORTH COAST REP

The Theatre School at North Coast Rep

2007 Summer Drama Fun Camp

Classes fill up quickly so reserve your space today! For ages 9-18. Call 858.481.1055 to reserve your space, or call Joe Powers at 858.481.2155 ext. 16 for more information.

July 9 - 13,

July 16 - 20,

July 23 - 27

Rashomon

by Fay and Michael Kanin
directed by David Ellenstein

Perspective is everything. Examine the story of an ancient Japanese fable from three angles. A dynamic world of imagination unfurls in this lively and inventive classic.

Previews July 11 - 13

July 14 - August 12

City of Solana Beach Department of Parks & Recreation

Kids Summer Day Camp - 2007
for ages 6 to 12

All Sessions will meet Monday through Friday from 8:30 a.m. to 2:00 p.m. at the new Fletcher Cove Park. The fee is $100.00 per child and includes beach activities, arts and crafts, t-shirt and a weekly field trip to an exciting destination. After-care is offered from 2:00 to 5:00 p.m. Our popular "Leader in Training" program is available for 13-17 year olds for only $40/week!

Explore the Borders (Mexico)

Session 1, June 18-22, 2007

!Bienvenidos! Get ready for the most colorful kids camp the City of Solana Beach has put on yet! During this week we will explore the vivid culture of this fascinating and fun country as we create crafts such as paper lanterns and flowers. The week will end with a fiesta including a piñata and more!

Field trip: Cabrillo National Monument

Oceans Week

Session 2, June 25-29, 2007

We live near the ocean and we may visit it often, but how much do we know about it? Come to camp to learn more about this beautiful treasure so close to us! We will have beach activities throughout the week.

Field trip: Birch Aquarium at Scripps

Happy and Healthy

Session 3, July 9-13, 2007

What better way to spend summer than getting exercise and having fun doing it? Throughout this week we will be learning about our incredible bodies and what we can do to keep them happy and healthy.

Field trip: Go Play Get Fit Youth Day at SDSU

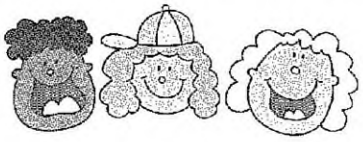

Ecology & Our Environment

Session 4, July 16-20, 2007

Egrets, marshes, and eucalyptus, oh my! Ecology week, July 16 - 20, is your child's time to discover an often overlooked region of San Diego County. Through crafts and experiments, we will dive into a part of our own backyard, learning about wildlife habitats, and how we are all a part them.

Field trip: San Elijo Lagoon

Step Into Storybooks

Session 5, July 23-27, 2007

This camp is a great opportunity for your child to step into storybooks! During this week campers will be diving into classics, acting out skits, reading award-winning children's books and even writing one of their own.

Field trip: The Wave Water Park

Rainforest Exploration

Session 6, July 30-Aug 3, 2007

Attention lovers of adventure!! Feel like swinging through the trees this summer? Sign your child up for Rainforest Exploration Camp, July 30 - August 3. During this week we will learn about habitats, wildlife and the role they play in our lives.

Field trip: Balboa Park and Museums

San Diego Appreciation Week

Session 7, August 6-10, 2007

From beaches to theme parks, we have it all in San Diego. If you are interested in your child learning to appreciate our beautiful City and its history, in a kid friendly fashion, sign your son or daughter up now.

Field trip: San Diego Harbor Cruise and Seaport Village

APPENDIX I: SUSMP COUNTER HANDOUT

STORMWATER SUSMP

(Standard Urban Storm Water Mitigation Plan)

FOR

CONSTRUCTION and BUILDING ACTIVITIES

The municipal storm water National Pollutant Discharge Elimination System (NPDES) permit (Order No. 2001-01, NPDES No. CAS0108758) issued by the San Diego Regional Water Quality Control Board on February 21, 2001, requires the development and implementation of a program addressing urban runoff pollution issues in development planning for public and private projects.

All new development and significant redevelopment projects that fall into one the following "priority project" categories are subject to these SUSMP requirements. In the instance where a project feature, such as a parking lot, falls into a priority project category, the entire project footprint is subject to these SUSMP requirements. These categories include:

- Residential development of 10 units or more
- Commercial development greater than 100,000 square feet
- Automotive repair shops
- Restaurants
- Hillside development greater than 5,000 square feet
- Projects discharging to receiving waters within Environmentally Sensitive Areas
- Parking lots >5,000 square feet or with >15 parking spaces and potentially exposed to urban runoff
- Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered priority projects. Parking lots, buildings, and other structures associated with utility projects are subject to SUSMP requirements if one or more of the criteria for the above categories are met.

It is the responsibility of the property owner/contractor to determine if the project falls under the SUSMP requirements. Failure to implement the necessary SUSMP requirements on priority projects is subject to enforcement by the City of Solana Beach as well as the Regional Water Quality Control Board. If you have any questions regarding the SUSMP and its requirements, please call Danny King at (858) 720-2477.

APPENDIX J: STORM WATER PLAN CHECK COMMENT FORM

CITY OF SOLANA BEACH
ENGINEERING DEPARTMENT
STORM WATER PLAN CHECK COMMENTS

Project: _____ Address: _____

☐ Construction phase **Erosion Control** shall be shown on the permitted plans, such as silt fences, gravel bags, desilting basins, slope protection and entrance controls. **Best management practices (BMP's)** shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during construction activities. Erosion prevention shall be emphasized to keep sediment on site during excavation and grading activities. Sediment controls such as mulch, jute netting and straw blankets shall be used as a supplement to erosion control for keeping sediment on site.

- **Submit Storm Water Management Plan** (attached)
- **Add the following note to plans**: "**EROSION CONTROL:** Best management practices shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during excavation and grading activities."

☐ The Applicant shall demonstrate that the **project does not increase storm water runoff** or peak discharge from their property. For example, add a storm water retention and infiltration feature such as a depressed landscape area or below ground drywell using course rock (1.5" to 2.5") or a pre-fabricated chamber. The amount of retention volume should be at least equal to 0.60 inches (0.05 feet) times the added impervious area. This should be designed to avoid runoff damage to downstream properties, such as not concentrating runoff where it was previously not concentrated. (For 5,000 SF or more of added impervious area, use County of San Diego Hydrology Manual)

☐ Storm Water and Non-Storm Water Runoff Control. Post-development measures that **reduce pollutant discharges from the site** shall be shown on the permit plans. For example, maximize permeable areas (landscaping, driveway grass strips, gravel paths, concrete pavers on sand) to allow runoff seepage into the ground and drain impermeable surfaces (roofs, hardscape, driveways) to permeable areas (i.e. planted areas) and other approved pollutant treatment BMP's.

- Is runoff from hardscape areas routed over natural treatment areas before draining off site?
- **Show on the plans** where hardscape and roofs drain to.
- **Show BMP's** on the plans (grassy swales, landscaping, infiltration pits, pervious pavements, gravel paths, etc.).
- The volume of treatment should be at least 0.60 inches (0.05 feet) times the added impervious area.

APPENDIX K: BUILDING PLAN CHECK COMMENT FORM

CITY OF SOLANA BEACH
C/O CITY OF ENCINITAS BUILDING DIVISION
505 S. Vulcan Avenue, Encinitas, CA 92024-3633
(760) 633-2730
APPLICATION TRACKING FORM

Plancheck No.: _____
Received by: _____
Date:

Site Address _____ Suite # _____
Site Business Name _____ APN _____
Project/Property Owner's Name _____
Contact Person _____ Phone # _____
Address _____ Fax # _____
Project Description _____ Sq. Ft. _____
Discretionary Permit Applicable? _____
Is/will the building equipped with fire sprinklers? ☐Yes ☐No Is the property on a septic system? ☐Yes ☐ No
Is there an existing swimming pool &/or spa on the property? ☐Yes ☐ No If "yes," see the Pool & Spa note below

THE FOLLOWING "CHECKED" ITEMS MUST HAVE WRITTEN APPROVAL PRIOR TO PERMIT ISSUANCE. APPROVALS FROM THE PLANNING, ENGINEERING, FIRE, HEALTH DEPARTMENTS, AND THE AIR POLLUTION CONTROL DISTRICT MAY ALSO BE REQUIRED PRIOR TO FRAME AND/OR FINAL INSPECTION AND OCCUPANCY (INDICATED ON "BLUE" CARD). IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE INDIVIDUAL DEPARTMENT(S) AT THE NUMBERS SHOWN.

CITY DEPARTMENTS

☐ **PLANNING / ZONING**.....858-720-2440
- ☐ O.K. for Plancheck Only. By _____ Date _____
- ☐ Fees Due. ☐ Park Fees ☐ Public Facilities Fees
- ☐ Fee Payment Required Prior to ☐ Permit Issuance ☐ Final Inspection
- ☐ Height Certificate Required prior to Requesting Frame Inspection.
- ☐ Approval Req'd prior to: ☐ Permit ☐ Frame Insp ☐ Final Insp
- ☐ Approval required prior to ☐ Frame ☐ Final Inspection
- ☐ O.K. to Issue Building Permits _____

☐ **ENGINEERING / SANITATION**.....858-720-2470
- ☐ O.K. for Plancheck Only. By _____ Date _____
- ☐ Permits Req'd ☐ Dedication Req'd ☐ Fees Req'd.
- ☐ Approval required prior to ☐ Frame ☐ Final Inspection (Sewer, Plancheck, In Lieu)
- ☐ See attached form for Storm Water BMP'S
- ☐ O.K. to Issue Building Permits _____

☐ **ENVIRONMENTAL**.....858-720-2470
- ☐ O.K. for Plancheck Only By _____ Date _____
- ☐ Storm Water Mgmt. Plan Required
- ☐ See attached form for Storm Water comments
- ☐ Post Construction BMP Inspection Required: ☐ During Construction ☐ Prior to Final Inspection
- ☐ O.K. to Issue Building Permits _____

☐ **FIRE PREVENTION**..... .858-720-2410
- ☐ O.K. for Plancheck Only By _____ Date _____
- Approval required prior to ☐ Frame ☐ Final Inspection
- ☐ O.K. to Issue _____

☐ **POOL & SPA SAFETY ENCLOSURE & SAFETY FEATURES**
Effective 1/1/07, AB 2977 requires all existing pools and spas shall comply with current State mandated enclosure & safety features.

X _____ _____
Signature of Applicant Date

G:/BldgForms/SolanaBeach/Tracking Sheet Eff 01/01/07

AGENCY APPROVALS

☐ **SCHOOL FEES**
(Obtain signature on the attached forms)
Solana Beach Elementary &
San Dieguito Union H.S. District.....760-753-6491

☐ **HEALTH DEPARTMENT**
- ☐ Health Regulated Business
- ☐ Hazardous Materials Management..... 619-338-2222
  1255 Imperial Avenue, San Diego 92138-5621
- ☐ Final Approval Required
- ☐ Septic Approval Required..... 760-471-0730
  151 Carmel St, San Marcos 92078

Approved by _____

☐ **AIR POLLUTION CONTROL DIST.** ..... (858) 586-2600
(Obtain stamp and signature on APCD Questionnaire)
10124 Old Grove Rd., San Diego CA 92131

☐ **WATER AND SEWER**
(Obtain signatures on attached forms)
- ☐ Santa Fe Irrigation District 858-756-2424
- ☐ Solana Beach Sanitation District 858-720-2470

☐ **CALIFORNIA COASTAL COMMISSION**....619-767-2370
Call for an appointment

☐ **ASSESSOR'S COPY OF PLANS**
At permit issuance, provide a third copy of Title Sheet, Plot Plan & Floor Plan (per Senate Bill 493).

☐ **OWNER/BUILDER AFFIDAVIT AND/OR CONTRACTOR INFORMATION**

☐ **SDG&E WORK ORDER**..... (800) 411-SDGE
For new / relocated gas & electric meters

STORMWATER BEST MANAGEMENT PRACTICE (BMP) GUIDE for CONSTRUCTION and BUILDING ACTIVITIES

STORMWATER POLLUTION

When rain flows over streets and other surfaces, it picks up pollutants and carries them into the stormwater conveyance ("storm drain") system. The storm drain system is designed to prevent flooding by transporting water away from urban areas. Unfortunately, this water and all the contaminants it contains eventually flow to our streams, lakes, and the ocean where we swim and fish. Once there, polluted runoff can harm wildlife and their habitats. In some cases, it can even cause beach closures or make our fish and shellfish unsafe to eat.

Construction activities can be a significant source of stormwater contamination. During the life of a project, many types of materials and wastes are routinely used or generated. If not properly managed, sediment and other pollutants (paint, concrete, drywall, fuels, solvents, etc.) can be washed or tracked offsite, eventually entering the storm drain system. It might not seem like your activities alone could be damaging to the environment; but the cumulative impact of all of the construction projects conducted throughout the City every year can seriously impact the health of our local waterbodies.

What are you adding?

For more information, or to report stormwater pollution, pick up the phone and dial (858) 720-2477 and speak to the Engineering Department.

PROJECTS 1 ACRE AND GREATER

If your project will disturb one acre of land or more, you must also obtain coverage under the Statewide General Construction Activity Stormwater Permit. This permit, issued by the California State Water Resources Control Board (SWRCB), will require you to prepare a Storm Water Pollution Prevention Plan (SWPPP), and to implement BMPs to reduce stormwater pollutants both during and after construction is completed. For information on obtaining coverage under the General Construction Permit, and other available resources, contact the SWRCB at (916) 341-5537

YOUR RESPONSIBILITIES

City of Solana Beach Stormwater Ordinance prohibits the discharge of pollutants to the storm drain system. Simply stated, only rain may legally enter the storm drain. As a construction site owner or operator, you are legally responsible for ensuring that sediment and other construction-related pollutants are properly managed. This means that pollutants from your site may not enter the storm drain system or any receiving water (such as creeks, streams, etc.) either directly or indirectly. You can also be held responsible for discharges or environmental damage caused by your employees or subcontractors.

Your grading and construction activities will be reviewed by City staff during plan check and site inspection to verify their compliance with the Stormwater Ordinance and related provisions of the City Grading Ordinance. Failure to comply with these regulations can result in civil and criminal penalties.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices (BMPs) are activities or practices designed to reduce or eliminate pollutants in stormwater. Proper selection and implementation of BMPs will help you to prevent stormwater pollution from your site. On the following pages, a number of BMPs that apply to erosion control and other construction activities are described. It is your responsibility to determine which of these (or other BMPs) are most appropriate for your project, and to implement them accordingly. The success of your efforts will ultimately depend on whether or not you have prevented pollutants from leaving the site.

Remember, knowledge is the most important tool on your site. Training your employees and subcontractors is the best way to ensure that your BMPs are implemented and maintained effectively.

EROSION CONTROL BMPs

EROSION CONTROL STRATEGY

Sediment is the most common pollutant washed from construction sites. It also transports numerous other contaminants such as paint, cement wash, asphalt, and automotive fluids. Sediment loss is best controlled by using a combination of BMPs to target each stage of the erosion process. This should include the following general steps

Step 1. Use advance planning and scheduling

Step 2. Stabilize slopes and exposed surfaces

Step 3. Divert or dissipate onsite flows.

Step 4. Capture sediment from runoff.

STEP 1: PLANNING AND SCHEDULING

Planning and scheduling should always be part of your erosion control strategy. Effective planning can greatly reduce the need for other costly and time-consuming solutions. It can also save you considerable money. Whenever possible, plan your project to utilize existing topography, drainage patterns, and vegetation. This will significantly reduce the potential for erosion both during and after construction.

Grading and clearing should be phased to reduce the amount and the duration of sediment exposure. If possible, schedule grading during the dry season (Mid-April through October), particularly avoiding December through February. Always be aware of forecasted weather conditions prior to any scheduled grading or clearing activities.

For weather forecasts, contact the National Weather Service at (858) 675-8700, or visit www.weather.com

STEP 2. STABILIZING SLOPES AND SURFACES

The City Grading Ordinance requires that slopes be stabilized as soon as they are created to increase their resistance to erosion. When permanent stabilization of slopes or other exposed surfaces is not yet feasible, temporary measures should always be used. A number of practical solutions can be used.

Preservation of Existing Vegetation.
Leaving existing vegetation (trees, vines, shrubs, grasses, etc.) in place can minimize the potential for erosion as well as the need for other costly controls

Seeding and Planting. Seeding grasses and planting trees or ground cover provides long-term stabilization of slopes and soils. Schedule landscaping to permanently cover exposed surfaces as soon as they are created.

Mulching. Mulches (such as wood chips, bark, straw, gravel, etc.) can be used to temporarily or permanently stabilize cleared or freshly seeded areas. Mulches should be inspected weekly and after rain for damage or deterioration.

Geotextiles and Mats. Geotextiles and mattings can be used for temporary or permanent soil stabilization, and are especially effective on steep slopes and channels. They should be inspected monthly and after significant rainfall.

Stabilization of Vehicle Traffic Areas. All areas of significant vehicle traffic (site entrances, access roads, parking lots, etc.) should be stabilized immediately after grading to prevent erosion and control dust. Site entrances and exits are especially important. Use gravel approaches to limit tracking of sediment offsite.

Remember, the effectiveness of BMPs you use will depend on their proper implementation and maintenance. Routine inspection and evaluation, especially before and after rainfall, should be part of your pollution control strategy.

Step 3: DIVERTING AND DISSIPATING FLOW

Effectively preventing sediment erosion generally requires a combination of surface stabilization and onsite flow control. Flow control methods reduce the ability of rainwater to erode sediments either by decreasing its velocity or by channeling it away from exposed surfaces. A number of practices are commonly used.

Earthen Dikes. Earthen dikes are berms or ridges of compacted soil (or other onsite materials) that divert flow away from slopes or other exposed areas. They are relatively inexpensive and can be constructed during initial grading operations.

Temporary Drains and Swales. Temporary drains and swales can be used to divert runoff around the site or disturbed areas.

Slope Drains. Slope drains are temporary pipes or lined channels that drain the top of a slope to a stable discharge point at the bottom.

When using flow diversion BMPs, remember that concentrated flows must be dissipated. Flow dissipation (check dams, rip rap, etc.) should always be used at drain or channel outlets to reduce runoff velocity and promote sedimentation. Care should also be taken not to disturb downstream properties.

Step 4: CAPTURING SEDIMENT FROM RUNOFF

Because sediment erosion can never be completely prevented, your control strategy should also include BMPs designed to recapture sediment from flows. The following methods are commonly used to promote sedimentation by filtering or trapping runoff.

Silt fences. Silt fences are a filter fabric attached to supporting poles, sometimes backed by wire. They are used in areas of sheet flow. Silt fences require frequent inspection, especially before and after rainfall.

Straw Bale Barriers. Straw bales can be used to create a temporary sediment trap in areas of sheet or rill flow. Bales are entrenched and placed end to end along a level contour. They should be inspected frequently since they tend to deteriorate.

Sand Bag Barriers. Stacking sand bags along a level contour can create a temporary sediment trap by ponding water upstream of a barrier. Sand bags are very versatile and can be used in a number of applications.

Brush and Rock Filters. Barriers constructed of brush or rock (3/4" to 3" diameter) can be used in areas of sheet or rill (channelized surfaces) flow to reduce velocity and trap sediment. They must be properly anchored, and should be inspected at least monthly and after each rainfall.

Sediment Traps and Basins. Traps and basins are excavated or constructed (berms, embankments, etc.) areas where runoff is trapped and sedimentation occurs. Traps are used for small drainage areas (less than 5 acres) and basins for larger ones. Both traps and basins should be constructed before clearing, grading, and grubbing begins, and located where they can be easily cleaned out.

Storm Drain Inlet and Creek Protection. Your erosion control strategy should always address the protection of onsite or down-gradient storm drain inlets and waterbodies. Discharges of pollutants to storm drains, or streams and other waterbodies, may result in violations of the City Stormwater and Grading Ordinances, the Federal Clean Water Act, and the California Fish and Game Code.

GENERAL CONSTRUCTION BMPs

In addition to sediment, many other types of pollutants are used or generated during building and construction.

Paint Wastes	Dement Wash	Drywall	Solvents	Adhesives
Glues	Trash	Cleared Vegetation	Wood	Asphalt
Demolition Wastes	Vehicle Fluids	Septic Wastes	Asbestos	Acids

Remember, discharging anything other than rain to the storm drain is against the law. All materials and wastes must be managed and disposed of properly. The BMP described below will help to prevent stormwater pollution from your construction activities.

MATERIALS and WASTE MANAGEMENT

- Use designated delivery, pickup, and storage areas away from drainage paths and waterways.
- Store only the materials you need onsite.
- Store materials (especially open bags) under a roof or inside a building. Cover and berm around storage areas. Cover materials stored outside with waterproof tarps.
- Keep an inventory of materials and regularly inspect storage areas.
- Store and dispose of wastes as required by Federal, State, and local regulations
- Use watertight dumpsters.
- Wash out concrete trucks offsite or in a designated area (e.g. a temporary pit where the concrete can set, be broken up, and then disposed of properly).

SPILL CONTROL

- Train employees on spill prevention and cleanup
- Make sure cleanup materials are easily accessible.
- Use secondary containment (drain pans, drop cloths, etc.) to catch spills and leaks
- Clean up spills immediately.
- Use as little water as possible ("dry" methods) for washing and spill cleanup.

VEHICLES AND EQUIPMENT
(Cleaning, Fueling, and Maintenance)

- Fuel, maintain, and wash vehicles offsite.
- If conducting activities onsite, use designated areas. Cover and berm work areas as necessary.
- Properly maintain vehicles and equipment to prevent leaks.

Additional Resources

City of Solana Beach Engineering Department
(858) 720-2477 www.ci.solana-beach.ca.us/

San Diego Regional Water Quality Control Board (SDRWQCB)
(858) 467-2952 www.swrcb.ca.gov/rwqcb9/

California State Water Resources Control Board (SWRCB)
(916) 341-5250 www.swrcb.ca.gov

U.S. Environmental Protection Agency (Region 9)
(415) 972-3510

APPENDIX M: CONSTRUCTION BMP BROCHURE

A POLLUTION PREVENTION GUIDE FOR THE CONSTRUCTION INDUSTRY

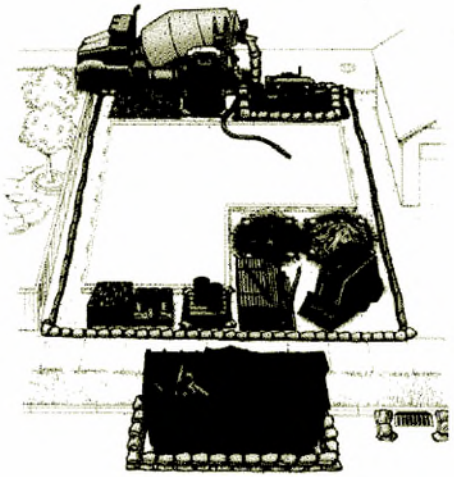

North County Storm Water Program

Carlsbad • Del Mar • Encinitas • Oceanside • San Marcos • Solana Beach • Vista

Only Rain in the Storm Drain

WATER QUALITY REGULATIONS FOR CONSTRUCTION SITES

Dear Contractor,

The North County Storm Water Program is a collective of jurisdictions in northern San Diego County working together to protect our watersheds. We believe that reducing pollution is critical to maintaining our communities' way of life.

It is our hope that this brochure will help you identify activities that are recognized to cause water pollution and implement appropriate Best Management Practices (BMPs) to minimize their impact. By providing you with these tools, we hope to make your job easier while keeping our waterways clean.

Each jurisdiction will be inspecting their construction sites to ensure the protection of water quality. We look forward to seeing the BMPs presented in this brochure implemented at your sites.

Together we have the ability to preserve and improve the quality of life in our communities.

Sincerely,

The North County Storm Water Program

Contact Phone Numbers:

City of Carlsbad
760-602-2799

City of San Marcos
760-744-1050

City of Encinitas
760-633-2787

City of Del Mar
858-755-9313

City of Oceanside
760-435-5800

City of Solana Beach
858-720-2470

City of Vista
760-726-1340

Construction Sites

In 1972, the Environmental Protection Agency developed regulations to control water pollution. As a result, the National Pollutant Discharge Elimination System (NPDES) Permit was created. NPDES permits are issued to municipalities as well as construction sites.

In addition to complying with local regulations, which are governed by our municipal NPDES permit, you may be required to obtain a permit through the State of California under the State General Construction Permit (99-08-DWQ). All construction sites over one acre are required to obtain coverage under this permit.

Construction sites can contribute pollutants such as sediment, metals, and chemicals, to our local creeks, rivers, lakes, lagoons, and ocean. These pollutants make their way down our streets and into storm drains, eventually discharging to the nearest body of water.

All construction sites are required to implement Best Management Practices (BMP) to prevent storm water pollution. This brochure is intended to assist your construction site in understanding BMP requirements.

Each municipality has one or more persons dedicated to ensuring that all construction sites are in compliance with state and local storm water control regulations. Contact your local municipality for further information.

Right-of-Way Permitting

We understand that there are times when space on construction sites is limited. If at any point, you (as a contractor or subcontractor) need to use the public right-of-way in order to work or store materials, you must apply for a special permit. This permit allows you to use the City's right-of-way areas, and describes what is required to prevent illegal contaminants from entering local storm drains. For more information or to obtain a permit application contact your local jursidiction.

Inspection and Enforcement Program

Each jurisdiction has established an enforcement program to ensure that all businesses operate in compliance with all appropriate storm water laws and other City requirements. Contractors, site supervisors and property owners can be held responsible for violations, which may lead to a civil penalty of up to $10,000 per day and/or reimbursing the local jurisdiction for all expenses associated with clean up.

Best Management Practices

Construction materials such as paint, dirt and trash often find their way into our storm drains, polluting the environment and jeopardizing our creeks, rivers, lakes, lagoons, and ocean.

The NCSWP is working with contractors to implement what are known as Best Management Practices (BMPs) on all construction sites. That is, methods used to keep pollution out of our storm drains and off public property, such as sidewalks, streets, parkways and alleys. Carrying out and maintaining these BMPs on the construction site is critical to protecting our ocean and bay.

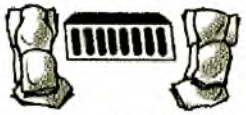

The following is a list of BMPs and pollution prevention measures that shall be implemented at all construction sites:

1. **Conduct daily site cleanings.**
2. **Develop spill response and containment procedures.**
3. **Educate employees and subcontractors about BMPs.**
4. **Develop an erosion control plan for wind and rain.**
5. **Regularly maintain all BMPs at project site.**

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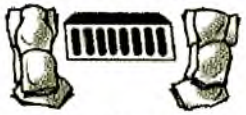

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3. **Educate employees and subcontractors about BMPs.**
4. **Develop an erosion control plan for wind and rain.**
5. **Regularly maintain all BMPs at project site.**

APPENDIX N: PUBLIC PROJECT PRE-CON MEETING AGENDA

PRE CONSTRUCTION MEETING
DISTILLERY PARKING LOT IMPROVEMENTS
BID NO. 2006-12
September 7, 2006 – 11:00 am

Introductions

Contacts

1. Contractor — MJC Construction
   Javier Jimenez
   (619) 472-5619 office

2. City — City of Solana Beach
   635 S. Hwy 101
   City of Solana Beach, CA 92075
   (858) 720-2470 (Engineering)
   (858) 755-1782 (Engineering fax)

   Hector Ezquerro – City Inspector (858) 720-2470
   Dan Goldberg – Project Manager (858) 720-2474
   Danny Hernandez – Acting Public Works Supervisor (858) 793-879(

   Utilities — Santa Fe Irrigation District – Dana Johnson (858) 756-2424

Project Status: Notice to Proceed – TBD
30 Working Days

Contract Amount: $53,508.00

Project Goals:
- Safety
- Community
- Quality
- Schedule
- Budget

Contractor Requirements:
- Any questions about Contract Award or "Key Contract Items Summary Sheet"?
- Submit Construction Schedule
- Submit Traffic Handling Plan
- Submit Storm Water Pollution Prevention Plan (SWPPP)
- Submit Names/Phone Numbers of Foreman/Emergency People
- Submit Names of Additional Subcontractors

Storm Water & Erosion Control (Danny King – City Environmental Specialist)
- Best management practices shall be used & maintained
- Erosion control plan

Page 1 of 2

APPENDIX O: PRIVATE PROJECT PRE-CONSTRUCTION CHECKLIST

City of Solana Beach
635 South Highway 101,
Solana Beach, CA 92075

PRE-CONSTRUCTION SITE / STORM-WATER INSPECTION CHECKLIST

Municipal Code Chapter 13.10 Storm Water Management
Engineering Inspection Division

Storm Inspection Type: None ☐ Pre- ☐

Inspected By: _____ Date: _____

Project Superintendent _____ Date: _____

Project Type: _____ Location: _____

Name of Contractor's 24-hour Site Contact: _____

Phone: _____

Watershed: ___Carlsbad ___San Dieguito
303(d) Listed: -Sediment -Bacteria
-Nutrients
-Bacteria

Priority: High Medium Low

Based On: ☐ Size
☐ Soil Erosion Potential
☐ Site Slope
☐ Proximity to Environmentally Sensitive Areas
☐ Other _____

DEFINITIONS:

SWPPP: Storm-water Pollution Prevention Plan (>1 acre) **BMP:** Best Management Practice

NPDES: National Pollutant Discharge Elimination System

Mark (x) box "Yes" or "No" or "N/A"; if comments, mark (x) box "Comment".

Yes	No	N/A	Comment	PRE-CONSTRUCTION
☐	☐	☐	☐	1. Is there a SWPPP filed and available on-site?
☐	☐	☐	☐	2. Are there Sensitive Environmental Resources to be shown on plans to be protected?
☐	☐	☐	☐	3. Does the Contractor have an ongoing NPDES Training Program?
☐	☐	☐	☐	4. Does the Contractor have a Qualified Person to Monitor and Report on BMPs? Provide a statement of qualifications.
☐	☐	☐	☐	5. Does the Contractor have an inspection schedule and documents on-site and readily available?
☐	☐	☐	☐	6. Did Contractor receive BMP Guide?
☐	☐	☐	☐	7. Did Contractor receive/complete Weather Triggered Action Plan?

Comments:_____

I certify that I understand the issues regarding storm-water pollution and the responsibilities that I have to ensure the protection of Solana Beach waterways.

_____ _____

Signature Date

APPENDIX P: CONSTRUCTION INSPECTION CHECKLIST

City of Solana Beach
635 South Highway 101,
Solana Beach, CA 92075

CONSTRUCTION SITE/STORM-WATER INSPECTION CHECKLIST

Municipal Code Chapter 13.10 Storm Water Management
Engineering Inspection Division

Inspection Description: Initial Visit ☐ Routine Inspection ☐ Follow-Up Inspection ☐

Storm Event Inspection Type: None ☐ Pre- ☐ Post ☐

Inspected By: _____ Date: _____

Project Superintendent: _____ Date: _____

Project Type: _____ Location: _____

Name of Contractor's 24-hour Site Contact: _____

Phone: _____

Did Superintendent Receive The BMP Guide Previously: Yes ☐ No ☐

If No, Did He/She Receive One Now: Yes ☐ No ☐

Is The Weather Triggered Action Plan On-Site and Available: Yes ☐ No ☐

Watershed: ___Carlsbad ___San Dieguito

303(d) Listed: -Sediment -Nutrients -Bacteria -Bacteria

Priority: High Medium Low

Based On: Pre-Inspection Checklist

DEFINITIONS:

SWPPP: Storm-water Pollution Prevention Plan (>1 acre) **BMP:** Best Management Practice

NPDES: National Pollutant Discharge Elimination System

Mark (x) box "Yes" or "No" or "N/A"; if comments, mark (x) box "Comment".

Yes No N/A Comment **CONSTRUCTION**

☐	☐	☐	☐	1. Are all BMPs identified on the SWPPP/Plans installed in the proper location, in accordance to the specifications, and functioning properly?
☐	☐	☐	☐	2. Does the SWPPP/Plans reflect current site conditions?
☐	☐	☐	☐	3. If required, is Dry Season Preparation adequate? (e.g.: Able to implement quickly, materials on-site or close, contractor is monitoring weather, perimeter protection in place.)
☐	☐	☐	☐	4. Does the Contractor have an inspection schedule and documents on-site and readily available?
☐	☐	☐	☐	5. Are Monitoring Reports available, and in compliance?
☐	☐	☐	☐	6. Are all downstream Operational Storm Drain Inlets protected?
☐	☐	☐	☐	7. Are all Natural Drainage Courses in proximity to this project protected?
☐	☐	☐	☐	8. Are all gravel bags, straw bales, and silt fences in place in accordance with the SWPPP/Plans, and are they functioning properly?
☐	☐	☐	☐	9. Are Non-Storm-water BMPs being used? (e.g.: concrete washouts, irrigation runoff, etc.)
☐	☐	☐	☐	10. If present, are all sediment traps/basins functioning properly?
☐	☐	☐	☐	11. Is sediment, debris, or mud being cleaned from public roads and intersections with site access roads? (Tracking BMPs in place.)
☐	☐	☐	☐	12. Are all discharge points free of any significant erosion or sediment transport?
☐	☐	☐	☐	13. If present, are all significant erodible slopes protected from erosion through the implement of acceptable soil stabilization practices? (Rills and Gullies Developing.)
☐	☐	☐	☐	14. Are all material and equipment handling, storage, and maintenance areas clean, and free of spills, leaks, or other deleterious materials?

☐	☐	☐	☐	13. If present, are all significant erodible slopes protected from erosion through the implement of acceptable soil stabilization practices? (Rills and Gullies Developing.)
☐	☐	☐	☐	14. Are all material and equipment handling, storage, and maintenance areas clean, and free of spills, leaks, or other deleterious materials?
☐	☐	☐	☐	15. Are all on-site traffic routes, parking, and storage of equipment and supplies restricted to areas designated in the SWPPP/Plans for those uses?
☐	☐	☐	☐	16. Are all locations of temporary soil stockpiles or construction materials in approved areas?
☐	☐	☐	☐	17. Are all seeded or landscaped and irrigation areas properly maintained?
☐	☐	☐	☐	18. Are all BMPs maintained in functional order?

Comments:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____

City Staff Signature Date

City of Solana Beach
635 South Highway 101,
Solana Beach, CA 92075

Weather Triggered Action Plan For Construction Sites
Municipal Code Chapter 13.10 Storm Water Management
Engineering Inspection Division

This Action Plan should be completed before the rainy season and updated prior to each rain event:

Project Superintendent:_____

Project Superintendent Signature:_____

Address:_____

Date:_____

Inspector Name:_____

Inspector Signature:_____

Date:_____

Notes:_____

_____

_____

_____

_____

_____

_____

_____

Materials and Wastes	
Existing Condition	Action Plan

Non-Storm Water Management	
Existing Condition	Action Plan

Discharge Locations	
Existing Condition	Action Plan

Erosion Controls	
Existing Condition	Action Plan

Sediment Controls	
Existing Condition	Action Plan

Equipment and Vehicles	
Existing Condition	Action Plan

APPENDIX R: SAMPLE CONTACT/COMPLAINT DATABASE

Name	Affiliation	Date	Type	Address	Violation	Enforcement Action
Susan Welker	County of SD	10/29/2006 (Sunday)	Call	Solana Hills	Susan called to notify us of a broken down truck that was leaking oil. Susan placed down absorbent but it was leaky pretty heavily.	I investigated Monday morning and noticed the oil leak. The absorbent Susan placed down was completely soaked with oil. The oil was not flowing down the gutter, but any nuisance water may carry oil down to storm drain. The violation was referred to Code Enforcement for investigation. -- Code enforcement was successful in removing vehicle and oil was cleaned up

Susan Welker	County of SD	11/14/2006	Call	368 Holmwood Lane	Susan called to report an illegal discharge at 368 Holmwood Lane. Crews working on a remodel at the location were powerwashing the driveway and the runoff was allowed to enter the San Elijo Lagoon. There was no containment attempt at all.	I investigated immediately and made contact with the RP. I confirmed that there were no BMPs in place and no attempt was made to contain the washwater. A toxic substance was allowed to enter a drain and empty into a canyon in the lagoon. I stopped work immediately and we got Code Enforcement onsite. The RP was a day laborer and there was no company or licensed contractor on-site. We tried unsuccessfully to contact the homeowner. OES was contacted about the toxic spill in lagoon. It did not reach RW, and OES notified the necessary agencies. The homeowner was finally contacted, a meeting will be held tomorrow afternoon with all agencies involved. A fine of $500 was issued and cleanup and abatement order.
Dave Thomas	Public Works	3/15/2007	Call	Earl Warren Middle School	Dave reported heavy flow coming off site.	Dave investigated and discovered the maintenance crew had just washed down the outdoor eating area. Action was completed. Follow up to school district necessary.

Dave Thomas	Public Works	3/28/2007	Radio	Parioli Restaurant	Dave reported employees washing parking lot with no containment	I investigated the complaint and detected the recently washed parking lot. I spoke to the owner who admitted to his employees washing water. I explained the regulations and he promised to comply. A written NOV was sent
Frank Zamarippa	Code Enforcement	3/28/2007	Email	240 South Cedros (Leaping Lotus)	Frank witnessed an employee washing down sidewalk in front of business	Frank stopped the violation and educated the violator. Written NOV sent
Frank Zamarippa	Code Enforcement	3/28/2007	Email	107 South Cedros (Carizma)	Frank witnessed an employee washing down sidewalk in front of business	Frank stopped the violation and educated the violator. Written NOV sent

APPENDIX S: BEACH BLANKET MOVIE NIGHT FLYER

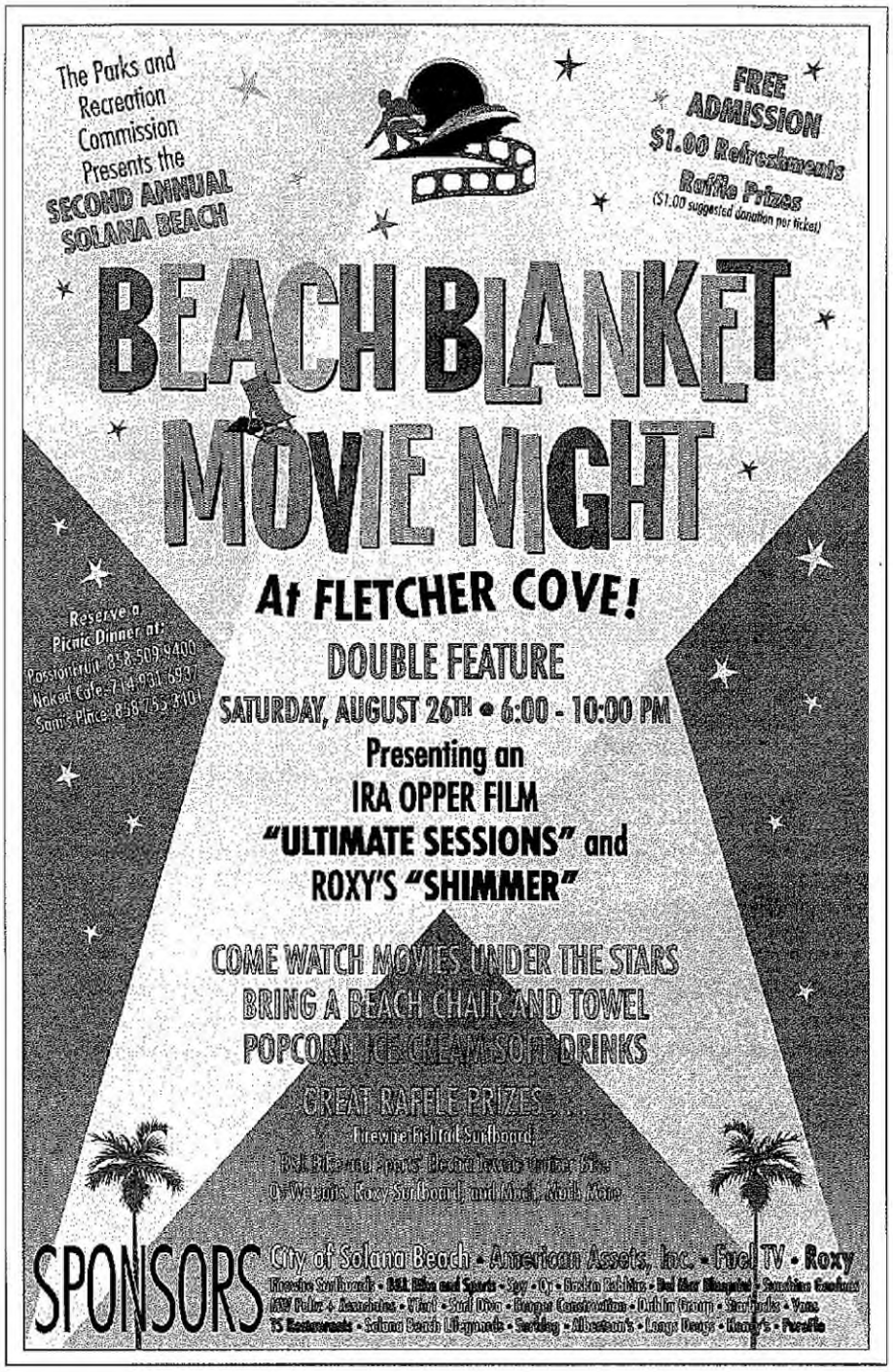

APPENDIX T: SUMMER CAMP PROGRAMS/CLASSES

City of Solana Beach
Department of Parks and Recreation
2006 - SUMMER CAMP PROGRAM SCHEDULE
Summer Session: June 19 – August 11, 2006
ALL the Summer Day Camps are for children ages 6-12 years.
(Kids entering 1st grade – Jr. High)

Awesome Astronomy
Session 1, June 26-30, 2006

This delightful camp will explore the fascinating world above our heads. Activities will include a variety of theme related games and craft projects as well as several projects that will enlighten children's awareness and knowledge of the Solar System and its affects on Earth. A field trip to the Ruben H. Fleet Space Theater and Science Center is part of this interesting summer camp. The camp meets Monday through Thursday from 9:00 am to 2:00 pm at San Dieguito Park and on Friday at Fletcher Cove. The fee is $90.00 per child.

* * * * *

Fantastic Rain Forrest
Session 2, July 10 – 14, 2006

The Fantastic Rain Forrest Camp will be filled with activities to enlighten children's awareness of the wonderful world hidden in the Earth's Rain Forrest's. The program includes theme related crafts and games as well as a visit from the Park Ranger, a cook out, and a special field trip to the Natural History Museum in Balboa Park. The camp meets Monday through Thursday from 9:00 am to 2:00 pm at San Dieguito Park and on Friday at Fletcher Cove. The fee is $90.00 per child.

* * * * *

Ecology and Lagoon Exploration
Session 3, July 24 – 28, 2006

The Ecology and Lagoon Exploration Summer Day Camp will investigate the ocean, lagoon, and park environments of Solana Beach. This exciting camp will be filled with fantastic activities and crafts that heighten children's awareness of the ecological opportunities around us. Field trips to the Monarch Butterfly Ranch and San Elijo Lagoon Nature Reserve are part of the exploration planned. The camp meets Monday through Thursday from 9:00 am to 2:00 pm at San Dieguito Park and on Friday at Fletcher Cove. The fee is $90.00 per child .

* * * * *

Awesome Olympics
Session 4, August 7 – 11, 2006

Our very own Summer Olympic Celebration will include Olympic style events that everyone can enjoy and be successful. Individual events as well as team competitions are planned. A terrific field trip to the Ray and Joan Kroc Community Center is planned, where campers can climb the rock tower and ice skate in the Olympic size rink. The camp meets Monday through Thursday from 9:00 am to 2:00 pm at San Dieguito Park and on Friday at Fletcher Cove. The fee is $90.00 per child .

* * * * *

DANCE TO THE STARS
Special Session, June 19–June 29, 2006
Monday through Thursday 2:00-4:30 p.m.

This class is intended to introduce 5th, 6th and 7th grade students to the basic elements of Ballroom Dancing from the 20th and 21st centuries. Students will gain an appreciation of the music of the times, as well as the manners and customs of a past era, along with the traditions of the present. The instructor, Marsi Weigand, teaches Dance and Physical Education at La Costa Canyon High School. The class meets Monday through Thursday from 2:00 - 4:30 p.m. at the La Colonia Community Center. The fee is $50.00 per student.

Solana Beach Department of Parks and Recreation
Kids Summer 2006 Day Camp - REGISTRATION FORM

Register for:

_____ Session I, Awesome Astronomy - June 26-30, 2006
_____ Session II, Fantastic Rain Forrest - July 10-14, 2006
_____ Session III, Ecology & Lagoon Exploration - July 24-28, 2006
_____ Session IV, Awesome Olympics - August 7-11, 2006
_____ Special Session, Dance To the Stars - June 19-29, 2006

Child's Name_____Grade in fall_____ Age_____
Address_____
City_____Zip_____
School child attends_____
Daytime Phone_____Emergency Phone No. _____
(Scholarships available for Solana Beach Students)
Circle T-shirt size: **Child:** S M L **Adult:** S M L XL (Cancellation fee $20.00)

A detailed information sheet will be mailed to you with your confirmation. For more information contact the Recreation Department at: 858 793-2564.

Release of Liability

I will not hold the instructors, sponsors, officials or members of the City of Solana Beach Department of Parks and Recreation responsible for any injury that any participant might incur while in the program.

_____
Parent/or Guardian

Please mail or deliver with your payment to:
City of Solana Beach, Dept of Parks and Recreation
635 South Highway 101
Solana Beach, California 92075

APPENDIX U: SPECIAL EVENTS PERMIT

NOTICE OF APPROVAL FOR SPECIAL EVENT
CITY OF SOLANA BEACH

The Special Event you have applied for has been approved, according to the following information:

Date Requested:	June 12, 2004
Hours:	5:30 a.m. – 2:00 p.m.
Organization:	San Dieguito Boys & Girls Clubs
Type of Event:	Seaside Stride 5 Mile Walk
Location:	See Attached Map
Contact Person:	Ellen Flanagan (760) 471-5516

Approved By:_____
Barry Johnson, City Manager

SPECIFIC GUIDELINES:

1. No City services, at the request of the applicant, for the event will be provided by the City.
2. The event participants must utilize the sidewalks and not the roadway where available on the course. If there is no sidewalk, participants must utilize the very outer edge of the roadway.
3. Event organizers must obey all traffic signs, lights, and laws.
4. Event organizers and participants shall utilize public right-a-ways and property for the purpose of this event at their own risk.
5. Event organizers and participants shall obey all traffic laws, signs, and traffic control devices at all times.
6. Event organizers must comply with all applicable water run-off regulations and must use best management practices. There will be absolutely no liquid, solid, or any other by-product generated by the event allowed in the city storm drain system. The parking lot at the conclusion of the event must be cleaned of all debris and disposed of in an acceptable manner to the City's Public Works Department.
7. Roadway and sidewalks and any other public areas utilized by the event participants and audience shall be left in a clean and orderly condition at the conclusion of the special event.
8. Applicant shall be charged for the amount of time to clean-up the areas or facilities used by the event participants if the areas utilized by the attendees of the event are not left in a clean and orderly condition. Estimated cost for retaining one City employee to clean-up refuse, and trash disposal is $ 43.20 per hour.
9. Any damage to public property as the result of this event will encumber full cost recovery from applicant by the City.

10. Event organizers shall at all times comply with any request or orders from the City's public works, lifeguard, law enforcement, or other public safety personnel. Failure to do so will result in the revocation of this permit and an immediate cease event order.

GENERAL GUIDELINES:

1. This permit and any other permits associated with this event will be available at the event.
2. If City services are required, applicant will be billed in advance for any and all City services provided above normally scheduled services. **All fees and charges shall be paid prior to final issuance of a permit for the event. Exception: Costs incurred by the City for clean up or other reasons due to the event, if any, shall be charged to the applicant billed as soon as the total cost is determined.**
3. All vehicles must comply with City parking regulations.
4. The organization and any of its subcontractors in advance of the event must file a business license application and fee, if they do not have a business license.
5. Vehicle loading and unloading cannot block pedestrian access. If required for short durations, signage directing the flow of pedestrian access, including wheelchair access must be established and posted.
6. The City reserves the right to shut down the event at any time, if necessary.
7. Applicant must comply with City noise regulations.
8. **It is the responsibility of the applicant to know and comply with the terms and conditions as stated within this special event permit and all applicable laws that pertain do the event, its organizers, and its participants whether they are stated on this permit or not.**
9. Contact Leah Escarcega or David Ott at (858) 720-2410 if there are any questions regarding the special event permit process.

C: City Manager's Office
Public Safety Director
Public Works Director
Sheriff's Department
Marine Safety Captain

VENDOR GUIDELINES

Fiesta del Sol

- All electric cords should be out of the public access areas. If they must extend into a public access area, the cords must be protected with pedestrian transition molding to minimize the trip hazard.
- All cooking areas and devices shall have at least one 2A-20BC fire extinguisher readily accessible to persons working in the immediate proximity of each device or cooking area and shall be in plain view.
- All portable LP-gas containers, valves, and fittings shall be properly secured in a fixed upright position and protected in accordance with the Uniform Fire Code.
- The following conditions apply to canopies in excess of 400 square feet, and to tents and temporary membrane structures having an area in excess of 200 square feet:
- All tents, temporary membrane structures, and/or canopies that are to be used at the function shall be adequately braced and anchored to prevent weather related collapse. Documentation of structural stability shall be furnished to the Fire Chief on request.
- All tent, canopy, or temporary membrane structure exits shall be in accordance with the Uniform Fire and Building Codes.
- The design and construction of the fabric envelope, method of anchoring, and inflation systems for air-supported and air-inflated structures shall be in accordance with the Building Code.
- The sidewalls, drops and tops of temporary membrane structures, tents and canopies shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Temporary membrane structures, tents or canopies shall have either a permanently affixed label or a Certificate of Flame Resistance bearing the following information:
  - Identification of the temporary structure's size and fabric or material type.
  - For flame-resistant-treated materials, the date that the temporary membrane structure, tent or canopy and other combustible materials were last treated with an approved flame retardant. The trade name and type of flame retardant utilized in the flame-retardant treatment. The name of the person and firm that applied the flame retardant.
- The following general storm water run-off practices shall apply to the event:
  - No dumping or allowing any material into City storm drains.
  - Install secondary containment around portable restroom facilities when feasible.
  - Prompt and proper clean-up of all trash debris.
  - Do not use water or any liquid to rinse down any debris or dirt on any ground surface. Dry sweeping only of event debris is allowed.
  - Protect all storm drain catch basins/inlets when feasible with proper storm water Best Management Practices implementation.
  - Do not allow excess water to leave the site. Properly contain everything onsite before it enters the City's storm drain system.

APPENDIX V: 2006 DRY WEATHER MONITORING PROGRAM RESULTS

THE ATTACHED DOCUMENT IS A COPY OF THE

PROGRAM DESCRIPTION,
NARRATIVE SUMMARY
AND
RESULTS SECTIONS
OF THE

City of Solana Beach
2004 Dry Weather Field Screening Program

Prepared by the City of Solana Beach,

(Note: the complete report, including tables, sampling sheets, graphs and charts, is available at Solana Beach City Hall for review, upon request.)

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1.0 EXECUTIVE SUMMARY

The Dry Weather Field Screening Program is an integral part of the NPDES (National Pollutant Discharge Elimination System) Storm Water Permit issued to the City of Solana Beach and other Copermittees by the San Diego Regional Water Quality Control Board.

The City of Solana Beach has implemented a comprehensive Storm Water Pollution Prevention Program. In 2006, twenty-eight sites were inspected with ***only one storm water conveyance*** line showing evidence of an illicit discharge or illegal connection. This line has a history of high bacteria counts, and the ongoing investigation attempting to locate the source of the bacteria is well documented and will continue until it is found and abated.

In September 2006, City of Solana Beach staff conducted the 2006 Dry Weather Screening Program under the regulations set forth in the NPDES Storm Water Permit Order No. 2001-01. Twenty-eight sites were inspected during the 2006 Dry Weather Screening Program. Each site was visually and chemically inspected for illegal discharges and/or illicit connections. Results were recorded on field data sheets and are included in the appendices of this Dry Weather Screening report.

2.0 INTRODUCTION

The Illicit Connection/Illegal Discharge Dry Weather Screening Program is one of the required tasks of the Storm Water NPDES Permit issued by the San Diego Regional Water Quality Control Board, under Order No. 2001-01. This is the fifth year that the San Diego Copermittees have conducted dry weather monitoring under this permit. The permit requires the City of Solana Beach, and all Copermittees, to develop and implement programs to prevent, reduce, and eliminate inappropriate discharges of pollutants from storm water conveyances into the waters of the United States.

The purpose of the Dry Weather Screening Program is to detect illicit connections and/or illegal discharges to the storm water conveyance system. In

order to accomplish this goal, strategic sites were identified to test for chronic and/or improper discharges. Chemical parameters specified by the U.S. Environmental Protection Agency (EPA) for field screening were used as indicators of potential pollution from industrial, commercial, or domestic sources. The EPA has presented the following most common non-storm water sources and has placed them into three contamination categories: pathogenic/toxic, nuisance, and clear. The pathogenic/toxic category can cause illness upon contact or consumption. The nuisance category can cause degradation of water quality and impair aquatic ecosystems. Clear water usually comes from natural sources such as springs and ground water infiltration. Table 1 displays the potential for these sources to enter the storm drainage system (EPA 1993).

Table 1: Potential Inappropriate Entries Into Storm Drainage Systems (EPA1993)

Potential Source:	**Storm Drain Entry**		**Flow Characteristics**		**Contamination Category**		
	Direct	**Indirect**	**Contin-uos**	**Inter-mittent**	**Patho-genic/ toxic**	**Nuis-ance**	**Clear**
Residential Areas:							
Sanitary wastewater	●	○	●	○	●	○	
Septic tank effluent		●	●	○	●	○	
Household chemicals	○	●		●	●		
Laundry wastewater	●			●		●	
Excess landscaping watering		●		●	○	○	●
Leaking potable water		●	●				●
Commercial Areas:							
Gasoline filling station	●	○		●	●		
Vehicle maintenance/ repair	●	○		●	●		
Laundry wastewater	●		●	○	○	●	
Construction site de-watering		●	●	○		●	
Sanitary wastewater	●	○	●		●		
Industrial Areas:							
Leaking tanks and pipes	○	●	●	○	●		
Miscellaneous process	●	○	●	○	●	○	○

waters			

Note: ● - most likely condition
❍ - may occur
Blank - not very likely

Discharges to the storm water conveyance system can originate form a variety of sources. The following provides a brief discussion of potential sources:

- Sanitary wastewater sources:
  - Sanitary wastewater (usually untreated) from improper sewer connections, exfiltration, or leakage
  - Effluent from improperly operating, or improperly designed, nearby septic tanks

- Automobile maintenance and operation sources:
  - Car wash wastewater
  - Radiator flushing wastewater
  - Engine degreasing wastes
  - Improper oil disposal
  - Leaky underground storage tanks

- Irrigation sources
  - Lawn runoff from over-watering
  - Direct spraying of impervious surfaces

- Relatively clean sources:
  - Infiltrating groundwater
  - Water routed from pre-existing springs or streams
  - Infiltrating potable water from leaking water mains

- Other Sources
  - Laundry wastewater
  - Non-contact cooling waters
  - Metal plating baths
  - Dewatering of construction sites
  - Washing of concrete trucks
  - Sump pump discharges
  - Improper disposal of household toxic substances
  - Spills from roadway and other accidents
  - Chemical, hazardous materials, garbage, sanitary sludge landfills and disposal sites

2.1 Land Use Characteristics

The City of Solana Beach consists of a total drainage area of 2,158 acres. The land use characteristics are estimated as follows (SANDAG 2000):

Agriculture	4 acres
Commercial and office	192 acres
Industrial	35 acres
Parks and Recreation	246 acres
Public Facilities and Utilities	110 acres
Residential	1436 acres
Transportation	98 acres
Undeveloped	37 acres
Water	1 acre

Figure 1 gives a visual presentation of the land use characteristics for the City of Solana Beach.

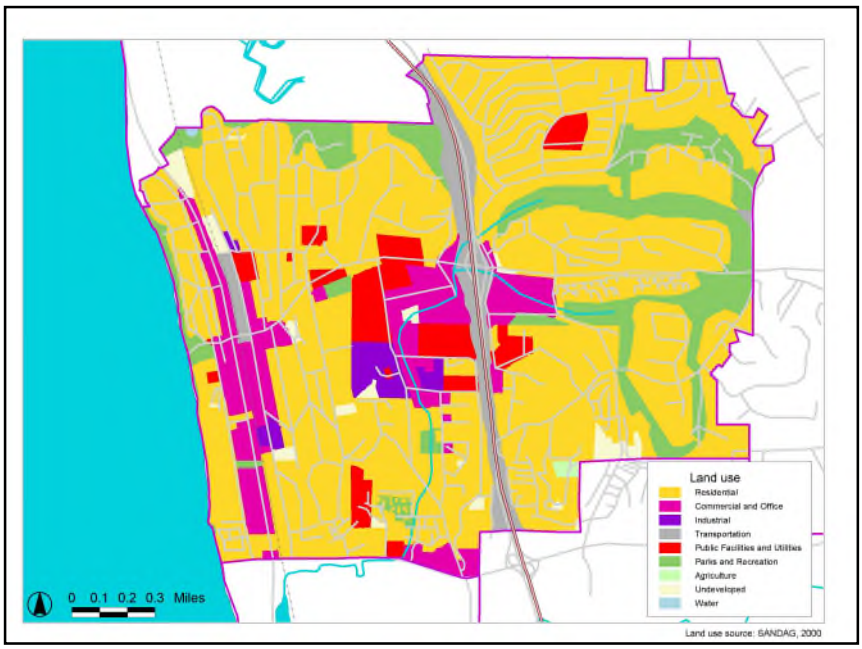

Figure 1. Land use in Solana Beach.

3.0 METHODS

This year marked the fifth year dry weather sampling was conducted under the municipal storm water discharge permit. Order No. 2001-01 Section F.5.b and Attachment E: Dry Weather Analytical and Field Screening Monitoring provide the requirements for field observations, field screening monitoring and analytical monitoring at each station. Further, the Copermittee Monitoring Workgroup has developed protocols for the jurisdictions to use to ensure consistency among the Copermittees.

First, a map of potential sampling locations was developed. In determining which storm drains and/or outfalls to monitor, the map was analyzed and sites were prioritized and selected based on the following: a review of the City's past Dry Weather Monitoring Programs; providing adequate coverage of the City's MS4 system, with a minimum of one monitoring location located within each hydrologic sub-basin; hydrologic conditions, total drainage area, history, and land use types at each potential monitoring location; points downstream of any suspected illegal or illicit activity; MS4 locations with potential to drain into surrounding sensitive water bodies; and ensuring sites were located at the farthest point downstream for each particular area of interest.

Four monitoring locations were selected within the coastal basin based on historical problem areas and proximity to the Pacific Ocean (Sites 11, 24, 25 and 26). Three monitoring locations were selected within the Fletcher Cove Basin based on their drainage to sensitive water bodies (Sites 20, 21, and 23). Eleven sites were selected within the San Elijo Basin. These sites were chosen based on their proximity to the environmentally sensitive San Elijo Lagoon, at the furthest possible point downstream before it enters the lagoon (Sites 1-10 and 22). Seven sites were chosen for the largest basin in the City, the Steven's Creek Basin (Sites 12-17, 19). The majority of this basin drains into Stevens Creek. Monitoring locations were selected at specific points throughout the basin based on the combination of criteria discussed in the previous paragraph. These sites were chosen to capture data from all the different land uses in the basin. These include industrial, residential, commercial and parks. The last basin, the Via de la Valle East Basin, is located in the southeast portion of the City. Three

monitoring locations were selected there to monitor what was leaving the City and entering the City of San Diego (Sites 18, 27, and 28).

An initial list of potential monitoring locations was developed. Twenty-eight sites met the criteria and were selected for the 2006 Dry Weather Monitoring program. All twenty-eight sites were identified as primary sites for monitoring based on the factors listed previously within this report.

The San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program Model Appendix D: Dry Weather Analytical and Field Screening Guidance provides guidelines for dry weather monitoring procedures as well as action levels for specific dry weather screening analytes. In accordance with this document, City staff made an initial visit to each site to determine if there was flow or not**.** Field data sheets were used to record site descriptions and characteristics, flow estimations, visual observations, and field chemistry results (see Table 3 for a summary of field observations).

If flowing or ponded water was observed during the initial visit, water quality tests were conducted. Sites that had elevated chemistry levels or abnormal visual observations were investigated immediately and the site was revisited within a period of not less than four hours and not more than twenty-four hours. Observations and chemical testing were repeated during the second visit. If the site was dry on the initial visit, a follow-up visit was not conducted.

Sites 3, 9, 14 and 25 had field screen tests and lab analysis performed. The Permit only requires that jurisdictions take ¼ of samples that were field screened to lab for analysis, but the City decided that since there were so few catch basins that had enough water to sample, it would be prudent to take them all to the lab for analysis.

Samples were collected by inserting a pre-cleaned HDPE bottle into the middle of the flowing or ponded water. Samples were tested on-site using CHEMetrics field test kits for the colorimetric analysis of ammonia, nitrate-N, orthophosphate-P, and detergents. In addition to the colorimetric analyses, the samples were also analyzed for pH, conductivity, and temperature using an Oakton Model 35630-62 pH/Conductivity/ Temperature Meter. Turbidity was measured using a Hach 2100P Turbidimeter. A description of the chemical testing equipment and the Quality Assurance/Quality Control Program are provided in Appendix B.

Table 2 presents the specific ranges and detection limits of the field test kits and meters.

Table 2: Range and Detection Limits for Field Test Kits and Meters

Parameter	**Kit or Meter**	**Range**	**Detection Limits (mg/L)**	**Accuracy/ Increment**
pH	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.00 to 14.00 pH	NA	± 0.01 pH
Temperature (^oC)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0 to 100 ^oC	NA	± 0.5 ^oC
Conductivity (mS/cm @ 25 ^oC)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.0 to 19.99 mS/cm	NA	± 1% Full Scale ± 1 Digit
Turbidity	Hach Model 2100P Turbidimeter	0-1000 NTU	NA	± 2% of reading plus stray light from 0-1000 NTU
Ammonia (mg/L)	CHEMetrics K-1510	0-1.0 and 1.0-10.0 mg/L	0.1	NA
Nitrates (mg/L)	CHEMetrics K-6902	0 – 1.0 and 1.0-5.0 mg/L	0.05	NA
Detergents (mg/L)	CHEMetrics	0-3.0 mg/L	0.25	NA
Phosphate (mg/L)	CHEMetrics K-8510	0 –1.0 and 1.0-10.0 mg/L	0.1	NA

4.0 RESULTS

Table 3 presents a detailed summary of all chemical, biological and visual observations made during the 2006 Dry Weather Screening Program. The following provides a brief discussion about the purpose and results of visual observations and chemical and biological tests.

Table 3

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Table 3

Table 3

4.1 Visual Observations

Visual observations included water color, clarity, and flow rate, floating materials, biological observations, structural condition of the conveyance, and vegetative condition at the site. If any particular odors were associated with the site, those observations were also recorded.

- **Flow:** Flowing water was observed at Sites 14 and 25. Ponded water was found at Sites 3, 9 and 12. Sites 1, 2, 6, 7, 11, 15, 17, 20, 21 and 26 were damp with insufficient water available to collect a sample. Sites 4, 5, 8, 10, 13, 16, 18, 19, 22, 23, 24, 26, 27, and 28 were dry.

- **Odor:** Odor can be caused by chemicals from residential, commercial, and industrial discharges; and from natural sources including decaying organic matter and microbial activity.

  The following sites had distinctive odors associated with them: Sites 9 and 25 had a distinct, musty odor. Site 3 had rotten eggs odor, which may have been due to decaying organic matter.

- **Water Color:** The apparent color of water results from dissolved substances and suspended matter. Soil runoff and decaying organic matter produce a variety of yellow, red, brown, and gray colors. Some algae and dinoflagellates produce reddish or deep yellow colors in water, while high levels of phytoplankton and other algae appear green.

  The water color ranged from clear to yellowish at the majority of sites. The water at Sites 3, 14, and 25 were a distinct yellow. All the other sites that contained water were clear.

- **Water Clarity:** Turbidity refers to the cloudiness of water. Water that is turbid generally has low clarity, and may appear cloudy or opaque, while less turbid water will appear clear. Suspended solids and microscopic plankton that scatter light passing through the water cause turbidity. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

- The water clarity at all sites was clear. Quantitative measurements for turbidity at each site are included in Table 3.

- **Floatable materials:** The type of floating matter can help identify the source of contamination, since these substances are often direct products of the source of the pollution.

  The majority of sites were free of floatable materials during the 2006 inspections, except for Sites 9 and 21 which contained trash and organic matter.

- **Biological:** At the majority of sites there was no biological activity noted with the following exceptions: Insects were detected at Sites 3, 7, 9, and 14.

- **Vegetative condition:** Excessive vegetation can be an indicator of elevated levels of nutrients in the runoff.

  Sites 1, 3, 9, 10, 14, and 25 had normal vegetation growth.

- **Deposits:**

  Sites 3, 9, and 25 had sediment/gravel deposits.

4.2 Field Chemical Analyses

All sites with flowing or ponded water were tested for the following parameters: temperature, pH, conductivity, turbidity, ammonia, detergents, nitrates, and orthophosphates. The data shows that the concentrations of some indicator parameters exceeded Copermittee action levels at Sites 3, 14 and 25. The following provides a brief discussion of each parameter. Table 3 provides a detailed list of analytical results. Section 5 provides a discussion of sites that appear impacted by illicit discharges.

- **Temperature:** Extreme temperatures can be an indication of commercial or industrial runoff.

  Temperature readings ranged from 19.1 to 23.3 ^{o} C.

- **pH:** Measures of pH represent the intensity of the acidity or alkalinity of water, on a scale from 0 to 14.0, with 7.0 considered neutral. The pH of natural

waters ranges from 6.0 to 9.0 (EPA 1993). Measurements outside of this range could be an indicator of commercial or industrial discharges.

All sites had pH levels within the recommended guidelines.

- **Conductivity:** Conductivity is the measure of the ability of water to carry an electrical current and high levels are an indicator of high total dissolved solids (TDS). The conductivity of saltwater is generally above 43 uS/cm. The Copermittees have not developed an action level for conductivity, but Best Professional Judgment (BPJ) is used. Generally, values greater than 5,000 umhos/cm may indicate an IC/ID.

  Conductivity levels ranged from 1.86 to 2.3 uS/cm. All levels were under the >5,000 uS/cm that is generally used for an IC/ID investigation so no follow up was required.

- **Turbidity:** Turbidity refers to the clarity of water. The cloudier the water, the higher the turbidity. Sources of turbidity include suspended organics/detritus, re-suspended bottom sediments, sediments originating from erosion, and phytoplankton. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

  Best Professional Judgment is used for IC/ID follow up for turbidity. No follow-up was necessary from these results.

- **Ammonia**: Ammonia is a common ingredient in commercial and household cleaning products. In addition, organic material contains nitrogen, which can convert into ammonia by means of biochemical degradation. Elevated levels of ammonia can be an indication of decaying organic matter or discharges containing cleaning agents. Ammonia levels range from 6 to 380 mg/L in raw sanitary wastewater, and from 0.1 to 3.0 mg/L in all other waters (EPA 1993). The Copermittee action level for ammonia is 1.0 mg/L.

  Ammonia levels ranged from Not Detected to 3.5 mg/L. A level of 3.5 mg/L was measured at Site 3. A level of 0.8 mg/L was measured at Site 9. A level of 0.4 mg/L was measured at Site 14. A level of 2.5 mg/L was measured at Site 25. All other sites were below the Copermittee action level.

- **Detergents:** Detergents are found in household and commercial cleaning and laundering products. Elevated detergent levels are a good indicator of commercial and/or residential wash water entering the storm water

conveyance. Detergent (surfactant) concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993). The Copermittee action level for MBAS (detergents) is 1.0 mg/L.

Because of their importance, detergents (surfactants) were tested in the field and in laboratory analyses. Detergent levels ranged from 0.25 mg/L at Site 14 (Table 3) to 0.5 at Sites 3 and 9. The most likely source of detergents at this site is residential car washing.

- **Nitrate-N:** Nitrates are commonly found in fertilizers, human or other animal wastes, in certain manufacturing processes, and in decomposing organic materials. Elevated levels of nitrate may be present in irrigation runoff, or may be indicative of an illicit connection to the storm drain system, by either commercial or residential sources.

  Nitrate levels at all sites were below the Copermittee action level of 1.35 mg/L. The only sites to have slightly elevated levels of nitrates were Sites 9 and 14, which measured at 0.3 and 1 mg/L, respectively, well below the Copermittee action level.

- **Orthophosphate-P**: Orthophosphate-P occurs naturally from rocks, and with the decay and mineralization of dead plants and animals, but may also indicate the presence of human sewage, and commercial, agricultural or residential waste water.

  - Orthophosphate levels measured at sites 3, 9, 12, 14 and 25 were above the Copermittee action level of 0.07 mg/L, ranging from 1.5 to 5.5 mg/L. Follow up investigations did not reveal where the source originated from. Catch basins were dry above sites 3, 9, 12 and 14 (most likely the result of excess irrigation water) and the catch basin above 25 was damp, not enough water to sample (It was already a monitoring site due to historical levels of bacteria in the area).

4.3 Laboratory Chemical Analyses

In accordance with the San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program Appendix D: Dry Weather Analytical and Field Screening Guidance, a minimum of 25% of all sites with flowing or ponded water

were tested for the following parameters: total hardness, surfactants (MBAS), oil and grease, diazinon and chlorpyrifos, dissolved cadmium, copper, lead, and zinc, and *Enterococcus*, total coliform, and fecal coliform bacteria. Sites 3. 9, 14, and 25 were selected for laboratory analysis based on analysis of previous Dry Weather monitoring results and geographic location. Concentrations of some indicator parameters exceeded co-permittee action levels at Sites 9, 12, 14, and 25. The following provides a brief discussion of each parameter. Table 3 provides a detailed list of analytical results. Section 5 provides a discussion of sites that appear impacted by illicit discharges.

- **Total Hardness:** Total hardness refers to the calcium and magnesium concentrations in water. The hardness of water can vary considerably between locations. Natural sources of hardness are dissolved limestones. Guidelines for maximum dissolved metals concentrations in natural water are linked to the hardness or alkalinity of the water (i.e., the softer the water, the lower the permitted level of dissolved metals).

  Hardness levels ranged from 317 to 602 mg CaCO3/L.

- **Surfactants (MBAS):** Surfactants are discharged from household and commercial cleaning and laundering operations. Anionic surfactants are commonly used in detergents and account for approximately two-thirds of the total surfactants used. Anionic surfactants are commonly measured as Methylene Blue Active Substances (MBAS). Surfactant concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993).

  MBAS was not detected at Site 25. However, Sites 3 and 9 had MBAS recordings of 0.5 mg/L, equal to the action level of 0.5 mg/L. Site 14 had an MBAS recording of 0.25, well below the action level of 0.5 mg/L. No follow-up investigations were required as a result of Surfactants (MBAS).

- **Oil and Grease:** The oil and grease analysis is applicable for the determination of hydrocarbons, vegetable oils, animal fats, waxes, soaps, grease, and related matter. Discharges may cause surface films and shoreline deposits leading to environmental degradation.

  Oil and grease levels at Sites 3, 9, 14 and 25 sampled for laboratory analysis were below the Copermittee action level of 5 mg/L, all registering Not Detected.

- **Diazinon:** Diazinon is an organophosphate insecticide. It kills insects, as well as other organisms through its effect on the nervous system. It is moderately persistent and has moderate to high mobility in soil. Diazinon, in high enough concentrations, is highly toxic to birds, mammals, honeybees, and other beneficial insects. It is also very highly toxic to freshwater fish and invertebrates following acute exposure.

  Diazinon was not detected at any of the sites selected for laboratory analysis.

- **Chlorpyrifos:** Chlorpyrifos is also an organophosphate insecticide and is the most widely used insecticide in the United States. It is used in agriculture on a variety of crops and for residential use as a termiticide, mosquitocide, lawn treatment, as well as other uses. It adsorbs readily to soil particles and therefore is not highly mobile in soil. Chlorpyrifos presents a high risk to birds, fish and mammals and an even a higher risk to aquatic invertebrates. The Copermittee action level for chlorpyrifos is 0.05 µg/L.

  Chlorpyrifos was not detected at any of the sites selected for laboratory analysis.

- **Dissolved Cadmium:** Cadmium occurs in sulfide minerals that also contain zinc, lead, or copper. It is used in electroplating, batteries, paint pigments, and alloys with various other metals. It is usually associated with zinc at a ratio of about one part cadmium to 500 parts zinc in most rocks and soils. It is nonessential for plants and animals and is extremely toxic and accumulates in the kidneys and liver. The average abundance of cadmium in streams is 1 µg/L and in groundwater is from 1 to 10 µg/L. The U.S. EPA primary drinking water standard MCL is 10 µg/L (Standard Methods 1998).

  Dissolved cadmium was not detected at any of the sites selected for laboratory analysis.

- **Dissolved Copper:** Copper occurs in its native state, but is also found in many minerals. It is widely used in electrical wiring, plumbing, roofing, various alloys, pigments, cooking utensils, brake pads, and the chemical industry. Copper is considered an essential trace element for plants and animals. The average abundance of copper in streams is 4 to 12 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 1.3 mg/L (Standard Methods 1998).

Dissolved copper levels were not detected at Sites 3, 9, and 14. Site 25 had a recording of 0.014. No follow-up actions required for Dissolved Copper.

- **Dissolved Lead:** Lead is normally found in the mineral galena. It is commonly used in batteries, ammunition, solder, piping, pigments, insecticides, and some alloys. It is nonessential for plants and animals and is toxic by ingestion and is a cumulative poison. The average abundance of lead in streams is 3 µg/L and in groundwater is generally less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 15 µg/L.

  Dissolved lead was not detected at any of the sites selected for laboratory analysis.

- **Dissolved Zinc:** Zinc occurs in its native state and is used in many alloys such as brass and bronze. It is also used in batteries, fungicides and pigments. It is an essential growth element for plants and animals, but at elevated levels it is toxic to some species of aquatic life. The average abundance of zinc in streams is 20 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA secondary drinking water standard MCL is 5 mg/L.

  Zinc levels were not detected at Sites 3 and 9. Sites 14 and 25 had recordings of 0.029 and 0.028. No follow-up actions required as a result of Dissolved Zinc.

- **Bacteria:** Bacteria are commonly found in human and animal feces. They are generally not harmful themselves, but they do indicate the possible presence of pathogenic bacteria, viruses, and protozoans that also live in human and animal digestive systems. Total coliform, fecal coliform and *Enterococcus* bacteria are common test organisms for water quality sampling.

  - **Total Coliforms:** Total coliforms are a group of bacteria that can occur in human feces, but can also be present in animal manure, soil and other places outside of the human body.

    Total coliform levels were the following:
    - 220,000 MPN/100mL at Site 3
    - 70,000 MPN/100mL at Site 9
    - 17,000 MPN/100mL at Site 14
    - 16,000,000 MPN/100mL at Site 25

    Sites 3, 9 and 25 all had limits that exceeded the Copermittee Action Level (50,000 MPN/100mL). Site 25 is already the subject of an ongoing IC/ID

investigation. Staff conducted upstream investigations on Site 25 on 10/05/06 and on Sites 3 and 9 on 10/10/06 (the day after receiving the analytical reports from the lab, Enviromatrix Analytical, Inc).. The catch basins were all dry upstream from all three sites, with some evidence of over-irrigation. Staff concluded that the natural conditions of the outfalls for 3 and 9 along with the over-irrigation in the area are most likely the causes for the high levels of bacteria. The outfalls drain into an earthen channel (Site 3) and a large concrete basin on the outside border (Site 9) of the San Elijo Lagoon. The vegetation of the lagoon naturally collects the water in a large natural pond which was very conducive to bacterial growth. Site 25 has other issues that may be the cause for high bacteria counts, with the most likely culprit being a structural problem (large sag) in the pipe that is very conducive to bacterial re-growth.

- **Fecal Coliforms:** Fecal coliforms are a subset of total coliforms and are more fecal-specific in origin.

  Fecal coliform levels were the following:
  - 2,800 MPN/100mL at Site 3
  - 30,000 MPN/100mL at Site 9
  - 17,000 MPN/100mL at Site 14
  - 80,000 MPN/100mL at Site 25

Site 9 and 25 had bacteria readings that exceeded the Copermittee Action Level for Fecal Coliforms (20,000 MPN/100mL). As reported above, upstream investigations were conducted on 10/05/06 for Site 25 and 10/10/06 for Site 9, both turning up dry. The most likely cause for the exceedences is over-irrigation with the natural lagoon environment contributing to the stagnant nature of the outfall area for Site 9 and structural pipe deficiencies for Site 25.

- **Enterococci:** Enterococci are a subgroup within the fecal *Streptococcus* group and are better suited for survivability in salt water. They are generally found in the digestive systems of humans and other warm-blooded mammals.

  Enterococci levels were the following:
  - 2,595 MPN/100mL at Site 3
  - 5,201 MPN/100mL at Site 9
  - 657 MPN/100mL at Site 14
  - 10,168 MPN/100mL at Site 25

Site 25 had the only exceedance of Enterococci Copermittee levels (10,000 MPN/100mL). Again, this is the site of an ongoing IC/ID investigation and a follow up inspection was conducted on 10/05/06. The upstream catch basins were dry but the outfall was flowing. This most likely indicates an over-irrigation problem at the neighboring condominium complexes, which directly connects to the outfall pipe downstream from the catch basins. This problem is most likely also due to a structural deficiency, as a large sag in the pipe may be harboring existing bacteria and promoting re-growth.

5.0 DISCUSSION

During the 2006 Dry Weather Screening Program, four sites displayed elevated levels of some analytes, compared to the Action Levels developed by the Copermittees. Twenty-three of the twenty-eight sites inspected this year were either dry or damp, with one site (Site 12) inaccessible to sample due to dangerous conditions (steep banks). Ponded or flowing water at Sites 3, 9, 14, and 25 was of relatively good quality. Site 25 is the subject of an ongoing IC/ID bacteria investigation. Site 3 had elevated levels of ammonia, phosphorus and total coliform. Site 9 had slightly elevated levels of total and fecal coliform and Site 14 had a slightly elevated level of phosphorus.

- **Site 3:** Samples were taken from the outfall located at Santa Inez. The Orthophosphate-P reading of 5.5 mg/L exceeded the Copermittee action level. Bacteria samples were collected and the testing resulted in total coliform, fecal coliform, and *Enterococcus* levels of 220,000, 2,800 and 2,595 MPN/100 mL respectively. The total coliform results exceeded the Copermittee action level, but upstream investigations conducted on 9/29/06 for the exceedences in field screening and again on 10/10/06 for the lab analysis exceedences were inconclusive. All catch basins visited upstream were dry or damp on both follow-up visits. This leads the City to believe that the elevated bacteria levels are a result of the location of the outfall, since it empties directly into an earthen channel in the San Elijo Lagoon. The discharge is trapped by the excessive vegetation and becomes very stagnant. It appeared to be a perfect breeding ground for bacteria. The phosphate levels may have come from residual runoff from residential car washing, as the area has a historic problem of over-irrigation.

- **Site 9:** Samples were taken from the outfall at Santa Luisa. Samples collected during testing resulted in exceedences of total and fecal coliform levels. The upstream investigation occurred on 10/10/06 (the day after receiving the lab results) but did not reveal the source of these bacterial exceedences. The location of the outfall may be a cause of the bacteria exceedences, as it is a large open concrete catch basin located in the San Elijo Lagoon. Heavy vegetation keeps the runoff stagnant in the concrete basin and it may be conducive to bacteria growth and re-growth. The upstream catch basins were dry on the follow-up inspection but this area is known for some minor over-irrigation problems.

- **Site 14:** Samples were taken from the outfall at Genevieve Avenue/Steven's Avenue, located in the middle of Steven's Creek. Samples collected resulted in one field screening exceedance of phosphorus. The upstream investigation occurred on 9/29/06 but did not reveal the source of the exceedance. The exceedance was very minor (the action level is 2.0 and the sample was 2.5) and may have been the result of over-watering. The water quality at this location was much better than in the past couple of years, which is a definite sign of improvement.

- **Site 25:** Samples were taken from the outfall located at the Seascape Sur beach access. Bacteria samples were collected during testing resulted in total coliform, fecal coliform, and *Enterococcus* levels of 16,000,000, 80,000 and 10,168 MPN/100 mL respectively, all exceeding action levels. There was also an exceedance of ammonia action levels as well (2.5 mg/L NH_3-N**).** This outfall is the subject of an ongoing IC/ID source investigation for bacteria. This outfall has had a historically high level of bacteria for the past five years, and the City is actively pursuing the source of the bacteria. The upstream investigation for the field screening exceedance (ammonia) occurred on 9/22/06 and for the lab exceedences (bacteria) occurred on 10/05/06 but neither revealed the source of the exceedences, as the upstream catch basins were dry. However, this is not uncommon, as the condominiums adjacent to the beach access drain directly into the pipe underground, with no sample locations accessible. Therefore, the upstream catch basins are often times dry, but the outfall is flowing. The City has done exhaustive investigations with relatively little success. The most likely culprit no is a structural deficiency in the underground pipe. A large sag in the pipe has been identified through CCTV with large amounts of sediment and debris trapped. This could be harboring bacteria and an ideal location for re-growth. The City is currently investigating long term structural fixes such as pipe blasting, re-lining or even the possibility of installing a low-flow diverter. These are all very expensive fixes but the City is dedicated to coming up with a permanent solution to this ongoing problem. The only bright spot is that the

outfall has not been affecting the receiving waters, so no emergency fix is necessary.

6.0 CONCLUSIONS

The 2006 Dry Weather Monitoring Program found only one storm water conveyance line with an indication of illegal discharges to the City of Solana Beach's storm water system. The majority of the other sites visited were dry or damp, with some sites showing evidence of some over-irrigation and/or car washing discharges. With the exception of the Seascape Sur area, sites that had water present did not have parameter concentrations high enough to cause great concern. All necessary follow up activities did not reveal a dominant source, as the catch basins were either damp or dry.

It is recommended that the City continue with its efforts to educate the Beachwalk business district about the City's pollution prevention programs and continue its efforts to eliminate the discharge at Site 25 (Seascape Sur). Commercial educational programs should continue and include both the proprietors and their employees. Residential programs should include building owners and residents. An informed public will provide support for new and already existing prevention programs.

Additionally, the City should continue exploring the options for capital improvements in the Seascape area as the source of the recurring bacterial problems has proven elusive. The City will continue to look into possibly correcting the structural problems within the pipe, which may be leading to bacterial re-growth. The outfall has not affected the quality of the receiving waters, yet, but a proactive approach by the City to abate the bacterial problem is recommended.

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APPENDIX W: UNDERGROUND UTILITY CONSTRUCTION BMPS

CITY OF SOLANA BEACH
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www.ci.solana-beach.ca.us FAX (858) 792-6513 / (858) 755-1782

Undergrounding Utility District Construction Best Management Practices

When conducting trenching work, construction Best Management Practices (BMPs) must be utilized at all times. Failure to keep all sediment and debris on your property is a violation of the City's Storm Water Regulations and can result in fines. The following list contains BMPs that may be used to keep sediment onsite and out of the City's storm drain conveyance system:

- Perimeter protection BMPs such as silt fences, straw waddles and/or sand bags can be used to contain sediment onsite.
- Cover all materials and keep above ground when a predicted rain event is to occur (>50% chance).
- Keep all materials/sediment out of street and gutter to prevent nuisance water from washing into storm drain system.
- Prevent sediment tracking into street by placing down gravel where equipment is entering and exiting property and sweeping area frequently.

These are all common general BMPs that can be utilized to prevent discharges into the City's storm drain conveyance system. If you or your contractor have any questions or require additional information on any of this, please feel free to call me at the number below.

Sincerely,

Danny King
Environmental Specialist

APPENDIX Y: ASSESSMENT TABLE

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1.0 EXECUTIVE SUMMARY

The Dry Weather Field Screening Program is an integral part of the NPDES (National Pollutant Discharge Elimination System) Storm Water Permit issued to the City of Solana Beach and other Copermittees by the San Diego Regional Water Quality Control Board.

The City of Solana Beach has implemented a comprehensive Storm Water Pollution Prevention Program. In 2006 twenty-eight sites were inspected, with **only one storm water conveyance** line showing evidence of an illicit discharge or illegal connection. This line has a history of high bacteria counts, and the ongoing investigation attempting to locate the source of the bacteria is well documented and will continue until it is found and abated.

In September 2006, City of Solana Beach staff conducted the 2006 Dry Weather Screening Program under the regulations set forth in the NPDES Storm Water Permit Order No. 2001-01. Twenty-eight sites were inspected during the 2006 Dry Weather Screening Program. Each site was visually and chemically inspected for illegal discharges and/or illicit connections. Results were recorded on field data sheets and are included in the appendices of this Dry Weather Screening report.

2.0 INTRODUCTION

The Illicit Connection/Illegal Discharge Dry Weather Screening Program is one of the required tasks of the Storm Water NPDES Permit issued by the San Diego Regional Water Quality Control Board, under Order No. 2001-01. This is the fifth year that the San Diego Copermittees have conducted dry weather monitoring under this permit. The permit requires the City of Solana Beach, and all Copermittees, to develop and implement programs to prevent, reduce, and eliminate inappropriate discharges of pollutants from storm water conveyances into the waters of the United States.

The purpose of the Dry Weather Screening Program is to detect illicit connections and/or illegal discharges to the storm water conveyance system. In order to accomplish this goal, strategic sites were identified to test for chronic and/or improper discharges. Chemical parameters specified by the U.S. Environmental Protection Agency (EPA) for field screening were used as indicators of potential pollution from industrial, commercial, or domestic sources. The EPA has presented the following most common non-storm water sources and has placed them into three contamination categories: pathogenic/toxic, nuisance, and clear. The pathogenic/toxic category can cause illness upon contact or consumption. The nuisance category can cause degradation of water quality and impair aquatic ecosystems. Clear water usually comes from natural sources such as springs and ground water infiltration. Table 1 displays the potential for these sources to enter the storm drainage system (EPA 1993).

Table 1: Potential Inappropriate Entries Into Storm Drainage Systems (EPA 1993)

Potential Source:	Storm Drain Entry		Flow Characteristics		Contamination Category		
	Direct	Indirect	Contin-uos	Inter-mittent	Patho-genic/ toxic	Nuis-ance	Clear
Residential Areas:							
Sanitary wastewater	●	❍	●	❍	●	❍	
Septic tank effluent		●	●	❍	●	❍	
Household chemicals	❍	●		●	●		
Laundry wastewater	●			●		●	
Excess landscaping watering		●		●	❍	❍	●
Leaking potable water		●	●				●
Commercial Areas:							
Gasoline filling station	●	❍		●	●		
Vehicle maintenance/ repair	●	❍		●	●		
Laundry wastewater	●		●	❍	❍	●	
Construction site de-watering		●	●	❍		●	
Sanitary wastewater	●	❍	●		●		
Industrial Areas:							
Leaking tanks and pipes	❍	●	●	❍	●		
Miscellaneous process waters	●	❍	●	❍	●	❍	❍

Note: ● - most likely condition
❍ - may occur
Blank - not very likely

Discharges to the storm water conveyance system can originate form a variety of sources. The following provides a brief discussion of potential sources:

- Sanitary wastewater sources:
  - Sanitary wastewater (usually untreated) from improper sewer connections, exfiltration, or leakage
  - Effluent from improperly operating, or improperly designed, nearby septic tanks

- Automobile maintenance and operation sources:
  - Car wash wastewater
  - Radiator flushing wastewater
  - Engine degreasing wastes
  - Improper oil disposal
  - Leaky underground storage tanks

- Irrigation sources
  - Lawn runoff from over-watering
  - Direct spraying of impervious surfaces

- Relatively clean sources:
  - Infiltrating groundwater
  - Water routed from pre-existing springs or streams
  - Infiltrating potable water from leaking water mains

- Other Sources
  - Laundry wastewater
  - Non-contact cooling waters
  - Metal plating baths
  - Dewatering of construction sites
  - Washing of concrete trucks
  - Sump pump discharges
  - Improper disposal of household toxic substances
  - Spills from roadway and other accidents
  - Chemical, hazardous materials, garbage, sanitary sludge landfills and disposal sites

2.1 Land Use Characteristics

The City of Solana Beach consists of a total drainage area of 2,158 acres. The land use characteristics are estimated as follows (SANDAG 2000):

Agriculture	4 acres
Commercial and office	192 acres
Industrial	35 acres
Parks and Recreation	246 acres

Public Facilities and Utilities	110 acres
Residential	1436 acres
Transportation	98 acres
Undeveloped	37 acres
Water	1 acre

Figure 1 gives a visual presentation of the land use characteristics for the City of Solana Beach.

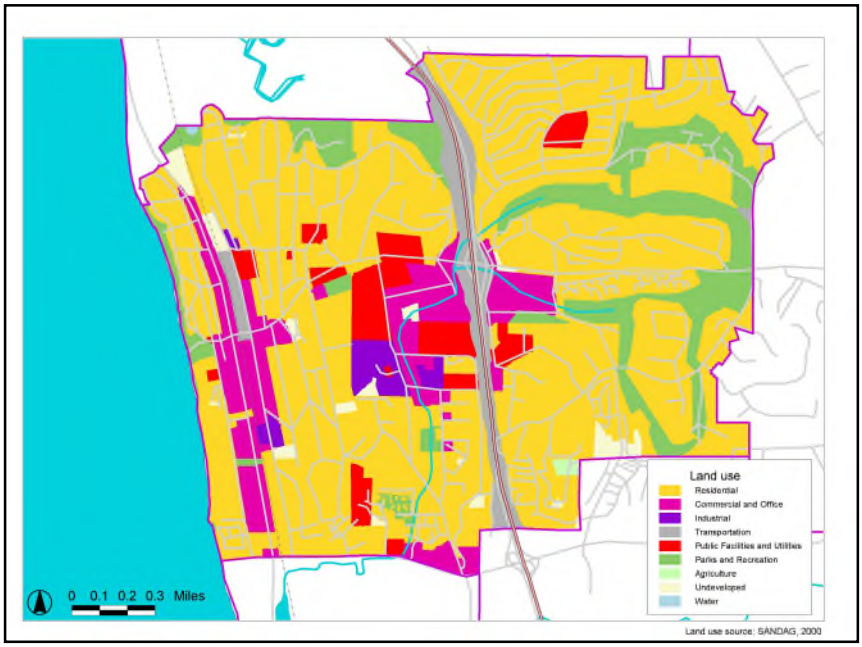

Figure 1. Land use in Solana Beach.

3.0 METHODS

This year marked the fifth year dry weather sampling was conducted under the municipal storm water discharge permit. Order No. 2001-01 Section F.5.b and Attachment E: Dry Weather Analytical and Field Screening Monitoring provide the requirements for field observations, field screening monitoring and analytical monitoring at each station. Further, the Copermittee Monitoring Workgroup has developed protocols for the jurisdictions to use to ensure consistency among the Copermittees.

First, a map of potential sampling locations was developed. In determining which storm drains and/or outfalls to monitor, the map was analyzed and sites were prioritized and selected based on the following: a review of the City's past Dry Weather Monitoring Programs; providing adequate coverage of the City's MS4 system, with a minimum of one monitoring location located within each hydrologic sub-basin; hydrologic conditions, total drainage area, history, and land use types at each potential monitoring location; points downstream of any suspected illegal or illicit activity; MS4 locations with potential to drain into surrounding sensitive water bodies; and ensuring sites were located at the farthest point downstream for each particular area of interest.

Four monitoring locations were selected within the coastal basin based on historical problem areas and proximity to the Pacific Ocean (Sites 11, 24, 25 and 26). Three monitoring locations were selected within the Fletcher Cove Basin based on their drainage to sensitive water bodies (Sites 20, 21, and 23). Eleven sites were selected within the San Elijo Basin. These sites were chosen based on their proximity to the environmentally sensitive San Elijo Lagoon, at the furthest possible point downstream before it enters the lagoon (Sites 1-10 and 22). Seven sites were chosen for the largest basin in the City, the Steven's Creek Basin (Sites 12-17, 19). The majority of this basin drains into Stevens Creek. Monitoring locations were selected at specific points throughout the basin based on the combination of criteria discussed in the previous paragraph. These sites were chosen to capture data from all the different land uses in the basin. These include industrial, residential, commercial and parks. The last basin, the Via de la Valle East Basin, is located in the southeast portion of the City. Three monitoring locations were selected there to monitor what was leaving the City and entering the City of San Diego (Sites 18, 27, and 28).

An initial list of potential monitoring locations was developed. Twenty-eight sites met the criteria and were selected for the 2006 Dry Weather Monitoring program. All twenty-eight sites were identified as primary sites for monitoring based on the factors listed previously within this report.

The San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program Model Appendix D: Dry Weather Analytical and Field Screening Guidance provides guidelines for dry weather monitoring procedures as well as action levels for specific dry weather screening analytes. In accordance with this document, City staff made an initial visit to each site to determine if there was flow or not**.** Field data sheets were used to record site descriptions and characteristics, flow estimations, visual observations, and field chemistry results (see Table 3 for a summary of field observations; individual data sheets are included in Appendix C).

If flowing or ponded water was observed during the initial visit, water quality tests were conducted. Sites that had elevated chemistry levels or abnormal visual observations were investigated immediately and the site was revisited within a period of not less than four hours and not more than twenty-four hours. Observations and chemical testing were repeated during the second visit. If the site was dry on the initial visit, a follow-up visit was not conducted.

Sites 3, 9, 14 and 25 had field screen tests and lab analysis performed. The Permit only requires that jurisdictions take ¼ of samples that were field screened to lab for analysis, but the City decided that since there were so few catch basins that had enough water to sample, it would be prudent to take them all to the lab for analysis.

Samples were collected by inserting a pre-cleaned HDPE bottle into the middle of the flowing or ponded water. Samples were tested on-site using CHEMetrics field test kits for the colorimetric analysis of ammonia, nitrate-N, orthophosphate-P, and detergents. In addition to the colorimetric analyses, the samples were also analyzed for pH, conductivity, and temperature using an Oakton Model 35630-62 pH/Conductivity/ Temperature Meter. Turbidity was measured using a Hach 2100P Turbidimeter. A description of the chemical testing equipment and the Quality Assurance/Quality Control Program are provided in Appendix B.

Table 2 presents the specific ranges and detection limits of the field test kits and meters.

Table 2: Range and Detection Limits for Field Test Kits and Meters

Parameter	Kit or Meter	Range	Detection Limits (mg/L)	Accuracy/ Increment
pH	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.00 to 14.00 pH	NA	± 0.01 pH
Temperature (^oC)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0 to 100 ^oC	NA	± 0.5 ^oC
Conductivity (mS/cm @ 25 ^oC)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.0 to 19.99 mS/cm	NA	± 1% Full Scale ± 1 Digit
Turbidity	Hach Model 2100P Turbidimeter	0-1000 NTU	NA	± 2% of reading plus stray light from 0-1000 NTU
Ammonia (mg/L)	CHEMetrics K-1510	0-1.0 and 1.0-10.0 mg/L	0.1	NA
Nitrates (mg/L)	CHEMetrics K-6902	0 – 1.0 and 1.0-5.0 mg/L	0.05	NA
Detergents (mg/L)	CHEMetrics	0-3.0 mg/L	0.25	NA
Phosphate (mg/L)	CHEMetrics K-8510	0 –1.0 and 1.0-10.0 mg/L	0.1	NA

4.0 RESULTS

Table 3 presents a detailed summary of all chemical, biological and visual observations made during the 2006 Dry Weather Screening Program. The following provides a brief discussion about the purpose and results of visual observations and chemical and biological tests.

Table 3

Table 3

Table 3

Table 3

4.1 Visual Observations

Visual observations included water color, clarity, and flow rate, floating materials, biological observations, structural condition of the conveyance, and vegetative condition at the site. If any particular odors were associated with the site, those observations were also recorded.

- **Flow:** Flowing water was observed at Sites 14 and 25. Ponded water was found at Sites 3, 9 and 12. Sites 1, 2, 6, 7, 11, 15, 17, 20, 21 and 26 were damp with insufficient water available to collect a sample. Sites 4, 5, 8, 10, 13, 16, 18, 19, 22, 23, 24, 26, 27, and 28 were dry.

- **Odor:** Odor can be caused by chemicals from residential, commercial, and industrial discharges; and from natural sources including decaying organic matter and microbial activity.

  The following sites had distinctive odors associated with them: Sites 9 and 25 had a distinct, musty odor. Site 3 had rotten eggs odor, which may have been due to decaying organic matter.

- **Water Color:** The apparent color of water results from dissolved substances and suspended matter. Soil runoff and decaying organic matter produce a variety of yellow, red, brown, and gray colors. Some algae and dinoflagellates produce reddish or deep yellow colors in water, while high levels of phytoplankton and other algae appear green.

  The water color ranged from clear to yellowish at the majority of sites. The water at Sites 9, 14, and 25 were a distinct yellow. All the other sites that contained water were clear.

- **Water Clarity:** Turbidity refers to the cloudiness of water. Water that is turbid generally has low clarity, and may appear cloudy or opaque, while less turbid water will appear clear. Suspended solids and microscopic plankton that scatter light passing through the water cause turbidity. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

  The water clarity at all sites was clear. Quantitative measurements for turbidity at each site are included in Table 3.

- **Floatable materials:** The type of floating matter can help identify the source of contamination, since these substances are often direct products of the source of the pollution.

  The majority of sites were free of floatable materials during the 2006 inspections, except for Sites 9 and 21 which contained trash and organic matter.

- **Biological:** At the majority of sites there was no biological activity noted with the following exceptions: Insects were detected at Sites 3, 7, 9, and 14.

- **Vegetative condition:** Excessive vegetation can be an indicator of elevated levels of nutrients in the runoff.

  Sites 1, 3, 9, 10, 14, and 25 had normal vegetation growth.

- **Deposits:**

  Sites 3, 9, and 25 had sediment/gravel deposits.

4.2 Field Chemical Analyses

All sites with flowing or ponded water were tested for the following parameters: temperature, pH, conductivity, turbidity, ammonia, detergents, nitrates, and orthophosphates. The data shows that the concentrations of some indicator parameters exceeded Copermittee action levels at Sites 3, 14 and 25. The following provides a brief discussion of each parameter. Table 3 provides a detailed list of analytical results. Section 5 provides a discussion of sites that appear impacted by illicit discharges.

- **Temperature:** Extreme temperatures can be an indication of commercial or industrial runoff.

  Temperature readings ranged from 19.1 to 23.3 ^{o}C.

- **pH:** Measures of pH represent the intensity of the acidity or alkalinity of water, on a scale from 0 to 14.0, with 7.0 considered neutral. The pH of natural waters ranges from 6.0 to 9.0 (EPA 1993). Measurements outside of this range could be an indicator of commercial or industrial discharges.

  All sites had pH levels within the recommended guidelines.

- **Conductivity:** Conductivity is the measure of the ability of water to carry an electrical current and high levels are an indicator of high total dissolved solids (TDS). The conductivity of saltwater is generally above 43 uS/cm. The Copermittees have not developed an action level for conductivity, but Best Professional Judgment (BPJ) is used. Generally, values greater than 5,000 umhos/cm may indicate an IC/ID.

  Conductivity levels ranged from 1.86 to 2.3 uS/cm. All levels were under the >5,000 uS/cm that is generally used for an IC/ID investigation so no follow up was required.

- **Turbidity:** Turbidity refers to the clarity of water. The cloudier the water, the higher the turbidity. Sources of turbidity include suspended organics/detritus, re-suspended bottom sediments, sediments originating from erosion, and phytoplankton. High

turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

Best Professional Judgment is used for IC/ID follow up for turbidity. No follow-up was necessary from these results.

- **Ammonia**: Ammonia is a common ingredient in commercial and household cleaning products. In addition, organic material contains nitrogen, which can convert into ammonia by means of biochemical degradation. Elevated levels of ammonia can be an indication of decaying organic matter or discharges containing cleaning agents. Ammonia levels range from 6 to 380 mg/L in raw sanitary wastewater, and from 0.1 to 3.0 mg/L in all other waters (EPA 1993). The Copermittee action level for ammonia is 1.0 mg/L.

  Ammonia levels ranged from Not Detected to 3.5 mg/L. A level of 3.5 mg/L was measured at Site 3. A level of 0.8 mg/L was measured at Site 9. A level of 0.4 mg/L was measured at Site 14. A level of 2.5 mg/L was measured at Site 25. All other sites were below the Copermittee action level.

- **Detergents:** Detergents are found in household and commercial cleaning and laundering products. Elevated detergent levels are a good indicator of commercial and/or residential wash water entering the storm water conveyance. Detergent (surfactant) concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993). The Copermittee action level for MBAS (detergents) is 1.0 mg/L.

  Because of their importance, detergents (surfactants) were tested in the field and in laboratory analyses. Detergent levels ranged from 0.25 mg/L at Site 14 (Table 3) to 0.5 at Sites 3 and 9. The most likely source of detergents at this site is residential car washing.

- **Nitrate-N:** Nitrates are commonly found in fertilizers, human or other animal wastes, in certain manufacturing processes, and in decomposing organic materials. Elevated levels of nitrate may be present in irrigation runoff, or may be indicative of an illicit connection to the storm drain system, by either commercial or residential sources.

  Nitrate levels at all sites were below the Copermittee action level of 1.35 mg/L. The only sites to have slightly elevated levels of nitrates were Sites 9 and 14, which measured at 0.3 and 1 mg/L, respectively, well below the Copermittee action level.

- **Orthophosphate-P**: Orthophosphate-P occurs naturally from rocks, and with the decay and mineralization of dead plants and animals, but may also indicate the presence of human sewage, and commercial, agricultural or residential waste water.

  Orthophosphate levels measured at sites 3, 9, 12, 14 and 25 were above the Copermittee action level of 0.07 mg/L, ranging from 1.5 to 5.5 mg/L. Follow up

investigations did not reveal where the source originated from. Catch basins were dry above sites 3, 9, 12 and 14 (most likely the result of excess irrigation water) and the catch basin above 25 was damp, not enough water to sample (It was already a monitoring site due to historical levels of bacteria in the area).

4.3 Laboratory Chemical Analyses

In accordance with the San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program Appendix D: Dry Weather Analytical and Field Screening Guidance, a minimum of 25% of all sites with flowing or ponded water were tested for the following parameters: total hardness, surfactants (MBAS), oil and grease, diazinon and chlorpyrifos, dissolved cadmium, copper, lead, and zinc, and *Enterococcus*, total coliform, and fecal coliform bacteria. Sites 3. 9, 14, and 25 were selected for laboratory analysis based on analysis of previous Dry Weather monitoring results and geographic location. Concentrations of some indicator parameters exceeded co-permittee action levels at Sites 9, 12, 14, and 25. The following provides a brief discussion of each parameter. Table 3 provides a detailed list of analytical results. Section 5 provides a discussion of sites that appear impacted by illicit discharges.

- **Total Hardness:** Total hardness refers to the calcium and magnesium concentrations in water. The hardness of water can vary considerably between locations. Natural sources of hardness are dissolved limestones. Guidelines for maximum dissolved metals concentrations in natural water are linked to the hardness or alkalinity of the water (i.e., the softer the water, the lower the permitted level of dissolved metals).

  Hardness levels ranged from 317 to 602 mg CaCO3/L.

- **Surfactants (MBAS):** Surfactants are discharged from household and commercial cleaning and laundering operations. Anionic surfactants are commonly used in detergents and account for approximately two-thirds of the total surfactants used. Anionic surfactants are commonly measured as Methylene Blue Active Substances (MBAS). Surfactant concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993).

  MBAS was not detected at Site 25. However, Sites 3 and 9 had MBAS recordings of 0.5 mg/L, equal to the action level of 0.5 mg/L. Site 14 had an MBAS recording of 0.25, well below the action level of 0.5 mg/L. No follow-up investigations were required as a result of Surfactants (MBAS).

- **Oil and Grease:** The oil and grease analysis is applicable for the determination of hydrocarbons, vegetable oils, animal fats, waxes, soaps, grease, and related matter. Discharges may cause surface films and shoreline deposits leading to environmental degradation.

  Oil and grease levels at Sites 3, 9, 14 and 25 sampled for laboratory analysis were below the Copermittee action level of 5 mg/L, all registering Not Detected.

- **Diazinon:** Diazinon is an organophosphate insecticide. It kills insects, as well as other organisms through its effect on the nervous system. It is moderately persistent and has moderate to high mobility in soil. Diazinon, in high enough concentrations, is highly toxic to birds, mammals, honeybees, and other beneficial insects. It is also very highly toxic to freshwater fish and invertebrates following acute exposure.

  Diazinon was not detected at any of the sites selected for laboratory analysis.

- **Chlorpyrifos:** Chlorpyrifos is also an organophosphate insecticide and is the most widely used insecticide in the United States. It is used in agriculture on a variety of crops and for residential use as a termiticide, mosquitocide, lawn treatment, as well as other uses. It adsorbs readily to soil particles and therefore is not highly mobile in soil. Chlorpyrifos presents a high risk to birds, fish and mammals and an even a higher risk to aquatic invertebrates. The Copermittee action level for chlorpyrifos is 0.05 µg/L.

  Chlorpyrifos was not detected at any of the sites selected for laboratory analysis.

- **Dissolved Cadmium:** Cadmium occurs in sulfide minerals that also contain zinc, lead, or copper. It is used in electroplating, batteries, paint pigments, and alloys with various other metals. It is usually associated with zinc at a ratio of about one part cadmium to 500 parts zinc in most rocks and soils. It is nonessential for plants and animals and is extremely toxic and accumulates in the kidneys and liver. The average abundance of cadmium in streams is 1 µg/L and in groundwater is from 1 to 10 µg/L. The U.S. EPA primary drinking water standard MCL is 10 µg/L (Standard Methods 1998).

  Dissolved cadmium was not detected at any of the sites selected for laboratory analysis.

- **Dissolved Copper:** Copper occurs in its native state, but is also found in many minerals. It is widely used in electrical wiring, plumbing, roofing, various alloys, pigments, cooking utensils, brake pads, and the chemical industry. Copper is considered an essential trace element for plants and animals. The average abundance of copper in streams is 4 to 12 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 1.3 mg/L (Standard Methods 1998).

  Dissolved copper levels were not detected at Sites 3, 9, and 14. Site 25 had a recording of 0.014. No follow-up actions required for Dissolved Copper.

- **Dissolved Lead:** Lead is normally found in the mineral galena. It is commonly used in batteries, ammunition, solder, piping, pigments, insecticides, and some alloys. It is nonessential for plants and animals and is toxic by ingestion and is a cumulative poison. The average abundance of lead in streams is 3 µg/L and in groundwater is

generally less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 15 µg/L.

Dissolved lead was not detected at any of the sites selected for laboratory analysis.

- **Dissolved Zinc:** Zinc occurs in its native state and is used in many alloys such as brass and bronze. It is also used in batteries, fungicides and pigments. It is an essential growth element for plants and animals, but at elevated levels it is toxic to some species of aquatic life. The average abundance of zinc in streams is 20 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA secondary drinking water standard MCL is 5 mg/L.

  Zinc levels were not detected at Sites 3 and 9. Sites 14 and 25 had recordings of 0.029 and 0.028. No follow-up actions required as a result of Dissolved Zinc.

- **Bacteria:** Bacteria are commonly found in human and animal feces. They are generally not harmful themselves, but they do indicate the possible presence of pathogenic bacteria, viruses, and protozoans that also live in human and animal digestive systems. Total coliform, fecal coliform and *Enterococcus* bacteria are common test organisms for water quality sampling.

  - **Total Coliforms:** Total coliforms are a group of bacteria that can occur in human feces, but can also be present in animal manure, soil and other places outside of the human body.

    Total coliform levels were the following:
    - 220,000 MPN/100mL at Site 3
    - 70,000 MPN/100mL at Site 9
    - 17,000 MPN/100mL at Site 14
    - 16,000,000 MPN/100mL at Site 25

    Sites 3, 9 and 25 all had limits that exceeded the Copermittee Action Level (50,000 MPN/100mL). Site 25 is already the subject of an ongoing IC/ID investigation. Staff conducted upstream investigations on Site 25 on 10/05/06 and on Sites 3 and 9 on 10/10/06 (the day after receiving the analytical reports from the lab, Enviromatrix Analytical, Inc).. The catch basins were all dry upstream from all three sites, with some evidence of over-irrigation. Staff concluded that the natural conditions of the outfalls for 3 and 9 along with the over-irrigation in the area are most likely the causes for the high levels of bacteria. The outfalls drain into an earthen channel (Site 3) and a large concrete basin on the outside border (Site 9) of the San Elijo Lagoon. The vegetation of the lagoon naturally collects the water in a large natural pond which was very conducive to bacterial growth. Site 25 has other issues that may be the cause for high bacteria counts, with the most likely culprit being a structural problem (large sag) in the pipe that is very conducive to bacterial re-growth.

- **Fecal Coliforms:** Fecal coliforms are a subset of total coliforms and are more fecal-specific in origin.

  Fecal coliform levels were the following:
  - 2,800 MPN/100mL at Site 3
  - 30,000 MPN/100mL at Site 9
  - 17,000 MPN/100mL at Site 14
  - 80,000 MPN/100mL at Site 25

Site 9 and 25 had bacteria readings that exceeded the Copermittee Action Level for Fecal Coliforms (20,000 MPN/100mL). As reported above, upstream investigations were conducted on 10/05/06 for Site 25 and 10/10/06 for Site 9, both turning up dry. The most likely cause for the exceedences is over-irrigation with the natural lagoon environment contributing to the stagnant nature of the outfall area for Site 9 and structural pipe deficiencies for Site 25.

- **Enterococci:** Enterococci are a subgroup within the fecal *Streptococcus* group and are better suited for survivability in salt water. They are generally found in the digestive systems of humans and other warm-blooded mammals.

  Enterococci levels were the following:
  - 2,595 MPN/100mL at Site 3
  - 5,201 MPN/100mL at Site 9
  - 657 MPN/100mL at Site 14
  - 10,168 MPN/100mL at Site 25

  Site 25 had the only exceedence of Enterococci Copermittee levels (10,000 MPN/100mL). Again, this is the site of an ongoing IC/ID investigation and a follow up inspection was conducted on 10/05/06. The upstream catch basins were dry but the outfall was flowing. This most likely indicates an over-irrigation problem at the neighboring condominium complexes, which directly connects to the outfall pipe downstream from the catch basins. This problem is most likely also due to a structural deficiency, as a large sag in the pipe may be harboring existing bacteria and promoting re-growth.

5.0 DISCUSSION

During the 2006 Dry Weather Screening Program, four sites displayed elevated levels of some analytes, compared to the Action Levels developed by the Copermittees. Twenty-three of the twenty-eight sites inspected this year were either dry or damp, with one site (Site 12) inaccessible to sample due to dangerous conditions (steep banks). Ponded or flowing water at Sites 3, 9, 14, and 25 was of relatively good quality. Site 25 is the subject of an ongoing IC/ID bacteria investigation. Site 3 had elevated levels of ammonia, phosphorus and total coliform. Site 9 had slightly elevated levels of total and fecal coliform and Site 14 had a slightly elevated level of phosphorus.

- **Site 3:** Samples were taken from the outfall located at Santa Inez. The Orthophospate-P reading of 5.5 mg/L exceeded the Copermittee action level. Bacteria samples were collected and the testing resulted in total coliform, fecal coliform, and *Enterococcus* levels of 220,000, 2,800 and 2,595 MPN/100 mL respectively. The total coliform results exceeded the Copermittee action level, but upstream investigations conducted on 9/29/06 for the exceedences in field screening and again on 10/10/06 for the lab analysis exceedences were inconclusive. All catch basins visited upstream were dry or damp on both follow-up visits. This leads us to believe that the elevated bacteria levels are a result of the location of the outfall, since it empties directly into an earthen channel in the San Elijo Lagoon. The discharge is trapped by the excessive vegetation and becomes very stagnant. It appeared to be a perfect breeding ground for bacteria. The phosphate levels may have come from residual runoff from residential car washing, as the area has a historic problem of over-irrigation.

- **Site 9:** Samples were taken from the outfall at Santa Luisa. Samples collected during testing resulted in exceedences of total and fecal coliform levels. The upstream investigation occurred on 10/10/06 (the day after receiving the lab results) but did not reveal the source of these bacterial exceedences. The location of the outfall may be a cause of the bacteria exceedences, as it is a large open concrete catch basin located in the San Elijo Lagoon. Heavy vegetation keeps the runoff stagnant in the concrete basin and it may be conducive to bacteria growth and re-growth. The upstream catch basins were dry on the follow-up inspection but this area is known for some minor over-irrigation problems.

- **Site 14:** Samples were taken from the outfall at Genevieve Avenue/Steven's Avenue, located in the middle of Steven's Creek. Samples collected resulted in one field screening exceedence of phosphorus. The upstream investigation occurred on 9/29/06 but did not reveal the source of the exceedence. The exceedence was very minor (the action level is 2.0 and the sample was 2.5) and may have been the result of over-watering. The water quality at this location was much better than in the past couple of years, which is a definite sign of improvement.

- **Site 25:** Samples were taken from the outfall located at the Seascape Sur beach access. Bacteria samples were collected during testing resulted in total coliform, fecal coliform, and *Enterococcus* levels of 16,000,000, 80,000 and 10,168 MPN/100 mL respectively, all exceeding action levels. There was also an exceedence of ammonia action levels as well (2.5 mg/L NH_3-N**).** This outfall is the subject of an ongoing IC/ID source investigation for bacteria. This outfall has had a historically high level of bacteria for the past five years, and the City is actively pursuing the source of the bacteria. The upstream investigation for the field screening exceedence (ammonia) occurred on 9/22/06 and for the lab exceedences (bacteria) occurred on 10/05/06 but neither revealed the source of the exceedences, as the upstream catch basins were dry. However, this is not uncommon, as the condominiums adjacent to the beach access

drain directly into the pipe underground, with no sample locations accessible. Therefore, the upstream catch basins are often times dry, but the outfall is flowing. The City has done exhaustive investigations with relatively little success. The most likely culprit no is a structural deficiency in the underground pipe. A large sag in the pipe has been identified through CCTV with large amounts of sediment and debris trapped. This could be harboring bacteria and an ideal location for re-growth. The City is currently investigating long term structural fixes such as pipe blasting, re-lining or even the possibility of installing a low-flow diverter. These are all very expensive fixes but the City is dedicated to coming up with a permanent solution to this ongoing problem. The only bright spot is that the outfall has not been affecting the receiving waters, so no emergency fix is necessary.

6.0 CONCLUSIONS

The 2006 Dry Weather Monitoring Program found only one storm water conveyance line with an indication of illegal discharges to the City of Solana Beach's storm water system. The majority of the other sites visited were dry or damp, with some sites showing evidence of some over-irrigation and/or car washing discharges. With the exception of the Seascape Sur area, sites that had water present did not have parameter concentrations high enough to cause great concern. All necessary follow up activities did not reveal a dominant source, as the catch basins were either damp or dry.

It is recommended that the City continue with its efforts to educate the Beachwalk business district about the City's pollution prevention programs and continue its efforts to eliminate the discharge at Site 25 (Seascape Sur). Commercial educational programs should continue and include both the proprietors and their employees. Residential programs should include building owners and residents. An informed public will provide support for new and already existing prevention programs.

Additionally, the City should continue exploring the options for capital improvements in the Seascape area as the source of the recurring bacterial problems has proven elusive. The City will continue to look into possibly correcting the structural problems within the pipe, which may be leading to bacterial re-growth. The outfall has not affected the quality of the receiving waters, yet, but a proactive approach by the City to abate the bacterial problem is recommended.

7.0 REFERENCES CITED

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State Water Resources Control Board. 1997. Water Quality Control Plan for the San Diego Basin.

U.S. Environmental Protection Agency (EPA), 1993. Investigation of Inappropriate Pollutant Entries Into the Storm Drainage System: A user's guide. Report PB93-131472. Prepared by Alabama University in Birmingham.

TABLE 3

SITE CHARACTERISTICS

Site ID	Watershed	Location Description	Drainage Area Land-Use (1)	Conveyance Type (2)	Conveyance Construction (3)	Date	Time
1	Carlsbad	Rios Road Trailhead	Residential	Catchbasin	Concrete	9/28/2006	4:02 PM
2	Carlsbad	Glenmont/Rawl	Residential	Catchbasin	Concrete	9/28/2006	4:07 PM
3	Carlsbad	Santa Inez Outfall	Residential	Outfall	Concrete/Steel	9/28/2006	9:15 AM
4	Carlsbad	626 Canyon Dr	Residential	Catchbasin	Concrete	9/28/2006	4:10 PM
5	Carlsbad	635 Canyon Dr	Residential	Catchbasin	Concrete	9/28/2006	4:10 PM
6	Carlsbad	Highland Ave (Executive Golf Course)	Residential/Parks	Catchbasin	Concrete	9/28/2006	4:30 PM
7	Carlsbad	Santa Helena Trailhead	Residential	Catchbasin	Concrete	9/28/2006	4:24 PM
8	Carlsbad	Santa Carina Trailhead	Residential	Catchbasin	Concrete	9/28/2006	4:26 PM
9	Carlsbad	Santa Luisa Outfall	Residential	Catchbasin	Concrete	9/28/2006	11:31 AM
10	Carlsbad	East Side Railroad Tracks	Residential/Commercial	Channel	Concrete	9/28/2006	1:30 PM
11	Carlsbad	645 Pacific	Residential	Catchbasin	Concrete	9/28/2006	3:49 PM
12	San Dieguito	Steven's Creek Outfall	Residential/Commercial/ Industrial/Parks	Open Channel/Box Culvert	Concrete Channel/Natural Creek	9/27/2006	2:00 PM
13	San Dieguito	Valley (N. Baker Iron Works)	Residential/Industrial/ Commercial	Catchbasin	Concrete	9/29/2006	3:12 PM
14	San Dieguito	Genevieve Ave/Steven's Creek	Residential/Commercial	Outfall	Natural Creek	9/27/2006	2:15 PM
15	San Dieguito	309 Solana Hills Drive	Residential	Catchbasin	Concrete	9/28/2006	4:15 PM
16	San Dieguito	559 Glencrest Ave	Residential	Catchbasin	Concrete	9/28/2006	4:10 PM
17	San Dieguito	Wells Fargo	Residential/Commercial	Catchbasin	Concrete	9/28/2006	4:20 PM
18	San Dieguito	Avacado Place	Residential	Catchbasin	Concrete	9/28/2006	4:35 PM
19	San Dieguito	Dell Street	Residential/Parks	Catchbasin	Concrete	9/28/2006	4:13 PM
20	San Dieguito	South Cedros/Via De La Valle	Residential/Commercial	Catchbasin	Concrete	9/29/2006	3:19 PM
21	San Dieguito	605 Marsolan Ave	Residential/Commercial	Catchbasin	Concrete	9/26/2006	10:05 AM
22	San Dieguito	779 Barbara Ave	Residential	Catchbasin	Concrete	9/28/2006	4:06 PM
23	San Dieguito	North Cedros/Lomas Santa Fe	Residential/Commercial	Catchbasin	Concrete	9/28/2006	3:56 PM
24	San Dieguito	347 Acacia St	Residential	Catchbasin	Concrete	9/29/2006	3:33 PM
25	San Dieguito	Seascape (Outfall)	Residential/Commercial	Outfall	Steel	9/21/2006	3:00 PM
26	San Dieguito	248 Sierra Ave	Residential	Catchbasin	Concrete	9/28/2006	3:50 PM
27	San Dieguito	San Andreas (City Limits)	Residential	Catchbasin	Concrete	9/28/2006	4:38 PM
28	San Dieguito	Spindrift Way/American Lane	Residential	Catchbasin	Concrete	9/28/2006	4:40 PM

QUALITATIVE OBSERVATIONS										
Site ID	Estimated Flow (gpm)	Light Conditions (4)	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology	Other
1	Damp	Overcast	None	None	Dry/No Flow	None	None	Normal	None	Catch basin damp, not enough to sample
2	Damp	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin damp, not enough to sample
3	Ponded	Overcast	Rotton Eggs	Yellow	Slightly Couldy	None	Sediment/ Gravel	Normal	Insects	Ponded water, no flow, water staagnant due to vegetation in lagoon
4	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
5	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
6	Damp	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin damp, not enough to sample
7	Damp	Overcast	None	None	Dry/No Flow	None	None	None	Insects	Catch basin damp, not enough to sample
8	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
9	Ponded	Sunny	Musty	None	Slightly Couldy	Trash	Sediment/ Gravel	Normal	Insects/Algae	Ponded water, no flow, water staagnant due to vegetation in lagoon
10	Dry	Sunny	None	None	Dry/No Flow	None	None	Normal	None	Concrete Channel Dry
11	Damp	Overcast	None	None	No Flow	None	None	None	None	Catch basin damp, not enough to sample
12	Ponded	Sunny	Other	Other	Other	Other	Other	Other	Other	Inaccessible
13	Dry	Sunny	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
14	Flowing	Sunny	None	Yellow	Clear	None	None	Normal	Insects, Algae, Fish	Sample taken
15	Damp	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin damp, not enough to sample
16	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
17	Damp	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin damp, not enough to sample
18	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
19	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
20	Damp	Partly cloudy	None	None	Dry/No Flow	None	None	None	None	Catch basin damp, not enough to sample
21	Damp	Overcast	None	None	Dry/No Flow	Organic matter	None	None	None	Catch basin damp, not enough to sample, organic matter detected in basin
22	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
23	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
24	Dry	Partly cloudy	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
25	Flowing	Sunny	Musty	Yellow	Slightly Cloudy	None	Sediment/ Gravel	Normal	Other	Not enough water flow, water flow increased for short amount of time, then went back to normal
26	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
27	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry
28	Dry	Overcast	None	None	Dry/No Flow	None	None	None	None	Catch basin dry

LABORATORY ANALYSIS																		
Site ID	Surfactants		Oil and Grease		Total Hardness mg/L		Cadmium (dissolved)		Copper (dissolved)		Lead (dissolved)		Zinc (dissolved)		Diazinon		Chlorpyrifos	
	mg/L	DL	mg/L	DL	CaCO3	DL	mg/L	DL	mg/L	DL	mg/L	DL	mg/L	DL	ug/L	DL	ug/L	DL
3	ND	0.5	ND	5	602	10	ND	0.005	ND	0.005	ND	0.005	ND	0.02	ND	0.05	ND	0.05
9	ND	0.5	ND	5	496	10	ND	0.005	ND	0.005	ND	0.005	ND	0.02	ND	0.05	ND	0.05
14	ND	0.5	ND	5	479	10	ND	0.005	ND	0.005	ND	0.005	0.029	0.02	ND	0.05	ND	0.05
25	6.3	0.5	ND	5	317	10	ND	0.005	0.014	0.005	ND	0.005	0.028	0.02	ND	0.05	ND	0.05

	BACTERIAL ANALYSIS					
Site ID	Total Coliform		Fecal Coliform		Enterococcus	
	MPN/100ml	DL	MPN/100ml	DL	MPN/100ml	DL
3	220,000	50,000	2,800	20,000	2,595	10,000
9	70,000	50,000	30,000	20,000	5,201	10,000
14	17,000	50,000	17,000	20,000	657	10,000
25	16,000,000	50,000	80,000	20,000	10,168	10,000

FIELD SCREENING								
Site ID	Temperature °C	pH	Turbidity NTU	Conductivity uS/cm	Nitrate mg/L NO_3-N	Ammonia mg/L NH_3-N	Reactive Phosphorus PO_4-P mg/L	Surfactants (MBAS) mg/L
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	19.6	7.58	N/A	2.3	0.1	3.5	5.5	0.5
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	19.1	7.73	N/A	1.86	0.3	0.8	1.5	0.5
10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	23.3	8.4	10	1.87	1	0.4	2.5	0.25
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	0.1	2.5	2	N/A
26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Compliance with Acti

Municipal

Inspections	Actual No. of Facilities	2001-2002
High Priority Facilities	~90	0
Medium Priority Facilities	19	0
Low Priority Facilities	44	0
Maintenance		
Material removed from MS4 (storm drain cleaning, public cleanup events, channel clearing)		178 tons
Material prevented from entering MS4 (street sweeping operations)		2,099 tons
Education		
No. of Presentations to Municipal Employees		9

Industrial Businesses

Inspections	Actual No. of Facilities	2001-2002
High Priority Facilities	66	7
Medium Priority Facilities	16	0
Low Priority Facilities	126	0
Enforcement		
Responses to Hotline Calls in regard to Industrial Businesses		Not known
Education/Public Participation		
No. of Workshops hosted for Industrial Business Sectors		2+ongoing at Business License counter
No. of Materials Distributed to Industrial Businesses		Not known

Commercial Businesses

Inspections	Actual No. of Facilities	2001-2002
High Priority Facilities	810	0
Low Priority Facilities	Not known	0
Enforcement		
Responses to Hotline Calls in regard to Commercial Businesses		Not known
Education/Public Participation		
No. of Workshops hosted for Commercial Business Sectors		2+ongoing at Business License counter
No. of Materials Distributed to Commercial Businesses		Not known

Municipal

Inspections	Actual No. of Facilities	2001-2002
High Priority Facilities	~90	0
Medium Priority Facilities	19	0

Residential

Household Hazardous Waste		2001-2002
Quantity of Household Hazardous Waste Collected		153,019 lbs.

Enforcement		
Responses to Hotline Calls in Regard to Residential Activities		91

Education/Public Participation		
No. of Presentations to Residential Neighborhoods, HOA, Community Groups, Etc.		4
No. of Cleanup Events Hosted		11
No. of Materials Distributed (brochures, magnets, bags, fliers, newsletters, posters)		Not known

Land Use

SUSMP		2001-2002
No. of Developments Subject to SUSMP requirements		0

Construction

Inspections	Actual No. of Facilities	2001-2002
High Priority Sites	27	27
Medium Priority Sites	17	17
Low Priority Sites	9	9

Enforcement		
Responses to Hotline Calls in regard to Construction Sites		Not known

Education/Public Participation		
No. of Workshops Hosted for Construction/Development Community		2
No. of Materials Distributed to Construction/Development Community		Not known

General Education

Estimated Impressions		2001-2002

Municipal

Inspections	Actual No. of Facilities	2001-2002
High Priority Facilities	~90	0
Medium Priority Facilities	19	0
No. of Estimated Educational Impressions Made (distributed materials, PSAs, bus shelters,		Not known

IC/ID

Dry Weather Sampling	Actual No. of Locations	2001-2002
No. of Locations Monitored	200	135
No. of Exceedances		
Nitrate		
Reactive Phosphorus		
Bacteria (enterococcus)		
Cadium		
Lead		
Ammonia		
Coastal Monitoring		
No. of Exceedances	22	
Total Coliform		
Fecal Coliform		
Enterococcus		

vity-Based Permit Requirements

Actual No. of Facilities	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities
81*	76					
68*	45					
41	20					

	47.6 tons					
	2,284 tons					

	27					

Actual No. of Facilities	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities
207	207					
5	5					
115	2					

	3					

	3+ongoing at Business License counter					
	~300					

Actual No. of Facilities		Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities
546	358					
4,837	7					

	62					

	6+ongoing at Business License counter					
	~1,800					

Actual No. of Facilities	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities
81*	76					
68*	45					

	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities
	163,509 lbs.					

	227					

	4					
	8					
	101,193					

	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities
	78					

Actual No. of Facilities		Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities
28	28					
33	33					
17	17					

	25					

	4+ongoing through permitting process					
	~500					

	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities

Actual No. of Facilities	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities
81*	76					
68*	45					
	462,385					

Actual No. of Locations	2002-2003	Actual No. of Locations	2003-2004	Actual No. of Locations	2004-2005	Actual No. of Locations
99	99					
	71					
	12					
	14					
	2					
	1					
	3					
	49					

21	4					
	2					
	0					
	2					

2005-2006

2005-2006

2005-2006

2005-2006

2005-2006

2005-2006

2005-2006

2005-2006

2005-2006

2005-2006
2005-2006

Compliance with Activity-Based Permit Requirements

Municipal

Inspections	Actual No. of Facilities	2001-2002	Actual No. of Facilities	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities	2005-2006	Actual No. of Facilities	2006-2007
High Priority Facilities	10	10	10	10	10	10	10	10	10	10	10	10
Medium Priority Facilities	1	1	1	1	1	1	1	1	1	1	1	1
Low Priority Facilities	4	4	4	4	4	4	4	4	4	4	6	6
Maintenance												
Material removed from MS4 (storm drain cleaning, public cleanup events, channel clearing)		N/A		~5 tons		~4 tons		~6 tons		~4 cubic yards		drain and channel clearing) - 325 pounds debris at beach clean up
Material prevented from entering MS4 (street sweeping operations)		N/A		N/A		N/A		645 cubic yards		~4 cubic yards		188lbs street sweeping
Number of catch basins cleaned (all catch basins inspected)		N/A		N/A				37		N/A		309 inspected / 35 catch basins cleaned
Education												
No. of Presentations to Municipal Employees		4		12 (Monthly Meetings)		4		3		4		3

Industrial Businesses

Inspections	Actual No. of Facilities	2001-2002	Actual No. of Facilities	2002-2003	Actual No. of Facilities	2003-2004	Actual No. of Facilities	2004-2005	Actual No. of Facilities	2005-2006	Actual No. of Facilities	2006-2007
High Priority Facilities	0	0	1	1	1	1	1	1	1	1	1	1
Medium Priority Facilities	2	2	1	1	1	0	1	0	0	0	0	0
Low Priority Facilities	0	0	1	1	1	0	1	0	0	0	0	0
Enforcement												
Responses to Hotline Calls in regard to Industrial Businesses		Not known		0		0		0		0		0
Education/Public Participation												
No. of Workshops hosted for Industrial Business Sectors		4		1		0		0		0		0
No. of Materials Distributed to Industrial Businesses		Not known		4 visits (Educational Materials Distributed Every Time		3 visits (Educational Materials Distributed Every Time		2 visits (Educational Materials Distributed Every Time		1 visit (Educational Materials Distributed and Discussed		1 visit (Educational Materials Distributed and Discussed)

Commercial Businesses

Inspections	Actual No. of Facilities	2001-2002	Actual No. of Facilities		Actual No. of Facilities		Actual No. of Facilities		Actual No. of Facilities		Actual No. of Facilities	
High Priority Facilities	90	90%	88	90%	87	85%	88	50%	88	20%	88	11

Compliance with Activity-Based Permit Requirements												
Low Priority Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Enforcement												
Responses to Hotline Calls in regard to Commercial Businesses		Not known		4		9		16		3		13
Education/Public Participation												
No. of Workshops hosted for Commercial Business Sectors		4		1		0		1		0		0
No. of Materials Distributed to Commercial Businesses		Not known		~1,800		~150		~100		0		~150 (3 per week)
Residential												
Household Hazardous Waste		**2001-2002**		**2002-2003**		**2003-2004**		**2004-2005**		**2005-2006**		**2006-2007**
Quantity of Household Hazardous Waste Collected		Not Known		Not Known at time of reporting (158 residents from Solana Beach utilized the program during this reporting period, but the tonnage is unknown).		HHW Facility does not document amount of waste collected. However, 270 residents utilized this service this reporting period, up from 158 last reporting period		HHW Facility does not document amount of waste collected. However, 293 residents utilized this service this reporting period, up from 158 last reporting period		HHW Facility does not document amount of waste collected. However, 319 residents utilized this service this reporting period, up from 293 last reporting period		HHW Facility does not document amount of waste collected. However, 379 residents utilized this service this reporting period, up from 319 last reporting period
Enforcement												
Responses to Hotline Calls in Regard to Residential Activities		Not Known		12		47		20		11		22
Education/Public Participation												
No. of Presentations to Residential Neighborhoods, HOA, Community Groups, Etc.		4		6		3		1		0		0
No. of Cleanup Events Hosted		1		1		1		1		1		1
No. of Materials Distributed (brochures, magnets, bags, fliers, newsletters, posters)		Not known		~2,000		~1,000		~1,200		~11,000		~1,200 (100 per month)
Land Use												
SUSMP		**2001-2002**		**2002-2003**		**2003-2004**		**2004-2005**		**2005-2006**		**2006-2007**
No. of Developments Subject to SUSMP requirements		0		0		2		0		2		2
Inspections	**Actual No. of Facilities**	**2001-2002**	**Actual No. of Facilities**		**Actual No. of Facilities**		**Actual No. of Facilities**		**Actual No. of Facilities**		**Actual No. of Facilities**	
High Priority Sites	2	2	2	2	4	4	4	4	4	3	4	192 (1 time per month)

Compliance with Activity-Based Permit Requirements

Medium Priority Sites	4	4	6	6	6	6	6	6	6	6	8	96 (I time per month)
Low Priority Sites	16	16	9	9	9	8	9	8	9	39	45	) (1 during wet, 1 during dry)
Enforcement												
Responses to Hotline Calls in regard to Construction Sites		Not known		6		4		4		12		7
Education/Public Participation												
No. of Workshops Hosted for Construction/Development Community		4		1		0		0		1		0
No. of Materials Distributed to Construction/Development Community		Not known		~50		~550		~550		~600		521
Dry Weather Sampling	**Actual No. of Locations**	**2001-2002**	**Actual No. of Locations**	**2002-2003**	**Actual No. of Locations**	**2003-2004**	**Actual No. of Locations**	**2004-2005**	**Actual No. of Locations**	**2005-2006**	**Actual No. of Locations**	**2006-2007**
No. of Locations Monitored	260	10	260	31	260	24	260	32	260	29	309	28
No. of Exceedances		2		3		4		2		1		9
Nitrate		N/A		3		0		0		0		0
Reactive Phosphorus		N/A		0		0		0		2		2
Bacteria		2		3		3		2		3		6
Cadium		N/A		0		0		0		0		0
Lead		N/A		0		0		0		0		0
Ammonia		N/A		3		1		0		0		0
Coastal Monitoring												
No. of Exceedances	1	0	1	1	2	2	2	0	1	0	0	0
Total Coliform		0		0		0		0		0		0
Fecal Coliform		0		1		2		0		0		0
Enterococcus		0		0		0		0		0		0

CITY OF SOLANA BEACH

JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM (JURMP) ANNUAL REPORT

SEPTEMBER 2008

Reporting Period:
July 1, 2007 to June 30, 2008

Respectfully Submitted to:
San Diego Regional Water Quality Control Board
In compliance with:
Order No. 2007-0001, NPDES Permit No. CAS0108758

CITY OF SOLANA BEACH
ANNUAL REPORT
STORM WATER PROGRAM
SEPTEMBER 2008

Copermittee:	City of Solana Beach
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Reporting Period:	July 1, 2007 to June 30, 2008
Report Prepared by:	Danny King Environmental Programs Manager

ACKNOWLEDGEMENTS

The City of Solana Beach wishes to expressly thank each Copermittee Storm Water Program Manager/Coordinator and their staff for their efforts during the Regional Stormwater Management Committee meetings and the workgroups and their development of model program components, the sharing of ideas and willingness to cultivate program consistency throughout San Diego County as an effective means of improving water quality in the Region. The level of collaboration among agencies and across jurisdictional boundaries is unique and a credit to the professionalism and efforts of the San Diego County Copermittees.

The activities described in this report are not merely *written words on a page*, but are the result of *tremendous efforts* of City staff to integrate many new activities into their daily routines and tasks. The City's FY 07/08 Storm Water Program Coordinator wishes to thank the Storm Water Team for their assistance, dedication and collaboration to make the City's FY 07/08 storm water program successful *and meaningful.*

Storm Water Team:

- Code Enforcement Officer, Tom Warden
- City Manager/Fire Chief/Director of Public Safety, David Ott
- Operations Manager, Steve Kerr
- City Inspector, Hector Ezquerro
- Deputy City Engineer, Dan Goldberg
- Director of Public Works/City Engineer, Mo Sammak
- Community Services Director, Tina Christianson
- Associate Engineer, Jim Greenstein
- Assistant Planner, Corey Johnson
- Senior Engineering Technician, Robert Martinez
- Management Analyst, Rimga Viskanta

A big thank-you also to the Public Works Crew for all their hard work!

- Maintenance Worker, Bill Stedman
- Maintenance Worker, Dave Thomas
- Lead Maintenance Worker, Danny Hernandez

CITY OF SOLANA BEACH
ANNUAL REPORT/ STORM WATER PROGRAM
SEPTEMBER 2008

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ACRONYMS

Acronym	Description
BMP	Best Management Practices: minimum standards that everyone and every business must adopt to reduce or eliminate urban runoff. BMPs are part of all storm water programs.
DWMP	Dry weather monitoring program: the procedures, requirements and program to collect samples during the dry season each year. Samples are typically collected over a one-two day period and then sent to the lab for analysis.
HHW	Household Hazardous Waste
IC/ID	Illegal Connection and Illicit Discharge: the term used to discuss connections to the MS4 that are not approved (illegal) or non-storm water (illicit) discharges.
JURMP	Jurisdictional Urban Runoff Management Program
MEP	Maximum Extent Practical: A term used by the RWQCB, and Copermittees to refer to the "best efforts," or "as much as possible."
MS4	Municipal Separate Storm Sewer System: references the City's storm water drainage system and the City's wastewater conveyance system.
NPDES	National Pollution Discharge Elimination System: the Federal program created by the 1972 Clean Water Act that governs State water quality / storm water programs.
Permit	Order 2007-0001 issued by the RWQCB, which requires cities to adopt and implement the JURMP, WURMP, and SUSMP.
PPM	Pollution Prevention Measure: a method, procedure, and/or process to control, reduce, prevent, or eliminate pollution.
RWQCB	Regional Water Quality Control Board. The Board is a California board, but for the *purposes of this report,* RWQCB represents the local water quality board (San Diego Regional Water Quality Control Board).
SUSMP	Standard Urban Storm water Mitigation Plan: a plan as to how the City will alter its review of construction plan (public and private) and estimate the extent of pollutant contributions from the site; the plan must specify BMPs that the City will require.
WURMP	Watershed Urban Runoff Management Program: programs that focus on urban water runoff from a larger point-of-view, which is the entire watershed (a watershed is aka a hydrological unit). Programs must specify how cities will work together on planning urban projects and solving water quality problems.
WWMP	Wet weather monitoring program: the procedures, requirements and program to collect samples during the wet season each year. Samples are collected on a monthly basis, depending on weather.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

During reporting period FY 07/08, the City worked with the other Copermittees to continue developing model guideline programs and implementing all the requirements of the old Permit (Order 2001-01) as well as beginning the development of the significant new requirements of the new Permit No. R9-2007-0001, which was adopted in January 2007. The City continued to implement its existing Jurisdictional Urban Runoff Management Program (JURMP) that was developed and submitted on February 21, 2002. In addition, the City developed and submitted a new JURMP in March, 2008 to comply with the new Permit, Order R9-2007-0001. Although most of the reporting period covered in this Annual Report consists of implementing activities consistent with Order No. 2001-01, there were some additional activities implemented during this reporting period that addressed new components of Order R9-2007-0001.

The new activities will be discussed in their respective chapters of this Report. Since many of the new programs required by the Permit R9-2007-0001 included time for the Copermittees to develop the programs, many of the new programs were not required to be implemented until after this reporting period. However, the City began the process of developing the new programs in cooperation with the other Copermittees, and any new programs that were actually implemented in this reporting period will be discussed in this Annual Report.

The City is confident that it has implemented all programs required of them during the five year permit cycle of Order 2001-01. The City is also actively working on developing and implementing improved programs for the next five year permit cycle in compliance with Order R9-2007-0001. During the last five year permit cycle, the City was able to create a storm water team consisting of staff from various departments, implemented all of the components of the JURMP and trained all pertinent staff as to the expectations of the Permit.

Accomplishments to prevent and reduce pollution, eliminate contamination and improve water quality include the following:

- *The City successfully implemented comprehensive educational, inspection and enforcement procedures for municipal, commercial, residential, industrial and construction component activities as described in the City's JURMP.*

- *The City maintains a storm water team approach that integrates staff from various departments, bringing diverse expertise and strengths to the program.*
- *The City monitors a dedicated Storm Water Hotline and email address to receive complaints, questions, and general information 24 hours a day, seven days a week, 365 days a year.*
- *The City provided recurring training for all staff regarding general Best Management Practices and specific department-related BMPs.*
- *The City maintains an inventory of all commercial properties in the City, including prioritization of those that pose a threat to water quality.*
- *The City inspected the minimum amount of high priority businesses as stated in the new JURMP and notified all high-priority businesses of specific BMPs related to each type of business.*
- *The City collaborated with neighboring jurisdictions within their respective watersheds to develop educational brochures, surveys, and host community events and distributed hundreds of brochures to residents and the business community.*
- *The City continues to modify plan-check review processes to include a requirement for Erosion Control Plans, BMPs, structural change and runoff mitigation alterations in project proposals and/or construction activities.*
- *The City participated in the 2007/2008 San Diego County Wet Weather Monitoring Program.*
- *The City investigated about 77 complaints regarding urban runoff. These complaints only include the ones in which follow-up actions were required. On average the City receives approximately 3-4 calls a week from residents reporting a potential violation.*
- *The City continues to enforce a smoking ban at all local beaches and parks, the first jurisdiction in the nation to do so.*
- *The City provided several opportunities for public participation including educational workshops/classes, Annual Coastal Clean-up Day, Copermittee meetings and Household Hazardous Waste home pick-up and permanent drop-off collection sites.*
- *The City continues to implement the new "Environmental" review to ALL building/grading permit applications to ensure every project that gets approved by the City is reviewed for storm water management.*
- *The City Council lowered the grading threshold from 200 cubic yards to 50 cubic yards for all projects within the City. This caused more projects to be assessed by the City engineers to implement pre, during, and post construction BMPs than previously.*

- *The City co-sponsored the third annual "Beach Blanket Movie Night" that provided residents a night of free movies and environmental education. The City had a booth co-sponsored by the Solana Center for Environmental Innovation that contained educational materials and games for attendees, and the films shown were dedicated to environmental protection of our ocean resources.*
- *The City authorized a part-time Code Enforcement Officer to continue weekend and off-hour patrols for storm water violations.*
- *The City added storm water specific language and reporting duties to new "standard" street sweeping contract to be used in all current and future contracts.*
- *The City modified its Municipal Code to comply with the new requirements of the Permit*
- *The City adopted the new model SUSMP*
- *The City participated in the development of the new Low Impact Development (LID) and Hydromodification Plan (HMP)*
- *The City developed and implemented the new post-construction BMP tracking and inspection program*

CERTIFICATION STATEMENT

CERTIFICATION STATEMENT

I certify that the work performed, and the report prepared herein, was conducted under the supervision and guidance of the City of Solana Beach Public Works/ Engineering Department to meet the requirements of the *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority* (NPDES No. CAS0108758). I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

Mo Sammak, P.E. **Date**
Director of Public Works/City Engineer
City of Solana Beach

CHAPTER 1
Introduction

CHAPTER 1: INTRODUCTION

The City of Solana Beach (hereinafter, referred to as "City") has prepared this report in compliance with Order No. 2001-01 and R9-2007-0001, NPDES Permit No. CAS0108758, *Water Discharge Requirements for Discharges of Urban Runoff From Municipal Separate Storm Sewer Systems Draining Watersheds of the County of San Diego, the Incorporated Cities of San Diego County and The San Diego Unified Port District and the San Diego County Regional Airport Authority* (hereinafter referred to as "Permit"). The California Regional Water Quality Control Board, San Diego Region (hereinafter, referred to as "RWQCB") issued the original Permit on February 21, 2001 to all Copermittees (all Cities of San Diego County, the County of San Diego, the Airport Authority and the Port District) and renewed the Permit R9-2007-0001 in January, 2007.

The new five-year Permit (Order No. R9-2007-0001) was issued just prior to this reporting period, and any activities developed and implemented during this reporting period will be described in this Report. However, it should be noted that the City submitted its new JURMP in relation to Order No. 2007-0001 in March, 2008, so any activities related to the new Order that were developed or implemented from March, 2008 to June 30, 2008, will be described in their respective chapters.

Under the new Permit, each Copermittee is required to submit an Annual Report in September of each year describing its jurisdictional program for the previous fiscal year (July 1 to June 30). The purpose of the report is to document to the RWQCB the City's progress and program accomplishments during the reporting period.

On February 21, 2002 and subsequently updated in March, 2008, Copermittees were required to implement a new comprehensive storm water program (Jurisdictional Urban Runoff Management Program [JURMP]) and submit a copy of the new program to the RWQCB. The implementation of this program occurred during the reporting period July 1, 2007 to June 30, 2008 for this 2008 Annual Report. This Annual Report will cover the final full year of implementation under Order No. 2001-01, as well as the first three months of implementation for Order No. 2007-0001.

The scope of the City's storm water program was significantly expanded by the requirements of the Order No. 2001-01 (Permit). The Permit also requires a more comprehensive Annual Report of the City's activities to reduce urban runoff than had been submitted in previous years (prior to 2001). This 2008 Annual Report covers

the City's storm water program activities throughout the entire 2007/2008 fiscal year reporting period.

1.1 Report Organization

This Report contains a description of all activities conducted to meet the requirements of the Permit. The information will be discussed in chapters applicable to each component of the JURMP, which occurred during this reporting period.

The organization of this report follows the outline of the new JURMP and includes the following sections:

- Development Planning Component
- Construction Component
- Municipal (Existing Development) Component
- Industrial and Commercial (Existing Development) Component
- Residential (Existing Development) Component
- Illicit Discharges Detection and Elimination Component
- Education Component
- Public Participation Component
- Fiscal Analysis Component
- Effectiveness Assessment Component
- Special Investigations
- Non-Emergency Fire Fighting
- JURMP Revisions
- Conclusions and Recommendations

1.2 Common Activities

The City participated with the Copermittees in several common activities (workshops, educational program component elements, model programs, etc.) that allowed for a sharing of resources and knowledge, which will provide a more cohesive message to the community. The common activities are described in the Copermittee Unified Urban Runoff Management Program (URMP) Annual Report, submitted with this report by the County of San Diego and incorporated herein by reference.

1.3 Report Content

The content of this report includes the activities associated with implementing the

storm water program (JURMP). The development of the City's JURMP required the City to inventory and prioritize its municipal facilities, commercial and industrial businesses, develop a method to educate the business and residential community about the new requirements, evaluate existing municipal ordinances, and adopt new laws if needed to ensure enforcement action was available, develop a method for educating agency staff, and develop a commercial, industrial and construction site inspection program.

The content of this report will include discussions about the programs and activities that occurred during this reporting period (July 1, 2007 to June 30, 2008e). The City presumes that the reader recognizes that significant activity has occurred subsequent to the end of the reporting period for this report. As a result, throughout this report a summary of post-reporting period activities will be discussed (where appropriate) to assist the RWQCB in understanding the City's efforts to reduce urban runoff and pollution and to comply with the Permit.

1.4 Program Goals

The primary goal of the City's JURMP is to reduce or eliminate pollutant discharge into the City's MS4 (municipal separate sewer storm system) and receiving water bodies, including the Pacific Ocean, thus improving the quality of water in the City, neighboring jurisdictions, and region-wide.

The City recognizes that a *scientifically measurable* change in water quality is a long-term goal that would require many years of data collection, research and analysis, extending beyond the life of the current Permit (which expires in 2012). As a result, the City's program includes short-term goals expected to focus the City's program on permit compliance as well as water quality improvements.

The following summarizes the City's current short-term annual program goals:

FY 02/03: Integration of WURMP(s), SUSMP and JURMP activities
FY 03/04: Complete assessment of JURMP (using regional strategy)
FY 04/05: Complete overall assessment of Regional Programs JURMP, WURMP and SUSMP; prepare for new Permit from RWQCB
FY 05/06: Assessment of JURMP, WURMP and SUSMP in preparation of new Permit anticipated to be adopted in early 2007. This involves the assessment of water quality data to focus on the sources of high priority pollutants locally as well as watershed and regionally.

FY 06/07	Further assessment of JURMP, WURMP and SUSMP to effectively develop new programs for incorporation in the new JURMP, WURMP and SUSMP that will be required by the new Permit (adopted January 2007). The complete program will be assessed to determine the effectiveness of existing programs and to develop better, more efficient programs to include in the next Permit cycle.
FY 07/08	Development and implementation of new JURMP to comply with Permit Order No. 2007-0001. The new Permit includes additional and improved requirements from those included in Order No. 2001-01. Although the City continued the implementation of Order 2001-01 during FY 07/08, significant time and resources were spent developing the new programs included in Order 2007-0001.
FY 08/09	Continue developing the new programs and activities under Permit Order No. 2007-0001, such as the Low Impact Development (LID) and Hydromodification Plan (HMP). In addition, track all SUSMP project post-construction BMPs and develop inspection protocol for annual inspections.

CHAPTER 2

Development Planning Component

CHAPTER 2: DEVELOPMENT PLANNING COMPONENT

In accordance with Permit Section D.1, this section of the report describes the City's efforts to reduce Development Project discharges of pollutants from the MS4 to the MEP; and to prevent Development Project discharges from the MS4 from causing or contributing to a violation of water quality standards; and to manage increases in runoff discharge rates and durations from Development Projects that are likely to cause increased erosion of stream beds and banks, silt pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.

In each Annual Report to the RWQCB, this section will include new modifications to the City's General Plan (if any), review process for new and redevelopment projects, inventory of current public and private projects and activities associated with the Standard Urban Storm Water Mitigation Plan (SUSMP). Activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The JURMP (Section 4.0: Development Planning Component) describes the City's plans to integrate new project review processes to require mitigation of urban runoff. In addition, the City adopted the new model SUSMP in February, 2008.

2.1 Assessment and Modification of General Plan

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. As such, the General Plan is crucial to the long-term success of its water quality and environmental programs.

There were *no changes* to the General Plan during this reporting period. However, the City has begun the process of updating the General Plan at the time of writing this report, and anticipates the update will take about two to three years to complete. Updates will be given in subsequent annual reports.

There were three modifications to the Municipal Code as a result of the new Permit and subsequent JURMP. These modifications include:

1. Minor revisions to Chapter 13.10 Storm Water Management that adds provisions that meet the requirements of the new stormwater permit within the timelines required for implementation.
2. The second ordinance change adds a new Chapter 13.30 to the Municipal Code to include the City's stormwater mitigation plan (SUSMP) that governs methods of controlling stormwater pollution. The SUSMP contains the specific types of best management practices that the city will impose on development.
3. The third ordinance change revises Chapter 15.40 Excavation and Grading, which controls the manner and method of grading properties and excavation within the City. The revised ordinance updates the existing ordinance to include new erosion control measures required by the SDRWQCB.

These modifications will be discussed in this chapter as well as Chapter 3, Construction Component.

2.2 Project Approval and Environmental Review Process Modifications

The City is tasked with ensuring that land uses in Solana Beach comply with City codes, the General Plan, City Council policies, Engineering standards and State law requirements. Approval of projects through the discretionary review process is generally but not always required prior to issuing grading, building and right-of-way permits. The City Code requires compliance with storm water regulations for all discretionary approvals and ministerial permits. The Planning, Engineering, Environmental, Building and Fire Departments review all plan checks that are submitted to the City. The Engineering and Environmental Departments administer all aspects of design and construction for public improvement projects. The Planning Department administers the environmental review (Initial Studies, Negative Declarations, EIRs, etc.) of both public and private projects.

The City has reviewed its General Plan and Municipal Codes and determined that the General Plan meets the requirements of Order No. 2007-0001. The following is a short list of recent improvements to the project review process that ensures all projects are reviewed and properly address storm water concerns:

- FY 05/06 - Every applicant who inquires about a particular project at the City Hall counter will be given a copy of the City's Construction BMP Brochure (Appendix I). This is being done to ensure that every person will have received a copy of the City's educational guide, many times more

than once. Additionally, the plan check routing sheet was previously modified to include a separate box to check when the applicant receives the BMP guide. The project will not be approved until the box is checked. This was done not only to ensure that all applicants receive the guide, but as well as helping the Code Enforcement Department enforce violations much more efficiently. For example, if there is a storm water violation at a particular project, staff can now go back and check the plan check routing slip to see if the applicant received the BMP guide. If the box is checked, then staff knows that they have the guide and should be aware of the proper regulations, therefore increased enforcement can be taken.

- FY 05/06 - Any project that increases the impervious area of a site by a minimum of 1,000 square feet must complete a Storm Water Plan Check Comment Form (Appendix J). This sheet requires a variety of information to ensure that there will be no additional run-off as a result of the project. The first requirement is the preparation of an Erosion Control Plan. Also, the applicant must demonstrate that the project *does not increase stormwater runoff*. Lastly, the applicant must demonstrate that they are implementing and maintaining all precautionary measures necessary to ensure that pollutant discharges from the site *will be reduced to the maximum extent practicable*. All additional storm water must be completely contained and treated onsite. This is not required by the Permit, but the City believes that it would be prudent to address this issue on such a small scale because of the relative abundance of these smaller projects within the jurisdiction and the lack of larger scale projects that would otherwise be dealt with through the SUSMP process. Instead of ignoring these projects all together, the City felt it would be in its best interests to review these “minor” projects to ensure that most new construction and redevelopment would address these storm water concerns.
- FY 06/07 - City continued to evaluate its project approval process and made some modifications to the process for approving new and redevelopment projects. As noted in last year’s Annual Report, the plan check routing sheet was further modified to include additional information regarding storm water management. The intent of the modifications is to ensure that pollutants and runoff from development will be reduced to the maximum extent practicable (MEP) standard and/or will not contribute to an exceedance of receiving water quality objectives.

- FY 06/07 - Project Applicants (Applicants) are required to submit a detailed project application, which addresses a variety of concerns, including urban runoff and environmental impacts. The project application provides an opportunity for City staff to determine whether or not the project will be exempt from the California Environmental Quality Act (CEQA) process. If the project is subject to CEQA, the environmental impacts of the project must be reviewed and depending on the potential impacts, a more substantial environmental impact report (EIR) may be required.

- FY 06/07 - The plan check routing sheet was further modified to include another section titled *Environmental* (Appendix K). This section was included to ensure that *all* plans submitted would be reviewed for storm water implications, no matter how small or relatively insignificant. Previously, plans would be routed through the Engineering Department and if the Engineering Technician determined that it warranted further review, the plans would be passed through to the Environmental Specialist. The process was modified to ensure that all plans would be reviewed just in case something was missed or overlooked. The City believes that plan review is essential to ensuring storm water compliance, so we are doing everything possible to make sure it is done thoroughly and accurately. This new and improved process resulted in the Environmental Specialist reviewing 286 plans during this reporting period.

In addition to the CEQA review process, all applicants must obtain a permit from the California Coastal Commission (CCC) because the City does not have a Local Coastal Plan. The City also has strict environmental standards requiring compliance and governing land-use planning and construction.

The application includes some of the following questions:

- Financial interest of all parties who own, or intend to own the property.

- Proof that all owners of record within 300 feet of the exterior boundaries of the property have been noticed of the intent to develop (this allows opportunity for public participation in the process).

- Present use of property and proposed development description (commercial, residential, mixed use, etc.).

- Current floor area ratio (FAR) and proposed (this allows review of the proposed change in impervious to pervious surface area). The City has a strict FAR and prohibits development within 40 feet of the western edge of the coastal bluffs.

- Proposed area to be graded (this allows the Engineering Department to assess potential erosion and runoff).

- Environmental condition of property (vegetation, drainage, noise, etc.) and neighboring properties.

- Business Applicants are required to submit information pertaining to the types of hazardous materials, whether or not industrial wastewater will be discharged in the property *and/or* off the property.

2.2.1 Project Requirements

As mentioned above, applicants are required to submit plans for all new and redevelopment of current structures to both the Planning and Engineering Department prior to approval. The Engineering Department (which includes Environmental Review) reviews the project's grading and construction plans for potentiality of contributing to urban runoff. The City Engineering Department also determines the appropriate BMP requirements for each project and attaches the Storm Water Plan Check Comment form to the project plans and returns the plans to the applicant for modification, if required. Applications may be required to submit one or more of the following:

- An Erosion Control Plan (which requires BMPs to manage storm water and non-storm water discharges from the site at all time and shall emphasize sediment control).

- Evidence that the project will not increase storm water runoff.

- Storm Water and Non-Storm Water Runoff Control (this requirement address long-term control of runoff and may require structural modifications to direct discharges into permeable areas such as landscaping).

In addition, all grading projects are required at a minimum to include the following:

- Source control BMPs for all projects expecting to generate runoff.

- Implementation of site design/landscape measures to reduce and/slow runoff, minimize impervious to previous ratio, maximize infiltration and promote alternative driveways and parking lots to include pervious land surfaces (as described in detail in the City's JURMP).

- Implementation of buffer zones for natural water bodies, where feasible and if not, trees, lighting and access restrictions are required.

- Industrial applicants are also required to provide evidence of coverage under the California General NPDES Permit for Storm Water Discharges Associated with Industrial Activities.

- Applicants are required to be in compliance with the City's current grading and storm water management ordinances, inspection requirements, general requirements for construction activities during the wet and dry season and implementation of appropriate BMPs to control erosion and runoff.

2.2.2 SUSMP

The City participated with other Copermittees in the development of the original model Standard Urban Storm Water Mitigation Plan (SUSMP), which was approved by the RWQCB on June 13, 2002. The Solana Beach City Council adopted the City's SUSMP on December 3, 2002, which was submitted to the RWQCB on December 13, 2002. ***The City adopted the updated model SUSMP that complies with all requirements of the new Permit in February 2008***.

The SUSMP addresses post-construction urban runoff pollution from new development and redevelopment projects that are designated as "priority projects" under the Permit. Most of the criterion that specifies which projects will be priority projects will not be applicable to the majority of City projects. The reason for this is that the City of Solana Beach is more than 95% "built-out" and primarily a residential community with small-business commercial properties (there are a few large commercial sites in the City). As a result, the City made few modifications to the Model SUSMP that was developed collectively by the Copermittees for its SUSMP. Over time, City staff will evaluate the effectiveness of the SUSMP and discuss changes to the Plan in this section of the Annual Report.

During this reporting period, the City of Solana Beach had *two projects* approved subject to the SUSMP requirements. These will be described in the following Construction Chapter.

However, the City's Planning Department (also referred to as Community Development Department) is well aware of the SUSMP requirements and is consistently on the lookout for potential projects that may fall under the SUSMP requirements. The Engineering Department handles all of the BMP review for the City, however, the Planning Department is the first department to review applicant plans.

2.2.3 Low Impact Development (LID)

LID is one of the most significant new requirements of the new Permit. The Permit states that each Copermittee shall develop and require each Priority Development Project to implement LID BMPs which will collectively minimize directly connected impervious area and promote infiltration. The City's new JURMP describes the LID site design BMPs required at each Priority Development Project. The LID requirements are being developed by the Copermittees on a regional level to promote consistency for the development community. The City is participating in the development of the LID requirements and will implement them into the City's program once finalized and within the timeline required by the new Permit.

2.2.4 Treatment Control BMP Maintenance Tracking

The City has developed a watershed-based database to track and inventory approved treatment control BMPs and treatment control BMP maintenance for Priority Development Projects within the City. The database contains all necessary information as required by the new Permit. In addition, the City has developed a program to verify that approved treatment control BMPs are operating effectively and have been adequately maintained.

2.3 Education

Municipal Staff Education

The City of Solana Beach is a very intimate, cooperative group. All departments work very well with one another because they are forced to do so on a daily basis to serve the relatively small community. This makes training and education a much easier task.

The previous formation of the storm water team brought together the directors of all the different departments (Planning, Engineering, Public Works, Assistant City Manager, Public Safety Chief, Code Enforcement Officers, Environmental Programs Manager, City Attorney and City Inspector) and provided them a forum to discuss storm water issues and come up with solutions collectively. In turn, the directors would educate their respective employees on the specific tasks they were to perform. This was a very effective and efficient way to educate the Municipal Staff when the Permit was first adopted and the JURMPs were initially being implemented.

City staff welcomes additional training opportunities and often seeks outside training opportunities to keep up with the ever-changing storm water universe. Part of the City's budget is specifically earmarked for training expenses to encourage Staff participation. Additionally, numerous consultants have made presentations to City staff regarding the latest technologies in the protection of water resources, including techniques to reduce erosion, bacteria and other COCs in urban runoff. City staff is always seeking new training opportunities to stay on top of this rapidly evolving field. The City's budget specifically allocated $1,850 for training and conferences in the Environmental Services budget for the FY 07/08.

Owner / Developer Education

The City, along with the other North County Copermittees, has developed a Construction BMP Brochure (Appendix I) which describes the construction storm water regulations and required BMPs. The BMPs are generic and a simple map is shown of a "typical" construction site, but the brochure has been very well received by the development community. It is simple and easy to understand, and City staff makes certain developers and contractors know every site is different and has unique characteristics. These brochures are distributed at the counter, at pre-construction meetings and in the field during inspections.

In addition, the City sends a "Rainy Season Reminder" to all current and active private projects within the City as a tool to educate and remind project owners and developers about the need to strictly adhere to the erosion control requirements during the rainy season.

Inspections are another opportunity staff utilizes to educate owners and developers about City and State runoff and erosion requirements. During inspections, the City Inspector points out problem areas and requires mitigation compliance immediately. If an owner or developer fails to comply, increased

enforcement including fines can be levied and the City Inspector has the authority to halt construction practices.

The City has implemented similar procedures for public projects as those utilized for private projects. That is, during pre-construction meetings (for all grading and public projects) the requirements for erosion control and runoff management are discussed; the City Inspector makes daily inspections of the construction site to ensure appropriate BMPs are implemented and verifies effectiveness; and if necessary, the City Inspector will require modification of practices and activities to reduce runoff or control erosion.

2.4 New Activities and Improvement for FY 08/09

The City will continue implementing the activities described in the Development Planning Component of the City's JURMP. In addition, with the development and implementation of the new SUSMP and LID requirements, the focus for FY 08/09 will include the continued implementation and education of planning staff, builders, residents, and the community at-large as to how regulations of the SUSMP and LID will impact construction. A more streamlined and effective approach will be implemented during permit application to ensure that all applicants are fully aware of the storm water regulations and the consequences of not adhering to them.

In addition, the new Permit necessitated updates to the City's municipal code that will have significant changes this component. The new Permit will necessitate ordinance changes, specifically to the Stormwater Management section (13.10) and the Grading Ordinance (15.40). These ordinances were approved by the City Council and the implementation has already occurred during this reporting period. They will be discussed in greater detail later in this Report.

2.5 Summary

The City has successfully implemented the Development Planning Component of the JURMP. Some of the key accomplishments include:

- Education of planning staff, owners/developers and the community regarding changes in planning processes.
- Implementation of new procedures to ensure new and redevelopment projects do not contribute to an exceedance in water quality standards.
- Addition of Environmental section of permit routing sheet to ensure *all* plans/projects are reviewed by Environmental Specialist for storm water

issues. Addition of post-construction BMP tracking and inspection box on routing sheet to ensure all BMPs are installed according to approved plans.

- Increased cooperation between City departments in implementing SUSMP requirements.
- Developed and implemented new post-construction BMP inventory and inspection tracking database.
- Modified Municipal Code to include new requirements of Permit Order No 2007-0001.

CHAPTER 3
Construction Component

CHAPTER 3: CONSTRUCTION COMPONENT

3.1 Introduction

In accordance with Permit Section D.2, this section of the report describes the City's efforts to reduce construction site discharge of pollutants from the MS4 to the MEP and prevent construction site discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of active construction sites (private and public), modifications to the City's policies or Municipal Code with respect to construction activities, modifications to identified potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to require BMPs at construction sites and program accomplishments. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

During this reporting period, the City conducted an evaluation of its construction practices and inventoried existing construction sites in an effort to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from these construction sites by requiring BMPs.

3.2 Modification of Grading Ordinance

There were *significant modifications* of the Grading Ordinance during this reporting period as a result of new requirements in the Permit. Chapter 15.54 (Excavating and Grading) was modified on February 13, 2008 to include the new requirements of the Permit. The amendments update and strengthen the City's regulations regarding stormwater pollution controls. The two main areas of impact in the updated ordinance deal with two new concepts (Hydromodification Plan (HMP) and Low Impact Development (LID)). Hydromodification is a state mandate that requires all local jurisdictions to regulate erosion control and other land-shaping impacts from stormwater runoff.

Low Impact Development is a new requirement including in the new storm water permit. It deals with using various techniques to channel stormwater runoff and the pollution it contains away from the stormwater conveyance system and into

landscaping and other on-site features to limit the amount of pollution escaping from individual parcels.

The last significant modification occurred June 30, 2005 in which the grading threshold was lowered from 200 cubic yards to 50 cubic yards for all construction projects, meaning much smaller projects that would not normally be scrutinized for storm water management would now be required to go through the grading permit process. This gave City staff more discretion on smaller projects to require storm water mitigation, and with it, gave Staff more power to enforce the installation and/or site design modifications to that would not have been required if a grading permit were not necessary.

3.3 Modification of Construction and Grading Approval Process

The modifications to the City's processes for project approvals are described in detail in the previous chapter of this report (Chapter 6). Although Chapter 6 specifically addresses Development Planning, the discussion included a description of various processes that Project Applicants must proceed with in order to obtain approval of their construction plans. Chapter 6 also describes the improvements made to the plan check routing slips as well as the increased education efforts City staff has made to ensure Permit compliance.

The Storm Water Plan Check Comment Form (see Appendix J) may require the Applicant to submit an Erosion Control Plan, proof that the project does not increase runoff from the property and/or implementation of structural changes to redirect runoff onto impervious surfaces.

3.3.1 SUSMP BMPs Installation and Tracking

The City continued implementation of the updated SUSMP process during this reporting period, and there were two *projects that required the SUSMP process review.* The two projects are:

Table 3-1 SUSMP Projects 2007/2008

PROJECT	SUSMP TRIGGER	SUSMP BMPs REQUIRED
735 Genevieve Street	>15 Parking Spaces	Installed permeable pavers and landscaping at end of parking lot and placed landscaping throughout parking lot to allow for infiltration.
201 South Hwy 101	Redevelopment >5,000 square feet of additional impervious surfaces	Installation of structural treatment control BMP (Jensen filtration device), detention pipe and bioswale.

These projects are still in the construction phase at the time of writing this report. However, the City does currently have a SUSMP treatment control BMP inventory for completed projects that is available upon request. In order to demonstrate the City's process for conditioning a SUSMP project from plan review until final occupancy, the following is a brief review of a project that was completed during this reporting period.

3.3.1.1 228 South Cedros Case Study

228 South Cedros (Project) consisted of the construction of a new office building on an already developed lot. The project on its own would not have triggered the SUSMP process because the lot was already impervious, however since the City has relatively few lots that would trigger the SUSMP on their own, the City takes into account the surrounding areas and often requires smaller projects to comply with the SUSMP regulations. The surrounding areas are also impervious in this area, so the City took the opportunity to condition this new construction with requirements that are often associated with stand alone SUSMP projects. The following process occurred during this reporting period.

The developer of 228 South Cedros submitted plans to the City in December 2006. A series of meetings occurred between the developer and the City's Engineering Department to discuss a myriad of issues, one being the post-construction BMP requirements. After a few meetings and discussions regarding the BMP plans, the project was approved with the following post-construction BMPs included:

- Modifications of existing drop inlet catch basin in parking lot to act as a small dry-well. The bottom of the inlet was removed making it an infiltration pit and a pipe installed vertically to allow for ponding and infiltration during non-rain events.
- Installation of a bio-swale along the edge of the parking lot for infiltration.

- Installation of a trench drain along bottom of parking lot for additional infiltration so no water would leave the site during non-rain events.

All of these BMPs were sized by a licensed engineer and verified by the City Engineer.

The above post-construction BMPs were approved by the City for this project. However, as often times are the case, things are altered during the construction phase, many times unauthorized. Because of this, the City now has included a box that can be checked on the initial plan check routing sheet requiring a final inspection of the BMPs prior to final permit and occupancy approval (see Appendix K). This allows the City one final inspection to ensure what was approved initially is what was actually installed. This scenario occurred during this project, and the City was able to catch it and require additional BMP measures. The City's Environmental Programs Manager and Associate Civil Engineer inspected the project and found the following:

- The vertical pipe in the drop inlet catch basin was not as high as approved on the plans. The contractor subsequently raised the pipe.
- The bio-swale on the edge of the parking lot ran into an existing concrete swale (which was uncovered during construction), thereby limited the capacity of the entire swale. The City required the contractor to install an additional infiltration pit at the end of the swale to make up for the unforeseen concrete section of the swale.
- The trench drain was not as deep as the plans showed. The City required the contractor to remove a large section of the asphalt parking lot above the trench drain and replace with permeable pavers to make up for the lack of depth of the trench drain.

This is a brief example of the City's process for requiring the post-construction BMPs and ensuring the contractors are installing them per plan. Construction projects are constantly changing due to field conditions, however the City is confident that its process for review and inspection is more than adequate to ensure SUSMP compliance.

The City does not anticipate many projects that will fall under the SUSMP guidelines, since the City is 95% "built out." However, any project that may be proposed that fall under the guidelines will be put through the process. Planning staff and Engineering staff have been trained and are aware of the SUSMP requirements, and will implement the program when appropriate.

As reported in last year's Annual Report, a significant improvement to the

building permit routing sheet that occurred last reporting period was the addition of the *Environmental* section (Appendix K). As noted in Chapter 2, the routing sheet was modified to ensure *all* permit applications were thoroughly reviewed by the Environmental Programs Manager. Even though the revision occurred before this reporting period, it's significant to mention because it brings the Environmental Programs Manager into the review process for all projects, regardless of size or type. This is significant because no projects will slip through the cracks, and all will be required to address storm water concerns. In addition, as mentioned above, the routing sheet also contains an area to mark if the project requires the installation of post-construction BMPs. Final permit approval and building occupancy will not be granted until a final inspection confirms the BMPs were installed correctly, according to approved plans.

3.4 Construction Site Inventory

This section of each Annual Report will include an inventory of construction sites active during this reporting period. Given that the reporting period for these Annual Reports ends prior to the submittal of the report, the inventory will most likely be slightly outdated by the time the report is reviewed by the RWQCB. However, the City maintains an inventory of current construction project sites, which is always available for review. In addition, the Planning Department maintains an inventory of proposed sites and projects. Large private projects (commercial sites, multi-unit housing, etc.) may remain on the "active" inventory for a significant period of time.

As shown on Table 3-2, there are currently twelve construction sites that required a grading permit active within the City. In addition, City Engineers are in constant discussions with private project property owners during the plan check process to ensure their projects include an Erosion Control Plan, modify drainage alterations to re-route runoff to pervious surface areas, proof that the project would not result in an increase in runoff from the site or other various structural BMPs, and require all projects to control and mitigate all run-off before it reaches the City's MS4 system. Table 3-3 shows all construction projects that have a potential to discharge pollutants but did not require a grading permit. These projects had extensive plan review by City staff and storm water/erosion control conditions placed on them even though a grading permit was not required.

Table 3-4 shows all the pre-construction meetings that were conducted for projects that were deemed high priority as well as all public projects. Pre-construction meetings are vital to storm water compliance, as all issues are

discussed as well as warnings given before there are storm water violations. The City takes this opportunity to educate the contractors as well as warn them about violation fines and citations, to let the contractors know how serious the City is about storm water regulations.

Table 3-2 Construction Site Inventory- Grading Projects 2007/2008

Project Name and Location	Priority Category	Current Zoning	Type of Construction	Project Size	Hydrologic Unit	Drainage	Draining to 303(d) listed water?	303(d) Pollutants of Concern	
583 Canyon Drive	Medium	Residential	Single Family Home	<1 acre	Carlsbad	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
548 North Rios Avenue	Medium	Residential	Single Family Home	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
401 Glencrest Drive	Medium	Residential	Single Family Home	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
140 North Rios	Medium	Residential	4-unit subdivision	< 1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean-Coliform	St Ma Er
118 Brookdale Place	Medium	Residential	Single Family Home	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
327 Pacific Avenue	Medium	Residential	Upper Bluff Maintenance	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
1128 Solana Drive	Medium	Residential	Single Family Home	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
417/423 Pacific Avenue	Medium	Residential	Upper Bluff Maintenance	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
311-319 Pacific Avenue	Medium	Residential	Upper Bluff Maintenance	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er

147 North Sierra Avenue	Medium	Residential	Single Family Home	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
214 South Rios Avenue	Medium	Residential	Single Family Home	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
134 South Granados	Medium	Residential	Single Family Home	<1 acre	San Dieguito	Runoff drains to MS4 to Pacific Ocean. Low flow drainage to sewer system through low-flow diverter	Yes	Ocean - Coliform	St Ma Er
733 Genevieve	High - SUSMP	Commercial	Restaurant	<1 acre (15 Parking Spaces)	San Dieguito	Runoff drains to Steven's Creek – Drains to San Dieguito Lagoon	Yes	Ocean - Coliform	SU Co Re

Table 3-3 Construction Site Inventory
Small Private Projects Requiring Plan Review/Modifications

Address	Type / Priority	General Storm Water Comments	Storm Water Plan Check Comment Form	Comments
233 Acacia Ave	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans
319 Barbara Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
533 Barbara Ave.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
628 Canyon Place	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of

					Impervious drainage required to be shown on plans
319	Barbara Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off-site
662	Canyon Dr.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
702	Castro Street	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans.
246	N. Cedros Ave,	Multi-Use / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans
607	N. Cedros Ave.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans
505	Ford Ave.	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans
508	Glenmont	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans
718	North Granados Ave.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off

1426	Highland Drive	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
645	Ida Avenue	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
837	Ida Avenue	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans
412	Marview Drive	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
614	Marvista Drive	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
624	Ridgeline Place	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
516	N. Rios Avenue	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased. Location of Impervious drainage required to be shown on plans
701	N. Rios Avenue	Residence / Low	Yes	Yes	Storm Water BMPs required throughout project, no discharges allowed off
1223	Santa Luisa Dr	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
1507	Santa Sabina Ct	Residence / Low	Yes	Yes	Storm Water BMPs required throughout project, no discharges allowed off
1050	Santa Queta	Residence / Low	Yes	Yes	Erosion Control Plan Needed. Proof runoff not increased.

					Location of Impervious drainage required to be shown on plans.
506	Seabright Ln	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
717	Seabright Ln.	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off
1050	Solana Drive	Residence / Low	Yes	No	Storm Water BMPs required throughout project, no discharges allowed off

Table 3-4 Public Projects Pre-Construction Meetings 2007/2008

DATE	PROJECT	DETAILS
7/20/2007	Street Repair and Slurry Seal	Erosion Control/Storm Water requirements discussed.
11/29/2007	N Cedros Avenue Drainage Improvement	Erosion Control/Storm Water requirements discussed.
3/20/2008	Hwy 101 Tree Replacement	Erosion Control/Storm Water requirements discussed.
3/18/2008	Tide Beach Seawall Maintenance	Erosion Control/Storm Water requirements discussed.
2/20/2008	Streetlight Installation Project	Erosion Control/Storm Water requirements discussed.
3/25/2008	Plaza Street Improvements	Erosion Control/Storm Water requirements discussed.
3/20/2008	Hwy 101 Tree Replacement	Erosion Control/Storm Water requirements discussed.
3/18/2008	Tide Beach Seawall Maintenance	Erosion Control/Storm Water requirements discussed.

**Table 3-4is not meant to be part of the Construction Inventory. This table is simply to demonstrate that the City conducts Pre-Construction Meetings prior to public projects and that storm water issues are discussed. The projects that require storm water inspection oversight from this table are included in their respective tables (Table 3-1 and 3-2).*

3.5 Construction Follow-Up Activities:

The City is very aggressive with its construction inspections and follow-up, and unless otherwise stated, all follow-up corrective activities were properly addressed and corrected within seven (7) working days. Many times the corrections are made immediately, however the City's policy is to allow the responsible party seven days to correct the violation. However, if there is an immediate threat to public health or safety, the City can require immediate corrective actions.

As stated above, the City takes a very pro-active approach toward construction projects. Plans are heavily scrutinized and discussions with the contractors often happen before the project even begins. The City has found that initiating contact with the contractor before the project even starts and maintaining contact throughout the construction process, leads to continued compliance with storm water regulations. Since the City of Solana Beach is relatively small and built out, the City's inspector has the ability to visit sites almost daily, and at a minimum weekly. Due to this high level of supervision, sites are not allowed to get out of compliance with storm water BMPs. That being said, there are instances where accidents do take place, most often when concrete trucks and pumpers are involved. The only violations from construction sites are listed below in Table 3-5. As you can see, no construction sites were cited for continued storm water violations except for the occasional accident that occurs often at construction sites.

Table 3-5 Construction Violations 2007/20

DATE	COMPANY	VIOLATION	ACTION
7/17/2007	Ismael's Concrete Pumping	Washing down concrete truck, no containment	Stop work, immediate clean-up. $100 Citation issued
9/10/2007	Palomar Transit Mix	Washing down concrete truck, no containment	Stop work, immediate clean-up. $100 Citation issued
9/19/2007	Salerno's Concrete Breaking, Trenching, Grading	Washing down dirt and mud in street from tracking	Water did not reach storm drain, verbal warning issued
11/9/2007	GRS Construction	Draining a Jacuzzi and minor storm water construction BMP violations	Stop draining Jacuzzi into street. Clean up construction site. Verbal warning issued
12/14/2007	Bryan Outcault, Inc	Washing down concrete truck, no containment	Stop work, immediate clean-up. $100 citation issued

12/26/2007	Fun Builder, Inc.	Washing down concrete from finished driveway, no containment	Stop work, immediate clean-up. $200 fine issued for violation and non-compliance
1/4/2008	Blue Moon Pool	Plaster spill onto street and gutter, no containment	Stop work, immediate clean-up. Spill did not reach storm drain. Written NOV issued
1/9/2008	Burger Construction	Testing new sprinkler lines, no containment, dirt and mud flowing into street	Stop work, immediate clean-up. $100 citation issued
2/13/2008	Streamline Concrete Pumping	Washing down concrete truck, no containment	Stop work, immediate clean-up. $100 citation issued
4/23/2008	True Blue Pools	Plaster discharge into City street	Stop work, immediate clean-up. $100 citation issued

3.6 Capital Improvement Projects Inventory

In addition to the inventory for private projects, City staff believes it is equally important to discuss both public (Capital Improvement Projects [CIPs]) and private projects under construction.

CIPs are held to the same *or stricter* standards for reducing runoff as private projects. BMPs, Erosion Control Plans, and structural changes to reduce or mitigate runoff pre and post-construction are required. Most, if not all, CIPs in Solana Beach are constructed by private contractors selected through the standard public bid process. Contractors are informed *prior to submitting a bid,* that the City requires adherence to RWQCB standards, Permit and City storm water regulations. To ensure compliance the City Inspector conducts a daily inspection of each CIP site during construction. Stop Notices are issued if the contractor fails to comply with any storm water / erosion control regulations.

Additionally, the Environmental Programs Manager is included in pre-construction meetings that are required for *all* public projects. A line item discussing NPDES regulations and requirements is standard for all public project agendas (Appendix L). This is just another way to ensure that all contractors are aware of the requirements before the project begins, and to help with possible enforcement actions.

In FY 06/07, the City Inspector did not issue any Stop Notices to contractors for failing to comply with storm water/erosion control regulations.

3.7 Threat to Water Quality Prioritization

In accordance with Permit Section F.2.e., the City described the criterion for designation of construction projects as high, medium, or low priority, in its JURMP. *There are* ***no changes*** *to report in the City's criterion for determining a project's impact or threat to water quality.* The City's prioritization criterion meets the requirements of the new Permit, so no changes were needed.

Of the active projects currently under construction, *there are no changes to report with respect to the potential threat to water quality*. The City is 95% "built out" which does not leave much room for major development projects. The only projects that would fall under the high priority would be significant redevelopment projects, which there were none of during this reporting period. The City is closely monitoring three potential projects that may fall under the high priority in the next reporting period, pending permit approval. It is important to note that

City staff is currently working with the prospective developers to ensure they integrate beneficial storm water designs during the design phase. The following projects are being closely monitored by City staff:

1) Multiple plans have been submitted to the City to build a hotel/restaurant and condos on the east side of Highway 101 at the northern tip of the City (commonly referred to as the Magellan site), however it has been met with some opposition within the community and a compromise is being sought. Plans still have not been adopted by the City Council at the time of this report. If a project is accepted for development in that area during the next reporting period, it will be a high priority project subject to the SUSMP process because of its proximity to the San Elijo Lagoon, a 303 (d) listed water body.

2) Another *potential* high priority project that is being discussed is a large multi-use residential/commercial development on what is currently the North County Transit District's (NCTD) train station property. This proposed project has also come under heavy scrutiny from the public and no plans have been approved by the City. If a project is accepted for development on this site during the next reporting period, it will be a high priority project because of its size. It will be subject to the SUSMP requirements much like the project mentioned above.

3) A potential high priority project that is still in the planning stage is the significant redevelopment of a portion of a commercial property located just east of Interstate 5 at Lomas Santa Fe. Currently, there exists a large commercial site consisting of multiple large stores, including Vons, Marshalls and a Big 5 Sporting Goods store. The site contains a large parking lot and conceptual plans have been discussed that would add another large store to the complex and redevelop another portion of the existing buildings. This project would be significant for Solana Beach and is being closely monitored through the beginning stages of the design.

The City's Capital Improvement Projects, available upon request, will be considered at least a medium priority for several reasons. First, priority categories may only result in a change in the frequency of oversight and the City Inspector visits each public construction site on a daily basis, which therefore eliminates the need for delineation in priority. Second, given the City's proximity to the Pacific Ocean, all erosion, sediment and runoff control practices are very important and are expected to be very beneficial to the community. Therefore, the designation of "medium or high priority," improves the likelihood that CIPs will not contribute to an exceedance of water quality standards. It doesn't make

sense to categorize a CIP project as low priority since the City holds itself to a higher standard than the rest of the community. The City strongly feels it should lead by example, and since the City Inspector is onsite everyday at CIP projects, storm water issues are addressed daily.

Two highly visible and much anticipated public projects were completed during this reporting period. First, the much anticipated public Coastal Rail Trail project continued during this reporting period. Due to the size and location of the project, the City felt it prudent to hire an independent inspector just for this project. The City does not have the resources to dedicate a full time employee to this project, so it was necessary to hire some outside help. Included in the duties of the inspector was storm water compliance. The inspector was required to complete weekly reports on storm water compliance and submit them to the City's Environmental Specialist for review. This project has been completed and is no longer in the City's inventory.

The other highly anticipated project that was completed during this reporting period was the Fletcher Cove Community Park redevelopment. This project consisted of turning a large, completely impervious parking lot into a multiuse community park with large areas of grass and landscaping. The park is located directly adjacent to the ocean which meant that extra care was given during the planning phase to ensure there would be no negative impacts to the environment. Some highlights of the park include:

- Turning approximately half of the parking lot into a large grassy area for the community to enjoy

- Planting native, drought tolerant plants to increase the amount of landscaping and pervious areas

- Creating a small patch of artificial turf located adjacent to the coastal bluff to eliminate irrigation and prevent bluff failures

- Installing a new shower that no longer drains to the ocean but instead is redirected into the sewer system. The shower also contains a sand trap to remove sand before it can impact the sewer system

- The installation of a CDS unit to treat all the runoff from the site prior to discharge to the sewer system

- The installation of nine (9) new dual trash/recycling containers to provide recycling options for the visitors

- The installation of a new, pervious asphalt low flow infiltration system to a parking lot across the street to compensate for the loss of parking as a result of this redevelopment. The City installed this system to treat runoff from an existing parking lot.

This new park is a testament to the community's passion for the environment. The park will have an environmental theme throughout and will not drain any runoff towards the ocean. New catch basins are going to be installed at the front of the site to capture runoff from up the street and divert it into the sewer system.

3.8 BMPs and Pollution Prevention Methods

As noted in the City's JURMP, the City requires general and specific BMPs for construction sites and with the modifications in the development review process; the City is able to require site design, source control and treatment BMPs prior to construction. Owners and developers are provided a BMP Construction Brochure (see Appendix I), and they meet with engineering staff to develop methods to ensure that runoff is not increased as a result of their proposed project. The City believes that working with the contractors during the plan approval process is the most critical time period to ensure that appropriate BMPs (structural, pre-and post-development) are built into the project *before* pollutants are allowed to enter the storm drain conveyance system.

BMP Selection

The City does not require a specific or certain type of BMP (except for SUSMP projects) for all projects similarly designed. Instead, staff members evaluate each project on its own merit and determine if modifications to the plans are required to control erosion and/or reduce runoff. City staff works together with property owners and developers to find satisfactory solutions to project problems.

Pollution Prevention Methods (PPM)

- Construction limitations – the City limits construction during the wet season when construction plans warrant and when it is feasible. Implementation of this PPM reduces the potential for pollution.

- Education – the City sends out letters to all active public and private

construction projects at the start of the wet season to remind them of the importance of implementing the required BMPs (see City JURMP for a description) and the importance to take precautions during storm events. Additionally, a BMP Construction Brochure is attached to all permit approvals and distributed at City Hall Engineering and Planning counters to all prospective developers and interested members of the community.

- Inspections – as discussed below and elsewhere in this report, the City Inspector and Environmental Programs Manager visit construction sites and keep a record of BMP implementation and effectiveness. When a developer does not comply with the City Inspector's request to modify practices to reduce runoff or erosion, construction activities can be halted at the site and fines may be levied.

3.9 Enforcement and Inspections

Enforcement of the City's Municipal Code is conducted by the City's Code Enforcement Officers. The City Inspector and Environmental Programs Manager conduct inspections of construction site BMPs, but if enforcement actions above written NOVs are necessary, Code Enforcement Officers are notified.

Code Compliance

The City has developed procedures to track and monitor citations issued to property and business owners, visitors, and developers. These procedures include the adoption of an Administrative Fine process which was adopted by the City Council on June 18, 2002. This process allows Code Enforcement Officers to issue administrative citations and penalties in between $100 and $1,000 for each day the violation occurs; this applies to construction sites, public and private.

In addition to the administrative fine process, the City adopted a Civil Penalty Matrix (Matrix). This is a very significant tool that has greatly enhanced the enforcement of storm water violations. The City felt it was necessary to develop a matrix to evaluate each violation in the field, and to respond to them in a consistent and appropriate manner. The Matrix was designed so that anybody in the field who witnesses a violation can apply the parameters of the Matrix to decide the appropriate way to respond. This greatly enhanced the efficiency of the storm water program, as now not all violations would require multiple staff to respond or, if a fine was necessary, staff did not have to wait for approval from upper management to issue it. This would sometimes take as long as month, but

with the Matrix, this could happen instantaneously in the field.

The Matrix was modeled after the City of San Diego's Civil Penalty Matrix. The Matrix was scaled down and modified for the type of violations most often encountered in Solana Beach, but the foundations are very similar. The Matrix basically breaks down the violation into two categories, Environmental Significance and Compliance Significance. These two categories are further broken down into Moderate, Major, and Severe. According to the type of violation and the history of the violator, the penalties will be placed in the appropriate section of the Matrix. This ensures that all violations are treated consistently, and the feelings of the investigating officer do not interfere, so the enforcement actions do not vary. This, according to our Code Enforcement Department, is extremely important if a fine gets challenged in court. The Matrix is currently being used, and a fine has not been successfully challenged yet. The Matrix was developed in cooperation between the City's Environmental Specialist and Code Enforcement Officer, further showing the great working relationship between City Departments.

The Matrix is used for all violations, not just construction related offenses. It can be applied to municipal, commercial, and residential offenses. For the complete Civil Penalty Matrix, see Appendix M.

The City also utilizes special radios that are used to communicate between Staff to report storm water violations. The radios were purchased so communication can be made at all times with appropriate staff, in the case of a storm water violation. The radios also can connect with the City's Code Enforcement Department, Fire Department, and Marine Safety Department, as well as the City of Del Mar Code, Fire, and Marine Safety Departments. This allows for immediate contact with appropriate staff to respond to any situation, including storm water. Before the radios, people either had to be paged or had to be at their desks, which proved to be very inefficient. The delays would often cause staff to miss violations because they did not get the information in time. The radios have allowed for much better communication and increased enforcement, as violators are often contacted while the violation is occurring.

Site Inspections

All construction sites that have a potential to discharge pollutants are inspected by the City Inspector and Environmental Programs Manager, this includes public and private development projects. As stated in the City's JURMP, it was

anticipated that private development projects would be inspected by the City's Building Department, which is shared with the City of Encinitas. However, a partnership to handle inspections did not develop. As a result, the City Inspector and Environmental Programs Manager have been visiting all development projects in the City, unless the project is an indoor remodel. In that case, the City Inspector would only visit the property if time and resources permit, and if prohibited activity is noticed, a letter is sent to the property owner.

With the combination of the City Inspector and Environmental Programs Manager, the City is often times able to inspect construction sites more frequently than required by the Permit. Both the City Inspector and Environmental Programs Manager devote time out of their schedule to visually monitor all construction sites. Sometimes this is done in tandem, but often times it is simply a drive by of all sites. They meet at the end of the day and discuss any problems observed, if any. This has been very successful in preventing pollution from leaving construction sites, as most problems are fixed before any illegal discharges leave the property. Since there are not too many projects in the City, this type of monitoring is highly successful, as private project managers and city staff communicate very effectively.

In addition to the visual inspections discussed above, more thorough on-site inspections are conducted in accordance to the City's JURMP. These inspections are conducted by both the City Inspector and Environmental Programs Manager in conjunction with the project superintendent. These inspections are set-up beforehand to ensure that the project superintendent has time set aside to walk the site with City staff and discuss storm water compliance. As reported in the newly revised JURMP, all high priority construction sites will be inspected, at a minimum, on a bi-weekly basis during the wet season and more frequently when deemed necessary during both wet and dry seasons. All medium priority sites will be inspected at least once per month during the wet season and more frequently when deemed necessary during both wet and dry seasons. All low priority sites will be visited on an as needed basis during both the wet and dry seasons, with more inspections likely during the wet season months.

If any possible violations are noticed during either the visual inspections or on-site inspections, City staff may stop and talk with the property owner, write a letter, request Code Compliance to issue a citation, issue a "stop work notice" or a combination of these activities. The City's new adopted Civil Penalty Matrix, discussed previously, is also used for construction related violations.

In addition, City staff conducts informal visual inspections at all medium and high priority construction sites prior to a rain event to ensure all BMPs are installed correctly and working properly. A follow-up informal visual site inspection is then conducted after the rain event to monitor how effective the installed BMPs were and if any modifications need to be done. Construction sites are constantly evolving and require constant monitoring, which the City staff understands and enforces.

Enforcement of BMPs

During inspection of construction sites, City staff verifies that appropriate BMPs have been implemented and are effective (sediment is on-site, erosion control methods in place, runoff mitigated or not leaving property, etc.). In addition, City staff has the authority to immediately require new BMPs if erosion control, runoff, or other activity is taking place that contributes pollutants into the City's MS4.

During this reporting period, the City staff conducted inspections of all CIPs and mandatory inspections of private projects within the City's jurisdiction and did not need to report any non-compliant sites to the RWQCB. Any site that was determined to be out of compliance was immediately notified and the problems were resolved within the time frame specified by the City.

Educational Activities

The education activities conducted for construction sites consisted mainly of verbal conversations between the contractor/developer and City staff. Because of the relatively few projects in the City, it is possible and practical to discuss issues on-site with the contractors. Also, they are given the Construction BMP brochure and storm water issues were specifically brought up. The City believes that it is much more effective to talk with the contractor face-to-face about these concerns and, since we are a small city, it has been and continues to be very effective.

City staff previously developed an educational Construction BMP guide (Appendix N) that is available upon request to actual and prospective developers/contractors at City Hall. This BMP Guide provides some background on the storm water regulations and provides examples of proper storm water management for construction sites. This used to be the primary tool used to disseminate information/guidelines to the development/construction community. However, as discussed briefly before in this report, a new and improved tool has

been developed by the North County Storm Water Program and is now being distributed to all prospective and active construction applicants.

A new educational brochure (see Appendix O) was developed by the City during this reporting period that focuses on general construction site requirements relating to all City codes. The brochure, titled "Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices," was requested by the City Council as a general educational tool to be distributed to all contractors. This has been very well received by the development community because it addresses everything from construction hours to permitting to storm water BMPs. This is another example of the City's proactive approach to community education.

The new tool that was developed and discussed in last year's Annual Report is the Construction BMP Brochure (Appendix I). This was developed by the North County Storm Water Program to provide a consistent message and requirements to all contractors/developers in the region, regardless of where they are doing work. This brochure was meant to supplement each individual cities educational outreach to ensure that the development community was receiving a consistent message regarding proper construction practices. This brochure has been very well received by the development community and in Solana Beach has replaced the Construction BMP Guide as the primary educational tool distributed to the development community. The Construction BMP Guide is still available upon request at the Planning/Engineering counter, but the Construction Brochure is now attached to all permit plans routed through the City.

Additionally, as discussed previously, the recent addition of the *Environmental* section to the building permit checklist has afforded the City another opportunity to educate the applicant/contractor on the storm water regulations. Every project that has the potential to discharge pollutants to the MS4, regardless of size or type, is reviewed by the Environmental Programs Manager and commented on. The Environmental Programs Manager always includes a statement on the routing sheet to remind the applicant/developer, "No discharges permitted off-site during the construction process and erosion control BMPs must be utilized and maintained throughout the life of the project." This statement varies slightly depending on the project but is always included to remind the applicant/contractor of their responsibilities. It is just another reminder that they must adhere to the storm water regulations, and sometimes, it will result in a conversation between the applicant and City staff in the beginning of the project

phase that can become very beneficial in establishing a good working relationship that carries throughout the project.

Another educational tool utilized by the City to get the word out to our residents was a series of articles published in the bi-annual newsletter "Shorelines" put out by the City. The newsletter is received by everyone in the community and is very popular and eagerly anticipated. A variety of storm water topics are touched upon, including construction. These articles are intended for smaller projects such as remodeling and single home construction, but it is still very important nonetheless. These smaller projects hold a much higher priority in our City because of the lack of larger projects; so educating the individual homeowners is extremely vital. Also, the City has found that the smaller projects have the most potential violations, as most are owner/contractor situations where they are not aware of the storm water regulations. The larger projects often have erosion control specialists and employees who are required to attend storm water education classes. The newsletter comes out four times a year, and are included as Appendices and described in previous Chapters of this Report.

Special Project BMP Education

A new tool developed during this reporting period was the development of a specialized BMP notice given to a specific type of construction activity. For example, during last reporting period, a large scale effort was made to underground overhead power lines for view impact reductions around the City. These were special projects that did not go through the normal permitting process. Therefore, these plans would not have been reviewed by the normal parties, and since the City is dedicated to storm water protection, City staff developed a special "Undergrounding Utility District Construction Best Management Practices" handout (Appendix P). This was a one page handout to be included in every permit application submitted by those participating in this program. Since the process of undergrounding utilities involves moving a lot of dirt, the City felt it prudent to take this extra precaution to ensure the proper BMPs are in place.

If any special projects in the future require project specific BMPs, the City is dedicated to developing materials to distribute to the applicants.

Post Construction BMP Inventory and Inspection

Another major change that occurred during this reporting period, as a result of the new Permit, is the requirement that the City must develop an inventory of all

post construction BMPs and conduct annual inspections. The City now has the ability to ensure that all post construction BMPs are installed and maintained by the contractor and/or property owner. The *Environmental* review section on the routing sheet contains a section that can be marked for inspection required prior to installation or prior to final approval of the project. This was done to ensure post construction BMPs required on the plans are actually installed and ensures maintenance through a special agreement that is recorded through the County of San Diego. The City found in some cases that the post construction BMP(s) are sometimes buried in the ground before inspection, thereby making it impossible to inspect and ensure it was actually installed. So, there is now a spot on the routing sheet that will put the onus on the contractor to call for an inspection during the installation to ensure it is actually being done. This way it can be more efficiently documented and inspection required before the permit gets final approval. In addition, this allows the Environmental Programs Manager the ability to document in a spreadsheet the type of BMP, location and inspection frequencies as the plans are being reviewed. This will assist City staff with post construction inspection requirements way before the project even begins.

Construction and Demolition Debris Recycling Ordinance

In January 2008, the City Council adopted a Construction and Demolition Debris Recycling Ordinance (C&D Ordinance). This ordinance requires all demolition projects and construction projects over a valuation of $100,000 to submit an approved Waste Management Plan (WMP) detailing how the contractor will recycle at least 50% of the waste generated from project. The contractor will not receive final permit approval until it's proven at least 50% of the waste was recycled.

This is an extremely significant accomplishment for the City and its clean water efforts. According to the National Association of Home Builders (NAHB) Research Center, the building of a 1,700 square foot home requires:

- 9,700 board feet of lumber
- 750 copper wire
- 2,500 square feet of insulation
- 6,484 square feet of drywall
- 170 feet of copper pipe
- 55 gallons of paint
- 55 cubic yards of concrete

This is a significant amount of waste that would normally end up in the local

landfills, or worse, illegally dumped in the environment. This new ordinance requires contractors to recycle their used materials, guaranteeing that it does not pollute the environment. This is another example of the progressiveness of the community as a whole when it comes to protecting the environment.

3.10 New Activities and Improvements in FY 08/09

City staff will continue to review all plans, enforce BMP (site, source and treatment) installation, conduct inspections and keep an accurate inventory of the private and public projects and post construction BMPs. The City is committed to working with the other cities within its respective watersheds (Carlsbad and San Dieguito) to ensure compliance with all storm water regulations and continue to develop watershed educational information. Some activities for next reporting period will focus on construction projects to target sediment, which is a high priority pollutant in both watersheds.

The primary focus for FY 08/09 will be the continued development and implementation of the LID program and new SUSMP. These are major program components and the City is committed to working with the other Copermittees to develop a high quality work product that can be implemented region-wide. These two components are extremely important to maintaining and enhancing the water quality in the region as more and more land is developed. As mentioned in last year's Annual Report, a major transition has been occurring within the City and it will continue into FY 08/09. This significant event is the moving of the City's Building Department in-house. Historically, Building Department services were provided to the City by a private company, EsGil. EsGil provided building services to the cities of Solana Beach, Encinitas and Del Mar on a contractual basis. However, the Building Department was housed at the City of Encinitas, and there was relatively no relationship between City staff and EsGil staff. This has now changed as EsGil has moved staff into the Solana Beach City Hall. This has allowed for staff interaction and cooperation, which has been tremendously successful. Bringing the Building Department into Solana Beach City Hall has provided the following benefits:

- Bringing all plans, review and inspections in-house. This will allow the City more control over the plan review process and inspection process. Previously, EsGil determined the amount and extent of review and inspections, and was not willing to accommodate storm water into their processes. This left the review of plans and inspections up to existing

staff, straining already limited resources. Now, EsGII staff and City staff routine discuss plans and work collaboratively to ensure consistency, including storm water issues.

- Since the development and implementation of this new transition will take some time and adjustments, it is not anticipated that it will be fully integrated until probably the FY 08/09 reporting period. However, City staff is very excited about this new development, as more staff will be available to assist in the storm water program. Additionally, as the SUSMP is updated and LID program implemented, it will be important to have the input and guidance from a dedicated Building Department staff in house. This way, all departments will be on board during the development stages to ensure buy-in and support of the new programs.

3.11 Summary

The City has been effective at implementing a plan-check process that has resulted in the implementation of BMPs, site design modifications, structural changes and runoff mitigation activities in project proposals and/or construction activities. Both public and private construction projects are subject to the City's strict standards, which provide a consistent approach to reducing urban runoff from construction activities. The City has effectively integrated the new stricter standards of the Permit, including the SUSMP, into its plan-check review process. The City has also begun developing project specific construction BMPs for large-scale specialized construction activities such as the Undergrounding Utility Districts that are forming around the community.

The City will continue to actively analyze the construction program and make necessary improvements/modifications to ensure the protection and enhancement of the local water quality. An example was the addition of the Environmental review section of the permit routing sheet. The City felt like some smaller projects, although not specifically required to be plan reviewed and inspected by the Permit, may have the potential to be overlooked. Therefore, now *all* plans are reviewed by the Environmental Programs Manager and necessary changes can be made before plans are approved. Also, the reduced grading ordinance modification demonstrates the City's commitment to reviewing as many projects as possible and integrating storm water management requirements to projects that would have been overlooked in the past.

The City is actively working with the other regional Copermittees on the

development and implementation of the two significant new requirements, the HMP and LID. These two programs are significant additions that will require City staff to work with the other Copermittees to develop regional programs to address runoff from construction projects. These new programs will also include an educational component, which the City will develop in conjunction with the region. The City is committed to participating with the regional Copermittees to develop and implement these respective programs, even though the HMP is not expected to affect any projects within the City. The City values itself as an active Copermittee, and allocated funds to the HMP development, even though it is highly unlikely to affect any projects within the City's jurisdiction.

CHAPTER 4
Municipal Component

CHAPTER 4: MUNICIPAL COMPONENT (EXISTING DEVELOPMENT)

4.1 Introduction

In accordance with Permit Section F.3.a, this section of the report describes the City's efforts to prevent or reduce pollutants in runoff from municipal land use areas and activities.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of municipal facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement BMPs at municipal facilities, program accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Municipal facilities and areas within the City of Solana Beach include public parks, public buildings, streets, roads, and parking lots, a public works yard, and the MS4 system. During this reporting period, the City conducted a comprehensive re-evaluation of its municipal sites to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from its facilities by implementing Best Management Practices (BMPs). This was accomplished through inspections of all public facilities.

4.2 Inventory of Municipal Facilities

During this reporting period, in response to the requirements of the Permit and in an effort to improve the quality of water in the region, the City once again inventoried its municipal sites and activities. Table 4-1 presents the City's municipal facilities, by prioritization level. *There are no changes in the City's inventory of municipal sites from those submitted to the RWQCB in the City's last Annual Report.*

The City's municipal facilities include five public buildings (City Hall, one Fire Station, the Marine Safety Center and the Community Centers at La Colonia Park and Fletcher Cove), one Public Works Yard, six public parking lots, City streets and roads, the Municipal Separate Storm Sewer System (MS4) and the beach (which consists of four access locations: Del Mar Shores, Seascape Sur, Tide Beach Park, and Fletcher Cove).

Table 4-1
Existing Municipal Facilities, By Priority Level

Facility Name	Facility Address	Type of Activity	Priority
Public Works Department	1764 Highland Drive	Materials storage, fleet parking, administration	High
North Seascape Sur Surf Park	Public beach access west of Highway 101	Public beach	High
Roads, streets	Citywide	Circulation	High
MS4 System	City-wide	Storm-water conveyance system	High
Fletcher Cove Parking Lot	North end of Plaza St.	Parking	High
Distillery Parking Lot	Sierra and Lomas Santa Fe		
Solana Beach and Tennis Club	West end of Dahlia St.		
Seascape Sur Parking Lot	Seascape Sur Easement		
Del Mar Shores Parking Lot	Sierra Ave. near Del Mar Terrace		
Del Mar Beach Club East Parking Lot	Sierra Ave. east of Del Mar Beach Club Dr.		
City of Solana Beach Fire Department	500 Lomas Santa Fe	Public Building - Fire Station, fleet and fire equipment storage	Medium
City of Solana Beach City Hall	635 S. Highway 101	Public Building -Administrative	Low
Marine Safety Department, Fletcher Cove	111 S. Sierra Ave.	Public Building Administrative, marine safety equipment storage	Low
Fletcher Cove Community Center	111 S. Sierra Ave.	Public Building – Community Center	Low
La Colonia Park and Community Center	715 Valley Ave	Public Park and Building – Community Center, administrative, park	Low
Tide Beach Park	302 Solana Vista Drive	Public beach	Low
Del Mar Shores	190 Del Mar Shores	Public beach	Low

4.2.1 Inspection Frequency of Municipal Sites

The City inspects all of its municipal sites listed above on a continuous basis. Every winter, prior to the wet season, the Public Works Yard (Yard) is given a complete inspection and all Public Works employees are given a complete storm water refresher training seminar. Also, the Public Works Crew is put through a practice run of the Weather Triggered Action Plan to prepare for the upcoming wet season. At this annual inspection, the current inventory of the storm water BMPs kept on-site (gravel bags, bio-filter rolls, straw rolls, etc) is documented

and additional supplies are ordered if necessary. Visual inspections are conducted on a daily basis by the Public Works Crew. Here are the specific dates and numbers of inspections for the City's municipal areas:

Public Works Yard: Weekly facility visual inspections by City staff and training every October to prepare for wet season. Inspection and training conducted last year on June 25, 2008.

Roads and Streets: Daily visual inspections by City Staff. Every street is swept at least once per month. Main arterial streets are swept once per week and collector streets are swept every other week. These frequencies are set based on the size and frequency of use by vehicles on a daily basis.

Parking Lots: Weekly visual inspections by City Staff. Every City parking lot is swept once per month. In addition, the Fletcher Cove Park parking lot is swept monthly during the summer months due to an increase in use during the summer.

MS4 System: Weekly visual inspections by City Staff. Highest priority catch basins cleaned annually (those with accumulated debris inside). All catch basins were inspected and 17 catch basins were cleaned. Approximately three (3) cubic yards of debris was removed from the MS4 system during this reporting period

Fire Department: Daily visual inspection by City Staff. Last inspection was conducted on June 25, 2008.

City Hall: Daily visual inspection by City Staff. Last inspection was conducted on June 25, 2008.

Marine Safety: Daily visual inspection by City Staff. Last inspection was conducted on June 25, 2008.

Parks and Recreation Department (La Colonia Community Center): Daily visual inspection by City Staff. Last inspection was conducted on June 25, 2008.

Beaches: Daily visual inspection by City Staff (Marine Safety Department).

4.2.2. Follow-up Activities

The City did not have any follow-up activities as a result of municipal inspections. All facilities were implementing the necessary BMPs and all employees were

properly trained. The Public Works Yard required no corrective action as everything remained in compliance. The Wet-Weathered Action Plan was successfully implemented and the employees were trained again and had a practice run prior to the beginning of the wet season.

4.2.3 Implementation of Pesticides, Herbicides and Fertilizer BMPs

The City has implemented all the appropriate pesticide, herbicide and fertilizer BMPs that are listed in the JURMP. The City's Public Works Department only handles approximately 10% of pesticide, herbicide, and fertilizer application for the City. There is a small amount of Round-Up kept on-site at the Public Works Yard that is stored and locked indoors. All employees of the Public Works Department are registered with the County of San Diego Department of Agriculture and are inspected on an annual basis. As part of the Integrated Pest Management Program, Public Works Staff has switched from using harmful pesticide Dursdan to a more environmentally friendly insecticidal latex coating to control the roach problems in City sewer manholes.

4.2.4 Special Events Vendor BMP Requirements

The City developed a "Special Events Vendor BMP Guidelines" (Appendix C) for all events that required a Special Events Permit. The guidelines include BMPs for food vendors, event coordinators and event workers. The guidelines include BMPs such as:

- Protecting all adjacent catch basins
- Trash and recycling containers required
- Portable restroom secondary containment
- No dumping into storm drains
- Proper clean-up practices (No water)

These requirements are all included in the Special Events Permit. For larger events, such as the City sponsored Fiesta Del Sol and Beach Blanket Movie Night, the City holds many meetings prior to the event with the organizers and all issues are discussed. The organizers are required to submit their BMP plans to the City, and City staff monitors the events throughout their entirety. The City then schedules post-event Street sweeping through its street sweeping contractor.

4.3 Pollutant Source Identification

To assist the City in determining the source of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, the municipal facilities were also identified by Watershed in the City JURMP*. There are no changes to report in the municipal facility by watershed classification.*

During this reporting period, staff continued to evaluate the possible types of pollution that could be generated from each municipal facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Any additional activities that may affect water quality such as additional storage or new materials kept on-site

Results from the evaluation indicate that most City facilities are a low threat to water quality. Parking lots, streets and roads, and the Public Works Yard are the highest priority of municipal facilities as they could introduce pollutants into the conveyance system, which could impact water quality.

The City is committed to implementing BMPs that will reduce pollutants from parking lots, streets and roads and the Public Works Yard in particular. The City has installed and maintains a BioClean filter in one of the upstream catch basins that lead to the problem Seascape Sur pipe. In addition, the City installed a curb inlet screen at the same catch basin upstream from Seascape Sur to prevent debris, and possible pollutants, from entering the catch basin. Also, the Yard is visually inspected weekly and BMPs are maintained and reinforced as needed. In addition, the City utilizes results from its dry-weather-monitoring program to determine if pollutants are entering the system from its municipal facilities.

During this reporting period, the results from the City's 2007 Dry-Weather-Monitoring Program (DRMP) were completed and presented to the City in January 2008. The results indicated a concern at Seascape Sur, which has been an ongoing problem in the City (see discussion in Chapter 12, Special Investigations) where elevated levels of bacteria were detected. An investigation into the identification of the pollutant source is ongoing, and the City is looking into alternatives ways to address the situation. No municipal facilities were found to be contributing the pollutants.

The City utilized the information from the 2002-2007 dry-weather-monitoring

programs and the criteria established by the Permit (Order 2001-01) to further develop its 2008 Dry-Weather-Monitoring Program. The results of the 2008 program will not be available until after this reporting period, but if any exceedances are detected, follow-up actions will be taken immediately. The results from the 2007 program indicate that the City's municipal facilities are not a likely contributor of pollutants.

4.4 Threat to Water Quality Prioritization

The City utilized the criteria prescribed in Permit Section F.3.a. (3)(a) and (b) to prioritize the facilities based on their potential Threat To Water Quality (TTWQ) from storm water runoff. In addition, dry-weather monitoring data and previous complaint records were included in the evaluation. As noted in the City's JURMP, results from the dry-weather monitoring program indicated that there were no illegal discharges or illicit connections associated with existing municipal facilities. However, the City still classified its public parking lots, MS4 system, streets and roads and the Public Works Yard as *high priority* using the criteria of the Permit. As also noted in the JURMP, the City classified the beach at Seascape Sur as a *high priority* because results from the dry-weather monitoring program indicated elevated levels of bacteria (see Chapter 12, Special Investigations).

The Fire Department facility was the only municipal site classified as medium-priority. The City Hall building, the Community Center at La Colonia Park, Tide Beach Park, Fletcher Cove Community Center and the Marine Safety Center facility were classified as low priority primarily due to the activities conducted at those sites.

There are no changes to report in the City's prioritization of its municipal facilities. As stated in the 2003 Annual Report, the results of the 2003 Wet Weather Monitoring Program revealed very high levels of the pesticide Diazinon within the watershed. The City focused its efforts on reducing the use of Diazinon within the City and by municipal landscaping contractors through educational activities. The City is happy to report that Diazinon was not found in any of the samples analyzed by the lab for our 2004, 2005, 2006 or 2007 dry weather programs. This is consistent with the overall trend region-wide showing that diazinon levels have been steadily decreasing. The City can now focus on other pesticides or high priority pollutants in the ongoing effort to improve water quality in the region.

4.5 Pollution Prevention Methods

As described throughout the Municipal Component Section of the JURMP, the City has established pollution prevention methods that focus on municipal operations, including operation and maintenance of its MS4 system with the goal of preventing and reducing pollutants in runoff. The following is a list of some of the methods in place to accomplish this goal:

- Annual Inspection and cleaning of the City's entire MS4 system
- Routine street sweeping (schedule is on the City's web site and available upon request)
- Daily trash removal from streets and parks
- Sediment and erosion control methods (application of Visqueen, materials coverage, silt fences, etc.)
- Facility and ground maintenance conducted in a manner that would not contribute pollutants to a conveyance systems and expected to reduce pollutant runoff during storm events
- The use of bio-filter roll(s) as a PPM at municipal facilities
- The installation and maintenance of additional permanent treatment BMPs at City facilities (Two CDS units and a large Bioswale)
- Maintenance of the MS4 including routine inspections, annual cleaning and proper disposal of captured materials
- Spill response procedures (street and road spills, facility spills)
- Household Hazardous Waste Collection (Note: the City participated in a reciprocal use agreement with the Cities of Vista, Poway and Escondido for use by Solana Beach residents to recycle their household waste materials.) The City also offers a door-to-door program (more on this later in the Report).
- Installation and maintenance of catch basin inlet filter at ongoing problem area directly upstream from beach outfall.

In the City's JURMP, the above pollution prevention methods were expanded for implementation at all City municipal facilities, depending on the type of activities conducted at each facility. To assist in developing appropriate BMPs, the facilities were categorized into the following types:

- Landscape and recreational facilities
- Roads and streets maintenance
- Public buildings
- Public Works Yard

- Parking facilities
- Storm Drain Conveyance System (MS4)

Specific BMPs were then developed for each category type identified and presented in the City's JURMP. For example, BMPs for the Public Works Yard (JURMP, Section 6) include:

- Materials storage alterations
- Visual inspections
- Improved operations and maintenance
- Good housekeeping procedures
- Preventative maintenance
- Spill prevention
- Sediment and erosion control
- Employee training
- Vehicle and equipment maintenance operation alterations
- Waste disposal and recycling
- Vehicle equipment and washing
- Storage tanks
- Outside storage

During this reporting period, the City implemented pollution prevention methods (BMPs) for each facility type based on what was presented in the City's JURMP. Municipal facilities were inspected by City staff to ensure the implementation of BMPs was occurring.

4.5.1 Proactive Approach to Pollution Prevention

Because of the City's proximity to the Pacific Ocean, the City has been proactive in its approach to urban runoff and pollutant mitigation and reduction, not only during this reporting period but also prior to the implementation of the JURMP.

Annual Inspection and Cleaning of Storm Drain System

The City conducts an annual inspection of its storm drain system – citywide. Public Works Staff visit every catch basin in the City and prioritize each based on the severity of sedimentation and trash build-up. All catch basins that contain any trash or sediment build-up are cleaned using a Vactor truck. During this reporting period, the City inspected all catch basins. Seventeen (17) catch basins had debris and were cleaned, resulting in three (3) cubic yards of material from the storm drain system (which includes open channels, etc.). The material,

primarily sediment and debris, was properly disposed of as a non-hazardous material. The City had the debris tested by Enviromatrix Analytical Inc and received a five year exemption from the local landfill.

Pet Waste Bag Dispensers

The City actively installs Pet Waste Bag Dispensers and maintains the dispensers to encourage proper pet waste disposal. Several years ago, the City placed these dispensers and signs along both sides of Sierra Avenue to encourage their use to prevent pollutants from entering the MS4(Sierra Avenue is the street closest to the beach, and runs parallel to Highway 101). The City implemented this BMP in response to results from its dry weather and coastal outfall monitoring, which indicated the presence of fecal bacteria at Seascape Sur. In an effort to educate the community about pet waste, the City included a discussion about its Dog Ordinance (Municipal Code 11.12.020X), which prohibits dogs in some locations of the City and on all beaches, in its Summer 2001 City newsletter and recreation guide *Shorelines* Vol. 14. No.1). In addition, City staff met with property managers of the condominiums along Sierra Avenue and educated them on storm water regulations and solicited their help in educating their residents.

The City recently completed its much anticipated Coastal Rail Trail. This trail runs parallel to Highway 101 the length of the City, and has become a popular walking/jogging spot for not only the residents, but their pets as well. The City required the project to include additional pet waste dispensers, and have found them to be used very frequently. In addition, the City recently completed the Fletcher Cove Park project, which is located adjacent to the ocean. One of the many environmental protection measures implemented as a part of this project was the installation of pet waste dispensers. City staff maintains these new dispensers as well. This shows the City's proactive approach to protecting the integrity of the local waterways. This practice of requiring pet waste dispenser's at all new public and private projects will continue as it has been received very well by the community.

As part of the Public Works Department routine tasks, the bag dispensers are refilled daily. The amount of material that is prevented from entering the City's MS4 system as a result of this PPM is unknown and there is no acceptable method of estimating it, however, the City's Public Works Crew refilled approximately 1,116 bags per week during this reporting period. This is down from 1,298 bags per week last reporting period but up from 775 two years ago, 625 the year before that and 550 the first year this was documented. The total

amount comes out to approximately 58,000 total bags at a cost of approximately $2,320 (4 cents per bag). Those numbers are down from 67,500 bags and approximately $2,700 from last reporting period.

Solana Center for Environmental Innovation

The City is proud to be associated with the Solana Center for Environmental Innovation (formerly Solana Recyclers), hereinafter referred to as Solana Center. Due in large part to the efforts of this group, the City was the first city in San Diego County to have a comprehensive *curbside* recycling program. In addition, to help educate the community, the Solana Center routinely writes articles for the City *Shorelines*. Also, Solana Center administers the City's Used Oil Recycling Program, providing education for schools, community groups and City events on the proper disposal of used oil. For a complete listing of articles written in the *Shorelines,* please see Chapter 6, Residential Component.

Recycling Efforts

The total amount of material recycled throughout the City during this reporting period is unknown at the time of this report (numbers will be available after March 15, 2009). However, the last reporting period ending in 2007 showed the City at a 62% recycling rate, which is on the upper tier of cities in the county and well within compliance with the 50% rate required by Assembly Bill 939 (AB939). Additionally, on September 15, 2007, the City hosted its annual beach and lagoon clean-up day and 120 volunteers (up from 118 last year and 71 a year before that) collected over 485 pounds of trash and 120 pounds of recyclable materials that might have otherwise ended up in the landfill or worse, City streets and possibly the City's MS4. The rise in participants and pounds of trash and recycling can be described as successes for the City. The rise in participants and trash/recyclables shows the excitement and pride that the residents have for their City as well as demonstrating that the City's education and outreach programs are successful.

The City also implemented a new residential solid waste and recycling automated single stream commingled collection program in November, 2006. This will be described in greater detail later in this report, but it should be noted that after the first year of implementation, residential recycling increased by 21% (about 950 tons), which is pretty remarkable.

The City Council also adopted a Construction and Demolition Debris Recycling Ordinance in January 2008. This ordinance is discussed in more detail in the

Construction Component of this Report, however it's important to mention because it once again demonstrates the City's progressive commitment to protecting the environment.

Hazardous Materials Management Team

The City's Fire Department contracts with San Diego County Hazardous Materials Management Division and established an Emergency Response Program to contain hazardous materials that result from automobile accidents, spills, illegal dumping or any other activities within the City of Solana Beach. Generally, the County's Hazardous Materials Team handles recovery and disposal of the materials, although work crews from the City's Public Works Department also contain some small spills and are on call 24 hours a day, 7 days a week to respond to all spills that occur within City limits.

Storm Drain Inventory and Stenciling

The City has inventoried all of its storm drain conveyance structures (inlets and catch basins). The inventory list includes addresses, cross streets and a bit-map. This information was then utilized to implement a program that affixed a stenciled tile at each location that reads, *"No Dumping! This drains to the ocean."* The City has successfully completed application of the tiles at *each* storm drain inlet or catch basin. In addition, the City now requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the a stenciled tile. The City constantly monitors the catch basins and if a tile is broken or has been removed, another one is immediately installed.

The City also participated with the non-profit group I Love A Clean San Diego (ILACSD) to sponsor an ongoing Tile Stenciling Program in which the City provides volunteers with a GIS map of all catch basins in the City and a box of tiles so they can compass the City and replace any tiles that are damaged or missing. This was a highly successful program/partnership that the City will continue to ensure all catch basins have tiles permanently affixed to them.

Street Sweeping

The City already had a comprehensive street sweeping program prior to the Permit and the implementation of the JURMP. The residential streets are swept once each month, while major arterial streets are swept once each week. In response to the comments received from the RWQCB on the FY 02/03 annual report, the City developed a form to characterize and measure the amount of

material collected by the street sweeper (Appendix A). The driver of the street sweeper completes the form after every trip and it is verified by the appropriate Public Works employee.

As reported in the City's FY 2005/06 Annual Report, the City was having significant problems with its contracted street sweeping company. The contractor was not performing up to contract specifications, and the City was having a difficult time getting the proper reports from the drivers. A contractual battle ensued and documentation was not submitted. The City eventually relieved the street sweeping company of their duties and selected another contractor. The new contractor has been much more effective and responsive. This reporting year, the amount of debris collected by the street sweeper totals 275 cubic yards, which is an increase over last year's amount of 188 cubic yards and a slight decrease over the two years ago total of 299.1 cubic yards. The lower amount for last year's total can be attributed to the troubles we encountered with our previous street sweeping contractor that was detailed in last year's annual report. The City removed that street sweeper and currently has a company that is performing excellent service for the City.

To demonstrate the City's commitment to documenting the amount of debris collected by the street sweeper, and to ensure that all activities were conducted in compliance with the storm water regulations, the City included specific language in its new street sweeping contract. This language will be used in every subsequent street sweeping contract to ensure all contractors are adhering to all storm water regulations, which was a comment made by the RWQCB in its JURMP Annual Report Review.

As mentioned above, and now required by the new Permit, the City sets sweeping frequencies based on the type of street. The larger, more frequently used by vehicles, are swept more often. The streets are classified based on SANDAG's Vehicle Miles Traveled (VMT) parameters. The lesser traveled streets, like residential streets, are swept once per month. The next street up, arterials, are swept twice per month, and the largest, most traveled streets, called collectors, are swept weekly. A complete schedule can be found on the City's website or upon request.

Spill Prevention

The City's Public Works Department maintains on-site at the Public Works Yard, a 55-gallon drum and specially equipped vacuum to handle small hazardous materials spills. The drum and vacuum are small enough to travel with the work

crews and have been utilized to contain oil from an automobile accident, spillage of work-related materials (paint and debris), and collection of minor hazardous materials. In the event the material exceeds the amount that can be collected by the work crews, the City's Fire Department initiates its spill response plan (discussed above). Currently, City work crews do not have the resources to weigh the amount of material collected or to track and document the amount of material collected. Significant spills for which the work crews responded to are discussed in Chapter 8: Illicit Discharges Detection and Elimination.

Staff Trainings

The City implemented a citywide staff-training program. Each month the City Hall hosts an all-hands meeting, which was determined to be the appropriate location to conduct the storm water training. Employees are educated about the Permit requirements, informed regarding expectations of staff, provided General Housekeeping handouts, facility-specific designated BMPs (from the City's JURMP), and instructed on the use of the Storm Water Hotline (see below). Staff trainings regarding storm water are routinely included in the monthly all-hands meeting when deemed appropriate.

The City anticipates that the new Permit adopted January 2007 will require additional intensive departmental trainings. The City anticipates another series of staff trainings to discuss the new aspects of the Permit and how each one relates to different departments within the City. This will also serve as an opportunity to review and refresh City staff responsibilities as they pertain to elements in the newly adopted Permit.

Storm water Hotline

To assist the public in directing their calls for complaints and service, the City maintains and responds to a storm water hotline 24-hour telephone recording (858) 720-4424. When the number was first established, it was checked twice each day. However, to facilitate a quicker, more effective response time, the City now links all calls to the direct extension of the City's Environmental Programs Manager. Therefore, all calls that are made to the City regarding storm water issues will be handled immediately. This has been proven very successful, as the issues are addressed immediately. This leads to much quicker responses, which result in more efficient spill response and enforcement actions. The City informs the public about the hotline number at City Council meetings, on flyers and handouts at workshops, on business cards, on educational materials and during inspections.

Materials Storage

Although only minor quantities of hazardous materials are stored at municipal facilities (as noted in the City's JURMP), the City stores those materials indoors when feasible. Only non-hazardous materials, such as Class 2 gravel, temporary stockpiles of topsoil, etc., are stored outdoors for short periods of time. When this does occur, City Staff ensures all storm water BMPs are installed around the piles and they are covered, if necessary, to ensure nothing leaves the Public Works Yard.

Sediment and Erosion Control

The City Public Works Department augmented the City's supply of Visqueen as a method to reduce or prevent sediment and erosion control. The Visqueen is utilized at the Public Works Yard on the sand and soil that is kept on-site. In addition, the work crews utilize bio-filter rolls to catch runoff. As added insurance, the City's Operations Manager always orders extra erosion control BMPs before the wet season to store on-site for emergency situations. Most of these practices were instituted as a result of suggestions made by the RWQCB during their inspection in August 2002.

Storm Drain Inlet/Catch Basin Insert

The City is currently participating in an ongoing experimental application of a catch basin insert in one of its MS4 curb inlets. The insert is being studied to determine its effect on the elevated levels of bacteria in the inlet. Although early results from the pilot program are inconclusive regarding bacteria, the catch basin filter has been extremely effective in eliminating large quantities of trash and organic matter from the MS4 system. Public Work Crews empty the filter on a scheduled weekly basis and routinely remove about half a trash bag full of debris. Additionally, inspection of the catch basin insert has revealed occasional violations of the adjacent landscapers as a large amount of grass clippings were found in the catch basin. An investigation resulted in a Notice of Violation (NOV) to the landscaping company and a discussion with the property management company. No additional violations have been reported.

Smoking Ban on Public Beaches and Parks

During a previous reporting period (December 2003), the City of Solana Beach jumped to the forefront of pollution prevention, on a nation-wide scale. The City was the first city in the nation to ban smoking at its public beaches and parks. The ordinance (Ordinance 316, see Appendix B) bans smoking at all public

beaches and parks, and is actively enforced by the Marine Safety Department and Code Enforcement Department. The public has been very responsive to this ordinance, and the City has had many requests from other jurisdictions, as far away as Australia. The City appears to be a trend setter, as the City of Los Angeles and other Orange County cities are following suit with their own ordinances in the works. More locally, the City of Del Mar and San Diego have followed with their own ordinances and other cities such as Oceanside are investigating the possibility. This is a significant pollution prevention action the City has undertaken, as cigarette butts are routinely found as the most abundant type of debris collected in beach clean-ups. The impact on the local beaches will be extremely beneficial, and the City is proud to be the trend setter in another environmental arena (the City was the first jurisdiction in San Diego County to provide curbside recycling).

Recycling/Trash Containers

One of the priorities of the Environmental Programs Manager was to improve the recycling program throughout the City. When the Environmental Programs Manager took over, there were no public recycling receptacles located anywhere in the City. If someone wanted to recycle, they would have to do so at home, but since this is a popular tourist location, it seemed necessary to provide recycling opportunities in high traffic areas. It's well known that people will recycle if it's made convenient and efficient for them, but since there were no opportunities available, it can only be assumed that everything was being discarded into the trash, or worse, finding its way into the storm drain system. This was a high priority for the Environmental Programs Manager, but initially the money was not there to purchase any new receptacles.

However, during a previous reporting period (December 2004), the opportunity presented itself when the City received its Department of Conservation (DOC) grant monies to be used toward the City's environmental programs. In the past, this money was used to purchase public benches and tables made from recycled plastic. The Environmental Programs Manager successfully redirected this grant money into purchasing new dual trash cans that have a separate container attached for recyclable materials. The new receptacles were placed at Fletcher Cove, two bus stops and at La Colonia community center. They have been very well received by the public and are very effective in separating recyclables from trash. The City has been so impressed with the results that the next several rounds of DOC money are already earmarked for more of these receptacles and more money is being sought to purchase as many as possible to be placed

throughout the City.

The Environmental Programs Manager met with a Councilmember to come up with a recycling "master plan" to help prioritize the City's recycling needs. It was agreed upon that the best location for the new recycling containers would be along the recently completed Coastal Rail Trail (CRT). Five (5) new containers were placed out on the CRT and are highly utilized by the community. The City had to add an additional recycling dumpster at the Public Works Yard to accommodate the increase in recyclable materials from these new containers. In addition, the City included nine (9) of these containers to be installed in the new Fletcher Cove Community Park.

Plastic Bag Advertising Ban

Another progressive action the City Council took was passing an ordinance banning the use of plastic bags for advertising. The ordinance bans the use of companies from advertising using small plastic bags because often times it is unsolicited and the bags never get picked up, eventually ending up in the City's MS4. This emerging type of advertising is typically conducted by small residential and commercial support businesses such as landscapers, pool cleaners, housekeepers, and handyman type services. This is another example of the City taking a proactive approach to litter in the MS4. Plastic is the number one pollutant found in the ocean worldwide.

Ensuring Implementation

To ensure that the PPMs are implemented, City staff meets periodically with all Department Directors to review the BMPs, Permit requirements and program expectations. Department Directors are responsible for ensuring that their staff carries out the BMPs for their facilities. The City Engineer meets every Wednesday with the Operation Manager, his public works crew and the City Inspector at the Public Works Yard for safety meetings. It was decided that at these meetings, storm water issues, including BMPs, should be discussed and the Yard will be inspected to ensure compliance. The Environmental Programs Manager will also conduct random compliance inspections. During this reporting period, there were no violations observed at the City's municipal facilities and all appropriate BMPs were being properly installed and maintained.

4.6 Pollution Prevention Strategy Effectiveness

One of the issues that the City faces is developing an appropriate process to determine the effectiveness of the pollution prevention methods and strategies, (BMPs). The City is committed to developing a consistent approach that could be agreed upon by all Copermittees. It is important to collect data and analyze results in a consistent manner – county/region wide – in order to be able to share results and draw conclusions across agencies, particularly given that water is not restricted by jurisdictional boundaries.

To address this issue, the Copermittees met several times in the fall of 2002 and in 2003 to work out a more appropriate strategy. A guidance document was prepared by the Copermittees and submitted to the RWQCB on October 16, 2003, titled *"A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs".* This guideline presents a comprehensive assessment strategy that initially focuses on programmatic assessments and moves toward water quality-based assessments to determine program effectiveness. More specifically, it addresses six levels of assessment:

- Compliance with Activity-based Permit Requirements
- Changes in Knowledge/Awareness
- Behavioral Changes
- Load Reductions
- Changes in Discharge Quality
- Changes in Receiving Water Quality

The City implemented this assessment program during the last reporting period, which is described in more detail in the Effectiveness of JURMP Assessment Component of this report.

4.7 JURMP Comments from RWQCB

The City received one comment on its 2005/2006 JURMP Annual Report regarding the Municipal Section. This comment claims the City did not adequately report on Municipal Separate Storm Sewer System (MS4) maintenance activities. Although the City did not receive comments from the RWQCB on its 2006/2007 Annual Report, the table requested in the comment letter from 2005/2006 is included with 2007/2008 information, and will continue to be included in future Annual Reports.

Table 4-2
2005/2006 MS4 Maintenance Activities

Type	Frequency	Date	Total Number	Number Inspected	Comments
Inspection and Cleaning of MS4	Annual	10/17/05	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	All catch basins and unimproved storm drains inspected, 4 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15	15	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.

Table 4-3
2006/2007 MS4 Maintenance Activities

Type	Frequency	Date	Total Number	Number Inspected	Comments
Inspection and Cleaning of MS4	Annual	11/29/06	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	All catch basins and unimproved storm drains inspected, 35 catch basins cleaned, 7 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15	15	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.
Inspection and Cleaning of City MS4 after Rain Events	After Rain Events	10/18/06 1/30/07 2/20/07	15	15	No debris removed, MS4 clean

Table 4-4
2007/2008 MS4 Maintenance Activities

Type	Frequency	Date	Total Number	Number Inspected	Comments
Inspection and Cleaning of MS4	Annual	Ongoing between May-October	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	309 catch basins, 15 unimproved storm drains (brow ditches, channels, etc)	All catch basins and unimproved storm drains inspected, 17 catch basins cleaned, 3 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15	15	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.
Inspection and Cleaning of City MS4 after Rain Events	After Rain Events	2/5/2008 – 100 lbs 2/14/2008 – 30 lbs 3/4/2008 – 100 lbs 3/31/2008 – 20 lbs	15	15	250 lbs of dirt, mud and vegetation removed after rain events

The tables above represent the inspection and cleaning activities related to the City's MS4. As you can see, the City conducts the annual inspections of the entire MS4 as the Permit requires, but goes above and beyond the inspection and cleaning requirement with monthly unimproved storm drain (brow ditches,

channels, etc) inspections and "after rain event" inspections. Currently, just the dates that these activities take place are being recorded, but the City will begin recording and documenting the amount of debris removed so that a better assessment can be made on the Municipal Programs. It should be noted that these activities are above and beyond the Permit requirements, but it shows the City's dedication and pro-active approach in maintaining a functional MS4 system.

4.8 New Activities and Improvements for FY 08/09

The City anticipates continuing the activities of the Municipal Component as specified in the JURMP. However, as noted earlier and what will be a recurring theme throughout this report is the development and implementation of the new JURMP activities in relation to the new Permit Order No 2007-0001. The focus will continue the cooperation among different departments, ensuring municipal facilities are in compliance with the Permit, and collaborating with other Copermittees. The City Department Directors were required to integrate more responsibilities into positions in order to implement the Watershed Urban Runoff Management Program (WURMP) and Standard Urban Storm Water Mitigation Plan (SUSMP). Because of our team approach, this transition occurred rather seamlessly. The Planning Department and Engineering Department worked closely together in implementing the SUSMP requirements.

As mentioned previously in this Report, the new Storm Water Permit was adopted in January 2007. This contained new elements that will require additional/modified requirements/duties of different Departments within the City. Additional staff trainings will be required to ensure that all Staff activities will be in compliance with the new Permit and some job duties will have to be altered. Since the new Permit has now been adopted, the majority of the City's efforts will be spent developing programs to meet the requirements of the new Permit. A significant amount of time will be spent updating old programs such as the SUSMP, JURMP and WURMPs in anticipation of implementing this new programs beginning March 2008. These changes will have to be implemented on the fly, and will require all Departments within the City to work collaboratively to accomplish the goals within the new Permit. The City is confident that the infrastructure of the City as a whole will allow for a relatively seamless transition to the requirements of the new Permit. Some of the new programs include:

- Minimum street sweeping and priority requirements

- Post-Construction BMP tracking and inspections
- Low Impact Development (LID) development and implementation
- Hydromodification Plan (HMP) development and implementation

4.9 Summary

The City has been successful at implementing the Municipal Component of the JURMP, establishing BMPs for its municipal facilities and providing informative and meaningful staff trainings. The City made significant advancements in the manner in which its storm water program is integrated into the routine tasks of various staff and has developed an effective interdepartmental working relationship. The Environmental Programs Manager position has greatly enhanced the coordination and implementation of the Permit, as well as other environmental programs (solid waste, HHW, etc.)

Highlights of some of the accomplishments of the City's Municipal Program Component include:

- Implementation of two comprehensive WURMPs
- Creation of an effective municipal inspection process
- Implementing storm water issues and inspections of Public Works Yard at weekly safety meetings between the City Engineer and Public Works Supervisor and crew
- Annual inspection and cleaning of the City's storm drains resulting in three cubic yards of debris diverted from receiving water bodies
- Implementation of street sweeping tracking form that allows the City to evaluate the effectiveness of the street sweeping program.
- Provision of public pet waste bag dispensers (58,000 bags were utilized by the community during this year at a total cost of $2,320 (4 cents per bag)
- Addition of new trash/recycling receptacles in high traffic area of City to promote recycling and prevent trash from entering storm drain system
- Enforcement of Smoking Ban on Public Beaches and Parks Ordinance which has significantly reduced amount if pollution on local beaches and parks.
- Implementation of weekly task for Public Works Crew to conduct weekly storm water inspections at the Public Works Yard
- Implemented scheduled cleaning of Fletcher Cove Low Flow Diverter

- Maintenance of Bioswale at La Colonia Community Center
- Maintenance of City-owned CDS units
- Maintenance of filter basket at upstream catch basin of Seascape Sur outfall on a weekly basis
- Routine scheduled inspection and maintenance on unimproved channels on a monthly basis and after all rain events
- Routine scheduled inspection on Fletcher Cove Low Flow Diverter to ensure it is functioning properly on a daily basis.

CHAPTER 5

Industrial And Commercial Component

CHAPTER 5: INDUSTRIAL AND COMMERCIAL COMPONENT

5.1 Introduction

In accordance with Permit Section D.3.b, this section of the report describes the City's efforts to prevent or reduce industrial and commercial discharges of pollutants into the MS4 to the MEP. In compliance with the Permit, the City evaluated businesses within the City and categorized them as commercial or industrial, as noted in JURMP sections 7.0 (Industrial and Commercial Component).

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of industrial and commercial facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement and enforce BMPs at industrial and commercial sites, related accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

During the last reporting period (July 1 2007 to June 30, 2008), the City conducted a complete evaluation of the commercial and industrial facilities doing business within the City. Facilities were identified as industrial and commercial sites based on criterion required by the Permit, which included activities conducted on site, SIC codes and also included a site visit. The City prepared an inventory of the facilities in order to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from the facilities by implementing Best Management Practices (BMPs). The City submitted the complete inventory list in the JURMP.

As a result of the new Permit, this chapter now combines two previous Chapters in the old Permit. The old Permit separated the Industrial and Commercial Sections; however, they are now combined. To keep consistency and for ease of readability, the following sections in this chapter separate the two components, so each can be analyzed according to their respective concerns.

5.2 Industrial Facilities Section

5.2.1 Inventory of Industrial Facilities

There is currently one industrial site operating within the City (Baker Iron Works). Table 3-1 presents the City's industrial facility, including its prioritization level. *There is no change in the City's inventory of industrial sites from those submitted in last year's Annual Report. The City's other industrial site, submitted to the RWQCB in the City's original JURMP (February 21, 2002), (Blalock Cabinet Shop) is no longer in business in Solana Beach*. It relocated to the City of Vista.

Table 5-1
Existing Industrial Facilities

Facility Name	Facility Address	Narrative Description	SIC Code	Priority
Baker Iron Works	710 Valley Ave	Iron works / metal fabrication	3441	High

5.2.2 Pollutant Source Identification

To assist the City in identifying potential sources of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, City staff evaluated the possible types of pollution that could be generated from each industrial facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Watershed location

Results from the evaluation concluded that the City's only industrial facility could be a potential source of pollutants (Baker Iron Works),

The conclusion that Baker Iron Works could be a potential source of pollutant discharge was due to the fact that the facility generally uses metal materials in the fabrication of structural devices; most of their work is performed outdoors, which is exposed to storm water, and runoff from the property can potentially enter the City's conveyance system. However, the City has worked closely with Baker Iron Works to minimize the potential for pollutants to run off their property and into the City's MS4 system. Baker Iron Works has been more than willing to work with the City to ensure compliance with the Permit, and has completed numerous tasks suggested by the City. These include:

- Permanently covering all stock piles of metal materials kept outside to shield it from rain events.

- Cleaning of yard as needed but no less than weekly with a magnetic device to pick up all loose metal shavings.

- Moving all chemicals indoors to ensure that they will not run off the property and into the City's MS4 system.

- Training all staff on proper storm water BMPs and general housekeeping for all activities that may impact the City's MS4 system.

- Installation of low flow sump/infiltration structure at the northwest corner of the facility to handle all low flows from the entire facility. The low flows will enter a small drain that extends across the driveway and enters into a small infiltration well structure to prevent the water from entering the MS4. This structure has worked very well in eliminating all low flows from leaving the site. Baker Iron Works employees routinely monitor and maintain the infiltration well to ensure proper functionality.

- Permanently sealing a trench drain near office building that used to drain directly to street. Now the runoff bypasses the drain and travels down to the low flow sump/infiltration structure mentioned above.

The results of the 2007 dry weather program indicate that no related pollutants were found downstream from this industrial facility. This is consistent with the 2001, 2002, 2003, 2004, 2005 and 2006 dry-weather-monitoring program results which also indicated that no related pollutants were found downstream from this facility. The City will continue to inspect and monitor these locations in the future to further ensure that they are not contributing to downstream pollution. In addition, Baker Iron Works has agreed to forward all results from their required water quality monitoring under the Statewide General Industrial Permit to City staff, upon request, for review during rain events.

The City utilized the information from the 2007 dry-weather-monitoring program, the criteria established by the Permit, and the evaluation of the potential sources of pollutants (discussed in this chapter and Section 7 of the City's JURMP) to develop its 2008 dry weather monitoring program. Similar to last year, one site downstream and one site upstream from Baker Iron are selected for testing. The City will continue to monitor runoff downstream from that facility over the next few

years.

5.2.3 Threat to Water Quality Prioritization

In the City's JURMP, the industrial sites were classified as a high, medium or low priority, based on their potential threat to water quality from storm water runoff. The classification utilized criteria prescribed in Permit Section F.3.a. (3)(a), (b).

There are no changes to report in the City's classification of its industrial facilities from last year's Annual Report. Baker Iron Works is still classified as a high priority industrial site.

5.2.4 Pollution Prevention Methods

The City realized that since Baker Iron Works is the only high priority industrial site in the City, it would be prudent and feasible to monitor their site frequently. Although the Permit requires only annual inspections, the City dedicated more time to ensure that the site was always in compliance. This pro-active approach that occurred in the beginning of this Permit cycle has proved to be well worth the effort. By spending the extra time and effort the first couple of years of this Permit to get this facility into compliance have built a strong working relationship between the owners and the City. This facility has had no violations the last couple of years and continues to stay in compliance.

As reported in last year's Annual Report, this facility was attempting to come into coverage under the statewide General Industrial Storm Water Permit (GISW). The reason they were not already covered was because of a major fire in the office of this facility during the reporting period, and all the documents were lost. However, the City has confirmed that Baker Iron Works is *now fully compliant* with the state GISW and is currently adhering to all requirements.

Baker Iron Works employees use a large magnet to clean their entire yard as often as needed but no less than once per week. This magnet is very effective in cleaning up small steel waste products that result from daily activities. The parking lot is swept and water is never used. All chemicals are kept in a locked storage shed that has secondary containment and is kept above ground, which was a recommendation of RWQCB staff.

5.2.5 Industrial Inspections

During FY 07/08, the City changed its inspection practices. Prior to FY 07/08,

City staff conducted all industrial and commercial facility inspections. However, this year the City hired an independent contractor that specializes in storm water inspections. This change occurred due to limited staff time to conduct the inspections, as well as to provide an increased service to the residents of Solana Beach. By hiring a contractor that specializes in storm water inspections, the City, and residents, can be assured that it is getting the highest quality service. Baker Iron Works was inspected on June 13, 2008 and was found to be in compliance in all areas. City staff will also continue to visually inspect the facility at least once a month, and always before the wet season and during rain events. If the City observes a non-compliant facility, the City will inform its appropriate representative at the RWQCB.

5.2.6 New Activities and Improvements for FY 08/09

City staff will continue to work closely with the proprietors of Baker Iron Works to 1) ensure functionality and maintenance of the filtration device, 2) ensure compliance with the City's storm water regulations and 3) educate the business owners and employees about the importance of protecting the community's water resources. In addition, if any new requirements or activities are developed targeting industrial facilities on a watershed or regional basis, the City will communicate these requirements directly to Baker Iron Works and assist them in coming into compliance.

5.2.7 Summary of Industrial Section

The City has been effective at working with owners of the one industrial site to ensure compliance with Permit and City regulations. The owners have installed and properly maintained the filtration system at the northwest corner of the property to collect and infiltrate all on-site low flow runoff before it enters the MS4 system. The City has established a great working relationship with the owners/operators of the site and they have made drastic strides to maintain compliance. City Staff will continue to monitor and inspect the facility frequently to ensure compliance with the Permit. Baker Iron Works have been very responsive and immediately remedy any problems encountered during inspections. They have gone above and beyond what is required to ensure they are in compliance with the Permit.

5.3 Commercial Facility Section

5.3.1 Inventory of Commercial Facilities

During the process of revising the JURMP, submitted in March 2008, the City updated the inventory of commercial facilities. The City selected locations based on the requirements of the new Permit and JURMP, and placed higher priorities on such facilities as automotive servicing, gas stations, repair and fueling, commercial rental yards, and golf courses (high Threat To Water Quality, TTWQ). The City currently has 77 stationary facilities, of which, 67 are classified as high Threat To Water Quality (TTWQ). The City will continue to update the inventory list as new businesses apply for permits or site inspections reveal changes. In addition, any facility that has the potential to release high priority pollutants into the City MS4 will be added to the list of high priority facilities.

Table 5-2 Inventory Of High Priority Commercial Facilities

Address	Street	Business	Type	Watershed
741	Academy Drive	Academy Animal Hospital	Animal Facility	San Dieguito
435	Cedros Avenue South	KMP Plumbing Company Inc.	Commercial/ Outside Storage Area	San Dieguito
659	Lomas Santa Fe	Henry's Farmers Markets	Grocery Store	San Dieguito
124	Lomas Santa Fe	Subway	Restaurant	San Dieguito
905	Lomas Santa Fe Drive	Baskin Robbins	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Caffe la Bocca	Restaurant	San Dieguito
705	Lomas Santa Fe Drive	Caspian Petroleum DBA LSF Mobil	Gas Station	San Dieguito
124	Lomas Santa Fe Drive	Chief's Burgers and Brew	Restaurant	San Dieguito
683	Lomas Santa Fe Drive	CVS/Pharmacy #9187	Retail	San Dieguito
663	Lomas Santa Fe Drive	Dixieline Lumber Company	Retail	San Dieguito

911	Lomas Santa Fe Drive	Einstein Bros Bagels	Restaurant	San Dieguito
689 - D	Lomas Santa Fe Drive	Jamba Juice	Restaurant	San Dieguito
280	Lomas Santa Fe Drive	Kings' Garden	Restaurant	San Dieguito
917	Lomas Santa Fe Drive	Lomas Santa Fe Cleaners	Dry Cleaning	San Dieguito
1550	Lomas Santa Fe Drive	Lomas Santa Fe Country Club	Golf Course	San Dieguito
124	Lomas Santa Fe Drive	On the Spot Cleaners	Dry Cleaning	San Dieguito
661	Lomas Santa Fe Drive	One Hour Martinizing	Dry Cleaning	San Dieguito
689	Lomas Santa Fe Drive	Panda Express #1029	Restaurant	San Dieguito
945	Lomas Santa Fe Drive	Pizza Nova Solana Beach LLC	Restaurant	San Dieguito
979	Lomas Santa Fe Drive	Samurai Japanese Restaurant	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Solana Beach Fish House	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Solana Donut House	Restaurant	San Dieguito
691	Lomas Santa Fe Drive	Togo's Eatery	Restaurant	San Dieguito
931	Lomas Santa Fe Drive	Vons Companies Inc. #2327, The	Retail	San Dieguito
136	North Cedros Avenue	Bill Smith Automotive	Auto Repair	San Dieguito
146	North Cedros Avenue	CA Auto Tech, Inc. DBA Test-Only Smog	Auto Repair	San Dieguito
128	North Cedros Avenue	D & B Automotive Specialties	Auto Repair	San Dieguito
421	North Highway 101	Clark's Auto Repair and Radiator SVC	Auto Repair	San Dieguito
243	North Highway 101	Java Depot	Restaurant	San Dieguito
435	North Highway 101	Mohawk Car Wash (Parent-CCSB Inc.)	Auto Washing	Carlsbad
369	North Highway	Moreland Choppers	Auto Repair	Carlsbad

	101			
135	North Highway 101	Pizza Port- Grain to Green	Restaurant	San Dieguito
445	North Highway 101	Roberto's Mexican Food Inc.	Restaurant	Carlsbad
435	North Highway 101	Shine Auto Detailing	Auto Detailer	Carlsbad
355	North Highway 101	Solana Succulents	Nursery	Carlsbad
125	North Highway 101	Station Sushi	Restaurant	San Dieguito
271	North Highway 101	T's Cafe	Restaurant	San Dieguito
221	North Highway 101	Tidewater Tavern Inc.	Restaurant	San Dieguito
225	Plaza Street	Solana Sushi	Restaurant	San Dieguito
235	S Hwy 101	El Camino Rental	Rental Yard	San Dieguito
663	San Rodolfo Drive	Panera Bread Solana Beach #4283	Restaurant	San Dieguito
665	San Rodolfo Drive	Top of the Bagel	Restaurant	San Dieguito
106	Solana Hills Drive	Carls Jr./M and N Foods LLC	Restaurant	San Dieguito
154	Solana Hills Drive	Premiere Cleaners	Dry Cleaning	San Dieguito
143	South Cedros Avenue	Belly Up Tavern/Wild Note Café	Restaurant	San Dieguito
330	South Cedros Avenue	Cedros Gardens, Inc.	Nursery	San Dieguito
507	South Cedros Avenue	R F McKenna Construction Company	Commercial/ Outside Storage Area	San Dieguito
132	South Cedros Avenue	Zinc Café	Restaurant	San Dieguito
731	South Highway 101	Bangkok Bay	Restaurant	San Dieguito
159	South Highway 101	Beach Grass Café	Restaurant	San Dieguito
437	South Highway 101	Beachwalk Cleaners	Cleaners	San Dieguito
437	South Highway 101	California Pizza Kitchen Inc.	Restaurant	San Dieguito
201	South Highway	Del Mar Smog	Auto Repair	San Dieguito

	101			
615	South Highway 101	Dynamite Shine	Auto Detailer	San Dieguito
305	South Highway 101	Long Drug Store #593	Retail	San Dieguito
647	South Highway 101	New Paroli Italian Bistro	Restaurant	San Dieguito
315	South Highway 101	Nobu Gourmet Japanese Restaurant	Restaurant	San Dieguito
437	South Highway 101	Pacific Coast Grill	Restaurant	San Dieguito
247	South Highway 101	Rancho Solana Pet Spa	Pet Grooming	San Dieguito
437	South Highway 101	Rubios' Fresh Mexican Grill Inc. #13	Restaurant	San Dieguito
437	South Highway 101	Solana Beach Coffee Company	Restaurant	San Dieguito
731	South Highway 101	Spotless Dry Cleaners	Dry Cleaning	San Dieguito
125	South Highway 101	Waters Fine Foods to Go	Restaurant	San Dieguito
512	South Nardo Avenue	Solana Orchids	Nursery	San Dieguito
106	South Sierra Avenue	Naked Café	Restaurant	San Dieguito
168	South Solana Hills Drive	Beverage and More	Retail	San Dieguito
136	South Solana Hills Drive	Perfect Pet Salon	Pet Grooming	San Dieguito
126	South Solana Hills Drive	Round Table Pizza	Restaurant	San Dieguito
536	Stevens Ave	Solana Beach Body Works	Auto Repair	San Dieguito
524	Stevens Avenue	Anne's Café and Deli	Restaurant	San Dieguito
524	Stevens Avenue	Bongiorno's New	Restaurant	San Dieguito

		York Pizzeria		
524	Stevens Avenue	Rudy's Taco Shop ad Market	Restaurant	San Dieguito
1580	Sun Valley Road	Lomas Santa Fe Ex. Golf Course 408	Golf Course	San Dieguito
637	Valley Avenue	Daniel Morgan's Automotive	Auto Repair	San Dieguito
650	Valley Avenue	Don Chuy's Restaurant	Restaurant	San Dieguito
607	Valley Avenue	Fidel's Little Mexico Inc.	Restaurant	San Dieguito
621	Valley Avenue	Tony Jacal's Inc.	Restaurant	San Dieguito
512	Via De la Valle	Del Mar Bagel Cafe	Restaurant	San Dieguito
640	Via de la Valle	Fish Market Restaurant	Restaurant	San Dieguito
514	Via de la Valle	Pamplemousse Grille	Restaurant	San Dieguito
550	Via de la Valle	Red Tracton's Restaurant	Restaurant	San Dieguito
660	Via del la Valle	AM/PM/ Mini-Market #704	Gas Station	San Dieguito
110	West Plaza Street	Solana Beach Do It Yourself Dogwash	Pet Grooming	San Dieguito

The commercial property inventory was utilized to identify potential sources of pollution (high TTWQ), prioritize the businesses and to develop an inspection frequency program, as noted in the City's JURMP.

5.3.2 Pollutant Source Identification

Eight percent (8%) of the City's 2,211 total drainage acres (roughly 177 acres) are zoned for commercial use. Some of the areas within the City zoned for commercial use drain to environmentally sensitive water bodies and 303(d) listed waters (impaired water bodies), as noted in the City's JURMP. Some of the 303(d) listed water bodies have been identified as having *constituents of concern (COC)* or pollutants that are of particular concern to those water bodies. Table 4-2 identifies the 303(d) water bodies and COCs that are impacted by drainage from the City of Solana Beach. There is *no change* to report in the City's source identification of pollution. As reported in last year's Annual Report, based on water quality data analysis of the past few years, Diazinon has been removed from the San Elijo Lagoon COC list.

Table 5-3 303(d) Water Bodies and COCs

303(d) Water Body	Constituent(s) of Concern
San Elijo Lagoon and Ecological Reserve	Coliform, sediment, nutrients
San Dieguito Lagoon (and its tributary, Stevens Creek)	Coliform, TDS
Pacific Ocean	Coliform

Using the inventory list, businesses were classified by types of activities conducted on the property in order to identify potential sources of pollution in accordance with Permit section F.3.c.(2). The Permit specified 25 possible high-priority businesses for each Copermittee. Upon review of the City's business license inventory, the high priority business categories applicable to the City of Solana Beach include automobile servicing and repair; automobile/vehicle washing; retail or wholesale fueling; pest control services; eating and drinking establishments; mobile carpet, drape, or upholstery cleaning; cement mixing or cutting; landscaping; nurseries; and golf courses.

Potential pollutants for each of the ten (10) categories identified above include, but are not limited to the following.

- *Automobile servicing and repair facilities have the potential to generate pollutants such as heavy metals (Cu, Zn, Cr, Ni, Pb), oil, grease, engine and transmission fluids, antifreeze, brake fluids, suspended solids, phosphates, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust, sand and broken glass.*
- *Automobile/vehicle washing facilities have the potential to generate pollutants such as suspended solid(s), pH, oil, grease, phosphates, heavy metals, detergents, engine and transmission fluids, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust and sand.*
- *Retail or wholesale fueling facilities (gas stations) have the potential to generate pollutants such as detergents, oil, grease, engine fluids, suspended solids, phosphates, litter, organic debris, fluids and sediments.*
- *Pest control services have the potential to generate pollutants such as harmful chemicals, pesticides, fertilizers, herbicides, nitrogen salts, and phosphorus and in particular, the chemical "Diazinon."*
- *Eating and drinking establishments have the potential to generate pollutants that occur due to improper waste disposal of oil and grease, improper application of pesticides, litter along sidewalks and parking lots, and sediments from equipment cleaning.*
- *Mobile carpet, drape, or upholstery cleaning businesses have the potential to generate pollutants such as BOD, COD, suspended solids, organic matter, cleaning solutions, animal-related wastes, litter and organic debris along sidewalks and parking lots.*
- *Cement mixing or cutting facilities have the potential to generate pollutants such as suspended solids, oil and grease, heavy metals, hydrocarbons, solvents, and metals*
- *Landscaping and maintenance activities have the potential to generate pollutants such as sediments, oil, grease, organic matter, fertilizers, herbicides, pesticides, nitrogen salts, nitrogen and phosphorus.*
- *Nursery (greenhouse) facilities have the potential to generate pollutants such as sediments, fertilizers, herbicides, pesticides, suspended solids (roof coating), nitrogen salts, phosphorus, oil, grease and organic matter.*
- *Golf courses conduct activities that may produce pollutants associated with landscaping and maintenance activities including litter, BOD, COD, sediment, bacteria/viruses, oil/grease, heavy metals, manure, pesticides, fertilizers and detergents.*

5.3.3 2007 Dry Weather Monitoring Results

Results from the 2007 Dry Weather Monitoring Program (DWMP) were collected and analyzed by the City in September 2007 (but are already outdated at the

time of this report). The 2007 program utilized the criteria established by the Permit (and the Copermittee Monitoring subcommittee). The City reviewed the results from the 2007 Dry Weather Monitoring Program looking for the pollutants listed above, and in particular, COCs described in Table 5-3. The results indicated that the bacterial levels at Seascape Sur outfall (which drains to the Pacific Ocean) continued to exceed the action levels established in the Permit and the IC/ID investigation continued (see Chapter 12).

The City continues the non-point source investigation (See Chapter 12), and utilized the results to help design its 2008 dry-weather monitoring program. The results from the 2008 monitoring program will not be available until after this report is submitted to the RWQCB. *As a result of Addendum 2 adopted by the RWQCB in September, 2008, the dry-weather monitoring results will be submitted in December, 2008.*

5.3.4 Threat to Water Quality Prioritization

The inventory of businesses for the City included identifying those that potentially posed a high threat to water quality (TTWQ) as set forth in the Permit and JURMP. As noted above, the City also categorized its businesses by the potential to generate the pollutants described. A detailed inventory of the high priority commercial businesses was provided in the JURMP, Appendix F.

The City has identified 77 stationary commercial sites, of which 67 are high priority Threat To Water Quality (TTWQ) facilities. *There are changes to report in the prioritization of types of commercial businesses within the City, from the JURMP Annual Report submitted in January 2008.* The re-inventory process that occurred during this reporting period as a result of the update to the JURMP revealed that the number of stationary facilities dropped from 88 to 77. Table 5-4 (below) summarizes the stationary businesses in the City's inventory by the general description.

It is important to note that many commercial businesses change very frequently, especially restaurant facilities. The City will make inventory adjustments as inspections reveal changes are necessary. This is an ongoing procedure that will continue into further reporting periods.

Table 5-4 High Priority TTWQ Commercial Facilities by Type of Business

Type of Business	Number
Animal Services	4
Automobile servicing and repair	8
Automobile/vehicle washing	3
Retail/Grocery Stores	3
Eating and drinking establishments	46
Golf courses	2
Dry Cleaning	5
Iron Works	1
Nurseries	3
Retail or wholesale fueling	2
Total	**77**

5.3.5 Business Community Education Campaign

City staff has implemented an aggressive education campaign for the business community. As stated in previous annual reports, education is conducted during the annual storm water inspections. The City, along with the North County Storm Water Program (the cities of Carlsbad, Encinitas, Escondido, Oceanside, Solana Beach, San Marcos, and Vista) developed two commercial BMP posters. The first is aimed toward automobile repair shops and the second toward restaurants. These posters are distributed by City staff during inspections. The business owners are required to place the posters in a noticeable location for all employees to see. On subsequent follow-up inspections, City staff or contracted inspectors check to see if they comply.

Additional educational/training tools developed to be distributed to the local businesses are the “Green Wrench Guide” and the “What’s Cookin’ Guide” developed by the Regional Outreach Workgroup. These guides are also distributed during site inspections as an extra training tool to help these businesses come into compliance. These guides have room designated in the back for employee to sign after they read the material to show educational compliance.

The City believes that distributing these educational tools directly to the businesses during inspections will have the greatest impact. Not only will we have their undivided attention, but we can also guarantee delivery and track who

has received the informational guides. Therefore, when it comes to compliance issues, we can easily determine who has and has not been informed of the regulations. These education tools will be discussed further in the Educational Component of this Annual Report.

By the time this inspection program was fully implemented, City staff and contracted inspectors found that a majority of business owners were "aware" or had some "basic knowledge" of storm water requirements. The City, along with the other Copermittees in the Carlsbad Watershed, developed a knowledge/awareness rating and included it on all inspection forms. This will help better assess the overall knowledge of the business community in relation to not only other businesses in the city, but in the watershed as well. This will be discussed more in the Educational Component.

Because of all these efforts above, City staff believes the high level of storm water knowledge in the business community is due in large part to the education campaign aimed at business owners. Although the jurisdictional business workshops have been postponed temporarily due to lack of attendance, the City understands the importance of these activities. Therefore, if the demand increases in the business community or if modifications of the Permit regulations or City regulations occur, the City is committed to resuming the business workshops.

5.3.6 Pollution Prevention Methods

Because of the City's proximity to the Pacific Ocean, the City has been proactive in its approach to reducing urban runoff, not only during this reporting period, but prior to the implementation of this Permit as well. For example, prior to the implementation of the original JURMP, the City had several pollution prevention methods (PPMs) in place for commercial properties, which continues through to the new JURMP during this reporting period and included, but were not limited to:

- Prohibition of all non-storm water discharges to the City's storm water conveyance system (SBMC 13.10.060).
- Measures to reduce pollutants to the maximum extent practicable (MEP) were required of business owners (SBMC §13.10.090).
- Persons owning or operating a parking lot (or impervious surface) were *required* to "clean those structure thoroughly as is necessary to prevent the discharge of pollutants to the City of Solana Beach storm water

conveyance system to the maximum extent practicable, but not less than once prior to each wet season" (SBMC 13.10.090).

- The City maintained by municipal code the authority to inspect business properties for compliance with the provisions of Solana Beach Municipal Code, Chapter 13 (SBMC 13.10.110).
- Required maintenance of commercial property (trash cans covered, litter removal, etc.) and appropriate waste disposal.
- Routine articles in the citywide community newsletter, *Shorelines* to educate the community about pollution prevention (see Chapter 9).

5.3.7 New Pollution Prevention Methods

In the City's JURMP, the above pollution prevention methods were expanded for commercial facilities, depending on the type of activities conducted at each business. Numerous activity-specific BMPs were also developed for each business type identified. Complete tables describing the BMPs in detail were included and presented in the City's original JURMP, submitted to the RWQCB on February 21, 2002. ***There are changes*** *to report with respect to BMPs designated for existing commercial properties in the new JURMP submitted in March, 2008.* The changes were necessary to comply with the increased requirements of the new Permit Order No. 2007-0001 and can be found in the recently submitted JURMP.

A) Common Commercial Property BMPs

Many of the BMPs provided to commercial property owners/managers were activity-specific to the type of business conducted on-site. However, there are several BMPs common to all commercial properties, which are described below.

- *Employee Training*: The training of employees on proper business practices to prevent or reduce urban runoff is listed as a BMP for all businesses. Knowledge of pollution prevention methods requires instruction from one person to another, particularly as the requirements are new to many employees and given that employees handle the majority of tasks at a commercial business, staff has explained to proprietors the importance of adequate employee training.

- *Good housekeeping* pollution prevention BMPs are required of most commercial facilities. Good housekeeping includes the proper disposal

of waste materials and proper coverage over waste dispensers, dry sweep outdoor areas, keeping the facility in generally good repair and maintained in good operating condition to prevent deterioration of materials.

- A *Spill Response Plan* (SRP) is required of most commercial facilities as noted in the JURMP. An effective SRP should prevent on-site hazardous materials from leaving the private commercial property and entering the City's storm drain conveyance system. Commercial property proprietors are being educated about an SRP and are now required during inspections by City staff.

- *Minimize Use of Water for Washing / Cleaning:* The BMPs associated with a reduction in the use of water for washing and cleaning is suggested for most commercial facilities operating within the City. It has been common practice for many years to use power-washing methods to clean the outside of buildings, windows, and out-door eating areas at restaurants. In addition, it has been common practice by commercial property owners (and their contractors) to hose-down the sidewalks in front of their businesses to collect trash, debris, and landscaping remnants. These types of cleaning procedures use a lot of water and it is likely that the water will run off of the property and into the City streets or storm drain system, bringing with the water a significant amount of pollutants. For that reason, commercial property owners are requested to find new methods of cleaning, reduce the amount of water used, and prevent the runoff from leaving their property.

- Various other activity-specific BMPs are required or suggested to commercial property owners and are listed in the City's JURMP.

B) Other Pollution Prevention Methods Affecting Commercial Properties

Municipal Code and General Plan Amendments

There were no changes to the Municipal Code or General Plan that affect the Industrial and Commercial Section of the Permit.

Brochures

The City worked collaboratively with other North County cities (see Chapter 9, Education Component) to jointly develop brochures in order to provide a

consistent message to the community, and in particular, commercial property owners/managers. The brochures were utilized by City staff to inform and educate the community, including commercial businesses. Public works crews, Code Enforcement Officers, Planning and Engineering staff passed out brochures when an educational opportunity presented itself. Staff also visited many businesses and distributed the brochure, "*Only Rain in the Drain"* and spoke to business owners about the need for pollution prevention.

5.3.8 Ensuring Implementation through Commercial Property Inspections

During this reporting period, the City decided to slightly modify its inspection process. In the past, City staff had conducted the inspections, but this reporting period the City decided to contract out the services to a company that specializes in storm water and grease management device inspections.

The City decided to contract out the services to ensure that the inspections were being conducted thoroughly and also to further enforce the City's grease management regulations. City staff was being stretched very thin with all the new requirements, so in order to ensure that the proper time and effort was being utilized on these important inspections, the City decided to contract out the services. In addition, the City wanted to begin enforcing its grease management regulations to ensure that all required eating establishments had the proper grease management devices installed and were being properly maintained. It is well documented that the number one cause of sewer spills is grease build-up, so the City is taking a pro-active approach to ensure that grease is being properly managed at all eating establishments.

The City hired Environmental Compliance Inspection Services (ECIS) to conduct the inspections in accordance with the new JURMP. According to the JURMP, the City has 77 stationary facilities, of which 67 are identified as a high "Threat To Water Quality" (TTWQ). 50% (as required in the new Permit) of the high TTWQ is 34 sites required for inspection this first year. The City, through its contractor, inspected 35 sites, two of which were no longer in business. The results are described below.

5.3.9 Enforcement

As mentioned above, the City hired ECIS to conduct the facility inspections. However, the City is still responsible for the follow-up enforcement actions, if necessary. The inspection protocol consisted of ECIS conducting an initial

inspection and then one follow-up if the site was out of compliance for a minor violation (trash dumpster lid open, training logs incomplete, etc.). If there is a major violation, ECIS would contact the City immediately for proper follow-up actions. If the facility was still out of compliance after the second visit, then ECIS would notify the City and City staff would follow-up from there, taking increased enforcement actions including fines, if necessary. The results are as follows:

Total Inspections: 33
Facilities in compliance after first inspection: 14
Facilities in compliance after second inspection: 19

The remaining 14 facilities were still out of compliance after the second inspection and were handed over to the City for follow-up. The violations were all minor infractions consisting of missing grease trap and interceptor receipts and one situation where the property managers were not providing enough trash service and the enclosures for a shared complex were out of compliance. The City followed up with meetings with the property owners and managers, and all facilities have since come into compliance. No citations were issued as a result of the inspections.

The complete database of commercial and industrial inspections is available upon request. The City maintains the database and will build on it as the new Permit cycle continues.

5.3.10 Mobile Businesses

The new Permit requires regulation of mobile businesses within each jurisdiction, which is a new requirement. The new Permit states that each Copermittee shall develop and implement a program to reduce the discharge of pollutants from mobile businesses to the Maximum Extent Practicable (MEP). The mobile business program is being addressed on the regional level, and the City is participating in the development of the program. However, the City has always taken a proactive approach in dealing with mobile businesses, especially mobile car detailers and carpet cleaners. The City has issued several citations in the last few years to mobile businesses that do not have the necessary BMPs in place to prevent pollutants from entering the City's MS4. These violations will be described in the IC/ID Chapter of this Report (Chapter 7), which will be submitted in December, 2008.

5.3.11 New Activities and Improvements for FY 08/09

The City is confident that the new inspection process for commercial facilities, initiated during this reporting period, is a significant improvement for this program. The City anticipates continuing to budget for consultant inspection services to focus on storm water and grease management device inspections. In addition, the City will continue to update the commercial facility inventory as new business licenses and inspections reveal changes.

A major new requirement of the Permit requires the City to develop a mobile business program. As mentioned above, the new Permit requires all Copermittees to develop and implement a program to reduce discharges of pollutants from mobile businesses to the MEP. Since this affects all Copermittees, the region decided to address this on a regional scale. This has become a primary focus and the subject of its own subcommittee, of which the City is involved with. The City will continue to work with the region to develop this program and implement it during the next reporting period.

The City will also look to improve educational materials for commercial facilities, include mobile businesses. The City is committed to working with the other North County Cities (as well as the Regional Outreach Workgroup) to collectively put together educational materials with a consistent message. Additionally, the City will work with the respective Watershed Groups to alter inspection forms or processes if a consensus is met within the group. One new addition that was agreed upon by the Carlsbad Watershed Group was the inclusion of two assessment questions at the end of the inspection to gauge the knowledge and/or behaviors of the facility owner/manager. This was included to gain a better understanding of the level of knowledge of the responsible employees and see if their behavior changes over time. Hopefully, this will give the Copermittees a better assessment tool to analyze program strengths and weaknesses.

5.3.12 Summary of Commercial Section

The City has successfully updated its JURMP and respective commercial inventories. As a result, the City has identified commercial facilities that pose a high threat to water quality and developed an inspection frequency per its new JURMP. The City has also developed an effective enforcement process and notified all high-priority businesses of required BMPs. For the most part, the businesses in this community have willingly adapted their practices to meet the storm water regulations of the Permit.

The City has successfully updated its JURMP to reflect the new requirements of Permit Order No. 2007-0001. As such, the City has successfully developed a program to comply with all aspects of the new JURMP, and is committed to continually improve on the program in the coming years.

The City's proactive approach of patrolling the City daily and stopping at sites where potential violations may occur before there are discharges has greatly reduced the amount of NOVs and citations issued. The City has discovered that it is much more efficient and worthwhile to put forth the effort to stop a potential violation before it occurs rather than wait and deal with the consequences. So far, this proactive approach has been very successful, as most businesses appreciate City staff working with them, instead of the normal practice of enforcement.

CHAPTER 6
Residential Component

CHAPTER 6: RESIDENTIAL COMPONENT

6.1 Introduction

In accordance with Permit Section D.3.c, this section of the report describes the City's efforts to prevent or reduce residential discharges of pollutants into the City's MS4 to the MEP and to prevent residential discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include any proposed modifications to the City's JURMP (Section 8.0, Residential Component) including prioritization of residential areas and pollutant source identification. Results from the City's efforts to implement BMPs will also be included. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The City conducted numerous community education discussions, distributed flyers and door-hangers and published articles in the City newsletter. The City also operated a 24-hour hotline for the community to be able to report any suspected violations or contact City staff. In addition, the City conducted its Household Hazardous Waste (HHW) collection and recycling program, which includes door-to-door services.

6.2 Pollution Prevention Methods

Polluted urban runoff in residential areas stem from activities associated with the following: automobile use, maintenance, cleaning, and repair; home and garden care (pesticides, herbicides and fertilizers); disposal of trash, pet waste, and household hazardous waste; outdoor washing activities; landscaping and home maintenance. The pollutants that can be generated by these activities (bacteria, detergents, heavy metals, grease, oil, herbicides and pesticides) are important to prevent from entering the City's MS4 to the maximum extent practical.

6.3 BMP Implementation

The City continued several pollution prevention methods that reduce, prevent or mitigate the harmful pollutants in urban residential runoff. The City continued its HHW collection program, operated a 24-hour hotline for reporting violations, sponsored community events and developed flyers, brochures and newsletter

articles. In addition, the Copermittees decided to develop regional programs to address the residential requirements of the new Permit.

6.3.1 Hazardous Waste Collection and Recycling

Under the 1989 California Integrated Waste Management Act (AB939), cities are required to provide Household Hazardous Waste (HHW) collection programs to residents in order to limit the volume of HHW (paint, household cleaners, pesticides, car batteries, automobile waste) that might otherwise find their way into a landfill, or worse, illegally dumped. For San Diego County, the HHW program had been funded by a tipping fee until 1997, when the County of San Diego sold the landfill system to private companies.

During the FY 07/08, the City of Solana Beach continued its partnership and the reciprocal use agreements with the cities of Vista, Poway and Escondido to provide permanent HHW drop-off service to City residents at a cost of $55 per vehicle. To encourage participation, the entire cost is picked up by the City. During this reporting period, the permanent facilities were utilized by 157 participants, up from 118 participants last reporting period. Additionally, the City operates a door-to-door program where, for a small co-payment of $10 per visit, a service will come directly to the resident's house to pick up the Household Hazardous Waste so that residents do not have to drive to Poway, Vista or Escondido. The door-to-door home pickup program was utilized by 259 participants, slightly down from 261 participants last year, and the permanent facility was used by 157 participants, for a total of 416, up from 379 total participants last year. The City also has a program for senior citizens and homebound residents where the door-to-door service is provided free of charge, with the City paying for the service. These programs are offered to encourage the proper disposal of hazardous wastes to prevent it from entering and polluting our sensitive waterways. The program also includes the disposal of e-wastes, including TVs, computers, VCRs, etc.

The City keeps records of how many people utilized the program throughout the FY07/08. Records indicate that 416 participants utilized this program in FY07/08. In addition, a questionnaire is provided to the participants at the time of disposal to acquire useful information such as how they heard of the program and what types of wastes were disposed. Many respondents listed local programs such as the City's newsletter "*Shorelines*" and educational brochures as the source of their knowledge of this program. Other sources include the two local trash haulers (EDCO and Coast Waste), Solana Center for Environmental Innovation, searching the internet, and basic word of mouth. Obviously, this bodes well for

the educational work of City staff and is a good indication that the City's educational program is effective at getting the word out to the community about environmental concerns, water quality, and opportunities to participate as the program continues to grow. Additionally, it shows the beneficial cooperation efforts between the City and its contractors. .

The City is a member of the Regional Solid Waste Association (RSWA). As a member, the City participates in a multi-city agreement with EDCO Waste and Recycling Services, Inc. (EDCO). As reported earlier, the agreement resulted in a very successful program for elderly and homebound City residents to dispose of HHW at their door, *at no charge to the residents*.

This agreement is necessary because the City of Solana Beach does not have the capacity to operate its own HHW facility within its jurisdictional boundaries. Without this RSWA agreement, the residents would have very limited options in dealing with the proper disposal of HHW. This would ultimately lead to the improper disposal of HHW, which would threaten the local waterways and sensitive environment. However, due to the foresight of the City government, the formation and participation in groups such as RSWA lead to increased opportunities for the community to protect the local environment. It also allows the City to subsidize the costs of disposal to assist the residents in properly disposing their HHW.

Recycling

As noted in the Introduction of this report, the City is a proactive agency working to improve the environment along with its partner in this effort, Solana Center (formerly known as Solana Recyclers). The City was the first city in the county to initiate a curbside recycling program.

Assembly Bill 939 (AB 939) requires cities to divert at least 50% of their total solid waste away from landfills, and the best way to accomplish this is through recycling. The percentage of waste that the residents of Solana Beach recycled in 2006 (the latest known total as of this reporting period) is 62%, the highest in the county. This shows that the City's programs are working and the awareness of the residents is very high, as many of the cities in the region failed to reach 50%. The process of writing the 2007 AB939 report is underway, but not completed before this report was submitted. These numbers will be included in next year's report.

One significant recent modification to the City's solid waste and recycling

collection occurred in November, 2006. As stated in last year's Annual Report, the City participated in a pilot study to determine the feasibility of transitioning from manual trash and recycling collection to automated collection. Studies have shown that automated collection drastically improves recycling rates by providing more efficient "single stream commingled recycling." The large-scale transition resulted in a 21% increase in residential recycling (or approximately 950 tons), which is a huge success.

In addition, the residents received new trash and recycling containers that are more durable and have lids attached. This has drastically cut down on the amount of loose trash that frequently escaped the old resident supplied containers that were much lighter and easier to tip over, and frequently had no lids. This allowed for the animals and birds to get into the cans and spread trash around the neighborhoods, which can enter the City's MS4 system. This has been a significant load reduction BMP, as City Public Works Crews have reported less loose trash around the community.

6.3.2 Annual Bulky Item Clean-up Day and Coastal Clean-Up Day

Each October, the City hosts an Annual Bulky Item Clean-up day. The City's waste hauler provides roll-off containers for the collection of large appliances, yard waste, excess trash and scrap metal. Residents only need to bring their large bulky items and excess trash to La Colonia Community Center to drop off anything that they have, to save them a trip to the landfill, and it's *free of charge*. Additionally, Solana Beach residents can call the City's trash hauler to set up an appointment for *free curbside pick-up* and disposal of up to three bulky items up to three weeks prior to the event. It is well documented that the easier and more efficient it is for people to recycle or dispose of large items the more often they will do it. By offering this convenient, local and free of charge event, the less likely residents will dispose of their large items illegally, and keeping them out of our local waterways.

Each September, the City of Solana Beach participates in the annual Coastal Clean-Up Day sponsored by the California Coastal Commission and I Love A Clean San Diego. The City hosted two sites again this year, one at Fletcher Cove and one in the San Elijo Lagoon, where residents came and spent the morning beautifying the local community. This event was another huge success with a combined 120 volunteers collecting 485 pounds of trash, and 120 pounds of recyclables.

6.3.3 24-hour Hotline

To assist residents in obtaining information, reporting suspected storm water violations or to report illegal dumping, the City operates a 24-hour "storm water hotline" during this reporting period. The hotline (858-720-4424) is available 24 hours a day, seven days a week, 365 days a year. The hotline is linked directly to the voice mail of the City's Environmental Programs Manager to increase efficiency and ensure prompt responses. This way, calls can be immediately fielded and handled in the appropriate manner.

6.3.4 Pet Waste Bag Dispensers

The City installed and maintains Pet Waste Bag Dispensers to reduce the potential of pollution stemming from residents (and visitors) not collecting waste from their pets while walking. This was a measure added to hopefully help the high levels of fecal coliform detected at the Seascape Outfall revealed during wet and dry weather monitoring. The City has posted dispensers and signs to encourage their use. The program appears to be working very well because, during this reporting period, approximately 67,500 waste bags (up from 37,800 last year, 30,000 the year before that and 26,400 the first year this was documented) were utilized by the community.

6.3.5 Education and Outreach

The City's entire education and outreach program is provided in Chapter 8 of this report. Activities associated with the educating of residents are addressed in this section, which may also be repeated in Chapter 8.

Shorelines articles:

The *Shorelines* is the City's Newsletter and Recreation Guide for community information. The newsletter is now distributed four times a year (Spring, Summer, Fall and Winter) to each resident and business within the City (up from twice annually in the past). It is one of the best methods to get information to the public about a variety of issues.

In the *Shorelines* for Summer 2007 (Appendix D), the City published a variety of issues relating to environmental education and storm water activities. These articles included:

- "The City of Solana Beach Water Quality Program"

- "Sewer Forcemain Replacement Project"
- "City Streets Make A Clean Sweep"
- "Residential Automated Trash and Recycling Program Update"
- "San Elijo Lagoon Lecture Series"
- "City of Solana Beach Department of Parks and Recreation Summer Day Camps"
    - Oceans Week
    - Ecology and Our Environment
    - Rainforest Exploration

In the Winter 2007 issue (Appendix F), the City published a variety of issues relating to environmental education and storm water activities. These articles included:

- Environmental News and Programs
    - Water Conservation News
- Storm Water Hotline
- Solana Beach Clean and Green Committee
- Coastal Clean-Up Day
- Restoration of San Dieguito Lagoon

In the Spring 2008 issue (Appendix G), the City published the following articles relating to environmental education and storm water activities:

- Update on Solana Beach Clean and Green Committee
- Construction and Demolition Debris Recycling Ordinance

- Plastic Bag Advertising Ban
- San Dieguito River Valley Conservancy

In the Summer 2008 issue (Appendix H), the City published the following articles relating to environmental education and storm water activities:

- Environmental Sustainability Update
- "City of Solana Beach Department of Parks and Recreation Summer Day Camps"
    - Under the Sea
    - Ecology and Our Environment

Brochures and Door hangers

In 2002/2003, the City collaborated with neighboring Copermittees (the cities of Del Mar, Encinitas, Oceanside, Vista, San Marcos, Escondido and Carlsbad) to develop several educational brochures. One particular brochure is referred to as the "door-hanger." The door-hanger is an excellent tool to inform groups or individual residents about pollutants that were found in their area, but may or may not have been contributed by them specifically. The door-hanger has a place for staff to leave their business card, indicate the types of pollution found (from landscaping to pet waste) and lists various specific BMPs for eliminating street and gutter debris in their area. Staff hopes that by placing the brochures around the entire neighborhood, residents will report to the City where the discharge came from or alter their behavior to prevent the discharge from occurring again.

Also in 2002/2003, the City collaborated with the other North County cities and created a brochure "*Only Rain in the Drain*," which is distributed at local community events and to visitors at City Hall, the Fire Department and Community Center. The brochure is also available at many community businesses. The brochure reviews Best Management Practices for residents and the need to prevent or mitigate pollution to the best extent practical. The brochure also provides a consistent message because all cities in the North County use it.

Staff distributed the door hangers and brochures to residents and business owners throughout the community. These educational materials have been used by Public Works staff, Code Enforcement Officers, and others and have been found to be an informative and effective tool. This includes those given out to neighborhoods during IC/ID and source tracking investigations, those given out individually during routine rounds around the City and any community fairs (Fiesta Del Sol) or regional workshops/events (about 2 a week on average for all activities, totaling approximately 104 distributed).

School Presentations

The Solana Center conducts school presentations for the City to local schools within the City's jurisdiction. As part of both trash haulers' contracts (EDCO and Coast Waste) with the City, they are required to provide funds for public outreach and education. Both haulers have chosen to contract out this work to Solana Center. Therefore, Solana Center provides school presentations regarding storm water issues to the local schools. These presentations include discussions about the importance of preventing pollution from entering the streets, gutters and storm drains. The Enviroscape model is also used during these presentations. Details regarding the school presentations that Solana Center conducted during this reporting period can be found in Chapter 10, Public Participation.

Additionally, the City's Park and Recreation staff conducts a summer "ecology camp" for local children to educate them on various environmental issues, including stormwater and recycling. The children go on field trips and have classroom discussions. It is a very interactive classroom setting where the children are encouraged to participate and really engage in the various activities. The ecology camp is an annual program that will be utilized to educate the children in all environmental issues.

The City's Marine Safety Department also conducts school presentations that focus on ocean awareness/safety as well as being environmentally aware and responsible. The presentations focus on water quality and the benefits of protecting this valuable asset.

These are reported on in further detail in Chapter 8, Education Component.

Tile Stenciling

All storm drain catch basins in the City currently have tile markers already installed. The construction standard described in the City's JURMP, with respect

to the requirement that all curb inlets have a tile marker permanently affixed on the face side, continues to be enforced. All new development/construction projects are required to install tile markers on all new curb inlets. City staff also document broken or missing tiles when detected in the field and report back to the Environmental Specialist to install.

Web site

The City's Web site (http://www.ci.solana-beach.ca.us/) is another tool that can be utilized by residents to obtain information about the City's storm water programs. The Web site address is printed on most educational and outreach materials, printed in the City's newsletter, and linked to other storm water programs (such as thinkblue.org; ProjectCleanWater.org; and the County's Department of Environmental Health).

6.4 Threat to Water Quality Prioritization

During this reporting period, the City re-evaluated the drainage areas to identify those areas that potentially posed a high threat to water quality as set forth in the Permit section D.3.c(1). The areas are defined in Section 8.2.1 of the City's new JURMP.

*There are **no changes** to report in the City's prioritization of high-priority residential areas from those submitted to the RWQCB in the City's new JURMP (submitted March, 2008).*

6.5 Implementation of BMPs

As noted in Section 6.1 (Pollution Prevention), the City has implemented various methods to prevent pollution to the Maximum Extent Practical (MEP) standard from entering the City's MS4. The City indicated in its JURMP (Submitted March, 2008) the designation of several BMPs for the High Priority Residential Areas and Activities (see JURMP, Appendix B).

One of the most significant differences between the City and other local agencies, is that runoff from residential automobile washing *is strictly enforced* by Solana Beach Code Enforcement Officials. City staff is often dispatched to reports of people washing their cars, and City procedures allow for several warnings before a citation is given, except in the case of mobile car-washing businesses. In that instance, mobile car detailers are informed to cease their

activity and immediately clean up the resulting discharge. Mobile detailers are cited for failure to comply if they refuse to discontinue or remedy the discharge. City staff records all violators and if they encounter them violating the Permit again within the City, they are immediately given an administration citation and fine.

6.6 Construction BMPs

In addition, the City is taking a proactive approach to construction projects along the perimeter of the City. The City is in a unique geographic situation, bordered to the north and south by ecologically sensitive lagoons and to the west by the Pacific Ocean, Therefore, all construction projects along the perimeter of the City are scrutinized even more to ensure no pollutants leave the site and enter the ecologically sensitive lagoons and ocean. This will be described in more detail in the Construction Component of this Report.

6.7 Enforcement Actions

Violations of the storm water Permit and any necessary follow-up actions taken by the City are described in Chapter 7.0, Illicit Discharge Detection and Elimination (IC/ID) Component. Since violations in the residential sector oftentimes are discovered during an IC/ID investigation, it is appropriate place to discuss the actions.

6.8 New Activities and Improvement for FY 08/09

The City is actively developing and implementing the activities described in the Residential Component of the City's new JURMP. The focus will continue to be education through brochures, flyers, public announcements, community fairs and one-on-one contact. The City will look for ways to generate interest in community workshops although the results of a recent survey indicate that a very high proportion of residents are knowledgeable about storm water issues.

The new Permit adopted in January 2007 contains increased requirements for the residential sector. This is one key area that the Permit focuses on; so new programs will have to be developed by the City to address these requirements. There is also a focus on watershed and regional programs to address the residential sector, so the City anticipates working with the other Copermittees to develop these programs cooperatively to express a consistent message. The City will be working to develop these programs for implementation in FY 08/09. These programs will be discussed in more detail in the Unified Urban Runoff

Mitigation Program

6.9 Summary

The City has been successful at implementing the Residential Component of the JURMP including among other things:

- Provision of public pet waste bag dispensers (approximately 58,0e00 bags were utilized by the community during this year).
- Collaborating with neighboring jurisdictions (NCSWP) to develop several brochures, which have been distributed at local events, to City Hall visitors, and in neighborhoods.
- Collaborating with all Copermittees to develop regional educational programs as required by the new Permit Order No. 2007-0001.
- Using the City's Web site to post informative information about the City's storm water programs.
- Operating a 24-hour, 7 day a week storm water hotline that residents can report any storm water violations.
- Operating a community-wide used oil and hazardous waste collection program that offers door-to-door service for all residents.
- Implementing a new community-wide curbside single stream commingled recycling program for all residents.
- Providing opportunities for local school presentations regarding storm water issues.

CHAPTER 7

Illicit Discharge Detection and Elimination Component

CHAPTER 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

This is a placeholder for Chapter 7, which as a result of Addendum No. 2 adopted by the Regional Water Quality Control Board on September 10, 2008, extended the reporting component of this Chapter to December 15, 2008.

CHAPTER 8
Education Component

CHAPTER 8: EDUCATION COMPONENT

8.1 Introduction

In accordance with Permit Section D.5, this section of the report describes the City's educational program that is intended to us all media as appropriate to measurably increase the knowledge of the target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience and to measurably change the behavior of target communities and thereby reduce pollutant releases to the MS4 and the environment.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. In addition, this section of the report will include the City's planned educational efforts for the following fiscal year.

During this reporting period, the City continued the comprehensive Education Component of the JURMP (Section 9) that was developed and implemented during the last five reporting periods. The activities were expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City. The City developed the program based on the requirements of the Permit and continued implementation during this reporting period.

In addition, the City began developing programs for the new requirements of the new Permit. These programs are being developed on a watershed and regional level, and the City is an active participant in these workgroups. A major focus of the new Permit is on developing a regional education program, with the idea of forming a "brand" for the region where people can identify with the program as a whole. By developing and implementing a regional program, the messages will be consistent and easier to identify with.

During this reporting period, the cities of Carlsbad, Del Mar, Oceanside, Escondido, Vista, San Marcos, Encinitas and Solana Beach continued the North County Education Group that was formed to develop strategies and programs to provide consistent messages to the communities of San Diego North County. This basis for this group is to have a more effective educational program than would be if the cities offered divergent messages. The group consists of storm

water program managers, assistants and staff members who all bring individual talents, experience and interests to the program. While this watershed group will continue developing educational materials and activities, it will also work with the regional group as mentioned above. This group will ensure that the Copermittees represented will participate with the "regional" message and program as required by the Permit.

As a collaborative, the group is able to obtain lower cost for educational tools (such as brochures, flyers, handouts, small tokens [pens, keys, etc.]), which provides a financial benefit to the agencies and thus, the community.

The North County Education Group has continued meeting through this reporting period, in which the City has been an active participant (for a summary of meeting dates, jurisdictions in attendance, and topics discussed, please reference the Carlsbad WURMP Annual Report).

The group has been able to assist each other in developing a consistent message incorporating the interests and concerns of each agency. When brochures and handouts have been created, flexibility among the agencies was required.

The collective decision-making process has also generated cooperative working relationships among the agencies, which was extremely beneficial when the development of the Watershed Urban Runoff Management Program(s) began and in working together to complete various storm-water-related tasks. The community also benefits from the consistent "one message" approach rather than six or seven different rules and regulations.

8.2 Pollution Prevention through Education – Jurisdictional Activities

The City's storm water program is comprehensive. Not only are there many components to administer, there are many different programs going on simultaneously throughout the County. The City participates in jurisdictional, watershed and regional activities. Each of these has separate and distinct educational components; however the challenge is to ensure that the same message is being spread throughout the County. The watershed activities have been recently defined and are in the early stages of implementation; since this is a jurisdictional report, there will not be much discussion about those in this Annual Report (For more detailed information on WURMP related activities, please see the WURMP Annual Reports for Carlsbad and San Dieguito). The

regional activities have been primarily described in the Copermittee *Unified Urban Runoff Management Program Annual Report for Fiscal Year 2007-08,* which has been submitted by the County and incorporated herein by reference. However, some of the activities will be summarized in this section of the report (see Regional Activities).

8.2.1 Staff Training

One of the most important aspects of the City's educational program is to educate its staff members. This turns out to be a relatively easy task for this City in that there are only about 70 full time staff members. All staff members are required to attend an all-hands citywide staff meeting each month. Staff determined that the best opportunity for training would be at the monthly staff meetings.

The City's Environmental Programs Manager prepared several different training sessions. These include:

- Delivered presentations at City Council meetings regarding several different aspects of the storm water program. Council meetings are televised throughout the City and meeting minutes and action agendas posted online and available at the City Clerk Department.

- Delivered Sewer Overflow Response Plan training to the Public Works Staff to emphasize proper detection, prevention, clean-up and reporting practicing to reduce number of sewage spills that enter the City's MS4 System.

- Distributing handouts describing general BMPs.

The City believes that all current staff are adequately aware of the storm water issues, and all new staff will be trained as appropriate upon arrival. However, due to the constantly evolving storm water field, the City will continue the periodic educational trainings at future City all-hands staff meetings and department specific trainings as appropriate.

8.2.2 Annual Beach Cleanup Days

Based on the results of the baseline survey; workshops, brochures, flyers, and articles were developed to promote understanding about storm drain pollution.

The City of Solana Beach, in cooperation with I Love a Clean San Diego County, Inc. coordinates an annual "Coastal Cleanup Day". These events are volunteer beach clean ups. As noted in this report, in September 2007, the City hosted its annual clean-up day and 120 volunteers collected 485 pounds of trash 120 pounds of recyclable glass and plastic materials that might have otherwise ended up in the landfill or worse, local waterways.

8.2.3 Storm Drain Tile Marker Installation

The City inventoried all of its storm drains (inlets and catch basins) and has the locations in GIS format. The inventory list includes addresses, cross streets and a GIS bit-map. Stenciled tiles are affixed to each storm drain inlet or catch basin location, which reads, *"No Dumping! This drains to the ocean."* The City now requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the stenciled tile. An extra supply of tile markers is kept at the City's Public Works Yard for all City projects as well as for private contractors to install on their projects to provide a consistent message throughout the City.

8.2.4 Local Community Events

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting to the participants no dumping or littering and to keep our beaches clean. The City also coordinates with Solana Center with their booth promoting proper disposal of HHW and recycling (oil included) in the City. The City passes out "*Only Rain in the Drain*" brochures, community surveys, and displays the watershed poster, "We All Live in a Watershed…" Staff discusses with residents the importance of protecting the water resources and educated them on the new storm water regulations. This reporting year's Fiesta Del Sol occurred on June 7 and 8, 2008. There were approximately 60,000 visitors during this year's event, and City staff distributed storm water brochures and informational flyers to those who visited the City's booth.

The City also partnered with a local community group to put on the third annual Beach Blanket Movie Night on 9/25/2007 (Appendix R). This was the third year this community event was held and was once again a huge success. The City worked closely with the event organizers and provided recycling containers, environmental educational material pertaining to storm water issues, and used oil recycling information. The City also shared a booth with Solana Center to provide environmental education to the attendees. It is important to note that this was the only booth allowed by the organizers because they want to promote a relaxed,

friendly environment. However, because the environment is such a popular thing in Solana Beach, they allowed the City to have a booth to promote the environmental programs. The event was very well attended and a huge success, and will continue to occur annually. This is a great way to promote environmental awareness at a free event to the community.

A new item that was distributed at this year's event was doggie-bag dispensers that attach onto a leash. These dispensers had the City logo and the message, "The City of Solana Beach Reminds You To Please Pick Up After Your Pets." The City wanted to emphasize the importance of eliminating pet waste from the MS4, as it can be a major contributor of harmful bacteria. These dispensers were very well received and the City plans on distributing them at every community event.

8.2.5 School Programs

The Solana Center is a local organization that writes articles for the City Newsletter (*Shorelines*) and presents educational programs in the City schools regarding storm drain pollution using the watershed model (Enviroscape) and fun handouts and items for the kids. Solana Center is paid through the City's solid waste contract, as well as a HHW grant, to provide educational opportunities to the community. City staff is in regular contact with the Solana Center and is confident that their program(s) is educational and informative for the children. The presentations are provided free to the local schools, and the information provided is invaluable.

The following table shows what school/community education has taken place during this reporting period:

School / Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
July 16-20, 2007	Ecology and our Environment	25	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)	Solana Beach
July 30-August 3, 2007	Rainforest Exploration	25	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)	Solana Beach
June 23-27, 2008	Ecology and Our Environment	20	Grade 1-Jr High	Fletcher Cove Community Center (Field Trips Included)	Solana Beach

April 16, 2008	Storm Water Watershed Presentations	48	Grade 1-Jr High	Santa Fe Montessori School	Solana Beach
April 21, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	Solana Beach Girl Scout Troup	Solana Beach
May 5, 2008	Storm Water Watershed Presentations	17	Grade 1-Jr High	La Colonia Community Center	Solana Beach
May 12, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	Solana Beach Boys and Girls Club	Solana Beach
May 19, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	La Colonia Community Center	Solana Beach

8.2.5.1 Marine Safety Department Educational Presentations

A new educational program was developed and implemented by the City lifeguards in the Marine Safety Department during this reporting period. The lifeguards began an outreach program to the local schools to educate the students on ocean safety and awareness as well as environmental education. This was a natural fit, seeing how the lifeguards provide a safe environment for the community to enjoy the valuable coastal resource, and they want to ensure that the community becomes environmental stewards to help protect this resource. The presentations focused on water quality, trash and litter control and the ecosystem as a whole. These presentations have been very well received by the schools and the lifeguards plan to continue them into the future.

Marine Safety Department Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
February 8, 2008	Ocean Awareness/Safety and Environmental Stewardship	40	Grade 1-Jr High	Marine Safety Department	Solana Beach
February 27, 2008	Ocean Awareness/Safety and Environmental Stewardship	13	Grade 1-Jr High	Marine Safety Department	Solana Beach
March 13, 2008	Ocean Awareness/Safety and Environmental Stewardship	40	Grade 1-Jr High	Marine Safety Department	Solana Beach

March 15, 2008	Ocean Awareness/Safety and Environmental Stewardship	6	Grade 1-Jr High	Marine Safety Department	Solana Beach
March 23, 2008	Ocean Awareness/Safety and Environmental Stewardship	13	Grade 1-Jr High	Marine Safety Department	Solana Beach
May 12, 2008	Ocean Awareness/Safety and Environmental Stewardship	60	Grade 1-Jr High	Marine Safety Department	Solana Beach
May 14, 2008	Ocean Awareness/Safety and Environmental Stewardship	60	Grade 1-Jr High	Marine Safety Department	Solana Beach
May 23, 2008	Ocean Awareness/Safety and Environmental Stewardship	10	Grade 1-Jr High	Marine Safety Department	Solana Beach
June 19, 2008	Ocean Awareness/Safety and Environmental Stewardship	40	Grade 1-Jr High	Marine Safety Department	Solana Beach
June 20, 2008	Ocean Awareness/Safety and Environmental Stewardship	5	Grade 1-Jr High	Marine Safety Department	Solana Beach

8.2.6 Educational Brochures

The City has participated with the North County Educational Group to develop many effective educational materials. The handouts and brochures are included in the Carlsbad WURMP Annual Report.

- "*Only Rain in the Drain*!" describes the importance of protecting the valuable water resources and the problems that can be caused by storm water pollution. It also provides a list of BMPs to help prevent pollution. The brochure also provides valuable resource numbers: *a direct number for each jurisdiction* is provided, as well as the County's Storm water hotline. The brochure is available at City Hall, the City Fire Department and Marine Safety, each staff member was provided a brochure and brochures were personally distributed to local businesses. The City's Public Works Crew and Code Enforcement Officers deliver these every day to the community when small

violations are observed. Since these staff members are out in the community every day, this has proven to be an effective means of public education. Larger infractions are reported to the Engineering Department or Code Enforcement Department for follow-up.

- The door-hanger *"Help!"* provides a method for staff members to indicate to residents that pollutants were found near their home. The brochure is in English and Spanish, which is helpful to residents. It is typically hung on a resident's door, provides a place for business cards and under the cards, (should they become misplaced) the brochure lists a contact number for *each jurisdiction*. The back of the brochure provides BMPs for vehicle maintenance, car washing, hazardous materials handling, recycling, litter, and sidewalk/driveway debris.

- To assist the public in directing their calls for complaints and service, the City operated a 24-hour storm water hotline telephone recording (858) 720-4424. The number is connected directly to the Environmental Specialist's voice mail (so it can still remain anonymous, if necessary), so that violations can be investigated immediately and the proper action taken *while the violation is occurring*. The City informs the public about the hotline number at City Council meetings, on flyers and handouts, and on business cards and on brochures.

8.2.7 City Newsletter (Shorelines)

Chapter 2 contains all the information regarding the *Shorelines* newsletter and gives a brief description of the articles included during this reporting period. The articles are also included in Appendices D, E, F, G and H.

8.2.8 Web Site

The City continues to utilize all the benefits of recent technological breakthroughs to educate the community about the various environmental programs, including the storm water program. On the City's Web site (www.ci.solana-beach.ca.us), there is a page "Environmental Services" that is dedicated to the environmental programs in the City, including storm water management.

As mentioned in last year's Report, the complete overhaul of the City's website has been finalized. The website is much more user friendly and staff has the ability to make instantaneous changes to individual web pages as necessary. This allows City staff to update the storm water page as things develop and

documents/forms become available. This is much more efficient and effective than the previous design as requests to the IT department do not have to be made and processed, greatly reducing waiting time. Additionally, important forms can be accessed online by the public reducing the need to come to City Hall to pick up documents and forms.

In local articles in the North County Times, the City's *Shorelines* Newsletter, all brochures and handouts and on all business cards, the City's Web site is listed. Although the educational success of the Web site it not measurable at this time, staff is certain that the community has opportunity to learn about the various requirements of the Permit.

8.2.9 Business Community

The City has initiated several methods to educate the business community about storm water pollution prevention.

First, the City prepared a letter explaining BMPs, storm water regulations, and business community responsibilities. The letter has been sent to each high-priority business in the City, along with the appropriate business-type BMPs. During inspections, Staff checks to see that the BMP list and/or the BMP poster are posted in a highly visible area. If not, then Staff will reissue the list and require it to be posted at all times. Businesses are subject to enforcement if the list is not posted during re-inspection.

Second, the City conducts annual compliance inspections (see Commercial Component, Section 4.4.3, for more details). Through the inspections, the City's inspection consultant educates the business owners about the requirements of the Permit and the City's various storm water programs. Given the City's close proximity to the Pacific Ocean and sensitive lagoons on either side, inspectors are able to show a direct link between commercial activities and impact on water quality. Next, after the initial inspections are conducted by the consultant, City staff conducted follow-up enforcement inspections, to ensure that the businesses are using the proper Best Management Practices to protect the City's waterways. These follow-up inspections were often conducted through scheduled meetings with the property owner and/or manager, to ensure the decision makers were present and can be held accountable. Often times, the initial inspections were conducted without prior warning, and various staff members at the facility were held responsible. Just to ensure that the right people were informed of the infractions/violations, follow-up inspections were pre-scheduled.

During this reporting period, *all* businesses that were inspected were deemed in compliance without any citations issued. Although some businesses had minor issues (trash lids not closed, parking lot not swept, etc.), follow-up inspections revealed no major infractions to report and no fines were issued.

However, there is one property that the City will continue to monitor throughout the year based on their trash situation. The site was out of compliance on the first inspection and follow-up inspection, although not one tenant in the complex could be singled out for violation. The property management was not providing adequate trash service for the businesses in the complex, therefore trash was allowed to pile up on the ground and lids were open due to over-flow. The City and its inspection consultant met with the various tenants and the property management to work out a solution. The property management agreed to increase the number of weekly trash pick-ups, and the problem appears to be resolved. However, the City will continue to spot check the property periodically throughout the year to ensure compliance.

Finally, the staff members have visited various businesses and left brochures, including door hangers, when pollutants have been found. In addition, staff members, including Code Enforcement Officers target educational messages (letters, visits, etc.,) to businesses when pollution is found in their area. Staff has been proactive in their approach to educating the business community.

8.2.10 Additional Signage at Seascape Sur Outfall

As reported in last year's Annual Report, the City was notified by the Marine Safety Department that people have been washing their hands in the discharge from the Seascape Sur Outfall. Since this outfall has had historically high levels of bacteria, the City wanted to prevent this from happening for public health/safety reasons. The outfall already had a warning sign attached to it; however, the City Engineer ordered another warning sign be placed directly in front of the outfall sticking out of the sand. This will hopefully prevent people from doing this again, and it appears to be working so far, as there have been no more reports from the Marine Safety Department. This is the type of quick response the City is dedicated to in order to ensure the public's health and safety, and other conditions will be treated in the same manner.

8.2.11 Special Events Permit

As reported in previous Annual Reports, the City adopted a Special Events

Permit that is required for group events (Triathlons, Block Parties, Birthday Parties, etc.) of over 25 people on public property. A storm water section is included in the Permit, with requirements regarding the event and adhering to all storm water regulations. This has proven to be a great educational tool, as most applicants tend to ask questions about this. It is a great tool to educate the public about storm water regulations. For an example of the Special Events Permit Conditions of Approval see Appendix S.

8.3 Pollution Prevention through Education – Regional Activities

The regional activities of the Copermittees of Order 2007-0001 are for the most part, described in the Regional Unified Annual Report. However, for purposes of completeness, some of the activities that the City has participated in are described in this section of the report. As mentioned above, the new Permit added significant requirements for regional education, some of which is described below. The City has been in cooperation with the other Copermittees to begin developing a regional educational program. Implementation will most likely begin during Fiscal Year 2008-2009 and will be reported on in next year's Annual Report.

8.3.1 Regional Monitoring

The City participated with the Copermittees in conducting a region-wide wet-weather monitoring program. Although no mass loading stations were located within the City, one of the testing sites (San Dieguito Lagoon) is a receiving water body from the City's drainage.

The 2007/08 program is described in detail in the Regional Unified Annual Report and in the report issued by the consultant, MEC Analytical. MEC's report will be submitted with the Unified URMP, and any data collected will be reported and discussed in that report.

8.3.2 Model Programs

One of the most important regional educational components is the ability the Copermittees have developed to help educate each other. This has been accomplished through routine meetings, sharing of project assignments, and most significantly, the development of model guidelines for the new JURMPs, SUSMPs, and WURMP(s). Not only have the model guidelines produced a fairly consistent message to educate the community, the model guidelines have

established collaborative working relationships among municipal, county, and state agencies, which is remarkable.

8.3.3 Linking to Regional Resources

The City posts links on its website to the regional Web sites (Project Clean Water and Think Blue). In addition, the City posts information on reporting storm water violations to the City as well as County's Regional Storm water Hotline on various educational materials. Linking the community together provides continuity, extension of resources, and economies of scale for the community and the agencies, and contributes to a greater understanding that we are all one-part of impact on water quality. It's important to educate the community that water-quality program should not and do not stop at jurisdictional (or watershed) boundaries.

Through the www.projectcleanwater.org Web site, San Diego County has been able to link many community members to various storm-water/urban-runoff-related programs of interest. In addition, the website contains information (dates, times, agendas) on meeting's that are open to the public if interested.

8.4 Pollution Prevention through Education – Watershed Activities

In accordance with the Permit, each municipality is required to participate in the development and implementation of a Watershed Urban Runoff Management Program (WURMP) for each hydrological unit in which the City's jurisdictional boundaries lie. The northern portion (~10%) of the City resides within the Carlsbad Hydrological Unit and the rest of the City resides within the San Dieguito River Hydrological Unit. As such, the City is required to participate in the development and implementation of two WURMPs addressing the runoff concerns of each watershed.

During this reporting period, the City actively participated in the development and implementation of the Carlsbad and San Dieguito WURMPs, as well as developed two new WURMPs to comply with Permit Order No. 2007-0001. The WURMP Annual Reports will be submitted in January 2009, and detail all the activities and programs being implemented by the respective Copermittees to address watershed issues.

In short, each WURMP contains the following 1) a time schedule for developing a comprehensive map of the entire Watershed including all land uses, the storm

drain systems, and inventories of all commercial, construction, industrial, municipal and residential areas, 2) a plan to ascertain the types of pollutants that exist in the water bodies throughout the watershed and a prioritization schedule to eliminate the pollutants; 3) a program to educate the entire community about issues related to urban runoff; 4) methods to provide the community opportunities to participate in the program; 5) plans to collaborate with Copermittee agencies to strategize, review and analyze information; and 6) an effective program effectiveness strategy and methods to conduct annual evaluations. A significant addition to the responsibilities of all WURMPs is the requirement to actively implement two (2) activities each year aimed at sources to reduce high priority pollutant loading into local waterways. This will be described in greater detail in the WURMP Annual Reports (submitted in January), but mention of it here in the JURMP is appropriate.

The City has been actively involved in the implementation of both WURMPs, and has brought materials developed in each WURMP to the residents of Solana Beach. The Carlsbad WURMP workgroup has been extremely effective in implementing almost all aspects of the WURMP, and are way ahead of the schedule developed for the WURMPs. The following list is a brief description of all the notable accomplishments of the Carlsbad WURMP workgroup during this reporting period:

- Developed materials for public distribution providing a consistent message to all residents in the North County Watershed.

- Pursued funding for projects involving multi-agency participation that assist us in raising watershed and storm water pollution prevention awareness.

- Maintained inter-jurisdictional collaboration focused on creation and implementation of cost effective watershed awareness and storm water pollution prevention education projects.

- Distribution of an informational door hanger on storm water pollution prevention for residents.

- Storm water “click message” pens.

- Put Toxic Waste in its Place booklet.

- Pet Waste Bacterial Load Reduction Survey and pet waste bag dispenser distribution to target high priority pollutant – bacteria.

- Integrated Pest Management Landscaping and Gardening Workshops.

- SUSMP development workshop.

- Revised education/awareness surveys.

The San Dieguito WURMP has also been very effective in implementing the required activities established in the WURMP. The following is the four-pronged education and outreach approach developed during the reporting period:

- Incorporate core watershed principles into existing educational programs.

- Promote watershed stewardship in communities.

- Develop educational strategies to target priority pollutants within the watershed.

- Achieve milestones as determined through annual assessments.

For more information on these particular activities, please refer to the City's individual WURMPs Annual Reports.

8.3.2 Cable Access Television

Another activity that occurred during this reporting period was the development of a City operated cable access television channel that will be utilized by City staff to inform the community about upcoming events and educate the community on various topics. City staff will take this opportunity to place educational material on storm water issues/regulations to be broadcast through the television community-wide. The channel will run 24 hours a day, 7 days a week and has become a significant public outreach and educational tool. Each month, City staff submits information to be displayed on the channel and it is incorporated into the live feed.

8.5 New Activities and Improvements for FY 08/09

The City will continue to educate the community through participation in the North

County Education Group, the San Dieguito WURMP group, the Regional Education Group, and using brochures, flyers, the *Shorelines*, and community/regional events. The City will also use the results from its DWMP to inform residents in areas that the data showed elevated levels of constituents of concern or materials that degrade the quality of water. The City plans to develop additional educational brochures collectively with the region that will be industry specific. As a result of the 13267 Directive Letter discussed above as well as the new Permit, the Copermittees have changed their approach to watershed issues and plan on taking a more direct approach in implementing activities that address specific pollutants of concern and their respective sources within the watershed. Following the direction of the RWQCB, the watersheds have changed their approach to integrate more pollutant based activities in an attempt to reduce COCs in the watershed and improve water quality. This appears to be the direction the RWQCB wants to go and the Copermittee's are eager to work with the RWQCB to improve the water quality throughout the region.

The adoption of the new Permit and Memorandum of Understanding (MOU) between the Copermittees required extensive outreach to educate the City Council and community on the benefits of the storm water program. City staff conducted many presentations and workshops for the City Council and community that educated them on pollution issues. As discussed earlier in this Report, the City had to revise and add sections to the Municipal Code as a result of the new Permit. City staff took this opportunity to educate the Council and community on the storm water regulations and the benefits of implementing this program,

8.6 Summary

The City has been successful at implementing a jurisdictional program, collaborating to implement a regional program, and developing a watershed-focused educational program. The City is certain that with its strong messages, meaningful content and integrated programs, the community will become more knowledgeable about pollution prevention methods. The City eagerly anticipates working collaboratively with the RWQCB in developing and implementing the educational component of the new Permit, which will guide the next five years of the program.

The City generally relies on educational material developed by the watershed and regional groups, as it has been agreed upon that a consistent message should be implemented whenever possible. However, much like the differences

in the watersheds throughout San Diego County, there are slight differences in how individual cities implement and enforce the Permit. Therefore, it will always be necessary to develop some jurisdictionally specific educational materials for the benefit of the community. The types of jurisdictional educational information/activities are described throughout this Report, but a few examples include:

- BMP specific guidelines for unique construction projects, such as the Underground Utility Program (undergrounding power poles)
- The "Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices"
- Construction and Demolition (C&D) Debris Recycling Guide
- Classroom Presentations
- Summer Camp Presentations
- Marine Safety Presentations

CHAPTER 9

Public Participation Component

CHAPTER 9: PUBLIC PARTICIPATION COMPONENT

9.1 Introduction

In accordance with Permit Section D.6, this section of the report describes the City's efforts to develop mechanisms for public participation in the implementation of the JURMP and obtain the committed participation from the community. Public participation comes in two forms; participation in implementing the program and the necessary public feedback for improving the program.

In each Annual Report to the RWQCB, this section will include modifications to the City's plans to provide opportunities in which the public can participate. In addition, this section of the Annual Report will describe the City's efforts during the reporting period. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Prior to the implementation of the original JURMP (February 2002), the City did not have a specific "public participation program." However, many members of the community have taken an active role in environmental issues over the years, which is most likely due to the City's proximity to the Environmentally Sensitive Areas (ESA) such as the ocean and lagoons. As a result, the City was the first city in San Diego County to have curbside recycling. The City has also been proactive in its approach to urban runoff and pollutant mitigation and reduction, by implementing a strict Municipal Code regarding Storm Water Management (adopted in 1993) and Grading and Excavation regulations to prevent erosion during construction.

As a result of Order 2001-01 (Permit), the City was required to design a specific program to ensure that the public had ample opportunities to learn about controlling urban runoff and assist the City in "spreading-the-word." The new Permit Order No. 2007-0001 further emphasizes the necessity of a strong public participation program.

The Public Participation Component is closely related to the Educational Component. However, while the educational program describes activities the City engaged to educate the public, public participation will describe activities the Public engaged in (or were provided an opportunity to do so).

During this reporting period, the City continued the comprehensive Public Participation Component for the JURMP (Section 10) developed during the previous reporting periods and began developing new programs to comply with the new Permit Order No. 2007-0001. The programs included activities that complemented the educational program with a goal of providing opportunities to ensure that residents, business owners, and those who do business (such as contractors) within the City, have an opportunity to learn about the negative impacts of urban runoff, understand the City's regulations relating to protecting the environment, and participate in the development of storm water program involving the community. The City developed the program based on the requirements of the Permit(s) and continued implementation during this reporting period.

9.1.1 Chapter Content

It is important that the reader understand that much of the public participation program is integrated into other program components and as such, much of the information within this chapter has been presented elsewhere in this report. However, to provide consistency in reporting, to ensure Permit compliance, and to present stand-alone chapters in this report, this section will include all opportunities for public participation, even if those same events were described in other chapters. However, for purposes of reducing redundancy, some events may be summarized in this chapter with a reference to other chapters for details.

9.2 Community Events

9.2.1 Fiesta Del Sol

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting no dumping or littering and keeping our beaches clean. The event was held on June 7 and 8, 2008 (see Appendix E). The City also passes out "*Only Rain in the Drain*" brochures and talks with residents about the importance of protecting the water resources. Solana Center also hosts a booth through the City of Solana Beach and promotes environmental stewardship, including used oil recycling and HHW information. Approximately 60,000 people attended the event this year and City staff handed out storm water educational brochures and doggie-bag dispensers to those that visited the City booth.

9.2.2 Beach Clean Up Opportunities

During this reporting period, Coastkeepers and the nonprofit group I Love A Clean San Diego (ILACSD) hosted the 23nd Annual California Coastal Cleanup Day in September 2007. The City hosts two locations, one at Fletcher Cove to clean the beach, and another at San Elijo Lagoon to clean up the lagoon.

9.2.3 Adopt-A-Beach Program

The City works collaboratively with I Love A Clean San Diego in the Adopt-A-Beach Program. The Program consisted of local businesses sponsoring a beach and agreeing to clean up the beach at least 3 times a year (1 time for schools). The City thought this was a great idea and extremely beneficial to the community, so approved our beaches being included in the program. Four (4) beaches (Tide Beach Park, Fletcher Cove, Del Mar Shores and Seascape Sur are all "adopted" and are cleaned at least three times a year. The signs are updated each year with new "adoptees" and City staff installs the new placards on the signs. This has been a very positive experience, as the City's beaches are each cleaned three times a year, resulting in at least 12 beach cleanups per year, in addition to the annual Beach Clean-Up Day.

9.2.4 Beach Blanket Movie Night

As mentioned in the previous Chapter, the City co-sponsors, with a local community group, a free community event called the Beach Blanket Movie Night. This event consists of placing a large movie screen at Fletcher Cove and showing environmentally themed movies for the community to enjoy. City staff took this opportunity to distribute storm water educational materials, promote recycling efforts and distribute doggie-bag dispensers to members of the community. Additionally, Solana Center attends and has educational material for the community as well. This was a very well attended and received event and will continue in the years to come. The City's "environmental booth" is the only booth allowed at this event, as the organizers recognize the importance of educating the community on environmental awareness. This is a great opportunity for the City to promote its programs as it has the community's undivided attention.

9.2.5 San Elijo Lagoon Day

San Elijo Lagoon Day (Appendix U) is an event sponsored by the City, the San Elijo Lagoon Conservancy and the County of San Diego Department of Parks and Recreation and it's a full day of educational activities where residents can

learn about the ecological reserve and how to protect the local environment. There are two main locations, one at the North Rios Trailhead and the other at the Santa Carina trailhead, both in Solana Beach. The City provided educational materials to distribute at the event and spread the word through our resources. It was a very well attended event that is scheduled to be held on an annual basis. This year's event was held on May 10, 2008.

9.2.6 Paws in the Park

"Paws in the Park" is an annual event put on by the City at the La Colonia Community Center Park. This community event is very well attended and the City took the opportunity to staff a booth and showcase the City's environmental programs. At this year's event, held in February 2008, City staff took advantage of the dog event to promote the importance of picking up after your pet and distributed customized "Dogs on Board" doggie-bag dispensers. These items were a huge success because it targeted the pet community, those most likely to have the potential to release bacteria into the environment. The dispensers had the City logo on it and the slogan, "The City of Solana Beach Reminds You To **Please Pick Up After Your Pet**." This is an annual event and the City will continue its environmental education campaign every year.

9.3 City Council Meetings and Workshops

The Solana Beach City Council meetings are televised, which provides an excellent opportunity for the public to participate in local government. In addition, the City's Agenda is published *online* (available on its Web site), which provides the public an opportunity to readily access the upcoming Council reports.

Another highly successful educational opportunity is the implementation of scrolling messages during televised City Council Meetings. Staff has taken advantage of this new tool to place storm water messages and notifications for upcoming presentations, events, etc. This has proved very valuable and will continue to be utilized by City staff.

The last tool available to City staff is the new cable access channel that scrolls information 24 hours a day, 7 days a week. The City has a dedicated channel on local cable that staff can place information on for the community. The environmental information is often requested by the community and therefore has a dedicated spot. Staff takes full advantage of this technology to educate the community on environmental programs, upcoming events, and general

education.

9.4 Copermittee Meetings

Most Copermittee meetings are open to the public to provide them an opportunity to participate in the process of developing the regional and local programs. Most Copermittee meetings are announced on the Project Clean Water Web site (projectcleanwater.org) and the City's Web site also links to the regional sites.

9.5 Collaborative Community Partnerships

The City has developed collaborative partnerships with various local organizations, which provide the public an opportunity to participate in improving water quality and/or the City's storm water program(s).

The City works closely with the Solana Center, which provides instruction to local school children on the harmful effects of pollution, the positive impacts of pollution prevention and the need to keep pollution out of the City's storm drains. Solana Center is contracted by the City's waste haulers through their exclusive Franchise Agreements. Solana Center also provides the following services for the City:

Referral Phone Calls:

Solana Center staff provided recycling telephone referral services for residents on the Cities of Carlsbad, Del Mar and Solana Beach. Solana Center staff spent time educating the community about CRV updates, composting information, and how they easily incorporate recycling activities into their daily lifestyle. Community phone inquiries included:

- The locations of local recycling centers and hours of operation.
- Redemption values of materials.
- Basic information of what materials can be or cannot be recycled in curbside recycling programs.
- General recycling information for commercial businesses.
- Services on commercial recycling carts.

- RotLine – Answering community questions regarding composting and vermicomposting.

Less Toxic Yard and Garden Workshops:

Solana Center staff conducts presentations throughout the community on alternative gardening tips that reduce the use of pesticides and herbicides. These workshops also promote the benefits of composting, further reducing the amount of trash generated and shipped to landfills as well as reducing the need for harmful chemicals/fertilizers.

Community / Recycling Events

Event Dates	Name of Event(s)	Attendance at Event(s)	Description and Summary of Event(s)
June 6 and 7, 2007	Fiesta Del Sol	60,000	Annual event for the City of Solana Beach. Recycling services were coordinated in conjunction with Coast Waste Management and EDCO Disposal Inc. Solana Center also provided education on used oil recycling as well as watershed presentations,
August 25, 2007	Beach Blanket Movie Night	1,000	Annual event put on by a partnership between the City and local community group to provide a free night of environmentally themed movies. Educational materials were distributed at event.

School / Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
July 16-20, 2007	Ecology and our Environment	25	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)
July 30-August 3, 2007	Rainforest Exploration	25	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)
June 23-27, 2008	Ecology and Our Environment	20	Grade 1-Jr High	Fletcher Cove Community Center (Field Trips Included)
April 16, 2008	Storm Water Watershed Presentations	48	Grade 1-Jr High	Santa Fe Montessori School
April 21, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	Solana Beach Girl Scout Troup
May 5, 2008	Storm Water Watershed Presentations	17	Grade 1-Jr High	La Colonia Community Center

May 12, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	Solana Beach Boys and Girls Club
May 19, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	La Colonia Community Center

Community Workshops

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
February 4, 2008	Irrigation Principles & Adjustments and Repair	35	Business/ Residential	Fletcher Cove Community Center
February 11, 2008	Irrigation System Troubleshooting	35	Business/ Residential	Fletcher Cove Community Center
February 18, 2008	Controller Programming	35	Business/ Residential	Fletcher Cove Community Center
February 25, 2008	Irrigation Scheduling	35	Business/ Residential	Fletcher Cove Community Center
March 24, 2008	Plant Identification	35	Business/ Residential	Fletcher Cove Community Center
October 18, 2007	Basic Landscape Design	35	Business/ Residential	Rancho Santa Fe
October 25, 2007	California Friendly Plants	35	Business/ Residential	Rancho Santa Fe
November 1, 2007	Efficiency Irrigation Systems	35	Business/ Residential	Rancho Santa Fe
November 8, 2007	Soils, Fertilizers and Watering	35	Business/ Residential	Rancho Santa Fe
March 8, 2008	Mini Residential Class	35	Business/ Residential	Rancho Santa Fe

The above workshops are conducted by the City's private water company Santa Fe Irrigation District (SFID) in conjunction with the City. The City provides the space to conduct the workshops and promotes the workshops at City Hall and with the landscaping contractors known throughout the community. All classes are taught in English and Spanish, and the classes taught in Rancho Santa Fe are promoted to Solana Beach residents/businesses as well. The City requires the municipal landscaping contract company to attend the workshops for educational purposes. This shows another great collaborative success between the City and its private water company. There is a great relationship between the two entities which extends beyond these workshops. The City and SFID work together to combat residential over-watering and ensure daily tasks and repair work are conducted in compliance with the Permit. In addition, pre-construction meetings for CIP projects include SFID and storm water issues are discussed. The City and SFID are committed to working together and maintaining this great working relationship since most of the work conducted by SFID (trenching, pipe laying, water testing) are all done within the City limits.

Articles for the City of Solana Beach's newsletter:

Solana Center writes regular articles for the City of Solana Beach on a wide range of topics, including E-waste, recycling, composting and buying recycled. The topic is coordinated between the City's Environmental Programs Manager and the Executive Director of the Solana Center. The articles are included in the Appendices and described in more detail in other sections of this Report.

9.5.1 Solana Beach Clean and Green Community Committee

During this reporting period, the City brought together active and willing community volunteers to form the Solana Beach Clean and Green Committee (Committee). This committee was formed to discuss environmental issues and develop programs to bring to City Council for implementation. City staff meets monthly with the group to discuss the City's environmental programs and to brainstorm activities that would benefit the community as a whole. The group has evolved from a few interested residents to a steady group of about 20 members from the residential and business sector of the community. The group has assisted in the development of the Construction and Demolition Debris Recycling Ordinance, the Plastic Bag Advertising Ban Ordinance, the Plastic Bag Recycling program and the development of the new "Green Flash" website. The group is currently working on the following items:

- Green Building Program

- Over-Irrigation Reduction Program
- Solar Panel Installation Incentive Program
- Development of a Climate Action Plan

The committee is also heavily involved in the water quality activities of the City and the NPDES program. The committee attends all community events and disseminates educational materials. This group has been extremely valuable and provides a direct link to the community, both residential and commercial. It allows all community members the opportunity to participate in City government.

9.6 Other Opportunities

9.6.1 City Storm water Hotline

The City operates a storm water hotline, (858-720-4424) which is dependent on public participation to report suspected violations of IC/IDs and to inquire about workshop information or other storm water-related needs. The hotline provides 24/7/365 access to the public so that they can report potential violations and/or call for information as soon as they are thinking about it, rather than having to wait for normal business hours. The hotline is sent directly to the Environmental Program Manager's voice mail (it can still be anonymous) to ensure quicker and more efficient response to the public inquiries, as well as providing an outlet for the public to discuss issues directly with City staff.

9.6.2 Web Site

In this day of high-technology, the City uses its Web site (www.ci.solana-beach.ca.us) to provide opportunities for the public to get involved, learn about the various storm water programs, or send email messages to the Environmental Programs Manager (stormwater@cosb.org). The City also provides links to www.projectcleanwater.org, the City of San Diego's Think Blue Campaign, the San Diego Regional Water Quality Control Board, the San Elijo Lagoon Conservancy and others.

During the writing of this Report (post-reporting period), the City has begun developing a more comprehensive environmental webpage on the City's site. The new page is tentatively titled "Green Flash" and will encompass all the City's environmental sustainability programs. Water quality and the City's NPDES programs will be prominent and expanded as a result of this new web page. This will be fully implemented during FY 2008/2009 and reported on in next year's

Annual Report, but it's worth mentioning here. It shows the City's proactive approach to engaging the public and keeping them educated on the new environmental programs throughout the City as well as providing links to relevant web pages.

9.6.3 Local Media

As described in detail in Chapter 8 (please refer to that chapter for more information), the City utilized the local media to inform and educate the public. Although this is not a public-participation activity, the information provided in the articles describes the ways in which the public can get involved, if they so choose. The City has a great working relationship with the local newspapers (Solana Beach Sun and Coast News) and has many articles published with environmental themes, including storm water related issues.

The City also published several articles in the *Shorelines* Newsletter (also described in Chapter 9) inviting the public to get involved, providing details on how they can participate in protecting the region's water resources.

9.7 New Activities and Improvements for FY 08/98

The City will continue to implement the elements of the public participation component as described in the City's new JURMP. The focus will be on expanding the collaborative partnerships to include more frequent opportunities for public involvement (clean up days, sampling days, etc.). Staff will continue to look for more opportunities to work with neighboring cities to host pollution prevention community events through its watershed programs (Large HHW event). Additionally, the City is working with the other Copermittee's in possibly putting together more large scale community educational events.

With the adoption of the new Permit, there is an added emphasis on developing a Regional Educational Program. This will be a main focus for the Copermittees during FY 08/09, and will be expected to implement a comprehensive regional program that will provide a consistent message to the entire region. As most of the new programs are geared towards improved watershed programs, this is one key area that was identified as a Regional program. Copermittees have already begun developing activities through the Regional workgroup, such as the mobile business education campaign. These programs will continue to be developed and implemented throughout the five year cycle of the new Permit.

9.8 Summary

The City has been successful at implementing numerous methods to encourage public participation. The City makes every effort to encourage the public to participate in improving water quality, recognizing that it's up to all of us.

Key opportunities for public participation included the following:

- Regional Copermittee Outreach Events
- Fiesta Del Sol
- Coastal Clean Up Day
- Regional Workshops
- City Council Meetings
- Copermittee meetings
- Collaborative community partnerships (SFID)
- Contacts through the City's Storm water hotline, City Web site
- Beach Blanket Movie Night
- San Diego County Fair
- San Elijo Lagoon Day
- Paws In The Park Community Event
- Formation of the Clean and Green Community Committee

CHAPTER 10
Fiscal Analysis Component

CHAPTER 10: FISCAL ANALYSIS

10.1 Introduction

In accordance with Permit Section J.1(k), this section of the report describes the resources that the City utilizes to finance the various storm water programs. Effective programs require adequate funding to implement planned activities. The fiscal analysis will evaluate the expenditures necessary to accomplish the activities of the Program.

In each Annual Report to the RWQCB, this section will report on any changes in the revenue sources that finance the City's storm water programs, a *general* description of the expenditures during the reporting period, the budget adopted for the following reporting period and any changes known at the time of the writing of the report (to keep the document as current as possible).

10.2 Revenue Sources

The City finances its Storm Water Management Department via revenues from an NPDES solid waste fee. The City recently went through a long, arduous process to establish a long-term funding source to ensure the program would be sufficiently financed. This is an area that the Copermittees have struggled with and the City is very proud of the fact that it has secured a voter approved fee to ensure the long term future of the program. The City believes it is the only Proposition 218 voter approved fee in the State, and that further shows the commitment level of the community to preserve and protect the local environment. The City was sued by the Howard Jarvis Taxpayer's Association (HJTA) and the fee was put to a vote of the community. The community responded and supported the fee, so now the City has a long-term funding source to maintain and enhance the NPDES program. The following is a brief history and timeline of significant events that led to the vote and approval of the City's NPDES Solid Waste Fee:

- June 15, 2004- Council Authorization of Consultant to Develop NPDES Fee Report
- May 3, 2005- City-Wide Mail Out Announcing Community Workshop and Background for the NPDES Solid Waste Fee
- May 11, 2005- Introduction of NPDES Solid Waste Fee-City Council Meeting
- May 11, 2005- Scroll Information About Community Workshop on Television Broadcast During City Council Meeting

- May 19, 2005- Community Workshop
- June 15, 2005- First Reading of NPDES Solid Waste Fee Ordinance- City Council Meeting
- June 22, 2005- Second Reading (Adoption) of Ordinance- City Council Meeting
- September 1, 2005- Included Insert in both WM and EDCO Bills That Explained Extra NPDES Solid Waste Fee
- December 12, 2006- Staff Report to request Public Hearing to present updated NPDES Fee Study and rate structure – City Council Meeting
- January 2007- Proposition 218 notifications for Public Hearing sent out City-wide to all property owners – City-wide mail-out
- February 28, 2007- Public Hearing to consider adoption of updated NPDES Fee Study Report (protest hearing) and introduce Ordinance 362 implementing new rate structure– City Council Meeting
- July 11, 2007- Staff Report to set Public Hearing on September 26, 2007 to announce results of Mail-In Ballot Election

For more information on the City's NPDES Solid Waste Fee, please see the City's website at www.ci.solana-beach.ca.us.

10.3 FY 2007/2008 Expenditures

The storm water budget for the FY 07/08 Environmental Services Department and other departments that support the storm water program are shown on Table 12-1. In addition to the budget below, the City also incurs significant costs associated with tasks that supplement pollution control such as routine street cleaning (trash pickup) performed by the public works department, cleaning of the parks and community centers, and beach clean ups.

Table 12-1 FY 07/08 Storm Water Budget

Expenditure	Amount
Salaries[1]	$153,000
Cleaning of Storm Drain System	$ 15,000
Permit Fees (County of S.D., RWQCB. SWRCB)	$ 40,500
Public Education, Investigations	$ 6,000
HHW Program	$ 25,000
Lab Testing	$ 16,000

[1] *Salaries for City personnel that handle storm water responsibilities were divided between various departments, depending on the amount of staff time allocated to that department. Salaries include anticipated overtime and benefits.*

Professional Services (Consultants)	$ 20,000
Maintenance of Steven's Creek Channel	$ 15,000
Training(Travel, Conferences, Meetings)	$ 1,800
Small Tools	$ 2,000
Misc. Items	$ 20,200
Seascape Storm Drain Cleaning	$ 15,000
WURMP Shared Costs	$ 12,000
Total	**$ 341,500**

10.4 FY 2008/2009 Proposed Budget

Table 12-2 presents the City's Proposed Budget for the FY 08/09 Environmental Services Department.

Table 12-2 FY 08/09 Storm Water Management Proposed Budget

Line Item	Budgeted
Salaries	$ 170,200
Storm Drain Cleaning	$ 15,000
Permit Fees Paid to County & RWQCB	$ 34,000
Lab Testing	$ 10,000
Investigations, brochures, public education	$ 6,000
Steven's Creek Cleaning	$ 10,700
HHW Program	$ 25,000
Watershed URMP Shared Costs	$ 12,000
State Water Control Board Fees	$ 7,000
Training (Travel, Conferences, Meetings)	$ 1,850
Misc. Items (Including small tools)	$ 20,350
Seascape Storm Drain Cleaning	$ 10,000
TMDL Investigation	$ 10,000
Commercial/Indust Facility Inspections	$ 15,000
Construction Inspections	$ 10,000
JPA Sediment Drying Pad	$ 6,000
Total	**$ 374,250**

New Additions to Budget

There are a few significant additions to the budget for FY 08/09 as a result of new programs and requirements of the Permit. As can be seen in the table above, the following items have been added to the Environmental Services Budget:

TMDL Investigation	$ 10,000
Commercial/Indust Facility Inspections	$ 15,000
Construction Inspections	$ 10,000
JPA Sediment Drying Pad	$ 6,000

The Total Maximum Daily Load (TMDL) Investigation is budgeted for the ongoing investigation in the San Elijo Lagoon. The City is listed as a responsible party and is actively implementing the program with the other responsible parties.

The Commercial/Industrial and Construction Inspections were added to this budget as a result of the increased requirements in the new Permit. Under the old Permit, City staff conducted the necessary inspections; however, since the responsibilities have increased under the new Permit, the City wanted to ensure the highest possible service to the community and decided to contract out the services. This will free up limited staff time to concentrate on other aspects of the Permit while at the same time getting expert consultants to provide high quality service and inspections. The City sees this as a win-win situation, and plans to continue this process throughout the life of the new Permit.

In addition, the City worked with the San Elijo Joint Powers Authority (SEJPA), who is responsible for sewer service for the City of Solana Beach and parts of Encinitas, to work out an agreement where storm drain material collected in the City's MS4 can be treated and disposed of at the Waste Water Treatment Plant (WWTP). Prior to this agreement, the City would have to dry out the material collected, test it and then wait to receive permission to dispose of in a specially lined portion of the landfill since storm drain material is considered non-hazardous special waste. In order to streamline the process and potentially turn the material into useful fertilizer, the City developed an agreement with the SEJPA to dispose and treat the material at the WWTP. This is another win for the City because the process is streamlined and material can be reused and not disposed of in the local landfills.

10.5 Summary

The City is committed to allocating enough resources to effectively implement the components of the Permit. During the NPDES Solid Waste Fee Study analysis, a complete assessment of the program was conducted to determine how much money is being spent performing the duties of the Permit. This was the basis for the NPDES Fee, and the City is committed to reassessing the Program on a continuous basis to ensure the NPDES Fee is collecting enough money to offset the costs of the Program. The City must take special care to ensure the NPDES Fee is not collecting more than the costs to run the Program, so this reassessment is necessary for this reason as well.

The City will periodically assess the costs of the Program and make necessary adjustments to the NPDES Fee to ensure the City is recovering the costs of implementation. This will ensure a long term funding source which is paramount to a successful program. The City anticipates a significant increase in costs to develop and implement the new programs adopted with the new Permit, and will reassess the NPDES Fee in future years to reflect the increases in the Program. The City has already responded to the new requirements of the Permit by allocating additional money into the FY 08/09 budget, and anticipates adding additional money as more programs are developed and implemented, especially on a watershed and regional level.

CHAPTER 11
Effectiveness Assessment Component

CHAPTER 11: EFFECTIVENESS ASSESSMENT COMPONENT

11.1 Introduction

In accordance with Section J.3.(l) of the Permit, each Copermittee is required to develop a long-term strategy for assessing the effectiveness of the various components of its Jurisdictional and Watershed Urban Runoff Management Programs (URMPs). The City will perform an annual effectiveness assessment to specifically assess:

1. Each significant jurisdictional activity/BMP or type of jurisdictional activity/BMP implemented;
2. Implementation of each major component of the JURMP (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination and Education); and
3. Implementation of the JURMP as a whole

During this reporting period, the City has continued implementation of all components of the Permit. This section will assess the effectiveness of the JURMP, and discuss all strengths and weaknesses of the City's program. Since the City's JURMP was submitted more than half way through this reporting period (March 2008), it will be very difficult to assess the new programs required of the new Permit. Most of the new programs are still in development, therefore this section will report on the programs implemented under the old Permit Order No. 2001-01 and any programs that have been developed in the short time frame of Permit Order No 2007-0001.

11.2 "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs"

During FY 03/04, the Copermittees developed an assessment document titled, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs." This document was prepared after discussions with the RWQCB in which the Board stated that the Copermittees needed a better method to assess the effectiveness of the JURMP. This document was approved by the Board and will be used to assess all future programs, or until another method is agreed upon. The document addresses six levels of assessment:

1. Compliance with Activity-Based Permit Requirements

2. Changes in Knowledge/Awareness
3. Behavioral Changes
4. Load Reductions
5. Changes in Discharge Quality
6. Changes in Receiving Water Quality

The levels of assessment have been combined into three rather than six categories for this reporting period because it is easier to assess the programs when they are combined into these three categories. Level 1 includes modified assessment tables from the JURMP. Level 2 and 3 are combined and discuss the program strengths (accomplishments and outcomes) for each component. Level 4, Load Reductions, is still being assessed as to the proper way to address this (possibly TMDLs) and so is only briefly discussed, and Level 5 and 6 are combined to attempt presenting a water quality assessment.

The strategy uses both quantitative and qualitative measures of program effectiveness.

In addition, during the development of the WURMPs, the cities worked tirelessly to develop a meaningful method to assess *that* program for its impact on water quality – not just whether or not the program components were implemented, but more importantly, the ability to find a way to measure the link between activities and improved water quality, if it exists.

The WURMP program effectiveness strategy incorporated all of the elements of a meaningful method to assess impact, incorporated public comments, collaborative writing, thinking and designing, and in the end, is a good start at learning how to meaningfully determine the value of the storm water program activities. The City anticipates that over time, the results of a well-thought-out meaningful assessment will provide the region important information from which program activities can be designed and modified, rather than implementing program activities and hoping the activities have the expected impact. The individual WURMP program assessments can be found in the upcoming WURMP Annual Report submittals (January 2009).

11.3 Level 1: Compliance with Activity-Based Permit Requirements

A table that summarizes the activities tracked by City staff, which demonstrates compliance with the requirements of the Permit, can be found in Appendix Z, Additionally, narratives explaining the City's efforts regarding compliance can be found in the individual components of this Annual Report.

11.4 Levels 2&3: Changes in Knowledge/Awareness and Behavioral Changes

This section is broken up into each component of the JURMP and presents a summary of the changes in knowledge/awareness and behavioral changes. Each section discusses the accomplishments for the component and discusses future improvements.

The assessment forms (worksheets) developed by the Copermittees were created to establish a consistent method of tracking program actions and accomplishments between agencies. The City's JURMP included the expectation that the forms would be utilized and as a result, the City will report the information as requested in the following sub-sections. However, some of the information is best reported in a narrative format, while some is best presented in tabular. All relevant information will be reported. For complete discussion of each program component, please refer to its corresponding Chapter of this Report.

Municipal Component

Program Strengths: During this reporting period, City staff again inspected *all the City's catch basins* and cleaned every one that appeared to have trash or sediment accumulated in the basins. Public Works staff removed approximately 3 cubic yards of material from its storm drains. The City also manages an active Beach Cleaning Schedule and maintains several different permanent BMPs throughout the City (the most significant structural BMPs being the bioswale located at La Colonia Community Center, the Low-Flow Diverter and CDS Unit at Fletcher Cove and the CDS Unit at the north end of North Cedros).

For a discussion regarding the qualitative accomplishments of the City's Municipal Component (major accomplishments, educational and outreach activities, new activities or improvements to be implemented next year) see Chapter 2 of this report.

Table 11-1 Municipal Inspections

Activity	Quantity	Units	Comments
Number of high priority municipal facilities (*buildings*)	1	n/a	Inspected high priority facility (PW Yard) weekly at Engineering Safety Meeting held at Public Works Yard. Annual inspection conducted on 6/25/08 and facility also inspected prior to rainy season. See Chapter 2 of this Report, and Section Two of the City's JURMP.
Number of high priority municipal facilities (*parking lots*)	6	n/a	Visually Inspected weekly by PW staff. Cleaned monthly by street sweeper. See Chapter 2 of this Report, Section Two of the City's JURMP.
Number of high priority municipal facilities (*other*)	3	n/a	One park (inspected 6/25/08), all city streets and roads (daily), and the MS4 (annually).
Number of high priority municipal facilities targeted for inspection (buildings and parking lots)	10	n/a	See above.
Number of high priority municipal facilities inspected	10	n/a	The Public Works Yard and all parking lots.
Number of medium and low priority municipal facilities inspected	5	n/a	Fire Department, Marine Safety Center, Fletcher Cove Community Center, City Hall and La Colonia Community Center inspected annually. All inspections occurred on 6/25/08.
Quantity of material removed from MS4 and beach	3	Cubic Yards	This is the amount of material the City collected from its annual cleaning of the MS4 and the beach. All catch basins were inspected, 17 were cleaned
Quantity of debris removed that had potential to enter MS4 (i.e. street sweeping, litter removal)	275	Cubic yards	This information provided by daily reports from street sweeping contractor.

The City's Public Works Crew is immensely knowledgeable when it comes to storm water issues. Since the crew is only five people, it is very easy to educate them on an ongoing basis. They are all very aware and conscientious of the storm water regulations and are eager to report any violations in the field to the appropriate staff. The Public Works Crew is a vital part of the Storm Water Team,

because they are always out in the field, and they have become the eyes and ears of the program. They have weekly meetings with the City Engineer, City Inspector and Environmental Programs Manager at the Public Works Yard where they discuss, among other things, the storm water regulations and they visually inspect the Yard.

The amount of cooperation between the various City departments has proven to be very successful, with each department willing to implement the storm water regulations into their program.

As reported in last year's Annual Report, one of the improvement areas for this component would be to conduct more department specific educational presentations. This will continue to be a high priority activity and an area to improve upon. This has proven to be very successful and is highly encouraged by the Department Directors. It is anticipated with the development and implementation of the new Permit that more education of City staff will be required. This will most likely occur with more department specific presentations to detail any changes or additions to department specific activities required in the Permit. Most new programs included in the new Permit will not be required to be implemented until after this reporting period to allow for proper development, the department specific trainings will most likely occur in FY 08/09. The Environmental Programs Manager will analyze the new requirements and develop appropriate presentations to City staff, and will report on these in next year's Annual Report.

Additionally, as a result of the RWQCBs response letter to FY 03/04 Annual Report, the City now calculates and tracks the total amount of material collected by their street sweeping activities. The City contracts out the street sweeping to a private company, but after some discussions with both the RWQCB staff and the contractor, a solution was worked out. The amount of loads is now documented weekly by the street sweeper, and is verified by the City's Public Works Crew. This information is reported in this Annual Report and will be documented in the years to follow to see if a trend can be verified to assess the effectiveness of the program. Additionally, as reported in last year's Annual Report, City staff ensured that the new street sweeping contract contained language that mandates that this be done on a continuous basis. So far, the activity has been very successful as data that is quantifiable is now collected and will be useful in load reduction calculations in the future (as enough data is collected).

Improvement Areas: City staff is confident that all aspects of the Municipal

Component are being adequately addressed, although they realize that things could always be improved. Some improvement areas may be additional educational sessions with City staff, to reinforce the importance of the Permit and how it affects their everyday activities (especially with the adoption of the new Permit). Increased inspections on Municipal facilities may be conducted to ensure compliance at all times. And lastly, a more detailed look at the "problem" catch basins, if any, which may require cleaning every year. If any of these catch basins exist, then a more aggressive litter/trash campaign may be conducted to nearby residences or businesses in hopes of a load reduction in the catch basin. Additionally, the Environmental Programs Manager will commit to ensuring all new employees are educated as soon as they start employment. This will help them in adjusting their daily activities immediately to comply with the requirements of the Permit.

Industrial Component

Program Strengths: Since the City has only one industrial site (down from two originally reported in JURMP), it had been decided that a strong pro-active approach to compliance would be adopted. The one site (Baker Iron Works) has been incorporated into the routine inspection schedule of the commercial sites dictated in the Permit, thereby allowing the City to ensure that the site is up to code on all storm water issues. This is an increased activity over the requirements of the Permit as inspection of this industrial site is only required bi-annually (it meets all the requirements of the Permit for bi-annual inspection). Since the one site was elevated to a high priority site, the City has taken an active approach in ensuring that the site will be in compliance at all times.

The City has developed a strong working relationship with the owners of Baker Iron Works. City staff have visited the site multiple times and worked cooperatively with them to come into compliance. The owners have responded well to the City's educational efforts and compliance requests. The City has successfully worked with Baker Iron Works to help them come into compliance by instituting several BMPs throughout the property. Although there are no indications from any of the Dry Weather Programs throughout the years that this site has contributed to pollutants to the City's MS4, the mere fact that there is a possibility of this occurring in the future prompted the City to request that a few BMPs be installed onsite. A couple of very successful accomplishments occurred that are worth noting.

1. The first accomplishment was the sealing up of a small storm drain

located on the property that drained directly away from the property and into street.

2. The second BMP installed was the daily dry sweeping of the property to ensure that no sediment/gravel got into the street by automobile traffic.

3. The third BMP integrated into their normal routine was the use of a magnet on the grounds outside where some work is conducted using steel. The magnet is used to sweep the entire yard and collect miscellaneous scrap metals that may have collected on the ground. This activity is conducted on an as needed basis, but no less than once per week.

4. The fourth, and most important, BMP was the installation of the storm drain sump/infiltration pit at the northwest corner of the property that was designed to catch all low flow dry-weather runoff from the property and filter it before it left the property. These BMPs have been successfully implemented by the owners and are currently in place and functioning.

An improvement area listed in previous annual reports involves ensuring that Baker Iron Works is complying with all requirements of the State Industrial General Permit, even though this is not a requirement of the storm water Permit. However, Baker Iron Works asked for the City's assistance in compliance and so City staff has worked with Baker Iron Works to implement the necessary elements for compliance. This has further helped the relationship grow between the City and its industrial partner, furthering the great working relationship.

As mentioned in last year's Annual Report, a devastating fire broke out in the office of Baker Iron Works (during FY 06/07). Most documents were destroyed, making it very difficult to send in all necessary paperwork to the State under the General Industrial Storm Water (GISW) Permit. Baker Iron Works staff worked directly with staff from the State regarding this issue and is in compliance. Additionally, the employee training manual was destroyed, however this year's inspection confirmed that another one was developed and is available onsite.

City staff also worked with Baker Iron Works to come into compliance under the GISW. Baker employees requested help with the monitoring requirements so City staff trained them in the proper sampling techniques and offered options on where to take the samples for analysis. This just proves the healthy working relationship between City staff and Baker Iron Works.

Improvement Areas: The City is confident that it is fulfilling all requirements of the Industrial Component. City staff is committed to inspecting Baker Iron Works annually as part of its high priority facility inspections due to the potential to release pollutants into the City's MS4. City staff believes that this industrial site is working well within the regulations of the Permit and is satisfied with the current situation. City staff will look to continue the open communication with Baker Iron Works and conduct further inspections to ensure that all new employees are aware of and compliant with the storm water regulations. Also, City staff will ensure that Baker Iron Works is aware of any new regulations coming down from the State (new Permit) and work with them to ensure compliance.

Commercial Component

Program Strengths: During this reporting period, the City decided it would be more effective to concentrate on the high priority sites to ensure compliance, as they would be most likely be the highest contributor of high priority pollutants. This approach is more aligned with the watershed and regional approach of targeting high priority pollutants, and more specifically, their respective sources. The City also re-inventoried the commercial facilities as part of the JURMP revision and set minimum inspection frequencies per the new Permit. The facilities were inspected by an independent consultant specializing in storm water and FOG inspections, with follow-up being conducted by both the contractor inspector and City staff.

As mentioned in previous reports, all the commercial sites were scheduled to be inspected on an annual basis, which is above and beyond what the old Permit requires. However, the City decided to be more aggressive with the thoroughness of inspections at high priority facilities, since all commercial facilities have been inspected at least once during the life of this Permit. The new Permit sets minimum inspections frequencies that have been incorporated with the new JURMP submittal, and the City inspected the required amount of facilities during this reporting period.

As stated in the new JURMP, the City currently has 77 stationary facilities, of which 67 are identified as high Threat To Water Quality (TTWQ). The JURMP states that at least 20% of all inventoried stationary businesses will be inspected in the first year of program implementation, meaning 16 sites are required for inspection. In addition, the JURMP states that at a minimum, 50% of all sites (excluding mobile sources) determined to pose a high threat to water quality will be inspected in the first year of implementation, increasing the number of facility

inspections from 16 to 34. The City, through its contractor, inspected 35 facilities, two of which were no longer in business. Only one facility required more than a follow-up inspection and no major violations were detected. A summary of the follow-up actions can be found in the Commercial Component of this Report.

Another program strength is the implementation of the City's grease management ordinance. The City is happy to report that a grease management ordinance was passed by City Council on September 7, 2004. Staff introduced the proposal to City Council on February 17, 2004, and got the approval to move forward with the education of local restaurants and the public about the pending ordinance. A condition of the resolution once the proposal passed was to give restaurants 18 months to install a grease trap/interceptor, or receive an approved waiver from the City. Therefore, all restaurants in the City (even existing restaurants) must have a functioning grease trap/interceptor by March 2006. This is a huge accomplishment by City staff as it is well documented that most major sewer spills are the result of grease related problems. Inspection of the grease traps and maintenance will be accomplished in conjunction with the storm water inspections. As mentioned above, the contractor the City hired to perform facility inspections also specializes in grease management device inspections. The contractor included grease management inspections into the storm water inspections and check for such things as proper cleaning and maintenance, record keeping, duct cleaning, screen cleaning and hood cleaning. These are all important aspects of storm water management, as grease can have an extremely detrimental environmental effect.

Improvement Areas: In previous annual reports, one improvement that was mentioned was the inspection of 100% of all high TTWQ commercial facilities in one reporting period. All commercial facilities have been inspected during the previous five year Permit cycle, however not in the same reporting period. Staff decided to focus more efforts on those commercial facilities that have a higher potential to discharge pollutants of concern into the watershed. As mentioned before, this approach is more aligned with the watershed and regional approach of targeting high priority pollutants, and more specifically, their respective sources. If the City had unlimited resources for facility inspections, 100% of them would be inspected annually. Until that time, inspections will be conducted in accordance to the frequencies established in the Permit.

Residential Component

Program Strengths: The City provides a wide range of programs for its residents to allow for convenient implementation of pollution prevention activities. Among the many programs the City provides are:

- Curbside recycling (first in the County to provide this service)
- Greenwaste collection
- Aggressive and convenient Household Hazardous Waste collection program (described in detail in Residential Component)
- Community Education Program (described in Residential Component)
- The development and maintenance of the City's website regarding the Storm Water Program

The City Council meetings are also televised to all the residents of Solana Beach. Many times storm water issues are discussed during these meetings. Other positive aspects of the program are the direct mailings of education materials and the articles placed in the community newsletter, "*Shorelines*." Tallying the amount of phone calls to the City's Storm Water Hotline does not appear to be a good assessment of the City's program. The City, because of its relative small size, prefers to conduct business on a more personal level. This has proven to be a much more effective way to work with the public. Therefore, although the hotline is still publicized, City staff distributes their direct telephone numbers to the public when dealing with storm water issues. This allows direct, immediate contact with a Staff member, which ensures immediate, effective response to storm water issues.

As stated in last year's Annual Report, the Environmental Programs Manager documents contacts (phone call, visit to City Hall, etc.) with the public regarding storm water issues to help assess the effectiveness of the program over time. The only calls documented are ones that required staff action on some level. The community of Solana Beach is very unique in that the residents are actively involved. Staff receives numerous phone calls every day that must be addressed immediately. Therefore, it would be unreasonable to document every contact made by the public, only the ones that pertain to storm water and where action is needed.

The table is substantial, so a brief summarization of the data is below. The complete table listing the caller, date, problem/issue, mode of contact (email, phone, counter, etc), and City action, is available for review at City Hall upon request.

- There were 77 contacts made from the public that required follow-up activities
- There were 28 phone contacts
- There were 4 direct contacts from the community
- There were 6 emails received from the public
- There were 1 calls from the City's hotline number
- There were 38 contacts made by the City's Code Enforcement Department through various methods. The new part time Code Enforcement Officer would make daily rounds to patrol for violations, and even worked off-peak hours and weekends.

Another area of improvement mentioned in previous annual reports was to develop additional educational materials for the residential community. This activity is constantly being addressed by the North County Storm Water Program (NCSWP) discussed previously in Chapter 8. The City feels that it is much more effective and efficient to address these issues collaboratively with the cities in the NCSWP. This allows for a consistent message to be disseminated to a large population of people throughout the North County, as well as resulting in a significant cost savings for the City. As for requirements/projects unique to Solana Beach, Staff will continue to develop materials as the situations arise. A few examples of these specialized educational materials are listed in Chapter 8 of this Report.

Additionally, as discussed previously in this report, a major program component of the new Permit is to establish a Regional Educational Program in collaboration with all other Copermittees. This regional program will hopefully provide a more consistent educational message for the entire County, so that conflicting messages will not be disseminated throughout the region. This should drastically improve the educational outreach materials developed regionally; however watershed specific materials will still need to be developed based on high priority

COCs and their sources within the watershed.

Improvement Areas: For the next reporting period, City staff will evaluate this component and make any necessary alterations to the program. The City will continue to develop educational materials for the residential community. All educational activities and materials that were produced by the NCSWP are described in detail in the Carlsbad WURMP Annual Report as well as summarized in Chapter 8 of this report.

Land-Use Planning for New Development Component

Program Strengths: The City continued its implementation of the original local Standard Urban Storm Water Mitigation Plan (SUSMP) program as well as participated in the development of the new SUSMP. The City has successfully implemented the SUSMP review into all plan check processes. Although there will not be many projects within the City subject to this new requirement (the City is 95% built-out), the appropriate departments are still very aware of the requirements. In addition, the new model SUSMP was developed and approved by the City during this reporting period and the City is now implementing the requirements of the new SUSMP program.

The Planning Department is actively involved in the City's Storm Water Program, and often notifies the Environmental Programs Manager when a proposed project may have storm water implications, including possible SUSMP projects. Although, as mentioned above, the City is almost completely built-out, the Planning Department has, as a result of this Permit, developed a list of possible proposed projects that may require a SUSMP. These projects have not been approved, but Planning Department staff have surveyed the City and put this list together to warn other staff as these projects may be proposed soon. This gives staff a "heads up" before the projects are submitted that they will probably be subject to the SUSMP requirements and so the process can begin when, if ever, these projects are proposed.

Another extremely important activity that was implemented during this reporting period was the relocation of the City's contract Building Department from the City of Encinitas City Hall to the Solana Beach City Hall. The cities of Encinitas, Solana Beach and Del Mar all share a private building department (EsGil) and until this reporting period, it was housed full time in Encinitas. This made it extremely difficult to work collaboratively with and communication was relatively non-existent. During this reporting period, EsGil staff spends half their day at the

Solana Beach City Hall, and files for Solana Beach projects are kept onsite. This has helped keep the communication lines open and greatly assisted the coordination of post-construction inspections by City staff. Now, before final occupancy approval is given by EsGil, they can check with City staff to ensure all post-construction BMPs were installed correctly. This is an extremely significant development as now Staff has an opportunity to ensure that all post construction BMPs are installed according to plan, before they are covered up in the construction process, which occur a majority of the time.

Improvement Areas: The City will continue to educate prospective applicants regarding the SUSMP if their respective projects will be subject to the new regulations. The City is very confident that its Land Use Planning component is very effective; however, it will continue to be modified in the future when necessary. As mentioned in the Development Component of this report, the City is expected to initiate an update to its General Plan sometime during 2009. This will have a major impact on the storm water program and City staff will make certain that elements of the Permit and JURMP are incorporated into the new General Plan.

Construction Component

Program Strengths: The City Inspector and Environmental Programs Manager are responsible for conducting construction site inspections. The City Inspector is responsible for all public CIP projects, whereas the Environmental Programs Manager deals with all private projects. However, they often team up and visit all sites together, which have proven to be very successful as they both bring in special expertise to the inspection process.

All construction sites were inspected for storm water issues based on the frequencies described in the City's JURMP. Since there are relatively few construction sites in the City, staff often times can visit the higher priority sites more frequently. Additionally, since the City only has one "City Inspector" for the whole City, he is responsible for monitoring all construction sites for all various issues. Therefore, he spends his whole day out in the field, and upon visits to construction sites for any issue (storm water related or not), he is able to monitor the BMPs on a daily basis. If the City Inspector notices a problem related to storm water, he notifies the Environmental Programs Manager immediately. The Environmental Programs Manager then investigates further, taking any necessary corrective or enforcement actions. This program has worked very well due to the already established relationship between the contractors and the City

staff. Because of this pre-established relationship, the transition into storm water compliance was virtually seamless. The Inspector keeps a daily log of all his activities, and storm water related issues are included. The City also mailed out a wet-season reminder to all active construction sites reminding them of their obligations under the Permit. Therefore, the City is assured that all contractors are aware of the regulations, making enforcement much easier for the City.

Additionally, for CIP projects, the applicant/contractor is required to have a Pre-Construction Meeting with City staff in which storm water issues are discussed. At these meetings, contractors are required to sign a Pre-Construction Inspection Checklist, are given a sample copy of the Site Inspection Checklist, and they are required to fill out a Wet-Weather Triggered Action Plan. All of these measures are taken to ensure that all contractors are aware of the storm water regulations, and it helps the enforcement aspect of the Permit as staff can be assured that all contractors have been educated and cannot claim ignorance of storm water issues. Appropriate enforcement actions (corrective, stop work, fines, etc.) can be enforced without fear of being challenged by violator.

Another activity that has proven very successful in regards to construction activities was the distribution of a colorful, informative BMP Construction Brochure. This brochure was developed by the NCSWP and delivers a consistent message for all North County Cities. The brochure is a tri-fold that gives background information on the storm water program and regulations and on the reverse side is a large diagram of a common construction site with the general BMPs shown and described. This brochure has been a huge success with the construction/developers world as they can post this brochure at their site to remind their employees of proper BMPs. These brochures are attached to all building and grading permits.

The City believes that any opportunity to educate the community should be taken advantage of. So, during this reporting period, 470 BMP Brochures were distributed to the community, as compared to 521 during FY 06/07, 509 during FY 05/06 and 416 during FY 04/05, further verifying the City's commitment to education.

As discussed in last year's Annual Report, the City developed and now tracks the SUSMP long-term BMP maintenance agreements. In addition, the City has implemented a new Long Term BMP Maintenance Agreement that requires the applicant to submit a recorded document from the County of San Diego which includes the maintenance activities required and gives the City the legal authority

to inspect the BMP to ensure compliance. This is an extremely helpful tool in ensuring that the post construction BMP is not only installed, but is being properly maintained to remain effective. This is also required in the new Permit, so the City is already in compliance with this new requirement.

As mentioned in last year's Annual Report, there are significant new construction requirements in the new Permit. The significant additions to the new Permit include the development and implementation of the Hydromodification Plan (HMP) and the update to the SUSMP model. The City is pleased to report that these new programs have been developed and the City participated in the process. The HMP program is not expected to affect the City, however the City still contributed funds to the program development as part of its Copermittee responsibility to the region. The City also revised its Municipal Code to adopt the updated model SUSMP in compliance with the new Permit regulations.

Improvement Areas: During the next reporting period, the City is committed to improving and modifying the construction program if any deficiencies are detected. The City is also committed to developing more educational materials to distribute to the public, and contractors in particular. The Construction BMP Brochure has been a major success, and the contractors/developers are constantly looking to us for more information and guidance.

With the adoption of the new Permit, additional construction activities and programs need to be developed and implemented in the years to come. The City will continue to work with the Copermittees to develop these programs for implementation. One area of improvement that the City is looking at is possibly hiring a specialized contractor to conduct construction inspections. This is similar to the City's decision to hire a contractor to perform commercial/industrial inspections, this will free up limited Staff resources while providing increased service to the community. The City Council approved $10,000 in FY 08/09 specifically for construction inspections, further strengthening the City's commitment to protecting the local water quality. The new Permit contains significant additional requirements for the Construction Component, so the City felt it was prudent to strengthen its program as well, and hiring a specialized consultant is a first step in the right direction.

Illicit Discharge Detection and Elimination Component

Place Holder – This will be submitted with Chapter 7 on December 15, 2008 as a result of Addendum No. 2 adopted by the RWQCB

Education Component

Program Strength: The City feels very strongly that the current education program being implemented by City staff has been very effective. The amount, and quality, of educational materials developed by the City and through collaboration with the other Copermittees, has proven to be very successful. The complete educational program is discussed thoroughly in the Educational Component of this report.

Improvement Areas: The City is very satisfied with its current educational program. The North County Storm Water Group has gone above and beyond the requirements of the WURMP's educational component, and has delivered many quality items to the resident's of Solana Beach. The only area of improvement could potentially be the City working more diligently on promoting the free classroom presentations provided by the Solana Center. The City, through its local contacts, will be more aggressive in contacting the schools to set these valuable presentations up. This is an area that has been somewhat underutilized, and is a focus point for improvement in the future.

Also, as required by the new Permit, the City will participate in the development of the new regional educational program. The new Permit requires the development of a regional educational program, and the City is committed to working with the other Copermittees to develop a successful and comprehensive program. Also, the new Permit requires Watershed based education based on the activities chosen by the participating Copermittees, and the City is committed to working with the Copermittees in its two watersheds to develop and implement the educational activities to support the watershed activities.

Public Participation Component

Program Strengths: The residents of Solana Beach have multiple opportunities to interact with City staff through the hotline, website, and direct interaction. All City staff are available to discuss any issues with the community if they come into City Hall, and most all literature distributed currently has the Environmental Programs Manager's direct telephone number listed on it. The City staff prides itself on dealing with the community on a personal basis, and as a result has established many key relationships with members of the community. The City continued to host the annual Coastal Clean-Up Day that allowed the community to get involved as well as distributing educational brochures at the local community events, Fiesta Del Sol and Beach Blanket Movie Night. Some additional

opportunities include:

- *Numerous Copermittee meetings*
- *Adopt-A-Beach Program*
- *Fiesta Del Sol*
- *Paws in the Park*
- *Beach Blanket Movie Night*
- *Shorelines Articles*
- *Opportunities to work with local Partnerships/Collaborative's*
- *City Hotline*
- *City Web site*
- *Clean and Green Community Committee*

Improvement Areas: The City realizes its responsibility to get the community involved in the storm water program. The City has given the residents ample opportunity to get involved in implementing the program, however the City is committed to resuming the community workshops if the demand is great enough. City staff is very visible throughout the community on a daily basis and routinely has discussions with residents regarding storm water issues. The feedback given to City staff has been overwhelmingly positive, and the City looks forward to continuing this personal relationship with the community.

In addition to the JURMP public participation opportunities, the community has public participation opportunities through the WURMP process. More information on the WURMP process is available in the WURMP annual reports submitted in January.

11.5 Level 4: Load Reductions

Level 4 load reduction is a key assessment measure for the storm water program. Ultimately, the goal of the storm water management programs are to reduce pollutant loads and by doing so, improve the discharge and receiving water quality. However, load reductions are very difficult to quantify, and the Copermittees as a whole are struggling to develop methods to achieve this task. This being said, the City will continue to analyze any data received that may be able to show a load reduction with the hope that it will somehow be linked to improvements in discharge and receiving water quality.

As a result of the Regional Water Quality Control Board's comments on the City's FY 02/03 Annual Report, the City has adapted its street sweeping

program. The City now requires the private street sweeper to document all load information on a weekly basis. This includes an estimated amount of debris collected. This information was collected initially in FY 05/06 and continued into this reporting period as well. The total amount of street sweeping debris collected in FY 05/06 was 299.1 cubic yards and it was reduced in FY 06/07 to 188 cubic yards. The total amount of debris collected in FY 07/08 increased to 275 cubic yards. This increase bodes well for the performance of the new street sweeping contractor. As mentioned previously in the Report, the City recently encountered a difficult time with the previous street sweeping company. The City had concerns with the performance of the previous company, and random inspections of the routes taken and the GPS reports given to the City indicated that the contractor was not performing up to the contract standards. That could be a good indication of why the amount of debris dropped so drastically from FY 05/06 to FY 06/07. The City terminated the contract with the underperforming contractor and now has a street sweeping contractor that appears to be doing a quality job.

Tracking cubic yards of street sweeping debris may be an effective way to calculate load reductions, which would be a good assessment of the program's effectiveness. Although, most of the debris collected by the street sweeper in the City of Solana Beach is organics (leaves, grasses, etc.), so therefore, this may not be a good indicator of load reductions. However, the information will be collected and analyzed and any trend will be documented for future use.

Another possible load reduction calculation could be documenting the amount of material collected and removed from the various BMPs throughout the City. These BMPs include:

- Annual inspection and cleaning of MS4 system
- Maintenance of CDS Unit(s)
- Maintenance of detention basin adjacent to San Elijo Lagoon
- Load reduction calculation for the Low Flow Diverter at Fletcher Cove and the filtration basket located upstream from Seascape Sur Outfall
- Load reduction calculation for the Bioswale maintained at La Colonia Community Center

- Maintenance records of permanent treatment BMPs required as part of SUSMP projects (privately owned)

All of these activities may not be feasible, however they all warrant further consideration. It has been generally agreed upon the Copermittees are not capable at this point to perform complete load reduction calculations and assessments, but we are committed to working towards this goal. The Copermittees have decided that this Level (4) should be attacked at a regional level, and not jurisdictionally. A significant regulatory program that should force us in this direction is the TMDLs that have been developed and are now being implemented by the Copermittees in several watersheds. The City is currently involved in the San Elijo Lagoon TMDL Investigative Order, and as relevant information is received from the monitoring they will be discussed in upcoming Annual Reports.

11.6 Levels 5&6: Changes in Discharge and Receiving Water Quality

The City has been collecting and analyzing jurisdictional monitoring data received through the dry-weather and coastal monitoring programs. The City will continue to analyze the data to better understand the collective water quality picture in the City. The data will be assessed to determine the potential water quality problems within the City. Data collected by the City will be analyzed independently as well as collectively with the regional monitoring programs. Although it is generally accepted that it will take many years to develop a trend in water quality, the City will nonetheless analyze its data on a continuous basis to see if anything develops. There are no glaring deficiencies in the water quality in the City, but the situation at Seascape Sur will continue to be monitored to ensure that the storm drain does not have an impact on the quality of the receiving water (Pacific Ocean).

The Regional Monitoring Program currently conducts trend analyses for the Wet Weather Monitoring Program. The goal of the WWMP is to collect data and analyze the data to determine if there are in fact improvements in the receiving water quality throughout the region. The City participates in this workgroup and will continue to assist the Copermittees in determining if we have obtained levels 5 and 6 of the assessment strategy.

11.6.1 Dry Weather Monitoring Data

2007 Summary

Place Holder for 2007 Dry Weather Monitoring Program – Will be submitted in December 2008 as a result of Addendum No. 2 adopted by RWQCB

11.6.2 Coastal Water Quality

The Pacific Ocean is the ultimate receiving water for the City although there are other intermediate receiving waters, such as the San Elijo Lagoon and the San Dieguito Lagoon. To measure the quality of the coastal receiving waters and assess the JURMP effectiveness, the City has monitored its one coastal storm drain outfall (Seascape Sur). The City used to monitor another outfall at Fletcher Cove; however, a low-flow diverter was installed in 1998 to divert dry-weather flows into the sewer system. This was done because of historically high levels of bacteria detected in that area.

Coastal and Lagoon Storm Drain Outfalls

The coastal outfall monitoring program reporting period is a little different than the reporting period for this report. The coastal monitoring program reporting period runs from November through October. All cities with flowing coastal storm drains meet regularly (Coastal Monitoring Workgroup) to develop and implement this program to promote regional consistency.

The Coastal Monitoring Workgroup developed an adaptive monitoring approach. This approach was developed to allow the individual cities to adapt their program to concentrate their limited resources on problematic locations and ease up on consistently non-problematic areas. The City had *no receiving water exceedances* for bacteria during this reporting period, which was consistent with the results of last reporting period. So, it appears that the increased educational and oversight of the vendors at the Fiesta Del Sol was successful as there were no exceedances after the event for the fourth year in a row. City staff again made this a priority during this reporting period to meet with the event organizers and discuss BMPs with them to relay to the individual vendors and provided them with more educational materials. In addition, City staff monitored the Food Court during the event to ensure all vendors were abiding by the storm water regulations. This was mentioned in previous annual reports as an improvement area because of the consistent exceedances after the Fiesta Del Sol that had occurred in the past.

The storm drain at Seascape Sur had multiple exceedances for total coliform, fecal coliform and enterococcus. This is a storm drain that has a history of high bacteria counts and is currently the focus of an IC/ID investigation. The program is being implemented by City staff, and the complete results are presented in the Coastal Monitoring Annual Report.

The Copermittees had to modify the Coastal Monitoring Program due to the new requirements of the Permit. The Coastal Monitoring Program workgroup made the necessary changes and additions to the program and are currently implementing the new model. The City is confident that it has met the requirements of both the old Permit and new Permit.

Beach Posting Data

The County Department of Environmental Health has monitored beach water quality for bacteria since the 1950's. This sampling is used to assess the health of the beaches. When bacteria levels exceed State standards, the County posts the beaches with signs warning and advises the public not to enter the water. In 2000, there was a significant change in protocol as a result of the passage of AB411, which required additional testing, incorporating testing for enterococcus, and required the beach be posted when only one sample exceeded the standard.

During this reporting period, there were ***no beach closures,*** which bodes well for the overall effectiveness of the City's program.

CHAPTER 12
Special Investigations

CHAPTER 12: SPECIAL INVESTIGATIONS

12.1 Introduction

In accordance with Permit Section J.3.a.(3)(k), this section of each Annual Report will expand on the City's efforts to prevent and eliminate illegal connections and illicit discharges (IC/ID) into and from the City's MS4 as discussed in Chapter 7. The City's IC/ID program is designed to identify, prohibit, and eliminate discharges that are a significant source of pollutants with the goal of protecting receiving water quality. This section of each Annual Report will provide the results of any special investigations conducted during the reporting period. However, the City also responded to many other complaints of possible IC/IDs, which resulted in rapid compliance, but did not warrant or require a comprehensive special investigation.

Although this Report does not contain a completed Chapter 7 due to the extension granted in Addendum No. 2, this Chapter will remain as many activities related to this Special Investigation can be reported on. Any additional information gathered from the 2008 Dry Weather Monitoring Program will be included in the December 12th submission.

"The Mystery of the Bacteria at Seascape Sur…"

12.2 Introduction

As reported in FY 2002/2003 Annual Report, there has been as ongoing, historical problem occurring at one particular storm drain in the City. The location, Seascape Sur, has had historically high levels of bacteria, often times exceeding limits at the storm drain and occasionally in the receiving water (*no exceedances during this reporting period*). Previous annual reports go into deep detail regarding the history of this problem and the City's efforts to remedy it. Since the history is important in describing the situation, this report will include much of what was written last year. Any added information that was discovered during this reporting period will be included in this report. Next year's report will include the City's additional efforts that were undertaken during the FY 07/08.

Prior to and during this reporting period, the City began a concerted effort to determine what was causing the elevated levels of bacteria at Seascape Sur outfall (based on results from the Dry Weather and Coastal Monitoring

Programs). The problem was thought to be resolved early on, but then monitoring results in subsequent years indicated the problem had either returned or persisted. In 2000, the City Engineering/Public Works Department was fairly certain that the problem had finally been corrected; particularly when the 2001 DWMP indicated the bacteria elevated levels had *decreased* (although they were still elevated above the normal range).

However, preliminary results from the 2002 DWMP revealed that the bacterial levels had risen from the previous year to a troublesome level (see 2002 DWMP, available at City Hall upon request). As a result, the City "went back to the drawing board," and with the help of MEC Analytical (consultant for the 2002 DWMP), began an upstream investigation that continued through the end of calendar year 2002.

12.3 Background

The City began its DWMP in 1993, with no significant problems reported until 1996 when elevated bacteria levels were noted at the Fletcher Cove Outfall. Subsequently, the City constructed a low flow diverter (in 1998), which corrected the problem by diverting dry weather flow to the City's sanitary sewer system.

Between 1997 and 1999 results from the DWMP revealed some minor issues that were readily resolved, but nothing significant at Seascape Sur or Fletcher Cove Outfalls.

However, results from the 2000 DWMP identified two locations with high levels of coliform bacteria, which was of significant concern because both locations flowed directly to the beach via the Seascape Sur Outfall and were in fact, just a short distance from the outfall. The City conducted an extensive investigation and eventually found an old leaking sewer lateral that was buried under the ground near the site of the catch basins used for testing. The lateral was dug up, examined, and staff determined that cementing over the pipe would be the best method to ensure it was completely sealed off (investigation confirmed that the pipe was no longer in use). Because the leaking lateral was located quite close to the curb inlet, City staff, plumbing contractors and the consultant were fairly certain that the pipe was the cause of the elevated bacteria counts.

To confirm that the pipe was the cause of the suspected pollution, the City contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during several follow-up tests. At that point, staff was optimistic

that their efforts had been successful.

The 2001 DWMP included ten sites for testing. To ensure the problem from the previous year had been corrected, the program included the same two sites that had elevated bacteria counts in 2000. Surprisingly, the site had elevated bacteria levels, but because they were much lower than the previous year, staff believed that the problem might be residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be televised in 2002 (the report for the 2001 program was delivered to the City in January 2002). The televising of the lines was scheduled during the routine cleaning of the storm drains later that year. Due to various issues, the televising of the lines did not take place prior to the implementation of the 2002 DWMP, which was under the regulations of the new Permit.

The City requested proposals from consultants to design and conduct the 2002 DWMP. The contract was awarded to MEC Analytical in late spring, early summer 2002. The City requested that the same two monitoring sites from 2000 and 2001 be included in the program, regardless of the new sampling procedures required of the Permit. The City included those sites to ensure continual monitoring of the area.

12.4 The 2002 Investigation

Samples for the 2002 program were collected on August 6th and 7th, 2002 throughout the City by MEC Analytical (MEC). Shortly thereafter, MEC contacted the City and informed the Storm Water Coordinator that significantly high levels of bacteria had been found at the locations of the year 2000 and 2001. As shown on Table 13-1, the amounts were troublesome.

Table 12-1 DWMP Initial Results (Sampled August 6-7, 2002)

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
1	West Side of Sierra Ave	700,000	30,000	24,000
2	Manhole between sites 1 and 2.	900,000	50,000	28,000
3	Seascape Sur Outfall (downstream from sites 1 and 2)	800,000	21,000	35,000

Results are reported in MPN/100 mL.

Based on the above results, it appeared that the problem, whatever the cause,

was more pronounced at Site 2, the manhole, than at either Site 1 or 3. Therefore, the City immediately requested that the conveyance system be televised. At the same, the City authorized MEC to conduct an upstream investigation, accompanied by City staff. MEC indicated to staff that the elevated levels of bacteria, combined with the results from previous years, were a sign that an illegal sanitary wastewater connection may be the cause of the problem. However, subsequent inspection by City staff (including public works crews that inspected various locations of the line) did not reveal any expected accompanying waste solids. A somewhat consistent drip was noticed, which was traced back to nearby condo complex that was discharging their pool (the process was discontinued and the complex changed their procedures to drain into the sewer system). Other causes of the slow drip appeared to be over-watering of the many condominium complexes on Sierra Avenue.

Staff sent letters to all HOAs on Sierra Avenue that drain to the Seascape Sur outfall to eliminate the slow drip. Staff received calls from some of the HOAs in response to the letters and discussed the issue in more detail and received positive responses.

The results of the televised line were viewed by the City Engineer, which revealed a dip in the line approximately at the location of the manhole (with the elevated bacteria) and two possible illegal connections just west of the curb inlet. However, additional investigation indicated that the connections were not a problem, but staff thought that the dip in line could be harboring residual bacteria, and possibly re-growth.

12.4.1 More Testing

In an attempt to pinpoint the source of the contamination, MEC and City staff began the upstream investigation on August 19, 2002. Samples were collected from Site 1, and at a curb inlet catch basin on the *eastside* of Sierra Avenue, directly upstream from Site 3 (named Site IE).

Staff was surprised when the results of the second round of sampling revealed *higher levels of total coliform (2,400,000), fecal coliform (50,000) and Enterococcus (500,000)* at Site 1E, than the previous results from Sites 1 and 3. Further, the results were surprising given that the dip in the line at Site 2 was thought to be the source of the contamination. *The results seemed to indicate that the source of the bacteria was coming upstream from Site 1E.*

12.4.2 Traveling Further Upstream

The curb-inlet catch basin on the east side of Sierra Ave (Site IE) receives street runoff and runoff from the Beachwalk Business Complex (Beachwalk). Beachwalk is a collection of various businesses located at 437 South Highway 101 in Solana Beach. Beachwalk businesses, at that time, included several restaurants (Pacific Coast Grill, California Pizza Kitchen, Rubios), several small food facilities (ColdStone Creamery, Solana Beach Coffee Company, VitaFit, etc.,) several professional offices, a bike shop and others. Beachwalk was constructed approximately 13 years ago and at the time of construction, an on-site storm drain system, that collects on-site runoff from the property, was lawfully connected to the City's MS4.

Based on the results of the second round of testing, City staff thought that the source of the contamination must somehow come (or significantly contribute) from Beachwalk. Upon speaking with the Management Group that oversees the property, staff made several visits to look for possible non-point source explanations and speak with business owners to discuss BMPs (see Timeline below for more details).

On August 27th, 2002, City staff went to Beachwalk and personally delivered educational brochures to *all of the businesses,* educating business owners about storm water regulations and BMPs. To ensure that all the businesses were addressed, door hangers were left at the businesses that were not open at the time of the visit and additional property visits were scheduled. City staff also spoke with the person responsible for maintenance of the property and provided detailed information about pollution prevention, storm water regulations, and BMPs and how to report violations. Many of the business owners were extremely helpful and all were cooperative. Some business owners went out of their way to show staff potential problem areas, discuss BMPs and provide access to private restroom facilities (staff were looking for overflow problems and unusual construction or evidence of recent repairs).

Staff conducted another visit on September 3rd, 2002 in response to a call from one of the business owner's that staff had contacted on August 27th, 2002. City staff confirmed that foul smelling odors were coming from catch basins on-site. Further inspection revealed excess watering occurring on the patio of the Pacific Coast Grill restaurant. A manager at the restaurant was contacted and educated regarding BMPs and the new storm water regulations. During this visits, staff determined that samples were needed at various storm drains throughout the complex to try and pinpoint and eliminate the problem. City staff identified several locations that should be tested and requested permission to collect the samples

from the property owners.[2]

On September 4th, 2002, City staff accompanied MEC to conduct additional testing and investigation. The process confirmed staff's suspicion that the bacteria levels were coming from Beachwalk. Various samples were collected at locations throughout the complex. An outdoor floor drain just outside the kitchen of Pacific Coast Grill appeared to have dark brown, stagnate water in it. On-site ammonia tests were also consistent with elevated bacterial numbers (60 mg/L). A sample (Site 32) was then collected for further lab analysis. Sites IE and 3 were also sampled again for additional information. As shown on Table 13-2, Site 32 confirmed that the contamination was coming from Beachwalk and most likely, the source was near or in, the floor drain outside Pacific Coast Grill Restaurant.

Table 12-2 Upstream Testing Results

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
32	Beachwalk floor drain	>16,000,000	300,000	>241,960
1E	East Side of Sierra Ave	3,000,000	50,000	3,550
3	West Side of Sierra Ave	800,000	70,000	24,950

Results are reported in MPN/100 mL.

12.4.3 Just When We Thought the Problem was Solved…

After the lab results came back and confirmed what was suspected, the property owners were notified of the severity of the situation and were eager to remedy the problem and work with the City to find a solution.

The property owners worked together with the City's Public Works Supervisor and a local plumber experienced in storm drain cleaning to correct the problem. The east side catch basin was temporarily sealed, the pipe was flushed and a specially equipped trucked was placed at the catch basin to vacuum out the resulting sludge for proper disposal. As soon as the procedure was complete, on September 18th, 2002, City staff collected additional samples from all three sites (32, 1E and 3), *expecting the results to show a decrease in bacteria levels*. The residual water in the pipes was clear of the brown, stagnate water, which also contributed to the hope that the problem was *surely* resolved. However, while

[2] *Although the City's Municipal Code does provide sufficient legal authority to order testing of the sites, rapid remedies are more likely to occur through solving problems in collaborative manner. For that reason, City staff requested permission from the property owners to conduct some testing and received immediate access and cooperation.*

results from Site 32 indicated *reduced bacterial levels*, downstream sample *again* indicated *high bacteria levels*! (the sample on the west side of the street).

12.4.4 Brainstorming

At first, these results seemed a bit perplexing (maybe it was the dip in the line?, etc.), but then, while staff continued to brainstorm ideas to solve the problem, some engineers thought was that the flushing of the system might have loosen some bacteria, which escaped collection by the Vactor truck. The City decided to wait a few weeks to see if the problem was alleviated after the system had time to completely flush out.

In the meantime City staff met with the property owners and 1) reviewed old construction plans for the property to look for potential areas of cross contamination; 2) discussed possible options that may help alleviate the situation, including training and education of business owners, television activities that might occur near the catch basin; and 3) it was decided that a temporary cap would be placed on the floor drain of Site 32 to secure it from contamination for 30 days (the cap could be removed during rain to prevent flooding).

After 30 days (and two rain events), staff requested that the plumbing contractor remove the temporary cap to allow further testing, which was agreed to.

12.4.5 Not again!

Surprisingly, results from this last round of testing indicated that there was still a significant problem on the property. An immediate meeting was scheduled with the property owners, who were informed of the test results and that the City now required them to remedy the problem through televising the lines, locating the illegal connection and reconstruction, or face serious fines by the RWQCB and the City. The property owners were concerned, responsive, cooperative and resolute in their attempts to do just that.

In addition, the City agreed to purchase a storm drain inlet filter to be placed in the catch basin just downstream from the complex, leading to the ocean outfall. It was installed the first week of December, and is maintained by the City's Public Works Staff. Although it does not filter the water passing through from Beachwalk, it does help alleviate the problem by filtering out the water coming from the street. The City hopes that this will help reduce the high bacteria

numbers found in the catch basin.

12.4.6 Action Taken By Property Owners During FY 03/04 Annual Reporting Period

By the end of December 2002, Beachwalk property owners had done the following to remedy the problem.

While attempting to televise the lines, a significant amount of sludge built up in the pipe prevented the camera from penetrating the pipes (which is likely the source of the problem, City staff also reviewed the small amount of footage that was performed in the pipes)

- An extensive flushing out of the entire system was conducted, which took quite some time to accomplish amidst the rain events in December and the amount of material in the pipes.

- The lines were televised and detected a large dip in the pipe where sediment and sludge were building up, possibly providing a breeding haven for re-growth of bacteria.

- No illegal connections or sanitary waste connections were detected. There were a few pipes connected to the outfall pipe coming from the adjacent condos, however these lines were proven to be outdoor area drains. Beachwalk property owners and condo associations are completely aware of the responsibility to rectify the situation.

The City decided that they must increase their efforts to rectify this continuous problem to ensure the integrity of the receiving waters at Seascape Sur. The bacteria levels were still consistently high, often exceeding standard limits for the outfall, but, fortunately, not yet affecting the receiving waters. Growing increasingly frustrated, City staff decided that an increased effort, and the high costs that come with it, were necessary to finding the cause, and solution, to the problem at Seascape Sur.

On March 4, 2004, City staff televised the Seascape Sur storm drain line for maintenance purposes. The video showed a significant amount of sediment accumulated at the end of the pipe coming from the Beachwalk Business Complex. Staff met with the Beachwalk property management and mandated that they clean the sediment from the line. The Beachwalk management

complied to our request and immediately cleaned the pipe, and City staff supervised to ensure all Best Management Practices were used and abided by at all times.

Laboratory results were still coming back consistently high, so the City decided to take on the cost of completely cleaning the storm drain pipe with the hopes that it would remove any residual bacteria that may be contributing to the problem. The problem the City faced was that this had never been done before, and the dimensions of the pipe made it very difficult to develop a plan of attack. The pipe starts at the curb inlet on Sierra Avenue, then travels completely underground and slopes downward until it empties out onto the beach. The distance from the street to the outfall is approximately 550 feet and dips to 30 feet below the surface, so access is very difficult. The City was able to gain access from the neighboring condominium complex to place a vactor truck to ensure that no excess water would escape containment and empty onto the beach. The project took 5 entire days to complete (ending on Friday, May 5, 2004), with City staff working with its private contractor, and cost approximately $10,000. The City removed 4 cubic yards of sediment from the pipe, and used over 5,000 gallons of water. The City was confident that the next lab results would come back spotless.

12.4.7 What Happens Next…?

On the following Monday (May 10, 2004), City staff received a phone call from the County of San Diego Department of Environmental Health advising them that samples they took in the receiving water adjacent to the Seascape Sur outfall had failed AB 911 standards. The exact opposite had happened from what staff was expecting. It appeared that all the effort and money spent to clean the pipe had actually made it worse. However, Staff immediately began an IC/ID investigation and discovered that an adjacent condominium complex had a sewer spill that weekend and raw sewage had entered into the Seascape Sur storm drain. City staff was relieved that they found the cause of the high bacteria, but highly disappointed that all of their work, time, and money had been wasted by a small sewer backup, and it was back to square one.

Because the sewage was traced back to a private lateral, the City was determined to put the pressure on the condominium complex to clean the pipe again. Staff met with the HOA representative and a deal was worked out to have the pipe cleaned again, at the HOA's expense. Additionally, the City took this opportunity to once again educate the HOA and wrote an article regarding the proper handling and disposal of grease for the HOA's monthly newsletter The

City then set the HOA up with a plan of attack and supervised the process, but the effort was stepped up a bit. Staff worked with the Regional Water Quality Control Board to allow the City to use a small concentration of bleach mixed with the water to make sure that the pipe was completely sterilized at the end. This cleaning was done on September 24, 2004.

12.4.8 Where We Were in FY 04/05

The results of the cleaning performed on September 24, 2004 proved it to be very successful. The bacteria levels were reduced significantly and the City hoped that the sterilization would be a permanent fix. However, the results in the resulting few months showed that the bacteria was slowly increasing back to its historical levels, further frustrating City staff. This may be due to City staff's worst fear that the dip in the pipe could be harboring and resulting in re-growth of bacteria that may enter by way of decomposing organic debris and/or illegal dumping.

Since this did not permanently solve the problem, the City continued to explore other options. In March 2005, the City was discussing the situation with its contract lab, Weston Solutions, and jumped at the opportunity to participate in a pilot study aimed at refining a new lab analysis that would potentially categorize the generic coliform and enterococcus bacteria indicators as deriving from human or animal origins. This would be an extremely significant discovery because the City could further identify where the bacteria was coming from, human (IC/ID) or from animals (dogs, possums, raccoons, etc.), to help direct what steps to take in the future. The City could further refine its source identification and, in theory, stop wasting limited resources on sources that don't exist.

The pilot program is completed; however, the results did not come back revealing anything substantial. Only one sample came back positive for human bacteria (and this was somewhat inconclusive), and samples collected after this positive result all came back negative. Therefore, the City can conclude with relative certainty that the source of the bacterial contamination is not human. This one positive result may be caused by a single illegal dumping occurrence or by laboratory error. The resulting negative results show that there is not a continuous inflow of sewage, as would result if there were an illegal connection. Although the pilot program is complete, one early, important conclusion would be that the bacteria is not coming from human origins, which would allow the City to eliminate this from source identification and focus its efforts on non-human

origins.

12.5 Timeline of Significant Actions

August 27, 2002- City staff distributed storm water brochures to all the businesses located in the Beachwalk complex. Staff toured the mall, visually inspected on site catch basins, outdoor floor drains, restroom facilities, and inspected several restaurants and discussed pollution prevention BMPs.

September 4, 2002- Based on feedback from the testing, staff spoke with the managers of Pacific Coast Grill, reviewed the storm water regulations, spoke about prohibited activities and distributed storm water brochures.

September 4, 2002- City staff and an employee from MEC conducted upstream investigation. A small outdoor floor drain contained brown, stagnate water with a very pungent odor. The drain cover was removed and the material was sampled. MEC called a few days later and reported that the results were consistent with the numbers for raw sewage for total and fecal coliform and *Enterococcus*.

September 18, 2002 - The Beachwalk storm drains were flushed out using clean, fresh water and the sludge was vacuumed out into a Vactor truck at Site 3. Results from follow-up samples indicated that a problem still existed.

October 24, 2002- Additional samples were taken to see if the problem had been eliminated. Results from the lab showed that the problem had not been solved. City staff continued to meet with property owners to pinpoint the source.

November 2002- The City installed a specialized catch basin filter unit that is designed to catch all debris (trash, organics, etc.) from the street before it reached the MS4 system. It also has specialized bio-filter rolls to filter out the hydrocarbons.

November 13, 2002- a semi-permanent cap was placed on the floor drain that seemed to be the source of the bacteria. A follow-up sample was scheduled for 30 days.

December 13, 2002- Samples were taken after the cap was removed and preliminary results indicate that the problem has not been resolved. More extensive investigation was ordered.

December 14-31, 2002- All property drains were cleaned and televised.

January through June- Increased monitoring and sampling through Coastal Monitoring Program to try and determine if the steps taken previously had successfully remedied the problem. An intensive educational program to the HOA's and the Business Complex was also implemented to assure compliance under the Permit.

March 4, 2004- Mandated and required the Beachwalk Business Complex to clean out storm drain system that leads to the City's Seascape Sur storm drain due to accumulation of debris (sediment, trash, etc.).

May 5, 2004- Completed cleaning of entire Seascape Sur storm drain line from Sierra Avenue to the beach outfall. A sewer spill occurred that following weekend from a private lateral connected to the Seascape line.

May 20, 2004- Wrote two articles for *Seascape Sur News,* the monthly newsletter distributed to the Seascape Sur condos, educating the residents on activities that may reduce bacteria that could be a possible source into the problem at Seascape Sur outfall. The first article was titled, "Sewer Clean-Outs," and it describes the proper way to dispose of grease (not down sink) to prevent sewer blockages and spills. The second article was titled, "Walk Dogs Off The Property and Clean Up After Them," which is pretty self-explanatory.

September 24, 2004- Completed cleaning again with the addition of bleach to counteract the sewer spill that occurred on May 5, 2004. Access issues during the summer months prevented the cleaning from occurring earlier.

November 2004- Samples showed a dramatic decrease in bacterial indicators, proving the cleaning was successful. However, future results showed the bacteria increasing back to historically high numbers.

March 1, 2005- Started participating in contract lab's pilot program to differentiate bacteria into human and animal origins.

May 30, 2007 – Conducted a thorough investigation with our lab (Weston) to detect any possible sources of the ongoing pollution (see below). Results of the investigation revealed that bacteria levels were in fact higher at the outfall than the catch basin; further reinforcing what City staff believes is a structural deficiency in the pipe that is leading to bacteria re-growth.

March 30, 2008 – Initiated a pilot study with lab to determine if the correct analytical analysis was being conducted

June 18, 2008 – Installed a catch basin inlet guard to prevent organic material from entering into catch basin on the east side of Seascape Sur storm drain. This was done to hopefully prevent the organic matter from decomposing inside the storm drain pipe and providing an area for bacterial regrowth.

August 10, 2008 – City contracted a company to place concrete inside the catch basins to fill in a one inch gap at the bottom where stagnant water would sit. The City thought this might be contributing to the bacteria load at the end of the pipe. By filling in the gap, water and organic matter would not have a place to stagnant and harbor bacteria.

September 29, 2008 – City hired a contractor to clean the entire Seascape storm drain from street to outfall.

12.6 Where We Are Now

The City continues to struggle with this ongoing situation, and is running out of options to try and eliminate the high bacteria counts. The budget continues to include money for cleaning out the line once per year, but this is merely a temporary band-aid to the problem, whereas the City is looking for a permanent fix. The one positive to take from this is that the discharge is not affecting the water quality of the receiving water (Pacific Ocean) yet, but there is no guarantee that this will not change in the future. Here are some options the City is now looking at to hopefully solve this reoccurring situation:

- Repairing sag in the outfall pipe: This option is being actively researched as re-growth in the pipe is now the most suspected culprit. Our Public Works Operation Manager is researching this option with other City staff. In addition, City staff is looking into other options such as re-lining the pipe or "pipe-blasting", which may help reduce the sag and improve flow through the pipe.

- Blocking off connections from adjacent residential complexes and making them drain to street so that discharge can be sampled: This option is seen as a last ditch effort, as it would be very expensive and politically charged. This would only be considered if outfall started affecting receiving water quality.

- Installing permanent BMP such as a low flow diverter: This option is also seen as a last ditch effort as it would be expensive and has not been fully researched to check the feasibility. City engineers would have to check the locations of the sewer main and the capacity to determine if this would be feasible. Funding may be available through grants for water quality, but again this option is a long term effort. City staff will continue to look into various funding options, one being the recent grant that allowed the City of Imperial Beach to install a low-flow diverter. Staff will monitor that project closely and may seek the same grant to place a diverter in this location.

- Conducting further tests to determine if source of bacteria can be pinpointed: This option is most feasible at this point. Our lab, Weston Solutions, contacted the City to be a part of a pilot program that will hopefully give us more results than the previous study (more information below). At this point, the City is open to any study that may assist us in finding the elusive source to the bacteria problem.

- The City's lab (Weston Solutions) did come out and visit the site again on 5/30/07 with City staff to investigate the surrounding areas to see if they could detect anything that may be contributing. Weston has performed similar investigations in other cities with very positive results. They are as interested in finding the source as the City, as we have been partners now for years on this. The results were very interesting and reconfirmed the City's belief that there is substantial re-growth occurring in the pipe as the bacteria results were much lower in the catch basins than at the outfall. The results are as follows:

	East Side Catch Basin (MPN/100mL)	Outfall (MPN/100mL)
Total Coliform	700,000	16,000,000
Fecal Coliform	80	50,000
Enterococci	41	483

12.6.1 Special Pilot Program

The City and Weston Solutions partnered for a unique pilot study with the hopes of finally determining the source of the bacteria. The specialized studies were

conducted to further analyze a unique phenomenon called "pseudofluorescence." This phenomenon first was detected in some samples from Seascape in the summer of 2007, when using the Enterolert method there were some false positives, or "pseudofluorescence." The lab noticed that the tests became to increase in frequency, and brought it to the attention of City staff after the March 31, 2008 samples were analyzed. The City and Weston then developed a plan to determine why this phenomenon was occurring, and if this could bring us any closer to solving the mystery.

Starting on April 30, 2008, Weston began testing the samples using the IDEXX method (SM 9223B) side by side with the Multiple Tube method (SM 9230B) for Enterococci in order to determine if the different methods yielded different results. Parallel analyses were carried out only on the outfall samples, as the paired ocean samples never exhibited pseudofluorescence. The following are the results:

Date	IDEXX Results (MPN/100mL)	Multiple Tube Results (MPN/100mL)
4/30/2008	<10	170
5/29/2008	<10	300

Analyzing the results, it is easy to confirm that something is causing interference with the IDEXX method. Because of this, PCR analyses were also performed, with results ranging between 1,000-10,000 (PCR includes viable and non-viable cells, as it only looks for specific DNA markers, regardless of cellular viability), which validates the Multiple Tube results by showing a definite presence of the target bacteria.

There is some concern that detergents may be the cause of the interference and pseudofluorescence. Enteroalert (IDEXX) analysis from both months displayed pseudofluorescence wells, so both were tested for detergents using an MBAS kit. The results are as follows:

Date	MBAS Results (ppm)
4/30/2008	15
5/29/2008	25

The 5/29/2008 sample had a larger number of pseudofluorescent Quantitray -

2000 wells, which seems to confirm the relationship between pseudofluorescence and the amount of detergent in the sample.

As a result of this pilot study, an official method change for enterococcus was instituted beginning with the 6/28/2008 samples. Using the Multiple Tube method, MPN for enterococcus was determined to be 3,000 per 100mL, while results from Enterolert (performed as a continued comparison) were found to be 63 MPN/100mL, with a continued pseudofluorescence.

This pilot study will continue into FY 08/09, and will be reported on in further depth in next year's Annual Report. In addition, continued upstream investigations will focus on detergents as the presence has been recorded a couple of different times.

The City will continue cooperating with Weston and their professional staff to investigate this ongoing mystery until a resolution is found.

12.7 Future Activities

The City is committed to finding the solution of the bacteria problem at Seascape Sur. During last reporting period, the City was involved with its lab, MEC Analytical Systems, in investigating upstream to find potential sources of the bacteria (see above). Although this investigation has not given the City the results it had hoped for yet, it nonetheless was an attempt to solve the dilemma. As discussed above, the City is now looking at other structural options with its engineering staff to hopefully look at another angle in this seemingly unending battle. Also, the City will continue the pilot program with Weston to compare the Enterolert (IDEXX) method with the Multiple Tube method, and continue to investigate the presence of detergents in the discharge. The investigations and studies have proven inconclusive so far and the City will continue investigating other more expensive options, more specifically fixing the structural deficiencies in the pipe.

The City has committed to setting money aside in its CIP budget to undertake some major projects to help solve the problem. As stated in the Fiscal Analysis Chapter, the FY 07/08 budget has $10,000 set aside specifically for the Seascape Sur storm drain cleaning. The next scheduled cleaning is for August 29th, 2008. The City is committed to thoroughly cleaning the pipe annually if need be, or until a long-term solution is found. The City is currently investigating other structural options and may find it better financially to undertake a large CIP project than continually spending $10,000 a year for a temporary fix. However, the location and depth of this particular pipe make it very difficult to work on, so it

is taking some time to develop a sound engineering plan to fix the pipe or divert the flows. If this is the option the City ultimately takes, it will be very prudent to take the time to do it correctly, so the City is committed to taking the time to develop a plan to ensure its effectiveness.

Additionally, the City actively monitors the outfall pipe and all surrounding areas for any unusual occurrences, and the Marine Safety Department will continue to notify the Environmental Programs Manager whenever there seems to be unusual spikes or odors coming from the outfall pipe, as one of the lifeguard towers is located directly in front of the outfall (during summer months). Lastly, City staff will continue to work with the neighboring condo associations to educate the residents as well as perform inspections of upstream businesses.

12.8 Summary

The City has thoroughly utilized the results from its DWMPs during the last several years to identify and attempt to eliminate the source of bacteria that was exposed through testing and upstream investigations. With the efforts of City staff, and the cooperation of the Beachwalk property owners/managers and neighboring condominium complexes, the sources of these unknown and pesky bacteria has almost been solved. Unfortunately, with the structural deficiencies (the sag) in the pipe, it may only take a small amount of bacteria entering the pipe to remain in the sag and promulgate (re-growth). Fortunately, the elevated bacteria levels do not seem to be affecting the receiving waters (no exceedances the past three years) yet, but the City desires to stay ahead of the game and wants to take care of the situation before it becomes a problem. Therefore, the City is currently examining other options such as re-lining the pipe, "pipe-blasting" or installing a low-flow diverter. In the very near future, the City is confident it will close the book on the *Mystery of Seascape Sur Bacteria*.

CHAPTER 13
Non-Emergency Fire Fighting

CHAPTER 13: NON-EMERGENCY FIRE FIGHTING

In accordance with Permit section J.3.a.(3)(l), this section of the report describes the City's efforts to control Non-Emergency Fire Fighting events. The City understands that the health and safety of its residents supersedes the storm water regulations when it comes to emergency situations, such as a fire. However, for non-emergency fire fighting activities such as routine maintenance and training, the release of water into the City's MS4 is not permitted. Therefore, the City's Fire Department trains at two special facilities, one in San Marcos and the other in Rancho Santa Fe. Both facilities have BMPs installed to properly handle the excess water, and comply with all regulations of the storm water Permit. ***No training exercises that involve water are conducted within the City limits.***

Routine maintenance of the City's fire trucks and apparatus is essential to ensuring public health and safety, as all equipment must be in top condition and functioning properly during an emergency. Most times, this maintenance is conducted onsite at the Fire Department. To handle the excess water, the Fire Department staff redirects the flows onto a large slope of vegetation behind the Fire Station. Staff takes extra precaution to ensure no water leaves the site. Also, the washing of trucks and apparatus occurs inside the large bays, which is plumbed directly to the sewer system.

This component is also discussed in the Municipal Component.

CHAPTER 14
JURMP Revisions

CHAPTER 14: JURMP REVISIONS

In accordance with Permit section Permit sections I.1.b. and J.3.a.(3)(m), this section of the report describes any revisions that occurred to the City's JURMP. As described in multiple chapters of this Report, the JURMP was completely revised during this reporting period in accordance with Permit Order No. 2007-0001. The revised JURMP was submitted to the RWQCB in March, 2008 and incorporated all new requirements contained in the new Permit. The new JURMP is available at City Hall upon request.

CHAPTER 15
Conclusions and Recommendations

CHAPTER 15: CONCLUSION AND RECOMMENDATIONS

15.1 Conclusion

During the FY 2007/2008 reporting period, the City was able to successfully implement the many requirements of the Permit as well as begin developing programs for the new Permit. Although the City has been required to have a storm water program under previous Orders issued by the RWQCB, this new Permit greatly expanded the types of activities and documentation efforts required of the cities. This was the fifth and final year of implementation under Permit No. 2001-01, and looking back, the City is very satisfied with the progress of the program. In addition, the City is eagerly working on developing the new programs for Permit Order No. 2007-0001.

The City continued its "team approach" to implementing the JURMP by integrating the ever-evolving requirements of the Permit into specific tasks that each member would be responsible for implementing in their respective departments. The Environmental Programs Manager is responsible for bringing the group together and updating the respective departments on any changes that may affect their department's daily activities. Additionally, the Environmental Programs Manager is responsible for ensuring that all requirements of the Permit were being addressed and satisfied. This collaborative method allowed the City to more rapidly modify procedures and handle the increased workload quickly and efficiently.

The City's accomplishments during this final year of the JURMP implementation provide evidence of the City's pro-active approach to improving water quality. The requirements under Order 2001-01 expanded the previous Order (90-42) significantly and have altered many of the daily routines of staff at the City. In addition, the City is actively working on developing the new programs to satisfy Permit Order No. 2007-0001 and has successfully implemented some of them, including, but not limited to, modifying the Municipal Code for the new model SUSMP, LID and HMP requirements, updated the City's JURMP and implementing the new Coastal Monitoring Program.

During the next reporting period, the City expects to build on the accomplishments of FY 07/08, and determine the most effective and meaningful program activities as to their impact on water quality (pollutant specific) collaboratively with the other Copermittees, and implement the approved

program assessment strategy. Since the new Permit (Order No. 2007-0001) was adopted during this reporting period (January 2007), the City has already begun working collaboratively with the RWQCB and other Copermittees to implement the new regulations of the Permit. The City is confident that it accomplished the goals set out under Permit No. 2001-01 and is looking forward to continuing the successful programs of Permit 2001-01 and developing and implementing new and improved programs for Permit 2007-0001. This was a very important year for the Copermittees as they had to evaluate and assess their programs and accomplishments over the last five years of the old Permit as well as develop and begin implementation of the newly adopted Permit 2007-0001. It's important to note the significant new programs that were incorporated into the new Permit. These include but are not limited to:

- Hydromodification Plan
- SUSMP Model Update
- Low Impact Development (LID)
- Minimum inspection and street sweeping frequencies
- Post Construction BMP Inspections

The City eagerly anticipates working collaboratively with the other Copermittees in further developing and implementing these significant programs during the next five year Permit cycle. The City is confident that the Copermittees will continue to develop and implement these programs to meet the requirements and goals of the new Permit. The City understands that all parties' involved (Copermittees and RWQCB staff) are in this together to improve the discharge and receiving waters in the region and we will continue to support and work collaboratively with all parties to accomplish this goal.

15.1.1 2007/2008 Accomplishments

The following is a small list of notable accomplishments achieved during the 2007/2008 reporting period. All of these activities are described in more detail throughout this report. They are the following:

- Continued implementation of two assessment questions on commercial facility inspection forms to help better assess the knowledge of the

business community on storm water regulations. This was done in cooperation with all North County cities to develop a meaningful and consistent assessment of the north county region.

- Modification of the Building Plan Check Form to include a new *Environmental* section that requires all plans to route through the Environmental Specialist for review. No permits can be issued without the Environmental Specialist signing of for approval. This is an obvious accomplishment since all plans will be reviewed for storm water issues.
- Addition of post-construction BMP tracking and inspection box on routing sheet to ensure all BMPs are installed according to approved plans.
- Adopted a NPDES Solid Waste Fee to fund the programs necessary to comply with the Permit. The Fee funds pollution prevention activities and will provide a long term funding source which is paramount to a successful program.
- Cooperated with an extensive landscape and irrigation educational series for public and private landscapers. This cooperation between the City and its private water company Santa Fe Irrigation District proved very successful. The classes were given in both English and Spanish and taught the participants proper landscaping and irrigation practices. The City is dedicated to continuing its public/private cooperation's in the future.
- Developed and submitted new JURMP
- Developed new HMP and LID programs in conjunction with the regional Copermittees to control discharge off of construction sites.
- Developed and adopted new model SUSMP
- Developed and implemented new post construction BMP tracking and inspection protocol
- Implemented new industrial and commercial inspection protocol, including hiring an independent contractor that specializes in storm water and grease management facility inspections
- Participated in regional workgroup to develop new mobile sources program

- Continued education and public participation activities, including community events, school presentations, summer camp presentations, water conservation presentations, website, Council Meeting, cable access channel and newsletter articles

- Modified Municipal Code to reflect changes in the new Permit No. 2007-0001 and corresponding JURMP
- Implemented minimum frequency inspections of municipal facilities, such as the building, CIP BMPs, and MS4 system.
- Collaborated with all Copermittees to develop regional educational programs as required by the new Permit Order No. 2007-0001.

15.2 Recommendations

Since the new Permit was adopted in January 2007, the majority of FY 2007/2008 was dedicated to developing new programs and fine tuning existing programs to comply with the new requirements. The City is committed to working cooperatively with the other Copermittees to develop and implement the new required programs to provide a consistent and recognizable message for the region. However, the City still must develop jurisdictional specific programs to address the specific pollutants of concern and their respective sources. So, in an effort to implement a successful and meaningful program, the following are recommendations to improve the City's storm water program for FY 08/09:

- *Resume the community workshops as soon as the demand is great enough.*
- *Continue to educate new and existing City staff to ensure compliance in the ever-changing storm water world.*
- *Complete the special investigation to uncover and eliminate the root cause of reoccurring problems upstream from Seascape Sur Outfall.*
- *Evaluate staffing needs and program responsibilities.*
- *Continue Implementation of SUSMP requirements and ensure all plans are in compliance.*
- *Develop the new JURMP program plan and implement measures to comply with Permit requirements*
- *Increase the education of residential sector which is a main focus of the new Permit. These programs will be addressed cooperatively at the*

regional level, but the City is committed to helping develop the materials and distribute to our residents.

- *Continue to collect and analyze monitoring data to establish a long-term assessment of the City's water quality.*
- *Develop additional industry specific educational materials to distribute to the community.*
- *Develop and implement pollutant specific activities to address high priority COCs (Constituents of Concern).*

APPENDICES

APPENDIX A: STREET SWEEPING MATERIALS FORM

Employee Name and Organization (below)

Date (above) use N/S below if not scheduled

1st 2nd 3rd 4th Tuesday	Time in: Time out:	Time in: Time out:	Equipment Number: Year, Make & Model

OBSTRUCTIONS (identify as vegetation, vehicle, etc. and provide description).

Reference previous date(s) reported (no entry above required):

End of day Volumn in Cubic Yards:
% (percentage) Sediment:
%(percentage) Organics:
Litter (describe-or-enter -0-)

Operator enter reason(s) for not following schedule or other comments:

C.O.S.B. Initial

Forward to R.W.Q.C.B. (C.O.S.B. Initial on Sending) City of Solana Beach 2004(adinf)

APPENDIX B: SMOKING BAN ORDINANCE

ORDINANCE NO. 316

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Findings and Purpose. The City Council of the City of Solana Beach hereby finds and declares that:

A. The City of Solana Beach is committed to keeping its beaches and parks clean, safe, healthy and pleasant for everyone.

B. Smoking is hazardous to health. Numerous studies have shown that second-hand smoke is a significant public health hazard. The U.S. Environmental Protection Agency has classified second-hand smoke as a group A carcinogen, the most dangerous class of carcinogen. Smoking in parks and beaches endangers children and others by exposing them to second-hand smoke. Moreover, children and youth who observe smoking and tobacco use in public beaches and parks may model the behavior.

C. The U.S. Centers For Disease Control and Prevention (CDC) estimates that second-hand smoke causes 3,000 lung cancer ceaths per year among adult non-smokers in the U.S. The California Environmental Protection Agency has concluded that second-hand smoke causes coronary heart disease in non-smokers. Second-hand smoke is especially hazardous to particular groups, including those with chronic health problems, the elderly and children. The CDC has found that second-hand smoke causes children to suffer from lower respiratory tract illness, such as bronchitis and pneumonia, exacerbates childhood asthma, and increases the risk of acute chronic middle ear infection in children.

D. Additionally, discarding cigarettes and cigar butts and tobacco onto the ground in City parks and beaches is unsightly, unclean and particularly hazardous to small children who handle and sometimes ingest them. The City must collect tobacco litter in parks and beaches or it will be collected by stormwater and washed directly into our ocean waters in violation of the City's stormwater pollution prevention permit and to the detriment of ocean life and all ocean users.

E. The City Council therefore determines that banning smoking and the improper disposal of tobacco products in City parks is necessary to protect the health, safety and welfare of Solana Beach residents and visitors.

SECTION 2. Section 11.12.020 A. of the Solana Beach Municipal Code is hereby amended to read as follows:

A. To dump or deposit any trash, specifically including cigarette and cigar butts and tobacco, refuse, rubbish, litter, or other kind of waste materials, except in approved containers specifically placed and designated to receive such waste materials. No person shall dispose of any animal carcass in or on any beach or park.

SECTION 3. Section 11.12.020 EE of the Solana Beach Municipal Code is hereby added to read as follows:

EE. No person shall smoke within the boundaries of any public beach or park unless the City has designated a specific temporary or permanent signed smoking area.

SECTION 4. If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.

SECTION 5. This ordinance shall become effective thirty (30) days following its adoption. Within fifteen (15) days after its adoption, the City Clerk shall publish this ordinance, or the title hereof as a summary, in a newspaper of general circulation within the City of Solana Beach as required by law.

INTRODUCED at a regular meeting of the City Council of the City of Solana Beach, California held on the 7th day of October, 2003, and thereafter

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, held on the 21st day of October 21, 2003, by the following vote:

AYES: Councilmembers – Golich, Kellejian, Campbell, Sheres, Powell

NOES: Councilmembers – None

ABSENT: Councilmembers – None

ABSTAIN: Councilmembers – None

THOMAS S. GOLICH, Mayor

APPROVED AS TO FORM:

CELIA A. BREWER, City Attorney

ATTEST:

JAN UHLMAN, Acting City Clerk

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) ss.
CITY OF SOLANA BEACH)

I, JAN UHLMAN, Acting City Clerk of the City of Solana Beach, California, DO HEREBY CERTIFY that the foregoing is the original of Ordinance No. 316 duly passed and adopted by the City Council of the City of Solana Beach, California, at a Regular meeting thereof held on the 21st day of October, 2003.

That, in compliance with the laws of the State of California, Ordinance No. 316 being:

> AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

A certified copy of the full text of Ordinance No. 316 along with the names of those City Councilmembers voting for and against said Ordinance was caused to be posted in the office of the City Clerk.

Executed the 23rd day of October, 2003.

(SEAL)

CITY OF SOLANA BEACH INCORPORATED JULY 1 1988 CALIFORNIA

Jan Uhlman
JAN UHLMAN, Acting City Clerk

Published: North County Times: October 28, 2003

VENDOR GUIDELINES

Fiesta del Sol

- All electric cords should be out of the public access areas. If they must extend into a public access area, the cords must be protected with pedestrian transition molding to minimize the trip hazard.
- All cooking areas and devices shall have at least one 2A-20BC fire extinguisher readily accessible to persons working in the immediate proximity of each device or cooking area and shall be in plain view.
- All portable LP-gas containers, valves, and fittings shall be properly secured in a fixed upright position and protected in accordance with the Uniform Fire Code.
- The following conditions apply to canopies in excess of 400 square feet, and to tents and temporary membrane structures having an area in excess of 200 square feet:
- All tents, temporary membrane structures, and/or canopies that are to be used at the function shall be adequately braced and anchored to prevent weather related collapse. Documentation of structural stability shall be furnished to the Fire Chief on request.
- All tent, canopy, or temporary membrane structure exits shall be in accordance with the Uniform Fire and Building Codes.
- The design and construction of the fabric envelope, method of anchoring, and inflation systems for air-supported and air-inflated structures shall be in accordance with the Building Code.
- The sidewalls, drops and tops of temporary membrane structures, tents and canopies shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Temporary membrane structures, tents or canopies shall have either a permanently affixed label or a Certificate of Flame Resistance bearing the following information:
  - Identification of the temporary structure's size and fabric or material type.
  - For flame-resistant-treated materials, the date that the temporary membrane structure, tent or canopy and other combustible materials were last treated with an approved flame retardant. The trade name and type of flame retardant utilized in the flame-retardant treatment. The name of the person and firm that applied the flame retardant.
- The following general storm water run-off practices shall apply to the event:
  - No dumping or allowing any material into City storm drains.
  - Install secondary containment around portable restroom facilities when feasible.
  - Prompt and proper clean-up of all trash debris.
  - Do not use water or any liquid to rinse down any debris or dirt on any ground surface. Dry sweeping only of event debris is allowed.
  - Protect all storm drain catch basins/inlets when feasible with proper storm water Best Management Practices implementation.
  - Do not allow excess water to leave the site. Properly contain everything onsite before it enters the City's storm drain system.

The City of Solana Beach Water Quality Program

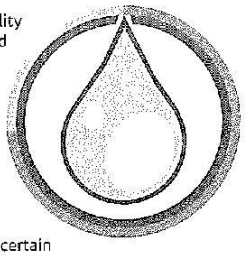

The City of Solana Beach has an extensive water quality program aimed at ensuring a clean and healthy ocean and lagoons. The program consists of a variety of activities conducted to reduce and eliminate urban runoff before it enters the City's storm drain system. Once this runoff (and the pollutants contained in it) enters the storm drain system, it empties onto the beaches and into the lagoons untreated. The system is completely separate than the sewer system, which is connected to a wastewater treatment plant where the pollutants are removed before discharging into the ocean.

The City is under a state mandate (Permit) to comply with certain regulations that govern water quality and urban runoff. The City, along with all other 17 cities in San Diego County, the County of San Diego, the Port District and the Airport Authority, are all required to comply with the same Permit, and adhere to the same regulations. The following is a brief outline of the activities required under the Permit that City staff is currently responsible for.

1) New Construction and Redevelopment Activities: City staff reviews all building plans submitted to ensure additional runoff associated with the project will be mitigated onsite. This usually involves the of installation post-construction Best Management Practices (BMPs) including infiltration pits but can involve installation of structural devices that target infiltration and pollutant removal. Plans are also reviewed to ensure erosion and sediment control BMPs such as silt fences and sand bags are used during construction to prevent pollutants from leaving the site.

2)Municipal/Commercial/Industrial/ Construction Inspections: City staff inspects all municipal, commercial, and industrial sites within the City to ensure potential pollutants are safely stored and employees are conducting their activities in accordance with the water quality regulations. This includes the proper onsite storage of hazardous materials, pesticides, herbicides, etc., as well as ensuring employees are not using excessive amount of water to clean outside eating areas, trash dumpsters, cooking mats, etc. No water should be leaving these sites at any time, with a few minor exceptions. Additionally, staff checks the maintenance records of the restaurant grease trap/interceptors to ensure they are functioning properly to reduce grease build up in the sewer pipes and prevent sewer spills.

3) Education/Outreach: City staff routinely educates municipal/commercial/industrial employees about these regulations during inspections and special mail outs. The City has information for the community on its website and in community newsletters, and is available for presentations to schools regarding urban runoff. Information is available at City Events such as Fiesta Del Sol and a beach and lagoon cleanup is held every year in September.

4) Violation Investigations: The City has a "Storm Water Hotline" where violations can be anonymously reported if witnessed in the community. If you witness someone dumping anything into the City's storm drains, a restaurant washing down its parking lot, a construction site discharging anything into the street, etc., then please call this number and report it for City follow-up. The City relies on the community to be its "eyes and ears" whenever something like this occurs, and appropriate follow-up will occur. The number is (858) 720-2400 ext. 2512, and remember, it can be anonymous if desired.

5) Water Quality Monitoring: City staff currently monitors all storm drain outfalls that empty out into either the ocean or lagoons. These outfalls are all tested for bacteria indicators on a routine basis (at a minimum monthly). Once a year, a more comprehensive monitoring program is conducted at more than thirty sites throughout the City and tested for many more pollutants, including dissolved metals, oil and grease, ammonia, nutrients, detergents, and orthophosphates. This data helps assess the overall health of the local waters and also alerts the City if an illegal discharge or connection has occurred upstream. If any violations are identified, then an upstream investigation is conducted to locate the source of pollutants.

These are just a few activities conducted by City staff to stay in compliance with the Permit and ensure a clean and healthy environment. If you would like additional information on any of the items listed above, or would like to find out more about additional activities not listed above, please contact Danny King at (858) 720-2477.

City of Solana Beach PUBLIC MEETING SCHEDULE

The Budget & Finance Committee meets the third Thursday of each month at 6:00 p.m. in the City Hall Council Chambers.

The Parks & Recreation Commission meets every second Thursday at 4:00 p.m. at La Colonia Park, 715 Valley Avenue, Solana Beach.
NOTE: NEW TIME

The Public Arts Advisory Commission meets the second Tuesday of each month at 3:30 p.m. in the City Hall Council Chambers.

The Public Safety Commission meets the second Tuesday of each month at 6:30 p.m. in the City Council Chambers.

The View Assessment Committee meets the third Tuesday of each month at 6:00 p.m. in the City Council Chambers.

Those times and days are the regular meeting schedule unless otherwise noted. Please check the City website for current information at:
www.ci.solana-beach.ca.us.

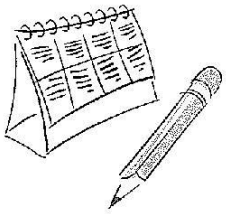

Regular meetings of the Solana Beach City Council are held at 6:00 p.m. on the second and fourth Wednesdays of each month in the Council Chambers at City Hall, 635 S. Highway 101, Solana Beach, CA 92075. Meetings are broadcast live on Cox (Channel 19) and Time Warner (Channel 66). For more information, please contact the City Clerk's Office at (858) 720-2400.

Sewer Forcemain Replacement Project

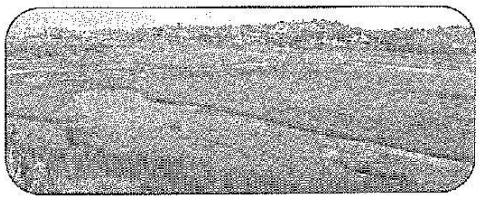

The City has recently completed the 3.2 million dollar sewer pipeline replacement project underneath the San Elijo Lagoon. The project was immensely complex due to the location and sensitivity of the pipeline, which runs underneath the environmentally sensitive Lagoon. The City and contractor had to manage complex construction activities around tremendous environmental restrictions to complete the project within an allotted timeframe and not interfere with the breeding season of migratory birds within the Lagoon.

The existing forcemain was installed in 1965 and conveys sewage approximately 1.1 miles underneath the lagoon to the San Elijo Joint Powers Agency Water Reclamation Facility in Encinitas. The pipe was nearing its life expectancy and needed to be replaced to prevent sewer spills into the environmentally sensitive Lagoon. The project was funded and spearheaded by the City of Solana Beach. The City of Encinitas, the County of San Diego and the San Elijo Lagoon Conservancy provided their support to have necessary easements in the Lagoon. The City obtained over half of the 3.2 million dollars in grant funds from the Environmental Protection Agency. The City will continue to attempt to secure these grant funds to provide sewer infrastructure repair throughout the City.

Sewer spills can have catastrophic effects on the plants and animals that inhabit the Lagoon as well as those who recreate in the nearby ocean. Major fines can be issued to responsible parties if sewer spills occur, so the City has taken a very proactive approach in analyzing the current sewage infrastructure and rehabilitating the aging system. In the very near future, the City will be replacing the Eden Gardens Pump Station and the Solana Beach Pump Station. As mentioned above, the City takes a very proactive approach to rehabilitating the aging system to prevent sewer spills and the devastating effects that they can cause to human health, property and the environment.

City Streets *Make a Clean Sweep*

Sreet sweeping is scheduled on Tuesday of each week, excluding any 5th Tuesday of a month. The City is divided into four sections as follows:

1. Northwest section, north of Lomas Santa Fe, west of I-5.
2. Southwest section, south of Lomas Santa Fe, west of I-5.
3. Northeast section, north of Lomas Santa Fe, east of I-5.
4. Southeast section, south of Lomas Santa Fe, east of I-5.

The northwest section is swept on the first Tuesday of each month.

The southwest section is swept on the second Tuesday of each month.

The northeast section is swept on the third Tuesday of each month.

The southeast section is swept on the fourth Tuesday of each month.

South Sierra Avenue is swept twice each month. The west side is swept the first and third Tuesday of the month, and the east side is swept the second and fourth Tuesday of the month.

Sweeping includes median curbs on Highway 101 and Lomas Santa Fe Drive, north-south curbs and gutters and east-west curbs and gutters to be swept on the first and third Tuesday of each month.

Residential Automated Trash and Recycling Program Update

The new residential automated trash and recycling program has just completed its fourth month of implementation, and early indications point to a dramatic increase in recycling rates for the City. As you may recall, the City approved Waste Management's proposal to switch residential trash and recycling from manual to automated and new containers were distributed to all residents in November, 2006.

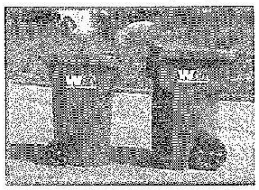

One of the main incentives for the City was to increase the recycling rates throughout the City to reduce the amount of materials entering our local landfills. This program has proven in other jurisdictions to have a major impact on this diversion, and early results have shown the same results here in Solana Beach. According to Waste Management, the recycling rates have increased 23% since the implementation of the new program. This has proven to be a very successful program so far, and the City commends you, the community, for making it happen. Please remember to recycle all you can, as the local landfills have a limited capacity and recycling has a dramatic effect on preserving our natural resources.

The Community Singalong Celebrates 20 Years

As our Solana Beach Community Sing-along reaches its 20th year in July, how many of you have attended one of these delightful evenings? "For some reason, many of our residents have the impression that they can't sing. Nonsense! For instance, at last years First Annual Solana Beach Holiday Singalong, folks didn't hesitate to sing out their favorites. Don't be shy," says Dr. Ed Siegel, founder and pianist for this free weekly event. This enjoyable family event is held each Thursday at the Fletcher Cove Community Center. Doors open at 7:30 p.m. Folks come and go until 9:00 p.m.

San Elijo Lagoon Lecture Series

All lectures take place on Friday at 7 PM

MiraCosta College/San Elijo Campus

Admission is free

The San Elijo Lagoon Conservancy (SELC) lectures series with MiraCosta College has been wildly popular with standing-room attendance. Part of SELC's year-long 20th anniversary observance, the series continues this summer and offers the public the chance to learn more about the history, ecology, and future of the San Elijo Lagoon.

"Early Occupation of the San Elijo Lagoon Region"

June 22, 2007

Dennis Gallegos, Archaeologist & President, Gallegos & Associates

Two final lectures will be offered this fall. For more information on the series contact: Denise Stillinger, dstillinger@miracosta.edu

San Elijo Lagoon Conservancy is a citizen-supported, non-profit organization dedicated to protect, preserve, and enhance the natural resources of the San Elijo Ecological Reserve and its watershed. During its 2007 anniversary year, SELC is offering a number of public events under the theme "20 Years of Watershed Moments." For more information visit www.sanelijo.org.

North Coast Repertory Theatre's Summer Schedule! 2007

Baby

by Sybille Pearson
directed by Paula Kalustian

Three couples from three generations all want the same thing – procreation. Enjoy great songs, zest and humor in this light-hearted production. A big Broadway success!

Previews May 23 - 25

May 26 - June 24

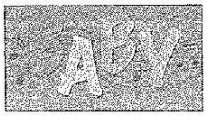

The Theatre School at North Coast Rep Presents:

Student-Written, Student-Directed One Acts

June 4 - June 6

NORTH COAST REP

The Theatre School at North Coast Rep

2007 Summer Drama Fun Camp

Classes fill up quickly so reserve your space today! For ages 9-18. Call 858.481.1055 to reserve your space, or call Joe Powers at 858.481.2155 ext. 16 for more information.

July 9 - 13,

July 16 - 20,

July 23 - 27

Rashomon

by Fay and Michael Kanin
directed by David Ellenstein

Perspective is everything. Examine the story of an ancient Japanese fable from three angles. A dynamic world of imagination unfurls in this lively and inventive classic.

Previews July 11 - 13

July 14 - August 12

City of Solana Beach Department of Parks & Recreation

Kids Summer Day Camp - 2007

for ages 6 to 12

All Sessions will meet Monday through Friday from 8:30 a.m. to 2:00 p.m. at the new Fletcher Cove Park. The fee is $100.00 per child and includes beach activities, arts and crafts, t-shirt and a weekly field trip to an exciting destination. After-care is offered from 2:00 to 5:00 p.m. Our popular "Leader in Training" program is available for 13-17 year olds for only $40/week!

Explore the Borders (Mexico)

Session 1, June 18-22, 2007

!Bienvenidos! Get ready for the most colorful kids camp the City of Solana Beach has put on yet! During this week we will explore the vivid culture of this fascinating and fun country as we create crafts such as paper lanterns and flowers. The week will end with a fiesta including a piñata and more!

Field trip: Cabrillo National Monument

Oceans Week

Session 2, June 25-29, 2007

We live near the ocean and we may visit it often, but how much do we know about it? Come to camp to learn more about this beautiful treasure so close to us! We will have beach activities throughout the week.

Field trip: Birch Aquarium at Scripps

Happy and Healthy

Session 3, July 9-13, 2007

What better way to spend summer than getting exercise and having fun doing it? Throughout this week we will be learning about our incredible bodies and what we can do to keep them happy and healthy.

Field trip: Go Play Get Fit Youth Day at SDSU

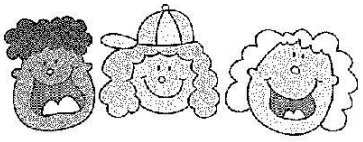

Ecology & Our Environment

Session 4, July 16-20, 2007

Egrets, marshes, and eucalyptus, oh my! Ecology week, July 16 - 20, is your child's time to discover an often overlooked region of San Diego County. Through crafts and experiments, we will dive into a part of our own backyard, learning about wildlife habitats, and how we are all a part them.

Field trip: San Elijo Lagoon

Step Into Storybooks

Session 5, July 23-27, 2007

This camp is a great opportunity for your child to step into storybooks! During this week campers will be diving into classics, acting out skits, reading award-winning children's books and even writing one of their own.

Field trip: The Wave Water Park

Rainforest Exploration

Session 6, July 30-Aug 3, 2007

Attention lovers of adventure!! Feel like swinging through the trees this summer? Sign your child up for Rainforest Exploration Camp, July 30 - August 3. During this week we will learn about habitats, wildlife and the role they play in our lives.

Field trip: Balboa Park and Museums

San Diego Appreciation Week

Session 7, August 6-10, 2007

From beaches to theme parks, we have it all in San Diego. If you are interested in your child learning to appreciate our beautiful City and its history, in a kid friendly fashion, sign your son or daughter up now.

Field trip: San Diego Harbor Cruise and Seaport Village

APPENDIX E: FIESTA DEL SOL FLYER 2008

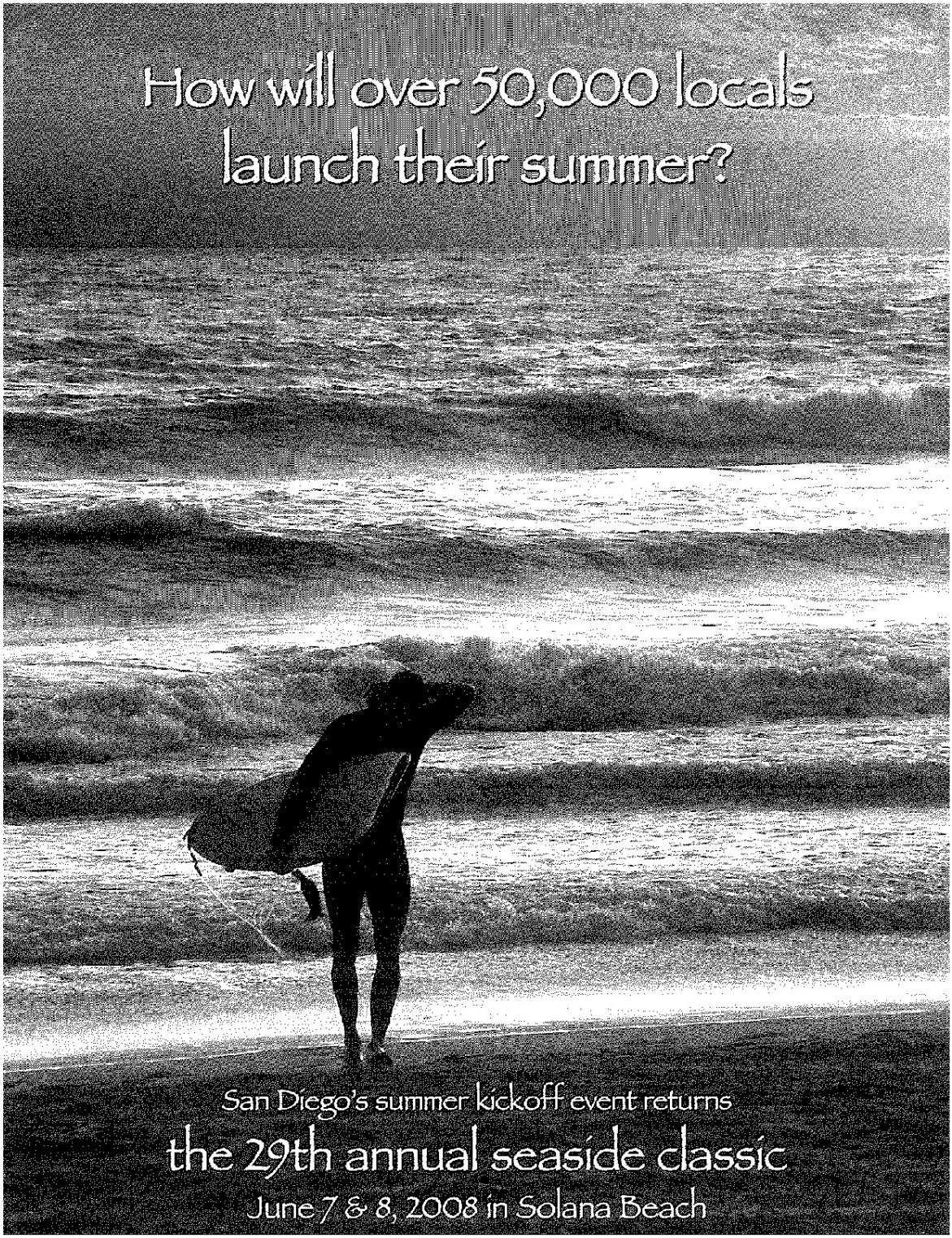

Environmental News and Programs

Water Conservation News

The Santa Fe Irrigation District is asking its customers to voluntarily increase water conservation efforts immediately in response to a looming water supply crisis created by historic dry conditions and significant court-ordered reductions in water deliveries from the Sacramento River/San Joaquin River Delta (Bay Delta) in Northern California.

Conservation has been a way of life in San Diego County for many years, but it's especially important now. Historic dry conditions are affecting all of our water supplies. In addition, on August 31, a federal judge ordered severe pumping restrictions that will reduce water deliveries from the State Water Project, the source for 40 percent of all water used in San Diego County last year. The combination of dry conditions and reduced water deliveries from the State Water Project next year make water supply shortages and mandatory water restrictions a very real possibility in 2008. It is essential that residents, businesses and public agencies conserve now to preserve water for next year and possibly beyond.

The San Diego County Water Authority, the wholesale water agency in San Diego County, is asking everyone to help the region conserve more water by joining the 20-Gallon Challenge. The 20-Gallon Challenge is a region-wide campaign to increase voluntary water conservation by 20 gallons per person, per day. Saving water now will help the region by allowing more water to stay in storage to meet demand next year.

Saving 20 gallons a day is easier than you might think. Some simple changes can make a big difference in your water use. Keep in mind that 60 percent of urban water use in San Diego is spent on landscape irrigation and other outdoor purposes, so make sure you think inside AND outside to maximize water savings. Go to this website and take the 20-Gallon Challenge pledge: www.20gallonchallenge.com.

Visit the Santa Fe Irrigation District's website at www.sfidwater.org to check for special notifications, new conservation programs, and more water conservation links.

The following are some of the programs that Santa Fe Irrigation District offers to help its customers manage their water more efficiently:

Weather Based Irrigation Pilot Program for Single-family Homeowners

A Smart or Weather Based Irrigation controller can be an effective technology for reducing water usage outdoors. A Smart Controller uses weather data and site information such as plant type and sprinkler system output to adjust watering times and frequency. Rebate Amount $350 (up to $200 toward product cost and up to $150 toward installation cost). Smart controller must be installed by a certified contractor, and the controller must be a qualifying controller listed on the San Diego County Water Authority's website at: www.sdcwa.org/manage/pdf/conservation/installers.pdf. Call 858-756-5672 for further information.

Residential Surveys

The Home Surveys are complimentary to educate the consumer on how to manage water more efficiently. Overview water usage history, check for meters leaks, check pressures, visual inspection of irrigation system, and suggestions to improve efficiency. Each home will receive an information package on landscapes and irrigation. Call (858) 756-5672 to schedule an appointment.

High Efficiency Clothes Washer Voucher

55% less energy, 65% less water and up to $175 discount. Vouchers Only! Customers must obtain the voucher first before purchase. Call toll-free at 1-800-986-4538.

California Friendly Landscape Training Program

One comprehensive mini-class March 8, 2008 (9:00-12:30 PM) Topics to include Basic Landscape Design, California Friendly and Native Plants, Landscape Sprinkler Systems, and Soil, Watering and Fertilizers. Call 858-756-5672 to register.

Multi-Family Toilet Vouchers

Receive a voucher worth up to $200 for approved high-efficiency toilets. Call toll-free at 1-800-986-4538.

Commercial, Industrial, Institutional Vouchers

One comprehensive mini-class March 8, 2008 (9:00-12:30 PM) Topics to include Basic Landscape Design, California Friendly and Native Plants, Landscape Sprinkler Systems, and Soil, Watering and Fertilizers. Call 858-756-5672 to register

Smart Landscape Program for Commercial, Multi-Family, and Public Sites

Grants for repairs/upgrades may qualify for up to $2,500 per irrigated acre. Grants are limited to $5,000 total for commercial or multi-family properties and $10,000 for Public sites. Call toll-free at 1-800-986-4538 (option 2, 5).

Artificial Turf Incentives for Mobile Home Parks, Public and Private Schools, Animal Care Facilities and Commercial Sites

50 cents per square foot incentive is available for sites looking to replace natural grass with artificial grass. Funding for the 50 cents incentive is limited and is provided on a first come, first served basis. A 30 cents incentive is provided year-round and is unlimited. For more information call 858-522-6762.

Free California Friendly Landscape Training (Spanish)

Irrigation Principles Irrigation System Troubleshooting, Controller Programming, Irrigation Scheduling, and Plant Class. The classes will be held at the Fletcher Cove Community Center on February 4, 11, 18, 25, and March 24, 2008. Call 858-756-5672 to register.

For more information, please contact Michael Banks or Jeanne Deaver at 858-756-2424.

For Conservation tips visit these websites:

http://bewaterwise.com
http://wwwthegarden.org
http://apps.sandiego.gov/landcalc
http://www.20gallonchallenge.com

BACKGROUND

About the Santa Fe Irrigation District

The Santa Fe Irrigation District was formed in 1923 under the California Irrigation District Act. The District provides water and related services to residential, commercial, and agricultural customers in the San Diego County communities of Rancho Santa Fe, Solana Beach and Fairbanks Ranch. The District provides service to about 22,000 customers in a 16-square-mile area. The District supplies over 4.5 billion gallons (or 14,000 acre-feet) of water per year to its customers, utilizing a blend of local water from Lake Hodges and imported water purchased through the San Diego County Water Authority. The District administers and operates the jointly owned R.E. Badger Filtration Plant, a 40 million gallon per day water treatment plant. The District has historical rights to local water supplies from Lake Hodges and the San Dieguito Reservoir.

STORM WATER HOTLINE!

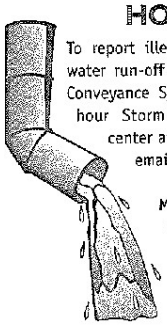

To report illegal dumping or excessive water run-off to the City's Storm Drain Conveyance System, call the City's 24-hour Storm Water Hotline message center at 858-720-4424 or send an email to stormwater@cosb.org.

Messages can be anonymous and are checked throughout the day and calls are promptly returned.

Solana Beach Clean and Green Committee

On March 14, 2007, the City of Solana Beach City Council signed the U.S. Mayors Climate Protection Agreement and joined the growing list of communities nationwide pledging to take local action to reduce the impact of global warming pollution. As a result of this pledge, a community group was formed to carry out the mission of the Agreement and assist the City in addressing the problems. The newly formed group is called the Solana Beach Clean and Green Committee.

The Committee is currently working on a number of issues, including:

- ensuring that grocery stores provide a plastic bag recycling center onsite
- distributing reusable cloth bags to use instead of plastic bags
- researching Green Building/LEED certification processes and Construction and Demolition Recycling ordinances.

The Committee is also researching solar power applications and initiating a global warming emmissions inventory with a goal to develope a Climate Action Plan.

The Clean and Green Committee meets monthly on every third Monday at City Hall from 2:00-3:00 p.m. and welcomes all residents to participate. For more information, please contact Danny King at (858) 720-2477.

Coastal Clean-up Day

Solana Beach hosted two sites, Fletcher Cove and the Rios Trail Head at the north end of North Rios Avenue in the San Elijo Lagoon, on Saturday, September 15, 2007, for the Worldwide Coastal Clean-up Day. Our small City had over 120 volunteers, of all ages, participate in picking up debris, trash and recyclables from the beach and Lagoon. For the first time in many years, plastic water bottles and their caps replaced cigarette butts as the most common litter problem at the San Elijo site.

A young woman volunteer from Sandag (they had about 20 volunteers at our sites) carried a 50 pound, old, rusty, stove top up from the Lagoon to deposit in the dumpster. (I don't know if it was gas or electric) What a trouper! In all, 605 pounds of paper, butts, bottles, caps, sofa cushions, diapers, cans, carpet, car parts, cardboard, pens, cups, balloons, etc., were cleaned from our beach and Lagoon. THANK YOU to all those volunteers and the Solana Beach lifeguards for making the clean-up such a success!!

Holiday Tree Recycling Collection Program

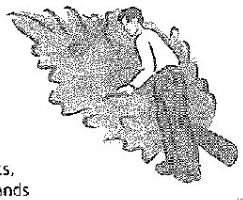

The City of Solana Beach, in partnership with Coast Waste Management, Inc, has a free Holiday tree recycling and collection program that allows residents to drop off their trees starting December 26, 2007 through January 14, 2008.

Holiday Tree RECYCLING

There will be two locations where residents may drop off their trees. The drop-off locations are across the street from 305 South Sierra Avenue (behind the Long's Drugstore) and 715 Valley Avenue at the La Colonia Community Center parking lot. No flocked trees and all lights, ornaments, tinsel, and tree stands must be removed. Trees do not have to be cut down if dropping off.

Holiday Tree COLLECTION

Trees must be cut into 4-foot sections and placed out on the curb for pick-up. All lights, ornaments, tinsel, and tree stands must be removed. Flocked trees will be collected by the trash drivers.

Restoration of San Dieguito Lagoon Well Underway!

Passersby on I-5 look with either relief or alarm when they see the earthwork being carried out in the San Dieguito Lagoon. We can celebrate, however, because it is a large-scale wetlands restoration project that will beautifully enhance what is the "western gateway" to the San Dieguito River Park. Work is well underway on the $86 million project, funded largely by Southern California Edison, to create over 150 acres of wetland and upland habitat. To learn more about the Wetlands Restoration Project, visit www.sdlagoon.com or sign up for a free bus tour by contacting the San Dieguito River Park at (858) 674-2275 extension14.

The San Dieguito River Park began in October a new grant-funded project to create four wetland treatment ponds on the east side of the freeway designed to treat urban runoff using native vegetation. The project includes construction of a new segment of the River Park's Coast-to-Crest Trail that will pass under the freeway. Visit www.sdrp.org to find out where you can explore more than fifty miles of trails, including the Coast-to-Crest Trail, throughout the River Park.

In September, the San Dieguito River Valley Conservancy began a habitat restoration project on the northern bank of the river on the property of the Del Mar Fairgrounds. Over the next five months, hard-working volunteers from the neighboring communities will help clear the site of non-native plants and prepare for replanting with native species.

Every acre counts in the critically threatened habitats of our coastal lagoons. Local residents, River Park visitors and wildlife can all look forward to the changes that will be taking place in the San Dieguito Lagoon over the next few years!

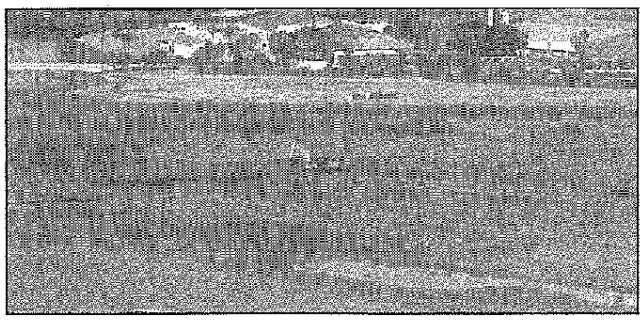

San Dieguito River Valley Habitat Restoration

Date: Last Sunday of every month
Time: 1:00 - 3:00pm
Location: San Dieguito Lagoon at Del Mar Fairgrounds

Assist the San Dieguito River Valley Conservancy in restoring native habitat by removing non-native plants and debris. Tools, training and refreshments provided! Bring water, sun protection and wear sturdy, closed-toed shoes. Please contact volunteer@sdrvc.org or (858) 674-2275 x12 for directions and to reserve a space.

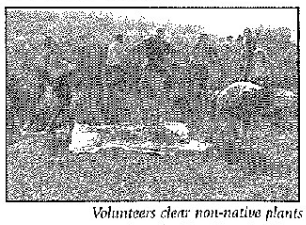

Volunteers clear non-native plants along the San Dieguito River.

LIFEGUARDING in the Winter Verses the Summer

One of the most commonly asked questions of year-round lifeguards is "What do you do in the winter?"

After the Labor Day holiday most lifeguard towers are closed and most of the seasonal staff is no longer working. The majority of lifeguard duties are then assumed by the small crew of year-round permanent lifeguards along with a few seasonal lifeguard supervisors. In Solana Beach, these men and women can be found at Marine Safety Department Headquarters, located at Fletcher Cove.

During the fall, winter, and spring months the job of the lifeguard changes dramatically. Gone are the warm days with sandy beaches, and gentle ocean waves. Warm summer water is replaced by temperatures dropping into the low 50s. The fun summer waves are replaced by large surf and strong currents that are dangerous to the average surfer. The sandy beaches erode with each large swell that arrives. In its wake it leaves exposed reef and cobblestone filled beaches.

Wetsuits and the ever increasing popularity of surfing have contributed to a steady increase in winter time aquatic activity. The result is an influx of surfers, body-boarders, and swimmers who get in over their heads in the dangerous winter conditions and need to be rescued. Although lifeguards make fewer rescues during the winter months, the ones they do make are extremely dangerous and complicated – often requiring the use of any number of resources. Personal water craft (Jet Skis) with attached sleds, inflatable rescue boats, Coast Guard and Sheriffs' helicopters have all been utilized to rescue people during these dangerous conditions.

During the winter and spring months the lifeguard staff visits local schools to give beach safety education presentations. The lifeguards also have local schools visit their Headquarters where they provide station tours to the students and teachers. Daily maintenance is performed on vehicles, rescue boats, equipment and Headquarters. During the course of each day, lifeguards patrol the beaches and check all of the public accesses to insure the public's safety and mitigate any unsafe or illegal activity. On-going training and re-certification in various aspects of ocean rescue and first aid round out the staff's weekly routine.

It's safe to say that the lifeguards' work is never done. Rather, it transforms itself from season to season. In fact, most year-round lifeguards would probably agree, much more work goes into the preparation for the summer season than the actual "busy" season itself!

Environmental News and Programs

Solana Beach Clean and Green Committee

The Solana Beach Clean and Green Committee continue work on a variety of issues to reduce the impact of global warming and pollution as a result of the U.S. Mayors Climate Protection Agreement.

The following is a list of accomplishments to date:

- Energy efficient lighting retrofit at all City facilities
- Conversion of residential manual source separated trash/recycling collection to automated single stream commingled recycling
- Adoption of Construction and Demolition Debris Recycling Program
- Energy efficient HVAC (heating and air conditioning) audit at City Hall
- Installation of public recycling containers at parks and beach accesses

The Solana Beach Clean and Green Committee is currently working on a number of things, some of which include:

- Developing a Climate Action Plan for Greenhouse Gas Emissions
- Ensuring that grocery stores have plastic bag recycling centers onsite
- Researching Green Building/LEED certification processes and incentives

The group meets the third Monday of each month at City Hall from 2:00pm - 3:00pm and welcomes all residents to participate. For more information, please contact Danny King at (858) 720-2477.

Construction and Demolition Debris Recycling Ordinance

Construction and demolition (C&D) debris can be a significant portion of a jurisdiction's waste stream, and diverting it from landfills can help jurisdictions achieve and maintain their diversion goals established by AB 939. Demolition and new construction such as residential and commercial buildings and roadways generate large amounts of C&D debris. This debris includes concrete, asphalt, wood, drywall, metals, and other miscellaneous and composite materials. According to the National Association of Home Builders (NAHB) Research Center, the building of a 1,700 square feet home requires:

9,700 board feet of lumber	4,850 square feet of sheathing
2,000 square feet of shingles	2,528 square feet of siding
750 feet of copper wire	55 cubic yards of concrete
2,500 square feet of insulation	170 feet of copper pipe
6,484 square feet of drywall	55 gallons of paint
300 pounds of nails	

As a result of State Law AB 939, all municipalities are required to divert at least 50% of the solid waste generated from landfill disposal by the year 2000. The City is currently at a 56% diversion rate, but it should increase with the implementation of recent programs such as the conversion to single stream commingled residential recycling, the increase in public recycling containers, and the implementation of the C&D recycling ordinance, which was adopted by City Council on January 23, 2008. This ordinance will require recycling at selected construction and demolition projects within the City.

For more information on this program or any of the programs listed above, please call Danny King at 858-720-2477.

Plastic Bag Advertising Ban

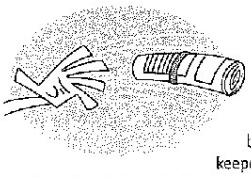

On January 9th, 2008, the Solana Beach City Council officially adopted Ordinance 375, effectively banning plastic bag advertising. This emerging type of advertising is typically conducted by small residential and commercial support businesses such as landscapers, pool cleaners, housekeepers, and handyman type services. The method of solicitation is to drive by properties and throw the bags onto driveways of residential and commercial properties. While this method of solicitation allows for quick distribution, the environmental challenge is that the plastic bags typically get left at the end of driveways. The bags often get run over and ultimately the bag and its contents end up in the City's gutters, catch basins, storm drains and eventually the local waterways (lagoons and ocean).

Many door-to-door advertisers have used plastic door hanger bags to distribute materials for years. The difference is that with a door hanger, the plastic bag does not find its way to the gutter as often, although they can and have. The new ordinance excludes newspapers that are routinely delivered and distributed to properties. If you receive an advertisement in a plastic bag, please contact the City's Code Enforcement Office at 858-720-2412. For more information on this ordinance, please contact Steve Didier at 858-720-2436.

New Number for the Graffiti Hotline

The Graffiti Hotline phone number has been changed. The new number is **858-720-4457**. The old number, 2507, will remain active temporarily until references to it can be updated. Please use the new number when calling to report graffiti.

Looking for a Few Good Volunteers

The San Dieguito River Valley Conservancy is looking for a few good volunteers. Actually, we'd like more than a few! Join us on Sunday, February 24th, from 1:00 – 3:00pm to help plant native plants at our habitat restoration project along the San Dieguito River channel.

Over the past few months, hard-working volunteers have cleared the project site of several types of non-native plants to make room for native coastal sage scrub species. Now, we need energetic volunteers to help with planting, seeding and weeding. Reservations are required – please e-mail volunteer@sdrvc.org or call (858) 674-2275 x12 for directions and to reserve a space. Tools, training and refreshments are provided!

The Conservancy hosts habitat restoration events on the last Sunday of every month from 1:00 to 3:00pm. Everyone is welcome. Visit www.sdrvc.org to find out more about how to get involved or to schedule a special volunteer work event for your organization. See you out in the River Park!

Time Warner Cable Lineup Changes

County Television Network will be moving from channel 22 to channel 24 on February 13, 2008. For Time Warner customers City Council meetings will air on channel 24 starting on that date.

Also, Shop NBC will be moving from channel 98 to channel 22. If you have any questions please contact Time Warner Cable customer service at 858-635-8486.

VOLUNTEERS NEEDED!

Solana Beach and Del Mar Fire Department's Community Emergency Response Team

Solana Beach and Del Mar residents are being asked to participate in a Community Emergency Response Team (CERT) training to become disaster workers. The classes are free and open to all residents or employees of Solana Beach and/or Del Mar who are 18 years or older. This is the City's fourth year of consecutive CERT training and there have been over 150 citizens trained thus far.

CERT members are trained in basic life and property saving skills in the event of a major disaster when professional services have not yet arrived or are overwhelmed.

CERT training is designed to prepare you to help yourself, your family, and your neighbors in the event of a catastrophic disaster. Because emergency services personnel will not be able to help everyone immediately, you can make a difference by using the CERT training to save lives and protect property.

CERT training covers basic skills that are important to know in a disaster when emergency services are overwhelmed and/or not available. With training and practice and by working as a team, you will be able to do the greatest good for the greatest number of victims before, during and after a disaster, while protecting yourself from becoming a victim.

The CERT program provides an effective first-response capability. Acting as individuals first, then later as members of teams, trained CERT volunteers can fan out within their assigned areas, extinguishing small fires, turning off natural gas inlets to damaged homes, performing light search and rescue, and rendering basic medical treatment. Trained volunteers also offer an important potential workforce to service organizations in non-hazardous functions such as shelter support, crowd control, and evacuation.

The 25 hour CERT training course covers the following topics:

1. **Disaster Preparedness**
2. **Fire Safety**
3. **Disaster Medical Operations**
4. **Light Search & Rescue Operations**
5. **CERT Organization**
6. **Disaster Psychology**
7. **Terrorism and CERT**

The next CERT training begins in May, 2008.

For more information and to sign-up, please contact:
Lorn Cannon, Solana Beach Fire Dept. - 858-720-2410
lcannon@cosb.org

Environmental Sustainability Update

The City of Solana Beach is comprised of many forward-thinking environmentally conscious residents committed to preserving and enhancing the environment for future generations. This is evident in the work being performed by the Solana Beach Clean and Green committee, which is comprised of local residents and business owners. The City Council has recently formed a Council Ad-Hoc subcommittee on Environmental Sustainability, to work closely with the Clean and Green committee and provide direction to City staff on sustainability programs.

The following are some recent accomplishments:

- Adoption of Construction and Demolition Debris Recycling Ordinance
- Adoption of Plastic Bag Advertising Ban
- Implementing a "Commuter Policy" providing incentives to City staff to find alternative transportation to work

The following are some programs being worked on currently:

- Green Building/LEED Incentive Programs
- Solar Incentive Programs
- Development of Climate Action Plan
- Plastic Bag Recycling Program

If you would like to participate in the Clean and Green Committee or would like more information regarding the committee and/or work products, please call Danny King at (858) 720-2477.

Are You Ready, Solana Beach?
- Free Disaster Training Available to Solana Beach Residents and Employees

The Solana Beach City Council and Solana Beach Fire Department are sponsoring a free disaster training program for Solana Beach residents or employees.

"*Are You Ready, Solana Beach?*" is a 1-hour disaster preparedness training customized for disaster risks that face Solana Beach residents. This training is provided neighborhood by neighborhood with the goal of teaching you how to prepare and join together in the event of a local disaster. The format of these meetings brings small groups of neighbors together to connect, learn, and plan how to respond in threatening situations. If you are interested in hosting or attending an "*Are You Ready, Solana Beach?*" neighborhood meeting, please call 720-4412 or email linettepage@yahoo.com.

Building a safe, prepared and strong Solana Beach community is the aim of this training program. The more residents and employees we can train, the stronger our city will be!

Please call 720-4412 for more information on this training session.

Make Your Home Fire Safe
Wildland Urban Interface Code

Solana Beach has adopted the Wildland Urban Interface Code. Based on State law, the Public Resources Code Section 4291 requires homeowners to maintain 100 feet of defensible space clearance around homes and structures.

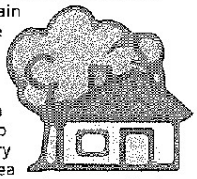

Homes with a defensible zone have a much greater chance of surviving a wildfire than homes without. A defensible zone breaks up the continuous path of plants that could carry wildfire to your home. This is a minimum area of 100 feet from any home. It is the area where modified landscaping allows your house to survive on its own – greatly improving the odds for firefighters to defend your home.

For a defensible zone, examine the following:

ROOF

- Remove branches within 10 feet of the chimney and dead leaves from roof/gutters.
- Install a fire resistant roof. Contact the Fire Department for roofing requirements.
- Cover chimney outlet and stovepipe with nonflammable 1/2 inch screen or smaller.

LANDSCAPING

- Remove flammable-type vegetation at least 30 ft. from all structures.
- Use fire resistant plants (check the local nursery).

YARD

- Stack woodpiles at least 30 feet from all structures.
- Remove vegetation within 10 feet of woodpiles.
- Remove construction materials, pine needles, leaves and debris.

ON GOING MAINTENANCE – THIS IS NOT A ONE-TIME PLAN

Maintenance can be fire retardant and drought resistant plants. Maintain plants by regular watering and removing dead branches! Call your utility company for help with trees near power lines. Never trim near power lines on your own.

MORE INFORMATION FOR HOMEOWNERS
www.firesafecouncil.org
www.bewaterwise.com
www.ci.solana-beach.ca.us

The Solana Beach Fire Department can answer your questions at 858-720-2407.

Help Create a Safe California!

SLOW DOWN:
Law Enforcement Torch Run

On Wednesday, June 4, the Law Enforcement Torch Run, to benefit the Special Olympics of San Diego, will run through Solana Beach on Highway 101. The torchbearer and other runners will pass through the City sometime between 7:00-8:30 a.m., which will be stopping traffic for approximately 20 minutes. Law Enforcement will be re-routing traffic during that time. For more information, please contact Teresa Contreras at (619) 283-6100.

APPENDIX I: CONSTRUCTION BMP BROCHURE

WATER QUALITY REGULATIONS FOR CONSTRUCTION SITES

Dear Contractor,

The North County Storm Water Program is a collective of jurisdictions in northern San Diego County working together to protect our watersheds. We believe that reducing pollution is critical to maintaining our communities' way of life.

It is our hope that this brochure will help you identify activities that are recognized to cause water pollution and implement appropriate Best Management Practices (BMPs) to minimize their impact. By providing you with these tools, we hope to make your job easier while keeping our waterways clean.

Each jurisdiction will be inspecting their construction sites to ensure the protection of water quality. We look forward to seeing the BMPs presented in this brochure implemented at your sites.

Together we have the ability to preserve and improve the quality of life in our communities.

Sincerely,

The North County Storm Water Program

Contact Phone Numbers:

City of Carlsbad
760-602-2799

City of San Marcos
760-744-1050

City of Encinitas
760-633-2787

City of Del Mar
858-755-8313

City of Oceanside
760-435-5800

City of Solana Beach
858-720-2470

City of Vista
760-726-1340

A POLLUTION PREVENTION GUIDE FOR THE CONSTRUCTION INDUSTRY

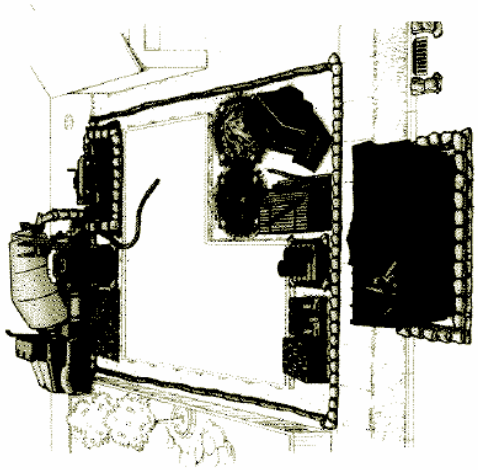

North County Storm Water Program

Carlsbad • Del Mar • Encinitas • Oceanside
• San Marcos • Solana Beach • Vista

Only Rain in the Storm Drain

Construction Sites

In 1972, the Environmental Protection Agency developed regulations to control water pollution. As a result, the National Pollutant Discharge Elimination System (NPDES) Permit was created. NPDES permits are issued to municipalities as well as construction sites. In addition to complying with local regulations, which are governed by our municipal NPDES permit, you may be required to obtain a permit through the State of California under the State General Construction Permit (99-08-DWQ). All construction sites over one acre are required to obtain coverage under this permit.

Construction sites can contribute pollutants such as sediment, metals, and chemicals, to our local creeks, rivers, lakes, lagoons, and ocean. These pollutants make their way down our streets and into storm drains, eventually discharging to the nearest body of water.

All construction sites are required to implement Best Management Practices (BMP) to prevent storm water pollution. This brochure is intended to assist your construction site in understanding BMP requirements.

Each municipality has one or more persons dedicated to ensuring that all construction sites are in compliance with state and local storm water control regulations. Contact your local municipality for further information.

Right-of-Way Permitting

We understand that there are times when space on construction sites is limited. If at any point, you (as a contractor or subcontractor) need to use the public right-of-way in order to work or store materials, you must apply for a special permit. This permit allows you to use the City's right-of-way areas, and describes what is required to prevent illegal contaminants from entering local storm drains. For more information or to obtain a permit application contact your local jursidiction.

Inspection and Enforcement Program

Each jurisdiction has established an enforcement program to ensure that all businesses operate in compliance with all appropriate storm water laws and other City requirements. Contractors, site supervisors and property owners can be held responsible for violations, which may lead to a civil penalty of up to $10,000 per day and/or reimbursing the local jurisdiction for all expenses associated with clean up.

Best Management Practices

Construction materials such as paint, dirt and trash often find their way into our storm drains, polluting the environment and jeopardizing our creeks, rivers, lakes, lagoons, and ocean.

The NCSWP is working with contractors to implement what are known as Best Management Practices (BMPs) on all construction sites. That is, methods used to keep pollution out of our storm drains and off public property, such as sidewalks, streets, parkways and alleys. Carrying out and maintaining these BMPs on the construction site is critical to protecting our ocean and bay.

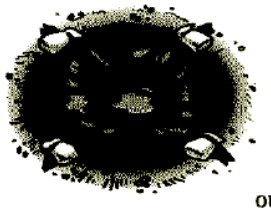

The following is a list of BMPs and pollution prevention measures that shall be implemented at all construction sites:

1. **Conduct daily site cleanings.**
2. **Develop spill response and containment procedures.**
3. **Educate employees and subcontractors about BMPs.**
4. **Develop an erosion control plan for wind and rain.**
5. **Regularly maintain all BMPs at project site.**

APPENDIX J: STORM WATER PLAN CHECK COMMENT FORM

CITY OF SOLANA BEACH
ENGINEERING DEPARTMENT
STORM WATER PLAN CHECK COMMENTS

Project: _____ Address: _____

☐ Construction phase **Erosion Control** shall be shown on the permitted plans, such as silt fences, gravel bags, de-silting basins, slope protection and entrance controls. **Best management practices (BMP's)** shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during construction activities. Erosion prevention shall be emphasized to keep sediment on site during excavation and grading activities. Sediment controls such as mulch, jute netting and straw blankets shall be used as a supplement to erosion control for keeping sediment on site.

- **Submit Storm Water Management Plan** (attached)
- **Add the following note to plans**: "**EROSION CONTROL:** Best management practices shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during excavation and grading activities."

☐ The Applicant shall demonstrate that the **project does not increase storm water runoff** or peak discharge from their property. For example, add a storm water retention and infiltration feature such as a depressed landscape area or below ground drywell using course rock (1.5" to 2.5") or a pre-fabricated chamber. The amount of retention volume should be at least equal to 0.60 inches (0.05 feet) times the added impervious area. This should be designed to avoid runoff damage to downstream properties, such as not concentrating runoff where it was previously not concentrated. (For 5,000 SF or more of added impervious area, use County of San Diego Hydrology Manual)

☐ Storm Water and Non-Storm Water Runoff Control. Post-development measures that **reduce pollutant discharges from the site** shall be shown on the permit plans. For example, maximize permeable areas (landscaping, driveway grass strips, gravel paths, concrete pavers on sand) to allow runoff seepage into the ground and drain impermeable surfaces (roofs, hardscape, driveways) to permeable areas (i.e. planted areas) and other approved pollutant treatment BMP's.

- Is runoff from hardscape areas routed over natural treatment areas before draining off site?
- **Show on the plans** where hardscape and roofs drain to.
- **Show BMP's** on the plans (grassy swales, landscaping, infiltration pits, pervious pavements, gravel paths, etc.).
- The volume of treatment should be at least 0.60 inches (0.05 feet) times the added impervious area.

APPENDIX K: BUILDING PLAN CHECK ROUTING FORM

CITY OF SOLANA BEACH
635 S. Highway 101, Solana Beach, CA 92075
(858) 720-2440
APPLICATION TRACKING FORM

Plancheck No.: _____
Received by: _____
Date:

Site Address _____ Suite # _____
Site Business Name _____ APN _____
Project/Property Owner's Name _____
Contact Person _____ Phone # _____
Address _____ Fax # _____
Project Description _____ E-Mail _____
Discretionary Permit Applicable? _____ Sq. Ft. _____
Estimated Building Valuation? _____ Estimated Grading Required? _____
Is/will the building equipped with fire sprinklers? ☐Yes ☐No Is the property on a septic system? ☐Yes ☐ No
Is there an existing swimming pool &/or spa on the property? ☐Yes ☐ No **If "yes," see the Pool & Spa note below**

THE FOLLOWING "CHECKED" ITEMS MUST HAVE WRITTEN APPROVAL PRIOR TO PERMIT ISSUANCE. APPROVALS FROM THE PLANNING, ENGINEERING, FIRE, HEALTH DEPARTMENTS, AND THE AIR POLLUTION CONTROL DISTRICT MAY ALSO BE REQUIRED PRIOR TO FRAME AND/OR FINAL INSPECTION AND OCCUPANCY (INDICATED ON "BLUE" CARD). IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE INDIVIDUAL DEPARTMENT(S) AT THE NUMBERS SHOWN.

CITY DEPARTMENTS

☐ **PLANNING / ZONING**.....858-720-2440
☐ O.K. for Plancheck Only. By _____ Date_____
☐ Fees Due. ☐ Park Fees ☐ Public Facilities Fees ☐ Public Arts Fee
☐ Fee Payment Required Prior to ☐ Permit Issuance ☐ Final Inspection
☐ Height Certificate Required prior to Requesting Frame Inspection.
☐ Approval Req'd prior to: ☐ Permit ☐ Frame Insp ☐ Final Insp
☐ Approval required prior to ☐ Frame ☐ Final Inspection
☐ Project shall comply with Wildland Urban Interface Standards (WUI)
☐ O.K. to Issue Building Permits _____

☐ **ENGINEERING / SANITATION**.....858-720-2470
☐ O.K. for Plancheck Only. By _____ Date _____
☐ Permits Req'd ☐ Dedication Req'd ☐ Fees Req'd.
☐ Approval required prior to ☐ Frame ☐ Final Inspection
(Sewer, Plancheck, In Lieu)
☐ See attached form for Storm Water BMP'S
☐ O.K. to Issue Building Permits _____

☐ **ENVIRONMENTAL**.....858-720-2477
☐ O.K. for Plancheck Only By _____ Date _____
☐ See attached form for Storm Water comments
☐ WMP Required Prior to ☐ Permit Issuance ☐ Final Inspection
☐ Post Construction BMP Inspection Required:
☐ During Construction ☐ Prior to Final Inspection
☐ O.K. to Issue Building Permits _____

☐ **FIRE PREVENTION**.....858-720-2410
☐ O.K. for Plancheck Only By _____ Date _____
Approval required prior to ☐ Frame ☐ Final Inspection
☐ O.K. to Issue_____

☐ **POOL & SPA SAFETY ENCLOSURE & SAFETY FEATURES**
Effective 1/1/07, AB 2977 requires all existing pools and spas shall comply with current State mandated enclosure & safety features.

AGENCY APPROVALS

☐ **SCHOOL FEES**
(Obtain signature on the attached forms)
Solana Beach Elementary &
San Dieguito Union H.S. District.....760-753-6491

☐ **HEALTH DEPARTMENT**
☐ Health Regulated Business
☐ Hazardous Materials Management.....619-338-2222
1255 Imperial Avenue, San Diego 92138-5621
☐ Final Approval Required
☐ Septic Approval Required 760-471-0730
151 Carmel St, San Marcos 92078
Approved by_____

☐ **AIR POLLUTION CONTROL DIST.** ..... (858) 586-2600
(Obtain stamp and signature on APCD Questionnaire)
10124 Old Grove Rd., San Diego CA 92131

☐ **WATER AND SEWER**
(Obtain signatures on attached forms)
☐ Santa Fe Irrigation District.....858-756-2424
☐ Solana Beach Sanitation District 858-720-2470

☐ **CALIFORNIA COASTAL COMMISSION**....619-767-2370
Call for an appointment

☐ **ASSESSOR'S COPY OF PLANS**
At permit issuance, provide a third copy of Title Sheet, Plot Plan & Floor Plan (per Senate Bill 493).

☐ **OWNER/BUILDER AFFIDAVIT AND/OR CONTRACTOR INFORMATION**

☐ **SDG&E WORK ORDER**..... (800) 411-SDGE
For new / relocated gas & electric meters

_____ _____
Signature of Applicant Date

F:/Common/UpdatedApplications/Tracking Sheet Eff 09/08

APPENDIX L: PUBLIC PROJECT PRE-CON MEETING AGENDA (SAMPLE)

PRE CONSTRUCTION MEETING
Streetlight Installation Project on Barbara/Granados and Pacific/Circle
Bid No. 2007-10
February 20, 2008

Introductions

Contacts

1. Contractor Lekos Electric, Inc.
   (619) 447-7661 (office)

2. City City of Solana Beach
   635 S. Hwy 101
   City of Solana Beach, CA 92075
   (858) 720-2470 (Engineering)
   (858) 755-1782 (Engineering fax)

   Hector Ezquerro – City Inspector (858) 720-2470 (o); (858) 354-8876 (c)
   Dan Goldberg – Project Manager (858) 720-2474
   Steve Kerr – Public Works Operations Manager (858) 449-2630

   Utilities Santa Fe Irrigation District – Dana Johnson (858) 756-2424

Project Status: Notice to Proceed – TBD
35 Working Days

Contract Amount: $56,460.00

Project Goals:
- Safety
- Community
- Quality
- Schedule
- Budget

Contractor Requirements:
- Any questions about Contract Award or "Key Contract Items Summary Sheet"?
- Submit Construction Schedule
- Submit Traffic Handling Plan
- Submit Storm Water Pollution Prevention Plan (SWPPP)
- Submit Names/Phone Numbers of Foreman/Emergency People
- Submit Names of Additional Subcontractors

Storm Water & Erosion Control
- Best management practices shall be used & maintained
- Erosion control plan

Labor Compliance, Certified Payroll and Progress Payments: Section XVIII - I (page 48)

Page 1 of 2

APPENDIX M: CIVIL PENALTY MATRIX

SOLANA BEACH
CIVIL PENALTIES MATRIX

The following factors will be considered in determining the amount of civil penalties from the Solana Beach Municipal Code 13.10.140 A. any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day** such a violation exists and will be assessed: (1) The seriousness of the violation (2) the duration of the violation; (3) the frequency or recurrence of the violation; (4) the history of the violation; (5) the Responsible Party's conduct after issuance of the Notice and Order; (6) the good faith efforts of the Responsible Party to comply; (7) the impact of the violation upon the community.

*** Criminal Penalties**

These factors are assigned to two categories, "**Environmental Significance**" and "**Compliance Significance**," in order to easily present them in a graphical form in the matrix chart.

Environmental Significance includes the following factor: Seriousness of the violation.

Compliance Significance includes the remaining factors: The duration of the violation, frequency or recurrence of the violation, the history of the violation, the Responsible Party's conduct after issuance of the Notice and Order; the good faith efforts of the Responsible Party to comply and the impact of the violation on the community.

Environmental Significance

Compliance Significance	Moderate	Major	Severe
Moderate	*NOV-$100	$100 - $200	$500
Major	$100- $200	$500	$1,000
Severe	$500-$1,000	$1,000	$1,000-Referral to Regulating Agency

* Notice of Violation

The list below gives examples of issues specific to storm water violations that could be considered under each of the factors.
Increased Penalties will be factored as Notice of Violation to Moderate, Moderate to Major or Major to Severe.
Decreased Penalties could be Severe to Major, Major to Moderate or Moderate to Notice of Violation.

Environmental Significance
Seriousness of the Violation

Relatively inert discharges (e.g., soil, sediment, cement residue, stucco residue, etc.) **[Moderate Environmental Impact]**

Moderate toxicity / moderate health threat discharges (e.g., cleaning products with no specific hazard, i.e. detergent, latex paint) **[Major Environmental Impact]**

Significant toxicity / significant health threat discharges (e.g., sewage, hazardous materials/wastes, etc.) **[Severe Environmental Impact]**

SOLANA BEACH
CIVIL PENALTIES MATRIX

Compliance Significance

Duration of Violation

Extent of discharge as determined by volume, area covered, how long it continued **[Greater Discharge Can Lead to Increased Penalty]**

Number of days the discharge remained unabated in the conveyance system **[Unabated Discharge Can Lead to Increased Penalty]**

Impact on the Community

Results in damage, degradation, or obstruction of the storm water conveyance system **[Can lead to Increased Penalties]**

Results in actual degradation of aquatic habitat in receiving waters **[Can lead to Increased Penalties]**

Results in actual impact on wildlife including benthic communities **[Can lead to Increased Penalties]**

Results in algal bloom, discoloration or odor in receiving waters **[Can lead to Increased Penalties]**

Discharge of constituent of concern within a watershed that leads to a 303 (d) listed water body **[Can lead to Increased Penalties]**

Regulated industry (e.g., subject to OSHA chemical right-to-know requirements or subject to Hazardous Material / Hazardous Waste Permit) **[Can lead to Increased Penalties]**

Recurrence of Violation

No prior administrative enforcement penalty can be a factor for officer's discretion in lowering penalties.

Prior administrative penalties action can lead to increased penalties.

Prior administrative enforcement within the last year maybe a factor in determining higher penalties leading up to a **criminal citation**.

Intentional discharge will be a factor to increase penalties leading up to a criminal citation.
SOLANA BEACH
CIVIL PENALTIES MATRIX

History of Violation

Prior violations or warnings issued by other regulatory or City agencies (e.g., County Dept. of Health, County Dept. of Env. Health, RWQCB, FEWD, MWWD) **[Can lead to Increased Penalties]**

Prior warnings (letter or Notice of Violation) from Storm Water Pollution Prevention Program **[Can lead to Increased Penalties]**

Good Faith Efforts to Comply

Responsible Party failed to implement BMPs and should have known of requirement for BMPs (e.g., gasoline service station or construction industry) **[Can lead to Increased Penalties]**

Existing BMPs failed to prevent discharge (e.g., employee failed to comply with documented training and procedures or structural BMP failed to perform to design) **[Can lead to Reduced Penalties]**

Rapid and appropriate response to discharge **[Can lead to Reduced Penalties]**

The Solana Beach Municipal Code 13.10.140 A States the following:

13.10.140 Penalties for violation.
A. Civil Penalties. Any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day such a violation exists**, and all pollution detection and mitigation costs (if applicable).
B. Criminal Penalties. Any person who knowingly or intentionally violates any provision of this chapter shall be subject to liability for a misdemeanor, punishable by imprisonment for a period not to exceed one year, or a fine not to exceed $10,000 for each day such a violation exists, or both.
C. Any monetary penalties collected by the city of Solana Beach pursuant to violations of this chapter shall be returned to the storm water management program to be used for storm water pollution monitoring and management practices. (Ord. 184 § 1, 1993)

13.10.150 Continuing violation.
Unless otherwise provided, a person, firm, corporation or organization shall be deemed to have committed a separate offense for each and every day during any portion of which a violation of this chapter is committed, continued or permitted by the person, firm, corporation or organization and shall be punishable accordingly as herein provided. (Ord. 184 § 1, 1993)

13.10.160 Concealment.
Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter shall constitute a violation of such provision. (Ord. 184 § 1, 1993)

13.10.170 Acts potentially resulting in violation of Federal Clean Water Act and/or Porter-Cologne Act.
Any person who violates any provision of this chapter, any provision of any permit issued pursuant to this chapter, or who discharges waste or wastewater which

causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, may also be in violation of the Federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts including civil and criminal liability. Any enforcement action authorized under this chapter should also include notice to the violator of such potential liability. (Ord. 184 § 1, 1993)

13.10.180 Violations deemed a public nuisance.

A. In addition to the penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to the public health, safety and welfare and is declared and deemed a public nuisance and to impact storm water quality, and such nuisance may be summarily abated and/or restored by any authorized enforcement official. Civil action to abate, enjoin or otherwise compel the cessation of such nuisance may be taken by the city attorney.

B. The cost of such abatement and restoration shall be borne by the owner of the property and the cost thereof shall be a lien upon and against the property and such lien shall continue in existence until the same shall be paid. If the lien is not satisfied by the owner of the property within three months after the completion by the authorized enforcement official of the removal of the nuisance and the restoration of the property to its original condition, the property may be sold in satisfaction thereof in a like manner as other real property is sold under execution.

C. If any violation of this chapter constitutes a seasonal and recurrent nuisance, the city of Solana Beach shall so declare. Thereafter such seasonal and recurrent nuisance shall be abated every year without the necessity of any further hearing. (Ord. 184 § 1, 1993)

13.10.190 Civil actions.

In addition to any other remedies provided in this section, any violation of this chapter may be enforced by civil action brought by the city of Solana Beach. In any such action, the city of Solana Beach may seek, and the court shall grant, as appropriate, any or all of the following remedies:

A. Injunctive relief;

B. Assessment of the violator for the costs of any investigation, inspection, or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing legal action under this subsection;

C. Costs incurred in removing, correcting, or terminating the adverse effects resulting from the violation;

D. Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life. Assessments under this subsection shall be paid to the city of Solana Beach to be used for costs associated with monitoring and establishing storm water

discharge pollution control systems and/or implementing or enforcing the provisions of this chapter. (Ord. 184 § 1, 1993)

STORMWATER BEST MANAGEMENT PRACTICE (BMP) GUIDE for CONSTRUCTION and BUILDING ACTIVITIES

STORMWATER POLLUTION

When rain flows over streets and other surfaces, it picks up pollutants and carries them into the stormwater conveyance ("storm drain") system. The storm drain system is designed to prevent flooding by transporting water away from urban areas. Unfortunately, this water and all the contaminants it contains eventually flow to our streams, lakes, and the ocean where we swim and fish. Once there, polluted runoff can harm wildlife and their habitats. In some cases, it can even cause beach closures or make our fish and shellfish unsafe to eat.

Construction activities can be a significant source of stormwater contamination. During the life of a project, many types of materials and wastes are routinely used or generated. If not properly managed, sediment and other pollutants (paint, concrete, drywall, fuels, solvents, etc.) can be washed or tracked offsite, eventually entering the storm drain system. It might not seem like your activities alone could be damaging to the environment; but the cumulative impact of all of the construction projects conducted throughout the City every year can seriously impact the health of our local waterbodies.

What are you adding?

For more information, or to report stormwater pollution, pick up the phone and dial (858) 720-2477 and speak to the Engineering Department.

PROJECTS 1 ACRE AND GREATER

If your project will disturb one acre of land or more, you must also obtain coverage under the Statewide General Construction Activity Stormwater Permit. This permit, issued by the California State Water Resources Control Board (SWRCB), will require you to prepare a Storm Water Pollution Prevention Plan (SWPPP), and to implement BMPs to reduce stormwater pollutants both during and after construction is completed. For information on obtaining coverage under the General Construction Permit, and other available resources, contact the SWRCB at (916) 341-5537

YOUR RESPONSIBILITIES

City of Solana Beach Stormwater Ordinance prohibits the discharge of pollutants to the storm drain system. Simply stated, only rain may legally enter the storm drain. As a construction site owner or operator, you are legally responsible for ensuring that sediment and other construction-related pollutants are properly managed. This means that pollutants from your site may not enter the storm drain system or any receiving water (such as creeks, streams, etc.) either directly or indirectly. You can also be held responsible for discharges or environmental damage caused by your employees or subcontractors.

Your grading and construction activities will be reviewed by City staff during plan check and site inspection to verify their compliance with the Stormwater Ordinance and related provisions of the City Grading Ordinance. Failure to comply with these regulations can result in civil and criminal penalties.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices (BMPs) are activities or practices designed to reduce or eliminate pollutants in stormwater. Proper selection and implementation of BMPs will help you to prevent stormwater pollution from your site. On the following pages, a number of BMPs that apply to erosion control and other construction activities are described. It is your responsibility to determine which of these (or other BMPs) are most appropriate for your project, and to implement them accordingly. The success of your efforts will ultimately depend on whether or not you have prevented pollutants from leaving the site.

Remember, knowledge is the most important tool on your site. Training your employees and subcontractors is the best way to ensure that your BMPs are implemented and maintained effectively.

EROSION CONTROL BMPs

EROSION CONTROL STRATEGY

Sediment is the most common pollutant washed from construction sites. It also transports numerous other contaminants such as paint, cement wash, asphalt, and automotive fluids. Sediment loss is best controlled by using a combination of BMPs to target each stage of the erosion process. This should include the following general steps

Step 1. Use advance planning and scheduling

Step 2. Stabilize slopes and exposed surfaces

Step 3. Divert or dissipate onsite flows.

Step 4. Capture sediment from runoff.

STEP 1: PLANNING AND SCHEDULING

Planning and scheduling should always be part of your erosion control strategy. Effective planning can greatly reduce the need for other costly and time-consuming solutions. It can also save you considerable money. Whenever possible, plan your project to utilize existing topography, drainage patterns, and vegetation. This will significantly reduce the potential for erosion both during and after construction.

Grading and clearing should be phased to reduce the amount and the duration of sediment exposure. If possible, schedule grading during the dry season (Mid-April through October), particularly avoiding December through February. Always be aware of forecasted weather conditions prior to any scheduled grading or clearing activities.

For weather forecasts, contact the National Weather Service at (858) 675-8700, or visit www.weather.com

STEP 2. STABILIZING SLOPES AND SURFACES

The City Grading Ordinance requires that slopes be stabilized as soon as they are created to increase their resistance to erosion. When permanent stabilization of slopes or other exposed surfaces is not yet feasible, temporary measures should always be used. A number of practical solutions can be used.

Preservation of Existing Vegetation.
Leaving existing vegetation (trees, vines, shrubs, grasses, etc.) in place can minimize the potential for erosion as well as the need for other costly controls

Seeding and Planting. Seeding grasses and planting trees or ground cover provides long-term stabilization of slopes and soils. Schedule landscaping to permanently cover exposed surfaces as soon as they are created.

Mulching. Mulches (such as wood chips, bark, straw, gravel, etc.) can be used to temporarily or permanently stabilize cleared or freshly seeded areas. Mulches should be inspected weekly and after rain for damage or deterioration.

Geotextiles and Mats. Geotextiles and mattings can be used for temporary or permanent soil stabilization, and are especially effective on steep slopes and channels. They should be inspected monthly and after significant rainfall.

Stabilization of Vehicle Traffic Areas. All areas of significant vehicle traffic (site entrances, access roads, parking lots, etc.) should be stabilized immediately after grading to prevent erosion and control dust. Site entrances and exits are especially important. Use gravel approaches to limit tracking of sediment offsite.

Remember, the effectiveness of BMPs you use will depend on their proper implementation and maintenance. Routine inspection and evaluation, especially before and after rainfall, should be part of your pollution control strategy.

Step 3: DIVERTING AND DISSIPATING FLOW

Effectively preventing sediment erosion generally requires a combination of surface stabilization and onsite flow control. Flow control methods reduce the ability of rainwater to erode sediments either by decreasing its velocity or by channeling it away from exposed surfaces. A number of practices are commonly used.

Earthen Dikes. Earthen dikes are berms or ridges of compacted soil (or other onsite materials) that divert flow away from slopes or other exposed areas. They are relatively inexpensive and can be constructed during initial grading operations.

Temporary Drains and Swales. Temporary drains and swales can be used to divert runoff around the site or disturbed areas.

Slope Drains. Slope drains are temporary pipes or lined channels that drain the top of a slope to a stable discharge point at the bottom.

When using flow diversion BMPs, remember that concentrated flows must be dissipated. Flow dissipation (check dams, rip rap, etc.) should always be used at drain or channel outlets to reduce runoff velocity and promote sedimentation. Care should also be taken not to disturb downstream properties.

Step 4: CAPTURING SEDIMENT FROM RUNOFF

Because sediment erosion can never be completely prevented, your control strategy should also include BMPs designed to recapture sediment from flows. The following methods are commonly used to promote sedimentation by filtering or trapping runoff.

Silt fences. Silt fences are a filter fabric attached to supporting poles, sometimes backed by wire. They are used in areas of sheet flow. Silt fences require frequent inspection, especially before and after rainfall.

Straw Bale Barriers. Straw bales can be used to create a temporary sediment trap in areas of sheet or rill flow. Bales are entrenched and placed end to end along a level contour. They should be inspected frequently since they tend to deteriorate.

Sand Bag Barriers. Stacking sand bags along a level contour can create a temporary sediment trap by ponding water upstream of a barrier. Sand bags are very versatile and can be used in a number of applications.

Brush and Rock Filters. Barriers constructed of brush or rock (3/4" to 3" diameter) can be used in areas of sheet or rill (channelized surfaces) flow to reduce velocity and trap sediment. They must be properly anchored, and should be inspected at least monthly and after each rainfall.

Sediment Traps and Basins. Traps and basins are excavated or constructed (berms, embankments, etc.) areas where runoff is trapped and sedimentation occurs. Traps are used for small drainage areas (less than 5 acres) and basins for larger ones. Both traps and basins should be constructed before clearing, grading, and grubbing begins, and located where they can be easily cleaned out.

Storm Drain Inlet and Creek Protection. Your erosion control strategy should always address the protection of onsite or down-gradient storm drain inlets and waterbodies. Discharges of pollutants to storm drains, or streams and other waterbodies, may result in violations of the City Stormwater and Grading Ordinances, the Federal Clean Water Act, and the California Fish and Game Code.

GENERAL CONSTRUCTION BMPs

In addition to sediment, many other types of pollutants are used or generated during building and construction.

Paint Wastes	Dement Wash	Drywall	Solvents	Adhesives
Glues	Trash	Cleared Vegetation	Wood	Asphalt
Demolition Wastes	Vehicle Fluids	Septic Wastes	Asbestos	Acids

Remember, discharging anything other than rain to the storm drain is against the law. All materials and wastes must be managed and disposed of properly. The BMP described below will help to prevent stormwater pollution from your construction activities.

MATERIALS and WASTE MANAGEMENT

- Use designated delivery, pickup, and storage areas away from drainage paths and waterways.
- Store only the materials you need onsite.
- Store materials (especially open bags) under a roof or inside a building. Cover and berm around storage areas. Cover materials stored outside with waterproof tarps.
- Keep an inventory of materials and regularly inspect storage areas.
- Store and dispose of wastes as required by Federal, State, and local regulations
- Use watertight dumpsters.
- Wash out concrete trucks offsite or in a designated area (e.g. a temporary pit where the concrete can set, be broken up, and then disposed of properly).

SPILL CONTROL

- Train employees on spill prevention and cleanup
- Make sure cleanup materials are easily accessible.
- Use secondary containment (drain pans, drop cloths, etc.) to catch spills and leaks
- Clean up spills immediately.
- Use as little water as possible ("dry" methods) for washing and spill cleanup.

VEHICLES AND EQUIPMENT
(Cleaning, Fueling, and Maintenance)

- Fuel, maintain, and wash vehicles offsite.
- If conducting activities onsite, use designated areas. Cover and berm work areas as necessary.
- Properly maintain vehicles and equipment to prevent leaks.

Additional Resources

City of Solana Beach Engineering Department
(858) 720-2477 www.ci.solana-beach.ca.us/

San Diego Regional Water Quality Control Board (SDRWQCB)
(858) 467-2952 www.swrcb.ca.gov/rwqcb9/

California State Water Resources Control Board (SWRCB)
(916) 341-5250 www.swrcb.ca.gov

U.S. Environmental Protection Agency (Region 9)
(415) 972-3510

APPENDIX O: GENERAL CONSTRUCTION "GOOD NEIGHBOR" BROCHURE

PROPERTY OWNERS ARE RESPONSIBLE FOR THE ACTIONS OF THE CONTRACTORS AND SUBCONTRACTORS WORKING ON THEIR PROPERTY.

Construction Hours and Noise Levels:

Construction workers shall not congregate at or report to the site prior to the beginning of construction hours.

Monday - Friday:
7:00 a.m. to 7:00 p.m.

Saturday:
9:00 a.m. to 6:00 p.m.

No construction is permitted on Sundays and Holidays. Please check the City's website for a list of observed holidays at:

www.ci.solana-beach.ca.gov

Construction noise levels shall not exceed 75 decibels for more than eight hours during any 24 hour period.

For information concerning construction hours and noise levels contact the Community Development Department at: (858) 720-2440

Storm Water Best Management Practices (BMPs)

Violations of the storm water regulations can result in penalties, including fines of $1000 per day per violation. These practices are strictly enforced.

Storm Water BMPs Continued:

- **Perimeter Protection Controls: Silt fences, straw wattels, sand bags, etc. must be used to control run-on and run-off from project site.**
- **Tracking Controls: All entrances and exits to the site must have protection measures installed to prevent tracking of sediment off the project site.**
- **Washout Area: All sites must have a designated "wash-out" area to clean equipment and dispose of excess concrete, stucco, and paint.**
- **Concrete Trucks/Pumpers: Concrete trucks and pumpers must have perimeter protection installed around and under them at all times. Any spill must be contained on-site and no washing of equipment permitted without a washout area.**
- **Materials Storage: All materials stored on-site must be contained and covered at all times.**
- **Trash Containers/Portable Restrooms: Dumpsters must be covered and have adequate perimeter protection and all portable restrooms must have secondary containment measures installed.**
- **Storm Drain Inlets: All adjacent storm drain inlets must be protected at all times to prevent pollutants from the project site from entering (including sediment).**

For more information concerning Storm Water BMPs contact the Environmental Services Department at (858) 720-2477.

Fire Safety:

Obey all Fire Codes:

- **Ensure fire lanes are kept clear and unobstructed.**
- **Any combustibles onsite must be stored safely.**
- **Remember oily rags catch on fire spontaneously, even when no ignition source or flame is present.**

For more information concerning fire safety contact the Fire Department at: (858) 720-2410

Encroachment Permits:

Encroachment Permits are required before you start work within the public right of way.

- **Constructing new or repairing old curbs, gutters and sidewalks, constructing new driveways or placing dumpsters in the right of way requires approval from the City and a fee of $245.**
- **The installation of new or repair of existing utilities requires approval from the City and a fee of $575.**

For more information concerning encroachment permits please contact the Engineering Department at: (858) 720-2470

Questions, Comments, Concerns?
Contact City Hall at: (858) 720-2400

Construction Site "Golden Rules"

Treat the construction site as if you were living next door to it.

- Communicate construction timetables to the surrounding neighbors. Consider distributing a letter to neighboring properties listing proposed timetables and contact information for the property owner and construction contractor.
- Notify neighbors if you expect excessive noise and/or traffic disruptions on a particular day. For example, if you are planning to demolish an existing residence or if you are expecting heavy equipment onsite to pour concrete.
- Avoid parking in front of neighbors homes and do not run car engines unnecessarily.
- Minimize noise by not using radios and refrain from shouting whenever possible.
- Construction vehicles should be parked legally and accommodated on the construction site whenever possible.
- Use respectful personal conduct by using the onsite restroom facilities and do not use profanity.

Community Development Department

City of Solana Beach
635 South Highway 101
Solana Beach, CA 92075
Phone: (858) 720-2440
FAX: (858) 755-1782
www.ci.solana-beach.ca.gov

City of Solana Beach

Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices

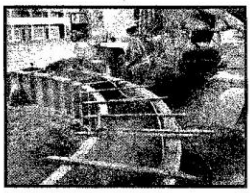

This fact sheet is provided to increase awareness of the basic rules all construction sites are required to follow by city ordinance. These rules are a minimum, and if not followed can result in penalties if you are found to be in violation of City or State applicable regulations.

In addition, we've provided some tips for additional measures that you can take at the site that would be appreciated by the City and your neighbors. We recognize that a construction site by its nature has a certain amount of noise, debris and inconvenience for the neighborhood. We have found from experience that where you can go above and beyond the minimum City Municipal Code requirements, and implement these good neighbor practices, your project can benefit from the improved neighborhood relations.

APPENDIX P: UNDERGROUND UTILITY DISTRICT SPECIAL BMP HANDOUT

Undergrounding Utility District Construction Best Management Practices

When conducting trenching work, construction Best Management Practices (BMPs) must be utilized at all times. Failure to keep all sediment and debris on your property is a violation of the City's Storm Water Regulations and can result in fines. The following list contains BMPs that may be used to keep sediment onsite and out of the City's storm drain conveyance system:

- Perimeter protection BMPs such as silt fences, straw waddles and/or sand bags can be used to contain sediment onsite.
- Cover all materials and keep above ground when a predicted rain event is to occur (>50% chance).
- Keep all materials/sediment out of street and gutter to prevent nuisance water from washing into storm drain system.
- Prevent sediment tracking into street by placing down gravel where equipment is entering and exiting property and sweeping area frequently.

These are all common general BMPs that can be utilized to prevent discharges into the City's storm drain conveyance system. If you or your contractor have any questions or require additional information on any of this, please feel free to call me at the number below.

Sincerely,

Danny King
Environmental Specialist

APPENDIX Q: CONTACT AND COMPLAINT DATABASE (SAMPLE)

Dave Thomas	Public Works	3/28/2007	Parioli Restaurant	Dave reported employees washing parking lot with no containment	I investigated the complaint and detected the recently washed parking lot. I spoke to the owner who admitted to his employees washing water. I explained the regulations and he promised to comply. A written NOV was sent
Frank Zamarippa	Code Enforcement	3/28/2007	240 South Cedros (Leaping Lotus)	Frank witnessed an employee washing down sidewalk in front of business	Frank stopped the violation and educated the violator. Written NOV sent
Frank Zamarippa	Code Enforcement	3/28/2007	107 South Cedros (Carizma)	Frank witnessed an employee washing down sidewalk in front of business	Frank stopped the violation and educated the violator. Written NOV sent
Dan Goldberg	Engineer	4/18/2007	834 S Sierra Ave	Dan witnessed a resident washing car on the street without proper containment	I investigated and contacted the resident. He was from out of town and was unaware of the regulations. I informed him and he stopped immediately.
Lifeguards	Marine Safety	8/9/2007	Seascape Outfall	Lifeguards called to report heavy flow at Seascape Outfall at 12:45pm	I investigated and noticed heavy flow in the street. I followed it back to Playa Del Mar apartments and a broken irrigation valve. Apparently the landscapers hit the valve and did not stop the flow. I called SFID and shut the water down to the complex until it could be fixed. Follow up with landscape manager for enforcement.

APPENDIX R: BEACH BLANKET MOVIE NIGHT FLYER

NOTICE OF APPROVAL FOR SPECIAL EVENT
CITY OF SOLANA BEACH

The Special Event you have applied for has been approved, according to the following information:

Date Requested: June 12, 2004
Hours: 5:30 a.m. – 2:00 p.m.
Organization: San Dieguito Boys & Girls Clubs
Type of Event: Seaside Stride 5 Mile Walk
Location: See Attached Map
Contact Person: Ellen Flanagan (760) 471-5516

Approved By:_____
Barry Johnson, City Manager

SPECIFIC GUIDELINES:

1. No City services, at the request of the applicant, for the event will be provided by the City.
2. The event participants must utilize the sidewalks and not the roadway where available on the course. If there is no sidewalk, participants must utilize the very outer edge of the roadway.
3. Event organizers must obey all traffic signs, lights, and laws.
4. Event organizers and participants shall utilize public right-a-ways and property for the purpose of this event at their own risk.
5. Event organizers and participants shall obey all traffic laws, signs, and traffic control devices at all times.
6. Event organizers must comply with all applicable water run-off regulations and must use best management practices. There will be absolutely no liquid, solid, or any other by-product generated by the event allowed in the city storm drain system. The parking lot at the conclusion of the event must be cleaned of all debris and disposed of in an acceptable manner to the City's Public Works Department.
7. Roadway and sidewalks and any other public areas utilized by the event participants and audience shall be left in a clean and orderly condition at the conclusion of the special event.
8. Applicant shall be charged for the amount of time to clean-up the areas or facilities used by the event participants if the areas utilized by the attendees of the event are not left in a clean and orderly condition. Estimated cost for retaining one City employee to clean-up refuse, and trash disposal is $ 43.20 per hour.
9. Any damage to public property as the result of this event will encumber full cost recovery from applicant by the City.

10. Event organizers shall at all times comply with any request or orders from the City's public works, lifeguard, law enforcement, or other public safety personnel. Failure to do so will result in the revocation of this permit and an immediate cease event order.

GENERAL GUIDELINES:

1. This permit and any other permits associated with this event will be available at the event.
2. If City services are required, applicant will be billed in advance for any and all City services provided above normally scheduled services. **All fees and charges shall be paid prior to final issuance of a permit for the event. Exception: Costs incurred by the City for clean up or other reasons due to the event, if any, shall be charged to the applicant billed as soon as the total cost is determined.**
3. All vehicles must comply with City parking regulations.
4. The organization and any of its subcontractors in advance of the event must file a business license application and fee, if they do not have a business license.
5. Vehicle loading and unloading cannot block pedestrian access. If required for short durations, signage directing the flow of pedestrian access, including wheelchair access must be established and posted.
6. The City reserves the right to shut down the event at any time, if necessary.
7. Applicant must comply with City noise regulations.
8. **It is the responsibility of the applicant to know and comply with the terms and conditions as stated within this special event permit and all applicable laws that pertain do the event, its organizers, and its participants whether they are stated on this permit or not.**
9. Contact Leah Escarcega or David Ott at (858) 720-2410 if there are any questions regarding the special event permit process.

C: City Manager's Office
Public Safety Director
Public Works Director
Sheriff's Department
Marine Safety Captain

APPENDIX T: SUMMER CAMP PROGRAMS/CLASSES

City of Solana Beach Department of Parks & Recreation

Kids Summer Day Camp - 2007

for ages 6 to 12

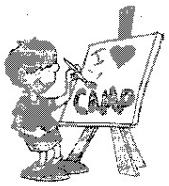

All Sessions will meet Monday through Friday from 8:30 a.m. to 2:00 p.m. at the new Fletcher Cove Park. The fee is $100.00 per child and includes beach activities, arts and crafts, t-shirt and a weekly field trip to an exciting destination. After-care is offered from 2:00 to 5:00 p.m. Our popular "Leader in Training" program is available for 13-17 year olds for only $40/week!

Explore the Borders (Mexico)

Session 1, June 18-22, 2007

!Bienvenidos! Get ready for the most colorful kids camp the City of Solana Beach has put on yet! During this week we will explore the vivid culture of this fascinating and fun country as we create crafts such as paper lanterns and flowers. The week will end with a fiesta including a piñata and more!

Field trip: Cabrillo National Monument

Oceans Week

Session 2, June 25-29, 2007

We live near the ocean and we may visit it often, but how much do we know about it? Come to camp to learn more about this beautiful treasure so close to us! We will have beach activities throughout the week.

Field trip: Birch Aquarium at Scripps

Happy and Healthy

Session 3, July 9-13, 2007

What better way to spend summer than getting exercise and having fun doing it? Throughout this week we will be learning about our incredible bodies and what we can do to keep them happy and healthy.

Field trip: Go Play Get Fit Youth Day at SDSU

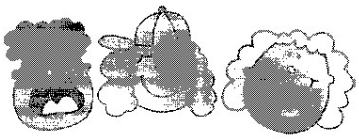

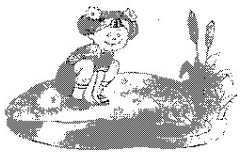

Ecology & Our Environment

Session 4, July 16-20, 2007

Egrets, marshes, and eucalyptus, oh my! Ecology week, July 16 - 20, is your child's time to discover an often overlooked region of San Diego County. Through crafts and experiments, we will dive into a part of our own backyard, learning about wildlife habitats, and how we are all a part them.

Field trip: San Elijo Lagoon

Step Into Storybooks

Session 5, July 23-27, 2007

This camp is a great opportunity for your child to step into storybooks! During this week campers will be diving into classics, acting out skits, reading award-winning children's books and even writing one of their own.

Field trip: The Wave Water Park

Rainforest Exploration

Session 6, July 30-Aug 3, 2007

Attention lovers of adventure!! Feel like swinging through the trees this summer? Sign your child up for Rainforest Exploration Camp, July 30 - August 3. During this week we will learn about habitats, wildlife and the role they play in our lives.

Field trip: Balboa Park and Museums

San Diego Appreciation Week

Session 7, August 6-10, 2007

From beaches to theme parks, we have it all in San Diego. If you are interested in your child learning to appreciate our beautiful City and its history, in a kid friendly fashion, sign your son or daughter up now.

Field trip: San Diego Harbor Cruise and Seaport Village

City of Solana Beach Department of Parks & Recreation

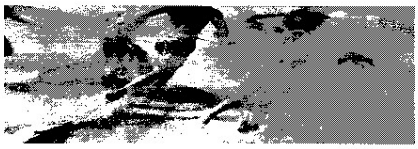

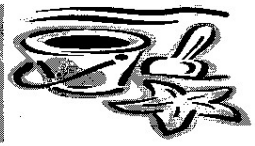

2008 KIDS SUMMER CAMP FOR AGES 6 TO 12

All Sessions will meet Mon-Fri from 8:30 to 2:00 at Fletcher Cove Community Center, 133 Pacific Ave. The fee is $100/week per child and includes activities such as beach walks, swimming at the Boys and Girls Club, arts & crafts, fun games, t-shirts and a weekly field trip to an exciting destination. After-care is offered from 2:00-5:00 ($25/week). Our popular "Leader in Training" program is also available again this summer for 13-17 year olds for only $40/week!

ECOLOGY AND OUR ENVIRONMENT - Session 1, June 23-27, 2008

Do your kids want to learn more about ecology and their environment here in Solana Beach? Well this week's camp is perfect for your children to explore the world of marshes and lagoons. Campers will learn about such things as how a tadpole turns into a frog, the water cycle and why it's important to take care of the environment. We will even get to explore our own San Elijo lagoon as this week's field trip. Mayor Kellejian will be a guest speaker on 1st day of camp!

AROUND THE WORLD IN 5 DAYS- Session 2, July 7-11, 2008

Come to camp and you can experience this trip around the world. Not only will campers be introduced to a global perspective but they will also be exploring the culture, and everyday life of all areas of the world. Kids will even be able to explore their own family culture and have a chance to share an aspect of their heritage with the other campers. Hop on board for this super-speed global experience.

FUN TO BE FIT - Session 3, July 14-18, 2008

Campers will get to see that living a healthy and active life can be fun! Learn about healthy eating as well as including physical activity in their everyday lives. Indoor and Outdoor activities and crafts will help the campers understand the way their bodies work and how they can keep their bodies happy and healthy. Field Trip: Go Play Get Fit Youth Day in Coronado.

OLYMPIC GAMES – Session 4, July 21-25, 2008

Come join Solana Beach's own week long Olympics in anticipation of the 2008 Olympics beginning this year. We will be trying out such sports as soccer, basketball, and running, as well as testing our skill out on the ice rink for this week's field trip.

SUMMER SAFARI – Session 5, July 28-Aug 1, 2008

Lions, and Tigers and Koalas? Oh my...join our own adventure through such places as the jungle, rainforest and safari. Learn about all sorts of animals, their habitats and how they influence our everyday lives. Love adventure and exploration? Then this is the camp for you. Field trip: Balboa Park Natural History Museum.

UNDER THE SEA – Session 6, August 4-8, 2008

Come test your knowledge of the big body of water that we are fortunate enough to live so close to. Explore the ocean through beach activities, crafts and a day of exploration at Scripps Birch Aquarium. Learn about dolphins, sharks, whales, and even starfish and sea cucumbers. Get a tour of the Solana Beach lifeguard tower and learn how to have fun safely at the beach.

SPLISH SPLASHTACULAR – Session 7, August 11-15, 2008

Is your child half amphibian? This is a perfect week for campers to explore the various ways to enjoy the water through water related crafts, water balloons and even water relays. From the ocean, to the pool and the pool to the Wave Water Park, come splish and splash with us.

Please join us at our annual

San Elijo Lagoon Day

Celebrate with Mother Nature

Saturday, May 10, 2008

9 am–3 pm For more information call **760/436.3944** or visit **www.sanelijo.org**

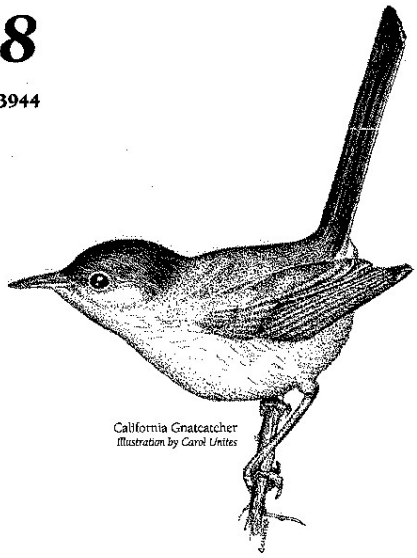

California Gnatcatcher
Illustration by Carol Unites

Trailhead Stations

Rios Trail
- 5-K Run with Doug, 8:30 am
- Guided nature walk, 9 am
- Doggie welcome table
- Birding with spotting scopes

DIRECTIONS:
Drive west on Lomas Santa Fe Ave. from I-5; turn north on Rios Ave. and drive to end of road.

Santa Carina Trail
- Naturalists on hand
- Archaeology & Native American display
- Children's story time at 11 am & 1 pm

DIRECTIONS:
Drive east on Lomas Santa Fe Ave. from I-5; turn north on Santa Helena (first stop light); turn left on Santa Victoria (2nd stop sign); turn left on Santa Carina and drive to end of road.

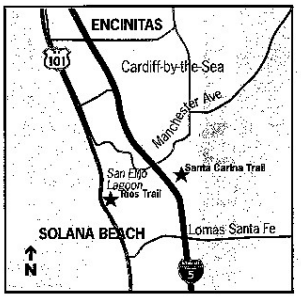

Lagoon Day is hosted by San Elijo Lagoon Conservancy and the County of San Diego Dept of Parks & Recreation and it's **FREE.**

Come enjoy:

- Spring wildflower display
- Migrating and nesting birds
- Special trailhead displays

RECEIVED
APR 24 2008
Engineering Dept.
City Of Solana Beach

Program Sponsors

DUDEK

San Elijo Lagoon CONSERVANCY

PARKS AND RECREATION
COUNTY OF SAN DIEGO
Where having fun is natural.
www.sdparks.org

APPENDIX V: 2007 DRY WEATHER MONITORING PROGRAM RESULTS

As a result of Addendum No. 2 adopted by the RWQCB in September 2008, this section will be submitted along with Chapter 7 "Illicit Discharge Detection and Elimination Component" in December 2008.

APPENDIX Z: EFFECTIVENESS ASSESSMENT TABLE

CHAPTER 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

7.1 Introduction

In accordance with Permit Section D.4, this section of the report describes the City's effort to implement an Illicit Discharge Detection and Elimination (IDDE) program during this reporting period, July 1, 2007 to June 30, 2008.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. This section will include results from efforts to eliminate and prevent illicit discharges, results from the most current Dry-Weather and Wet-Weather Monitoring Programs and Coastal Outfall Monitoring Program. Also, this section of the report will include any changes to the City's *Action Levels for Field Screening and Laboratory Parameters*. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. It should be noted that prior to the adoption of the new Permit Order No. 2007-0001, this component was known as the Illegal Connection/Illicit Discharge Elimination program, or IC/ID. With the adoption of the new Permit, this component is now known as the Illicit Discharge Detection and Elimination Component, or IDDE. Both of these terms may be used in this chapter as different programs are discussed during this transition period, but they can and are used interchangeably.

During this reporting period, the City continued the comprehensive IDDE Component of the previous Jurisdictional Urban Runoff Management Program, or JURMP (Order No. 2001-01) as well as developed the new IDDE program in accordance with the new JURMP (Order No. 2007-0001). The activities are expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City. The City implemented the IDDE program based on the requirements of the existing Permit as well as commenced development of the new IDDE program associated with the new Permit.

The City's JURMP outlines in descriptive detail the City's plans for detecting and eliminating illicit discharges, which would be redundant to repeat in this Report. However, the City's IDDE program that was in place *prior to the JURMP,* directed the procedures for conducting the 2001 dry-weather monitoring program (DWMP), while the procedures identified in the old JURMP directed the 2002-2007 DWMP. This report will discuss the results of the 2008 DWMP, which adheres to the requirements of the new Permit, and is described in detail in the City's new JURMP.

7.2 Public Reporting of Illicit Discharges and Connections

The City has an extensive public reporting program that includes a designated hotline (858-720-4424) that links directly to the Environmental Programs Manager's desk, a dedicated email address that also links to the Environmental Programs Manager, and a highly trained City staff that knows how to route calls to the general lines at City Hall to the appropriate staff. The City of Solana Beach is a small an intimate city where residents believe in personal relationships and demand immediate responses and actions. The City's hotline and email address to report storm water violations is posted on almost all public outreach, including the City's website, community newsletters and environmental brochures. In addition, the City utilizes its public access television channel to display storm water educational items and the hotline numbers for reporting.

The City tracks complaints and follow-up activities in a database that is managed by the Environmental Programs Manager. Usually, the City's Code Enforcement Officers respond to the complaints and hotline reports and handle the issues in the field. An email and/or violation form is then sent to the Environmental Programs Manager to document the actions taken and to proceed with any necessary increased enforcement actions such as Notice of Violations (NOVs), citations or stop work orders. This database is constantly being updated and also acts as a resource for historical violations and repeat offenders. If a repeat offender is identified, then increased enforcement actions will automatically be initiated.

7.2.1 Summary of IDDE Violations

The following is a brief summary of the IDDE violations that were acted upon by City staff through complaints, field detection and reports from the public. For a complete account of each violation, the City's database can be reviewed upon request.

During this reporting period (July 1, 2007 – June 30, 2008), there were 87 reports investigated by City staff. Most of these violations were minor in nature, ranging from washing down a driveway or patio to washing a car in the street with no containment. These violations are usually handled with a verbal warning or Notice of Violation. However, during this reporting period, twelve citations were issued and two stop work notices enforced.

There was one significant issue worth mentioning that occurred during this reporting period. City staff noticed a pattern that the most prevalent and serious violations that were occurring throughout the City involved mobile concrete pumping trucks. These violations were also the most difficult to clean up after an accident, so the City decided to become very proactive when dealing with these companies. The proper handling of concrete and appropriate BMPs became a standing item to discuss during pre-

construction meetings, and City staff routinely stopped at all construction projects if a concrete truck or pumper was seen onsite, regardless if there was a violation or not. City staff would talk to the project superintendent and the concrete pump and truck operator to ensure that all necessary precautions were being taken to prevent a spill, and also to remind them that enforcement actions will be taken if a violation does occur.

For the most part, this was a highly successful program as concrete violations drastically reduced and word of mouth spread between local contractors that the City was heavily enforcing concrete management. However, the City did have one company that was not fully cooperating and still conducting "business as usual." The City proceeded with multiple citations to the concrete truck operators, until the company's owner finally returned phone calls from the City requesting a sit-down meeting. After the meeting, the trucking company came into full compliance and there have been no violations from this company since. This is a success worth mentioning in the ongoing struggle with mobile businesses interested more in getting the job done and out of town than complying with storm water regulations.

7.2.2 Increased Code Enforcement Activities

In an effort to reduce the number of violations that occur on the weekends, the City authorized a Code Enforcement Officer to work alternating Saturdays and off-peak weekday hours. It has come to the City's attention that a significant amount of violations are occurring on the weekends, when people know that no City staff is available for enforcement. This activity has been overwhelmingly successful, with the identification and elimination of many violations.

7.3 IDDE Program History and Current Prohibitions

The City implemented its first IDDE program in 1993, which included dry weather screening, annual storm water conveyance system inspections, and prompt responsiveness to complaints.

Between 1993 and 2002, the City's IDDE program did not indicate any significant problems, except for occasionally high levels of bacteria at a curb inlet or manhole leading up to the Seascape Sur outfall. A complete discussion about the activities related to this IDDE problem, including its history, can be found in the JURMP Annual Report Chapter 12: "Special Investigations."

Over the years, the City has responded to complaints and results from its dry weather monitoring reports to detect IDDEs. The City's efforts have been successful, but in response to the requirements of the Permit, the City expanded its program in 2001 to comply with the old Permit (Order No. 2001-01). During this reporting period, the City

also began development of the new IDDE program necessary by the adoption of the new Permit (Order No. 2007-0001), which is described in detail in the new JURMP.

Prohibitions

As noted in the City's JURMP, most non-storm water discharges are prohibited by Solana Beach Municipal Code (Storm Water Management Chapter 13.10). The City modified its Municipal Code and General Plan to ensure the City has sufficient legal authority to enforce the prohibitions of non-storm water discharges included in Order No. 2007-0001.

7.3.1 Significant Spills

The City operates a storm water hotline and email address that the community can use to report any violations or suspicious behavior they may encounter. This hotline can also be used to notify City staff of any significant spills that have occurred. Additionally, the City's website has a link to directly e-mail the Environmental Program's Manager to report violations or spills. The residents can also directly call City Hall and talk to the appropriate Staff member to report any significant spills.

There was *one significant spill* reported during this reporting period. The spill was reported on October 15, 2007 by City field staff that noticed a small amount sewage coming out of a manhole in the street. Once it was reported, City crews had it fixed within 20 minutes. The blockage was caused by root intrusion and the spill was estimated at approximately 1,000 gallons. All of the sewage was collected from a downstream City-owned CDS unit and redirected back into the sewer system, so there was no detrimental effects on the environment. The City immediately placed the problem sewer line on its list of "hot spots" and the line is now monitored and cleaned on a more frequent basis (4 x year vs 1 x year).

The City has an aggressive sewer maintenance program to prevent sewer spills from occurring. The City cleans the entire system at least once per year, and the known "hot spots" are cleaned and CCTV videoed four times per year. The aggressive Grease Management Ordinance has drastically cut down on the amount of grease in one particular hot spot, but the area is still monitored four times per year. The City is proud of its aggressive maintenance program and strives to attain zero sewer spills.

7.3.2 HHW Program

The City manages an extensive HHW Program that is discussed in detail in the Residential Component of the 2008 JURMP Annual Report.

7.3.3 Grease Trap Ordinance

In October 2004, the City Council adopted a grease trap ordinance that requires new, remodeled, and even *existing* restaurants to install a properly designed grease trap/interceptor. Previously, the City's Building Department would require all new and significantly remodeled restaurants to install a grease trap/interceptor, but it was simply a policy, not an ordinance. The City realized the need for an enforceable ordinance that would grant the City the power to inspect the traps to ensure proper installation and maintenance. These inspections are now part of the annual storm water inspections and City staff (or designated contractors) review maintenance records to ensure the traps/interceptors are being properly maintained. The ordinance allowed existing restaurants eighteen (18) months to install the grease traps/interceptors and enforcement began in April 2006. As mentioned in the JURMP Annual Report, the City contracted out commercial/industrial inspection services to a private firm. This private firm inspected grease management devices and reviewed maintenance records for all restaurants/eating establishments that were inspected.

7.4 Dry Weather Monitoring Program (DWMP)

The dry weather field screening data is an important part of the City's IDDE program. The results provide information on whether pollutants are detected in the storm drain system, which can be used to identify potential illegal discharges or connections.

The specific purpose of this program is to detect by system inspection and by field screening and lab water quality testing the existence of either illicit connections to the storm drainage system or the use of the storm drainage system for illegal discharges, during the dry season. The basic requirements for the program are described in the Permit and City's JURMP.

The purpose behind conducting tests of storm drains during dry periods is that illicit connections and illegal discharges are most apparent when they are not being masked by storm flows or ground water discharges. Theoretically, there should be no flow in the storm drains during dry periods, except for the limited amount of exemptions listed in the Permit Section B.2 "Non-Storm Water Discharges." Therefore, if flow is present, an investigation must be conducted to determine where the flow is coming from to determine if there is an IDDE violation.

Prior to the implementation of the JURMP (from 1993 to 2001), the City completed eight years of dry weather testing, primarily with the services of Kinnetic Laboratories/Cooper Engineering Associates, which collected the field samples and conducted the testing and analysis. The City's program was based on a systematic and comprehensive approach.

In 1993, the City inspected selected outfalls within the City limits and monitored selected sites along Stevens Creek. In 1994, major outlets from the City were tested, in addition to the sites monitored in 1993. The primary objectives in the 1995 through 1999 dry weather field screening programs were to target strategic locations where the potential existed for possible pollutant discharges or illicit connections, as well as carry out a comprehensive monitoring of the City.

For completeness and consistency in reporting, the City will briefly summarize the results from the DWMP over the past few years.

7.4.1 Historical Results

The 1995 dry weather field screening data characterized outfalls, identifying areas of non-storm water, non-permitted discharges as well as the identification of problem or potential problem areas. Sampling points were selected in an effort to survey in-line flow as well as inflow and outflow at the City limits. As a result of the 1995 field screening, dumping of grease into Stevens Creek was discovered at a local restaurant. The City notified the property owner, as well as the business owner, to cease such activity, which occurred.

The 1996 dry weather field screening data continued to characterize outfalls, identifying areas of non-storm water, non-permitted discharges as well as the identification of problem or potential problem areas. Results from the 1996 program indicated elevated bacteria levels at the Fletcher Cove Outfall (O-03A). Subsequently, the City constructed a low flow diverter (in 1998), which diverts the flow to the City's sanitary sewer system. The diverter pumps 40 gallons per minute, year round, 24-hours a day. Runoff is only discharged at Fletcher Cove outfall during storm runoff events that exceed 40 gallons per minute. The diverter helps eliminate the contamination at the Fletcher Cove Outfall caused by storm water runoff.

The 1997 dry weather field screening data included several sites that had been screened in previous years, two new sites and an independent study. The new sites were added upstream of two previously monitored sites in Stevens Creek to try to isolate the sources of pollutants that had been detected at those sites during screening in several past years. The independent study was conducted to isolate the source of bacteria that the San Diego County Department of Environmental Health indicated had been found at a commercial site contributing to Seascape Sur Outfall. Additional investigations were conducted in Stevens Creek and the cleaning of the commercial site was ordered. Results indicated no significant problems had occurred during this reporting period.

The 1998 dry weather field screening data included further investigation of locations

with consistent evidence of possible pollutant discharges (high pH) in Stevens Creek, the continual monitoring and bacterial testing of Seascape Sur Outfall, and the continual monitoring of representative areas in the City. The samples from Stevens Creek Outfall were collected while the Del Mar Racetrack was in operation to determine if that location (and its activities) was having an effect on the elevated levels bacteria. The results indicated that the pH phenomena in Stevens Creek were due to leachate migrating through the concrete structure. However, the effects of the Del Mar Racetrack were found to be inconclusive, but several outfalls were cleaned of trash and debris.

The 1999 dry weather field screening data continued to screen the same sites as in the previous year and again included the Fletcher Cove Outfall. The 1999 DWMP was again conducted during the early part of the racing season in Del Mar to build on the data collected in the previous years. Fletcher Cove was added back to monitor the bacteria and the effectiveness of the City's structural Best Management Practices for the low flow diverter. Results from the testing did not indicate any significant problem areas and the effects of the Race Track were again inconclusive.

The 2000 dry weather field screening data continued to build on the database the City has established. The report identified two locations with high levels of coliform (both flowing to the Seascape Sur Outfall). The City conducted an investigation and sealed off an old leaking sewer lateral that was found to be located near the curb inlet of the upstream site with elevated bacteria counts. The City contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during the follow-up tests. The 2000 report recommended that the City clean several sites of trash and debris, which was done.

The 2001 DWMP included ten sites for testing, including the same two sites that had elevated bacteria counts in 2000, and Fletcher Cove Outfall (where the diverter is in operation). Site S-13A and S-13 were also included to detect the effects of the Del Mar Race Track during racing season. Seven of the ten sites had at least some flow or ponded water; and one site (S-02) required a follow-up investigation based on elevated levels of fecal and coliform bacteria. Although the S-02 site had elevated bacteria levels, they were lower than the previous year, which led City staff to believe that the problem (for which repairs had been recently completed), was simply residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be cleaned.

The 2002 DWMP increased the number of sites from 10 to thirty-one, with a representation of all five watershed sub-basins in the City. Sites were selected ensuring that historical problem areas, drainage to sensitive water bodies and sites with potential discharge from commercial areas were all represented. This was the first year of dry-weather monitoring under the new Permit, which included specific rules and guidelines

developed by the Copermittees to ensure consistency. Some of the keys findings include the following:

- Water clarity at all but one site was clear.
- Floating trash was observed at four sites and sedimentation was observed at four sites.
- At the majority of sites, there was no biological activity noted.
- One site had excessive algae growth, while four had some vegetation and algae growth.
- All sites had pH levels below the action levels agreed upon by the Copermittees.
- Several sites had elevated levels of Ammonia, which triggered a follow-up investigation.
- Elevated levels of detergents were found at one site; as a result, staff has scheduled some time to pass out "door-hanger" flyers to educate the surrounding community as to the cause of this result (which is likely due to car washing, which is prohibited in the City).
- Levels of the all of the following were below the Copermittee action levels: oil and grease, surfactants, Diazinon[1], Chlorphyrifos and dissolved cadmium, copper, lead and zinc.

7.4.2 Results from the 2003-2007 DWMPs

The Dry Weather Monitoring Programs from 2003-2007 were all conducted under the requirements of Permit Order No. 2001-01. Although the results were slightly different from year-to-year, the program results can be generally summarized into the following information. Each year, there were approximately 28-30 sites chosen, depending on the amount of flow in each year. The sites were relatively static throughout the years, as the City has identified the key catch basins/outfalls/manholes in each sub-basin and has monitored them every year. There is one significant problem area that has been identified and it has been the subject of an ongoing IDDE investigation for years. Chapter 12 "Special Investigations" of the JURMP Annual Report is dedicated entirely to this ongoing problem, so all the information can be found there. The City has worked tirelessly on this ongoing problem and plans to continue until a resolution is found.

7.4.3 Results from the 2008 DWMP

The 2008 Dry Weather Monitoring Program is included as an attachment to the 2008 JURMP Annual Report (Appendix V).

7.5 Action Levels to Trigger Follow-up Investigations

The City collaborates with the other Copermittees of Order 2007-0001 in developing the standardized responses, procedures, processes, policies and programs by participating in the Dry Weather Monitoring Workgroup. This helps by providing consistency in messages, requirements and community expectations. One major accomplishment of the Dry Weather Monitoring Workgroup during this reporting period was the development of the "Trash Assessment Form" which is a new requirement included in Permit Order No. 2007-0001. This form was utilized during the 2008 DWMPs for all Copermittees and is included in the 2008 DWMP report.

7.6 Coastal Monitoring Program

The purpose of the City's Coastal Outfall Monitoring program is to detect IDDEs through monitoring of the City's coastal outfalls, and to protect human health and public safety by notifying the public of any potential health hazards in the ocean. Prior to 2002, the San Diego County Department of Environmental Health designed and conducted the Coastal Outfall Monitoring Program. In 2002, the City utilized its own staff to conduct an inventory of its outfalls and design the monitoring program, which is currently being implemented.

During this reporting period, the Coastal Monitoring Workgroup, comprised of the cities that have storm drains that flow into the ocean, met monthly to discuss pertinent issues and establish monitoring guidelines and reporting limits. Here is a brief description of the City's Coastal Monitoring Program for FY 07/08.

The Permit requires cities to monitor all flowing coastal and lagoon outfalls located within the City. The sampling frequency is once per month required during the wet season, and twice per month required during the dry season (two samples at each location, one at storm drain, one at receiving waters). The samples are taken to a State-certified laboratory for analysis of three parameters; Total Coliform, Fecal Coliform, and Enterococcus. The new Permit slightly altered these requirements, eliminating the lagoon sampling and reducing the twice per month samples during the dry season to once per month.

Under the new Permit, the City monitors one coastal outfall (Seascape Outfall). The other coastal outfall in the City (Fletcher Cove Park) is connected to a Low Flow Divertor and sampling is not required.

The Seascape Outfall has had historical problems and is the current target of an ongoing IDDE investigation. This is discussed in detail in Chapter 12 of the JURMP Annual Report. For complete results, please see the Coastal Outfall Monitoring Annual

Report submitted annually with the County Unified URMP.

7.7 Wet Weather Monitoring

The Copermittees of Order 2001-01 and Order 2007-0001 collectively hired MEC Analytical again to continue the Wet Weather Monitoring Program (WWMP) for 2007/08. The complete report can be found in the County Unified URMP annual submittal.

7.8 MS4 Map

The City has a Geographic Information System (GIS) map of all catch basins in the located throughout the City. The City also has a Drainage Master Plan that includes all storm drain conveyance structures included (catch basins, inlets, outfalls, manholes, etc.) available in GIS format that is accessible digitally. In addition, the City has an independent consultant working on a new database that will incorporate the Drainage Master Plan, will allow violations to be tracked and documentation of maintenance and inspection of long-term construction BMPs. The intent of the new database will be to house all pertinent information into one location, making tracking and record retention much more efficient. The database is still under construction but hopefully will be functional during this next reporting period.

7.9 New Activities and Improvements in FY 08/09

The City will analyze its 2008 DWMP in FY 08/09, review the results in detail and integrate the findings into program activities. City staff will evaluate the results to determine areas within the city (residential and commercial etc.,) that need additional education to improve the water quality in the region. The City will use the results from the previous DWMP to design the 2009 DWMP and attempt to conclude the special investigation (see Chapter 12). The ongoing problem at Seascape Sur, which was detected again in this reporting period's Coastal Monitoring and Dry-Weather Monitoring Programs, are discussed in greater detail in Chapter 12 (Special Investigations) of the JURMP annual report.

Additionally, City staff began enforcing the Grease Trap Ordinance, including it the commercial/industrial restaurant inspections. Staff, or the designated consultant, will continue to inspect the grease traps/interceptors during future annual storm water inspections to ensure that proper maintenance is being conducted and records kept on-site. Analysis on the effects on sewer spills will also being conducted in the next few years to see if the ordinance has had a successful impact on reducing spills as a result of grease build-up.

Additionally, it is anticipated that the WURMP workgroups will begin analyzing the Dry Weather Programs of participating jurisdictions and begin tailoring some of those activities to address high priority pollutants, and the activities/sources associated with them. In the years past, jurisdictions would self analyze their respective programs to address high priority locations and sources, but with the added emphasis on WURMP activities stressed by the RWQCB staff, these issues will now be attacked on a watershed basis. This has the potential to provide more knowledge and resources that were previously limited by staff resources, but now with the assistance of neighboring jurisdictions, this may prove very valuable. The DWMPs can be used to identify problem areas that may have a particular clump of sources upstream, and will help focus the WURMP activities on these areas in mini-pilot programs to determine if the source can be identified, or maybe as important, eliminated as a possible source so that resources can be focused on other potential sources.

7.10 Summary

As evidenced by the Copermittee WWMP, the City's DWMP, the City's "team approach" in responding to complaints, and the improvements made citywide in procedures and investigative processes, the City is proficient and effective at detecting and eliminating IDDEs, and working to change the human behavior that has caused negative impacts on water quality.

Recognizing that human behavior is the basis of many non-point source pollution problems, the City quickly acts on reports from residents, City staff, and other agencies to follow up on problems as soon as they are reported. The City altered the storm water hotline to link directly to the Environmental Program Manager's voice mail box so that calls can be consistently monitored and acted upon. The City has effectively utilized the administrative fine process which has proven to be a very efficient and timely procedure in issuing citations, which will reduce the potential for pollution into the City's MS4.

The City's aggressive sewer maintenance program and grease management ordinance has proved to be successful in preventing sewer spills. These programs are vital to prevent the catastrophic environmental effects that sewer spills have on the natural environment. In addition, the proactive approach that City staff takes in educating contractors before there is an illegal discharge has greatly reduced the amount of violations in the City. This is extremely evident by the concrete truck and pumper scenario discussed above. The violations at minor construction projects have reduced as a result of this proactive approach.

CHAPTER 11: EFFECTIVENESS ASSESSMENT COMPONENT

This to be added to existing Chapter 11 component of 2008 JURMP Annual Report…….

Illicit Discharge Detection and Elimination Component

Program Strengths: The City continued to implement its IDDE program by responding to complaints and investigating potential violations promptly and thoroughly. The City serves the community effectively and efficiently by connecting the storm water hotline directly to the Environmental Programs Manager, saving valuable time and effort. The program has proven to be very successful as the community of Solana Beach is very intimate and prefers to do business face-to-face and requires immediate results. The City has a very customer service focused atmosphere, and the residents demand instant and effective action on relevant issues. This has, in turn, been very beneficial to the storm water program because many times, in order to effectively deal with a violation or IDDE, it has to be investigated immediately. This has led to many violations and violators being discovered while it is occurring, rather than letting time elapse which can lead to a lengthy and complex IDDE investigation that may yield no results.

The 2008 Dry Weather Monitoring Program (DWMP) was conducted in-house by City staff. The program was modeled after the initial report conducted by MEC Analytical, and the complete report is included in the 2008 JURMP Annual Report (Appendix V). In summary, there was one location (Seascape) that had the potential to be an IDEE situation. This location has been an ongoing problem area in the City for many years and the source has proven elusive and the investigation continues. The problem is most likely a structural deficiency in the pipe, which cannot be corrected without a large Capital Improvement Project. The City is still researching other options such as slip-lining the existing pipe or installing a Low Flow Diverter at the end of the pipe. During this reporting period, the City installed two curb screen debris BMPs in the upstream catch basins in hopes of removing the source (decaying organic debris) before it enters the underground pipe. These screens are from two different manufacturers and are part of a pilot program to test the effectiveness. After the first rain event (which occurred after the reporting period but it worth mentioning), the curb screens prevented twenty-five (25) pounds of organic debris and trash from entering the storm drain. This pilot program will continue throughout the next reporting period and the results will be discussed in next year's Annual Report.

The City is committed to solving the bacteria problem at Seascape. The City dedicates approximately $10,000 in the annual CIP budget to clean out the Seascape pipe with

the intention of eliminating any residual bacteria and debris trapped in the sag in the pipe. The City continues to work with the adjacent condominium complexes to eliminate the over-watering issues that may be contributing to the problem. City staff works very well in communicating possible IDDE situations around the outfall, as the Marine Safety Department has a lifeguard station located directly in front of the outfall (during summer months). Whenever there is a noticeable increase in flow or odor, the lifeguards are instructed to contact the Environmental Programs Manager to investigate. This will continue to occur until a remedy is found for the problem outfall. More information on this problem area can be found in Chapter 12 of the 2008 JURMP Annual Report.

One strength of the City's IDDE program is the aggressive sewer maintenance program. The City contracts with a private contractor to clean and video every sewer line in the City at least once annually and the "hot spots" are cleaned quarterly. This helps prevent the buildup of roots and grease in the system, preventing possible blockages and spills. Another strength is the aggressive Grease Management Ordinance that requires not only new and remodeled restaurants and eating establishments to install appropriate grease interceptors or traps, but also requires existing restaurants to install those devices as well. This aggressive approach was adopted to address a specific problem area in the City, and the results have been overwhelmingly positive. The amount of grease buildup in the sewer lines of the "hot spot" has been drastically reduced, and there has not been a spill in the targeted area since the adoption of the ordinance.

Improvement Areas: During the next reporting period, the City is committed to eliminating the historical bacteriological problem at the Seascape outfall. More aggressive actions may have to be taken to determine the ultimate source of the problem. The IDDE investigations discussed in previous annual reports have turned out to be inconclusive; so the City may have to look at alternate solutions, such as a permanent BMP structure installation (i.e. Low Floe Diverter) or the possibility of blocking off the connections to the storm drain and rerouting the site drainage of the neighboring condominiums to the street before entering the catch basin. These solutions would be very expensive, and since the receiving water has not been affected yet, the City will continue to pursue the elimination of the bacteria at its source. Additionally, the City will continue to gather and analyze additional data from the wet weather and dry weather programs and compare the datasets to determine other potential IDDE problems.

APPENDIX V: 2008 DRY WEATHER MONITORING PROGRAM RESULTS

THE ATTACHED DOCUMENT IS A COPY OF THE

PROGRAM DESCRIPTION,
NARRATIVE SUMMARY
AND
RESULTS SECTIONS
OF THE

City of Solana Beach
2008 Dry Weather Field Screening Program

Prepared by the City of Solana Beach

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1.0 EXECUTIVE SUMMARY

The Dry Weather Field Monitoring Program is an integral part of the NPDES (National Pollutant Discharge Elimination System) Storm Water Permit issued to the City of Solana Beach (City) and other Copermittees by the San Diego Regional Water Quality Control Board.

The City of Solana Beach has implemented a comprehensive Storm Water Pollution Prevention Program. In 2008 twenty-eight sites were inspected, with **only one storm water conveyance** line showing evidence of an illicit discharge or illegal connection. This line has a history of high bacteria counts, and the ongoing investigation attempting to locate the source of the bacteria is well documented and will continue until it is found and abated.

In September 2008, City of Solana Beach staff conducted the 2008 Dry Weather Monitoring Program under the regulations set forth in the NPDES Storm Water Permit Order No. 2007-0001. Twenty-eight sites were inspected during the 2008 Dry Weather Monitoring Program. Each site was visually and chemically inspected for illegal discharges and/or illicit connections. Results were recorded on field data sheets and are included in the appendices of this Dry Weather Screening report.

2.0 INTRODUCTION

The Illicit Connection/Illegal Discharge Dry Weather Monitoring Program is one of the required tasks of the Storm Water NPDES Permit issued by the San Diego Regional Water Quality Control Board, under Order No. 2007-0001. This is the first year under this new Permit, which replaced NPDES Order No. 2001-01, that the San Diego Copermittees have conducted this particular dry weather monitoring program. The permit requires the City of Solana Beach, and all Copermittees, to develop and implement programs to prevent, reduce, and eliminate inappropriate discharges of pollutants from storm water conveyances into the waters of the United States. There are only slight modifications to the previous Order No. 2001-01, and each will be discussed in detail in their respective chapters later in this report.

The purpose of the Dry Weather Monitoring Program is to detect illicit connections and/or illegal discharges to the storm water conveyance system. In order to accomplish this goal, strategic sites were identified to test for chronic and/or improper discharges. Chemical parameters specified by the U.S. Environmental Protection Agency (EPA) for field screening were used as indicators of potential pollution from industrial, commercial, or domestic sources. The EPA has presented the following most common non-storm water sources and has placed them into three contamination categories: pathogenic/toxic, nuisance, and clear. The pathogenic/toxic category can cause illness upon contact or consumption. The nuisance category can cause degradation of water quality and impair

aquatic ecosystems. Clear water usually comes from natural sources such as springs and ground water infiltration. Table 1 displays the potential for these sources to enter the storm drainage system (EPA 1993).

Table 1: Potential Inappropriate Entries Into Storm Drainage Systems (EPA 1993)

Potential Source:	Storm Drain Entry		Flow Characteristics		Contamination Category		
	Direct	Indirect	Contin-uos	Inter-mittent	Patho-genic/ toxic	Nuis-ance	Clear
Residential Areas:							
Sanitary wastewater	●	❍	●	❍	●	❍	
Septic tank effluent		●	●	❍	●	❍	
Household chemicals	❍	●		●	●		
Laundry wastewater	●			●		●	
Excess landscaping watering		●		●	❍	❍	●
Leaking potable water		●	●				●
Commercial Areas:							
Gasoline filling station	●	❍		●	●		
Vehicle maintenance/ repair	●	❍		●	●		
Laundry wastewater	●		●	❍	❍	●	
Construction site de-watering		●	●	❍		●	
Sanitary wastewater	●	❍	●		●		
Industrial Areas:							
Leaking tanks and pipes	❍	●	●	❍	●		
Miscellaneous process waters	●	❍	●	❍	●	❍	❍

Note: ● - most likely condition
❍ - may occur
Blank - not very likely

Discharges to the storm water conveyance system can originate form a variety of sources. The following provides a brief discussion of potential sources:

- Sanitary wastewater sources:
  - Sanitary wastewater (usually untreated) from improper sewer connections, exfiltration, or leakage
  - Effluent from improperly operating, or improperly designed, nearby septic tanks

- Automobile maintenance and operation sources:
  - Car wash wastewater
  - Radiator flushing wastewater
  - Engine degreasing wastes
  - Improper oil disposal
  - Leaky underground storage tanks

- Irrigation sources
  - Lawn runoff from over-watering
  - Direct spraying of impervious surfaces

- Relatively clean sources:
  - Infiltrating groundwater
  - Water routed from pre-existing springs or streams
  - Infiltrating potable water from leaking water mains

- Other Sources
  - Laundry wastewater
  - Non-contact cooling waters
  - Metal plating baths
  - Dewatering of construction sites
  - Washing of concrete trucks
  - Sump pump discharges
  - Improper disposal of household toxic substances
  - Spills from roadway and other accidents
  - Chemical, hazardous materials, garbage, sanitary sludge landfills and disposal sites

2.1 Land Use Characteristics

The City of Solana Beach consists of a total drainage area of 2,158 acres. The land use characteristics are estimated as follows (SANDAG 2000):

Agriculture	4 acres
Commercial and office	192 acres
Industrial	35 acres
Parks and Recreation	246 acres
Public Facilities and Utilities	110 acres
Residential	1436 acres
Transportation	98 acres
Undeveloped	37 acres
Water	1 acre

Figure 1 gives a visual presentation of the land use characteristics for the City of Solana Beach.

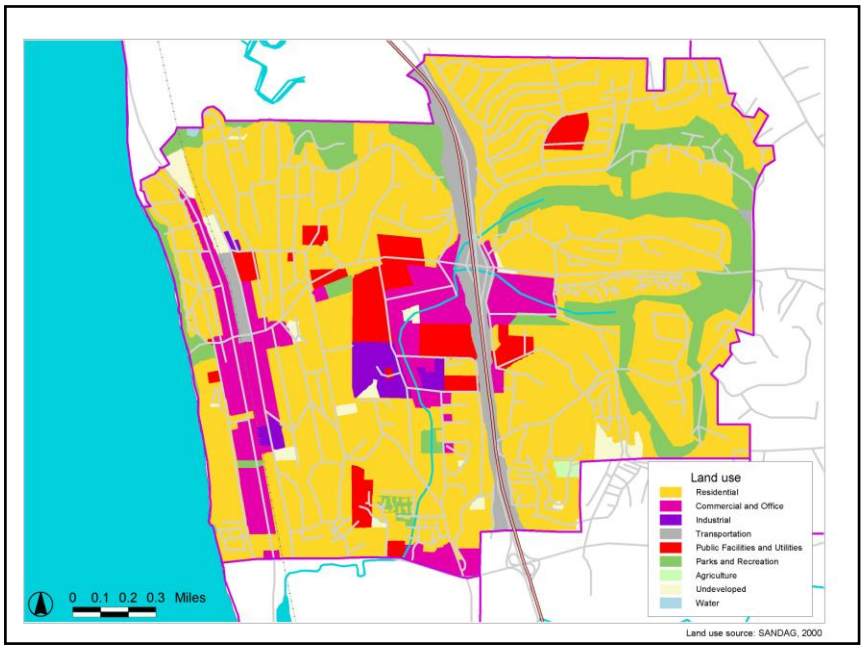

Figure 1. Land use in Solana Beach.

3.0 METHODS

This year marked the first year of dry weather monitoring conducted under the new municipal storm water discharge permit. Under the "Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001" Section II. B. 3, specific requirements for field observations, field screening monitoring and analytical monitoring are listed. Further, the Copermittee Monitoring Workgroup has developed protocols for the jurisdictions to use to ensure consistency among the Copermittees.

First, the City selected dry weather field screening and analytical monitoring stations based on the criteria listed in the Order. In determining which storm drains and/or

outfalls to monitor, a map was analyzed and sites were prioritized and selected based on the following:

- Review of the City's past Dry Weather Monitoring Programs
- Stations should be located downstream of any sources of suspected illegal or illicit activity
- Stations shall be located to the degree practicable at the farthest manhole or other accessible location downstream in the system within each cell
- Hydrological conditions, total drainage area of the site, traffic density, age of the structures or buildings in the area, history of the area, and land use types shall be considered in location stations
- Each Copermittee shall determine alternate stations to be sampled in place of selected stations that do not have flow

The City of Solana Beach is relatively small with highly defined geographic boundaries. The City is bordered to the north by the San Elijo Lagoon, the west by the Pacific Ocean, the south by the San Dieguito Lagoon and the east by the County of San Diego. All major outfalls on each border were selected for this program, along with the furthest accessible downstream storm drain structure for each sub-basin. These sites were selected with the thought that if any water were present in the structures furthest downstream, then upstream investigations would take place to determine the source of the water during dry periods. Therefore, no "alternate" stations were identified because staff would investigate all catch basins upstream from flowing or ponded outfalls/catch basins to attempt to find the source. Based on the above criteria, the following sites were selected for the City of Solana Beach.

Four monitoring locations were selected within the coastal basin based on historical problem areas and proximity to the Pacific Ocean (Sites 11, 24, 25 and 26). Three monitoring locations were selected within the Fletcher Cove Basin based on their drainage to sensitive water bodies (Sites 20, 21, and 23). Eleven sites were selected within the San Elijo Basin. These sites were chosen based on their proximity to the environmentally sensitive San Elijo Lagoon, at the furthest possible point downstream before it enters the lagoon (Sites 1-10 and 22). Seven sites were chosen for the largest basin in the City, the Steven's Creek Basin (Sites 12-17, 19). The majority of this basin drains into Stevens Creek. Monitoring locations were selected at specific points throughout the basin based on the combination of criteria discussed in the previous paragraph. These sites were chosen to capture data from all the different land uses in the basin. These include industrial, residential, commercial and parks. The last basin, the Via de la Valle East Basin, is located in the southeast portion of the City. Three monitoring locations were selected there to monitor what was leaving the City and entering the City of San Diego (Sites 18, 27, and 28).

An initial list of potential monitoring locations was developed. Twenty-eight sites met the criteria and were selected for the 2008 Dry Weather Monitoring program. All

twenty-eight sites were identified as primary sites for monitoring based on the factors listed previously within this report.

In accordance with Order No. 2007-0001, City staff made an initial visit to each site to determine if there was flow present, ponded water, or if the storm drain structure was dry**.** Field data sheets were used to record site descriptions and characteristics, flow estimations, visual observations, and field chemistry results (see Table 3 for a summary of field observations; individual data sheets are included in Appendix C). A new requirement included in Order No. 2007-0001 was the development of a Trash Assessment program. This program will be used to assess the presence of trash in receiving waters and urban runoff at each dry weather field screening or analytical monitoring station. Assessments of trash shall provide information on the spatial extent and amount of trash present, as well as the nature of the types of trash present. The Copermittees met and developed the "Trash Assessment Form" which is included with each Dry Weather Monitoring Field Datasheet for each station.

If flowing or ponded water was observed during the initial visit, water quality tests were conducted. Sites that had elevated chemistry levels or abnormal visual observations were investigated immediately and the site was revisited within a period of not less than four hours and not more than twenty-four hours. Observations and chemical testing were repeated during the second visit. If the site was dry on the initial visit, a follow-up visit was not conducted.

Sites 3 and 25 had ponded and flowing water present, respectively. Field screen tests and lab analysis were performed on both stations. The Order only requires that jurisdictions take ¼ (25%) of samples that were field screened to lab for analysis, but the City decided that since there were so few catch basins that had enough water to sample, it would be prudent to take them all to the lab for analysis.

Samples were collected by inserting a pre-cleaned HDPE bottle into the middle of the flowing or ponded water. Samples were tested on-site using CHEMetrics field test kits for the colorimetric analysis of ammonia, nitrate-N, orthophosphate-P, and detergents. In addition to the colorimetric analyses, the samples were also analyzed for pH, conductivity, and temperature using an Oakton Model 35630-62 pH/Conductivity/ Temperature Meter. Turbidity was measured using a Hach 2100P Turbidimeter..

Table 2 presents the specific ranges and detection limits of the field test kits and meters.

Table 2: Range and Detection Limits for Field Test Kits and Meters

Parameter	Kit or Meter	Range	Detection Limits (mg/L)	Accuracy/ Increment
pH	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.00 to 14.00 pH	NA	± 0.01 pH
Temperature (^oC)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0 to 100 ^oC	NA	± 0.5 ^oC
Conductivity (mS/cm @ 25 ^oC)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.0 to 19.99 mS/cm	NA	± 1% Full Scale ± 1 Digit
Turbidity	Hach Model 2100P Turbidimeter	0-1000 NTU	NA	± 2% of reading plus stray light from 0-1000 NTU
Ammonia (mg/L)	CHEMetrics K-1510	0-1.0 and 1.0-10.0 mg/L	0.1	NA
Nitrates (mg/L)	CHEMetrics K-6902	0 – 1.0 and 1.0-5.0 mg/L	0.05	NA
Detergents (mg/L)	CHEMetrics	0-3.0 mg/L	0.25	NA
Phosphate (mg/L)	CHEMetrics K-8510	0 –1.0 and 1.0-10.0 mg/L	0.1	NA

4.0 RESULTS

Table 3 presents a detailed summary of all chemical, biological and visual observations made during the 2008 Dry Weather Screening Program. The following provides a brief discussion about the purpose and results of visual observations and chemical and biological tests.

Table 3

Table 3

Table 3

Table 3

4.1 Visual Observations

Visual observations included water color, clarity, and flow rate, floating materials, biological observations, structural condition of the conveyance, and vegetative condition at the site. If any particular odors were associated with the site, those observations were also recorded.

- **Flow:** Flowing water was only observed at Site 25. Ponded water was only found at Site 3. Sites 2, 6, 8, 15, 17, 19 and 24 were damp with insufficient water available to collect a sample. Sites 1, 4, 5, 7, 9-14, 16, 18, 20-23 and 26-28 were all dry.

- **Odor:** Odor can be caused by chemicals from residential, commercial, and industrial discharges; and from natural sources including decaying organic matter and microbial activity.

  Only Site 25 had a distinctive rotten eggs odor associated with it. This may have been due to decaying organic matter within the pipe.

- **Water Color:** The apparent color of water results from dissolved substances and suspended matter. Soil runoff and decaying organic matter produce a variety of yellow, red, brown, and gray colors. Some algae and dinoflagellates produce reddish or deep yellow colors in water, while high levels of phytoplankton and other algae appear green.

  Two sites had a distinctive color to the samples. Site 3 and Site 25 had a distinct yellow color.

- **Water Clarity:** Turbidity refers to the cloudiness of water. Water that is turbid generally has low clarity, and may appear cloudy or opaque, while less turbid water will appear clear. Suspended solids and microscopic plankton that scatter light passing through the water cause turbidity. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

  Two sites had slightly cloudy water samples, Site 3 and 25. Quantitative measurements for turbidity at each site are included in Table 3.

- **Floatable materials:** The type of floating matter can help identify the source of contamination, since these substances are often direct products of the source of the pollution.

  All of sites were free of floatable materials during the 2008 inspections.

- **Biological:** There was no biological activity detected at any of the sites.

- **Vegetative condition:** Excessive vegetation can be an indicator of elevated levels of nutrients in the runoff.

  There were no sites with abnormal vegetative growth. Site 3 had vegetation surrounding the outlet, but it was normal vegetation from the San Elijo Lagoon.

- **Deposits:**

  None of the sites had any deposits associated with them.

4.2 Field Chemical Analyses

All sites with flowing or ponded water were tested for the following parameters: temperature, pH, conductivity, turbidity, ammonia, detergents, nitrates, and orthophosphates. Only two sites that were monitored had flowing or ponded water associated with them. Both these sites had field and lab tests conducted on the water present. The results for both sites will be included under each parameter below, and any exceedences will be discussed in Section 5 of this report. Table 3 included in this report provides a detailed list of analytical results. Section 5 of this report provides a discussion of sites that appear impacted by illicit discharges.

- **Temperature:** Extreme temperatures can be an indication of commercial or industrial runoff.

  Site 3: 21.7°C
  Site 25: 18.9°C

- **pH:** Measures of pH represent the intensity of the acidity or alkalinity of water, on a scale from 0 to 14.0, with 7.0 considered neutral. The pH of natural waters ranges from 6.0 to 9.0 (EPA 1993). Measurements outside of this range could be an indicator of commercial or industrial discharges.

  Site 3: 8.37
  Site 25: 8.22

  Both sites had pH levels within the recommended guidelines.

- **Conductivity:** Conductivity is the measure of the ability of water to carry an electrical current and high levels are an indicator of high total dissolved solids (TDS). The conductivity of saltwater is generally above 43 uS/cm. The Copermittees have not developed an action level for conductivity, but Best Professional Judgment (BPJ) is used. Generally, values greater than 5,000 umhos/cm may indicate an IC/ID.

  Site 3: 2.59 uS/cm

Site 25: 2.57 uS/cm

Both levels were under the >5,000 uS/cm that is generally used for an IC/ID investigation so no follow up from these results was required.

- **Turbidity:** Turbidity refers to the clarity of water. The cloudier the water, the higher the turbidity. Sources of turbidity include suspended organics/detritus, re-suspended bottom sediments, sediments originating from erosion, and phytoplankton. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

  Site 3: 3 NTU
  Site 25: 7 NTU

  Best Professional Judgment is used for IC/ID follow up for turbidity. No follow-up was necessary from these results.

- **Ammonia**: Ammonia is a common ingredient in commercial and household cleaning products. In addition, organic material contains nitrogen, which can convert into ammonia by means of biochemical degradation. Elevated levels of ammonia can be an indication of decaying organic matter or discharges containing cleaning agents. Ammonia levels range from 6 to 380 mg/L in raw sanitary wastewater, and from 0.1 to 3.0 mg/L in all other waters (EPA 1993). The Copermittee action level for ammonia is 1.0 mg/L.

  Site 3: 3.5 mg/L
  Site 25: 3.5 mg/L

  Both sites had slightly elevated levels on ammonia, so follow-up was conducted. This will be explained in Section 5 of this report.

- **Detergents:** Detergents are found in household and commercial cleaning and laundering products. Elevated detergent levels are a good indicator of commercial and/or residential wash water entering the storm water conveyance. Detergent (surfactant) concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993). The Copermittee action level for MBAS (detergents) is 1.0 mg/L.

  Site 3: 1 mg/L
  Site 25: 3 mg/L

  Site 25 exceeded the Copermittees action level, and follow-up activities were conducted as a result. This will be explained in Section 5 of this report. The most likely source of detergents at this site is residential car washing.

- **Nitrate-N:** Nitrates are commonly found in fertilizers, human or other animal wastes, in certain manufacturing processes, and in decomposing organic materials. Elevated levels of nitrate may be present in irrigation runoff, or may be indicative of an illicit connection to the storm drain system, by either commercial or residential sources. The Copermittee action level for Nitrate is 1.35 mg/L.
  Site 3: 0.5 mg/L
  Site 25: 0 mg/L

  Both sites were below the action level for nitrates.

- **Orthophosphate-P**: Orthophosphate-P occurs naturally from rocks, and with the decay and mineralization of dead plants and animals, but may also indicate the presence of human sewage, and commercial, agricultural or residential waste water. The Copermittee action level for Orthophosphate is 0.07 mg/L.

  Site 3: 2.5 mg/L
  Site 25: 0 mg/L

  Site 3 exceeded the action level for Orthophosphate. A follow-up was conducted and will be detailed in Section 5 below.

4.3 Laboratory Chemical Analyses

In accordance with Order No. 2007-0001 Section D.4, a minimum of 25% of all sites with flowing or ponded water were tested for the following parameters: total hardness, surfactants (MBAS), oil and grease, diazinon, chlorpyrifos and malathion, dissolved cadmium, copper, lead, and zinc, and *Enterococcus*, total coliform, and fecal coliform bacteria. Sites 3 and 25 were selected for laboratory analysis because they had ponded and flowing water, respectively. The following provides a brief discussion of each parameter and the results at each site. Table 3 provides a detailed list of analytical results. Section 5 provides a discussion of sites that appear impacted by illicit discharges.

- **Total Hardness:** Total hardness refers to the calcium and magnesium concentrations in water. The hardness of water can vary considerably between locations. Natural sources of hardness are dissolved limestones. Guidelines for maximum dissolved metals concentrations in natural water are linked to the hardness or alkalinity of the water (i.e., the softer the water, the lower the permitted level of dissolved metals).

  Site 3: 616 $CaCO_3$
  Site 25: 478 $CaCO_3$

- **Surfactants (MBAS):** Surfactants are discharged from household and commercial cleaning and laundering operations. Anionic surfactants are commonly used in detergents and account for approximately two-thirds of the total surfactants used. Anionic surfactants are commonly measured as Methylene Blue Active Substances (MBAS). Surfactant concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993).

  Site 3: Non Detect (ND) mg/L
  Site 25: 6.3 mg/L

  Site 25 exceeded Copermittee action levels and will be discussed in Section 5 of this report.

- **Oil and Grease:** The oil and grease analysis is applicable for the determination of hydrocarbons, vegetable oils, animal fats, waxes, soaps, grease, and related matter. Discharges may cause surface films and shoreline deposits leading to environmental degradation.

  Site 3: ND mg/L
  Site 25: ND mg/L

  Both sites registered Non-Detect for Oil and Grease and therefore no follow-up required.

- **Diazinon:** Diazinon is an organophosphate insecticide. It kills insects, as well as other organisms through its effect on the nervous system. It is moderately persistent and has moderate to high mobility in soil. Diazinon, in high enough concentrations, is highly toxic to birds, mammals, honeybees, and other beneficial insects. It is also very highly toxic to freshwater fish and invertebrates following acute exposure.

  Site 3: ND ug/L
  Site 25: ND ug/L

  Diazinon was not detected at either site and therefore no follow-up required.

- **Chlorpyrifos:** Chlorpyrifos is also an organophosphate insecticide and is the most widely used insecticide in the United States. It is used in agriculture on a variety of crops and for residential use as a termiticide, mosquitocide, lawn treatment, as well as other uses. It adsorbs readily to soil particles and therefore is not highly mobile in soil. Chlorpyrifos presents a high risk to birds, fish and mammals and an even a higher risk to aquatic invertebrates. The Copermittee action level for chlorpyrifos is 0.05 µg/L.

Site 3: ND ug/L
Site 25: ND ug/L

Diazinon was not detected at either site and therefore no follow-up required.

- **Malathion:** Malathion is an organophosphate parasympathomimetic which binds irreversibly to cholinesterase. Malathion is an insecticide of relatively low human toxicity. Malathion is a pesticide that is widely used in agriculture, residential landscaping, public recreation areas, and in public health pest control programs such as mosquito eradication. In the US, it is the most commonly used organophosphate insecticide

  Site 3: ND ug/L
  Site 25: ND ug/L

  Malathion was not detected at either site and therefore no follow-up required.

- **Dissolved Cadmium:** Cadmium occurs in sulfide minerals that also contain zinc, lead, or copper. It is used in electroplating, batteries, paint pigments, and alloys with various other metals. It is usually associated with zinc at a ratio of about one part cadmium to 500 parts zinc in most rocks and soils. It is nonessential for plants and animals and is extremely toxic and accumulates in the kidneys and liver. The average abundance of cadmium in streams is 1 µg/L and in groundwater is from 1 to 10 µg/L. The U.S. EPA primary drinking water standard MCL is 10 µg/L (Standard Methods 1998).

  Site 3: ND mg/L
  Site 25: ND mg/L

  Dissolved cadmium was not detected at either site and therefore no follow-up required.

- **Dissolved Copper:** Copper occurs in its native state, but is also found in many minerals. It is widely used in electrical wiring, plumbing, roofing, various alloys, pigments, cooking utensils, brake pads, and the chemical industry. Copper is considered an essential trace element for plants and animals. The average abundance of copper in streams is 4 to 12 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 1.3 mg/L (Standard Methods 1998).

  Site 3: 0.0105 mg/L
  Site 25: 0.0238 mg/L

  Dissolved copper was below the Copermittee action level and no follow-up required.

- **Dissolved Lead:** Lead is normally found in the mineral galena. It is commonly used in batteries, ammunition, solder, piping, pigments, insecticides, and some alloys. It is nonessential for plants and animals and is toxic by ingestion and is a cumulative poison. The average abundance of lead in streams is 3 µg/L and in groundwater is generally less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 15 µg/L.

  Site 3: ND mg/L
  Site 25: ND mg/L

  Dissolved lead was not detected at either site therefore no follow-up required.

- **Dissolved Zinc:** Zinc occurs in its native state and is used in many alloys such as brass and bronze. It is also used in batteries, fungicides and pigments. It is an essential growth element for plants and animals, but at elevated levels it is toxic to some species of aquatic life. The average abundance of zinc in streams is 20 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA secondary drinking water standard MCL is 5 mg/L.

  Site 3: 0.018 mg/L
  Site 25: 0.113 mg/L

  Dissolved zinc was below Copermittee action levels therefore no follow-up required.

- **Bacteria:** Bacteria are commonly found in human and animal feces. They are generally not harmful themselves, but they do indicate the possible presence of pathogenic bacteria, viruses, and protozoans that also live in human and animal digestive systems. Total coliform, fecal coliform and *Enterococcus* bacteria are common test organisms for water quality sampling.

  - **Total Coliforms:** Total coliforms are a group of bacteria that can occur in human feces, but can also be present in animal manure, soil and other places outside of the human body. The Copermittee action level for Total Coliform is 50,000 MPN/100mL.

    Site 3: 110,000 MPN/100mL
    Site 25: >16,000,000 MPN/100mL

    Both sites had results that exceeded the Copermittee action level (50,000 MPN/100mL). Site 25 is already the subject of an ongoing IC/ID investigation. Staff conducted upstream investigations on Site 25 and Site 3, and will be discussed in Section 5 below.

- **Fecal Coliforms:** Fecal coliforms are a subset of total coliforms and are more fecal-specific in origin.

  Fecal coliform levels were the following:
  Site 3: 3,000 MPN/100mL
  Site 25: 800,000 MPN/100mL

  Site 25 had bacteria readings that exceeded the Copermittee action level for Fecal Coliforms (20,000 MPN/100mL). Upstream investigations were conducted and the results are explained in Section 5 below.

- **Enterococci:** Enterococci are a subgroup within the fecal *Streptococcus* group and are better suited for survivability in salt water. They are generally found in the digestive systems of humans and other warm-blooded mammals.

  Site 3: 13,000 MPN/100mL
  Site 25: 80,000 MPN/100mL

  Both sites exceeded the Copermittee action levels for enterococci (10,000 MPN/100mL). Upstream investigations were conducted and the results are explained in Section 5 below.

4.4 Trash Assessment Monitoring

A new component added to the Dry Weather Monitoring Program in Order No. 2007-0001 is a Trash Assessment Monitoring requirement. According to the Order, Copermittees must "Assess the presence of trash in receiving waters and urban runoff at each dry weather field screening or analytical monitoring station. Assessments of trash shall provide information on the spatial extent and amount of trash present, as well as the nature of the types of trash present."

The Copermittees developed a standardized "Trash Assessment Form" (Form), through the Dry Weather Monitoring Workgroup, which encompasses all the requirements listed in Order No. 2007-0001. This Form was completed for all twenty-eight sites included in this Dry Weather Monitoring Program. Twenty-seven sites received an "Optimal" level rating, which is the highest ranking level. The Optimal level states, "On first glance, little or no trash visible. Little or no trash (<10) evident when evaluated area is closely examined for litter and debris." Only one site (Site 12) received a Suboptimal ranking, which is the next level down. Approximately 13 pieces of trash was detected at Site 12, which is an outfall that drains a large portion of the City.

All Trash Assessment Forms are included with their respective Field Datasheets at the end of this Report.

5.0 DISCUSSION

During the 2008 Dry Weather Monitoring Program, two sites (Site 3 and 25) displayed elevated levels of some analytes, compared to the Action Levels developed by the Copermittees. Twenty-six of the twenty-eight sites inspected this year were either dry or damp. Site 25 is the subject of an ongoing IC/ID bacteria investigation. The following analytes exceeded Copermittee action levels at their respective sites:

- Site 3: Ammonia, Orthophosphates, Total Coliform and Enterococcus
- Site 25: Ammonia, Detergents (MBAS), Total Coliform, Fecal Coliform and Entercoccus

- **Site 3:** Samples were taken from the outfall located at Santa Inez, which drains into the San Elijo Lagoon. Field tests for Ammonia and Orthophosphates and lab results for Total Coliform and Enterococcus revealed exceedences in Copermittee action levels. A follow-up investigation was immediately conducted on 9/30/08 after the field tests revealed exceedences in Ammonia and Orthophosphates. Upstream catch basins were all dry but there looked to be evidence of neighborhood over-irrigation or washing activities (car or hardscape).

  As mentioned above, this outfall drains into the San Elijo Lagoon, and heavy natural vegetation prevents the water from draining effectively into the lagoon. Often times, there is a pool of stagnant water in front of the outfall that may be a breeding ground for bacteria and a holding pond for other pollutants such as Orthophosphates. If there was recent over-irrigation or car washing that occurred just prior to sampling, then it could be just enough to register exceedences in these analytes.

  Another follow-up investigation was conducted on 10/14/08 when the lab results came back showing the exceedences in Total Coliform and Enterococcus. This investigation revealed not only dry catch basins, but a dry discharge point in the lagoon at the outfall. No samples could be taken because the entire area was dry, including the area that previously held the ponded water. This was a common theme during this Dry Weather Monitoring Program as many areas that contained water in previous years were now currently dry. This may have to do with the prolonged drought the region is in and the heavy educational outreach and education to residents regarding water conservation.

- **Site 25:** Samples were taken from the outfall located at the Seascape Sur beach access. This outfall has historically high levels of bacteria, and the City is actively pursuing the source of the bacteria through an ongoing IC/ID investigation. In addition to the bacteria exceedences, field screening tests revealed exceedences in Ammonia and Detergents (MBAS).

A follow-up investigation for the field screening exceedences occurred immediately on 9/30/08. All upstream public catch basins were dry, and no flow was entering the pipe from the street level. This led City staff to believe that the flow coming out of the outfall was coming from the neighboring private condominiums, which have underground connections into the outfall pipe. City staff investigated the adjacent condominiums and found over-irrigation occurring at common area landscaping. The over-irrigation is most likely contributing as the transport mechanism for the pollutants in the pipe.

Another follow-up investigation was conducted on 10/14/08 when the lab results came back showing exceedences in all three bacteriological indicators (Total Coliform, Fecal Coliform and Enterococcus). The follow-up investigation revealed no flow at the outfall and dry catch basins upstream. There were no signs of over-irrigation in the general vicinity and no samples were taken.

As mentioned in previous Dry Weather Monitoring Reports, the City has discovered a structural deficiency (sag) in the underground pipe leading to the outfall. It is believed that this sag could be acting as a large breeding ground for sediment and decaying organic debris, and could be harboring pollutants and contributing to the re-growth of bacteria. The City is currently exploring different options to resolve this ongoing issue, and has committed to budgeting in an annual CIP project to thoroughly clean the pipe to remove the debris in the sag. In addition, the City has installed curb debris screen Best Management Practices (BMPs) at upstream catch basins. For more information on all the activities the City has conducted and future plans for the problem area, please see the City's Jurisdictional Urban Runoff Management Program Annual Report.

6.0 CONCLUSIONS

The 2008 Dry Weather Monitoring Program found only one storm water conveyance line with an indication of illegal discharges to the City of Solana Beach's storm water system. The majority of the other sites visited were dry or damp, with one additional site showing evidence of over-irrigation and/or car washing discharges. However, this site did not have analyte concentrations high enough to cause great concern. All necessary follow up activities did not reveal a dominant source, as the catch basins and outfalls were dry.

The City will continue with its efforts to educate the Beachwalk business district and adjacent private condominium complexes about the City's pollution prevention programs and continue its efforts to eliminate the discharge at Site 25 (Seascape Sur). Commercial educational programs will continue and include both the proprietors and their employees. Residential programs will include building owners, Homeowner Associations (HOA's) and residents. An informed public will provide support for new and already existing prevention programs.

Additionally, the City will continue to explore options for capital improvements in the Seascape area as the source of the recurring bacterial problems has proven elusive. The City will continue to look into possibly correcting the structural problems within the pipe, which may be leading to bacterial re-growth. The outfall has not affected the quality of the receiving waters, yet, but a proactive approach by the City to abate the bacterial problem is recommended.

In addition, the City plans to implement a large-scale residential over-irrigation reduction study in the area of the Santa Inez outfall. That area has a high occurrence of over-irrigation which may be the cause of the exceedences at the outfall. The City, along with other local municipalities and water districts, has secured a grant from the Metropolitan Water District to conduct this study to analyze over-irrigation and its impacts on water conservation and water quality. These types of regional partnerships will also greatly assist the educational outreach and education to local residents.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	Rios Rd Trailhead	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	Carlsbad	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	8:00AM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Dry - No Flow

Trash Assessment Form

SITE ID: Rios Rd Trailhead **DATE:** 9/25/08

LOCATION: Carlsbad **TIME:** 8:00 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	GLENMONT / RAIL PL	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00)
Location	CARLSBAD	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	8:15AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage		☒ Other DAMP/No Flow	
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray		☐ Other	
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque			☐ Other	
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter		☐ Other	
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits		☐ Other	
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive			☐ Other	
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other	

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP, NO FLOW. NO FIELD TESTS CONDUCTED

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: Glenmont / Raul Pl **DATE:** 9/25/08

LOCATION: Carlsbad **TIME:** 8:15 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	SANTA INEZ	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN ELUO LAGOON	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/30/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	10:00 am	**Observer**			**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	21.7°C	NH_3-N (mg/L)	3.5	NO_3-N (mg/L)	.5	Ortho-PO_4 (mg/L)	2.5
pH (pH units)	8.37	TURB (NTU)	3	COND (mS/cm)	2.59	MBAS (mg/L)	1.0

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Standing, Still water
Excessive Overland flow

Trash Assessment Form

SITE ID: Santa Inez Outfall **DATE:** 9/30/08

LOCATION: 4 Carlsbad **TIME:** 10:00 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 40 x 40

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☒ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	626 Canyon Dr	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	Carlsbad	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	8:25 AM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage		☒ Other Dry/No Flow	
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray		☐ Other	
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque			☐ Other	
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter		☐ Other	
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits		☐ Other	
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive			☐ Other	
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Dry - No Flow

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 626 Canyon Dr **DATE:** 9/25/08

LOCATION: Carlsbad **TIME:** 8:25 am

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	635 Canyon Dr	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00)
Location	Carlsbad	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	8:27 AM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other Dry/No Flow
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Dry - No Flow

Trash Assessment Form

SITE ID: 635 Canyon Dr DATE: 9/25/08

LOCATION: Carlsbad TIME: 8:27 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees

Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	HIGHLAND AVE (EX GOLF COURSE)	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	CARLSBAD	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	8:40 AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☒ Other DAMP/No Flow

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP, NOT ENOUGH WATER TO SAMPLE. EVIDENCE OF OVER-IRRIGATION IN NEIGHBORHOOD

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: HIGHLAND AVE (EXE GOLF COURSE) **DATE:** 9/25/08

LOCATION: CARLSBAD **TIME:** 8:40 AM

OBSERVER: DANNY KING

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	SANTA HELENA TRAILHEAD	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	CARLSBAD	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	8:50 AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other Dry/No Flow
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY

Trash Assessment Form

SITE ID: Santa Helena Trailhead **DATE:** 9/25/08

LOCATION: Carlsbad **TIME:** 8:50AM

OBSERVER: Danny Klisa

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 30 x 30

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☒ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	SANTA CARLINA TRAILHEAD	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	CARLSBAD	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	8:55AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other DAMP/NO FLOW
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP, EVIDENCE OF NEARBY OVER-IRRIGATION - NOT ENOUGH WATER TO SAMPLE

Trash Assessment Form

SITE ID: Santa Carina Trailhead **DATE:** 9/25/08

LOCATION: Carlsbad **TIME:** 8:55 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 30

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☒ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	SANTA LUISA OUTFALL	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	CARLSBAD	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	9:02 AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty		☐ Rotten Eggs	☐ Chemical	☐ Sewage		☒ Other Dry/No Flow	
Color	☐ None	☐ Yellow		☐ Brown	☐ White	☐ Gray		☐ Other	
Clarity	☐ Clear			☐ Slightly Cloudy	☐ Opaque			☐ Other	
Floatables	☐ None	☐ Trash		☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter		☐ Other	
Deposits	☐ None	☐ Sediment/Gravel		☐ Fine Particulates	☐ Stains	☐ Oily Deposits		☐ Other	
Vegetation	☐ None	☐ Limited		☐ Normal	☐ Excessive			☐ Other	
Biology	☐ None	☐ Insects	☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other	

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY - NO FLOW

Trash Assessment Form

SITE ID: SANTA LUISA OUTFALL **DATE:** 9/25/08

LOCATION: CARLSBAD **TIME:** 9:02 AM

OBSERVER: DANNY KING

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 30 x 30

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent -- 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	East Side Railroad Tracks	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	Carlsbad	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	9:30AM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow / Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae ☐ Fish ☐ Snails		☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Concrete Channel Dry - No Flow

Trash Assessment Form

SITE ID: East Side Railroad Tracks **DATE:** 9/25/08

LOCATION: Carlsbad **TIME:** 9:30 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	645 PACIFIC	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	CARLSBAD	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	9:41 AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other No Flow / Dry

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY - NO FLOW

Trash Assessment Form

SITE ID: 645 Pacific Ave **DATE:** 9/25/08

LOCATION: Carlsbad **TIME:** 9:41 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	STEVENS CREEK OUTFALL	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUTO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/30/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	10:45	**Observer**			**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☒ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other NO FLOW
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		ml
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: NO FLOW

Trash Assessment Form

SITE ID: Stevens Creek Outfall **DATE:** 9/30/08

LOCATION: San Dieguito **TIME:** 10:45 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 30

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	VALLEY (N. BAKER IRON WORKS)	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	10:05 AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY - NO FLOW

Trash Assessment Form

SITE ID: VALLEY (N. BAKER IRON WORKS) **DATE:** 9/25/08

LOCATION: SAN DIEGUITO **TIME:** 10:05AM

OBSERVER: DANNY KING

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	STEVENS/GENEVIEVE	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/30/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	10:40	**Observer**			**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other	NO FLOW
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other	
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other	
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other	
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other	
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☒ Other	
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☒ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: NO FLOW

Trash Assessment Form

SITE ID: Stevens / Genevieve **DATE:** 9/30/08

LOCATION: San Dieguito **TIME:** 10:40AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 30

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	309 Sauna Hills Dr	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	San Diegulito	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	10:17 AM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Damp
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☒ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Damp. No Samples Taken - Over-Irrigation

Trash Assessment Form

SITE ID: 309 Solana Hills Dr **DATE:** 9/25/08

LOCATION: San Dieguito **TIME:** 10:17 AM

OBSERVER: Darren King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	559 GLENCREST AVE	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/03	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	10:24 AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY

Trash Assessment Form

SITE ID: 559 GLENCREST AVE **DATE:** 9/25/08

LOCATION: SAN DIEGUITO **TIME:** 10:24 AM

OBSERVER: DANNY KING

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	WELLS FARGO	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	10:40AM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Food/Damp
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☒ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP - NOT ENOUGH WATER TO SAMPLE

Trash Assessment Form

SITE ID: Wells Fargo **DATE:** 9/25/08

LOCATION: San Dieguito **TIME:** 10:40 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	Avocado Place	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	San Dieguito	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	10:55 AM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow / Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Dry

Trash Assessment Form

SITE ID: Avocado Place **DATE:** 9/25/08

LOCATION: San Diegulito **TIME:** 10:55 AM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	DEL STREET	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	12:35 PM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Dams
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☒ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMS – EVIDENCE OF OVER-IRRIGATION FROM NEIGHBORHOOD

Trash Assessment Form

SITE ID: Dell Street **DATE:** 9/25/08

LOCATION: San Diego **TIME:** 12:35 pm

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	SOUTH CEDROS/VIA DE LA VALLE	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	1:00 PM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other No Flow/Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY

Trash Assessment Form

SITE ID: South Cedros/Via De La Valle **DATE:** 9/25/08

LOCATION: San Dieguito **TIME:** 1:00PM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent -- 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	605 MARSOLAN	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	1:05 PM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Day
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY

Trash Assessment Form

SITE ID: 605 MARSOCAN **DATE:** 9/25/08

LOCATION: SAN DIEGUITO **TIME:** 1:05PM

OBSERVER: DANNY KING

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	779 Barbara Ave	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00)
Location	San Diego	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	1:27 PM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Dry

Trash Assessment Form

SITE ID: 779 BARBARA AVE **DATE:** 9/25/08

LOCATION: SAN DIEGUITO **TIME:** 1:27 PM

OBSERVER: DANNY KUSC

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	North Cedros / Lomas Santa Fe	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	San Dieguito	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	1:35 PM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow / Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Dry

Trash Assessment Form

SITE ID: North Cedros/Lomas Santa Fe **DATE:** 9/25/08

LOCATION: San Dieguito **TIME:** 1:35 pm

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	347 Acacia St	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	San Dieguito	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	1:50 PM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Damp
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☒ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Damp - Over-Irrigation Detected, No Flow

Trash Assessment Form

SITE ID: 347 Acacia **DATE:** 9/25/08

LOCATION: San Diego **TIME:** 1:50PM

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	SEASCAPE OUTFALL	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SEASCAPE / SAN DIELUCO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/30/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	8:30 am	**Observer**			**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☐ N/A ☐ Low ☐ Incoming ☒ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☒ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	18.9°C	NH_3-N (mg/L)	3.5	NO_3-N (mg/L)	0	Ortho-PO_4 (mg/L)	0
pH (pH units)	8.22	TURB (NTU)	7	COND (mS/cm)	2.57	MBAS (mg/L)	3

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: SAND IN RECEIVING WATER SAMPLE

Trash Assessment Form

SITE ID: SEASCAPE OUTFALL DATE: 9/30/08

LOCATION: SAN DIELUCIO TIME: 8:30AM

OBSERVER: DANNY KING

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 30 x 30

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☒ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	248 SIERRA AVE	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	1:55 PM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY

Trash Assessment Form

SITE ID: 248 SIERRA AVE DATE: 9/25/08

LOCATION: SAN DIEGUITO TIME: 1:55 PM

OBSERVER: DANNY KING

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	SAN ANDREAS (CITY LIMITS)	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	SAN DIEGUITO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/08	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	2:30PM	**Observer**	DANNY KING		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other No Flow/Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY - NO FLOW

Trash Assessment Form

SITE ID: San Andreas (City Limits) **DATE:** 9/25/08

LOCATION: San Dieguito **TIME:** 2:30 pm

OBSERVER: Danny King

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	Spindrift Way / American Ln	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00)
Location	San Diego	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/25/03	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	2:40 PM	**Observer**	Danny King		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☒ Other No Flow/Dry

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Catch Basin Dry - No Flow

Trash Assessment Form

SITE ID: Soindrift / American Ln **DATE:** 9/25/08

LOCATION: San Dieguito **TIME:** 2:40 PM

OBSERVER: Danny Kish

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

CITY OF SOLANA BEACH

JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM (JURMP) ANNUAL REPORT

SEPTEMBER 2009

Reporting Period:
July 1, 2008 to June 30, 2009

Respectfully Submitted to:
San Diego Regional Water Quality Control Board
In compliance with:
Order No. 2007-0001, NPDES Permit No. CAS0108758

CITY OF SOLANA BEACH
ANNUAL REPORT
STORM WATER PROGRAM
SEPTEMBER 2009

Copermittee:	City of Solana Beach
Contact Person:	Mohammed Sammak, P.E. Director of Public Works/City Engineer (858) 720-2470
Day-to-Day Contact	Dan King Environmental Programs Manager (858) 720-2477
Emergency Contact	Public Works Emergency Phone Line (858) 720-2479
Stormwater Hotline	24-hour message service (858) 720-4424
Address:	635 South Highway 101 Solana Beach, CA 92075
Reporting Period:	July 1, 2008 to June 30, 2009
Report Prepared by:	Dan King Environmental Programs Manager

ACKNOWLEDGEMENTS

The City of Solana Beach wishes to expressly thank each Copermittee Storm Water Program Manager/Coordinator and their staff for their efforts during the Regional Stormwater Management Committee meetings and the workgroups and their development of model program components, the sharing of ideas and willingness to cultivate program consistency throughout San Diego County as an effective means of improving water quality in the Region. The level of collaboration among agencies and across jurisdictional boundaries is unique and a credit to the professionalism and efforts of the San Diego County Copermittees.

The activities described in this report are not merely *written words on a page*, but are the result of *tremendous efforts* of City staff to integrate many new activities into their daily routines and tasks. The City's Fiscal Year 2008/2009 (FY 08/09) Storm Water Program Coordinator wishes to thank the Storm Water Team for their assistance, dedication and collaboration to make the City's FY 08/09 storm water program successful *and meaningful.*

Storm Water Team:

Code Enforcement Officer, Tom Warden

Code Enforcement Specialist, Frank Zamarippa

City Manager/Fire Chief/Director of Public Safety, David Ott

Deputy City Manager, Wende Protzman

Operations Manager, Steve Kerr

City Inspector, Hector Ezquerro

Deputy City Engineer, Dan Goldberg

Director of Public Works/City Engineer, Mohammed Sammak

Community Services Director, Tina Christianson

Associate Engineer, Jim Greenstein

Assistant Planner, Corey Johnson

Senior Engineering Technician, Robert Martinez

Management Analyst, Rimga Viskanta

A big thank-you also to the Public Works Crew for all their hard work!

Maintenance Worker, Bill Stedman

Maintenance Worker, Dave Thomas

Maintenance Worker, Josh Blea

Lead Maintenance Worker, Danny Hernandez

CITY OF SOLANA BEACH
ANNUAL REPORT/ STORM WATER PROGRAM
SEPTEMBER 2009

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ACRONYMS

Acronym	Description
BMP	Best Management Practices: minimum standards that everyone and every business must adopt to reduce or eliminate urban runoff. BMPs are part of all storm water programs.
DWMP	Dry weather monitoring program: the procedures, requirements and program to collect samples during the dry season each year. Samples are typically collected over a one-two day period and then sent to the lab for analysis.
HHW	Household Hazardous Waste
IC/ID	Illegal Connection and Illicit Discharge: the term used to discuss connections to the MS4 that are not approved (illegal) or non-storm water (illicit) discharges.
JURMP	Jurisdictional Urban Runoff Management Program
MEP	Maximum Extent Practical: A term used by the RWQCB, and Copermittees to refer to the "best efforts," or "as much as possible."
MS4	Municipal Separate Storm Sewer System: references the City's storm water drainage system and the City's wastewater conveyance system.
NPDES	National Pollution Discharge Elimination System: the Federal program created by the 1972 Clean Water Act that governs State water quality / storm water programs.
Permit	Order 2007-0001 issued by the RWQCB, which requires cities to adopt and implement the JURMP, WURMP, and SUSMP.
PPM	Pollution Prevention Measure: a method, procedure, and/or process to control, reduce, prevent, or eliminate pollution.
RWQCB	Regional Water Quality Control Board. The Board is a California board, but for the *purposes of this report,* RWQCB represents the local water quality board (San Diego Regional Water Quality Control Board).
SUSMP	Standard Urban Storm water Mitigation Plan: a plan as to how the City will alter its review of construction plan (public and private) and estimate the extent of pollutant contributions from the site; the plan must specify BMPs that the City will require.
WURMP	Watershed Urban Runoff Management Program: programs that focus on urban water runoff from a larger point-of-view, which is the entire watershed (a watershed is aka a hydrological unit). Programs must specify how cities will work together on planning urban projects and solving water quality problems.
WWMP	Wet weather monitoring program: the procedures, requirements and program to collect samples during the wet season each year. Samples are collected on a monthly basis, depending on weather.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

During reporting period Fiscal Year 2008/2009 (FY 08/09), the City worked with the other Copermittees to continue developing model guideline programs and implementing all the established requirements of Permit No. R9-2007-0001 (Permit). This was the first complete year of implementation of the City's new Jurisdictional Urban Runoff Management Program (JURMP) that was developed and submitted in March, 2008 to comply with the new Permit, Order R9-2007-0001. This Annual Report (Report) is slightly different from the reports completed in the past, as updates to the JURMP have occurred and the reporting format has subsequently changed as a result. All efforts have been made to keep the Report as close to the previous reports for ease of comparability, however there are some significant changes as a result of the updated JURMP.

This is the second year of implementation of the requirements of the new Permit, but first full year implementing the new JURMP. The new activities will be discussed in their respective chapters of this Report, with some chapters modified or removed. The City began the process of developing the new programs in cooperation with the other Copermittees, and any new programs that were actually implemented in this reporting period will be discussed in this Annual Report.

The City is confident that it has implemented all programs required of them during the five year permit cycle of Order 2001-01. The City is also actively working on developing and implementing improved programs for the next five year permit cycle in compliance with Order R9-2007-0001. During the last five year permit cycle, the City was able to create a storm water team consisting of staff from various departments, implemented all of the components of the JURMP and trained all pertinent staff as to the expectations of the Permit.

Accomplishments to prevent and reduce pollution, eliminate contamination and improve water quality include the following:

- *The City successfully implemented comprehensive educational, inspection and enforcement procedures for municipal, commercial, residential, industrial and construction component activities as described in the City's JURMP.*
- *The City maintains a storm water team approach that integrates staff from various departments, bringing diverse expertise and strengths to the program.*

- *The City monitors a dedicated Storm Water Hotline and email address to receive complaints, questions, and general information 24 hours a day, seven days a week, 365 days a year.*
- *The City maintains an inventory of all municipal, commercial and industrial properties in the City, including prioritization of those that pose a threat to water quality.*
- *The City inspected the minimum amount of high priority businesses as stated in the new JURMP and notified all high-priority businesses of specific BMPs related to each type of business.*
- *The City collaborated with neighboring jurisdictions within their respective watersheds to develop educational brochures, surveys, and host community events and distributed hundreds of brochures to residents and the business community.*
- *The City continues to modify plan-check review processes to include a requirement for Erosion Control Plans, BMPs, structural change and runoff mitigation alterations in project proposals and/or construction activities.*
- *The City participated in the 2008/2009 San Diego County Wet Weather Monitoring Program.*
- *The City continues to enforce a smoking ban at all local beaches and parks, the first jurisdiction in the nation to do so. In addition, the City strengthened its tobacco ordinance to ban smoking in all public parks, restaurants and buildings.*
- *The City provided several opportunities for public participation including educational workshops/classes, community events, Copermittee meetings and Household Hazardous Waste home pick-up and permanent drop-off collection sites.*
- *The City continues to implement the new "Environmental" review to ALL building/grading permit applications to ensure every project that gets approved by the City is reviewed for storm water management.*
- *The City Council lowered the grading threshold from 200 cubic yards to 50 cubic yards for all projects within the City. This caused more projects to be assessed by the City engineers to implement pre, during, and post construction BMPs than previously.*
- *The City co-sponsored the fourth annual "Beach Blanket Movie Night" that provided residents a night of free movies and environmental education. The City had a booth co-sponsored by the Solana Center for Environmental Innovation that contained educational materials and games for attendees, and the films shown were dedicated to environmental protection of our ocean resources.*

- *The City authorized a part-time Code Enforcement Officer to continue weekend and off-hour patrols for storm water violations.*
- *The City added storm water specific language and reporting duties to new "standard" street sweeping contract to be used in all current and future contracts.*
- *The City modified its Municipal Code to comply with the new requirements of the Permit*
- *The City adopted the new model SUSMP*
- *The City participated in the development of the new Low Impact Development (LID) and Hydromodification Plan (HMP)*
- *The City developed and implemented the new post-construction BMP verification, tracking and inspection program*

CERTIFICATION STATEMENT

CERTIFICATION STATEMENT

I certify that the work performed, and the report prepared herein, was conducted under the supervision and guidance of the City of Solana Beach Public Works/ Engineering Department to meet the requirements of the *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority* (NPDES No. CAS0108758). I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

Mohammed Sammak, P.E. **Date**
Director of Public Works/City Engineer
City of Solana Beach

CHAPTER 1
Introduction

CHAPTER 1: INTRODUCTION

The City of Solana Beach (hereinafter, referred to as "City") has prepared this report in compliance with Order No. R9-2007-0001, NPDES Permit No. CAS0108758, *Water Discharge Requirements for Discharges of Urban Runoff From Municipal Separate Storm Sewer Systems Draining Watersheds of the County of San Diego, the Incorporated Cities of San Diego County and The San Diego Unified Port District and the San Diego County Regional Airport Authority* (hereinafter referred to as "Permit"). The California Regional Water Quality Control Board, San Diego Region (hereinafter, referred to as "RWQCB") issued the new Permit to all "Copermittees" (all cities in San Diego County, the County of San Diego, the Airport Authority and the Port District) in January, 2007.

Under the Permit, each Copermittee is required to submit an Annual Report in September of each year describing its jurisdictional program for the previous fiscal year (July 1 to June 30). The purpose of the report is to document to the RWQCB the City's progress and program accomplishments during the reporting period.

On February 21, 2002 and subsequently updated in March, 2008, Copermittees are required to implement a comprehensive storm water program (Jurisdictional Urban Runoff Management Program [JURMP]) and submit a copy of the program to the RWQCB. The implementation of this program occurred during the reporting period covering July 1, 2008 to June 30, 2009 for this 2009 Annual Report. This Annual Report will cover the second full year of implementation under Permit Order No. 2007-0001, but the first full year of implementation of the new JURMP.

1.1 Report Organization

This Report contains a description of all activities conducted to meet the requirements of the Permit. The information will be discussed in chapters applicable to each component of the JURMP, which occurred during this reporting period.

The organization of this report follows the outline of the new JURMP and includes the following sections:

- Development Planning Component
- Construction Component
- Municipal (Existing Development) Component
- Industrial and Commercial (Existing Development) Component
- Residential (Existing Development) Component

- Illicit Discharges Detection and Elimination Component
- Education Component
- Public Participation Component
- Fiscal Analysis Component
- Effectiveness Assessment Component
- Special Investigations
- Non-Emergency Fire Fighting
- JURMP Revisions
- Conclusions and Recommendations

1.2 Common Activities

The City participated with the Copermittees in several common activities (workshops, educational program component elements, model programs, etc.) that allowed for a sharing of resources and knowledge, which will provide a more cohesive message to the community. The common activities are described in the Copermittee Unified Urban Runoff Management Program (URMP) Annual Report, submitted with this report by the County of San Diego and incorporated herein by reference.

1.3 Report Content

The content of this report includes the activities associated with implementing the storm water program (JURMP). The development of the City's JURMP required the City to inventory and prioritize its municipal facilities, commercial and industrial businesses, develop a method to educate the business and residential community about the new requirements, evaluate existing municipal ordinances, and adopt new laws if needed to ensure enforcement action was available, develop a method for educating agency staff, and develop a commercial, industrial and construction site inspection program.

The content of this report will include discussions about the programs and activities that occurred during this reporting period (July 1, 2008 to June 30, 2009). The City presumes that the reader recognizes that significant activity may occur subsequent to the end of the reporting period for this report. As a result, throughout this report a summary of post-reporting period activities will be discussed (where appropriate) to assist the RWQCB in understanding the City's efforts to reduce urban runoff and pollution and to comply with the Permit.

1.4 Program Goals

The primary goal of the City's JURMP is to reduce or eliminate pollutant discharge into the City's MS4 (municipal separate sewer storm system) and receiving water bodies, including the Pacific Ocean, thus improving the quality of water in the City, neighboring jurisdictions, and region-wide.

The City recognizes that a *scientifically measurable* change in water quality is a long-term goal that would require many years of data collection, research and analysis, extending beyond the life of the current Permit (which expires in 2012). As a result, the City's program includes short-term goals expected to focus the City's program on permit compliance as well as water quality improvements. The following summarizes the City's past and current short-term annual program goals:

FY 02/03: Integration of WURMP(s), SUSMP and JURMP activities

FY 03/04: Complete assessment of JURMP (using regional strategy)

FY 04/05: Complete overall assessment of Regional Programs JURMP, WURMP and SUSMP; prepare for new Permit from RWQCB

FY 05/06: Assessment of JURMP, WURMP and SUSMP in preparation of new Permit anticipated to be adopted in early 2007. This involves the assessment of water quality data to focus on the sources of high priority pollutants locally as well as watershed and regionally.

FY 06/07 Further assessment of JURMP, WURMP and SUSMP to effectively develop new programs for incorporation in the new JURMP, WURMP and SUSMP that will be required by the new Permit (adopted January 2007). The complete program will be assessed to determine the effectiveness of existing programs and to develop better, more efficient programs to include in the next Permit cycle.

FY 07/08 Development and implementation of new JURMP to comply with Permit Order No. 2007-0001. The new Permit includes additional and improved requirements from those included in Order No. 2001-01. Although the City continued the implementation of Order 2001-01 during FY 07/08, significant time and resources were spent developing the new programs included in Order 2007-0001.

FY 08/09 Continue developing the new programs and activities under Permit Order No. 2007-0001, such as the Low Impact Development (LID) and Hydromodification Plan (HMP). In addition, track all SUSMP project post-construction BMPs and develop inspection protocol for annual inspections.

FY 09/10 Continue implementation of the new JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The focus of new water quality regulations are shifting to development and implementation of Total Maximum Daily Loads (TMDLs), which the City will actively participate in. The City will continue to be involved in the LID, HMP and new SUSMP requirements development for future implementation.

CHAPTER 2

Development Planning Component

CHAPTER 2: DEVELOPMENT PLANNING COMPONENT

In accordance with Permit Section D.1, this section of the report describes the City's efforts to reduce Development Project discharges of pollutants from the MS4 to the Maximum Extent Practicable (MEP); to prevent Development Project discharges from the MS4 from causing or contributing to a violation of water quality standards; and to manage increases in runoff discharge rates and durations from Development Projects that are likely to cause increased erosion of stream beds and banks, silt pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.

In each Annual Report to the RWQCB, this section will include new modifications to the City's General Plan (if any), review process for new and redevelopment projects, inventory of current public and private projects and activities associated with the Standard Urban Storm Water Mitigation Plan (SUSMP). Activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The JURMP (Section 4.0: Development Planning Component) describes the City's plans to integrate new project review processes to require mitigation of urban runoff. In addition, the City adopted the new model SUSMP in February, 2008.

2.1 Assessment and Modification of General Plan

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. As such, the General Plan is crucial to the long-term success of its water quality and environmental programs.

There were *no changes* to the General Plan during this reporting period. However, the City has begun the process of updating the General Plan at the time of writing this report, and anticipates the update will take about two to three years to complete. Updates will be given in subsequent annual reports.

There were three modifications to the Municipal Code as a result of the new Permit and subsequent JURMP. These modifications were approved by the City Council in February 2009, but are important to mention in this Report due to their

significance. They include:

1. Minor revisions to Chapter 13.10 Storm Water Management that adds provisions that meet the requirements of the new storm water permit within the timelines required for implementation.
2. The second ordinance change adds a new Chapter 13.30 to the Municipal Code to include the City's storm water mitigation plan (SUSMP) that governs methods of controlling storm water pollution. The SUSMP contains the specific types of best management practices that the city will impose on development.
3. The third ordinance change revises Chapter 15.40 Excavation and Grading, which controls the manner and method of grading properties and excavation within the City. The revised ordinance updates the existing ordinance to include new erosion control measures required by the SDRWQCB.

These modifications were discussed in great detail in last year's Annual Report.

2.2 Project Approval and Environmental Review Process Modifications

The City is tasked with ensuring that land uses in Solana Beach comply with City codes, the General Plan, City Council policies, Engineering standards and State law requirements. Approval of projects through the discretionary review process is generally but not always required prior to issuing grading, building and right-of-way permits. The City Code requires compliance with storm water regulations for all discretionary approvals and ministerial permits. The Planning, Engineering, Environmental, Building and Fire Departments review all building plans that are submitted to the City. The Engineering and Environmental Departments administer all aspects of design and construction for public improvement projects. The Planning Department administers the environmental review (Initial Studies, Negative Declarations, EIRs, etc.) of both public and private projects.

The City has reviewed its General Plan and Municipal Codes and determined that the General Plan meets the requirements of Order No. 2007-0001. The following is a short list of recent improvements to the project review process that ensures all projects are reviewed and properly address storm water concerns:

FY 05/06 - Every applicant who inquires about a particular project at the City Hall counter was given a copy of the City's Construction BMP Brochure (Appendix I). This is being done to ensure that every person will have received a copy of the City's educational guide, often times more than once.

FY 05/06 - Any project that increases the impervious area of a site by a minimum of 1,000 square feet must complete a Storm Water Plan Check Comment Form (Appendix J). This sheet requires a variety of information to ensure that there will be no additional run-off as a result of the project. The first requirement is the preparation of an Erosion Control Plan. Also, the applicant must demonstrate that the project *does not increase storm water runoff*. Lastly, the applicant must demonstrate that they are implementing and maintaining all precautionary measures necessary to ensure that pollutant discharges from the site *will be reduced to the maximum extent practicable*. All additional storm water must be completely contained and treated onsite. This is not required by the Permit, but the City believes that it would be prudent to address this issue on such a small scale because of the relative abundance of these smaller projects within the jurisdiction and the lack of larger scale projects that would otherwise be dealt with through the SUSMP process. Instead of ignoring these projects all together, the City felt it would be in its best interests to review these “minor” projects to ensure that most new construction and redevelopment would address these storm water concerns.

FY 06/07 - City continued to evaluate its project approval process and made some modifications to the process for approving new and redevelopment projects. The plan check routing sheet was further modified to include additional information regarding storm water management. The intent of the modifications is to ensure that pollutants and runoff from development will be reduced to the maximum extent practicable (MEP) standard and/or will not contribute to an exceedance of receiving water quality objectives.

FY 06/07 - Project Applicants (Applicants) are required to submit a detailed project application, which addresses a variety of concerns, including urban runoff and environmental impacts. The project application provides an opportunity for City staff to determine whether or not the project will be exempt from the California Environmental Quality Act (CEQA) process. If the project is subject to CEQA, the environmental impacts of the project must be reviewed and depending on the potential impacts, a more substantial environmental impact report (EIR) may be required.

FY 06/07 - The plan check routing sheet was further modified to include another section titled *Environmental* (Appendix K). This section was included to ensure that *all* plans submitted would be reviewed for storm water implications, no

matter how small or relatively insignificant. Previously, plans would be routed through the Engineering Department and if the Engineering Technician determined that it warranted further review, the plans would be passed through to the Environmental Programs Manager. The process was modified to ensure that all plans would be reviewed just in case something was missed or overlooked. The City believes that plan review is essential to ensuring storm water compliance, so we are doing everything possible to make sure it is done thoroughly and accurately. This new and improved process resulted in the Environmental Programs Manager reviewing 224 plans during this reporting period.

FY 08/09 – The City implemented a complex and highly efficient computer database (BEACH) that greatly improved the internal plan review process. This database was developed by a local resident and was tailored to the specific needs of the City's departments. The database was built after extensive comment and review from the various departments to maximize the efficiency and streamline the process, while at the same time incorporating all the necessary information for each department. This process and subsequent database has greatly improved the Environmental plan review process by ensuring that all comments of the Environmental review are addressed prior to initial permit issuance, as well as final permit occupancy. This will be explained in further detail later in the Report, but it has been a tremendous success.

In addition to the CEQA review process, all applicants must obtain a permit from the California Coastal Commission (CCC) because the City does not have a Local Coastal Plan. The City also has strict environmental standards requiring compliance and governing land-use planning and construction.

The application includes some of the following questions:

- Financial interest of all parties who own, or intend to own the property.
- Proof that all owners of record within 300 feet of the exterior boundaries of the property have been noticed of the intent to develop (this allows opportunity for public participation in the process).
- Present use of property and proposed development description (commercial, residential, mixed use, etc.).
- Current floor area ratio (FAR) and proposed (this allows review of the

proposed change in impervious to pervious surface area). The City has a strict FAR and prohibits development within 40 feet of the western edge of the coastal bluffs.

- Proposed area to be graded (this allows the Engineering Department to assess potential erosion and runoff).

- Environmental condition of property (vegetation, drainage, noise, etc.) and neighboring properties.

- Business Applicants are required to submit information pertaining to the types of hazardous materials, whether or not industrial wastewater will be discharged in the property *and/or* off the property.

2.2.1 Project Requirements

As mentioned above, applicants are required to submit plans for all new and redevelopment of current structures to both the Planning and Engineering Department prior to approval. The Engineering Department (which includes Environmental Review) reviews the project's grading and construction plans for potentiality of contributing to urban runoff. The City Engineering Department also determines the appropriate BMP requirements for each project and attaches the Storm Water Plan Check Comment form to the project plans and returns the plans to the applicant for modification, if required. Applications may be required to submit one or more of the following:

- An Erosion Control Plan (which requires BMPs to manage storm water and non-storm water discharges from the site at all time and shall emphasize sediment control).

- Evidence that the project will not increase storm water runoff.

- Storm Water and Non-Storm Water Runoff Control (this requirement address long-term control of runoff and may require structural modifications to direct discharges into permeable areas such as landscaping).

In addition, all grading projects are required at a minimum to include the following:

- Source control BMPs for all projects expecting to generate runoff.
- Implementation of site design/landscape measures to reduce and/slow runoff, minimize impervious to previous ratio, maximize infiltration and promote alternative driveways and parking lots to include pervious land surfaces (as described in detail in the City's JURMP).
- Implementation of buffer zones for natural water bodies, where feasible and if not, trees, lighting and access restrictions are required.

Industrial applicants are also required to provide evidence of coverage under the California General NPDES Permit for Storm Water Discharges Associated with Industrial Activities.

Applicants are required to be in compliance with the City's current grading and storm water management ordinances, inspection requirements, general requirements for construction activities during the wet and dry season and implementation of appropriate BMPs to control erosion and runoff.

2.2.2 SUSMP

The City participated with other Copermittees in the development of the original model Standard Urban Storm Water Mitigation Plan (SUSMP), which was approved by the RWQCB on June 13, 2002. The Solana Beach City Council adopted the City's SUSMP on December 3, 2002, which was submitted to the RWQCB on December 13, 2002. The City adopted the updated model SUSMP that complies with all requirements of the new Permit in February 2008.

The SUSMP addresses post-construction urban runoff pollution from new development and redevelopment projects that are designated as "priority projects" under the Permit. Most of the criterion that specifies which projects will be priority projects will not be applicable to the majority of City projects. The reason for this is that the City of Solana Beach is more than 95% "built-out" and primarily a residential community with small-business commercial properties (there are a few large commercial sites in the City). As a result, the City made few modifications to the Model SUSMP that was developed collectively by the Copermittees for its SUSMP. Over time, City staff will evaluate the effectiveness

of the SUSMP and discuss changes to the Plan in this section of the Annual Report.

During this reporting period, the City of Solana Beach had *no SUSMP projects submitted or approved*. The majority of the development in Solana Beach consists of single-family construction and remodeling projects. The largest project that was under construction during this reporting period was the Interstate 5 Interchange project, but that is a CalTrans project subject to their specific Permit and requirements. The City worked closely with CalTrans and had our own Inspector monitor the site, but compliance was solely the responsibility of CalTrans. If the City's Inspector observed any discharge or potential violation, contact was immediately made with CalTrans. The City took a very proactive approach to monitoring this site even though it was out of our jurisdiction due to the fact that any discharges could impact our MS4 system.

The City's Planning Department (also referred to as Community Development Department) is well aware of the SUSMP requirements and is consistently on the lookout for potential projects that may fall under the SUSMP requirements. The Engineering Department handles all of the BMP review for the City, however, the Planning Department is the first department to review applicant plans.

2.2.3 Low Impact Development (LID)

LID is one of the most significant new requirements of the new Permit. The Permit states that each Copermittee shall develop and require each Priority Development Project to implement LID BMPs which will collectively minimize directly connected impervious area and promote infiltration. The City's new JURMP describes the LID site design BMPs required at each Priority Development Project. The LID requirements are being developed by the Copermittees on a regional level to promote consistency for the development community. The City is participating in the development of the LID requirements and will implement the requirements into the City's program once finalized and within the timeline required by the new Permit.

2.2.4 Treatment Control BMP Maintenance Tracking

The City has developed a database to track and inventory approved treatment control BMPs and treatment control BMP maintenance for Priority Development Projects within the City. The database contains all necessary information as required by the new Permit. In addition, the City has developed a program to

verify that approved treatment control BMPs are operating effectively and have been adequately maintained. The City's current treatment control BMP inventory is listed below. Not all projects are a result of the SUSMP process because they were built prior to the requirements; however the City still lists them in their inventory and inspects annually.

Private Project Treatment Control BMP Inventory

Address	Type of Project	Type of BMP(s) Installed	Maintenance Agreement	Inspection Date
533 Lomas Santa Fe	Boys and Girls Club Remodel/Construction	CDS Unit (1), Storm Chamber Infiltration Basins (2), Drainage Inserts (2)	Yes	6/24/09
420 Steven's Avenue	Office Building Construction	CDS Units (3)	Yes	6/24/09
667 San Rodolfo	Shopping Center Remodel	CDS Unit (1)	Yes	6/24/09
634 Steven's Ave	Commercial Building Construction	Bio-Swale	No	6/24/09
601 North Cedros Ave	Single Family Sub-Division (23 Units)	CDS Unit (1)	No – City Maintained	6/24/09
641 Valley Ave	Mixed Use Comm/Res	Bio-Swale, pervious concrete	No	6/24/09

715 Valley Ave	Park	Bio-Swale	No - City Maintained	6/24/09
111 South Sierra Ave	Park	CDS Unit, Low Flow Diverter	No- City Maintained	6/24/09
749 Genevieve St	Parking Lot >15 spaces	Bio-Swale, Pervious Pavers	No	6/24/09

2.2.5 Treatment Control BMP Maintenance Inspections

City staff conducted the annual inspections of the projects listed above as required by the Permit. Due to the relatively small amount of projects, all initial inspections were completed on 6/24/09. City staff sent out Verification Letters to all sites prior to the initial inspection. The following is a list of the sites that were in compliance on the initial visit:

- 634 Steven's Avenue
- 601 North Cedros Avenue
- 641 Valley Avenue
- 715 Valley Avenue
- 111 South Sierra Avenue
- 749 Genevieve Street

The other three projects were not in compliance with the post construction BMPs maintenance requirements of the Permit. City staff confirmed that all the BMPs were installed; they had just not been maintained during this reporting period. Here is a summary of the inspection results:

- 533 Lomas Santa Fe Drive:

As reported above, City staff sent out Verification Letters to all sites in the

database. The property owner contacted Staff regarding the letter to inquire what this program was about. The property owner verified that no maintenance activities were conducted on the CDS Unit or drainage inserts, and requested City staff assistance on how to comply. City staff met with the Boys and Girls Clun staff onsite on 6/24/09 to inspect the BMPs and confirmed that they were out of compliance with the maintenance requirements. City staff had to show the Boys and Girls staff where the BMPs were located and then gave them the contact information for the manufacturer to schedule the maintenance. The maintenance activities were scheduled at the time of writing this report.

- 420 Steven's Avenue and 667 San Rodolfo Drive

Both of these properties are owned and operated by the same corporation, and were inspected jointly on 6/24/09. Similar to the situation above, City staff received a call from the property owners regarding the Verification Letter they received prior to the inspection. City staff met with the property owners and inspected the BMPs, confirming the proper maintenance was not conducted. City staff has since worked with the property owner to schedule maintenance for the BMPs.

Since this is the first full year of implementation for the BMP verification and maintenance inspections, City staff has taken an educational approach. Both properties are willing and cooperative and want to come into compliance, so Staff has taken the approach of education and helping the properties into compliance. However, all properties were put on notice that next year's inspections will be enforcement driven and maintenance activities must be conducted.

2.2.6 Priority Development BMP Verification Prior to Occupancy

Although there were no priority development projects approved during this reporting period, the City does have a BMP verification process set up to ensure all BMPs are installed prior to occupancy. This process is not only conducted for priority development projects, but grading and building projects that require post construction BMPs (small infiltration pits, roof drains to landscaping, etc). As mentioned in last year's Annual Report, the building permit routing sheet that goes to each department reviewing the plans was modified to include check boxes in the "Environmental Review" section. These check boxes are for projects that require a post construction BMP of any kind, and if they are checked for any project, the Building Department will not issue final occupancy permits until the Environmental section is complete. This includes an inspection either during

construction for BMPs underground (to ensure they were installed prior to being covered by landscaping) or final inspection if the BMPs can be identified at the end of the project. It is the responsibility of the contractor to notify the Environmental staff for inspection or the "pink card" will not be signed and the final Permit will not be issued. This ensures that all post-construction BMPs are installed prior to the final permit being issued for occupancy.

2.2.7 Hydromodification Plan (HMP)

The HMP has not been finalized at the time of writing this Report. However, it is not anticipated that any projects in Solana Beach will be subject to the requirements. The City has participated in the development of the HMP and has paid our share for the development, realizing that this is a regional issue and as a Copermittee we have a responsibility to assist the other Copermittees in complying with the Permit requirements. If any project is subject to the HMP, it will be reported in this section of each Annual Report.

2.3 Education

Municipal Staff Education

The City of Solana Beach is a very intimate, cooperative group. All departments work very well with one another because they are forced to work together on a daily basis to serve the relatively small community. This makes training and education a much easier task.

The previous formation of the storm water team brought together the directors of all the different departments (Planning, Engineering, Public Works, Assistant City Manager, Public Safety Chief, Code Enforcement Officers, Environmental Programs Manager, City Attorney and City Inspector) and provided them a forum to discuss storm water issues and come up with solutions collectively. In turn, the directors would educate their respective employees on the specific tasks they were to perform. This was a very effective and efficient way to educate the Municipal Staff when the Permit was first adopted and the JURMPs were initially being implemented.

City staff welcomes additional training opportunities and often seeks outside training opportunities to keep up with the ever-changing storm water world. In addition, Staff welcomes presentations from consultants regarding the latest technologies in the protection of water resources, including techniques to reduce erosion, bacteria and other COCs in urban runoff. City staff is always seeking

new training opportunities to stay on top of this rapidly evolving field. Specific trainings are listed in their appropriate sections throughout this Report.

Owner / Developer Education

The City, along with the other North County Copermittees, developed a Construction BMP Brochure (Appendix I) which describes the construction storm water regulations and required BMPs. The BMPs are generic with a simple diagram of a "typical" construction site, which has been very well received by the development community. It is simple and easy to understand, and City staff makes certain developers and contractors know every site is different and has unique characteristics. These brochures are distributed at the counter, at pre-construction meetings and in the field during inspections.

In addition, the City sends a "Rainy Season Reminder" (Appendix N) to all current and active private projects within the City as a tool to educate and remind project owners and developers about the need to strictly adhere to the erosion control requirements during the rainy season. These letters are sent out in the beginning of October as a "friendly reminder" that they need to ensure their sites are in compliance before the rain events start, or risk increased enforcement actions.

Inspections are another opportunity staff utilizes to educate owners and developers about City and State runoff and erosion requirements. During inspections, the City Inspector points out problem areas and requires mitigation compliance immediately. If an owner or developer fails to comply, increased enforcement including fines can be levied and the City Inspector has the authority to halt construction activities with a Stop Work notice.

The City has implemented similar procedures for public projects as those utilized for private projects. During mandatory pre-construction meetings (for all grading and public projects) the requirements for erosion control and runoff management are discussed. In addition, City staff notifies the primary contractor that they are ultimately responsible for all actions of their subcontractors, and violations of the City's storm water requirements will result in enforcement actions.

2.4 New Activities and Improvement for FY 09/10

The City will continue implementing the activities described in the Development Planning Component of the City's JURMP. In addition, with the development and implementation of the new SUSMP and LID requirements, the focus for FY 09/10

will include the continued implementation and education of planning staff, builders, residents, and the community at-large as to how regulations of the SUSMP and LID will impact construction.

The BEACH database will continue to be implemented and updated during this reporting period with improvements and advancements made as necessary. One major improvement to the BEACH database that is occurring at the time of writing this Report is the inclusion of a field for inputting and maintaining records of post-construction BMPs. The goal is to also modify the database to include maintenance and inspections records so that all information on a particular project will be contained in one electronic location. Currently, these maintenance records are being kept in an Excel spreadsheet, but the BEACH database will ultimately be the most effective and efficient location for all project records.

2.5 Summary

The City has successfully implemented the Development Planning Component of the JURMP. Some of the key accomplishments include:

- Education of planning staff, owners/developers and the community regarding changes in planning processes.
- Implementation of new procedures to ensure new and redevelopment projects do not contribute to an exceedance in water quality standards.
- Addition of Environmental section of permit routing sheet to ensure *all* plans/projects are reviewed by Environmental Specialist for storm water issues. Addition of post-construction BMP tracking and inspection box on routing sheet to ensure all BMPs are installed according to approved plans.
- Increased cooperation between City departments in implementing SUSMP requirements.
- Developed and implemented new post-construction BMP inventory and inspection tracking database.
- Modified Municipal Code to include new requirements of Permit Order No 2007-0001.
- Development and implementation of new BEACH database to store all pertinent information regarding parcels in Solana Beach. This includes environmental fields that are used during plan review and permit issuance as well as housing all the necessary information for post-construction BMP tracking and maintenance.

CHAPTER 3
Construction Component

CHAPTER 3: CONSTRUCTION COMPONENT

3.1 Introduction

In accordance with Permit Section D.2, this section of the report describes the City's efforts to reduce construction site discharge of pollutants from the MS4 to the MEP and prevent construction site discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of active construction sites (private and public), modifications to the City's policies or Municipal Code with respect to construction activities, modifications to identified potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to require BMPs at construction sites and program accomplishments. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

During this reporting period, the City conducted an evaluation of its construction practices and inventoried existing construction sites in an effort to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from these construction sites by requiring BMPs.

3.2 Modification of Grading Ordinance

There were *no significant modifications* of the Grading Ordinance during this reporting period as a result of new requirements in the Permit. During last reporting period, Chapter 15.54 (Excavating and Grading) was modified on February 13, 2008 to include the new requirements of the Permit. The amendments update and strengthen the City's regulations regarding storm water pollution controls. The two main areas of impact in the updated ordinance deal with two new concepts (Hydromodification Plan (HMP) and Low Impact Development (LID)). Hydromodification is a state mandate that requires all local jurisdictions to regulate erosion control and other land-shaping impacts from storm water runoff.

Low Impact Development is a new requirement including in the new storm water permit. It deals with using various techniques to channel storm water runoff and

the pollution it contains away from the storm water conveyance system and into landscaping and other on-site features to limit the amount of pollution escaping from individual parcels.

Previously, the last significant modification to the City's grading ordinance occurred June 30, 2005 in which the grading threshold was lowered from 200 cubic yards to 50 cubic yards for all construction projects, meaning much smaller projects that would not normally be scrutinized for storm water management would now be required to go through the grading permit process. This gave City staff more discretion on smaller projects to require storm water mitigation, and with it, gave Staff more power to enforce the installation and/or site design modifications to that would not have been required if a grading permit were not necessary.

3.3 Modification of Construction and Grading Approval Process

The modifications to the City's processes for project approvals are described in detail in the previous chapter of this report (Chapter 2). Although Chapter 2 specifically addresses Development Planning, the discussion included a description of various processes that project applicants must proceed with in order to obtain approval of their construction plans. Chapter 2 also describes the improvements made to the plan check database BEACH as well as the increased education efforts City staff has made to ensure Permit compliance.

The Storm Water Plan Check Comment Form (see Appendix J) may require the applicant to submit an Erosion Control Plan, proof that the project does not increase runoff from the property and/or implementation of structural changes to redirect runoff onto impervious surfaces.

3.3.1 SUSMP BMPs Installation and Tracking

The City continued implementation of the updated SUSMP process during this reporting period, but there were *no projects that required the SUSMP process review.*

The City does not anticipate many projects that will fall under the SUSMP guidelines, since the City is 95% "built out." However, any project that may be proposed that fall under the guidelines will be put through the process. Planning staff and Engineering staff have been trained and are aware of the SUSMP requirements, and will implement the program when appropriate.

As reported in previous Annul Reports, a significant improvement to the building permit routing sheet that recently occurred was the addition of the *Environmental* review section (Appendix K). As noted previously in this Report, the routing sheet was modified to ensure *all* permit applications were thoroughly reviewed by Environmental staff. Even though the revision occurred before this reporting period, it's significant to mention because it brings the Environmental Programs Manager into the review process for all projects, regardless of size or type. This is significant because no projects will slip through the cracks, and all will be required to address storm water concerns. In addition, as mentioned above, the routing sheet also contains an area to mark if the project requires the installation of post-construction BMPs. Final permit approval and building occupancy will not be granted until a final inspection confirms the BMPs were installed correctly, according to approved plans.

3.4 Construction Site Inventory

This section of each Annual Report will include an inventory of construction sites active during this reporting period. Given that the reporting period for these Annual Reports ends prior to the submittal of the report, the inventory will most likely be slightly outdated by the time the report is reviewed by the RWQCB. However, the City maintains an inventory of current construction project sites, which is always available for review.

The construction inventory is updated periodically, but at a minimum monthly, to ensure all active projects are included and inspected according to the frequency set forth in the JURMP. The update process consists of reviewing the Building Department files of active sites. In the past, the inventory was updated as soon as a building permit was approved. However, it was discovered that often times, construction activities would not commence for many months after permit issuance. This led to a significant amount of wasted time and resources for limited City staff to visit multiple sites where there were no construction activities occurring. Since the Building Department staff is required to be onsite when the project begins, review of their files is the most appropriate and accurate manner to update the construction inventory. Review of the Building Department files is now possible due to the fact that they are now housed at the City of Solana Beach City Hall. This is a major improvement over the last few years when the files were located at the City of Encinitas City Hall, along with Building Department staff.

As shown on Table 3-1, there are currently ten construction sites that required a grading permit active within the City. In addition, City Engineers are in constant discussions with private project property owners during the plan check process to ensure their projects include an Erosion Control Plan, modify drainage alterations to re-route runoff to pervious surface areas, proof that the project would not result in an increase in runoff from the site or other various structural BMPs, and require all projects to control and mitigate all run-off before it reaches the City's MS4 system. Table 3-2 shows all construction projects that have a potential to discharge pollutants but did not require a grading permit. These projects had extensive plan review by City staff and storm water/erosion control conditions placed on them even though a grading permit was not required.

Table 3-3 shows all the pre-construction meetings that were conducted for projects that were deemed high priority as well as all public projects. Pre-construction meetings are vital to storm water compliance, as all issues are discussed as well as warnings given before there are storm water violations. The City takes this opportunity to educate the contractors as well as warn them about violation fines and citations, to let the contractors know how serious the City is about storm water regulations. Table 3-4 shows all the construction related violations. Table 3-5 shows all Capital Improvement Projects (CIP) and their priority and inspection frequencies.

The City had no projects subject to the HMP or requiring advance treatment during this reporting period. In addition, there were no projects over 1 acre in size, which is very common considering the City is 95% built-out and most projects are in-fill and redevelopment projects.

Table 3-1 Construction Site Inventory
Grading Projects 2008/2009

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Size	Watershed	FY 08/09 Active Wet Season / # Inspections	FY 08/09 Active Dry Season / # Inspections	FY 08/09 Total # Inspections
548 North Rios Avenue	Medium	Single Family Home	Jul-2008	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 3 Inspections	10
401 Glencrest Drive	Medium	Single Family Home	May-2008	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 2 Inspections	9
118 Brookdale Place	Medium	Single Family Home	Jan-2008	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 1 Inspection	8
327 Pacific Avenue	Medium	Upper Bluff Maintenance	Sep-2008	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 2 Inspections	9
417/423 Pacific Avenue	Medium	Upper Bluff Maintenance	Dec-2008	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 2 Inspections	9
583 Canyon Drive	Medium	Single Family Home	Nov-2008	<1 acre	Carlsbad	28 Weeks / 7 Inspections	24 Weeks / 4 Inspections	11
311-319 Pacific Avenue	Medium	Upper Bluff Maintenance	Nov-2008	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 2 Inspections	9
147 North Sierra Avenue	Medium	Single Family Home	Aug-2008	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 4 Inspections	11

153 N Hwy 101	Medium	Office Building	Oct-2007	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 5 Inspections	12
214 S Rios Avenue	Medium	Single Family Home	Nov-2008	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 2 Inspections	9

Table 3-2 Construction Site Inventory
Small Private Projects Requiring Plan Review/Modifications 2008/2009

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Size	Watershed	FY 08/09 Active Wet Season / # Inspections	FY 08/09 Active Dry Season / # Inspections	FY 08/09 Total # Inspections
603 Canyon Pl	Low	Residence	Dec-08	<1 acre	Carlsbad	20 Weeks / 3 Inspections	8 Weeks / 1 Inspection	4
702 Castro St	Low	Residence	Jun-08	<1 acre	San Dieguito	28 Weeks / 3 Inspections	20 Weeks / 2 Inspections	5
205 Estrella St	Low	Residence	Nov-07	<1 acre	San Dieguito	28 Weeks / 3 Inspections	24 Weeks / 2 Inspections	5
242 S Granados	Low	Residence	May-08	<1 acre	San Dieguito	28 Weeks / 2 Inspections	24 Weeks / 2 Inspections	4
1438 Highland Dr	Low	Residence	Dec-08	<1 acre	San Dieguito	20 Weeks / 3 Inspections	8 Weeks / 1 Inspection	4
153 N Highway 101	Low	Commercial	Apr-08	<1 acre	San Dieguito	28 Weeks / 5 Inspections	24 Weeks / 2 Inspections	7
645 Ida Avenue	Low	Residence	Apr-08	<1 acre	San Dieguito	28 Weeks / 3 Inspections	24 Weeks / 1 Inspection	4

837 Ida Avenue	Low	Residence	Sep-08	<1 acre	San Dieguito	28 Weeks / 3 Inspections	12 Weeks / 1 Inspection	4
627 Nardito	Low	Residence	Dec-08	<1 acre	San Dieguito	20 Weeks / 2 Inspections	8 Weeks / 1 Inspection	3
274 Pacific Ave	Low	Residence	Sep-08	<1 acre	San Dieguito	28 Weeks / 4 Inspections	12 Weeks / 2 Inspections	6
624 Ridgeline Pl	Low	Residence	Jan-08	<1 acre	Carlsbad	16 Weeks / 3 Inspections	8 Weeks / 1 Inspection	4
516 N Rios	Low	Residence	Feb-08	<1 acre	San Dieguito	12 Weeks / 3 Inspections	8 Weeks / 1 Inspection	4
558 San Lucas	Low	Residence	Nov-08	<1 acre	San Dieguito	24 Weeks / 2 Inspections	8 Weeks / 1 Inspection	3
571 San Lucas	Low	Residence	Aug-08	<1 acre	San Dieguito	28 Weeks / 2 Inspections	16 Weeks / 1 Inspection	3
506 Seabright	Low	Residence	May-08	<1 acre	Carlsbad	28 Weeks / 5 Inspections	24 Weeks / 2 Inspections	7
751 Seabright	Low	Residence	Jun-07	<1 acre	Carlsbad	28 Weeks / 5 Inspections	24 Weeks / 2 Inspections	7

Table 3-3 Public Projects Pre-Construction Meetings 2008/2009

DATE	PROJECT	DETAILS
7/10/2008	2008 Street Repair and Slurry Seal Project I	Erosion Control/Storm Water requirements discussed.
10/20/2008	Seascape Sur Access Stairway Pier Rehabilitation	Erosion Control/Storm Water requirements discussed.
10/23/2008	2008 Street Repair and Slurry Seal Project II	Erosion Control/Storm Water requirements discussed.
11/24/2008	Coastal Rail Trail Completion at Cliff Street Bridge	Erosion Control/Storm Water requirements discussed.
4/20/2009	Fletcher Cove Park Railing/Fence Replacement	Erosion Control/Storm Water requirements discussed.
5/20/2009	City Hall Parking Lot Modifications	Erosion Control/Storm Water requirements discussed.

**Table 3-4 is not meant to be part of the Construction Inventory. This table is simply to demonstrate that the City conducts Pre-Construction Meetings prior to public projects and that storm water issues are discussed. The projects that require storm water inspection oversight from this table are included in their respective tables (Table 3-1 and 3-2).*

3.5 Construction Follow-Up Activities:

The City is very aggressive with its construction inspections and follow-up, and unless otherwise stated, all follow-up corrective activities were properly addressed and corrected within seven (7) working days. Many times the corrections are made immediately, however the City's policy is to allow the responsible party seven days to correct the violation. However, if there is an immediate threat to public health or safety, the City can require immediate corrective actions.

As stated above, the City takes a very pro-active approach toward construction projects. Plans are heavily scrutinized and discussions with the contractors often happen before the project even begins. The City has found that initiating contact with the contractor before the project even starts and maintaining contact throughout the construction process, leads to continued compliance with storm water regulations. Since the City of Solana Beach is relatively small and built out, the City's inspector has the ability to visit sites almost daily, and at a minimum weekly. Due to this high level of supervision, sites are not allowed to get out of compliance with storm water BMPs. That being said, there are instances where accidents do take place, most often when concrete trucks and pumpers are involved. The only violations from construction sites are listed

below in Table 3-5. As you can see, no construction sites were cited for rainy event discharges or lack of BMP implementation and maintenance. All the construction related violations were due to discharges at small sites that occur frequently. All violations were corrected within the timeframe allocated by the City, and there are no outstanding compliance issues.

Table 3-4 Construction Violations 2008/2009

DATE	COMPANY	VIOLATION	ACTION	COMPLIANCE ACHIEVED
7/8/2008	Pride Pumping	Concrete spill, no secondary containment system	$100 Citation issued	Yes. Contractor immediately stopped work and cleaned up discharge
8/5/2008	Valley Short Pour Concrete	Concrete spill into street	$200 Citation issued	Initial compliance did not occur, violator was uncooperative. Action raised from verbal warning to $200 citation. After citation issued, spill cleaned up. Secondary containment area installed
8/7/2008	Distinctive Carpet	Washing down driveway	Verbal Warning	Yes. Washing activities stopped
8/25/2008	Crew Builders	Power washing driveway	Verbal Warning	Yes. Washing activities stopped
8/26/2008	Dean Russell	Concrete spill into street	Verbal Warning	Yes. Contractor immediately stopped work and cleaned up discharge
9/25/2008	Alvarado Construction	Washing color coat and sealer off driveway	$100 Citation issued	Yes. Contractor immediately stopped work

				and cleaned up discharge
10/31/2008	JC Baldwin	Sand tracking into the parking lot at Fletcher Cove	Verbal Warning	Yes. Contractor called out street sweeper to clean parking lot

3.6 Capital Improvement Projects Inventory

In addition to the inventory for private projects, City staff believes it is equally important to discuss both public (Capital Improvement Projects [CIPs]) and private projects under construction.

CIPs are held to the same *or stricter* standards for reducing runoff as private projects. BMPs, Erosion Control Plans, and structural changes to reduce or mitigate runoff pre and post-construction are required. Most, if not all, CIPs in Solana Beach are constructed by private contractors selected through the standard public bid process. Contractors are informed *prior to submitting a bid,* that the City requires adherence to RWQCB standards, Permit and City storm water regulations. To ensure compliance the City Inspector conducts a daily inspection of each CIP site during construction. Stop Notices are issued if the contractor fails to comply with any storm water / erosion control regulations.

Additionally, the Environmental Programs Manager is included in pre-construction meetings that are required for *all* public projects. A line item discussing NPDES regulations and requirements is standard for all public project agendas (Appendix L). This is just another way to ensure that all contractors are aware of the requirements before the project begins, and to help with possible enforcement actions.

In FY 08/09, the City Inspector did not issue any Stop Notices to contractors for failing to comply with storm water/erosion control regulations.

Table 3-5 below shows the inventory of CIP projects during FY 08/09. The City had two projects, and placed both of the projects in the high priority category. This was done to ensure that the City's projects would be inspected at a very high frequency in order to ensure compliance at all times. The City even hired a consultant to monitor the Eden Gardens Pump Station project daily because of the sensitivity of the project, and so the site was technically inspected daily, but as far as compliance inspections are concerned, they were conducted at the frequency outlined in the JURMP. For the Plaza Street Improvements, the City's Engineering Inspector was onsite daily to monitor the site.

Table 3-5 Construction Site Inventory
Capital Improvement Projects 2008/2009

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Size	Watershed	FY 08/09 Active Wet Season / # Inspections	FY 08/09 Active Dry Season / # Inspections	FY 08/09 Total # Inspections
Eden Gardens Pump Station	High	Sewer Pump Station	Jun-08	<1 acre	San Dieguito	28 Weeks / 14 Inspections	24 Weeks / 6 Inspection	20
Plaza Street Improvements	High	Street and Landscape Improvements	May-08	<1 acre	San Dieguito	28 Weeks / 14 Inspections	24 Weeks / 6 Inspections	20

3.7 Threat to Water Quality Prioritization

In accordance with Permit Section F.2.e., the City described the criterion for designation of construction projects as high, medium, or low priority, in its JURMP. *There are **no changes** to report in the City's criterion for determining a project's impact or threat to water quality.* The City's prioritization criterion meets the requirements of the new Permit, so no changes were needed.

Of the active projects currently under construction, *there are no changes to report with respect to the potential threat to water quality*. The City is 95% "built out" which does not leave much room for major development projects. The only projects that would fall under the high priority would be significant redevelopment projects, which there were none of during this reporting period. The City is closely monitoring two potential projects that may fall under the high priority in the next reporting period, pending permit approval. It is important to note that City staff is currently working with the prospective developers to ensure they integrate beneficial storm water designs during the design phase. The following projects are being closely monitored by City staff:

1) Multiple plans have been submitted to the City to build a hotel/restaurant and condos on the east side of Highway 101 at the northern tip of the City (commonly referred to as the Magellan site), however it has been met with some opposition within the community and a compromise is being sought. Plans still have not been adopted by the City Council at the time of this report. If a project is accepted for development in that area during the next reporting period, it will be a high priority project subject to the SUSMP process because of its proximity to the San Elijo Lagoon, a 303 (d) listed water body.

2) Another *potential* high priority project that is being discussed is a large multi-use residential/commercial development on what is currently the North County Transit District's (NCTD) train station property. This proposed project has also come under heavy scrutiny from the public and no plans have been approved by the City. If a project is accepted for development on this site during the next reporting period, it will be a high priority project because of its size. It will be subject to the SUSMP requirements much like the project mentioned above.

One of the projects including in this list in last year's Annual Report was approved by City Council in April 2009. The project is the redevelopment of a

portion of a commercial property located just east of Interstate 5 at Lomas Santa Fe. However, like mentioned above, it often takes many months for a project to actually get started after the approval process. Construction activities at this site are projected to begin in October 2009, and will be added to the active construction inventory at that time.

The City's Capital Improvement Projects, available upon request, will be considered at least a medium priority for several reasons. First, priority categories may only result in a change in the frequency of oversight and the City Inspector visits each public construction site on a daily basis, which therefore eliminates the need for delineation in priority. Second, given the City's proximity to the Pacific Ocean, all erosion, sediment and runoff control practices are very important and are expected to be very beneficial to the community. Therefore, the designation of "medium or high priority," improves the likelihood that CIPs will not contribute to an exceedance of water quality standards. It doesn't make sense to categorize a CIP project as low priority since the City holds itself to a higher standard than the rest of the community. The City strongly feels it should lead by example, and since the City Inspector is onsite everyday at CIP projects, storm water issues are addressed daily.

3.8 BMPs and Pollution Prevention Methods

As noted in the City's JURMP, the City requires general and specific BMPs for construction sites and with the modifications in the development review process; the City is able to require site design, source control and treatment BMPs prior to construction. Owners and developers are provided a BMP Construction Brochure (see Appendix I), and they meet with engineering staff to develop methods to ensure that runoff is not increased as a result of their proposed project. The City believes that working with the contractors during the plan approval process is the most critical time period to ensure that appropriate BMPs (structural, pre-and post-development) are built into the project *before* pollutants are allowed to enter the storm drain conveyance system.

BMP Selection

The City does not require a specific or certain type of BMP (except for SUSMP projects) for all projects similarly designed. Instead, staff members evaluate each project on its own merit and determine if modifications to the plans are required to control erosion and/or reduce runoff. City staff works together with property owners and developers to find satisfactory solutions to project problems.

Pollution Prevention Methods (PPM)

Construction limitations – the City limits construction during the wet season when construction plans warrant and when it is feasible. Implementation of this PPM reduces the potential for pollution.

Education – the City sends out letters to all active public and private construction projects at the start of the wet season to remind them of the importance of implementing the required BMPs (see City JURMP for a description) and the importance to take precautions during storm events (Appendix N). Additionally, a BMP Construction Brochure is attached to all permit approvals and distributed at City Hall Engineering and Planning counters to all prospective developers and interested members of the community.

Inspections – as discussed below and elsewhere in this report, the City Inspector and Environmental Programs Manager visit construction sites and keep a record of BMP implementation and effectiveness. When a developer does not comply with the City Inspector's request to modify practices to reduce runoff or erosion, construction activities can be halted at the site and fines may be levied.

3.9 Enforcement and Inspections

Enforcement of the City's Municipal Code is conducted by the City's Code Enforcement Officers. The City Inspector and Environmental Programs Manager conduct inspections of construction site BMPs, but if enforcement actions above written NOVs are necessary, Code Enforcement Officers are notified.

Code Compliance

The City has developed procedures to track and monitor citations issued to property and business owners, visitors, and developers. These procedures include the implementation of an Administrative Fine process which was adopted by the City Council on June 18, 2002. This process allows Code Enforcement Officers to issue administrative citations and penalties in between $100 and $1,000 for each day the violation occurs; this applies to construction sites, public and private.

In addition to the administrative fine process, the City adopted a Civil Penalty Matrix (Matrix). This is a very significant tool that has greatly enhanced the enforcement of storm water violations. The City felt it was necessary to develop a matrix to evaluate each violation in the field, and to respond to them in a

consistent and appropriate manner. The Matrix was designed so that anybody in the field who witnesses a violation can apply the parameters of the Matrix to decide the appropriate way to respond. This greatly enhanced the efficiency of the storm water program, as now not all violations would require multiple staff to respond or, if a fine was necessary, staff did not have to wait for approval from upper management to issue it. This would sometimes take as long as month, but with the Matrix, this could happen instantaneously in the field.

The Matrix was modeled after the City of San Diego's Civil Penalty Matrix. The Matrix was scaled down and modified for the type of violations most often encountered in Solana Beach, but the foundations are very similar. The Matrix basically breaks down the violation into two categories, Environmental Significance and Compliance Significance. These two categories are further broken down into Moderate, Major, and Severe. According to the type of violation and the history of the violator, the penalties will be placed in the appropriate section of the Matrix. This ensures that all violations are treated consistently, and the feelings of the investigating officer do not interfere, so the enforcement actions do not vary. This, according to our Code Enforcement Department, is extremely important if a fine gets challenged in court. The Matrix is currently being used, and a fine has not been successfully challenged yet. The Matrix was developed in cooperation between the City's Environmental Specialist and Code Enforcement Officer, further showing the great working relationship between City Departments.

The Matrix is used for all violations, not just construction related offenses. It can be applied to municipal, commercial, and residential offenses. For the complete Civil Penalty Matrix, see Appendix M.

The City also utilizes special radios that are used to communicate between Staff to report storm water violations. The radios were purchased so communication can be made at all times with appropriate staff, in the case of a storm water violation. The radios also can connect with the City's Code Enforcement Department, Fire Department, and Marine Safety Department, as well as the City of Del Mar Code, Fire, and Marine Safety Departments. This allows for immediate contact with appropriate staff to respond to any situation, including storm water. Before the radios, people either had to be paged or had to be at their desks, which proved to be very inefficient. The delays would often cause staff to miss violations because they did not get the information in time. The radios have allowed for much better communication and increased enforcement, as violators are often contacted while the violation is occurring.

Site Inspections

All construction sites that have a potential to discharge pollutants are inspected by the City Inspector and Environmental Programs Manager, this includes public and private development projects. The City Inspector and Environmental Programs Manager have been visiting all development projects in the City, unless the project is an indoor remodel. In that case, the City Inspector would only visit the property if time and resources permit, and if prohibited activity is noticed, a letter is sent to the property owner.

The sites are inspected at the rate of frequency established in the JURMP. At a minimum, each site that is determined to be high inspection frequency priority will be inspected at least every two weeks during the rainy season (October 1st through April 30th). Medium inspection frequency priority projects are to be inspected at least monthly during the rainy season. Low inspection frequency priority construction sites will be inspected on an as-needed basis during the rainy season. All construction sites will be inspected for storm water management compliance on an as needed basis during the dry season.

With the combination of the City Inspector and Environmental Programs Manager, the City is often times able to inspect construction sites more frequently than required by the Permit. Both the City Inspector and Environmental Programs Manager devote time out of their schedule to visually monitor all construction sites. Sometimes this is done in tandem, but often times it is simply a drive by of all sites. They meet at the end of the day and discuss any problems observed, if any. This has been very successful in preventing pollution from leaving construction sites, as most problems are fixed before any illegal discharges leave the property. Since there are not too many projects in the City, this type of monitoring is highly successful, as private project managers and city staff communicate very effectively.

If any possible violations are noticed during either the visual inspections or on-site inspections, City staff may stop and talk with the property owner, write a letter, request Code Compliance to issue a citation, issue a “stop work notice” or a combination of these activities. The City’s new adopted Civil Penalty Matrix, discussed previously, is also used for construction related violations.

In addition, City staff conducts informal visual inspections at all medium and high priority construction sites prior to a rain event to ensure all BMPs are installed correctly and working properly. A follow-up informal visual site inspection is then

conducted after the rain event to monitor how effective the installed BMPs were and if any modifications need to be done. Construction sites are constantly evolving and require constant monitoring, which the City staff understands and enforces.

All inspections conducted during this reporting period addressed all the required inspection steps to determine full compliance. There were no sites that required multiple follow-up inspections or reporting to the RWQCB, as all were either in compliance at the time of inspection or made the necessary corrections after the initial inspection and were in compliance during the follow-up inspection.

Enforcement of BMPs

During inspection of construction sites, City staff verifies that appropriate BMPs have been implemented and are effective (sediment is on-site, erosion control methods in place, runoff mitigated or not leaving property, etc.). In addition, City staff has the authority to immediately require new BMPs if erosion control, runoff, or other activity is taking place that contributes pollutants into the City's MS4.

During this reporting period, the City staff conducted inspections of all CIPs and mandatory inspections of private projects within the City's jurisdiction and did not need to report any non-compliant sites to the RWQCB. Any site that was determined to be out of compliance was immediately notified and the problems were resolved within the time frame specified by the City.

Educational Activities

The education activities conducted for construction sites consisted mainly of verbal conversations between the contractor/developer and City staff. Because of the relatively few projects in the City, it is possible and practical to discuss issues on-site with the contractors. Also, they are given the Construction BMP brochure and storm water issues were specifically brought up. The City believes that it is much more effective to talk with the contractor face-to-face about these concerns and, since we are a small city, it has been and continues to be very effective.

An educational brochure (Appendix O) was developed by the City that focuses on general construction site requirements relating to all City codes. The brochure, titled "Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices," was requested by the City Council

as a general educational tool to be distributed to all contractors. This has been very well received by the development community because it addresses everything from construction hours to permitting to storm water BMPs. This is another example of the City's proactive approach to community education.

Another tool that was developed and discussed in last year's Annual Report is the Construction BMP Brochure (Appendix I). This was developed by the North County Storm Water Program to provide a consistent message and requirements to all contractors/developers in the region, regardless of where they are doing work. This brochure was meant to supplement each individual cities educational outreach to ensure that the development community was receiving a consistent message regarding proper construction practices. This brochure has been very well received by the development community and in Solana Beach has replaced the Construction BMP Guide as the primary educational tool distributed to the development community.

Additionally, as discussed previously, the recent addition of the *Environmental* section to the building permit checklist has afforded the City another opportunity to educate the applicant/contractor on the storm water regulations. Every project that has the potential to discharge pollutants to the MS4, regardless of size or type, is reviewed by the Environmental Programs Manager and commented on.

Another educational tool utilized by the City to get the word out to our residents was a series of articles published in the newsletter "Shorelines" put out by the City. The newsletter is updated and distributed four times per year and is received by everyone in the community. A variety of storm water topics are touched upon, including construction. These articles are intended for smaller projects such as remodeling and single home construction, but it is still very important nonetheless. These smaller projects hold a much higher priority in our City because of the lack of larger projects; so educating the individual homeowners is extremely vital. Also, the City has found that the smaller projects have the most potential violations, as most are owner/contractor situations where they are not aware of the storm water regulations. The larger projects often have erosion control specialists and employees who are required to attend storm water education classes. The newsletter comes out four times a year, and are included as Appendices and described in previous Chapters of this Report.

<u>Special Project BMP Education</u>

A new tool that was recently implemented was the development of a specialized BMP notice given to a specific type of construction activity. For example, a large scale effort is being made to underground overhead power lines for view impact reductions around the City. These were special projects that did not go through the normal permitting process. Therefore, these plans would not have been reviewed by the normal parties, and since the City is dedicated to storm water protection, City staff developed a special "Undergrounding Utility District Construction Best Management Practices" handout (Appendix P). This was a one page handout to be included in every permit application submitted by those participating in this program. Since the process of undergrounding utilities involves moving a lot of dirt, the City felt it prudent to take this extra precaution to ensure the proper BMPs are in place.

If any special projects in the future require project specific BMPs, the City is dedicated to developing materials to distribute to the applicants.

Post Construction BMP Inventory and Inspection

Another major change that recently occurred, as a result of the new Permit, is the requirement that the City must develop an inventory of all post construction BMPs and conduct annual inspections for Priority Development Projects (SUSMP). The City now has the ability to ensure that all post construction BMPs are installed and maintained by the contractor and/or property owner. The *Environmental* review section on the routing sheet contains a section that can be marked for inspection required prior to installation or prior to final approval of the project. This was done to ensure post construction BMPs required on the plans are actually installed and ensures maintenance through a special agreement that is recorded through the County of San Diego. The City found in some cases that the post construction BMP(s) are sometimes buried in the ground before inspection, thereby making it impossible to inspect and ensure it was actually installed. So, there is now a spot on the routing sheet that will put the onus on the contractor to call for an inspection during the installation to ensure it is actually being done. This way it can be more efficiently documented and inspection required before the permit gets final approval. In addition, this allows the Environmental Programs Manager the ability to document in a spreadsheet the type of BMP, location and inspection frequencies as the plans are being reviewed. This will assist City staff with post construction inspection requirements way before the project even begins.

Construction and Demolition Debris Recycling Ordinance

In January 2008, the City Council adopted a Construction and Demolition Debris Recycling Ordinance (C&D Ordinance). This ordinance requires all demolition projects and construction projects over a valuation of $100,000 to submit an approved Waste Management Plan (WMP) detailing how the contractor will recycle at least 50% of the waste generated from project. The contractor will not receive final permit approval until it's proven at least 50% of the waste was recycled.

This is an extremely significant accomplishment for the City and its clean water efforts. According to the National Association of Home Builders (NAHB) Research Center, the building of a 1,700 square foot home requires:

- 9,700 board feet of lumber
- 750 copper wire
- 2,500 square feet of insulation
- 6,484 square feet of drywall
- 170 feet of copper pipe
- 55 gallons of paint
- 55 cubic yards of concrete

This is a significant amount of waste that would normally end up in the local landfills, or worse, illegally dumped in the environment. This new ordinance requires contractors to recycle their used materials, guaranteeing that it does not pollute the environment. This is another example of the progressiveness of the community as a whole when it comes to protecting the environment.

3.10 New Activities and Improvements in FY 09/10

City staff will continue to review all plans, enforce BMP (site, source and treatment) installation, conduct inspections and keep an accurate inventory of the private and public projects and post construction BMPs. The City is committed to working with the other cities within its respective watersheds (Carlsbad and San Dieguito) to ensure compliance with all storm water regulations and continue to develop watershed educational information.

The primary focus for FY 09/10 will be the continued development and implementation of the LID, HMP and SUSMP programs. These are major program components and the City is committed to working with the other Copermittees to develop a high quality work product that can be implemented region-wide. These three components are extremely important to maintaining and enhancing the water quality in the region as more and more land is developed. Training of appropriate City staff on these new requirements will be a priority to ensure successful implementation of the new programs.

3.11 Summary

The City has been effective at implementing a plan-check process that has resulted in the implementation of BMPs, site design modifications, structural changes and runoff mitigation activities in project proposals and/or construction activities. Both public and private construction projects are subject to the City's strict standards, which provide a consistent approach to reducing urban runoff from construction activities. The City has effectively integrated the new stricter standards of the Permit, including the SUSMP, into its plan-check review process. The City has also begun developing project specific construction BMPs for large-scale specialized construction activities such as the Undergrounding Utility Districts that are forming around the community.

The City will continue to actively analyze the construction program and make necessary improvements/modifications to ensure the protection and enhancement of the local water quality. An example was the addition of the Environmental review section of the permit routing sheet. The City felt like some smaller projects, although not specifically required to be plan reviewed and inspected by the Permit, may have the potential to be overlooked. Therefore, now *all* plans are reviewed by the Environmental Programs Manager and necessary changes can be made before plans are approved. Also, the reduced grading ordinance modification demonstrates the City's commitment to reviewing as many projects as possible and integrating storm water management requirements to projects that would have been overlooked in the past.

The City is actively working with the other regional Copermittees on the development and implementation of the two significant new requirements, the HMP and LID. These two programs are significant additions that will require City staff to work with the other Copermittees to develop regional programs to address runoff from construction projects. These new programs will also include an educational component, which the City will develop in conjunction with the

region. The City is committed to participating with the regional Copermittees to develop and implement these respective programs, even though the HMP is not expected to affect any projects within the City. The City values itself as an active Copermittee, and allocated funds to the HMP development, even though it is highly unlikely to affect any projects within the City's jurisdiction.

CHAPTER 4
Municipal Component

CHAPTER 4: MUNICIPAL COMPONENT (EXISTING DEVELOPMENT)

4.1 Introduction

In accordance with Permit Section F.3.a, this section of the report describes the City's efforts to prevent or reduce pollutants in runoff from municipal land use areas and activities.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of municipal facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement BMPs at municipal facilities, program accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Municipal facilities and areas within the City of Solana Beach include public parks, public buildings, streets, roads, and parking lots, a public works yard, and the MS4 system. During this reporting period, the City conducted a comprehensive re-evaluation of its municipal sites to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from its facilities by implementing Best Management Practices (BMPs). This was accomplished through inspections of all public facilities.

4.2 Inventory of Municipal Facilities

During this reporting period, in response to the requirements of the Permit and in an effort to improve the quality of water in the region, the City once again inventoried its municipal sites and activities. Table 4-1 presents the City's municipal facilities, by prioritization level. *There are no changes in the City's inventory of municipal sites from those submitted to the RWQCB in the City's last Annual Report.*

The City's municipal facilities include five public buildings (City Hall, Fire Station, Marine Safety Center and the community centers at La Colonia Park and Fletcher Cove), one Public Works Yard, six public parking lots, City streets and roads, the Municipal Separate Storm Sewer System (MS4) and the beach (which consists of four access locations: Del Mar Shores, Seascape Sur, Tide Beach Park, and Fletcher Cove).

Table 4-1
Existing Municipal Facilities, By Priority Level

Facility Name	Facility Address	Type of Activity	Priority
Public Works Department	1764 Highland Drive	Materials storage, fleet parking, administration	High
North Seascape Sur Surf Park	Public beach access west of Highway 101	Public beach	High
Roads, streets	Citywide	Circulation	High
MS4 System	City-wide	Storm-water conveyance system	High
Fletcher Cove Parking Lot	North end of Plaza St.	Parking	High
Distillery Parking Lot	Sierra and Lomas Santa Fe		
Solana Beach and Tennis Club	West end of Dahlia St.		
Seascape Sur Parking Lot	Seascape Sur Easement		
Del Mar Shores Parking Lot	Sierra Ave. near Del Mar Terrace		
Del Mar Beach Club East Parking Lot	Sierra Ave. east of Del Mar Beach Club Dr.		
City of Solana Beach Fire Department	500 Lomas Santa Fe	Public Building - Fire Station, fleet and fire equipment storage	Medium
City of Solana Beach City Hall	635 S. Highway 101	Public Building -Administrative	Low
Marine Safety Department, Fletcher Cove	111 S. Sierra Ave.	Public Building Administrative, marine safety equipment storage	Low
Fletcher Cove Community Center	111 S. Sierra Ave.	Public Building – Community Center	Low
La Colonia Park and Community Center	715 Valley Ave	Public Park and Building – Community Center, administrative, park	Low
Tide Beach Park	302 Solana Vista Drive	Public beach	Low
Del Mar Shores	190 Del Mar Shores	Public beach	Low

4.2.1 Inspection Frequency of Municipal Sites

The City inspects all of its municipal sites listed above on a continuous basis. The inspections addressed all the required inspection steps to determine full compliance. Every winter, prior to the wet season, the Public Works Yard (Yard) is given a complete inspection and all Public Works employees are given a complete storm water refresher training seminar. Also, the Public Works Crew is put through a practice run of the Weather Triggered Action Plan to prepare for the upcoming wet season. At this annual inspection, the current inventory of the storm water BMPs kept on-site (gravel bags, bio-filter rolls, straw rolls, etc) is

documented and additional supplies are ordered if necessary. Visual inspections are conducted on a daily basis by the Public Works Crew. Here are the specific dates and numbers of inspections for the City's municipal areas:

Public Works Yard: Weekly facility visual inspections by City staff and training every October to prepare for wet season. Inspection and training conducted last year on June 22, 2009.

Roads and Streets: Daily visual inspections by City Staff. Every street is swept at least once per month. Main arterial streets and collector roads are swept twice per month. These frequencies are set based on the size and frequency of use by vehicles on a daily basis.

Parking Lots: Weekly visual inspections by City Staff. Every City parking lot is swept once per month. In addition, the Fletcher Cove Park parking lot is swept monthly during the summer months due to an increase in use during the summer.

MS4 System: Weekly visual inspections by City Staff. Highest priority catch basins cleaned annually (those with accumulated debris inside). All 309 catch basins and 15 unimproved channels were inspected and 13 catch basins were cleaned. Approximately five (5) cubic yards of debris was removed from the MS4 system during this reporting period.

Fire Department: Daily visual inspection by City Staff. Last inspection was conducted on June 22, 2009.

City Hall: Daily visual inspection by City Staff. Last inspection was conducted on June 22, 2009.

Marine Safety: Daily visual inspection by City Staff. Last inspection was conducted on June 22, 2009.

La Colonia Community Center: Daily visual inspection by City Staff. Last inspection was conducted on June 22, 2009.

Beaches: Daily visual inspection by City Staff (Marine Safety Department).

4.2.2. Follow-up Activities

The City had one follow-up activity as a result of municipal inspections. The Fire Department had some minor corrections to make after the initial inspection on June 22, 2009. The inspection revealed some miscellaneous oil containers and paint containers located outside of the trash dumpsters in the trash enclosure. These items were being stored temporarily until the next Household Hazardous Waste (HHW) pickup occurred. However, the containers should have been covered and above ground, shielded from the environment. A follow-up inspection was conducted on June 29, 2009 and the facility was found to be in compliance. The leftover containers were placed in a protective storage shed, and will be kept there until the next HHW pickup. Staff at the Fire Department was educated and will ensure that all future oil and paint containers will be placed inside the protective shed.

All other facilities were implementing the necessary BMPs and all employees were properly trained. The Public Works Yard required no corrective action as everything remained in compliance. The Wet-Weathered Action Plan was successfully implemented and the employees were trained again and had a practice run prior to the beginning of the wet season.

4.2.3 Implementation of Pesticides, Herbicides and Fertilizer BMPs

A significant change occurred during this reporting period in regards to pesticides, herbicides and fertilizers. As reported in last year's Annual Report, the City used to house a small amount of these materials at the Public Works Yard. However, City staff no longer handles any pesticides, herbicides or fertilizers and does not store any of this material onsite. Instead, all applications are conducted by the City's contracted landscaping company and no material is kept in the City.

In addition, the City has recently switched to using only organic pesticides, herbicides and fertilizers on City property. This change was approved by the City Council and additional funds were allocated to implement the program. The City is extremely proud of this transition, as the chemically produced materials can create significant water quality degradation. This major transition (including financially) was approved and encouraged by the City Council, which reflects the environmentally conscientious attitude of the community.

4.3 Pollutant Source Identification

To assist the City in determining the source of pollutants in its receiving water

bodies, and/or the receiving water bodies of neighboring jurisdictions, the municipal facilities were also identified by Watershed in the City JURMP*. There are no changes to report in the municipal facility by watershed classification.*

During this reporting period, staff continued to evaluate the possible types of pollution that could be generated from each municipal facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Any additional activities that may affect water quality such as additional storage or new materials kept on-site

Results from the evaluation indicate that most City facilities are a low threat to water quality. Parking lots, streets and roads, and the Public Works Yard are the highest priority of municipal facilities as they could introduce pollutants into the conveyance system, which could impact water quality.

The City is committed to implementing BMPs that will reduce pollutants from parking lots, streets and roads and the Public Works Yard in particular. The City has installed and maintains a BioClean filter in one of the upstream catch basins that lead to the problem Seascape Sur pipe. In addition, the City installed a curb inlet screen at the same catch basin upstream from Seascape Sur to prevent debris, and possible pollutants, from entering the catch basin.

During this reporting period, an additional BMP catch basin inlet screen was installed in the opposite catch basin across the street as a pilot test project. This inlet screen automatically opens up during a rain event to prevent flooding, but remains in place during dry weather periods. The sturdy screen also contains a filter in the basket behind the screen to further filter out pollutants prior to entering the Seascape Sur storm drain. These two BMPs will be studied and sampling results analyzed to determine if they are effective BMPs for the problem pipe. The results will be described in more detail in Chapter 12 (Special Investigations)

The Public Works Yard is visually inspected weekly and BMPs are maintained and reinforced as needed. In addition, the City utilizes results from its dry-weather-monitoring program to determine if pollutants are entering the system from its municipal facilities.

The City's 2008 Dry-Weather-Monitoring Program (DWMP) was completed by

the City in September 2008. The results indicated a concern at Seascape Sur, which has been an ongoing problem in the City (see discussion in Chapter 12, Special Investigations) where elevated levels of bacteria were detected. An investigation into the identification of the pollutant source is ongoing, and the City is looking into alternatives ways to address the situation. No municipal facilities were found to be contributing the pollutants.

The City utilized the information from the 2002-2008 dry-weather-monitoring programs and the criteria established by the Permit (Order 2007-0001) to further develop its 2009 Dry-Weather-Monitoring Program. The results of the 2009 program will not be available until after this reporting period, but if any exceedances are detected, follow-up actions will be taken immediately. The results of the 2009 DWMP will be included in Chapter 7 (IDDE) of this Report, which will be submitted separately in December 2009 as agreed to by the RWQCB.

4.4 Threat to Water Quality Prioritization

The City utilized the criteria prescribed in Permit Section F.3.a. (3)(a) and (b) to prioritize the facilities based on their potential Threat To Water Quality (TTWQ) from storm water runoff. In addition, dry-weather monitoring data and previous complaint records were included in the evaluation. As noted in the City's JURMP, results from the 2008 dry-weather monitoring program indicated that there were no illegal discharges or illicit connections associated with existing municipal facilities. However, the City still classified its public parking lots, MS4 system, streets and roads and the Public Works Yard as *high priority* using the criteria of the Permit. As also noted in the JURMP, the City classified the beach at Seascape Sur as a *high priority* because results from historic dry-weather monitoring and Coastal Monitoring programs indicated elevated levels of bacteria (see Chapter 12, Special Investigations).

The Fire Department facility was the only municipal site classified as medium-priority. The City Hall building, the Community Center at La Colonia Park, Tide Beach Park, Fletcher Cove Community Center and the Marine Safety Center facility were classified as low priority primarily due to the activities conducted at those sites.

There are no changes to report in the City's prioritization of its municipal facilities.

It should be noted that in the 2003 Annual Report, the results of the 2003 Wet

Weather Monitoring Program revealed very high levels of the pesticide Diazinon within the watershed. The City focused its efforts on reducing the use of Diazinon within the City and by municipal landscaping contractors through educational activities. The City is happy to report that Diazinon was not found in any of the samples analyzed by the lab for our 2004, 2005, 2006, 2007 or 2008 dry weather programs. This is consistent with the overall trend region-wide showing that diazinon levels have been steadily decreasing. The City can now focus on other pesticides or high priority pollutants in the ongoing effort to improve water quality in the region. This is a success story that can be celebrated by the entire region, and is a great case proving the validity of the storm water program as a whole.

4.5 Pollution Prevention Methods

As described throughout the Municipal Component Section of the JURMP, the City has established pollution prevention methods that focus on municipal operations, including operation and maintenance of its MS4 system with the goal of preventing and reducing pollutants in runoff. The following is a list of some of the methods in place to accomplish this goal:

- Annual inspection and cleaning of the City's MS4 system
- Routine street sweeping (schedule is on the City's web site and available upon request)
- Daily trash removal from high priority streets and parks
- Sediment and erosion control methods (application of Visqueen, materials coverage, silt fences, etc.)
- Facility and ground maintenance conducted in a manner that would not contribute pollutants to a conveyance systems and expected to reduce pollutant runoff during storm events
- The use of bio-filter roll(s) as a PPM at municipal facilities
- The installation and maintenance of additional permanent treatment BMPs at City facilities (Two CDS units, Sand Trap and a large Bioswale)
- Maintenance of the MS4 including routine inspections, annual cleaning and proper disposal of captured materials
- Spill response procedures (street and road spills, facility spills)
- Household Hazardous Waste Collection (Note: the City participated in a reciprocal use agreement with the Cities of Vista, Poway and Escondido for use by Solana Beach residents to recycle their

household waste materials.) The City also offers a door-to-door program (more on this later in the Report).

- Installation and maintenance of two catch basin inlet filters and debris screens at ongoing problem area directly upstream from Seascape Sur beach outfall.

In the City's JURMP, the above pollution prevention methods were expanded for implementation at all City municipal facilities, depending on the type of activities conducted at each facility. To assist in developing appropriate BMPs, the facilities were categorized into the following types:

- Landscape and recreational facilities
- Roads and streets maintenance
- Public buildings
- Public Works Yard
- Parking facilities
- Storm Drain Conveyance System (MS4)

Specific BMPs were then developed for each category type identified and presented in the City's JURMP. For example, BMPs for the Public Works Yard (JURMP, Section 6) include:

- Materials storage alterations
- Visual inspections
- Improved operations and maintenance
- Good housekeeping procedures
- Preventative maintenance
- Spill prevention
- Sediment and erosion control
- Employee training
- Vehicle and equipment maintenance operation alterations
- Waste disposal and recycling
- Vehicle equipment and washing
- Storage tanks
- Outside storage

During this reporting period, the City implemented pollution prevention methods (BMPs) for each facility type based on what was presented in the City's JURMP. Municipal facilities were inspected by City staff to ensure the implementation of BMPs was occurring.

4.5.1 Proactive Approach to Pollution Prevention – JURMP Requirements

Because of the City's proximity to the Pacific Ocean, the City has been proactive in its approach to urban runoff and pollutant mitigation and reduction, not only during this reporting period but also prior to the implementation of the JURMP.

Annual Inspection and Cleaning of Storm Drain System

The City conducts an annual inspection of its storm drain system – citywide. Public Works staff inspects all 309 catch basins in the City and prioritize each based on the severity of sedimentation and trash build-up in accordance to the Permit**.** All catch basins that contain trash or sediment build-up in excess of the Permit requirements are cleaned using a Vactor truck. During this reporting period, the City inspected all 309 catch basins and 15 unimproved channels. Thirteen (13) catch basins had accumulated debris and all 13 were cleaned, resulting in five (5) cubic yards of material removed from the storm drain system (which includes open channels, etc.). The material, primarily sediment and debris, was properly disposed of at the San Elijo Wastewater Reclamation Facility.

Special Events Vendor BMP Requirements

The City developed a "Special Events Vendor BMP Guidelines" (Appendix C) for all events that require a Special Events Permit. The guidelines include BMPs for food vendors, event coordinators and event workers. The guidelines include BMPs such as:

- Protecting all adjacent catch basins
- Trash and recycling containers required
- Portable restroom secondary containment
- No dumping into storm drains
- Proper clean-up practices (No water)

These requirements are all included in the Special Events Permit. For larger events, such as the City sponsored Fiesta Del Sol and Beach Blanket Movie Night, the City holds multiple meetings prior to the event with the organizers and all issues are discussed. The organizers are required to submit their BMP plans to the City, and City staff monitors the events throughout their entirety. The City schedules post-event street sweeping through its street sweeping contractor for all major events.

Pet Waste Bag Dispensers

The City actively installs Pet Waste Bag Dispensers and maintains the dispensers to encourage proper pet waste disposal. Several years ago, the City placed these dispensers and signs along both sides of Sierra Avenue to encourage their use to prevent pollutants from entering the MS4(Sierra Avenue is the street closest to the beach, and runs parallel to Highway 101). The City implemented this BMP in response to results from its dry weather and coastal outfall monitoring, which indicated the presence of fecal bacteria at Seascape Sur. In an effort to educate the community about pet waste, the City periodically includes discussions about its pet regulations, which prohibits dogs in some locations of the City and on all beaches, in its community newsletter and recreation guide *Shorelines.* In addition, City staff meets with property managers of the condominiums along Sierra Avenue and educated them on storm water regulations and solicited their help in educating their residents.

The City recently completed its much anticipated Coastal Rail Trail. This trail runs parallel to Highway 101 the length of the City, and has become a popular walking/jogging spot for not only the residents, but their pets as well. The City required the project to include additional pet waste dispensers, and have found them to be used very frequently. In addition, the City recently completed the Fletcher Cove Park project, which is located adjacent to the ocean. One of the many environmental protection measures implemented as a part of this project was the installation of pet waste dispensers. City staff maintains these new dispensers as well. This shows the City's proactive approach to protecting the integrity of the local waterways. This practice of requiring pet waste dispenser's at all new public and private projects will continue as it has been received very well by the community.

As part of the Public Works Department routine tasks, the pet bag dispensers are refilled daily. The amount of material that is prevented from entering the City's MS4 system as a result of this PPM is unknown and there is no acceptable method of estimating it, however, the City's Public Works Crew refilled approximately 1,380 bags per week. This is up from 1,116 bags per week during the last reporting period. This is relatively consistent from the 1,298 bags per week during FY 06/07. For reference sake, these are the numbers from the previous years; 775 (FY 05/06), 625 (FY 04/05), and 550 the first year this was documented (FY 03/04). The total amount for FY 08/09 comes out to approximately 72,000 total bags at a cost of approximately $2,880 (4 cents per bag). Those numbers are up from 58,000 bags and approximately $2,320 from

last reporting period.

Solana Center for Environmental Innovation

The City is proud to be associated with the Solana Center for Environmental Innovation (formerly Solana Recyclers), hereinafter referred to as Solana Center. Due in large part to the efforts of this group, the City was the first city in San Diego County to have a comprehensive *curbside* recycling program. In addition, to help educate the community, the Solana Center routinely writes articles for the City *Shorelines*. Also, Solana Center administers the City's Used Oil Recycling Program, providing education for schools, community groups and City events on the proper disposal of used oil. For a complete listing of articles written in the *Shorelines,* please see Chapter 6, Residential Component.

Recycling Efforts

The total amount of material recycled throughout the City during this reporting period is unknown at the time of this report (numbers will be available after March 15, 2010). However, the last reporting period ending in 2008 showed the City at a 62% recycling rate, which is on the upper tier of cities in the county and well within compliance with the 50% rate required by Assembly Bill 939 (AB939).

The City implemented a new residential solid waste and recycling automated single stream commingled collection program in November, 2006. This will be described in greater detail later in this report, but it should be noted that after the first year of implementation, residential recycling increased by 48% (about 816 tons) and after the second year is was up 20% (345 tons) which is pretty remarkable.

The City Council also adopted a Construction and Demolition Debris Recycling Ordinance in January 2008. This ordinance is discussed in more detail in the Construction Component of this Report, however it's important to mention because it once again demonstrates the City's progressive commitment to protecting the environment.

Hazardous Materials Management Team

The City's Fire Department contracts with San Diego County Hazardous Materials Management Division and established an Emergency Response Program to contain hazardous materials that result from automobile accidents, spills, illegal dumping or any other activities within the City of Solana Beach. Generally, the County's Hazardous Materials Team handles recovery and

disposal of the materials, although work crews from the City's Public Works Department also contain some small spills and are on call 24 hours a day, 7 days a week to respond to all spills that occur within City limits.

Storm Drain Inventory and Stenciling

The City has inventoried all of its storm drain conveyance structures (inlets and catch basins). The inventory list includes addresses, cross streets and a bit-map. This information was then utilized to implement a program that affixed a stenciled tile at each location that reads, *"No Dumping! This drains to the ocean."* The City has successfully completed application of the tiles at *every* storm drain inlet and catch basin. In addition, the City requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the a stenciled tile. The City constantly monitors the catch basins and if a tile is broken or has been removed, another one is immediately installed.

The City also participated with the non-profit group I Love A Clean San Diego (ILACSD) to sponsor an ongoing Tile Stenciling Program in which the City provides volunteers with a GIS map of all catch basins in the City and a box of tiles so they can compass the City and replace any tiles that are damaged or missing. This was a highly successful program/partnership that the City will continue to ensure all catch basins have tiles permanently affixed to them.

Street Sweeping

The City already had a comprehensive street sweeping program prior to the Permit and the implementation of the JURMP. The residential streets are swept once each month, while major arterial streets and collector roads are swept twice per month. In response to the comments received from the RWQCB on the FY 02/03 annual report, the City developed a form to characterize and measure the amount of material collected by the street sweeper (Appendix A). The driver of the street sweeper completes the form after every trip and it is verified by the appropriate Public Works employee.

As reported in the City's FY 2005/06 Annual Report, the City was having significant problems with its contracted street sweeping company. The contractor was not performing up to contract specifications, and the City was having a difficult time getting the proper reports from the drivers. A contractual battle ensued and documentation was not submitted. The City eventually relieved the street sweeping company of their duties and selected another contractor. The new contractor has been much more effective and responsive.

This reporting year, the amount of debris collected by the street sweeper totals 274 cubic yards, which is almost identical to last year's amount of 275 cubic yards and a slight decrease over the total of 299.1 cubic yards recorded in FY 06/07. The relatively consistent amount of debris collected by the street sweeper can be attributed to the fact that most of the debris consists of organic materials, including leafs and green waste. There is relatively no trash collected, which is a good indication that the City, and community's, efforts at trash and litter reduction are successful. The City will continue to monitor the street sweeping debris to see if there are certain areas where trash is more prevalent and litter reduction campaigns can be implemented. However, at this time, most of the debris is organic green waste materials.

To demonstrate the City's commitment to documenting the amount of debris collected by the street sweeper, and to ensure that all activities were conducted in compliance with the storm water regulations, the City included specific language in its new street sweeping contract. This language will be used in every subsequent street sweeping contract to ensure all contractors are adhering to all storm water regulations, which was a comment made by the RWQCB in its JURMP Annual Report Review.

As mentioned above, and now required by the new Permit, the City sets sweeping frequencies based on the type of street. The larger, more frequently used by vehicles, are swept more often. The streets are classified based on SANDAG's Vehicle Miles Traveled (VMT) parameters. The lesser traveled streets, like residential streets and parking lots, are swept once per month. The other higher frequency traveled streets such as arterials and collectors are swept twice per month. A complete schedule can be found on the City's website or upon request.

The Permit requires the Copermittees to identify the total distance of curb-miles of improved streets, and highways for high, medium, and low sweeping frequencies.

High Priority (twice per month):
Lomas Santa Fe – 4.06 miles
Highway 101 – 3.89 miles
South Sierra – 1.62 miles
Stevens/Valley – 3.29 miles
Cedros – 2.63 miles

Medium Priority (once per month):
All residential streets – 90.71 miles

Low Priority (once per month):
Parking Lots – 12 total lots, 59,750 square feet

These streets were cleaned on the set schedule listed above.

The Permit also requires Copermittees to identify the total distance of curb miles swept.

The City sweeps all (100%) streets and parking lots at least monthly. The high priority streets are swept twice per month. The total distance swept per year is:

High Priority: 402.74 miles per year
Medium Priority: 1,088.52 miles per year
Low Priority: 717,000 square feet per year

Spill Prevention

The City's Public Works Department maintains on-site at the Public Works Yard, a 55-gallon drum and specially equipped vacuum to handle small hazardous materials spills. The drum and vacuum are small enough to travel with the work crews and have been utilized to contain oil from an automobile accident, spillage of work-related materials (paint and debris), and collection of minor hazardous materials. In the event the material exceeds the amount that can be collected by the work crews, the City's Fire Department initiates its spill response plan (discussed above). Currently, City work crews do not have the resources to weigh the amount of material collected or to track and document the amount of material collected. Significant spills for which the work crews responded to are discussed in Chapter 7: Illicit Discharges Detection and Elimination.

Staff Trainings

As reported in previous Annual Reports, the staff trainings used to occur at the monthly citywide staff meetings. However, these trainings had to be general in nature because of all the varying departments and staff that attended. During this reporting period, staff decided to take a more proactive approach and implement a department specific training focusing on the sections of the Permit that pertained to their respective duties. Staff felt that more focused, detailed trainings would be a much more effective approach, and this turned out to be extremely

successful. This approach will be used more frequently, while ensuring that all new employees receive the general training as well when they are hired. Details about specific staff trainings are discussed in the Education Chapter of this Report.

Storm water Hotline

To assist the public in directing their calls for complaints and service, the City maintains and responds to a 24-hour storm water hotline telephone recording (858) 720-4424. When the number was first established, it was checked twice each day. However, to facilitate a quicker, more effective response time, the City now links all calls to the direct extension of the City's Environmental Programs Manager. Therefore, all calls that are made to the City regarding storm water issues will be handled immediately. This has been proven very successful, as the issues are addressed immediately. This leads to much quicker responses, which result in more efficient spill response and enforcement actions. The City informs the public about the hotline number at City Council meetings, on flyers and handouts at workshops, on business cards, on educational materials and during inspections.

Materials Storage

Although only minor quantities of hazardous materials are stored at municipal facilities (as noted in the City's JURMP), the City stores those materials indoors when feasible. Only non-hazardous materials, such as Class 2 gravel, temporary stockpiles of topsoil, etc., are stored outdoors for short periods of time. When this does occur, City Staff ensures all storm water BMPs are installed around the piles and they are covered, if necessary, to ensure nothing leaves the Public Works Yard.

Sediment and Erosion Control

The City Public Works Department augmented the City's supply of Visqueen as a method to reduce or prevent sediment and erosion control. The Visqueen is utilized at the Public Works Yard on the sand and soil that is kept on-site. In addition, the work crews utilize bio-filter rolls to catch runoff. As added insurance, the City's Operations Manager always orders extra erosion control BMPs before the wet season to store on-site for emergency situations. Most of these practices were instituted as a result of suggestions made by the RWQCB during their inspection in August 2002.

Storm Drain Inlet/Catch Basin Insert

The City is currently participating in an ongoing experimental application of two catch basin inserts in one problem location in its MS4 curb inlets. The inserts are being studied to determine its effect on the elevated levels of bacteria in the inlets, located above the Seascape Sur outfall. Although early results from the pilot program are inconclusive regarding bacteria, the catch basin filters have been extremely effective in eliminating large quantities of trash and organic matter from the MS4 system. Public Work Crews empty the filters on a scheduled weekly basis and routinely remove about half a trash bag full of debris. Additionally, inspection of the catch basin insert has revealed occasional violations of the adjacent landscapers as a large amount of grass clippings were found in the catch basin. An investigation resulted in a Notice of Violation (NOV) to the landscaping company and a discussion with the property management company. No additional violations have been reported.

Smoking Ban on Public Beaches and Parks

During a previous reporting period (December 2003), the City of Solana Beach jumped to the forefront of pollution prevention, on a nation-wide scale. The City was the first city in the nation to ban smoking at its public beaches and parks. The ordinance (Ordinance 316, see Appendix B) bans smoking at all public beaches and parks, and is actively enforced by the Marine Safety Department and Code Enforcement Department. The public has been very responsive to this ordinance, and the City has had many requests from other jurisdictions, as far away as Australia. The City appears to be a trend setter, as the City of Los Angeles and other Orange County cities are following suit with their own ordinances in the works. More locally, the City of Del Mar and San Diego have followed with their own ordinances and other cities such as Oceanside are investigating the possibility. This is a significant pollution prevention action the City has undertaken, as cigarette butts are routinely found as the most abundant type of debris collected in beach clean-ups. The impact on the local beaches will be extremely beneficial, and the City is proud to be the trend setter in another environmental arena (the City was the first jurisdiction in San Diego County to provide curbside recycling).

In addition, although it occurred after this reporting period, the City approved an enhanced No Smoking Ordinance that extends further than the one listed above. On August 7th, 2009, a much more stringent ordinance was adopted by the City Council that extended the ordinance to include the following no smoking areas:

- All enclosed or unenclosed dining areas and bars
- Street Fairs
- Farmer's markets
- On, near or around the Coastal Rail Trail
- Within 20 feet of all entry ways and all enclosed areas available to and customarily used by the general public and all businesses patronized by the public
- Tot lot and Playground

This will, without a doubt, significantly reduce the amount of smoking outdoors in Solana Beach, and therefore reduce the amount of cigarette butts that end up in our MS4 and receiving waters. The City is excited to start implementing this ordinance and reducing the amount of pollution that comes with smoking.

Recycling/Trash Containers

The City, and community, places a high priority on recycling, as evidence by the extremely high recycling diversion rate, discussed previously in this Report. The City has made a conscientious effort to increase the amount of public recycling containers over the last few years. As discussed in previous annual reports, the City has focused on placing dual trash/recycling containers at all popular public locations throughout the City, including parks, beach accesses and the Coastal Rail Trail. The City receives an annual grant through the Department of Conservation as well as an annual grant through the Regional Solid Waste Association, and these funds have been used to purchase and install the dual trash/recycling containers throughout the community. This has dramatically increased the amount of public recycling, and the City anticipates continuing this program in the coming years.

Not only is the City focusing on implementing a public recycling program, but as previously mentioned, the City recently implemented a large scale residential recycling program. The City, along with its waste hauler Waste Management, recently converted the traditional source separated recycling program to a streamlined, single stream commingled recycling program. This has been a huge success as the residential recycling rates have dramatically increased by 20%, or 345 tons.

Another example of the City's proactive approach to pollution prevention occurred during this reporting period. The City had a particular problem location where a private commercial dumpster was constantly overflowing with trash and

was a popular illegal dumping location. The dumpster was shared between two private businesses that didn't get along and would not talk to each other or take responsibility for maintaining the trash area. The City, acknowledging the problem and need for a solution, invited both business owners into a meeting, and threatened increased enforcement actions if they didn't cooperate. The end result was a joint agreement between the two businesses to build a locked trash enclosure which has eliminated the illegal dumping problem and increased their service to eliminate the overflowing trash situation. This is a significant accomplish that was fostered by the City which eliminated a significant trash situation, preventing it from entering the City's MS4.

Plastic Bag Advertising Ban

Another progressive action the City Council took was passing an ordinance banning the use of plastic bags for advertising. The ordinance bans the recently popular style of advertising used by companies in which they use small plastic bags full of rocks because often times it is unsolicited and the bags never get picked up, eventually ending up in the City's MS4. This emerging type of advertising is typically conducted by small residential and commercial support businesses such as landscapers, pool cleaners, housekeepers, and handyman type services. This is another example of the City taking a proactive approach to litter in the MS4. Plastic is the number one pollutant found in the ocean worldwide.

Plastic Bag Recycling Program

A significant new accomplishment that occurred during this reporting period was the implementation of a revolutionary plastic bag recycling program. This unique program is an unprecedented public/private partnership between the City and Trex, Inc., a private company that makes durable, high quality plastic building materials. This partnership is believed to be the first of its kind, in which the City designates specific "drop-off" locations throughout town in which the community can take their used plastic bags and drop them off. The City then takes these bags and compresses them into small bales that are taken to Trex's facilities for reuse.

This is an extremely unique and highly successful program that demonstrates the City's ability and willingness to think outside the box when it comes to dealing with the single highest pollutant in the world's waterways, plastic. Currently, there are no recycling programs established in the country in which plastic bags are

collected locally and processed locally into reusable, high quality products. All plastic bag recycling occurs overseas due to the lack of "washing" facilities in the United States. The amount of contamination problems with current common plastic bag recycling programs requires the bags to be shipped overseas to China, where the lack of environmental regulations brings into question the reliability of recycling the bags at all. Often times, the material ends up in the local environment anyway, so the amount of resources it takes to ship the material overseas negates the environmental benefit of recycling the bags. However, the City has fostered a relationship with a local business that guarantees the bags are properly handled and recycled. The City is extremely proud of its plastic bag recycling program, and the results to date are pretty remarkable. As mentioned above, over 150,000 bags have been recycled and prevented from reaching our local waterways.

Ensuring Implementation

To ensure that the PPMs are implemented, City staff meets periodically with all Department Directors to review the BMPs, Permit requirements and program expectations. Department Directors are responsible for ensuring that their staff carries out the BMPs for their facilities. The City Engineer meets every Wednesday with the Operation Manager, his public works crew and the City Inspector at the Public Works Yard for safety meetings. It was decided that at these meetings, storm water issues, including BMPs, should be discussed and the Yard will be inspected to ensure compliance. The Environmental Programs Manager will also conduct random compliance inspections. During this reporting period, there were no violations observed at the City's municipal facilities and all appropriate BMPs were being properly installed and maintained.

4.6 Pollution Prevention Strategy Effectiveness

One of the issues that the City faces is developing an appropriate process to determine the effectiveness of the pollution prevention methods and strategies, (BMPs). The City is committed to developing a consistent approach that could be agreed upon by all Copermittees. It is important to collect data and analyze results in a consistent manner – county/region wide – in order to be able to share results and draw conclusions across agencies, particularly given that water is not restricted by jurisdictional boundaries.

To address this issue, the Copermittees met several times in the fall of 2002 and in 2003 to work out a more appropriate strategy. A guidance document was

prepared by the Copermittees and submitted to the RWQCB on October 16, 2003, titled *"A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs".* This guideline presents a comprehensive assessment strategy that initially focuses on programmatic assessments and moves toward water quality-based assessments to determine program effectiveness. More specifically, it addresses six levels of assessment:

Compliance with Activity-based Permit Requirements

- Changes in Knowledge/Awareness
- Behavioral Changes
- Load Reductions
- Changes in Discharge Quality
- Changes in Receiving Water Quality

The City implemented this assessment program during the last reporting period, which is described in more detail in the Effectiveness of JURMP Assessment Component of this report.

Compliance with Maintenance Activities

Tables 4-2 and 4-3 below outline the MS4, sewer system and permanent City BMPs maintenance schedules. The City has an extremely aggressive maintenance program to ensure the systems are clean and functioning properly.

Table 4-2
MS4 Maintenance Activities 2008/2009

Type	Frequency	Date	Total Number (and Distance)	Number Inspected (and Distance)	Comments
Inspection and Cleaning of MS4	Annual	Ongoing between May-October	309 catch basins– 14.5 Miles of MS4	309 catch basins- 0.5 Miles of MS4 pipe inspected	All catch basins inspected, 0.5 miles of pipe inspected (Seascape Sur) 13 catch basins were found with accumulated debris and 13 cleaned, 5 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15 – 0.8 miles of Unimproved Storm Drains (Brow Ditches, Channels, etc)	15 – 0.8 Miles of Unimproved Storm Drains (Brow Ditches, Channels, etc)	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.
Inspection and Cleaning of Sewer Lines	Annually (entire City)	Ongoing	Entire System	Entire System	The entire sewer system is inspected and cleaned annually, and 1/3 of the system is televised annually

The tables above represent the inspection and cleaning activities related to the City's MS4 and sewer system. As you can see, the City conducts the annual inspections of the entire MS4 as the Permit requires, but goes above and beyond the inspection and cleaning requirements with monthly unimproved storm drain (brow ditches, channels, etc) inspections and cleaning of the entire sewer system annually. The unimproved storm drains are handpicked by City Staff on an as needed basis as a result of the inspections. The City also has an aggressive sewer videoing program that televising one-third of the system each year, identifying possible leaks, infiltration into the City's MS4, grease build-up and root intrusions that may lead to sewer spills. This is an extremely aggressive sewer maintenance program, which reflects the commitment the City has to maintaining a healthy system and preventing spills into the environment.

In addition, the City has designated sewer "hot spots" that are cleaned quarterly (every three months). These "hot spots" are areas with historical problems such as heavy grease buildup, root intrusion, and flat lines that may need increased cleaning to prevent sewer backups. The program includes an aggressive "root foaming" procedure in areas with historical root intrusion problems.

Table 4-3
Municipal Treatment Control BMP Maintenance Activities 2008/2009

BMP Type	Location	Frequency	Total Number	Number Inspected	Comments
Low Flow Diverter	Fletcher Cove Park	Monthly	1	1	Low Flow Diverter is cleaned once per month and inspected daily
Sand Trap	Fletcher Cove Park	Monthly	1	1	Sand Trap is cleaned monthly

CDS Unit	Fletcher Cove Park and North Rios Avenue	Monthly	2	2	The CDS units are cleaned monthly
Sewer Siphon	San Elijo Lagoon	Monthly	1	1	The siphon is cleaned monthly
Bio-Swale	La Colonia Park	Annually	1	1	The Bio-Swale is cleaned annually prior to rainy season and inspected weekly

The City has an aggressive maintenance program for all City-maintained permanent BMPs. The monthly maintenance frequency for the Sand Trap and CDS units are much higher than suggested by the manufacturer. The daily inspections of the Low Flow Diverter are conducted to ensure it is functioning at all times and redirecting the urban runoff away from the beach and into the sewer system.

4.7 New Activities and Improvements for FY 09/10

The City anticipates continuing the activities of the Municipal Component as specified in the JURMP. However, as noted earlier and what will be a recurring theme throughout this Report is the development and implementation of the new JURMP activities in relation to the new Permit Order No 2007-0001. The focus will be continuing the cooperation among different departments, ensuring municipal facilities are in compliance with the Permit, and collaborating with other Copermittees. The Department Directors were required to integrate more responsibilities into positions in order to implement the Watershed Urban Runoff Management Programs (WURMP), Standard Urban Storm Water Mitigation Plan (SUSMP) and Low Impact Development (LID) program. Because of our team

approach, this transition occurred rather seamlessly. The Planning Department and Engineering Department worked closely together in implementing the respective requirements.

As mentioned previously in this Report, the new JURMP document was adopted in March 2008. This contained new elements that will require additional/modified requirements/duties of different Departments within the City. Additional staff trainings will be required to ensure that all Staff activities will be in compliance with the new Permit and some job duties will have to be altered. Since the new Permit has now been adopted, the majority of the City's efforts will be spent implementing programs to meet the requirements of the new Permit. These changes will have to be implemented on the fly, and will require all Departments within the City to work collaboratively to accomplish the goals within the new Permit. The City is confident that the infrastructure of the City as a whole will allow for a relatively seamless transition to the requirements of the new Permit. Some of the new programs include:

- Minimum street sweeping and priority requirements
- Post-Construction BMP verification, tracking and inspections
- SUSMP implementation
- Low Impact Development (LID) development and implementation
- Hydromodification Plan (HMP) development and implementation

4.8 Summary

The City has been successful at implementing the Municipal Component of the JURMP, establishing BMPs for its municipal facilities and providing informative and meaningful staff trainings. The City made significant advancements in the manner in which its storm water program is integrated into the routine tasks of various staff and has developed an effective interdepartmental working relationship. The Environmental Programs Manager position has greatly enhanced the coordination and implementation of the Permit, as well as other environmental programs (solid waste, Used Oil Recycling, HHW, etc.)

Highlights of some of the accomplishments of the City's Municipal Program Component include:

- Implementation of two comprehensive WURMPs
- Creation of an effective municipal inspection process
- Implementing storm water issues and inspections of Public Works Yard at weekly safety meetings between the City Engineer and Public Works Operations Manager and crew
- Annual inspection and cleaning of the City's storm drains resulting in five (5) cubic yards of debris diverted from receiving water bodies
- Continued implementation of street sweeping tracking form that allows the City to evaluate the effectiveness of the street sweeping program.
- Provision of public pet waste bag dispensers (72,000 bags were utilized by the community during this year at a total cost of $2,880 (4 cents per bag)
- Addition of new trash/recycling receptacles in high traffic area of City to promote recycling and prevent trash/litter from entering storm drain system
- Enforcement and enhancement of Smoking Ban on Public Beaches and Parks Ordinance which has significantly reduced amount of pollution on local beaches and parks
- Implementation of weekly task for Public Works Crew to conduct weekly storm water inspections at the Public Works Yard
- Implemented scheduled cleaning of Fletcher Cove Sand Trap and CDS unit monthly
- Maintenance of Bioswale at La Colonia Community Center
- Maintenance of City-owned CDS unit at North Rios monthly
- Maintenance of filter basket at upstream catch basin of Seascape Sur outfall on a weekly basis
- Routine scheduled inspection and maintenance on unimproved channels on a monthly basis and after all rain events
- Routine scheduled inspection on Fletcher Cove Low Flow Diverter to ensure it is functioning properly on a daily basis
- Implementation of unique public/private plastic bag recycling program, resulting in the recycling of over 150,000 bags to date

CHAPTER 5

Industrial/Commercial Component

CHAPTER 5: INDUSTRIAL AND COMMERCIAL COMPONENT

5.1 Introduction

In accordance with Permit Section D.3.b, this section of the report describes the City's efforts to prevent or reduce industrial and commercial discharges of pollutants into the MS4 to the MEP. In compliance with the Permit, the City evaluated businesses within the City and categorized them as commercial or industrial, as noted in JURMP sections 7.0 (Industrial and Commercial Component).

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of industrial and commercial facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement and enforce BMPs at industrial and commercial sites, related accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

During the last reporting period (July 1 2008 to June 30, 2009), the City conducted a complete evaluation of the commercial and industrial facilities doing business within the City. Facilities were identified as industrial and commercial sites based on criteria required by the Permit, which included activities conducted on site and also included a site visit for verification. The City prepared an inventory of the facilities in order to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from the facilities by implementing Best Management Practices (BMPs). The City submitted the complete inventory list in the JURMP.

As a result of the new Permit, this chapter now combines two previous Chapters in the old Permit. The old Permit separated the Industrial and Commercial Sections; however, they are now combined. To keep consistency and for ease of readability, the following sections in this chapter separate the two components, so each can be analyzed according to their respective concerns.

5.2 Industrial Facilities Section

5.2.1 Inventory of Industrial Facilities

There is currently one industrial site operating within the City (Baker Iron Works). Table 3-1 presents the City's industrial facility, including its prioritization level. *There is no change in the City's inventory of industrial sites from those submitted in last year's Annual Report.*

Table 5-1
Existing Industrial Facilities

Facility Name	Facility Address	Narrative Description	SIC Code	Priority
Baker Iron Works	710 Valley Ave	Iron works / metal fabrication	3441	High

5.2.2 Pollutant Source Identification

To assist the City in identifying potential sources of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, City staff evaluated the possible types of pollution that could be generated from each industrial facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Watershed location

Results from the evaluation concluded that the City's only industrial facility could be a potential source of pollutants (Baker Iron Works),

The conclusion that Baker Iron Works could be a potential source of pollutant discharge was due to the fact that the facility generally uses metal materials in the fabrication of structural devices; most of their work is performed outdoors and is potentially exposed to storm water, and runoff from the property can potentially enter the City's conveyance system. However, the City has worked closely with Baker Iron Works to minimize the potential for pollutants to run off their property and into the City's MS4 system. Baker Iron Works has been more than willing to work with the City to ensure compliance with the Permit, and has completed numerous tasks suggested by the City. These include:

- Permanently covering all stock piles of metal materials kept outside to shield it from rain events.

- Cleaning of yard as needed but no less than weekly with a magnetic device to pick up all loose metal shavings.

- Moving all chemicals indoors to ensure that they will not run off the property and into the City's MS4 system.

- Training all staff on proper storm water BMPs and general housekeeping for all activities that may impact the City's MS4 system.

- Installation of low flow sump/infiltration structure at the northwest corner of the facility to handle all low flows from the entire facility. The low flows will enter a small drain that extends across the driveway and enters into a small infiltration well structure to prevent the water from entering the MS4. This structure has worked very well in eliminating all low flows from leaving the site. Baker Iron Works employees routinely monitor and maintain the infiltration well to ensure proper functionality.

- Permanently sealing a trench drain near office building that used to drain directly to street. Now the runoff bypasses the drain and travels down to the low flow sump/infiltration structure mentioned above.

The results of the 2008 dry weather program indicate that no related pollutants were found downstream from this industrial facility. This is consistent with the 2001, 2002, 2003, 2004, 2005, 2006 and 2007 dry-weather-monitoring program results which also indicated that no related pollutants were found downstream from this facility. The City will continue to inspect and monitor these locations in the future to further ensure that they are not contributing to downstream pollution. In addition, Baker Iron Works has agreed to forward all results from their required water quality monitoring under the Statewide General Industrial Permit to City staff, upon request, for review during rain events.

The City utilized the information from the 2008 dry-weather-monitoring program, the criteria established by the Permit, and the evaluation of the potential sources of pollutants (discussed in this chapter and Section 7 of the City's JURMP) to develop its 2009 dry weather monitoring program. Similar to last year, one site downstream and one site upstream from Baker Iron are selected for testing. The City will continue to monitor runoff downstream from this facility as long as it is in operation.

5.2.3 Threat to Water Quality Prioritization

In the City's JURMP, the industrial sites were classified as a high, medium or low priority, based on their potential threat to water quality from storm water runoff. The classification utilized criteria prescribed in Permit Section F.3.a. (3)(a), (b).

There are no changes to report in the City's classification of its industrial facilities from last year's Annual Report. Baker Iron Works is still classified as a high priority industrial site.

5.2.4 Pollution Prevention Methods

The City realized that since Baker Iron Works is the only high priority industrial site in the City, it would be prudent and feasible to monitor their site frequently. Although the Permit requires only annual inspections, the City dedicated more time to ensure that the site was always in compliance. This pro-active approach that occurred in the beginning of this Permit cycle has proved to be well worth the effort. By spending the extra time and effort the first couple of years of this Permit to get this facility into compliance have built a strong working relationship between the owners and the City. This facility has had no violations the last couple of years and continues to stay in compliance.

The City has confirmed that Baker Iron Works is *in compliance* with the state GISW and is currently adhering to all requirements.

Baker Iron Works employees use a large magnet to clean their entire yard as often as needed but no less than once per week. This magnet is very effective in cleaning up small steel waste products that result from daily activities. The parking lot is swept and water is never used. All chemicals are kept in a locked storage shed that has secondary containment and is kept above ground, which was a recommendation of RWQCB staff.

5.2.5 Industrial Inspections

As stated in last year's Report, during FY 07/08, the City changed its inspection practices. Prior to FY 07/08, City staff conducted all industrial and commercial facility inspections. However, in FY 2007/08, the City hired an independent contractor that specializes in storm water inspections. This change occurred due to limited staff time to conduct the inspections, as well as to provide an increased service to the residents of Solana Beach. By hiring a contractor that specializes in storm water inspections, the City, and residents, can be assured that it is

getting the highest quality service.

The City contracted out these services to Environmental Compliance Inspection Services (ECIS) again in FY 08/09. Baker Iron Works was inspected on June 19, 2009 and all designated BMPs were implemented and the facility was found to be in compliance in all areas. The inspection addressed all the required inspection steps to determine full compliance. City staff will also continue to visually inspect the facility at least once a month, and always before the wet season and during rain events. If the City observes a non-compliant facility, the City will inform its appropriate representative at the RWQCB.

5.2.6 New Activities and Improvements for FY 09/10

City staff will continue to work closely with the proprietors of Baker Iron Works to 1) ensure functionality and maintenance of the BMPs, 2) ensure compliance with the City's storm water regulations and 3) educate the business owners and employees about the importance of protecting the community's water resources. In addition, if any new requirements or activities are developed targeting industrial facilities on a watershed or regional basis, the City will communicate these requirements directly to Baker Iron Works and assist them in coming into compliance.

City staff will also monitor business license applications to ensure if another industrial facility opens up that it will be added to the inventory and inspected to ensure full compliance.

5.2.7 Summary of Industrial Section

The City has been effective at working with owners of the one industrial site to ensure compliance with Permit and City regulations. The owners have installed and properly maintained the filtration system at the northwest corner of the property to collect and infiltrate all on-site low flow runoff before it enters the MS4 system. The City has established a great working relationship with the owners/operators of the site and they have made drastic strides to maintain compliance. City Staff will continue to monitor and inspect the facility frequently to ensure compliance with the Permit. Baker Iron Works have been very responsive and immediately remedy any problems encountered during inspections. They have gone above and beyond what is required to ensure they are in compliance with the Permit.

5.3 Commercial Facility Section

5.3.1 Inventory of Commercial Facilities

During the process of revising the JURMP, submitted in March 2008, the City updated the inventory of commercial facilities. The City selected locations based on the requirements of the new Permit, and placed higher priorities on such facilities as automotive servicing, gas stations, repair and fueling, commercial rental yards, and golf courses (high Threat To Water Quality, TTWQ). The City's JURMP inventory has 77 stationary facilities, however 3 stationary facilities were removed (no longer in business) as a result of the inspections conducted during this reporting period, 67 of these facilities are classified as high Threat To Water Quality (TTWQ). The City will continue to update the inventory list as new businesses apply for permits or site inspections reveal changes. In addition, any facility that has the potential to release high priority pollutants into the City MS4 will be added to the list of high priority facilities.

Table 5-2 Inventory Of High Priority Commercial Facilities

Address	Street	Business	Type	Watershed
741	Academy Drive	Academy Animal Hospital	Animal Facility	San Dieguito
435	Cedros Avenue South	KMP Plumbing Company Inc.	Commercial/ Outside Storage Area	San Dieguito
659	Lomas Santa Fe	Henry's Farmers Markets	Grocery Store	San Dieguito
124	Lomas Santa Fe	Subway	Restaurant	San Dieguito
905	Lomas Santa Fe Drive	Baskin Robbins	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Caffe la Bocca	Restaurant	San Dieguito
705	Lomas Santa Fe Drive	Caspian Petroleum DBA LSF Mobil	Gas Station	San Dieguito
124	Lomas Santa Fe Drive	Chief's Burgers and Brew	Restaurant	San Dieguito
683	Lomas Santa Fe Drive	CVS/Pharmacy #9187	Retail	San Dieguito
663	Lomas Santa Fe	Dixieline Lumber	Retail	San Dieguito

	Drive	Company		
911	Lomas Santa Fe Drive	Einstein Bros Bagels	Restaurant	San Dieguito
689 - D	Lomas Santa Fe Drive	Jamba Juice	Restaurant	San Dieguito
280	Lomas Santa Fe Drive	Kings' Garden	Restaurant	San Dieguito
917	Lomas Santa Fe Drive	Lomas Santa Fe Cleaners	Dry Cleaning	San Dieguito
1550	Lomas Santa Fe Drive	Lomas Santa Fe Country Club	Golf Course	San Dieguito
124	Lomas Santa Fe Drive	On the Spot Cleaners	Dry Cleaning	San Dieguito
661	Lomas Santa Fe Drive	One Hour Martinizing	Dry Cleaning	San Dieguito
689	Lomas Santa Fe Drive	Panda Express #1029	Restaurant	San Dieguito
945	Lomas Santa Fe Drive	Pizza Nova Solana Beach LLC	Restaurant	San Dieguito
979	Lomas Santa Fe Drive	Samurai Japanese Restaurant	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Solana Beach Fish House	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Solana Donut House	Restaurant	San Dieguito
691	Lomas Santa Fe Drive	Togo's Eatery	Restaurant	San Dieguito
931	Lomas Santa Fe Drive	Vons Companies Inc. #2327, The	Retail	San Dieguito
136	North Cedros Avenue	Bill Smith Automotive	Auto Repair	San Dieguito
146	North Cedros Avenue	CA Auto Tech, Inc. DBA Test-Only Smog	Auto Repair	San Dieguito
128	North Cedros Avenue	D & B Automotive Specialties	Auto Repair	San Dieguito
421	North Highway 101	Clark's Auto Repair and Radiator SVC	Auto Repair	San Dieguito
243	North Highway 101	Java Depot	Restaurant	San Dieguito
435	North Highway 101	Mohawk Car Wash (Parent-CCSB Inc.)	Auto Washing	Carlsbad

369	North Highway 101	Moreland Choppers	Auto Repair	Carlsbad
135	North Highway 101	Pizza Port- Grain to Green	Restaurant	San Dieguito
445	North Highway 101	Roberto's Mexican Food Inc.	Restaurant	Carlsbad
435	North Highway 101	Shine Auto Detailing	Auto Detailer	Carlsbad
355	North Highway 101	Solana Succulents	Nursery	Carlsbad
125	North Highway 101	Station Sushi	Restaurant	San Dieguito
271	North Highway 101	T's Cafe	Restaurant	San Dieguito
221	North Highway 101	Tidewater Tavern Inc.	Restaurant	San Dieguito
225	Plaza Street	Solana Sushi	Restaurant	San Dieguito
235	S Hwy 101	El Camino Rental	Rental Yard	San Dieguito
663	San Rodolfo Drive	Panera Bread Solana Beach #4283	Restaurant	San Dieguito
665	San Rodolfo Drive	Top of the Bagel	Restaurant	San Dieguito
106	Solana Hills Drive	Carls Jr./M and N Foods LLC	Restaurant	San Dieguito
154	Solana Hills Drive	Premiere Cleaners	Dry Cleaning	San Dieguito
143	South Cedros Avenue	Belly Up Tavern/Wild Note Café	Restaurant	San Dieguito
330	South Cedros Avenue	Cedros Gardens, Inc.	Nursery	San Dieguito
507	South Cedros Avenue	R F McKenna Construction Company	Commercial/ Outside Storage Area	San Dieguito
132	South Cedros Avenue	Zinc Café	Restaurant	San Dieguito
731	South Highway 101	Bangkok Bay	Restaurant	San Dieguito
159	South Highway 101	Beach Grass Café	Restaurant	San Dieguito
437	South Highway 101	Beachwalk Cleaners	Cleaners	San Dieguito
437	South Highway 101	California Pizza Kitchen Inc.	Restaurant	San Dieguito

615	South Highway 101	Dynamite Shine	Auto Detailer	San Dieguito
305	South Highway 101	Long Drug Store #593	Retail	San Dieguito
647	South Highway 101	New Paroli Italian Bistro	Restaurant	San Dieguito
315	South Highway 101	Nobu Gourmet Japanese Restaurant	Restaurant	San Dieguito
437	South Highway 101	Pacific Coast Grill	Restaurant	San Dieguito
247	South Highway 101	Rancho Solana Pet Spa	Pet Grooming	San Dieguito
437	South Highway 101	Rubios' Fresh Mexican Grill Inc. #13	Restaurant	San Dieguito
437	South Highway 101	Solana Beach Coffee Company	Restaurant	San Dieguito
731	South Highway 101	Spotless Dry Cleaners	Dry Cleaning	San Dieguito
125	South Highway 101	Waters Fine Foods to Go	Restaurant	San Dieguito
106	South Sierra Avenue	Naked Café	Restaurant	San Dieguito
168	South Solana Hills Drive	Beverage and More	Retail	San Dieguito
136	South Solana Hills Drive	Perfect Pet Salon	Pet Grooming	San Dieguito
126	South Solana Hills Drive	Round Table Pizza	Restaurant	San Dieguito
524	Stevens Avenue	Anne's Café and Deli	Restaurant	San Dieguito
524	Stevens Avenue	Bongiorno's New York Pizzeria	Restaurant	San Dieguito
524	Stevens Avenue	Rudy's Taco Shop ad Market	Restaurant	San Dieguito
1580	Sun Valley Road	Lomas Santa Fe Ex. Golf Course 408	Golf Course	San Dieguito

637	Valley Avenue	Daniel Morgan's Automotive	Auto Repair	San Dieguito
650	Valley Avenue	Don Chuy's Restaurant	Restaurant	San Dieguito
607	Valley Avenue	Fidel's Little Mexico Inc.	Restaurant	San Dieguito
621	Valley Avenue	Tony Jacal's Inc.	Restaurant	San Dieguito
512	Via De la Valle	Del Mar Bagel Cafe	Restaurant	San Dieguito
640	Via de la Valle	Fish Market Restaurant	Restaurant	San Dieguito
514	Via de la Valle	Pamplemousse Grille	Restaurant	San Dieguito
550	Via de la Valle	Red Tracton's Restaurant	Restaurant	San Dieguito
660	Via del la Valle	AM/PM/ Mini-Market #704	Gas Station	San Dieguito
110	West Plaza Street	Solana Beach Do It Yourself Dogwash	Pet Grooming	San Dieguito

The commercial property inventory was utilized to identify potential sources of pollution (high TTWQ), prioritize the businesses and to develop an inspection frequency program, as noted in the City's JURMP.

5.3.2 Pollutant Source Identification

Eight percent (8%) of the City's 2,211 total drainage acres (roughly 177 acres) are zoned for commercial use. Some of the areas within the City zoned for commercial use drain to environmentally sensitive water bodies and 303(d) listed waters (impaired water bodies), as noted in the City's JURMP. Some of the 303(d) listed water bodies have been identified as having *constituents of concern (COC)* or pollutants that are of particular concern to those water bodies. Table 5-3 identifies the 303(d) water bodies and COCs that are impacted by drainage from the City of Solana Beach. There is *no change* to report in the City's source identification of pollution. As reported in last year's Annual Report, based on water quality data analysis of the past few years, Diazinon has been removed from the San Elijo Lagoon COC list.

Table 5-3 303(d) Water Bodies and COCs

303(d) Water Body	Constituent(s) of Concern
San Elijo Lagoon and Ecological Reserve	Coliform, sediment, nutrients
San Dieguito Lagoon (and its tributary, Stevens Creek)	Coliform, TDS
Pacific Ocean	Coliform

Using the inventory list, businesses were classified by types of activities conducted on the property in order to identify potential sources of pollution in accordance with Permit section F.3.c.(2). The Permit specified 25 possible high-priority business categories for each Copermittee. Upon review of the City's business license inventory, the high priority business categories applicable to the City of Solana Beach include automobile servicing and repair; automobile/vehicle washing; retail or wholesale fueling; pest control services; eating and drinking establishments; mobile carpet, drape, or upholstery cleaning; cement mixing or cutting; landscaping; nurseries; and golf courses.

Potential pollutants for each of the ten (10) categories identified above include, but are not limited to the following.

- *Automobile servicing and repair facilities have the potential to generate pollutants such as heavy metals (Cu, Zn, Cr, Ni, Pb), oil, grease, engine and transmission fluids, antifreeze, brake fluids, suspended solids, phosphates, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust, sand and broken glass.*

- *Automobile/vehicle washing facilities have the potential to generate pollutants such as suspended solid(s), pH, oil, grease, phosphates, heavy metals, detergents, engine and transmission fluids, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust and sand.*

- *Retail or wholesale fueling facilities (gas stations) have the potential to generate pollutants such as detergents, oil, grease, engine fluids, suspended solids, phosphates, litter, organic debris, fluids and sediments.*

- *Pest control services have the potential to generate pollutants such as harmful chemicals, pesticides, fertilizers, herbicides, nitrogen salts, and phosphorus and in particular, the chemical "Diazinon."*

- *Eating and drinking establishments have the potential to generate pollutants that occur due to improper waste disposal of oil and grease, improper application of pesticides, litter along sidewalks and parking lots, and sediments from equipment cleaning.*

- *Mobile carpet, drape, or upholstery cleaning businesses have the potential to generate pollutants such as BOD, COD, suspended solids, organic matter, cleaning solutions, animal-related wastes, litter and organic debris along sidewalks and parking lots.*

- *Cement mixing or cutting facilities have the potential to generate pollutants such as suspended solids, oil and grease, heavy metals, hydrocarbons, solvents, and metals*

- *Landscaping and maintenance activities have the potential to generate pollutants such as sediments, oil, grease, organic matter, fertilizers, herbicides, pesticides, nitrogen salts, nitrogen and phosphorus.*

- *Nursery (greenhouse) facilities have the potential to generate pollutants such as sediments, fertilizers, herbicides, pesticides, suspended solids (roof coating), nitrogen salts, phosphorus, oil, grease and organic matter.*

- *Golf courses conduct activities that may produce pollutants associated with landscaping and maintenance activities including litter, BOD, COD, sediment, bacteria/viruses, oil/grease, heavy metals, manure, pesticides, fertilizers and detergents.*

5.3.3 2008 Dry Weather Monitoring Results

Results from the 2008 Dry Weather Monitoring Program (DWMP) were collected and analyzed by the City in September 2008 (but are already outdated at the time of this report). The 2008 program utilized the criteria established by the Permit (and the Copermittee Monitoring subcommittee). The City reviewed the results from the 2008 Dry Weather Monitoring Program looking for the pollutants listed above, and in particular, COCs described in Table 5-3. The results indicated one potential problem area, the bacterial levels at Seascape Sur outfall (which drains to the Pacific Ocean) continued to exceed the action levels established in the Permit and the IDDE investigation continued (see Chapter 12).

The City continues the non-point source investigation (see Chapter 12), and utilized the results to help design its 2009 Dry-Weather Monitoring Program. The results from the 2009 monitoring program will not be available until after this report is submitted to the RWQCB. *As a result of Addendum 2 adopted by the RWQCB in September, 2008, the 2009 Dry-Weather Monitoring results will be submitted in December, 2009.*

5.3.4 Threat to Water Quality Prioritization

The inventory of businesses for the City included identifying those that potentially posed a high threat to water quality (TTWQ) as set forth in the Permit and JURMP. As noted above, the City also categorized its businesses by the potential to generate the pollutants described. A detailed inventory of the high priority commercial businesses was provided in the JURMP.

The City's JURMP identified 77 stationary commercial sites, of which 67 are high priority Threat To Water Quality (TTWQ) facilities. *There are three changes to report in the number of commercial businesses within the City, from the JURMP submitted in March 2008.* The re-inventory process that occurred, as a result of the facility inspections conducted during this reporting period, revealed that the number of stationary facilities dropped from 77 (as reported in the JURMP) to 74. Table 5-4 (below) summarizes the stationary businesses in the City's inventory by the general description.

It is important to note that many commercial businesses change very frequently, especially restaurant facilities. The City will make inventory adjustments as inspections reveal changes are necessary. This is an ongoing procedure that will continue into further reporting periods.

Table 5-4 High Priority TTWQ Commercial Facilities by Type of Business

Type of Business	Number
Animal Services	4
Automobile servicing and repair	6
Automobile/vehicle washing	3
Retail/Grocery Stores	3
Eating and drinking establishments	46
Golf courses	2
Dry Cleaning	5
Iron Works	1
Nurseries	2
Retail or wholesale fueling	2
Total	**74**

5.3.5 Business Community Education Campaign

City staff has implemented an aggressive education campaign for the business community. As stated in previous annual reports, education is conducted during the annual storm water inspections. The City, along with the North County Storm Water Program (the cities of Carlsbad, Encinitas, Escondido, Oceanside, Solana Beach, San Marcos, and Vista) developed two commercial BMP posters. The first is aimed toward automobile repair shops and the second toward restaurants. These posters are distributed by City staff during inspections. The business owners are required to place the posters in a noticeable location for all employees to see. On subsequent follow-up inspections, City staff or contracted inspectors check to see if they comply.

Additional educational/training tools developed to be distributed to the local businesses are the “Green Wrench Guide” and the “What’s Cookin’ Guide” developed by the Regional Outreach Workgroup. These guides are also distributed during site inspections as an extra training tool to help these businesses come into compliance. These guides have room designated in the back for employee to sign after they read the material to show educational compliance.

The City believes that distributing these educational tools directly to the businesses during inspections will have the greatest impact. Not only will we have their undivided attention, but we can also guarantee delivery and track who

has received the informational guides. Therefore, when it comes to compliance issues, we can easily determine who has and has not been informed of the regulations. These education tools will be discussed further in the Educational Component of this Annual Report.

By the time this inspection program was fully implemented, City staff and contracted inspectors found that a majority of business owners were "aware" or had some "basic knowledge" of storm water requirements. The City, along with the other Copermittees in the Carlsbad Watershed, developed a knowledge/awareness rating and included it on all inspection forms. This will help better assess the overall knowledge of the business community in relation to not only other businesses in the city, but in the watershed as well. This is discussed more in the Educational Component.

5.3.6 Pollution Prevention Methods

Because of the City's proximity to the Pacific Ocean, the City has been proactive in its approach to reducing urban runoff, not only during this reporting period, but prior to the implementation of this Permit as well. For example, prior to the implementation of the original JURMP, the City had several pollution prevention methods (PPMs) in place for commercial properties, which continues through to the new JURMP during this reporting period and included, but were not limited to:

- Prohibition of all non-storm water discharges to the City's storm water conveyance system (SBMC 13.10.060).
- Measures to reduce pollutants to the maximum extent practicable (MEP) were required of business owners (SBMC §13.10.090).
- Persons owning or operating a parking lot (or impervious surface) were *required* to "clean those structure thoroughly as is necessary to prevent the discharge of pollutants to the City of Solana Beach storm water conveyance system to the maximum extent practicable, but not less than once prior to each wet season" (SBMC 13.10.090).
- The City maintained by municipal code the authority to inspect business properties for compliance with the provisions of Solana Beach Municipal Code, Chapter 13 (SBMC 13.10.110).
- Required maintenance of commercial property (trash cans covered, litter removal, etc.) and appropriate waste disposal.
- Routine articles in the citywide community newsletter, *Shorelines* to educate the community about pollution prevention (see Chapter 9).

5.3.7 New Pollution Prevention Methods

In the City's JURMP, the above pollution prevention methods were expanded for commercial facilities, depending on the type of activities conducted at each business. Numerous activity-specific BMPs were also developed for each business type identified. Complete tables describing the BMPs in detail are included and presented in the City's new JURMP, submitted to the RWQCB in March, 2008. *There are no changes to report with respect to BMPs designated for existing commercial properties.*

Common Commercial Property BMPs

Many of the BMPs provided to commercial property owners/managers were activity-specific to the type of business conducted on-site. However, there are several BMPs common to all commercial properties, which are described below.

Employee Training: The training of employees on proper business practices to prevent or reduce urban runoff is listed as a BMP for all businesses. Knowledge of pollution prevention methods requires instruction from one person to another, particularly as the requirements are new to many employees and given that employees handle the majority of tasks at a commercial business, staff has explained to proprietors the importance of adequate employee training.

Good housekeeping pollution prevention BMPs are required of most commercial facilities. Good housekeeping includes the proper disposal of waste materials and proper coverage over waste dispensers, dry sweep outdoor areas, keeping the facility in generally good repair and maintained in good operating condition to prevent deterioration of materials.

A *Spill Response Plan* (SRP) is required of most commercial facilities as noted in the JURMP. An effective SRP should prevent on-site hazardous materials from leaving the private commercial property and entering the City's storm drain conveyance system. Commercial property proprietors are being educated about an SRP and are now required during inspections by City staff.

Minimize Use of Water for Washing / Cleaning: The BMPs associated with a reduction in the use of water for washing and cleaning is suggested for most commercial facilities operating within the City. It has been common practice for many years to use power-washing methods to clean the outside of buildings, windows, and out-door eating areas at restaurants. In addition, it has been

common practice by commercial property owners (and their contractors) to hose-down the sidewalks in front of their businesses to collect trash, debris, and landscaping remnants. These types of cleaning procedures use a lot of water and it is likely that the water will run off of the property and into the City streets or storm drain system, bringing with the water a significant amount of pollutants. For that reason, commercial property owners are requested to find new methods of cleaning, reduce the amount of water used, and prevent the runoff from leaving their property.

Various other activity-specific BMPs are required or suggested to commercial property owners and are listed in the City's JURMP.

Other Pollution Prevention Methods Affecting Commercial Properties

Municipal Code and General Plan Amendments

There were no changes to the Municipal Code or General Plan that affect the Industrial and Commercial Section of the Permit.

Brochures

The City worked collaboratively with other North County cities (see Chapter 9, Education Component) to jointly develop brochures in order to provide a consistent message to the community, and in particular, commercial property owners/managers. The brochures were utilized by City staff to inform and educate the community, including commercial businesses. Public works crews, Code Enforcement, Planning and Engineering staff pass out brochures when an educational opportunity presented itself. Staff also visited many businesses and distributed the brochure, "*Only Rain in the Drain"* and spoke to business owners about the need for pollution prevention.

5.3.8 Ensuring Implementation through Commercial Property Inspections

During this reporting period, the City once again decided to contract out the inspection services to ensure that they are being conducted thoroughly and also to further enforce the City's grease management regulations. City staff is stretched very thin with all the new storm water and Fats, Oils and Grease (FOG) requirements, so in order to ensure that the proper time and effort was being utilized on these important inspections, the City contracts out the services. In addition, the City wanted to begin enforcing its grease management regulations to ensure that all required eating establishments had the proper grease management devices installed and were being properly maintained. It is well

documented that the number one cause of sewer spills is grease build-up, so the City is taking a pro-active approach to ensure that grease is being properly managed at all eating establishments.

The City hired Environmental Compliance Inspection Services (ECIS) again this reporting period to conduct the inspections in accordance with the new JURMP. According to the JURMP, the City has 77 stationary facilities, of which 67 are identified as a high "Threat To Water Quality" (TTWQ). The inspection frequency of high priority businesses increased from 50% the first year to 100% this year during this reporting period (as required in the new Permit). The City, through its contractor, inspected all 77 stationary facilities, which is above and beyond the 67 inspections required by the Permit. The commercial inspections addressed all required inspection steps to determine full compliance. The results are described below.

5.3.9 Enforcement

As mentioned above, the City hired ECIS to conduct the facility inspections. However, the City is still responsible for the follow-up enforcement actions, if necessary. The inspection protocol consisted of ECIS conducting an initial inspection and then one follow-up if the site was out of compliance for a minor violation (trash dumpster lid open, training logs incomplete, etc.). If there is a major violation, ECIS would contact the City immediately for proper follow-up actions. If the facility was still out of compliance after the second visit, then ECIS would notify the City and City staff would follow-up from there, taking increased enforcement actions including fines, if necessary. The results are as follows:

First Inspection:

Total Inspections: 77

Facilities in compliance after first inspection: 43

Facilities not in compliance after first inspection: 31

Facilities no longer in business: 3

Second Inspection:

Total Inspections: 31

Facilities in compliance after second inspection: 18

Facilities not in compliance after second inspection: 13

The remaining 13 facilities were still out of compliance after the second inspection and were handed over to the City for follow-up. The majority of violations were all relatively minor infractions consisting of dirty trash enclosures and grease bin areas. The City followed up with meetings with the property owners and managers, and all facilities have since come into compliance. No citations were issued as a result of the inspections.

The complete database of commercial and industrial inspections is available upon request. The City maintains the database and will build on it as the new Permit cycle continues.

5.3.10 Mobile Businesses

The new Permit requires regulation of mobile businesses within each jurisdiction, which is a new requirement. The new Permit states that each Copermittee shall develop and implement a program to reduce the discharge of pollutants from mobile businesses to the Maximum Extent Practicable (MEP). The mobile business program is being addressed on the regional level, and the City is participating in the development of the program. However, the City has always taken a proactive approach in dealing with mobile businesses, especially mobile car detailers and carpet cleaners. The City has issued several citations in the last few years to mobile businesses that do not have the necessary BMPs in place to prevent pollutants from entering the City's MS4. These violations will be described in the IDDE Chapter of this Report (Chapter 7), which will be submitted in December, 2009.

It should be noted that there are *no mobile businesses* currently in City's inventory. The Planning Department has been notified of these new requirements targeted mobile businesses, so if one applies for a business license, Planning staff will notify the Environmental staff. Environmental staff will take a proactive approach to educating the new business on the storm water regulations.

5.3.11 New Activities and Improvements for FY 09/10

The City is confident that the new inspection process for commercial facilities is a significant improvement for this program. The City anticipates continuing to budget for consultant inspection services to focus on storm water and grease management device inspections. In addition, the City will continue to update the commercial facility inventory as new business licenses and inspections reveal changes.

A significant new requirement of the Permit requires the City to develop a mobile business program. As mentioned above, the new Permit requires all Copermittees to develop and implement a program to reduce discharges of pollutants from mobile businesses to the MEP. Since this affects all Copermittees, the region decided to address this on a regional scale. This has become a primary focus and the subject of its own subcommittee, of which the City is involved with. The City will continue to work with the region to develop this program and implement it during the next reporting period.

The City will also look to improve educational materials for commercial facilities, including mobile businesses. The City is committed to working with the other North County Cities (as well as the Regional Outreach Workgroup) to collectively put together educational materials with a consistent message. Additionally, the City will work with the respective Watershed Groups to alter inspection forms or processes if a consensus is met within the group. An example of the benefit of this collaboration was the addition by the member cities in the Carlsbad Watershed Group of two assessment questions at the end of the inspection to gauge the knowledge and/or behaviors of the facility owner/manager. This was included to gain a better understanding of the level of knowledge of the responsible employees and see if their behavior changes over time. Hopefully, this will give the Copermittees a better assessment tool to analyze program strengths and weaknesses.

Another significant improvement to the program that occurred during this reporting period was the addition of a higher level of grease management device inspections. As mentioned in last year's Annual Report, the City decided to contract out inspection services for commercial facilities with the intent to include grease management device inspections as well. The first year (last reporting period) focuses on whether or not a required commercial establishment had a grease management device. During this reporting period, the City increased the focus of the inspections to include whether or not the grease device was the correct size and included the correct connections. The initial inspection was simply to gauge if the necessary commercial facilities had any type of device installed, but during this reporting period, the City increased its efforts to ensure the correct type and size was installed. This is extremely important as simply having a device is not sufficient is it was too small or did not include all the proper connections. This is just another example of the City's proactive approach in preventing sewer spills.

5.3.12 Summary of Commercial Section

The City has successfully updated its JURMP and commercial facility inventory in compliance with the Permit requirements. As a result, the City has identified commercial facilities that pose a high threat to water quality and implemented the new inspection frequencies per its new JURMP. The City has also developed an effective enforcement process and notified all high-priority businesses of required BMPs. For the most part, the businesses in this community have willingly adapted their practices to meet the storm water regulations of the Permit.

The City has successfully updated its JURMP to reflect the new requirements of Permit Order No. 2007-0001. As such, the City has successfully developed a program to comply with all aspects of the new JURMP, and is committed to continually improve on the program in the coming years.

The City's proactive approach of patrolling the City daily and stopping at sites where potential violations may occur before there are discharges has greatly reduced the amount of NOVs and citations issued. The City has discovered that it is much more efficient and worthwhile to put forth the effort to stop a potential violation before it occurs rather than wait and deal with the consequences. So far, this proactive approach has been very successful, as most businesses appreciate City staff working with them, instead of the normal practice of enforcement.

The City has successfully inspected 100% of its commercial businesses and anticipates continuing this procedure for the life of the Permit. The inventories will continue to be updated as new businesses open up and old ones close down, as evidence in the report above. This is a continuous process in which all departments at the City play a key role, and communication is vital.

CHAPTER 6
Residential Component

CHAPTER 6: RESIDENTIAL COMPONENT

6.1 Introduction

In accordance with Permit Section D.3.c, this section of the report describes the City's efforts to prevent or reduce residential discharges of pollutants into the City's MS4 to the MEP and to prevent residential discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include any proposed modifications to the City's JURMP (Section 8.0, Residential Component) including prioritization of residential areas and pollutant source identification. Results from the City's efforts to implement BMPs will also be included. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The City conducted numerous community education discussions, distributed flyers and door-hangers and published articles in the City newsletter. The City developed and implemented a new environmental portal on its website titled "Green Flash" consisting of all environmental programs in the City, for easy access by the public. The City also operated a 24-hour hotline for the community to be able to report any suspected violations or contact City staff. In addition, the City conducted its Household Hazardous Waste (HHW) collection and recycling program, which includes door-to-door services.

6.2 Pollution Prevention Methods

Polluted urban runoff in residential areas occur from activities associated with the following activities: automobile use, maintenance, cleaning, and repair; home and garden care (pesticides, herbicides and fertilizers); disposal of trash, pet waste, and household hazardous waste; outdoor washing activities; landscaping and home maintenance. It is imperative to prevent the pollutants that can be generated by these activities (bacteria, detergents, heavy metals, grease, oil, herbicides and pesticides) from entering the City's MS4 to the maximum extent practical.

6.3 BMP Implementation

The City continued several pollution prevention methods that reduce, prevent or mitigate the harmful pollutants in urban residential runoff. The City continued its HHW collection program, operated a 24-hour hotline for reporting violations, sponsored community events and developed flyers, brochures, newsletter and website articles. In addition, the Copermittees decided to develop regional programs to address the residential requirements of the new Permit.

6.3.1 Hazardous Waste and Used Oil Collection and Recycling

Under the 1989 California Integrated Waste Management Act (AB939), cities are required to provide Household Hazardous Waste (HHW) collection programs to residents in order to limit the volume of HHW (used oil, paint, household cleaners, pesticides, car batteries, automobile waste, etc) that might otherwise end up in a landfill, or worse, illegally dumped. For San Diego County, the HHW program had been funded by a tipping fee until 1997, when the County of San Diego sold the landfill system to private companies.

During the FY 08/09, the City of Solana Beach continued its partnership and the reciprocal use agreements with the cities of Vista, Poway and Escondido to provide permanent facility HHW drop-off service to City residents at a cost of $55 per vehicle. To encourage participation, the entire cost is picked up by the City.

During this reporting period, the permanent facilities were utilized by 89 participants. The total weight of the hazardous materials brought to the permanent facilities was 7,936 pounds. Additionally, the City operates a door-to-door program where, for a small co-payment of $10 per visit, a company will come directly to the resident's house to pick up the Household Hazardous Waste so that residents do not have to drive to Poway, Vista or Escondido. The door-to-door home pickup program was utilized by 209 residents. The total weight of the hazardous materials collected through the home pickup program was 24,887 pounds. The total participation in the HHW program was 298 residents and the total weight of hazardous materials was 32,823 pounds. Included in the door-to-door program is a service offered to senior citizens and homebound residents that provided free of charge, with the City paying for the service. These programs are offered to encourage the proper disposal of hazardous wastes to prevent it from entering and polluting our sensitive waterways. The program also includes the disposal of e-wastes, including TVs, computers, VCRs, fluorescent bulbs, batteries, etc.

The City keeps records of how many people utilized the program throughout the FY 08/09 and a questionnaire is provided to the participants at the time of disposal to acquire useful information such as how they heard of the program and what types of wastes were disposed. Many respondents listed local programs such as the City's newsletter "*Shorelines*" and educational brochures as the source of their knowledge of this program. Other sources include the two local trash haulers (EDCO and Coast Waste), Solana Center for Environmental Innovation, the internet, and basic word of mouth. Obviously, this bodes well for the educational work of City staff and is a good indication that the City's educational program is effective at getting the word out to the community about environmental concerns, water quality, and opportunities to participate as the program continues to grow. Additionally, it shows the beneficial cooperation efforts between the City and its contractors.

The City is a member of the Regional Solid Waste Association (RSWA). As a member, the City participates in a multi-city agreement with EDCO Waste and Recycling Services, Inc. (EDCO). As reported earlier, the agreement resulted in a very successful program for elderly and homebound City residents to dispose of HHW at their door, *at no charge to the residents*. This provides a solution for the two largest obstacles for the elderly and homebound residents, providing home pick-up service at no cost. This has been an extremely effective and popular program throughout the entire community.

This agreement is necessary because the City of Solana Beach does not have the capacity to operate its own HHW facility within its jurisdictional boundaries. Without this RSWA agreement, the residents would have very limited options in dealing with the proper disposal of HHW. This would ultimately lead to the improper disposal of HHW, which would threaten the local waterways and sensitive environment. However, due to the foresight of the City government, the formation and participation in groups such as RSWA lead to increased opportunities for the community to protect the local environment. It also allows the City to subsidize the costs of disposal to assist the residents in properly disposing their HHW. For a small city like Solana Beach, becoming members of larger organizations is imperative for keeping costs down and increasing negotiation power. These programs would not be self sufficient if Solana Beach was not part of a larger organization, as the City and community receive the benefits of "strength in numbers." This has helped keep the costs for such important programs low and participation high.

The City also promotes local HHW collection events by advertising the events on

the City's website and sending out Eblast email alerts to registered community members. These events typically occur at the Solana Center located in Encinitas, but the City values proper disposal of HHW, so these events located outside of the City are still publicized by the City. This is just another convenient way for residents to dispose of their HHW.

Battery Recycling Program

A significant new program that occurred during this reporting period was the implementation of a battery recycling program at the City's public library. The City, in conjunction with the entire region, established a battery recycling program at all public libraries throughout the County, which includes the City's library. Batteries were recently added to the HHW list of products that can longer be disposed of in the normal trash, due to the potential of releasing harmful chemicals into the environment. The region applied for a grant to fund the recycling program, and was awarded money through the HD 15 regional grant through the CIWMB. The program was established in December 2008 and ran through March 2009. During this time frame, the Solana Beach library collected 555 pounds of batteries. This is a great demonstration of the region working together to apply for a grant to make recycling easier and more convenient for the residents. The City will look to continue these types of partnerships to bring worthwhile programs to the community.

Recycling

As noted in the Introduction of this report, the City is a proactive agency working to improve the local environment. The City, with assistance from the non-profit environmental group Solana Center (formerly known as Solana Recyclers), was the first city in the county to initiate a curbside recycling program.

Assembly Bill 939 (AB 939) requires cities to divert at least 50% of their total solid waste away from landfills, and the best way to accomplish this is through recycling. The percentage of waste that the community of Solana Beach recycled in 2007 (the latest known total as of this reporting period) is 62%. This shows that the City's programs are working and the awareness of the residents is very high, as many of the cities in the region failed to reach 50%. The process of writing the 2008 AB939 report is underway, but not completed before this report was submitted. These numbers will be included in next year's report.

One significant recent modification to the City's solid waste and recycling collection occurred in November, 2006. The City participated in a pilot study to

determine the feasibility of transitioning from manual trash and recycling collection to automated collection. Studies have shown that automated collection drastically improves recycling rates by providing more efficient "single stream commingled recycling." The large-scale transition resulted in a 20% increase in residential recycling (or approximately 1,161 tons) over the two year period of implementation, which is a huge success.

In addition, the residents received new trash and recycling containers that are more durable and have lids attached. This has drastically cut down on the amount of loose trash that frequently escaped the old resident supplied containers that were much lighter and easier to tip over, and frequently had no lids. This allowed for the animals and birds to get into the cans and spread trash around the neighborhoods, which can enter the City's MS4 system. This has been a significant load reduction BMP, as City Public Works Crews have reported less loose trash around the community.

6.3.2 Annual Bulky Item Clean-up Day and Coastal Clean-Up Day

Each October, the City hosts an Annual Bulky Item Clean-up day. The City's waste hauler provides roll-off containers for the collection of large appliances, yard waste, excess trash and scrap metal. Residents only need to bring their large bulky items and excess trash to La Colonia Community Center to drop off anything that they have, to save them a trip to the landfill, and it's *free of charge*. Additionally, Solana Beach residents can call the City's trash hauler to set up an appointment for *free curbside pick-up* and disposal of up to three bulky items up to three weeks prior to the event. It is well documented that the easier and more efficient it is for people to recycle or dispose of large items the more often they will do it. By offering this convenient, local and free of charge event, the less likely residents will dispose of their large items illegally, and keeping them out of our local waterways. The Bulky Item Clean-up Day held in October 2008 resulted in 26.7 tons of trash and debris being collected and properly disposed off, preventing it from ending up in the City's MS4.

Each September, the City of Solana Beach participates in the annual Coastal Clean-Up Day sponsored by the California Coastal Commission and I Love A Clean San Diego. The City hosted two sites again this year, one at Fletcher Cove and one in the San Elijo Lagoon, where residents came and spent the morning beautifying the local community.

6.3.3 24-hour Hotline

To assist residents in obtaining information, reporting suspected storm water violations or to report illegal dumping, the City operates a 24-hour "storm water hotline" during this reporting period. The hotline (858-720-4424) is available 24 hours a day, seven days a week, 365 days a year. The hotline is linked directly to the voice mail of the City's Environmental Programs Manager to increase efficiency and ensure prompt responses. This way, calls can be immediately fielded and handled in the appropriate manner.

6.3.4 Pet Waste Bag Dispensers

The City installed and maintains Pet Waste Bag Dispensers to reduce the potential of pollution stemming from residents (and visitors) not collecting waste from their pets while walking. This was a measure added to hopefully help the high levels of fecal coliform detected at the Seascape Outfall revealed during wet and dry weather monitoring. The City has posted dispensers and signs to encourage their use. The program appears to be working very well because, during this reporting period, approximately 72,000 pet waste bags (up from 67,500 in FY 07/08, 37,800 in FY 06/07, 30,000 in FY 05/06 and 26,400 in FY 04/05) were utilized by the community.

6.3.5 Education and Outreach

The City's entire education and outreach program is provided in Chapter 8 of this report. Activities associated with the educating of residents are addressed in this section, which may also be repeated in Chapter 8.

Shorelines articles:

The *Shorelines* is the City's Newsletter and Recreation Guide for community information. The newsletter is now distributed four times a year (Spring, Summer, Fall and Winter) to each resident and business within the City (up from twice annually in the past). It is one of the best methods to get information to the public about a variety of issues, the environment being a key component. The *Shorelines* newsletter always contains environmental articles and the community has come to rely on this publication as a means of keeping up with City government. This has proven to be an ideal community educational effort.

In the Fall 2008 issue (Appendix F), the City published the following environmental education and storm water activities:

- Green Building is Coming to Your Town
- Environmental Sustainability Update
- Solana Beach Annual Bulky Item Clean-Up Day
- Annual Coastal Clean-Up Day
- Water Conservation
- Don't Sp"OIL" Our Water!
- Free Watershed Presentations
- City Initiates Plastic Bag Recycling Program

In the Winter 2008/09 issue (Appendix G), the City published the following articles relating to environmental education and storm water activities:

- Storm Water (NPDES) Rainy Season Construction Reminders
- City's New "Green Flash" Website
- Save Water Now!!! – Water Conservation
- "Our Lagoon, Our Legacy."
- Solana Center Celebrates 25 Years
- FREE Watershed Presentations
- Holiday Tree Recycling/Collection Program
- "Our Earth – Our Chance" 2009 Arts Alive Banners

In the Spring 2009 issue (Appendix H), the City published the following articles relating to environmental education and storm water activities:

- Solana Beach Commits to Sustainability
- Green Building is Here!
- Green Tips and Recycling Truths
- Free Walks and Programs for Kids at San Elijo Lagoon

In the Summer 2009 issue (Appendix D), the City published the following articles relating to environmental education and storm water activities:

- Things to Remember Before Remodeling/Construction
- Storm Water Hotline
- Green Building is Here!
- Look What's Happening at the San Elijo Lagoon Conservancy
- How to Dispose of Household Hazardous Waste Safely and Easily
- Solana Center for Environmental Innovation – 25 Years of Positive Change
- Plastic Bag Recycling Program

Brochures and Door hangers

The City collaborated with neighboring Copermittees (the cities of Del Mar, Encinitas, Oceanside, Vista, San Marcos, Escondido and Carlsbad) to develop several educational brochures. One particular brochure is referred to as the "door-hanger." The door-hanger is an excellent tool to inform groups or individual residents about pollutants that were found in their area, but may or may not have been contributed by them specifically. The door-hanger has a place for staff to leave their business card, indicate the types of pollution found (from landscaping to pet waste) and lists various specific BMPs for eliminating street and gutter debris in their area. Staff hopes that by placing the brochures around the entire neighborhood, residents will report to the City where the

discharge came from or alter their behavior to prevent the discharge from occurring again.

In addition, the City collaborated with the other North County cities and created a brochure "*Only Rain in the Drain*," which is distributed at local community events and to visitors at City Hall, the Fire Department and Community Center. The brochure is also available at many community businesses. The brochure reviews Best Management Practices for residents and the need to prevent or mitigate pollution to the best extent practical. The brochure also provides a consistent message because all cities in the North County use it.

Staff distributed the door hangers and brochures to residents and business owners throughout the community. These educational materials have been used by Public Works staff, Code Enforcement Officers, and others and have been found to be an informative and effective tool. This includes those given out to neighborhoods during IC/ID and source tracking investigations, those given out individually during routine rounds around the City and any community fairs (Fiesta Del Sol) or regional workshops/events (about 2 a week on average for all activities, totaling approximately 104 distributed).

School Presentations

The Solana Center conducts school presentations for the City to local schools within the City's jurisdiction. As part of both trash haulers' contracts (EDCO and Waste Management) with the City, they are required to provide funds for public outreach and education. Both haulers have chosen to contract out this work to Solana Center. Therefore, Solana Center provides school presentations regarding storm water issues to the local schools. These presentations include discussions about the importance of preventing pollution from entering the streets, gutters and storm drains. The Enviroscape model is also used during these presentations.

Additionally, the City's Park and Recreation staff conducts a summer "ecology camp" for local children to educate them on various environmental issues, including storm water and recycling. The children go on field trips and have classroom discussions. It is a very interactive classroom setting where the children are encouraged to participate and really engage in the various activities. The ecology camp is an annual program that will be utilized to educate the children in all environmental issues.

The City's Marine Safety Department also conducts school presentations that focus on ocean awareness/safety as well as being environmentally aware and responsible. The presentations focus on water quality and the benefits of protecting this valuable asset.

These are reported on in further detail in Chapter 8, Education Component.

Tile Stenciling

All storm drain catch basins in the City currently have tile markers already installed. The construction standard described in the City's JURMP, with respect to the requirement that all curb inlets have a tile marker permanently affixed on the face side, continues to be enforced. All new development/construction projects are required to install tile markers on all new curb inlets. City staff also document broken or missing tiles when detected in the field and report back to the Environmental Specialist to install.

Web site

As mentioned previously in this Report, the City recently unveiled a significant upgrade to the environmental section of its website. Previously, the environmental programs were lumped into the Engineering Department page, which was somewhat difficult to locate. Now, the City has a separate page that has its own icon on the homepage. This shows the type of commitment that the City, and the community, places on the environment. The City has received many compliments regarding the website, and was even recognized by the League of Woman Voter's, North Coast San Diego County for the "Green Flash" section.

6.4 Threat to Water Quality Prioritization

During this reporting period, the City re-evaluated the drainage areas to identify those areas that potentially posed a high threat to water quality as set forth in the Permit section D.3.c(1). The areas are defined in Section 8.2.1 of the City's new JURMP.

There are *no changes* to report in the City's prioritization of high-priority residential areas from those submitted to the RWQCB in the City's new JURMP (submitted March, 2008).

6.5 Implementation of BMPs

As noted in Section 6.1 (Pollution Prevention), the City has implemented various methods to prevent pollution to the Maximum Extent Practical (MEP) standard from entering the City's MS4. The City indicated in its revised JURMP the designation of several BMPs for the High Priority Residential Areas and Activities (see JURMP, Appendix B).

One of the most significant differences between the City and other local agencies, is that runoff from residential automobile washing *is strictly enforced* by Solana Beach Code Enforcement Officials. City staff is often dispatched to reports of people washing their cars, and City procedures allow for several warnings before a citation is given, except in the case of mobile car-washing businesses. In that instance, mobile car detailers are informed to cease their activity and immediately clean up the resulting discharge. Mobile detailers are cited for failure to comply if they refuse to discontinue or remedy the discharge. City staff records all violators and if they encounter them violating the Permit again within the City, they are immediately given an administration citation and fine.

The City also actively enforces minimum BMPs for the following activities:

- Motor Vehicle or Boat Repair and Maintenance
- Motor Vehicle Parking
- Home and Garden Care Activities and Product Use
- Home Care and Maintenance
- Manure and Pet Waste Management
- Private Sewer Laterals and On-Site Wastewater Systems

If City staff witnesses a violation of any of the provisions above, the Administrative Fine Process will be initiated until full compliance is achieved.

6.6 Enforcement Actions

Violations of the storm water Permit and any necessary follow-up actions taken

by the City are described in Chapter 7.0, Illicit Discharge Detection and Elimination (IC/ID) Component, which will be submitted in December, 2009. Since violations in the residential sector often times are discovered during an IDDE investigation, it is appropriate place to discuss the actions.

6.7 New Activities and Improvement for FY 09/10

The City is actively developing and implementing the activities described in the Residential Component of the City's new JURMP. The focus will continue to be education through the new Green Flash website, brochures, flyers, public announcements, community fairs and one-on-one contact.

The new Permit adopted in January 2007 contains increased requirements for the residential sector. This is one key area that the Permit focuses on; so new programs will have to be developed by the City to address these requirements. There is also a focus on watershed and regional programs to address the residential sector, so the City anticipates working with the other Copermittees to develop these programs cooperatively to convey a consistent message. The City will be working to develop these programs for implementation in FY 09/10. These programs will be discussed in more detail in the Unified Urban Runoff Mitigation Program

6.9 Summary

The City has been successful at implementing the Residential Component of the JURMP including among other things:

- Provision of public pet waste bag dispensers (approximately 72,000 bags were utilized by the community during this year).
- Collaborating with neighboring jurisdictions (NCSWP) and the regional Copermittees to develop several brochures, which have been distributed at local events, to City Hall visitors, and throughout the community.
- Collaborating with all Copermittees to develop regional educational programs as required by the new Permit Order No. 2007-0001.
- Using and upgrading the City's website to post informative information about the City's storm water programs.
- Operating a 24-hour, 7 day a week storm water hotline that residents can report any storm water violations.
- Operating a community-wide used oil and hazardous waste collection program that offers door-to-door service for all residents. This program

has been a huge success as 298 residents participated and properly disposed of 32,823 pounds of hazardous waste that might have otherwise ended up polluting the local environment.

- Conducted the Annual Bulky Item Pick-Up Day which resulted in 26.7 tons of waste collected and prevented from entering the City's MS4.
- Implementing a new community-wide curbside single stream commingled recycling program for all residents.
- Providing opportunities for local school presentations regarding storm water issues.
- Implemented new battery recycling program at local Solana Beach library resulting in 555 pounds of batteries recycled from December 2008 to March 2009.

CHAPTER 7

Illicit Discharge Detection and Elimination Component

CHAPTER 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

This is a placeholder for Chapter 7, which as a result of Addendum No. 2 adopted by the Regional Water Quality Control Board on September 10, 2008, extended the reporting component of this Chapter to December 15, 2009.

CHAPTER 8
Education Component

CHAPTER 8: EDUCATION COMPONENT

8.1 Introduction

In accordance with Permit Section D.5, this section of the report describes the City's educational program that is intended to use all media as appropriate to measurably increase the knowledge of the target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience and to measurably change the behavior of target communities and thereby reduce pollutant releases to the MS4 and the environment.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. In addition, this section of the Report will include the City's planned educational efforts for the following fiscal year.

During this reporting period, the City continued implementation of the comprehensive Education Component of the JURMP. The activities were expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City. The City developed the program based on the requirements of the Permit and continued implementation during this reporting period.

The City began implementing programs for the new requirements of the Permit. These programs are being developed on a watershed and regional level, and the City is an active participant in these workgroups. A major focus of the new Permit is on developing a regional education program, with the idea of forming a "brand" for the region where people can identify with the program as a whole. By developing and implementing a regional program, the messages will be consistent and easier to identify with. This will be further explained in the Regional URMP submitted by the County of San Diego.

During this reporting period, the cities of Carlsbad, Del Mar, Oceanside, Escondido, Vista, San Marcos, Encinitas and Solana Beach continued the North County Education Group that was formed to develop strategies and programs to provide consistent messages to the communities of San Diego North County. This basis for this group is to have a more effective educational program than would be if the cities offered divergent messages. The group consists of storm

water program managers, assistants and staff members who all bring individual talents, experience and interests to the program. While this watershed group will continue developing educational materials and activities, it will also work with the regional group as mentioned above. This group will ensure that the Copermittees represented will participate with the "regional" message and program as required by the Permit.

As a collaborative, the group is able to obtain lower cost for educational tools (such as brochures, flyers, handouts, small tokens [pens, keys, etc.), which provides a financial benefit to the agencies and thus, the community.

The North County Education Group has continued meeting through this reporting period, in which the City has been an active participant (for a summary of meeting dates, jurisdictions in attendance, and topics discussed, please reference the Carlsbad WURMP Annual Report).

The group has been able to assist each other in developing a consistent message incorporating the interests and concerns of each agency. When brochures and handouts have been created, flexibility among the agencies was required.

The collective decision-making process has also generated cooperative working relationships among the agencies, which was extremely beneficial when the development of the Watershed Urban Runoff Management Program(s) began and in working together to complete various storm-water-related tasks. The community also benefits from the consistent "one message" approach rather than six or seven different rules and regulations.

8.2 Pollution Prevention through Education – Jurisdictional Activities

The City's storm water program is comprehensive. Not only are there many components to administer jurisdictionally, there are many different programs going on simultaneously throughout the County. The City participates in jurisdictional, watershed and regional activities. Each of these has separate and distinct educational components; however the challenge is to ensure that the same general message is being spread throughout the County, with individual messages being developed by the Watershed groups and Jurisdictions based on the Constituents of Concern (COCs) for each watershed. The watershed activities have been recently defined and are in the early stages of implementation; since this is a jurisdictional report, there will not be much

discussion about those in this Annual Report (For more detailed information on WURMP related activities, please see the WURMP Annual Reports for Carlsbad and San Dieguito). The regional activities have been primarily described in the Copermittee *Unified Urban Runoff Management Program Annual Report for Fiscal Year 2008-09,* which has been submitted by the County and incorporated herein by reference. However, some of the activities will be summarized in this section of the report (see Regional Activities).

8.2.1 Staff Training

One of the most important aspects of the City's educational program is to educate its staff members. This turns out to be a relatively easy task for this City in that there are only about 70 full time staff members. All staff members are required to attend an all-hands citywide staff meeting each month. Staff determined that this would be a good opportunity for training, and periodically conducts trainings at these meetings. However, the staff trainings were modified slightly during this reporting period. Staff determined that they would start conducting individual training sessions with various departments. These department specific trainings would allow Staff to get into more of the Permit details according to the particular department and their respective duties. Trainings at the citywide staff meetings had to be general in detail since there was staff for all different departments.

For example, at the department specific trainings, Staff could review in detail the Low Impact Development (LID), Hydromodification (HMP) and SUSMP requirements with Planning Department staff. This could not occur at the level of detail necessary for comprehension at the citywide meeting. This also occurred with the Public Works Department and a comprehensive training regarding sewer spill prevention, spill response and required reporting.

One particular example of a department specific training that occurred was a SUSMP training that was conducted at a City Engineer's Luncheon. The City's Engineering staff all attended the meeting on December 3, 2008 where a consultant presented "An Overview of the New Model SUSMP Process and Approach to Planning, Design, Construction, Operation, and Maintenance Leading to Compliance with Water Quality Regulations in the San Diego Region, Including Low Impact Development (LID), Stormwater Treatment, and Hydromodification Standards." This was a great opportunity for the Engineering staff to be educated by an expert in the field, and also provided them with an opportunity to asks questions and discuss issues with their peers.

The City believes that all current Staff is adequately aware of the storm water issues, and all new staff will be trained as appropriate upon arrival. However, due to the constantly evolving storm water field, the City will continue the periodic educational trainings at future City all-hands staff meetings and department specific trainings as appropriate.

8.2.2 Annual Beach Cleanup Days

The City of Solana Beach, in cooperation with I Love a Clean San Diego County, Inc. coordinates an annual "Coastal Cleanup Day". These events are volunteer beach and lagoon clean ups. The City had another successful event hosting two sites within the City, one at Fletcher Cove Park and the other in the San Elijo Lagoon.

8.2.3 Storm Drain Tile Marker Installation

The City inventoried all of its storm drains (inlets and catch basins) and has the locations in GIS format. The inventory list includes addresses, cross streets and a GIS bit-map. Stenciled tiles are affixed to each storm drain inlet or catch basin location, which reads, *"No Dumping! This drains to the ocean."* The City now requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the stenciled tile. An extra supply of tile markers is kept at the City's Public Works Yard for all City projects as well as for private contractors to install on their projects to provide a consistent message throughout the City.

8.2.4 Local Community Events

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting to the participants no dumping or littering and to keep our beaches clean. The City also coordinates with Solana Center with their booth promoting proper disposal of HHW and recycling (oil included) in the City. The City passes out "*Only Rain in the Drain*" brochures, community surveys, and displays the watershed poster, "We All Live in a Watershed…" Staff discusses with residents the importance of protecting the water resources and educated them on the new storm water regulations. This reporting year's Fiesta Del Sol occurred on June 6 and 7, 2009. There were approximately 70,000 visitors during this year's event, and City staff distributed storm water brochures and informational flyers to those who visited the City's booth.

The City's Park and Recreation Commission also put on the fourth annual Beach

Blanket Movie Night on 8/23/2008 (Appendix R). This was the fourth year this community event was held and was once again a huge success. The City worked closely with the event organizers and provided recycling containers, environmental educational material pertaining to storm water issues, and used oil recycling information. The City also shared a booth with Solana Center to provide environmental education to the attendees, utilizing the Enviroscape model. It is important to note that this was the only booth allowed by the Parks and Recreation Commission because they want to promote a relaxed, friendly environment. However, because the environment is such a popular topic in Solana Beach, they allowed City staff to have a booth to promote the environmental programs. The event was very well attended and a huge success, and will continue to occur annually. This is a great way to promote environmental awareness at a free event to the community.

The City also continued to distribute the immensely popular and effective doggie-bag dispensers that attach onto the pet leash. These dispensers had the City logo and the message, "The City of Solana Beach Reminds You To Please Pick Up After Your Pets." The City wanted to again emphasize the importance of eliminating pet waste from the MS4, as it can be a major contributor of harmful bacteria. These dispensers were very well received and the City plans on distributing them at every community event.

8.2.5 School Programs

The Solana Center is a local organization that writes articles for the City Newsletter (*Shorelines*) and presents educational programs in the City schools regarding storm drain pollution using the watershed model (Enviroscape) and fun handouts and items for the kids. Solana Center is paid through the City's solid waste contract, as well as a HHW grant, to provide educational opportunities to the community. City staff is in regular contact with the Solana Center and is confident that their program(s) are educational and informative for the children. The presentations are provided free to the local schools, and the information provided is invaluable.

The following table shows what school/community education has taken place during this reporting period:

School / Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
July 16-20, 2007	Ecology and our Environment	25	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)	Solana Beach
July 30-August 3, 2007	Rainforest Exploration	25	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)	Solana Beach
June 23-27, 2008	Ecology and Our Environment	20	Grade 1-Jr High	Fletcher Cove Community Center (Field Trips Included)	Solana Beach
April 16, 2008	Storm Water Watershed Presentations	48	Grade 1-Jr High	Santa Fe Montessori School	Solana Beach
April 21, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	Solana Beach Girl Scout Troup	Solana Beach
May 5, 2008	Storm Water Watershed Presentations	17	Grade 1-Jr High	La Colonia Community Center	Solana Beach
May 12, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	Solana Beach Boys and Girls Club	Solana Beach
May 19, 2008	Storm Water Watershed Presentations	15	Grade 1-Jr High	La Colonia Community Center	Solana Beach

Another new educational opportunity presented itself during this reporting period. The City wanted to expand its educational program and reach a previously untouched sector in the schools, the Parent Teachers Association (PTA). The City set up a presentation titled, “Go Green: Why You Should Care & What You Can Do To Help Our Planet” (Appendix Q). The presentation included all aspects of environmental sustainability, including storm water pollution prevention. The presentation was given to approximately 25 adults.

8.2.6 Marine Safety Department Educational Presentations

The City of Solana Beach Marine Safety Department also conducts presentations at local schools. The lifeguards maintain an outreach program to the local schools to educate the students on ocean safety and awareness as well as environmental education. This is a natural fit, seeing how the lifeguards provide a safe environment for the community to enjoy the valuable coastal resource, and they want to ensure that the community becomes environmental stewards to help protect this resource. The presentations focused on water quality, trash and litter control and the ecosystem as a whole. These presentations have been very

well received by the schools and the lifeguards plan to continue them into the future.

Marine Safety Department Education

Date of Event	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
March 12, 2009	Ocean Awareness/Safety and Environmental Stewardship	30	Grade 1 – Jr High	Marine Safety Department	Solana Beach
March 18, 2009	Ocean Awareness/Safety and Environmental Stewardship	40	Grade 1 – Jr High	Marine Safety Department	Solana Beach
June 9, 2009	Ocean Awareness/Safety and Environmental Stewardship	62	Grade 1 – Jr High	Marine Safety Department	Solana Beach
June 24, 2009	Ocean Awareness/Safety and Environmental Stewardship	30	Grade 1 – Jr High	Marine Safety Department	Solana Beach
June 25, 2009	Ocean Awareness/Safety and Environmental Stewardship	40	Grade 1 – Jr High	Marine Safety Department	Solana Beach
July 23,	Ocean Awareness/Safety	30	Grade 1 –	Marine Safety	Solana

2009	and Environmental Stewardship		Jr High	Department	Beach

8.2.7 Kids Korps Educational Presentations

During this reporting period, the City entered into a valuable relationship with a local non-profit youth volunteer organization called Kids Korps. Kids Korps is a national recognized youth organization located right here in Solana Beach. Kids Korps engages young people, age 5 through 18, in community service with the mission to instill in America's youth the spirit of giving while providing valuable education in leadership and responsibility. The City and Kids Korps have partnered to conduct park cleanups and educational presentations. The City of Solana Beach sponsors disadvantaged, underserved local children for a week during the summer where they can attend the Kids Korps camp for free, and staff takes this opportunity educate the children on storm water pollution. The Staff presentation was so well received that Kids Korps invited back City staff to present at three different camps, reaching over 60 children. This activity will continue in the upcoming years with the goal to expand the cooperation with increased educational opportunities and cleanup events.

The City and Kids Korps joined to have a large-scale cleanup at La Colonia Park on August 14th, 2008. This event had City staff walk with about 60 children to pick up litter in the park and surrounding neighborhoods. Staff also gave a presentation to about 30 children before the cleanup to stress the importance of littering and preventing storm water pollution. This was extremely successful and will continue to be an annual event.

8.2.8 Targeted Education for Underserved Community

The City has a comprehensive and successful program established to reach out to the underserved community in Solana Beach. City staff takes these opportunities to educate this sector of the community on many items, including the storm water and pollution prevention programs. The various programs are described in more detail below.

The City has a successful Junior Lifeguard Program that teaches young children about safe ocean practices, lifeguard techniques and environmental stewardship. Children come from all around the City to participate in this summer program,

and space is limited. However, through a unique partnership between the City and a private company called ReRip, about ten spaces in the program are reserved for the underserved community that may not otherwise be able to afford it. The City and ReRip cosponsor an annual environmental event in which a fundraiser is conducted and the proceeds go toward giving ten children a full ride scholarship to the Junior Lifeguard Program. These children participate in all the activities and learn all about pollution prevention and storm water regulations. This is a unique partnership that the City is extremely proud of, and the community has rallied around it.

Another successful program that benefits the underserved community is the City's Summer Day Camp program. The City offers half-scholarships to the underserved community that would not be able to afford to send their kids to the camps for the full price. These camps have environmental themes, including pollution prevention and storm water education incorporated into the curriculum. So this has been a successful outreach attempt to the underserved community.

As mentioned above, the City's relationship with Kids Korps is another opportunity to reach the underserved community. The City sponsors one week of Kids Korps summer camp for underserved children in the area, and the program has been a huge success. City staff gives presentations and educate the children on storm water pollution prevention, and also brings in the Solana Center to give the Enviroscape presentation. The City anticipates continuing this successful relationship in the years to come.

8.2.9 Water Conservation

The City does not provide drinking water to the community of Solana Beach. That service is provided by a private company, the Santa Fe Irrigation District (SFID). The City and SFID have a great working relationship which has benefitted the community of Solana Beach in many ways.

Due to ongoing drought conditions and increased environmental regulations, water conservation has been a major focus during this reporting period. Although drinking water is a completely separate entity than storm water, they are linked in many important ways. Primarily, over-irrigation of potable water is often the transport mechanism for many pollutants during dry weather. Over-irrigation carries pollutants such as pesticides, herbicides, fertilizers, bacteria, trash, oil and grease and many other pollutants into the MS4 system. Water conservation activities can reduce the transport mechanisms thereby reducing the amount of

pollutants that make it into the City's MS4 system. The City recognizes that promoting water conservation not only helps during times of drought conditions, but also helps combat storm water pollution.

The City and SFID have a regularly scheduled monthly meeting to discuss all things water related. These meetings have turned into valuable information sharing sessions where Staff from both agencies can discuss upcoming projects and report observations from the field. The City and SFID have joined together on many educational seminars and workshops for the community, both residential and commercial. The following is a list of water conservation related presentations and workshops that occurred during this reporting period.

California Friendly Landscape Classes:

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
October 10, 2008	California Friendly Landscape Training	22	Residents and Businesses	Fletcher Cove Community Center
March 4, 2009	California Friendly Landscape Training	35	Landscape Professionals	Fletcher Cove Community Center
March 7, 2009	California Friendly Landscape Training	33	Residents and Businesses	Fletcher Cove Community Center
March 11, 2009	California Friendly Landscape Training	33	Landscape Professionals	Fletcher Cove Community Center
March 18, 2009	California Friendly Landscape Training	33	Landscape Professionals	Fletcher Cove Community Center
March 25, 2009	California Friendly Landscape Training	33	Landscape Professionals	Fletcher Cove Community Center
April 1, 2009	California Friendly Landscape Training	33	Landscape Professionals	Fletcher Cove Community Center

Community Workshops/Events:

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
November 7, 2008	Drought Overview	25	Civic and Historical Society	Fletcher Cove Community Center
February 5, 2009	Water Supply, Water Ambassador Program	50	SHAG HOA Association	La Colonia Community Center
February 27, 2009	Solana Beach Green Building Fair	200	Residents and Businesses	Fletcher Cove Park
May 16, 2009	California Friendly Landscape Contest	District-Wide Event	Solana Beach and Rancho Santa Fe	Contest Winner was a Solana Beach Resident

Classroom Presentations:

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
February 9, 2009	Splash Lab	30	Santa Fe Christian School – 5th Grade	Santa Fe Christian School
August 2, 2009	Watersheds and You	50	Unitarian Church – K-6th Grade	Unitarian Church
August 9, 2009	Watersheds and You	50	Unitarian Church – K-6th Grade	Unitarian Church

8.2.10 Educational Brochures

The City has participated with the North County Educational Group to develop many effective educational materials. The handouts and brochures are included in the Carlsbad WURMP Annual Report.

"*Only Rain in the Drain*!" describes the importance of protecting the valuable water resources and the problems that can be caused by storm water pollution. It also provides a list of BMPs to help prevent pollution. The brochure also

provides valuable resource numbers: *a direct number for each jurisdiction* is provided, as well as the County's Storm water hotline. The brochure is available at City Hall, the City Fire Department and Marine Safety, each staff member was provided a brochure and brochures were personally distributed to local businesses. The City's Public Works Crew and Code Enforcement Officers deliver these every day to the community when small violations are observed. Since these staff members are out in the community every day, this has proven to be an effective means of public education. Larger infractions are reported to the Engineering Department or Code Enforcement Department for follow-up.

The door-hanger *"Help!"* provides a method for staff members to indicate to residents that pollutants were found near their home. The brochure is in English and Spanish, which is helpful to residents. It is typically hung on a resident's door, provides a place for business cards and under the cards, (should they become misplaced) the brochure lists a contact number for *each jurisdiction*. The back of the brochure provides BMPs for vehicle maintenance, car washing, hazardous materials handling, recycling, litter, and sidewalk/driveway debris.

To assist the public in directing their calls for complaints and service, the City operated a 24-hour storm water hotline telephone recording (858) 720-4424. The number is connected directly to the Environmental Program Manager's voice mail (so it can still remain anonymous, if necessary), so that violations can be investigated immediately and the proper action taken *while the violation is occurring*. The City informs the public about the hotline number at City Council meetings, on flyers and handouts, and on business cards and on brochures.

8.2.11 City Newsletter (Shorelines)

Chapter 6 contains all the information regarding the *Shorelines* newsletter and gives a brief description of the articles included during this reporting period. The articles are also included in Appendices D, F, G and H.

The City implemented a new educational/outreach opportunity during this reporting period. Every year, the Solana Beach School District distributes a district-wide directory to all families with children that attend school in the district. The City bought advertising space in the directory to promote environmental sustainability. This was a very successful outreach opportunity that reached a significant portion of the community.

8.2.12 Web Site

The recent upgrade of the environmental portion of the City's website has been explained previously in this Report. The new "Green Flash" has been extremely helpful in getting the word out in an effective and easy to find location. This has been a huge success, as the website is updated constantly with new and pertinent information.

8.2.13 Business Community

The City has initiated several methods to educate the business community about storm water pollution prevention.

First, the City prepared a letter explaining BMPs, storm water regulations, and business community responsibilities. The letter has been sent to each high-priority business in the City, along with the appropriate business-type BMPs. During inspections, Staff checks to see that the BMP list and/or the BMP poster are posted in a highly visible area. If not, then Staff will reissue the list and require it to be posted at all times. Businesses are subject to enforcement if the list is not posted during re-inspection.

Second, the City conducts annual commercial compliance inspections (see Commercial Component). Through the inspections, the City's inspection consultant educates the business owners about the requirements of the Permit and the City's various storm water programs. Given the City's close proximity to the Pacific Ocean and sensitive lagoons to the north and south, inspectors are able to show a direct link between commercial activities and impact on water quality. Next, after the initial and follow up inspections are conducted by the consultant, City staff conducts follow-up enforcement inspections on those businesses still determined to be out of compliance, to ensure that the businesses are using the proper Best Management Practices to protect the City's waterways. These follow-up inspections are often conducted through scheduled meetings with the property owner and/or manager, to ensure the decision makers were present and can be held accountable. Often times, the initial inspections were conducted without prior warning, and various staff members at the facility were held responsible. Just to ensure that the right people were informed of the infractions/violations, follow-up inspections were pre-scheduled.

During this reporting period, *all* businesses that were inspected were deemed in compliance without any citations issued. As reported earlier, not all businesses were in compliance during the first inspection. Some businesses had minor

issues (trash lids not closed, grease barrels not covered, etc.), however, the enforcement follow-up inspections revealed that the minor infractions had been corrected and no fines were issued.

As reported in last year's Annual Report, there was one business complex that was going to be monitored by City staff throughout the year due to the trash situation. The businesses were out of compliance in this complex due to the trash enclosures being a mess with overflowing debris. The property management company was not providing adequate solid waste service, so the trash dumpsters were filling up faster than they were being serviced. The City, and its inspection consultant, discussed the situation with the property management and explained the potential penalties if this were not taken care of. The City is happy to report that the property management company increased the service and there is no longer a problem at this location. City staff has conducted spot checks and this complex was inspected again this year and it has remained in compliance. Finally, the staff members have visited various businesses and left brochures, including door hangers, when pollutants have been found. In addition, staff members, including Code Enforcement Officers target educational messages (letters, visits, etc.,) to businesses when pollution is found in their area. Staff has been proactive in their approach to educating the business community.

8.2.14 Special Events Permit

As reported in previous Annual Reports, the City adopted a Special Events Permit that is required for group events (Triathlons, Block Parties, Birthday Parties, etc.) of over 25 people on public property. A storm water section is included in the Permit, with requirements regarding the event and adhering to all storm water regulations. This has proven to be a great educational tool, as most applicants tend to ask questions about this. It is a great tool to educate the public about storm water regulations. For an example of the Special Events Permit Conditions of Approval see Appendix S.

8.3 Pollution Prevention through Education – Regional Activities

The regional activities of the Copermittees of Order 2007-0001 are, for the most part, described in the Regional Unified Annual Report. However, for purposes of completeness, some of the activities that the City has participated in are described in this section of the Report. As mentioned above, the new Permit added significant requirements for regional education, some of which is described below. The City has been in cooperation with the other Copermittees

in developing a regional educational program. Implementation of some of these programs did occur during FY 2008/2009 and will be reported on in the Regional Unified Annual Report. The City is actively working with the Regional Copermittee Education group to develop additional programs for implementation during FY 2009/2010.

8.3.1 Regional Monitoring

The City participated with the Copermittees in conducting a region-wide wet-weather monitoring program. Although no mass loading stations were located within the City, one of the testing sites (San Dieguito Lagoon) is a receiving water body from the City's drainage.

The 2008/09 program is described in detail in the Regional Unified Annual Report and in the report issued by the consultant, MEC Analytical. MEC's report will be submitted with the Unified Annual Report, and any data collected will be reported and discussed in that report.

8.3.2 Model Programs

One of the most important regional educational components is the ability the Copermittees have developed to help educate each other. This has been accomplished through routine meetings, sharing of project assignments, and most significantly, the development of model guidelines for the new JURMPs, SUSMPs, and WURMP(s). Not only have the model guidelines produced a fairly consistent message to educate the community, the model guidelines have established collaborative working relationships among municipal, county, and state agencies, which is remarkable. In addition, this cooperation has allowed for relatively consistent program components and requirements, which especially helps the business and construction community. So, if they are doing business in various cities, they will not have to completely alter their practices to comply with the respective jurisdictions. This is especially relevant in the LID, SUSMP and general BMP programs.

8.3.3 Linking to Regional Resources

The City posts links on its website to the regional Web sites (Project Clean Water and Think Blue). In addition, the City posts information on reporting storm water violations to the City as well as County's Regional Storm water Hotline on various educational materials. Linking the community together provides continuity, extension of resources, and economies of scale for the community and the

agencies, and contributes to a greater understanding that we are all interconnected and can help positively impact water quality. It's important to educate the community that water quality programs should not and do not stop at jurisdictional (or watershed) boundaries.

Through the www.projectcleanwater.org website, San Diego County has been able to link many community members to various storm water/urban-runoff-related programs of interest. In addition, the website contains information (dates, times, agendas) on meeting's that are open to the public and links to download important documents and reports.

8.4 Pollution Prevention through Education – Watershed Activities

In accordance with the Permit, each municipality is required to participate in the development and implementation of a Watershed Urban Runoff Management Program (WURMP) for each hydrological unit in which the City's jurisdictional boundaries lie. The northern portion (~10%) of the City resides within the Carlsbad Hydrological Unit and the rest of the City resides within the San Dieguito River Hydrological Unit. As such, the City is required to participate in the development and implementation of two WURMPs addressing the runoff concerns of each watershed.

During this reporting period, the City actively participated in the development and implementation of the Carlsbad and San Dieguito WURMPs, in compliance with Permit Order No. 2007-0001. The WURMP Annual Reports will be submitted in January 2010, and will detail all the activities and programs being implemented by the respective Copermittees to address watershed issues.

In short, each WURMP contains the following 1) a time schedule for developing a comprehensive map of the entire Watershed including all land uses, the storm drain systems, and inventories of all commercial, construction, industrial, municipal and residential areas, 2) a plan to ascertain the types of pollutants that exist in the water bodies throughout the watershed and a prioritization schedule to eliminate the pollutants; 3) a program to educate the entire community about issues related to urban runoff; 4) methods to provide the community opportunities to participate in the program; 5) plans to collaborate with Copermittee agencies to strategize, review and analyze information; and 6) an effective program effectiveness strategy and methods to conduct annual evaluations. A significant addition to the responsibilities of all WURMPs is the requirement to actively implement two (2) activities each year aimed at sources to reduce high priority

pollutant loading into local waterways. This will be described in greater detail in the WURMP Annual Reports (submitted in January), but mention of it here in the JURMP is appropriate.

The City has been actively involved in the implementation of both WURMPs, and has brought materials developed in each WURMP to the community (business and residents) of Solana Beach. The Carlsbad and San Dieguito WURMP workgroups have been extremely effective in implementing the requirements of the Permit. For more information on the particular activities in each WURMP, please refer to the City's individual WURMPs Annual Reports that will be submitted in January 2010.

8.5 New Activities and Improvements for FY 09/10

The City will continue to educate the community through participation in the North County Education Group (Carlsbad WURMP), the San Dieguito WURMP group, the Regional Education Group, the City's new Green Flash environmental web portal, brochures, flyers, the *Shorelines*, and community/regional events. The City will also use the results from its DWMP to inform residents in areas that the data showed elevated levels of constituents of concern or pollutants that degrade the quality of water. The City plans to develop additional educational brochures collectively with the region that will be industry specific. As a result of the 13267 Directive Letter discussed above as well as the new Permit, the Copermittees have changed their approach to watershed issues and plan on taking a more direct approach in implementing activities that address specific pollutants of concern and their respective sources within the watershed. Following the direction of the RWQCB, the watersheds have changed their approach to integrate more pollutant based activities in an attempt to reduce COCs in the watershed and improve water quality. This appears to be the direction the RWQCB wants to go and the Copermittees are eager to work with the RWQCB to improve the water quality throughout the region.

The adoption of the new Permit and Memorandum of Understanding (MOU) between the Copermittees required extensive outreach to educate the City Council and community on the benefits of the storm water program. City staff conducted many presentations for the City Council and community that educated them on pollution issues. City staff took this opportunity to educate the Council and community on the storm water regulations and the benefits of implementing this program.

The City also incorporates education to school children through its relationship with the Solana Center and the City's Marine Safety Department classroom presentations. As mentioned above, the City indirectly contracts out the Solana Center to give *free* classroom presentations to local schools. These presentations are paid for through the City's waste hauler contracts. City staff will be more proactive in its efforts to get more presentations in the schools during FY 2009/2010. City staff has begun to meet regularly with the Solana Beach School District regarding environmental issues as the new Superintendent is very receptive. These meetings have occurred on a quarterly basis and will continue to do so in the future. It is the City's intent to use this platform to get more storm water education into the schools. This will be reported on in the next Annual Report.

8.6 Summary

The City has been successful at implementing a jurisdictional and watershed based educational program. With the adoption of the new Permit, a renewed focus has been placed on a large scale regional education program, in which the City has been actively involved with during this reporting period. A new regional education working group has been established by the Copermittees to develop a consistent, region-wide program, and the City of Solana Beach has been actively involved. This first step has already been accomplished, with the region adopting the "Think Blue" program developed by the City of San Diego. This gives the region a known brand of which to build a successful educational program. The details of this regional program will be described in detail in the Regional Unified Annual Report.

On a jurisdictional level, the City is certain that with its strong messages, meaningful content and integrated programs, the community will become more knowledgeable about pollution prevention methods.

As mentioned above, the City plans to utilize the educational materials developed by the watershed and regional groups, as it has been agreed upon that a consistent message should be implemented whenever possible. However, much like the differences in the watersheds throughout San Diego County, there are slight differences in how individual cities implement and enforce certain components of the Permit. Therefore, it will always be necessary to develop some jurisdictionally specific educational materials for the benefit of the community. The types of jurisdictional educational information/activities are described throughout this Report, but a few examples include:

- BMP specific guidelines for unique construction projects, such as the Underground Utility Program (undergrounding power poles) and the Trench Resurfacing Program.

- The “Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices”

- Construction and Demolition (C&D) Debris Recycling Guide

- Classroom Presentations

- Summer Camp Presentations

- Marine Safety Presentations

- Water Conservation, Landscape Workshops

- Unique partnerships with public and private entities such as Kids Korps and ReRip to provide educational opportunities for the underserved population

CHAPTER 9

Public Participation Component

CHAPTER 9: PUBLIC PARTICIPATION COMPONENT

9.1 Introduction

In accordance with Permit Section D.6, this section of the report describes the City's efforts to develop mechanisms for public participation in the implementation of the JURMP and obtain the committed participation from the community. Public participation comes in two forms; participation in implementing the program and the necessary public feedback for improving the program.

In each Annual Report to the RWQCB, this section will include modifications to the City's plans to provide opportunities in which the public can participate. In addition, this section of the Annual Report will describe the City's efforts to encourage public participation during the reporting period. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Prior to the implementation of the original JURMP (February 2002), the City did not have a specific "public participation program." However, many members of the community have taken an active role in environmental issues over the years, which is most likely due to the City's proximity to the ocean and lagoons. As a result, the City was the first city in San Diego County to have curbside recycling and a smoking ban at the beaches and parks. The City has also been proactive in its approach to urban runoff and pollutant mitigation and reduction, by implementing a strict Municipal Code regarding Storm Water Management (adopted in 1993) and Grading and Excavation regulations to prevent erosion during construction.

As a result of Order 2001-01 (Permit), the City was required to design a specific program to ensure that the public had ample opportunities to learn about controlling urban runoff and assist the City in "spreading-the-word." The new Permit Order No. 2007-0001 further emphasizes the necessity of a strong public participation program.

The Public Participation Component is closely related to the Educational Component. However, while the educational program describes activities the City engaged in to educate the public, public participation will describe activities the

public engaged in (or were provided an opportunity to do so).

During this reporting period, the City began the implementation of the comprehensive Public Participation Component for the new JURMP (Section 11). The programs included activities that complemented the educational program with a goal of providing opportunities to ensure that residents, business owners, and those who do business (such as contractors) within the City, have an opportunity to learn about the negative impacts of urban runoff, understand the City's regulations relating to protecting the environment, and participate in the development of storm water program involving the community. The City developed the program based on the requirements of the Permit(s) and continued implementation during this reporting period.

9.1.1 Chapter Content

It is important that the reader understand that much of the public participation program is integrated into other program components and as such, much of the information within this chapter has been presented elsewhere in this report. However, to provide consistency in reporting, to ensure Permit compliance, and to present stand-alone chapters in this report, this section will include all opportunities for public participation, even if those same events were described in other chapters. However, for purposes of reducing redundancy, some events may be summarized in this chapter with a reference to other chapters for details.

9.2 Community Events

9.2.1 Fiesta Del Sol

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting no dumping or littering and keeping our beaches clean. The event was held on June 6 and 7, 2009 (Appendix E). The City also passes out "*Only Rain in the Drain*" brochures and talks with residents about the importance of protecting the water resources. Solana Center also hosts a booth through the City of Solana Beach and promotes environmental stewardship, including used oil recycling and HHW information. Approximately 70,000 people attended the event this year and City staff handed out storm water educational brochures and doggie-bag dispensers to those that visited the City booth.

The City's Clean and Green Team, consisting of environmentally conscientious members of the community, also shared the booth with City staff. They distributed information regarding climate change, energy conservation and water quality. Since this is such a hot topic this year, it got many more people to go to the City booth this year. City staff took this opportunity to educate more people regarding the storm water regulations. This was an extremely successful event this year.

9.2.2 Beach Clean Up Opportunities

During this reporting period, Coastkeepers and the nonprofit group I Love A Clean San Diego (ILACSD) hosted the 24th Annual California Coastal Cleanup Day in September 2008. The City hosts two locations, one at Fletcher Cove to clean the beach, and another at San Elijo Lagoon to clean up the lagoon. This provided opportunities for the public to come out and help keep the lagoons and beaches clean, while also educating them on cigarette butt pollution and water quality concerns. The results of this event are included earlier in this Report.

9.2.3 Adopt-A-Beach Program

The City works collaboratively with I Love A Clean San Diego in the Adopt-A-Beach Program. The Program consisted of local businesses and/or community groups sponsoring a beach and agreeing to clean up the beach at least 3 times a year (1 time for schools). The City thought this was a great idea and extremely beneficial to the community, so approved our beaches being included in the program. Four (4) beaches (Tide Beach Park, Fletcher Cove, Del Mar Shores and Seascape Sur are all "adopted" and are cleaned at least three times a year. The signs are updated each year with new "adoptees" and City staff installs the new placards on the signs. This has been a very positive experience, as the City's beaches are each cleaned three times a year, resulting in at least 12 beach cleanups per year, in addition to the annual Beach Clean-Up Day.

9.2.4 Beach Blanket Movie Night

As mentioned in the previous Chapter, the City's Parks and Recreation Department puts on a free community event called the Beach Blanket Movie Night. This event consists of placing a large movie screen at Fletcher Cove Park and showing environmentally themed movies for the community to enjoy. City staff took this opportunity to distribute storm water educational materials, promote recycling efforts and distribute doggie-bag dispensers to members of the

community. Additionally, Solana Center attends and has educational material for the community as well, including the Enviroscape model. This has turned into one of the most successful community events and is based around environmental themes. The City's "environmental booth" is the only booth allowed at this event, as the organizers recognize the importance of educating the community on environmental awareness. This is a great opportunity for the City to promote its programs as it has the community's undivided attention.

9.2.5 San Elijo Lagoon Day

San Elijo Lagoon Day is an event sponsored by the City, the San Elijo Lagoon Conservancy and the County of San Diego Department of Parks and Recreation and it's a full day of educational activities where residents can learn about the ecological reserve and how to protect the local environment. There are two main locations, one at the North Rios Trailhead and the other at the Santa Carina trailhead, both in Solana Beach. The City provided educational materials to distribute at the event and spread the word through our resources. It was a very well attended event that is scheduled to be held on an annual basis. This year's event was held on May 13, 2009.

9.2.6 Paws in the Park

"Paws in the Park" is an annual event put on by the City at the La Colonia Community Park. This community event is very well attended and the City has a booth to showcase the City's environmental programs. At this year's event, held March 15th, 2009, City staff took advantage of the pet event to promote the importance of picking up after your pet and distributed customized "Bags on Board" doggie-bag dispensers. These items are a huge success because the event targets the pet community, those most likely to have the potential to release bacteria into the environment. The dispensers had the City logo on it and the slogan, "The City of Solana Beach Reminds You To Please Pick Up After Your Pet." In addition, the City distributed specialized educational information regarding pet waste and the harmful effects it can have on the environment. This is an annual event and the City will continue its environmental education campaign every year.

9.3 City Council Meetings

The Solana Beach City Council meetings are televised, which provides an excellent opportunity for the public to participate in local government. In addition,

the City's Agenda is published online (available on its website), which provides the public an opportunity to readily access the upcoming Council reports.

Another highly successful educational opportunity is the implementation of scrolling messages during televised City Council Meetings. Staff has taken advantage of this new tool to place storm water messages and notifications for upcoming presentations, events, etc. This has proved very valuable and will continue to be utilized by City staff when appropriate.

9.4 Copermittee Meetings

Most Copermittee meetings are open to the public and provide an opportunity to participate in the process of developing the regional and local programs. All Copermittee meeting dates are available on the Project Clean Water Web site (projectcleanwater.org) and the City's website also links to the regional sites.

9.5 Collaborative Community Partnerships

The City has developed collaborative partnerships with various local organizations, which provide the public an opportunity to participate in improving water quality and/or the City's storm water program(s).

The City works closely with the Solana Center, which provides instruction to local school children on the harmful effects of pollution, the positive impacts of pollution prevention and the need to keep pollution out of the City's storm drains. Solana Center is contracted by the City's waste haulers through their exclusive Franchise Agreements. Solana Center also provides the following services for the City:

Referral Phone Calls: Solana Center staff provides recycling telephone referral services for residents on the Cities of Carlsbad, Del Mar and Solana Beach. Solana Center staff spent time educating the community about CRV updates, composting information, and how they easily incorporate recycling activities into their daily lifestyle. Community phone inquiries included:

- The locations of local recycling centers and hours of operation.
- Redemption values of materials.
- Basic information of what materials can be or cannot be recycled in

curbside recycling programs.

- General recycling information for commercial businesses.
- Services on commercial recycling carts.
- RotLine – Answering community questions regarding composting and vermicomposting.

Less Toxic Yard and Garden Workshops:
Solana Center staff conducts presentations throughout the community on alternative gardening tips that reduce the use of pesticides and herbicides. These workshops also promote the benefits of composting, further reducing the amount of trash generated and shipped to landfills as well as reducing the need for harmful chemicals/fertilizers.

Community / Recycling Events

Event Dates	Name of Event(s)	Attendance at Event(s)	Description and Summary of Event(s)
June 7 and 8, 2008	Fiesta Del Sol	70,000	Annual event for the City of Solana Beach. Recycling services were coordinated in conjunction with Waste Management and EDCO Disposal Inc. Solana Center also provided education on used oil recycling, HHW and watershed presentations,
August 23, 2008	Beach Blanket Movie Night	1,000	Annual event put on by the City's Parks and Recreation Commission to provide a free night of environmentally themed movies. Educational materials were distributed at event.
March 15, 2009	Paws in the Park	500	Annual event put on by the City's Parks and Recreation Commission for pet education and games. Educational materials were distributed at event.

School / Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
July 23-27, 2008	Ecology and our Environment	20	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)
July 28-August 1, 2008	Summer Safari	25	Grade 1-Jr High	La Colonia Community Center (Field Trips Included)
August 4-8, 2008	Under the Sea	25	Grade 1-Jr High	Fletcher Cove Community Center (Field Trips Included)

July 23, 2008	Storm Water Presentations	49	Grade 1-High School	Boys and Girls Club
October 4, 2008	Storm Water Presentations	18	Grade 1-Jr High	Solana Beach Library
January 13, 2009	Storm Water Presentations	23	Grade 1-Jr High	Solana Beach Library
February 3, 2009	Storm Water Presentations	21	Grade 1-Jr High	Solana Vista Elementary School
April 2e8, 2009	Storm Water Presentations	20	Grade 1-Jr High	Santa Fe Montessori
May 1, 2009	Storm Water Presentations	31	Pre-School	Sandy Hill Pre-School
May 27, 2009	Storm Water Presentations	24	Grade 1-Jr High	Santa Fe Montessori School
June 24, 2009	Storm Water Presentations	37	Grade 1-Jr High	La Colonia Community Center (Kids Korps)

Community Workshops

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
October 10, 2008	California Friendly Landscape Training	22	Residents and Businesses	Fletcher Cove Community Center
March 4, 2009	California Friendly Landscape Training	35	Landscape Professionals	Fletcher Cove Community Center
March 7, 2009	California Friendly Landscape Training	33	Residents and Businesses	Fletcher Cove Community Center
March 11, 2009	California Friendly Landscape Training	33	Landscape Professionals	Fletcher Cove Community Center
March 18, 2009	California Friendly Landscape Training	33	Landscape Professionals	Fletcher Cove Community Center
March 25, 2009	California Friendly Landscape Training	33	Landscape Professionals	Fletcher Cove Community Center
April 1, 2009	California Friendly Landscape Training	33	Landscape Professionals	Fletcher Cove Community Center

The above workshops are conducted by the City's private water company Santa Fe Irrigation District (SFID) in conjunction with the City. The City provides the space to conduct the workshops and promotes the workshops, including directly to the landscaping contractors known throughout the community. All classes are taught in English and Spanish, and the classes taught in Rancho Santa Fe are promoted to Solana Beach residents/businesses as well. The City requires the municipal landscaping contract company to attend the workshops for educational

purposes. This shows another great collaborative success between the City and its private water company. There is a great relationship between the two entities which extends beyond these workshops. The City and SFID work together to combat residential over-watering and ensure daily tasks and repair work are conducted in compliance with the Permit. In addition, pre-construction meetings for CIP projects include SFID and storm water issues are discussed. The City and SFID are committed to working together and maintaining this great working relationship since most of the work conducted by SFID (trenching, pipe laying, water testing) are all done within the City limits.

Shorelines Newsletter:

The Solana Center writes regular articles for the City of Solana Beach on a wide range of topics, including E-waste, recycling, composting and buying recycled products. The topic is coordinated between the City's Environmental Programs Manager and the Executive Director of the Solana Center. The articles are included in the Appendices and described in more detail in other sections of this Report.

9.5.1 Solana Beach Clean and Green Community Committee

As mentioned in last year's Annual Report, the City brought together active and willing community volunteers to form the Solana Beach Clean and Green Team (Team). This Team was formed to discuss pertinent local environmental issues and develop programs to bring to City Council for implementation. City staff meets monthly with the group to discuss the City's environmental programs and to brainstorm activities that would benefit the community as a whole. The group has evolved from a few interested residents to a steady group of about 20 members from the residential and business sector of the community. The group has assisted in the development of the following programs:

- Construction and Demolition Debris Recycling Ordinance
- Plastic Bag Advertising Ban Ordinance
- Plastic Bag Recycling program
- "Green Flash" Website
- Green Building Incentive Program

- Greenhouse Gas Baseline Emissions Inventory

The group is currently working on the following items:

- Green Business Program Over-Irrigation Reduction Program
- Solar Financing District
- Climate Action Plan

The Team is also heavily involved in the water quality activities of the City and the NPDES program. The committee attends all community events and disseminates educational materials. This group has been extremely valuable and provides a direct link to the community, both residential and commercial. It allows all community members the opportunity to participate in City government.

9.6 Other Opportunities

9.6.1 City Storm water Hotline

The City operates a storm water hotline, (858-720-4424) which is dependent on public participation to report suspected violations of IC/IDs and to inquire about workshop information or other storm water-related needs. The hotline provides 24/7/365 access to the public so that they can report potential violations and/or call for information as soon as they are thinking about it, rather than having to wait for normal business hours. The hotline is sent directly to the Environmental Program Manager's voice mail (it can still be anonymous) to ensure quicker and more efficient response to the public inquiries, as well as providing an outlet for the public to discuss issues directly with City staff.

9.6.2 Website

As reported previously in this Report, the City developed a more comprehensive environmental web portal on the City's website. The new page is titled "Green Flash" and encompasses all of the City's environmental sustainability programs. Water quality and the City's NPDES programs are prominent and have been expanded as a result of this new web portal. This shows the City's proactive approach to engaging the public and keeping them educated on the new environmental programs throughout the City as well as providing links to relevant web pages.

9.6.3 Local Media

As described in detail in Chapter 8 (please refer to that chapter for more information), the City utilized the local media to inform and educate the public. Although this is not a public-participation activity, the information provided in the articles describes the ways in which the public can get involved, if they so choose. The City has a great working relationship with the local newspapers (Solana Beach Sun and Coast News) and has many articles published with environmental themes, including storm water related issues.

The City also published several articles in the *Shorelines* Newsletter (also described in Chapter 9) inviting the public to get involved, providing details on how they can participate in protecting the region's water resources.

The City also has a contracted media relations consultant with ties to the major media outlets. This consultant is brought in on the City's major events to help promote the events and activities to a much larger audience. This is not done for every event in the community; however it is important to note that this service is available when appropriate.

9.7 New Activities and Improvements for FY 09/10

The City will continue to implement the elements of the public participation component as described in the City's JURMP. The focus will be on expanding the collaborative partnerships to include more frequent opportunities for public involvement (clean up days, events, etc.). Staff will continue to look for more opportunities to work with neighboring cities to host pollution prevention community events through its watershed programs (Large HHW event). Additionally, the City is working with the other Copermittees in possibly putting together more large scale community educational events.

With the adoption of the new Permit, there is an added emphasis on developing a Regional Educational Program. This has been a main focus for the Copermittees during this reporting period. Copermittees are expected to implement a comprehensive regional program that will provide a consistent message to the entire region. As most of the new programs are geared towards improved watershed programs, this is one key area that was identified as a Regional program. Copermittees have already begun developing activities through the Regional workgroup, such as the mobile business education

campaign. These programs will continue to be developed and implemented throughout the five year cycle of the new Permit. For more details on the activities the Copermittees have implemented during FY 08/09, please see the Regional Unified Annual Report.

One new program that City staff is looking into is the expansion of the Annual Coastal Cleanup Day to other locations throughout the City. Currently, the City hosts to locations, one at Fletcher Cove Park and the other in the San Elijo Lagoon. City staff is looking into the idea of extending the program to inland sites in the City and engaging local community leaders into hosting sites in their neighborhoods. If successful, this will engage public participation from community members who wish to volunteer to keep their neighborhoods clean, while giving the City more opportunity to educate residents and businesses during the cleanup. This will be included in next year's Annual Report.

9.8 Summary

The City has been successful at implementing numerous methods to encourage public participation. The City makes every effort to encourage the public to participate in improving water quality, recognizing that it's up to all of us.

Key opportunities for public participation included the following:

- Regional Copermittee Outreach Events
- Fiesta Del Sol
- Coastal Clean Up Day
- Regional Workshops
- City Council Meetings
- Copermittee meetings
- Collaborative community partnerships (SFID, Solana Center, Kids Korps)
- Contacts through the City's Storm water hotline, City website
- Beach Blanket Movie Night
- San Diego County Fair
- San Elijo Lagoon Day
- Paws In The Park Community Event
- Formation of the Clean and Green Community Committee

CHAPTER 10
Fiscal Analysis Component

CHAPTER 10: FISCAL ANALYSIS

10.1 Introduction

In accordance with Permit Section J.1(k), this section of the report describes the resources that the City utilizes to finance the various components of the storm water program. Effective programs require adequate funding to implement planned activities. The fiscal analysis will evaluate the expenditures necessary to accomplish the activities of the City's program.

In each Annual Report to the RWQCB, this section will report on any changes in the revenue sources that finance the City's storm water program, a *general* description of the expenditures during the reporting period, the budget adopted for the following reporting period and any changes known at the time of the writing of the report (to keep the document as current as possible).

10.2 Revenue Sources

The City finances its Storm Water Management Department via revenues from an NPDES solid waste fee. The City went through a long, arduous process to establish a long-term funding source to ensure the program would be sufficiently financed. This is an area that the Copermittees have struggled with and the City is very proud of the fact that it has secured a voter approved fee to ensure the long term future of the program. The City was sued by the Howard Jarvis Taxpayer's Association (HJTA) and the fee was put to a vote of the community. The community responded and supported the fee, so now the City has a long-term funding source to maintain and enhance the NPDES program. The following is a brief history and timeline of significant events that led to the vote and approval of the City's NPDES Solid Waste Fee:

- June 15, 2004- Council Authorization of Consultant to Develop NPDES Fee Report
- May 3, 2005- City-Wide Mail Out Announcing Community Workshop and Background for the NPDES Solid Waste Fee
- May 11, 2005- Introduction of NPDES Solid Waste Fee-City Council Meeting
- May 11, 2005- Scroll Information About Community Workshop on Television Broadcast During City Council Meeting
- May 19, 2005- Community Workshop
- June 15, 2005- First Reading of NPDES Solid Waste Fee Ordinance- City Council Meeting

- June 22, 2005- Second Reading (Adoption) of Ordinance- City Council Meeting
- September 1, 2005- Included Insert in both WM and EDCO Bills That Explained Extra NPDES Solid Waste Fee
- December 12, 2006- Staff Report to request Public Hearing to present updated NPDES Fee Study and rate structure – City Council Meeting
- January 2007- Proposition 218 notifications for Public Hearing sent out City-wide to all property owners – City-wide mail-out
- February 28, 2007- Public Hearing to consider adoption of updated NPDES Fee Study Report (protest hearing) and introduce Ordinance 362 implementing new rate structure– City Council Meeting
- July 11, 2007- Staff Report to set Public Hearing on September 26, 2007 to announce results of Mail-In Ballot Election

For more information on the City's NPDES Solid Waste Fee, please see the City's website at http://www.cityofsolanabeach.org.

10.3 FY 2008/2009 Expenditures

The storm water budget for the FY 08/09 Environmental Services Department and other departments that support the storm water program are shown on Table 10-1. In addition to the budget below, the City also incurs significant costs associated with tasks that supplement pollution control such as routine street cleaning (trash/litter pickup) performed by the public works department, cleaning of the parks and community centers, and beach cleanups.

Table 10-1 FY 2008/2009
Storm Water Management Budget

Line Item	Budgeted
Salaries[1]	$ 170,200
Storm Drain Cleaning	$ 15,000
Permit Fees Paid to County & RWQCB	$ 34,000
Lab Testing	$ 10,000
Investigations, brochures, public education	$ 6,000
Steven's Creek Cleaning	$ 10,700
HHW Program	$ 25,000
Watershed URMP Shared Costs	$ 12,000

[1] *Salaries for City personnel that handle storm water responsibilities were divided between various departments, depending on the amount of staff time allocated to that department. Salaries include anticipated overtime and benefits.*

State Water Control Board Fees	$ 7,000
Training (Travel, Conferences, Meetings)	$ 1,850
Misc. Items (Including small tools)	$ 20,350
Seascape Storm Drain Cleaning	$ 10,000
TMDL Investigation	$ 10,000
Commercial/Indust Facility Inspections	$ 15,000
Construction Inspections	$ 10,000
JPA Sediment Drying Pad	$ 6,000
Total	**$ 374,250**

10.4 FY 2009/2010 Proposed Budget

Table 10-2 presents the City's Proposed Budget for the FY 09/10 Environmental Services Department.

Table 10-2 FY 2008/2009
Storm Water Management Proposed Budget

Line Item	Budgeted
Salaries[2]	$ 159,500
Storm Drain Cleaning	$ 10,100
Permit Fees Paid to County & RWQCB	$ 34,000
Lab Testing	$ 6,000
Investigations, brochures, public education	$ 6,000
Steven's Creek Cleaning	$ 9,100
HHW Program	$ 28,000
Watershed URMP Shared Costs	$ 13,000
State Water Control Board Fees	$ 7,500
Training (Travel, Conferences, Meetings)	$ 1,000
Misc. Items (Materials, Supplies, Services)	$ 16,000
Seascape Storm Drain Cleaning	$ 8,000
TMDL Investigation and JURMP Update	$ 10,000

[2] *Salaries for City personnel that handle storm water responsibilities were divided between various departments, depending on the amount of staff time allocated to that department. Salaries include anticipated overtime and benefits.*

Commercial/Indust Facility Inspections	$ 12,000
Construction Inspections	$ 12,000
JPA Sediment Drying Pad	$ 6,000
Total	**$ 338,200**

New Additions to Budget

There are no significant additions to the budget for FY 09/10. However, as was described in last year's Annual Report and again below, there are new categories included as a result of new programs required by the new JURMP. As can be seen in the table above, the following items have been added to the Environmental Services Budget:

TMDL Investigation	$ 10,000
Commercial Industrial Inspections/ weather monitoring	$ 12,000
Construction Inspections	$ 12,000
JPA Sediment Drying Pad	$ 6,000

The Total Maximum Daily Load (TMDL) Investigation is budgeted for the ongoing investigation in the San Elijo Lagoon. The City is listed as a responsible party and is actively implementing the program with the other responsible parties.

The Commercial/Industrial and Construction Inspections were added to this budget as a result of the increased requirements in the new Permit. Under the old Permit, City staff conducted the necessary inspections; however, since the responsibilities have increased under the new Permit, the City wanted to ensure the highest possible service to the community and decided to contract out the services. This will free up limited staff time to concentrate on other aspects of the Permit while at the same time getting expert consultants to provide high quality service and inspections. The City sees this as a win-win situation, and plans to continue this process throughout the life of the new Permit.

In addition, the City worked with the San Elijo Joint Powers Authority (SEJPA),

who is responsible for sewer service for the City of Solana Beach and parts of Encinitas, to work out an agreement where storm drain material collected in the City's MS4 can be treated and disposed of at the Waste Water Treatment Plant (WWTP). Prior to this agreement, the City would have to dry out the material collected, test it and then wait to receive permission to dispose of in a specially lined portion of the landfill since storm drain material is considered non-hazardous special waste. In order to streamline the process and potentially turn the material into useful fertilizer, the City developed an agreement with the SEJPA to dispose and treat the material at the WWTP. This is another win for the City because the process is streamlined and material can be reused and not disposed of in the local landfills.

10.5 Summary

The City is committed to allocating enough resources to effectively implement the components of the Permit. During the NPDES Solid Waste Fee Study analysis, a complete assessment of the program was conducted to determine how much money is being spent performing the duties of the Permit. This was the basis for the NPDES Fee, and the City is committed to reassessing the program on a continuous basis to ensure the NPDES Fee is collecting enough money to offset a significant portion of the costs of the Program. The City must take special care to ensure the NPDES Fee is not collecting more than the costs to run the program, so this reassessment is necessary for this reason as well.

The City will periodically assess the costs of the program and make necessary adjustments to the NPDES Fee to ensure the City is recovering a significant portion of the costs of implementation. This will ensure a long term funding source which is paramount to a successful program. The City anticipates a significant increase in costs to develop and implement the new programs adopted with the new Permit, and will reassess the NPDES Fee in future years to reflect the increases in the program. The City has already responded to the new requirements of the Permit by reallocating and adjusting money into the FY 09/10 budget, and anticipates continuing this process as more programs are developed and implemented, especially on a watershed and regional level.

It should be noted that the City of Solana Beach is also struggling with the recent downturn in the economy that is affecting most, if not all, Copermittees. As you can see from the budget, there is less money allocated to the FY 09/10 budget than was allocated in the FY 08/09 budget. This is a reality that all Copermittees, along with the State, are dealing with. The City of Solana Beach feels fortunate to

have a steady funding source that comes with a voter approved NPDES fee, however all budgets are getting tighter. The City feels extremely confident that the adjustments made to the FY 09/10 budget can be absorbed in the program without a significant reduction in services. The areas that have been reduced in budget generally consist of consultant work that will be absorbed with full time staff, and the City fully anticipates meeting all requirements of the Permit. However, it should be noted that this is a very serious situation that will have to be continually monitored throughout the year, as there is still extreme uncertainty regarding the economy. This is just something that all Copermittees, including the State, will have to monitor as the year goes on. However, as mentioned above, the City is in better shape than most since the majority of funding for the program does not come from the General Fund.

CHAPTER 11
Effectiveness Assessment Component

CHAPTER 11: EFFECTIVENESS ASSESSMENT COMPONENT

11.1 Introduction

In accordance with Section J.3.(l) of the Permit, each Copermittee is required to develop a long-term strategy for assessing the effectiveness of the various components of its Jurisdictional and Watershed Urban Runoff Management Programs (URMPs). The City will perform an annual effectiveness assessment to specifically assess:

- Each significant jurisdictional activity/BMP or type of jurisdictional activity/BMP implemented;
- Implementation of each major component of the JURMP (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination and Education); and
- Implementation of the JURMP as a whole

During this reporting period, the City has continued implementation of all components of the Permit. This section will assess the effectiveness of the JURMP, and discuss all strengths and weaknesses of the City's program. Since the City's JURMP was submitted in March 2008, this Report will be the first full year of implementation and it will be difficult to effectively assess the new programs. Most of the new programs are still in development, therefore this section will report on any significant results from the programs implemented under the old Permit Order No. 2001-01 and any programs that have been developed and implemented during the first full year under Permit Order No 2007-0001.

11.2 "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs"

The Copermittees developed an assessment document titled, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs." This document was prepared after discussions with the RWQCB in which the Board stated that the Copermittees needed a better method to assess the effectiveness of the JURMP. This document was approved by the RWQCB and will be used to assess all future programs, or until another method is agreed

upon. The document addresses six levels of assessment:

1. Compliance with Activity-Based Permit Requirements
2. Changes in Knowledge/Awareness
3. Behavioral Changes
4. Load Reductions
5. Changes in Discharge Quality
6. Changes in Receiving Water Quality

The levels of assessment have been combined into three rather than six categories for this reporting period because it is easier to assess the programs when they are combined into these three categories. Level 1 includes modified assessment tables from the JURMP. Level 2 and 3 are combined and discuss the program strengths (accomplishments and outcomes) for each component. Level 4, Load Reductions, is still being assessed as to the proper way to address this (possibly TMDLs) and so is only briefly discussed, and Level 5 and 6 are combined to attempt presenting a water quality assessment.

The strategy uses both quantitative and qualitative measures of program effectiveness.

In addition, during the development of the WURMPs, the cities worked tirelessly to develop a meaningful method to assess *that* program for its impact on water quality – not just whether or not the program components were implemented, but more importantly, the ability to find a way to measure the link between activities and improved water quality, if it exists.

The WURMP program effectiveness strategy incorporated all of the elements of a meaningful method to assess impact, incorporated public comments, collaborative writing, thinking and designing, and in the end, is a good start at learning how to meaningfully determine the value of the storm water program activities. The City anticipates that over time, the results of a well-thought-out meaningful assessment will provide the region important information from which program activities can be designed and modified, rather than implementing program activities and hoping the activities have the expected impact. The

individual WURMP program assessments can be found in the upcoming WURMP Annual Report submittals (January 2010).

11.3 Level 1: Compliance with Activity-Based Permit Requirements

A table that summarizes the activities tracked by City staff, which demonstrates compliance with the requirements of the Permit, can be found in Appendix Z. Additionally, narratives explaining the City's efforts regarding compliance can be found in the individual components of this Annual Report.

11.4 Levels 2&3: Changes in Knowledge/Awareness and Behavioral Changes

This section is broken up into each component of the JURMP and presents a summary of the changes in knowledge/awareness and behavioral changes. Each section discusses the accomplishments for the component and discusses future improvements.

Municipal Component

Program Strengths: During this reporting period, City staff again inspected *all 309 of the City's catch basins* and 15 unimproved channels and cleaned every one that appeared to have trash or sediment accumulated in the basins. Public Works staff removed approximately 5 cubic yards of material from its storm drain system. The City also manages an active Beach Cleaning Schedule and maintains several different permanent BMPs throughout the City (the most significant structural BMPs being the bioswale located at La Colonia Community Center, the Low-Flow Diverter, CDS Unit and Sand Trap at Fletcher Cove and the CDS Unit at the north end of North Cedros).

For a discussion regarding the qualitative accomplishments of the City's Municipal Component (major accomplishments, educational and outreach activities, new activities or improvements to be implemented next year) see Chapter 2 of this report.

Table 11-1 Municipal Inspections

Activity	Quantity	Units	Comments
Number of high priority municipal facilities (*buildings*)	1	n/a	Inspected high priority facility (PW Yard) weekly at Engineering Safety Meeting held at Public Works Yard. Annual inspection conducted on 6/22/09 and facility also inspected prior to rainy season. See Chapter 2 of this Report.
Number of high priority municipal facilities (*parking lots*)	6	n/a	Visually Inspected weekly by PW staff. Cleaned monthly by street sweeper. See Chapter 2 of this Report.
Number of high priority municipal facilities (*other*)	3	n/a	One park (inspected 6/22/09), all city streets and roads (daily), and the MS4 (annually).
Number of high priority municipal facilities targeted for inspection (buildings and parking lots)	10	n/a	See above.
Number of high priority municipal facilities inspected	10	n/a	The Public Works Yard and all parking lots.
Number of medium and low priority municipal facilities inspected	5	n/a	Fire Department, Marine Safety Center, Fletcher Cove Community Center, City Hall and La Colonia Community Center inspected annually. All inspections occurred on 6/22/09.
Quantity of material removed from MS4 and beach	5	Cubic Yards	This is the amount of material the City collected from its annual cleaning of the MS4 and the beach. All 309 catch basins and 15 unimproved channels were inspected, 13 catch basins were cleaned, which was 100% of the catch basins that had accumulated trash/debris inside.
Quantity of debris removed that had potential to enter MS4 (i.e. street sweeping, litter removal)	274	Cubic yards	This information provided by daily reports from street sweeping contractor.

The City's Public Works Crew is immensely knowledgeable when it comes to storm water issues. Since the crew consists of only five people, it is very easy to

educate them on an ongoing basis. They are all very aware and conscientious of the storm water regulations and are eager to report any violations in the field to the appropriate staff. The Public Works Crew is a vital part of the Storm Water Team, because they are always out in the field, and they have become the eyes and ears of the program. They have weekly tailgate meetings with the City Engineer and City Inspector at the Public Works Yard where they discuss, among other things, the storm water regulations and visually inspect the Yard.

The amount of cooperation between the various City departments has proven to be very successful, with each department willing to implement the storm water regulations into their daily activities.

As reported in last year's Annual Report, one of the improvement areas for this component would be to conduct more department specific educational presentations. This will continue to be a high priority activity and an area to improve upon. This has proven to be very successful and is highly encouraged by the Department Directors. It is anticipated with the continued development and implementation of the new Permit requirements that more education of City staff will be required. This will most likely occur with more department specific presentations to detail any changes or additions to department specific activities required in the Permit. The City's Environmental Programs Manager conducted two department specific presentations during this reporting period. The presentations were given to the Engineering Department and Public Works Department. These are the highest priority departments as their activities are directly influenced by the Permit. The presentations focused on the following:

- Engineering Department – SUSMP, Hydromodification Plan (HMP) and LID training
    - On June 1, 2009, City staff from the Engineering and Planning Departments attended a regional training on the model SUSMP, HMP and LID. This workshop focused on the new requirements, and was attended by over 100 staff members of the Copermittees.
- Public Works Department – Sewer Overflow Prevention, Spill Response and Reporting
    - On April 28, 2009, City staff and the City's sewer maintenance contractor held a comprehensive half-day training on the topics listed above. The training was conducted to ensure that both the

City staff and contractor staff were educated on the storm water and sewer regulations and their associated responsibilities. The training was attended by 20 staff members of both organizations.

The Environmental Programs Manager will analyze the new requirements and develop appropriate presentations to City staff, and will report on these in next year's Annual Report. It is anticipated that the next department specific training will be conducted with the Community Development/Planning Department regarding the new LID, HMP and SUSMP requirements as they are being developed and implemented.

Additionally, as a result of the RWQCBs response letter to FY 03/04 Annual Report, the City now calculates and tracks the total amount of material collected by their street sweeping activities. This initially was a difficult task, as the City contracts out the street sweeping to a private company, but after some discussions with both the RWQCB staff and the contractor, a solution was worked out. The amount of material collected is now documented weekly by the street sweeper, and is verified by the City's Public Works Crew. This information is reported in this Annual Report and will be documented in the years to follow to see if a trend can be verified to assess the effectiveness of the program. Additionally, as reported in last year's Annual Report, City staff ensured that the new street sweeping contract contained language that mandates that this activity is done on a continuous basis. So far, the activity has been very successful as data that is quantifiable is now collected and will be useful in load reduction calculations in the future (as enough data is collected).

Improvement Areas: City staff is confident that all aspects of the Municipal Component are being adequately addressed, although they realize that things could always be improved. Some improvement areas may be additional educational sessions with City staff, to reinforce the importance of the Permit and how it affects their everyday activities (especially with the adoption of the new Permit). Increased inspections on Municipal facilities may be conducted to ensure compliance at all times. And finally, more detailed investigations into the "problem" catch basins, if any, which may require cleaning every year. If any of these catch basins exist, then a more aggressive litter/trash campaign may be conducted to nearby residences or businesses in hopes of a load reduction in the catch basin. Additionally, the Environmental Programs Manager will commit to ensuring all new employees are educated as soon as they start employment. This will help them in adjusting their daily activities immediately to comply with the requirements of the Permit.

Industrial Component

Program Strengths: Since the City has only one industrial site, it had been determined that a strong pro-active approach to compliance would be adopted. The one site (Baker Iron Works) has been incorporated into the routine inspection schedule of the commercial sites as dictated in the JURMP, thereby allowing the City to ensure that the site is up to code on all storm water issues. Since the one site was elevated to a high priority site, the City has taken an active approach in ensuring that the site will be in compliance at all times.

The City has developed a strong working relationship with the owners of Baker Iron Works. City staff have visited the site multiple times and worked cooperatively with them to come into compliance. The owners have responded well to the City's educational efforts and compliance requests. The City has successfully worked with Baker Iron Works to help them come into compliance by instituting several BMPs throughout the property. Although there are no indications from any of the Dry Weather Programs throughout the years that this site has contributed to pollutants to the City's MS4, the mere fact that there is a possibility of this occurring in the future prompted the City to request that a few BMPs be installed onsite. A couple of very successful accomplishments occurred that are worth noting.

The first accomplishment was the sealing up of a small storm drain located on the property that drained directly away from the property and into street.

The second BMP installed was the daily dry sweeping of the property to ensure that no sediment/gravel got into the street by automobile traffic.

The third BMP integrated into their normal routine was the use of a magnet on the grounds outside where some work is conducted using steel. The magnet is used to sweep the entire yard and collect miscellaneous scrap metals that may have collected on the ground. This activity is conducted on an as needed basis, but no less than once per week.

The fourth, and most important, BMP was the installation of the storm drain sump/infiltration pit at the northwest corner of the property that was designed to catch all low flow dry-weather runoff from the property and filter it before it left the property. These BMPs have been successfully implemented by the owners and are currently in place and functioning.

An improvement area that has been listed in previous annual reports involved ensuring that Baker Iron Works is complying with all requirements of the State Industrial General Permit, even though this is not a requirement of the storm water Permit. However, Baker Iron Works asked for the City's assistance in compliance and so City staff has worked with Baker Iron Works to implement the necessary elements for compliance. This has further helped the relationship grow between the City and its industrial partner, furthering the great working relationship.

As mentioned in last year's Annual Report, a devastating fire broke out in the office of Baker Iron Works (during FY 06/07). Most documents were destroyed, making it very difficult to send in all necessary paperwork to the State under the General Industrial Storm Water (GISW) Permit. Baker Iron Works staff worked directly with staff from the State regarding this issue and is in compliance. Additionally, the employee training manual was destroyed, however this year's inspection confirmed that another one was developed and is available onsite.

City staff also worked with Baker Iron Works to come into compliance under the GISW. Baker employees requested help with the monitoring requirements so City staff trained them in the proper sampling techniques and offered options on where to take the samples for analysis. This just proves the healthy working relationship between City staff and Baker Iron Works.

Improvement Areas: The City is confident that it is fulfilling all requirements of the Industrial Component. City staff is committed to inspecting Baker Iron Works annually as part of its high priority facility inspections due to the potential to release pollutants into the City's MS4. City staff believes that this industrial site is working well within the regulations of the Permit and is satisfied with the current situation. City staff will look to continue the open communication with Baker Iron Works and conduct further inspections to ensure that all new employees are aware of and compliant with the storm water regulations. Also, City staff will ensure that Baker Iron Works is aware of any new regulations coming down from the State and work with them to ensure compliance.

Commercial Component

Program Strengths: The City has a very aggressive commercial inspection program that goes above and beyond the Permit requirements. As reported previously in this Report, the City inspected 100% of *all commercial facilities* identified in the JURMP inventory. This is above and beyond the requirements of

the Permit, which states that 100% of the high priority sites be inspected during the second year of Permit implementation. In addition, the City implemented an aggressive Fats, Oils and Grease (FOG) inspection program to ensure the reliability of the sewer system, and prevent sewer spills caused by grease buildup. These two programs demonstrate the City's proactive approach to maintaining compliance with the Commercial Component of the Permit, and are described in more detail below.

The City also re-inventoried the commercial facilities as part of the JURMP revision and set minimum inspection frequencies per the new Permit. The facilities were inspected by an independent consultant specializing in storm water and FOG inspections, with follow-up being conducted by both the contractor inspector and City staff.

As stated in the new JURMP, the City currently had 77 stationary facilities, of which 67 are identified as high Threat To Water Quality (TTWQ). The JURMP states that in the second year of JURMP implementation, at least 25% of all inventoried stationary businesses will be inspected, meaning 17 sites are required for inspection. In addition, the JURMP states that at a minimum, 100% of all sites (excluding mobile sources) determined to pose a high threat to water quality will be inspected in the second year of implementation, increasing the number of facility inspections from 17 to 67. The City, through its contractor, went above and beyond the required 67 inspections and inspected all 77 facilities, three of which were no longer in business. Thirteen (13) facilities required more than one follow-up inspection and no major violations were detected. All facilities were in compliance during the enforcement inspections conducted by City staff. A summary of the follow-up actions can be found in the Commercial Component of this Report.

Another program strength is the implementation of the City's grease management ordinance. The City is happy to report that a grease management ordinance was passed by City Council on September 7, 2004. Staff introduced the proposal to City Council on February 17, 2004, and got the approval to move forward with the education of local restaurants and the public about the pending ordinance. A condition of the resolution once the proposal passed was to give restaurants 18 months to install a grease trap/interceptor, or receive an approved waiver from the City. Therefore, all restaurants in the City (even existing restaurants) must have a functioning grease trap/interceptor by March 2006. This is a huge accomplishment by City staff as it is well documented that most major sewer spills are the result of grease related problems. Inspection of the grease

traps and maintenance are accomplished in conjunction with the storm water inspections. As mentioned above, the contractor the City hired to perform facility inspections also specializes in grease management device inspections. The contractor included grease management inspections into the storm water inspections and check for such things as proper cleaning and maintenance, record keeping, duct cleaning, screen cleaning and hood cleaning. These are all important aspects of storm water management, as grease can have an extremely detrimental environmental effect.

A significant improvement to the grease management program that occurred during this reporting period is the increased level of inspection that was authorized and conducted by the City's contractor. As mentioned above, the City's contractor checked if each required commercial facility had a grease management device during FY 07/08. However, the inspection was taken to the next step in analyzing whether or not the installed device was of sufficient size and type. As often is the case with restaurants, they change frequently. So, an appropriate size and type grease management device may be sufficient for one type of restaurant, but if that restaurant closes and another, higher grease producing restaurant moves in, then the grease trap and/or interceptor may no longer be sufficient. This was a bold new move by the City that could be extremely controversial, but the City felt it was a necessary preventive measure and proceeding with the increased inspection level.

This process will take more time to complete as the restaurants have been notified of their insufficient management devices, but the City recognizes that to replace or install a device takes time. However, by getting the process started now, the City hopes to have all restaurants in compliance in the very near future. The results of this aggressive, innovative program will be explained in more detail in next year's Annual Report.

Improvement Areas: In previous annual reports, one improvement that was mentioned was the inspection of 100% of all high TTWQ commercial facilities in one reporting period. As reported above, this has been accomplished. The City is confident that all requirements of the Commercial Component of the Permit are currently being satisfied. One area of improvement may be increasing the amount of education and public outreach to the business community. The City believes that they have a good relationship with the current business community but more education is always welcome. City staff could make an increased effort to educate new businesses as they apply for business licenses but producing additional educational brochures and pamphlets.

Residential Component

Program Strengths: The City provides a wide range of programs for its residents to allow for convenient implementation of pollution prevention activities. Among the many programs the City provides are:

- Curbside recycling (first in the County to provide this service)
- Curbside Green-waste collection
- Aggressive and convenient Household Hazardous Waste collection program (described in detail in Residential Component)
- Community Education Program (described in Residential Component)
- The development and maintenance of the City's website regarding the Storm Water Program
- Community workshops on proper landscape practices
- Educational opportunities at local community events (Fiesta Del Sol, Beach Blanket Movie Night, Coastal Cleanup Day, Paws at the Park, etc.)
- Free presentations on proper HHW disposal and Used Oil Recycling (conducted by Solana Center)
- Opportunity to join Community Clean and Green Team which meets monthly to discuss environmental programs

The City Council meetings are also televised and available live on the internet to all the residents of Solana Beach. Many times storm water issues are discussed during these meetings. Other positive aspects of the program are the direct mailings of education materials included in monthly trash billings and the articles placed in the community newsletter, "*Shorelines*." Tallying the amount of phone calls to the City's Storm Water Hotline does not appear to be a good assessment of the City's program. The City, because of its relative small size, prefers to conduct business on a more personal level. This has proven to be a much more effective way to work with the public. Therefore, although the hotline is still publicized, City staff distributes their direct telephone numbers to the public when dealing with storm water issues. This allows direct, immediate contact with a

Staff member, which ensures immediate, effective response to storm water issues.

As stated in last year's Annual Report, City staff document contacts (phone call, visit to City Hall, etc.) with the public regarding storm water issues to help assess the effectiveness of the program over time. The only calls documented are ones that required staff action on some level. The community of Solana Beach is very unique in that the residents are actively involved. Staff receives numerous phone calls every day that must be addressed immediately. Therefore, it would be unreasonable to document every contact made by the public, only the ones that pertain to storm water and where action is needed.

Another area of improvement mentioned in previous annual reports was to develop additional educational materials for the residential community. This activity is constantly being addressed by the North County Storm Water Program (NCSWP) discussed previously in Chapter 8. In addition, as mention throughout this Report, a large focus was placed on developing an effective regional educational program in the requirements of the new Permit. The Copermittees have formed a regional workgroup to develop a regional "brand" that will be recognizable by all residents throughout the region. The Copermittees have adopted the "Think Blue" campaign developed by the City of San Diego, since this slogan is widely known throughout the region. The activities and programs that have been developed and implemented by this group are described in the Regional Unified Annual Report. The City has been an active member in this workgroup during this reporting period.

The City feels that it is much more effective and efficient to address these issues collaboratively with the NCSWP and the Regional Educational Workgroup. This allows for a consistent message to be disseminated to a large population of people throughout the region, as well as resulting in a significant cost savings for the City. As for requirements/projects unique to Solana Beach, Staff will continue to develop materials as the situations arise. A few examples of these specialized educational materials are listed in Chapter 8 of this Report.

Improvement Areas: For the next reporting period, City staff will evaluate this component and make any necessary alterations to the program. The City will continue to develop educational materials for the residential community, both jurisdictionally, on a watershed basis through the NCSWP and regionally through the Regional Educational Workgroup.

Land-Use Planning for New Development Component

Program Strengths: The City continued its implementation of the Standard Urban Storm Water Mitigation Plan (SUSMP) program as well as participated in the development of the new SUSMP. The City has successfully implemented the SUSMP review into all plan check processes. Although there will not be many projects within the City subject to this new requirement (the City is 95% built-out), the appropriate departments are still very aware of the requirements. In addition, the new model SUSMP was developed and approved by the City during last period and the City is now implementing the requirements of the new SUSMP program during this reporting period.

The Planning Department is actively involved in the City's Storm Water Program, and often notifies the Environmental Programs Manager when a proposed project may have storm water implications, including possible SUSMP projects. Although, as mentioned above, the City is almost completely built-out, the Planning Department has, as a result of this Permit, developed a list of possible proposed projects that may require a SUSMP. These projects have not been approved, but Planning Department staff have surveyed the City and put this list together to warn other staff as these projects may be proposed soon. This gives staff a "heads up" before the projects are submitted that they will probably be subject to the SUSMP requirements and so the process can begin when, if ever, these projects are proposed.

As mentioned previously in this Report, the City is very small and by nature, very intimate. This applies to development projects as well, as the City Council reviews development projects very closely. It is extremely rare when a significant development project is proposed that has not gone through extensive review by the applicants and City staff prior to submittal. This allows the Community Development/Planning staff to inform the applicants of possible storm water issues (especially grading, LID, HMP and SUSMP projects) prior to submitting their plans, so that the project will incorporate necessary storm water features into the original plans. This is extremely helpful to the applicants, as it avoids the possibility of redesign and speeds up the process. Therefore, most applicants set up meetings beforehand with Staff to review their plans to avoid any possible delays or impediments to their proposed projects.

Another extremely important activity that was described in last year's Annual Report but is worth mentioning again is the relocation of the City's contract Building Department from the City of Encinitas City Hall to the Solana Beach City

Hall. The cities of Encinitas, Solana Beach and Del Mar all share a private building department (EsGil) and until recently, it was housed full time in Encinitas. This made it extremely difficult to work collaboratively with and communication was relatively non-existent. However, now EsGil staff spends half their day at the Solana Beach City Hall, and files for Solana Beach projects are kept onsite. This has helped keep the communication lines open and greatly assisted the coordination of during and post-construction inspections by City staff. Now, before final occupancy approval is given by EsGil, they can check with City staff to ensure all post-construction BMPs were installed correctly. This is an extremely significant development as now Staff has an opportunity to ensure that all post construction BMPs are installed according to plan, before they are covered up in the construction process, which occur a majority of the time.

Improvement Areas: The City will continue to educate prospective applicants regarding the SUSMP, LID and HMP if their respective projects will be subject to the new regulations. The City is very confident that its Land Use Planning component is very effective; however, it will continue to be modified in the future when necessary. The City is expected to initiate an update to its General Plan sometime during 2010. This will have a major impact on the storm water program and City staff will make certain that elements of the Permit and JURMP are incorporated into the new General Plan. In addition, as the new SUSMP, LID and HMP are finalized and adopted, City staff will develop new educational materials for the construction community.

Construction Component

Program Strengths: The City Inspector and Environmental Programs Manager are responsible for conducting construction site inspections. The City Inspector is responsible for all public CIP projects, whereas the Environmental Programs Manager deals with all private projects.

All construction sites were inspected for storm water issues based on the frequencies described in the City's JURMP. Since there are relatively few construction sites in the City, staff often times can visit the higher priority sites more frequently. Additionally, since the City only has one "City Inspector" for the entire City, he is responsible for monitoring all construction sites for all construction related issues. Therefore, he spends his whole day out in the field, and upon visits to construction sites for any issue (storm water related or not), he is able to monitor the BMPs on a daily basis. If the City Inspector notices a

problem related to storm water, he notifies the Environmental Programs Manager immediately. The Environmental Programs Manager then investigates further, taking any necessary corrective or enforcement actions. This program has worked very well due to the already established relationship between the contractors and the City staff. Because of this pre-established relationship, the transition into storm water compliance was virtually seamless. The Inspector keeps a daily log of all his activities, and storm water related issues are included. The City also mailed out a wet-season reminder to all active construction sites reminding them of their obligations under the Permit. Therefore, the City is assured that all contractors are aware of the regulations, making enforcement much easier for the City.

Additionally, for all CIP projects, the applicant/contractor is required to have a Pre-Construction Meeting with City staff in which storm water issues are discussed. At these meetings, contractors are required to sign a Pre-Construction Inspection Checklist, are given a sample copy of the Site Inspection Checklist, and they are required to fill out a Wet-Weather Triggered Action Plan (if the project will be in construction during the rainy season). All of these measures are taken to ensure that all contractors are aware of the storm water regulations, and it helps the enforcement aspect of the Permit as staff can be assured that all contractors have been educated and cannot claim ignorance of storm water issues. Appropriate enforcement actions (corrective, stop work, fines, etc.) can be enforced without fear of being challenged by violator.

Another activity that has proven very successful in regards to construction activities was the distribution of a colorful, informative BMP Construction Brochure. This brochure was developed by the NCSWP and delivers a consistent message for all North County Cities. The brochure is a tri-fold that gives background information on the storm water program and regulations and on the reverse side is a large diagram of a common construction site with the general BMPs shown and described. This brochure has been a huge success with the construction/developers world as they can post this brochure at their site to remind their employees of proper BMPs. These brochures are attached to all building and grading permits.

The City believes that any opportunity to educate the community should be taken advantage of. So, during this reporting period, 224 BMP Brochures were distributed to the community, as compared 470 during FY 07/08, 521 during FY 06/07, 509 during FY 05/06 and 416 during FY 04/05. The drastic reduction in brochures distributed, during this reporting period, directly reflect the slowdown in

construction activities region-wide. All building project applicants were given a brochure; there were just drastically reduced projects during this reporting period.

As discussed in last year's Annual Report, the City developed and now tracks the SUSMP long-term BMP maintenance agreements as required by the Permit. In addition, the City continues to implement the Long Term BMP Maintenance Agreement that requires the applicant to submit a recorded document from the County of San Diego which includes the maintenance activities required and gives the City the legal authority to inspect the BMP to ensure compliance. This is an extremely helpful tool in ensuring that the post construction BMP is not only installed, but is being properly maintained to remain effective.

As mentioned in last year's Annual Report, there are significant new construction requirements in the new Permit. The significant additions to the new Permit include the development and implementation of the Hydromodification Plan (HMP), Low Impact Development (LID) and the update to the model SUSMP. The City is pleased to report that these new programs either have been developed or are currently in the process and the City is participating in the regional process. The HMP program is not expected to affect the City; however the City still contributed funding toward the program development as part of its Copermittee responsibility to the region. The City also revised its Municipal Code to adopt the updated model SUSMP in compliance with the new Permit regulations.

Improvement Areas: During the next reporting period, the City is committed to improving and modifying the construction program if any deficiencies are detected. The City is also committed to developing more educational materials to distribute to the public, and contractors in particular. The Construction BMP Brochure has been a major success, and the contractors/developers are constantly looking to us for more information and guidance.

With the adoption of the new Permit, additional construction activities and programs need to be developed and implemented in the years to come. The City will continue to work with the Copermittees to develop these programs for implementation. One area of improvement that the City is looking at is possibly hiring a specialized contractor to conduct construction inspections. This is similar to the City's decision to hire a contractor to perform commercial/industrial inspections, this will free up limited Staff resources while providing increased service to the community. The City Council approved $12,000 in FY 09/10 specifically for construction inspections, further strengthening the City's

commitment to protecting the local water quality. The new Permit contains significant additional requirements for the Construction Component, so the City felt it was prudent to strengthen its program as well, and hiring a specialized consultant is a first step in the right direction.

Illicit Discharge Detection and Elimination Component

Place Holder – This will be submitted with Chapter 7 on December 15, 2008 as a result of Addendum No. 2 adopted by the RWQCB

Education Component

Program Strength: The City feels very strongly that the current education program being implemented by City staff has been very effective. The amount, and quality, of educational materials developed by the City and through collaboration with the other Copermittees, has proven to be very successful. The following events have allowed City Staff to educate the community, both residential and commercial:

- Fiesta Del Sol
- Paws in the Park
- Beach Blanket Movie Night
- Annual Coastal Cleanup Day
- City Council Meetings
- Clean and Green Team
- Civic and Historical Society meetings
- *Shorelines* Community Newsletter
- Green Flash website
- Brochures and Handouts at City Facilities
- Partnerships with Solana Center, Santa Fe Irrigation District, Kids Korps and the Solana Beach School District

The complete educational program is discussed thoroughly in the Educational Component of this report.

Improvement Areas: The City is very satisfied with its current educational program. The North County Storm Water Group has gone above and beyond the

requirements of the WURMP's educational component, and has delivered many quality items to the resident's of Solana Beach.

Also, as reported in last year's Annual Report, the City is participating in the development of the new regional educational program. The new Permit requires the development of a regional educational program, and the City is committed to working with the other Copermittees to develop a successful and comprehensive program. Also, the new Permit requires Watershed based education based on the activities chosen by the participating Copermittees, and the City is committed to working with the Copermittees in its two watersheds to develop and implement the educational activities to support the watershed activities. These activities are described in detail in the Regional Unified Annual Report (submitted with the Copermittees reports in September 2009) and the Watershed Annual Reports which will be submitted in January 2010, respectively.

Public Participation Component

Program Strengths: The residents of Solana Beach have multiple opportunities to interact with City staff through the hotline, website, community events and direct interaction. All City staff are available to discuss any issues with the community if they come into City Hall, and most all literature distributed currently has the appropriate Staff contact information listed on it. City staff prides itself on dealing with the community on a personal basis, and as a result has established many positive relationships with key members of the community. The City continued to host the annual Coastal Clean-Up Day that allowed the community to get involved as well as distributing educational brochures at the local community events, Fiesta Del Sol and Beach Blanket Movie Night. Some additional opportunities include:

- Copermittee meetings
- Adopt-A-Beach Program Beach Cleanups
- Fiesta Del Sol
- Paws in the Park
- Beach Blanket Movie Night
- Shorelines Articles
- Opportunities to work with local Partnerships/Collaborative's
- City Hotline
- Green Flash website

- Clean and Green Community Group

Improvement Areas: The City realizes its responsibility to get the community involved in the storm water program. The City has given the residents ample opportunity to get involved in implementing the program. City staff is very visible throughout the community on a daily basis and routinely has discussions with residents regarding storm water issues. The feedback given to City staff has been overwhelmingly positive, and the City looks forward to continuing this personal relationship with the community.

In addition to the JURMP public participation opportunities, the community has public participation opportunities through the WURMP process. More information on the WURMP process is available in the WURMP annual reports submitted in January.

11.5 Level 4: Load Reductions

Level 4 load reduction is a key assessment measure for the storm water program. Ultimately, the goal of the storm water management programs is to reduce pollutant loading into the City's MS4 and by doing so, improve the discharge and receiving water quality. However, load reductions are very difficult to quantify, and the Copermittees as a whole are struggling to develop methods to achieve this task. This being said, the City will continue to analyze any data received that may be able to show a load reduction with the hope that it will somehow be linked to improvements in discharge and receiving water quality.

As a result of the Regional Water Quality Control Board's comments on the City's FY 02/03 Annual Report, the City has adapted its street sweeping program. The City now requires the private street sweeper to document all load information on a weekly basis. This includes an estimated amount of debris collected. This information was collected initially in FY 05/06 and continued into this reporting period as well. The total amount of street sweeping debris collected in FY 05/06 was 299.1 cubic yards and it was reduced in FY 06/07 to 188 cubic yards. The total amount of debris collected in FY 07/08 increased to 275 cubic yards. This amount remained amazingly constant during FY 08/09, with 274 cubic yards collected. The increases achieved in the last two reporting periods bode well for the performance of the new street sweeping contractor. As mentioned previously in the Report, the City recently encountered a difficult time with the previous street sweeping company. The City had concerns with the performance of the previous company, and random inspections of the routes

taken and the GPS reports given to the City indicated that the contractor was not performing up to the contract standards. That could be a good indication of why the amount of debris dropped so drastically from FY 05/06 to FY 06/07. The City terminated the contract with the underperforming contractor and now has a street sweeping contractor that appears to be doing a quality job.

Tracking cubic yards of street sweeping debris may be an effective way to calculate load reductions, which would be a good assessment of the program's effectiveness. Although, most of the debris collected by the street sweeper in the City of Solana Beach is organics (leaves, grasses, etc.), so therefore, this may not be a good indicator of load reductions. However, the information will be collected and analyzed and any trend will be documented for future use.

Another possible load reduction calculation could be documenting the amount of material collected and removed from the various BMPs throughout the City. These BMPs include:

- Annual inspection and cleaning of MS4 system
- Maintenance of CDS Unit(s)
- Maintenance of detention basin adjacent to San Elijo Lagoon
- Load reduction calculation for the Low Flow Diverter at Fletcher Cove and the filtration basket located upstream from Seascape Sur Outfall
- Load reduction calculation for the Bioswale maintained at La Colonia Community Center
- Maintenance records of permanent treatment BMPs required as part of SUSMP projects (privately owned)

All of these activities may not be feasible, however they all warrant further consideration. It has been generally agreed upon the Copermittees are not capable at this point to perform complete load reduction calculations and assessments, but we are committed to working towards this goal. The Copermittees have decided that this Level (4) should be attacked at a regional level, and not jurisdictionally. A significant regulatory program that should force us in this direction is the TMDLs that have been developed and are now being implemented by the Copermittees in several watersheds. The City is currently involved in the San Elijo Lagoon TMDL Investigative Order, and as relevant information is received from the monitoring they will be discussed in upcoming Annual Reports.

11.6 Levels 5&6: Changes in Discharge and Receiving Water Quality

The City has been collecting and analyzing jurisdictional monitoring data received through the dry-weather and coastal monitoring programs. The City will continue to analyze the data to better understand the collective water quality picture in the City. The data will be assessed to determine the potential water quality problems within the City. Data collected by the City will be analyzed independently as well as collectively with the regional monitoring programs. Although it is generally accepted that it will take many years to develop a trend in water quality, the City will nonetheless analyze its data on a continuous basis to see if anything develops. There are no glaring deficiencies in the water quality in the City, but the situation at Seascape Sur will continue to be monitored to ensure that the storm drain does not have an impact on the quality of the receiving water (Pacific Ocean). Seascape Sur will be explained in greater detail in the next Chapter.

The Regional Monitoring Program currently conducts trend analyses for the Wet Weather Monitoring Program. The goal of the WWMP is to collect data and analyze the data to determine if there are in fact improvements in the receiving water quality throughout the region. The City participates in this workgroup and will continue to assist the Copermittees in determining if we have obtained levels 5 and 6 of the assessment strategy.

11.6.1 Dry Weather Monitoring Data

<u>2009 Summary</u>

Place Holder for 2009 Dry Weather Monitoring Program – Will be submitted in December 2009 as a result of Addendum No. 2 adopted by RWQCB

11.6.2 Coastal Water Quality

The Pacific Ocean is the ultimate receiving water for the City although there are other intermediate receiving waters, such as the San Elijo Lagoon and the San Dieguito Lagoon. To measure the quality of the coastal receiving waters and assess the JURMP effectiveness, the City has monitored its one coastal storm drain outfall (Seascape Sur). The City used to monitor another outfall at Fletcher Cove; however, a low-flow diverter was installed in 1998 to divert dry-weather flows into the sewer system. This was done because of historically high levels of

bacteria detected in that area.

Coastal Storm Drain Outfalls

The coastal outfall monitoring program reporting period is different than the reporting period for this Report. The coastal monitoring program reporting period runs from November through October. All cities with flowing coastal storm drains meet regularly (Coastal Monitoring Workgroup) to develop and implement this program to promote regional consistency.

The Coastal Monitoring Workgroup developed an adaptive monitoring approach. This approach was developed to allow the individual cities to adapt their program to concentrate their limited resources on problematic locations and ease up on consistently non-problematic areas. The City had *no receiving water exceedances* for bacteria during this reporting period, which was consistent with the results of the last two reporting periods. In addition, it's apparent that the increased educational and oversight of the vendors at the Fiesta Del Sol was successful as there were no exceedances after the event for the fifth year in a row. City staff again made this a priority during this reporting period to meet with the event organizers and discuss BMPs with them to relay to the individual vendors and provided them with more educational materials. In addition, City staff monitored the Food Court during the event to ensure all vendors were abiding by the storm water regulations. This was mentioned in previous annual reports as an improvement area because of the consistent exceedances after the Fiesta Del Sol that had occurred in the past.

The storm drain at Seascape Sur had multiple exceedances for total coliform, fecal coliform and enterococcus during this reporting period. However, the magnitude and the frequency of exceedances have decreased during this reporting period, which is a significant achievement. This is a storm drain that has a history of high bacteria counts and is currently the focus of an IC/ID investigation. The City has recently installed upstream BMPs that may be contributing to the improvement in water quality. The program is being implemented by City staff, and the complete results are presented in the Coastal Monitoring Annual Report, and explained in the next Chapter of this Report.

The Copermittees had to modify the Coastal Monitoring Program due to the new requirements of the Permit. The Coastal Monitoring Program workgroup made the necessary changes and additions to the program and are currently implementing the new model. The City is confident that it has met the

requirements of both the old Permit and new Permit. The complete Copermittees Coastal Monitoring Program is incorporated into the Regional Monitoring Annual Report.

Beach Posting Data

The County Department of Environmental Health has monitored beach water quality for bacteria since the 1950's. This sampling is used to assess the health of the beaches. When bacteria levels exceed State standards, the County posts the beaches with signs warning and advising the public not to enter the water. In 2000, there was a significant change in protocol as a result of the passage of AB411, which required additional testing, incorporating testing for enterococcus, and required the beach be posted when only one sample exceeded the standard.

During this reporting period, there were ***no beach closures*** **in the City of Solana Beach,** which bodes well for the overall effectiveness of the City's program.

CHAPTER 12
Special Investigations

CHAPTER 12: SPECIAL INVESTIGATIONS

12.1 Introduction

In accordance with Permit Section D.4.e, this section of each Annual Report will describe the Copermittee's efforts to eliminate all detected illicit discharges, illicit discharge sources, and illicit connections as soon as possible after detection. The City's Illicit Discharge Detection and Elimination (IDDE) program is designed to identify, prohibit, and eliminate discharges that are a significant source of pollutants with the goal of protecting receiving water quality. This section of each Annual Report will provide the results of any special investigations conducted during the reporting period. However, the City also responded to many other complaints of possible IC/IDs, which resulted in rapid compliance, but did not warrant or require a comprehensive special investigation.

Although this Report does not contain a completed Chapter 7 due to the extension granted in Addendum No. 2, this Chapter will remain as many activities related to this Special Investigation can be reported on. Any additional information gathered from the 2009 Dry Weather Monitoring Program will be included in the December 12th submission.

"The Mystery of the Bacteria at Seascape Sur…"

12.2 Background

As first reported in the FY 2002/2003 Annual Report, there has been as ongoing, historical problem occurring at one particular storm drain in the City. The location, Seascape Sur, has had historically high levels of bacteria; often times exceeding limits at the storm drain and occasionally in the receiving water (there were *no exceedances in the receiving water during FY 08/09*). Previous annual reports go into deep detail regarding the history of this problem and the City's efforts to remedy it. Since the history is important in describing the situation, this report will include much of what was written last year. Any added information that was discovered during this reporting period will be included in this report. Next year's report will include the City's additional efforts that were undertaken during the FY 09/10.

Prior to and during this reporting period, the City began a concerted effort to determine what was causing the elevated levels of bacteria at Seascape Sur

outfall (based on results from the Dry Weather and Coastal Monitoring Programs). The problem was thought to be resolved early on, but then monitoring results in subsequent years indicated the problem had either returned or persisted. In 2000, the City Engineering/Public Works Department was fairly certain that the problem had finally been corrected; particularly when the 2001 DWMP indicated the bacteria elevated levels had *decreased* (although they were still elevated above the normal range).

However, preliminary results from the 2002 DWMP revealed that the bacterial levels had risen from the previous year to a troublesome level (see 2002 DWMP, available at City Hall upon request). As a result, the City "went back to the drawing board," and with the help of MEC Analytical (consultant for the 2002 DWMP), began an upstream investigation that continued through the end of calendar year 2002.

History

The City began its DWMP in 1993, with no significant problems reported until 1996 when elevated bacteria levels were noted at the Fletcher Cove Outfall. Subsequently, the City constructed a low flow diverter (in 1998), which corrected the problem by diverting dry weather flow to the City's sanitary sewer system.

Between 1997 and 1999 results from the DWMP revealed some minor issues that were readily resolved, but nothing significant at Seascape Sur or Fletcher Cove Outfalls.

However, results from the 2000 DWMP identified two locations with high levels of coliform bacteria, which was of significant concern because both locations flowed directly to the beach via the Seascape Sur Outfall and were in fact, just a short distance from the outfall. The City conducted an extensive investigation and eventually found an old leaking sewer lateral that was buried under the ground near the site of the upstream catch basins in the parking garage of a business complex. The lateral was dug up, examined, and staff determined that cementing over the pipe would be the best method to ensure it was completely sealed off (investigation confirmed that the pipe was no longer in use). Because the leaking lateral was located quite close to the curb inlet, City staff, plumbing contractors and the consultant were fairly certain that the pipe was the cause of the elevated bacteria counts.

To confirm that the pipe was the cause of the suspected pollution, the City

contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during several follow-up tests. At that point, staff was optimistic that their efforts had been successful.

The 2001 DWMP included ten sites for testing. To ensure the problem from the previous year had been corrected, the program included the same two sites that had elevated bacteria counts in 2000. Surprisingly, the site had elevated bacteria levels, but because they were much lower than the previous year, staff believed that the problem might be residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be televised in 2002. The televising of the lines was scheduled during the routine cleaning of the storm drains later that year. Due to various issues, the televising of the lines did not take place prior to the implementation of the 2002 DWMP, which was under the regulations of the new Permit.

The City requested proposals from consultants to design and conduct the 2002 DWMP. The contract was awarded to MEC Analytical in late spring, early summer 2002. The City requested that the same two monitoring sites from 2000 and 2001 be included in the program, regardless of the new sampling procedures required of the Permit. The City included those sites to ensure continual monitoring of the area.

12.4 The 2002 Investigation

Samples for the 2002 program were collected on August 6th and 7th, 2002 throughout the City by MEC Analytical (MEC). Shortly thereafter, MEC contacted the City and informed the Storm Water Coordinator that significantly high levels of bacteria had been found at the locations of the year 2000 and 2001. As shown on Table 13-1, the amounts were troublesome.

Table 12-1 DWMP Initial Results (Sampled August 6-7, 2002)

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
1	West Side of Sierra Ave	700,000	30,000	24,000
2	Manhole between sites 1 and 2.	900,000	50,000	28,000
3	Seascape Sur Outfall (downstream from sites 1 and 2)	800,000	21,000	35,000

Results are reported in MPN/100 mL.

Based on the above results, it appeared that the problem, whatever the cause, was more pronounced at Site 2, the manhole, than at either Site 1 or 3. Therefore, the City immediately requested that the conveyance system be televised. At the same, the City authorized MEC to conduct an upstream investigation, accompanied by City staff. MEC indicated to staff that the elevated levels of bacteria, combined with the results from previous years, were a sign that an illegal sanitary wastewater connection may be the cause of the problem. However, subsequent inspection by City staff (including public works crews that inspected various locations of the line) did not reveal any expected accompanying waste solids. A somewhat consistent drip was noticed, which was traced back to nearby condo complex that was discharging their pool (the process was discontinued and the complex changed their procedures to drain into the sewer system). Other causes of the slow drip appeared to be over-watering of the many condominium complexes on Sierra Avenue.

Staff sent letters to all HOAs on Sierra Avenue that drain to the Seascape Sur outfall to eliminate the slow drip. Staff received calls from some of the HOAs in response to the letters and discussed the issue in more detail and received positive responses.

The results of the televised line were viewed by the City Engineer, which revealed a dip in the line approximately at the location of the manhole (with the elevated bacteria) and two possible illegal connections just west of the curb inlet. However, additional investigation indicated that the connections were not a problem, but staff thought that the dip in line could be harboring residual bacteria, and possibly re-growth.

12.4.1 More Testing

In an attempt to pinpoint the source of the contamination, MEC and City staff began the upstream investigation on August 19, 2002. Samples were collected from Site 1, and at a curb inlet catch basin on the *eastside* of Sierra Avenue, directly upstream from Site 3 (named Site IE).

Staff was surprised when the results of the second round of sampling revealed *higher levels of total coliform (2,400,000), fecal coliform (50,000) and Enterococcus (500,000)* at Site 1E, than the previous results from Sites 1 and 3. Further, the results were surprising given that the dip in the line at Site 2 was thought to be the source of the contamination. *The results seemed to indicate*

that the source of the bacteria was coming upstream from Site 1E.

12.4.2 Traveling Further Upstream

The curb-inlet catch basin on the east side of Sierra Ave (Site IE) receives street runoff and runoff from the Beachwalk Business Complex (Beachwalk). Beachwalk is a collection of various businesses located at 437 South Highway 101 in Solana Beach. Beachwalk businesses, at that time, included several restaurants (Pacific Coast Grill, California Pizza Kitchen, Rubio's), several small food facilities (ColdStone Creamery, Solana Beach Coffee Company, VitaFit, etc.,) several professional offices, a bike shop and others. Beachwalk was constructed approximately 13 years ago and at the time of construction, an on-site storm drain system, that collects on-site runoff from the property, was lawfully connected to the City's MS4.

Based on the results of the second round of testing, City staff thought that the source of the contamination must somehow come (or significantly contribute) from Beachwalk. Upon speaking with the Management Group that oversees the property, staff made several visits to look for possible non-point source explanations and speak with business owners to discuss BMPs (see Timeline below for more details).

On August 27th, 2002, City staff went to Beachwalk and personally delivered educational brochures to *all of the businesses,* educating business owners about storm water regulations and BMPs. To ensure that all the businesses were addressed, door hangers were left at the businesses that were not open at the time of the visit and additional property visits were scheduled. City staff also spoke with the person responsible for maintenance of the property and provided detailed information about pollution prevention, storm water regulations, and BMPs and how to report violations. Many of the business owners were extremely helpful and all were cooperative. Some business owners went out of their way to show staff potential problem areas, discuss BMPs and provide access to private restroom facilities (staff were looking for overflow problems and unusual construction or evidence of recent repairs).

Staff conducted another visit on September 3rd, 2002 in response to a call from one of the business owner's that staff had contacted on August 27th, 2002. City staff confirmed that foul smelling odors were coming from catch basins on-site. Further inspection revealed excess watering occurring on the patio of the Pacific

Coast Grill restaurant. A manager at the restaurant was contacted and educated regarding BMPs and the new storm water regulations. During this visits, staff determined that samples were needed at various storm drains throughout the complex to try and pinpoint and eliminate the problem. City staff identified several locations that should be tested and requested permission to collect the samples from the property owners.

On September 4th, 2002, City staff accompanied MEC to conduct additional testing and investigation. The process confirmed staff's suspicion that the bacteria levels were coming from Beachwalk. Various samples were collected at locations throughout the complex. An outdoor floor drain just outside the kitchen of Pacific Coast Grill appeared to have dark brown, stagnate water in it. On-site ammonia tests were also consistent with elevated bacterial numbers (60 mg/L). A sample (Site 32) was then collected for further lab analysis. Sites IE and 3 were also sampled again for additional information. As shown on Table 13-2, Site 32 confirmed that the contamination was coming from Beachwalk and most likely, the source was near or in, the floor drain outside Pacific Coast Grill Restaurant.

Table 12-2 Upstream Testing Results

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
32	Beachwalk floor drain	>16,000,000	300,000	>241,960
1E	East Side of Sierra Ave	3,000,000	50,000	3,550
3	West Side of Sierra Ave	800,000	70,000	24,950

Results are reported in MPN/100 mL.

12.4.3 Just When We Thought the Problem was Solved…

After the lab results came back and confirmed what was suspected, the property owners were notified of the severity of the situation and were eager to remedy the problem and work with the City to find a solution.

The property owners worked together with the City's Public Works Supervisor and a local plumber experienced in storm drain cleaning to correct the problem. The east side catch basin was temporarily sealed, the pipe was flushed and a specially equipped trucked was placed at the catch basin to vacuum out the resulting sludge for proper disposal. As soon as the procedure was complete, on September 18th, 2002, City staff collected additional samples from all three sites (32, 1E and 3), *expecting the results to show a decrease in bacteria levels*. The

residual water in the pipes was clear of the brown, stagnate water, which also contributed to the hope that the problem was *surely* resolved. However, while results from Site 32 indicated *reduced bacterial levels*, downstream sample *again* indicated *high bacteria levels* (the sample on the west side of the street).

12.4.4 Brainstorming

At first, these results seemed a bit perplexing (maybe it was the dip in the line?, etc.), but then, while staff continued to brainstorm ideas to solve the problem, some engineers thought was that the flushing of the system might have loosen some bacteria, which escaped collection by the Vactor truck. The City decided to wait a few weeks to see if the problem was alleviated after the system had time to completely flush out.

In the meantime City staff met with the property owners and 1) reviewed old construction plans for the property to look for potential areas of cross contamination; 2) discussed possible options that may help alleviate the situation, including training and education of business owners, television activities that might occur near the catch basin; and 3) it was decided that a temporary cap would be placed on the floor drain of Site 32 to secure it from contamination for 30 days (the cap could be removed during rain to prevent flooding).

After 30 days (and two rain events), staff requested that the plumbing contractor remove the temporary cap to allow further testing, which was agreed to.

12.4.5 Not again!

Surprisingly, results from this last round of testing indicated that there was still a significant problem on the property. An immediate meeting was scheduled with the property owners, who were informed of the test results and that the City now required them to remedy the problem through televising the lines, locating the illegal connection and reconstruction, or face serious fines by the RWQCB and the City. The property owners were concerned, responsive, cooperative and resolute in their attempts to do just that.

In addition, the City agreed to purchase a storm drain inlet filter to be placed in the catch basin just downstream from the complex, leading to the ocean outfall. It was installed the first week of December, and is maintained by the City's Public Works Staff. Although it does not filter the water passing through from

Beachwalk, it does help alleviate the problem by filtering out the water coming from the street. The City hopes that this will help reduce the high bacteria numbers found in the catch basin.

12.4.6 Action Taken By Property Owners During FY 03/04 Annual Reporting Period

By the end of December 2002, Beachwalk property owners had done the following to remedy the problem.

While attempting to televise the lines, a significant amount of sludge built up in the pipe prevented the camera from penetrating the pipes (which is likely the source of the problem, City staff also reviewed the small amount of footage that was performed in the pipes)

An extensive flushing out of the entire system was conducted, which took quite some time to accomplish amidst the rain events in December and the amount of material in the pipes.

The lines were televised and detected a large dip in the pipe where sediment and sludge were building up, possibly providing a breeding haven for re-growth of bacteria.

No illegal connections or sanitary waste connections were detected. There were a few pipes connected to the outfall pipe coming from the adjacent condos, however these lines were proven to be outdoor area drains. Beachwalk property owners and condo associations are completely aware of the responsibility to rectify the situation.

The City decided that they must increase their efforts to rectify this continuous problem to ensure the integrity of the receiving waters at Seascape Sur. The bacteria levels were still consistently high, often exceeding standard limits for the outfall, but, fortunately, not yet affecting the receiving waters. Growing increasingly frustrated, City staff decided that an increased effort, and the high costs that come with it, were necessary to finding the cause, and solution, to the problem at Seascape Sur.

On March 4, 2004, City staff televised the Seascape Sur storm drain line for maintenance purposes. The video showed a significant amount of sediment accumulated at the end of the pipe coming from the Beachwalk Business

Complex. Staff met with the Beachwalk property management and mandated that they clean the sediment from the line. The Beachwalk management complied to our request and immediately cleaned the pipe, and City staff supervised to ensure all Best Management Practices were used and abided by at all times.

Laboratory results were still coming back consistently high, so the City decided to take on the cost of completely cleaning the storm drain pipe with the hopes that it would remove any residual bacteria that may be contributing to the problem. The problem the City faced was that this had never been done before, and the dimensions of the pipe made it very difficult to develop a plan of attack. The pipe starts at the curb inlet on Sierra Avenue, then travels completely underground and slopes downward until it empties out onto the beach. The distance from the street to the outfall is approximately 550 feet and dips to 30 feet below the surface, so access is very difficult. The City was able to gain access from the neighboring condominium complex to place a vactor truck to ensure that no excess water would escape containment and empty onto the beach. The project took 5 entire days to complete (ending on Friday, May 5, 2004), with City staff working with its private contractor, and cost approximately $10,000. The City removed 4 cubic yards of sediment from the pipe, and used over 5,000 gallons of water. The City was confident that the next lab results would come back spotless.

12.4.7 What Happens Next…?

On the following Monday (May 10, 2004), City staff received a phone call from the County of San Diego Department of Environmental Health advising them that samples they took in the receiving water adjacent to the Seascape Sur outfall had failed AB 911 standards. The exact opposite had happened from what staff was expecting. It appeared that all the effort and money spent to clean the pipe had actually made it worse. However, Staff immediately began an IC/ID investigation and discovered that an adjacent condominium complex had a sewer spill that weekend and raw sewage had entered into the Seascape Sur storm drain. City staff was relieved that they found the cause of the high bacteria, but highly disappointed that all of their work, time, and money had been wasted by a small sewer backup, and it was back to square one.

Because the sewage was traced back to a private lateral, the City was determined to put the pressure on the condominium complex to clean the pipe again. Staff met with the HOA representative and a deal was worked out to have the pipe cleaned again, at the HOA's expense. Additionally, the City took this

opportunity to once again educate the HOA and wrote an article regarding the proper handling and disposal of grease for the HOA's monthly newsletter The City then set the HOA up with a plan of attack and supervised the process, but the effort was stepped up a bit. Staff worked with the Regional Water Quality Control Board to allow the City to use a small concentration of bleach mixed with the water to make sure that the pipe was completely sterilized at the end. This cleaning was done on September 24, 2004.

12.4.8 Where We Were in FY 04/05

The results of the cleaning performed on September 24, 2004 proved it to be very successful. The bacteria levels were reduced significantly and the City hoped that the sterilization would be a permanent fix. However, the results in the resulting few months showed that the bacteria was slowly increasing back to its historical levels, further frustrating City staff. This may be due to City staff's worst fear that the dip in the pipe could be harboring and resulting in re-growth of bacteria that may enter by way of decomposing organic debris and/or illegal dumping.

Since this did not permanently solve the problem, the City continued to explore other options. In March 2005, the City was discussing the situation with its contract lab, Weston Solutions, and jumped at the opportunity to participate in a pilot study aimed at refining a new lab analysis that would potentially categorize the generic coliform and enterococcus bacteria indicators as deriving from human or animal origins. This would be an extremely significant discovery because the City could further identify where the bacteria was coming from, human (IC/ID) or from animals (dogs, possums, raccoons, etc.), to help direct what steps to take in the future. The City could further refine its source identification and, in theory, stop wasting limited resources on sources that don't exist.

The pilot program is completed; however, the results did not come back revealing anything substantial. Only one sample came back positive for human bacteria (and this was somewhat inconclusive), and samples collected after this positive result all came back negative. Therefore, the City can conclude with relative certainty that the source of the bacterial contamination is not human. This one positive result may be caused by a single illegal dumping occurrence or by laboratory error. The resulting negative results show that there is not a continuous inflow of sewage, as would result if there were an illegal connection. Although the pilot program is complete, one early, important conclusion would be

that the bacteria is not coming from human origins, which would allow the City to eliminate this from source identification and focus its efforts on non-human origins.

12.4.9 Special Pilot Program FY 07/08

The City's lab (Weston Solutions) offered their services to the City for a special pilot program during FY 07/08. On 5/30/07 Weston staff met with City staff to investigate the surrounding areas to see if they could detect anything that may be contributing to the high bacteria levels adjacent to the east catch basin. Weston has performed similar investigations in other cities with very positive results. They were very interested in finding the source for the City, as we have been partners now for years on this. The results were very interesting and reconfirmed the City's belief that there is substantial re-growth occurring in the pipe as the bacteria results were much lower in the catch basins than at the outfall. The results are as follows:

	East Side Catch Basin (MPN/100mL)	Outfall (MPN/100mL)
Total Coliform	700,000	16,000,000
Fecal Coliform	80	50,000
Enterococci	41	483

The City and Weston Solutions partnered for a unique pilot study with the hopes of finally determining the source of the bacteria. The specialized studies were conducted to further analyze a unique phenomenon called "pseudofluorescence." This phenomenon first was detected in some samples from Seascape in the summer of 2007, when using the Enterolert method there were some false positives, or "pseudofluorescence." The lab noticed that the tests became to increase in frequency, and brought it to the attention of City staff after the March 31, 2008 samples were analyzed. The City and Weston then developed a plan to determine why this phenomenon was occurring, and if this could bring us any closer to solving the mystery.

Starting on April 30, 2008, Weston began testing the samples using the IDEXX method (SM 9223B) side by side with the Multiple Tube method (SM 9230B) for Enterococci in order to determine if the different methods yielded different results. Parallel analyses were carried out only on the outfall samples, as the

paired ocean samples never exhibited pseudofluorescence. The following are the results:

Date	IDEXX Results (MPN/100mL)	Multiple Tube Results (MPN/100mL)
4/30/2008	<10	170
5/29/2008	<10	300

Analyzing the results, it is easy to confirm that something is causing interference with the IDEXX method. Because of this, PCR analyses were also performed, with results ranging between 1,000-10,000 (PCR includes viable and non-viable cells, as it only looks for specific DNA markers, regardless of cellular viability), which validates the Multiple Tube results by showing a definite presence of the target bacteria.

There is some concern that detergents may be the cause of the interference and pseudofluorescence. Enteroalert (IDEXX) analysis from both months displayed pseudofluorescence wells, so both were tested for detergents using an MBAS kit. The results are as follows:

Date	MBAS Results (ppm)
4/30/2008	15
5/29/2008	25

The 5/29/2008 sample had a larger number of pseudofluorescent Quantitray - 2000 wells, which seems to confirm the relationship between pseudofluorescence and the amount of detergent in the sample.

As a result of this pilot study, an official method change for enterococcus was instituted beginning with the 6/28/2008 samples. Using the Multiple Tube method, MPN for enterococcus was determined to be 3,000 per 100mL, while results from Enterolert (performed as a continued comparison) were found to be 63 MPN/100mL, with a continued pseudofluorescence.

This pilot study will continue into FY 08/09, and will be reported on in further depth in next year's Annual Report. In addition, continued upstream investigations will focus on detergents as the presence has been recorded a

couple of different times.

The City will continue cooperating with Weston and their professional staff to investigate this ongoing mystery until a resolution is found.

12.5 Timeline of Significant Actions

August 27, 2002- City staff distributed storm water brochures to all the businesses located in the Beachwalk complex. Staff toured the mall, visually inspected on site catch basins, outdoor floor drains, restroom facilities, and inspected several restaurants and discussed pollution prevention BMPs.

September 4, 2002- Based on feedback from the testing, staff spoke with the managers of Pacific Coast Grill, reviewed the storm water regulations, spoke about prohibited activities and distributed storm water brochures.

September 4, 2002- City staff and an employee from MEC conducted upstream investigation. A small outdoor floor drain contained brown, stagnate water with a very pungent odor. The drain cover was removed and the material was sampled. MEC called a few days later and reported that the results were consistent with the numbers for raw sewage for total and fecal coliform and *Enterococcus*.

September 18, 2002 - The Beachwalk storm drains were flushed out using clean, fresh water and the sludge was vacuumed out into a Vactor truck at Site 3. Results from follow-up samples indicated that a problem still existed.

October 24, 2002- Additional samples were taken to see if the problem had been eliminated. Results from the lab showed that the problem had not been solved. City staff continued to meet with property owners to pinpoint the source.

November 2002- The City installed a specialized catch basin filter unit that is designed to catch all debris (trash, organics, etc.) from the street before it reached the MS4 system. It also has specialized bio-filter rolls to filter out the hydrocarbons.

November 13, 2002- a semi-permanent cap was placed on the floor drain that seemed to be the source of the bacteria. A follow-up sample was scheduled for 30 days.

December 13, 2002- Samples were taken after the cap was removed and

preliminary results indicate that the problem has not been resolved. More extensive investigation was ordered.

December 14-31, 2002- All property drains were cleaned and televised.

January through June- Increased monitoring and sampling through Coastal Monitoring Program to try and determine if the steps taken previously had successfully remedied the problem. An intensive educational program to the HOA's and the Business Complex was also implemented to assure compliance under the Permit.

March 4, 2004- Mandated and required the Beachwalk Business Complex to clean out storm drain system that leads to the City's Seascape Sur storm drain due to accumulation of debris (sediment, trash, etc.).

May 5, 2004- Completed cleaning of entire Seascape Sur storm drain line from Sierra Avenue to the beach outfall. A sewer spill occurred that following weekend from a private lateral connected to the Seascape line.

May 20, 2004- Wrote two articles for *Seascape Sur News,* the monthly newsletter distributed to the Seascape Sur condos, educating the residents on activities that may reduce bacteria that could be a possible source into the problem at Seascape Sur outfall. The first article was titled, "Sewer Clean-Outs," and it describes the proper way to dispose of grease (not down sink) to prevent sewer blockages and spills. The second article was titled, "Walk Dogs Off The Property and Clean Up After Them," which is pretty self-explanatory.

September 24, 2004- Completed cleaning again with the addition of bleach to counteract the sewer spill that occurred on May 5, 2004. Access issues during the summer months prevented the cleaning from occurring earlier.

November 2004- Samples showed a dramatic decrease in bacterial indicators, proving the cleaning was successful. However, future results showed the bacteria increasing back to historically high numbers.

March 1, 2005- Started participating in contract lab's pilot program to differentiate bacteria into human and animal origins.

May 30, 2007 – Conducted a thorough investigation with our lab (Weston) to detect any possible sources of the ongoing pollution (see below). Results of the

investigation revealed that bacteria levels were in fact higher at the outfall than the catch basin; further reinforcing what City staff believes is a structural deficiency in the pipe that is leading to bacteria re-growth.

March 30, 2008 – Initiated a pilot study with lab to determine if the correct analytical analysis was being conducted

June 18, 2008 – Installed a catch basin inlet guard to prevent organic material from entering into catch basin on the east side of Seascape Sur storm drain. This was done to hopefully prevent the organic matter from decomposing inside the storm drain pipe and providing an area for bacterial re-growth.

August 10, 2008 – City contracted a company to place concrete inside the catch basins to fill in a one inch gap at the bottom where stagnant water would sit. The City thought this might be contributing to the bacteria load at the end of the pipe. By filling in the gap, water and organic matter would not have a place to stagnant and harbor bacteria.

September 29, 2008 – City hired a contractor to clean the entire Seascape storm drain from street to outfall.

August 30, 2008 – City entered into a pilot project with a company that installs catch basin curb inlet screens to prevent leaves and debris from entering the catch basin. Screen was installed on east side catch basin to prevent organic debris from entering the catch basin and rotting inside the pipe.

October 2, 2008 – City entered into a pilot project with a different company that installs catch basin curb inlet screens to prevent leaves and debris from entering the catch basin. Screen was installed on west side catch basin to prevent organic debris from entering the catch basin and rotting inside the pipe.

12.6 Where We Are Now

As listed above, the City is participating in two unique pilot programs at Seascape Sur. The City has installed two different catch basin debris screen BMPs at the east and west catch basins directly upstream from the Seascape outfall. The goal of the debris screens is to prevent organic debris and trash from entering the pipe and rotting, producing a perfect food source for bacterial re-growth in the sag in the pipe. The BMPs were installed in August and September 2008, with the intent to monitor the bacteria results at the outfall after a year.

Here are the results:

Date	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)
9/30/08	16,000,000	800,000	80,000
10/9/08	16,000,000	1,300,000	130,000
11/20/08	No Flow	No Flow	No Flow
12/22/08	500	20	20
1/21/09	1,600,000	2,200	13,000
2/21/09	No Flow	No Flow	No Flow
3/25/09	170,000	110	5,000
4/3/09	74	10	10
5/27/09	1,600,000	23,000	800
6/23/09	270,000	13,000	5,000
7/21/09	230,000	20,000	7,000
8/18/09	170,000	7,000	13,000

As you can see from the table above, the bacteria results have decreased when compared to previous years. This may be attributable to the new BMP installations upstream or the continuous educational efforts of City staff. Whatever the case may be, the results still are not what the City would prefer. It can't be emphasized enough that the outfall does not seem to impact the receiving water at all; however the City is still focusing its efforts on eliminating the source of the bacteria in the very near future.

The City continues to struggle with this ongoing situation, although has made some improvements to the bacteria levels during this reporting period. The budget continues to include money for cleaning out the line once per year, but

this is merely a temporary band-aid to the problem, whereas the City is looking for a permanent fix. The one positive to take from this is that the discharge is not affecting the water quality of the receiving water (Pacific Ocean) yet, but there is no guarantee that this will not change in the future. Here are some options the City is now looking at to hopefully solve this reoccurring situation:

Repairing sag in the outfall pipe: This option is being actively researched as re-growth in the pipe is now the most suspected culprit. Our Public Works Operation Manager is researching this option with other City staff. In addition, City staff is looking into other options such as re-lining the pipe or "pipe-blasting", which may help reduce the sag and improve flow through the pipe.

Blocking off connections from adjacent residential complexes and making them drain to street so that discharge can be sampled: This option is seen as a last ditch effort, as it would be very expensive and politically charged. This would only be considered if outfall started affecting receiving water quality.

Installing permanent BMP such as a low flow diverter: This option is also seen as a last ditch effort as it would be expensive and has not been fully researched to check the feasibility. City engineers would have to check the locations of the sewer main and the capacity to determine if this would be feasible. Funding may be available through grants for water quality, but again this option is a long term effort. City staff will continue to look into various funding options, one being the recent grant that allowed the City of Imperial Beach to install a low-flow diverter. Staff will monitor that project closely and may seek the same grant to place a diverter in this location.

12.7 Future Activities

The City is committed to finding the solution of the bacteria problem at Seascape Sur. During last reporting period, the City installed additional upstream BMPs at the catch basins leading into the problem pipe. This activity seems to have slightly improved the bacteria levels at the outfall and has encouraged City staff that some of their efforts seem to be paying off. As discussed above, the City is now looking at other structural options with its engineering staff to hopefully look at another angle in this seemingly unending battle. The City has committed to setting money aside in its CIP budget to undertake some major projects to help solve the problem. As stated in the Fiscal Analysis Chapter, the FY 09/10 budget has $8,000 set aside specifically for the Seascape Sur storm drain cleaning. The City is committed to thoroughly cleaning the pipe annually if need be, or until a

long-term solution is found. The City is currently investigating other structural options and may find it better financially to undertake a large CIP project than continually spending $8,000 a year for a temporary fix. However, the location and depth of this particular pipe make it very difficult to work on, so it is taking some time to develop a sound engineering plan to fix the pipe or divert the flows. If this is the option the City ultimately takes, it will be very prudent to take the time to do it correctly, so the City is committed to taking the time to develop a plan to ensure its effectiveness.

Additionally, the City actively monitors the outfall pipe and all surrounding areas for any unusual occurrences, and the Marine Safety Department will continue to notify the Environmental Programs Manager whenever there seems to be unusual spikes or odors coming from the outfall pipe, as one of the lifeguard towers is located directly in front of the outfall (during summer months). Lastly, City staff will continue to work with the neighboring condominium associations to educate the residents as well as perform inspections of upstream businesses.

12.8 Summary

The City has thoroughly utilized the results from its DWMPs and Coastal Monitoring Program during the last several years to identify and attempt to eliminate the source of bacteria that was identified through testing and upstream investigations. With the efforts of City staff, and the cooperation of the Beachwalk property owners/managers and neighboring condominium complexes, the sources of the elusive bacteria has almost been solved. Unfortunately, with the structural deficiencies (the sag) in the pipe, it may only take a small amount of bacteria entering the pipe to remain in the sag and promulgate (re-growth). Fortunately, the elevated bacteria levels do not seem to be affecting the receiving waters (no receiving water exceedances the past four years) yet, but the City desires to stay ahead of the curve and wants to take care of the situation before it becomes a problem. Therefore, the City is currently examining other options such as re-lining the pipe, "pipe-blasting" or installing a low-flow diverter. In the very near future, the City is confident it will close the book on the *Mystery of Seascape Sur Bacteria*.

CHAPTER 13
Non-Emergency Fire Fighting

CHAPTER 13: NON-EMERGENCY FIRE FIGHTING

In accordance with Permit section J.3.a.(3)(l), this section of the report describes the City's efforts to control Non-Emergency Fire Fighting events. The City understands that the health and safety of its residents supersedes the storm water regulations when it comes to emergency situations, such as a fire. However, for non-emergency fire fighting activities such as routine maintenance and training, the release of water into the City's MS4 is not permitted. Therefore, the City's Fire Department trains at two special facilities, one in San Marcos and the other in Rancho Santa Fe. Both facilities have BMPs installed to properly handle the excess water, and comply with all regulations of the storm water Permit. ***No training exercises that involve water are conducted within the City limits.***

Routine maintenance of the City's fire trucks and apparatus is essential to ensuring public health and safety, as all equipment must be in top condition and functioning properly during an emergency. Most times, this maintenance is conducted onsite at the Fire Department. To handle the excess water, the Fire Department staff redirects the flows onto a large slope of vegetation behind the Fire Station. Staff takes extra precaution to ensure no water leaves the site. Also, the washing of trucks and apparatus occurs inside the large bays, which is plumbed directly to the sewer system.

This component is also discussed in the Municipal Component.

CHAPTER 14
JURMP Revisions

CHAPTER 14: JURMP REVISIONS

In accordance with Permit section Permit sections I.1.b. and J.3.a.(3)(m), this section of the report describes any revisions that occurred to the City's JURMP.

The City made several changes to the JURMP as a result of a review of the document by the RWQCB. RWQCB staff met with City Staff on February 9, 2009 to discuss the City's revised JURMP and FY 2007/2008 JURMP Annual Report. As a result of the meeting, additional information for the Annual Report and several additions to the City's JURMP were requested by RWQCB staff. The City was in full agreement with the additions and has since incorporated the additional information into the respective Chapters of this Report and has made the necessary changes to the JURMP. The changes are as follows:

- Section D.2.c.(1) requires that pollution prevention BMPs be designated, where appropriate. Appendix B of the JURMP requires pollution prevention only for sites which employ 10 or more employees. Pollution prevention is appropriate for sites which employ less than 10 employees.
    - The City has made this change in the JURMP document.
- Sections D.2.c.(1)(a)viii and ix of the Permit require designated BMPs of preservation of natural hydrologic features and riparian buffers and corridors where feasible.
    - The City has made this change in the JURMP document.
- Section D.3.a.(2)(c) of the Permit requires the City to implement or require implementation of the designated BMPs and additional necessary measures for the municipal areas and activities.
    - The City has made this change in the JURMP document.
- Sections D.3.a.(3)(b)iv, v and vi of the Permit require maintenance activities including a) record keeping of the maintenance and cleaning activities including quantity of waste removed, b) proper disposal of waste, and c) measures to eliminate waste during maintenance.
    - The City has made the change in the JURMP document.
- Section D.3.a.(4) of the Permit requires the City to implement BMPs which include the use of native vegetation, schedules of irrigation, and proper disposal for municipal sites.
    - The City has made this change in the JURMP document.
- Section D.3.a.(2)(f) of the Permit requires the City to implement BMPs for special events which are expected to generate significant trash and litter.

- The City has made this change in the JURMP document.

CHAPTER 15
Conclusions and Recommendations

CHAPTER 15: CONCLUSION AND RECOMMENDATIONS

15.1 Conclusion

During the FY 2008/2009 reporting period, the City was able to successfully implement the many requirements of the Permit. Although the City has been required to have a storm water program under previous Orders issued by the RWQCB, this new Permit greatly expanded the types of activities and documentation efforts required of the cities. This was the second full year of implementation under Permit No. 2001-07 and the first full year of JURMP implementation. The City is very satisfied with the progress of the new program and is actively developing the regional large scale programs such as the HMP, LID and regional educational programs.

The City continued its "team approach" to implementing the JURMP by integrating the ever-evolving requirements of the Permit into specific tasks that each member would be responsible for implementing in their respective departments. The Environmental Programs Manager is responsible for bringing the group together and updating the respective departments on any changes that may affect their respective daily activities. Additionally, the Environmental Programs Manager is responsible for ensuring that all requirements of the Permit are being addressed and satisfied. This collaborative method allowed the City to more rapidly modify procedures and handle the increased workload quickly and efficiently, especially with a small staff with lean resources.

The City's accomplishments during this final year of the JURMP implementation provide evidence of the City's pro-active approach to improving water quality. The requirements under Order 2001-01 expanded the previous Order (90-42) significantly and have altered many of the daily routines of staff at the City. In addition, the City is actively working on developing the new programs to satisfy Permit Order No. 2007-0001 and has successfully implemented some of them, including, but not limited to, modifying the Municipal Code for the new model SUSMP, LID and HMP requirements, updated the City's JURMP and implementing the new Coastal Monitoring Program.

During the next reporting period, the City expects to build on the accomplishments of FY 08/09, and determine the most effective and meaningful program activities as to their impact on water quality (pollutant specific) collaboratively with the other Copermittees, and implement the approved

program assessment strategy. Since the new Permit (Order No. 2007-0001) was adopted during last reporting period (January 2007), the City has already begun working collaboratively with the RWQCB and other Copermittees to implement the new regulations of the Permit. The City is confident that it is in compliance with the goals set out under Permit No. 2007-0001 for the first two years of implementation. These include but are not limited to:

- Minimum commercial, industrial and construction inspections
- Minimum municipal inspection and maintenance of BMPs
- Implementing comprehensive educational and public participation component
- Developing Hydromodification Plan
- Implementing SUSMP Model update
- Developing Low Impact Development (LID) program
- Minimum inspection and street sweeping frequencies
- Post Construction BMP verifications and inspections

The City eagerly anticipates working collaboratively with the other Copermittees in further developing and implementing these significant programs during this Permit cycle. The City is confident that the Copermittees will continue to develop and implement these programs to meet the requirements and goals of the new Permit. The City understands that all parties' involved (Copermittees and RWQCB staff) are in this together to improve the discharge and receiving waters in the region and we will continue to support and work collaboratively with all parties to accomplish this goal.

15.1.1 2008/2009 Accomplishments

The following is a small list of notable accomplishments achieved during the 2008/2009 reporting period. All of these activities are described in more detail throughout this report. They are the following:

- Continued development and implementation of model SUSMP, LID and HMP programs

- Development of new BEACH database to track building permits, post-construction BMP inspections, and plan check comments

- Development and implementation post-construction BMP verification and maintenance tracking system

- Development of stakeholder cooperation and partnerships with key organizations such as the Santa Fe Irrigation District, Solana Center and Kids Korps

- Development and implementation of new upgraded web portal "Green Flash" to house all of the City's environmental programs and information

- Development and implementation of unique plastic bag recycling program that turns bags into reusable, high quality plastic building materials locally within the United States

- Transition to all organic pesticides, herbicides and fertilizers for all City landscaping purposes

- Development of relationship with local Solana Beach School District to foster open communication for environmental education in local schools

- Development of Clean and Green Team, consisting of active environmentally conscientious community members to develop and implement environmental programs and education

- Continued educational outreach at all local events, and conducting cleanups and community bulky-item pickup days

- Continued implementation of aggressive and convenient HHW program to provide easy and efficient HHW pickup and proper disposal

- Continued extensive landscape and irrigation educational series for public and private landscapers. The classes were given in both English and Spanish and taught the participants proper landscaping and irrigation practices.

- Continued Implementation of new industrial and commercial inspection protocol, including hiring an independent contractor that specializes in storm water and grease management facility inspections

- Participated in regional workgroup to develop new mobile sources

program

15.2 Recommendations

Since the new Permit was adopted in January 2007, FY 2008/2009 was again dedicated to developing new programs and fine tuning existing programs to comply with the new requirements. The City is committed to working cooperatively with the other Copermittees to develop and implement the new required programs to provide a consistent and recognizable message for the region. However, the City still must develop jurisdictional specific programs to address the specific pollutants of concern and their respective sources. So, in an effort to implement a successful and meaningful program, the following are recommendations to improve the City's storm water program for FY 09/10:

- *Continue to educate new and existing City staff to ensure compliance in the ever-changing storm water world.*
- *Complete the special investigation to uncover and eliminate the root cause of reoccurring problems upstream from Seascape Sur Outfall.*
- *Evaluate staffing needs and program responsibilities.*
- *Continue Implementation of SUSMP requirements and ensure all plans are in compliance.*
- *Continue implementation of the new JURMP program plan and implement measures to comply with Permit requirements*
- *Increase the education of residential sector which is a main focus of the new Permit. These programs will be addressed cooperatively at the regional level, but the City is committed to helping develop the materials and distribute to our residents.*
- *Continue to collect and analyze monitoring data to establish a long-term assessment of the City's water quality.*
- *Develop additional industry specific educational materials to distribute to the community.*
- *Develop and implement pollutant specific activities to address high priority COCs (Constituents of Concern).*

APPENDICES

APPENDIX A: STREET SWEEPING MATERIALS FORM

Employee Name and Organization (below)

Date (above) use N/S below if not scheduled

1st 2nd 3rd 4th Tuesday	Time in: Time out:	Time in: Time out:	Equipment Number: Year, Make & Model

OBSTRUCTIONS (identify as vegetation, vehicle, etc. and provide description).

Reference previous date(s) reported (no entry above required):

End of day Volumn in Cubic Yards:
% (percentage) Sediment:
%(percentage) Organics:
Litter (describe-or-enter -0-)

Operator enter reason(s) for not following schedule or other comments:

C.O.S.B. Initial

Forward to R.W.Q.C.B. (C.O.S.B. Initial on Sending) City of Solana Beach 2004(adinf)

APPENDIX B: SMOKING BAN ORDINANCE

ORDINANCE NO. 316

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Findings and Purpose. The City Council of the City of Solana Beach hereby finds and declares that:

A. The City of Solana Beach is committed to keeping its beaches and parks clean, safe, healthy and pleasant for everyone.

B. Smoking is hazardous to health. Numerous studies have shown that second-hand smoke is a significant public health hazard. The U.S. Environmental Protection Agency has classified second-hand smoke as a group A carcinogen, the most dangerous class of carcinogen. Smoking in parks and beaches endangers children and others by exposing them to second-hand smoke. Moreover, children and youth who observe smoking and tobacco use in public beaches and parks may model the behavior.

C. The U.S. Centers For Disease Control and Prevention (CDC) estimates that second-hand smoke causes 3,000 lung cancer ceaths per year among adult non-smokers in the U.S. The California Environmental Protection Agency has concluded that second-hand smoke causes coronary heart disease in non-smokers. Second-hand smoke is especially hazardous to particular groups, including those with chronic health problems, the elderly and children. The CDC has found that second-hand smoke causes children to suffer from lower respiratory tract illness, such as bronchitis and pneumonia, exacerbates childhood asthma, and increases the risk of acute chronic middle ear infection in children.

D. Additionally, discarding cigarettes and cigar butts and tobacco onto the ground in City parks and beaches is unsightly, unclean and particularly hazardous to small children who handle and sometimes ingest them. The City must collect tobacco litter in parks and beaches or it will be collected by stormwater and washed directly into our ocean waters in violation of the City's stormwater pollution prevention permit and to the detriment of ocean life and all ocean users.

E. The City Council therefore determines that banning smoking and the improper disposal of tobacco products in City parks is necessary to protect the health, safety and welfare of Solana Beach residents and visitors.

SECTION 2. Section 11.12.020 A. of the Solana Beach Municipal Code is hereby amended to read as follows:

A. To dump or deposit any trash, specifically including cigarette and cigar butts and tobacco, refuse, rubbish, litter, or other kind of waste materials, except in approved containers specifically placed and designated to receive such waste materials. No person shall dispose of any animal carcass in or on any beach or park.

SECTION 3. Section 11.12.020 EE of the Solana Beach Municipal Code is hereby added to read as follows:

EE. No person shall smoke within the boundaries of any public beach or park unless the City has designated a specific temporary or permanent signed smoking area.

SECTION 4. If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.

SECTION 5. This ordinance shall become effective thirty (30) days following its adoption. Within fifteen (15) days after its adoption, the City Clerk shall publish this ordinance, or the title hereof as a summary, in a newspaper of general circulation within the City of Solana Beach as required by law.

INTRODUCED at a regular meeting of the City Council of the City of Solana Beach, California held on the 7th day of October, 2003, and thereafter

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, held on the 21st day of October 21, 2003, by the following vote:

AYES: Councilmembers – Golich, Kellejian, Campbell, Sheres, Powell

NOES: Councilmembers – None

ABSENT: Councilmembers – None

ABSTAIN: Councilmembers – None

THOMAS S. GOLICH, Mayor

APPROVED AS TO FORM:

CELIA A. BREWER, City Attorney

ATTEST:

JAN UHLMAN, Acting City Clerk

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) ss.
CITY OF SOLANA BEACH)

I, JAN UHLMAN, Acting City Clerk of the City of Solana Beach, California, DO HEREBY CERTIFY that the foregoing is the original of Ordinance No. 316 duly passed and adopted by the City Council of the City of Solana Beach, California, at a Regular meeting thereof held on the 21st day of October, 2003.

That, in compliance with the laws of the State of California, Ordinance No. 316 being:

> AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

A certified copy of the full text of Ordinance No. 316 along with the names of those City Councilmembers voting for and against said Ordinance was caused to be posted in the office of the City Clerk.

Executed the 23rd day of October, 2003.

{SEAL}

CITY OF SOLANA BEACH INCORPORATED JULY 1 1988 CALIFORNIA

Jan Uhlman
JAN UHLMAN, Acting City Clerk

Published: North County Times: October 28, 2003

VENDOR GUIDELINES

Fiesta del Sol

- All electric cords should be out of the public access areas. If they must extend into a public access area, the cords must be protected with pedestrian transition molding to minimize the trip hazard.
- All cooking areas and devices shall have at least one 2A-20BC fire extinguisher readily accessible to persons working in the immediate proximity of each device or cooking area and shall be in plain view.
- All portable LP-gas containers, valves, and fittings shall be properly secured in a fixed upright position and protected in accordance with the Uniform Fire Code.
- The following conditions apply to canopies in excess of 400 square feet, and to tents and temporary membrane structures having an area in excess of 200 square feet:
- All tents, temporary membrane structures, and/or canopies that are to be used at the function shall be adequately braced and anchored to prevent weather related collapse. Documentation of structural stability shall be furnished to the Fire Chief on request.
- All tent, canopy, or temporary membrane structure exits shall be in accordance with the Uniform Fire and Building Codes.
- The design and construction of the fabric envelope, method of anchoring, and inflation systems for air-supported and air-inflated structures shall be in accordance with the Building Code.
- The sidewalls, drops and tops of temporary membrane structures, tents and canopies shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Temporary membrane structures, tents or canopies shall have either a permanently affixed label or a Certificate of Flame Resistance bearing the following information:
    - Identification of the temporary structure's size and fabric or material type.
    - For flame-resistant-treated materials, the date that the temporary membrane structure, tent or canopy and other combustible materials were last treated with an approved flame retardant. The trade name and type of flame retardant utilized in the flame-retardant treatment. The name of the person and firm that applied the flame retardant.
- The following general storm water run-off practices shall apply to the event:
    - No dumping or allowing any material into City storm drains.
    - Install secondary containment around portable restroom facilities when feasible.
    - Prompt and proper clean-up of all trash debris.
    - Do not use water or any liquid to rinse down any debris or dirt on any ground surface. Dry sweeping only of event debris is allowed.
    - Protect all storm drain catch basins/inlets when feasible with proper storm water Best Management Practices implementation.
    - Do not allow excess water to leave the site. Properly contain everything onsite before it enters the City's storm drain system.

APPENDIX D: SHORELINES NEWSLETTER SUMMER 2009

Storm Water HOTLINE!

To report illegal dumping or excessive water run-off to the City's Storm Drain Conveyance System, call the City's 24-hour Storm Water Hotline message center at **(858) 720-4424** or email: **stormwater@cosb.org.** Messages are checked throughout the day and are promptly investigated.

Green Building is Here!

Since adopting green building guidelines and checklists from Build it Green (residential) and the Leadership in Energy and Environmental Design (LEED) program (commercial) in December of 2008, the City of Solana Beach has taken the lead on promoting an incentive based green building program to help address sustainability on a regional and local level.

To find out more about both programs please visit **www.builditgreen.org** and **www.usgbc.org/leed** to review the green building guidelines and checklist procedures.

The City also held a Green Building Launch Week on February 27 to kickoff the new program and promote various sustainability and green building issues. Hundreds of residents and builders showed up to visit booths from different public agencies and green builders/designers and green product vendors. For more information about the City's Green Building Program, please visit the City's website at **www.cityofsolanabeach.org** and click on the Green Flash on the homepage or call (858) 720-2436.

Look What's Happening at the San Elijo Lagoon Conservancy

Free public docent-led walks:

- **Every second Saturday**
  9:00 a.m.–11:00 a.m.
  at the Rios Avenue trailhead
- **Every Saturday**
  10:00 a.m.–11:00 a.m.
  at the new San Elijo Nature Center
- **Saturday, June 6**
  10:00 a.m.–11:00 a.m.
  at the Rios Avenue trailhead
  (a special walk for young families)

Volunteer work events:

- **Every third Saturday**
  9:00 a.m.–11:00 a.m.
  various locations,
  please contact **ralph@SanElijo.org**

FRIENDS OF THE SOLANA BEACH LIBRARY AND THE CITY OF SOLANA BEACH

Essay Contest
Theme: Our Earth, Our Chance

Everyone is welcome to participate. Essays will be judged in the following four age groups: Kindergarten–3rd grade, 4th–6th grade, 7th–12th grade and Adults–over 18. Prizes for 1st, 2nd, and 3rd place winners will be awarded on Wednesday, July 15, at the exciting Arts Alive Auction.

To participate:

Pick up an entry form at the Library or Solana Beach City Hall beginning May 1, 2009. Return completed essay to Rebecca Lynn at the Solana Beach Library by 5:00 p.m. on Wednesday, July 1. A fully completed entry form must be submitted with each essay. *Good Luck!*

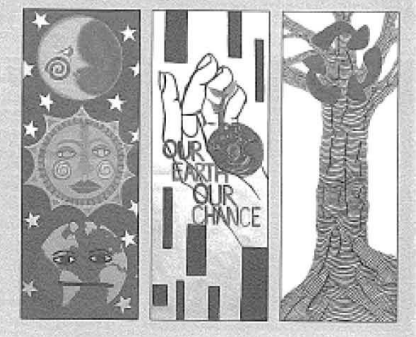

CITY OF SOLANA BEACH PARKS & RECREATION

2009 Kids Summer Day Camp for Ages 6–12

All Sessions will meet Monday–Friday from 8:30 a.m. to 2:00 p.m. at Fletcher Cove Community Center, 133 Pacific Ave. The fee is $106/week per child and includes activities such as beach walks, swimming at the Boys and Girls Club, arts & crafts, Library visit, fun games, t-shirts and a weekly field trip to an exciting destination. After-care is offered from 2:00 p.m.–5:00 p.m. ($27/week). Our popular "Leader in Training" program is also available again this summer for 13–17 year olds for only $40/week!

ENVIRONMENTALLY FRIENDLY... June 22–26

There are many exciting ecological discoveries to be investigated here in Solana Beach. Find out how simple it is to appreciate the simple aspects of the world around you. Campers will discover ways in which they can help save the environment, explore the world of creepy crawly insects, and even discover the local San Elijo Lagoon through a nature walk for this week's field trip.

Things to Remember Before Remodeling/Construction

Summer is approaching, and many of you will begin remodeling or construction projects on your homes. However, there are things you should remember before you start.

All construction activities are subject to environmental regulations. Storm water Best Management Practices (BMPs) are required to control erosion and water run-off, even in the summer.

Also, it is extremely important to remember that the actions of private contractors are ultimately the responsibility of the homeowner. Therefore, you must ensure that anybody who is working on your home is aware of the storm water regulations and are adhering to them at all times. Storm water violations are strictly enforced in the City and can result in fines.

If you are unsure of the regulations and would like some assistance before you start your project, please feel free to call Danny King, the City's Environmental Programs Manager, at (858) 720-2477.

Also, try to recycle all your construction "wastes." Did you know that construction of an average 2,000 square foot track home produces thirteen (13) tons of waste. Up to 86% of the waste generated on any project could be recycled! That is a huge amount of waste that does not have to go to our landfills, and can save you money.

Storm Water HOTLINE!

To report illegal dumping or excessive water run-off to the City's Storm Drain Conveyance System, call the City's 24-hour Storm Water Hotline message center at **(858) 720-4424** or email: **stormwater@cosb.org**. Messages are checked throughout the day and are promptly investigated.

How to Dispose of Household Hazardous Waste Safely and Easily

Do you have pesticides or fertilizers collecting in your garage? Do you have old car batteries or household chemicals that you want to get rid of? Have you just moved in or out of a home and have excess paint and cleaners?

Well, now is the time to properly dispose of these Household Hazardous Wastes (HHW). The City of Solana Beach has a wonderful HHW Program that can help you get rid of all your hazardous waste problems. Residents have a couple of options available through the HHW Program to make it easier and more convenient to dispose of their HHW in the proper manner.

The first option available is the Home Pick-up Program where, for a small co-pay of $10 dollars per visit, you can get service to your door where your hazardous wastes will be removed and properly disposed of it. To schedule an appointment for home HHW collection, please call **(800) 444-4244.**

The second option is to bring the HHW to one of two specialized collection centers (Poway or Vista) and the City will pay for the entire disposal cost (no co-pay). Residents must show proof of residency to qualify.

There is also a special service to the homebound and elderly (age 65 and over) where it is free of charge for household hazardous waste pick-up at your residence.

For more on the City's HHW Program, call (800) 444-4244.

Some Common HHW are:

- Aerosols
- All Purpose Cleaners
- Antifreeze
- Asbestos
- Auto Batteries/Fluids
- Disinfectants
- Drain Opener
- Fertilizers
- Fluorescent Light Bulbs
- Gasoline
- Household Batteries
- Insecticides
- Latex Paint
- Lighter Fluid
- Oil Based Paint
- Oil & Filters
- Pesticides
- Pool Chemicals
- Solvents
- Thinners
- Varnishes

APPENDIX E: FIESTA DEL SOL FLYER 2009

Water Conservation

The Santa Fe Irrigation District is asking residents and businesses to decrease their water consumption immediately on a voluntary basis. This is in response to serious water supply restrictions created by historic dry conditions and significant court-ordered reductions from the Sacramento River/San Joaquin River Delta.

The effects of this situation already are being felt in San Diego County. The Metropolitan Water District of Southern California, San Diego County's primary water supplier, began withdrawing water from storage last year to meet demands.

On Jan1, 2008 agriculture customers who subscribe to MWD's discounted water program had those supplies cut by 30 percent.

Mandatory water use restrictions remain a very real possibility in the near future without increased conservation.

Water-Savings can be accomplished in many simple ways. Often these measures cost little or nothing. PLEASE HELP SAVE NOW!

Santa Fe Irrigation District offers many conservation programs to reduce water consumption inside and out. The District is asking customers to please reduce lawn watering by one day per week, and reduce irrigation cycles by a couple of minutes. Fix sprinkler systems for better distribution efficiency, reduce overspray, fix all leaks and do not allow water to run off the property down the storm drains. Water the landscape before 8:00 a.m. and after 6:00 p.m. to further reduce loss from evaporation.

Santa Fe Irrigation District offers the following rebate programs, if you have any questions or want additional information on any of them, please visit **www.sfidwater.org** or call (858) 756-5672.

- Free Single-Family Residential Home Surveys
- Large Landscape Evaluations
- Smart Controller Rebates
- Water Savings Performance Program
- Smart Landscape Grants for Commercial, Multifamily, and Public Sites
- Agricultural Water Management Program

Residential, Commercial, or Multifamily:

- High Efficiency Clothes Washer Incentive of up to $185
- High Efficiency Toilets Incentive of up to $200
- Incentives for upgrades from Ultra-Low Flush to High Efficiency Toilets of $30
- Rotating Nozzles: $4 per nozzle

Santa Fe Irrigation District encourages customers to go to the **www.20gallonchallenge.com** website to view information on Conservation Programs and Incentives.

The City of Solana Beach's Annual Coastal Clean-Up Day 2008

The City of Solana Beach is once again partnering with the California Coastal Commission, I Love A Clean San Diego (ILACSD), and San Diego Coastkeeper to clean up the beaches and lagoons that surround our beautiful city during the annual California Coastal Clean-Up Day. The clean up event will be held on **September 20, 2008 from 9:00 a.m. to Noon.** California Coastal Clean-Up Day is the premier volunteer event focused on the marine environment in the country. In 2007, more than 60,000 volunteers worked together to collect more than 900,000 pounds of trash and recyclables from our beaches, lakes, and waterways.

The City sponsors two locations, one at Fletcher Cove Park and the other in the San Elijo Lagoon at the North Rios Trailhead, where volunteers can give back to the community by cleaning up trash and debris to help keep our beaches and lagoons clean and beautiful for all to enjoy. Each site will be staffed and have all necessary materials available (trash bags, recycling bags, gloves, etc.) for participants to use. All you have to do is show up! The City is looking for volunteers to make this the most successful event ever, so please bring your family and enjoy a fun filled day while making this great city an ever better place to be!

For more information, please contact Danny King at (858) 720-2477. You can also visit the official website at **www.coastal.ca.gov/publiced/ccd/ccd.html** to get more facts and information about the annual event.

Solana Beach Annual Bulky Item Clean-Up Day

This year's Annual Bulky Item Clean-Up Day is scheduled for **October 25, 2008 from 9:00 a.m. to 3:00 p.m.** in the La Colonia Community Center parking lot at the Valley Avenue entrance. Waste Management (WM) will provide roll-off containers for drop off items such as furniture, scrap metal, appliances, carpet, and mattresses.

Additionally, Solana Beach residents may call Waste Management at (800) 386-7783 between October 6 and October 20 to receive free curbside pickup and disposal of up to three bulky items. Items need to be curbside by 7:00 a.m. on October 25. (Hazardous Waste or E-Waste not included in this collection event).

If you have any questions regarding the Annual Clean-Up Day, please contact Danny King at (858) 720-2477. If you would like to schedule a curbside pickup, please contact Waste Management at (800) 386-7783.

SOLANA CENTER

FREE Watershed Presentations!

FREE watershed education presentations are available through the Solana Center. These presentations are appropriate for children in grades 2 through 6 and are designed to enhance understanding of how pollution moves though our waterways. Educators utilize a hands-on, interactive Enviroscape model and eco-puppets to empower kids to protect our ecosystem!

To schedule a free presentation for your community group or classroom, please contact Laura at the Solana Center at (760) 436-7986, ext. 215 or **laura@solanacenter.org.**

SAN DIEGUITO RIVER VALLEY CONSERVANCY

Securing Our Natural Legacy . . . www.sdrvc.org

Beach & Lagoon Clean-Up

Saturday, September 20 • 9:00am – Noon
Dog Beach at San Dieguito Lagoon, Solana Beach/Del Mar

Join the Conservancy and REI for the 24th Annual Coastal Clean-Up Day! Refreshments provided! Bring water & sun protection. Register at **www.cleanupday.org** for the San Dieguito Lagoon/Dog Beach site in Zone 1.

Guided Nature Hike

Sunday, September 28 • 5:00pm – 7:30pm
Crest Canyon & Torrey Pines Extension, Del Mar

Join the Conservancy as we explore Crest Canyon & Torrey Pines Extension on an easy 3.5-mile sunset hike. Bring water. Reservations required; Contact (858) 674-2275, ext. 12 or **hikes@sdrvc.org** for reservations & directions.

Storm Water (NPDES) Rainy Season Construction Reminders

The City is mandated by the State to comply with various storm water regulations in an effort to protect and enhance water quality in local waterways. One of these components is construction management and as we enter the winter rainy season, construction projects will be monitored more closely to ensure compliance with the City's storm water regulations.

All construction activities are subject to environmental regulations, even small single family remodeling and redevelopments.

Storm water BMPs (Best Management Practices) are required to control erosion and water run-off. Failure to properly control storm water run-off from your construction site can lead to fines levied on the contractor AS WELL AS the property owner.

So, the City highly recommends that all property owners ensure that their contractors are well aware of the storm water requirements and the consequences for failing to comply. For more information, please contact the City's Environmental Programs Manager Danny King at (858) 720-2477.

FREE Watershed Presentations

FREE watershed education presentations are available through the Solana Center. These presentations are appropriate for children in grades 2 though 6 and are designed to enhance understanding of how pollution moves thorough our waterways. Educators utilize a hands-on, interactive Enviroscape model and eco-puppets to empower kids to protect our ecosystems!

To schedule a free presentation for your community group or classroom, please contact Laura at the Solana Center at (760) 436-7986, ext 215 or laura@solanacenter.org.

"Our Earth — Our Chance" is the Theme for the 2009 Arts Alive Banners

Solana Beach celebrates its eighth year of presenting the Arts Alive Banners with a thoughtful, environmental theme, "Our Earth — Our Chance." Sixty banners will be painted by residents, local school students, professional and future artists who will dazzle the community with their inspired artistic visions illustrating this theme. This year the Public Arts Advisory Commission (PAAC) will add two awards to the Arts Alive Program. One will be the "Peoples' Choice Award," for the most popular banner. The second award will be given to the artist whose banner gets the highest bid at the Auction.

From January to May 2009, the Banners and will be displayed throughout the City on Old Highway 101, Lomas Santa Fe and Valley Avenues for everyone to enjoy. Following the display period, the colorful banners will be sold at the celebrated Arts Alive Auction, with the proceeds used to promote the Public Art Program in Solana Beach.

The Arts Alive Banner Program is sponsored by the Solana Beach City Council and administered by the PAAC. It is a popular community program that provides an opportunity for residents, schools, and artists to participate in an annual creative event that beautifies Solana Beach and attracts visitors to the City. To get involved, to paint a banner, or for more information about the Arts Alive Banners contact Anita Edman, Community Services Coordinator, at (858) 720-2454.

Holiday Tree Recycling / Collection Program

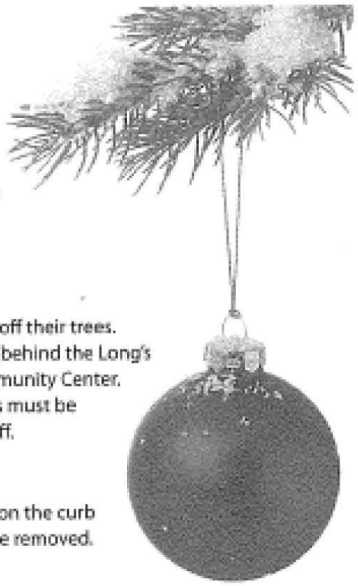

The City of Solana Beach, in partnership with Coast Waste Management, Inc. has a **Holiday Tree Recycling and Collection Program** that allows residents to drop off their trees free of charge starting **December 26, 2008 through January 14, 2009.**

Holiday Tree Recycling

There will be two locations where residents may drop off their trees. They are across the street from 305 South Sierra Avenue (behind the Long's Drugstore) and 715 Valley Avenue at the La Colonia Community Center. No flocked trees and all ornaments, tinsel and tree stands must be removed. Trees do not have to be cut down if dropped off.

Holiday Tree Collection

Trees must be cut into 4-foot sections and placed out on the curb for pick-up. All ornaments, tinsel, and tree stands must be removed. Flocked trees will also be collected by the trash drivers.

APPENDIX H: SHORELINES NEWSLETTER SPRING 2009

Solana Beach Commits to Sustainability

The City of Solana Beach is committed to developing and maintaining a green and sustainable future for all those who live, work and play here. The City, along with the cooperation and support of an extremely active and motivated community group called the Solana Beach Clean and Green Team, has developed and implemented progressive programs to promote and reward sustainable practices throughout the community. The following is a brief list of notable accomplishments to date:

- Energy audits conducted at all City facilities
- Energy efficient lighting retrofit at all City facilities
- Conversion of residential manual source separated trash/recycling collection to automated single stream commingled recycling resulting in a 21% increase in recycling rates
- Adoption of Construction and Demolition Debris Recycling Ordinance
- Energy efficient HVAC (heating and air conditioning) audit at City Hall
- Installation of public recycling containers at parks and beach accesses
- Adoption of a Green Building Program
- Implementation of an employee commuter incentive program
- Implementation of a "Plastic Bag Advertising Ban"
- Implementation of a general plastic bag recycling program
- Development of new environmental web portal "Green Flash" on City website

The City and the Solana Beach Clean and Green Team are currently working on a number of other programs, some of which include:

- Developing a Climate Action Plan for Greenhouse Gas Emissions
- Researching a Solar Financing District
- Developing a Green Purchasing Policy
- Developing a Green Business Recognition Program

The Clean and Green Team meets monthly on every third Monday at City Hall from 1:30–3:00 p.m. and welcomes all residents to participate. For more information, please contact Danny King at (858) 720-2477.

Green Building is Here!

The City of Solana Beach has taken the lead on promoting an incentive based green building program to help address sustainability on a regional and local level. On December 10, 2008, City Council adopted green building guidelines and checklists from Build it Green (residential) and the Leadership in Energy and Environmental Design (LEED) program (commercial) as the City's green building reference documents and certification procedures. The city's new Green Building Program includes incentives such as permit fee rebates for green certified projects ($1,000 for residential; up to $1,500 for commercial), expedited permit processing, public recognition in *Shorelines*, on the City's website, and at a Council meeting.

Build it Green is a California based non-profit specializing in green building and providing resources to local governments and the building community. And LEED is a nationally recognized program specializing in commercial green building with more services and programs on the way. Staff is currently developing a Green Building webpage, which should be ready by the end of January, to provide information on the incentives and certification procedures for project applicants. In the mean time, to find out more about both programs please visit **www.builditgreen.org** and **www.usgbc.org/leed** to review the green building guidelines and checklist procedures.

The City has also scheduled a **Green Building Launch Week for the week of February 23rd** that will include evening workshops during the week about various sustainability and green building issues. More information about the workshop times and locations will be posted in the City's website and eBlasted to the community. Green Building Launch Week will wrap up with a **Green Building Fair from 1:00–4:00 p.m. on Friday, February 27 at Fletcher Cove Park.** Residents and builders are encouraged to visit booths from different public agencies and green product vendors. The City will also have an environmental booth set up to provide more information about the City's Green Building and other environmental programs. Green product or service vendors interested in running a booth at the Green Building Fair are invited to call the City at **(858) 720-2436. Space is limited.**

Free Walks and Programs for Kids at San Elijo Lagoon

The San Elijo Lagoon Conservancy invites you to a free guided nature walk the second Saturday of each month. Walks start at the North Rios Avenue trailhead at 9:00 a.m. and are led by knowledgeable docents. Walks last approximately two hours.

Upcoming dates:

- Saturday, February 14
- Saturday, March 14
- Saturday, April 11
- Saturday, May 9

Young families are invited to kids' walks on the following dates:

- Saturday, February 21, 10:00 a.m. "Discovering Dazzling Dabbling Ducks"
- Saturday, April 18, 10:00 a.m. "Finding Fabulous Flowers"

The annual **Lagoon Day takes place on Saturday, May 16** at the new San Elijo nature center in Cardiff (2710 Manchester Street). For the first time this year, there will be a 'BioBlitz', a 24-hour inventory of all living organisms at the Lagoon. Visitors on the 16th can interact with the participating scientists and enjoy guided walks. Children will be entertained by fun interactive activities. All are welcome, and the event is free.

Conservancy docent Peter Ash shows local children the marvelous plants & animals found at the San Elijo Lagoon Ecological Reserve.

Our Earth—Our Chance

THEME FOR THE 2009 ARTS ALIVE BANNERS

They are up and they are powerful! The Arts Alive Banners scream the thoughts and concerns for the planet of the artists, students, and residents who painted them. They are compelling messages.

Solana Beach celebrates the eighth year of presenting the Arts Alive Banners with an environmentally based theme, "Our Earth—Our Chance." These unique street banners are currently on display throughout the City along Highway 101, Lomas Santa Fe Avenue, and in Eden Gardens. They will be displayed until May for all to enjoy. Following the display period, they will be sold at the celebrated Arts Alive Auction on **Wednesday, July 15, 2009. SAVE that DATE.** It is an exciting event that you won't want to miss. All proceeds from the Auction are used to promote the Public Art Program in Solana Beach.

For more information about the Arts Alive Banners contact Anita Edman, Community Services Coordinator, at (858) 720-2454.

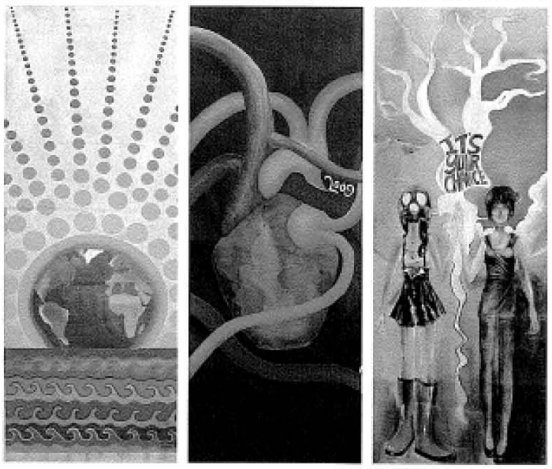

APPENDIX I: CONSTRUCTION BMP BROCHURE

WATER QUALITY REGULATIONS FOR CONSTRUCTION SITES

Dear Contractor,

The North County Storm Water Program is a collective of jurisdictions in northern San Diego County working together to protect our watersheds. We believe that reducing pollution is critical to maintaining our communities' way of life.

It is our hope that this brochure will help you identify activities that are recognized to cause water pollution and implement appropriate Best Management Practices (BMPs) to minimize their impact. By providing you with these tools, we hope to make your job easier while keeping our waterways clean.

Each jurisdiction will be inspecting their construction sites to ensure the protection of water quality. We look forward to seeing the BMPs presented in this brochure implemented at your sites.

Together we have the ability to preserve and improve the quality of life in our communities.

Sincerely,

The North County Storm Water Program

Contact Phone Numbers:

City of Carlsbad
760-602-2799

City of Encinitas
760-633-2787

City of Oceanside
760-435-5800

City of San Marcos
760-744-1050

City of Del Mar
858-755-8313

City of Solana Beach
858-720-2470

City of Vista
760-726-1340

A POLLUTION PREVENTION GUIDE FOR THE CONSTRUCTION INDUSTRY

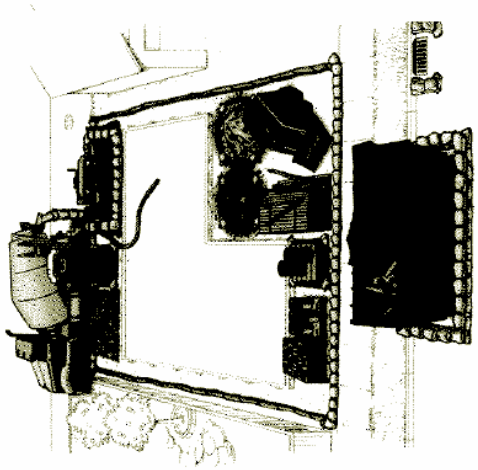

North County Storm Water Program

Carlsbad • Del Mar • Encinitas • Oceanside
• San Marcos • Solana Beach • Vista

Only Rain in the Storm Drain

Construction Sites

In 1972, the Environmental Protection Agency developed regulations to control water pollution. As a result, the National Pollutant Discharge Elimination System (NPDES) Permit was created. NPDES permits are issued to municipalities as well as construction sites. In addition to complying with local regulations, which are governed by our municipal NPDES permit, you may be required to obtain a permit through the State of California under the State General Construction Permit (99-08-DWQ). All construction sites over one acre are required to obtain coverage under this permit.

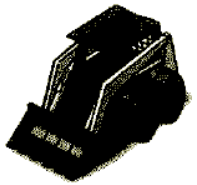

Construction sites can contribute pollutants such as sediment, metals, and chemicals, to our local creeks, rivers, lakes, lagoons, and ocean. These pollutants make their way down our streets and into storm drains, eventually discharging to the nearest body of water.

All construction sites are required to implement Best Management Practices (BMP) to prevent storm water pollution. This brochure is intended to assist your construction site in understanding BMP requirements.

Each municipality has one or more persons dedicated to ensuring that all construction sites are in compliance with state and local storm water control regulations. Contact your local municipality for further information.

Right-of-Way Permitting

We understand that there are times when space on construction sites is limited. If at any point, you (as a contractor or subcontractor) need to use the public right-of-way in order to work or store materials, you must apply for a special permit. This permit allows you to use the City's right-of-way areas, and describes what is required to prevent illegal contaminants from entering local storm drains. For more information or to obtain a permit application contact your local jursidiction.

Inspection and Enforcement Program

Each jurisdiction has established an enforcement program to ensure that all businesses operate in compliance with all appropriate storm water laws and other City requirements. Contractors, site supervisors and property owners can be held responsible for violations, which may lead to a civil penalty of up to $10,000 per day and/or reimbursing the local jurisdiction for all expenses associated with clean up.

Best Management Practices

Construction materials such as paint, dirt and trash often find their way into our storm drains, polluting the environment and jeopardizing our creeks, rivers, lakes, lagoons, and ocean.

The NCSWP is working with contractors to implement what are known as Best Management Practices (BMPs) on all construction sites. That is, methods used to keep pollution out of our storm drains and off public property, such as sidewalks, streets, parkways and alleys. Carrying out and maintaining these BMPs on the construction site is critical to protecting our ocean and bay.

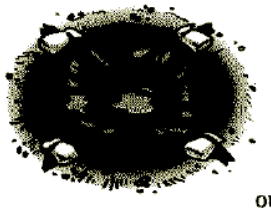

The following is a list of BMPs and pollution prevention measures that shall be implemented at all construction sites:

1. **Conduct daily site cleanings.**
2. **Develop spill response and containment procedures.**
3. **Educate employees and subcontractors about BMPs.**
4. **Develop an erosion control plan for wind and rain.**
5. **Regularly maintain all BMPs at project site.**

APPENDIX J: STORM WATER PLAN CHECK COMMENT FORM

CITY OF SOLANA BEACH
ENGINEERING DEPARTMENT
STORM WATER PLAN CHECK COMMENTS

Project: _____ Address: _____

☐ Construction phase **Erosion Control** shall be shown on the permitted plans, such as silt fences, gravel bags, de-silting basins, slope protection and entrance controls. **Best management practices (BMP's)** shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during construction activities. Erosion prevention shall be emphasized to keep sediment on site during excavation and grading activities. Sediment controls such as mulch, jute netting and straw blankets shall be used as a supplement to erosion control for keeping sediment on site.

- **Submit Storm Water Management Plan** (attached)
- **Add the following note to plans**: "**EROSION CONTROL:** Best management practices shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during excavation and grading activities."

☐ The Applicant shall demonstrate that the **project does not increase storm water runoff** or peak discharge from their property. For example, add a storm water retention and infiltration feature such as a depressed landscape area or below ground drywell using course rock (1.5" to 2.5") or a pre-fabricated chamber. The amount of retention volume should be at least equal to 0.60 inches (0.05 feet) times the added impervious area. This should be designed to avoid runoff damage to downstream properties, such as not concentrating runoff where it was previously not concentrated. (For 5,000 SF or more of added impervious area, use County of San Diego Hydrology Manual)

☐ Storm Water and Non-Storm Water Runoff Control. Post-development measures that **reduce pollutant discharges from the site** shall be shown on the permit plans. For example, maximize permeable areas (landscaping, driveway grass strips, gravel paths, concrete pavers on sand) to allow runoff seepage into the ground and drain impermeable surfaces (roofs, hardscape, driveways) to permeable areas (i.e. planted areas) and other approved pollutant treatment BMP's.

- Is runoff from hardscape areas routed over natural treatment areas before draining off site?
- **Show on the plans** where hardscape and roofs drain to.
- **Show BMP's** on the plans (grassy swales, landscaping, infiltration pits, pervious pavements, gravel paths, etc.).
- The volume of treatment should be at least 0.60 inches (0.05 feet) times the added impervious area.

APPENDIX K: BUILDING PLAN CHECK ROUTING FORM

CITY OF SOLANA BEACH
635 S. Highway 101, Solana Beach, CA 92075
(858) 720-2440
APPLICATION TRACKING FORM

Plancheck No.: _____
Received by: _____
Date:

Site Address _____ Suite # _____
Site Business Name _____ APN _____
Project/Property Owner's Name _____
Contact Person _____ Phone # _____
Address _____ Fax # _____
Project Description _____ E-Mail _____
Discretionary Permit Applicable? _____ Sq. Ft. _____
Estimated Building Valuation? _____ Estimated Grading Required? _____
Is/will the building equipped with fire sprinklers? ☐Yes ☐No Is the property on a septic system? ☐Yes ☐ No
Is there an existing swimming pool &/or spa on the property? ☐Yes ☐ No **If "yes," see the Pool & Spa note below**

THE FOLLOWING "CHECKED" ITEMS MUST HAVE WRITTEN APPROVAL PRIOR TO PERMIT ISSUANCE. APPROVALS FROM THE PLANNING, ENGINEERING, FIRE, HEALTH DEPARTMENTS, AND THE AIR POLLUTION CONTROL DISTRICT MAY ALSO BE REQUIRED PRIOR TO FRAME AND/OR FINAL INSPECTION AND OCCUPANCY (INDICATED ON "BLUE" CARD). IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE INDIVIDUAL DEPARTMENT(S) AT THE NUMBERS SHOWN.

CITY DEPARTMENTS

☐ **PLANNING / ZONING**.....**858-720-2440**
☐ O.K. for Plancheck Only. By _____ Date_____
☐ Fees Due. ☐ Park Fees ☐ Public Facilities Fees ☐ Public Arts Fee
☐ Fee Payment Required Prior to ☐ Permit Issuance ☐ Final Inspection
☐ Height Certificate Required prior to Requesting Frame Inspection.
☐ Approval Req'd prior to: ☐ Permit ☐ Frame Insp ☐ Final Insp
☐ Approval required prior to ☐ Frame ☐ Final Inspection
☐ Project shall comply with Wildland Urban Interface Standards (WUI)
☐ O.K. to Issue Building Permits _____

☐ **ENGINEERING / SANITATION**.....**858-720-2470**
☐ O.K. for Plancheck Only. By _____ Date _____
☐ Permits Req'd ☐ Dedication Req'd ☐ Fees Req'd.
☐ Approval required prior to ☐ Frame ☐ Final Inspection
(Sewer, Plancheck, In Lieu)
☐ See attached form for Storm Water BMP'S
☐ O.K. to Issue Building Permits _____

☐ **ENVIRONMENTAL**.....**858-720-2477**
☐ O.K. for Plancheck Only By _____ Date _____
☐ See attached form for Storm Water comments
☐ WMP Required Prior to ☐ Permit Issuance ☐ Final Inspection
☐ Post Construction BMP Inspection Required:
☐ During Construction ☐ Prior to Final Inspection
☐ O.K. to Issue Building Permits _____

☐ **FIRE PREVENTION**.....**858-720-2410**
☐ O.K. for Plancheck Only By _____ Date _____
Approval required prior to ☐ Frame ☐ Final Inspection
☐ O.K. to Issue_____

☐ **POOL & SPA SAFETY ENCLOSURE & SAFETY FEATURES**
Effective 1/1/07, AB 2977 requires all existing pools and spas shall comply with current State mandated enclosure & safety features.

AGENCY APPROVALS

☐ **SCHOOL FEES**
(Obtain signature on the attached forms)
Solana Beach Elementary &
San Dieguito Union H.S. District.....**760-753-6491**

☐ **HEALTH DEPARTMENT**
☐ Health Regulated Business
☐ Hazardous Materials Management.....**619-338-2222**
1255 Imperial Avenue, San Diego 92138-5621
☐ Final Approval Required
☐ Septic Approval Required **760-471-0730**
151 Carmel St, San Marcos 92078
Approved by_____

☐ **AIR POLLUTION CONTROL DIST.** ..... **(858) 586-2600**
(Obtain stamp and signature on APCD Questionnaire)
10124 Old Grove Rd., San Diego CA 92131

☐ **WATER AND SEWER**
(Obtain signatures on attached forms)
☐ Santa Fe Irrigation District.....**858-756-2424**
☐ Solana Beach Sanitation District **858-720-2470**

☐ **CALIFORNIA COASTAL COMMISSION**....**619-767-2370**
Call for an appointment

☐ **ASSESSOR'S COPY OF PLANS**
At permit issuance, provide a third copy of Title Sheet, Plot Plan & Floor Plan (per Senate Bill 493).

☐ **OWNER/BUILDER AFFIDAVIT AND/OR CONTRACTOR INFORMATION**

☐ **SDG&E WORK ORDER**..... **(800) 411-SDGE**
For new / relocated gas & electric meters

_____ _____
Signature of Applicant Date

F:/Common/UpdatedApplications/Tracking Sheet Eff 09/08

APPENDIX L: PUBLIC PROJECT PRE-CON MEETING AGENDA (SAMPLE)

PRE CONSTRUCTION MEETING
2008 Street Repair and Slurry Seal Project
Bid No. 2008-12
October 23, 2008

Introductions

Contacts

1. Contractor RMV Construction, Inc.
   4079 Huerfano Ave. Suite 118
   San Diego, CA 92117
   (858) 581-3488 (office)
   (619) 517-5837 (cell phone)

2. City City of Solana Beach
   635 S. Hwy 101
   City of Solana Beach, CA 92075
   (858) 720-2470 (Engineering)
   (858) 755-1782 (Engineering fax)

   Hector Ezquerro/Josh Blea – City Inspector (858) 720-2470
   Dan Goldberg – Project Manager (858) 720-2474
   Steve Kerr – Public Works Operations Manager (858) 449-2630
   Craig Miller – Marine Safety Captain (858) 720-4444

   Utilities Santa Fe Irrigation District – Dana Johnson (858) 756-2424

Project Status: Notice to Proceed – TBD
20 Working Days

Contract Amount: $18,888.00

Project Goals:
- Safety
- Community
- Quality
- Schedule
- Budget

Contractor Requirements:
- Any questions about Contract Award or "Key Contract Items Summary Sheet"?
- Submit Construction Schedule
- Submit Traffic Handling Plan
- Submit Storm Water Pollution Prevention Plan (SWPPP)
- Submit Names/Phone Numbers of Foreman/Emergency People
- Submit Names of Additional Subcontractors

10/23/2008 Page 1 of 2 9:51 AM

Storm Water & Erosion Control

- Best management practices shall be used & maintained
- Erosion control plan

Labor Compliance, Certified Payroll and Progress Payments

Public Notification: Contractor's responsibility (keep the public informed & keep the City informed)

Utility issues

Project Safety: Contractor's responsibility

- Traffic Control Plans

Storage and Staging Areas/Access Corridors

- Contractor shall not store equipment and materials overnight on the beach or in public parking spaces.
- The site access for construction equipment shall be from Fletcher Cove beach access ramp.

Inspection & Testing

- City will provide inspection

Change Orders

- Notification must be in writing
- Work is not approved until you have a change order signed by the City Council, City Manager or the City Engineer. Project Manager and Project Inspector cannot approve change orders.

Submittals

- Submittals should be given to the project manager.

Operating hours

- 7 a.m. to 4:30 p.m. Monday through Friday. Do not operate, start equipment or congregate near residential areas before 7 a.m.
- If the contractor wants to work on Saturday, the contractor must reimburse the city for inspection services.

Work Schedule

Project Issues

APPENDIX M: CIVIL PENALTY MATRIX

SOLANA BEACH
CIVIL PENALTIES MATRIX

The following factors will be considered in determining the amount of civil penalties from the Solana Beach Municipal Code 13.10.140 A. any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day** such a violation exists and will be assessed: (1) The seriousness of the violation (2) the duration of the violation; (3) the frequency or recurrence of the violation; (4) the history of the violation; (5) the Responsible Party's conduct after issuance of the Notice and Order; (6) the good faith efforts of the Responsible Party to comply; (7) the impact of the violation upon the community.

*** Criminal Penalties**

These factors are assigned to two categories, "**Environmental Significance**" and "**Compliance Significance**," in order to easily present them in a graphical form in the matrix chart.

Environmental Significance includes the following factor: Seriousness of the violation.

Compliance Significance includes the remaining factors: The duration of the violation, frequency or recurrence of the violation, the history of the violation, the Responsible Party's conduct after issuance of the Notice and Order; the good faith efforts of the Responsible Party to comply and the impact of the violation on the community.

Environmental Significance

Compliance Significance	Moderate	Major	Severe
Moderate	*NOV-$100	$100 - $200	$500
Major	$100- $200	$500	$1,000
Severe	$500-$1,000	$1,000	$1,000-Referral to Regulating Agency

* Notice of Violation

The list below gives examples of issues specific to storm water violations that could be considered under each of the factors.
Increased Penalties will be factored as Notice of Violation to Moderate, Moderate to Major or Major to Severe.
Decreased Penalties could be Severe to Major, Major to Moderate or Moderate to Notice of Violation.

Environmental Significance
Seriousness of the Violation

Relatively inert discharges (e.g., soil, sediment, cement residue, stucco residue, etc.) **[Moderate Environmental Impact]**

Moderate toxicity / moderate health threat discharges (e.g., cleaning products with no specific hazard, i.e. detergent, latex paint) **[Major Environmental Impact]**

Significant toxicity / significant health threat discharges (e.g., sewage, hazardous materials/wastes, etc.) **[Severe Environmental Impact]**

SOLANA BEACH
CIVIL PENALTIES MATRIX

Compliance Significance

Duration of Violation

Extent of discharge as determined by volume, area covered, how long it continued **[Greater Discharge Can Lead to Increased Penalty]**

Number of days the discharge remained unabated in the conveyance system **[Unabated Discharge Can Lead to Increased Penalty]**

Impact on the Community

Results in damage, degradation, or obstruction of the storm water conveyance system **[Can lead to Increased Penalties]**

Results in actual degradation of aquatic habitat in receiving waters **[Can lead to Increased Penalties]**

Results in actual impact on wildlife including benthic communities **[Can lead to Increased Penalties]**

Results in algal bloom, discoloration or odor in receiving waters **[Can lead to Increased Penalties]**

Discharge of constituent of concern within a watershed that leads to a 303 (d) listed water body **[Can lead to Increased Penalties]**

Regulated industry (e.g., subject to OSHA chemical right-to-know requirements or subject to Hazardous Material / Hazardous Waste Permit) **[Can lead to Increased Penalties]**

Recurrence of Violation

No prior administrative enforcement penalty can be a factor for officer's discretion in lowering penalties.

Prior administrative penalties action can lead to increased penalties.

Prior administrative enforcement within the last year maybe a factor in determining higher penalties leading up to a **criminal citation**.

Intentional discharge will be a factor to increase penalties leading up to a criminal citation.
SOLANA BEACH
CIVIL PENALTIES MATRIX

History of Violation
Prior violations or warnings issued by other regulatory or City agencies (e.g., County Dept. of Health, County Dept. of Env. Health, RWQCB, FEWD, MWWD) **[Can lead to Increased Penalties]**

Prior warnings (letter or Notice of Violation) from Storm Water Pollution Prevention Program **[Can lead to Increased Penalties]**

Good Faith Efforts to Comply
Responsible Party failed to implement BMPs and should have known of requirement for BMPs (e.g., gasoline service station or construction industry) **[Can lead to Increased Penalties]**

Existing BMPs failed to prevent discharge (e.g., employee failed to comply with documented training and procedures or structural BMP failed to perform to design) **[Can lead to Reduced Penalties]**

Rapid and appropriate response to discharge **[Can lead to Reduced Penalties]**

The Solana Beach Municipal Code 13.10.140 A States the following:

13.10.140 Penalties for violation.
A. Civil Penalties. Any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day such a violation exists**, and all pollution detection and mitigation costs (if applicable).
B. Criminal Penalties. Any person who knowingly or intentionally violates any provision of this chapter shall be subject to liability for a misdemeanor, punishable by imprisonment for a period not to exceed one year, or a fine not to exceed $10,000 for each day such a violation exists, or both.
C. Any monetary penalties collected by the city of Solana Beach pursuant to violations of this chapter shall be returned to the storm water management program to be used for storm water pollution monitoring and management practices. (Ord. 184 § 1, 1993)

13.10.150 Continuing violation.
Unless otherwise provided, a person, firm, corporation or organization shall be deemed to have committed a separate offense for each and every day during any portion of which a violation of this chapter is committed, continued or permitted by the person, firm, corporation or organization and shall be punishable accordingly as herein provided. (Ord. 184 § 1, 1993)

13.10.160 Concealment.
Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter shall constitute a violation of such provision. (Ord. 184 § 1, 1993)

13.10.170 Acts potentially resulting in violation of Federal Clean Water Act and/or Porter-Cologne Act.
Any person who violates any provision of this chapter, any provision of any permit issued pursuant to this chapter, or who discharges waste or wastewater which causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, may also be in violation of the Federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts including civil and

criminal liability. Any enforcement action authorized under this chapter should also include notice to the violator of such potential liability. (Ord. 184 § 1, 1993)

13.10.180 Violations deemed a public nuisance.

A. In addition to the penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to the public health, safety and welfare and is declared and deemed a public nuisance and to impact storm water quality, and such nuisance may be summarily abated and/or restored by any authorized enforcement official. Civil action to abate, enjoin or otherwise compel the cessation of such nuisance may be taken by the city attorney.

B. The cost of such abatement and restoration shall be borne by the owner of the property and the cost thereof shall be a lien upon and against the property and such lien shall continue in existence until the same shall be paid. If the lien is not satisfied by the owner of the property within three months after the completion by the authorized enforcement official of the removal of the nuisance and the restoration of the property to its original condition, the property may be sold in satisfaction thereof in a like manner as other real property is sold under execution.

C. If any violation of this chapter constitutes a seasonal and recurrent nuisance, the city of Solana Beach shall so declare. Thereafter such seasonal and recurrent nuisance shall be abated every year without the necessity of any further hearing. (Ord. 184 § 1, 1993)

13.10.190 Civil actions.

In addition to any other remedies provided in this section, any violation of this chapter may be enforced by civil action brought by the city of Solana Beach. In any such action, the city of Solana Beach may seek, and the court shall grant, as appropriate, any or all of the following remedies:

A. Injunctive relief;

B. Assessment of the violator for the costs of any investigation, inspection, or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing legal action under this subsection;

C. Costs incurred in removing, correcting, or terminating the adverse effects resulting from the violation;

D. Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life. Assessments under this subsection shall be paid to the city of Solana Beach to be used for costs associated with monitoring and establishing storm water discharge pollution control systems and/or implementing or enforcing the provisions of this chapter. (Ord. 184 § 1, 1993)

APPENDIX N: RAINY SEASON REMINDER

October 15, 2008

XXXXXXXXXXXX
XXXXXXXXXXXX
Solana Beach, CA 92075

RE: EROSION CONTROL RESPONSIBILITIES FOR CONSTRUCTION SITES

Dear Owner and/or Contractor:

As the rainy season begins, this is a reminder to make sure that your project site at **XXXXXXXX** is in compliance with the City of Solana Beach's Storm Water Management Section 13.60 and Excavation and Grading Ordinance Section 15.40. Your responsibility as owner/contractor is to control and reduce pollutants in runoff from all your construction activities. You are required to comply throughout the year, but the "rainy season" requires special attention and practices.

Since we are now in the official "rainy season," you shall implement all the required measures in the Storm Water Pollution Prevention Plan or Erosion Control Plan for your project site. Your responsibility to implement these measures is not only to comply with the City of Solana Beach's Ordinances and Jurisdictional Urban Runoff Management Program (JURMP), but also to comply with the Regional Water Quality Control Board Permit Order 2007-0001.

At a minimum you must implement these practices on all disturbed areas during the rainy season:

- Cover and stabilize all exposed soil, particularly on slopes, in order to prevent erosion.
- Employ any erosion control measures that are adequate to prevent erosion.
- Implement Best Management Practices (BMPs) to reduce the tracking of sediment onto public or private roads.
- Conduct pre- and post-storm inspections of erosion prevention and control measures and determine whether they function properly; modify if necessary to improve effectiveness.
- Maintain all erosion prevention and control measures throughout the season and replace them as needed to ensure measures accomplish the task.
- Ensure that all site personnel are trained in erosion prevention and control techniques as well as in the requirements of the Statewide General Construction Storm Water Permit.

- Review, upgrade, and fully implement your site-specific Storm Water Pollution Prevention Plan consisting of Best Management Practices for all pollutants, including those other than sediment. The City of Solana Beach will be inspecting your project site for compliance. The California Regional Water Quality Control Board plans to conduct their compliance inspections jointly with the United States Environmental Protection Agency. Other agencies may inspect your site at will.

If you would like additional information on selecting appropriate BMPs, the City has developed a BMP Brochure that is available upon request. Failure to comply with the City's storm water regulations can result in enforcement actions, including stop work notices and fines.

If you have any questions, or require additional information, please contact me at (858) 720-2477.

Sincerely,

Danny King
Environmental Programs Manager
City of Solana Beach

APPENDIX O: GENERAL CONSTRUCTION "GOOD NEIGHBOR" BROCHURE

PROPERTY OWNERS ARE RESPONSIBLE FOR THE ACTIONS OF THE CONTRACTORS AND SUBCONTRACTORS WORKING ON THEIR PROPERTY.

Construction Hours and Noise Levels:

Construction workers shall not congregate at or report to the site prior to the beginning of construction hours.

Monday - Friday:
7:00 a.m. to 7:00 p.m.

Saturday:
9:00 a.m. to 6:00 p.m.

No construction is permitted on Sundays and Holidays. Please check the City's website for a list of observed holidays at:

www.ci.solana-beach.ca.gov

Construction noise levels shall not exceed 75 decibels for more than eight hours during any 24 hour period.

For information concerning construction hours and noise levels contact the Community Development Department at:
(858) 720-2440

Storm Water Best Management Practices (BMPs)

Violations of the storm water regulations can result in penalties, including fines of $1000 per day per violation. These practices are strictly enforced.

Storm Water BMPs Continued:

- **Perimeter Protection Controls: Silt fences, straw wattels, sand bags, etc. must be used to control run-on and run-off from project site.**
- **Tracking Controls: All entrances and exits to the site must have protection measures installed to prevent tracking of sediment off the project site.**
- **Washout Area: All sites must have a designated "wash-out" area to clean equipment and dispose of excess concrete, stucco, and paint.**
- **Concrete Trucks/Pumpers: Concrete trucks and pumpers must have perimeter protection installed around and under them at all times. Any spill must be contained on-site and no washing of equipment permitted without a washout area.**
- **Materials Storage: All materials stored on-site must be contained and covered at all times.**
- **Trash Containers/Portable Restrooms: Dumpsters must be covered and have adequate perimeter protection and all portable restrooms must have secondary containment measures installed.**
- **Storm Drain Inlets: All adjacent storm drain inlets must be protected at all times to prevent pollutants from the project site from entering (including sediment).**

For more information concerning Storm Water BMPs contact the Environmental Services Department at (858) 720-2477.

Fire Safety:

Obey all Fire Codes:

- **Ensure fire lanes are kept clear and unobstructed.**
- **Any combustibles onsite must be stored safely.**
- **Remember oily rags catch on fire spontaneously, even when no ignition source or flame is present.**

For more information concerning fire safety contact the Fire Department at:
(858) 720-2410

Encroachment Permits:

Encroachment Permits are required before you start work within the public right of way.

- **Constructing new or repairing old curbs, gutters and sidewalks, constructing new driveways or placing dumpsters in the right of way requires approval from the City and a fee of $245.**
- **The installation of new or repair of existing utilities requires approval from the City and a fee of $575.**

For more information concerning encroachment permits please contact the Engineering Department at:
(858) 720-2470

Questions, Comments, Concerns?
Contact City Hall at: (858) 720-2400

Construction Site "Golden Rules"

Treat the construction site as if you were living next door to it.

- Communicate construction timetables to the surrounding neighbors. Consider distributing a letter to neighboring properties listing proposed timetables and contact information for the property owner and construction contractor.
- Notify neighbors if you expect excessive noise and/or traffic disruptions on a particular day. For example, if you are planning to demolish an existing residence or if you are expecting heavy equipment onsite to pour concrete.
- Avoid parking in front of neighbors homes and do not run car engines unnecessarily.
- Minimize noise by not using radios and refrain from shouting whenever possible.
- Construction vehicles should be parked legally and accommodated on the construction site whenever possible.
- Use respectful personal conduct by using the onsite restroom facilities and do not use profanity.

Community Development Department

City of Solana Beach
635 South Highway 101
Solana Beach, CA 92075
Phone: (858) 720-2440
FAX: (858) 755-1782
www.ci.solana-beach.ca.gov

City of Solana Beach

Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices

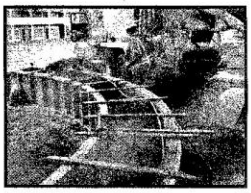

This fact sheet is provided to increase awareness of the basic rules all construction sites are required to follow by city ordinance. These rules are a minimum, and if not followed can result in penalties if you are found to be in violation of City or State applicable regulations.

In addition, we've provided some tips for additional measures that you can take at the site that would be appreciated by the City and your neighbors. We recognize that a construction site by its nature has a certain amount of noise, debris and inconvenience for the neighborhood. We have found from experience that where you can go above and beyond the minimum City Municipal Code requirements, and implement these good neighbor practices, your project can benefit from the improved neighborhood relations.

APPENDIX P: UNDERGROUND UTILITY DISTRICT SPECIAL BMP HANDOUT

Undergrounding Utility District Construction Best Management Practices

When conducting trenching work, construction Best Management Practices (BMPs) must be utilized at all times. Failure to keep all sediment and debris on your property is a violation of the City's Storm Water Regulations and can result in fines. The following list contains BMPs that may be used to keep sediment onsite and out of the City's storm drain conveyance system:

- Perimeter protection BMPs such as silt fences, straw waddles and/or sand bags can be used to contain sediment onsite.
- Cover all materials and keep above ground when a predicted rain event is to occur (>50% chance).
- Keep all materials/sediment out of street and gutter to prevent nuisance water from washing into storm drain system.
- Prevent sediment tracking into street by placing down gravel where equipment is entering and exiting property and sweeping area frequently.

These are all common general BMPs that can be utilized to prevent discharges into the City's storm drain conveyance system. If you or your contractor have any questions or require additional information on any of this, please feel free to call me at the number below.

Sincerely,

Danny King
Environmental Specialist

APPENDIX Q: SOLANA BEACH PTA EDUCATION

Solana Beach PTA Presents
A Parent Education Seminar

Go Green: Why You Should Care & What You Can Do To Help Our Planet.

What does it mean to "Be Green?" Solana Vista parent and owner of GreenEdge Kids, Annie Kaskade, will lead the panel discussion with members from the Solana Beach Clean and Green Committee to inform us about local environmental issues. Learn what you can do today to make a difference! Bring a friend, everyone is welcome!

Date:	Wednesday, October 8, 2008.
Time:	10:15 am to 11:15 am, immediately following the PTA meeting.
Location:	Skyline Elementary in the Activity Center.
Questions:	Please contact Elizabeth Eshoo, 858 663 4994.

Be the first to purchase your Solana Vista and Skyline Wave Stainless Steel Water Bottle - on sale at the Seminar for only $12.00!

20 oz. size, includes the Wave logo. Great for sports, the car, the Earth!

APPENDIX R: BEACH BLANKET MOVIE NIGHT FLYER

NOTICE OF APPROVAL FOR SPECIAL EVENT
CITY OF SOLANA BEACH

The Special Event you have applied for has been approved, according to the following information:

Date Requested: June 12, 2004
Hours: 5:30 a.m. – 2:00 p.m.
Organization: San Dieguito Boys & Girls Clubs
Type of Event: Seaside Stride 5 Mile Walk
Location: See Attached Map
Contact Person: Ellen Flanagan (760) 471-5516

Approved By:_____
Barry Johnson, City Manager

SPECIFIC GUIDELINES:

1. No City services, at the request of the applicant, for the event will be provided by the City.
2. The event participants must utilize the sidewalks and not the roadway where available on the course. If there is no sidewalk, participants must utilize the very outer edge of the roadway.
3. Event organizers must obey all traffic signs, lights, and laws.
4. Event organizers and participants shall utilize public right-a-ways and property for the purpose of this event at their own risk.
5. Event organizers and participants shall obey all traffic laws, signs, and traffic control devices at all times.
6. Event organizers must comply with all applicable water run-off regulations and must use best management practices. There will be absolutely no liquid, solid, or any other by-product generated by the event allowed in the city storm drain system. The parking lot at the conclusion of the event must be cleaned of all debris and disposed of in an acceptable manner to the City's Public Works Department.
7. Roadway and sidewalks and any other public areas utilized by the event participants and audience shall be left in a clean and orderly condition at the conclusion of the special event.
8. Applicant shall be charged for the amount of time to clean-up the areas or facilities used by the event participants if the areas utilized by the attendees of the event are not left in a clean and orderly condition. Estimated cost for retaining one City employee to clean-up refuse, and trash disposal is $ 43.20 per hour.
9. Any damage to public property as the result of this event will encumber full cost recovery from applicant by the City.

10. Event organizers shall at all times comply with any request or orders from the City's public works, lifeguard, law enforcement, or other public safety personnel. Failure to do so will result in the revocation of this permit and an immediate cease event order.

GENERAL GUIDELINES:

1. This permit and any other permits associated with this event will be available at the event.
2. If City services are required, applicant will be billed in advance for any and all City services provided above normally scheduled services. **All fees and charges shall be paid prior to final issuance of a permit for the event. Exception: Costs incurred by the City for clean up or other reasons due to the event, if any, shall be charged to the applicant billed as soon as the total cost is determined.**
3. All vehicles must comply with City parking regulations.
4. The organization and any of its subcontractors in advance of the event must file a business license application and fee, if they do not have a business license.
5. Vehicle loading and unloading cannot block pedestrian access. If required for short durations, signage directing the flow of pedestrian access, including wheelchair access must be established and posted.
6. The City reserves the right to shut down the event at any time, if necessary.
7. Applicant must comply with City noise regulations.
8. **It is the responsibility of the applicant to know and comply with the terms and conditions as stated within this special event permit and all applicable laws that pertain do the event, its organizers, and its participants whether they are stated on this permit or not.**
9. Contact Leah Escarcega or David Ott at (858) 720-2410 if there are any questions regarding the special event permit process.

C: City Manager's Office
Public Safety Director
Public Works Director
Sheriff's Department
Marine Safety Captain

City of Solana Beach Department of Parks & Recreation

2008 Kids Summer Day Camp for ages 6 to 12

All Sessions will meet Mon-Fri from 8:30 to 2:00 at Fletcher Cove Community Center, 133 Pacific Ave. The fee is $100/week per child and includes activities such as beach walks, swimming at the Boys and Girls Club, arts & crafts, fun games, t-shirts and a weekly field trip to an exciting destination. After-care is offered from 2:00-5:00 ($25/week). Our popular "**Leader in Training**" program is also available again this summer for 13-17 year olds for only $40/week!

Ecology & our Environment

Session 1, June 23-27, 2008

Do your kids want to learn more about ecology and their environment here in Solana Beach? Well this week's camp is perfect for your children to explore the world of marshes and lagoons. Campers will learn about such things as how a tadpole turns into a frog, the water cycle and why it's important to take care of the environment. **We will even get to explore our own San Elijo lagoon as this week's field trip**. Mayor Kellejian will be a guest speaker on 1st day of camp!

Around the World in 5 Days

Session 2, July 7-11, 2008

Come to camp and you can experience this trip around the world. Not only will campers be introduced to a global perspective but they will also be exploring the culture, and everyday life of all areas of the world. Kids will even be able to explore their own family culture and have a chance to share an aspect of their heritage with the other campers. Hop on board for this super-speed global experience.

Fun To Be Fit

Session 3, July 14-18, 2008

Campers will get to see that living a healthy and active life can be fun! Learn about healthy eating as well as including physical activity in their everyday lives. Indoor and Outdoor activities and crafts will help the campers understand the way their bodies work and how they can keep their bodies happy and healthy. **Field Trip: Go Play Get Fit Youth Day in Coronado**.

olympic Games

Session 4, July 21-25, 2008

Come join Solana Beach's own week long Olympics in anticipation of the 2008 Olympics beginning this year. We will be trying out such sports as soccer, basketball, and running, as well as testing our skill out on the ice rink for this week's field trip.

Summer Safari

Session 5, July 28 - August 1, 2008

Lions, and Tigers and Koalas? Oh my...join our own adventure through such places as the jungle, rainforest and safari. Learn about all sorts of animals, their habitats and how they influence our everyday lives. Love adventure and exploration? Then this is the camp for you. **Field trip: Balboa Park Natural History Museum**.

Under the Sea

Session 6, August 4-8, 2008

Come test your knowledge of the big body of water that we are fortunate enough to live so close to. Explore the ocean through beach activities, crafts and a day of exploration at Scripps Birch Aquarium. Learn about dolphins, sharks, whales, and even starfish and sea cucumbers. Get a tour of the Solana Beach lifeguard tower and learn how to have fun safely at the beach.

Splish Splashtacular

Session 7, August 11-15, 2008

Is your child half amphibian? This is a perfect week for campers to explore the various ways to enjoy the water through water related crafts, water balloons and even water relays. From the ocean, to the pool and the pool to the Wave Water Park – come splish and splash with us!

CITY OF SOLANA BEACH PARKS & RECREATION

2009 Kids Summer Day Camp for Ages 6–12

All Sessions will meet Monday – Friday from 8:30 a.m. to 2:00 p.m. at Fletcher Cove Community Center, 133 Pacific Ave. The fee is $106/week per child and includes activities such as beach walks, swimming at the Boys and Girls Club, arts & crafts, Library visit, fun games, t-shirts and a weekly field trip to an exciting destination. After-care is offered from 2:00 p.m.– 5:00 p.m. ($27/week). Our popular "Leader in Training" program is also available again this summer for 13 – 17 year olds for only $40/week!

1 ENVIRONMENTALLY FRIENDLY ... June 22 – 26

There are many exciting ecological discoveries to be investigated here in Solana Beach. Find out how simple it is to appreciate the simple aspects of the world around you. Campers will discover ways in which he/she can help save the environment, explore the world of creepy crawly insects, and even discover the local San Elijo Lagoon through a nature walk for this week's field trip.

2 FUN TO BE FIT ... July 6 – 10

Challenge your camper to a world of healthy living. Kids will get to learn how to incorporate healthy aspects into their lives in a fun way. Learning simple changes can make a world of difference in the way your child feels and lives. Campers will learn that a healthy lifestyle can be easy and fun just by eating right and staying active. The field trip will be a day full of active fun at Coronado Island for the GO PLAY GET FIT day.

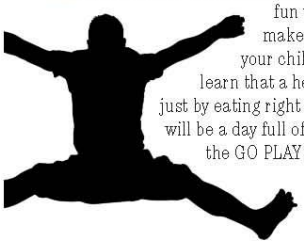

3 TIME TRAVEL ... July 13 – 17

Travel back in time to the prehistoric land filled with dinosaurs and other historic creatures. Campers will get a chance to understand how the world has changed from the prehistoric world to the world we live in now. Kids will have the chance to make some predictions as to what they think the world will look like in the future and hopes for the future based on knowledge of the past. This week's field trip will be to the Natural History Museum at Balboa Park.

4 WORLD EXPLORERS ... July 20 – 24

Ever wonder what living in another country would be like? Come explore the many wonders this world has to offer in this 5 day top speed trip around the world. Campers will get to explore the world beyond the United States with crafts from other countries, songs and cultural differences from all over the world. Campers will enjoy this imaginary flight around the world with a special stop at the Cabrillo National Monument for this week's field trip.

5 SPACE CADETS ... July 27 – 31

Ever imagined seeing Earth from space or wanted to be an astronaut? This week campers will each get a chance to explore the universe beyond our planet and even how things work on Earth versus other planets. Kids will get to learn about what it takes to be an astronaut and the world above our heads through games, crafts and even a trip to the Ruben H. Fleet Science Center at Balboa Park.

6 IT'S A ZOO OUT THERE ... August 3 – 7

There's the Grasslands, Jungle, Rainforest, and even your local beach that contains hundreds of animals that campers will get a chance to learn about and explore. Learn all about the crazy life of animals of all kinds with theme related crafts and discussions as well as a chance for the campers to explore our own San Diego Zoo.

7 WATER ADVENTURES ... August 10 – 14

You don't have to be an underwater animal to enjoy the wonderful world of water. Campers will learn about the various underwater creatures as well as explore all the fun that one can have in and around water. Not only will campers get to enjoy the beach but this week's field trip will be to the Wave Water Park where kids can experience the fun that comes with water, without having to grow gills.

APPENDIX U: 2009 DRY WEATHER MONITORING PROGRAM RESULTS

As a result of Addendum No. 2 adopted by the RWQCB in September 2008, this section will be submitted along with Chapter 7 "Illicit Discharge Detection and Elimination Component" in December 2009.

APPENDIX Z: EFFECTIVENESS ASSESSMENT TABLE

CHAPTER 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

7.1 Introduction

In accordance with Permit Section D.4, this section of the report describes the City's effort to implement an Illicit Discharge Detection and Elimination (IDDE) program during this reporting period, July 1, 2008 to June 30, 2009.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. This section will include results from efforts to eliminate and prevent illicit discharges, results from the most current Dry-Weather and Wet-Weather Monitoring Programs and Coastal Outfall Monitoring Program. Also, this section of the report will include any changes to the City's *Action Levels for Field Screening and Laboratory Parameters*. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

During this reporting period, the City continued the comprehensive IDDE Component in accordance with the new JURMP (Order No. 2007-0001). The activities are expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City.

The City's JURMP outlines in descriptive detail the City's plans for detecting and eliminating illicit discharges, which would be redundant to repeat in this Report. This report will discuss the results of the 2009 Dry Weather Monitoring Program, which adheres to the requirements of the new Permit, and is described in detail in the City's new JURMP.

7.2 Public Reporting of Illicit Discharges and Connections

The City has an extensive public reporting program that includes a designated hotline (858-720-4424) that links directly to the Environmental Programs Manager's desk, a dedicated email address that also links to the Environmental Programs Manager, and a highly trained City staff that knows how to route calls to the appropriate staff members at City Hall. The City of Solana Beach is a small and intimate city where residents believe in personal relationships and demand immediate responses and actions. The City's hotline and email address to report storm water violations is posted on almost all public outreach materials, including the City's website, community newsletters and environmental brochures.

The City tracks complaints and follow-up activities in a database that is managed by the Environmental Programs Manager. Usually, the City's Code Enforcement Officers respond to the complaints and hotline reports and handle the issues in the field. An email and/or violation form is then sent to the Environmental Programs Manager to document the actions taken and to proceed with any necessary increased enforcement actions such as Notice of Violations (NOVs), citations or stop work orders. This database is constantly being updated and also acts as a resource for historical violations and repeat offenders. If a repeat offender is identified, then increased enforcement actions will automatically be initiated, as explained in the City's Civil Penalty Matrix.

7.2.1 Summary of IDDE Violations

The following is a brief summary of the IDDE violations that were acted upon by City staff through complaints, field detection and reports from the public. For a complete account of each violation, the City's database can be reviewed upon request.

During this reporting period (July 1, 2008 – June 30, 2009), there were 220 contacts made by City staff. This includes educational contacts made by City staff and violation investigations. The City hired a part-time Code Enforcement Officer during this reporting period and one of his primary responsibilities was assisting the storm water program. This part-time staff member made it a priority to engage the public when he noticed a potential violation occurring or about to occur. This is why the number jumped drastically from last year's report of 87 storm water investigations. The City believes being proactive is an important part of storm water pollution prevention, and made this a priority by hiring a part-time code enforcement officer. Most of these violations were minor in nature, ranging from washing down a driveway or patio to washing a car in the street with no containment. These violations are usually handled with a verbal warning or written Notice of Violation. However, during this reporting period, seven citations were issued, down from twelve last year. The decrease in citations may be attributed to the proactive educational contacts made by City staff prior to a potential violation occurring. The following is a brief description of each violation that resulted in a citation. The complete database is too extensive to include in this report, however it is available upon request.

7/8/08 – City staff received a call about a concrete spill at a construction site at 417 Pacific Avenue. Staff investigated and confirmed the report. Staff issued a stop work until the spill was sufficiently cleaned. Contractor was cited $100 for lacking proper secondary containment. Staff re-inspected site and it was clean, case closed.

8/5/08 – City staff on patrol witnessed a concrete spill located at a construction site at

424 Pacific Avenue. Staff made contact with the concrete truck employee and concrete pumping employee, neither had proper secondary containment. Stop work was issued until site was sufficiently cleaned. Both responsible parties (truck driver and concrete pump operator) received a $100 citation. Staff re-inspected site and it was clean, case closed.

9/25/08 – City staff on patrol witnessed a large amount of dark brown colored water discharging down the street. Staff traced it upstream to 233 South Helix Avenue and discovered a stagnant pool being drained into the street with no filtering or containment. Staff issued stop work and directed landscaper to properly dispose of water into sewer system. Landscaper was issued a $100 citation. Case closed.

9/25/08 – City staff received a call reporting a discharge of dark colored water into street at 640 North Granados Avenue. Staff investigated and found a contractor pressure washing a newly constructed driveway with no containment. The discharge contained remnants of a color coat and sealer product that was just applied to finished driveway. Staff issued stop work until discharge was sufficiently cleaned. Contractor received a $100 citation. Staff re-inspected site and it was clean, case closed.

11/15/08 (Saturday) – City staff on patrol detected a soapy discharge and traced it back to 811 Mola Vista Way where a resident was washing rug into the gutter. Staff issued stop work and directed the resident to clean discharge and properly contain wash water. Resident received a $100 citation. Staff re-inspected site and it was clean, case closed.

3/18/09 – City staff received a call regarding a roof cleaning company pressure washing tile roofs and not properly containing the excess water. Staff investigated and found the contractor at 743 San Mario Drive and confirmed the complaint. Staff issued a stop work until the area was sufficiently cleaned, and educated the contractor on proper ways to manage excess wash water. This was the company's second offense, so a $200 citation was issued. Staff re-inspected and site was clean, case closed.

As mentioned in last year's Annual Report, City staff has noticed a pattern that the most prevalent and serious violations that were occurring throughout the City involved mobile concrete pumping trucks. These violations were also the most difficult to clean up after an accident, so the City decided to become very proactive when dealing with these companies. The proper handling of concrete and appropriate BMPs became a standing item to discuss during pre-construction meetings, and City staff routinely stopped at all construction projects if a concrete truck or pumper was seen onsite, regardless if there was a violation or not. City staff would talk to the project superintendent and the concrete pump and truck operator to ensure that all necessary precautions were being taken to prevent a spill, and also to remind them that enforcement actions will be taken

if a violation does occur. This proactive program was continued during this reporting period, and it has proven highly successful. The amount of concrete pumping violations continues to decrease, which can be attributed to this proactive outreach program.

7.2.2 Increased Code Enforcement Activities

As mentioned above, in an effort to reduce the number of violations that occur on the weekends, the City hired a part-time Code Enforcement Officer and directed him to work alternating Saturdays and off-peak weekday hours. It has come to the City's attention that a significant amount of violations are occurring on the weekends, when people know that no City staff is available for enforcement. This activity has been overwhelmingly successful, with the identification and elimination of many violations.

7.3 IDDE Program History and Current Prohibitions

The City implemented its first IDDE program in 1993, which included dry weather screening, annual storm water conveyance system inspections, and prompt responsiveness to complaints.

Between 1993 and 2002, the City's IDDE program did not indicate any significant problems, except for occasionally high levels of bacteria at a curb inlet or manhole leading down to the Seascape Sur outfall. A complete discussion about the activities related to this IDDE problem, including its history, can be found in the JURMP Annual Report Chapter 12: "Special Investigations."

Over the years, the City has responded to complaints and results from its dry weather monitoring reports to detect IDDEs. The City's efforts have been successful, but in response to the requirements of the Permit, the City expanded its program in 2001 to comply with the old Permit (Order No. 2001-01). During this reporting period, the City continued implementing the new IDDE program required in the new Permit (Order No. 2007-0001), which is described in detail in the City's new JURMP.

Prohibitions

As noted in the City's JURMP, most non-storm water discharges are prohibited by Solana Beach Municipal Code (Storm Water Management Chapter 13.10). The City modified its Municipal Code and General Plan to ensure the City has sufficient legal authority to enforce the prohibitions of non-storm water discharges included in Order No. 2007-0001.

7.3.1 Significant Spills

The City operates a storm water hotline and email address that the community can use to report any violations or suspicious behavior they may observe. This hotline can also

be used to notify City staff of any significant spills that have occurred. Additionally, the City's website has a link to directly e-mail the Environmental Program's Manager to report violations or spills. The residents can also directly call City Hall and talk to the appropriate Staff member to report any significant spills. These multiple communication options allow the community to get in direct contact with staff immediately, which greatly speeds up the identification and elimination of spills.

The City had *four significant sewer spills* during this reporting period. The causes ranged from debris and grease blockages to a construction accident. Fortunately, only two of them escaped total containment and reached the environment. A brief description of each spill and the follow-up actions are explained below.

- 10/22/08 – A resident reported a discharge coming out of a manhole on the access road to the Solana Beach pump station. City crews immediately responded and cleared the blockage, caused by grease buildup in the sewer line. Approximately 3,000 gallons were released and 2,250 gallons were recovered. The line was placed on the "hot spot" list for increased cleaning, so it is now cleaned four times per year instead of the normal one time per year.

- 11/24/08 – A construction crew notified City staff that a discharge was coming out of a manhole in the middle of Valley Avenue. City crews immediately responded and discovered that the construction crew had drove a sheet of metal piling through the sewer line, completely blocking the pipe. City crews immediately implemented a "high-line" device that pumped the sewage from the manhole immediately upstream of the blockage to a manhole immediately downstream of the blockage, eliminating the spill. Construction crews worked 24 hours a day the next three days to repair the line and return it to normal operations. 9,450 gallons were spilled and 1,360 gallons were recovered. The remaining sewage ended up in Steven's Creek, so Dog Beach in Del Mar was closed until bacteria samples showed the receiving waters were safe.

- 11/27/08 – City staff was notified by a resident that their bathroom fixtures were backing up and there might be a problem with the City's main line. Staff responded and located a blockage of the main line due to debris. The line was cleared, but the built up sewage behind the blockage created a surge that resulted in a sewer spill from a private lateral. 8,700 gallons spilled, but all 8,700 gallons were recovered as it traveled into the City's Low Flow Diverter at Fletcher Cove and was diverted back into the sewer system. No discharge reached the beach or ocean.

- 4/3/09 – City staff was notified by a resident that a discharge was coming out of a

manhole in the middle of Via De La Valle road. City crews cleared the blockage, which was determined to have been caused by grease. 2,030 gallons were spilled and 1,100 gallons were recovered. The remaining amount made it into Steven's Creek, but samples at Dog Beach revealed that it was not contaminated by the spill. City staff inspected the upstream restaurants and confirmed that they were conducting the required maintenance on their respective grease management devices. The line was placed on the City's "hot spot" list for increased cleaning.

Although there were four significant spills during this reporting period, the City is confident that its sewer maintenance program is progressive and successful. The City has an aggressive sewer maintenance program to prevent sewer spills from occurring. The City cleans the entire system at least once per year, and the known "hot spots" are cleaned and CCTV videoed four times per year. The aggressive Grease Management Ordinance has drastically cut down on the amount of grease in one particular hot spot, but the area is still monitored four times per year. The City is proud of its aggressive maintenance program and strives to attain zero sewer spills.

7.3.2 HHW Program

The City manages an extensive HHW Program that is discussed in detail in the Residential Component of the 2008 JURMP Annual Report.

7.3.3 Grease Trap Ordinance

In October 2004, the City Council adopted a grease trap ordinance that requires new, remodeled, and even *existing* restaurants to install a properly designed grease management device (including grease interceptors, traps, etc.). Previously, the City's Building Department would require all new and significantly remodeled restaurants to install a grease management device, but it was simply a policy, not an ordinance. The City realized the need for an enforceable ordinance that would grant the City the power to inspect the devices to ensure proper installation and maintenance. These inspections are now part of the annual commercial/industrial storm water inspections and City staff (or designated contractors) review maintenance records to ensure the proper devices are installed and properly maintained. The ordinance allowed existing restaurants eighteen (18) months to install the grease traps/interceptors and enforcement began in April 2006. As mentioned in the JURMP Annual Report, the City contracted out commercial/industrial inspection services to a private firm. This private firm inspected grease management devices and reviewed maintenance records for all restaurants/eating establishments that were inspected.

7.4 Dry Weather Monitoring Program (DWMP)

The dry weather field screening data is an important part of the City's IDDE program. The results provide information on whether pollutants are detected in the storm drain system, which can be used to identify potential illegal discharges or connections.

The specific purpose of this program is to detect by system inspection and by field screening and lab water quality testing the existence of either illicit connections to the storm drainage system or the use of the storm drainage system for illegal discharges, during the dry season. The basic requirements for the program are described in the Permit and City's JURMP.

The purpose behind conducting tests of storm drains during dry periods is that illicit connections and illegal discharges are most apparent when they are not being masked by storm flows or ground water discharges. Theoretically, there should be no flow in the storm drains during dry periods, except for the limited amount of exemptions listed in the Permit Section B.2 "Non-Storm Water Discharges." Therefore, if flow is present, an investigation must be conducted to determine where the flow is coming from to determine if there is an IDDE violation.

Prior to the implementation of the original JURMP (from 1993 to 2001), the City completed eight years of dry weather testing, primarily with the services of Kinnetic Laboratories/Cooper Engineering Associates, which collected the field samples and conducted the testing and analysis. The City's program was based on a systematic and comprehensive approach.

In 1993, the City inspected selected outfalls within the City limits and monitored selected sites along Stevens Creek. In 1994, major outlets from the City were tested, in addition to the sites monitored in 1993. The primary objectives in the 1995 through 1999 dry weather field screening programs were to target strategic locations where the potential existed for possible pollutant discharges or illicit connections, as well as carry out a comprehensive monitoring of the City.

For completeness and consistency in reporting, the City will briefly summarize the results from the DWMP over the past few years.

7.4.1 Historical Results

The 1995 dry weather field screening data characterized outfalls, identifying areas of non-storm water, non-permitted discharges as well as the identification of problem or potential problem areas. Sampling points were selected in an effort to survey in-line flow as well as inflow and outflow at the City limits. As a result of the 1995 field

screening, dumping of grease into Stevens Creek was discovered at a local restaurant. The City notified the property owner, as well as the business owner, to cease such activity, which occurred.

The 1996 dry weather field screening data continued to characterize outfalls, identifying areas of non-storm water, non-permitted discharges as well as the identification of problem or potential problem areas. Results from the 1996 program indicated elevated bacteria levels at the Fletcher Cove Outfall (O-03A). Subsequently, the City constructed a low flow diverter (in 1998), which diverts the flow to the City's sanitary sewer system. The diverter pumps 40 gallons per minute, year round, 24-hours a day. Runoff is only discharged at Fletcher Cove outfall during storm runoff events that exceed 40 gallons per minute. The diverter helps eliminate the contamination at the Fletcher Cove Outfall caused by storm water runoff.

The 1997 dry weather field screening data included several sites that had been screened in previous years, two new sites and an independent study. The new sites were added upstream of two previously monitored sites in Stevens Creek to try to isolate the sources of pollutants that had been detected at those sites during screening in several past years. The independent study was conducted to isolate the source of bacteria that the San Diego County Department of Environmental Health indicated had been found at a commercial site contributing to Seascape Sur Outfall. Additional investigations were conducted in Stevens Creek and the cleaning of the commercial site was ordered. Results indicated no significant problems had occurred during this reporting period.

The 1998 dry weather field screening data included further investigation of locations with consistent evidence of possible pollutant discharges (high pH) in Stevens Creek, the continual monitoring and bacterial testing of Seascape Sur Outfall, and the continual monitoring of representative areas in the City. The samples from Stevens Creek Outfall were collected while the Del Mar Racetrack was in operation to determine if that location (and its activities) was having an effect on the elevated levels bacteria. The results indicated that the pH phenomena in Stevens Creek were due to leachate migrating through the concrete structure. However, the effects of the Del Mar Racetrack were found to be inconclusive, but several outfalls were cleaned of trash and debris.

The 1999 dry weather field screening data continued to screen the same sites as in the previous year and again included the Fletcher Cove Outfall. The 1999 DWMP was again conducted during the early part of the racing season in Del Mar to build on the data collected in the previous years. Fletcher Cove was added back to monitor the bacteria and the effectiveness of the City's structural Best Management Practices for the low flow diverter. Results from the testing did not indicate any significant problem

areas and the effects of the Race Track were again inconclusive.

The 2000 dry weather field screening data continued to build on the database the City has established. The report identified two locations with high levels of coliform (both flowing to the Seascape Sur Outfall). The City conducted an investigation and sealed off an old leaking sewer lateral that was found to be located near the curb inlet of the upstream site with elevated bacteria counts. The City contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during the follow-up tests. The 2000 report recommended that the City clean several sites of trash and debris, which was done.

The 2001 DWMP included ten sites for testing, including the same two sites that had elevated bacteria counts in 2000, and Fletcher Cove Outfall (where the diverter is in operation). Site S-13A and S-13 were also included to detect the effects of the Del Mar Race Track during racing season. Seven of the ten sites had at least some flow or ponded water; and one site (S-02) required a follow-up investigation based on elevated levels of fecal and coliform bacteria. Although the S-02 site had elevated bacteria levels, they were lower than the previous year, which led City staff to believe that the problem (for which repairs had been recently completed), was simply residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be cleaned.

The 2002 DWMP increased the number of sites from 10 to thirty-one, with a representation of all five watershed sub-basins in the City. Sites were selected ensuring that historical problem areas, drainage to sensitive water bodies and sites with potential discharge from commercial areas were all represented. This was the first year of dry-weather monitoring under the new Permit, which included specific rules and guidelines developed by the Copermittees to ensure consistency. Some of the keys findings include the following:

- Water clarity at all but one site was clear.
- Floating trash was observed at four sites and sedimentation was observed at four sites.
- At the majority of sites, there was no biological activity noted.
- One site had excessive algae growth, while four had some vegetation and algae growth.
- All sites had pH levels below the action levels agreed upon by the Copermittees.
- Several sites had elevated levels of Ammonia, which triggered a follow-up investigation.
- Elevated levels of detergents were found at one site; as a result, staff has scheduled some time to pass out “door-hanger” flyers to educate the surrounding

community as to the cause of this result (which is likely due to car washing, which is prohibited in the City).

- Levels of the all of the following were below the Copermittee action levels: oil and grease, surfactants, Diazinon[1], Chlorphyrifos and dissolved cadmium, copper, lead and zinc.

7.4.2 Results from the 2003-2008 DWMPs

The Dry Weather Monitoring Programs from 2003-2007 were all conducted under the requirements of Permit Order No. 2001-01, and the 2008 program was conducted under the similar requirements of Permit Order No. 2007-0001. Although the results were slightly different from year-to-year, the program results can be generally summarized into the following information. Each year, there were approximately 28-30 sites chosen, depending on the amount of flow in each year. The sites were relatively static throughout the years, as the City has identified the key catch basins/outfalls/manholes in each sub-basin and has monitored them every year. There is one significant problem area that has been identified and it has been the subject of an ongoing IDDE investigation for years. Chapter 12 “Special Investigations” of the JURMP Annual Report is dedicated entirely to this ongoing problem, so all the information can be found there. The City has worked tirelessly on this ongoing problem and plans to continue until a resolution is found.

7.4.3 Results from the 2009 DWMP

The 2009 Dry Weather Monitoring Program is included as an attachment to the 2009 JURMP Annual Report (Appendix V).

7.5 Action Levels to Trigger Follow-up Investigations

The City collaborates with the other Copermittees of Order 2007-0001 in developing the standardized responses, procedures, processes, policies and programs by participating in the Dry Weather Monitoring Workgroup. This helps by providing consistency in messages, requirements and community expectations. This includes the continuation of the “Trash Assessment Form” analysis at each site, which is a new requirement included in Permit Order No. 2007-0001. This form was utilized during the 2008 and 2009 DWMPs for all Copermittees and is included in the 2009 DWMP report. These assessment forms will assist the Copermittees in long-term assessments of DWMP sites, to determine any trends in the prevalence of trash throughout the City. It should be noted that there were no locations in the 2009 DWMP where the sites were less than Optimal. Trash does not appear to be a problem in the City’s MS4 system.

7.6 Coastal Monitoring Program

The purpose of the City's Coastal Outfall Monitoring program is to detect IDDEs through monitoring of the City's coastal outfalls, and to protect human health and public safety by notifying the public of any potential health hazards in the ocean. Prior to 2002, the San Diego County Department of Environmental Health designed and conducted the Coastal Outfall Monitoring Program. In 2002, the City utilized its own staff to conduct an inventory of its outfalls and design the monitoring program, which is currently being implemented.

During this reporting period, the Coastal Monitoring Workgroup, comprised of the cities that have storm drains that flow into the ocean, met monthly to discuss pertinent issues and establish monitoring guidelines and reporting limits. Here is a brief description of the City's Coastal Monitoring Program for FY 08/09.

As stated in last year's Annual Report, the new Permit requires Copermittees to monitor all flowing coastal outfalls located within the City. The sampling frequency is once per month required during both the wet and dry season (two samples at each location, one at storm drain, one at receiving waters). The samples are taken to a State-certified laboratory for analysis of three parameters; Total Coliform, Fecal Coliform, and Enterococcus.

Under the new Permit, the City monitors one coastal outfall (Seascape Outfall). The other coastal outfall in the City (Fletcher Cove Park) is connected to a Low Flow Diverter and sampling is not required.

The Seascape Outfall has had historical problems and is the current target of an ongoing IDDE investigation. This is discussed in detail in Chapter 12 of the JURMP Annual Report. For complete results, please see the Coastal Outfall Monitoring Annual Report submitted annually with the County Unified URMP.

7.7 Wet Weather Monitoring

The Copermittees of Order 2007-0001 collectively hired MEC Analytical again to continue the Wet Weather Monitoring Program (WWMP) for 2008/09. The complete report can be found in the County Unified URMP annual submittal.

7.8 MS4 Map

The City has a Geographic Information System (GIS) map of all catch basins in the located throughout the City. The City also has a Drainage Master Plan that includes all storm drain conveyance structures included (catch basins, inlets, outfalls, manholes,

drainage channels, etc.) available in GIS format that is accessible digitally. In addition, the City has an independent consultant working on a new database that will incorporate the Drainage Master Plan, will allow violations to be tracked and documentation of maintenance and inspection of long-term construction BMPs. The intent of the new database will be to house all pertinent information into one location, making tracking and record retention much more efficient. The database is still under construction but hopefully will be functional during this next reporting period.

7.9 New Activities and Improvements in FY 09/10

The City will analyze its 2009 DWMP in FY 09/10, review the results in detail and integrate the findings into program activities. City staff will evaluate the results to determine areas within the city (residential and commercial etc.,) that need additional education to improve the water quality in the region. The City will use the results from the previous DWMP to design the 2009 DWMP and attempt to conclude the special investigation (see Chapter 12). The ongoing problem at Seascape Sur, which was detected again in this reporting period's Coastal Monitoring and Dry-Weather Monitoring Programs, are discussed in greater detail in Chapter 12 (Special Investigations) of the JURMP annual report.

Additionally, City staff continued enforcing the Grease Management Ordinance, including inspecting the grease management devices during the commercial/industrial restaurant inspections. Staff, or its designated consultant, will continue to inspect the grease traps/interceptors during future annual storm water inspections to ensure that proper maintenance is being conducted and records kept on-site. Analysis on the effects on sewer spills will also being conducted in the next few years to see if the ordinance has had a successful impact on reducing spills as a result of grease build-up.

Additionally, it is anticipated that the WURMP workgroups will begin analyzing the Dry Weather Programs of partnering jurisdictions and begin tailoring some of those activities to address high priority pollutants, and the activities/sources associated with them. In the years past, jurisdictions would self analyze their respective programs to address high priority locations and sources, but with the added emphasis on WURMP activities stressed by the RWQCB staff, these issues will now be attacked on a watershed basis. This has the potential to provide more knowledge and resources that were previously limited by staff resources, but now with the assistance of neighboring jurisdictions, this may prove very valuable. The DWMPs can be used to identify problem areas that may have a particular cluster of sources upstream, and will help focus the WURMP activities on these areas in mini-pilot programs to determine if the source can be identified or, maybe as important, eliminated as a possible source so that resources can be focused

on other potential sources.

7.10 Summary

As evidenced by the Copermittee WWMP, the City's DWMP, the City's "team approach" in responding to complaints, and the improvements made citywide in procedures and investigative processes, the City is proficient and effective at detecting and eliminating IDDEs, and working to change the human behavior that has caused negative impacts on water quality.

Recognizing that human behavior is the basis of many non-point source pollution problems, the City quickly acts on reports from residents, City staff, and other agencies to follow up on problems as soon as they are reported. The City's storm water hotline is link directly to the Environmental Program Manager's voice mail box so that calls can be consistently monitored and acted upon. The City has effectively utilized the administrative fine process which has proven to be a very efficient and timely procedure in issuing citations, which will reduce the potential for pollution into the City's MS4.

The City's aggressive sewer maintenance program and grease management ordinance has proved to be successful in preventing sewer spills. These programs are vital to prevent the catastrophic environmental effects that sewer spills have on the natural environment. In addition, the proactive approach that City staff takes in educating contractors before there is an illegal discharge has greatly reduced the amount of violations in the City. This is extremely evident by the concrete truck and pumper scenario discussed above. The violations at minor construction projects have reduced as a result of this proactive approach.

In addition, as a result of the effects of the long-term drought the region is mired in, water conservation efforts have been stepped up, which has proven to also help water quality in the City. The City has stepped up its educational outreach efforts with the assistance of the local water provider Santa Fe Irrigation District, and the community has responded extremely well. This has helped to reduce the dry weather flows into the City's MS4 system, thereby reducing the primary transport mechanism for pollutants entering the local waterways. Over-irrigation has reduced dramatically, and the City and residents have responded by planting more drought tolerant and native vegetation. Overall, water consumption is down close to 20% since the proactive and aggressive educational water conservation campaign has started. The City has forged a great relationship with the private water agency and the results have benefitted both water conservation and water quality. This is evident in the only two DWMP sites (out of 30 total sites) that had enough water present to take a sample.

CHAPTER 11: EFFECTIVENESS ASSESSMENT COMPONENT

This to be added to existing Chapter 11 component of 2009 JURMP Annual Report…….

Illicit Discharge Detection and Elimination Component

Program Strengths: The City continued to implement its IDDE program by responding to complaints and investigating potential violations promptly and thoroughly. The City serves the community effectively and efficiently by connecting the storm water hotline directly to the Environmental Programs Manager, saving valuable time and effort. The program has proven to be very successful as the community of Solana Beach is very intimate and prefers to do business face-to-face and requires immediate results. The City has a very customer service focused atmosphere, and the residents demand instant and effective action on relevant issues. This has, in turn, been very beneficial to the storm water program because many times, in order to effectively deal with a violation or IDDE, it has to be investigated immediately. This has led to many violations and violators being discovered while it is occurring, rather than letting time elapse which can lead to a lengthy and complex IDDE investigation that may yield no results.

The 2009 Dry Weather Monitoring Program (DWMP) was conducted in-house by City staff. The program was modeled after the initial report conducted by MEC Analytical, and the complete report is included in the 2009 JURMP Annual Report (Appendix V). In summary, there were no locations that showed evidence of an IDDE. This is a significant improvement over the past seven years, where the City had one persistent problem at Seascape Sur with extremely elevated bacterial indicators. This location had been an ongoing problem area in the City for many years and the source had proven elusive. The results of this year's Dry Weather Monitoring Program are extremely exciting and encouraging for City staff and the storm water program as a whole. The City had invested a significant amount of monetary and staff resources educating the adjacent property owners, cleaning the entire line annually, installing and maintaining upstream catch basin BMPs, conducting focused and thorough ongoing investigations and performing structural changes upstream to try and identify and eliminate the source. The results of the 2009 DWMP are the first real positive results the City has encountered at Seascape, and hope the source has finally been eliminated. The case is by no means closed, as this is only one year of results below the Copermittee Action Levels. But it is a significant step forward in the ongoing investigation and elimination of the persistent bacteria problem.

The City will continue to monitor the bacteria results throughout the year as part of its

Coastal Monitoring Program. In addition, the City continues to dedicate approximately $10,000 in the annual CIP budget to clean out the Seascape pipe with the intention of eliminating any residual bacteria and debris trapped in the sag in the pipe. The City will continue to work with the adjacent condominium complexes to eliminate the over-watering issues that may be contributing to the problem. City staff works very well in communicating possible IDDE situations around the outfall, as the Marine Safety Department has a lifeguard station located directly in front of the outfall (during summer months). Whenever there is a noticeable increase in flow or odor, the lifeguards are instructed to contact the Environmental Programs Manager to investigate. This will continue to occur until a remedy is found for the problem outfall. More information on this problem area can be found in Chapter 12 of the 2009 JURMP Annual Report.

It should be worth noting that in addition to the DWMP results, the Coastal Monitoring Program sampling results post-reporting period for Seascape Sur have dramatically improved. This may be the results of the aggressive educational outreach, the installation of the curb screen debris BMPs or a combination of both, but the results have been much lower than in previous years. Although it's only been a few months since the end of the reporting period, it's a positive improvement that will be analyzed throughout FY 2009/2010 and reported in next year's Annual Report.

One strength of the City's IDDE program is the aggressive sewer maintenance program. The City contracts with a private contractor to clean and video every sewer line in the City at least once annually and the "hot spots" are cleaned quarterly. This helps prevent the buildup of roots and grease in the system, preventing possible blockages and spills. Another strength is the aggressive Grease Management Ordinance that requires not only new and remodeled restaurants and eating establishments to install appropriate grease interceptors or traps, but also requires existing restaurants to install devices as well. This aggressive approach was adopted to address a specific problem area in the City, and the results have been overwhelmingly positive. The amount of grease buildup in the sewer lines of the "hot spot" has been drastically reduced, and there has not been a spill in the targeted area since the adoption of the ordinance.

Another strength of the program was the hiring of an additional part-time Code Enforcement Officer to assist with the storm water program. This part-time staff member made it a priority to engage the public when he noticed a potential violation occurring or about to occur. This is why the number of Staff contacts jumped drastically from last year's report of 87 storm water investigations to 220 during this reporting period. The City believes being proactive is an important part of storm water pollution prevention, and made this a priority by hiring a part-time code enforcement officer.

<u>Improvement Areas:</u> During the next reporting period, the City is committed to

eliminating the historical bacteriological problem at the Seascape outfall. More aggressive actions may have to be taken to determine the ultimate source of the problem. The IDDE investigations discussed in previous annual reports have turned out to be inconclusive; so the City may have to look at alternate solutions, such as a permanent BMP structure installation (i.e. Low Flow Diverter) or the possibility of blocking off the connections to the storm drain and rerouting the site drainage of the neighboring condominiums to the street before entering the catch basin. These solutions would be very expensive, and since the receiving water has not been affected yet, the City will continue to pursue the elimination of the bacteria at its source. As mentioned above, the results of the 2009 DWMP and Coastal Monitoring Program post-reporting period have shown a significant improvement in the water quality at Seascape, but more work still needs to be done. Additionally, the City will continue to gather and analyze additional data from the wet weather and dry weather programs and compare the datasets to determine other potential IDDE problems.

APPENDIX V: 2009 DRY WEATHER MONITORING PROGRAM RESULTS

THE ATTACHED DOCUMENT IS A COPY OF THE

PROGRAM DESCRIPTION,
NARRATIVE SUMMARY
AND
RESULTS SECTIONS
OF THE

City of Solana Beach
2009 Dry Weather Field Screening Program

Prepared by the City of Solana Beach

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1.0 EXECUTIVE SUMMARY

The Dry Weather Field Monitoring Program (DWMP) is an integral part of the National Pollutant Discharge Elimination System (NPDES) Storm Water Permit issued to the City of Solana Beach (City) and other Copermittees by the San Diego Regional Water Quality Control Board (RWQCB).

The City of Solana Beach has implemented a comprehensive Storm Water Pollution Prevention Program. In 2009, twenty-eight sites were inspected with **no storm water conveyance** line showing evidence of an illicit discharge or illegal connection. This is a significant change from the last seven years of the Dry Weather Monitoring Program as there was always one line that showed persistent presence of high bacteria counts. It appears as if the mystery of the Seascape Sur bacteria source may have been eliminated. The City has focused an intense amount of time and resources over the past seven years to identify and eliminate the source of the high bacteria counts, and we may have finally succeeded in remedying the one problem area within the City.

In August 2009, City of Solana Beach staff conducted inspections at twenty-eight sites under the 2009 Dry Weather Monitoring Program regulations set forth in the NPDES Storm Water Permit Order No. 2007-0001. Each site was visually and chemically inspected for illegal discharges and/or illicit connections. The results were recorded on field data sheets and are included in the appendices of this Dry Weather Monitoring Program report.

2.0 INTRODUCTION

The Illicit Connection/Illegal Discharge Dry Weather Monitoring Program is one of the required tasks of the Storm Water NPDES Permit issued by the San Diego Regional Water Quality Control Board, under Order No. 2007-0001. This is the second year under this new Permit, which replaced NPDES Order No. 2001-01, that the San Diego Copermittees have conducted this particular dry weather monitoring program. The permit requires the City of Solana Beach, and all Copermittees, to develop and implement programs to prevent, reduce, and eliminate inappropriate discharges of pollutants from storm water conveyances into the waters of the United States.

The purpose of the Dry Weather Monitoring Program is to detect illicit connections and/or illegal discharges to the storm water conveyance system. In order to accomplish this goal, strategic sites were identified to test for chronic and/or improper discharges. Chemical parameters specified by the U.S. Environmental Protection Agency (EPA) for field screening were used as indicators of potential pollution from industrial, commercial, or domestic sources. The EPA has presented the following most common non-storm water sources and has placed them into three contamination categories: pathogenic/toxic, nuisance, and clear. The pathogenic/toxic category can cause illness upon contact or consumption. The nuisance category can cause degradation of water quality and impair aquatic ecosystems. Clear water usually comes from natural sources such as springs and

ground water infiltration. Table 1 displays the potential for these sources to enter the storm drainage system (EPA 1993).

Table 1: Potential Inappropriate Entries Into Storm Drainage Systems (EPA 1993)

Potential Source:	Storm Drain Entry		Flow Characteristics		Contamination Category		
	Direct	Indirect	Contin-uos	Inter-mittent	Patho-genic/ toxic	Nuis-ance	Clear
Residential Areas:							
Sanitary wastewater	●	❍	●	❍	●	❍	
Septic tank effluent		●	●	❍	●	❍	
Household chemicals	❍	●		●	●		
Laundry wastewater	●			●		●	
Excess landscaping watering		●		●	❍	❍	●
Leaking potable water		●	●				●
Commercial Areas:							
Gasoline filling station	●	❍		●	●		
Vehicle maintenance/ repair	●	❍		●	●		
Laundry wastewater	●		●	❍	❍	●	
Construction site de-watering		●	●	❍		●	
Sanitary wastewater	●	❍	●		●		
Industrial Areas:							
Leaking tanks and pipes	❍	●	●	❍	●		
Miscellaneous process waters	●	❍	●	❍	●	❍	❍

Note: ● - most likely condition
❍ - may occur
Blank - not very likely

Discharges to the storm water conveyance system can originate from a variety of sources. The following provides a brief discussion of potential sources:

- Sanitary wastewater sources:
  - Sanitary wastewater (usually untreated) from improper sewer connections, exfiltration, or leakage
  - Effluent from improperly operating, or improperly designed, nearby septic tanks

- Automobile maintenance and operation sources:
  - Car wash wastewater
  - Radiator flushing wastewater
  - Engine degreasing wastes
  - Improper oil disposal
  - Leaky underground storage tanks

- Irrigation sources
  - Lawn runoff from over-watering
  - Direct spraying of impervious surfaces

- Relatively clean sources:
  - Infiltrating groundwater
  - Water routed from pre-existing springs or streams
  - Infiltrating potable water from leaking water mains

- Other Sources
  - Laundry wastewater
  - Non-contact cooling waters
  - Metal plating baths
  - Dewatering of construction sites
  - Washing of concrete trucks
  - Sump pump discharges
  - Improper disposal of household toxic substances
  - Spills from roadway and other accidents
  - Chemical, hazardous materials, garbage, sanitary sludge landfills and disposal sites

2.1 Land Use Characteristics

The City of Solana Beach consists of a total drainage area of 2,158 acres. The land use characteristics are estimated as follows (SANDAG 2000):

Agriculture	4 acres
Commercial and office	192 acres

Industrial	35 acres
Parks and Recreation	246 acres
Public Facilities and Utilities	110 acres
Residential	1436 acres
Transportation	98 acres
Undeveloped	37 acres
Water	1 acre

Figure 1 gives a visual presentation of the land use characteristics for the City of Solana Beach.

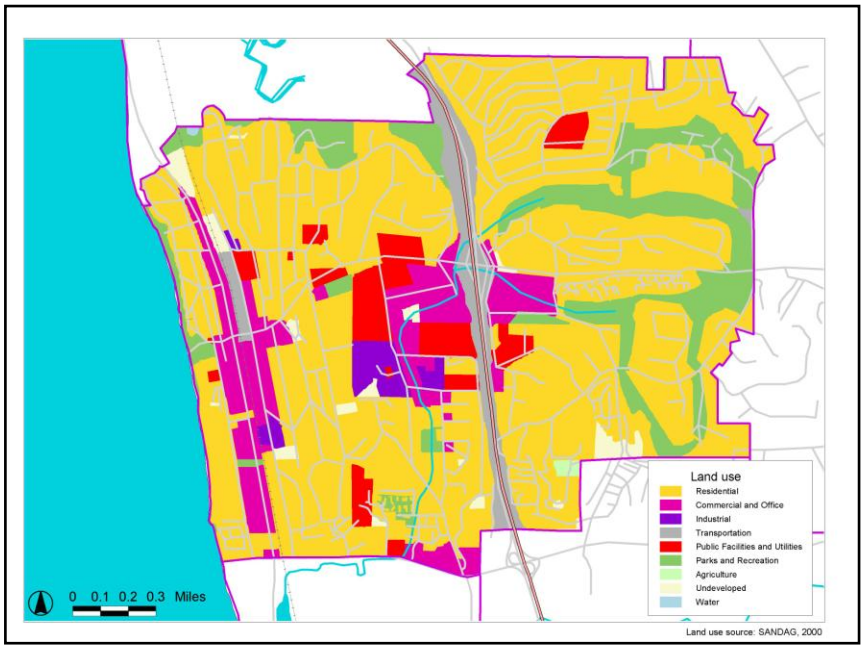

Figure 1. Land use in Solana Beach.

3.0 METHODS

This year marked the second year of dry weather monitoring conducted under the new municipal storm water discharge permit. Under the "Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001" Section II. B. 3, specific requirements for field observations, field screening monitoring and analytical monitoring are listed. Further, the Copermittee Monitoring Workgroup has developed protocols for the jurisdictions to use to ensure consistency among the Copermittees.

First, the City selected dry weather field screening and analytical monitoring stations based on the criteria listed in the Order. In determining which storm drains and/or outfalls to monitor, a map was analyzed and sites were prioritized and selected based on the following:

- Review of the City's past Dry Weather Monitoring Programs
- Stations should be located downstream of any sources of suspected illegal or illicit activity
- Stations shall be located to the degree practicable at the farthest manhole or other accessible location downstream in the system within each cell
- Hydrological conditions, total drainage area of the site, traffic density, age of the structures or buildings in the area, history of the area, and land use types shall be considered in location stations
- Each Copermittee shall determine alternate stations to be sampled in place of selected stations that do not have flow

The City of Solana Beach is relatively small with highly defined geographic boundaries. The City is bordered to the north by the San Elijo Lagoon, the west by the Pacific Ocean, the south by the San Dieguito Lagoon and the east by the County of San Diego. All major outfalls on each border were selected for this program, along with the furthest accessible downstream storm drain structure for each sub-basin. These sites were selected with the thought that if any water were present in the structures furthest downstream, then upstream investigations would take place to determine the source of the water during dry periods. Therefore, no "alternate" stations were identified because staff would investigate all catch basins upstream from flowing or ponded outfalls/catch basins to attempt to find the source. Based on the above criteria, the following sites were selected for the City of Solana Beach.

Four monitoring locations were selected within the coastal basin based on historical problem areas and proximity to the Pacific Ocean (Sites 11, 24, 25 and 26). Three monitoring locations were selected within the Fletcher Cove Basin based on their drainage to sensitive water bodies (Sites 20, 21, and 23). Eleven sites were selected within the San Elijo Basin. These sites were chosen based on their proximity to the environmentally sensitive San Elijo Lagoon, at the furthest possible point downstream before it enters the lagoon (Sites 1-10 and 22). Seven sites were chosen for the largest basin in the City, the Steven's Creek Basin (Sites 12-17, 19). The majority of this basin drains into Stevens Creek. Monitoring locations were selected at specific points throughout the basin based on the combination of criteria discussed in the previous paragraph. These sites were chosen to capture data from all the different land uses in the basin. These include industrial, residential, commercial and parks. The last basin, the Via de la Valle East Basin, is located in the southeast portion of the City. Three monitoring locations were selected there to monitor what was leaving the City and entering the City of San Diego (Sites 18, 27, and 28).

An initial list of potential monitoring locations was developed. Twenty-eight sites met the criteria and were selected for the 2009 Dry Weather Monitoring program. All twenty-eight sites were identified as primary sites for monitoring based on the factors listed previously within this report.

In accordance with Order No. 2007-0001, City staff made an initial visit to each site to determine if there was flow present, ponded water, or if the storm drain structure was dry.

Field data sheets were used to record site descriptions and characteristics, flow estimations, visual observations, and field chemistry results (see Table 3 for a summary of field observations; individual data sheets are included in Appendix C). A new requirement included in Order No. 2007-0001 was the development of a Trash Assessment program. This program will be used to assess the presence of trash in receiving waters and urban runoff at each dry weather field screening or analytical monitoring station. Assessments of trash shall provide information on the spatial extent and amount of trash present, as well as the nature of the types of trash present. The Copermittees met and developed the "Trash Assessment Form" which is included with each Dry Weather Monitoring Field Datasheet for each station. This is the second year collecting visual data on trash at each site, with the intent being to characterize the amount of trash collected by the MS4 and to assess the long term progress of reducing or eliminating this pollutant if present.

If flowing or ponded water was observed during the initial visit, water quality tests were conducted. Sites that had elevated chemistry levels or abnormal visual observations were investigated immediately and the site was revisited within a period of not less than four hours and not more than twenty-four hours. Observations and chemical testing were repeated during the second visit. If the site was dry on the initial visit, a follow-up visit was not conducted.

Sites 14 and 25 had ponded and flowing water present, respectively. Field screen tests and lab analysis were performed on both stations. The Order only requires that jurisdictions take ¼ (25%) of samples that were field screened to lab for analysis, but the City decided that since there were so few sites that had enough water to sample, it would be prudent to take them all to the lab for analysis.

Samples were collected by inserting a pre-cleaned HDPE bottle into the middle of the flowing or ponded water. Samples were tested on-site using CHEMetrics field test kits for the colorimetric analysis of ammonia, nitrate-N, orthophosphate-P, and detergents. In addition to the colorimetric analyses, the samples were also analyzed for pH, conductivity, and temperature using an Oakton Model 35630-62 pH/Conductivity/ Temperature Meter. Turbidity was measured using a Hach 2100P Turbidimeter..

Table 2 presents the specific ranges and detection limits of the field test kits and meters.

Table 2: Range and Detection Limits for Field Test Kits and Meters

Parameter	Kit or Meter	Range	Detection Limits (mg/L)	Accuracy/ Increment
pH	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.00 to 14.00 pH	NA	± 0.01 pH
Temperature (^{o}C)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0 to 100 ^{o}C	NA	± 0.5 ^{o}C
Conductivity (mS/cm @ 25 ^{o}C)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.0 to 19.99 mS/cm	NA	± 1% Full Scale ± 1 Digit
Turbidity	Hach Model 2100P Turbidimeter	0-1000 NTU	NA	± 2% of reading plus stray light from 0-1000 NTU
Ammonia (mg/L)	CHEMetrics K-1510	0-1.0 and 1.0-10.0 mg/L	0.1	NA
Nitrates (mg/L)	CHEMetrics K-6902	0 – 1.0 and 1.0-5.0 mg/L	0.05	NA
Detergents (mg/L)	CHEMetrics	0-3.0 mg/L	0.25	NA
Phosphate (mg/L)	CHEMetrics K-8510	0 –1.0 and 1.0-10.0 mg/L	0.1	NA

4.0 RESULTS

Table 3 presents a detailed summary of all chemical, biological and visual observations made during the 2009 Dry Weather Screening Program. The following provides a brief discussion about the purpose and results of visual observations and chemical and biological tests.

TABLE 3

SITE CHARACTERISTICS							
Site ID	**Watershed**	**Location Description**	**Drainage Area Land-Use (1)**	**Conveyance Type (2)**	**Conveyance Construction (3)**	**Date**	**Time**
1	Carlsbad	Rios Road Trailhead	Residential	Catch Basin	Concrete	8/10/2009	8:30 AM
2	Carlsbad	Glenmont/Rawl	Residential	Catch Basin	Concrete	8/10/2009	8:30 AM
3	Carlsbad	Santa Inez Outfall	Residential	Outlet	Concrete/Steel	8/10/2009	9:00 AM
4	Carlsbad	626 Canyon Dr	Residential	Catch Basin	Concrete	8/10/2009	9:20 AM
5	Carlsbad	635 Canyon Dr	Residential	Catch Basin	Concrete	8/10/2009	9:25 AM
6	Carlsbad	Highland Ave (Executive Golf Course)	Residential/Parks	Catch Basin	Concrete	8/10/2009	9:40 AM
7	Carlsbad	Santa Helena Trailhead	Residential	Catch Basin	Concrete	8/6/2009	9:45 AM
8	Carlsbad	Santa Carina Trailhead	Residential	Catch Basin	Concrete	8/10/2009	9:50 AM
9	Carlsbad	Santa Luisa Outfall	Residential	Catch Basin	Concrete	8/10/2009	10:25 AM
10	Carlsbad	East Side Railroad Tracks	Residential/Commercial	Channel	Concrete	8/6/2009	11:00 AM
11	Carlsbad	645 Pacific	Residential	Catch Basin	Concrete	8/10/2009	11:20 AM
12	San Dieguito	Steven's Creek Outfall	Residential/Commercial/ Industrial/Parks	Open Channel/Box Culvert	Concrete Channel/Natural Creek	8/10/2009	11:35 AM
13	San Dieguito	Valley (N. Baker Iron Works)	Residential/Industrial/ Commercial	Catch Basin	Concrete	8/10/2009	11:45 AM
14	San Dieguito	Genevieve Ave/Steven's Creek	Residential/Commercial	Outfall	Concrete Channel	8/5/2009	10:00 AM

SITE CHARACTERISTICS (continued)

Site ID	Watershed	Location Description	Drainage Area Land-Use (1)	Conveyance Type (2)	Conveyance Construction (3)	Date	Time
15	San Dieguito	309 Solana Hills Drive	Residential	Catch Basin	Concrete	8/10/2009	1:00 PM
16	San Dieguito	559 Glencrest Ave	Residential	Catch Basin	Concrete	8/10/2009	1:15 PM
17	San Dieguito	Wells Fargo	Residential/Commercial	Catch Basin	Concrete	8/10/2009	1:25 PM
18	San Dieguito	Avocado Place	Residential	Catch Basin	Concrete	8/10/2009	1:45 PM
19	San Dieguito	Dell Street	Residential/Parks	Catch Basin	Concrete	8/10/2009	2:10 PM
20	San Dieguito	South Cedros/Via De La Valle	Residential/Commercial	Catch Basin	Concrete	8/12/2009	1:00 PM
21	San Dieguito	605 Marsolan Ave	Residential/Commercial	Catch Basin	Concrete	8/12/2009	1:05 PM
22	San Dieguito	779 Barbara Ave	Residential	Catch Basin	Concrete	8/12/2009	1:20 PM
23	San Dieguito	North Cedros/Lomas Santa Fe	Residential/Commercial	Catch Basin	Concrete	8/12/2009	1:30 PM
24	San Dieguito	347 Acacia St	Residential	Catch Basin	Concrete	8/12/2009	1:45 PM
25	San Dieguito	Seascape (Outfall)	Residential/Commercial	Outfall	Steel	8/5/2009	8:30 AM
26	San Dieguito	248 Sierra Ave	Residential	Catch Basin	Concrete	8/12/2009	1:55 PM
27	San Dieguito	San Andreas (City Limits)	Residential	Catch Basin	Concrete	8/12/2009	2:15 PM
28	San Dieguito	Spindrift Way/American Lane	Residential	Catch Basin	Concrete	8/12/2009	2:20 PM

QUALITATIVE OBSERVATIONS										
Site ID	**Estimated Flow (gpm)**	**Light Conditions**	**Odor**	**Color**	**Clarity**	**Floatables**	**Deposits**	**Vegetation**	**Biology**	**Other**
1	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry
2	Dry	Sunny	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp; no flow observed.
3	Dry	Sunny	None	None	None	None	None	None	None	Dry, no flow observed.
4	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
5	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
6	Damp	Sunny	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp, not enough to sample. Evidence of overland flow from irrigation.
7	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
8	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
9	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
10	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Concrete channel dry; no flow observed.
11	Damp	Sunny	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp, not enough to sample.
12	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Box culvert damp; not enough to sample.
13	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
14	Ponded	Sunny	None	None	Clear	None	Sediment/ Gravel	Normal	Insects, Fish, Crawfish	No flow coming from Outfall; significant water ponded in Stevens Creek concrete channel; no overland flow; fish & crawfish detected in water.

QUALITATIVE OBSERVATIONS (continued)

Site ID	Estimated Flow (gpm)	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology	Other
15	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
16	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry, no flow observed.
17	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
18	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
19	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
20	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
21	Damp	Partly Cloudy	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp; no flow observed.
22	Dry	Partly Cloudy	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
23	Dry	Partly Cloudy	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
24	Dry	Partly Cloudy	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
25	Flowing	Sunny	Musty	None	Clear	None	None	None	None	Slow trickle coming out of outfall; flow was no reaching receiving water. Slightly musty with no color and no evidence of overland flow.
26	Dry	Partly Cloudy	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
27	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
28	Damp	Partly Cloudy	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp; no flow observed.

LAB ANALYSIS																				
Site ID	**Surfactants**		**Oil and Grease**		**Total Hardness mg/L**		**Cadmium (dissolved)**		**Copper (dissolved)**		**Lead (Pb) (dissolved)**		**Zinc (dissolved)**		**Diazinon**		**Chlorpyrifos**		**Malathion**	
	mg/L	DL	mg/L	DL	CaCO3	DL	mg/L	DL	mg/L	DL	mg/L	DL	mg/L	DL	ug/L	DL	ug/L	DL	ug/L	DL
14	ND	0.5	ND	5	832	10	ND	0.005	ND	0.005	ND	0.005	ND	0.02	ND	0.05	ND	0.05	ND	0.05
25	6.3	0.5	ND	5	517	10	ND	ND	0.0320	0.005	ND	0.005	0.055	0.02	ND	0.05	ND	0.05	ND	0.05

	BACTERIAL ANALYSIS					
Site ID	**Total Coliform**		**Fecal Coliform**		**Enterococcus**	
	MPN/100ml	DL	MPN/100ml	DL	MPN/100ml	DL
14	2,000	50,000	2,000	20,000	7	10,000
25	30,000	50,000	4,000	20,000	1,600	10,000

FIELD SCREENING							
Site ID	**Temperature °C**	**pH**	**Turbidity NTU**	**Conductivity uS/cm**	**Nitrate mg/L NO_3-N**	**Ammonia mg/L NH_3-N**	**Reactive Phosphorus PO_4-P mg/L**
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	18	7.9	12	6.3	0	0.5	0
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
25	18.3	8.17	5	2.92	0	3	0
26	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A	N/A	N/A

4.1 Visual Observations

Visual observations included water color, clarity, and flow rate, floating materials, biological observations, structural condition of the conveyance, and vegetative condition at the site. If any particular odors were associated with the site, those observations were also recorded.

- **Flow:** Flowing water was only observed at Site 25; a slow trickle was observed dripping from the outfall, but flow was not reaching receiving water. Although ponded water was observed at Site 14, no flow was coming from the Outfall. However, significant water was observed ponded in the Stevens Creek concrete channel, with no overland flow; fish and crawfish were detected in the water. The catch basin at Site 6 was damp, but there was not enough to sample; this site showed evidence of overland flow from irrigation sources Sites 11, 21 and 28 were damp with insufficient water available to collect a sample. Sites 1- 5, 7-10, 12-13, 15-20, 22-24 and 26-27 were all dry.

- **Odor:** Odor can be caused by chemicals from residential, commercial, and industrial discharges; and from natural sources including decaying organic matter and microbial activity.

  Only Site 25 had a slightly musty smell associated with it. This may have been due to aging organic matter within the pipe.

- **Water Color:** The apparent color of water results from dissolved substances and suspended matter. Soil runoff and decaying organic matter produce a variety of yellow, red, brown, and gray colors. Some algae and dinoflagellates produce reddish or deep yellow colors in water, while high levels of phytoplankton and other algae appear green.

  None of the sites tested produced distinctively colored samples.

- **Water Clarity:** Turbidity refers to the cloudiness of water. Water that is turbid generally has low clarity, and may appear cloudy or opaque, while less turbid water will appear clear. Suspended solids and microscopic plankton that scatter light passing through the water cause turbidity. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

  Site 25, the only one observed with flowing water, was clear with a turbidity NTU of 5; and Site 14, the only one showing ponding was also clear, with a turbidity NTU of 12. All of the other sites had no flow.

- **Floatable materials:** The type of floating matter can help identify the source of contamination, since these substances are often direct products of the source of the pollution.

All of sites were free of floatable materials during the 2009 inspections.

- **Biological:** Only Site 14 indicated biological activity; insects, fish and crawfish were detected in the water ponded in Stevens Creek concrete channel.

- **Vegetative condition:** Excessive vegetation can be an indicator of elevated levels of nutrients in the runoff.

  There were no sites with abnormal vegetative growth. Vegetation was observed at Site 14 but it was normal vegetation similar to that found in the natural portion of the Stevens Creek channel.

- **Deposits:**

  Only Site 14 was observed with sediment/gravel deposits.

4.2 Field Chemical Analyses

All sites with flowing or ponded water were tested for the following parameters: temperature, pH, conductivity, turbidity, ammonia, detergents, nitrates, and orthophosphates. Only two sites that were monitored had flowing or ponded water associated with them. Both these sites had field and lab tests conducted on the water present. The results for both sites will be included under each parameter below, and any exceedances will be discussed in Section 11.6.2 of this report. Table 3 included in this report provides a detailed list of analytical results.

- **Temperature:** Extreme temperatures can be an indication of commercial or industrial runoff.

  Site 14: 18°C
  Site 25: 18.3°C

- **pH:** Measures of pH represent the intensity of the acidity or alkalinity of water, on a scale from 0 to 14.0, with 7.0 considered neutral. The pH of natural waters ranges from 6.0 to 9.0 (EPA 1993). Measurements outside of this range could be an indicator of commercial or industrial discharges.

  The pH for Sites 14 & 25 were 7.9 and 8.17 respectively – both considered neutral and within the EPA pH levels for natural waters.

- **Conductivity:** Conductivity is the measure of the ability of water to carry an electrical current and high levels are an indicator of high total dissolved solids (TDS). The conductivity of saltwater is generally above 43 uS/cm. The Copermittees have

not developed an action level for conductivity, but Best Professional Judgment (BPJ) is used. Generally, values greater than 5,000 umhos/cm may indicate an IC/ID.

Site 14: 6.3 uS/cm
Site 25: 2.92 uS/cm

Both levels were under the >5,000 uS/cm that is generally used for an IDDE investigation so no follow up from these results was required.

- **Turbidity:** Turbidity refers to the clarity of water. The cloudier the water, the higher the turbidity. Sources of turbidity include suspended organics/detritus, re-suspended bottom sediments, sediments originating from erosion, and phytoplankton. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

  Site 14: 12 NTU
  Site 25: 5 NTU

  Best Professional Judgment is used for IC/ID follow up for turbidity. No follow-up was necessary from these results.

- **Ammonia**: Ammonia is a common ingredient in commercial and household cleaning products. In addition, organic material contains nitrogen, which can convert into ammonia by means of biochemical degradation. Elevated levels of ammonia can be an indication of decaying organic matter or discharges containing cleaning agents. Ammonia levels range from 6 to 380 mg/L in raw sanitary wastewater, and from 0.1 to 3.0 mg/L in all other waters (EPA 1993). The Copermittee action level for ammonia is 1.0 mg/L.

  Site 14: 0.5 mg/L
  Site 25: 3.2 mg/L

  Site 25 had a slightly elevated ammonia level but the results from the bacterial lab testing came back below action levels, so no follow-up actions were taken. This site is the subject of an intense source identification study and the lab results showed that the efforts of City staff may have finally abated the bacteria source.

- **Detergents:** Detergents are found in household and commercial cleaning and laundering products. Elevated detergent levels are a good indicator of commercial and/or residential wash water entering the storm water conveyance. Detergent (surfactant) concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993). The Copermittee action level for MBAS (detergents) is 1.0 mg/L.

  Site 14: 1 mg/L

Site 25: 2 mg/L

Site 25 exceeded the Copermittee action level, and follow-up activities were conducted as a result. An immediate upstream investigation did not reveal the source of the detergents. The most likely source of detergents at this site is residential car washing.

- **Nitrate-N:** Nitrates are commonly found in fertilizers, human or other animal wastes, in certain manufacturing processes, and in decomposing organic materials. Elevated levels of nitrate may be present in irrigation runoff, or may be indicative of an illicit connection to the storm drain system, by either commercial or residential sources. The Copermittee action level for Nitrate is 1.35 mg/L.

  Site 14: 0 mg/L
  Site 25: 0 mg/L

  Nitrates were not found at either site.

- **Orthophosphate-P**: Orthophosphate-P occurs naturally from rocks, and with the decay and mineralization of dead plants and animals, but may also indicate the presence of human sewage, and commercial, agricultural or residential waste water. The Copermittee action level for Orthophosphate is 0.07 mg/L.

  Site 14: 0 mg/L
  Site 25: 0 mg/L

  Neither site exceeded the action level for Orthophosphate.

4.3 Laboratory Chemical Analyses

In accordance with Order No. 2007-0001 Section D.4, a minimum of 25% of all sites with flowing or ponded water shall be tested for the following parameters: total hardness, surfactants (MBAS), oil and grease, diazinon, chlorpyrifos and malathion, dissolved cadmium, copper, lead, and zinc, and *Enterococcus*, total coliform, and fecal coliform bacteria. Sites 14 and 25 were selected for laboratory analysis because they had ponded and flowing water, respectively. The following provides a brief discussion of each parameter and the results at each site. Table 3 provides a detailed list of analytical results. Section 5 provides a discussion of sites that appear impacted by illicit discharges.

- **Total Hardness:** Total hardness refers to the calcium and magnesium concentrations in water. The hardness of water can vary considerably between locations. Natural sources of hardness are dissolved limestones. Guidelines for maximum dissolved metals concentrations in natural water are linked to the hardness or alkalinity of the water (i.e., the softer the water, the lower the permitted level of dissolved metals).

Site 14: 832 $CaCO_3$
Site 25: 517 $CaCO_3$

- **Surfactants (MBAS):** Surfactants are discharged from household and commercial cleaning and laundering operations. Anionic surfactants are commonly used in detergents and account for approximately two-thirds of the total surfactants used. Anionic surfactants are commonly measured as Methylene Blue Active Substances (MBAS). Surfactant concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993).

  Site 14: Non Detect (ND) mg/L
  Site 25: 6.3 mg/L

- **Oil and Grease:** The oil and grease analysis is applicable for the determination of hydrocarbons, vegetable oils, animal fats, waxes, soaps, grease, and related matter. Discharges may cause surface films and shoreline deposits leading to environmental degradation.

  Site 14: ND mg/L
  Site 25: ND mg/L

  Both sites registered Non-Detect for Oil and Grease and therefore no follow-up required.

- **Diazinon:** Diazinon is an organophosphate insecticide. It kills insects, as well as other organisms through its effect on the nervous system. It is moderately persistent and has moderate to high mobility in soil. Diazinon, in high enough concentrations, is highly toxic to birds, mammals, honeybees, and other beneficial insects. It is also very highly toxic to freshwater fish and invertebrates following acute exposure.

  Site 14: ND ug/L
  Site 25: ND ug/L

  Diazinon was not detected at either site and therefore no follow-up required.

- **Chlorpyrifos:** Chlorpyrifos is also an organophosphate insecticide and is the most widely used insecticide in the United States. It is used in agriculture on a variety of crops and for residential use as a termiticide, mosquitocide, lawn treatment, as well as other uses. It adsorbs readily to soil particles and therefore is not highly mobile in soil. Chlorpyrifos presents a high risk to birds, fish and mammals and an even a higher risk to aquatic invertebrates. The Copermittee action level for chlorpyrifos is 0.05 µg/L.

  Site 14: ND ug/L
  Site 25: ND ug/L

Diazinon was not detected at either site and therefore no follow-up required.

- **Malathion:** Malathion is an organophosphate parasympathomimetic which binds irreversibly to cholinesterase. Malathion is an insecticide of relatively low human toxicity. Malathion is a pesticide that is widely used in agriculture, residential landscaping, public recreation areas, and in public health pest control programs such as mosquito eradication. In the US, it is the most commonly used organophosphate insecticide

  Site 14: ND ug/L
  Site 25: ND ug/L

  Malathion was not detected at either site and therefore no follow-up required.

- **Dissolved Cadmium:** Cadmium occurs in sulfide minerals that also contain zinc, lead, or copper. It is used in electroplating, batteries, paint pigments, and alloys with various other metals. It is usually associated with zinc at a ratio of about one part cadmium to 500 parts zinc in most rocks and soils. It is nonessential for plants and animals and is extremely toxic and accumulates in the kidneys and liver. The average abundance of cadmium in streams is 1 µg/L and in groundwater is from 1 to 10 µg/L. The U.S. EPA primary drinking water standard MCL is 10 µg/L (Standard Methods 1998).

  Site 14: ND mg/L
  Site 25: ND mg/L

  Dissolved cadmium was not detected at either site and therefore no follow-up required.

- **Dissolved Copper:** Copper occurs in its native state, but is also found in many minerals. It is widely used in electrical wiring, plumbing, roofing, various alloys, pigments, cooking utensils, brake pads, and the chemical industry. Copper is considered an essential trace element for plants and animals. The average abundance of copper in streams is 4 to 12 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 1.3 mg/L (Standard Methods 1998).

  Site 14: ND mg/L
  Site 25: 0.0320 mg/L

  Dissolved copper was below the Copermittee action level and no follow-up required.

- **Dissolved Lead:** Lead is normally found in the mineral galena. It is commonly used in batteries, ammunition, solder, piping, pigments, insecticides, and some alloys. It is

nonessential for plants and animals and is toxic by ingestion and is a cumulative poison. The average abundance of lead in streams is 3 µg/L and in groundwater is generally less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 15 µg/L.

Site 14: ND mg/L
Site 25: ND mg/L

Dissolved lead was not detected at either site therefore no follow-up required.

- **Dissolved Zinc:** Zinc occurs in its native state and is used in many alloys such as brass and bronze. It is also used in batteries, fungicides and pigments. It is an essential growth element for plants and animals, but at elevated levels it is toxic to some species of aquatic life. The average abundance of zinc in streams is 20 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA secondary drinking water standard MCL is 5 mg/L.

  Site 14: 0 mg/L
  Site 25: 0.0550 mg/L

  Dissolved zinc was below Copermittee action levels therefore no follow-up required.

- **Bacteria:** Bacteria are commonly found in human and animal feces. They are generally not harmful themselves, but they do indicate the possible presence of pathogenic bacteria, viruses, and protozoans that also live in human and animal digestive systems. Total coliform, fecal coliform and *Enterococcus* bacteria are common test organisms for water quality sampling.

  - **Total Coliforms:** Total coliforms are a group of bacteria that can occur in human feces, but can also be present in animal manure, soil and other places outside of the human body. The Copermittee action level for Total Coliform is 50,000 MPN/100mL.

    Site 14: 2,000 MPN/100mL
    Site 25: 30,000 MPN/100mL

    Neither site had results that exceeded the Copermittee action level (50,000 MPN/100mL).

  - **Fecal Coliforms:** Fecal coliforms are a subset of total coliforms and are more fecal-specific in origin. The Copermittee action level for Fecal Coliform is 20,000 MPN/100mL.Fecal coliform levels were the following:

    Site 14: 2,000 MPN/100mL

Site 25: 4,000 MPN/100mL

Neither site had bacteria readings that exceeded the Copermittee action level for Fecal Coliforms (20,000 MPN/100mL).

- **Enterococci:** Enterococci are a subgroup within the fecal *Streptococcus* group and are better suited for survivability in salt water. They are generally found in the digestive systems of humans and other warm-blooded mammals.

  Site 14: 7 MPN/100mL
  Site 25: 1,600 MPN/100mL

  Neither site exceeded the Copermittee action levels for enterococci (10,000 MPN/100mL).

4.4 Trash Assessment Monitoring

A new component added to the Dry Weather Monitoring Program in Order No. 2007-0001 is a Trash Assessment Monitoring requirement. According to the Order, Copermittees must "Assess the presence of trash in receiving waters and urban runoff at each dry weather field screening or analytical monitoring station. Assessments of trash shall provide information on the spatial extent and amount of trash present, as well as the nature of the types of trash present."

The Copermittees developed a standardized "Trash Assessment Form" (Form), through the Dry Weather Monitoring Workgroup, which encompasses all the requirements listed in Order No. 2007-0001. This Form was completed for all twenty-eight sites included in this Dry Weather Monitoring Program. Twenty-eight sites received an "Optimal" level rating, which is the highest ranking level. The Optimal level states, "On first glance, little or no trash visible. Little or no trash (<10) evident when evaluated area is closely examined for litter and debris." In last year's DWMP report, one site (Site 12) received a Suboptimal ranking, which is the next level down. However, this site increased its ranking to Optimal in this year's report, which is a significant improvement.

All Trash Assessment Forms are included with their respective Field Datasheets at the end of this Report.

5.0 DISCUSSION

During the 2009 Dry Weather Monitoring Program, two sites (Site 14 and 25) contained either ponded or flowing water and therefore field and lab testing were conducted on both. Only one site showed slightly elevated levels of analytes during the field screen testing, but neither site had levels exceeding Copermittee Action Levels during the lab testing. Since the field screening is very rudimentary and more susceptible to testing

error, it's worth noting that neither site exceeded Action Levels during the more rigorous and detailed lab analysis.

Twenty-six of the twenty-eight sites inspected this year were either dry or damp. Site 25 was the subject of an ongoing IDDE bacteria investigation, but results from this year's DWMP revealed that the bacteria levels are significantly reduced, and are under the Copermittee Action Levels. The following analytes exceeded Copermittee action levels at their respective sites:

- Site 14: N/A
- Site 25: Ammonia, Detergents (MBAS) – Field Screening Only

- **Site 14:** Samples were taken from the outfall located in Steven's Creek where the channel goes from earthen to concrete and eventually drains into the San Dieguito Lagoon. There is a small depressed area that constantly contains ponded water, and it has come to harbor small fish, tadpoles and crawdads. The water quality is good as no results came back exceeding Copermittee Action Levels.

- **Site 25:** Samples were taken from the outfall located at the Seascape Sur beach access. This outfall has historically high levels of bacteria, and the City is actively pursuing the source of the bacteria through an ongoing IDDE investigation. Last year's DWMP revealed bacteria exceedances (Total, Fecal and Entero) and field screening tests revealed exceedences in Ammonia and Detergents (MBAS). This year's DWMP revealed that the bacteria results were significantly reduced and were under the Copermittee Action Levels. However, Ammonia and Detergents (MBAS) continued to exceed the Action Levels during the field screening portion of the program. Immediate upstream investigations did not reveal the source, and it was probably due to residues from car washing. All upstream catch basins were dry and no flow was coming from the commercial property across the street or from the street.

6.0 CONCLUSIONS

The 2009 Dry Weather Monitoring Program did not find any evidence of a storm water conveyance line with an indication of illegal discharges to the City of Solana Beach's storm water system. The majority of the sites visited were dry or damp, with one site (Site 25 Seascape Sur) showing possible evidence of over-irrigation and/or car washing discharges. However, this site did not have analyte concentrations high enough to cause great concern. All necessary follow up activities did not reveal a dominant source, as the catch basins and outfalls were dry.

This site has had historical problems and has been the focus of an ongoing IDDE investigation for over seven years. A significant improvement in this conveyance line was detected as all bacteria indicators were below Copermittee Action Levels, which is a

great accomplishment. This conveyance line has been the subject of intense focus and scrutiny, costing the City large amounts of money and staff time.

This major improvement in bacteria counts is a major victory for the City. However, it is only one year and may be later determined to be an anomaly. City staff will not consider this investigation closed until we gather a few years of data to confirm the bacteria source has been eliminated. That being said, the City will continue with its efforts to educate the Beachwalk business district and adjacent private condominium complexes about the City's pollution prevention programs and continue its efforts to eliminate the discharge at Site 25 (Seascape Sur). Commercial educational programs will continue and include both the proprietors and their employees. Residential programs will include building owners, Homeowner Associations (HOA's) and residents. An informed public will provide support for new and already existing prevention programs.

Additionally, the City will continue to explore options for capital improvements in the Seascape area if the recurring bacterial problems return. The City will continue to look into possibly correcting the structural problems within the pipe, which may be leading to bacterial re-growth. The outfall has not affected the quality of the receiving waters, yet, but a proactive approach by the City to abate the bacterial problem is recommended.

CITY OF SOLANA BEACH

JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM (JURMP) ANNUAL REPORT

SEPTEMBER 2010

Reporting Period:
July 1, 2009 to June 30, 2010

Respectfully Submitted to:
San Diego Regional Water Quality Control Board
In compliance with:
Order No. 2007-0001, NPDES Permit No. CAS0108758

CITY OF SOLANA BEACH
ANNUAL REPORT
STORM WATER PROGRAM
SEPTEMBER 2010

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Stormwater Hotline	24-hour message service (858) 720-4424
Address:	635 South Highway 101 Solana Beach, CA 92075
Reporting Period:	July 1, 2009 to June 30, 2010
Report Prepared by:	Dan King Management Analyst

ACKNOWLEDGEMENTS

The City of Solana Beach wishes to expressly thank each Copermittee Storm Water Program Manager/Coordinator and their staff for their efforts during the Regional Stormwater Management Committee meetings and the workgroups and their development and continued implementation of model program components, the sharing of ideas and willingness to cultivate program consistency throughout San Diego County as an effective means of improving water quality in the Region. The level of collaboration among agencies and across jurisdictional boundaries is unique and a credit to the professionalism and efforts of the San Diego County Copermittees.

The activities described in this report are not merely *written words on a page*, but are the result of *tremendous efforts* of City staff to integrate many new activities into their daily routines and tasks. The City's Fiscal Year 2009/2010 (FY 09/10) Storm Water Program Manager wishes to thank the City's Storm Water Team for their assistance, dedication and collaboration to make the City's FY 09/10 storm water program successful *and meaningful.*

Storm Water Team:

Code Enforcement Officer, Tom Warden

City Manager/Fire Chief/Director of Public Safety, David Ott

Deputy City Manager, Wende Protzman

Operations Manager, Steve Kerr

City Inspector, Hector Ezquerro

Deputy City Engineer, Dan Goldberg

Director of Public Works/City Engineer, Mohammed Sammak

Community Services Director, Tina Christianson

Associate Engineer, Jim Greenstein

Assistant Planner, Corey Johnson

Senior Engineering Technician, Robert Martinez

Management Analyst, Rimga Viskanta

A big thank-you also to the Public Works Crew for all their hard work!

Maintenance Worker, Bill Stedman

Maintenance Worker, Dave Thomas

Maintenance Worker, Josh Blea

Lead Maintenance Worker, Danny Hernandez

CITY OF SOLANA BEACH
ANNUAL REPORT/ STORM WATER PROGRAM
SEPTEMBER 2010

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ACRONYMS

Acronym	Description
BMP	Best Management Practices: minimum standards that everyone and every business must adopt to reduce or eliminate urban runoff. BMPs are part of all storm water programs.
DWMP	Dry weather monitoring program: the procedures, requirements and program to collect samples during the dry season each year. Samples are typically collected over a one-two day period and then sent to the lab for analysis.
HHW	Household Hazardous Waste
IC/ID	Illegal Connection and Illicit Discharge: the term used to discuss connections to the MS4 that are not approved (illegal) or non-storm water (illicit) discharges.
JURMP	Jurisdictional Urban Runoff Management Program
MEP	Maximum Extent Practical: A term used by the RWQCB, and Copermittees to refer to the "best efforts," or "as much as possible."
MS4	Municipal Separate Storm Sewer System: references the City's storm water drainage system and the City's wastewater conveyance system.
NPDES	National Pollution Discharge Elimination System: the Federal program created by the 1972 Clean Water Act that governs State water quality / storm water programs.
Permit	Order 2007-0001 issued by the RWQCB, which requires cities to adopt and implement the JURMP, WURMP, and SUSMP.
PPM	Pollution Prevention Measure: a method, procedure, and/or process to control, reduce, prevent, or eliminate pollution.
RWQCB	Regional Water Quality Control Board. The Board is a California board, but for the *purposes of this report,* RWQCB represents the local water quality board (San Diego Regional Water Quality Control Board).
SUSMP	Standard Urban Storm water Mitigation Plan: a plan as to how the City will alter its review of construction plan (public and private) and estimate the extent of pollutant contributions from the site; the plan must specify BMPs that the City will require.
WURMP	Watershed Urban Runoff Management Program: programs that focus on urban water runoff from a larger point-of-view, which is the entire watershed (a watershed is aka a hydrological unit). Programs must specify how cities will work together on planning urban projects and solving water quality problems.
WWMP	Wet weather monitoring program: the procedures, requirements and program to collect samples during the wet season each year. Samples are collected on a monthly basis, depending on weather.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

During reporting period Fiscal Year 2009/2010 (FY 09/10), the City worked with the other Copermittees to continue developing model programs and implementing all the established requirements of Permit No. R9-2007-0001 (Permit). This was the second complete year of implementation of the City's new Jurisdictional Urban Runoff Management Program (JURMP) that was developed and submitted in March, 2008 to comply with the new Permit, Order R9-2007-0001. This Annual Report (Report) incorporates the changes recommended by Regional Board Staff after review of last year's Annual Report, and complies with the requirements of each section of the Permit.

This is the second full year implementing the new JURMP, in compliance with the Permit regulations. The new activities will be discussed in their respective chapters of this Report, with some chapters modified or removed. The City began the process of developing the new programs in cooperation with the other Copermittees, and any new programs that were actually implemented in this reporting period will be discussed in this Annual Report.

The City is confident that it has implemented all programs required of them during the five year permit cycle of Order 2001-01. The City is also actively working on developing and implementing improved programs for the next five year permit cycle in compliance with Order R9-2007-0001. During the last five year permit cycle, the City was able to create a storm water team consisting of staff from various departments, implemented all of the components of the JURMP and trained all pertinent Staff as to the expectations of the Permit.

Accomplishments to prevent and reduce pollution, eliminate contamination and improve water quality include the following:

- *The City successfully implemented comprehensive educational, inspection and enforcement procedures for municipal, commercial, residential, industrial and construction component activities as described in the City's JURMP.*
- *The City monitors a dedicated Storm Water Hotline and email address to receive complaints, questions, and general information 24 hours a day, seven days a week, 365 days a year.*

- *The City maintains an inventory of all municipal, commercial and industrial properties in the City, including prioritization of those that pose a threat to water quality.*
- *The City inspected the minimum amount of high priority businesses as stated in the new JURMP and notified all high-priority businesses of specific BMPs related to each type of business.*
- *The City collaborated with neighboring jurisdictions within their respective watersheds to develop educational brochures, surveys, and host community events and distributed hundreds of brochures to residents and the business community.*
- *The City continues to modify plan-check review processes to include a requirement for Erosion Control Plans, BMPs, and runoff mitigation alterations in project proposals and/or construction activities.*
- *The City participated in the 2009/2010 San Diego County Wet Weather Monitoring Program.*
- *The City continues to enforce a smoking ban at all local beaches and parks, the first jurisdiction in the nation to do so. In addition, the City strengthened its tobacco ordinance to ban smoking in all public parks, restaurants and buildings.*
- *The City provided several opportunities for public participation including educational workshops/classes, community events, Copermittee meetings and Household Hazardous Waste home pick-up and permanent drop-off collection sites.*
- *The City continues to implement the new "Environmental" review to ALL building/grading permit applications to ensure every project that gets approved by the City is reviewed for storm water management.*
- *The City Council lowered the grading threshold from 200 cubic yards to 50 cubic yards for all projects within the City. This caused more projects to be assessed by the City engineers to implement pre, during, and post construction BMPs than previously.*
- *The City co-sponsored the fifth annual "Beach Blanket Movie Night" that provided residents a night of free movies and environmental education. The City had a booth co-sponsored by the Solana Center for Environmental Innovation that contained educational materials and games for attendees, and the films shown were dedicated to environmental protection of our ocean resources.*
- *The City authorized a part-time Code Enforcement Officer to continue weekend and off-hour patrols for storm water violations.*

- *The City added storm water specific language and reporting duties to new "standard" street sweeping contract to be used in all current and future contracts.*
- *The City modified its Municipal Code to comply with the new requirements of the Permit.*
- *The City implemented the new model SUSMP.*
- *The City participated in the development and implementation of the new Low Impact Development (LID) and Hydromodification Plan (HMP).*
- *The City developed and implemented the post-construction BMP verification, tracking and inspection program.*

CERTIFICATION STATEMENT

CERTIFICATION STATEMENT

I certify that the work performed, and the report prepared herein, was conducted under the supervision and guidance of the City of Solana Beach Public Works/ Engineering Department to meet the requirements of the *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority* (NPDES No. CAS0108758). I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

Mohammed Sammak, P.E. **Date**
Director of Public Works/City Engineer
City of Solana Beach

CHAPTER 1
Introduction

CHAPTER 1: INTRODUCTION

The City of Solana Beach (hereinafter, referred to as "City") has prepared this report in compliance with Order No. R9-2007-0001, NPDES Permit No. CAS0108758, *Water Discharge Requirements for Discharges of Urban Runoff From Municipal Separate Storm Sewer Systems Draining Watersheds of the County of San Diego, the Incorporated Cities of San Diego County and The San Diego Unified Port District and the San Diego County Regional Airport Authority* (hereinafter referred to as "Permit"). The California Regional Water Quality Control Board, San Diego Region (hereinafter, referred to as "RWQCB") issued the new Permit to all "Copermittees" (all cities in San Diego County, the County of San Diego, the Airport Authority and the Port District) in January, 2007.

Under the Permit, each Copermittee is required to submit an Annual Report in September of each year describing its jurisdictional program for the previous fiscal year (July 1 to June 30). The purpose of the report is to document to the RWQCB the City's progress and program accomplishments during the reporting period.

The Permit, first adopted on February 21, 2002 and subsequently updated in March, 2008, requires Copermittees to implement a comprehensive storm water program (Jurisdictional Urban Runoff Management Program [JURMP]) and submit a copy of the program to the RWQCB. The implementation of this program occurred during the reporting period covering July 1, 2009 to June 30, 2010 for this 2010 Annual Report. This Annual Report will cover the third year of implementation under Permit Order No. 2007-0001, but the second full year of implementation of the new JURMP.

1.1 Report Organization

This Report contains a description of all activities conducted to meet the requirements of the Permit. The information will be discussed in chapters applicable to each component of the JURMP, which occurred during this reporting period.

The organization of this report follows the outline of the new JURMP and includes the following sections:

- Development Planning Component
- Construction Component
- Municipal (Existing Development) Component
- Industrial and Commercial (Existing Development) Component
- Residential (Existing Development) Component

- Illicit Discharges Detection and Elimination Component
- Education Component
- Public Participation Component
- Fiscal Analysis Component
- Effectiveness Assessment Component
- Special Investigations
- Non-Emergency Fire Fighting
- JURMP Revisions
- Conclusions and Recommendations

1.2 Common Activities

The City participated with the Copermittees in several common activities (workshops, educational program component elements, model programs, etc.) that allowed for a sharing of resources and knowledge, which will provide a more cohesive message to the community. The common activities are described in the Copermittee Unified Urban Runoff Management Program (URMP) Annual Report, submitted with this report by the County of San Diego and incorporated herein by reference.

1.3 Report Content

The content of this report includes the activities associated with implementing the storm water program (JURMP). The development of the City's JURMP required the City to inventory and prioritize its municipal facilities, commercial and industrial businesses, develop a method to educate the business and residential community about the new requirements, evaluate existing municipal ordinances, and adopt new laws if needed to ensure enforcement action was available, develop a method for educating agency staff, and develop a commercial, industrial and construction site inspection program. Each subsequent year of Permit implementation requires the City to revisit these items and update as necessary. This Report contains those updates, where applicable.

The content of this report will include discussions about the programs and activities that occurred during this reporting period (July 1, 2009 to June 30, 2010). The City presumes that RWQCB staff recognizes that significant activity may occur subsequent to the end of the reporting period for this report. As a result, throughout this report a summary of post-reporting period activities will be discussed (where appropriate) to assist the RWQCB in understanding the City's efforts to reduce urban runoff and pollution and to comply with the Permit.

1.4 Program Goals

The primary goal of the City's JURMP is to reduce or eliminate pollutant discharges into the City's MS4 (municipal separate sewer storm system) and receiving water bodies, including the Pacific Ocean, thus improving the quality of water in the City, neighboring jurisdictions, and region-wide.

The City recognizes that a *scientifically measurable* change in water quality is a long-term goal that would require many years of data collection, research and analysis, extending beyond the life of the current Permit (which expires in 2012). As a result, the City's program includes short-term goals expected to focus the City's program on permit compliance as well as water quality improvements. The following summarizes the City's past and current short-term annual program goals:

FY 02/03: Integration of WURMP(s), SUSMP and JURMP activities

FY 03/04: Complete assessment of JURMP (using regional strategy)

FY 04/05: Complete overall assessment of Regional Programs JURMP, WURMP and SUSMP; prepare for new Permit from RWQCB

FY 05/06: Assessment of JURMP, WURMP and SUSMP in preparation of new Permit anticipated to be adopted in early 2007. This involves the assessment of water quality data to focus on the sources of high priority pollutants locally as well as watershed and regionally.

FY 06/07 Further assessment of JURMP, WURMP and SUSMP to effectively develop new programs for incorporation in the new JURMP, WURMP and SUSMP that will be required by the new Permit (adopted January 2007). The complete program will be assessed to determine the effectiveness of existing programs and to develop better, more efficient programs to include in the next Permit cycle.

FY 07/08 Development and implementation of new JURMP to comply with Permit Order No. 2007-0001. The new Permit includes additional and improved requirements from those included in Order No. 2001-01. Although the City continued the implementation of Order 2001-01 during FY 07/08, significant time and resources were spent developing the new programs included in Order 2007-0001.

FY 08/09 Continue developing the new programs and activities under Permit Order No. 2007-0001, such as the Low Impact Development (LID) and Hydromodification Plan (HMP). In addition, track all SUSMP project post-construction BMPs and develop inspection protocol for annual inspections.

FY 09/10 Continue implementation of the new JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The focus of new water quality regulations are shifting to development and implementation of Total Maximum Daily Loads (TMDLs), which the City will actively participate in. The City will continue to be involved in the LID, HMP and new SUSMP requirements development for future implementation.

FY 10/11 Continue implementation of the JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The focus of new water quality regulations are shifting to development and implementation of Total Maximum Daily Loads (TMDLs), which the City will actively participate in. The City will continue to implement the LID, HMP and new SUSMP requirements on priority projects. The City will continue assessing the Storm Water Program to determine if there are any other areas where the utilization of specialized consultants will bring a higher value to the community while at the same time assisting Staff with Permit compliance as resources continue to dwindle during these tough economic times. Currently, Staff utilizes outside consultants to assist with:

- Commercial/Industrial facility inspections
- Dry Weather Monitoring Program
- Department specific specialized Staff trainings

All aspects of the Permit are under review by Staff to determine the most effective and efficient means of compliance. The City is fortunate to have a voter approved NPDES fee, so funding is not a problem, but Staff's resources are. So, outsourcing certain aspects of the storm water program may be a benefit to the City as well as the community.

CHAPTER 2

Development Planning Component

CHAPTER 2: DEVELOPMENT PLANNING COMPONENT

In accordance with Permit Section D.1, this section of the report describes the City's efforts to reduce Development Project discharges of pollutants from the MS4 to the Maximum Extent Practicable (MEP); to prevent Development Project discharges from the MS4 from causing or contributing to a violation of water quality standards; and to manage increases in runoff discharge rates and durations from Development Projects that are likely to cause increased erosion of stream beds and banks, silt pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.

In each Annual Report to the RWQCB, this section will include new modifications to the City's General Plan (if any), review process for new and redevelopment projects, inventory of current public and private projects and activities associated with the Standard Urban Storm Water Mitigation Plan (SUSMP). Activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The JURMP (Section 4.0: Development Planning Component) describes the City's plans to integrate new project review processes to require mitigation of urban runoff. In addition, the City adopted the new model SUSMP in February, 2008.

2.1 Assessment and Modification of General Plan

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. As such, the General Plan is crucial to the long-term success of its water quality and environmental programs.

There were *no changes* to the General Plan during this reporting period. However, the City has tentatively scheduled the General Plan update to begin in January 2011. It has been included in the City Council's FY 2010/2011 Workplan and is a priority project. Updates will be given in subsequent annual reports.

There were three modifications to the Municipal Code as a result of the new Permit and subsequent JURMP. These modifications were approved by the City Council in February 2009:

1. Minor revisions to Chapter 13.10 Storm Water Management that adds provisions that meet the requirements of the new storm water permit within the timelines required for implementation.
2. The second ordinance change adds a new Chapter 13.30 to the Municipal Code to include the City's storm water mitigation plan (SUSMP) that governs methods of controlling storm water pollution. The SUSMP contains the specific types of best management practices that the city will impose on development.
3. The third ordinance change revises Chapter 15.40 Excavation and Grading, which controls the manner and method of grading properties and excavation within the City. The revised ordinance updates the existing ordinance to include new erosion control measures required by the SDRWQCB.

2.2 Project Approval and Environmental Review Process Modifications

The City is tasked with ensuring that land uses in Solana Beach comply with City codes, the General Plan, City Council policies, Engineering standards and State law requirements. Approval of projects through the discretionary review process is generally, but not always, required prior to issuing grading, building and right-of-way permits. The City's Municipal Code (Code) requires compliance with storm water regulations for all discretionary approvals and ministerial permits. The Planning, Engineering, Environmental, Building and Fire Departments review all building plans that are submitted to the City. The Engineering and Environmental Departments administer all aspects of design and construction for public improvement projects. The Planning Department administers the environmental review (Initial Studies, Negative Declarations, EIRs, etc.) of both public and private projects.

The City has reviewed its General Plan and Municipal Codes and determined that the General Plan meets the requirements of Order No. 2007-0001. The following is a short list of recent improvements to the project review process that ensures all projects are reviewed and properly address storm water concerns:

FY 05/06 - Every applicant who inquires about a particular project at the City Hall counter was given a copy of the City's Construction BMP Brochure (Appendix I). This is being done to ensure that every person will have received a copy of the City's educational guide, often times more than once.

FY 05/06 - Any project that increases the impervious area of a site by a minimum of 1,000 square feet must complete a Storm Water Plan Check Comment Form (Appendix J). This sheet requires a variety of information to ensure that there will be no additional run-off as a result of the project. The first requirement is the preparation of an Erosion Control Plan. Also, the applicant must demonstrate that the project *does not increase storm water runoff*. Lastly, the applicant must demonstrate that they are implementing and maintaining all precautionary measures necessary to ensure that pollutant discharges from the site *will be reduced to the maximum extent practicable*. All additional storm water must be completely contained and treated onsite. This is not required by the Permit, but the City believes that it would be prudent to address this issue on such a small scale because of the relative abundance of these smaller projects within the jurisdiction and the lack of larger scale projects that would otherwise be dealt with through the SUSMP process. Instead of ignoring these projects all together, the City felt it would be in its best interests to review these “minor” projects to ensure that most new construction and redevelopment would address these storm water concerns.

FY 06/07 - City continued to evaluate its project approval process and made some modifications to the process for approving new and redevelopment projects. The plan check routing sheet was further modified to include additional information regarding storm water management. The intent of the modifications is to ensure that pollutants and runoff from development will be reduced to the maximum extent practicable (MEP) standard and/or will not contribute to an exceedance of receiving water quality objectives.

FY 06/07 - Project Applicants (Applicants) are required to submit a detailed project application, which addresses a variety of concerns, including urban runoff and environmental impacts. The project application provides an opportunity for City staff to determine whether or not the project will be exempt from the California Environmental Quality Act (CEQA) process. If the project is subject to CEQA, the environmental impacts of the project must be reviewed and depending on the potential impacts, a more substantial environmental impact report (EIR) may be required.

FY 06/07 - The plan check routing sheet was further modified to include another section titled *Environmental* (Appendix K). This section was included to ensure that *all* plans submitted would be reviewed for storm water implications, no matter how small or relatively insignificant. Previously, plans would be routed through the Engineering Department and if the Engineering Technician

determined that it warranted further review, the plans would be passed through to the Environmental Programs Manager. The process was modified to ensure that all plans would be reviewed just in case something was missed or overlooked. The City believes that plan review is essential to ensuring storm water compliance, so we are doing everything possible to make sure it is done thoroughly and accurately. This new and improved process resulted in the Environmental Programs Manager reviewing 224 plans during this reporting period.

FY 08/09 – The City implemented a complex and highly efficient computer database (BEACH) that greatly improved the internal plan review process. This database was developed by a local resident and was tailored to the specific needs of the City's departments. The database was built after extensive comment and review from the various departments to maximize the efficiency and streamline the process, while at the same time incorporating all the necessary information for each department. This process and subsequent database has greatly improved the Environmental plan review process by ensuring that all comments of the Environmental review are addressed prior to initial permit issuance, as well as final permit occupancy. This will be explained in further detail later in the Report, but it has been a tremendous success.

In addition to the CEQA review process, all applicants must obtain a permit from the California Coastal Commission (CCC) because the City does not have a Local Coastal Plan. The City also has strict environmental standards requiring compliance and governing land-use planning and construction.

The application includes some of the following questions:

- Financial interest of all parties who own, or intend to own the property.
- Proof that all owners of record within 300 feet of the exterior boundaries of the property have been noticed of the intent to develop (this allows opportunity for public participation in the process).
- Present use of property and proposed development description (commercial, residential, mixed use, etc.).
- Current floor area ratio (FAR) and proposed (this allows review of the proposed change in impervious to pervious surface area). The City has a strict FAR and prohibits development within 40 feet of the western edge of

the coastal bluffs.

- Proposed area to be graded (this allows the Engineering Department to assess potential erosion and runoff).

- Environmental condition of property (vegetation, drainage, noise, etc.) and neighboring properties.

- Business Applicants are required to submit information pertaining to the types of hazardous materials, whether or not industrial wastewater will be discharged in the property *and/or* off the property.

2.2.1 Project Requirements

As mentioned above, applicants are required to submit plans for all new and redevelopment of private properties to both the Planning and Engineering departments prior to approval. The Engineering Department (which includes Environmental Review) reviews the project's grading and construction plans for a project's potential pollutant contribution to urban runoff. The City Engineering Department also determines the appropriate pre, during and post BMP requirements for each project and attaches the Storm Water Plan Check Comment form to the project plans and returns the plans to the applicant for modification, if required. Applications may be required to submit one or more of the following:

- An Erosion Control Plan (which requires BMPs to manage storm water and non-storm water discharges from the site at all time and shall emphasize sediment control).

- Evidence that the project will not increase storm water runoff.

- Storm Water and Non-Storm Water Runoff Control (this requirement address long-term control of runoff and may require structural modifications to direct discharges into permeable areas such as landscaping).

In addition, all grading projects are required at a minimum to include the following:

- Source control BMPs for all projects expecting to generate runoff.

- Implementation of site design/landscape measures to reduce and/slow runoff, minimize impervious to previous ratio, maximize infiltration and promote alternative driveways and parking lots to include pervious land surfaces (as described in detail in the City's JURMP).

- Implementation of buffer zones for natural water bodies, where feasible and if not, trees, lighting and access restrictions are required.

Industrial applicants are also required to provide evidence of coverage under the California General NPDES Permit for Storm Water Discharges Associated with Industrial Activities.

Applicants are required to be in compliance with the City's current grading and storm water management ordinances, inspection requirements, general requirements for construction activities during the wet and dry season and implementation of appropriate BMPs to control erosion and runoff.

2.2.2 SUSMP

The City participated with other Copermittees in the development of the original model Standard Urban Storm Water Mitigation Plan (SUSMP), which was approved by the RWQCB on June 13, 2002. The Solana Beach City Council adopted the City's SUSMP on December 3, 2002, which was submitted to the RWQCB on December 13, 2002. The City also participated in the development of the new SUSMP in accordance with the new Permit. The City Council adopted the updated model SUSMP in February 2008.

The SUSMP addresses post-construction urban runoff pollution from new development and redevelopment projects that are designated as "priority projects" under the Permit. Most of the criterion that specifies which projects will be priority projects will not be applicable to the majority of City projects. The reason for this is that the City of Solana Beach is more than 95% "built-out" and primarily a residential community with small commercial properties. As a result, the City made few modifications to the Model SUSMP that was developed collectively by the Copermittees for its SUSMP. Over time, City staff will evaluate the effectiveness of the SUSMP and discuss changes, if necessary, in this section of the Annual Report.

During this reporting period, the City of Solana Beach had *no SUSMP projects submitted or approved*. The majority of the development in Solana Beach consists of single-family construction and remodeling projects.

The City's Planning Department (also referred to as Community Development Department) is well aware of the SUSMP requirements and is consistently on the lookout for potential projects that may fall under the SUSMP requirements. The Engineering Department handles all of the BMP review for the City, however, the Planning Department is the first department to review applicant plans. Often times for larger projects, meetings are held between City Staff and the applicants well before the plans are submitted. At this time, Planning Staff works with the applicants to ensure the project complies with the SUSMP regulations. This helps to avoid costly delays in the project timeline by ensuring the applicant is aware of the SUSMP requirements and incorporates them into the project prior to submittal. It's a very proactive approach that has proven successful on all large projects in the City, not just SUSMP projects.

2.2.3 Low Impact Development (LID)

LID is one of the most significant new requirements of the new Permit. The Permit states that each Copermittee shall develop and require each Priority Development Project to implement LID BMPs which will collectively minimize directly connected impervious area and promote infiltration. The City's new JURMP describes the LID site design BMPs required at each Priority Development Project. The LID requirements were developed by the Copermittees during this reporting period, which promoted consistency throughout the region for the development community. The City has now incorporated the LID requirements into the development review process. There has not been a project subject to the SUSMP or LID requirements in the City to date, but there are a few in the pipeline including the following CIP projects:

- Highway 101 Corridor Revitalization Project
- La Colonia Park and Community Center Renovation

City Staff will continue to monitor these projects to ensure compliance of the new requirements.

2.2.4 Treatment Control BMP Maintenance Tracking

The City has developed a database to track and inventory approved treatment control BMPs and treatment control BMP maintenance for Priority Development Projects within the City. The database contains all necessary information as required by the new Permit. In addition, the City has developed a program to verify that approved treatment control BMPs are operating effectively and have been adequately maintained. The City's current treatment control BMP inventory is listed below. Not all projects are a result of the SUSMP process because they were built prior to the requirements; however the City still lists them in their inventory and inspects annually.

Private Project Treatment Control BMP Inventory

Address	Type of Project	Type of BMP(s) Installed	Maintenance Agreement	Inspection Date
533 Lomas Santa Fe	Boys and Girls Club Remodel/Construction	CDS Unit (1), Storm Chamber Infiltration Basins (2), Drainage Inserts (2)	Yes	9/25/09
420 Steven's Avenue	Office Building Construction	CDS Units (3)	Yes	9/25/09
667 San Rodolfo	Shopping Center Remodel	CDS Unit (1)	Yes	9/25/09
634 Steven's Ave	Commercial Building Construction	Bio-Swale	No	9/25/09
601 North	Single Family Sub-	CDS Unit	No – City	9/25/09

Cedros Ave	Division (23 Units)	(1)	Maintained	
641 Valley Ave	Mixed Use Comm/Res	Bio-Swale, pervious concrete	No	9/25/09
715 Valley Ave	Park	Bio-Swale	No - City Maintained	9/25/09
111 South Sierra Ave	Park	CDS Unit, Low Flow Diverter	No- City Maintained	9/25/09
749 Genevieve St	Parking Lot >15 spaces	Bio-Swale, Pervious Pavers	No	9/25/09

2.2.5 Treatment Control BMP Maintenance Inspections

According to the City's JURMP, annual inspections will be completed on an annual basis prior to October 1st. City Staff conducted the annual inspections of the projects listed above as required by the Permit prior to October 1st (9/25/09). Due to the relatively small amount of projects, Staff plans to inspect all treatment control BMPs annually, regardless of their frequency priority. City Staff sent out Verification Letters to all sites prior to the inspections. *The City is happy to report that all properties were in full compliance during the first inspection.*

2.2.6 Priority Development BMP Verification Prior to Occupancy

Although there were no priority development projects approved during this reporting period, the City does have a BMP verification process set up to ensure all BMPs are installed prior to occupancy. This process is not only conducted for priority development projects, but grading and building projects that require post construction BMPs (small infiltration pits, roof drains to landscaping, etc). As mentioned in previous Annual Reports, the building permit routing sheet that goes to each department reviewing the plans was modified to include check boxes in the "Environmental Review" section. These check boxes are for projects that require a post construction BMP of any kind, and if they are checked for any project, the Building Department will not issue final occupancy permits until the

Environmental section is complete. This includes an inspection either during construction for BMPs underground (to ensure they were installed prior to being covered by landscaping) or final inspection if the BMPs can be identified at the end of the project. It is the responsibility of the contractor to notify the Environmental staff for inspection or the "pink card" will not be signed and the final Permit will not be issued. City Staff has required contractors to dig up and remove landscaping in order to show that the BMP was actually installed according to the plans if the contractor failed to properly notify Staff for an inspection. This ensures that all post-construction BMPs are installed prior to the final permit being issued for occupancy.

2.2.7 Hydromodification Plan (HMP)

The HMP was finalized and adopted by the Regional Board just after this reporting period (July 2010). As mentioned in last year's Annual Report, Staff does not anticipate that any projects in Solana Beach will be subject to the new HMP requirements. The City participated in the development of the HMP and has paid our share for the development costs, realizing that this is a regional issue and as a Copermittee we have a responsibility to assist the other Copermittees in complying with the Permit requirements. If any project is subject to the HMP, it will be reported in this section of each Annual Report.

2.3 Education

Municipal Staff Education

The City of Solana Beach is a very intimate, cooperative group. All departments work very well with one another because they are forced to work together on a daily basis to serve the relatively small community. This makes training and education a much easier task.

The previous formation of the storm water team brought together the directors of all the different departments (Planning, Engineering, Public Works, City Manager's, Public Safety (Fire and Marine Safety, Code Enforcement, Environmental, City Attorney's and City Inspector) and provided them a forum to discuss storm water issues, keep everybody in the loop on ongoing issues and develop solutions collectively. In turn, the directors would educate their respective employees on the specific tasks they were to perform. This was a very effective and efficient way to educate the Municipal Staff when the Permit was first adopted and the JURMPs were initially being implemented.

City staff welcomes additional training opportunities and often seeks outside training opportunities to keep up with the ever-changing storm water world. In addition, Staff welcomes presentations from consultants regarding the latest technologies in the protection of water resources, including techniques to reduce erosion, bacteria and other COCs in urban runoff. City Staff is always seeking new training opportunities to stay on top of this rapidly evolving field. Specific trainings are listed in their appropriate sections throughout this Report.

Owner / Developer Education

The City, along with the other North County Copermittees, developed a Construction BMP Brochure (Appendix I) which describes the construction storm water regulations and required BMPs. The BMPs are generic with a simple diagram of a "typical" construction site, which has been very well received by the development community. It is simple and easy to understand, and City staff makes certain developers and contractors know every site is different and has unique characteristics. These brochures are distributed at the counter, at pre-construction meetings and in the field during inspections.

In addition, the City sends a "Rainy Season Reminder" (Appendix N) to all current and active private projects within the City as a tool to educate and remind project owners and developers about the need to strictly adhere to the erosion control requirements during the rainy season. These letters are sent out in the beginning of October as a "friendly reminder" that they need to ensure their sites are in compliance before the rain events start, or risk increased enforcement actions.

Inspections are another opportunity staff utilizes to educate owners and developers about City and State runoff and erosion requirements. During inspections, the City Inspector points out problem areas and requires mitigation compliance immediately. If an owner or developer fails to comply, increased enforcement including fines can be levied and the City Inspector has the authority to halt construction activities with a Stop Work notice.

The City has implemented similar procedures for public projects as those utilized for private projects. During mandatory pre-construction meetings (for all grading and public projects) the requirements for erosion control and runoff management are discussed. In addition, City staff notifies the primary contractor that they are ultimately responsible for all actions of their subcontractors, and violations of the City's storm water requirements will result in enforcement actions.

2.4 New Activities and Improvement for FY 10/11

The City will continue implementing the activities described in the Development Planning Component of the City's JURMP. In addition, with the development and implementation of the new SUSMP, LID and HMP requirements, the focus for FY 10/11 will include the continued implementation and education of planning/engineering Staff, builders, residents, and the community at-large as to how regulations of the SUSMP, LID and potentially HMP will impact construction.

The BEACH database will continue to be implemented and updated during this reporting period with improvements and advancements made as necessary. The goal is to modify the database to include maintenance and inspections records so that all information on a particular project will be contained in one electronic location. Currently, these maintenance records are being kept in an Excel spreadsheet, but the BEACH database will ultimately be the most effective and efficient location for all project records.

2.5 Summary

The City has successfully implemented the Development Planning Component of the JURMP. Some of the key accomplishments include:

- Education of planning Staff, owners/developers and the community regarding changes in planning processes.
- Implementation of new procedures to ensure new and redevelopment projects do not contribute to an exceedance in water quality standards.
- Addition of Environmental section of permit routing sheet to ensure *all* plans/projects are reviewed by Environmental Specialist for storm water issues. Addition of post-construction BMP tracking and inspection box on routing sheet to ensure all BMPs are installed according to approved plans.
- Increased cooperation between City departments in implementing SUSMP requirements.
- Developed and implemented new post-construction BMP inventory and inspection tracking database.
- Development and implementation of new BEACH database to store all pertinent information regarding parcels in Solana Beach. This includes environmental fields that are used during plan review and permit issuance as well as housing all the necessary information for post-construction BMP tracking and maintenance.

- Conducted department specific Staff trainings by outside consultant specifically for Planning and Engineering Staff regarding the new program requirements in the new Permit (HMP, SUSMP and LID).

CHAPTER 3
Construction Component

CHAPTER 3: CONSTRUCTION COMPONENT

3.1 Introduction

In accordance with Permit Section D.2, this section of the report describes the City's efforts to reduce construction site discharge of pollutants from the MS4 to the MEP and prevent construction site discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of active construction sites (private and public), modifications to the City's policies or Municipal Code with respect to construction activities, and modifications to identified potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to require BMPs at construction sites and program accomplishments. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

During this reporting period, the City conducted an evaluation of its construction practices and inventoried existing construction sites in an effort to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from these construction sites by requiring BMPs.

3.2 Modification of Grading Ordinance

There were *no significant modifications* of the Grading Ordinance during this reporting period as a result of new requirements in the Permit. As reported in last year's Annual Report, Chapter 15.54 (Excavating and Grading) was modified on February 13, 2008 to include the new requirements of the Permit. The amendments updated and strengthened the City's regulations regarding storm water pollution controls. The two main areas of impact in the updated ordinance dealt with two new concepts (Hydromodification Plan (HMP) and Low Impact Development (LID)). As mentioned previously, Hydromodification is a state mandate that requires all local jurisdictions to regulate erosion control and other land-shaping impacts from storm water runoff on priority projects.

Low Impact Development is a new requirement included in the new storm water permit. It deals with using various techniques to channel storm water runoff and

the pollution it contains away from the storm water conveyance system and into landscaping and other on-site features to limit the amount of pollution escaping from individual parcels.

Previously, the last significant modification to the City's grading ordinance occurred June 30, 2005 in which the grading threshold was lowered from 200 cubic yards to 50 cubic yards for all construction projects. This resulted in much smaller projects that would not normally be scrutinized for storm water management would now be required to go through the grading permit process. This gave City Staff more discretion on smaller projects to require storm water mitigation, and with it, gave Staff more power to enforce the installation and/or site design modifications to that would not have been required if a grading permit were not necessary.

3.3 Modification of Construction and Grading Approval Process

The modifications to the City's processes for project approvals are described in detail in the previous chapter of this report (Chapter 2). Although Chapter 2 specifically addresses Development Planning, the discussion included a description of various processes that project applicants must proceed with in order to obtain approval of their construction plans. Chapter 2 also describes the improvements made to the plan check database BEACH as well as the increased education efforts City staff has made to ensure Permit compliance.

The Storm Water Plan Check Comment Form (see Appendix J) may require the applicant to submit an Erosion Control Plan, proof that the project does not increase runoff from the property and/or implementation of structural changes to redirect runoff onto impervious surfaces.

3.3.1 SUSMP BMPs Installation and Tracking

The City continued implementation of the updated SUSMP process during this reporting period, but there were *no projects that required the SUSMP process review.*

The City does not anticipate many projects that will fall under the SUSMP guidelines, since the City is 95% "built out." However, any project that may be proposed that fall under the guidelines will be put through the process. Planning Staff and Engineering Staff have been trained and are aware of the SUSMP requirements, and will implement the program when appropriate.

As reported in previous Annual Reports, a significant improvement to the building permit routing sheet that recently occurred was the addition of the *Environmental* review section (Appendix K). As noted previously in this Report, the routing sheet was modified to ensure *all* permit applications were thoroughly reviewed by Environmental Staff. Even though the revision occurred before this reporting period, it's significant to mention because it brings the Environmental Programs Manager into the review process for all projects, regardless of size or type. This is significant because no projects will slip through the cracks, and all will be required to address storm water concerns. In addition, as mentioned above, the routing sheet also contains an area to mark if the project requires the installation of post-construction BMPs. Final permit approval and building occupancy will not be granted until a final inspection confirms the BMPs were installed correctly, according to the approved plans.

3.4 Construction Site Inventory

This section of each Annual Report will include an inventory of construction sites active during this reporting period. Given that the reporting period for these Annual Reports ends prior to the submittal of the report, the inventory will most likely be slightly outdated by the time the report is reviewed by the RWQCB. However, the City maintains an inventory of current construction project sites, which is always available for review.

The construction inventory is updated periodically, but at a minimum monthly, to ensure all active projects are included and inspected according to the frequency set forth in the JURMP. The update process consists of reviewing the Building Department files of active sites. In the past, the inventory was updated as soon as a building permit was approved. However, it was discovered that often times, construction activities would not commence for many months after permit issuance. This led to a significant amount of wasted time and resources for limited City Staff to visit multiple sites where there were no construction activities occurring. Since the City's Building Department Staff is required to be onsite when the project begins, review of their files is the most appropriate and accurate manner to update the construction inventory. Review of the Building Department files is now possible due to the fact that they are now housed at the City of Solana Beach City Hall. This is a major improvement over the last few years when the files were located at the City of Encinitas City Hall, along with Building Department Staff.

As shown on Table 3-1, there are currently seven construction sites that required a grading permit active within the City. In addition, City Engineers are in constant discussions with private project property owners during the plan check process to ensure their projects include an Erosion Control Plan, modify drainage alterations to re-route runoff to pervious surface areas, proof that the project would not result in an increase in runoff from the site or other various structural BMPs, and require all projects to control and mitigate all run-off before it reaches the City's MS4 system. Table 3-2 shows all construction projects that have a potential to discharge pollutants but did not require a grading permit. These projects had extensive plan review by City Staff and storm water/erosion control conditions placed on them even though a grading permit was not required. Table 3-3 shows all Capital Improvement Projects (CIP) and their priority and inspection frequencies.

The City had no projects subject to the HMP or requiring advance treatment during this reporting period. In addition, there were no projects over 1 acre in size, which is very common considering the City is 95% built-out and most projects are in-fill and redevelopment projects.

Table 3-1 Construction Site Inventory
Grading Projects 2009/2010

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Size	Watershed	FY 09/10 Active Wet Season / # Inspections	FY 09/10 Active Dry Season / # Inspections	FY 09/10 Total # Inspections
514 Barbara	Medium	Single Family Home	Oct-08	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 3 Inspections	10
403 Marview	Medium	Single Family Home	Mar-09	<1 acre	San Dieguito	28 Weeks / 7 Inspections	24 Weeks / 3 Inspections	10
624 Barbara	Medium	Single Family Home	Nov-09	<1 acre	San Dieguito	20 Weeks / 5 Inspections	12 Weeks / 1 Inspection	8
638 Marsolan	Medium	Single Family Home	Dec-09	<1 acre	San Dieguito	16 Weeks / 4 Inspections	12 Weeks / 2 Inspections	6
190 S Rios	Medium	Single Family Home	Apr-10	<1 acre	San Dieguito	0 Weeks / 0 Inspections	12 Weeks / 2 Inspections	2
717 Seabright	Medium	Single Family Home	May-10	<1 acre	San Dieguito	0 Weeks / 0 Inspections	8 Weeks / 1 Inspections	1
427 Barbara	Medium	Single Family Residence	Jun-10	<1 acre	San Dieguito	0 Weeks / 0 Inspections	4 Weeks / 1 Inspections	1

Table 3-2 Construction Site Inventory
Small Private Projects 2009/2010

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Size	Watershed	FY 09/10 Active Wet Season / # Inspections	FY 09/10 Active Dry Season / # Inspections	FY 08/09 Total # Inspections
603 Canyon Pl	Low	Residence	Dec-08	<1 acre	Carlsbad	28 Weeks / 3 Inspections	24 Weeks / 1 Inspection	4
437 E Cliff St	Low	Addition/Remodel	Mar-10	<1 acre	San Dieguito	4 Weeks / 1 Inspection	12 Weeks / 1 Inspection	2
338 Glenmont Dr	Low	Addition/Remodel	Oct-09	<1 acre	San Dieguito	28 Weeks / 2 Inspections	12 Weeks / 1 Inspection	3
241 S Granados	Low	Addition	Mar-10	<1 acre	San Dieguito	4 Weeks / 1 Inspection	12 Weeks / 1 Inspection	2
514 S Granados	Low	Addition/Remodel	Jun-09	<1 acre	San Dieguito	28 Weeks / 3 Inspections	24 Weeks / 1 Inspection	4
445 Holmwood Ln	Low	SFD	Jul-09	<1 acre	Carlsbad	28 Weeks / 6 Inspections	24 Weeks / 4 Inspections	10
830 Ida	Low	Addition	Mar-10	<1 acre	San Dieguito	4 Weeks /	12 Weeks /	2

Avenue						1 Inspections	1 Inspection	
401 Loma Larga	Low	Addition/Remodel	Mar-10	<1 acre	San Dieguito	4 Weeks / 1 Inspection	12 Weeks / 1 Inspection	2
501 Mar Vista	Low	Addition	Apr-10	<1 acre	San Dieguito	0 Weeks / 0 Inspections	12 Weeks / 1 Inspection	1
274 Pacific Ave	Low	Residence	Sep-08	<1 acre	San Dieguito	28 Weeks / 4 Inspections	24 Weeks / 1 Inspection	5
831 Mola Vista	Low	Addition	Jun-08	<1 acre	San Dieguito	0 Weeks / 0 Inspections	4 Weeks / 1 Inspection	1
173 S Nardo	Low	Addition	May-10	<1 acre	San Dieguito	0 Weeks / 0 Inspections	8 Weeks / 1 Inspection	1
365 Pacific	Low	Remodel	Mar-10	<1 acre	San Dieguito	4 Weeks / 1 Inspections	12 Weeks / 1 Inspection	2
499 Santa Dominga	Low	Addition	Jun-10	<1 acre	San Dieguito	0 Weeks / 0 Inspections	4 Weeks / 1 Inspection	1
1223 Santa Luisa	Low	Addition	Apr-09	<1 acre	San Dieguito	28 Weeks / 6 Inspections	24 Weeks / 2 Inspections	8
698 Solana Circle	Low	Addition	Jan-10	<1 acre	San Dieguito	12 Weeks / 2 Inspections	12 Weeks / 1 Inspection	3

3.5 Construction Follow-Up Activities:

The City is very aggressive with its construction inspections and follow-up, and unless otherwise stated, all follow-up corrective activities were properly addressed and corrected within seven (7) working days. Many times the corrections are made immediately, however the City's policy is to allow the responsible party seven days to correct the violation. That being said, if there is an immediate threat to public health or safety, the City can, and will, require immediate corrective actions.

As stated above, the City takes a very pro-active approach toward construction projects. Plans are heavily scrutinized and discussions with the contractors often happen before the project even begins. The City has found that initiating contact with the contractor before the project even starts and maintaining contact throughout the construction process leads to continued compliance with storm water regulations. Since the City of Solana Beach is relatively small and built out, the City's inspector has the ability to visit sites almost daily, and at a minimum weekly. Due to this high level of supervision, sites are not allowed to get out of compliance with storm water BMPs. That being said, there are instances where accidents do take place, most often when concrete trucks and pumpers are involved.

There were no significant violations from construction sites during this reporting period. There were minor issues that Staff would encounter during inspections such as open trash dumpsters, minor sediment tracking or BMPs that were improper installed or needed replacing, but there were no citations issues. Staff believes that the proactive approach to construction inspections, pre-cons and the constant contact in the field from the City Inspector, EsGil Inspector and the Environmental Programs Manager all helped to keep the construction sites in compliance. Also, due to the lengthy drought the region is experiencing, there were relatively few rain events that occurred.

3.6 Capital Improvement Projects Inventory

In addition to the inventory for private projects, City staff believes it is equally important to discuss public (Capital Improvement Projects [CIPs]) projects under construction.

CIPs are held to the same *or stricter* standards for reducing runoff as private projects. BMPs, Erosion Control Plans, and structural changes to reduce or mitigate runoff pre, during and post-construction are required. Most, if not all, CIPs in Solana Beach are constructed by private contractors selected through the standard public construction bid process. Contractors are informed *prior to submitting a bid,* that the City requires adherence to RWQCB standards, Permit and City storm water regulations. To ensure compliance, the City Inspector conducts a daily inspection of each CIP site during construction. Stop Notices are issued if the contractor fails to comply with any storm water / erosion control regulations.

Additionally, the Environmental Programs Manager is included in pre-construction meetings that are required for *all* public projects. A line item discussing NPDES regulations and requirements is standard for all public project agendas (Appendix L). This is just another way to ensure that all contractors are aware of the requirements before the project begins, and to help with possible enforcement actions, if necessary.

In FY 09/10, the City Inspector did not issue any Stop Notices to contractors for failing to comply with storm water/erosion control regulations.

Table 3-3 below shows the inventory of CIP projects during FY 09/10. The City had four projects, and placed all of the projects in the high priority category. This was done to ensure that the City's projects would be inspected at a very high frequency in order to ensure compliance at all times. The City even hired a consultant to monitor the Eden Gardens Pump Station project daily because of the sensitivity of the project, and so the site was technically inspected daily, but as far as compliance inspections are concerned, they were conducted at the frequency outlined in the JURMP. For the other CIP projects, the City's Inspector was onsite daily to monitor the site.

Table 3-3 Construction Site Inventory
Capital Improvement Projects 2009/20010

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Size	Watershed	FY 09/10 Active Wet Season / # Inspections	FY 09/10 Active Dry Season / # Inspections	FY 09/10 Total # Inspections
Eden Gardens Pump Station	High	Sewer Pump Station	Jun-08 Completed Apr-10	<1 acre	San Dieguito	28 Weeks / 14 Inspections	16 Weeks / 4 Inspection	18
Steven's Ave Emergency Storm Drain Repair	High	Storm Drain Repair	Jun-10	<1 acre	San Dieguito	0 Weeks / 0 Inspections	4 Weeks / 4 Inspections	4
Sewer Repair Project	High	Sewer Repairs	May-10	<1 acre	San Dieguito	0 Weeks / 0 Inspections	8 Weeks / 8 Inspection	8
Pump Station Vault Maintenance	High	Sewer Vault Maintenance	Mar-10	<1 acre	San Dieguito	4 Weeks / 4 Inspections	12 Weeks / 6 Inspections	10

3.6.1 Significant CIP Project Narratives

In this section, Staff felt it was necessary to add some additional narrative to some of the more significant CIP projects, and to explain some other projects that weren't necessarily planned construction activities, but ones that were either emergency, preventative or experimental that occurred during this reporting period. Staff feels that these projects were significant in showing the City's proactive approach to protecting the local environment. There are as follows:

Sewer Assessment and Repair Program

The City embarked on a significant project to video and inspect the entire sewer system infrastructure during this reporting period. The City Council authorized approximately $150,000 towards this assessment and repair program with the intent to prevent any failures in the City's infrastructure. The City hired consultants to video the entire length of the sewer pipes and develop an assessment report to categorize the infrastructure into priority replacement projects. The City repaired all high priority areas on the western side of the City (west of I-5) and has scheduled the eastern side for FY 2010/2011. This is a very aggressive and proactive program that demonstrates the City's commitment to no sewer spills in the City.

Fletcher Cove Pump Station Vault Maintenance

The City identified some maintenance that needed to be conducted on the Fletcher Cove Pump Station Vault (Vault), as the top portion was starting to erode away. The Vault is located directly downstream from the public restrooms in the Park, which has had some minor overflow issues in the past. The restrooms contained floor drains that were connected to a "Sand Trap" permanent treatment control BMP maintained by the City. The Sand Trap was connected to the Low-Flow Diverter, which is connected back to the sewer system. The RWQCB was notified by a concerned resident that there is a small potential for bacterial contamination of the ocean receiving waters if the restrooms backed up, the Sand Trap was full and the Low-Flow Diverter was not working. Although highly unlikely, Staff did take this concern very seriously. City Staff met with RWQCB staff multiple times to discuss the issue and potential solutions, and the City took the opportunity to fix the problem along with the Vault maintenance project. The City redesigned the floor drain pipes, realigned them to bypass the Sand Trap and Low-Flow Diverter and connected them directly to the Vault. A manhole was also installed to allow for routine cleaning and maintenance of the lines to prevent blockages.

This project demonstrated the City's willingness to go above and beyond the requirements of the Permit to fix a potential pollutant source before it became a problem. In addition, City Staff would like to thank RWQCB staff for their assistance and cooperation in developing a workable solution for all, including the community. Although there was never a spill that reached the ocean, the City still felt it necessary to take proactive steps to ensure the integrity of the receiving waters.

Marine View Slope Maintenance

The City has a very large slope on the east side of I-5 on Marine View Avenue that has been a problem area for large-scale erosion. The slope is now bare with no vegetation, and gullies have been cut out over the year by large rain events. These rain events produce a significant amount of erosion, and the City has attempted many solutions over the years, with minimal success. Staff has attempted to work with specialized erosion control consultants, but has been told by them all that there are no solutions for this particular problem. The slope is too large, steep and has too many ruts and gullies for the standard erosion control BMPs, such as hydroseeding, matting and even bonded fiber matrix. The City has installed a reinforced silt fence at the bottom that has to be replaced after every rain event, and takes up a lot of Staff resources.

Staff was approached by a local erosion control company in August 2009 to become a pilot project for a new hydroseed formula called "Rhino Snot." Staff agreed to use the product on the Marine View Slope, and it held up remarkably well during the rainy season. The product was placed on a portion of the slope and prevented erosion throughout the entire rainy season. It worked so well that Staff has scheduled for the application to be done on the entire slope the first week of October, 2010. Staff will be monitoring the location throughout this rainy season and hopes to have found a long-term solution. The City does have a large-scale CIP project planned for this slope, but does not currently have the funding for it. The results of this year's application will be reported on in next year's Annual Report.

3.7 Threat to Water Quality Prioritization

In accordance with Permit Section F.2.e., the City describes the criterion for designation of construction projects as high, medium, or low priority, in its JURMP. *There are **no changes** to report in the City's criterion for determining a project's impact or threat to water quality.* The City's prioritization criterion meets

the requirements of the new Permit, so no changes were needed.

Of the active projects currently under construction, *there are no changes to report with respect to the potential threat to water quality*. The City is 95% "built out" which does not leave much room for major development projects. The only projects that would fall under the high priority would be significant redevelopment projects, which there were none of during this reporting period. The City is closely monitoring two potential projects that may fall under the high priority in the next reporting period, pending permit approval. It is important to note that City Staff is currently working with the prospective developers to ensure they integrate beneficial storm water designs (LID) during the design phase. The following projects are being closely monitored by City Staff:

1) Multiple plans have been submitted to the City to build a hotel/restaurant and condos on the east side of Highway 101 at the northern tip of the City (commonly referred to as the Magellan site), however it has been met with some opposition within the community and a compromise is being sought. Plans still have not been adopted by the City Council at the time of this report. If a project is accepted for development in that area during the next reporting period, it will be a high priority project subject to the SUSMP process because of its proximity to the San Elijo Lagoon, a 303 (d) listed water body.

2) Another *potential* high priority project that is being discussed is a large multi-use residential/commercial development on what is currently the North County Transit District's (NCTD) train station property. This proposed project has also come under heavy scrutiny from the public and no plans have been approved by the City. If a project is approved for development on this site during the next reporting period, it will be a high priority project because of its size and pollutant potential. It will be subject to the SUSMP requirements much like the project mentioned above.

One of the projects including in last year's Annual Report was approved by City Council in April 2009. The project is the redevelopment of a portion of a commercial property located just east of Interstate 5 at Lomas Santa Fe Drive. However, like mentioned above, it often takes many months for a project to actually get started after the approval process. The project, much like most of the construction projects in the current economic times, has been suspended indefinitely until financing can be secured. If it becomes active during FY 2010/2011, it will be reported on in next year's Annual Report.

The City's Capital Improvement Projects (list available upon request) will be considered at least a medium priority for several reasons. First, priority categories may only result in a change in the frequency of oversight and since the City Inspector visits each public construction site on a daily basis, it eliminates the need for delineation in priority. Second, given the City's proximity to the Pacific Ocean, all erosion, sediment and runoff control practices are very important and are expected to be very beneficial to the community. Therefore, the designation of "medium or high priority" improves the likelihood that CIPs will not contribute to an exceedance of water quality standards. It doesn't make sense to categorize a CIP project as low priority since the City holds itself to a higher standard than the rest of the community. The City strongly feels it should lead by example, and since the City Inspector is onsite everyday at CIP projects, storm water issues are addressed daily.

3.8 BMPs and Pollution Prevention Methods

As noted in the City's JURMP, the City requires general and specific BMPs for construction sites. With the modifications in the development review process, the City is able to require site design, source control and treatment BMPs prior to construction. Owners and developers are provided a BMP Construction Brochure (see Appendix I), and they meet with Engineering Staff to develop methods to ensure that runoff is not increased as a result of their proposed project. The City believes that working with the contractors during the plan development (when applicable) and approval process is the most critical time period to ensure that appropriate BMPs (structural, pre-and post-development) are built into the project *before* pollutants are allowed to enter the storm drain conveyance system.

BMP Selection

The City does not require a specific or certain type of BMP (except for SUSMP projects) for all projects similarly designed. Instead, Staff evaluates each project on its own merit and determines if modifications to the plans are required to control erosion and/or reduce runoff. City Staff works together with property owners and developers to find satisfactory solutions to project problems.

Pollution Prevention Methods (PPM)

Construction limitations – the City limits construction during the wet season when construction plans warrant and when it is feasible. Implementation of this PPM reduces the potential for pollution.

Education – the City sends out letters to all active public and private construction projects prior to the wet season as a reminder of the importance of implementing the required BMPs (see City JURMP for a description) and the importance to take precautions during storm events (Appendix N). Additionally, a BMP Construction Brochure is attached to all permit approvals and distributed at City Hall Engineering and Planning counters to all prospective developers and interested members of the community.

Inspections – as discussed below and elsewhere in this report, the City Inspector and Environmental Programs Manager visit construction sites and keep a record of BMP implementation and effectiveness. When a developer does not comply with the City Inspector's request to modify practices to reduce runoff or erosion, a Stop Work can be issued and fines may be levied.

3.9 Enforcement and Inspections

Enforcement of the City's Municipal Code is conducted by the City's Code Enforcement Department. The City Inspector and Environmental Programs Manager conduct inspections of construction site BMPs, but if enforcement actions above verbal warnings and written NOVs are necessary, Code Enforcement Officers are notified.

Code Compliance

The City has developed procedures to track and monitor citations issued to property and business owners, visitors, and developers. These procedures include the implementation of an Administrative Fine process which was adopted by the City Council on June 18, 2002. This process allows Code Enforcement Officers to issue administrative citations and penalties beginning at $100 and rising up to $1,000 for each violation per day that the violation(s) occur; this applies to construction sites, public and private.

In addition to the administrative fine process, the City adopted a Civil Penalty Matrix (Matrix). This is a very significant tool that has greatly enhanced the efficiency and consistency of enforcement for storm water violations. The City felt it was necessary to develop a matrix to evaluate each violation in the field, and to respond to them in a consistent and appropriate manner. The Matrix was designed so that anybody in the field who witnesses a violation can apply the parameters of the Matrix to decide the appropriate way to respond. This greatly enhanced the efficiency of the storm water program, as not all violations require multiple Staff to respond or, if a fine was necessary, Staff did not have to wait for

approval from upper management to issue it. This would sometimes take as long as month, but with the Matrix, this could happen instantaneously in the field.

The Matrix was modeled after the City of San Diego's Civil Penalty Matrix. The Matrix was modified for the type of violations most often encountered in Solana Beach, but the foundations are very similar. The Matrix breaks down the violation into two categories, Environmental Significance and Compliance Significance. These categories are further broken down into Moderate, Major, and Severe. According to the type of violation and the history of the violator, the penalties will be placed in the appropriate section of the Matrix. This ensures that all violations are treated consistently, and the feelings of the investigating officer do not interfere, so the enforcement actions do not vary. This, according to our Code Enforcement Department, is extremely important if a fine gets challenged in court. The Matrix has been in use for over four years, and a fine has not been successfully challenged yet. The Matrix was developed in cooperation between the City's Environmental Specialist and Code Enforcement Officer, further showing the great working relationship between City Departments.

The Matrix is used for all violations, not just construction related offenses. It can be applied to municipal, commercial, and residential offenses. For the complete Civil Penalty Matrix, see Appendix M.

Site Inspections

All construction sites that have a potential to discharge pollutants are inspected by the City Inspector and Environmental Programs Manager, this includes public and private development projects. The City Inspector and Environmental Programs Manager inspect all development projects in the City in accordance to the JURMP.

The sites are inspected at the rate of frequency established in the JURMP. At a minimum, each site that is determined to be high inspection frequency priority will be inspected at least every two weeks during the rainy season (October 1st through April 30th). Medium inspection frequency priority projects are to be inspected at least monthly during the rainy season. Low inspection frequency priority construction sites will be inspected on an as-needed basis during the rainy season. All construction sites will be inspected for storm water management compliance on an as needed basis during the dry season.

With the combination of the City Inspector and Environmental Programs

Manager, the City is often times able to inspect construction sites more frequently than required by the Permit. Both the City Inspector and Environmental Programs Manager devote time out of their schedule to visually monitor all construction sites. Sometimes this is done in tandem, but often times it is simply a drive-by of all sites. They meet routinely and discuss any problems observed, if any. This has been very successful in preventing pollution from leaving construction sites, as most problems are fixed before any illegal discharges leave the property. Since there are not too many projects in the City, this type of monitoring is highly successful, as private project managers and City Staff communicate very effectively.

If any potential violations are noticed during either the visual inspections or on-site inspections, City Staff will stop and talk with the property owner/contractor, write a letter, request Code Compliance to issue a citation, issue a "stop work notice" or a combination of these activities. The City's Civil Penalty Matrix, discussed previously, is also used for construction related violations.

In addition, City Staff conducts informal visual inspections at all medium and high priority construction sites prior to a rain event to ensure all BMPs are installed correctly and working properly. A follow-up informal visual site inspection is then conducted during and/or after the rain event to monitor how effective the installed BMPs were and if any modifications need to be done. Construction sites are constantly evolving and require constant monitoring, which the City Staff understands and enforces.

All inspections conducted during this reporting period addressed all the required inspection steps to determine full compliance. There were no sites that required multiple follow-up inspections or reporting to the RWQCB, as all were either in compliance at the time of inspection or made the necessary corrections after the initial inspection and were in compliance during the follow-up inspection.

Enforcement of BMPs

During inspection of construction sites, City Staff verifies that appropriate BMPs have been installed correctly and are working effectively (sediment is on-site, erosion control methods in place, runoff mitigated or not leaving property, etc.). In addition, City Staff has the authority to immediately require new BMPs if erosion control, runoff, or other activity is taking place that contributes pollutants into the City's MS4.

During this reporting period, the City staff conducted inspections of all CIPs and mandatory inspections of private projects within the City's jurisdiction and did not need to report any non-compliant sites to the RWQCB. Any site that was determined to be out of compliance was immediately notified and the problems were resolved within the time frame specified by the City.

Educational Activities

The educational activities conducted for construction sites consisted mainly of verbal conversations between the contractor/developer and City Staff. Because of the relatively few projects in the City, it is possible and practical to discuss issues during the pre-construction meeting and on-site with the contractors. Also, they are given the Construction BMP brochure prior to the start of the project and ongoing inspections/meetings occur throughout the project. The City believes that it is much more effective to talk with the contractor face-to-face about storm water issues and, since we are a small city, it has been and continues to be very effective.

An educational brochure (Appendix O) was recently developed by the City that focuses on general construction site requirements relating to all City codes. The brochure, titled "Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices," was requested by the City Council as a general educational tool to be distributed to all contractors. This has been very well received by the development community because it addresses everything from construction hours to permitting to storm water BMPs. This is another example of the City's proactive approach to community education.

Another tool that was developed and is currently being implemented is the Construction BMP Brochure (Appendix I). This was developed by the North County Storm Water Program to provide a single message and consistent requirements to all contractors/developers in the region, regardless of where they are doing work. This brochure was meant to supplement each individual cities educational outreach to ensure that the development community was receiving a consistent message regarding proper construction practices. This brochure has been very well received by the development community and in Solana Beach has replaced the Construction BMP Guide as the primary educational tool distributed to the development community.

Additionally, as discussed previously, the addition of the *Environmental* section to the building permit routing sheet has afforded the City another opportunity to

educate the applicant/contractor on the storm water regulations. Every project that has the potential to discharge pollutants to the MS4, regardless of size or type, is reviewed by the Environmental Programs Manager and commented on.

Another educational tool utilized by the City to get the word out to the community is the City's newsletter "Shorelines." The newsletter is updated and distributed four times per year and is eagerly anticipated by the community. A variety of storm water topics are touched upon in each edition, including construction. These articles are usually focused on education for single-family residential projects since often times these are done by smaller contractors that may not have the knowledge that larger developers do. In addition, the City wants to educate the property owners of the regulations and let them know that they are ultimately responsible for actions their contractors do, including violations. Often times, City Staff discovers that the property owners are the best allies to have because they don't want to be held responsible, so they ensure their contractors are adhering to the regulations. It's been a very effective tool in storm water management throughout the community.

These smaller projects hold a much higher priority in our City because of the lack of larger projects; so educating the individual homeowners is extremely vital. Also, the City has found that the smaller projects have the most potential violations, as most are owner/contractor situations where they are not aware of the storm water regulations. The larger projects often have erosion control specialists and employees who are required to attend storm water education classes. The newsletter comes out four times a year, and are included as Appendices and described in later chapters of this Report.

Special Project BMP Education

An effective tool that has been recently developed and continues to be implemented is the development of specialized BMP notices for specific types of specialized construction activities. For example, a large scale effort is being made to underground overhead power lines for view impact reductions around the City. These were special projects that did not go through the normal permitting process. Therefore, these plans would not have been reviewed by the normal parties, and since the City is dedicated to storm water protection, City Staff developed a special "Undergrounding Utility District Construction Best Management Practices" handout (Appendix P). This was a one page handout to be included in every permit application submitted by those participating in this program. Since the process of undergrounding utilities involves moving a lot of

dirt, the City felt it prudent to take this extra precaution to ensure the proper BMPs are in place.

If any special projects in the future require project specific BMPs, the City is dedicated to developing materials to distribute to the applicants.

Post Construction BMP Inventory and Inspection

Another significant new requirement in the Permit mandates that the City must develop an inventory of all post construction BMPs and conduct annual inspections for Priority Development Projects (SUSMP). The City now has the ability to ensure that all post construction BMPs are installed and maintained by the contractor and/or property owner. The *Environmental* review section on the routing sheet contains a section that can be marked for inspection required prior to installation or prior to final approval of the project. This was done to ensure post construction BMPs required on the plans are actually installed and ensures maintenance through a special agreement that is recorded on the property through the County of San Diego. The City found in some cases that the post construction BMP(s) are often buried in the ground before inspection, thereby making it impossible to inspect and ensure it was properly installed according to the approved plans. So, the City revised the routing sheet to include a box that, when checked, puts the onus on the contractor to call for an inspection during the installation to ensure it is actually being done. This way, it can be more efficiently documented and inspection required before the permit gets final approval. In addition, this allows the Environmental Programs Manager the ability to document in a spreadsheet the type of BMP, location and inspection frequencies as the plans are being reviewed. This will assist City Staff with post construction inspection documentation requirements prior to the start of the project.

Construction and Demolition Debris Recycling Ordinance

In January 2008, the City Council adopted a Construction and Demolition Debris Recycling Ordinance (C&D Ordinance). This ordinance requires all demolition projects and construction projects over a valuation of $100,000 to submit an approved Waste Management Plan (WMP) detailing how the contractor will recycle at least 50% of the waste generated from project. The contractor will not receive final permit approval until they have proven at least 50% of the waste was recycled.

This is an extremely significant accomplishment for the City and its clean water efforts. According to the National Association of Home Builders (NAHB)

Research Center, the building of a 1,700 square foot home requires:

- 9,700 board feet of lumber
- 750 copper wire
- 2,500 square feet of insulation
- 6,484 square feet of drywall
- 170 feet of copper pipe
- 55 gallons of paint
- 55 cubic yards of concrete

This is a significant amount of waste that would normally end up in the local landfills, or worse, illegally dumped in the environment. This ordinance requires contractors to recycle their used materials, guaranteeing that it does not pollute the environment. This is another example of the progressiveness of the community as a whole when it comes to protecting the environment.

3.10 New Activities and Improvements in FY 10/11

City Staff will continue to review all plans, enforce BMP (site, source and treatment) installation, conduct inspections and keep an accurate inventory of the private and public projects and post construction BMPs. The City is committed to working with the other cities within its respective watersheds (Carlsbad and San Dieguito) to ensure compliance with all storm water regulations and continue to develop watershed educational information.

The primary focus for FY 10/11 will be the continued development and implementation of the LID, HMP and SUSMP programs. These are major program components and the City is committed to working with the other Copermittees to develop a high quality work product that can be implemented region-wide. These three components are extremely important to maintaining and enhancing the water quality in the region as more and more land is developed. Training of appropriate City Staff on these new requirements will be a priority to ensure successful implementation of the new programs. In addition, Staff is currently reviewing its documents and handouts to ensure they are up to date and accurate with the new requirements.

City Staff is currently reviewing its construction inspection protocol and changes might be made in the upcoming reporting period. As reported above, the current construction inspections are being conducted by the City Inspector and Environmental Programs Manager. The City is analyzing the current practice and due to potential upcoming staffing changes (retirements, reorganization),

changes might be on the horizon. The City is assessing whether or not construction inspections should be continued in-house, or if contracting out those services to a specialized consultant would benefit the City and the community. The City's recent successes with contracting out the commercial/industrial inspections, Dry Weather Monitoring Programs services and Staff trainings have made the City take a hard look at other service areas as well. There is also the possibility that a part-time Code Enforcement Officer will be hired with the focus of construction inspections. This analysis is occurring at the time of the writing of this report and more information will be given in next year's Annual Report.

3.11 Summary

The City has been effective at implementing a plan-check process that has resulted in the implementation of BMPs, site design modifications, structural changes and runoff mitigation activities in project proposals and/or construction activities. Both public and private construction projects are subject to the City's strict standards, which provide a consistent approach to reducing urban runoff from construction activities. The City has effectively integrated the new stricter standards of the Permit, including the SUSMP, into its plan-check review process. The City has also developed project specific construction BMPs for large-scale specialized construction activities such as the Undergrounding Utility Districts that are forming around the community.

The City will continue to actively analyze the construction program and make necessary improvements/modifications to ensure the protection and enhancement of the local water quality. An example of the City's commitment was the addition of the Environmental review section of the permit routing sheet. The City felt like some smaller projects, although not specifically required to be plan reviewed and inspected by the Permit, may have the potential to be overlooked. Therefore, now *all* plans are reviewed by the Environmental Programs Manager and necessary changes can be made before plans are approved. Also, the reduced grading ordinance modification demonstrates the City's commitment to reviewing as many projects as possible and integrating storm water management requirements to projects that would have been overlooked in the past.

The City, along with the other regional Copermittees, developed and is now implementing the two significant new requirements, the HMP and LID. These two programs are significant additions that will require City Staff to work with the other Copermittees to implement regional programs to address runoff from

construction projects. These new programs also include an educational component, which the City is currently developing in conjunction with the region. The City is committed to participating with the regional Copermittees to develop and implement these respective programs, even though the HMP is not expected to affect any projects within the City. The City values itself as an active Copermittee, and allocated funds to the HMP development, even though it is highly unlikely to affect any projects within the City's jurisdiction.

The City is also currently analyzing the construction inspection protocol and is considering outsourcing the inspections to a specialized consultant. The City had such great success with outsourcing the commercial/industrial inspections and Staff trainings that it is now assessing whether or not an outside consultant would be a benefit to the community and help with limited Staff resources. This will be discussed further in next year's Annual Report.

CHAPTER 4
Municipal Component

CHAPTER 4: MUNICIPAL COMPONENT (EXISTING DEVELOPMENT)

4.1 Introduction

In accordance with Permit Section F.3.a, this section of the report describes the City's efforts to prevent or reduce pollutants in runoff from municipal land use areas and activities.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of municipal facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement BMPs at municipal facilities, program accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Municipal facilities and areas within the City of Solana Beach include public parks, public buildings, streets, roads, and parking lots, a public works yard, and the MS4 system. During this reporting period, the City once again conducted a comprehensive re-evaluation of its municipal sites to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from its facilities by implementing Best Management Practices (BMPs). This was accomplished through inspections of all public facilities.

4.2 Inventory of Municipal Facilities

During this reporting period, in response to the requirements of the Permit and in an effort to improve the quality of water in the region, the City once again inventoried its municipal sites and activities. Table 4-1 presents the City's municipal facilities, by prioritization level. *There are no changes in the City's inventory of municipal sites from those submitted to the RWQCB in the City's last Annual Report.*

The City's municipal facilities include five public buildings (City Hall, Fire Station, Marine Safety Center and the community centers at La Colonia Park and Fletcher Cove), one Public Works Yard, six public parking lots, City streets and roads, the Municipal Separate Storm Sewer System (MS4) and the beach (which consists of four access locations: Del Mar Shores, Seascape Sur, Tide Beach Park, and Fletcher Cove).

Table 4-1
Existing Municipal Facilities, By Priority Level

Facility Name	Facility Address	Type of Activity	Priority
Public Works Department	1764 Highland Drive	Materials storage, fleet parking, administration	High
North Seascape Sur Surf Park	Public beach access west of Highway 101	Public beach	High
Roads, streets	Citywide	Circulation	High
MS4 System	City-wide	Storm-water conveyance system	High
Fletcher Cove Parking Lot	North end of Plaza St.	Parking	High
Distillery Parking Lot	Sierra and Lomas Santa Fe		
Solana Beach and Tennis Club	West end of Dahlia St.		
Seascape Sur Parking Lot	Seascape Sur Easement		
Del Mar Shores Parking Lot	Sierra Ave. near Del Mar Terrace		
Del Mar Beach Club East Parking Lot	Sierra Ave. east of Del Mar Beach Club Dr.		
City of Solana Beach Fire Department	500 Lomas Santa Fe	Public Building - Fire Station, fleet and fire equipment storage	Medium
City of Solana Beach City Hall	635 S. Highway 101	Public Building -Administrative	Low
Marine Safety Department, Fletcher Cove	111 S. Sierra Ave.	Public Building Administrative, marine safety equipment storage	Low
Fletcher Cove Community Center	111 S. Sierra Ave.	Public Building – Community Center	Low
La Colonia Park and Community Center	715 Valley Ave	Public Park and Building – Community Center, administrative, park	Low
Tide Beach Park	302 Solana Vista Drive	Public beach	Low
Del Mar Shores	190 Del Mar Shores	Public beach	Low

4.2.1 Inspection Frequency of Municipal Sites

The City inspects all of its municipal sites listed above on a continuous basis. The inspections address all the required inspection steps to determine full compliance. Every winter, prior to the wet season, the Public Works Yard (Yard) is given a complete inspection and all Public Works employees are given a complete storm water refresher training seminar. Also, the Public Works Crew is put through a practice run of the Wet Weather Triggered Action Plan to prepare for the upcoming wet season. At this annual inspection, the current inventory of the storm water BMPs kept on-site (gravel bags, bio-filter rolls, straw rolls, etc) is

documented and additional supplies are ordered if necessary. Visual inspections are conducted on a daily basis by the Public Works Crew.

As required by Permit Section J.3.a(3)(c)xix, the City confirms that the municipal inspections addressed all required inspection steps to determine full compliance.

Here are the specific dates and numbers of inspections for the City's municipal areas:

Public Works Yard: Weekly facility visual inspections by City Staff. Compliance inspection conducted last year on June 18, 2010.

Roads and Streets: Daily visual inspections by City Staff. Every street is swept at least once per month. Main arterial streets and collector roads are swept twice per month. These frequencies are set based on Permit requirements and the size and frequency of use by vehicles on a daily basis.

Parking Lots: Weekly visual inspections by City Staff. Every City parking lot is swept once per month. In addition, the Fletcher Cove Park parking lot is swept monthly during the summer months due to an increase in use during the summer.

MS4 System: Weekly visual inspections by City Staff. Highest priority catch basins cleaned annually (those with accumulated debris inside). All 309 catch basins and 15 unimproved channels were inspected and 26 catch basins were cleaned. Approximately 3.5 cubic yards of debris was removed from the MS4 system during this reporting period.

Fire Department: Daily visual inspection by City Staff. Compliance inspection was conducted on June 18, 2010.

City Hall: Daily visual inspection by City Staff. Compliance inspection was conducted on June 18, 2010.

Marine Safety: Daily visual inspection by City Staff. Compliance inspection was conducted on June 18, 2010.

La Colonia Community Center: Daily visual inspection by City Staff. Compliance inspection was conducted on June 18, 2010.

Beaches: Daily visual inspection by City Staff (Marine Safety Department).

4.2.2. Follow-up Activities

There were no follow-up activities required as a result of the municipal inspections. Due to the education, knowledge and constant monitoring by City Staff, no violations were detected during the compliance inspections.

All municipal facilities are implementing the necessary BMPs and all employees were properly trained. The Public Works Yard required no corrective action as everything remained in compliance. The Wet-Weathered Action Plan was successfully implemented and the employees were trained again and had a practice run prior to the beginning of the wet season.

4.2.3 Implementation of Pesticides, Herbicides and Fertilizer BMPs

As reported in last year's Annual Report, the City used to house a small amount of pesticides, herbicides and fertilizers at the Public Works Yard. However, City Staff no longer handles any pesticides, herbicides or fertilizers and does not store any of this material onsite. Instead, all applications are conducted by the City's contracted landscaping company and no material is stored at City facilities. This greatly reduces a high priority pollutant source and eliminates the potential for a release into the City's MS4.

In addition, the City has recently switched to using only organic pesticides, herbicides and fertilizers on City property. This change was approved by the City Council and additional funds are allocated to implement the program. The City is extremely proud of this transition, as the chemically produced materials can create significant water quality degradation. This major transition (including financially) was approved and encouraged by the City Council, which reflects the environmentally conscientious attitude of the community.

4.3 Pollutant Source Identification

To assist the City in determining the source of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, the municipal facilities were also identified by Watershed in the City's JURMP*. There are no changes to report in the municipal facility by watershed classification.*

During this reporting period, Staff continued to evaluate the possible types of pollution that could be generated from each municipal facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site

- Proximity to conveyance system, or environmentally sensitive areas
- Any additional activities that may affect water quality such as additional storage or new materials kept on-site

Results from the evaluation indicate that most City facilities are a low threat to water quality. Parking lots, streets and roads, and the Public Works Yard are the highest priority of municipal facilities as they could introduce pollutants into the conveyance system, which could impact water quality.

The City is committed to implementing BMPs that will reduce pollutants from parking lots, streets and roads and, in particular, the Public Works Yard. The City has installed and maintains a BioClean filter in one of the upstream catch basins that lead to the problem Seascape Sur storm drain outfall. In addition, the City installed a curb inlet screen at the same catch basin upstream from Seascape Sur to prevent debris, and possible pollutants, from entering the catch basin.

As reported in last year's Annual Report, an additional BMP catch basin inlet screen was installed in the opposite catch basin across the street as a pilot test project. This inlet screen automatically opens up during a rain event to prevent flooding, but remains in place during dry weather periods. The sturdy screen also contains a filter in the basket behind the screen to further filter out pollutants prior to entering the Seascape Sur storm drain. These two BMPs will be studied and sampling results analyzed to determine if they are effective BMPs for the problem pipe. The results will be described in more detail in Chapter 12 (Special Investigations)

The Public Works Yard is visually inspected daily and BMPs are maintained and reinforced as needed. In addition, the City utilizes results from its dry-weather-monitoring program to determine if pollutants are entering the system from its municipal facilities.

The City's 2009 Dry-Weather-Monitoring Program (DWMP) was completed by the City in September 2009. The results indicated a continuing concern at Seascape Sur, which has been an ongoing problem in the City (see discussion in Chapter 12, Special Investigations), where elevated levels of bacteria were detected. An investigation into the identification of the pollutant source is ongoing, and the City is looking into alternatives ways to address the situation. No municipal facilities were found to be contributing the pollutants.

The City utilized the information from the 2002-2009 DWMPs and the criteria established by the Permit (Order 2007-0001) to further develop its 2010 Dry-

Weather-Monitoring Program. The results of the 2010 program will not be available until after this reporting period, but if any exceedances are detected, follow-up actions will be taken immediately. The results of the 2010 DWMP will be included in Chapter 7 (IDDE) of this Report, which will be submitted separately in December 2010 as agreed to by the RWQCB Staff.

4.4 Threat to Water Quality Prioritization

The City utilized the criteria prescribed in Permit Section F.3.a. (3)(a) and (b) to prioritize the facilities based on their potential Threat To Water Quality (TTWQ) from storm water runoff. In addition, dry-weather monitoring data and previous complaint records were included in the evaluation. As noted in the City's JURMP, results from the 2009 DWMP indicated that there were no illegal discharges or illicit connections associated with existing municipal facilities. However, the City still classified its public parking lots, MS4 system, streets and roads and the Public Works Yard as *high priority* using the criteria of the Permit. Also noted in the JURMP, the City classified the beach at Seascape Sur as a *high priority* because results from historic dry-weather monitoring and Coastal Monitoring programs indicated elevated levels of bacteria (see Chapter 12, Special Investigations).

The Fire Station facility was the only municipal site classified as medium-priority, due to the types of materials stored onsite (although always indoors). The City Hall building, the Community Center at La Colonia Park, Tide Beach Park, Fletcher Cove Community Center and the Marine Safety Center facility were classified as low priority primarily due to the activities conducted at those sites.

There are no changes to report in the City's prioritization of its municipal facilities.

It should be noted that in the 2003 Annual Report, the results of the 2003 Wet Weather Monitoring Program revealed very high levels of the pesticide Diazinon within the watershed. The City focused its efforts on reducing the use of Diazinon within the City and by municipal landscaping contractors through educational activities. The City is happy to report that Diazinon was not found in any of the samples analyzed by the lab for our 2004, 2005, 2006, 2007 or 2008 dry weather programs. This is consistent with the overall trend region-wide showing that Diazinon levels have been steadily decreasing. The City can now focus on other pesticides or high priority pollutants in the ongoing effort to improve water quality in the region. This is a success story that can be celebrated by the entire region, and is a great case proving the validity of the

storm water program as a whole.

4.5 Pollution Prevention Methods

As described throughout the Municipal Component Section of the JURMP, the City has established pollution prevention methods that focus on municipal operations, including operation and maintenance of its MS4 system with the goal of preventing and reducing pollutants in runoff. The following is a list of some of the methods in place to accomplish this goal:

- Annual inspection and cleaning of the City's MS4 system
- Routine street sweeping (schedule is on the City's web site and available upon request)
- Sediment and erosion control methods (application of Visqueen, materials coverage, silt fences, etc.)
- Facility and ground maintenance conducted in a manner that would not contribute pollutants to a conveyance systems and expected to reduce pollutant runoff during storm events
- The use of bio-filter roll(s) as a PPM at municipal facilities
- The installation and maintenance of permanent treatment BMPs at City facilities (Two CDS units, pervious pavement, Sand Trap and a large Bioswale)
- Maintenance of the MS4 including routine inspections, annual cleaning and proper disposal of captured materials
- Spill response procedures (street and road spills, facility spills)
- Household Hazardous Waste Collection (Note: the City participated in a reciprocal use agreement with the Cities of Vista, Poway and Escondido for use by Solana Beach residents to recycle their household waste materials.) The City also offers a door-to-door program (more on this later in the Report).
- Installation and maintenance of two catch basin inlet filters and debris screens at ongoing problem area directly upstream from Seascape Sur beach outfall.

In the City's JURMP, the above pollution prevention methods were expanded for implementation at all City municipal facilities, depending on the type of activities conducted at each facility. To assist in developing appropriate BMPs, the facilities were categorized into the following types:

- Landscape and recreational facilities
- Roads and streets maintenance

- Public buildings
- Public Works Yard
- Parking facilities
- Storm Drain Conveyance System (MS4)

Specific BMPs were then developed for each category type identified and presented in the City's JURMP. For example, BMPs for the Public Works Yard (JURMP, Section 6) include:

- Materials storage alterations
- Visual inspections
- Improved operations and maintenance
- Good housekeeping procedures
- Preventative maintenance
- Spill prevention
- Sediment and erosion control
- Employee training
- Vehicle and equipment maintenance operation alterations
- Waste disposal and recycling
- Vehicle equipment and washing
- Storage tanks
- Outside storage

During this reporting period, the City implemented pollution prevention methods (BMPs) for each facility type based on what was presented in the City's JURMP. Municipal facilities were inspected by City Staff to ensure the implementation of BMPs was occurring.

4.5.1 Proactive Approach to Pollution Prevention – JURMP Requirements

Because of the City's proximity to the Pacific Ocean, Staff has been proactive in its approach to urban runoff and pollutant mitigation and reduction, not only during this reporting period but also prior to the implementation of the JURMP.

Annual Inspection and Cleaning of Storm Drain System

The City conducts an annual inspection of its storm drain system – citywide. Public Works staff inspects all 309 catch basins in the City and prioritize each based on the severity of sedimentation and trash build-up in accordance to the Permit**.** All catch basins that contain trash or sediment build-up in excess of the Permit requirements are cleaned using a Vactor truck. During this reporting

period, the City inspected all 309 catch basins and 15 unimproved channels. Twenty-six (26) catch basins had accumulated debris and all 26 were cleaned, resulting in 3.5 cubic yards of material removed from the storm drain system (which includes open channels, etc.). The material, primarily sediment and debris, was properly disposed of at the San Elijo Wastewater Reclamation Facility.

Special Events Vendor BMP Requirements

The City developed a "Special Events Vendor BMP Guidelines" (Appendix C) for all events that require a Special Events Permit. The guidelines include BMPs for food vendors, event coordinators and event workers. The guidelines include BMPs such as:

- Protecting all adjacent catch basins
- Trash and recycling containers required
- Portable restroom secondary containment
- No dumping into storm drains
- Proper clean-up practices (No water)

These requirements are all included in the Special Events Permit. For larger events, such as the City sponsored Fiesta Del Sol and Beach Blanket Movie Night, the City holds multiple meetings prior to the event with the organizers and all issues are discussed. The organizers are required to submit their BMP plans to the City, and City Staff monitors the events throughout their entirety. The City schedules post-event street sweeping through its street sweeping contractor for all major events.

Pet Waste Bag Dispensers

The City actively installs Pet Waste Bag Dispensers and maintains the dispensers to encourage proper pet waste disposal. Several years ago, the City placed these dispensers and signs along both sides of Sierra Avenue to encourage their use to prevent pollutants from entering the MS4 (Sierra Avenue is the street closest to the beach, and runs parallel west of Highway 101). The City implemented this BMP in response to results from its dry weather and coastal outfall monitoring, which indicated the presence of fecal bacteria at Seascape Sur. In an effort to educate the community about pet waste, the City periodically includes discussions about its pet regulations, which prohibits dogs in some locations of the City and on all beaches, in its community newsletter and recreation guide *Shorelines.* In addition, City Staff meets with property managers of the condominiums along Sierra Avenue and educated them on storm water

regulations and solicited their help in educating their residents.

The City recently completed its much anticipated Coastal Rail Trail. This trail runs parallel to Highway 101 the entire length of the City, and has become a popular walking/jogging spot for not only the residents, but their pets as well. The City required the project to include additional pet waste dispensers, and have found them to be used very frequently. In addition, the City recently completed the Fletcher Cove Park project, which is located adjacent to the ocean. One of the many environmental protection measures implemented as a part of this project was the installation of pet waste dispensers. City Staff maintains these new dispensers as well. This shows the City's proactive approach to protecting the integrity of the local waterways. This practice of requiring pet waste dispenser's at all new public projects will continue as it has been received very well by the community.

As part of the Public Works Department routine tasks, the pet bag dispensers are refilled daily. The amount of material that is prevented from entering the City's MS4 system as a result of this PPM is unknown and there is no acceptable method of estimating it, however, the City's Public Works Crew refilled approximately 1,385 bags per week during this reporting period. Here is how it compares to previous reporting periods:

- FY 08/09 – 1,380 per week
- FY 07/08 – 1,116 per week
- FY 06/07 – 1,298 per week
- FY 05/06 – 775 per week
- FY 04/05 – 625 per week
- FY 03/04 – 550 per week

The pet waste bags cost approximately $0.04 per bag, which resulted in an annual cost of $2,500 for FY 09/10.

Solana Center for Environmental Innovation

The City is proud to be associated with the Solana Center for Environmental Innovation (formerly Solana Recyclers), hereinafter referred to as Solana Center. Due in large part to the efforts of this group, the City was the first city in San Diego County to have a comprehensive *curbside* recycling program. In addition, to help educate the community, the Solana Center routinely writes articles for the City *Shorelines*. Also, Solana Center administers the City's Used Oil Recycling Program, providing education for schools, community groups and City events on

the proper disposal of used oil. For a complete listing of articles written in the *Shorelines,* please see Chapter 6, Residential Component. Finally, Solana Center Staff provides classroom presentations to Solana Beach schools educating the children on storm water issues and water quality. The presentations are free for the schools (paid for by the City) and are extremely popular. For a list of the presentations, see Chapter 8 (Education Component).

Recycling Efforts

The City takes a very proactive role in promoting recycling efforts throughout the community. In previous Annual Reports, the City would include in this section the diversion rates as reported to the California Integrated Waste Management Board (CIWMB). However, the CIWMB changed the way diversion rates are calculated and reported, so recycling percentages are no longer given. Instead, jurisdictions are given a "target" disposal rate for pounds/per person/per day based on historical disposal and recycling amounts. This can roughly be translated to recycling percentages, but as long as the City meets its designated disposal rate, it's considered 50% diversion (recycling) under AB 939. The City's 2008 (latest reporting period available) diversion rate is as follows:

- Target – 8.9 pounds per person per day
- Actual – 5.2 pounds per person per day

As you can see from the results, the City is significantly below the target rate, meaning the community is doing a tremendous job diverting waste from the landfills through means such as recycling, conservation, composting, etc. The City is extremely proud of the progress and results of its recycling efforts.

A significant effort to increase the already stellar recycling rates throughout the community was undertaken during this reporting period. The City recognized that the residential sector of the community was thoroughly committed to recycling and the results reflected this. This is due in large part to the City's transition to automated single-stream recycling a few years ago, which made it extremely convenient for residents to recycle. However, the results showed that commercial sector was not doing as well. The City analyzed its current Municipal Code to review its current requirements and identified some key areas to strengthen to help increase the commercial recycling rates. On May 12, 2010, the City Council adopted a new mandatory commercial recycling ordinance (Appendix G) requiring *all* commercial establishments to have a recycling program. The City anticipates this new requirement will have a positive impact on the overall

recycling rates once fully implemented.

As reported in last year's Annual Report, the City Council adopted a Construction and Demolition Debris Recycling Ordinance in January 2008. This ordinance is discussed in more detail in the Construction Component of this Report, however it's important to mention because it once again demonstrates the City's proactive and aggressive commitment to recycling and environmental protection.

Hazardous Materials Management Team

The City's Fire Department contracts with San Diego County Hazardous Materials Management Division and established an Emergency Response Program to contain hazardous materials that result from automobile accidents, spills, illegal dumping or any other activities within the City of Solana Beach. Generally, the County's Hazardous Materials Team handles recovery and disposal of the materials, although work crews from the City's Public Works Department also contain some small spills and are on call 24 hours a day, 7 days a week to respond to all spills that occur within City limits. All Public Works Staff has been trained to handle spills in the appropriate manner, to reduce and/or eliminate potential impacts to the City's MS4 and receiving waters.

Storm Drain Inventory and Stenciling

The City has inventoried all of its storm drain conveyance structures (inlets and catch basins). The inventory list includes addresses, cross streets and is available in GIS format. This information was then utilized to implement a program that affixed a stenciled tile at each location that reads, *"No Dumping! This drains to the ocean."* The City has successfully completed application of the tiles at *every* storm drain inlet and catch basin throughout the City. In addition, the City requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the a stencil or tile. The City constantly monitors the catch basins and if a tile is broken or has been removed, another one is immediately installed.

The City also participated with the non-profit group I Love A Clean San Diego (ILACSD) to sponsor an ongoing Tile Stenciling Program in which the City provides volunteers with a GIS map of all catch basins in the City and a box of tiles so they can compass the City and replace any tiles that are damaged or missing. This was a highly successful program/partnership that the City will continue to ensure all catch basins have tiles permanently affixed to them.

Street Sweeping

The City already had a comprehensive street sweeping program prior to the Permit and the implementation of the JURMP. The residential streets are swept once each month, while major arterial streets and collector roads are swept twice per month. In response to the comments received from the RWQCB on the FY 02/03 annual report, the City developed a form to characterize and measure the amount of material collected by the street sweeper (Appendix A). The driver of the street sweeper completes the form after every trip and it is verified by the appropriate Public Works employee.

As reported in the City's FY 2005/06 Annual Report, the City was having significant problems with its contracted street sweeping company. The contractor was not performing up to contract specifications, and the City was having a difficult time getting the proper reports from the drivers. A contractual battle ensued and documentation was not submitted. The City eventually relieved the street sweeping company of their duties and selected another contractor. The new contractor has been much more effective and responsive.

This reporting year, the amount of debris collected by the street sweeper totals 207 cubic yards, which is slightly less than last year's amount of 275 cubic yards. The relatively consistent amount of debris collected by the street sweeper can be attributed to the fact that most of the debris consists of organic materials, including leafs and green waste. There is relatively no trash collected, which is a good indication that the City, and community's, efforts at trash and litter reduction are successful. The City will continue to monitor the street sweeping debris to see if there are certain areas where trash is more prevalent and litter reduction campaigns can be implemented. However, at this time, most of the debris is organic green waste materials.

To demonstrate the City's commitment to documenting the amount of debris collected by the street sweeper and to ensure that all activities were conducted in compliance with the storm water regulations, the City included specific language in its new street sweeping contract. This language will be used in every subsequent street sweeping contract to ensure all contractors are adhering to all storm water regulations, which was a comment made by the RWQCB in its JURMP Annual Report review.

As mentioned above, and now required by the new Permit, the City sets sweeping frequencies based on the type of street. The larger, more frequently

used by vehicles, are swept more often. The streets are classified based on SANDAG's Vehicle Miles Traveled (VMT) parameters. The lesser traveled streets, like residential streets, are swept once per month. Parking lots are swept as needed, but at a minimum once per year. The other higher frequency traveled streets such as arterials and collectors are swept twice per month. A complete schedule can be found on the City's website or upon request.

The Permit requires the Copermittees to identify the total distance of curb-miles of improved streets, and highways for high, medium, and low sweeping frequencies.

High Priority (twice per month):
Lomas Santa Fe – 4.06 miles
Highway 101 – 3.89 miles
South Sierra – 1.62 miles
Stevens/Valley – 3.29 miles
Cedros – 2.63 miles

Medium Priority (once per month):
All residential streets – 90.71 miles

Low Priority (once per month):
Parking Lots – 12 total lots, 59,750 square feet

These streets were cleaned on the set schedule listed above.

The Permit also requires Copermittees to identify the total distance of curb miles swept.

The City sweeps all (100%) streets at least monthly. The high priority streets are swept twice per month. Parking lots are swept as needed, but at a minimum once per year as identified in the JURMP. The total distance swept per year is:

High Priority: 402.74 miles per year
Medium Priority: 1,088.52 miles per year
Low Priority: 717,000 square feet per year

Spill Prevention

The City's Public Works Department maintains on-site at the Public Works Yard, a 55-gallon drum and specially equipped vacuum to handle small hazardous

materials spills. The drum and vacuum are small enough to travel with the work crews and have been utilized to contain oil from an automobile accident, spillage of work-related materials (paint and debris), and collection of minor hazardous materials. In the event the material exceeds the amount that can be collected by the work crews, the City's Fire Department initiates its spill response plan (discussed above). Currently, City work crews do not have the resources to weigh the amount of material collected or to track and document the amount of material collected. Significant spills for which the work crews responded to are discussed in Chapter 7: Illicit Discharges Detection and Elimination.

Staff Trainings

As reported in previous Annual Reports, the staff trainings used to occur at the monthly citywide Staff meetings. However, these trainings had to be general in nature because of all the varying departments and staff that attended. During this reporting period, staff decided to take a more proactive approach and implement a department specific training focusing on the sections of the Permit that pertained to their respective duties. Staff felt that more focused, detailed trainings would be a much more effective approach, and this turned out to be extremely successful. During this reporting period, the City contracted out the Staff trainings to a specialized consultant, which conducted the following department specific trainings:

On June 22nd, 2010, the City's Land Development and Engineering Staff were trained on storm water issues related to their work responsibilities. The training included the following information:

1) Basic laws, regulations and permits associated with the Storm Water Program
2) Impact of Land Development on water quality (hydromodification and pollutants)
3) Discussion on Receiving Waters
4) Watersheds
5) City's Land Development processes related to the Storm Water Program
6) Low Impact Development (LID)
7) Source Control BMPs
8) Treatment Control BMPs

Based upon feedback from Staff during the training session, the City has continued to further refine its Land Development processes related to the Storm Water Program. Specifically, the City is revising its intake and processing forms and checklists to ensure that all applicants continue to fulfill the City's

requirements with respect to LID, source control and treatment control BMPs. The City plans to fully implement these forms and checklists in the 2nd quarter of FY 2010-11.

On June 24th, 2010, the City's Public Works Department was trained on storm water issues related to their work responsibilities. It is important to note that the Director of Public Works/City Engineer was in attendance, further supporting Staff and the importance of the Storm Water Program. Training included the following information:

1) Basic laws, regulations and permits associated with the Storm Water Program
2) Introduction to Urban Runoff
3) Separation of MS4 and Sanitary Sewer Systems
4) Watersheds
5) MS4 and Receiving Waters
6) Pollutants in Waterways
7) City's Storm Water Program
8) General BMPs
9) Specific BMPs related to Public Works services

This new approach was extremely successful and will be used more frequently, while ensuring that all new employees receive the general training as well when they are hired. Details about specific Staff trainings are also discussed in the Education Chapter of this Report.

Storm Water Hotline

To assist the public in directing their calls for complaints and service, the City maintains and responds to a 24-hour storm water hotline telephone recording (858) 720-4424. When the number was first established, it was checked twice each day. However, to facilitate a quicker, more effective response time, the City now links all calls to the direct extension of the City's Environmental Programs Manager. Therefore, all calls that are made to the City regarding storm water issues will be handled immediately. This has been proven very successful, as the issues are addressed immediately. This leads to much quicker responses, which result in more efficient spill response and enforcement actions. The City informs the public about the hotline number at City Council meetings, on flyers and handouts at workshops, on business cards, on educational materials and during inspections.

Materials Storage

Although only minor quantities of hazardous materials are stored at municipal facilities (as noted in the City's JURMP), the City stores those materials indoors when feasible. Only non-hazardous materials, such as Class 2 gravel, temporary stockpiles of topsoil, etc., are stored outdoors for short periods of time. When this does occur, City Staff ensures all storm water BMPs are installed around the piles and they are covered, if necessary, to ensure no discharges occur from the Public Works Yard.

Sediment and Erosion Control

The City's Public Works Department augmented the City's supply of Visqueen as a method to reduce or prevent sediment and erosion control. The Visqueen is utilized at the Public Works Yard on the sand and soil that is kept on-site. In addition, the work crews utilize bio-filter rolls to prevent runoff. As added insurance, the City's Operations Manager always orders extra erosion control BMPs before the wet season to store on-site for emergency situations. Most of these practices were instituted as a result of suggestions made by the RWQCB during their inspection in August 2002.

Storm Drain Inlet/Catch Basin Insert

The City is currently participating in an ongoing experimental application of two catch basin inserts in one problem location at Seascape Sur. The inserts are being studied to determine its effect on the elevated levels of bacteria found downstream at the storm drain outlet. Early results from the pilot program show a slight reduction in the bacteria levels at the outfall and the catch basin filters have been extremely effective in eliminating large quantities of trash and organic matter from the MS4 system. Public Work Crews empty the filters on a weekly basis and routinely remove about half a trash bag full of debris.

Smoking Ban on Public Beaches and Parks

In 2003, the City of Solana Beach jumped to the forefront of pollution prevention on a nation-wide scale. The City was the first in the nation to ban smoking at its public beaches and parks. The Ordinance (Ordinance 316, see Appendix B) bans smoking at all public beaches and parks, and is actively enforced by the Marine Safety Department and Code Enforcement Department. The public has been very responsive to this ordinance, and the City has had many requests from other jurisdictions, as far away as Australia. The City appears to be a trend setter, as the City of Los Angeles and other Orange County cities followed suit

with their own ordinances a few years ago, and most other cities in San Diego County have recently implemented their own local bans. This is a significant pollution prevention action the City has undertaken, as cigarette butts are routinely found as the most abundant type of debris collected in beach clean-ups. The impact on the local beaches will be extremely beneficial, and the City is proud to be the trend setter in another environmental arena (the City was the first jurisdiction in San Diego County to provide curbside recycling).

During this reporting period, the City approved an enhanced No Smoking Ordinance that extends further than the one listed above. On August 7th, 2009, a much more stringent ordinance was adopted by the City Council that extended the ordinance to include the following no smoking areas:

- All enclosed or unenclosed dining areas and bars
- Street Fairs
- Farmer's markets
- On, near or around the Coastal Rail Trail
- Within 20 feet of all entry ways and all enclosed areas available to and customarily used by the general public and all businesses patronized by the public
- Tot lot and Playground areas

This will, without a doubt, significantly reduce the amount of smoking outdoors in Solana Beach, and therefore reduce the amount of cigarette butts that end up in our MS4 and receiving waters. The City is excited to start implementing this ordinance and reducing the amount of pollution that comes with smoking.

Another significant pollution prevention action the City has taken, although post-reporting period, is the recent adoption of a new commercial litter abatement ordinance. On September 8, 2010, the City Council adopted Ordinance 419, which requires, among other things, all commercial businesses to develop and implement a litter reduction plan. This plan must include at least daily inspections/cleanups around their businesses up to 200 feet. This should significantly prevent litter/debris from entering the City's MS4 as it would require employees to inspect sidewalks, gutter, streets and open space up to 200 feet surrounding the property, and remove any litter they encounter.

Recycling/Trash Containers

The City, and community, places a high priority on recycling, as evidence by the extremely high recycling diversion rate, discussed previously in this Report. The

City has made a conscientious effort to increase the amount of public recycling containers over the last few years. As discussed in previous annual reports, the City has focused on placing dual trash/recycling containers at all popular public locations throughout the City, including parks, beach accesses and the Coastal Rail Trail. The City receives an annual grant through the Department of Conservation as well as an annual grant through the Regional Solid Waste Association, and these funds have been used to purchase and install the dual trash/recycling containers throughout the community. This has dramatically increased the amount of public recycling, and the City anticipates continuing this program in the coming years.

Not only is the City focusing on implementing a public recycling program, but as previously mentioned, the City implemented a large scale residential recycling program. The City, along with its waste hauler Waste Management, converted the traditional source separated recycling program to a streamlined, single stream commingled recycling program. This has been a huge success as the residential recycling rates have dramatically increased by 20%.

Plastic Bag Advertising Ban

Another progressive action the City Council took was passing an ordinance banning the use of plastic bags for advertising. The ordinance bans the popular style of advertising used by companies in which they use small plastic bags full of rocks because often times it is unsolicited and the bags never get picked up, eventually ending up in the City's MS4. This emerging type of advertising is typically conducted by small residential and commercial support businesses such as landscapers, pool cleaners, housekeepers, and handyman type services. This is another example of the City taking a proactive approach to litter in the MS4. Plastic is the number one pollutant found in the ocean worldwide.

Plastic Bag Recycling Program

A significant accomplishment that occurred during last reporting period was the implementation of a revolutionary single-use plastic bag recycling program. This unique program is an unprecedented public/private partnership between the City and Trex, Inc., a private company that makes durable, high quality plastic building materials. This partnership is believed to be the first of its kind, in which the City designates specific "drop-off" locations throughout the community in which the community can take their used plastic bags and drop them off. The City then takes these bags and compresses them into small bales that are taken

to Trex's facilities for reuse.

This is an extremely unique and highly successful program that demonstrates the City's ability and willingness to think outside the box when it comes to dealing with the single highest pollutant in the world's waterways, plastic. Currently, there are no recycling programs established in the country in which plastic bags are collected locally and processed locally into reusable, high quality products. All plastic bag recycling occurs overseas due to the lack of "washing" facilities in the United States. The amount of contamination problems with current common plastic bag recycling programs requires the bags to be shipped overseas to China, where the lack of environmental regulations brings into question the reliability of recycling the bags at all. Often times, the material ends up in the local environment anyway, so the amount of resources it takes to ship the material overseas negates the environmental benefit of recycling the bags. However, the City has fostered a relationship with a local business that guarantees the bags are properly handled and recycled. The City is extremely proud of its plastic bag recycling program, and the results to date are pretty remarkable. To date, over 475,000 bags have been recycled and prevented from reaching our local waterways.

Ensuring Implementation

To ensure that the PPMs are implemented, City staff meets periodically with all Department Directors to review the BMPs, Permit requirements and program expectations. Department Directors are responsible for ensuring that their Staff carries out the BMPs for their facilities. The City Engineer meets every Wednesday with the Operation Manager, his public works crew and the City Inspector at the Public Works Yard for safety meetings. It was decided that at these meetings, storm water issues, including BMPs, should be discussed and the Yard will be inspected to ensure compliance. The Environmental Programs Manager will also conduct random compliance inspections. During this reporting period, there were no violations observed at the City's municipal facilities and all appropriate BMPs were being properly installed and maintained.

4.6 Pollution Prevention Strategy Effectiveness

One of the issues that the City faces is developing an appropriate process to determine the effectiveness of the pollution prevention methods and strategies, (BMPs). The City is committed to developing a consistent approach that could be agreed upon by all Copermittees. It is important to collect data and analyze

results in a consistent manner – county/region wide – in order to be able to share results and draw conclusions across agencies, particularly given that water is not restricted by jurisdictional boundaries.

To address this issue, the Copermittees met several times in the fall of 2002 and in 2003 to work out a more appropriate strategy. A guidance document was prepared by the Copermittees and submitted to the RWQCB on October 16, 2003, titled *"A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs".* This guideline presents a comprehensive assessment strategy that initially focuses on programmatic assessments and moves toward water quality-based assessments to determine program effectiveness. More specifically, it addresses six levels of assessment:

Compliance with Activity-based Permit Requirements

- Changes in Knowledge/Awareness
- Behavioral Changes
- Load Reductions
- Changes in Discharge Quality
- Changes in Receiving Water Quality

The City implemented this assessment program during the last reporting period, which is described in more detail in the Effectiveness of JURMP Assessment Component of this report.

Compliance with Maintenance Activities

Tables 4-2 and 4-3 below outline the MS4, sewer system and permanent City BMPs maintenance schedules. The City has an extremely aggressive maintenance program to ensure the systems are clean and functioning properly.

Table 4-2
MS4 Maintenance Activities 2009/2010

Type	Frequency	Date	Total Number (and Distance)	Number Inspected (and Distance)	Comments
Inspection and Cleaning of MS4	Annual	Ongoing between May-October	309 catch basins– 14.5 Miles of MS4	309 catch basins- 0.5 Miles of MS4 pipe inspected	All catch basins inspected, 0.5 miles of pipe inspected (Seascape Sur) 26 catch basins were found with accumulated debris and 26 cleaned, 3.5 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15 – 0.8 miles of Unimproved Storm Drains (Brow Ditches, Channels, etc)	15 – 0.8 Miles of Unimproved Storm Drains (Brow Ditches, Channels, etc)	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.
Inspection and Cleaning of Sewer Lines	Annually (entire City)	Ongoing	Entire System	Entire System	The entire sewer system is inspected and cleaned annually, and 1/3 of the system is televised annually

The tables above represent the inspection and cleaning activities related to the City's MS4 and sewer system. As you can see, the City conducts the annual inspections of the entire MS4 as the Permit requires, but goes above and beyond the inspection and cleaning requirements with monthly unimproved storm drain (brow ditches, channels, etc) inspections and cleaning of the entire sewer system annually. The unimproved storm drains are handpicked by City Staff on an as needed basis as a result of the inspections. The City also has an aggressive sewer videoing program that televising one-third of the system each year, identifying possible leaks, infiltration into the City's MS4, grease build-up and root intrusions that may lead to sewer spills. This is an extremely aggressive sewer maintenance program, which reflects the commitment the City has to maintaining a healthy system and preventing spills into the environment.

In addition, the City has designated sewer "hot spots" that are cleaned quarterly (every three months). These "hot spots" are areas with historical problems such as heavy grease buildup, root intrusion, and flat lines that may need increased cleaning to prevent sewer backups. The program includes an aggressive "root foaming" procedure in areas with historical root intrusion problems.

Table 4-3
Municipal Treatment Control BMP Maintenance Activities 2009/2010

BMP Type	Location	Frequency	Total Number	Number Inspected	Comments
Low Flow Diverter	Fletcher Cove Park	Monthly	1	1	Low Flow Diverter is cleaned once per month and inspected daily
Sand Trap	Fletcher Cove Park	Monthly	1	1	Sand Trap is cleaned monthly

CDS Units	Fletcher Cove Park and North Rios Avenue	Monthly	2	2	The CDS units are cleaned monthly
Sewer Siphon	San Elijo Lagoon	Monthly	1	1	The siphon is cleaned monthly
Bio-Swale	La Colonia Park	Annually	1	1	The Bio-Swale is cleaned annually prior to rainy season and inspected weekly

The City has an aggressive maintenance program for all City-maintained permanent BMPs. The monthly maintenance frequency for the Sand Trap and CDS units are much higher than suggested by the manufacturer. The daily inspections of the Low Flow Diverter are conducted to ensure it is functioning at all times and redirecting the urban runoff away from the beach and into the sewer system.

RWQCB Audit – Field Inspection

In addition, the City was inspected by RWQCB staff on October 8, 2009. RWQCB staff conducted a field visit to inspect the City's permanent treatment control BMPs and to ensure the City was properly monitoring and maintaining them. City Staff met with RWQCB staff and visited all the permanent City maintained BMPs and demonstrated the cleaning operation at each one. RWQCB found that there were no violations and the City was in compliance, and issued a Facility Inspection Report (Appendix H).

4.7 New Activities and Improvements for FY 10/11

The City anticipates continuing implementing programs aimed at meeting the

requirements of the Municipal Component as specified in the JURMP. The focus will be continuing the cooperation among different departments, ensuring municipal facilities are in compliance with the Permit, and collaborating with other Copermittees. The Department Directors were required to integrate more responsibilities into positions in order to implement the Watershed Urban Runoff Management Programs (WURMP), Standard Urban Storm Water Mitigation Plan (SUSMP), Hydromodification (HMP) program and the Low Impact Development (LID) program. Because of our team approach, this transition occurred rather seamlessly. The Planning Department and Engineering Department worked closely together in implementing the respective requirements.

As mentioned previously in this Report, the new JURMP document was adopted in March 2008. This contained new elements that will require additional/modified requirements/duties of different Departments within the City. Additional Staff trainings were conducted to ensure that all Staff activities are in compliance with the new Permit and some job duties will have to be altered. Since the new Permit has now been adopted, the majority of the City's efforts will be spent implementing programs to meet the requirements of the new Permit. These changes will have to be implemented on the fly, and will require all Departments within the City to work collaboratively to accomplish the goals within the new Permit. The City is confident that the infrastructure of the City as a whole will allow for a relatively seamless transition to the requirements of the new Permit. Some of the new programs include:

- Minimum street sweeping and priority requirements
- Post-Construction BMP verification, tracking and inspections
- SUSMP implementation
- Low Impact Development (LID) development and implementation
- Hydromodification Plan (HMP) development and implementation

4.8 Summary

The City has been successful at implementing the Municipal Component of the JURMP, establishing BMPs for its municipal facilities and providing informative and meaningful Staff trainings. The City made significant advancements in the manner in which its storm water program is integrated into the routine tasks of various Staff and has developed an effective interdepartmental working relationship. The Environmental Programs Manager position has greatly

enhanced the coordination and implementation of the Permit, as well as other environmental programs (solid waste, Used Oil Recycling, HHW, etc.)

Highlights of some of the accomplishments of the City's Municipal Program Component include:

- Implementation of two comprehensive WURMPs
- Creation of an effective municipal inspection process, all municipal facilities were inspected regardless of priority
- Implementing storm water issues and inspections of Public Works Yard at weekly safety meetings between the City Engineer and Public Works Operations Manager and Staff
- Annual inspection and cleaning of the City's MS4 system resulting in 3.5 cubic yards of debris diverted from receiving water bodies
- Continued implementation of street sweeping tracking form that allows the City to evaluate the effectiveness of the street sweeping program (207 cubic yards collected).
- Provision of public pet waste bag dispensers (72,000 bags were utilized by the community during this year at a total cost of $2,880 (4 cents per bag)
- Addition of new trash/recycling receptacles in high traffic area of City to promote recycling and prevent trash/litter from entering storm drain system
- Enforcement and enhancement of Smoking Ban on Public Beaches and Parks Ordinance which has significantly reduced amount of pollution on local beaches and parks
- Implementation of weekly task for Public Works Crew to conduct weekly storm water inspections at the Public Works Yard
- Implemented scheduled cleaning of Fletcher Cove Sand Trap and CDS unit monthly
- Maintenance of Bioswale at La Colonia Community Center
- Maintenance of City-owned CDS unit at North Rios monthly
- Maintenance of two filter baskets at upstream catch basins of Seascape Sur outfall on a weekly basis
- Routine scheduled inspection and maintenance on unimproved channels on a monthly basis and after all rain events
- Routine scheduled inspection on Fletcher Cove Low Flow Diverter to ensure it is functioning properly on a daily basis
- Implementation of unique public/private plastic bag recycling program, resulting in the recycling of over 475,000 bags to date

CHAPTER 5

Industrial/Commercial Component

CHAPTER 5: INDUSTRIAL AND COMMERCIAL COMPONENT

5.1 Introduction

In accordance with Permit Section D.3.b, this section of the report describes the City's efforts to prevent or reduce industrial and commercial discharges of pollutants into the MS4 to the MEP. In compliance with the Permit, the City evaluated businesses within the City and categorized them as commercial or industrial, as noted in JURMP sections 7.0 (Industrial and Commercial Component).

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of industrial and commercial facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement and enforce BMPs at industrial and commercial sites, related accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

During the last reporting period (July 1 2009 to June 30, 2010), the City conducted a complete evaluation of the commercial and industrial facilities doing business within the City. Facilities were identified as industrial and commercial sites based on criteria required by the Permit, which included activities conducted on-site and also included a site visit for verification. The City prepared an inventory of the facilities in order to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from the facilities by implementing Best Management Practices (BMPs). The City's complete inventory is listed in the JURMP.

As a result of the new Permit, this chapter now combines two previous Chapters from the old Permit. The old Permit separated the Industrial and Commercial Sections; however, they are now combined. To keep consistency and for ease of readability, the following sections in this chapter separate the two components, so each can be analyzed according to their respective requirements.

5.2 Industrial Facilities Section

5.2.1 Inventory of Industrial Facilities

There is currently one industrial site operating within the City (Baker Iron Works). Table 3-1 presents the City's industrial facility, including its prioritization level. *There is no change in the City's inventory of industrial sites from those submitted in last year's Annual Report.*

Table 5-1
Existing Industrial Facilities

Facility Name	Facility Address	Narrative Description	SIC Code	Priority
Baker Iron Works	710 Valley Ave	Iron works / metal fabrication	3441	High

5.2.2 Pollutant Source Identification

To assist the City in identifying potential sources of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, City Staff evaluated the possible types of pollution that could be generated from each industrial facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Watershed location

Results from the evaluation concluded that the City's only industrial facility could be a potential source of pollutants (Baker Iron Works),

The conclusion that Baker Iron Works could be a potential source of pollutant discharge was due to the fact that the facility generally uses metal materials in the fabrication of structural devices. Some of their work is performed and stored outdoors and is potentially exposed to storm water, and runoff from the property can potentially enter the City's conveyance system. However, the City has worked closely with Baker Iron Works to minimize the potential for pollutants to run off their property and into the City's MS4 system. Baker Iron Works has been more than willing to work with the City to ensure compliance with the Permit, and has completed numerous tasks suggested by the City. These include:

- Permanently covering all stock piles of metal materials kept outside to shield it from rain events.

- Routine cleaning of the yard as needed but no less than weekly with a magnetic device to pick up all loose metal shavings.

- Moving all chemicals indoors to ensure that they are protected from the weather and will not run off the property and into the City's MS4 system.

- Training all staff on proper storm water BMPs and general housekeeping for all activities that may impact the City's MS4 system.

- Installation of low flow sump/infiltration structure at the northwest corner of the facility to handle all low flows from the entire facility. The low flows will enter a small drain that extends across the driveway and enters into a small infiltration well structure to prevent the water from entering the MS4. This structure has worked very well in eliminating all low flows from leaving the site. Baker Iron Works employees routinely monitor and maintain the infiltration well to ensure proper functionality.

- Permanently sealing a trench drain near the office building that previously drained directly to street. The result is that the runoff bypasses the drain and travels into the low flow sump/infiltration structure mentioned above.

The results of the 2009 dry weather program indicate that no related pollutants were found downstream from this industrial facility. This is consistent with the 2001-2008 dry-weather-monitoring program results which also indicated that no related pollutants were found downstream from this facility. The City will continue to inspect and monitor these locations in the future to further ensure that they are not contributing to downstream pollution. In addition, Baker Iron Works has agreed to forward all results from their required water quality monitoring under the Statewide General Industrial Permit to City staff, upon request, for review during rain events.

The City utilized the information from the 2009 dry-weather-monitoring program, the criteria established by the Permit, and the evaluation of the potential sources of pollutants (discussed in this chapter and Section 7 of the City's JURMP) to develop its 2010 dry weather monitoring program. Similar to last year, one site downstream and one site upstream from Baker Iron are selected for testing. The City will continue to monitor runoff downstream from this facility as long as it is in operation.

5.2.3 Threat to Water Quality Prioritization

In the City's JURMP, the industrial sites were classified as a high, medium or low priority, based on their potential threat to water quality from storm water runoff. The classification utilized criteria prescribed in Permit Section F.3.a. (3)(a), (b).

There are no changes to report in the City's classification of its industrial facilities from last year's Annual Report. Baker Iron Works is still classified as a high priority industrial site.

5.2.4 Pollution Prevention Methods

The City realized that since Baker Iron Works is the only high priority industrial site in the City, it would be prudent and feasible to monitor their site frequently. Although the Permit requires only annual inspections, the City dedicates more time to ensure that the site is always in compliance. This pro-active approach that occurred in the beginning of this Permit cycle has proved to be well worth the effort. By spending the extra time and effort the first couple of years of this Permit to get this facility into compliance have built a strong working relationship between the owners and the City. This facility has had no violations and continues to stay in compliance.

The City has confirmed that Baker Iron Works is *in compliance* with the state GISW and is currently adhering to all requirements.

Baker Iron Works employees use a large magnet to clean their entire yard as often as needed but no less than once per week. This magnet is very effective in cleaning up small steel waste products that result from daily activities. The parking lot is swept and water is never used. All chemicals are kept in a locked storage shed that has secondary containment and is kept above ground, which was a recommendation of RWQCB staff.

5.2.5 Industrial Inspections

As stated in last year's Report, during FY 07/08, the City changed its inspection practices. Prior to FY 07/08, City staff conducted all industrial and commercial facility inspections. However, in FY 2007/08, the City hired an independent contractor that specializes in storm water inspections. This change occurred due to limited staff time to conduct the inspections, as well as to provide an increased service to the residents of Solana Beach. By hiring a contractor that specializes in storm water inspections, the City, and residents, can be assured that it is

getting the highest quality service.

The City contracted out these services to Environmental Compliance Inspection Services (ECIS) again in FY 09/10. Baker Iron Works was inspected on June 2, 2010 and all designated BMPs were implemented and the facility was found to be in compliance in all areas. The inspection addressed all the required inspection steps to determine full compliance. City Staff will also continue to visually inspect the facility at least once a month, and always before the wet season and during rain events. If the City observes a non-compliant facility, the City will inform its appropriate representative at the RWQCB.

As required by Permit Section J.3.a(3)(d)vi, the City confirms that the industrial inspections addressed all required inspection steps to determine full compliance.

5.2.6 New Activities and Improvements for FY 10/11

City staff will continue to work closely with the proprietors of Baker Iron Works to 1) ensure functionality and maintenance of the BMPs, 2) ensure compliance with the City's storm water regulations and 3) educate the business owners and employees about the importance of protecting the community's water resources. In addition, if any new requirements or activities are developed targeting industrial facilities on a watershed or regional basis, the City will communicate these requirements directly to Baker Iron Works and assist them in coming into compliance.

City Staff will also monitor business license applications to ensure if another industrial facility opens up that it will be added to the inventory and inspected to ensure full compliance.

5.2.7 Summary of Industrial Section

The City has been effective at working with owners of the one industrial site to ensure compliance with Permit and City regulations. The owners have installed and properly maintained the filtration system at the northwest corner of the property to collect and infiltrate all on-site low flow runoff before it enters the MS4 system. The City has established a great working relationship with the owners/operators of the site and they have made drastic strides to maintain compliance. City Staff will continue to monitor and inspect the facility frequently to ensure compliance with the Permit. Baker Iron Works have been very responsive and immediately remedy any problems encountered during

inspections. They have gone above and beyond what is required to ensure they are in compliance with the Permit.

5.3 Commercial Facility Section

5.3.1 Inventory of Commercial Facilities

During the process of revising the JURMP, submitted in March 2008, the City updated the inventory of commercial facilities. The City selected locations based on the requirements of the new Permit, and placed higher priorities on such facilities as automotive servicing, gas stations, repair and fueling, commercial rental yards, and golf courses (high Threat To Water Quality, TTWQ). The City's JURMP inventory had 77 stationary facilities; however the inventory is updated each year as a result of the inspections. The current inventory (see Table 5-2 below) now contains 82 facilities, up from the 77 listed in the JURMP. The City will continue to update the inventory list as new businesses apply for permits or site inspections reveal changes. In addition, any facility that has the potential to release high priority pollutants into the City MS4 will be added to the list of high priority facilities.

Table 5-2 Inventory Of High Priority Commercial Facilities

Address	Street	Business	Type	Watershed
741	Academy Drive	Academy Animal Hospital	Animal Facility	San Dieguito
435	Cedros Avenue South	KMP Plumbing Company Inc.	Commercial/ Outside Storage Area	San Dieguito
659	Lomas Santa Fe	Henry's Farmers Markets	Grocery Store	San Dieguito
124	Lomas Santa Fe	Subway	Restaurant	San Dieguito
905	Lomas Santa Fe Drive	Baskin Robbins	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Caffe la Bocca	Restaurant	San Dieguito
705	Lomas Santa Fe Drive	Caspian Petroleum DBA LSF Mobil	Gas Station	San Dieguito
124	Lomas Santa Fe Drive	Chief's Burgers and Brew	Restaurant	San Dieguito
663	Lomas Santa Fe	Dixieline Lumber	Retail	San Dieguito

	Drive	Company		
911	Lomas Santa Fe Drive	Einstein Bros Bagels	Restaurant	San Dieguito
689 – D	Lomas Santa Fe Drive	Jamba Juice	Restaurant	San Dieguito
280	Lomas Santa Fe Drive	Kings' Garden	Restaurant	San Dieguito
1550	Lomas Santa Fe Drive	Lomas Santa Fe Country Club	Golf Course	San Dieguito
689	Lomas Santa Fe Drive	Panda Express #1029	Restaurant	San Dieguito
945	Lomas Santa Fe Drive	Pizza Nova Solana Beach LLC	Restaurant	San Dieguito
979	Lomas Santa Fe Drive	Samurai Japanese Restaurant	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Solana Beach Fish House	Restaurant	San Dieguito
124	Lomas Santa Fe Drive	Solana Donut House	Restaurant	San Dieguito
691	Lomas Santa Fe Drive	Togo's Eatery	Restaurant	San Dieguito
931	Lomas Santa Fe Drive	Vons Companies Inc. #2327, The	Retail	San Dieguito
136	North Cedros Avenue	Bill Smith Automotive	Auto Repair	San Dieguito
146	North Cedros Avenue	CA Auto Tech, Inc. DBA Test-Only Smog	Auto Repair	San Dieguito
128	North Cedros Avenue	D & B Automotive Specialties	Auto Repair	San Dieguito
421	North Highway 101	Clark's Auto Repair and Radiator SVC	Auto Repair	San Dieguito
243	North Highway 101	Java Depot	Restaurant	San Dieguito
435	North Highway 101	Mohawk Car Wash (Parent-CCSB Inc.)	Auto Washing	Carlsbad
369	North Highway 101	Moreland Choppers	Auto Repair	Carlsbad
135	North Highway 101	Pizza Port- Grain to Green	Restaurant	San Dieguito

445	North Highway 101	Roberto's Mexican Food Inc.	Restaurant	Carlsbad
435	North Highway 101	Shine Auto Detailing	Auto Detailer	Carlsbad
355	North Highway 101	Solana Succulents	Nursery	Carlsbad
125	North Highway 101	Station Sushi	Restaurant	San Dieguito
271	North Highway 101	T's Cafe	Restaurant	San Dieguito
221	North Highway 101	Tidewater Tavern Inc.	Restaurant	San Dieguito
225	Plaza Street	Solana Sushi	Restaurant	San Dieguito
235	S Hwy 101	El Camino Rental	Rental Yard	San Dieguito
663	San Rodolfo Drive	Panera Bread Solana Beach #4283	Restaurant	San Dieguito
665	San Rodolfo Drive	Top of the Bagel	Restaurant	San Dieguito
106	Solana Hills Drive	Carls Jr./M and N Foods LLC	Restaurant	San Dieguito
143	South Cedros Avenue	Belly Up Tavern/Wild Note Café	Restaurant	San Dieguito
330	South Cedros Avenue	Cedros Gardens, Inc.	Nursery	San Dieguito
507	South Cedros Avenue	R F McKenna Construction Company	Commercial/ Outside Storage Area	San Dieguito
132	South Cedros Avenue	Zinc Café	Restaurant	San Dieguito
731	South Highway 101	Bangkok Bay	Restaurant	San Dieguito
159	South Highway 101	Beach Grass Café	Restaurant	San Dieguito
437	South Highway 101	California Pizza Kitchen Inc.	Restaurant	San Dieguito
615	South Highway 101	Dynamite Shine	Auto Detailer	San Dieguito
647	South Highway 101	Paroli Italian Bistro	Restaurant	San Dieguito
315	South Highway 101	Nobu Gourmet Japanese Restaurant	Restaurant	San Dieguito
437	South Highway	Pacific Coast Grill	Restaurant	San Dieguito

	101			
437	South Highway 101	Rubios' Fresh Mexican Grill Inc. #13	Restaurant	San Dieguito
437	South Highway 101	Solana Beach Coffee Company	Restaurant	San Dieguito
125	South Highway 101	Waters Fine Foods to Go	Restaurant	San Dieguito
106	South Sierra Avenue	Naked Café	Restaurant	San Dieguito
126	South Solana Hills Drive	Round Table Pizza	Restaurant	San Dieguito
524	Stevens Avenue	Anne's Café and Deli	Restaurant	San Dieguito
524	Stevens Avenue	Bongiorno's New York Pizzeria	Restaurant	San Dieguito
524	Stevens Avenue	Rudy's Taco Shop ad Market	Restaurant	San Dieguito
1580	Sun Valley Road	Lomas Santa Fe Ex. Golf Course 408	Golf Course	San Dieguito
637	Valley Avenue	Daniel Morgan's Automotive	Auto Repair	San Dieguito
650	Valley Avenue	Don Chuy's Restaurant	Restaurant	San Dieguito
607	Valley Avenue	Fidel's Little Mexico Inc.	Restaurant	San Dieguito
621	Valley Avenue	Tony Jacal's Inc.	Restaurant	San Dieguito
512	Via De la Valle	Del Mar Bagel Cafe	Restaurant	San Dieguito
640	Via de la Valle	Fish Market Restaurant	Restaurant	San Dieguito
514	Via de la Valle	Pamplemousse Grille	Restaurant	San Dieguito
550	Via de la Valle	Red Tracton's Restaurant	Restaurant	San Dieguito
660	Via del la Valle	AM/PM/ Mini-Market #704	Gas Station	San Dieguito
717	S Hwy 101	Marriott Courtyard	Hotel	San Dieguito

437	S Hwy 101	Cupcake Love	Restaurant	San Dieguito
145	S Hwy 101	Masuo's Japanese	Restaurant	San Dieguito
224	S Cedros Ave	Soul and Pepper	Restaurant	San Dieguito
240	S Cedros Ave	Twisted Tart	Restaurant	San Dieguito
437	S Hwy 101	Blanca	Restaurant	San Dieguito
621	S Hwy 101	Holiday Inn Express	Hotel	San Dieguito
437	S Hwy 101	Coldstone	Restaurant	San Dieguito
691	Lomas Santa Fe	Starbucks	Restaurant	San Dieguito
937	Lomas Santa Fe	Starbucks	Restaurant	San Dieguito
150	South Acacia	Hideaway Café	Restaurant	San Dieguito
346	S Cedros Ave	Lockwood Café	Restaurant	San Dieguito
141	Lomas Santa Fe	Sam's Place	Restaurant	San Dieguito

The commercial property inventory was utilized to identify potential sources of pollution (high TTWQ), prioritize the businesses and to develop an inspection frequency program, as noted in the City's JURMP.

5.3.2 Pollutant Source Identification

Eight percent (8%) of the City's 2,211 total drainage acres (roughly 177 acres) are zoned for commercial use. Some of the areas within the City zoned for commercial use drain to environmentally sensitive water bodies and 303(d) listed waters (impaired water bodies), as noted in the City's JURMP. Some of the 303(d) listed water bodies have been identified as having *constituents of concern (COC)* or pollutants that are of particular concern to those water bodies. Table 5-3 identifies the 303(d) water bodies and COCs that are impacted by drainage from the City of Solana Beach. There is *no change* to report in the City's identification of potential pollution sources. As reported in last year's Annual Report, based on water quality data analysis of the past few years, Diazinon has been removed from the San Elijo Lagoon COC list.

Table 5-3 303(d) Water Bodies and COCs

303(d) Water Body	Constituent(s) of Concern
San Elijo Lagoon and Ecological Reserve	Coliform, sediment, nutrients
San Dieguito Lagoon (and its tributary, Stevens Creek)	Coliform, TDS
Pacific Ocean	Coliform

Using the inventory list, businesses were classified by types of activities conducted on the property in order to identify potential sources of pollution in accordance with Permit section F.3.c.(2). The Permit specified 25 possible high-priority business categories for each Copermittee. Upon review of the City's business license inventory, the high priority business categories applicable to the City of Solana Beach include automobile servicing and repair; automobile/vehicle washing; retail or wholesale fueling; pest control services; eating and drinking establishments; mobile carpet, drape, or upholstery cleaning; cement mixing or cutting; landscaping; nurseries; and golf courses.

Potential pollutants for each of the ten (10) categories identified above include, but are not limited to the following.

- *Automobile servicing and repair facilities have the potential to generate pollutants such as heavy metals (Cu, Zn, Cr, Ni, Pb), oil, grease, engine and transmission fluids, antifreeze, brake fluids, suspended solids, phosphates, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust, sand and broken glass.*
- *Automobile/vehicle washing facilities have the potential to generate pollutants such as suspended solid(s), pH, oil, grease, phosphates, heavy metals, detergents, engine and transmission fluids, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust and sand.*
- *Retail or wholesale fueling facilities (gas stations) have the potential to generate pollutants such as detergents, oil, grease, engine fluids, suspended solids, phosphates, litter, organic debris, fluids and sediments.*
- *Pest control services have the potential to generate pollutants such as harmful chemicals, pesticides, fertilizers, herbicides, nitrogen salts, and phosphorus and in particular, the chemical "Diazinon."*
- *Eating and drinking establishments have the potential to generate pollutants that occur due to improper waste disposal of oil and grease, improper*

application of pesticides, litter along sidewalks and parking lots, and sediments from equipment cleaning.

- *Mobile carpet, drape, or upholstery cleaning businesses have the potential to generate pollutants such as BOD, COD, suspended solids, organic matter, cleaning solutions, animal-related wastes, litter and organic debris along sidewalks and parking lots.*
- *Cement mixing or cutting facilities have the potential to generate pollutants such as suspended solids, oil and grease, heavy metals, hydrocarbons, solvents, and metals*
- *Landscaping and maintenance activities have the potential to generate pollutants such as sediments, oil, grease, organic matter, fertilizers, herbicides, pesticides, nitrogen salts, nitrogen and phosphorus.*
- *Nursery (greenhouse) facilities have the potential to generate pollutants such as sediments, fertilizers, herbicides, pesticides, suspended solids (roof coating), nitrogen salts, phosphorus, oil, grease and organic matter.*
- *Golf courses conduct activities that may produce pollutants associated with landscaping and maintenance activities including litter, BOD, COD, sediment, bacteria/viruses, oil/grease, heavy metals, manure, pesticides, fertilizers and detergents.*

5.3.3 2009 Dry Weather Monitoring Results

Results from the 2009 Dry Weather Monitoring Program (DWMP) were collected and analyzed by the City in September 2009 (but are already outdated at the time of this report). The 2009 program utilized the criteria established by the Permit (and the Copermittee Monitoring subcommittee). The City reviewed the results from the 2009 Dry Weather Monitoring Program looking for the pollutants listed above, and in particular, COCs described in Table 5-3. The results indicated one potential problem area. The bacterial levels at Seascape Sur outfall (which drains to the Pacific Ocean) continued to exceed the action levels established in the Permit and the IDDE investigation continued (see Chapter 12).

The City continues the non-point source investigation (see Chapter 12), and utilized the results to help design its 2010 Dry-Weather Monitoring Program. The results from the 20010 monitoring program will not be available until after this report is submitted to the RWQCB. *As a result of Addendum 2 adopted by the RWQCB in September, 2008, the 2010 Dry-Weather Monitoring results will be submitted in December, 2010.* It's worth noting that the City contracted out the 2010 DWMP services to an outside consultant that specializes in this field. The City is hoping that this will further assist the City in determining the source of the high bacteria at Seascape Sur. The results will be presented in December, 2010.

5.3.4 Threat to Water Quality Prioritization

The inventory of businesses for the City included identifying those that potentially posed a high threat to water quality (TTWQ) as set forth in the Permit and JURMP. As noted above, the City also categorized its businesses by the potential to generate the pollutants described.

The City's JURMP identified 77 stationary commercial sites, of which 67 are high priority Threat To Water Quality (TTWQ) facilities. As reported in this Annual Report, the inventory has been updated as a result of the inspections. *There are five changes to report in the number of commercial businesses within the City, from the JURMP submitted in March 2008.* The re-inventory process that occurred, as a result of the facility inspections conducted during this reporting period, revealed that the number of stationary facilities increased from 77 (as reported in last year's Annual Report) to 82. Table 5-4 (below) summarizes the stationary businesses in the City's inventory by the general description.

It is important to note that many commercial businesses change very frequently, especially restaurant facilities. The City will make inventory adjustments as inspections reveal changes are necessary. This is an ongoing procedure that will continue into further reporting periods.

Table 5-4 High Priority TTWQ Commercial Facilities by Type of Business

Type of Business	Number
Animal Services	4
Automobile servicing and repair	6
Automobile/vehicle washing	3
Retail/Grocery Stores	3
Eating and drinking establishments	59
Golf courses	2
Iron Works	1
Nurseries	2
Retail or wholesale fueling	2
Total	**82**

5.3.5 Business Community Education Campaign

City Staff has implemented an aggressive education campaign for the business community. As stated in previous annual reports, education is conducted during the annual storm water inspections. The City, along with the North County Storm Water Program (the cities of Carlsbad, Encinitas, Escondido, Oceanside, Solana Beach, San Marcos, and Vista) previously developed two commercial BMP

posters that are still being utilized. The first is aimed toward automobile repair shops and the second toward restaurants. These posters are distributed by the City's contractor (ECIS) during inspections. The business owners are required to place the posters in a noticeable location for all employees to see. On subsequent follow-up inspections, City staff or contracted inspectors check to see if they comply.

Additional educational/training tools developed to be distributed to the local businesses are the "Green Wrench Guide" and the "What's Cookin' Guide" developed by the Regional Outreach Workgroup. These guides are also distributed during site inspections as an extra training tool to help these businesses come into compliance. These guides have room designated in the back for employee to sign after they read the material to show educational compliance.

The City believes that distributing these educational tools directly to the businesses during inspections will have the greatest impact. Not only will inspectors have their undivided attention, but the City can also guarantee delivery and track which establishments have received the informational guides. Therefore, when it comes to compliance issues, the City can quickly determine who has and has not been informed of the regulations. These education tools will be discussed further in the Educational Component of this Annual Report.

By the time this inspection program was fully implemented, City Staff and contracted inspectors found that a majority of business owners were "aware" or had some "basic knowledge" of storm water requirements. The City, along with the other Copermittees in the Carlsbad Watershed, developed a knowledge/awareness rating and included it on all inspection forms. This will help better assess the overall knowledge of the business community in relation to not only other businesses in the city, but in the watershed as well. This is discussed more in the Educational Component.

5.3.6 Pollution Prevention Methods

Because of the City's proximity to the Pacific Ocean, the City has been proactive in its approach to reducing urban runoff, not only during this reporting period, but prior to the implementation of the Permit as well. For example, prior to the implementation of the original JURMP, the City had several pollution prevention methods (PPMs) in place for commercial properties, which continues through to the new JURMP during this reporting period and included, but were not limited to:

- Prohibition of all non-storm water discharges to the City's storm water conveyance system (SBMC 13.10.060).
- Measures to reduce pollutants to the maximum extent practicable (MEP) were required of business owners (SBMC §13.10.090).
- Persons owning or operating a parking lot (or impervious surface) were *required* to "clean those structure thoroughly as is necessary to prevent the discharge of pollutants to the City of Solana Beach storm water conveyance system to the maximum extent practicable, but not less than once prior to each wet season" (SBMC 13.10.090).
- The City maintained by municipal code the authority to inspect business properties for compliance with the provisions of Solana Beach Municipal Code, Chapter 13 (SBMC 13.10.110).
- Required maintenance of commercial property (trash cans covered, litter removal, etc.) and appropriate waste disposal.
- Routine articles in the citywide community newsletter, *Shorelines* to educate the community about pollution prevention (see Chapter 9).

5.3.7 New Pollution Prevention Methods

In the City's JURMP, pollution prevention methods were expanded for commercial facilities, depending on the type of activities conducted at each business. Numerous activity-specific BMPs were also developed for each business type identified. Complete tables describing the BMPs in detail are included in the City's JURMP, submitted to the RWQCB in March, 2008. *There are no changes to report with respect to BMPs designated for existing commercial properties.*

Common Commercial Property BMPs

Many of the BMPs provided to commercial property owners/managers were activity-specific to the type of business conducted on-site. However, there are several BMPs common to all commercial properties, which are described below.

Employee Training: The training of employees on proper business practices to prevent or reduce urban runoff is listed as a BMP for all businesses. Knowledge of pollution prevention methods requires instruction from one person to another, particularly as the requirements are new to many employees and given that employees handle the majority of tasks at a commercial business, staff has explained to proprietors the importance of adequate employee training.

Good housekeeping: Pollution prevention BMPs are required of most commercial facilities. Good housekeeping includes the proper disposal of waste materials and proper coverage over waste dispensers, dry sweep outdoor areas, keeping the facility in generally good repair and maintained in good operating condition to prevent deterioration of materials.

A *Spill Response Plan* (SRP) is required of most commercial facilities as noted in the JURMP. An effective SRP should prevent on-site hazardous materials from leaving the private commercial property and entering the City's storm drain conveyance system. Commercial property proprietors are being educated about an SRP and are now required during inspections by City staff.

Minimize Use of Water for Washing / Cleaning: The BMPs associated with a reduction in the use of water for washing and cleaning is suggested for most commercial facilities operating within the City. It has been common practice for many years to use power-washing methods to clean the outside of buildings, windows, and out-door eating areas at restaurants. In addition, it has been common practice by commercial property owners (and their contractors) to hose-down the sidewalks in front of their businesses to collect trash, debris, and landscaping remnants. These types of cleaning procedures use a lot of water and it is likely that the water will run off of the property and into the City streets or storm drain system, bringing with the water a significant amount of pollutants. For that reason, commercial property owners are requested to find new methods of cleaning, reduce the amount of water used, and prevent the runoff from leaving their property.

Various other activity-specific BMPs are required or suggested to commercial property owners and are listed in the City's JURMP.

Other Pollution Prevention Methods Affecting Commercial Properties

Municipal Code and General Plan Amendments

There were no changes to the Municipal Code or General Plan that affect the Industrial and Commercial Section of the Permit.

Brochures

The City worked collaboratively with other North County cities (see Chapter 9, Education Component) to jointly develop brochures in order to provide a consistent message to the community, and in particular, commercial property owners/managers. The brochures were utilized by City Staff to inform and

educate the community, including commercial businesses. Public works crews, Code Enforcement, Planning and Engineering Staff pass out brochures when an educational opportunity presented itself. Staff also visited many businesses and distributed the brochure, "*Only Rain in the Drain"* and spoke to business owners about the need for pollution prevention.

5.3.8 Ensuring Implementation through Commercial Property Inspections

During this reporting period, the City once again decided to contract out the inspection services to ensure that they are being conducted thoroughly and also to further enforce the City's grease management regulations. City Staff resources are stretched extremely thin with all the new storm water and Fats, Oils and Grease (FOG) requirements, so in order to ensure that the proper time and effort was being utilized on these important inspections, the City contracted out the services. In addition, the City wanted to continue enforcing its aggresive grease management regulations to ensure that all required eating establishments had the proper grease management devices installed and were being properly maintained. It is well documented that the number one cause of sewer spills is grease build-up, so the City is taking a pro-active approach to ensure that grease is being properly managed at all eating establishments.

The City hired Environmental Compliance Inspection Services (ECIS) again this reporting period to conduct the inspections in accordance with the new JURMP. According to last year's updated commercial inventory, the City had 74 stationary facilities, of which 64 were identified as a high "Threat To Water Quality" (TTWQ). The inspection frequency of high priority businesses for the third year of Permit implementation remained at 100% (as detailed in the new Permit). Throughout the course of the year, the City added 3 more facilities to the commercial inventory as new businesses opened, bringing the inventory up to 77 total facilities.

The City, through its contractor, visited all 77 stationary facilities, which is above and beyond the 67 inspections required by the Permit. In the course of the inspections, the contractor identified 5 more facilities and added them to the inventory. In total, the City's new inventory is at 82 total commercial establishments with 72 being high priority. The City's contractor inspected all 82 facilities, which is above and beyond the 72 required by the Permit. The commercial inspections addressed all required inspection steps to determine full compliance. The results are described below.

As required by Permit Section J.3.a(3)(d)vi, the City confirms that the commercial inspections addressed all required inspection steps to determine full compliance.

As required by Permit Section J.3.a(3)(d)ii, the City confirms that the commercial BMPs were implemented during all inspections.

5.3.9 Enforcement

As mentioned above, the City hired ECIS to conduct the facility inspections. However, the City is still responsible for the follow-up enforcement actions, if necessary. The inspection protocol consisted of ECIS conducting an initial inspection and then one follow-up if the site was out of compliance for a minor violation (trash dumpster lid open, training logs incomplete, etc.). If there is a major violation, ECIS would contact the City immediately for proper follow-up actions. If the facility was still out of compliance after the second visit, then ECIS would notify the City and City Staff would follow-up from there, taking increased enforcement actions including fines, if necessary. The results are as follows:

First Inspections:

Total Inspections: 82

Facilities in compliance after first inspection: 47

Facilities not in compliance after first inspection: 35

Follow-Up Inspections:

Total Inspections: 35

Facilities in compliance after second inspection: 25

Facilities not in compliance after second inspection: 10

The remaining 10 facilities that were still out of compliance after the follow-up inspection were handed over to the City for additional follow-up. The majority of violations were all relatively minor infractions consisting of dirty trash enclosures, grease bin areas and lack of grease trap/interceptor maintenance logs. The City followed up with meetings with the property owners and managers, and all facilities have since come into compliance. *No citations were issued as a result of the inspections.*

The complete database of commercial and industrial inspections is available upon request. The City maintains the database and will build on it as the new

Permit cycle continues.

5.3.10 Mobile Businesses

The Permit requires regulation of mobile businesses within each jurisdiction, which is a new requirement. The Permit states that each Copermittee shall develop and implement a program to reduce the discharge of pollutants from mobile businesses to the Maximum Extent Practicable (MEP). The mobile business program is being addressed on the regional level, and the City is participating in the development of the program. However, the City has always taken a proactive approach in dealing with mobile businesses, especially mobile car detailers and carpet cleaners. The City has issued several citations in the last few years to mobile businesses that do not have the necessary BMPs in place to prevent pollutants from entering the City's MS4. These violations will be described in the IDDE Chapter of this Report (Chapter 7), which will be submitted in December, 2010.

It should be noted that there are *no mobile businesses* currently in City's inventory. The Planning Department has been notified of these new requirements targeted mobile businesses, so if one applies for a business license, Planning Staff will notify the Environmental Staff. Environmental Staff will take a proactive approach to educating the new business on the storm water regulations.

5.3.11 New Activities and Improvements for FY 10/11

The City is confident that the new inspection process for commercial facilities is a significant improvement for this program. The City anticipates continuing to budget for consultant inspection services to focus on storm water and grease management device inspections. The approved FY 2010/2011 contains $7,000 to continue outsourcing the inspections. In addition, the City will continue to update the commercial facility inventory as new business licenses and inspections reveal changes.

A significant new requirement of the Permit requires the City to develop a mobile business program. As mentioned above, the new Permit requires all Copermittees to develop and implement a program to reduce discharges of pollutants from mobile businesses to the MEP. Since this affects all Copermittees, the region decided to address this on a regional scale. This has become a primary focus and the subject of its own subcommittee, of which the City is involved with. The City will continue to work with the region to develop

this program and implement it during the next reporting period.

The City will also look to improve educational materials for commercial facilities, including mobile businesses. The City is committed to working with the other North County Cities (as well as the Regional Outreach Workgroup) to collectively put together educational materials with a consistent message. Additionally, the City will work with the respective Watershed Groups to alter inspection forms or processes if a consensus is met within the group. An example of the benefit of this collaboration was the addition by the member cities in the Carlsbad Watershed Group of two assessment questions at the end of the inspection to gauge the knowledge and/or behaviors of the facility owner/manager. This was included to gain a better understanding of the level of knowledge of the responsible employees and see if their behavior changes over time. Hopefully, this will give the Copermittees a better assessment tool to analyze program strengths and weaknesses.

Another significant improvement to the program that continued during this reporting period was the addition of a higher level of grease management device inspections. As mentioned in last year's Annual Report, the City decided to contract out inspection services for commercial facilities with the intent to include grease management device inspections as well. This was the second year of the increased grease management inspections, which included whether or not the grease device was the correct size and included the correct connections. The initial inspection was simply to gauge if the necessary commercial facilities had any type of device installed, but during this reporting period, the City once again inspected to ensure the correct type and size was installed. This is extremely important as simply having a device is not sufficient is it was too small or did not include all the proper connections. The City now has two solid years of inspection data and has a great inventory of the current grease management devices throughout the community. This is just another example of the City's proactive approach in preventing sewer spills.

5.3.12 Summary of Commercial Section

The City has successfully updated its JURMP and commercial facility inventory in compliance with the Permit requirements. As a result, the City has identified commercial facilities that pose a high threat to water quality and implemented the new inspection frequencies per its new JURMP. The City has also developed an effective enforcement process and notified all high-priority businesses of required BMPs. For the most part, the businesses in this community have willingly

adapted their practices to meet the storm water regulations of the Permit.

The City has successfully updated its JURMP to reflect the new requirements of Permit Order No. 2007-0001. As such, the City has successfully developed a program to comply with all aspects of the new JURMP, and is committed to continually improve on the program in the coming years.

The City's proactive approach of patrolling the City daily and stopping at sites where potential violations may occur before there are discharges has greatly reduced the amount of NOVs and citations issued. The City has discovered that it is much more efficient and worthwhile to put forth the effort to stop a potential violation before it occurs rather than wait and deal with the consequences. So far, this proactive approach has been very successful, as most businesses appreciate City Staff working with them, instead of the normal practice of enforcement.

The City has successfully inspected 100% of its commercial businesses and anticipates continuing this procedure for the life of the Permit. The inventories will continue to be updated as new businesses open up and old ones close down, as described in the report above. This is a continuous process in which all departments at the City play a key role, and communication is vital. The City has successfully implemented measures to comply with all of the requirements in the Industrial/Commercial Component of the Permit.

CHAPTER 6
Residential Component

CHAPTER 6: RESIDENTIAL COMPONENT

6.1 Introduction

In accordance with Permit Section D.3.c, this section of the report describes the City's efforts to prevent or reduce residential discharges of pollutants into the City's MS4 to the MEP and to prevent residential discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include any proposed modifications to the City's JURMP (Section 8.0, Residential Component) including prioritization of residential areas and pollutant source identification. Results from the City's efforts to implement BMPs will also be included. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The City conducted numerous community education outreach activities, distributed flyers and door-hangers and published articles in the City's newsletter. The City continued implementation of the "Green Flash" environmental portal on its website and operated a 24-hour hotline for the community to be able to report any suspected violations or contact City Staff. In addition, the City conducted its Household Hazardous Waste (HHW) collection and recycling program, which includes door-to-door services. Finally, the City hosted many community events and distributed storm water information to residents at the City booth.

6.2 Pollution Prevention Methods

Polluted urban runoff in residential areas occur from activities associated with the following actions: automobile use, maintenance, cleaning, and repair; home and garden care (pesticides, herbicides and fertilizers); disposal of trash, pet waste, and household hazardous waste; outdoor washing activities; landscaping and home maintenance. It is imperative to prevent the pollutants that can be generated by these activities (bacteria, detergents, heavy metals, grease, oil, herbicides and pesticides) from entering the City's MS4 to the maximum extent practical.

6.3 BMP Implementation

The City continued several pollution prevention methods that reduce, prevent or mitigate the harmful pollutants in urban residential runoff. The City continued its

HHW collection program, operated a 24-hour hotline for reporting violations, sponsored community events and developed flyers, brochures, newsletter and website articles. In addition, the Copermittees continued to develop regional programs to address the residential requirements of the new Permit.

6.3.1 Hazardous Waste and Used Oil Collection and Recycling

Under the 1989 California Integrated Waste Management Act (AB939), jurisdictions are required to provide Household Hazardous Waste (HHW) collection programs to residents in order to limit the volume of HHW (used oil, paint, household cleaners, pesticides, car batteries, automobile waste, etc) that might otherwise end up in a landfill, or worse, illegally dumped. For San Diego County, the HHW program had been funded by a tipping fee until 1997, when the County of San Diego sold the landfill system to private companies.

During the FY 09/10, the City continued its partnership and the reciprocal use agreements with the cities of Vista, Poway and Escondido to provide permanent facility HHW drop-off service to City residents at a cost of $55 per vehicle. To encourage participation, the entire cost is picked up by the City.

During this reporting period, the permanent facilities were utilized by 73 participants. The total weight of the hazardous materials brought to the permanent facilities was 10,070 pounds. Additionally, the City operates a door-to-door program where, for a small co-payment of $10 per visit, a company will come directly to the resident's house to pick up the Household Hazardous Waste so that residents do not have to drive to Poway, Vista or Escondido. The door-to-door home pickup program was utilized by 187 residents. The total weight of the hazardous materials collected through the home pickup program was 28,653 pounds. The total participation in the HHW program was 260 residents and the total weight of hazardous materials was 38,723 pounds. Included in the door-to-door program is a service offered to senior citizens and homebound residents that provided free of charge, with the City paying for the service. These programs are offered to encourage the proper disposal of hazardous wastes to prevent it from entering and polluting our sensitive waterways. The program also includes the disposal of e-wastes, including TVs, computers, VCRs, fluorescent bulbs, batteries, etc.

For a complete breakdown of the types and weight of HHW disposed by the residents of Solana Beach, please see the following table:

Type	Home Pick-Up Program	Permanent Facility Program
Flammable & Poison	9,282	2,569
Acid	294	72
Base	136	75
Oxidizer	27	44
PCB-Containing	0	2
Reclaimable	12,312	2,953
Asbestos	374	74
Universal Waste	1,183	422
Electronic Waste	3,948	3,091
Aerosol Containers	987	8
Other HHW	110	760
Total (lbs)	28,653	10,070

The City keeps records of how many people utilized the program throughout the FY 09/10 and a questionnaire is provided to the participants at the time of disposal to acquire useful information such as how they heard of the program and what types of wastes were disposed. Many respondents listed local programs such as the City's newsletter "*Shorelines*", the City's website and educational brochures as the source of their knowledge of this program. Other sources include the two local trash haulers (EDCO and Coast Waste), Solana Center for Environmental Innovation, the internet, and basic word of mouth. Obviously, this bodes well for the educational work of City Staff and is a good indication that the City's educational program is effective at getting the word out to the community about environmental concerns, water quality, and opportunities to participate as the program continues to grow. Additionally, it shows the beneficial cooperation efforts between the City and its contractors.

The City is a member of the Regional Solid Waste Association (RSWA). As a member, the City participates in a multi-city agreement with EDCO Waste and Recycling Services, Inc. (EDCO). As reported earlier, the agreement resulted in a very successful program for elderly and homebound City residents to dispose of HHW at their door, *at no charge to the residents*. This provides a solution for the two largest obstacles for the elderly and homebound residents, convenience and cost, by providing home pick-up service at free of charge. This has been an

extremely effective and popular program throughout the entire community.

This agreement is necessary because the City does not have the capacity to operate its own HHW facility within its jurisdictional boundaries. Without this RSWA agreement, the residents would have very limited options in dealing with the proper disposal of HHW. This would potentially lead to the improper disposal of HHW, which would threaten the local waterways and sensitive environment. However, due to the foresight of the City government, the formation and participation in groups such as RSWA lead to increased opportunities for the community to protect the local environment. It also allows the City to subsidize the costs of disposal to assist the residents in properly disposing their HHW. For a small city like Solana Beach, becoming members of larger organizations is imperative for keeping costs down and increasing negotiation power. These programs would not be self sufficient if Solana Beach was not part of a larger organization, as the City and community receive the benefits of "strength in numbers." This has helped keep the costs for such important programs low and participation high.

The City also promotes local HHW collection events by advertising the events on the City's website and sending out Eblast email alerts to registered community members. These events typically occur at the Solana Center located in Encinitas, but the City values proper disposal of HHW, so these events located outside of the City are still publicized by the City. This is just another convenient way for residents to dispose of their HHW.

Recycling

As noted in the Introduction of this report, the City is a proactive agency working to protect and enhance the local environment. The City, with assistance from the non-profit environmental group Solana Center (formerly known as Solana Recyclers), was the first city in the county to initiate a curbside recycling program.

Assembly Bill 939 (AB 939) requires cities to divert at least 50% of their total solid waste away from landfills, and the best way to accomplish this is through recycling. As reported earlier in this Report, the City's target disposal rate of pounds per person per day was 8.9 and the actual recorded was 5.2. This is significantly below the AB 939 requirements and shows that the City's programs are working and the awareness of the residents is very high, as many of the cities in the region failed to reach their target. The process of writing the 2009 AB939 report is underway, but not completed before this report was submitted.

These numbers will be included in next year's report.

6.3.2 Annual Bulky Item Clean-up Day and Coastal Clean-Up Day

Each October, the City hosts an Annual Bulky Item Clean-up day. The City's waste hauler provides roll-off containers for the collection of large appliances, yard waste, excess trash and scrap metal. Residents only need to bring their large bulky items and excess trash to La Colonia Community Center to drop off anything that they have, to save them a trip to the landfill, and it's *free of charge*. Additionally, Solana Beach residents can call the City's trash hauler to set up an appointment for *free curbside pick-up* and disposal of up to three bulky items up to three weeks prior to the event. It is well documented that the easier and more efficient it is for people to recycle or dispose of large items the more often they will do it. By offering this convenient, local and free of charge event, the less likely residents will dispose of their large items illegally, and keeping them out of our local waterways. The Bulky Item Clean-up Day held in October 2008 resulted in 20.24 tons of trash and debris (down from 26.7 tons last reporting year) collected and properly disposed off, preventing it from ending up in the City's MS4.

Each September, the City of Solana Beach participates in the annual Coastal Clean-Up Day sponsored by the California Coastal Commission and I Love A Clean San Diego. The City hosted two sites again this year, one at Fletcher Cove and one in the San Elijo Lagoon, where residents came and spent the morning beautifying the local community. This is an extremely popular and successful event that usually draws over 200 community volunteers, and removes hundreds of pounds of litter and debris from the local lagoons and beaches.

6.3.3 24-hour Hotline

To assist residents in obtaining information, reporting suspected storm water violations or to report illegal dumping, the City operates a 24-hour "storm water hotline" during this reporting period. The hotline (858-720-4424) is available 24 hours a day, seven days a week, 365 days a year. The hotline is linked directly to the voice mail of the City's Environmental Programs Manager to increase efficiency and ensure prompt responses. This way, calls can be immediately fielded and handled in the appropriate manner.

6.3.4 Pet Waste Bag Dispensers

The City installed and maintains Pet Waste Bag Dispensers to reduce the

potential of pollution stemming from residents (and visitors) not collecting waste from their pets while walking. This was a measure added to hopefully help the high levels of fecal coliform detected at the Seascape Outfall revealed during wet and dry weather monitoring. The City has posted dispensers and signs to encourage their use. The program appears to be working very well because, during this reporting period, approximately 72,000 pet waste bags (72,000 used in FY 08/09, 67,500 in FY 07/08, 37,800 in FY 06/07, 30,000 in FY 05/06 and 26,400 in FY 04/05) were utilized by the community.

6.3.5 Education and Outreach

The City's entire education and outreach program is provided in Chapter 8 of this report. Activities associated with the educating of residents are addressed in this section, which may also be repeated in Chapter 8.

Shorelines articles:

The *Shorelines* is the City's Newsletter and Recreation Guide for community information. The newsletter is now distributed four times a year (Spring, Summer, Fall and Winter) to each resident and business within the City (up from twice annually in the past). It is one of the best methods to get information to the public about a variety of issues, the environment being a key component. The *Shorelines* newsletter always contains environmental articles and the community has come to rely on this publication as a means of keeping up with City government. This has proven to be an ideal community educational effort.

During this reporting period, the City transitioned from printing the *Shorelines* on paper to going electronic. This has resulted in a significant reduction of paper waste, and saves energy throughout the process. The City (and community) has also seen a benefit in the quality of the output, as articles can be uploaded at any time and they can become much more interactive. Hyperlinks to relevant online sources are now embedded into the articles, which have proven to be very beneficial. The transition to an electronic format has been a tremendous success and the quality and content of the newsletter is rapidly improving.

In the Summer 2009 issue, the City published the following articles relating to environmental education and storm water activities:

- Things to Remember Before Remodeling/Construction

- Storm Water Hotline
- Green Building is Here!
- Look What's Happening at the San Elijo Lagoon Conservancy
- How to Dispose of Household Hazardous Waste Safely and Easily
- Solana Center for Environmental Innovation – 25 Years of Positive Change
- Plastic Bag Recycling Program

In the Fall 2009 issue, the City published the following environmental education and storm water activities:

- Vehicle Washing Regulations – Storm Water Issues
- Construction Rainy Season Reminder – Storm Water BMPs
- Solana Beach Annual Bulky Item Clean-Up Day
- Annual Coastal Clean-Up Day
- City of Solana Beach's First Annual "Keep Solana Beach Beautiful Day"
- The City of Solana Beach's Commitment to Sustainability Update
- FREE Watershed Presentations
- Plastic Bag Recycling Program Update

In the Winter 2009/2010 issue, the City published the following articles relating to environmental education and storm water activities:

- Storm Water (NPDES) Rainy Season Construction Reminders
- Household Hazardous Waste Program Description
- FREE Watershed Presentations

- Holiday Tree Recycling/Collection Program

- The City of Solana Beach's First Ever Greenhouse Gas Emissions Baseline Inventory

The City has recently gone "green" and now only produces the *Shorelines* newsletter electronically. It is available on the City's website, and has become much more interactive and relevant (provides up-to-the-minute information that can be rapidly changed). For a copy of the articles listed above, please contact the City and Staff can provide a paper copy to review.

Brochures and Door hangers

The City collaborated with neighboring Copermittees (the cities of Del Mar, Encinitas, Oceanside, Vista, San Marcos, Escondido and Carlsbad) to develop several educational brochures. One particular brochure is referred to as the "door-hanger." The door-hanger is an excellent tool to inform groups or individual residents about pollutants that were found in their area, but may or may not have been contributed by them specifically. The door-hanger has a place for Staff to leave their business card, indicate the types of pollution found (from landscaping to pet waste) and lists various specific BMPs for eliminating street and gutter debris in their area. Staff hopes that by placing the brochures around the entire neighborhood, residents will report to the City where the discharge came from or alter their behavior to prevent the discharge from occurring again.

In addition, the City collaborated with the other North County cities and created a brochure "*Only Rain in the Drain*," which is distributed at local community events and to visitors at City Hall, the Fire Department and Community Center. The brochure reviews Best Management Practices for residents and the need to prevent or mitigate pollution to the best extent practical. The brochure also provides a consistent message because all cities in the North County use it.

Staff distributed the door hangers and brochures to residents and business owners throughout the community. These educational materials have been used by Public Works Staff, Code Enforcement Officers, and others and have been found to be an informative and effective tool. This includes those given out to neighborhoods during IC/ID and source tracking investigations, those given out individually during routine rounds around the City and any community fairs (Fiesta Del Sol, Green Fair, Movie Night, etc) or regional workshops/events (about 2 a week on average for all activities, totaling approximately 104

distributed).

School Presentations

The Solana Center conducts school presentations for the City to local schools within the City's jurisdiction. As part of both trash haulers' contracts (EDCO and Waste Management) with the City, they are required to provide funds for public outreach and education. Both haulers have chosen to contract out this work to Solana Center. Therefore, Solana Center provides school presentations regarding storm water issues to the local schools. These presentations include discussions about the importance of preventing pollution from entering the streets, gutters and storm drains. The Enviroscape model is also used during these presentations.

Additionally, the City's Park and Recreation staff conducts a summer "ecology camp" for local children to educate them on various environmental issues, including storm water and recycling. The children go on field trips and have classroom discussions. It is a very interactive classroom setting where the children are encouraged to participate and really engage in the various activities. The ecology camp is an annual program that will be utilized to educate the children in all environmental issues.

The City's Marine Safety Department also conducts school presentations that focus on ocean awareness/safety as well as being environmentally aware and responsible. The presentations focus on water quality and the benefits of protecting this valuable asset.

These are reported on in further detail in Chapter 8, Education Component.

Tile Stenciling

All storm drain catch basins in the City currently have tile markers installed. The construction standard described in the City's JURMP, with respect to the requirement that all curb inlets have a tile marker permanently affixed on the face side, continues to be enforced. All new development/construction projects are required to install tile markers on all new curb inlets. City Staff also documents broken or missing tiles when detected in the field and report back to the Public Works Operations Manager to install.

Website

As mentioned previously in this Report, the City recently unveiled a significant

upgrade to the environmental section of its website. Previously, the environmental programs were lumped into the Engineering Department page, which was somewhat difficult to locate. Now, the City has a separate page that has its own icon on the homepage. This shows the type of commitment that the City, and the community, places on the environment. The City has received many compliments regarding the website, and was even recognized by the League of Woman Voter's, North Coast San Diego County for the "Green Flash" section.

6.4 Threat to Water Quality Prioritization

During this reporting period, the City re-evaluated the drainage areas to identify those areas that potentially posed a high threat to water quality as set forth in the Permit section D.3.c(1). The areas are defined in Section 8.2.1 of the City's new JURMP.

There are *no changes* to report in the City's prioritization of high-priority residential areas from those submitted to the RWQCB in the City's new JURMP (submitted March, 2008).

6.5 Implementation of BMPs

As noted in Section 6.1 (Pollution Prevention), the City has implemented various methods to prevent pollution to the Maximum Extent Practical (MEP) standard from entering the City's MS4. The City indicated in its revised JURMP the designation of several BMPs for the High Priority Residential Areas and Activities (see JURMP, Appendix B).

One of the most significant differences between the City and other local agencies, is that runoff from residential automobile washing *is strictly enforced* by Solana Beach Code Enforcement Officials. City Staff is often dispatched to reports of people washing their cars, and City procedures allow for several warnings before a citation is given, except in the case of mobile car-washing businesses. In that instance, mobile car detailers are informed to cease their activity and immediately clean up the resulting discharge. Mobile detailers are cited for failure to comply if they refuse to discontinue or remedy the discharge. City Staff records all violators and if they encounter them violating the Permit again within the City, they are immediately given an administration citation and fine.

The City also actively enforces minimum BMPs for the following activities:

- Motor Vehicle or Boat Repair and Maintenance

- Motor Vehicle Parking
- Home and Garden Care Activities and Product Use
- Home Care and Maintenance
- Manure and Pet Waste Management
- Private Sewer Laterals and On-Site Wastewater Systems

If City staff witnesses a violation of any of the provisions above, the Administrative Fine Process will be initiated until full compliance is achieved.

6.6 Enforcement Actions

Violations of the storm water Permit and any necessary follow-up actions taken by the City are described in Chapter 7.0, Illicit Discharge Detection and Elimination (IC/ID) Component, which will be submitted in December, 2010. Since violations in the residential sector often times are discovered during an IDDE investigation, it is appropriate place to discuss the actions.

6.7 New Activities and Improvement for FY 10/11

The City is actively developing and implementing the activities described in the Residential Component of the City's new JURMP. The focus will continue to be education through the new Green Flash website, brochures, flyers, public announcements, community fairs and one-on-one contact.

The new Permit adopted in January 2007 contains increased requirements for the residential sector. This is one key area that the Permit focuses on, so new programs will have to be developed by the City to address these requirements. There is also a focus on watershed and regional programs to address the residential sector, so the City anticipates working with the other Copermittees to develop these programs cooperatively to convey a consistent message. The City will be working to continue developing and implementing these programs for FY 10/11. These programs will be discussed in more detail in the Unified Urban Runoff Mitigation Program

6.9 Summary

The City has been successful at implementing the Residential Component of the JURMP including among other things:

- Provision of public pet waste bag dispensers (approximately 72,000 bags were utilized by the community during this year).
- Collaborating with neighboring jurisdictions (CWURMP and SDWURMP) and the regional Copermittees to develop several informational items, which have been distributed at local events, to City Hall visitors, and throughout the community.
- Collaborating with all Copermittees to develop regional educational programs as required by Permit Order No. 2007-0001.
- Using and upgrading the City's website to post informative information about the City's storm water programs.
- Operating a 24-hour, 7 day a week storm water hotline that residents can report any storm water violations.
- Operating a community-wide used oil and hazardous waste collection program that offers door-to-door service for all residents. This program has been a huge success as 260 residents participated and properly disposed of 38,723 pounds of hazardous waste that might have otherwise ended up polluting the local environment.
- Conducted the Annual Bulky Item Pick-Up Day which resulted in 20.24 tons of waste collected and prevented from entering the City's MS4.
- Providing opportunities for local school presentations regarding storm water issues.

CHAPTER 7

Illicit Discharge Detection and Elimination Component

CHAPTER 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

This is a placeholder for Chapter 7, which as a result of Addendum No. 2 adopted by the Regional Water Quality Control Board on September 10, 2008, extended the reporting component of this Chapter to December 15, 2010.

CHAPTER 8
Education Component

CHAPTER 8: EDUCATION COMPONENT

8.1 Introduction

In accordance with Permit Section D.5, this section of the report describes the City's educational program that is intended to use all media as appropriate to measurably increase the knowledge of the target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience and to measurably change the behavior of target communities and thereby reduce pollutant releases to the MS4 and the environment.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. In addition, this section of the Report will include the City's planned educational efforts for the following fiscal year.

During this reporting period, the City continued implementation of the comprehensive Education Component of the JURMP. The activities were expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City. The City developed the program based on the requirements of the Permit and continued implementation during this reporting period.

The City continued implementing programs for the new requirements of the Permit. These programs are being developed on a watershed and regional level, and the City is an active participant in these workgroups. A major focus of the new Permit is on developing a regional education program, with the idea of forming a "brand" for the region where people can identify with the program as a whole. By developing and implementing a regional program, the messages will be consistent and easier to identify with. This will be further explained in the Regional URMP submitted by the County of San Diego.

During this reporting period, the cities of Carlsbad, Del Mar, Oceanside, Escondido, Vista, San Marcos, Encinitas and Solana Beach continued to develop strategies and programs to provide consistent messages to the communities of San Diego North County. While this watershed group will continue developing educational materials and activities, it will also work with the regional group as mentioned above. This group will ensure that the Copermittees represented will

participate with the "regional" message and program as required by the Permit.

As a collaborative, the group is able to obtain lower cost for educational tools (such as brochures, flyers, handouts, small tokens [pens, keys, etc.), which provides a financial benefit to the agencies and thus, the community.

The group has been able to assist each other in developing a consistent message incorporating the interests and concerns of each agency. When brochures and handouts have been created, flexibility among the agencies was required.

The collective decision-making process has also generated cooperative working relationships among the agencies, which was extremely beneficial when the development of the Watershed Urban Runoff Management Program(s) began and in working together to complete various storm-water-related tasks. The community also benefits from the consistent "one message" approach rather than six or seven different rules and regulations.

8.2 Pollution Prevention through Education – Jurisdictional Activities

The City's storm water program is comprehensive. Not only are there many components to administer jurisdictionally, there are many different programs going on simultaneously throughout the County. The City participates in jurisdictional, watershed and regional activities. Each of these has separate and distinct educational components; however the challenge is to ensure that the same general message is being spread throughout the County, with individual messages being developed by the Watershed groups and Jurisdictions based on the Constituents of Concern (COCs) for each watershed. The watershed activities have been recently defined and are in the early stages of implementation; since this is a jurisdictional report, there will not be much discussion about those in this Annual Report (For more detailed information on WURMP related activities, please see the WURMP Annual Reports for Carlsbad and San Dieguito). The regional activities have been primarily described in the Copermittee *Unified Urban Runoff Management Program Annual Report for Fiscal Year 2009-10,* which has been submitted by the County and incorporated herein by reference. However, some of the activities will be summarized in this section of the report (see Regional Activities).

8.2.1 Staff Training

One of the most important aspects of the City's educational program is to educate its Staff members. This turns out to be a relatively easy task for this City in that there are only about 70 full time Staff members. All Staff members are required to attend an all-hands citywide Staff meeting each month. Staff determined that this would be a good opportunity for training, and periodically conducts trainings at these meetings.

However, the Staff trainings were modified slightly during this reporting period. Staff determined that it would be a greater benefit to bring in an outside consultant to perform the Staff trainings. Staff hired a consultant that specializes in storm water training to get the highest possible training geared towards each department. Staff determined that with all the new Permit requirements that were coming into the implementation period, such as the HMP, LID and new SUSMP, the best thing would be to bring in a specialized consultant. Not only is the consultant conducting specialized trainings, but the consultant is also meeting with various Staff members to review their current documents and make updates where appropriate.

Here is a brief description of the specialized trainings that occurred during this reporting period:

On June 22nd, 2010, the City's Land Development Staff was trained on storm water issues related to their work responsibilities. The training included the following information:

1) Basic laws, regulations and permits associated with the Storm Water Program
2) Impact of Land Development on water quality (Hydromodification and pollutants)
3) Discussion on Receiving Waters
4) Watersheds
5) City's Land Development processes related to the Storm Water Program
6) Low Impact Development (LID)
7) Source Control BMPs
8) Treatment Control BMPs

Based upon feedback from Staff during the training session, the City has continued to further refine its Land Development processes related to the Storm Water Program. Specifically, the City is revising its intake and processing forms and checklists to ensure that all applicants continue to fulfill the City's requirements with respect to LID, source control and treatment control BMPs.

The City plans to fully implement these forms and checklists in the 2nd quarter of FY 2010/2011.

On June 24th, 2010, the City's Public Works Department was trained on storm water issues related to their work responsibilities. It is important to note that the Director of Public Works/City Engineer was in attendance, further supporting Staff and the importance of the Storm Water Program. Training included the following information:

1) Basic laws, regulations and permits associated with the Storm Water Program
2) Introduction to Urban Runoff
3) Separation of MS4 and Sanitary Sewer Systems
4) Watersheds
5) MS4 and Receiving Waters
6) Pollutants in Waterways
7) City's Storm Water Program
8) General BMPs
9) Specific BMPs related to Public Works services

The City believes that all current Staff is adequately aware of the storm water issues, and all new Staff will be trained as appropriate upon arrival. However, due to the constantly evolving storm water field, the City will continue the periodic educational trainings at future City all-hands Staff meetings and department specific trainings as appropriate.

8.2.2 Annual Beach Cleanup Days

The City of Solana Beach, in cooperation with I Love a Clean San Diego County, Inc. coordinates an annual "Coastal Cleanup Day". These events are volunteer beach and lagoon clean ups. The City had another successful event hosting two sites within the City, one at Fletcher Cove Park and the other in the San Elijo Lagoon.

8.2.3 Storm Drain Tile Marker Installation

The City inventoried all of its storm drains (inlets and catch basins) and has the locations in GIS format. The inventory list includes addresses, cross streets and a GIS bit-map. Stenciled tiles are affixed to each storm drain inlet or catch basin location, which reads, *"No Dumping! This drains to the ocean."* The City now requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the stenciled tile. An extra supply of tile markers is kept at

the City's Public Works Yard for all City projects as well as for private contractors to install on their projects to provide a consistent message throughout the City.

8.2.4 Local Community Events

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting to the participants no dumping or littering and to keep our beaches clean. The City also coordinates with Solana Center with their booth promoting proper disposal of HHW and recycling (oil included) in the City. The City passes out "*Only Rain in the Drain*" brochures, and displays the watershed poster, "We All Live in a Watershed…" Staff discusses with residents the importance of protecting the water resources and educated them on the new storm water regulations. This reporting year's Fiesta Del Sol occurred on June 5 and 6, 2010. There were approximately 60,000 visitors during this year's event, and City Staff distributed storm water brochures and informational flyers to those who visited the City's booth. In addition, the Fiesta Del Sol included a "Green Alley" which included vendors promoting environmental sustainability. This was one of the busiest areas at the Fair, and the organizers plan on making this a permanent fixture in future events. This further demonstrates the City;s commitment to sustainability and the communities demand and desire to be more environmentally sustainable.

The City's Park and Recreation Commission also put on the fifth annual Beach Blanket Movie Night on 8/22/2009 (Appendix R). This was the fifth year this community event was held and was once again a huge success. The City worked closely with the event organizers and provided recycling containers, environmental educational material pertaining to storm water issues, and used oil recycling information. The City also shared a booth with Solana Center to provide environmental education to the attendees, utilizing the Enviroscape model. It is important to note that this was the only booth allowed by the Parks and Recreation Commission because they want to promote a relaxed, friendly environment. However, because the environment is such a popular topic in Solana Beach, they allowed City Staff to have a booth to promote the environmental programs. The event was very well attended and a huge success, and will continue to occur annually. This is a great way to promote environmental awareness at a free event to the community.

The City also continued to distribute the immensely popular and effective doggie-bag dispensers that attach onto the pet leash. These dispensers had the City logo and the message, "The City of Solana Beach Reminds You To Please Pick

Up After Your Pets." The City wanted to again emphasize the importance of eliminating pet waste from the MS4, as it can be a major contributor of harmful bacteria. These dispensers were very well received and the City plans on distributing them at every community event.

8.2.5 School Programs

The Solana Center is a local organization that writes articles for the City Newsletter (*Shorelines*) and presents educational programs in the City schools regarding storm drain pollution using the watershed model (Enviroscape) and fun handouts and items for the kids. Solana Center is paid through the City's solid waste franchise agreements, as well as a HHW grant, to provide educational opportunities to the community. City Staff is in regular contact with the Solana Center and is confident that their program(s) are educational and informative for the children. The presentations are provided free to the local schools, and the information provided is invaluable.

The following table shows what school/community education has taken place during this reporting period:

School / Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
June 22-26, 2009	"Environmentally Friendly"	25	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach
July 13-17, 2009	"Time Travel"	25	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach
August 3-7, 2009	"It's a Zoo Out There…"	20	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach
August 10-14, 2009	"Water Adventures"	25	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach

8.2.6 Marine Safety Department Educational Presentations

The City of Solana Beach Marine Safety Department also conducts presentations at local schools. The lifeguards maintain an outreach program to the local schools to educate the students on ocean safety and awareness as well as

environmental education. This is a natural fit, seeing how the lifeguards provide a safe environment for the community to enjoy the valuable coastal resource, and they want to ensure that the community becomes environmental stewards to help protect this resource. The presentations focused on water quality, trash and litter control and the ecosystem as a whole. These presentations have been very well received by the schools and the lifeguards plan to continue them into the future.

8.2.7 Kids Korps Educational Presentations

During this reporting period, the City continues its valuable relationship with the local non-profit youth volunteer organization called Kids Korps. Kids Korps engages young people, age 5 through 18, in community service with the mission to instill in America's youth the spirit of giving while providing valuable education in leadership and responsibility. The City and Kids Korps have partnered to conduct park cleanups and educational presentations. The City of Solana Beach sponsors disadvantaged, underserved local children for a week during the summer where they can attend the Kids Korps camp for free, and Staff takes this opportunity educate the children on storm water pollution. The Staff presentation was so well received that Kids Korps invited back City Staff to present at two different camps, reaching over 60 children. During this reporting period, Staff contracted with Solana Center to provide the presentations, using their Enviroscape model and interactive puppet show. This activity will continue in the upcoming years with the goal to expand the cooperation with increased educational opportunities and cleanup events.

8.2.8 Targeted Education for Underserved Community

The City has a comprehensive and successful program established to reach out to the underserved community in Solana Beach. City Staff takes these opportunities to educate this sector of the community on many items, including the storm water and pollution prevention programs. The various programs are described in more detail below.

The City has a successful Junior Lifeguard Program that teaches young children about safe ocean practices, lifeguard techniques and environmental stewardship. Children come from all around the City to participate in this summer program, and space is limited. However, through a unique partnership between the City and a private company called ReRip, about ten spaces in the program are reserved for the underserved community that may not otherwise be able to afford

it. The City and ReRip cosponsor an annual environmental event (the Future of Surfing Event) in which a raffle fundraiser is conducted and the proceeds go toward giving ten children a full ride scholarship to the Junior Lifeguard Program. These children participate in all the activities and learn all about pollution prevention and storm water regulations. This is a unique partnership that the City is extremely proud of, and the community has rallied around it.

Another successful program that benefits the underserved community is the City's Summer Day Camp program. The City offers full and half-scholarships to the underserved community that would not be able to afford to send their kids to the camps for the full price. These camps have environmental themes, including pollution prevention and storm water education incorporated into the curriculum. So this has been a successful outreach attempt to the underserved community.

As mentioned above, the City's relationship with Kids Korps is another opportunity to reach the underserved community. The City, through the City Council allocated Community Grant Program, sponsors one week of Kids Korps summer camp for underserved children in the area, and the program has been a huge success. City Staff and the Solana Center give presentations and educate the children on storm water pollution prevention. The City anticipates continuing this successful relationship in the years to come.

8.2.9 Water Conservation

The City does not provide drinking water to the community of Solana Beach. That service is provided by a private company, the Santa Fe Irrigation District (SFID). The City and SFID have a great working relationship which has benefitted the community of Solana Beach in many ways.

Due to ongoing drought conditions and increased environmental regulations, water conservation has been a major focus during this reporting period. Although drinking water is a completely separate entity than storm water, they are linked in many important ways. Primarily, over-irrigation of potable water is often the transport mechanism for many pollutants during dry weather. Over-irrigation carries pollutants such as pesticides, herbicides, fertilizers, bacteria, trash, oil and grease and many other pollutants into the MS4 system. Water conservation activities can reduce the transport mechanisms thereby reducing the amount of pollutants that make it into the City's MS4 system. The City recognizes that promoting water conservation not only helps during times of drought conditions, but also helps combat storm water pollution.

The City and SFID have a regularly scheduled monthly meeting to discuss all things water related. These meetings have turned into valuable information sharing sessions where Staff from both agencies can discuss upcoming projects and report observations from the field. The City and SFID have joined together on many educational seminars and workshops for the community, both residential and commercial. The following is a list of water conservation related presentations and workshops that occurred during this reporting period.

California Friendly Landscape Classes:

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
8-15-2009	Have a Green Thumb and a Water Smart Landscape	68	Residents	Rancho Santa Fe Garden Club
9-14-2009	Designing with Water Smart Plants	61	Residents	Rancho Santa Fe Garden Club
10-7-2009	Surviving California Drought "Water Expo"	55	Residents	Rancho Santa Fe Garden Club
1-25-2010	Irrigation Basics and Maintenance	22	Landscape Professionals	Fletcher Cove Community Center
2-1-2010	Irrigation Valve Troubleshooting	31	Landscape Professionals	Fletcher Cove Community Center
2-8-2010	Water Schedules and Controller Programming	31	Landscape Professionals	Fletcher Cove Community Center
2-15-2010	Horticulture Practices	29	Landscape Professionals	Fletcher Cove Community Center
3-13-2010	California Gardening for the Water Wise Gardener	83	Residents	Quail Gardens
4-24-2010	Garden Tour and exhibit	125	Residents	Rancho Santa Fe Garden Club

8.2.10 Educational Brochures

The City has participated with the North County Educational Group to develop

many effective educational materials. The handouts and brochures are included in the Carlsbad WURMP Annual Report.

"*Only Rain in the Drain*!" describes the importance of protecting the valuable water resources and the problems that can be caused by storm water pollution. It also provides a list of BMPs to help prevent pollution. The brochure also provides valuable resource numbers: *a direct number for each jurisdiction* is provided, as well as the County's Storm water hotline. The City's Public Works Crew and Code Enforcement Officers deliver these every day to the community when small violations are observed. Since these Staff members are out in the community every day, this has proven to be an effective means of public education. Larger infractions are reported to the Engineering Department or Code Enforcement Department for follow-up.

The door-hanger *"Help!"* provides a method for Staff members to indicate to residents that pollutants were found in their neighborhood. The brochure is in English and Spanish, which is helpful to all residents. It is typically hung on a resident's door, provides a place for business cards and under the cards, (should they become misplaced) the brochure lists a contact number for each jurisdiction. The back of the brochure provides BMPs for vehicle maintenance, car washing, hazardous materials handling, recycling, litter, and sidewalk/driveway debris.

To assist the public in directing their calls for complaints and service, the City operated a 24-hour storm water hotline telephone recording (858) 720-4424. The number is connected directly to the Environmental Program Manager's voice mail (so it can still remain anonymous, if necessary), so that violations can be investigated immediately and the proper action taken *while the violation is occurring*. The City informs the public about the hotline number at City Council meetings, on flyers and handouts, and on business cards and on brochures.

8.2.11 City Newsletter (Shorelines)

Chapter 6 contains all the information regarding the *Shorelines* newsletter and gives a brief description of the articles included during this reporting period. The articles are available upon request.

8.2.12 Website

The recent upgrade of the environmental portion of the City's website has been explained previously in this Report. The new "Green Flash" has been extremely helpful in getting the word out in an effective and easy to find location. This has

been a huge success, as the website is updated constantly with new and pertinent information. The City also has an "eBlast" system that notifies interested citizens on special news and events via email, which has proven to be extremely beneficial and successful in getting out news on all City happenings, including environmental.

8.2.13 Business Community

The City has initiated several methods to educate the business community about storm water pollution prevention.

The City hires a specialized consultant (ECIS) to conduct annual commercial compliance inspections (see Commercial Component). Through the inspections, ECIS educates the business owners about the requirements of the Permit and the City's various storm water programs. Given the City's close proximity to the Pacific Ocean and sensitive lagoons to the north and south, inspectors are able to show a direct link between commercial activities and impact on water quality. Next, after the initial and follow-up inspections are conducted by the consultant, City Staff conducts follow-up enforcement inspections on those businesses still determined to be out of compliance, to ensure that the businesses are using the proper Best Management Practices to protect the City's waterways. These follow-up inspections are often conducted through scheduled meetings with the property owner and/or manager, to ensure the decision makers are present and can be held accountable. Often times, the initial inspections were conducted without prior warning, and various staff members at the facility are held responsible. Just to ensure that the right people are informed of the infractions/violations, follow-up inspections are pre-scheduled.

During this reporting period, *all* businesses that were inspected were deemed in compliance without any citations issued. As reported earlier, not all businesses were in compliance during the first inspection. Some businesses had minor issues (trash lids not closed, grease barrels not covered, etc.), however, the enforcement follow-up inspections revealed that the minor infractions had been corrected and no fines were issued.

8.2.14 Special Events Permit

As reported in previous Annual Reports, the City adopted a Special Events Permit that is required for group events (Triathlons, Block Parties, Birthday Parties, etc.) of over 25 people on public property. A storm water section is included in the Permit, with requirements regarding the event and adhering to all

storm water regulations. This has proven to be a great educational tool, as most applicants tend to ask questions about this. It is a great tool to educate the public about storm water regulations. For an example of the Special Events Permit Conditions of Approval, see Appendix S.

8.3 Pollution Prevention through Education – Regional Activities

The regional activities of the Copermittees of Order 2007-0001 are, for the most part, described in the Regional Unified Annual Report. However, for purposes of completeness, some of the activities that the City has participated in are described in this section of the Report. As mentioned above, the new Permit added significant requirements for regional education, some of which is described below. The City has been in cooperation with the other Copermittees in developing a regional educational program. Implementation of some of these programs did occur during FY 2009/2010 and will be reported on in the Regional Unified Annual Report. The City is actively working with the Regional Copermittee Education group to develop additional programs for implementation during FY 2010/2011.

8.3.1 Regional Monitoring

The City participated with the Copermittees in conducting a region-wide wet-weather monitoring program. Although no mass loading stations were located within the City, one of the testing sites (San Dieguito Lagoon) is a receiving water body from the City's drainage.

The 2009/10 program is described in detail in the Regional Unified Annual Report and in the report issued by the consultant, MEC Analytical. MEC's report will be submitted with the Unified Annual Report, and any data collected will be reported and discussed in that report.

8.3.2 Model Programs

One of the most important regional educational components is the ability the Copermittees have developed to help educate each other. This has been accomplished through routine meetings, sharing of project assignments, and most significantly, the development of model guidelines for the new JURMPs, SUSMPs, and WURMP(s). Not only have the model guidelines produced a fairly consistent message to educate the community, the model guidelines have established collaborative working relationships among municipal, county, and

state agencies, which is remarkable. In addition, this cooperation has allowed for relatively consistent program components and requirements, which especially helps the business and construction community. So, if they are doing business in various cities, they will not have to completely alter their practices to comply with the respective jurisdictions. This is especially relevant in the LID, SUSMP and general BMP programs.

8.3.3 Linking to Regional Resources

The City posts links on its website to the regional Web sites (Project Clean Water and Think Blue). In addition, the City posts information on reporting storm water violations to the City as well as County's Regional Storm water Hotline on various educational materials. Linking the community together provides continuity, extension of resources, and economies of scale for the community and the agencies, and contributes to a greater understanding that we are all interconnected and can help positively impact water quality. It's important to educate the community that water quality programs should not and do not stop at jurisdictional (or watershed) boundaries.

Through the www.projectcleanwater.org website, San Diego County has been able to link many community members to various storm water/urban-runoff-related programs of interest. In addition, the website contains information (dates, times, agendas) on meeting's that are open to the public and links to download important documents and reports.

8.4 Pollution Prevention through Education – Watershed Activities

In accordance with the Permit, each municipality is required to participate in the development and implementation of a Watershed Urban Runoff Management Program (WURMP) for each hydrological unit in which the City's jurisdictional boundaries lie. The northern portion (~10%) of the City resides within the Carlsbad Hydrological Unit and the rest of the City resides within the San Dieguito River Hydrological Unit. As such, the City is required to participate in the development and implementation of two WURMPs addressing the runoff concerns of each watershed.

During this reporting period, the City actively participated in the development and implementation of the Carlsbad and San Dieguito WURMPs, in compliance with Permit Order No. 2007-0001. The WURMP Annual Reports will be submitted in January 2011, and will detail all the activities and programs being implemented

by the respective Copermittees to address watershed issues.

In short, each WURMP contains the following 1) a time schedule for developing a comprehensive map of the entire Watershed including all land uses, the storm drain systems, and inventories of all commercial, construction, industrial, municipal and residential areas, 2) a plan to ascertain the types of pollutants that exist in the water bodies throughout the watershed and a prioritization schedule to eliminate the pollutants; 3) a program to educate the entire community about issues related to urban runoff; 4) methods to provide the community opportunities to participate in the program; 5) plans to collaborate with Copermittee agencies to strategize, review and analyze information; and 6) an effective program effectiveness strategy and methods to conduct annual evaluations. A significant addition to the responsibilities of all WURMPs is the requirement to actively implement two (2) activities each year aimed at sources to reduce high priority pollutant loading into local waterways. This will be described in greater detail in the WURMP Annual Reports (submitted in January), but mention of it here in the JURMP is appropriate.

The City has been actively involved in the implementation of both WURMPs, and has brought materials developed in each WURMP to the community (business and residents) of Solana Beach. The Carlsbad and San Dieguito WURMP workgroups have been extremely effective in implementing the requirements of the Permit. For more information on the particular activities in each WURMP, please refer to the City's individual WURMPs Annual Reports that will be submitted in January 2011.

Both of the WURMPs the City is involved with have contracted with the same consultant to assist in the development and implementation of the program requirements. This has also helped to bring consistency and continuity to the residents of Solana Beach. Although there are slight differences in the watersheds, such as the land uses and COCs, the City is able to make the implementation of the general programs more effective by having the same consultant.

8.5 New Activities and Improvements for FY 10/11

The City will continue to educate the community through participation in the Carlsbad WURMP, the San Dieguito WURMP group, the Regional Education Group, the City's new Green Flash environmental web portal, brochures, flyers, the *Shorelines*, and community/regional events. The City will also use the results

from its DWMP to inform residents in areas that the data showed elevated levels of constituents of concern or pollutants that degrade the quality of water. The City plans to develop additional educational brochures (collectively with the region) that will be industry specific. As a result of the 13267 Directive Letter, the Copermittees have changed their approach to watershed issues and plan on taking a more direct approach in implementing activities that address specific pollutants of concern and their respective sources within the watershed. Following the direction of the RWQCB, the watersheds have changed their approach to integrate more pollutant based activities in an attempt to reduce COCs in the watershed and improve water quality. This appears to be the direction the RWQCB wants to go and the Copermittees are eager to work with the RWQCB to improve the water quality throughout the region.

The City also incorporates education to school children through its relationships with the Solana Center and the Kids Korps non-profit organizations. As mentioned above, the City indirectly contracts out the Solana Center to give *free* classroom presentations to local schools. These presentations are paid for through the City's waste hauler contracts. City Staff will be more proactive in its efforts to get more presentations in the schools during FY 2010/2011. It has been an ongoing struggle to get into the schools with the demanding curriculum of the Solana Beach School District. However, City Staff has begun to meet regularly with the local School Districts on many issues, and Staff has made it a priority to get environmental issues included along with the standard discussions such as traffic safety, neighborhood sensitivity and children safety. These meetings have occurred on a quarterly basis and will continue to do so in the future. It is the City's intent to use this platform to get more storm water education into the schools.

8.6 Summary

The City has been successful at implementing a jurisdictional and watershed based educational program. With the adoption of the new Permit, a renewed focus has been placed on a large scale regional education program, in which the City has been actively involved with during this reporting period. A new regional education working group has been established by the Copermittees to develop a consistent, region-wide program, and the City of Solana Beach has been actively involved. This first step has already been accomplished, with the region adopting the "Think Blue" program developed by the City of San Diego. This gives the region a known brand of which to build a successful educational program. The details of this regional program will be described in detail in the Regional Unified

Annual Report.

On a jurisdictional level, the City is confident that with its strong messages, meaningful content and integrated programs, the community has become more knowledgeable about pollution prevention methods.

As mentioned above, the City plans to utilize the educational materials developed by the watershed and regional groups, as it has been agreed upon that a consistent message should be implemented whenever possible. However, much like the differences in the watersheds throughout San Diego County, there are slight differences in how individual cities implement and enforce certain components of the Permit. Therefore, it will always be necessary to develop some jurisdictionally specific educational materials for the benefit of the community. The types of jurisdictional educational information/activities are described throughout this Report, but a few examples include:

- BMP specific guidelines for unique construction projects, such as the Underground Utility Program (undergrounding power poles) and the Trench Resurfacing Program.
- The "Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices"
- Construction and Demolition (C&D) Debris Recycling Guide
- Classroom Presentations
- Summer Camp Presentations
- Marine Safety Presentations
- Water Conservation, Landscape Workshops
- Unique partnerships with public and private entities such as Solana Center, Kids Korps and ReRip to provide educational opportunities for the underserved population

CHAPTER 9

Public Participation Component

CHAPTER 9: PUBLIC PARTICIPATION COMPONENT

9.1 Introduction

In accordance with Permit Section D.6, this section of the report describes the City's efforts to develop mechanisms for public participation in the implementation of the JURMP and obtain the committed participation from the community. Public participation comes in two forms; participation in implementing the program and the necessary public feedback for improving the program.

In each Annual Report to the RWQCB, this section will include modifications to the City's plans to provide opportunities in which the public can participate. In addition, this section of the Annual Report will describe the City's efforts to encourage public participation during the reporting period. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Prior to the implementation of the original JURMP (February 2002), the City did not have a specific "public participation program." However, many members of the community have taken an active role in environmental issues over the years, which is most likely due to the City's proximity to the ocean and lagoons. As a result, the City was the first city in San Diego County to have curbside recycling and a smoking ban at the beaches and parks. The City has also been proactive in its approach to urban runoff and pollutant mitigation and reduction, by implementing a strict Municipal Code regarding Storm Water Management (adopted in 1993) and Grading and Excavation regulations to prevent erosion during construction.

As a result of Order 2001-01 (Permit), the City was required to design a specific program to ensure that the public had ample opportunities to learn about controlling urban runoff and assist the City in "spreading-the-word." The new Permit Order No. 2007-0001 further emphasizes the necessity of a strong public participation program.

The Public Participation Component is closely related to the Educational Component. However, while the educational program describes activities the City engaged in to educate the public, public participation will describe activities the

public engaged in (or were provided an opportunity to do so).

During this reporting period, the City began the implementation of the comprehensive Public Participation Component for the new JURMP (Section 11). The programs included activities that complemented the educational program with a goal of providing opportunities to ensure that residents, business owners, and those who do business (such as contractors) within the City, have an opportunity to learn about the negative impacts of urban runoff, understand the City's regulations relating to protecting the environment, and participate in the development of storm water program involving the community. The City developed the program based on the requirements of the Permit(s) and continued implementation during this reporting period.

9.1.1 Chapter Content

It is important that the reader understand that much of the public participation program is integrated into other program components and as such, much of the information within this chapter has been presented elsewhere in this report. However, to provide consistency in reporting, to ensure Permit compliance, and to present stand-alone chapters in this report, this section will include all opportunities for public participation, even if those same events were described in other chapters. However, for purposes of reducing redundancy, some events may be summarized in this chapter with a reference to other chapters for details.

9.2 Community Events

The following list gives a brief description of each community event that Staff coordinated and provided storm water education to the community.

9.2.1 Fiesta Del Sol

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting no dumping or littering and keeping our beaches clean. The event was held on June 5 and 6, 2010 (Appendix E). The City also passes out "*Only Rain in the Drain*" brochures and talks with residents about the importance of protecting the water resources. Solana Center also hosts a booth through the City of Solana Beach and promotes environmental stewardship, including used oil recycling and HHW information. Approximately 60,000 people attended the event this year and City staff handed out storm water educational brochures and doggie-bag dispensers

to those that visited the City booth.

The City's Clean and Green Team, consisting of environmentally conscientious members of the community, also shared the booth with City Staff. They distributed information regarding climate change, energy conservation and water quality. Since this is such a hot topic this year, it got many more people to go to the City booth this year. City Staff took this opportunity to educate more people regarding the storm water regulations. This was an extremely successful event this year.

As mentioned in the previous chapter, the event this year included a new area called the "Green Alley." This area was dedicated to all things sustainable, and included vendors and games focused on environmental sustainability. This was by far the most popular area, and the event organizers plan to include it in future years. The event organizers even planned to have the live music powered entirely by solar power. Unfortunately, it was an extremely overcast weekend so the bands power had to be augmented by biodiesel.

9.2.2 Beach Clean Up Opportunities

During this reporting period, Coastkeepers and the nonprofit group I Love A Clean San Diego (ILACSD) hosted the 25th Annual California Coastal Cleanup Day on September 19, 2009. The City hosts two locations, one at Fletcher Cove to clean the beach, and another at San Elijo Lagoon to clean up the lagoon. This provided opportunities for the public to come out and help keep the lagoons and beaches clean, while also educating them on cigarette butt pollution and water quality concerns. The results of this event are included earlier in this Report.

9.2.3 Adopt-A-Beach Program

The City works collaboratively with I Love A Clean San Diego in the Adopt-A-Beach Program. The Program consisted of local businesses and/or community groups sponsoring a beach and agreeing to clean up the beach at least 3 times a year (1 time for schools). The City thought this was a great idea and extremely beneficial to the community, so approved our beaches being included in the program. Four (4) beaches (Tide Beach Park, Fletcher Cove, Del Mar Shores and Seascape Sur are all "adopted" and are cleaned at least three times a year. The signs are updated each year with new "adoptees" and City Staff installs the new placards on the signs. This has been a very positive experience, as the City's beaches are each cleaned three times a year, resulting in at least 12

beach cleanups per year, in addition to the annual Beach Clean-Up Day.

9.2.4 Beach Blanket Movie Night

As mentioned in the previous Chapter, the City's Parks and Recreation Commission puts on a free community event called the Beach Blanket Movie Night. This event consists of placing a large movie screen at Fletcher Cove Park and showing environmentally themed movies for the community to enjoy. City Staff took this opportunity to distribute storm water educational materials, promote recycling efforts and distribute doggie-bag dispensers to members of the community. Additionally, Solana Center attends and has educational material for the community as well, including the Enviroscape model. This has turned into one of the most successful community events and is based around environmental themes. The City's "environmental booth" is the only booth allowed at this event, as the organizers recognize the importance of educating the community on environmental awareness. This is a great opportunity for the City to promote its programs as it has the community's undivided attention. This year's event was held on August 22, 2009.

9.2.5 San Elijo Lagoon Day

San Elijo Lagoon Day is an event sponsored by the City, the San Elijo Lagoon Conservancy (SELC) and the County of San Diego Department of Parks and Recreation and it's a full day of educational activities where residents can learn about the ecological reserve and how to protect the local environment. This year's event was held at the SELC's new LEED certified Nature Center and the City and the Clean and Green Committee shared a booth to educate the visitors on the City's environmental initiatives. It was a very well attended event that is scheduled to be held on an annual basis. This year's event was held on May 15, 2010.

9.2.6 Paws in the Park

"Paws in the Park" is an annual event put on by the City at the La Colonia Community Park. This community event is very well attended and the City has a booth to showcase the City's environmental programs. At this year's event, held March 14th, 2010, City Staff took advantage of the pet event to promote the importance of picking up after your pet and distributed customized "Bags on Board" doggie-bag dispensers. These items are a huge success because the event targets the pet community, those most likely to have the potential to

release bacteria into the environment. The dispensers had the City logo on it and the slogan, "The City of Solana Beach Reminds You To Please Pick Up After Your Pet." In addition, the City distributed specialized educational information regarding pet waste and the harmful effects it can have on the environment. This is an annual event and the City will continue its environmental education campaign every year.

9.2.7 Green Fair

The City held its 2nd Annual Green Fair on March 14th, 2010 at Fletcher Cove Park. The City, along with the community volunteer group the Clean and Green Team, hosted the second ever Green Fair that consists of vendors, food, music and demonstrations. The vendors are all local sustainability businesses and the demonstrations consisted of a bicycle safety course conducted by the Sheriff's Department and an alternative vehicle showcase to demonstrate alternative modes of transportation to the community. The event has grown rapidly and had over 30 booths, with approximately 500 people coming throughout the day. It was a widely successful event, and the City will continue to host a Green Fair every March.

In addition to the Green Fair, the City has officially declared March as "Sustainability Month." The City hosts activities throughout the month, many of which incorporate storm water issues because water quality is a major concern for the community. The City hosted four lectures, one each Tuesday night in the Council Chambers, all free of charge and with different environmental themes. The Sustainability Month has been so successful with the community, the City plans to make it a tradition. This shows the level of environmental support held throughout the community.

9.2.8 "Keep Solana Beach Beautiful Day"

In last year's Annual Report, the City identified a potential new event that Staff was looking into developing called the "Keep Solana Beach Beautiful Day." The event was going to piggy-back on the largely success Annual Coastal Cleanup Day and would include various other cleanup locations throughout town. Since the Annual Coastal Cleanup Day only focused on the beaches and lagoons, Staff felt that it would be beneficial to establish other locations that have had a history of litter problems. During this reporting period, Staff did accomplish its goal of developing and implementing a "Keep Solana Beach Beautiful Day" on September 19, 2009.

The great thing about this new event is that it was success largely because of the support of the community. The community volunteer group the Clean and Green Team adopted all five locations and volunteered to be the "site captains" and lead the community volunteers at each site. Staff provided the supplies and the publicity and the volunteers organized themselves. It was a hugely successful event and the community was active and supportive. This was a tremendous demonstration of public participation and cooperation between the community and the City. For a copy of the flyer, see Appendix D.

9.3 City Council Meetings

The Solana Beach City Council meetings are televised, which provides an excellent opportunity for the public to participate in local government. In addition, the City's Agenda is published online (available on its website), which provides the public an opportunity to readily access the upcoming Council reports.

Another highly successful educational opportunity is the implementation of scrolling messages during televised City Council Meetings. Staff has taken advantage of this new tool to place storm water messages and notifications for upcoming presentations, events, etc. This has proved very valuable and will continue to be utilized by City staff when appropriate.

9.4 Copermittee Meetings

Most Copermittee meetings are open to the public and provide an opportunity to participate in the process of developing the regional and local programs. All Copermittee meeting dates are available on the Project Clean Water Web site (projectcleanwater.org) and the City's website also links to the regional sites.

9.5 Collaborative Community Partnerships

The City has developed collaborative partnerships with various local organizations, which provide the public an opportunity to participate in improving water quality and/or the City's storm water program.

The City works closely with the Solana Center, which provides instruction to local school children on the harmful effects of pollution, the positive impacts of pollution prevention and the need to keep pollution out of the City's storm drains. Solana Center is contracted by the City's waste haulers through their exclusive

Franchise Agreements. Solana Center also provides the following services for the City:

Referral Phone Calls: Solana Center staff provides recycling telephone referral services for residents on the cities of Encinitas, Del Mar and Solana Beach. Solana Center staff spent time educating the community about CRV updates, composting information, and how they easily incorporate recycling activities into their daily lifestyle. Community phone inquiries included:

- The locations of local recycling centers and hours of operation.
- Redemption values of materials.
- Basic information of what materials can be or cannot be recycled in curbside recycling programs.
- General recycling information for commercial businesses.
- Services on commercial recycling carts.
- RotLine – Answering community questions regarding composting and vermicomposting.

Less Toxic Yard and Garden Workshops:
Solana Center staff conducts presentations throughout the community on alternative gardening tips that reduce the use of pesticides and herbicides. These workshops also promote the benefits of composting, further reducing the amount of trash generated and shipped to landfills as well as reducing the need for harmful chemicals/fertilizers.

Community Outreach Events

Event Dates	Name of Event(s)	Attendance at Event(s)	Description and Summary of Event(s)
June 5 and 6, 2010	Fiesta Del Sol	60,000	Annual event for the City of Solana Beach. Recycling services were coordinated in conjunction with Waste Management and EDCO Disposal Inc. Solana Center also provided education on used oil recycling, HHW and watershed presentations,
August 22, 2009	Beach Blanket Movie Night	1,000	Annual event put on by the City's Parks and Recreation Commission to provide a free night of environmentally themed movies. Educational materials were distributed at event.

March 14, 2010	Paws in the Park	500	Annual event put on by the City's Parks and Recreation Commission for pet education and games. Educational materials were distributed at event.
March 26, 2010	Green Fair	500	Annual event put on by the City consisting of local sustainability vendors. The City provides music, food, bike demonstrations, alternative vehicle showcases and highlights the City sustainability programs.
September 19, 2009	Coastal Cleanup Event	300	City hosted two locations where the community could help clean up the San Elijo Lagoon and the beaches. City also distributed storm water educational brochures at the sign up table.

California Friendly Landscape Classes:

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
August 15, 2009	Have a Green Thumb and a Water Smart Landscape	68	Residents	Rancho Santa Fe Garden Club
September 14, 2009	Designing with Water Smart Plants	61	Residents	Rancho Santa Fe Garden Club
October 7, 2009	Surviving California Drought "Water Expo"	55	Residents	Rancho Santa Fe Garden Club
January 25, 2010	Irrigation Basics and Maintenance	22	Landscape Professionals	Fletcher Cove Community Center
February 1, 2010	Irrigation Valve Troubleshooting	31	Landscape Professionals	Fletcher Cove Community Center
February 8, 2010	Water Schedules and Controller Programming	31	Landscape Professionals	Fletcher Cove Community Center
February 15, 2010	Horticulture Practices	29	Landscape Professionals	Fletcher Cove Community Center
March 13, 2010	California Gardening for the Water Wise Gardener	83	Residents	Quail Gardens
April 24, 2010	Garden Tour and exhibit	125	Residents	Rancho Santa Fe Garden Club

The above workshops are conducted by the City's private water company Santa Fe Irrigation District (SFID) in conjunction with the City. The City provides the space to conduct the workshops and promotes the workshops, including directly to the landscaping contractors known throughout the community. All classes are taught in English and Spanish, and the classes taught in Rancho Santa Fe are promoted to Solana Beach residents/businesses as well. The City requires the municipal landscaping contract company to attend the workshops for educational purposes. This shows another great collaborative success between the City and its private water company. There is a great relationship between the two entities which extends beyond these workshops. The City and SFID work together to combat residential over-watering and ensure daily tasks and repair work are conducted in compliance with the Permit. In addition, pre-construction meetings for CIP projects include SFID and storm water issues are discussed. The City and SFID are committed to working together and maintaining this great working relationship since most of the work conducted by SFID (trenching, pipe laying, water testing) are all done within the City limits.

Shorelines Newsletter:

The Solana Center writes regular articles for the City of Solana Beach on a wide range of topics, including E-waste, recycling, composting and buying recycled products. The topic is coordinated between the City's Environmental Programs Manager and the Executive Director of the Solana Center. The articles are included in the Appendices and described in more detail in other sections of this Report.

9.5.1 Solana Beach Clean and Green Community Committee

As mentioned in last year's Annual Report, the City brought together active and willing community volunteers to form the Solana Beach Clean and Green Team (Team). This Team was formed to discuss pertinent local environmental issues and develop programs to bring to City Council for implementation. City Staff meets monthly with the group to discuss the City's environmental programs and to brainstorm activities that would benefit the community as a whole. The group has evolved from a few interested residents to a steady group of about 20 members from the residential and business sector of the community. The group has assisted in the development of the following programs:

- Construction and Demolition Debris Recycling Ordinance

- Plastic Bag Advertising Ban Ordinance
- Plastic Bag Recycling program
- “Green Flash” Website
- Green Building Incentive Program
- Greenhouse Gas Baseline Emissions Inventory

The group is currently working on the following items:

- Green Business Program Over-Irrigation Reduction Program
- Solar Financing District
- Climate Action Plan
- Opposition to Prop 23
- Making the City a Bike-Friendly Community

The Team is also heavily involved in the water quality activities of the City and the NPDES program. The Team attends all community events and disseminates educational materials. This group has been extremely valuable and provides a direct link to the community, both residential and commercial. It allows all community members the opportunity to participate in City government.

9.6 Other Opportunities

9.6.1 City Storm water Hotline

The City operates a storm water hotline, (858-720-4424) which is dependent on public participation to report suspected violations of IC/IDs and to inquire about workshop information or other storm water-related needs. The hotline provides 24/7/365 access to the public so that they can report potential violations and/or call for information as soon as they are thinking about it, rather than having to wait for normal business hours. The hotline is sent directly to the Environmental Program Manager’s voice mail (it can still be anonymous) to ensure quicker and more efficient response to the public inquiries, as well as providing an outlet for

the public to discuss issues directly with City Staff.

9.6.2 Website

As reported previously in this Report, the City developed a more comprehensive environmental web portal on the City's website. The new page is titled "Green Flash" and encompasses all of the City's environmental sustainability programs. Water quality and the City's NPDES programs are prominent and have been expanded as a result of this new web portal. This shows the City's proactive approach to engaging the public and keeping them educated on the new environmental programs throughout the City as well as providing links to relevant web pages.

9.6.3 Local Media

As described in detail in Chapter 8 (please refer to that chapter for more information), the City utilized the local media to inform and educate the public. Although this is not a public-participation activity, the information provided in the articles describes the ways in which the public can get involved, if they so choose. The City has a great working relationship with the local newspapers (Solana Beach Sun and Coast News) and has many articles published with environmental themes, including storm water related issues.

The City also published several articles in the *Shorelines* Newsletter (also described in Chapter 9) inviting the public to get involved, providing details on how they can participate in protecting the region's water resources.

The City also has a contracted media relations consultant with ties to the major media outlets. This consultant is brought in on the City's major events to help promote the events and activities to a much larger audience. This is not done for every event in the community; however it is important to note that this service is available when appropriate.

9.7 New Activities and Improvements for FY 10/11

The City will continue to implement the elements of the public participation component as described in the City's JURMP. The focus will be on expanding the collaborative partnerships to include more frequent opportunities for public involvement (clean up days, events, etc.). Staff will continue to look for more opportunities to work with neighboring cities to host pollution prevention

community events through its watershed programs (ex., large-scale HHW event). Additionally, the City is working with the other Copermittees to potentially conduct additional large scale community educational events.

With the adoption of the new Permit, there is an added emphasis on developing a Regional Educational Program. This has been a main focus for the Copermittees during this reporting period. Copermittees are expected to implement a comprehensive regional program that will provide a consistent message to the entire region. As most of the new programs are geared towards improved watershed programs, this is one key area that was identified as a Regional program. Copermittees have already begun developing activities through the Regional workgroup, such as the mobile business education campaign. These programs will continue to be developed and implemented throughout the five year cycle of the new Permit. For more details on the activities the Copermittees have implemented during FY 09/10, please see the Regional Unified Annual Report.

9.8 Summary

The City has been successful at implementing numerous methods to encourage public participation. The City makes every effort to encourage the public to participate in improving water quality, recognizing that it's up to all of us.

Key opportunities for public participation included the following:

- Regional Copermittee Outreach Events
- Fiesta Del Sol
- Coastal Clean Up Day
- Keep Solana Beach Beautiful Day
- Regional Workshops
- City Council Meetings
- Copermittee meetings
- Collaborative community partnerships (SFID, Solana Center, Kids Korps)
- Contacts through the City's Storm water hotline, City website
- Beach Blanket Movie Night
- San Diego County Fair
- San Elijo Lagoon Day
- Paws In The Park Community Event
- Formation of the Clean and Green Community Committee
- Annual Green Fair

CHAPTER 10
Fiscal Analysis Component

CHAPTER 10: FISCAL ANALYSIS

10.1 Introduction

In accordance with Permit Section J.1(k), this section of the report describes the resources that the City utilizes to finance the various components of the storm water program. Effective programs require adequate funding to implement planned activities. The fiscal analysis will evaluate the expenditures necessary to accomplish the activities of the City's program.

The Standardized Fiscal Analysis Method and Format (Fiscal Analysis Method) was collaboratively developed and adopted by the Copermittees in January 2009 in accordance with sections G, J.1.a(3)(k) and J.1.c(1)(d) of NPDES Order No. R9-2007-0001. The Fiscal Analysis Method document was submitted to the San Diego RWQCB by January 31, 2009, as Attachment 1 of the Regional Urban Runoff Management Plan (RURMP) Annual Report for 2008-2009. As a result, the City of Solana Beach is utilizing the format and guidelines described in the Fiscal Analysis Method for this reporting period.

10.2 General Budget Information

The City's Budget for FY 09/10 was presented to the Solana Beach City Council and approved at a public hearing held on June 24, 2009. There were no significant additions to the budget for FY 09/10. However, due to many of the economic issues facing governmental organizations, Departments were requested to prepare budgets with at least a 5% decrease in their materials, supplies, and service categories.

The City's NPDES program is primarily implemented by the Public Works Department's Environmental Services. Environmental Services is responsible for the coordination of all storm water related tasks. Therefore, the majority of the reported projected expenditures included in this section are part of the Environmental Services Program's FY 09/10 budget, which is approximately 8% of the total FY 09/10 Public Works Department budget.

10.3 Fiscal Analysis Methods

The City of Solana Beach utilized the format and guidelines included in the Fiscal Analysis Method for reporting purposes; however, there were a few adjustments made due to how the City of Solana Beach tracks expenditures. These adjustments are described in the relevant sections below.

10.4 Fiscal Analysis Results

The City's FY 09/10 jurisdictional (JURMP), watershed, (WURMP), and regional (RURMP) projected expenditures for the implementation of the Municipal Permit requirements are summarized in the table below.

FY 09/10 Projected Expenditures	
Jurisdictional Component	
Administration	96,552
Development Planning	15,075
Construction	32,635
Municipal	132,920
Industrial and Commercial	22,000
Residential, Education, and Public Participation	47,000
IDDE	64,000
Jurisdictional Total	**410,182**
Watershed Component	
Carlsbad Watershed	19,440
San Dieguito Watershed	19,440
Watershed Total	**38,880**
Regional Component	
Total Copermittee Cost Share for the City of Solana Beach (including regional and special investigations monitoring costs)	22,698
Additional Regional Costs	11,440
Regional Total	**34,138**
Total Costs	**$483,200**

10.4.1 JURMP Expenditures

The City utilized the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, due to the implementation overlap of some of the City's municipal permit components; it is difficult to separate out individual component costs. As a result, the expenditures for residential, education, and public participation are reported as one expenditure category. Additionally, since the City does not explicitly track expenditures by municipal permit component for its budgeting purposes, in many cases estimated

percentages were utilized to allocate expenditures into the appropriate municipal permit component categories.

A total of $410,182 was projected to be expended in FY 09/10 for the implementation of JURMP activities. An overview of the expenditures reflected in JURMP activity components is described below.

10.4.1.1 Administration

Activities identified in this component represent labor and non-labor expenditures for materials, supplies, equipment, or tools that are not otherwise incorporated into other expenditure categories, general administrative functions (e.g., program planning, budgeting, staff supervision), and program assessment and reporting.

10.4.1.2 Development Planning

Activities identified in this component represent labor and non-labor expenditures related to issuance or oversight of permits or of plans (e.g., permit counter support, plan checks, permit or application processing), project planning and engineering (e.g. project design specifications, capital improvement projects).

10.4.1.3 Construction

Activities identified in this component represent labor and non-labor expenditures related to construction site inspections and enforcement.

10.4.1.4 Municipal

Activities identified in this component represent labor and non-labor expenditures related to maintenance inspections of streets, roads, catch basins and inlets, open channels, and the MS4, municipal facility inspections, street and parking lot sweeping, catch basins and inlets, open channels, and MS4 cleaning, and municipal BMP implementation. Additionally, this category includes the expenditures for non-emergency fire-fighting flows, if applicable.

10.4.1.5 Industrial and Commercial

Activities identified in this component represent labor and non-labor expenditures related to evaluation and enforcement of program requirements at industrial and commercial sites or sources (e.g. routine inspections and complaint investigations).

10.4.1.6 Residential, Education, and Public Participation

Activities identified in these components represent labor and non-labor expenditures related to investigation and enforcement of residential areas or activities, staffing outreach events, development and production of outreach materials, and any expenditures associated with waste collection and recycling (e.g. HHW, used oil).

10.4.1.7 Illicit Discharge Detection and Elimination

Activities identified in this component represent labor and non-labor expenditures related to the identification and elimination of illicit discharges or connections, enforcing the City's storm water ordinance, and any expenditures related to monitoring programs (e.g. Dry weather monitoring, coastal storm drain monitoring, special investigations, field or sampling equipment, materials and supplies).

10.4.2 WURMP Expenditures

The City utilized the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City of Solana Beach expenditures and do not account for any expenditure disbursed by other Copermittees included in the watershed(s).

A total of $38,880 was projected to be expended in FY 09/10 for the implementation of WURMP activities. The amount also includes costs for the implementation of applicable TMDLs (Revised Project I – Twenty Beaches and Creeks in San Diego Region development and San Elijo Lagoon TMDL investigation).

10.4.3 RURMP Expenditures

The City utilized the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City of Solana Beach expenditures and do not account for any expenditure disbursed by other Copermittees in the region.

A total of $34,138 was projected to be expended in FY 09/10 for the implementation of RURMP activities.

10.5 Funding Sources

The City primarily finances its Storm Water Management Department via revenues from an NPDES solid waste fee that was initiated in 2004. The City went through a long, arduous process to establish a long-term funding source to ensure the program would be sufficiently financed from 2004 through 2007. The City was sued by the Howard Jarvis Taxpayer's Association (HJTA), and the fee was put to a vote of the community. In September 2007, property owners in Solana Beach voted in favor of the fee which ultimately results in the City having a funding source to maintain, enhance, and ensure the long-term future of the NPDES program at the City. For more information on the City's NPDES Solid Waste Fee, please see the City's website at http://www.cityofsolanabeach.org.

The City's voter approved Solid Waste Fee does not cover 100% of the Storm Water Program expenditures. The City also utilizes the General Fund to assist in supporting some elements of the City's NPDES program. The General Fund is supported by major revenue sources that include property tax, the local portion of the sales tax and use tax, transient occupancy tax.

CHAPTER 11
Effectiveness Assessment Component

CHAPTER 11: EFFECTIVENESS ASSESSMENT COMPONENT

11.1 Introduction

In accordance with Section J.3.(l) of the Permit, each Copermittee is required to develop a long-term strategy for assessing the effectiveness of the various components of its Jurisdictional and Watershed Urban Runoff Management Programs (URMPs). The City will perform an annual effectiveness assessment to specifically assess:

- Each significant jurisdictional activity/BMP or type of jurisdictional activity/BMP implemented;
- Implementation of each major component of the JURMP (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination and Education); and
- Implementation of the JURMP as a whole

During this reporting period, the City has continued implementation of all components of the Permit. This section will assess the effectiveness of the JURMP, and discuss all strengths and weaknesses of the City's program. Since the City's JURMP was submitted in March 2008, this Report will be the second full year of implementation and it will be difficult to effectively assess the new programs. Most of the new programs are still in the early stages of implementation, therefore this section will report on any significant results from the programs implemented under the old Permit Order No. 2001-01 and any programs that have been developed and implemented during the second full year under Permit Order No 2007-0001.

11.2 "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs"

The Copermittees developed an assessment document titled, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs." This document was prepared after discussions with the RWQCB in which the Board stated that the Copermittees needed a better method to assess the effectiveness of the JURMP. This document was approved by the RWQCB and will be used to assess all future programs, or until another method is agreed

upon. The document addresses six levels of assessment:

1. Compliance with Activity-Based Permit Requirements
2. Changes in Knowledge/Awareness
3. Behavioral Changes
4. Load Reductions
5. Changes in Discharge Quality
6. Changes in Receiving Water Quality

The levels of assessment have been combined into three rather than six categories for this reporting period because it is easier to assess the programs when they are combined into these three categories. Level 1 includes modified assessment tables from the JURMP. Level 2 and 3 are combined and discuss the program strengths (accomplishments and outcomes) for each component. Level 4, Load Reductions, is still being assessed as to the proper way to address this (possibly TMDLs) and so is only briefly discussed, and Level 5 and 6 are combined to attempt presenting a water quality assessment.

The strategy uses both quantitative and qualitative measures of program effectiveness.

In addition, during the development of the WURMPs, the cities worked tirelessly to develop a meaningful method to assess *that* program for its impact on water quality – not just whether or not the program components were implemented, but more importantly, the ability to find a way to measure the link between activities and improved water quality, if it exists.

The WURMP program effectiveness strategy incorporated all of the elements of a meaningful method to assess impact, incorporated public comments, collaborative writing, thinking and designing, and in the end, is a good start at learning how to meaningfully determine the value of the storm water program activities. The City anticipates that over time, the results of a well-thought-out meaningful assessment will provide the region important information from which program activities can be designed and modified, rather than implementing program activities and hoping the activities have the expected impact. The

individual WURMP program assessments can be found in the upcoming WURMP Annual Report submittals (January 2011).

11.3 Level 1: Compliance with Activity-Based Permit Requirements

A table that summarizes the activities tracked by City Staff, which demonstrates compliance with the requirements of the Permit, can be found in Appendix Z. Additionally, narratives explaining the City's efforts regarding compliance can be found in the individual components of this Annual Report.

11.4 Levels 2&3: Changes in Knowledge/Awareness and Behavioral Changes

This section is broken up into each component of the JURMP and presents a summary of the changes in knowledge/awareness and behavioral changes. Each section discusses the accomplishments for the component and discusses future improvements.

Municipal Component

Program Strengths: During this reporting period, City staff again inspected *all 309 of the City's catch basins* and 15 unimproved channels and cleaned every one that appeared to have trash or sediment accumulated in the basins. Public Works Staff cleaned 26 catch basins and removed approximately 3.5 cubic yards of material from its storm drain system. The City also manages an active Beach Cleaning Schedule and maintains several different permanent BMPs throughout the City (the most significant structural BMPs being the bioswale located at La Colonia Community Center, the Low-Flow Diverter, CDS Unit and Sand Trap at Fletcher Cove and the CDS Unit at the north end of North Cedros).

For a discussion regarding the qualitative accomplishments of the City's Municipal Component (major accomplishments, educational and outreach activities, new activities or improvements to be implemented next year) see Chapter 2 of this report.

Table 11-1 Municipal Inspections

Activity	Quantity	Units	Comments
Number of high priority municipal facilities (*buildings*)	1	n/a	Inspected high priority facility (PW Yard) weekly at Engineering Safety Meeting held at Public Works Yard. Annual inspection conducted on 6/18/10 and facility also inspected prior to rainy season. See Chapter 2 of this Report.
Number of high priority municipal facilities (*parking lots*)	6	n/a	Visually Inspected weekly by PW staff. Cleaned monthly by street sweeper. See Chapter 2 of this Report.
Number of high priority municipal facilities (*other*)	3	n/a	One park (inspected 6/18/10), all city streets and roads (daily), and the MS4 (annually).
Number of high priority municipal facilities targeted for inspection (buildings and parking lots)	10	n/a	See above.
Number of high priority municipal facilities inspected	10	n/a	The Public Works Yard and all parking lots.
Number of medium and low priority municipal facilities inspected	5	n/a	Fire Department, Marine Safety Center, Fletcher Cove Community Center, City Hall and La Colonia Community Center inspected annually. All inspections occurred on 6/18/10.
Quantity of material removed from MS4 and beach	3.5	Cubic Yards	This is the amount of material the City collected from its annual cleaning of the MS4 and the beach. All 309 catch basins and 15 unimproved channels were inspected, 26 catch basins were cleaned, which was 100% of the catch basins that had accumulated trash/debris inside.
Quantity of debris removed that had potential to enter MS4 (i.e. street sweeping, litter removal)	207	Cubic yards	This information provided by daily reports from street sweeping contractor.

The City's Public Works Crew is immensely knowledgeable when it comes to storm water issues. Since the crew consists of only five people, it is very easy to educate them on an ongoing basis. They are all very aware and conscientious of the storm water regulations and are eager to report any violations in the field to the appropriate staff. The Public Works Crew is a vital part of the Storm Water Team, because they are always out in the field, and they have become the eyes and ears of the program. They have weekly tailgate meetings with the City Engineer and City Inspector at the Public Works Yard where they discuss, among other things, the storm water regulations and visually inspect the Yard.

As reported earlier in the Report, the City did hire a specialized consultant to perform department specific trainings. This was an item listed as an "area of improvement" in last year's Annual Report. The City accomplished this goal and held a specialized Public Works Staff Training on June 24, 2010. Some of the items discussed were:

1) Basic laws, regulations and permits associated with the Stormwater Program
2) Intro to Urban Runoff
3) Separation of MS4 and Sanitary Sewer Systems
4) Watersheds
5) MS4 and Receiving Waters
6) Pollutants in Waterways
7) City's Stormwater Program
8) General BMPs
9) Specific BMPs related to Public Works services

In addition, the City's specialized consultant conducted an additional training for all other City Staff, but primarily focused on the Engineering and Planning Department Staff. All Staff from those two departments were required to be there, and there was 100% participation. This training was held on June 22, 2010 and the items discussed were:

1) Basic laws, regulations and permits associated with the Stormwater Program
2) Impact of Land Development on water quality (hydromodification and pollutants)
3) Discussion on Receiving Waters
4) Watersheds
5) City's Land Development processes related to the Stormwater Program

6) Low Impact Development (LID)
7) Source Control BMPs
8) Treatment Control BMPs

The amount of cooperation between the various City departments has proven to be very successful, with each department willing to implement the storm water regulations into their daily activities.

As reported in last year's Annual Report, one of the improvement areas for this component would be to conduct more department specific educational presentations. The City accomplished this goal, but it will continue to be a high priority activity. This has proven to be very successful and is highly encouraged by the Department Directors. It is anticipated with the continued development and implementation of the new Permit requirements that more education of City Staff will be required. This will most likely occur with more department specific presentations to detail any changes or additions to department specific activities required in the Permit.

The Environmental Programs Manager will analyze the new requirements and develop appropriate presentations to City Staff, and will report on these in next year's Annual Report.

Additionally, as a result of the RWQCBs response letter to FY 03/04 Annual Report, the City now calculates and tracks the total amount of material collected by their street sweeping activities. This initially was a difficult task, as the City contracts out the street sweeping to a private company, but after some discussions with both the RWQCB staff and the contractor, a solution was worked out. The amount of material collected is now documented weekly by the street sweeper, and is verified by the City's Public Works Crew. This information is reported in this Annual Report and will be documented in the years to follow to see if a trend can be verified to assess the effectiveness of the program. Additionally, as reported in last year's Annual Report, City Staff ensured that the new street sweeping contract contained language that mandates that this activity is done on a continuous basis. So far, the activity has been very successful as data that is quantifiable is now collected and will be useful in load reduction calculations in the future (as enough data is collected).

<u>Improvement Areas:</u> City Staff is confident that all aspects of the Municipal Component are being adequately addressed, although they realize that things could always be improved. Some improvement areas may be additional

educational sessions with City Staff, to reinforce the importance of the Permit and how it affects their everyday activities (especially with the adoption of the new Permit). Increased inspections on Municipal facilities may be conducted to ensure compliance at all times. And finally, more detailed investigations into the "problem" catch basins, if any, which may require cleaning every year. If any of these catch basins exist, then a more aggressive litter/trash campaign may be conducted to nearby residences or businesses in hopes of a load reduction in the catch basin. Additionally, the Environmental Programs Manager will commit to ensuring all new employees are educated as soon as they start employment. This will help them in adjusting their daily activities immediately to comply with the requirements of the Permit.

One important action that occurred post-reporting period but is worth mentioning is the adoption of a strengthened litter reduction ordinance. Ordinance 419 was adopted by City Council on September 8, 2010 and, among other things, required commercial businesses to develop and implement a Litter Reduction Program for their property. The ordinance required, at a minimum, that all commercial businesses visually inspect at least 200 feet around each business property at least once per day and to clean up any litter or debris identified. This is a significant new litter reduction program that will have a major impact on the City's storm water program. This will be discussed in more detail in next year's Annual Report.

In addition, as reported in the previous Annual Report, the City adopted a Leaf Blower Ban in July 2009 (Appendix F). This ban was enacted to prevent organic debris from being blown all over the City and into the storm drain conveyance system. Staff noticed that often times, landscapers would use these blowers to push the organic matter off of the property they were maintaining and into the streets, gutters or sidewalks, where it would eventually end up in the storm drains. This has a major impact on the City water quality, so the City Council voted unanimously to ban gas powered leaf blowers in the City. The ban does not go into effect until January 1, 2011 as the City Council wanted to give the community some time to transition away from the blowers.

These two progressive and aggressive ordinances further show the City's commitment to environmental protection and enhancement. These laws go above and beyond the basic requirements of the Permit, and the community supports it. These ordinances will go into effect during FY 10/11 and will be reported on in-depth in next year's Annual Report.

Industrial Component

Program Strengths: Since the City has only one industrial site, it had been determined that a strong pro-active approach to compliance would be adopted. The one site (Baker Iron Works) has been incorporated into the routine inspection schedule of the commercial sites as dictated in the JURMP, thereby allowing the City to ensure that the site is up to code on all storm water issues. Since the one site was elevated to a high priority site, the City has taken an active approach in ensuring that the site will be in compliance at all times.

The City has developed a strong working relationship with the owners of Baker Iron Works. City Staff have visited the site multiple times and worked cooperatively with them to come into compliance. The owners have responded well to the City's educational efforts and compliance requests. The City has successfully worked with Baker Iron Works to help them come into compliance by instituting several BMPs throughout the property. Although there are no indications from any of the Dry Weather Programs throughout the years that this site has contributed to pollutants to the City's MS4, the mere fact that there is a possibility of this occurring in the future prompted the City to request that a few BMPs be installed onsite. A couple of very successful accomplishments occurred that are worth noting.

The first accomplishment was the sealing up of a small storm drain located on the property that drained directly away from the property and into street.

The second BMP installed was the daily dry sweeping of the property to ensure that no sediment/gravel got into the street by automobile traffic.

The third BMP integrated into their normal routine was the use of a magnet on the grounds outside where some work is conducted using steel. The magnet is used to sweep the entire yard and collect miscellaneous scrap metals that may have collected on the ground. This activity is conducted on an as needed basis, but no less than once per week.

The fourth, and most important, BMP was the installation of the storm drain sump/infiltration pit at the northwest corner of the property that was designed to catch all low flow dry-weather runoff from the property and filter it before it left the property. These BMPs have been successfully implemented by the owners and are currently in place and functioning.

An improvement area that has been listed in previous annual reports involved ensuring that Baker Iron Works is complying with all requirements of the State Industrial General Permit, even though this is not a requirement of the storm water Permit. However, Baker Iron Works asked for the City's assistance in compliance and so City Staff has worked with Baker Iron Works to implement the necessary elements for compliance. This has further helped the relationship grow between the City and its industrial partner, furthering the great working relationship.

City Staff worked with Baker Iron Works to come into compliance under the GISW. Baker employees requested help with the monitoring requirements so City Staff trained them in the proper sampling techniques and offered options on where to take the samples for analysis. This just proves the healthy working relationship between City staff and Baker Iron Works.

Improvement Areas: The City is confident that it is fulfilling all requirements of the Industrial Component. City Staff is committed to inspecting Baker Iron Works annually as part of its high priority facility inspections due to the potential to release pollutants into the City's MS4. City Staff believes that this industrial site is working well within the regulations of the Permit and is satisfied with the current situation. City Staff will look to continue the open communication with Baker Iron Works and conduct further inspections to ensure that all new employees are aware of and compliant with the storm water regulations. Also, City Staff will ensure that Baker Iron Works is aware of any new regulations coming down from the State and work with them to ensure compliance.

Commercial Component

Program Strengths: The City has a very aggressive commercial inspection program that goes above and beyond the Permit requirements. As reported previously in this Report, the City inspected 100% of *all commercial facilities,* regardless of priority, identified in the JURMP inventory. This is above and beyond the requirements of the Permit, which states that 100% of the *high priority* sites be inspected. In addition, the City implemented an aggressive Fats, Oils and Grease (FOG) inspection program to ensure the reliability of the sewer system, and prevent sewer spills caused by grease buildup. These two programs demonstrate the City's proactive approach to maintaining compliance with the Commercial Component of the Permit, and are described in more detail below.

The City also re-inventoried the commercial facilities as part of the JURMP

revision and set minimum inspection frequencies per the new Permit. The facilities were inspected by an independent consultant specializing in storm water and FOG inspections, with follow-up being conducted by both the contractor inspector and City Staff.

As stated in the new JURMP, the City had 77 stationary facilities, of which 67 are identified as high Threat To Water Quality (TTWQ). The JURMP states that in the third year of JURMP implementation, at least 25% of all inventoried stationary businesses will be inspected, meaning 17 sites are required for inspection. In addition, the JURMP states that at a minimum, 100% of all sites (excluding mobile sources) determined to pose a high threat to water quality will be inspected in the second year of implementation, increasing the number of facility inspections from 17 to 67. The City, through its contractor, went above and beyond the required 67 inspections and inspected all 77 facilities. During the course of the inspections, the consultant identified 5 additional businesses that should be added to the inventory. The City requested that the consultant inspect those businesses as well, bringing the total to 82 facilities inspected. Ten (10) facilities required more than one follow-up inspection and no major violations were detected. All facilities were in compliance during the enforcement inspections conducted by City Staff. A summary of the follow-up actions can be found in the Commercial Component of this Report.

Another program strength is the implementation of the City's grease management ordinance. The City is happy to report that a grease management ordinance was passed by City Council on September 7, 2004. Staff introduced the proposal to City Council on February 17, 2004, and got the approval to move forward with the education of local restaurants and the public about the pending ordinance. A condition of the resolution once the proposal passed was to give restaurants 18 months to install a grease trap/interceptor, or receive an approved waiver from the City. Therefore, all restaurants in the City (even existing restaurants) must have a functioning grease trap/interceptor by March 2006. This is a huge accomplishment by City Staff as it is well documented that most major sewer spills are the result of grease related problems. Inspection of the grease traps and maintenance are accomplished in conjunction with the storm water inspections. As mentioned above, the contractor the City hired to perform facility inspections also specializes in grease management device inspections. The contractor included grease management inspections into the storm water inspections and check for such things as proper cleaning and maintenance, record keeping, duct cleaning, screen cleaning and hood cleaning. These are all important aspects of storm water management, as grease can have an extremely

detrimental environmental effect.

A significant improvement to the grease management program that occurred during this reporting period is the increased level of inspection that was authorized and conducted by the City's contractor. As mentioned above, the City's contractor checked if each required commercial facility had a grease management device during FY 07/08. However, the inspection was taken to the next step in analyzing whether or not the installed device was of sufficient size and type. As often is the case with restaurants, they change frequently. So, an appropriate size and type grease management device may be sufficient for one type of restaurant, but if that restaurant closes and another, higher grease producing restaurant moves in, then the grease trap and/or interceptor may no longer be sufficient. This was a bold new move by the City that could be extremely controversial, but the City felt it was a necessary preventive measure and proceeding with the increased inspection level. This increased inspection process continued in FY 09/10.

This process will take more time to complete as the restaurants have been notified of their insufficient management devices, but the City recognizes that to replace or install a device takes time. However, by getting the process started now, the City hopes to have all restaurants in compliance in the very near future.

Improvement Areas: In previous annual reports, one improvement that was mentioned was the inspection of 100% of all high TTWQ commercial facilities in one reporting period. As reported above, this has been accomplished. The City is confident that all requirements of the Commercial Component of the Permit are currently being satisfied. One area of improvement may be increasing the amount of education and public outreach to the business community. The City believes that they have a good relationship with the current business community but more education is always welcome. City Staff could make an increased effort to educate new businesses as they apply for business licenses but producing additional educational brochures and pamphlets.

Residential Component

Program Strengths: The City provides a wide range of programs for its residents to allow for convenient implementation of pollution prevention activities. Among the many programs the City provides are:

- Curbside recycling (first in the County to provide this service)
- Curbside Green-waste collection
- Aggressive and convenient Household Hazardous Waste collection program (described in detail in Residential Component)
- Community Education Program (described in Residential Component)
- The development and maintenance of the City's website regarding the Storm Water Program
- Community workshops on proper landscape practices
- Educational opportunities at local community events (Fiesta Del Sol, Beach Blanket Movie Night, Coastal Cleanup Day, Paws at the Park, etc.)
- Free presentations on proper HHW disposal and Used Oil Recycling (conducted by Solana Center)
- Opportunity to join Community Clean and Green Team which meets monthly to discuss environmental programs

The City Council meetings are also televised and available live on the internet to all the residents of Solana Beach. Many times storm water issues are discussed during these meetings. Other positive aspects of the program are the direct mailings of education materials included in monthly trash billings and the articles placed in the community newsletter, "*Shorelines*." Tallying the amount of phone calls to the City's Storm Water Hotline does not appear to be a good assessment of the City's program. The City, because of its relative small size, prefers to conduct business on a more personal level. This has proven to be a much more effective way to work with the public. Therefore, although the hotline is still publicized, City Staff distributes their direct telephone numbers to the public when dealing with storm water issues. This allows direct, immediate contact with a Staff member, which ensures immediate, effective response to storm water issues.

As stated in last year's Annual Report, City Staff documents contacts (phone call, visit to City Hall, etc.) with the public regarding storm water issues to help assess the effectiveness of the program over time. The only calls documented are ones

that required Staff action on some level. The community of Solana Beach is very unique in that the residents are actively involved. Staff receives numerous phone calls every day that must be addressed immediately. Therefore, it would be unreasonable to document every contact made by the public, only the ones that pertain to storm water and where action is needed.

Another area of improvement mentioned in previous Annual Reports was to develop additional educational materials for the residential community. This activity is constantly being addressed by the two WURMP groups discussed previously in Chapter 8. In addition, as mention throughout this Report, a large focus was placed on developing an effective regional educational program in the requirements of the new Permit. The Copermittees have formed a regional workgroup to develop a regional "brand" that will be recognizable by all residents throughout the region. The Copermittees have adopted the "Think Blue" campaign developed by the City of San Diego, since this slogan is widely known throughout the region. The activities and programs that have been developed and implemented by this group are described in the Regional Unified Annual Report. The City has been an active member in this workgroup during this reporting period.

The City feels that it is much more effective and efficient to address these issues collaboratively with the WURMP groups and the Regional Educational Workgroup. This allows for a consistent message to be disseminated to a large population of people throughout the region, as well as resulting in a significant cost savings for the City. As for requirements/projects unique to Solana Beach, Staff will continue to develop materials as the situations arise. A few examples of these specialized educational materials are listed in Chapter 8 of this Report.

Improvement Areas: For the next reporting period, City Staff will evaluate this component and make any necessary alterations to the program. The City will continue to develop educational materials for the residential community, both jurisdictionally, on a watershed basis through the NCSWP and regionally through the Regional Educational Workgroup.

Land-Use Planning for New Development Component

Program Strengths: The City continued its implementation of the Standard Urban Storm Water Mitigation Plan (SUSMP) program as well as participated in the development of the new SUSMP. The City has successfully implemented the

SUSMP review into all plan check processes. Although there will not be many projects within the City subject to this new requirement (the City is 95% built-out), the appropriate departments are still very aware of the requirements. In addition, the new model SUSMP was developed and approved by the City during last period and the City is now implementing the requirements of the new SUSMP program during this reporting period.

The Planning Department is actively involved in the City's Storm Water Program, and often notifies the Environmental Programs Manager when a proposed project may have storm water implications, including possible SUSMP projects. Although, as mentioned above, the City is almost completely built-out, the Planning Department has, as a result of this Permit, developed a list of possible proposed projects that may require a SUSMP. These projects have not been approved by City Council, but Planning Department Staff have surveyed the City and put this list together to warn the Environmental Staff as these projects may be proposed soon. This gives Staff a "heads up" before the projects are submitted that they will probably be subject to the SUSMP requirements and so the process can begin when, if ever, these projects are proposed.

As mentioned previously in this Report, the City is very small and by nature, very intimate. This applies to development projects as well, as the City Council reviews development projects very closely. It is extremely rare when a significant development project is proposed that has not gone through extensive review by the applicants and City Staff prior to submittal. This allows the Community Development/Planning Staff to inform the applicants of possible storm water issues (especially grading, LID, HMP and SUSMP projects) prior to submitting their plans, so that the project will incorporate necessary storm water features into the original plans. This is extremely helpful to the applicants, as it avoids the possibility of redesign (as well as increased costs) and speeds up the process. Therefore, most applicants set up meetings beforehand with Staff to review their plans to avoid any possible delays or impediments to their proposed projects.

Improvement Areas: The City will continue to educate prospective applicants regarding the SUSMP, LID and HMP if their respective projects will be subject to the new regulations. The City is very confident that its Land Use Planning component is very effective; however, it will continue to be modified in the future when necessary. The City is expected to initiate an update to its General Plan sometime during 2011. This will have a major impact on the storm water program and City Staff will make certain that elements of the Permit and JURMP are incorporated into the new General Plan. In addition, as the new SUSMP, LID

and HMP are finalized and adopted, City Staff will develop new educational materials for the construction community.

Construction Component

Program Strengths: The City Inspector and Environmental Programs Manager are responsible for conducting construction site inspections. The City Inspector is responsible for all public CIP projects, whereas the Environmental Programs Manager deals with all private projects.

All construction sites were inspected for storm water issues based on the frequencies described in the City's JURMP. Since there are relatively few construction sites in the City, Staff often times can visit the higher priority sites more frequently. Additionally, the City's contracted Building Department (EsGil) inspector makes daily visits to most construction sites in the City. Although they do not handle storm water issues directly, they do notify the City Inspector or Environmental Programs Manager if they notice anything questionable onsite. This is another significant advantage to having the private building department staff housed at City Hall. Therefore, the City has three different Staff members out in the field monitoring construction sites and BMPs on a daily basis.

If the City Inspector or EsGil inspector notices a problem related to storm water, they notify the Environmental Programs Manager immediately. The Environmental Programs Manager then investigates further, taking any necessary corrective or enforcement actions. This program has worked very well due to the already established relationship between the contractors and the City Staff. Because of this pre-established relationship, the transition into storm water compliance was virtually seamless. The Inspector keeps a daily log of all his activities, and storm water related issues are included. The City also mailed out a wet-season reminder to all active construction sites reminding them of their obligations under the Permit. Therefore, the City is assured that all contractors are aware of the regulations, making enforcement much easier for the City.

Additionally, for all CIP projects, the applicant/contractor is required to have a Pre-Construction Meeting with City Staff in which storm water issues are discussed. At these meetings, contractors are given a sample copy of the Site Inspection Checklist, and they are required to fill out a Wet-Weather Triggered Action Plan (if the project will be in construction during the rainy season). All of these measures are taken to ensure that all contractors are aware of the storm

water regulations, and it helps the enforcement aspect of the Permit as Staff can be assured that all contractors have been educated and cannot claim ignorance of storm water issues. Appropriate enforcement actions (corrective, stop work, fines, etc.) can be enforced without fear of being challenged by violator.

Another activity that has proven very successful in regards to construction activities was the distribution of a colorful, informative BMP Construction Brochure. This brochure was developed by the Carlsbad WURMP workgroup and delivers a consistent message for all North County cities. The brochure is a tri-fold that gives background information on the storm water program and regulations and on the reverse side is a large diagram of a common construction site with the general BMPs shown and described. This brochure has been a huge success with the construction/developers world as they can post this brochure at their site to remind their employees of proper BMPs. These brochures are attached to all building and grading permits.

The City believes that any opportunity to educate the community should be taken advantage of. So, during this reporting period, approximately 150 BMP brochures were distributed during this reporting period, down from 224 BMP brochures in FY 08/09, 470 during FY 07/08, 521 during FY 06/07, 509 during FY 05/06 and 416 during FY 04/05. The drastic reduction in brochures distributed during the last two reporting periods directly reflects the slowdown in construction activities region-wide. All building project applicants were given a brochure; there were just drastically reduced projects during this reporting period.

As discussed in last year's Annual Report, the City developed and now tracks the SUSMP long-term BMP maintenance agreements as required by the Permit. In addition, the City continues to implement the Long Term BMP Maintenance Agreement that requires the applicant to submit a recorded document from the County of San Diego which includes the maintenance activities required and gives the City the legal authority to inspect the BMP to ensure compliance. This is an extremely helpful tool in ensuring that the post construction BMP is not only installed, but is being properly maintained to remain effective.

As mentioned in last year's Annual Report, there are significant new construction requirements in the new Permit. The significant additions to the new Permit include the development and implementation of the Hydromodification Plan (HMP), Low Impact Development (LID) and the update to the model SUSMP. The City is pleased to report that these new programs either have been developed and implementation is currently in the process or they are being

developed and close to finalized, and the City is participating in the regional process. The HMP program is not expected to affect the City; however the City still contributed funding toward the program development as part of its Copermittee responsibility to the region. The City also revised its Municipal Code to adopt the updated model SUSMP in compliance with the new Permit regulations.

Improvement Areas: During the next reporting period, the City is committed to improving and modifying the construction program if any deficiencies are detected. The City is also committed to developing more educational materials to distribute to the public, and contractors in particular. The Construction BMP Brochure has been a major success, and the contractors/developers are constantly looking to us for more information and guidance.

With the adoption of the new Permit, additional construction activities and programs need to be developed and implemented in the years to come. The City will continue to work with the Copermittees to develop these programs for implementation. One area of improvement that the City is looking at is possibly hiring a specialized contractor to conduct construction inspections. This is similar to the City's decision to hire a contractor to perform commercial/industrial inspections and specialized Staff training, as this will free up limited Staff resources while providing increased service to the community. The City Council approved $10,000 in FY 10/11 specifically for construction inspections, further strengthening the City's commitment to protecting the local water quality. The new Permit contains significant additional requirements for the Construction Component, so the City felt it was prudent to strengthen its program as well, and hiring a specialized consultant is a first step in the right direction.

Illicit Discharge Detection and Elimination Component

Place Holder – This will be submitted with Chapter 7 on December 15, 2010 as a result of Addendum No. 2 adopted by the RWQCB

Education Component

Program Strength: The City feels very strongly that the current education program being implemented by City Staff has been very effective. The amount, and quality, of educational materials developed by the City and through

collaboration with the other Copermittees, has proven to be very successful. The following events have allowed City Staff to educate the community, both residential and commercial:

- Fiesta Del Sol
- Paws in the Park
- Beach Blanket Movie Night
- Annual Coastal Cleanup Day
- Annual Green Fair
- Future of Surfing Event
- City Council Meetings
- Clean and Green Team
- Civic and Historical Society meetings
- Friends of the Library meetings
- *Shorelines* Community Newsletter
- Green Flash website
- Brochures and Handouts at City Facilities
- Partnerships with Solana Center, Santa Fe Irrigation District, Kids Korps and the Solana Beach School District

The complete educational program is discussed thoroughly in the Educational Component of this report.

Improvement Areas: The City is very satisfied with its current educational program. The respective WURMP groups have gone above and beyond the requirements of the WURMP's educational component, and have delivered many quality items to the resident's of Solana Beach.

Also, as reported in last year's Annual Report, the City is participating in the development of the new regional educational program. The new Permit requires the development of a regional educational program, and the City is committed to working with the other Copermittees to develop a successful and comprehensive program. Also, the new Permit requires Watershed based education based on the activities chosen by the participating Copermittees, and the City is committed to working with the Copermittees in its two watersheds to develop and implement

the educational activities to support the watershed activities. These activities are described in detail in the Regional Unified Annual Report (submitted with the Copermittees reports in September 2010) and the Watershed Annual Reports which will be submitted in January 2011, respectively.

Public Participation Component

Program Strengths: The residents of Solana Beach have multiple opportunities to interact with City Staff through the hotline, website, community events and direct interaction. All City Staff are available to discuss any issues with the community if they come into City Hall, and most all literature distributed currently has the appropriate Staff contact information listed on it. City Staff prides itself on dealing with the community on a personal basis, and as a result has established many positive relationships with key members of the community. The City continued to host the annual Coastal Clean-Up Day that allowed the community to get involved as well as distributing educational brochures at the local community events. Some additional opportunities include:

- Copermittee meetings
- Adopt-A-Beach Program Beach Cleanups
- Fiesta Del Sol
- Paws in the Park
- Annual Green Fair
- Beach Blanket Movie Night
- Shorelines Articles
- Opportunities to work with local Partnerships/Collaborative's
- City Hotline
- Green Flash website
- Clean and Green Community Group

Improvement Areas: The City realizes its responsibility to get the community involved in the storm water program. The City has given the residents ample opportunity to get involved in implementing the program. City Staff is very visible throughout the community on a daily basis and routinely has discussions with residents regarding storm water issues. The feedback given to City Staff has been overwhelmingly positive, and the City looks forward to continuing this personal relationship with the community.

In addition to the JURMP public participation opportunities, the community has public participation opportunities through the WURMP process. More information on the WURMP process is available in the WURMP annual reports submitted in January.

11.5 Level 4: Load Reductions

Level 4 load reduction is a key assessment measure for the storm water program. Ultimately, the goal of the storm water management programs is to reduce pollutant loading into the City's MS4 and by doing so, improve the discharge and receiving water quality. However, load reductions are very difficult to quantify, and the Copermittees as a whole are struggling to develop methods to achieve this task. This being said, the City will continue to analyze any data received that may be able to show a load reduction with the hope that it will somehow be linked to improvements in discharge and receiving water quality.

As a result of the Regional Water Quality Control Board's comments on the City's FY 02/03 Annual Report, the City has adapted its street sweeping program. The City now requires the private street sweeper to document all load information on a weekly basis. This includes an estimated amount of debris collected. This information was collected initially in FY 05/06 and continued into this reporting period as well. The total amount of street sweeping debris collected for each FY is as follows:

- FY 05/06 – 299.1 cubic yards
- FY 06/07 – 188 cubic yards
- FY 07/08 – 275 cubic yards
- FY 08/09 – 274 cubic yards
- FY 09/10 – 270 cubic yards

The total amounts remained amazingly constant from FY 08/09 to FY 09/10. City Staff believes that the reason is most likely that the majority of the debris picked up by the street sweeper is organic material from natural sources such as trees and vegetation. Therefore, the load reduction measure of quantifying cubic yards and hopefully detecting a decrease over time is not a good indicator for Solana Beach. The street sweeper not only quantifies the amount of debris each day

collected but also records an approximation of the type of debris. And for Solana Beach, it is over 95% organic matter. There are only trace amounts of litter or trash, which is a positive thing, but it also indicates that quantifying load reductions from street sweeping activities is not a good measure of the City's storm water program. However, the information will be collected and analyzed and any trend will be documented for future use.

Another possible load reduction calculation could be documenting the amount of material collected and removed from the various BMPs throughout the City. These BMPs include:

- Annual inspection and cleaning of MS4 system
- Maintenance of CDS Unit(s)
- Maintenance of detention basin adjacent to San Elijo Lagoon
- Load reduction calculation for the Low Flow Diverter at Fletcher Cove and the filtration basket located upstream from Seascape Sur Outfall
- Load reduction calculation for the Bioswale maintained at La Colonia Community Center
- Maintenance records of permanent treatment BMPs required as part of SUSMP projects (privately owned)

All of these activities may not be feasible, however they all warrant further consideration. It has been generally agreed upon the Copermittees are not capable at this point to perform complete load reduction calculations and assessments, but we are committed to working towards this goal. The Copermittees have decided that this Level (4) should be attacked at a regional level, and not jurisdictionally. A significant regulatory program that should force us in this direction is the TMDLs that have been developed and are now being implemented by the Copermittees in several watersheds. The City is currently involved in the San Elijo Lagoon Bacteria TMDL Investigative Order, and as relevant information is received from the monitoring they will be discussed in upcoming Annual Reports.

11.6 Levels 5&6: Changes in Discharge and Receiving Water Quality

The City has been collecting and analyzing jurisdictional monitoring data received through the dry-weather and coastal monitoring programs. The City will continue to analyze the data to better understand the collective water quality

picture in the City. The data will be assessed to determine the potential water quality problems within the City. Data collected by the City will be analyzed independently as well as collectively with the regional monitoring programs. Although it is generally accepted that it will take many years to develop a trend in water quality, the City will nonetheless analyze its data on a continuous basis to see if anything develops. There are no glaring deficiencies in the water quality in the City, but the situation at Seascape Sur will continue to be monitored to ensure that the storm drain does not have an impact on the quality of the receiving water (Pacific Ocean). Seascape Sur will be explained in greater detail in the next Chapter.

The Regional Monitoring Program currently conducts trend analyses for the Wet Weather Monitoring Program. The goal of the WWMP is to collect data and analyze the data to determine if there are in fact improvements in the receiving water quality throughout the region. The City participates in this workgroup and will continue to assist the Copermittees in determining if we have obtained levels 5 and 6 of the assessment strategy.

11.6.1 Dry Weather Monitoring Data

2010 Summary

Place Holder for 2010 Dry Weather Monitoring Program – Will be submitted in December 2010 as a result of Addendum No. 2 adopted by RWQCB.

11.6.2 Coastal Water Quality

The Pacific Ocean is the ultimate receiving water for the City although there are other intermediate receiving waters, such as the San Elijo Lagoon and the San Dieguito Lagoon. To measure the quality of the coastal receiving waters and assess the JURMP effectiveness, the City has monitored its one coastal storm drain outfall (Seascape Sur). The City used to monitor another outfall at Fletcher Cove; however, a low-flow diverter was installed in 1998 to divert dry-weather flows into the sewer system. The City is currently involved in a IRWM grant application that includes the installation of an additional low-flow diverter at Seascape Sur, but that will be discussed in more detail in Chapter 12 of this Report.

Coastal Storm Drain Outfalls

The coastal outfall monitoring program reporting period is different than the reporting period for this Report. The coastal monitoring program reporting period runs from November through October. All cities with flowing coastal storm drains meet regularly (Coastal Monitoring Workgroup) to develop and implement this program to promote regional consistency.

The Coastal Monitoring Workgroup developed an adaptive monitoring approach. This approach was developed to allow the individual cities to adapt their program to concentrate their limited resources on problematic locations and ease up on consistently non-problematic areas. The City had *no receiving water exceedances* for bacteria during this reporting period, which was consistent with the results of the last three reporting periods. In addition, it's apparent that the increased educational and oversight of the vendors at the Fiesta Del Sol was successful as there were no exceedances after the event for the sixth year in a row. City Staff again made this a priority during this reporting period to meet with the event organizers and discuss BMPs requirements with them so that they can relay that information to the individual vendors and provide them with more educational materials. In addition, City Staff monitored the Food Court during the event to ensure all vendors were abiding by the storm water regulations. This was mentioned in previous annual reports as an improvement area because of the consistent exceedances after the Fiesta Del Sol that had occurred in the past.

The storm drain at Seascape Sur had multiple exceedances for total coliform, fecal coliform and enterococcus during this reporting period. However, the magnitude and the frequency of exceedances have decreased during the last two reporting periods, which is a significant achievement. This is a storm drain that has a history of high bacteria counts and is currently the focus of an ongoing IC/ID investigation. The City has recently installed upstream BMPs that may be contributing to the improvement in water quality. The program is being implemented by City Staff, and the complete results are presented in the Coastal Monitoring Annual Report, and explained in the next Chapter of this Report.

The Copermittees had to modify the Coastal Monitoring Program due to the new requirements of the Permit. The Coastal Monitoring Program workgroup made the necessary changes and additions to the program and are currently implementing the new model. The City is confident that it has met the requirements of both the old Permit and new Permit. The complete Copermittees Coastal Monitoring Program is incorporated into the Regional Monitoring Annual Report.

Beach Posting Data

The County Department of Environmental Health has monitored beach water quality for bacteria since the 1950's. This sampling is used to assess the health of the beaches. When bacteria levels exceed State standards, the County posts the beaches with signs warning and advising the public not to enter the water. In 2000, there was a significant change in protocol as a result of the passage of AB411, which required additional testing, incorporating testing for enterococcus, and required the beach be posted when only one sample exceeded the standard.

During this reporting period, there were ***no beach closures*** **in the City of Solana Beach,** which bodes well for the overall effectiveness of the City's program.

CHAPTER 12
Special Investigations

CHAPTER 12: SPECIAL INVESTIGATIONS

12.1 Introduction

In accordance with Permit Section D.4.e, this section of each Annual Report will describe the Copermittee's efforts to eliminate all detected illicit discharges, illicit discharge sources, and illicit connections as soon as possible after detection. The City's Illicit Discharge Detection and Elimination (IDDE) program is designed to identify, prohibit, and eliminate discharges that are a significant source of pollutants with the goal of protecting receiving water quality. This section of each Annual Report will provide the results of any special investigations conducted during the reporting period. However, the City also responded to many other complaints of possible IC/IDs, which resulted in rapid compliance, but did not warrant or require a comprehensive special investigation.

Although this Report does not contain a completed Chapter 7 due to the extension granted in Addendum No. 2, this Chapter will remain as many activities related to this Special Investigation can be reported on. Any additional information gathered from the 2010 Dry Weather Monitoring Program will be included in the December 2010 submission.

"The Mystery of the Bacteria at Seascape Sur…"

12.2 Background

As first reported in the FY 2002/2003 Annual Report, there has been as ongoing, historical problem occurring at one particular storm drain in the City. The location, Seascape Sur, has had historically high levels of bacteria; often times exceeding limits at the storm drain and occasionally in the receiving water (there were *no exceedances in the receiving water during FY 09/10*). Previous annual reports go into deep detail regarding the history of this problem and the City's efforts to remedy it. Since the history is important in describing the situation, this report will include much of what was written last year. Any added information that was discovered during this reporting period will be included in this report. Next year's report will include the City's additional efforts that were undertaken during the FY 10/11.

Prior to and during this reporting period, the City began a concerted effort to determine what was causing the elevated levels of bacteria at Seascape Sur

outfall (based on results from the Dry Weather and Coastal Monitoring Programs). The problem was thought to be resolved early on, but then monitoring results in subsequent years indicated the problem had either returned or persisted. In 2000, the City Engineering/Public Works Department was fairly certain that the problem had finally been corrected; particularly when the 2001 DWMP indicated the bacteria elevated levels had *decreased* (although they were still elevated above the normal range).

However, preliminary results from the 2002 DWMP revealed that the bacterial levels had risen from the previous year to a troublesome level (see 2002 DWMP, available at City Hall upon request). As a result, the City "went back to the drawing board," and with the help of MEC Analytical (consultant for the 2002 DWMP), began an upstream investigation that continued through the end of calendar year 2002.

History

The City began its DWMP in 1993, with no significant problems reported until 1996 when elevated bacteria levels were noted at the Fletcher Cove Outfall. Subsequently, the City constructed a low flow diverter (in 1998), which corrected the problem by diverting dry weather flow to the City's sanitary sewer system.

Between 1997 and 1999 results from the DWMP revealed some minor issues that were readily resolved, but nothing significant at Seascape Sur or Fletcher Cove Outfalls.

However, results from the 2000 DWMP identified two locations with high levels of coliform bacteria, which was of significant concern because both locations flowed directly to the beach via the Seascape Sur Outfall and were in fact, just a short distance from the outfall. The City conducted an extensive investigation and eventually found an old leaking sewer lateral that was buried under the ground near the site of the upstream catch basins in the parking garage of a business complex. The lateral was dug up, examined, and staff determined that cementing over the pipe would be the best method to ensure it was completely sealed off (investigation confirmed that the pipe was no longer in use). Because the leaking lateral was located quite close to the curb inlet, City staff, plumbing contractors and the consultant were fairly certain that the pipe was the cause of the elevated bacteria counts.

To confirm that the pipe was the cause of the suspected pollution, the City

contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during several follow-up tests. At that point, staff was optimistic that their efforts had been successful.

The 2001 DWMP included ten sites for testing. To ensure the problem from the previous year had been corrected, the program included the same two sites that had elevated bacteria counts in 2000. Surprisingly, the site had elevated bacteria levels, but because they were much lower than the previous year, staff believed that the problem might be residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be televised in 2002. The televising of the lines was scheduled during the routine cleaning of the storm drains later that year. Due to various issues, the televising of the lines did not take place prior to the implementation of the 2002 DWMP, which was under the regulations of the new Permit.

The City requested proposals from consultants to design and conduct the 2002 DWMP. The contract was awarded to MEC Analytical in late spring, early summer 2002. The City requested that the same two monitoring sites from 2000 and 2001 be included in the program, regardless of the new sampling procedures required of the Permit. The City included those sites to ensure continual monitoring of the area.

12.3 The 2002 Investigation

Samples for the 2002 program were collected on August 6th and 7th, 2002 throughout the City by MEC Analytical (MEC). Shortly thereafter, MEC contacted the City and informed the Storm Water Coordinator that significantly high levels of bacteria had been found at the locations of the year 2000 and 2001. As shown on Table 13-1, the amounts were troublesome.

Table 12-1 DWMP Initial Results (Sampled August 6-7, 2002)

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
1	West Side of Sierra Ave	700,000	30,000	24,000
2	Manhole between sites 1 and 2.	900,000	50,000	28,000
3	Seascape Sur Outfall (downstream from sites 1 and 2)	800,000	21,000	35,000

Results are reported in MPN/100 mL.

Based on the above results, it appeared that the problem, whatever the cause, was more pronounced at Site 2, the manhole, than at either Site 1 or 3. Therefore, the City immediately requested that the conveyance system be televised. At the same, the City authorized MEC to conduct an upstream investigation, accompanied by City staff. MEC indicated to staff that the elevated levels of bacteria, combined with the results from previous years, were a sign that an illegal sanitary wastewater connection may be the cause of the problem. However, subsequent inspection by City staff (including public works crews that inspected various locations of the line) did not reveal any expected accompanying waste solids. A somewhat consistent drip was noticed, which was traced back to nearby condo complex that was discharging their pool (the process was discontinued and the complex changed their procedures to drain into the sewer system). Other causes of the slow drip appeared to be over-watering of the many condominium complexes on Sierra Avenue.

Staff sent letters to all HOAs on Sierra Avenue that drain to the Seascape Sur outfall to eliminate the slow drip. Staff received calls from some of the HOAs in response to the letters and discussed the issue in more detail and received positive responses.

The results of the televised line were viewed by the City Engineer, which revealed a dip in the line approximately at the location of the manhole (with the elevated bacteria) and two possible illegal connections just west of the curb inlet. However, additional investigation indicated that the connections were not a problem, but staff thought that the dip in line could be harboring residual bacteria, and possibly re-growth.

12.3.1 More Testing

In an attempt to pinpoint the source of the contamination, MEC and City staff began the upstream investigation on August 19, 2002. Samples were collected from Site 1, and at a curb inlet catch basin on the *eastside* of Sierra Avenue, directly upstream from Site 3 (named Site IE).

Staff was surprised when the results of the second round of sampling revealed *higher levels of total coliform (2,400,000), fecal coliform (50,000) and Enterococcus (500,000)* at Site 1E, than the previous results from Sites 1 and 3. Further, the results were surprising given that the dip in the line at Site 2 was thought to be the source of the contamination. *The results seemed to indicate*

that the source of the bacteria was coming upstream from Site 1E.

12.3.2 Traveling Further Upstream

The curb-inlet catch basin on the east side of Sierra Ave (Site IE) receives street runoff and runoff from the Beachwalk Business Complex (Beachwalk). Beachwalk is a collection of various businesses located at 437 South Highway 101 in Solana Beach. Beachwalk businesses, at that time, included several restaurants (Pacific Coast Grill, California Pizza Kitchen, Rubio's), several small food facilities (ColdStone Creamery, Solana Beach Coffee Company, VitaFit, etc.,) several professional offices, a bike shop and others. Beachwalk was constructed approximately 13 years ago and at the time of construction, an on-site storm drain system, that collects on-site runoff from the property, was lawfully connected to the City's MS4.

Based on the results of the second round of testing, City staff thought that the source of the contamination must somehow come (or significantly contribute) from Beachwalk. Upon speaking with the Management Group that oversees the property, staff made several visits to look for possible non-point source explanations and speak with business owners to discuss BMPs (see Timeline below for more details).

On August 27th, 2002, City staff went to Beachwalk and personally delivered educational brochures to *all of the businesses,* educating business owners about storm water regulations and BMPs. To ensure that all the businesses were addressed, door hangers were left at the businesses that were not open at the time of the visit and additional property visits were scheduled. City staff also spoke with the person responsible for maintenance of the property and provided detailed information about pollution prevention, storm water regulations, and BMPs and how to report violations. Many of the business owners were extremely helpful and all were cooperative. Some business owners went out of their way to show staff potential problem areas, discuss BMPs and provide access to private restroom facilities (staff were looking for overflow problems and unusual construction or evidence of recent repairs).

Staff conducted another visit on September 3rd, 2002 in response to a call from one of the business owner's that staff had contacted on August 27th, 2002. City staff confirmed that foul smelling odors were coming from catch basins on-site. Further inspection revealed excess watering occurring on the patio of the Pacific

Coast Grill restaurant. A manager at the restaurant was contacted and educated regarding BMPs and the new storm water regulations. During this visits, staff determined that samples were needed at various storm drains throughout the complex to try and pinpoint and eliminate the problem. City staff identified several locations that should be tested and requested permission to collect the samples from the property owners.

On September 4th, 2002, City staff accompanied MEC to conduct additional testing and investigation. The process confirmed staff's suspicion that the bacteria levels were coming from Beachwalk. Various samples were collected at locations throughout the complex. An outdoor floor drain just outside the kitchen of Pacific Coast Grill appeared to have dark brown, stagnate water in it. On-site ammonia tests were also consistent with elevated bacterial numbers (60 mg/L). A sample (Site 32) was then collected for further lab analysis. Sites IE and 3 were also sampled again for additional information. As shown on Table 13-2, Site 32 confirmed that the contamination was coming from Beachwalk and most likely, the source was near or in, the floor drain outside Pacific Coast Grill Restaurant.

Table 12-2 Upstream Testing Results

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
32	Beachwalk floor drain	>16,000,000	300,000	>241,960
1E	East Side of Sierra Ave	3,000,000	50,000	3,550
3	West Side of Sierra Ave	800,000	70,000	24,950

Results are reported in MPN/100 mL.

12.3.3 Just When We Thought the Problem was Solved…

After the lab results came back and confirmed what was suspected, the property owners were notified of the severity of the situation and were eager to remedy the problem and work with the City to find a solution.

The property owners worked together with the City's Public Works Supervisor and a local plumber experienced in storm drain cleaning to correct the problem. The east side catch basin was temporarily sealed, the pipe was flushed and a specially equipped trucked was placed at the catch basin to vacuum out the resulting sludge for proper disposal. As soon as the procedure was complete, on September 18th, 2002, City staff collected additional samples from all three sites (32, 1E and 3), *expecting the results to show a decrease in bacteria levels*. The

residual water in the pipes was clear of the brown, stagnate water, which also contributed to the hope that the problem was *surely* resolved. However, while results from Site 32 indicated *reduced bacterial levels*, downstream sample *again* indicated *high bacteria levels* (the sample on the west side of the street).

12.3.4 Brainstorming

At first, these results seemed a bit perplexing (maybe it was the dip in the line?, etc.), but then, while staff continued to brainstorm ideas to solve the problem, some engineers thought was that the flushing of the system might have loosen some bacteria, which escaped collection by the Vactor truck. The City decided to wait a few weeks to see if the problem was alleviated after the system had time to completely flush out.

In the meantime City staff met with the property owners and 1) reviewed old construction plans for the property to look for potential areas of cross contamination; 2) discussed possible options that may help alleviate the situation, including training and education of business owners, television activities that might occur near the catch basin; and 3) it was decided that a temporary cap would be placed on the floor drain of Site 32 to secure it from contamination for 30 days (the cap could be removed during rain to prevent flooding).

After 30 days (and two rain events), staff requested that the plumbing contractor remove the temporary cap to allow further testing, which was agreed to.

12.3.5 Not again!

Surprisingly, results from this last round of testing indicated that there was still a significant problem on the property. An immediate meeting was scheduled with the property owners, who were informed of the test results and that the City now required them to remedy the problem through televising the lines, locating the illegal connection and reconstruction, or face serious fines by the RWQCB and the City. The property owners were concerned, responsive, cooperative and resolute in their attempts to do just that.

In addition, the City agreed to purchase a storm drain inlet filter to be placed in the catch basin just downstream from the complex, leading to the ocean outfall. It was installed the first week of December, and is maintained by the City's Public Works Staff. Although it does not filter the water passing through from

Beachwalk, it does help alleviate the problem by filtering out the water coming from the street. The City hopes that this will help reduce the high bacteria numbers found in the catch basin.

12.3.6 Action Taken By Property Owners During FY 03/04 Annual Reporting Period

By the end of December 2002, Beachwalk property owners had done the following to remedy the problem.

While attempting to televise the lines, a significant amount of sludge built up in the pipe prevented the camera from penetrating the pipes (which is likely the source of the problem, City staff also reviewed the small amount of footage that was performed in the pipes)

An extensive flushing out of the entire system was conducted, which took quite some time to accomplish amidst the rain events in December and the amount of material in the pipes.

The lines were televised and detected a large dip in the pipe where sediment and sludge were building up, possibly providing a breeding haven for re-growth of bacteria.

No illegal connections or sanitary waste connections were detected. There were a few pipes connected to the outfall pipe coming from the adjacent condos, however these lines were proven to be outdoor area drains. Beachwalk property owners and condo associations are completely aware of the responsibility to rectify the situation.

The City decided that they must increase their efforts to rectify this continuous problem to ensure the integrity of the receiving waters at Seascape Sur. The bacteria levels were still consistently high, often exceeding standard limits for the outfall, but, fortunately, not yet affecting the receiving waters. Growing increasingly frustrated, City staff decided that an increased effort, and the high costs that come with it, were necessary to finding the cause, and solution, to the problem at Seascape Sur.

On March 4, 2004, City staff televised the Seascape Sur storm drain line for maintenance purposes. The video showed a significant amount of sediment accumulated at the end of the pipe coming from the Beachwalk Business

Complex. Staff met with the Beachwalk property management and mandated that they clean the sediment from the line. The Beachwalk management complied to our request and immediately cleaned the pipe, and City staff supervised to ensure all Best Management Practices were used and abided by at all times.

Laboratory results were still coming back consistently high, so the City decided to take on the cost of completely cleaning the storm drain pipe with the hopes that it would remove any residual bacteria that may be contributing to the problem. The problem the City faced was that this had never been done before, and the dimensions of the pipe made it very difficult to develop a plan of attack. The pipe starts at the curb inlet on Sierra Avenue, then travels completely underground and slopes downward until it empties out onto the beach. The distance from the street to the outfall is approximately 550 feet and dips to 30 feet below the surface, so access is very difficult. The City was able to gain access from the neighboring condominium complex to place a vactor truck to ensure that no excess water would escape containment and empty onto the beach. The project took 5 entire days to complete (ending on Friday, May 5, 2004), with City staff working with its private contractor, and cost approximately $10,000. The City removed 4 cubic yards of sediment from the pipe, and used over 5,000 gallons of water. The City was confident that the next lab results would come back spotless.

12.3.7 What Happens Next…?

On the following Monday (May 10, 2004), City staff received a phone call from the County of San Diego Department of Environmental Health advising them that samples they took in the receiving water adjacent to the Seascape Sur outfall had failed AB 911 standards. The exact opposite had happened from what staff was expecting. It appeared that all the effort and money spent to clean the pipe had actually made it worse. However, Staff immediately began an IC/ID investigation and discovered that an adjacent condominium complex had a sewer spill that weekend and raw sewage had entered into the Seascape Sur storm drain. City staff was relieved that they found the cause of the high bacteria, but highly disappointed that all of their work, time, and money had been wasted by a small sewer backup, and it was back to square one.

Because the sewage was traced back to a private lateral, the City was determined to put the pressure on the condominium complex to clean the pipe again. Staff met with the HOA representative and a deal was worked out to have the pipe cleaned again, at the HOA's expense. Additionally, the City took this

opportunity to once again educate the HOA and wrote an article regarding the proper handling and disposal of grease for the HOA's monthly newsletter The City then set the HOA up with a plan of attack and supervised the process, but the effort was stepped up a bit. Staff worked with the Regional Water Quality Control Board to allow the City to use a small concentration of bleach mixed with the water to make sure that the pipe was completely sterilized at the end. This cleaning was done on September 24, 2004.

12.3.8 Where We Were in FY 04/05

The results of the cleaning performed on September 24, 2004 proved it to be very successful. The bacteria levels were reduced significantly and the City hoped that the sterilization would be a permanent fix. However, the results in the resulting few months showed that the bacteria was slowly increasing back to its historical levels, further frustrating City staff. This may be due to City staff's worst fear that the dip in the pipe could be harboring and resulting in re-growth of bacteria that may enter by way of decomposing organic debris and/or illegal dumping.

Since this did not permanently solve the problem, the City continued to explore other options. In March 2005, the City was discussing the situation with its contract lab, Weston Solutions, and jumped at the opportunity to participate in a pilot study aimed at refining a new lab analysis that would potentially categorize the generic coliform and enterococcus bacteria indicators as deriving from human or animal origins. This would be an extremely significant discovery because the City could further identify where the bacteria was coming from, human (IC/ID) or from animals (dogs, possums, raccoons, etc.), to help direct what steps to take in the future. The City could further refine its source identification and, in theory, stop wasting limited resources on sources that don't exist.

The pilot program is completed; however, the results did not come back revealing anything substantial. Only one sample came back positive for human bacteria (and this was somewhat inconclusive), and samples collected after this positive result all came back negative. Therefore, the City can conclude with relative certainty that the source of the bacterial contamination is not human. This one positive result may be caused by a single illegal dumping occurrence or by laboratory error. The resulting negative results show that there is not a continuous inflow of sewage, as would result if there were an illegal connection. Although the pilot program is complete, one early, important conclusion would be

that the bacteria is not coming from human origins, which would allow the City to eliminate this from source identification and focus its efforts on non-human origins.

12.3.9 Special Pilot Program FY 07/08

The City's lab (Weston Solutions) offered their services to the City for a special pilot program during FY 07/08. On 5/30/07 Weston staff met with City staff to investigate the surrounding areas to see if they could detect anything that may be contributing to the high bacteria levels adjacent to the east catch basin. Weston has performed similar investigations in other cities with very positive results. They were very interested in finding the source for the City, as we have been partners now for years on this. The results were very interesting and reconfirmed the City's belief that there is substantial re-growth occurring in the pipe as the bacteria results were much lower in the catch basins than at the outfall. The results are as follows:

	East Side Catch Basin (MPN/100mL)	Outfall (MPN/100mL)
Total Coliform	700,000	16,000,000
Fecal Coliform	80	50,000
Enterococci	41	483

The City and Weston Solutions partnered for a unique pilot study with the hopes of finally determining the source of the bacteria. The specialized studies were conducted to further analyze a unique phenomenon called "pseudofluorescence." This phenomenon first was detected in some samples from Seascape in the summer of 2007, when using the Enterolert method there were some false positives, or "pseudofluorescence." The lab noticed that the tests became to increase in frequency, and brought it to the attention of City staff after the March 31, 2008 samples were analyzed. The City and Weston then developed a plan to determine why this phenomenon was occurring, and if this could bring us any closer to solving the mystery.

Starting on April 30, 2008, Weston began testing the samples using the IDEXX method (SM 9223B) side by side with the Multiple Tube method (SM 9230B) for Enterococci in order to determine if the different methods yielded different results. Parallel analyses were carried out only on the outfall samples, as the

paired ocean samples never exhibited pseudofluorescence. The following are the results:

Date	IDEXX Results (MPN/100mL)	Multiple Tube Results (MPN/100mL)
4/30/2008	<10	170
5/29/2008	<10	300

Analyzing the results, it is easy to confirm that something is causing interference with the IDEXX method. Because of this, PCR analyses were also performed, with results ranging between 1,000-10,000 (PCR includes viable and non-viable cells, as it only looks for specific DNA markers, regardless of cellular viability), which validates the Multiple Tube results by showing a definite presence of the target bacteria.

There is some concern that detergents may be the cause of the interference and pseudofluorescence. Enteroalert (IDEXX) analysis from both months displayed pseudofluorescence wells, so both were tested for detergents using an MBAS kit. The results are as follows:

Date	MBAS Results (ppm)
4/30/2008	15
5/29/2008	25

The 5/29/2008 sample had a larger number of pseudofluorescent Quantitray - 2000 wells, which seems to confirm the relationship between pseudofluorescence and the amount of detergent in the sample.

As a result of this pilot study, an official method change for enterococcus was instituted beginning with the 6/28/2008 samples. Using the Multiple Tube method, MPN for enterococcus was determined to be 3,000 per 100mL, while results from Enterolert (performed as a continued comparison) were found to be 63 MPN/100mL, with a continued pseudofluorescence.

This pilot study will continue into FY 08/09, and will be reported on in further depth in next year's Annual Report. In addition, continued upstream investigations will focus on detergents as the presence has been recorded a

couple of different times.

The City will continue cooperating with Weston and their professional staff to investigate this ongoing mystery until a resolution is found.

12.4 Timeline of Significant Actions

August 27, 2002- City staff distributed storm water brochures to all the businesses located in the Beachwalk complex. Staff toured the mall, visually inspected on site catch basins, outdoor floor drains, restroom facilities, and inspected several restaurants and discussed pollution prevention BMPs.

September 4, 2002- Based on feedback from the testing, staff spoke with the managers of Pacific Coast Grill, reviewed the storm water regulations, spoke about prohibited activities and distributed storm water brochures.

September 4, 2002- City staff and an employee from MEC conducted upstream investigation. A small outdoor floor drain contained brown, stagnate water with a very pungent odor. The drain cover was removed and the material was sampled. MEC called a few days later and reported that the results were consistent with the numbers for raw sewage for total and fecal coliform and *Enterococcus*.

September 18, 2002 - The Beachwalk storm drains were flushed out using clean, fresh water and the sludge was vacuumed out into a Vactor truck at Site 3. Results from follow-up samples indicated that a problem still existed.

October 24, 2002- Additional samples were taken to see if the problem had been eliminated. Results from the lab showed that the problem had not been solved. City staff continued to meet with property owners to pinpoint the source.

November 2002- The City installed a specialized catch basin filter unit that is designed to catch all debris (trash, organics, etc.) from the street before it reached the MS4 system. It also has specialized bio-filter rolls to filter out the hydrocarbons.

November 13, 2002- a semi-permanent cap was placed on the floor drain that seemed to be the source of the bacteria. A follow-up sample was scheduled for 30 days.

December 13, 2002- Samples were taken after the cap was removed and

preliminary results indicate that the problem has not been resolved. More extensive investigation was ordered.

December 14-31, 2002- All property drains were cleaned and televised.

January through June- Increased monitoring and sampling through Coastal Monitoring Program to try and determine if the steps taken previously had successfully remedied the problem. An intensive educational program to the HOA's and the Business Complex was also implemented to assure compliance under the Permit.

March 4, 2004- Mandated and required the Beachwalk Business Complex to clean out storm drain system that leads to the City's Seascape Sur storm drain due to accumulation of debris (sediment, trash, etc.).

May 5, 2004- Completed cleaning of entire Seascape Sur storm drain line from Sierra Avenue to the beach outfall. A sewer spill occurred that following weekend from a private lateral connected to the Seascape line.

May 20, 2004- Wrote two articles for *Seascape Sur News,* the monthly newsletter distributed to the Seascape Sur condos, educating the residents on activities that may reduce bacteria that could be a possible source into the problem at Seascape Sur outfall. The first article was titled, "Sewer Clean-Outs," and it describes the proper way to dispose of grease (not down sink) to prevent sewer blockages and spills. The second article was titled, "Walk Dogs Off The Property and Clean Up After Them," which is pretty self-explanatory.

September 24, 2004- Completed cleaning again with the addition of bleach to counteract the sewer spill that occurred on May 5, 2004. Access issues during the summer months prevented the cleaning from occurring earlier.

November 2004- Samples showed a dramatic decrease in bacterial indicators, proving the cleaning was successful. However, future results showed the bacteria increasing back to historically high numbers.

March 1, 2005- Started participating in contract lab's pilot program to differentiate bacteria into human and animal origins.

May 30, 2007 – Conducted a thorough investigation with our lab (Weston) to detect any possible sources of the ongoing pollution (see below). Results of the

investigation revealed that bacteria levels were in fact higher at the outfall than the catch basin; further reinforcing what City staff believes is a structural deficiency in the pipe that is leading to bacteria re-growth.

March 30, 2008 – Initiated a pilot study with lab to determine if the correct analytical analysis was being conducted

June 18, 2008 – Installed a catch basin inlet guard to prevent organic material from entering into catch basin on the east side of Seascape Sur storm drain. This was done to hopefully prevent the organic matter from decomposing inside the storm drain pipe and providing an area for bacterial re-growth.

August 10, 2008 – City contracted a company to place concrete inside the catch basins to fill in a one inch gap at the bottom where stagnant water would sit. The City thought this might be contributing to the bacteria load at the end of the pipe. By filling in the gap, water and organic matter would not have a place to stagnant and harbor bacteria.

September 29, 2008 – City hired a contractor to clean the entire Seascape storm drain from street to outfall.

August 30, 2008 – City entered into a pilot project with a company that installs catch basin curb inlet screens to prevent leaves and debris from entering the catch basin. Screen was installed on east side catch basin to prevent organic debris from entering the catch basin and rotting inside the pipe.

October 2, 2008 – City entered into a pilot project with a different company that installs catch basin curb inlet screens to prevent leaves and debris from entering the catch basin. Screen was installed on west side catch basin to prevent organic debris from entering the catch basin and rotting inside the pipe.

12.5 Where We Are Now

As listed above, the City is participating in two unique pilot programs at Seascape Sur. The City has installed two different catch basin debris screen BMPs at the east and west catch basins directly upstream from the Seascape outfall. The goal of the debris screens is to prevent organic debris and trash from entering the pipe and rotting, producing a perfect food source for bacterial re-growth in the sag in the pipe. The BMPs were installed in August and September 2008, with the intent to monitor the bacteria results at the outfall after a year.

Here are the results for FY 08/09 and 09/10:

Date	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)
9/30/08	16,000,000	800,000	80,000
10/9/08	16,000,000	1,300,000	130,000
11/20/08	No Flow	No Flow	No Flow
12/22/08	500	20	20
1/21/09	1,600,000	2,200	13,000
2/21/09	No Flow	No Flow	No Flow
3/25/09	170,000	110	5,000
4/3/09	74	10	10
5/27/09	1,600,000	23,000	800
6/23/09	270,000	13,000	5,000
7/21/09	230,000	20,000	7,000
8/18/09	170,000	7,000	13,000
9/22/09	80,000	23,000	3,000
10/26/09	130,000	9,000	2,000
11/16/09	600,000	230,000	4,000
12/21/09	9,000,000	110,000	600
1/11/10	9,000,000	17,000	9,000
2/16/10	40,000	20,000	<200

3/15/10	240,000	11,000	220
4/20/10	140,000	20,000	200
5/10/10	210,000	20,000	500
6/23/09	1,300,000	170,000	13,000

As you can see from the table above, the bacteria results have decreased when compared to previous years, with the exception of December 2009 and January 2010. This may be attributable to the new BMP installations upstream or the continuous educational efforts of City Staff. Whatever the case may be, the results still are not acceptable to City Staff or the community. It can't be emphasized enough that the outfall does not seem to impact the receiving water at all; however the City is still focusing its efforts on eliminating the source of the bacteria in the very near future.

The City continues to struggle with this ongoing situation, although has made some improvements to the bacteria levels during this reporting period. The budget continues to include money for cleaning out the line once per year, but this is merely a temporary band-aid to the problem, whereas the City is looking for a permanent fix. The one positive to take from this is that the discharge is not affecting the water quality of the receiving water (Pacific Ocean) yet, but there is no guarantee that this will not change in the future. Here are some options the City is now looking at to hopefully solve this reoccurring situation:

Repairing sag in the outfall pipe: This option is being actively researched as re-growth in the pipe is now the most suspected culprit. Our Public Works Operation Manager is researching this option with other City Staff. In addition, City Staff is looking into other options such as re-lining the pipe or "pipe-blasting", which may help reduce the sag and improve flow through the pipe.

Blocking off connections from adjacent residential complexes and making them drain to street so that discharge can be sampled: This option is seen as a last ditch effort, as it would be very expensive and politically challenging. This would only be considered if outfall started affecting receiving water quality.

Installing permanent BMP such as a low flow diverter: This option is also seen as a last ditch effort as it would be expensive and has not been fully researched to

check the feasibility. City engineers would have to check the locations of the sewer main and the capacity to determine if this would be feasible. Funding may be available through grants for water quality, but again this option is a long term effort. City staff will continue to look into various funding options, one being the recent grant that allowed the City of Imperial Beach to install a low-flow diverter. Staff will monitor that project closely and may seek the same grant to place a diverter in this location.

During this reporting period, the City partnered with the San Elijo JPA (the local WWTP) to apply for grant funding to assist with the costs associated with installing a low-flow diverter. The grant is through the IRWM Proposition 84 and includes, among other local water quality improvement projects, the City's Seascape Sur Low-Flow Diverter project. The City's grant application received the highest ranking by the IRWM review board. It is currently included in the Phase 1 application process that will be submitted to the State for approval in the next few months. Hopefully, the City will have more news to report in the next Annual Report.

12.6 Future Activities

The City is committed to finding the solution of the bacteria problem at Seascape Sur, or at least installing a permanent treatment control BMP to redirect the flow to the sewer system. During last reporting period, the City installed and monitored additional upstream BMPs at the catch basins leading into the problem pipe. This activity seems to have slightly improved the bacteria levels at the outfall and has encouraged City Staff that some of their efforts seem to be paying off. As discussed above, the City is now looking at other structural options with its engineering staff to hopefully look at another angle in this seemingly unending battle, and also applied for a grant to help with funding a Low Flow Diverter. As mentioned above, the grant received the highest priority ranking by the regional grant review board and will be submitted to the State for funding under the Prop 84 IRWM process.

The City has committed to setting money aside in its CIP budget to undertake some major projects to help solve the problem. As stated in the Fiscal Analysis Chapter, the FY 10/11 budget has $5,000 set aside specifically for the Seascape Sur storm drain cleaning. The City is committed to thoroughly cleaning the pipe annually if need be, or until a long-term solution is found. The City is currently investigating other structural options and may find it better financially to undertake a large CIP project than continually spending $5,000 a year for a

temporary fix. However, the location and depth of this particular pipe make it very difficult to work on, so it is taking some time to develop a sound engineering plan to fix the pipe or divert the flows. If this is the option the City ultimately takes, it will be very prudent to take the time to do it correctly, so the City is committed to taking the time to develop a plan to ensure its effectiveness.

Additionally, the City actively monitors the outfall pipe and all surrounding areas for any unusual occurrences, and the Marine Safety Department will continue to notify the Environmental Programs Manager whenever there seems to be unusual spikes or odors coming from the outfall pipe, as one of the lifeguard towers is located directly in front of the outfall (during summer months). Lastly, City Staff will continue to work with the neighboring condominium associations to educate the residents as well as perform inspections of upstream businesses.

12.7 Summary

The City has thoroughly utilized the results from its DWMPs and Coastal Monitoring Program during the last several years to identify and attempt to eliminate the source of bacteria that was identified through testing and upstream investigations. With the efforts of City Staff, and the cooperation of the Beachwalk property owners/managers and neighboring condominium complexes, the sources of the elusive bacteria has almost been solved. Unfortunately, with the structural deficiencies (the sag) in the pipe, it may only take a small amount of bacteria entering the pipe to remain in the sag and promulgate (re-growth). Fortunately, the elevated bacteria levels do not seem to be affecting the receiving waters (no receiving water exceedances the past five years) yet, but the City desires to stay ahead of the curve and wants to take care of the situation before it becomes a problem. Therefore, the City is currently examining other options such as re-lining the pipe, "pipe-blasting" or installing a low-flow diverter. In the very near future, the City is confident it will close the book on the *Mystery of Seascape Sur Bacteria*.

CHAPTER 13
Non-Emergency Fire Fighting

CHAPTER 13: NON-EMERGENCY FIRE FIGHTING

In accordance with Permit section J.3.a.(3)(l), this section of the report describes the City's efforts to control Non-Emergency Fire Fighting events. The City understands that the health and safety of its residents supersedes the storm water regulations when it comes to emergency situations, such as a fire. However, for non-emergency fire fighting activities such as routine maintenance and training, the release of water into the City's MS4 is not permitted. Therefore, the City's Fire Department trains at two special facilities, one in San Marcos and the other in Rancho Santa Fe. Both facilities have BMPs installed to properly handle the excess water, and comply with all regulations of the storm water Permit. ***No training exercises that involve water are conducted within the City limits.***

Routine maintenance of the City's fire trucks and apparatus is essential to ensuring public health and safety, as all equipment must be in top condition and functioning properly during an emergency. Most times, this maintenance is conducted onsite at the Fire Department. To handle the excess water, the Fire Department staff redirects the flows onto a large slope of vegetation behind the Fire Station. Staff takes extra precaution to ensure no water leaves the site. Also, the washing of trucks and apparatus occurs inside the large bays, which is plumbed directly to the sewer system.

This component is also discussed in the Municipal Component.

CHAPTER 14
JURMP Revisions

CHAPTER 14: JURMP REVISIONS

In accordance with Permit section Permit sections I.1.b. and J.3.a.(3)(m), this section of the report describes any revisions that occurred to the City's JURMP.

As reported in last year's Annual Report, the City made multiple revisions to the JURMP based on comments by RWQCB staff after initial review of the new document. Those revisions have been made and are currently included in the City's JURMP. *There were no additional revisions to the City's JURMP made during this reporting period.*

CHAPTER 15
Conclusions and Recommendations

CHAPTER 15: CONCLUSION AND RECOMMENDATIONS

15.1 Conclusion

During the FY 2009/2010 reporting period, the City was able to successfully implement the many requirements of the Permit. Although the City has been required to have a storm water program under previous Orders issued by the RWQCB, this new Permit greatly expanded the types of activities and documentation efforts required of the cities. This was the third full year of implementation under Permit No. 2001-07 and the second full year of JURMP implementation. The City is very satisfied with the progress of the new program and is actively developing the regional large scale programs such as the HMP, LID, SUSMP and regional educational programs.

The City continued its "team approach" to implementing the JURMP by integrating the ever-evolving requirements of the Permit into specific tasks that each member would be responsible for implementing in their respective departments. The Environmental Programs Manager is responsible for bringing the group together and updating the respective departments on any changes that may affect their respective daily activities. Additionally, the Environmental Programs Manager is responsible for ensuring that all requirements of the Permit are being addressed and satisfied. This collaborative method allowed the City to more rapidly modify procedures and handle the increased workload quickly and efficiently, especially with a small staff with lean resources.

The City's accomplishments during this final year of the JURMP implementation provide evidence of the City's pro-active approach to improving water quality. The requirements under Order 2001-01 expanded the previous Order (90-42) significantly and have altered many of the daily routines of Staff at the City. In addition, the City is actively working on developing and implementing the new programs to satisfy Permit Order No. 2007-0001, including, but not limited to, modifying the Municipal Code for the new model SUSMP, LID and HMP requirements, updated the City's JURMP and implementing the new Coastal Monitoring Program.

During the next reporting period, the City expects to build on the accomplishments of FY 09/10, and determine the most effective and meaningful program activities as to their impact on water quality (pollutant specific) collaboratively with the other Copermittees, and implement the approved

program assessment strategy. The City is confident that it is in compliance with the goals set out under Permit No. 2007-0001 for the first three years of implementation. These include but are not limited to:

- Minimum commercial, industrial and construction inspections
- Minimum municipal inspection and maintenance of BMPs
- Implementing comprehensive educational and public participation component
- Developing Hydromodification Plan
- Implementing SUSMP Model update
- Developing Low Impact Development (LID) program
- Minimum inspection and street sweeping frequencies
- Post Construction BMP verifications and inspections

The City eagerly anticipates working collaboratively with the other Copermittees in further developing and implementing these significant programs during this Permit cycle. The City is confident that the Copermittees will continue to develop and implement these programs to meet the requirements and goals of the new Permit. The City understands that all parties' involved (Copermittees and RWQCB staff) are in this together to improve the discharge and receiving waters in the region and we will continue to support and work collaboratively with all parties to accomplish this goal.

15.1.1 2009/2010 Accomplishments

The following is a small list of notable accomplishments achieved during the 2009/2010 reporting period. All of these activities are described in more detail throughout this report. They are the following:

- Continued development and implementation of new SUSMP, LID and HMP programs

- Continued implementation of new BEACH database to track building permits, post-construction BMP inspections, and plan check comments

- Implementation of post-construction BMP verification and maintenance tracking system

- Development of stakeholder cooperation and partnerships with key organizations such as the Santa Fe Irrigation District, Solana Center and Kids Korps

- Implementation of new upgraded web portal "Green Flash" to house all of the City's environmental programs and information

- Implementation of unique plastic bag recycling program that turns bags into reusable, high quality plastic building materials locally within the United States

- Implementation of only organic pesticides, herbicides and fertilizers for all City landscaping purposes

- Development of relationship with local Solana Beach School District to foster open communication for environmental education in local schools

- Continued work with the Clean and Green Team, consisting of active environmentally conscientious community members to develop and implement environmental programs and education

- Continued educational outreach at all local events, and conducting cleanups and community bulky-item pickup days

- Continued implementation of aggressive and convenient HHW program to provide easy and efficient HHW pickup and proper disposal

- Continued extensive landscape and irrigation educational series for public and private landscapers. The classes were given in both English and Spanish and taught the participants proper landscaping and irrigation practices.

- Participated in regional workgroup to develop new mobile sources program

- Implemented new specialized Staff trainings utilizing an outside consultant to target priority educational areas

- Implemented a comprehensive Sewer Assessment and Repair Program, which consisted of videoing the entire sewer system and setting a

schedule to repair priority areas

- Completed the Fletcher Cove Pump Station Vault Maintenance, which consisted of repairing a dilapidated portion of the pump station, installing a new manhole for cleaning and maintenance purposes and redirecting the floor drains in the public restrooms to the pump station directly, bypassing the Sand Trap and Low-Flow Diverter

- Completing the Marine View Slope Maintenance which consisted of using an experimental "hydroseed" product to protect the slope from ongoing erosion. The City has tried other BMPs on the slope with minimal results, but the new "Rhino Snot" product proved successful, and will be placed on the slope prior to every rainy season until the long term CIP project can be completed on the slope

- Staff re-inventoried the commercial and industrial sites throughout the City

- Staff continued to outsource the commercial/industrial facility inspections to a specialized contractor that inspected 100% of all facilities, regardless of priority

- Staff inspected 100% of all municipal inspections

- City Council adopted a mandatory commercial recycling ordinance, mandating recycling at ALL commercial facilities

- Adopted a Leaf Blower Ban, banning all gas powered leaf blowers in the City and banning landscapers from blowing or collecting organic debris in the street, gutter or sidewalk. Oftentimes, this organic debris finds its way into the City's MS4 system, so the City now requires all landscaping activities to be conducted on the property, and makes it a violation of the City's storm water requirements subject to enforcement actions if people do not comply

- Implemented a "Keep Solana Beach Beautiful Day" to have the community "adopt" areas throughout the City to clean up litter and trash

- Implemented the 2nd Annual Green Fair

15.2 Recommendations

Since the new Permit was adopted in January 2007, FY 2009/2010 was again dedicated to developing new programs and fine tuning existing programs to comply with the new requirements. The City is committed to working cooperatively with the other Copermittees to develop and implement the new required programs to provide a consistent and recognizable message for the region. However, the City still must develop jurisdictional specific programs to address the specific pollutants of concern and their respective sources. So, in an effort to implement a successful and meaningful program, the following are recommendations to improve the City's storm water program for FY 10/11:

- *Continue to educate new and existing City Staff to ensure compliance in the ever-changing storm water world.*
- *Complete the special investigation to uncover and eliminate the root cause of reoccurring problems upstream from Seascape Sur Outfall, or install a permanent treatment control BMP to eliminate the ongoing bacteria exceedances at the outfall.*
- *Evaluate staffing needs and program responsibilities and continue to research the possibility of utilizing outside consulting help.*
- *Continue implementation of SUSMP, LID and HMP requirements and ensure all plans are in compliance.*
- *Continue implementation of the new JURMP program plan and implement measures to comply with Permit requirements*
- *Increase the education of residential sector which is a main focus of the new Permit. These programs will be addressed cooperatively at the regional level, but the City is committed to helping develop the materials and distribute to our residents.*
- *Continue to collect and analyze monitoring data to establish a long-term assessment of the City's water quality.*
- *Develop additional industry specific educational materials to distribute to the community.*
- *Develop and implement pollutant specific activities to address high priority COCs (Constituents of Concern).*

APPENDICES

APPENDIX A: STREET SWEEPING MATERIALS FORM

Employee Name and Organization (below)

Date (above) use N/S below if not scheduled

1st 2nd 3rd 4th Tuesday	Time in: Time out:	Time in: Time out:	Equipment Number: Year, Make & Model

OBSTRUCTIONS (identify as vegetation, vehicle, etc. and provide description).

Reference previous date(s) reported (no entry above required):

End of day Volumn in Cubic Yards:
% (percentage) Sediment:
%(percentage) Organics:
Litter (describe-or-enter -0-)

Operator enter reason(s) for not following schedule or other comments:

C.O.S.B. Initial

Forward to R.W.Q.C.B. (C.O.S.B. Initial on Sending) City of Solana Beach 2004(adinf)

APPENDIX B: SMOKING BAN ORDINANCE

ORDINANCE NO. 316

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Findings and Purpose. The City Council of the City of Solana Beach hereby finds and declares that:

A. The City of Solana Beach is committed to keeping its beaches and parks clean, safe, healthy and pleasant for everyone.

B. Smoking is hazardous to health. Numerous studies have shown that second-hand smoke is a significant public health hazard. The U.S. Environmental Protection Agency has classified second-hand smoke as a group A carcinogen, the most dangerous class of carcinogen. Smoking in parks and beaches endangers children and others by exposing them to second-hand smoke. Moreover, children and youth who observe smoking and tobacco use in public beaches and parks may model the behavior.

C. The U.S. Centers For Disease Control and Prevention (CDC) estimates that second-hand smoke causes 3,000 lung cancer ceaths per year among adult non-smokers in the U.S. The California Environmental Protection Agency has concluded that second-hand smoke causes coronary heart disease in non-smokers. Second-hand smoke is especially hazardous to particular groups, including those with chronic health problems, the elderly and children. The CDC has found that second-hand smoke causes children to suffer from lower respiratory tract illness, such as bronchitis and pneumonia, exacerbates childhood asthma, and increases the risk of acute chronic middle ear infection in children.

D. Additionally, discarding cigarettes and cigar butts and tobacco onto the ground in City parks and beaches is unsightly, unclean and particularly hazardous to small children who handle and sometimes ingest them. The City must collect tobacco litter in parks and beaches or it will be collected by stormwater and washed directly into our ocean waters in violation of the City's stormwater pollution prevention permit and to the detriment of ocean life and all ocean users.

E. The City Council therefore determines that banning smoking and the improper disposal of tobacco products in City parks is necessary to protect the health, safety and welfare of Solana Beach residents and visitors.

SECTION 2. Section 11.12.020 A. of the Solana Beach Municipal Code is hereby amended to read as follows:

A. To dump or deposit any trash, specifically including cigarette and cigar butts and tobacco, refuse, rubbish, litter, or other kind of waste materials, except in approved containers specifically placed and designated to receive such waste materials. No person shall dispose of any animal carcass in or on any beach or park.

SECTION 3. Section 11.12.020 EE of the Solana Beach Municipal Code is hereby added to read as follows:

EE. No person shall smoke within the boundaries of any public beach or park unless the City has designated a specific temporary or permanent signed smoking area.

SECTION 4. If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.

SECTION 5. This ordinance shall become effective thirty (30) days following its adoption. Within fifteen (15) days after its adoption, the City Clerk shall publish this ordinance, or the title hereof as a summary, in a newspaper of general circulation within the City of Solana Beach as required by law.

INTRODUCED at a regular meeting of the City Council of the City of Solana Beach, California held on the 7th day of October, 2003, and thereafter

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, held on the 21st day of October 21, 2003, by the following vote:

AYES: Councilmembers – Golich, Kellejian, Campbell, Sheres, Powell

NOES: Councilmembers – None

ABSENT: Councilmembers – None

ABSTAIN: Councilmembers – None

THOMAS S. GOLICH, Mayor

APPROVED AS TO FORM:

CELIA A. BREWER, City Attorney

ATTEST:

JAN UHLMAN, Acting City Clerk

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) ss.
CITY OF SOLANA BEACH)

I, JAN UHLMAN, Acting City Clerk of the City of Solana Beach, California, DO HEREBY CERTIFY that the foregoing is the original of Ordinance No. 316 duly passed and adopted by the City Council of the City of Solana Beach, California, at a Regular meeting thereof held on the 21st day of October, 2003.

That, in compliance with the laws of the State of California, Ordinance No. 316 being:

> AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

A certified copy of the full text of Ordinance No. 316 along with the names of those City Councilmembers voting for and against said Ordinance was caused to be posted in the office of the City Clerk.

Executed the 23rd day of October, 2003.

{SEAL}

CITY OF SOLANA BEACH INCORPORATED JULY 1 1988 CALIFORNIA

Jan Uhlman
JAN UHLMAN, Acting City Clerk

Published: North County Times: October 28, 2003

VENDOR GUIDELINES

Fiesta del Sol

- All electric cords should be out of the public access areas. If they must extend into a public access area, the cords must be protected with pedestrian transition molding to minimize the trip hazard.
- All cooking areas and devices shall have at least one 2A-20BC fire extinguisher readily accessible to persons working in the immediate proximity of each device or cooking area and shall be in plain view.
- All portable LP-gas containers, valves, and fittings shall be properly secured in a fixed upright position and protected in accordance with the Uniform Fire Code.
- The following conditions apply to canopies in excess of 400 square feet, and to tents and temporary membrane structures having an area in excess of 200 square feet:
- All tents, temporary membrane structures, and/or canopies that are to be used at the function shall be adequately braced and anchored to prevent weather related collapse. Documentation of structural stability shall be furnished to the Fire Chief on request.
- All tent, canopy, or temporary membrane structure exits shall be in accordance with the Uniform Fire and Building Codes.
- The design and construction of the fabric envelope, method of anchoring, and inflation systems for air-supported and air-inflated structures shall be in accordance with the Building Code.
- The sidewalls, drops and tops of temporary membrane structures, tents and canopies shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Temporary membrane structures, tents or canopies shall have either a permanently affixed label or a Certificate of Flame Resistance bearing the following information:
  - Identification of the temporary structure's size and fabric or material type.
  - For flame-resistant-treated materials, the date that the temporary membrane structure, tent or canopy and other combustible materials were last treated with an approved flame retardant. The trade name and type of flame retardant utilized in the flame-retardant treatment. The name of the person and firm that applied the flame retardant.
- The following general storm water run-off practices shall apply to the event:
  - No dumping or allowing any material into City storm drains.
  - Install secondary containment around portable restroom facilities when feasible.
  - Prompt and proper clean-up of all trash debris.
  - Do not use water or any liquid to rinse down any debris or dirt on any ground surface. Dry sweeping only of event debris is allowed.
  - Protect all storm drain catch basins/inlets when feasible with proper storm water Best Management Practices implementation.
  - Do not allow excess water to leave the site. Properly contain everything onsite before it enters the City's storm drain system.

APPENDIX D: KEEP SOLANA BEACH BEAUTIFUL DAY 2009

APPENDIX E: FIESTA DEL SOL FLYER 2010

APPENDIX F: LEAF BLOWER BAN – ORDINANCE 399

ORDINANCE NO. 399

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING AND REPEALING SECTIONS OF CHAPTER 7.34 OF THE SOLANA BEACH MUNUCIPAL CODE, ALL RELATED TO NOISE ABATEMENT AND CONTROL AND AMENDING SECTION 13.10.030 OF THE SOLANA BEACH MUNICIPAL CODE, RELATED TO STORM WATER MANAGEMENT

WHEREAS, the City's Noise Abatement and Control Ordinance (Chapter 7.34 of the Solana Beach Municipal Code) was enacted in 1991 pursuant to Ordinance Number 147; and

WHEREAS, no amendments have been made to Chapter 7.34 of the Solana Beach Municipal Code since its enactment;

WHEREAS, the City Council desires to update Chapter 7.34 to clarity certain provisions and to repeal sections that are unnecessary.

WHEREAS, the City of Solana Beach's storm water management and discharge control ordinance, Chapter 13.10 of the Solana Beach Municipal Code, provides for the prevention and enforcement of certain discharges into the storm water system within the City; and

WHEREAS, organic contaminants whose presence degrades the quality of the receiving waters in violation of basin plan, enclosed bays and estuaries plan, inland surface water plan, and California ocean plan standards including but not limited to leaves, grass clippings and yard waste and trimmings must be prevented from entering the storm drain conveyance system, which includes, among other things, the streets, gutters, and catch basins.

WHEREAS, leaf blowers can contribute to the discharge of pollutants, specifically organic contaminants, into the City's storm drain conveyance system; and

WHEREAS, the SBMC section 13.10.030 needs to be amended to expand the definition of pollutants to specify leaves, grass clippings, and yard waste and trimmings as organic contaminants.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 7.34.040.A of the Solana Beach Municipal Code is hereby amended as follows:

7.34.040 Sound level limits.

A. Unless a permit has been applied for and granted pursuant to this chapter, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below except as provided in SBMC 7.34.170 and construction noise level limits governed by SBMC 7.34.100. The noise subject to the limits set forth below is that part of the total noise at the specified location that is due solely to the action of said person. The limits apply to the source of the noise only, not the source of the noise plus the ambient noise level.

Applicable Limit
One-Hour Average
Sound Level

Zone	**(Time)**	**(Decibels)**
ER1, ER2, LR,		
LMR, MR	7 a.m. to 10 p.m.	50
Residential	10 p.m. to 7 a.m.	45
MHR, HR	7 a.m. to 10 p.m.	55
Residential	10 p.m. to 7 a.m.	45
C, LC, OP	7 a.m. to 10 p.m.	60
Commercial Office	10 p.m. to 7 a.m.	55
LI, SC		
Light Industrial and	7 a.m. to 10 p.m.	70
Special Commercial	10 p.m. to 7 a.m.	60
Public/Institutional	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	45
Park/Recreational	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	45

B. In the event the alleged offensive noise, as judged by the noise control officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, the applicable limits set forth above shall be reduced by five dB. The noise control officer may use an octave band spectral filter coupled to a sound level meter to aid in the judgment of the presence of an audible tone. If the sound intensity measured in any audible octave band exceeds that in adjacent bands by five dB, then an audible tone shall be judged as present.

C. The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts.

D. Fixed location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section,

measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

Section 2. Section 7.34.070 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.070 Solid waste management vehicles and parking lot and sidewalk vacuums.

No person shall operate, or permit to be operated, a refuse compacting, processing, or collection vehicle or a parking lot or sidewalk vacuum between the hours of 6:00 p.m. and 6:30 a.m. in or immediately adjacent to any residential area of the city unless a permit has been applied for and granted pursuant to this chapter.

Section 3. Section 7.34.080 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.080 Leaf blowers.

A. Regulation. It is unlawful for any person to use or operate within the city limits any leaf blower powered by a 2-stroke gas-powered engine to blow leaves, dirt and other debris off sidewalks, driveways, lawns and other surfaces, except between the hours of 9:00 a.m. and 5:00 p.m. Only non-commercial residential uses of leaf blowers are permitted on Sundays.

B. No person shall operate any leaf blower without attachment of all mufflers and full extension tubes supplied by the manufacturer for that leaf blower.

C. Beginning January 1, 2011, no leaf blower powered by a 2-stroke gas engine shall be permitted to operate within the city.

Section 4. Section 7.34.140 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.140 General noise regulations.

A. General Prohibitions. It is unlawful for any person to make, continue or cause to be made or continued, within the limits of the city, any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in the area.

The characteristics and conditions which should be considered in determining whether a violation of the provisions of this section exists, include, but are not limited to, the following:

1. The level of noise;
2. Whether the nature of the noise is usual or unusual;
3. Whether the origin of the noise is natural or unnatural;
4. The level of the background noise;
5. The proximity of the noise to sleeping facilities;
6. The nature and zoning of the area within which the noise emanates;
7. The density of the inhabitation of the area within which the noise emanates;
8. The time of the day or night the noise occurs;
9. The duration of the noise; and

APPENDIX G: MANDATORY COMMERCIAL RECYCLING ORDINANCE

ORDINANCE 417

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SECTIONS OF CHAPTER 6.20 OF THE SOLANA BEACH MUNUCIPAL CODE, ALL RELATED TO RECYCLING

WHEREAS, the City's Solid Waste Collection and Disposal Ordinance (Chapter 6.20 of the Solana Beach Municipal Code) was enacted in 1993 pursuant to Ordinance Number 177; and

WHEREAS, the City's Solid Waste Collection and Disposal Ordinance, Sections 6.20.090 and 6.20.135 were amended in 2006 pursuant to Ordinance Number 345;

WHEREAS, Section 6.20.135 fails to mandate that all business types must recycle;

WHEREAS, Section 6.20.135 does state that residents and businesses may choose other methods to recycle other than through the City's recycling services;

WHEREAS, the City Council desires to update Chapter 6.20 to clarify certain provisions.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 6.20.090 of the Solana Beach Municipal Code is hereby amended as follows:

6.20.090 Containers.
It shall be the duty of the occupants of residential, commercial and industrial occupancies to maintain containers for the accumulation and disposal of garbage, recyclables, combustible and noncombustible rubbish, miscellaneous debris, rubbish, recyclable material and other refuse. All containers or receptacles used for the reception, removal and disposal of garbage, recyclables, food plant wastes, market greens, market refuse and like refuse, should be water-tight, constructed of a material of suitable strength and durability, shall be tight-seamed and provided with handles and tight-fitting lid or cover, which lid shall be and remain affixed to the container at such time as the garbage, recyclables, food plant waste, market greens, market refuse and other refuse are placed within the container. Noncombustible refuse and other like refuse, other than garbage, may be deposited in well-constructed containers having a capacity not in excess of 96 gallons each (residential) and which, when filled, do not collectively exceed a weight of 150 pounds for solid waste and recyclables. Green waste may be deposited in well-constructed containers having a capacity not in excess of 32 gallons each (residential) and which, when filled, do not collectively exceed a

weight of 50 pounds. No person shall fill any container with garbage, recyclables, rubbish or other refuse above the top of the container to such extent as to permit the contents of any container to be blown or otherwise strewn about. Paper bags and cardboard containers shall not be used as containers for the disposal of garbage, recyclables, rubbish and other refuse.

Where a franchisee, pursuant to a franchise agreement under this chapter, provides carts/containers for refuse, all refuse and recyclables must be containerized only in the carts/containers provided by the franchisee at the cost and under the terms set out in the franchise agreement. Containers provided by the franchisee are the sole property of the franchisee and may not be removed from the residential premises for which they are provided. Franchisee shall be responsible for normal wear and tear of such containers. Costs to repair damages beyond ordinary wear and tear shall be borne by the resident. Costs for additional carts/containers shall be borne by the resident. All costs shall be as set out in the franchise agreement.

Tree limbs, trunks, hedge cuttings, brush and lumber shall not exceed four feet in length. In commercial and business zones, containers shall be metal lined, leak proof, constructed of noncombustible materials, provided with an impervious lid, and approved by the fire department or its representative as providing adequate protection against fire hazard.

Section 2. Section 6.20.135 of the Solana Beach Municipal Code is hereby amended as follows:

6.20.135 Mandatory recycling.

A. It shall be mandatory for all occupants to separate from refuse, for recycling purposes, all designated residential, commercial, and industrial recyclables and otherwise participate in recycling through the collection service provided by a franchisee.

B. A responsible occupant is not prohibited from using alternative collection and disposal methods which are not in conflict with the provisions of this code.

C. Nothing in this ordinance shall preclude any person from self hauling recyclable materials generated by that person to a recycling facility or operator. An occupant may transport recyclable materials generated at its business or property to a recycling facility or operator (rather than utilizing a franchisee). The city manager or his/her designee may restrict or prohibit self hauling by an occupant if the city manager or his/her designee determines, after providing notice and an opportunity for a hearing, that the occupant's self hauling activities violate the provisions of this section or any other applicable law or regulation.

D. Nothing in this ordinance shall preclude any occupant from selling or exchanging at fair market value, for reuse or recycling, recyclables generated from that business,

commercial or residential property; or from donating to another entity for reuse or recycling recyclables generated from that business, commercial or residential property.

E. It is unlawful for any person to fail to segregate designated recyclable material. Violations of this section shall be punishable as provided in Chapters 1.16 and 1.18 SBMC. Nothing in this subsection shall prevent the city from obtaining voluntary compliance with the provisions of this section through educational programs, issuance of warning notices, or other means.

EFFECTIVE DATE: This Ordinance shall be effective thirty (30) days after its adoption. Within fifteen (15) days after its adoption, the City Clerk of the City of Solana Beach shall cause this Ordinance to be published pursuant to the provisions of Government Code Section 36933.

INTRODUCED AND FIRST READ at a regular meeting of the City Council of the City of Solana Beach, California, on the 12th day of May, 2010; and

THEREAFTER ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, on the ____ day of _____, 2010, by the following vote:

AYES: Councilmembers –
NOES: Councilmembers –
ABSTAIN: Councilmembers –
ABSENT: Councilmembers –

_____
THOMAS M. CAMPBELL, Mayor

APPROVED AS TO FORM:

_____
JOHANNA N. CANLAS, City Attorney

ATTEST:

_____
ANGELA IVEY, City Clerk

APPENDIX H: RWQCB FIELD AUDIT REPORT

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - SAN DIEGO REGION
WATERSHED MANAGEMENT PROGRAM

FACILITY INSPECTION REPORT

FACILITY: City of Solana Beach JURMP Program Field Visit **CIWQS#: 257637** **INSPECTION DATE/Time: 10/08/09 1 pm**

FACILITY: **City of Solana Beach JURMP Program Field Visit October 08, 2009**

REPRESENTATIVE(S) PRESENT DURING INSPECTION: Laurie Walsh (SDRWQCB), Danny King (City of Solana Beach Stormwater Program), Denise Olaguer (City of Solana Beach Stormwater)

City of Solana Beach	**Dan King Stormwater Program Administrator (858) 720-2477**
NAME OF COPERMITTEE	CONTACT NAME AND PHONE #

APPLICABLE WATER QUALITY LICENSING REQUIREMENTS

- ☒ **MS4 URBAN RUNOFF REQUIREMENTS NPDES NOS. CAS0108758, CAS0108740 or CAS0108766**
- ☐ **GENERAL PERMIT ORDER NO. 99-08-DWQ, NPDES NO. CAS000002 – CONSTRUCTION**
- ☐ **GENERAL PERMIT ORDER NO. 99-06-DWQ, NPDES NO. CAS000003 - CALTRANS**
- ☐ **GENERAL OR INDIVIDUAL WASTE DISCHARGE REQUIREMENTS**
- ☐ **GENERAL OR INDIVIDUAL WAIVER OF WASTE DISCHARGE REQUIREMENTS**
- ☐ **SECTION 401 WATER QUALITY CERTIFICATION**
- ☐ **CWC SECTION 13264**

INSPECTION TYPE (Check One)

A1 ____ "A" type compliance--Comprehensive inspection in which samples are taken. (EPA Type S)

B1 __X__ "B" type compliance--A routine nonsampling inspection. (EPA Type C)

02 ____ Noncompliance follow-up--Inspection made to verify correction of a previously identified violation.

03 ____ Enforcement follow-up--Inspection made to verify that conditions of an enforcement action are being met.

04 ____ Complaint--Inspection made in response to a complaint.

05 ____ Pre-requirement--Inspection made to gather info. relative to preparing, modifying, or rescinding requirements.

06 ____ No Exposure Certification (NEC) - verification that there is no exposure of industrial activities to storm water.

07 ____ Notice of termination request for industrial facilities or construction sites - verification that the facility or construction site is not subject to permit requirements (**Type, NOT I or NOT C - circle one**).

08 ____ Compliance Assistance Inspection - Outreach inspection due to discharger's request for compliance assistance.

INSPECTION FINDINGS

__N__ Were violations noted during this inspection? (Yes/No/Pending Sample Results)

I. COMPLIANCE HISTORY:

- 2/24/2009 Regional Board wrote letter commenting on JURMP Annual Report 07/08.
- 3/26/2009 City of Solana Beach response letter to Regional Boards 2/24/09 Letter.

FACILITY: City of Solana Beach JURMP Program Field Visit **CIWQS#: 257637** **INSPECTION DATE/Time: 10/08/09 1 pm**

II. FINDINGS :

- The Field Visit included all private and public post construction BMP locations within the City of Solana Beach. Affordable Pipeline Services is contracted with the City to conduct all the maintenance of their storm water BMPs.

Fletcher Cove Restrooms

Submersible Pump gets extracted just prior to cleaning of low flow diverter at Fletcher Cove.

Overflow of the diverter can occur if plastic bags or debris get caught within pump intake. Typically occurs after heavy rain event when trash ends up in the low flow diverter structure.

Low Flow Diverter Structure is downgradient from the public restrooms located at the top of the steep grade. The floor drains in the restrooms are plumbed to connect to the low flow diversion structure. In its current condition if the toilets in the restrooms were to overflow and the submersible pump in the low flow diversion structure were to be clogged, there is the potential for waste products to be discharged to the beach. Once the City of Solana Beach became aware of this connection, they installed plugs in the restroom floor drains. Any discharge from an overflowing toilet gets captured in the floor drain and cleaned out every morning. The City has engineered a solution to fix the plumbing problem and is currently advertising for bids to do the work. The engineered solution includes connecting the floor drains directly to the sanitary sewer and installing a manhole for ease of future maintenance. Quantities of material (water and sediment) removed are calculated by differentially leveling of vac truck volume. There is no discernable way to tell what portion of volume is liquid vs. sediment. Vac truck decants at the San Elijo Joint Power Authority WWTP. The low flow diverter is cleaned once per month.

Hose coupling broke during rinsing of vac truck pipe. The hose contained potable water and runoff barely reached the beach as is seen in photo on right. An alternate hose was used to avoid further discharge of water. No discharge occurred after the alternate hose was use.

Sand Trap Before Cleaning

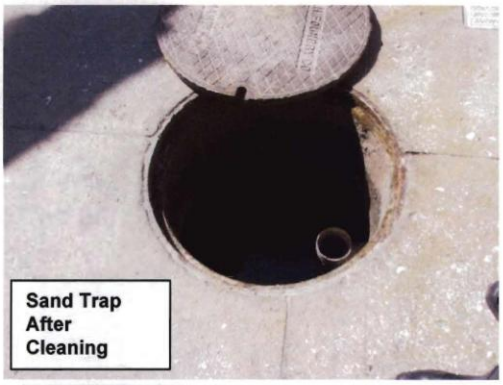

Sand Trap After Cleaning

PVC pipe in manhole is from the floor drain coming from showers. The Sand Trap design is successful in removing significant amounts of sand preventing it from fouling the system further downgradient. When the sand trap fills water overflows the weir into the low flow diversion. There is no schedule plan to modify this system since it is working well along with regular cleanings. The sand trap is cleaned once per month.

La Colonia Park Bioswale BMP

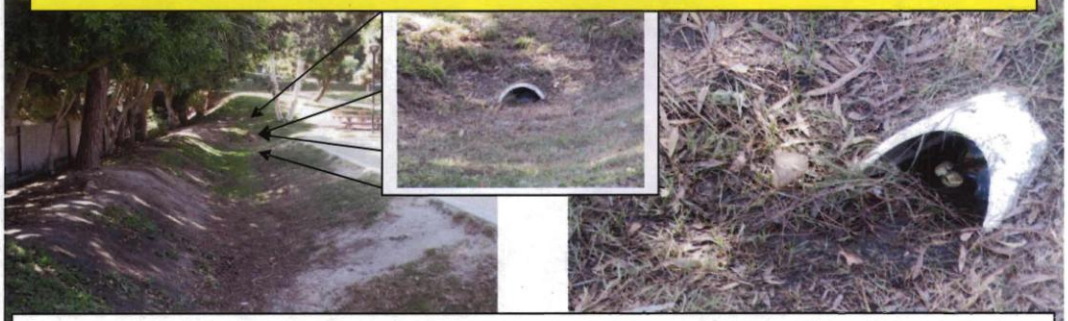

BioSwale located at the La Colonia Park. This post construction BMP is managed by the City. The inlet pipe looked clogged with debris and some trash to the point it was about half way clogged. Dan King with city requested city staff come and clean it out that day.

Cedros CDS Unit: Cleaned on a once per month basis. During first flush of rainy season this unit can get quite filled with trash and debris.

Boys and Girls Club Post Construction BMPs

1- Drainage into filters

2- Verified presence of Inlet filter beneath grate

3- Verified second filter insert

4- Discharge from parking lot onto private BGC road.

5- Ultimate discharge point onto neighboring school grassy area.

6 CDS unit verified

Boys and Girls Club: Blue arrows indicate direction of storm water run off into and out of filter inserts in photos 1-5. Storm water run off from the BGC property is designed to drain through the filter inserts beneath the retaining wall (photo 4) and onto their private driveway before discharging to a grassy field (beyond the fence in photo 5). The BGC have a written agreement with the school to allow this drainage pattern. Photo 6 shows the location of the CDS unit at the back of the BGC Property. CDS Unit gets maintained once per year. BGC staff is going to check manufactures recommended maintenance for this unit under current design parameters to make sure that once per year is sufficient.

III. RECOMMENDATIONS AND ADDITIONAL COMMENTS

- The City of Solana Beach has a small inventory of private and municipal post construction BMPs.
- The debris in the bioswale at the La Colonia Park should be removed to increase efficiency of that BMP.
- The City contracts with Affordable Pipeline Services (APS) for maintenance of the low flow diverter and the CDS units that the City is responsible for maintaining. Maintenance of these units is on a regular basis. City staff is onsite when APS is servicing the units. APS writes comments on the invoices regarding amount of debris removed and if there is anything in the debris that may be cause for concern (oil/grease, excessive trash, etc.). If it's an emergency situation that needs immediate attention, Steve Kerr (Operations Manager) is contacted directly by APS and/or City staff.
- By letter dated March 26, 2009 the City of Solana Beach responded to all comments set forth in the Regional Boards February 24, 2009 letter commenting on the FY 07/08 JURMP Annual Report.

IV. SIGNATURE SECTION

Inspection Report received by:

FACILITY REPRESENTATIVE	SIGNATURE	TITLE	DATE
Laurie Walsh	Laurie Walsh		10/08/2009
STAFF INSPECTOR	SIGNATURE		INSPECTION DATE

VI. (For internal use only)

Reviewed by Supervisor: _____ Date 10-14-09

cc:

Inter-office Referral: 1) _____ 2) _____ 3) _____ 4) _____ 5) _____

s: north watershed unit/forms/inspection form.doc (vrs. 11/22/00)

CIWQS:
Place ID: 257637

APPENDIX I: CONSTRUCTION BMP BROCHURE

WATER QUALITY REGULATIONS FOR CONSTRUCTION SITES

Dear Contractor,

The North County Storm Water Program is a collective of jurisdictions in northern San Diego County working together to protect our watersheds. We believe that reducing pollution is critical to maintaining our communities' way of life.

It is our hope that this brochure will help you identify activities that are recognized to cause water pollution and implement appropriate Best Management Practices (BMPs) to minimize their impact. By providing you with these tools, we hope to make your job easier while keeping our waterways clean.

Each jurisdiction will be inspecting their construction sites to ensure the protection of water quality. We look forward to seeing the BMPs presented in this brochure implemented at your sites.

Together we have the ability to preserve and improve the quality of life in our communities.

Sincerely,

The North County Storm Water Program

Contact Phone Numbers:

City of Carlsbad
760-602-2799

City of San Marcos
760-744-1050

City of Encinitas
760-633-2787

City of Del Mar
858-755-8313

City of Oceanside
760-435-5800

City of Solana Beach
858-720-2470

City of Vista
760-726-1340

A POLLUTION PREVENTION GUIDE FOR THE CONSTRUCTION INDUSTRY

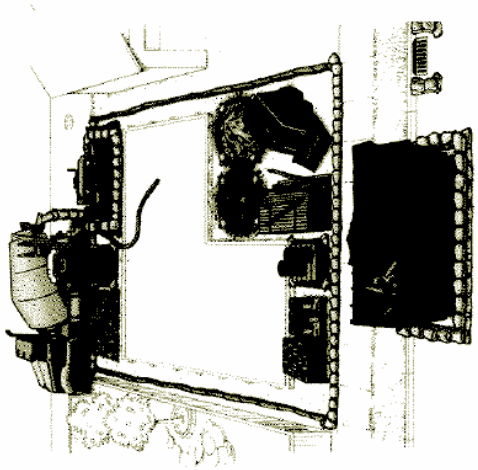

North County Storm Water Program

Carlsbad • Del Mar • Encinitas • Oceanside
• San Marcos • Solana Beach • Vista

Only Rain in the Storm Drain

Construction Sites

In 1972, the Environmental Protection Agency developed regulations to control water pollution. As a result, the National Pollutant Discharge Elimination System (NPDES) Permit was created. NPDES permits are issued to municipalities as well as construction sites. In addition to complying with local regulations, which are governed by our municipal NPDES permit, you may be required to obtain a permit through the State of California under the State General Construction Permit (99-08-DWQ). All construction sites over one acre are required to obtain coverage under this permit.

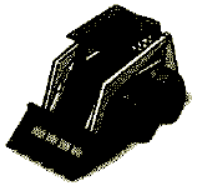

Construction sites can contribute pollutants such as sediment, metals, and chemicals, to our local creeks, rivers, lakes, lagoons, and ocean. These pollutants make their way down our streets and into storm drains, eventually discharging to the nearest body of water.

All construction sites are required to implement Best Management Practices (BMP) to prevent storm water pollution. This brochure is intended to assist your construction site in understanding BMP requirements.

Each municipality has one or more persons dedicated to ensuring that all construction sites are in compliance with state and local storm water control regulations. Contact your local municipality for further information.

Right-of-Way Permitting

We understand that there are times when space on construction sites is limited. If at any point, you (as a contractor or subcontractor) need to use the public right-of-way in order to work or store materials, you must apply for a special permit. This permit allows you to use the City's right-of-way areas, and describes what is required to prevent illegal contaminants from entering local storm drains. For more information or to obtain a permit application contact your local jursidiction.

Inspection and Enforcement Program

Each jurisdiction has established an enforcement program to ensure that all businesses operate in compliance with all appropriate storm water laws and other City requirements. Contractors, site supervisors and property owners can be held responsible for violations, which may lead to a civil penalty of up to $10,000 per day and/or reimbursing the local jurisdiction for all expenses associated with clean up.

Best Management Practices

Construction materials such as paint, dirt and trash often find their way into our storm drains, polluting the environment and jeopardizing our creeks, rivers, lakes, lagoons, and ocean.

The NCSWP is working with contractors to implement what are known as Best Management Practices (BMPs) on all construction sites. That is, methods used to keep pollution out of our storm drains and off public property, such as sidewalks, streets, parkways and alleys. Carrying out and maintaining these BMPs on the construction site is critical to protecting our ocean and bay.

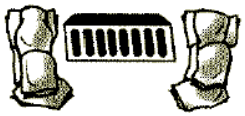

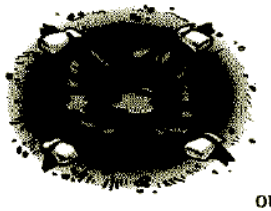

The following is a list of BMPs and pollution prevention measures that shall be implemented at all construction sites:

1. **Conduct daily site cleanings.**
2. **Develop spill response and containment procedures.**
3. **Educate employees and subcontractors about BMPs.**
4. **Develop an erosion control plan for wind and rain.**
5. **Regularly maintain all BMPs at project site.**

APPENDIX J: STORM WATER PLAN CHECK COMMENT FORM

CITY OF SOLANA BEACH
ENGINEERING DEPARTMENT
STORM WATER PLAN CHECK COMMENTS

Project: _____ Address: _____

☐ Construction phase **Erosion Control** shall be shown on the permitted plans, such as silt fences, gravel bags, de-silting basins, slope protection and entrance controls. **Best management practices (BMP's)** shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during construction activities. Erosion prevention shall be emphasized to keep sediment on site during excavation and grading activities. Sediment controls such as mulch, jute netting and straw blankets shall be used as a supplement to erosion control for keeping sediment on site.

- **Submit Storm Water Management Plan** (attached)
- **Add the following note to plans**: "**EROSION CONTROL:** Best management practices shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during excavation and grading activities."

☐ The Applicant shall demonstrate that the **project does not increase storm water runoff** or peak discharge from their property. For example, add a storm water retention and infiltration feature such as a depressed landscape area or below ground drywell using course rock (1.5" to 2.5") or a pre-fabricated chamber. The amount of retention volume should be at least equal to 0.60 inches (0.05 feet) times the added impervious area. This should be designed to avoid runoff damage to downstream properties, such as not concentrating runoff where it was previously not concentrated. (For 5,000 SF or more of added impervious area, use County of San Diego Hydrology Manual)

☐ Storm Water and Non-Storm Water Runoff Control. Post-development measures that **reduce pollutant discharges from the site** shall be shown on the permit plans. For example, maximize permeable areas (landscaping, driveway grass strips, gravel paths, concrete pavers on sand) to allow runoff seepage into the ground and drain impermeable surfaces (roofs, hardscape, driveways) to permeable areas (i.e. planted areas) and other approved pollutant treatment BMP's.

- Is runoff from hardscape areas routed over natural treatment areas before draining off site?
- **Show on the plans** where hardscape and roofs drain to.
- **Show BMP's** on the plans (grassy swales, landscaping, infiltration pits, pervious pavements, gravel paths, etc.).
- The volume of treatment should be at least 0.60 inches (0.05 feet) times the added impervious area.

APPENDIX K: BUILDING PLAN CHECK ROUTING FORM

CITY OF SOLANA BEACH
635 S. Highway 101, Solana Beach, CA 92075
(858) 720-2440
APPLICATION TRACKING FORM

Plancheck No.: _____
Received by: _____
Date:

Site Address _____ Suite # _____
Site Business Name _____ APN _____
Project/Property Owner's Name _____
Contact Person _____ Phone # _____
Address _____ Fax # _____
Project Description _____ E-Mail _____
Discretionary Permit Applicable? _____ Sq. Ft. _____
Estimated Building Valuation? _____ Estimated Grading Required? _____
Is/will the building equipped with fire sprinklers? ☐Yes ☐No Is the property on a septic system? ☐Yes ☐ No
Is there an existing swimming pool &/or spa on the property? ☐Yes ☐ No **If "yes," see the Pool & Spa note below**

THE FOLLOWING "CHECKED" ITEMS MUST HAVE WRITTEN APPROVAL PRIOR TO PERMIT ISSUANCE. APPROVALS FROM THE PLANNING, ENGINEERING, FIRE, HEALTH DEPARTMENTS, AND THE AIR POLLUTION CONTROL DISTRICT MAY ALSO BE REQUIRED PRIOR TO FRAME AND/OR FINAL INSPECTION AND OCCUPANCY (INDICATED ON "BLUE" CARD). IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE INDIVIDUAL DEPARTMENT(S) AT THE NUMBERS SHOWN.

CITY DEPARTMENTS

☐ **PLANNING / ZONING**.....**858-720-2440**
☐ O.K. for Plancheck Only. By _____ Date_____
☐ Fees Due. ☐ Park Fees ☐ Public Facilities Fees ☐ Public Arts Fee
☐ Fee Payment Required Prior to ☐ Permit Issuance ☐ Final Inspection
☐ Height Certificate Required prior to Requesting Frame Inspection.
☐ Approval Req'd prior to: ☐ Permit ☐ Frame Insp ☐ Final Insp
☐ Approval required prior to ☐ Frame ☐ Final Inspection
☐ Project shall comply with Wildland Urban Interface Standards (WUI)
☐ O.K. to Issue Building Permits _____

☐ **ENGINEERING / SANITATION**.....**858-720-2470**
☐ O.K. for Plancheck Only. By _____ Date _____
☐ Permits Req'd ☐ Dedication Req'd ☐ Fees Req'd.
☐ Approval required prior to ☐ Frame ☐ Final Inspection
(Sewer, Plancheck, In Lieu)
☐ See attached form for Storm Water BMP'S
☐ O.K. to Issue Building Permits _____

☐ **ENVIRONMENTAL**.....**858-720-2477**
☐ O.K. for Plancheck Only By _____ Date _____
☐ See attached form for Storm Water comments
☐ WMP Required Prior to ☐ Permit Issuance ☐ Final Inspection
☐ Post Construction BMP Inspection Required:
☐ During Construction ☐ Prior to Final Inspection
☐ O.K. to Issue Building Permits _____

☐ **FIRE PREVENTION**.....**858-720-2410**
☐ O.K. for Plancheck Only By _____ Date _____
Approval required prior to ☐ Frame ☐ Final Inspection
☐ O.K. to Issue_____

☐ **POOL & SPA SAFETY ENCLOSURE & SAFETY FEATURES**
Effective 1/1/07, AB 2977 requires all existing pools and spas shall comply with current State mandated enclosure & safety features.

AGENCY APPROVALS

☐ **SCHOOL FEES**
(Obtain signature on the attached forms)
Solana Beach Elementary &
San Dieguito Union H.S. District.....**760-753-6491**

☐ **HEALTH DEPARTMENT**
☐ Health Regulated Business
☐ Hazardous Materials Management.....**619-338-2222**
1255 Imperial Avenue, San Diego 92138-5621
☐ Final Approval Required
☐ Septic Approval Required **760-471-0730**
151 Carmel St, San Marcos 92078
Approved by_____

☐ **AIR POLLUTION CONTROL DIST.** ..... **(858) 586-2600**
(Obtain stamp and signature on APCD Questionnaire)
10124 Old Grove Rd., San Diego CA 92131

☐ **WATER AND SEWER**
(Obtain signatures on attached forms)
☐ Santa Fe Irrigation District.....**858-756-2424**
☐ Solana Beach Sanitation District **858-720-2470**

☐ **CALIFORNIA COASTAL COMMISSION**....**619-767-2370**
Call for an appointment

☐ **ASSESSOR'S COPY OF PLANS**
At permit issuance, provide a third copy of Title Sheet, Plot Plan & Floor Plan (per Senate Bill 493).

☐ **OWNER/BUILDER AFFIDAVIT AND/OR CONTRACTOR INFORMATION**

☐ **SDG&E WORK ORDER**..... **(800) 411-SDGE**
For new / relocated gas & electric meters

_____ _____
Signature of Applicant Date

F:/Common/UpdatedApplications/Tracking Sheet Eff 09/08

APPENDIX L: PUBLIC PROJECT PRE-CON MEETING AGENDA

PRE CONSTRUCTION MEETING
Fletcher Cove Pump Station Vault Maintenance
Bid No. 2009-07
December 18, 2009

Introductions

Contacts

1. Contractor A.B. Hashmi, Inc.
   2003 South El Camino Real, # 105
   Oceanside, CA 92054
   (760) 672-8059

2. City City of Solana Beach
   635 S. Hwy 101
   City of Solana Beach, CA 92075
   (858) 720-2470 (Engineering)
   (858) 755-1782 (Engineering fax)

   Hector Ezquerro – City Inspector (858) 354-8876 (cell)
   Dan Goldberg – Project Manager (858) 720-2474
   Steve Kerr – Public Works Operations Manager (858) 449-2630 (cell)
   Craig Miller – Marine Safety Captain (858) 720-4444

   Utilities Santa Fe Irrigation District (858) 756-2424
   Joe Hernandez – San Elijo Joint Powers Authority (760) 801-0935 (cell)

Project Status: Notice to Proceed – TBD
25 Working Days

Contract Amount: $20,770.00

Project Goals:
- Safety
- Community
- Quality
- Schedule
- Budget

Contractor Requirements:
- Any questions about Contract Award or "Key Contract Items Summary Sheet"?
- Submit Construction Schedule
- Submit Traffic Handling Plan
- Submit Storm Water Pollution Prevention Plan (SWPPP)
- Submit Names/Phone Numbers of Foreman/Emergency People
- Submit Names of Additional Subcontractors

9/28/2010 Page 1 of 2 3:31 PM

Storm Water & Erosion Control
- Best management practices shall be used & maintained
- Erosion control plan

Labor Compliance, Certified Payroll and Progress Payments

Public Notification: Contractor's responsibility (keep the public & the city informed)

Utility issues

Project Safety: Contractor's responsibility
- Traffic Control Plans

Inspection & Testing
- City will provide inspection

Change Orders
- Notification must be in writing
- Work is not approved until you have a change order signed by the City Council, City Manager or the City Engineer. Project Manager and Project Inspector cannot approve change orders.

Submittals
- Submittals should be given to the project manager.

Operating hours
- 7 a.m. to 4:30 p.m. Monday through Friday. Do not operate, start equipment or congregate near residential areas before 7 a.m.
- No work will be allowed on weekends or holidays.

Operating Conditions
- Per Section I (General Requirements), Part J.2 (page 43), the contractor shall perform all work in coordination with the San Elijo Joint Powers Authority (SEJPA). SEJPA requires 24 hour access to the pump station and the pump station must remain operational throughout the duration of the project unless coordinated with SEJPA and approved by the city. In addition, the marine safety building and the adjacent restroom building must remain fully operational throughout the project.
- Per Section I (General Requirements), Part J.4 (page 43), the contractor will not be allowed to close Fletcher Cove Park, the beach access ramp or any portion or the parking lot. All work shall be contained as close as possible to the area immediately surrounding the place where the work is occurring.
- Per Section I (General Requirements), Part J.6 (page 43), there may be separate construction projects taking place that will gain access to their project using the beach access ramp. Contractor is expected to cooperate with and allow access to the outside construction contractors.
- Scheduling of all work shall be coordinated with the Marine Safety Department to ensure that their operations are impacted as little as possible during the project.

Project Issues/Ordering of Materials

Work Schedule/Notice to Proceed

APPENDIX M: CIVIL PENALTY MATRIX

SOLANA BEACH
CIVIL PENALTIES MATRIX

The following factors will be considered in determining the amount of civil penalties from the Solana Beach Municipal Code 13.10.140 A. any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day** such a violation exists and will be assessed: (1) The seriousness of the violation (2) the duration of the violation; (3) the frequency or recurrence of the violation; (4) the history of the violation; (5) the Responsible Party's conduct after issuance of the Notice and Order; (6) the good faith efforts of the Responsible Party to comply; (7) the impact of the violation upon the community.

*** Criminal Penalties**

These factors are assigned to two categories, "**Environmental Significance**" and "**Compliance Significance**," in order to easily present them in a graphical form in the matrix chart.

Environmental Significance includes the following factor: Seriousness of the violation.

Compliance Significance includes the remaining factors: The duration of the violation, frequency or recurrence of the violation, the history of the violation, the Responsible Party's conduct after issuance of the Notice and Order; the good faith efforts of the Responsible Party to comply and the impact of the violation on the community.

Environmental Significance

Compliance Significance	Moderate	Major	Severe
Moderate	*NOV-$100	$100 - $200	$500
Major	$100- $200	$500	$1,000
Severe	$500-$1,000	$1,000	$1,000-Referral to Regulating Agency

* Notice of Violation

The list below gives examples of issues specific to storm water violations that could be considered under each of the factors.
Increased Penalties will be factored as Notice of Violation to Moderate, Moderate to Major or Major to Severe.
Decreased Penalties could be Severe to Major, Major to Moderate or Moderate to Notice of Violation.

Environmental Significance
Seriousness of the Violation

Relatively inert discharges (e.g., soil, sediment, cement residue, stucco residue, etc.) **[Moderate Environmental Impact]**

Moderate toxicity / moderate health threat discharges (e.g., cleaning products with no specific hazard, i.e. detergent, latex paint) **[Major Environmental Impact]**

Significant toxicity / significant health threat discharges (e.g., sewage, hazardous materials/wastes, etc.) **[Severe Environmental Impact]**

SOLANA BEACH
CIVIL PENALTIES MATRIX

Compliance Significance

Duration of Violation

Extent of discharge as determined by volume, area covered, how long it continued **[Greater Discharge Can Lead to Increased Penalty]**

Number of days the discharge remained unabated in the conveyance system **[Unabated Discharge Can Lead to Increased Penalty]**

Impact on the Community

Results in damage, degradation, or obstruction of the storm water conveyance system **[Can lead to Increased Penalties]**

Results in actual degradation of aquatic habitat in receiving waters **[Can lead to Increased Penalties]**

Results in actual impact on wildlife including benthic communities **[Can lead to Increased Penalties]**

Results in algal bloom, discoloration or odor in receiving waters **[Can lead to Increased Penalties]**

Discharge of constituent of concern within a watershed that leads to a 303 (d) listed water body **[Can lead to Increased Penalties]**

Regulated industry (e.g., subject to OSHA chemical right-to-know requirements or subject to Hazardous Material / Hazardous Waste Permit) **[Can lead to Increased Penalties]**

Recurrence of Violation

No prior administrative enforcement penalty can be a factor for officer's discretion in lowering penalties.

Prior administrative penalties action can lead to increased penalties.

Prior administrative enforcement within the last year maybe a factor in determining higher penalties leading up to a **criminal citation**.

Intentional discharge will be a factor to increase penalties leading up to a criminal citation.
SOLANA BEACH
CIVIL PENALTIES MATRIX

History of Violation
Prior violations or warnings issued by other regulatory or City agencies (e.g., County Dept. of Health, County Dept. of Env. Health, RWQCB, FEWD, MWWD) **[Can lead to Increased Penalties]**

Prior warnings (letter or Notice of Violation) from Storm Water Pollution Prevention Program **[Can lead to Increased Penalties]**

Good Faith Efforts to Comply
Responsible Party failed to implement BMPs and should have known of requirement for BMPs (e.g., gasoline service station or construction industry) **[Can lead to Increased Penalties]**

Existing BMPs failed to prevent discharge (e.g., employee failed to comply with documented training and procedures or structural BMP failed to perform to design) **[Can lead to Reduced Penalties]**

Rapid and appropriate response to discharge **[Can lead to Reduced Penalties]**

The Solana Beach Municipal Code 13.10.140 A States the following:

13.10.140 Penalties for violation.
A. Civil Penalties. Any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day such a violation exists**, and all pollution detection and mitigation costs (if applicable).
B. Criminal Penalties. Any person who knowingly or intentionally violates any provision of this chapter shall be subject to liability for a misdemeanor, punishable by imprisonment for a period not to exceed one year, or a fine not to exceed $10,000 for each day such a violation exists, or both.
C. Any monetary penalties collected by the city of Solana Beach pursuant to violations of this chapter shall be returned to the storm water management program to be used for storm water pollution monitoring and management practices. (Ord. 184 § 1, 1993)

13.10.150 Continuing violation.
Unless otherwise provided, a person, firm, corporation or organization shall be deemed to have committed a separate offense for each and every day during any portion of which a violation of this chapter is committed, continued or permitted by the person, firm, corporation or organization and shall be punishable accordingly as herein provided. (Ord. 184 § 1, 1993)

13.10.160 Concealment.
Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter shall constitute a violation of such provision. (Ord. 184 § 1, 1993)

13.10.170 Acts potentially resulting in violation of Federal Clean Water Act and/or Porter-Cologne Act.
Any person who violates any provision of this chapter, any provision of any permit issued pursuant to this chapter, or who discharges waste or wastewater which causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, may also be in violation of the Federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts including civil and

criminal liability. Any enforcement action authorized under this chapter should also include notice to the violator of such potential liability. (Ord. 184 § 1, 1993)

13.10.180 Violations deemed a public nuisance.

A. In addition to the penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to the public health, safety and welfare and is declared and deemed a public nuisance and to impact storm water quality, and such nuisance may be summarily abated and/or restored by any authorized enforcement official. Civil action to abate, enjoin or otherwise compel the cessation of such nuisance may be taken by the city attorney.

B. The cost of such abatement and restoration shall be borne by the owner of the property and the cost thereof shall be a lien upon and against the property and such lien shall continue in existence until the same shall be paid. If the lien is not satisfied by the owner of the property within three months after the completion by the authorized enforcement official of the removal of the nuisance and the restoration of the property to its original condition, the property may be sold in satisfaction thereof in a like manner as other real property is sold under execution.

C. If any violation of this chapter constitutes a seasonal and recurrent nuisance, the city of Solana Beach shall so declare. Thereafter such seasonal and recurrent nuisance shall be abated every year without the necessity of any further hearing. (Ord. 184 § 1, 1993)

13.10.190 Civil actions.

In addition to any other remedies provided in this section, any violation of this chapter may be enforced by civil action brought by the city of Solana Beach. In any such action, the city of Solana Beach may seek, and the court shall grant, as appropriate, any or all of the following remedies:

A. Injunctive relief;

B. Assessment of the violator for the costs of any investigation, inspection, or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing legal action under this subsection;

C. Costs incurred in removing, correcting, or terminating the adverse effects resulting from the violation;

D. Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life. Assessments under this subsection shall be paid to the city of Solana Beach to be used for costs associated with monitoring and establishing storm water discharge pollution control systems and/or implementing or enforcing the provisions of this chapter. (Ord. 184 § 1, 1993)

APPENDIX N: RAINY SEASON REMINDER (SAMPLE)

October 15, 2008

XXXXXXXXXXXX
XXXXXXXXXXXX
Solana Beach, CA 92075

RE: EROSION CONTROL RESPONSIBILITIES FOR CONSTRUCTION SITES

Dear Owner and/or Contractor:

As the rainy season begins, this is a reminder to make sure that your project site at **XXXXXXXX** is in compliance with the City of Solana Beach's Storm Water Management Section 13.60 and Excavation and Grading Ordinance Section 15.40. Your responsibility as owner/contractor is to control and reduce pollutants in runoff from all your construction activities. You are required to comply throughout the year, but the "rainy season" requires special attention and practices.

Since we are now in the official "rainy season," you shall implement all the required measures in the Storm Water Pollution Prevention Plan or Erosion Control Plan for your project site. Your responsibility to implement these measures is not only to comply with the City of Solana Beach's Ordinances and Jurisdictional Urban Runoff Management Program (JURMP), but also to comply with the Regional Water Quality Control Board Permit Order 2007-0001.

At a minimum you must implement these practices on all disturbed areas during the rainy season:

- Cover and stabilize all exposed soil, particularly on slopes, in order to prevent erosion.
- Employ any erosion control measures that are adequate to prevent erosion.
- Implement Best Management Practices (BMPs) to reduce the tracking of sediment onto public or private roads.
- Conduct pre- and post-storm inspections of erosion prevention and control measures and determine whether they function properly; modify if necessary to improve effectiveness.
- Maintain all erosion prevention and control measures throughout the season and replace them as needed to ensure measures accomplish the task.
- Ensure that all site personnel are trained in erosion prevention and control techniques as well as in the requirements of the Statewide General Construction Storm Water Permit.

- Review, upgrade, and fully implement your site-specific Storm Water Pollution Prevention Plan consisting of Best Management Practices for all pollutants, including those other than sediment. The City of Solana Beach will be inspecting your project site for compliance. The California Regional Water Quality Control Board plans to conduct their compliance inspections jointly with the United States Environmental Protection Agency. Other agencies may inspect your site at will.

If you would like additional information on selecting appropriate BMPs, the City has developed a BMP Brochure that is available upon request. Failure to comply with the City's storm water regulations can result in enforcement actions, including stop work notices and fines.

If you have any questions, or require additional information, please contact me at (858) 720-2477.

Sincerely,

Danny King
Environmental Programs Manager
City of Solana Beach

APPENDIX O: GENERAL CONSTRUCTION "GOOD NEIGHBOR" BROCHURE

PROPERTY OWNERS ARE RESPONSIBLE FOR THE ACTIONS OF THE CONTRACTORS AND SUBCONTRACTORS WORKING ON THEIR PROPERTY.

Construction Hours and Noise Levels:

Construction workers shall not congregate at or report to the site prior to the beginning of construction hours.

Monday - Friday:
7:00 a.m. to 7:00 p.m.

Saturday:
9:00 a.m. to 6:00 p.m.

No construction is permitted on Sundays and Holidays. Please check the City's website for a list of observed holidays at:

www.ci.solana-beach.ca.gov

Construction noise levels shall not exceed 75 decibels for more than eight hours during any 24 hour period.

For information concerning construction hours and noise levels contact the Community Development Department at:
(858) 720-2440

Storm Water Best Management Practices (BMPs)

Violations of the storm water regulations can result in penalties, including fines of $1000 per day per violation. These practices are strictly enforced.

Storm Water BMPs Continued:

- **Perimeter Protection Controls: Silt fences, straw wattels, sand bags, etc. must be used to control run-on and run-off from project site.**
- **Tracking Controls: All entrances and exits to the site must have protection measures installed to prevent tracking of sediment off the project site.**
- **Washout Area: All sites must have a designated "wash-out" area to clean equipment and dispose of excess concrete, stucco, and paint.**
- **Concrete Trucks/Pumpers: Concrete trucks and pumpers must have perimeter protection installed around and under them at all times. Any spill must be contained on-site and no washing of equipment permitted without a washout area.**
- **Materials Storage: All materials stored on-site must be contained and covered at all times.**
- **Trash Containers/Portable Restrooms: Dumpsters must be covered and have adequate perimeter protection and all portable restrooms must have secondary containment measures installed.**
- **Storm Drain Inlets: All adjacent storm drain inlets must be protected at all times to prevent pollutants from the project site from entering (including sediment).**

For more information concerning Storm Water BMPs contact the Environmental Services Department at (858) 720-2477.

Fire Safety:

Obey all Fire Codes:

- **Ensure fire lanes are kept clear and unobstructed.**
- **Any combustibles onsite must be stored safely.**
- **Remember oily rags catch on fire spontaneously, even when no ignition source or flame is present.**

For more information concerning fire safety contact the Fire Department at:
(858) 720-2410

Encroachment Permits:

Encroachment Permits are required before you start work within the public right of way.

- **Constructing new or repairing old curbs, gutters and sidewalks, constructing new driveways or placing dumpsters in the right of way requires approval from the City and a fee of $245.**
- **The installation of new or repair of existing utilities requires approval from the City and a fee of $575.**

For more information concerning encroachment permits please contact the Engineering Department at:
(858) 720-2470

Questions, Comments, Concerns?
Contact City Hall at: (858) 720-2400

Construction Site "Golden Rules"

Treat the construction site as if you were living next door to it.

- Communicate construction timetables to the surrounding neighbors. Consider distributing a letter to neighboring properties listing proposed timetables and contact information for the property owner and construction contractor.
- Notify neighbors if you expect excessive noise and/or traffic disruptions on a particular day. For example, if you are planning to demolish an existing residence or if you are expecting heavy equipment onsite to pour concrete.
- Avoid parking in front of neighbors homes and do not run car engines unnecessarily.
- Minimize noise by not using radios and refrain from shouting whenever possible.
- Construction vehicles should be parked legally and accommodated on the construction site whenever possible.
- Use respectful personal conduct by using the onsite restroom facilities and do not use profanity.

Community Development Department

City of Solana Beach
635 South Highway 101
Solana Beach, CA 92075
Phone: (858) 720-2440
FAX: (858) 755-1782
www.ci.solana-beach.ca.gov

City of Solana Beach

Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices

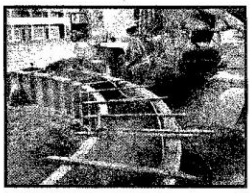

This fact sheet is provided to increase awareness of the basic rules all construction sites are required to follow by city ordinance. These rules are a minimum, and if not followed can result in penalties if you are found to be in violation of City or State applicable regulations.

In addition, we've provided some tips for additional measures that you can take at the site that would be appreciated by the City and your neighbors. We recognize that a construction site by its nature has a certain amount of noise, debris and inconvenience for the neighborhood. We have found from experience that where you can go above and beyond the minimum City Municipal Code requirements, and implement these good neighbor practices, your project can benefit from the improved neighborhood relations.

APPENDIX P: UNDERGROUND UTILITY DISTRICT SPECIAL BMP HANDOUT

Undergrounding Utility District Construction Best Management Practices

When conducting trenching work, construction Best Management Practices (BMPs) must be utilized at all times. Failure to keep all sediment and debris on your property is a violation of the City's Storm Water Regulations and can result in fines. The following list contains BMPs that may be used to keep sediment onsite and out of the City's storm drain conveyance system:

- Perimeter protection BMPs such as silt fences, straw waddles and/or sand bags can be used to contain sediment onsite.
- Cover all materials and keep above ground when a predicted rain event is to occur (>50% chance).
- Keep all materials/sediment out of street and gutter to prevent nuisance water from washing into storm drain system.
- Prevent sediment tracking into street by placing down gravel where equipment is entering and exiting property and sweeping area frequently.

These are all common general BMPs that can be utilized to prevent discharges into the City's storm drain conveyance system. If you or your contractor have any questions or require additional information on any of this, please feel free to call me at the number below.

Sincerely,

Danny King
Environmental Specialist

APPENDIX Q: COMMERCIAL FACILITY LITTER REDUCTION ORDINANCE

ORDINANCE 419

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SECTIONS OF CHAPTER 6.12 AND 11.16 OF THE SOLANA BEACH MUNICIPAL CODE, ALL RELATED TO LITTER CONTROL AND REMOVAL

WHEREAS, the City's Litter Control Ordinance (Chapter 6.12 of the Solana Beach Municipal Code) was enacted in 1987 pursuant to Ordinance Number 46; and

WHEREAS, the City's Sidewalk Ordinance (Chapter 11.16 of the Solana Beach Municipal Code) was enacted in 1988 pursuant to Ordinance Number 75; and

WHEREAS, Chapter 6.12 does not require all business to remove litter generated by their establishments; and

WHEREAS, Section 6.12.030 is silent in prohibiting all persons from depositing litter into gutters; and

WHEREAS, Section 11.16.050 does not specifically require all property owners to keep abutting sidewalks free of litter; and

WHEREAS, the City Council desires to update Chapters 6.12 and 11.16 to clarify certain provisions.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 6.12.030 of the Solana Beach Municipal Code is hereby amended as follows:

6.12.030 Prohibition.

A. It shall be unlawful for any person to throw, deposit, cause to be deposited, or leave litter in or upon any public street, alley, gutter, sidewalk, beach, public right-of-way or public place within the city except in public receptacles or authorized private receptacles.

B. It shall be unlawful for any person to throw, deposit, cause to be deposited, or leave any litter in or upon any private property within the city, vacant or occupied, other than the owner of the private property.

Section 2. Section 6.12.070 is hereby added to Chapter 6.12 of the Solana Beach Municipal Code as follows:

6.12.070 Duty to remove litter.

Any persons owning or occupying a place of business within the City of Solana Beach shall implement a general litter removal program within an area of two hundred (200) feet of their commercial establishment so as to remove litter generated by said business at least once each business day. This litter removal program shall not permit the business owner or its employees to trespass upon private property. However, the business shall attempt to gain permission of the owner of the private property for said purposes. In addition, this litter removal program requires the business owner or its employees to remove litter from public property with the exception that they are not required to remove litter from any area within a public street or highway.

Section 3. Section 11.16.050 of the Solana Beach Municipal Code is hereby amended as follows:

11.16.050 Maintenance by lot owners.

A. The owners of each lot fronting on any portion of a public street or place where the street or place is improved with a sidewalk shall maintain the sidewalk in such a condition that the sidewalk will not endanger persons or property and in a condition which will not interfere with the public convenience in the use of those works or areas, including keeping the sidewalk free of litter. The owners' obligations shall not apply to those conditions created or maintained in, upon, above or in connection with such sidewalk by any person other than the owner of the lot, where the person is authorized to do work or to maintain encroachments by virtue of a permit or right granted to the person by law or by the city. The person creating the condition pursuant to a permit shall have the duty otherwise imposed by this section upon the lot owner. The obligations of this subsection also apply to lots where the area between the property line of the privately owned lot and the back of the street line is maintained as a parkway, park or parking strip.

B. The city manager is authorized to enforce subsection A of this section, pursuant to the provisions of the State Streets and Highways Code, Division 7, Part 3, Chapter 22, commencing with Section 5600.

C. For the purposes of this section, the term sidewalk includes a park or parking strip maintained in the area between the property line and the street line and also includes curbing, bulkheads, retaining walls or other work for the protection of any sidewalk, park or parking strip.

EFFECTIVE DATE: This Ordinance shall be effective thirty (30) days after its adoption. Within fifteen (15) days after its adoption, the City Clerk of the City of Solana Beach shall cause this Ordinance to be published pursuant to the provisions of Government Code Section 36933.

INTRODUCED AND FIRST READ at a regular meeting of the City Council of the City of Solana Beach, California, on the 25th day of August, 2010; and

THEREAFTER ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, on the ___ day of _____, 2010, by the following vote:

AYES: Councilmembers –
NOES: Councilmembers –
ABSTAIN: Councilmembers –
ABSENT: Councilmembers –

_____
THOMAS M. CAMPBELL, Mayor

APPROVED AS TO FORM:

_____
JOHANNA N. CANLAS, City Attorney

ATTEST:

_____
ANGELA IVEY, City Clerk

APPENDIX R: BEACH BLANKET MOVIE NIGHT FLYER

APPENDIX S: SPECIAL EVENTS PERMIT CONDITIONS OF APPROVAL

NOTICE OF APPROVAL FOR SPECIAL EVENT
CITY OF SOLANA BEACH

The Special Event you have applied for has been approved, according to the following information:

Date Requested: June 12, 2004
Hours: 5:30 a.m. – 2:00 p.m.
Organization: San Dieguito Boys & Girls Clubs
Type of Event: Seaside Stride 5 Mile Walk
Location: See Attached Map
Contact Person: Ellen Flanagan (760) 471-5516

Approved By:_____
Barry Johnson, City Manager

SPECIFIC GUIDELINES:

1. No City services, at the request of the applicant, for the event will be provided by the City.
2. The event participants must utilize the sidewalks and not the roadway where available on the course. If there is no sidewalk, participants must utilize the very outer edge of the roadway.
3. Event organizers must obey all traffic signs, lights, and laws.
4. Event organizers and participants shall utilize public right-a-ways and property for the purpose of this event at their own risk.
5. Event organizers and participants shall obey all traffic laws, signs, and traffic control devices at all times.
6. Event organizers must comply with all applicable water run-off regulations and must use best management practices. There will be absolutely no liquid, solid, or any other by-product generated by the event allowed in the city storm drain system. The parking lot at the conclusion of the event must be cleaned of all debris and disposed of in an acceptable manner to the City's Public Works Department.
7. Roadway and sidewalks and any other public areas utilized by the event participants and audience shall be left in a clean and orderly condition at the conclusion of the special event.
8. Applicant shall be charged for the amount of time to clean-up the areas or facilities used by the event participants if the areas utilized by the attendees of the event are not left in a clean and orderly condition. Estimated cost for retaining one City employee to clean-up refuse, and trash disposal is $ 43.20 per hour.
9. Any damage to public property as the result of this event will encumber full cost recovery from applicant by the City.

10. Event organizers shall at all times comply with any request or orders from the City's public works, lifeguard, law enforcement, or other public safety personnel. Failure to do so will result in the revocation of this permit and an immediate cease event order.

GENERAL GUIDELINES:

1. This permit and any other permits associated with this event will be available at the event.
2. If City services are required, applicant will be billed in advance for any and all City services provided above normally scheduled services. **All fees and charges shall be paid prior to final issuance of a permit for the event. Exception: Costs incurred by the City for clean up or other reasons due to the event, if any, shall be charged to the applicant billed as soon as the total cost is determined.**
3. All vehicles must comply with City parking regulations.
4. The organization and any of its subcontractors in advance of the event must file a business license application and fee, if they do not have a business license.
5. Vehicle loading and unloading cannot block pedestrian access. If required for short durations, signage directing the flow of pedestrian access, including wheelchair access must be established and posted.
6. The City reserves the right to shut down the event at any time, if necessary.
7. Applicant must comply with City noise regulations.
8. **It is the responsibility of the applicant to know and comply with the terms and conditions as stated within this special event permit and all applicable laws that pertain do the event, its organizers, and its participants whether they are stated on this permit or not.**
9. Contact Leah Escarcega or David Ott at (858) 720-2410 if there are any questions regarding the special event permit process.

C: City Manager's Office
Public Safety Director
Public Works Director
Sheriff's Department
Marine Safety Captain

APPENDIX T: SUMMER CAMP PROGRAMS/CLASSES

CITY OF SOLANA BEACH PARKS & RECREATION

2009 Kids Summer Day Camp for Ages 6–12

All Sessions will meet Monday – Friday from 8:30 a.m. to 2:00 p.m. at Fletcher Cove Community Center, 133 Pacific Ave. The fee is $106/week per child and includes activities such as beach walks, swimming at the Boys and Girls Club, arts & crafts, Library visit, fun games, t-shirts and a weekly field trip to an exciting destination. After-care is offered from 2:00 p.m.– 5:00 p.m. ($27/week). Our popular "Leader in Training" program is also available again this summer for 13 – 17 year olds for only $40/week!

1 ENVIRONMENTALLY FRIENDLY ... June 22 – 26

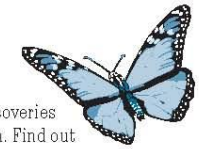

There are many exciting ecological discoveries to be investigated here in Solana Beach. Find out how simple it is to appreciate the simple aspects of the world around you. Campers will discover ways in which he/she can help save the environment, explore the world of creepy crawly insects, and even discover the local San Elijo Lagoon through a nature walk for this week's field trip.

2 FUN TO BE FIT ... July 6 – 10

Challenge your camper to a world of healthy living. Kids will get to learn how to incorporate healthy aspects into their lives in a fun way. Learning simple changes can make a world of difference in the way your child feels and lives. Campers will learn that a healthy lifestyle can be easy and fun just by eating right and staying active. The field trip will be a day full of active fun at Coronado Island for the GO PLAY GET FIT day.

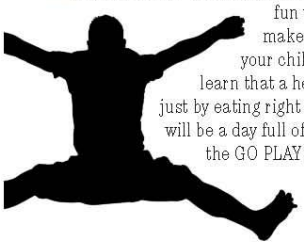

3 TIME TRAVEL ... July 13 – 17

Travel back in time to the prehistoric land filled with dinosaurs and other historic creatures. Campers will get a chance to understand how the world has changed from the prehistoric world to the world we live in now. Kids will have the chance to make some predictions as to what they think the world will look like in the future and hopes for the future based on knowledge of the past. This week's field trip will be to the Natural History Museum at Balboa Park.

4 WORLD EXPLORERS ... July 20 – 24

Ever wonder what living in another country would be like? Come explore the many wonders this world has to offer in this 5 day top speed trip around the world. Campers will get to explore the world beyond the United States with crafts from other countries, songs and cultural differences from all over the world. Campers will enjoy this imaginary flight around the world with a special stop at the Cabrillo National Monument for this week's field trip.

5 SPACE CADETS ... July 27 – 31

Ever imagined seeing Earth from space or wanted to be an astronaut? This week campers will each get a chance to explore the universe beyond our planet and even how things work on Earth versus other planets. Kids will get to learn about what it takes to be an astronaut and the world above our heads through games, crafts and even a trip to the Ruben H. Fleet Science Center at Balboa Park.

6 IT'S A ZOO OUT THERE ... August 3 – 7

There's the Grasslands, Jungle, Rainforest, and even your local beach that contains hundreds of animals that campers will get a chance to learn about and explore. Learn all about the crazy life of animals of all kinds with theme related crafts and discussions as well as a chance for the campers to explore our own San Diego Zoo.

7 WATER ADVENTURES ... August 10 – 14

You don't have to be an underwater animal to enjoy the wonderful world of water. Campers will learn about the various underwater creatures as well as explore all the fun that one can have in and around water. Not only will campers get to enjoy the beach but this week's field trip will be to the Wave Water Park where kids can experience the fun that comes with water, without having to grow gills.

APPENDIX U: 2010 DRY WEATHER MONITORING PROGRAM RESULTS

As a result of Addendum No. 2 adopted by the RWQCB in September 2008, this section will be submitted along with Chapter 7 "Illicit Discharge Detection and Elimination Component" in December 2010.

APPENDIX Z: EFFECTIVENESS ASSESSMENT TABLE

CHAPTER 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

7.1 Introduction

In accordance with Permit Section D.4, this section of the report describes the City's effort to implement an Illicit Discharge Detection and Elimination (IDDE) program during this reporting period, July 1, 2009 to June 30, 2010.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. This section will include results from efforts to eliminate and prevent illicit discharges, results from the most current Dry-Weather Monitoring Program, Wet-Weather Monitoring Program and Coastal Outfall Monitoring Program. Also, this section of the report will include any changes to the City's *Action Levels for Field Screening and Laboratory Parameters*. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

During this reporting period, the City continued the comprehensive IDDE Component in accordance with the City's JURMP (Order No. 2007-0001). The activities are expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City.

The City's JURMP outlines in descriptive detail the City's plans for detecting and eliminating illicit discharges, which would be redundant to repeat in this Report. This report will discuss the results of the City's 2010 Dry Weather Monitoring Program, which adheres to the requirements of the Permit, and is described in detail in the City's JURMP.

7.2 Public Reporting of Illicit Discharges and Connections

The City has an extensive public reporting program that includes a designated storm water hotline (858-720-4424) operated 24 hours a day, 7 days a week, that links directly to the Environmental Programs Manager's desk, a dedicated email address that also links to the Environmental Programs Manager, and a highly trained City Staff that knows how to route calls to the appropriate Staff members at City Hall. The City of Solana Beach is a small and intimate city where residents believe in personal relationships and demand immediate responses and actions. The City's hotline and email address to report storm water violations is posted on almost all public outreach materials, including the City's website, community newsletters and environmental brochures.

The City tracks complaints and follow-up activities in a database that is managed by the Environmental Programs Manager. Usually, the City's Code Enforcement Officers respond to the complaints and hotline reports and handle the issues in the field. An email and/or violation form is then sent to the Environmental Programs Manager to document the actions taken and to proceed with any necessary increased enforcement actions such as Notice of Violations (NOVs), citations or stop work orders. This database is constantly being updated and also acts as a resource for historical violations and repeat offenders. If a repeat offender is identified, then increased enforcement actions will automatically be initiated, as explained in the City's Civil Penalty Matrix.

7.2.1 Summary of IDDE Violations

The following is a brief summary of the IDDE violations that were acted upon by City Staff through complaints, field detection and reports from the public. For a complete account of each violation, the City's database can be reviewed upon request.

During this reporting period (July 1, 2009 – June 30, 2010), there were approximately 260 contacts made by City Staff. This includes educational contacts made by City Staff and violation investigations. The City had a part-time Code Enforcement Officer during this reporting period and one of the primary responsibilities was assisting the storm water program. This part-time Staff member made it a priority to engage the public when he noticed a potential violation occurring or about to occur. Many of these contacts were verbal and educational in nature, and so documentation was not needed. There were 28 documented contacts that required more than an educational message, and the ones that resulted in citations will be discussed in more detail later in this section.

The City believes being proactive is an important part of storm water pollution prevention, and made this a priority by maintaining the part-time code enforcement officer, in addition to the one full-time officer. Most of the violations were minor in nature, ranging from washing down a driveway or patio to washing a car in the street with no containment. These violations are usually handled with a verbal warning or written Notice of Violation. However, during this reporting period, four citations were issued, down from seven last year. The decrease in citations may be attributed to the proactive educational contacts made by City Staff prior to a potential violation occurring. Another reason for the decrease in storm water violations and reports is the economy. There is a significant reduction in building activities in the City, and this sector is where most of the violations come from.

The following is a brief description of each violation that resulted in a citation. The complete database is too large to include in this report, however it is available upon request.

10/12/09 – City Staff encountered a minor construction project at 115 North Highway 101 where the contractor was not utilizing the proper BMPs when conducting a concrete washout. Residue was flowing down the street with no containment BMPs in place. Staff immediately contacted the Responsible Party (RP) and ordered a stop work until the discharge was properly cleaned and BMPs properly installed. The RP complied, the discharge was satisfactorily cleaned, and the proper BMPs were installed. The discharge did not reach the storm drain system, but Staff still issued a citation for the discharge and not having the proper BMPs installed.

4/13/10 – City Staff received a call from the public regarding sand blasting occurring at 480 North Cedros Avenue. Staff investigated and detected a contractor performing sand blasting on a commercial property with no BMPs installed. A slight discharge of materials was detected off-site and the air quality was very poor. Staff contacted the RP and issued a stop work. The owner of the company was off-site, but Staff was able to contact him and requested an immediate meeting onsite. The owner complied, met with Staff onsite, and immediately installed the necessary BMPs. The discharge was cleaned. Staff issued a citation.

7/29/10 – City Staff received a call from the public reporting power washing activities occurring at 311 Pacific Avenue. Staff investigated and confirmed the report. Staff made contact with the RP and issued a stop work. RP complied and installed the necessary BMPs. Staff issued a citation.

8/3/2010 – City Staff detected a discharge of a slurry-type substance at 170 Del Mar Shores Drive. Staff investigated the onsite condominium complex and detected a contractor conducting

some work in one of the units. Staff issued a stop work and an immediate clean-up order to the contractor. The RP complied and cleaned the discharge and installed the necessary BMPs. Staff issued a citation.

As mentioned in last year's Annual Report, City Staff noticed a pattern that the most prevalent and serious violations occurring throughout the City involved mobile concrete pumping trucks. These violations are also the most difficult to clean up after an accident, so the City decided to become very proactive when dealing with these companies. The proper handling of concrete and appropriate BMPs became a standing item to discuss during pre-construction meetings, and City Staff routinely stops at all construction projects if a concrete truck or pumper is detected onsite, regardless if there is a violation or not. City Staff talks to the project superintendents and the concrete pump and truck operator to ensure that all necessary precautions are being taken to prevent a spill, and also to remind them that enforcement actions will be taken if a violation does occur. This proactive program was continued during this reporting period, and it has proven highly successful. The amount of concrete pumping violations continues to decrease, which can be attributed to this proactive outreach program.

7.2.2 Increased Code Enforcement Activities

As mentioned above, in an effort to reduce the number of violations that occur on the weekends, the City has a part-time Code Enforcement Officer dedicated to working alternating Saturdays and off-peak weekday hours. It has come to the City's attention that a significant amount of violations are occurring on the weekends, when people know that no City Staff is available for enforcement. This activity has been overwhelmingly successful, with the identification and elimination of many violations.

7.3 IDDE Program History and Current Prohibitions

The City implemented its first IDDE program in 1993, which included dry weather screening, annual storm water conveyance system inspections, and prompt responsiveness to complaints. Between 1993 and 2002, the City's IDDE program did not indicate any significant problems, except for occasionally high levels of bacteria at a curb inlet or manhole leading down to the Seascape Sur outfall. A complete discussion about the activities related to this IDDE problem, including its history, can be found in the JURMP Annual Report Chapter 12: "Special Investigations."

Over the years, the City has responded to complaints and results from its dry weather monitoring reports to detect IDDEs. The City's efforts have been successful, but in response to the requirements of the Permit, the City expanded its program in 2001 to comply with the old Permit (Order No. 2001-01). During this reporting period, the City continued implementing the new IDDE program required in the new Permit (Order No. 2007-0001), which is described in detail in the City's new JURMP.

Prohibitions
As noted in the City's JURMP, most non-storm water discharges are prohibited by Solana Beach Municipal Code (Storm Water Management Chapter 13.10). The City modified its Municipal Code and General Plan to ensure the City has sufficient legal authority to enforce the prohibitions of non-storm water discharges included in Order No. 2007-0001.

7.3.1 Significant Spills

The City operates a storm water hotline and email address that the community can use to report any violations or suspicious behavior they may observe. This hotline can also be used to notify

City Staff of any significant spills that have occurred. Additionally, the City's website has a link to directly e-mail the Environmental Program's Manager to report violations or spills. The residents can also directly call City Hall and talk to the appropriate Staff member to report any significant spills. These multiple communication options allow the community to get in direct contact with Staff immediately, which greatly speeds up the identification and elimination of spills.

During this reporting period, the City had *no sewer spills*, which is a dramatic reduction from the four spills reported in FY 2008/2009. This is a significant accomplishment that can be attributed to the proactive and aggressive sewer management program the City implements. The grease management ordinance, sewer assessment program and sewer maintenance program all contributed to the overall success of the City's program. These programs are described in greater detail later in this chapter.

7.3.2 HHW Program

The City manages an extensive HHW Program that is discussed in detail in the Residential Component of the 2010 JURMP Annual Report.

7.3.3 Grease Management Ordinance

In October 2004, the City Council adopted a grease management ordinance that requires new, remodeled, and even *existing* restaurants to install a properly designed grease management device (including grease interceptors, traps, etc.). Previously, the City's Building Department would require all new and significantly remodeled restaurants to install a grease management device, but it was simply a policy, not an ordinance. The City realized the need for an enforceable ordinance that would grant the City the power to inspect the devices to ensure proper installation and maintenance. These inspections are now part of the annual commercial/industrial storm water inspections and City Staff (or designated contractors) review maintenance records to ensure the proper devices are installed and properly maintained. The ordinance allowed existing restaurants eighteen (18) months to install the grease traps/interceptors and enforcement began in April 2006. As mentioned in the JURMP Annual Report, the City contracted out commercial/industrial inspection services to a private firm. This private firm inspected grease management devices and reviewed maintenance records for all restaurants/eating establishments that were inspected.

7.4 Dry Weather Monitoring Program (DWMP)

The dry weather field screening data is an important part of the City's IDDE program. The results provide information on whether pollutants are detected in the storm drain system, which can be used to identify potential illegal discharges or connections. The specific purpose of this program is to detect by system inspection and by field screening and lab water quality testing the existence of either illicit connections to the storm drainage system or the use of the storm drainage system for illegal discharges, during the dry season. The basic requirements for the program are described in the Permit and City's JURMP.

The purpose behind conducting tests of storm drains during dry periods is that illicit connections and illegal discharges are most apparent when they are not being masked by storm flows or ground water discharges. Theoretically, there should be no flow in the storm drains during dry periods, except for the limited amount of exemptions listed in the Permit Section B.2 "Non-Storm Water Discharges." Therefore, if flow is present, an investigation must be conducted to determine where the flow is coming from to determine if there is an IDDE violation.

Prior to the implementation of the original JURMP (from 1993 to 2001), the City completed eight

years of dry weather testing, primarily with the services of Kinnetic Laboratories/Cooper Engineering Associates, which collected the field samples and conducted the testing and analysis. The City's program was based on a systematic and comprehensive approach.

In 1993, the City inspected selected outfalls within the City limits and monitored selected sites along Stevens Creek. In 1994, major outlets from the City were tested, in addition to the sites monitored in 1993. The primary objectives in the 1995 through 1999 dry weather field screening programs were to target strategic locations where the potential existed for possible pollutant discharges or illicit connections, as well as carry out a comprehensive monitoring of the City.

For completeness and consistency in reporting, the City will briefly summarize the results from the DWMP over the past few years.

7.4.1 Historical Results

The 1995 dry weather field screening data characterized outfalls, identifying areas of non-storm water, non-permitted discharges as well as the identification of problem or potential problem areas. Sampling points were selected in an effort to survey in-line flow as well as inflow and outflow at the City limits. As a result of the 1995 field screening, dumping of grease into Stevens Creek was discovered at a local restaurant. The City notified the property owner, as well as the business owner, to cease such activity, which occurred.

The 1996 dry weather field screening data continued to characterize outfalls, identifying areas of non-storm water, non-permitted discharges as well as the identification of problem or potential problem areas. Results from the 1996 program indicated elevated bacteria levels at the Fletcher Cove Outfall (O-03A). Subsequently, the City constructed a low flow diverter (in 1998), which diverts the flow to the City's sanitary sewer system. The diverter pumps 40 gallons per minute, year round, 24-hours a day. Runoff is only discharged at Fletcher Cove outfall during storm runoff events that exceed 40 gallons per minute. The diverter helps eliminate the contamination at the Fletcher Cove Outfall caused by storm water runoff.

The 1997 dry weather field screening data included several sites that had been screened in previous years, two new sites and an independent study. The new sites were added upstream of two previously monitored sites in Stevens Creek to try to isolate the sources of pollutants that had been detected at those sites during screening in several past years. The independent study was conducted to isolate the source of bacteria that the San Diego County Department of Environmental Health indicated had been found at a commercial site contributing to Seascape Sur Outfall. Additional investigations were conducted in Stevens Creek and the cleaning of the commercial site was ordered. Results indicated no significant problems had occurred during this reporting period.

The 1998 dry weather field screening data included further investigation of locations with consistent evidence of possible pollutant discharges (high pH) in Stevens Creek, the continual monitoring and bacterial testing of Seascape Sur Outfall, and the continual monitoring of representative areas in the City. The samples from Stevens Creek Outfall were collected while the Del Mar Racetrack was in operation to determine if that location (and its activities) was having an effect on the elevated levels bacteria. The results indicated that the pH phenomenon in Stevens Creek was due to leachate migrating through the concrete structure. The effects of the Del Mar Racetrack were found to be inconclusive, but several outfalls were cleaned of trash and debris.

The 1999 dry weather field screening data continued to screen the same sites as in the previous

year and again included the Fletcher Cove Outfall. The 1999 DWMP was again conducted during the early part of the racing season in Del Mar to build on the data collected in the previous years. Fletcher Cove was added back to monitor the bacteria and the effectiveness of the City's structural Best Management Practice for the low flow diverter. Results from the testing did not indicate any significant problem areas and the effects of the Race Track were again inconclusive.

The 2000 dry weather field screening data continued to build on the database the City established. The report identified two locations with high levels of coliform (both flowing to the Seascape Sur Outfall). The City conducted an investigation and sealed off an old leaking sewer lateral that was found to be located near the curb inlet of the upstream site with elevated bacteria counts. The City contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during the follow-up tests. The 2000 report recommended that the City clean several sites of trash and debris, which was done.

The 2001 DWMP included ten sites for testing, including the same two sites that had elevated bacteria counts in 2000, and Fletcher Cove Outfall (where the diverter is in operation). Site S-13A and S-13 were also included to detect the effects of the Del Mar Race Track during racing season. Seven of the ten sites had at least some flow or ponded water; and one site (S-02) required a follow-up investigation based on elevated levels of fecal and coliform bacteria. Although the S-02 site had elevated bacteria levels, they were lower than the previous year, which led City Staff to believe that the problem (for which repairs had been recently completed), was simply residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be cleaned.

The 2002 DWMP increased the number of sites from 10 to 31, with a representation of all five watershed sub-basins in the City. Sites were selected ensuring that historical problem areas, drainage to sensitive water bodies and sites with potential discharge from commercial areas were all represented. This was the first year of dry-weather monitoring under the Permit Order No. 2001-01, which included specific rules and guidelines developed by the Copermittees to ensure consistency. Some of the keys findings include the following:

- Water clarity at all but one site was clear.
- Floating trash was observed at four sites and sedimentation was observed at four sites.
- At the majority of sites, there was no biological activity noted.
- One site had excessive algae growth, while four had some vegetation and algae growth.
- All sites had pH levels below the action levels agreed upon by the Copermittees.
- Several sites had elevated levels of Ammonia, which triggered a follow-up investigation.
- Elevated levels of detergents were found at one site; as a result, staff has scheduled some time to pass out "door-hanger" flyers to educate the surrounding community as to the cause of this result (which is likely due to car washing, which is prohibited in the City).
- Levels of the all of the following were below the Copermittee action levels: oil and grease, surfactants, Diazinon, Chlorphyrifos and dissolved cadmium, copper, lead and zinc.

7.4.2 Results from the 2003-2009 DWMPs

The Dry Weather Monitoring Programs from 2003-2007 were all conducted under the requirements of Permit Order No. 2001-01, and the 2008 program was conducted under the similar requirements of Permit Order No. 2007-0001. Although the results were slightly different from year-to-year, the program results can be generally summarized into the following

information. Each year, there were approximately 28-30 sites chosen, depending on the amount of flow in each year. The sites were relatively static throughout the years, as the City has identified the key catch basins/outfalls/ manholes in each sub-basin and has monitored them every year. There is one significant problem area that has been identified and it has been the subject of an ongoing IDDE investigation for years. Chapter 12 "Special Investigations" of the JURMP Annual Report is dedicated entirely to this ongoing problem, so all the information can be found there. The City has worked tirelessly on this ongoing problem and plans to continue until a resolution is found.

7.4.3 Results from the 2010 DWMP

The 2010 Dry Weather Monitoring Program is included as an attachment to the 2010 JURMP Annual Report. All procedures and outcomes can be found in the report.

7.5 Action Levels to Trigger Follow-up Investigations

The City collaborates with the other Copermittees of Order 2007-0001 in developing the standardized responses, procedures, processes, policies and programs by participating in the Dry Weather Monitoring Workgroup. This helps by providing consistency in messages, requirements and community expectations. This includes the continuation of the "Trash Assessment Form" analysis at each site, which is a new requirement included in Permit Order No. 2007-0001. This form was utilized during the 2008, 2009 and 2010 DWMPs for all Copermittees and is included in each respective DWMP report (2010 included in Attachment V of JURMP Annual Report). These assessment forms will assist the Copermittees in long-term assessments of DWMP sites, to determine any trends in the prevalence of trash throughout the City. Based on the Trash Assessment inspections during the 2010 DWMP, trash does not appear to be a problem in the City's MS4 system. The forms can be found as an Appendix to the DWMP Report.

7.6 Coastal Monitoring Program

The purpose of the City's Coastal Outfall Monitoring program is to detect IDDEs through monitoring of the City's coastal outfalls, and to protect human health and public safety by notifying the public of any potential health hazards in the ocean. Prior to 2002, the San Diego County Department of Environmental Health designed and conducted the Coastal Outfall Monitoring Program. In 2002, the City utilized its own Staff to conduct an inventory of its outfalls and design the monitoring program, which is currently being implemented.

During this reporting period, the Coastal Monitoring Workgroup, comprised of the cities that have storm drains that flow into the ocean, continued to meet on a consistent basis to discuss pertinent issues and establish monitoring guidelines and reporting limits. Here is a brief description of the City's Coastal Monitoring Program for FY 09/10.

The Permit requires Copermittees to monitor all flowing coastal outfalls located within the City. The sampling frequency is once per month required during both the wet and dry season (two samples at each location, one at storm drain, one at receiving waters). The samples are taken to a State-certified laboratory for analysis of three parameters; Total Coliform, Fecal Coliform, and Enterococcus. Under the new Permit, the City monitors one coastal outfall (Seascape Outfall). The other coastal outfall in the City (Fletcher Cove Park) is connected to a Low Flow Diverter and sampling is not required.

The Seascape Outfall has had historical problems and is the current target of an ongoing IDDE

investigation. This is discussed in detail in Chapter 12 of the JURMP Annual Report. For complete results, please see the Coastal Outfall Monitoring Annual Report submitted annually with the County Unified URMP.

During this reporting period, the City hired a contractor to perform the required sampling and analysis. The City is co-owner of the San Elijo Wastewater Treatment Plant (SEJPA) which has an on-site laboratory and staff that conducts ocean monitoring as part of its own separate NPDES Permit. The SEJPA extended an offer of services (after a recent expansion which allowed them more personnel and resources) to conduct the City's Coastal Monitoring Program. The City analyzed the proposal and concluded that it would save both financial and staff resources to contract with the SEJPA. In addition, the SEJPA was much more convenient and closer to the City, thereby allowing for a quicker response in case of an emergency. It was a win-win situation both the City and the SEJPA, which is critical during these tough economic times.

The results of the sampling at Seascape Sur show continued elevated bacteria levels at the outfall. Although a positive trend has been identified as the bacteria levels have reduced significantly over the last few years. During this reporting period, there were two spikes in December and January (wet season) but the other months were drastically reduced. This may be the result of the upstream curb inlet BMPs in conjunction with the education and outreach efforts of the adjacent property owners. The results will be analyzed on a continuous basis to determine if the City's efforts are working to reduce the high bacteria levels coming from the Seascape Sur outfall.

7.7 Wet Weather Monitoring

The Copermittees of Order 2007-0001 collectively hired MEC Analytical again to continue the Wet Weather Monitoring Program (WWMP) for 2009/10. The complete report can be found in the County Unified URMP annual submittal.

7.8 MS4 Map

The City has a Geographic Information System (GIS) map of all catch basins located throughout the City. The City also has a Drainage Master Plan that includes all storm drain conveyance structures (catch basins, inlets, outfalls, manholes, drainage channels, etc.) available in GIS format that is accessible digitally.

7.9 Sewer Assessment Project

In the City's continued effort to prevent IDDE's, a major sewer assessment project was undertaken during this reporting period. Old, failing sewer lines can be a major source or potential contributor of sewage entering into the City's MS4 system. Either infiltration through cracks in existing pipes or line breaks from pipes past their life expectancy can create significant water quality problems for any city. The City of Solana Beach recognizes that proper maintenance of existing sewer infrastructure is essential to a successful water quality program. To this end, the City conducted a major sewer assessment project during this reporting period that will likely last into FY 2010/2011 as well.

On September 23, 2009, the City Council authorized the City Manager to enter into a professional services agreement (PSA) with RBF Consulting (RBF) to review the Closed Circuit Television (CCTV) information associated with the City's sanitary sewer pipeline system west of Interstate 5 (I-5), prepare a report related to the findings of the inspection and make specific

recommendation for each of the sewer lines identified in the report as needing immediate or urgent repair. Shortly after execution of the contract, RBF started evaluating all CCTV information.

On January 7, 2010, RBF submitted a report titled "Solana Beach Red Flag Report, Project Number 1". This report identified eight facilities needing immediate repairs. The City immediately repaired the two locations that were in the most need of repair. Construction plans were then prepared for the remaining locations and bids for the work were solicited and received.

On April 28, 2010, the City Council awarded a construction contract to Scott Michael, Inc., in the amount of $84,000 for the 2010 West Side Sewer Pipeline Repair Project, Bid No. 2010-03. The remaining six facilities were then repaired to complete phase 1 of the project.

The City has begun the second phase of the project for the east side of the City. The CCTV videoing of the sewer pipes are currently being conducted, and the City plans on completing the repairs on the east side during FY 2010/2011.

7.10 Sewer System Management Plan (SSMP)

During this reporting period, the City also completed and certified its Sewer System Management Plan (SSMP). The intent of the SSMP is to establish the minimum requirements under which a public collection system must be operated and maintained. The SSMP reflects the ongoing day-to-day activities of the City of Solana Beach for the management, operation, maintenance and funding of the City's sanitary collection system. The SSMP is important to the City's storm water program because it ensures that the sewer collection program is being properly managed and operated, thereby reducing the potential for harmful sewer spills that may contaminate the local waterways.

The SSMP was required to address sewage discharge prohibitions and provisions prescribed in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (referred to as the "Order"). The Order prohibits any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. The following are some of the provisions that are included in the Order:

- The sewer agency must comply with all requirements of the Order;
- The sewer agency shall take all feasible steps to eliminate sewer spills and overflows;
- All sewer spills and overflows must be reported to the State;
- When a sewer overflow occurs, the agency shall take all feasible steps and necessary remedial actions to limit the volume of untreated or partially treated wastewater discharged and recover as much of the wastewater discharged as possible.

The goal of the SSMP is to provide a documented plan that describes all collection system activities and programs employed by the City to ensure proper management of all collection system assets. Implementing the SSMP will ensure proper management, operation, and maintenance of all parts of the sanitary sewer system. Adhering to the provisions of the SSMP will help reduce and prevent sewer overflows and provide guidance on how to mitigate any sewer overflows that do occur. Mitigation of sewer overflows would include meeting all applicable regulatory notification and reporting requirements. Commitment to continual improvement will also ensure that the SSMP is both a living and sustainable document that is continually updated, revised, and tailored towards the City's needs.

7.11 New Activities and Improvements in FY 10/11

The City will analyze its 2010 DWMP, review the results in detail and integrate the findings into program activities for implementation in FY 2010/2011. City Staff will evaluate the results to determine areas within the city (residential and commercial etc.,) that may need additional education or BMPs to improve the water quality in the region. The City will use the results from previous DWMPs to design the 2011 DWMP and attempt to conclude the special investigation (see Chapter 12). The ongoing problem at Seascape Sur, which was detected again in this reporting period's Coastal Monitoring and Dry-Weather Monitoring Programs, is discussed in greater detail in Chapter 12 (Special Investigations) of the JURMP Annual Report.

As reported in the JURMP Annual Report, the City was successful in securing a grant for the possible installation of a low-flow diverter at Seascape Sur through the IRWM Prop 84 grant cycle. The City was a co-partner in a joint application that was placed in the Tier 1 (highest priority) funding category. Depending on when the State issues the funding for the grants, the City hopes to install a permanent treatment control BMP to eliminate the bacteria problems at Seascape Sur. This will hopefully end the ongoing IDDE at Seascape and close the book on the Special Investigation. This will be reported on in more detail in next year's JURMP Annual Report.

City Staff continued enforcing the stringent Grease Management Ordinance, including inspecting the grease management devices during the commercial/industrial restaurant inspections. Staff, or its designated consultant, will continue to inspect the grease traps/interceptors during future annual storm water inspections to ensure that proper maintenance is being conducted and records kept on-site. Analysis on the effects on sewer spills will also being conducted in the next few years to see if the ordinance has had a successful impact on reducing spills as a result of grease build-up. For FY 2009/2010, *the City had no sewer spills*, which is a great testament to the success of the City's sewer management program.

Additionally, it is anticipated that the WURMP workgroups will begin analyzing the Dry Weather Programs of partnering jurisdictions and begin tailoring some of the watershed activities to address high priority pollutants, and the activities/sources associated with them. In the years past, jurisdictions would self analyze their respective programs to address high priority locations and sources, but with the added emphasis on WURMP activities stressed by the RWQCB staff, these issues will now be addressed on a watershed basis. This has the potential to provide more knowledge and resources that were previously limited by staff resources, but now with the assistance of neighboring jurisdictions, this may prove very valuable. The DWMPs can be used to identify problem areas that may have a particular cluster of sources upstream, and will help focus the WURMP activities on these areas in mini-pilot programs to determine if the source can be identified or, maybe as important, eliminated as a possible source so that resources can be focused on other potential sources.

7.12 Summary

As evidenced by the regional Copermittee WWMP, the City's DWMP, the City's Coastal Monitoring Program, the City's "team approach" in responding to complaints, and the improvements made citywide in procedures and investigative processes, the City is efficient and effective at detecting and eliminating IDDEs, and working to change the human behavior that has caused negative impacts on water quality.

Recognizing that human behavior is the basis of many non-point source pollution problems, the

City quickly acts on reports from residents, City Staff, and other agencies to follow up on problems as soon as they are reported. The City's storm water hotline is linked directly to the Environmental Program Manager's voice mail box so that calls can be consistently monitored and acted upon. The City has effectively utilized the administrative fine process which has proven to be a very efficient and timely procedure in issuing citations, which will reduce the potential for pollution into the City's MS4.

The City's aggressive sewer maintenance program and grease management ordinance has proved to be successful in preventing sewer spills. These programs are vital to prevent the catastrophic environmental effects that sewer spills have on the natural environment. As mentioned above, *the City had no sewer spills in FY 2009/2010*, which is a remarkable testament to the proactive and aggressive sewer management program implemented by the City. In addition, the proactive approach that City Staff takes in educating contractors before there is an illegal discharge has greatly reduced the amount of violations in the City. This is extremely evident by the concrete truck and pumper scenario discussed above. The violations at minor construction projects have reduced as a result of this proactive approach.

In addition, as a result of the effects of the long-term drought the region is currently experiencing, water conservation efforts have been stepped up, which has proven to also help water quality in the City. The City has increased its educational outreach efforts with the assistance of the local water provider Santa Fe Irrigation District, and the community has responded extremely well. This has helped to reduce the dry weather flows into the City's MS4 system, thereby reducing the primary transport mechanism for pollutants entering the local waterways. Over-irrigation has reduced dramatically, and the City and residents have responded by planting more drought tolerant and native vegetation. Overall, water consumption is down close to 20% since the proactive and aggressive educational water conservation campaign has started. The City has forged a great relationship with the private water agency and the results have benefitted both water conservation and water quality. This is evident in the fact that only four DWMP sites (out of 29 total sites) had enough water present to take a sample.

CHAPTER 11: EFFECTIVENESS ASSESSMENT COMPONENT

This to be added to existing Chapter 11 component of 2010 JURMP Annual Report…….

Illicit Discharge Detection and Elimination Component

Program Strengths: The City continued to implement its IDDE program by responding to complaints and investigating potential violations promptly and thoroughly. The City serves the community effectively and efficiently by connecting the storm water hotline directly to the Environmental Programs Manager, saving valuable time and effort. The program has proven to be very successful as the community of Solana Beach is very intimate and prefers to do business face-to-face and demands immediate results. The City has a very customer service focused atmosphere, and the residents demand instant and effective action on relevant issues. This has, in turn, been very beneficial to the storm water program because many times, in order to effectively deal with a violation or IDDE, it has to be investigated immediately. This has led to many violations and violators being discovered while it is occurring, rather than letting time elapse which can lead to a lengthy and complex IDDE investigation that may yield no results.

The 2010 Dry Weather Monitoring Program (DWMP) was conducted by a specialized consultant. The City decided to contract out the services to a consultant with DWM expertise, with the assistance of City Staff. The City, along with most other agencies, has experienced a reduction in City Staff due to the economic downturn. This has stretched in-house resources extremely thin, so the City has relied more heavily on contracted services during this reporting period. The City is fortunate to have a voter-approved NPDES fee which funds a portion of the storm water program. With this dedicated funding source, the City can take advantage of specialized contractors to perform specific duties, such as commercial/industrial inspections, Coastal Monitoring Program and now the Dry Weather Monitoring Program. Although the City has experienced and qualified Staff in-house, they are constantly being pulled in different directions with the budget cuts. Therefore, the City has been able to supplement its current Staff resources with outside consultants, which has made the storm water program even stronger,

The 2010 DWMP was modeled after the initial report conducted by MEC Analytical, and the complete report is included in the 2010 JURMP Annual Report. In summary, *there was one location that showed evidence of an IDDE*. This one location is Seascape Sur, where there is an investigation that has been ongoing for many years. The Seascape Outfall has had a historic problem and the City has tried multiple solutions to locate and eliminate the source. The one positive aspect is that the outfall discharge has not affected the water quality in the ocean. There has been no indication through sampling that the ocean is being affected by the high bacteria counts coming from the outfall. The complete description of this outfall and the investigation the City has conducted can be found in Chapter 12 of the JURMP Annual Report.

The City will continue to monitor the bacteria results throughout the year as part of its Coastal Monitoring Program. In addition, the City continues to dedicate approximately $10,000 in the annual CIP budget to clean out the Seascape pipe with the intention of eliminating any residual bacteria and debris trapped in the sag in the pipe. The City will continue to work with the adjacent condominium complexes to eliminate the over-watering issues that may be contributing to the problem. City Staff works very well in communicating possible IDDE situations around the outfall, as the Marine Safety Department has a lifeguard station located directly in front of the outfall (during summer months). Whenever there is a noticeable increase in flow or odor, the lifeguards are instructed to contact the Environmental Programs Manager to investigate. This will continue to occur until a remedy is found for the problem outfall.

In addition, as reported in Chapter 7 of the JURMP Annual Report, the City was successful in getting placed in the Tier 1 (highest priority) funding level for the Prop 84 grant cycle. The City was a co-partner in a large grant proposal that included funding for a permanent treatment control BMP (low-flow diverter) at Seascape Sur. If the City continues to have high bacteria levels at the Seascape Sur outfall, a permanent BMP solution may be the only option. The City is optimistic that their grant proposal will be funded which will allow for the installation of the treatment control BMP. Hopefully, this will solve the ongoing IDDE investigation and bring this long pursuit to a close.

It should be worth noting that in addition to the DWMP results, the Coastal Monitoring Program sampling results post-reporting period for Seascape Sur have continued to improve. This may be the result of the aggressive educational outreach, the installation of the curb screen debris BMPs or a combination of both, but the results have been much lower than in previous years. Although this outfall has been prone to occasional and unpredictable spikes (two spikes in December and January of this reporting period), the overall trend of the results has been positive. On average, the bacterial results have been much lower the last two years in relation to the years before them.

A major strength of the City's IDDE program is the aggressive sewer maintenance program. The City contracts with a private contractor to clean and video every sewer line in the City at least once annually and the "hot spots" are cleaned quarterly. This helps prevent the buildup of roots and grease in the system, preventing possible blockages and spills. In addition, the City completed a "Sewer Assessment Project" for the west side of the City, which included CCTV video inspection of the sewer infrastructure on the entire west side (west of I-5) of the City. A report was then produced listing the highest priority repairs, and the City completed the work. The City plans to complete the east side of the City in FY 2010/2011. This program has been extremely successful as evident by the fact that there *were no sewer spills in the City during this reporting period* (down from four sewer spills during FY 2008/2009). This is a remarkable achievement and testament to the proactive and aggressive sewer management program implemented by the City. More information on this can be found in Chapter 7 (IDDE) of this Annual Report.

Another strength is the aggressive Grease Management Ordinance that requires not only new and remodeled restaurants and eating establishments to install appropriate grease interceptors or traps, but also requires existing restaurants to install devices as well. This aggressive approach was adopted to address a specific problem area in the City, and the results have been overwhelmingly positive. The amount of grease buildup in the sewer lines of the "hot spot" has been drastically reduced, and there has not been a spill in the targeted area since the adoption of the ordinance.

One final strength of the IDDE program worth mentioning is the City's dedicated part-time Code Enforcement Officer for the storm water program. As mentioned in last year's Annual Report, the City hired a part-time officer to focus on storm water issues, especially on the weekends and off-peak hours. This officer was so successful that the City continued to fund the position in FY 2009/2010. This part-time Staff member made it a priority to engage the public whenever they notice a potential violation occurring or about to occur. The City believes being proactive is an important part of storm water pollution prevention, and made this a priority by continuing to fund the part-time code enforcement officer.

Improvement Areas: During the next reporting period, the City is committed to eliminating the historical bacteria problem at the Seascape outfall. More aggressive actions may have to be taken to determine the ultimate source of the problem, including the installation of a permanent

treatment control BMP. The IDDE investigations discussed in previous annual reports have turned out to be inconclusive; so the City may have to look at alternate solutions such as a low flow diverter or the possibility of blocking off the underground connections to the storm drain and rerouting the site drainage of the neighboring condominiums to the street before entering the catch basin. These solutions would be very expensive, and since the receiving water has not been affected yet, the City will continue to pursue the elimination of the bacteria at its source. However, if the City does receive the Prop 84 IRWM grant funding, work will begin on designing and installing the low flow diverter immediately. As mentioned above, the results of the 2010 DWMP and Coastal Monitoring Program post-reporting period have shown a continued improvement in the water quality at Seascape, but more work still needs to be done. Additionally, the City will continue to gather and analyze additional data from the wet weather and dry weather programs and compare the datasets to determine other potential IDDE problems.

Appendix V: 2010 Dry Weather Monitoring Program Results

THE ATTACHED DOCUMENT IS A COPY OF THE

PROGRAM DESCRIPTION,
NARRATIVE SUMMARY
AND
RESULTS SECTIONS
OF THE

City of Solana Beach
2010 Dry Weather Field Screening Program

Prepared by the City of Solana Beach

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1.0 EXECUTIVE SUMMARY

The Dry Weather Field Monitoring Program (DWMP) is an integral part of the National Pollutant Discharge Elimination System (NPDES) Storm Water Permit issued to the City of Solana Beach (City) and other Copermittees by the San Diego Regional Water Quality Control Board (RWQCB).

The City of Solana Beach has implemented a comprehensive Storm Water Pollution Prevention Program (SWPPP). In 2010, twenty-nine sites were inspected with **only one storm water conveyance** line showing evidence of an illicit discharge or illegal connection. This line has a history of high bacteria counts, and the ongoing investigation attempting to locate the source of the bacteria is well documented and will continue until it is found and abated.

In September 2010, City of Solana Beach conducted inspections at twenty-nine sites under the 2010 Dry Weather Monitoring Program and the regulations set forth in the NPDES Storm Water Permit Order No. 2007-0001. Each site was visually and chemically inspected for illegal discharges and/or illicit connections. The results were recorded on field data sheets and are included in the Appendix A of this Dry Weather Monitoring Program report.

2.0 INTRODUCTION

The Illicit Connection/Illegal Discharge Dry Weather Monitoring Program is one of the required tasks of the Storm Water NPDES Permit issued by the San Diego Regional Water Quality Control Board, under Order No. 2007-0001. This is the third year under this new Permit, which replaced NPDES Order No. 2001-01, that the San Diego Copermittees have conducted this particular dry weather monitoring program. The permit requires the City of Solana Beach, and all Copermittees, to develop and implement programs to prevent, reduce, and eliminate inappropriate discharges of pollutants from storm water conveyances into the waters of the United States.

The purpose of the Dry Weather Monitoring Program is to detect illicit connections and/or illegal discharges to the storm water conveyance system. In order to accomplish this goal, strategic sites were identified to test for chronic and/or improper discharges. Chemical parameters specified by the U.S. Environmental Protection Agency (EPA) for field screening were used as indicators of potential pollution from industrial, commercial, or domestic sources. The EPA has presented the following most common non-storm water sources and has placed them into three contamination categories: pathogenic/toxic, nuisance, and clear. The pathogenic/toxic category can cause illness upon contact or consumption. The nuisance category can cause degradation of water quality and impair aquatic ecosystems. Clear water usually comes from natural sources such as springs and ground water infiltration. Table 1 displays the potential for these sources to enter the storm drainage system (EPA 1993).

Table 1: Potential Inappropriate Entries Into Storm Drainage Systems (EPA 1993)

Potential Source:	Storm Drain Entry		Flow Characteristics		Contamination Category		
	Direct	Indirect	Continuous	Intermittent	Pathogenic/ Toxic	Nuisance	Clear
Residential Areas:							
Sanitary wastewater	●	❍	●	❍	●	❍	
Septic tank effluent		●	●	❍	●	❍	
Household chemicals	❍	●		●	●		
Laundry wastewater	●			●		●	
Excess landscaping watering		●		●	❍	❍	●
Leaking potable water		●	●				●
Commercial Areas:							
Gasoline filling station	●	❍		●	●		
Vehicle maintenance/ repair	●	❍		●	●		
Laundry wastewater	●		●	❍	❍	●	
Construction site de-watering		●	●	❍		●	
Sanitary wastewater	●	❍	●		●		
Industrial Areas:							
Leaking tanks and pipes	❍	●	●	❍	●		
Miscellaneous process waters	●	❍	●	❍	●	❍	❍

Note: ● - most likely condition
❍ - may occur
Blank - not very likely

Discharges to the storm water conveyance system can originate form a variety of sources. The following provides a brief discussion of potential sources:

- Sanitary wastewater sources:
  - Sanitary wastewater (usually untreated) from improper sewer connections, exfiltration, or leakage
  - Effluent from improperly operating, or improperly designed, nearby septic tanks

- Automobile maintenance and operation sources:
  - Car wash wastewater
  - Radiator flushing wastewater
  - Engine degreasing wastes
  - Improper oil disposal
  - Leaky underground storage tanks

- Irrigation sources:
  - Lawn runoff from over-watering
  - Direct spraying of impervious surfaces

- Relatively clean sources:
  - Infiltrating groundwater
  - Water routed from pre-existing springs or streams
  - Infiltrating potable water from leaking water mains

- Other Sources:
  - Laundry wastewater
  - Non-contact cooling waters
  - Metal plating baths
  - Dewatering of construction sites
  - Washing of concrete trucks
  - Sump pump discharges
  - Improper disposal of household toxic substances
  - Spills from roadway and other accidents
  - Chemical, hazardous materials, garbage, sanitary sludge landfills and disposal sites

2.1 Land Use Characteristics

The City of Solana Beach consists of a total drainage area of 2,158 acres. The land use characteristics are estimated as follows (SANDAG 2000):

Agriculture	4 acres
Commercial and Office	192 acres
Industrial	35 acres
Parks and Recreation	246 acres
Public Facilities and Utilities	110 acres
Residential	1436 acres
Transportation	98 acres
Undeveloped	37 acres
Water	1 acre

Figure 1 presents a visual exhibit of the land use characteristics for the City of Solana Beach.

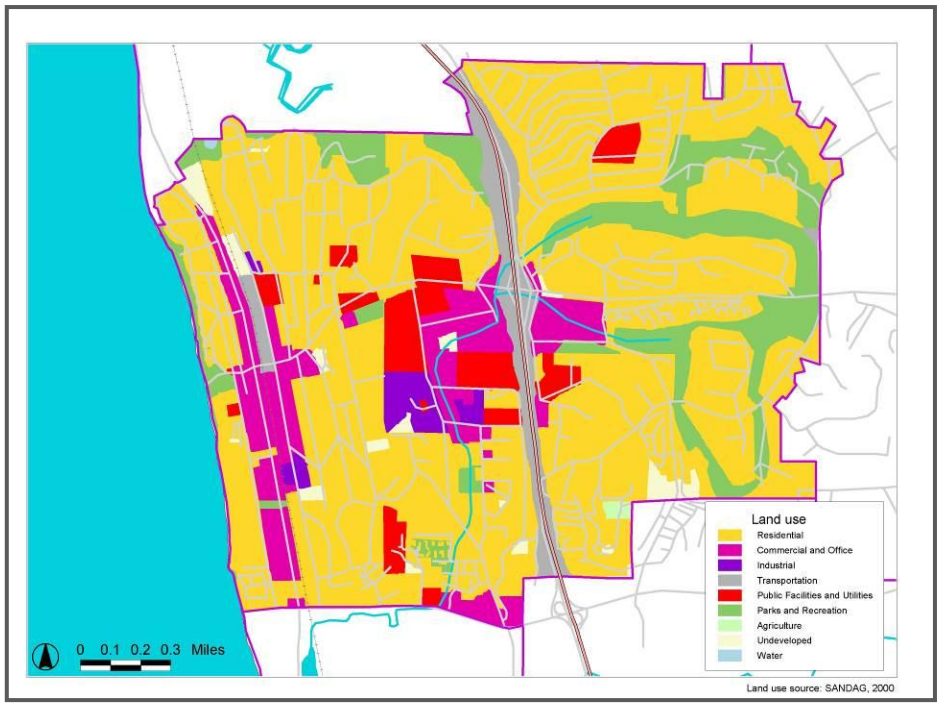

Figure 1. Land use in the City of Solana Beach.

3.0 METHODS

This year marked the third year of dry weather monitoring conducted under the new municipal storm water discharge permit. Under the "Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001" Section II. B. 3, specific requirements for field observations, field screening monitoring and analytical monitoring are listed. Further, the Copermittee Monitoring Workgroup has developed protocols for the jurisdictions to use to ensure consistency among the Copermittees.

First, the City selected dry weather field screening and analytical monitoring stations based on the criteria listed in the Order. In determining which storm drains and/or outfalls to monitor, a map was analyzed and sites were prioritized and selected based on the following:

- Review of the City's past Dry Weather Monitoring Programs
- Stations should be located downstream of any sources of suspected illegal or illicit activity
- Stations shall be located to the degree practicable at the farthest manhole or other accessible location downstream in the system within each cell

- Hydrological conditions, total drainage area of the site, traffic density, age of the structures or buildings in the area, history of the area, and land use types shall be considered in location stations
- Each Copermittee shall determine alternate stations to be sampled in place of selected stations that do not have flow

The City of Solana Beach is relatively small with highly defined geographic boundaries. The City is bordered to the north by the San Elijo Lagoon, the west by the Pacific Ocean, the south by the San Dieguito Lagoon and the east by the County of San Diego. All major outfalls on each border were selected for this program, along with the furthest accessible downstream storm drain structure for each sub-basin. These sites were selected with the thought that if any water were present in the structures furthest downstream, then upstream investigations would take place to determine the source of the water during dry periods. Therefore, no "alternate" stations were identified because staff would investigate all catch basins upstream from flowing or ponded outfalls/catch basins to attempt to find the source. Based on the above criteria, the following sites were selected for the City of Solana Beach.

Four monitoring locations were selected within the coastal basin based on historical problem areas and proximity to the Pacific Ocean (Sites 11, 24, 25 and 26). Three monitoring locations were selected within the Fletcher Cove Basin based on their drainage to sensitive water bodies (Sites 20, 21, and 23). Eleven sites were selected within the San Elijo Basin. These sites were chosen based on their proximity to the environmentally sensitive San Elijo Lagoon, at the furthest possible point downstream before it enters the lagoon (Sites 1-10 and 22). Seven sites were chosen for the largest basin in the City, the Steven's Creek Basin (Sites 12-17, 19, and 29). The majority of this basin drains into Stevens Creek. Monitoring locations were selected at specific points throughout the basin based on the combination of criteria discussed in the previous paragraph. These sites were chosen to capture data from all the different land uses in the basin. These include industrial, residential, commercial and parks. The last basin, the Via de la Valle East Basin, is located in the southeast portion of the City. Three monitoring locations were selected there to monitor what was leaving the City and entering the City of San Diego (Sites 18, 27, and 28).

An initial list of potential monitoring locations was developed. Twenty-eight sites met the criteria and were initially selected for the Dry Weather Monitoring program. An additional site was added to the list during the 2010 monitoring effort within the Steven's Creek Basin (Site 29), bringing the total number of sites up to twenty- nine. All twenty-nine sites were identified as primary sites for monitoring based on the factors listed previously within this report.

In accordance with Order No. 2007-0001, City staff made an initial visit to each site to determine if there was flow present, ponded water, or if the storm drain structure was dry**.** Field data sheets were used to record site descriptions and characteristics, flow estimations, visual observations, and field chemistry results (see Tables 3 through 6 for a

summary of field observations; individual data sheets are included in Appendix A). A new requirement included in Order No. 2007-0001 was the development of a Trash Assessment program. This program will be used to assess the presence of trash in receiving waters and urban runoff at each dry weather field screening or analytical monitoring station. Assessments of trash shall provide information on the spatial extent and amount of trash present, as well as the nature of the types of trash present. The Copermittees met and developed the "Trash Assessment Form" which is included with each Dry Weather Monitoring Field Datasheet for each station. This is the third year collecting visual data on trash at each site, with the intent being to characterize the amount of trash collected by the MS4 and to assess the long term progress of reducing or eliminating this pollutant if present.

If flowing or ponded water was observed during the initial visit, water quality tests were conducted. Sites that had elevated chemistry levels or abnormal visual observations were investigated immediately and the site was revisited within a period of not less than four hours and not more than twenty-four hours. Observations and chemical testing were repeated during the second visit if the field analytical screening results were above the published action levels. If the site was dry on the initial visit, a follow-up visit was not conducted.

Sites 12, 14, 21 and 25 had either ponded or flowing water present with a collectible sample. Field screening tests and lab analysis were performed on all four stations. The Order only requires that jurisdictions take ¼ (25%) of samples that were field screened to lab for analysis, but the City decided that since there were so few catch basins/outlets that had enough water to sample, it would be prudent to take them all to the lab for analysis. Sites that had lab analysis results above the Dry Weather Monitoring Program action levels were investigated within 24 hours of the receipt of the laboratory findings. Visual observations and additional laboratory samples were collected during the follow-up investigations to be analyzed for constituents above the action levels during the initial site visit.

Samples were collected by inserting a pre-cleaned HDPE bottle into the middle of the flowing or ponded water. Samples were tested on-site using CHEMetrics field test kits for the colorimetric analysis of ammonia, nitrate-N, orthophosphate-P, and detergents (MBAS). In addition to the colorimetric analyses, the samples were also analyzed for pH, conductivity, and temperature using an YSI Model 63 pH/Conductivity/ Temperature Meter. Turbidity was measured using a Hach 2100P Turbidimeter.

Table 2 presents the specific ranges and detection limits of the field test kits and meters.

Table 2: Range and Detection Limits for Field Test Kits and Meters

Parameter	Kit or Meter	Range	Detection Limits (mg/L)	Accuracy/ Increment
pH	YSI Model 63 pH/ Conductivity/ Temperature Meter	0.00 to 14.00 pH	NA	± 0.01 pH
Temperature (^{o}C)	YSI Model 63 pH/ Conductivity/ Temperature Meter	-5 to +75 ^{o}C	NA	± 0.1 ^{o}C
Conductivity (mS/cm @ 25 ^{o}C)	YSI Model 63 pH/ Conductivity/ Temperature Meter	0.0 to 49.99 mS/cm	NA	± 1% Full Scale ± 1 Digit
Turbidity	Hach Model 2100P Turbidimeter	0 to 1000 NTU	NA	± 2% of reading plus stray light from 0-1000 NTU
Ammonia (mg/L)	CHEMetrics K-1510	0 – 1.0 and 1.0 – 10.0 mg/L	0.1	NA
Nitrates (mg/L)	CHEMetrics K-6904	0 – 1.0 and 1.0 – 5.0 mg/L	0.05	NA
Detergents (mg/L)	CHEMetrics K-9400	0 – 3.0 mg/L	0.25	NA
Phosphate (mg/L)	CHEMetrics K-8510	0 – 1.0 and 1.0 – 10.0 mg/L	0.1	NA

4.0 RESULTS

The following tables present a detailed summary of all chemical, biological, and visual observations made during the 2010 Dry Weather Screening Program. The following provides a brief discussion about the purpose and results of visual observations and chemical and biological tests.

Table 3: DWMP Site Characteristics

SITE CHARACTERISTICS							
Site ID	Watershed	Location Description	Drainage Area Land-Use (1)	Conveyance Type (2)	Conveyance Construction (3)	Date	Time
1	Carlsbad	Rios Road Trailhead	Residential	Catch Basin	Concrete	9/13/2010	9:50 AM
2	Carlsbad	Glenmont/Rawl	Residential	Catch Basin	Concrete	9/13/2010	10:20 AM
3	Carlsbad	Santa Inez Outfall	Residential	Outlet	Concrete/Steel	9/13/2010	2:50 PM
4	Carlsbad	626 Canyon Dr	Residential	Catch Basin	Concrete	9/13/2010	10:25 AM
5	Carlsbad	635 Canyon Dr	Residential	Catch Basin	Concrete	9/13/2010	10:30 AM
6	Carlsbad	Highland Ave (Executive Golf Course)	Residential/Parks	Catch Basin	Concrete	9/13/2010	2:05 PM
7	Carlsbad	Santa Helena Trailhead	Residential	Catch Basin	Concrete	9/13/2010	2:30 PM
8	Carlsbad	Santa Carina Trailhead	Residential	Catch Basin	Concrete	9/13/2010	2:35 PM
9	Carlsbad	Santa Luisa Outfall	Residential	Catch Basin	Concrete	9/13/2010	2:20 PM
10	Carlsbad	East Side Railroad Tracks	Residential/Commercial	Channel	Concrete	9/13/2010	10:00 AM
11	Carlsbad	645 Pacific	Residential	Catch Basin	Concrete	9/13/2010	8:55 AM
12	San Dieguito	Steven's Creek Outfall	Residential/Commercial/ Industrial/Parks	Open Channel/Box Culvert	Concrete Channel/Natural Creek	9/13/2010	11:50 AM
13	San Dieguito	Valley (N. Baker Iron Works)	Residential/Industrial/ Commercial	Catch Basin	Concrete	9/13/2010	11:25 AM
14	San Dieguito	Genevieve Ave/Steven's Creek	Residential/Commercial	Outfall	Concrete Channel	9/13/2010	11:10 AM
15	San Dieguito	309 Solana Hills Drive	Residential	Catch Basin	Concrete	9/13/2010	10:55 AM
16	San Dieguito	559 Glencrest Ave	Residential	Catch Basin	Concrete	9/13/2010	10:35 AM
17	San Dieguito	Wells Fargo	Residential/Commercial	Catch Basin	Concrete	9/13/2010	3:00 PM
18	San Dieguito	Avocado Place	Residential	Catch Basin	Concrete	9/13/2010	1:55 PM
19	San Dieguito	Dell Street	Residential/Parks	Catch Basin	Concrete	9/13/2010	10:45 AM

SITE CHARACTERISTICS							
Site ID	**Watershed**	**Location Description**	**Drainage Area Land-Use (1)**	**Conveyance Type (2)**	**Conveyance Construction (3)**	**Date**	**Time**
20	San Dieguito	South Cedros/Via De La Valle	Residential/Commercial	Catch Basin	Concrete	9/13/2010	7:55 AM
21	San Dieguito	605 Marsolan Ave	Residential/Commercial	Catch Basin	Concrete	9/13/2010	8:00 AM
22	San Dieguito	779 Barbara Ave	Residential	Catch Basin	Concrete	9/13/2010	10:15 AM
23	San Dieguito	North Cedros/Lomas Santa Fe	Residential/Commercial	Catch Basin	Concrete	9/13/2010	8:30 AM
24	San Dieguito	347 Acacia St	Residential	Catch Basin	Concrete	9/13/2010	8:45 AM
25	San Dieguito	Seascape (Outfall)	Residential/Commercial	Outfall	Steel	9/13/2010	9:15 AM
26	San Dieguito	248 Sierra Ave	Residential	Catch Basin	Concrete	9/13/2010	8:40 AM
27	San Dieguito	San Andreas (City Limits)	Residential	Catch Basin	Concrete	9/13/2010	1:45 PM
28	San Dieguito	Spindrift Way/American Lane	Residential	Catch Basin	Concrete	9/13/2010	1:35 PM
29	San Dieguito	Valley Ave/Via De La Valle	Residential/Commercial	Catch Basin	Concrete	9/13/2010	11:35 AM

Table 4: DWMP Field Screening Visual Observations

QUALITATIVE OBSERVATIONS										
Site ID	**Estimated Flow (gpm)**	**Weather**	**Odor**	**Color**	**Clarity**	**Floatables**	**Deposits**	**Vegetation**	**Biology**	**Other**
1	Damp	Partly Cloudy	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp. Sample not collectible.
2	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
3	Damp	Sunny	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp, no flow observed.
4	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
5	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
6	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
7	Damp	Sunny	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp; no flow observed.
8	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
9	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
10	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Concrete channel dry; no flow observed.
11	Dry	Overcast	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
12	Ponded	Sunny	None	None	Clear	None	Sediment/Gravel	Normal	Insects, Fish	Water ponded at Outfall; no flow observed.
13	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
14	Ponded	Sunny	None	Yellow	Clear	Leaves	Fine Particulates	Normal	Fish	No flow coming from Outfall; water ponded in Stevens Creek concrete channel.
15	Damp	Sunny	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp; no flow observed.
16	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry, no flow observed.
17	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
18	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
19	Flowing (<0.1 gpm)	Sunny	None	None	Clear	None	Sediment/Gravel	None	None	Hairline trickle in catch basin, sample not collectible.

QUALITATIVE OBSERVATIONS										
Site ID	**Estimated Flow (gpm)**	**Weather**	**Odor**	**Color**	**Clarity**	**Floatables**	**Deposits**	**Vegetation**	**Biology**	**Other**
20	Dry	Overcast	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
21	Ponded	Overcast	Rotten Eggs	None	Slightly Cloudy	Leaves	Fine Particulates	None	None	Ponded water in catch basin. Evidence of residential over-irrigation.
22	Damp	Sunny	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp; no flow observed.
23	Dry	Overcast	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
24	Dry	Overcast	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
25	Flowing (1.5 gpm)	Overcast	Musty	None	Slightly Cloudy	Bubbles/Foam	None	None	None	Flow estimated at 1.5 gpm. No evidence of overland flow. Does not reach receiving water.
26	Damp	Overcast	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp; no flow observed.
27	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
28	Dry	Sunny	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Dry/No Flow	Catch basin dry; no flow observed.
29	Damp	Sunny	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Damp/No Flow	Catch basin damp; no flow observed.

Table 5: DWMP Analytical Laboratory Results

LAB ANALYSIS																
Site ID	Oil and Grease		Total Hardness mg/L		Cadmium (Cd) (dissolved)		Copper (Cu) (dissolved)		Lead (Pb) (dissolved)		Zinc (Zn) (dissolved)		Diazinon		Chlorpyrifos	
	mg/L	*DL*	*CaCO3*	*DL*	*mg/L*	*DL*	*mg/L*	*DL*	*mg/L*	*DL*	*mg/L*	*DL*	*µg/L*	*DL*	*µg/L*	*DL*
12	ND	4.8	580	10	ND	0.005	ND	0.01	ND	0.005	ND	0.02	ND	0.05	ND	0.05
14	ND	4.8	670	10	ND	0.005	ND	0.01	ND	0.005	ND	0.02	ND	0.05	ND	0.05
21	6.5	4.8	460	10	ND	0.005	ND	0.01	ND	0.005	0.027	0.02	ND	0.05	ND	0.05
25	ND	4.8	620	10	ND	0.005	0.01	0.01	ND	0.005	0.044	0.02	ND	0.05	ND	0.05

BACTERIAL ANALYSIS						
Site ID	Total Coliform		Fecal Coliform		Enterococcus	
	MPN/100mL	*DL*	*MPN/100mL*	*DL*	*MPN/100mL*	*DL*
12	130,000	200	17,000	200	17,000	20
14	3,000	200	400	200	<20	20
21	30,000	200	1,700	200	2,200	20
25	>1,600,000	200	>1,600,000	200	90,000	20

BACTERIAL ANALYSIS (FOLLOW-UP)						
Site ID	Total Coliform		Fecal Coliform		Enterococcus	
	MPN/100mL	*DL*	*MPN/100mL*	*DL*	*MPN/100mL*	*DL*
12	240,000	200	50,000	200	7,000	20
25	500,000	200	500,000	200	800	20

Table 6: DWMP Field Screening Results

FIELD SCREENING								
Site ID	Temperature ºC	pH	Turbidity NTU	Conductivity uS/cm	Nitrate mg/L NO_3-N	Ammonia mg/L NH_3-N	Reactive Phosphorus PO_4-P mg/L	Surfactants (MBAS) mg/L
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	17.1	7.93	9.56	4.39	1.5	0.6	1.5	0.25
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	18.4	7.78	6.25	5.26	<0.25	0.2	0.1	0.50
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21	18.0	7.87	16.9	2.91	<0.25	0.6	0.8	0.25
22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
25	17.6	8.07	52.2	3.11	<0.25	0.6	1.8	0.50
26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

4.1 Visual Observations

Visual observations included water color, clarity, and flow rate, floating materials, biological observations, structural condition of the conveyance, and vegetative condition at the site. If any particular odors were associated with the site, those observations were also recorded.

- **Flow:** Flowing water was observed at Site 19 and Site 25, although flow at Site 19 was only a hairline trickle and a sample was not collectible. At Site 25 water was flowing from the Outfall at approximately 1.5 gpm, but flow did not reach the receiving water.

  Ponded water was observed at Site 12, although no water was flowing from the Outfall. Ponded water was also found at Site 14, but no water was coming from the Outfall. At both of these locations, significant water was ponded in the Stevens Creek channel, with no evidence of overland flow. Fish were detected in the water at both locations, and evidence of a transient encampment and possible fecal contamination was observed at Site 12. Ponded water was also observed in the catch basin at Site 21, which showed evidence of overland flow from residential irrigation sources.

  Sites 1, 3, 7, 15, 22, 26, and 29 were damp with insufficient water available to collect a sample. Sites 2, 4-6, 8-11, 13, 16-18, 20, 23-24, and 27-28 were all dry.

- **Odor:** Odor can be caused by chemicals from residential, commercial, and industrial discharges; and from natural sources including decaying organic matter and microbial activity.

  Site 21 had a distinctive rotten eggs odor associated with it. This may have been due to decaying organic matter within the catch basin. Site 25 had a slightly musty smell associated with the water flow. This also may be due to decaying organic matter.

- **Water Color:** The apparent color of water results from dissolved substances and suspended matter. Soil runoff and decaying organic matter produce a variety of yellow, red, brown, and gray colors. Some algae and dinoflagellates produce reddish or deep yellow colors in water, while high levels of phytoplankton and other algae appear green.

  Only Site 14 had a distinctive yellow color in the collected sample.

- **Water Clarity:** Turbidity refers to the cloudiness of water. Water that is turbid generally has low clarity, and may appear cloudy or opaque, while less turbid water will appear clear. Suspended solids and microscopic plankton that scatter light passing through the water cause turbidity. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

Two sites had slightly cloudy water samples (Site 21 and Site 25). The samples collected at the other two sites with an obtainable sample (Site 12 and Site 14) were clear. Quantitative measurements for turbidity were analyzed at each site with a collectible sample; turbidity at Site 21 measured at 16.9 NTU, while turbidity at Site 25 measured at 52.2 NTU. Turbidity at the sites with clear samples, Site 12 and Site 14, measured at 9.56 NTU and 6.25 NTU, respectively.

- **Floatable materials:** The type of floating matter can help identify the source of contamination, since these substances are often direct products of the source of the pollution.

  Leaves were observed floating in the ponded water at Sites 14 and 21, while bubbles/foam was observed on the surface of the flow at Site 25.

- **Biological:** Sites 12 and 14 indicated biological activity. Insects and fish were observed at Site 12, while fish were observed at Site 14.

- **Vegetative condition:** Excessive vegetation can be an indicator of elevated levels of nutrients in the runoff.

  There were no sites with abnormal vegetative growth. Vegetation was observed at Sites 12 and 14, although it was normal vegetation similar to that found in the natural portion of the Stevens Creek channel.

- **Deposits:** Site 14 and Site 21 were observed with fine particulates, and Site 12 and Site 19 were observed with sediment/gravel.

4.2 Field Chemical Analyses

All sites with flowing or ponded water were tested for the following parameters: temperature, pH, conductivity, turbidity, ammonia, detergents, nitrates, and orthophosphates. Four of the sites that were monitored had flowing or ponded water associated with them with a collectible sample. These sites had field and lab tests conducted on the water present at the sampling site. The results for the sites will be included under each parameter below, and any exceedances will be discussed in Section 5 of this report. Table 6 included in this report provides a detailed list of field screening results. Section 5 of this report provides a discussion of sites that appear impacted by illicit discharges.

- **Temperature:** Extreme temperatures can be an indication of commercial or industrial runoff.

Site 12: 17.1°C	Site 21: 18.0°C
Site 14: 18.4°C	Site 25: 17.6°C

- **pH:** Measures of pH represent the intensity of the acidity or alkalinity of water, on a scale from 0 to 14.0, with 7.0 considered neutral. The pH of natural waters ranges from 6.0 to 9.0 (EPA 1993). Measurements outside of this range could be an indicator of commercial or industrial discharges.

  Site 12: 7.93 Site 21: 7.87
  Site 14: 7.78 Site 25: 8.07

  The pH for all sites was within the recommended EPA guidelines and considered neutral.

- **Conductivity:** Conductivity is the measure of the ability of water to carry an electrical current and high levels are an indicator of high total dissolved solids (TDS). The conductivity of saltwater is generally above 43 mS/cm. The Copermittees have not developed an action level for conductivity, but Best Professional Judgment (BPJ) is used. Generally, values greater than 10 mS/cm may indicate an IC/ID.

  Site 12: 4.39 mS/cm Site 21: 2.91 mS/cm
  Site 14: 5.26 mS/cm Site 25: 3.11 mS/cm

  Best Professional Judgment is used for IC/ID follow up for conductivity. No follow-up was necessary from these results.

- **Turbidity:** Turbidity refers to the clarity of water. The cloudier the water, the higher the turbidity. Sources of turbidity include suspended organics/detritus, re-suspended bottom sediments, sediments originating from erosion, and phytoplankton. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.

  Site 12: 9.56 NTU Site 21: 16.9 NTU
  Site 14: 6.25 NTU Site 25: 52.2 NTU

  Best Professional Judgment is used for IC/ID follow up for turbidity. No follow-up was necessary from these results.

- **Ammonia**: Ammonia is a common ingredient in commercial and household cleaning products. In addition, organic material contains nitrogen, which can convert into ammonia by means of biochemical degradation. Elevated levels of ammonia can be an indication of decaying organic matter or discharges containing cleaning agents. Ammonia levels range from 6 to 380 mg/L in raw sanitary wastewater, and from 0.1 to 3.0 mg/L in all other waters (EPA 1993). The Copermittee action level for ammonia is 1.0 mg/L.

Site 12: 0.6 mg/L
Site 14: 0.2 mg/L
Site 21: 0.6 mg/L
Site 25: 0.6 mg/L

Ammonia levels at all of the sites were below the action level. No additional follow-up was necessary.

- **Detergents:** Detergents are found in household and commercial cleaning and laundering products. Elevated detergent levels are a good indicator of commercial and/or residential wash water entering the storm water conveyance. Detergent (surfactant) concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA 1993). The Copermittee action level for MBAS (detergents) is 1.0 mg/L.

  Site 12: 0.25 mg/L
  Site 14: 0.50 mg/L
  Site 21: 0.25 mg/L
  Site 25: 0.50 mg/L

  Detergent levels at all of the sites were below the action level. No additional follow-up was necessary.

- **Nitrate-N:** Nitrates are commonly found in fertilizers, human or other animal wastes, in certain manufacturing processes, and in decomposing organic materials. Elevated levels of nitrate may be present in irrigation runoff, or may be indicative of an illicit connection to the storm drain system, by either commercial or residential sources. The Copermittee action level for Nitrate is 10.0 mg/L.

  Site 12: 0.25 mg/L
  Site 14: 0.50 mg/L
  Site 21: 0.25 mg/L
  Site 25: 0.50 mg/L

  All sites were below the action level for nitrates. . No additional follow-up was necessary.

- **Orthophosphate-P**: Orthophosphate-P occurs naturally from rocks, and with the decay and mineralization of dead plants and animals, but may also indicate the presence of human sewage, and commercial, agricultural or residential waste water. The Copermittee action level for Orthophosphate is 2.0 mg/L.

  Site 12: 1.5 mg/L
  Site 14: 0.1 mg/L
  Site 21: 0.8 mg/L
  Site 25: 1.8 mg/L

  No site exceeded the established action level for Orthophosphate.

4.3 Laboratory Chemical Analyses

In accordance with Order No. 2007-0001 Section D.4, a minimum of 25% of all sites with flowing or ponded water were tested for the following parameters: total hardness, oil

and grease, diazinon and chlorpyrifos, dissolved cadmium, copper, lead, and zinc, *Enterococcus*, total coliform, and fecal coliform bacteria. All sites that had a collectible sample were selected for laboratory. The following provides a brief discussion of each parameter and the results at each site. Table 5 provides a detailed list of analytical results. Section 5 provides a discussion of sites that appear impacted by illicit discharges. Results from the laboratory analysis can also be found in Appendix B.

- **Total Hardness:** Total hardness refers to the calcium and magnesium concentrations in water. The hardness of water can vary considerably between locations. Natural sources of hardness are dissolved limestone. Guidelines for maximum dissolved metals concentrations in natural water are linked to the hardness or alkalinity of the water (i.e., the softer the water, the lower the permitted level of dissolved metals).

  Site 12: 580 $CaCO_3$ Site 21: 460 $CaCO_3$
  Site 14: 670 $CaCO_3$ Site 25: 620 $CaCO_3$

- **Oil and Grease:** The oil and grease analysis is applicable for the determination of hydrocarbons, vegetable oils, animal fats, waxes, soaps, grease, and related matter. Discharges may cause surface films and shoreline deposits leading to environmental degradation. The established action level for Oil and Grease is 15 mg/L.

  Site 12: ND (< 4.8 mg/L) Site 21: 6.5 mg/L
  Site 14: ND (< 4.8 mg/L) Site 25: ND (< 4.8 mg/L)

  Three of the four sites registered Not Detected (ND) for Oil and Grease; the fourth site was below the action level. Therefore, no follow-up was required.

- **Diazinon:** Diazinon is an organophosphate insecticide. It kills insects, as well as other organisms through its effect on the nervous system. It is moderately persistent and has moderate to high mobility in soil. Diazinon, in high enough concentrations, is highly toxic to birds, mammals, honeybees, and other beneficial insects. It is also very highly toxic to freshwater fish and invertebrates following acute exposure.

  Site 12: ND (< 0.5 µg/L) Site 21: ND (< 0.5 µg/L)
  Site 14: ND (< 0.5 µg/L) Site 25: ND (< 0.5 µg/L)

  Diazinon was not detected at any site and therefore no follow-up required.

- **Chlorpyrifos:** Chlorpyrifos is also an organophosphate insecticide and is the most widely used insecticide in the United States. It is used in agriculture on a variety of crops and for residential use as a termiticide, mosquitocide, lawn treatment, as well as other uses. It adsorbs readily to soil particles and therefore is not highly mobile in soil. Chlorpyrifos presents a high risk to birds, fish and mammals and an even a higher risk to aquatic invertebrates. The Copermittee action level for chlorpyrifos is 0.05 µg/L.

Site 12: ND (< 0.5 µg/L) Site 21: ND (< 0.5 µg/L)
Site 14: ND (< 0.5 µg/L) Site 25: ND (< 0.5 µg/L)

Chlorpyrifos was not detected at any site and therefore no follow-up required.

- **Dissolved Cadmium:** Cadmium occurs in sulfide minerals that also contain zinc, lead, or copper. It is used in electroplating, batteries, paint pigments, and alloys with various other metals. It is usually associated with zinc at a ratio of about one part cadmium to 500 parts zinc in most rocks and soils. It is nonessential for plants and animals and is extremely toxic and accumulates in the kidneys and liver. The average abundance of cadmium in streams is 1 µg/L and in groundwater is from 1 to 10 µg/L. The U.S. EPA primary drinking water standard MCL is 10 µg/L (Standard Methods 1998).

  Site 12: ND (< 5 µg/L) Site 21: ND (< 5 µg/L)
  Site 14: ND (< 5 µg/L) Site 25: ND (< 5 µg/L)

  Dissolved cadmium was not detected at any site and therefore no follow-up required.

- **Dissolved Copper:** Copper occurs in its native state, but is also found in many minerals. It is widely used in electrical wiring, plumbing, roofing, various alloys, pigments, cooking utensils, brake pads, and the chemical industry. Copper is considered an essential trace element for plants and animals. The average abundance of copper in streams is 4 to 12 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 1.3 mg/L (Standard Methods 1998).

  Site 12: ND (< 0.01 mg/L) Site 21: ND (< 0.01 mg/L)
  Site 14: ND (< 0.01 mg/L) Site 25: 0.01 mg/L

  Dissolved copper was below the Copermittee action level and no follow-up was required.

- **Dissolved Lead:** Lead is normally found in the mineral galena. It is commonly used in batteries, ammunition, solder, piping, pigments, insecticides, and some alloys. It is nonessential for plants and animals and is toxic by ingestion and is a cumulative poison. The average abundance of lead in streams is 3 µg/L and in groundwater is generally less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 15 µg/L.

  Site 12: ND (< 5 µg/L) Site 21: ND (< 5 µg/L)
  Site 14: ND (< 5 µg/L) Site 25: ND (< 5 µg/L)

  Dissolved lead was not detected at any site therefore no follow-up was required.

- **Dissolved Zinc:** Zinc occurs in its native state and is used in many alloys such as brass and bronze. It is also used in batteries, fungicides and pigments. It is an essential growth element for plants and animals, but at elevated levels it is toxic to some species of aquatic life. The average abundance of zinc in streams is 20 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA secondary drinking water standard MCL is 5 mg/L.

  Site 12: ND (< 0.02 mg/L) Site 21: 0.027 mg/L
  Site 14: ND (< 0.02 mg/L) Site 25: 0.044 mg/L

  Dissolved zinc was below Copermittee action levels and therefore no follow-up was required.

- **Bacteria:** Bacteria are commonly found in human and animal feces. They are generally not harmful themselves, but they do indicate the possible presence of pathogenic bacteria, viruses, and protozoans that also live in human and animal digestive systems. Total coliform, fecal coliform and *Enterococcus* bacteria are common test organisms for water quality sampling.

  - **Total Coliforms:** Total coliforms are a group of bacteria that can occur in human feces, but can also be present in animal manure, soil and other places outside of the human body. The Copermittee action level for total coliform is 50,000 MPN/100mL.

    Site 12: 130,000 MPN/100mL Site 21: 30,000 MPN/100mL
    Site 14: 3,000 MPN/100mL Site 25: > 1,600,000 MPN/100mL

    Two of the four sites had results that exceeded the Copermittee action level (50,000 MPN/100mL). Site 25 is already the subject of an ongoing IC/ID investigation. Staff conducted follow-up sampling and upstream investigations on Site 12 and Site 25, and will be discussed further in Section 5 below.

  - **Fecal Coliforms:** Fecal coliforms are a subset of total coliforms and are more fecal-specific in origin. The Copermittee action level for fecal coliform is 20,000 MPN/100mL. Fecal coliform levels were the following:

    Site 12: 17,000 MPN/100mL Site 21: 1,700 MPN/100mL
    Site 14: 400 MPN/100mL Site 25: > 1,600,000 MPN/100mL

    Site 25 had bacteria readings that exceeded the Copermittee action level for fecal coliforms (20,000 MPN/100mL). Follow-up sampling and an upstream investigation were conducted and the results are explained in Section 5 below.

- **Enterococci:** Enterococci are a subgroup within the fecal *Streptococcus* group and are better suited for survivability in salt water. They are generally found in the digestive systems of humans and other warm-blooded mammals. The Copermittee action level for Enterococci is 10,000 MPN/100mL.

  Site 12: 17,000 MPN/100mL
  Site 14: < 20 MPN/100mL
  Site 21: 2,200 MPN/100mL
  Site 25: 90,000 MPN/100mL

  Site 12 and 25 exceeded the Copermittee action levels for Enterococci (10,000 MPN/100mL). Follow-up sampling and upstream investigations were conducted and the results are explained in Section 5 below.

4.4 Trash Assessment Monitoring

A new component added to the Dry Weather Monitoring Program in Order No. 2007-0001 is a Trash Assessment Monitoring requirement. According to the Order, Copermittees must "Assess the presence of trash in receiving waters and urban runoff at each dry weather field screening or analytical monitoring station. Assessments of trash shall provide information on the spatial extent and amount of trash present, as well as the nature of the types of trash present."

The Copermittees developed a standardized "Trash Assessment Form" (Form), through the Dry Weather Monitoring Workgroup, which encompasses all the requirements listed in Order No. 2007-0001. This Form was completed for all twenty-nine sites included in this Dry Weather Monitoring Program. Twenty-four sites received an "Optimal" level rating, which is the highest ranking level. The "Optimal" level states, "On first glance, little or no trash visible. Little or no trash (<10) evident when evaluated area is closely examined for litter and debris." Five sites (Sites 6, 8, 13, 20, and 23) received a "Suboptimal" ranking, which is the next level down. At these sites, between 10 and 50 pieces of trash were observed within the MS4 assessment area. No sites received "Marginal", "Submarginal", or "Poor" ratings during the 2010 Dry Weather Monitoring Program.

All Trash Assessment Forms are included with their respective Field Datasheets in Appendix A at the end of this report.

5.0 DISCUSSION

During the 2010 Dry Weather Monitoring Program, twenty-five of the twenty-nine sites inspected were either dry or damp where a sample could not be collected. Four sites (Sites 12, 14, 21, and 25) contained either ponded or flowing water, and field and lab screening were conducted on samples from all four sites. No exceedances were recorded during the field screening of the samples from the four sites, although lab analysis of the samples from two of the sites (Site 12 and Site 25) displayed elevated levels of bacterial

indicators. Site 25 has been the subject of an ongoing IDDE bacteria investigation. The following analytes exceeded Copermittee action levels at their respective sites:

- Site 12: Total Coliform and Enterococcus
- Site 25: Total Coliform, Fecal Coliform, and Enterococcus

- **Site 12:** Samples were taken from ponded water near the outfall located in Steven's Creek just south of Via de la Valle, which eventually drains into the San Dieguito Lagoon. Field tests for all analytes were below the Copermittee action levels, but lab results for Total Coliform and Enterococcus revealed exceedances. A follow-up investigation was immediately conducted on 9/21/2010 on receipt of the lab results.

  The follow-up on 9/21/2010 showed that the site had ponded water at the outfall, and a confirmation sample was collected and brought to the lab for analysis of bacterial indicators. During the confirmation visit, the area adjacent to the creek showed evidence of a transient encampment; trash and clothing was littered around the area (beer cans, cardboard boxes, water bottles, and food packaging), and toilet paper was scattered near the sampling site. The toilet paper appeared to have been used and had what was presumed as feces visible on the outer layer. This area was between 10-15 feet from the outfall and Steven's Creek. There was also one instance of guano on a piece of cardboard near the creek.

  Lab analysis of the confirmation sampling revealed exceedances of Total Coliform and Fecal Coliform bacteria. The City of Solana Beach is investigating possible abatement of the high bacterial indicator results.

- **Site 25:** Samples were taken from the outfall located at the Seascape Sur beach access. This outfall has historically high levels of bacteria, and the City is actively pursuing the source of the bacteria through an ongoing IDDE investigation. Last year's DWMP revealed exceedances of Ammonia and Detergents (MBAS). Initial field screening in 2010 did not result in any exceedances, although lab analysis resulted in bacterial exceedances of Total Coliform, Fecal Coliform, and Enterococcus.

  A follow-up investigation for the field screening exceedances occurred immediately upon receipt of the lab results on 9/15/2010. All upstream catch basins were dry, and no flow was entering the pipe from the street level. Water was again flowing from the Seascape Outfall at approximately 1.0 gpm, and a sample was collected for the exceedance confirmation. Lab results again showed elevated levels of Total Coliform and Fecal Coliform; Enterococcus was detected in the sample, but below the Copermittees action level.

  A second follow-up at Site 25 was performed on 9/20/2010 following the second exceedance of the bacterial indicator data. The two upstream catch basins along South Sierra were damp, although there was evidence of prior flow from the

landscaping at Solana Beach and Tennis Club into the western catch basin inlet, most likely due to over-irrigation. There were also rodent feces along the northern side of the beach access walkway inside a fenced area near utility boxes, approximately 50 feet west of South Sierra. All other areas were dry with no evidence of overland flow. The outfall was flowing, but only at a trickle of approximately 0.5 gpm; a sample was not collected during the second follow-up event.

During the three visits to the Seascape Sur Outfall, the flow never reached the receiving water.

6.0 CONCLUSIONS

The 2010 Dry Weather Monitoring Program found one storm water conveyance line with an indication of illegal discharges to the City of Solana Beach's storm water system (Site 25). The majority of the other sites visited were dry or damp, with one additional site showing evidence of over-irrigation discharges (Site 21). However, this site did not have analyte concentrations high enough to exceed the Copermittees action levels. All necessary follow up activities did not reveal a dominant source, as the catch basins and outfalls were either damp or dry.

Site 12 at Stevens Creek was dry during last year's DWMP, but the ponded water at the outfall revealed elevated levels of bacterial indicators in 2010. Evidence of a transient encampment adjacent to the outfall may have influenced the results, and the City may look into preventing such encampments in the future. During both of the visits to Site 12, the outfall was dry and ponded water was collected from the creek channel. No flow was observed originating from the City's MS4.

Site 25 at Seascape Sur has had historical problems and has been the focus of an ongoing IDDE investigation for over eight years. The City will continue with its efforts to educate the Beachwalk business district and adjacent private condominium complexes about the City's pollution prevention programs and continue its efforts to eliminate the discharge at Site 25 (Seascape Sur). Commercial educational programs will continue and include both the proprietors and their employees. Residential programs will include building owners, Homeowner Associations (HOA's) and residents. An informed public will provide support for new and already existing prevention programs.

Additionally, the City will continue to explore options for capital improvements in the Seascape area as the source of the recurring bacterial problems has proven elusive. The City will continue to look into possibly correcting the structural problems within the pipe, which may be leading to bacterial re-growth. The outfall has not yet affected the quality of the receiving waters, but a proactive approach by the City to abate the bacterial problem is recommended.

Appendix A
2010 Dry Weather Monitoring Data Sheets and Trash Assessments

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for reproduction purposes.

San Diego Stormwater Copermittees

Dry Weather Monitoring Field Datasheet

X Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) X MS4 ☐ Receiving Water

Site ID	1	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 904
Location	RIOS ROAD TRAILHEAD	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 904.61
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 904.61
Time	0950	Observer	B.GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): X Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open X None

Conveyance (Check one only): ☐ Manhole X Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny X Partly Cloudy ☐ Overcast ☐ Fog

Tide X N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain X > 72 hours ☐ < 72 hours

Rainfall X None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	X None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	X None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	X Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	X None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	X None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	X None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	X None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded X Dry ☐ Tidal DAMP

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No X N/A

Evidence of Overland Flow? ☐ Yes X No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken X Yes ☐ No **Photo #** 15-16

Field Screening Samples Collected? ☐ Yes X No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes X No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP. NOT ENOUGH FLOW FOR COLLECTION.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 1 DATE: 9/13/2010

LOCATION: RIOS ROAD TRAILHEAD TIME: 0950

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees

Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	2	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 904
Location	GLENMUNT AVE/RAWL PL	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 904.61
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 904.61
Time	1020	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 20

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 2 DATE: 9/13/2010

LOCATION: GLENMONT AVE / KAWL PL TIME: 1020

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4' x 3'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees

Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	3	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 904
Location	SANTA INEZ OUTFALL	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 904.61
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 904.61
Time	1450	Observer	B GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal DAMP

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 48

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: OUTFALL DAMP – SAMPLE NOT COLLECTABLE

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 3 DATE: 9/13/2010

LOCATION: SANTA INEZ OUTFALL TIME: 1450

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10' x 6'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	4	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 904.61
Location	626 CANYON DR.	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 904.61
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 904.61
Time	1025	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 21-22

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 4 DATE: 9/13/2010

LOCATION: 626 CANYON DR. TIME: 1025

OBSERVER: B. CAMBUS

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5' x 4'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	5	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00) 904
Location	635 CANYON DR.	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 904.61
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 904.61
Time	1030	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other LEAVES
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 23-24

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 5 DATE: 9/13/2010

LOCATION: 635 CANYON DR TIME: 1030

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5' x 4'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	6	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00) 904
Location	HIGHLAND AVE (EXEC. GOLF COURSE)	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 904.61
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 904.61
Time	1905	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 41-42

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 6 DATE: 9/13/2010

LOCATION: HIGHLAND AVE (EXEL GOLF COURSE) TIME: 1405

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6' x 4'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: _____

San Diego Stormwater Copermittees

Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	7	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00) 904
Location	SANTA HELENA TRAILHEAD	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 904.61
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 904.61
Time	1430	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal DAMP

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 44-45

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP – SAMPLE NOT COLLECTABLE.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

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   Single- and multi-family homes, mobile home parks, etc.

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   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 7 DATE: 9/13/2010

LOCATION: SANTA HELENA TRAILHEAD TIME: 1430

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5' x 3'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

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San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 Receiving Water

Site ID	8	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g. 7.00) 904
Location	SANTA CARLINA TRAILHEAD	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g. 7.10) 904.61
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g. 7.11) 904.61
Time	1435	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other LEAVES
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 46-47

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 8 DATE: 9/13/2010

LOCATION: SANTA CARLINA TRAILHEAD TIME: 1435

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10' x 2'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

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San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	9	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00) 904
Location	SANTA LUISA OUTFALL	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 904.61
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 904.61
Time	1420	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 43

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 9 DATE: 9/13/2010

LOCATION: SANTA LUISA OUTFALL TIME: 1420

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 6'x4'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	10	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 904
Location	EAST SIDE RAILROAD TRACKS	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 904.61
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 904.61
Time	1000	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 17

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 10 DATE: 9/13/2010

LOCATION: EAST SIDE RAILROAD TRACKS TIME: 1000

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20' x 10'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
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- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

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San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	11	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 904
Location	645 PACIFIC	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 904.61
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 904.61
Time	0855	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** 11-12

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 11 DATE: 9/13/2010

LOCATION: 645 PACIFIC TIME: 0855

OBSERVER: B. GAMBUE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4' x 3'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type*	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	12	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00) 905
Location	STEVEN'S CREEK OUTFALL	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	1150	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☒ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☒ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 36

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	17.1	NH_3-N (mg/L)	0.6	NO_3-N (mg/L)	1.5	Ortho-PO_4 (mg/L)	1.5
pH (pH units)	7.93	TURB (NTU)	9.56	COND (mS/cm)	4.39	MBAS (mg/L)	0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	Ø	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: FLOW PONDED, NO FLOW FROM OUTFALL.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 12 DATE: 9/13/2010

LOCATION: STEVEN'S CREEK OUTFALL TIME: 1150

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20' x 10'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

_____

_____

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_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For TOTAL COLIFORM, ENTERO ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	12	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00)
Location	STEVEN'S CREEK OUTFALL	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10)
Date	9/21/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11)
Time	10:20	Observer			Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☒ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: PONDED SAMPLE TAKEN FROM CREEK. LAB ANALYSIS FOR INDICATOR BACTERIA. TRANSIENT EVIDENCE NEAR SAMPLING STATION.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	13	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 905
Location	VALLEY (N. BAKER IRON WORKS)	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 905.11
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 905.11
Time	1125	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other LEAVES
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 33

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 13 DATE: 9/13/2010

LOCATION: VALLEY (N BAKER IRON WORKS) TIME: 1125

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4'x3'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste). or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	14	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00) 905
Location	GENEVIEVE AVE/STEVEN'S CREEK	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	1110	**Observer**	B.GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other LEAVES
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☐ Algae	☒ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 31-32

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.4	NH_3-N (mg/L)	0.2	NO_3-N (mg/L)	<0.25	Ortho-PO_4 (mg/L)	0.1
pH (pH units)	7.78	TURB (NTU)	6.25	COND (mS/cm)	5.26	MBAS (mg/L)	0.5

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: PONDED IN CREEK, NO FLOW. SAMPLE COLLECTED.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 14 **DATE:** 4/13/2010

LOCATION: GENEVIEVE AVE/STEVEN'S CREEK **TIME:** 1110

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20' x 20'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	15	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 905
Location	309 SOLANA HILLS DR	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 905.11
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 905.11
Time	1055	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☒ Other LEAVES

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal DAMP

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 29-30

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP - NO COLLECTABLE SAMPLE.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 15 DATE: 3/19/2010

LOCATION: 309 SOLANA HILLS DR TIME: 1055

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 6' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	16	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 905
Location	559 GLENCREST AVE.	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 905.11
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 905.11
Time	1035	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other LEAVES
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 25-26

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 16 DATE: 9/13/2010

LOCATION: 559 GLENCREST AVE TIME: 10:35

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5'x6'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	17	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00) 905
Location	WELLS FARGO	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	1500	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other LEAVES
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 49-50

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 17 DATE: 9/13/2010

LOCATION: WELLS FARGO TIME: 1500

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6' x 4'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	18	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 905
Location	AVOCADO PLACE	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 905.11
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 905.11
Time	1355	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 40

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 18 DATE: 9/13/2010

LOCATION: AVOCADO PLACE TIME: 1355

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 5' x 3'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	19	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00) 905
Location	DELL STREET	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	1045	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 27-28

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	<0.1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: HAIRLINE TRICKLE - SAMPLE NOT COLLECTABLE

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 19 DATE: 9/13/2010

LOCATION: DELL STREET TIME: 1045

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 8' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	20	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 905
Location	SOUTH CEDROS/VIA DE LA VALLE	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 905.11
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 905.11
Time	0755	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal _____

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 1-2

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DRY.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 20 DATE: 9/13/2010

LOCATION: S CEDROS/VIA DEL VALLE TIME: 0755

OBSERVER: B. GONRUE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 8' x 4'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees

Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	21	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 905
Location	605 MARSOLAN AVE	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g., 7.10) 905.11
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 905.11
Time	0800	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☒ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other LEAVES
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☒ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 3-5

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.0	NH_3-N (mg/L)	0.6	NO_3-N (mg/L)	<0.25	Ortho-PO_4 (mg/L)	0.8
pH (pH units)	7.87	TURB (NTU)	16.9	COND (mS/cm)	2.91	MBAS (mg/L)	0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: PONDED WATER AT BOTTOM OF CATCH BASIN. APPEARS TO HAVE ORIGINATED FROM STREET DUE TO OVER-IRRIGATION (SEE PHOTOS). FIELD SCREENING & LAB SAMPLES COLLECTED.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 21 DATE: 9/13/2010

LOCATION: 605 MARSOLAN AVE TIME: 0800

OBSERVER: B. GAMBOA

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 6' x 3'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees

Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	22	Latitude	(e.g., 33.41174)	Watershed	Hydrologic Unit	(e.g., 7.00) 905
Location	779 BARBARA AVE	Longitude	(e.g., -117.35213)		Hydrologic Area	(e.g. 7.10) 905.11
Date	9/13/2010	TB Page			Hydrologic Subarea (Optional)	(e.g., 7.11) 905.11
Time	1015	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae ☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal DAMP

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 18-19

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP, NOT ENOUGH WATER FOR COLLECTABLE SAMPLE.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 22 DATE: 9/13/2010

LOCATION: 779 BARBARA AVE TIME: 1015

OBSERVER: R. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 8' x 4'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	23	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00) 905
Location	NORTH CEDROS / LOMAS SANTA FE	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	0830	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 6-7

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 23 DATE: 9/13/2010

LOCATION: N CEDROS / LOMAS SANTA FE TIME: 0830

OBSERVER: B. GAMBUE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees

Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	24	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00) 905
Location	347 ACACIA ST	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	0845	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 10

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 24 DATE: 9/13/2010

LOCATION: 347 ACACIA STREET TIME: 0845

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 6' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	25	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00)	905
Location	SEASCAPE (OUTFALL)	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)	905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)	905.11
Time	0915	**Observer**	B. GAMBLE		**Discharge Area** (Optional)		

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☐ N/A ☒ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 13-14

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	17.6	NH_3-N (mg/L)	0.6	NO_3-N (mg/L)	<0.25	Ortho-PO_4 (mg/L)	1.8
pH (pH units)	8.07	TURB (NTU)	52.2	COND (mS/cm)	3.11	MBAS (mg/L)	0.5

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow	1.5	gpm

COMMENTS: OUTFALL FLOWING, SAMPLE COLLECTED. FLOW DOES NOT REACH RW.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 25 DATE: 9/13/2010

LOCATION: SEASCAPE OUTFALL TIME: 0915

OBSERVER: R. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 2' X 8'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For BACTERIAL INDICATORS ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	25	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00)
Location	SEASCAPE (OUTFALL)	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10)
Date	9/15/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11)
Time	11:55	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☐ N/A ☐ Low ☒ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow	1.0	gpm

COMMENTS: OUTFALL FLOWING, WATER DOES NOT REACH RW. COLLECTED SAMPLE FOR LAB ANALYSIS - CONFIRMATION FOR BACTERIAL INDICATOR EXCEEDANCES.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	26	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00) 905
Location	248 SIERRA AVE	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g. 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	0840	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal DRY

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 8-9

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY, NO SAMPLE COLLECTED.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 26 **DATE:** 9/13/2010

LOCATION: 248 SIERRA AVE **TIME:** 0840

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	27	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00) 905
Location	SAN ANDRES (CITY LIMITS)	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	1345	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 39

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004, 4/15/2005, 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 27 DATE: 9/13/2010

LOCATION: SAN ANDRES (CITY LIMITS) TIME: 1345

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4'x3'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	28	**Latitude**	(e.g., 33.41174)	Watershed	**Hydrologic Unit**	(e.g., 7.00) 905
Location	SPINDRIFT WAY / AMERICAN LN	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	1335	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 37-38

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: DRY

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

   Rural residential (For the County of San Diego and other appropriate Copermittees)
   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 28 DATE: 9/13/2010

LOCATION: SPINDRIFT WY / AMERICAN LN TIME: 1335

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5' x 3'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	29	**Latitude**	(e.g., 33.41174)	**Watershed**	**Hydrologic Unit**	(e.g., 7.00) 905
Location	VALLEY AVE / VIA DE LA VALLE	**Longitude**	(e.g., -117.35213)		**Hydrologic Area**	(e.g., 7.10) 905.11
Date	9/13/2010	**TB Page**			**Hydrologic Subarea** (Optional)	(e.g., 7.11) 905.11
Time	1135	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other LEAVES
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal DAMP

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No **Photo #** 34-35

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: CATCH BASIN DAMP. SAMPLE NOT COLLECTABLE.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

San Diego Stormwater Copermittees

Land Use Types for Dry Weather Monitoring

(Adopted by the Dry Weather Monitoring Workgroup, April 20, 2004)

1. **Residential**

   Residential (general)
   Single- and multi-family homes, mobile home parks, etc.

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   Single family homes located in rural areas with lot sizes of approximately 1 to 10 acres. Rural residential estates may have small orchards, fields or small storage buildings associated with the residential dwelling unit, etc.

2. **Commercial**

   Offices, schools, shopping centers, auto dealerships, government/civic centers, cemeteries, churches, libraries, post offices, fire/police stations, military use, jails, prisons, border patrol holding stations, dormitories, hotels, motels, resorts, and casinos, etc.

3. **Agricultural**

   Orchards, vineyards, nurseries, greenhouses, flower fields, dairies, livestock, poultry, equine ranches, row crops and grains, pasture, fallow, etc.

4. **Industrial**

   Shipbuilding, airframe, aircraft manufacturing, industrial parks, manufacturing uses such as lumber, furniture, paper, rubber, stone, clay, and glass; auto repair services/recycling centers; warehousing, wholesale trade; mining, sand and gravel extraction, salt evaporation; junkyard, dumps/landfills; auto wrecking/dismantling and recycling centers, etc.

5. **Parks**

   Recreation areas and centers, neighborhood parks, wildlife and nature preserves, golf courses, accessible sandy areas along the coast or major water bodies allowing swimming and picnicking, etc.

6. **Open**

   Vacant and undeveloped lands, etc.

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: 29 DATE: 9/13/2010

LOCATION: VALLEY AVE/VIA DE LA VALLE TIME: 1135

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 6' x 4'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

Appendix B
2010 Dry Weather Monitoring Analytical Laboratory Results

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for reproduction purposes.

SAN ELIJO JPA LABORATORY
2695 Manchester Avenue
Cardiff, California 92007
Phone (760) 753-6203 ext 39
FAX (760) 753-5935

Danny King
City of Solana Beach

DATE OF REPORT	September 20, 2010
DATE OF SAMPLE	**September 13,2010**
SAMPLED BY	Brett Gamble/Mikhail Ogawa Engineering
ANALYZED BY	SEJPA lab
PROJECT NAME	Solana Beach Dry Weather Monitoring

RESULTS TABLE

				SAMPLE ID:	Site#12	Site#14	Site#21	Site#25	Site#25	Site#12
				Time Collected:	11:50	11:10	8:10	9:05	11:55 on 9/15/10	10:20 on 9/21/10
ANALYSES	***METHOD**	**UNITS**	**RL**						resample	resample
Total Coliform	9221B	MPN/100ml	200		130000	3000	30000	>1,600,000	500,000	240000
Fecal Coliform	9221E	MPN/100ml	200		17000	400	1700	>1,600,000	500,000	50000
Enterococcus	9230B	MPN/100ml	20		17000	<20	2200	90000	800	7000
dissolved Pb	EPA200.7	mg/L	0.02		nd	nd	nd	nd		
dissolved Zn	EPA200.7	mg/L	0.005		nd	nd	0.027	0.044		
dissolved Cu	EPA200.7	mg/L	0.01		nd	nd	nd	0.01		
Dissolved Cd	EPA200.7	mg/L	0.005		nd	nd	nd	nd		
total Hardness	2340C	mg/L	10		580	670	460	620		
Chlorpyrifos	EPA8141	mg/L	0.952		nd	nd	nd	nd		
Diazinon	EPA8141	mg/L	0.952		nd	nd	nd	nd		
Oil & Grease	EPA1664A	mg/L	4.8		nd	nd	6.5	nd		
								nd=none detected		

*Standard Methods, 20th Edition

Ravy H. Chea
Senior Lab Analyst

A Laboratory Certified by the State of California Department of Health Services
Certificate No. 1104

Appendix C
2010 Dry Weather Monitoring Analytical Chain of Custody Forms

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SAN ELIJO JOINT POWERS AUTHORITY

CHAIN OF CUSTODY RECORD

SANITATION DISTRICT	DATE
SOLANA BEACH	9/13/2010

SAMPLERS (SIGNATURE): BRETT GAMBLE

DATE	TIME	SAMPLE LOCATION	Grab	Composite	Water-Liq.	Solid	Other	Number of Containers	Routine (R) or Top Priority (TP)	ANALYSIS REQUESTED
9/13/10	0810	21	X		X				R	TOTAL, FECAL, ENTERO, DISSOLVED METALS (Pb, Cd, Cu, Zn), TOTAL HARDNESS, OIL & GREASE, DIAZINON & CHLORPYRIFOS
	0905	25	X		X				R	
	1110	14	X		X				R	
	1150	12	X		X				R	

1		2		3		4	
RELINQUISHED BY (SIGNATURE)	DATE/TIME 9/13/10 12:15	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RELINQUISHED BY (SIGNATURE)	DATE/TIME
RECEIVED BY	9/13/10 12:15	RECEIVED BY		RECEIVED BY		RECEIVED BY	

SAN ELIJO
JOINT POWERS AUTHORITY

CHAIN OF CUSTODY RECORD

SANITATION DISTRICT	DATE
SOLANA BEACH	9/15/10

SAMPLERS (SIGNATURE): BRETT GAMBLE

DATE	TIME	SAMPLE LOCATION	Grab	Composite	Water-Liq.	Solid	Other	Number of Containers	Routine (R) or Top Priority (TP)	ANALYSIS REQUESTED
9/15/10	11:55	SITE 25	X		X			1	R	TOTAL, FECAL, ENTERO

1		2		3		4	
RELINQUISHED BY (SIGNATURE)	DATE/TIME 9/15/10 12:15	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RELINQUISHED BY (SIGNATURE)	DATE/TIME
RECEIVED BY	9/15/10 1220	RECEIVED BY		RECEIVED BY		RECEIVED BY	

SAN ELIJO JOINT POWERS AUTHORITY

CHAIN OF CUSTODY RECORD

SANITATION DISTRICT	DATE
SOLANA BEACH	9/21/2010

SAMPLERS (SIGNATURE): [signature] BRETT GAMBLE

DATE	TIME	SAMPLE LOCATION	Grab	Composite	Water-Liq.	Solid	Other	Number of Containers	Routine (R) or Top Priority (TP)	ANALYSIS REQUESTED
9/21/10	10:20	SITE #12	X		X			1	R	TOTAL COLIFORM, FECAL COLIFORM, ENTEROC

1		2		3		4	
RELINQUISHED BY (SIGNATURE) [signature]	DATE/TIME 9/21/10 10:40	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RELINQUISHED BY (SIGNATURE)	DATE/TIME
RECEIVED BY [signature]	9/21/10 10:47	RECEIVED BY		RECEIVED BY		RECEIVED BY	

Appendix D
2010 Dry Weather Monitoring Program Photos

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for reproduction purposes.

Photo 1. **DWM Site 1 damp at storm drain inlet. Photo taken during field screening on 13 September 2010.**

Photo 2. **DWM Site 2 dry catch basin inlet. Photo taken during field screening on 13 September 2010.**

Photo 3. DWM Site 3 damp at the outfall. Photo taken during field screening on 13 September 2010.

Photo 4. DWM Site 4 dry at catch basin inlet. Photo taken during field screening on 13 September 2010.

Photo 5. DWM Site 5 dry at storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 6. DWM Site 6 dry at storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 7. DWM Site 7 damp at catch basin. Photo taken during field screening on 13 September 2010.

Photo 8. DWM Site 8 dry at storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 9. **DWM Site 9 dry at storm drain inlet. Photo taken during field screening on 13 September 2010.**

Photo 10. **DWM Site 10 dry at concrete brow ditch. Photo taken during field screening on 13 September 2010.**

Photo 11. DWM Site 11 dry at inlet sampling site. Photo taken during field screening on 13 September 2010.

Photo 12. DWM Site 12 ponded at outfall sampling site. Photo taken during field screening on 13 September 2010.

Photo 13. DWM Site 13 dry within manhole at sampling site. Photo taken during field screening on 13 September 2010.

Photo 14. DWM Site 14 ponded at creek. Photo taken during field screening on 13 September 2010.

Photo 15. DWM Site 15 damp at storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 16. DWM Site 16 dry at storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 17. DWM Site 17 dry at storm drain inlet. Photo taken during field screening on 13 September 2010.

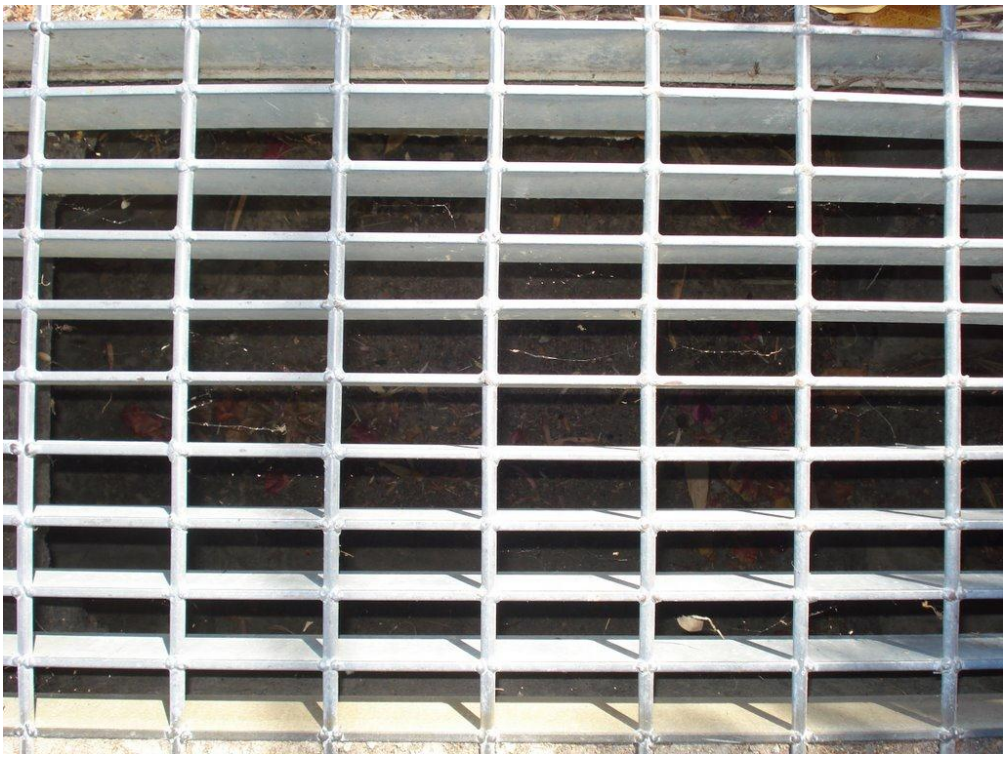

Photo 18. DWM Site 18 dry at storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 19. DWM Site 19 hairline trickle flow, sample not collectible. Photo taken during field screening on 13 September 2010.

Photo 20. DWM Site 20 dry at storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 21. DWM Site 21 ponded within storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 22. DWM Site 22 damp within storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 23. DWM Site 23 dry within storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 24. DWM Site 24 dry within storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 25. DWM Site 25 flowing at outfall sampling site. Photo taken during field screening on 13 September 2010.

Photo 26. DWM Site 26 damp within storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 27. DWM Site 27 dry within storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 28. DWM Site 28 dry within storm drain inlet. Photo taken during field screening on 13 September 2010.

Photo 29. DWM Site 29 damp within storm drain inlet. Photo taken during field screening on 13 September 2010.

CITY OF SOLANA BEACH

JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM (JURMP) ANNUAL REPORT

SEPTEMBER 2011

Reporting Period:
July 1, 2010 to June 30, 2011

Respectfully Submitted to:
San Diego Regional Water Quality Control Board
In compliance with:
Order No. 2007-0001, NPDES Permit No. CAS0108758

CITY OF SOLANA BEACH
ANNUAL REPORT
STORM WATER PROGRAM
SEPTEMBER 2010

Copermittee:	City of Solana Beach
Contact Person:	Mohammed Sammak, P.E. Director of Public Works/City Engineer (858) 720-2470
Day-to-Day Contact	Taryn Dunbar Assistant Civil Engineer (858) 720-2487
Emergency Contact	Public Works Emergency Phone Line (858) 720-2479
Storm Water Hotline	24-hour message service (858) 720-4424
Address:	635 South Highway 101 Solana Beach, CA 92075
Reporting Period:	July 1, 2010 to June 30, 2011
Report Prepared by:	Taryn Dunbar Assistant Civil Engineer

ACKNOWLEDGEMENTS

The City of Solana Beach wishes to expressly thank each Copermittee Storm Water Program Manager/Coordinator and their staff for their efforts during the Regional Storm Water Management Committee meetings and the workgroups and their development and continued implementation of model program components, the sharing of ideas and willingness to cultivate program consistency throughout San Diego County as an effective means of improving water quality in the Region. The level of collaboration among agencies and across jurisdictional boundaries is unique and a credit to the professionalism and efforts of the San Diego County Copermittees.

The activities described in this report are not merely *written words on a page*, but are the result of *tremendous efforts* of City staff to integrate many new activities into their daily routines and tasks. The City's Fiscal Year 2010/2011 (FY 10/11) Storm Water Program Manager wishes to thank the City's Storm Water Team for their assistance, dedication and collaboration to make the City's FY 10/11 storm water program successful *and meaningful.*

Storm Water Team:

Code Enforcement Officer, Tom Warden

City Manager/Fire Chief/Director of Public Safety, David Ott

Deputy City Manager, Wende Protzman

Operations Manager, Steve Kerr

City Inspector, Hector Ezquerro

Principle Engineer, Dan Goldberg

Director of Public Works/City Engineer, Mohammed Sammak

Community Services Director, Tina Christianson

Associate Engineer, Jim Greenstein

Associate Planner, Corey Johnson

Assistant Planner, Greg Hueners

Senior Engineering Technician, Robert Martinez

Management Analyst, Danny King

A big thank-you also to the Public Works Crew for all their hard work!

Lead Maintenance Worker, Danny Hernandez

Maintenance Worker, Bill Stedman

Maintenance Worker, Dave Thomas

Maintenance Worker, Josh Blea

CITY OF SOLANA BEACH
ANNUAL REPORT/ STORM WATER PROGRAM
SEPTEMBER 2010

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ACRONYMS

Acronym	Description
BMP	Best Management Practices: minimum standards that everyone and every business must adopt to reduce or eliminate urban runoff. BMPs are part of all storm water programs.
DWMP	Dry weather monitoring program: the procedures, requirements and program to collect samples during the dry season each year. Samples are typically collected over a one-two day period and then sent to the lab for analysis.
HHW	Household Hazardous Waste
IC/ID	Illegal Connection and Illicit Discharge: the term used to discuss connections to the MS4 that are not approved (illegal) or non-storm water (illicit) discharges.
JURMP	Jurisdictional Urban Runoff Management Program
MEP	Maximum Extent Practical: A term used by the RWQCB, and Copermittees to refer to the "best efforts," or "as much as possible."
MS4	Municipal Separate Storm Sewer System: references the City's storm water drainage system and the City's wastewater conveyance system.
NPDES	National Pollution Discharge Elimination System: the Federal program created by the 1972 Clean Water Act that governs State water quality / storm water programs.
Permit	Order 2007-0001 issued by the RWQCB, which requires cities to adopt and implement the JURMP, WURMP, and SUSMP.
PPM	Pollution Prevention Measure: a method, procedure, and/or process to control, reduce, prevent, or eliminate pollution.
RWQCB	Regional Water Quality Control Board. The Board is a California board, but for the *purposes of this report,* RWQCB represents the local water quality board (San Diego Regional Water Quality Control Board).
SUSMP	Standard Urban Storm water Mitigation Plan: a plan as to how the City will alter its review of construction plan (public and private) and estimate the extent of pollutant contributions from the site; the plan must specify BMPs that the City will require.
WURMP	Watershed Urban Runoff Management Program: programs that focus on urban water runoff from a larger point-of-view, which is the entire watershed (a watershed is also referred to as a hydrological unit). Programs must specify how cities will work together on planning urban projects and solving water quality problems.
WWMP	Wet weather monitoring program: the procedures, requirements and program to collect samples during the wet season each year. Samples are collected on a monthly basis, depending on weather.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

During reporting period Fiscal Year 2010/2011 (FY 10/11), the City worked with the other Copermittees to continue developing model programs and implementing all the established requirements of Permit No. R9-2007-0001 (Permit). This was the third complete year of implementation of the City's new Jurisdictional Urban Runoff Management Program (JURMP) that was developed and submitted in March, 2008 to comply with the new Permit, Order R9-2007-0001. This Annual Report (Report) incorporates the changes recommended by Regional Board Staff after review of last year's Annual Report, and complies with the requirements of each section of the Permit.

This is the third full year implementing the new JURMP, in compliance with the Permit regulations. The new activities will be discussed in their respective chapters of this Report, with some chapters modified or removed. The City began the process of developing the new programs in cooperation with the other Copermittees, and any new programs that were actually implemented in this reporting period will be discussed in this Annual Report.

The City is confident that it has implemented all programs required of them during the five year permit cycle of Order 2001-01. The City is also actively working on developing and implementing improved programs for the next five year permit cycle in compliance with Order R9-2007-0001. During the last five year permit cycle, the City created a storm water team consisting of staff from various departments, implemented all of the components of the JURMP and trained all pertinent Staff as to the expectations of the Permit.

Accomplishments to prevent and reduce pollution, eliminate contamination and improve water quality include the following:

- *The City successfully implemented comprehensive educational, inspection and enforcement procedures for municipal, commercial, residential, industrial and construction component activities as described in the City's JURMP.*
- *The City monitors a dedicated Storm Water Hotline and email address to receive complaints, questions, and general information 24 hours a day, seven days a week, 365 days a year.*

- *The City maintains an inventory of all municipal, commercial and industrial properties in the City, including prioritization of those that pose a threat to water quality.*
- *The City inspected the minimum amount of high priority businesses as stated in the new JURMP and notified all high-priority businesses of specific BMPs related to each type of business.*
- *The City collaborated with neighboring jurisdictions within their respective watersheds to develop educational brochures, surveys, and host community events and distributed hundreds of brochures to residents and the business community.*
- *The City continues to modify plan-check review processes to include a requirement for Erosion Control Plans, BMPs, and runoff mitigation alterations in project proposals and/or construction activities.*
- *The City participated in the 2010/2011 San Diego County Wet Weather Monitoring Program.*
- *The City continues to enforce a smoking ban at all local beaches and parks, the first jurisdiction in the nation to do so. In addition, the City strengthened its tobacco ordinance to ban smoking in all public parks, restaurants and buildings.*
- *The City provided several opportunities for public participation including educational workshops/classes, community events, Copermittee meetings and Household Hazardous Waste home pick-up and permanent drop-off collection sites.*
- *The City continues to implement the new "Environmental" review to ALL building/grading permit applications to ensure every project that gets approved by the City is reviewed for storm water management.*
- *The City Council lowered the grading threshold from 200 cubic yards to 50 cubic yards for all projects within the City. This caused more projects to be assessed by the City engineers to implement pre, during, and post construction BMPs.*
- *The City co-sponsored the sixth annual "Beach Blanket Movie Night" that provided residents a night of free movies and environmental education. The City had a booth co-sponsored by the Solana Center for Environmental Innovation that contained educational materials and games for attendees, and the films shown were dedicated to environmental protection of our ocean resources.*
- *The City authorized a part-time Code Enforcement Officer to continue weekend and off-hour patrols for storm water violations.*

- *The City added storm water specific language and reporting duties to new "standard" street sweeping contract to be used in all current and future contracts.*
- *The City modified its Municipal Code to comply with the new requirements of the Permit.*
- *The City implemented the new model SUSMP.*
- *The City participated in the development and implementation of the new Low Impact Development (LID) and Hydromodification Plan (HMP).*
- *The City developed and implemented the post-construction BMP verification, tracking and inspection program.*

CERTIFICATION STATEMENT

CERTIFICATION STATEMENT

I certify that the work performed, and the report prepared herein, was conducted under the supervision and guidance of the City of Solana Beach Public Works/ Engineering Department to meet the requirements of the *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority* (NPDES No. CAS0108758). I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

M. Sammak 9/28/11

Mohammed Sammak, P.E. **Date**
Director of Public Works/City Engineer
City of Solana Beach

REGISTERED PROFESSIONAL ENGINEER
MOHAMMAD SAMMAK
NO. 37146
EXP. 6-30-12
CIVIL
STATE OF CALIFORNIA

CHAPTER 1
Introduction

CHAPTER 1: INTRODUCTION

The City of Solana Beach (hereinafter, referred to as "City") has prepared this report in compliance with Order No. R9-2007-0001, NPDES Permit No. CAS0108758, *Water Discharge Requirements for Discharges of Urban Runoff From Municipal Separate Storm Sewer Systems Draining Watersheds of the County of San Diego, the Incorporated Cities of San Diego County and The San Diego Unified Port District and the San Diego County Regional Airport Authority* (hereinafter referred to as "Permit"). The California Regional Water Quality Control Board, San Diego Region (hereinafter, referred to as "RWQCB") issued the new Permit to all "Copermittees" (all cities in San Diego County, the County of San Diego, the Airport Authority and the Port District) in January, 2007.

Under the Permit, each Copermittee is required to submit an Annual Report in September of each year describing its jurisdictional program for the previous fiscal year (July 1 to June 30). The purpose of the report is to document to the RWQCB the City's progress and program accomplishments during the reporting period.

The Permit, first adopted on February 21, 2002 and subsequently updated in March, 2008, requires Copermittees to implement a comprehensive storm water program (Jurisdictional Urban Runoff Management Program [JURMP]) and submit a copy of the program to the RWQCB. The implementation of this program occurred during the reporting period covering July 1, 2010 to June 30, 2011 for this 2011 Annual Report. This Annual Report will cover the fourth year of implementation under Permit Order No. 2007-0001, but the third full year of implementation of the new JURMP.

1.1 Report Organization

This Report contains a description of all activities conducted to meet the requirements of the Permit. The information will be discussed in chapters applicable to each component of the JURMP, which occurred during this reporting period.

The organization of this report follows the outline of the new JURMP and includes the following sections:

- Development Planning Component
- Construction Component

- Municipal (Existing Development) Component
- Industrial and Commercial (Existing Development) Component
- Residential (Existing Development) Component
- Illicit Discharges Detection and Elimination Component
- Education Component
- Public Participation Component
- Fiscal Analysis Component
- Effectiveness Assessment Component
- Special Investigations
- Non-Emergency Fire Fighting
- JURMP Revisions
- Conclusions and Recommendations

1.2 Common Activities

The City participated with the Copermittees in several common activities (workshops, educational program component elements, model programs, etc.) that allowed for a sharing of resources and knowledge, which will provide a more cohesive message to the community. The common activities are described in the Copermittee Unified Urban Runoff Management Program (URMP) Annual Report, submitted with this report by the County of San Diego and incorporated herein by reference.

1.3 Report Content

The content of this report includes the activities associated with implementing the storm water program (JURMP). The development of the City's JURMP required the City to inventory and prioritize its municipal facilities, commercial and industrial businesses, develop a method to educate the business and residential community about the new requirements, evaluate existing municipal ordinances, and adopt new laws if needed to ensure enforcement action was available, develop a method for educating agency staff, and develop a commercial, industrial and construction site inspection program. Each subsequent year of Permit implementation requires the City to revisit these items and update as necessary. This Report contains those updates, where applicable.

The content of this report will include discussions about the programs and activities that occurred during this reporting period (July 1, 2010 to June 30, 2011). The City presumes that RWQCB staff recognizes that significant activity may occur subsequent to the end of the reporting period for this report. As a

result, throughout this report a summary of post-reporting period activities will be discussed (where appropriate) to assist the RWQCB in understanding the City's efforts to reduce urban runoff and pollution and to comply with the Permit.

1.4 Program Goals

The primary goal of the City's JURMP is to reduce or eliminate pollutant discharges into the City's MS4 (municipal separate sewer storm system) and receiving water bodies, including the Pacific Ocean, thus improving the quality of water in the City, neighboring jurisdictions, and region-wide.

The City recognizes that a *scientifically measurable* change in water quality is a long-term goal that would require many years of data collection, research and analysis, extending beyond the life of the current Permit (which expires in 2012). As a result, the City's program includes short-term goals expected to focus the City's program on permit compliance as well as water quality improvements. The following summarizes the City's past and current short-term annual program goals:

FY 02/03: Integration of WURMP(s), SUSMP and JURMP activities

FY 03/04: Complete assessment of JURMP (using regional strategy)

FY 04/05: Complete overall assessment of Regional Programs JURMP, WURMP and SUSMP; prepare for new Permit from RWQCB

FY 05/06: Assessment of JURMP, WURMP and SUSMP in preparation of new Permit anticipated to be adopted in early 2007. This involves the assessment of water quality data to focus on the sources of high priority pollutants locally as well as watershed and regionally.

FY 06/07 Further assessment of JURMP, WURMP and SUSMP to effectively develop new programs for incorporation in the new JURMP, WURMP and SUSMP that will be required by the new Permit (adopted January 2007). The complete program will be assessed to determine the effectiveness of existing programs and to develop better, more efficient programs to include in the next Permit cycle.

FY 07/08 Development and implementation of new JURMP to comply with Permit Order No. 2007-0001. The new Permit includes additional and improved requirements from those included in Order No. 2001-01. Although the City continued the implementation of Order 2001-01 during FY 07/08, significant time and resources were spent developing the new programs included in Order 2007-0001.

FY 08/09 Continue developing the new programs and activities under Permit Order No. 2007-0001, such as the Low Impact Development (LID) and Hydromodification Plan (HMP). In addition, track all SUSMP project post-construction BMPs and develop inspection protocol for annual inspections.

FY 09/10 Continue implementation of the new JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The focus of new water quality regulations are shifting to development and implementation of Total Maximum Daily Loads (TMDLs), which the City will actively participate in. The City will continue to be involved in the LID, HMP and new SUSMP requirements development for future implementation.

FY 10/11 Continue implementation of the JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The focus of new water quality regulations are shifting to development and implementation of Total Maximum Daily Loads (TMDLs), which the City will actively participate in. The City will continue to implement the LID, HMP and new SUSMP requirements on priority projects. The City will continue assessing the Storm Water Program to determine if there are any other areas where the utilization of specialized consultants will bring a higher value to the community while at the same time assisting Staff with Permit compliance as resources continue to dwindle during these tough economic times. Currently, Staff utilizes outside consultants to assist with:

- Commercial/Industrial facility inspections
- Dry Weather Monitoring Program
- Department specific specialized Staff trainings

All aspects of the Permit are under review by Staff to determine the most effective and efficient means of compliance. The City is fortunate to have a voter approved NPDES fee, so funding is not a problem, but Staff's resources are. So, outsourcing certain aspects of the storm water program may be a benefit to the City as well as the community.

FY 11/12 Continue implementation of the JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The City will continue to implement the LID, HMP and new SUSMP requirements on priority projects. Continued use of outside consultants to assist with commercial/Industrial facility inspections, dry Weather Monitoring Program, and department specific specialized Staff trainings. Continue updating commercial/industrial inventory as new businesses are established. Continue educating the public about the importance of eliminating storm water runoff from residences, businesses, construction sites, and public facilities. Preparation for new permit requirements.

CHAPTER 2
Development Planning Component

CHAPTER 2: DEVELOPMENT PLANNING COMPONENT

In accordance with Permit Section D.1, this section of the report describes the City's efforts to reduce Development Project discharges of pollutants from the MS4 to the Maximum Extent Practicable (MEP); to prevent Development Project discharges from the MS4 from causing or contributing to a violation of water quality standards; and to manage increases in runoff discharge rates and durations from Development Projects that are likely to cause increased erosion of stream beds and banks, silt pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.

In each Annual Report to the RWQCB, this section will include new modifications to the City's General Plan (if any), review process for new and redevelopment projects, inventory of current public and private projects and activities associated with the Standard Urban Storm Water Mitigation Plan (SUSMP). Activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The JURMP (Section 4.0: Development Planning Component) describes the City's plans to integrate new project review processes to require mitigation of urban runoff. In addition, the City adopted the new model SUSMP in February, 2008.

2.1 Assessment and Modification of General Plan

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. As such, the General Plan is crucial to the long-term success of its water quality and environmental programs.

There were *no changes* to the General Plan during this reporting period. However, the City is currently working on the General Plan update. It has been included in the City Council's FY 2010/2011 Workplan and is a priority project. Updates will be given in subsequent annual reports.

2.2 Project Approval and Environmental Review Process Modifications

The City is tasked with ensuring that land uses in Solana Beach comply with City codes, the General Plan, City Council policies, Engineering standards and State law requirements. Approval of projects through the discretionary review process is generally, but not always, required prior to issuing grading, building and right-of-way permits. The City's Municipal Code (Code) requires compliance with storm water regulations for all discretionary approvals and ministerial permits. The Planning, Engineering, Environmental, Building and Fire Departments review all building plans that are submitted to the City. The Engineering and Environmental Departments administer all aspects of design and construction for public improvement projects. The Planning Department administers the environmental review (Initial Studies, Negative Declarations, EIRs, etc.) of both public and private projects.

The City has reviewed its General Plan and Municipal Codes and determined that the General Plan meets the requirements of Order No. 2007-0001. The following is a short list of recent improvements to the project review process that ensures all projects are reviewed and properly address storm water concerns:

FY 05/06 - Every applicant who inquires about a particular project at the City Hall counter was given a copy of the City's Construction BMP Brochure (Appendix A). This is being done to ensure that every person will have received a copy of the City's educational guide, often times more than once.

FY 05/06 - Any project that increases the impervious area of a site by a minimum of 1,000 square feet must complete a Storm Water Plan Check Comment Form (Appendix B). This sheet requires a variety of information to ensure that there will be no additional run-off as a result of the project. The first requirement is the preparation of an Erosion Control Plan. Also, the applicant must demonstrate that the project *does not increase storm water runoff*. Lastly, the applicant must demonstrate that they are implementing and maintaining all precautionary measures necessary to ensure that pollutant discharges from the site *will be reduced to the maximum extent practicable*. All additional storm water must be completely contained and treated onsite. This is not required by the Permit, but the City believes that it would be prudent to address this issue on such a small scale because of the relative abundance of these smaller projects within the jurisdiction and the lack of larger scale projects that would otherwise be dealt with through the SUSMP process. Instead of ignoring these projects all together, the City felt it would be in its best interests to review these "minor" projects to

ensure that most new construction and redevelopment would address these storm water concerns.

FY 06/07 - City continued to evaluate its project approval process and made some modifications to the process for approving new and redevelopment projects. The plan check routing sheet was further modified to include additional information regarding storm water management. The intent of the modifications is to ensure that pollutants and runoff from development will be reduced to the maximum extent practicable (MEP) standard and/or will not contribute to an exceedance of receiving water quality objectives.

FY 06/07 - Project Applicants (Applicants) are required to submit a detailed project application, which addresses a variety of concerns, including urban runoff and environmental impacts. The project application provides an opportunity for City staff to determine whether or not the project will be exempt from the California Environmental Quality Act (CEQA) process. If the project is subject to CEQA, the environmental impacts of the project must be reviewed and depending on the potential impacts, a more substantial environmental impact report (EIR) may be required.

FY 07/08 - The plan check routing sheet was further modified to include another section titled *Environmental* (Appendix C). This section was included to ensure that *all* plans submitted would be reviewed for storm water implications, no matter how small or relatively insignificant. Previously, plans would be routed through the Engineering Department and if the Engineering Technician determined that it warranted further review, the plans would be passed through to the Environmental Programs Manager. The process was modified to ensure that all plans would be reviewed just in case something was missed or overlooked. The City believes that plan review is essential to ensuring storm water compliance, so we are doing everything possible to make sure it is done thoroughly and accurately.

FY 08/09 – The City implemented a complex and highly efficient computer database (BEACH) that greatly improved the internal plan review process. This database was developed by a local resident and was tailored to the specific needs of the City's departments. The database was built after extensive comment and review from the various departments to maximize the efficiency and streamline the process, while at the same time incorporating all the necessary information for each department. This process and subsequent database has greatly improved the Environmental plan review process by

ensuring that all comments of the Environmental review are addressed prior to initial permit issuance, as well as final permit occupancy. This will be explained in further detail later in the Report and has been a tremendous success.

In addition to the CEQA review process, all applicants must obtain a permit from the California Coastal Commission (CCC) because the City does not have a Local Coastal Plan. The City also has strict environmental standards requiring compliance and governing land-use planning and construction.

The application includes some of the following questions:

- Financial interest of all parties who own, or intend to own the property.
- Proof that all owners of record within 300 feet of the exterior boundaries of the property have been notified of the intent to develop (this allows opportunity for public participation in the process).
- Present use of property and proposed development description (commercial, residential, mixed use, etc.).
- Current floor area ratio (FAR), this allows review of the proposed change in impervious to pervious surface area. The City has a strict FAR and prohibits development within 40 feet of the western edge of the coastal bluffs.
- Proposed area to be graded (this allows the Engineering Department to assess potential erosion and runoff).
- Environmental condition of property (vegetation, drainage, noise, etc.) and neighboring properties.
- Business Applicants are required to submit information pertaining to the types of hazardous materials and whether or not industrial wastewater will be discharged in the property *and/or* off the property.

2.2.1 Project Requirements

As mentioned above, applicants are required to submit plans for all new and redevelopment of private properties to both the Planning and Engineering departments prior to approval. The Engineering Department (which includes Environmental Review) reviews the project's grading and construction plans for a

project's potential pollutant contribution to urban runoff. The City Engineering Department also determines the appropriate pre, during and post BMP requirements for each project and attaches the Storm Water Plan Check Comment form to the project plans and returns the plans to the applicant for modification, if required. Applications may be required to submit one or more of the following:

- An Erosion Control Plan (which requires BMPs to manage storm water and non-storm water discharges from the site at all time and shall emphasize sediment control).

- Evidence that the project will not increase storm water runoff.

- Storm Water and Non-Storm Water Runoff Control (this requirement address long-term control of runoff and may require structural modifications to direct discharges into permeable areas such as landscaping).

In addition, all grading projects are required at a minimum to include the following:

- Source control BMPs for all projects expecting to generate runoff.

- Implementation of site design/landscape measures to reduce and slow runoff, minimize impervious to previous ratio, maximize infiltration and promote alternative driveways and parking lots to include pervious land surfaces (as described in detail in the City's JURMP).

- Implementation of buffer zones for natural water bodies, where feasible and if not, trees, lighting and access restrictions are required.

Industrial applicants are also required to provide evidence of coverage under the California General NPDES Permit for Storm Water Discharges Associated with Industrial Activities.

Applicants are required to be in compliance with the City's current grading and storm water management ordinances, inspection requirements, general requirements for construction activities during the wet and dry season and implementation of appropriate BMPs to control erosion and runoff.

2.2.2 SUSMP

The City participated with other Copermittees in the development of the original model Standard Urban Storm Water Mitigation Plan (SUSMP), which was approved by the RWQCB on June 13, 2002. The Solana Beach City Council adopted the City's SUSMP on December 3, 2002, which was submitted to the RWQCB on December 13, 2002. The City also participated in the development of the new SUSMP in accordance with the new Permit. The City Council adopted the updated model SUSMP in February 2008.

The SUSMP addresses post-construction urban runoff pollution from new development and redevelopment projects that are designated as "priority projects" under the Permit. Most of the criterion that specifies which projects will be priority projects will not be applicable to the majority of City projects. The reason for this is that the City of Solana Beach is more than 95% "built-out" and primarily a residential community with small commercial properties. As a result, the City made few modifications to the Model SUSMP that was developed collectively by the Copermittees for its SUSMP. Over time, City staff will evaluate the effectiveness of the SUSMP and discuss changes, if necessary, in this section of the Annual Report.

During this reporting period, the City of Solana Beach had *no SUSMP projects submitted or approved*. The majority of the development in Solana Beach consists of single-family construction and remodeling projects.

The City's Planning Department (also referred to as Community Development Department) is well aware of the SUSMP requirements and is consistently on the lookout for potential projects that may fall under the SUSMP requirements. The Engineering Department handles all of the BMP review for the City, however, the Planning Department is the first department to review applicant plans. Often times for larger projects, meetings are held between City Staff and the applicants well before the plans are submitted. At this time, Planning Staff works with the applicants to ensure the project complies with the SUSMP regulations. This helps to avoid costly delays in the project timeline by ensuring the applicant is aware of the SUSMP requirements and incorporates them into the project prior to submittal. It's a very proactive approach that has proven successful on all large projects in the City, not just SUSMP projects.

2.2.3 Low Impact Development (LID)

LID is one of the most significant new requirements of the Permit. The Permit

states that each Copermittee shall develop and require each Priority Development Project to implement LID BMPs which will collectively minimize directly connected impervious area and promote infiltration. The City's new JURMP describes the LID site design BMPs required at each Priority Development Project. The LID requirements were developed by the Copermittees during this reporting period, which promoted consistency throughout the region for the development community. The City has now incorporated the LID requirements into the development review process. There has not been a project subject to the SUSMP or LID requirements in the City to date, but there are a few planned for the future including the following CIP projects:

- Highway 101 Corridor Revitalization Project
- La Colonia Park and Community Center Renovation

City Staff will continue to monitor these projects to ensure compliance of the new requirements.

2.2.4 Treatment Control BMP Maintenance Tracking

The City has developed a database to track and inventory approved treatment control BMPs and treatment control BMP maintenance for Priority Development Projects within the City. The database contains all necessary information as required by the new Permit. In addition, the City has developed a program to verify that approved treatment control BMPs are operating effectively and have been adequately maintained. The City's current treatment control BMP inventory is listed below. Not all projects are a result of the SUSMP process because they were built prior to the requirements; however the City still lists them in their inventory and inspects annually.

Table 2-1 Private Project Treatment Control BMP Inventory

Address	Type of Project	Type of BMP(s) Installed	Maintenance Agreement	Inspection Date
533 Lomas Santa Fe	Boys and Girls Club Remodel/ Construction	CDS Unit (1), Storm Chamber Infiltration Basins (2), Drainage Inserts (2)	Yes	6/30/11

420 Steven's Avenue	Office Building Construction	CDS Units (3)	Yes	6/30/11
667 San Rodolfo	Shopping Center Remodel	CDS Unit (1)	Yes	6/30/11
634 Steven's Ave	Commercial Building Construction	Bio-Swale	No	6/30/11
601 North Cedros Ave	Single Family Sub-Division (23 Units)	CDS Unit (1)	No – City Maintained	6/30/11
641 Valley Ave	Mixed Use Comm/Res	Bio-Swale, pervious concrete	No	6/30/11
715 Valley Ave	Park	Bio-Swale	No - City Maintained	6/30/11
111 South Sierra Ave	Park	CDS Unit, Low Flow Diverter	No- City Maintained	6/30/11
749 Genevieve St	Parking Lot >15 spaces	Bio-Swale, Pervious Pavers	No	6/30/11

2.2.5 Treatment Control BMP Maintenance Inspections

According to the City's JURMP, annual inspections will be completed on an annual basis prior to October 1st. City Staff conducted the annual inspections of the projects listed above as required by the Permit prior to October 1st (6/30/11). Due to the relatively small amount of projects, Staff plans to inspect all treatment control BMPs annually, regardless of their frequency priority. City Staff sent out Verification Letters to all sites prior to the inspections. *The City is happy to report that all properties were in full compliance during the first inspection.*

2.2.6 Priority Development BMP Verification Prior to Occupancy

Although there were no priority development projects approved during this reporting period, the City does have a BMP verification process set up to ensure all BMPs are installed prior to occupancy. This process is not only conducted for priority development projects, but grading and building projects that require post construction BMPs (small infiltration pits, roof drains to landscaping, etc) as well. As mentioned in previous Annual Reports, the building permit routing sheet that goes to each department reviewing the plans was modified to include check boxes in the "Environmental Review" section. These check boxes are for projects that require a post construction BMP of any kind, and if they are checked for any project, the Building Department will not issue final occupancy permits until the Environmental section is complete. This includes an inspection either during construction for BMPs underground (to ensure they were installed prior to being covered by landscaping) or final inspection if the BMPs can be identified at the end of the project. It is the responsibility of the contractor to notify the Environmental staff for inspection or the "pink card" will not be signed and the final Permit will not be issued. City Staff has required contractors to dig up and remove landscaping in order to show that the BMP was actually installed according to the plans if the contractor failed to properly notify Staff for an inspection. This ensures that all post-construction BMPs are installed prior to the final permit being issued for occupancy.

2.2.7 Hydromodification Plan (HMP)

The HMP was finalized and adopted by the Regional Board in July 2010. As mentioned in last year's Annual Report, Staff does not anticipate that any projects in Solana Beach will be subject to the new HMP requirements. The City participated in the development of the HMP and has paid our share for the development costs, realizing that this is a regional issue and as a Copermittee we have a responsibility to assist the other Copermittees in complying with the Permit requirements. If any project is subject to the HMP, it will be reported in this section of each Annual Report.

2.3 Education

Municipal Staff Education

The City of Solana Beach is a very intimate, cooperative group. All departments work very well with one another because they are forced to work together on a daily basis to serve the relatively small community. This makes training and education a much easier task.

The previous formation of the storm water team brought together the directors of all the different departments Planning, Engineering, Public Works, City Manager's, Public Safety (Fire and Marine Safety, Code Enforcement), Environmental, City Attorney's and City Inspector and provided them a forum to discuss storm water issues, keep everybody in the loop on ongoing issues and develop solutions collectively. In turn, the directors would educate their respective employees on the specific tasks they were to perform. This was a very effective and efficient way to educate the Municipal Staff when the Permit was first adopted and the JURMPs were initially being implemented.

City staff welcomes additional training opportunities and often seeks outside training to keep up with new storm water issues. In addition, Staff welcomes presentations from consultants regarding the latest technologies in the protection of water resources, including techniques to reduce erosion, bacteria and other COCs in urban runoff. Specific trainings are listed in their appropriate sections throughout this Report.

Owner / Developer Education

The City, along with the other North County Copermittees, developed a Construction BMP Brochure (Appendix A) which describes the construction storm water regulations and required BMPs. The BMPs are generic with a simple diagram of a "typical" construction site, which has been very well received by the development community. It is simple and easy to understand, and City staff makes certain developers and contractors know every site is different and has unique characteristics. These brochures are distributed at the counter, at pre-construction meetings and in the field during inspections.

In addition, the City sends a "Rainy Season Reminder" (Appendix D) to all current and active private projects within the City as a tool to educate and remind project owners and developers about the need to strictly adhere to the erosion control requirements during the rainy season. These letters are sent out in the beginning of October as a "friendly reminder" that they need to ensure their sites are in compliance before the rain events start, or risk increased enforcement actions.

Inspections are another opportunity staff utilizes to educate owners and developers about City and State runoff and erosion requirements. During inspections, the City Inspector notes problem areas and requires mitigation compliance immediately. If an owner or developer fails to comply, increased enforcement including fines can be levied and the City Inspector has the

authority to halt construction activities with a Stop Work notice.

The City has implemented similar procedures for public projects as those utilized for private projects. During mandatory pre-construction meetings (for all grading and public projects) the requirements for erosion control and runoff management are discussed. In addition, City staff notifies the primary contractor that they are ultimately responsible for all actions of their subcontractors, and violations of the City's storm water requirements will result in enforcement actions.

2.4 New Activities and Improvement for FY 11/12

The City will continue implementing the activities described in the Development Planning Component of the City's JURMP. In addition, to the development and implementation of the new SUSMP, LID and HMP requirements, the focus for FY 11/12 will include the continued implementation and education of planning/engineering Staff, builders, residents, and the community at-large as to how regulations of the SUSMP, LID and potentially HMP will impact construction.

The BEACH database will continue to be implemented and updated during this reporting period with improvements and advancements made as necessary. The goal is to modify the database to include maintenance and inspections records so that all information on a particular project will be contained in one electronic location. Currently, these maintenance records are being kept in an Excel spreadsheet, but the BEACH database will ultimately be the most effective and efficient location for all project records.

In an effort to control costs and create a more effective stormwater management program, the City has combined the City Inspector and the Stormwater Programs Manager into one new position titled Assistant Civil Engineer. This is an important step for the city because the Assistant Civil Engineer knows specifically what BMPs and stormwater mitigation efforts to look for during construction inspections and site visits.

2.5 Summary

The City has successfully implemented the Development Planning Component of the JURMP. Some of the key accomplishments include:

- Education of planning Staff, owners/developers and the community regarding changes in planning processes.

- Implementation of new procedures to ensure new and redevelopment projects do not contribute to an exceedance in water quality standards.
- Addition of Environmental section of permit routing sheet to ensure *all* plans/projects are reviewed by Environmental Specialist for storm water issues. Addition of post-construction BMP tracking and inspection box on routing sheet to ensure all BMPs are installed according to approved plans.
- Increased cooperation between City departments in implementing SUSMP requirements.
- Developed and implemented new post-construction BMP inventory and inspection tracking database.
- Developed and implemented new BEACH database to store all pertinent information regarding parcels in Solana Beach. This includes environmental fields that are used during plan review and permit issuance as well as housing all the necessary information for post-construction BMP tracking and maintenance.
- Creation of new Assistant Civil Engineer position which combines storm water program management and construction inspections.

CHAPTER 3
Construction Component

CHAPTER 3: CONSTRUCTION COMPONENT

3.1 Introduction

In accordance with Permit Section D.2, this section of the report describes the City's efforts to reduce construction site discharge of pollutants from the MS4 to the MEP and prevent construction site discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of active construction sites (private and public), modifications to the City's policies or Municipal Code with respect to construction activities, and modifications to identified potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to require BMPs at construction sites and program accomplishments. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

During this reporting period, the City conducted an evaluation of its construction practices and inventoried existing construction sites in an effort to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from these construction sites by requiring BMPs.

3.2 Modification of Grading Ordinance

There were *no significant modifications* of the Grading Ordinance during this reporting period as a result of new requirements in the Permit. As reported in previous annual reports, Chapter 15.54 (Excavating and Grading) was modified on February 13, 2008 to include the new requirements of the Permit. The amendments updated and strengthened the City's regulations regarding storm water pollution controls. The two main areas of impact in the updated ordinance dealt with two new concepts (Hydromodification Plan (HMP) and Low Impact Development (LID)). As mentioned previously, Hydromodification is a state mandate that requires all local jurisdictions to regulate erosion control and other land-shaping impacts from storm water runoff on priority projects.

Low Impact Development is a new requirement included in the new storm water permit. It deals with using various techniques to channel storm water runoff and

the pollution it contains away from the storm water conveyance system and into landscaping and other on-site features to limit the amount of pollution escaping from individual parcels.

Previously, the last significant modification to the City's grading ordinance occurred June 30, 2005 in which the grading threshold was lowered from 200 cubic yards to 50 cubic yards for all construction projects. This resulted in much smaller projects which would not normally be scrutinized for storm water management, would now be required to go through the grading permit process. This gave City Staff more discretion on smaller projects to require storm water mitigation, and with it, gave Staff more power to enforce the installation and/or site design modifications that would not have been required if a grading permit were not necessary.

3.3 Modification of Construction and Grading Approval Process

The modifications to the City's processes for project approvals are described in detail in the previous chapter of this report (Chapter 2). Although Chapter 2 specifically addresses Development Planning, the discussion included a description of various processes that project applicants must proceed with in order to obtain approval of their construction plans. Chapter 2 also describes the improvements made to the plan check database BEACH as well as the increased education efforts City staff has made to ensure Permit compliance.

The Storm Water Plan Check Comment Form (see Appendix B) may require the applicant to submit an Erosion Control Plan, proof that the project does not increase runoff from the property and/or implementation of structural changes to redirect runoff onto impervious surfaces.

3.3.1 SUSMP BMPs Installation and Tracking

The City continued implementation of the updated SUSMP process during this reporting period, however there were *no projects that required the SUSMP process review.*

The City does not anticipate many projects that will fall under the SUSMP guidelines, since the City is 95% "built out." However, any project that may be proposed that fall under the guidelines will be put through the process. Planning Staff and Engineering Staff have been trained and are aware of the SUSMP requirements, and will implement the program when appropriate.

As reported in previous Annual Reports, a significant improvement to the building permit routing sheet was the addition of the *Environmental* review section (Appendix C). As noted previously in this Report, the routing sheet was modified to ensure *all* permit applications were thoroughly reviewed by Environmental Staff. This is significant because no projects will slip through the cracks, and all will be required to address storm water concerns. In addition, as mentioned above, the routing sheet also contains an area to mark if the project requires the installation of post-construction BMPs. Final permit approval and building occupancy will not be granted until a final inspection confirms the BMPs were installed correctly, according to the approved plans.

3.4 Construction Site Inventory

This section of the Annual Report will include an inventory of construction sites active during this reporting period. Given that the reporting period for these Annual Reports ends prior to the submittal of the report, the inventory will most likely be slightly outdated by the time the report is reviewed by the RWQCB. However, the City maintains an inventory of current construction project sites, which is always available for review.

The construction inventory is updated periodically, but at a minimum monthly, to ensure all active projects are included and inspected according to the frequency set forth in the JURMP. The update process consists of reviewing the Building Department files of active sites. In the past, the inventory was updated as soon as a building permit was approved. However, it was discovered that often times, construction activities would not commence for many months after permit issuance. This led to a significant amount of wasted time and resources for limited City Staff to visit multiple sites where there were no construction activities occurring. Since the City's Building Department Staff is required to be onsite when the project begins, review of their files is the most appropriate and accurate manner to update the construction inventory. Review of the Building Department files is now possible due to the fact that they are now housed at the City of Solana Beach City Hall. This is a major improvement over the last few years when the files were located at the City of Encinitas City Hall, along with Building Department Staff.

As shown on Table 3-1, there are currently thirteen construction sites that required a grading permit active within the City. In addition, City Engineers are in constant discussions with private project property owners during the plan check process to ensure their projects include an Erosion Control Plan, modify drainage

alterations to re-route runoff to pervious surface areas, proof that the project would not result in an increase in runoff from the site or other various structural BMPs, and require all projects to control and mitigate all run-off before it reaches the City's MS4 system. Table 3-2 shows all construction projects that have a potential to discharge pollutants but did not require a grading permit. These projects had extensive plan review by City Staff and storm water/erosion control conditions placed on them even though a grading permit was not required. Table 3-3 shows all Capital Improvement Projects (CIP) and their priority and inspection frequencies.

The City had no projects subject to the HMP or requiring advance treatment during this reporting period. In addition, there were no projects over 1 acre in size, which is very common considering most projects are in-fill and redevelopment projects.

Table 3-1 Construction Site Inventory Grading Projects 2010/2011

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Status	Project Size	Watershed	FY 10/11 Active Wet Season / # Inspections	FY 10/11 Active Dry Season / # Inspections	FY 10/11 Total # Inspections
235 S. Granados	Medium	Single Family Home	Jul-10	Completed July 2011	< 1 acre	San Dieguito	28 Weeks / 10 Inspections	24 Weeks / 6 Inspections	16
427 Barbara	Medium	Single Family Home	Jul-10	Completed July 2011	< 1 acre	Carlsbad	28 Weeks / 14 Inspections	24 Weeks / 12 Inspections	26
211/231 Pacific	Medium	Seawall	Dec-10	Ongoing	< 1 acre	Carlsbad	20 Weeks / 8 Inspections	8 Weeks / 2 Inspections	10
461 Marview	Medium	Single Family Home	Feb-11	Ongoing	< 1 acre	Carlsbad	12 Weeks / 6 Inspections	8 Weeks / 4 Inspections	10
620 San Julio	Medium	Grading	Feb-11	Completed April 2011	< 1 acre	San Dieguito	4 Weeks / 2 Inspections	0 Weeks / 0 Inspections	2
233-237 N. Rios	Medium	3 Condo Grading	Feb-11	Completed May 2011	< 1 acre	Carlsbad	10 Weeks / 4 Inspection	2 Weeks / 1 Inspection	5
1067 Cerro Verde	Medium	Grading	Aug-11	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
624 Mar Vista	Medium	Single Family Home	Sep-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
920 Avocado	Medium	Single Family Home	Jul-11	Ongoing	<1 acre	San Dieguito	0 Weeks / 0 Inspections	4 Weeks / 2 Inspections	2
524 Pacific	Medium	Single Family Home	Jul-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
505 Ford	Medium	Single family Home	Aug-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
225 Stevens	Medium	Parking Lot/Playground Reconfiguration	Aug-11	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
708-710 Midori	Medium	Retaining Walls	Aug-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0

Table 3-2 Construction Site Inventory Small Private Projects 2010/2011

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Status	Project Size	Watershed	FY 10/11 Active Wet Season / # Inspections	FY 10/11 Active Dry Season / # Inspections	FY 10/11 Total # Inspections
222 Barbara	Low	Addition/Remodel	Sep-11	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
245 Barbara	Low	Family Room and Balcony	NA	Not started	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
302 Barbara	Low	Addition/Remodel	NA	Not started	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
533 Canyon	Low	Addition/Remodel	Feb-11	Ongoing	< 1 acre	Carlsbad	12 Weeks / 4 Inspections	8 Weeks / 4 Inspections	8
606 W. Circle	Low	Addition/Remodel	June-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	4 Weeks / 2 Inspections	2
260 E. Cliff	Low	Addition/Remodel	June-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspection	1 Weeks / 1 Inspection	1
631 Glenmont	Low	Addition/Remodel	Sep-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
514 N. Granados	Low	Addition/Remodel	Jun-09	Ongoing	< 1 acre	Carlsbad	28 Weeks / 10 Inspections	20 Weeks / 6 Inspections	16
762 N. Granados	Low	Addition/Remodel	Jun-10	Ongoing	<1 acre	Carlsbad	28 Weeks / 10 Inspections	18 Weeks / 6 Inspections	16
15877 Highland	Low	Addition/Remodel	Nov-10	Ongoing	< 1 acre	San Dieguito	24 Weeks / 6 Inspections	8 Weeks / 4 Inspections	10
403 Marview	Low	Single Family Garage	May-10	Ongoing	< 1 acre	San Dieguito	28 Weeks / 6 Inspections	20 Weeks / 6 Inspections	12
501 Mar Vista	Low	Demolition Single Family Home	Apr-10	Ongoing	< 1 acre	Carlsbad	28 Weeks / 6 Inspections	20 Weeks / 6 Inspections	12
614 Mar Vista	Low	Addition/Remodel	Nov-10	Ongoing	< 1 acre	Carlsbad	24 Weeks / 6 Inspections	8 Weeks / 3 Inspections	9
639 Mar Vista	Low	Addition/Remodel	Aug-10	Ongoing	< 1 acre	Carlsbad	28 Weeks / 10 Inspections	16 Weeks / 6 Inspections	16
326 S.	Low	Demolition Single	Sep-11	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0	0 Weeks / 0	0

Nardo		Family Home					Inspections	Inspections	
133 Pacific	Low	Addition/Remodel	Oct-10	Ongoing	< 1 acre	Carlsbad	28 Weeks / 14 Inspections	8 Weeks / 3 Inspections	17
221 S. Rios	Low	Demolition Single Family Home	May-11	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0 Inspections	6 Weeks / 1 Inspections	1
635 N. Rios	Low	Addition/Remodel	Aug-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
468 Santa Alicia	Low	Addition/Remodel	June-11	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0 Inspections	2 Weeks / 1 Inspections	1
412 Santa Bartola	Low	Addition/Remodel	Nov-10	Ongoing	< 1 acre	San Dieguito	24 Weeks / 10 Inspections	8 Weeks / 4 Inspections	14
1304 Santa Luisa	Low	Addition/Remodel	Mar-11	Ongoing	< 1 acre	Carlsbad	6 Weeks / 4 Inspections	8 Weeks / 2 Inspections	6
916 Santa Queta	Low	Addition/Remodel	Mar-11	Ongoing	< 1 acre	Carlsbad	6 Weeks / 4 Inspections	8 Weeks / 2 Inspections	6
537 Santa Victoria	Low	Addition/Remodel	Sep-11	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0
630 Seabright	Low	Single Family Development	Feb-11	Ongoing	< 1 acre	Carlsbad	10 Weeks / 4 Inspections	8 Weeks / 2 Inspections	6
748 E. Solana Circle	Low	Addition/Remodel	Feb-11	Ongoing	< 1 acre	San Dieguito	10 Weeks / 4 Inspections	8 Weeks / 2 Inspections	6

3.5 Construction Follow-Up Activities:

The City is very aggressive with its construction inspections and follow-up, and unless otherwise stated, all follow-up corrective activities were properly addressed and corrected within seven (7) working days. Many times the corrections are made immediately, however the City's policy is to allow the responsible party seven days to correct the violation. That being said, if there is an immediate threat to public health or safety, the City can, and will, require immediate corrective actions.

As stated above, the City takes a very pro-active approach toward construction projects. Plans are heavily scrutinized and discussions with the contractors often happen before the project even begins. The City has found that initiating contact with the contractor before the project begins and maintaining contact throughout the construction process leads to continued compliance with storm water regulations. Since the City of Solana Beach is relatively small, the City's inspector has the ability to visit sites almost daily, and at a minimum weekly. Due to this high level of supervision, sites remain in compliance with storm water BMPs. That being said, there are instances where accidents do take place, most often when concrete trucks and pumpers are involved.

It is important to note that there were no significant violations from construction sites during this reporting period. There were minor issues that Staff encountered during inspections such as open trash dumpsters, minor sediment tracking or BMPs that were improperly installed or needed replacing, but there were no citations issued. Staff believes that the proactive approach to construction inspections, pre construction meetings and constant contact in the field from the Assistant Civil Engineer and EsGil Inspector all helped to keep the construction sites in compliance. Also, due to the lengthy drought the region is experiencing, there were relatively few rain events that occurred.

3.6 Capital Improvement Projects Inventory

In addition to the inventory for private projects, City staff believes it is equally important to discuss public Capital Improvement Projects (CIPs) under construction.

CIPs are held to the same *or stricter* standards for reducing runoff as private projects. BMPs, Erosion Control Plans, and structural changes to reduce or mitigate runoff pre, during and post-construction are required. Most, if not all, CIPs in Solana Beach are constructed by private contractors selected through the standard public construction bid process. Contractors are informed *prior to submitting a bid,* that the City requires adherence to RWQCB standards, Permit and City storm water regulations. To ensure compliance, the city inspector

conducts a daily inspection of each CIP site during construction. Stop Notices are issued if the contractor fails to comply with any storm water / erosion control regulations.

Additionally, the Assistant Civil Engineer is included in pre-construction meetings that are required for *all* public projects. A line item discussing NPDES regulations and requirements is standard for all public project agendas (Appendix E). This is another way to ensure that all contractors are aware of the requirements before the project begins, and to help with possible enforcement actions, if necessary.

In FY 10/11, the City Inspector did not issue any Stop Notices to contractors for failing to comply with storm water/erosion control regulations.

Table 3-3 below shows the inventory of CIP projects during FY 10/11. The City had three projects, and placed all of the projects in the high priority category. This was done to ensure that the City's projects would be inspected at a very high frequency in order to ensure compliance at all times. For the other CIP projects, the City's Inspector was onsite daily to monitor the site.

Table 3-3 Construction Site Inventory Capital Improvement Projects 2010/2011

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Status	Project Size	Watershed	FY 10/11 Active Wet Season / # Inspections	FY 10/11 Active Dry Season / # Inspections	FY 10/11 Total # Inspections
Steven's Ave Emergency Storm Drain Repair	High	Storm Drain Repair	Jun-10	Completed Oct-10	<1 acre	San Dieguito	2 Weeks / 2 Inspections	14 Weeks / 14 Inspections	16
Fletcher Cove Community Center Phase I ADA Improvements	High	Concrete Work	Sep-10	Completed Dec-10	< 1 acre	Carlsbad	12 Weeks / 60 Inspections	4 Weeks / 20 Inspections	80
Fletcher Cove Community Center Phase II Building Construction	High	Building Construction	Feb-11	Completed Aug-11	< 1 acre	Carlsbad	12 Weeks / 40 Inspections	16 Weeks / 80 Inspections	120

3.6.1 Significant CIP Project Narratives

In this section, some additional narrative has been added to some of the more significant CIP projects, and to explain some other projects that weren't necessarily planned construction activities, but ones that were either emergency, preventative or experimental that occurred during this reporting period. Staff feels that these projects significantly show the City's proactive approach to protecting the local environment.

Sewer Assessment and Repair Program

The City embarked on a significant project to video and inspects the entire sewer system infrastructure during this reporting period. The City Council authorized approximately $150,000 towards this assessment and repair program with the intent to prevent any failures in the City's infrastructure. The City hired consultants to video the entire length of the sewer pipes and develop an assessment report to categorize the infrastructure into priority replacement projects. The City repaired all high priority areas on the western side of the City (west of I-5) and has begun repair on the eastern side during FY 2010/2011. This is a very aggressive and proactive program that demonstrates the City's commitment to no sewer spills in the City.

Marine View Slope Maintenance

The City has a very steep slope on the east side of I-5 on Marine View Avenue that has been a problem area for large-scale erosion. The slope is now bare with no vegetation, and gullies have been cut out over the years by large rain events. These rain events produce a significant amount of erosion, and the City has attempted many solutions over the years, with minimal success. Staff has attempted to work with specialized erosion control consultants, but has been told by them all that there are no solutions for this particular problem. The slope is too large, steep and has too many ruts and gullies for the standard erosion control BMPs, such as hydroseeding, matting and even bonded fiber matrix. The City has installed a reinforced silt fence at the bottom that has to be replaced after every rain event, and takes up a lot of Staff resources.

Staff was approached by a local erosion control company in August 2009 to become a pilot project for a new hydroseed formula called "Rhino Snot." Staff agreed to use the product on the Marine View Slope, and it held up remarkably well during the rainy season. The product was placed on a portion of the slope

and prevented erosion throughout the entire rainy season. It worked so well that Staff has scheduled for the application to be done on the entire slope the first week of October, 2010. Staff will be monitoring the location throughout this rainy season and hopes to have found a long-term solution. The City does have a large-scale CIP project planned for this slope, and received bids for this project at the end of the reporting period. Work on this project is expected to begin in early Fall 2011. The results of this project will be reported on in next year's Annual Report.

3.7 Threat to Water Quality Prioritization

In accordance with Permit Section F.2.e., the City describes the criterion for designation of construction projects as high, medium, or low priority, in its JURMP. *There are **no changes** to report in the City's criterion for determining a project's impact or threat to water quality.* The City's prioritization criterion meets the requirements of the new Permit, so no changes were needed.

Of the active projects currently under construction, *there are no changes to report with respect to the potential threat to water quality*. The only projects that would fall under the high priority would be significant redevelopment projects, which there were none of during this reporting period. The City is closely monitoring two potential projects that may fall under the high priority in the next reporting period, pending permit approval. It is important to note that City Staff is currently working with the prospective developers to ensure they integrate beneficial storm water designs (LID) during the design phase. The following projects are being closely monitored by City Staff:

1) Multiple plans have been submitted to the City to build a hotel/restaurant and condos on the east side of Highway 101 at the northern tip of the City (commonly referred to as the Magellan site), however it has been met with some opposition within the community and a compromise is being sought. Plans still have not been adopted by the City Council at the time of this report. If a project is accepted for development in that area during the next reporting period, it will be a high priority project subject to the SUSMP process because of its proximity to the San Elijo Lagoon, a 303 (d) listed water body.

2) Another *potential* high priority project that is being discussed is a large multi-use residential/commercial development on what is currently the North County

Transit District's (NCTD) train station property. This proposed project has also come under heavy scrutiny from the public and no plans have been approved by the City. If a project is approved for development on this site during the next reporting period, it will be a high priority SUSMP project because of its size and pollutant potential.

The City's Capital Improvement Projects (list available upon request) will be considered at least a medium priority for several reasons. First, priority categories may only result in a change in the frequency of oversight and since the City Inspector visits each public construction site on a daily basis, it eliminates the need for delineation in priority. Second, given the City's proximity to the Pacific Ocean, all erosion, sediment and runoff control practices are important and are expected to be very beneficial to the community. Therefore, the designation of "medium or high priority" improves the likelihood that CIPs will not contribute to an exceedance of water quality standards. It doesn't make sense to categorize a CIP project as low priority since the City holds itself to a higher standard than what the Permit requires.

3.8 BMPs and Pollution Prevention Methods

As noted in the City's JURMP, the City requires general and specific BMPs for construction sites. With the modifications in the development review process, the City is able to require site design, source control and treatment BMPs prior to construction. Owners and developers are provided a BMP Construction Brochure (see Appendix A), and they meet with Engineering Staff to develop methods to ensure that runoff is not increased as a result of their proposed project. The City believes that working with the contractors during the plan development (when applicable) and approval process is the most critical time period to ensure that appropriate BMPs (structural, pre-and post-development) are built into the project *before* pollutants are allowed to enter the storm drain conveyance system.

BMP Selection

The City does not require a specific or certain type of BMP (except for SUSMP projects) for all projects similarly designed. Instead, Staff evaluates each project on its own merit and determines if modifications to the plans are required to control erosion and/or reduce runoff. City Staff works together with property owners and developers to find satisfactory solutions to project problems.

Pollution Prevention Methods (PPM)

Construction limitations – the City limits construction during the wet season when construction plans warrant and when it is feasible. Implementation of this PPM reduces the potential for pollution.

Education – the City sends out letters to all active public and private construction projects prior to the wet season as a reminder of the importance of implementing the required BMPs (see City JURMP for a description) and the importance of taking precautions during storm events (Appendix D). Additionally, a BMP Construction Brochure is attached to all permit approvals and distributed at City Hall Engineering and Planning counters to all prospective developers and interested members of the community.

Inspections – as discussed below and elsewhere in this report, the Assistant Civil Engineer visit construction sites and keep a record of BMP implementation and effectiveness. When a developer does not comply with the City's request to modify practices to reduce runoff or erosion, a Stop Work can be issued and fines may be levied.

3.9 Enforcement and Inspections

Enforcement of the City's Municipal Code is conducted by the City's Code Enforcement Department. The Assistant Civil Engineer conducts inspections of construction site BMPs, but if enforcement actions above verbal warnings and written NOVs are necessary, Code Enforcement Officers are notified.

Code Compliance

The City has developed procedures to track and monitor citations issued to property and business owners, visitors, and developers. These procedures include the implementation of an Administrative Fine process which was adopted by the City Council on June 18, 2002. This process allows Code Enforcement Officers to issue administrative citations and penalties beginning at $100 and rising up to $1,000 for each violation per day that the violation(s) occur; this applies to both public and private construction sites.

In addition to the administrative fine process, the City adopted a Civil Penalty Matrix (Matrix). This is a very significant tool that has greatly enhanced the

efficiency and consistency of enforcement for storm water violations. The City felt it was necessary to develop a matrix to evaluate each violation in the field, and to respond to them in a consistent and appropriate manner. The Matrix was designed so that anybody in the field who witnesses a violation can apply the parameters of the Matrix to decide the appropriate way to respond. This greatly enhanced the efficiency of the storm water program, as not all violations require multiple Staff to respond or, if a fine was necessary, Staff did not have to wait for approval from upper management to issue it. This would sometimes take as long as month, but with the Matrix, this could happen instantaneously in the field.

The Matrix was modeled after the City of San Diego's Civil Penalty Matrix. The Matrix was modified for the type of violations most often encountered in Solana Beach, but the foundations are very similar. The Matrix breaks down the violation into two categories, Environmental Significance and Compliance Significance. These categories are further broken down into Moderate, Major, and Severe. According to the type of violation and the history of the violator, the penalties will be placed in the appropriate section of the Matrix. This ensures that all violations are treated consistently, and the feelings of the investigating officer do not interfere, so the enforcement actions do not vary. This, according to our Code Enforcement Department, is extremely important if a fine gets challenged in court. The Matrix has been in use for over five years, and a fine has not been successfully challenged yet. The Matrix was developed in cooperation between the City's Environmental Specialist and Code Enforcement Officer, further demonstrating the great working relationship between City Departments.

The Matrix is used for all violations, not just construction related offenses. It can be applied to municipal, commercial, and residential offenses. For the complete Civil Penalty Matrix, see Appendix F.

Site Inspections

All construction sites that have a potential to discharge pollutants are inspected by the Assistant Civil Engineer, including public and private development projects. All development projects in the City are inspected in accordance to the JURMP.

The sites are inspected at the rate of frequency established in the JURMP. At a minimum, each site that is determined to have a high inspection frequency

priority will be inspected at least every two weeks during the rainy season (October 1st through April 30th). Medium inspection frequency priority projects are to be inspected at least monthly during the rainy season. Low inspection frequency priority construction sites will be inspected on an as-needed basis during the rainy season. All construction sites will be inspected for storm water management compliance on an as needed basis during the dry season.

The Assistant Civil Engineer devotes time out of her schedule to visually monitor all construction sites. This has been very successful in preventing pollution from leaving construction sites, as most problems are fixed before any illegal discharge leave the property. Since there are not too many projects in the City, this type of monitoring is highly successful, as private project managers and City Staff communicate very effectively.

If any potential violations are noticed during either the visual inspections or on-site inspections, City Staff will stop and talk with the property owner/contractor, write a letter, request Code Compliance to issue a citation, issue a “stop work notice” or a combination of these activities. The City’s Civil Penalty Matrix, discussed previously is also used for construction related violations.

In addition, City Staff conducts informal visual inspections at all medium and high priority construction sites prior to a rain event to ensure all BMPs are installed correctly and working properly. A follow-up informal visual site inspection is then conducted during and/or after the rain event to monitor how effective the installed BMPs were and if any modifications need to be done. Construction sites are constantly evolving and require constant monitoring, which the City Staff understands and enforces.

All inspections conducted during this reporting period addressed the required inspection steps to determine full compliance. There were no sites that required multiple follow-up inspections or reporting to the RWQCB, as all were either in compliance at the time of inspection or made the necessary corrections after the initial inspection and were in compliance during the follow-up inspection.

Enforcement of BMPs

During inspection of construction sites, City Staff verifies that appropriate BMPs have been installed correctly and are working effectively (sediment is on-site,

erosion control methods in place, runoff mitigated or not leaving property, etc.). In addition, City Staff has the authority to immediately require new BMPs if erosion control, runoff, or other activity is taking place that contributes pollutants into the City's MS4.

During this reporting period, the City staff conducted inspections of all CIPs and mandatory inspections of private projects within the City's jurisdiction and did not need to report any non-compliant sites to the RWQCB. Any site that was determined to be out of compliance was immediately notified and the problems were resolved within the time frame specified by the City.

Educational Activities

The educational activities conducted for construction sites consisted mainly of verbal conversations between the contractor/developer and City Staff. Because of the relatively few projects in the City, it is possible and practical to discuss issues during the pre-construction meeting and on-site with the contractors. Also, they are given the Construction BMP brochure prior to the start of the project and ongoing inspections/meetings occur throughout the project. The City believes that it is much more effective to talk with the contractor face-to-face about storm water issues and, since we are a small city, it has been and continues to be very effective.

An educational brochure (Appendix G) was recently developed by the City that focuses on general construction site requirements relating to all City codes. The brochure, titled "Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices," was requested by the City Council as a general educational tool to be distributed to all contractors. This has been very well received by the development community because it addresses everything from construction hours to permitting to storm water BMPs. This is another example of the City's proactive approach to community education.

Another tool that was developed and is currently being implemented is the Construction BMP Brochure (Appendix A). This was developed by the North County Storm Water Program to provide a single message and consistent requirements to all contractors/developers in the region, regardless of where they are doing work. This brochure was meant to supplement each individual cities educational outreach to ensure that the development community was receiving a

consistent message regarding proper construction practices. This brochure has been very well received by the development community and in Solana Beach has replaced the Construction BMP Guide as the primary educational tool distributed to the development community.

As discussed previously, the inclusion of the *Environmental* section to the building permit routing sheet has afforded the City another opportunity to educate the applicant/contractor on the storm water regulations. Every project that has the potential to discharge pollutants to the MS4, regardless of size or type, is reviewed by the Environmental Programs Manager and commented on.

Another educational tool utilized by the City is the City's newsletter "Shorelines." The newsletter is updated and distributed four times per year and is eagerly anticipated by the community. A variety of storm water topics are touched upon in each edition, including construction. These articles are usually focused on education for single-family residential projects since often times these are done by smaller contractors that may not have the knowledge that larger developers do. In addition, the City wants to educate the property owners of the regulations and let them know that they are ultimately responsible for the actions of their contractors, including violations. Often times, City Staff discovers that the property owners are the best allies to have because they don't want to be held responsible, so they ensure their contractors are adhering to the regulations. It's been a very effective tool in storm water management throughout the community.

These smaller projects hold a much higher priority in our City because of the lack of larger projects; so educating the individual homeowners is extremely vital. Also, the City has found that the smaller projects have the most potential violations, as most are owner/contractor situations where they are not aware of the storm water regulations. The larger projects often have erosion control specialists and employees who are required to attend storm water education classes. The newsletter is included as Appendices and described in later chapters of this Report.

Special Project BMP Education

An effective tool that has been recently developed and continues to be implemented is the development of specialized BMP notices for specific types of specialized construction activities. For example, a large scale effort is being

made to underground overhead power lines for view impact reductions around the City. These were special projects that did not go through the normal permitting process. Therefore, these plans would not have been reviewed by the normal parties, and since the City is dedicated to storm water protection, City Staff developed a special "Undergrounding Utility District Construction Best Management Practices" handout (Appendix H). This was a one page handout to be included in every permit application submitted by those participating in this program. Since the process of undergrounding utilities involves moving a large amount of dirt, the City felt it prudent to take this extra precaution to ensure the proper BMPs are in place.

If any special projects in the future require project specific BMPs, the City is dedicated to developing materials to distribute to the applicants.

Post Construction BMP Inventory and Inspection

Another significant new requirement in the Permit mandates that the City must develop an inventory of all post construction BMPs and conduct annual inspections for Priority Development Projects (SUSMP). The City now has the ability to ensure that all post construction BMPs are installed and maintained by the contractor and/or property owner. The *Environmental* review section on the routing sheet contains a section that can be marked for inspection required prior to installation or prior to final approval of the project. This was done to ensure post construction BMPs required on the plans are actually installed and ensures maintenance through a special agreement that is recorded on the property through the County of San Diego. The City found in some cases that the post construction BMP(s) are often buried in the ground before inspection, thereby making it impossible to inspect and ensure it was properly installed according to the approved plans. So, the City revised the routing sheet to include a box that, when checked, puts the onus on the contractor to call for an inspection during the installation to ensure it is actually being done. This way, it can be more efficiently documented and inspection required before the permit gets final approval. In addition, this allows the Assistant Civil Engineer the ability to document in a spreadsheet the type of BMP, location and inspection frequencies as the plans are being reviewed. This will assist City Staff with post construction inspection documentation requirements prior to the start of the project.

Construction and Demolition Debris Recycling Ordinance

In January 2008, the City Council adopted a Construction and Demolition Debris Recycling Ordinance (C&D Ordinance). This ordinance requires all demolition projects and construction projects over a valuation of $100,000 to submit an approved Waste Management Plan (WMP) detailing how the contractor will recycle at least 50% of the waste generated from the project. The contractor will not receive final permit approval until they have proven at least 50% of the waste was recycled.

This is an extremely significant accomplishment for the City and its clean water efforts. According to the National Association of Home Builders (NAHB) Research Center, building a 1,700 square foot home requires:

- 9,700 board feet of lumber
- 750 copper wire
- 2,500 square feet of insulation
- 6,484 square feet of drywall
- 170 feet of copper pipe
- 55 gallons of paint
- 55 cubic yards of concrete

This is a significant amount of waste that would normally end up in the local landfills, or worse, illegally dumped in the environment. This ordinance requires contractors to recycle their used materials, guaranteeing that it does not pollute the environment. This is another example of the progressiveness of the community as a whole when it comes to protecting the environment.

3.10 New Activities and Improvements in FY 11/12

City Staff will continue to review all plans, enforce BMP (site, source and treatment) installation, conduct inspections and keep an accurate inventory of the private and public projects and post construction BMPs. The City is committed to working with the other cities within its respective watersheds (Carlsbad and San Dieguito) to ensure compliance with all storm water regulations and continue to develop watershed educational information.

The primary focus for FY 11/12 will be the continued development and implementation of the LID, HMP and SUSMP programs. These are major program components and the City is committed to working with the other Copermittees to develop a high quality work product that can be implemented

region-wide. These three components are extremely important in maintaining and enhancing the water quality in the region as more and more land is developed. Training of appropriate City Staff on these new requirements will be a priority to ensure successful implementation of the new programs. In addition, Staff is currently reviewing its documents and handouts to ensure they are up to date and accurate with the new requirements.

City Staff is currently reviewing its construction inspection protocol and changes might be made in the upcoming reporting period. As reported above, the current construction inspections are being conducted by the Assistant Civil Engineer. The City is analyzing the current practice and due to potential upcoming staffing changes (retirements, reorganization); changes might be on the horizon. The City is assessing whether or not construction inspections should be continued in-house, or if contracting out those services to a specialized consultant would benefit the City and the community. The City's recent successes with contracting out the commercial/industrial inspections, Dry Weather Monitoring Programs services and Staff trainings have made the City take a hard look at other service areas as well. There is also the possibility that a part-time Code Enforcement Officer will be hired with the focus of construction inspections. This analysis is occurring at the time of the writing of this report and more information will be given in next year's Annual Report.

3.11 Summary

The City has been effective at implementing a plan-check process that has resulted in the implementation of BMPs, site design modifications, structural changes and runoff mitigation activities in project proposals and/or construction activities. Both public and private construction projects are subject to the City's strict standards, which provide a consistent approach to reducing urban runoff from construction activities. The City has effectively integrated the new stricter standards of the Permit, including the SUSMP, into its plan-check review process. The City has also developed project specific construction BMPs for large-scale specialized construction activities such as the Undergrounding Utility Districts that are forming around the community.

The City will continue to actively analyze the construction program and make necessary improvements/modifications to ensure the protection and enhancement of the local water quality. An example of the City's commitment

was the addition of the Environmental review section of the permit routing sheet. The City felt that some smaller projects, although not specifically required to be plan reviewed and inspected by the Permit, may have the potential to be overlooked. Therefore, now *all* plans are reviewed by the Assistant Civil Engineer and necessary changes can be made before plans are approved. Also, the reduced grading ordinance modification demonstrates the City's commitment to reviewing as many projects as possible and integrating storm water management requirements to projects that would have been overlooked in the past.

The City, along with the other regional Copermittees, developed and is now implementing the two significant new requirements, the HMP and LID. These two programs are significant additions that will require City Staff to work with the other Copermittees to implement regional programs to address runoff from construction projects. These new programs also include an educational component, which the City is currently developing in conjunction with the region. The City is committed to participating with the regional Copermittees to develop and implement these respective programs, even though the HMP is not expected to affect any projects within the City. The City values itself as an active Copermittee, and allocated funds to the HMP development, even though it is highly unlikely to affect any projects within the City's jurisdiction.

CHAPTER 4
Municipal Component

CHAPTER 4: MUNICIPAL COMPONENT (EXISTING DEVELOPMENT)

4.1 Introduction

In accordance with Permit Section F.3.a, this section of the report describes the City's efforts to prevent or reduce pollutants in runoff from municipal land use areas and activities.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of municipal facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement BMPs at municipal facilities, program accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Municipal facilities and areas within the City of Solana Beach include public parks, public buildings, streets, roads, and parking lots, a public works yard, and the MS4 system. During this reporting period, the City once again conducted a comprehensive re-evaluation of its municipal sites to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from its facilities by implementing Best Management Practices (BMPs). This was accomplished through inspections of all public facilities.

4.2 Inventory of Municipal Facilities

During this reporting period, in response to the requirements of the Permit and in an effort to improve the quality of water in the region, the City once again inventoried its municipal sites and activities. Table 4-1 presents the City's municipal facilities, by prioritization level. *There are no changes in the City's inventory of municipal sites from those submitted to the RWQCB in the City's last Annual Report.*

The City's municipal facilities include five public buildings (City Hall, Fire Station, Marine Safety Center and the community centers at La Colonia Park and

Fletcher Cove), one Public Works Yard, six public parking lots, City streets and roads, the Municipal Separate Storm Sewer System (MS4) and the beach (which consists of four access locations: Del Mar Shores, Seascape Sur, Tide Beach Park, and Fletcher Cove).

Table 4-1 Existing Municipal Facilities, By Priority Level

Facility Name	Facility Address	Type of Activity	Priority
Public Works Department	1764 Highland Drive	Materials storage, fleet parking, administration	High
North Seascape Sur Surf Park	Public beach access west of Highway 101	Public beach	High
Roads, streets	Citywide	Circulation	High
MS4 System	City-wide	Storm-water conveyance system	High
Fletcher Cove Parking Lot	North end of Plaza St.	Parking	High
Distillery Parking Lot	Sierra and Lomas Santa Fe		
Solana Beach and Tennis Club	West end of Dahlia St.		
Seascape Sur Parking Lot	Seascape Sur Easement		
Del Mar Shores Parking Lot	Sierra Ave. near Del Mar Terrace		
Del Mar Beach Club East Parking Lot	Sierra Ave. east of Del Mar Beach Club Dr.		
City of Solana Beach Fire Department	500 Lomas Santa Fe	Public Building - Fire Station, fleet and fire equipment storage	Medium
City of Solana Beach City Hall	635 S. Highway 101	Public Building -Administrative	Low
Marine Safety Department, Fletcher Cove	111 S. Sierra Ave.	Public Building Administrative, marine safety equipment storage	Low
Fletcher Cove Community Center	111 S. Sierra Ave.	Public Building – Community Center	Low
La Colonia Park and Community Center	715 Valley Ave	Public Park and Building – Community Center, administrative, park	Low
Tide Beach Park	302 Solana Vista Drive	Public beach	Low
Del Mar Shores	190 Del Mar Shores	Public beach	Low

4.2.1 Inspection Frequency of Municipal Sites

The City inspects all of its municipal sites listed above on a continuous basis. The inspections address all the required inspection steps to determine full compliance. Every winter, prior to the wet season, the Public Works Yard (Yard)

is given a complete inspection and all Public Works employees are given a complete storm water refresher training seminar. Also, the Public Works Crew is put through a practice run of the Wet Weather Triggered Action Plan to prepare for the upcoming wet season. At this annual inspection, the current inventory of the storm water BMPs kept on-site (gravel bags, bio-filter rolls, straw rolls, etc) is documented and additional supplies are ordered if necessary. Visual inspections are conducted on a daily basis by the Public Works Crew.

As required by Permit Section J.3.a (3) (c) xix, the City confirms that the municipal inspections addressed all required inspection steps to determine full compliance.

Here are the specific dates and numbers of inspections for the City's municipal areas:

Public Works Yard: Weekly facility visual inspections by City Staff. Compliance inspection conducted last year on June 1, 2011.

Roads and Streets: Daily visual inspections by City Staff. Every street is swept at least once per month. Main arterial streets and collector roads are swept twice per month. These frequencies are set based on Permit requirements and the size and frequency of use by vehicles on a daily basis.

Parking Lots: Weekly visual inspections by City Staff. Every City parking lot is swept once per month. In addition, the Fletcher Cove Park parking lot is swept weekly during the summer months due to an increase in use during the summer.

MS4 System: Weekly visual inspections by City Staff. Highest priority catch basins cleaned annually (those with accumulated debris inside). All 309 catch basins and 15 unimproved channels were inspected and 26 catch basins were cleaned. Approximately 5 cubic yards of debris was removed from the MS4 system during this reporting period.

Fire Department: Daily visual inspection by City Staff. Compliance inspection was conducted on June 1, 2011.

City Hall: Daily visual inspection by City Staff. Compliance inspection was conducted on June 1, 2011.

Marine Safety: Daily visual inspection by City Staff. Compliance inspection was conducted on June 1, 2011.

La Colonia Community Center: Daily visual inspection by City Staff. Compliance inspection was conducted on June 1, 2011.

Beaches: Daily visual inspection by City Staff (Marine Safety Department).

4.2.2. Follow-up Activities

There were no follow-up activities required as a result of the municipal inspections. Due to the education, knowledge and constant monitoring by City Staff, no violations were detected during the compliance inspections.

All municipal facilities are implementing the necessary BMPs and all employees are properly trained. The Public Works Yard required no corrective action as everything remained in compliance. The Wet-Weathered Action Plan was successfully implemented and the employees were trained again and had a practice run prior to the beginning of the wet season.

4.2.3 Implementation of Pesticides, Herbicides and Fertilizer BMPs

As reported in last year's Annual Report, the City used to house a small amount of pesticides, herbicides and fertilizers at the Public Works Yard. However, City Staff no longer handles any pesticides, herbicides or fertilizers and does not store any of this material onsite. Instead, all applications are conducted by the City's contracted landscaping company and no material is stored at City facilities. This greatly reduces a high priority pollutant source and eliminates the potential for a release into the City's MS4.

In addition, the City has recently switched to using only organic pesticides, herbicides and fertilizers on City property. This change was approved by the City Council and additional funds are allocated to implement the program. The City is extremely proud of this transition, as the chemically produced materials can create significant water quality degradation. This major transition (including financially) was approved and encouraged by the City Council, which reflects the environmentally conscientious attitude of the community.

4.3 Pollutant Source Identification

To assist the City in determining the source of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, the municipal facilities were also identified by Watershed in the City's JURMP*. There are no changes to report in the municipal facility by watershed classification.*

During this reporting period, Staff continued to evaluate the possible types of pollution that could be generated from each municipal facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Any additional activities that may affect water quality such as additional storage or new materials kept on-site

Results from the evaluation indicate that most City facilities are a low threat to water quality. Parking lots, streets and roads, and the Public Works Yard are the highest priority of municipal facilities as they could introduce pollutants into the conveyance system, which could impact water quality.

The City is committed to implementing BMPs that will reduce pollutants from parking lots, streets and roads and, in particular, the Public Works Yard. The City has installed and maintains a BioClean filter in one of the upstream catch basins that lead to the problem Seascape Sur storm drain outfall. In addition, the City installed a curb inlet screen at the same catch basin upstream from Seascape Sur to prevent debris, and possible pollutants, from entering the catch basin.

As reported in last year's Annual Report, an additional BMP catch basin inlet screen was installed in the opposite catch basin across the street as a pilot test project. This inlet screen automatically opens up during a rain event to prevent flooding, but remains in place during dry weather periods. The sturdy screen also contains a filter in the basket behind the screen to further filter out pollutants prior to entering the Seascape Sur storm drain. These two BMPs will be studied and sampling results analyzed to determine if they are effective BMPs for the problem pipe. The results will be described in more detail in Chapter 12 (Special Investigations)

The Public Works Yard is visually inspected daily and BMPs are maintained and

reinforced as needed. In addition, the City utilizes results from its dry-weather-monitoring program to determine if pollutants are entering the system from its municipal facilities.

The City's 2010 Dry-Weather-Monitoring Program (DWMP) was completed by the City in September 2010. The results indicated a continuing concern at Seascape Sur, which has been an ongoing problem in the City (see discussion in Chapter 12, Special Investigations), where elevated levels of bacteria were detected. An investigation into the identification of the pollutant source is ongoing, and the City is looking into alternative ways to address the situation. No municipal facilities were found to be contributing the pollutants.

The City utilized the information from the 2002-2010 DWMPs and the criteria established by the Permit (Order 2007-0001) to further develop its 2011 Dry-Weather-Monitoring Program. The results of the 2011 program will not be available until after this reporting period, but if any exceedances are detected, follow-up actions will be taken immediately. The results of the 2011 DWMP will be included in Chapter 7 (IDDE) of this Report, which will be submitted separately in December 2011 as agreed to by the RWQCB Staff.

4.4 Threat to Water Quality Prioritization

The City utilized the criteria prescribed in Permit Section F.3.a. (3)(a) and (b) to prioritize the facilities based on their potential Threat To Water Quality (TTWQ) from storm water runoff. In addition, dry-weather monitoring data and previous complaint records were included in the evaluation. As noted in the City's JURMP, results from the 2010 DWMP indicated that there were no illegal discharges or illicit connections associated with existing municipal facilities. However, the City still classified its public parking lots, MS4 system, streets and roads and the Public Works Yard as *high priority* using the criteria of the Permit. Also noted in the JURMP, the City classified the beach at Seascape Sur as a *high priority* because results from historic dry-weather monitoring and Coastal Monitoring programs indicated elevated levels of bacteria (see Chapter 12, Special Investigations).

The Fire Station facility was the only municipal site classified as medium-priority, due to the types of materials stored onsite (although always indoors). The City Hall building, the Community Center at La Colonia Park, Tide Beach Park,

Fletcher Cove Community Center and the Marine Safety Center facility were classified as low priority primarily due to the activities conducted at those sites.

There are no changes to report in the City's prioritization of its municipal facilities.

It should be noted that in the 2003 Annual Report, the results of the 2003 Wet Weather Monitoring Program revealed very high levels of the pesticide Diazinon within the watershed. The City focused its efforts on reducing the use of Diazinon within the City and by municipal landscaping contractors through educational activities. The City is happy to report that Diazinon was not found in any of the samples analyzed by the lab for current dry weather programs. This is consistent with the overall trend region-wide showing that Diazinon levels have been steadily decreasing. The City can now focus on other pesticides or high priority pollutants in the ongoing effort to improve water quality in the region. This is a success story that can be celebrated by the entire region, proving the validity of the storm water program as a whole.

4.5 Pollution Prevention Methods

As described throughout the Municipal Component Section of the JURMP, the City has established pollution prevention methods that focus on municipal operations, including operation and maintenance of its MS4 system with the goal of preventing and reducing pollutants in runoff. The following is a list of some of the methods in place to accomplish this goal:

- Annual inspection and cleaning of the City's MS4 system
- Routine street sweeping (schedule is on the City's web site and available upon request)
- Sediment and erosion control methods (applications of Visqueen, materials coverage, silt fences, etc.)
- Facility and ground maintenance conducted in a manner that would not contribute pollutants to a conveyance systems and expected to reduce pollutant runoff during storm events
- The use of bio-filter roll(s) as a PPM at municipal facilities
- The installation and maintenance of permanent treatment BMPs at City facilities (Two CDS units, pervious pavement, Sand Trap and a large Bioswale)

- Maintenance of the MS4 including routine inspections, annual cleaning and proper disposal of captured materials
- Spill response procedures (street and road spills, facility spills)
- Household Hazardous Waste Collection (Note: the City participated in a reciprocal use agreement with the Cities of Vista, Poway and Escondido for use by Solana Beach residents to recycle their household waste materials.) The City also offers a door-to-door program, described later in the Report.
- Installation and maintenance of two catch basin inlet filters and debris screens at ongoing problem areas directly upstream from Seascape Sur beach outfall.

In the City's JURMP, the above pollution prevention methods were expanded for implementation at all City municipal facilities, depending on the type of activities conducted at each facility. To assist in developing appropriate BMPs, the facilities were categorized into the following types:

- Landscape and recreational facilities
- Roads and streets maintenance
- Public buildings
- Public Works Yard
- Parking facilities
- Storm Drain Conveyance System (MS4)

Specific BMPs were then developed for each category type identified and presented in the City's JURMP. For example, BMPs for the Public Works Yard (JURMP, Section 6) include:

- Materials storage alterations
- Visual inspections
- Improved operations and maintenance
- Good housekeeping procedures
- Preventative maintenance
- Spill prevention
- Sediment and erosion control
- Employee training
- Vehicle and equipment maintenance operation alterations

- Waste disposal and recycling
- Vehicle equipment and washing
- Storage tanks
- Outside storage

During this reporting period, the City implemented pollution prevention methods (BMPs) for each facility type based on what was presented in the City's JURMP. Municipal facilities were inspected by City Staff to ensure the implementation of BMPs was occurring.

4.5.1 Proactive Approach to Pollution Prevention – JURMP Requirements

Because of the City's proximity to the Pacific Ocean, Staff has been proactive in its approach to urban runoff and pollutant mitigation and reduction, not only during this reporting period but also prior to the implementation of the JURMP.

Annual Inspection and Cleaning of Storm Drain System

The City conducts an annual inspection of its storm drain system – citywide. Public Works staff inspects all 309 catch basins in the City and prioritize each based on the severity of sedimentation and trash build-up in accordance to the Permit**.** All catch basins that contain trash or sediment build-up in excess of the Permit requirements are cleaned using a Vactor truck. During this reporting period, the City inspected all 309 catch basins and 15 unimproved channels. Thirty (30) catch basins had accumulated debris and all 30 were cleaned, resulting in 5 cubic yards of material removed from the storm drain system (which includes open channels, etc.). The material, primarily sediment and debris, was properly disposed of at the San Elijo Wastewater Reclamation Facility.

Special Events Vendor BMP Requirements

The City developed a "Special Events Vendor BMP Guidelines" (Appendix I) for all events that require a Special Events Permit. The guidelines include BMPs for food vendors, event coordinators and event workers. The guidelines include BMPs such as:

- Protecting all adjacent catch basins
- Required trash and recycling containers
- Portable restroom secondary containment
- No dumping into storm drains

- Proper clean-up practices (No water)

These requirements are all included in the Special Events Permit. For larger events, such as the City sponsored Fiesta Del Sol and Beach Blanket Movie Night, the City holds multiple meetings prior to the event with the organizers and all issues are discussed. The organizers are required to submit their BMP plans to the City, and City Staff monitors the events throughout their entirety. The City schedules post-event street sweeping through its street sweeping contractor for all major events.

Pet Waste Bag Dispensers

The City actively installs Pet Waste Bag Dispensers and maintains the dispensers to encourage proper pet waste disposal. Several years ago, the City placed these dispensers and signs along both sides of Sierra Avenue to encourage their use to prevent pollutants from entering the MS4 (Sierra Avenue is the street closest to the beach, and runs parallel west of Highway 101). The City implemented this BMP in response to results from its dry weather and coastal outfall monitoring, which indicated the presence of fecal bacteria at Seascape Sur. In an effort to educate the community about pet waste, the City periodically includes discussions about its pet regulations, which prohibits dogs in some locations of the City and on all beaches, in its community newsletter and recreation guide *Shorelines.* In addition, City Staff meets with property managers of the condominiums along Sierra Avenue to educate them on storm water regulations and solicit their help in educating their residents.

The City has taken a proactive approach to installing pet waste dispensers at various locations throughout the city, including the Coastal Rail Trail and Fletcher Cove Park. This shows the City's proactive approach to protecting the integrity of the local waterways. This practice of requiring pet waste dispenser's at all new public projects will continue as it has been widely received by the community.

As part of the Public Works Department routine tasks, the pet bag dispensers are refilled daily. The amount of material that is prevented from entering the City's MS4 system as a result of this PPM is unknown and there is no acceptable method of estimating it, however, the City's Public Works Crew refilled approximately 1,807 bags per week during this reporting period. Here is how it compares to previous reporting periods:

- FY 09/10 – 1,385 per week
- FY 08/09 – 1,380 per week
- FY 07/08 – 1,116 per week
- FY 06/07 – 1,298 per week
- FY 05/06 – 775 per week
- FY 04/05 – 625 per week
- FY 03/04 – 550 per week

The pet waste bags cost approximately $0.04 per bag, which resulted in an annual cost of $3,760 for FY 10/11.

Solana Center for Environmental Innovation

The City is proud to be associated with the Solana Center for Environmental Innovation (formerly Solana Recyclers), hereinafter referred to as Solana Center. Due in large part to the efforts of this group, the City was the first city in San Diego County to have a comprehensive *curbside* recycling program. In addition, to help educate the community, the Solana Center routinely writes articles for the City *Shorelines*. Also, Solana Center administers the City's Used Oil Recycling Program, providing education for schools, community groups and City events on the proper disposal of used oil. For a complete listing of articles written in the *Shorelines,* please see Chapter 6, Residential Component. Finally, Solana Center Staff provides classroom presentations to Solana Beach schools educating the children on storm water issues and water quality. The presentations are free for the schools (paid for by the City) and are extremely popular. For a list of the presentations, see Chapter 8 (Education Component).

Recycling Efforts

The City takes a very proactive role in promoting recycling efforts throughout the community. In previous Annual Reports, the City would include in this section the diversion rates as reported to the California Integrated Waste Management Board (CIWMB). However, the CIWMB changed the way diversion rates are calculated and reported, so recycling percentages are no longer given. Instead, jurisdictions are given a "target" disposal rate for pounds/per person/per day based on historical disposal and recycling amounts. This can roughly be translated to recycling percentages, but as long as the City meets its designated disposal rate, it's considered 50% diversion (recycling) under AB 939. The City's 2010 diversion rate is as follows:

- Target – 8.9 pounds per person per day

- Actual – 6.0 pounds per person per day

As you can see from the results, the City is significantly below the target rate, meaning the community is doing a tremendous job diverting waste from the landfills through means such as recycling, conservation, composting, etc. The City is extremely proud of the progress and results of its recycling efforts.

A significant effort to increase the already stellar recycling rates throughout the community was undertaken during this reporting period. The City recognized that the residential sector of the community was thoroughly committed to recycling and the results reflected this. This is due in large part to the City's transition to automated single-stream recycling a few years ago, which made it extremely convenient for residents to recycle. However, the results showed that commercial sector was not doing as well. The City analyzed its current Municipal Code to review its current requirements and identified some key areas to strengthen to help increase the commercial recycling rates. On May 12, 2010, the City Council adopted a new mandatory commercial recycling ordinance (Appendix J) requiring *all* commercial establishments to have a recycling program. The City anticipates this new requirement will have a positive impact on the overall recycling rates once fully implemented.

As reported in pervious Annual Reports, the City Council adopted a Construction and Demolition Debris Recycling Ordinance in January 2008. This ordinance is discussed in more detail in the Construction Component of this Report, however it's important to mention because it once again demonstrates the City's proactive and aggressive commitment to recycling and environmental protection.

Hazardous Materials Management Team

The City's Fire Department contracts with San Diego County Hazardous Materials Management Division and established an Emergency Response Program to contain hazardous materials that result from automobile accidents, spills, illegal dumping or any other activities within the City of Solana Beach. Generally, the County's Hazardous Materials Team handles recovery and disposal of the materials, although work crews from the City's Public Works Department also contain some small spills and are on call 24 hours a day, 7 days a week to respond to all spills that occur within City limits. All Public Works Staff has been trained to handle spills in the appropriate manner, to reduce and/or eliminate potential impacts to the City's MS4 and receiving waters.

Storm Drain Inventory and Stenciling

The City has inventoried all of its storm drain conveyance structures (inlets and catch basins). The inventory list includes addresses, cross streets and is available in GIS format. This information was then utilized to implement a program that affixed a stenciled tile at each location that reads, *"No Dumping! This drains to the ocean."* The City has successfully completed application of the tiles at *every* storm drain inlet and catch basin throughout the City. In addition, the City requires all new or re-development projects that install a storm drain curb inlet or catch basin to include a stencil or tile. The City constantly monitors the catch basins and if a tile is broken or has been removed, another one is immediately installed.

The City also participated with the non-profit group I Love A Clean San Diego (ILACSD) to sponsor an ongoing Tile Stenciling Program in which the City provides volunteers with a GIS map of all catch basins in the City and a box of tiles so they can compass the City and replace any tiles that are damaged or missing. This was a highly successful program/partnership that the City will continue to ensure all catch basins have tiles permanently affixed to them.

Street Sweeping

The City already had a comprehensive street sweeping program prior to the Permit and the implementation of the JURMP. The residential streets are swept once each month, while major arterial streets and collector roads are swept twice per month. In response to the comments received from the RWQCB on the FY 02/03 annual report, the City developed a form to characterize and measure the amount of material collected by the street sweeper (Appendix K). The driver of the street sweeper completes the form after every trip and it is verified by the appropriate Public Works employee.

As reported in the City's FY 2005/06 Annual Report, the City was having significant problems with its contracted street sweeping company. The contractor was not performing up to contract specifications, and the City was having a difficult time getting the proper reports from the drivers. A contractual battle ensued and documentation was not submitted. The City eventually relieved the street sweeping company of their duties and selected another contractor. The new contractor has been much more effective and responsive.

This reporting year, the amount of debris collected by the street sweeper totals 212 cubic yards, which is slightly more than last year's amount of 207 cubic yards. The relatively consistent amount of debris collected by the street sweeper can be attributed to the fact that most of the debris consists of organic materials, including leafs and green waste. There is relatively no trash collected, which is a good indication that the City, and community's, efforts at trash and litter reduction are successful. The City will continue to monitor the street sweeping debris to see if there are certain areas where trash is more prevalent and litter reduction campaigns can be implemented. However, at this time, most of the debris is organic green waste materials.

To demonstrate the City's commitment to documenting the amount of debris collected by the street sweeper and to ensure that all activities were conducted in compliance with the storm water regulations, the City included specific language in its new street sweeping contract. This language will be used in every subsequent street sweeping contract to ensure all contractors are adhering to all storm water regulations, which was a comment made by the RWQCB in its JURMP Annual Report review.

As mentioned above, and now required by the new Permit, the City sets sweeping frequencies based on the type of street; the larger, more frequently used by vehicles, are swept more often. The streets are classified based on SANDAG's Vehicle Miles Traveled (VMT) parameters. The lesser traveled streets, like residential streets, are swept once per month. Parking lots are swept as needed, but at a minimum once per year. The other higher frequency traveled streets such as arterials and collectors are swept twice per month. A complete schedule can be found on the City's website or upon request.

The Permit requires the Copermittees to identify the total distance of curb-miles of improved streets, and highways for high, medium, and low sweeping frequencies.

High Priority (twice per month):
Lomas Santa Fe – 4.06 miles
Highway 101 – 3.89 miles
South Sierra – 1.62 miles
Stevens/Valley – 3.29 miles
Cedros – 2.63 miles

Medium Priority (once per month):
All residential streets – 90.71 miles

Low Priority (once per month):
Parking Lots – 12 total lots, 59,750 square feet

These streets were cleaned on the set schedule listed above.

The Permit also requires Copermittees to identify the total distance of curb miles swept.

The City sweeps all (100%) streets at least monthly. The high priority streets are swept twice per month. Parking lots are swept as needed, but at a minimum once per year as identified in the JURMP. The total distance swept per year is:

High Priority: 402.74 miles per year
Medium Priority: 1,088.52 miles per year
Low Priority: 717,000 square feet per year

Spill Prevention

The City's Public Works Department maintains on-site at the Public Works Yard, a 55-gallon drum and specially equipped vacuum to handle small hazardous materials spills. The drum and vacuum are small enough to travel with the work crews and have been utilized to contain oil from an automobile accident, spillage of work-related materials (paint and debris), and collection of minor hazardous materials. In the event the material exceeds the amount that can be collected by the work crews, the City's Fire Department initiates its spill response plan (discussed above). Currently, City work crews do not have the resources to weigh the amount of material collected or to track and document the amount of material collected. Significant spills for which the work crews responded to are discussed in Chapter 7: Illicit Discharges Detection and Elimination.

Staff Trainings

As reported in previous Annual Reports, the staff trainings used to occur at the monthly citywide Staff meetings. However, these trainings had to be general in nature because of all the varying departments and staff that attended. During this

reporting period, staff decided to take a more proactive approach and implement a department specific training focusing on the sections of the Permit that pertained to their respective duties. Staff felt that more focused, detailed trainings would be a much more effective approach, and this turned out to be extremely successful. During this reporting period, the City did not have any specific stormwater trainings. However, a few are scheduled for the upcoming year and will be reported on in next year's report including:

1. Sewer spill prevention and spill mitigation
2. Storm water issues relating to public works

The City will continue to look for other opportunities to educate their staff on storm water related issues throughout next year's reporting period.

Storm Water Hotline

To assist the public in directing their calls for complaints and service, the City maintains and responds to a 24-hour storm water hotline telephone recording (858) 720-4424. When the number was first established, it was checked twice each day. However, to facilitate a quicker, more effective response time, the City now links all calls to the direct extension of the City's Assistant Civil Engineer. Therefore, all calls that are made to the City regarding storm water issues will be handled immediately. This has been proven very successful, as the issues are addressed immediately. This leads to much quicker responses, which result in more efficient spill response and enforcement actions. The City informs the public about the hotline number at City Council meetings, on flyers and handouts at workshops, on business cards, on educational materials and during inspections.

Materials Storage

Although only minor quantities of hazardous materials are stored at municipal facilities (as noted in the City's JURMP), the City stores those materials indoors when feasible. Only non-hazardous materials, such as Class 2 gravel, temporary stockpiles of topsoil, etc., are stored outdoors for short periods of time. When this does occur, City Staff ensures all storm water BMPs are installed around the piles and they are covered, if necessary, to ensure no discharges occur from the Public Works Yard.

Sediment and Erosion Control

The City's Public Works Department augmented the City's supply of Visqueen as a method to reduce or prevent sediment and erosion control. The Visqueen is utilized at the Public Works Yard on the sand and soil that is kept on-site. In addition, the work crews utilize bio-filter rolls to prevent runoff. As added insurance, the City's Operations Manager always orders extra erosion control BMPs before the wet season to store on-site for emergency situations. Most of these practices were instituted as a result of suggestions made by the RWQCB during their inspection in August 2002.

Storm Drain Inlet/Catch Basin Insert

The City is currently participating in an ongoing experimental application of two catch basin inserts in one problem location at Seascape Sur. The inserts are being studied to determine its effect on the elevated levels of bacteria found downstream at the storm drain outlet. Early results from the pilot program show a slight reduction in the bacteria levels at the outfall and the catch basin filters have been extremely effective in eliminating large quantities of trash and organic matter from the MS4 system. Public Work Crews empty the filters on a weekly basis and routinely remove about half a trash bag full of debris.

Smoking Ban on Public Beaches and Parks

In 2003, the City of Solana Beach jumped to the forefront of pollution prevention on a nation-wide scale. The City was the first in the nation to ban smoking at its public beaches and parks. The Ordinance (Ordinance 316, see Appendix L) bans smoking at all public beaches and parks, and is actively enforced by the Marine Safety Department and Code Enforcement Department. The public has been very responsive to this ordinance, and the City has had many requests from other jurisdictions, as far away as Australia. The City appears to be a trend setter, as the City of Los Angeles and other Orange County cities followed suit with their own ordinances a few years ago, and most other cities in San Diego County have recently implemented their own local bans. This is a significant pollution prevention action the City has undertaken, as cigarette butts are routinely found as the most abundant type of debris collected in beach clean-ups. The impact on the local beaches will be extremely beneficial, and the City is proud to be the trend setter in another environmental arena (the City was the first jurisdiction in San Diego County to provide curbside recycling).

During this reporting period, the City approved an enhanced No Smoking Ordinance that extends further than the one listed above. On August 7th, 2009, a much more stringent ordinance was adopted by the City Council that extended the ordinance to include the following no smoking areas:

- All enclosed or unenclosed dining areas and bars
- Street Fairs
- Farmer's markets
- On, near or around the Coastal Rail Trail
- Within 20 feet of all entry ways and all enclosed areas available to and customarily used by the general public and all businesses patronized by the public
- Tot lot and Playground areas

This will, without a doubt, significantly reduce the amount of smoking outdoors in Solana Beach, and therefore reduce the amount of cigarette butts that end up in our MS4 and receiving waters. The City is excited to start implementing this ordinance and reduces the amount of pollution that comes with smoking.

Another significant pollution prevention action the City has taken, although post-reporting period is the recent adoption of a new commercial litter abatement ordinance. On September 8, 2010, the City Council adopted Ordinance 419, which requires, among other things, all commercial businesses to develop and implement a litter reduction plan. This plan must include at least daily inspections/cleanups around their businesses up to 200 feet. This should significantly prevent litter/debris from entering the City's MS4 as it would require employees to inspect sidewalks, gutter, streets and open space up to 200 feet surrounding the property, and remove any litter they encounter.

Recycling/Trash Containers

The City, and community, places a high priority on recycling, as evidence by the extremely high recycling diversion rate, discussed previously in this Report. The City has made a conscientious effort to increase the amount of public recycling containers over the last few years. As discussed in previous annual reports, the City has focused on placing dual trash/recycling containers at all popular public locations throughout the City, including parks, beach accesses and the Coastal Rail Trail. The City receives an annual grant through the Department of

Conservation as well as an annual grant through the Regional Solid Waste Association, and these funds have been used to purchase and install the dual trash/recycling containers throughout the community. This has dramatically increased the amount of public recycling, and the City anticipates continuing this program in the coming years.

Not only is the City focusing on implementing a public recycling program, but as previously mentioned, the City implemented a large scale residential recycling program. The City, along with its waste hauler Waste Management, converted the traditional source separated recycling program to a streamlined, single stream commingled recycling program. This has been a huge success as the residential recycling rates have dramatically increased by 20%.

Plastic Bag Advertising Ban

Another progressive action the City Council took was passing an ordinance banning the use of plastic bags for advertising. The ordinance bans the popular style of advertising used by companies in which they use small plastic bags full of rocks because often times it is unsolicited and the bags never get picked up, eventually ending up in the City's MS4. This emerging type of advertising is typically conducted by small residential and commercial support businesses such as landscapers, pool cleaners, housekeepers, and handyman type services. This is another example of the City taking a proactive approach to litter in the MS4. Plastic is the number one pollutant found in the ocean worldwide.

Ensuring Implementation

To ensure that the PPMs are implemented, City staff meets periodically with all Department Directors to review the BMPs, Permit requirements and program expectations. Department Directors are responsible for ensuring that their Staff carries out the BMPs for their facilities. The City Engineer meets every Wednesday with the Operation Manager and his public works crew at the Public Works Yard for safety meetings. It was decided that at these meetings, storm water issues, including BMPs, should be discussed and the Yard will be inspected to ensure compliance. The Assistant Civil Engineer will also conduct random compliance inspections. During this reporting period, there were no violations observed at the City's municipal facilities and all appropriate BMPs were being properly installed and maintained.

4.6 Pollution Prevention Strategy Effectiveness

One of the issues that the City faces is developing an appropriate process to determine the effectiveness of the pollution prevention methods and strategies, (BMPs). The City is committed to developing a consistent approach that could be agreed upon by all Copermittees. It is important to collect data and analyze results in a consistent manner – county/region wide – in order to be able to share results and draw conclusions across agencies, particularly given that water is not restricted by jurisdictional boundaries.

To address this issue, the Copermittees met several times in the fall of 2002 and in 2003 to work out a more appropriate strategy. A guidance document was prepared by the Copermittees and submitted to the RWQCB on October 16, 2003, titled *"A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs".* This guideline presents a comprehensive assessment strategy that initially focuses on programmatic assessments and moves toward water quality-based assessments to determine program effectiveness. More specifically, it addresses six levels of assessment:

<u>Compliance with Activity-based Permit Requirements</u>

- Changes in Knowledge/Awareness
- Behavioral Changes
- Load Reductions
- Changes in Discharge Quality
- Changes in Receiving Water Quality

The City implemented this assessment program during the last reporting period, which is described in more detail in the Effectiveness of JURMP Assessment Component of this report.

<u>Compliance with Maintenance Activities</u>

Tables 4-2 and 4-3 below outline the MS4, sewer system and permanent City BMPs maintenance schedules. The City has an extremely aggressive

maintenance program to ensure the systems are clean and functioning properly.

Table 4-2 MS4 Maintenance Activities 20102011

Type	Frequency	Date	Total Number (and Distance)	Number Inspected (and Distance)	Comments
Inspection and Cleaning of MS4	Annual	Ongoing between May-October	309 catch basins– 14.5 Miles of MS4	309 catch basins- 0.5 Miles of MS4 pipe inspected	All catch basins inspected, 0.5 miles of pipe inspected (Seascape Sur) 26 catch basins were found with accumulated debris and 26 cleaned, 5 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15 – 0.8 miles of Unimproved Storm Drains (Brow Ditches, Channels, etc)	15 – 0.8 Miles of Unimproved Storm Drains (Brow Ditches, Channels, etc)	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.
Inspection and Cleaning of Sewer Lines	Annually (entire City)	Ongoing	Entire System	Entire System	The entire sewer system is inspected and cleaned annually, and 1/3 of the system is televised annually

The tables above represent the inspection and cleaning activities related to the City's MS4 and sewer system. As you can see, the City conducts the annual inspections of the entire MS4 as the Permit requires, but goes above and beyond the inspection and cleaning requirements with monthly unimproved storm drain (brow ditches, channels, etc) inspections and cleaning of the entire sewer system annually. The unimproved storm drains are handpicked by City Staff on an as needed basis as a result of the inspections. The City also has an aggressive sewer videoing program that televises one-third of the system each year, identifying possible leaks, infiltration into the City's MS4, grease build-up and root intrusions that may lead to sewer spills. This is an extremely aggressive sewer

maintenance program, which reflects the commitment the City has to maintaining a healthy system and preventing spills into the environment.

In addition, the City has designated sewer “hot spots” that are cleaned quarterly (every three months). These “hot spots” are areas with historical problems such as heavy grease buildup, root intrusion, and flat lines that may need increased cleaning to prevent sewer backups. The program includes an aggressive “root foaming” procedure in areas with historical root intrusion problems.

Table 4-3 Municipal Treatment Control BMP Maintenance Activities 2010/2011

BMP Type	Location	Frequency	Total Number	Number Inspected	Comments
Low Flow Diverter	Fletcher Cove Park	Monthly	1	1	Low Flow Diverter is cleaned once per month and inspected daily
Sand Trap	Fletcher Cove Park	Monthly	1	1	Sand Trap is cleaned monthly
CDS Units	Fletcher Cove Park and North Rios Avenue	Monthly	2	2	The CDS units are cleaned monthly
Sewer Siphon	San Elijo Lagoon	Monthly	1	1	The siphon is cleaned monthly
Bio-Swale	La Colonia Park	Annually	1	1	The Bio-Swale is cleaned annually prior to rainy season and inspected weekly

The City has an aggressive maintenance program for all City-maintained permanent BMPs. The monthly maintenance frequency for the Sand Trap and CDS units are much higher than suggested by the manufacturer. The daily inspections of the Low Flow Diverter are conducted to ensure it is functioning at all times and redirecting the urban runoff away from the beach and into the sewer system.

4.7 New Activities and Improvements for FY 11/12

The City anticipates continuing to implement programs aimed at meeting the requirements of the Municipal Component as specified in the JURMP. The focus will be on continuing the cooperation among different departments, ensuring municipal facilities are in compliance with the Permit, and collaborating with other Copermittees. The Department Directors were required to integrate more responsibilities into positions in order to implement the Watershed Urban Runoff Management Programs (WURMP), Standard Urban Storm Water Mitigation Plan (SUSMP), Hydromodification (HMP) program and the Low Impact Development (LID) program. Because of our team approach, this transition occurred rather seamlessly. The Planning Department and Engineering Department worked closely together in implementing the respective requirements.

As mentioned previously in this Report, the new JURMP document was adopted in March 2008. This contained new elements that will require additional/modified requirements/duties of different Departments within the City. Additional Staff trainings were conducted to ensure that all Staff activities are in compliance with the new Permit and some job duties will have to be altered. Since the new Permit has now been adopted, the majority of the City's efforts will be spent implementing programs to meet the requirements of the new Permit. These changes will have to be implemented on the fly, and will require all Departments within the City to work collaboratively to accomplish the goals within the new Permit. The City is confident that the infrastructure of the City as a whole will allow for a relatively seamless transition to the requirements of the new Permit. Some of the new programs include:

- Minimum street sweeping and priority requirements
- Post-Construction BMP verification, tracking and inspections
- SUSMP implementation
- Low Impact Development (LID) development and implementation
- Hydromodification Plan (HMP) development and implementation

4.8 Summary

The City has been successful at implementing the Municipal Component of the

JURMP, establishing BMPs for its municipal facilities and providing informative and meaningful Staff trainings. The City made significant advancements in the manner in which its storm water program is integrated into the routine tasks of various Staff and has developed an effective interdepartmental working relationship. The Environmental Programs Manager position has greatly enhanced the coordination and implementation of the Permit, as well as other environmental programs (solid waste, Used Oil Recycling, HHW, etc.)

Highlights of some of the accomplishments of the City's Municipal Program Component include:

- Implementation of two comprehensive WURMPs
- Creation of an effective municipal inspection process, all municipal facilities were inspected regardless of priority
- Implementation of storm water issues and inspections of Public Works Yard at weekly safety meetings between the City Engineer and Public Works Operations Manager and Staff
- Annual inspection and cleaning of the City's MS4 system resulting in 5 cubic yards of debris diverted from receiving water bodies
- Continued implementation of street sweeping tracking form that allows the City to evaluate the effectiveness of the street sweeping program (212 cubic yards collected).
- Provision of public pet waste bag dispensers (98,000 bags were utilized by the community during this year at a total cost of $3,920 (4 cents per bag)
- Addition of new trash/recycling receptacles in high traffic areas of City to promote recycling and prevent trash/litter from entering storm drain system
- Enforcement and enhancement of Smoking Ban on Public Beaches and Parks Ordinance which has significantly reduced amount of pollution on local beaches and parks
- Implementation of weekly task for Public Works Crew to conduct weekly storm water inspections at the Public Works Yard
- Implementation of scheduled cleaning of Fletcher Cove Sand Trap and CDS unit monthly
- Maintenance of Bioswale at La Colonia Community Center
- Maintenance of City-owned CDS unit at North Rios on a monthly basis
- Maintenance of two filter baskets at upstream catch basins of Seascape

Sur outfall on a weekly basis

- Routine scheduled inspection and maintenance of unimproved channels on a monthly basis and after all rain events
- Routine scheduled inspection of Fletcher Cove Low Flow Diverter to ensure it is functioning properly on a daily basis
- Implementation of unique public/private plastic bag recycling program, resulting in the recycling of over 475,000 bags to date

CHAPTER 5
Industrial/Commercial Component

CHAPTER 5: INDUSTRIAL AND COMMERCIAL COMPONENT

5.1 Introduction

In accordance with Permit Section D.3.b, this section of the report describes the City's efforts to prevent or reduce industrial and commercial discharges of pollutants into the MS4 to the MEP. In compliance with the Permit, the City evaluated businesses within the City and categorized them as commercial or industrial, as noted in JURMP sections 7.0 (Industrial and Commercial Component).

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of industrial and commercial facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement and enforce BMPs at industrial and commercial sites, related accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

During the last reporting period (July 1 2009 to June 30, 2010), the City conducted a complete evaluation of the commercial and industrial facilities doing business within the City. Facilities were identified as industrial and commercial sites based on criteria required by the Permit, which included activities conducted on-site and also included a site visit for verification. The City prepared an inventory of the facilities in order to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from the facilities by implementing Best Management Practices (BMPs). The City's complete inventory is listed in the JURMP.

As a result of the new Permit, this chapter now combines two previous Chapters from the old Permit. To keep consistency and for ease of readability, the following sections in this chapter separate the two components, so each can be analyzed according to their respective requirements.

5.2 Industrial Facilities

5.2.1 Inventory of Industrial Facilities

There is currently one industrial site operating within the City (Baker Iron Works). Table 5-1 presents the City's industrial facility, including its prioritization level. *There is no change in the City's inventory of industrial sites from those submitted in last year's Annual Report.*

Table 5-1 Existing Industrial Facilities

Facility Name	Address Number	Street Name	Zip Code	Hydrologic Area	SIC Code	NAICS Code	Principal Products/ Services	Potential Pollutants									Tributary to 303 (d) Listed and Generating Pollutants for Which the Water Body is Impaired	Threat to Water Quality
								Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash		
Baker Iron Works	710	Valley	92075	905.11	3441	332312	Iron Works/ Metal Fabr.		X	X		X	X		X	X	Yes	High

5.2.2 Pollutant Source Identification

To assist the City in identifying potential sources of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, City Staff evaluated the possible types of pollution that could be generated from each industrial facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Watershed location

Results from the evaluation concluded that the City's only industrial facility could be a potential source of pollutants (Baker Iron Works).

The conclusion that Baker Iron Works could be a potential source of pollutant discharge was due to the fact that the facility generally uses metal materials in the fabrication of structural devices. Some of their work is performed and stored outdoors and is potentially exposed to storm water, and runoff from the property can potentially enter the City's conveyance system. However, the City has worked closely with Baker Iron Works to minimize the potential for pollutants to

run off their property and into the City's MS4 system. Baker Iron Works has been more than willing to work with the City to ensure compliance with the Permit, and has completed numerous tasks suggested by the City. These include:

- Permanently covering all stock piles of metal materials kept outside to shield it from rain events.

- Routine cleaning of the yard as needed but no less than weekly with a magnetic device to pick up all loose metal shavings.

- Moving all chemicals indoors to ensure that they are protected from the weather and will not run off the property and into the City's MS4 system.

- Training all staff on proper storm water BMPs and general housekeeping for all activities that may impact the City's MS4 system.

- Installation of low flow sump/infiltration structure at the northwest corner of the facility to handle all low flows from the entire facility. The low flows will enter a small drain that extends across the driveway and enters into a small infiltration well structure to prevent the water from entering the MS4. This structure has worked very well in eliminating all low flows from leaving the site. Baker Iron Works employees routinely monitor and maintain the infiltration well to ensure proper functionality.

- Permanently sealing a trench drain near the office building that previously drained directly to the street. The result is that the runoff bypasses the drain and travels into the low flow sump/infiltration structure mentioned above.

The results of the 2010 dry weather program indicate that no related pollutants were found downstream from this industrial facility. This is consistent with the 2001-2009 dry-weather-monitoring program results which also indicated that no related pollutants were found downstream from this facility. The City will continue to inspect and monitor these locations in the future to further ensure that they are not contributing to downstream pollution. In addition, Baker Iron Works has agreed to forward all results from their required water quality monitoring under the Statewide General Industrial Permit to City staff, upon request, for review during rain events.

The City utilized the information from the 2010 dry-weather-monitoring program, the criteria established by the Permit, and the evaluation of the potential sources of pollutants (discussed in this chapter and Section 7 of the City's JURMP) to develop its 2011 dry weather monitoring program. Similar to last year, one site downstream and one site upstream from Baker Iron are selected for testing. The City will continue to monitor runoff downstream from this facility as long as it is in operation.

5.2.3 Threat to Water Quality Prioritization

In the City's JURMP, the industrial site was classified as a high, medium or low priority, based on its potential threat to water quality from storm water runoff. The classification utilized criteria prescribed in Permit Section F.3.a. (3)(a), (b).

There are no changes to report in the City's classification of its industrial facility from last year's Annual Report. Baker Iron Works is still classified as a high priority industrial site.

5.2.4 Pollution Prevention Methods

The City realized that since Baker Iron Works is the only high priority industrial site in the City, it would be prudent and feasible to monitor their site frequently. Although the Permit requires only annual inspections, the City dedicates more time to ensure that the site is always in compliance. This pro-active approach that occurred in the beginning of this Permit cycle has proved to be well worth the effort. Spending extra time and effort the first couple of years of this Permit to get this facility into compliance has built a strong working relationship between the owners and the City. This facility has had no violations and continues to stay in compliance.

The City has confirmed that Baker Iron Works is *in compliance* with the state GISW and is currently adhering to all requirements.

Baker Iron Works employees use a large magnet to clean their entire yard as often as needed but no less than once per week. This magnet is very effective in cleaning up small steel waste products that result from daily activities. The parking lot is swept and water is never used. All chemicals are kept in a locked storage shed that has secondary containment and is kept above ground, which

was a recommendation of RWQCB staff.

5.2.5 Industrial Inspections

As stated in previous Annual Reports, during FY 07/08, the City changed its inspection practices. Prior to FY 07/08, City staff conducted all industrial and commercial facility inspections. However, in FY 2007/08, the City hired an independent contractor that specializes in storm water inspections. This change occurred due to limited staff time to conduct the inspections, as well as to provide an increased service to the residents of Solana Beach. By hiring a contractor that specializes in storm water inspections, the City, and residents, can be assured that it is getting the highest quality service.

The City contracted out these services to Environmental Compliance Inspection Services (ECIS) again in FY 10/11. Baker Iron Works was inspected on May 26, 2011 and all designated BMPs were implemented and the facility was found to be in compliance in all areas. The inspection addressed all the required inspection steps to determine full compliance. City Staff will also continue to visually inspect the facility at least once a month, and always before the wet season and during rain events. If the City observes a non-compliant facility, the City will inform its appropriate representative at the RWQCB.

As required by Permit Section J.3.a (3) (d) vi, the City confirms that the industrial inspections addressed all required inspection steps to determine full compliance.

5.2.6 New Activities and Improvements for FY 11/12

City staff will continue to work closely with the proprietors of Baker Iron Works to 1) ensure functionality and maintenance of the BMPs, 2) ensure compliance with the City's storm water regulations and 3) educate the business owners and employees about the importance of protecting the community's water resources. In addition, if any new requirements or activities are developed targeting industrial facilities on a watershed or regional basis, the City will communicate these requirements directly to Baker Iron Works and assist them in remaining in compliance.

City Staff will also monitor business license applications to ensure if another industrial facility opens up that it will be added to the inventory and inspected to

ensure full compliance.

5.2.7 Summary of Industrial Section

The City has been effective at working with owners of the one industrial site to ensure compliance with Permit and City regulations. The owners have installed and properly maintained the filtration system at the northwest corner of the property to collect and infiltrate all on-site low flow runoff before it enters the MS4 system. The City has established a great working relationship with the owners/operators of the site and they have made drastic strides to maintain compliance. City Staff will continue to monitor and inspect the facility frequently to ensure compliance with the Permit. Baker Iron Works has been very responsive and immediately remedies any problems encountered during inspections. They have gone above and beyond what is required to ensure they are in compliance with the Permit.

5.3 Commercial Facility

5.3.1 Inventory of Commercial Facilities

During the process of revising the JURMP, submitted in March 2008, the City updated its inventory of commercial facilities. The City selected locations based on the requirements of the new Permit, and placed higher priorities on such facilities as automotive servicing, gas stations, repair and fueling, commercial rental yards, and golf courses (high Threat To Water Quality, TTWQ). The City's JURMP inventory had 77 stationary facilities; however the inventory is updated each year as a result of the inspections. The current inventory (see Table 5-2 below) now contains 82 facilities. The City will continue to update the inventory list as new businesses apply for permits or site inspections reveal changes. In addition, any facility that has the potential to release high priority pollutants into the City MS4 will be added to the list of high priority facilities.

Table 5-2 Inventory Of High Priority Commercial Facilities

Facility Name	Address Number	Street Name	Zip Code	Hydrologic Area	SIC Code	NAICS Code	Principal Products/Services	Potential Pollutants									Tributary to 303 (d) Listed and Generating Pollutants for Which the Water Body is Impaired	Threat to Water Quality
								Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash		
Academy Animal Hospital	741	Academy	92075	905.11	0742	541940	Animal Facility	X	X		X	X	X	X	X	X	Yes	Low
AM/PM/ Mini-Market #704	660	Via del la Valle	92075	905.11	5541	447110	Fueling	X	X	X		X			X	X	Yes	High
Annie's Café and Deli	524	Stevens	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Baker Iron Works	710	Valley	92075	905.11	3441	332312	Iron Works/Metal Fabrication		X	X		X	X		X	X	Yes	High
Bangkok Bay	731	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Baskin Robbins	905	Lomas Santa Fe	92075	905.11	5812	722211	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Beach Grass Café	159	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Belly Up Tavern/Wild Note Café	143	S Cedros	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Bill Smith Automotive	136	N Cedros	92075	905.11	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Blanca	437	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Bongiorno's New York Pizzeria	524	Stevens	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
CA Auto Tech, Inc. DBA Test-Only Smog	146	N Cedros	92075	905.11	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Caffe la Bocca	124, #102	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
California Pizza Kitchen Inc.	437	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High

Carls Jr./M and N Foods LLC	106	Solana Hills	92075	905.11	5812	722211	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Caspian Petroleum DBA LSF Mobil	705	Lomas Santa Fe	92075	905.11	5541	447110	Fueling	X	X	X		X			X	X	Yes	High
Cedros Gardens, Inc.	330	S Cedros	92075	905.11	5261	444220	Nursery/ Greenhouse				X		X	X	X	X	Yes	High
Chief's Burgers and Brew	124, #108	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Chronic Tacos	919	Lomas Santa Fe	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Clark's Auto Repair and Radiator SVC	421	N Hwy 101	92075	905.11	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Cold Stone Creamery	437	S Hwy 101	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Cupcake Love	437	S Hwy 101	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
D & B Automotive Specialties	128	N Cedros	92075	905.11	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Del Mar Bagel Cafe	512	Via De la Valle	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Dixieline Lumber Company	663	Lomas Santa Fe	92075	905.11	5211	444110	Building Materials			X	X		X		X	X	Yes	Medium
Don Chuy's Restaurant	650	Valley Avenue	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Dynamite Shine	615	S Hwy 101	92075	905.11	7532	811192	Auto Detailer	X	X	X		X			X	X	Yes	High
Einstein Bros Bagels	911	Lomas Santa Fe	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
El Camino Rental	235	S Hwy 101	92075	905.11	7353	532412	Heavy Construction Equipment Rental and Leasing	X	X						X	X	Yes	Low
Fidel's Little Mexico Inc.	607	Valley Avenue	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Fish Market Restaurant	640	Via de la Valle	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Henry's Farmers Markets	659	Lomas Santa Fe	92075	905.11	5411	445110	Grocery Store	X	X		X	X	X		X	X	Yes	Medium
Hideaway Café	150	S Acacia	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High

Holiday Inn Express	621	S Hwy 101	92075	905.11	7011	721110	Hotels and Motels	X	X			X	X	X	X	X	Yes	Medium
Jamba Juice	689 – D	Lomas Santa Fe	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Java Depot	243	N Hwy 101	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Jersey Mike's Subs	915	Lomas Santa Fe	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Kings' Garden	280	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
KMP Plumbing Company Inc.	435	S Cedros	92075	905.11	4225	493110	General Warehousing and Storage	X	X						X	X	Yes	Low
Lockwood Table Café	346	S Cedros	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Lomas Santa Fe Country Club	1505	Lomas Santa Fe	92075	905.11	7997	713910	Golf Course/Park				X		X	X	X	X	Yes	High
Lomas Santa Fe Ex. Golf Course 408	1580	Sun Valley	92075	905.11	7997	713910	Golf Course/Park				X		X	X	X	X	Yes	High
Marriott Courtyard	717	S Hwy 101	92075	905.11	7011	721110	Hotels and Motels	X	X			X	X	X	X	X	Yes	Medium
Masuo's Japanese	145	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Mohawk Car Wash (Parent-CCSB Inc.)	435	N Hwy 101	92075	904.61	7542	811192	Auto Washing	X	X	X		X			X	X	Yes	High
Moreland Choppers	369	N Hwy 101	92075	904.61	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Naked Café	106	South Sierra	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Nobu Gourmet Japanese Restaurant	315	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Orange Blossom Café	224	S Cedros	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Pacific Coast Grill	437	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Pamplemousse Grille	514	Via de la Valle	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Panda Express #1029	689	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High

Panera Bread Solana Beach #4283	667	San Rodolfo	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Paroli Italian Bistro	647	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Pizza Nova Solana Beach LLC	945	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Pizza Port- Grain to Green	135	N Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
R F McKenna Construction Company	507	S Cedros	92075	905.11	4225	493110	General Warehousing and Storage	X	X						X	X	Yes	Low
Red Tracton's Restaurant	550	Via de la Valle	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Roberto's Mexican Food Inc.	445	N Hwy 101	92075	904.61	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Roundtable Pizza	126	Solana Hills	92075	905.11	5912	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Rubios' Fresh Mexican Grill Inc. #13	437	S Hwy 101	92075	905.11	5812	722211	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Rudy's Taco Shop and Market	524	Stevens	92075	905.11	5812	722211	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Sam's Place	141	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Samurai Japanese Restaurant	979	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Shine Auto Detailing	435	N Hwy 101	92075	904.61	7532	811192	Auto Detailer	X	X	X		X			X	X	Yes	Medium
Solana Beach Coffee Company	437	S Hwy 101	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Solana Beach Fish House	124, #209	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Solana Donut House	124, #105	Lomas Santa Fe	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Solana Succulents	355	N Hwy 101	92075	904.61	5261	444220	Nursery/ Greenhouse				X		X	X	X	X	Yes	High
Solana Sushi	117	Plaza Street	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Starbucks	691	Lomas Santa Fe	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High

Starbucks	937	Lomas Santa Fe	92075	905.11	5812	722213	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Station Sushi	125	N Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Subway	124, # 101	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
T's Cafe	271	N Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Tidewater Tavern Inc.	221	N Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Togo's Eatery	691	Lomas Santa Fe	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Tony Jacal's Inc.	621	Valley	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Top of the Bagel	665	San Rodolfo	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Twisted Tart	240	S Cedros	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Vons Companies Inc. #2327, The	931	Lomas Santa Fe	92075	905.11	5411	445110	Grocery Store	X	X		X	X	X		X	X	Yes	Medium
Waters Fine Foods to Go	125	S Hwy 101	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Zinc Café	132	S Cedros	92075	905.11	5812	722110	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High

The commercial property inventory was utilized to identify potential sources of pollution (high TTWQ), prioritize the businesses and to develop an inspection frequency program, as noted in the City's JURMP.

5.3.2 Pollutant Source Identification

Eight percent (8%) of the City's 2,211 total drainage acres (roughly 177 acres) are zoned for commercial use. Some of the areas within the City zoned for commercial use drain to environmentally sensitive water bodies and 303(d) listed waters (impaired water bodies), as noted in the City's JURMP. Some of the 303(d) listed water bodies have been identified as having *constituents of concern (COC)* or pollutants that are of particular concern to those water bodies. Table 5-3 identifies the 303(d) water bodies and COCs that are impacted by drainage from the City of Solana Beach. There is *no change* to report in the City's identification of potential pollution sources. As reported in last year's Annual Report, based on water quality data analysis of the past few years, Diazinon has been removed from the San Elijo Lagoon COC list.

Table 5-3 303(d) Water Bodies and COCs

303(d) Water Body	Constituent(s) of Concern
San Elijo Lagoon and Ecological Reserve	Coliform, sediment, nutrients
San Dieguito Lagoon (and its tributary, Stevens Creek)	Coliform, TDS
Pacific Ocean	Coliform

Using the inventory list, businesses were classified by types of activities conducted on the property in order to identify potential sources of pollution in accordance with Permit section F.3.c. (2). The Permit specified 25 possible high-priority business categories for each Copermittee. Upon review of the City's business license inventory, the high priority business categories applicable to the City of Solana Beach include automobile servicing and repair; automobile/vehicle washing; retail or wholesale fueling; pest control services; eating and drinking establishments; mobile carpet, drape, or upholstery cleaning; cement mixing or cutting; landscaping; nurseries; and golf courses.

Potential pollutants for each of the ten (10) categories identified above include, but are not limited to the following.

- *Automobile servicing and repair facilities have the potential to generate pollutants such as heavy metals (Cu, Zn, Cr, Ni, Pb), oil, grease, engine and transmission fluids, antifreeze, brake fluids, suspended solids, phosphates, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust, sand and broken glass.*
- *Automobile/vehicle washing facilities have the potential to generate pollutants such as suspended solid(s), pH, oil, grease, phosphates, heavy metals, detergents, engine and transmission fluids, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust and sand.*
- *Retail or wholesale fueling facilities (gas stations) have the potential to generate pollutants such as detergents, oil, grease, engine fluids, suspended solids, phosphates, litter, organic debris, fluids and sediments.*
- *Pest control services have the potential to generate pollutants such as harmful chemicals, pesticides, fertilizers, herbicides, nitrogen salts, and phosphorus and in particular, the chemical "Diazinon."*
- *Eating and drinking establishments have the potential to generate pollutants that occur due to improper waste disposal of oil and grease, improper application of pesticides, litter along sidewalks and parking lots, and sediments from equipment cleaning.*
- *Mobile carpet, drape, or upholstery cleaning businesses have the potential to generate pollutants such as BOD, COD, suspended solids, organic matter, cleaning solutions, animal-related wastes, litter and organic debris along sidewalks and parking lots.*
- *Cement mixing or cutting facilities have the potential to generate pollutants such as suspended solids, oil and grease, heavy metals, hydrocarbons, solvents, and metals*
- *Landscaping and maintenance activities have the potential to generate pollutants such as sediments, oil, grease, organic matter, fertilizers, herbicides, pesticides, nitrogen salts, nitrogen and phosphorus.*
- *Nursery (greenhouse) facilities have the potential to generate pollutants such as sediments, fertilizers, herbicides, pesticides, suspended solids (roof coating), nitrogen salts, phosphorus, oil, grease and organic matter.*
- *Golf courses conduct activities that may produce pollutants associated with landscaping and maintenance activities including litter, BOD, COD, sediment, bacteria/viruses, oil/grease, heavy metals, manure, pesticides, fertilizers and detergents.*

5.3.3 2010 Dry Weather Monitoring Results

Results from the 2010 Dry Weather Monitoring Program (DWMP) were collected and analyzed by the City in September 2010 (but are already outdated at the time of this report). The 2010 program utilized the criteria established by the Permit (and the Copermittee Monitoring subcommittee). The City reviewed the results from the 2010 Dry Weather Monitoring Program looking for the pollutants listed above, and in particular, COCs described in Table 5-3. The results indicated one potential problem area. The bacterial levels at Seascape Sur outfall (which drains to the Pacific Ocean) continued to exceed the action levels established in the Permit and the IDDE investigation continued (see Chapter 12).

The City continues the non-point source investigation (see Chapter 12), and utilized the results to help design its 2011 Dry-Weather Monitoring Program. The results from the 2011 monitoring program will not be available until after this report is submitted to the RWQCB. *As a result of Addendum 2 adopted by the RWQCB in September, 2008, the 2011 Dry-Weather Monitoring results will be submitted in December, 2011.* It's worth noting that the City contracted out the 2011 DWMP services to an outside consultant that specializes in this field. The City is hoping that this will further assist the City in determining the source of the high bacteria at Seascape Sur. The results will be presented in December, 2011.

5.3.4 Threat To Water Quality Prioritization

The inventory of businesses for the City included identifying those that potentially posed a high threat to water quality (TTWQ) as set forth in the Permit and JURMP. As noted above, the City also categorized its businesses by the potential to generate the pollutants described.

The City's JURMP identified 82 stationary commercial sites, of which 73 are high priority Threat To Water Quality (TTWQ) facilities. Table 5-4 (below) summarizes the stationary businesses in the City's inventory by the general description.

It is important to note that many commercial businesses change very frequently, especially restaurant facilities. The City will make inventory adjustments as inspections reveal changes are necessary. This is an ongoing procedure that will continue into further reporting periods.

Table 5-4 High Priority TTWQ Commercial Facilities by Type of Business

Type of Business	Number
Animal Services	4
Automobile servicing and repair	5
Automobile/vehicle washing	3
Retail/Grocery Stores	3
Eating and drinking establishments	60
Golf courses	2
Iron Works	1
Nurseries	2
Retail or wholesale fueling	2
Total	**82**

5.3.5 Business Community Education Campaign

City Staff has implemented an aggressive education campaign for the business community. As stated in previous annual reports, education is conducted during the annual storm water inspections. The City, along with the North County Storm Water Program (the cities of Carlsbad, Encinitas, Escondido, Oceanside, Solana Beach, San Marcos, and Vista) previously developed two commercial BMP posters that are still being utilized. The first is aimed toward automobile repair shops and the second toward restaurants. These posters are distributed by the City's contractor (ECIS) during inspections. The business owners are required to place the posters in a noticeable location for all employees to see. On subsequent follow-up inspections, City staff or contracted inspectors check to see if they comply.

Additional educational/training tools developed to be distributed to the local businesses are the "Green Wrench Guide" and the "What's Cookin' Guide" developed by the Regional Outreach Workgroup. These guides are also distributed during site inspections as an extra training tool to help these businesses come into compliance. These guides have room designated in the back for employees to sign after they read the material to show educational compliance.

The City believes that distributing these educational tools directly to the businesses during inspections will have the greatest impact. Not only will inspectors have their undivided attention, but the City can also guarantee delivery and track which establishments have received the informational guides.

Therefore, when it comes to compliance issues, the City can quickly determine who has and has not been informed of the regulations. These education tools will be discussed further in the Educational Component of this Annual Report.

By the time this inspection program was fully implemented, City Staff and contracted inspectors found that a majority of business owners were “aware” or had some “basic knowledge” of storm water requirements. The City, along with the other Copermittees in the Carlsbad Watershed, developed a knowledge/awareness rating and included it on all inspection forms. This will help better assess the overall knowledge of the business community in relation to not only other businesses in the city, but in the watershed as well. This is discussed more in the Educational Component.

5.3.6 Pollution Prevention Methods

Because of the City’s proximity to the Pacific Ocean, the City has been proactive in its approach to reducing urban runoff, not only during this reporting period, but prior to the implementation of the Permit as well. For example, prior to the implementation of the original JURMP, the City had several pollution prevention methods (PPMs) in place for commercial properties, which continues through to the new JURMP during this reporting period and included, but were not limited to:

- Prohibition of all non-storm water discharges to the City’s storm water conveyance system (SBMC 13.10.060).
- Measures to reduce pollutants to the maximum extent practicable (MEP) were required of business owners (SBMC §13.10.090).
- Persons owning or operating a parking lot (or impervious surface) were *required* to “clean those structure thoroughly as is necessary to prevent the discharge of pollutants to the City of Solana Beach storm water conveyance system to the maximum extent practicable, but not less than once prior to each wet season” (SBMC 13.10.090).
- The City maintained by municipal code the authority to inspect business properties for compliance with the provisions of Solana Beach Municipal Code, Chapter 13 (SBMC 13.10.110).
- Required maintenance of commercial property (trash cans covered, litter removal, etc.) and appropriate waste disposal.
- Routine articles in the citywide community newsletter, *Shorelines* to educate the community about pollution prevention (see Chapter 9).

5.3.7 New Pollution Prevention Methods

In the City's JURMP, pollution prevention methods were expanded for commercial facilities, depending on the type of activities conducted at each business. Numerous activity-specific BMPs were also developed for each business type identified. Complete tables describing the BMPs in detail are included in the City's JURMP, submitted to the RWQCB in March, 2008. *There are no changes to report with respect to BMPs designated for existing commercial properties.*

Common Commercial Property BMPs

Many of the BMPs provided to commercial property owners/managers were activity-specific to the type of business conducted on-site. However, there are several BMPs common to all commercial properties, which are described below.

Employee Training

The training of employees on proper business practices to prevent or reduce urban runoff is listed as a BMP for all businesses. Knowledge of pollution prevention methods requires instruction from one person to another, particularly as the requirements are new to many employees and given that employees handle the majority of tasks at a commercial business, staff has explained to proprietors the importance of adequate employee training.

Good Housekeeping

Pollution prevention BMPs are required of most commercial facilities. Good housekeeping includes the proper disposal of waste materials and proper coverage over waste dispensers, dry sweep outdoor areas, keeping the facility in generally good repair and maintained in good operating condition to prevent deterioration of materials.

Spill Response Plan (SRP)

An SRP is required of most commercial facilities as noted in the JURMP. An effective SRP should prevent on-site hazardous materials from leaving the private commercial property and entering the City's storm drain conveyance system. Commercial property proprietors are being educated about an SRP and are now required during inspections by City staff.

Minimize Use of Water for Washing / Cleaning

The BMPs associated with a reduction in the use of water for washing and cleaning is suggested for most commercial facilities operating within the City. It has been common practice for many years to use power-washing methods to clean the outside of buildings, windows, and out-door eating areas at restaurants. In addition, it has been common practice by commercial property owners (and their contractors) to hose-down the sidewalks in front of their businesses to collect trash, debris, and landscaping remnants. These types of cleaning procedures use a lot of water and it is likely that the water will run off of the property and into the City streets or storm drain system, bringing with the water a significant amount of pollutants. For that reason, commercial property owners are requested to find new methods of cleaning, reduce the amount of water used, and prevent the runoff from leaving their property.

Various other activity-specific BMPs are required or suggested to commercial property owners and are listed in the City's JURMP.

Municipal Code and General Plan Amendments

There were no changes to the Municipal Code or General Plan that affect the Industrial and Commercial Section of the Permit.

Brochures

The City worked collaboratively with other North County cities (see Chapter 9, Education Component) to jointly develop brochures in order to provide a consistent message to the community, and in particular, commercial property owners/managers. The brochures were utilized by City Staff to inform and educate the community, including commercial businesses. Public works crews, Code Enforcement, Planning and Engineering Staff pass out brochures when an educational opportunity presented itself. Staff also visited many businesses and distributed the brochure, "Only Rain in the Drain" and spoke to business owners about the need for pollution prevention.

5.3.8 Ensuring Implementation through Commercial Property Inspections

During this reporting period, the City once again decided to contract out the inspection services to ensure that they are being conducted thoroughly and also to further enforce the City's grease management regulations. City Staff resources are stretched extremely thin with all the new storm water and Fats,

Oils and Grease (FOG) requirements, so in order to ensure that the proper time and effort was being utilized on these important inspections, the City contracted out the services. In addition, the City wanted to continue enforcing its aggressive grease management regulations to ensure that all required eating establishments had the proper grease management devices installed and were being properly maintained. It is well documented that the number one cause of sewer spills is grease build-up, so the City is taking a pro-active approach to ensure that grease is being properly managed at all eating establishments.

The City hired Environmental Compliance Inspection Services (ECIS) again this reporting period to conduct the inspections in accordance with the new JURMP. The inspection frequency of high priority businesses for the third year of Permit implementation remained at 100% (as detailed in the new Permit). The City currently has an inventory of 83 total facilities.

The City, through its contractor, visited all 82 stationary facilities, which is above and beyond the 71 inspections required by the Permit. The commercial inspections addressed all required inspection steps to determine full compliance. The results are described below.

As required by Permit Section J.3.a (3) (d) vi, the City confirms that the commercial inspections addressed all required inspection steps to determine full compliance.

As required by Permit Section J.3.a (3) (d) ii, the City confirms that the commercial BMPs were implemented during all inspections.

5.3.9 Enforcement

As mentioned above, the City hired ECIS to conduct the facility inspections. However, the City is still responsible for the follow-up enforcement actions, if necessary. The inspection protocol consisted of ECIS conducting an initial inspection and then one follow-up if the site was out of compliance for a minor violation (trash dumpster lid open, training logs incomplete, etc.). If there is a major violation, ECIS would contact the City immediately for proper follow-up actions. If the facility was still out of compliance after the second visit, then ECIS would notify the City and City Staff would follow-up from there, taking increased enforcement actions including fines, if necessary. The results are as follows:

First Inspections:

Total Inspections: 82

Facilities in compliance after first inspection: 53

Facilities not in compliance after first inspection: 29

Follow-Up Inspections:

Total Inspections: 29

Facilities in compliance after second inspection: 16

Facilities not in compliance after second inspection: 13

The remaining 13 facilities that were still out of compliance after the follow-up inspection were handed over to the City for additional follow-up. The majority of violations were all relatively minor infractions consisting of dirty trash enclosures, grease bin areas and lack of grease trap/interceptor maintenance logs. The City followed up with meetings with the property owners and managers, and all facilities have since come into compliance. *No citations were issued as a result of the inspections.*

The complete database of commercial and industrial inspections is available upon request. The City maintains the database and will build on it as the new Permit cycle continues.

5.3.10 Mobile Businesses

The Permit requires regulation of mobile businesses within each jurisdiction, which is a new requirement. The Permit states that each Copermittee shall develop and implement a program to reduce the discharge of pollutants from mobile businesses to the Maximum Extent Practicable (MEP). The mobile business program is being addressed on the regional level, and the City is participating in the development of the program. However, the City has always taken a proactive approach in dealing with mobile businesses, especially mobile car detailers and carpet cleaners. The City has issued several citations in the last few years to mobile businesses that do not have the necessary BMPs in place to prevent pollutants from entering the City's MS4. These violations will be described in the IDDE Chapter of this Report (Chapter 7), which will be submitted in December, 2011.

It should be noted that there are *no mobile businesses* currently in the City's inventory. The Planning Department has been notified of these new requirements targeting mobile businesses, so if one applies for a business license, Planning Staff will notify the Environmental Staff which will take a proactive approach to educating the new business on the storm water regulations.

5.3.11 New Activities and Improvements for FY 11/12

The City is confident that the new inspection process for commercial facilities is a significant improvement for this program. The City anticipates continuing to budget for consultant inspection services to focus on storm water and grease management device inspections. The approved FY 2011/2012 budget contains $12,000 to continue outsourcing the inspections. In addition, the City will continue to update the commercial facility inventory as new business licenses and inspections reveal changes.

A significant new requirement of the Permit requires the City to develop a mobile business program. As mentioned above, the new Permit requires all Copermittees to develop and implement a program to reduce discharges of pollutants from mobile businesses to the MEP. Since this affects all Copermittees, the region decided to address this on a regional scale. This has become a primary focus and the subject of its own subcommittee, which the City is involved in. The City will continue to work with the region to develop this program and implement it during the next reporting period.

The City will also look to improve educational materials for commercial facilities, including mobile businesses. The City is committed to working with the other North County Cities (as well as the Regional Outreach Workgroup) to collectively put together educational materials with a consistent message. Additionally, the City will work with the respective Watershed Groups to alter inspection forms or processes if a consensus is met within the group. An example of the benefit of this collaboration was the addition by the member cities in the Carlsbad Watershed Group of two assessment questions at the end of the inspection to gauge the knowledge and/or behaviors of the facility owner/manager. This was included to gain a better understanding of the level of knowledge of the responsible employees and see if their behavior changes over time. Hopefully, this will give the Copermittees a better assessment tool to analyze program strengths and weaknesses.

Another significant improvement to the program that continued during this reporting period was the addition of a higher level of grease management device inspections. As mentioned in last year's Annual Report, the City decided to contract out inspection services for commercial facilities with the intent to include grease management device inspections as well. This was the second year of the increased grease management inspections, which included whether or not the grease device was the correct size and included the correct connections. The initial inspection was simply to gauge if the necessary commercial facilities had any type of device installed, but during this reporting period, the City once again inspected to ensure the correct type and size was installed. This is extremely important as simply having a device is not sufficient if it was too small or did not include all the proper connections. The City now has three years of inspection data and has a great inventory of the current grease management devices throughout the community. This is just another example of the City's proactive approach in preventing sewer spills.

5.3.12 Summary

The City has successfully updated its JURMP and commercial facility inventory in compliance with the Permit requirements. As a result, the City has identified commercial facilities that pose a high threat to water quality and implemented the new inspection frequencies per its new JURMP. The City has also developed an effective enforcement process and notified all high-priority businesses of required BMPs. For the most part, the businesses in this community have willingly adapted their practices to meet the storm water regulations of the Permit.

The City has successfully updated its JURMP to reflect the new requirements of Permit Order No. 2007-0001. As such, the City has successfully developed a program to comply with all aspects of the new JURMP, and is committed to continually improve on the program in the coming years.

The City's proactive approach of patrolling the City daily and stopping at sites where potential violations may occur before there are discharges has greatly reduced the amount of NOVs and citations issued. The City has discovered that it is much more efficient and worthwhile to put forth the effort to stop a potential violation before it occurs rather than wait and deal with the consequences. So far, this proactive approach has been very successful, as most businesses appreciate City Staff working with them, instead of the normal practice of

enforcement.

The City has successfully inspected 100% of its commercial businesses and anticipates continuing this procedure for the life of the Permit. The inventories will continue to be updated as new businesses open up and old ones close down, as described in the report above. This is a continuous process in which all departments at the City play a key role, and communication is vital. The City has successfully implemented measures to comply with all of the requirements in the Industrial/Commercial Component of the Permit.

CHAPTER 6
Residential Component

CHAPTER 6: RESIDENTIAL COMPONENT

6.1 Introduction

In accordance with Permit Section D.3.c, this section of the report describes the City's efforts to prevent or reduce residential discharges of pollutants into the City's MS4 to the MEP and to prevent residential discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include any proposed modifications to the City's JURMP (Section 8.0, Residential Component) including prioritization of residential areas and pollutant source identification. Results from the City's efforts to implement BMPs will also be included. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The City conducted numerous community education outreach activities, distributed flyers and door-hangers and published articles in the City's newsletter. The City continued implementation of the "Green Flash" environmental portal on its website and operated a 24-hour hotline for the community to be able to report any suspected violations or contact City Staff. In addition, the City conducted its Household Hazardous Waste (HHW) collection and recycling program, which includes door-to-door services. Finally, the City hosted many community events and distributed storm water information to residents at the City booth.

6.2 Pollution Prevention Methods

Polluted urban runoff in residential areas occur from activities associated with the following actions: automobile use, maintenance, cleaning, and repair; home and garden care (pesticides, herbicides and fertilizers); disposal of trash, pet waste, and household hazardous waste; outdoor washing activities; landscaping and home maintenance. It is imperative to prevent the pollutants that can be generated by these activities (bacteria, detergents, heavy metals, grease, oil, herbicides and pesticides) from entering the City's MS4 to the maximum extent practical.

6.3 BMP Implementation

The City continued several pollution prevention methods that reduce, prevent or mitigate the harmful pollutants in urban residential runoff. The City continued its HHW collection program, operated a 24-hour hotline for reporting violations, sponsored community events and developed flyers, brochures, newsletter and website articles. In addition, the Copermittees continued to develop regional programs to address the residential requirements of the new Permit.

6.3.1 Hazardous Waste and Used Oil Collection and Recycling

Under the 1989 California Integrated Waste Management Act (AB939), jurisdictions are required to provide Household Hazardous Waste (HHW) collection programs to residents in order to limit the volume of HHW (used oil, paint, household cleaners, pesticides, car batteries, automobile waste, etc) that might otherwise end up in a landfill, or worse, illegally dumped. For San Diego County, the HHW program had been funded by a tipping fee until 1997, when the County of San Diego sold the landfill system to private companies.

During the FY 10/11, the City continued its partnership and the reciprocal use agreements with the cities of Vista, Poway and Escondido to provide permanent facility HHW drop-off service to City residents at a cost of $55 per vehicle. To encourage participation, the entire cost is picked up by the City.

During this reporting period, the permanent facilities were utilized by 77 participants. Additionally, the City operates a door-to-door program where, for a small co-payment of $10 per visit, a company will come directly to the resident's house to pick up the Household Hazardous Waste so that residents do not have to drive to Poway, Vista or Escondido. The door-to-door home pickup program was utilized by 197 residents. The total participation in the HHW program was 274 residents and the total weight of hazardous materials was 20,838 pounds. Included in the door-to-door program is a service offered to senior citizens and homebound residents that provided free of charge, with the City paying for the service. These programs are offered to encourage the proper disposal of hazardous wastes to prevent it from entering and polluting our sensitive waterways. The program also includes the disposal of e-wastes, including TVs, computers, VCRs, fluorescent bulbs, batteries, etc.

For a complete breakdown of the types and weight of HHW disposed by the

residents of Solana Beach, please see the following table:

Table 6-1 Household Hazardous Waste by Type

Type	Household Hazardous Waste
Flammable & Poison	5,421
Acid	221
Base	397
Oxidizer	36
PCB-Containing	0
Reclaimable	5,795
Asbestos	8
Universal Waste	665
Electronic Waste	7,725
Aerosol Containers	11
Other HHW	927
Total (lbs)	20,838

The City keeps records of how many people utilized the program throughout the FY 10/11 and a questionnaire is provided to the participants at the time of disposal to acquire useful information such as how they heard of the program and what types of wastes were disposed. Many respondents listed local programs such as the City's newsletter "*Shorelines*", the City's website and educational brochures as the source of their knowledge of this program. Other sources include the two local trash haulers (EDCO and Coast Waste), Solana Center for Environmental Innovation, the internet, and basic word of mouth. This bodes well for the educational work of City Staff and is a good indication that the City's educational program is effective at getting the word out to the community about environmental concerns, water quality, and opportunities to participate as the program continues to grow. Additionally, it shows the beneficial cooperation efforts between the City and its contractors.

The City is a member of the Regional Solid Waste Association (RSWA). As a member, the City participates in a multi-city agreement with EDCO Waste and Recycling Services, Inc. (EDCO). As reported earlier, the agreement resulted in a very successful program for elderly and homebound City residents to dispose of HHW at their door, *at no charge to the residents*. This provides a solution for the two largest obstacles for the elderly and homebound residents, convenience and

cost, by providing home pick-up service free of charge. This has been an extremely effective and popular program throughout the entire community.

This agreement is necessary because the City does not have the capacity to operate its own HHW facility within its jurisdictional boundaries. Without this RSWA agreement, the residents would have very limited options in dealing with the proper disposal of HHW. This would potentially lead to the improper disposal of HHW, which would threaten the local waterways and sensitive environment. However, due to the foresight of the City government, the formation and participation in groups such as RSWA lead to increased opportunities for the community to protect the local environment. It also allows the City to subsidize the costs of disposal to assist the residents in properly disposing their HHW. For a small city like Solana Beach, becoming members of larger organizations is imperative for keeping costs down and increasing negotiation power. These programs would not be self sufficient if Solana Beach was not part of a larger organization, as the City and community receive the benefits of “strength in numbers.” This has helped keep the costs for such important programs low and participation high.

The City also promotes local HHW collection events by advertising the events on the City’s website and sending out Eblast email alerts to registered community members. These events typically occur at the Solana Center located in Encinitas, but the City values proper disposal of HHW, so these events located outside of the City are still publicized by the City. This is just another convenient way for residents to dispose of their HHW.

Recycling

As noted in the Introduction of this report, the City is a proactive agency working to protect and enhance the local environment. The City, with assistance from the non-profit environmental group Solana Center (formerly known as Solana Recyclers), was the first city in the county to initiate a curbside recycling program.

Assembly Bill 939 (AB 939) requires cities to divert at least 50% of their total solid waste away from landfills, and the best way to accomplish this is through recycling. As reported earlier in this Report, the City’s target disposal rate of pounds per person per day was 8.9 and the actual recorded was 6.0. This is significantly below the AB 939 requirements and shows that the City’s programs

are working and the awareness of the residents is very high, as many of the cities in the region failed to reach their target. The process of writing the 2010 AB939 report is underway, but not completed before this report was submitted. These numbers will be included in next year's report.

6.3.2 Annual Bulky Item Clean-up Day and Coastal Clean-Up Day

Each October, the City hosts an Annual Bulky Item Clean-up day. The City's waste hauler provides roll-off containers for the collection of large appliances, yard waste, excess trash and scrap metal. Residents only need to bring their large bulky items and excess trash to La Colonia Community Center to drop off anything that they have, to save them a trip to the landfill, and it's *free of charge*. Additionally, Solana Beach residents can call the City's trash hauler to set up an appointment for *free curbside pick-up* and disposal of up to three bulky items up to three weeks prior to the event. It is well documented that the easier and more efficient it is for people to recycle or dispose of large items the more often they will do it. By offering this convenient, local and free of charge event, residents are less likely to dispose of their large items illegally, keeping these items out of our local waterways. The Bulky Item Clean-up Day held in October 2010 resulted in 10.25 tons of trash and 1.37 tons of recycled material collected and properly disposed off, preventing it from ending up in the City's MS4.

Each September, the City of Solana Beach participates in the annual Coastal Clean-Up Day sponsored by the California Coastal Commission and I Love A Clean San Diego. The City hosted two sites again this year, one at Fletcher Cove and one in the San Elijo Lagoon, where residents came and spent the morning beautifying the local community. This is an extremely popular and successful event that usually draws over 200 community volunteers, and removes hundreds of pounds of litter and debris from the local lagoons and beaches.

6.3.3 24-hour Hotline

To assist residents in obtaining information, reporting suspected storm water violations or to report illegal dumping, the City operates a 24-hour "storm water hotline". The hotline (858-720-4424) is available 24 hours a day, seven days a week, and 365 days a year. The hotline is linked directly to the voice mail of the City's Environmental Programs Manager to increase efficiency and ensure

prompt responses. This way, calls can be immediately fielded and handled in the appropriate manner.

6.3.4 Pet Waste Bag Dispensers

The City installed and maintains Pet Waste Bag Dispensers to reduce the potential of pollution stemming from residents (and visitors) not collecting waste from their pets while walking. This was a measure added to hopefully help the high levels of fecal coliform detected at the Seascape Outfall revealed during wet and dry weather monitoring. The City has posted dispensers and signs to encourage their use. The program appears to be working very well because, during this reporting period, approximately 98,000 pet waste bags were utilized by the community.

6.3.5 Education and Outreach

The City's entire education and outreach program is provided in Chapter 8 of this report. Activities associated with the educating of residents are addressed in this section, which may also be repeated in Chapter 8.

Shorelines articles

The *Shorelines* is the City's Newsletter and Recreation Guide for community information. The newsletter is now distributed four times a year (Spring, Summer, Fall and Winter) to each resident and business within the City (up from twice annually in the past). It is one of the best methods to get information to the public about a variety of issues, the environment being a key component. The *Shorelines* newsletter always contains environmental articles and the community has come to rely on this publication as a means of keeping up with City government. This has proven to be an ideal community educational effort.

During this reporting period, the City transitioned from printing the *Shorelines* on paper to going electronic. This has resulted in a significant reduction of paper waste, and saves energy throughout the process. The City (and community) has also seen a benefit in the quality of the output, as articles can be uploaded at any time and they can become much more interactive. Hyperlinks to relevant online sources are now embedded into the articles, which have proven to be very beneficial. The transition to an electronic format has been a tremendous success and the quality and content of the newsletter is rapidly improving.

In the summer 2011 issue, the City published the following articles relating to environmental education and storm water activities:

- Docent-Naturalists Openings
- Storm Water Hotline
- How to Dispose of Household Hazardous Waste Safely and Easily
- Household Hazardous Waste and Electronic Waste Program
- The City of Solana Beach's Commitment to Sustainability
- Remodeling/Construction
- Household Battery Recycling
- Plastic Bag Recycling Program

In the fall 2010 issue, the City published the following environmental education and storm water activities:

- Annual Coastal Clean-Up Day
- ReRip's 4th Annual Future of Surfing Fundraiser Event

In the winter 2010/2011 issue, the City published the following articles relating to environmental education and storm water activities:

- Storm Water (NPDES) Rainy Season Construction Reminders
- Household Hazardous Waste and Electronic Waste Program
- Subsidized Compost Bin Program
- Holiday Tree Recycling/Collection Program

The City has recently gone "green" and now only produces the *Shorelines* newsletter electronically. It is available on the City's website, and has become

much more interactive and relevant (provides up-to-the-minute information that can be rapidly changed). For a copy of the articles listed above, please contact the City and Staff can provide a paper copy to review.

Brochures and Door hangers

The City collaborated with neighboring Copermittees (the cities of Del Mar, Encinitas, Oceanside, Vista, San Marcos, Escondido and Carlsbad) to develop several educational brochures. One particular brochure is referred to as the "door-hanger." The door-hanger is an excellent tool to inform groups or individual residents about pollutants that were found in their area, but may or may not have been contributed by them specifically. The door-hanger has a place for Staff to leave their business card, indicate the types of pollution found (from landscaping to pet waste) and lists various specific BMPs for eliminating street and gutter debris in their area. Staff hopes that by placing the brochures around the entire neighborhood, residents will report to the City where the discharge came from or alter their behavior to prevent the discharge from occurring again.

In addition, the City collaborated with the other North County cities and created a brochure "*Only Rain in the Drain*," which is distributed at local community events and to visitors at City Hall, the Fire Department and Community Center. The brochure reviews Best Management Practices for residents and the need to prevent or mitigate pollution to the best extent practical. The brochure also provides a consistent message because all cities in the North County use it.

Staff distributed the door hangers and brochures to residents and business owners throughout the community. These educational materials have been used by Public Works Staff, Code Enforcement Officers, and others and have been found to be an informative and effective tool. This includes those given out to neighborhoods during IC/ID and source tracking investigations, those given out individually during routine rounds around the City and any community fairs (Fiesta Del Sol, Green Fair, Movie Night, etc) or regional workshops/events (about 2 a week on average for all activities, totaling approximately 104 distributed).

School Presentations

The Solana Center conducts school presentations for the City to local schools

within the City's jurisdiction. As part of both trash haulers' contracts (EDCO and Waste Management) with the City, they are required to provide funds for public outreach and education. Both haulers have chosen to contract out this work to Solana Center. Therefore, Solana Center provides school presentations regarding storm water issues to the local schools. These presentations include discussions about the importance of preventing pollution from entering the streets, gutters and storm drains. The Enviroscape model is also used during these presentations.

Additionally, the City's Park and Recreation staff conducts a summer "ecology camp" for local children to educate them on various environmental issues, including storm water and recycling. The children go on field trips and have classroom discussions. It is a very interactive classroom setting where the children are encouraged to participate and engage in the various activities. The ecology camp is an annual program that will be utilized to educate the children in all environmental issues.

The City's Marine Safety Department also conducts school presentations that focus on ocean awareness/safety as well as being environmentally aware and responsible. The presentations focus on water quality and the benefits of protecting this valuable asset.

These are reported on in further detail in Chapter 8, Education Component.

Tile Stenciling

All storm drain catch basins in the City currently have tile markers installed. The construction standard described in the City's JURMP, with respect to the requirement that all curb inlets have a tile marker permanently affixed on the face side, continues to be enforced. All new development/construction projects are required to install tile markers on all new curb inlets. City Staff also documents broken or missing tiles when detected in the field and report back to the Public Works Operations Manager to install.

Website

As mentioned previously in this Report, the City recently unveiled a significant upgrade to the environmental section of its website. Previously, the environmental programs were lumped into the Engineering Department page,

which was somewhat difficult to locate. Now, the City has a separate page that has its own icon on the homepage. This shows the type of commitment that the City, and the community, places on the environment. The City has received many compliments regarding the website, and was even recognized by the League of Woman Voter's, North Coast San Diego County for the "Green Flash" section.

6.4 Threat to Water Quality Prioritization

During this reporting period, the City re-evaluated the drainage areas to identify those areas that potentially posed a high threat to water quality as set forth in the Permit section D.3.c(1). The areas are defined in Section 8.2.1 of the City's new JURMP.

There are *no changes* to report in the City's prioritization of high-priority residential areas from those submitted to the RWQCB in the City's new JURMP (submitted March, 2008).

6.5 Implementation of BMPs

As noted in Section 6.1 (Pollution Prevention), the City has implemented various methods to prevent pollution to the Maximum Extent Practical (MEP) standard from entering the City's MS4. The City indicated in its revised JURMP the designation of several BMPs for the High Priority Residential Areas and Activities.

One of the most significant differences between the City and other local agencies, is that runoff from residential automobile washing *is strictly enforced* by Solana Beach Code Enforcement Officials. City Staff is often dispatched to reports of people washing their cars, and City procedures allow for several warnings before a citation is given, except in the case of mobile car-washing businesses. In that instance, mobile car detailers are informed to cease their activity and immediately clean up the resulting discharge. Mobile detailers are cited for failure to comply if they refuse to discontinue or remedy the discharge. City Staff records all violators and if they encounter them violating the Permit again within the City, they are immediately given an administration citation and fine.

The City also actively enforces minimum BMPs for the following activities:

- Motor Vehicle or Boat Repair and Maintenance
- Motor Vehicle Parking
- Home and Garden Care Activities and Product Use
- Home Care and Maintenance
- Manure and Pet Waste Management
- Private Sewer Laterals and On-Site Wastewater Systems

If City staff witnesses a violation of any of the provisions above, the Administrative Fine Process will be initiated until full compliance is achieved.

6.6 Enforcement Actions

Violations of the storm water Permit and any necessary follow-up actions taken by the City are described in Chapter 7.0, Illicit Discharge Detection and Elimination (IC/ID) Component, which will be submitted in December, 2011. Since violations in the residential sector often times are discovered during an IDDE investigation, it is an appropriate place to discuss the actions.

6.7 New Activities and Improvement for FY 10/11

The City is actively developing and implementing the activities described in the Residential Component of the City's new JURMP. The focus will continue to be education through the new Green Flash website, brochures, flyers, public announcements, community fairs and one-on-one contact.

The new Permit adopted in January 2007 contains increased requirements for the residential sector. This is one key area that the Permit focuses on, so new programs will have to be developed by the City to address these requirements. There is also a focus on watershed and regional programs to address the residential sector, so the City anticipates working with the other Copermittees to develop these programs cooperatively to convey a consistent message. The City will be working to continue developing and implementing these programs for FY 11/12. These programs will be discussed in more detail in the Unified Urban

Runoff Mitigation Program

6.8 Summary

The City has been successful at implementing the Residential Component of the JURMP including among other things:

- Providing public pet waste bag dispensers (approximately 98,000 bags were utilized by the community during this year).
- Collaborating with neighboring jurisdictions (CWURMP and SDWURMP) and the regional Copermittees to develop several informational items, which have been distributed at local events, to City Hall visitors, and throughout the community.
- Collaborating with all Copermittees to develop regional educational programs as required by Permit Order No. 2007-0001.
- Using and upgrading the City's website to post informative information about the City's storm water programs.
- Operating a 24-hour, 7 day a week storm water hotline that residents can report any storm water violations.
- Operating a community-wide used oil and hazardous waste collection program that offers door-to-door service for all residents. This program has been a huge success as 274 residents participated and properly disposed of 20,838 pounds of hazardous waste that might have otherwise ended up polluting the local environment.
- Conducting the Annual Bulky Item Pick-Up Day which resulted in 10.25 tons of trash and 1.37 tons of recycled material collected and prevented from entering the City's MS4.
- Providing opportunities for local school presentations regarding storm water issues.

CHAPTER 7

Illicit Discharge Detection and Elimination Component

CHAPTER 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

This is a placeholder for Chapter 7, which as a result of Addendum No. 2 adopted by the Regional Water Quality Control Board on September 10, 2008, extended the reporting component of this Chapter to December 15, 2011.

CHAPTER 8
Education Component

CHAPTER 8: EDUCATION COMPONENT

8.1 Introduction

In accordance with Permit Section D.5, this section of the report describes the City's educational program that is intended to use all media as appropriate to measurably increase the knowledge of the target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience and to measurably change the behavior of target communities and thereby reduce pollutant releases to the MS4 and the environment.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. In addition, this section of the Report will include the City's planned educational efforts for the following fiscal year.

During this reporting period, the City continued implementation of the comprehensive Education Component of the JURMP. The activities were expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City. The City developed the program based on the requirements of the Permit and continued implementation during this reporting period.

The City continued implementing programs for the new requirements of the Permit. These programs are being developed on a watershed and regional level, and the City is an active participant in these workgroups. A major focus of the new Permit is on developing a regional education program, with the idea of forming a "brand" for the region where people can identify with the program as a whole. By developing and implementing a regional program, the messages will be consistent and easier to identify with. This will be further explained in the Regional URMP submitted by the County of San Diego.

During this reporting period, the cities of Carlsbad, Del Mar, Oceanside, Escondido, Vista, San Marcos, Encinitas and Solana Beach continued to develop strategies and programs to provide consistent messages to the communities of San Diego North County. While this watershed group will continue developing

educational materials and activities, it will also work with the regional group as mentioned above. This group will ensure that the Copermittees represented will participate with the “regional” message and program as required by the Permit.

As a collaborative, the group is able to obtain lower costs for educational tools (such as brochures, flyers, handouts, small tokens [pens, key chains, etc.), which provides a financial benefit to the agencies and thus, the community.

The group has been able to assist each other in developing a consistent message incorporating the interests and concerns of each agency. When brochures and handouts have been created, flexibility among the agencies was required.

The collective decision-making process has also generated cooperative working relationships among the agencies, which was extremely beneficial when the development of the Watershed Urban Runoff Management Program(s) began and in working together to complete various storm-water-related tasks. The community also benefits from the consistent “one message” approach rather than six or seven different rules and regulations.

8.2 Pollution Prevention through Education – Jurisdictional Activities

The City’s storm water program is comprehensive. Not only are there many components to administer jurisdictionally, there are many different programs going on simultaneously throughout the County. The City participates in jurisdictional, watershed and regional activities. Each of these has separate and distinct educational components; however the challenge is to ensure that the same general message is being spread throughout the County, with individual messages being developed by the Watershed groups and Jurisdictions based on the Constituents of Concern (COCs) for each watershed. The watershed activities have been recently defined and are in the early stages of implementation; since this is a jurisdictional report, there will not be much discussion about those in this Annual Report (For more detailed information on WURMP related activities, please see the WURMP Annual Reports for Carlsbad and San Dieguito). The regional activities have been primarily described in the Copermittee *Unified Urban Runoff Management Program Annual Report for Fiscal Year 2010-11,* which has been submitted by the County and incorporated herein by reference. However, some of the activities will be summarized in this

section of the report (see Regional Activities).

8.2.1 Staff Training

One of the most important aspects of the City's educational program is to educate its Staff members. This turns out to be a relatively easy task for this City in that there are only about 70 full time Staff members. All Staff members are required to attend an all-hands citywide Staff meeting each month. Staff determined that this would be a good opportunity for training, and periodically conducts trainings at these meetings.

During this reporting period, the City did not have any formal stormwater trainings. Staff is however, continuously reminded of regulations and how their Department is involved in storm water issues. A few trainings are scheduled for the upcoming year and will be reported on in next year's report including:

1. Sewer spill prevention and spill mitigation
2. Storm water issues relating to public works

The City will continue to look for other opportunities to educate their staff on storm water related issues throughout next year's reporting period.

The City believes that all current Staff is adequately aware of the storm water issues, and all new Staff will be trained as appropriate upon arrival. However, due to the constantly evolving storm water field, the City will continue the periodic educational trainings at future City all-hands Staff meetings and department specific trainings as appropriate.

8.2.2 Annual Beach Cleanup Days

The City of Solana Beach, in cooperation with I Love a Clean San Diego County, Inc. coordinates an annual "Coastal Cleanup Day". These events are volunteer beach and lagoon clean ups. The City had another successful event hosting two sites within the City, one at Fletcher Cove Park and the other in the San Elijo Lagoon.

8.2.3 Storm Drain Tile Marker Installation

The City inventoried all of its storm drains (inlets and catch basins) and has the

locations in GIS format. The inventory list includes addresses, cross streets and a GIS bit-map. Stenciled tiles are affixed to each storm drain inlet or catch basin location, which reads, *"No Dumping! This drains to the ocean."* The City now requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the stenciled tile. An extra supply of tile markers is kept at the City's Public Works Yard for all City projects as well as for private contractors to install on their projects to provide a consistent message throughout the City.

8.2.4 Local Community Events

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting to the participants no dumping or littering and to keep our beaches clean. The City also coordinates with Solana Center with their booth promoting proper disposal of HHW and recycling (oil included) in the City. The City passes out "*Only Rain in the Drain*" brochures, and displays the watershed poster, "We All Live in a Watershed…" Staff discusses with residents the importance of protecting the water resources and educates them on the new storm water regulations. This reporting year's Fiesta Del Sol occurred on June 4 and 5, 2011. There were approximately 60,000 visitors during this year's event, and City Staff distributed storm water brochures and informational flyers to those who visited the City's booth. In addition, the Fiesta Del Sol included a "Green Alley" which included vendors promoting environmental sustainability. This was one of the busiest areas at the Fair, and the organizers plan on making this a permanent fixture in future events. This further demonstrates the City's commitment to sustainability and the community's demand and desire to be more environmentally sustainable.

The City's Park and Recreation Commission also put on the sixth annual Beach Blanket Movie Night on August 28, 2010 (Appendix M). This was the sixth year this community event was held and was once again a huge success. The City worked closely with the event organizers and provided recycling containers, environmental educational material pertaining to storm water issues, and used oil recycling information. The City also shared a booth with Solana Center to provide environmental education to the attendees, utilizing the Enviroscape model. It is important to note that this was the only booth allowed by the Parks and Recreation Commission because they want to promote a relaxed, friendly environment. However, because the environment is such a popular topic in Solana Beach, they allowed City Staff to have a booth to promote the

environmental programs. The event was very well attended and a huge success, and will continue to occur annually. This is a great way to promote environmental awareness at a free event to the community.

The City also continued to distribute the immensely popular and effective doggie-bag dispensers that attach onto the pet leash. These dispensers had the City logo and the message, “The City of Solana Beach Reminds You To Please Pick Up After Your Pets.” The City wanted to again emphasize the importance of eliminating pet waste from the MS4, as it can be a major contributor of harmful bacteria. These dispensers were very well received and the City plans on distributing them at every community event.

8.2.5 School Programs

The Solana Center is a local organization that writes articles for the City Newsletter (*Shorelines*) and presents educational programs in the City schools regarding storm drain pollution using the watershed model Enviroscape and fun handouts and items for the kids. Solana Center is paid through the City’s solid waste franchise agreements, as well as a HHW grant, to provide educational opportunities to the community. City Staff is in regular contact with the Solana Center and is confident that their program(s) are educational and informative for the children. The presentations are provided free to the local schools, and the information provided is invaluable.

The following table shows what school/community education has taken place during this reporting period:

Table 8-1 School/Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
July 19-23, 2011	“Under the Sea”	25	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach
August 2-6, 2011	“Rainforest Explorers”	20	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach
August 9-13, 2011	“Water Adventures”	25	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach

8.2.6 Marine Safety Department Educational Presentations

The City of Solana Beach Marine Safety Department also conducts presentations at local schools. The lifeguards maintain an outreach program to the local schools to educate the students on ocean safety and awareness as well as environmental education. This is a natural fit, seeing how the lifeguards provide a safe environment for the community to enjoy the valuable coastal resource, and they want to ensure that the community becomes environmental stewards to help protect this resource. The presentations focused on water quality, trash and litter control and the ecosystem as a whole. These presentations have been very well received by the schools and the lifeguards plan to continue them into the future.

8.2.7 Summer Day Camp Presentations

This year, the kids attending Summer Day Camp were treated to a presentation by The California Center for Sustainable Energy (CCSE). Volunteers taught a group of approximately thirty students about the importance of recycling, conserving energy and using products that have a small environmental impact. The engaging presentation involved hands-on experiments that demonstrated different types of energy usage and consumption. Active members of the City's Clean and Green Team were also present.

8.2.8 Kids Korps Educational Presentations

During this reporting period, the City continued its valuable relationship with the local non-profit youth volunteer organization called Kids Korps. Kids Korps engages young people, age 5 through 18, in community service with the mission to instill in America's youth the spirit of giving while providing valuable education in leadership and responsibility. The City and Kids Korps have partnered to conduct park cleanups and educational presentations. The City of Solana Beach sponsors disadvantaged, underserved local children for a week during the summer where they attended the Kids Korps camp for free. Staff also took this opportunity to educate the children on storm water pollution. The Staff presentation was so well received that Kids Korps invited back City Staff to present at two different camps, reaching over 60 children. During this reporting period, Staff contracted with Solana Center to provide the presentations, using their Enviroscape model and interactive puppet show. This activity will continue

in the upcoming years with the goal to expand the cooperation with increased educational opportunities and cleanup events.

8.2.9 Targeted Education for Underserved Community

The City has a comprehensive and successful program established to reach out to the underserved community in Solana Beach. City Staff takes these opportunities to educate this sector of the community on many items, including the storm water and pollution prevention programs. The various programs are described in more detail below.

The City has a successful Junior Lifeguard Program that teaches young children about safe ocean practices, lifeguard techniques, and environmental stewardship. Children come from all around the City to participate in this summer program, and space is limited. However, through a unique partnership between the City and a private company called ReRip, about ten spaces in the program are reserved for the underserved community that may not otherwise be able to afford it. The City and ReRip cosponsor an annual environmental event (the Future of Surfing Event) in which a raffle fundraiser is conducted and the proceeds go toward giving ten children a full ride scholarship to the Junior Lifeguard Program. These children participate in all the activities and learn about pollution prevention and storm water regulations. This is a unique partnership that the City is extremely proud of, and the community has rallied around it.

Another successful program that benefits the underserved community is the City's Summer Day Camp program. The City offers full and half-scholarships to the underserved community that would not be able to afford to send their kids to the camps for the full price. These camps have environmental themes, including pollution prevention and storm water education incorporated into the curriculum.

8.2.10 Water Conservation

Drinking water is provided to the community of Solana Beach by the Santa Fe Irrigation District (SFID). The City and SFID have a great working relationship which has benefitted the community of Solana Beach in many ways.

Due to ongoing drought conditions and increased environmental regulations, water conservation has been a major focus during this reporting period. Although

drinking water is a completely separate entity than storm water, they are linked in many important ways. Primarily, over-irrigation of potable water is often the transport mechanism for many pollutants during dry weather. Over-irrigation carries pollutants such as pesticides, herbicides, fertilizers, bacteria, trash, oil and grease and many other pollutants into the MS4 system. Water conservation activities can reduce the transport mechanisms thereby reducing the amount of pollutants that make it into the City's MS4 system. The City recognizes that promoting water conservation not only helps during times of drought conditions, but also helps combat storm water pollution.

The City and SFID have a regularly scheduled monthly meeting to discuss all things water related. These meetings have turned into valuable information sharing sessions where Staff from both agencies can discuss upcoming projects and report observations from the field. The City and SFID have joined together on many educational seminars and workshops for the community, both residential and commercial. The following is a list of water conservation related presentations and workshops that occurred during this reporting period.

Table 8-2 California Friendly Landscape Classes

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
September 11, 2010	Water Saving Landscape Training	70	Residents	Rancho Santa Fe Garden Club
February 22, 2011	Landscape Water Management Workshop for Professionals	50	Landscape Professionals	City of Encinitas Community Center
March 1, 2011	Landscape Water Management Workshop for Professionals	50	Landscape Professionals	City of Encinitas Community Center
March 8, 2011	Landscape Water Management Workshop for Professionals	50	Landscape Professionals	City of Encinitas Community Center
March 15, 2011	Landscape Water Management Workshop for Professionals	50	Landscape Professionals	Olivenhain Municipal Water District

8.2.10 Educational Brochures

The City has participated with the North County Educational Group to develop many effective educational materials. The handouts and brochures are included in the Carlsbad WURMP Annual Report.

"*Only Rain in the Drain*!" describes the importance of protecting the valuable water resources and the problems that can be caused by storm water pollution. It also provides a list of BMPs to help prevent pollution. The brochure also provides valuable resource numbers: *a direct number for each jurisdiction* is provided, as well as the County's Storm Water Hotline. The City's Public Works Crew and Code Enforcement Officers deliver these every day to the community when small violations are observed. Since these Staff members are out in the

community every day, this has proven to be an effective means of public education. Larger infractions are reported to the Engineering Department or Code Enforcement Department for follow-up.

The door-hanger *"Help!"* provides a method for Staff members to indicate to residents that pollutants were found in their neighborhood. The brochure is in English and Spanish, which is helpful to all residents. It is typically hung on a resident's door, provides a place for business cards and under the cards, (should they become misplaced) the brochure lists a contact number for each jurisdiction. The back of the brochure provides BMPs for vehicle maintenance, car washing, hazardous materials handling, recycling, litter, and sidewalk/driveway debris.

To assist the public in directing their calls for complaints and service, the City operates a 24-hour storm water hotline telephone recording (858) 720-4424. The number is connected directly to the Environmental Program Manager's voice mail (so it can still remain anonymous, if necessary), so that violations can be investigated immediately and the proper action taken *while the violation is occurring*. The City informs the public about the hotline number at City Council meetings, on flyers and handouts, on business cards, and on brochures.

8.2.11 City Newsletter (Shorelines)

Chapter 6 contains information regarding the *Shorelines* newsletter and gives a brief description of the articles included during this reporting period. The articles are available upon request.

8.2.12 Website

The recent upgrade of the environmental portion of the City's website has been explained previously in this Report. The new "Green Flash" has been extremely helpful in getting the word out in an effective and easy to find location. This has been a huge success, as the website is updated constantly with new and pertinent information. The City also has an "eBlast" system that notifies interested citizens on special news and events via email, which has proven to be extremely beneficial and successful in getting out news on all City happenings, including environmental.

8.2.13 Business Community

The City has initiated several methods to educate the business community about storm water pollution prevention.

The City hires a specialized consultant (ECIS) to conduct annual commercial compliance inspections (see Commercial Component). Through the inspections, ECIS educates the business owners about the requirements of the Permit and the City's various storm water programs. Given the City's close proximity to the Pacific Ocean and sensitive lagoons to the north and south, inspectors are able to show a direct link between commercial activities and impact on water quality. Next, after the initial and follow-up inspections are conducted by the consultant, City Staff conducts follow-up enforcement inspections on those businesses still determined to be out of compliance, to ensure that the businesses are using the proper Best Management Practices to protect the City's waterways. These follow-up inspections are often conducted through scheduled meetings with the property owner and/or manager, to ensure the decision makers are present and can be held accountable. Often times, the initial inspections were conducted without prior warning, and various staff members at the facility are held responsible. Just to ensure that the right people are informed of the infractions/violations, follow-up inspections are pre-scheduled.

During this reporting period, *all* businesses that were inspected were deemed in compliance without any citations issued. As reported earlier, not all businesses were in compliance during the first inspection. Some businesses had minor issues (trash lids not closed, grease barrels not covered, etc.), however, the enforcement follow-up inspections revealed that the minor infractions had been corrected and no fines were issued.

8.2.14 Special Events Permit

As reported in previous Annual Reports, the City adopted a Special Events Permit that is required for group events (Triathlons, Block Parties, Birthday Parties, etc.) of over 25 people on public property. A storm water section is included in the Permit, with requirements regarding the event and adhering to all storm water regulations. This has proven to be a great educational tool, as most applicants tend to ask questions about this. It is a great tool to educate the public about storm water regulations. For an example of the Special Events Permit

Conditions of Approval, see Appendix N.

8.3 Pollution Prevention through Education – Regional Activities

The regional activities of the Copermittees of Order 2007-0001 are, for the most part, described in the Regional Unified Annual Report. However, for purposes of completeness, some of the activities that the City has participated in are described in this section of the Report. As mentioned above, the new Permit added significant requirements for regional education, some of which are described below. The City has been in cooperation with the other Copermittees in developing a regional educational program. Implementation of some of these programs did occur during FY 2010/2011 and will be reported on in the Regional Unified Annual Report. The City is actively working with the Regional Copermittee Education group to develop additional programs for implementation during FY 2011/2012.

8.3.1 Regional Monitoring

The City participated with the Copermittees in conducting a region-wide wet-weather monitoring program. Although no mass loading stations were located within the City, one of the testing sites (San Dieguito Lagoon) is a receiving water body from the City's drainage.

The 2010/11 program is described in detail in the Regional Unified Annual Report and in the report issued by the consultant, MEC Analytical. MEC's report will be submitted with the Unified Annual Report, and any data collected will be reported and discussed in that report.

8.3.2 Model Programs

One of the most important regional educational components is the ability the Copermittees have developed to help educate each other. This has been accomplished through routine meetings, sharing of project assignments, and most significantly, the development of model guidelines for the new JURMPs, SUSMPs, and WURMPs. Not only have the model guidelines produced a fairly consistent message to educate the community, the model guidelines have established collaborative working relationships among municipal, county, and state agencies, which is remarkable. In addition, this cooperation has allowed for

relatively consistent program components and requirements, which especially helps the business and construction community. So, if they are doing business in various cities, they will not have to significantly alter their practices to comply with the respective jurisdictions. This is especially relevant in the LID, SUSMP and general BMP programs.

8.3.3 Linking to Regional Resources

The City posts links on its website to the regional Web sites (Project Clean Water and Think Blue). In addition, the City posts information on reporting storm water violations to the City as well as County's Regional Storm Water Hotline on various educational materials. Linking the community together provides continuity, extension of resources, and economies of scale for the community and the agencies, and contributes to a greater understanding that we are all interconnected and can help positively impact water quality. It's important to educate the community that water quality programs should not and do not stop at jurisdictional (or watershed) boundaries.

Through the www.projectcleanwater.org website, San Diego County has been able to link many community members to various storm water/urban runoff related programs of interest. In addition, the website contains information (dates, times, agendas) on meeting's that are open to the public and links to download important documents and reports.

8.4 Pollution Prevention through Education – Watershed Activities

In accordance with the Permit, each municipality is required to participate in the development and implementation of a Watershed Urban Runoff Management Program (WURMP) for each hydrological unit in which the City's jurisdictional boundaries lie. The northern portion (~10%) of the City resides within the Carlsbad Hydrological Unit and the rest of the City resides within the San Dieguito River Hydrological Unit. As such, the City is required to participate in the development and implementation of two WURMPs addressing the runoff concerns of each watershed.

During this reporting period, the City actively participated in the development and implementation of the Carlsbad and San Dieguito WURMPs, in compliance with Permit Order No. 2007-0001. The WURMP Annual Reports will be submitted in

January 2012, and will detail all the activities and programs being implemented by the respective Copermittees to address watershed issues.

In short, each WURMP contains the following 1) a time schedule for developing a comprehensive map of the entire Watershed including all land uses, the storm drain systems, and inventories of all commercial, construction, industrial, municipal and residential areas, 2) a plan to ascertain the types of pollutants that exist in the water bodies throughout the watershed and a prioritization schedule to eliminate the pollutants; 3) a program to educate the entire community about issues related to urban runoff; 4) methods to provide the community opportunities to participate in the program; 5) plans to collaborate with Copermittee agencies to strategize, review and analyze information; and 6) an effective program effectiveness strategy and methods to conduct annual evaluations. A significant addition to the responsibilities of all WURMPs is the requirement to actively implement two (2) activities each year aimed at sources to reduce high priority pollutant loading into local waterways. This will be described in greater detail in the WURMP Annual Reports (submitted in January), but mention of it here in the JURMP is appropriate.

The City has been actively involved in the implementation of both WURMPs, and has brought materials developed in each WURMP to the community (business and residents) of Solana Beach. The Carlsbad and San Dieguito WURMP workgroups have been extremely effective in implementing the requirements of the Permit. For more information on the particular activities in each WURMP, please refer to the City's individual WURMPs Annual Reports that will be submitted in January 2011.

Both of the WURMPs the City is involved with have contracted with the same consultant to assist in the development and implementation of the program requirements. This has also helped to bring consistency and continuity to the residents of Solana Beach. Although there are slight differences in the watersheds, such as the land uses and COCs, the City is able to make the implementation of the general programs more effective by having the same consultant.

8.5 New Activities and Improvements for FY 11/12

The City will continue to educate the community through participation in the

Carlsbad WURMP, the San Dieguito WURMP group, the Regional Education Group, the City's new Green Flash environmental web portal, brochures, flyers, the *Shorelines*, and community/regional events. The City will also use the results from its DWMP to inform residents in areas that the data showed elevated levels of constituents of concern or pollutants that degrade the quality of water. The City plans to develop additional educational brochures (collectively with the region) that will be industry specific. As a result of the 13267 Directive Letter, the Copermittees have changed their approach to watershed issues and plan on taking a more direct approach in implementing activities that address specific pollutants of concern and their respective sources within the watershed. Following the direction of the RWQCB, the watersheds have changed their approach to integrate more pollutant based activities in an attempt to reduce COCs in the watershed and improve water quality. This appears to be the direction the RWQCB wants to go and the Copermittees are eager to work with the RWQCB to improve the water quality throughout the region.

The City also incorporates education to school children through its relationships with the Solana Center and the Kids Korps non-profit organizations. As mentioned above, the City indirectly contracts out the Solana Center to give *free* classroom presentations to local schools. These presentations are paid for through the City's waste hauler contracts. City Staff will be more proactive in its efforts to get more presentations in the schools during FY 2011/2012. It has been an ongoing struggle to get into the schools with the demanding curriculum of the Solana Beach School District. However, City Staff has begun to meet regularly with the local School Districts on many issues, and Staff has made it a priority to get environmental issues included along with the standard discussions such as traffic safety, neighborhood sensitivity and children safety. These meetings have occurred on a quarterly basis and will continue to do so in the future. It is the City's intent to use this platform to get more storm water education into the schools.

8.6 Summary

The City has been successful at implementing a jurisdictional and watershed based educational program. With the adoption of the new Permit, a renewed focus has been placed on a large scale regional education program, in which the City has been actively involved with during this reporting period. A new regional education working group has been established by the Copermittees to develop a

consistent, region-wide program, and the City of Solana Beach has been actively involved. This first step has already been accomplished, with the region adopting the “Think Blue” program developed by the City of San Diego. This gives the region a known brand of which to build a successful educational program. The details of this regional program will be described in detail in the Regional Unified Annual Report.

On a jurisdictional level, the City is confident that with its strong messages, meaningful content and integrated programs, the community has become more knowledgeable about pollution prevention methods.

As mentioned above, the City plans to utilize the educational materials developed by the watershed and regional groups, as it has been agreed upon that a consistent message should be implemented whenever possible. However, much like the differences in the watersheds throughout San Diego County, there are slight differences in how individual cities implement and enforce certain components of the Permit. Therefore, it will always be necessary to develop some jurisdictionally specific educational materials for the benefit of the community. The types of jurisdictional educational information/activities are described throughout this Report, but a few examples include:

- BMP specific guidelines for unique construction projects, such as the Underground Utility Program (undergrounding power poles) and the Trench Resurfacing Program.
- The “Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices”
- Construction and Demolition (C&D) Debris Recycling Guide
- Classroom Presentations
- Summer Camp Presentations
- Marine Safety Presentations
- Water Conservation, Landscape Workshops

- Unique partnerships with public and private entities such as Solana Center, Kids Korps and ReRip to provide educational opportunities for the underserved population

CHAPTER 9
Public Participation Component

CHAPTER 9: PUBLIC PARTICIPATION COMPONENT

9.1 Introduction

In accordance with Permit Section D.6, this section of the report describes the City's efforts to develop mechanisms for public participation in the implementation of the JURMP and obtain the committed participation from the community. Public participation comes in two forms; participation in implementing the program and the necessary public feedback for improving the program.

In each Annual Report to the RWQCB, this section will include modifications to the City's plans to provide opportunities in which the public can participate. In addition, this section of the Annual Report will describe the City's efforts to encourage public participation during the reporting period. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Prior to the implementation of the original JURMP (February 2002), the City did not have a specific "public participation program." However, many members of the community have taken an active role in environmental issues over the years, which is most likely due to the City's proximity to the ocean and lagoons. As a result, the City was the first city in San Diego County to have curbside recycling and a smoking ban at the beaches and parks. The City has also been proactive in its approach to urban runoff and pollutant mitigation and reduction, by implementing a strict Municipal Code regarding Storm Water Management (adopted in 1993) and Grading and Excavation regulations to prevent erosion during construction.

As a result of Order 2001-01 (Permit), the City was required to design a specific program to ensure that the public had ample opportunities to learn about controlling urban runoff and assist the City in "spreading-the-word." The new Permit Order No. 2007-0001 further emphasizes the necessity of a strong public participation program.

The Public Participation Component is closely related to the Educational

Component. However, while the educational program describes activities the City engaged in to educate the public, public participation will describe activities the public engaged in (or were provided an opportunity to do so).

During this reporting period, the City began the implementation of the comprehensive Public Participation Component for the new JURMP (Section 11). The programs included activities that complemented the educational program with a goal of providing opportunities to ensure that residents, business owners, and those who do business (such as contractors) within the City, have an opportunity to learn about the negative impacts of urban runoff, understand the City's regulations relating to protecting the environment, and participate in the development of storm water program involving the community. The City developed the program based on the requirements of the Permit(s) and continued implementation during this reporting period.

9.1.1 Chapter Content

It is important that the reader understand that much of the public participation program is integrated into other program components and as such, much of the information within this chapter has been presented elsewhere in this report. However, to provide consistency in reporting, to ensure Permit compliance, and to present stand-alone chapters in this report, this section will include all opportunities for public participation, even if those same events were described in other chapters. However, for purposes of reducing redundancy, some events may be summarized in this chapter with a reference to other chapters for details.

9.2 Community Events

The following list gives a brief description of each community event that Staff coordinated and provided storm water education to the community.

9.2.1 Fiesta Del Sol

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting no dumping or littering and keeping our beaches clean. The event was held on June 4th and 5th, 2011 (Appendix O). The City also passes out "*Only Rain in the Drain*" brochures and talks with residents about the importance of protecting the water resources.

Solana Center hosts a booth through the City of Solana Beach and promotes environmental stewardship, including used oil recycling and HHW information. Approximately 60,000 people attended the event this year and City staff handed out storm water educational brochures and doggie-bag dispensers to those that visited the City booth.

The City's Clean and Green Team, consisting of environmentally conscientious members of the community, also shared the booth with City Staff. They distributed information regarding climate change, energy conservation and water quality. Since this is such a hot topic this year, it attracted many more people to the City booth than in previous years. City Staff took this opportunity to educate more people regarding the storm water regulations.

As mentioned in the previous chapter, the event this year included an area called the "Green Alley." This area was dedicated to all things sustainable, and included vendors and games focused on environmental sustainability. This was by far the most popular area, and the event organizers plan to include it in future years.

9.2.2 Beach Clean Up Opportunities

During this reporting period, San Diego Coastkeeper and the nonprofit group I Love A Clean San Diego (ILACSD) hosted the 26th Annual California Coastal Cleanup Day on September 25, 2010. The City hosted two locations, one at Fletcher Cove to clean the beach, and another at San Elijo Lagoon to clean up the lagoon. This provided opportunities for the public to come out and help keep the lagoons and beaches clean, while also educating them on cigarette butt pollution and water quality concerns. The results of this event are included earlier in this Report.

9.2.3 Adopt-A-Beach Program

The City works collaboratively with I Love A Clean San Diego in the Adopt-A-Beach Program. The Program consists of local businesses and/or community groups sponsoring a beach and agreeing to clean up the beach at least 3 times a year (1 time for schools). The City thought this was a great idea and extremely beneficial to the community. Four (4) beaches (Tide Beach Park, Fletcher Cove, Del Mar Shores and Seascape Sur are all "adopted" and are cleaned at least three times a year. The signs are updated each year with new "adoptees" and

City Staff installs the new placards on the signs. This has been a very positive experience, as the City's beaches are each cleaned three times a year, resulting in at least 12 beach cleanups per year, in addition to the annual Beach Clean-Up Day.

9.2.4 Beach Blanket Movie Night

As mentioned in the previous Chapter, the City's Parks and Recreation Commission puts on a free community event called the Beach Blanket Movie Night. This event consists of placing a large movie screen at Fletcher Cove Park and showing environmentally themed movies for the community to enjoy. City Staff took this opportunity to distribute storm water educational materials, promote recycling efforts and distribute doggie-bag dispensers to members of the community. Additionally, Solana Center attended and handed out educational material to the community as well, including the Enviroscape model. This has turned into one of the most successful community events and is based around environmental themes. The City's "environmental booth" is the only booth allowed at this event, as the organizers recognize the importance of educating the community on environmental awareness. This is a great opportunity for the City to promote its programs as it has the community's undivided attention. This year's event was held on August 28, 2010.

9.2.6 Paws in the Park

"Paws in the Park" is an annual event put on by the City at the La Colonia Community Park. This community event is very well attended and the City has a booth to showcase the City's environmental programs. At this year's event, held March 20th, 2011, City Staff took advantage of the pet event to promote the importance of picking up after your pet and distributed customized "Bags on Board" doggie-bag dispensers. These items are a huge success because the event targets the pet community, those most likely to have the potential to release bacteria into the environment. The dispensers had the City logo on it and the slogan, "The City of Solana Beach Reminds You To Please Pick Up After Your Pet." In addition, the City distributed specialized educational information regarding pet waste and the harmful effects it can have on the environment. This is an annual event and the City will continue its environmental education campaign every year.

9.2.7 Green Fair

The City held its 3rd Annual Green Fair on March 26th, 2011 at Fletcher Cove Park. The City, along with the community volunteer group the Clean and Green Team hosted the third annual Green Fair that consisted of vendors, food, music and demonstrations. The vendors were all local sustainability businesses and the demonstrations consisted of a bicycle safety course conducted by the Sheriff's Department and an alternative vehicle showcase to demonstrate alternative modes of transportation to the community. The event has grown rapidly and had over 30 booths, with approximately 500 people coming throughout the day. It was a widely successful event, and the City will continue to host a Green Fair every March.

In addition to the Green Fair, the City has officially declared March as "Sustainability Month." The City hosts activities throughout the month, many of which incorporate storm water issues because water quality is a major concern for the community. The City hosted four lectures, one each Tuesday night in the Council Chambers, all free of charge and with different environmental themes. The Sustainability Month has been so successful with the community, the City plans to make it a tradition. This shows the level of environmental support held throughout the community.

9.3 City Council Meetings

The Solana Beach City Council meetings are televised, which provides an excellent opportunity for the public to participate in local government. In addition, the City's Agenda is published online (available on its website), which provides the public an opportunity to readily access the upcoming Council reports.

Another highly successful educational opportunity is the implementation of scrolling messages during televised City Council Meetings. Staff has taken advantage of this new tool to place storm water messages and notifications for upcoming presentations, events, etc. This has proved very valuable and will continue to be utilized by City staff when appropriate.

9.4 Copermittee Meetings

Most Copermittee meetings are open to the public and provide an opportunity to

participate in the process of developing the regional and local programs. All Copermittee meeting dates are available on the Project Clean Water Web site (projectcleanwater.org) and the City's website also links to the regional sites.

9.5 Collaborative Community Partnerships

The City has developed collaborative partnerships with various local organizations, which provide the public an opportunity to participate in improving water quality and/or the City's storm water program.

The City works closely with the Solana Center, which provides instruction to local school children on the harmful effects of pollution, the positive impacts of pollution prevention and the need to keep pollution out of the City's storm drains. Solana Center is contracted by the City's waste haulers through their exclusive Franchise Agreements. Solana Center also provides the following services for the City:

Referral Phone Calls: Solana Center staff provides recycling telephone referral services for residents of the cities of Encinitas, Del Mar and Solana Beach. Solana Center staff spent time educating the community about CRV updates, composting information, and how they easily incorporate recycling activities into their daily lifestyle. Community phone inquiries included:

- The locations of local recycling centers and hours of operation.
- Redemption values of materials.
- Basic information of what materials can be or cannot be recycled in curbside recycling programs.
- General recycling information for commercial businesses.
- Services on commercial recycling carts.
- RotLine – Answering community questions regarding composting and vermicomposting.

Less Toxic Yard and Garden Workshops:
Solana Center staff conducts presentations throughout the community on

alternative gardening tips that reduce the use of pesticides and herbicides. These workshops also promote the benefits of composting, further reducing the amount of trash generated and shipped to landfills as well as reducing the need for harmful chemicals/fertilizers.

Table 9-1 Community Outreach Events

Event Dates	Name of Event(s)	Attendance at Event(s)	Description and Summary of Event(s)
August 28, 2010	Beach Blanket Movie Night	1,000	Annual event put on by the City's Parks and Recreation Commission to provide a free night of environmentally themed movies. Educational materials were distributed at event.
September 25, 2010	Coastal Cleanup Event	300	City hosted two locations where the community could help clean up the San Elijo Lagoon and the beaches. City also distributed storm water educational brochures at the sign up table.
March 20, 2011	Paws in the Park	500	Annual event put on by the City's Parks and Recreation Commission for pet education and games. Educational materials were distributed at event.
March 26, 2011	Green Fair	500	Annual event put on by the City consisting of local sustainability vendors. The City provides music, food, bike demonstrations; alternative vehicle showcases and highlights the City sustainability programs.
June 4 and 5, 2011	Fiesta Del Sol	60,000	Annual event for the City of Solana Beach. Recycling services were coordinated in conjunction with Waste Management and EDCO Disposal Inc. Solana Center also provided education on used oil recycling, HHW and watershed presentations,

Table 9-2 California Friendly Landscape Classes

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
September 11, 2010	Water Saving Landscape Training	70	Residents	Rancho Santa Fe Garden Club
February 22, 2011	Landscape Water Management Workshop for Professionals	50	Landscape Professionals	City of Encinitas Community Center
March 1, 2011	Landscape Water Management Workshop for Professionals	50	Landscape Professionals	City of Encinitas Community Center
March 8, 2011	Landscape Water Management Workshop for Professionals	50	Landscape Professionals	City of Encinitas Community Center
March 15, 2011	Landscape Water Management Workshop for Professionals	50	Landscape Professionals	Olivenhain Municipal Water District

The above workshops are conducted by the City's private water company Santa Fe Irrigation District (SFID) in conjunction with the City. The City promotes the workshops to the community and directly to the landscaping contractors known throughout the community. All classes are taught in English and Spanish, and the classes taught in Rancho Santa Fe are promoted to Solana Beach residents/businesses as well. The City requires the municipal landscaping contract company to attend the workshops for educational purposes. This shows another great collaborative success between the City and its private water company.

There is a great relationship between the two entities which extends beyond these workshops. The City and SFID work together to combat residential over-watering and ensure daily tasks and repair work are conducted in compliance with the Permit. In addition, pre-construction meetings for CIP projects include SFID and storm water issues are discussed. The City and SFID are committed to working together and maintaining this great working relationship since most of the work conducted by SFID (trenching, pipe laying, water testing) are all done

within the City limits.

Shorelines Newsletter:

The Solana Center writes regular articles for the City of Solana Beach on a wide range of topics, including E-waste, recycling, composting and buying recycled products. The topic is coordinated between the City's Assistant Civil Engineer and the Executive Director of the Solana Center. The articles are included in the Appendices and described in more detail in other sections of this Report.

9.5.1 Solana Beach Clean and Green Community Committee

As mentioned in last year's Annual Report, the City brought together active and willing community volunteers to form the Solana Beach Clean and Green Team (Team). This Team was formed to discuss pertinent local environmental issues and develop programs to bring to City Council for implementation. City Staff meets monthly with the group to discuss the City's environmental programs and to brainstorm activities that would benefit the community as a whole. The group has evolved from a few interested residents to a steady group of about 20 members from the residential and business sector of the community. The group has assisted in the development of the following programs:

- Construction and Demolition Debris Recycling Ordinance
- Plastic Bag Advertising Ban Ordinance
- Plastic Bag Recycling program
- "Green Flash" Website
- Green Building Incentive Program
- Greenhouse Gas Baseline Emissions Inventory

The group is currently working on the following items:

- Green Business Program Over-Irrigation Reduction Program

- Solar Financing District
- Climate Action Plan
- Opposition to Prop 23
- Making the City a Bike-Friendly Community

The Team is also heavily involved in the water quality activities of the City and the NPDES program. The Team attends all community events and disseminates educational materials. This group has been extremely valuable and provides a direct link to the community, both residential and commercial. It allows all community members the opportunity to participate in City government.

9.6 Other Opportunities

9.6.1 City Storm Water Hotline

The City operates a storm water hotline, (858-720-4424) which is dependent on public participation to report suspected violations of IC/IDs and to inquire about workshop information or other storm water-related needs. The hotline provides 24/7/365 access to the public so that they can report potential violations and/or call for information as soon as they are thinking about it, rather than having to wait for normal business hours. The hotline is sent directly to the Environmental Program Manager's voice mail (it can still be anonymous) to ensure quicker and more efficient response to the public inquiries, as well as providing an outlet for the public to discuss issues directly with City Staff.

9.6.2 Website

As reported previously in this Report, the City developed a more comprehensive environmental web portal on the City's website. The new page is titled "Green Flash" and encompasses all of the City's environmental sustainability programs. Water quality and the City's NPDES programs are prominent and have been expanded as a result of this new web portal. This shows the City's proactive approach to engaging the public and keeping them educated on the new environmental programs throughout the City as well as providing links to relevant web pages.

9.6.3 Local Media

As described in detail in Chapter 8, the City utilized the local media to inform and educate the public. Although this is not a public-participation activity, the information provided in the articles describes the ways in which the public can get involved, if they so choose. The City has a great working relationship with the local newspapers (Solana Beach Sun and Coast News) and has many articles published with environmental themes, including storm water related issues.

The City also published several articles in the *Shorelines* Newsletter (described in Chapter 9) inviting the public to get involved, providing details on how they can participate in protecting the region's water resources.

The City also has a contracted media relations consultant with ties to the major media outlets. This consultant is brought in on the City's major events to help promote the events and activities to a much larger audience. This is not done for every event in the community; however it is important to note that this service is available when appropriate.

9.7 New Activities and Improvements for FY 11/12

The City will continue to implement the elements of the public participation component as described in the City's JURMP. The focus will be on expanding the collaborative partnerships to include more frequent opportunities for public involvement (clean up days, events, etc.). Staff will continue to look for more opportunities to work with neighboring cities to host pollution prevention community events through its watershed programs (ex., large-scale HHW event). Additionally, the City is working with the other Copermittees to potentially conduct additional large scale community educational events.

With the adoption of the new Permit, there is an added emphasis on developing a Regional Educational Program. This has been a main focus for the Copermittees during this reporting period. Copermittees are expected to implement a comprehensive regional program that will provide a consistent message to the entire region. As most of the new programs are geared towards improved watershed programs, this is one key area that was identified as a Regional program. Copermittees have already begun developing activities through the Regional workgroup, such as the mobile business education

campaign. These programs will continue to be developed and implemented throughout the five year cycle of the new Permit. For more details on the activities the Copermittees have implemented during FY 10/11, please see the Regional Unified Annual Report.

9.8 Summary

The City has been successful at implementing numerous methods to encourage public participation. The City makes every effort to encourage the public to participate in improving water quality, recognizing that it's up to all of us.

Key opportunities for public participation included the following:

- Regional Copermittee Outreach Events
- Fiesta Del Sol
- Coastal Clean Up Day
- Regional Workshops
- City Council Meetings
- Copermittee Meetings
- Collaborative community partnerships (SFID, Solana Center, Kids Korps)
- Contacts through the City's Storm water hotline, City website
- Beach Blanket Movie Night
- San Diego County Fair
- San Elijo Lagoon Day
- Paws In The Park Community Event
- Formation of the Clean and Green Community Committee
- Annual Green Fair

CHAPTER 10
Fiscal Analysis Component

CHAPTER 10: FISCAL ANALYSIS

10.1 Introduction

In accordance with Permit Section J.1 (k), this section of the report describes the resources that the City utilizes to finance the various components of the storm water program. Effective programs require adequate funding to implement planned activities. The fiscal analysis will evaluate the expenditures necessary to accomplish the activities of the City's program.

The Standardized Fiscal Analysis Method and Format (Fiscal Analysis Method) was collaboratively developed and adopted by the Copermittees in January 2009 in accordance with sections G, J.1.a(3)(k) and J.1.c(1)(d) of NPDES Order No. R9-2007-0001. The Fiscal Analysis Method document was submitted to the San Diego RWQCB by January 31, 2009, as Attachment 1 of the Regional Urban Runoff Management Plan (RURMP) Annual Report for 2008-2009. As a result, the City of Solana Beach is utilizing the format and guidelines described in the Fiscal Analysis Method for this reporting period.

10.2 General Budget Information

The City's Budget for FY 10/11 was presented to the Solana Beach City Council and approved at a public hearing held on June 23, 2010. During FY 10/11, the City continued to face the challenge of maintaining and preserving its great community character while at the same time providing for long-term fiscal sustainability during the severe and prolonged economic downturn. Under the direction of City Council to cut expenditures as a result of reduced revenues, Departments enacted budget cuts in materials, supplies, and services in FY 10/11.

The City's NPDES program is primarily implemented by the Public Works Department's Environmental Services. Environmental Services is responsible for the coordination of all storm water related tasks. Therefore, the majority of the reported projected expenditures included in this section are part of the Environmental Services Program's FY 10/11 budget, which is approximately 7% of the total FY 10/11 Public Works Department budget.

10.3 Fiscal Analysis Methods

The City of Solana Beach utilized the format and guidelines included in the Fiscal Analysis Method for reporting purposes; however, there were a few adjustments made due to how the City of Solana Beach tracks expenditures. These adjustments are described in the relevant sections below.

10.4 Fiscal Analysis Results

The City's FY 10/11 jurisdictional (JURMP), watershed, (WURMP), and regional (RURMP) projected expenditures for the implementation of the Municipal Permit requirements are summarized in the table below.

FY 10/11 Projected Expenditures	
Jurisdictional Component	
Administration	56,052
Development Planning	13,295
Construction	27,355
Municipal (including Non-Fire Fighting Flows)	136,370
Industrial and Commercial	12,350
Residential, Education, and Public Participation	34,950
IDDE	57,350
Jurisdictional Total	**337,722**
Watershed Component	
Carlsbad Watershed	14,790
San Dieguito Watershed	14,790
Watershed Total	**29,580**
Regional Component	
Total Copermittee Cost Share for the City of Solana Beach (including regional and special investigations monitoring costs)	25,148
Additional Regional Costs	5,290
Regional Total	**30,438**
Total Costs	**$397,740**

10.4.1 JURMP Expenditures

The City utilized the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, due to the implementation overlap of some of the City's municipal permit components; it is difficult to separate out individual component costs. As a result, the expenditures for residential, education, and public participation are reported as one expenditure category.

Additionally, since the City does not explicitly track expenditures by municipal permit component for its budgeting purposes, in many cases estimated percentages were utilized to allocate expenditures into the appropriate municipal permit component categories.

A total of $337,722 was projected to be expended in FY 10/11 for the implementation of JURMP activities. An overview of the expenditures reflected in JURMP activity components is described below.

10.4.1.1 Administration

Activities identified in this component represent labor and non-labor expenditures for materials, supplies, equipment, or tools that are not otherwise incorporated into other expenditure categories, general administrative functions (e.g., program planning, budgeting, staff supervision), and program assessment and reporting.

10.4.1.2 Development Planning

Activities identified in this component represent labor and non-labor expenditures related to issuance or oversight of permits or of plans (e.g., permit counter support, plan checks, permit or application processing), project planning and engineering (e.g. project design specifications, capital improvement projects).

10.4.1.3 Construction

Activities identified in this component represent labor and non-labor expenditures related to construction site inspections and enforcement.

10.4.1.4 Municipal

Activities identified in this component represent labor and non-labor expenditures related to maintenance inspections of streets, roads, catch basins and inlets, open channels, and the MS4, municipal facility inspections, street and parking lot sweeping, catch basins and inlets, open channels, and MS4 cleaning, and municipal BMP implementation. Additionally, this category includes the expenditures for non-emergency fire-fighting flows.

10.4.1.5 Industrial and Commercial

Activities identified in this component represent labor and non-labor expenditures related to evaluation and enforcement of program requirements at industrial and

commercial sites or sources (e.g. routine inspections and complaint investigations).

10.4.1.6 Residential, Education, and Public Participation

Activities identified in these components represent labor and non-labor expenditures related to investigation and enforcement of residential areas or activities, staffing outreach events, development and production of outreach materials, and any expenditures associated with waste collection and recycling (e.g. HHW, used oil).

10.4.1.7 Illicit Discharge Detection and Elimination

Activities identified in this component represent labor and non-labor expenditures related to the identification and elimination of illicit discharges or connections, enforcing the City's storm water ordinance, and any expenditures related to monitoring programs (e.g. Dry weather monitoring, coastal storm drain monitoring, field or sampling equipment, materials and supplies).

10.4.1.8 WURMP Expenditures

The City utilized the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City of Solana Beach expenditures and do not account for any expenditure disbursed by other Copermittees included in the watershed(s).
A total of $29,580 was projected to be expended in FY 10/11 for the implementation of WURMP activities. The amount also includes costs for the implementation of applicable TMDLs (Revised Project I – Twenty Beaches and Creeks in San Diego Region development and San Elijo Lagoon TMDL investigation).

10.4.1.9 RURMP Expenditures

The City utilized the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City of Solana Beach expenditures and do not account for any expenditure disbursed by other Copermittees in the region.
A total of $30,438 was projected to be expended in FY 10/11 for the implementation of RURMP activities.

10.5 Funding Sources

The City primarily finances its Storm Water Management Department via revenues from an NPDES solid waste fee that was initiated in 2004. The City went through a long, arduous process to establish a long-term funding source to ensure the program would be sufficiently financed from 2004 through 2007. The City was sued by the Howard Jarvis Taxpayer's Association (HJTA), and the fee was put to a vote of the community. In September 2007, property owners in Solana Beach voted in favor of the fee which ultimately results in the City having a funding source to maintain, enhance, and ensure the long-term future of the NPDES program at the City. For more information on the City's NPDES Solid Waste Fee, please see the City's website at http://www.cityofsolanabeach.org

The City also utilizes the General Fund to assist in supporting some elements of the City's NPDES program. The General Fund is supported by major revenue sources that include property tax, the local portion of the sales tax and use tax, transient occupancy tax.

CHAPTER 11

Effectiveness Assessment Component

CHAPTER 11: EFFECTIVENESS ASSESSMENT COMPONENT

11.1 Introduction

In accordance with Section J.3. (l) of the Permit, each Copermittee is required to develop a long-term strategy for assessing the effectiveness of the various components of its Jurisdictional and Watershed Urban Runoff Management Programs (URMPs). The City will perform an annual effectiveness assessment to specifically assess:

- Each significant jurisdictional activity/BMP or type of jurisdictional activity/BMP implemented;
- Implementation of each major component of the JURMP (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination and Education); and
- Implementation of the JURMP as a whole

During this reporting period, the City has continued implementation of all components of the Permit. This section will assess the effectiveness of the JURMP, and discuss all strengths and weaknesses of the City's program. Since the City's JURMP was submitted in March 2008, this Report will be the third full year of implementation and it will be difficult to effectively assess the new programs. Most of the new programs are still in the early stages of implementation, therefore this section will report on any significant results from the programs implemented under the old Permit Order No. 2001-01 and any programs that have been developed and implemented during the third full year under Permit Order No 2007-0001.

11.2 "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs"

The Copermittees developed an assessment document titled, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs." This document was prepared after discussions with the RWQCB in which the Board stated that the Copermittees needed a better method to assess

the effectiveness of the JURMP. This document was approved by the RWQCB and will be used to assess all future programs, or until another method is agreed upon. The document addresses six levels of assessment:

1. Compliance with Activity-Based Permit Requirements
2. Changes in Knowledge/Awareness
3. Behavioral Changes
4. Load Reductions
5. Changes in Discharge Quality
6. Changes in Receiving Water Quality

The levels of assessment have been combined into three rather than six categories for this reporting period because it is easier to assess the programs when they are combined into these three categories. Level 1 includes modified assessment tables from the JURMP. Level 2 and 3 are combined and discuss the program strengths (accomplishments and outcomes) for each component. Level 4, Load Reductions, is still being assessed as to the proper way to address this (possibly TMDLs) and so is only briefly discussed, and Level 5 and 6 are combined to attempt presenting a water quality assessment.

The strategy uses both quantitative and qualitative measures of program effectiveness.

In addition, during the development of the WURMPs, the cities worked tirelessly to develop a meaningful method to assess *that* program for its impact on water quality – not just whether or not the program components were implemented, but more importantly, the ability to find a way to measure the link between activities and improved water quality, if it exists.

The WURMP program effectiveness strategy incorporated all of the elements of a meaningful method to assess impact, incorporated public comments, collaborative writing, thinking and designing, and in the end, is a good start to learn how to meaningfully determine the value of the storm water program

activities. The City anticipates that over time, the results of a well-thought-out meaningful assessment will provide the region important information from which program activities can be designed and modified, rather than implementing program activities and hoping the activities have the expected impact. The individual WURMP program assessments can be found in the upcoming WURMP Annual Report submittals (January 2012).

11.3 Level 1: Compliance with Activity-Based Permit Requirements

A table that summarizes the activities tracked by City Staff, which demonstrates compliance with the requirements of the Permit, can be found in Appendix P. Additionally, narratives explaining the City's efforts regarding compliance can be found in the individual components of this Annual Report.

11.4 Levels 2&3: Changes in Knowledge/Awareness and Behavioral Changes

This section is broken up into each component of the JURMP and presents a summary of the changes in knowledge/awareness and behavioral changes. Each section discusses the accomplishments for the component and discusses future improvements.

11.4.1 Municipal Component

Program Strengths: During this reporting period, City staff again inspected *all 309 of the City's catch basins* and 15 unimproved channels and cleaned every one that appeared to have trash or sediment accumulated in the basins. Public Works Staff cleaned 26 catch basins and removed approximately 5 cubic yards of material from its storm drain system. The City also manages an active Beach Cleaning Schedule and maintains several different permanent BMPs throughout the City (the most significant structural BMPs being the bioswale located at La Colonia Community Center, the Low-Flow Diverter, CDS Unit and Sand Trap at Fletcher Cove and the CDS Unit at the north end of North Cedros).

For a discussion regarding the qualitative accomplishments of the City's Municipal Component (major accomplishments, educational and outreach activities, new activities or improvements to be implemented next year) see Chapter 2 of this report.

Table 11-1 Municipal Inspections

Activity	Quantity	Units	Comments
Number of high priority municipal facilities (*buildings*)	1	n/a	Inspected high priority facility (PW Yard) weekly at Engineering Safety Meeting held at Public Works Yard. Annual inspection conducted on 6/18/10 and facility also inspected prior to rainy season. See Chapter 2 of this Report.
Number of high priority municipal facilities (*parking lots*)	6	n/a	Visually Inspected weekly by PW staff. Cleaned monthly by street sweeper. See Chapter 2 of this Report.
Number of high priority municipal facilities (*other*)	3	n/a	One park (inspected 6/18/10), all city streets and roads (daily), and the MS4 (annually).
Number of high priority municipal facilities targeted for inspection (buildings and parking lots)	10	n/a	See above.
Number of high priority municipal facilities inspected	10	n/a	The Public Works Yard and all parking lots.
Number of medium and low priority municipal facilities inspected	5	n/a	Fire Department, Marine Safety Center, Fletcher Cove Community Center, City Hall and La Colonia Community Center inspected annually. All inspections occurred on 6/18/10.
Quantity of material removed from MS4 and beach	5	Cubic Yards	This is the amount of material the City collected from its annual cleaning of the MS4 and the beach. All 309 catch basins and 15 unimproved channels were inspected, 26 catch basins were cleaned, which was 100% of the catch basins that had accumulated trash/debris inside.
Quantity of debris removed that had potential to enter MS4 (i.e. street sweeping, litter removal)	212	Cubic yards	This information provided by daily reports from street sweeping contractor.

The City's Public Works Crew is immensely knowledgeable when it comes to storm water issues. Since the crew consists of only five people, it is very easy to educate them on an ongoing basis. They are all very aware and conscientious of the storm water regulations and are eager to report any violations in the field to

the appropriate staff. The Public Works Crew is a vital part of the Storm Water Team, because they are always out in the field, and they have become the eyes and ears of the program. They have weekly tailgate meetings with the City Engineer and City Inspector at the Public Works Yard where they discuss, among other things, the storm water regulations and visually inspect the Yard.

The amount of cooperation between the various City departments has proven to be very successful, with each department willing to implement the storm water regulations into their daily activities.

As reported in last year's Annual Report, one of the improvement areas for this component would be to conduct more department specific educational presentations. The City accomplished this goal, but it will continue to be a high priority activity. This has proven to be very successful and is highly encouraged by the Department Directors. It is anticipated with the continued development and implementation of the new Permit requirements that more education of City Staff will be required. This will most likely occur with more department specific presentations to detail any changes or additions to department specific activities required in the Permit.

The Assistant Civil Engineer will analyze the new requirements and develop appropriate presentations to City Staff, and will report on these in next year's Annual Report.

Additionally, as a result of the RWQCBs response letter to FY 03/04 Annual Report, the City now calculates and tracks the total amount of material collected by their street sweeping activities. This initially was a difficult task, as the City contracts out the street sweeping to a private company, but after some discussions with both the RWQCB staff and the contractor, a solution was worked out. The amount of material collected is now documented weekly by the street sweeper, and is verified by the City's Public Works Crew. This information is reported in this Annual Report and will be documented in the years to follow to see if a trend can be verified to assess the effectiveness of the program. Additionally, as reported in last year's Annual Report, City Staff ensured that the new street sweeping contract contained language that mandates that this activity is done on a continuous basis. So far, the activity has been very successful as data that is quantifiable is now collected and will be useful in load reduction calculations in the future (as enough data is collected).

Improvement Areas: City Staff is confident that all aspects of the Municipal Component are being adequately addressed, although they realize that things could always be improved. Some improvement areas may be additional educational sessions with City Staff, to reinforce the importance of the Permit and how it affects their everyday activities (especially with the adoption of the new Permit). Increased inspections on Municipal facilities may be conducted to ensure compliance at all times. And finally, more detailed investigations into the "problem" catch basins, if any, which may require cleaning every year. If any of these catch basins exist, then a more aggressive litter/trash campaign may be conducted to nearby residences or businesses in hopes of a load reduction in the catch basin. Additionally, the Assistant Civil Engineer will commit to ensuring all new employees are educated as soon as they start employment. This will help them in adjusting their daily activities immediately to comply with the requirements of the Permit.

One important action that occurred during last year's reporting period mentioning is the adoption of a strengthened litter reduction ordinance. Ordinance 419 was adopted by City Council on September 8, 2010 and, among other things, required commercial businesses to develop and implement a Litter Reduction Program for their property. The ordinance required, at a minimum, that all commercial businesses visually inspect at least 200 feet around each business property at least once per day and to clean up any litter or debris identified. This is a significant new litter reduction program that will have a major impact on the City's storm water program. This will be discussed in more detail in next year's Annual Report.

In addition, as reported in the previous Annual Report, the City adopted a Leaf Blower Ban in July 2009 (Appendix Q). This ban was enacted to prevent organic debris from being blown all over the City and into the storm drain conveyance system. Staff noticed that landscapers would use these blowers to push the organic matter off of the property they were maintaining and into the streets, gutters or sidewalks, where it would eventually end up in the storm drains. This has a major impact on the City water quality, so the City Council voted unanimously to ban gas powered leaf blowers in the City. The ban does not go into effect until January 1, 2011 as the City Council wanted to give the community some time to transition away from the blowers.

These two progressive and aggressive ordinances further show the City's

commitment to environmental protection and enhancement. These laws go above and beyond the basic requirements of the Permit, and the community supports it. These ordinances went into effect during this reporting period with cooperation and support of the public.

11.4.2 Industrial Component

Program Strengths: Since the City has only one industrial site, it had been determined that a strong pro-active approach to compliance would be adopted. The one site (Baker Iron Works) has been incorporated into the routine inspection schedule of the commercial sites as dictated in the JURMP, thereby allowing the City to ensure that the site is up to code on all storm water issues. Since the one site was elevated to a high priority site, the City has taken an active approach in ensuring that the site will be in compliance at all times.

The City has developed a strong working relationship with the owners of Baker Iron Works. City Staff have visited the site multiple times and worked cooperatively with them to come into compliance. The owners have responded well to the City's educational efforts and compliance requests. The City has successfully worked with Baker Iron Works to help them come into compliance by instituting several BMPs throughout the property. Although there are no indications from any of the Dry Weather Programs throughout the years that this site has contributed pollutants to the City's MS4, the mere fact that there is a possibility of this occurring in the future prompted the City to request that a few BMPs be installed onsite. A couple of very successful accomplishments occurred since this time that are worth noting.

The first accomplishment was the sealing up of a small storm drain located on the property that drained directly away from the property and into street.

The second BMP installed was the daily dry sweeping of the property to ensure that no sediment/gravel ended up in the street by automobile traffic.

The third BMP integrated into their normal routine was the use of a magnet on the grounds outside where some work is conducted using steel. The magnet is used to sweep the entire yard and collect miscellaneous scrap metals that may have collected on the ground. This activity is conducted on an as needed basis, but no less than once per week.

The fourth, and most important, BMP was the installation of the storm drain sump/infiltration pit at the northwest corner of the property that was designed to catch all low flow dry-weather runoff from the property and filter it before it left the property. These BMPs have been successfully implemented by the owners and are currently in place and functioning.

An improvement area that has been listed in previous annual reports involved ensuring that Baker Iron Works is complying with all requirements of the State Industrial General Permit, even though this is not a requirement of the Storm Water Permit. However, Baker Iron Works asked for the City's assistance in compliance and so City Staff has worked with Baker Iron Works to implement the necessary elements for compliance. This has further helped the relationship grow between the City and its industrial partner, furthering the great working relationship.

City Staff worked with Baker Iron Works to come into compliance under the GISW. Baker employees requested help with the monitoring requirements so City Staff trained them in the proper sampling techniques and offered options on where to take the samples for analysis. This just proves the healthy working relationship between City Staff and Baker Iron Works.

Improvement Areas: The City is confident that it is fulfilling all requirements of the Industrial Component. City Staff is committed to inspecting Baker Iron Works annually as part of its high priority facility inspections due to the potential to release pollutants into the City's MS4. City Staff believes that this industrial site is working well within the regulations of the Permit and is satisfied with the current situation. City Staff will look to continue the open communication with Baker Iron Works and conduct further inspections to ensure that all new employees are aware of and compliant with the storm water regulations. Also, City Staff will ensure that Baker Iron Works is aware of any new regulations from the State and work with them to ensure compliance.

11.4.3 Commercial Component

Program Strengths: The City has a very aggressive commercial inspection program that goes above and beyond the Permit requirements. As reported previously in this Report, the City inspected 100% of *all commercial facilities,* regardless of priority, identified in the JURMP inventory. This is above and

beyond the requirements of the Permit, which states that 100% of the *high priority* sites be inspected. In addition, the City implemented an aggressive Fats, Oils and Grease (FOG) inspection program to ensure the reliability of the sewer system, and prevent sewer spills caused by grease buildup. These two programs demonstrate the City's proactive approach to maintaining compliance with the Commercial Component of the Permit, and are described in more detail below.

The City also re-inventoried the commercial facilities as part of the JURMP revision and set minimum inspection frequencies per the new Permit. The facilities were inspected by an independent consultant specializing in storm water and FOG inspections, with follow-up being conducted by both the contractor inspector and City Staff.

As stated in the new JURMP, the City has 82 stationary facilities, of which 74 are identified as high Threat To Water Quality (TTWQ). The JURMP states that in the third year of JURMP implementation, at least 25% of all inventoried stationary businesses will be inspected, meaning 19 sites are required for inspection. In addition, the JURMP states that at a minimum, 100% of all sites (excluding mobile sources) determined to pose a high threat to water quality will be inspected in the second year of implementation, increasing the number of facility inspections from 74 to 82. The City went above and beyond the permit requirements and through their consultant inspected all 82 facilities. Twenty nine (29) facilities required more than one follow-up inspection and no major violations were detected. All facilities were in compliance during the enforcement inspections conducted by City Staff. A summary of the follow-up actions can be found in the Commercial Component of this Report.

Another program strength is the implementation of the City's grease management ordinance. The City is happy to report that a grease management ordinance was passed by City Council on September 7, 2004. Staff introduced the proposal to City Council on February 17, 2004, and received approval to move forward with the education of local restaurants and the public about the pending ordinance. A condition of the resolution once the proposal passed was to give restaurants 18 months to install a grease trap/interceptor, or receive an approved waiver from the City. Therefore, all restaurants in the City (even existing restaurants) must have a functioning grease trap/interceptor by March 2006. This is a huge accomplishment by City Staff as it is well documented that most major sewer spills are the result of grease related problems. Inspection of

the grease traps and maintenance are accomplished in conjunction with the storm water inspections. As mentioned above, the contractor the City hired to perform facility inspections also specializes in grease management device inspections. The contractor included grease management inspections into the storm water inspections and checks for such things as proper cleaning and maintenance, record keeping, duct cleaning, screen cleaning and hood cleaning. These are all important aspects of storm water management, as grease can have an extremely detrimental environmental effect.

A significant improvement to the grease management program that occurred during this reporting period is the increased level of inspection that was authorized and conducted by the City's contractor. As mentioned above, the City's contractor checked if each required commercial facility had a grease management device during FY 07/08. However, the inspection was taken to the next step in analyzing whether or not the installed device was of sufficient size and type. As often is the case with restaurants, they change frequently. So, an appropriate size and type grease management device may be sufficient for one type of restaurant, but if that restaurant closes and another, higher grease producing restaurant moves in, then the grease trap and/or interceptor may no longer be sufficient. This was a bold new move by the City that could be extremely controversial, but the City felt it was a necessary preventive measure in proceeding with the increased inspection level. This increased inspection process continued in FY 10/11.

This process will take more time to complete as the restaurants have been notified of their insufficient management devices, but the City recognizes that to replace or install a device takes time. However, by getting the process started now, the City hopes to have all restaurants in compliance in the very near future.

Improvement Areas: In previous annual reports, one improvement that was mentioned was the inspection of 100% of all high TTWQ commercial facilities in one reporting period. As reported above, this has been accomplished. The City is confident that all requirements of the Commercial Component of the Permit are currently being satisfied. One area of improvement may be increasing the amount of education and public outreach to the business community. The City believes that they have a good relationship with the current business community but more education is always welcome. City Staff could make an increased effort to educate new businesses as they apply for business licenses by producing

additional educational brochures and pamphlets.

11.4.4 Residential Component

Program Strengths: The City provides a wide range of programs for its residents to allow for convenient implementation of pollution prevention activities. Among the many programs the City provides are:

- Curbside recycling (first in the County to provide this service)
- Curbside Green-waste collection
- Aggressive and convenient Household Hazardous Waste collection program (described in detail in Residential Component)
- Community Education Program (described in Residential Component)
- The development and maintenance of the City's website regarding the Storm Water Program
- Community workshops on proper landscape practices
- Educational opportunities at local community events (Fiesta Del Sol, Beach Blanket Movie Night, Coastal Cleanup Day, Paws in the Park, etc.)
- Free presentations on proper HHW disposal and Used Oil Recycling (conducted by Solana Center)
- Opportunity to join Community Clean and Green Team which meets monthly to discuss environmental programs

The City Council meetings are also televised and available live on the internet to all the residents of Solana Beach. Many times storm water issues are discussed during these meetings. Other positive aspects of the program are the direct mailings of education materials included in monthly trash billings and the articles placed in the community newsletter, "*Shorelines*." Tallying the amount of phone calls to the City's Storm Water Hotline does not appear to be a good assessment of the City's program. The City, because of its relative small size, prefers to

conduct business on a more personal level. This has proven to be a much more effective way to work with the public. Therefore, although the hotline is still publicized, City Staff distributes their direct telephone numbers to the public when dealing with storm water issues. This allows direct, immediate contact with a Staff member, which ensures immediate, effective response to storm water issues.

As stated in last year's Annual Report, City Staff documents contacts (phone calls, visits to City Hall, etc.) with the public regarding storm water issues to help assess the effectiveness of the program over time. The only calls documented are ones that required Staff action on some level. The community of Solana Beach is very unique in that the residents are actively involved. Staff receives numerous phone calls every day that must be addressed immediately. Therefore, it would be unreasonable to document every contact made by the public.

Another area of improvement mentioned in previous Annual Reports was to develop additional educational materials for the residential community. This activity is constantly being addressed by the two WURMP groups discussed previously in Chapter 8. In addition, as mentioned throughout this Report, a large focus was placed on developing an effective regional educational program in the requirements of the new Permit. The Copermittees have formed a regional workgroup to develop a regional "brand" that will be recognizable by all residents throughout the region. The Copermittees have adopted the "Think Blue" campaign developed by the City of San Diego, since this slogan is widely known throughout the region. The activities and programs that have been developed and implemented by this group are described in the Regional Unified Annual Report. The City has been an active member in this workgroup during this reporting period.

The City feels that it is much more effective and efficient to address these issues collaboratively with the WURMP groups and the Regional Educational Workgroup. This allows for a consistent message to be disseminated to a large population of people throughout the region, as well as resulting in a significant cost savings for the City. As for requirements/projects unique to Solana Beach, Staff will continue to develop materials as the situations arise. A few examples of these specialized educational materials are listed in Chapter 8 of this Report.

Improvement Areas: For the next reporting period, City Staff will evaluate this

component and make any necessary alterations to the program. The City will continue to develop educational materials for the residential community, both jurisdictionally, on a watershed basis through the NCSWP and regionally through the Regional Educational Workgroup.

11.4.5 Land-Use Planning for New Development Component

Program Strengths: The City continued its implementation of the Standard Urban Storm Water Mitigation Plan (SUSMP) program as well as participated in the development of the new SUSMP. The City has successfully implemented the SUSMP review into all plan check processes. Although there will not be many projects within the City subject to this new requirement (the City is 95% built-out), the appropriate departments are still very aware of the requirements. In addition, the new model SUSMP was developed and approved by the City during last period and the City is now implementing the requirements of the new SUSMP program during this reporting period.

The Planning Department is actively involved in the City's Storm Water Program, and often notifies the Environmental Programs Manager when a proposed project may have storm water implications, including possible SUSMP projects. Although, as mentioned above, the City is almost completely built-out, the Planning Department has, as a result of this Permit, developed a list of possible proposed projects that may require a SUSMP. These projects have not been approved by City Council, but Planning Department Staff have surveyed the City and put this list together to warn the Environmental Staff as these projects may be proposed soon. This gives Staff a "heads up" before the projects are submitted that they will probably be subject to the SUSMP requirements and so the process can begin when, if ever, these projects are proposed.

As mentioned previously in this Report, the City is small and by nature, very intimate. This applies to development projects as well, as the City Council reviews development projects very closely. It is extremely rare when a significant development project is proposed that has not gone through extensive review by the applicants and City Staff prior to submittal. This allows the Community Development/Planning Staff to inform the applicants of possible storm water issues (especially grading, LID, HMP and SUSMP projects) prior to submitting their plans, so that the project will incorporate necessary storm water features into the original plans. This is extremely helpful to the applicants, as it avoids the

possibility of redesign (as well as increased costs) and speeds up the process. Therefore, most applicants set up meetings beforehand with Staff to review their plans to avoid any possible delays or impediments to their proposed projects.

Improvement Areas: The City will continue to educate prospective applicants regarding the SUSMP, LID and HMP if their respective projects will be subject to the new regulations. The City is very confident that its Land Use Planning component is very effective; however, it will continue to be modified in the future when necessary. The City is working on updates to its General Plan in the later part of 2011. This will have a major impact on the storm water program and City Staff will make certain that elements of the Permit and JURMP are incorporated into the new General Plan. In addition, as the new SUSMP, LID and HMP are finalized and adopted City Staff will develop new educational materials for the construction community.

11.4.6 Construction Component

Program Strengths: The Assistant Civil Engineer is responsible for conducting construction site inspections. This has proven to be a good use of resources as the Assistant Civil Engineer is trained in stormwater compliance as well as construction inspection criteria.

All construction sites were inspected for storm water issues based on the frequencies described in the City's JURMP. Since there are relatively few construction sites in the City, Staff often times can visit the higher priority sites more frequently. Additionally, the City's contracted Building Department (EsGil) inspector makes daily visits to most construction sites in the City. Although they do not handle storm water issues directly, they notify the Assistant Civil Engineer if they notice anything questionable onsite. This is another significant advantage to having the private building department staff housed at City Hall. Therefore, the City has three different Staff members out in the field monitoring construction sites and BMPs on a daily basis.

If the City Inspector or EsGil inspector notices a problem related to storm water, they notify the Assistant Civil Engineer immediately. The Assistant Civil Engineer investigates further, taking any necessary corrective or enforcement actions. This program has worked very well due to the already established relationship between the contractors and the City Staff. Because of this pre-established

relationship, the transition into storm water compliance was virtually seamless. The Inspector keeps a daily log of all of his activities, and storm water related issues are included. The City also mailed out a wet-season reminder to all active construction sites reminding them of their obligations under the Permit. Therefore, the City is assured that all contractors are aware of the regulations, making enforcement much easier for the City.

Additionally, for all CIP projects, the applicant/contractor is required to have a Pre-Construction Meeting with City Staff in which storm water issues are discussed. At these meetings, contractors are given a sample copy of the Site Inspection Checklist, and they are required to fill out a Wet-Weather Triggered Action Plan (if the project will be in construction during the rainy season). All of these measures are taken to ensure that all contractors are aware of the storm water regulations, and it helps the enforcement aspect of the Permit as Staff can be assured that all contractors have been educated and cannot claim ignorance of storm water issues. Appropriate enforcement actions (corrective, stop work, fines, etc.) can be enforced without fear of being challenged by violator.

Another activity that has proven very successful in regards to construction activities was the distribution of a colorful, informative BMP Construction Brochure. This brochure was developed by the Carlsbad WURMP workgroup and delivers a consistent message for all North County cities. The brochure is a tri-fold that gives background information on the storm water program and regulations and on the reverse side is a large diagram of a common construction site with the general BMPs shown and described. This brochure has been a huge success with the construction/developers as they can post this brochure at their site to remind their employees of proper BMPs. These brochures are attached to all building and grading permits.

The City believes that any opportunity to educate the community should be taken advantage of. As such, during this reporting period, approximately 175 BMP brochures were distributed during this reporting period, up from 150 BMP brochures in FY 09/10 224 FY 08/09, 470 during FY 07/08, 521 during FY 06/07, 509 during FY 05/06 and 416 during FY 04/05. The slight increase in brochures distributed during the last two reporting periods directly reflects an increase in construction activities region-wide. All building project applicants were given a brochure; there were just fewer projects during this reporting period.

As discussed in last year's Annual Report, the City developed and now tracks the SUSMP long-term BMP maintenance agreements as required by the Permit. In addition, the City continues to implement the Long Term BMP Maintenance Agreement that requires the applicant to submit a recorded document from the County of San Diego which includes the maintenance activities required and gives the City the legal authority to inspect the BMP to ensure compliance. This is an extremely helpful tool in ensuring that the post construction BMP is not only installed, but is being properly maintained to remain effective.

As mentioned in last year's Annual Report, there are significant new construction requirements in the new Permit. The significant additions to the new Permit include the development and implementation of the Hydromodification Plan (HMP), Low Impact Development (LID) and the update to the model SUSMP. The City is pleased to report that these new programs either have been developed and implementation is currently in the process or they are being developed and close to finalized, and the City is participating in the regional process. The HMP program is not expected to affect the City; however the City still contributed funding toward the program development as part of its Copermittee responsibility to the region. The City also revised its Municipal Code to adopt the updated model SUSMP in compliance with the new Permit regulations.

Improvement Areas: During the next reporting period, the City is committed to improving and modifying the construction program if any deficiencies are detected. The City is also committed to developing more educational materials to distribute to the public, and contractors in particular. The Construction BMP Brochure has been a major success, and the contractors/developers are constantly looking to us for more information and guidance.

With the adoption of the new Permit, additional construction activities and programs need to be developed and implemented in future years. The City will continue to work with the Copermittees to develop these programs for implementation. One area of improvement that the City is looking at is possibly hiring a specialized contractor to conduct construction inspections. This is similar to the City's decision to hire a contractor to perform commercial/industrial inspections and specialized Staff training, as this will free up limited Staff resources while providing increased service to the community. The City Council approved $10,000 in FY 10/11 specifically for construction inspections, further

strengthening the City's commitment to protecting the local water quality. The new Permit contains significant additional requirements for the Construction Component, so the City felt it was prudent to strengthen its program as well, and hiring a specialized consultant is a first step in the right direction.

11.4.7 Illicit Discharge Detection and Elimination Component

Place Holder – This will be submitted with Chapter 7 on December 15, 2011 as a result of Addendum No. 2 adopted by the RWQCB

11.4.8 Education Component

Program Strength: The City feels very strongly that the current education program being implemented by City Staff has been very effective. The amount, and quality, of educational materials developed by the City and through collaboration with the other Copermittees, has proven to be very successful. The following events have allowed City Staff to educate the community, both residential and commercial:

- Fiesta Del Sol
- Paws in the Park
- Beach Blanket Movie Night
- Annual Coastal Cleanup Day
- Annual Green Fair
- City Council Meetings
- Clean and Green Team
- Civic and Historical Society meetings
- Friends of the Library meetings
- *Shorelines* Community Newsletter
- Green Flash website
- Brochures and Handouts at City Facilities
- Partnerships with Solana Center, Santa Fe Irrigation District, Kids Korps and the Solana Beach School District

The complete educational program is discussed thoroughly in the Educational Component of this report.

Improvement Areas: The City is very satisfied with its current educational program. The respective WURMP groups have gone above and beyond the requirements of the WURMP's educational component, and have delivered many quality items to the residents of Solana Beach.

Also, as reported in last year's Annual Report, the City is participating in the development of the new regional educational program. The new Permit requires the development of a regional educational program, and the City is committed to working with the other Copermittees to develop a successful and comprehensive program. Also, the new Permit requires Watershed based education based on the activities chosen by the participating Copermittees, and the City is committed to working with the Copermittees in its two watersheds to develop and implement the educational activities to support the watershed activities. These activities are described in detail in the Regional Unified Annual Report (submitted with the Copermittees reports in September 2011) and the Watershed Annual Reports which will be submitted in January 2012, respectively.

11.4.9 Public Participation Component

Program Strengths: The residents of Solana Beach have multiple opportunities to interact with City Staff through the hotline, website, community events and direct interaction. All City Staff are available to discuss any issues with the community if they come into City Hall, and most all literature distributed currently has the appropriate Staff contact information listed on it. City Staff prides itself on interacting with the community on a personal basis, and as a result has established many positive relationships with key members. The City continued to host the annual Coastal Clean-Up Day that allowed the community to get involved as well as distributing educational brochures at the local community events. Some additional opportunities include:

- Copermittee meetings
- Adopt-A-Beach Program Beach Cleanups
- Fiesta Del Sol
- Paws in the Park

- Annual Green Fair
- Beach Blanket Movie Night
- Shorelines Articles
- Opportunities to work with local Partnerships/Collaborative's
- City Hotline
- Green Flash website
- Clean and Green Community Group

Improvement Areas: The City realizes its responsibility to get the community involved in the storm water program. The City has given the residents ample opportunity to get involved in implementing the program. City Staff is very visible throughout the community on a daily basis and routinely has discussions with residents regarding storm water issues. The feedback given to City Staff has been overwhelmingly positive, and the City looks forward to continuing this personal relationship with the community.

In addition to the JURMP public participation opportunities, the community has public participation opportunities through the WURMP process. More information on the WURMP process is available in the WURMP annual reports submitted in January.

11.5 Level 4: Load Reductions

Level 4 load reduction is a key assessment measure for the storm water program. Ultimately, the goal of the storm water management program is to reduce pollutant loading into the City's MS4 and by doing so, improve the discharge and receiving water quality. However, load reductions are very difficult to quantify, and the Copermittees as a whole are struggling to develop methods to achieve this task. This being said, the City will continue to analyze any data received that may be able to show a load reduction with the hope that it will somehow be linked to improvements in discharge and receiving water quality.

As a result of the Regional Water Quality Control Board's comments on the City's FY 02/03 Annual Report, the City has adapted its street sweeping program. The City now requires the private street sweeper to document all load information on a weekly basis. This includes an estimated amount of debris

collected. This information was collected initially in FY 05/06 and continued into this reporting period as well. The total amount of street sweeping debris collected for each FY is as follows:

- FY 05/06 – 299.1 cubic yards
- FY 06/07 – 188 cubic yards
- FY 07/08 – 275 cubic yards
- FY 08/09 – 274 cubic yards
- FY 09/10 – 270 cubic yards
- FY 10/11 – 212 cubic yards

The total amounts remained relatively constant over the past few years. City Staff believes that the reason is most likely that the majority of the debris picked up by the street sweeper is organic material from natural sources such as trees and vegetation. Therefore, the load reduction measure of quantifying cubic yards and hopefully detecting a decrease over time is not a good indicator for Solana Beach. The street sweeper not only quantifies the amount of debris each day collected but also records an approximation of the type of debris. And for Solana Beach, it is over 95% organic matter. There are only trace amounts of litter or trash, which is a positive thing, but it also indicates that quantifying load reductions from street sweeping activities is not a good measure of the City's storm water program. However, the information will be collected and analyzed and any trend will be documented for future use.

Another possible load reduction calculation could be documenting the amount of material collected and removed from the various BMPs throughout the City. These BMPs include:

- Annual inspection and cleaning of MS4 system
- Maintenance of CDS Unit(s)
- Maintenance of detention basin adjacent to San Elijo Lagoon
- Load reduction calculation for the Low Flow Diverter at Fletcher Cove and

the filtration basket located upstream from Seascape Sur Outfall

- Load reduction calculation for the Bioswale maintained at La Colonia Community Center
- Maintenance records of permanent treatment BMPs required as part of SUSMP projects (privately owned)

All of these activities may not be feasible, however they all warrant further consideration. It has been generally agreed upon that the Copermittees are not capable at this point of performing complete load reduction calculations and assessments, but are all committed to working towards this goal. The Copermittees have decided that this Level (4) should be attacked at a regional level, and not jurisdictionally. A significant regulatory program that should force us in this direction is the TMDLs that have been developed and are now being implemented by the Copermittees in several watersheds. The City is currently involved in the San Elijo Lagoon Bacteria TMDL Investigative Order, and as relevant information is received from the monitoring they will be discussed in upcoming Annual Reports.

11.6 Levels 5&6: Changes in Discharge and Receiving Water Quality

The City has been collecting and analyzing jurisdictional monitoring data received through the dry-weather and coastal monitoring programs. The City will continue to analyze the data to better understand the collective water quality picture in the City. The data will be assessed to determine the potential water quality problems within the City. Data collected by the City will be analyzed independently as well as collectively with the regional monitoring programs. Although it is generally accepted that it will take many years to develop a trend in water quality, the City will nonetheless analyze its data on a continuous basis to see if anything develops. There are no glaring deficiencies in the water quality in the City, but the situation at Seascape Sur will continue to be monitored to ensure that the storm drain does not have an impact on the quality of the receiving water (Pacific Ocean). Seascape Sur will be explained in greater detail in the next Chapter.

The Regional Monitoring Program currently conducts trend analyses for the Wet Weather Monitoring Program. The goal of the WWMP is to collect data and analyze the data to determine if there are in fact improvements in the receiving

water quality throughout the region. The City participates in this workgroup and will continue to assist the Copermittees in determining if we have obtained levels 5 and 6 of the assessment strategy.

11.6.1 Dry Weather Monitoring Data

2011 Summary

Place Holder for 2011 Dry Weather Monitoring Program – Will be submitted in December 2011 as a result of Addendum No. 2 adopted by RWQCB.

11.6.2 Coastal Water Quality

The Pacific Ocean is the ultimate receiving water for the City although there are other intermediate receiving waters, such as the San Elijo Lagoon and the San Dieguito Lagoon. To measure the quality of the coastal receiving waters and assess the JURMP effectiveness, the City has monitored its one coastal storm drain outfall (Seascape Sur). The City used to monitor another outfall at Fletcher Cove; however, a low-flow diverter was installed in 1998 to divert dry-weather flows into the sewer system. The City is currently involved in an IRWM grant application that includes the installation of an additional low-flow diverter at Seascape Sur, which is discussed in more detail in Chapter 12 of this Report.

Coastal Storm Drain Outfalls

The coastal outfall monitoring program reporting period is different than the reporting period for this Report. The coastal monitoring program reporting period runs from November through October. All cities with flowing coastal storm drains meet regularly (Coastal Monitoring Workgroup) to develop and implement this program to promote regional consistency.

The Coastal Monitoring Workgroup developed an adaptive monitoring approach. This approach was developed to allow the individual cities to adapt their program to concentrate their limited resources on problematic locations and ease up on consistently non-problematic areas. The City had *no receiving water exceedances* for bacteria during this reporting period, which was consistent with the results of the last three reporting periods. In addition, it's apparent that the increased educational and oversight of the vendors at the Fiesta Del Sol was

successful as there were no exceedances after the event for the sixth year in a row. City Staff again made this a priority during this reporting period to meet with the event organizers and discuss BMP requirements with them so that they can relay that information to the individual vendors and provide them with more educational materials. In addition, City Staff monitored the Food Court during the event to ensure all vendors were abiding by the storm water regulations. This was mentioned in previous annual reports as an improvement area because of the consistent exceedances after the Fiesta Del Sol that had occurred in the past.

The storm drain at Seascape Sur had multiple exceedances for total coliform, fecal coliform and enterococcus during this reporting period. However, the magnitude and the frequency of exceedances have decreased during the last two reporting periods, which is a significant achievement. This is a storm drain that has a history of high bacteria counts and is currently the focus of an ongoing IC/ID investigation. The City has recently installed upstream BMPs that may be contributing to the improvement in water quality. The program is being implemented by City Staff, and the complete results are presented in the Coastal Monitoring Annual Report, and explained in the next Chapter of this Report.

The Copermittees had to modify the Coastal Monitoring Program due to the new requirements of the Permit. The Coastal Monitoring Program workgroup made the necessary changes and additions to the program and are currently implementing the new model. The City is confident that it has met the requirements of both the old Permit and new Permit. The complete Copermittees Coastal Monitoring Program is incorporated into the Regional Monitoring Annual Report.

Beach Posting Data

The County Department of Environmental Health has monitored beach water quality for bacteria since the 1950's. This sampling is used to assess the health of the beaches. When bacteria levels exceed State standards, the County posts signs on the beaches warning and advising the public not to enter the water. In 2000, there was a significant change in protocol as a result of the passage of AB411, which required additional testing, incorporating testing for enterococcus, which required the beach to be posted when only one sample exceeded the standard.

During this reporting period, there were ***no beach closures*** **in the City of Solana Beach,** which bodes well for the overall effectiveness of the City's program.

CHAPTER 12
Special Investigations

CHAPTER 12: SPECIAL INVESTIGATIONS

12.1 Introduction

In accordance with Permit Section D.4.e, this section of each Annual Report will describe the Copermittee's efforts to eliminate all detected illicit discharges, illicit discharge sources, and illicit connections as soon as possible after detection. The City's Illicit Discharge Detection and Elimination (IDDE) program is designed to identify, prohibit, and eliminate discharges that are a significant source of pollutants with the goal of protecting receiving water quality. This section of each Annual Report will provide the results of any special investigations conducted during the reporting period. However, the City also responded to many other complaints of possible IC/IDs, which resulted in rapid compliance, but did not warrant or require a comprehensive special investigation.

Although this Report does not contain a completed Chapter 7 due to the extension granted in Addendum No. 2, this Chapter will remain as many activities related to this Special Investigation can be reported on. Any additional information gathered from the 2011 Dry Weather Monitoring Program will be included in the December 2011 submission.

12.2 Bacteria at Seascape Sur

12.2.1 Background

As first reported in the FY 2002/2003 Annual Report, there has been an ongoing, historical problem occurring at one particular storm drain in the City. The location, Seascape Sur, has had historically high levels of bacteria; often times exceeding limits at the storm drain and occasionally in the receiving water (there were *no exceedances in the receiving water during FY 10/11*). Previous annual reports go into detail regarding the history of this problem and the City's efforts to remedy it. Since the history is important in describing the situation, this report will include much of what was written last year. Any added information that was discovered during this reporting period will be included in this report. Next year's report will include the City's additional efforts that were undertaken during FY 11/12.

Prior to and during this reporting period, the City began a concerted effort to determine what was causing the elevated levels of bacteria at Seascape Sur

outfall (based on results from the Dry Weather and Coastal Monitoring Programs). The problem was thought to be resolved early on, but then monitoring results in subsequent years indicated the problem had either returned or persisted. In 2000, the City Engineering/Public Works Department was fairly certain that the problem had finally been corrected; particularly when the 2001 DWMP indicated the bacteria elevated levels had *decreased* (although they were still elevated above the normal range).

However, preliminary results from the 2002 DWMP revealed that the bacterial levels had risen from the previous year to a troublesome level (see 2002 DWMP, available at City Hall upon request). As a result, the City "went back to the drawing board," and with the help of MEC Analytical (consultant for the 2002 DWMP), began an upstream investigation that continued through the end of calendar year 2002.

12.2.2 History

The City began its DWMP in 1993, with no significant problems reported until 1996 when elevated bacteria levels were noted at the Fletcher Cove Outfall. Subsequently, the City constructed a low flow diverter (in 1998), which corrected the problem by diverting dry weather flow to the City's sanitary sewer system.

Between 1997 and 1999 results from the DWMP revealed some minor issues that were readily resolved, but nothing significant at Seascape Sur or Fletcher Cove Outfalls.

However, results from the 2000 DWMP identified two locations with high levels of coliform bacteria, which was of significant concern because both locations flowed directly to the beach via the Seascape Sur Outfall and were in fact, just a short distance from the outfall. The City conducted an extensive investigation and eventually found an old leaking sewer lateral that was buried under the ground near the site of the upstream catch basins in the parking garage of a business complex. The lateral was dug up, examined, and staff determined that cementing over the pipe would be the best method to ensure it was completely sealed off (investigation confirmed that the pipe was no longer in use). Because the leaking lateral was located close to the curb inlet, City staff, plumbing contractors and the consultant were fairly certain that the pipe was the cause of the elevated bacteria counts.

To confirm that the pipe was the cause of the suspected pollution, the City contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during several follow-up tests. At that point, staff was optimistic that their efforts had been successful.

The 2001 DWMP included ten sites for testing. To ensure the problem from the previous year had been corrected, the program included the same two sites that had elevated bacteria counts in 2000. Surprisingly, the site had elevated bacteria levels, but because they were much lower than the previous year, staff believed that the problem might be residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be televised in 2002. The televising of the lines was scheduled during the routine cleaning of the storm drains later that year. Due to various issues, the televising of the lines did not take place prior to the implementation of the 2002 DWMP, which was under the regulations of the new Permit.

The City requested proposals from consultants to design and conduct the 2002 DWMP. The contract was awarded to MEC Analytical in late spring, early summer 2002. The City requested that the same two monitoring sites from 2000 and 2001 be included in the program, regardless of the new sampling procedures required of the Permit. The City included those sites to ensure continual monitoring of the area.

12.2.3 The 2002 Investigation

Samples for the 2002 program were collected on August 6th and 7th, 2002 throughout the City by MEC Analytical (MEC). Shortly thereafter, MEC contacted the City and informed the Storm Water Coordinator that significantly high levels of bacteria had been found at the locations of the year 2000 and 2001. As shown on Table 13-1, the amounts were troublesome.

Table 12-1 DWMP Initial Results (Sampled August 6-7, 2002)

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
1	West Side of Sierra Ave	700,000	30,000	24,000
2	Manhole between sites 1 and 2.	900,000	50,000	28,000
3	Seascape Sur Outfall (downstream from sites 1 and 2)	800,000	21,000	35,000

Results are reported in MPN/100 mL.

Based on the above results, it appeared that the problem, whatever the cause, was more pronounced at Site 2, the manhole, than at either Site 1 or 3. Therefore, the City immediately requested that the conveyance system be televised. At the same time, the City authorized MEC to conduct an upstream investigation, accompanied by City staff. MEC indicated to staff that the elevated levels of bacteria, combined with the results from previous years, were a sign that an illegal sanitary wastewater connection may be the cause of the problem. However, subsequent inspection by City staff (including public works crews that inspected various locations of the line) did not reveal any expected accompanying waste solids. A somewhat consistent drip was noticed, which was traced back to a nearby condo complex that was discharging their pool (the process was discontinued and the complex changed their procedures to drain into the sewer system). Other causes of the slow drip appeared to be over-watering of the many condominium complexes on Sierra Avenue.

Staff sent letters to all HOAs on Sierra Avenue that drain to the Seascape Sur outfall to eliminate the slow drip. Staff received calls from some of the HOAs in response to the letters and discussed the issue in more detail and received positive responses.

The results of the televised line were viewed by the City Engineer, which revealed a dip in the line approximately at the location of the manhole (with the elevated bacteria) and two possible illegal connections just west of the curb inlet. However, an additional investigation indicated that the connections were not a problem, but staff thought that the dip in line could be harboring residual bacteria, and possibly re-growth.

12.2.4 Additional Testing

In an attempt to pinpoint the source of the contamination, MEC and City staff began the upstream investigation on August 19, 2002. Samples were collected from Site 1, and at a curb inlet catch basin on the *eastside* of Sierra Avenue, directly upstream from Site 3 (named Site IE).

Staff was surprised when the results of the second round of sampling revealed *higher levels of total coliform (2,400,000), fecal coliform (50,000) and Enterococcus (500,000)* at Site 1E, than the previous results from Sites 1 and 3. Further, the results were surprising given that the dip in the line at Site 2 was

thought to be the source of the contamination. *The results seemed to indicate that the source of the bacteria was coming upstream from Site 1E.*

12.2.5 Traveling Further Upstream

The curb-inlet catch basin on the east side of Sierra Ave (Site IE) receives street runoff and runoff from the Beachwalk Business Complex (Beachwalk). Beachwalk is a collection of various businesses located at 437 South Highway 101 in Solana Beach. Beachwalk businesses, at that time, included several restaurants (Pacific Coast Grill, California Pizza Kitchen, Rubio's), several small food facilities (ColdStone Creamery, Solana Beach Coffee Company, VitaFit, etc.,) several professional offices, a bike shop and others. Beachwalk was constructed approximately 13 years ago and at the time of construction, an on-site storm drain system, that collects on-site runoff from the property, was lawfully connected to the City's MS4.

Based on the results of the second round of testing, City staff thought that the source of the contamination must somehow come (or significantly contribute) from Beachwalk. Upon speaking with the Management Group that oversees the property, staff made several visits to look for possible non-point source explanations and speak with business owners to discuss BMPs (see Timeline below for more details).

On August 27th, 2002, City staff went to Beachwalk and personally delivered educational brochures to *all of the businesses,* educating business owners about storm water regulations and BMPs. To ensure that all the businesses were addressed, door hangers were left at the businesses that were not open at the time of the visit and additional property visits were scheduled. City staff also spoke with the person responsible for maintenance of the property and provided detailed information about pollution prevention, storm water regulations, and BMPs and how to report violations. Many of the business owners were extremely helpful and all were cooperative. Some business owners went out of their way to show staff potential problem areas, discuss BMPs and provide access to private restroom facilities (staff were looking for overflow problems and unusual construction or evidence of recent repairs).

Staff conducted another visit on September 3rd, 2002 in response to a call from one of the business owner's that staff had contacted on August 27th, 2002. City

staff confirmed that foul smelling odors were coming from catch basins on-site. Further inspection revealed excess watering occurring on the patio of the Pacific Coast Grill restaurant. A manager at the restaurant was contacted and educated regarding BMPs and the new storm water regulations. During this visit, staff determined that samples were needed at various storm drains throughout the complex to try and pinpoint and eliminate the problem. City staff identified several locations that should be tested and requested permission to collect the samples from the property owners.

On September 4th, 2002, City staff accompanied MEC to conduct additional testing and investigation. The process confirmed staff's suspicion that the bacteria levels were coming from Beachwalk. Various samples were collected at locations throughout the complex. An outdoor floor drain just outside the kitchen of Pacific Coast Grill appeared to have dark brown, stagnate water in it. On-site ammonia tests were also consistent with elevated bacterial numbers (60 mg/L). A sample (Site 32) was then collected for further lab analysis. Sites IE and 3 were also sampled again for additional information. As shown on Table 12-2, Site 32 confirmed that the contamination was coming from Beachwalk and most likely, the source was near or in, the floor drain outside Pacific Coast Grill Restaurant.

Table 12-2 Upstream Testing Results

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
32	Beachwalk floor drain	>16,000,000	300,000	>241,960
1E	East Side of Sierra Ave	3,000,000	50,000	3,550
3	West Side of Sierra Ave	800,000	70,000	24,950

Results are reported in MPN/100 mL.

After the lab results came back and confirmed what was suspected, the property owners were notified of the severity of the situation and were eager to remedy the problem and work with the City to find a solution.

The property owners worked together with the City's Public Works Supervisor and a local plumber experienced in storm drain cleaning to correct the problem. The east side catch basin was temporarily sealed, the pipe was flushed and a specially equipped trucked was placed at the catch basin to vacuum out the resulting sludge for proper disposal. As soon as the procedure was complete, on September 18th, 2002, City staff collected additional samples from all three sites (32, 1E and 3), *expecting the results to show a decrease in bacteria levels*. The

residual water in the pipes was clear of the brown, stagnate water, which also contributed to the hope that the problem was resolved. However, while results from Site 32 indicated *reduced bacterial levels*, downstream sample *again* indicated *high bacteria levels* (the sample on the west side of the street).

12.2.6 Brainstorming

At first, these results seemed a bit perplexing (maybe it was the dip in the line?, etc.), but then, while staff continued to brainstorm ideas to solve the problem, some engineers thought that the flushing of the system might have loosened some bacteria, which escaped collection by the Vactor truck. The City decided to wait a few weeks to see if the problem was alleviated after the system had time to completely flush out.

In the meantime City staff met with the property owners and 1) reviewed old construction plans for the property to look for potential areas of cross contamination; 2) discussed possible options that may help alleviate the situation, including training and education of business owners, television activities that might occur near the catch basin; and 3) decided that a temporary cap would be placed on the floor drain of Site 32 to secure it from contamination for 30 days (the cap could be removed during rain to prevent flooding).

After 30 days (and two rain events), the plumbing contractor agreed to remove the temporary cap to allow further testing.

Surprisingly, results from this last round of testing indicated that there was still a significant problem on the property. A meeting was scheduled immediately with the property owners, who were informed of the test results and that the City now required them to remedy the problem through televising the lines, locating the illegal connection and reconstruction, or face serious fines by the RWQCB and the City. The property owners were concerned, responsive, cooperative and resolute in their attempts to solve the problem.

In addition, the City agreed to purchase a storm drain inlet filter to be placed in the catch basin just downstream from the complex, leading to the ocean outfall. It was installed the first week of December, and is maintained by the City's Public Works Staff. Although it does not filter the water passing through from Beachwalk, it does help alleviate the problem by filtering out the water coming

from the street. The City hopes that this will help reduce the high bacteria numbers found in the catch basin.

12.2.7 Action Taken By Property Owners during FY 03/04 Annual Reporting Period

By the end of December 2002, Beachwalk property owners had done the following to remedy the problem:

While attempting to televise the lines, a significant amount of sludge built up in the pipe prevented the camera from penetrating the pipes (which is likely the source of the problem, City staff also reviewed the small amount of footage that was performed in the pipes).

An extensive flushing out of the entire system was conducted, which took some time to accomplish amidst the rain events in December and the amount of material in the pipes.

The lines were televised and detected a large dip in the pipe where sediment and sludge were building up, possibly providing a breeding haven for re-growth of bacteria.

No illegal connections or sanitary waste connections were detected. There were a few pipes connected to the outfall pipe coming from the adjacent condos, however these lines were proven to be outdoor area drains. Beachwalk property owners and condo associations are completely aware of the responsibility to rectify the situation.

The City decided that they must increase their efforts to rectify this continuous problem to ensure the integrity of the receiving waters at Seascape Sur. The bacteria levels were still consistently high, often exceeding standard limits for the outfall, but, fortunately, not yet affecting the receiving waters. Growing increasingly frustrated, City staff decided that an increased effort, and the high costs that come with it, were necessary to finding the cause, and solution, to the problem at Seascape Sur.

On March 4, 2004, City staff televised the Seascape Sur storm drain line for maintenance purposes. The video showed a significant amount of sediment accumulation at the end of the pipe coming from the Beachwalk Business

Complex. Staff met with the Beachwalk property management and mandated that they clean the sediment from the line. The Beachwalk management complied with our request and immediately cleaned the pipe, and City staff supervised to ensure all BMPs were used and abided by at all times.

Laboratory results were still coming back consistently high, so the City decided to take on the cost of completely cleaning the storm drain pipe with the hopes that it would remove any residual bacteria that may be contributing to the problem. The problem the City faced was that this had never been done before, and the dimensions of the pipe made it very difficult to develop a plan of attack. The pipe starts at the curb inlet on Sierra Avenue, then travels completely underground and slopes downward until it empties out onto the beach. The distance from the street to the outfall is approximately 550 feet and dips to 30 feet below the surface, making access very difficult. The City was able to gain access from the neighboring condominium complex to place a Vactor truck to ensure that no excess water would escape containment and empty onto the beach. The project took 5 days to complete (ending on Friday, May 7, 2004), with City staff working with its private contractor, and cost approximately $10,000. The City removed 4 cubic yards of sediment from the pipe, and used over 5,000 gallons of water. The City was confident that the next lab results would come back spotless.

On the following Monday (May 10, 2004), City staff received a phone call from the County of San Diego Department of Environmental Health advising them that samples they took in the receiving water adjacent to the Seascape Sur outfall had failed AB 911 standards. It appeared that all the effort and money spent to clean the pipe had actually made it worse. However, Staff immediately began an IC/ID investigation and discovered that an adjacent condominium complex had a sewer spill that weekend and raw sewage had entered into the Seascape Sur storm drain. City staff was relieved that they found the cause of the high bacteria, but highly disappointed that all of their work, time, and money had been wasted by a small sewer backup.

Because the sewage was traced back to a private lateral, the City was determined to put the pressure on the condominium complex to clean the pipe again. Staff met with the HOA representative and a deal was worked out to have the pipe cleaned again, at the HOA's expense. Additionally, the City took this opportunity to once again educate the HOA and wrote an article regarding the proper handling and disposal of grease for the HOA's monthly newsletter. The

City then set the HOA up with a plan of attack and supervised the process. Staff worked with the Regional Water Quality Control Board to allow the City to use a small concentration of bleach mixed with the water to make sure that the pipe was completely sterilized at the end. This cleaning was done on September 24, 2004.

12.2.8 Progress in FY 04/05

The results of the cleaning performed on September 24, 2004 proved to be very successful. The bacteria levels were reduced significantly and the City hoped that the sterilization would be a permanent fix. However, the results in the following few months showed that the bacteria was slowly increasing back to its historical levels, further frustrating City staff. This may be due to City staff's worst fear that the dip in the pipe could be harboring and resulting in re-growth of bacteria that may enter by way of decomposing organic debris and/or illegal dumping.

Since this did not permanently solve the problem, the City continued to explore other options. In March 2005, the City was discussing the situation with its contract lab, Weston Solutions, and jumped at the opportunity to participate in a pilot study aimed at refining a new lab analysis that would potentially categorize the generic coliform and enterococcus bacteria indicators as deriving from human or animal origins. This would be an extremely significant discovery because the City could further identify where the bacteria was coming from, human (IC/ID) or from animals (dogs, possums, raccoons, etc.), to help direct what steps to take in the future. The City could further refine its source identification and, in theory, stop wasting limited resources on sources that don't exist.

The pilot program is completed; however, the results did not come back revealing anything substantial. Only one sample came back positive for human bacteria (and this was somewhat inconclusive), and samples collected after this positive result all came back negative. Therefore, the City concluded with relative certainty that the source of the bacterial contamination is not human. This one positive result may be caused by a single illegal dumping occurrence or by laboratory error. The resulting negative results show that there is not a continuous inflow of sewage, as would result if there were an illegal connection. Although the pilot program is complete, one early, important conclusion would be

that the bacteria is not coming from human origins, which would allow the City to eliminate this from source identification and focus its efforts on non-human sources.

12.2.9 Special Pilot Program FY 07/08

The City's lab (Weston Solutions) offered their services to the City for a special pilot program during FY 07/08. On May 30, 2007 Weston staff met with City staff to investigate the surrounding areas to see if they could detect anything that may be contributing to the high bacteria levels adjacent to the east catch basin. Weston has performed similar investigations in other cities with positive results. They were very interested in finding the source for the City, as we have been partners now for years on this. The results were very interesting and reconfirmed the City's belief that there is substantial re-growth occurring in the pipe as the bacteria results were much lower in the catch basins than at the outfall. The results are as follows:

Table 12-2 Results from Weston Solutions Pilot Program

	East Side Catch Basin (MPN/100mL)	Outfall (MPN/100mL)
Total Coliform	700,000	16,000,000
Fecal Coliform	80	50,000
Enterococci	41	483

The City and Weston Solutions partnered for a unique pilot study with the hopes of finally determining the source of the bacteria. The specialized studies were conducted to further analyze a unique phenomenon called "pseudofluorescence." This phenomenon first was detected in some samples from Seascape in the summer of 2007, when using the Enterolert method resulted in some false positives, or "pseudofluorescence." The lab noticed that the tests began to increase in frequency, and brought it to the attention of City staff after the March 31, 2008 samples were analyzed. The City and Weston then developed a plan to determine why this phenomenon was occurring, and if this could bring us any closer to solving the mystery.

Starting on April 30, 2008, Weston began testing the samples using the IDEXX method (SM 9223B) side by side with the Multiple Tube method (SM 9230B) for Enterococci in order to determine if the different methods yielded different

results. Parallel analyses were carried out only on the outfall samples, as the paired ocean samples never exhibited pseudofluorescence. The following are the results:

Table 12-3 IDEXX and Multiple Tube Results

Date	IDEXX Results (MPN/100mL)	Multiple Tube Results (MPN/100mL)
4/30/2008	<10	170
5/29/2008	<10	300

Analyzing the results, it is easy to confirm that something is causing interference with the IDEXX method. Because of this, PCR analyses were also performed, with results ranging between 1,000-10,000 (PCR includes viable and non-viable cells, as it only looks for specific DNA markers, regardless of cellular viability), which validates the Multiple Tube results by showing a definite presence of the target bacteria.

There is some concern that detergents may be the cause of the interference and pseudofluorescence. Enteroalert (IDEXX) analysis from both months displayed pseudofluorescence wells, so both were tested for detergents using an MBAS kit. The results are as follows:

Table 12-4 MBAS Results

Date	MBAS Results (ppm)
4/30/2008	15
5/29/2008	25

The sample taken on May 29th, 2008 had a larger number of pseudofluorescent Quantitray -2000 wells, which seems to confirm the relationship between pseudofluorescence and the amount of detergent in the sample.

As a result of this pilot study, an official method change for enterococcus was instituted beginning with the samples taken on June 28th, 2008. Using the Multiple Tube method, MPN for enterococcus was determined to be 3,000 per 100mL, while results from Enterolert (performed as a continued comparison) were found to be 63 MPN/100mL, with a continued pseudofluorescent. In addition, continued upstream investigations will focus on detergents as the presence has been recorded a couple of different times.

The City will continue cooperating with Weston and their professional staff to investigate this ongoing mystery until a resolution is found.

12.2.10 Timeline of Significant Actions

August 27, 2002- City staff distributed storm water brochures to all the businesses located in the Beachwalk complex. Staff toured the mall, visually inspected on site catch basins, outdoor floor drains, restroom facilities, and inspected several restaurants and discussed pollution prevention BMPs.

September 4, 2002- Based on feedback from the testing, staff spoke with the managers of Pacific Coast Grill, reviewed the storm water regulations, spoke about prohibited activities and distributed storm water brochures.

September 4, 2002- City staff and an employee from MEC conducted upstream investigation. A small outdoor floor drain contained brown, stagnate water with a very pungent odor. The drain cover was removed and the material was sampled. MEC called a few days later and reported that the results were consistent with the numbers for raw sewage for total and fecal coliform and *Enterococcus*.

September 18, 2002 - The Beachwalk storm drains were flushed out using clean, fresh water and the sludge was vacuumed out into a Vactor truck at Site 3. Results from follow-up samples indicated that a problem still existed.

October 24, 2002- Additional samples were taken to see if the problem had been eliminated. Results from the lab showed that the problem had not been solved. City staff continued to meet with property owners to pinpoint the source.

November 2002- The City installed a specialized catch basin filter unit that is designed to catch all debris (trash, organics, etc.) from the street before it reached the MS4 system. It also has specialized bio-filter rolls to filter out the hydrocarbons.

November 13, 2002- a semi-permanent cap was placed on the floor drain that seemed to be the source of the bacteria. A follow-up sample was scheduled for 30 days.

December 13, 2002- Samples were taken after the cap was removed and

preliminary results indicate that the problem has not been resolved. More extensive investigation was ordered.

December 14-31, 2002- All property drains were cleaned and televised.

January through June 2002- Increased monitoring and sampling through Coastal Monitoring Program to try and determine if the steps taken previously had successfully remedied the problem. An intensive educational program to the HOA's and the Business Complex was also implemented to assure compliance under the Permit.

March 4, 2004- Mandated and required the Beachwalk Business Complex to clean out storm drain system that leads to the City's Seascape Sur storm drain due to accumulation of debris (sediment, trash, etc.).

May 5, 2004- Completed cleaning of entire Seascape Sur storm drain line from Sierra Avenue to the beach outfall. A sewer spill occurred that following weekend from a private lateral connected to the Seascape line.

May 20, 2004- Wrote two articles for *Seascape Sur News,* the monthly newsletter distributed to the Seascape Sur condos, educating the residents on activities that may reduce bacteria that could be a possible source of the problem at Seascape Sur outfall. The first article was titled, "Sewer Clean-Outs," and it describes the proper way to dispose of grease (not down the sink) to prevent sewer blockages and spills. The second article was titled, "Walk Dogs Off The Property and Clean Up After Them".

September 24, 2004- Completed cleaning again with the addition of bleach to counteract the sewer spill that occurred on May 5, 2004. Access issues during the summer months prevented the cleaning from occurring earlier.

November 2004- Samples showed a dramatic decrease in bacterial indicators, proving the cleaning was successful. However, future results showed the bacteria increasing back to historically high numbers.

March 1, 2005- Started participating in contract lab's pilot program to differentiate bacteria into human and animal origins.

May 30, 2007 – Conducted a thorough investigation with our lab (Weston) to detect any possible sources of the ongoing pollution (see below). Results of the investigation revealed that bacteria levels were in fact higher at the outfall than the catch basin; further reinforcing what City staff believes is a structural deficiency in the pipe that is leading to bacteria re-growth.

March 30, 2008 – Initiated a pilot study with lab to determine if the correct analytical analysis was being conducted

June 18, 2008 – Installed a catch basin inlet guard to prevent organic material from entering into the catch basin on the east side of Seascape Sur storm drain. This was done to hopefully prevent the organic matter from decomposing inside the storm drain pipe and providing an area for bacterial re-growth.

August 10, 2008 – City contracted a company to place concrete inside the catch basins to fill in a one inch gap at the bottom where stagnant water would sit. The City thought this might be contributing to the bacteria load at the end of the pipe. By filling in the gap, water and organic matter would not have a place to stagnant and harbor bacteria.

September 29, 2008 – City hired a contractor to clean the entire Seascape Sur storm drain from street to outfall.

August 30, 2008 – City entered into a pilot project with a company that installs catch basin curb inlet screens to prevent leaves and debris from entering the catch basin. Screen was installed on east side catch basin to prevent organic debris from entering the catch basin and rotting inside the pipe.

October 2, 2008 – City entered into a pilot project with a different company that installs catch basin curb inlet screens to prevent leaves and debris from entering the catch basin. Screen was installed on west side catch basin to prevent organic debris from entering the catch basin and rotting inside the pipe.

12.2.11 Where We Are Now

As listed above, the City is participating in two unique pilot programs at Seascape Sur. The City has installed two different catch basin debris screen BMPs at the east and west catch basins directly upstream from the Seascape

outfall. The goal of the debris screens is to prevent organic debris and trash from entering the pipe and rotting, producing a perfect food source for bacterial re-growth in the sag in the pipe. The BMPs were installed in August and September 2008, with the intent to monitor the bacteria results at the outfall after a year.

As is shown in the following table, the bacteria results have decreased when compared to previous years, with the exception of December 2009 and January 2010. This may be attributable to the new BMP installations upstream or the continuous educational efforts of City Staff. Whatever the case may be, the results are still not acceptable to City Staff or the community. It cannot be emphasized enough that the outfall does not seem to impact the receiving water at all; however the City is still focusing its efforts on eliminating the source of the bacteria in the very near future.

Table 12-5 Seascape Sur Results, September 2008 to June 2011

Date	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)
9/30/08	16,000,000	800,000	80,000
10/9/08	16,000,000	1,300,000	130,000
11/20/08	No Flow	No Flow	No Flow
12/22/08	500	20	20
1/21/09	1,600,000	2,200	13,000
2/21/09	No Flow	No Flow	No Flow
3/25/09	170,000	110	5,000
4/3/09	74	10	10
5/27/09	1,600,000	23,000	800
6/23/09	270,000	13,000	5,000
7/21/09	230,000	20,000	7,000

8/18/09	170,000	7,000	13,000
9/22/09	80,000	23,000	3,000
10/26/09	130,000	9,000	2,000
11/16/09	600,000	230,000	4,000
12/21/09	9,000,000	110,000	600
1/11/10	9,000,000	17,000	9,000
2/16/10	40,000	20,000	<200
3/15/10	240,000	11,000	220
4/20/10	140,000	20,000	200
5/10/10	210,000	20,000	500
6/23/10	160,000	160,000	<20
7/26/10	900,000	23,000	700
8/16/10	23,000	<2,000	1,100
9/13/10	3,000,000	1,300,000	13,000
10/28/10	300,000	<20,000	2,100
11/2/10	170,000	<2,000	3,000
12/6/10	11,000	200	200
1/24/11	>1,600,000	5,000	22,000
2/7/11	8,000	400	2,300
3/14/11	220,000	2,000	40

4/11/11	11,000	400	<200
5/16/11	2,200	1,100	40
6/21/11	160,000	160,000	<20

The City continues to struggle with this ongoing situation, although has made some improvements to the bacteria levels during this reporting period. The budget continues to include money for cleaning the line once per year, but this is merely a temporary fix to the problem, whereas the City is looking for a permanent solution. The one positive to take from this is that the discharge is not affecting the water quality of the receiving water (Pacific Ocean) yet, there is no guarantee that this will not change in the future. Here are some options the City is now looking at to hopefully solve this reoccurring problem:

Repairing sag in the outfall pipe: This option is being actively researched as re-growth in the pipe is now the most suspected culprit. The City's Public Works Operation Manager is researching this option with other City Staff. In addition, City Staff is looking into other options such as re-lining the pipe or "pipe-blasting", which may help reduce the sag and improve flow through the pipe.

Blocking off connections from adjacent residential complexes and making them drain to the street so that discharge can be sampled: This option is seen as a last ditch effort, as it would be very expensive and politically challenging. This would only be considered if the outfall started affecting receiving water quality.

Installing permanent BMP such as a low flow diverter: This option is also seen as a last ditch effort as it would be expensive and has not been fully researched to check the feasibility. City engineers would have to check the locations of the sewer main and the capacity to determine if this would be feasible. Funding may be available through grants for water quality, but again this option is a long term effort. City staff will continue to look into various funding options, one being the recent grant that allowed the City of Imperial Beach to install a low-flow diverter. Staff will monitor that project closely and may seek the same grant to place a diverter in this location.

During this reporting period, the City partnered with the San Elijo JPA (the local WWTP) to apply for grant funding to assist with the costs associated with

installing a low-flow diverter. The grant is through the IRWM Proposition 84 and includes, among other local water quality improvement projects, the City's Seascape Sur Low-Flow Diverter project. The City's grant application received the highest ranking by the IRWM review board. It is currently included in the Phase 1 application process that will be submitted to the State for approval. The City is anticipating receiving $100,000 to install a Low Flow Diverter. This project and funding have not been finalized yet and will be reported on in future reports.

12.2.12 Future Activities

The City is committed to finding a solution to the bacteria problem at Seascape Sur, or at least installing a permanent treatment control BMP to redirect the flow to the sewer system. During the last reporting period, the City installed and monitored additional upstream BMPs at the catch basins leading into the problem pipe. This activity seems to have slightly improved the bacteria levels at the outfall and has encouraged City Staff that some of their efforts seem to be paying off. As discussed above, the City is now looking at other structural options with its engineering staff to hopefully find another angle in this seemingly unending battle, and also applied for a grant to help with funding a Low Flow Diverter.

The City has committed to setting money aside in its CIP budget to undertake some major projects to help solve the problem. As stated in the Fiscal Analysis Chapter, the FY 11/12 budget has $5,000 set aside specifically for the Seascape Sur storm drain cleaning. The City is committed to thoroughly cleaning the pipe annually if need be, or until a long-term solution is found. The City is currently investigating other structural options and may find it better financially to undertake a large CIP project than continually spending $5,000 a year for a temporary fix. However, the location and depth of this particular pipe make it very difficult to work on, so it is taking some time to develop a sound engineering plan to fix the pipe or divert the flows. If this is the option the City ultimately takes, it will be very prudent to take the time to do it correctly, so the City is committed to taking the time to develop a plan to ensure its effectiveness.

Additionally, the City actively monitors the outfall pipe and all surrounding areas for any unusual occurrences, and the Marine Safety Department will continue to notify the Engineering Department whenever there seems to be unusual spikes or odors coming from the outfall pipe, as one of the lifeguard towers is located directly in front of the outfall (during summer months). Lastly, City Staff will

continue to work with the neighboring condominium associations to educate the residents as well as perform inspections of upstream businesses.

12.3 Summary

The City has thoroughly utilized the results from its DWMPs and Coastal Monitoring Program during the last several years to identify and attempt to eliminate the source of bacteria that was identified through testing and upstream investigations. With the efforts of City Staff, and the cooperation of the Beachwalk property owners/managers and neighboring condominium complexes, the sources of the bacteria have almost been solved. Unfortunately, with the structural deficiencies (the sag) in the pipe, it may only take a small amount of bacteria entering the pipe to remain in the sag and promulgate (re-growth). Fortunately, the elevated bacteria levels do not seem to be affecting the receiving waters (no receiving water exceedances in the past five years) yet, but the City wants to take care of the situation before it becomes a problem. Therefore, the City is currently examining other options such as re-lining the pipe, “pipe-blasting” or installing a low-flow diverter.

CHAPTER 13
Non-Emergency Fire Fighting

CHAPTER 13: NON-EMERGENCY FIRE FIGHTING

In accordance with Permit section J.3.a.(3)(l), this section of the report describes the City's efforts to control Non-Emergency Fire Fighting events. The City understands that the health and safety of its residents supersedes the storm water regulations when it comes to emergency situations, such as a fire. However, for non-emergency fire fighting activities such as routine maintenance and training, the release of water into the City's MS4 is not permitted. Therefore, the City's Fire Department trains at two special facilities, one in San Marcos and the other in Rancho Santa Fe. Both facilities have BMPs installed to properly handle the excess water, and comply with all regulations of the storm water Permit. ***No training exercises that involve water are conducted within the City limits.***

Routine maintenance of the City's fire trucks and apparatus is essential to ensuring public health and safety, as all equipment must be in top condition and functioning properly during an emergency. Most of the time, this maintenance is conducted onsite at the Fire Department. To handle the excess water, the Fire Department staff redirects the flows onto a large slope of vegetation behind the Fire Station. Staff takes extra precaution to ensure no water leaves the site. Also, the washing of trucks and apparatus occurs inside the large bays, which is plumbed directly to the sewer system.

Non-Emergency Fire Fighting is also discussed in the Municipal Component.

CHAPTER 14
JURMP Revisions

CHAPTER 14: JURMP REVISIONS

In accordance with Permit section Permit sections I.1.b. and J.3.a.(3)(m), this section of the report describes any revisions that occurred to the City's JURMP.

As reported in last year's Annual Report, the City made multiple revisions to the JURMP based on comments by RWQCB staff after initial review of the new document. Those revisions have been made and are currently included in the City's JURMP.

Tables 5.1 and 5-2 have been updated based on recommendations by the San Diego Coast Keeper. The City is confident that this newly formatted table complies with the requirements of the permit.

CHAPTER 15
Conclusions and Recommendations

CHAPTER 15: CONCLUSION AND RECOMMENDATIONS

15.1 Conclusion

During the FY 2010/2011 reporting period, the City was able to successfully implement the many requirements of the Permit. Although the City has been required to have a storm water program under previous Orders issued by the RWQCB, this new Permit greatly expanded the types of activities and documentation efforts required of the cities. This was the third full year of implementation under Permit No. 2001-07 and the second full year of JURMP implementation. The City is very satisfied with the progress of the new program and is actively developing the regional large scale programs such as the HMP, LID, SUSMP and regional educational programs.

The City continued its “team approach” in implementing the JURMP by integrating the evolving requirements of the Permit into specific tasks that each member would be responsible for implementing in their respective departments. The Environmental Programs Manager is responsible for bringing the group together and updating the respective departments on any changes that may affect their respective daily activities. Additionally, the Environmental Programs Manager is responsible for ensuring that all requirements of the Permit are being addressed and satisfied. This collaborative method allowed the City to more rapidly modify procedures and handle the increased workload quickly and efficiently, especially with a small staff with lean resources.

The City’s accomplishments during this reporting period provide evidence of the City’s pro-active approach to improving storm water quality. The requirements under Order 2001-01 expanded the previous Order (90-42) significantly and have altered many of the daily routines of Staff at the City. In addition, the City is actively working on developing and implementing the new programs to satisfy Permit Order No. 2007-0001, including, but not limited to, modifying the Municipal Code for the new model SUSMP, LID and HMP requirements, updated the City’s JURMP and implementing the new Coastal Monitoring Program.

During the next reporting period, the City expects to build on the accomplishments of FY 10/11, and determine the most effective and meaningful program activities as to their impact on water quality (pollutant specific)

collaboratively with the other Copermittees, and implement the approved program assessment strategy. The City is confident that it is in compliance with the goals set out under Permit No. 2007-0001. These include but are not limited to:

- Minimum commercial, industrial and construction inspections
- Minimum municipal inspection and maintenance of BMPs
- Implementing comprehensive educational and public participation component
- Developing Hydromodification Plan
- Implementing SUSMP Model update
- Developing Low Impact Development (LID) program
- Minimum inspection and street sweeping frequencies
- Post Construction BMP verifications and inspections

The City eagerly anticipates working collaboratively with the other Copermittees in further developing and implementing these significant programs during this Permit cycle. The City is confident that the Copermittees will continue to develop and implement these programs to meet the requirements and goals of the new Permit. The City understands that all parties' involved (Copermittees and RWQCB staff) are in this together to improve the discharge and receiving waters in the region and we will continue to support and work collaboratively with all parties to accomplish this goal.

15.1.1 2010/2011 Accomplishments

The following is a small list of notable accomplishments achieved during the 2010/2011 reporting period. All of these activities are described in more detail throughout this report. They are the following:

- Continued development and implementation of new SUSMP, LID and HMP programs

- Continued implementation of new BEACH database to track building permits, post-construction BMP inspections, and plan check comments

- Implementation of post-construction BMP verification and maintenance tracking system

- Development of stakeholder cooperation and partnerships with key organizations such as the Santa Fe Irrigation District, Solana Center and Kids Korps

- Upgrades to web portal "Green Flash" to house all of the City's environmental programs and information

- Development of relationship with local Solana Beach School District to foster open communication for environmental education in local schools

- Continued work with the Clean and Green Team, consisting of active environmentally conscientious community members to develop and implement environmental programs and education

- Continued educational outreach at all local events, and conducting cleanups and community bulky-item pickup days

- Continued implementation of aggressive and convenient HHW program to provide easy and efficient HHW pickup and proper disposal

- Continued extensive landscape and irrigation educational series for public and private landscapers. The classes were given in both English and Spanish and taught the participants proper landscaping and irrigation practices.

- Participated in regional workgroup to develop new mobile sources program

- Continued to conduct specialized Staff trainings utilizing an outside consultant to target priority educational areas

- Implemented a comprehensive Sewer Assessment and Repair Program, which consisted of videoing the entire sewer system and setting a schedule to repair priority areas

- Staff re-inventoried the commercial and industrial sites throughout the City
- Staff continued to outsource the commercial/industrial facility inspections to a specialized contractor that inspected 100% of all facilities, regardless of priority
- Staff inspected 100% of all municipal inspections
- Implemented a mandatory commercial recycling ordinance, mandating recycling at ALL commercial facilities
- Implemented a Leaf Blower Ban, banning all gas powered leaf blowers in the City and banning landscapers from blowing or collecting organic debris in the street, gutter or sidewalk. Oftentimes, this organic debris finds its way into the City's MS4 system, so the City now requires all landscaping activities to be conducted on the property, and makes it a violation of the City's storm water requirements subject to enforcement actions if people do not comply
- Implemented a "Keep Solana Beach Beautiful Day" to have the community "adopt" areas throughout the City to clean up litter and trash
- Implemented the 3rd Annual Green Fair

15.2 Recommendations

Since the new Permit was adopted in January 2007, FY 2010/2011 was again dedicated to developing new programs and fine tuning existing programs to comply with the new requirements. The City is committed to working cooperatively with the other Copermittees to develop and implement the new required programs to provide a consistent and recognizable message for the region. However, the City still must develop jurisdictional specific programs to address the specific pollutants of concern and their respective sources. In an effort to implement a successful and meaningful program, the following are recommendations to improve the City's storm water program for FY 11/12:

- *Continue to educate new and existing City Staff to ensure compliance in with evolving storm water regulations.*

- *Complete the special investigation to uncover and eliminate the root cause of reoccurring problems upstream from Seascape Sur Outfall, or install a permanent treatment control BMP to eliminate the ongoing bacteria exceedances at the outfall.*
- *Evaluate staff needs and program responsibilities and continue to research the possibility of utilizing outside consulting services.*
- *Continue implementation of SUSMP, LID and HMP requirements and ensure all plans are in compliance.*
- *Continue implementation of the new JURMP program plan and implement measures to comply with Permit requirements*
- *Increase the education of residential sector which is a main focus of the new Permit. These programs will be addressed cooperatively at the regional level, but the City is committed to helping develop the materials to be distributed to our residents.*
- *Continue to collect and analyze monitoring data to establish a long-term assessment of the City's storm water quality.*
- *Develop additional industry specific educational materials to distribute to the community.*
- *Develop and implement pollutant specific activities to address high priority COCs (Constituents of Concern).*

APPENDICES

APPENDIX A: CONSTRUCTION BMP BROCHURE

CONSTRUCTION SITES

In 1972, the Environmental Protection Agency developed regulations to control water pollution. As a result, the National Pollutant Discharge Elimination System (NPDES) Permit was created. NPDES permits are issued to municipalities as well as construction sites. In addition to complying with local regulations, which are governed by our municipal NPDES permit, you may be required to obtain a permit through the State of California under the State General Construction Permit (99-08-DWQ). All construction sites over one acre are required to obtain coverage under this permit.

Construction sites can contribute pollutants such as sediment, metals, and chemicals, to our local creeks, rivers, lakes, lagoons, and ocean. These pollutants make their way down our streets and into storm drains, eventually discharging to the nearest body of water.

All construction sites are required to implement Best Management Practices (BMP) to prevent storm water pollution. This brochure is intended to assist your construction site in understanding BMP requirements.

Each municipality has one or more persons dedicated to ensuring that all construction sites are in compliance with state and local storm water control regulations. Contact your local municipality for further information.

RIGHT-OF-WAY PERMITTING

We understand that there are times when space on construction sites is limited. If at any point, you (as a contractor or subcontractor) need to use the public right-of-way in order to work or store materials, you must apply for a special permit. This permit allows you to use the City's right-of-way areas, and describes what is required to prevent illegal contaminants from entering local storm drains. For more information or to obtain a permit application contact your local jursidiction.

INSPECTION AND ENFORCEMENT PROGRAM

Each jurisdiction has established an enforcement program to ensure that all businesses operate in compliance with all appropriate storm water laws and other City requirements. Contractors, site supervisors and property owners can be held responsible for violations, which may lead to a civil penalty of up to $10,000 per day and/or reimbursing the local jurisdiction for all expenses associated with clean up.

BEST MANAGEMENT PRACTICES

Construction materials such as paint, dirt and trash often find their way into our storm drains, polluting the environment and jeopardizing our creeks, rivers, lakes, lagoons, and ocean.

The NCSWP is working with contractors to implement what are known as Best Management Practices (BMPs) on all construction sites. That is, methods used to keep pollution out of our storm drains and off public property, such as sidewalks, streets, parkways and alleys. Carrying out and maintaining these BMPs on the construction site is critical to protecting our ocean and bay.

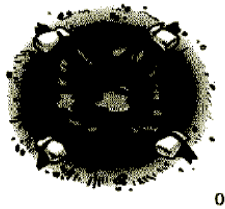

The following is a list of BMPs and pollution prevention measures that shall be implemented at all construction sites:

1. **Conduct daily site cleanings.**
2. **Develop spill response and containment procedures.**
3. **Educate employees and subcontractors about BMPs.**
4. **Develop an erosion control plan for wind and rain.**
5. **Regularly maintain all BMPs at project site.**

A Pollution Prevention Guide for the Construction Industry

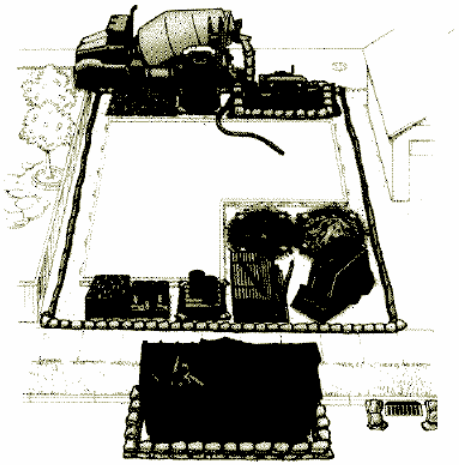

North County Storm Water Program

Carlsbad • Del Mar • Encinitas • Oceanside • San Marcos • Solana Beach • Vista

Only Rain in the Storm Drain

Water Quality Regulations for Construction Sites

Dear Contractor,

The North County Storm Water Program is a collective of jurisdictions in northern San Diego County working together to protect our watersheds. We believe that reducing pollution is critical to maintaining our communities' way of life.

It is our hope that this brochure will help you identify activities that are recognized to cause water pollution and implement appropriate Best Management Practices (BMPs) to minimize their impact. By providing you with these tools, we hope to make your job easier while keeping our waterways clean.

Each jurisdiction will be inspecting their construction sites to ensure the protection of water quality. We look forward to seeing the BMPs presented in this brochure implemented at your sites.

Together we have the ability to preserve and improve the quality of life in our communities.

Sincerely,

The North County Storm Water Program

Contact Phone Numbers:

City of Carlsbad
760-602-2799

City of San Marcos
760-744-1050

City of Encinitas
760-633-2787

City of Del Mar
858-755-9313

City of Oceanside
760-435-5800

City of Solana Beach
858-720-2470

City of Vista
760-726-1340

APPENDIX B: STORM WATER PLAN CHECK COMMENT FORM

CITY OF SOLANA BEACH
ENGINEERING DEPARTMENT
STORM WATER PLAN CHECK COMMENTS

Project: _____ Address: _____

☐ Construction phase **Erosion Control** shall be shown on the permitted plans, such as silt fences, gravel bags, de-silting basins, slope protection and entrance controls. **Best management practices (BMP's)** shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during construction activities. Erosion prevention shall be emphasized to keep sediment on site during excavation and grading activities. Sediment controls such as mulch, jute netting and straw blankets shall be used as a supplement to erosion control for keeping sediment on site.

- **Submit Storm Water Management Plan** (attached)
- **Add the following note to plans**: "**EROSION CONTROL:** Best management practices shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during excavation and grading activities."

☐ The Applicant shall demonstrate that the **project does not increase storm water runoff** or peak discharge from their property. For example, add a storm water retention and infiltration feature such as a depressed landscape area or below ground drywell using course rock (1.5" to 2.5") or a pre-fabricated chamber. The amount of retention volume should be at least equal to 0.60 inches (0.05 feet) times the added impervious area. This should be designed to avoid runoff damage to downstream properties, such as not concentrating runoff where it was previously not concentrated. (For 5,000 SF or more of added impervious area, use County of San Diego Hydrology Manual)

☐ Storm Water and Non-Storm Water Runoff Control. Post-development measures that **reduce pollutant discharges from the site** shall be shown on the permit plans. For example, maximize permeable areas (landscaping, driveway grass strips, gravel paths, concrete pavers on sand) to allow runoff seepage into the ground and drain impermeable surfaces (roofs, hardscape, driveways) to permeable areas (i.e. planted areas) and other approved pollutant treatment BMP's.

- Is runoff from hardscape areas routed over natural treatment areas before draining off site?
- **Show on the plans** where hardscape and roofs drain to.

- **Show BMP's** on the plans (grassy swales, landscaping, infiltration pits, pervious pavements, gravel paths, etc.).
- The volume of treatment should be at least 0.60 inches (0.05 feet) times the added impervious area.

APPENDIX C: BUILDING PLAN CHECK ROUTING FORM

CITY OF SOLANA BEACH
635 S. Highway 101, Solana Beach, CA 92075
(858) 720-2440
APPLICATION TRACKING FORM

Plancheck No.: _____
Received by: _____
Date:

Site Address _____ Suite # _____
Site Business Name _____ APN _____
Project/Property Owner's Name _____
Contact Person _____ Phone # _____
Address _____ Fax # _____
Project Description _____ E-Mail _____
Discretionary Permit Applicable? _____ Sq. Ft. _____
Estimated Building Valuation? _____ Estimated Grading Required? _____
Is/will the building equipped with fire sprinklers? ☐Yes ☐No Is the property on a septic system? ☐Yes ☐ No
Is there an existing swimming pool &/or spa on the property? ☐Yes ☐ No **If "yes," see the Pool & Spa note below**

THE FOLLOWING "CHECKED" ITEMS MUST HAVE WRITTEN APPROVAL PRIOR TO PERMIT ISSUANCE. APPROVALS FROM THE PLANNING, ENGINEERING, FIRE, HEALTH DEPARTMENTS, AND THE AIR POLLUTION CONTROL DISTRICT MAY ALSO BE REQUIRED PRIOR TO FRAME AND/OR FINAL INSPECTION AND OCCUPANCY (INDICATED ON "BLUE" CARD). IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE INDIVIDUAL DEPARTMENT(S) AT THE NUMBERS SHOWN.

CITY DEPARTMENTS

☐ **PLANNING / ZONING**.....858-720-2440
- ☐ O.K. for Plancheck Only. By _____ Date _____
- ☐ Fees Due. ☐ Park Fees ☐ Public Facilities Fees ☐ Public Arts Fee
- ☐ Fee Payment Required Prior to ☐ Permit Issuance ☐ Final Inspection
- ☐ Height Certificate Required prior to Requesting Frame Inspection.
- ☐ Approval Req'd prior to: ☐ Permit ☐ Frame Insp ☐ Final Insp
- ☐ Approval required prior to ☐ Frame ☐ Final Inspection
- ☐ Project shall comply with Wildland Urban Interface Standards (WUI)
- ☐ O.K. to Issue Building Permits _____

☐ **ENGINEERING / SANITATION**.....858-720-2470
- ☐ O.K. for Plancheck Only. By _____ Date _____
- ☐ Permits Req'd ☐ Dedication Req'd ☐ Fees Req'd.
- ☐ Approval required prior to ☐ Frame ☐ Final Inspection (Sewer, Plancheck, In Lieu)
- ☐ See attached form for Storm Water BMP'S
- ☐ O.K. to Issue Building Permits _____

☐ **ENVIRONMENTAL**.....858-720-2477
- ☐ O.K. for Plancheck Only By _____ Date _____
- ☐ See attached form for Storm Water comments
- ☐ WMP Required Prior to ☐ Permit Issuance ☐ Final Inspection
- ☐ Post Construction BMP Inspection Required:
  - ☐ During Construction ☐ Prior to Final Inspection
- ☐ O.K. to Issue Building Permits _____

☐ **FIRE PREVENTION**.....858-720-2410
- ☐ O.K. for Plancheck Only By _____ Date _____
- Approval required prior to ☐ Frame ☐ Final Inspection
- ☐ O.K. to Issue _____

☐ **POOL & SPA SAFETY ENCLOSURE & SAFETY FEATURES**
Effective 1/1/07, AB 2977 requires all existing pools and spas shall comply with current State mandated enclosure & safety features.

AGENCY APPROVALS

☐ **SCHOOL FEES**
(Obtain signature on the attached forms)
Solana Beach Elementary &
San Dieguito Union H.S. District.....760-753-6491

☐ **HEALTH DEPARTMENT**
- ☐ Health Regulated Business
- ☐ Hazardous Materials Management.....619-338-2222
  1255 Imperial Avenue, San Diego 92138-5621
- ☐ Final Approval Required
- ☐ Septic Approval Required 760-471-0730
  151 Carmel St, San Marcos 92078
- Approved by _____

☐ **AIR POLLUTION CONTROL DIST.** ..... (858) 586-2600
(Obtain stamp and signature on APCD Questionnaire)
10124 Old Grove Rd., San Diego CA 92131

☐ **WATER AND SEWER**
(Obtain signatures on attached forms)
- ☐ Santa Fe Irrigation District.....858-756-2424
- ☐ Solana Beach Sanitation District 858-720-2470

☐ **CALIFORNIA COASTAL COMMISSION**....619-767-2370
Call for an appointment

☐ **ASSESSOR'S COPY OF PLANS**
At permit issuance, provide a third copy of Title Sheet, Plot Plan & Floor Plan (per Senate Bill 493).

☐ **OWNER/BUILDER AFFIDAVIT AND/OR CONTRACTOR INFORMATION**

☐ **SDG&E WORK ORDER**..... (800) 411-SDGE
For new / relocated gas & electric meters

_____ _____
Signature of Applicant Date

F:/Common/UpdatedApplications/Tracking Sheet Eff 09/08

APPENDIX D: RAINY SEASON REMINDER (SAMPLE)

October 15, 2008

XXXXXXXXXXXX
XXXXXXXXXXXX
Solana Beach, CA 92075

RE: EROSION CONTROL RESPONSIBILITIES FOR CONSTRUCTION SITES

Dear Owner and/or Contractor:

As the rainy season begins, this is a reminder to make sure that your project site at **XXXXXXXX** is in compliance with the City of Solana Beach's Storm Water Management Section 13.60 and Excavation and Grading Ordinance Section 15.40. Your responsibility as owner/contractor is to control and reduce pollutants in runoff from all your construction activities. You are required to comply throughout the year, but the "rainy season" requires special attention and practices.

Since we are now in the official "rainy season," you shall implement all the required measures in the Storm Water Pollution Prevention Plan or Erosion Control Plan for your project site. Your responsibility to implement these measures is not only to comply with the City of Solana Beach's Ordinances and Jurisdictional Urban Runoff Management Program (JURMP), but also to comply with the Regional Water Quality Control Board Permit Order 2007-0001.

At a minimum you must implement these practices on all disturbed areas during the rainy season:

- Cover and stabilize all exposed soil, particularly on slopes, in order to prevent erosion.
- Employ any erosion control measures that are adequate to prevent erosion.
- Implement Best Management Practices (BMPs) to reduce the tracking of sediment onto public or private roads.
- Conduct pre- and post-storm inspections of erosion prevention and control measures and determine whether they function properly; modify if necessary to improve effectiveness.
- Maintain all erosion prevention and control measures throughout the season and replace them as needed to ensure measures accomplish the task.
- Ensure that all site personnel are trained in erosion prevention and control techniques as well as in the requirements of the Statewide General Construction Storm Water Permit.

- Review, upgrade, and fully implement your site-specific Storm Water Pollution Prevention Plan consisting of Best Management Practices for all pollutants, including those other than sediment. The City of Solana Beach will be inspecting your project site for compliance. The California Regional Water Quality Control Board plans to conduct their compliance inspections jointly with the United States Environmental Protection Agency. Other agencies may inspect your site at will.

If you would like additional information on selecting appropriate BMPs, the City has developed a BMP Brochure that is available upon request. Failure to comply with the City's storm water regulations can result in enforcement actions, including stop work notices and fines.

If you have any questions, or require additional information, please contact me at (858) 720-2477.

Sincerely,

Danny King
Environmental Programs Manager
City of Solana Beach

APPENDIX E: PUBLIC PROJECT PRE-CON MEETING AGENDA

PRE CONSTRUCTION MEETING
Fletcher Cove Pump Station Vault Maintenance
Bid No. 2009-07
December 18, 2009

Introductions

Contacts

1. Contractor A.B. Hashmi, Inc.
   2003 South El Camino Real, # 105
   Oceanside, CA 92054
   (760) 672-8059

2. City City of Solana Beach
   635 S. Hwy 101
   City of Solana Beach, CA 92075
   (858) 720-2470 (Engineering)
   (858) 755-1782 (Engineering fax)

   Hector Ezquerro – City Inspector (858) 354-8876 (cell)
   Dan Goldberg – Project Manager (858) 720-2474
   Steve Kerr – Public Works Operations Manager (858) 449-2630 (cell)
   Craig Miller – Marine Safety Captain (858) 720-4444

   Utilities Santa Fe Irrigation District (858) 756-2424
   Joe Hernandez – San Elijo Joint Powers Authority (760) 801-0935 (cell)

Project Status: Notice to Proceed – TBD
25 Working Days

Contract Amount: $20,770.00

Project Goals:
- Safety
- Community
- Quality
- Schedule
- Budget

Contractor Requirements:
- Any questions about Contract Award or "Key Contract Items Summary Sheet"?
- Submit Construction Schedule
- Submit Traffic Handling Plan
- Submit Storm Water Pollution Prevention Plan (SWPPP)
- Submit Names/Phone Numbers of Foreman/Emergency People
- Submit Names of Additional Subcontractors

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Storm Water & Erosion Control
- Best management practices shall be used & maintained
- Erosion control plan

Labor Compliance, Certified Payroll and Progress Payments

Public Notification: Contractor's responsibility (keep the public & the city informed)

Utility issues

Project Safety: Contractor's responsibility
- Traffic Control Plans

Inspection & Testing
- City will provide inspection

Change Orders
- Notification must be in writing
- Work is not approved until you have a change order signed by the City Council, City Manager or the City Engineer. Project Manager and Project Inspector cannot approve change orders.

Submittals
- Submittals should be given to the project manager.

Operating hours
- 7 a.m. to 4:30 p.m. Monday through Friday. Do not operate, start equipment or congregate near residential areas before 7 a.m.
- No work will be allowed on weekends or holidays.

Operating Conditions
- Per Section I (General Requirements), Part J.2 (page 43), the contractor shall perform all work in coordination with the San Elijo Joint Powers Authority (SEJPA). SEJPA requires 24 hour access to the pump station and the pump station must remain operational throughout the duration of the project unless coordinated with SEJPA and approved by the city. In addition, the marine safety building and the adjacent restroom building must remain fully operational throughout the project.
- Per Section I (General Requirements), Part J.4 (page 43), the contractor will not be allowed to close Fletcher Cove Park, the beach access ramp or any portion or the parking lot. All work shall be contained as close as possible to the area immediately surrounding the place where the work is occurring.
- Per Section I (General Requirements), Part J.6 (page 43), there may be separate construction projects taking place that will gain access to their project using the beach access ramp. Contractor is expected to cooperate with and allow access to the outside construction contractors.
- Scheduling of all work shall be coordinated with the Marine Safety Department to ensure that their operations are impacted as little as possible during the project.

Project Issues/Ordering of Materials

Work Schedule/Notice to Proceed

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APPENDIX F: CIVIL PENALTY MATRIX

SOLANA BEACH
CIVIL PENALTIES MATRIX

The following factors will be considered in determining the amount of civil penalties from the Solana Beach Municipal Code 13.10.140 A. any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day** such a violation exists and will be assessed: (1) The seriousness of the violation (2) the duration of the violation; (3) the frequency or recurrence of the violation; (4) the history of the violation; (5) the Responsible Party's conduct after issuance of the Notice and Order; (6) the good faith efforts of the Responsible Party to comply; (7) the impact of the violation upon the community.

*** Criminal Penalties**

These factors are assigned to two categories, "**Environmental Significance**" and "**Compliance Significance**," in order to easily present them in a graphical form in the matrix chart.

Environmental Significance includes the following factor: Seriousness of the violation.

Compliance Significance includes the remaining factors: The duration of the violation, frequency or recurrence of the violation, the history of the violation, the Responsible Party's conduct after issuance of the Notice and Order; the good faith efforts of the Responsible Party to comply and the impact of the violation on the community.

Environmental Significance

Compliance Significance	Moderate	Major	Severe
Moderate	*NOV-$100	$100 - $200	$500
Major	$100- $200	$500	$1,000
Severe	$500-$1,000	$1,000	$1,000-Referral to

			Regulating Agency

* Notice of Violation

The list below gives examples of issues specific to storm water violations that could be considered under each of the factors.
Increased Penalties will be factored as Notice of Violation to Moderate, Moderate to Major or Major to Severe.
Decreased Penalties could be Severe to Major, Major to Moderate or Moderate to Notice of Violation.

Environmental Significance
Seriousness of the Violation

Relatively inert discharges (e.g., soil, sediment, cement residue, stucco residue**,** etc.) **[Moderate Environmental Impact]**

Moderate toxicity / moderate health threat discharges (e.g., cleaning products with no specific hazard, i.e. detergent, latex paint) **[Major Environmental Impact]**

Significant toxicity / significant health threat discharges (e.g., sewage, hazardous materials/wastes, etc.) **[Severe Environmental Impact]**

SOLANA BEACH
CIVIL PENALTIES MATRIX

Compliance Significance

Duration of Violation

Extent of discharge as determined by volume, area covered, how long it continued **[Greater Discharge Can Lead to Increased Penalty]**

Number of days the discharge remained unabated in the conveyance system **[Unabated Discharge Can Lead to Increased Penalty]**

Impact on the Community

Results in damage, degradation, or obstruction of the storm water conveyance system **[Can lead to Increased Penalties]**

Results in actual degradation of aquatic habitat in receiving waters **[Can lead to Increased Penalties]**

Results in actual impact on wildlife including benthic communities **[Can lead to Increased Penalties]**

Results in algal bloom, discoloration or odor in receiving waters **[Can lead to Increased Penalties]**

Discharge of constituent of concern within a watershed that leads to a 303 (d) listed water body **[Can lead to Increased Penalties]**

Regulated industry (e.g., subject to OSHA chemical right-to-know requirements or subject to Hazardous Material / Hazardous Waste Permit) **[Can lead to Increased Penalties]**

Recurrence of Violation

No prior administrative enforcement penalty can be a factor for officer's discretion in lowering penalties.

Prior administrative penalties action can lead to increased penalties.

Prior administrative enforcement within the last year maybe a factor in determining higher penalties leading up to a **criminal citation**.

Intentional discharge will be a factor to increase penalties leading up to a criminal citation.
SOLANA BEACH
CIVIL PENALTIES MATRIX

History of Violation

Prior violations or warnings issued by other regulatory or City agencies (e.g., County Dept. of Health, County Dept. of Env. Health, RWQCB, FEWD, MWWD) **[Can lead to Increased Penalties]**

Prior warnings (letter or Notice of Violation) from Storm Water Pollution Prevention Program **[Can lead to Increased Penalties]**

Good Faith Efforts to Comply

Responsible Party failed to implement BMPs and should have known of requirement for BMPs (e.g., gasoline service station or construction industry) **[Can lead to Increased Penalties]**

Existing BMPs failed to prevent discharge (e.g., employee failed to comply with documented training and procedures or structural BMP failed to perform to design) **[Can lead to Reduced Penalties]**

Rapid and appropriate response to discharge **[Can lead to Reduced Penalties]**

The Solana Beach Municipal Code 13.10.140 A States the following:

13.10.140 Penalties for violation.

A. Civil Penalties. Any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day such a violation exists**, and all pollution detection and mitigation costs (if applicable).

B. Criminal Penalties. Any person who knowingly or intentionally violates any provision of this chapter shall be subject to liability for a misdemeanor, punishable by imprisonment for a period not to exceed one year, or a fine not to exceed $10,000 for each day such a violation exists, or both.

C. Any monetary penalties collected by the city of Solana Beach pursuant to violations of this chapter shall be returned to the storm water management program to be used for storm water pollution monitoring and management practices. (Ord. 184 § 1, 1993)

13.10.150 Continuing violation.

Unless otherwise provided, a person, firm, corporation or organization shall be deemed to have committed a separate offense for each and every day during any portion of which a violation of this chapter is committed, continued or

permitted by the person, firm, corporation or organization and shall be punishable accordingly as herein provided. (Ord. 184 § 1, 1993)

13.10.160 Concealment.
Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter shall constitute a violation of such provision. (Ord. 184 § 1, 1993)

13.10.170 Acts potentially resulting in violation of Federal Clean Water Act and/or Porter-Cologne Act.
Any person who violates any provision of this chapter, any provision of any permit issued pursuant to this chapter, or who discharges waste or wastewater which causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, may also be in violation of the Federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts including civil and criminal liability. Any enforcement action authorized under this chapter should also include notice to the violator of such potential liability. (Ord. 184 § 1, 1993)

13.10.180 Violations deemed a public nuisance.
A. In addition to the penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to the public health, safety and welfare and is declared and deemed a public nuisance and to impact storm water quality, and such nuisance may be summarily abated and/or restored by any authorized enforcement official. Civil action to abate, enjoin or otherwise compel the cessation of such nuisance may be taken by the city attorney.
B. The cost of such abatement and restoration shall be borne by the owner of the property and the cost thereof shall be a lien upon and against the property and such lien shall continue in existence until the same shall be paid. If the lien is not satisfied by the owner of the property within three months after the completion by the authorized enforcement official of the removal of the nuisance and the restoration of the property to its original condition, the property may be sold in satisfaction thereof in a like manner as other real property is sold under execution.
C. If any violation of this chapter constitutes a seasonal and recurrent nuisance, the city of Solana Beach shall so declare. Thereafter such seasonal and

recurrent nuisance shall be abated every year without the necessity of any further hearing. (Ord. 184 § 1, 1993)

13.10.190 Civil actions.

In addition to any other remedies provided in this section, any violation of this chapter may be enforced by civil action brought by the city of Solana Beach. In any such action, the city of Solana Beach may seek, and the court shall grant, as appropriate, any or all of the following remedies:

A. Injunctive relief;

B. Assessment of the violator for the costs of any investigation, inspection, or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing legal action under this subsection;

C. Costs incurred in removing, correcting, or terminating the adverse effects resulting from the violation;

D. Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life. Assessments under this subsection shall be paid to the city of Solana Beach to be used for costs associated with monitoring and establishing storm water discharge pollution control systems and/or implementing or enforcing the provisions of this chapter. (Ord. 184 § 1, 1993)

APPENDIX G: GENERAL CONSTRUCTION "GOOD NEIGHBOR" BROCHURE

PROPERTY OWNERS ARE RESPONSIBLE FOR THE ACTIONS OF THE CONTRACTORS AND SUBCONTRACTORS WORKING ON THEIR PROPERTY.

Construction Hours and Noise Levels:

Construction workers shall not congregate at or report to the site prior to the beginning of construction hours.

Monday - Friday:
7:00 a.m. to 7:00 p.m.

Saturday:
9:00 a.m. to 6:00 p.m.

No construction is permitted on Sundays and Holidays. Please check the City's website for a list of observed holidays at:

www.ci.solana-beach.ca.gov

Construction noise levels shall not exceed 75 decibels for more than eight hours during any 24 hour period.

For information concerning construction hours and noise levels contact the Community Development Department at:
(858) 720-2440

Storm Water Best Management Practices (BMPs)

Violations of the storm water regulations can result in penalties, including fines of $1000 per day per violation. These practices are strictly enforced.

Storm Water BMPs Continued:

- **Perimeter Protection Controls: Silt fences, straw wattels, sand bags, etc. must be used to control run-on and run-off from project site.**
- **Tracking Controls: All entrances and exits to the site must have protection measures installed to prevent tracking of sediment off the project site.**
- **Washout Area: All sites must have a designated "wash-out" area to clean equipment and dispose of excess concrete, stucco, and paint.**
- **Concrete Trucks/Pumpers: Concrete trucks and pumpers must have perimeter protection installed around and under them at all times. Any spill must be contained on-site and no washing of equipment permitted without a washout area.**
- **Materials Storage: All materials stored on-site must be contained and covered at all times.**
- **Trash Containers/Portable Restrooms: Dumpsters must be covered and have adequate perimeter protection and all portable restrooms must have secondary containment measures installed.**
- **Storm Drain Inlets: All adjacent storm drain inlets must be protected at all times to prevent pollutants from the project site from entering (including sediment).**

For more information concerning Storm Water BMPs contact the Environmental Services Department at (858) 720-2477.

Fire Safety:

Obey all Fire Codes:

- **Ensure fire lanes are kept clear and unobstructed.**
- **Any combustibles onsite must be stored safely.**
- **Remember oily rags catch on fire spontaneously, even when no ignition source or flame is present.**

For more information concerning fire safety contact the Fire Department at:
(858) 720-2410

Encroachment Permits:

Encroachment Permits are required before you start work within the public right of way.

- **Constructing new or repairing old curbs, gutters and sidewalks, constructing new driveways or placing dumpsters in the right of way requires approval from the City and a fee of $245.**
- **The installation of new or repair of existing utilities requires approval from the City and a fee of $575.**

For more information concerning encroachment permits please contact the Engineering Department at:
(858) 720-2470

Questions, Comments, Concerns?
Contact City Hall at: (858) 720-2400

Construction Site "Golden Rules"

Treat the construction site as if you were living next door to it.

- Communicate construction timetables to the surrounding neighbors. Consider distributing a letter to neighboring properties listing proposed timetables and contact information for the property owner and construction contractor.
- Notify neighbors if you expect excessive noise and/or traffic disruptions on a particular day. For example, if you are planning to demolish an existing residence or if you are expecting heavy equipment onsite to pour concrete.
- Avoid parking in front of neighbors homes and do not run car engines unnecessarily.
- Minimize noise by not using radios and refrain from shouting whenever possible.
- Construction vehicles should be parked legally and accommodated on the construction site whenever possible.
- Use respectful personal conduct by using the onsite restroom facilities and do not use profanity.

Community Development Department

City of Solana Beach
635 South Highway 101
Solana Beach, CA 92075
Phone: (858) 720-2440
FAX: (858) 755-1782
www.ci.solana-beach.ca.gov

City of Solana Beach

Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices

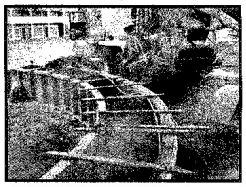

This fact sheet is provided to increase awareness of the basic rules all construction sites are required to follow by city ordinance. These rules are a minimum, and if not followed can result in penalties if you are found to be in violation of City or State applicable regulations.

In addition, we've provided some tips for additional measures that you can take at the site that would be appreciated by the City and your neighbors. We recognize that a construction site by its nature has a certain amount of noise, debris and inconvenience for the neighborhood. We have found from experience that where you can go above and beyond the minimum City Municipal Code requirements, and implement these good neighbor practices, your project can benefit from the improved neighborhood relations.

APPENDIX H: UNDERGROUND UTILITY DISTRICT SPECIAL BMP HANDOUT

Undergrounding Utility District Construction Best Management Practices

When conducting trenching work, construction Best Management Practices (BMPs) must be utilized at all times. Failure to keep all sediment and debris on your property is a violation of the City's Storm Water Regulations and can result in fines. The following list contains BMPs that may be used to keep sediment onsite and out of the City's storm drain conveyance system:

- Perimeter protection BMPs such as silt fences, straw waddles and/or sand bags can be used to contain sediment onsite.
- Cover all materials and keep above ground when a predicted rain event is to occur (>50% chance).
- Keep all materials/sediment out of street and gutter to prevent nuisance water from washing into storm drain system.
- Prevent sediment tracking into street by placing down gravel where equipment is entering and exiting property and sweeping area frequently.

These are all common general BMPs that can be utilized to prevent discharges into the City's storm drain conveyance system. If you or your contractor have any questions or require additional information on any of this, please feel free to call me at the number below.

Sincerely,

Danny King
Environmental Specialist

APPENDIX I: SPECIAL EVENT VENDOR BMP GUIDELINES

VENDOR GUIDELINES

Fiesta del Sol

- All electric cords should be out of the public access areas. If they must extend into a public access area, the cords must be protected with pedestrian transition molding to minimize the trip hazard.
- All cooking areas and devices shall have at least one 2A-20BC fire extinguisher readily accessible to persons working in the immediate proximity of each device or cooking area and shall be in plain view.
- All portable LP-gas containers, valves, and fittings shall be properly secured in a fixed upright position and protected in accordance with the Uniform Fire Code.
- The following conditions apply to canopies in excess of 400 square feet, and to tents and temporary membrane structures having an area in excess of 200 square feet:
- All tents, temporary membrane structures, and/or canopies that are to be used at the function shall be adequately braced and anchored to prevent weather related collapse. Documentation of structural stability shall be furnished to the Fire Chief on request.
- All tent, canopy, or temporary membrane structure exits shall be in accordance with the Uniform Fire and Building Codes.
- The design and construction of the fabric envelope, method of anchoring, and inflation systems for air-supported and air-inflated structures shall be in accordance with the Building Code.
- The sidewalls, drops and tops of temporary membrane structures, tents and canopies shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Temporary membrane structures, tents or canopies shall have either a permanently affixed label or a Certificate of Flame Resistance bearing the following information:
  - Identification of the temporary structure's size and fabric or material type.
  - For flame-resistant-treated materials, the date that the temporary membrane structure, tent or canopy and other combustible materials were last treated with an approved flame retardant. The trade name and type of flame retardant utilized in the flame-retardant treatment. The name of the person and firm that applied the flame retardant.
- The following general storm water run-off practices shall apply to the event:
  - No dumping or allowing any material into City storm drains.
  - Install secondary containment around portable restroom facilities when feasible.
  - Prompt and proper clean-up of all trash debris.
  - Do not use water or any liquid to rinse down any debris or dirt on any ground surface. Dry sweeping only of event debris is allowed.
  - Protect all storm drain catch basins/inlets when feasible with proper storm water Best Management Practices implementation.
  - Do not allow excess water to leave the site. Properly contain everything onsite before it enters the City's storm drain system.

APPENDIX J: MANDATORY COMMERCIAL RECYCLING ORDINANCE

ORDINANCE 417

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SECTIONS OF CHAPTER 6.20 OF THE SOLANA BEACH MUNUCIPAL CODE, ALL RELATED TO RECYCLING

WHEREAS, the City's Solid Waste Collection and Disposal Ordinance (Chapter 6.20 of the Solana Beach Municipal Code) was enacted in 1993 pursuant to Ordinance Number 177; and

WHEREAS, the City's Solid Waste Collection and Disposal Ordinance, Sections 6.20.090 and 6.20.135 were amended in 2006 pursuant to Ordinance Number 345;

WHEREAS, Section 6.20.135 fails to mandate that all business types must recycle;

WHEREAS, Section 6.20.135 does state that residents and businesses may choose other methods to recycle other than through the City's recycling services;

WHEREAS, the City Council desires to update Chapter 6.20 to clarify certain provisions.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 6.20.090 of the Solana Beach Municipal Code is hereby amended as follows:

6.20.090 Containers.
It shall be the duty of the occupants of residential, commercial and industrial occupancies to maintain containers for the accumulation and disposal of garbage, recyclables, combustible and noncombustible rubbish, miscellaneous debris, rubbish, recyclable material and other refuse. All containers or receptacles used for the reception, removal and disposal of garbage, recyclables, food plant wastes, market greens, market refuse and like refuse, should be water-tight, constructed of a material of suitable strength and durability, shall be tight-seamed and provided with handles and tight-fitting lid or cover, which lid shall be and remain affixed to the container at such time as the garbage, recyclables, food plant waste, market greens, market refuse and other refuse are placed within the container. Noncombustible refuse and other like refuse, other than garbage, may be deposited in well-constructed containers having a capacity not in excess of 96 gallons each (residential) and which, when filled, do not collectively exceed a weight of 150 pounds for solid waste and recyclables. Green waste may be deposited in well-constructed containers having a capacity not in excess of 32 gallons each (residential) and which, when filled, do not collectively exceed a

commercial or residential property; or from donating to another entity for reuse or recycling recyclables generated from that business, commercial or residential property.

E. It is unlawful for any person to fail to segregate designated recyclable material. Violations of this section shall be punishable as provided in Chapters 1.16 and 1.18 SBMC. Nothing in this subsection shall prevent the city from obtaining voluntary compliance with the provisions of this section through educational programs, issuance of warning notices, or other means.

EFFECTIVE DATE: This Ordinance shall be effective thirty (30) days after its adoption. Within fifteen (15) days after its adoption, the City Clerk of the City of Solana Beach shall cause this Ordinance to be published pursuant to the provisions of Government Code Section 36933.

INTRODUCED AND FIRST READ at a regular meeting of the City Council of the City of Solana Beach, California, on the 12th day of May, 2010; and

THEREAFTER ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, on the ____ day of _____, 2010, by the following vote:

AYES: Councilmembers –
NOES: Councilmembers –
ABSTAIN: Councilmembers –
ABSENT: Councilmembers –

_____
THOMAS M. CAMPBELL, Mayor

APPROVED AS TO FORM:

_____
JOHANNA N. CANLAS, City Attorney

ATTEST:

_____
ANGELA IVEY, City Clerk

APPENDIX K: STREET SWEEPING MATERIALS FORM

Employee Name and Organization (below)

Date (above) use N/S below if not scheduled

1st 2nd 3rd 4th Tuesday	Time in: Time out:	Time in: Time out:	Equipment Number: Year, Make & Model

OBSTRUCTIONS (identify as vegetation, vehicle, etc. and provide description).

Reference previous date(s) reported (no entry above required):

End of day Volumn in Cubic Yards:
% (percentage) Sediment:
%(percentage) Organics:
Litter (describe-or-enter -0-)

Operator enter reason(s) for not following schedule or other comments:

C.O.S.B. Initial

Forward to R.W.Q.C.B. (C.O.S.B. Initial on Sending) City of Solana Beach 2004(adinf)

APPENDIX L: SMOKING BAN ORDINANCE

ORDINANCE NO. 316

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Findings and Purpose. The City Council of the City of Solana Beach hereby finds and declares that:

A. The City of Solana Beach is committed to keeping its beaches and parks clean, safe, healthy and pleasant for everyone.

B. Smoking is hazardous to health. Numerous studies have shown that second-hand smoke is a significant public health hazard. The U.S. Environmental Protection Agency has classified second-hand smoke as a group A carcinogen, the most dangerous class of carcinogen. Smoking in parks and beaches endangers children and others by exposing them to second-hand smoke. Moreover, children and youth who observe smoking and tobacco use in public beaches and parks may model the behavior.

C. The U.S. Centers For Disease Control and Prevention (CDC) estimates that second-hand smoke causes 3,000 lung cancer deaths per year among adult non-smokers in the U.S. The California Environmental Protection Agency has concluded that second-hand smoke causes coronary heart disease in non-smokers. Second-hand smoke is especially hazardous to particular groups, including those with chronic health problems, the elderly and children. The CDC has found that second-hand smoke causes children to suffer from lower respiratory tract illness, such as bronchitis and pneumonia, exacerbates childhood asthma, and increases the risk of acute chronic middle ear infection in children.

D. Additionally, discarding cigarettes and cigar butts and tobacco onto the ground in City parks and beaches is unsightly, unclean and particularly hazardous to small children who handle and sometimes ingest them. The City must collect tobacco litter in parks and beaches or it will be collected by stormwater and washed directly into our ocean waters in violation of the City's stormwater pollution prevention permit and to the detriment of ocean life and all ocean users.

ORDINANCE NO. 316
No Smoking in Public Beaches and Parks
Page 2

E. The City Council therefore determines that banning smoking and the improper disposal of tobacco products in City parks is necessary to protect the health, safety and welfare of Solana Beach residents and visitors.

SECTION 2. Section 11.12.020 A. of the Solana Beach Municipal Code is hereby amended to read as follows:

A. To dump or deposit any trash, specifically including cigarette and cigar butts and tobacco, refuse, rubbish, litter, or other kind of waste materials, except in approved containers specifically placed and designated to receive such waste materials. No person shall dispose of any animal carcass in or on any beach or park.

SECTION 3. Section 11.12.020 EE of the Solana Beach Municipal Code is hereby added to read as follows:

EE. No person shall smoke within the boundaries of any public beach or park unless the City has designated a specific temporary or permanent signed smoking area.

SECTION 4. If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.

SECTION 5. This ordinance shall become effective thirty (30) days following its adoption. Within fifteen (15) days after its adoption, the City Clerk shall publish this ordinance, or the title hereof as a summary, in a newspaper of general circulation within the City of Solana Beach as required by law.

APPENDIX M: BEACH BLANKET MOVIE NIGHT FLYER

APPENDIX N: SPECIAL EVENTS PERMIT CONDITIONS OF APPROVAL

NOTICE OF APPROVAL FOR SPECIAL EVENT
CITY OF SOLANA BEACH

The Special Event you have applied for has been approved, according to the following information:

Date Requested:	June 12, 2004
Hours:	5:30 a.m. – 2:00 p.m.
Organization:	San Dieguito Boys & Girls Clubs
Type of Event:	Seaside Stride 5 Mile Walk
Location:	See Attached Map
Contact Person:	Ellen Flanagan (760) 471-5516

Approved By:_____
Barry Johnson, City Manager

SPECIFIC GUIDELINES:

1. No City services, at the request of the applicant, for the event will be provided by the City.
2. The event participants must utilize the sidewalks and not the roadway where available on the course. If there is no sidewalk, participants must utilize the very outer edge of the roadway.
3. Event organizers must obey all traffic signs, lights, and laws.
4. Event organizers and participants shall utilize public right-a-ways and property for the purpose of this event at their own risk.
5. Event organizers and participants shall obey all traffic laws, signs, and traffic control devices at all times.
6. Event organizers must comply with all applicable water run-off regulations and must use best management practices. There will be absolutely no liquid, solid, or any other by-product generated by the event allowed in the city storm drain system. The parking lot at the conclusion of the event must be cleaned of all debris and disposed of in an acceptable manner to the City's Public Works Department.
7. Roadway and sidewalks and any other public areas utilized by the event participants and audience shall be left in a clean and orderly condition at the conclusion of the special event.
8. Applicant shall be charged for the amount of time to clean-up the areas or facilities used by the event participants if the areas utilized by the attendees of the event are not left in a clean and orderly condition. Estimated cost for retaining one City employee to clean-up refuse, and trash disposal is $ 43.20 per hour.
9. Any damage to public property as the result of this event will encumber full cost recovery from applicant by the City.

10. Event organizers shall at all times comply with any request or orders from the City's public works, lifeguard, law enforcement, or other public safety personnel. Failure to do so will result in the revocation of this permit and an immediate cease event order.

GENERAL GUIDELINES:

1. This permit and any other permits associated with this event will be available at the event.
2. If City services are required, applicant will be billed in advance for any and all City services provided above normally scheduled services. **All fees and charges shall be paid prior to final issuance of a permit for the event. Exception: Costs incurred by the City for clean up or other reasons due to the event, if any, shall be charged to the applicant billed as soon as the total cost is determined.**
3. All vehicles must comply with City parking regulations.
4. The organization and any of its subcontractors in advance of the event must file a business license application and fee, if they do not have a business license.
5. Vehicle loading and unloading cannot block pedestrian access. If required for short durations, signage directing the flow of pedestrian access, including wheelchair access must be established and posted.
6. The City reserves the right to shut down the event at any time, if necessary.
7. Applicant must comply with City noise regulations.
8. **It is the responsibility of the applicant to know and comply with the terms and conditions as stated within this special event permit and all applicable laws that pertain do the event, its organizers, and its participants whether they are stated on this permit or not.**
9. Contact Leah Escarcega or David Ott at (858) 720-2410 if there are any questions regarding the special event permit process.

C: City Manager's Office
Public Safety Director
Public Works Director
Sheriff's Department
Marine Safety Captain

APPENDIX O: FIESTA DEL SOL FLYER 2011

APPENDIX P: EFFECTIVENESS ASSESSMENT TABLE

Inspections	Actual No. of Facilities	2005-2006	Actual No. of Facilities	2006-2007	Actual No. of Facilities	2007-2008	Actual No. of Facilities	2008-2009	Actual No. of Facilities	2009-2010	Actual No. of Facilities	2010-2011
High Priority Facilities	10	10	10	10	10	10	10	10	10	10	10	10
Medium Priority Facilities	1	1	1	1	1	1	1	1	1	1	1	1
Low Priority Facilities	4	4	6	6	6	6	6	6	6	6	6	6
Maintenance												
Material removed from MS4 (storm drain cleaning, public cleanup events, channel clearing)		~4 cubic yards		~7 cubic yards (storm drain and channel clearing) - 325 pounds debris at beach clean up		~3 cubic yards (storm drain and channel clearing) - 485 pounds trash, 120 pounds of recyclables at beach clean up		~5 cubic yards (catch basin and channel clearing)		~3.5 cubic yards (catch basin and channel clearing)		~5 cubic yards (catch basin and channel clearing)
Material prevented from entering MS4 (street sweeping operations)		~4 cubic yards		188lbs street sweeping		275 lbs street sweeping		275 cubic yards street sweeping		207 cubic yards street sweeping		212 cubic yards street sweeping
Number of catch basins cleaned (all catch basins inspected)		N/A		309 inspected / 35 catch basins cleaned		309 inspected / 17 catch basins cleaned		309 inspected / 13 catch basins cleaned		309 inspected / 26 catch basins cleaned		309 inspected / 26 catch basins cleaned
Education												
No. of Presentations to Municipal Employees		4		3		1		2		2		2
Industrial Businesses												
Inspections	**Actual No. of Facilities**	**2005-2006**	**Actual No. of Facilities**	**2006-2007**	**Actual No. of Facilities**	**2007-2008**	**Actual No. of Facilities**	**2008-2009**	**Actual No. of Facilities**	**2009-2010**	**Actual No. of Facilities**	**2010-2011**
High Priority Facilities	1	1	1	1	1	1	1	1 (1 Inspected)	1	1 (1 Inspected)	1	1 (1 Inspected)
Medium Priority Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Low Priority Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Enforcement												
Responses to Hotline Calls in regard to Industrial Businesses		0		0		0		0		0		0
Education/Public Participation												
No. of Workshops hosted for Industrial Business Sectors		0		0		0		0		0		0
No. of Materials Distributed to Industrial Businesses		1 visit (Educational Materials Distributed and Discussed		1 visit (Educational Materials Distributed and Discussed)		1 visit (Educational Materials Distributed and Discussed)		1 visit (Educational Materials Distributed and Discussed During Annual Inspection)		1 visit (Educational Materials Distributed and Discussed During Annual Inspection)		1 visit (Educational Materials Distributed and Discussed During Annual Inspection)
Commercial Businesses												
Inspections	**Actual No. of Facilities**		**Actual No. of Facilities**		**Actual No. of Facilities**	**2007-2008**	**Actual No. of Facilities**	**2008-2009**	**Actual No. of Facilities**	**2009-2010**	**Actual No. of Facilities**	**2010-2011**
High Priority Facilities	88	20%	88	11	88	67 (35 Inspected)	88	67 (67 Inspected)	88	72 (72 Inspected)	88	77 (77 Inspected)
Low Priority Facilities	0	0	0	0	0	10	0	10 (10 Inspected)	0	10 (10 Inspected)	0	10 (10 Inspected)
Enforcement												
Responses to Hotline Calls in regard to Commercial Businesses		3		13		3		6		0		N/A (Will be submitted with IC/ID Component)
Education/Public Participation												

No. of Workshops hosted for Commercial Business Sectors		0		0		0		0		2 (During March "Sustainability Month")		2 (During March "Sustainability Month")
No. of Materials Distributed to Commercial Businesses		0		~150 (3 per week)		~52 (1 per week)		77 (1 per inspection)		82 (1 per inspection)		82 (1 per inspection)
Residential												
Household Hazardous Waste		**2005-2006**		**2006-2007**		**2007-2008**		**2008-2009**		**2009-2010**		**2010-2011**
Quantity of Household Hazardous Waste Collected		HHW Facility does not document amount of waste collected. However, 319 residents utilized this service this reporting period, up from 293 last reporting period		HHW Facility does not document amount of waste collected. However, 379 residents utilized this service this reporting period, up from 319 last reporting period		HHW Facility does not document amount of waste collected. However, 416 residents utilized this service this reporting period, up from 379 last reporting period		298 residents utilized this service this reporting period with a total of 32,823 pounds of material properly disposed of		260 residents utilized this service this reporting period with a total of 38,723 pounds of material properly disposed of		274 residents utilized this service this reporting period with a total of 20,838 pounds of material properly disposed of
Enforcement												
Responses to Hotline Calls in Regard to Residential Activities		11		22		29		11		2		N/A (Will be submitted with IC/ID Component)
Education/Public Participation												
No. of Presentations to Residential Neighborhoods, HOA, Community Groups, Etc.		0		0		12 (Monthly Clean and Green Community Meetings)		23 Total - 12 Monthly Clean and Green Community Meetings and 11 Water Conservation and Storm Water Community Meetings		25 Total - 12 Monthly Clean and Green Community Meetings, 9 Water Conservation Presentation and 4 Sustainability Community Meetings (Sustainability Month)		17 Total - 12 Monthly Clean and Green Community Meetings, 5 Water Conservation Presentation
No. of Cleanup Events Hosted		1		1		2		2		1		1
SUSMP		**2005-2006**		**2006-2007**		**2007-2008**		**2008-2009**		**2009-2010**		**2010-2011**
No. of Developments Subject to SUSMP requirements		2		2		2		0		0		0
Inspections	**Actual No. of Facilities**		**Actual No. of Facilities**		**Actual No. of Facilities**		**Actual No. of Facilities**		**Actual No. of Facilities**		**Actual No. of Facilities**	
High Priority Sites	4	3	4	192 (1 time per month)	4	13 Sites (2x month) = 312	4	2 Sites (2x month during wet season, 1x month during dry) = 40	4	4 Sites (2x month during wet season, 1x month during dry) = 40	3	3 Sites (2x month during wet season, 1x month during dry) = 30
Medium Priority Sites	6	6	8	96 (I time per month)	8	27 Sites (1x per wet, 1x per dry) = 54	8	10 Sites (1x per wet, as needed dry) = 97	7	7 Sites (1x per wet, as needed dry) = 38	13	13 Sites (1x per wet, as needed dry) = 45
Low Priority Sites	9	39	45	90 (1 during wet, 1 during dry)	45	As Needed	45	16 Sites (As Needed) = 74	16	16 Sites (As Needed) = 51	0	25 Sites (As Needed) = 159
Enforcement												
Responses to Hotline Calls in regard to Construction Sites		12		7		10		5		2		N/A (Will be submitted with IC/ID Component)
Education/Public Participation												
No. of Workshops Hosted for Construction/Development Community		1		0		1 (Construction and Demolition Debris Recycling)		0		1 (During March "Sustainability Month")		0
No. of Materials Distributed to Construction/Development Community		~600		521		470		224		~200		~180

Dry Weather Sampling	Actual No. of Locations	2005-2006	Actual No. of Locations	2006-2007	Actual No. of Locations	2007-2008	Actual No. of Locations	2008-2009	Actual No. of Locations	2009-2010	Actual No. of Locations	2010-2011 (Placeholder, will be submitted with IC/ID in December)
No. of Locations Monitored	260	29	309	28	309	28	309	28	309	29	309	N/A
No. of Exceedances		5		8		8		1		2		N/A
Nitrate		0		0		0		0		0		N/A
Reactive Phosphorus		2		2		1		0		0		N/A
Bacteria		3		6		5		0		2		N/A
Cadmium		0		0		0		0		0		N/A
Lead		0		0		0		0		0		N/A
Ammonia		0		0		2		1		0		N/A
Coastal Monitoring												
No. of Exceedances	1	0	0	0	0	0	0	0	0	0	0	N/A
Total Coliform		0		0		0		0		0		N/A
Fecal Coliform		0		0		0		0		0		N/A
Enterococcus		0		0		0		0		0		N/A

APPENDIX Q: LEAF BLOWER BAN – ORDINANCE 399

ORDINANCE NO. 399

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING AND REPEALING SECTIONS OF CHAPTER 7.34 OF THE SOLANA BEACH MUNUCIPAL CODE, ALL RELATED TO NOISE ABATEMENT AND CONTROL AND AMENDING SECTION 13.10.030 OF THE SOLANA BEACH MUNICIPAL CODE, RELATED TO STORM WATER MANAGEMENT

WHEREAS, the City's Noise Abatement and Control Ordinance (Chapter 7.34 of the Solana Beach Municipal Code) was enacted in 1991 pursuant to Ordinance Number 147; and

WHEREAS, no amendments have been made to Chapter 7.34 of the Solana Beach Municipal Code since its enactment;

WHEREAS, the City Council desires to update Chapter 7.34 to clarity certain provisions and to repeal sections that are unnecessary.

WHEREAS, the City of Solana Beach's storm water management and discharge control ordinance, Chapter 13.10 of the Solana Beach Municipal Code, provides for the prevention and enforcement of certain discharges into the storm water system within the City; and

WHEREAS, organic contaminants whose presence degrades the quality of the receiving waters in violation of basin plan, enclosed bays and estuaries plan, inland surface water plan, and California ocean plan standards including but not limited to leaves, grass clippings and yard waste and trimmings must be prevented from entering the storm drain conveyance system, which includes, among other things, the streets, gutters, and catch basins.

WHEREAS, leaf blowers can contribute to the discharge of pollutants, specifically organic contaminants, into the City's storm drain conveyance system; and

WHEREAS, the SBMC section 13.10.030 needs to be amended to expand the definition of pollutants to specify leaves, grass clippings, and yard waste and trimmings as organic contaminants.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 7.34.040.A of the Solana Beach Municipal Code is hereby amended as follows:

7.34.040 Sound level limits.

A. Unless a permit has been applied for and granted pursuant to this chapter, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below except as provided in SBMC 7.34.170 and construction noise level limits governed by SBMC 7.34.100. The noise subject to the limits set forth below is that part of the total noise at the specified location that is due solely to the action of said person. The limits apply to the source of the noise only, not the source of the noise plus the ambient noise level.

Applicable Limit
One-Hour Average
Sound Level

Zone	(Time)	(Decibels)
ER1, ER2, LR,		
LMR, MR	7 a.m. to 10 p.m.	50
Residential	10 p.m. to 7 a.m.	45
MHR, HR	7 a.m. to 10 p.m.	55
Residential	10 p.m. to 7 a.m.	45
C, LC, OP	7 a.m. to 10 p.m.	60
Commercial Office	10 p.m. to 7 a.m.	55
LI, SC		
Light Industrial and	7 a.m. to 10 p.m.	70
Special Commercial	10 p.m. to 7 a.m.	60
Public/Institutional	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	45
Park/Recreational	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	45

B. In the event the alleged offensive noise, as judged by the noise control officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, the applicable limits set forth above shall be reduced by five dB. The noise control officer may use an octave band spectral filter coupled to a sound level meter to aid in the judgment of the presence of an audible tone. If the sound intensity measured in any audible octave band exceeds that in adjacent bands by five dB, then an audible tone shall be judged as present.

C. The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts.

D. Fixed location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section,

measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

Section 2. Section 7.34.070 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.070 Solid waste management vehicles and parking lot and sidewalk vacuums.

No person shall operate, or permit to be operated, a refuse compacting, processing, or collection vehicle or a parking lot or sidewalk vacuum between the hours of 6:00 p.m. and 6:30 a.m. in or immediately adjacent to any residential area of the city unless a permit has been applied for and granted pursuant to this chapter.

Section 3. Section 7.34.080 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.080 Leaf blowers.

A. Regulation. It is unlawful for any person to use or operate within the city limits any leaf blower powered by a 2-stroke gas-powered engine to blow leaves, dirt and other debris off sidewalks, driveways, lawns and other surfaces, except between the hours of 9:00 a.m. and 5:00 p.m. Only non-commercial residential uses of leaf blowers are permitted on Sundays.

B. No person shall operate any leaf blower without attachment of all mufflers and full extension tubes supplied by the manufacturer for that leaf blower.

C. Beginning January 1, 2011, no leaf blower powered by a 2-stroke gas engine shall be permitted to operate within the city.

Section 4. Section 7.34.140 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.140 General noise regulations.

A. General Prohibitions. It is unlawful for any person to make, continue or cause to be made or continued, within the limits of the city, any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in the area.

The characteristics and conditions which should be considered in determining whether a violation of the provisions of this section exists, include, but are not limited to, the following:

1. The level of noise;
2. Whether the nature of the noise is usual or unusual;
3. Whether the origin of the noise is natural or unnatural;
4. The level of the background noise;
5. The proximity of the noise to sleeping facilities;
6. The nature and zoning of the area within which the noise emanates;
7. The density of the inhabitation of the area within which the noise emanates;
8. The time of the day or night the noise occurs;
9. The duration of the noise; and

APPENDIX R: COMMERCIAL FACILITY LITTER REDUCTION ORDINANCE

ORDINANCE 419

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SECTIONS OF CHAPTER 6.12 AND 11.16 OF THE SOLANA BEACH MUNICIPAL CODE, ALL RELATED TO LITTER CONTROL AND REMOVAL

WHEREAS, the City's Litter Control Ordinance (Chapter 6.12 of the Solana Beach Municipal Code) was enacted in 1987 pursuant to Ordinance Number 46; and

WHEREAS, the City's Sidewalk Ordinance (Chapter 11.16 of the Solana Beach Municipal Code) was enacted in 1988 pursuant to Ordinance Number 75; and

WHEREAS, Chapter 6.12 does not require all business to remove litter generated by their establishments; and

WHEREAS, Section 6.12.030 is silent in prohibiting all persons from depositing litter into gutters; and

WHEREAS, Section 11.16.050 does not specifically require all property owners to keep abutting sidewalks free of litter; and

WHEREAS, the City Council desires to update Chapters 6.12 and 11.16 to clarify certain provisions.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 6.12.030 of the Solana Beach Municipal Code is hereby amended as follows:

6.12.030 Prohibition.

A. It shall be unlawful for any person to throw, deposit, cause to be deposited, or leave litter in or upon any public street, alley, gutter, sidewalk, beach, public right-of-way or public place within the city except in public receptacles or authorized private receptacles.

B. It shall be unlawful for any person to throw, deposit, cause to be deposited, or leave any litter in or upon any private property within the city, vacant or occupied, other than the owner of the private property.

Section 2. Section 6.12.070 is hereby added to Chapter 6.12 of the Solana Beach Municipal Code as follows:

6.12.070 Duty to remove litter.

Any persons owning or occupying a place of business within the City of Solana Beach shall implement a general litter removal program within an area of two hundred (200) feet of their commercial establishment so as to remove litter generated by said business at least once each business day. This litter removal program shall not permit the business owner or its employees to trespass upon private property. However, the business shall attempt to gain permission of the owner of the private property for said purposes. In addition, this litter removal program requires the business owner or its employees to remove litter from public property with the exception that they are not required to remove litter from any area within a public street or highway.

Section 3. Section 11.16.050 of the Solana Beach Municipal Code is hereby amended as follows:

11.16.050 Maintenance by lot owners.

A. The owners of each lot fronting on any portion of a public street or place where the street or place is improved with a sidewalk shall maintain the sidewalk in such a condition that the sidewalk will not endanger persons or property and in a condition which will not interfere with the public convenience in the use of those works or areas, including keeping the sidewalk free of litter. The owners' obligations shall not apply to those conditions created or maintained in, upon, above or in connection with such sidewalk by any person other than the owner of the lot, where the person is authorized to do work or to maintain encroachments by virtue of a permit or right granted to the person by law or by the city. The person creating the condition pursuant to a permit shall have the duty otherwise imposed by this section upon the lot owner. The obligations of this subsection also apply to lots where the area between the property line of the privately owned lot and the back of the street line is maintained as a parkway, park or parking strip.

B. The city manager is authorized to enforce subsection A of this section, pursuant to the provisions of the State Streets and Highways Code, Division 7, Part 3, Chapter 22, commencing with Section 5600.

C. For the purposes of this section, the term sidewalk includes a park or parking strip maintained in the area between the property line and the street line and also includes curbing, bulkheads, retaining walls or other work for the protection of any sidewalk, park or parking strip.

EFFECTIVE DATE: This Ordinance shall be effective thirty (30) days after its adoption. Within fifteen (15) days after its adoption, the City Clerk of the City of Solana Beach shall cause this Ordinance to be published pursuant to the provisions of Government Code Section 36933.

ORDINANCE 419
(Litter Control)
Page 3 of 3

INTRODUCED AND FIRST READ at a regular meeting of the City Council of the City of Solana Beach, California, on the 25th day of August, 2010; and

THEREAFTER ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, on the ___ day of _____, 2010, by the following vote:

AYES: Councilmembers –
NOES: Councilmembers –
ABSTAIN: Councilmembers –
ABSENT: Councilmembers –

_____
THOMAS M. CAMPBELL, Mayor

APPROVED AS TO FORM:

_____
JOHANNA N. CANLAS, City Attorney

ATTEST:

_____
ANGELA IVEY, City Clerk

APPENDIX S: SUMMER CAMP PROGRAMS/CLASSES

CITY OF SOLANA BEACH PARKS & RECREATION

2010 Kids Summer Day Camp for Ages 6–12

All Sessions will meet Monday–Friday from 8:30 a.m. to 2:00 p.m. at Fletcher Cove Community Center, 133 Pacific Ave. The fee is $106/week per child and includes activities such as beach walks, swimming at the Boys and Girls Club, arts & crafts, Library visit, fun games, friends, and a weekly field trip to an exciting destination. After-care is offered from 2:00 p.m.–5:00 p.m. ($27/week). Our popular "Leader in Training" program is also available again this summer for 13–17 year olds for only $40/week!

1 ENVIRONMENTALLY FRIENDLY... June 21-25

There are many exciting ecological discoveries to be investigated here in Solana Beach. Find out how simple it is to appreciate the simple aspects of the world around you. Campers will discover ways in which they can help save the environment, explore the world of creepy crawly insects, and even discover the local San Elijo Lagoon through a nature walk for this week's field trip.

2 SPLISH SPLASHTACULAR... July 5-9

Is your child half amphibian? This is a perfect week for campers to explore the various ways to enjoy the water through water related crafts, water balloons and water relays. From the ocean, to the pool, and The Wave Water Park. . . come splish and splash with us!

3 FUN TO BE FIT... July 22-26

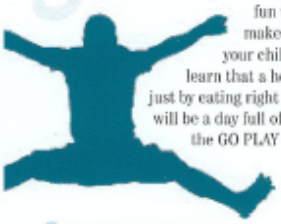

Challenge your camper to a world of healthy living. Kids will get to learn how to incorporate healthy aspects into their lives in a fun way. Learning simple changes can make a world of difference in the way your child feels and lives. Campers will learn that a healthy lifestyle can be easy and fun just by eating right and staying active. The field trip will be a day full of active fun at Coronado Island for the GO PLAY GET FIT day.

4 UNDER THE SEA ... July 19-23

Come test your knowledge of the big body of water that we are fortunate enough to live by. Explore the ocean through beach activities, crafts and a day of exploration at **Scripps Birch Aquarium**. Learn about dolphins, sharks, whales, starfish and sea cucumbers. Tour the Solana Beach lifeguard tower and learn to have fun safely at the beach..

5 AWESOME ASTRONOMY ... July 26-30

Ever imagine seeing Earth from space or wanted to be an astronaut? This week campers will each get a chance to explore the universe beyond our planet and even how things work on Earth versus other planets. Kids will get to learn about what it takes to be an astronaut and the world above our heads through games, crafts and even a trip to the **Ruben H. Fleet Science Center** at Balboa Park.

6 RAINFOREST EXPLORERS ... August 2-6

There's the Grasslands, Jungle, Rainforest, and even your local beach that contains hundreds of animals that campers will get a chance to learn about and explore. Learn all about the crazy life of animals of all kinds with theme related crafts and discussions as well as a chance for the campers to explore our own **San Diego Zoo.**

7 WATER ADVENTURES... August 9-13

You don't have to be an underwater animal to enjoy the wonderful world of water. Campers will learn about the various underwater creatures as well as explore all the fun that one can have in and around water. Not only will campers get to enjoy the beach but this week's field trip will be to the **Wave Water Park** where kids can experience the fun that comes with water, without having to grow gills.

APPENDIX T: 2010 DRY WEATHER MONITORING PROGRAM RESULTS

As a result of Addendum No. 2 adopted by the RWQCB in September 2008, this section will be submitted along with Chapter 7 "Illicit Discharge Detection and Elimination Component" in December 2011.

CITY OF SOLANA BEACH

JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM (JURMP) ANNUAL REPORT

SEPTEMBER 2012

Reporting Period:
July 1, 2011 to June 30, 2012

Respectfully Submitted to:
San Diego Regional Water Quality Control Board
In compliance with:
Order No. 2007-0001, NPDES Permit No. CAS0108758

CITY OF SOLANA BEACH
ANNUAL REPORT
STORM WATER PROGRAM
SEPTEMBER 2012

Copermittee:	City of Solana Beach
Contact Person:	Mohammed Sammak, P.E. Director of Public Works/City Engineer (858) 720-2470
Day-to-Day Contact	Taryn Dunbar Assistant Civil Engineer (858) 720-2487
Emergency Contact	Public Works Emergency Phone Line (858) 720-2479
Storm Water Hotline	24-hour message service (858) 720-4424
Address:	635 South Highway 101 Solana Beach, CA 92075
Reporting Period:	July 1, 2011 to June 30, 2012
Report Prepared by:	Taryn Dunbar Assistant Civil Engineer

ACKNOWLEDGEMENTS

The City of Solana Beach wishes to expressly thank each Copermittee Storm Water Program Manager/Coordinator and their staff for their efforts during the Regional Storm Water Management Committee meetings and the workgroups and their development and continued implementation of model program components, the sharing of ideas and willingness to cultivate program consistency throughout San Diego County as an effective means of improving water quality in the Region. The level of collaboration among agencies and across jurisdictional boundaries is unique and a credit to the professionalism and efforts of the San Diego County Copermittees.

The activities described in this report are not merely *written words on a page*, but are the result of *tremendous efforts* of City staff to integrate many new activities into their daily routines and tasks. The City's Fiscal Year 2011/2012 (FY 11/12) Storm Water Program Manager wishes to thank the City's Storm Water Team for their assistance, dedication and collaboration to make the City's FY 11/12 storm water program successful *and meaningful.*

Storm Water Team:

Code Enforcement Officer, Tom Warden

City Manager/Fire Chief/Director of Public Safety, David Ott

Operations Manager, Steve Kerr

City Inspector, Hector Ezquerro

Principle Engineer, Dan Goldberg

Director of Public Works/City Engineer, Mohammed Sammak

Community Services Director, Wende Protzman

Associate Engineer, Jim Greenstein

Associate Planner, Corey Johnson

Assistant Planner, Greg Hueners

Senior Engineering Technician, Robert Martinez

Management Analyst, Danny King

A big thank-you also to the Public Works Crew for all their hard work!

Lead Maintenance Worker, Danny Hernandez

Maintenance Worker, Bill Stedman

Maintenance Worker, Dave Thomas

Maintenance Worker, Josh Blea

CITY OF SOLANA BEACH
ANNUAL REPORT/ STORM WATER PROGRAM
SEPTEMBER 2012

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ACRONYMS

Acronym	Description
BMP	Best Management Practices: minimum standards that everyone and every business must adopt to reduce or eliminate urban runoff. BMPs are part of all storm water programs.
DWMP	Dry weather monitoring program: the procedures, requirements and program to collect samples during the dry season each year. Samples are typically collected over a one-two day period and then sent to the lab for analysis.
HHW	Household Hazardous Waste
IC/ID	Illegal Connection and Illicit Discharge: the term used to discuss connections to the MS4 that are not approved (illegal) or non-storm water (illicit) discharges.
JURMP	Jurisdictional Urban Runoff Management Program
MEP	Maximum Extent Practical: A term used by the RWQCB, and Copermittees to refer to the "best efforts," or "as much as possible."
MS4	Municipal Separate Storm Sewer System: references the City's storm water drainage system and the City's wastewater conveyance system.
NPDES	National Pollution Discharge Elimination System: the Federal program created by the 1972 Clean Water Act that governs State water quality / storm water programs.
Permit	Order 2007-0001 issued by the RWQCB, which requires cities to adopt and implement the JURMP, WURMP, and SUSMP.
PPM	Pollution Prevention Measure: a method, procedure, and/or process to control, reduce, prevent, or eliminate pollution.
RWQCB	Regional Water Quality Control Board. The Board is a California board, but for the *purposes of this report,* RWQCB represents the local water quality board (San Diego Regional Water Quality Control Board).
SUSMP	Standard Urban Storm water Mitigation Plan: a plan as to how the City will alter its review of construction plan (public and private) and estimate the extent of pollutant contributions from the site; the plan must specify BMPs that the City will require.
TMDL	Total Maximum Daily Loads: a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.
WURMP	Watershed Urban Runoff Management Program: programs that focus on urban water runoff from a larger point-of-view, which is the entire watershed (a watershed is also referred to as a hydrological unit). Programs must specify how cities will work together on planning urban projects and solving water quality problems.
WWMP	Wet weather monitoring program: the procedures, requirements and program to collect samples during the wet season each year. Samples are collected on a monthly basis, depending on weather.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

During reporting period Fiscal Year 2011/2012 (FY 11/12), the City worked with the other Copermittees to continue developing model programs and implementing all the established requirements of Permit No. R9-2007-0001 (Permit). This was the fourth complete year of implementation of the City's new Jurisdictional Urban Runoff Management Program (JURMP) that was developed and submitted in March, 2008 to comply with the new Permit, Order R9-2007-0001. This Annual Report (Report) incorporates the changes recommended by Regional Board Staff after review of last year's Annual Report, and complies with the requirements of each section of the Permit.

This is the fourth full year implementing the new JURMP, in compliance with the Permit regulations. The new activities will be discussed in their respective chapters of this Report, with some chapters modified or removed. The City began the process of developing the new programs in cooperation with the other Copermittees, and any new programs that were actually implemented in this reporting period will be discussed in this Annual Report.

The City is confident that it has implemented all programs required of them during the five year permit cycle of Order 2001-01. The City is also actively working on developing and implementing improved programs for the next five year permit cycle in compliance with Order R9-2007-0001. During the last five year permit cycle, the City created a storm water team consisting of staff from various departments, implemented all of the components of the JURMP and trained all pertinent Staff as to the expectations of the Permit.

Accomplishments to prevent and reduce pollution, eliminate contamination and improve water quality include the following:

- *The City successfully implemented comprehensive educational, inspection and enforcement procedures for municipal, commercial, residential, industrial and construction component activities as described in the City's JURMP.*
- *The City monitors a dedicated Storm Water Hotline and email address to receive complaints, questions, and general information 24 hours a day, seven days a week, 365 days a year.*

- *The City maintains an inventory of all municipal, commercial and industrial properties in the City, including prioritization of those that pose a threat to water quality.*
- *The City inspected the minimum amount of high priority businesses as stated in the new JURMP and notified all high-priority businesses of specific BMPs related to each type of business.*
- *The City collaborated with neighboring jurisdictions within their respective watersheds to develop educational brochures, surveys, and host community events and distributed hundreds of brochures to residents and the business community.*
- *The City continues to modify plan-check review processes to include a requirement for Erosion Control Plans, BMPs, and runoff mitigation alterations in project proposals and/or construction activities.*
- *The City participated in the 2011/2012 San Diego County Wet Weather Monitoring Program.*
- *The City continues to enforce a smoking ban at all local beaches and parks, the first jurisdiction in the nation to do so. In addition, the City strengthened its tobacco ordinance to ban smoking in all public parks, restaurants and buildings.*
- *The City implemented a plastic bag use reduction ordinance to help reduce single use plastic bag usage in the City.*
- *The City provided several opportunities for public participation including educational workshops/classes, community events, Copermittee meetings and Household Hazardous Waste home pick-up and permanent drop-off collection sites.*
- *The City continues to implement the new "Environmental" review to ALL building/grading permit applications to ensure every project that gets approved by the City is reviewed for storm water management.*
- *The City co-sponsored the seventh annual "Beach Blanket Movie Night" that provided residents a night of free movies and environmental education. The City had a booth co-sponsored by the Solana Center for Environmental Innovation that contained educational materials and games for attendees, and the films shown were dedicated to environmental protection of our ocean resources.*
- *The City authorized a part-time Code Enforcement Officer to continue weekend and off-hour patrols for storm water violations.*
- *The City added storm water specific language and reporting duties to new "standard" street sweeping contract to be used in all current and future contracts.*

- *The City modified its Municipal Code to comply with the new requirements of the Permit.*
- *The City implemented the new model SUSMP.*
- *The City participated in the development and implementation of the new Low Impact Development (LID) and Hydromodification Plan (HMP).*
- *The City developed and implemented the post-construction BMP verification, tracking and inspection program.*

CERTIFICATION STATEMENT

CERTIFICATION STATEMENT

I certify that the work performed, and the report prepared herein, was conducted under the supervision and guidance of the City of Solana Beach Public Works/ Engineering Department to meet the requirements of the *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority* (NPDES No. CAS0108758). I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

M. Sammak 9/19/12

Mohammed Sammak, P.E. **Date**
Director of Public Works/City Engineer
City of Solana Beach

REGISTERED PROFESSIONAL ENGINEER
MOHAMMAD SAMMAK
NO. 37146
EXP. 6-30-14
CIVIL
STATE OF CALIFORNIA

CHAPTER 1
Introduction

CHAPTER 1: INTRODUCTION

The City of Solana Beach (hereinafter, referred to as "City") has prepared this report in compliance with Order No. R9-2007-0001, NPDES Permit No. CAS0108758, *Water Discharge Requirements for Discharges of Urban Runoff From Municipal Separate Storm Sewer Systems Draining Watersheds of the County of San Diego, the Incorporated Cities of San Diego County and The San Diego Unified Port District and the San Diego County Regional Airport Authority* (hereinafter referred to as "Permit"). The California Regional Water Quality Control Board, San Diego Region (hereinafter, referred to as "RWQCB") issued the new Permit to all "Copermittees" (all cities in San Diego County, the County of San Diego, the Airport Authority and the Port District) in January, 2007.

Under the Permit, each Copermittee is required to submit an Annual Report in September of each year describing its jurisdictional program for the previous fiscal year (July 1 to June 30). The purpose of the report is to document to the RWQCB the City's progress and program accomplishments during the reporting period.

The Permit, first adopted on February 21, 2002 and subsequently updated in March, 2008, requires Copermittees to implement a comprehensive storm water program (Jurisdictional Urban Runoff Management Program [JURMP]) and submit a copy of the program to the RWQCB. The implementation of this program occurred during the reporting period covering July 1, 2011 to June 30, 2012 for this 2012 Annual Report. This Annual Report will cover the fifth year of implementation under Permit Order No. 2007-0001, but the fourth full year of implementation of the new JURMP.

1.1 Report Organization

This Report contains a description of all activities conducted to meet the requirements of the Permit. The information will be discussed in chapters applicable to each component of the JURMP, which occurred during this reporting period.

The organization of this report follows the outline of the new JURMP and includes the following sections:

- Development Planning Component
- Construction Component

- Municipal (Existing Development) Component
- Industrial and Commercial (Existing Development) Component
- Residential (Existing Development) Component
- Illicit Discharges Detection and Elimination Component
- Education Component
- Public Participation Component
- Fiscal Analysis Component
- Effectiveness Assessment Component
- Special Investigations
- Non-Emergency Fire Fighting
- JURMP Revisions
- Conclusions and Recommendations

1.2 Common Activities

The City participated with the Copermittees in several common activities (workshops, educational program component elements, model programs, etc.) that allowed for a sharing of resources and knowledge, which will provide a more cohesive message to the community. The common activities are described in the Copermittee Unified Urban Runoff Management Program (URMP) Annual Report, submitted with this report by the County of San Diego and incorporated herein by reference.

1.3 Report Content

The content of this report includes the activities associated with implementing the storm water program (JURMP). The development of the City's JURMP required the City to inventory and prioritize its municipal facilities, commercial and industrial businesses, develop a method to educate the business and residential community about the new requirements, evaluate existing municipal ordinances, and adopt new laws if needed to ensure enforcement action was available, develop a method for educating agency staff, and develop a commercial, industrial and construction site inspection program. Each subsequent year of Permit implementation requires the City to revisit these items and update as necessary. This Report contains those updates, where applicable.

The content of this report will include discussions about the programs and activities that occurred during this reporting period (July 1, 2011 to June 30, 2012). The City presumes that RWQCB staff recognizes that significant activity may occur subsequent to the end of the reporting period for this report. As a

result, throughout this report a summary of post-reporting period activities will be discussed (where appropriate) to assist the RWQCB in understanding the City's efforts to reduce urban runoff and pollution and to comply with the Permit.

1.4 Program Goals

The primary goal of the City's JURMP is to reduce or eliminate pollutant discharges into the City's MS4 (municipal separate sewer storm system) and receiving water bodies, including the Pacific Ocean, thus improving the quality of water in the City, neighboring jurisdictions, and region-wide.

The City recognizes that a *scientifically measurable* change in water quality is a long-term goal that would require many years of data collection, research and analysis, extending beyond the life of the current Permit (which expires in 2012). As a result, the City's program includes short-term goals expected to focus the City's program on permit compliance as well as water quality improvements. The following summarizes the City's past and current short-term annual program goals:

FY 02/03: Integration of WURMP(s), SUSMP and JURMP activities

FY 03/04: Complete assessment of JURMP (using regional strategy)

FY 04/05: Complete overall assessment of Regional Programs JURMP, WURMP and SUSMP; prepare for new Permit from RWQCB

FY 05/06: Assessment of JURMP, WURMP and SUSMP in preparation of new Permit anticipated to be adopted in early 2007. This involves the assessment of water quality data to focus on the sources of high priority pollutants locally as well as watershed and regionally.

FY 06/07 Further assessment of JURMP, WURMP and SUSMP to effectively develop new programs for incorporation in the new JURMP, WURMP and SUSMP that will be required by the new Permit (adopted January 2007). The complete program will be assessed to determine the effectiveness of existing programs and to develop better, more efficient programs to include in the next Permit cycle.

FY 07/08 Development and implementation of new JURMP to comply with Permit Order No. 2007-0001. The new Permit includes additional and improved requirements from those included in Order No. 2001-01. Although the City continued the implementation of Order 2001-01 during FY 07/08, significant time and resources were spent developing the new programs included in Order 2007-0001.

FY 08/09 Continue developing the new programs and activities under Permit Order No. 2007-0001, such as the Low Impact Development (LID) and Hydromodification Plan (HMP). In addition, track all SUSMP project post-construction BMPs and develop inspection protocol for annual inspections.

FY 09/10 Continue implementation of the new JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The focus of new water quality regulations are shifting to development and implementation of Total Maximum Daily Loads (TMDLs), which the City will actively participate in. The City will continue to be involved in the LID, HMP and new SUSMP requirements development for future implementation.

FY 10/11 Continue implementation of the JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The focus of new water quality regulations are shifting to development and implementation of Total Maximum Daily Loads (TMDLs), which the City will actively participate in. The City will continue to implement the LID, HMP and new SUSMP requirements on priority projects. The City will continue assessing the Storm Water Program to determine if there are any other areas where the utilization of specialized consultants will bring a higher value to the community while at the same time assisting Staff with Permit compliance as resources continue to dwindle during these tough economic times. Currently, Staff utilizes outside consultants to assist with:

- Commercial/Industrial facility inspections
- Dry Weather Monitoring Program
- Department specific specialized Staff trainings

All aspects of the Permit are under review by Staff to determine the most effective and efficient means of compliance. The City is fortunate to have a voter approved NPDES fee, so funding is not a problem, but Staff's resources are. So, outsourcing certain aspects of the storm water program may be a benefit to the City as well as the community.

FY 11/12 Continue implementation of the JURMP to further reduce and eliminate pollutant discharges into the City's MS4 system. The City will continue to implement the LID, HMP and new SUSMP requirements on priority projects. Continued use of outside consultants to assist with commercial/Industrial facility inspections, dry Weather Monitoring Program, and department specific specialized Staff trainings. Continue updating commercial/industrial inventory as new businesses are established. Continue educating the public about the importance of eliminating storm water runoff from residences, businesses, construction sites, and public facilities. Preparation for new permit requirements.

FY 12/13 The RWQCB is currently in the process of issuing a new permit. This permit is currently under review by the Copermittees in San Diego, Orange, and Riverside Counties, along with non-governmental organizations (NGOs) such as Coast Keeper and The Sierra Club and interested members of the public. Since the

new permit requirements are still in the development process, the City will continue with the current program to further reduce and eliminate pollutant discharges into the MS4 system. The City will continue to implement the LID, HMP and new SUSMP requirements on priority projects. Continued use of outside consultants to assist with commercial/Industrial facility inspections, dry Weather Monitoring Program, and department specific specialized Staff trainings. Continue updating commercial/industrial inventory as new businesses are established. Continue educating the public about the importance of eliminating storm water runoff from residences, businesses, construction sites, and public facilities. The City will prepare for new permit requirements as they become available. The City was also involved with creating a TMDL for sediment along with the other Copermittees in the San Dieguito Watershed.

CHAPTER 2

Development Planning Component

CHAPTER 2: DEVELOPMENT PLANNING COMPONENT

In accordance with Permit Section D.1, this section of the report describes the City's efforts to reduce Development Project discharges of pollutants from the MS4 to the Maximum Extent Practicable (MEP); to prevent Development Project discharges from the MS4 from causing or contributing to a violation of water quality standards; and to manage increases in runoff discharge rates and durations from Development Projects that are likely to cause increased erosion of stream beds and banks, silt pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.

In each Annual Report to the RWQCB, this section will include new modifications to the City's General Plan (if any), review process for new and redevelopment projects, inventory of current public and private projects and activities associated with the Standard Urban Storm Water Mitigation Plan (SUSMP). Activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The JURMP (Section 4.0: Development Planning Component) describes the City's plans to integrate new project review processes to require mitigation of urban runoff. In addition, the City adopted the new model SUSMP in February, 2008.

2.1 Assessment and Modification of General Plan

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. As such, the General Plan is crucial to the long-term success of its water quality and environmental programs.

There were *no changes* to the General Plan during this reporting period. However, the City is currently working on the General Plan update. It has been included in the City Council's FY 2011/2012 Workplan and is a priority project. Updates will be given in subsequent annual reports.

2.2 Project Approval and Environmental Review Process Modifications

The City is tasked with ensuring that land uses in Solana Beach comply with City codes, the General Plan, City Council policies, Engineering standards and State law requirements. Approval of projects through the discretionary review process is generally, but not always, required prior to issuing grading, building and right-of-way permits. The City's Municipal Code (Code) requires compliance with storm water regulations for all discretionary approvals and ministerial permits. The Planning, Engineering, Environmental, Building and Fire Departments review all building plans that are submitted to the City. The Engineering and Environmental Departments administer all aspects of design and construction for public improvement projects. The Planning Department administers the environmental review (Initial Studies, Negative Declarations, EIRs, etc.) of both public and private projects.

The City has reviewed its General Plan and Municipal Codes and determined that the General Plan meets the requirements of Order No. 2007-0001. The following is a short list of recent improvements to the project review process that ensures all projects are reviewed and properly address storm water concerns:

FY 05/06 - Every applicant who inquires about a particular project at the City Hall counter was given a copy of the City's Construction BMP Brochure (Appendix A). This is being done to ensure that every person will have received a copy of the City's educational guide, often times more than once.

FY 05/06 - Any project that increases the impervious area of a site by a minimum of 1,000 square feet must complete a Storm Water Plan Check Comment Form (Appendix B). This sheet requires a variety of information to ensure that there will be no additional run-off as a result of the project. The first requirement is the preparation of an Erosion Control Plan. Also, the applicant must demonstrate that the project *does not increase storm water runoff*. Lastly, the applicant must demonstrate that they are implementing and maintaining all precautionary measures necessary to ensure that pollutant discharges from the site *will be reduced to the maximum extent practicable*. All additional storm water must be completely contained and treated onsite. This is not required by the Permit, but the City believes that it would be prudent to address this issue on such a small scale because of the relative abundance of these smaller projects within the jurisdiction and the lack of larger scale projects that would otherwise be dealt with through the SUSMP process. Instead of ignoring these projects all together, the City felt it would be in its best interests to review these "minor" projects to

ensure that most new construction and redevelopment would address these storm water concerns.

FY 06/07 - City continued to evaluate its project approval process and made some modifications to the process for approving new and redevelopment projects. The plan check routing sheet was further modified to include additional information regarding storm water management. The intent of the modifications is to ensure that pollutants and runoff from development will be reduced to the maximum extent practicable (MEP) standard and/or will not contribute to an exceedance of receiving water quality objectives.

FY 06/07 - Project Applicants (Applicants) are required to submit a detailed project application, which addresses a variety of concerns, including urban runoff and environmental impacts. The project application provides an opportunity for City staff to determine whether or not the project will be exempt from the California Environmental Quality Act (CEQA) process. If the project is subject to CEQA, the environmental impacts of the project must be reviewed and depending on the potential impacts, a more substantial environmental impact report (EIR) may be required.

FY 07/08 - The plan check routing sheet was further modified to include another section titled *Environmental* (Appendix C). This section was included to ensure that *all* plans submitted would be reviewed for storm water implications, no matter how small or relatively insignificant. Previously, plans would be routed through the Engineering Department and if the Engineering Technician determined that it warranted further review, the plans would be passed through to the Environmental Programs Manager. The process was modified to ensure that all plans would be reviewed just in case something was missed or overlooked. The City believes that plan review is essential to ensuring storm water compliance, so we are doing everything possible to make sure it is done thoroughly and accurately.

FY 08/09 – The City implemented a complex and highly efficient computer database (BEACH) that greatly improved the internal plan review process. This database was developed by a local resident and was tailored to the specific needs of the City's departments. The database was built after extensive comment and review from the various departments to maximize the efficiency and streamline the process, while at the same time incorporating all the necessary information for each department. This process and subsequent database has greatly improved the Environmental plan review process by

ensuring that all comments of the Environmental review are addressed prior to initial permit issuance, as well as final permit occupancy. This will be explained in further detail later in the Report and has been a tremendous success.

In addition to the CEQA review process, all applicants must obtain a permit from the California Coastal Commission (CCC) because the City does not have a Local Coastal Plan. The City also has strict environmental standards requiring compliance and governing land-use planning and construction.

The application includes some of the following questions:

- Financial interest of all parties who own, or intend to own the property.
- Proof that all owners of record within 300 feet of the exterior boundaries of the property have been notified of the intent to develop (this allows opportunity for public participation in the process).
- Present use of property and proposed development description (commercial, residential, mixed use, etc.).
- Current floor area ratio (FAR), this allows review of the proposed change in impervious to pervious surface area. The City has a strict FAR and prohibits development within 40 feet of the western edge of the coastal bluffs.
- Proposed area to be graded (this allows the Engineering Department to assess potential erosion and runoff).
- Environmental condition of property (vegetation, drainage, noise, etc.) and neighboring properties.
- Business Applicants are required to submit information pertaining to the types of hazardous materials and whether or not industrial wastewater will be discharged in the property *and/or* off the property.

2.2.1 Project Requirements

As mentioned above, applicants are required to submit plans for all new and redevelopment of private properties to both the Planning and Engineering departments prior to approval. The Engineering Department (which includes Environmental Review) reviews the project's grading and construction plans for a

project's potential pollutant contribution to urban runoff. The City Engineering Department also determines the appropriate pre, during and post BMP requirements for each project and attaches the Storm Water Plan Check Comment form to the project plans and returns the plans to the applicant for modification, if required. Applications may be required to submit one or more of the following:

- An Erosion Control Plan (which requires BMPs to manage storm water and non-storm water discharges from the site at all time and shall emphasize sediment control).

- Evidence that the project will not increase storm water runoff.

- Storm Water and Non-Storm Water Runoff Control (this requirement address long-term control of runoff and may require structural modifications to direct discharges into permeable areas such as landscaping).

In addition, all grading projects are required at a minimum to include the following:

- Source control BMPs for all projects expecting to generate runoff.

- Implementation of site design/landscape measures to reduce and slow runoff, minimize impervious to previous ratio, maximize infiltration and promote alternative driveways and parking lots to include pervious land surfaces (as described in detail in the City's JURMP).

- Implementation of buffer zones for natural water bodies, where feasible and if not, trees, lighting and access restrictions are required.

Industrial applicants are also required to provide evidence of coverage under the California General NPDES Permit for Storm Water Discharges Associated with Industrial Activities.

Applicants are required to be in compliance with the City's current grading and storm water management ordinances, inspection requirements, general requirements for construction activities during the wet and dry season and implementation of appropriate BMPs to control erosion and runoff.

2.2.2 SUSMP

The City participated with other Copermittees in the development of the original model Standard Urban Storm Water Mitigation Plan (SUSMP), which was approved by the RWQCB on June 13, 2002. The Solana Beach City Council adopted the City's SUSMP on December 3, 2002, which was submitted to the RWQCB on December 13, 2002. The City also participated in the development of the new SUSMP in accordance with the current Permit. The City Council adopted the updated model SUSMP in February 2008.

The SUSMP addresses post-construction urban runoff pollution from new development and redevelopment projects that are designated as "priority projects" under the Permit. Most of the criterion that specifies which projects will be priority projects will not be applicable to the majority of City projects. The reason for this is that the City of Solana Beach is more than 95% "built-out" and primarily a residential community with small commercial properties. As a result, the City made few modifications to the Model SUSMP that was developed collectively by the Copermittees for its SUSMP. Over time, City staff will evaluate the effectiveness of the SUSMP and discuss changes, if necessary, in this section of the Annual Report.

During this reporting period, the City of Solana Beach had *one SUSMP project.* The Highway 101 Westside Street Improvement Project is a Risk Level 1 project. This risk level determines the minimum level of BMPs that will be acceptable based on the project site and the project construction activities. The risk level is based on project duration, proximity to impaired receiving waters, and soil conditions.

The City's Planning Department (also referred to as Community Development Department) is well aware of the SUSMP requirements and is consistently on the lookout for potential projects that may fall under the SUSMP requirements. The Engineering Department handles all of the BMP review for the City, however, the Planning Department is the first department to review applicant plans. Often times for larger projects, meetings are held between City Staff and the applicants well before the plans are submitted. At this time, Planning Staff works with the applicants to ensure the project complies with the SUSMP regulations. This helps to avoid costly delays in the project timeline by ensuring the applicant is aware of the SUSMP requirements and incorporates them into the project prior to submittal. It's a very proactive approach that has proven successful on all large projects in the City, not just SUSMP projects.

2.2.3 Low Impact Development (LID)

LID is one of the most significant new requirements of the Permit. The Permit states that each Copermittee shall develop and require each Priority Development Project to implement LID BMPs which will collectively minimize directly connected impervious area and promote infiltration. The City's JURMP describes the LID site design BMPs required at each Priority Development Project. The LID requirements were developed by the Copermittees, which promoted consistency throughout the region for the development community. The City has incorporated the LID requirements into the development review process. This year, the City had their first SUSMP project as discussed above. La Colonia Park and Community Center Renovation is another CIP project that could be subject to the SUSMP or LID requirements. If this project is finalized, it will be reported on in the next reporting period.

2.2.4 Treatment Control BMP Maintenance Tracking

The City has developed a database to track and inventory approved treatment control BMPs and treatment control BMP maintenance for Priority Development Projects within the City. The database contains all necessary information as required by the Permit. In addition, the City has developed a program to verify that approved treatment control BMPs are operating effectively and have been adequately maintained. The City's current treatment control BMP inventory is listed below. Not all projects are a result of the SUSMP process because they were built prior to the requirements; however the City still lists them in their inventory and inspects annually.

Table 2-1 Private Project Treatment Control BMP Inventory

Address	Type of Project	Type of BMP(s) Installed	Maintenance Agreement	Inspection Date
533 Lomas Santa Fe	Boys and Girls Club Remodel/ Construction	CDS Unit (1), Storm Chamber Infiltration Basins (2), Drainage Inserts (2)	Yes	6/14/12
420 Steven's Avenue	Office Building Construction	CDS Units (3)	Yes	6/14/12

667 San Rodolfo	Shopping Center Remodel	CDS Unit (1)	Yes	6/14/12
634 Steven's Ave	Commercial Building Construction	Bio-Swale	No	6/14/12
601 North Cedros Ave	Single Family Sub-Division (23 Units)	CDS Unit (1)	No – City Maintained	6/14/12
641 Valley Ave	Mixed Use Comm/Res	Bio-Swale, pervious concrete	No	6/14/12
715 Valley Ave	Park	Bio-Swale	No - City Maintained	6/14/12
111 South Sierra Ave	Park	CDS Unit, Low Flow Diverter	No- City Maintained	6/14/12
749 Genevieve St	Parking Lot >15 spaces	Bio-Swale, Pervious Pavers	No	6/14/12

2.2.5 Treatment Control BMP Maintenance Inspections

According to the City's JURMP, annual inspections will be completed on an annual basis prior to October 1st. City Staff conducted the annual inspections of the projects listed above as required by the Permit prior to October 1st (6/14/12). Due to the relatively small amount of projects, Staff plans to inspect all treatment control BMPs annually, regardless of their frequency priority. *The City is happy to report that all properties were in full compliance during the first inspection.*

2.2.6 Priority Development BMP Verification Prior to Occupancy

Although there were no priority development projects approved during this reporting period, the City does have a BMP verification process set up to ensure all BMPs are installed prior to occupancy. This process is not only conducted for priority development projects, but grading and building projects that require post construction BMPs (small infiltration pits, roof drains to landscaping, etc) as well.

As mentioned in previous Annual Reports, the building permit routing sheet that goes to each department reviewing the plans was modified to include check boxes in the "Environmental Review" section. These check boxes are for projects that require a post construction BMP of any kind, and if they are checked for any project, the Building Department will not issue final occupancy permits until the Environmental section is complete. This includes an inspection either during construction for BMPs underground (to ensure they were installed prior to being covered by landscaping) or final inspection if the BMPs can be identified at the end of the project. It is the responsibility of the contractor to notify the Environmental staff for inspection or the "pink card" will not be signed and the final Permit will not be issued. City Staff has required contractors to dig up and remove landscaping in order to show that the BMP was actually installed according to the plans if the contractor failed to properly notify Staff for an inspection. This ensures that all post-construction BMPs are installed prior to the final permit being issued for occupancy.

2.2.7 Hydromodification Plan (HMP)

The HMP was finalized and adopted by the Regional Board in July 2010. As mentioned in last year's Annual Report, Staff does not anticipate that any projects in Solana Beach will be subject to the new HMP requirements. The City participated in the development of the HMP and has paid our share for the development costs, realizing that this is a regional issue and as a Copermittee we have a responsibility to assist the other Copermittees in complying with the Permit requirements. If any project is subject to the HMP, it will be reported in this section of each Annual Report.

2.3 Education

Municipal Staff Education

The City of Solana Beach is a very intimate, cooperative group. All departments work very well with one another because they are forced to work together on a daily basis to serve the relatively small community. This makes training and education a much easier task.

The previous formation of the storm water team brought together the directors of all the different departments Planning, Engineering, Public Works, City Manager's, Public Safety (Fire and Marine Safety, Code Enforcement), Environmental, City Attorney's and City Inspector and provided them a forum to discuss storm water issues, keep everybody in the loop on ongoing issues and

develop solutions collectively. In turn, the directors would educate their respective employees on the specific tasks they were to perform. This was a very effective and efficient way to educate the Municipal Staff when the Permit was first adopted and the JURMPs were initially being implemented.

City staff welcomes additional training opportunities and often seeks outside training to keep up with new storm water issues. In addition, Staff welcomes presentations from consultants regarding the latest technologies in the protection of water resources, including techniques to reduce erosion, bacteria and other COCs in urban runoff. Specific trainings are listed in their appropriate sections throughout this Report.

Owner / Developer Education

The City, along with the other North County Copermittees, developed a Construction BMP Brochure (Appendix A) which describes the construction storm water regulations and required BMPs. The BMPs are generic with a simple diagram of a "typical" construction site, which has been very well received by the development community. It is simple and easy to understand, and City staff makes certain developers and contractors know every site is different and has unique characteristics. These brochures are distributed at the counter, at pre-construction meetings and in the field during inspections.

In addition, the City sends a "Rainy Season Reminder" (Appendix D) to all current and active private projects within the City as a tool to educate and remind project owners and developers about the need to strictly adhere to the erosion control requirements during the rainy season. These letters are sent out in the beginning of October as a "friendly reminder" that they need to ensure their sites are in compliance before the rain events start, or risk increased enforcement actions.

Inspections are another opportunity staff utilizes to educate owners and developers about City and State runoff and erosion requirements. During inspections, the City Inspector notes problem areas and requires mitigation compliance immediately. If an owner or developer fails to comply, increased enforcement including fines can be levied and the City Inspector has the authority to halt construction activities with a Stop Work notice.

The City has implemented similar procedures for public projects as those utilized for private projects. During mandatory pre-construction meetings (for all grading and public projects) the requirements for erosion control and runoff management

are discussed. In addition, City staff notifies the primary contractor that they are ultimately responsible for all actions of their subcontractors, and violations of the City's storm water requirements will result in enforcement actions.

2.4 New Activities and Improvement for FY 12/13

The City will continue implementing the activities described in the Development Planning Component of the City's JURMP. In addition, to the development and implementation of the new SUSMP, LID and HMP requirements, the focus for FY 12/13 will include the continued implementation and education of planning/engineering Staff, builders, residents, and the community at-large as to how regulations of the SUSMP, LID and potentially HMP will impact construction. The City will also implement any new requirements required under the new permit.

The BEACH database will continue to be implemented and updated during this reporting period with improvements and advancements made as necessary. The goal is to modify the database to include maintenance and inspections records so that all information on a particular project will be contained in one electronic location. Currently, these maintenance records are being kept in an Excel spreadsheet, but the BEACH database will ultimately be the most effective and efficient location for all project records.

The City will also prepare for the new permit to be adopted in the spring of 2013 and any new requirements that may come along with it.

2.5 Summary

The City has successfully implemented the Development Planning Component of the JURMP. Some of the key accomplishments include:

- Education of planning Staff, owners/developers and the community regarding changes in planning processes.
- Implementation of new procedures to ensure new and redevelopment projects do not contribute to an exceedance in water quality standards.
- Addition of Environmental section of permit routing sheet to ensure *all* plans/projects are reviewed by Environmental Specialist for storm water issues. Addition of post-construction BMP tracking and inspection box on routing sheet to ensure all BMPs are installed according to approved plans.

- Increased cooperation between City departments in implementing SUSMP requirements.
- Developed and implemented new post-construction BMP inventory and inspection tracking database.
- Developed and implemented new BEACH database to store all pertinent information regarding parcels in Solana Beach. This includes environmental fields that are used during plan review and permit issuance as well as housing all the necessary information for post-construction BMP tracking and maintenance.
- Participated in various workshops held by the Board to better understand and help provide input regarding the new draft permit.

CHAPTER 3
Construction Component

CHAPTER 3: CONSTRUCTION COMPONENT

3.1 Introduction

In accordance with Permit Section D.2, this section of the report describes the City's efforts to reduce construction site discharge of pollutants from the MS4 to the MEP and prevent construction site discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of active construction sites (private and public), modifications to the City's policies or Municipal Code with respect to construction activities, and modifications to identified potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to require BMPs at construction sites and program accomplishments. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

During this reporting period, the City conducted an evaluation of its construction practices and inventoried existing construction sites in an effort to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from these construction sites by requiring BMPs.

3.2 Modification of Grading Ordinance

There were *no significant modifications* of the Grading Ordinance during this reporting period as a result of new requirements in the Permit. As reported in previous annual reports, Chapter 15.54 (Excavating and Grading) was modified on February 13, 2008 to include the new requirements of the Permit. The amendments updated and strengthened the City's regulations regarding storm water pollution controls. The two main areas of impact in the updated ordinance dealt with two new concepts (Hydromodification Plan (HMP) and Low Impact Development (LID)). As mentioned previously, Hydromodification is a state mandate that requires all local jurisdictions to regulate erosion control and other land-shaping impacts from storm water runoff on priority projects.

Low Impact Development is a new requirement included in the new storm water permit. It deals with using various techniques to channel storm water runoff and

the pollution it contains away from the storm water conveyance system and into landscaping and other on-site features to limit the amount of pollution escaping from individual parcels.

Previously, the last significant modification to the City's grading ordinance occurred June 30, 2005 in which the grading threshold was lowered from 200 cubic yards to 50 cubic yards for all construction projects. This resulted in much smaller projects which would not normally be scrutinized for storm water management, would now be required to go through the grading permit process. This gave City Staff more discretion on smaller projects to require storm water mitigation, and with it, gave Staff more power to enforce the installation and/or site design modifications that would not have been required if a grading permit were not necessary.

3.3 Modification of Construction and Grading Approval Process

The modifications to the City's processes for project approvals are described in detail in the previous chapter of this report (Chapter 2). Although Chapter 2 specifically addresses Development Planning, the discussion included a description of various processes that project applicants must proceed with in order to obtain approval of their construction plans. Chapter 2 also describes the improvements made to the plan check database BEACH as well as the increased education efforts City staff has made to ensure Permit compliance.

The Storm Water Plan Check Comment Form (see Appendix B) may require the applicant to submit an Erosion Control Plan, proof that the project does not increase runoff from the property and/or implementation of structural changes to redirect runoff onto impervious surfaces.

3.3.1 SUSMP BMPs Installation and Tracking

The City continued implementation of the updated SUSMP process during this reporting period. Although construction began on the Highway 101 Westside Street Improvements Project after the reporting period (July 5, 2012), this project is the first City project to be subjected to SUSMP requirements.

Because of the scale of this project (25 acre construction site area), the City hired a consultant to be the onsite construction inspector. The construction inspector is well trained in stormwater requirements and is onsite daily to ensure the proper BMPs are installed and maintained. A copy of the project's Stormwater Pollution Prevention Plan (SWPPP) is available at City Hall and on

the job site at all times. A Qualified SWPPP Practitioner (QSP) visits the site weekly and completes a Stormwater Site Inspection Report. These reports are kept in a file at City Hall.

Since this project falls outside the current reporting period, it will be reported on in more detail in next year's report.

The City does not anticipate many projects that will fall under the SUSMP guidelines, since the City is 95% "built out." However, any project that may be proposed that fall under the guidelines will be put through the process. Planning Staff and Engineering Staff have been trained and are aware of the SUSMP requirements, and will implement the program when appropriate.

As reported in previous Annual Reports, a significant improvement to the building permit routing sheet was the addition of the *Environmental* review section (Appendix C). As noted previously in this Report, the routing sheet was modified to ensure *all* permit applications were thoroughly reviewed by Environmental Staff. This is significant because no projects will slip through the cracks, and all will be required to address storm water concerns. In addition, as mentioned above, the routing sheet also contains an area to mark if the project requires the installation of post-construction BMPs. Final permit approval and building occupancy will not be granted until a final inspection confirms the BMPs were installed correctly, according to the approved plans.

3.4 Construction Site Inventory

This section of the Annual Report will include an inventory of construction sites active during this reporting period. Given that the reporting period for these Annual Reports ends prior to the submittal of the report, the inventory will most likely be slightly outdated by the time the report is reviewed by the RWQCB. However, the City maintains an inventory of current construction project sites, which is always available for review.

The construction inventory is updated periodically, but at a minimum monthly, to ensure all active projects are included and inspected according to the frequency set forth in the JURMP. The update process consists of reviewing the Building Department files of active sites. In the past, the inventory was updated as soon as a building permit was approved. However, it was discovered that often times, construction activities would not commence for many months after permit issuance. This led to a significant amount of wasted time and resources for

limited City Staff to visit multiple sites where there were no construction activities occurring. Since the City's Building Department Staff is required to be onsite when the project begins, review of their files is the most appropriate and accurate manner to update the construction inventory. Review of the Building Department files is now possible due to the fact that they are now housed at the City of Solana Beach City Hall. This is a major improvement over the last few years when the files were located at the City of Encinitas City Hall, along with Building Department Staff.

As shown on Table 3-1, there are currently 12 construction sites that required a grading permit active within the City. In addition, City Engineers are in constant discussions with private project property owners during the plan check process to ensure their projects include an Erosion Control Plan, modify drainage alterations to re-route runoff to pervious surface areas, proof that the project would not result in an increase in runoff from the site or other various structural BMPs, and require all projects to control and mitigate all run-off before it reaches the City's MS4 system. Table 3-2 shows all construction projects that have a potential to discharge pollutants but did not require a grading permit. These projects had extensive plan review by City Staff and storm water/erosion control conditions placed on them even though a grading permit was not required. Table 3-3 shows all Capital Improvement Projects (CIP) and their priority and inspection frequencies.

Table 3-1 Construction Site Inventory Grading Projects 2011/2012

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Status	Project Size	Watershed	FY 11/12 Active Wet Season / # Inspections	FY 11/12 Active Dry Season / # Inspections	FY 11/12 Total # Inspections
235 S. Granados	Medium	Single Family Home	Jul-10	Ongoing	< 1 acre	San Dieguito	28 Weeks / 15 Inspections	24 Weeks / 5 Inspections	20
461 Marview	Medium	Single Family Home	Feb-11	Ongoing	< 1 acre	Carlsbad	28 Weeks / 10 Inspections	24 Weeks / 5 Inspections	15
233-237 N. Rios	Medium	3 Condo Grading	Feb-11	Completed May 2011	< 1 acre	Carlsbad	10 Weeks / 4 Inspection	2 Weeks / 1 Inspection	5
1067 Cerro Verde	Medium	Grading	Aug-11	Ongoing	< 1 acre	San Dieguito	28 Weeks / 15 Inspections	20 Weeks / 5 Inspections	20
624 Mar Vista	Medium	Single Family Home	Sep-11	Completed July 2012	< 1 acre	Carlsbad	28 Weeks / 10 Inspections	22 Weeks / 5 Inspections	15
920 Avocado	Medium	Single Family Home	Jul-11	Ongoing	<1 acre	San Dieguito	28 Weeks / 15 Inspections	16 Weeks / 7 Inspections	22
524 Pacific	Medium	Single Family Home	Jul-11	Completed September 2012	< 1 acre	Carlsbad	28 Weeks / 15 Inspections	16 Weeks / 7 Inspections	22
505 Ford	Medium	Single Family Home	Aug-11	Ongoing	< 1 acre	Carlsbad	28 Weeks / 15 Inspections	14 Weeks / 5 Inspections	20
225 Stevens	Medium	Parking Lot/Playground Reconfiguration	Aug-11	Completed July 2012	< 1 acre	San Dieguito	28 Weeks / 15 Inspections	14 Weeks / 5 Inspections	20
336 N. Granados	Medium	Single Family Home	Nov-11	Ongoing	< 1 acre	Carlsbad	22 Weeks / 10 Inspections	8 Weeks / 3 Inspections	13
536 S. Granados	Medium	Single Family Home	Jun-12	Ongoing	< 1 acre	San Dieguito	28 Weeks / 15 Inspections	24 Weeks / 5 Inspections	20
460 Palmitas	Medium	Single Family Home	Jul-12	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0 Inspections	0 Weeks / 0 Inspections	0

Table 3-2 Construction Site Inventory Small Private Projects 2011/2012

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Status	Project Size	Watershed	FY 11/12 Active Wet Season / # Inspections	FY 12/12 Active Dry Season / # Inspections	FY 11/12 Total # Inspections
1441 Calle Santa Fe	Low	Addition/Remodel	Oct-11	Completed	< 1 acre	San Dieguito	8 Weeks / 4 Inspections	0 Weeks / 0 Inspections	4
653 Canyon	Low	Addition/Remodel	May-12	Completed	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	4 Weeks / 2 Inspections	2
638 W. Circle	Low	Addition/Remodel	Oct-11	Completed	< 1 acre	Carlsbad	8 Weeks / 4 Inspections	0 Weeks / 0 Inspections	4
631 Glenmont	Low	Addition/Remodel	July-11	Completed	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	10 Weeks / 3 Inspections	3
536 S. Granados	Low	Addition/Remodel	Apr-12	Completed	< 1 acre	San Dieguito	2 Weeks / 1 Inspections	7 Weeks / 2 Inspections	3
420 Loma Larga	Low	Addition/Remodel	May-12	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0 Inspections	12 Weeks / 4 Inspections	4
639 Marsolan	Low	Addition/Remodel	Aug-11	Completed	<1 acre	San Dieguito	4 Weeks / 2 Inspections	6 Weeks / 2 Inspections	4
808 Ocean Surf	Low	Addition/Remodel	Feb-12	Completed	< 1 acre	San Dieguito	10 Weeks / 2 Inspections	2 Weeks / 1 Inspections	3
1136 Santa Madera	Low	Addition/Remodel	May-12	Ongoing	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	12 Weeks / 4 Inspections	4
329 N. Sierra	Low	Addition/Remodel	Mar-12	Completed	< 1 acre	San Dieguito	6 Weeks / 2 Inspections	4 Weeks / 2 Inspections	4
591 S. Sierra	Low	Addition/Remodel	Oct-11	Completed	< 1 acre	San Dieguito	12 Weeks / 4 Inspections	0 Weeks / 0 Inspections	4
785 Solana Circle E.	Low	Addition/Remodel	Jan-11	Completed	< 1 acre	San Dieguito	12 Weeks / 4 Inspections	0 Weeks / 0 Inspections	4
324 Via de Vista	Low	Addition/Remodel	May-12	Ongoing	< 1 acre	San Dieguito	0 Weeks / 0 Inspections	7 Weeks / 2 Inspections	2

3.5 Construction Follow-Up Activities:

The City is very aggressive with its construction inspections and follow-up, and unless otherwise stated, all follow-up corrective activities were properly addressed and corrected within seven (7) working days. Many times the corrections are made immediately, however the City's policy is to allow the responsible party seven days to correct the violation. That being said, if there is an immediate threat to public health or safety, the City can, and will, require immediate corrective actions.

As stated above, the City takes a very pro-active approach toward construction projects. Plans are heavily scrutinized and discussions with the contractors often happen before the project even begins. The City has found that initiating contact with the contractor before the project begins and maintaining contact throughout the construction process leads to continued compliance with storm water regulations. Since the City of Solana Beach is relatively small, the City's inspector has the ability to visit sites almost daily, and at a minimum weekly. Due to this high level of supervision, sites remain in compliance with storm water BMPs. That being said, there are instances where accidents do take place, most often when concrete trucks and pumpers are involved.

It is important to note that there were no significant violations from construction sites during this reporting period. There were minor issues that Staff encountered during inspections such as open trash dumpsters, minor sediment tracking or BMPs that were improperly installed or needed replacing, but there were no citations issued. Staff believes that the proactive approach to construction inspections, pre construction meetings and constant contact in the field from the Assistant Civil Engineer and EsGil Inspector all helped to keep the construction sites in compliance. Also, due to the lengthy drought the region is experiencing, there were relatively few rain events that occurred.

3.6 Capital Improvement Projects Inventory

In addition to the inventory for private projects, City staff believes it is equally important to discuss public Capital Improvement Projects (CIPs) under construction.

CIPs are held to the same *or stricter* standards for reducing runoff as private projects. BMPs, Erosion Control Plans, and structural changes to reduce or mitigate runoff pre, during and post-construction are required. Most, if not all, CIPs in Solana Beach are constructed by private contractors selected through the standard public construction bid process. Contractors are informed *prior to submitting a bid,* that the City requires adherence to RWQCB standards, Permit and City storm water regulations. To ensure compliance, the city inspector

conducts a daily inspection of each CIP site during construction. Stop Notices are issued if the contractor fails to comply with any storm water / erosion control regulations.

Additionally, the Assistant Civil Engineer is included in pre-construction meetings that are required for *all* public projects. A line item discussing NPDES regulations and requirements is standard for all public project agendas (Appendix E). This is another way to ensure that all contractors are aware of the requirements before the project begins, and to help with possible enforcement actions, if necessary.

In FY 11/12, the City Inspector did not issue any Stop Notices to contractors for failing to comply with storm water/erosion control regulations.

Table 3-3 below shows the inventory of CIP projects during FY 11/12. The City had three projects, and placed all of the projects in the high priority category. This was done to ensure that the City's projects would be inspected at a very high frequency in order to ensure compliance at all times. For the other CIP projects, the City's Inspector was onsite daily to monitor the site.

Table 3-3 Construction Site Inventory Capital Improvement Projects 2011/2012

Project Name and Location	Inspection Frequency	Type of Construction	Start Date	Project Status	Project Size	Watershed	FY 11/12 Active Wet Season / # Inspections	FY 11/12 Active Dry Season / # Inspections	FY 10/11 Total # Inspections
Marine View Avenue Improvement	High	Grading	Sep-11	Completed Feb-12	<1 acre	San Dieguito	18 Weeks / 60 Inspections	2 Weeks / 7 Inspections	67
Realignment of El Viento at North Granados	High	Utility installation/roadway improvements	May-12	Completed Aug-12	< 1 acre	Carlsbad	0 Weeks / 0 Inspections	8 Weeks / 24 Inspections	24
Ocean, Seabright Lane and Access Road Storm Drain	High	Storm drain Replacement	Feb-12	Completed May-12	< 1 acre	Carlsbad	12 Weeks / 40 Inspections	2 Weeks / 5 Inspections	45

3.6.1 Significant CIP Project Narratives

In this section, some additional narrative has been added to some of the more significant CIP projects, and to explain some other projects that weren't necessarily planned construction activities, but ones that were either emergency, preventative or experimental that occurred during this reporting period. Staff feels that these projects significantly show the City's proactive approach to protecting the local environment.

Sewer Assessment and Repair Program

The City embarked on a significant project to video and inspects the entire sewer system infrastructure during this reporting period. The City Council authorized approximately $150,000 towards this assessment and repair program with the intent to prevent any failures in the City's infrastructure. The City hired consultants to video the entire length of the sewer pipes and develop an assessment report to categorize the infrastructure into priority replacement projects. The City repaired all high priority areas throughout the City. This is a very aggressive and proactive program that demonstrates the City's commitment to no sewer spills in the City. This year, the City completed a sewer lining project on approximately 2,500 linear feet of pipeline. This project took care of the next tier of priority pipelines to be rehabilitated. The City is looking to perform some sewer pipeline replacements in spring 2013 and will report on this project in the next Annual Report.

Marine View Slope Maintenance

The City has a very steep slope on the east side of I-5 on Marine View Avenue that has been a problem area for large-scale erosion. The slope is now bare with no vegetation, and gullies have been cut out over the years by large rain events. These rain events produce a significant amount of erosion, and the City has attempted many solutions over the years, with minimal success.

Beginning in September 2011, The City began work on a CIP project that eliminated the erosion problem on the slope on Marine View. This project included regarding the slope to eliminate the gullies, applying a layer of hydroseed to help vegetate the slope, planting trees and bushes on the slope, and applying a geomat to help further stabilize the slope.

Staff has been keeping a close eye on this slope and is hopeful that the slope will

not erode during future rainy seasons.

3.7 Threat to Water Quality Prioritization

In accordance with Permit Section F.2.e., the City describes the criterion for designation of construction projects as high, medium, or low priority, in its JURMP. *There are **no changes** to report in the City's criterion for determining a project's impact or threat to water quality.* The City's prioritization criterion meets the requirements of the new Permit, so no changes were needed.

Of the active projects currently under construction, *there are no changes to report with respect to the potential threat to water quality*. The only projects that would fall under the high priority would be significant redevelopment projects. The City began construction on the Highway 101 Westside Improvements in early July 2012. The City hired a consultant team to oversee the construction inspection for this project. The Contractor also hired a stormwater consultant with qualifications as a Qualified SWPPP Designer (QSD) and Qualified SWPPP Practitioner (QSP). The QSP is onsite at least once a week to check that the proper BMPs are in place and that the Contractor is following the guidelines set forth in the project specific SWPPP. Stormwater inspection reports are submitted to the City on a weekly basis. This project is considered a high priority project and since construction began after the reporting period, this project will be reported on in more detail next year.

The City is closely monitoring two additional potential projects that may fall under the high priority in the next reporting period, pending permit approval. It is important to note that City Staff is currently working with the prospective developers to ensure they integrate beneficial storm water designs (LID) during the design phase. The following projects are being closely monitored by City Staff:

1) Multiple plans have been submitted to the City to build a hotel/restaurant and condos on the east side of Highway 101 at the northern tip of the City (commonly referred to as the Magellan site), however it has been met with some opposition within the community and a compromise is being sought. Plans still have not been adopted by the City Council at the time of this report. If a project is accepted for development in that area during the next reporting period, it will be a high priority project subject to the SUSMP process because of its proximity to the

San Elijo Lagoon, a 303 (d) listed water body.

2) Another *potential* high priority project that is being discussed is a large multi-use residential/commercial development on what is currently the North County Transit District's (NCTD) train station property. This proposed project has also come under heavy scrutiny from the public and no plans have been approved by the City. If a project is approved for development on this site during the next reporting period, it will be a high priority SUSMP project because of its size and pollutant potential.

The City's Capital Improvement Projects (list available upon request) will be considered at least a medium priority for several reasons. First, priority categories may only result in a change in the frequency of oversight and since the City Inspector visits each public construction site on a daily basis, it eliminates the need for delineation in priority. Second, given the City's proximity to the Pacific Ocean, all erosion, sediment and runoff control practices are important and are expected to be very beneficial to the community. Therefore, the designation of "medium or high priority" improves the likelihood that CIPs will not contribute to an exceedance of water quality standards. It doesn't make sense to categorize a CIP project as low priority since the City holds itself to a higher standard than what the Permit requires.

3.8 BMPs and Pollution Prevention Methods

As noted in the City's JURMP, the City requires general and specific BMPs for construction sites. With the modifications in the development review process, the City is able to require site design, source control and treatment BMPs prior to construction. Owners and developers are provided a BMP Construction Brochure (see Appendix A), and they meet with Engineering Staff to develop methods to ensure that runoff is not increased as a result of their proposed project. The City believes that working with the contractors during the plan development (when applicable) and approval process is the most critical time period to ensure that appropriate BMPs (structural, pre-and post-development) are built into the project *before* pollutants are allowed to enter the storm drain conveyance system.

BMP Selection

The City does not require a specific or certain type of BMP (except for SUSMP

projects) for all projects similarly designed. Instead, Staff evaluates each project on its own merit and determines if modifications to the plans are required to control erosion and/or reduce runoff. City Staff works together with property owners and developers to find satisfactory solutions to project problems.

Pollution Prevention Methods (PPM)

Construction limitations – the City limits construction during the wet season when construction plans warrant and when it is feasible. Implementation of this PPM reduces the potential for pollution.

Education – the City sends out letters to all active public and private construction projects prior to the wet season as a reminder of the importance of implementing the required BMPs (see City JURMP for a description) and the importance of taking precautions during storm events (Appendix D). Additionally, a BMP Construction Brochure is attached to all permit approvals and distributed at City Hall Engineering and Planning counters to all prospective developers and interested members of the community.

Inspections – as discussed below and elsewhere in this report, the Assistant Civil Engineer visits construction sites and keeps a record of BMP implementation and effectiveness. When a developer does not comply with the City's request to modify practices to reduce runoff or erosion, a Stop Work can be issued and fines may be levied.

3.9 Enforcement and Inspections

Enforcement of the City's Municipal Code is conducted by the City's Code Enforcement Department. The Assistant Civil Engineer conducts inspections of construction site BMPs, but if enforcement actions above verbal warnings and written NOVs are necessary, Code Enforcement Officers are notified.

Code Compliance

The City has developed procedures to track and monitor citations issued to property and business owners, visitors, and developers. These procedures include the implementation of an Administrative Fine process which was adopted by the City Council on June 18, 2002. This process allows Code Enforcement Officers to issue administrative citations and penalties beginning at $100 and rising up to $1,000 for each violation per day that the violation(s) occur; this

applies to both public and private construction sites.

In addition to the administrative fine process, the City adopted a Civil Penalty Matrix (Matrix). This is a very significant tool that has greatly enhanced the efficiency and consistency of enforcement for storm water violations. The City felt it was necessary to develop a matrix to evaluate each violation in the field, and to respond to them in a consistent and appropriate manner. The Matrix was designed so that anybody in the field who witnesses a violation can apply the parameters of the Matrix to decide the appropriate way to respond. This greatly enhanced the efficiency of the storm water program, as not all violations require multiple Staff to respond or, if a fine was necessary, Staff did not have to wait for approval from upper management to issue it. This would sometimes take as long as month, but with the Matrix, this could happen instantaneously in the field.

The Matrix was modeled after the City of San Diego's Civil Penalty Matrix. The Matrix was modified for the type of violations most often encountered in Solana Beach, but the foundations are very similar. The Matrix breaks down the violation into two categories, Environmental Significance and Compliance Significance. These categories are further broken down into Moderate, Major, and Severe. According to the type of violation and the history of the violator, the penalties will be placed in the appropriate section of the Matrix. This ensures that all violations are treated consistently, and the feelings of the investigating officer do not interfere, so the enforcement actions do not vary. This, according to our Code Enforcement Department, is extremely important if a fine gets challenged in court. The Matrix has been in use for over six years, and a fine has not been successfully challenged yet. The Matrix was developed in cooperation between the City's Environmental Specialist and Code Enforcement Officer, further demonstrating the great working relationship between City Departments.

The Matrix is used for all violations, not just construction related offenses. It can be applied to municipal, commercial, and residential offenses. For the complete Civil Penalty Matrix, see Appendix F.

Site Inspections

All construction sites that have a potential to discharge pollutants are inspected by the Assistant Civil Engineer, including public and private development projects. All development projects in the City are inspected in accordance to the

JURMP.

The sites are inspected at the rate of frequency established in the JURMP. At a minimum, each site that is determined to have a high inspection frequency priority will be inspected at least every two weeks during the rainy season (October 1st through April 30th). Medium inspection frequency priority projects are to be inspected at least monthly during the rainy season. Low inspection frequency priority construction sites will be inspected on an as-needed basis during the rainy season. All construction sites will be inspected for storm water management compliance on an as needed basis during the dry season.

The Assistant Civil Engineer devotes time out of her schedule to visually monitor all construction sites. This has been very successful in preventing pollution from leaving construction sites, as most problems are fixed before any illegal discharge leave the property. Since there are not too many projects in the City, this type of monitoring is highly successful, as private project managers and City Staff communicate very effectively.

If any potential violations are noticed during either the visual inspections or on-site inspections, City Staff will stop and talk with the property owner/contractor, write a letter, request Code Compliance to issue a citation, issue a “stop work notice” or a combination of these activities. The City’s Civil Penalty Matrix, discussed previously is also used for construction related violations.

In addition, City Staff conducts informal visual inspections at all medium and high priority construction sites prior to a rain event to ensure all BMPs are installed correctly and working properly. A follow-up informal visual site inspection is then conducted during and/or after the rain event to monitor how effective the installed BMPs were and if any modifications need to be done. Construction sites are constantly evolving and require constant monitoring, which the City Staff understands and enforces.

All inspections conducted during this reporting period addressed the required inspection steps to determine full compliance. There were no sites that required multiple follow-up inspections or reporting to the RWQCB, as all were either in compliance at the time of inspection or made the necessary corrections after the initial inspection and were in compliance during the follow-up inspection.

Enforcement of BMPs

During inspection of construction sites, City Staff verifies that appropriate BMPs have been installed correctly and are working effectively (sediment is on-site, erosion control methods in place, runoff mitigated or not leaving property, etc.). In addition, City Staff has the authority to immediately require new BMPs if erosion control, runoff, or other activity is taking place that contributes pollutants into the City's MS4.

During this reporting period, the City staff conducted inspections of all CIPs and mandatory inspections of private projects within the City's jurisdiction and did not need to report any non-compliant sites to the RWQCB. Any site that was determined to be out of compliance was immediately notified and the problems were resolved within the time frame specified by the City.

Educational Activities

The educational activities conducted for construction sites consisted mainly of verbal conversations between the contractor/developer and City Staff. Because of the relatively few projects in the City, it is possible and practical to discuss issues during the pre-construction meeting and on-site with the contractors. Also, they are given the Construction BMP brochure prior to the start of the project and ongoing inspections/meetings occur throughout the project. The City believes that it is much more effective to talk with the contractor face-to-face about storm water issues and, since we are a small city, it has been and continues to be very effective.

An educational brochure (Appendix G) was developed by the City that focuses on general construction site requirements relating to all City codes. The brochure, titled "Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices," was requested by the City Council as a general educational tool to be distributed to all contractors. This has been very well received by the development community because it addresses everything from construction hours to permitting to storm water BMPs. This is another example of the City's proactive approach to community education.

Another tool that was developed and is currently being implemented is the Construction BMP Brochure (Appendix A). This was developed by the North

County Storm Water Program to provide a single message and consistent requirements to all contractors/developers in the region, regardless of where they are doing work. This brochure was meant to supplement each individual cities educational outreach to ensure that the development community was receiving a consistent message regarding proper construction practices. This brochure has been very well received by the development community and in Solana Beach has replaced the Construction BMP Guide as the primary educational tool distributed to the development community.

As discussed previously, the inclusion of the *Environmental* section to the building permit routing sheet has afforded the City another opportunity to educate the applicant/contractor on the storm water regulations. Every project that has the potential to discharge pollutants to the MS4, regardless of size or type, is reviewed by the Environmental Programs Manager and commented on.

Another educational tool utilized by the City is the City's newsletter "Shorelines." The newsletter is updated and distributed four times per year and is eagerly anticipated by the community. A variety of storm water topics are touched upon in each edition, including construction. These articles usually focus on education for single-family residential projects since often times these are done by smaller contractors that may not have the knowledge that larger developers do. In addition, the City wants to educate the property owners of the regulations and let them know that they are ultimately responsible for the actions of their contractors, including violations. Often times, City Staff discovers that the property owners are the best allies to have because they don't want to be held responsible, so they ensure their contractors are adhering to the regulations. It's been a very effective tool in storm water management throughout the community.

These smaller projects hold a much higher priority in our City because of the lack of larger projects; so educating the individual homeowners is extremely vital. Also, the City has found that the smaller projects have the most potential violations, as most are owner/contractor situations where they are not aware of the storm water regulations. The larger projects often have erosion control specialists and employees who are required to attend storm water education classes. The newsletter is included as Appendices and described in later chapters of this Report.

Special Project BMP Education

An effective tool that has been recently developed and continues to be implemented is the development of specialized BMP notices for specific types of specialized construction activities. For example, a large scale effort is being made to underground overhead power lines for view impact reductions around the City. These were special projects that did not go through the normal permitting process. Therefore, these plans would not have been reviewed by the normal parties, and since the City is dedicated to storm water protection, City Staff developed a special "Undergrounding Utility District Construction Best Management Practices" handout (Appendix H). This was a one page handout to be included in every permit application submitted by those participating in this program. Since the process of undergrounding utilities involves moving a large amount of dirt, the City felt it prudent to take this extra precaution to ensure the proper BMPs are in place.

If any special projects in the future require project specific BMPs, the City is dedicated to developing materials to distribute to the applicants.

Post Construction BMP Inventory and Inspection

Another significant new requirement in the Permit mandates that the City must develop an inventory of all post construction BMPs and conduct annual inspections for Priority Development Projects (SUSMP). The City now has the ability to ensure that all post construction BMPs are installed and maintained by the contractor and/or property owner. The *Environmental* review section on the routing sheet contains a section that can be marked for inspection required prior to installation or prior to final approval of the project. This was done to ensure post construction BMPs required on the plans are actually installed and ensures maintenance through a special agreement that is recorded on the property through the County of San Diego. The City found in some cases that the post construction BMP(s) are often buried in the ground before inspection, thereby making it impossible to inspect and ensure it was properly installed according to the approved plans. So, the City revised the routing sheet to include a box that, when checked, puts the onus on the contractor to call for an inspection during the installation to ensure it is actually being done. This way, it can be more efficiently documented and inspected before the permit gets final approval. In addition, this allows the Assistant Civil Engineer the ability to document in a spreadsheet the type of BMP, location and inspection frequencies as the plans are being

reviewed. This will assist City Staff with post construction inspection documentation requirements prior to the start of the project.

Construction and Demolition Debris Recycling Ordinance

In January 2008, the City Council adopted a Construction and Demolition Debris Recycling Ordinance (C&D Ordinance). This ordinance requires all demolition projects and construction projects over a valuation of $100,000 to submit an approved Waste Management Plan (WMP) detailing how the contractor will recycle at least 50% of the waste generated from the project. The contractor will not receive final permit approval until they have proven at least 50% of the waste was recycled.

This is an extremely significant accomplishment for the City and its clean water efforts. According to the National Association of Home Builders (NAHB) Research Center, building a 1,700 square foot home requires:

- 9,700 board feet of lumber
- 750 copper wire
- 2,500 square feet of insulation
- 6,484 square feet of drywall
- 170 feet of copper pipe
- 55 gallons of paint
- 55 cubic yards of concrete

This is a significant amount of waste that would normally end up in the local landfills, or worse, illegally dumped in the environment. This ordinance requires contractors to recycle their used materials, guaranteeing that it does not pollute the environment. This is another example of the progressiveness of the community as a whole when it comes to protecting the environment.

3.10 New Activities and Improvements in FY 12/13

City Staff will continue to review all plans, enforce BMP (site, source and treatment) installation, conduct inspections and keep an accurate inventory of the private and public projects and post construction BMPs. The City is committed to working with the other cities within its respective watersheds (Carlsbad and San Dieguito) to ensure compliance with all storm water regulations and continue to develop watershed educational information.

The primary focus for FY 12/13 will be the continued development and implementation of the LID, HMP and SUSMP programs. These are major program components and the City is committed to working with the other Copermittees to develop a high quality work product that can be implemented region-wide. These three components are extremely important in maintaining and enhancing the water quality in the region as more and more land is developed. Training of appropriate City Staff on these new requirements will be a priority to ensure successful implementation of the new programs. In addition, Staff is currently reviewing its documents and handouts to ensure they are up to date and accurate with the new requirements.

City Staff is currently reviewing its construction inspection protocol and changes might be made in the upcoming reporting period. As reported above, the current construction inspections are being conducted by the Assistant Civil Engineer. The City is analyzing the current practice and due to potential upcoming staffing changes (retirements, reorganization); changes might be on the horizon. The City is assessing whether or not construction inspections should be continued in-house, or if contracting out those services to a specialized consultant would benefit the City and the community. The City's recent successes with contracting out the commercial/industrial inspections, Dry Weather Monitoring Programs services and Staff trainings have made the City take a hard look at other service areas as well. There is also the possibility that a part-time Code Enforcement Officer will be hired with the focus of construction inspections. This analysis is occurring at the time of the writing of this report and more information will be given in next year's Annual Report.

Next reporting period, the Assistant Civil Engineer will be heavily involved in inspecting the stormwater and BMP Requirements for the Highway 101 Westside Improvements. Since this project started after the FY 11/12 reporting period (July 2012), it will be reported on in more detail in the next annual report.

3.11 Summary

The City has been effective at implementing a plan-check process that has resulted in the implementation of BMPs, site design modifications, structural changes and runoff mitigation activities in project proposals and/or construction activities. Both public and private construction projects are subject to the City's strict standards, which provide a consistent approach to reducing urban runoff

from construction activities. The City has effectively integrated the new stricter standards of the Permit, including the SUSMP, into its plan-check review process. The City has also developed project specific construction BMPs for large-scale specialized construction activities such as the Undergrounding Utility Districts that are forming around the community.

The City will continue to actively analyze the construction program and make necessary improvements/modifications to ensure the protection and enhancement of the local water quality. An example of the City's commitment was the addition of the Environmental review section of the permit routing sheet. The City felt that some smaller projects, although not specifically required to be plan reviewed and inspected by the Permit, may have the potential to be overlooked. Therefore, now *all* plans are reviewed by the Assistant Civil Engineer and necessary changes can be made before plans are approved. Also, the reduced grading ordinance modification demonstrates the City's commitment to reviewing as many projects as possible and integrating storm water management requirements to projects that would have been overlooked in the past.

The City, along with the other regional Copermittees, developed and is now implementing the two significant new requirements, the HMP and LID. These two programs are significant additions that will require City Staff to work with the other Copermittees to implement regional programs to address runoff from construction projects. These new programs also include an educational component, which the City is currently developing in conjunction with the region. The City is committed to participating with the regional Copermittees to develop and implement these respective programs, even though the HMP is not expected to affect any projects within the City. The City values itself as an active Copermittee, and allocated funds to the HMP development, even though it is highly unlikely to affect any projects within the City's jurisdiction.

CHAPTER 4
Municipal Component

CHAPTER 4: MUNICIPAL COMPONENT (EXISTING DEVELOPMENT)

4.1 Introduction

In accordance with Permit Section F.3.a, this section of the report describes the City's efforts to prevent or reduce pollutants in runoff from municipal land use areas and activities.

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of municipal facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement BMPs at municipal facilities, program accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Municipal facilities and areas within the City of Solana Beach include public parks, public buildings, streets, roads, and parking lots, a public works yard, and the MS4 system. During this reporting period, the City once again conducted a comprehensive re-evaluation of its municipal sites to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from its facilities by implementing Best Management Practices (BMPs). This was accomplished through inspections of all public facilities.

4.2 Inventory of Municipal Facilities

During this reporting period, in response to the requirements of the Permit and in an effort to improve the quality of water in the region, the City once again inventoried its municipal sites and activities. Table 4-1 presents the City's municipal facilities, by prioritization level. *There are no changes in the City's inventory of municipal sites from those submitted to the RWQCB in the City's last Annual Report.*

The City's municipal facilities include five public buildings (City Hall, Fire Station, Marine Safety Center and the community centers at La Colonia Park and

Fletcher Cove), one Public Works Yard, six public parking lots, City streets and roads, the Municipal Separate Storm Sewer System (MS4) and the beach (which consists of four access locations: Del Mar Shores, Seascape Sur, Tide Beach Park, and Fletcher Cove).

Table 4-1 Existing Municipal Facilities, By Priority Level

Facility Name	Facility Address	Type of Activity	Priority
Public Works Department	1764 Highland Drive	Materials storage, fleet parking, administration	High
North Seascape Sur Surf Park	Public beach access west of Highway 101	Public beach	High
Roads, streets	Citywide	Circulation	High
MS4 System	City-wide	Storm-water conveyance system	High
Fletcher Cove Parking Lot	North end of Plaza St.	Parking	High
Distillery Parking Lot	Sierra and Lomas Santa Fe		
Solana Beach and Tennis Club	West end of Dahlia St.		
Seascape Sur Parking Lot	Seascape Sur Easement		
Del Mar Shores Parking Lot	Sierra Ave. near Del Mar Terrace		
Del Mar Beach Club East Parking Lot	Sierra Ave. east of Del Mar Beach Club Dr.		
City of Solana Beach Fire Department	500 Lomas Santa Fe	Public Building - Fire Station, fleet and fire equipment storage	Medium
City of Solana Beach City Hall	635 S. Highway 101	Public Building -Administrative	Low
Marine Safety Department, Fletcher Cove	111 S. Sierra Ave.	Public Building Administrative, marine safety equipment storage	Low
Fletcher Cove Community Center	111 S. Sierra Ave.	Public Building – Community Center	Low
La Colonia Park and Community Center	715 Valley Ave	Public Park and Building – Community Center, administrative, park	Low
Tide Beach Park	302 Solana Vista Drive	Public beach	Low
Del Mar Shores	190 Del Mar Shores	Public beach	Low

4.2.1 Inspection Frequency of Municipal Sites

The City inspects all of its municipal sites listed above on a continuous basis. The inspections address all the required inspection steps to determine full compliance. Every winter, prior to the wet season, the Public Works Yard (Yard)

is given a complete inspection and all Public Works employees are given a complete storm water refresher training seminar. Also, the Public Works Crew is put through a practice run of the Wet Weather Triggered Action Plan to prepare for the upcoming wet season. At this annual inspection, the current inventory of the storm water BMPs kept on-site (gravel bags, bio-filter rolls, straw rolls, etc) is documented and additional supplies are ordered if necessary. Visual inspections are conducted on a daily basis by the Public Works Crew.

As required by Permit Section J.3.a (3) (c) xix, the City confirms that the municipal inspections addressed all required inspection steps to determine full compliance.

Here are the specific dates and numbers of inspections for the City's municipal areas:

Public Works Yard: Weekly facility visual inspections by City Staff. Compliance inspection conducted last year on May 24, 2012.

Roads and Streets: Daily visual inspections by City Staff. Every street is swept at least once per month. Main arterial streets and collector roads are swept twice per month. These frequencies are set based on Permit requirements and the size and frequency of use by vehicles on a daily basis.

Parking Lots: Weekly visual inspections by City Staff. Every City parking lot is swept once per month. In addition, the Fletcher Cove Park parking lot is swept weekly during the summer months due to an increase in use during the summer.

MS4 System: Weekly visual inspections by City Staff. Highest priority catch basins cleaned annually (those with accumulated debris inside). All 309 catch basins and 15 unimproved channels were inspected and 26 catch basins were cleaned. Approximately 19 cubic yards of debris was removed from the MS4 system during this reporting period.

Fire Department: Daily visual inspection by City Staff. Compliance inspection was conducted on May 24, 2012.

City Hall: Daily visual inspection by City Staff. Compliance inspection was conducted on May 24, 2012.

Marine Safety: Daily visual inspection by City Staff. Compliance inspection was conducted on May 24, 2012.

La Colonia Community Center: Daily visual inspection by City Staff. Compliance inspection was conducted on May 24, 2012.

Beaches: Daily visual inspection by City Staff (Marine Safety Department).

4.2.2. Follow-up Activities

There were no follow-up activities required as a result of the municipal inspections. Due to the education, knowledge and constant monitoring by City Staff, no violations were detected during the compliance inspections.

All municipal facilities are implementing the necessary BMPs and all employees are properly trained. The Public Works Yard required no corrective action as everything remained in compliance. The Wet-Weathered Action Plan was successfully implemented and the employees were trained again and had a practice run prior to the beginning of the wet season.

4.2.3 Implementation of Pesticides, Herbicides and Fertilizer BMPs

As reported in last year's Annual Report, the City used to house a small amount of pesticides, herbicides and fertilizers at the Public Works Yard. However, City Staff no longer handles any pesticides, herbicides or fertilizers and does not store any of this material onsite. Instead, all applications are conducted by the City's contracted landscaping company and no material is stored at City facilities. This greatly reduces a high priority pollutant source and eliminates the potential for a release into the City's MS4.

In addition, the City has recently switched to using only organic pesticides, herbicides and fertilizers on City property. This change was approved by the City Council and additional funds are allocated to implement the program. The City is extremely proud of this transition, as the chemically produced materials can create significant water quality degradation. This major transition (including financially) was approved and encouraged by the City Council, which reflects the environmentally conscientious attitude of the community.

4.3 Pollutant Source Identification

To assist the City in determining the source of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, the municipal facilities were also identified by Watershed in the City's JURMP*. There are no changes to report in the municipal facility by watershed classification.*

During this reporting period, Staff continued to evaluate the possible types of pollution that could be generated from each municipal facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Any additional activities that may affect water quality such as additional storage or new materials kept on-site

Results from the evaluation indicate that most City facilities are a low threat to water quality. Parking lots, streets and roads, and the Public Works Yard are the highest priority of municipal facilities as they could introduce pollutants into the conveyance system, which could impact water quality.

The City is committed to implementing BMPs that will reduce pollutants from parking lots, streets and roads and, in particular, the Public Works Yard. The City has installed and maintains a BioClean filter in one of the upstream catch basins that lead to the problem Seascape Sur storm drain outfall. In addition, the City installed a curb inlet screen at the same catch basin upstream from Seascape Sur to prevent debris, and possible pollutants, from entering the catch basin.

As reported in last year's Annual Report, an additional BMP catch basin inlet screen was installed in the opposite catch basin across the street as a pilot test project. This inlet screen automatically opens up during a rain event to prevent flooding, but remains in place during dry weather periods. The sturdy screen also contains a filter in the basket behind the screen to further filter out pollutants prior to entering the Seascape Sur storm drain. These two BMPs will be studied and sampling results analyzed to determine if they are effective BMPs for the problem pipe. The results will be described in more detail in Chapter 12 (Special Investigations)

The Public Works Yard is visually inspected daily and BMPs are maintained and

reinforced as needed. In addition, the City utilizes results from its dry-weather-monitoring program to determine if pollutants are entering the system from its municipal facilities.

The City's 2011 Dry-Weather-Monitoring Program (DWMP) was completed by the City in September 2011. The results indicated a continuing concern at Seascape Sur, which has been an ongoing problem in the City (see discussion in Chapter 12, Special Investigations), where elevated levels of bacteria were detected. An investigation into the identification of the pollutant source is ongoing, and the City is looking into alternative ways to address the situation. No municipal facilities were found to be contributing the pollutants.

The City utilized the information from the 2002-2011 DWMPs and the criteria established by the Permit (Order 2007-0001) to further develop its 2012 Dry-Weather-Monitoring Program. The results of the 2012 program will not be available until after this reporting period, but if any exceedances are detected, follow-up actions will be taken immediately. The results of the 2012 DWMP will be included in Chapter 7 (IDDE) of this Report, which will be submitted separately in December 2012 as agreed to by the RWQCB Staff.

4.4 Threat to Water Quality Prioritization

The City utilized the criteria prescribed in Permit Section F.3.a. (3)(a) and (b) to prioritize the facilities based on their potential Threat To Water Quality (TTWQ) from storm water runoff. In addition, dry-weather monitoring data and previous complaint records were included in the evaluation. As noted in the City's JURMP, results from the 2011 DWMP indicated that there were no illegal discharges or illicit connections associated with existing municipal facilities. However, the City still classified its public parking lots, MS4 system, streets and roads and the Public Works Yard as *high priority* using the criteria of the Permit. Also noted in the JURMP, the City classified the beach at Seascape Sur as a *high priority* because results from historic dry-weather monitoring and Coastal Monitoring programs indicated elevated levels of bacteria (see Chapter 12, Special Investigations).

The Fire Station facility was the only municipal site classified as medium-priority, due to the types of materials stored onsite (although always indoors). The City Hall building, the Community Center at La Colonia Park, Tide Beach Park,

Fletcher Cove Community Center and the Marine Safety Center facility were classified as low priority primarily due to the activities conducted at those sites.

There are no changes to report in the City's prioritization of its municipal facilities.

It should be noted that in the 2003 Annual Report, the results of the 2003 Wet Weather Monitoring Program revealed very high levels of the pesticide Diazinon within the watershed. The City focused its efforts on reducing the use of Diazinon within the City and by municipal landscaping contractors through educational activities. The City is happy to report that Diazinon was not found in any of the samples analyzed by the lab for current dry weather programs. This is consistent with the overall trend region-wide showing that Diazinon levels have been steadily decreasing. The City can now focus on other pesticides or high priority pollutants in the ongoing effort to improve water quality in the region. This is a success story that can be celebrated by the entire region, proving the validity of the storm water program as a whole.

4.5 Pollution Prevention Methods

As described throughout the Municipal Component Section of the JURMP, the City has established pollution prevention methods that focus on municipal operations, including operation and maintenance of its MS4 system with the goal of preventing and reducing pollutants in runoff. The following is a list of some of the methods in place to accomplish this goal:

- Annual inspection and cleaning of the City's MS4 system
- Routine street sweeping (schedule is on the City's web site and available upon request)
- Sediment and erosion control methods (applications of Visqueen, materials coverage, silt fences, etc.)
- Facility and ground maintenance conducted in a manner that would not contribute pollutants to a conveyance systems and expected to reduce pollutant runoff during storm events
- The use of bio-filter roll(s) as a PPM at municipal facilities
- The installation and maintenance of permanent treatment BMPs at City facilities (Two CDS units, pervious pavement, Sand Trap and a large Bioswale)

- Maintenance of the MS4 including routine inspections, annual cleaning and proper disposal of captured materials
- Spill response procedures (street and road spills, facility spills)
- Household Hazardous Waste Collection (Note: the City participated in a reciprocal use agreement with the Cities of Vista, Poway and Escondido for use by Solana Beach residents to recycle their household waste materials.) The City also offers a door-to-door program, described later in the Report.
- Installation and maintenance of two catch basin inlet filters and debris screens at ongoing problem areas directly upstream from Seascape Sur beach outfall.

In the City's JURMP, the above pollution prevention methods were expanded for implementation at all City municipal facilities, depending on the type of activities conducted at each facility. To assist in developing appropriate BMPs, the facilities were categorized into the following types:

- Landscape and recreational facilities
- Roads and streets maintenance
- Public buildings
- Public Works Yard
- Parking facilities
- Storm Drain Conveyance System (MS4)

Specific BMPs were then developed for each category type identified and presented in the City's JURMP. For example, BMPs for the Public Works Yard (JURMP, Section 6) include:

- Materials storage alterations
- Visual inspections
- Improved operations and maintenance
- Good housekeeping procedures
- Preventative maintenance
- Spill prevention
- Sediment and erosion control
- Employee training
- Vehicle and equipment maintenance operation alterations

- Waste disposal and recycling
- Vehicle equipment and washing
- Storage tanks
- Outside storage

During this reporting period, the City implemented pollution prevention methods (BMPs) for each facility type based on what was presented in the City's JURMP. Municipal facilities were inspected by City Staff to ensure the implementation of BMPs was occurring.

4.5.1 Proactive Approach to Pollution Prevention – JURMP Requirements

Because of the City's proximity to the Pacific Ocean, Staff has been proactive in its approach to urban runoff and pollutant mitigation and reduction, not only during this reporting period but also prior to the implementation of the JURMP.

Annual Inspection and Cleaning of Storm Drain System

The City conducts an annual inspection of its storm drain system – citywide. Public Works staff inspects all 309 catch basins in the City and prioritize each based on the severity of sedimentation and trash build-up in accordance to the Permit**.** All catch basins that contain trash or sediment build-up in excess of the Permit requirements are cleaned using a Vactor truck. During this reporting period, the City inspected all 309 catch basins and 15 unimproved channels. Thirty (30) catch basins had accumulated debris and all 30 were cleaned, resulting in 19 cubic yards of material removed from the storm drain system (which includes open channels, etc.). The material, primarily sediment and debris, was properly disposed of at the San Elijo Wastewater Reclamation Facility.

Special Events Vendor BMP Requirements

The City developed a "Special Events Vendor BMP Guidelines" (Appendix I) for all events that require a Special Events Permit. The guidelines include BMPs for food vendors, event coordinators and event workers. The guidelines include BMPs such as:

- Protecting all adjacent catch basins
- Required trash and recycling containers
- Portable restroom secondary containment

- No dumping into storm drains
- Proper clean-up practices (No water)

These requirements are all included in the Special Events Permit. For larger events, such as the City sponsored Fiesta Del Sol and Beach Blanket Movie Night, the City holds multiple meetings prior to the event with the organizers and all issues are discussed. The organizers are required to submit their BMP plans to the City, and City Staff monitors the events throughout their entirety. The City schedules post-event street sweeping through its street sweeping contractor for all major events.

Pet Waste Bag Dispensers

The City actively installs Pet Waste Bag Dispensers and maintains the dispensers to encourage proper pet waste disposal. Several years ago, the City placed these dispensers and signs along both sides of Sierra Avenue to encourage their use to prevent pollutants from entering the MS4 (Sierra Avenue is the street closest to the beach, and runs parallel west of Highway 101). The City implemented this BMP in response to results from its dry weather and coastal outfall monitoring, which indicated the presence of fecal bacteria at Seascape Sur. In an effort to educate the community about pet waste, the City periodically includes discussions about its pet regulations, which prohibits dogs in some locations of the City and on all beaches, in its community newsletter and recreation guide *Shorelines.* In addition, City Staff meets with property managers of the condominiums along Sierra Avenue to educate them on storm water regulations and solicit their help in educating their residents.

The City has taken a proactive approach to installing pet waste dispensers at various locations throughout the city, including the Coastal Rail Trail and Fletcher Cove Park. This shows the City's proactive approach to protecting the integrity of the local waterways. This practice of requiring pet waste dispenser's at all new public projects will continue as it has been widely received by the community.

As part of the Public Works Department routine tasks, the pet bag dispensers are refilled daily. The amount of material that is prevented from entering the City's MS4 system as a result of this PPM is unknown and there is no acceptable method of estimating it, however, the City's Public Works Crew refilled approximately 1,846 bags per week during this reporting period. Here is how it compares to previous reporting periods:

- FY 11/12 – 1,846 per week
- FY 10/11 – 1,807 per week
- FY 09/10 – 1,385 per week
- FY 08/09 – 1,380 per week
- FY 07/08 – 1,116 per week
- FY 06/07 – 1,298 per week
- FY 05/06 – 775 per week
- FY 04/05 – 625 per week
- FY 03/04 – 550 per week

The pet waste bags cost approximately $0.04 per bag, which resulted in an annual cost of $3,840 for FY 11/12.

Solana Center for Environmental Innovation

The City is proud to be associated with the Solana Center for Environmental Innovation (formerly Solana Recyclers), hereinafter referred to as Solana Center. Due in large part to the efforts of this group, the City was the first city in San Diego County to have a comprehensive *curbside* recycling program. In addition, to help educate the community, the Solana Center routinely writes articles for the City *Shorelines*. Also, Solana Center administers the City's Used Oil Recycling Program, providing education for schools, community groups and City events on the proper disposal of used oil. For a complete listing of articles written in the *Shorelines,* please see Chapter 6, Residential Component. Finally, Solana Center Staff provides classroom presentations to Solana Beach schools educating the children on storm water issues and water quality. The presentations are free for the schools (paid for by the City) and are extremely popular. For a list of the presentations, see Chapter 8 (Education Component).

Recycling Efforts

The City takes a very proactive role in promoting recycling efforts throughout the community. In previous Annual Reports, the City would include in this section the diversion rates as reported to the California Integrated Waste Management Board (CIWMB). However, the CIWMB changed the way diversion rates are calculated and reported, so recycling percentages are no longer given. Instead, jurisdictions are given a "target" disposal rate for pounds/per person/per day based on historical disposal and recycling amounts. This can roughly be translated to recycling percentages, but as long as the City meets its designated disposal rate, it's considered 50% diversion (recycling) under AB 939. The City's

2011 diversion rate is as follows:

- Target – 8.9 pounds per person per day
- Actual – 5.8 pounds per person per day

As you can see from the results, the City is significantly below the target rate, meaning the community is doing a tremendous job diverting waste from the landfills through means such as recycling, conservation, composting, etc. The City is extremely proud of the progress and results of its recycling efforts.

A significant effort to increase the already stellar recycling rates throughout the community was undertaken during this reporting period. The City recognized that the residential sector of the community was thoroughly committed to recycling and the results reflected this. This is due in large part to the City's transition to automated single-stream recycling a few years ago, which made it extremely convenient for residents to recycle. However, the results showed that commercial sector was not doing as well. The City analyzed its current Municipal Code to review its current requirements and identified some key areas to strengthen to help increase the commercial recycling rates. On May 12, 2010, the City Council adopted a new mandatory commercial recycling ordinance (Appendix J) requiring *all* commercial establishments to have a recycling program. The City anticipates this new requirement will have a positive impact on the overall recycling rates once fully implemented.

As reported in pervious Annual Reports, the City Council adopted a Construction and Demolition Debris Recycling Ordinance in January 2008. This ordinance is discussed in more detail in the Construction Component of this Report, however it's important to mention because it once again demonstrates the City's proactive and aggressive commitment to recycling and environmental protection.

Hazardous Materials Management Team

The City's Fire Department contracts with San Diego County Hazardous Materials Management Division and established an Emergency Response Program to contain hazardous materials that result from automobile accidents, spills, illegal dumping or any other activities within the City of Solana Beach. Generally, the County's Hazardous Materials Team handles recovery and disposal of the materials, although work crews from the City's Public Works Department also contain some small spills and are on call 24 hours a day, 7 days

a week to respond to all spills that occur within City limits. All Public Works Staff has been trained to handle spills in the appropriate manner, to reduce and/or eliminate potential impacts to the City's MS4 and receiving waters.

Storm Drain Inventory and Stenciling

The City has inventoried all of its storm drain conveyance structures (inlets and catch basins). The inventory list includes addresses, cross streets and is available in GIS format. This information was then utilized to implement a program that affixed a stenciled tile at each location that reads, *"No Dumping! This drains to the ocean."* The City has successfully completed application of the tiles at *every* storm drain inlet and catch basin throughout the City. In addition, the City requires all new or re-development projects that install a storm drain curb inlet or catch basin to include a stencil or tile. The City constantly monitors the catch basins and if a tile is broken or has been removed, another one is immediately installed.

The City also participated with the non-profit group I Love A Clean San Diego (ILACSD) to sponsor an ongoing Tile Stenciling Program in which the City provides volunteers with a GIS map of all catch basins in the City and a box of tiles so they can compass the City and replace any tiles that are damaged or missing. This was a highly successful program/partnership that the City will continue to ensure all catch basins have tiles permanently affixed to them.

Street Sweeping

The City already had a comprehensive street sweeping program prior to the Permit and the implementation of the JURMP. The residential streets are swept once each month, while major arterial streets and collector roads are swept twice per month. In response to the comments received from the RWQCB on the FY 02/03 annual report, the City developed a form to characterize and measure the amount of material collected by the street sweeper (Appendix K). The driver of the street sweeper completes the form after every trip and it is verified by the appropriate Public Works employee.

As reported in the City's FY 2005/06 Annual Report, the City was having significant problems with its contracted street sweeping company. The contractor was not performing up to contract specifications, and the City was having a difficult time getting the proper reports from the drivers. A contractual battle

ensued and documentation was not submitted. The City eventually relieved the street sweeping company of their duties and selected another contractor. The new contractor has been much more effective and responsive.

This reporting year, the amount of debris collected by the street sweeper totals 234 cubic yards, which is slightly more than last year's amount of 212 cubic yards. The relatively consistent amount of debris collected by the street sweeper can be attributed to the fact that most of the debris consists of organic materials, including leafs and green waste. There is relatively no trash collected, which is a good indication that the City, and community's, efforts at trash and litter reduction are successful. The City will continue to monitor the street sweeping debris to see if there are certain areas where trash is more prevalent and litter reduction campaigns can be implemented. However, at this time, most of the debris is organic green waste materials.

To demonstrate the City's commitment to documenting the amount of debris collected by the street sweeper and to ensure that all activities were conducted in compliance with the storm water regulations, the City included specific language in its new street sweeping contract. This language will be used in every subsequent street sweeping contract to ensure all contractors are adhering to all storm water regulations, which was a comment made by the RWQCB in its JURMP Annual Report review.

As mentioned above, and now required by the new Permit, the City sets sweeping frequencies based on the type of street; the larger, more frequently used by vehicles, are swept more often. The streets are classified based on SANDAG's Vehicle Miles Traveled (VMT) parameters. The lesser traveled streets, like residential streets, are swept once per month. Parking lots are swept as needed, but at a minimum once per year. The other higher frequency traveled streets such as arterials and collectors are swept twice per month. A complete schedule can be found on the City's website or upon request.

The Permit requires the Copermittees to identify the total distance of curb-miles of improved streets, and highways for high, medium, and low sweeping frequencies.

High Priority (twice per month):
Lomas Santa Fe – 4.06 miles
Highway 101 – 3.89 miles

South Sierra – 1.62 miles
Stevens/Valley – 3.29 miles
Cedros – 2.63 miles

Medium Priority (once per month):
All residential streets – 90.71 miles

Low Priority (once per month):
Parking Lots – 12 total lots, 59,750 square feet

These streets were cleaned on the set schedule listed above.

The Permit also requires Copermittees to identify the total distance of curb miles swept.

The City sweeps all (100%) streets at least monthly. The high priority streets are swept twice per month. Parking lots are swept as needed, but at a minimum once per year as identified in the JURMP. The total distance swept per year is:

High Priority: 402.74 miles per year
Medium Priority: 1,088.52 miles per year
Low Priority: 717,000 square feet per year

Spill Prevention

The City's Public Works Department maintains on-site at the Public Works Yard, a 55-gallon drum and specially equipped vacuum to handle small hazardous materials spills. The drum and vacuum are small enough to travel with the work crews and have been utilized to contain oil from an automobile accident, spillage of work-related materials (paint and debris), and collection of minor hazardous materials. In the event the material exceeds the amount that can be collected by the work crews, the City's Fire Department initiates its spill response plan (discussed above). Currently, City work crews do not have the resources to weigh the amount of material collected or to track and document the amount of material collected. Significant spills for which the work crews responded to are discussed in Chapter 7: Illicit Discharges Detection and Elimination.

Staff Trainings

As reported in previous Annual Reports, the staff trainings used to occur at the monthly citywide Staff meetings. However, these trainings had to be general in nature because of all the varying departments and staff that attended. During this reporting period, staff decided to take a more proactive approach and implement a department specific training focusing on the sections of the Permit that pertained to their respective duties. Staff felt that more focused, detailed trainings would be a much more effective approach, and this turned out to be extremely successful. During this reporting period, the City did not have any specific stormwater trainings. However, a few are scheduled for the upcoming year and will be reported on in next year's report including:

1. Sewer spill prevention and spill mitigation
2. Storm water issues relating to public works
3. What to look for in reporting potential storm water pollution

The City will continue to look for other opportunities to educate their staff on storm water related issues throughout next year's reporting period.

Storm Water Hotline

To assist the public in directing their calls for complaints and service, the City maintains and responds to a 24-hour storm water hotline telephone recording (858) 720-4424. When the number was first established, it was checked twice each day. However, to facilitate a quicker, more effective response time, the City now links all calls to the direct extension of the City's Assistant Civil Engineer. Therefore, all calls that are made to the City regarding storm water issues will be handled immediately. This has been proven very successful, as the issues are addressed immediately. This leads to much quicker responses, which result in more efficient spill response and enforcement actions. The City informs the public about the hotline number at City Council meetings, on flyers and handouts at workshops, on business cards, on educational materials and during inspections.

Materials Storage

Although only minor quantities of hazardous materials are stored at municipal facilities (as noted in the City's JURMP), the City stores those materials indoors when feasible. Only non-hazardous materials, such as Class 2 gravel, temporary stockpiles of topsoil, etc., are stored outdoors for short periods of time. When

this does occur, City Staff ensures all storm water BMPs are installed around the piles and they are covered, if necessary, to ensure no discharges occur from the Public Works Yard.

Sediment and Erosion Control

The City's Public Works Department augmented the City's supply of Visqueen as a method to reduce or prevent sediment and erosion control. The Visqueen is utilized at the Public Works Yard on the sand and soil that is kept on-site. In addition, the work crews utilize bio-filter rolls to prevent runoff. As added insurance, the City's Operations Manager always orders extra erosion control BMPs before the wet season to store on-site for emergency situations. Most of these practices were instituted as a result of suggestions made by the RWQCB during their inspection in August 2002.

Storm Drain Inlet/Catch Basin Insert

The City is currently participating in an ongoing experimental application of two catch basin inserts in one problem location at Seascape Sur. The inserts are being studied to determine its effect on the elevated levels of bacteria found downstream at the storm drain outlet. Early results from the pilot program show a slight reduction in the bacteria levels at the outfall and the catch basin filters have been extremely effective in eliminating large quantities of trash and organic matter from the MS4 system. Public Work Crews empty the filters on a weekly basis and routinely remove about half a trash bag full of debris.

Smoking Ban on Public Beaches and Parks

In 2003, the City of Solana Beach jumped to the forefront of pollution prevention on a nation-wide scale. The City was the first in the nation to ban smoking at its public beaches and parks. The Ordinance (Ordinance 316, see Appendix L) bans smoking at all public beaches and parks, and is actively enforced by the Marine Safety Department and Code Enforcement Department. The public has been very responsive to this ordinance, and the City has had many requests from other jurisdictions, as far away as Australia. The City appears to be a trend setter, as the City of Los Angeles and other Orange County cities followed suit with their own ordinances a few years ago, and most other cities in San Diego County have recently implemented their own local bans. This is a significant pollution prevention action the City has undertaken, as cigarette butts are routinely found as the most abundant type of debris collected in beach clean-ups.

The impact on the local beaches will be extremely beneficial, and the City is proud to be the trend setter in another environmental arena (the City was the first jurisdiction in San Diego County to provide curbside recycling).

During this reporting period, the City approved an enhanced No Smoking Ordinance that extends further than the one listed above. On August 7th, 2009, a much more stringent ordinance was adopted by the City Council that extended the ordinance to include the following no smoking areas:

- All enclosed or unenclosed dining areas and bars
- Street Fairs
- Farmer's markets
- On, near or around the Coastal Rail Trail
- Within 20 feet of all entry ways and all enclosed areas available to and customarily used by the general public and all businesses patronized by the public
- Tot lot and Playground areas

This will, without a doubt, significantly reduce the amount of smoking outdoors in Solana Beach, and therefore reduce the amount of cigarette butts that end up in our MS4 and receiving waters. The City is excited to start implementing this ordinance and reduces the amount of pollution that comes with smoking.

Another significant pollution prevention action the City has taken, although post-reporting period is the recent adoption of a new commercial litter abatement ordinance. On September 8, 2010, the City Council adopted Ordinance 419, which requires, among other things, all commercial businesses to develop and implement a litter reduction plan. This plan must include at least daily inspections/cleanups around their businesses up to 200 feet. This should significantly prevent litter/debris from entering the City's MS4 as it would require employees to inspect sidewalks, gutter, streets and open space up to 200 feet surrounding the property, and remove any litter they encounter.

Recycling/Trash Containers

The City, and community, places a high priority on recycling, as evidence by the extremely high recycling diversion rate, discussed previously in this Report. The City has made a conscientious effort to increase the amount of public recycling containers over the last few years. As discussed in previous annual reports, the

City has focused on placing dual trash/recycling containers at all popular public locations throughout the City, including parks, beach accesses and the Coastal Rail Trail. The City receives an annual grant through the Department of Conservation as well as an annual grant through the Regional Solid Waste Association, and these funds have been used to purchase and install the dual trash/recycling containers throughout the community. This has dramatically increased the amount of public recycling, and the City anticipates continuing this program in the coming years.

Not only is the City focusing on implementing a public recycling program, but as previously mentioned, the City implemented a large scale residential recycling program. The City, along with its waste hauler Waste Management, converted the traditional source separated recycling program to a streamlined, single stream commingled recycling program. This has been a huge success as the residential recycling rates have dramatically increased by 20%.

Single-Use Plastic Bag Reduction Ordinance

In May 2012, the Solana Beach City Council voted unanimously to ban single-use plastic bags at the point of sale. Grocery stores had a six month grace period to comply with the ordinance that prevents them from handing out single plastic bags. This ordinance not only reduces waste in the City and promotes recycling but it also encourages residents to think about what impact their actions have on the environment. The residents and business owners were very accepting of this ordinance since they understand the outcome will help reduce unnecessary waste. Solana Beach is very proud to be the first City in San Diego County to implement such an ordinance.

Plastic Bag Advertising Ban

Another progressive action the City Council took was passing an ordinance banning the use of plastic bags for advertising. The ordinance bans the popular style of advertising used by companies in which they use small plastic bags full of rocks because often times it is unsolicited and the bags never get picked up, eventually ending up in the City's MS4. This emerging type of advertising is typically conducted by small residential and commercial support businesses such as landscapers, pool cleaners, housekeepers, and handyman type services. This is another example of the City taking a proactive approach to litter in the MS4. Plastic is the number one pollutant found in the ocean worldwide.

Ensuring Implementation

To ensure that the PPMs are implemented, City staff meets periodically with all Department Directors to review the BMPs, Permit requirements and program expectations. Department Directors are responsible for ensuring that their Staff carries out the BMPs for their facilities. The City Engineer meets every Wednesday with the Operation Manager and his public works crew at the Public Works Yard for safety meetings. It was decided that at these meetings, storm water issues, including BMPs, should be discussed and the Yard will be inspected to ensure compliance. The Assistant Civil Engineer will also conduct random compliance inspections. During this reporting period, there were no violations observed at the City's municipal facilities and all appropriate BMPs were being properly installed and maintained.

4.6 Pollution Prevention Strategy Effectiveness

One of the issues that the City faces is developing an appropriate process to determine the effectiveness of the pollution prevention methods and strategies, (BMPs). The City is committed to developing a consistent approach that could be agreed upon by all Copermittees. It is important to collect data and analyze results in a consistent manner – county/region wide – in order to be able to share results and draw conclusions across agencies, particularly given that water is not restricted by jurisdictional boundaries.

To address this issue, the Copermittees met several times in the fall of 2002 and in 2003 to work out a more appropriate strategy. A guidance document was prepared by the Copermittees and submitted to the RWQCB on October 16, 2003, titled *"A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs".* This guideline presents a comprehensive assessment strategy that initially focuses on programmatic assessments and moves toward water quality-based assessments to determine program effectiveness. More specifically, it addresses six levels of assessment:

Compliance with Activity-based Permit Requirements

- Changes in Knowledge/Awareness
- Behavioral Changes

- Load Reductions
- Changes in Discharge Quality
- Changes in Receiving Water Quality

The City implemented this assessment program during the last reporting period, which is described in more detail in the Effectiveness of JURMP Assessment Component of this report.

Compliance with Maintenance Activities

Tables 4-2 and 4-3 below outline the MS4, sewer system and permanent City BMPs maintenance schedules. The City has an extremely aggressive maintenance program to ensure the systems are clean and functioning properly.

Table 4-2 MS4 Maintenance Activities 20102011

Type	Frequency	Date	Total Number (and Distance)	Number Inspected (and Distance)	Comments
Inspection and Cleaning of MS4	Annual	Ongoing between May-October	309 catch basins– 14.5 Miles of MS4	309 catch basins- 0.5 Miles of MS4 pipe inspected	All catch basins inspected, 0.5 miles of pipe inspected (Seascape Sur) 26 catch basins were found with accumulated debris and 26 cleaned, and Steven's Creek Channel was cleaned for a total of 19 cubic yards removed
Inspection and Cleaning of Unimproved Storm Drains (Brow Ditches, Channels, etc)	Monthly	The 30th of every month	15 – 0.8 miles of Unimproved Storm Drains (Brow Ditches, Channels, etc)	15 – 0.8 Miles of Unimproved Storm Drains (Brow Ditches, Channels, etc)	All unimproved storm drains inspected on the 30th of every month and cleaned as needed.

Inspection and Cleaning of Sewer Lines	Annually (entire City)	Ongoing	Entire System	Entire System	The entire sewer system is inspected and cleaned annually, and 1/3 of the system is televised annually

The tables above represent the inspection and cleaning activities related to the City's MS4 and sewer system. As you can see, the City conducts the annual inspections of the entire MS4 as the Permit requires, but goes above and beyond the inspection and cleaning requirements with monthly unimproved storm drain (brow ditches, channels, etc) inspections and cleaning of the entire sewer system annually. The unimproved storm drains are handpicked by City Staff on an as needed basis as a result of the inspections. The City also has an aggressive sewer videoing program that televises one-third of the system each year, identifying possible leaks, infiltration into the City's MS4, grease build-up and root intrusions that may lead to sewer spills. This is an extremely aggressive sewer maintenance program, which reflects the commitment the City has to maintaining a healthy system and preventing spills into the environment.

In addition, the City has designated sewer "hot spots" that are cleaned quarterly (every three months). These "hot spots" are areas with historical problems such as heavy grease buildup, root intrusion, and flat lines that may need increased cleaning to prevent sewer backups. The program includes an aggressive "root foaming" procedure in areas with historical root intrusion problems.

This year, the City's maintenance crew noticed a large amount of sediment and debris in the bottom of Steven's Creek Channel. The channel was cleaned by the City's contracted stormdrain cleaner.

Table 4-3 Municipal Treatment Control BMP Maintenance Activities 2010/2011

BMP Type	Location	Frequency	Total Number	Number Inspected	Comments
Low Flow Diverter	Fletcher Cove Park	Monthly	1	1	Low Flow Diverter is cleaned once per month and inspected daily
Sand	Fletcher Cove	Monthly	1	1	Sand Trap is cleaned monthly

Trap	Park				
CDS Units	Fletcher Cove Park and North Rios Avenue	Monthly	2	2	The CDS units are cleaned monthly
Sewer Siphon	San Elijo Lagoon	Monthly	1	1	The siphon is cleaned monthly
Bio-Swale	La Colonia Park	Annually	1	1	The Bio-Swale is cleaned annually prior to rainy season and inspected weekly

The City has an aggressive maintenance program for all City-maintained permanent BMPs. The monthly maintenance frequency for the Sand Trap and CDS units are much higher than suggested by the manufacturer. The daily inspections of the Low Flow Diverter are conducted to ensure it is functioning at all times and redirecting the urban runoff away from the beach and into the sewer system.

4.7 New Activities and Improvements for FY 12/13

The City anticipates continuing to implement programs aimed at meeting the requirements of the Municipal Component as specified in the JURMP. The focus will be on continuing the cooperation among different departments, ensuring municipal facilities are in compliance with the Permit, and collaborating with other Copermittees. The Department Directors were required to integrate more responsibilities into positions in order to implement the Watershed Urban Runoff Management Programs (WURMP), Standard Urban Storm Water Mitigation Plan (SUSMP), Hydromodification (HMP) program and the Low Impact Development (LID) program. Because of our team approach, this transition occurred rather seamlessly. The Planning Department and Engineering Department worked closely together in implementing the respective requirements.

As mentioned previously in this Report, the new JURMP document was adopted in March 2008. This contained new elements that will require additional/modified requirements/duties of different Departments within the City. Additional Staff

trainings were conducted to ensure that all Staff activities are in compliance with the new Permit and some job duties will have to be altered. Since the new Permit has now been adopted, the majority of the City's efforts will be spent implementing programs to meet the requirements of the new Permit. These changes will have to be implemented on the fly, and will require all Departments within the City to work collaboratively to accomplish the goals within the new Permit. The City is confident that the infrastructure of the City as a whole will allow for a relatively seamless transition to the requirements of the new Permit. Some of the new programs include:

- Minimum street sweeping and priority requirements
- Post-Construction BMP verification, tracking and inspections
- SUSMP implementation
- Low Impact Development (LID) development and implementation
- Hydromodification Plan (HMP) development and implementation

4.8 Summary

The City has been successful at implementing the Municipal Component of the JURMP, establishing BMPs for its municipal facilities and providing informative and meaningful Staff trainings. The City made significant advancements in the manner in which its storm water program is integrated into the routine tasks of various Staff and has developed an effective interdepartmental working relationship. The Environmental Programs Manager position has greatly enhanced the coordination and implementation of the Permit, as well as other environmental programs (solid waste, Used Oil Recycling, HHW, etc.)

Highlights of some of the accomplishments of the City's Municipal Program Component include:

- Implementation of two comprehensive WURMPs
- Creation of an effective municipal inspection process, all municipal facilities were inspected regardless of priority
- Implementation of storm water issues and inspections of Public Works Yard at weekly safety meetings between the City Engineer and Public Works Operations Manager and Staff

- Annual inspection and cleaning of the City's MS4 system and Steven's Creek Channel resulting in 19 cubic yards of debris diverted from receiving water bodies
- Continued implementation of street sweeping tracking form that allows the City to evaluate the effectiveness of the street sweeping program (234 cubic yards collected).
- Provision of public pet waste bag dispensers (96,000 bags were utilized by the community during this year at a total cost of $3,840 (4 cents per bag)
- Addition of new trash/recycling receptacles in high traffic areas of City to promote recycling and prevent trash/litter from entering storm drain system
- Enforcement and enhancement of Smoking Ban on Public Beaches and Parks Ordinance which has significantly reduced amount of pollution on local beaches and parks
- Implementation of weekly task for Public Works Crew to conduct weekly storm water inspections at the Public Works Yard
- Implementation of scheduled cleaning of Fletcher Cove Sand Trap and CDS unit monthly
- Maintenance of Bioswale at La Colonia Community Center
- Maintenance of City-owned CDS unit at North Rios on a monthly basis
- Maintenance of two filter baskets at upstream catch basins of Seascape Sur outfall on a weekly basis
- Routine scheduled inspection and maintenance of unimproved channels on a monthly basis and after all rain events
- Routine scheduled inspection of Fletcher Cove Low Flow Diverter to ensure it is functioning properly on a daily basis
- Implementation of unique public/private plastic bag recycling program, resulting in the recycling of over 500,000 bags to date

CHAPTER 5

Industrial/Commercial Component

CHAPTER 5: INDUSTRIAL AND COMMERCIAL COMPONENT

5.1 Introduction

In accordance with Permit Section D.3.b, this section of the report describes the City's efforts to prevent or reduce industrial and commercial discharges of pollutants into the MS4 to the MEP. In compliance with the Permit, the City evaluated businesses within the City and categorized them as commercial or industrial, as noted in JURMP sections 7.0 (Industrial and Commercial Component).

In each Annual Report to the RWQCB, this section will include modifications to the City's inventory of industrial and commercial facilities, pollutant source identification and potential threats to water quality. In addition, this section of each Annual Report will include results from the City's efforts to implement and enforce BMPs at industrial and commercial sites, related accomplishments and activities. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

During the last reporting period (July 1 2010 to June 30, 2011), the City conducted a complete evaluation of the commercial and industrial facilities doing business within the City. Facilities were identified as industrial and commercial sites based on criteria required by the Permit, which included activities conducted on-site and also included a site visit for verification. The City prepared an inventory of the facilities in order to understand potential sources of pollution, threats to water quality, and to develop a plan to mitigate or eliminate urban runoff and pollution from the facilities by implementing Best Management Practices (BMPs). The City's complete inventory is listed in the JURMP.

As a result of the new Permit, this chapter now combines two previous Chapters from the old Permit. To keep consistency and for ease of readability, the following sections in this chapter separate the two components, so each can be analyzed according to their respective requirements.

5.2 Industrial Facilities

5.2.1 Inventory of Industrial Facilities

There is currently one industrial site operating within the City (Baker Iron Works). Table 5-1 presents the City's industrial facility, including its prioritization level. *There is no change in the City's inventory of industrial sites from those submitted in last year's Annual Report.*

Table 5-1 Existing Industrial Facilities

Facility Name	Address Number	Street Name	Zip Code	Hydrologic Area	SIC Code	NAICS Code	Principal Products/ Services	Potential Pollutants									Tributary to 303 (d) Listed and Generating Pollutants for Which the Water Body is Impaired	Threat to Water Quality
								Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash		
Baker Iron Works	710	Valley	92075	905.11	3441	332312	Iron Works/ Metal Fabr.		X	X		X	X		X	X	Yes	High

5.2.2 Pollutant Source Identification

To assist the City in identifying potential sources of pollutants in its receiving water bodies, and/or the receiving water bodies of neighboring jurisdictions, City Staff evaluated the possible types of pollution that could be generated from each industrial facility. The evaluation included the following:

- Type of materials stored or used on site
- Activities conducted on site
- Proximity to conveyance system, or environmentally sensitive areas
- Watershed location

Results from the evaluation concluded that the City's only industrial facility could be a potential source of pollutants (Baker Iron Works).

The conclusion that Baker Iron Works could be a potential source of pollutant discharge was due to the fact that the facility generally uses metal materials in the fabrication of structural devices. Some of their work is performed and stored outdoors and is potentially exposed to storm water, and runoff from the property can potentially enter the City's conveyance system. However, the City has worked closely with Baker Iron Works to minimize the potential for pollutants to

run off their property and into the City's MS4 system. Baker Iron Works has been more than willing to work with the City to ensure compliance with the Permit, and has completed numerous tasks suggested by the City. These include:

- Permanently covering all stock piles of metal materials kept outside to shield it from rain events.

- Routine cleaning of the yard as needed but no less than weekly with a magnetic device to pick up all loose metal shavings.

- Moving all chemicals indoors to ensure that they are protected from the weather and will not run off the property and into the City's MS4 system.

- Training all staff on proper storm water BMPs and general housekeeping for all activities that may impact the City's MS4 system.

- Installation of low flow sump/infiltration structure at the northwest corner of the facility to handle all low flows from the entire facility. The low flows will enter a small drain that extends across the driveway and enters into a small infiltration well structure to prevent the water from entering the MS4. This structure has worked very well in eliminating all low flows from leaving the site. Baker Iron Works employees routinely monitor and maintain the infiltration well to ensure proper functionality.

- Permanently sealing a trench drain near the office building that previously drained directly to the street. The result is that the runoff bypasses the drain and travels into the low flow sump/infiltration structure mentioned above.

The results of the 2011 dry weather program indicate that no related pollutants were found downstream from this industrial facility. This is consistent with the 2001-2010 dry-weather-monitoring program results which also indicated that no related pollutants were found downstream from this facility. The City will continue to inspect and monitor these locations in the future to further ensure that they are not contributing to downstream pollution. In addition, Baker Iron Works has agreed to forward all results from their required water quality monitoring under the Statewide General Industrial Permit to City staff, upon request, for review during rain events.

The City utilized the information from the 2011 dry-weather-monitoring program, the criteria established by the Permit, and the evaluation of the potential sources of pollutants (discussed in this chapter and Section 7 of the City's JURMP) to develop its 2011 dry weather monitoring program. Similar to last year, one site downstream and one site upstream from Baker Iron are selected for testing. The City will continue to monitor runoff downstream from this facility as long as it is in operation.

5.2.3 Threat to Water Quality Prioritization

In the City's JURMP, the industrial site was classified as a high, medium or low priority, based on its potential threat to water quality from storm water runoff. The classification utilized criteria prescribed in Permit Section F.3.a. (3)(a), (b).

There are no changes to report in the City's classification of its industrial facility from last year's Annual Report. Baker Iron Works is still classified as a high priority industrial site.

5.2.4 Pollution Prevention Methods

The City realized that since Baker Iron Works is the only high priority industrial site in the City, it would be prudent and feasible to monitor their site frequently. Although the Permit requires only annual inspections, the City dedicates more time to ensure that the site is always in compliance. This pro-active approach that occurred in the beginning of this Permit cycle has proved to be well worth the effort. Spending extra time and effort the first couple of years of this Permit to get this facility into compliance has built a strong working relationship between the owners and the City. This facility has had no violations and continues to stay in compliance.

The City has confirmed that Baker Iron Works is *in compliance* with the state GISW and is currently adhering to all requirements.

Baker Iron Works employees use a large magnet to clean their entire yard as often as needed but no less than once per week. This magnet is very effective in cleaning up small steel waste products that result from daily activities. The parking lot is swept and water is never used. All chemicals are kept in a locked storage shed that has secondary containment and is kept above ground, which

was a recommendation of RWQCB staff.

5.2.5 Industrial Inspections

As stated in previous Annual Reports, during FY 07/08, the City changed its inspection practices. Prior to FY 07/08, City staff conducted all industrial and commercial facility inspections. However, in FY 07/08, the City hired an independent contractor that specializes in storm water inspections. This change occurred due to limited staff time to conduct the inspections, as well as to provide an increased service to the residents of Solana Beach. By hiring a contractor that specializes in storm water inspections, the City, and residents, can be assured that it is getting the highest quality service.

The City contracted out these services to Environmental Compliance Inspection Services (ECIS) again in FY 11/12. Baker Iron Works was inspected on April 25, 2012 and all designated BMPs were implemented and the facility was found to be in compliance in all areas. The inspection addressed all the required inspection steps to determine full compliance. City Staff will also continue to visually inspect the facility at least once a month, and always before the wet season and during rain events. If the City observes a non-compliant facility, the City will inform its appropriate representative at the RWQCB.

As required by Permit Section J.3.a (3) (d) vi, the City confirms that the industrial inspections addressed all required inspection steps to determine full compliance.

5.2.6 New Activities and Improvements for FY 12/13

City staff will continue to work closely with the proprietors of Baker Iron Works to 1) ensure functionality and maintenance of the BMPs, 2) ensure compliance with the City's storm water regulations and 3) educate the business owners and employees about the importance of protecting the community's water resources. In addition, if any new requirements or activities are developed targeting industrial facilities on a watershed or regional basis, the City will communicate these requirements directly to Baker Iron Works and assist them in remaining in compliance.

City Staff will also monitor business license applications to ensure if another industrial facility opens up that it will be added to the inventory and inspected to

ensure full compliance.

5.2.7 Summary of Industrial Section

The City has been effective at working with owners of the one industrial site to ensure compliance with Permit and City regulations. The owners have installed and properly maintained the filtration system at the northwest corner of the property to collect and infiltrate all on-site low flow runoff before it enters the MS4 system. The City has established a great working relationship with the owners/operators of the site and they have made drastic strides to maintain compliance. City Staff will continue to monitor and inspect the facility frequently to ensure compliance with the Permit. Baker Iron Works has been very responsive and immediately remedies any problems encountered during inspections. They have gone above and beyond what is required to ensure they are in compliance with the Permit.

5.3 Commercial Facility

5.3.1 Inventory of Commercial Facilities

During the process of revising the JURMP, submitted in March 2008, the City updated its inventory of commercial facilities. The City selected locations based on the requirements of the new Permit, and placed higher priorities on such facilities as automotive servicing, gas stations, repair and fueling, commercial rental yards, and golf courses (high Threat To Water Quality, TTWQ). The current inventory (see Table 5-2 below) now contains 77 facilities. The City will continue to update the inventory list as new businesses apply for permits or site inspections reveal changes. In addition, any facility that has the potential to release high priority pollutants into the City MS4 will be added to the list of high priority facilities.

Table 5-2 Inventory Of High Priority Commercial Facilities

Facility Name	Address Number	Street Name	Zip Code	Hydrologic Area	SIC Code	NAICS Code	Principal Products/Services	Potential Pollutants									Tributary to 303 (d) Listed and Generating Pollutants for Which the Water Body is Impaired	Threat to Water Quality
								Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash		
Academy Animal Hospital	741	Academy	92075	905.11	0742	541940	Animal Facility	X	X		X	X	X	X	X	X	Yes	Low
AM/PM/ Mini-Market #704	660	Via del la Valle	92075	905.11	5541	447110	Fueling	X	X	X		X			X	X	Yes	High
Annie's Café and Deli	524	Stevens	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Baker Iron Works	710	Valley	92075	905.11	3441	332312	Iron Works/Metal Fabrication		X	X		X	X		X	X	Yes	High
Bangkok Bay	731	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Baskin Robbins	905	Lomas Santa Fe	92075	905.11	5812	722211	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Beach Grass Café	159	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Belly Up Tavern/Wild Note Café	143	S Cedros	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Bill Smith Automotive	136	N Cedros	92075	905.11	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Bongiorno's New York Pizzeria	524	Stevens	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
CA Auto Tech, Inc. DBA Test-Only Smog	146	N Cedros	92075	905.11	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Cafe la Bocca	124, #102	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
California Pizza Kitchen Inc.	437	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Carls Jr./M and N Foods LLC	106	Solana Hills	92075	905.11	5812	722513	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High

Caspian Petroleum DBA LSF Mobil	705	Lomas Santa Fe	92075	905.11	5541	447110	Fueling	X	X	X		X			X	X	Yes	High
Cedros Gardens, Inc.	330	S Cedros	92075	905.11	5261	444220	Nursery/ Greenhouse				X		X	X	X	X	Yes	High
Chief's Burgers and Brew	124, #108	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Chronic Tacos	919	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Clark's Auto Repair and Radiator SVC	421	N Hwy 101	92075	905.11	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Crush Italian Cuisine	437	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Cupcake Love	437	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
D & B Automotive Specialties	128	N Cedros	92075	905.11	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Dixieline Lumber Company	663	Lomas Santa Fe	92075	905.11	5211	444110	Building Materials			X	X		X		X	X	Yes	Medium
Don Chuy's Restaurant	650	Valley Avenue	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Dynamite Shine	615	S Hwy 101	92075	905.11	7532	811192	Auto Detailer	X	X	X		X			X	X	Yes	High
Einstein Bros Bagels	911	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Fidel's Little Mexico Inc.	607	Valley Avenue	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Fish Market Restaurant	640	Via de la Valle	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Hideaway Café	150	S Acacia	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Holiday Inn Express	621	S Hwy 101	92075	905.11	7011	721110	Hotels and Motels	X	X			X	X	X	X	X	Yes	Medium
Jamba Juice	689 – D	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Java Depot	243	N Hwy 101	92075	905.11	5812	722515	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Jersey Mike's Subs	915	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
KMP Plumbing Company Inc.	435	S Cedros	92075	905.11	4225	493110	General Warehousing and	X	X						X	X	Yes	Low

							Storage											
Lockwood Table Café	346	S Cedros	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Lomas Santa Fe Country Club	1505	Lomas Santa Fe	92075	905.11	7997	713910	Golf Course/Park				X		X	X	X	X	Yes	High
Lomas Santa Fe Ex. Golf Course 408	1580	Sun Valley	92075	905.11	7997	713910	Golf Course/Park				X		X	X	X	X	Yes	High
Marriott Courtyard	717	S Hwy 101	92075	905.11	7011	722511	Hotels and Motels	X	X			X	X	X	X	X	Yes	Medium
Masuo's Japanese	145	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
McCaffrey's Pub	123	W. Plaza	92075	905.11	5813	722410	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Mohawk Car Wash (Parent-CCSB Inc.)	435	N Hwy 101	92075	904.61	7542	811192	Auto Washing	X	X	X		X			X	X	Yes	High
Moreland Choppers	369	N Hwy 101	92075	904.61	7538	811111	Auto Repair	X	X	X		X			X	X	Yes	High
Naked Café	106	South Sierra	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Orange Blossom Café	224	S Cedros	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Pamplemousse Grille	514	Via de la Valle	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Panda Express #1029	689	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Panera Bread Solana Beach #4283	667	San Rodolfo	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Paroli Italian Bistro	647	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Pizza Nova Solana Beach LLC	945	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Pizza Port- Grain to Green	135	N Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
R F McKenna Construction Company	507	S Cedros	92075	905.11	4225	493110	General Warehousing and Storage	X	X						X	X	Yes	Low
Red Tracton's Restaurant	550	Via de la Valle	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Roberto's Mexican	445	N Hwy	92075	904.61	5812	722511	Eating/Drinking	X	X		X	X	X		X	X	Yes	High

Food Inc.		101					Establishment											
Rubios' Fresh Mexican Grill Inc. #13	437	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Rudy's Taco Shop and Market	524	Stevens	92075	905.11	5812	722513	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Samurai Japanese Restaurant	979	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Shine Auto Detailing	435	N Hwy 101	92075	904.61	7532	811192	Auto Detailer	X	X	X		X			X	X	Yes	High
Solana Beach Coffee Company	437	S Hwy 101	92075	905.11	5812	722515	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Solana Beach Fish House	124, #209	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Solana Donut House	124, #105	Lomas Santa Fe	92075	905.11	5812	722515	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Solana Succulents	355	N Hwy 101	92075	904.61	5261	444220	Nursery/ Greenhouse				X		X	X	X	X	Yes	High
Solana Sushi	117	Plaza Street	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Sprouts Farmers Markets	659	Lomas Santa Fe	92075	905.11	5411	445110	Grocery Store	X	X		X	X	X		X	X	Yes	Medium
Starbucks	691	Lomas Santa Fe	92075	905.11	5812	722515	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Starbucks	937	Lomas Santa Fe	92075	905.11	5812	722515	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Station Sushi	125	N Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Subway	124, # 101	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
T's Cafe	271	N Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Tidewater Tavern Inc.	221	N Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Togo's Eatery	691	Lomas Santa Fe	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Tony Jacal's Inc.	621	Valley	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Top of the Bagel	665	San Rodolfo	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High

Vons Companies Inc. #2327, The	931	Lomas Santa Fe	92075	905.11	5411	445110	Grocery Store	X	X		X	X	X		X	X	Yes	Medium
Waters Fine Foods to Go	125	S Hwy 101	92075	905.11	5812	722513	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Woody's Solana Beach	437	S Hwy 101	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Yummy Yogurt	153	N Hwy 101	92075	905.11	5812	722515	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High
Zinc Café	132	S Cedros	92075	905.11	5812	722511	Eating/Drinking Establishment	X	X		X	X	X		X	X	Yes	High

The commercial property inventory was utilized to identify potential sources of pollution (high TTWQ), prioritize the businesses and to develop an inspection frequency program, as noted in the City's JURMP.

5.3.2 Pollutant Source Identification

Eight percent (8%) of the City's 2,211 total drainage acres (roughly 177 acres) are zoned for commercial use. Some of the areas within the City zoned for commercial use drain to environmentally sensitive water bodies and 303(d) listed waters (impaired water bodies), as noted in the City's JURMP. Some of the 303(d) listed water bodies have been identified as having *constituents of concern (COC)* or pollutants that are of particular concern to those water bodies. Table 5-3 identifies the 303(d) water bodies and COCs that are impacted by drainage from the City of Solana Beach. There is *no change* to report in the City's identification of potential pollution sources. As reported in last year's Annual Report, based on water quality data analysis of the past few years, Diazinon has been removed from the San Elijo Lagoon COC list.

Table 5-3 303(d) Water Bodies and COCs

303(d) Water Body	Constituent(s) of Concern
San Elijo Lagoon and Ecological Reserve	Coliform, sediment, nutrients
San Dieguito Lagoon (and its tributary, Stevens Creek)	Coliform, TDS
Pacific Ocean	Coliform

Using the inventory list, businesses were classified by types of activities conducted on the property in order to identify potential sources of pollution in accordance with Permit section F.3.c. (2). The Permit specified 25 possible high-priority business categories for each Copermittee. Upon review of the City's business license inventory, the high priority business categories applicable to the City of Solana Beach include automobile servicing and repair; automobile/vehicle washing; retail or wholesale fueling; pest control services; eating and drinking establishments; mobile carpet, drape, or upholstery cleaning; cement mixing or cutting; landscaping; nurseries; and golf courses.

Potential pollutants for each of the ten (10) categories identified above include, but are not limited to the following.

- *Automobile servicing and repair facilities have the potential to generate pollutants such as heavy metals (Cu, Zn, Cr, Ni, Pb), oil, grease, engine and transmission fluids, antifreeze, brake fluids, suspended solids, phosphates, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust, sand and broken glass.*
- *Automobile/vehicle washing facilities have the potential to generate pollutants such as suspended solid(s), pH, oil, grease, phosphates, heavy metals, detergents, engine and transmission fluids, litter, organic debris, fluids, sediments, paint, solvents, paint chips/dust and sand.*
- *Retail or wholesale fueling facilities (gas stations) have the potential to generate pollutants such as detergents, oil, grease, engine fluids, suspended solids, phosphates, litter, organic debris, fluids and sediments.*
- *Pest control services have the potential to generate pollutants such as harmful chemicals, pesticides, fertilizers, herbicides, nitrogen salts, and phosphorus and in particular, the chemical "Diazinon."*
- *Eating and drinking establishments have the potential to generate pollutants that occur due to improper waste disposal of oil and grease, improper application of pesticides, litter along sidewalks and parking lots, and sediments from equipment cleaning.*
- *Mobile carpet, drape, or upholstery cleaning businesses have the potential to generate pollutants such as BOD, COD, suspended solids, organic matter, cleaning solutions, animal-related wastes, litter and organic debris along sidewalks and parking lots.*
- *Cement mixing or cutting facilities have the potential to generate pollutants such as suspended solids, oil and grease, heavy metals, hydrocarbons, solvents, and metals*
- *Landscaping and maintenance activities have the potential to generate pollutants such as sediments, oil, grease, organic matter, fertilizers, herbicides, pesticides, nitrogen salts, nitrogen and phosphorus.*
- *Nursery (greenhouse) facilities have the potential to generate pollutants such as sediments, fertilizers, herbicides, pesticides, suspended solids (roof coating), nitrogen salts, phosphorus, oil, grease and organic matter.*
- *Golf courses conduct activities that may produce pollutants associated with landscaping and maintenance activities including litter, BOD, COD, sediment, bacteria/viruses, oil/grease, heavy metals, manure, pesticides, fertilizers and detergents.*

5.3.3 2011 Dry Weather Monitoring Results

Results from the 2011 Dry Weather Monitoring Program (DWMP) were collected and analyzed by the City in September 2011 (but are already outdated at the time of this report). The 2011 program utilized the criteria established by the Permit (and the Copermittee Monitoring subcommittee). The City reviewed the results from the 2011 Dry Weather Monitoring Program looking for the pollutants listed above, and in particular, COCs described in Table 5-3. The results indicated one potential problem area. The bacterial levels at Seascape Sur outfall (which drains to the Pacific Ocean) continued to exceed the action levels established in the Permit and the IDDE investigation continued (see Chapter 12).

The City continues the non-point source investigation (see Chapter 12), and utilized the results to help design its 2011 Dry-Weather Monitoring Program. The results from the 2012 monitoring program will not be available until after this report is submitted to the RWQCB. *As a result of Addendum 2 adopted by the RWQCB in September 2008, the 2012 Dry-Weather Monitoring results will be submitted in December, 2012.* It's worth noting that the City contracted out the 2012 DWMP services to an outside consultant that specializes in this field. The City is hoping that this will further assist the City in determining the source of the high bacteria at Seascape Sur. The results will be presented in December, 2012.

5.3.4 Threat To Water Quality Prioritization

The inventory of businesses for the City included identifying those that potentially posed a high threat to water quality (TTWQ) as set forth in the Permit and JURMP. As noted above, the City also categorized its businesses by the potential to generate the pollutants described.

The City's JURMP identified 77 stationary commercial sites, of which 69 are high priority Threat To Water Quality (TTWQ) facilities. Table 5-4 (below) summarizes the stationary businesses in the City's inventory by the general description.

It is important to note that many commercial businesses change very frequently, especially restaurant facilities. The City will make inventory adjustments as inspections reveal changes are necessary. This is an ongoing procedure that will continue into further reporting periods.

Table 5-4 High Priority TTWQ Commercial Facilities by Type of Business

Type of Business	Number
Animal Services	1
Automobile servicing and repair	9
Automobile/vehicle washing	1
Retail/Grocery Stores	2
Eating and drinking establishments	54
Golf courses	2
Hotels/Motels	2
Iron Works	1
Nurseries	2
Retail or wholesale fueling	3
Total	**77**

5.3.5 Business Community Education Campaign

City Staff has implemented an aggressive education campaign for the business community. As stated in previous annual reports, education is conducted during the annual storm water inspections. The City, along with the North County Storm Water Program (the cities of Carlsbad, Encinitas, Escondido, Oceanside, Solana Beach, San Marcos, and Vista) previously developed two commercial BMP posters that are still being utilized. The first is aimed toward automobile repair shops and the second toward restaurants. These posters are distributed by the City's contractor (ECIS) during inspections. The business owners are required to place the posters in a noticeable location for all employees to see. On subsequent follow-up inspections, City staff or contracted inspectors check to see if they comply.

Additional educational/training tools developed to be distributed to the local businesses are the "Green Wrench Guide" and the "What's Cookin' Guide" developed by the Regional Outreach Workgroup. These guides are also distributed during site inspections as an extra training tool to help these businesses come into compliance. These guides have room designated in the back for employees to sign after they read the material to show educational compliance.

The City believes that distributing these educational tools directly to the businesses during inspections will have the greatest impact. Not only will inspectors have their undivided attention, but the City can also guarantee

delivery and track which establishments have received the informational guides. Therefore, when it comes to compliance issues, the City can quickly determine who has and has not been informed of the regulations. These education tools will be discussed further in the Educational Component of this Annual Report.

By the time this inspection program was fully implemented, City Staff and contracted inspectors found that a majority of business owners were “aware” or had some “basic knowledge” of storm water requirements. The City, along with the other Copermittees in the Carlsbad Watershed, developed a knowledge/awareness rating and included it on all inspection forms. This will help better assess the overall knowledge of the business community in relation to not only other businesses in the city, but in the watershed as well. This is discussed more in the Educational Component.

5.3.6 Pollution Prevention Methods

Because of the City’s proximity to the Pacific Ocean, the City has been proactive in its approach to reducing urban runoff, not only during this reporting period, but prior to the implementation of the Permit as well. For example, prior to the implementation of the original JURMP, the City had several pollution prevention methods (PPMs) in place for commercial properties, which continues through to the new JURMP during this reporting period and included, but were not limited to:

- Prohibition of all non-storm water discharges to the City’s storm water conveyance system (SBMC 13.10.060).
- Measures to reduce pollutants to the maximum extent practicable (MEP) were required of business owners (SBMC §13.10.090).
- Persons owning or operating a parking lot (or impervious surface) were *required* to “clean those structure thoroughly as is necessary to prevent the discharge of pollutants to the City of Solana Beach storm water conveyance system to the maximum extent practicable, but not less than once prior to each wet season” (SBMC 13.10.090).
- The City maintained by municipal code the authority to inspect business properties for compliance with the provisions of Solana Beach Municipal Code, Chapter 13 (SBMC 13.10.110).
- Required maintenance of commercial property (trash cans covered, litter removal, etc.) and appropriate waste disposal.

- Routine articles in the citywide community newsletter, *Shorelines* to educate the community about pollution prevention (see Chapter 9).

5.3.7 New Pollution Prevention Methods

In the City's JURMP, pollution prevention methods were expanded for commercial facilities, depending on the type of activities conducted at each business. Numerous activity-specific BMPs were also developed for each business type identified. Complete tables describing the BMPs in detail are included in the City's JURMP, submitted to the RWQCB in March, 2008. *There are no changes to report with respect to BMPs designated for existing commercial properties.*

Common Commercial Property BMPs

Many of the BMPs provided to commercial property owners/managers were activity-specific to the type of business conducted on-site. However, there are several BMPs common to all commercial properties, which are described below.

Employee Training

The training of employees on proper business practices to prevent or reduce urban runoff is listed as a BMP for all businesses. Knowledge of pollution prevention methods requires instruction from one person to another, particularly as the requirements are new to many employees and given that employees handle the majority of tasks at a commercial business, staff has explained to proprietors the importance of adequate employee training.

Good Housekeeping

Pollution prevention BMPs are required of most commercial facilities. Good housekeeping includes the proper disposal of waste materials and proper coverage over waste dispensers, dry sweep outdoor areas, keeping the facility in generally good repair and maintained in good operating condition to prevent deterioration of materials.

Spill Response Plan (SRP)

An SRP is required of most commercial facilities as noted in the JURMP. An effective SRP should prevent on-site hazardous materials from leaving the private commercial property and entering the City's storm drain conveyance system. Commercial property proprietors are being educated about an SRP and

are now required during inspections by City staff.

Minimize Use of Water for Washing / Cleaning

The BMPs associated with a reduction in the use of water for washing and cleaning is suggested for most commercial facilities operating within the City. It has been common practice for many years to use power-washing methods to clean the outside of buildings, windows, and out-door eating areas at restaurants. In addition, it has been common practice by commercial property owners (and their contractors) to hose-down the sidewalks in front of their businesses to collect trash, debris, and landscaping remnants. These types of cleaning procedures use a lot of water and it is likely that the water will run off of the property and into the City streets or storm drain system, bringing with the water a significant amount of pollutants. For that reason, commercial property owners are requested to find new methods of cleaning, reduce the amount of water used, and prevent the runoff from leaving their property.

Various other activity-specific BMPs are required or suggested to commercial property owners and are listed in the City's JURMP.

Municipal Code and General Plan Amendments

There were no changes to the Municipal Code or General Plan that affect the Industrial and Commercial Section of the Permit.

Brochures

The City worked collaboratively with other North County cities (see Chapter 9, Education Component) to jointly develop brochures in order to provide a consistent message to the community, and in particular, commercial property owners/managers. The brochures were utilized by City Staff to inform and educate the community, including commercial businesses. Public works crews, Code Enforcement, Planning and Engineering Staff pass out brochures when an educational opportunity presented itself. Staff also visited many businesses and distributed the brochure, "Only Rain in the Drain" and spoke to business owners about the need for pollution prevention.

5.3.8 Ensuring Implementation through Commercial Property Inspections

During this reporting period, the City once again decided to contract out the inspection services to ensure that they are being conducted thoroughly and also

to further enforce the City's grease management regulations. City Staff resources are stretched extremely thin with all the new storm water and Fats, Oils and Grease (FOG) requirements, so in order to ensure that the proper time and effort was being utilized on these important inspections, the City contracted out the services. In addition, the City wanted to continue enforcing its aggressive grease management regulations to ensure that all required eating establishments had the proper grease management devices installed and were being properly maintained. It is well documented that the number one cause of sewer spills is grease build-up, so the City is taking a pro-active approach to ensure that grease is being properly managed at all eating establishments.

The City hired Environmental Compliance Inspection Services (ECIS) again this reporting period to conduct the inspections in accordance with the new JURMP. The inspection frequency of high priority businesses for the third year of Permit implementation remained at 100% (as detailed in the new Permit). The City currently has an inventory of 77 total facilities.

The City, through its contractor, visited all 77 stationary facilities, which is above and beyond the minimum number of inspections required by the Permit. The commercial inspections addressed all required inspection steps to determine full compliance. The results are described below.

As required by Permit Section J.3.a (3) (d) vi, the City confirms that the commercial inspections addressed all required inspection steps to determine full compliance.

As required by Permit Section J.3.a (3) (d) ii, the City confirms that the commercial BMPs were implemented during all inspections.

5.3.9 Enforcement

As mentioned above, the City hired ECIS to conduct the facility inspections. However, the City is still responsible for the follow-up enforcement actions, if necessary. The inspection protocol consisted of ECIS conducting an initial inspection and then one follow-up if the site was out of compliance for a minor violation (trash dumpster lid open, training logs incomplete, etc.). If there is a major violation, ECIS would contact the City immediately for proper follow-up actions. If the facility was still out of compliance after the second visit, then ECIS

would notify the City and City Staff would follow-up from there, taking increased enforcement actions including fines, if necessary. The results are as follows:

First Inspections:

Total Inspections: 77

Facilities in compliance after first inspection: 48

Facilities not in compliance after first inspection: 29

Follow-Up Inspections:

Total Inspections: 29

Facilities in compliance after second inspection: 16

Facilities not in compliance after second inspection: 13

The remaining 13 facilities that were still out of compliance after the follow-up inspection were handed over to the City for additional follow-up. The majority of violations were all relatively minor infractions consisting of dirty trash enclosures, grease bin areas and lack of grease trap/interceptor maintenance logs. The City followed up with meetings with the property owners and managers, and all facilities have since come into compliance. *No citations were issued as a result of the inspections.*

The complete database of commercial and industrial inspections is available upon request. The City maintains the database and will build on it as the new Permit cycle continues.

5.3.10 Mobile Businesses

The Permit requires regulation of mobile businesses within each jurisdiction, which is a new requirement. The Permit states that each Copermittee shall develop and implement a program to reduce the discharge of pollutants from mobile businesses to the Maximum Extent Practicable (MEP). The mobile business program is being addressed on the regional level, and the City is participating in the development of the program. However, the City has always taken a proactive approach in dealing with mobile businesses, especially mobile car detailers and carpet cleaners. The City has issued several citations in the last few years to mobile businesses that do not have the necessary BMPs in

place to prevent pollutants from entering the City's MS4. These violations will be described in the IDDE Chapter of this Report (Chapter 7), which will be submitted in December, 2012.

It should be noted that there are *no mobile businesses* currently in the City's inventory. The Planning Department has been notified of these new requirements targeting mobile businesses, so if one applies for a business license, Planning Staff will notify the Environmental Staff which will take a proactive approach to educating the new business on the storm water regulations.

5.3.11 New Activities and Improvements for FY 12/13

The City is confident that the new inspection process for commercial facilities is a significant improvement for this program. The City anticipates continuing to budget for consultant inspection services to focus on storm water and grease management device inspections. The approved FY 2012/2013 budget contains $12,000 to continue outsourcing the inspections. In addition, the City will continue to update the commercial facility inventory as new business licenses and inspections reveal changes.

A significant new requirement of the Permit requires the City to develop a mobile business program. As mentioned above, the new Permit requires all Copermittees to develop and implement a program to reduce discharges of pollutants from mobile businesses to the MEP. Since this affects all Copermittees, the region decided to address this on a regional scale. This has become a primary focus and the subject of its own subcommittee, which the City is involved in. The City will continue to work with the region to develop this program and implement it during the next reporting period.

The City will also look to improve educational materials for commercial facilities, including mobile businesses. The City is committed to working with the other North County Cities (as well as the Regional Outreach Workgroup) to collectively put together educational materials with a consistent message. Additionally, the City will work with the respective Watershed Groups to alter inspection forms or processes if a consensus is met within the group. An example of the benefit of this collaboration was the addition by the member cities in the Carlsbad Watershed Group of two assessment questions at the end of the inspection to gauge the knowledge and/or behaviors of the facility owner/manager. This was

included to gain a better understanding of the level of knowledge of the responsible employees and see if their behavior changes over time. Hopefully, this will give the Copermittees a better assessment tool to analyze program strengths and weaknesses.

Another significant improvement to the program that continued during this reporting period was the addition of a higher level of grease management device inspections. As mentioned in last year's Annual Report, the City decided to contract out inspection services for commercial facilities with the intent to include grease management device inspections as well. This was the second year of the increased grease management inspections, which included whether or not the grease device was the correct size and included the correct connections. The initial inspection was simply to gauge if the necessary commercial facilities had any type of device installed, but during this reporting period, the City once again inspected to ensure the correct type and size was installed. This is extremely important as simply having a device is not sufficient if it was too small or did not include all the proper connections. The City now has three years of inspection data and has a great inventory of the current grease management devices throughout the community. This is just another example of the City's proactive approach in preventing sewer spills.

5.3.12 Summary

The City has successfully updated its JURMP and commercial facility inventory in compliance with the Permit requirements. As a result, the City has identified commercial facilities that pose a high threat to water quality and implemented the new inspection frequencies per its new JURMP. The City has also developed an effective enforcement process and notified all high-priority businesses of required BMPs. For the most part, the businesses in this community have willingly adapted their practices to meet the storm water regulations of the Permit.

The City has successfully updated its JURMP to reflect the new requirements of Permit Order No. 2007-0001. As such, the City has successfully developed a program to comply with all aspects of the new JURMP, and is committed to continually improve on the program in the coming years.

The City's proactive approach of patrolling the City daily and stopping at sites where potential violations may occur before there are discharges has greatly

reduced the amount of NOVs and citations issued. The City has discovered that it is much more efficient and worthwhile to put forth the effort to stop a potential violation before it occurs rather than wait and deal with the consequences. So far, this proactive approach has been very successful, as most businesses appreciate City Staff working with them, instead of the normal practice of enforcement.

The City has successfully inspected 100% of its commercial businesses and anticipates continuing this procedure for the life of the Permit. The inventories will continue to be updated as new businesses open up and old ones close down, as described in the report above. This is a continuous process in which all departments at the City play a key role, and communication is vital. The City has successfully implemented measures to comply with all of the requirements in the Industrial/Commercial Component of the Permit.

CHAPTER 6
Residential Component

CHAPTER 6: RESIDENTIAL COMPONENT

6.1 Introduction

In accordance with Permit Section D.3.c, this section of the report describes the City's efforts to prevent or reduce residential discharges of pollutants into the City's MS4 to the MEP and to prevent residential discharges from the MS4 from causing or contributing to a violation of water quality standards.

In each Annual Report to the RWQCB, this section will include any proposed modifications to the City's JURMP (Section 8.0, Residential Component) including prioritization of residential areas and pollutant source identification. Results from the City's efforts to implement BMPs will also be included. A summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or permit compliance.

The City conducted numerous community education outreach activities, distributed flyers and door-hangers and published articles in the City's newsletter. The City continued implementation of the "Green Flash" environmental portal on its website and operated a 24-hour hotline for the community to be able to report any suspected violations or contact City Staff. In addition, the City conducted its Household Hazardous Waste (HHW) collection and recycling program, which includes door-to-door services. Finally, the City hosted many community events and distributed storm water information to residents at the City booth.

6.2 Pollution Prevention Methods

Polluted urban runoff in residential areas occur from activities associated with the following actions: automobile use, maintenance, cleaning, and repair; home and garden care (pesticides, herbicides and fertilizers); disposal of trash, pet waste, and household hazardous waste; outdoor washing activities; landscaping and home maintenance. It is imperative to prevent the pollutants that can be generated by these activities (bacteria, detergents, heavy metals, grease, oil, herbicides and pesticides) from entering the City's MS4 to the maximum extent practical.

6.3 BMP Implementation

The City continued several pollution prevention methods that reduce, prevent or mitigate the harmful pollutants in urban residential runoff. The City continued its HHW collection program, operated a 24-hour hotline for reporting violations, sponsored community events and developed flyers, brochures, newsletter and website articles. In addition, the Copermittees continued to develop regional programs to address the residential requirements of the new Permit.

6.3.1 Hazardous Waste and Used Oil Collection and Recycling

Under the 1989 California Integrated Waste Management Act (AB939), jurisdictions are required to provide Household Hazardous Waste (HHW) collection programs to residents in order to limit the volume of HHW (used oil, paint, household cleaners, pesticides, car batteries, automobile waste, etc) that might otherwise end up in a landfill, or worse, illegally dumped. For San Diego County, the HHW program had been funded by a tipping fee until 1997, when the County of San Diego sold the landfill system to private companies.

During the FY 11/12, the City continued its partnership and the reciprocal use agreements with the cities of Vista, Poway and Escondido to provide permanent facility HHW drop-off service to City residents at a cost of $55 per vehicle. To encourage participation, the entire cost is picked up by the City.

Additionally, the City operates a door-to-door program where, for a small co-payment of $10 per visit, a company will come directly to the resident's house to pick up the Household Hazardous Waste so that residents do not have to drive to Poway, Vista or Escondido. The total participation in the HHW program was 261 residents and the total weight of hazardous materials was 24,279 pounds. Included in the door-to-door program is a service offered to senior citizens and homebound residents that provided free of charge, with the City paying for the service. These programs are offered to encourage the proper disposal of hazardous wastes to prevent it from entering and polluting our sensitive waterways. The program also includes the disposal of e-wastes, including TVs, computers, VCRs, fluorescent bulbs, batteries, etc.

For a complete breakdown of the types and weight of HHW disposed by the residents of Solana Beach, please see the following table:

Table 6-1 Household Hazardous Waste by Type

Type	Household Hazardous Waste
Flammable & Poison	5,597
Acid	180
Base	352
Oxidizer	35
PCB-Containing	14
Reclaimable	10,452
Asbestos	0
Universal Waste	334
Electronic Waste	6,569
Aerosol Containers	0
Other HHW	746
Total (lbs)	24,279

The City keeps records of how many people utilized the program throughout the FY 11/12 and a questionnaire is provided to the participants at the time of disposal to acquire useful information such as how they heard of the program and what types of wastes were disposed. Many respondents listed local programs such as the City's newsletter "*Shorelines*", the City's website and educational brochures as the source of their knowledge of this program. Other sources include the two local trash haulers (EDCO and Coast Waste), Solana Center for Environmental Innovation, the internet, and basic word of mouth. This bodes well for the educational work of City Staff and is a good indication that the City's educational program is effective at getting the word out to the community about environmental concerns, water quality, and opportunities to participate as the program continues to grow. Additionally, it shows the beneficial cooperation efforts between the City and its contractors.

The City is a member of the Regional Solid Waste Association (RSWA). As a member, the City participates in a multi-city agreement with EDCO Waste and Recycling Services, Inc. (EDCO). As reported earlier, the agreement resulted in a very successful program for elderly and homebound City residents to dispose of HHW at their door, *at no charge to the residents*. This provides a solution for the two largest obstacles for the elderly and homebound residents, convenience and cost, by providing home pick-up service free of charge. This has been an

extremely effective and popular program throughout the entire community.

This agreement is necessary because the City does not have the capacity to operate its own HHW facility within its jurisdictional boundaries. Without this RSWA agreement, the residents would have very limited options in dealing with the proper disposal of HHW. This would potentially lead to the improper disposal of HHW, which would threaten the local waterways and sensitive environment. However, due to the foresight of the City government, the formation and participation in groups such as RSWA lead to increased opportunities for the community to protect the local environment. It also allows the City to subsidize the costs of disposal to assist the residents in properly disposing their HHW. For a small city like Solana Beach, becoming members of larger organizations is imperative for keeping costs down and increasing negotiation power. These programs would not be self sufficient if Solana Beach was not part of a larger organization, as the City and community receive the benefits of "strength in numbers." This has helped keep the costs for such important programs low and participation high.

The City also promotes local HHW collection events by advertising the events on the City's website and sending out Eblast email alerts to registered community members. These events typically occur at the Solana Center located in Encinitas, but the City values proper disposal of HHW, so these events located outside of the City are still publicized by the City. This is just another convenient way for residents to dispose of their HHW.

Recycling

As noted in the Introduction of this report, the City is a proactive agency working to protect and enhance the local environment. The City, with assistance from the non-profit environmental group Solana Center (formerly known as Solana Recyclers), was the first city in the county to initiate a curbside recycling program.

Assembly Bill 939 (AB 939) requires cities to divert at least 50% of their total solid waste away from landfills, and the best way to accomplish this is through recycling. As reported earlier in this Report, the City's target disposal rate of pounds per person per day was 8.9 and the actual recorded was 6.0. This is significantly below the AB 939 requirements and shows that the City's programs are working and the awareness of the residents is very high, as many of the

cities in the region failed to reach their target. The process of writing the 2011 AB939 report is underway, but not completed before this report was submitted. These numbers will be included in next year's report.

6.3.2 Annual Bulky Item Clean-up Day and Coastal Clean-Up Day

Each October, the City hosts an Annual Bulky Item Clean-up day. The City's waste hauler provides roll-off containers for the collection of large appliances, yard waste, excess trash and scrap metal. Residents only need to bring their large bulky items and excess trash to La Colonia Community Center to drop off anything that they have, to save them a trip to the landfill, and it's *free of charge*. Additionally, Solana Beach residents can call the City's trash hauler to set up an appointment for *free curbside pick-up* and disposal of up to three bulky items up to three weeks prior to the event. It is well documented that the easier and more efficient it is for people to recycle or dispose of large items the more often they will do it. By offering this convenient, local and free of charge event, residents are less likely to dispose of their large items illegally, keeping these items out of our local waterways. The Bulky Item Clean-up Day held in October 2011 resulted in 18.24 tons of material collected and properly disposed off, preventing it from ending up in the City's MS4.

Each September, the City of Solana Beach participates in the annual Coastal Clean-Up Day sponsored by the California Coastal Commission and I Love A Clean San Diego. The City hosted two sites again this year, one at Fletcher Cove and one in the San Elijo Lagoon, where residents came and spent the morning beautifying the local community. This is an extremely popular and successful event that usually draws over 200 community volunteers, and removes hundreds of pounds of litter and debris from the local lagoons and beaches.

6.3.3 24-hour Hotline

To assist residents in obtaining information, reporting suspected storm water violations or to report illegal dumping, the City operates a 24-hour "storm water hotline". The hotline (858-720-4424) is available 24 hours a day, seven days a week, and 365 days a year. The hotline is linked directly to the voice mail of the City's Environmental Programs Manager to increase efficiency and ensure prompt responses. This way, calls can be immediately fielded and handled in the appropriate manner.

6.3.4 Pet Waste Bag Dispensers

The City installed and maintains Pet Waste Bag Dispensers to reduce the potential of pollution stemming from residents (and visitors) not collecting waste from their pets while walking. This was a measure added to hopefully help the high levels of fecal coliform detected at the Seascape Outfall revealed during wet and dry weather monitoring. The City has posted dispensers and signs to encourage their use. The program appears to be working very well because, during this reporting period, approximately 96,000 pet waste bags were utilized by the community.

6.3.5 Education and Outreach

The City's entire education and outreach program is provided in Chapter 8 of this report. Activities associated with the educating of residents are addressed in this section, which may also be repeated in Chapter 8.

Shorelines articles

The *Shorelines* is the City's Newsletter and Recreation Guide for community information. The newsletter is now distributed four times a year (Spring, Summer, Fall and Winter) to each resident and business within the City (up from twice annually in the past). It is one of the best methods to get information to the public about a variety of issues, the environment being a key component. The *Shorelines* newsletter always contains environmental articles and the community has come to rely on this publication as a means of keeping up with City government. This has proven to be an ideal community educational effort.

During this reporting period, the City transitioned from printing the *Shorelines* on paper to going electronic. This has resulted in a significant reduction of paper waste, and saves energy throughout the process. The City (and community) has also seen a benefit in the quality of the output, as articles can be uploaded at any time and they can become much more interactive. Hyperlinks to relevant online sources are now embedded into the articles, which have proven to be very beneficial. The transition to an electronic format has been a tremendous success and the quality and content of the newsletter is rapidly improving.

In the summer 2012 issue, the City published the following articles relating to environmental education and storm water activities:

- City of Solana Beach Bans Single-Use Plastic Bags!
- Storm Water Hotline
- How to Dispose of Household Hazardous Waste Safely and Easily
- Household Hazardous Waste and Electronic Waste Program
- Love My Bike Love My Planet
- Green Building Recognition Program
- Remodeling/Construction
- Household Battery Recycling
- Plastic Bag Recycling Program

In the fall 2011 issue, the City published the following environmental education and storm water activities:

- Annual Coastal Clean-Up Day
- San Elijo Lagoon Conservancy

In the winter 2011/2012 issue, the City published the following articles relating to environmental education and storm water activities:

- Leaf Blower Ordinance
- Storm Water (NPDES) Rainy Season Construction Reminders
- Household Hazardous Waste and Electronic Waste Program
- Day Without a Bag
- Subsidized Compost Bin Program

- Holiday Tree Recycling/Collection Program

The City has recently gone "green" and now only produces the *Shorelines* newsletter electronically. It is available on the City's website, and has become much more interactive and relevant (provides up-to-the-minute information that can be rapidly changed). For a copy of the articles listed above, please contact the City and Staff can provide a paper copy to review.

Brochures and Door hangers

The City collaborated with neighboring Copermittees (the cities of Del Mar, Encinitas, Oceanside, Vista, San Marcos, Escondido and Carlsbad) to develop several educational brochures. One particular brochure is referred to as the "door-hanger." The door-hanger is an excellent tool to inform groups or individual residents about pollutants that were found in their area, but may or may not have been contributed by them specifically. The door-hanger has a place for Staff to leave their business card, indicate the types of pollution found (from landscaping to pet waste) and lists various specific BMPs for eliminating street and gutter debris in their area. Staff hopes that by placing the brochures around the entire neighborhood, residents will report to the City where the discharge came from or alter their behavior to prevent the discharge from occurring again.

In addition, the City collaborated with the other North County cities and created a brochure "*Only Rain in the Drain*," which is distributed at local community events and to visitors at City Hall, the Fire Department and Community Center. The brochure reviews Best Management Practices for residents and the need to prevent or mitigate pollution to the best extent practical. The brochure also provides a consistent message because all cities in the North County use it.

Staff distributed the door hangers and brochures to residents and business owners throughout the community. These educational materials have been used by Public Works Staff, Code Enforcement Officers, and others and have been found to be an informative and effective tool. This includes those given out to neighborhoods during IC/ID and source tracking investigations, those given out individually during routine rounds around the City and any community fairs (Fiesta Del Sol, Green Fair, Movie Night, etc) or regional workshops/events (about 2 a week on average for all activities, totaling approximately 104 distributed).

School Presentations

The Solana Center conducts school presentations for the City to local schools within the City's jurisdiction. As part of both trash haulers' contracts (EDCO and Waste Management) with the City, they are required to provide funds for public outreach and education. Both haulers have chosen to contract out this work to Solana Center. Therefore, Solana Center provides school presentations regarding storm water issues to the local schools. These presentations include discussions about the importance of preventing pollution from entering the streets, gutters and storm drains. The Enviroscape model is also used during these presentations.

Additionally, the City's Park and Recreation staff conducts a summer "ecology camp" for local children to educate them on various environmental issues, including storm water and recycling. The children go on field trips and have classroom discussions. It is a very interactive classroom setting where the children are encouraged to participate and engage in the various activities. The ecology camp is an annual program that will be utilized to educate the children in all environmental issues.

The City's Marine Safety Department also conducts school presentations that focus on ocean awareness/safety as well as being environmentally aware and responsible. The presentations focus on water quality and the benefits of protecting this valuable asset.

These are reported on in further detail in Chapter 8, Education Component.

Tile Stenciling

All storm drain catch basins in the City currently have tile markers installed. The construction standard described in the City's JURMP, with respect to the requirement that all curb inlets have a tile marker permanently affixed on the face side, continues to be enforced. All new development/construction projects are required to install tile markers on all new curb inlets. City Staff also documents broken or missing tiles when detected in the field and report back to the Public Works Operations Manager to install.

Website

As mentioned previously in this Report, the City recently unveiled a significant

upgrade to the environmental section of its website. Previously, the environmental programs were lumped into the Engineering Department page, which was somewhat difficult to locate. Now, the City has a separate page that has its own icon on the homepage. This shows the type of commitment that the City, and the community, places on the environment. The City has received many compliments regarding the website, and was even recognized by the League of Woman Voter's, North Coast San Diego County for the "Green Flash" section.

6.4 Threat to Water Quality Prioritization

During this reporting period, the City re-evaluated the drainage areas to identify those areas that potentially posed a high threat to water quality as set forth in the Permit section D.3.c(1). The areas are defined in Section 8.2.1 of the City's new JURMP.

There are *no changes* to report in the City's prioritization of high-priority residential areas from those submitted to the RWQCB in the City's new JURMP (submitted March, 2008).

6.5 Implementation of BMPs

As noted in Section 6.1 (Pollution Prevention), the City has implemented various methods to prevent pollution to the Maximum Extent Practical (MEP) standard from entering the City's MS4. The City indicated in its revised JURMP the designation of several BMPs for the High Priority Residential Areas and Activities.

One of the most significant differences between the City and other local agencies, is that runoff from residential automobile washing *is strictly enforced* by Solana Beach Code Enforcement Officials. City Staff is often dispatched to reports of people washing their cars, and City procedures allow for several warnings before a citation is given, except in the case of mobile car-washing businesses. In that instance, mobile car detailers are informed to cease their activity and immediately clean up the resulting discharge. Mobile detailers are cited for failure to comply if they refuse to discontinue or remedy the discharge. City Staff records all violators and if they encounter them violating the Permit again within the City, they are immediately given an administration citation and fine.

The City also actively enforces minimum BMPs for the following activities:

- Motor Vehicle or Boat Repair and Maintenance
- Motor Vehicle Parking
- Home and Garden Care Activities and Product Use
- Home Care and Maintenance
- Manure and Pet Waste Management
- Private Sewer Laterals and On-Site Wastewater Systems

If City staff witnesses a violation of any of the provisions above, the Administrative Fine Process will be initiated until full compliance is achieved.

6.6 Enforcement Actions

Violations of the storm water Permit and any necessary follow-up actions taken by the City are described in Chapter 7.0, Illicit Discharge Detection and Elimination (IC/ID) Component, which will be submitted in December, 2011. Since violations in the residential sector often times are discovered during an IDDE investigation, it is an appropriate place to discuss the actions.

6.7 New Activities and Improvement for FY 11/12

The City is actively developing and implementing the activities described in the Residential Component of the City's new JURMP. The focus will continue to be education through the new Green Flash website, brochures, flyers, public announcements, community fairs and one-on-one contact.

The Permit adopted in January 2007 contains increased requirements for the residential sector. This is one key area that the Permit focuses on, so new programs will have to be developed by the City to address these requirements. There is also a focus on watershed and regional programs to address the residential sector, so the City anticipates working with the other Copermittees to develop these programs cooperatively to convey a consistent message. The City

will be working to continue developing and implementing these programs for FY 12/13. These programs will be discussed in more detail in the Unified Urban Runoff Mitigation Program

6.8 Summary

The City has been successful at implementing the Residential Component of the JURMP including among other things:

- Providing public pet waste bag dispensers (approximately 96,000 bags were utilized by the community during this year).
- Collaborating with neighboring jurisdictions (CWURMP and SDWURMP) and the regional Copermittees to develop several informational items, which have been distributed at local events, to City Hall visitors, and throughout the community.
- Collaborating with all Copermittees to develop regional educational programs as required by Permit Order No. 2007-0001.
- Using and upgrading the City's website to post informative information about the City's storm water programs.
- Operating a 24-hour, 7 day a week storm water hotline that residents can report any storm water violations.
- Operating a community-wide used oil and hazardous waste collection program that offers door-to-door service for all residents. This program has been a huge success as 261 residents participated and properly disposed of 24,279 pounds of hazardous waste that might have otherwise ended up polluting the local environment.
- Conducting the Annual Bulky Item Pick-Up Day which resulted in 18.24 tons of material collected and prevented from entering the City's MS4.
- Providing opportunities for local school presentations regarding storm water issues.

CHAPTER 7

Illicit Discharge Detection and Elimination Component

CHAPTER 7: ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

This is a placeholder for Chapter 7, which as a result of Addendum No. 2 adopted by the Regional Water Quality Control Board on September 10, 2008, extended the reporting component of this Chapter to December 15, 2012.

CHAPTER 8
Education Component

CHAPTER 8: EDUCATION COMPONENT

8.1 Introduction

In accordance with Permit Section D.5, this section of the report describes the City's educational program that is intended to use all media as appropriate to measurably increase the knowledge of the target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience and to measurably change the behavior of target communities and thereby reduce pollutant releases to the MS4 and the environment.

In each Annual Report to the RWQCB, this section will include a description of the City's efforts during the reporting period and possibly post-reporting period if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance. In addition, this section of the Report will include the City's planned educational efforts for the following fiscal year.

During this reporting period, the City continued implementation of the comprehensive Education Component of the JURMP. The activities were expected to increase knowledge among the residents, business owners, and those who do business (such as contractors) within the City. The City developed the program based on the requirements of the Permit and continued implementation during this reporting period.

The City continued implementing programs for the new requirements of the Permit. These programs are being developed on a watershed and regional level, and the City is an active participant in these workgroups. A major focus of the new Permit is on developing a regional education program, with the idea of forming a "brand" for the region where people can identify with the program as a whole. By developing and implementing a regional program, the messages will be consistent and easier to identify with. This will be further explained in the Regional URMP submitted by the County of San Diego.

During this reporting period, the cities of Carlsbad, Del Mar, Oceanside, Escondido, Vista, San Marcos, Encinitas and Solana Beach continued to develop strategies and programs to provide consistent messages to the communities of San Diego North County. While this watershed group will continue developing

educational materials and activities, it will also work with the regional group as mentioned above. This group will ensure that the Copermittees represented will participate with the "regional" message and program as required by the Permit.

As a collaborative, the group is able to obtain lower costs for educational tools (such as brochures, flyers, handouts, small tokens [pens, key chains, etc.), which provides a financial benefit to the agencies and thus, the community.

The group has been able to assist each other in developing a consistent message incorporating the interests and concerns of each agency. When brochures and handouts have been created, flexibility among the agencies was required.

The collective decision-making process has also generated cooperative working relationships among the agencies, which was extremely beneficial when the development of the Watershed Urban Runoff Management Program(s) began and in working together to complete various storm-water-related tasks. The community also benefits from the consistent "one message" approach rather than six or seven different rules and regulations.

8.2 Pollution Prevention through Education – Jurisdictional Activities

The City's storm water program is comprehensive. Not only are there many components to administer jurisdictionally, there are many different programs going on simultaneously throughout the County. The City participates in jurisdictional, watershed and regional activities. Each of these has separate and distinct educational components; however the challenge is to ensure that the same general message is being spread throughout the County, with individual messages being developed by the Watershed groups and Jurisdictions based on the Constituents of Concern (COCs) for each watershed. The watershed activities have been recently defined and are in the early stages of implementation; since this is a jurisdictional report, there will not be much discussion about those in this Annual Report (For more detailed information on WURMP related activities, please see the WURMP Annual Reports for Carlsbad and San Dieguito). The regional activities have been primarily described in the Copermittee *Unified Urban Runoff Management Program Annual Report for Fiscal Year 2010-11,* which has been submitted by the County and incorporated herein by reference. However, some of the activities will be summarized in this

section of the report (see Regional Activities).

8.2.1 Staff Training

One of the most important aspects of the City's educational program is to educate its Staff members. This turns out to be a relatively easy task for this City in that there are only about 70 full time Staff members. All Staff members are required to attend an all-hands citywide Staff meeting each month. Staff determined that this would be a good opportunity for training, and periodically conducts trainings at these meetings.

During this reporting period, the City did not have any formal stormwater trainings. Staff is however, continuously reminded of regulations and how their Department is involved in storm water issues. A few trainings are scheduled for the upcoming year and will be reported on in next year's report including:

1. Sewer spill prevention and spill mitigation
2. Storm water issues relating to public works

The City will continue to look for other opportunities to educate their staff on storm water related issues throughout next year's reporting period.

The City believes that all current Staff is adequately aware of the storm water issues, and all new Staff will be trained as appropriate upon arrival. However, due to the constantly evolving storm water field, the City will continue the periodic educational trainings at future City all-hands Staff meetings and department specific trainings as appropriate.

8.2.2 Annual Beach Cleanup Days

The City of Solana Beach, in cooperation with I Love a Clean San Diego County, Inc. coordinates an annual "Coastal Cleanup Day". These events are volunteer beach and lagoon clean ups. The City had another successful event hosting two sites within the City, one at Fletcher Cove Park and the other in the San Elijo Lagoon.

8.2.3 Storm Drain Tile Marker Installation

The City inventoried all of its storm drains (inlets and catch basins) and has the

locations in GIS format. The inventory list includes addresses, cross streets and a GIS bit-map. Stenciled tiles are affixed to each storm drain inlet or catch basin location, which reads, *"No Dumping! This drains to the ocean."* The City now requires all new or re-development projects that install a storm drain curb inlet or catch basin to include the stenciled tile. An extra supply of tile markers is kept at the City's Public Works Yard for all City projects as well as for private contractors to install on their projects to provide a consistent message throughout the City.

8.2.4 Local Community Events

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting to the participants no dumping or littering and to keep our beaches clean. The City also coordinates with Solana Center with their booth promoting proper disposal of HHW and recycling (oil included) in the City. The City passes out "*Only Rain in the Drain*" brochures, and displays the watershed poster, "We All Live in a Watershed…" Staff discusses with residents the importance of protecting the water resources and educates them on the new storm water regulations. This reporting year's Fiesta Del Sol occurred on June 2 and 3, 2012. There were approximately 60,000 visitors during this year's event, and City Staff distributed storm water brochures and informational flyers to those who visited the City's booth. In addition, the Fiesta Del Sol included a "Green Alley" which included vendors promoting environmental sustainability. This was one of the busiest areas at the Fair, and the organizers plan on making this a permanent fixture in future events. This further demonstrates the City's commitment to sustainability and the community's demand and desire to be more environmentally sustainable.

The City's Park and Recreation Commission also put on the seventh annual Beach Blanket Movie Night on August 27, 2011 (Appendix N). This was the seventh year this community event was held and was once again a huge success. The City worked closely with the event organizers and provided recycling containers, environmental educational material pertaining to storm water issues, and used oil recycling information. The City also shared a booth with Solana Center to provide environmental education to the attendees, utilizing the Enviroscape model. It is important to note that this was the only booth allowed by the Parks and Recreation Commission because they want to promote a relaxed, friendly environment. However, because the environment is such a popular topic in Solana Beach, they allowed City Staff to have a booth to promote

the environmental programs. The event was very well attended and a huge success, and will continue to occur annually. This is a great way to promote environmental awareness at a free event to the community.

The City also continued to distribute the immensely popular and effective doggie-bag dispensers that attach onto the pet leash. These dispensers had the City logo and the message, "The City of Solana Beach Reminds You To Please Pick Up After Your Pets." The City wanted to again emphasize the importance of eliminating pet waste from the MS4, as it can be a major contributor of harmful bacteria. These dispensers were very well received and the City plans on distributing them at every community event.

8.2.5 School Programs

The Solana Center is a local organization that writes articles for the City Newsletter (*Shorelines*) and presents educational programs in the City schools regarding storm drain pollution using the watershed model Enviroscape and fun handouts and items for the kids. Solana Center is paid through the City's solid waste franchise agreements, as well as a HHW grant, to provide educational opportunities to the community. City Staff is in regular contact with the Solana Center and is confident that their program(s) are educational and informative for the children. The presentations are provided free to the local schools, and the information provided is invaluable.

The following table shows what school/community education has taken place during this reporting period:

Table 8-1 School/Adult Community Education

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location	Jurisdiction
July 16-20, 2012	"Ocean Discovery"	25	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach
July 30-August 3, 2012	"Ecology and Our Environment"	20	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach
August 13-17, 2012	"Mission Antarctica"	25	6-12 year olds	Fletcher Cove Community Center (Field Trips Included)	Solana Beach

8.2.6 Marine Safety Department Educational Presentations

The City of Solana Beach Marine Safety Department also conducts presentations at local schools. The lifeguards maintain an outreach program to the local schools to educate the students on ocean safety and awareness as well as environmental education. This is a natural fit, seeing how the lifeguards provide a safe environment for the community to enjoy the valuable coastal resource, and they want to ensure that the community becomes environmental stewards to help protect this resource. The presentations focused on water quality, trash and litter control and the ecosystem as a whole. These presentations have been very well received by the schools and the lifeguards plan to continue them into the future.

8.2.7 Kids Korps Educational Presentations

During this reporting period, the City continued its valuable relationship with the local non-profit youth volunteer organization called Kids Korps. Kids Korps engages young people, age 5 through 18, in community service with the mission to instill in America's youth the spirit of giving while providing valuable education in leadership and responsibility. The City and Kids Korps have partnered to conduct park cleanups and educational presentations. The City of Solana Beach sponsors disadvantaged, underserved local children for a week during the summer where they attended the Kids Korps camp for free. Staff also took this opportunity to educate the children on storm water pollution. The Staff presentation was so well received that Kids Korps invited back City Staff to present at two different camps, reaching over 60 children. During this reporting period, Staff contracted with Solana Center to provide the presentations, using their Enviroscape model and interactive puppet show. This activity will continue in the upcoming years with the goal to expand the cooperation with increased educational opportunities and cleanup events.

8.2.8 Targeted Education for Underserved Community

The City has a comprehensive and successful program established to reach out to the underserved community in Solana Beach. City Staff takes these opportunities to educate this sector of the community on many items, including the storm water and pollution prevention programs. The various programs are described in more detail below.

The City has a successful Junior Lifeguard Program that teaches young children about safe ocean practices, lifeguard techniques, and environmental stewardship. Children come from all around the City to participate in this summer program, and space is limited. However, through a unique partnership between the City and a private company called ReRip, about ten spaces in the program are reserved for the underserved community that may not otherwise be able to afford it. The City and ReRip cosponsor an annual environmental event (the Future of Surfing Event) in which a raffle fundraiser is conducted and the proceeds go toward giving ten children a full ride scholarship to the Junior Lifeguard Program. These children participate in all the activities and learn about pollution prevention and storm water regulations. This is a unique partnership that the City is extremely proud of, and the community has rallied around it.

Another successful program that benefits the underserved community is the City's Summer Day Camp program. The City offers full and half-scholarships to the underserved community that would not be able to afford to send their kids to the camps for the full price. These camps have environmental themes, including pollution prevention and storm water education incorporated into the curriculum.

8.2.9 Water Conservation

Drinking water is provided to the community of Solana Beach by the Santa Fe Irrigation District (SFID). The City and SFID have a great working relationship which has benefitted the community of Solana Beach in many ways.

Due to ongoing drought conditions and increased environmental regulations, water conservation has been a major focus during this reporting period. Although drinking water is a completely separate entity than storm water, they are linked in many important ways. Primarily, over-irrigation of potable water is often the transport mechanism for many pollutants during dry weather. Over-irrigation carries pollutants such as pesticides, herbicides, fertilizers, bacteria, trash, oil and grease and many other pollutants into the MS4 system. Water conservation activities can reduce the transport mechanisms thereby reducing the amount of pollutants that make it into the City's MS4 system. The City recognizes that promoting water conservation not only helps during times of drought conditions, but also helps combat storm water pollution.

The City and SFID have a regularly scheduled monthly meeting to discuss all

things water related. These meetings have turned into valuable information sharing sessions where Staff from both agencies can discuss upcoming projects and report observations from the field. The City and SFID have joined together on many educational seminars and workshops for the community, both residential and commercial. The following is a list of water conservation related presentations and workshops that occurred during this reporting period.

Table 8-2 California Friendly Landscape Classes

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
November 9, 2011	Educational Workshop about Water Conservation	70	Residents	San Diego Botanic Gardens

Due to limited staff resources, SFID only co-hosted one workshop during this reporting period. However, they continually educate their residents on water conservation through their website and informational brochures.

8.2.10 Educational Brochures

The City has participated with the North County Educational Group to develop many effective educational materials. The handouts and brochures are included in the Carlsbad WURMP Annual Report.

"*Only Rain in the Drain*!" describes the importance of protecting the valuable water resources and the problems that can be caused by storm water pollution. It also provides a list of BMPs to help prevent pollution. The brochure also provides valuable resource numbers: *a direct number for each jurisdiction* is provided, as well as the County's Storm Water Hotline. The City's Public Works Crew and Code Enforcement Officers deliver these every day to the community when small violations are observed. Since these Staff members are out in the community every day, this has proven to be an effective means of public education. Larger infractions are reported to the Engineering Department or Code Enforcement Department for follow-up.

The door-hanger *"Help!"* provides a method for Staff members to indicate to

residents that pollutants were found in their neighborhood. The brochure is in English and Spanish, which is helpful to all residents. It is typically hung on a resident's door, provides a place for business cards and under the cards, (should they become misplaced) the brochure lists a contact number for each jurisdiction. The back of the brochure provides BMPs for vehicle maintenance, car washing, hazardous materials handling, recycling, litter, and sidewalk/driveway debris.

To assist the public in directing their calls for complaints and service, the City operates a 24-hour storm water hotline telephone recording (858) 720-4424. The number is connected directly to the Environmental Program Manager's voice mail (so it can still remain anonymous, if necessary), so that violations can be investigated immediately and the proper action taken *while the violation is occurring*. The City informs the public about the hotline number at City Council meetings, on flyers and handouts, on business cards, and on brochures.

8.2.11 City Newsletter (Shorelines)

Chapter 6 contains information regarding the *Shorelines* newsletter and gives a brief description of the articles included during this reporting period. The articles are available upon request.

8.2.12 Website

The recent upgrade of the environmental portion of the City's website has been explained previously in this Report. The new "Green Flash" has been extremely helpful in getting the word out in an effective and easy to find location. This has been a huge success, as the website is updated constantly with new and pertinent information. The City also has an "eBlast" system that notifies interested citizens on special news and events via email, which has proven to be extremely beneficial and successful in getting out news on all City happenings, including environmental.

8.2.13 Business Community

The City has initiated several methods to educate the business community about storm water pollution prevention.

The City hires a specialized consultant (ECIS) to conduct annual commercial

compliance inspections (see Commercial Component). Through the inspections, ECIS educates the business owners about the requirements of the Permit and the City's various storm water programs. Given the City's close proximity to the Pacific Ocean and sensitive lagoons to the north and south, inspectors are able to show a direct link between commercial activities and impact on water quality. Next, after the initial and follow-up inspections are conducted by the consultant, City Staff conducts follow-up enforcement inspections on those businesses still determined to be out of compliance, to ensure that the businesses are using the proper Best Management Practices to protect the City's waterways. These follow-up inspections are often conducted through scheduled meetings with the property owner and/or manager, to ensure the decision makers are present and can be held accountable. Often times, the initial inspections were conducted without prior warning, and various staff members at the facility are held responsible. Just to ensure that the right people are informed of the infractions/violations, follow-up inspections are pre-scheduled.

During this reporting period, *all* businesses that were inspected were deemed in compliance without any citations issued. As reported earlier, not all businesses were in compliance during the first inspection. Some businesses had minor issues (trash lids not closed, grease barrels not covered, etc.), however, the enforcement follow-up inspections revealed that the minor infractions had been corrected and no fines were issued.

8.2.14 Special Events Permit

As reported in previous Annual Reports, the City adopted a Special Events Permit that is required for group events (Triathlons, Block Parties, Birthday Parties, etc.) of over 25 people on public property. A storm water section is included in the Permit, with requirements regarding the event and adhering to all storm water regulations. This has proven to be a great educational tool, as most applicants tend to ask questions about this. It is a great tool to educate the public about storm water regulations. For an example of the Special Events Permit Conditions of Approval, see Appendix O.

8.3 Pollution Prevention through Education – Regional Activities

The regional activities of the Copermittees of Order 2007-0001 are, for the most part, described in the Regional Unified Annual Report. However, for purposes of

completeness, some of the activities that the City has participated in are described in this section of the Report. As mentioned above, the new Permit added significant requirements for regional education, some of which are described below. The City has been in cooperation with the other Copermittees in developing a regional educational program. Implementation of some of these programs did occur during FY 2011/2012 and will be reported on in the Regional Unified Annual Report. The City is actively working with the Regional Copermittee Education group to develop additional programs for implementation during FY 2012/2013.

8.3.1 Regional Monitoring

The City participated with the Copermittees in conducting a region-wide wet-weather monitoring program. Although no mass loading stations were located within the City, one of the testing sites (San Dieguito Lagoon) is a receiving water body from the City's drainage.

The 2011/12 program is described in detail in the Regional Unified Annual Report and in the report issued by the consultant, MEC Analytical. MEC's report will be submitted with the Unified Annual Report, and any data collected will be reported and discussed in that report.

8.3.2 Model Programs

One of the most important regional educational components is the ability the Copermittees have developed to help educate each other. This has been accomplished through routine meetings, sharing of project assignments, and most significantly, the development of model guidelines for the new JURMPs, SUSMPs, and WURMPs. Not only have the model guidelines produced a fairly consistent message to educate the community, the model guidelines have established collaborative working relationships among municipal, county, and state agencies, which is remarkable. In addition, this cooperation has allowed for relatively consistent program components and requirements, which especially helps the business and construction community. So, if they are doing business in various cities, they will not have to significantly alter their practices to comply with the respective jurisdictions. This is especially relevant in the LID, SUSMP and general BMP programs.

8.3.3 Linking to Regional Resources

The City posts links on its website to the regional Web sites (Project Clean Water and Think Blue). In addition, the City posts information on reporting storm water violations to the City as well as County's Regional Storm Water Hotline on various educational materials. Linking the community together provides continuity, extension of resources, and economies of scale for the community and the agencies, and contributes to a greater understanding that we are all interconnected and can help positively impact water quality. It's important to educate the community that water quality programs should not and do not stop at jurisdictional (or watershed) boundaries.

Through the www.projectcleanwater.org website, San Diego County has been able to link many community members to various storm water/urban runoff related programs of interest. In addition, the website contains information (dates, times, agendas) on meeting's that are open to the public and links to download important documents and reports.

8.4 Pollution Prevention through Education – Watershed Activities

In accordance with the Permit, each municipality is required to participate in the development and implementation of a Watershed Urban Runoff Management Program (WURMP) for each hydrological unit in which the City's jurisdictional boundaries lie. The northern portion (~10%) of the City resides within the Carlsbad Hydrological Unit and the rest of the City resides within the San Dieguito River Hydrological Unit. As such, the City is required to participate in the development and implementation of two WURMPs addressing the runoff concerns of each watershed.

During this reporting period, the City actively participated in the development and implementation of the Carlsbad and San Dieguito WURMPs, in compliance with Permit Order No. 2007-0001. The WURMP Annual Reports will be submitted in January 2013, and will detail all the activities and programs being implemented by the respective Copermittees to address watershed issues.

In short, each WURMP contains the following 1) a time schedule for developing a comprehensive map of the entire Watershed including all land uses, the storm drain systems, and inventories of all commercial, construction, industrial,

municipal and residential areas, 2) a plan to ascertain the types of pollutants that exist in the water bodies throughout the watershed and a prioritization schedule to eliminate the pollutants; 3) a program to educate the entire community about issues related to urban runoff; 4) methods to provide the community opportunities to participate in the program; 5) plans to collaborate with Copermittee agencies to strategize, review and analyze information; and 6) an effective program effectiveness strategy and methods to conduct annual evaluations. A significant addition to the responsibilities of all WURMPs is the requirement to actively implement two (2) activities each year aimed at sources to reduce high priority pollutant loading into local waterways. This will be described in greater detail in the WURMP Annual Reports (submitted in January), but mention of it here in the JURMP is appropriate.

The City has been actively involved in the implementation of both WURMPs, and has brought materials developed in each WURMP to the community (business and residents) of Solana Beach. The Carlsbad and San Dieguito WURMP workgroups have been extremely effective in implementing the requirements of the Permit. For more information on the particular activities in each WURMP, please refer to the City's individual WURMPs Annual Reports that will be submitted in January 2012.

Both of the WURMPs the City is involved with have contracted with the same consultant to assist in the development and implementation of the program requirements. This has also helped to bring consistency and continuity to the residents of Solana Beach. Although there are slight differences in the watersheds, such as the land uses and COCs, the City is able to make the implementation of the general programs more effective by having the same consultant.

8.5 New Activities and Improvements for FY 12/13

The City will continue to educate the community through participation in the Carlsbad WURMP, the San Dieguito WURMP group, the Regional Education Group, the City's new Green Flash environmental web portal, brochures, flyers, the *Shorelines*, and community/regional events. The City will also use the results from its DWMP to inform residents in areas that the data showed elevated levels of constituents of concern or pollutants that degrade the quality of water. The City plans to develop additional educational brochures (collectively with the region)

that will be industry specific. As a result of the 13267 Directive Letter, the Copermittees have changed their approach to watershed issues and plan on taking a more direct approach in implementing activities that address specific pollutants of concern and their respective sources within the watershed. Following the direction of the RWQCB, the watersheds have changed their approach to integrate more pollutant based activities in an attempt to reduce COCs in the watershed and improve water quality. This appears to be the direction the RWQCB wants to go and the Copermittees are eager to work with the RWQCB to improve the water quality throughout the region.

The City also incorporates education to school children through its relationships with the Solana Center and the Kids Korps non-profit organizations. As mentioned above, the City indirectly contracts out the Solana Center to give *free* classroom presentations to local schools. These presentations are paid for through the City's waste hauler contracts. City Staff will be more proactive in its efforts to get more presentations in the schools during FY 2011/2012. It has been an ongoing struggle to get into the schools with the demanding curriculum of the Solana Beach School District. However, City Staff has begun to meet regularly with the local School Districts on many issues, and Staff has made it a priority to get environmental issues included along with the standard discussions such as traffic safety, neighborhood sensitivity and children safety. These meetings have occurred on a quarterly basis and will continue to do so in the future. It is the City's intent to use this platform to get more storm water education into the schools.

8.6 Summary

The City has been successful at implementing a jurisdictional and watershed based educational program. With the adoption of the new Permit, a renewed focus has been placed on a large scale regional education program, in which the City has been actively involved with during this reporting period. A new regional education working group has been established by the Copermittees to develop a consistent, region-wide program, and the City of Solana Beach has been actively involved. This first step has already been accomplished, with the region adopting the "Think Blue" program developed by the City of San Diego. This gives the region a known brand of which to build a successful educational program. The details of this regional program will be described in detail in the Regional Unified Annual Report.

On a jurisdictional level, the City is confident that with its strong messages, meaningful content and integrated programs, the community has become more knowledgeable about pollution prevention methods.

As mentioned above, the City plans to utilize the educational materials developed by the watershed and regional groups, as it has been agreed upon that a consistent message should be implemented whenever possible. However, much like the differences in the watersheds throughout San Diego County, there are slight differences in how individual cities implement and enforce certain components of the Permit. Therefore, it will always be necessary to develop some jurisdictionally specific educational materials for the benefit of the community. The types of jurisdictional educational information/activities are described throughout this Report, but a few examples include:

- BMP specific guidelines for unique construction projects, such as the Underground Utility Program (undergrounding power poles) and the Trench Resurfacing Program.
- The “Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices”
- Construction and Demolition (C&D) Debris Recycling Guide
- Classroom Presentations
- Summer Camp Presentations
- Marine Safety Presentations
- Water Conservation, Landscape Workshops
- Unique partnerships with public and private entities such as Solana Center and Kids Korps to provide educational opportunities for the underserved population

CHAPTER 9
Public Participation Component

CHAPTER 9: PUBLIC PARTICIPATION COMPONENT

9.1 Introduction

In accordance with Permit Section D.6, this section of the report describes the City's efforts to develop mechanisms for public participation in the implementation of the JURMP and obtain the committed participation from the community. Public participation comes in two forms; participation in implementing the program and the necessary public feedback for improving the program.

In each Annual Report to the RWQCB, this section will include modifications to the City's plans to provide opportunities in which the public can participate. In addition, this section of the Annual Report will describe the City's efforts to encourage public participation during the reporting period. Also, a summary of activities conducted post-reporting period may be included if the activity is deemed essential to understanding the City's efforts at reducing urban runoff or Permit compliance.

Prior to the implementation of the original JURMP (February 2002), the City did not have a specific "public participation program." However, many members of the community have taken an active role in environmental issues over the years, which is most likely due to the City's proximity to the ocean and lagoons. As a result, the City was the first city in San Diego County to have curbside recycling and a smoking ban at the beaches and parks. The City has also been proactive in its approach to urban runoff and pollutant mitigation and reduction, by implementing a strict Municipal Code regarding Storm Water Management (adopted in 1993) and Grading and Excavation regulations to prevent erosion during construction.

As a result of Order 2001-01 (Permit), the City was required to design a specific program to ensure that the public had ample opportunities to learn about controlling urban runoff and assist the City in "spreading-the-word." The new Permit Order No. 2007-0001 further emphasizes the necessity of a strong public participation program.

The Public Participation Component is closely related to the Educational

Component. However, while the educational program describes activities the City engaged in to educate the public, public participation will describe activities the public engaged in (or were provided an opportunity to do so).

During this reporting period, the City began the implementation of the comprehensive Public Participation Component for the new JURMP (Section 11). The programs included activities that complemented the educational program with a goal of providing opportunities to ensure that residents, business owners, and those who do business (such as contractors) within the City, have an opportunity to learn about the negative impacts of urban runoff, understand the City's regulations relating to protecting the environment, and participate in the development of storm water program involving the community. The City developed the program based on the requirements of the Permit(s) and continued implementation during this reporting period.

9.1.1 Chapter Content

It is important that the reader understand that much of the public participation program is integrated into other program components and as such, much of the information within this chapter has been presented elsewhere in this report. However, to provide consistency in reporting, to ensure Permit compliance, and to present stand-alone chapters in this report, this section will include all opportunities for public participation, even if those same events were described in other chapters. However, for purposes of reducing redundancy, some events may be summarized in this chapter with a reference to other chapters for details.

9.2 Community Events

The following list gives a brief description of each community event that Staff coordinated and provided storm water education to the community.

9.2.1 Fiesta Del Sol

The City of Solana Beach hosts an annual block party called Fiesta de Sol. Each year at the block party the City has a booth promoting no dumping or littering and keeping our beaches clean. The event was held on June 2nd and 3rd, 2012 (Appendix P). The City also passes out "*Only Rain in the Drain*" brochures and talks with residents about the importance of protecting the water resources.

Solana Center hosts a booth through the City of Solana Beach and promotes environmental stewardship, including used oil recycling and HHW information. Approximately 60,000 people attended the event this year and City staff handed out storm water educational brochures and doggie-bag dispensers to those that visited the City booth.

The City's Clean and Green Team, consisting of environmentally conscientious members of the community, also shared the booth with City Staff. They distributed information regarding climate change, energy conservation and water quality. Since this is such a hot topic this year, it attracted many more people to the City booth than in previous years. City Staff took this opportunity to educate more people regarding the storm water regulations.

As mentioned in the previous chapter, the event this year included an area called the "Green Alley." This area was dedicated to all things sustainable, and included vendors and games focused on environmental sustainability. This was by far the most popular area, and the event organizers plan to include it in future years.

9.2.2 Beach Clean Up Opportunities

During this reporting period, San Diego Coastkeeper and the nonprofit group I Love A Clean San Diego (ILACSD) hosted the 27th Annual California Coastal Cleanup Day on September 17, 2011. The City hosted two locations, one at Fletcher Cove to clean the beach, and another at San Elijo Lagoon to clean up the lagoon. This provided opportunities for the public to come out and help keep the lagoons and beaches clean, while also educating them on cigarette butt pollution and water quality concerns. The results of this event are included earlier in this Report.

9.2.3 Adopt-A-Beach Program

The City works collaboratively with I Love A Clean San Diego in the Adopt-A-Beach Program. The Program consists of local businesses and/or community groups sponsoring a beach and agreeing to clean up the beach at least 3 times a year (1 time for schools). The City thought this was a great idea and extremely beneficial to the community. Four (4) beaches (Tide Beach Park, Fletcher Cove, Del Mar Shores and Seascape Sur are all "adopted" and are cleaned at least three times a year. The signs are updated each year with new "adoptees" and

City Staff installs the new placards on the signs. This has been a very positive experience, as the City's beaches are each cleaned three times a year, resulting in at least 12 beach cleanups per year, in addition to the annual Beach Clean-Up Day.

9.2.4 Beach Blanket Movie Night

As mentioned in the previous Chapter, the City's Parks and Recreation Commission puts on a free community event called the Beach Blanket Movie Night. This event consists of placing a large movie screen at Fletcher Cove Park and showing environmentally themed movies for the community to enjoy. City Staff took this opportunity to distribute storm water educational materials, promote recycling efforts and distribute doggie-bag dispensers to members of the community. Additionally, Solana Center attended and handed out educational material to the community as well, including the Enviroscape model. This has turned into one of the most successful community events and is based around environmental themes. The City's "environmental booth" is the only booth allowed at this event, as the organizers recognize the importance of educating the community on environmental awareness. This is a great opportunity for the City to promote its programs as it has the community's undivided attention. This year's event was held on August 27, 2011.

9.3 City Council Meetings

The Solana Beach City Council meetings are televised, which provides an excellent opportunity for the public to participate in local government. In addition, the City's Agenda is published online (available on its website), which provides the public an opportunity to readily access the upcoming Council reports.

Another highly successful educational opportunity is the implementation of scrolling messages during televised City Council Meetings. Staff has taken advantage of this new tool to place storm water messages and notifications for upcoming presentations, events, etc. This has proved very valuable and will continue to be utilized by City staff when appropriate.

9.4 Copermittee Meetings

Most Copermittee meetings are open to the public and provide an opportunity to

participate in the process of developing the regional and local programs. All Copermittee meeting dates are available on the Project Clean Water Web site (projectcleanwater.org) and the City's website also links to the regional sites.

9.5 Collaborative Community Partnerships

The City has developed collaborative partnerships with various local organizations, which provide the public an opportunity to participate in improving water quality and/or the City's storm water program.

The City works closely with the Solana Center, which provides instruction to local school children on the harmful effects of pollution, the positive impacts of pollution prevention and the need to keep pollution out of the City's storm drains. Solana Center is contracted by the City's waste haulers through their exclusive Franchise Agreements. Solana Center also provides the following services for the City:

Referral Phone Calls: Solana Center staff provides recycling telephone referral services for residents of the cities of Encinitas, Del Mar and Solana Beach. Solana Center staff spent time educating the community about CRV updates, composting information, and how they easily incorporate recycling activities into their daily lifestyle. Community phone inquiries included:

- The locations of local recycling centers and hours of operation.
- Redemption values of materials.
- Basic information of what materials can be or cannot be recycled in curbside recycling programs.
- General recycling information for commercial businesses.
- Services on commercial recycling carts.
- RotLine – Answering community questions regarding composting and vermicomposting.

Less Toxic Yard and Garden Workshops:
Solana Center staff conducts presentations throughout the community on

alternative gardening tips that reduce the use of pesticides and herbicides. These workshops also promote the benefits of composting, further reducing the amount of trash generated and shipped to landfills as well as reducing the need for harmful chemicals/fertilizers.

Table 9-1 Community Outreach Events

Event Dates	Name of Event(s)	Attendance at Event(s)	Description and Summary of Event(s)
August 27, 2010	Beach Blanket Movie Night	1,000	Annual event put on by the City's Parks and Recreation Commission to provide a free night of environmentally themed movies. Educational materials were distributed at event.
September 17, 2011	Coastal Cleanup Event	300	City hosted two locations where the community could help clean up the San Elijo Lagoon and the beaches. City also distributed storm water educational brochures at the sign up table.
April 28, 2012	Coastal Cleanup Event	200	Annual Creek to Bay Cleanup Day sponsored by I Love a Clean San Diego. One site was hosted at Fletcher Cove Beach and volunteers cleaned the beach and HWY 101.
June 2 and 3, 2012	Fiesta Del Sol	60,000	Annual event for the City of Solana Beach. Recycling services were coordinated in conjunction with Waste Management and EDCO Disposal Inc. Solana Center also provided education on used oil recycling, HHW and watershed presentations,

Table 9-2 California Friendly Landscape Classes

Date of Event(s)	Event Title	Estimated Audience	Specific Audience	Location
November 9, 2011	Educational Workshop about Water Conservation	70	Residents	San Diego Botanic Gardens

The above workshops are conducted by the City's private water company Santa Fe Irrigation District (SFID) in conjunction with the City. The City promotes the workshops to the community and directly to the landscaping contractors known throughout the community. All classes are taught in English and Spanish, and the classes taught in Rancho Santa Fe are promoted to Solana Beach residents/businesses as well. The City requires the municipal landscaping contract company to attend the workshops for educational purposes. This shows another great collaborative success between the City and its private water

company.

There is a great relationship between the two entities which extends beyond these workshops. The City and SFID work together to combat residential over-watering and ensure daily tasks and repair work are conducted in compliance with the Permit. In addition, pre-construction meetings for CIP projects include SFID and storm water issues are discussed. The City and SFID are committed to working together and maintaining this great working relationship since most of the work conducted by SFID (trenching, pipe laying, water testing) are all done within the City limits.

Shorelines Newsletter:

The Solana Center writes regular articles for the City of Solana Beach on a wide range of topics, including E-waste, recycling, composting and buying recycled products. The topic is coordinated between the City's Assistant Civil Engineer and the Executive Director of the Solana Center. The articles are included in the Appendices and described in more detail in other sections of this Report.

9.5.1 Solana Beach Clean and Green Community Committee

As mentioned in last year's Annual Report, the City brought together active and willing community volunteers to form the Solana Beach Clean and Green Team (Team). This Team was formed to discuss pertinent local environmental issues and develop programs to bring to City Council for implementation. City Staff meets monthly with the group to discuss the City's environmental programs and to brainstorm activities that would benefit the community as a whole. The group has evolved from a few interested residents to a steady group of about 20 members from the residential and business sector of the community. The group has assisted in the development of the following programs:

- Construction and Demolition Debris Recycling Ordinance
- Plastic Bag Advertising Ban Ordinance
- Plastic Bag Recycling program
- "Green Flash" Website

- Green Building Incentive Program
- Greenhouse Gas Baseline Emissions Inventory

The group is currently working on the following items:

- Green Business Program Over-Irrigation Reduction Program
- Solar Financing District
- Climate Action Plan
- Opposition to Prop 23
- Making the City a Bike-Friendly Community

The Team is also heavily involved in the water quality activities of the City and the NPDES program. The Team attends all community events and disseminates educational materials. This group has been extremely valuable and provides a direct link to the community, both residential and commercial. It allows all community members the opportunity to participate in City government.

9.6 Other Opportunities

9.6.1 City Storm Water Hotline

The City operates a storm water hotline, (858-720-4424) which is dependent on public participation to report suspected violations of IC/IDs and to inquire about workshop information or other storm water-related needs. The hotline provides 24/7/365 access to the public so that they can report potential violations and/or call for information as soon as they are thinking about it, rather than having to wait for normal business hours. The hotline is sent directly to the Environmental Program Manager's voice mail (it can still be anonymous) to ensure quicker and more efficient response to the public inquiries, as well as providing an outlet for the public to discuss issues directly with City Staff.

9.6.2 Website

As reported previously in this Report, the City developed a more comprehensive environmental web portal on the City's website. The new page is titled "Green Flash" and encompasses all of the City's environmental sustainability programs. Water quality and the City's NPDES programs are prominent and have been expanded as a result of this new web portal. This shows the City's proactive approach to engaging the public and keeping them educated on the new environmental programs throughout the City as well as providing links to relevant web pages.

9.6.3 Local Media

As described in detail in Chapter 8, the City utilized the local media to inform and educate the public. Although this is not a public-participation activity, the information provided in the articles describes the ways in which the public can get involved, if they so choose. The City has a great working relationship with the local newspapers (Solana Beach Sun and Coast News) and has many articles published with environmental themes, including storm water related issues.

The City also published several articles in the *Shorelines* Newsletter (described in Chapter 9) inviting the public to get involved, providing details on how they can participate in protecting the region's water resources.

The City also has a contracted media relations consultant with ties to the major media outlets. This consultant is brought in on the City's major events to help promote the events and activities to a much larger audience. This is not done for every event in the community; however it is important to note that this service is available when appropriate.

9.7 New Activities and Improvements for FY 12/13

The City will continue to implement the elements of the public participation component as described in the City's JURMP. The focus will be on expanding the collaborative partnerships to include more frequent opportunities for public involvement (clean up days, events, etc.). Staff will continue to look for more opportunities to work with neighboring cities to host pollution prevention community events through its watershed programs (ex., large-scale HHW event).

Additionally, the City is working with the other Copermittees to potentially conduct additional large scale community educational events.

With the adoption of the new Permit, there is an added emphasis on developing a Regional Educational Program. This has been a main focus for the Copermittees during this reporting period. Copermittees are expected to implement a comprehensive regional program that will provide a consistent message to the entire region. As most of the new programs are geared towards improved watershed programs, this is one key area that was identified as a Regional program. Copermittees have already begun developing activities through the Regional workgroup, such as the mobile business education campaign. These programs will continue to be developed and implemented throughout the five year cycle of the new Permit. For more details on the activities the Copermittees have implemented during FY 10/11, please see the Regional Unified Annual Report.

9.8 Summary

The City has been successful at implementing numerous methods to encourage public participation. The City makes every effort to encourage the public to participate in improving water quality, recognizing that it's up to all of us.

Key opportunities for public participation included the following:

- Regional Copermittee Outreach Events
- Fiesta Del Sol
- Coastal Clean Up Day
- Regional Workshops
- City Council Meetings
- Copermittee Meetings
- Collaborative community partnerships (SFID, Solana Center, Kids Korps)
- Contacts through the City's Storm water hotline, City website
- Beach Blanket Movie Night
- San Diego County Fair
- San Elijo Lagoon Day
- Formation of the Clean and Green Community Committee

CHAPTER 10
Fiscal Analysis Component

CHAPTER 10: FISCAL ANALYSIS

10.1 Introduction

In accordance with Permit Section J.1 (k), this section of the report describes the resources that the City utilizes to finance the various components of the storm water program. Effective programs require adequate funding to implement planned activities. The fiscal analysis will evaluate the expenditures necessary to accomplish the activities of the City's program.

The Standardized Fiscal Analysis Method and Format (Fiscal Analysis Method) was collaboratively developed and adopted by the Copermittees in January 2009 in accordance with sections G, J.1.a(3)(k) and J.1.c(1)(d) of NPDES Order No. R9-2007-0001. The Fiscal Analysis Method document was submitted to the San Diego RWQCB by January 31, 2009, as Attachment 1 of the Regional Urban Runoff Management Plan (RURMP) Annual Report for 2008-2009. As a result, the City of Solana Beach is utilizing the format and guidelines described in the Fiscal Analysis Method for this reporting period.

10.2 General Budget Information

The City's Budget for FY 11/12 was presented to the Solana Beach City Council and approved at a public hearing held on June 22, 2011. During FY 11/12, the City continued to face the challenge of maintaining and preserving its great community character while at the same time providing for long-term fiscal sustainability during the severe and prolonged economic downturn. Under the direction of City Council to cut expenditures as a result of reduced revenues, Departments enacted budget cuts in materials, supplies, and services in FY 11/12.

The City's NPDES program is primarily implemented by the Public Works Department's Environmental Services. Environmental Services is responsible for the coordination of all storm water related tasks. Therefore, the majority of the reported projected expenditures included in this section are part of the Environmental Services Program's FY 11/12 budget, which is approximately 7% of the total FY 11/12 Public Works Department budget.

10.3 Fiscal Analysis Methods

The City of Solana Beach utilized the format and guidelines included in the Fiscal Analysis Method for reporting purposes; however, there were a few adjustments made due to how the City of Solana Beach tracks expenditures. These adjustments are described in the relevant sections below.

10.4 Fiscal Analysis Results

The City's FY 11/12 jurisdictional (JURMP), watershed, (WURMP), and regional (RURMP) projected expenditures for the implementation of the Municipal Permit requirements are summarized in the table below.

FY 11/12 Projected Expenditures	
Jurisdictional Component	
Administration	52,030
Development Planning	17,200
Construction	24,260
Municipal (including Non-Fire Fighting Flows)	144,100
Industrial and Commercial	12,530
Residential, Education, and Public Participation	21,530
IDDE	55,780
Jurisdictional Total	**327,430**
Watershed Component	
Carlsbad Watershed	10,470
San Dieguito Watershed	17,970
Watershed Total	**28,440**
Regional Component	
Total Copermittee Cost Share for the City of Solana Beach (including regional and special investigations monitoring costs)	17,500
Additional Regional Costs	4,470
Regional Total	**21,970**
Total Costs	**$377,840**

10.4.1 JURMP Expenditures

The City utilized the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, due to the implementation overlap of some of the City's municipal permit components; it is difficult to separate out individual component costs. As a result, the expenditures for residential, education, and public participation are reported as one expenditure category.

Additionally, since the City does not explicitly track expenditures by municipal permit component for its budgeting purposes, in many cases estimated percentages were utilized to allocate expenditures into the appropriate municipal permit component categories.

A total of $327,430 was projected to be expended in FY 11/12 for the implementation of JURMP activities. An overview of the expenditures reflected in JURMP activity components is described below.

10.4.1.1 Administration

Activities identified in this component represent labor and non-labor expenditures for materials, supplies, equipment, or tools that are not otherwise incorporated into other expenditure categories, general administrative functions (e.g., program planning, budgeting, staff supervision), and program assessment and reporting.

10.4.1.2 Development Planning

Activities identified in this component represent labor and non-labor expenditures related to issuance or oversight of permits or of plans (e.g., permit counter support, plan checks, permit or application processing), project planning and engineering (e.g. project design specifications, capital improvement projects).

10.4.1.3 Construction

Activities identified in this component represent labor and non-labor expenditures related to construction site inspections and enforcement.

10.4.1.4 Municipal

Activities identified in this component represent labor and non-labor expenditures related to maintenance inspections of streets, roads, catch basins and inlets, open channels, and the MS4, municipal facility inspections, street and parking lot sweeping, catch basins and inlets, open channels, and MS4 cleaning, and municipal BMP implementation. Additionally, this category includes the expenditures for non-emergency fire-fighting flows.

10.4.1.5 Industrial and Commercial

Activities identified in this component represent labor and non-labor expenditures related to evaluation and enforcement of program requirements at industrial and

commercial sites or sources (e.g. routine inspections and complaint investigations).

10.4.1.6 Residential, Education, and Public Participation

Activities identified in these components represent labor and non-labor expenditures related to investigation and enforcement of residential areas or activities, staffing outreach events, development and production of outreach materials, and any expenditures associated with waste collection and recycling (e.g. HHW, used oil).

10.4.1.7 Illicit Discharge Detection and Elimination

Activities identified in this component represent labor and non-labor expenditures related to the identification and elimination of illicit discharges or connections, enforcing the City's storm water ordinance, and any expenditures related to monitoring programs (e.g. Dry weather monitoring, coastal storm drain monitoring, field or sampling equipment, materials and supplies).

10.4.1.8 WURMP Expenditures

The City utilized the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City of Solana Beach expenditures and do not account for any expenditure disbursed by other Copermittees included in the watershed(s).
A total of $28,440 was projected to be expended in FY 11/12 for the implementation of WURMP activities. The amount also includes costs for the implementation of applicable TMDLs (Revised Project I – Twenty Beaches and Creeks in San Diego Region development and San Elijo Lagoon TMDL investigation).

10.4.1.9 RURMP Expenditures

The City utilized the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City of Solana Beach expenditures and do not account for any expenditure disbursed by other Copermittees in the region.
A total of $21,970 was projected to be expended in FY 11/12 for the implementation of RURMP activities.

10.5 Funding Sources

The City primarily finances its Storm Water Management Department via revenues from an NPDES solid waste fee that was initiated in 2004. The City went through a long, arduous process to establish a long-term funding source to ensure the program would be sufficiently financed from 2004 through 2007. The City was sued by the Howard Jarvis Taxpayer's Association (HJTA), and the fee was put to a vote of the community. In September 2007, property owners in Solana Beach voted in favor of the fee which ultimately results in the City having a funding source to maintain, enhance, and ensure the long-term future of the NPDES program at the City. For more information on the City's NPDES Solid Waste Fee, please see the City's website at http://www.cityofsolanabeach.org

The City also utilizes the General Fund to assist in supporting some elements of the City's NPDES program. The General Fund is supported by major revenue sources that include property tax, the local portion of the sales tax and use tax, transient occupancy tax.

CHAPTER 11

Effectiveness Assessment Component

CHAPTER 11: EFFECTIVENESS ASSESSMENT COMPONENT

11.1 Introduction

In accordance with Section J.3. (l) of the Permit, each Copermittee is required to develop a long-term strategy for assessing the effectiveness of the various components of its Jurisdictional and Watershed Urban Runoff Management Programs (URMPs). The City will perform an annual effectiveness assessment to specifically assess:

- Each significant jurisdictional activity/BMP or type of jurisdictional activity/BMP implemented;
- Implementation of each major component of the JURMP (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination and Education); and
- Implementation of the JURMP as a whole

During this reporting period, the City has continued implementation of all components of the Permit. This section will assess the effectiveness of the JURMP, and discuss all strengths and weaknesses of the City's program. Since the City's JURMP was submitted in March 2008, this Report will be the third full year of implementation and it will be difficult to effectively assess the new programs. Most of the new programs are still in the early stages of implementation, therefore this section will report on any significant results from the programs implemented under the old Permit Order No. 2001-01 and any programs that have been developed and implemented during this year under Permit Order No 2007-0001.

11.2 "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs"

The Copermittees developed an assessment document titled, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs." This document was prepared after discussions with the RWQCB in which the Board stated that the Copermittees needed a better method to assess

the effectiveness of the JURMP. This document was approved by the RWQCB and will be used to assess all future programs, or until another method is agreed upon. The document addresses six levels of assessment:

1. Compliance with Activity-Based Permit Requirements
2. Changes in Knowledge/Awareness
3. Behavioral Changes
4. Load Reductions
5. Changes in Discharge Quality
6. Changes in Receiving Water Quality

The levels of assessment have been combined into three rather than six categories for this reporting period because it is easier to assess the programs when they are combined into these three categories. Level 1 includes modified assessment tables from the JURMP. Level 2 and 3 are combined and discuss the program strengths (accomplishments and outcomes) for each component. Level 4, Load Reductions, is still being assessed as to the proper way to address this (possibly TMDLs) and so is only briefly discussed, and Level 5 and 6 are combined to attempt presenting a water quality assessment.

The strategy uses both quantitative and qualitative measures of program effectiveness.

In addition, during the development of the WURMPs, the cities worked tirelessly to develop a meaningful method to assess *that* program for its impact on water quality – not just whether or not the program components were implemented, but more importantly, the ability to find a way to measure the link between activities and improved water quality, if it exists.

The WURMP program effectiveness strategy incorporated all of the elements of a meaningful method to assess impact, incorporated public comments, collaborative writing, thinking and designing, and in the end, is a good start to learn how to meaningfully determine the value of the storm water program

activities. The City anticipates that over time, the results of a well-thought-out meaningful assessment will provide the region important information from which program activities can be designed and modified, rather than implementing program activities and hoping the activities have the expected impact. The individual WURMP program assessments can be found in the upcoming WURMP Annual Report submittals (January 2013).

11.3 Level 1: Compliance with Activity-Based Permit Requirements

A table that summarizes the activities tracked by City Staff, which demonstrates compliance with the requirements of the Permit, can be found in Appendix Q. Additionally, narratives explaining the City's efforts regarding compliance can be found in the individual components of this Annual Report.

11.4 Levels 2&3: Changes in Knowledge/Awareness and Behavioral Changes

This section is broken up into each component of the JURMP and presents a summary of the changes in knowledge/awareness and behavioral changes. Each section discusses the accomplishments for the component and discusses future improvements.

11.4.1 Municipal Component

Program Strengths: During this reporting period, City staff again inspected *all 309 of the City's catch basins* and 15 unimproved channels and cleaned every one that appeared to have trash or sediment accumulated in the basins. Public Works Staff cleaned 26 catch basins and removed approximately 19 cubic yards of material from its storm drain system, including Steven's Creek Channel. The City also manages an active Beach Cleaning Schedule and maintains several different permanent BMPs throughout the City (the most significant structural BMPs being the bioswale located at La Colonia Community Center, the Low-Flow Diverter, CDS Unit and Sand Trap at Fletcher Cove and the CDS Unit at the north end of North Cedros).

For a discussion regarding the qualitative accomplishments of the City's Municipal Component (major accomplishments, educational and outreach activities, new activities or improvements to be implemented next year) see

Chapter 2 of this report.

Table 11-1 Municipal Inspections

Activity	Quantity	Units	Comments
Number of high priority municipal facilities (*buildings*)	1	n/a	Inspected high priority facility (PW Yard) weekly at Engineering Safety Meeting held at Public Works Yard. Annual inspection conducted on 6/18/10 and facility also inspected prior to rainy season. See Chapter 2 of this Report.
Number of high priority municipal facilities (*parking lots*)	6	n/a	Visually Inspected weekly by PW staff. Cleaned monthly by street sweeper. See Chapter 2 of this Report.
Number of high priority municipal facilities (*other*)	3	n/a	One park, all city streets and roads (inspected daily), and the MS4 (inspected annually).
Number of high priority municipal facilities targeted for inspection (buildings and parking lots)	10	n/a	See above.
Number of high priority municipal facilities inspected	10	n/a	The Public Works Yard and all parking lots.
Number of medium and low priority municipal facilities inspected	5	n/a	Fire Department, Marine Safety Center, Fletcher Cove Community Center, City Hall and La Colonia Community Center inspected annually. All inspections occurred on 6/14/12.
Quantity of material removed from MS4, beach and Steven's Creek Channel	19	Cubic Yards	This is the amount of material the City collected from its annual cleaning of the MS4 and the beach. All 309 catch basins and 15 unimproved channels were inspected, 26 catch basins were cleaned, which was 100% of the catch basins that had accumulated trash/debris inside.
Quantity of debris removed that had potential to enter MS4 (i.e. street sweeping, litter removal)	234	Cubic yards	This information provided by daily reports from street sweeping contractor.

The City's Public Works Crew is immensely knowledgeable when it comes to storm water issues. Since the crew consists of only five people, it is very easy to

educate them on an ongoing basis. They are all very aware and conscientious of the storm water regulations and are eager to report any violations in the field to the appropriate staff. The Public Works Crew is a vital part of the Storm Water Team, because they are always out in the field, and they have become the eyes and ears of the program. They have weekly tailgate meetings with the City Engineer and City Inspector at the Public Works Yard where they discuss, among other things, the storm water regulations and visually inspect the Yard.

The amount of cooperation between the various City departments has proven to be very successful, with each department willing to implement the storm water regulations into their daily activities.

As reported in last year's Annual Report, one of the improvement areas for this component would be to conduct more department specific educational presentations. The City accomplished this goal, but it will continue to be a high priority activity. This has proven to be very successful and is highly encouraged by the Department Directors. It is anticipated with the continued development and implementation of the new Permit requirements that more education of City Staff will be required. This will most likely occur with more department specific presentations to detail any changes or additions to department specific activities required in the Permit.

The Assistant Civil Engineer will analyze the new requirements and develop appropriate presentations to City Staff, and will report on these in next year's Annual Report.

Additionally, as a result of the RWQCBs response letter to FY 03/04 Annual Report, the City now calculates and tracks the total amount of material collected by their street sweeping activities. This initially was a difficult task, as the City contracts out the street sweeping to a private company, but after some discussions with both the RWQCB staff and the contractor, a solution was worked out. The amount of material collected is now documented weekly by the street sweeper, and is verified by the City's Public Works Crew. This information is reported in this Annual Report and will be documented in the years to follow to see if a trend can be verified to assess the effectiveness of the program. Additionally, as reported in last year's Annual Report, City Staff ensured that the new street sweeping contract contained language that mandates that this activity is done on a continuous basis. So far, the activity has been very successful as

data that is quantifiable is now collected and will be useful in load reduction calculations in the future (as enough data is collected).

Improvement Areas: City Staff is confident that all aspects of the Municipal Component are being adequately addressed, although they realize that things could always be improved. Some improvement areas may be additional educational sessions with City Staff, to reinforce the importance of the Permit and how it affects their everyday activities (especially with the adoption of the new Permit). Increased inspections on Municipal facilities may be conducted to ensure compliance at all times. And finally, more detailed investigations into the "problem" catch basins, if any, which may require cleaning every year. If any of these catch basins exist, then a more aggressive litter/trash campaign may be conducted to nearby residences or businesses in hopes of a load reduction in the catch basin. Additionally, the Assistant Civil Engineer will commit to ensuring all new employees are educated as soon as they start employment. This will help them in adjusting their daily activities immediately to comply with the requirements of the Permit.

As reported in last year's report, City Council adopted a strengthened litter reduction ordinance. Ordinance 419 was adopted by City Council on September 8, 2010 and, among other things, required commercial businesses to develop and implement a Litter Reduction Program for their property. The ordinance required, at a minimum, that all commercial businesses visually inspect at least 200 feet around each business property at least once per day and to clean up any litter or debris identified. This is a significant new litter reduction program that will have a major impact on the City's storm water program. This will be discussed in more detail in next year's Annual Report.

In addition, as reported in the previous Annual Report, the City adopted a Leaf Blower Ban in July 2009 (Appendix R). This ban was enacted to prevent organic debris from being blown all over the City and into the storm drain conveyance system. Staff noticed that landscapers would use these blowers to push the organic matter off of the property they were maintaining and into the streets, gutters or sidewalks, where it would eventually end up in the storm drains. This has a major impact on the City water quality, so the City Council voted unanimously to ban gas powered leaf blowers in the City. The ban went into effect on January 1, 2011 as the City Council wanted to give the community some time to transition away from the blowers.

These two progressive and aggressive ordinances further show the City's commitment to environmental protection and enhancement. These laws go above and beyond the basic requirements of the Permit, and the community supports it. These ordinances went into effect during this reporting period with cooperation and support of the public.

11.4.2 Industrial Component

Program Strengths: Since the City has only one industrial site, it had been determined that a strong pro-active approach to compliance would be adopted. The one site (Baker Iron Works) has been incorporated into the routine inspection schedule of the commercial sites as dictated in the JURMP, thereby allowing the City to ensure that the site is up to code on all storm water issues. Since the one site was elevated to a high priority site, the City has taken an active approach in ensuring that the site will be in compliance at all times.

The City has developed a strong working relationship with the owners of Baker Iron Works. City Staff have visited the site multiple times and worked cooperatively with them to come into compliance. The owners have responded well to the City's educational efforts and compliance requests. The City has successfully worked with Baker Iron Works to help them come into compliance by instituting several BMPs throughout the property. Although there are no indications from any of the Dry Weather Programs throughout the years that this site has contributed pollutants to the City's MS4, the mere fact that there is a possibility of this occurring in the future prompted the City to request that a few BMPs be installed onsite. A couple of very successful accomplishments occurred since this time that are worth noting.

The first accomplishment was the sealing up of a small storm drain located on the property that drained directly away from the property and into street.

The second BMP installed was the daily dry sweeping of the property to ensure that no sediment/gravel ended up in the street by automobile traffic.

The third BMP integrated into their normal routine was the use of a magnet on the grounds outside where some work is conducted using steel. The magnet is used to sweep the entire yard and collect miscellaneous scrap metals that may have collected on the ground. This activity is conducted on an as needed basis,

but no less than once per week.

The fourth, and most important, BMP was the installation of the storm drain sump/infiltration pit at the northwest corner of the property that was designed to catch all low flow dry-weather runoff from the property and filter it before it left the property. These BMPs have been successfully implemented by the owners and are currently in place and functioning.

An improvement area that has been listed in previous annual reports involved ensuring that Baker Iron Works is complying with all requirements of the State Industrial General Permit, even though this is not a requirement of the Storm Water Permit. However, Baker Iron Works asked for the City's assistance in compliance and so City Staff has worked with Baker Iron Works to implement the necessary elements for compliance. This has further helped the relationship grow between the City and its industrial partner, furthering the great working relationship.

City Staff worked with Baker Iron Works to come into compliance under the GISW. Baker employees requested help with the monitoring requirements so City Staff trained them in the proper sampling techniques and offered options on where to take the samples for analysis. This just proves the healthy working relationship between City Staff and Baker Iron Works.

Improvement Areas: The City is confident that it is fulfilling all requirements of the Industrial Component. City Staff is committed to inspecting Baker Iron Works annually as part of its high priority facility inspections due to the potential to release pollutants into the City's MS4. City Staff believes that this industrial site is working well within the regulations of the Permit and is satisfied with the current situation. City Staff will look to continue the open communication with Baker Iron Works and conduct further inspections to ensure that all new employees are aware of and compliant with the storm water regulations. Also, City Staff will ensure that Baker Iron Works is aware of any new regulations from the State and work with them to ensure compliance.

11.4.3 Commercial Component

Program Strengths: The City has a very aggressive commercial inspection program that goes above and beyond the Permit requirements. As reported

previously in this Report, the City inspected 100% of *all commercial facilities,* regardless of priority*,* identified in the JURMP inventory. This is above and beyond the requirements of the Permit, which states that 100% of the *high priority* sites be inspected. In addition, the City implemented an aggressive Fats, Oils and Grease (FOG) inspection program to ensure the reliability of the sewer system, and prevent sewer spills caused by grease buildup. These two programs demonstrate the City's proactive approach to maintaining compliance with the Commercial Component of the Permit, and are described in more detail below.

The City also re-inventoried the commercial facilities as part of the JURMP revision and set minimum inspection frequencies per the new Permit. The facilities were inspected by an independent consultant specializing in storm water and FOG inspections, with follow-up being conducted by both the contractor inspector and City Staff.

As stated in the new JURMP, the City has 77 stationary facilities, of which 69 are identified as high Threat To Water Quality (TTWQ). The JURMP states that in the third year of JURMP implementation, at least 25% of all inventoried stationary businesses will be inspected, meaning 19 sites are required for inspection. In addition, the JURMP states that at a minimum, 100% of all sites (excluding mobile sources) determined to pose a high threat to water quality will be inspected in the second year of implementation, increasing the number of facility inspections from 69 to 77. The City went above and beyond the permit requirements and through their consultant inspected all 77 facilities. Twenty nine (29) facilities required more than one follow-up inspection and no major violations were detected. All facilities were in compliance during the enforcement inspections conducted by City Staff. A summary of the follow-up actions can be found in the Commercial Component of this Report.

Another program strength is the implementation of the City's grease management ordinance. The City is happy to report that a grease management ordinance was passed by City Council on September 7, 2004. Staff introduced the proposal to City Council on February 17, 2004, and received approval to move forward with the education of local restaurants and the public about the pending ordinance. A condition of the resolution once the proposal passed was to give restaurants 18 months to install a grease trap/interceptor, or receive an approved waiver from the City. Therefore, all restaurants in the City (even existing restaurants) must have a functioning grease trap/interceptor by March

2006. This is a huge accomplishment by City Staff as it is well documented that most major sewer spills are the result of grease related problems. Inspection of the grease traps and maintenance are accomplished in conjunction with the storm water inspections. As mentioned above, the contractor the City hired to perform facility inspections also specializes in grease management device inspections. The contractor included grease management inspections into the storm water inspections and checks for such things as proper cleaning and maintenance, record keeping, duct cleaning, screen cleaning and hood cleaning. These are all important aspects of storm water management, as grease can have an extremely detrimental environmental effect.

A significant improvement to the grease management program that occurred during this reporting period is the increased level of inspection that was authorized and conducted by the City's contractor. As mentioned above, the City's contractor checked if each required commercial facility had a grease management device during FY 07/08. However, the inspection was taken to the next step in analyzing whether or not the installed device was of sufficient size and type. As often is the case with restaurants, they change frequently. So, an appropriate size and type grease management device may be sufficient for one type of restaurant, but if that restaurant closes and another, higher grease producing restaurant moves in, then the grease trap and/or interceptor may no longer be sufficient. This was a bold new move by the City that could be extremely controversial, but the City felt it was a necessary preventive measure in proceeding with the increased inspection level. This increased inspection process continued in FY 11/12.

This process will take more time to complete as the restaurants have been notified of their insufficient management devices, but the City recognizes that to replace or install a device takes time. However, by getting the process started now, the City hopes to have all restaurants in compliance in the very near future.

Improvement Areas: In previous annual reports, one improvement that was mentioned was the inspection of 100% of all high TTWQ commercial facilities in one reporting period. As reported above, this has been accomplished. The City is confident that all requirements of the Commercial Component of the Permit are currently being satisfied. One area of improvement may be increasing the amount of education and public outreach to the business community. The City believes that they have a good relationship with the current business community

but more education is always welcome. City Staff could make an increased effort to educate new businesses as they apply for business licenses by producing additional educational brochures and pamphlets.

11.4.4 Residential Component

Program Strengths: The City provides a wide range of programs for its residents to allow for convenient implementation of pollution prevention activities. Among the many programs the City provides are:

- Curbside recycling (first in the County to provide this service)
- Curbside Green-waste collection
- Aggressive and convenient Household Hazardous Waste collection program (described in detail in Residential Component)
- Community Education Program (described in Residential Component)
- The development and maintenance of the City's website regarding the Storm Water Program
- Community workshops on proper landscape practices
- Educational opportunities at local community events (Fiesta Del Sol, Beach Blanket Movie Night, Coastal Cleanup Day, Paws in the Park, etc.)
- Free presentations on proper HHW disposal and Used Oil Recycling (conducted by Solana Center)
- Opportunity to join Community Clean and Green Team which meets monthly to discuss environmental programs

The City Council meetings are also televised and available live on the internet to all the residents of Solana Beach. Many times storm water issues are discussed during these meetings. Other positive aspects of the program are the direct mailings of education materials included in monthly trash billings and the articles placed in the community newsletter, "*Shorelines*." Tallying the amount of phone

calls to the City's Storm Water Hotline does not appear to be a good assessment of the City's program. The City, because of its relative small size, prefers to conduct business on a more personal level. This has proven to be a much more effective way to work with the public. Therefore, although the hotline is still publicized, City Staff distributes their direct telephone numbers to the public when dealing with storm water issues. This allows direct, immediate contact with a Staff member, which ensures immediate, effective response to storm water issues.

As stated in last year's Annual Report, City Staff documents contacts (phone calls, visits to City Hall, etc.) with the public regarding storm water issues to help assess the effectiveness of the program over time. The only calls documented are ones that required Staff action on some level. The community of Solana Beach is very unique in that the residents are actively involved. Staff receives numerous phone calls every day that must be addressed immediately. Therefore, it would be unreasonable to document every contact made by the public.

Another area of improvement mentioned in previous Annual Reports was to develop additional educational materials for the residential community. This activity is constantly being addressed by the two WURMP groups discussed previously in Chapter 8. In addition, as mentioned throughout this Report, a large focus was placed on developing an effective regional educational program in the requirements of the new Permit. The Copermittees have formed a regional workgroup to develop a regional "brand" that will be recognizable by all residents throughout the region. The Copermittees have adopted the "Think Blue" campaign developed by the City of San Diego, since this slogan is widely known throughout the region. The activities and programs that have been developed and implemented by this group are described in the Regional Unified Annual Report. The City has been an active member in this workgroup during this reporting period.

The City feels that it is much more effective and efficient to address these issues collaboratively with the WURMP groups and the Regional Educational Workgroup. This allows for a consistent message to be disseminated to a large population of people throughout the region, as well as resulting in a significant cost savings for the City. As for requirements/projects unique to Solana Beach, Staff will continue to develop materials as the situations arise. A few examples of these specialized educational materials are listed in Chapter 8 of this Report.

Improvement Areas: For the next reporting period, City Staff will evaluate this component and make any necessary alterations to the program. The City will continue to develop educational materials for the residential community, both jurisdictionally, on a watershed basis through the NCSWP and regionally through the Regional Educational Workgroup.

11.4.5 Land-Use Planning for New Development Component

Program Strengths: The City continued its implementation of the Standard Urban Storm Water Mitigation Plan (SUSMP) program as well as participated in the development of the new SUSMP. The City has successfully implemented the SUSMP review into all plan check processes. Although there will not be many projects within the City subject to this new requirement (the City is 95% built-out), the appropriate departments are still very aware of the requirements. In addition, the new model SUSMP was developed and approved by the City during last period and the City is now implementing the requirements of the new SUSMP program during this reporting period.

The Planning Department is actively involved in the City's Storm Water Program, and often notifies the Environmental Programs Manager when a proposed project may have storm water implications, including possible SUSMP projects. Although, as mentioned above, the City is almost completely built-out, the Planning Department has, as a result of this Permit, developed a list of possible proposed projects that may require a SUSMP. These projects have not been approved by City Council, but Planning Department Staff have surveyed the City and put this list together to warn the Environmental Staff as these projects may be proposed soon. This gives Staff a "heads up" before the projects are submitted that they will probably be subject to the SUSMP requirements and so the process can begin when, if ever, these projects are proposed.

As mentioned previously in this Report, the City is small and by nature, very intimate. This applies to development projects as well, as the City Council reviews development projects very closely. It is extremely rare when a significant development project is proposed that has not gone through extensive review by the applicants and City Staff prior to submittal. This allows the Community Development/Planning Staff to inform the applicants of possible storm water issues (especially grading, LID, HMP and SUSMP projects) prior to submitting their plans, so that the project will incorporate necessary storm water features

into the original plans. This is extremely helpful to the applicants, as it avoids the possibility of redesign (as well as increased costs) and speeds up the process. Therefore, most applicants set up meetings beforehand with Staff to review their plans to avoid any possible delays or impediments to their proposed projects.

Improvement Areas: The City will continue to educate prospective applicants regarding the SUSMP, LID and HMP if their respective projects will be subject to the new regulations. The City is very confident that its Land Use Planning component is very effective; however, it will continue to be modified in the future when necessary. The City is working on updates to its General Plan. This will have a major impact on the storm water program and City Staff will make certain that elements of the Permit and JURMP are incorporated into the new General Plan. In addition, as the new SUSMP, LID and HMP are finalized and adopted City Staff will develop new educational materials for the construction community.

11.4.6 Construction Component

Program Strengths: The Assistant Civil Engineer is responsible for conducting construction site inspections. This has proven to be a good use of resources as the Assistant Civil Engineer is trained in stormwater compliance as well as construction inspection criteria.

All construction sites were inspected for storm water issues based on the frequencies described in the City's JURMP. Since there are relatively few construction sites in the City, Staff often times can visit the higher priority sites more frequently. Additionally, the City's contracted Building Department (EsGil) inspector makes daily visits to most construction sites in the City. Although they do not handle storm water issues directly, they notify the Assistant Civil Engineer if they notice anything questionable onsite. This is another significant advantage to having the private building department staff housed at City Hall. Therefore, the City has three different Staff members out in the field monitoring construction sites and BMPs on a daily basis.

If the Assistant Civil Engineer or EsGil inspector notices a problem related to storm water, they notify the Assistant Civil Engineer immediately. The Assistant Civil Engineer investigates further, taking any necessary corrective or enforcement actions. This program has worked very well due to the already established relationship between the contractors and the City Staff. Because of

this pre-established relationship, the transition into storm water compliance was virtually seamless. The Inspector keeps a log of all of his activities, and storm water related issues are included. The City also mailed out a wet-season reminder to all active construction sites reminding them of their obligations under the Permit. Therefore, the City is assured that all contractors are aware of the regulations, making enforcement much easier for the City.

Additionally, for all CIP projects, the applicant/contractor is required to have a Pre-Construction Meeting with City Staff in which storm water issues are discussed. At these meetings, contractors are given a sample copy of the Site Inspection Checklist, and they are required to fill out a Wet-Weather Triggered Action Plan (if the project will be in construction during the rainy season). All of these measures are taken to ensure that all contractors are aware of the storm water regulations, and it helps the enforcement aspect of the Permit as Staff can be assured that all contractors have been educated and cannot claim ignorance of storm water issues. Appropriate enforcement actions (corrective, stop work, fines, etc.) can be enforced without fear of being challenged by violator.

Another activity that has proven very successful in regards to construction activities was the distribution of a colorful, informative BMP Construction Brochure. This brochure was developed by the Carlsbad WURMP workgroup and delivers a consistent message for all North County cities. The brochure is a tri-fold that gives background information on the storm water program and regulations and on the reverse side is a large diagram of a common construction site with the general BMPs shown and described. This brochure has been a huge success with the construction/developers as they can post this brochure at their site to remind their employees of proper BMPs. These brochures are attached to all building and grading permits.

The City believes that any opportunity to educate the community should be taken advantage of. As such, during this reporting period, approximately 80 BMP brochures were distributed during this reporting period, down from 175 in the last reporting period. The decrease in brochures distributed during the last two reporting periods directly reflects an decrease in construction activities region-wide. All building project applicants were given a brochure; there were just fewer projects during this reporting period.

As discussed in last year's Annual Report, the City developed and now tracks the

SUSMP long-term BMP maintenance agreements as required by the Permit. In addition, the City continues to implement the Long Term BMP Maintenance Agreement that requires the applicant to submit a recorded document from the County of San Diego which includes the maintenance activities required and gives the City the legal authority to inspect the BMP to ensure compliance. This is an extremely helpful tool in ensuring that the post construction BMP is not only installed, but is being properly maintained to remain effective.

As mentioned in last year's Annual Report, there are significant new construction requirements in the new Permit. The significant additions to the new Permit include the development and implementation of the Hydromodification Plan (HMP), Low Impact Development (LID) and the update to the model SUSMP. The City is pleased to report that these new programs either have been developed and implementation is currently in the process or they are being developed and close to finalized, and the City is participating in the regional process. The HMP program is not expected to affect the City; however the City still contributed funding toward the program development as part of its Copermittee responsibility to the region. The City also revised its Municipal Code to adopt the updated model SUSMP in compliance with the new Permit regulations.

Improvement Areas: During the next reporting period, the City is committed to improving and modifying the construction program if any deficiencies are detected. The City is also committed to developing more educational materials to distribute to the public, and contractors in particular. The Construction BMP Brochure has been a major success, and the contractors/developers are constantly looking to us for more information and guidance.

With the adoption of the new Permit, additional construction activities and programs need to be developed and implemented in future years. The City will continue to work with the Copermittees to develop these programs for implementation. One area of improvement that the City is looking at is possibly hiring a specialized contractor to conduct construction inspections. This is similar to the City's decision to hire a contractor to perform commercial/industrial inspections and specialized Staff training, as this will free up limited Staff resources while providing increased service to the community. The City Council approved $10,000 in FY 11/12 specifically for construction inspections, further strengthening the City's commitment to protecting the local water quality. The

new Permit contains significant additional requirements for the Construction Component, so the City felt it was prudent to strengthen its program as well, and hiring a specialized consultant is a first step in the right direction.

11.4.7 Illicit Discharge Detection and Elimination Component

Place Holder – This will be submitted with Chapter 7 on December 15, 2012 as a result of Addendum No. 2 adopted by the RWQCB

11.4.8 Education Component

Program Strength: The City feels very strongly that the current education program being implemented by City Staff has been very effective. The amount, and quality, of educational materials developed by the City and through collaboration with the other Copermittees, has proven to be very successful. The following events have allowed City Staff to educate the community, both residential and commercial:

- Fiesta Del Sol
- Beach Blanket Movie Night
- Annual Coastal Cleanup Day
- City Council Meetings
- Clean and Green Team
- Civic and Historical Society meetings
- Friends of the Library meetings
- *Shorelines* Community Newsletter
- Green Flash website
- Brochures and Handouts at City Facilities
- Partnerships with Solana Center, Santa Fe Irrigation District, Kids Korps and the Solana Beach School District

The complete educational program is discussed thoroughly in the Educational Component of this report.

Improvement Areas: The City is very satisfied with its current educational

program. The respective WURMP groups have gone above and beyond the requirements of the WURMP's educational component, and have delivered many quality items to the residents of Solana Beach.

Also, as reported in last year's Annual Report, the City is participating in the development of the new regional educational program. The new Permit requires the development of a regional educational program, and the City is committed to working with the other Copermittees to develop a successful and comprehensive program. Also, the new Permit requires Watershed based education based on the activities chosen by the participating Copermittees, and the City is committed to working with the Copermittees in its two watersheds to develop and implement the educational activities to support the watershed activities. These activities are described in detail in the Regional Unified Annual Report (submitted with the Copermittees reports in September 2012) and the Watershed Annual Reports which will be submitted in January 2013, respectively.

11.4.9 Public Participation Component

Program Strengths: The residents of Solana Beach have multiple opportunities to interact with City Staff through the hotline, website, community events and direct interaction. All City Staff are available to discuss any issues with the community if they come into City Hall, and most all literature distributed currently has the appropriate Staff contact information listed on it. City Staff prides itself on interacting with the community on a personal basis, and as a result has established many positive relationships with key members. The City continued to host the annual Coastal Clean-Up Day that allowed the community to get involved as well as distributing educational brochures at the local community events. Some additional opportunities include:

- Copermittee meetings
- Adopt-A-Beach Program Beach Cleanups
- Fiesta Del Sol
- Beach Blanket Movie Night
- Shorelines Articles
- Opportunities to work with local Partnerships/Collaborative's
- City Hotline
- Green Flash website

- Clean and Green Community Group

Improvement Areas: The City realizes its responsibility to get the community involved in the storm water program. The City has given the residents ample opportunity to get involved in implementing the program. City Staff is very visible throughout the community on a daily basis and routinely has discussions with residents regarding storm water issues. The feedback given to City Staff has been overwhelmingly positive, and the City looks forward to continuing this personal relationship with the community.

In addition to the JURMP public participation opportunities, the community has public participation opportunities through the WURMP process. More information on the WURMP process is available in the WURMP annual reports submitted in January.

11.5 Level 4: Load Reductions

Level 4 load reduction is a key assessment measure for the storm water program. Ultimately, the goal of the storm water management program is to reduce pollutant loading into the City's MS4 and by doing so, improve the discharge and receiving water quality. However, load reductions are very difficult to quantify, and the Copermittees as a whole are struggling to develop methods to achieve this task. This being said, the City will continue to analyze any data received that may be able to show a load reduction with the hope that it will somehow be linked to improvements in discharge and receiving water quality.

As a result of the Regional Water Quality Control Board's comments on the City's FY 02/03 Annual Report, the City has adapted its street sweeping program. The City now requires the private street sweeper to document all load information on a weekly basis. This includes an estimated amount of debris collected. This information was collected initially in FY 05/06 and continued into this reporting period as well. The total amount of street sweeping debris collected for each FY is as follows:

- FY 05/06 – 299.1 cubic yards
- FY 06/07 – 188 cubic yards

- FY 07/08 – 275 cubic yards
- FY 08/09 – 274 cubic yards
- FY 09/10 – 270 cubic yards
- FY 10/11 – 212 cubic yards
- FY 11/12 - 234 cubic yards

The total amounts remained relatively constant over the past few years. City Staff believes that the reason is most likely that the majority of the debris picked up by the street sweeper is organic material from natural sources such as trees and vegetation. Therefore, the load reduction measure of quantifying cubic yards and hopefully detecting a decrease over time is not a good indicator for Solana Beach. The street sweeper not only quantifies the amount of debris each day collected but also records an approximation of the type of debris. And for Solana Beach, it is over 95% organic matter. There are only trace amounts of litter or trash, which is a positive thing, but it also indicates that quantifying load reductions from street sweeping activities is not a good measure of the City's storm water program. However, the information will be collected and analyzed and any trend will be documented for future use.

Another possible load reduction calculation could be documenting the amount of material collected and removed from the various BMPs throughout the City. These BMPs include:

- Annual inspection and cleaning of MS4 system
- Maintenance of CDS Unit(s)
- Maintenance of detention basin adjacent to San Elijo Lagoon
- Load reduction calculation for the Low Flow Diverter at Fletcher Cove and the filtration basket located upstream from Seascape Sur Outfall
- Load reduction calculation for the Bioswale maintained at La Colonia Community Center
- Maintenance records of permanent treatment BMPs required as part of SUSMP projects (privately owned)

All of these activities may not be feasible, however they all warrant further consideration. It has been generally agreed upon that the Copermittees are not capable at this point of performing complete load reduction calculations and assessments, but are all committed to working towards this goal. The Copermittees have decided that this Level (4) should be attacked at a regional level, and not jurisdictionally. A significant regulatory program that should force us in this direction is the TMDLs that have been developed and are now being implemented by the Copermittees in several watersheds. The City is currently involved in the San Elijo Lagoon Bacteria TMDL Investigative Order, and as relevant information is received from the monitoring they will be discussed in upcoming Annual Reports.

11.6 Levels 5&6: Changes in Discharge and Receiving Water Quality

The City has been collecting and analyzing jurisdictional monitoring data received through the dry-weather and coastal monitoring programs. The City will continue to analyze the data to better understand the collective water quality picture in the City. The data will be assessed to determine the potential water quality problems within the City. Data collected by the City will be analyzed independently as well as collectively with the regional monitoring programs. Although it is generally accepted that it will take many years to develop a trend in water quality, the City will nonetheless analyze its data on a continuous basis to see if anything develops. There are no glaring deficiencies in the water quality in the City, but the situation at Seascape Sur will continue to be monitored to ensure that the storm drain does not have an impact on the quality of the receiving water (Pacific Ocean). Seascape Sur will be explained in greater detail in the next Chapter.

The Regional Monitoring Program currently conducts trend analyses for the Wet Weather Monitoring Program. The goal of the WWMP is to collect data and analyze the data to determine if there are in fact improvements in the receiving water quality throughout the region. The City participates in this workgroup and will continue to assist the Copermittees in determining if we have obtained levels 5 and 6 of the assessment strategy.

11.6.1 Dry Weather Monitoring Data

2012 Summary

Place Holder for 2012 Dry Weather Monitoring Program – Will be submitted in December 2012 as a result of Addendum No. 2 adopted by RWQCB.

11.6.2 Coastal Water Quality

The Pacific Ocean is the ultimate receiving water for the City although there are other intermediate receiving waters, such as the San Elijo Lagoon and the San Dieguito Lagoon. To measure the quality of the coastal receiving waters and assess the JURMP effectiveness, the City has monitored its one coastal storm drain outfall (Seascape Sur). The City used to monitor another outfall at Fletcher Cove; however, a low-flow diverter was installed in 1998 to divert dry-weather flows into the sewer system. The City is currently involved in an IRWM grant application that includes the installation of an additional low-flow diverter at Seascape Sur, which is discussed in more detail in Chapter 12 of this Report.

Coastal Storm Drain Outfalls

The coastal outfall monitoring program reporting period is different than the reporting period for this Report. The coastal monitoring program reporting period runs from November through October. All cities with flowing coastal storm drains meet regularly (Coastal Monitoring Workgroup) to develop and implement this program to promote regional consistency.

The Coastal Monitoring Workgroup developed an adaptive monitoring approach. This approach was developed to allow the individual cities to adapt their program to concentrate their limited resources on problematic locations and ease up on consistently non-problematic areas. The City had *no receiving water exceedances* for bacteria during this reporting period, which was consistent with the results of the last three reporting periods. In addition, it's apparent that the increased educational and oversight of the vendors at the Fiesta Del Sol was successful as there were no exceedances after the event for the seventh year in a row. City Staff again made this a priority during this reporting period to meet with the event organizers and discuss BMP requirements with them so that they can relay that information to the individual vendors and provide them with more educational materials. In addition, City Staff monitored the Food Court during the event to ensure all vendors were abiding by the storm water regulations. This was mentioned in previous annual reports as an improvement area because of the consistent exceedances after the Fiesta Del Sol that had occurred in the

past.

The storm drain at Seascape Sur had multiple exceedances for total coliform, fecal coliform and enterococcus during this reporting period. However, the magnitude and the frequency of exceedances have decreased during the last two reporting periods, which is a significant achievement. This is a storm drain that has a history of high bacteria counts and is currently the focus of an ongoing IC/ID investigation. The City has recently installed upstream BMPs that may be contributing to the improvement in water quality. The program is being implemented by City Staff, and the complete results are presented in the Coastal Monitoring Annual Report, and explained in the next Chapter of this Report.

The Copermittees had to modify the Coastal Monitoring Program due to the new requirements of the Permit. The Coastal Monitoring Program workgroup made the necessary changes and additions to the program and are currently implementing the new model. The City is confident that it has met the requirements of both the old Permit and new Permit. The complete Copermittees Coastal Monitoring Program is incorporated into the Regional Monitoring Annual Report.

Beach Posting Data

The County Department of Environmental Health has monitored beach water quality for bacteria since the 1950's. This sampling is used to assess the health of the beaches. When bacteria levels exceed State standards, the County posts signs on the beaches warning and advising the public not to enter the water. In 2000, there was a significant change in protocol as a result of the passage of AB411, which required additional testing, incorporating testing for enterococcus, which required the beach to be posted when only one sample exceeded the standard.

During this reporting period, there were ***no beach closures*** **in the City of Solana Beach,** which bodes well for the overall effectiveness of the City's program.

CHAPTER 12
Special Investigations

CHAPTER 12: SPECIAL INVESTIGATIONS

12.1 Introduction

In accordance with Permit Section D.4.e, this section of each Annual Report will describe the Copermittee's efforts to eliminate all detected illicit discharges, illicit discharge sources, and illicit connections as soon as possible after detection. The City's Illicit Discharge Detection and Elimination (IDDE) program is designed to identify, prohibit, and eliminate discharges that are a significant source of pollutants with the goal of protecting receiving water quality. This section of each Annual Report will provide the results of any special investigations conducted during the reporting period. However, the City also responded to many other complaints of possible IC/IDs, which resulted in rapid compliance, but did not warrant or require a comprehensive special investigation.

Although this Report does not contain a completed Chapter 7 due to the extension granted in Addendum No. 2, this Chapter will remain as many activities related to this Special Investigation can be reported on. Any additional information gathered from the 2012 Dry Weather Monitoring Program will be included in the December 2012 submission.

12.2 Bacteria at Seascape Sur

12.2.1 Background

As first reported in the FY 2002/2003 Annual Report, there has been an ongoing, historical problem occurring at one particular storm drain in the City. The location, Seascape Sur, has had historically high levels of bacteria; often times exceeding limits at the storm drain and occasionally in the receiving water. Previous annual reports go into detail regarding the history of this problem and the City's efforts to remedy it. Since the history is important in describing the situation, this report will include much of what was written last year. Any added information that was discovered during this reporting period will be included in this report. Next year's report will include the City's additional efforts that were undertaken during FY 11/12.

Prior to and during this reporting period, the City began a concerted effort to determine what was causing the elevated levels of bacteria at Seascape Sur

outfall (based on results from the Dry Weather and Coastal Monitoring Programs). The problem was thought to be resolved early on, but then monitoring results in subsequent years indicated the problem had either returned or persisted. In 2000, the City Engineering/Public Works Department was fairly certain that the problem had finally been corrected; particularly when the 2001 DWMP indicated the bacteria elevated levels had *decreased* (although they were still elevated above the normal range).

However, preliminary results from the 2002 DWMP revealed that the bacterial levels had risen from the previous year to a troublesome level (see 2002 DWMP, available at City Hall upon request). As a result, the City "went back to the drawing board," and with the help of MEC Analytical (consultant for the 2002 DWMP), began an upstream investigation that continued through the end of calendar year 2002.

12.2.2 History

The City began its DWMP in 1993, with no significant problems reported until 1996 when elevated bacteria levels were noted at the Fletcher Cove Outfall. Subsequently, the City constructed a low flow diverter (in 1998), which corrected the problem by diverting dry weather flow to the City's sanitary sewer system.

Between 1997 and 1999 results from the DWMP revealed some minor issues that were readily resolved, but nothing significant at Seascape Sur or Fletcher Cove Outfalls.

However, results from the 2000 DWMP identified two locations with high levels of coliform bacteria, which was of significant concern because both locations flowed directly to the beach via the Seascape Sur Outfall and were in fact, just a short distance from the outfall. The City conducted an extensive investigation and eventually found an old leaking sewer lateral that was buried under the ground near the site of the upstream catch basins in the parking garage of a business complex. The lateral was dug up, examined, and staff determined that cementing over the pipe would be the best method to ensure it was completely sealed off (investigation confirmed that the pipe was no longer in use). Because the leaking lateral was located close to the curb inlet, City staff, plumbing contractors and the consultant were fairly certain that the pipe was the cause of the elevated bacteria counts.

To confirm that the pipe was the cause of the suspected pollution, the City contracted with Kinnetic Labs to provide additional testing, which showed reduced counts during several follow-up tests. At that point, staff was optimistic that their efforts had been successful.

The 2001 DWMP included ten sites for testing. To ensure the problem from the previous year had been corrected, the program included the same two sites that had elevated bacteria counts in 2000. Surprisingly, the site had elevated bacteria levels, but because they were much lower than the previous year, staff believed that the problem might be residual bacteria. As a result, the City ordered that the line between the curb-inlet and the outfall be televised in 2002. The televising of the lines was scheduled during the routine cleaning of the storm drains later that year. Due to various issues, the televising of the lines did not take place prior to the implementation of the 2002 DWMP, which was under the regulations of the new Permit.

The City requested proposals from consultants to design and conduct the 2002 DWMP. The contract was awarded to MEC Analytical in late spring, early summer 2002. The City requested that the same two monitoring sites from 2000 and 2001 be included in the program, regardless of the new sampling procedures required of the Permit. The City included those sites to ensure continual monitoring of the area.

12.2.3 The 2002 Investigation

Samples for the 2002 program were collected on August 6th and 7th, 2002 throughout the City by MEC Analytical (MEC). Shortly thereafter, MEC contacted the City and informed the Storm Water Coordinator that significantly high levels of bacteria had been found at the locations for 2000 and 2001. As shown on Table 13-1, the amounts were troublesome.

Table 12-1 DWMP Initial Results (Sampled August 6-7, 2002)

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
1	West Side of Sierra Ave	700,000	30,000	24,000
2	Manhole between sites 1 and 2.	900,000	50,000	28,000
3	Seascape Sur Outfall (downstream from sites 1 and 2)	800,000	21,000	35,000

Results are reported in MPN/100 mL.

Based on the above results, it appeared that the problem, whatever the cause, was more pronounced at Site 2, the manhole, than at either Site 1 or 3. Therefore, the City immediately requested that the conveyance system be televised. At the same time, the City authorized MEC to conduct an upstream investigation, accompanied by City staff. MEC indicated to staff that the elevated levels of bacteria, combined with the results from previous years, were a sign that an illegal sanitary wastewater connection may be the cause of the problem. However, subsequent inspection by City staff (including public works crews that inspected various locations of the line) did not reveal any expected accompanying waste solids. A somewhat consistent drip was noticed, which was traced back to a nearby condo complex that was discharging their pool (the process was discontinued and the complex changed their procedures to drain into the sewer system). Other causes of the slow drip appeared to be over-watering of the many condominium complexes on Sierra Avenue.

Staff sent letters to all HOAs on Sierra Avenue that drain to the Seascape Sur outfall to eliminate the slow drip. Staff received calls from some of the HOAs in response to the letters and discussed the issue in more detail and received positive responses.

The results of the televised line were viewed by the City Engineer, which revealed a dip in the line approximately at the location of the manhole (with the elevated bacteria) and two possible illegal connections just west of the curb inlet. However, an additional investigation indicated that the connections were not a problem, but staff thought that the dip in line could be harboring residual bacteria, and possibly re-growth.

12.2.4 Additional Testing

In an attempt to pinpoint the source of the contamination, MEC and City staff began the upstream investigation on August 19, 2002. Samples were collected from Site 1, and at a curb inlet catch basin on the *eastside* of Sierra Avenue, directly upstream from Site 3 (named Site IE).

Staff was surprised when the results of the second round of sampling revealed *higher levels of total coliform (2,400,000), fecal coliform (50,000) and Enterococcus (500,000)* at Site 1E, than the previous results from Sites 1 and 3. Further, the results were surprising given that the dip in the line at Site 2 was

thought to be the source of the contamination. *The results seemed to indicate that the source of the bacteria was coming upstream from Site 1E.*

12.2.5 Traveling Further Upstream

The curb-inlet catch basin on the east side of Sierra Ave (Site IE) receives street runoff and runoff from the Beachwalk Business Complex (Beachwalk). Beachwalk is a collection of various businesses located at 437 South Highway 101 in Solana Beach. Beachwalk businesses, at that time, included several restaurants (Pacific Coast Grill, California Pizza Kitchen, Rubio's), several small food facilities (Solana Beach Coffee Company, VitaFit, etc.,) several professional offices, a bike shop and others. Beachwalk was constructed approximately 13 years ago and at the time of construction, an on-site storm drain system, that collects on-site runoff from the property, was lawfully connected to the City's MS4.

Based on the results of the second round of testing, City staff thought that the source of the contamination must somehow come (or significantly contribute) from Beachwalk. Upon speaking with the Management Group that oversees the property, staff made several visits to look for possible non-point source explanations and speak with business owners to discuss BMPs (see Timeline below for more details).

On August 27th, 2002, City staff went to Beachwalk and personally delivered educational brochures to *all of the businesses,* educating business owners about storm water regulations and BMPs. To ensure that all the businesses were addressed, door hangers were left at the businesses that were not open at the time of the visit and additional property visits were scheduled. City staff also spoke with the person responsible for maintenance of the property and provided detailed information about pollution prevention, storm water regulations, and BMPs and how to report violations. Many of the business owners were extremely helpful and all were cooperative. Some business owners went out of their way to show staff potential problem areas, discuss BMPs and provide access to private restroom facilities (staff were looking for overflow problems and unusual construction or evidence of recent repairs).

Staff conducted another visit on September 3rd, 2002 in response to a call from one of the business owner's that staff had contacted on August 27th, 2002. City

staff confirmed that foul smelling odors were coming from catch basins on-site. Further inspection revealed excess watering occurring on the patio of the Pacific Coast Grill restaurant. A manager at the restaurant was contacted and educated regarding BMPs and the new storm water regulations. During this visit, staff determined that samples were needed at various storm drains throughout the complex to try and pinpoint and eliminate the problem. City staff identified several locations that should be tested and requested permission to collect the samples from the property owners.

On September 4th, 2002, City staff accompanied MEC to conduct additional testing and investigation. The process confirmed staff's suspicion that the bacteria levels were coming from Beachwalk. Various samples were collected at locations throughout the complex. An outdoor floor drain just outside the kitchen of Pacific Coast Grill appeared to have dark brown, stagnate water in it. On-site ammonia tests were also consistent with elevated bacterial numbers (60 mg/L). A sample (Site 32) was then collected for further lab analysis. Sites IE and 3 were also sampled again for additional information. As shown on Table 12-2, Site 32 confirmed that the contamination was coming from Beachwalk and most likely, the source was near or in, the floor drain outside Pacific Coast Grill Restaurant.

Table 12-2 Upstream Testing Results

Site	Site Location	Total Coliform	Fecal Coliform	*Enterococcus*
32	Beachwalk floor drain	>16,000,000	300,000	>241,960
1E	East Side of Sierra Ave	3,000,000	50,000	3,550
3	West Side of Sierra Ave	800,000	70,000	24,950

Results are reported in MPN/100 mL.

After the lab results came back and confirmed what was suspected, the property owners were notified of the severity of the situation and were eager to remedy the problem and work with the City to find a solution.

The property owners worked together with the City's Public Works Supervisor and a local plumber experienced in storm drain cleaning to correct the problem. The east side catch basin was temporarily sealed, the pipe was flushed and a specially equipped trucked was placed at the catch basin to vacuum out the resulting sludge for proper disposal. As soon as the procedure was complete, on September 18th, 2002, City staff collected additional samples from all three sites (32, 1E and 3), *expecting the results to show a decrease in bacteria levels*. The

residual water in the pipes was clear of the brown, stagnate water, which also contributed to the hope that the problem was resolved. However, while results from Site 32 indicated *reduced bacterial levels*, downstream sample *again* indicated *high bacteria levels* (the sample on the west side of the street).

12.2.6 Brainstorming

At first, these results seemed a bit perplexing (maybe it was the dip in the line?, etc.), but then, while staff continued to brainstorm ideas to solve the problem, some engineers thought that the flushing of the system might have loosened some bacteria, which escaped collection by the Vactor truck. The City decided to wait a few weeks to see if the problem was alleviated after the system had time to completely flush out.

In the meantime City staff met with the property owners and 1) reviewed old construction plans for the property to look for potential areas of cross contamination; 2) discussed possible options that may help alleviate the situation, including training and education of business owners, television activities that might occur near the catch basin; and 3) decided that a temporary cap would be placed on the floor drain of Site 32 to secure it from contamination for 30 days (the cap could be removed during rain to prevent flooding).

After 30 days (and two rain events), the plumbing contractor agreed to remove the temporary cap to allow further testing.

Surprisingly, results from this last round of testing indicated that there was still a significant problem on the property. A meeting was scheduled immediately with the property owners, who were informed of the test results and that the City now required them to remedy the problem through televising the lines, locating the illegal connection and reconstruction, or face serious fines by the RWQCB and the City. The property owners were concerned, responsive, cooperative and resolute in their attempts to solve the problem.

In addition, the City agreed to purchase a storm drain inlet filter to be placed in the catch basin just downstream from the complex, leading to the ocean outfall. It was installed the first week of December, and is maintained by the City's Public Works Staff. Although it does not filter the water passing through from Beachwalk, it does help alleviate the problem by filtering out the water coming

from the street. The City hopes that this will help reduce the high bacteria numbers found in the catch basin.

12.2.7 Action Taken By Property Owners during FY 03/04 Annual Reporting Period

By the end of December 2002, Beachwalk property owners had done the following to remedy the problem:

While attempting to televise the lines, a significant amount of sludge built up in the pipe prevented the camera from penetrating the pipes (which is likely the source of the problem, City staff also reviewed the small amount of footage that was performed in the pipes).

An extensive flushing out of the entire system was conducted, which took some time to accomplish amidst the rain events in December and the amount of material in the pipes.

The lines were televised and detected a large dip in the pipe where sediment and sludge were building up, possibly providing a breeding haven for re-growth of bacteria.

No illegal connections or sanitary waste connections were detected. There were a few pipes connected to the outfall pipe coming from the adjacent condos, however these lines were proven to be outdoor area drains. Beachwalk property owners and condo associations are completely aware of the responsibility to rectify the situation.

The City decided that they must increase their efforts to rectify this continuous problem to ensure the integrity of the receiving waters at Seascape Sur. The bacteria levels were still consistently high, often exceeding standard limits for the outfall, but, fortunately, not yet affecting the receiving waters. Growing increasingly frustrated, City staff decided that an increased effort, and the high costs that come with it, were necessary to finding the cause, and solution, to the problem at Seascape Sur.

On March 4, 2004, City staff televised the Seascape Sur storm drain line for maintenance purposes. The video showed a significant amount of sediment accumulation at the end of the pipe coming from the Beachwalk Business

Complex. Staff met with the Beachwalk property management and mandated that they clean the sediment from the line. The Beachwalk management complied with our request and immediately cleaned the pipe, and City staff supervised to ensure all BMPs were used and abided by at all times.

Laboratory results were still coming back consistently high, so the City decided to take on the cost of completely cleaning the storm drain pipe with the hopes that it would remove any residual bacteria that may be contributing to the problem. The problem the City faced was that this had never been done before, and the dimensions of the pipe made it very difficult to develop a plan of attack. The pipe starts at the curb inlet on Sierra Avenue, then travels completely underground and slopes downward until it empties out onto the beach. The distance from the street to the outfall is approximately 550 feet and dips to 30 feet below the surface, making access very difficult. The City was able to gain access from the neighboring condominium complex to place a Vactor truck to ensure that no excess water would escape containment and empty onto the beach. The project took 5 days to complete (ending on Friday, May 7, 2004), with City staff working with its private contractor, and cost approximately $10,000. The City removed 4 cubic yards of sediment from the pipe, and used over 5,000 gallons of water. The City was confident that the next lab results would come back spotless.

On the following Monday (May 10, 2004), City staff received a phone call from the County of San Diego Department of Environmental Health advising them that samples they took in the receiving water adjacent to the Seascape Sur outfall had failed AB 911 standards. It appeared that all the effort and money spent to clean the pipe had actually made it worse. However, Staff immediately began an IC/ID investigation and discovered that an adjacent condominium complex had a sewer spill that weekend and raw sewage had entered into the Seascape Sur storm drain. City staff was relieved that they found the cause of the high bacteria, but highly disappointed that all of their work, time, and money had been wasted by a small sewer backup.

Because the sewage was traced back to a private lateral, the City was determined to put the pressure on the condominium complex to clean the pipe again. Staff met with the HOA representative and a deal was worked out to have the pipe cleaned again, at the HOA's expense. Additionally, the City took this opportunity to once again educate the HOA and wrote an article regarding the proper handling and disposal of grease for the HOA's monthly newsletter. The

City then set the HOA up with a plan of attack and supervised the process. Staff worked with the Regional Water Quality Control Board to allow the City to use a small concentration of bleach mixed with the water to make sure that the pipe was completely sterilized at the end. This cleaning was done on September 24, 2004.

12.2.8 Progress in FY 04/05

The results of the cleaning performed on September 24, 2004 proved to be very successful. The bacteria levels were reduced significantly and the City hoped that the sterilization would be a permanent fix. However, the results in the following few months showed that the bacteria was slowly increasing back to its historical levels, further frustrating City staff. This may be due to City staff's worst fear that the dip in the pipe could be harboring and resulting in re-growth of bacteria that may enter by way of decomposing organic debris and/or illegal dumping.

Since this did not permanently solve the problem, the City continued to explore other options. In March 2005, the City was discussing the situation with its contract lab, Weston Solutions, and jumped at the opportunity to participate in a pilot study aimed at refining a new lab analysis that would potentially categorize the generic coliform and enterococcus bacteria indicators as deriving from human or animal origins. This would be an extremely significant discovery because the City could further identify where the bacteria was coming from, human (IC/ID) or from animals (dogs, possums, raccoons, etc.), to help direct what steps to take in the future. The City could further refine its source identification and, in theory, stop wasting limited resources on sources that don't exist.

The pilot program is completed; however, the results did not come back revealing anything substantial. Only one sample came back positive for human bacteria (and this was somewhat inconclusive), and samples collected after this positive result all came back negative. Therefore, the City concluded with relative certainty that the source of the bacterial contamination is not human. This one positive result may be caused by a single illegal dumping occurrence or by laboratory error. The resulting negative results show that there is not a continuous inflow of sewage, as would result if there were an illegal connection. Although the pilot program is complete, one early, important conclusion would be

that the bacteria is not coming from human origins, which would allow the City to eliminate this from source identification and focus its efforts on non-human sources.

12.2.9 Special Pilot Program FY 07/08

The City's lab (Weston Solutions) offered their services to the City for a special pilot program during FY 07/08. On May 30, 2007 Weston staff met with City staff to investigate the surrounding areas to see if they could detect anything that may be contributing to the high bacteria levels adjacent to the east catch basin. Weston has performed similar investigations in other cities with positive results. They were very interested in finding the source for the City, as we have been partners now for years on this. The results were very interesting and reconfirmed the City's belief that there is substantial re-growth occurring in the pipe as the bacteria results were much lower in the catch basins than at the outfall. The results are as follows:

Table 12-2 Results from Weston Solutions Pilot Program

	East Side Catch Basin (MPN/100mL)	Outfall (MPN/100mL)
Total Coliform	700,000	16,000,000
Fecal Coliform	80	50,000
Enterococci	41	483

The City and Weston Solutions partnered for a unique pilot study with the hopes of finally determining the source of the bacteria. The specialized studies were conducted to further analyze a unique phenomenon called "pseudofluorescence." This phenomenon first was detected in some samples from Seascape in the summer of 2007, when using the Enterolert method resulted in some false positives, or "pseudofluorescence." The lab noticed that the tests began to increase in frequency, and brought it to the attention of City staff after the March 31, 2008 samples were analyzed. The City and Weston then developed a plan to determine why this phenomenon was occurring, and if this could bring us any closer to solving the mystery.

Starting on April 30, 2008, Weston began testing the samples using the IDEXX method (SM 9223B) side by side with the Multiple Tube method (SM 9230B) for Enterococci in order to determine if the different methods yielded different results. Parallel analyses were carried out only on the outfall samples, as the

paired ocean samples never exhibited pseudofluorescence. The following are the results:

Table 12-3 IDEXX and Multiple Tube Results

Date	IDEXX Results (MPN/100mL)	Multiple Tube Results (MPN/100mL)
4/30/2008	<10	170
5/29/2008	<10	300

Analyzing the results, it is easy to confirm that something is causing interference with the IDEXX method. Because of this, PCR analyses were also performed, with results ranging between 1,000-10,000 (PCR includes viable and non-viable cells, as it only looks for specific DNA markers, regardless of cellular viability), which validates the Multiple Tube results by showing a definite presence of the target bacteria.

There is some concern that detergents may be the cause of the interference and pseudofluorescence. Enteroalert (IDEXX) analysis from both months displayed pseudofluorescence wells, so both were tested for detergents using an MBAS kit. The results are as follows:

Table 12-4 MBAS Results

Date	MBAS Results (ppm)
4/30/2008	15
5/29/2008	25

The sample taken on May 29th, 2008 had a larger number of pseudofluorescent Quantitray -2000 wells, which seems to confirm the relationship between pseudofluorescence and the amount of detergent in the sample.

As a result of this pilot study, an official method change for enterococcus was instituted beginning with the samples taken on June 28th, 2008. Using the Multiple Tube method, MPN for enterococcus was determined to be 3,000 per 100mL, while results from Enterolert (performed as a continued comparison) were found to be 63 MPN/100mL, with a continued pseudofluorescent. In addition, continued upstream investigations will focus on detergents as the presence has been recorded a couple of different times.

The City will continue cooperating with Weston and their professional staff to

investigate this ongoing mystery until a resolution is found.

12.2.10 Timeline of Significant Actions

August 27, 2002- City staff distributed storm water brochures to all the businesses located in the Beachwalk complex. Staff toured the mall, visually inspected on site catch basins, outdoor floor drains, restroom facilities, and inspected several restaurants and discussed pollution prevention BMPs.

September 4, 2002- Based on feedback from the testing, staff spoke with the managers of Pacific Coast Grill, reviewed the storm water regulations, spoke about prohibited activities and distributed storm water brochures.

September 4, 2002- City staff and an employee from MEC conducted upstream investigation. A small outdoor floor drain contained brown, stagnate water with a very pungent odor. The drain cover was removed and the material was sampled. MEC called a few days later and reported that the results were consistent with the numbers for raw sewage for total and fecal coliform and *Enterococcus*.

September 18, 2002 - The Beachwalk storm drains were flushed out using clean, fresh water and the sludge was vacuumed out into a Vactor truck at Site 3. Results from follow-up samples indicated that a problem still existed.

October 24, 2002- Additional samples were taken to see if the problem had been eliminated. Results from the lab showed that the problem had not been solved. City staff continued to meet with property owners to pinpoint the source.

November 2002- The City installed a specialized catch basin filter unit that is designed to catch all debris (trash, organics, etc.) from the street before it reached the MS4 system. It also has specialized bio-filter rolls to filter out the hydrocarbons.

November 13, 2002- a semi-permanent cap was placed on the floor drain that seemed to be the source of the bacteria. A follow-up sample was scheduled for 30 days.

December 13, 2002- Samples were taken after the cap was removed and preliminary results indicate that the problem has not been resolved. More

extensive investigation was ordered.

December 14-31, 2002- All property drains were cleaned and televised.

January through June 2002- Increased monitoring and sampling through Coastal Monitoring Program to try and determine if the steps taken previously had successfully remedied the problem. An intensive educational program to the HOA's and the Business Complex was also implemented to assure compliance under the Permit.

March 4, 2004- Mandated and required the Beachwalk Business Complex to clean out storm drain system that leads to the City's Seascape Sur storm drain due to accumulation of debris (sediment, trash, etc.).

May 5, 2004- Completed cleaning of entire Seascape Sur storm drain line from Sierra Avenue to the beach outfall. A sewer spill occurred that following weekend from a private lateral connected to the Seascape line.

May 20, 2004- Wrote two articles for *Seascape Sur News,* the monthly newsletter distributed to the Seascape Sur condos, educating the residents on activities that may reduce bacteria that could be a possible source of the problem at Seascape Sur outfall. The first article was titled, "Sewer Clean-Outs," and it describes the proper way to dispose of grease (not down the sink) to prevent sewer blockages and spills. The second article was titled, "Walk Dogs Off The Property and Clean Up After Them".

September 24, 2004- Completed cleaning again with the addition of bleach to counteract the sewer spill that occurred on May 5, 2004. Access issues during the summer months prevented the cleaning from occurring earlier.

November 2004- Samples showed a dramatic decrease in bacterial indicators, proving the cleaning was successful. However, future results showed the bacteria increasing back to historically high numbers.

March 1, 2005- Started participating in contract lab's pilot program to differentiate bacteria into human and animal origins.

May 30, 2007 – Conducted a thorough investigation with our lab (Weston) to

detect any possible sources of the ongoing pollution (see below). Results of the investigation revealed that bacteria levels were in fact higher at the outfall than the catch basin; further reinforcing what City staff believes is a structural deficiency in the pipe that is leading to bacteria re-growth.

March 30, 2008 – Initiated a pilot study with lab to determine if the correct analytical analysis was being conducted

June 18, 2008 – Installed a catch basin inlet guard to prevent organic material from entering into the catch basin on the east side of Seascape Sur storm drain. This was done to hopefully prevent the organic matter from decomposing inside the storm drain pipe and providing an area for bacterial re-growth.

August 10, 2008 – City contracted a company to place concrete inside the catch basins to fill in a one inch gap at the bottom where stagnant water would sit. The City thought this might be contributing to the bacteria load at the end of the pipe. By filling in the gap, water and organic matter would not have a place to stagnant and harbor bacteria.

September 29, 2008 – City hired a contractor to clean the entire Seascape Sur storm drain from street to outfall.

August 30, 2008 – City entered into a pilot project with a company that installs catch basin curb inlet screens to prevent leaves and debris from entering the catch basin. Screen was installed on east side catch basin to prevent organic debris from entering the catch basin and rotting inside the pipe.

October 2, 2008 – City entered into a pilot project with a different company that installs catch basin curb inlet screens to prevent leaves and debris from entering the catch basin. Screen was installed on west side catch basin to prevent organic debris from entering the catch basin and rotting inside the pipe.

12.2.11 Where We Are Now

As listed above, the City is participating in two unique pilot programs at Seascape Sur. The City has installed two different catch basin debris screen BMPs at the east and west catch basins directly upstream from the Seascape outfall. The goal of the debris screens is to prevent organic debris and trash from

entering the pipe and rotting, producing a perfect food source for bacterial re-growth in the sag in the pipe. The BMPs were installed in August and September 2008, with the intent to monitor the bacteria results at the outfall after a year.

As is shown in the following table, the bacteria results have decreased when compared to previous years, with the exception of December 2009 and January 2010. This may be attributable to the new BMP installations upstream or the continuous educational efforts of City Staff. Whatever the case may be, the results are still not acceptable to City Staff or the community. It cannot be emphasized enough that the outfall does not seem to impact the receiving water at all; however the City is still focusing its efforts on eliminating the source of the bacteria in the very near future.

Table 12-5 Seascape Sur Results, September 2009 to June 2012

Date	Total Coliform (MPN/100mL)	Fecal Coliform (MPN/100mL)	Enterococcus (MPN/100mL)
9/22/09	80,000	23,000	3,000
10/26/09	130,000	9,000	2,000
11/16/09	600,000	230,000	4,000
12/21/09	9,000,000	110,000	600
1/11/10	9,000,000	17,000	9,000
2/16/10	40,000	20,000	<200
3/15/10	240,000	11,000	220
4/20/10	140,000	20,000	200
5/10/10	210,000	20,000	500
6/23/10	160,000	160,000	<20
7/26/10	900,000	23,000	700

8/16/10	23,000	<2,000	1,100
9/13/10	3,000,000	1,300,000	13,000
10/28/10	300,000	<20,000	2,100
11/2/10	170,000	<2,000	3,000
12/6/10	11,000	200	200
1/24/11	>1,600,000	5,000	22,000
2/7/11	8,000	400	2,300
3/14/11	220,000	2,000	40
4/11/11	11,000	400	<200
5/16/11	2,200	1,100	40
6/21/11	160,000	160,000	<20
7/12/11	>1,600,000	23,000	90
8/15/11	1,600,000	17,000	360
9/19/11	900,000	30,000	2,400
10/14/11	23,000	2,000	800
11/15/11	80,000	13,000	2,400
12/5/11	80,000	<2,000	<20
1/9/12	110,000	800	40
2/13/12	50,000	4,000	70
3/12/12	300,000	<2,000	550

4/3/12	30,000	<200	<20
5/7/12	30,000	<200	60
6/18/12	>1,600,000	5,000	16,000

The City continues to struggle with this ongoing situation, although has made some improvements to the bacteria levels during this reporting period. The budget continues to include money for cleaning the line once per year, but this is merely a temporary fix to the problem, whereas the City is looking for a permanent solution. The one positive to take from this is that the discharge is not affecting the water quality of the receiving water (Pacific Ocean) yet, there is no guarantee that this will not change in the future. Here are some options the City is now looking at to hopefully solve this reoccurring problem:

Repairing sag in the outfall pipe: This option is being actively researched as re-growth in the pipe is now the most suspected culprit. The City's Public Works Operation Manager is researching this option with other City Staff. In addition, City Staff is looking into other options such as re-lining the pipe or "pipe-blasting", which may help reduce the sag and improve flow through the pipe.

Blocking off connections from adjacent residential complexes and making them drain to the street so that discharge can be sampled: This option is seen as a last ditch effort, as it would be very expensive and politically challenging. This would only be considered if the outfall started affecting receiving water quality.

Installing permanent BMP such as a low flow diverter: This option is also seen as a last ditch effort as it would be expensive and has not been fully researched to check the feasibility. City engineers would have to check the locations of the sewer main and the capacity to determine if this would be feasible. Funding may be available through grants for water quality, but again this option is a long term effort. City staff will continue to look into various funding options, one being the recent grant that allowed the City of Imperial Beach to install a low-flow diverter. Staff will monitor that project closely and may seek the same grant to place a diverter in this location.

During this reporting period, the City partnered with the San Elijo JPA (the local WWTP) to apply for grant funding to assist with the costs associated with

installing a low-flow diverter. The grant is through the IRWM Proposition 84 and includes, among other local water quality improvement projects, the City's Seascape Sur Low-Flow Diverter project. The City's grant application received the highest ranking by the IRWM review board. It is currently included in the Phase 1 application process that will be submitted to the State for approval. The City is anticipating receiving $100,000 to install a Low Flow Diverter. This project and funding have not been finalized yet and will be reported on in future reports.

12.2.12 Future Activities

The City is committed to finding a solution to the bacteria problem at Seascape Sur, or at least installing a permanent treatment control BMP to redirect the flow to the sewer system. During the last reporting period, the City installed and monitored additional upstream BMPs at the catch basins leading into the problem pipe. This activity seems to have slightly improved the bacteria levels at the outfall and has encouraged City Staff that some of their efforts seem to be paying off. As discussed above, the City is now looking at other structural options with its engineering staff to hopefully find another angle in this seemingly unending battle, and also applied for a grant to help with funding a Low Flow Diverter.

The City has committed to setting money aside in its CIP budget to undertake some major projects to help solve the problem. As stated in the Fiscal Analysis Chapter, the FY 12/13 budget has $5,000 set aside specifically for the Seascape Sur storm drain cleaning. The City is committed to thoroughly cleaning the pipe annually if need be, or until a long-term solution is found. The City is currently investigating other structural options and may find it better financially to undertake a large CIP project than continually spending $5,000 a year for a temporary fix. However, the location and depth of this particular pipe make it very difficult to work on, so it is taking some time to develop a sound engineering plan to fix the pipe or divert the flows. If this is the option the City ultimately takes, it will be very prudent to take the time to do it correctly, so the City is committed to taking the time to develop a plan to ensure its effectiveness.

Additionally, the City actively monitors the outfall pipe and all surrounding areas for any unusual occurrences, and the Marine Safety Department will continue to notify the Engineering Department whenever there seems to be unusual spikes or odors coming from the outfall pipe, as one of the lifeguard towers is located directly in front of the outfall (during summer months). Lastly, City Staff will

continue to work with the neighboring condominium associations to educate the residents as well as perform inspections of upstream businesses.

12.3 Summary

The City has thoroughly utilized the results from its DWMPs and Coastal Monitoring Program during the last several years to identify and attempt to eliminate the source of bacteria that was identified through testing and upstream investigations. With the efforts of City Staff, and the cooperation of the Beachwalk property owners/managers and neighboring condominium complexes, the sources of the bacteria have almost been solved. Unfortunately, with the structural deficiencies (the sag) in the pipe, it may only take a small amount of bacteria entering the pipe to remain in the sag and promulgate (re-growth). Fortunately, the elevated bacteria levels do not seem to be affecting the receiving waters (no receiving water exceedances in the past five years) yet, but the City wants to take care of the situation before it becomes a problem. Therefore, the City is currently examining other options such as re-lining the pipe, “pipe-blasting” or installing a low-flow diverter.

CHAPTER 13
Non-Emergency Fire Fighting

CHAPTER 13: NON-EMERGENCY FIRE FIGHTING

In accordance with Permit section J.3.a.(3)(l), this section of the report describes the City's efforts to control Non-Emergency Fire Fighting events. The City understands that the health and safety of its residents supersedes the storm water regulations when it comes to emergency situations, such as a fire. However, for non-emergency fire fighting activities such as routine maintenance and training, the release of water into the City's MS4 is not permitted. Therefore, the City's Fire Department trains at two special facilities, one in San Marcos and the other in Rancho Santa Fe. Both facilities have BMPs installed to properly handle the excess water, and comply with all regulations of the storm water Permit. ***No training exercises that involve water are conducted within the City limits.***

Routine maintenance of the City's fire trucks and apparatus is essential to ensuring public health and safety, as all equipment must be in top condition and functioning properly during an emergency. Most of the time, this maintenance is conducted onsite at the Fire Department. To handle the excess water, the Fire Department staff redirects the flows onto a large slope of vegetation behind the Fire Station. Staff takes extra precaution to ensure no water leaves the site. Also, the washing of trucks and apparatus occurs inside the large bays, which is plumbed directly to the sewer system.

Non-Emergency Fire Fighting is also discussed in the Municipal Component.

CHAPTER 14
JURMP Revisions

CHAPTER 14: JURMP REVISIONS

In accordance with Permit section Permit sections I.1.b. and J.3.a.(3)(m), this section of the report describes any revisions that occurred to the City's JURMP.

As reported in last year's Annual Report, the City made multiple revisions to the JURMP based on comments by RWQCB staff after initial review of the new document. Those revisions have been made and are currently included in the City's JURMP.

Tables 5.1 and 5-2 have been updated based on recommendations by the San Diego Coast Keeper. The City is confident that this newly formatted table complies with the requirements of the permit.

CHAPTER 15
Conclusions and Recommendations

CHAPTER 15: CONCLUSION AND RECOMMENDATIONS

15.1 Conclusion

During the FY 2011/2012 reporting period, the City was able to successfully implement the many requirements of the Permit. Although the City has been required to have a storm water program under previous Orders issued by the RWQCB, this new Permit greatly expanded the types of activities and documentation efforts required of the cities. This was the third full year of implementation under Permit No. 2001-07 and the second full year of JURMP implementation. The City is very satisfied with the progress of the new program and is actively developing the regional large scale programs such as the HMP, LID, SUSMP and regional educational programs.

The City continued its “team approach” in implementing the JURMP by integrating the evolving requirements of the Permit into specific tasks that each member would be responsible for implementing in their respective departments. The Assistant Civil Engineer is responsible for bringing the group together and updating the respective departments on any changes that may affect their respective daily activities. Additionally, the Environmental Programs Manager is responsible for ensuring that all requirements of the Permit are being addressed and satisfied. This collaborative method allowed the City to more rapidly modify procedures and handle the increased workload quickly and efficiently, especially with a small staff with lean resources.

The City’s accomplishments during this reporting period provide evidence of the City’s pro-active approach to improving storm water quality. The requirements under Order 2001-01 expanded the previous Order (90-42) significantly and have altered many of the daily routines of Staff at the City. In addition, the City is actively working on developing and implementing the new programs to satisfy Permit Order No. 2007-0001, including, but not limited to, modifying the Municipal Code for the new model SUSMP, LID and HMP requirements, updated the City’s JURMP and implementing the new Coastal Monitoring Program.

During the next reporting period, the City expects to build on the accomplishments of FY 11/12, and determine the most effective and meaningful program activities as to their impact on water quality (pollutant specific)

collaboratively with the other Copermittees, and implement the approved program assessment strategy. The City is confident that it is in compliance with the goals set out under Permit No. 2007-0001. These include but are not limited to:

- Minimum commercial, industrial and construction inspections
- Minimum municipal inspection and maintenance of BMPs
- Implementing comprehensive educational and public participation component
- Developing Hydromodification Plan
- Implementing SUSMP Model update
- Developing Low Impact Development (LID) program
- Minimum inspection and street sweeping frequencies
- Post Construction BMP verifications and inspections

The City eagerly anticipates working collaboratively with the other Copermittees in further developing and implementing these significant programs during this Permit cycle. The City is confident that the Copermittees will continue to develop and implement these programs to meet the requirements and goals of the new Permit. The City understands that all parties' involved (Copermittees and RWQCB staff) are in this together to improve the discharge and receiving waters in the region and we will continue to support and work collaboratively with all parties to accomplish this goal.

15.1.1 2011/2012 Accomplishments

The following is a small list of notable accomplishments achieved during the 2011/2012 reporting period. All of these activities are described in more detail throughout this report. They are the following:

- Continued development and implementation of new SUSMP, LID and HMP programs.

- Continued implementation of new BEACH database to track building permits, post-construction BMP inspections, and plan check comments.

- Implementation of post-construction BMP verification and maintenance tracking system.

- Development of stakeholder cooperation and partnerships with key organizations such as the Santa Fe Irrigation District, Solana Center and Kids Korps.

- Upgrades to web portal "Green Flash" to house all of the City's environmental programs and information.

- Development of relationship with local Solana Beach School District to foster open communication for environmental education in local schools.

- Continued work with the Clean and Green Team, consisting of active environmentally conscientious community members to develop and implement environmental programs and education.

- Continued educational outreach at all local events, and conducting cleanups and community bulky-item pickup days.

- Continued implementation of aggressive and convenient HHW program to provide easy and efficient HHW pickup and proper disposal.

- Continued extensive landscape and irrigation educational series for public and private landscapers. The classes were given in both English and Spanish and taught the participants proper landscaping and irrigation practices.

- Participated in regional workgroup to develop new mobile sources program.

- Continued to conduct specialized Staff trainings utilizing an outside consultant to target priority educational areas.

- Lined approximately 2,600 linear feet of sewer pipe throughout the City to help prevent wastewater infiltration.

- Staff re-inventoried the commercial and industrial sites throughout the

City.

- Staff continued to outsource the commercial/industrial facility inspections to a specialized contractor that inspected 100% of all facilities, regardless of priority.

- Staff inspected 100% of all municipal inspections.

- Implemented a single-use plastic bag ban ordinance to reduce liter and waste in the City.

- Participated in Board held focused workshops to discuss the new permit.

15.2 Recommendations

Since the new Permit was adopted in January 2007, FY 2011/2012 was again dedicated to developing new programs and fine tuning existing programs to comply with the new requirements. The City is committed to working cooperatively with the other Copermittees to develop and implement the new required programs to provide a consistent and recognizable message for the region. However, the City still must develop jurisdictional specific programs to address the specific pollutants of concern and their respective sources. In an effort to implement a successful and meaningful program, the following are recommendations to improve the City's storm water program for FY 12/13:

- Continue to educate new and existing City Staff to ensure compliance in with evolving storm water regulations.
- Complete the special investigation to uncover and eliminate the root cause of reoccurring problems upstream from Seascape Sur Outfall, or install a permanent treatment control BMP to eliminate the ongoing bacteria exceedances at the outfall.
- Evaluate staff needs and program responsibilities and continue to research the possibility of utilizing outside consulting services.
- Continue implementation of SUSMP, LID and HMP requirements and ensure all plans are in compliance.
- Continue implementation of the new JURMP program plan and implement measures to comply with Permit requirements

- Increase the education of residential sector which is a main focus of the new Permit. These programs will be addressed cooperatively at the regional level, but the City is committed to helping develop the materials to be distributed to our residents.
- Continue to collect and analyze monitoring data to establish a long-term assessment of the City's storm water quality.
- Develop additional industry specific educational materials to distribute to the community.
- Develop and implement pollutant specific activities to address high priority COCs (Constituents of Concern).
- Make any changes necessary to comply with the new permit if adopted.

APPENDICES

APPENDIX A: CONSTRUCTION BMP BROCHURE

CONSTRUCTION SITES

In 1972, the Environmental Protection Agency developed regulations to control water pollution. As a result, the National Pollutant Discharge Elimination System (NPDES) Permit was created. NPDES permits are issued to municipalities as well as construction sites. In addition to complying with local regulations, which are governed by our municipal NPDES permit, you may be required to obtain a permit through the State of California under the State General Construction Permit (99-08-DWQ). All construction sites over one acre are required to obtain coverage under this permit.

Construction sites can contribute pollutants such as sediment, metals, and chemicals, to our local creeks, rivers, lakes, lagoons, and ocean. These pollutants make their way down our streets and into storm drains, eventually discharging to the nearest body of water.

All construction sites are required to implement Best Management Practices (BMP) to prevent storm water pollution. This brochure is intended to assist your construction site in understanding BMP requirements.

Each municipality has one or more persons dedicated to ensuring that all construction sites are in compliance with state and local storm water control regulations. Contact your local municipality for further information.

RIGHT-OF-WAY PERMITTING

We understand that there are times when space on construction sites is limited. If at any point, you (as a contractor or subcontractor) need to use the public right-of-way in order to work or store materials, you must apply for a special permit. This permit allows you to use the City's right-of-way areas, and describes what is required to prevent illegal contaminants from entering local storm drains. For more information or to obtain a permit application contact your local jursidiction.

INSPECTION AND ENFORCEMENT PROGRAM

Each jurisdiction has established an enforcement program to ensure that all businesses operate in compliance with all appropriate storm water laws and other City requirements. Contractors, site supervisors and property owners can be held responsible for violations, which may lead to a civil penalty of up to $10,000 per day and/or reimbursing the local jurisdiction for all expenses associated with clean up.

BEST MANAGEMENT PRACTICES

Construction materials such as paint, dirt and trash often find their way into our storm drains, polluting the environment and jeopardizing our creeks, rivers, lakes, lagoons, and ocean.

The NCSWP is working with contractors to implement what are known as Best Management Practices (BMPs) on all construction sites. That is, methods used to keep pollution out of our storm drains and off public property, such as sidewalks, streets, parkways and alleys. Carrying out and maintaining these BMPs on the construction site is critical to protecting our ocean and bay.

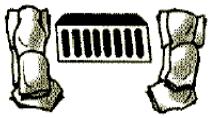

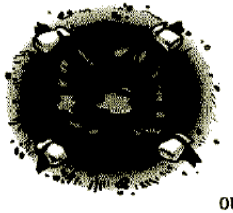

The following is a list of BMPs and pollution prevention measures that shall be implemented at all construction sites:

1. **Conduct daily site cleanings.**
2. **Develop spill response and containment procedures.**
3. **Educate employees and subcontractors about BMPs.**
4. **Develop an erosion control plan for wind and rain.**
5. **Regularly maintain all BMPs at project site.**

A Pollution Prevention Guide for the Construction Industry

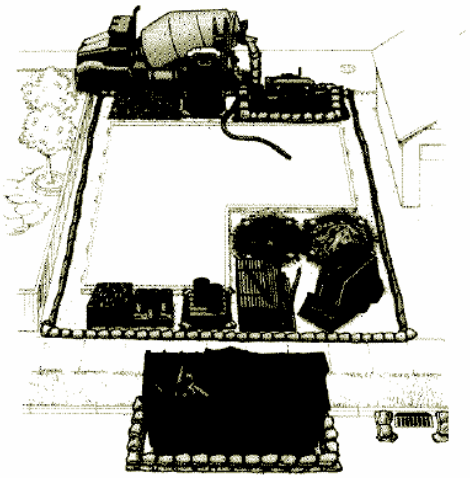

North County Storm Water Program

Carlsbad • Del Mar • Encinitas • Oceanside • San Marcos • Solana Beach • Vista

Only Rain in the Storm Drain

Water Quality Regulations for Construction Sites

Dear Contractor,

The North County Storm Water Program is a collective of jurisdictions in northern San Diego County working together to protect our watersheds. We believe that reducing pollution is critical to maintaining our communities' way of life.

It is our hope that this brochure will help you identify activities that are recognized to cause water pollution and implement appropriate Best Management Practices (BMPs) to minimize their impact. By providing you with these tools, we hope to make your job easier while keeping our waterways clean.

Each jurisdiction will be inspecting their construction sites to ensure the protection of water quality. We look forward to seeing the BMPs presented in this brochure implemented at your sites.

Together we have the ability to preserve and improve the quality of life in our communities.

Sincerely,

The North County Storm Water Program

Contact Phone Numbers:

City of Carlsbad
760-602-2799

City of San Marcos
760-744-1050

City of Encinitas
760-633-2787

City of Del Mar
858-755-9313

City of Oceanside
760-435-5800

City of Solana Beach
858-720-2470

City of Vista
760-726-1340

APPENDIX B: STORM WATER PLAN CHECK COMMENT FORM

CITY OF SOLANA BEACH
ENGINEERING DEPARTMENT
STORM WATER PLAN CHECK COMMENTS

Project: _____ Address: _____

☐ Construction phase **Erosion Control** shall be shown on the permitted plans, such as silt fences, gravel bags, de-silting basins, slope protection and entrance controls. **Best management practices (BMP's)** shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during construction activities. Erosion prevention shall be emphasized to keep sediment on site during excavation and grading activities. Sediment controls such as mulch, jute netting and straw blankets shall be used as a supplement to erosion control for keeping sediment on site.

- **Submit Storm Water Management Plan** (attached)
- **Add the following note to plans**: "**EROSION CONTROL:** Best management practices shall be developed and implemented to manage storm water and non-storm water discharges from the site at all times during excavation and grading activities."

☐ The Applicant shall demonstrate that the **project does not increase storm water runoff** or peak discharge from their property. For example, add a storm water retention and infiltration feature such as a depressed landscape area or below ground drywell using course rock (1.5" to 2.5") or a pre-fabricated chamber. The amount of retention volume should be at least equal to 0.60 inches (0.05 feet) times the added impervious area. This should be designed to avoid runoff damage to downstream properties, such as not concentrating runoff where it was previously not concentrated. (For 5,000 SF or more of added impervious area, use County of San Diego Hydrology Manual)

☐ Storm Water and Non-Storm Water Runoff Control. Post-development measures that **reduce pollutant discharges from the site** shall be shown on the permit plans. For example, maximize permeable areas (landscaping, driveway grass strips, gravel paths, concrete pavers on sand) to allow runoff seepage into the ground and drain impermeable surfaces (roofs, hardscape, driveways) to permeable areas (i.e. planted areas) and other approved pollutant treatment BMP's.

- Is runoff from hardscape areas routed over natural treatment areas before draining off site?
- **Show on the plans** where hardscape and roofs drain to.

- **Show BMP's** on the plans (grassy swales, landscaping, infiltration pits, pervious pavements, gravel paths, etc.).
- The volume of treatment should be at least 0.60 inches (0.05 feet) times the added impervious area.

APPENDIX C: BUILDING PLAN CHECK ROUTING FORM

CITY OF SOLANA BEACH
635 S. Highway 101, Solana Beach, CA 92075
(858) 720-2440
APPLICATION TRACKING FORM

Plancheck No.: _____
Received by: _____
Date:

Site Address _____ Suite # _____
Site Business Name _____ APN _____
Project/Property Owner's Name _____
Contact Person _____ Phone # _____
Address _____ Fax # _____
Project Description _____ E-Mail _____
Discretionary Permit Applicable? _____ Sq. Ft. _____
Estimated Building Valuation? _____ Estimated Grading Required? _____
Is/will the building equipped with fire sprinklers? ☐Yes ☐No Is the property on a septic system? ☐Yes ☐ No
Is there an existing swimming pool &/or spa on the property? ☐Yes ☐ No **If "yes," see the Pool & Spa note below**

THE FOLLOWING "CHECKED" ITEMS MUST HAVE WRITTEN APPROVAL PRIOR TO PERMIT ISSUANCE. APPROVALS FROM THE PLANNING, ENGINEERING, FIRE, HEALTH DEPARTMENTS, AND THE AIR POLLUTION CONTROL DISTRICT MAY ALSO BE REQUIRED PRIOR TO FRAME AND/OR FINAL INSPECTION AND OCCUPANCY (INDICATED ON "BLUE" CARD). IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE INDIVIDUAL DEPARTMENT(S) AT THE NUMBERS SHOWN.

CITY DEPARTMENTS

☐ **PLANNING / ZONING**.....**858-720-2440**
- ☐ O.K. for Plancheck Only. By _____ Date _____
- ☐ Fees Due. ☐ Park Fees ☐ Public Facilities Fees ☐ Public Arts Fee
- ☐ Fee Payment Required Prior to ☐ Permit Issuance ☐ Final Inspection
- ☐ Height Certificate Required prior to Requesting Frame Inspection.
- ☐ Approval Req'd prior to: ☐ Permit ☐ Frame Insp ☐ Final Insp
- ☐ Approval required prior to ☐ Frame ☐ Final Inspection
- ☐ Project shall comply with Wildland Urban Interface Standards (WUI)
- ☐ O.K. to Issue Building Permits _____

☐ **ENGINEERING / SANITATION**.....**858-720-2470**
- ☐ O.K. for Plancheck Only. By _____ Date _____
- ☐ Permits Req'd ☐ Dedication Req'd ☐ Fees Req'd.
- ☐ Approval required prior to ☐ Frame ☐ Final Inspection (Sewer, Plancheck, In Lieu)
- ☐ See attached form for Storm Water BMP'S
- ☐ O.K. to Issue Building Permits _____

☐ **ENVIRONMENTAL**.....**858-720-2477**
- ☐ O.K. for Plancheck Only By _____ Date _____
- ☐ See attached form for Storm Water comments
- ☐ WMP Required Prior to ☐ Permit Issuance ☐ Final Inspection
- ☐ Post Construction BMP Inspection Required:
  - ☐ During Construction ☐ Prior to Final Inspection
- ☐ O.K. to Issue Building Permits _____

☐ **FIRE PREVENTION**.....**858-720-2410**
- ☐ O.K. for Plancheck Only By _____ Date _____
- Approval required prior to ☐ Frame ☐ Final Inspection
- ☐ O.K. to Issue _____

☐ **POOL & SPA SAFETY ENCLOSURE & SAFETY FEATURES**
Effective 1/1/07, AB 2977 requires all existing pools and spas shall comply with current State mandated enclosure & safety features.

AGENCY APPROVALS

☐ **SCHOOL FEES**
(Obtain signature on the attached forms)
Solana Beach Elementary &
San Dieguito Union H.S. District.....**760-753-6491**

☐ **HEALTH DEPARTMENT**
- ☐ Health Regulated Business
- ☐ Hazardous Materials Management.....**619-338-2222**
  1255 Imperial Avenue, San Diego 92138-5621
- ☐ Final Approval Required
- ☐ Septic Approval Required **760-471-0730**
  151 Carmel St, San Marcos 92078

Approved by _____

☐ **AIR POLLUTION CONTROL DIST.** ..... **(858) 586-2600**
(Obtain stamp and signature on APCD Questionnaire)
10124 Old Grove Rd., San Diego CA 92131

☐ **WATER AND SEWER**
(Obtain signatures on attached forms)
- ☐ Santa Fe Irrigation District.....**858-756-2424**
- ☐ Solana Beach Sanitation District **858-720-2470**

☐ **CALIFORNIA COASTAL COMMISSION**....**619-767-2370**
Call for an appointment

☐ **ASSESSOR'S COPY OF PLANS**
At permit issuance, provide a third copy of Title Sheet, Plot Plan & Floor Plan (per Senate Bill 493).

☐ **OWNER/BUILDER AFFIDAVIT AND/OR CONTRACTOR INFORMATION**

☐ **SDG&E WORK ORDER**..... **(800) 411-SDGE**
For new / relocated gas & electric meters

_____ _____
Signature of Applicant Date

F:/Common/UpdatedApplications/Tracking Sheet Eff 09/08

APPENDIX D: RAINY SEASON REMINDER (SAMPLE)

October 15, 2008

XXXXXXXXXXXX
XXXXXXXXXXXX
Solana Beach, CA 92075

RE: EROSION CONTROL RESPONSIBILITIES FOR CONSTRUCTION SITES

Dear Owner and/or Contractor:

As the rainy season begins, this is a reminder to make sure that your project site at **XXXXXXXX** is in compliance with the City of Solana Beach's Storm Water Management Section 13.60 and Excavation and Grading Ordinance Section 15.40. Your responsibility as owner/contractor is to control and reduce pollutants in runoff from all your construction activities. You are required to comply throughout the year, but the "rainy season" requires special attention and practices.

Since we are now in the official "rainy season," you shall implement all the required measures in the Storm Water Pollution Prevention Plan or Erosion Control Plan for your project site. Your responsibility to implement these measures is not only to comply with the City of Solana Beach's Ordinances and Jurisdictional Urban Runoff Management Program (JURMP), but also to comply with the Regional Water Quality Control Board Permit Order 2007-0001.

At a minimum you must implement these practices on all disturbed areas during the rainy season:

- Cover and stabilize all exposed soil, particularly on slopes, in order to prevent erosion.
- Employ any erosion control measures that are adequate to prevent erosion.
- Implement Best Management Practices (BMPs) to reduce the tracking of sediment onto public or private roads.
- Conduct pre- and post-storm inspections of erosion prevention and control measures and determine whether they function properly; modify if necessary to improve effectiveness.
- Maintain all erosion prevention and control measures throughout the season and replace them as needed to ensure measures accomplish the task.
- Ensure that all site personnel are trained in erosion prevention and control techniques as well as in the requirements of the Statewide General Construction Storm Water Permit.

- Review, upgrade, and fully implement your site-specific Storm Water Pollution Prevention Plan consisting of Best Management Practices for all pollutants, including those other than sediment. The City of Solana Beach will be inspecting your project site for compliance. The California Regional Water Quality Control Board plans to conduct their compliance inspections jointly with the United States Environmental Protection Agency. Other agencies may inspect your site at will.

If you would like additional information on selecting appropriate BMPs, the City has developed a BMP Brochure that is available upon request. Failure to comply with the City's storm water regulations can result in enforcement actions, including stop work notices and fines.

If you have any questions, or require additional information, please contact me at (858) 720-2477.

Sincerely,

Danny King
Environmental Programs Manager
City of Solana Beach

APPENDIX E: PUBLIC PROJECT PRE-CON MEETING AGENDA

PRE-CONSTRUCTION MEETING
EL VIENTO AT GRANADOS AVENUE
SEWER, WATER AND STREET REALIGNMENT
&
LOMAS SANTA FE DRIVE SIDEWALKS
Bid 2012-04

May 3, 2012 – 1:30 pm

Introductions

Contacts

1. Contractor **Piperin Corporation**
   (760) 510-6747 office
   Craig Barry (619) 339-7875

2. City City of Solana Beach
   635 S. Highway 101
   Solana Beach, CA 92075
   (858) 720-2470 (Engineering Dept.)
   (858) 755-1782 (Engineering fax)

   Jim Greenstein – Project Manager (858) 720-2476
   Hector Ezquerro – Project Inspector (858) 354-8876
   Taryn Dunbar – City Inspector (858) 720-2487
   Steve Kerr – Public Works Operations Manager (858) 449-2630

3. Utilities Santa Fe Irrigation District – (858) 756-2424

Project Status: Notice to Proceed – pending contract
Start within 10 working days; Complete within 90 working days of start

Contract Amount: $365,870

Project Goals:
- Safety
- Community
- Quality
- Schedule
- Budget
- On-time completion

Contractor Requirements:
- Submit Names/Phone Numbers of Foreman/Emergency People
- Submit Names of Additional Subcontractors
- Construction Schedule - received

Page 1 of 2

Storm Water & Erosion Control

- Best management practices shall be used & maintained

Labor Compliance, Certified Payroll and Progress Payments

Public Notification: Contractor's responsibility (keep the public informed & keep the City informed) Section H, Part 1-M

- Advance notification of road closure
- Door hangers

Project Safety: Contractor's responsibility

- Traffic Control Plans – submitted and under review
    - El Viento & Granados
    - Lomas Santa Fe Drive

Inspection & Testing

- City will provide inspection; testing by City on-call consultant as needed.

Change Orders

- Notification must be in writing if there is a request for a change order or extra work.
- Work is not approved until change order is signed by the City Manager or the City Engineer. Authority to sign change orders is regulated by the municipal code based on the price of the change order. Project Manager and Project Inspector cannot approve change orders. Any work performed before a signed change order is issued is done at that the contractor's risk.

Submittals and Requests for Information (RFI) – submit to the city's project manager.

Operating hours

- 7 a.m. to 3:30 p.m. Monday thru Friday. Do not operate, start equipment or congregate near residential areas before 7 a.m. Any requests to modify these hours must be submitted in writing to the city.
- If the contractor wants to work on Saturday, the contractor must reimburse the city for inspection services. All requests for Saturday work must be submitted to the city by 5:00 pm on the Thursday before the work is to be performed.

Project Issues

- Power Pole relocation
- Sewer realignment
- Water main replacement
- Access to driveways, particularly on El Viento
- Lomas Santa Fe Sidewalks
    - Restriping

F:\Common\City Projects\El Viento Improvement Project\El Viento pre-con agenda.doc

Page 2 of 2

APPENDIX F: CIVIL PENALTY MATRIX

SOLANA BEACH
CIVIL PENALTIES MATRIX

The following factors will be considered in determining the amount of civil penalties from the Solana Beach Municipal Code 13.10.140 A. any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day** such a violation exists and will be assessed: (1) The seriousness of the violation (2) the duration of the violation; (3) the frequency or recurrence of the violation; (4) the history of the violation; (5) the Responsible Party's conduct after issuance of the Notice and Order; (6) the good faith efforts of the Responsible Party to comply; (7) the impact of the violation upon the community.

*** Criminal Penalties**

These factors are assigned to two categories, "**Environmental Significance**" and "**Compliance Significance**," in order to easily present them in a graphical form in the matrix chart.

Environmental Significance includes the following factor: Seriousness of the violation.

Compliance Significance includes the remaining factors: The duration of the violation, frequency or recurrence of the violation, the history of the violation, the Responsible Party's conduct after issuance of the Notice and Order; the good faith efforts of the Responsible Party to comply and the impact of the violation on the community.

Environmental Significance

Compliance Significance	Moderate	Major	Severe
Moderate	*NOV-$100	$100 - $200	$500
Major	$100- $200	$500	$1,000
Severe	$500-$1,000	$1,000	$1,000-Referral to Regulating Agency

* Notice of Violation

The list below gives examples of issues specific to storm water violations that could be considered under each of the factors.
Increased Penalties will be factored as Notice of Violation to Moderate, Moderate to Major or Major to Severe.
Decreased Penalties could be Severe to Major, Major to Moderate or Moderate to Notice of Violation.

Environmental Significance
Seriousness of the Violation

Relatively inert discharges (e.g., soil, sediment, cement residue, stucco residue**,** etc.) **[Moderate Environmental Impact]**

Moderate toxicity / moderate health threat discharges (e.g., cleaning products with no specific hazard, i.e. detergent, latex paint) **[Major Environmental Impact]**

Significant toxicity / significant health threat discharges (e.g., sewage, hazardous materials/wastes, etc.) **[Severe Environmental Impact]**

SOLANA BEACH
CIVIL PENALTIES MATRIX

Compliance Significance

Duration of Violation

Extent of discharge as determined by volume, area covered, how long it continued **[Greater Discharge Can Lead to Increased Penalty]**

Number of days the discharge remained unabated in the conveyance system **[Unabated Discharge Can Lead to Increased Penalty]**

Impact on the Community

Results in damage, degradation, or obstruction of the storm water conveyance system **[Can lead to Increased Penalties]**

Results in actual degradation of aquatic habitat in receiving waters **[Can lead to Increased Penalties]**

Results in actual impact on wildlife including benthic communities **[Can lead to Increased Penalties]**

Results in algal bloom, discoloration or odor in receiving waters **[Can lead to Increased Penalties]**

Discharge of constituent of concern within a watershed that leads to a 303 (d) listed water body **[Can lead to Increased Penalties]**

Regulated industry (e.g., subject to OSHA chemical right-to-know requirements or subject to Hazardous Material / Hazardous Waste Permit) **[Can lead to Increased Penalties]**

Recurrence of Violation

No prior administrative enforcement penalty can be a factor for officer's discretion in lowering penalties.

Prior administrative penalties action can lead to increased penalties.

Prior administrative enforcement within the last year maybe a factor in determining higher penalties leading up to a **criminal citation**.

Intentional discharge will be a factor to increase penalties leading up to a criminal citation.
SOLANA BEACH
CIVIL PENALTIES MATRIX

History of Violation

Prior violations or warnings issued by other regulatory or City agencies (e.g., County Dept. of Health, County Dept. of Env. Health, RWQCB, FEWD, MWWD) **[Can lead to Increased Penalties]**

Prior warnings (letter or Notice of Violation) from Storm Water Pollution Prevention Program **[Can lead to Increased Penalties]**

Good Faith Efforts to Comply

Responsible Party failed to implement BMPs and should have known of requirement for BMPs (e.g., gasoline service station or construction industry) **[Can lead to Increased Penalties]**

Existing BMPs failed to prevent discharge (e.g., employee failed to comply with documented training and procedures or structural BMP failed to perform to design) **[Can lead to Reduced Penalties]**

Rapid and appropriate response to discharge **[Can lead to Reduced Penalties]**

The Solana Beach Municipal Code 13.10.140 A States the following:

13.10.140 Penalties for violation.

A. Civil Penalties. Any person who violates any of the provisions of this chapter shall be liable for a civil penalty not to exceed $1,000 for **each day such a violation exists**, and all pollution detection and mitigation costs (if applicable).

B. Criminal Penalties. Any person who knowingly or intentionally violates any provision of this chapter shall be subject to liability for a misdemeanor, punishable by imprisonment for a period not to exceed one year, or a fine not to exceed $10,000 for each day such a violation exists, or both.

C. Any monetary penalties collected by the city of Solana Beach pursuant to violations of this chapter shall be returned to the storm water management program to be used for storm water pollution monitoring and management practices. (Ord. 184 § 1, 1993)

13.10.150 Continuing violation.

Unless otherwise provided, a person, firm, corporation or organization shall be deemed to have committed a separate offense for each and every day during any portion of which a violation of this chapter is committed, continued or

permitted by the person, firm, corporation or organization and shall be punishable accordingly as herein provided. (Ord. 184 § 1, 1993)

13.10.160 Concealment.
Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter shall constitute a violation of such provision. (Ord. 184 § 1, 1993)

13.10.170 Acts potentially resulting in violation of Federal Clean Water Act and/or Porter-Cologne Act.
Any person who violates any provision of this chapter, any provision of any permit issued pursuant to this chapter, or who discharges waste or wastewater which causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, may also be in violation of the Federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts including civil and criminal liability. Any enforcement action authorized under this chapter should also include notice to the violator of such potential liability. (Ord. 184 § 1, 1993)

13.10.180 Violations deemed a public nuisance.
A. In addition to the penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to the public health, safety and welfare and is declared and deemed a public nuisance and to impact storm water quality, and such nuisance may be summarily abated and/or restored by any authorized enforcement official. Civil action to abate, enjoin or otherwise compel the cessation of such nuisance may be taken by the city attorney.
B. The cost of such abatement and restoration shall be borne by the owner of the property and the cost thereof shall be a lien upon and against the property and such lien shall continue in existence until the same shall be paid. If the lien is not satisfied by the owner of the property within three months after the completion by the authorized enforcement official of the removal of the nuisance and the restoration of the property to its original condition, the property may be sold in satisfaction thereof in a like manner as other real property is sold under execution.
C. If any violation of this chapter constitutes a seasonal and recurrent nuisance, the city of Solana Beach shall so declare. Thereafter such seasonal and

recurrent nuisance shall be abated every year without the necessity of any further hearing. (Ord. 184 § 1, 1993)

13.10.190 Civil actions.

In addition to any other remedies provided in this section, any violation of this chapter may be enforced by civil action brought by the city of Solana Beach. In any such action, the city of Solana Beach may seek, and the court shall grant, as appropriate, any or all of the following remedies:

A. Injunctive relief;

B. Assessment of the violator for the costs of any investigation, inspection, or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing legal action under this subsection;

C. Costs incurred in removing, correcting, or terminating the adverse effects resulting from the violation;

D. Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life. Assessments under this subsection shall be paid to the city of Solana Beach to be used for costs associated with monitoring and establishing storm water discharge pollution control systems and/or implementing or enforcing the provisions of this chapter. (Ord. 184 § 1, 1993)

APPENDIX G: GENERAL CONSTRUCTION "GOOD NEIGHBOR" BROCHURE

PROPERTY OWNERS ARE RESPONSIBLE FOR THE ACTIONS OF THE CONTRACTORS AND SUBCONTRACTORS WORKING ON THEIR PROPERTY.

Construction Hours and Noise Levels:

Construction workers shall not congregate at or report to the site prior to the beginning of construction hours.

Monday - Friday:
7:00 a.m. to 7:00 p.m.

Saturday:
9:00 a.m. to 6:00 p.m.

No construction is permitted on Sundays and Holidays. Please check the City's website for a list of observed holidays at:

www.ci.solana-beach.ca.gov

Construction noise levels shall not exceed 75 decibels for more than eight hours during any 24 hour period.

For information concerning construction hours and noise levels contact the Community Development Department at: (858) 720-2440

Storm Water Best Management Practices (BMPs)

Violations of the storm water regulations can result in penalties, including fines of $1000 per day per violation. These practices are strictly enforced.

Storm Water BMPs Continued:

- **Perimeter Protection Controls: Silt fences, straw wattels, sand bags, etc. must be used to control run-on and run-off from project site.**
- **Tracking Controls: All entrances and exits to the site must have protection measures installed to prevent tracking of sediment off the project site.**
- **Washout Area: All sites must have a designated "wash-out" area to clean equipment and dispose of excess concrete, stucco, and paint.**
- **Concrete Trucks/Pumpers: Concrete trucks and pumpers must have perimeter protection installed around and under them at all times. Any spill must be contained on-site and no washing of equipment permitted without a washout area.**
- **Materials Storage: All materials stored on-site must be contained and covered at all times.**
- **Trash Containers/Portable Restrooms: Dumpsters must be covered and have adequate perimeter protection and all portable restrooms must have secondary containment measures installed.**
- **Storm Drain Inlets: All adjacent storm drain inlets must be protected at all times to prevent pollutants from the project site from entering (including sediment).**

For more information concerning Storm Water BMPs contact the Environmental Services Department at (858) 720-2477.

Fire Safety:

Obey all Fire Codes:

- **Ensure fire lanes are kept clear and unobstructed.**
- **Any combustibles onsite must be stored safely.**
- **Remember oily rags catch on fire spontaneously, even when no ignition source or flame is present.**

For more information concerning fire safety contact the Fire Department at: (858) 720-2410

Encroachment Permits:

Encroachment Permits are required before you start work within the public right of way.

- **Constructing new or repairing old curbs, gutters and sidewalks, constructing new driveways or placing dumpsters in the right of way requires approval from the City and a fee of $245.**
- **The installation of new or repair of existing utilities requires approval from the City and a fee of $575.**

For more information concerning encroachment permits please contact the Engineering Department at: (858) 720-2470

Questions, Comments, Concerns?
Contact City Hall at: (858) 720-2400

Construction Site "Golden Rules":

Treat the construction site as if you were living next door to it.

- Communicate construction timetables to the surrounding neighbors. Consider distributing a letter to neighboring properties listing proposed timetables and contact information for the property owner and construction contractor.
- Notify neighbors if you expect excessive noise and/or traffic disruptions on a particular day. For example, if you are planning to demolish an existing residence or if you are expecting heavy equipment onsite to pour concrete.
- Avoid parking in front of neighbors homes and do not run car engines unnecessarily.
- Minimize noise by not using radios and refrain from shouting whenever possible.
- Construction vehicles should be parked legally and accommodated on the construction site whenever possible.
- Use respectful personal conduct by using the onsite restroom facilities and do not use profanity.

Community Development Department

City of Solana Beach
635 South Highway 101
Solana Beach, CA 92075
Phone: (858) 720-2440
FAX: (858) 755-1782
www.ci.solana-beach.ca.gov

City of Solana Beach

Construction Site Supervision in Solana Beach: Code Requirements and Good Neighbor Practices

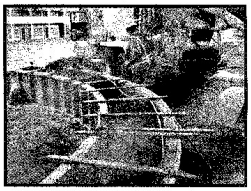

This fact sheet is provided to increase awareness of the basic rules all construction sites are required to follow by city ordinance. These rules are a minimum, and if not followed can result in penalties if you are found to be in violation of City or State applicable regulations.

In addition, we've provided some tips for additional measures that you can take at the site that would be appreciated by the City and your neighbors. We recognize that a construction site by its nature has a certain amount of noise, debris and inconvenience for the neighborhood. We have found from experience that where you can go above and beyond the minimum City Municipal Code requirements, and implement these good neighbor practices, your project can benefit from the improved neighborhood relations.

APPENDIX H: UNDERGROUND UTILITY DISTRICT SPECIAL BMP HANDOUT

Undergrounding Utility District Construction Best Management Practices

When conducting trenching work, construction Best Management Practices (BMPs) must be utilized at all times. Failure to keep all sediment and debris on your property is a violation of the City's Storm Water Regulations and can result in fines. The following list contains BMPs that may be used to keep sediment onsite and out of the City's storm drain conveyance system:

- Perimeter protection BMPs such as silt fences, straw waddles and/or sand bags can be used to contain sediment onsite.
- Cover all materials and keep above ground when a predicted rain event is to occur (>50% chance).
- Keep all materials/sediment out of street and gutter to prevent nuisance water from washing into storm drain system.
- Prevent sediment tracking into street by placing down gravel where equipment is entering and exiting property and sweeping area frequently.

These are all common general BMPs that can be utilized to prevent discharges into the City's storm drain conveyance system. If you or your contractor have any questions or require additional information on any of this, please feel free to call me at the number below.

Sincerely,

Danny King
Environmental Specialist

APPENDIX I: SPECIAL EVENT VENDOR BMP GUIDELINES

VENDOR GUIDELINES

Fiesta del Sol

- All electric cords should be out of the public access areas. If they must extend into a public access area, the cords must be protected with pedestrian transition molding to minimize the trip hazard.
- All cooking areas and devices shall have at least one 2A-20BC fire extinguisher readily accessible to persons working in the immediate proximity of each device or cooking area and shall be in plain view.
- All portable LP-gas containers, valves, and fittings shall be properly secured in a fixed upright position and protected in accordance with the Uniform Fire Code.
- The following conditions apply to canopies in excess of 400 square feet, and to tents and temporary membrane structures having an area in excess of 200 square feet:
- All tents, temporary membrane structures, and/or canopies that are to be used at the function shall be adequately braced and anchored to prevent weather related collapse. Documentation of structural stability shall be furnished to the Fire Chief on request.
- All tent, canopy, or temporary membrane structure exits shall be in accordance with the Uniform Fire and Building Codes.
- The design and construction of the fabric envelope, method of anchoring, and inflation systems for air-supported and air-inflated structures shall be in accordance with the Building Code.
- The sidewalls, drops and tops of temporary membrane structures, tents and canopies shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with flame retardant in an approved manner. Temporary membrane structures, tents or canopies shall have either a permanently affixed label or a Certificate of Flame Resistance bearing the following information:
  - Identification of the temporary structure's size and fabric or material type.
  - For flame-resistant-treated materials, the date that the temporary membrane structure, tent or canopy and other combustible materials were last treated with an approved flame retardant. The trade name and type of flame retardant utilized in the flame-retardant treatment. The name of the person and firm that applied the flame retardant.
- The following general storm water run-off practices shall apply to the event:
  - No dumping or allowing any material into City storm drains.
  - Install secondary containment around portable restroom facilities when feasible.
  - Prompt and proper clean-up of all trash debris.
  - Do not use water or any liquid to rinse down any debris or dirt on any ground surface. Dry sweeping only of event debris is allowed.
  - Protect all storm drain catch basins/inlets when feasible with proper storm water Best Management Practices implementation.
  - Do not allow excess water to leave the site. Properly contain everything onsite before it enters the City's storm drain system.

APPENDIX J: MANDATORY COMMERCIAL RECYCLING ORDINANCE

ORDINANCE 417

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SECTIONS OF CHAPTER 6.20 OF THE SOLANA BEACH MUNUCIPAL CODE, ALL RELATED TO RECYCLING

WHEREAS, the City's Solid Waste Collection and Disposal Ordinance (Chapter 6.20 of the Solana Beach Municipal Code) was enacted in 1993 pursuant to Ordinance Number 177; and

WHEREAS, the City's Solid Waste Collection and Disposal Ordinance, Sections 6.20.090 and 6.20.135 were amended in 2006 pursuant to Ordinance Number 345;

WHEREAS, Section 6.20.135 fails to mandate that all business types must recycle;

WHEREAS, Section 6.20.135 does state that residents and businesses may choose other methods to recycle other than through the City's recycling services;

WHEREAS, the City Council desires to update Chapter 6.20 to clarify certain provisions.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 6.20.090 of the Solana Beach Municipal Code is hereby amended as follows:

6.20.090 Containers.
It shall be the duty of the occupants of residential, commercial and industrial occupancies to maintain containers for the accumulation and disposal of garbage, recyclables, combustible and noncombustible rubbish, miscellaneous debris, rubbish, recyclable material and other refuse. All containers or receptacles used for the reception, removal and disposal of garbage, recyclables, food plant wastes, market greens, market refuse and like refuse, should be water-tight, constructed of a material of suitable strength and durability, shall be tight-seamed and provided with handles and tight-fitting lid or cover, which lid shall be and remain affixed to the container at such time as the garbage, recyclables, food plant waste, market greens, market refuse and other refuse are placed within the container. Noncombustible refuse and other like refuse, other than garbage, may be deposited in well-constructed containers having a capacity not in excess of 96 gallons each (residential) and which, when filled, do not collectively exceed a weight of 150 pounds for solid waste and recyclables. Green waste may be deposited in well-constructed containers having a capacity not in excess of 32 gallons each (residential) and which, when filled, do not collectively exceed a

commercial or residential property; or from donating to another entity for reuse or recycling recyclables generated from that business, commercial or residential property.

E. It is unlawful for any person to fail to segregate designated recyclable material. Violations of this section shall be punishable as provided in Chapters 1.16 and 1.18 SBMC. Nothing in this subsection shall prevent the city from obtaining voluntary compliance with the provisions of this section through educational programs, issuance of warning notices, or other means.

EFFECTIVE DATE: This Ordinance shall be effective thirty (30) days after its adoption. Within fifteen (15) days after its adoption, the City Clerk of the City of Solana Beach shall cause this Ordinance to be published pursuant to the provisions of Government Code Section 36933.

INTRODUCED AND FIRST READ at a regular meeting of the City Council of the City of Solana Beach, California, on the 12th day of May, 2010; and

THEREAFTER ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, on the ____ day of _____, 2010, by the following vote:

AYES: Councilmembers –
NOES: Councilmembers –
ABSTAIN: Councilmembers –
ABSENT: Councilmembers –

_____
THOMAS M. CAMPBELL, Mayor

APPROVED AS TO FORM:

_____
JOHANNA N. CANLAS, City Attorney

ATTEST:

_____
ANGELA IVEY, City Clerk

APPENDIX K: STREET SWEEPING MATERIALS FORM

Employee Name and Organization (below)

Date (above) use N/S below if not scheduled

1st 2nd 3rd 4th Tuesday	Time in: Time out:	Time in: Time out:	Equipment Number: Year, Make & Model

OBSTRUCTIONS (identify as vegetation, vehicle, etc. and provide description).

Reference previous date(s) reported (no entry above required):

End of day Volumn in Cubic Yards: _____
% (percentage) Sediment: _____
%(percentage) Organics: _____
Litter (describe-or-enter –0-) _____

Operator enter reason(s) for not following schedule or other comments: _____

C.O.S.B. Initial _____

Forward to R.W.Q.C.B. (C.O.S.B. Initial on Sending) City of Solana Beach 2004(adinf)

APPENDIX L: SMOKING BAN ORDINANCE

ORDINANCE NO. 316

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SOLANA BEACH MUNICIPAL CODE SECTION 11.12.020 A TO INCLUDE TOBACCO LITTER AND ADDING SECTION 11.12.020 EE TO PROHIBIT SMOKING IN CITY PARKS AND BEACHES

THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Findings and Purpose. The City Council of the City of Solana Beach hereby finds and declares that:

A. The City of Solana Beach is committed to keeping its beaches and parks clean, safe, healthy and pleasant for everyone.

B. Smoking is hazardous to health. Numerous studies have shown that second-hand smoke is a significant public health hazard. The U.S. Environmental Protection Agency has classified second-hand smoke as a group A carcinogen, the most dangerous class of carcinogen. Smoking in parks and beaches endangers children and others by exposing them to second-hand smoke. Moreover, children and youth who observe smoking and tobacco use in public beaches and parks may model the behavior.

C. The U.S. Centers For Disease Control and Prevention (CDC) estimates that second-hand smoke causes 3,000 lung cancer deaths per year among adult non-smokers in the U.S. The California Environmental Protection Agency has concluded that second-hand smoke causes coronary heart disease in non-smokers. Second-hand smoke is especially hazardous to particular groups, including those with chronic health problems, the elderly and children. The CDC has found that second-hand smoke causes children to suffer from lower respiratory tract illness, such as bronchitis and pneumonia, exacerbates childhood asthma, and increases the risk of acute chronic middle ear infection in children.

D. Additionally, discarding cigarettes and cigar butts and tobacco onto the ground in City parks and beaches is unsightly, unclean and particularly hazardous to small children who handle and sometimes ingest them. The City must collect tobacco litter in parks and beaches or it will be collected by stormwater and washed directly into our ocean waters in violation of the City's stormwater pollution prevention permit and to the detriment of ocean life and all ocean users.

ORDINANCE NO. 316
No Smoking in Public Beaches and Parks
Page 2

E. The City Council therefore determines that banning smoking and the improper disposal of tobacco products in City parks is necessary to protect the health, safety and welfare of Solana Beach residents and visitors.

SECTION 2. Section 11.12.020 A. of the Solana Beach Municipal Code is hereby amended to read as follows:

A. To dump or deposit any trash, specifically including cigarette and cigar butts and tobacco, refuse, rubbish, litter, or other kind of waste materials, except in approved containers specifically placed and designated to receive such waste materials. No person shall dispose of any animal carcass in or on any beach or park.

SECTION 3. Section 11.12.020 EE of the Solana Beach Municipal Code is hereby added to read as follows:

EE. No person shall smoke within the boundaries of any public beach or park unless the City has designated a specific temporary or permanent signed smoking area.

SECTION 4. If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.

SECTION 5. This ordinance shall become effective thirty (30) days following its adoption. Within fifteen (15) days after its adoption, the City Clerk shall publish this ordinance, or the title hereof as a summary, in a newspaper of general circulation within the City of Solana Beach as required by law.

APPENDIX M: SINGLE-USE PLASTIC BAG REDUCTION

ORDINANCE 435

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, ADDING CHAPTER 5.01 OF THE SOLANA BEACH MUNICIPAL CODE, ALL RELATED TO PLASTIC BAG USE REDUCTION

WHEREAS, about nineteen billion (19,000,000,000) single use bags are used annually in California but less than 5% are recycled; and

WHEREAS, there are approximately 461 licensed retail businesses in the City of Solana Beach ("the City"); and,

WHEREAS, approximately 160 of these licensed retail businesses provide single use, disposable carry-out bags to their customers; and

WHEREAS, about 6.5 million single use carry-out bags are distributed by licensed retail establishments in the City each year; and

WHEREAS, most of these single use carry out bags are made from plastic or other material that does not readily decompose; and

WHEREAS, numerous studies have documented the prevalence of single use plastic carry out bags littering the environment, blocking storm drains, fouling beaches and the ocean environment; and

WHEREAS, the City's taxpayers must bear the brunt of the clean-up costs; and

WHEREAS, plastic bags are a significant source of marine debris and are hazardous to marine animals and birds which often confuse single use plastic carry out bags for a source of food. The ingestion of these bags can result in reduced nutrient absorption and death to birds and marine animals; and

WHEREAS, single use paper bags are made from renewable resources and are much less environmentally problematic than single use plastic bags, yet they do require environmental resources to manufacture, transport, and recycle and/or dispose of; and

WHEREAS, from an overall environmental and economic perspective, the best alternative to single use plastic carryout bags is a major shift to reusable bags; and

WHEREAS, this ordinance permits stores to implement incentives to generate a shift in consumer behavior toward the use of reusable bags and significantly reducing single-use bag consumption; and

WHEREAS, there are several alternatives to single-use carry out bags readily available in the City, including reusable bags produced from sustainable materials; and

WHEREAS, it is the City's desire to whenever possible conserve resources, reduce the amount of green house gas emissions, waste, beach litter and marine pollution and to protect the public health and welfare including local wildlife, all of which increase the quality of life for Solana Beach's residents and visitors; and

WHEREAS, the City Council of the City of Solana Beach conducted a noticed public hearing regarding the proposed ordinance at their regular scheduled meeting of April 25, 2012. The public hearing was advertised pursuant to applicable law and testimony was invited and received; and

WHEREAS, the proposed ordinance is exempt from review under the California Environmental Quality Act (CEQA) based upon the commonsense exemption under 14 CCR 15061(b)(3) and the reasoning in the California Supreme Court case *Save the Plastic Bag Coalition v. City of Manhattan Beach*, 52 Cal. 4th 155 (2011); and

WHEREAS, even though the proposed ordinance is exempt from CEQA, an Initial Environmental Study was prepared in an abundance of caution under the applicable provisions of CEQA. Based upon this study it was determined that the proposed ordinance is not an action involving any significant impacts upon the environment, and a Negative Declaration was prepared and is hereby adopted; and

WHEREAS, the proposed ordinance does not preempt compliance with the California Retail Food Code or any other state of federal law.

WHEREAS, the City Council desires to add Chapter 5.01 to the Solana Beach Municipal Code, entitled "Single-Use Carryout Bag Use Reduction" to provide for restrictions on the use of plastic bags within the City.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 5.01.010 of the Solana Beach Municipal Code is hereby added as follows:

Section 5.01.010 Definitions

(a) "Food Vendor" means any person or establishment in the City of Solana Beach, that provides prepared food for public consumption on or off its premises and includes, without limitation, any store, shop, sales outlet, restaurant, Grocery Store, delicatessen, or catering truck or vehicle.

(b) "Grocery Store" means any Retail Establishment that sells groceries, fresh, packaged, canned, dry, prepared or frozen food or beverage products and similar items, and includes, without limitation, supermarkets, convenience stores, liquor stores and gasoline stations.

(c) "Non-Profit Vendor" means a recognized tax exempt organization which provides goods as a part of its services.

(d) "Paper Bag Cost Pass-Through" means the cost which may be collected by retailers from their customers when providing a Recycled Paper Bag.

(e) "Pharmacy" means any retail store, where prescriptions, medications, controlled or over the counter drugs, personal care products or health supplement goods or vitamins are sold, but excluding any licensed pharmacy located within a hospital.

(f) "Product Bag" means any bag, provided to a customer for use within a Retail Establishment to assist in the collection or transport of products such as produce, bulk items, meat, poultry, dry cleaning or laundry, to the point-of-sale within the Retail Establishment.

(g) "Recyclable Paper Bag" means a paper bag that meets all of the following requirements: (1) contains no old growth fiber; (2) is one hundred percent (100%) recyclable overall and contains a minimum of forty percent (40%) postconsumer recycled material; (3) is capable of composting, consistent with the timeline and specifications of the American society of Testing and Materials (ASTM) Standard D6400; (4) is accepted for recycling in curbside programs in the City; (5) has printed on the bag the name of the manufacturer, the location where the bag was manufactured, and the percentage of postconsumer recycled material used; and (6) displays the word "Recyclable" in a highly visible manner on the outside of the bag.

(h) "Retail Establishment" means any person, including any corporation, partnership, business, facility, vendor, organization or individual that sells or provides merchandise, goods or materials, including, without limitation, clothing, food, or personal items of any kind, directly to a customer; Retail Establishment includes, without limitation, any Grocery Store, department store, hardware store, Pharmacy, liquor store, restaurant, catering truck, convenience store, and any other retail store or vendor.

(i) "Reusable Bag" means a bag with handles that is specifically designed and manufactured for multiple reuse and meets all of the following requirements: (1) has a minimum lifetime of 125 uses, which for purposes of this subsection, means the capability of carrying a minimum of 22 pounds 125 times over a distance of at least 175 feet; (2) has a minimum volume of 15 liters; (3) is machine washable or is made from a material that can be cleaned or disinfected; (4) does not contain lead, cadmium, or any other heavy metal in toxic amounts, as defined by applicable state and federal standards and regulations for packaging or reusable bags; (5) has printed on the bag, or on a tag that is permanently affixed to the bag, the name of the manufacturer, the location (country) where the bag was manufactured, a statement that the bag does not contain lead, cadmium, or any other heavy metal in toxic amounts, and the percentage of postconsumer recycled material used, if any; and (6) if made of plastic, is a minimum of at least 2.25 mils thick.

(j) "Single-Use Plastic Carry-Out Bag" means any bag that is less than 2.25 mils thick and is made predominately of plastic derived from petroleum or from bio-based sources, such as corn or other plant sources provided by a Retail Establishment at the point of sale to a customer for use to transport or carry away purchases, such as merchandise, goods or food, from the retail establishment. Single-Use Plastic Carry-Out Bags do not include Product Bags as defined in this Chapter.

(k) "Vendor" means any store, shop, restaurant, sales outlet or other commercial establishment located within or doing business within the City of Solana Beach, which provides perishable or nonperishable goods.

Section 2. Section 5.01.020 of the Solana Beach Municipal Code is hereby added as follows:

5.01.020 Prohibitions

(a) No Retail Establishment in the City shall provide a Single-Use Plastic Carry-Out Bag to a customer at the point of sale unless otherwise permitted pursuant to Section 5.01.040.

(b) No Retail Establishment in the City shall provide any type of bag to a customer at the point of sale except a Reusable Bag or a Recycled Paper Bag unless otherwise permitted pursuant to Section 5.01.040.

(c) No person shall distribute a Single-Use Plastic Carry-Out Bag at any City Facility, City-managed concession, City sponsored event, or City permitted event unless otherwise permitted pursuant to Section 5.01.040.

(d) No person shall distribute a Single-Use Plastic Carry-Out Bag at any Farmers Market within the City of Solana Beach.

(e) Nothing in this Chapter shall prohibit the provision of bags, including including Single-Use Plastic Carry-Out Bags, as may be necessary to comply with the California Retail Food Code or any other state or federal law.

Section 3. Section 5.01.030 of the Solana Beach Municipal Code is hereby added as follows:

5.01.030 Incentives for Use of Reusable Bags

(a) Affected Retail Establishments are strongly encouraged to provide incentives for the use of Reusable Bags through passing through the cost of recycled bags, through credits or rebates for customers that use Reusable Bags, or through education. Such incentives may include one or more of the following:

(1) Paper Bag Cost Pass-Through

A. Subject to subsection (B) of this Section, an affected Retail Establishment may provide a Recycled Paper Bag to a customer if it collects a Paper Bag Cost Pass-through from the customer for each Recycled Paper Bag provided.

B. The Paper Bag Cost Pass-through shall not be less than 10 cents unless a store has previously submitted a full accounting to the City, signed by a responsible manager under penalty of perjury that identifies all costs including bag purchase, shipping, handling and storage, showing a lesser actual cost to the store for each bag. Any such accounting shall expire one year from the date of original submission and a new accounting would need to be resubmitted.

(2) Rebate. An affected Retail Establishment may rebate or otherwise reimburse a customer for use of a Reusable Bag up to 5 cents per Reusable Bag per transaction.

(3) Each Retail Establishment is strongly encouraged to educate its staff to promote reusable bags and to post signs encouraging customers to use reusable bags.

Section 4. Section 5.01.040 of the Solana Beach Municipal Code is hereby added as follows:

5.01.040 Exemptions

Notwithstanding the requirements contained in Section 5.01.020:

(a) A Retail Establishment shall provide a customer participating in the California Special Supplemental Food Program for Women, Infants, and Children pursuant to Article 2 (commencing with Section 123275) of Chapter 1 of Part 2 of Division 106 of the California Health and Safety Code and a customer participating in the Supplemental Food Program pursuant to Chapter 10 (commencing with Section 15500) of Part 3 of Division 9 of the California Welfare and Institutions Code, with a reusable bag or a recycled paper bag at no cost at the point of sale.

(b) The City Manager, or his or her designee, may exempt an Affected Retail Establishment, Vendor or Non-Profit Vendor from the requirements of this Chapter for a period of up to one additional year after the operative date of this Ordinance, upon sufficient showing by the applicant that the provisions of this Chapter would cause undue hardship. The phrase undue hardship includes:

1. Situations where there are no acceptable alternatives to Plastic Carry-Out Bags for reasons which are unique to the Retail Establishment, Vendor or Non-Profit Vendor;

2. Situations where compliance with the requirements of this Code would deprive a person of a legally protected right."

(c) The provision of Product Bags as defined in this Chapter is not prohibited.

Section 5. Section 5.01.050 of the Solana Beach Municipal Code is hereby added as follows:

5.01.050 Remedies.

(a) The City Manager, or his or her designee, is authorized to establish regulations and to take any and all actions reasonable and necessary to obtain compliance with this Chapter, including, but not limited to, inspecting any retail establishment's premises to verify compliance.

(b) Any person violating this Section shall be guilty of an infraction, which shall be punishable by a fine not exceeding two hundred fifty dollars, or a misdemeanor, which shall be punishable by a fine not exceeding one thousand dollars, or by imprisonment in the County Jail for a period not exceeding six months or by both such fine and imprisonment.

(c) The City Attorney may seek legal, injunctive, or other equitable relief to enforce this Chapter.

(d) Administrative enforcement of this ordinance shall proceed pursuant to Solana Beach Municipal Code Chapter 1.18.

(e) Each violation of this Chapter shall be considered a separate offense.

(f) The remedies and penalties provided in this section are cumulative and not exclusive, and nothing in this Chapter shall preclude any person from pursuing any other remedies provided by law.

(g) Notwithstanding any other provision of this Ordinance, this Ordinance may be enforced through any remedy as provided for in this Section upon its Effective Date.

Section 6. Chapter 5.01 of the Solana Beach Municipal Code shall become effective and operative as to: 1) Grocery Stores, Food Vendors, Restaurants, Pharmacies and City facilities three (3) months after its adoption by the City Council, and 2) all remaining Affected Retail Establishments, Vendors and Non-Profit Vendors six (6) months after its adoption by the City Council.

Section 7. Within fifteen (15) days after its adoption, the City Clerk of the City of Solana Beach shall cause this Ordinance to be published pursuant to the provisions of Government Code Section 36933.

Section 8. The City Council of the City of Solana Beach hereby declares that should any section, paragraph, sentence, phrase, term or word of this Ordinance, hereby adopted, be declared for any reason to be invalid, it is the intent of the City Council that it would have adopted all other portions of this Ordinance irrespective of any such portion declared invalid.

INTRODUCED AND FIRST READ at a regular meeting of the City Council of the City of Solana Beach, California, on the 25th day of April, 2012; and

THEREAFTER ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, on the 9th day of May, 2012, by the following vote:

AYES:	Councilmembers – Kellejian, Roberts, Nichols, Heebner
NOES:	Councilmembers – None
ABSTAIN:	Councilmembers – None
ABSENT:	Councilmembers – Campbell

APPENDIX N: BEACH BLANKET MOVIE NIGHT FLYER

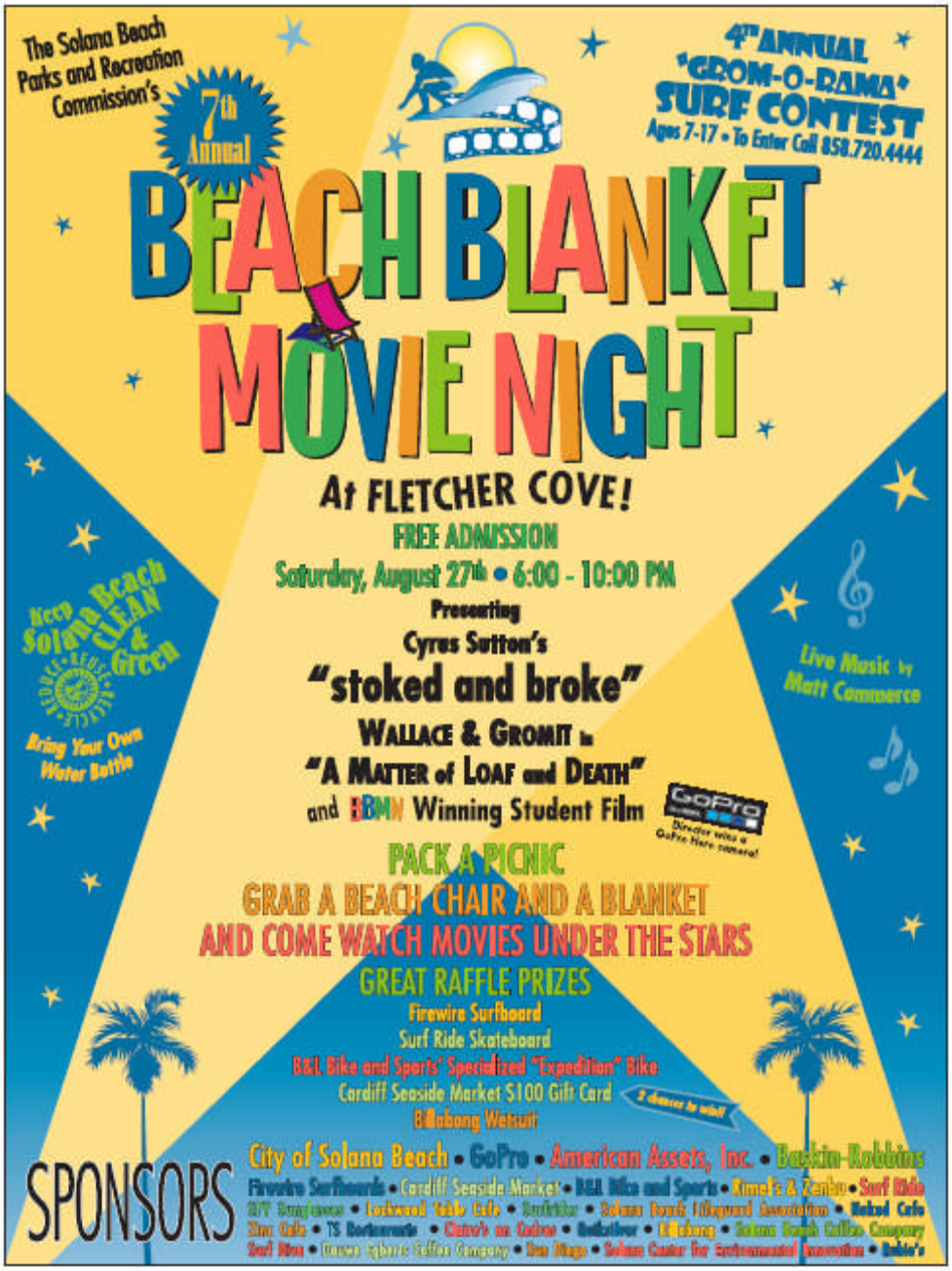

APPENDIX O: SPECIAL EVENTS PERMIT CONDITIONS OF APPROVAL

NOTICE OF APPROVAL FOR SPECIAL EVENT
CITY OF SOLANA BEACH

The Special Event you have applied for has been approved, according to the following information:

Date Requested:	June 12, 2004
Hours:	5:30 a.m. – 2:00 p.m.
Organization:	San Dieguito Boys & Girls Clubs
Type of Event:	Seaside Stride 5 Mile Walk
Location:	See Attached Map
Contact Person:	Ellen Flanagan (760) 471-5516

Approved By:_____
Barry Johnson, City Manager

SPECIFIC GUIDELINES:

1. No City services, at the request of the applicant, for the event will be provided by the City.
2. The event participants must utilize the sidewalks and not the roadway where available on the course. If there is no sidewalk, participants must utilize the very outer edge of the roadway.
3. Event organizers must obey all traffic signs, lights, and laws.
4. Event organizers and participants shall utilize public right-a-ways and property for the purpose of this event at their own risk.
5. Event organizers and participants shall obey all traffic laws, signs, and traffic control devices at all times.
6. Event organizers must comply with all applicable water run-off regulations and must use best management practices. There will be absolutely no liquid, solid, or any other by-product generated by the event allowed in the city storm drain system. The parking lot at the conclusion of the event must be cleaned of all debris and disposed of in an acceptable manner to the City's Public Works Department.
7. Roadway and sidewalks and any other public areas utilized by the event participants and audience shall be left in a clean and orderly condition at the conclusion of the special event.
8. Applicant shall be charged for the amount of time to clean-up the areas or facilities used by the event participants if the areas utilized by the attendees of the event are not left in a clean and orderly condition. Estimated cost for retaining one City employee to clean-up refuse, and trash disposal is $ 43.20 per hour.
9. Any damage to public property as the result of this event will encumber full cost recovery from applicant by the City.

10. Event organizers shall at all times comply with any request or orders from the City's public works, lifeguard, law enforcement, or other public safety personnel. Failure to do so will result in the revocation of this permit and an immediate cease event order.

GENERAL GUIDELINES:

1. This permit and any other permits associated with this event will be available at the event.
2. If City services are required, applicant will be billed in advance for any and all City services provided above normally scheduled services. **All fees and charges shall be paid prior to final issuance of a permit for the event. Exception: Costs incurred by the City for clean up or other reasons due to the event, if any, shall be charged to the applicant billed as soon as the total cost is determined.**
3. All vehicles must comply with City parking regulations.
4. The organization and any of its subcontractors in advance of the event must file a business license application and fee, if they do not have a business license.
5. Vehicle loading and unloading cannot block pedestrian access. If required for short durations, signage directing the flow of pedestrian access, including wheelchair access must be established and posted.
6. The City reserves the right to shut down the event at any time, if necessary.
7. Applicant must comply with City noise regulations.
8. **It is the responsibility of the applicant to know and comply with the terms and conditions as stated within this special event permit and all applicable laws that pertain do the event, its organizers, and its participants whether they are stated on this permit or not.**
9. Contact Leah Escarcega or David Ott at (858) 720-2410 if there are any questions regarding the special event permit process.

C: City Manager's Office
Public Safety Director
Public Works Director
Sheriff's Department
Marine Safety Captain

APPENDIX P: FIESTA DEL SOL FLYER 2012

APPENDIX Q: EFFECTIVENESS ASSESSMENT TABLE

Inspections	Actual No. of Facilities	2006-2007	Actual No. of Facilities	2007-2008	Actual No. of Facilities	2008-2009	Actual No. of Facilities	2009-2010	Actual No. of Facilities	2010-2011	Actual No. of Facilities	2011-2012
High Priority Facilities	10	10	10	10	10	10	10	10	10	10	10	10
Medium Priority Facilities	1	1	1	1	1	1	1	1	1	1	1	1
Low Priority Facilities	6	6	6	6	6	6	6	6	6	6	6	6
Maintenance												
Material removed from MS4 (storm drain cleaning, public cleanup events, channel clearing)		~7 cubic yards (storm drain and channel clearing) - 325 pounds debris at beach clean up		~3 cubic yards (storm drain and channel clearing) - 485 pounds trash, 120 pounds of recyclables at beach clean up		~5 cubic yards (catch basin and channel clearing)		~3.5 cubic yards (catch basin and channel clearing)		~5 cubic yards (catch basin and channel clearing)		~19 cubic yards (catch basin and channel clearing)
Material prevented from entering MS4 (street sweeping operations)		188lbs street sweeping		275 lbs street sweeping		275 cubic yards street sweeping		207 cubic yards street sweeping		212 cubic yards street sweeping		234 cubic yards street sweeping
Number of catch basins cleaned (all catch basins inspected)		309 inspected / 35 catch basins cleaned		309 inspected / 17 catch basins cleaned		309 inspected / 13 catch basins cleaned		309 inspected / 26 catch basins cleaned		309 inspected / 26 catch basins cleaned		309 inspected / 26 catch basins cleaned
Education												
No. of Presentations to Municipal Employees		3		1		2		2		2		2
Industrial Businesses												
Inspections	**Actual No. of Facilities**	**2006-2007**	**Actual No. of Facilities**	**2007-2008**	**Actual No. of Facilities**	**2008-2009**	**Actual No. of Facilities**	**2009-2010**	**Actual No. of Facilities**	**2010-2011**	**Actual No. of Facilities**	**2011-2012**
High Priority Facilities	1	1	1	1	1	1	1	1	1	1	1	1
Medium Priority Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Low Priority Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Enforcement												
Responses to Hotline Calls in regard to Industrial Businesses		0		0		0		0		0		0
Education/Public Participation												
No. of Workshops hosted for Industrial Business Sectors		0		0		0		0		0		0
No. of Materials Distributed to Industrial Businesses		1 visit (Educational Materials Distributed and Discussed)		1 visit (Educational Materials Distributed and Discussed)		1 visit (Educational Materials Distributed and Discussed During Annual Inspection)		1 visit (Educational Materials Distributed and Discussed During Annual Inspection)		1 visit (Educational Materials Distributed and Discussed During Annual Inspection)		1 visit (Educational Materials Distributed and Discussed During Annual Inspection)
Commercial Businesses												
Inspections	**Actual No. of Facilities**		**Actual No. of Facilities**	**2007-2008**	**Actual No. of Facilities**	**2008-2009**	**Actual No. of Facilities**	**2009-2010**	**Actual No. of Facilities**	**2010-2011**	**Actual No. of Facilities**	**2011-2012**

High Priority Facilities	88	11	88	67 (35 Inspected)	88	67 (67 Inspected)	88	72 (72 Inspected)	88	77 (77 Inspected)	88	77 (77 Inspected)
Low Priority Facilities	0	0	0	10	0	10 (10 Inspected)	0	10 (10 Inspected)	0	10 (10 Inspected)	0	9 (9 Inspected)
Enforcement												
Responses to Hotline Calls in regard to Commercial Businesses		13		3		6		0		0		N/A (Will be submitted with IC/ID Component)
Education/Public Participation												
No. of Workshops hosted for Commercial Business Sectors		0		0		0		2 (During March "Sustainability Month")		2 (During March "Sustainability Month")		2 (During March "Sustainability Month")
No. of Materials Distributed to Commercial Businesses		~150 (3 per week)		~52 (1 per week)		77 (1 per inspection)		82 (1 per inspection)		82 (1 per inspection)		77 (1 per inspection)
Residential												
Household Hazardous Waste		**2006-2007**		**2007-2008**		**2008-2009**		**2009-2010**		**2010-2011**		**2011-2012**
Quantity of Household Hazardous Waste Collected		HHW Facility does not document amount of waste collected. However, 379 residents utilized this service this reporting period, up from 319 last reporting period		HHW Facility does not document amount of waste collected. However, 416 residents utilized this service this reporting period, up from 379 last reporting period		298 residents utilized this service this reporting period with a total of 32,823 pounds of material properly disposed of		260 residents utilized this service this reporting period with a total of 38,723 pounds of material properly disposed of		274 residents utilized this service this reporting period with a total of 20,838 pounds of material properly disposed of		261 residents utilized this service this reporting period with a total of 23,797 pounds of material properly disposed of
Enforcement												
Responses to Hotline Calls in Regard to Residential Activities		22		29		11		0		0		N/A (Will be submitted with IC/ID Component)
Education/Public Participation												
No. of Presentations to Residential Neighborhoods, HOA, Community Groups, Etc.		0		12 (Monthly Clean and Green Community Meetings)		23 Total - 12 Monthly Clean and Green Community Meetings and 11 Water Conservation and Storm Water Community Meetings		25 Total - 12 Monthly Clean and Green Community Meetings, 9 Water Conservation Presentation and 4 Sustainability Community Meetings (Sustainability Month)		17 Total - 12 Monthly Clean and Green Community Meetings, 5 Water Conservation Presentation		13 Total - 12 Monthly Clean and Green Community Meetings, 1 Water Conservation Presentation
No. of Cleanup Events Hosted		1		2		2		1		1		2
SUSMP		**2006-2007**		**2007-2008**		**2008-2009**		**2009-2010**		**2010-2011**		**2011-2012**
No. of Developments Subject to SUSMP requirements		2		2		0		0		0		1

Inspections	Actual No. of Facilities		Actual No. of Facilities		Actual No. of Facilities		Actual No. of Facilities		Actual No. of Facilities		Actual No. of Facilities	
High Priority Sites	4	192 (1 time per month)	4	13 Sites (2x month) = 312	4	2 Sites (2x month during wet season, 1x month during dry) = 40	4	4 Sites (2x month during wet season, 1x month during dry) = 40	3	3 Sites (2x month during wet season, 1x month during dry) = 30	3	3 Sites (2x month during wet season, 1x month during dry) = 30
Medium Priority Sites	8	96 (I time per month)	8	27 Sites (1x per wet, 1x per dry) = 54	8	10 Sites (1x per wet, as needed dry) = 97	7	7 Sites (1x per wet, as needed dry) = 38	13	13 Sites (1x per wet, as needed dry) = 45	12	12 Sites (1x per wet, as needed dry) = 45
Low Priority Sites	45	90 (1 during wet, 1 during dry)	45	As Needed	45	16 Sites (As Needed) = 74	16	16 Sites (As Needed) = 51	0	25 Sites (As Needed) = 159	0	13 Sites (As Needed) = 45
Enforcement												
Responses to Hotline Calls in regard to Construction Sites		7		10		5		2		0		N/A (Will be submitted with IC/ID Component)
Education/Public Participation												
No. of Workshops Hosted for Construction/Development Community		0		1 (Construction and Demolition Debris Recycling)		0		1 (During March "Sustainability Month")		0		0
No. of Materials Distributed to Construction/Development Community		521		470		224		~200		~180		~180
Dry Weather Sampling	**Actual No. of Locations**	**2006-2007**	**Actual No. of Locations**	**2007-2008**	**Actual No. of Locations**	**2008-2009**	**Actual No. of Locations**	**2009-2010**	**Actual No. of Locations**	**2010-2011**	**Actual No. of Locations**	**2011-2012 (Placeholder, will be submitted with IC/ID in December)**
No. of Locations Monitored	309	28	309	29	309	29	309	29	309	29	309	N/A
No. of Exceedances		9		N/A		N/A		2		2		N/A
Nitrate		0		N/A		N/A		0		0		N/A
Reactive Phosphorus		2		N/A		N/A		0		0		N/A
Bacteria		6		N/A		N/A		2		2		N/A
Cadium		0		N/A		N/A		0		0		N/A
Lead		0		N/A		N/A		0		0		N/A
Ammonia		0		N/A		N/A		0		0		N/A
Coastal Monitoring												
No. of Exceedances	0	0	0	0	0	0	0	0	0	3	0	N/A
Total Coliform		0		0		0		0		1		N/A
Fecal Coliform		0		0		0		0		1		N/A
Enterococcus		0		0		0		0		1		N/A

APPENDIX R: LEAF BLOWER BAN – ORDINANCE 399

ORDINANCE NO. 399

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING AND REPEALING SECTIONS OF CHAPTER 7.34 OF THE SOLANA BEACH MUNUCIPAL CODE, ALL RELATED TO NOISE ABATEMENT AND CONTROL AND AMENDING SECTION 13.10.030 OF THE SOLANA BEACH MUNICIPAL CODE, RELATED TO STORM WATER MANAGEMENT

WHEREAS, the City's Noise Abatement and Control Ordinance (Chapter 7.34 of the Solana Beach Municipal Code) was enacted in 1991 pursuant to Ordinance Number 147; and

WHEREAS, no amendments have been made to Chapter 7.34 of the Solana Beach Municipal Code since its enactment;

WHEREAS, the City Council desires to update Chapter 7.34 to clarity certain provisions and to repeal sections that are unnecessary.

WHEREAS, the City of Solana Beach's storm water management and discharge control ordinance, Chapter 13.10 of the Solana Beach Municipal Code, provides for the prevention and enforcement of certain discharges into the storm water system within the City; and

WHEREAS, organic contaminants whose presence degrades the quality of the receiving waters in violation of basin plan, enclosed bays and estuaries plan, inland surface water plan, and California ocean plan standards including but not limited to leaves, grass clippings and yard waste and trimmings must be prevented from entering the storm drain conveyance system, which includes, among other things, the streets, gutters, and catch basins.

WHEREAS, leaf blowers can contribute to the discharge of pollutants, specifically organic contaminants, into the City's storm drain conveyance system; and

WHEREAS, the SBMC section 13.10.030 needs to be amended to expand the definition of pollutants to specify leaves, grass clippings, and yard waste and trimmings as organic contaminants.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 7.34.040.A of the Solana Beach Municipal Code is hereby amended as follows:

7.34.040 Sound level limits.

A. Unless a permit has been applied for and granted pursuant to this chapter, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below except as provided in SBMC 7.34.170 and construction noise level limits governed by SBMC 7.34.100. The noise subject to the limits set forth below is that part of the total noise at the specified location that is due solely to the action of said person. The limits apply to the source of the noise only, not the source of the noise plus the ambient noise level.

Applicable Limit
One-Hour Average
Sound Level

Zone	(Time)	(Decibels)
ER1, ER2, LR,		
LMR, MR	7 a.m. to 10 p.m.	50
Residential	10 p.m. to 7 a.m.	45
MHR, HR	7 a.m. to 10 p.m.	55
Residential	10 p.m. to 7 a.m.	45
C, LC, OP	7 a.m. to 10 p.m.	60
Commercial Office	10 p.m. to 7 a.m.	55
LI, SC		
Light Industrial and	7 a.m. to 10 p.m.	70
Special Commercial	10 p.m. to 7 a.m.	60
Public/Institutional	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	45
Park/Recreational	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	45

B. In the event the alleged offensive noise, as judged by the noise control officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, the applicable limits set forth above shall be reduced by five dB. The noise control officer may use an octave band spectral filter coupled to a sound level meter to aid in the judgment of the presence of an audible tone. If the sound intensity measured in any audible octave band exceeds that in adjacent bands by five dB, then an audible tone shall be judged as present.

C. The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts.

D. Fixed location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section,

measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

Section 2. Section 7.34.070 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.070 Solid waste management vehicles and parking lot and sidewalk vacuums.

No person shall operate, or permit to be operated, a refuse compacting, processing, or collection vehicle or a parking lot or sidewalk vacuum between the hours of 6:00 p.m. and 6:30 a.m. in or immediately adjacent to any residential area of the city unless a permit has been applied for and granted pursuant to this chapter.

Section 3. Section 7.34.080 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.080 Leaf blowers.

A. Regulation. It is unlawful for any person to use or operate within the city limits any leaf blower powered by a 2-stroke gas-powered engine to blow leaves, dirt and other debris off sidewalks, driveways, lawns and other surfaces, except between the hours of 9:00 a.m. and 5:00 p.m. Only non-commercial residential uses of leaf blowers are permitted on Sundays.

B. No person shall operate any leaf blower without attachment of all mufflers and full extension tubes supplied by the manufacturer for that leaf blower.

C. Beginning January 1, 2011, no leaf blower powered by a 2-stroke gas engine shall be permitted to operate within the city.

Section 4. Section 7.34.140 of the Solana Beach Municipal Code is hereby amended as follows:

7.34.140 General noise regulations.

A. General Prohibitions. It is unlawful for any person to make, continue or cause to be made or continued, within the limits of the city, any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in the area.

The characteristics and conditions which should be considered in determining whether a violation of the provisions of this section exists, include, but are not limited to, the following:

1. The level of noise;
2. Whether the nature of the noise is usual or unusual;
3. Whether the origin of the noise is natural or unnatural;
4. The level of the background noise;
5. The proximity of the noise to sleeping facilities;
6. The nature and zoning of the area within which the noise emanates;
7. The density of the inhabitation of the area within which the noise emanates;
8. The time of the day or night the noise occurs;
9. The duration of the noise; and

APPENDIX S: COMMERCIAL FACILITY LITTER REDUCTION ORDINANCE

ORDINANCE 419

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SOLANA BEACH, CALIFORNIA, AMENDING SECTIONS OF CHAPTER 6.12 AND 11.16 OF THE SOLANA BEACH MUNICIPAL CODE, ALL RELATED TO LITTER CONTROL AND REMOVAL

WHEREAS, the City's Litter Control Ordinance (Chapter 6.12 of the Solana Beach Municipal Code) was enacted in 1987 pursuant to Ordinance Number 46; and

WHEREAS, the City's Sidewalk Ordinance (Chapter 11.16 of the Solana Beach Municipal Code) was enacted in 1988 pursuant to Ordinance Number 75; and

WHEREAS, Chapter 6.12 does not require all business to remove litter generated by their establishments; and

WHEREAS, Section 6.12.030 is silent in prohibiting all persons from depositing litter into gutters; and

WHEREAS, Section 11.16.050 does not specifically require all property owners to keep abutting sidewalks free of litter; and

WHEREAS, the City Council desires to update Chapters 6.12 and 11.16 to clarify certain provisions.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SOLANA BEACH DOES ORDAIN AS FOLLOWS:

Section 1. Section 6.12.030 of the Solana Beach Municipal Code is hereby amended as follows:

6.12.030 Prohibition.

A. It shall be unlawful for any person to throw, deposit, cause to be deposited, or leave litter in or upon any public street, alley, gutter, sidewalk, beach, public right-of-way or public place within the city except in public receptacles or authorized private receptacles.

B. It shall be unlawful for any person to throw, deposit, cause to be deposited, or leave any litter in or upon any private property within the city, vacant or occupied, other than the owner of the private property.

Section 2. Section 6.12.070 is hereby added to Chapter 6.12 of the Solana Beach Municipal Code as follows:

6.12.070 Duty to remove litter.

Any persons owning or occupying a place of business within the City of Solana Beach shall implement a general litter removal program within an area of two hundred (200) feet of their commercial establishment so as to remove litter generated by said business at least once each business day. This litter removal program shall not permit the business owner or its employees to trespass upon private property. However, the business shall attempt to gain permission of the owner of the private property for said purposes. In addition, this litter removal program requires the business owner or its employees to remove litter from public property with the exception that they are not required to remove litter from any area within a public street or highway.

Section 3. Section 11.16.050 of the Solana Beach Municipal Code is hereby amended as follows:

11.16.050 Maintenance by lot owners.

A. The owners of each lot fronting on any portion of a public street or place where the street or place is improved with a sidewalk shall maintain the sidewalk in such a condition that the sidewalk will not endanger persons or property and in a condition which will not interfere with the public convenience in the use of those works or areas, including keeping the sidewalk free of litter. The owners' obligations shall not apply to those conditions created or maintained in, upon, above or in connection with such sidewalk by any person other than the owner of the lot, where the person is authorized to do work or to maintain encroachments by virtue of a permit or right granted to the person by law or by the city. The person creating the condition pursuant to a permit shall have the duty otherwise imposed by this section upon the lot owner. The obligations of this subsection also apply to lots where the area between the property line of the privately owned lot and the back of the street line is maintained as a parkway, park or parking strip.

B. The city manager is authorized to enforce subsection A of this section, pursuant to the provisions of the State Streets and Highways Code, Division 7, Part 3, Chapter 22, commencing with Section 5600.

C. For the purposes of this section, the term sidewalk includes a park or parking strip maintained in the area between the property line and the street line and also includes curbing, bulkheads, retaining walls or other work for the protection of any sidewalk, park or parking strip.

EFFECTIVE DATE: This Ordinance shall be effective thirty (30) days after its adoption. Within fifteen (15) days after its adoption, the City Clerk of the City of Solana Beach shall cause this Ordinance to be published pursuant to the provisions of Government Code Section 36933.

ORDINANCE 419
(Litter Control)
Page 3 of 3

INTRODUCED AND FIRST READ at a regular meeting of the City Council of the City of Solana Beach, California, on the 25th day of August, 2010; and

THEREAFTER ADOPTED at a regular meeting of the City Council of the City of Solana Beach, California, on the ___ day of _____, 2010, by the following vote:

AYES: Councilmembers –
NOES: Councilmembers –
ABSTAIN: Councilmembers –
ABSENT: Councilmembers –

_____
THOMAS M. CAMPBELL, Mayor

APPROVED AS TO FORM:

_____
JOHANNA N. CANLAS, City Attorney

ATTEST:

_____
ANGELA IVEY, City Clerk

APPENDIX T: SUMMER CAMP PROGRAMS/CLASSES

CITY OF SOLANA BEACH PARKS & RECREATION

2011 Kids Summer Day Camp for Ages 6-12

All Sessions meet Monday - Friday from 8:30 a.m. to 2:00 p.m. at Fletcher Cove Community Center, 133 Pacific Ave. The fee is $106/week per child and includes activities such as beach walks, swimming at the Boys and Girls Club, arts & crafts, Library visit, fun games, friends, and a weekly field trip to an exciting destination.
After-care is offered from 2:00 p.m. - 5:00 p.m. ($27/week). Our popular "Leader in Training" program is also available this summer for 13 - 17 year olds for only $40/week!

1 Fun To Be Fit

July 11-15

Challenge your camper to a world of healthy living. Kids will get to learn how to incorporate healthy aspects into their lives in a fun way. Learning simple changes can make a world of difference in the way your child feels and lives. Campers will learn that a healthy lifestyle can be easy and fun just by eating right and staying active. The field trip will be a day full of active fun at Coronado Island for the GO PLAY GET FIT day.

2 Splish Splashtacular

July 18-22

Is your child half amphibian? This is a perfect week for campers to explore the various ways to enjoy the water through water related crafts, water balloons and water relays. From the ocean, to the pool, and the Wave Water Park, where kids can experience the fun that comes with water, without having to grow gills . . . Come splish and splash with us!

3 T-Rex & Friends

July 25-29

From dinosaurs to mastodons, travel through 75 million years and dig into the rich fossil history of southern California and Baja California. Ponder mysteries such as: How did dinosaurs live, move, and interact? What did they eat? Why did some animals become extinct? San Diego Natural History Museum field trip.

4 Environmentally Friendly

August 1-5

There are many exciting ecological discoveries to be investigated here in Solana Beach. Find out how easy it is to appreciate the simple aspects of the world around you. Campers will discover ways in which they can help save the environment, explore the world of marshes and lagoons, and even discover the local San Elijo Lagoon through a nature walk for this week's field trip.

5 Mad Science

August 8-12

This exciting week will offer campers a hands-on science experience without leaving Fletcher Cove. With professional equipment and experienced instructors, Mad Science workshops will offer engaging learning experiences for all campers. Are you ready to take your school's Science Day to the next level? Staff will engage your campers in a science experience they will never forget. Mad Science will bring interactive science exhibits right to us! All science activities are hands-on. Ruben H. Fleet Science Center field trip.

6 Water Wonderland

August 15-19

Welcome to the wettest week of summer! Wear your swimsuits and be prepared to get soaked! Water bucket brigade, rubber duck races, slip 'n' slide and water balloons galore are just a taste of what to expect in this wildly wet, water-filled week! Cool off and stay refreshed on the hottest days of summer in our Water Wonderland. This week's field trip will be to the Wave Water Park.

7 Animal Planet

August 22-26

There's the Grasslands, Jungle, Rainforest, and even your local beach that contains hundreds of animals that campers will get a chance to learn about and explore. Learn all about the crazy life of animals of all kinds with theme related crafts and discussions as well as a chance for the campers to explore our own Wild Animal Park.

APPENDIX U: 2010 DRY WEATHER MONITORING PROGRAM RESULTS

As a result of Addendum No. 2 adopted by the RWQCB in September 2008, this section will be submitted along with Chapter 7 "Illicit Discharge Detection and Elimination Component" in December 2012.

DECLARATION OF SERVICE BY EMAIL

I, the undersigned, declare as follows:

I am a resident of the County of Sacramento and I am over the age of 18 years, and not a party to the within action. My place of employment is 980 Ninth Street, Suite 300, Sacramento, California 95814.

On March 29, 2024, I served the:

- **Current Mailing List dated March 28, 2024**
- **Notice of Waiver of Procedural Requirements, Extension Request Approval, and Postponement of Hearing issued March 29, 2024**
- **Claimants' Comments on the Draft Proposed Decision and Parameters and Guidelines (Volumes 1-14) filed February 20, 2024**

  San Diego Regional Water Quality Control Board Order No. R9-2007-0001, Permit CAS0108758, Parts D.3.a.(3)(b)(iii), D.5.a.(1), D.5.a.(2), D.5.b.(1)(a), D.5.b.(1)(b)(iii-vi), D.5.b.(1)(c), D.5.b.(1)(d), D.5.b.(2), D.5.b.(3), E.2.f., E.2.g., F.1., F.2., F.3., I.1., I.2., I.5., J.3.a.(3)(c)(iv)-(viii), (x)-(xv), the first sentence of L.1. as it applies to the newly mandated activities, and L.1.a.(3)-(6), 07-TC-09-R County of San Diego, Cites of Carlsbad, Del Mar, Imperial Beach, Lemon Grove, Poway, San Marcos, Santee, Solana Beach, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, San Diego, and Vista, Claimants

by making it available on the Commission's website and providing notice of how to locate it to the email addresses provided on the attached mailing list.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration was executed on March 29, 2024 at Sacramento, California.

Jill Magee

Jill Magee
Commission on State Mandates
980 Ninth Street, Suite 300
Sacramento, CA 95814
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COMMISSION ON STATE MANDATES

Mailing List

Last Updated: 3/28/24

Claim Number: 07-TC-09-R

Matter: San Diego Regional Water Quality Control Board Order No. R9-2007-0001 Permit CAS0108758 Parts D.1.d.(7)-(8), D.1.g., D.3.a.(3), D.3.a.(5), D.5, E.2.f, E.2.g, F.1, F.2, F.3, I.1, I.2, I.5, J.3.a.(3)(c)iv-viii & x-xv, and L.

Claimants: City of Carlsbad
City of Chula Vista
City of Del Mar
City of Encinitas
City of Escondido
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of Oceanside
City of Poway
City of San Diego
City of San Marcos
City of Santee
City of Solana Beach
City of Vista

TO ALL PARTIES, INTERESTED PARTIES, AND INTERESTED PERSONS:

Each commission mailing list is continuously updated as requests are received to include or remove any party or person on the mailing list. A current mailing list is provided with commission correspondence, and a copy of the current mailing list is available upon request at any time. Except as provided otherwise by commission rule, when a party or interested party files any written material with the commission concerning a claim, it shall simultaneously serve a copy of the written material on the parties and interested parties to the claim identified on the mailing list provided by the commission. (Cal. Code Regs., tit. 2, § 1181.3.)

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CITY OF VISTA

2006-07 JURMP Annual Report

Submitted January 2008

Prepared by:
City of Vista Engineering Department

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita L. Geldert
City Manager
City of Vista

Lawrence D. Pierce
Director of Engineering
City of Vista

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INTRODUCTION

This Annual Report is submitted as a comprehensive description of Jurisdictional Urban Runoff Management Program (JURMP) activities conducted by the City of Vista during the reporting period in accordance with the requirements of Order 2001-01.

The overall program is detailed in the City of Vista's JURMP, dated February 2002 with revisions noted in annual reports. The JURMP was prepared in accordance with the requirements of the National Pollutant Discharge Elimination System (NPDES) municipal storm water permit, (CAS018758) Order 2001-01, issued by the San Diego Regional Water Quality Control Board (RWQCB) on February 21, 2001. This Annual Report describes the City's activities conducted during the fiscal year of July 2006 through June 2007 (FY 06-07).

On January 24, 2007, the Regional Water Quality Control Board adopted Order No. R9-2007-0001, which replaced Order 2001-01. While the City continued to implement its JURMP under the existing order, the City also began the process of updating the JURMP to comply with this new Order. An updated JURMP will be submitted by March 24, 2008 to comply with this Order.

PROGRAM OVERVIEW

The City of Vista is located thirty-five miles north of downtown San Diego and seven miles east of the Pacific Ocean. It covers an area of approximately 18.6 square miles between Oceanside and Carlsbad to the west and San Marcos and unincorporated areas of San Diego to the east. The City has a population of about 95,000 people. The majority of the City (55%) is classified as residential. The remaining land use types are categorized as undeveloped land (13%), parks and recreation (9%), industrial (8%), commercial (6%) and agriculture (2%). Other land uses comprise the remaining 7% of the area.

The City of Vista's urban runoff management program is intended to protect water quality during planning for new development, construction, and on-going use of existing development. The reduction of pollutant discharges to the maximum extent practicable from the City's storm drain system is achieved through the implementation of Best Management Practices (BMPs). This includes both structural and non-structural BMPs. The City continues to develop and improve on methods to assess the effectiveness of these BMPs, and feeds this information back into the program planning loop to focus future activities.

The following JURMP program components are covered in this annual report:

- Existing development (Municipal, Industrial, Commercial, and Residential);
- Land use planning for new and redevelopment;

- Construction;
- Illicit discharge detection and elimination;
- Education;
- Public participation;
- Assessment of the JURMP effectiveness;
- Fiscal analysis of FY 06-07 and the upcoming year's budget (FY 07-08);
- JURMP revisions; and
- Special investigations.

Following is a summary of accomplishments during the reporting period and plans for the coming year by JURMP component.

Municipal

Program Strengths

The municipal facilities continued to implement their Storm Water Pollution Prevention Plans and to conduct self-inspections of their facilities. Additionally, all high priority municipal sites were inspected during FY 06-07 by an outside contractor. In-house trainings continued to remind field personnel on proper implementation of appropriate BMPs and other storm water issues. Additional BMPs were implemented at the municipal sites as detailed in Section 2. The City also continued to make significant progress in updating both the Storm Drain and Sewer Master Plans. Updated plans will provide prioritization of network repairs and also assist in identifying problem areas that may require more attention from Public Works staff for cleaning, maintenance and/or repairs.

During FY 06-07, approximately 8,000 curb miles of streets were swept, removing an estimated 859 tons of materials, a significant increase over FY 05-06 (@ 250 tons). This was accomplished under a new street sweeping contractor. City staff inspected and cleaned approximately 1,204 catch basins and inlets, which equates to approximately 148% of the City storm facilities. This improvement was accomplished through the use of a new City owned vacuum truck. Approximately 180 $yd^3$of sediment and debris were removed from the municipal separate storm sewer system, and approximately 864 yd^3 of sediment were removed from flood control channels. In total, 1,614 yd^3 of sediment and debris were removed from the City's MS4. In addition, over 1100 tons of sediment, trash, green waste and debris were removed from streets, lots, medians and right-of-ways.

FY 07-08 Plans

1. The City will continue to hire an outside contractor to annually inspect the main high priority municipal facilities and parking lots. This provides a third-party stormwater professional perspective for the review and evaluation of site conditions and BMP implementation.

2. The City will work to complete the Storm Drain and Sewer Master Plan updates.

3. The City will explore methods and databases to more efficiently track and report on maintenance activities.

4. The City will revise its JURMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will identify key areas and information to be collected to enhance the program's effectiveness.

Industrial

Program Strengths

All high priority (23), 13 medium priority, and 3 low priority industrial facilities were inspected during the reporting period. Detailed information on industrial permit issues was provided during inspections and in the report. The inspections included assessment of facility operator knowledge of storm water issues and facility BMP implementation. Additionally, all facilities were assessed using the Pollutant Discharge Potential Assessment form conducted as a pilot during the previous fiscal year. Because many of the City's industrial facilities are found in new industrial parks, where essentially all activity is indoors, the number of BMP deficiencies observed at industrial sites was relatively small – only two violations related to BMPs were noted during industrial inspections. Several industries were in violation for failure to monitor, resulting in the issuance of Notices of Violation, and subsequent follow-up from the industry to submit monitoring plans or provide evidence of their removal from the requirements to conduct monitoring.

FY 07-08 Plans

The City will continue to conduct annual inspections of high priority industrial facilities and inspect other industrial facilities as resources allow. Following are additional program improvements that the City will address in FY 07-08.

1. The City will increase enforcement efforts to obtain compliance from facilities that have failed to conduct required monitoring and will continue to notify the Regional Board of those needing an Industrial Permit.

2. The City will improve internal procedures to provide proper notification to the Regional Board for any facilities in which noncompliance may endanger health or the environment.

3. The City will update the Industrial component of the JURMP to comply with new Order R9-2007-0001 and will identify key areas and information to be collected to enhance the program's effectiveness.

Commercial

Program Strengths

The major accomplishment for this component during the reporting year was the inspection of all inventoried restaurants, nurseries and greenhouses, with follow-up inspections of automotive facilities with compliance issues noted during FY 05-06. The City aggressively pursued restaurant compliance for grease handling and storage requirements.

Other strengths included the continued use of the knowledge and BMP implementation assessments conducted during inspections, as well as the use of the PDPA form that was conducted during the previous year as a pilot project.

FY 07-08 Plans

There continue to be compliance issues with commercial facilities, particularly with restaurants and how they handle and store waste oil and grease, and general housekeeping around dumpsters. In general, the City would like to see the commercial program grow increasingly effective each year in bringing facilities into compliance. The following have been identified as areas of focus for FY 07-08:

1. Continue to focus education, inspections and enforcement on restaurants and other commercial facilities with repeated non-compliance issues.

2. Increase compliance activities through the addition of a Stormwater Code Enforcement Officer.

3. Update the Commercial component of the JURMP to comply with new Order R9-2007-0001 and identify key areas and information to be collected to enhance the program's effectiveness.

Residential

Program Strengths

The City continued to actively conduct residential outreach as well as complaint investigations to obtain compliance with BMP requirements for high priority residential areas and activities. A new pet waste education program was launched. Also during 2006-07, approximately 244,936 pounds of HHW were dropped off by Vista residents, and residential use of the HHW facility continued to increase.

FY 07-08 Plans

The City has identified nitrates and trash as dry weather constituents of concern (COCs). The watershed has identified bacteria and sediment as high priority COCs (wet weather monitoring). Some residential areas and activities can contribute to these COCs. As shown in the City's dry weather program, over-irrigation runoff can carry contaminants to the

storm drain system. Following are some on-going program improvements that the City will address in FY 07-08.

1. The City will continue to implement education, investigation and enforcement programs to reduce stormwater pollutants from high priority residential areas and activities, with an emphasis on the COCs.

2. The City will update the Residential component of the JURMP to comply with new Order R9-2007-0001 and will identify key areas and information to be collected to enhance the program's effectiveness.

Land Use Planning and Development

Program Strengths

During the reporting period, the City continued to implement its SUSMP requirements for all projects. Since the RWQCB SUSMP Program audits, the City has made a concerted effort towards obtaining conformance with the SUSMP requirements for site design and source control implementation. This has been accomplished and the resulting BMPs have been progressing toward Low Impact Development types. The more natural types of BMPs have also crossed from site design into treatment control BMPs. All of the priority projects approved during the reporting period had natural treatment control. The natural treatment control BMPs included properly designed treatment control detention basins and vegetated bioswales.

FY 07-08 Plans

The City plans to collaborate with other Copermittees to work towards regional standards for implementation of SUSMP requirements, including LID and HMP requirements. Currently, there is no standard for quantities of site design and source control for projects. By developing minimum standards, the Copermittees could eliminate the confusion over how much site design is required. Until the interim and final HMP requirements are determined, the quantity of site design BMPs for a particular project is still jurisdictionally specific and developers across the region are subject to mixed requirements. The City also plans to continue to require more natural treatment control BMPs and site design features for the projects.

The City will revise its JURMP and SUSMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will identify key areas and information to be collected to enhance the program's effectiveness.

Construction

Program Strengths

The construction component strengths during the reporting period were the site inspections conducted at all priority sites. As City inspectors have

become more educated through training sessions, and their own experiences, the inspections and contractor compliance has improved. Once again, there were very few legitimate construction related complaints received during the reporting period.

In addition, program staff spent a considerable amount of time with the Building Department inspectors training them on proper storm water BMPs and key areas to inspect.

FY 07-08 Plans

City staff will continue meeting with developers and contractors at all pre-cons to discuss site BMPs. Additionally, the City will improve the current or develop new databases to track construction projects and post-construction BMPs.

The City will revise its JURMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will identify key areas and information to be collected to enhance the program's effectiveness.

Illicit Discharge Detection and Elimination

Program Strengths

The City continued to actively seek and eliminate illicit connections and discharges through the dry weather program and complaint investigations. While there were various exceedances of dry weather actions levels, the 2007 Dry Weather Monitoring Program found no indications of illegal discharges to the City of Vista's storm water conveyance system.

The City conducts an active stormwater complaint investigation and enforcement program, and conducted 203 stormwater investigations last year. The City's ultimate goal is to achieve compliance, and the Code Enforcement Officer worked to achieve that end through education or enforcement, as appropriate. The City did step up enforcement actions for repeat violators, issuing 112 Notices of Violation and 69 administrative citations with fines.

FY 07-08 Plans

The City will continue to refine and improve these program areas as needed. The completed GIS maps will assist the City in evaluating the locations of the current dry weather monitoring sites to determine if they are properly located in order to best identify illegal discharges, and to track illicit discharges when identified. Following are some highlighted activities planned for 2007-08.

1. The City will hire a second Stormwater Code Enforcement Officer and continue to focus on identified problem areas and repeat violators.

2. The City will add a Stormwater email address and publicize it on the website and in other documents for another means to facilitate reporting.

3. The City will continue to respond to private lateral sewer overflows and continue to develop a Fats, Oils and Grease program in order to reduce sewer overflows caused by grease blockages.

4. The City will revise its JURMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will identify key areas and information to be collected to enhance the program's effectiveness.

Education

Program Strengths

The strength of the education program during this reporting period was the active distribution of storm water materials to various target audiences, including residents, municipal staff, school children, businesses, developers and construction site operators. The City conducted and participated in external and internal workshops and presentations, including elementary school classroom presentations, a new pilot education program at Guajome Park Academy, automotive classroom presentations, and City staff training sessions.

FY 07-08 Plans

The City of Vista will continue to collaborate with watershed and regional education groups to focus on education campaigns that are effective at overcoming barriers to behavior change. Following are some identified program improvement areas for FY 07-08.

1. The City will continue to distribute the materials that have been developed, and will work with the watershed and regional education groups to develop effective materials and campaigns.

2. The City will continue to conduct classroom presentations to school children, and to educate target audiences on specific BMPs and issues as they are identified.

3. The City will revise its JURMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will develop an education strategy and identify key areas and information to be collected to enhance the program's effectiveness.

Public Participation

Program Strengths

Vista continued to co-sponsor creek cleanup efforts throughout the City to improve our waterways and encourage the public to become stewards of their community. The City also provided many opportunities for public participation, from formal public meetings to festivals and events. Vista continued to advertise the hotlines on educational and promotional materials. Vista residents who have an interest in improving their neighborhoods can take part in various City programs and commissions. Additionally, the City of Vista obtained a State Grant to develop a Watershed Management Plan and began the planning process by forming a watershed planning group composed of various local stakeholders.

FY 07-08 Plans

The City will continue to seek public involvement with the JURMP, and to seek stakeholder participation in the development of plans to improve water quality. As the City revises its JURMP to meet the requirements of Order R9-2001-0001, the City will seek public participation in program development. The City will also continue to seek improved methods for public participation and will create a Stormwater email address to provide additional means for public contact and involvement.

Program Assessment

Program Strengths

The City of Vista continued to use the Copermittee developed JURMP Effectiveness Assessment Framework for its JURMP assessment. This framework provides guidance that aims to move from a permit compliance-based documentation process toward an assessment strategy that focuses on the ultimate goal of reducing pollutants and improving water quality. Through the planning, implementation and assessment processes, the City works to identify pollutant sources, implement effective BMPs, and refine programs in order to eliminate or reduce the identified pollutants as efficiently as possible.

The City tracks program compliance activities as well as higher levels of program assessment. Knowledge changes were assessed with pre- and post- tests for school children. Knowledge and BMP implementation were assessed by inspectors for municipal, commercial and industrial facilities. Load reductions are estimated for maintenance activities, including street sweeping and storm drain maintenance. Thirty-two storm drain system locations were monitored as part of the Dry Weather Monitoring Program and the City elected to monitor five creek sites to obtain additional receiving water information for future assessments.

FY 07-08 Plans

The City will revise its JURMP to meet the requirements of Order R9-2007-0001. The City will also continue to pursue regional standards and methods for calculating pollutant load reductions for program activities, and to pursue assessment tools that will allow higher levels of program assessment.

Fiscal Assessment

Program Strengths

The City continued to fund its storm water management program to comply with Permit requirements. Additionally, the City pursued and obtained grants for education and watershed planning activities.

FY 07-08 Plans

The City has increased the 2007-08 budget in order to begin funding two new Water Quality Protection Program staff positions, to pay for increased lagoon and watershed monitoring required by Investigative Order R9-2006-0076, and to pay for increased program requirements to implement new urban runoff order R9-2007-0001.

The City will continue to look for ways to cost efficiently implement the JURMP and to ensure a stable funding source, and will work with the Regional Copermittees to develop fiscal reporting standards as required under Order R9-2007-0001.

Conclusions

The City has been successfully implementing the JURMP and identifying areas for program refinement. Through the iterative process of implementation and evaluation, these activities and procedures are modified in order to more efficiently and effectively implement BMPs to reduce pollutant discharges in urban runoff to the Maximum Extent Practicable. As the program continues to be implemented, more data will be collected in order to help evaluate the impacts of the program on water quality.

The City's JURMP is a citywide program, implemented by multiple departments and numerous City staff. Successful implementation and continued compliance depends on good communication and direction, education, and continued collaboration. Increased collaboration helps the City implement the JURMP as efficiently and effectively as possible.

Over this next year, the City will be updating and expanding the JURMP in order to comply with newly issued Order No. R9-2007-0001. This will also include updating Watershed and Regional Urban Runoff Management programs. The City will continue to actively participate and collaborate with Copermittees and various stakeholders to update and implement the Carlsbad and San Luis Rey

Watershed Urban Runoff Management Plans, as well as the Regional Urban Runoff Management Program currently under development.

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to provide a comprehensive report on the City of Vista's (City) implementation of the Jurisdictional Urban Runoff Management Program in accordance with the requirements of the San Diego Regional Water Quality Control Board (RWQCB) NPDES Permit No. CAS0108758 and Order No. 2001-01 (Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, and the San Diego Unified Port District). This annual report describes the activities conducted by the City during the Fiscal Year and reporting period of July 1, 2006 through June 30, 2007 (FY 06-07). The City's program is described in its Jurisdictional Urban Runoff Management Plan (JURMP), February 2002, and subsequent revisions.

In accordance with Order No. 2001-01 Section I, descriptions of the various program activities conducted by the City are included in this annual report. Specifically, Section I requires the following be addressed:

- Existing development (Municipal, Industrial, Commercial, and Residential);
- Land use planning for new and redevelopment;
- Construction;
- Illicit discharge detection and elimination;
- Education;
- Public participation;
- Assessment of the JURMP effectiveness;
- Fiscal analysis of FY 06-07 and the upcoming year's budget (FY 07-08);
- JURMP revisions; and
- Special investigations.

The program activities conducted during the reporting period for each of these components are detailed in Sections 2.0 through 14.0 of this document.

1.2 CITY OF VISTA CHARACTERISTICS

The City of Vista is located thirty-five miles north of downtown San Diego and seven miles east of the Pacific Ocean. It covers an area of approximately 18.6 square miles between Oceanside and Carlsbad to the west and San Marcos and unincorporated areas of San Diego to the east. The City has a population of about 95,000 people. The majority of the City (55%) is classified as residential. The remaining land use types are categorized as undeveloped land (13%), parks and recreation (9%), industrial (8%), commercial (6%) and agriculture (2%). Other land uses comprise the remaining 7% of the area.

The City is primarily located within the Carlsbad Hydrologic Unit (HU) (Figure 1.1). The Carlsbad HU is divided into several Hydrologic Areas (HA). The northern portion of the City is primarily within the Buena Vista Creek HA (55% of the land area) and the southern portion is primarily within the Agua Hedionda HA (38% of the land area). The Loma Alta HA comprises approximately 1% of the northwestern portion of the City and the San Marcos HA comprises less than 1% of the southernmost portions of the City. The extreme northern portion of the City lies within the San Luis Rey HU (6% of the land area). Runoff generated within the city is ultimately discharged to the receiving waters of Agua Hedionda Creek, Buena Vista Creek and Guajome Creek, which are tributaries to Agua Hedionda Lagoon, Buena Vista Lagoon, and San Luis Rey River, respectively.

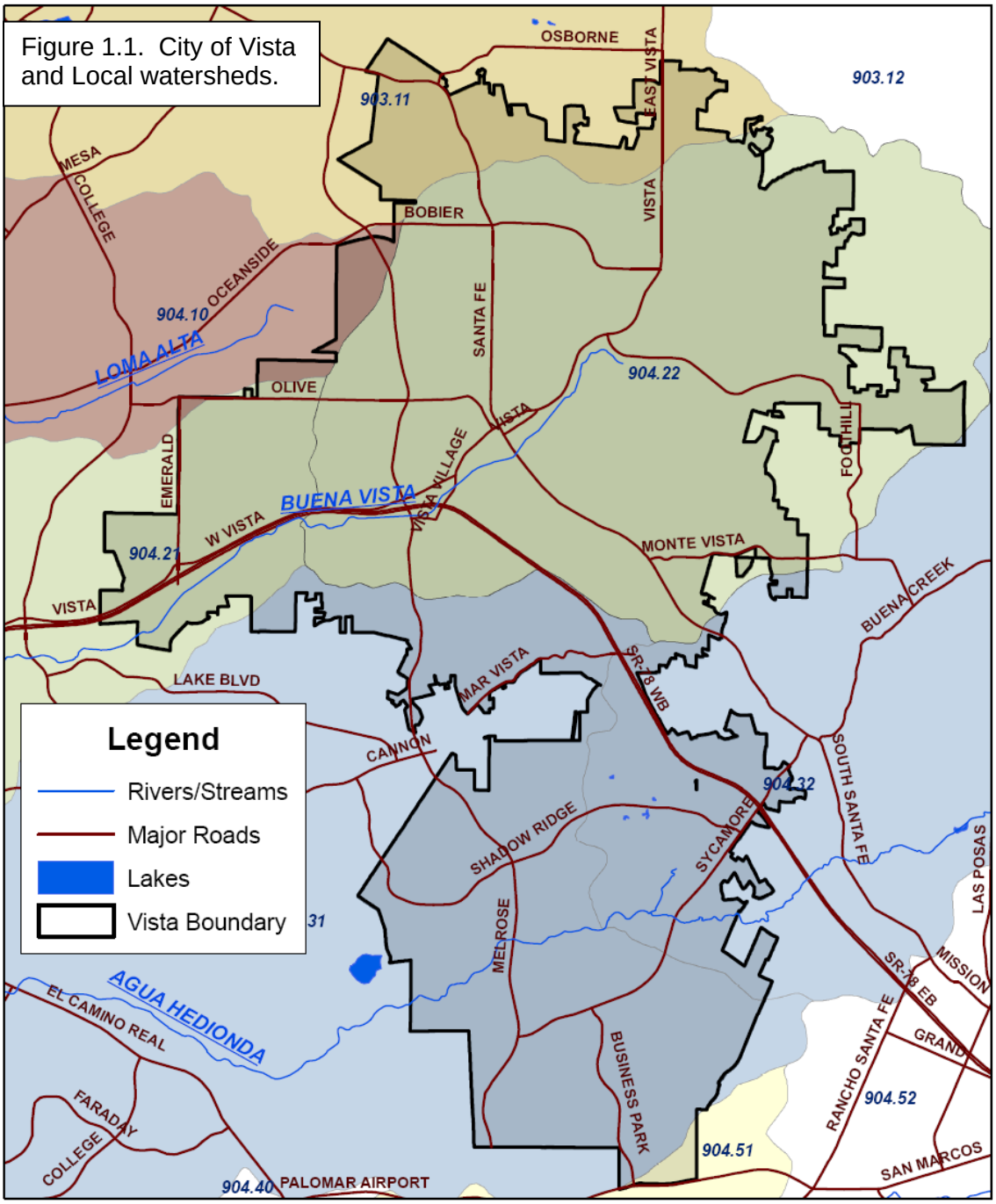

Figure 1.1. City of Vista and Local watersheds.

1.3 ORGANIZATION OF THE REPORT

The structure of the Annual Report is as follows:

SECTION 1 – Introduction

SECTION 2 – Municipal Component Activities

SECTION 3 – Industrial Component Activities

SECTION 4 – Commercial Component Activities

SECTION 5 – Residential Component Activities

SECTION 6 – Land Use and Development Component Activities

SECTION 7 – Construction Component Activities

SECTION 8 – Illicit Discharge Detection and Elimination Component Activities

SECTION 9 – Education Component Activities

SECTION 10 – Public Participation Component Activities

SECTION 11 – Assessment of JURMP Effectiveness

SECTION 12 – Fiscal Analysis

SECTION 13 – Special Investigations

SECTION 14 – Conclusions and Recommendations

1.4 ANNUAL PROGRAM REVIEW

On September 12, 2007, the San Diego Regional Water Quality Control Board sent a letter to the City of Vista with comments on the 2005-06 JURMP Annual Report submittal. A copy of this letter is in Appendix G. There were six numbered comments, and a request that the City's response be addressed in the 2006-07 JURMP Annual Report. Following is a summary of where in this report the City's responses can be found.

1. Municipal inspections: Please see JURMP report section 2.1.5.
2. Industrial Inspections: Please see JURMP report section 3.1.1 and appendix B-2.
3. Potential high priority sites: Please see JURMP report section 3.1.1 and appendix B-1.
4. Storm water monitoring: Please see JURMP report section 3.1.3 page 5 and Table 3-2.

5. Update on MS4 mapping: Please see JURMP report section 8.1.3 and 2.1.3.9.
6. Criteria: Please see JURMP report section 3.1.5 and appendix B-3.

While these comments were provided to Vista following the completion of the 2006-07 reporting period and thus changes in this reporting period could not have been made, the City will address any corrections needed in upcoming JURMP submittals and annual reports.

1.5 PROGRAM UPDATES

On January 24, 2007, the San Diego Regional Water Quality Control Board reissued NPDES Permit CAS0108758 as new Order R9-2007-0001 to the City of Vista and all San Diego County Copermittees. This replaced Order No. 2001-01. This new Order requires that JURMP updates be submitted in January 2008 (this was extended into March 2008 by Addendum 1). Therefore, all JURMP components will be updated by the new submittal date to comply with the new requirements found in Order R9-2007-0001.

1.6 WURMP IMPLEMENTATION

In addition to implementing JURMP activities, City staff resources and efforts are also directed at implementing watershed activities. The City continues to participate in ongoing coordination and activities implementing these programs. Some of these activities included watershed cleanup events, watershed educational material development and distribution, watershed surveys, collecting water quality data, and directing development of the Agua Hedionda Watershed Management Plan under State Water Board Grant Agreement No. 06-139-559-0. The details of Vista's watershed implementation activities are found in the respective Carlsbad Watershed Urban Runoff Management Program Annual Report and the San Luis Rey Watershed Urban Runoff Management Program Annual Report.

2.0 MUNICIPAL FACILITIES AND ACTIVITIES COMPONENT

The City of Vista (City) provides services to its residents including street maintenance, wastewater collection, treatment and disposal, stormwater collection and conveyance, household hazardous waste disposal and recycling, parks and recreational facilities maintenance, law enforcement services, fire and paramedic services, and other services at City Hall. Numerous facilities, equipment, and City staff are necessary to provide these services. This section describes how the City prevented or reduced pollutants in runoff from municipal land use areas and activities during the FY 06-07 reporting year.

2.1 PROGRAM ACCOMPLISHMENTS

2.1.1 Source Identification (Municipal Inventory)

During the reporting period, the City concluded that the sanitary sewer pump stations were not a significant threat to water quality and revised their priority to medium priority facilities. This conclusion is based on the following: no surface water exposure to significant pollutants at the pump stations, and; the pump stations are visited on a daily basis for maintenance by Encina Water Authority. No other significant changes were made to the City's municipal facilities inventory during the reporting year. The current inventory is included in Appendix A-1 of this document.

2.1.2 BMP Requirements

2.1.2.1 Pollution Prevention BMPs

Pollution prevention BMPs for municipal facilities include preventative maintenance, inspection, and incident response. The requirements are outlined in the Vista Municipal Code, Chapter 13.18 Stormwater Management and Discharge Control Program, in various facility Storm Water Pollution Prevention Plans (SWPPPs), and are taught during employee training sessions. The City ensures that pollution prevention BMPs are implemented during annual facility inspections.

Specific pollution prevention BMPs were implemented during this reporting period, including regular maintenance and inspection of streets and roads, the storm drain system, the sewer collection system, landscaping, and municipal buildings. These pollution prevention BMPs are discussed below in Section 2.1.3. Incident response, including any municipal incidents (e.g. sewer spills), are discussed in Section 8.0 of this report.

2.1.2.2 BMP for Municipal Facilities

Municipal BMP requirements are in the Vista Municipal Code, Chapter 13.18 Stormwater Management and Discharge Control Program and in various facility SWPPPs. Municipal facility supervisors and staff perform routine inspections of their facilities to ensure that municipal BMPs are implemented. In addition, the City ensures that municipal BMPs are implemented during annual facility inspections. All required pollution prevention and municipal site specific BMPs were implemented during the reporting period.

2.1.3 BMP Implementation

2.1.3.1 Streets and Roads

Through the City's street sweeping contracted services, approximately 8,000 curb miles were swept during the reporting year for an estimated 859 tons of material removed. This street sweeping is based upon a twice per week schedule of all City streets (non-inclusive of private roadways) and a once per week schedule for the City's main roadways. Vacuum street sweepers are used to remove sediments, litter and debris from the streets and curbs.

During the reporting period the City entered into an agreement with a new street sweeping contractor that provides more efficient coverage and reporting information than the previous contractor. The next annual report will have more information that may be useful for assessment and enhancing the street sweeping program.

The City contracts with an organization, Partnerships with Industry (PWI), for trash and litter collection along the City right-of-ways. During the reporting year, this contractor collected waste four days per week for approximately five hours per day. Approximately 865 bags of trash and debris were removed from the City's streets and right-of-ways during the year (for an estimated 5,190 pounds).

Approximately 20 acres of City medians, parkways and slopes are maintained by a private contractor through the Parks and Community Services Department. These areas are inspected routinely up to three times per week. Debris and vegetation are removed routinely. It is estimated that approximately 1200 yd^3 of green waste and debris (estimated at 100 tons) were removed during the reporting period.

The City performs weed abatement in public right-of-ways and properties. Approximately 9 acres were mowed, resulting in approximately 32 tons of debris removed and approximately 63

acres were sprayed by the Public Works Department from roads and streets. Other activities include weed removal, trash removal, miscellaneous debris removal and homeless encampment cleanup. During this reporting period, approximately 109 tons of materials were removed by Public Works from empty lots.

Another City cleanup program is graffiti removal. During the reporting period, the Public Works crews removed 16,482 ft^2 of graffiti from public property. The City uses a vacuum recovery system in conjunction with inlet protection to collect any water discharged during graffiti cleaning prior to proper disposal.

2.1.3.2 Parking Areas

In October-November 2003, the City contracted with a company to install storm drain inlet filters in City parking lots as listed in Table 2.1.

The filtration units were installed and are being maintained by a contractor. Following installation, quarterly maintenance of the unit resulted in the removal of materials at each location as described in Table 2.1. Based on contractor reports, approximately 335 pounds of wet sediment and debris were removed from the inlet filters during the reporting period. This was over a period of five visits to each of the filters. The filters were also inspected for effectiveness and where maintenance or repair was required, the City's contractor immediately performed the maintenance or repairs.

Table 2.1 Municipal Storm Drain Filtration Locations and Removals

Parking Lot Location	Jul-04			Oct-05			May-06			Jul-06			Sep-06			Dec-06			Mar-07			May-07		
	F=% Filter Used D=% Debris O=% Organics																							
	F	D	O	F	D	O	F	D	O	F	D	O	F	D	O	F	D	O	F	D	O	F	D	O
City Hall parking lot (SW corner of Eucalyptus & Escondido avenues)	25	10	15	35	25	10	60	40	20	10	5	5	50	5	45	30	15	15	100	25	75	20	5	15
San Diego Co. Library (SE corner of parking lot)	25	10	15	80	40	40	65	25	40	20	5	15	40	10	30	40	15	25	50	45	5	16	8	8
San Diego Co. Library (12"x12" drains in parking lot)	40	10	30	25	-	25	80	50	30	100	30	70	100	20	80	15	10	5	15	5	10	20	10	10
San Diego Co. Library (12"x12" drains in parking lot)	60	20	40	40	20	20	70	50	20	100	25	75	80	10	70	10	5	5	8	8	-	20	10	10
Wave Waterpark parking lot	10	5	5	25	5	20	60	20	40	40	10	30	20	5	15	25	20	5	30	15	15	50	25	25
Brengle Terrace Park (near tennis courts)	25	20	5	55	40	15	90	80	10	25	20	5	30	30	-	70	65	5	45	45	-	30	20	10

Additionally, municipally owned parking areas at Brengle Terrace Park, City Hall, City Recreation Center, and Wildwood Park are dry swept using street sweepers on a bi-weekly basis.

2.1.3.3 Municipal Yards

Throughout the reporting year the City's Public Works' Main Yard was informally reviewed/inspected by division managers every other week in conjunction with sweeping and drain cleaning. The storm drain inlets are inspected regularly on a bi-weekly basis, as well as before and after storm events. The BMPs, as discussed in the JURMP and amended in the Municipal Yard's SWPPP, were employed at the yards including:

- Good Housekeeping
- Ground Maintenance
- Material Storage Practices
- Material Inventory Procedures
- Spill Prevention and Response
- Waste Disposal and Recycling Storage Tanks & Outside Storage
- Vehicle and Equipment Maintenance Operations
- Preventative Maintenance
- Loading and Unloading Materials
- Reporting and Record Keeping

2.1.3.4 Specific BMPs implemented

Other BMPs were also implemented and are discussed below:

<u>Main Yard</u>

- Additional spill kits were installed around the site to aid in rapid response to spills.
- The hazardous materials storage area has a permanent cover and rubber berms are installed in front of the area as secondary containment.
- A larger container for the combustible materials storage locker is used and unneeded materials were disposed of to reduce potential for spillage.
- Removable covers are installed over the bulk material storage bins.
- Outdoor recycling bins were covered with tarps.
- Emergency storm drain covers are placed near all storm drain inlet so that the inlet could be covered in the event of a spill on site.
- Signage was placed in fuel pump area indicating the location of the spill kit; and

- Fuel and paint cans were moved to flammable storage containers.

Auxiliary Yard

- Covers were erected to store e-waste and other potential pollutants.

Satellite Yard

- Storm drain sediment and debris drying area is lined and bermed. It is also covered during rain events. Any wastes that may accumulate are tested prior to disposal.
- Disturbed slopes were stabilized with straw blanket to prevent erosion.
- Concrete V-ditches and site discharge points were cleaned and sediment control measures were implemented to minimize sediment discharges from the site.
- Sediment controls were placed around material stockpiles.

Satellite Yard-MS4 Sediment and Debris Drying Area

2.1.3.5 Parks and Buildings

A SWPPP is implemented for facilities and activities overseen by Parks and Community Services. The SWPPP outlines the BMP requirements for these facilities and activities. Throughout the reporting year the City's Parks and Community Services Department regularly inspected and maintained the twelve City parks, two historical parks, two theaters, water park, and the City's Vista Village Creek Walk. As reported in the JURMP the following BMPs are employed at these facilities:

- Facility and Grounds Maintenance
- Good Housekeeping
- Facility Repair, Remodeling and Construction
- Preventative Maintenance
- Landscape Waste Removal/Disposal
- Native Vegetation
- Irrigation
- Integrated Pest Management.

The City's Parks and Building staff regularly maintain City Hall grounds and landscaping. All litter, debris and landscape waste is

collected immediately following maintenance activities. BMPs included in the JURMP that were utilized during the reporting year include the following:

- Facility and Grounds Maintenance
- Good Housekeeping
- Material Storage Practices
- Material Inventory Procedures
- Visual Inspections
- Landscape Waste Removal and Disposal
- Facility Repair, Remodeling and Construction.

2.1.3.6 Specific BMPs Implemented

BMPs implemented at Buena Vista Park & Maintenance Yard include the following:

- Labeled storage areas and sheds,
- Minimized exposure during refilling chemical equipment tanks
- Required portable restroom facilities service/contractor to eliminate spillage from cleaning process.

At Brengle Terrace Park & Maintenance Yard, the Parks and Community Services Department implemented the following:

- Parking lot storm drain catch basin filter insert,
- Used good-housekeeping efforts at the maintenance yard,
- Required tenants to use good housekeeping practices,
- Provided secondary containment for chemicals,
- Stored materials under a cover,
- Covered temporary stockpiles,
- Maintained a supply of gravel bags onsite for dirt parking areas, and
- Washed vehicles at commercial wash or used biodegradable soap when washing over pervious areas.

BMPs at City Hall include dry sweeping City Hall parking lot and removing sediments from fiber roll inlet protection. A storm drain filter insert is also inspected and maintained in the City Hall main parking lot. Another significant BMP at City Hall is the use of drought tolerant plants and mulch; thereby eliminating irrigation runoff and minimizing fertilizer and pesticide applications.

The WAVE Waterpark continues to implement the BMPs included in its own SWPPP. A storm drain filter insert is inspected and maintained in the WAVE's parking lot. Additional BMPs include

general clean up procedures to eliminate discharges into storm inlet, disposal methods for shallow left over liquids from pool (scrubbing and acid washing), and an employee education program.

2.1.3.7 Maintenance Of Municipal Separate Storm Sewer System

Per the City's JURMP (Feb. 2002), the City focuses its MS4 maintenance (inspections and cleanings) on known hot spots. During the reporting year the crew inspected and cleaned approximately 1,204 catch basins and curb inlets. This equates to approximately 148% of the City storm facilities. This work was performed using a rented vactor truck and City crews. It is estimated that approximately 180 yd^3 of sediment and debris were removed from the system using the vactor truck. Additionally, the City Public Works crews removed approximately 864 cu. yds. of material from flood control channels and 35 cu. yds. During maintenance of under sidewalk drains. It is estimated that 3.25 miles of channel were cleaned during maintenance activities.

During the 2006-07 rainy season, the City had 16 staff members on "rain patrol." Rain Patrols are responsible for clearing debris from inlets, grates, pipe openings and road shoulders; providing emergency erosion/sediment control (e.g. sandbags); surveying City streets for damage due to rain and/or flooding. It is estimated that 147 cu. yds. of sediment and debris were removed from the system by this staff during FY 2007 reporting period.

Buena Vista Creek Debris Net

The City maintains a permanent BMP structure in the Buena Vista Creek channel. The debris net, installed immediately upstream of the Vista Village Creekwalk, is maintained on a monthly basis and after major rainfall events. It is estimated that 38 cu. yds. of debris was removed during FY 2007. To facilitate sediment removal from this area, the City constructed an access ramp which allows small equipment to enter the lined channel and access the debris net.

Additionally, the City crews pull sediment from the Vista Village Creekwalk system. The amount of material removed during the reporting period was 385 cu. yds.

The City progressed towards obtaining a city-wide permit for channel maintenance. In previous reporting periods, the City hired a consultant who completed field surveys of 32 potential maintenance sites. At each site, they assessed biological resources and provided aerial photo maps.

During the reporting period, the City performed additional field surveys to identify additional potential maintenance sites to add to the list. It is anticipated that the permitting process will be complete during the next fiscal year and updates will be provided in future Annual Reports.

The City has also been participating in the Regional Channel Maintenance Workgroup, and will continue to participate in this regional effort to develop guidance documents for the purposes of obtaining channel maintenance permitting from the regulatory agencies.

2.1.3.8 Sewer Collection System

The City's sewage collection transmission system is inspected and maintained on an ongoing basis by City crews. The maintenance schedule is established to ensure that the entire system is maintained on an annual basis. Of the approximately 311 miles of collection system and 7,500 manholes and cleanouts in the collection system, approximately 210 miles and 5,000 manholes and cleanouts were maintained during the reporting year many portions cleaned twice or three times. Additionally, approximately 15 miles of the system was video inspected and logged during the physical cleaning and inspection.

In addition to regular inspection and maintenance, pollution prevention also includes system upgrades and rapid spill response. The following sewer system capital improvement projects (CIP) were in the process, which will assist in minimizing inflow and infiltration (I/I) and/or system failures:

- Vista-Carlsbad Interceptor VC1–VC3: Construction complete
- York Drive Sewer: Const. 90% complete
- Raceway Pump Station & Forcemain Replacement: Const. 90% complete
- Buena Outfall Forcemain Replacement: Const. 90% complete

- West Vista Way Sewer Replacement: Design on hold
- S. Santa Fe Sewer, Phase I: Design complete; Construction pending by County .
- S. Santa Fe Sewer, Phase II: Design complete; Construction pending by County
- S. Santa Fe Sewer, Phase III: Construction complete
- Mimosa, Juniper, Grand and Green Oak – Design phase
- Buena Outfall Manhole Rehab – Design phase

2.1.3.9 Capital Improvement Projects

The City is in the midst of completing the Wastewater and Storm Drain System Master Plan Updates. The Master Plan Updates will provide several items to assist in the implementation of the City's stormwater program. The following is a description of those items:

- Development of a GIS system that will include all public storm drain facilities. The GIS will allow staff to further integrate available information about facilities upstream of any point in the system. This capability enhances the IC/ID program by quickly identifying potential sources in the event of IC/ID monitoring that exceeds action levels.
- Development of a hydraulic model that will assist the City in determining the capacities and identify potentially deficient sections of the storm drain system.
- Identification of sanitary sewer collection systems that are in disrepair and prioritize their repairs. This will reduce and prevent losses of sewage to the ground and potential sanitary sewer overflows.

2.1.3.10 Fire Stations

During this reporting period, the Fire Department continued to implement the Fire Facility and Activity SWPPP. The SWPPP was developed in previous reporting periods and after a two-full years of implementation, no changes to the SWPPP were found to be necessary. All of the pollution prevention and other specific BMPs were implemented.

The Fire Facility and Activity SWPPP is similar to those prepared for other departments. The SWPPP describes activities and facilities that may cause pollutants and describes the BMPs required to mitigate the potential pollution.

2.1.4 Management of Pesticides, Herbicides, and Fertilizers

The City has an active program to manage the use of pesticides, herbicides, and fertilizers. The following practices were implemented to comply with stormwater pollution prevention:

- Certified pesticide applicator staff attended continuing education seminars to keep licenses current. Non-certified staff are trained in basic pesticide safety.
- Use of some Category 1 and Category 2 pesticides (branded as Diazinon, Dursban, and Metasystox) has been reduced and/or eliminated due to increasing usage restrictions and environmental concerns.
- Chemicals and fertilizers are never "dumped" into landscape, storm drains, or trash cans. Chemical and fertilizer inventories are used according to label directions. Empty containers are triple rinsed and either recycled or made unusable and disposed of in accordance with label directions and regulations.
- MSDS files were updated to include new environmental restrictions, and other product use changes. City applicators are informed of all changes.
- Integrated Pest Management (IPM) practices are part of the City's ongoing training program. Emphasis is placed on using other types of control measures first, (e.g. adjusting watering or fertilizer schedules, use of biologic control measures) using chemical control only as necessary and in needed amounts.
- Landscape contractors were required to follow the same requirements listed above. Landscape contracts require contractors to notify the City and submit for approval any pesticides and fertilizers prior to use. Language was also added to the landscape contracts to more specifically reference stormwater pollution prevention regulations. City staff regularly inspects and corrects the activities of landscape.
- Records of pesticide use were maintained in accordance with the California Department of Pesticide Regulations (DPR). Records of usage are maintained for a minimum of five years. Monthly use reports are filed with San Diego County Department of Agriculture. The County performs compliance inspections of chemical storage facilities and chemical usage records. Chemicals are stored to avoid contact with precipitation during rain events.

2.1.5 Inspection of Municipal Areas and Activities

Inspections of the municipal facilities were performed on several different levels during this reporting period, including routine informal self-inspections and annual facility inspections by the City's contractor. The purpose of these inspections was to ensure that BMPs (including those for pollution prevention) were being implemented. Eleven of the high priority municipal areas are actual municipally operated sites/facilities, while the remainders are

networks or parts of networks that include: (1) streets and roads; (2) the MS4, and; (3) the sanitary sewer system.

Per Section 2.8.3 of the JURMP, the City formally inspects all high priority municipal sites. Municipal sites are considered to be fixed facilities where high priority municipal activities occur. The networks, as described above, are routinely inspected under various programs such as street sweeping, streets maintenance, MS4 inspections and cleaning and the sanitary sewer system video inspection and cleaning program. Formal inspection forms are not generated for the general routine inspections performed on these municipal network areas.

Table 2.4 provides a summary of the formal annual stormwater inspections performed for the municipally operated sites/facilities by the City's inspection contractor.

Copies of the completed inspections can be found in Appendix A-2. For each facility, recommendations for follow-up corrective actions were listed. All identified corrective actions were implemented after the inspections were completed and verified by City staff.

The City also performs bi-weekly informal inspections of some of its significant facilities including the Public Works Yards and City Parking Lots. The inspections include sweeping and the immediate maintenance and repair of BMPs that are implemented at each facility/site. Documentation of the inspections for FY 2006-07 can be found in Appendix A-3.

Table 2.4 Summary of Annual Stormwater Inspections for Municipal Facilities

MUNICIPAL FACILITY	RESPONSIBLE DEPARTMENT	INSPECTION DATE
The Wave Waterpark	Parks and Community Services	3/16/07
Buena Vista Park & Maintenance Yard	Parks and Community Services	3/15/07
Brengle Terrace Maintenance Yard	Parks and Community Services	3/15/07
Public Works Yard (Main)	Public Works Department	3/16/07
Public Works Yard (Auxiliary)	Public Works Department	3/16/07
Satellite Yard	Public Works Department	3/16/07
City Hall Parking Lot	Facilities Management	6/26/07
Broadway @ Haynes Parking Lot	Public Works & Parks and Community Services	6/26/07

MUNICIPAL FACILITY	RESPONSIBLE DEPARTMENT	INSPECTION DATE
Main St @ Indiana Parking Lot	Public Works & Parks and Community Services	6/25/07
Main St @ Michigan Parking Lot	Public Works & Parks and Community Services	6/26/07
Vista Village Dr @ Michigan Parking Lot	Public Works & Parks and Community Services	6/26/07

2.1.6 Compliance and Enforcement

During annual inspections performed by the City's contractor, any corrective actions items were identified. The follow-up recommendations were presented to the responsible facility manager and the BMPs were implemented. The City verified that all corrective actions were taken that were recommended by the City's contractor.

2.2 IMPLEMENTATION PLANS FOR 2007-08

During the next implementation period, several improvements are planned, including:

- Completion of a systemwide GIS for the City's stormwater facilities, including open channel facilities that aren't typically mapped. This will help identify runoff patterns, maintenance activities, and to assist staff with locating dischargers.
- Continue to pursue channel maintenance permits and work with other Copermittees on storm drain channel maintenance procedures.
- Continue to hire an outside contractor to annually inspect municipal high priority stationary facilities.
- Explore improved methods and databases to more efficiently track and report on maintenance activities.
- Complete the Sewer and Storm Drain Master Plan updates.

2.3 PROPOSED REVISIONS TO JURMP

The City's JURMP is currently being revised to comply with Order No. R9-2007-0001, and will be submitted to the Regional Board by March 24, 2008. A copy of the current municipal inventory is found in Appendix A-1.

Section 2.8 of the JURMP has been revised in compliance with Order No. 2001-01. The revised section is listed below:

2.8 INSPECTION OF MUNICIPAL FACILITIES AND ACTIVITIES

The City seeks to achieve compliance at its municipal facilities with the minimum applicable BMPs through site inspections, informal self-inspections by site supervisors and staff, and other means as described in this section.

2.8.1 Inspection Procedures

Municipal high priority stationary facilities will be formally inspected to ensure the facilities are operating in accordance with the permits, and applicable codes, regulations and ordinances. If sites do not meet the City's minimum water quality protection requirements or there is a discharge related to municipal activities, City Engineering staff, municipal supervisors, or third-party inspectors conducting inspections will immediately direct compliance and conduct follow-up inspections as necessary to confirm that compliance is attained.

City staff will use the following framework when conducting both informal and formal inspections:

- Determine if BMPs are being used in accordance with the intent of all regulations;
- Determine whether BMPs are effectively being implemented and maintained properly;
- Determine whether the facility supervisor is making appropriate adjustment when ineffective BMPs are found.

2.8.2 Municipal Facility Self-Inspections

Stormwater management is a dynamic operation where changes are expected. BMPs for stormwater management measures that require frequent maintenance to remain effective may require relocation, revision and re-installation, particularly as facility dynamics change. Therefore, Facility Supervisor self-inspections will be conducted prior to the rainy season, and periodically throughout at a frequency determined by the Facility Supervisor.

There are four primary purposes of the self-inspections:

- To ensure that BMPs are properly implemented and functioning effectively;
- To identify maintenance (e.g., material removal) and repair needs; and
- To ensure proper implementation of stormwater management plans.
- At a minimum, a self-inspection will note the date, time, conditions and if any corrective actions are needed.

2.8.3 Inspection Frequencies

At a minimum, each site that is determined to be high priority will be formally inspected by the Engineering staff or contractors annually. The need for additional inspections may vary depending upon several factors including site conditions, weather patterns, and history of facility compliance and past performance.

3.0 INDUSTRIAL FACILITIES

The objective of the industrial facilities component of the City's Jurisdictional Urban Runoff Management Program (JURMP) is to reduce pollutants in urban runoff from industrial sites. This section summarizes the City's efforts and accomplishments during the July 2006 through June 2007 (FY06-07) reporting period for this existing land use component.

3.1 PROGRAM ACCOMPLISHMENTS

3.1.1 Source Identification (Industrial Inventory)

New businesses are identified through the City business license database, information from complaint investigations, inspections, and phone and business listings. This information is gathered throughout the year. New businesses are added to the inventory after an inspection or site visit confirms the priority of that industry, as opposed to previous years in which un-confirmed industries were added to the inventory (as "potential" based on available information), and then updated following an inspection. In the 05-06 annual report, appendix B-1 provided the future (06-07) inventory, which then listed new businesses to be inspected in the upcoming reporting period. The column indicating "inspected" referred to those industries that had been inspected during the 05-06 reporting period. All industries that had been identified as "high priority" or "potential high priority" on the 06-07 inventory were inspected during the 06-07 reporting period, in compliance with the Permit.

The 06-07 inventory included 24 facilities initially identified as high priority. All of these industries were inspected during this reporting period (Appendix B-1), although one business had moved out of the City and was subsequently removed from the inventory. As a result of the comprehensive site inspections (discussed below), the City's database and 07-08 inventory has been updated to reflect industry changes and prioritizes the sources based on their potential to cause adverse impacts to water quality if discharges are released from the industrial facilities. Two industries terminated activities that subjected them to the Industrial Permit and filed No Exposure Certifications, so they were reprioritized to medium priority. Another business filed a Notice of Intent to be covered under the Industrial Permit and has subsequently been added to the current inventory. There are currently 22 high priority industries in the 07-08 inventory (Appendix B-2).

The City contracted D-Max Engineering, Inc. (D-MAX) to conduct the FY 06-07 inspections. D-Max inspected all high priority industries on the 06-07 inventory, as well as inspecting an additional 13 medium priority and 3 low priority industries.

3.1.2 Industrial Inspection Procedures

Inspection Notification Letter and Educational Materials
When possible, high priority industrial inspections were scheduled in order to meet with the appropriate personnel who could also provide access to documents such as Storm Water Pollution Prevention Plans (SWPPPs) and monitoring reports. Before commencing the inspection process, the City prepared and mailed a letter to the majority of businesses selected for inspection. The letter provided general information about the program and informed the business owner of the upcoming inspection.

Site Inspection
The site inspection procedure involved a thorough examination of the facility and all outdoor activities with the potential to generate urban runoff pollution. A standard five-page inspection form was completed at each site to document the visit (submitted with previous Annual Report). Whenever a business was found to have moved, or was located outside City jurisdiction, or was a duplicate listing, an inspection form was completed to document that finding. In the case of facilities where the listed business had moved and was replaced, inspections were conducted at the replacement business if it required inspection based on prioritization guidelines provided in the City's JURMP.

Meeting With Manager/Responsible Party
Upon meeting the manager/responsible party, the inspector discussed the storm water program and the purpose of the inspection; using this opportunity to assess knowledge and provide education to the business regarding storm water compliance. This included a brief overview of the federal and state water quality laws, municipal permit requirements, impacts of urban runoff, and a description of the local water bodies and pollutants of concern. The inspector also discussed Best Management Practices (BMPs) to eliminate pollutant discharges to the storm drain system and distributed educational materials approved by the City.

After the introduction, the inspector verified the existing information including the business address and phone number and made changes as necessary. The inspector also thoroughly evaluated the Standard Industrial Classification (SIC) and North American Industrial Classification System (NAICS) codes to verify whether they reflected the principal activity of the business. If the SIC and/or NAICS codes did not reflect the principal activity of the business, applicable SIC and/ or NAICS codes were recommended.

BMP and Pollutant Discharge Potential Assessments
After the introductory meeting, the inspector conducted a thorough walk-through of the facility, generally accompanied by the manager/responsible

party, to inspect all areas exposed to storm water and to evaluate existing BMPs and their effectiveness. If specific BMPs were not implemented or found to be ineffective, BMP recommendations were made and noted on the inspection form. If a storm water ordinance violation was observed or significant corrective action was needed right away, the inspector notified the City Code Enforcement Officer immediately for further assistance.

If the facility had a SWPPP and storm water monitoring program, the documents were reviewed to ensure they contained proper sections in accordance with the General Industrial Storm Water Permit.

The inspector also conducted a Pollutant Discharge Potential Assessment for each facility using the one-page form developed by D-Max Engineering. The assessment is intended to be a semi-quantitative tool to identify which sites are potential significant sources of principal pollutants of concern for storm water. This procedure, along with the form, was submitted with the FY 05-06 JURMP Annual Report.

Storm Water Quality Inspection Summary and Conclusion
At the completion of the walk-through, the inspector summarized the recommended corrective actions and/or violations on the inspection form and discussed any recommendations with the manager/responsible party. If corrective actions were provided to the business, the manager/responsible party was provided a photocopy or fax of the inspection summary. In addition to the five-page inspection form that was completed, a drainage schematic was included for each inspection conducted as well.

Data Management
After each inspection was completed, data were entered into a Microsoft Access database. The database was used to document each inspection conducted and to provide easy access to inspection information. D-MAX's Assistant Project Manager performed a quality assurance check on each inspection form and the data entered into the database. No significant changes were made to the format of the database in FY 06-07.

3.1.3 BMP Requirements and Inspection Results

Pollution Prevention BMPs
The City's JURMP describes the pollution prevention strategy for industrial businesses that includes a combination of inventory, inspection, education and enforcement. Additionally, Vista Municipal Code section 13.18.100(E)(3) requires high priority industries to consider, and where deemed appropriate by the facility, implement pollution prevention practices. At a minimum, this includes the following types of measures:

- ✓ The use of smaller quantities of toxic materials or substitution of less-toxic materials;
- ✓ Changes to production processes to reduce waste;
- ✓ Decreases in waste water flows;
- ✓ Recycling of wastes as part of the production process;
- ✓ Segregation of wastes; and,
- ✓ Treatment of wastes on-site to decrease volume and/or toxicity.

Additional activity specific pollution prevention BMPs are detailed in the City Standards Manual. Pollution Prevention BMPs were encouraged for implementation at inspected industrial facilities.

Industrial Facility BMPs

The City's Municipal Code Section 13.18 (Stormwater Ordinance) and the accompanying City Stormwater Standards Manual Section D, Industrial Activities and Facilities, document the specific BMP requirements for industrial businesses operating in the City of Vista. Business owners are frequently referred to this detailed information via hard copies sent to them, presented during inspections, and/or accessed through the City's website. In general, the following BMPs are required at each industry;

- ✓ Good housekeeping;
- ✓ Preventive maintenance;
- ✓ Material handling and storage of significant materials;
- ✓ Employee training;
- ✓ Solid waste (non-hazardous) handling and recycling;
- ✓ Record keeping;
- ✓ Self inspection/quality assurance; and
- ✓ Spill response.

The business activity-specific and pollutant-specific BMPs are also included in the Stormwater Ordinance and Standards Manual. The City required BMP implementation for industrial facilities and initiated enforcement actions for violations.

Most BMP implementation problems at industrial sites were related to significant outdoor exposure of materials and/or activities. Because many of the City's industrial facilities are found in new industrial parks, where essentially all activity is indoors, the number of BMP deficiencies observed at industrial sites was relatively small, with only 2 facilities requiring follow-up inspections for BMP deficiencies. These are summarized below.

Municipal Storm Water Code Violations and Stormwater Monitoring

There were only two industrial facilities inspected that had some type of BMP violation. This included Versaform Corp., and Western CNC, Inc. Both had materials or wastes that needed to be covered or properly

stored. Versaform was reinspected in May and found at that time to be in compliance with the BMP requirements. Western CNC filed a NEC in March and received a follow-up inspection in May. Follow-up inspections continued into the next fiscal year and concluded when Western CNC complied and implemented the no exposure requirements.

During the inspection program, several industrial facilities were found to be in violation for failure to conduct required monitoring, and the facilities were notified of this during the initial inspection. These businesses were re-inspected during the reporting period. Those that still had not conducted monitoring were sent Notice of Violation letters from Code Enforcement. These businesses were required to provide a monitoring plan and specify who would be conducting the monitoring, or to provide copies of paperwork submitted to the Regional Water Quality Control Board to document that they were not subject to the monitoring requirements of the State General Industrial Permit.

Following is a summary of these facilities and actions taken:

Table 3 -1. Industries with Noted Storm Water Monitoring Violations.

Business	Enforcement Action	Response	Follow-up Action
C Enterprises	Notice of Violation	Filed [0]NEC	High Priority – reassess NEC annually
E & J Stone	Notice of Violation	Filed NEC	High Priority – reassess NEC annually
Javo Beverage Co.	Notice of Violation	Filed [1]NOI	Conduct monitoring – High Priority
Print, Inc.	Notice of Violation	Filed [2]NOT / NEC	Re-prioritized to Medium
Quality Discount Ice Cream, Inc.	Notice of Violation	Filed NEC	Re-prioritized to Medium
VQS Enterprises, Inc.	Notice of Violation	Filed [3]NONA/NEC	Re-prioritized to Medium

[0]NEC = No Exposure Certification
[1]NOI = Notice of Intent
[2]NOT = Notice of Termination
[3]NONA = Notice of Non-Applicability

During FY 2005-06, eight facilities were noted as not meeting the storm water monitoring requirement. This included C Enterprises, E & J Stone, Elixir Steel Framing, Excellent Coatings, Pacific Lead Products, Print Inc., Quality Discount Ice Cream, and Shadowridge Water Reclamation Facility. Following is a summary of the compliance status for these facilities:

Table 3-2. Compliance status with FY 2005-06 Annual Report noted violations.

Business	Status	Compliance?	Follow-up Action
C Enterprises	Active	Yes – Filed NEC	Reinspect and reassess NEC
E & J Stone	Active	Yes – Filed NEC	Reinspect and reassess NEC

Elixir Steel Framing	Not in Business in Vista	Not Applicable	None
Excellent Coatings	Active	Yes	Inspect Annually
Pacific Lead Products	Not in Business in Vista	Not Applicable	None
Print Inc.	Active	Yes – Filed NOT / NEC	Medium Priority
Quality Discount Ice Cream, Inc.	Active	Yes – Filed NEC	Reinspect and reassess NEC
Shadowridge Water Reclamation Facility	Inactive	Not Applicable	Reinspect and reassess

Industrial Permit Compliance

- Two businesses were found to be in violation of some other aspect of the Industrial permit. American Peptide Company had filed an NOI, but had not developed a SWPPP. The facility was noted as being conditionally subject to the Industrial Permit, and the inspector did not observe any outdoor exposure. It was noted that the facility may be able to file a Notice of Termination. Also, Print, Inc. had filed an NOI but had not developed or implemented a SWPPP and monitoring plan at the time of the inspection. After the City conducted follow-up enforcement actions, Print, Inc. filed a Notice of Termination and No Exposure Certification.

3.1.5 Reporting of Non-compliant Sites

During FY 06-07, there were no sites reported or found that met the criteria of non-compliant sites that posed a threat to human or environmental health.

During FY 05-06, there was a non-compliance discharge issue with Jensen Meat Co. that was discovered during dry weather monitoring. Upstream tracking for ammonia occurred on July 19, and it was determined that the source was Jensen Meat. Apparently, an outdoor refrigeration unit leaked and condensate carried ammonia to the storm drain system. In hindsight this business should have been reported to the Regional Board for this noncompliance. Unfortunately, July 19th marked a transition week for the City between the exiting Stormwater Program Manager and the in-coming Program Manager. Because the discharge issue was resolved and eliminated on the day of discovery (July 19) by the monitoring personnel and Jensen Meat, and compliance was again confirmed on a July 25, 2006 inspection of the facility with the new Program Manager, the site was not referred to the Regional Board. In the future, the Regional Board will be notified of these noncompliance incidents within the prescribed time frames. A new evaluation and report form is included in Appendix B-3 in order to provide a more standardized

approach for evaluating and reporting these instances of noncompliance that may endanger health or the environment.

3.2 IMPLEMENTATION PLANS FOR 2007-08

The following lists the recommended implementation actions for the industrial component for FY 2007-08:

- Update the industrial business inventory database to comply with new Order R9-2007-0001.
- Conduct annual inspections at the frequency required by Order R9-2007-0001.
- Complete follow-ups as a result of the FY07-08 inspections and input findings in the database. Ensure compliance with monitoring requirements and notify RWQCB of facilities that are not in compliance with the State General Industrial Permit.
- Train staff on the standardized report form to notify the RWQCB of sites meeting the criteria of posing a threat to environmental or human health.

3.3 REVISIONS TO JURMP

A copy of the updated 2007-08 industrial inventory is in Appendix B-2. The City's JURMP is currently being revised to comply with Order No. R9-2007-0001, and will be submitted to the Regional Board by March 24, 2008.

4.0 COMMERCIAL FACILITIES

The objective of the commercial facilities component of the City's JURMP is to reduce pollutants in runoff from commercial sites. This section summarizes the City's efforts and accomplishments during the July 2006-June 2007 (FY06-07) reporting period for this existing land use component.

4.1 PROGRAM ACCOMPLISHMENTS

4.1.1 Source Identification (Commercial Inventory)

The primary source of information for the commercial inventory is the City's Business License database, and the inventory is updated with information from complaint investigations, inspections, and phone and business listings. A list of new businesses, provided periodically from Business License staff, includes general business information as well as the type of operation and commercial SIC/NAIC code. Based on this information, those with high priority SIC/NAIC codes or descriptions are added to the inventory and are verified or reprioritized when they are inspected.

As part of the inspection process, the assigned JURMP classifications, NAICS codes, and SIC codes were assessed to determine if they appropriately described the businesses' threat to water quality. If no JURMP classification, NAICS code, or SIC code had been assigned, appropriate classifications were recommended. If an NAICS or SIC code was not provided for a business, the appropriate code was recommended during the inspection. It was determined during the course of the inspections that 43 commercial facilities required a change of SIC and/or NAICS codes. These changes are reflected in the revised inventory.

An updated inventory is included in Appendix C-1 and includes 580 businesses. The inventory was reorganized to further categorize the commercial businesses into the subcategories listed in Order 2001-01 Section F.3.c.(2).

4.1.2 Inspection Procedures

Prior to beginning the 2006-2007 inspection program, the City of Vista prepared a list of the businesses to be inspected. The commercial inspection list focused on eating and drinking establishments, nurseries and greenhouses, and some automotive facilities with previous violations. This focus was based on priorities established through the Carlsbad and San Luis Rey WURMPs, as well as City of Vista inventory priorities and complaints.

D-Max was contracted to conduct 267 commercial inspections. Inspections were not scheduled with businesses, although most businesses had been sent a letter notifying them of upcoming storm water inspections. The inspection procedures including forms and data management are the same as those described in 3.1.2 of this annual report.

4.1.3 BMP Requirements

During site inspections, owners and operators were informed of the required pollution prevention measures for inclusion into their processes, where applicable. During the inspection and follow-up process, the inspector informed the businesses of the BMPs that must be implemented at their site. Additionally, all known businesses within Vista, not just the businesses that are inspected each year, were sent a Water Quality Protection Program English-Spanish flier describing the City storm water regulations and what businesses must do to comply. This flier is distributed at the City's business license counter, attached to each business license application, and was distributed in the business license renewal forms mailed in June 2007.

Pollution Prevention BMPs

The City's JURMP describes the pollution prevention strategy for commercial businesses that includes a combination of inventory, inspection, education and enforcement. Vista Municipal Code section 13.18.090(C) requires commercial facilities to implement the pollution prevention practices specified in the City's Stormwater Standards Manual that are applicable to their operation.

BMP Implementation

In addition to the pollution prevention BMPs, the City's Municipal Code Section 13.18 (Stormwater Ordinance) and the accompanying City Stormwater Standards Manual specify the BMP requirements for commercial businesses operating in the City of Vista. Business owners are frequently referred to this detailed information via hard copies sent to them, provided to them during inspections, or accessed through the City's website. Commercial category and activity specific BMPs are detailed in the Standards manual. The following general BMPs were required for all regulated businesses:

- ✓ Good housekeeping;
- ✓ Preventive maintenance;
- ✓ Material handling and storage of significant materials;
- ✓ Employee training;
- ✓ Solid waste (non-hazardous) handling and recycling;

- ✓ Record keeping;
- ✓ Self inspection/quality assurance; and
- ✓ Spill response.

4.1.4 Inspection Results

During 2006-07, the City focused on inspecting restaurants, greenhouses and nurseries, and automotive facilities with repeat violations.

During the inspection program, 75 commercial businesses were found to have a total of 79 violations of the City's Municipal Storm Water Ordinance. The majority of the violations were for improper implementation of required BMPs, specifically failure for restaurants to provide both overhead cover and containment for grease bins. The following provides a summary of the number and type of violations noted:

- Seventy-three violations for improper implementation of required BMPs
- Five violations for litter
- One violation for an illegal discharge

A list of these facilities including the violation summary is included in Appendix C-2.

The most common concerns for restaurants continued to be dumpster and grease recycling bin areas. Dumpster lids were often left open, grease bins stored outside lacked cover and spill containment, and there were often significant grease stains in the surrounding waste area. Many businesses had containment in the form of double-walled grease bins; however, the City determined that this BMP was not an adequate form of spill containment. Businesses with double-walled grease bins were advised to have additional spill containment measures on hand, such as berms or dikes and dry absorbent materials. Restaurants with exterior grease storage and tallow bins in need of cleaning were required to provide cover and containment.

The City conducted follow-up visits for the 75 businesses noted above. This included 67 restaurant or food-related businesses, 4 auto repair facilities, 2 petroleum facilities, and 2 equipment rental businesses. Twenty-four were found to have implemented the corrective actions listed in the initial inspection report. Enforcement cases were opened for the remaining 51 facilities. Enforcement to obtain compliance included four verbal warnings, 45 Notices of Violation and 34 administrative citations. Escalated enforcement actions were initiated for 23 facilities. The Code Enforcement Officer closed all cases after verifying implementation of the required corrective actions. A summary of these actions is provided in Appendix C-2.

It was noted that several restaurants in Vista have now been built with or retrofitted with automatic pump systems, which collect used grease within the building and provide an exterior fitting connection for pump out and hauling. This minimizes spills of grease that can occur when containers are being carried across parking lots and hand-emptied into bins.

Pollutant Discharge Potential Assessment (PDPA)
Facility evaluation using this form (described in report section 3.1.2 and previously provided with the 2005-06 JURMP Annual Report) was conducted for all inspected facilities.

4.1.5 Compliance and Enforcement

During the reporting year, there were 106 inspection cases opened and complaint investigations involving commercial businesses. In total, there were 19 verbal warnings, 83 Notices of Violation, and 58 administrative citations issued to obtain compliance. The violations varied in nature from poor housekeeping, to lack of containment for oils, to power washing. Most of these actions were initiated by the City in response to violations noted during the inspections. The City escalated enforcement actions in 29 cases to obtain compliance. The details of these investigations are including in Appendix E-1 summarizing all stormwater investigations and enforcement actions for FY06-07.

4.2 IMPLEMENTATION PLANS FOR 2006-07

The following lists the recommended implementation actions for the commercial component for FY 2006-07:

- Update the City's JURMP inventories to add the newly identified commercial businesses and to comply with Order R9-2007-0001.
- Conduct follow-up to commercial inspections as needed and input the results in the database.
- Continue the use of the PDPA to further identify potential pollutant sources and additional BMPs needed to mitigate those pollutants.
- Focus on the common non-compliance issues and require additional BMPs when needed (i.e., restaurant grease storage/disposal).

4.3 REVISIONS TO JURMP

The City's JURMP revisions include an updated commercial facilities inventory, which has been provided as Appendix C-1 in this report. This

component will be combined with the Industrial component and updated during FY 2007-08 to comply with Order No. R9-2007-0001.

5.0 RESIDENTIAL COMPONENT

The objective of the City of Vista's (City) residential JURMP component is to prevent or reduce pollutants in runoff from residential land use areas and activities. This is accomplished by encouraging pollution prevention, prioritizing residential threat to water quality, educating residents, requiring BMP implementation, and conducting enforcement activities when necessary to obtain compliance.

5.1 PROGRAM ACCOMPLISHMENTS

5.1.1 Threat to Water Quality Prioritization

In the JURMP, the City identified its high priority residential activities and areas in accordance with Order 2001-01, F.3.d.(2) which include the following:

- Automobile repair and maintenance;
- Automobile washing;
- Automobile parking;
- Home and garden care activities and product use (pesticides, herbicides, and fertilizers);
- Disposal of household hazardous waste (e.g., paints, cleaning products);
- Disposal of pet waste;
- Disposal of green waste;
- Any residence tributary to a Clean Water Act section 303(d) impaired waterbody, where the residence generates pollutants for which the waterbody is impaired; and
- Any residence within or directly adjacent to or discharging directly to a coastal lagoon or other receiving waters within an environmentally sensitive area (ESA).

The City has also identified the following as high priority residential activities/areas:

- Private sewer laterals;
- Private sewer septic systems; and
- Private roads/streets.

These high priority activities or areas have not changed during the reporting period.

5.1.2 Residential BMP Implementation

Residential BMP Requirements - The City revised its Municipal Code Section 13.18 Stormwater Management and Discharge Control Ordinance in February 2002. These revisions included addition of the high priority

residential activities with the potential to generate pollution and impact the City's MS4 and receiving waters, and Best Management Practices (BMPs) to minimize the impacts of these activities. The language in the Municipal Code specifically addresses the following activities:

- Vehicle or Boat Repair and Maintenance;
- Vehicle Washing;
- Vehicle Parking;
- Home and Garden Care Activities and Product Use;
- Home Care and Maintenance;
- Manure and Pet Waste Management;
- Private Sewer Laterals and Septic Systems; and
- Street Sweeping of Private Roads or Streets.

BMPs for all of these activities are required by the Municipal Code and the City's JURMP.

Household Hazardous Waste Disposal – The City of Vista provides its residents with a household hazardous waste (HHW) collection center at the Auxiliary Corporation Yard at 1165 East Taylor Street, as well as the option of curbside pickup of HHW. This facility is a Regional Household Toxics Collection Center and is open to Vista residents every Saturday from 9:00 am to 3:00 pm. The facility accepts a wide range of wastes from aerosols to batteries, paint, and solvents. Electronic waste is also accepted at the Vista facility. The facility and services are advertised in brochures, special mailers and on the City website. A summary of the material collected during this reporting period is contained in Section 8.4, Tables 8.4 and 8.5.

Sanitary Sewer Private Laterals - During this reporting period, the City continued to distribute information to residents' about their responsibility for maintenance and repair of their private sewer lateral pipes. The City also responded to reports of private lateral overflows. The City responded to four private lateral overflows from residences, resulting in the issuance of four Notices of Violation. These responses are summarized in Appendix E-2.

Residential Educational Efforts – The City continued to make available and distribute activity/pollutant specific literature to residents. Some of these materials include information in Spanish. Materials also include important City phone numbers and contacts.

City Stormwater Staff also worked with the City's Beautification and Improvement Commission, Weed and Seed representatives and Law Enforcement staff through their various residential outreach activities and programs. These various groups deal with a broad range of community topics, but all include a range of environmentally-related issues to encourage citizen involvement including:

- Neighborhood Cleanup and Beautification,
- Public Safety and Health
- Public Area Enhancements,
- Pollution Prevention
- Recycling Promotion, and
- Stormwater Runoff.

Events for Residents - During the reporting year, the City participated in several community events at which residential BMP information was distributed. These events included the following:

- Coastal Cleanup Day (Buena Creek), September 16, 2006;
- Dumpster Day at Townsite, March 31, 2007
- San Luis Rey Peppertree Day, April 15, 2007 (watershed);
- Creek to Bay Cleanup (Buena Vista Creek), April 28, 2007
- City of Vista Public Works Day, May 24, 2007;
- Chocolate Festival, May 27, 2007

The details of these events are included in Section 9.0 and 10.0 of this report.

5.1.3 Compliance and Enforcement

The City responded to and documented 68 complaints concerning residential activities during the reporting year. These calls varied in their nature and the action required. The objectives of the City response to these calls were to:

- Return violators to compliance in a timely manner and prevent future violations;
- Educate the residential community;
- Promote compliance of the laws and regulations;
- Initiate and conclude enforcement activities in a timely manner;
- Penalize violators as appropriate, and to deprive violators of any significant benefit gained from violations; and
- Treat residents equally and consistently with regard to the same types of violations.

If a significant and/or immediate threat to water quality was observed, action was taken to require the responsible party to immediately cease the discharge. The typical progressive enforcement steps are:

- Verbal warnings with documentation;
- Written Warning Notices of Violation;
- Cost recovery;
- Administrative citations; and

- Civil and or criminal court actions.

Of the 68 complaints investigated, there were 50 cases opened. In total, there were 41 verbal warnings, 12 formal Notices of Violation (NOV), and 6 administrative citations issued to obtain compliance. Additionally there were 4 private sewer lateral calls from residences which resulted in 4 NOVs. All enforcement activities have written documentation recorded in case files that include corrective actions and or follow-up actions and correspondence. A summary of these complaint investigations is found in Appendix E-1.

5.2 IMPLEMENTATION PLANS FOR FY 2007-08

The following lists the recommended implementation actions for the residential component for FY 2007-08:

- Continue education and enforcement activities as needed to ensure BMP implementation for high priority residential areas and activities.
- Conduct outreach campaigns focused on the constituents of concern that may be contributed by residential areas and activities.
- Update the Residential component of the JURMP to comply with new Order R9-2007-0001.

5.3 REVISIONS TO JURMP

There were no JURMP revisions for the residential component. The JURMP will be updated to comply with Order R9-2007-0001.

6.0 LAND USE FOR NEW DEVELOPMENT & REDEVELOPMENT

6.1 ASSESSMENT OF GENERAL PLAN

The Land Use Element of the Vista General Plan was last updated in 1988 and the Conservation Element was last updated in 1984. As previously reported, the City has been planning to update these elements as part of a larger General Plan Update. This update was originally scheduled to be conducted during the reporting year and completed in 2005. However, due to loss of planning staff and resource limitations to fund such an effort, the City was not able to meet that General Plan update schedule.

At the time of writing, the City has now initiated the General Plan update process and anticipates an adoption date in 2010. A consultant was hired in 2007 to assist the City with the update process. As seen in the schedule below, the community outreach and EIR processes cause the long-lead time. The schedule lists all of the tasks required to complete the General Plan update. With that said, the City recognizes the importance of including water quality and watershed protection principles and policies while making land-use decisions. The City through ordinance requires these water quality and watershed protection principles to be implemented in land-use projects as well as larger watershed-level planning. Additionally, the City's planning staff incorporates water quality and watershed protection principles in their projects and their staff reports to the City's Planning Commission. Through these means, the City is meeting the spirit of the Permit by implementing the guiding principles that will be included in the General Plan update.

Draft
Workplan/Timeline for the City of Vista General Plan Update/EIR

4/19/07

Task Name	Start	Finish
Start-up Meetings	Mon 5/14/07	Fri 5/25/07
Public Outreach Program	Mon 6/4/07	Tue 2/2/10
Kick-off meeting with City Staff	Thu 6/21/07	Thu 6/21/07
(3) Kick-off Visioning Workshops	Mon 8/6/07	Fri 9/14/07
Visioning Workshop 1	Thu 8/16/07	Thu 8/16/07
Visioning Workshop 2	Thu 9/6/07	Thu 9/6/07
Visioning Workshop 3	Thu 9/13/07	Thu 9/13/07
1st Youth Visioning Session	Tue 9/18/07	Tue 9/18/07
2nd Youth Visioning session	Tue 10/16/07	Tue 10/16/07
(8) Stakeholder meetings	Mon 9/17/07	Mon 10/15/07
(3) Focused Issue Community Workshops	Tue 4/1/08	Fri 8/29/08
Community Workshop 1 - Land Use/Community Identity	Thu 4/17/08	Thu 4/17/08
Community Workshop 2 - Circulation	Thu 6/19/08	Thu 6/19/08
Community Workshop 3 - Open Space/Conservation/Community Health	Thu 8/28/08	Thu 8/28/08
Public Hearings for Plan Adoption	Mon 11/16/09	Tue 1/26/10
2 Public Hearings with Planning Commission	Tue 12/1/09	Tue 12/15/09
2 Public Hearings with City Council	Tue 1/12/10	Tue 3/2/10
General Plan Update Open House and Reception	Tue 3/16/10	Tue 3/16/10
Baseline Study	Mon 5/21/07	Wed 10/31/07
Preparation of Technical Analyses	Mon 5/21/07	Fri 9/28/07
Land Use	Mon 5/21/07	Fri 9/28/07
Geology, Soils, and Mineral Resources	Mon 5/21/07	Fri 9/28/07
Biological Resources	Mon 5/21/07	Fri 9/28/07
Hydrology and Water Quality	Mon 5/21/07	Fri 9/28/07
Cultural and Historical Resources	Mon 5/21/07	Fri 9/28/07
Noise	Mon 5/21/07	Fri 9/28/07
Air Quality & Climate	Mon 5/21/07	Fri 9/28/07
Aesthetics & Visual Resources	Mon 5/21/07	Fri 9/28/07
Transportation/Circulation	Mon 5/21/07	Fri 9/28/07
Hazards and Hazardous Materials	Mon 5/21/07	Fri 9/28/07
Other Issues (Recreation, Public Services/Utilities, Population and Housing)	Mon 5/21/07	Fri 9/28/07
Prepare Draft Baseline Study Document	Mon 10/8/07	Wed 10/31/07
Prepare General Plan Elements	Wed 1/2/08	Wed 12/31/08
Land Use Element, including Economic Analysis	Wed 1/2/08	Thu 8/7/08
Circulation Element – RBF	Tue 4/1/08	Fri 10/31/08
Open Space and Conservation Element – J & S	Tue 4/1/08	Fri 8/1/08
Community Health (Noise, Safety, Air Quality) Element – J & S	Fri 8/1/08	Fri 10/31/08
Draft GP Update	Mon 11/3/08	Wed 12/31/08
Final GP Update	Tue 12/1/09	Tue 3/2/10
Program Environmental Impact Report	Mon 1/5/09	Fri 10/30/09
Project Initiation/CEQA Document Scoping/Development of Project Description	Thu 1/15/09	Thu 1/15/09
Preparation of Technical Analysis for Administrative Draft PEIR	Mon 2/2/09	Thu 4/30/09
Prepare Administrative Draft PEIR	Fri 5/1/09	Fri 5/29/09
Internal Screencheck Reviews and Public Review	Mon 6/1/09	Fri 10/30/09
Revise and Submit Final PEIR, Findings of Fact and MMRP	Thu 10/1/09	Mon 11/30/09
Sphere of Influence Analysis and Feasibility Study	Tue 9/4/07	Thu 12/20/07

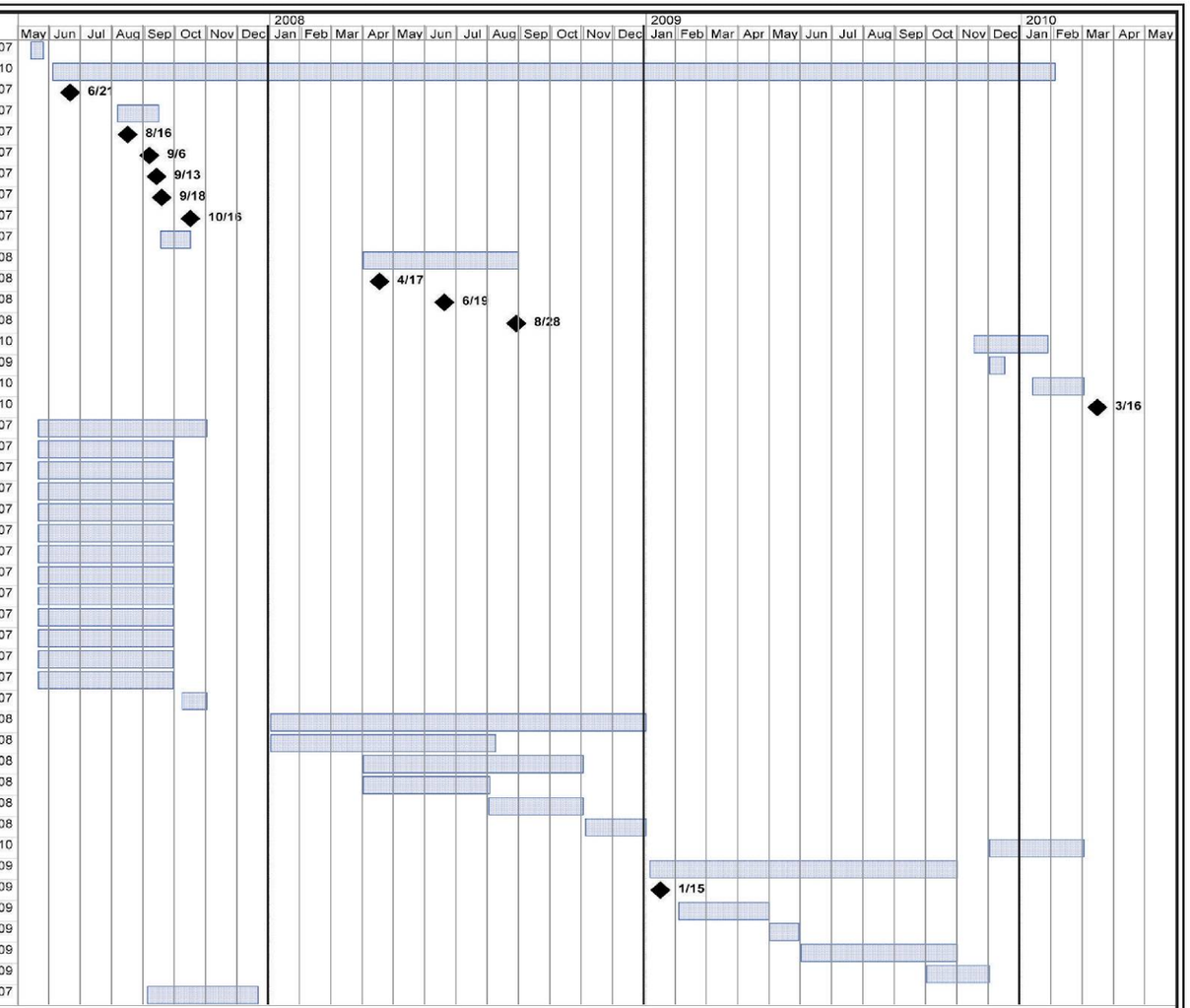

Task Milestone

6.2 DEVELOPMENT PROJECT APPROVAL PROCESS (SUSMP)

Figure 6.1 provides a broad overview of the City Development Project review and Approval Process. Based on this overview, City Water Quality Protection, Planning and Land Development Staff developed a more detailed flow chart as the review relates to and incorporates stormwater pollution prevention principles and requirements. This flowchart is shown in Figure 6.2. This process continues to be iterative with lessons learned.

The City's SUSMP program has been reviewed by RWQCB staff. At that time, some recommendations were made by RWQCB staff and followed up on by the City. The recommendations are as follows:

- Revise the City's Standards Manual to reflect consistency with the Regional Model SUSMP. In particular the effectiveness table for Treatment Control BMPs had some inconsistencies. The Standards Manual was revised to be consistent with the Regional Model SUSMP.

- Require Site Design and Source Control BMPs per the City's Standards Manual. Staff has been firm with requiring site design and source control BMPs per the Standards Manual. The items are checked on plans as well as within the submitted Stormwater Management Plans.

- Require justification for the Treatment Control BMPs. The City is requiring justification for the selection of Treatment Control BMPs. The project applicants must submit the justification as to why the selected BMP was chosen over higher pollutant removal efficient BMPs. The justification is required in the submitted Stormwater Management Plans.

All of the above recommendations have been implemented by the City.

Figure 6.1 City Development Review

BRIEF OVERVIEW OF CITY DEVELOPMENT PROCESS

Pre-Application Meeting (when requested by applicant)

Planning Application Submittal
(Site Plan, Plot Plan, Special Use Permit, Minor Use Permit, Tentative Subdivision Map, Tentative Parcel Map)

Letter of Incompleteness (if appropriate)

Re-submittal of Complete Application

Environmental Review (if required)

Discretionary Decision – Conditions of Approval
(City Planner, Zoning Administrator, Planning Commission, City Council)

Engineering Plan, Landscape Plan and Planning Final Mylar Submittal
(Final Map, Grading Plans, Improvement Plans to Engineering, Landscape Plans and final Mylar to Planning)
NOTE: Water and Utility Plans should be submitted to service providers

Engineering Plan, Landscape Plan and Planning Final Mylar Check Processes

Final Map Approval, Improvement Plan Approval, Grading Permit Issued, Improvement Bonding, Landscape Plan Approval, Planning Final Mylar Approval

Submittal of Building and Finish Grading Plans

Building and Finish Grading Plans Checked

Engineering Inspections

Rough Grading Approval

Building and Finish Grading Permits Issued

Planning, Landscape, Engineering, Fire and Building Inspections

Fire Department Annual Permits

Building Final / Meter Release / Certificate of Occupancy

Fire Inspections

Figure 6.2

CITY OF VISTA
SUSMP IMPLEMENTATION PROCESS

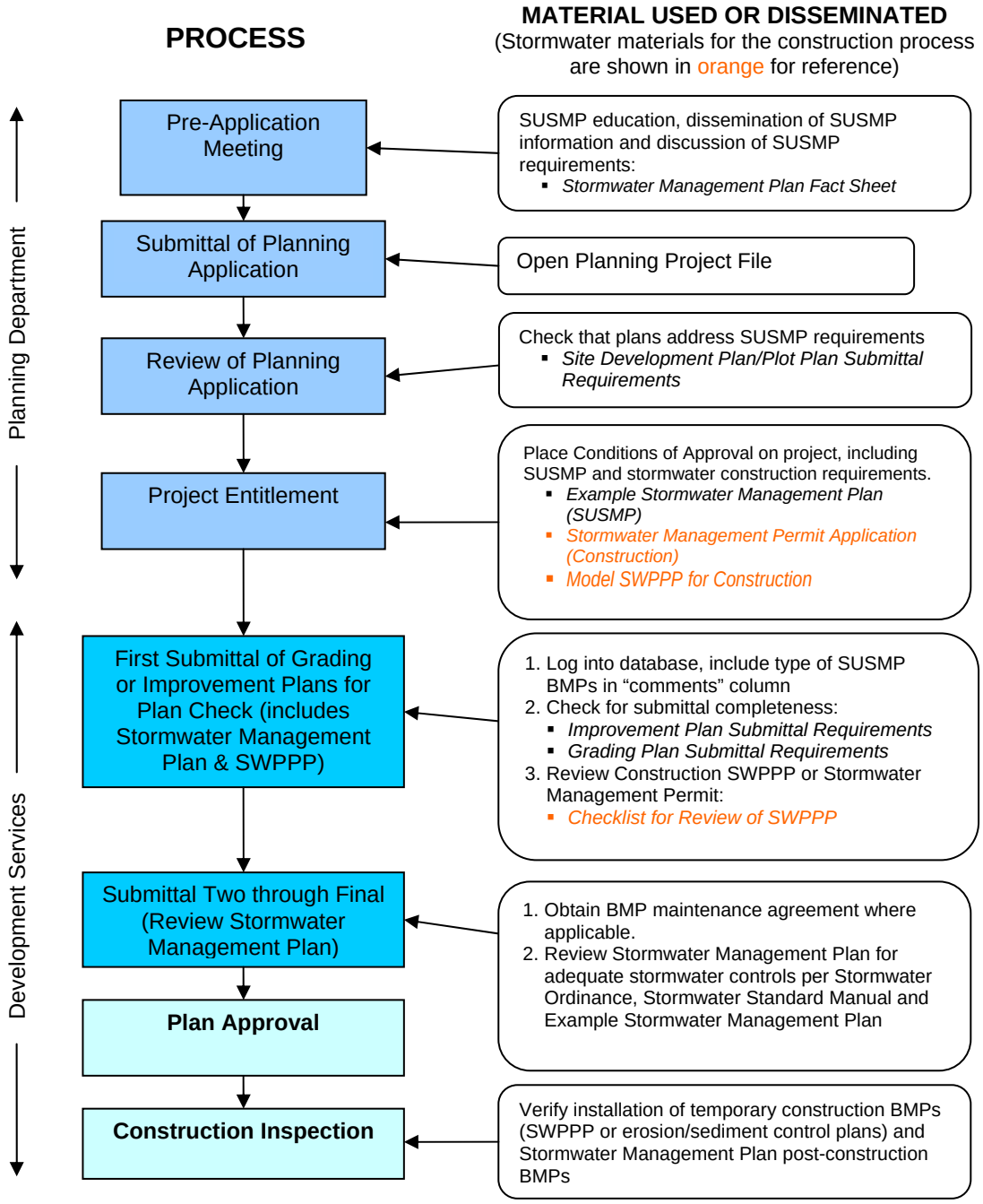

6.3 DISCRETIONARY PERMIT APPROVAL

The City requires applicants to complete a Stormwater Requirements Applicability Checklist. The checklist helps applicants determine whether the project is a priority project that is subject to post-construction BMPs.

During the reporting year, the City issued eighteen discretionary permits which included requirements for addressing post construction water quality issues. Table 6.1 summarizes these projects and lists the types of permanent BMPs required of the projects for addressing long term water quality issues resulting from the development.

During the reporting year, the City issued fourteen grading permits that included post-construction treatment control BMPs. Table 6.2 summarizes these projects and lists the types of permanent BMPs required of the projects for addressing long term water quality issues resulting from the development.

Table 6.1
City of Vista SUSMP Projects with Discretionary Approval: July '06 – June '07

Planning No.	Project Name/Proponent	Project Description	Date of Approval	Post Construction BMP Requirements Per CASQA Standards
14-248	John Ahlswede & Daryl McFarland	Six Lot Subdivision/Six Bldg. Industrial Complex	10/3/2006	SD-10,SD-12,SD-20,SD-21,TC-10,TC-12,TC-40
8-182	TMACK Melrose	39,559 sf Shopping Center	10/17/2006	SD-10,SD-12,SD-20,SD-21,TC-10,TC-12,TC-40
14-215	Concordia Homes - TSM	159 Single-Family Home Subdivision	10/17/2006	SD-10,SD-12,TC-22,TC-30,MP-52
14-247	LBS Realty	Six Industrial Buildings on 12.1 Acre Site	11/7/2006	SD-10,SD-12,SD-21,TC-30,MP-52
14-242	CMA Architecture & Engineering	12 Office Building Development/Subdivision	12/5/2006	SD-10,SD-12,TC-22,TC-30,MP-52
23-305	Lusardi Construction	Two Industrial Building Development	7/6/2006	SD-10,SD-12,TC-30,MP-52
24-019	Eric Minicilli	Eight Unit Residential Condo Development	9/29/2006	SD-10,SD-12,TC-30,MP-52
23-311	CTA Architects	Second Industrial Building	9/29/2006	SD-10,SD-12,TC-30,MP-52
23-313	Buccola Engineering	5,438 sf Industrial Building	10/31/2006	SD-10,SD-12,TC-30,MP-52
14-251	Citymark Development---SDP	11 Office Building Condo Development	1/16/2007	SD-10,SD-12,TC-30,MP-52
8-151	West Coast Baptist---SUP	Church/School Expansion	2/20/2007	SD-10,SD-12,TC-30,MP-52
2-089	RA&B Developments ---TSM	15-Lot Single-Family Subdivision	3/20/2007	SD-10,SD-12,TC-30,MP-52
19-056	California West Homes--TSM	59 Single Family Homes	4/3/2007	SD-10,SD-12,TC-30,MP-52
8-150 amend 1	24 Hour Fitness	35,000 Square Foot Commercial Building	4/17/2007	SD-10,SD-12,TC-30,MP-52
14-255	Stephen Vander Schaaf/SD County Sup. Housing--ND	15-Unit Apartment Development	5/15/2007	SD-10,SD-12,TC-30,MP-52

Planning No.	Project Name/Proponent	Project Description	Date of Approval	Post Construction BMP Requirements Per CASQA Standards
19-055	Urban West Strategies/Torrey Investors--TSM	59-Single-Family Residential Lots, 46 Live/Work Condos	5/15/2007	SD-10,SD-12,TC-30,MP-52
14-260	Marc Perlman--SDP	Two-Story Medical Offic Bldg. Condo Development	6/16/2007	SD-10,SD-12,TC-30,MP-52
2-082	SHG Vista 1, LLC--TSM	15 Single-Family Residential Lot Subdivision	6/19/2007	SD-10,SD-12,TC-30,MP-52

Table 6.2
City of Vista SUSMP Projects with Grading Approval: July ’06 – June ‘07

Project No.	Project Name/Proponent	Project Description	Post Construction BMP Requirements Per CASQA Standards
GP 06-044	1375 Oak Drive	Condos	TC-30, SD-10, SD-12, TC-21, MP-52
GP 06-047	2261 Edgehill Road	14 SFD's	MP-40, MP-52, TC-22
GP 06-048	2405 N. Santa Fe Ave.	Precise for N.Coast Church	TC-30, SD-20, SD-10, SD-12, TC-22
GP 06-051	1045 Sycamore Ave.	Precise subdivision	SD-10, SD-12, MP-51, TC-22,
GP 06-053	1045 Sycamore Ave.	Demo plan for subdivision	SD-10, SD-12, MP-51, TC-22,
GP 06-054	877 Sycamore Ave.	Demo plan for subdivision	SD-10, SD-12, SD-13, MP-51, TC-22,
GP 06-064	1434 Grandview Road	Warmlands estates	TC-22
GP 06-067	2405 N. Santa Fe Ave.	N. Coast church minor plan	TC-30, SD-20, SD-10, SD-12, TC-22
GP 06-070	877 Sycamore Ave.	Precise grading plan	SD-10, SD-12, SD-13, MP-51, TC-22,
GP 06-072	2545 Fortune Way	Precise grading plan	TC-30
GP 06-075	775 North Avenue	Industrial buildings	TC-10, SD-10, SD-12, SD-20, MP-52
GP 06-076	1025 Cielita Linda	Precise grading plan	SD-10, SD-12, TC-40, TC-30
GP 07-003	1661 W. Vista Way	Car wash	TC-30
GP 07-020	324 Sycamore Ave.	Precise grading plan - 24 hr fitness	SD-10, SD-12, SD-13, MP-52, TC-30

6.4 CAPITAL IMPROVEMENT PROJECTS

The City also requires that Capital Improvement Projects (CIPs) adhere to SUSMP requirements. During the reporting period, the City had several projects in various stages of design and construction. The following table lists the CIPs subject to SUSMP requirements and the post construction BMPs incorporated into the projects.

Table 6.3 Capital Improvement Projects

Project	**BMPs**	**Status During Reporting Period**
Olive @ VVD	Drainage Inserts	Installed
Business Park @ Palomar Airport Road	Reduction in impervious surface areas and inclusion of a cobblestone infiltration swale	Installed
Brengle Terrace Restroom	Grass lined swale	Installed
Escondido Medians	Vegetated Swales and Rain Garden	Design

6.5 REVISIONS TO THE ENVIRONMENTAL REVIEW PROCESS

CEQA review revisions as reported in the City's JURMP continue to be implemented.

6.6 IMPLEMENTATION PLANS FOR 2007-08

During the next implementation period the City plans to:

- Complete Program revisions per Order R9-2007-0001
- Work towards the completion of the General Plan Update
- Work collaboratively with other Copermittees to revise and update the SUSMP and the implementation of SUSMP requirements
- Work collaboratively with other Copermittees towards completion of the impending Hydromodification Plan development

6.8 REVISIONS TO JURMP

There were no JURMP revisions for the Land Use Component. The City will revise its JURMP and SUSMP to meet the requirements of Order R9-2007-0001.

7.0 CONSTRUCTION COMPONENT

The objective of the construction component is to minimize the impacts of construction activities, in particular sediment, on receiving waters within the City of Vista (City). The City's construction component emphasizes pollution prevention during both the preconstruction in the planning and design phases, as well as during the active construction phases of projects.

7.1 SOURCE IDENTIFICATION (CONSTRUCTION INVENTORY)

The City's construction project tracking database lists active construction projects in the City, inclusive of those not necessarily inspected by City inspectors, but tracked due to priority (e.g. public school projects). This database is continuously updated as new projects begin, are completed, and/or as project information changes. At a minimum, the database is updated monthly as inspection staff provides percent completion updates. Due to the dynamics of this tracking system, printouts reflect "snapshots" in time. A copy of the December 2007 inventory is provided in Appendix D-1.

7.2 PROGRAM ACCOMPLISHMENTS

7.2.1 BMP Requirements

7.2.1.1 Pollution Prevention BMPs

The City's JURMP describes a combination of inventory, inspection, education and enforcement to prevent sediment and other construction related pollutants from being discharged off construction sites. In addition to these City actions to prevent pollution, project proponents are required to implement pollution prevention BMPs including a system of erosion control BMPs, their Stormwater Management Permits, and/or SWPPPs that describe the site-specific pollution prevention BMPs, educate workers and subcontractors, and regularly maintain, inspect, and upgrade site BMPs. These minimum pollution prevention BMPs were required during the reporting period as described in the City's Stormwater Ordinance Chapter 13.18.140 and Standards Manual Section F Land Disturbance Activities.

7.2.1.2 BMP Requirements for Construction Sites

Other required BMPs for construction activity are listed in the City's Stormwater Ordinance Chapter 13.18.140 and Standards Manual Section F Land Disturbance Activities, and Stormwater Management Permit. At a minimum these include BMPs from the following categories which were required throughout the reporting period:

- Erosion control;
- Sediment control;
- Tracking control;
- Materials management; and
- Velocity reduction

Specific site conditions dictate the most effective combination of applicable BMPs, but at a minimum the abovementioned BMPs are required to be implemented. At all times, the City has the authority to require additional BMPs as necessary to prevent erosion and discharge of sediments to the maximum extent practicable.

7.2.2 BMP Implementation

During the reporting year, the City required construction projects to utilize a combination of applicable pollution prevention and other site specific BMPs at construction sites. Prior to issuance of grading approvals, project proponents were required to demonstrate via Stormwater Management Permit, SWPPP and/or erosion control plans, that the minimum City required BMPs would be implemented onsite.

During each project's pre-construction meeting, staff reviewed the BMPs and City's expectations for implementation and maintenance with the contractor and/or developer. At the pre-construction meetings, the Water Quality Program Code Enforcement Officer or Inspector provided an informational handout on BMPs. These meetings served as an effective means to not only ensure City minimums are being met, but to educate onsite project proponents regarding the City's seriousness about the issues, resolve potential problems, and answer questions.

After grading begins on a project, City inspectors communicate on an as-needed basis with contractors regarding BMPs along with all other project requirements. Verification of BMP implementation via City inspection reports is discussed in Section 7.2.5.

7.2.3 Ordinance Revisions

No ordinance revisions were made during this reporting year. In the FY02-03 Annual JURMP report, the City reported that it anticipated revising the Grading Ordinance Chapter 17.56 to adopt a revised fee schedule to accommodate changes in the City's plan review process. However, no revisions have been made.

7.2.4 Plan Checks

The City's stormwater permit applications continued to be used and checked for construction site BMPs in conjunction with site erosion control plans during grading plan submittals. Plan submittal checklists also remain on the City's website - http://www.ci.vista.ca.us/gov/community_dev/info-files2.asp

7.2.5 Inspection of Construction Sites

The Building and Engineering Inspection staffs are responsible for the inspections of construction projects within the City. These inspectors lead the pre-construction meetings for each site during which BMP implementation and maintenance requirements are discussed, as described in Section 7.2.2.

Inspectors typically communicate frequently with developers during the early stages of the project to educate and reinforce site requirements. After BMP installation, inspection staff continues to assess sites with particular attention to BMP maintenance and performance. Inspection staff requires additional meetings onsite as needed, issuing corrective notices, new BMP requirements, and other requirements, using multi-inspector reviews to bring additional experience to the site when necessary. At the time of rough grade release for building permits, sites are reviewed periodically by the engineering inspectors, but primarily come under control of the building inspectors. For the purposes of stormwater inspections, the engineering inspectors performed inspections on projects that were in the building permit phase as well.

Inspection documentation and reporting procedures continued to be implemented during the reporting period. Inspections were documented on the City's construction inspection form. This form continues to be revised for ease of use and clarification (Appendix D-2). Hard copy files for inspections are retained in the project files in the Engineering Department. The City had previously modified its electronic database to collect specific information. The database has been reviewed to determine if additional information is needed for project sites. During the reporting period, no changes were made to the construction database.

During the rainy season of October 1st through April 30th, site reports were generated weekly for high priority sites, and monthly for medium and low priority sites. These reports become the inspection forms used by inspectors when completing their stormwater specific inspections.

During the reporting period, all of the required inspections were performed in a timely manner. In FY 06-07 109 high priority site inspections and 26 medium and 65 low priority site inspections were conducted during the wet season. During the dry season period of the reporting year, the City conducted 20 high priority site inspections and 12 medium and 48 low priority site inspections. Any required follow-up actions were directed to the contractors and followed-up on by the construction inspector. If necessary, enforcement actions were taken which are described below.

7.2.6 Compliance and Enforcement

The following protocol and hierarchy of enforcement actions were established by the City and through the Municipal Code;

- Verbal warnings with documentation;
- Written warning notices of violation;
- Stop Work Orders;
- Suspension, revocation or denial of permits;
- Administrative citations; and
- Civil and or criminal prosecutions.

In general, documented verbal warnings are no longer being used by the City for construction sites. A violation is first issued as a site memo from the inspector and/or Notice of Violation (NOV) from the Code Compliance Officer. This then escalates to stop work order and/or citation and fine.

During the reporting period, the Engineering Department logged three formal construction complaints and a miscellaneous complaint at a construction site about hazardous materials that was unfounded. These complaints and/or violations varied in nature ranging from concrete wash down to sediment release. Two of the three violators received formal written notices of violation (NOVs) with required corrective action and response time frames, and two were issued administrative citations with escalating fines. There were no non-compliant sites which posed a threat to human or environmental health.

7.3 IMPLEMENTATION PLANS FOR 2007-08

The following items are anticipated for implementation and/or revision during the next reporting period:

- Continue to train external contractors and developers

- Enhance the tracking of information (e.g., project priority, etc) between the time of project application and field construction

- Enhance the tracking system for inspections and follow-up enforcement

7.4 PROPOSED REVISIONS TO JURMP

The City's JURMP is currently being revised to comply with Order No. R9-2007-0001, and will be submitted to the RWQCB by March 24 2008.

8.0 ILLICIT DISCHARGE DETECTION & ELIMINATION COMPONENT

As detailed in the City's JURMP, the objective of this component is to actively seek and eliminate illicit connections and illegal discharges (IC/IDs) into and from the City of Vista's (City) municipal separate storm sewer system (MS4). The following sections describe the City's actions for meeting this objective during the 2006-07 reporting period.

8.1 DRY WEATHER ANALYTICAL MONITORING

This section provides a summary of the dry weather monitoring data for 2007 as well as a discussion about the constituents of concern and probable sources.

8.1.1 2006 Dry Weather Monitoring

For 2006-07, a total of 32 dry weather sites and five creek sites were monitored between June 18, 2007 and August 31, 2007. A total of 17 sample results from 14 sites were above the dry weather action levels. These same sites were then re-tested between four hours and twenty-four hours later. Sites which had elevated concentrations above action levels during initial field testing are listed in Table 8.1. The complete results and discussion of these monitoring efforts are included in the City's 2007 Dry Weather Monitoring Report (Appendix E-2).

Table 8.1. Sites exceeding action levels

Analyte in which concentration was above the dry weather action level							
	Conductivity	MBAS	Turbidity	Nitrate	Ammonia	Temperature	Bacteria
Site	BV-1	AH-17 BV-1 MV-2A MV-3	MV-3	AH-8 AH-8A BV-11 BV-18 BV-19 BV-24	AH-17	BV-14	AH-21 BV-6 BV-8

8.1.2 Follow-up Investigations

Follow-up investigations were initiated at all sites which showed initial exceedances. A total of fourteen sites were revisited for follow-up investigations. Of these sites, nine continued to exceed action levels for at least one parameter. These nine sites were then further investigated as part of the IC/ID requirements of the dry weather monitoring program. No illicit connections or illegal discharges were found to be the cause of these exceedances. The details of these investigations are found in the complete report located in Appendix E-2 and are summarized in Table 8.2.

Table 8.2. ICID Investigation Results

Site ID	Conductivity	Temperature	Ammonia (mg/L)	Nitrate (mg/L)	Surfactants (MBAS) (mg/l)
Action Level	**BPJ**	**BPJ**	**1.0**	**10.0**	**1.0**
AH-8A	-	-	-	15	-
BV-1	6.06 m/S	-	-	-	Below action level
BV-11	-	-	-	15	-
BV-18	-	-	-	15	-
BV-19	-	-	-	30	-
BV-24	-	-	-	22.5	-
BV-14	-	27.4	-	-	-
MV-2A	-	-	-	-	Below action level
G-3	-	-	10.0	-	-

BPJ – Best Professional Judgment

The 2007 Dry Weather Monitoring Program found no illicit connections or illegal discharges to be the cause of action level exceedances. Elevated nitrate concentrations were detected during follow-up, primarily in the upper north eastern region of the Buena Vista watershed. Four sites in this watershed had nitrate concentrations exceeding action levels during initial, follow-up and IC/ID investigations. These IC/ID investigations continued to corroborate 2006 results which indicated groundwater as the primary source of nitrate.

All samples analyzed in the laboratory were below action levels for pesticides (Diazinon & Chlorpyrifos), Oil & Grease, MBAS, and metals (dissolved cadmium, copper, lead, and zinc).

8.1.3 MS4

During 2006, Vista contracted with Dudek Engineering to update the City's storm drain master plan and to develop a GIS map of the City's MS4. During this reporting period, a draft GIS map was completed and delivered to the City. This GIS layer is being used as needed, but is considered draft until all work within the Dudek agreement is completed. This GIS layer will then continue to be updated by City staff.

8.2 COMPLAINT INVESTIGATIONS, INSPECTIONS, FOLLOW-UP AND ENFORCEMENT

During the reporting year, the City responded to potential illegal discharge complaints in accordance with procedures detailed in the City's JURMP and revised response procedures. All reported complaints were logged electronically and responded to by the Stormwater Code Enforcement Officer, who is responsible for follow-up investigations of these situations. In the event this officer was not available, the City continued to utilize the trained Engineering staff

to respond to discharge reports. A summary of these investigations and enforcement cases is in Appendix E-1.

During 2006-07, a total of 203 investigations or enforcement cases related to stormwater or urban runoff discharge complaints were received from the public or initiated by the City. Table 8.3 summarizes the nature of these situations and the number of enforcement actions conducted for these complaints. This amounted to the issuance of 246 enforcement actions to obtain compliance. When necessary to achieve compliance, multiple actions or escalated enforcement actions were taken. This occurred in 35 cases.

Table 8.3 Complaint Investigation Enforcement Summary

Complaints Investigated and Cases Opened		Enforcement Action			Escalated Enforce-ment
Type	Quantity	Verbal Warning	Notice of Violation	Administrative Citation/Fine	# of Cases
Residential	68	41	12	6	5
Private Laterals	8	0	8	0	0
Commercial	106	19	83	58	29
Industrial	7	1	6	0	0
Construction	4	0	2	5	1
Municipal	2	1	0	0	0
Other	8	3	1	0	0
Total	**203**	65	112	69	35

Figure 8.1. Stormwater Cases by Source Type during 2006-07

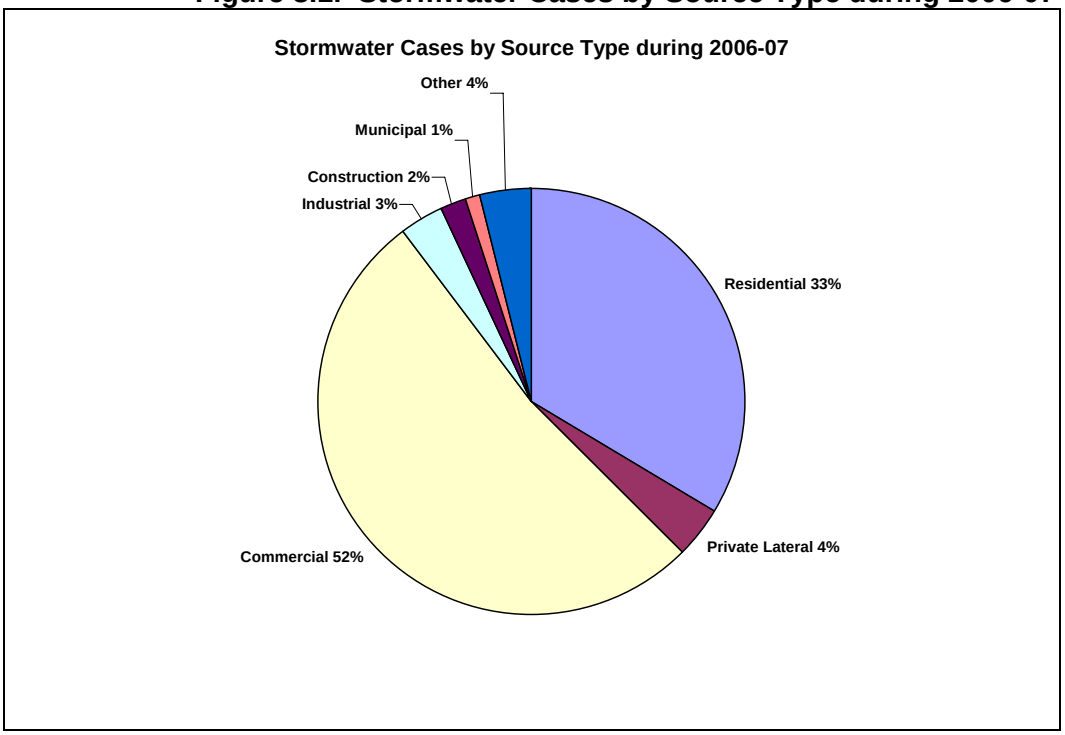

Figure 8.1 shows the distribution based on the source of the potential IC/ID investigation that the City responded to during the reporting period. Appendix E-1 provides more detail as to the location, nature, follow-up and enforcement for each case logged and responded to by the City.

There was a significantly higher percentage of commercial investigations during 2006-07 than the previous year, due to the City's continued focus on restaurant inspections. The commercial cases were predominantly restaurants with grease storage and housekeeping issues. The City required that improperly managed grease and tallow bins be stored under cover and with spill containment. Many of the citations were for failure to implement these requirements. The City also followed up on high priority industries that failed to conduct stormwater monitoring. This information is detailed in Section 3 of this report.

Stormwater Hotlines

The City's local stormwater hotline, (760) 726-1340 ext.1686 and 1698, provides information to callers in English and Spanish, respectively. These numbers provide a 24-hour voicemail to the public and are checked between the City's operating hours of 7:30 a.m. to 5:30 p.m., Monday through Friday. During the reporting period, there were only 14 calls to the City hotline. One was not a Stormwater issue, two were referred to the County Stormwater program, four of these were referred to Public Works for cleanup or maintenance, and one was an informational request. Therefore, the hotline has not been the primary mechanism in which the public has contacted the City on potential stormwater issues. The City did increase the advertisement of these numbers, which are posted on the City's website and included on all printed educational information. During the FY 06-07, the numbers were advertised in the City of Vista Winter-Spring 2007 "People, Parks, & Programs" community services guide, which was mailed to all residents.

There are also currently two regional stormwater hotline numbers promoted within San Diego County; a toll-free Regional Stormwater Hotline, 1-888-846-0800 and the Think Blue Hotline, 1-888-THINK Blue (1-888-844-6525). Both of these hotlines are staffed by the County of San Diego, Monday through Friday, 8:00 a.m. to 5:00 p.m. County staff refers calls to appropriate cities, as applicable. In addition to personal service at these hotlines, during regular business hours, the hotlines provide a voice mail message for 24-hour public access.

8.3 PREVENTION AND RESPONSE TO SEWAGE AND OTHER SPILLS

As described in the City's JURMP, the City has established procedures for preventing, responding to, containing, and cleaning up all sewage and other spills that have the potential to discharge to the MS4 from any source.

In most cases, sewage and other spills reaching the MS4 are observed and reported by residents and/or City field staff. The City's Engineering and Public Works staff are responsible for responding to sewer spill calls. City staff follows a set protocol for all sewage spills outlined in the City's Sanitary Sewer Overflow Prevention and Response Plan (SSORP) in accordance with State Water Resources Control Board Order No. 2006-0003-DWQ and Regional Board Order 96-04, which has now been replaced by Order R9-2007-0005.

During the reporting period, the City reported and responded to four sewer spills within the City's sewer system and service area. Additionally, the City responded to 8 private sewer lateral overflows or spills. With the adoption of Order R9-2007-0005, all spills are now reported to the State and Regional Water Quality Control Board on-line through CIWQS.

With the adoption of the new Statewide Permit for Sanitary Sewer Systems, the City began developing a sanitary sewer plan that includes updates to the existing Sanitary Sewer Overflow Response Plan. The City also began planning for the development of a Fats, Oils & Grease (FOG) Program that will include residential education and restaurant inspections. The SSORP will be updated in Fiscal Year 07-08 and a FOG program will be implemented in the second half of Fiscal Year 08-09.

8.4 DISPOSAL OF USED OIL AND TOXIC MATERIALS

The Household Hazardous Waste (HHW) Collection and Recycling Facility in Vista is open to residents every Saturday from 9:00 a.m. to 3:00 p.m. This facility accepts all types of HHW, including waste oil. Residents are encouraged to use this facility for used oil and other toxic materials. Printed materials and website information advertise the facility location and hours of operation in order to facilitate proper waste recycling and disposal procedures by Vista residents. If desired, residents can also call for curbside pickup of their HHW. Table 8.3 summarizes the estimated quantities picked up from Vista residents.

Table 8.4 Amounts of HHW picked up from Vista residents.

HHW Material		Pounds
Flammable & Poison	Flammable & Poison	358
Acid	Organic and Inorganic acid	18
Base	Organic and Inorganic base	18
Reclaimable	Latex paint	1,429
Aerosol Containers	Non-empty aerosol containers	89
Other HHW	Other	179
Total		2,091

During 2006-07, approximately 244,936 pounds of HHW were dropped off by Vista residents. This is summarized in Table 8.4.

Table 8.5 Estimated amounts of HHW dropped off by Vista residents.

HHW Material		Pounds
Flammable & Poison	Flammable solid/liquid	20,927
	Bulked Flammable Liquids	14,777
	Oil-base paint	26,103
	Poison (excl. aerosols)	12,690
	Reactive and Explosive	6
Acid	Organic and Inorganic acid	2,571
Base	Organic and Inorganic base	2,004
Oxidizers		960
PCB-containing	Other PCB waste	109
Reclaimable	Antifreeze	2,555
	Latex paint	65,453
	Motor oil/oil products	12,940
	Oil Filters	974
Asbestos		278
Universal Waste	Mercury containing waste	22
	Lamps	3,840
	Rechargeable batteries	42
	Household batteries	2,755
Electronic Waste	SB20/50 video display devices	17,422
	Consumer Electronic devices	41,238
Aerosol Containers	Non-empty aerosol containers	4,397
Other HHW	Pharmaceutical Waste	153
	Compressed gas cylinder	1,362
	Non-UW aerosol containers	696
	Other	10,663
Total		244,936

Use of HHW collection by Vista residents has steadily increased from FY 02 to present, as shown Table 8.5.

Table 8.5: Number of Vista resident cars

	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07
# cars	1827	1860	2059	2252	2814	3067
Home pickup	7	16	22	30	30	20

Home pickup is not commonly used, primarily because Vista has an HHW collection site in its jurisdiction, making drop-off for residents convenient and free.

The City contracted with Solana Center for Environmental Innovation (Solana Center) to help increase recycling of used oil and filters. Two events were conducted in collaboration with auto parts stores to promote recycling. The January and June events were advertised in newspapers and fliers, encouraging people to bring in their used oil filter and receive a new one in exchange. Over 80 people attended these events and over 135 used oil filters were collected for recycling.

Solana Center was also contracted to give educational presentations to vocational and high school auto shops on oil recycling and compliance. Presentations were made to the Vista High School auto shop class and to the Vista Adult education auto shop class, resulting in 45 students receiving presentations in both English and Spanish.

Vista also continued to work with the nine certified collection centers. During the reporting period, these centers collected 30,840 gallons of oil and 3,140 used oil filters from do-it-yourselfers, which are significant increases from the previous fiscal year.

8.5 IMPLEMENTATION PLANS FOR FY 2007-08

The City will continue development of a FOG program to reduce wastewater overflows cased by blockages in private and public sewer lines, as well as examining ways to improve maintenance programs.

It is also anticipated that the dry weather monitoring sites will be re-evaluated to ensure that they are in locations that best represent the City's storm drain system. This will occur with the completion of GIS storm drain system maps, which will also aid in follow-up investigations.

The City will add a new Stormwater Code Enforcement Officer position and will continue to focus compliance efforts on repeat violators.

The City plans to add a stormwater email address and publicize it on the website and other documents as another means to facilitate reporting.

8.6 REVISIONS TO JURMP

This section of the JURMP as well as the dry weather monitoring program will be updated during FY 2007-08 to comply with Order R9-2007-0001.

9.0 EDUCATION COMPONENT

As described in the City's JURMP, the overall objectives of the City's educational element are as follows:

- To measurably increase the knowledge of target communities regarding municipal separate storm sewers systems (MS4s), impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience; and
- To change the behavior of target communities and thereby reduce pollutants into the MS4s and environment.

During this reporting period, education remained as one of the top priorities of the City's stormwater efforts. These efforts are detailed below in Section 9.2.

9.1 PROGRAM CONTENT

Section 9.0 of the City's JURMP provides details and a summary table regarding the educational program content targeted at the specific audiences. These target audiences/communities include:

- Municipal departments & personnel;
- Industrial owners & operators;
- Commercial owners & operators;
- Residents and the general public;
- School children;
- Developers & construction contractors; and
- Quasi-governmental agencies.

9.2 PROGRAM ACCOMPLISHMENTS

During this reporting period, the City continued to implement education programs and outreach to target audiences. Following is a summary of the target audiences and the mechanisms used to reach them with specific stormwater education information.

9.2.1 Municipal Departments and Personnel Workshops & Training

City staff training was conducted for many departments during this reporting period. City staff also attended and participated in a variety of external and other professional training activities. These activities are summarized in Table 9.1 below. Over 80 staff attended the following workshops and training sessions.

Table 9.1 2006-07 City Staff Workshops and Training

Workshop/Training	Host/Presenter	Date
"Storm Watch", Municipal Storm Water Pollution Prevention	Excal Visual DVD	8/06
Storm Water Management & Your Responsibilities	Construction Management Assoc. of America	9/14/06
Vista Engineering Inspection Staff Meeting	Vista Water Quality Protection Program (WQPP)	9/21/06
Watershed Assessment & Management Workshop	USC Sea Grant	11/13/06
Construction Permit Compliance & SWPPP Prep	Building Industry Assn. of San Diego	11/30, 12/5 & 12/14/06
Ground Control (DVD)	Excal Visual DVD	12/22/06
Storm Water Management Seminar - LID	Tory Walker et al.	1/18/07
Administration & Enforcement of Wetlands	Lohrman Education	1/30/07
Fostering Sustainable Behavior	San Diego Regional Copermittees	2/7-8/07
Advanced SWPPP Training	Associated General Contractors	2/28/07
Engineering Staff Meeting – New Stormwater Permit & Programs	Vista WQPP	3/21/07
New Storm Water Permit – Briefing to Department Heads	Vista WQPP	3/28/07
New Storm Water Permit Briefing to various departments	Vista WQPP	Various 3/07 – 4/07
New San Diego County Municipal Storm Water Permit Briefing	Building Industry Assn. of San Diego	5/07/07
New Urban Runoff Requirements – To Vista Planning Commission	Vista Water Quality Protection Program	6/05/07

9.2.3 Industrial and Commercial Business Owners and Operators

During this reporting period, the City continued to distribute informational brochures to business owners and operators during stormwater inspections and enforcement activities. The general business brochure contains information regarding the City's Municipal Code requirements and Best Management Practices to be implemented at businesses.

As part of the industrial and commercial inspection program, facilities were provided information using a variety of education mechanisms. Initially, to inform facility managers/owners of the upcoming inspections, an educational letter was sent. Education was also provided during the

inspection itself on a one-on-one basis. Further education occurred if a follow-up inspection was required. During each education interaction, businesses were provided with information regarding the stormwater program goals, regulations and BMP expectations.

The City distributed specific educational material for commercial and industrial facilities during inspections. The following table shows the number and type of information distributed. Copies of these items have been submitted with previous annual reports.

Table 9.2 Business Educational Material Distributed

Educational Material	# Distributed
"Storm Water Protection Is In Good Hands…Yours" (Restaurant Poster)	190
Grease Bin Handout	105
NOI handout	1
Industrial Permit exemption handout	9
NONA/NEC forms	8

Additionally, the Code Enforcement Officer distributed over 50 business related handouts on stormwater BMPs and pollution prevention to businesses during investigations or other compliance activities.

In an effort to reach as many businesses as possible, the City updated and inserted an English/Spanish Stormwater Requirements flier into every business license renewal notice (approximately 8000). The flier notified businesses of their responsibilities to eliminate and/or reduce storm water pollution, as well as information to industrial businesses concerning the State Storm Water Permit.

9.2.4 Residents and General Public

Brochures/Printed Materials
The City continued to distribute existing publications through various mechanisms, including local community events, during site visits, at public locations, and through mailings.

Calls and Complaint Response
The City continued its education efforts with one-on-one interactions triggered by complaints and/or situations in the field. A summary of complaints is included in Section 8.0 and Appendix E-1. Printed material is distributed to the violator along with verbal communication addressing

the violation and necessary corrective actions. During this reporting period, the Stormwater Code Enforcement Officer distributed over 270 brochures and booklets to residents in response to complaint investigations or conditions observed in the field.

Community Events

The City participated in one watershed stormwater event during the reporting period. On April 15, 2007, the City staffed a booth for the Pepper Tree Day Earth Fair hosted at the Mission San Luis Rey. City of Vista staff gave presentations using the Enviroscape® watershed model, to provide the public with a visual demonstration of the causes and effects of urban runoff, and distributed literature for residents to take home regarding BMPs to reduce or eliminate storm water pollutants.

The City's annual Public Works Day, held on May 24, 2007 included stormwater education material and demonstrations. The Water Quality Protection Program hosted a booth, providing literature and promotional items. The storm drain maintenance crew created a display of the storm drain system, and graffiti removal staff demonstrated the new pressure spray cleaner and water recovery system. Over 400 school age children and adults attended.

The City also co-sponsored two creek clean-up events. The first was held on Coastal Cleanup Day, September 16, 2006, along an area of Buena Creek. Over 130 volunteers participated in this cleanup. The second was concurrent with the Creek to Bay cleanup on April 28, 2007. This was along a trail and bank section of the Buena Vista Creek. Approximately 130 people participated in this event and received stormwater informational material and promotional items.

City staff hosted booths to distribute stormwater educational information at other public events, including a March 14, 2007 Sherriff Appreciation open house in the Townsite area of Vista, a March 31, 2007 "Dumpster Day" also in Townsite, and a May 27, 2007 Chocolate Festival in Vista.

Municipal Facilities / Public Lobbies
Printed educational brochures were provided for distribution at several City facilities visited regularly by the public including City Hall, City Public Works and Engineering lobbies. Additionally, several of the City's field staff carry the informational brochures and door hangers in their vehicles and distribute them as needed or appropriate when they are out in the community.

Premiums/Promos
Another focus during this reporting period was proper pet waste disposal. Vista continued to maintain Doggi-pot bag dispensers at parks and distributed magnets and Bags on Board® bag dispensers.

City of Vista Website
During the reporting period the City completed an update of its website which is located at www.cityofvista.com or www.ci.vista.ca.us to include more stormwater pollution prevention information and additional helpful links to website users. The website now provides access to the City's Municipal Code which contains both updated grading and stormwater ordinances. The website also provides phone numbers for stormwater, storm drain, and household hazardous waste contacts; provides PDF versions of all educational literature and includes expanded informational sections on construction, industrial and residential BMPs, permits, etc. The City plans to continue enhancing the website as new materials are developed and introduced.

9.2.5 School Children and Students

The City's stormwater education program actively pursued outreach to Vista schools during the reporting period. A total of 57 presentations were conducted, reaching 1225 students. Each presentation included a demonstration using the Enviroscape® Model, as well as an Eco Quiz, and discussion of household BMPs to prevent storm water pollution. Each classroom was provided with a watershed poster, guides to household hazardous waste (English and Spanish), and a recycling guide. The students were given three pledge cards to sign and take home with them. These pledge cards were created during the previous fiscal year as part of a North County Storm Water Program education activity. Students also received promotional items with storm water pollution prevention and conservation messages, which included magnets, pencils, sharpeners and rulers.

In addition, the City of Vista worked with the Vista High School Auto Shop program and an automotive vocational program, which uses Vista High School's Auto Shop facilities after hours, to conduct presentations

on environmental laws and storm water pollution prevention. Approximately 45 students attended the 2 presentations.

During this reporting period, the City obtained a grant from the Metropolitan Water District to conduct a pilot education program with Guajome Park Academy and Communities Alive in Nature called the Clean Water Keepers. This was a project based program designed to enhance the student's knowledge and stewardship of the local waterbodies, water resources, quality, use and conservation. Students involved included 250 6th graders and 12 high school students. Curriculum included mapping exercises, water chemistry, and field training in water quality sampling and analysis, including benthic macro-invertebrate collection in a local creek. Selected groups of students made presentations of their experiences to the Vista Irrigation District Board of Directors, to the Carlsbad Watershed Network, and to the Guajome Park Academy School Board. Additionally, the City of Vista Council issued a proclamation designating May 9th as "Clean Water Keepers Day" in recognition of the efforts undertaken by the students and teachers. A newspaper article on this program can be found in Appendix F-1.

9.2.6 Developers and Construction Contractors

Education efforts for outside contractors and developers continue with one-on-one interactions that are project specific. These efforts include providing materials at the City permits counter, via email, during pre-application and/or at pre-con meetings. Information typically distributed includes the following:

- Applicable sections of the City Stormwater Standards Manual (SUSMP)
- Stormwater Management Plan (SWMP) requirements;
- Stormwater Management Permit Application and Instructions;
- References and/or fact sheets from the CASQA and Caltrans Construction BMP manuals;
- The NCSWP Construction BMP brochure;
- Model SWPPPs (City, BIA, Caltrans); and
- SWRCB General Construction Permit package.

The City also posted the Standards Manual and other information on the City website.

During the reporting year, education efforts consisted mainly of individual interactions with contractors and/or developers and City staff either through counter interaction or attendance at all pre-construction (pre-con) meetings. The City's Stormwater Standards Manual and

Stormwater Ordinance which include requirements for construction BMPs and post-construction BMPs were distributed through the Engineering and Planning department staffs in the latter part of the reporting year. The Construction BMP brochure was also provided at the permits counter and distributed at pre-con meetings.

In previous years, the City had mailed out a letter to developers and construction companies regarding upcoming rainy season requirements. During this reporting period, the City had construction inspectors deliver this educational information during inspections at active sites as well as mailing to developer addresses from the inventory list. This included information for developers/owners and construction companies reminding them to prepare for the rainy season and increase erosion, sediment, and materials management control measures. Approximately 65 letters were mailed and hand-delivered.

Additionally, the City hosted a storm water permit briefing on May 7, 2007 that was presented by the Building Industry Association of San Diego County. The purpose was to inform North County developers, engineers and landscape architects about new permit requirements related to hydromodification, advanced treatment, Low Impact Development, and grading limitations. Approximately 45 local developers and engineers attended.

9.2.6 Quasi-governmental Agencies

The City continued to participate in monthly meeting with its local utilities (i.e. Vista Irrigation District, SDGE, Cox, PacBell). In addition, the City worked with the Vista Unified School District maintenance staff on educational and compliance issues and pursued better collaboration with Vista Irrigation District on water conservation and related education issues.

9.3 WATERSHED EDUCATION ACTIVITIES

The cities of Carlsbad, Del Mar, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach and Vista along with the County of San Diego continued working together as the North County Storm Water Program (NCSWP). In collaboration with outside environmental organizations and watershed stakeholders, the NCSWP produced materials and implemented watershed and storm water pollution prevention education campaigns on a watershed level. During this reporting period, Vista participated with this group, distributing materials developed jointly and hosting informational booths at area events such as the Pepper Tree Earth Day event.

These activities are detailed in the respective San Luis Rey and Carlsbad Watershed Urban Runoff Management Program Annual Reports.

9.4 IMPLEMENTATION PLANS FOR 2007-08

The City plans to continue its efforts to provide education at the local, watershed and regional levels, in accordance with a new strategy that will be developed during 2007-08. This strategy will be developed to comply with the new storm water Order No. R9-2007-0001. It will identify target audiences requiring training and education as described in the Order, and will also focus on pollutants and audiences that are potential sources of these pollutants and the behaviors they can implement to eliminate or reduce these pollutants.

9.5 REVISIONS TO THE JURMP

There were no JURMP revisions for the Education Component. This component will be updated during FY 2007-08 to comply with Order R9-2007-0001.

10.0 PUBLIC PARTICIPATION

As a municipal government agency, one of the City of Vista's primary missions is to serve its public and thus, their participation is consistently welcomed and encouraged. As a service to its community, City staff regularly seeks opportunities to facilitate and encourage public participation through both formal and informal interactions. With respect to urban runoff and pollution prevention, the City anticipates this participation to increase as the education and awareness of its community increases and the City's program evolves.

The formal public participation mechanisms used by the City include public meetings, commissions, community groups, and public events. The public participation opportunities provided during the 2006-07 reporting period are discussed below.

10.1 PROGRAM ACCOMPLISHMENTS

10.1.1 Public Meetings/Notifications for Municipal Code Revisions

There were no municipal code revisions or public meetings held specifically for stormwater pollution prevention during the reporting period. However, storm water program items are typically on the City Council agenda as resolutions are adopted or consultant contracts amended. These council meetings, held on the second and fourth Tuesday of each month, provide an opportunity for anyone from the public to address the elected officials on any stormwater related issues.

A presentation on some of the new storm water permit requirements and lagoon monitoring programs was presented at the June 12, 2007 council meeting.

10.1.2 Beautification and Improvement Commission

The City's Beautification and Improvement Commission (BIC) is comprised of representatives from the community, City Staff and a City Council person. The BIC deals with a broad range of environmentally-related issues to encourage public citizen involvement. Issues that the BIC is charged with include neighborhood beautification, public area enhancements, recycling promotion, and storm water runoff.

Commission members and City staff continued to coordinate with volunteers to conduct cleanup events during the reporting year. The City was successful at drawing attention to the Agua Hedionda watershed. Cleanup events were held to engage the public and show the need for improvements to the local creeks and watershed. A copy of a newspaper article on this September cleanup event is included in Appendix F-2.

10.1.3 Education

The public participation component is largely linked to the City's education component. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted urban runoff; and on the best management practices (BMPs) that can be implemented to minimize pollution of runoff and receiving waters.

As discussed in Section 9.0, the City education efforts during this year focused on disseminating general stormwater information using a variety of mechanisms including distributing printed materials, co-sponsoring community events, giving presentations, and interacting with City staff and the public. By providing various forms and forums for education and involvement, it is the City's intent to increase participation and community ownership in the implementation of the JURMP in future reporting years.

During the reporting period, the City of Vista obtained a grant from the Metropolitan Water District to conduct a pilot education program called the Clean Water Keepers. This program was lead by Communities Alive in Nature and was implemented at Guajome Park Academy with 250 High School and sixth grade students. The program was designed to encourage stewardship of the local waterbodies. In response to this successful program, May 9th, 2007 was proclaimed Clean Water Keepers Day in the City of Vista and program leaders and students were recognized at the City Council meeting. A copy of this proclamation and a newspaper article on the education program are found in Appendix F-1.

10.1.4 Public Outreach and Contact Information

One of the key components of the City's education materials is promotion of City contact phone numbers. The City's stormwater and sanitary sewer system hotlines are also posted on the City's website. The public is encouraged to call and report observed violations and/or to inquire about the "do's" and "don'ts" of the MS4 system. City staff are committed to responding and following up on all calls and complaints in a timely manner.

The City has also improved its advertisement and education for the Household Hazardous Waste Collection Facility. Printed materials and presentations describe the services at this facility, and include a phone number and hours of operation. By encouraging the public to properly dispose of these materials, it is expected that less illegally disposed materials will end up in local waterbodies.

10.1.5 Community Activities

Community activities provide for two-way discussions of stormwater activities. They include booths at public events, presentations at public and community meetings, and community improvement events (cleanups, stenciling events, etc.). During 2006-07, the City co-sponsored cleanup efforts at creeks, trails, parks and neighborhood sites, as well as participating at other community events. During a neighborhood cleanup event on September 23, 2006, volunteers marked about 30 storm drain inlets along Santa Fe Avenue. Following is a listing of these community events:

- Buena Creek Cleanup, September 2006;
- Townsite cleanup, September 2006
- Townsite Neighborhood, Mary 2007;
- Pepper Tree Day, April 2007;
- Buena Vista Creek Cleanup, April 2007;
- Public Works Day, May 2007; and
- Chocolate Festival, May 2007.

At each of these events, City staff interacted with the public by providing printed materials and discussing stormwater issues. Participants were encouraged to ask questions and provide feedback. A more detailed description of these activities is provided in Section 9 of this report.

10.1.6 Website

During this reporting period, the City continued to use the City website to provide information to the public, including hotline information and access to printed materials.

10.1.7 Watershed

The City is an active participant in both the Carlsbad and San Luis Rey River Watershed public participation activities. This includes participation in the Carlsbad Watershed Network (CWN), comprised of a variety of stakeholders including representatives from other municipalities in the watershed, environmental organizations, conservancies, the Regional Water Quality Control Board, and other members of the public. City staff attended monthly CWN meetings when possible.

The City was awarded a $500,000 Proposition 40 grant from the State Water Board to develop a watershed management plan for the Agua Hedionda

Watershed. Plan development is a stakeholder driven process and a Watershed Planning Group was established to work with consultants on plan development. The plan is due for completion in October 2008. Information on watershed public participation activities is included within the San Luis Rey WURMP and Carlsbad WURMP annual reports.

10.2 IMPLEMENTATION PLANS FOR 2007-08

During the next implementation period, the City plans to continue using the public participation mechanisms discussed above and add new opportunities for input. Following are activities that the City plans to pursue:

- Continue to work with stakeholders and consultants to develop the Agua Hedionda Watershed Management Plan.

- Update and revise the JURMP to comply with the new permit requirements, and seek public input on the program.

- Add a stormwater email address to the website and publications to allow another method for the public to provide comment and recommendations on the program.

10.3 REVISIONS TO JURMP

There were no JURMP revisions for the Public Participation Component. This component will be fully updated during FY 2007-08 to comply with Order R9-2007-0001.

11.0 ASSESSMENT OF JURMP EFFECTIVENESS

In accordance with Order 2001-01 Section F.7, the City is required to develop and implement a long-term strategy for assessing the effectiveness of its JURMP. The original strategy, developed as a model for the Copermittees and used in Vista's JURMP, consisted of tracking program activities for each component and providing a qualitative summary of major accomplishments within each component. This strategy was not acceptable to the RWQCB and the Copermittees were asked to develop a new strategy. The new strategy, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs" (Framework), was completed and presented to the RWQCB in October 2003 and is discussed in more detail in the Unified JURMP annual report of 2003-2004.

The City of Vista continued to use the Framework for its JURMP assessment. The current assessment strategy focuses on activity tracking and subjectively reflecting on the strengths and needed improvements for each program component, which is identified as Level 1: Compliance with Activity-Based Permit Requirements in the model assessment strategy. The discussion following each of the components includes a narrative of strengths and improvement needs, as well as discussion of Level 1 activities, and Level 2 and 3 assessments (Changes in Knowledge and Awareness and Behavioral Change/BMP Implementation, respectively) where available. There are a few areas in which the City can conduct Level 4 assessments (Load reductions), but it is believed that this will be most meaningful and comparable when the Copermittees collaboratively agree on standardized assumptions and calculations for load reductions. When sufficient data exist for statistical comparisons, the City will conduct Level 5: Changes in Discharge Quality and Level 6: Changes in Receiving Water Quality assessments. Most information on Level 6 is presented in the WURMP reports.

11.1 PROGRAM ASSESSMENT

Following is the program assessment for the FY 06-07 reporting period. Each JURMP component is addressed and includes a narrative of program strengths and FY 07-08 focus areas to build on program successes. The Level 1 compliance activities are summarized below and detailed in each report section. Any level 2 and 3 assessments are also included with the applicable component discussion below. Due to the lack of regionally standardized accurate load reduction estimating tools and methods, only limited load reductions (level 4) have been assessed for the program. At this time the City does not have the means to accomplish load reductions beyond the collected information directly related to physical removal of materials (e.g., debris, sediments, etc.). As regional standards are developed, the City will participate in collection of standardized information and perform further load reduction estimates. The load reduction information available is summarized below and in the applicable report section.

11.2.1 Municipal

Program Strengths

The municipal facilities continued to implement their SWPPPs and conduct self-inspections of their facilities. Additionally, all high priority municipal facilities were inspected during FY 06-07 by outside contractors. In-house trainings continued to remind field personnel on proper implementation of appropriate BMPs and other storm water issues. Additional BMPs were implemented at the municipal sites as detailed in Section 2. The City also continued to make significant progress in updating both the Storm Drain and Sewer Master Plans. Updated plans will provide prioritization of network repairs and also assist in identifying problem areas that may require more attention from Public Works staff for cleaning, maintenance and or repairs.

During FY 06-07, approximately 8,000 curb miles of streets were swept, removing an estimated 859 tons of materials, a significant increase over FY 05-06 (@ 250 tons). This was accomplished under a new street sweeping contractor. City staff inspected and cleaned approximately 1,204 catch basins and inlets, which equates to approximately 148% of the City storm facilities. This improvement was accomplished through the use of a new City owned vacuum truck. Approximately 180 $yd^3$of sediment and debris were removed from the municipal separate storm sewer system, and approximately 864 yd^3 of sediment were removed from flood control channels.

The following table provides a summary of the amount of sediment, debris and trash removed during maintenance activities, as well as inspections.

Table 11.1. Municipal Activity Summary and Load Reductions

Activity	Quantity
Number of high priority municipal facilities	11
Number of high priority municipal facilities inspected*	11
Quantity of sediment and debris removed from the municipal separate storm sewer system (MS4) • Storm Drain Facility Vactor cleaning 180 $yards^3$ • Flood control channels & under sidewalk 864 $yards^3$ • Rain Patrol 147 $yards^3$ • Creekwalk Debris Net 38 $yards^3$ • Creekwalk System 385 $yards^3$	1614 yds^3
Quantity of sediment, trash and debris removed from municipal areas and facilities that otherwise may have entered the MS4: • Street Sweeping 859 tons • Green waste from medians & ROWs 132 tons • Roadside Trash 2.6 tons • Empty lot, misc. removal 109 tons • Parking Lot inlet filters 0.17 tons	1103 tons

*Does not include networks, such as sewer and storm drain systems, and roads.

The City hired an outside contractor to inspect the high priority municipal fixed facilities (maintenance yards, recreation and parking lots). During inspections, each contact was evaluated for their stormwater knowledge and the facility was assessed for BMP implementation (1, low to 5 high). This is the same inspection assessment that has been conducted for the commercial and industrial inspection form. Since this was the first year for this assessment, it will serve as a baseline for future inspection assessments. Table 11.1 is a summary of these scores:

Table 11.2. Municipal Facility Knowledge and BMP Scores

	Average Knowledge Score	Average BMP Score
Average	4.3	2.9
Median	4.5	3.0
# of facilities assessed	6	11

FY 07-08 Plans

1. The City will continue to hire an outside contractor to annually inspect the six main high priority municipal facilities and parking lots. This provides a third-party Stormwater professional perspective for the review and evaluation of site conditions and BMP implementation.

2. The City will work to complete the Storm Drain and Sewer Master Plan updates.

3. The City will explore methods and databases to more efficiently track and report on maintenance activities.

4. The City will revise its JURMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will identify key areas and information to be collected to enhance the program's effectiveness.

11.2.2 Industrial and Commercial

FY 06-07 Industrial Program Strengths

All high priority, 13 medium priority, and 3 low priority industrial facilities were inspected during the reporting period. Detailed information on industrial permit issues were provided during inspections and in the report. The inspections included assessment of facility operator knowledge of storm water issues and facility BMP implementation. Additionally, all facilities were assessed using the Pollutant Discharge Potential Assessment form conducted as a pilot during the previous fiscal year. Because many of the City's industrial facilities are found in new industrial parks, where essentially all activity is indoors, the number of BMP deficiencies observed at industrial

sites was relatively small – only two violations related to BMPs were noted during industrial inspections. Several industries were in violation for failure to monitor, resulting in the issuance of Notices of Violation, and subsequent follow-up from the industry to submit monitoring plans or provide evidence of their removal from the requirements to monitor.

FY 06-07 Commercial Program Strengths

The major accomplishment for this component during the reporting year was the inspection of all inventoried restaurants, nurseries and greenhouses, as well as inspections of automotive facilities with compliance issues noted during FY 05-06. The City aggressively pursued restaurant compliance with grease handling and storage requirements.

Other strengths included the continued use of the knowledge and BMP implementation assessments conducted during inspections, as well as the use of the PDPA form that was conducted during the previous year as a pilot project. The results of the knowledge and BMP assessments for the commercial facilities are summarized below in Table 11.4.

Industrial and Commercial Summary and Assessments

The following table summarizes the inspection and enforcement activities for regulated businesses during the reporting period.

Table 11.3. Industrial and Commercial Activity Summary

	Quantity
Industrial	
Number of high priority Industrial facilities in FY 06-07	24
Number of high priority Industrial facilities inspected*	23
Number of medium and low priority industrial facilities in FY 06-07	238
Number of medium and low priority industrial facilities inspected	16
Number of investigations / number of enforcement actions taken	7/7
Number of facilities referred to RWQCB for non-compliance that poses a threat to health or the environment.	0
Commercial	
Number of high priority commercial facilities identified	580
Number of high priority commercial facilities inspected	267
Number of investigations / number of enforcement actions taken	106/160

* One facility on the inventory had moved out of Vista and therefore was not inspected.

The following are the results of the storm water knowledge and BMP assessments conducted during inspections of commercial and industrial facilities. This is based on standardized ranking criteria that the inspector uses to rate the facility operator knowledge and the facility BMP implementation (from one – low to five – high). For this analysis, all industrial and commercial facilities that were inspected and assessed are included in these results.

Table 11.4 provides a breakdown of information from the inspections stating the average and median ratings for BMP and knowledge assessments, as well as rating frequencies, from FY 04-05 through FY 06-07 inspection programs.

TABLE 11.4 Statistical summary of Knowledge and BMP Assessment Scores

Overall Program Scores:	2004/2005 Knowledge Assessment	2005/2006 Knowledge Assessment	**2006/2007 Knowledge Assessment**	2004/2005 BMP Assessment	2005/2006 BMP Assessment	**2006/2007 BMP Assessment**
AVERAGE Rating	2.3	2.3	**2.1**	3.3	3.4	**3.0**
MEDIAN Rating	2	2	**2**	4	3	**3**
# of "Level 5" Ratings	2	4	**139**	37	81	**77**
# of "Level 4" Ratings	44	67	**72**	127	132	**14**
# of "Level 3" Ratings	61	113	**40**	71	131	**100**
# of "Level 2" Ratings	129	109	**37**	23	52	**75**
# of "Level 1" Ratings	69	133	**16**	48	33	**39**

The overall average and median scores for storm water knowledge and BMP implementation have remained relatively constant, with a slight decrease in the 2006-07 inspection program. The decrease in BMP implementation is likely the result of taking a stricter approach to grease bin BMPs in 2006-07, which resulted in a higher violation rate. All such violations received the lowest possible BMP score of 1. Graphs 11-1 and 11-2 display relative score frequencies for BMP implementation and storm water knowledge for the past three inspection programs, respectively. The graphs are based on relative frequencies so that the three years' inspection programs, which did not include the same number of inspections, can be more directly compared. Graph 11-1 shows that the bulk of facilities inspected in 2006-07 tend to have BMP scores distributed around the peak at 3, which is the average BMP implementation score for 2006-07. As previously noted, a greater number of facilities were given a BMP implementation score of 1 due to the grease bin requirements.

The average knowledge assessment score decreased somewhat as compared to previous years, but the median knowledge score remained the same. In many

cases a decreased or similar knowledge score at a second or even third inspection at a business may be attributed to different people's knowledge being assessed than in previous years. It has been the City's experience that restaurants in particular, which comprised a large portion of inspected facilities in all three years' inspection programs, tend to have high turnover rates. Because employees and managers often change from year to year, inspectors often have to introduce the storm water program anew each time an inspection is conducted at such facilities. Graph 11-2 shows a summary of storm water knowledge assessment score frequencies from 2004/2005, 2005/2006, and 2006/2007.

Because high priority industrial businesses are inspected each year and typically have lower staff turnover rates than other inspected businesses, their BMP and knowledge scores were also analyzed. Graphs 11-3 and 11-4 display the BMP and knowledge scores, respectively, for high priority industrial sites. Although the sample size of around 20 is not especially large, on the whole both the average knowledge scores and average BMP scores increased at these facilities. There has been an overall shift away from BMP implementation scores of 1 and 2 and an increase in scores of 3 and 4. Knowledge assessment scores of 5 increased from previous years, possibly due to the education efforts of the City and familiarity with both the inspection program and the Industrial Permit. Our experience has shown direct interaction to be a powerful tool in achieving increased knowledge and BMP implementation, and much of these improvements may be due to direct interaction with the facility management during inspections. Because the majority of the high priority industrial sites are also subject to the Industrial Permit, the threat of enforcement by the Regional Board may also be a factor in encouraging compliance.

The relative BMP implementation and knowledge score frequencies for facilities within each prioritization category for 2006/2007 are displayed in Graphs 11-5 and 11-6, respectively. High priority commercial facilities, most of which were restaurants, have the lowest BMP implementation and knowledge assessment scores, likely due to high turnover rates and the grease storage requirements. Over 60 percent of the high priority commercial businesses have knowledge scores of 1 or 2. High priority industrial businesses have the highest knowledge scores, likely because they are inspected most frequently and typically also are regulated under the Industrial Permit.

Only three low priority industrial facilities were inspected during this inspection program. A breakdown of the BMP implementation and knowledge assessment scores are not included in Graphs 11-5 and 11-6 because of the small number of inspections that were conducted.

Tables 11.5 and 11.6 show comparisons of the BMP and knowledge scores for businesses inspected in both 2005/2006 and 2006/2007. Most of the businesses that were inspected in both years were restaurants or high priority industrial facilities. Interestingly, for both industrial and commercial sites the businesses

that had BMP or knowledge scores of 1 during the last reporting period tended to have much higher scores in 2006/2007. This trend is especially apparent for commercial business BMP scores: as a group, the sites that scored a 1 in 2005/2006 had the highest average BMP score (about 3.4) in 2006/2007. The commercial businesses that scored a 2 in 2005/2006, however, showed little improvement in 2006/2007. The main difference between these two groups is that the 1 group were marked as being in violation, while the 2 group were not. Most likely the combination of being told they were in violation and/or follow-up actions by City code enforcement staff account for the difference in the response of these two groups. While it is only one year's data and the sample size is not huge, this data does indicate that the City's enforcement process is effective in bringing about improved BMP implementation.

Graph 11-1
BMP Implementation Score Frequency, 2004/2005, 2005/2006, and 2006/2007

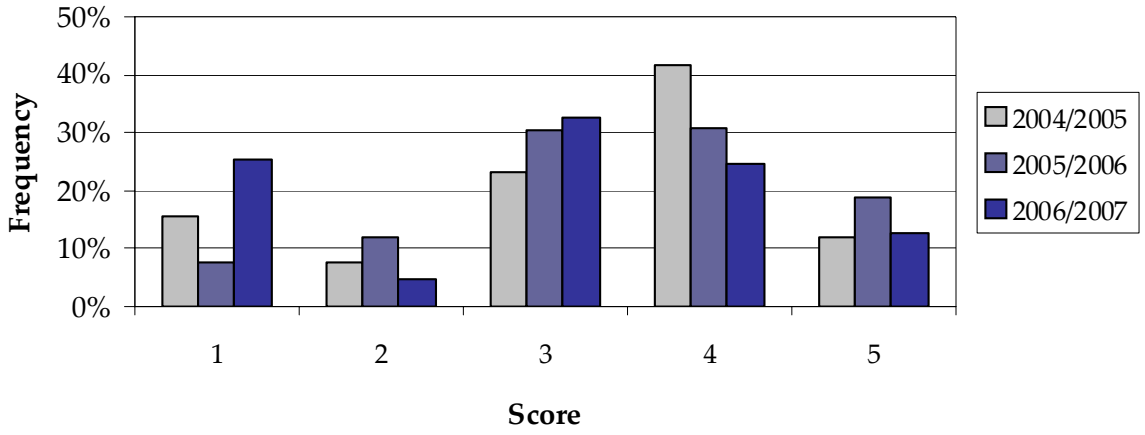

Graph 11-2
Storm Water Knowledge Assessment Score Frequencies, 2004/2005, 2005/2006, and 2006/2007

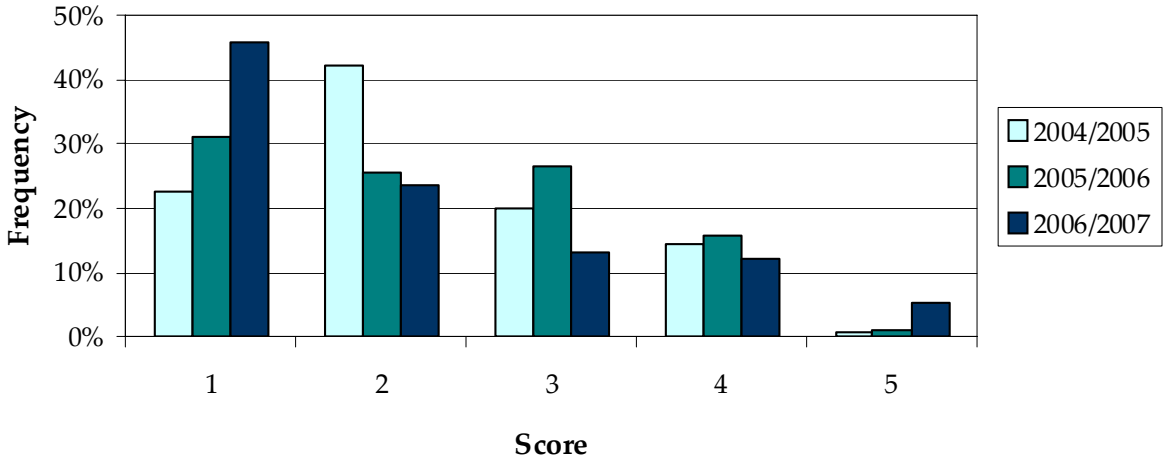

Graph 11-3
BMP Implementation Score Frequency at High Priority Industrial Facilites, 2004/2005, 2005/2006, and 2006/2007

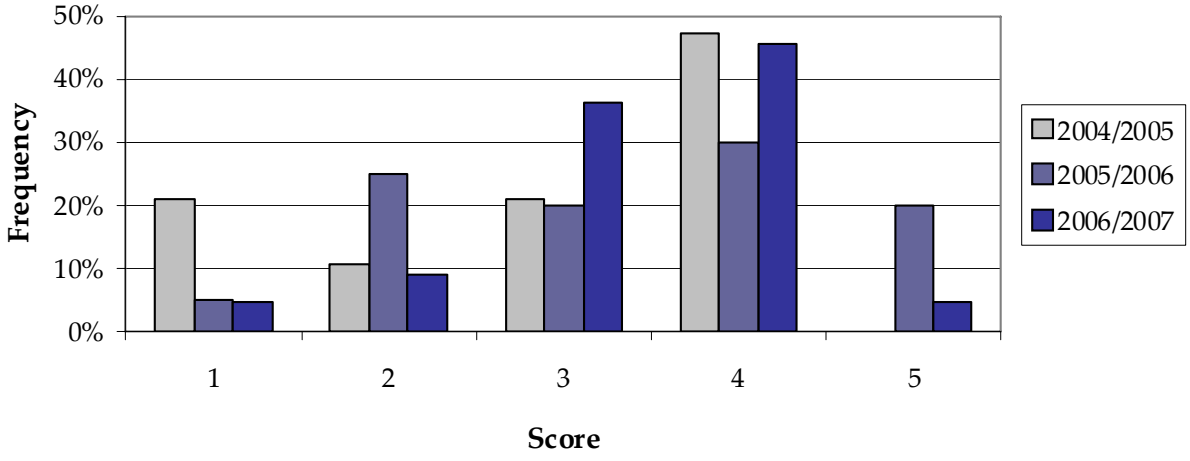

Graph 11-4
Knowledge Assessment Score Frequency at High Priority Industrial Facilities, 2004/2005, 2005/2006, and 2006/2007

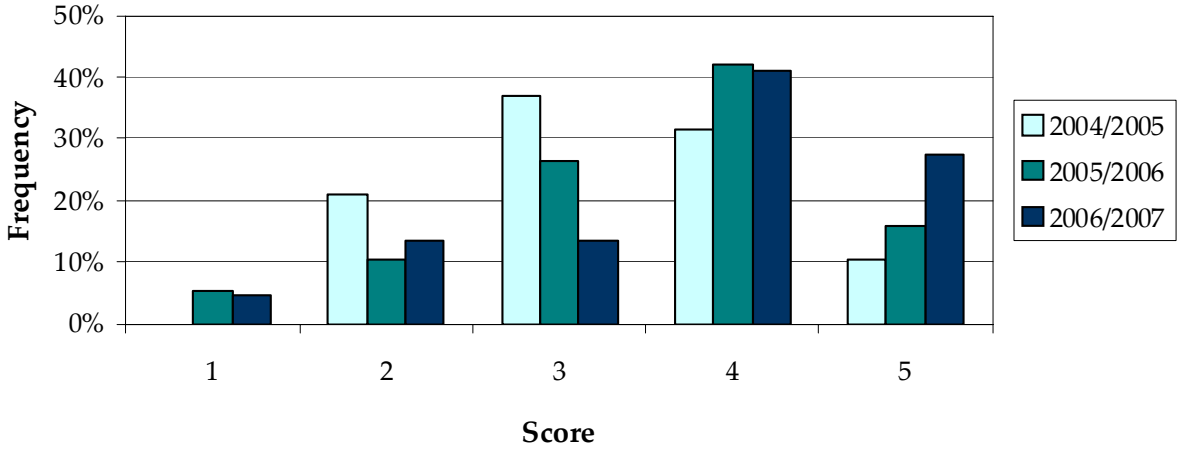

Graph 11-5
Breakdown of BMP Assessment Scores by Facility Priority, 2006/2007

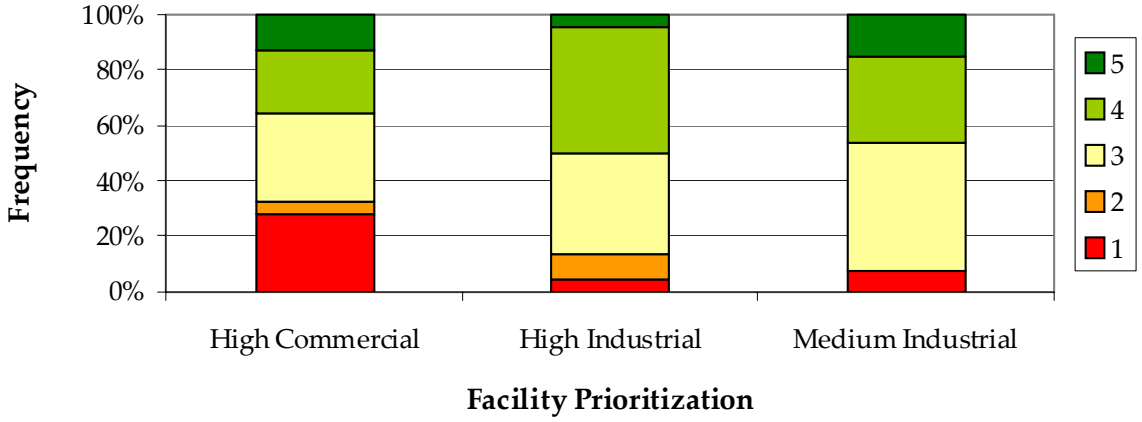

Graph 11-6
Breakdown of Storm Water Knowledge Assessment Scores by Facility Priority, 2006/2007

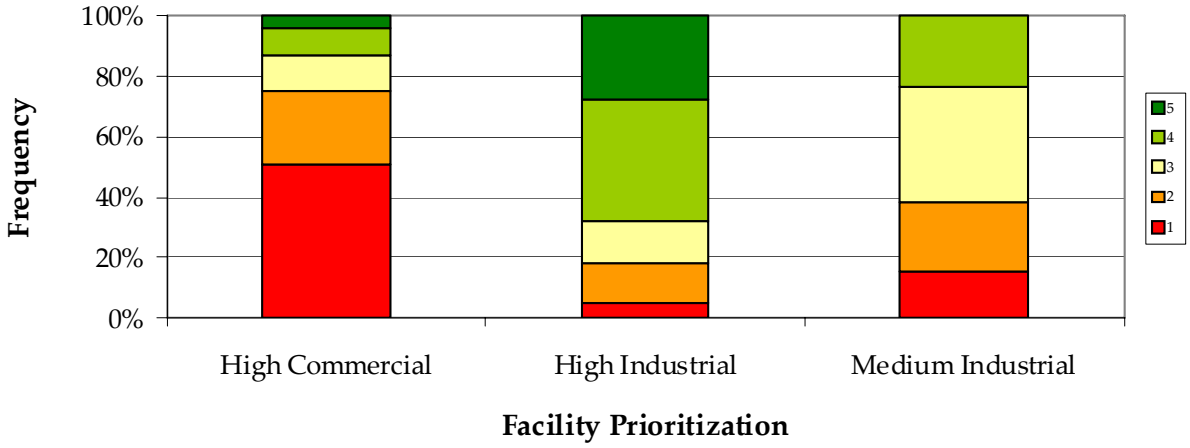

TABLE 11.5
COMPARISON OF BMP SCORES FOR SITES INSPECTED IN BOTH 2005/2006 AND 2006/2007

Type	2005/2006 Score	Sites	2006/2007 Average Score	Average Change
Industrial	1	1	4.0	3.0
Industrial	2	6	3.3	1.3
Industrial	3	2	4.0	1.0
Industrial	4	3	3.3	-0.7
Industrial	5	3	3.7	-1.3
Commercial	1	17	3.4	2.4
Commercial	2	28	2.1	0.1
Commercial	3	57	2.5	-0.5
Commercial	4	47	3.0	-1.0
Commercial	5	19	3.4	-1.6

TABLE 11.6
COMPARISON OF KNOWLEDGE SCORES FOR SITES INSPECTED IN BOTH 2005/2006 AND 2006/2007

Type	2005/2006 Score	Sites	2006/2007 Average Score	Average Change
Industrial	1	1	3.0	2.0
Industrial	2	1	4.0	2.0
Industrial	3	2	3.0	0.0
Industrial	4	2	3.5	-0.5
Industrial	5	0	-	-
Commercial	1	28	2.6	1.6
Commercial	2	41	2.4	0.4
Commercial	3	44	2.3	-0.7
Commercial	4	24	1.8	-2.3
Commercial	5	1	2.0	-3.0

PDPA Evaluation

As described earlier in this report, D-MAX recently developed a one-page pollutant discharge potential assessment (PDPA) form to aid in identifying the sources of pollutants (previously submitted in the 2005-06 Annual Report). The form is intended to be a semi-quantitative tool to identify which sites are major sources of the principal pollutants of concern for storm water. Please note that although left out of the BMP implementation and knowledge assessment score analyses, the PDPA scores of municipal facilities are incorporated in the following graph. PDPA forms were completed for all businesses that received full inspections.

Inspectors record scores for the following pollutants on the PDPA form: sediments, nutrients, aluminum, iron, heavy metals, organic compounds, trash and debris, oxygen demanding substances, oil and grease, bacteria and viruses, pesticides, and acid/base. Where a PDP of three or higher is recorded, the area(s) of the site thought to be the main source(s) of the pollutant are identified via check boxes, and the type(s) of BMP(s) necessary is identified. Graph 11-7, below, presents the frequency for each pollutant.

Graph 11-7
Frequency of Pollutant Discharge Potential Scores

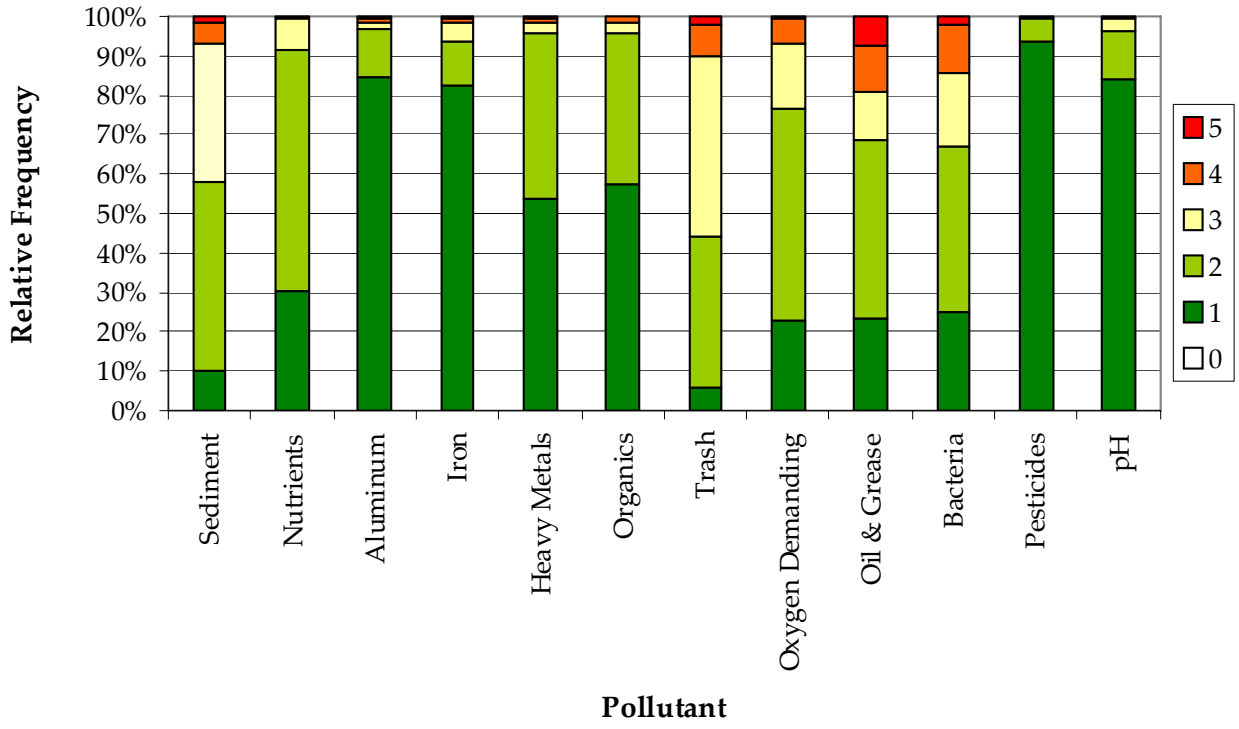

Higher frequencies of higher scores were most common in the following pollutant categories: sediment, trash and debris, oxygen demanding substances, oil and grease, and bacteria and viruses.

Appendix H contains figures displaying the location of PDP scores for six selected pollutants within the City. Sediments, nutrients, heavy metals, trash and debris, oil and grease, and bacteria are included in Figures H-1 through H-6, respectively. Facilities marked with yellow, orange, or red points, have moderate to severe potential to discharge the specific pollutant into the storm water conveyance system. Heavy metal PDP scores greater than 3 were typically given to auto body shops and some industrial facilities involved in metal work. Higher trash and debris scores were mainly attributed to poorly kept dumpster areas, typically at restaurants. In many cases these areas were communal dumpster areas and the responsibility to keep the area clean is shared. In general, the high oil and grease and bacteria and virus scores were due to

grease bin areas lacking secondary containment and/or overhead coverage. In many cases, these areas not only lacked proper storage, but were also poorly kept. Grease spills were commonly noted on and around the grease storage area.

FY 07-08 Industrial Plans

The City will continue to conduct annual inspections of high priority industrial facilities and inspect other industrial facilities as resources allow. Following are additional program improvements that the City will address in FY 07-08.

1. The City will increase enforcement efforts to obtain compliance from facilities that have failed to conduct required monitoring and improved notification to the Regional Board for those needing an Industrial Permit.

2. The City will improve internal procedures to provide proper notification to the Regional Board for any facilities in which noncompliance may endanger health or the environment.

3. The City will update the Industrial component of the JURMP to comply with new Order R9-2007-0001 and will identify key areas and information to be collected to enhance the program's effectiveness.

FY 07-08 Commercial Plans

There continue to be compliance issues with commercial facilities, particularly with restaurants and how they handle and store waste oil and grease, and general housekeeping around dumpsters. Program staff have identified several mechanisms that will help us achieve increased compliance:

1. Continue to focus education, inspections and enforcement on restaurants and other commercial facilities with repeated non-compliance issues.

2. Increase compliance activities through the addition of a second Stormwater Code Enforcement Officer.

3. Update the Commercial component of the JURMP to comply with new Order R9-2007-0001 and will identify key areas and information to be collected to enhance the program's effectiveness.

11.2.4 Residential

FY 06-07 Program Strengths

The City continued to actively conduct residential outreach as well as complaint investigations to obtain compliance with BMP requirements for high priority residential areas and activities. A new pet waste education

program was launched. Also during 2006-07, residential use of the HHW facility continued to increase.

Table 11.7. Residential Activity Summary

Activities	Quantity
Quantity of household hazardous waste materials collected	247,027 pounds
Quantity of waste oil collected by Certified Collection Centers	30,840 gallons
Number of residential cases investigated	68
Total number of enforcement actions taken	59

FY 07-08

The City has identified nitrates and trash as dry weather constituents of concern (COCs). The watershed has identified bacteria and sediment as high priority COCs (wet weather monitoring). Some residential areas and activities can contribute to these COCs. As shown in the City's dry weather program, over-irrigation runoff can carry contaminants to the storm drain system. Following are some on-going program improvements that the City will address in FY 07-08.

1. The City will continue to implement education and investigation programs to reduce stormwater pollutants from high priority residential areas and activities.

2. The City will update the Residential component of the JURMP to comply with new Order R9-2007-0001 and will identify key areas and information to be collected to enhance the program's effectiveness.

11.2.5 Land Use Planning and Development

FY 06-07 Program Strengths

During the reporting period, the City continued to implement its SUSMP requirements for all projects. Since the RWQCB SUSMP Program audits, the City has continued to require conformance with the SUSMP for site design and source control implementation. This has been accomplished and the resulting BMPs have been progressing toward Low Impact Development types. The more natural types of BMPs have also crossed from site design into treatment control BMPs. All of the priority projects approved during the reporting period had natural treatment control. The natural treatment control BMPs included properly designed treatment control detention basins and vegetated bioswales.

During the reporting period, 18 private projects received the City's discretionary approval. These projects and four Capital Improvement

Projects were required to comply with the City's SUSMP requirements. The City also issued 14 grading permits that included post-construction treatment control BMPs.

FY 07-08 Plans

The City plans to collaborate with other Copermittees to work towards regional standards for implementation of SUSMP requirements, including LID and HMP requirements. Currently, there is no standard for quantities of site design and source control for projects. By developing minimum standards, the Copermittees could eliminate the confusion over how much site design is required. Until the interim and final HMP requirements are determined, the quantity of site design BMPs for a particular project is still jurisdictionally specific and developers across the region are subject to mixed requirements. The City also plans to continue to require more natural treatment control BMPs and site design features for the projects.

The City will revise its JURMP and SUSMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will identify key areas and information to be collected to enhance the program's effectiveness.

11.2.6 Construction

FY 06-07 Program Strengths

The construction component strengths during the reporting period were the site inspections conducted at all priority sites. The City continued to use a database to generate project specific inspection forms based on site priorities. As City inspectors have become more educated through training sessions, and their own experiences, the inspections and contractor compliance has improved. There were very few legitimate construction related complaints received during the reporting period.

In addition, program staff spent a considerable amount of time with the Building Department inspectors training them on proper storm water BMPs and key areas to inspect.

Table 11.8. Construction Activity Tracking

Activity	Rainy Season	Dry Season
Number of high priority construction inspections	109	20
Number of medium priority construction inspections	26	12
Number of Low priority construction inspections	65	48
Total Number of Construction Complaint Investigations	4	
Total Number of Construction Enforcement Actions	7	

FY 07-08 Improvement Plans
City staff will continue meeting with developers and contractors at all pre-cons to discuss site BMPs. Additionally, the City will improve current or develop new databases to track construction projects and post-construction BMPs.

The City will revise its JURMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will identify key areas and information to be collected to enhance the program's effectiveness.

11.2.7 Illicit Discharges Detection and Elimination

FY 06-07 Program Strengths
The City continued to actively seek and eliminate illicit connections and discharges through the dry weather program and complaint investigations. While there were various exceedances of dry weather actions levels, the 2007 Dry Weather Monitoring Program found relatively few indications of illegal discharges to the City of Vista's storm water conveyance system.

The City conducts an active stormwater complaint investigation and enforcement program, and conducting 203 stormwater investigations last year. The City's ultimate goal is to achieve compliance, and the Code Enforcement Officer works to achieve that end through education or enforcement, as appropriate. The City did step up enforcement actions for repeat violators, issuing 112 Notices of Violation and 69 administrative citations with fines.

Table 11.9. IDDE Activity tracking

Activity	Quantity
Number of dry weather sampling locations monitored	32
Number of illicit connections identified and eliminated	1
Number of illegal discharges identified and eliminated	107
Number of stormwater enforcement complaints or cases opened	203

FY 07-08 Plans
The City will continue to refine and improve these program areas as needed. The completed GIS maps will assist the City in evaluating the locations of the current dry weather monitoring sites to determine if they are properly located in order to best identify illegal discharges, and to track illicit discharges when identified. Following are some highlighted activities planned for 2007-08.

1. The City will continue to develop a Fats, Oils and Grease program in order to reduce sewer overflows caused by grease blockages and to

comply with the new Waste Discharge Requirements for Sewer Collection Systems.

2. The City will hire a second Stormwater Code Enforcement Officer and continue to focus on identified problem areas and repeat violators.

3. The City will add a Stormwater email address and publicize it on the website and in other documents for another means to facilitate reporting.

4. The City will revise its JURMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will identify key areas and information to be collected to enhance the program's effectiveness.

11.2.7 Education

FY 06-07 Program Strengths

The strength of the education program during this reporting period was the active distribution of storm water materials to various target audiences, including residents, municipal staff, school children, businesses, developers and construction site operators. The City conducted and participated in external and internal workshops and presentations, including elementary school classroom presentations, a new pilot education program at Guajome Park Academy, automotive classroom presentations, and City staff and commission training sessions.

Table 11.10 Education Activity Tracking

Number of community events and creek cleanups	6
Students receiving classroom presentations	1,475
Number of staff training events	19
Mailed newsletters and fliers with Stormwater information	> 52,000*
Brochures, posters, promotional items, etc. distributed	>10,000*

* Estimated

As part of the elementary school classroom presentations, there were a number of students who were given tests before the presentation and then tests after to assess changes in knowledge. Table 11.11 below shows the number of students involved and the increase in the number of students with stormwater knowledge after the presentations.

Table 11.11 Classroom Presentation Knowledge Summary

EcoQuiz Results	# of students attending presentations	Number of students aware of watershed & storm drains before presentations	Number of students aware of watershed & storm drains after presentations
Total	537	284	450

FY 07-08 Plans

The City of Vista will continue to collaborate with watershed and regional education groups to focus on education campaigns that are effective at overcoming barriers to behavior change. Following are some identified program improvement areas for FY 07-08.

1. The City will continue to distribute the materials that have been developed, and will work with the watershed and regional education groups to develop effective materials and campaigns.

2. The City will continue to conduct classroom presentations to school children, and to educate target audiences on specific BMPs and issues as they are identified.

3. The City will revise its JURMP to meet the requirements of Order R9-2007-0001. As a part of the program revisions, the City will develop an education strategy and identify key areas and information to be collected to enhance the program's effectiveness.

11.2.8 Public Participation

FY 06-07 Program Strengths

Vista continued to co-sponsor creek cleanup efforts throughout the City to improve our waterways and encourage the public to become stewards of their community. The City also provided many opportunities for public participation, from formal public meetings to festivals and events. Vista continued to advertise the hotlines on educational and promotional materials. Vista residents who have an interest in improving their neighborhoods can take part in various City programs and commissions. Additionally, the City of Vista obtained a State Grant to develop a Watershed Management Plan and began the planning process by forming a watershed planning group composed of various local stakeholders.

FY 07-08 Plans

The City will continue to seek public involvement with the JURMP, and to seek stakeholder participation in the development of plans to improve water quality. As the City revises its JURMP to meet the requirements of Order

R9-2001-0001, the City will seek public participation in program development. The City will also continue to seek improved methods for public participation and will create a Stormwater email address to provide additional means for public contact and involvement.

12.0 FISCAL ANALYSIS

FY06-07 and FY07-08 FUNDING SOURCE AND BUDGET

The City's Jurisdictional Urban Runoff Management Program is funded through the City's Sewer Enterprise fund and is typically based on a two-year budgeting cycle.

Additionally, the City continues to pursue and utilize funding from grant sources. Some of the education activities are funded through the Used Oil Block Grant. The City will also pursue other State Funds as part of watershed collaboration efforts.

Table 12-1 City of Vista Budget Summary

Stormwater Program Item	2006-07 Budget	2007-08 Budget
Staff *		
• Salaries, benefits, vehicle, uniforms	$ 212,884	$ 224,523
MS4 Maintenance		
• Storm Drain Maintenance & staff		
• Waste Testing & Disposal	$ 1,169,607	$ 1,029,879
• Equipment Rental & Purchase		
• Street Sweeping Contracts		
Monitoring		
• Wet and Dry Weather Monitoring	$ 111,150	$ 122,800
• Storm drain materials testing		
• Spill Response Sampling		
Business Inspection & Enforcement		
• Industrial/Commercial Inspections	$ 120,450	$ 90,000
• Database updates/management		
Permit Fees		
• SWRCB Permit Fee	$ 15,000	$ 15,300
Education		
• Events		
• Training & conferences (internal/external)	$ 34,381	$ 25,140
• Materials Development		
• Used Oil Block Grant (1/2)		
WURMP and Regional Program		
• WURMP coordination	$ 67,000	$ 334,500
• TMDL monitoring, cost share		
• Hydromodification Mgmt Plan		
Administrative Expenses		
• Supplies and small tools	$ 1,195	$ 3,955
Total =	**$ 1,731,667**	**$ 1,846,097**

*Includes staff in WQPP, but not other Planning, Development, Construction, Building, Parks, Public Works Maintenance, or Administrative staff implementing storm water requirements within their work units.

The 2007-08 budget has been increased in order to begin funding two new Water Quality Protection Program positions, to begin implementing increased program

requirements under Order R9-2007-0001, and to fund Vista's share of coastal lagoon and watershed monitoring required under Investigative Order R9-2006-0076. The monitoring required under the Investigative Order will provide data that will populate models that will be used to set Total Maximum Daily Loads for bacteria, sediment and nutrient impairments in the affected lagoons.

13.0 SPECIAL INVESTIGATIONS

There were no special investigations conducted during the FY 2006-07 Annual Reporting period.

14.0 CONCLUSIONS AND RECOMMENDATIONS

This JURMP annual report marks the end of the City of Vista's sixth reporting year (June 2006 to July 2007) for compliance with Order 2001-01. This Order was renewed on January 24, 2007, and the City began planning for and updating current programs to comply with Order R9-2007-0001, in addition to actively implementing the programmatic activities defined in the City's Jurisdictional Urban Runoff Management Plan (JURMP). Some of the key areas of implementation of the JURMP during this period included increasing and improving storm drain and street maintenance activities, expanding inspections and compliance activities, approving more high efficiency and natural BMPs for new development, assessing water quality, obtaining grants for education and watershed management planning, and encouraging citywide and community participation. The City also continued contributing to the development and implementation of the programs in two watersheds (Carlsbad and San Luis Rey Watersheds).

14.1 ITERATIVE PROCESS

The City's stormwater program continued to evolve. The City's JURMP states that the program will require periodic revision. The City of Vista is committed to working with its staff, other Copermittees and the RWQCB to improve and adapt the plan and efforts as necessary to comply with the permit requirements. The City's program continues to be dynamic requiring changes in the daily operations and implementation based on lessons learned and City staff input. The assessment information, including the strengths and improvement areas identified in this report, will continue to direct improved program activities, and the City will update the JURMP to meet the requirement of new Order R9-2007-0001.

14.2 PROGRAM FOCUS

The City continued to focus on implementing program requirements at municipal facilities and operations. These efforts were through: (1) staff training and education (both internally and externally); (2) implementation of facility Storm Water Pollution Prevention Plans; (3) facility inspections; (4) maintenance of structural BMPs; and (5) improving maintenance activities.

The City implemented its SUSMP requirements and emphasized natural treatment control BMPs. The City's strong construction inspection process also continued over the last year, with an emphasis on education at pre-con meetings and construction site BMP implementation.

Inspections of the industrial and commercial businesses were focused during the reporting period on high priority industries and specific commercial facilities. All high priority industrial facilities were inspected along with all inventoried restaurants, nurseries and greenhouses. Assessment programs continued to be implemented and the Pollutant Discharge Potential Assessment was expanded to all inspected facilities.

The City continued to actively seek and eliminate illicit connections and discharges through the Dry Weather Monitoring Program and complaint investigations. The Dry Weather Monitoring Program found relatively few indications of illegal discharges to the City of Vista's storm water conveyance system. Complaint investigations and follow-up inspections were successfully conducted. Compliance was achieved through education or enforcement as necessary. The City also actively responded to private sewer lateral spills to minimize any discharges to the storm drain system.

Education of all target audiences continued to be a key element for the success of the program. During this year, a significant amount of educational materials were disseminated. Thousands of school children and adults attended educational presentations. The City also provided opportunities for public participation through creek cleanups, public meetings, and stakeholder meetings, including a watershed planning group to help develop an Agua Hedionda Watershed Management Plan.

14.3 FUNDING SOURCES

The Water Quality Protection Program activities are funded through the sewer enterprise fund. Some storm water education programs were funded through the California Integrated Waste Management Board Used Oil Block Grant. The City also implemented various grants during the year, including a grant form the Metropolitan Water District to conduct the Clean Water Keepers pilot school education program and a Proposition 40 grant from the State Water Board to develop a watershed management plan for the Agua Hedionda watershed.

14.4 WATER QUALITY DATA ANALYSIS

The City has been collecting dry weather water quality data for many years under the previous Municipal Permit (Order 90-42). The requirements for monitoring changed under Order 2001-01 as did the City's monitoring efforts. The City has collected several seasons of data under these new requirements and continues to evaluate these data to determine the City's main constituents of concern. During the dry season, nitrates and trash were the most commonly observed pollutants. Programs will continue to be focused around these specific issues.

14.5 CITYWIDE PARTICIPATION

The City's Water Quality Protection Program is administered by the Engineering Department management and staff. However, the JURMP is a citywide program with its continuing success dependent upon all City staff participation. During this reporting period the program was successfully integrated into many citywide programs which will help to ensure continued program compliance.

14.6 WATERSHED COLLABORATION

The City will continue to collaborate and focus on implementing the activities developed in the Carlsbad and San Luis Rey Watershed Urban Runoff Management Plans with the appropriate Copermittees, organizations and stakeholders within these watersheds.

14.7 PROGRAMMATIC RECOMMENDATIONS

The Water Quality Protection Program and various City staff continue to look for ways to improve the City's JURMP implementation. The recommended action plans for the 2006-2007 Fiscal Year are detailed in Report Section 11, Effectiveness Assessment. This included several areas of focus to build on program success. An outline of these recommended plans is presented below:

Municipal

- Improve and utilize newly populated storm drain and sanitary sewer system GIS layers
- Pursue channel maintenance permits
- Continue to hire an outside contractor to annually inspect the main high priority municipal facilities and parking lots

Industrial

- Increase enforcement for monitoring violations
- Improve internal procedures to provide proper notification to the Regional Board for facilities in which noncompliance may endanger health or the environment

Commercial

- Focus inspections on restaurants and repeat offenders
- Increase compliance activities through the addition of another Stormwater Code Enforcement Officer

Residential

- Implement increased education, investigation and enforcement programs through the addition of new staff in order to reduce stormwater pollutants from high priority residential areas and activities

Land Use Development

- Collaborate with Copermittees toward regional SUSMP requirements, including LID and HMP requirements.

Construction

- Continue addressing storm water issues at pre-con meetings
- Improve databases to track construction projects and post-construction BMPs

Illicit Discharge Detection and Elimination

- Review dry weather monitoring locations and adjust as needed
- Continue to develop a Fats, Oils and Grease program
- Hire an additional Stormwater Code Enforcement officer and continue to focus on identified problem areas and repeat violators
- Add a Stormwater email address and publicize it to facilitate reporting from the public

Education

- Develop an education strategy to address specific audiences, pollutants and behaviors
- Continue to collaborate with watershed and regional education workgroups
- Continue to conduct classroom presentations

Public participation

- Continue to involve stakeholders in program development

Effectiveness Assessment

- Work with Copermittees to develop standardized assessment methods and tools

Fiscal analysis

- Continue to pursue a stable funding source for the City's Jurisdictional Urban Runoff Management Program

The City will update all JURMP components to comply with new Order R9-2007-0001 and will identify key areas and information to be collected to enhance the program's effectiveness.

Appendices

APPENDIX A

A-1 UPDATED MUNICIPAL INVENTORY

A-2 ANNUAL HIGH PRIORITY MUNICIPAL SITE INSPECTIONS

A-3 SELF INSPECTION REPORTS

APPENDIX A-1
MUNICIPAL FACILITIES INVENTORY

Name	Description	Address	Priority
MUNICIPAL YARDS			
Public Works Yard	Street, Sewer & Vehicle Maintenance Facility	1165 East Taylor St.	high
Public Works Satellite Yard	Dumpster & Container Storage Facility	2430 Lupine Hills Dr.	high
PW Auxiliary Yard HHW Center	Recycle Center, Dumpsters & Storage Facility	1145 East Taylor St.	high
PARKS			
Guajome Park (Vista portion)	Vacant Land/Open Space	North Santa Fe Ave.@ Osborne	low
Buena Vista Park	Walking Trails & Open Space Maintenance Yard	Shadowridge Dr.@ Green Oak Rd.	low high
Brengle Terrace Park	Gym, Hall Rental, Outdoor Facilities, Theatre	1200 Vale Terrace Dr.	low
Brengle Terrace Park	Maintenance Yard	1201 Vale Terrace Dr.	high
Williamson Park (Restrooms)	Softball Fields & Parking	Grapevine Lane	low
Breeze Hill Park (Restrooms)	Softball Fields, Playground Equip. & Parking	South Melrose @ Los Palmas	low
Raintree Park (Restrooms)	Playground Equipment	Townsite Dr. @ Indian Rock Rd.	low
Townsite Park (Restrooms)	Playground Equipment & Soccer Field	Townsite Dr. @ North Citrus Dr.	low
Wildwood Park (Restrooms)	Museums, Hall Rental, Playground & Parking.	651 East Vista Way	low
Civic Center Park (Restroom)	Tennis Court, Skateboard & Playground Equip.	600 Eucalyptus Ave.	low
Thibido Park (Restrooms)	Tennis Court, Adobe Rental & Playgrd Equip.	Lupine Hills Dr. @ Countrywood	low
Shadowridge Park (Restroom)	Playground Equipment & Parking	Lupine Hills Dr. @ Optimist Way	low
Vista Village Creek Walk	Park with Creek Walkway	Recreation Drive	medium
Wave Waterpark	Pool, Water Rides, Rentals & Food Prep.	161 Recreation Dr.	high
PUBLIC PARKING / ROADS, STREETS & HIGHWAYS			
Public Parking Downtown	For Main Street Merchants	Vista Village Dr. @ Michigan Ave.	high
	For Main Street Merchants	Main St. @ Michigan Ave.	high
	For Main Street Merchants	Main St. @ Indiana Ave.	high
	For Broadway Merchants	Broadway @ Hanes Dr.	high
	City Hall Parking	Eucalyptus Ave.	high
City streets and roads	Transportation network	Throughout the City	high
SEWER & STORM DRAIN FACILITIES			
Sewage Pump Station	Main to Encina Wastewater Treatment	Jefferson St. & Hwy. 78 (Carlsbad)	medium
Sewage Pump Station	Main to Encina Wastewater Treatment	So. Melrose Dr.& Green Oak Rd.	medium
Sewage Pump Station	Main to Encina Wastewater Treatment	So. Melrose Dr.& Aspen Way	medium
Sewage Collection & Transmission Lines and drainage areas	Sewage collection & transmission lines	Throughout the City	high
MS4	Stormwater conveyance system	Throughout the City	high
CITY FACILITIES			
Fire Station # 1	Building & Parking	175 North Melrose Dr.	medium
Fire Station # 3	Building & Parking	1070 Old Taylor St.	medium

APPENDIX A-1
MUNICIPAL FACILITIES INVENTORY

Name	Description	Address	Priority
Fire Station # 2	Building & Parking	1050 Valley Dr.	medium
Fire Station # 4	Building & Parking	2121 Thibido Rd.	medium
Avo Theatre	Parks & Recreation Rental	Main St. & Michigan Ave.	medium
Warehouse Facility	Leased to Costco.	Hacienda Dr. @ Emerald Ave.	medium
Sheriff Station	Residential Used as a Sub-Station Office	340 Townsite Dr.	medium
Sheriff Station	Residential Used as a Sub-Station Office	1477 Moon Rd.	medium
Sheriff Station	Residential Used as a Sub-Station Office	2082 Thibido Rd.	medium
Chamber of Commerce	Community Center Complex & Parking (Block)	201 East Washington St.	medium
City Library Building	Library, Parking & Book Store (County Staffed)	700 Eucalyptus Ave.	medium
City Hall Office Complex	Main Offices. Vehicle Storage & Parking	600 Eucalyptus Ave.	medium
Brengle Terrace Park	Senior Center, Hall Rental, Catering & Parking	1400 Vale Terrace Dr.	medium
Historical Site Parkland	Rock Outcropping with Petroglyph	Apollo Dr.	medium
Rancho Buena Vista Adobe	Museums, Hall Rental & Gift Store.	651 East Vista Way	medium
VACANT LAND PARCELS			
Various Locations Throughout the City			low

CITY OF VISTA FACILITIES
BI-WEEKLY SCHEDULE OF PAVEMENT SWEEPING
BY PUBLIC WORKS

DATE	AREA SWEPT
12/02/05	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
12/16/05	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
12/30/05	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
01/13/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
01/24/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
02/10/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
02/24/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
03/10/06	RAIN
03/24/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
04/07/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
04/21/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
05/05/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
05/19/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
06/02/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
06/16/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
06/30/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
07/14/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
07/28/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
08/11/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
08/25/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
09/08/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD

CITY OF VISTA FACILITIES
BI-WEEKLY SCHEDULE OF PAVEMENT SWEEPING
BY PUBLIC WORKS

DATE	AREA SWEPT
09/22/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
10/06/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
10/20/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
11/03/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
11/17/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
12/01/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
12/15/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
12/29/06	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
01/12/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
01/26/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
02/09/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
02/23/07	RAIN
03/09/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
03/23/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
04/06/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
04/20/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
05/04/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
05/18/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
06/01/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
06/15/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
06/29/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD

CITY OF VISTA FACILITIES
BI-WEEKLY SCHEDULE OF PAVEMENT SWEEPING
BY PUBLIC WORKS

DATE	AREA SWEPT
07/12/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
07/26/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
08/09/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
08/23/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
09/06/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
09/20/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
10/04/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
10/18/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
11/09/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
11/21/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
12/07/07	~~SWEPT PW YARD~~ RAIN
12/21/07	SWEPT PW YARD, PARKING LOT, LAGUNA YARD
01/04/08	RAIN

CITY OF VISTA
HAZARDOUS WASTE SITE
BI-WEEKLY INSPECTION BY PUBLIC WORKS

DATE	RESULTS
12/02/05	NO LEAKS, SPILLS, CLEAN
12/16/05	NO LEAKS, SPILLS, CLEAN
12/30/05	NO LEAKS, SPILLS, CLEAN
01/13/06	NO LEAKS, SPILLS, CLEAN
01/24/06	NO LEAKS, SPILLS, CLEAN
02/10/06	NO LEAKS, SPILLS, CLEAN
02/24/06	NO LEAKS, SPILLS, CLEAN
03/10/06	RAIN
03/24/06	NO LEAKS, SPILLS, CLEAN
04/07/06	NO LEAKS, SPILLS, CLEAN
04/21/06	NO LEAKS, SPILLS, CLEAN
05/05/06	NO LEAKS SPILLS, CLEAN
05/19/06	NO LEAKS SPILLS, CLEAN
06/02/06	NO LEAKS, SPILLS, CLEAN
06/16/06	NO LEAKS, SPILLS, CLEAN
06/30/06	NO LEAKS, SPILLS, CLEAN
07/14/06	NO LEAKS, SPILLS, CLEAN
07/28/06	NO LEAKS, SPILLS, CLEAN
08/11/06	NO LEAKS, SPILLS, CLEAN
08/25/06	NO LEAKS SPILLS, CLEAN
09/08/06	NO LEAKS, SPILLS, CLEAN

CITY OF VISTA
HAZARDOUS WASTE SITE
BI-WEEKLY INSPECTION BY PUBLIC WORKS

DATE	RESULTS
01/02/07	NO LEAKS, SPILLS, CLEAN
01/04/07	NO LEAKS, SPILLS, CLEAN
01/09/07	NO LEAKS, SPILLS, CLEAN
01/11/07	NO LEAKS, SPILLS, CLEAN
01/16/07	NO LEAKS, SPILLS, CLEAN
01/18/07	NO LEAKS, SPILLS, CLEAN
01/23/07	NO LEAKS, SPILLS, CLEAN
01/25/07	NO LEAKS, SPILLS, CLEAN
02/01/07	NO LEAKS, SPILLS, CLEAN
02/06/07	NO LEAKS, SPILLS, CLEAN
02/08/07	NO LEAKS, SPILLS, CLEAN
02/13/07	NO LEAKS, SPILLS, CLEAN
02/15/07	NO LEAKS, SPILLS, CLEAN
02/20/07	NO LEAKS, SPILLS, CLEAN
02/22/07	RAIN
03/01/07	NO LEAKS, SPILLS, CLEAN
03/06/07	NO LEAKS, SPILLS, CLEAN
03/08/07	NO LEAKS, SPILLS, CLEAN
03/20/07	NO LEAKS, SPILLS, CLEAN
03/22/07	NO LEAKS, SPILLS, CLEAN
03/27/07	NO LEAKS, SPILLS, CLEAN
04/03/07	NO LEAKS, SPILLS, CLEAN
04/05/07	NO LEAKS, SPILLS, CLEAN
04/10/07	NO LEAKS, SPILLS, CLEAN
04/12/07	NO LEAKS, SPILLS, CLEAN
04/17/07	NO LEAKS, SPILLS, CLEAN
04/19/07	NO LEAKS, SPILLS, CLEAN

CITY OF VISTA
HAZARDOUS WASTE SITE
BI-WEEKLY INSPECTION BY PUBLIC WORKS

DATE	RESULTS
07/12/07	NO LEAKS, SPILLS, CLEAN
07/26/07	NO LEAKS, SPILLS, CLEAN
08/09/07	NO LEAKS, SPILLS, CLEAN
08/23/07	NO LEAKS, SPILLS, CLEAN
09/06/07	NO LEAKS, SPILLS, CLEAN
09/20/07	NO LEAKS, SPILLS, CLEAN
10/04/07	NO LEAKS, SPILLS, CLEAN
10/18/07	NO LEAKS, SPILLS, CLEAN
11/01/07	NO LEAKS, SPILLS, CLEAN
11/21/07	NO LEAKS, SPILLS, CLEAN
12/07/07	RAIN, NO SPILLS
12/21/07	NO LEAKS, SPILLS, CLEAN
01/04/08	RAIN

Monthly Hazardous Waste Inspection

Date: 7-13-06

Time: 10:AM

Inspected By: Armando Sandoval

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

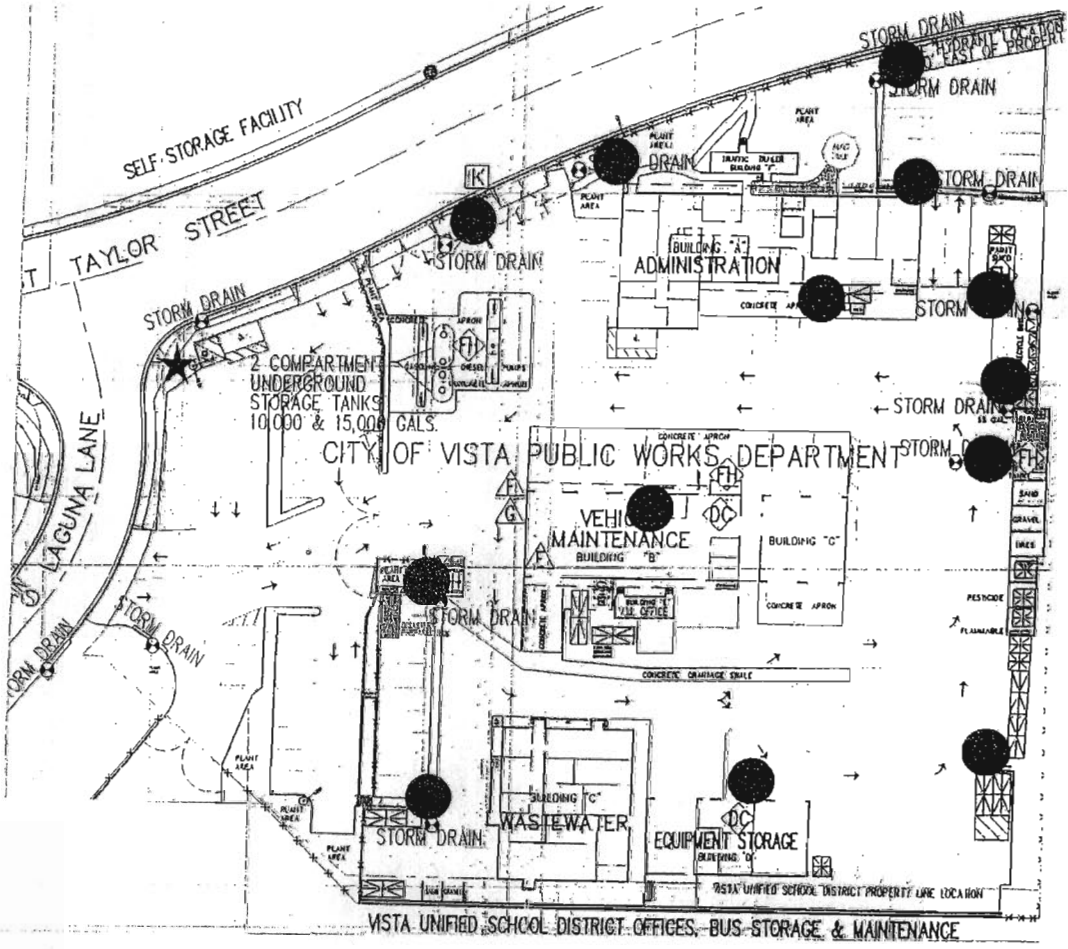

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 7-27-06

Time: 9:Am

Inspected By: Armando .S

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

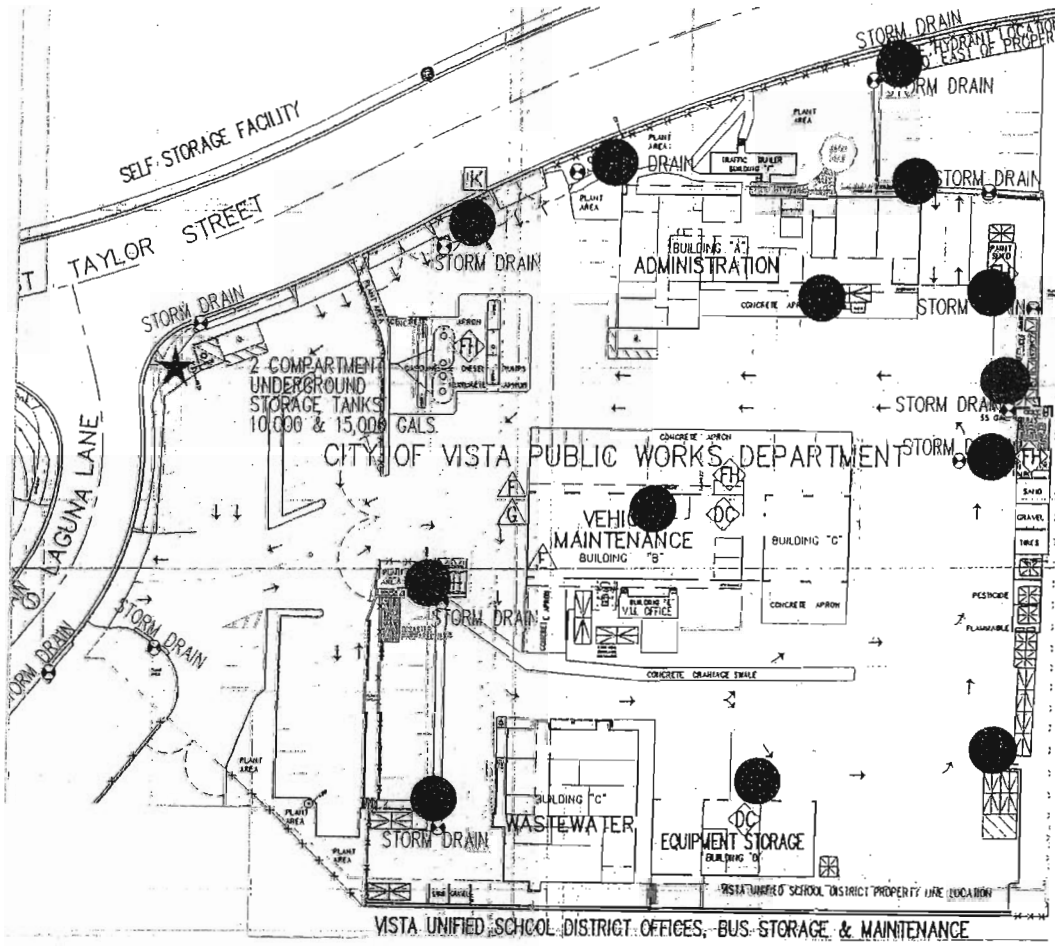

Comments:

Signature: Fernando Sandoval

Monthly Hazardous Waste Inspection

Date: 8-11-06

Time: 9:AM

Inspected By: Armando Sandoval

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

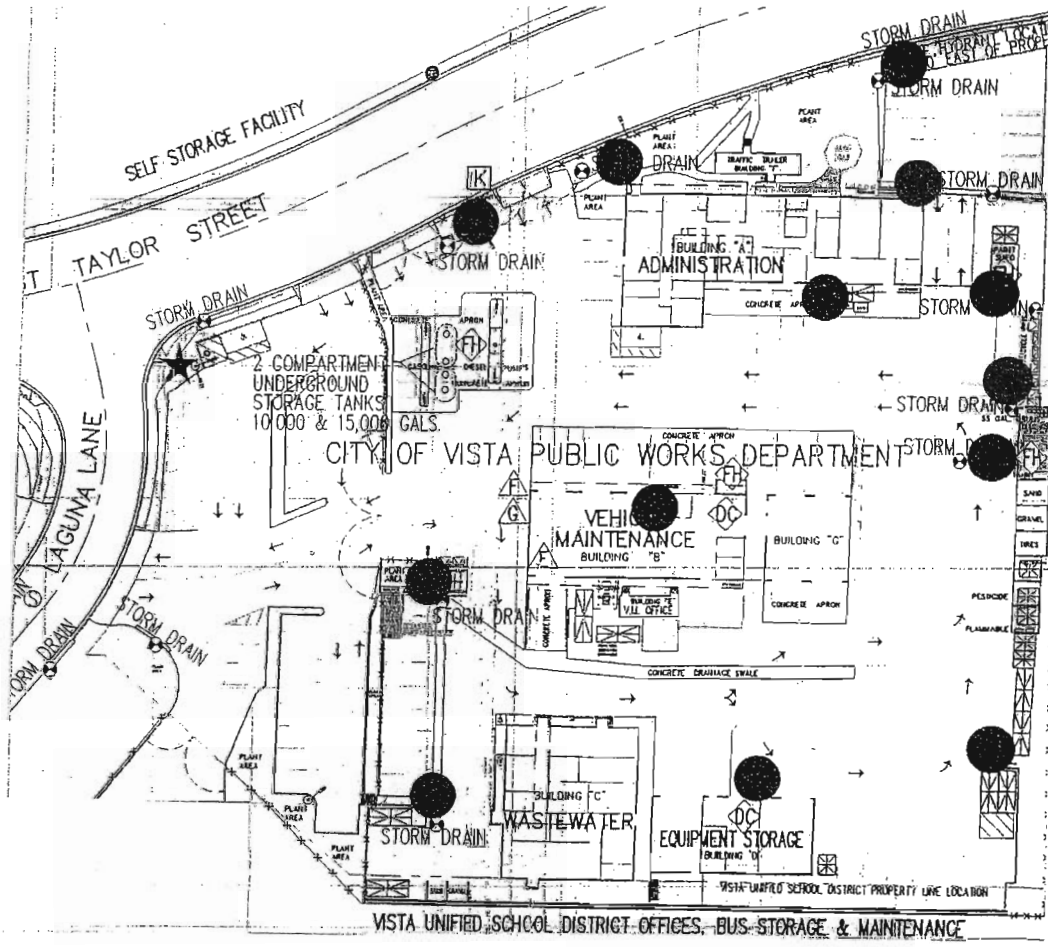

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 8-25-06

Time: 8:Am

Inspected By: Armando Sandoval

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

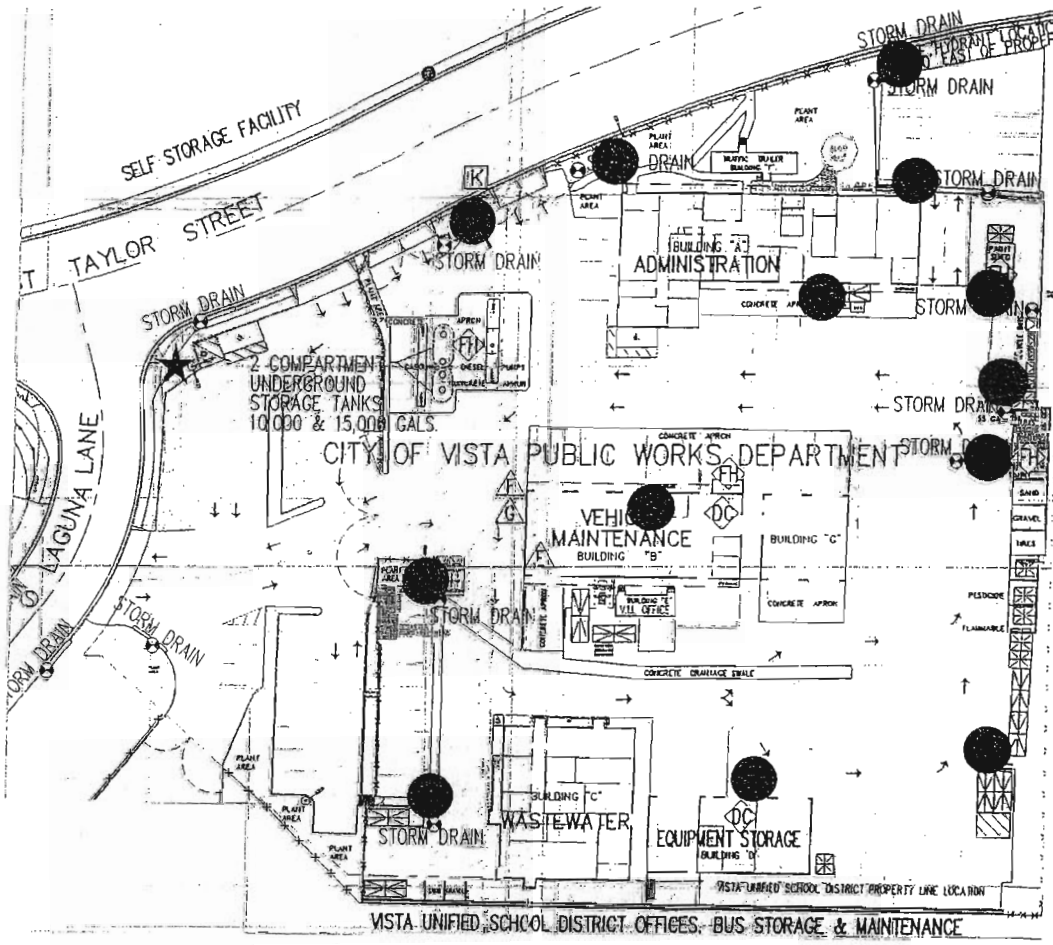

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 9-8-06

Time: 8:. Am

Inspected By: Armando Sandoval

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

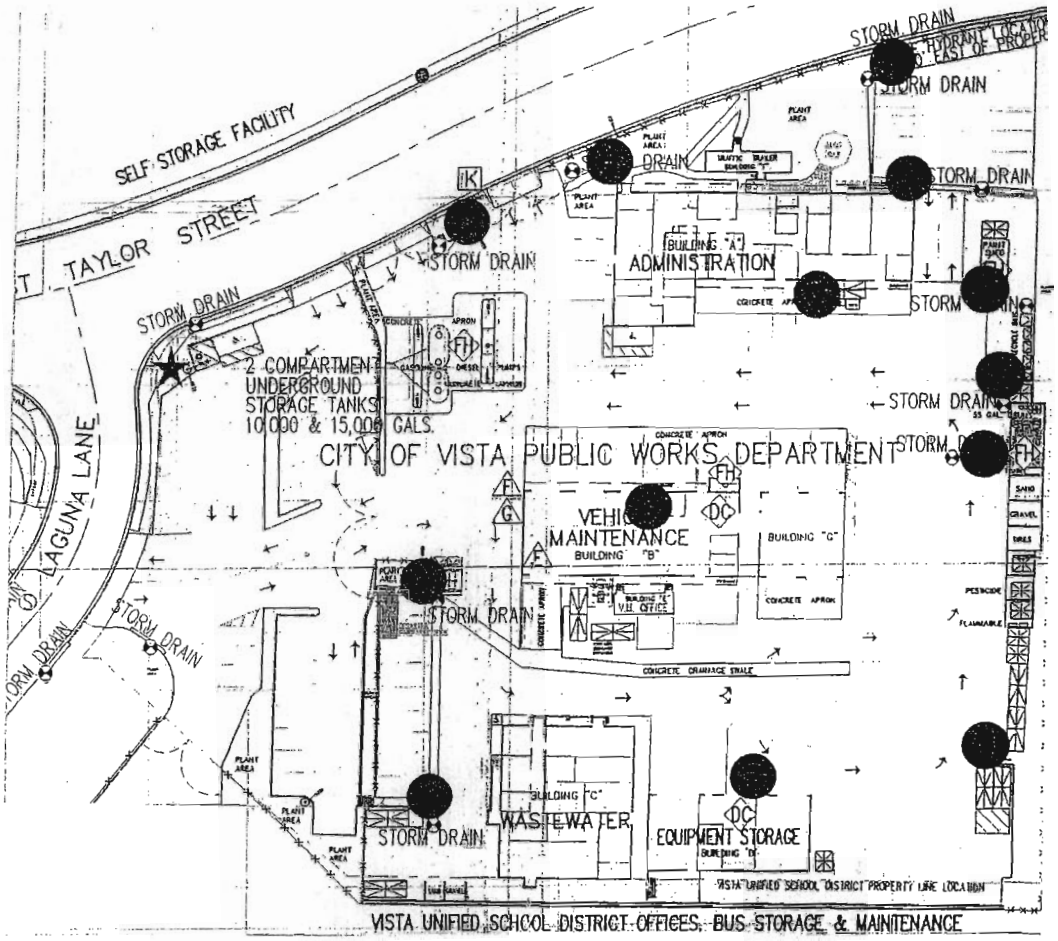

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 9-22-06

Time: 8:Am

Inspected By: Armando Santoal

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ____

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

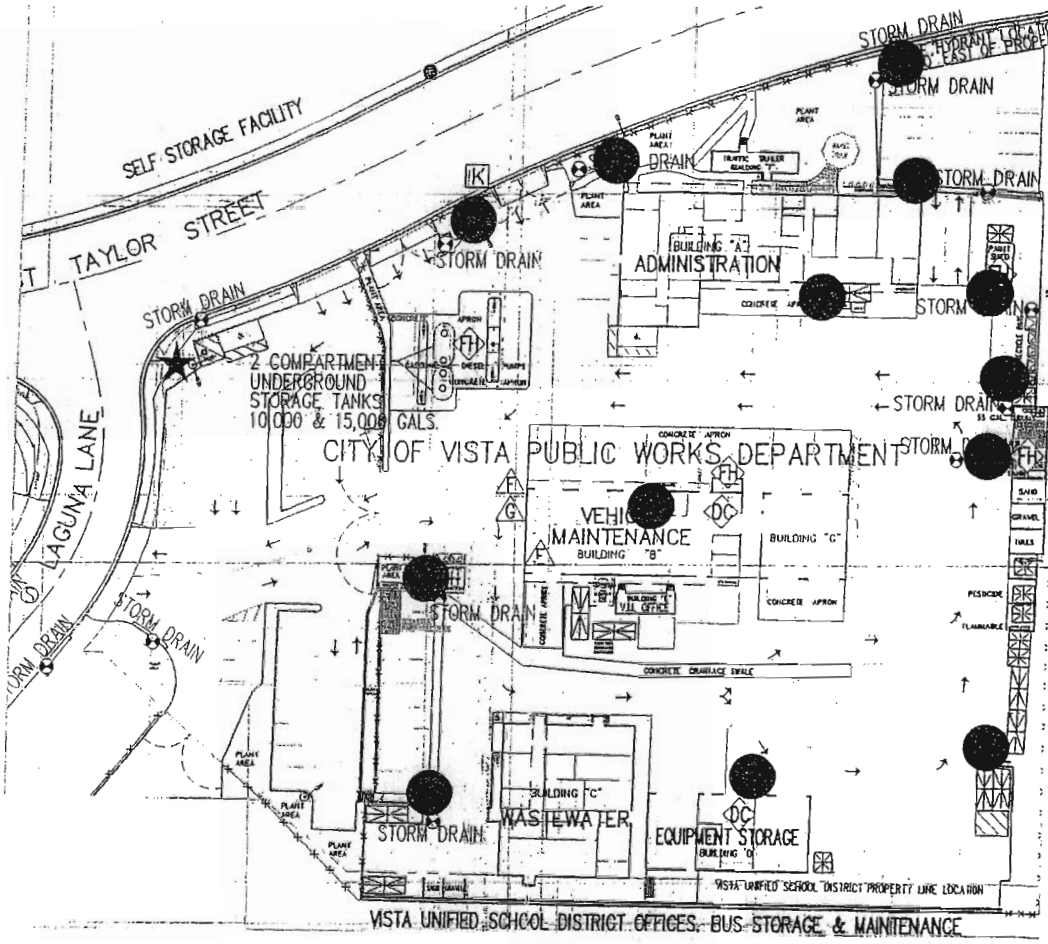

Comments: number #7 need to install (Drain Cover) (Hazardous waste Bucket)

Signature: Armando Santoal

Monthly Hazardous Waste Inspection

Date: 10-20-06

Time: 10:Am

Inspected By: Armando Sandoval

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

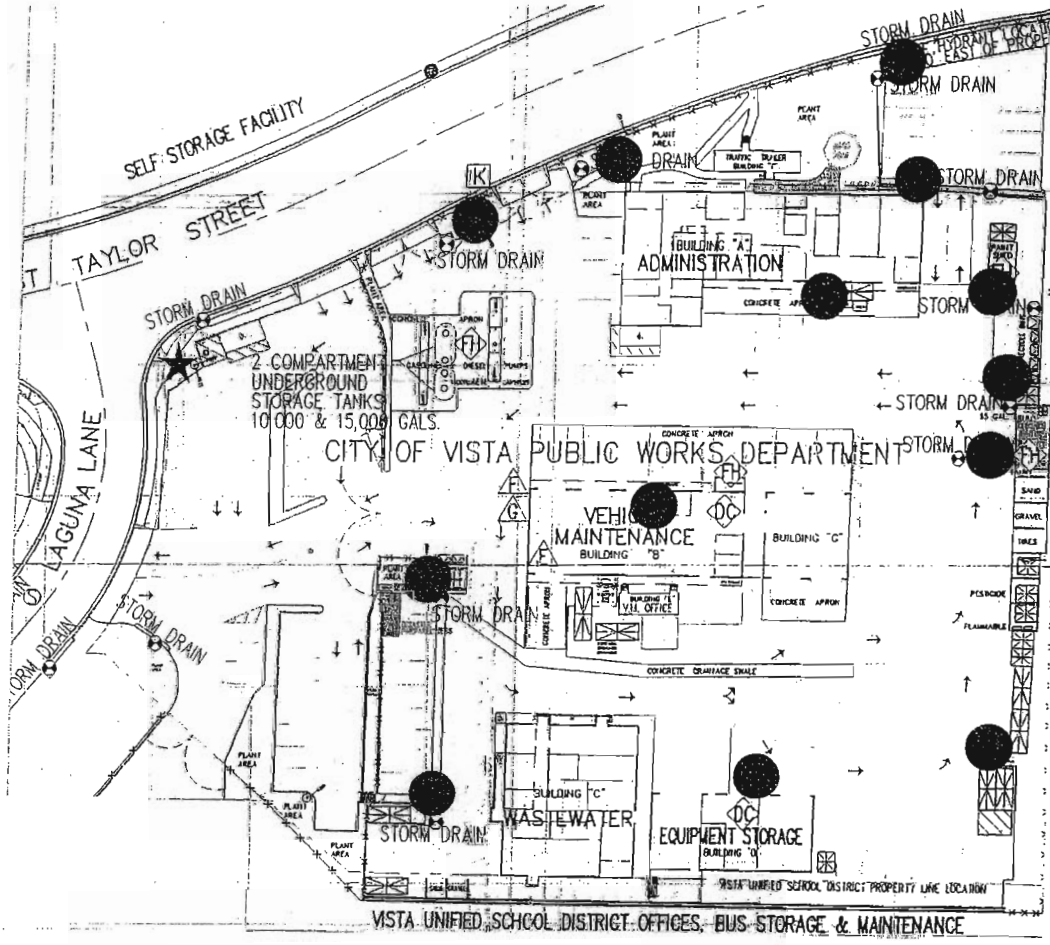

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 11-3-06

Time: 8:Am

Inspected By: Armando Sandoval

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

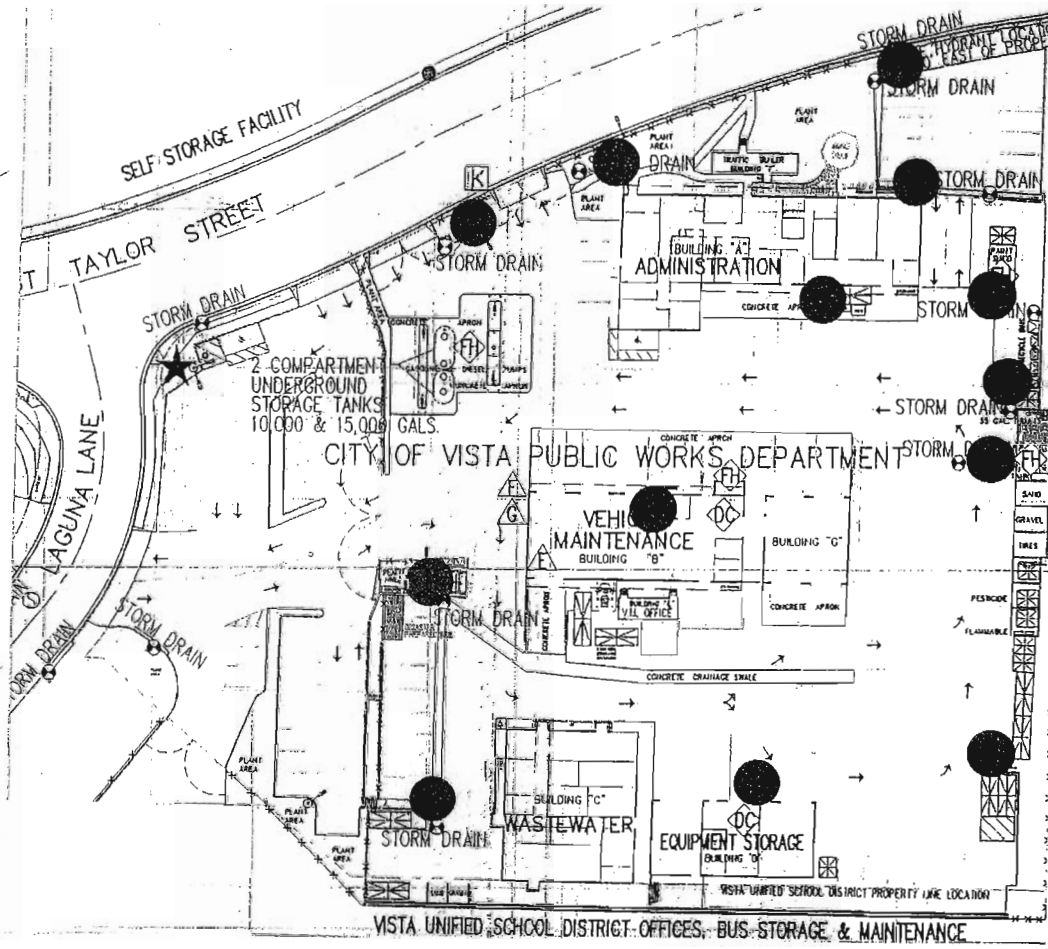

Site 13 ✓

Cart ✓

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 11-17-06

Time: 10:AM

Inspected By: Armando Sandoval

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

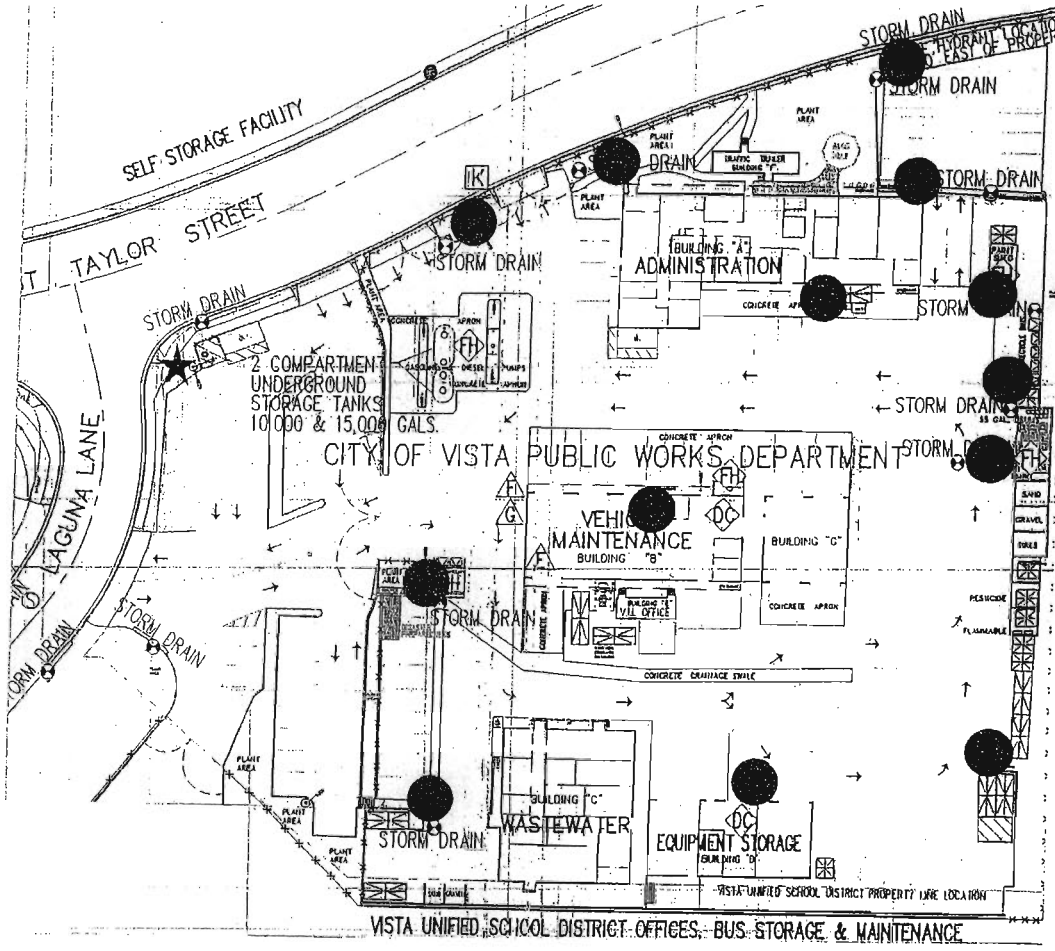

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 12-29-06

Time: 10:30 AM

Inspected By: Armando S

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

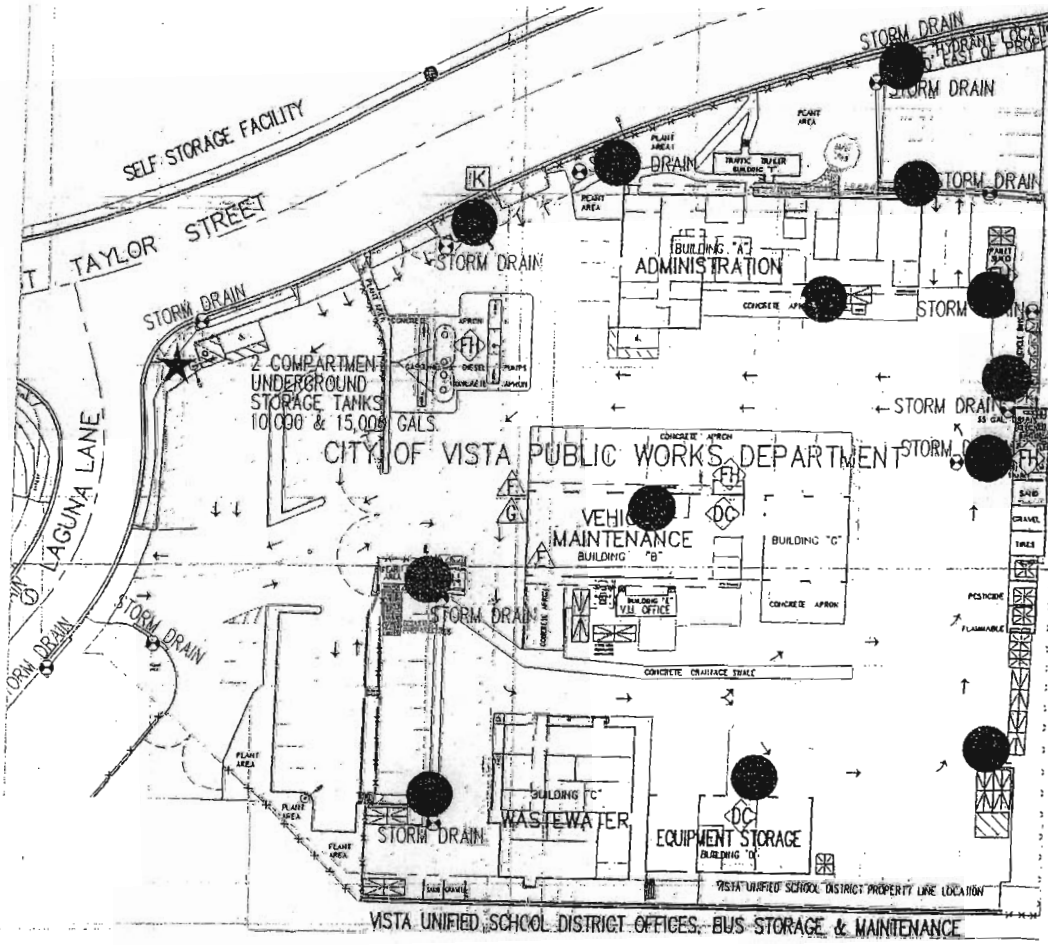

Cart ✓

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 1-12-07

Time: 8:Am

Inspected By: Armando . S

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

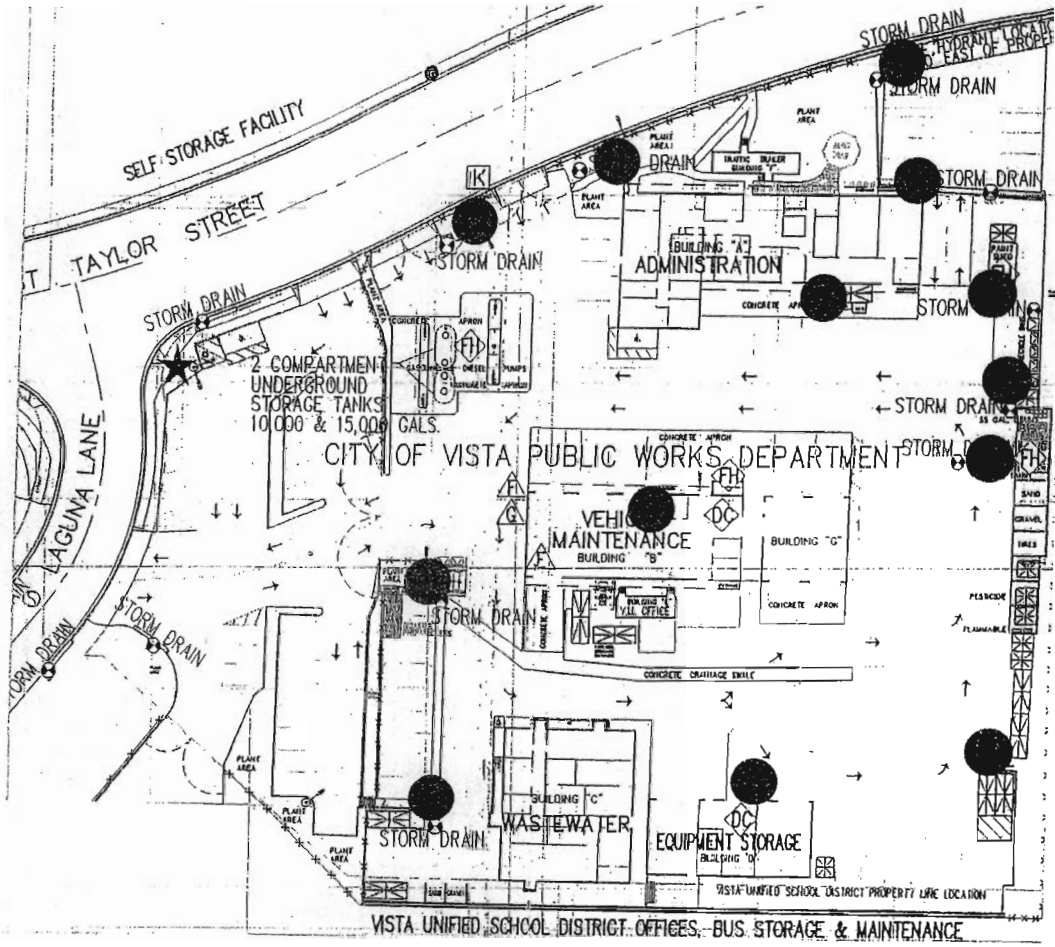

Comments:

Signature: Armando S

Monthly Hazardous Waste Inspection

Date: 1-26-07

Time: 1:pm

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

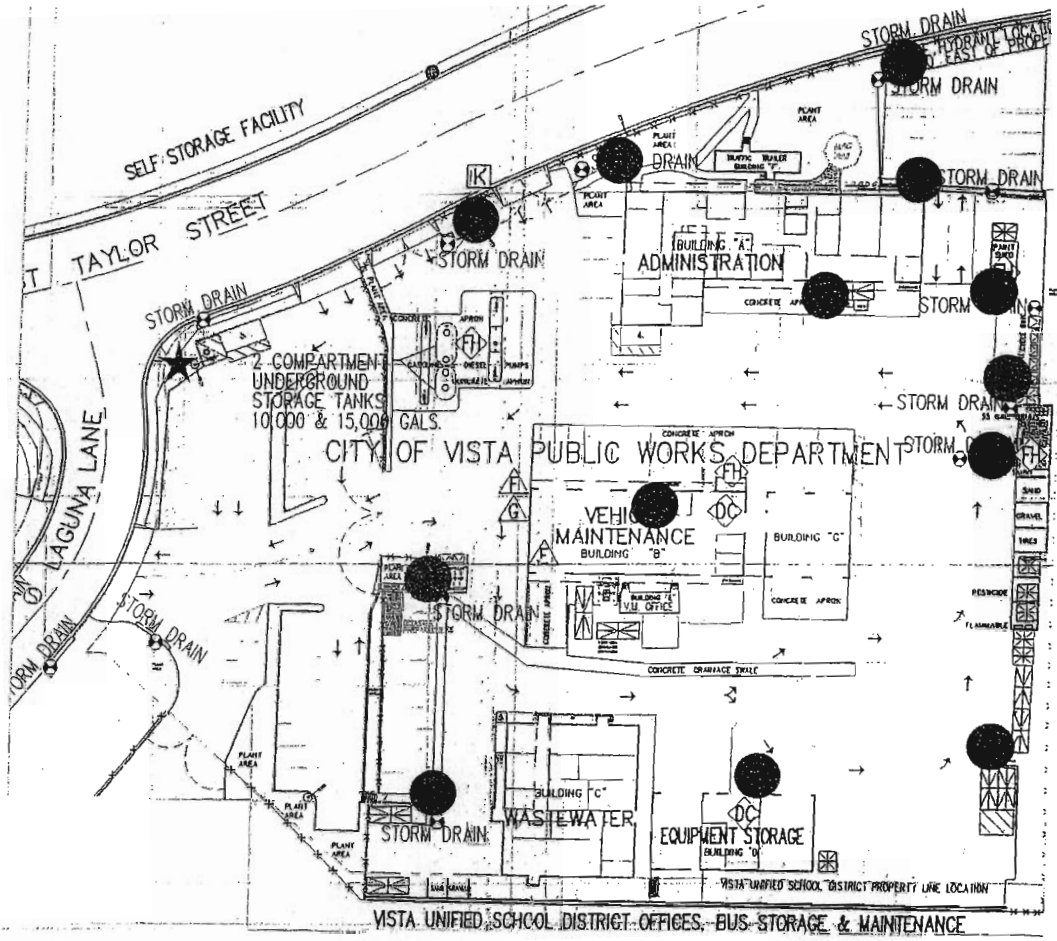

Comments:

Signature: Armando S

Monthly Hazardous Waste Inspection

Date: 2-9-07

Time: 1:00 PM

Inspected By: Armando .S

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

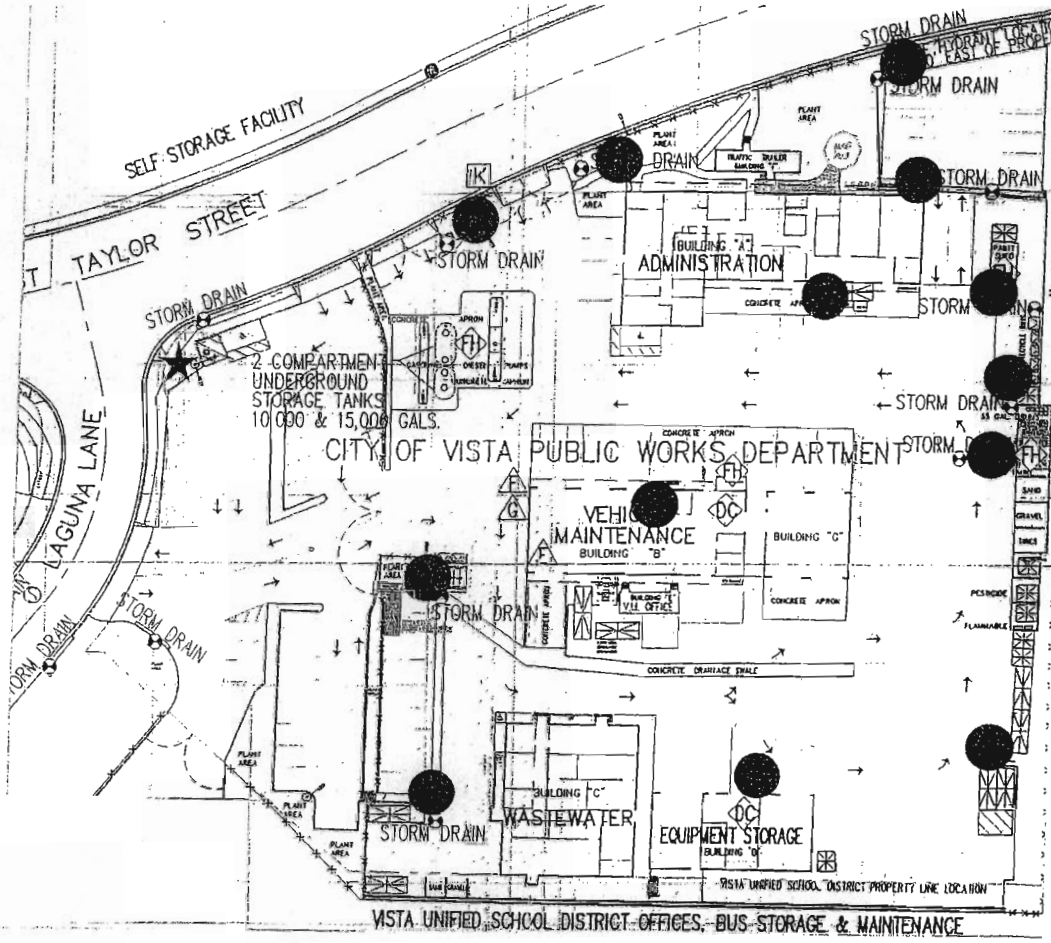

Cart ✓

Comments:

Signature: Armando .S

Monthly Hazardous Waste Inspection

Date: 2-23-07

Time: 1:pm

Inspected By: Armando S

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

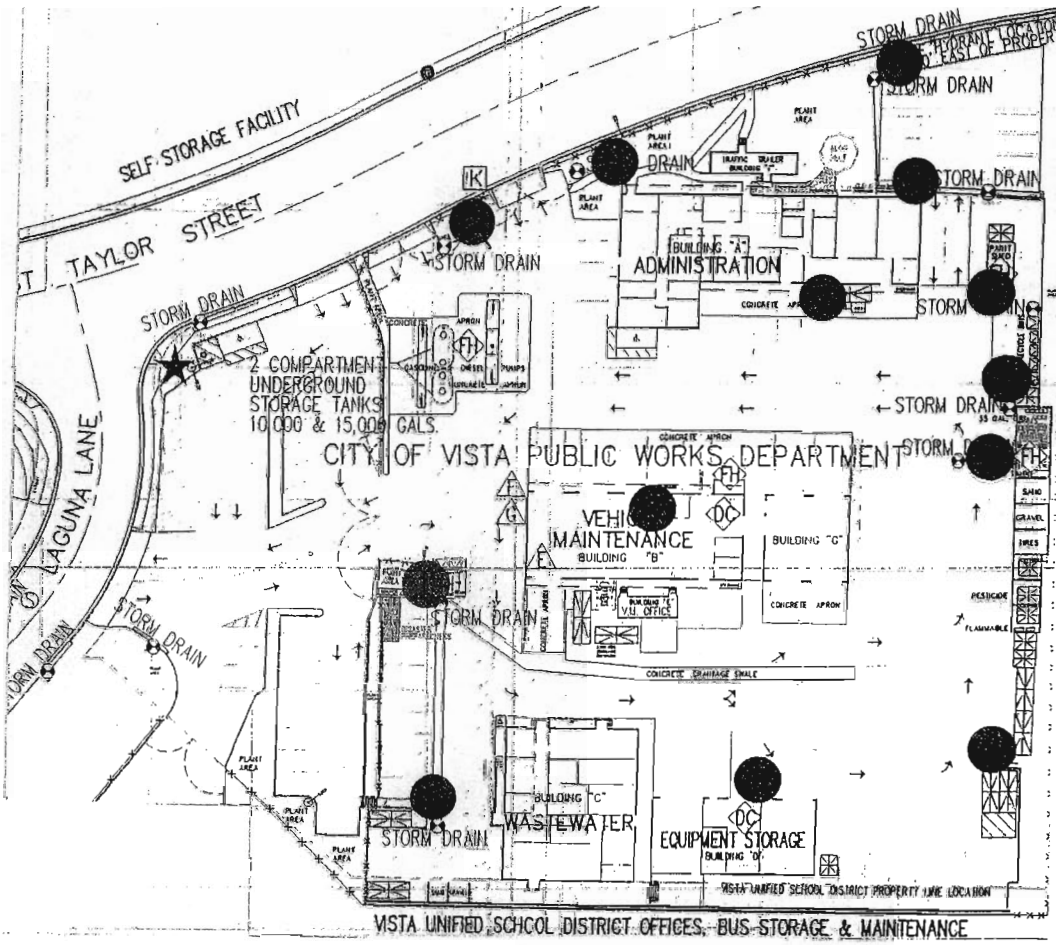

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 3-9-07

Time: 1:pm

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

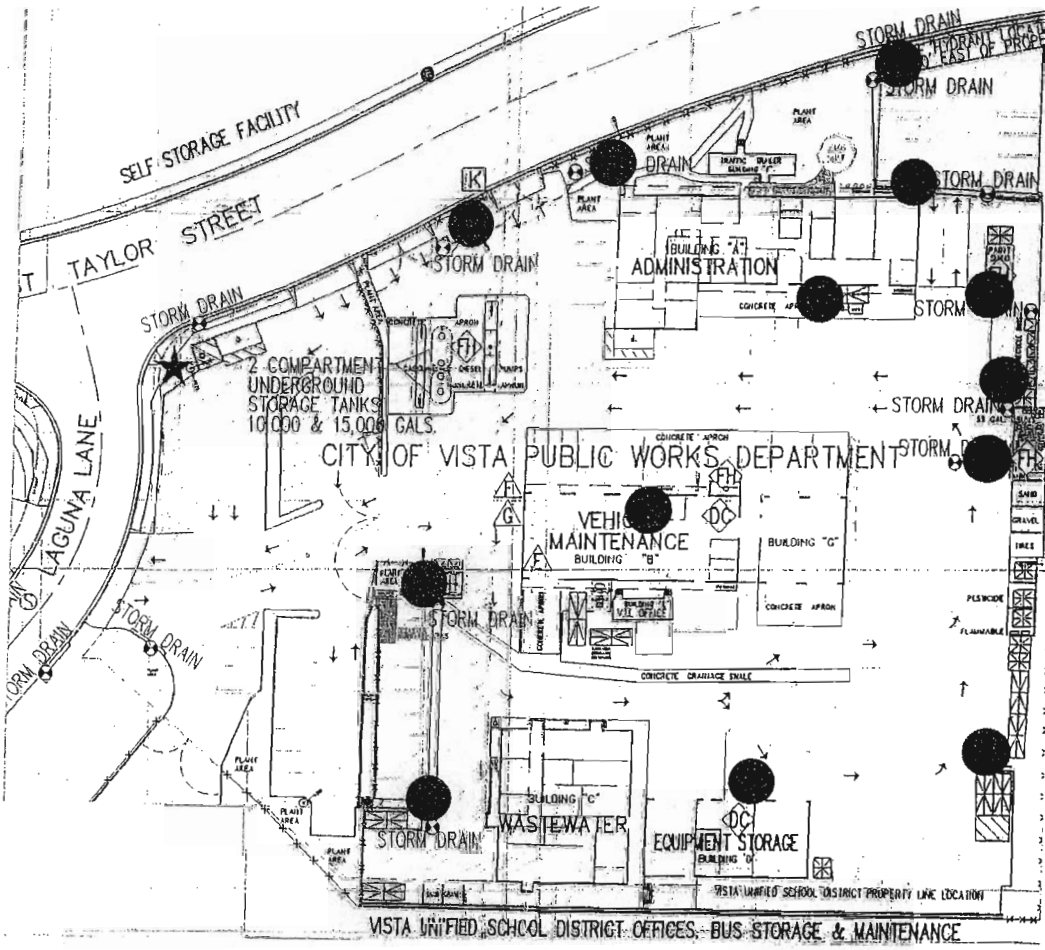

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 3-23-07

Time: 8:AM

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

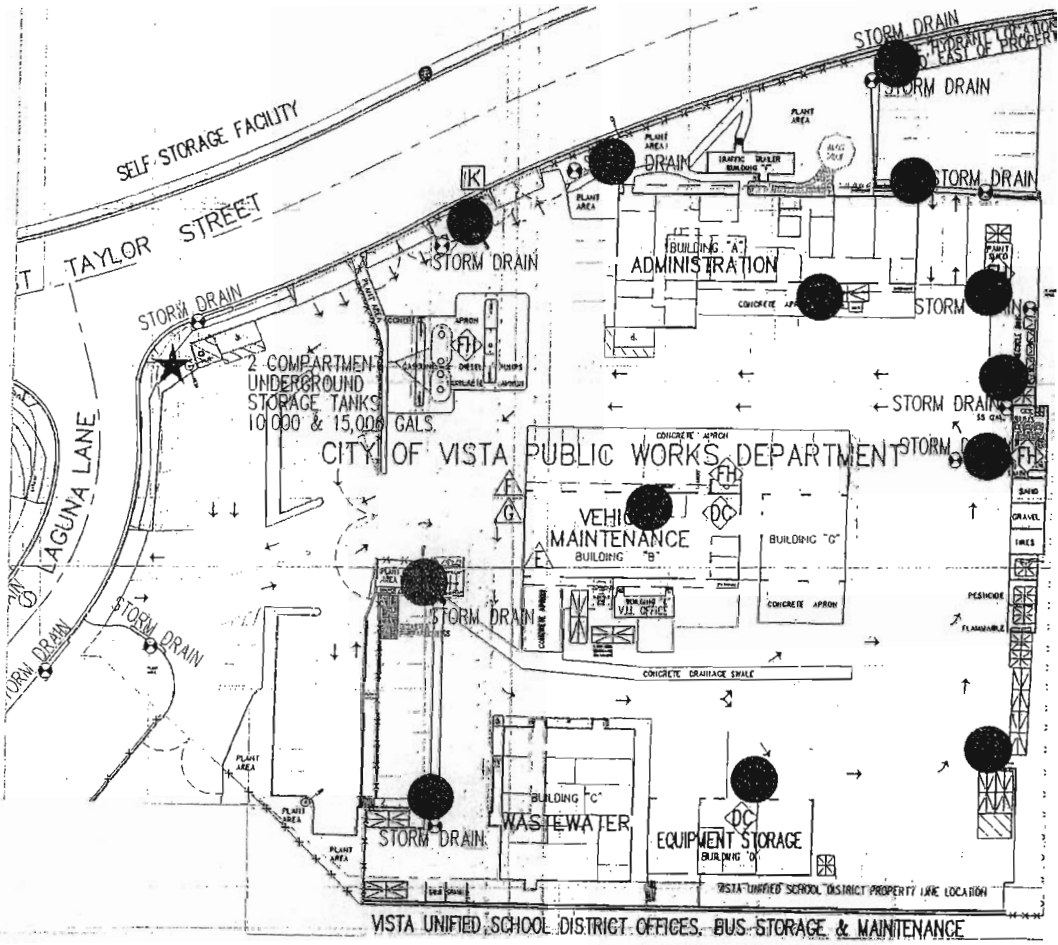

Comments:

Signature: Fernando Sandoval

Monthly Hazardous Waste Inspection

Date: 4-6-07

Time: 2:pm

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

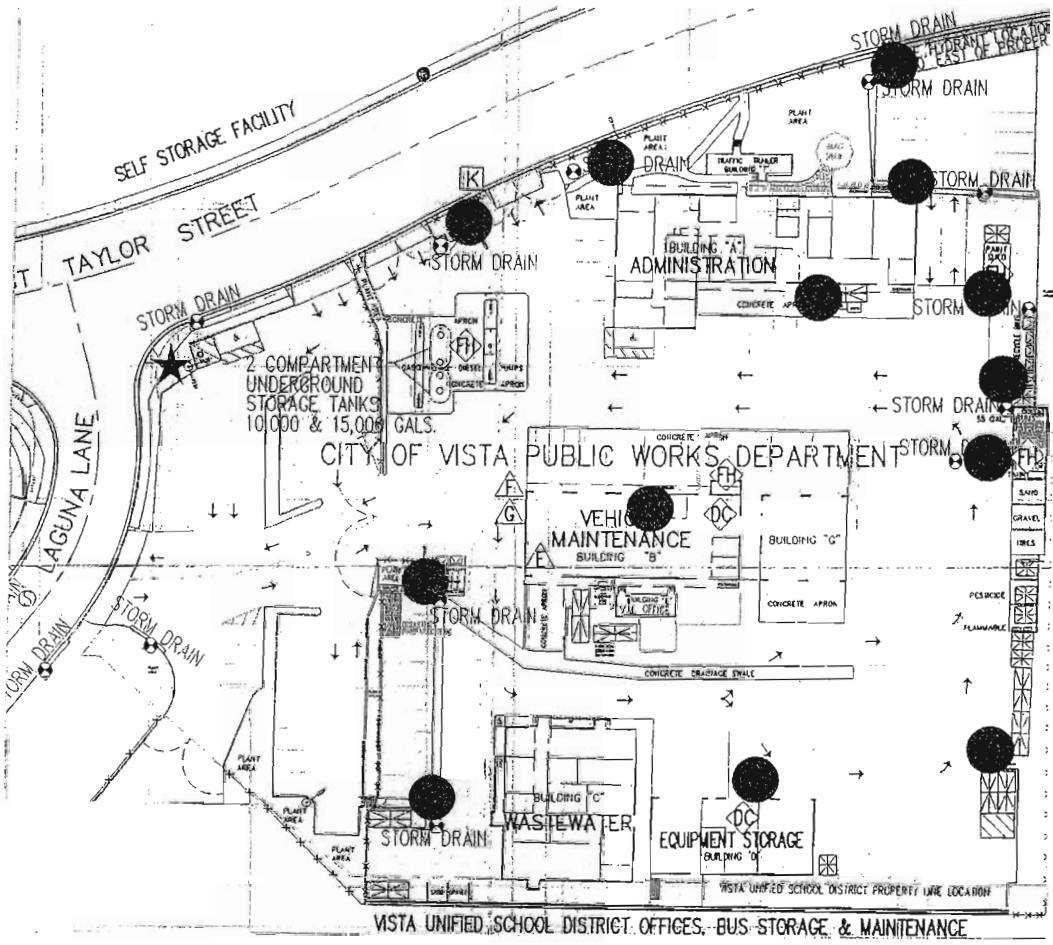

Comments:

Signature: Armando Sardaal

Monthly Hazardous Waste Inspection

Date: 4-20-07

Time: 8:AM

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

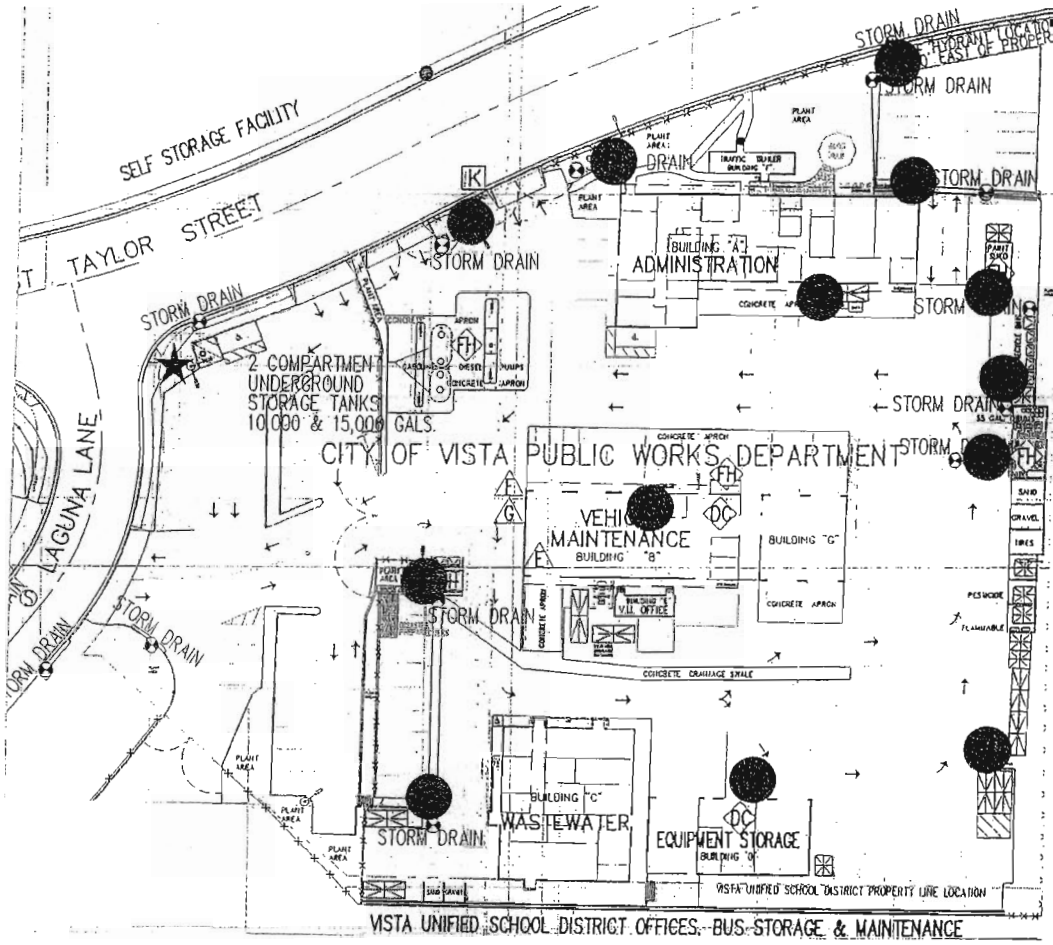

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 5-4-07

Time: 8:Am

Inspected By: Armando .S

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

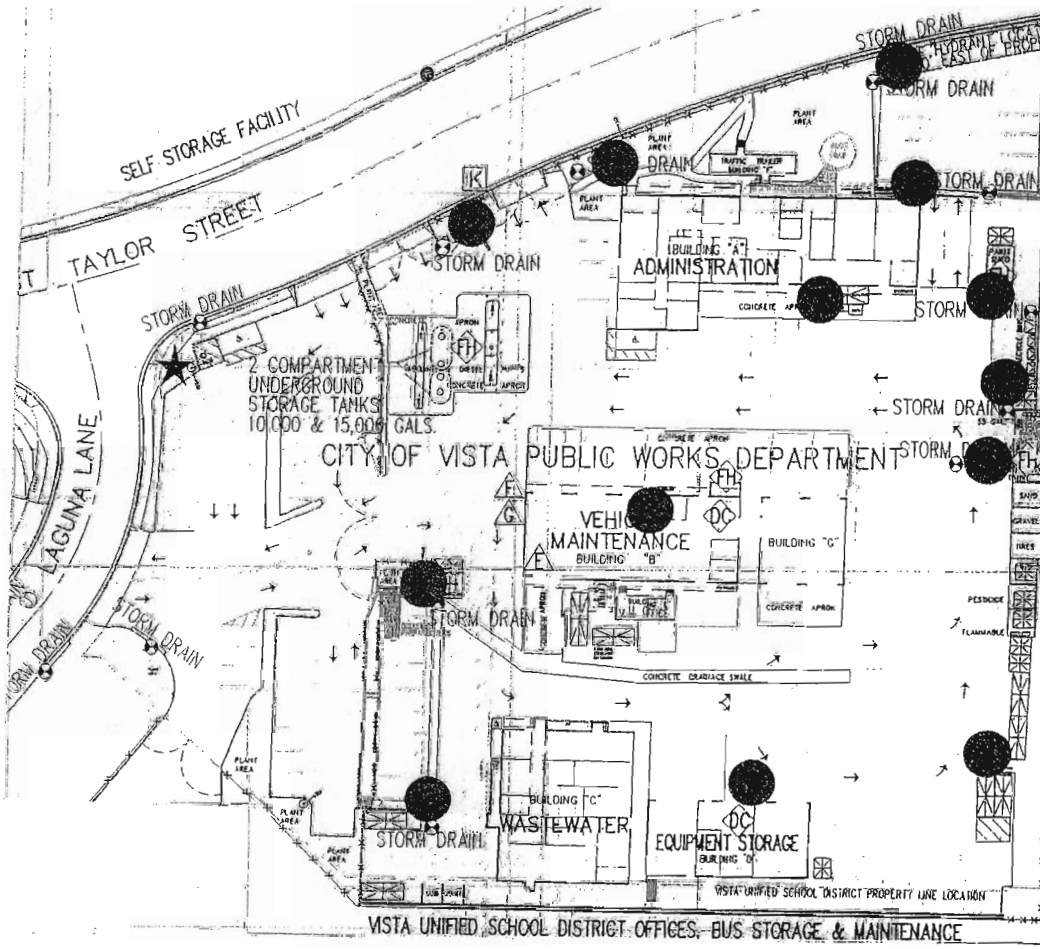

Comments:

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 7-26-07

Time: 4:pm

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

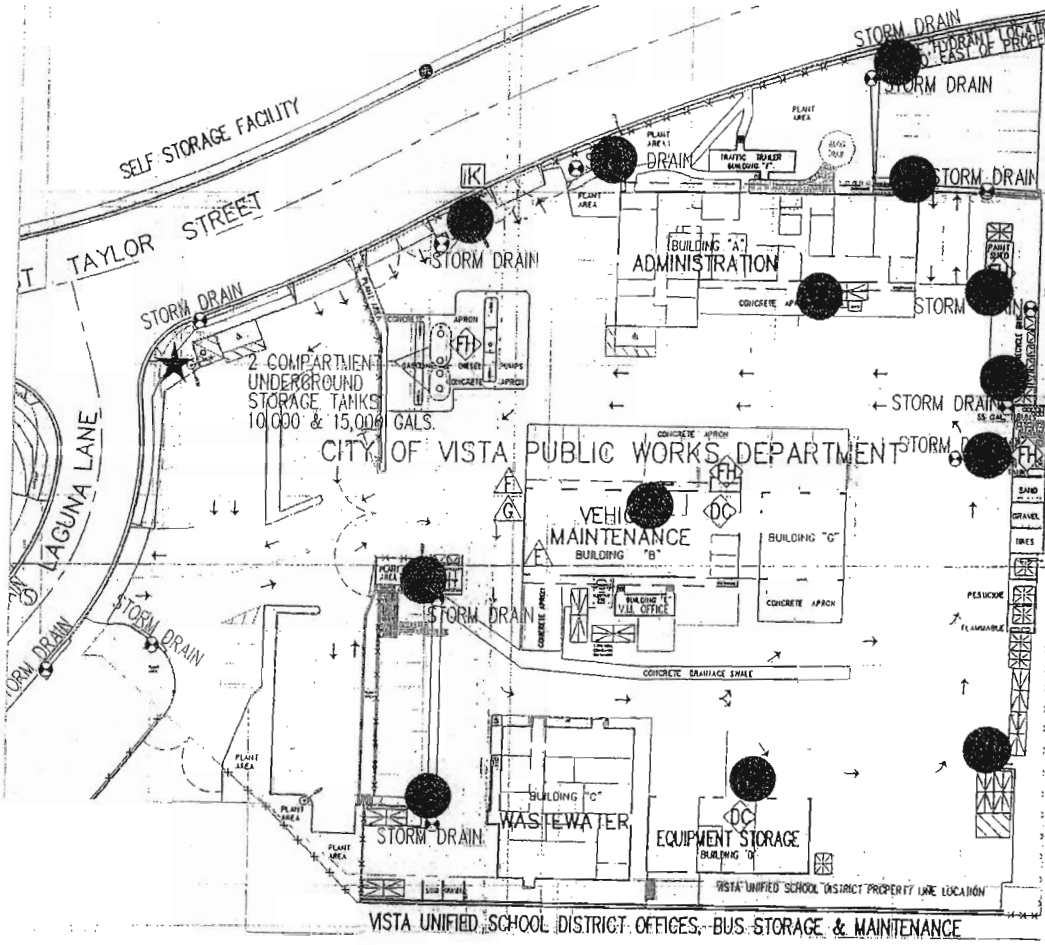

Comments: need new labels for (Spill Response Kit)

Signature: Amanda Sandoval

Monthly Hazardous Waste Inspection

Date: 9-6-07

Time: 3:PM

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

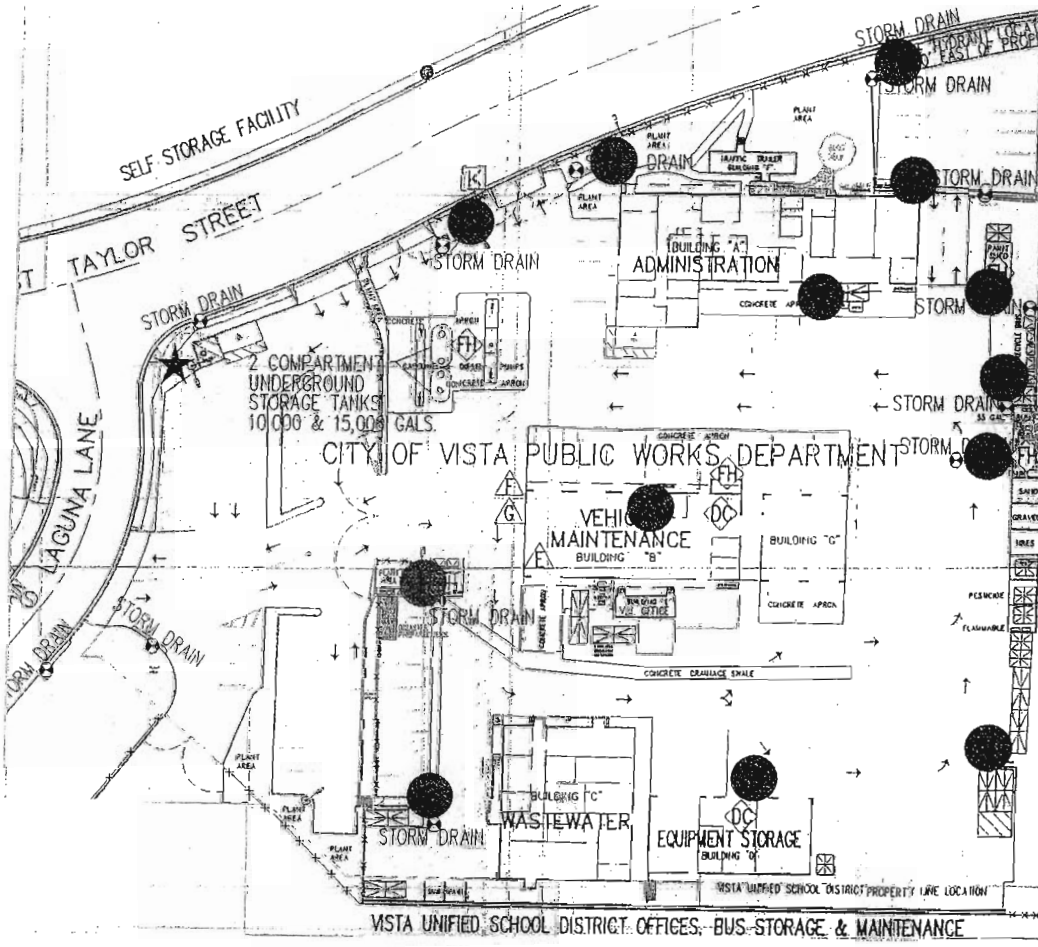

Comments: _____

Signature: Armando S

Monthly Hazardous Waste Inspection

Date: 10/18/07

Time: 3:00 pm

Inspected By: Ramón Benitez

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

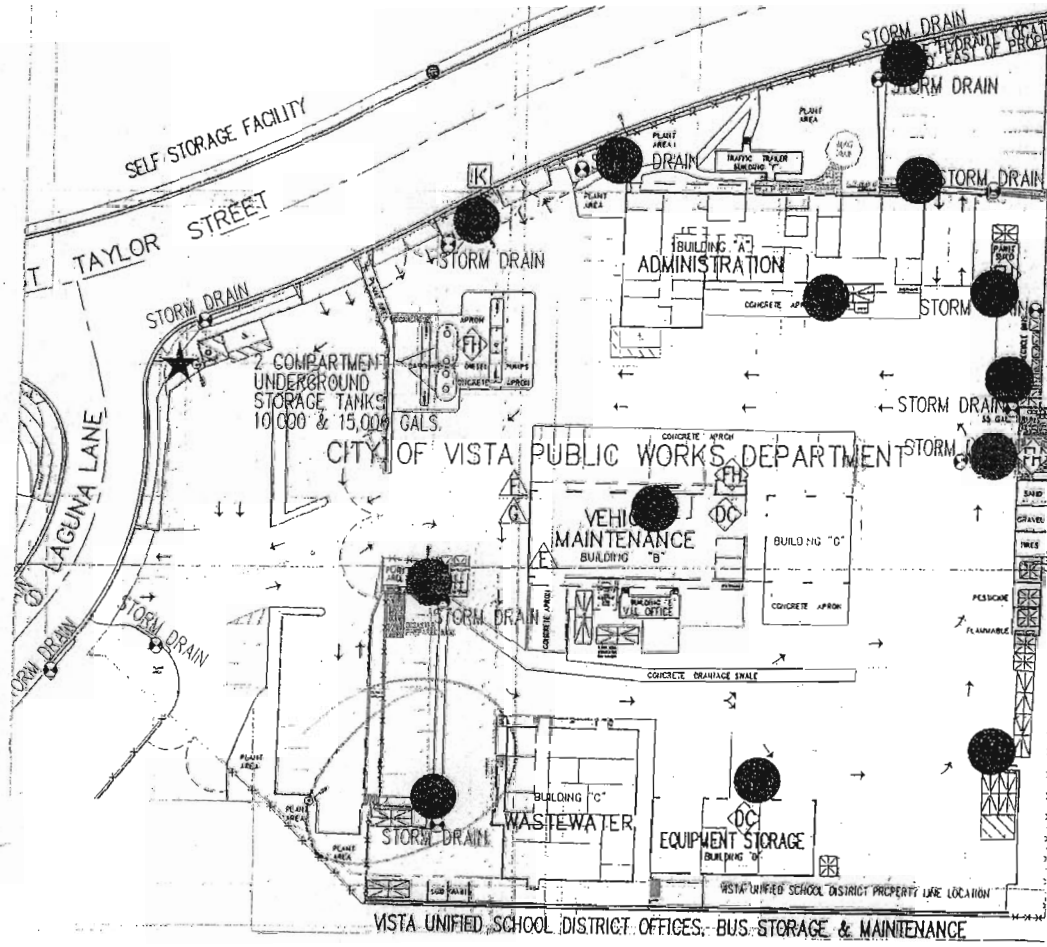

Comments: Need Hazardous Labels on all Spill Response Kits

Signature: [signature]

Monthly Hazardous Waste Inspection

Date: 11/29/07

Time: 6:35 AM

Inspected By: Ramon Benitez

Site 1 None

Site 2 OK

Site 3 OK

Site 4 OK

Site 5 OK

Site 6 OK

Site 7 OK

Site 8 OK

Site 9 OK

Site 10 OK

Site 11 OK

Site 12 OK

Cart OK

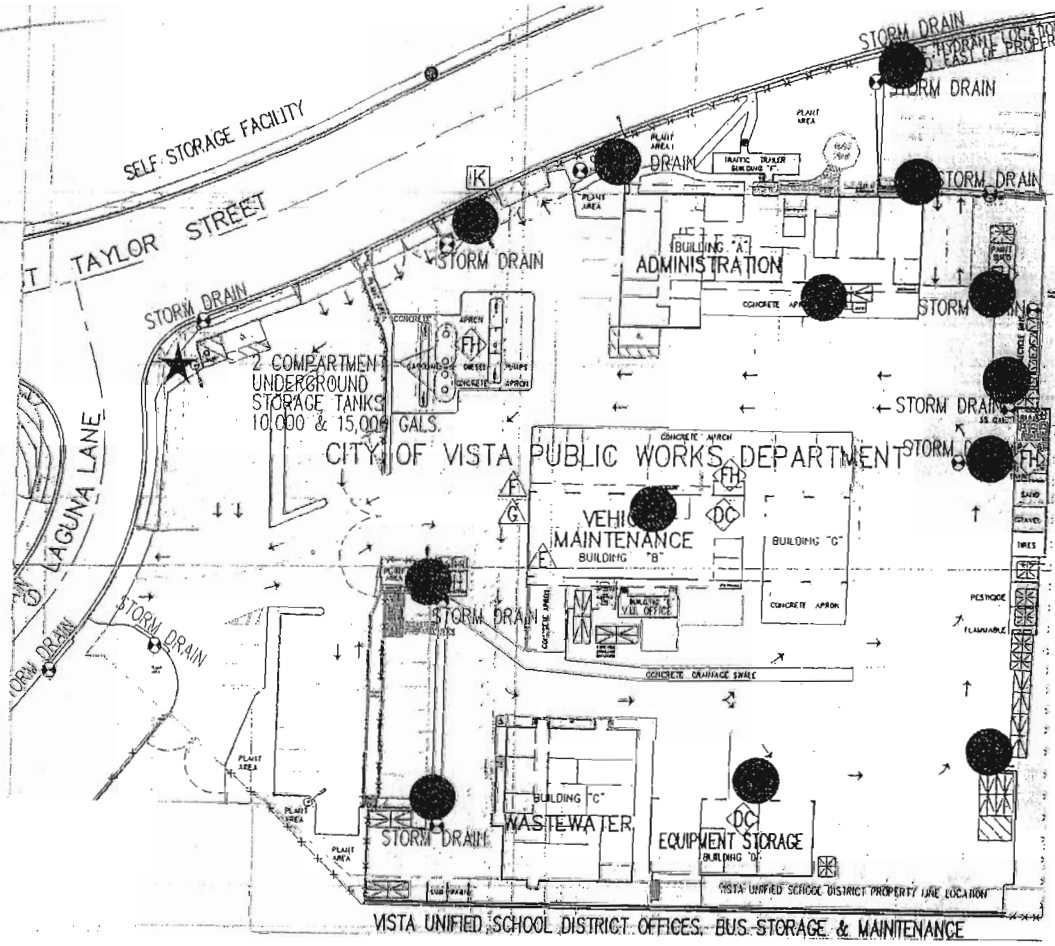

Comments: Site #1 is missing drain cover needs replacement (looks like it was used & never put back into place

Signature:

Monthly Hazardous Waste Inspection

Date: 12/6/07

Time: 6:35

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

Cart ✓

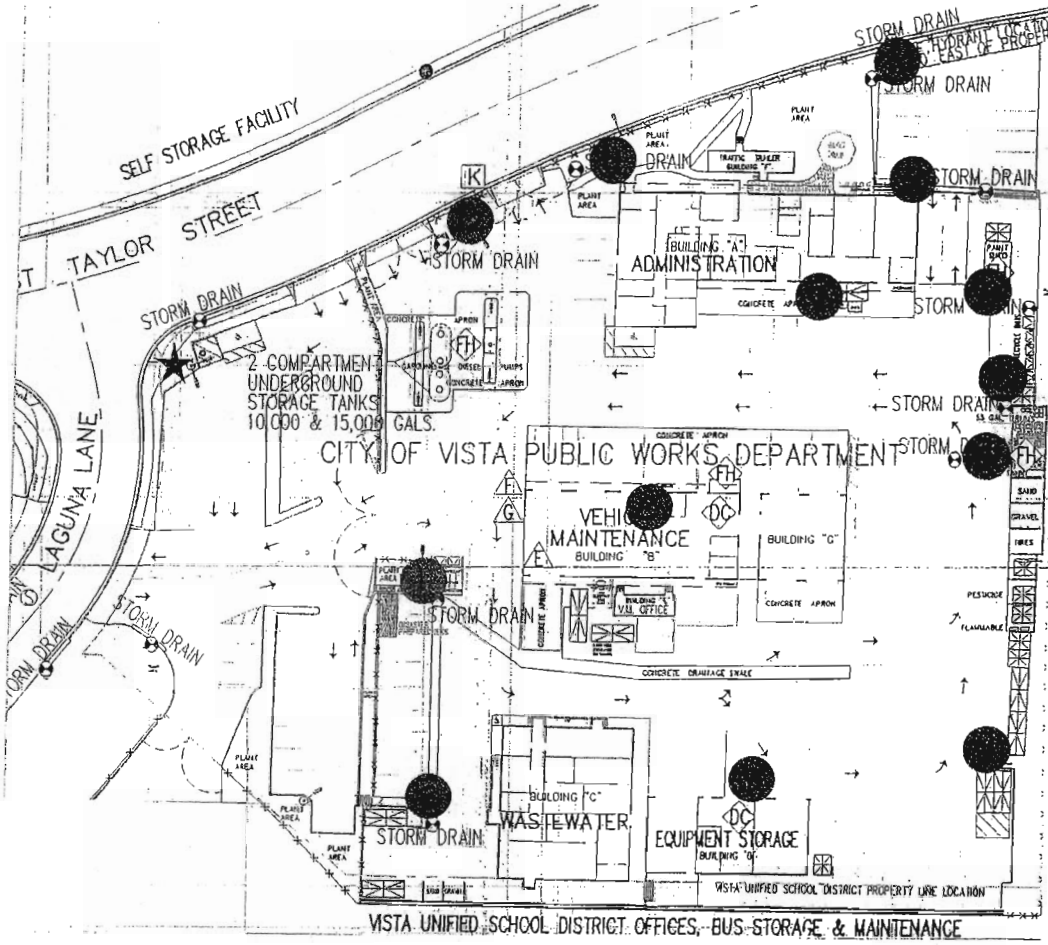

Comments: need Labels on buckets

Signature: Armando Sandoval

Monthly Hazardous Waste Inspection

Date: 12/21/07

Time: Armando

Inspected By: Armando

Site 1 ✓

Site 2 ✓

Site 3 ✓

Site 4 ✓

Site 5 ✓

Site 6 ✓

Site 7 ✓

Site 8 ✓

Site 9 ✓

Site 10 ✓

Site 11 ✓

Site 12 ✓

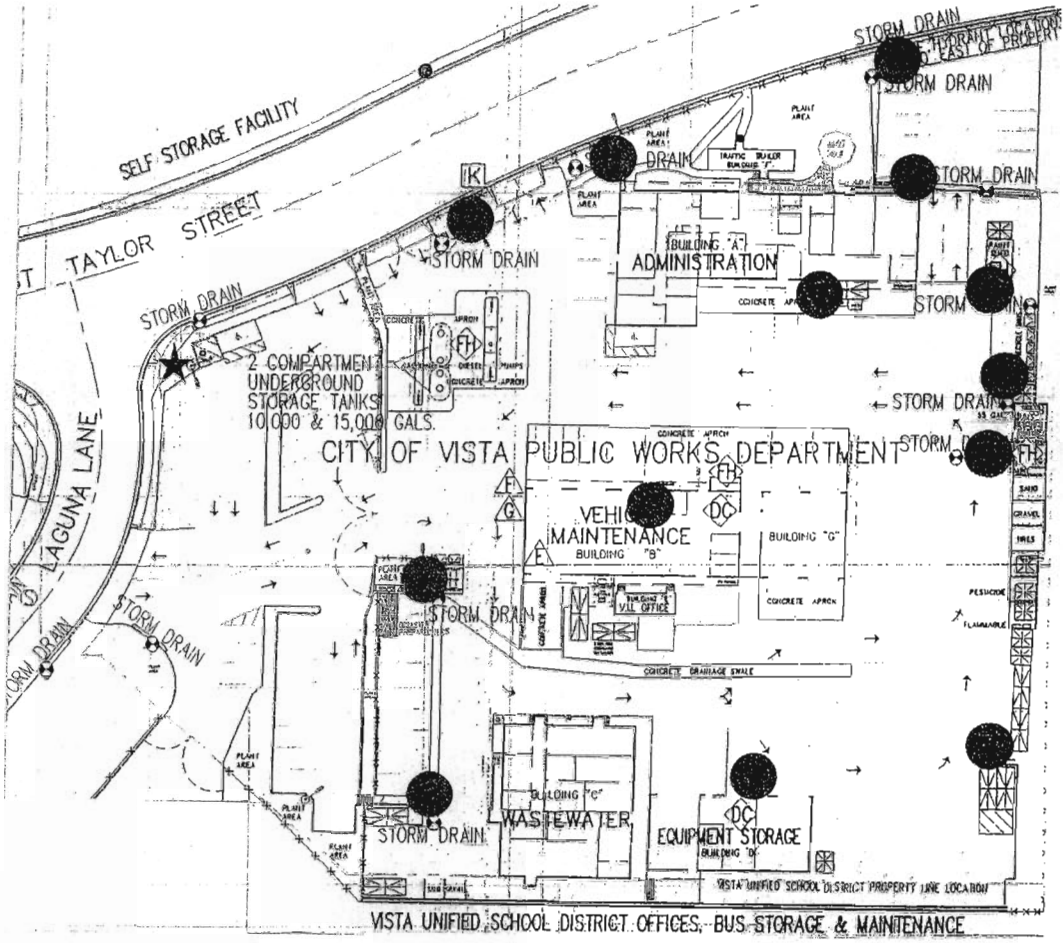

Cart ✓

Comments: need Labels on buckets

Spill Kit

Signature: Armando S.

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Brengle Terrace Park Maintenance Yard

Business: Brengle Terrace Park Maintenance Yard
1270 Vale Terrace
Vista , CA 92084
(760) 726-4857

Watershed: Buena Vista

Contact: John Menezes-Park Supervisor **Personnel Present:** John Menezes

Inspection Date: 3/15/2007

Inspection Type: Routine

Inspector Company: DMax Engineering, Inc. **Inspector:** Shauna McKellar

Principal Activity: Park Maintenance

Assigned JURMP Prioritization:

SIC Code(s)

BMP Summary/Notes

This is a maintenance yard for Brengle Terrace Park.
The yard is mostly on dirt covered in gravel, with a paved road going through the lot.
Maintenance work is done inside a shop and oil and gasoline for yard equipment are stored inside away from entrances and exits. Some larger yard equipment (tractors) are kept outside partly under canopies on soil.
Stockpiles of landscaping materials are unstabalized, but do not appear to have potential of entering the creek that runs through the park due to the surrounding vegetated areas.
The concrete channel that runs along the paved road eventually leads to a turf field. Slopes surrounding the maintenance yard appear well vegetated and concrete channel was free of sediment and debris.
Some sand from broken sandbags was surrounding a part of the channel.
All paints, pesticides, and other chemicals are stored in locked sheds with spill kits. Two drums of cleaning solution are kept outside without overhead coverage and secondary containment on pervious ground.
Some galvanized metal (chain-link fences) is stored on pervious ground without overhead coverage in addition to some old sprinklers and pipes that contain copper.
Large dumpsters are open, but covered with tarps during rain events.

Corrective Actions Required by the City

Provide secondary containment and overhead coverage for drums of cleaning solution.
Ensure stockpiles of soil and landscape materials are adequately stabilized.
Clean up after and removed and replace broken sandbags. Consider using gravel bags

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Brengle Terrace Park Maintenance Yard

instead of sand bags.

Recommended City Actions (if any) and Assessment

Additional City Actions

Note that this maintenace yard is going to be relocated to a paved area in the future.

Level of knowledge regarding stormwater issues:	5
Level of cleanliness, BMP implementation, orderliness of site:	3

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Buena Vista Park Maintenance Yard

Business: Buena Vista Park Maintenance Yard
Shadowridge @ Green Oak Rd.
Vista , CA
(760) 726-4857

Watershed: Agua Hedionda

Contact: John Menezes-Park Supervisor **Personnel Present:** Lou Sanchez/John Menezes

Inspection Date: 3/15/2007

Inspection Type: Routine

Inspector Company: DMax Engineering, Inc. **Inspector:** Shauna McKellar

Principal Activity: Park Maintenance

Assigned JURMP Prioritization:

SIC Code(s)

BMP Summary/Notes

This site is a maintenance yard for a public park.
Yard equipment vehicles are stored under a canopy.
All liquids, paints, fertilizers, pesticides, etc. are stored in enclosed stored lockers equipped with spill kits.
One of the lockers was rusty and the paint was chipping significantly.
Two portable toilets were at the site on a patch of dirt and lacked containment trays.
Dumpster areas are enclosed and the area was clean.
The concrete channel that directs runoff from the roads to the creek had significant sediment and organic debris buildup.
Streets and parking areas were free of sediment and debris.
Some hillsides at the property (not part of the maintenance yard) appeared to have erosion problems, most notable a SDG & E easement.

Corrective Actions Required by the City

Determine responsible party for SDG & E easement.
Provide trays for portable toilets.
Keep storage lockers in good condition.

Recommended City Actions (if any) and Assessment

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Buena Vista Park Maintenance Yard

Level of knowledge regarding stormwater issues:	5
Level of cleanliness, BMP implementation, orderliness of site:	3

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Public Works Main Yard

Business: Public Works Main Yard
1165 E. Taylor Street
Vista , CA 92084
(760) 726-1340

Watershed: Buena Vista

Contact: City of Vista

Personnel Present: Craig Trammell, Chuck Crist, George Solano

Inspection Date: 3/16/2007
Inspection Type: Routine
Inspector Company: DMax Engineering, Inc. **Inspector:** Shauna McKellar
Principal Activity: Vehicle fueling, maintenance storage
Assigned JURMP Prioritization:
SIC Code(s)

BMP Summary/Notes

This site is the main yard for the city of Vista's Public Works Department.
The site is well organized and was free of sediment and debris.
Each storm drain has a cover stored nearby in case of a major spill.
Large service vehicles are stored outside without cover. A paint truck had significant paint residue on the truck and ground where the truck is parked. This truck contains a spill kit.
Stockpiles of dirt/sand/gravel are stored in enclosed, bermed, covered bays. Some of the stockpiles were spilling over the berms.
All waste liquids and paints are stored in a covered contained area with secondary containment. Waste water from mopping the maintenance shop floor is also stored in this area.
A couple of large recent fluid stains were observed in the parking lot and had not been treated.
All maintenance occurs inside a designated shop.

Corrective Actions Required by the City

Treat fluid spills from vehicles appropriately and promptly.
Promptly treat fresh paint spills.

Recommended City Actions (if any) and Assessment

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Public Works Main Yard

Level of knowledge regarding stormwater issues:	5
Level of cleanliness, BMP implementation, orderliness of site:	3

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Public Works Auxiliary Yard HHW

Business: Public Works Auxiliary Yard HHW
1145 East Taylor Street
Vista , CA 92084
(760) 726-1340

Watershed: Buena Vista

Contact: City of Vista

Personnel Present: Craig Trammell

Inspection Date: 3/16/2007

Inspection Type: Routine

Inspector Company: DMax Engineering, Inc.

Inspector: Shauna McKellar

Principal Activity: Auxilary yard, storage

Assigned JURMP Prioritization:

SIC Code(s)

BMP Summary/Notes

This site is an auxiliary yard for the main public works yard across the street. The site is shared with a hazardous household waste drop off site that is privately managed.
The city's portion of the site consists of a few large dumpsters for general waste, yard waste, and sediment waste. These areas were free of debris, and the area contains a bin with large tarps that are used to cover the dumpsters during rain events.
The HHW yard contained significant e-waste such as monitors and printers. Some of the printers still had ink cartridges in them and these areas were uncovered.
Car batteries were also observed on the site on pallets, but lacking secondary containment and overhead coverage.
Light sediment was observed in the HHW storage areas.
All liquid HHW drums were stored in a bermed, covered area.
Cleaners and other household chemicals are stored inside locked sheds.
This area remains locked when not in use and has a security system to prevent vandalism, theft, and/or illegal dumping.

Corrective Actions Required by the City

Contact manager of the hazardous household waste facility about providing adequate cover for e-waste and batteries.

Recommended City Actions (if any) and Assessment

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Public Works Auxiliary Yard HHW

Level of knowledge regarding stormwater issues:	4
Level of cleanliness, BMP implementation, orderliness of site:	4

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Public Works Satellite Yard

Business: Public Works Satellite Yard
2430 Lupine Hills Dr
Vista , CA 92081
(760) 726-1340

Watershed: Agua Hedionda

Contact: City of Vista

Personnel Present: Craig Trammell, Chuck Crist, George Solano

Inspection Date: 3/16/2007
Inspection Type: Routine
Inspector Company: DMax Engineering, Inc.

Inspector: Shauna McKellar

Principal Activity: Storage yard
Assigned JURMP Prioritization:
SIC Code(s)

BMP Summary/Notes

This is a storage yard for the Vista public works department.
The majority of the storage at the site is temporary and is stored on a flat area of pervious ground.
One cage filled with light fixtures was on impervious ground without overhead coverage and was not lifted off the ground. Some metal street light fixtures were stored on pallets without overhead coverage.
A large lined settling pond is at the site and used for emptying the vactor used to clean the city's storm drain system. The water is allowed to evaporate and the silt is disposed of.
The settling pond and surrounding area contained moderate trash from the water waste.
This area is reportedly raked once a month to collect trash.
All waste piles (concrete, silt, landscape waste) are surrounded by straw waddles.
Concrete brow ditches are lined with straw waddles and cleaned out regularly. Some organic debris was present during inspection.

Corrective Actions Required by the City

Control trash from vactor settling pond from leaving the site.
Cover (and raise from ground) light fixtures as much as possible, especially if the light fixtures begin to rust or otherwise show songs of corrosion.

Recommended City Actions (if any) and Assessment

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of Public Works Satellite Yard

-No current business license was available. Review City business license records to determine if this business has a current license on file.

Level of knowledge regarding stormwater issues:	4
Level of cleanliness, BMP implementation, orderliness of site:	3

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of The Wave Waterpark

Business: The Wave Waterpark
161 Recreation Drive
Vista , CA 92083
(760) 726-1340

Watershed: Buena Vista

Contact: City of Vista

Personnel Present: Scott Welles

Inspection Date: 3/16/2007

Inspection Type: Routine

Inspector Company: DMax Engineering, Inc.

Inspector: Shauna McKellar

Principal Activity: Public waterpark

Assigned JURMP Prioritization:

SIC Code(s)

BMP Summary/Notes

This is a city owned water park facility.
The majority of the drains at the park are part of a closed system that is recycled, filtered, and used for the water attractions.
Drains in the landscaping and parking lots, as well as the back storage area all connect and drain to the concrete-lined channel along the NW side of the park.
Back storage areas were cluttered with materials mostly made of plastic. Large metal pipes and pumps were temporarily being stored on pallets without overhead coverage - these are being put back into the pools in the next few weeks.
The storm drain in the storage area was obstructed by some materials and surrounded by organic debris. Catch basins are cleaned every 2-3 months.
Hazardous liquid storage has secondary containment and is covered with a plank of plywood.
An old rusted 55-gallon drum with grease was observed in the back storage area. According to Mr. Welles, this drum has been on the site for years, but is no longer used since frying no longer occurs at the facility.
Spill kits are located throughout the facility and employees are trained to clean up all wet spills immediately with absorbent.
Significant amounts of leaf debris was noted in the parking lot and storage areas. Landscapers reportedly tend to them 2-3 times a week.

Corrective Actions Required by the City

Dispose of old 55-gallon drum with waste grease.
Keep storm drain inlets free of debris.

City of Vista

Storm Water Compliance Inspection Report

Re: Inspection of The Wave Waterpark

Recommended City Actions (if any) and Assessment

-Conduct a follow-up inspection at this business to ensure the recommended BMPs have been implemented.

Level of knowledge regarding stormwater issues:	3
Level of cleanliness, BMP implementation, orderliness of site:	3

D-MAX Engineering, Inc.

Storm Water Compliance Inspection Report

Re: Inspection of Parking Lot: 600 Eucalyptus Ave -City Hall Parking

Business: Parking Lot: 600 Eucalyptus Ave -City Hall Parking
600 Eucalyptus Ave
Vista, CA 92083

Contact:

Inspection Date: 6/26/2007 **Inspection Type:** Routine

D-MAX Inspector: Peter Smith

Principal Activity: Parking lot

Facility Size: 20000 square feet **Percent Impervious:** 75%

Property Mgmt Co.:

Facility Personnel Present:

Educational Materials Distributed: None

Watershed: Buena Vista **Receiving Water Body:** Buena Vista Creek

Assigned JURMP Prioritization:

SIC Code(s):

NAICS Code(s):

BMP Summary/Notes

- This site is a municipal parking lot located at Vista's City Hall.
- This parking lot has a drive-way running through the middle of it, splitting the parking lot into an eastern and western side. The western side is closer to the city hall buildings. This side of the parking lot was free of significant oil spills/stains as well as litter. Sediment and organic debris (fallen leaves) are beginning to accumulate in the gutters near the storm drain in this side of the lot.
- Runoff from the eastern parking lot appears to flow into a small asphalt swale, which leads to a storm drain. Sediment and fallen leaves have accumulated inside the storm drain. A few pieces of litter were also observed in the storm drain. It appears that at one time the storm drain and asphalt swale were protected with fiber rolls. The fiber rolls appear severely worn and no longer effective.
- Fresh oil stains were also observed in a few of the parking spots.

Corrective Actions Required by the City

- Properly treat and clean up all oil stains observed in the eastern half of the parking lot.
- Remove the organic debris, litter, and sediment accumulations from the asphalt swale and storm drain in the eastern side of the parking lot.
- Replace the worn-out existing fiber rolls, used to protect the asphalt swale and storm drain.
- Remove organic debris and sediment the gutters leading to the storm drain in the more western parking lot.

D-MAX Engineering, Inc.

Storm Water Compliance Inspection Report

Re: Inspection of Parking Lot: Broadway at Hanes Dr.

Business: Parking Lot: Broadway at Hanes Dr.
Broadway at Hanes Dr
Vista, CA 92083

Contact:

Inspection Date: 6/26/2007 **Inspection Type:** Routine

D-MAX Inspector: Peter Smith

Principal Activity: Parking lot

Facility Size: 10000 square feet **Percent Impervious:** 99%

Property Mgmt Co.:

Facility Personnel Present:

Educational Materials Distributed: None

Watershed: Buena Vista **Receiving Water Body:** Buena Vista Creek

Assigned JURMP Prioritization:

SIC Code(s):

NAICS Code(s):

BMP Summary/Notes

- This site is a municipally operated parking lot.
- The parking lot is almost completely asphalt. To the west of this parking lot is what appears to be a vacant, pervious lot.
- Some litter was noted around the parking lot, mostly paper waste. Sediment accumulations were also observed around the parking lot, especially towards the western side of the lot.
- No significant or fresh oil stains were observed in the parking lot.

Corrective Actions Required by the City

- Improve housekeeping BMPs related to this parking lot. Sediment accumulations and litter should be removed from the parking lot on a routine basis.

Recommended City Actions

- No current business license was available. Review City business license records to determine if this business has a current license on file.

Assessment Category	Score
Level of knowledge regarding storm water issues	
Level of cleanliness, BMP implementation, orderliness of site	3

D-MAX Engineering, Inc.

Storm Water Compliance Inspection Report

Re: Inspection of Parking Lot: Main St at Indiana Ave

Business: Parking Lot: Main St at Indiana Ave
Main St at Indiana Ave
Vista, CA 92083

Contact:

Inspection Date: 6/25/2007 **Inspection Type:** Routine

D-MAX Inspector: Peter Smith

Principal Activity: Parking lot

Facility Size: 15000 square feet **Percent Impervious:** 50%

Property Mgmt Co.:

Facility Personnel Present:

Educational Materials Distributed: None

Watershed: Buena Vista **Receiving Water Body:** Buena Vista Creek

Assigned JURMP Prioritization:

SIC Code(s):

NAICS Code(s):

BMP Summary/Notes

- This site is a municipally operated parking lot located at the corner of Main St. and Indiana Ave.
- No significant or fresh oil stains were observed in the parking lot.
- The lot is mostly free of litter other than several cigarette butts observed around the lot.
- Approximately half of the parking lot appears to be paved, the other half dirt. Pavement is worn, loose, and larger sediment observed on the paved areas. Larger sediment was also observed over pervious areas of the lot, as well.
- Most of the sediment is large (gravel sized) and appears to have a low potential to be transported in the runoff. However, evidence that some of the smaller sediment has been transported to the western sidewalk was also observed.

Corrective Actions Required by the City

- Implement further BMPs to prevent smaller sediment from being transported to the western sidewalk. Consider perimeter protection along the western sidewalk.
- Improve housekeeping BMPs to reduce the amount of litter (cigarette butts mostly) and sediment observed in the parking lot.

Recommended City Actions

- No current business license was available. Review City business license records to determine if this business has a current license on file.

Assessment Category	Score

D-MAX Engineering, Inc.

Storm Water Compliance Inspection Report

Re: Inspection of Parking Lot: Main St at Michigan Ave

Business: Parking Lot: Main St at Michigan Ave
Main St at Michigan Ave
Vista, CA 92083

Contact:

Inspection Date: 6/26/2007 **Inspection Type:** Routine

D-MAX Inspector: Peter Smith

Principal Activity: Parking Lot

Facility Size: 2000 square feet **Percent Impervious:** 95%

Property Mgmt Co.:

Facility Personnel Present:

Educational Materials Distributed: None

Watershed: Buena Vista **Receiving Water Body:** Buena Vista Creek

Assigned JURMP Prioritization:

SIC Code(s):

NAICS Code(s):

BMP Summary/Notes

- This site is a municipal, public parking lot.
- No significant oil stains or spills were observed in the parking lot.
- Organic debris accumulations were observed around the parking lot. Debris was mostly leaves and seed pods from the surrounding trees.
- A few cigarette butts were also observed on the ground around the parking lot.
- No signs of erosion were observed.
- No evidence of over-watering, from the surrounding landscaping was observed.

Corrective Actions Required by the City

- Improve housekeeping BMPs with regards to this parking lot. Routinely sweep the parking lot free of organic debris (leaves) and litter (cigarette butts).

Recommended City Actions

- No current business license was available. Review City business license records to determine if this business has a current license on file.

Assessment Category	Score
Level of knowledge regarding storm water issues	
Level of cleanliness, BMP implementation, orderliness of site	3

D-MAX Engineering, Inc.

Storm Water Compliance Inspection Report

Re: Inspection of Parking Lot: Vista Village Dr at Michigan Ave

Business: Parking Lot: Vista Village Dr at Michigan Ave
Vista Village Dr at Michigan Ave
Vista, CA 92083

Contact:

Inspection Date: 6/26/2007 **Inspection Type:** Routine

D-MAX Inspector: Peter Smith

Principal Activity: Public parking lot

Facility Size: 2500 square feet **Percent Impervious:** 90%

Property Mgmt Co.:

Facility Personnel Present:

Educational Materials Distributed: None

Watershed: Buena Vista **Receiving Water Body:** Buena Vista Creek

Assigned JURMP Prioritization:

SIC Code(s):

NAICS Code(s):

BMP Summary/Notes

- This site is a municipal parking lot.
- At the time of inspection, two individuals were observed power washing the parking lot. The storm drain located toward the NW corner of the lot was blocked to prevent power wash water from entering the storm drain. The individuals conducting the power washing were also observed entering the storm water conveyance system.
- Landscaping appears well-vegetated and no signs of erosion where observed.
- This parking lot has two covered trash enclosures where dumpsters are stored. Inside both trash enclosures was clean. Some litter (cardboard boxes) were observed behind one of the trash enclosures.
- Other than that the site appeared clean and well maintained. No significant sediment or debris accumulations were observed.

Corrective Actions Required by the City

- The uncontained litter (cardboard boxes) located behind the eastern trash enclosure should be properly disposed of.

Recommended City Actions

- No current business license was available. Review City business license records to determine if this business has a current license on file.

Assessment Category	Score
Level of knowledge regarding storm water issues	

APPENDIX B

B-1 2006-2007 INDUSTRIAL BUSINESSES INVENTORY

B-2 UPDATED 2007-2008 INDUSTRIAL INVENTORY

B-3 REPORT FORM FOR NONCOMPLIANCE THAT POSES A THREAT TO HEALTH OR THE ENVIRONMENT

Business Name	Street Address	Status	Inspected in 06-07	SIC	NAIC	Watershed
High Priority Industrial						
American Peptide Company	1271 Avenida Chelsea, Vista, CA 92083	High	X	2834	325412	Agua Hedionda
C Enterprises, LP	2445 Cades Way, Vista, CA 92081	High	X	3357	33592	Agua Hedionda
Cercom, Inc. (BAE Systems)	991 Park Center Dr., Vista, CA 92083	High	X	3297	327125	Agua Hedionda
Cercom (watson way)	1960 Watson Way, Vista, CA 92083	High	X	3297	327125	Agua Hedionda
E&J Stone	795 North Drive, Suite E, Vista, CA 92081	High	X	3281	327991	Loma Alta
E-World Recyclers, L L C	2480 Ash St., Vista, CA 92081	High	X		562119	Agua Hedionda
Excellent Coatings Inc	1285 Distribution Way, Vista, CA 92083-8817	High	X	2851	325510	Agua Hedionda
Ferro Electronic Materials Systems	1395 ASPEN WAY, Vista, CA 92083	High	X	3675	334414	Agua Hedionda
Frito Lay Inc	1390 VANTAGE CT, Vista, CA 92083	High	X	4214	484220	Agua Hedionda
Jensen Meat Co Inc	2525 BIRCH ST, Vista, CA 92083	High	X	2013	311613	Agua Hedionda
Lee Steel & Supply	1305 LEE DR, Vista, CA 92083	High	X	5051	421510	Loma Alta
Lee's Iron Inc	1315 LEE DR, Vista, CA 92083	High	X	5093	421930	Loma Alta
Osmonics (GE)	760 Shadowridge Dr., Vista, CA 92083	High	X	3999	339999	Agua Hedionda
Pacific Lead Products, Inc.	793 NORTH AVE, Suite #D, Vista, CA 92083	moved out of City	N/A	3369	331528	Loma Alta
Print Inc	1225 PARK CENTER DR, Suite #A, Vista, CA 92083	High	X	2759	323113	Agua Hedionda
Quality Discount Ice Cream Inc	2465 CORAL ST, Vista, CA 92083	High	X	4214	484220	Agua Hedionda
Rayzist Photomask Inc	955 PARK CENTER DR, Vista, CA 92083	High	X	3281	327991	Agua Hedionda
Reybro, Inc. dba Quality Recycling	149 NETTLETON RD, Vista, CA 92083	High	X	5093	421930	Buena Vista
Roadway Express Inc.	1392 Engineer St, Vista, CA 92083	High	X	4212	484110	Agua Hedionda
Shadowridge Water Reclamation Facility	2525 LUPINE HILLS RD, Vista, CA 92083	High - inactive	X	4952	221320	Agua Hedionda
Summit Windows and Patio Doors	2760 Progress St, Vista, CA 92081	High = Jen-Weld	X	3089	337215	Agua Hedionda
Versaform Corp	1377 Specialty Dr, Vista, CA 92081	High	X	3728	336413	Agua Hedionda
Watkins Manufacturing Corp	1280 PARK CENTER DR, Vista, CA 92083	High	X	3088	326191	Agua Hedionda
Westbridge Research Group	1150 JOSHUA WAY, Vista, CA 92083	High	X	2879	32532	Agua Hedionda
Medium Priority Industrial						
2s2, Inc.	1330 Specialty Dr #C, Vista, CA 92081	Medium		3679	334419	Agua Hedionda
A T Machine	2515 PIONEER AVE, Suite #3, Vista, CA 92083	Medium		3599	33271	Agua Hedionda
A W R/Racing Cages	2865 Scott Street #106-107, Vista, CA 92081	Medium		3711	336211	Agua Hedionda
Accutech, LLC	2641 LA MIRADA DR, Vista, CA 92083	Medium		2835	325413	Agua Hedionda
Advance Web Offset, Inc.	2260 Oak Ridge Way, Vista, CA 92081	Medium		2752	323110	Agua Hedionda
Aea Wireless, Inc.	1489 POINSETTIA AVE 134, Vista, CA 92083	Medium		3679	334418	Agua Hedionda
Aero Vision International	2780 LA MIRADA DR, Suite #C, Vista, CA 92083	Medium		3724	336412	Agua Hedionda

Business Name	Street Address	Status	Inspected in 06-07	SIC	NAIC	Watershed
Air Tech Streamlining	2530 FORTUNE WAY, Vista, CA 92083	Medium		3714	000000	Agua Hedionda
Alvarado Micro-Precision	2475 CORAL ST, Suite #C, Vista, CA 92083	Medium		3499	332999	Agua Hedionda
American Faucet & Coatings Corp	3280 CORPORATE VIEW DR, Vista, CA 92083	Medium		3499	33251	Agua Hedionda
American Metal Packaging Company	1185 PARK CENTER DR, Suite #C, Vista, CA 92083	Medium		3674	42161	Agua Hedionda
Aperio Technologies, Inc.	1430 VANTAGE CT 106, Vista, CA 92083	Medium		3826	334516	Agua Hedionda
Apollo Sprayers Inc	1030 JOSHUA WAY, Vista, CA 92083	Medium		3999	339999	Agua Hedionda
Applied Control Concepts / CNC	1209 Activity Dr , Vista, CA 92081	Medium		3599	332710	Agua Hedionda
Applied Membranes, Inc.	2325 COUSTEAU CT, Vista, CA 92083	Medium		3589	333319	Agua Hedionda
Applied Technology Co.	1280 LIBERTY WAY, Vista, CA 92083	Medium		3999	339999	Agua Hedionda
Armorcraft Off-Road Corp	2312 La Mirada Drive, Vista, CA 92081	Medium		3711	336111	Agua Hedionda
Arshia Custom Cabinet	2525 Pioneer Ave, #5, Vista, CA 92081	Medium		2434	337110	Agua Hedionda
B & C Nutritional Products Inc	2550 PIONEER AVE, Vista, CA 92083	Medium		2834	325412	Agua Hedionda
B/E Aerospace	2555 BIRCH ST, Vista, CA 92083	Medium		3599	33271	Agua Hedionda
Bekaert Progressive Composites	2455 ASH St, Vista, CA 92083	Medium		3089	326199	Agua Hedionda
Bendmac Manufacturing	440 OLIVE AVE, Suite #P, Vista, CA 92084	Medium		3498	332996	Buena Vista
Bilandzija Cabinets	2588 PROGRESS ST, Suite #5, Vista, CA 92083	Medium		2434	33711	Agua Hedionda
BOJ	611 MERCANTILE STREET, VISTA, CA 92083	Medium		2434	337110	Buena Vista
Bravo Screen Print	1230 Activity Rd #D, Vista, CA 92081	Medium		2759	323113	Agua Hedionda
Bristol S.G., Inc.	2525 PIONEER AVE, Suite #6, Vista, CA 92083	Medium		3679	339999	Agua Hedionda
Bruning Engineering Inc	2598 FORTUNE WAY, Suite #M, Vista, CA 92083	Medium		3499	332117	Agua Hedionda
C N C Precision Machining	797 NORTH AVE, Suite #C, Vista, CA 92083	Medium		3599	33271	Buena Vista
Caldwell Development Inc	1271 ACTIVITY DR, Vista, CA 92083	Medium		3519	42199	Agua Hedionda
Carlsbad Custom Cabinets	1341 DISTRIBUTION WAY, Suite #14, Vista, CA	Medium		2434	33711	Agua Hedionda
CH Products	970 PARK CENTER DR , Vista, CA 92083	Medium		3699	333319	Agua Hedionda
Closet World Inc.	1335 PARK CENTER DR, Suite #A, Vista, CA 92083	Medium		2521	23551	Agua Hedionda
Coast Intelligen, Inc.	2460 ASH ST, Vista, CA 92083	Medium		3621	335312	Agua Hedionda
Cookies Con Amore	2330 La Mirada Dr #700, Vista, CA 92081	Medium		2052	311821	Agua Hedionda
Cornerstone Sensors Inc	1304 N.MELROSE DR, Suite #C, Vista, CA 92083	Medium		3676	334415	Loma Alta
Cousins Signs Inc	350 E.BROADWAY, Vista, CA 92084	Medium		3993	33995	Buena Vista
Creative Printing	1132 N.MELROSE DR, Vista, CA 92083	Medium		2759	323112	Buena Vista
C-Shoes	797 NORTH AVE, Suite #D, Vista, CA 92083	Medium		3499	332117	Buena Vista
Csi Technologies, Inc.	2595 COMMERCE Way, Vista, CA 92083	Medium		3629	335999	Agua Hedionda
Custom Machined Products	1338 N.MELROSE DR, Suite #E, Vista, CA 92083	Medium		3499	332117	Loma Alta
D J Orthopedics, L L C	2985 SCOTT ST, Vista, CA 92083	Medium		3482	334510	Agua Hedionda
Dart Plastics & Engineering, Inc.	1240 ACTIVITY DR, Suite #A, Vista, CA 92083	Medium		3808	326199	Agua Hedionda
Dime Water, Inc.	2575 FORTUNE WAY, Suite #J, Vista, CA 92083	Medium		3589	333319	Agua Hedionda
Distinctive Plastics, Inc.	1385 DECISION ST, Vista, CA 92085	Medium		3089	326199	Agua Hedionda

Business Name	Street Address	Status	Inspected in 06-07	SIC	NAIC	Watershed
Diversified Manufacturing Of Ca	2555 PROGRESS ST, Vista, CA 92083	Medium		3999	339999	Agua Hedionda
Diversified Tool & Die	2585 BIRCH ST, Vista, CA 92083	Medium		3469	332116	Agua Hedionda
Douglas Wheel, Inc.	1340 N.MELROSE DR, Vista, CA 92083	Medium		3714	336399	Loma Alta
Dutek Inc.	2248 OAK RIDGE WAY , Vista, CA 92083	Medium		3679	334418	Agua Hedionda
Earthlite Massage Tables Inc dba	3210 EXECUTIVE RIDGE DR , Vista, CA 92083	Medium		2599	3371	Agua Hedionda
Eaton Leonard Robolix, Inc	1391 SPECIALTY DR, Suite #A, Vista, CA 92083	Medium		3542	333513	Agua Hedionda
Econo Plastics, Inc. (Progressive	1210 N.MELROSE DR, Suite #A, Vista, CA 92083	Medium		3089	326199	Buena Vista
Elite Metal Finishing	1392 POINSETTIA AVE, Suite #C, Vista, CA 92083	Medium		3471	332813	Agua Hedionda
F&T Precision Products	980 PARK CENTER DR, Suite #I, Vista, CA 92083	Medium		3599	33271	Agua Hedionda
Fax Foods	1392 POINSETTIA AVE, Suite #A&B, Vista, CA	Medium		3089	321699	Agua Hedionda
Fish House Foods, Inc.	3285 CORPORATE VIEW DR, Vista, CA 92083	Medium		5149	42249	Agua Hedionda
Flotron	2485 CORAL ST, Vista, CA 92083	Medium		3999	339999	Agua Hedionda
Francis P. Gallo Services	323 E. BROADWAY F, Vista, CA 92084	Medium		2759	51411	Buena Vista
Funktion	1930 WATSON WAY, Suite #P, Vista, CA 92083	Medium		3999	339999	Buena Vista
Graphic Converting, Inc.	1370 DECISION ST, Vista, CA 92083	Medium		2657	322212	Agua Hedionda
Grilla	1235 Activity Dr Ste F, Vista, CA 92081	Medium		3714	336399	Agua Hedionda
H F Johnston Mfg. Co.	2475 ASH ST, Vista, CA 92083	Medium		3599	332999	Agua Hedionda
H2O F/X	1230 Activity Drive E & F, Vista, CA 92081	Medium		3444	332322	Agua Hedionda
HI REZ Digital Solutions	1235 Activity Drive, Suite #E, Vista, CA 92081	Medium		2759	323115	Agua Hedionda
Hi Tech Swiss Machining Inc	2410 LA MIRADA DR, Vista, CA 92083	Medium		3599	332117	Agua Hedionda
Horstman Manufacturing Co Inc	2510 PIONEER AVE, Vista, CA 92083	Medium		3799	336999	Agua Hedionda
Hudson Printing, Inc.	1497 Poinsettia Ave, #153, Vista, CA 92081	Medium		2759	323110	Agua Hedionda
Hydrocomponents & Technologies, Inc.	1175 PARK CENTER DR, Suite #H, Vista, CA 92083	Medium		3999	339999	Agua Hedionda
I C P America, Inc.	1070 JOSHUA WAY , Vista, CA 92083	Medium		3676	334415	Agua Hedionda
I W Technologies, Inc.	2446 CADES WAY, Vista, CA 92083	Medium		3999	333319	Agua Hedionda
IDL Tech Tools	2438 Cades Way, Vista, CA 92084	Medium		3423	332212	Agua Hedionda
Intellectual Technology, Inc.	1040 JOSHUA WAY, Vista, CA 92083	Medium		3577	334418	Agua Hedionda
J & D Laboratories	2640 PROGRESS ST, Vista, CA 92083	Medium		2834	325412	Agua Hedionda
J Mark Manufacturing Inc	2480 CORAL , Suite #C, Vista, CA 92083	Medium		3499	332312	Agua Hedionda
JAVO Beverage Co.	1311 Specialty Drive, Vista, CA 92084	Medium	X	2095	311920	Agua Hedionda
Jeld Wen Co. Warehouse	935 Poinsettia Ave, Vista, CA 92083	Medium		4225	493110	Agua Hedionda
Jif-Pak Manufacturing, Inc.	1451 ENGINEER ST, Vista, CA 92083	Medium		3999	31-33	Agua Hedionda
Joseph Webb Foods Inc	1201 PARK CENTER DR, Vista, CA 92083	Medium		5142	422420	Agua Hedionda
Killion Industries Inc	1380 POINSETTIA AVE, Vista, CA 92083	Medium		2541	337215	Agua Hedionda
Killion Industries, Inc.	2811 La Mirada Drive, Vista, CA 92083	Medium		2541	337215	Agua Hedionda
Lemken Kuhlwerk	2330 La Mirada Dr Suite 200, Vista, CA 92081	Medium		2434	337110	Agua Hedionda
Lightwave Audio Systems, Inc.	1384 POINSETTIA AVE, Suite #F, Vista, CA 92083	Medium		3679	3343	Agua Hedionda

Business Name	Street Address	Status	Inspected in 06-07	SIC	NAIC	Watershed
M Klemme Technology, Corp	1386 POINSETTIA AVE, Suite #A, Vista, CA 92083	Medium		3499	332999	Agua Hedionda
M M Precision Machining	2525 PIONEER AVE, Suite #4, Vista, CA 92083	Medium		3345	333515	Agua Hedionda
Magna Coatings Corp	1440 Decision Street, Vista, CA 92083	Medium		2851	32551	Agua Hedionda
Magnacore Inc.	1386 POINSETTIA AVE, Suite #B, Vista, CA 92083	Medium		3999	339999	Agua Hedionda
Manzo's Metal Works	797 North Avenue, #D, Vista, CA 92081	Medium		3599	332710	Loma Alta
Martin Enterprises	3235 EXECUTIVE RIDGE DR, Vista, CA 92083	Medium		3599	33271	Agua Hedionda
Meridian Laboratory Inc	1330 N.MELROSE DR, Suite #E, Vista, CA 92083	Medium		3499	332999	Loma Alta
Micronel U.S.	1280 LIBERTY WAY , Vista, CA 92083	Medium		3999	31-33	Agua Hedionda
Mihal Enterprises dba JT- Designs	1250 Activity Dr # E, Vista, CA 92081	Medium		3599	332710	Agua Hedionda
Minor Fab	1205 N. Melrose Suite M, Vista, CA 92084	Medium		3499	332999	Buena Vista
Modern Medical Supply	1235 Activity Drive, F, Vista, CA 92083	Medium		2599	339111	Agua Hedionda
Natural Alternatives Int'l Inc	1215 PARK CENTER DR, Vista, CA 92081	Medium		2833	325411	Agua Hedionda
NML, LLC	2575 Pioneer Ave. Suite 105, Vista, CA 92081	Medium		3999	339999	Agua Hedionda
Nutritional Engineering Inc.	1208 AVENIDA CHELSEA, Vista, CA 92083	Medium		2834	325412	Agua Hedionda
Oem Production LLC	2875 Scott St 101-102, Vista, CA 92081	Medium		3949	339922	Agua Hedionda
Orthodontic Design & Production, Inc.	1370 DECISION ST Suite D, Vista, CA 92081	Medium		3843	339114	Agua Hedionda
Pacific Aero Press	1133 LARK HILL DR , Vista, CA 92084	Medium		5731	51113	Buena Vista
Pacific Ceet, Inc.	1220 LIBERTY WAY, Vista, CA 92083	Medium		3999	31-33	Agua Hedionda
Pacific Dream Enterprises, Inc.	1351 DISTRIBUTION WAY, Suite #4, Vista, CA 92083	Medium	Replaced by Abramo Industrial	2511	337122	Agua Hedionda
Pacific Stair Products	2241 La Mirada Drive, Vista, CA 92081	Medium		2541	337212	Agua Hedionda
Palmac Design & Manufacturing	2445 LA MIRADA DR, Vista, CA 92083	Medium		3499	332117	Agua Hedionda
Palmer Natural Products, Inc.	2595 FORTUNE WAY, Vista, CA 92083	Medium	replaced by Pixel Imaging	2834	325412	Agua Hedionda
Phoenix Wheel Company, Inc. (HRE Performance)	2453 CADES WAY, Suite #A, Vista, CA 92083	Medium		3499	336999	Agua Hedionda
Power Craft Autoparts	452 OLIVE , Suite #L, Vista, CA 92084	Medium		3999	339999	Buena Vista
Pozza Manufacturing Inc.	1185 PARK CENTER DR, Suite #Q, Vista, CA 92083	Medium		3599	333999	Agua Hedionda
Precise Manufacturing	1495 POINSETTIA AVE, Suite #148, Vista, CA 92083	Medium		3599	33271	Agua Hedionda
Print House Inc	2630 PROGRESS ST, Vista, CA 92083	Medium		2759	323113	Agua Hedionda
Pro Designer Plastics Inc Pdp	1260 LIBERTY WAY, Suite #D, Vista, CA 92083	Medium		3089	326199	Agua Hedionda
Promach	2438 Cades Way, Vista, CA 92081	Medium		3599	33271	Agua Hedionda
Proteus Dimensional Technologies, Inc	1260 Distribution Way, Vista, CA 92083	Medium		3999	339999	Agua Hedionda
Quantum Focus Instruments	990 PARK CENTER DR D, Vista, CA 92083	Medium		3826	3345	Agua Hedionda

Business Name	Street Address	Status	Inspected in 06-07	SIC	NAIC	Watershed
R Jesse & Company Inc	1226 KEYSTONE WAY, Vista, CA 92083	Medium		3645	335122	Agua Hedionda
Ray Allen Company, Inc.	2525 PIONEER AVE 8, Vista, CA 92081	Medium		3593	333995	Agua Hedionda
Renee Machine, Inc.	1185 PARK CENTER DR, Suite #E, Vista, CA 92083	Medium		3499	332117	Agua Hedionda
Sandel Avionics, Inc.	2401 DOGWOOD WAY , Vista, CA 92081	Medium		3812	334511	Agua Hedionda
Seber Tech L L C	2438 CADES WAY , Vista, CA 92083	Medium		3999	332999	Agua Hedionda
Security Systems, Inc	2585 FORTUNE WAY, B, Vista, CA 92081	Medium		3629	335999	Agua Hedionda
Sherline Products, Inc.	3235 EXECUTIVE RIDGE DR , Vista, CA 92083-	Medium	X	3553	333210	Agua Hedionda
Skylark Sport Marketing dba, Prana	3275 Corporate View, Vista, CA 92081	Medium		2329	315228	Agua Hedionda
Speedy Cut Inc	2565 PROGRESS ST, Vista, CA 92083	Medium		3499	332117	Agua Hedionda
Stines Machine Inc	2481 CORAL ST, Vista, CA 92083	Medium	X	3599	332710	Agua Hedionda
Stinky FAB.	2588 Progress Street, #15, Vista, CA 92081	Medium		3499	3329999	Agua Hedionda
Tech 22	1160 JOSHUA WAY, Vista, CA 92083	Medium		3679	334418	Agua Hedionda
Tecxel/R Zamora Corp.	2826 LA MIRADA DR, Suite #D, Vista, CA 92083	Medium		3599	33271	Agua Hedionda
Tedco Tool	1175 PARK CENTER DR, Suite #C, Vista, CA 92084	Medium		3728	336413	Agua Hedionda
The Art Of Coffee, Inc.	1311 SPECIALTY DR, Vista, CA 92083	Medium		2095	311920	Agua Hedionda
The Pressroom	843 WILLIAMSTON ST , Vista, CA 92084	Medium		2759	323112	Buena Vista
Tri Digital	1495 POINSETTIA AVE, Suite #144, Vista, CA 92083	Medium		2759	32311	Agua Hedionda
Trinity Innovations	1250 KEYSTONE WAY, Vista, CA 92083	Medium		3993	339999	Agua Hedionda
U S I Inc.	1185 PARK CENTER DR, Suite #0, Vista, CA 92083	Medium		2834	325412	Agua Hedionda
Urgent Signs	2336 La Mirada Dr #1000, Vista, CA 92081	Medium		3933	33995	Agua Hedionda
US Post Office	960 POSTAL WAY, Vista, CA 92084	Medium	X	4311	491110	Buena Vista
Vista Industrial Products Inc	1395 PARK CENTER DR, Vista, CA 92083	Medium		3499	332117	Agua Hedionda
VQS Enterprises, Inc.	1081 Poinsettia Ave., Vista, CA 92083	Medium	X	2759	323115	Agua Hedionda
W5 Machining, Inc.	2365 OAK RIDGE WAY, Vista, CA 92083	Medium		3545	333515	Agua Hedionda
Western Cnc, Inc	1001 PARK CENTER DR, Vista, CA 92083	Medium	X	3999	33271	Agua Hedionda
Youngdale Manufacturing Corp	2449 CADES WAY , Vista, CA 92083	Medium		3429	332510	Agua Hedionda
Low Priority Industrial						
Accelerated Learning International	2420 Grand Ave #D2, Vista, CA 92081	Low		5961	45411	Agua Hedionda
Acells Corp	3121 Scott St , Vista, CA 92081	Low		5099	421990	Agua Hedionda
Advance Micro Components Inc	2475 CORAL ST B, Vista, CA 92083	Low		5063	42161	Agua Hedionda
Agrispect, Inc.	2591 PIONEER AVE #B, Vista, CA 92083	Low		5193	42293	Agua Hedionda
All In One Recon	734 Valley Crest Dr , Vista, CA 92084	Low		1799	23599	Buena Vista
American Legacy Products, Inc.	2575 FORTUNE WAY, Suite #G, Vista, CA 92083	Low		5099	424430	Agua Hedionda
Argosy Industries Inc	2640 BUSINESS PARK DR , Vista, CA 92083	Low		5063	42161	Agua Hedionda
Aschbrenner, Inc. dba Spectrum Floral	2505 Commerce Way, Vista, CA	Low		5193	45311	Agua Hedionda
Austin Doors (same office-Kaylimd	1351 DISTRIBUTION WAY 1, Vista, CA 92085	Low		1751	235510	Agua Hedionda

Business Name	Street Address	Status	Inspected in 06-07	SIC	NAIC	Watershed
B N J Ultraservices, Inc. (Ultra Max)	381 OLIVE AVE, Vista, CA 92083	Low		5169	42269	Buena Vista
Bare Back Skateboards, Inc.	2835 LA MIRADA DR, Suite #B, Vista, CA 92083	Low		5091	421910	Agua Hedionda
Briggs Tree Company Inc	1111 POINSETTIA AVE , Vista, CA 92083	Low		5193	42293	Agua Hedionda
C P C	1126 N. MELROSE , Vista, CA 92083	Low		5099	42199	Buena Vista
Cal Mex Wholesale Growers & Shipper,	2680 La Mirada Dr, Vista, CA 92083	Low		5193	42293	Agua Hedionda
Cal-Americas	2834 LA MIRADA DR , Vista, CA 92081	Low		5193	42293	Agua Hedionda
California Breakers, Inc.	2490 GRAND AVE, Vista, CA 92083	Low		5063	42161	Agua Hedionda
California Specialty Produce	1330 KEYSTONE WAY, Suite #A, Vista, CA 92083	Low		5148	42248	Agua Hedionda
Capitol Paving Inc	408 OLIVE AVE, Vista, CA 92083	Low		1799	23599	Buena Vista
Casa Blanca Products	1255 ACTIVITY DR, Suite #D, Vista, CA 92083-8517	Low		5149	42249	Agua Hedionda
Chalice West	1005 EUCALYPTUS AVE , Vista, CA 92084	Low		5091	42199	Buena Vista
Cms Inc/Spring Parts Div Of Cms Inc.	1341 DISTRIBUTION WAY, Suite #11, Vista, CA	Low		5099	42199	Agua Hedionda
Coastal Express	2680 La Mirada Dr, Vista, CA 92083	Low		5193	42293	Agua Hedionda
Control Technology	2416 CADES WAY , Vista, CA 92083	Low		5063	42161	Agua Hedionda
C-SBI changed to: To West Coast Refrigerated Truck	1330 DISTRIBUTION WAY #B, Vista, CA 92083	Delete - duplicate		5193	42293	Agua Hedionda
D D H Enterprise, Inc	2220 OAK RIDGE WAY , Vista, CA 92083	Low		5063	42161	Agua Hedionda
Dils Roofing	2230 La Mirada Dr, Vista, CA 92081	Low		1761	235610	Agua Hedionda
Dos Gringos	3260 Corporate View Dr., Vista, CA 92081	Low		5193	42293	Agua Hedionda
Edco Distributing Inc	3150 SCOTT ST, Vista, CA 92083	Low		5099	42199	Agua Hedionda
EMS Construction	3160 SCOTT ST , Vista, CA 92081	Low		1761	235610	Agua Hedionda
Exhibitart Displays, Inc.	1250 DISTRIBUTION WAY, Vista, CA 92083	Low		5099	339999	Agua Hedionda
Feng Brothers Usa Group Inc	958 POSTAL WAY 4C, Vista, CA 92083	Low comm	Replaced by DMHP	5091	42199	Buena Vista
Flamingo Holland Inc	1250 AVENIDA CHELSEA , Vista, CA 92081	Low		5193	42293	Agua Hedionda
Francis Biddle International, Inc.	2506 PIONEER AVE , Vista, CA 92083	Low		5193	42293	Agua Hedionda
Freeberg Industrial Fabrication	985 POINSETTIA AVE, Vista, CA 92083	Low		5084	42183	Agua Hedionda
Futuretronix, Inc.	1489 Poinsettia Ave #134, Vista, CA 92081	Low		5065	421690	Agua Hedionda
Gillco Products Inc	1228 KEYSTONE WAY, Vista, CA 92083	Low		5149	42249	Agua Hedionda
Greentrees Hydroponics, Inc.	2581 PIONEER AVE, Suite #D, Vista, CA 92083	Low		5099	42199	Agua Hedionda
H O Quinlan And Associates	755 VENUS VIEW DR , Vista, CA 92083	Low		5091	42199	Buena Vista
Horticultural Sales, Inc.	1330 DISTRIBUTION WAY #E, Vista, CA 92081	Low		5193	42293	Agua Hedionda
H2Odyssey & Ocean Divers USA	975 PARK CENTER DR , Vista, CA 92083	Low		5099	42199	Agua Hedionda
Hippo Golf Company, Inc. (Ca)	2755 DOS AARON WAY, Suite #A, Vista, CA 92083	Low		5091	339920	Agua Hedionda
Horizon Meat & Seafood Of San Diego	980 Park Center Dr #C, Vista, CA 92081	Low		5142	42242	Agua Hedionda
Intaglio Physicians & Surgeons	1260 Avenida Chelsea, Vista, CA 92081	Low		5122	4222	Agua Hedionda

Business Name	Street Address	Status	Inspected in 06-07	SIC	NAIC	Watershed
International Poly Bag, Inc	990 PARK CENTER DR G, Vista, CA 92083	Low		5162	42262	Agua Hedionda
Jeannie Hyde Packaging, Inc.	2442 CADES WAY, VISTA, CA 92083	Low		5085	421840	Agua Hedionda
K.O. Enterprises	512 WCALIFORNIA AVE, Vista, CA 92083	Low		1751	23551	Buena Vista
Key Electronics Mfg	1120 SYCAMORE AVE I, Vista, CA 92083	Low		5063	42161	Agua Hedionda
LA CANTINA DOORS, INC.	1340 Specialty Drive, Suite J, Vista, CA 92081	Low		1751	235510	Agua Hedionda
Less Time & More	1236 Activity Dr #A, Vista, CA 92081	Low		5199	42299	Agua Hedionda
Mc Kenzie Distributing	1330 KEYSTONE WAY D, Vista, CA 92083	Low		5141	42241	Agua Hedionda
Nurserymens Exchange, Inc.	1330 Distribution Way, Suite C, Vista, CA 92081	Low		5193	42293	Agua Hedionda
Oak Tree Vans LTD	1386 Poinsettia Ave., Suite E, Vista, CA 92081	Low		1799	23599	Agua Hedionda
Orlimar Golf Company	1385 PARK CENTER DR , Vista, CA 92083	Low		5091	31-33	Agua Hedionda
Pacific Microcomputers South	2440 GRAND AVE C, Vista, CA 92083	Low comm	replaced by Excel Media Solutons	5063	42161	Agua Hedionda
Palomar Technologies, Inc	2230 OAK RIDGE WAY , Vista, CA 92083	Low		3999	0000	Agua Hedionda
Passion Growers West	1352 Decision St., Vista, Ca 92081	Low		5193	42293	Agua Hedionda
Perfect Equation, Inc	3275 CORPORATE VIEW DR , Vista, CA 92081	Low		5961	454110	Agua Hedionda
Plangea Cutting, L L C	1487 POINSETTIA AVE, Suite #120, Vista, CA 92083	Low		5137	313312	Agua Hedionda
PlusPharma	2460 Coral St, Vista, CA 92081	Low		5122	422210	Agua Hedionda
Poweron	1185 PARK CENTER DR S, Vista, CA 92083	Low		5063	31-33	Agua Hedionda
Prototypworks	1798 CLUB HEIGHTS LN , Vista, CA 92083	Low		1799	23599	Buena Vista
Qed Information Systems	1120 SYCAMORE AVE 2F, Vista, CA 92083-7803	Low		5063	42161	Agua Hedionda
Quality Laser Source, Inc.	1310 N. MELROSE DR C, Vista, CA 92083	Low		5063	42161	Buena Vista
R K Iron Works	1124 N.MELROSE , Suite #203, Vista, CA 92083	Low		5051	42151	Buena Vista
Redline	2510 Commerce Way, Vista, CA 92083	Low		5013	423120	Agua Hedionda
Robert Jury & Associates	2435 Cades Way, Vista, CA 92081	Low		5064	423620	Agua Hedionda
Roma Gourmet Food Ent Of Ca	2825 LA MIRADA DR , Vista, CA 92083	Low		5141	42241	Agua Hedionda
Ruiz Cactus/Javier's	529 Mar Vista, Vista, CA 92083	Low		5193	42293	Agua Hedionda
Semco	1430 VANTAGE CT , Vista, CA 92083-8596	Low		5063	42161	Agua Hedionda
Snacker's Delight, Inc.	1240 ACTIVITY DR C, Vista, CA 92083	Low		5141001	42241	Agua Hedionda
South Coast Components	2440 GRAND AVE C, Vista, CA 92083	Low comm	Replaced by Excel Media Solutons	5063	42161	Agua Hedionda
Spectra Gases Inc	1261 ACTIVITY DR, Vista, CA 92083	Low		5169	42269	Agua Hedionda
Starline Windows	1350 Specialty Dr, B, Vista, CA 92081	Low		1793	235920	Agua Hedionda
Sundance Machinery Sales, Inc.	1489 POINSETTIA AVE, Suite #132, Vista, CA 92083	Low		5084	42183	Agua Hedionda
Sunset Deli Provisions, Inc.	2820 LA MIRADA DR, Vista, CA 92083	Low		5147	42247	Agua Hedionda
Superior Plant Sales Inc	2581 PIONEER AVE #B, Vista, CA 92083	Low		5193	42293	Agua Hedionda

Business Name	Street Address	Status	Inspected in 06-07	SIC	NAIC	Watershed
T R Tropicals Inc	3110 SCOTT ST , Vista, CA 92083	Low	Replaced by Sunrise Farms	5193	42293	Agua Hedionda
Technical Tooling & Gage	2598 FORTUNE WAY, Suite #F, Vista, CA 92083	Low		5051	332999	Agua Hedionda
Tempo Research Corp	1390 ASPEN WAY , Vista, CA 92083	Low		5063	42161	Agua Hedionda
Texmate Inc	995 PARK CENTER DR , Vista, CA 92083	Low		5063	42161	Agua Hedionda
Tritton Technologies, Inc.	1340 Specialty Drive #B, Vista, CA 92081	Low		5045	421430	Agua Hedionda
West Coast Refrigerated Trucking	1330 Distribution Way, Suite B, Vista, CA 92081	Low	X	5193	42293	Agua Hedionda
Wrought Iron Concepts, Inc.	1124 North Melrose Drive, Vista, CA 92083	Low		1799	23599	Buena Vista
Ziphouse, LLC	1330 Specialty Dr, D, Vista, CA 92081	Low		5162	422610	Agua Hedionda
Zuitsports, Inc.	2880 Scott Stree, #101-102, Vista, CA 92081	Low		5136	42232	Agua Hedionda
Potential Medium/Low Priority Industrial						
Abramo Industrial Design & Mfg.	1341 DISTRIBUTION WAY, Suite #21, Vista, CA	Medium	X			Agua Hedionda
Auspex Pharmaceuticals	1261 LIBERTY WAY C, Vista, CA 92083	Low comm			8731009	Agua Hedionda
Bodyworks Inc. (Replaced by Standard Process of S. Ca)	981 PARK CENTER DR , Vista, CA 92083	Low	X		5047015	Agua Hedionda
Crown Industrial Products, Inc.	1785 Park Center DR G, Vista, CA 92083	Medium	X			Agua Hedionda
Fabstall, Inc.	1124 N. Melrose Dr., 203, Vista, CA 92083	Low comm		3312		
Int L Industrial Develop Org	1280 LIBERTY WAY D, Vista, CA 92083	Low comm				Agua Hedionda
M C C Enterprises, Inc	1201 PARK CENTER DR, Vista, CA 92083	Delete - Business not found		5144		Agua Hedionda
Maniatech (replaced by Vision Manufacturing)	1198 JOSHUA WAY , Vista, CA 92083	Medium	X		8734001	Agua Hedionda
Pacific Pride Carwash Co., Inc.	925 Poinsettia Ave., #17, Vista, CA 92083	Moved				
Pro Bio Sensor	2420 Grand Ave., B1, Vista, CA 92081	Low comm		3391		
Scientific Solutions	1260 Activity Dr, D., Vista, CA 92081	Moved			54171	
Structural Materials Co.	2270 La Mirada Dr., Vista, CA 92084	Low	X		42333	
United Site Services Of Ca, Inc.	157 Nettleton Rd., Vista, CA 92083	Potential		493		
Western Tectrix Rv Manufacturing Inc.	2598 FORTUNE WAY G, Vista, CA 92083	Moved			8733008	Agua Hedionda
Concept Machining	1230 Activity Dr. #C, Vista, CA	Medium	X			

Appendix B-2
2007-08 Industrial Inventory

Business Name:	Street Address	SIC	NAICS	Watershed
High Priority Industrial				
American Peptide Company	1271 Avenida Chelsea, Vista, CA 92083	2834	325412	Agua Hedionda
BAE Systems Advanced Ceramics Inc	991 PARK CENTER DR, Vista, CA 92083	3297	327125	Agua Hedionda
BAE Systems, Advanced Ceramics	1960 Watson Way, Vista, CA 92083	3297	327125	Agua Hedionda
C Enterprises, LP	2445 Cades Way, Vista, CA 92081	3357	33592	Agua Hedionda
E&J Stone	795 North Avenue, Suite E, Vista, CA 92081	3281	327991	Loma Alta
E-World Recyclers	2480 Ash Street, Vista, CA 92081	5093	42193	Agua Hedionda
Excellent Coatings Inc	1285 DISTRIBUTION WAY, Vista, CA 92083-8817	2851	325510	Agua Hedionda
Ferro Electronic Materials Systems	1395 ASPEN WAY, Vista, CA 92083	3675	334414	Agua Hedionda
Frito Lay Inc	1390 VANTAGE CT, Vista, CA 92081	4214	484220	Agua Hedionda
Javo Beverage Co.	1311 Specialty Drive, Vista, CA 92081	2095	311920	Agua Hedionda
Jeld-Wen Summit Windows And Patio Doors	2760 PROGRESS ST, Vista, CA 92083	3442	33231	Agua Hedionda
Jensen Meat Co Inc	2525 BIRCH ST, Vista, CA 92083	2013	311613	Agua Hedionda
Lee Steel & Supply	1305 LEE DR, Vista, CA 92081	5051	421510	Agua Hedionda
Lee's Iron Inc	1315 LEE DR, Vista, CA 92083	5093	421930	Agua Hedionda
Osmonics (GE)	760 Shadowridge Dr., Vista, CA 92083	3999	339999	Agua Hedionda
Rayzist Photomask Inc	955 PARK CENTER DR, Vista, CA 92083	3281	327991	Agua Hedionda
Reybro, Inc. dba Quality Recycling	149 NETTLETON RD, Vista, CA 92083	5093	421930	Buena Vista
Roadway Express Inc.	1392 Engineer St, Vista, CA 92083	4212	484110	Agua Hedionda
Shadowridge Water Reclamation Facility	2525 LUPINE HILLS RD, Vista, CA 92083	4952	221320	Agua Hedionda
Versaform Corp	1377 Specialty Dr, Vista, CA 92081	3728	336413	Agua Hedionda
Watkins Manufacturing Corp	1280 PARK CENTER DR, Vista, CA 92083	3088	326191	Agua Hedionda
Westbridge Research Group	1150 JOSHUA WAY, Vista, CA 92081	2879	32532	Agua Hedionda
Medium Priority Industrial				
2s2, Inc.	1330 Specialty Dr #C, Vista, CA 92081	3679	334419	Agua Hedionda
A T Machine	2515 PIONEER AVE, Suite #3, Vista, CA 92083	3599	33271	Agua Hedionda
A W R/Racing Cages	2865 Scott Street #106-107, Vista, CA 92081	3711	336211	Agua Hedionda
Abramo Industrial Design and Manufacturing	1351 Distribution Way #4, Vista, CA 92081	2434	33711	Agua Hedionda
Accutech, LLC	2641 LA MIRADA DR, Vista, CA 92083	2835	325413	Agua Hedionda
Advance Web Offset, Inc.	2260 Oak Ridge Way, Vista, CA 92081	2752	323110	Agua Hedionda
Aea Wireless, Inc.	1489 POINSETTIA AVE 134, Vista, CA 92083	3679	334418	Agua Hedionda
Aero Vision International	2780 LA MIRADA DR, Suite #C, Vista, CA 92083	3724	336412	Agua Hedionda
Air Tech Streamlining	2530 FORTUNE WAY, Vista, CA 92083	3714	000000	Agua Hedionda
Alvarado Micro-Precision	2475 CORAL ST, Suite #C, Vista, CA 92083	3499	332999	Agua Hedionda
American Faucet & Coatings Corp	3280 CORPORATE VIEW DR, Vista, CA 92083	3499	33251	Agua Hedionda
American Metal Packaging Company	1185 PARK CENTER DR, Suite #C, Vista, CA 92083	3674	42161	Agua Hedionda

Business Name:	Street Address	SIC	NAICS	Watershed
Aperio Technologies, Inc.	1430 VANTAGE CT 106, Vista, CA 92083	3826	334516	Agua Hedionda
Apollo Sprayers Inc	1030 JOSHUA WAY, Vista, CA 92083	3999	339999	Agua Hedionda
Applied Control Concepts / CNC Dynamics	1209 Activity Dr , Vista, CA 92081	3599	332710	Agua Hedionda
Applied Membranes, Inc.	2325 COUSTEAU CT, Vista, CA 92083	3589	333319	Agua Hedionda
Applied Technology Co.	1280 LIBERTY WAY, Vista, CA 92083	3999	339999	Agua Hedionda
Armorcraft Off-Road Corp	2312 La Mirada Drive, Vista, CA 92081	3711	336111	Agua Hedionda
Arshia Custom Cabinet	2525 Pioneer Ave, #5, Vista, CA 92081	2434	337110	Agua Hedionda
B & C Nutritional Products Inc	2550 PIONEER AVE, Vista, CA 92083	2834	325412	Agua Hedionda
B/E Aerospace	2555 BIRCH ST, Vista, CA 92083	3599	33271	Agua Hedionda
Bekaert Progressive Composites	2455 ASH St, Vista, CA 92083	3089	326199	Agua Hedionda
Bendmac Manufacturing	440 OLIVE AVE, Suite #P, Vista, CA 92084	3498	332996	Buena Vista
Bilandzija Cabinets	2588 PROGRESS ST, Suite #5, Vista, CA 92083	2434	33711	Agua Hedionda
BOJ	611 MERCANTILE STREET, VISTA, CA 92083	2434	337110	Buena Vista
Bravo Screen Print	1230 Activity Rd #D, Vista, CA 92081	2759	323113	Agua Hedionda
Bristol S.G., Inc.	2525 PIONEER AVE, Suite #6, Vista, CA 92083	3679	339999	Agua Hedionda
Bruning Engineering Inc	2598 FORTUNE WAY, Suite #M, Vista, CA 92083	3499	332117	Agua Hedionda
C N C Precision Machining	797 NORTH AVE, Suite #C, Vista, CA 92083	3599	33271	Loma Alta
Caldwell Development Inc	1271 ACTIVITY DR, Vista, CA 92083	3519	42199	Agua Hedionda
Carlsbad Custom Cabinets	1341 DISTRIBUTION WAY, Suite #14, Vista, CA 92083	2434	33711	Agua Hedionda
CH Products	970 PARK CENTER DR , Vista, CA 92083	3699	333319	Agua Hedionda
Closet World Inc.	1335 PARK CENTER DR, Suite #A, Vista, CA 92083	2521	23551	Agua Hedionda
Coast Intelligen, Inc.	2460 ASH ST, Vista, CA 92083	3621	335312	Agua Hedionda
Concept Machining	1230 Activity Dr #C, Vista, CA 92081	3599	33271	Agua Hedionda
Cookies Con Amore	2330 La Mirada Dr #700, Vista, CA 92081	2052	311821	Agua Hedionda
Cornerstone Sensors Inc	1304 N.MELROSE DR, Suite #C, Vista, CA 92083	3676	334415	Loma Alta
Cousins Signs Inc	350 E.BROADWAY, Vista, CA 92084	3993	33995	Buena Vista
Creative Printing	1132 N.MELROSE DR, Vista, CA 92083	2759	323112	Buena Vista
Crown Industrial Products, Inc.	2440 La Mirada Dr., Vista, CA 92081	3714	33634	Agua Hedionda
C-Shoes	797 NORTH AVE, Suite #D, Vista, CA 92083	3499	332117	Loma Alta
Csi Technologies, Inc.	2595 COMMERCE Way, Vista, CA 92083	3629	335999	Agua Hedionda
Custom Machined Products	1338 N.MELROSE DR, Suite #E, Vista, CA 92083	3499	332117	Loma Alta
D J Orthopedics, L L C	2985 SCOTT ST, Vista, CA 92083	3482	334510	Agua Hedionda
Dart Plastics & Engineering, Inc.	1240 ACTIVITY DR, Suite #A, Vista, CA 92083	3808	326199	Agua Hedionda
Dime Water, Inc.	2575 FORTUNE WAY, Suite #J, Vista, CA 92083	3589	333319	Agua Hedionda
Distinctive Plastics, Inc.	1385 DECISION ST, Vista, CA 92085	3089	326199	Agua Hedionda
Diversified Manufacturing Of Ca	2555 PROGRESS ST, Vista, CA 92083	3999	339999	Agua Hedionda

Business Name:	Street Address	SIC	NAICS	Watershed
Diversified Tool & Die	2585 BIRCH ST, Vista, CA 92083	3469	332116	Agua Hedionda
Douglas Wheel, Inc.	1340 N.MELROSE DR, Vista, CA 92083	3714	336399	Loma Alta
Dutek Inc.	2248 OAK RIDGE WAY , Vista, CA 92083	3679	334418	Agua Hedionda
Earthlite Massage Tables Inc dba	3210 EXECUTIVE RIDGE DR , Vista, CA 92083	2599	3371	Agua Hedionda
Eaton Leonard Robolix, Inc	1391 SPECIALTY DR, Suite #A, Vista, CA 92083	3542	333513	Agua Hedionda
Econo Plastics, Inc. (Progressive Molding)	1210 N.MELROSE DR, Suite #A, Vista, CA 92083	3089	326199	Loma Alta
Elite Metal Finishing	1392 POINSETTIA AVE, Suite #C, Vista, CA 92083	3471	332813	Agua Hedionda
F&T Precision Products	980 PARK CENTER DR, Suite #I, Vista, CA 92083	3599	33271	Agua Hedionda
Fax Foods	1392 POINSETTIA AVE, Suite #A&B, Vista, CA 92083	3089	321699	Agua Hedionda
Fish House Foods, Inc.	3285 CORPORATE VIEW DR, Vista, CA 92083	5149	42249	Agua Hedionda
Flotron	2485 CORAL ST, Vista, CA 92083	3999	339999	Agua Hedionda
Francis P. Gallo Services	323 E. BROADWAY F, Vista, CA 92084	2759033	51411	Buena Vista
Funktion	1930 WATSON WAY, Suite #P, Vista, CA 92083	3999	339999	Agua Hedionda
Graphic Converting, Inc.	1370 DECISION ST, Vista, CA 92083	2657	322212	Agua Hedionda
Grilla	1235 Activity Dr Ste F, Vista, CA 92081			Agua Hedionda
H F Johnston Mfg. Co.	2475 ASH ST, Vista, CA 92083	3599	332999	Agua Hedionda
H2O F/X	1230 Activity Drive E & F, Vista, CA 92081	3444	332322	Agua Hedionda
Hi Rez Digital Solutions	1235 Activity Drive, Suite #E, Vista, CA 92081	2759	323115	Agua Hedionda
Hi Tech Swiss Machining Inc	2410 LA MIRADA DR, Vista, CA 92083	3599	332117	Agua Hedionda
Horstman Manufacturing Co Inc	2510 PIONEER AVE, Vista, CA 92083	3799	336999	Agua Hedionda
HRE Performance Wheels	2611 Commerce Way Suite D, Vista, CA 92081	3714	336399	Agua Hedionda
Hudson Printing, Inc.	1497 Poinsettia Ave, #153, Vista, CA 92081	2759	323110	Agua Hedionda
Hydrocomponents & Technologies, Inc.	1175 PARK CENTER DR, Suite #H, Vista, CA 92083	3999	339999	Agua Hedionda
I C P America, Inc.	1070 JOSHUA WAY , Vista, CA 92083	3676	334415	Agua Hedionda
I W Technologies, Inc.	2446 CADES WAY, Vista, CA 92083	3999	333319	Agua Hedionda
IDL Tech Tools	2438 Cades Way, Vista, CA 92084	3423	332212	Agua Hedionda
Intellectual Technology, Inc.	1040 JOSHUA WAY, Vista, CA 92083	3577	334418	Agua Hedionda
J & D Laboratories	2640 PROGRESS ST, Vista, CA 92083	2834	325412	Agua Hedionda
J Mark Manufacturing Inc	2480 CORAL , Suite #C, Vista, CA 92083	3499	332312	Agua Hedionda
Jeld Wen Co. Warehouse	935 Poinsettia Ave, Vista, CA 92083	4225	493110	Agua Hedionda
Jif-Pak Manufacturing, Inc.	1451 ENGINEER ST, Vista, CA 92083	3999	31-33	Agua Hedionda
Killion Industries Inc	1380 POINSETTIA AVE, Vista, CA 92083	2541	337215	Agua Hedionda
Killion Industries, Inc.	2811 La Mirada Drive, Vista, CA 92083	2541	337215	Agua Hedionda
Lemken Kuhlwerk	2330 La Mirada Dr Suite 200, Vista, CA 92081	2434	337110	Agua Hedionda
Lightwave Audio Systems, Inc.	1384 POINSETTIA AVE, Suite #F, Vista, CA 92083	3679	3343	Agua Hedionda
M Klemme Technology, Corp	1386 POINSETTIA AVE, Suite #A, Vista, CA 92083	3499	332999	Agua Hedionda

Business Name:	Street Address	SIC	NAICS	Watershed
M M Precision Machining	2525 PIONEER AVE, Suite #4, Vista, CA 92083	3345	333515	Agua Hedionda
Magna Coatings Corp	1440 Decision Street, Vista, CA 92083	2851	32551	Agua Hedionda
Magnacore Inc.	1386 POINSETTIA AVE, Suite #B, Vista, CA 92083	3999	339999	Agua Hedionda
Manzo's Metal Works	797 North Avenue, #D, Vista, CA 92081	3599	332710	Loma Alta
Martin Enterprises	3235 EXECUTIVE RIDGE DR, Vista, CA 92083	3599	33271	Agua Hedionda
Meridian Laboratory Inc	1330 N.MELROSE DR, Suite #E, Vista, CA 92083	3499	332999	Loma Alta
Micronel U.S.	1280 LIBERTY WAY , Vista, CA 92083	3999	31-33	Agua Hedionda
Mihal Enterprises dba JT- Designs	1250 Activity Dr # E, Vista, CA 92081	3599	332710	Agua Hedionda
Minor Fab	1205 N. Melrose Suite M, Vista, CA 92084	3499	332999	Loma Alta
Modern Medical Supply	1235 Activity Drive, F, Vista, CA 92083	2599	339111	Agua Hedionda
Natural Alternatives Int'l Inc	1215 PARK CENTER DR, Vista, CA 92081	2833	325411	Agua Hedionda
NML, LLC	2575 Pioneer Ave. Suite 105, Vista, CA 92081	3999	339999	Agua Hedionda
Nutritional Engineering Inc.	1208 AVENIDA CHELSEA, Vista, CA 92083	2834	325412	Agua Hedionda
Oem Production LLC	2875 Scott St 101-102, Vista, CA 92081	3949	339922	Agua Hedionda
Orthodontic Design & Production, Inc.	1370 DECISION ST Suite D, Vista, CA 92081	3843	339114	Agua Hedionda
Outreach Inc	2230 Oak Ridge Way, Vista, CA 92081	2759	323119	Agua Hedionda
Pacific Aero Press	1133 LARK HILL DR , Vista, CA 92084	2731	51113	Buena Vista
Pacific Ceet, Inc.	1220 LIBERTY WAY, Vista, CA 92083	3999	31-33	Agua Hedionda
Pacific Dream Enterprises, Inc.	1351 DISTRIBUTION WAY, Suite #4, Vista, CA 92083	2511	337122	Agua Hedionda
Pacific Stair Products	2241 La Mirada Drive, Vista, CA 92081	2541	337212	Agua Hedionda
Palmac Design & Manufacturing	2445 LA MIRADA DR, Vista, CA 92083	3499	332117	Agua Hedionda
Phoenix Wheel Company, Inc. (HRE Performance)	2453 CADES WAY, Suite #A, Vista, CA 92083	3499	336999	Agua Hedionda
Pixel Imaging Media	2595 Fortune Way, Vista, CA 92081	2759	323119	Agua Hedionda
Power Craft Autoparts	452 OLIVE , Suite #L, Vista, CA 92084	3999	339999	Buena Vista
Pozza Manufacturing Inc.	1185 PARK CENTER DR, Suite #Q, Vista, CA 92083	3599	333999	Agua Hedionda
Precise Manufacturing	1495 POINSETTIA AVE, Suite #148, Vista, CA 92083	3599	33271	Agua Hedionda
Print House Inc	2630 PROGRESS ST, Vista, CA 92083	2759	323113	Agua Hedionda
Print Inc	1225 PARK CENTER DR, Suite #A, Vista, CA 92083	2759	323113	Agua Hedionda
Pro Designer Plastics Inc Pdp	1260 LIBERTY WAY, Suite #D, Vista, CA 92083	3089	326199	Agua Hedionda
Promach	2438 Cades Way, Vista, CA 92081	3599	33271	Agua Hedionda
Proteus Dimensional Technologies, Inc	1260 Distribution Way, Vista, CA 92083	3999	339999	Agua Hedionda
Quality Discount Ice Cream Inc	2465 CORAL ST, Vista, CA 92081	4214	484220	Agua Hedionda
Quantum Focus Instruments	990 PARK CENTER DR D, Vista, CA 92083	3826	3345	Agua Hedionda
R Jesse & Company Inc	1226 KEYSTONE WAY, Vista, CA 92083	3645	335122	Agua Hedionda
Ray Allen Company, Inc.	2525 PIONEER AVE 8, Vista, CA 92081	3593	333995	Agua Hedionda
Renee Machine, Inc.	1185 PARK CENTER DR, Suite #E, Vista, CA 92083	3499	332117	Agua Hedionda

Business Name:	Street Address	SIC	NAICS	Watershed
Sandel Avionics, Inc.	2401 DOGWOOD WAY , Vista, CA 92081	3812	334511	Agua Hedionda
Seber Tech L L C	2438 CADES WAY , Vista, CA 92083	3999	332999	Agua Hedionda
Security Systems, Inc	2585 FORTUNE WAY, B, Vista, CA 92081	3629	335999	Agua Hedionda
Sherline Products, Inc.	3235 EXECUTIVE RIDGE DR , Vista, CA 92083-8257	3499	332999	Agua Hedionda
Skylark Sport Marketing dba, Prana	3275 Corporate View, Vista, CA 92081	2329	315228	Agua Hedionda
Speedy Cut Inc	2565 PROGRESS ST, Vista, CA 92083	3499	332117	Agua Hedionda
Stines Machine Inc	2481 CORAL ST, Vista, CA 92083	3599	332710	Agua Hedionda
STINKY FAB.	2588 Progress Street, #15, Vista, CA 92081	3499	3329999	Agua Hedionda
Tech 22	1160 JOSHUA WAY, Vista, CA 92083	3679	334418	Agua Hedionda
Tecxel/R Zamora Corp.	2826 LA MIRADA DR, Suite #D, Vista, CA 92083	3599	33271	Agua Hedionda
Tedco Tool	1175 PARK CENTER DR, Suite #C, Vista, CA 92084	3728	336413	Agua Hedionda
The Art Of Coffee, Inc.	1311 SPECIALTY DR, Vista, CA 92083	2095	311920	Agua Hedionda
The Pressroom	843 WILLIAMSTON ST , Vista, CA 92084	2759	323112	Buena Vista
Tri Digital	1495 POINSETTIA AVE, Suite #144, Vista, CA 92083	2759	32311	Agua Hedionda
Trinity Innovations	1250 KEYSTONE WAY, Vista, CA 92083	3993	339999	Agua Hedionda
U S I Inc.	1185 PARK CENTER DR, Suite #0, Vista, CA 92083	2834	325412	Agua Hedionda
Urgent Signs	2336 La Mirada Dr #1000, Vista, CA 92081	3933	33995	Agua Hedionda
US Post Office	960 POSTAL WAY, Vista, CA 92084	4311	491110	Buena Vista
V Q S Enterprises, Inc.	1081 POINSETTIA AVE, Vista, CA 92083	2759	32311	Agua Hedionda
Vision Manufacturing Inc	1198 Joshua Way, Vista, CA 92081	3672	334412	Agua Hedionda
Vista Industrial Products Inc	1395 PARK CENTER DR, Vista, CA 92083	3499	332117	Agua Hedionda
W5 Machining, Inc.	2365 OAK RIDGE WAY, Vista, CA 92083	3545	333515	Agua Hedionda
Western Cnc, Inc	1001 PARK CENTER DR, Vista, CA 92083	3599	33271	Agua Hedionda
Youngdale Manufacturing Corp	2449 CADES WAY , Vista, CA 92083	3429	332510	Agua Hedionda
Low Priority Industrial				
Accelerated Learning International	2420 Grand Ave #D2, Vista, CA 92081	5961	45411	Agua Hedionda
Acells Corp	3121 Scott St , Vista, CA 92081	5099	421990	Agua Hedionda
Advance Micro Components Inc	2475 CORAL ST B, Vista, CA 92083	5063	42161	Agua Hedionda
Agrispect, Inc.	2591 PIONEER AVE #B, Vista, CA 92083	5193	42293	Agua Hedionda
American Horticultural Supply, Inc.	1345 Specialty Dr #A, Vista, CA 92081	5193	42293	Agua Hedionda
American Legacy Products, Inc.	2575 FORTUNE WAY, Suite #G, Vista, CA 92083	5099	424430	Agua Hedionda
Argosy Industries Inc	2640 BUSINESS PARK DR , Vista, CA 92083	5063	42161	Agua Hedionda
Aschbrenner, Inc. dba Spectrum Floral Service	2505 Commerce Way, Vista, CA 92083-8441	5193	45311	Agua Hedionda
Austin Doors (same office-Kaylimd Commercial Contr	1351 DISTRIBUTION WAY 1, Vista, CA 92085	1751	235510	Agua Hedionda
B N J Ultraservices, Inc. (Ultra Max)	381 OLIVE AVE, Vista, CA 92083	5169	42269	Buena Vista
Bare Back Skateboards, Inc.	2835 LA MIRADA DR, Suite #B, Vista, CA 92083	5091	421910	Agua Hedionda

Business Name:	Street Address	SIC	NAICS	Watershed
C P C	1126 N. MELROSE , Vista, CA 92083	5099	42199	Buena Vista
Cal Mex Wholesale Growers & Shipper, Inc	2680 La Mirada Dr, Vista, CA 92083	5193	42293	Agua Hedionda
Cal-Americas	2834 LA MIRADA DR , Vista, CA 92081	5193	42293	Agua Hedionda
California Breakers, Inc.	2490 GRAND AVE, Vista, CA 92083	5063	42161	Agua Hedionda
California Specialty Produce	1330 KEYSTONE WAY, Suite #A, Vista, CA 92083	5148	42248	Agua Hedionda
Capitol Paving Inc	408 OLIVE AVE, Vista, CA 92083	1799	23599	Buena Vista
Casa Blanca Products	1255 ACTIVITY DR, Suite #D, Vista, CA 92083-8517	5149	42249	Agua Hedionda
Chalice West	1005 EUCALYPTUS AVE , Vista, CA 92084	5099	42199	Buena Vista
Cms Inc/Spring Parts Div Of Cms Inc.	1341 DISTRIBUTION WAY, Suite #11, Vista, CA 92083	5099	42199	Agua Hedionda
Coastal Express	2680 La Mirada Dr., Vista, CA 92081	unassigned		Agua Hedionda
Control Technology	2416 CADES WAY , Vista, CA 92083	5063	42161	Agua Hedionda
D D H Enterprise, Inc	2220 OAK RIDGE WAY , Vista, CA 92083	5063	42161	Agua Hedionda
Dils Roofing	2230 La Mirada Dr, Vista, CA 92081	1761	235610	Agua Hedionda
Dos Gringos	3260 Corporate View Dr., Vista, CA 92081	unassigned		Agua Hedionda
Edco Distributing Inc	3150 SCOTT ST, Vista, CA 92083	5099	42199	Agua Hedionda
EMS Construction	3160 SCOTT ST , Vista, CA 92081	1761	235610	Agua Hedionda
Exhibitart Displays, Inc.	1250 DISTRIBUTION WAY, Vista, CA 92083	5099	339999	Agua Hedionda
Flamingo Holland Inc	1250 AVENIDA CHELSEA , Vista, CA 92081	5193	42293	Agua Hedionda
Francis Biddle International, Inc.	2506 PIONEER AVE , Vista, CA 92083	5193	42293	Agua Hedionda
Freeberg Industrial Fabrication	985 POINSETTIA AVE, Vista, CA 92083	5084	42183	Agua Hedionda
Futuretronix, Inc.	1489 Poinsettia Ave #134, Vista, CA 92081	5065	421690	Agua Hedionda
Gillco Products Inc	1228 KEYSTONE WAY, Vista, CA 92083	5149	42249	Agua Hedionda
Greentrees Hydroponics, Inc.	2581 PIONEER AVE, Suite #D, Vista, CA 92083	5099	42199	Agua Hedionda
H O Quinlan And Associates	755 VENUS VIEW DR , Vista, CA 92083	5099	42199	Buena Vista
H2Odyssey & Ocean Divers USA	975 PARK CENTER DR , Vista, CA 92083	5099	42199	Agua Hedionda
Hippo Golf Company, Inc. (Ca)	2755 DOS AARON WAY, Suite #A, Vista, CA 92083	5091	339920	Agua Hedionda
Horizon Meat & Seafood Of San Diego	980 Park Center Dr #C, Vista, CA 92081	5142	42242	Agua Hedionda
Horticultural Sales, Inc.	1330 DISTRIBUTION WAY #E, Vista, CA 92081	5193	42293	Agua Hedionda
Intaglio Physicians & Surgeons	1260 Avenida Chelsea, Vista, CA 92081	5122	4222	Agua Hedionda
International Poly Bag, Inc	990 PARK CENTER DR G, Vista, CA 92083	5162	42262	Agua Hedionda
Jeannie Hyde Packaging, Inc.	2442 CADES WAY, VISTA, CA 92083	5085	421840	Agua Hedionda
Joseph Webb Foods Inc	1201 PARK CENTER DR, Vista, CA 92083	5142	422420	Agua Hedionda
K.O. Enterprises	512 WCALIFORNIA AVE, Vista, CA 92083	1751	23551	Buena Vista
Key Electronics Mfg	1120 SYCAMORE AVE I, Vista, CA 92083	5063	42161	Agua Hedionda
La Cantina Doors, Inc.	1340 Specialty Drive, Suite J, Vista, CA 92081	1751	235510	Agua Hedionda
Less Time & More	1236 Activity Dr #A, Vista, CA 92081	5199	42299	Agua Hedionda

Business Name:	Street Address	SIC	NAICS	Watershed
Mc Kenzie Distributing	1330 KEYSTONE WAY D, Vista, CA 92083	5141	42241	Agua Hedionda
Nurserymens Exchange, Inc.	1330 Distribution Way Suite C, Vista, CA 92081	unassigned		Agua Hedionda
OakTree Vans LTD	1386 Poinsettia Ave., Suite E, Vista, CA 92081	1799	23599	Agua Hedionda
Orlimar Golf Company	1385 PARK CENTER DR , Vista, CA 92083	5091	31-33	Agua Hedionda
Passion Growers West	1352 Decision St., Vista, CA 92081	unassigned		Agua Hedionda
Perfect Equation, Inc	3275 CORPORATE VIEW DR , Vista, CA 92081	5961	454110	Agua Hedionda
Plangea Cutting, L L C	1487 POINSETTIA AVE, Suite #120, Vista, CA 92083	5137	313312	Agua Hedionda
PlusPharma	2460 Coral St, Vista, CA 92081	5122	422210	Agua Hedionda
Poweron	1185 PARK CENTER DR S, Vista, CA 92083	5063	31-33	Agua Hedionda
Prototypworks	1798 CLUB HEIGHTS LN , Vista, CA 92083	1799	23599	Agua Hedionda
Qed Information Systems	1120 SYCAMORE AVE 2F, Vista, CA 92083-7803	5063	42161	Agua Hedionda
Quality Laser Source, Inc.	1310 N. MELROSE DR C, Vista, CA 92083	5063	42161	Loma Alta
R K Iron Works	1124 N.MELROSE , Suite #203, Vista, CA 92083	5051	42151	Buena Vista
Redline	2510 Commerce Way, Vista, CA 92083	5013	423120	Agua Hedionda
Robert Jury & Associates	2435 Cades Way, Vista, CA 92081	5064	423620	Agua Hedionda
Roma Gourmet Food Ent Of Ca	2825 LA MIRADA DR , Vista, CA 92083	5141	42241	Agua Hedionda
Rosa Gonzales Plants Inc	377 OLIVE AVE , Vista, CA 92083	5193	42293	Buena Vista
Semco	1430 VANTAGE CT , Vista, CA 92083-8596	5063	42161	Agua Hedionda
Spectra Gases Inc	1261 ACTIVITY DR, Vista, CA 92083	5169	42269	Agua Hedionda
Standard Process of Southern California Inc.	981 Park Center Drive, Vista, CA 92081	5199	42299	Agua Hedionda
Starline Windows	1350 Specialty Dr, B, Vista, CA 92081	1793	235920	Agua Hedionda
Structural Materials Co.	2770 La Mirada Drive, Vista, CA 92084	5039	42139	Agua Hedionda
Sundance Machinery Sales, Inc.	1489 POINSETTIA AVE, Suite #132, Vista, CA 92083	5084	42183	Agua Hedionda
Sunrise Farms	9110 Scott St., Vista, CA 92083			Agua Hedionda
Sunset Deli Provisions, Inc.	2820 LA MIRADA DR, Vista, CA 92083	5147	42247	Agua Hedionda
Superior Plant Sales Inc	2581 PIONEER AVE #B, Vista, CA 92083	5193	42293	Agua Hedionda
Technical Tooling & Gage	2598 FORTUNE WAY, Suite #F, Vista, CA 92083	5051	332999	Agua Hedionda
Tempo Research Corp	1390 ASPEN WAY , Vista, CA 92083	5063	42161	Agua Hedionda
Texmate Inc	995 PARK CENTER DR , Vista, CA 92083	5063	42161	Agua Hedionda
Tritton Technologies, Inc.	1340 Specialty Drive #B, Vista, CA 92081	5045	421430	Agua Hedionda
West Coast Refrigerated Trucking	1330 Distribution Way Suite B, Vista, CA 92081	4789	488999	Agua Hedionda
Wrought Iron Concepts, Inc.	1124 North Melrose Drive, Vista, CA 92083	1799	23599	Buena Vista
Ziphouse, LLC	1330 Specialty Dr, D, Vista, CA 92081	5162	422610	Agua Hedionda
Zuitsports, INC.	2880 Scott Stree, #101-102, Vista, CA 92081	5136	42232	Agua Hedionda

Report of Stormwater Noncompliance that may Endanger Health or the Environment

VISTA WATER QUALITY PROTECTION PROGRAM

Noncompliance Incident Description

INCIDENT DATE: _____ TIME: _____ DURATION: _____

LOCATION OF INCIDENT: _____

RESPONSIBLE PARTY NAME: _____PHONE: _____

RESPONSIBLE PARTY ADDRESS: _____

LAW ENFORCEMENT CALLED?: ☐ Y ☐ N REPORT NO: _____ OFFICER NAME: _____

FIRE DEPARTMENT RESPONDED?: ☐ Y ☐ N REF. NO: _____ DEH-HIRT CALLED TO RESPOND? ☐ Y ☐ N

DESCRIPTION OF NONCOMPLIANCE (pollutants discharged, amounts, source, water impacted, etc.):

_____

_____

_____

_____

CAUSE OF THE NONCOMPLIANCE OR UNAUTHORIZED RELEASE:

_____

_____

_____

Section I - Evaluation

CRITERIA	Y	N	N/A	COMMENTS
Sediment discharge observed that could impact wildlife, sensitive habitat, an impaired water body (303d listed), OR an ESA? *If YES, describe the evidence of the discharge (turbidity, TSS), and estimate the sediment load discharged from the site.*				
Toxic materials or hazardous substances discharged from the site that could impact water quality? *If YES, describe the evidence of the discharge, material, estimated volume, proximity to storm drain, water or sensitive habitat.*				
Other discharge or noncompliance that may endanger health or the environment? *If yes, describe.*				
Did the discharge enter a storm drain? Did the discharge enter a receiving water body? *If yes, provide name*.				

City of Vista
600 Eucalyptus Avenue, Vista, CA 92084
Phone: (760) 726-1340

DESCRIPTION OF ACTIONS TAKEN TO MITIGATE THE RELEASE OR CORRECT THE NONCOMPLIANCE:

_____

_____

_____

_____

DESCRIPTION OF ACTIONS TAKEN TO MITIGATE THE RELEASE OR CORRECT THE NONCOMPLIANCE:

_____

_____

_____

DESCRIPTION OF ENFORCEMENT ACTIONS TAKEN – and DATES TAKEN:

_____

_____

_____

Section II
FOR WATER QUALITY PROGRAM MANAGER or DESIGNATED REPRESENTATIVE ONLY

1. Contact the RWQCB by telephone within 24-hours of the discovery of non-compliance.
2. Fax a copy of this form to the RWQCB within 5 days of the discovery of non-compliance.

   San Diego Regional Water Quality Control Board Fax Number: (858) 571-6972

Date When City Became Aware: _____ **Date When RWQCB Contacted by Phone:** _____

Name and Telephone Number of RWQCB Contact _____

Date when written report faxed to RWQCB _____

Signed: _____ Date: _____

Program Manager or Designated Representative

City of Vista
600 Eucalyptus Avenue, Vista, CA 92084
Phone: (760) 726-1340

APPENDIX C

C-1 UPDATED 2007-2008 COMMERCIAL INVENTORY

C-2 COMMERCIAL FACILITY FOLLOW-UP INSPECTIONS

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
(a) Auto repair, maintenance, fueling, cleaning					
A 1 Vista Repair	916 Postal Way, Vista, CA 92083		7538	811111	Buena Vista
A Smog Test Only	414 N. Santa Fe Ave, Suite A, Vista, CA 92083		7549	811198	Buena Vista
A+ Automotive	257 N Emerald Dr #A, Vista, CA 92083		7538	811111	Buena Vista
A-1 Radiator	1903 West Vista Way, Suite C, Vista, CA 92083		7539	811118	Buena Vista
AA Marine	901 West Vista Way, Vista, CA 92084		5551	441222	Buena Vista
A-B-C Smog	1415 South Santa Fe Ave, Vista, CA 92084		7549	811198	Buena Vista
Adams Automotive	158 Olive Ave, Suite A, Vista, CA 92083		7549	488410	Buena Vista
Advance Auto Center	1352 N. Melrose, Suites L-K, Vista, CA 92083		7538	811111	Loma Alta
AJ Smog	660 E Vista Way, Vista, CA 92084		7549	811198	Buena Vista
All Tune & Lube	257 N Emerald Drive, Suite B, Vista, CA 92083		7538	811111	Buena Vista
Allen's Auto	718 East Vista Way, Vista, CA 92084	X	7538	811111	Buena Vista
Alta Mechanic	446 Olive Ave Suite F & G, Vista, CA 92083		7538	811111	Buena Vista
Andy's Automotive Specialist	1069 South Santa Fe Avenue, Vista, CA 92083		7536	811122	Buena Vista
Auto Diagnostic Repair	1752 E Vista Way, Vista, CA 92084		7538	811111	Buena Vista
Auto Precision	1024 Service Place, Suite 101, Vista, CA 92084		7538	811111	Buena Vista
Auto Smog	2070 Hacienda Dr Suite J, Vista, CA 92081		7549	811198	Buena Vista
Auto Spa	851 W. VISTA WAY , Vista, CA 92083		7542	811192	Buena Vista
Autocare USA	414 N. Santa Fe Ave, Suites B & C, Vista, CA 92083	X	7538	811111	Buena Vista
Autotyme Automotive, Inc.	1146 North Melrose Drive, #801, Vista, CA 92083	X	7538	811111	Buena Vista
B & C Auto Repair	918 Postal Way, Vista, CA 92083		7538	811111	Buena Vista
B & D Auto Repair and Service	1350 North Melrose Drive, Vista, CA 92083		7538	811111	Loma Alta
BANKER DIRECT AUTO SALES	536 N. SANTA FE AVE., VISTA, CA 92083	X	5521	44112	Buena Vista
Big O Tires	636 South Santa Fe Avenue, Vista, CA 92084		7549	811198	Buena Vista
Bob Workman's European Auto Service	1304 North Melrose Drive, Suite A, Vista, CA 92083		7538	811111	Loma Alta
British Masters	715 Mercantile Street, Vista, CA 92083		7538	811111	Buena Vista
Budget Smog	1205 North Melrose Drive, Suite G, Vista, CA 92083		7538	811111	Loma Alta
Budget Smog Test Only Center	538 Olive Ave 300-C, Vista, CA 92083		7549	811198	Buena Vista
CESAR'S AUTO MECHANICS	452 Olive Ave, Suite L, Vista, CA 92083		7538	811111	Buena Vista
Clutchworks	1205 North Melrose Drive, Suite D, Vista, CA 92083		7537	811113	Loma Alta
Corona Used Tires/AJ Smog	658-660 E VISTA WAY, VISTA, CA 92084, Vista, CA 92084		7534	811198	Buena Vista
Courtesy Auto Repair	826 N. Santa Fe Ave, Vista, CA 92083		7538	811111	Buena Vista
Cox Auto Service	1018 Service Place, Vista, CA 92084		7538	811111	Buena Vista
Dion's Automotive	1210 N. Melrose Drive, Suite D, Vista, CA 92083		7538	81111	Loma Alta
Discount Alignment	1024 Service Place, Suite 100, Vista, CA 92084		7538	811111	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Discount Tire Co., Inc.	1007 Service Place, Vista, CA 92083		5531	441320	Buena Vista
Drew's Automotive Repair	538 OLIVE AVE., SUITE D, VISTA, CA 92083, Vista, CA 92083		7538	811111	Buena Vista
Drift Tech / Discount Towing and Auto Repair	635 Mercantile ST # C, Vista, CA 92083		7538	811111	Buena Vista
Driveline Vista	253 North Emerald Drive, Suite A & B, Vista, CA 92083		7538	811118	Buena Vista
Euro Pacific Paint & Body	1210 N. Melrose Drive, Suite B, Vista, CA 92083		7532	811121	Loma Alta
Euro Pacific, Inc.	1210 North Melrose Drive, Suite B, Vista, CA 92083		7532	811121	Loma Alta
European Motorsports	2588 Progress Street, Suite 11, Vista, CA 92081		7538	811111	Agua Hedionda
Evans Tire & Service Center	865 E VISTA WAY, VISTA, CA 92084, Vista, CA 92084		7534	811198	Buena Vista
Evans Tire & Service Centers	2070 Hacienda Drive, Suite A, Vista, CA 92083		7534	811198	Buena Vista
Express Tire & Certified Auto Service	2030 Hacienda Drive, Suite 100, Vista, CA 92083		7538	811111	Buena Vista
EZ Lube	786 E VISTA WAY, VISTA, CA 92084, Vista, CA 92084		7549	811191	Buena Vista
F Piersalls Vista Buggy Bath	1759 E. VISTA WAY , Vista, CA 92083		7542	811192	Buena Vista
FDO Auto Service	446 Olive Avenue, Suite A, Vista, CA 92083		7538	811111	Buena Vista
Fernando Sons Fer's Auto Repair	446 Olive Avenue, Suite F, Vista, CA 92083		7538	811111	Buena Vista
Fountain Car Wash	1352 N. SANTA FE AVE , Vista, CA 92083		7542	811192	Buena Vista
Fred's Automotive	1725 East Vista Way, Vista, CA 92084	X	7538	811111	Buena Vista
General Transmission	427 Redlands Street, Suite B, Vista, CA 92083		7537	811113	Buena Vista
George's Auto Repair and Smog	1740 E Vista Way #B, Vista, CA 92084		7538	811111	Buena Vista
German Auto Clinic	912 Postal Way, Vista, CA 92083	X	7538	811111	Buena Vista
Glitter Wash	1140 S. SANTA FE AVE , Vista, CA 92083		7542	811192	Buena Vista
GM Exclusive	1215 North Melrose Drive, Suite B, Vista, CA 92083		7538	811111	Loma Alta
Golden Wrench Automotive	241 N EMERALD DRIVE, SUITE B, VISTA, CA 92083, Vista, CA 92083		7538	811111	Buena Vista
Hanjo Auto Repair	452 Olive Avenue, Suite M, Vista, CA 92083		7538	811111	Buena Vista
Happy Auto Sales	721 N. SANTA FE AVE , Vista, CA 92084	X	5521	44112	Buena Vista
Hera's Auto Shop Mufflers & Brakes	808 N Santa Fe Ave, Suite A, Vista, CA 92083		7533	811112	Buena Vista
Herman Tuning	1903 W. Vista Wary, Vista, CA 92083		7699	811490	Buena Vista
Humberto's Auto Repair	444 South Santa Fe Avenue, Suite B, Vista, CA 92083		7538	811111	Buena Vista
J & J Automotive	635 Mercantile St, #A, Vista, CA 92083		7538	811111	Buena Vista
Jack's Auto Repair	427 Redlands, Suite A, Vista, CA 92083	X	7538	811111	Buena Vista
JCM Auto Repair	452 Olive Avenue, Suite J, Vista, CA 92083		7538	811111	Buena Vista
Jiffy Lube #432	1213 East Vista Way, Vista, CA 92084		7549	811191	Buena Vista
Juan's Auto Electric	808 North Santa Fe Ave, Suite B, Vista, CA 92083		7539	811118	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Kragen Auto Parts	1250 S. Santa Fe Ave. #A, Vista, CA 92084		5531	441310	Buena Vista
Ludwick's Automotive, Inc.	460 Olive Avenue, Vista, CA 92083		7539	811118	Buena Vista
Masterlube, Inc.	243 Sycamore Avenue, Vista, CA 92084		7538	811111	Agua Hedionda
Matt's Mobil Auto Repair	253 North Emerald Drive, Suite D, Vista, CA 92083		7538	811111	Buena Vista
Mexicano Tires	428 N Santa Fe Ave #A, Vista, CA 92083		7534	811198	Buena Vista
Michael's Electric	611 South Santa Fe Avenue, Vista, CA 92083		7539	811118	
Midas Shop	1150 South Santa Fe Avenue, Vista, CA 92084		7538	811111	Buena Vista
Mike and Pancho's Auto Repair	635 Mercantile St., Suite B, Vista, CA 92083		7538	811111	Buena Vista
North County Auto Exchange	1082 S. SANTA FE AVE , Vista, CA 92084	X	5521	44112	Buena Vista
North County Import Specialist	1215 North Melrose Drive, Suite A, Vista, CA 92083		7538	811111	Loma Alta
Novak Auto Repair	723 OLIVE AVE., SUITE B, VISTA, CA 92083, Vista, CA 92083		7538	811111	Buena Vista
Oceanside Towing & Services, Inc.	1352 N. Melrose Dr, #E, Vista, CA 92083		7538	811111	Loma Alta
Olympic Auto Body and Paint	119 Terracina Way, Vista, CA 92083		7532	811121	Buena Vista
On The Move Mobile Auto & Truck	538 OLIVE AVE., SUITE B, VISTA, CA 92083, Vista, CA 92083		7538	811111	Buena Vista
Pacific Coast Smog Check	1310 N. Melrose, Vista, CA 92083		7549	811198	Loma Alta
Perfect Timing Auto Service	1224 Keystone Way, Vista, CA 92083		7538	811111	Agua Hedionda
Pitawanakwat Auto Repair	538 OLIVE AVE., SUITE 304, VISTA, CA 92083, Vista, CA 92083		7538	811111	Buena Vista
Quick Check Smog	835 N Santa Fe Ave, Vista, CA 92083		7549	811198	Buena Vista
R A S Services, Inc.	401 W. VISTA WAY , Vista, CA 92083		7542	811192	Buena Vista
Rancho Del Oro Towing	2260 LA MIRADA DR, VISTA CA 92081, Vista, CA 92081		7549	488410	Agua Hedionda
Raylen Tasker's Auto Center	1806 East Vista Way, Vista, CA 92083		7538	811111	Buena Vista
RC Auto and Smog	1410 South Santa Fe Avenue, Suite B, Vista, CA 92084		7538	811111	Buena Vista
Red Line Towing & Fleet Maintenance, Inc.	451 OLIVE AVE., VISTA, CA 92083, Vista, CA 92083		7549	48841	Buena Vista
Reliable Transmission/Vista Towing	810 North Santa Fe Avenue, Vista, CA 92083		7537	811113	Buena Vista
Richard's Performance Muffler	1352 N. Melrose Dr #A, Vista, CA 92083		7533	811112	Loma Alta
Rob's Auto Repair	1124 North Melrose Drive, Suite 202, Vista, CA 92083		7538	811111	Buena Vista
Rollin Renches Inc.	1212 DISTRIBUTION WAY, VISTA, CA 92083, Vista, CA 92083		7538	811111	Agua Hedionda
Romeo's Car Wash	352 N. SANTA FE AVE , Vista, CA 92083		7542	811192	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
S & R Service Center	245 N Emerald Drive, Suite C, Vista, CA 92083		7538	811111	Buena Vista
Santa Fe Auto Repair	1045 North Santa Fe Avenue, Vista, CA 92083		7538	811111	Buena Vista
Santa Fe Car Wash	980 S. SANTA FE AVE , Vista, CA 92084		7542	811192	Buena Vista
Security Chevrolet Inc	1100 E. VISTA WAY , Vista, CA 92084	X	5511001	44111	Buena Vista
Service Clinic	436 Vista Village Dr, Vista, CA 92083	X	7538	811111	Buena Vista
Shadowridge 76, Inc./Vollmer Petroleum	636 Sycamore Avenue, Vista, CA 92083		5541	447110	Agua Hedionda
Smog Centers of California	485 N. Melrose Dr., Vista, CA 92083		7549	811198	Buena Vista
Specialized Paint & Body Works	553 Mercantile St., Vista, CA 92083		7532	811121	Buena Vista
Sport Car Motion	2332 LA MIRADA ST, #1100 VISTA, CA 92084, Vista, CA 92084		7549	811198	Agua Hedionda
T I M Services (Mazda Services)	245 North Emerald Drive, Suite A, Vista, CA 92083		7538	811111	Buena Vista
Ted's Auto Service	727 East Vista Way, Vista, CA 92083	X	7538	811111	Buena Vista
Teo's Auto Electric	446 Olive Ave, Suite H, Vista, CA 92083		7539	811118	Buena Vista
The Transmission Source	538 OLIVE AVE., SUITE 101-103, VISTA, CA 92083, Vista, CA 92083		7537	811113	Buena Vista
Tom Kennedy Auto Repair	1330 North Melrose Drive, Suite D, Vista, CA 92083		7538	811111	Loma Alta
Tony's Mobil	801 South Santa Fe Avenue, Vista, CA 92083		5541	447110	Buena Vista
Tri City Tire & Automotive	241 N Emerald Dr #A, Vista, CA 92083		7534	811111	Buena Vista
Tri City Transmission	1147 South Santa Fe Avenue, Vista, CA 92083		7537	811113	Buena Vista
Tri-city Smog	245 N Emerald #B, Vista, CA 92083		7549	811198	Buena Vista
Used Car Depot	1036 S. Santa Fe Ave, Vista, CA 92084	X	5521	44112	Buena Vista
Victor's Brake & Auto Specialists	1352 N. Melrose Dr, Suite G, Vista, CA 92083		7539	811118	Loma Alta
Vista Auto Group Inc.	267 S Santa Fe AVE , Vista, CA 92083	X	5521	44112	Buena Vista
Vista Brake Service and Supply	790 East Vista Way, Vista, CA 92084	X	7539	811118	Buena Vista
Vista Car Care	444 South Santa Fe Avenue, Suite A, Vista, CA 92083		7538	811111	Buena Vista
Vista Car Sales	1420 S. SANTA FE AVE , Vista, CA 92084	X	5521	44112	Buena Vista
Vista Firestone Brake and Smog	711 South Santa Fe Avenue, Vista, CA 92083		7538	811111	Buena Vista
Vista Independent Volvo Service	538 OLIVE AVE., SUITE C-303, VISTA, CA 92083, Vista, CA 92083		7538	811111	Buena Vista
Vista Motorcycle	1155 South Santa Fe Avenue, Suite G, Vista, CA 92083		7699	811490	Buena Vista
Vista Muffler and Radiator	435 Redlands Street, Vista, CA 92083		7538	811111	Buena Vista
Vista Santa Fe Car Wash	521 N. SANTA FE AVE , Vista, CA 92083		7542	811192	Buena Vista
Vista Santa Fe Transmissions, Inc.	1144 South Santa Fe Avenue, Vista, CA 92083		7538	811111	Buena Vista
Vista Transmission Service	427 Redlands Street, Suite B, Vista, CA 92083	X	7537	811113	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Vista Valley Auto Center	1803 E. VISTA WAY , Vista, CA 92084	X	5521	44112	Buena Vista
Vista Way Smog	911 East Vista Way, Vista, CA 92083		7549	811198	Buena Vista
Volvo Works	1211 North Melrose Drive, Suite A, Vista, CA 92083		7538	811111	Loma Alta
West Coast Imports Sales & Conversions	1386 POINSETTIA AVE #E, Vista, CA 92083	X	5521	44112	Agua Hedionda
Wholesale Tube Bending #2	257 North Emerald Drive, Suite C, Vista, CA 92083		7533	811112	Buena Vista
Wizard Auto Repair	446 Olive Avenue, Suite C, Vista, CA 92083		7538	811111	Buena Vista
X R-Bob's Harley Davidson Repair	329 Olive Avenue, Vista, CA 92083		7699	811490	Buena Vista
Ye Olde Car Shoppe	555 Mercantile Street, Vista, CA 92084		7538	811111	Buena Vista
Zimmermann Autosport/ZAS	1304 North Melrose Drive, Suite B, Vista, CA 92083		7532	811121	Loma Alta
(b) Airplane repair, maintenance, fueling, cleaning					
None Identified					
(c) Boat Services					
Sea Witch Marine, Inc	1085 S. SANTA FE AVE , Vista, CA 92083	X	5551	44122	Buena Vista
(d) Equipment Repair					
Coast Equipment Rental	1713 W. VISTA WAY , Vista, CA 92083	X	7359	53249	Buena Vista
Doug Miller Equipment Rental	135 E Broadway , Vista, CA 92084		Unassigned	53249	Buena Vista
Pauley Equipment	348 N. SANTA FE AVE , Vista, CA 92083		7359	53221	Buena Vista
Vista Equipment Rentals Inc	1121 S. SANTA FE AVE , Vista, CA 92083	X	7359	53231	Buena Vista
(e) Auto Paint/Body					
El Mago Paint and Body	427 Red Lands St Suite C, Vista, CA 92083		7532	811121	Buena Vista
Kenny's Kar Klinic	420 Vista Village Drive, Vista, CA 92083	X	7532	811121	Buena Vista
Patrick Flynn's Collision and Frame Repair	1013 Service Place, Vista, CA 92084	X	7532	811121	Buena Vista
Performance Auto Body	1330 North Melrose Drive, Suite A, Vista, CA 92083		7532	811121	Loma Alta
Classic Datsun Motorsports	345 Olive Avenue, Vista, CA 92083		7532	811121	Buena Vista
(f) Mobile Vehicle Washing					
Mobile Wash Works	1125 Cabrillo Circle, Vista, CA 92084		Unassigned	811192	Buena Vista
Randy's Pressure Washing	1205 N. SANTA FE #62, Vista, CA 92083		7542	811192	Buena Vista
(g) Auto Parking Lots					
A M Cars & Trucks Enterprises	1830 HACIENDA DR #4, Vista, CA 92083		7515	532	Buena Vista
Auto Europa Cars	737 TOWNSITE DR #743, Vista, CA 92084		5521	44112	Buena Vista
Budget Rent A Car	1859 W. VISTA WAY , Vista, CA 92083		7514	532111	Buena Vista
Budget Rent A Car Systems, Inc.	241 N. EMERALD DR , Vista, CA 92083		7514	532	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
C & M Motors Inc/ NationaLease	1902 VIA CENTRE , Vista, CA 92083		5511	44111	Buena Vista
Diamond Imports Of Vista	964 VISTA VILLAGE DR , Vista, CA 92084		5521	44112	Buena Vista
E G M Auto Sales & Leasing	835 N. SANTA FE AVE #A, Vista, CA 92084		5511	44111	Buena Vista
E Z Buy Auto Information Service	952 POSTAL WAY #4G, Vista, CA 92083		5511	44111	Buena Vista
Enterprise Car Sales	875 W. VISTA WAY , Vista, CA 92084		5511	44111	Buena Vista
Enterprise Rent-A-Car Lsg 3249	875 W. VISTA WAY , Vista, CA 92083		7514	532111	Buena Vista
Fred's Auto Sales	1725 E. VISTA WAY , Vista, CA 92084		5012	42111	Buena Vista
George's Auto Sales, Inc.	1211 N. MELROSE DR #B, Vista, CA 92083		5511	42111	Loma Alta
J & C Leasing Carolyn Culkin	1112 NASH LN , Vista, CA 92083		7514	532111	Buena Vista
North County Ford	450 W. VISTA WAY , Vista, CA 92083		5511	44111	Buena Vista
Vista Village Motors	350 VISTA VILLAGE DR , Vista, CA 92083		5521	44112	Buena Vista
Whiting's Auto Sales	968 Vista Village DR , Vista, CA 92084		5521	Unassigned	Buena Vista
(h) Fueling					
7 Eleven #15923	1501 North Santa Fe Avenue, Vista, CA 92083		5541	447110	Buena Vista
7 Eleven #24085	900 North Santa Fe Avenue, Vista, CA 92083		5541	447110	Buena Vista
7 Eleven #32326 A 2111	3251 BUSINESS PARK DR, VISTA, CA 92083, Vista, CA 92083		5541	44711	Agua Hedionda
American Petroleum	1740 East Vista Way, Vista, CA 92084	X	5541	447110	Buena Vista
Ammex Oil, Inc. Fillco	1244 N. Santa Fe Ave., Vista, CA 92083	X	5541	447110	Buena Vista
Apro #27	976 Escondido Ave, Vista, CA 92083	X	5541	447190	Buena Vista
Apro Llc #30	485 N. Melrose Dr, Vista, CA 92083		5541	447110	Buena Vista
Arco AM PM #6315	1403 South Santa Fe Avenue, Vista, CA 92083		5541	44711	Buena Vista
Barnicles Express Gasoline	845 E VISTA WAY, VISTA, CA 92084, Vista, CA 92084		5541	447110	Buena Vista
Chevron Station #1497	2295 South Melrose Drive, Vista, CA 92081		5541	447110	Agua Hedionda
Chevron USA	224 Emerald Dr, Vista, CA 92083		5541	447110	Buena Vista
Chevron USA (Foothill Chevron)	1211 E. Vista Way, Vista, CA 92084		5541	447110	Buena Vista
E Vista Way Exxon	911 E Vista Way, Vista, CA 92083		5541	447110	Buena Vista
Emerald Shell	145 N EMERALD DRIVE, VISTA, CA 92083, Vista, CA 92083		5541	447110	Buena Vista
Exxon Mobil Oil Corporation	710 Sycamore Avenue, Vista, CA 92083		5541	447110	Agua Hedionda
Foothill Chevron	1211 East Vista Way, Vista, CA 92084		5541	44711	Buena Vista
Golden State Gasoline, Inc.	535 North Santa Fe Avenue, Suite 4, Vista, CA 92083		5541	44711	Buena Vista
John's AMPM	625 Sycamore Avenue, Vista, CA 92083	X	5541	447110	Agua Hedionda

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
LM Retail, LP dba Shell Gasoline	2131 E Vista Way, Vista, CA 92084		5541	447190	San Luis Rey
Melrose Shell	210 South Melrose Drive, Vista, CA 92081		5541	447110	Buena Vista
Shell Oil Products U.S.	400 Sycamore Ave, Vista, CA 92083		5541	447110	Agua Hedionda
SKS, Inc. Petroleum Distributors	620 South Santa Fe Avenue, Vista, CA 92083	X	5541	447190	Buena Vista
South Melrose Arco	1590 S. Melrose Drive., Vista, CA 92081		5541	447110	Agua Hedionda
Sycamore Texaco	400 SYCAMORE AVE, Vista, CA 92083		5541	44711	Agua Hedionda
TJ Properties, Inc Chevron Olive	485 North Melrose Drive, Vista, CA 92083		5541	44711	Buena Vista
Vista Unocal	976 Escondido Avenue, Vista, CA 92083		5541	44719	Buena Vista
Western States Petroleum LLC dba Chevron	600 Hacienda Drive, Vista, CA 92083		5541	447110	Buena Vista
(i) Pest Control					
A A Same Day Exterminators	807 N. SANTA FE AVE , Vista, CA 92084		7342	56172	Buena Vista
Barlow's Pest Control	375 Windy Lane , Vista, CA 92083		Unassigned	56171	Buena Vista
Gemini Pest Control Inc	1058 TAYLOR ST , Vista, CA 92083		7342	56172	San Luis Rey
Kennedy Pest Control, Inc.	114 NATAL WAY , Vista, CA 92083		7342	56172	Buena Vista
Orkin Pest Control D Glassmaker	2420 GRAND AVE #J, Vista, CA 92083		7342	56172	Agua Hedionda
Pestgon Inc	519 S. SANTA FE , Vista, CA 92083		7342	56172	Buena Vista
Willis Exterminators	2475 CORAL ST #B, Vista, CA 92084		7342	56172	Agua Hedionda
(j) Eating Places					
Ai Sushi	1910 SHADOWRIDGE DR Suite #106, Vista, CA 92083	X	5812	722110	Agua Hedionda
Aibertos Mexican Food	435 N. SANTA FE AVE, Vista, CA 92084	X	5812	722211	Buena Vista
Albertacos Mex Food Inc	601 SYCAMORE AVE, Vista, CA 92083	X	5812	722211	Agua Hedionda
Albertson's #6201	1301 E Vista Way, Vista, CA 92084	X	5411	445110	Buena Vista
Albertson's #6797	1601 S Melrose Dr, Vista, CA 92081	X	5411	44511	Agua Hedionda
Allen's Alley Cafe	124 HANES PL, Vista, CA 92084	X	5812	722212	Buena Vista
Arashi Japanese Cuisine	962 S. Santa Fe Ave., Vista, CA 92084	X	5812	722110	Buena Vista
Arby's	40 Main St Suite E-110, Vista, CA 92083	X	5812	722211	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Armandos Mexican Food	770 SYCAMORE AVE Suite #L, Vista, CA 92083	X	5812	722211	Agua Hedionda
Baja Fresh Mexican Grill	620 HACIENDA DR Suite #101, Vista, CA 92081	X	5812	722211	Buena Vista
Bombay Cafe	1280 E VISTA WAY, SUITE #4, Vista, CA 92084	X	5812	722110	Buena Vista
Boston Market Store #1167	1730 UNIVERSITY DR, Vista, CA 92083	X	5812	722211	Agua Hedionda
Burger King	377 VISTA VILLAGE DR, Vista, CA 92084	X	5812	722211	Buena Vista
Burger King #10512	1650 S. MELROSE DR, Vista, CA 92081	X	5812	722213	Agua Hedionda
Cafe Oasis	1175 Park Center Drive, Suite F, Vista, CA 92081	X	5812	722210	Agua Hedionda
California Pizza Kitchen	307 Vista Village Drive, Vista, CA 92085	X	5812	722110	Buena Vista
Carl's Jr. #1390	660 HACIENDA DR, Vista, CA 92083	X	5812	722211	Buena Vista
Carl's Jr. Restaurant and the Green Burrito	1790 UNIVERSITY DR, Vista, CA 92083	X	5812	722211	Agua Hedionda
Carl's Tavern	1565 W. VISTA WAY, Vista, CA 92083	X	5812	722410	Buena Vista
Casa Linda	721 S. SANTA FE AVE, Vista, CA 92083	X	5812	722110	Buena Vista
Chicks Natural Roasted Chicken	950 E VISTA WAY, SUITE #H & I, Vista, CA 92084	X	5812	722211	Buena Vista
Chili Coast Burgers	1330 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Chili's Grill & Bar	255 Vista Village Dr., Vista, CA 92083	X	5812	722110	Buena Vista
China Coast Buffet California, Inc	1810 University Dr, Vista, CA 92083	X	5812	722212	Agua Hedionda
China Szechwan	959 E. VISTA WAY, Vista, CA 92084	X	5812	722110	Buena Vista
Chin's Express & Teriyaki	1711 UNIVERSITY DR Suite #130, Vista, CA 92083	X	5812	722211	Agua Hedionda
Chin's Szechwan Vista, Inc.	600 E VISTA WAY, Vista, CA 92083	X	5812	722110	Buena Vista
Chipotle Mexican Grill	30 Main St #G-100, Vista, CA 92084	X	5812	722211	Buena Vista
Choo Choo Donuts	1597 Vista Way E. Ste.B, Vista, CA 92084	X	5461	311811	Buena Vista
Christina Bakery	1110 N. SANTA FE AVE D, Vista, CA 92083	X	5461	722213	Buena Vista
Christin's Café	2515 Pioneer Ave #5, Vista, CA 92081	X	5812	722211	Agua Hedionda
Ciao Restaurant	2015 E. VISTA WAY, Vista, CA 92084	X	5812	722110	San Luis Rey
Cirincione's Ristorante & Pizzeria	1450 N. SANTA FE AVE Suite #E, Vista, CA 92083	X	5812	722110	Buena Vista
Coco's 882	605 W. VISTA WAY, Vista, CA 92083	X	5812	722110	Buena Vista
Cold Stone Creamery	30 Main St #120, Vista, CA 92084	X	5812	722213	Buena Vista
Colima's Mexican Food	1850 Hacienda Dr. Suite#22, Vista, CA 92081	X	5812	722211	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Curbside Cafe	307 MAIN ST, Vista, CA 92084	X	5812	722110	Buena Vista
D' Elegantes Restaurant	2004 E. VISTA WAY, Vista, CA 92084	X	5813	722410	San Luis Rey
D. Chamber Creations LLC dba Coldstone Creamery	1711 UNIVERSITY DR Suite #140, Vista, CA 92083	X	5812	722213	Agua Hedionda
Dairy Queen	1031 S SANTA FE AVE, SUITE #A, Vista, CA 92083	X	5812	722211	Buena Vista
Dairy Queen - Shadowridge	1580 S. MELROSE DR Suite #116, Vista, CA 92081	X	5812	722213	Agua Hedionda
Danish & Donuts	1450 Santa Fe Ave.N. Ste I, Vista, CA 92083	X	5461	722213	Buena Vista
Danny's Donuts	102 Eucalyptus Ave, Vista, CA 92084	X	5461	722213	Buena Vista
Del Taco 213	1037 BOBIER DR., Vista, CA 92083	X	5812	722211	Buena Vista
Diamond Donuts	730 SYCAMORE AVE F, Vista, CA 92083	X	5812	722213	Agua Hedionda
Dinner Studio	1850 Hacienda Dr. Suite#12, Vista, CA 92084	X	5812	722320	Buena Vista
Dominos Pizza 7731	1021 E BOBIER DR, Vista, CA 92083	X	5812	722211	Buena Vista
Dominos Pizza 8300	603 E. SYCAMORE AVE, Vista, CA 92083	X	5812	722211	Agua Hedionda
Donut Factory	1839 Vista Way W. Ste C, Vista, CA 92083	X	5461	311811	Buena Vista
Dos Amigos Restaurant	1651 S. Melrose Dr, Suite D, Vista, CA 92081	X	5812	722211	Agua Hedionda
Drucker Subway Sr, Inc	1651 S. MELROSE DR Suite #B, Vista, CA 92081	X	5812	722211	Agua Hedionda
Duran N Sonz Roast Pig	2125 Foothill Dr. , Vista, CA 92084		5812	72232	Buena Vista
East Of Java	3231 Business Park Dr. Ste.1, Vista, CA 92081	X	5812	722211	Agua Hedionda
Eddie's Market	415 N Santa Fe, Vista, CA 92084	X	5411	445110	Buena Vista
El Asadero Restaurant	1717 E VISTA WAY, SUITE #106, Vista, CA 92084	X	5812	722211	Buena Vista
El Callejon Vista	20 Main St, H-100, Vista, CA 92083	X	5812	722110	Buena Vista
El Caporal Mexican Food	800 ESCONDIDO AVE B, Vista, CA 92084	X	5812	722211	Buena Vista
El Dorado Express Grill	3265 BUSINESS PARK DR B, Vista, CA 92084	X	5812	722211	Agua Hedionda
El Pollo Loco #3492	495 S. Melrose Dr., Vista, CA 92083	X	5812	722211	Buena Vista
El Puertesito Mexican Restaurant	1450 N. SANTA FE AVE Suite #R, Vista, CA 92084	X	5812	722110	Buena Vista
El Puerto Fish Market	403 N Santa Fe Ave, Vista, CA 92083	X	5421	445220	Buena Vista
El Ranchero	226 MAIN ST, Vista, CA 92084	X	5812	722110	Buena Vista
El Ranchero Restaurant	1565 N. SANTA FE AVE, Vista, CA 92084	X	5812	722110	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
El Rinconcito Mexican Seafood Resturant	1033 S SANTA FE AVE SUITE #E, Vista, CA 92084	X	5812	722110	Buena Vista
El Tigre Foods Warehouse	1150 E. Vista Way, Vista, CA 92083	X	5411	445110	Buena Vista
El Torito Market	249 N. EMERALD DR, Vista, CA 92083	X	5411	445110	Buena Vista
Elaines Cake Boutique	1021 N. Santa Fe Ave., Vista, CA 92084	X	5461	311811	Buena Vista
Elk's Lodge Restaurant	1947 E Vista Way, Vista, CA 92085	X	5812	722110	San Luis Rey
Emerald Thai Cuisine	1011 S. SANTA FE AVE, Vista, CA 92083	X	5812	722110	Buena Vista
Eriberto's Mexican Food	1805 HACIENDA DR, Vista, CA 92081	X	5812	722211	Buena Vista
Erika Restaurant	1851 W. VISTA WAY Suite #C, Vista, CA 92083	X	5812	722211	Buena Vista
European Deli & Rest	573 W. VISTA WAY Suite #D, Vista, CA 92083	X	5812	722211	Buena Vista
Feliccias	1011 S SANTA FE AVE, SUITE C, Vista, CA 92083	X	5812	722110	Buena Vista
Fiesta Giant Pizza	1120 N. Santa Fe Ave., Vista, CA 92083	X	5812	722211	Buena Vista
Filibertos Mexican Food	960 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Food 4 Less 300	500 Hacienda Drive, Vista, CA 92083	X	5411	445110	Buena Vista
Foodmaker Inc 55 - Jack In The Box	815 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Fortune Palace Restaurant	785 Shadowridge Dr., Vista, CA 92083	X	5812	722110	Agua Hedionda
Franciscos Mexican Deli	821 N. SANTA FE AVE, Vista, CA 92084	X	5812	722211	Buena Vista
Frank's Mexican Grill	122 W. CALIFORNIA AVE, Vista, CA 92083	X	5812	722211	Buena Vista
Frazier Farms	225 Vista Village Drive, Vista, CA 92083	X	5411	445110	Buena Vista
Frogy's Donuts and Bakery	602 E VISTA WAY, SUITE A, Vista, CA 92084	X	5461	722213	Buena Vista
Giant New York Pizza	1250 S. SANTA FE AVE Suite #E, Vista, CA 92084	X	5812	722110	Buena Vista
Godwins Café	325 S MELROSE DR., Vista, CA 92083	X	5812	722211	Buena Vista
Golden Donut	1281 N. SANTA FE AVE Z, Vista, CA 92083	X	5461	722213	Buena Vista
Golden Dragon Restaurant	1350 E. VISTA WAY Suite #10, Vista, CA 92084	X	5812	722210	Buena Vista
Hello Deli	2820 La Mirada Dr. Ste. A, Vista, CA 92081	X	5812	722211	Agua Hedionda
Hennessey's	224 Main St , Vista, CA 92084	X	5812	722211	Buena Vista
Holly's Pies	540 W. VISTA WAY, Vista, CA 92083	X	5812	722110	Buena Vista
House of Thanon Thai Cuisine	485 S. Melrose Dr. # 108 & 109, Vista, CA 92081	X	5812	722110	Buena Vista
Icebox Jr	2260 Oak Ridge Way, Suite D, Vista, CA 92081	X	5812	722211	Agua Hedionda
In N Out Burger #61	2010 HACIENDA DR, Vista, CA 92081	X	5812	722211	Buena Vista
International House Of Pancakes 814	632 SYCAMORE AVE, Vista, CA 92083	X	5812	722110	Agua Hedionda
Islands Fine Burgers & Drinks	240 S MELROSE DR., Vista, CA 92083	X	5812	722110	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
J F Japanese Cafe	35 Main St. Suite #150, Vista, CA 92083	X	5812	722211	Buena Vista
Jack In The Box #3002	740 SYCAMORE AVE, Vista, CA 92083	X	5812	722211	Agua Hedionda
Jack in the Box #3019	1471 N. SANTA FE AVE, Vista, CA 92084	X	5812	722211	Buena Vista
Jack In The Box #3029	260 S MELROSE DR., Vista, CA 92083	X	5812	722211	Buena Vista
Jack In The Box #3032	3281 BUSINESS PARK DR, Vista, CA 92081	X	5812	722211	Agua Hedionda
Java Hut Drive-Thru	823 E. Vista Way, Vista, CA 92084	X	5812	722213	Buena Vista
Java Hut Drive-Thru	949 S. Santa Fe Ave., Vista, CA 92084	X	5812	722213	Buena Vista
Jims Vista Lounge	1587 E. VISTA WAY Suite #A&B, Vista, CA 92084	X	5813	722410	Buena Vista
Jj's Deli Cafe #5	1495 POINSETTIA AVE 152, Vista, CA 92081	X	5812	722211	Agua Hedionda
Johnny Mac's Delipub, LLC	770 SYCAMORE AVE Suite #H, Vista, CA 92081	X	5812	722211	Agua Hedionda
Juanita's Taco Shop	248 MAIN ST, Vista, CA 92083	X	5812	722211	Buena Vista
Juba Juba	680 HACIENDA DR, Vista, CA 92083	X	5812	722213	Buena Vista
Juice N Tea	30 Main St #180, Vista, CA 92083	X	5812	722213	Buena Vista
Juniors Taco Shop	1680 S. Melrose Dr. #110, Vista, CA 92083	X	5812	722110	Agua Hedionda
K & H Steak, Inc. dba Steak Escape	35 Main St #110, Vista, CA 92083	X	5812	722211	Buena Vista
Kabab Cuisine	1688 S. Melrose Dr. #206, Vista, CA 92081	X	5812	722110	Agua Hedionda
Kentucky Fried Chicken	840 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Kork's Donuts & Ice Cream	771 E VISTA WAY, SUITE 102A, Vista, CA 92083	X	5461	722213	Buena Vista
La Gordita	1275 S. SANTA FE AVE Suites #117, 118, Vista, CA 92083	X	5812	722211	Buena Vista
La Mexicana Market	440 N Santa Fe Ave, Vista, CA 92083	X	5421	445210	Buena Vista
La Paloma Restaurant & Cocktail	116 ESCONDIDO AVE 104-05, Vista, CA 92084	X	5812	722210	Buena Vista
Lamppost Pizza	15 Main St., Vista, CA 92083	X	5812	722211	Buena Vista
Little Caesars Pizza	1041 E. VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Los Cabos Mexican & Seafood	760 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Lucy's Place Ice Cream	1583 E Vista Way #4, Vista, CA 92084	X	5812	722213	Buena Vista
Mama & Papa's Pizza Grotto	988 ESCONDIDO AVE SUITE A, Vista, CA 92083	X	5812	722211	Buena Vista
Marco Italian Restaurant	1825 E. VISTA WAY, Vista, CA 92084	X	5812	722110	Buena Vista
Mariscos El Pacifico	702 S SANTA FE AVE, Vista, CA 92084	X	5812	722110	Buena Vista
Martha's Bakery	995 Postal Way #110, Vista, CA 92083	X	5461	311811	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Mc Donalds 12791	1470 N. SANTA FE AVE, Vista, CA 92083	X	5812	722211	Buena Vista
Mc Donalds 1959	827 S. SANTA FE AVE, Vista, CA 92083	X	5812	722211	Buena Vista
Mexican & Greek Fast Food	573 W. Vista Way, Vista, CA 92083	X	5812	722211	Buena Vista
Mexican Buffet	1234 S SANTA FE AVE, Vista, CA 92084	X	5812	722110	Buena Vista
Mexiplus Vista, LLC dba Taco Pablo's	530 HACIENDA DR, Vista, CA 92081	X	5812	722211	Buena Vista
Mi Pueblito Mexican & Seafood Inc.	815 N. SANTA FE AVE, Vista, CA 92084	X	5812	722211	Buena Vista
Mi Tiendita Market	700 Townsite Drive , Vista, CA 92084	X	5411	445110	Buena Vista
Mobile Food Service Hub	365 Olive Ave Suite A, Vista, CA 92084	X	5963	722330	Buena Vista
Mr. A's Liquor Deli	254 VISTA VILLAGE DR, Vista, CA 92084	X	5812	722211	Buena Vista
Naked Bean - Vista	530 HACIENDA DR Suite #101, Vista, CA 92083	X	5812	722213	Buena Vista
Nanay's Oriental & Fish Market	1350 E Vista Way, Suite 9, Vista, CA 92084	X	5411	445220	Buena Vista
New Panda Buffet	1040 E VISTA WAY, Vista, CA 92084	X	5812	722212	Buena Vista
Nikos Burgers	1004 S. Santa Fe Ave., Vista, CA 92084	X	5812	722211	Buena Vista
Nucci's Italian Cafe Pizza Pas	1580 S. MELROSE DR Suite #108, Vista, CA 92081	X	5812	722110	Agua Hedionda
Nuevo Vallarta Restaurant	825 WILLIAMSTON ST, Vista, CA 92083	X	5812	722211	Buena Vista
Oggi's Pizza & Brewing Co.	425 S. MELROSE DR, Vista, CA 92081	X	5812	722110	Buena Vista
Ohana Hawaiian BBQ	620 Hacienda Dr #106, Vista, CA 92081	X	5812	722211	Buena Vista
Oriental Market of Vista	1021 N. SANTA FE AVE F, Vista, CA 92084	X	5411	445110	Buena Vista
Oscar's Mexican Food	822 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Paleteria La Mixteca	1110 North Santa Fe Ave, Suite F, Vista, CA 92083	X	5812	722211	Buena Vista
Palomar Pizza & Pasta	3265 BUSINESS PARK DR A, Vista, CA 92081	X	5812	722111	Agua Hedionda
Pam's Donuts & Ice Cream	510 HACIENDA DR 109, Vista, CA 92081	X	5461	722213	Buena Vista
Pan Don Felipe's Mexican Bakery	613 S. Santa Fe Ave, Vista, CA 92084	X	5461	722213	Buena Vista
Panda Express #1262	316 Sycamore Ave, Vista, CA 92083	X	5812	722211	Agua Hedionda
Panda Express, Inc.	20 Maint St. Suite #160, Vista, CA 92084	X	5812	722211	Buena Vista
Panera Bread	401 Vista Village Dr, Ste. A, Vista, CA 92083	X	5812	722211	Buena Vista
Papa John's Pizza	485 S. MELROSE DR Suite #E, Vista, CA 92083	X	5812	722211	Buena Vista
Pepper Tree Frosty	270 S SANTA FE AVE, Vista, CA 92083	X	5812	722211	Buena Vista
Pho Little Saigon Restaurant	1717 E VISTA WAY, SUITE 101-102, Vista, CA 92084	X	5812	722110	Buena Vista
Pho Lucky	770 Sycamore Ave # E & F, Vista, CA 92081	X	5812	722110	Agua Hedionda
Pick Up Stix-Vista #7214	251 S. MELROSE DR Suite #303, Vista, CA 92081	X	5812	722211	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Picket Fence	945 S SANTA FE AVE, Vista, CA 92083	X	5812	722110	Buena Vista
Pineapple Joe's	35 Main St. C-140, Vista, CA 92083	X	5812	722211	Buena Vista
Pizza Factory	1910 Shadowridge Dr. Suite #101, Vista, CA 92081	X	5812	722110	Agua Hedionda
Pizza Hut Inc	1591 E. VISTA WAY Suite #B, Vista, CA 92084	X	5812	722211	Buena Vista
Playa Azul Seafood Restaurant	1281 N SANTA FE AVE Suite #X, Y, Vista, CA 92084	X	5812	722211	Buena Vista
Popeyes Fried Chicken	1817 W. VISTA WAY Suite #F, Vista, CA 92083	X	5812	722211	Buena Vista
Primo Food Market	1535 W. VISTA WAY, Vista, CA 92083	X	5411	445110	Buena Vista
Quizno's Subs	485 S Melrose Dr #112, Vista, CA 92081	X	5812	722211	Buena Vista
Rancho del Oro	1281 N. Santa Fe Ave #K, Vista, CA 92083	X	5411	445110	Buena Vista
Rancho Grande Mexican & Seafood	102 S SANTA FE AVE, Vista, CA 92084	X	5812	722110	Buena Vista
Restaurant y Panderia Montealban	1275 S SANTA FE AVE., Vista, CA 92083		5812	722211	Buena Vista
Rice King	3265 Business Park Drive, Suite C, Vista, CA 92081	X	5812	722211	Agua Hedionda
Ricedle Chinese Cuisine	1611 S. MELROSE DR Suite #P, Vista, CA 92081	X	5812	722110	Agua Hedionda
Rin's Coffee Car @ Vista Medical Plaza	2067 W. VISTA WAY #160, Vista, CA 92083	X	5812	722213	Buena Vista
Rodeos Meat Market	356 VISTA VILLAGE DR, Vista, CA 92083	X	5421	445210	Buena Vista
Round Table Pizza	923 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Rubio's Baja Grill	1711 UNIVERSITY DR Suite #110, Vista, CA 92083	X	5812	722211	Agua Hedionda
Rudys Coyote Cafe	1450 N. SANTA FE AVE Suite #Y, Vista, CA 92083	X	5812	722211	Buena Vista
Salsa Market	1100 N. SANTA FE AVE, Vista, CA 92083	X	5411	445110	Buena Vista
San Giorgio Lucano Corp (EZ Pasta, Inc)	1280 E VISTA WAY, SUITE #106, VISTA, CA 92084, Vista, CA 92084	X	5812	722110	Buena Vista
Santorini Island Grill Vista, L L C	3295 Business Park Dr. Suite D, Vista, CA 92081	X	5812	722211	Agua Hedionda
Smitty's Downtown	119 E. BROADWAY, Vista, CA 92083	X	5813	722410	Buena Vista
Solano Bakery	203 MAIN ST, Vista, CA 92084	X	5461	311811	Buena Vista
Sonrise Fast Food and Deli	800 Escondido Ave #F, San Marcos, CA 92084	X	5812	722211	Buena Vista
Souplantation	1860 UNIVERSITY DR, Vista, CA 92083	X	5812	722213	Agua Hedionda
Stagecoach Inn	1865 W. VISTA WAY, Vista, CA 92083	X	5813	722410	Buena Vista
Starbucks Coffee	1385 E. Vista Way, Vista, CA 92084	X	5812	722213	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Starbucks Coffee #5366	1711 UNIVERSITY DR #150, Vista, CA 92083	X	5812	722213	Agua Hedionda
Starbucks Coffee #5838	251 S. MELROSE DR Suite #301, Vista, CA 92081	X	5812	722213	Buena Vista
Starbuck's Coffee #6676	30 Main St, #190, Vista, CA 92083	X	5812	722213	Buena Vista
Starbucks Coffee #6792	1631 MELROSE DR., Vista, CA 92081	X	5812	722213	Agua Hedionda
Stater Bros Market #156	780 Sycamore Ave, Vista, CA 92083	X	5411	445110	Agua Hedionda
Stater Bros. Market #157	1451 N. Santa Fe Ave., Vista, CA 92084	X	5411	445110	Buena Vista
Sub Shop # 195	1289 E. Vista Way, Vista, CA 92084	X	5812	722211	Buena Vista
Submarina	942 S. SANTA FE AVE, Vista, CA 92084	X	5812	722211	Buena Vista
Submarina (Business Park)	3231 Business Park Dr. Suite 4, Vista, CA 92081	X	5812	722211	Agua Hedionda
Subway #24598/Subway Life, Inc.	1711 UNIVERSITY DR Suite #120, Vista, CA 92083	X	5812	722211	Agua Hedionda
Subway #32111	20 Main St. Suite #150, Vista, CA 92084	X	5812	722211	Buena Vista
Subway Sandwiches & Salads #22847	1031 S SANTA FE AVE, SUITE #B, Vista, CA 92083	X	5812	722211	Buena Vista
Subway Sandwiches & Salads 2208	950 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Sun Hing Buffet LLC	1960 Hacienda Dr , Vista, CA 92081	X	5812	722212	Buena Vista
Sunnyside Grill	1651 S. Melrose Dr Suite A, Vista, CA 92081	X	5812	722211	Agua Hedionda
Sunrise Cafe	1250 S. SANTA FE AVE Suite #3, Vista, CA 92083	X	5812	722110	Buena Vista
Super Taco	1072 E. Vista Way, Vista, CA 92084	X	5812	722211	Buena Vista
Sushi Cafe	3245 Business Park Dr. Suite #2, Vista, CA 92081	X	5812	722211	Agua Hedionda
Taco Bell 15435	1800 UNIVERSITY DR, Vista, CA 92083	X	5812	722211	Agua Hedionda
Taco Bell 17787	910 E VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Taco Bell 20413	3271 BUSINESS PARK DR, Vista, CA 92081	X	5812	722211	Agua Hedionda
Thai Pasta	1876 Hacienda Dr., Vista, CA 92081	X	5812	722110	Buena Vista
The Original Pancake House	435 S. MELROSE DR, Vista, CA 92081	X	5812	722110	Buena Vista
The Snack House	1580 S. MELROSE DR Suite #117, Vista, CA 92084	X	5461	722213	Agua Hedionda

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
The Village Bagel Co. (Guerin Mngmt)	485 S. Melrose Dr. #106, Vista, CA 92081	X	5461	722213	Buena Vista
Three Sisters Catering, Inc.	1589-A East Vista Way, Vista, CA 92084	X	5812	722320	Buena Vista
Tom's No. 24 Restaurant	1110 SYCAMORE AVE, Vista, CA 92083	X	5812	722211	Agua Hedionda
Tortilleria Los Reyes	218 MAIN ST, Vista, CA 92084	X	5812	722211	Buena Vista
Tropical Juice & Deli	1116 Sycamore Ave. #F, Vista, CA 92081	X	5812	722213	Agua Hedionda
Two Brothers From Italy	1651 S. MELROSE DR Suite #C, Vista, CA 92081	X	5812	722211	Agua Hedionda
Two Brothers From Italy	986 E VISTA WAY, Vista, CA 92083	X	5812	722211	Buena Vista
Upper Crust Pizza	1330 E VISTA WAY, SUITE #2, Vista, CA 92084	X	5812	722211	Buena Vista
Vaqueros Mexican Food	1740 E. VISTA WAY, Vista, CA 92084	X	5812	722211	Buena Vista
Village Cafe	406 MAIN ST, Vista, CA 92083	X	5812	722211	Buena Vista
Vista Chinese Food	828 N. Santa Fe Ave #A1, Vista, CA 92083	X	5812	722110	Buena Vista
Vista Donuts	879 S SANTA FE AVE, Vista, CA 92083	X	5461	722213	Buena Vista
Vista Entertainment Center	435 W. VISTA WAY, Vista, CA 92083	X	5812	722211	Buena Vista
Vista Way Cafe	868 E Vista Way, Vista, CA 92084	X	5812	722110	Buena Vista
Vista's Ice Box	777 E VISTA WAY, SUITE #204, Vista, CA 92084	X	5812	722211	Buena Vista
Vons Grocery #2121	940 S. Santa Fe Ave., Vista, CA 92083	X	5411	445110	Buena Vista
Wasabi Japanese Cuisine	1688 S. MELROSE DR Suite #212, Vista, CA 92083	X	5812	722110	Agua Hedionda
Wendy's Restaurant #16	567 W. VISTA WAY, Vista, CA 92083	X	5812	722211	Buena Vista
Wicked Good Pizza	749 Shadowridge Dr., Vista, CA 92081	X	5812	722110	Agua Hedionda
Wienerschnitzal 288	901 S SANTA FE AVE, Vista, CA 92083	X	5812	722211	Buena Vista
Yogurt Giant	1817 W. VISTA WAY Suite #E, Vista, CA 92083	X	5812	722211	Buena Vista
Yum Yum Donut Franchise 5050d	924 S SANTA FE AVE, Vista, CA 92083	X	5461	722213	Buena Vista
(K) Mobile Carpet & Upholtery Cleaning					
Advance Carpet Cleaning & Bldg.	278 PASEO MARGUERIT , Vista, CA 92084		7217	56174	San Luis Rey
Affordable Carpet Care And Jch Enterprises	1611 S Melrose Ave #170-a, Vista, CA 92081		Unassigned	56174	Agua Hedionda
Affordable Carpet Care&Jch Ent	418 SANTA CLARA DR , Vista, CA 92083		7217	56174	Buena Vista
Alliance Disaster & Restoration Services	1487 POINSETTIA AVE #126, Vista, CA 92083		Unassigned	56174	Agua Hedionda

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Andy's Carpet Cleaner	352 N Santa Fe Ave , Vista, CA 92083		Unassigned	56174	Buena Vista
C & J Discount Carpet Care	1004 Marlin Dr. , Vista, CA 92084		Unassigned	56174	Buena Vista
Clean As A Whistle Carpet Care	2220 WATSON WAY #193, Vista, CA 92083		7217	56174	Agua Hedionda
Heaven's Best Carpet & Upholstery	104 Hill Dr , Vista, CA 92083		Unassigned	56174	Buena Vista
Hydra Vac	1037 GLENMERE RD , Vista, CA 92084		7217	56174	Buena Vista
Living Waters Carpet & Upholstery	18045 SATICOY ST , Reseda, CA 91335		Unassigned	56174	Mobile: Not in City
Mckenna's Carpet	1275 Tower Dr , Vista, CA 92083		Unassigned	56174	Buena Vista
Miller Carpet Care	512 W. California Ave., Vista, CA 92083		Unassigned	56174	Agua Hedionda
Paul's Pressure Washing	751 E. VISTA WAY #81, Vista, CA 92084		1799	56172	Buena Vista
Rancho Carpet Cleaning Inc.	1157 S Santa Fe Ave , Vista, CA 92083		Unassigned	56174	Buena Vista
River Carpet Cleaning	1610 Calle Jules , Vista, CA 92084		Unassigned	56174	Buena Vista
Showcase Textile Care	904 JUDILYN DR , Vista, CA 92083		Unassigned	56174	Buena Vista
Superior Carpet Cleaning	926 Westport Ln , Vista, CA 92084		Unassigned	56174	Buena Vista
The Torrey Pines Co., Inc.	2560 FORTUNE WAY , Vista, CA 92083		7217	56174	Agua Hedionda
Thompson's Xtreme Cleaning Co.	200 Plymouth Dr. , Vista, CA 92084		Unassigned	56174	Buena Vista
(I) Cement Mixing or Cutting					
Allied Stone Group, LLC	2141 INDUSTRIAL CT #F, Vista, CA 92083		1743	23543	Agua Hedionda
American Concrete Cutting & Cor	1217 DISTRIBUTION WAY , Vista, CA 92083		1799	23599	Agua Hedionda
American Tile Company	1253 ACTIVITY DR #A, Vista, CA 92083		1799	23599	Agua Hedionda
Antonio Maola Concrete Pumping	603 RANCHO VISTA RD , Vista, CA 92083		1799	23599	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Araiza Paving & Grading	550 W. VISTA WAY #110, Vista, CA 92083		1611	23411	Buena Vista
Betz Concrete, Inc.	1217 DISTRIBUTION WAY , Vista, CA 92084		1771	23599	Agua Hedionda
Capt N Kidd Services, Inc	1590 TIERRA DEL CIEL , Vista, CA 92084		1741	23541	Buena Vista
Coppock Pool & Spa	719 SUNSET DR , Vista, CA 92083		1799	23599	Agua Hedionda
Cornerstone Marble Gran & Tile	1205 AVENIDA CHELSEA #B, Vista, CA 92083		1799	23599	Agua Hedionda
D W Masonry Wright	1919 SUNSET DR , Vista, CA 92083		1541	Unassigned	Agua Hedionda
Dc Concrete And Masonry	1710 JONATHON ST , Vista, CA 92083		1741	23541	Buena Vista
Euro Tile	383 N Melrose Dr #B, Vista, CA 92083		Unassigned	23543	Buena Vista
G & F Custom Plastering	664 E. VISTA WAY #E, Vista, CA 92084		1541	Unassigned	Buena Vista
Garza Grading & Paving	755 NORTH DR , Vista, CA 92083		1611	23599	Loma Alta
Geogrid Retaining Wall Systems, Inc	1295 DISTRIBUTION WAY , Vista, CA 92083		1741	23	Agua Hedionda
Honor Life Memorials	955 PARK CENTER DR , Vista, CA 92083		1741	23541	Agua Hedionda
Innovations In Marble And Tile	1128 PORTOLA ST , Vista, CA 92084		1799	23599	Buena Vista
Padilla Construction	552 OLIVE ST , Vista, CA 92083		1742	23542	Buena Vista
Perfect Paving Grading & Seal	1641 MONTE MAR DR , Vista, CA 92083		1799	23599	Buena Vista
Pool Genie	1453 SUNRISE DR #B, Vista, CA 92084		1799	23599	Buena Vista
Precision Concrete	1495 POINSETTIA AVE #145, Vista, CA 92083		1611	2357	Agua Hedionda
Prestige Tile And Marble Installation Co	2168 OPAL RIDGE , Vista, CA 92084		Unassigned	235430	Agua Hedionda
Santa Fe Paving	602 LEMON AVE , Vista, CA 92084		1799	23599	Buena Vista
Swanson Studios	339 OLIVE AVE , Vista, CA 92083		1743	23543	Buena Vista
T.D. Tile	1485 POINSETTIA AVE , Vista, CA 92083		1743	23543	Agua Hedionda
Western Concrete Pumping, Inc	2181 LA MIRADA DR , Vista, CA 92083		1623	23491	Agua Hedionda
(n) Painting & Coating					

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
(cho)2 Home Services	955 Postal Way #56, Vista, CA 92083		Unassigned	811	Buena Vista
A C Coating	512 W. CALIFORNIA ST #116, Vista, CA 92083		1721	23521	Buena Vista
Altura Paint & Supply	1850 HACIENDA DR #15, Vista, CA 92083		1799	23599	Buena Vista
Calvert Painting	1161 LARK HILL DR , Vista, CA 92084		1799	23599	San Luis Rey
Capital Painting Corporation	216 E. BROADWAY , Vista, CA 92084		1799	23599	Buena Vista
Capital Painting Corporation 1	512 W CALIFORNIA AVE #204, Vista, CA 92084		Unassigned	2352	Buena Vista
El Carpi Jr. Construction	610 COCAPAH ST , Vista, CA 92083		Unassigned	811	Buena Vista
Fred A. Jones Painting	1407 BONAIR DR , Vista, CA 92084		1799	23599	Buena Vista
J B Coating	219 S. SANTA FE AVE #137, Vista, CA 92083		1721	23521	Buena Vista
J S Custom Painting	1722 FOOTHILL , Vista, CA 92084		1799	23599	Buena Vista
J.B. Handyman	326 SAN DEL DR , Vista, CA 92083		Unassigned	811	Buena Vista
Jackpot Painting	391 OLIVE AVE , Vista, CA 92083		1799	23599	Buena Vista
Joe Lane Custom Painting	1105 COLLINSWOOD LN , Vista, CA 92083		1721	23521	Buena Vista
Lopez Demolition	318 Arnel Ave , Vista, CA 92083		Unassigned	23594	Buena Vista
Main Painting Co	121 HANES PL , Vista, CA 92084		1799	23599	Buena Vista
Medel Painting	934 N Santa Fe Ave , Vista, CA 92083		Unassigned	2352	Buena Vista
Michael A. Eddy Painting	1930 WATSON WAY #I, Vista, CA 92083		3479	332812	Agua Hedionda
Rainbow Painting	561 Emerald Drive , Vista, CA 92083		Unassigned	2352	Buena Vista
Rivera's Painting	239 PALA VISTA DR #11, Vista, CA 92083		1721	2352	Buena Vista
Ronald W. Card	758 LAZY CIR , Vista, CA 92083		1721	2352	Agua Hedionda
Ryan's Painting	666 TOWNSITE DR , Vista, CA 92084		1721	2352	Buena Vista
Stark Painting Inc	2525 PIONEER AVE #1, Vista, CA 92083		1721	23599	Agua Hedionda
Terry's Painting	533 SUNSET DR , Vista, CA 92083		1799	23599	Agua Hedionda
Vision Painting	810 N Citrus , Vista, CA 92084		Unassigned	2352	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
(p) Landscaping					
Alta Vista Lawn Care	534 W. CALIFORNIA AVE #4, Vista, CA 92083		782	56173	Buena Vista
Andres Gardening & Hndymn Svc	1984 WARMLANDS AVE , Vista, CA 92084		782	56173	Buena Vista
Artistic View	405 PALMBARK , Vista, CA 92083		782	56173	Buena Vista
Brians Landscape And Maintenance	452 W Los Angeles Dr , Vista, CA 92083		Unassigned	54132	Buena Vista
Brother's In Law Landscaping	343 Gail Dr , Vista, CA 92084		Unassigned	811	Buena Vista
Brothers Maint	320 ACATENO AVE , Vista, CA 92083		782	56173	Buena Vista
Casas Tree Service	755 HIGHLAND DR , Vista, CA 92083		783	Unassigned	Buena Vista
Castillo Landscaping	1424 Bonair Road #11, Vista, CA 92084		Unassigned	56173	Buena Vista
Chlorophyll Kid	916 JUDILYN DR , Vista, CA 92083		782	56173	Buena Vista
Classic Touch Landscape Maint	2185 HAWLEY DR , Vista, CA 92084		782	56173	San Luis Rey
Cole Landscape	824 Earth Dr , Vista, CA 92083		Unassigned	54132	Buena Vista
Condominium Services Company	402 OLIVE AVE #B, Vista, CA 92083		781	54132	Buena Vista
Cortez Tree Service	720 W. CALIFORNIA AVE , Vista, CA 92083		783	Unassigned	Buena Vista
Countryside Landscape	2049 E. VISTA , Vista, CA 92084		782	56173	San Luis Rey
Cox Landscape	947 Sheffield Dr , Vista, CA 92081		Unassigned	56173	Agua Hedionda
Cutters Source	1334 N. MELROSE DR #C, Vista, CA 92083		782	4442	Loma Alta
Dan Boteler Landscaping	579 MAR VISTA DR , Vista, CA 92083		1799	23599	Agua Hedionda
Darrel D Rose Landscaping	508 MOA DR , Vista, CA 92083		782	56173	Buena Vista
Enrique Chavez	209 Hawthorne Circle , Vista, CA 92083		Unassigned	56173	Buena Vista
Fernando's Tree Service	280 Alestar St #4, Vista, CA 92083		Unassigned	54132	Buena Vista
G&F Landscape	1593 E. VISTA WAY #A, Vista, CA 92084		781	54132	Buena Vista
Gonzalez Tree Svc & Lndscpng	314 ACATENO AVE , Vista, CA 92084		782	56173	Buena Vista
Green Meadows Lawn Service	1243 ARCADIA AVE #C, Vista, CA 92084		782	56173	Buena Vista
Green Weaver Landscaping Services	527 Huff St. , Vista, CA 92083		Unassigned	56173	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Greenness Design	1146 SUNSET DR , Vista, CA 92083		782	56173	Agua Hedionda
Hernandez Gardening	401 W California Ave #17, Vista, CA 92083		Unassigned	56173	Buena Vista
Hernandez Lndscpg & Grdng Svc	952 WELLPOTT PL , Vista, CA 92084		782	56173	Buena Vista
Invision Landscape Inc.	1366 Brewley Lane , Vista, CA 92083		Unassigned	54132	Agua Hedionda
J. R. Landscaping & Maintenance	950 Arcadia Ave. #40, Vista, CA 92084		Unassigned	56173	Buena Vista
Jackson Landscape Construction	2202 BAXTER CANYON RD , Vista, CA 92083		782	56173	Agua Hedionda
Jmb Landscaping & Tree Service	310 BANDINI PL , Vista, CA 92083		783	Unassigned	Buena Vista
Joel Hernandez R	1804 Christi Dr , Vista, CA 92084		Unassigned	54132	Buena Vista
Kaufman Masonry & Landscape Supply	845 W. VISTA WAY , Vista, CA 92083		5211	44411	Buena Vista
Las Palmas Landscape Mtc	309 LADO DE LOMA DR , Vista, CA 92083		782	56173	Buena Vista
Leituala Tree Work And General Maintenance	156 Pond Place #23, Vista, CA 92083		Unassigned	54132	Buena Vista
Life Gardening Svcs	1803 MANZANITA CT , Vista, CA 92083		782	56173	Agua Hedionda
Mobile Handyman And Landscape	848 Smith Dr , Vista, CA 92084		Unassigned	811	Buena Vista
Monica's Garden	2304 AZURE LN , Vista, CA 92081		Unassigned	42293	Agua Hedionda
N J Landscaping	2330 Azure Lane , Vista, CA 92081		Unassigned	54132	Agua Hedionda
Pascual Perez	1200 E Taylor St , Vista, CA 92084		Unassigned	54132	Buena Vista
Rafael Sanchez Maint	206 W. CALIFORNIA AVE , Vista, CA 92083		782	56173	Buena Vista
Rancho Tree Service	425 REDLANDS ST , Vista, CA 92085		1799	23599	Buena Vista
Rancho Vista Landscaping Inc.	1335 WARMLANDS AVE , Vista, CA 92084		782	56173	Buena Vista
Robles Landscaping	247 E. BOBIER DR , Vista, CA 92084		782	56173	Buena Vista
Slobo Landscaping	1735 STORMY LN , Vista, CA 92084		1799	23599	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Tesoro Landscape / So Cal Landscape Svc	1045 HIGHLAND DR , Vista, CA 92083		782	56173	Buena Vista
The Lawn Center	603 S. SANTA FE AVE , Vista, CA 92083		782	4442	Buena Vista
The Vintage Rose	2057 PASEO LADERA , Vista, CA 92084		5992	45311	San Luis Rey
Tree Barber Enterprises, Inc.	1923 GOODWIN DR , Vista, CA 92084		783	54132	San Luis Rey
Trotta Landscape	460 OCEANVIEW DR , Vista, CA 92084		781	54132	Buena Vista
Turf Star, Inc.	2110 LA MIRADA , Vista, CA 92083		782	56173	Agua Hedionda
(q) Nurseries					
Arellano Growers Whsl	2015 FOOTHILL DR , Vista, CA 92084	X	5193	42293	Buena Vista
Briggs Tree Company Inc	1111 POINSETTIA AVE , Vista, CA 92083	X	0181	111422	Agua Hedionda
Buena Creek Nursery	1280 SUNSET DR , Vista, CA 92083	X	5193	422293	Agua Hedionda
Coopers Cactus	1097 CREST VIEW RD , Vista, CA 92083	X	5193	42293	Agua Hedionda
Desert Theater II	800 SUNSET DR , Vista, CA 92083	X	5193	422293	Agua Hedionda
Esperanza Growers	1455 E. TAYLOR ST , Vista, CA 92084		0181	1114	Buena Vista
Fiamengo Nursery	1715 MONTE MAR RD , Vista, CA 92083	X	0181	111421	Buena Vista
HMS Co.	1400 Arcadia Ave., Vista, CA 92084	X	5193	42293	Buena Vista
Mikes Landscape & Nursery Co	753 N. EMERALD DR , Vista, CA 92083	X	0181	111336	Buena Vista
Rainbow Gardens	1444 E. TAYLOR ST , Vista, CA 92084		0181	1114	Buena Vista
Rancho Garcia Nursery	1640 Bonair Rd., Vista, CA 92084	X	5193	42293	Buena Vista
South Coast Orchids	805 MAR VISTA DR , Vista, CA 92081	X	0181	111421	Agua Hedionda
Torres Asuncion Growers	1712 Anza Ave., Vista, CA 92084	X	0181	111422	San Luis Rey
United Plant Growers, Inc.	1054 MAR VISTA , Vista, CA 92081		5193	42293	Agua Hedionda
Warmland Nursery	1850 WARMLAND AVE , Vista, CA 92084		0181	1114	Buena Vista
(r) Golf Courses & Other Rec. Facilities					
Festival Fun Parks, L L C - Arcade	1525 W. VISTA WAY , Vista, CA 92083		7999	713990	Buena Vista
Shadowridge Country Club	1980 GATEWAY DR , Vista, CA 92083		7999	532292	Agua Hedionda
(s) Cemetaries					
Allen Bros Mortuary & Chapel	1315 S. SANTA FE AVE , Vista, CA 92083		7261	81221	Buena Vista

Business Name:	Street Address	Inspected	SIC	NAICS	Watershed
Cremation Services Inc	2570 FORTUNE WAY D, Vista, CA 92083		7261	81221	Agua Hedionda
Palm Crest Funeral & Cremation	2598 FORTUNE WAY I, Vista, CA 92083		7261	81221	Agua Hedionda
(t) Pool Cleaning					
Bobby Watkins Family Pool & Spa Service	943 Crescent Dr , Vista, CA 92084		Unassigned	23599	Mobile
Double J Pool Service	1215 Allea Lane , Vista, CA 92083		Unassigned	Unassigned	Mobile
Got Pool Cleaning And Repair	1569 Green Oak Road , Vista, CA 92081		Unassigned	22131	Mobile
Integrity Pool Services	915 Marlin Drive , Vista, CA 92084		Unassigned	Unassigned	Mobile
Leahi Pool & Spa	510 N Melrose Ave #P-7, Vista, CA 92083		Unassigned	22131	Mobile
Pool Perfection	801 HILLSIDE TER 8, Vista, CA 92084		7389	51224	Mobile
S & A Pool Service	528 Collyn St , Vista, CA 92083		Unassigned	22131	Mobile
(v) Port-a-potty Servicing					
United Site Services of CA, Inc	157 Nettleton Rd, Vista, CA 92083	X	7359	562991	Buena Vista
(w) Other					
AMERICAN SPORT BIKE	1341 Distribution Way #22, Vista, CA 92081		5571	441221	Agua Hedionda
ARTISTIC TILE & STONE	325 S. Santa Fe Ave., Vista, CA 92083		5211	444190	Buena Vista
Ceragem	1031 S Santa Fe Ave E, Vista, CA 92083		5999	446199	Buena Vista
Napa Auto Parts Vista	1334 North Melrose Drive, G/H, Vista, CA 92083		5531	44131	Loma Alta
Nu Blocks, LLC	2420 Grand Ave, B, Vista, CA 92081		8731	541710	Agua Hedionda
Pelican Packaging Inc	2365 OAK RIDGE WAY, Vista, CA 92083		7389	56191	Agua Hedionda
Prudential Overall Supply	2485 ASH ST, Vista, CA 92083		7211	812321	Agua Hedionda
Rayne Water Of North County	2011 W.VISTA WAY, Vista, CA 92083		5499	445299	Buena Vista
RESTORONICS OF SAN DIEGO	1340 Specialty Drive #C, Vista, CA 92083		7629	811211	Agua Hedionda

Appendix C-2
Commercial Facilities Requiring Follow-up Inspections
Enforcement Summary

Business Name	Address	Main Area of Site or Issue Requiring Follow-Up			Actions Taken			
		Grease Bin	Waste Area	Other BMP Issues	Case	Verbal	NOV	Citation
Aibertos Mexican Food	435 N. SANTA FE AVE	✔			07-072	1	1	0
Albertson's #6201	1301 E Vista Way	✔			07-045	0	1	0
Albertson's #6797	1601 S Melrose Dr	✔			07-026	0	1	0
Allen's Auto	718 East Vista Way			✔	none	0	0	0
American Petroleum	1740 East Vista Way			✔	07-044	0	1	0
Arashi Japanese Cuisine	962 S. Santa Fe Ave.	✔			07-068	0	1	1
Armandos Mexican Food	770 SYCAMORE AVE Suite #L	✔			07-029	0	1	1
Autotyme Automotive, Inc.	1146 North Melrose Drive, #801			✔	none	0	0	0
California Pizza Kitchen	307 Vista Village Drive	✔		✔	07-056	0	1	0
Chili's Grill & Bar	255 Vista Village Dr.	✔			07-022	1	0	0
Chin's Szechwan Vista, Inc.	600 E VISTA WAY	✔			none	0	0	0
Chipotle Mexican Grill	30 MAIN St #G-100	✔			07-054	0	1	0
Coast Equipment Rental	1713 W. VISTA WAY			✔	07-091	0	1	1
Colima's Mexican Food	1850 Hacienda Dr. Suite#22	✔			07-018	0	1	4
Del Taco 212	1037 BOBIER DR.	✔			07-080	0	0	1
Dominos Pizza 8300	603 E. SYCAMORE AVE		✔		none	0	0	0
Dos Amigos Restaurant	1651 S. Melrose Dr, Suite D	✔			07-035	0	1	0
Eddie's Market	415 N Santa Fe			✔	none	0	0	0

Appendix C-2
Commercial Facilities Requiring Follow-up Inspections
Enforcement Summary

El Asadero Restaurant	1717 E VISTA WAY, SUITE #106	✔			none	0	0	0
El Callejon Vista	20 Main St, H-100	✔			none	0	0	0
El Caporal Mexican Food	800 ESCONDIDO AVE B	✔			07-069	0	1	0
El Pollo Loco #3492	495 S. Melrose Dr.	✔			none	0	0	0
El Ranchero	226 MAIN ST	✔			07-058	0	1	0
El Rinconcito Mexican Seafood Resturant	1033 S SANTA FE AVE SUITE #E	✔			07-065	0	0	2
Elk's Lodge Restaurant	1947 E Vista Way	✔			none	0	0	0
Emerald Thai Cuisine	1011 S. SANTA FE AVE	✔			none	0	0	0
Eriberto's Mexican Food	1805 HACIENDA DR	✔			07-017	0	1	1
Filibertos Mexican Food	960 E VISTA WAY	✔			07-046	0	1	2
Foodmaker Inc 55 - Jack In The Box	815 E VISTA WAY	✔			none	0	0	0
Frank's Mexican Grill	122 W. CALIFORNIA AVE	✔			07-077	0	1	0
German Auto Clinic	912 Postal Way			✔	none	0	0	0
Hennessey's	224 MAIN St	✔			none	0	0	0
Holly's Pies	540 W. VISTA WAY	✔			none	0	0	0
In N Out Burger #61	2010 HACIENDA DR	✔			07-020	0	1	1
Jack in the Box #3019	1471 N. SANTA FE AVE	✔			07-074	0	1	0
Jack In The Box #3029	260 S MELROSE DR.	✔			07-023	0	1	1
Jack's Auto Repair	427 Redlands, Suite A			✔	none	0	0	0
Jj's Deli Cafe #5	1495 POINSETTIA AVE 152	✔			none	0	0	0
Juanita's Taco Shop	248 MAIN ST	✔			07-059	0	1	0
Juniors Taco Shop	1680 S. Melrose Dr. #110	✔			07-033	0	1	0

Appendix C-2
Commercial Facilities Requiring Follow-up Inspections
Enforcement Summary

Kentucky Fried Chicken	840 E VISTA WAY	✔			07-048	1		0
Los Cabos Mexican & Seafood	760 E VISTA WAY	✔			07-050	0	1	4
Mama & Papa's Pizza Grotto	988 ESCONDIDO AVE SUITE A	✔			07-063	0	1	0
Mc Donalds 12791	1470 N. SANTA FE AVE	✔			07-076	0	0	0
Mexican Buffet	1234 S SANTA FE AVE	✔			07-066	0	1	0
Mi Pueblito Mexican & Seafood Inc.	815 N. SANTA FE AVE	✔			07-073	0	1	1
Mobile Food Service Hub	365 Olive Ave Suite A	✔			07-057	0	1	0
Nikos Burgers	1004 S. Santa Fe Ave.	✔			07-067	0	1	0
Nucci's Italian Cafe Pizza Pas	1580 S. MELROSE DR Suite #108	✔			07-027	0	1	0
Oggi's Pizza & Brewing Co.	425 S. MELROSE DR	✔			07-024	0		2
Oscar's Mexican Food	822 E VISTA WAY	✔			07-049	0	1	1
Panda Express #1262	316 Sycamore Ave	✔			07-030	0	1	1
Panda Express, Inc.	20 Maint St. Suite #160	✔			07-052	0	1	1
Pepper Tree Frosty	270 S SANTA FE AVE	✔			07-070	0	1	0
Pho Lucky	770 Sycamore Ave # E & F	✔			none	0	0	0
Popeyes Fried Chicken	1817 W. VISTA WAY Suite #F	✔		✔	07-008	1	1	2
Primo Food Market	1535 W. VISTA WAY	✔			07-061	0	1	1
Rancho del Oro	1281 N. Santa Fe Ave #K	✔			none	0	0	0
Rancho Grande Mexican & Seafood	102 S SANTA FE AVE	✔			07-071	0	1	1
Rodeos Meat Market	356 VISTA VILLAGE DR	✔			07-053	0	1	0
Rudys Coyote Cafe	1450 N. SANTA FE AVE Suite #Y	✔			07-075	0	0	1
SKS, Inc. Petroleum Distributors	620 South Santa Fe Avenue			✔	07-084	0	1	0

Appendix C-2
Commercial Facilities Requiring Follow-up Inspections
Enforcement Summary

Sun Hing Buffet LLC	1960 HACIENDA Dr	✔			07-039	0	1	0
Sunnyside Grill	1651 S. Melrose Dr Suite A	✔			07-028	0	1	1
Taco Bell 20413	3271 BUSINESS PARK DR	✔			none	0	0	0
Ted's Auto Service	727 East Vista Way			✔	none	0	0	0
Thai Pasta	1876 Hacienda Dr.	✔			07-019	0	1	1
The Original Pancake House	435 S. MELROSE DR	✔			07-025	0	1	1
Tortilleria Los Reyes	218 MAIN ST	✔			none	0	0	0
Vaqueros Mexican Food	1740 E. VISTA WAY	✔			07-044	0	1	0
Vista Equipment Rentals Inc	1121 S. SANTA FE AVE			✔	none	0	0	0
Vista Transmission Service	427 Redlands Street, Suite B			✔	none	0	0	0
Vista Way Cafe	868 E Vista Way	✔			07-047	0	1	0
Wendy's Restaurant #16	567 W. VISTA WAY	✔			07-062	0	1	1
Wienerschnitzal 288	901 S SANTA FE AVE	✔			07-064	0	1	0
						4	45	34

APPENDIX D

D-1 **CONSTRUCTION INVENTORY (December 2007)**

D-2 **CONSTRUCTION INSPECTION FORM**

High Priority Projects

Inspector	Street Name	Street No	APN	Area (ac)	WDID	GP No	PROJ NAME
D. Shaw	S. Melrose Dr.	2301	219-010-40-00	5.9		07-008	Premier Crossing
D. Shaw	Sycamore Ave	877	217-023-61-00	5.03		54, 06-070, 06-	Pocina Properties (24 lot subdivision)
K. Groscup	Copper Dr	719	164-081-05-00	6.1		05-020	56 Townhomes
K. Groscup	Edgehill	2261	178-010-55-00	8.74		06-047	14 homes - Willowen Ridge
K. Groscup	Grandview	1434	174-131-02-00	8		05-041	WARMLANDS 13
K. Groscup	Taylor St E	385	171-162-24-00	7.04	9 37C317212	01-020	Rough Grading for PC 2-043- 9 lot subdvsn
R. Ward	Olive @ VVD					CIP	Olive Improvements CIP# 8043

Medium Priority Projects

Inspector	Street Name	Street No	APN	Area (ac)	WDID	GP No	PROJ NAME
D. Shaw	Hilo Way	702	183-460-19-00	3.25	9 37C322096	03-026	No Activity - GRADING PLAN NO 03
D. Shaw	Melrose Way	1276	166-182-04-00	2.92	9 37C322097	03-088	GRADING PLAN NO 01 **IS PROJECT ACTIVE?/ YES**
D. Shaw	Oleander	2565				01-022	5 Lot Sub
D. Shaw	Vale View Drive	787	166-680-17-00	3.34	9 37C323095	04-048	SUNSET HEIGHTS - 5 lot subdivision
D. Shaw	Vista Village Dr.	307	164-205-12-00	3.5		06-009	Vista Village Phase IV
K. Groscup	Warmlands Ave.	2346	171-240-18-00	1.78		03-036	3 SFR
R. Ward	Melrose S.	326	164-230-71-00	1.17	9 37C326833	05-017	VISTA EXECUTIVE PLAZA/permit issued 11/1/05
R. Ward	Sunset Dr.	1805	169-022-02-00	2.4		05-012	SFR

Low Priority Projects

Inspector	Street Name	Street No	APN	Area (ac)	WDID	GP No	PROJ NAME
D. Shaw	Business Park Dr.	3181	221-661-02-00	3.09		06-006	Business Park Car Wash
D. Shaw	Fortune Way	2545	219-031-21-00			06-072	COMM
D. Shaw	Miramar Dr.	1020	183-170-39-00			06-034	SFR (Sorges Residence)
D. Shaw	Ridge Rd.	1311	169-160-38-00	.40		05-015	SFR
D. Shaw	Scott St.	3105	219-011-62-00	1		07-016	SAIC Test Lane Demonstration - Parking Lot
D. Shaw	Sunset Dr	1226	169-101-01-00			06-068	SFD
D. Shaw	Sunset Dr	930	183-012-36-00	.23		06-002	SFR
D. Shaw	Vale View Dr.	709	166-740-08-00			06-037	SFR
F. Durazo	Emerald/Grapevine					CIP	Intersection
K. Groscup	Knapp Dr	1834	159-161-19-00	.5		03-050	SFR
R. Ward	Golden Trail	1090	179-270-46-00	.50		05-036	SFR

Print Date:
1/18/2008

PRIORITY: ____

Site ID: ____

Municipal NPDES Stormwater Permit

CONSTRUCTION ACTIVITIES INSPECTION FORM

Project Name/Description: _____ APN: _____

Inspector: _____ Project Location: _____ Size of Site (acres): _____

Covered under Statewide General Construciton Permit? ☐ Check if YES If yes, is SWPPP on-site? ☐ Check if YES WDID: _____

Contact Person: _____ Contact Phone: _____ Emergency Phone: _____

Bldg. Permit No: _____ Grading Plan No: _____ Disturbed area (sq. ft): _____

DATE OF INSPECTION _____ **% COMPLETE:** _____

Checking the boxes below means that the particular BMP is in place-even if it is ineffective. If it is ineffective - note action and comments below.

PHASE: _____

Erosion Control BMPs: Is there evidence of erosion at the project site? YES ☐ No ☐

☐ Preserving Existing Vegetation ☐ Hydroseeding ☐ Soil Binders, Hydraulic Mulch ☐ Permanent Landscaping

☐ Geotextiles, Plastic Covers, Erosion Control Blankets/Mats ☐ Diversion Channel for Run-On ☐ Other Type: _____

Sediment Control BMPs: Is there evidence of offsite sediment or sediment discharge? YES ☐ No ☐

☐ *Perimeter Protection:* ☐ N/A ☐ Gravel Bags ☐ Silt Fencing ☐ Fiber Rolls ☐ Other _____

☐ *Slope Protection:* ☐ N/A ☐ Silt Fencing ☐ Fiber Rolls ☐ Slope Drains ☐ Other _____

☐ *Resource Protection (environmentally sensitive areas and waterways)*

☐ *Sediment Capture:* ☐ N/A ☐ Detention Basin ☐ Desilting Basin ☐ Other _____

☐ *Velocity Reduction:* ☐ N/A ☐ Check Dams ☐ Rip Rap ☐ Other _____

☐ *Off-Site Sediment Tracking:* ☐ N/A ☐ Gravel Entrance ☐ Temporary Construction Road ☐ Other _____

☐ *Inlet Protection:* ☐ N/A ☐ Gravel Bags ☐ Gravel Rolls ☐ Fiber Rolls ☐ Other _____

☐ *Other* Type: _____

Materials Management BMPs: Are activities or storage of materials/wastes resulting in discharge offsite? [For example-paints, concrete, plastering] Yes ☐ No ☐

☐ *Spill Prevention and Control Program (employee education and training)*

☐ *Fuel Chemicals Stored On-Site:* ☐ N/A ☐ Secondary Containment ☐ Leak Detection ☐ Other _____

☐ *Equipment Related Wastes:* ☐ N/A ☐ Covered ☐ Secondary Containment ☐ Other _____

☐ *Stockpile On-Site (Solids):* ☐ N/A ☐ Covered ☐ Secondary Containment ☐ Other _____

☐ *Trash/Litter On-Site:* ☐ N/A ☐ Receptacles Provided ☐ Covered ☐ Secondary Containment

☐ Other _____

☐ *Concrete Waste:* ☐ N/A ☐ Designated Washout Area ☐ Secondary Containment ☐ Other _____

☐ *Sanitary Waste:* ☐ N/A ☐ Secondary Containment ☐ Located away from inlets ☐ Other _____

Comments:

Enforcement Action: ☐ No Action ☐ Verbal Warning ☐ Correction Notice ☐ Stop Work ☐ Admin Cite ☐ NOV

Follow Up? ☐ Follow Up Date: _____

Signature _____ **Date:** _____

Version - November 2006

Supervisor Review: _____

APPENDIX E

E-1 2006-2007 ENFORCEMENT CASE DATABASE SUMMARY

E-2 2007 DRY WEATHER FIELD SCREENING AND ANALYTICAL MONITORING FINAL REPORT

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-068 **Type** Private Lateral **Location Address** 1173 Amador **Watershed** Buena Vista Creek **Call Date** 7/18/2006 **Case Closed** 7/18/2006	Sewer spill overflow	Sewer blockage on private lateral. Tenant felt it is city main. Wastewater crew responded, videoed the city main. It was a private lateral block. Property owner called plumber and line was cleared. Discharge pooled in low spot and City reclaimed it.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, clear liine. **Follow-up Actions** Property owner called to provide phone # and name of plumbing contractor and status. ASAP Drain Guys (760) 721-2904, root invasion **Actions completed** Case closed. Copy of NOV mailed to property owner.
SW No. SW06-070 **Type** Private Lateral **Location Address** 1947 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 7/24/2006 **Case Closed** 10/3/2006	Sewage spill	Toilet paper visible spilling onto soil around clean-out on west side of property. Area dry. Spill appears to be contained on slope and has not entered creek.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** camera the line, repair or replace line. **Follow-up Actions** 7/27/06, cap replaced, area cleaned. 8/1/06, John Bergman has camera'd the line showing 2 problem areas. 8/16/06, John has board meeting on 8/30/06 and will request funds to contract a plumber. 9/6/06, John has installed sweep cleqn-outs and is procurring a metal cage for clean-out at the west end. Another clean-out was discovered in the process of line repair. Water line burst between kitchen and bar. I will check progress in two weeks. 10/3/06 Waterline repaired. John will have cage in place by 10/27/06. **Actions completed** All lines repaired. A cage is being manufactured to cover the clean-out that is vandalized chronically.
SW No. SW06-099 **Type** Private Lateral **Location Address** 828 Matagual Dr. **Watershed** Agua Hedionda Creek **Call Date** 9/20/2006 **Case Closed** 9/20/2006	Sewer Spill into right-of-way	As in Complaint Description. Wastewater crew on scene, owner called plumber.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, repair/clear private lateral **Follow-up Actions** Obtain copy of plumber's cause of stoppage report. **Actions completed** Plumber's bill indicated cause of blockage and they repaired/cleared the lateral.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-109 **Type** Private Lateral **Location Address** 1519 Sunrise Dr. **Watershed** Buena Vista Creek **Call Date** 10/27/2006 **Case Closed** 10/27/2006	Sewage spill into right-of-way	Sewage was not spilling at arrival on scene. Wastewater crew also on scene waiting to have area washed down when plumber arrives. Unable to contact property owner, tenant or neighbors for phone # of property owner. Toilet paper was visible on pavement around cleanout cap that had popped off from blockage. ASAP Drain Guys arrived on scene at 11:30 a.m. and cleared blockage of twisted roots that was completely blocking 4" private lateral. Flow reinstated and wash down complete. NOV written and stapled with "HELP" brochure on dorr of home. Scene cleared. 10/31/06, Property owner, Steven Anaya, contacted me. He will be paying plumbing company. Replace cleanout cover with appropriate title.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, repair line. Replace cleanout lid to read "SEWER". **Follow-up Actions** Clear line - Confirm water flow. **Actions completed** Private lateral cleared.
SW No. SW06-111 **Type** Private Lateral **Location Address** 479 Bandini Pl **Watershed** Buena Vista Creek **Call Date** 11/6/2006 **Case Closed** 12/7/2006	Sewer seepage into roadway from private lateral.	Observed as in Complaint Description. 11/16/07, received a call from owner of ASAP DRAIN GUYS. Contract signed and Dig Alert requested. Project will start week of 11/20/06. Public Works personnel (Wastewater crew supervisor) stated City main is clear but 479 Bandini Place has root impaction on private lateral.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, repair line; camera line mandatory as spill is chronic. **Follow-up Actions** 11/15/06, Verify status with plumber. 4:30 p.m. received a call from owner of ASAP DRAIN GUYS. Line is displaced but unblocked. Pipe will be repaired by next week. **Actions completed** 1/30/06, Owner of ASAP DRAIN GUYS - work is complete- pipe was old "Orangeberg" and it had deteriorated and was crushed. I viewed VHS inspection of new line - all pipe looks intact - no roots and waterflowing freely.
SW No. SW07-006 **Type** Private Lateral **Location Address** 1605 S. Melrose **Watershed** Agua Hedionda Creek **Call Date** 1/19/2007 **Case Closed** 1/23/2007	Someone has a hose and it is draining into sewer line.	observed as described above. I spoke with employee and requested cleanout cap be replaced. He stated plumbing is blocked. I requested line be cleared by plumbing contractor as this same problem occurred in 2003.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge to sewer clean out at rear of store. Replace clean out cap. Repair blocked ine. **Follow-up Actions** photo verify that cap has been replaced- contact plumbing contractor for line repair verification. **Actions completed** cap on and ASAP Drain Guys verified line had been cleared.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-007 **Type** Private Lateral **Location Address** 8 Viper Wy **Watershed** Agua Hedionda Creek **Call Date** 1/30/2007 **Case Closed** 2/6/2007	private lateral- sewage odor	Wastewater on scene. Manhole cover removed. Complete impaction of private lateral. Director of company and facilities manager were on scene. I directed them to contact plumber. ASAP Drain Guys arrived on scene- line vaccumed and the lateral had a crushed 45 degree elbow about 2' down from surface. ASAP replaced elbow and 3' of pipe. Camera showed that a 40' line to main was clear. Concrete pavement would be replaced by another company.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge repair line provide plumbing contractor invoice for work performed **Follow-up Actions** ASAP drain guys confirmed repair on 1/31/07 **Actions completed** plumbing invoice fax'd to engineering on 2/6/07 and system functional
SW No. SW07-013 **Type** Private Lateral **Location Address** 1031 S. Sante Fe Ave **Watershed** Buena Vista Creek **Call Date** 2/8/2007 **Case Closed** 2/14/2007	Sewer spill from sewer cleanout	observed sewage discharging out of cleanout onto pavement. Wastewater crew on scene mitigating spill and plumber contacted (ASAP Drain Guys)	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge, repair or replace private lateral, provide plumber invoice **Follow-up Actions** receipt of invoice **Actions completed** 2/14/2007, invoice received - line repaired.
SW No. SW06-074 **Type** Commercial **Location Address** 25 Main St **Watershed** Buena Vista Creek **Call Date** 8/4/2006 **Case Closed** 8/28/2006	Trash compactor enclosure plumbed to storm drain.	Verified plans (listed as 425 Vista Village Dr. GP 01-062, pg 9 of 16, drawing 3675). Two area drains in rear trash compactor enclosures are plumbed to storm drain system. Met on site with Steve Hargrave, Property Manager.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge. Alter present BMP maintenance to conform with Stormwater Pollution Prevenetion Standard. Provide Stormwater program with a spill prevention plan. **Follow-up Actions** 8/18/06, Received a call from Frank Soto, General Manager for Krikorian. He will redesign BMP for theate maintenance of trash cans and compactor area. I requested copy by next week. 8/28/06, BMP procedure/policy received via e-mail from Frank Soto. **Actions completed** Monitor intermittently.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-075 **Type** Commercial **Location Address** 1040 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 8/8/2006 **Case Closed** 8/10/2006	Grease discharge	As in Complaint Description. Did not enter creek; dried brush trapped spill.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, contact plumber, verify last date of maintenance of grease interceptor and provide contract copy. Clean grease from rear lot. **Follow-up Actions** Immediately cease discharge and contact plumber. By 8/10/06 provide grease recycling contract. **Actions completed** Line cleared, copies received and lot cleaned.
SW No. SW06-077 **Type** Commercial **Location Address** 901 S. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 8/10/2006 **Case Closed** 11/13/2006	No second containment and no overhead coverage, grease accumulation in trash enclosure	No second containment and no overhead coverage, grease accumulation in trash enclosure	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease washing outside, obtain second containment and overhead coverage for grease recycler. Remove grease accumulation in trash enclosure. **Follow-up Actions** Photo Verify. 9/5/06, no corrective action. Darren Snow, franchise owner, not in office. 9/6/06, same status. 9/7/06, Darren snow contscted me. He was in a quandry to know what to do regarding secondary containment and an overhead coverage. His grease company (Baker Commodities) told him he didn't need a secondary containment because the grease recycler already has one and there are no drain inlets near the dumpster area. Baker Commodities would also build (out of plywood) an overhead cover. 9/25/06. Darren stated he fired Baker Commodities and has contracted with North Countv Grease. **Actions completed** 11/7/06, Citation issued - failure to have overhead coverage. 11/9/06, Drums now have overhead coverage. 11/13/06, Received a call from Darren Snow regarding citation and I suggested the appeal process.
SW No. SW06-078 **Type** Commercial **Location Address** 1330 E. Vista Way #1 **Watershed** Buena Vista Creek **Call Date** 8/10/2006 **Case Closed** 8/31/2006	No second containment or overhead coverage. Also, storing mop/cleaning supplies with no second containment or overhead coverage.	Burger Place and rear door. Also known as Chili Coast Burgers	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, provide second containment and overhead coverage on all storage of waste and materials **Follow-up Actions** Photo verify. **Actions completed** Area clean. No grease drum. I spoke with Pat Ng, she stated she is now storing grease in jugs and company picked up the drum. Mop,keg and cleaning supplies removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-084 **Type** Commercial **Location Address** 3265 Business Park Dr. #B **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 10/12/2006	No second containment or overhead coverage	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** obtain second containment and overhead coverage **Follow-up Actions** Photo verify. 9/12/06, I spoke with Juan Villarroel regarding second containment and overhead coverage. He will discuss this with his wife and make a decision. **Actions completed** Mr. Villarroel has decided to recycle grease into original oil container and have vendor pick it up in that fashion. I contacted grease drum vendor to remove drum as no one claimed ownership.
SW No. SW06-095 **Type** Commercial **Location Address** 3265 Business Park Dr. #C **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 10/23/2006	No second containment and no overhead coverage	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second containment and overhead coverage or remove form location. **Follow-up Actions** Photo verify. 9/18/06, Hand delivered registered letter to Danny Banks, son of owner Patrick Banks. I contacted Patrick. They are selling the business but he will investigate who owns grease drum. **Actions completed** Grease drum removed from site. Area cleaner. Business owner Banks stated he was selling at the end of October 2006.
SW No. SW06-085 **Type** Commercial **Location Address** 3271 Business Park Dr. **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 10/12/2006	No second container and no overhead coverage.	As in Complaint Description. 12/13/06, City Inspector noted spilled grease at location. I spoke, personally, with the Asst. Mgr - she will have area cleaned - Manager will return 12/19/l06. 12/19/06, was unable to reach Mgr. by phone. 12/20/06, I placed a call to Corporate Office. I spoke with Representative. She requested I send all information to Corporate Office. I sent NOV letter and pictures of second containment and overhead coverages and web addresses. Requested all be in place by 1/10/07. 1/2/07, Received a call from Dist. Mgr. for Taco Bell. They have ordered a unit (back ordered) and it will be delivered in two weeks. He had area power washed. I told him I would monitor area for compliance. 1/18/07, no corrective action. Called Dist. Mgr. - another design required ordering, another 10 days. 2/9/07, Dist. Mgr. called and unit arrived. 2/15/07, no corrective action - issue second citation. (1st citation 2/7/07). 2/26/07, corrective action is inadequate. I contacted Mgr. She requested an additional 2 weeks to reorder second containment and overhead coverage. 3/12/07, Mgr. need extension, area is clean.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Obtain second containment and overhead coverage **Follow-up Actions** Photo Verify. 9/25/06, No corrective action - phone # of restaurant sounds like a fax machine. Phone directory and reverse directory offer same number. Searched Business License and showed phone number was Suncoast Ventures. I left a message on 10/10/06. Photo of recycler unit appears to comply with second containment and overhead coverage as it is a black metal enclosure. 10/12/06, Spoke with Jayne Strommer. She feels the unit is in compliance, but monitor it for any discharge. **Actions completed** Recycle bin is a second containment and there is overhead coverage - Monitor…. It did not have a second containment! Grease was dripping out. 3/19/07, second containment and overhead cover in place - Area Clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-083 **Type** Commercial **Location Address** 1370 Decision St. #D **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 9/25/2006	No second containment and no overhead coverage for plaster on pallet	As in Complaint Description. In addition, a portable basketball hoop is leaking a grease like substance.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second containment and overhead coverage. Remove grease stains around hoop. **Follow-up Actions** Photo verify **Actions completed** Area cleaned. No plaster bags on palette. Basketball hoop removed.
SW No. SW06-082 **Type** Commercial **Location Address** 785 Shadowridge Dr **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 9/20/2006	No second containment or overhead coverage	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** obtain second containment and overhead coverage. **Follow-up Actions** Photo verify. 9/11/06 Kelvin Ng contacted me. He is considering his options and we discussed drum containment. 9/13/06 Kelvin will contact company to remove drums and store grease in jugs for recycling. **Actions completed** Drums removed.
SW No. SW06-081 **Type** Commercial **Location Address** 601 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 11/16/2006	No secondary containment or overhead coverage, grease stains, trash bin lids open and hoses off lot.	No secondary containment or overhead coverage, grease stains, trash bin lids open and hoses off lot. 1-800-698-4782 x 223 / rneilsonlebaron@yahoo.com - - Ralph Nielson of Labaron Investments owns property.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge, remove grease stains, obtain secondary containment and overhead coverage and keep trash bin lids closed. **Follow-up Actions** Photo verify. 10/24/06, I contacted Gabriella Andrade @ corporate office and faxed NOV, letter, automatic pump system & yellow roll top pictures with fax header. 10/27/06, Alvarado Davila came to the Engineering Dept. Tony Tirado assisted in translation. I gave Mr. Davila information that was sent certified and he will contact his recycle company for solution. 11/2/06, Alvarado Davila met w/Tony Tirado and I to reiterate secondary containment and overhead coverage necessity and to keep area clean. **Actions completed** Secondary containment and overhead coverage in place and area clean. Property owner & business owner notified of compliance.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-080 **Type** Commercial **Location Address** 625 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 8/31/2006	Not swept, trash bins not in enclosures, no cover on storage drums, oil/grease on lot, leaves and debris throughout site.	As in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Sweep regularly, cover drums with tarp, remove oil/grease often and secure trash bins **Follow-up Actions** Photo verify **Actions completed** All clean and swept. Oil removed with absorbant and trash bins are locked. (EDCO can not gain access to dumpster in enclosure location and bins are stored on west site.)
SW No. SW-06-079 **Type** Commercial **Location Address** 1611 S. Melrose Dr., #P **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 9/25/2006	No second containment and no overhead coverage	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain a second containment and overhead coverage **Follow-up Actions** Photo verify **Actions completed** Recycler removed.
SW No. SW06-086 **Type** Commercial **Location Address** 3281 Business Park Dr. **Watershed** Agua Hedionda Creek **Call Date** 8/22/2006 **Case Closed** 11/13/2006	No secondary containment and no overhead coverage	No secondary containment and no overhead coverage	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Obtain secondary containment and overhead coverage **Follow-up Actions** Photo verify. See 3245 Business Park Dr. SW06-087 - both businesses owned by Spring Hawk Corporation. 10/25/06, David Bashey left message that APS (Automatic Pump System) will be installed on 11/7/06. **Actions completed** 11/8/06, APS installed. Old tallow bin removed and area is clean. E-mailed David Bashey with approval o corrective action.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-088 **Type** Commercial **Location Address** 632 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 8/23/2006 **Case Closed** 11/13/2006	No secondary containment and no overhead coverage, grease stains and over-watering	No secondary containment and no overhead coverage, grease stains and over-watering	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain secondary containment and overhead coverage, reduce irrigation and remove grease accumulation. **Follow-up Actions** 9/18/06, area power washed and landscape irrigation appears repaired. Grease recycler, no corrective action. 9/19/06, contacted Claudio Eleazar, Manager, and he needs to check with corporate office for recycler change. **Actions completed** 10/17/06, New tallowbin installed, monitor and contact Mike by 10/31/06 for long term solution. 11/13/06, secondary containment and overhead coverage in place. Spill kit available within enclosure.
SW No. SW06-089 **Type** Commercial **Location Address** 1711 University Dr. #110 **Watershed** Agua Hedionda Creek **Call Date** 8/23/2006 **Case Closed** 12/8/2006	No second containment or overhead coverage - grease accumulation	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Obtain secondary containment and overhead coverage - remove grease accumulation **Follow-up Actions** Photo verify. 9/26/06, Spoke with managers of Rubio's - both had forwarded information to corporate office. Representative at Corporate Office stated he is working with a recycling company "Baker Commodities" to obtain a compliance style. 10/10/06, I spoke with the Corporate Rep. and he ordered the yellow roll top last week. Expects it by 10/17/06. 10/25/06, Contacted the Rep. for status - no corrective action to date - left message. 10/26/06, Rep. returned call and stated it will be 3 weeks for rolltop to arrive. I requested he contact Rubio's management to "keep it clean". I contacted Rubio's and stated same. **Actions completed** 55 gallon drum is within yellow rolltop second containment and overhead coverage. It is located at rear door of business. Unit is also on four wheeled tray. Tallow bin was located in dumpster at north end of business. I spoke to Mgr. and voiced my concern about current location, wheeled tray and distance from previous collection dumpster area with spill potential. I suggested removing wheels and placing unit at dumpster where old tallow bin was. Mgr. concurred and would speak to District Mgr.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-090 **Type** Commercial **Location Address** 1711 University Dr. #130 **Watershed** Agua Hedionda Creek **Call Date** 8/23/2006 **Case Closed** 9/26/2006	No second containment and no overhead coverage, grease accumulation	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second containment and overhead coverage. Remove grease accumulation **Follow-up Actions** Photo Verify. 9/26/06, I spoke with Gilberto Garcia, new owner of Chen's. NOTE: name change from CHIN's to CHEN's. **Actions completed** Grease recycler moved inside suite. Area clean. Poster of BMP maintenance on wall.
SW No. SW06-091 **Type** Commercial **Location Address** 1730 University Dr. **Watershed** Agua Hedionda Creek **Call Date** 8/23/2006 **Case Closed** 12/22/2006	No second containment or overhead coverage - grease accumulation	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Obtain second containment and overhead coverage - remove grease on dumpster pavement. **Follow-up Actions** Photo verify - 9/25/06, no corrective action. 10/10/06, phoned store, spoke with Asst. Mgr. She stated letter had been received by her Mgr. and forwarded to District Mgr - no response from them to date. 10/10/06, no corrective action. I responded to message from SLM Waste Mgmt. They are in contact with corporate to install second containment and overhead coverage. I requested he contact me with their choice and estimated time of installment. A call was received and all of above was clarified. 100/19/06, I e mailed SLM Waste Mgr. information on APS System. 10/26/06, spoke with Mgr. Second containment and **Actions completed** Three 55 gallon drums are securely housed within the second containment/overhead coverage. Damage has been done to housing unit and doesn't appear to have been constructed completely as screws are not installed at base. I contacted Mgr. and stated the case closed and check screws for safety.
SW No. SW06-092 **Type** Commercial **Location Address** 1790 University Dr. **Watershed** Agua Hedionda Creek **Call Date** 8/23/2006 **Case Closed** 10/12/2006	No second containment and no overhead coverage, grease accumulation	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain secondary containment and overhead coverage for grease recycler. Have area power washed and maintain area. **Follow-up Actions** Photo Verify. 9/13/06, Rudy Lopez contacted me with questions. I recalled his phone # and left message. 9/14/06, I contacted Rudy Lopez, we spoke at length (41 minutes) regarding code requirements. He stated he has 25 other restaurants in this area and he has contradicting code requirements. I faxed over a copy of Chapter 13.18 and 660 Hacienda D-Max inspection. 9/20/06, Spoke with Rudy Lopez, he has a spill kit for both Carl's Jr's. and is working on obtaining a secondary containment and overhead coverage. 9/26/06, Rudy will contract with company to install in-house recycle system (hole **Actions completed** APS (Automatic Pump System) installed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-096 **Type** Commercial **Location Address** 636 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 8/29/2006 **Case Closed** 10/17/2006	Channel congested with accumulation of vegetation, trash and debris.	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear & clean channel **Follow-up Actions** Photo verify. 9/6/06,I spoke with Paolo Caoile - responsibility to clean channel falls to tenant as shown in lease agreement. 9/18/06, John Kalafut called and has been in touch with Amy & Carlsbad watershed. 9/28/06, Paolo contacted me and he will contact Amy Trujillo, of Carlsbad watershed network, to coordinate spraying, etc. **Actions completed** Channel cleared of non-native invasive plants. Water is flowing freely and no trash is visible.
SW No. SW06-097 **Type** Commercial **Location Address** 632 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 8/29/2006 **Case Closed** 10/17/2006	Channel blockage due to excessive vegetation, trash and debris	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear & clean channel **Follow-up Actions** Photo verify. 9/26/06, Jenifer Steger contacted me to clarify removal of vegetation. **Actions completed** Area clear and no trash. Water flowing freely.
SW No. SW06-100 **Type** Commercial **Location Address** 650 Sycamore **Watershed** Agua Hedionda Creek **Call Date** 9/13/2006 **Case Closed** 10/5/2006	Landscape company throwing plant trimming refuse into creek in front of Burlington's.	As in Complaint Description. Took photos of two Aztec Landscape employees throwing trimmings into creek. While driving to location I witnessed an Aztec Landscape driver toss a cigarette out of his company truck. White Ford pick-up, CA 6S8 3825, truck #22, male driver. 1-800-281-9909. Eastbound Hwy 78 at Mar Vista. AT SITE: Aztec truck #40, one forman and two employees. I spoke with Forman who cantacted his supervisor. They cleaned up the dumped refuse. Aztec (619) 460-1106 fax. Rafael Aguilar (619) 464-3303 ext 106 and (619) 572-4016. No Business License, contacted Cathy Garrison in the Business License Dept. She contacted Aztec. BL # 00022660. See e-mail 10/5/06 12:28 p.m. Aztec is contracted by City of Vista through Community Service Dept. In notified Rod Krueger on all occurrences.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discarge. Provide educational training to employees with documentation. **Follow-up Actions** Intermittent monitoring of all landscape employees. **Actions completed** As above. Received a fax from Axtec of employee training.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-105 **Type** Commercial **Location Address** 705 E Vista Way **Watershed** Buena Vista Creek **Call Date** 10/10/2006 **Case Closed** 10/12/2006	Trash and debris blown from business into creek	Trash and debris blown from business into creek and food strewn about.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove trash and debris, lock dumpster, keep product inside and not on loading dock. Maintain and monitor rear lot. **Follow-up Actions** Photo verify **Actions completed** Area cleared of debris.
SW No. SW06-108 **Type** Commercial **Location Address** 40 Main St **Watershed** Buena Vista Creek **Call Date** 10/17/2006 **Case Closed** 2/5/2007	Grease recycle unit in non-compliance.	As in Complaint Description. I spoke with the owner and discussed necessity to address grease. Owner was leaving for the Middle East and returning in 30 days. Another partner would address this issue.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge, provide second containment and overhead coverage or remove unit to indoor location. Remove grease on asphlat and maintain. **Follow-up Actions** Photo verify. 11/20/06, no corrective action. Left message at the office - citation in one week. 11/29/06, no corrective action. Left message at the office - issue $100.00 citation. 12/13/06, no corrective action. Left message at the office - issue #200.00 citation. 12/14/06 or 12/15/06, owner returned from Middle East. 12/20/06, left message for owner outlining what needs to have happen or citations will continue to be issued. Owner called and we discussed issues. He is unhappy with Baker Commodities as they were to resolve this issue. I gave owner the names and phone numbers of "Grainger" and "One More Time" as **Actions completed** 2/1/07, faxed request to clean pavement and enclosure of grease. 2/5/07, I spoke with Rep. of Regency Center. He stated his company would pressure wash site.
SW No. SW06-115 **Type** Commercial **Location Address** 553 Mercantile St **Watershed** Buena Vista Creek **Call Date** 11/15/2006 **Case Closed** 11/22/2006	Discharge of paint grindings while washing and hosing vehicle and pavement.	Discharge of paint grindings while washing and hosing vehicle and pavement. I spoke with Mr. Gastellum regarding grey discharge in water running down the road. He stated he had been sanding a vehicle and washing it off all day. I requested he cease discharge and retain pollutant and dispose of properly. He stated the "grey stuff" is what is lying on the ground from the weather. I could see no reason to try to convince him as he has been asked previously while I was accompanied by Clarence Rich (Code Compliance) earlier in '06. I returned to Engineering and issued a NOV for pollutant discharge. Area will be monitored.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and retain/reclaim on site **Follow-up Actions** Intermittent monitoring **Actions completed** Intermittent monitoring

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-123 **Type** Commercial **Location Address** 440 N. Olive Ave. **Watershed** Buena Vista Creek **Call Date** 11/27/2006 **Case Closed** 1/4/2007	Motor grease/oil and grit on pavement to rear door of business and oozing toward sump located on east side of building which discharges to right-of-way.	observed as described in complaint description	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease disharge, remove oil and grit. **Follow-up Actions** photo verification. **Actions completed** Area cleaned.
SW No. SW06-124 **Type** Commercial **Location Address** 875 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 12/8/2006 **Case Closed** 1/18/2007	Car suds into storm drain on site.	I spoke with on-site manager and explained that the car wash discharge needs to be directed to clarifier with better effeciency. Some of the wash water runs off wash rack and channels into storm drain and inlet about 20 ft. to the south.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease errant discharge, berm suggested surrounding rack. Request clarifier maintenance schedule and contractor. **Follow-up Actions** Photo verification and recpt of maintenance schedule. 12/20/06, contractor will implement asphalt berm in January-fiber cloth has been placed surrounding inlet to prevent further discharge from wash rack. **Actions completed** 1/4/07, no corrective action other than fibercloth and receipt of maintenance shcudule I left a vocemail message requesting update- a return call indicated week of 1/8-12/07 for install. 18/07, aslphalt surrounding wash reack has been laid, monitor for compliance. 1/10/07, no corrective action- voice mail from on-site manager. 1/15/07, no corrective action- receivd call from distric manager stating asphalt in on 1/17/07; complaint from regional board.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-127 **Type** Commercial **Location Address** 2050 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 12/14/2006 **Case Closed** 1/4/2007	Sediment Discharge off property	observed as described in complaint description. Minimal dirt is spilling off curbe. I don't believe the dirt is the primary source.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge and implement BMP's **Follow-up Actions** photo verification **Actions completed** gravel bags nesteled into soil back of curb and area in front of 2050 E. Vista Way clean.
SW No. SW06-129 **Type** Commercial **Location Address** 1700 University Dr **Watershed** Agua Hedionda Creek **Call Date** 12/22/2006 **Case Closed** 1/17/2007	Day porter spreading chemicals on pavement in front of storm drain inlet and scrubbing w/ broom then hosing into inlet.	observed as described in complaint description. Contaced property manager of square and requested day porter of company, number, contact info, etc. Letter with info. Brochures sent to day porter company.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge. Train employees and verify professional pressure washer contractor reclaims water **Follow-up Actions** verify pressure wash company does reclaim and employees informed of wash procedure **Actions completed** all verified and I have not seen any further violations from day porters at this location.
SW No. SW07-003 **Type** Commercial **Location Address** 377 Vista Village Dr **Watershed** Buena Vista Creek **Call Date** 1/8/2007 **Case Closed** 1/18/2007	Runnoff from hosing off-site	Day porter was washing off site and not collecting the discharge. Suds and water entering inlet to south of business.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge- have professional pressure wash company clean site that reclaims discharge water. **Follow-up Actions** verify operations mgr uses public works company that reclaims **Actions completed** no pressure wash company is used per manager- he has instructed his employees to scrub, mop and dry, then move to another area requiring cleaning. Site will be monitored. *Dirty water discharged inside utility sink.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-001 **Type** Commercial **Location Address** 251 S. Melrose Dr., Suite 303 **Watershed** Buena Vista Creek **Call Date** 1/9/2007 **Case Closed** 1/10/2007	trash and debris disposed by restaurant outside empty dumpster, liquid and food throughout enclosure.	observed as described in compliant description.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** remove and dispose of all debris in appropriate containers. Power wash dumpster encloser and reclaim all discharge. **Follow-up Actions** photo verify **Actions completed** all area clean
SW No. SW07-005 **Type** Commercial **Location Address** 1013 Service Pl **Watershed** Buena Vista Creek **Call Date** 1/18/2007 **Case Closed** 2/6/2007	No second container/ overhead storage on auto waste fluids in canopy area, dumpster lids open	observed as describe in complaint description	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** implement second container for drums, keep lids closed unless actively in use. **Follow-up Actions** photo verification **Actions completed** 2/6/2007, Spill pallet in place under drums and trash llids down. I encouraged tenant to do a spring cleaning prior to annual DMAX inspection. He agreed.
SW No. SW07-004 **Type** Commercial **Location Address** 976 Escondido Ave **Watershed** Buena Vista Creek **Call Date** 1/18/2007 **Case Closed** 3/12/2007	No second container /overhead coverage for drums, sediment spilling off hill next to dumpster enclosure- failure to correct these 2006 DMAX inspection items.	observed as described in complaint description. 1/23/07, received call from owner of APRO LLC inquiring of certified letter they received. We discussed violations and course of resolve. 2/13/07, Received call from owner of APRO LLC to discuss second container and overhead coverage plus cost involved. They asked for other suggestions.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** remove sediment and repair landscaping, implement second container/ overhead coverage. Have spill protection plan available upon request **Follow-up Actions** photo verification. 2/6/07 no corrective action-issue citation. 2/15/07, no corrective action-issue second citation. 3/1/07 spoke w/ property manager and unit was not installed per her direction and I mentioned mud was not cleaned, manager said it will be done today. 3/8/07, mud/ dirt removed to left of dumpster, no corrective action with second container/overhead coverage. **Actions completed** 3/2/07, cover and spill contaiment dropped off and mud not removed. I contacted owner. She stated drums too heavy and have requested old picked up/ new installed w/ second container/overhead coverage by 3/8/07. 3/12/07, second container/overhead coverage in place, area clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-011 **Type** Commercial **Location Address** 650 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 1/29/2007 **Case Closed** 3/4/2007	trash and debris throughout site and blown into creek	observed as described in complaint description. 2/07/07, Current information is invalid for Property Manager. I contacted property owner-no response. Recalled property owner 2/28/07- left message and note by secretary to property owner. 2/12/07, no response from property owner. Called again and left another voice message. Received a fax from tenants with a phone number for outside area property manager. 2/14/07, contacted tenant, she had building damage due to rain and propery manager for outside of building came onto site. I requested assistance.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** remove all trash and debris through site and creek. Obtain appropriate waste receptacles, contract with day porter and pressure wash company - provide name, contact and phone number. **Follow-up Actions** photo verification and receipt of contractor info. 2/26/07, no corrective action. 2/28/07, contacted property management representative and he will correct all by 3/1/07. **Actions completed** 3/1/07, parking lot clean- creek not. Contacted property management representative. 3/4/07, creek is exceptionally clean.
SW No. SW07-022 **Type** Commercial **Location Address** 255 Vista Village Dr. **Watershed** Buena Vista Creek **Call Date** 1/30/2007 **Case Closed** 3/28/2007	no second container/ overhead coverage for grease recycler	observed as described in complaint description. I contacted assist manager and he would obtain second container/ overhead coverage. I requested the area to be pressure washed as pavement in enclosure was greasy and dirt had accumulated	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease any greasy discharge from grease recycler- obtain second container/ overhead coverage and pressure wash area. **Follow-up Actions** photo verification **Actions completed** second container/ overhead coverage in place, area pressure washed
SW No. SW07-008 **Type** Commercial **Location Address** 1817 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 2/1/2007 **Case Closed** 4/23/2007	discharging pollutants into alley way at business back door with thought that metal grate was a disposal inlet.	D-MAX inspector provided photo verification. Previouis annual inspection notes similar behavior with no corrective and consistent results. After discussion with storm water supervisor it was concluded to issue citation. No business license, notified City Business License Dept, she will proceed.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** cease discharge replace existing metal grate with solid metal cover labeled "sewer". Provide level surface for recycled tank, provide second container/ overhead coverage and pressure wash bin area. Train employees and provide grease trap schedule. **Follow-up Actions** photo verification and obtained a copy of grease trap schedule. Verify employee training. 2/15/07, no corrective action - issue second citation. 2/26/07, some corrections have been done/some pending. **Actions completed** 4/5/07, I spoke with tenant from Popeye's and requested number for property manager. Grate over sewer has not been implemented. 4/12/07, no response from tenant. 4/23/07, employees signatures verified on what's cookin' book.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-010 **Type** Commercial **Location Address** 1717 E. Vista Wy **Watershed** Buena Vista Creek **Call Date** 2/5/2007 **Case Closed** 4/23/2007	poor housekeeping throughout site. No second container/ overhead storage on grease drums in dumpster area, trash over-flowing, using area drain for personal discharge, storage outside, cargo container.	observed as stated in complaint description. I contacted property manager and after discussing concerns, emailed him photos and NOV to improve conditions.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** cease discharge, obtain second container/overhead storage for drums, keep lids closed on trash bins, inform tenants not to use area drains, pressure wash dumpster enclosure. **Follow-up Actions** photo verification. 02/15/07, no corrective action-issue citation. 2/28/07 no corrective action - contacted code compliance requesting additional assistance for tenant storage. Transient activity noted at large cargo container to the east of the enclosure. I called property manager, he is meeting on-site, Tuesday, with power wash companies, tenants and myself. 3/07, nuymerous emails-area cleaner- market stil discharging fluids out back door. 4/4/07, emailed and left message for property owner-no response from him. 4/2307, area cleaner. **Actions completed** 3/6/07, I met with property owner, some areas had been swept; much more to be corrected. 4/23/07, area cleaner, storage area clear.
SW No. SW07-037 **Type** Commercial **Location Address** 1717 E. Vista Way, Suite 114 **Watershed** Buena Vista Creek **Call Date** 2/5/2007 **Case Closed** 6/6/2007	maritime cargo container on parking stalls at Stacy Plaza accumulating trash, grafitti, debris, etc.	observeed as described in complaint description. Transient activity chronic also. I spoke with property manager and code compliance and development services: container is in municode violation.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** remove cargo container from site, remove trash and debris accumulating around and under. **Follow-up Actions** photo verification. 5/22/07 received call from (x1262). He stated that General of VFW wanted us to resend the NOV to remove container. I explained to John Conley in regards to condition of container, that Commander of VFW is in the process of relocating container and contents. I then phoned tenant to relate the necessity to proceed with removal by May 31st. He stated General of VFW had expectations to have the NOV removed. Tenant had stalled in moving forward. I reiterated deadline 5/31/07. **Actions completed** 05/31/07. container still on site. Spoke with employee at business. Much has been removed and locating a person to relocate container. 6//4/07, container should be removed by 6/6/07. 6/6/07, Cargo container removed and area swept.
SW No. SW07-015 **Type** Commercial **Location Address** 500 Hacienda Dr. **Watershed** Buena Vista Creek **Call Date** 3/5/2007 **Case Closed** 3/7/2007	interceptor requires maintenance-bad odor and appears to be discharging.	observed as reported in complaint description. I spoke with store manager, they have scheduled a sevice for all 3 interceptors within the week	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease any further discharge. Service unit and power wash rear area of interceptors-reclaim all discharge water. **Follow-up Actions** photo verify and obtain work invoice of cleaning **Actions completed** area cleaned and invoice received

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-017 **Type** Commercial **Location Address** 1805 Hacienda Dr **Watershed** Buena Vista Creek **Call Date** 3/22/2007 **Case Closed** 5/3/2007	No second container/ overhead coverage, no spill kit	observed as described in complaint description. Unable to verify if spill kit was available, sediment and debris have been removed from inlet leading to street.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** obtain second container and overhead coverage, and spill kit **Follow-up Actions** photo verification, second storage and overhead coverage and visually verify spill kit. 4/13/07, no corrective action, issue citation. 4/26/07, curb installed around recycler, no overhead coverage, met with tenant and code compliance officer for translation purposes. Cite if not contacted by 5/3/07. I requested restaurant manager to make an overhead coverage decision - once decided, more time will be allowed for final compliance. **Actions completed** 5/3/07, a shed is in place over grease bin. I requested the inside area be maintained for any grease spills.
SW No. SW07-018 **Type** Commercial **Location Address** 1850 Hacienda Dr. **Watershed** Buena Vista Creek **Call Date** 3/22/2007 **Case Closed** 5/16/2007	grease recyclers no second containter/ overhead storage. Trash and debris accumulation in dumpster enclosure	observed as described in complaint description. 5/15/07, tenant wanted to appeal citations after having them explained to him while visiting code compliance. He was referred to a code compliance officer for further requirements, he stated he already met all of them, and I stated that I would do a follow-up inspection.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** cease further discharge, obtain second container/ overhead coverage, and remove trash. **Follow-up Actions** photo verification. 4/13/07, no corrective action-issue citation. 4/27/07, no correctvive action- issue second citations, email property manager. **Actions completed** 5/16/07, shed housing - one grease recycling unit is in place and area clean.
SW No. SW07-019 **Type** Commercial **Location Address** 1876 Hacienda Dr **Watershed** Buena Vista Creek **Call Date** 3/22/2007 **Case Closed** 4/25/2007	no secondary containment and overhead coverage, dumpster area congested with food, trash, debris.	observed as described in complaint description	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** cease discharge, remove all trash, food and debris within dumpster and area of site of restaurant, and obtain a second container and overhead storage. **Follow-up Actions** photo verification. 4/13/07, no corrective action, issue citation. 4/24/07, employee ofThai Pasta called to say new drum is inside business and it was dropped of 4/13/07 around noon. **Actions completed** 4/25/07,drum was moved inside restaurant. Property manager was notified of enclosure untidiness and required maintenance.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-020 **Type** Commercial **Location Address** 2010 Hacienda Dr **Watershed** Buena Vista Creek **Call Date** 3/22/2007 **Case Closed** 4/27/2007	no second container/ overhead storage, grease accumulation in dumpster enclosure	observed as described in complaint description.4/26/07, service manager is implementing second container/overhead coverage. Will photo 4/27/07	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** cease an discharge, obtain second container/overhead coverage **Follow-up Actions** photo verify 4/13/07, no corrective action. Issue citation **Actions completed** 4/27/2007, met on site with service manager who installed a unique cover over grease bin. A spill pan was placed under bin. This tainless steel cover was fabricated by him for In-N-Out Burger. While it doesn not conform to generally approved second container/ overhead storage designs, we both agreed to test it and if required, refinement. In N Out Burger would upgrade to comply.
SW No. SW07-021 **Type** Commercial **Location Address** 440 Olive Ave **Watershed** Buena Vista Creek **Call Date** 3/26/2007 **Case Closed** 3/29/2007	pressure washer discharged water to right- of-way	observed as described in complaint description. I met w/ Tracer Engineering and Downstream Services with APC pressure wash company. Area was reclaimed.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** remove and reclaim all affluent from discharge **Follow-up Actions** photo verification **Actions completed** all discharge had been reclaimed.
SW No. SW07-031 **Type** Commercial **Location Address** 1717 E. Vista Way, Suite 104 & 105 **Watershed** Buena Vista Creek **Call Date** 3/26/2007 **Case Closed** 4/4/2007	blood and water was discharged out of business rear(behind meat cases of market) door and washed to area drain.	I spoke with tenant on 3/16/07 and requested he cease further discharge. He stated he would talk with his employees. I notified property manager and health department of the pollutant discharge of 3/26/07	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease any further discharge to area drain. Train employees in BMPs. **Follow-up Actions** intermittent monitoring **Actions completed** intermittent monitoring, no further discharge noted since 3/26/07.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-033 **Type** Commercial **Location Address** 1680 S. Melrose Sr. #110 **Watershed** Agua Hedionda Creek **Call Date** 4/2/2007 **Case Closed** 4/10/2007	dumpster lids open, no second container/ no overhead coverage	observed as described in complaint description. Grease recycler was immaculate and no grease spill seen on pavement. After conferring with Jayne S. Stormwater Program Manager, it was concluded to allow bin to remain with second container/ overhead coverage and monitor.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** maintain grease recycler free of grease spills and remove any pavement spills **Follow-up Actions** 4/19/07, unit still extremely clean, photo verification **Actions completed** unit remains clean. Will monitor througout ensuing months
SW No. SW07-028 **Type** Commercial **Location Address** 1651 S. Melrose Dr. #A **Watershed** Agua Hedionda Creek **Call Date** 4/2/2007 **Case Closed** 5/14/2007	no second container/ overhead coverage, grease accumulation on pavement	observed as described in complaint description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** provide second container/ overhead coverage, remove grease on pavement **Follow-up Actions** photo verification. 4/17/07, tarp and wood spill plate intended as second container/ overhead coverage- not an approved method. Issued citation. 4/30/07, no corrective action- both Dos Amigos and Sunnyside Grill have requested drums inside garage. 5/2/07 Dos Amigos called and drums are in place. Bin to be placed on 5/4/07. **Actions completed** 5/14/07, grease unit removed from rear of business and area clean. Two 55-gallon drums have been placed in mini-garage on west side of building.
SW No. SW07-027 **Type** Commercial **Location Address** 1580 S. Melrose Dr. **Watershed** Agua Hedionda Creek **Call Date** 4/2/2007 **Case Closed** 4/17/2007	no second container/ overhead coverage and dumpster lids are open.	observed as described in complaint description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** provide second container/ overhead coverage **Follow-up Actions** photo verification **Actions completed** second container/ overhead coverage implemented

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-026 **Type** Commercial **Location Address** 1601 S. Melrose Dr. **Watershed** Agua Hedionda Creek **Call Date** 4/2/2007 **Case Closed** 4/17/2007	no second container/ overhead coverage, fluids on pavement and excessive grease accumulation. Loading dock has oil/grease trash and debris.	observed as described in complaint description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** obtain second container/ overhead coverage, remove grease, fluids, oil, trash and debris from loading dock and pavement. **Follow-up Actions** photo verification **Actions completed** grease recycler removed, area clean, loading dock clean
SW No. SW07-025 **Type** Commercial **Location Address** 435 S. Melrose Dr. **Watershed** Buena Vista Creek **Call Date** 4/2/2007 **Case Closed** 5/14/2007	no second container/ overhead coverage, trash and grease accumulation throughout enclosure. Restaurant continues to wash (possibly floor mats) food and pollutants to storm drain.	observed as described in complaint description. I spoke with someone from property management company on 4/12/07 and she will discuss issues with business owner.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** obtain second container/ overhead coverage- cease discharge into storm drain area. Remove grease accumulation on pavement and empty drum to rear of building. **Follow-up Actions** photo verification **Actions completed** second container/ overhead coverage, dumpster area clean
SW No. SW07-024 **Type** Commercial **Location Address** 425 S. Melrose Dr **Watershed** Buena Vista Creek **Call Date** 4/2/2007 **Case Closed** 5/14/2007	no second container/ overhead coverage, trash and grease accumulation throughout enclosure. Restaurant continues to wash (possibly floor mats) food and pollutants to storm drain.	observed as described in complaint description. I spoke with someone from property management company on 4/12/07 and she will discuss issues with business owner.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** obtain second container/ overhead coverage- cease discharge into storm drain area. Remove grease accumulation on pavement and empty drum to rear of building. **Follow-up Actions** photo verification-no corrective action, left a message with property management company. She talked with both Oggi's and Pancake House, and she stateed that property is owned by Oggi's and cite if necessary; citations issued. **Actions completed** 05/14/07, second container/ overhead coverage in place and area clean. A concrete berm has been installleed at rear of yard gate to prevent discharge to area drain.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-035 **Type** Commercial **Location Address** 1651 #D S. Melrose Dr. **Watershed** Agua Hedionda Creek **Call Date** 4/2/2007 **Case Closed** 5/14/2007	no second container/ overhead coverage for grease unit and grease on pavement and bin	observed as described in complaint description. I spoke with business owner at Sunnyside Grill. He stated both businesses were aware of second container/ overhead coverage requirement and they would respond, as both use the recycler.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** provide second container/ overhead coverage and remove grease **Follow-up Actions** photo verification. 4/30/07, no corrective action taken, I contacted business owner and we discussed grease bin location with Sunnyside Grill owner, two 55-gallon drums will be delivered and placed in mini garage on west side of building. 5/2/07 owner called, drums in place, bin will be removed by Friday. **Actions completed** 5/14/07 grease unit removed from rear of business and area clean. two 55-gallon drums have been placed in mini garrgag on west side of building.
SW No. SW07-030 **Type** Commercial **Location Address** 316 Sycamore Ave. **Watershed** Agua Hedionda Creek **Call Date** 4/2/2007 **Case Closed** 6/21/2007	No spill containment for grease bin (trash enclosure is covered).	observed as described in complaint description. 5/30/07 met with manager and property manager on-site to discuss grease recycler	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** remove accumulated fluids and implement spill pan under grease bin. **Follow-up Actions** photo verification. 4/17/07, fluids noted under bin- no spill containment, white substance originating from enclosure was discharged across pavement. **Actions completed** 5/14/07, no corrective action- contacted manager. 5/30/07, met w/ other managers on-site, area much cleaner. 6/21/07, flexible spill pan under bin, okay, area clean.
SW No. SW07-023 **Type** Commercial **Location Address** 260 S. Melrose Dr. **Watershed** Buena Vista Creek **Call Date** 4/2/2007 **Case Closed** 6/11/2007	No second container/ overhead coverage , grease accumulation on pavement, trash and debris in enclosure, dumpster lids are up.	observed as described in complaint description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** obtain second container/ overhead coverage , clean pavement free of grease and pollutants **Follow-up Actions** photo verification. 4/17/07- no corrective action-issue citation. 4/30/07, no corrective action, attempted phone contact-no answer. 5/27/07 assistant managercalled, he is installing APS system. Will call w/ install date. 5/31/07, I contacted a gentlemen at One More Time and he said the unit was on site and will be installed by 6/11/07. he explained that Jack in the Box Corp. had ordered their own APS system and the cost is $4,000 and takes 3-4 weeks to get delivered. **Actions completed** 5/14/07, no corrective action. Received email from assistant manager. 6/11/07, APS system installed, area clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-029 **Type** Commercial **Location Address** 770 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 4/2/2007 **Case Closed** 4/30/2007	2 grease recycler drums in enclosure require removal. Dumpster enclosure requires pressure washing. No lid on dumpster. Furniture in additional enclosure.	observed as described in complaint description. I contacted property management and he will correct violations. I spoke with tenant and she can't get North County Grease to remove drums, new grease company may assist	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** remove obsolete grease drums, pressure wash enclosure and obtain dumpster with lid. Remove furniture from enclosure. **Follow-up Actions** photo verification. 4/17/07, citation issued to tenant, two 55-gallon drums still on site with no second container/ overhead coverage. Trash bags have been raided by critters and trash (food) has been spilled onto enclosure pavement. **Actions completed** Two 55-gallon drums removed from site. One 55-gallon drum with second container/ overhead coverage in enclosure.
SW No. SW07-032 **Type** Commercial **Location Address** 2011 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 4/5/2007 **Case Closed** 4/18/2007	Salt crystal stock piles from water softener system is placed on roadside bluff and seeping into roadside swale..	observed as described in complaint description. A water leak from meter area on west side of building is apparent as algae bulid-up is accumulating on pavement. Sediment is discharging from bank on east side of lot.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** remove salt from areas at perimeter. Fix leak at southwest corner of buldiing. Remove sediment on building east side. **Follow-up Actions** photo verification **Actions completed** corrective action verified
SW No. SW07-039 **Type** Commercial **Location Address** 1960 Hacienda Dr. **Watershed** Buena Vista Creek **Call Date** 5/16/2007 **Case Closed** 7/19/2007	No second containter and no overhead coverage, excessive grease accumulation in dumpster enclosure, trash lids open.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, obtain second container and overhead coverage, remove grease accumulation. **Follow-up Actions** Photo verify. 6/4/07, business owner requested additional time ot obtain second container/overhead coverage. 6/11/07, second container/overhead coverage has been ordered. 6/21/07, recycler is gone and area is to be cleaned. **Actions completed** 6/26/07, area pressure washed - no cover on drums - left message with tenant. 7/5/07, contacted tenant - wood cover not approved. Provide cover over drums. Yellow spill pan okay. 7/17/07, phoned tenant, will meet 7/19/07 to view the overhead coverage. 7/19/07, second container and overhead coverage are in place - area clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-038 **Type** Commercial **Location Address** 3205 'C' Business Park Dr. **Watershed** Agua Hedionda Creek **Call Date** 5/17/2007 **Case Closed** 5/22/2007	no second container/ overhead coverage for grease drum	observed as described in complaint description	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** remove drum from dumptster enclosure or provide second container/ overhead coverage **Follow-up Actions** 5/21/07, received call from owner/new manager, he removed it to inside new room **Actions completed** 2/31/07, photo verification, drum gone, area clean.
SW No. SW07-040 **Type** Commercial **Location Address** 1810 University Dr. **Watershed** Agua Hedionda Creek **Call Date** 5/21/2007 **Case Closed** 7/19/2007	No secondary container or overhead coverage	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge, obtain secondary container and overhead coverage or relocate inside. **Follow-up Actions** 6/11/07, area cleared of accumulated storage, no secondary container or overhead coverage - issue citation. Representative with North County Square contacted me regarding the secondary container and overhead coverage. He will relate requirement to China Coast Buffet again. 6/25/07, No secondary container or overhead coverage - issued 2nd citations. **Actions completed** 6/29/07, received a call from the business owner - secondary container and overhead coverage are in place. 7/5/07, spill pan with two 55 gallon drums with wood cover - cover not an approved coverage method. Have attempted three times to call and speak with the business owner (7/2 - not there, 7/3 - not there, 7/5 - no response, no answer - issue 3rd citations. 7/6/07, I spoke with tenant, her grease provider was not providing correct information. We discussed possibilities and I allowed her one aditional week to obtain appropriate coverage. 7/19/07, recycler has secondary container and overhead coverage. Area is clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-045 **Type** Commercial **Location Address** 1301 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 5/31/2007 **Case Closed** 6/8/2007	leaky trash compactor, oil stains on loading dock and trash/debris accumulation	pressure wash location maintain loading dock free of accumulation of trash and debris, determine outlet of area drain.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** see site investigation wording **Follow-up Actions** 6/4/07, area cleaner. I spoke to new store manager regarding status of sewage drain inlet. The other managers have located that and will be contacting me. 6/6/07, store manager verified issues resolved and will meet me on-site 6/8/07 for photos. Blue prints indicate area drains are going to storm system. **Actions completed** 6/8/07, area clean.
SW No. SW07-049 **Type** Commercial **Location Address** 822 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 5/31/2007 **Case Closed** 7/16/2007	No second container, no overhead coverage, drain grate congested, grease accumulation throughout site.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Provide second container/overhead coverage, clean grate, degrease the lot. **Follow-up Actions** Photo verify. 7/5/07, no corrective action - issue first citation. 7/16/07, area has been cleaned - no second container or overhead coverage but it is immaculate. **Actions completed** 7/16/07, area is very clean. While no second container/overhead coverage has been implemented, the area is being maintained. A qualifying statement will be made regarding future disposition of grease unit if spills become chronic.
SW No. SW07-050 **Type** Commercial **Location Address** 760 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 5/31/2007 **Case Closed** 7/23/2007	no second container or overhead coverage. There are oil stain in the parking lot.	Observed as in Complaint Description. Cat litter was spread around grease recycle unit.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge, provide second container and overhead coverage, remove cat litter and degrease area. **Follow-up Actions** Photo verify. Dumpster lids down. Cat litter and tarp implemented as second container and overhead coverage. Issue 1st citation. 7/16/07 same as previous - issue second citation. **Actions completed** Dumpster area clean, lot asphalt repaired and second container and overhead coverage implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-046 **Type** Commercial **Location Address** 960 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 5/31/2007 **Case Closed** 7/20/2007	No second container/overhead coverage. Spill pan has accumulation of grease and stains on pavement in enclosure.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, remove grease accumulation on pavement, obtain overhead coverage, remove trash and debris throughout site. **Follow-up Actions** 6/12/07, tenant contacted me. He will address options. Photo verify. 7/5/07, no corrective action - issue first citation. 7/16/07, Some pressure washing & sweeping has been done. No overhead coverage - issue citation. Trash lids are down. 7/19/07, received a call form Code officer, the business owner was upset after receiving a $200.00 citation and stated the grease hauler did not remove grease bin on time. Also, stated a new second container/overhead coverage had been on site for a few days with two 55 gallon drums to be placed in dumpster enclosure once bin was removed. We agreed to meet on 7/20/07 to **Actions completed** 7/20/07, New unit in place. Spoke with owner regarding fluid stains within enclosure. He will remove. Lids were down and area clean within parking lot.
SW No. SW07-044 **Type** Commercial **Location Address** 1740 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 5/31/2007 **Case Closed** 7/6/2007	No second container/overhead coverage, dumpster lids open	Observed as described.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, obtain second container/overhead coverage, close lids on dumpster. **Follow-up Actions** Photo verify **Actions completed** Drum removed.
SW No. SW07-048 **Type** Commercial **Location Address** 840 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 5/31/2007 **Case Closed** 6/8/2007	no second container/ overhead coverage	site investigation shows the grease recycle unit does not have a second container/ overhead coverage. However, the area is clean and due to the design, spills are unlikely to occur.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** prevent future discharge **Follow-up Actions** intermittent monitoring **Actions completed** intermittent monitoring

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-047 **Type** Commercial **Location Address** 868 E. Vista Way **Watershed** Agua Hedionda Creek **Call Date** 5/31/2007 **Case Closed** 7/6/2007	No overhead coverage, dumpster lids open, enclosure has trash & debris accumulation.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, remove trash and debris, close dumpster lids, provide overhead coverage for grease drums. **Follow-up Actions** Photo verify **Actions completed** Overhead coverage implemented.
SW No. SW07-056 **Type** Commercial **Location Address** 307 Vista Village Dr. **Watershed** Buena Vista Creek **Call Date** 6/11/2007 **Case Closed** 7/16/2007	No second container or overhead coverage and chemicals on rack in rear service yard. Area drains to two outlets and unknown discharge location; trash bins are in rear enclosed service yard.	Observed as in Complaint Description. I spoke with General Manager of business. Plans indicate area drains plumb to storm drain system. I began communicating with the Sr. Vice Pres. of the development and he explained that the City of Vista requested the roof be removed and then plumb area service yard to storm drain system. See commercial plan corrections - sheet dated 3/1/06 - by Rick Snider. California Pizza Kitchen will place seals over area drains and house chemicals in sheds and keep grease recycler immaculately clean.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge. Obtain second container and overhead coverage and enclose or remove chemical storage in rear srvice yard. **Follow-up Actions** 6/26/07, no response via e-mail. I contacted General Manager - she apologized. Contacted her regional manager and requested that information will be addressed by 6/29/07. **Actions completed** Service yard has orange seals over two area drains. Chemicals are stored in weather protected sheds. Grease recycler isi extremely clean. A qualifying e-mail was sent to Sr. Vice Pres. of development.
SW No. SW07-059 **Type** Commercial **Location Address** 248 Main St. **Watershed** Buena Vista Creek **Call Date** 6/11/2007 **Case Closed** 7/5/2007	No spill containment	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second spill container. **Follow-up Actions** Photo Verify. **Actions completed** Second container implemented - area is clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-052 **Type** Commercial **Location Address** 20 Main St #160 **Watershed** Buena Vista Creek **Call Date** 6/11/2007 **Case Closed** 8/2/2007	No second container or overhead coverage - grease accumulation on unit & pavement; lids open	As observed in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; obtain second container/overhead coverage **Follow-up Actions** Photo verify. 7/10/07, no corrective action. I e-mailed Panda Express Representative; an interior tank style is being retrofitted for the store **Actions completed** 7/26/07, Spill containment - no overhead coverage. Grease on pavement with new bin in place: issue citation - posted on property. Employee called - received citation and will contact store representatives to clear up this issue. 8/2/07, overhead structure has been constructed and pavement is clean. I received no phone call or notification that this structure was implemented.
SW No. SW07-053 **Type** Commercial **Location Address** 356 Vista Village Dr. **Watershed** Buena Vista Creek **Call Date** 6/11/2007 **Case Closed** 7/10/2007	No second container/overhead coverage for recycler.	Observed as in Complaint Description	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain a second container and overhead coverage. Maintain area. **Follow-up Actions** Photo verify **Actions completed** Second container and overhead coverage implemented.
SW No. SW07-054 **Type** Commercial **Location Address** 30 Main St # G-100 **Watershed** Buena Vista Creek **Call Date** 6/11/2007 **Case Closed** 7/5/2007	No second container and overhead coverage	6/11/07, I spoke with business manager. I addressed the 55 gallon grease drum and requested a second container and overhead coverage. She would contact appropriate contractor.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second container and overhead coverage. **Follow-up Actions** Photo verify. 6/18/07, employee of SLM called for clarification. I e-mailed her the grease handouts. **Actions completed** Second container and overhead coverage has been implemented. Area is clean. I met with store manager on site to view new containment.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-057 **Type** Commercial **Location Address** 365 Olive Ave **Watershed** Buena Vista Creek **Call Date** 6/11/2007 **Case Closed** 7/23/2007	no second container or overhead coverage for two grease bins, dumpster lids open.	Observed as in Complaint Description. Numerous boxes, trash, debris, litter, stockpiles, old engine parts, old inoperable vehicles throughout site.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, obtain second container/overhead coverage, remove all trash, debris, stockpiles, engines/vehicles, keep lids closed on dumpsters. **Follow-up Actions** Photo verify, 7/6/07, area has improved, much has yet to be cleared. They are working with Code Compliance. 7/16/07, Site visit - much improved - so second container or overhead coverage yet. 7/17/07, called business owner …..not on site. 7/19/07, Met with business owner requested canopy and spill pan as soon as possible, by Monday 7/23/07. **Actions completed** A spill containment berm surrounding two large tank/bin recyclers with overhead canopy has been implemented. Area cleaner.
SW No. SW07-055 **Type** Commercial **Location Address** 303 Vista Village Dr. **Watershed** Buena Vista Creek **Call Date** 6/11/2007 **Case Closed** 8/8/2007	No secondary containment or overhead coverage; hosing off site; storage uncovered. Restaurant is next to creek. Dumpster lids open, fluids from compactor entering right-of-way.	Observed as described in Complaint Description. I spoke with restaurant manager. We walked the site and I explained the necessity to maintain good housekeeping practices. A second containment and an overhead cover for the recycler was required.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; provide second containment and overhead coverage; remove storage or place under cover; keep dumpster lids closed; remove fluid and grease accumulation from pavement and reclaim discharge. **Follow-up Actions** 7/10/07, no corrective action - issue citation. No contact from business owner. 7/11/07, received a call from regional manager. He will address the issues immediately. 7/16/07, regional manager is in contact with 'One More Time' recyclers to retrofit location. Temporary secondary containment and overhead coverage will be implemented. 7/18/07, Follow-up, thin board only covering 2/3rds of grease recycler with some section of cardboard under recycler. 7/20/07, I e-mailed regional manager information requesting update of retrofit. 7/25/07, regional manager ordered an APS system, arrival in 2 to 3 weeks. I contact **Actions completed** APS is installed and the large tank grease unit removed.
SW No. SW07-058 **Type** Commercial **Location Address** 226 Main Street **Watershed** Buena Vista Creek **Call Date** 6/11/2007 **Case Closed** 7/5/2007	No second container. Drum is located within a covered enclosure	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain spill containment of for drum. **Follow-up Actions** Photo verify **Actions completed** Spill pan implemented and area is clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-062 **Type** Commercial **Location Address** 567 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 6/19/2007 **Case Closed** 8/14/2007	No second containment or overhead coverage, grease accumulation, trash and debris.	Observed as described in Complaint Description. Trash lid is open.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; obtain second containment and overhead coverage; remove grease accumulation throughout. **Follow-up Actions** Photo verify. 6/28/07, no corrective action - issue citation. 7/16/07, Representative of Wendy's Corporate Office phoned to say she was in possession of citation and wanted clarification. She will proceed to correct violaton. She will communicate within the week with decision of second containment and overhead coverage. 7/24/07, Received phone message from Representative and e-mailed her back with suggestions. **Actions completed** Area is clean and second containment and overhead coverage has been implemented.
SW No. SW07-061 **Type** Commercial **Location Address** 1535 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 6/19/2007 **Case Closed** 7/26/2007	Trash and debris throughout site. Dumpster lids open, food strewn throughout lot. Heavy discharge from service yard to east area drain. No second container or overhead coverage for grease recycler.	Observed as in Complaint Description. Chemicals, mop bucket are outside; ice machine condensate; hosing off site.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge, close lids, obtain second container and overhead coverage, move mop, bucket and chemicals undercover. **Follow-up Actions** 7/11/07, Owner contacted me regarding these issues - left message. 7/12/07 I contacted owner. He will resolve issues. 7/20/07, Grease recycler moved into shed - no spill pan. Trash and debris throughout site. 7/23/07, I spoke with owner and e-mailed specific areas to address. **Actions completed** 7/26/07, Spill pan under grease recycler. Area cleaner. No run-off noted.
SW No. SW07-060 **Type** Commercial **Location Address** 980 Park Center Dr **Watershed** Agua Hedionda Creek **Call Date** 6/20/2007 **Case Closed** 6/22/2007	dumping chemicals at Dos Aarons and Park Center Dr.	white/grey mud like material in swale, curb\gutter, parking lot, pavement and roadway emanating from service truck. I spoke with tenant- the material is an acrylice base. I requested the MSDS sheet on the product and requested clean up.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease further discharge and remove all discharge **Follow-up Actions** photo verification **Actions completed** area clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-079 **Type** Commercial **Location Address** 240 S. Melrose Dr **Watershed** Buena Vista Creek **Call Date** 6/21/2007 **Case Closed** 8/1/2007	fdsw	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge. Remove grease accumulation from line to storm drain inlet and reclaim all discharge. Provide copy of work order from removal company - Maintain area free from discharge. **Follow-up Actions** Receive a copy of the work order - verify through policy of employee good housekeeping practices to reclaim all water in service area other than rain water. **Actions completed** Drains in service yard blocked. Grease recycler is covered and has a spill containment. Employees have been instructed to reclaim water in service yard and dispose of it into sanitary sewer. Islands Co. cleared grease in curb box.
SW No. SW07-065 **Type** Commercial **Location Address** 1033 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/19/2007	Second container and overhead coverage was disjointed and covered with grease accumulaton - pavement also.	Observed as in Complaint Description. Trash lids open. Second drum (blue) in trash/grease bin area. No second container or overhead coverge. This business has been given previous opportunities to maintain BMPs.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; secure second container/overhead coverage; remove blue 55 gallon drum or provide second container and overhead coverage; remove grease accumulation on pavement in dumpster enclosure and grease second container/overhead coverage area. **Follow-up Actions** Photo verify. 7/12/07, some corrective action has occurred. Blue 55 gallon has no second container or overhead coverage. Issue citation. **Actions completed** Blue 55 gallon drum removed from location and second container and overhead coverage has been righted. Area clean.
SW No. SW07-072 **Type** Commercial **Location Address** 435 N. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/24/2007	No secondary containment and overhead coverage; sediment leaving site/ trash lids open	Observed as in Complaint Description. 7/24/07, left message with Biotane to pick-up recycle unit. Left message for property management for this site. 7/30/07, Biotane picked up recycling unit. No response from property management. Send verbal warning letter.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge; obtain second container and overhead coverage and implement corrective erosion control measures. **Follow-up Actions** Photo verify. Letter sent to property owner for sediment discharge. 8/13/07. Received a call from the property management. Area is being appressed. Stated that cars being washed in complex above is creating runoff. 8/17/07, Revisited site. Sand bags are ineffective. E-mailed property management and spoke with him on the phone allowing until 8/28/07 to complete corrective actions. I asked about all of complex responsibility. 8/26/07 - rained. 8/28/07, some BMPs have further been implemented at existing sand bags. Area did well during recent rain. Slope at dumpster area had heavy runoff as well as south **Actions completed** Area cleaner; dirt swept up; lids down; 55 gallon drum has been placed in storage room to rear of building and has secondary containment as well as overhead coverage.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-066 **Type** Commercial **Location Address** 1234 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/12/2007	No second container or overhead coverage on grease unit.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second container and overhead coverage. **Follow-up Actions** Photo verify. **Actions completed** Area clean. Second container and overhead coverage (umbrella with spill pan) implemented.
SW No. SW07-075 **Type** Commercial **Location Address** 1450 N. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 8/17/2007	Grease drum lid and dumpster lid open; spill containment and surfaces with grease and fluid accumulation.	Observed as in Complaint Description	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Secure overhead cover on grease recycle unit. Pressure wash dumpster enclosure and reclaim all discharge, clean spill containment and maintain thereafter. **Follow-up Actions** Photo verify. **Actions completed** Area cleaner, lids are down. I spoke with tenant as he exited kitchen service door. Fluids were running down kitchen door pavement into curb/gutter. He stated the mop bucket tipped over. Food particles were on pavement. I told him it was unacceptable. He was nonchalant and indifferent and questioned what should he do, it was an accident. I told him that a mop or towel or wet/dry vacuum was essential to reclaim discharged fluids. I told him it was a citable violation; that the area is monitored and do not repeat the violation or a citation would be issued.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-067 **Type** Commercial **Location Address** 1004 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/19/2007	No second container or overhead coverage.	Observed as in Complaint Description	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second container and overhead coverage. **Follow-up Actions** Photo Verify **Actions completed** Business had been sold. Recycler removed from premises.
SW No. SW07-070 **Type** Commercial **Location Address** 270 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/26/2007	No second container or overhead coverage, grease spills and accumulation.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge; obtain second container and overhead coverage; remove grease accumulation **Follow-up Actions** Photo verify. 7/2/07 granted short extension to locate second container and overhead coverage. **Actions completed** Second container & overhead coverage implemented. Area clean.
SW No. SW07-068 **Type** Commercial **Location Address** 962 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/24/2007	No overhead coverage.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Obtain overhead cover. **Follow-up Actions** 7/12/07, no corrective action - drum covered with sheet of plywood. Issue citation. **Actions completed** Drums removed from location.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-069 **Type** Commercial **Location Address** 800 "B" Escondido Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/12/2007	No second container or overhead coverage.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second container and overhead coverage **Follow-up Actions** Photo verify. **Actions completed** Area clean - drums removed.
SW No. SW07-063 **Type** Commercial **Location Address** 988 Escondido Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/19/2007		Observed as described	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Obtain second container and overhead coverage. **Follow-up Actions** Photo verify **Actions completed** Second container/overhead coverage implemented.
SW No. SW07-074 **Type** Commercial **Location Address** 1471 N. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/18/2007	No second containment or overhead coverage. Stain and grease accumulation.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge obtain second container, overhead coverage and remove stains. **Follow-up Actions** Photo verify **Actions completed** Area Clean, APS unit installed; dumpster lids are closed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-071 **Type** Commercial **Location Address** 102 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/24/2007	No spill containment, trash and boxes etc. in enclosure.	Observed as in Complaint Description. Fluids from dumpster are being discharged off site.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; obtain spill pan; remove trash etc.from enclosure. **Follow-up Actions** Photo verify. 7/12/07, some trash has been removed. No spill containment - issue citation. **Actions completed** Spill containment implemented and area is clean.
SW No. SW07-076 **Type** Commercial **Location Address** 1470 N. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 6/28/2007	No second container or overhead coverage.	Observed as in Complaint Description.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None at this time other than maintenance. **Follow-up Actions** None **Actions completed** None required.
SW No. SW07-078 **Type** Commercial **Location Address** 1281 N. Santa Fe Ave, Suite X & Y **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/24/2007	No second container or overhead coverage. Trash and storage issues.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; obtain second container and overhead coverage, remove storage. **Follow-up Actions** Photo verify. 7/12/07, No corrective action - issue citation. **Actions completed** Drums removed from location, area is clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-077 **Type** Commercial **Location Address** 122 W. California Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/12/2007	No second container or overhead coverage. Storage outside.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Provide second container and overhead coverage for drums. Reclaim all discharge water. Remove storage from exterior of building. **Follow-up Actions** Photo verify. **Actions completed** Second container and overhead coverage in place. Storage has been removed.
SW No. SW07-073 **Type** Commercial **Location Address** 815 N. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/30/2007	No second container or overhead coverage - trash and debris	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; obtain second container and overhead coverage and remove trash and debris. **Follow-up Actions** Photo verify. 7/12/07, no corrective action - issue citation. **Actions completed** A roof structure was constructed over the 55 gallon drum in dumpster enclosure as well as a spill container underneath. Area has been cleaned. Stains still visible, but cleaned.
SW No. SW07-064 **Type** Commercial **Location Address** 901 Escondodo Ave **Watershed** Buena Vista Creek **Call Date** 6/25/2007 **Case Closed** 7/18/2007	No maintenance on second container, no cover over drums.	Second container and overhead coverage not functioning, spills and splatters throughout dumpster enclosure; two 5 galllon buckets with grease are next to two 55 gallon grease drums. Trash lids open.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge. Obtain functional second container/overhead coverage. Remove two 5 gallon grease buckets, clean pavement, close dumpster lids. **Follow-up Actions** Photo verify. 7/11/07, business owners came into Engineering Dept. requesting an extension - unable to contact their grease company. I provided additional suggestons. **Actions completed** A wood structure has been constructed to house spill pan and two 55 gallon drums. Area has been cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-107 **Type** Industrial **Location Address** 1201 Park Center Dr. **Watershed** Agua Hedionda Creek **Call Date** 10/18/2006 **Case Closed** 10/20/2006	Diesel Fuel spill by Marten Transport driver at 6:15 a.m. on 10/18/06.	Diesel Fuel spill by Marten Transport driver at 6:15 a.m. on 10/18/06. Trucker exited site and entered right-of-way spilling fuel into storm drain. Irrigation water carried fuel farther down roadway and into storm drain inlet which exited under roadway to a catch box on the north side of Park Center Dr. Appropriate hazmat team was contacted by the company. Local City Fire Dept. and storm drain crew was not notified. Chris D., storm drain supervisor - Public Work's- drove by and saw Hazmat Team "Patriot" and inquired. I was called by Rudy Luna, Public Work's Supervisor, to pursue enforcement. San Diego Hazmat was called to scene to verify extent of discharge. PPM was negotiable and area was cleared. " CURA" (Latin for overseer) is a hazmat response company, they call out local hazmat response teams to mitigate accidents. Pete Okonski, Operations Manager for CURA, (972) 378-7336, pete@curaes.com, contacted me for clarification of incident.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Provide written documentation of incident, response by Hazmat Company (Patriot), spill containment policy/procedure, name of Marten Transport driver and contact information **Follow-up Actions** Receipt of written document. **Actions completed** Received documents from Ryan Steinbuch, Joseph Webb's Safety and Security Manager.
SW No. SW06-067 **Type** Residential **Location Address** 505 W. Taylor St. **Watershed** Buena Vista Creek **Call Date** 7/6/2006 **Case Closed** 7/27/2006	Stock piling, no BMP's	As in Complaint Description. Previous Case SW05-069 - Citation #829, non payment, gone to collections as of 7/11/06.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMP's for stock piles **Follow-up Actions** Photo verify **Actions completed** 7/27/06, tarps are on piles. Owner is replacing driveway & constructing a retaining wall. Complainant updated.
SW No. SW06-069 **Type** Residential **Location Address** 1629 Arrowwood Ln **Watershed** Buena Vista Creek **Call Date** 7/24/2006 **Case Closed** 7/27/2006	Concrete discharge and sediment entering storm drain.	As in Complaint Description. Cotntractor's concrete pump jammed discharging concrete onto roadway. Contractor further washed off with hose and sediment was washed into brow ditch.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove concrete & sediment from driveway and brow ditch. **Follow-up Actions** Photo Verify **Actions completed** Area cleaned and contractor notified me of completion of clean-up. NOV copy given to Will Ullrich.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-071 **Type** Residential **Location Address** 207 Knoll Rd **Watershed** Buena Vista Creek **Call Date** 8/1/2006 **Case Closed** 9/7/2006	Eroding driveway discharging sediment to right-of-way	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Repair/Replace driveway. 8/18/06 Attempted contact with Fred Harris, 215 Knoll Rd, (760) 724-8209. 8/21/06, Contacted Jessie Harris, they will landscape front property at 215 Knoll Rd. adjacent and to the east side of 207 Knoll Rd. I contacted Marcy Lee and explained the conversation. She stated she would plant red apple to avoid further run-off on her west side of 215 Knoll Rd @ 111 Knoll Rd. **Follow-up Actions** Photo verify. 8/28/06, property owner requested two additional days to complete repairs. **Actions completed** Corrective action verified. Driveway reqaired.
SW No. SW06-073 **Type** Residential **Location Address** 111 Knoll Rd. **Watershed** Buena Vista Creek **Call Date** 8/2/2006 **Case Closed** 8/2/2006	Sediment discharge from denuded frontage	As in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, implement BMP's at perimeter. **Follow-up Actions** Intermittent follow-up **Actions completed** Intermittent follow-up
SW No. SW06-072 **Type** Residential **Location Address** 118 Knoll Rd. **Watershed** Buena Vista Creek **Call Date** 8/2/2006 **Case Closed** 8/14/2006	Storage, overgrown vegetation, trash and debris, possible habitation in RV.	As in Complaint Description.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** referred to Code Compliance Office, Jeff Stevens. **Follow-up Actions** Jeff Stevens called to inform us that little could be done. **Actions completed** Not a stormwater issue.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-093 **Type** Residential **Location Address** 1129 Sugarbush Dr. **Watershed** Buena Vista Creek **Call Date** 8/24/2006 **Case Closed** 9/6/2006	Black flex pipe leaving rear property and discharge directed into adjoining creek.	As in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and remove pipe into creek, repair property drainage **Follow-up Actions** Photo verify **Actions completed** 9/6/06, I spoke with Dr. Fox. Neighbor at 950 Ora Avo Rd. attached black flex pipe to prevent erosion. Case referred to County as both homes are in the County area. E-mail sent to Project Clean Water.org. Pictures sent to projsp2@projectcleanwater.org attention Eva Lozzarnes.
SW No. SW06-098 **Type** Residential **Location Address** 1045 E. Vista Way #4 **Watershed** Buena Vista Creek **Call Date** 9/18/2006 **Case Closed** 9/19/2006	Discharge of pollutants off property and into storm drain inlet	As in Complaint Description. I have previously spoken to resident and daughter of Sp #4. I gave them the HELP borchure and explained pollutant and contamination of water bodies on 8/13/06. They stated they would comply.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and implement alternate cleaning procedure. **Follow-up Actions** Monitoring **Actions completed** Monitoring
SW No. SW06-101 **Type** Residential **Location Address** 804 Avenida de Benito Juarez **Watershed** Buena Vista Creek **Call Date** 9/20/2006 **Case Closed** 10/3/2006	White stain originating from 804 Avendia de Benito Juarez.	White stain originating from 804 Avendia de Benito Juarez.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove stain from surrounding area. **Follow-up Actions** Photo verify **Actions completed** Area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-094 **Type** Residential **Location Address** Branding Iron Cir **Watershed** Agua Hedionda Creek **Call Date** 9/22/2006 **Case Closed** 8/31/2006	Overwatering causing runoff to creek.	As in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Review & revise irrigation program to reduce runoff **Follow-up Actions** Intermittent monitoring **Actions completed** Intermittent monitoring
SW No. SW06-102 **Type** Residential **Location Address** 318 Muddy Ln **Watershed** Buena Vista Creek **Call Date** 9/25/2006 **Case Closed** 10/2/2006	Concrete washed into roadway.	As in Complaint Description with tracking onto private driveways.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and remove concrete throughoutt area. **Follow-up Actions** Photo Verify **Actions completed** Area cleaned - No residue
SW No. SW06-104 **Type** Residential **Location Address** 300 W. Los Angeles **Watershed** Buena Vista Creek **Call Date** 10/5/2006 **Case Closed** 10/9/2006	Over watering of complex	Over watering of complex	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Reduce over watering **Follow-up Actions** Monitor **Actions completed** Monitor

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-112 **Type** Residential **Location Address** 1300 Bobolink **Watershed** Buena Vista Creek **Call Date** 10/23/2006 **Case Closed** 11/8/2006	100 Hypoderic needles washed from 8" storm drain outlet pipe. Needles were single use for insulin, per Work Partners (760-940-5480).	Contacted Toni Danils. She related finding many needles in storm drain curb/gutter. This occurred following a rain event. Needles were removed by Sheriff's Dept. I met with Sudi Shoja and Tim Shell from Engineering Dept. and Chuck Crist, Rudy Luna and Chris Dzwigalski from Public Works Dept., on site. It was determined a 36" pipe from Bobier shunts to an 8" line. The 36" cap on line is intact. Some standing water will be removed and maintained by Public Works. The pipe line system was placed on 2007/08 CIP project list. Complainant and Becky Weiss, of the City Manager's Office, was informed of status	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Public Works. Remove needles and clear pipe lines. **Follow-up Actions** Assigned to Public Works for maintenance and monitoring. **Actions completed** Intermittent cleaning by Public Work's & is now on the 2007/08 CIP lislt.
SW No. SW06-110 **Type** Residential **Location Address** 1307 Dorsey **Watershed** Buena Vista Creek **Call Date** 10/23/2006 **Case Closed** 10/23/2006	Yellow dye discharging into strom drain	Fire Dept spoke with Tom Lariviere. He had a halloween party and put yellow in his fish pond for special effect. Party was over and he drained his pond to the street (400 gallons).	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge **Follow-up Actions** Fire researced yellow dye - water dye with a 8.5 ph per MSDS - non hazardous. Scott Rosecrans of DEH was notified. No citation issued by County. 11/6/06, I followed up incident with a letter to the property owne with Pet and Help brochures, recommending no further fish pond discharge into City storm drain system. **Actions completed** Monitor location for any discharge from address.
SW No. SW06-118 **Type** Residential **Location Address** 1291 Amador Ave **Watershed** Buena Vista Creek **Call Date** 11/8/2006 **Case Closed** 4/2/2007	Denuded property and unprotected stock piles.	Observed as in Complaint Description. 3/2/07, spoke with owner - he is unable to find concrete contractor. 3/6/07, gave owner name and number for a concrete contractor who does small jobs like his driveway.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge, implement BMPs. **Follow-up Actions** Photo verify. 12/6/06, no corrective action. Issue NOV. 12/21/06, no corrective action - issue citation, some vegetation has been planted. 1/2/07, I spoke with owner - I suggested silt fence or some barrier at top of slope frontage. He stated he would be installing a driveway in February. I mentioned sweeping is a necessity but not long term. February- area clean but no driveway installed yet. March - Spoke with owner and he wants a contrete driveway. I gave him a contractor number as a suggestion. April - No material driveway. Owner stated he would put gravel in place as cost factor would allow. Area not **Actions completed** Area vegetated - no discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-116 **Type** Residential **Location Address** 1173 Amador Ave. **Watershed** Buena Vista Creek **Call Date** 11/8/2006 **Case Closed** 1/3/2007	Denuded property	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, implement BMPs **Follow-up Actions** Photo verify. 12/18/06, area beginning to vegetate. **Actions completed** Area vegetated - sediment descharge is not visible - continue to allow vegetation to take hold to prevent further discharge.
SW No. SW06-117 **Type** Residential **Location Address** 1283 Amador Ave. **Watershed** Buena Vista Creek **Call Date** 11/8/2006 **Case Closed** 1/23/2007	Denuded property.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge and implement BMPs. **Follow-up Actions** Photo verify. 12/6/06, no corrective action - issue NOV. 12/21/06, no corrective action - issue citation. 1/11/07, no corrective action - issue second citations. 1/17/07, I contacted Officer in Code Enforcement and asked that he accompany me to this address (2:00 p.m. meeting time). We spoke with the Mother-In-Law of owner. She signed certified letter of 12/6/06. I requested she ask the owner to call me. Upon returning to City Hall (3:15 p.m.) owner had left a message to call him and discuss the issues. I called at 4:00 p.m. and the call went to his voice mail. I called again at 4:30 p.m. and the owner answered. We **Actions completed** Fiber roll is at curb. Driveway on east side and a westerly curb area plus neighbor on west side area - no BMPs. Follow-up letter required owner to maintain property from sediment discharge in these unprotected areas.
SW No. SW06-119 **Type** Residential **Location Address** 342 Gail Dr. **Watershed** Buena Vista Creek **Call Date** 11/10/2006 **Case Closed** 11/22/2006	Leaking oil. White Geo CA Lic: 3ELU059. Vehicle has greasy finger prints on hood and they could be working on vehicle. Pool of fluids under vehicle and grease accumulation in and around front of vehicle.	Leaking oil. White Geo CA Lic: 3ELU059. Vehicle has greasy finger prints on hood and they could be working on vehicle. Pool of fluids under vehicle and grease accumulation in and around front of vehicle. HELP brochure left on vehicle requesting car removal and grease clean-up.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease vehicle fluid discharge, remove fluid accumulation, fix leak or remove vehicle off of public right-of-way **Follow-up Actions** Photo verify. 11/21/06, Some corrective action. Vehicle still leaking, send verbal warning letter. Intermittent monitoring **Actions completed** Intermittent monitoring

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-114 **Type** Residential **Location Address** 1045 E. Vista Way #4 **Watershed** Buena Vista Creek **Call Date** 11/14/2006 **Case Closed** 11/14/2006	Discharge from Sp #4 of the Orange Grove Mobile Home Park	Discharge from Sp #4 of the Orange Grove Mobile Home Park	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge **Follow-up Actions** Monitor Intermittently **Actions completed** Monitor Intermittently
SW No. SW06-121 **Type** Residential **Location Address** 905 Valley Dr **Watershed** Buena Vista Creek **Call Date** 11/22/2006 **Case Closed** 1/4/2007	Sediment into roadway	Observed as in complaint description. City annexed area from county. City now has responsibility of street in front of 905 Valley Drive.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Allow vegetation to fill in frontage to act as a natural filter. **Follow-up Actions** fegetation is growing, however, deep ruts still carry water and sediment. Contact public works for possible berm. **Actions completed** 1/4/2007, I photo'd area as public works has now installed berms. A December rain event (on 12/27) held sediment in place. Vegetation maturing. I contacted property owner to state "monitor site and continue to allow vegetation to grow."
SW No. SW06-120 **Type** Residential **Location Address** 843 Valley Drive **Watershed** Buena Vista Creek **Call Date** 11/22/2006 **Case Closed** 1/4/2007	Sediment in roadway	Observed as in complaint description. City annexed area from county. City now has responsibility of street in front of 843 Valley Drive.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Allow vegetation to fill in frontage to act as a natural filter. **Follow-up Actions** fegetation is growing, however, deep ruts still carry water and sediment. Contact public works for possible berm. **Actions completed** 1/4/2007, I photo'd area as public works has now installed berms. A December rain event (on 12/27) held sediment in place. Vegetation maturing. I contacted property owner to state "monitor site and continue to allow vegetation to grow."

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-125 **Type** Residential **Location Address** 1292 Amador Ave **Watershed** Buena Vista Creek **Call Date** 12/12/2006 **Case Closed** 1/15/2007	Denuded slpe and property frontage with sediment discharge.	Complaint confirmed. 12/18/06, property owner called- he is resolving issue and asked for additional time.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and implement appropriate BMP's **Follow-up Actions** Photo verification. 1/8/07, no corrective action issue NOV **Actions completed** Gravel in place. I spoke w/ son of property owner. He will monitor and refine as needed.
SW No. SW07-002 **Type** Residential **Location Address** 230 Portia Ave. **Watershed** Buena Vista Creek **Call Date** 1/8/2007 **Case Closed** 1/10/2007	dumping sewage rom RV into manhole in front RV's residence.	RV parked in driveway. No hook-ups visible. Canvased neighorhood for storm drain inlets-none. Manhole in front of 238 Portia Ave.l, there is a sewer main. I spoke with witness. Occupant of RV opened sewer holding tank outlet and allowed it to run into manhole, (manhole cover had been removed).	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease disharge and take RV to appropriate disposal location **Follow-up Actions** None Req'd **Actions completed** None Req'd
SW No. SW07-009 **Type** Residential **Location Address** 2010 Westwood Rd. **Watershed** Buena Vista Creek **Call Date** 2/5/2007 **Case Closed** 2/26/2007	sediment dischargeing into right-of-way	observed as described in complaint description 2/14/07, I spoke with property owner and he has suggested gravel for perimeter protection and would have it done by next week	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge, remove sediment from roadway, implement perimeter protection. **Follow-up Actions** photo verification **Actions completed** gravel in place

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-034 **Type** Residential **Location Address** 1114 Cochise Ct. **Watershed** Buena Vista Creek **Call Date** 4/9/2007 **Case Closed** 6/25/2007	Sediment discharging off property, accumulated trash	observed as described in complaint description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** remove and maintain area free of sediment and dirt **Follow-up Actions** photo verification. 4/23/07, sediment removed (whether by rain event or property owner). Brow ditch still congested. Issue NOV. **Actions completed** 5/1/07,sent letter to home owner association's president 6/5/07. 5/15/07, brow ditch fairly clean. White tarp with brow ditch trash was noted behind shrubs on slope and a red vehicle like engine part was nestled in shrubbery. Issue citation. 6/5/06 no corrective action taken with white tarp and red engine. Citation issued. 6/6/07 current home owner association member requesting explanation, unavailable so I left a message. 6/7/07, left message w/ manager. 6/18/07, photo follow-up: red engine gone, white sheet bundles still on site. 6/19/07, message left with manager, issue second citation by 6/20/07. 6/25/07, all trash and debris removed. Corrective action verified and sent to property owner.
SW No. SW07-036 **Type** Residential **Location Address** 255 Pala Vista **Watershed** Buena Vista Creek **Call Date** 4/26/2007 **Case Closed** 6/20/2007	discharge of clothes washer grey water to right-of way	waste water contacted me stating an illegal discharge from clothes washer was discovered. 1.5 inch white pvc pipe was plumbed down side of yard outleting through shrubs then to street. No one was home and I left "help" flyer and stapled my business card and NOV and attached to entrance gate. 5/35/07 no corrective action, spoke with 3 tenants that said seaside properties manages the place. Faxed and mailed information to property owner and manager.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** remove washer or obtain permit to plumb to sewer system. Running test required for plumb to sewer. **Follow-up Actions** photo verify removal or perform water test on plumbed line. **Actions completed** 5/16/07 site inspection- water running down street- emanating from clothes washer. I emailed property owner of status. 5/28/07, propery owners' employee died- need extra time to take photo. Washer was moved into garage. 6/10/07, photo indicated appliances no longer in shed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-041 **Type** Residential **Location Address** 2068 Cheryl Ln. **Watershed** Buena Vista Creek **Call Date** 5/22/2007 **Case Closed** 6/20/2007	motor fluid spilling onto roadway in front of residence	observed as described in complaint description. Representative for property owner called to say that property owner is in the Phillipines, but she requested tenant to clean up location with cat litter. And will email tenant name and number.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** remove motor fluids from pavement. **Follow-up Actions** photo verification **Actions completed** 6/20/07, finally , property owner was able to remove much of fluid from pavement
SW No. SW07-042 **Type** Residential **Location Address** 880 S. Melrose Dr. **Watershed** Buena Vista Creek **Call Date** 5/22/2007 **Case Closed** 5/25/2007	red concrete pouring down/gutter	observed as described in complaint description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge and remove red disharge **Follow-up Actions** verify corrective action has occurred **Actions completed** 5/25/07, area clean. Home owner has placed BMP's to prevent further discharge during landscape remodel
SW No. SW07-043 **Type** Residential **Location Address** 750 Breeze Hill Rd. #91 **Watershed** Agua Hedionda Creek **Call Date** 5/26/2007 **Case Closed** 6/12/2007	boat discharging holding tank and fluids. Smells of fish and fuel	I attempted to contact the manager and left a message. 5/30/07, no response, left message again. 5/31/07, spoke with management-they want to send letter to violator and insert educational into billing for all condo owners. 6/5/07 forwarded brochures to management via email.	**Enforcement Action** ☑ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease any future discharge other than residential car washing **Follow-up Actions** left help flyer at door of violator. 6/12/07, received call from violator, he will take boat to car wash in the future. **Actions completed** violator understood necessity to adhere to sewage water compliance

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-051 **Type** Residential **Location Address** 1149 Lime Pl. **Watershed** Buena Vista Creek **Call Date** 6/5/2007 **Case Closed** 6/22/2007	Smells like sewage. Sink outside, goats, illegal habitation in garage.	6/7/07, Code Enforcement & I met on site to investigate various complaints. A hand utility sink is discharging to property/public right-of-way. Food is being rinsed in sink. A septic failure is suspected and San Diego County Department of Environmental Health was notified. Clothes washer on site discharging to grass. 6/22/07, Site inspection with Code Enforcement Officer, sink removed. Washer now plumbed to subsurface french drain - outlet unknown. Contacted Building Inspection Supervisor. He arrived on scene and assessed washer/dryer, water heater and septic. He stated water had a permit. I questioned the gas dryer in a sleeping room and water heater next to window - no roof vent. 7/5/07, Specialist with the County Department of Environmental Health states a dye test could be performed, but, if sewage is not visible, no violation exixts. She feels the system has reached capacity and a new system is required.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove sink and cease discharge. Plumb washer to septic or remove from location. **Follow-up Actions** Photo verify. 6/22/07, sink removed. Area at frontage extremely wet (clay soil). Recontacted Dept. of Environmental Health and requested a septic check. **Actions completed** 6/22/07, Sink removed. 7/26/07, met with Specialist of the Dept. of Environmental Health and Code Enforcement Officer. Area dry - no smell. Will refer Building Code violations to the Building Dept.
SW No. SW07-088 **Type** Residential **Location Address** 1567 Monte Vista Dr. **Watershed** Buena Vista Creek **Call Date** 6/7/2007 **Case Closed** 8/30/2007	Dirt stock piles in frontage.	Observed dirt stock piled in front of residence and no BMPs. Attempted on site contact - gate locked - no entry. Property is not listed on GIS. With further research, property owner was located and letter sent to remove or implement BMPs. Potential pollution was prevelant.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove or implement BMPs. **Follow-up Actions** Photo verify. **Actions completed** Stock piles removed.
SW No. SW06-103 **Type** Construction **Location Address** 215 Knoll Rd **Watershed** Buena Vista Creek **Call Date** 9/26/2006 **Case Closed** 11/20/2006	Lack of BMPs during construction	Frontage not secured and no BMPs to prevent runoff during house construction.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, implement BMPs and maintain **Follow-up Actions** Photo verify. 10/9/06 Partial corrective action. 10/17/06, BMP failure following rain event. 10/23/06, 85% BMP replacement - no gravel in front. 10/24/06, I spoke with Fred Harris. He needs to determine his plan to place BMPs. I spoke with George Meyer, inspector, to coordinate response to Fred. George M. will inspect tomorrow. 11/16/06, I spoke with Fred. I gave him Rudy Luna's # at Public Works to ask about asphalt roadway. **Actions completed** Gravel in place and area with maintenance.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-106 **Type** Construction **Location Address** 921-925 Poinsettia Ave **Watershed** Agua Hedionda Creek **Call Date** 10/4/2006 **Case Closed** 11/7/2006	BMP failure and mud entering Hidden Meadows drainage below industrial park.	BMP failure and mud entering Hidden Meadows drainage below industrial park. Hidden Meadows has congested brow ditches from overgrown vegetation and debris, channel with overgrowth. Poinsettia industrial has inadequate BMP implementation and failure.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Upgrade all site BMP's, remove congestion of ditches at industrial location **Follow-up Actions** Upgrade and refinement implemented by 11/18/06 - intermittent inspection to observe MEP on BMP's. 11/7/06, BMP's - MEP per Jayne Strommer. Monitor regularly. **Actions completed** 11/07/06, BMP's implemented - monitor regularly
SW No. SW07-012 **Type** Construction **Location Address** 2338 Carioca Pl **Watershed** Buena Vista Creek **Call Date** 2/8/2007 **Case Closed** 3/26/2007	sediment discharge	observed as stated in complaint description. Discharging off property to street below. 3/4/07, received letter of explanation from owner regarding disposition and mitigation of three properties.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** imlement BMP's at perimeter, remove sediment on streets/ drainage systems to west and south of site. **Follow-up Actions** photo verification. 2/26/07, inadequate BMP's installed. Mud throughout location - no perimeter protection. Issue first citation. **Actions completed** 3/8/2007, Some BMP's installed-gravel and cement blocks at concrete driveway-2342 Carioca Pl. and area has been professionally swept. 3/12/07, 95% mud from area removed- no permeter BMP's @ 2583 Catalin Ave. property
SW No. SW06-126 **Type** Other **Location Address** 231 1 Row Dr **Watershed** Buena Vista Creek **Call Date** 12/18/2006 **Case Closed** 1/4/2007	No BMP's- sediment discharging off property.	observed as described in complaint description. I faxed NOV to contact at North Star Homes after discussing concern via phone. He stated he would respond to BMP's.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** implement apporopriate BMP's, protect inlets **Follow-up Actions** photo verification **Actions completed** 12/22/06, BMP's in place. 1/4/07, rain event occurred and BMP's are preventing sediment discharge off property. Inlet is protected with gravel bags.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-128 **Type** Other **Location Address** 2241 Hawley **Watershed** Buena Vista Creek **Call Date** 12/22/2006 **Case Closed** 1/22/2007	sediment discharge into roadway	observed as described in complaint description. Initially faxed a verbal written request to maintain and upgrade BMP's. Transmission no good. Attempted phone call- no answer/ no voice machine. Retried 12//26/06 and again 1/2/07, no good. Email to son on 1/2/07 who stated property owner would return on 1/6/07.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge, remove accumulated sediment install and upgrade BMP's, maintain thereafter. **Follow-up Actions** photo verication **Actions completed** Gravel in place with the exception of a large 100 square foot of dirt near private fence on southwest side of lot. Area will require monitoring for compliance. Request to call property owner, if it falls into violation again, has been made.
SW No. SW07-014 **Type** Other **Location Address** 452 Pina Ln. **Watershed** Buena Vista Creek **Call Date** 3/1/2007 **Case Closed** 3/12/2007	no BMP's- sediment discharging off site and into right of way	observed as reported in complaint description. I contacted real estate broker of property. He recommmended I send warning letter to property owner. He would also call property owner to inform him of violation	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease further discharge, implement BMP's, remove debris from driveway apron and road way areas. **Follow-up Actions** photo verification **Actions completed** area clean, some gravel at entrance
SW No. SW07-016 **Type** Other **Location Address** La Mirada Canyon **Watershed** Agua Hedionda Creek **Call Date** 3/15/2007 **Case Closed** 3/15/2007	illegal structure built across creek in La Mirada Canyon	I was notified by code compliance managaer that Joe Wall Tracker Service was in the process of removing an illegal schack straddling a creek. It appeared as though plumbing sewer was discharged to creek. Encampment was established at least one growing season as corn and other fruits and vegetables had fruited and had been harvested. Upon my arrival the shack was being demolished. The toilet received water from area landscape water lines and sewage was discharge to a 4' by 4' hole next to running creek.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** remove and demolish illicit connection **Follow-up Actions** receive removal verification from code compliance officer. **Actions completed** 3/20/07, code compliance officer confirmed area is clear.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-004 **Type** Commercial **Location Address** 2121 Thibodo Rd. **Watershed** Agua Hedionda Creek **Call Date** 7/19/2006 **Case Closed** 7/19/2006	Brow ditch next to Fire Station No. 4 requires cleaning.	Forwarded request to Public Works.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Public Works **Follow-up Actions** Referred to Public Works **Actions completed** Referred to Public Works
SW No. MISC 0607-006 **Type** Commercial **Location Address** 437 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 8/2/2006 **Case Closed** 8/9/2006	Branches in Geib Lumber channel	Observed as in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove branches from channel **Follow-up Actions** Photo verify **Actions completed** Branches removed.
SW No. MISC 0607-014 **Type** Commercial **Location Address** 102 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 9/12/2006 **Case Closed** 9/12/2006	Discharging dirty carpet cleaning water	Witnessed carpet cleaner discharging dirty water onto vacant dirt lot and edging toward City right-of-way.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge dirty water. Dispose of in an appropriate manor. **Follow-up Actions** Contact supervisor **Actions completed** Discharge ceased. I contacted supervisor to inform them of the violation and educated them regarding stormwater discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-030 **Type** Commercial **Location Address** 815 Escondido Ave. **Watershed** Buena Vista Creek **Call Date** 10/19/2006 **Case Closed** 10/19/2006	Repaving product tracked onto Escondido Ave.	Observed as in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove paving product debris **Follow-up Actions** photo verify **Actions completed** area clean
SW No. MISC 0607-032 **Type** Commercial **Location Address** 929 Poinsettia Ave **Watershed** Agua Hedionda Creek **Call Date** 10/26/2006 **Case Closed** 10/26/2006	Fire sprinkler discharge	Fire sprinkler flush, holding only potable water. Drains cleared below water flush prior to water release.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No violation **Follow-up Actions** None **Actions completed** None
SW No. MISC 0607-036 **Type** Commercial **Location Address** 537 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 11/15/2006 **Case Closed** 11/20/2006	Pressure washing old paint into sidewalk curb/gutter into right-of - way.	As in Complaint Description	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove pollutant **Follow-up Actions** Photo Verify **Actions completed** Area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-037 **Type** Commercial **Location Address** 1209 Activity Dr. **Watershed** Agua Hedionda Creek **Call Date** 11/20/2006 **Case Closed** 11/21/2006	Illegal discharge	Tenant was moving and was cleaning concrete flooring with no reclamation of water.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease any further discharge, remove all existing pollutants on concrete pavement **Follow-up Actions** Photo verify **Actions completed** All was cleaned - nothing in storm drain inlet
SW No. MISC 0607-051 **Type** Commercial **Location Address** 157 Nettleton Rd. **Watershed** Buena Vista Creek **Call Date** 2/2/2007 **Case Closed** 2/2/2007	United Site Services (portable toilets and handwash trailer units) were washing out toilets on-site.	I drove perimeter and no water visible within business site. There were numerous hoses and ground was wet. I spoke with business manager and she stated the toilet were cleaned down in San Diego. The hoses are to fill handwash units. Because no picture of violation was available and I didn't witness any violation I presented Green Wrench guides and suggested she use it as a training guide during safety meetings.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None **Follow-up Actions** None **Actions completed** Use Green Wrench guide for training of employees. .
SW No. MISC 0607-052 **Type** Commercial **Location Address** 1725 Hacienda Dr. **Watershed** Agua Hedionda Creek **Call Date** 2/5/2007 **Case Closed** 2/6/2007	washing boat in back of business and not reclaiming discharge	I spoke with sales manager. He felt that the water was okay. I provided educational information and a Green Wrench guide	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge or reclaim any discharge **Follow-up Actions** Monitor **Actions completed** Sales Manager agreed to inform his employees and not wash without reclaiming discharge

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-053 **Type** Commercial **Location Address** 1209 Activity Dr. **Watershed** Agua Hedionda Creek **Call Date** 3/14/2007 **Case Closed** 3/14/2007	washing black colored water into sewage drain	observed as described in complaint descriptions. Rust was prevelant. Fire spriinkler system was being drained for testing	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge, redirect to landscaping, sewer clean out or reclaim **Follow-up Actions** site inspectoin **Actions completed** 3/14/07, I spoke with Vanguard Inc. owner. He was unaware of pollution issue and stated he would direct discharge to landscaping.
SW No. MISC 0607-058 **Type** Commercial **Location Address** 1461 N. Santa Fe Ave. **Watershed** **Call Date** 5/3/2007 **Case Closed** 5/14/2007	High school car wash at Hollywood Video	5/3/07, I emailed VUSD to notify them of reclamation requirement. I contacted employee at Hollywood Video.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** protect all inlets and remove all discharge water **Follow-up Actions** received confirmation with photos of succesful retrieval of discharge water. **Actions completed** 5/14/07, as noted in email/photos
SW No. MISC 0607-060 **Type** Commercial **Location Address** Numerous **Watershed** Buena Vista Creek **Call Date** 5/26/2007 **Case Closed** 6/26/2007	Lack of BMP's- wash down no reclamation	photos (brought into counter by complaint)	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease discharge, repair, replace and maintain **Follow-up Actions** referred to public works, engineering and stormwater **Actions completed** Lowes, Henessey's, stormwater follow up indicates area is dry

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-061 **Type** Commercial **Location Address** Escondiido at South Santa Fe **Watershed** Buena Vista Creek **Call Date** 6/3/2007 **Case Closed** 6/8/2007	Aztec Landscaping not reclaiming discharge water from pressure washing bus stop	Witness (Public Works employee)	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease further discharge, provide BMP policy **Follow-up Actions** verify action taken and policy by Aztec **Actions completed** received BMP pollicy- employee reprimanded.
SW No. MISC 0607-001 **Type** Residential **Location Address** 1621 Arrow Wood Ln **Watershed** **Call Date** 7/6/2006 **Case Closed** 7/6/2006	Water migration from 1603 Foothill - private issue.	Called complainant and determined it was a private issue.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private issue **Follow-up Actions** private issue **Actions completed** private issue
SW No. MISC 0607-002 **Type** Residential **Location Address** 1418 Chestnut Ln **Watershed** Buena Vista Creek **Call Date** 7/6/2006 **Case Closed** 7/6/2006	Pool water discharge from 944 Cypress Dr.	Private issue	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private issue **Follow-up Actions** Private issue **Actions completed** Private issue

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-003 **Type** Residential **Location Address** 1804 Debra Ln **Watershed** Buena Vista Creek **Call Date** 7/17/2006 **Case Closed** 7/17/2006	Overwatering front of property	As in Complaint Description	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Suggested reduced watering **Follow-up Actions** None **Actions completed** None
SW No. MISC 0607-007 **Type** Residential **Location Address** 215 Knoll Rd. **Watershed** Buena Vista Creek **Call Date** 7/24/2006 **Case Closed** 8/2/2006	Clean-up during construction - site not tidy	Spoke with property owner and requested better housekeeping. Spoke with job site bldg inspector requesting assistance.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clean up construction area. Implement BMPs. **Follow-up Actions** Photo verify **Actions completed** Area improved. BMPs implemented.
SW No. MISC 0607-009 **Type** Residential **Location Address** 1734 Mount Way **Watershed** Agua Hedionda Creek **Call Date** 8/14/2006 **Case Closed** 8/21/2006	Concrete washed into curb/gutter	Observed as in Complaint Description. Spoke with property owner. Gave HELP brochure and requested clean-up.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove all traces of contrete all the way to inlet. **Follow-up Actions** Photo verify **Actions completed** Area clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-010 **Type** Residential **Location Address** 1946 Harmony Way **Watershed** **Call Date** 8/21/2006 **Case Closed** 8/21/2006	Business is power washing mobile homes in San Marcos.	Business address was listed as a Vista residence. Knocked at the door - no answer. Contacted San Maros Stormwater Dept. and left message. Business Lic. Information/none.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No evidence of Vista violation **Follow-up Actions** None **Actions completed** None
SW No. MISC 0607-012 **Type** Residential **Location Address** 2389 Warmlands **Watershed** Buena Vista Creek **Call Date** 8/24/2006 **Case Closed** 9/1/2006	Overwatering - called in by Weston Solutions, Inc.	Observed as in Complaint Description.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None **Follow-up Actions** None **Actions completed** Area Dry
SW No. MISC 0607-011 **Type** Residential **Location Address** 209 Casper Dr. **Watershed** Buena Vista Creek **Call Date** 8/29/2006 **Case Closed** 8/29/2006	Pool Discharge	Pool water discharging down roadway. Spoke with contractor, water was dechlored.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No violation **Follow-up Actions** No violation **Actions completed** No violation

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-013 **Type** Residential **Location Address** 705 Crestview Rd **Watershed** Buena Vista Creek **Call Date** 9/6/2006 **Case Closed** 9/11/2006	Plumbing leak	Water was running upon investigation, contacted property owner, repaired leak.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair leak **Follow-up Actions** Photo verify **Actions completed** Area dry
SW No. MISC 0607-016 **Type** Residential **Location Address** 149 Bellerive Dr **Watershed** Buena Vista Creek **Call Date** 9/12/2006 **Case Closed** 9/13/2006	Oil stain on driveway.	Observed as described in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove grease stain **Follow-up Actions** Photo Verify **Actions completed** Area Clean
SW No. MISC 0607-015 **Type** Residential **Location Address** 1698 Jonathan St. **Watershed** Buena Vista Creek **Call Date** 9/12/2006 **Case Closed** 9/12/2006	Dried paint residue into storm drain inlet	Spoke with property owner. Dried paint was present when they moved.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Prevent any further discharge to storm drain inlet. **Follow-up Actions** Intermittent monitoring **Actions completed** Intermittent monitoring

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-017 **Type** Residential **Location Address** 821 N. Citrus Ave **Watershed** Buena Vista Creek **Call Date** 9/14/2006 **Case Closed** 9/14/2006	Cars leaking fluid	No cars leaking fluid, but trash accumulation. Referred to Code Enforcement.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Code Enforcement **Follow-up Actions** Referred to Code Enforcement **Actions completed** Referred to Code Enforcement
SW No. MISC 0607-019 **Type** Residential **Location Address** 1782 Knapp Dr **Watershed** Buena Vista Creek **Call Date** 9/19/2006 **Case Closed** 10/16/2006	Excessive water discharge	After extensive monitoring, it was noted a possible pool discharge and overwatering was the origin of the runoff.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Intermittent Monitoring **Follow-up Actions** Photo Verify **Actions completed** Area Dr.
SW No. MISC 0607-020 **Type** Residential **Location Address** 1511 Maxwell Ln **Watershed** Buena Vista Creek **Call Date** 9/25/2006 **Case Closed** 10/18/2006	Lot encroachment into waterway.	Observed as Described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Property owner to remove encroaching vegetation and damaged fence. **Follow-up Actions** Photo Verify **Actions completed** Area cleared - fence repaired

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-022 **Type** Residential **Location Address** 611 Lemon Ave **Watershed** Buena Vista Creek **Call Date** 9/27/2006 **Case Closed** 10/10/2006	Water run-off blockage	Neighbor did landscaping which altered the flow of water. Private property-private issue.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private property, private issue **Follow-up Actions** None **Actions completed** Private property, private issue
SW No. MISC 0607-024 **Type** Residential **Location Address** 937 Bellwood Ln **Watershed** Agua Hedionda Creek **Call Date** 9/27/2006 **Case Closed** 9/27/2006	Complaint of slope and structure.	Referred to Engineering & Bldg. Departments	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Engineering & Bldg. Departments **Follow-up Actions** Referred to Engineering & Bldg. Departments **Actions completed** Referred to Engineering & Bldg. Departments
SW No. MISC 0607-023 **Type** Residential **Location Address** 1182 York Dr. **Watershed** Buena Vista Creek **Call Date** 9/28/2006 **Case Closed** 9/28/2006	Overwatering from neighbors	Unable to verify. Unable to contact complainant - Unfounded	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Unable to verify **Follow-up Actions** Unable to verify **Actions completed** Unable to verify

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-025 **Type** Residential **Location Address** 1829 Goldenrod Ln **Watershed** Agua Hedionda Creek **Call Date** 9/29/2006 **Case Closed** 9/29/2006	White substance in gutter.	Pool filter material originating from 1829 Goldenron Ln.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove white pool filter substance from gutter and cease further discharge. **Follow-up Actions** Photo verify **Actions completed** Area Clean
SW No. MISC 0607-026 **Type** Residential **Location Address** San-Del Dr **Watershed** Buena Vista Creek **Call Date** 10/3/2006 **Case Closed** 10/3/2006	excessive water from residences	oberved as described in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** reduce water run-off **Follow-up Actions** Monitor location **Actions completed** Drier.
SW No. MISC 0607-027 **Type** Residential **Location Address** 323 Plaza de Benito Juarez **Watershed** Buena Vista Creek **Call Date** 10/5/2006 **Case Closed** 10/5/2006	Excessive water runoff	Observed as described in Compliant Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Reduce water usage. **Follow-up Actions** Monitor location **Actions completed** Drier

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-028 **Type** Residential **Location Address** 819 Vale View Dr. **Watershed** Buena Vista Creek **Call Date** 10/12/2006 **Case Closed** 10/12/2006	Sawdust piles in front yard	Eucalyptus trees were cut down by City. Sawdust remained. Contacted Administrative Services - City contractor will be removing sawdust.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sawdust. **Follow-up Actions** Photo verify **Actions completed** Area cleaner.
SW No. MISC 0607-029 **Type** Residential **Location Address** 452 Oceanview Rd. **Watershed** Buena Vista Creek **Call Date** 10/16/2006 **Case Closed** 10/23/2006	Old wall collapsed. No BMP in place	Observed as in Complaint Description.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Bldg Dept - Implement BMPs **Follow-up Actions** Photo verify **Actions completed** BMPs installed
SW No. MISC 0607-033 **Type** Residential **Location Address** 309 Salina Ct **Watershed** Buena Vista Creek **Call Date** 10/30/2006 **Case Closed** 10/30/2006	Oil in curb/gutter	As in Complaint Description. Owner was in process of cleaning up oil upon my visit to site.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clean up oil **Follow-up Actions** Photo verify **Actions completed** Area clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-034 **Type** Residential **Location Address** 1418 Chestnut Ln **Watershed** Buena Vista Creek **Call Date** 10/31/2006 **Case Closed** 11/1/2006	Water running and slope displacement.	Property owners stated water running from 944 Cypress Dr. for 2 days and her slope is slilpping. I contacted Engineering & Stormwater… private property, private issue. Suggested they contact Vista Irrigation District (VID). VID said they have a leak and told them to contact a plumber.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair leak. **Follow-up Actions** Monitor area **Actions completed** Area dry
SW No. MISC 0607-035 **Type** Residential **Location Address** 1868 Ithica Dr. **Watershed** Agua Hedionda Creek **Call Date** 11/8/2006 **Case Closed** 11/10/2006	Granite dust discharge into curb/gutter.	As in Complaint Description. Spoke with contractor informing him of Stormwater regulations and request area be cleaned.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove pollutant **Follow-up Actions** Photo verify **Actions completed** Area clean.
SW No. MISC 0607-042 **Type** Residential **Location Address** 845 Crescent Dr. **Watershed** Buena Vista Creek **Call Date** 11/8/2006 **Case Closed** 11/28/2006	sediment spilling off property	As described in complaint description, left help brochure requesting BMP placement. Property owner called and he will fix problem	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** implement BMPs **Follow-up Actions** photo verification **Actions completed** dirt lowered behind asphalt curb and gravel bags at southern end of property

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-039 **Type** Residential **Location Address** 122 Plymouth Dr **Watershed** Buena Vista Creek **Call Date** 11/15/2006 **Case Closed** 11/15/2006	Washing trucks and water run-off entering roadway	As in Complaint Description	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Code Enforcement because of possible business/residential questions **Follow-up Actions** Referred to Code Enforcement **Actions completed** Monitor - Area dry
SW No. MISC 0607-038 **Type** Residential **Location Address** 845 Crescent Dr. **Watershed** Buena Vista Creek **Call Date** 11/20/2006 **Case Closed** 11/20/2006	Dirt discharge	I spoke with property owner. He will refine his BMPs to prevent further discharge.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Upgrade existing BMPs **Follow-up Actions** Monitor **Actions completed** BMPs improved - monitor
SW No. MISC 0607-040 **Type** Residential **Location Address** 1111 Prospect Cir. **Watershed** Buena Vista Creek **Call Date** 11/21/2006 **Case Closed** 11/21/2006	Denuded slope	Slope is being graded and terraced and any sediment would filter through vegetation before reaching creek far below the property.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs, prevent any sediment discharge off property **Follow-up Actions** Photo verify **Actions completed** Vegetation growing.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-041 **Type** Residential **Location Address** 365 Apollo Dr. **Watershed** Buena Vista Creek **Call Date** 11/22/2006 **Case Closed** 11/22/2006	Property owner washing ATV blocking sidewalk during street sweeping	I spoke with property owner. Presented a carwash brochure and suggested avoiding pollutant discharge.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Reduce runoff. Keep curb/guttter clear. **Follow-up Actions** Monitor **Actions completed** Property owner receptive to pollution problems and keeping the water bodies cleaner.
SW No. MISC 0607-043 **Type** Residential **Location Address** Uknown **Watershed** **Call Date** 11/30/2006 **Case Closed** 12/4/2006	clogged drain	forwarded to public works	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** unclogged drain **Follow-up Actions** none **Actions completed** none
SW No. MISC 0607-045 **Type** Residential **Location Address** 1188 Phillips **Watershed** Buena Vista Creek **Call Date** 12/12/2006 **Case Closed** 12/22/2006	Blocked drain near NCTD as it is a private issue	referred to NCTD as it is a private issue. After thorough map research with Richard Caldwell and Dev. Service, Tim Shell and Rudy Luna-No record can be found for sewage drain inlet box as being city constructed. All appears to be private.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** contact NCTD- number and name was provided to complainant. **Follow-up Actions** private issue **Actions completed** private issue

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-049 **Type** Residential **Location Address** 2366 Brookhaven Pass **Watershed** Agua Hedionda Creek **Call Date** 1/17/2007 **Case Closed** 1/22/2007	Silver metallic Volkswagen Jetta parks in front of 2366 Brookhaven Pass and vehicle fluids have accumulated on street	observed as described in complaint description. Vehicle was gone upon investigation. Grease spill visible. Clean-up has been attempted. Thick layer remain. I left Help brochure.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** remove grease accumulation with dry method and dispose of in trash. Cease vehicle discharge or remove from roadway **Follow-up Actions** photo verification afer follow-up inspection on 01/19/07 by 8am **Actions completed** the vehicle fluid eroded the asphalt. Appearance of cleaning is visible. A street sweeper cleaned location and there was no change regarding stain's appearance
SW No. MISC 0607-050 **Type** Residential **Location Address** 1757 Country Side Dr. **Watershed** Agua Hedionda Creek **Call Date** 2/2/2007 **Case Closed** 2/2/2007	washing out medical equipment on driveway and into curb/ gutter usually 10:30am	I drove by locaiton- no visible indication of any fluids, grease, discoloration, stains	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** unfounded but complainant will call if occurring **Follow-up Actions** None **Actions completed** Unfounded
SW No. MISC 0607-054 **Type** Residential **Location Address** 694 Ascot **Watershed** Agua Hedionda Creek **Call Date** 3/22/2007 **Case Closed**	pet owner housing 2 dogs in garage and washing fecal matter in roadway/driveway of condo complex	odor of feces/urine detected but not visual. 2 dogs were visible under 2 inch gap of garage door. I left pet waste brochure.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease washing fecal matter into roadway **Follow-up Actions** referred to code and humane society **Actions completed** referred to code and humane society

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-055 **Type** Residential **Location Address** 1021 N. Citrus Ave **Watershed** Buena Vista Creek **Call Date** 4/9/2007 **Case Closed** 4/11/2007	sediment discharge from slope and sprinkler broken	observed as described in complaint descriptions	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** sweep up dirt, repair sprinkler **Follow-up Actions** photo verification **Actions completed** corrections verified
SW No. MISC 0607-057 **Type** Residential **Location Address** 339 Cananea St. **Watershed** Buena Vista Creek **Call Date** 4/17/2007 **Case Closed** 4/17/2007	urinating/ defecating in backyard, trash excessive	I contacted Manny from Code Compliance. Site was in disrepair, excessive trash, possible habitation in back shed.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease washing trash into curb/gutter **Follow-up Actions** referred to code compliance for complaint **Actions completed** 4/17/07, no further discharge noted-monitor location
SW No. MISC 0607-056 **Type** Residential **Location Address** 351 Townsite Dr **Watershed** Buena Vista Creek **Call Date** 4/19/2007 **Case Closed** 4/17/2007	discharging laundry water to curb/gutter-foamy stuff along curb	clothes were hanging along fence and water was at curb edge. No detergent was detectable.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** I spoke with english-speaking girl and she spoke with babysitter at the house. I requested no further discharge **Follow-up Actions** verify area is dry **Actions completed** afer 3 checks during the week, area was dry

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-059 **Type** Residential **Location Address** 355 Penrod Court **Watershed** Buena Vista Creek **Call Date** 5/16/2007 **Case Closed** 5/16/2007	oil running into roadway	a quarter cup of motor oil from 347 Penrod Ct. spilt on fence and gravel/driveway between 355 Penrod Ct.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** civil matter between neighbors **Follow-up Actions** none **Actions completed** unknown civil matter
SW No. MISC 0607-062 **Type** Residential **Location Address** 1851 Anna Ln **Watershed** Agua Hedionda Creek **Call Date** 6/18/2007 **Case Closed** 6/18/2007	Water runoff past rear of property causing flooding.	Unfounded - Area dry - Referred to county hotline for possible assistance	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None - County **Follow-up Actions** None - County **Actions completed** None - County
SW No. MISC 0607-008 **Type** Construction **Location Address** 1025 Cielita Linda Dr **Watershed** Buena Vista Creek **Call Date** 8/3/2006 **Case Closed** 8/7/2006	Hazardous materials not protected from elements	All hazardous materials are in fenced compound in the center of a very large piece of property.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Unfounded **Follow-up Actions** Unfounded **Actions completed** Unfounded

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-005 **Type** Other **Location Address** Alta Vista Ave @ Escondido Ave. **Watershed** Buena Vista Creek **Call Date** 8/1/2006 **Case Closed** 9/27/2006	Water leak from VID water line - Reported by Councilperson, Judy Ritter.	Referred to VID	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair water leak **Follow-up Actions** Photo verify **Actions completed** Leak repaired - area dry.
SW No. MISC 0607-018 **Type** Other **Location Address** 700 North Ave **Watershed** Buena Vista Creek **Call Date** 9/18/2006 **Case Closed** 9/18/2006	Car Wash Fund Raiser	Received car wash fund raiser flyer and contacted the coordinator. Coordinator cancelled car wash after stormwater educational discussion.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Event cancelled **Follow-up Actions** Event cancelled **Actions completed** Event cancelled
SW No. MISC 0607-021 **Type** Other **Location Address** Osbourne @ E. Vista Way (County) **Watershed** Loma Alta Creek **Call Date** 9/26/2006 **Case Closed** 9/28/2006	Trash and stockpiles of dirt	Observed as in Compalint Description. Referred to County Hotline.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to County Hotline. **Follow-up Actions** Referred to County Hotline. **Actions completed** Referred to County Hotline.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0607-031 **Type** Other **Location Address** Across from 919 Valley Rd. **Watershed** Buena Vista Creek **Call Date** 10/19/2006 **Case Closed** 10/23/2006	Clogged detention basin	As in Complaint Description. Reffered to Public Works Dept for cleaning request	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear blockage **Follow-up Actions** photo verify **Actions completed** Area cleared

CITY OF VISTA
2007 Dry Weather Field Screening
and
IC/ID Program

FINAL REPORT

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September 2007

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EXECUTIVE SUMMARY

This report presents the results of the 2007 City of Vista Dry Weather Monitoring Program, as required under the NPDES Municipal Stormwater Permit.

Dry weather monitoring was undertaken between June 18th and August 31st 2007 and included routine monitoring at a total of 37 field screening locations. A total of 32 routine dry weather monitoring sites were investigated. In addition, five creek sites were monitored in order to establish a baseline understanding of water quality in receiving waters of each sub watershed.

During the 2007 Dry Weather Screening Program a total of fourteen sample results were above the dry weather action levels. These same sites were then re-tested between four hours and twenty-four hours later. Dry weather sites which had elevated concentrations above action levels during initial field testing are listed in Table ES-1.

Table ES-1: Dry weather stations with concentrations above action levels for any of measured parameters.

Analyte in which concentration was above the dry action level							
	Conductivity	MBAS	Turbidity	Nitrate	Ammonia	Temperature	Indicator Bacteria
Site Location	BV-1	AH-17 BV-1 MV-2A MV-3	MV-3	AH-8 AH-8A BV-11 BV-18 BV-19 BV-24	AH-17	BV-14 Top	AH-21 BV-6 BV-8

Follow-up investigations were initiated at all sites which showed initial exceedances. A total of fourteen sites were revisited for follow-up investigations. Of these sites a further nine continued to exceed action levels for at least one contaminant of concern. These nine sites were then further investigated as part of the IC/ID requirements of the dry weather monitoring program (Table ES-2). No illicit connections or illegal discharges were found to be the cause of these exceedances.

Table ES-2: City of Vista Dry Weather Monitoring - ICID Investigation Results.

Site ID	Conductivity	Temperature	Ammonia (mg/L)	Nitrate (mg/L)	Surfactants (MBAS) (mg/L)
Dry Weather Action Level	**Best Professional Judgment**	**Best Professional Judgment**	**1.0**	**10.0**	**1.0**
AH-8A	-	-	-	15	-
BV-1	6.06 m/S	-	-	-	Below action level
BV-11	-	-	-	15	-
BV-18	-	-	-	15	-
BV-19	-	-	-	30	-
BV-24	-	-	-	22.5	-
BV-14 Top	-	27.4	-	-	-
MV-2A	-	-	-	-	Below action level
G-3	-	-	10.0	-	-

"-" parameter not analyzed

Of particular note in this 2007 dry weather monitoring program is the continued elevated nitrate concentrations in dry weather flows in the upper north eastern region of the Buena Vista subwatershed. Four sites in this subwatershed had high nitrate concentrations at initial, follow-up and IC/ID investigations. IC/ID investigations continued to corroborate 2006 results which indicated groundwater as the primary source of nitrate.

In addition, the results of a Mann-Kendall trend analysis of historical data (1995-2007) showed that:

- ammonia appeared to be decreasing over time at BV-1,
- at site G-3 nitrates are decreasing while turbidity is increasing
- BV-15 has decreasing phosphates
- AH-17 has decreasing concentrations of nitrate

It is recommended that the City of Vista Dry Weather Program undergo a complete review in preparation for adoption of the revised NPDES permit R-9-2007-0001.

1.0 INTRODUCTION

The Dry Weather Field Screening Program is an integral part of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit issued to the City of Vista (City) and other Co-permittees by the San Diego Regional Water Quality Control Board. The City has implemented a comprehensive Jurisdictional Urban Runoff Management Plan (JURMP) that includes the Dry Weather Field Screening and Illicit Connections/Illicit Discharges (IC/ID) Program. In 2006, the Dry Weather Monitoring Program consisted of screening 29 sites from several drainage basins within the City. In addition, seven creek sites were monitored. Although these creek sites were not a component of the JURMP requirements, the City added these sites to better characterize the water quality of the City's receiving waters during dry weather conditions.

From June 18th thru August 31st, Weston Solutions, Inc. conducted the 2007 Dry Weather Field Screening Program for the City of Vista. A total of 37 field screening sites were inspected during the 2007 program; this included 32 routine monitoring sites and five creek sites. Each site was visually inspected and field parameters were measured to identify illegal discharges and/or illicit connections. A total of 12 sites, including five creek sites and seven field screening sites, were selected for more comprehensive laboratory analyses. These 12 sites included two sites in the Agua Hedionda watershed, five sites in the Buena Vista watersheds and five creek monitoring sites on Aqua Hedionda, Buena Vista Creeks and San Luis Rey watersheds. Photographs taken of each site location are included in Appendix A while field parameter measurements and site observations recorded onto data sheets from each site are provided in Appendix B.

1.1 Dry Weather Monitoring Program Background

The Illicit Connection/Illegal Discharge (IC/ID) Dry Weather Field Screening Program is one of the requirements of the Municipal Storm Water NPDES Permit issued by the San Diego Regional Water Quality Control Board (RWQCB), under Order No. 2001-01. This permit requires all Co-permittees, including the City of Vista, to develop and implement programs to prevent, reduce, and eliminate inappropriate discharges of pollutants from storm water conveyances into the waters of the United States.

The purpose of the Dry Weather Screening Program is to detect illicit connections and/or illegal discharges to the storm water conveyance system. In order to accomplish this goal, strategic sites were identified to test for chronic and/or improper discharges. Chemical parameters specified by the U.S. Environmental Protection Agency (EPA) for field screening were used as indicators of potential pollution from industrial, commercial, or domestic sources. The EPA has presented the following most common non-storm water sources and has placed them into three contamination categories: pathogenic/toxic, nuisance, and clear. The pathogenic/toxic category may cause illness upon contact or consumption and possibly impair aquatic ecosystems. The nuisance category can cause degradation of water quality and impair aquatic ecosystems. Clear water usually comes from natural sources such as springs and ground water infiltration. Table 1-1 displays the potential for these sources to enter the storm drainage system (EPA, 1993).

Table 1-1: Potential Discharges to Storm Drainage Systems (EPA, 1993).

Potential Source	Storm Drain Entry		Flow Characteristics		Contamination Category		
	Direct	Indirect	Continuous	Intermittent	Pathogenic / Toxic	Nuisance	Clear
Residential Areas							
Sanitary Wastewater	●	○	●	○	●	○	
Septic Tank Effluent		●	●	○	●	○	
Household Chemicals	○	●		●	●		
Laundry Wastewater	●			●		●	
Excess Landscaping Watering		●		●	○	○	●
Leaking Potable Water		●	●				●
Commercial Areas							
Gasoline Filling Stations	●	○		●	●		
Vehicle Maintenance/Repair	●	○		●	●		
Laundry Wastewater	●		●	○	○	●	
Construction Site Dewatering		●	●	○		●	
Sanitary Wastewater	●	○	●		●		
Industrial Areas							
Leaking Tanks and Pipes	○	●	●	○	●		
Misc. Process Waters	●	○	●	○	●	○	○

Note: ● = most likely condition; ○= may occur; blank = not likely to occur

Discharges to the storm water conveyance system can originate from a variety of sources. The following provides a brief discussion of potential sources:

Sanitary wastewater sources:

- Sanitary wastewater (usually untreated) from improper sewerage connections, ex-filtration, or leakage
- Effluent from improperly operating, or improperly designed, nearby septic tanks

Automobile maintenance and operation sources:

- Car wash wastewater
- Radiator flushing wastewater
- Engine degreasing wastes
- Improper oil disposal
- Leaky underground storage tanks

Irrigation sources:

- Lawn runoff from over-watering
- Direct spraying of impervious surfaces

Relatively clean sources:

- Infiltrating groundwater
- Water routed from pre-existing springs or streams
- Infiltrating potable water from leaking water mains

Other Sources:

- Laundry wastewater
- Non-contact cooling waters
- Metal plating baths
- Dewatering of construction sites
- Washing of concrete trucks
- Sump pump discharges
- Improper disposal of household toxic substances
- Spills from roadway and other accidents
- Chemical, hazardous materials, garbage, sanitary sludge landfills and disposal sites
- Fire hydrant discharges

2.0 GEOGRAPHIC SETTING

2.1 City of Vista Characteristics

The City of Vista has a population of approximately 95,000 people and is located thirty-five miles north of downtown San Diego and seven miles east of the Pacific Ocean (Figure 2-1). It covers an area of approximately 18.6 square miles between Oceanside and Carlsbad to the west and San Marcos and unincorporated areas of San Diego to the east. The City's jurisdictional boundaries are contained almost entirely within the Carlsbad Hydrologic Unit (HU) - only the northernmost portion of the City lies within the San Luis Rey HU (6 percent of the City's total land area). The Carlsbad HU is divided into six Hydrologic Areas (HA), including: the Buena Vista Creek HA, the Agua Hedionda HA, the Loma Alta HA, and the San Marcos HA. Approximately 93 percent of the land within the City's jurisdiction lies within the Carlsbad HU. The Buena Vista Creek HA accounts for 55 percent of the land area, located in the northern portion of the City, while the Agua Hedionda HA accounts for 38 percent of the land area, located in the southern portion of the City. The Loma Alta HA is located in the northwestern portion of the City and contains approximately 1 percent of the City's land area while the San Marcos HA, in the southernmost portion of the City, comprises less than 1 percent of the land area.

Numerous sub-drainage areas have been identified within these HAs. These include:

- Buena Vista Creek
- North Fork Buena Vista Creek
- North Santa Fe
- Foothill/Vale Terrace
- Eucalyptus
- Monte Vista
- Sunset
- Buena
- Agua Hedionda
- Guajome Lake

Runoff generated within these drainage basins is ultimately discharged to the receiving waters of Agua Hedionda Creek, Buena Vista Creek, and Guajome Creek which are tributaries to Agua Hedionda Lagoon, Buena Vista Lagoon, and the San Luis Rey River respectively.

Land use within the City of Vista, depicted in Figure 2-2, is classified as 49.1 percent residential (SANDAG, 2006). The remaining land use types are categorized as transportation (14.8 percent), parks (8.6 percent), industrial (7.9 percent), vacant (7.5 percent), commercial (5.1 percent) and public facility (4.2 percent). Agricultural and commercial recreational uses each comprise less than 2 percent of the total land use.

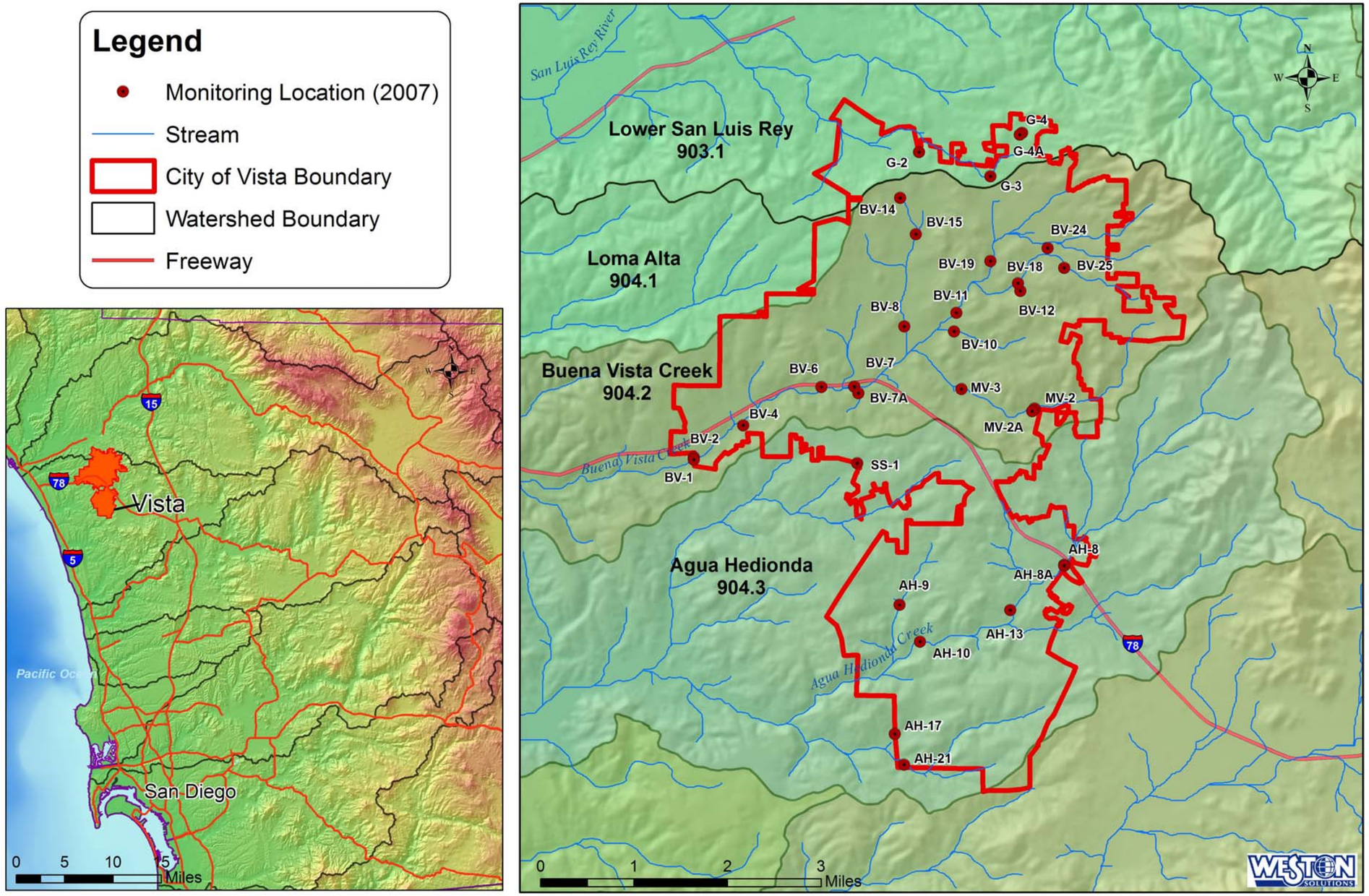

Figure 2-1: City of Vista Vicinity Map and 2007 Dry Weather Field Screening Program Sampling Locations.

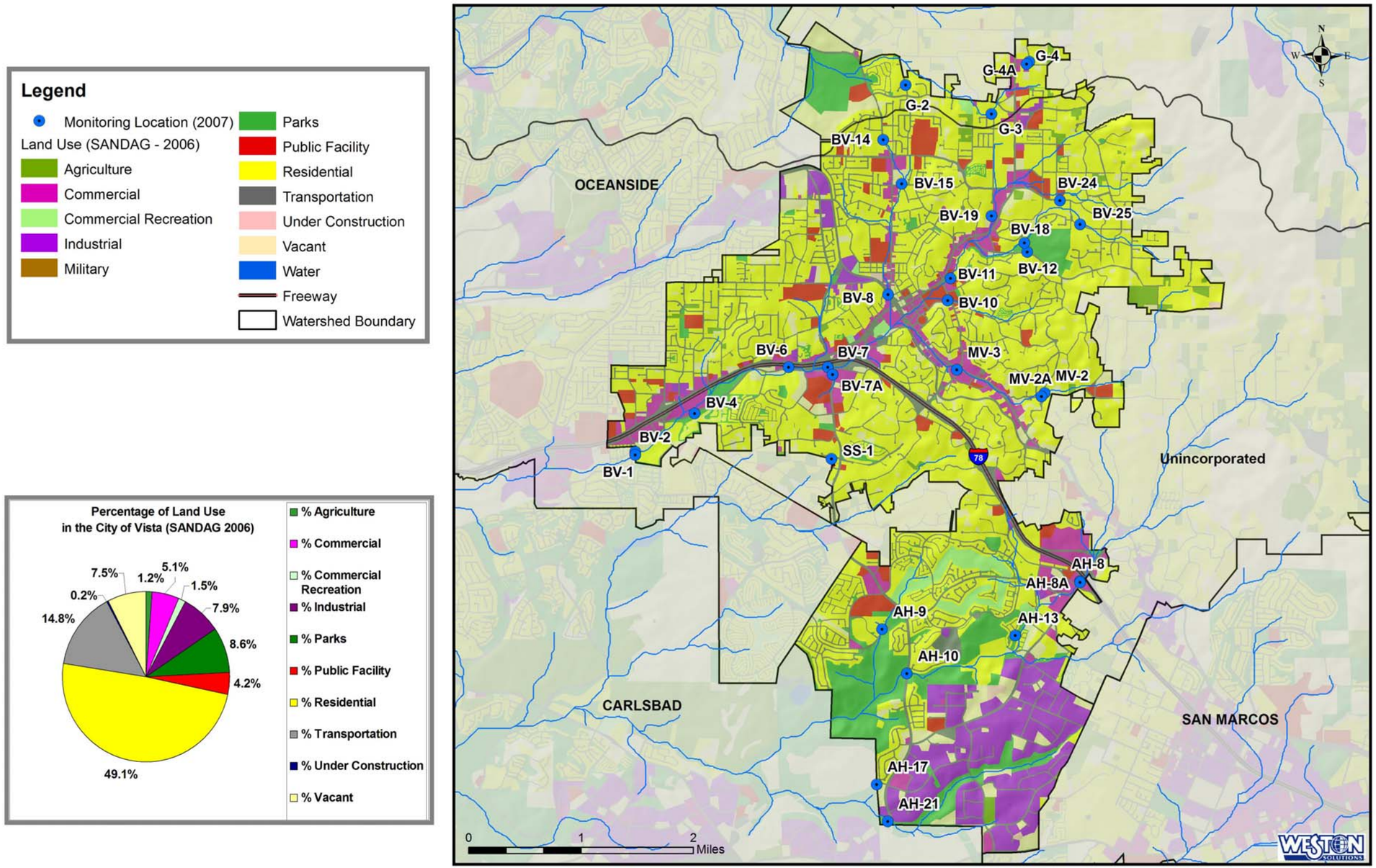

Figure 2-2: City of Vista Land Use Map and 2007 Dry Weather Field Screening Program Sampling Locations.

2.2 Dry Weather Site Locations – Hydrologic Areas

A review was conducted to determine whether sampling locations monitored in previous years adequately represented the numerous sub-drainage basins, land use types, and conveyance types within the City. A total of 37 sites were chosen to be monitored in 2007. All of the sites previously monitored in 2006 were included in the 2007 monitoring plan with the exception of:

- two creek monitoring sites; MV-1 and BVC-1
- SS-1, which was located outside of the City of Vista jurisdiction in 2006

Two additional sites were included in the 2007 monitoring program:

- MV-2A was located slightly downstream of the dry site MV-2
- G-4A was located downstream of the dry site G-4

The initial sampling locations during the 2007 Dry Weather Field Screening Program are depicted in Figure 2-1 and Figure 2-2. These locations include 32 storm drain or drainage sites and 5 creek sites. Follow-up sample locations, when needed, occurred at the same sample location as the initial sample location. Table 2-1 lists all 2007 field screening sampling locations and provides geographical information such as drainage area, land use, conveyance type, and conveyance construction for each site within the Agua Hedionda, Buena Vista Creek and Lower San Luis Rey hydrologic areas. Photographs taken to document conditions at sampling locations are provided in Appendix A.

2.2.1 Agua Hedionda Hydrologic Area

Eight sample locations were monitored in the Agua Hedionda HA (Table 2-1) as follows:

Four site locations were in residential/commercial areas:

- AH-8
- AH-8A
- AH-9
- AH-17

Three site locations were in residential areas:

- AH-10
- AH-13
- SS-1

- Site AH-21 was located in a commercial area

Figure 2-3: Sampling site AH-17

Conveyance type and conveyance composition within the Agua Hedionda hydrologic area also varied.

Three site locations were natural creek conveyances:

- AH-8
- AH-10
- AH-13

Five site locations were concrete outlets:
- AH-8A
- AH-9
- AH-17
- AH-21
- SS-1

2.2.2 Buena Vista Creek Hydrologic Area

A total of 19 sampling sites were monitored in the Buena Vista Creek HA (Table 2-1).

Four site locations were located in residential/commercial areas:
- BV-4
- BV-6
- BV-8
- BV-10

Figure 2-4: Sampling site BV-10 concrete channel in residential/commercial zone

Eleven sites were located in residential areas:
- BV-1
- BV-2
- BV -14 top and bottom
- BV-15
- BV-19
- BV-24
- BV-25
- MV-2
- MV-2a
- MV-3

Three sites were located in commercial areas:
- BV-7
- BV-7A
- BV-11

Two sites were located in parks areas:
- BV-12
- BV-18

Conveyance type and conveyance composition within the Buena Vista HA also varied.
- Six conveyances were natural creeks while
- Ten were outlets/catch basins made of concrete
- Of the remaining four sites, three locations had concrete lined channels and one was an earthen channel

2.2.3 Lower San Luis Rey Hydrologic Area

Land use within the San Luis Rey HA varied slightly at each site location.
- Four of the site locations within the Lower San Luis Rey hydrologic area were in residential areas
- Two of the site locations (G-2 and G-4) were at concrete catch basins while the other sampling locations (G-3 and G-4A) were concrete outlets

Table 2-1: 2007 Dry Weather Monitoring Locations and Drainage Basin Characteristics.

Site ID	Sample Date	Sample Time	Hydrologic Unit	Hydrologic Area	Vista Sub-Drainage Basin	Location Description	Latitude	Longitude	Drainage Area Land Use	Conveyance Type	Conveyance Construction
Dry Weather Monitoring Stations											
AH-8	6/20/2007	10:25	Carlsbad	Agua Hedionda	Buena	623 Sycamore Avenue	33.16655	-117.21545	Residential/Commercial	Natural Creek	Natural
AH-8A	6/202007	10:35	Carlsbad	Agua Hedionda	Buena	634 Sycamore Avenue	33.16643	-117.21545	Residential/Commercial	Outlet	Concrete
AH-9	6/20/2007	11:20	Carlsbad	Agua Hedionda	Agua Hedionda	Shadowridge & Antiqua Drive	33.16013	-117.24574	Residential/Commercial	Outlet	Concrete
AH-10	6/18/2007	08:45	Carlsbad	Agua Hedionda	Agua Hedionda	Melrose Drive & Green Oak Drive	33.15442	-117.24188	Residential	Natural Creek	Natural
AH-13	6/20/2007	11:55	Carlsbad	Agua Hedionda	Buena	Cottontail Lane & Sandy Lane	33.15948	-117.22532	Residential	Natural Creek	Natural
AH-17	6/25/2007	08:40	Carlsbad	Agua Hedionda	Agua Hedionda	Faraday Drive, west end	33.14008	-117.24635	Residential/commercial	Outlet	Concrete
AH-21	6/18/2007	07:30	Carlsbad	Agua Hedionda	Agua Hedionda	Melrose Drive, south end	33.13532	-117.24462	commercial	Outlet	Concrete
SS-1	6/25/2007	09:15	Carlsbad	Agua Hedionda	Sunset	Escondido Avenue & Melrose Drive	33.18205	-117.25377	Residential	Outlet	Concrete
BV-1	6/25/2007	10:25	Carlsbad	Buena Vista Creek	Buena Vista Creek	4241 Tiberon Drive	33.18273	-117.28393	Residential	Outlet	Concrete
BV-2	6/25/2007	10:20	Carlsbad	Buena Vista Creek	Buena Vista Creek	East of 4241 Tiberon Drive	33.18234	-117.28390	Residential	Concrete Channel	Concrete
BV-4	6/25/2007	11:00	Carlsbad	Buena Vista Creek	Buena Vista Creek	1740 Hacienda Drive	33.18775	-117.27485	Residential/Commercial	Outlet	Concrete
BV-6	6/18/2007	10:30	Carlsbad	Buena Vista Creek	Buena Vista Creek	Hacienda Drive & Breeze Hill Drive	33.19384	-117.26051	Residential/Commercial	Natural Creek	Natural
BV-7	6/25/2007	11:30	Carlsbad	Buena Vista Creek	Buena Vista Creek	Melrose & Hacienda	33.19392	-117.25446	Commercial	Outlet	Concrete
BV-7A	6/25/2007	11:40	Carlsbad	Buena Vista Creek	Buena Vista Creek	Melrose & Hacienda	33.19295	-117.25370	Commercial	Outlet	Concrete
BV-8	6/19/2007	09:07	Carlsbad	Buena Vista Creek	North Santa Fe	Olive Avenue & Goeting Way	33.20338	-117.24533	Residential/Commercial	Concrete Channel	Concrete
BV-10	6/25/2007	12:30	Carlsbad	Buena Vista Creek	Eucalyptus	Eucalyptus Avenue & Escondido Avenue	33.20268	-117.23618	Residential/Commercial	Concrete Channel	Concrete
BV-11	6/26/2007	09:00	Carlsbad	Buena Vista Creek	N Fork Buena Vista Creek	Footbridge in Wildwood Park	33.20554	-117.23574	Commercial	Natural Creek	Natural
BV-12	6/20/2007	08:15	Carlsbad	Buena Vista Creek	Foothill/Vale Terrace	Brengle Terrace Park, south side	33.20905	-117.22402	Parks	Natural Creek	Natural
BV-14 - top	6/26/2007	09:50	Carlsbad	Buena Vista Creek	North Santa Fe	North Santa Fe & Weston Circle	33.22335	-117.24632	Residential	Catch Basin	Concrete
BV-14 - bottom	6/26/2007	10:10	Carlsbad	Buena Vista Creek	North Santa Fe	North Santa Fe & Weston Circle	33.22335	-117.24632	Residential	Catch Basin	Concrete
BV-15	6/19/2007	08:56	Carlsbad	Buena Vista Creek	North Santa Fe	Canenea Avenue & Citrus Avenue	33.21770	-117.24339	Residential	Outlet	Concrete
BV-18	6/19/2007	10:55	Carlsbad	Buena Vista Creek	Foothill/Vale Terrace	Brengle Terrace Park, north side	33.21022	-117.22446	Parks	Natural Creek	Natural
BV-19	6/19/2007	10:00	Carlsbad	Buena Vista Creek	N Fork Buena Vista Creek	1040 East Vista Way	33.21364	-117.22957	Residential	Earthen Channel	Natural
BV-24	6/26/2007	1045	Carlsbad	Buena Vista Creek	Foothill/Vale Terrace	1427 Foothill Drive	33.21573	-117.21906	Residential	Outlet	Concrete
BV-25	6/26/2007	12:00	Carlsbad	Buena Vista Creek	Foothill/Vale Terrace	1661 Foothill Drive	33.21267	-117.21596	Residential	Natural Creek	Natural
MV-2	6/27/2007	11:00	Carlsbad	Buena Vista Creek	Monte Vista	Monte Vista dr. & Cypress - 1073 Cypress	33.19082	-117.22118	Residential	Catch Basin	Concrete
MV-2A	6/28/2007	09:05	Carlsbad	Buena Vista Creek	Monte Vista	Monte Vista dr.& Cypress – NW corner	33.19045	-117.22162	Residential	Outlet	Natural
MV-3	6/27/2007	11:30	Carlsbad	Buena Vista Creek	Monte Vista	Santa Fe dr.	33.19373	-117.23468	Residential	Catch Basin	Concrete
G-2	6/28/2007	09:45	San Luis Rey	Lower San Luis	Guajome	Corner of Ahmu & Goodwin	33.23046	-117.24294	Residential	Catch Basin	Concrete
G-3	6/26/2007	12:25	San Luis Rey	Lower San Luis	Guajome	Calle Jules, north end	33.22680	-117.22970	Residential	Outlet	Concrete
G-4	6/26/2007	11:55	San Luis Rey	Lower San Luis	Guajome	2395 Warmlands	33.23341	-117.22410	Residential	Catch Basin	Concrete
G-4A	6/28/2007	10:30	San Luis Rey	Lower San Luis	Guajome	Corner of Vista Grande & E. Warmlands	33.23332	-117.22424	Residential	Outlet	Natural

Yellow - new site location

3.0 METHODS

The City's Dry Weather Analytical and Field Screening Guidance Manual provides both guidelines for dry weather monitoring procedures and action levels for specific dry weather screening analytes. In accordance with this document, Weston Solutions' field scientists made an initial visit to each site. During each site visit, photographs were taken (Appendix A) and field observations and measurements recorded on data sheets (Appendix B). Specifically, field data sheets were used to record site descriptions and characteristics, flow estimations, visual observations, and field chemistry results.

If flowing or ponded water was observed during the initial visit, water quality tests were conducted. Sites which had constituent concentrations above dry weather action limits were investigated immediately. In these cases the sites were revisited within a period of not less than four hours and not more than twenty-four hours. Observations and/or chemical testing were repeated during the second visit. If the site was dry on the initial visit, or if there were no constituent concentrations above the dry weather action levels, a follow-up visit was not conducted.

Figure 3-1: Sampling at Site AH-9

Samples were collected by inserting a pre-cleaned HDPE bottle into the middle of the flowing or ponded water. Samples were tested on-site using CHEMetrics field test kits for the colorimetric analysis of ammonia, nitrate-N, orthophosphate-P, and detergents. In addition to the colorimetric analyses, the samples were also analyzed for pH, conductivity, and temperature using an Oakton Model 35630-62 pH/Conductivity/Temperature Meter. Turbidity was measured using a Hach 2100P Turbidimeter. A description of the chemical testing equipment and the Quality Assurance/Quality Control Program are provided with the chemistry and microbiological reports in Appendix C. Table 3-1 presents the specific ranges and detection limits of the field test kits and meters as well as the dry weather action level for each parameter.

Table 3-1: Field Screening Parameters, Methods, Detection Limits and Action Levels.

Parameter	Kit or Meter	Kit or Meter Range	Accuracy/ Increment	Detection Limit (mg/L)	Action Level (mg/L)
pH	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.00 to 14.00 pH	± 0.01 pH	NA	<6.5 or >9.0
Temperature (°C)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0 to 100 °C	± 0.5 °C	NA	Best Professional Judgment
Conductivity (mS/cm @ 25 °C)	Oakton Model 35630-62 pH/ Conductivity/ Temperature Meter	0.0 to 19.99 mS/cm	± 1% Full Scale ± 1 Digit	NA	Best Professional Judgment
Turbidity	Hach Model 2100P Turbidimeter	0-1000 NTU	± 2% of reading plus stray light from 0-1000 NTU	NA	Best Professional Judgment
Ammonia (mg/L)	CHEMetrics K-1510	0-1.0 and 1.0-10.0 mg/L	0.1 mg/L from 0 to 0.4 mg/L 0.2 from 0.4 to 1.0 mg/L 1.0 mg/L from 1 to 10 mg/L	0.1	1.0
Nitrates (mg/L)	CHEMetrics K-6902	0 – 1.0 and 1.0-5.0 mg/L	0.1 mg/L from 0 to 0.4 mg/L 0.2 from 0.4 to 1.0 mg/L 0.5 mg/L from 1 to 5 mg/L	0.1	10.0
Detergents (mg/L)	CHEMetrics K-9400	0-3.0 mg/L	0.25 mg/L from 0 to 1 mg/L 0.5 mg/L from 1 to 3 mg/L	0.25	1.0
Phosphate (mg/L)	CHEMetrics K-8510	0 –1.0 and 1.0-10.0 mg/L	0.1 mg/L from 0 to 0.4 mg/L 0.2 from 0.4 to 1.0 mg/L 1.0 mg/L from 1 to 10 mg/L	0.1	2.0

In accordance with the City's Dry Weather Analytical and Field Screening Guidance Manual, a minimum of 25% of all the dry weather monitoring sites with flowing or ponded water were tested for the following parameters: total hardness, surfactants (MBAS), oil and grease, diazinon and chlorpyrifos, dissolved cadmium, dissolved copper, dissolved lead, dissolved zinc, and enterococci, total coliform, and fecal coliform bacteria (Table 3-2). Samples were collected from the horizontal and vertical center of the channel if possible or directly from the outfall discharge and kept clear from uncharacteristic floating debris. Because oil and grease and other petroleum hydrocarbons tend to float, oil and grease grab samples were collected at the air/water interface. Samples were properly preserved and put on ice for transport to the laboratory for analysis within appropriate holding times. Sites were selected for laboratory analysis based upon concentrations of at least one indicator parameter being elevated above Co-permittee action levels in previous monitoring years.

Table 3-2: Laboratory Analytical Parameters, Methods, Detection Limits, and Action Levels.

Parameter	Analytical Method	Sample Container Type	Preservative	Reporting Limit (mg/L)	Action Level (mg/L)
Total Hardness	EPA 200.7	500 mL plastic	HNO_3	10 mg/L	-
Detergents (MBAS)	SM 5540C	500 mL plastic	None	0.5 mg/L	1.0 mg/L
Oil and Grease	EPA 413.1	1 liter glass amber	HCl	5.0 mg/L	15 mg/L
Diazinon	EPA 8141A (w)	1 liter glass amber	None	0.05 µg/L	0.5 mg/L
Chlorpyrifos	EPA 8141A (w)	1 liter glass amber	None	0.05 µg/L	0.5 mg/L
Dissolved Cadmium	EPA 6020	500 mL plastic	None	0.005 mg/L	California Toxics Rule
Dissolved Copper	EPA 6020	500 mL plastic	None	0.005 mg/L	California Toxics Rule
Dissolved Lead	EPA 6020	500 mL plastic	None	0.005 mg/L	California Toxics Rule
Dissolved Zinc	EPA 6020	500 mL plastic	None	0.02 mg/L	California Toxics Rule
Enterococci	SM 9230 B	100 mL plastic	Sodium Thiosulfate	10 MPN/100 mL	10,000 MPN/100 mL
Fecal Coliform	SM 9221 E	100 mL plastic	Sodium Thiosulfate	20 MPN/100 mL	20,000 MPN/100 mL
Total Coliform	SM 9221 B	100 mL plastic	Sodium Thiosulfate	20 MPN/100 mL	50,000 MPN/100 mL

3.1 Monitoring Program

Field sampling for the City of Vista Dry Weather Monitoring Program was conducted between June 18, 2007 and June 29, 2007.

3.2 Field Screening Analyses

All sites with flowing or ponded water were sampled for the following parameters: Temperature, pH, conductivity, turbidity, ammonia, surfactants (MBAS), nitrate, and ortho-phosphates.

4.0 RESULTS

The following sections provide results for the 2007 dry weather monitoring program. Visual observations made at each of the hydrologic areas are presented in Section 4.1 while field screening analyses for each hydrologic area using a water quality meter or field test kit are presented in Section 4.2. Results of chemical analyses of water samples collected from selected field stations are presented in Section 4.3. In addition to the dry weather monitoring station results described above, the City of Vista also monitors the receiving waters to provide water quality information for watershed assessment. These creek sites are presented in Section 5.

4.1 Visual Observations

Visual observations made at each monitoring station included water color, water clarity, floatable materials, deposits, vegetation, biology, and flow. If any particular odors were associated with the site, those observations were also recorded. A summary of the qualitative visual observations are presented in Table 4-1.

- **Odor:** Odor can be caused by chemicals from residential, commercial, and industrial discharges. It can also result from natural sources including decaying organic matter and microbial activity.
- **Water Color:** The apparent color of water results from dissolved substances and suspended matter. Soil runoff and decaying organic matter produce a variety of yellow, red, brown, and gray colors.
- **Water Clarity:** Water clarity is a qualitative assessment of turbidity. Turbidity refers to the cloudiness of water. Water that is turbid generally has low clarity, and may appear cloudy or opaque, while less turbid water will appear clear. Suspended solids and microscopic plankton that scatter light passing through the water cause turbidity. High turbidity can be an indicator of soil runoff or blooms of microscopic organisms due to high nutrient inputs.
- **Floatable Materials:** The type of floating matter can help identify the source of contamination, since these substances are often direct products of the source of the pollution. Trash such as plastic bags, containers, glass bottles, paper products, and styrofoam items may be indicative of contaminants as well.
- **Deposits**: Deposits can help identify sources of contamination. These substances are often the direct product of a pollution source.
- **Vegetation:** Excessive vegetation can be an indicator of elevated levels of nutrients and bacteria in the runoff.
- **Biology:** The presence or absence of biological organisms such as larval and adult insects, fish, crustaceans, mollusks, and algae, can help to indicate if there is toxicity associated with the runoff.

- **Flow:** Water moving down a conveyance; in some instances flow may be ponded and stagnant pools may be present, or in cases of no flow, portions of a water body or conveyance may be dry (no water).

4.1.1 Agua Hedionda

Visual field observations were recorded during the 2007 dry weather monitoring program at eight sites (AH-8 thru SS-1) throughout the Agua Hedionda hydrologic area and are presented in Table 4-1.

- Weather varied from overcast to sunny at all sites listed above.
- Odor was not evident in water samples with the exception of AH-9, which had a musty odor.
- Color was not evident in water samples taken at sites AH-8, AH-8A, A-10 and AH-13, while a yellow color was evident at sites AH-9, AH-17, AH-17 follow up, AH-21 and SS-1.
- Water samples taken at sites listed above appeared clear except for AH-17 and AH-17 follow up, which had a slightly cloudy appearance.
- Floatables varied and included trash, leaf debris, pollen, bubbles and foam.
- Deposits were not evident except for AH-10, which had course particulates in the water sample.
- Vegetation appeared normal at all sites with the exception of AH-8A, which was overgrown and had excessive vegetation.
- Biology in all the sampling locations varied and included insects, algae, bivalves, snails, crawfish and tadpoles.

4.1.2 Buena Vista Creek

Visual field observations were recorded during the 2007 dry weather monitoring program at 20 sites (BV-1 thru MV-3) throughout the Buena Vista Creek hydrologic area and are presented in Table 4-1.

- Weather varied from overcast, partly cloudy to sunny at sites listed above.
- Odor was not evident in water samples taken except for MV-2A and MV-2A follow up, which had a musty odor and MV-3, which had a dirt and asphalt odor.
- Color was not evident in water samples taken at sites listed above except for sites BV-1, BV-1 follow up, MV-2A, MV-2A follow up and MV-3. A yellow color was evident at these sites while MV-3 follow up appeared to be brown.
- Water samples taken at sites listed above appeared clear except for BV-24, MV-2A, MV-2A follow up, MV-3 and MV-3 follow up which had a slightly cloudy appearance.
- Floatables appeared varied; trash, leaf debris, pollen, sheen, bubbles and foam were evident at sites listed above.
- Deposits (such as sediment) were evident at sites listed above except for BV-1, BV-2, and BV-19 which had none.
- Vegetation appeared varied from none at BV-7, BV-10, BV-14, and MV-3 to excessive at BV-19 and BV-24.
- Biology appeared varied; none, insects, algae, snails, crayfish and ducks were evident at sites listed above.

4.1.3 Lower San Luis Rey

Visual field observations were recorded during the 2007 dry weather monitoring program at four sites throughout the Low San Luis Rey hydrologic area and are presented in Table 4-1.

- Weather was sunny at sites listed above.
- A musty odor was evident in water samples taken at G-2, G-3 and G-3 follow up, while G-4A had no evidence of odor.
- Color of water samples taken at sites listed above appeared yellow.
- Water samples taken at sites listed above appeared slightly cloudy.
- Floatables were varied; trash, leaf debris, sheen, bubbles and foam were evident at sites listed above.
- Deposits were evident at sites listed above.
- Vegetation appeared varied from none at G-2, normal at G-4A and excessive at G-3.
- Biology appeared varied; insects and algae were evident at the sites listed above.

Table 4-1: City of Vista 2007 Dry Weather Monitoring Results – Qualitative Observations

StationID	Date	Estimated flow (gpm)	Weather	Rainfall	Odor	Color	Clarity	Floatables	Deposit	Vegetation	Biology	Overland Flow
AH-8	6/20/2007	89.75317876	Sunny	None	None	None	Clear	Trash	None	Normal	Insect & Algae & Bivalves	No
AH-8 follow up	6/21/2007	89.75317876	Overcast	None	None	None	Clear	Trash	None	Normal	Insect & Algae & Bivalves	No
AH-8A	6/202007	44.87658938	Sunny	None	None	None	Clear	Trash	None	Excessive	Insect & Algae & Bivalves	No
AH-8A follow up	6/21/2007	44.87658938	Overcast	None	None	None	Clear	Trash	None	Excessive	Insect & Algae & Bivalves	No
AH-9	6/20/2007	119.670905	Sunny	None	Musty	Yellow	Clear	Trash & Leaf Debris	None	Normal	Insect & Algae & Bivalves	No
AH-10	6/18/2007	359.012715	Overcast	None	None	None	Clear	Trash & Leaf Debris	Coarse particulate	Normal	Insect & Algae & Bivalves	No
AH-13	6/20/2007	89.75317876	sunny	None	None	None	Clear	Pollen & Leaf Debris	None	Normal	Insect & Algae & Bivalves & Crayfish	No
AH-17	6/25/2007	1.402393418	Partly cloudy	None	None	Yellow	Slightly Cloudy	Trash & Leaf Debris	None	Normal	Insect & Algae	Yes
AH-17 follow up	6/26/2007	1.402393418	Overcast	None	None	Yellow	Slightly Cloudy	Trash & Leaf Debris	None	Normal	Insect & Algae	No
AH-21	6/18/2007	1.402393418	Overcast	None	None	Yellow	Clear	Leaf Debris	None	Normal	Algae	No
SS-1	6/25/2007	22.43829469	Sunny	None	None	Yellow	Clear	Trash & Bubbles/Foam & Leaf Debris	None	Normal	Insect & Algae & Snails	Yes
BV-1	6/25/2007	4.207180254	Sunny	None	None	Yellow	Clear	Trash & Leaf Debris & Pollen	None	Normal	Insect & Algae & Snails	No
BV-1 follow up	6/26/2007	4.207180254	Sunny	None	None	Yellow	Clear	Trash & Leaf Debris & Pollen	None	Normal	Insect & Algae & Snails	No
BV-2	6/25/2007	1077.038145	Sunny	None	None	None	Clear	Trash & Leaf Debris	None	Limited	Algae & Ducks	No
BV-4	6/25/2007	33.65744204	Sunny	None	None	None	Clear	Trash & Bubbles/Foam & Leaf Debris	Coarse particulate	Normal	Algae	No
BV-6	6/18/2007	239.34181	Sunny	None	None	None	Clear	Trash & Leaf Debris	Coarse particulate	Normal	None	No
BV-7 DRY	6/25/2007	DRY										No
BV-7A DRY	6/25/2007	DRY										No
BV-8	6/19/2007	33.65744204	Sunny	None	None	None	Clear	Trash & Leaf Debris	Fine particulate	Limited	Insect & Algae	No
BV-10	6/25/2007	12.62154076	Sunny	None	None	None	Clear	Trash & Leaf Debris	Fine particulate	None	Insect & Algae	No
BV-11	6/26/2007	448.7658938	Overcast	None	None	None	Clear	Trash & Leaf Debris	Coarse particulate	Normal	Insect & Algae	No
BV-11 follow up	6/27/2007	448.7658938	Partly cloudy	None	None	None	Clear	Trash & Leaf Debris	Coarse particulate	Normal	Insect & Algae	No
BV-12 DRY	6/20/2007	DRY	Partly cloudy	None				Trash	None	Normal	None	Yes
BV-14 Top	6/26/2007	0.1981506	Sunny	None	None	None	Clear	Trash & Leaf Debris	Fine particulate	None	Insects	Yes
BV-14 Top follow up	6/27/2007	0.1981506	Sunny	None	None	None	Clear	Trash & Leaf Debris	Fine particulate	None	Insects	Yes
BV-14 Bottom	6/26/2007	0.3963012	Sunny	None	None	None	Clear	Leaf Debris	Fine particulate	None	Insects	Yes
BV-15 DRY	6/19/2007	DRY										No
BV-18	6/19/2007	53.85190726	Sunny	None	None	None	Clear	Trash	Fine particulate	Normal	Insect & Crayfish	No
BV-18 follow up	6/20/2007	53.85190726	Partly cloudy	None	None	None	Clear	Trash	Fine particulate	Normal	Insect & Crayfish	No
BV-19	6/19/2007	149.5886313	Sunny	None	None	None	Clear	Trash	None	Excessive	Insects	No
BV-19 follow up	6/20/2007	149.5886313	Overcast	None	None	None	Clear	Trash	None	Excessive	Insects	No
BV-24	6/26/2007	6.222887061	Sunny	None	None	None	Slightly Cloudy	Leaf Debris	Fine particulate	Excessive	Insect & Algae	No
BV-24 follow up	6/27/2007	6.222887061	Sunny	None	None	None	Clear	Leaf Debris	Fine particulate	Excessive	Insect & Algae	No
BV-25 DRY	6/26/2007	DRY										
MV-2 DRY	6/27/2007	DRY										Yes
MV-2A	6/28/2007	Ponded	Sunny	None	Musty	Yellow	Slightly Cloudy	Trash & Sheen & Leaf Debris	Sediment	Normal	Insects	Yes
MV-2A follow up	6/28/2007	Ponded	Sunny	None	Musty	Yellow	Slightly Cloudy	Trash & Sheen & Leaf Debris	Sediment	Normal	Insects	No
MV-3	6/27/2007	Ponded	Sunny	None	Dirt & Asphalt	Yellow	Slightly Cloudy	Trash	Sediment/Fine	None	Insects	Yes
MV-3 follow up	6/28/2007	5.609573673	Sunny	None	None	Brown	Slightly Cloudy	Trash & Leaf Debris	Sediment/Fine	None	None	Yes
G-2	6/28/2007	Trickle	Sunny	None	Musty	Yellow	Slightly Cloudy	Trash & Leaf Debris	Fine particulate	None	Insects	Yes
G-3	6/26/2007	Ponded	Sunny	None	Musty	Yellow	Slightly Cloudy	Trash & Leaf Debris	Sediment	Excessive	Insects	Yes
G-3 follow up	6/27/2007	Ponded	Sunny	None	Musty	Yellow	Slightly Cloudy	Trash & Leaf Debris	Sediment	Excessive	Insects	Yes
G-4 DRY	6/26/2007	DRY										Yes
G-4A	6/28/2007	Trickle	Sunny	None	None	Yellow	Slightly Cloudy	Bubbles/Foam & Sheen & Leaf Debris	Fine particulate	Normal	Insect & Algae	Yes

4.2 Description of Field Screening/Analytical Chemistry Parameters

All sites with flowing or ponded water were sampled for the following parameters: Temperature, pH, conductivity, turbidity, ammonia, surfactants (MBAS), nitrate, and ortho-phosphates. A brief description of the reasons for measuring a given field parameter is provided below:

- **Temperature:** Extreme temperatures can be an indicator of commercial or industrial runoff. There is no numeric dry weather action level for temperature; Best Professional Judgment is used by the field monitoring crew to determine the need for follow-up investigations. In some cases, proximity of drainages to street levels or shallow flow in culverts may result in elevated temperatures and may not be indicative of industrial or commercial discharges.

- **pH:** Measures of pH represent the intensity of the acidity or alkalinity of water, on a scale ranging from 0.0 to 14.0, with 7.0 considered neutral. The pH of natural waters typically ranges from 6.0 to 9.0 (EPA, 1993). Measurements falling outside of this range could be an indicator of commercial or industrial discharges.

- **Conductivity:** Conductivity is a measurement of a water body's capability to pass electrical current and is generally affected by the geology of the area in which the water is flowing. The presence of inorganic dissolved solids such as chloride, nitrate, sulfate, and phosphate anions or sodium, magnesium, calcium, iron, and aluminum cations will increase a water's conductivity while organic compounds such as oil, phenol, alcohol, and sugar may act to lower conductivity through water. Discharges to streams can change the conductivity depending upon their make-up. A failing sewage system would raise the conductivity because of the presence of chloride, phosphate, and nitrate.

- **Turbidity:** Turbidity refers to the clarity of a water body; high concentrations of particulate matter can modify light penetration, and through sedimentation smother benthic habitats-impacting both organisms and eggs. Fine particulate material can clog or damage sensitive gill structures, decrease an organism's resistance to disease, prevent proper egg and larval development, and potentially interfere with particle feeding activities. If light penetration is reduced significantly, reductions in photosynthesis can also result in a lower daytime release of oxygen into the water. High turbidity may be indicative of illicit discharges.

- **Ammonia:** Ammonia is commonly used in fertilizers and may be combined with other compounds such as sulfate and nitrate to form ammonia-based salts. Toxic concentrations of ammonia, as low as 0.53 mg/L of NH_3, have been reported for various fresh water organisms (http://www.epa.gov/waterscience/criteria/ammonia). These toxic levels are both pH and temperature dependent and increase as both pH and temperature decrease. Generally, plants are more tolerant of ammonia than animals, and invertebrates are more tolerant than adult fish. Juvenile fish, however, have relatively low tolerances for elevated ammonia levels and may undergo developmental changes in their gill tissue, liver, and kidneys. Un-ionized ammonia should not exceed 0.05 mg/L for aquatic organisms.

- **MBAS:** Surfactants are discharged from household and commercial cleaning and laundering operations. Anionic surfactants are commonly used in detergents and account for approximately two-thirds of the total surfactants used. Anionic surfactants are commonly measured as Methylene Blue Active Substances (MBAS). Surfactant concentrations are usually below 0.1 mg/L in natural waters and range from 1.0 to 20.0 mg/L in raw sanitary wastewaters (EPA, 1993). Because of their importance, detergents (surfactants) were tested in the field and in laboratory analyses.

- **Nitrate:** High nitrate levels in urban runoff may be a result of fertilizer runoff, leachate from septic tanks, sewage spills/ illicit connections, or erosion of natural deposits.

- **Orthophosphate-P:** Orthophosphate-P (reactive phosphorus) can occur naturally from local geologic conditions, and with the decay and dead animals, but may also indicate the presence of human sewage, and commercial, agricultural or residential waste water. Detergents containing phosphates can also be source of phosphate contamination found in water.

4.3 Field Screening Parameter Results

4.3.1 Agua Hedionda - Field Sites

Field screening parameters for the 2007 Dry Weather Monitoring Program are presented in Table 4-2.

Nitrate - Two of the Agua Hedionda field sites had elevated nitrate levels (above the dry weather action level of 10 mg/L). Site AH-8 exceeded the nitrate action level during the initial investigation of 13.5 mg/L and had a follow up value of 9.0 mg/L. Nitrate levels at site AH-8A also exceeded action levels with a measured value of 15 mg/L during the initial investigation and follow up value of 15 mg/L.

Ammonia - One of the Agua Hedionda field sites had ammonia levels above the dry weather action level (1.0 mg/L). Site AH-17 had an exceedance of 6.0 mg/L upon initial investigation and a follow up value of 0.6 mg/L.

Surfactant (MBAS) - One of the Agua Hedionda field sites had Surfactant (MBAS) levels above the dry weather action level (1.0 mg/L). Site AH-17 had an exceedance of 1.0 mg/L upon initial investigation and a follow up value of 0.75 mg/L.

Table 4-2: City of Vista 2007 Dry Weather Monitoring – Field Screening Results.

Site ID	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (µS/cm)	Nitrate (mg/L)	Ammonia (mg/L)	Reactive Phosphorus (mg/L) ⁒ 3.06	Surfactants (MBAS) (mg/L)
Dry Weather Action Level	**BPJ**	**<6.5 or >9.0**	**BPJ**	**BPJ**	**10.0**	**1.0**	**2.0**	**1.00**
Dry Weather Monitoring Stations								
AH-8	18.5	8.48	0.6	1.829	**13.5**	0.1	0.0654	0.25
AH-8 Follow-Up					9.0			
AH-8A	19.4	7.88	0.49	1.742	**15.0**	0.2	0.0654	0.25
AH-8A Follow-Up					**15.0**			
AH-9	20.1	7.57	1.06	2.29	0.3	0.4	0.1961	0.25
AH-10	18.1	7.58	1.08	2.56	1.0	0.1	0.0654	0.25
AH-13	19.2	7.90	4.74	1.819	6.0	0.2	0.0654	0.25
AH-17	20.4	8.19	7.25	1.927	0.4	**6.0**	0.1307	**1.0**
AH-17 Follow Up						0.6		0.75
AH-21	18.3	7.90	2.68	3.12	0.2	0.6	0.0327	0.25
SS-1	20.1	7.87	9.6	1.076	0.3	0.3	0.0980	0.25
BV-1	19.7	8.23	1.86	**8.21**	0.4	0.4	0.1307	**1.0**
BV-1 Follow-Up				**6.58**				**2.0**
BV-2	19.4	7.98	1.98	1.759	2.5	0.2	0.0327	0.25
BV-4	21.1	8.66	1.98	1.795	0.3	0.1	0.0654	0.25
BV-6	20.8	7.74	4.18	1.747	4.5	0.1	0.0654	0.25
BV-7 DRY	n/a							
BV-7A DRY	n/a							
BV-8	22.5	8.75	1.51	1.252	0.8	0.1	0.0327	0.25
BV-10	23.1	8.07	0.46	1.582	7.5	0.1	0.0000	0.50
BV-11	18.3	8.25	1.09	1.668	**22.5**	0.4	0.0490	0.25
BV-11 Follow Up					**22.5**			
BV-12 DRY	n/a							
BV-14-T	**27.8**	8.57	0.47	1.808	0.4	0.1	0.0327	0.25
BV-14-T Follow-Up	**27.4**							
BV-14-B	22.0	7.92	0.51	4.66	1.0	0.2	0.1307	0.25
BV-15 DRY								
BV-18	18.9	7.55	8.19	2.21	**22.5**	0.2	0.0654	0.25
BV-18 follow Up					**15.0**			
BV-19	20.8	7.77	0.64	1.534	**13.5**	0.2	0.0654	0.50
BV-19 Follow-Up					**15.0**			
BV-24	21.2	8.25	22.4	1.601	**18.0**	0.6	0.0980	0.25
BV-24 Follow Up					**12.0**			
BV-25 DRY	n/a							
MV-2 DRY	n/a							
MV-2A	20.5	8.12	32.6	0.928	0.1	0.8	0.9804	**1.50**
MV-2AFollow-Up								**1.50**
MV-3	24.2	7.94	**126**	1.159	1.0	0.8	0.2614	**2.00**
MV-3 Follow Up			60.8					0.75
G-2	23.7	8.35	1.72	0.849	0.2	0.3	0.2614	0.25
G-3	22.5	7.84	6.8	1484	0.3	**5**	0.9804	0.50
G-3 Follow-Up						**10**		
G-4 DRY								
G-4A	21.0	7.96	14.9	0.844	0.6	0.8	0.9804	0.50

Yellow highlighting indicates value surpassed dry weather action level
Gray highlighting indicates site was dry

4.3.2 Buena Vista Creek - Field Sites

Field screening parameters for the 2007 Dry Weather Monitoring Program are presented in Table 4-2.

Nitrate - Four of the Buena Vista Creek field sites had nitrate levels above the dry weather action level (10 mg/L). Site BV-11 exceeded the nitrate action level during the initial screening and the follow up (22.5 mg/L for both measurements). Nitrate levels at site BV-18 also exceeded action levels with a measured value of 22.5 mg/L during the initial investigation and follow up value of 15 mg/L. Initial and follow up nitrate values were above action level at site BV-19 (13.5 mg/L and 15 mg/L respectively). Nitrate levels at BV-24 were in exceedance of the dry weather action level during the initial investigation and the follow up (18.0 mg/L and 12 mg/L respectively).

Surfactants (MBAS) – One of the Buena Vista Creek field sites had Surfactants (MBAS) level exceeded the dry weather action level (1.0mg/L). Site BV-1 had an exceedance of 1.0 mg/L upon initial investigation and a follow up value of 2.0 mg/L.

Turbidity – One of the Buena Vista Creek field sites exceeded the dry weather action level (100 NTU). Site MV-3 had an exceedance of 126 NTU upon initial investigation, and a follow up turbidity value that was below action level (60.8 NTU).

Conductivity - dry weather action levels are determined based upon best professional judgment, but a value above 5 mS/cm (5000 µS/cm) is generally considered outside the accepted range. Buena Vista Creek Field Site BV-1 conductivity levels were exceeding the dry weather action level during the initial field screening and the follow up (8.21 mS/cm and 6.58 mS/cm respectively).

Temperature - exceedances are determined based upon best professional judgment, but temperatures greater than 25 degrees Celsius or less than 15 degrees Celsius are usually considered outside of the dry weather acceptable range. The top pipe of BV-14 top was the only Buena Vista Creek field site with a temperature level above the dry weather action level with an initial screening value of 27.8°C, and a follow up measurement of 27.4°C

4.3.3 Lower San Luis Rey - Field Sites

Field screening parameters for the 2007 dry weather monitoring program are presented in Table 4-2.

Ammonia - One of the San Luis Rey field sites had ammonia levels above the dry weather action level (1.0 mg/L). Site G-3 had an exceedance of 5.0 mg/L upon initial investigation and a follow up value of 10 mg/L.

4.4 Laboratory Analyses

Laboratory analyses were conducted on samples collected at seven dry weather sites and five creek monitoring sites. A brief description of the chemical analytes selected for laboratory analysis is provided below.

- **Oil and Grease:** The oil and grease analysis is applicable for the determination of hydrocarbons, vegetable oils, animal fats, waxes, soaps, grease, and related matter. Discharges may cause surface films and shoreline deposits leading to environmental degradation. The Co-permittee action level for oil and grease is 15 mg/L.

- **Diazinon:** Diazinon is an organophosphate insecticide. The retail sale of diazinon was banned in 2005 by EPA. It kills insects, as well as other organisms through its effect on the nervous system. Diazinon is moderately persistent in the environment and, in high enough concentrations, can be toxic to birds, mammals, honeybees, and other beneficial insects. It is also toxic to freshwater fish and invertebrates. The Co-permittee action level for diazinon is 0.5 µg/L.

- **Chlorpyrifos:** Chlorpyrifos is an organophosphate insecticide that is currently being phased out by the US EPA. Over the years, chlorpyrifos has been the most widely used insecticide in the United States, and is still used in agriculture on a variety of crops. In private residences, chlorpyrifos has been used as a termiticide, mosquitocide, and lawn treatment, in addition to other domestic uses. It absorbs readily to soil particles and therefore is not highly mobile in soil. Chlorpyrifos presents a high risk to birds, fish and mammals, and an even a higher risk to aquatic invertebrates. The Co-permittee action level for chlorpyrifos is 0.5 µg/L.

- **Total Hardness:** Hardness refers to the presence of particular minerals in water. The hardness of water can vary considerably between locations. Natural sources of hardness are limestones, which are dissolved by percolating rainwater made acid by dissolved carbon dioxide. Hardness results are used in determining California Toxics Rule water quality objectives for dissolved metals.

- **Dissolved Cadmium:** Cadmium occurs in sulfide minerals that also contain zinc, lead, or copper and is usually associated with zinc at a ratio of about one part cadmium to 500 parts zinc in most rocks and soils. Commercially it is used in electroplating, batteries, paint pigments, and alloys with various other metals. Guidelines for maximum cadmium concentrations in natural water are linked to the hardness or alkalinity of the water (i.e., the softer the water, the lower the permitted level of cadmium). It is considered nonessential for plants and considered extremely toxic to animals. In animals, cadmium tends to accumulate and disrupt the functioning of organs such as the kidneys and liver. The average abundance of cadmium in streams is 1 µg/L and in groundwater is from 1 to10 µg/L. The U.S. EPA primary drinking water standard or maximum contaminant level (MCL) is 10 µg/L (Standard Methods, 1998).

- **Dissolved Copper:** Copper occurs in its native state, but is also found in many minerals. It is widely used in electrical wiring, plumbing, roofing, various alloys, pigments, cooking utensils, brake pads, and the chemical industry. Copper is considered an essential trace element for plants and animals. The average abundance of copper in streams is 4 to 12 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 1.3 mg/L (Standard Methods, 1998).

- **Dissolved Lead:** Lead is normally found in the mineral galena. It is commonly used in batteries, ammunition, solder, piping, pigments, insecticides, and some alloys. It is nonessential for plants; in animals it is toxic by ingestion and is a cumulative poison. The average abundance of lead in streams is 3 µg/L; lead concentrations in groundwater are generally less than 0.1 mg/L. The U.S. EPA drinking water 90th percentile action level is 15µg/L.

- **Dissolved Zinc:** Zinc occurs in its native state and is used in many alloys such as brass and bronze. It is also used in batteries, fungicides and pigments. It is an essential growth element for plants and animals, but at elevated levels it is toxic to some species of aquatic life. The average abundance of zinc in streams is 20 µg/L and in groundwater is less than 0.1 mg/L. The U.S. EPA secondary drinking water standard MCL is 5 mg/L.

- **Bacteria:** Bacteria (specifically total coliform, fecal coliform, and enterococcus) are commonly found in human and animal feces. They are generally not harmful themselves, but they do indicate the possible presence of pathogenic bacteria, viruses, and protozoans that also live in human and animal digestive systems. Total coliform, fecal coliform, and enterococci bacteria are common test organisms for water quality sampling.

    - **Total Coliforms:** Total coliforms are a group of bacteria that can occur in human feces, but can also be present in animal manure, soil, and other places outside the human body. Elevated total coliform concentrations may also be a result of regrowth in warm, ponded areas with sufficient organic matter that may act as an amplifier.

    - **Fecal Coliforms:** Fecal coliforms are a subset of total coliforms and are more indicative of the presence of animal or human waste.

    - **Enterococci:** Enterococci are a subgroup within the fecal streptococcus group and are better suited for survivability in salt water. They are generally found in the digestive systems of humans and other warm-blooded mammals.

4.4.1 Agua Hedionda - Field Sites Chemistry Results

Chemistry results from water samples collected from Agua Hedionda field site locations AH-10 and AH-21 and are provided in Table 4-3.

All chemistry and bacterial concentrations were below dry weather action levels for field site AH-10.

All chemistry and bacterial concentrations were below dry weather action levels at field site AH-21 except for Enterococcus (28,000 MPN/100mL) bacteria during initial visit. Follow-up investigations showed enterococcus levels below dry weather action levels.

4.4.2 Buena Vista Creek - Field Sites Chemistry Results

Chemistry results from water samples collected from Buena Vista Creek field site locations BV-6, BV-8, BV-15 (dry), BV-18, and BV-19 are provided in Table 4-3.

All chemistry and bacterial concentrations were below dry weather action levels except for field site BV-6. Site BV-6 had an exceedance of (240,000 MPN/100 mL) total coliform and fecal coliform (240,000 MPN/100 mL) bacteria. Upon follow up investigation, both Total Coliform and Fecal Coliform values were below dry weather action levels.

All chemistry and bacterial concentrations were below dry weather action levels except for field site BV-8. Site BV-8 had an enterococcus exceedance of 17,000 MPN/100 mL. Upon follow up investigation, enterococcus value was below dry weather action levels.

All chemistry and bacterial concentrations were below dry weather action levels for field sites BV-18 and BV-19.

Table 4-3: City of Vista 2007 - Dry Weather Monitoring Station Laboratory Analytical Results.

Analytes	MRL		Dry Weather Monitoring Stations									
		Sample Date:	6/18/2007	6/18/2007	7/11/2007	6/18/2007	7/11/2007	6/19/2007	7/11/2007	N/A	6/19/2007	6/19/2007
		Dry Weather Action Level	AH-10	AH-21	AH-21 follow-up	BV-6	BV-6 Follow up	BV-8	BV-8 Follow up	BV-15 DRY	BV-18	BV-19
MBAS (surfactants) (mg/L)	0.5	1.0	ND	ND	not measured	ND	not measured	ND	not measured	N/A	ND	ND
Oil and Grease (mg/L)	1	15	ND	ND	not measured	ND	not measured	ND	not measured	N/A	ND	ND
Total Hardness (mg/L CaCO3)	10	N/A	799	1040	not measured	566	not measured	388	not measured	N/A	920	799
Dissolved Cadmium (mg/L)	0.005	CTR	ND	ND	not measured	ND	not measured	ND	not measured	N/A	ND	ND
Dissolved Copper (mg/L)	0.005	CTR	ND	0.005	not measured	ND	not measured	ND	not measured	N/A	ND	ND
Dissolved Lead (mg/L)	0.005	CTR	ND	ND	not measured	ND	not measured	ND	not measured	N/A	ND	ND
Dissolved Zinc (mg/L)	0.02	CTR	ND	0.030	not measured	ND	not measured	ND	not measured	N/A	ND	ND
Diazinon (µg/L)	0.05	0.5	ND	ND	not measured	ND	not measured	ND	not measured	N/A	ND	ND
Chlorpyrifos (µg/L)	0.05	0.5	ND	ND	not measured	ND	not measured	ND	not measured	N/A	ND	ND
Total Coliform (MPN/100mL)	20	50,000	2,200	30,000	ND	240,000	5,000	13,000	35,000	N/A	7,000	5,000
Fecal Coliform (MPN/100mL)	20	20,000	500	17,000	ND	240,000	230	800	1,700	N/A	700	20
Enterococcus (MPN/100mL)	10	10,000	500	28,000	17,000	230	800	17,000	5,000	N/A	1,300	230

"yellow" – exceedance dry weather water quality guidelines
"N/A" - Not analyzed (site was dry)
CTR-California Toxics Rule.

Figure 4-1 through Figure 4-7 illustrate the results of initial and follow-up field inspections to provide an easy visual comparison of chemical test results across all sites. These figures show that the concentrations of some indicator parameters were above dry weather action levels at certain sites.

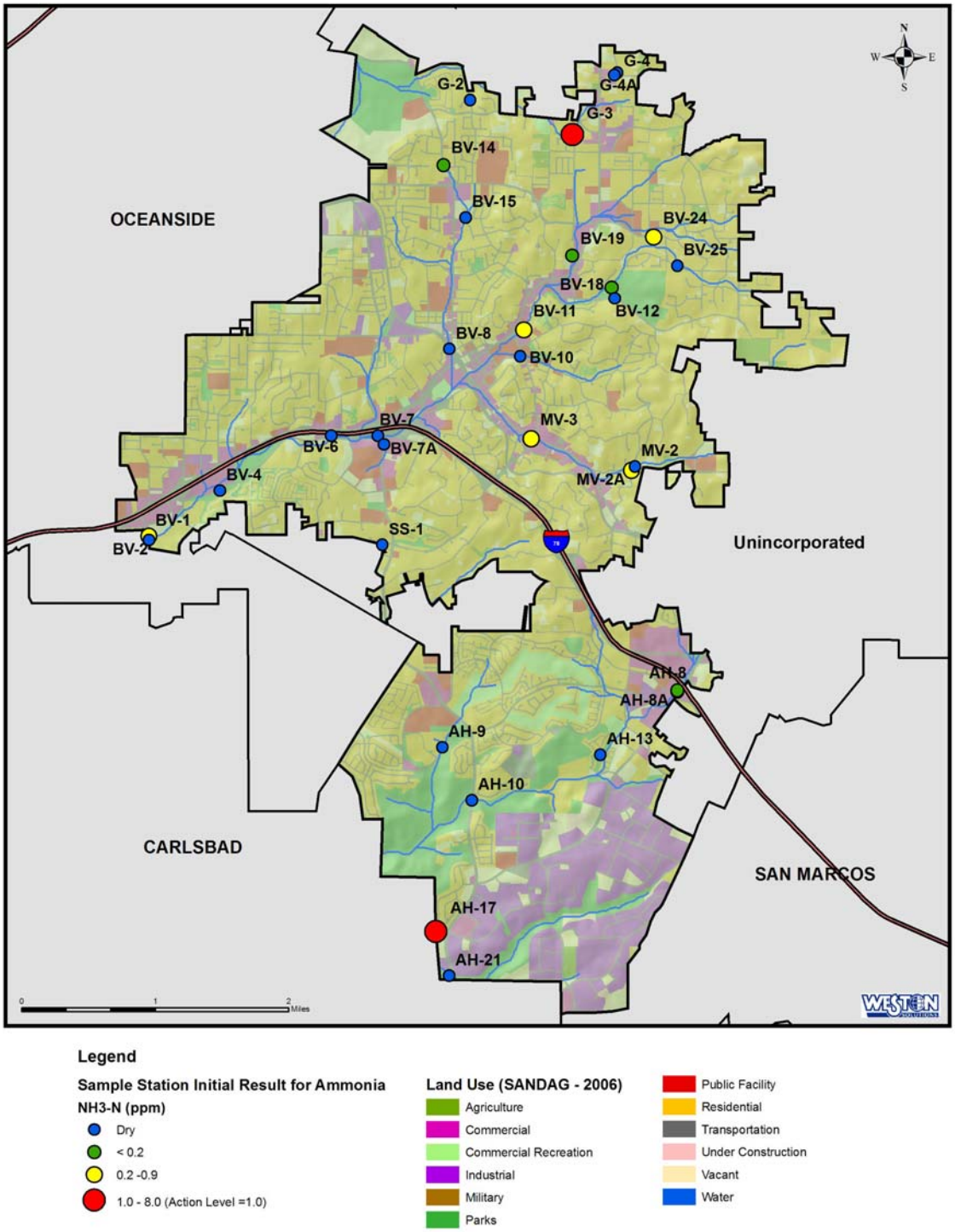

Figure 4-1: Initial Field Screening Results for Ammonia.

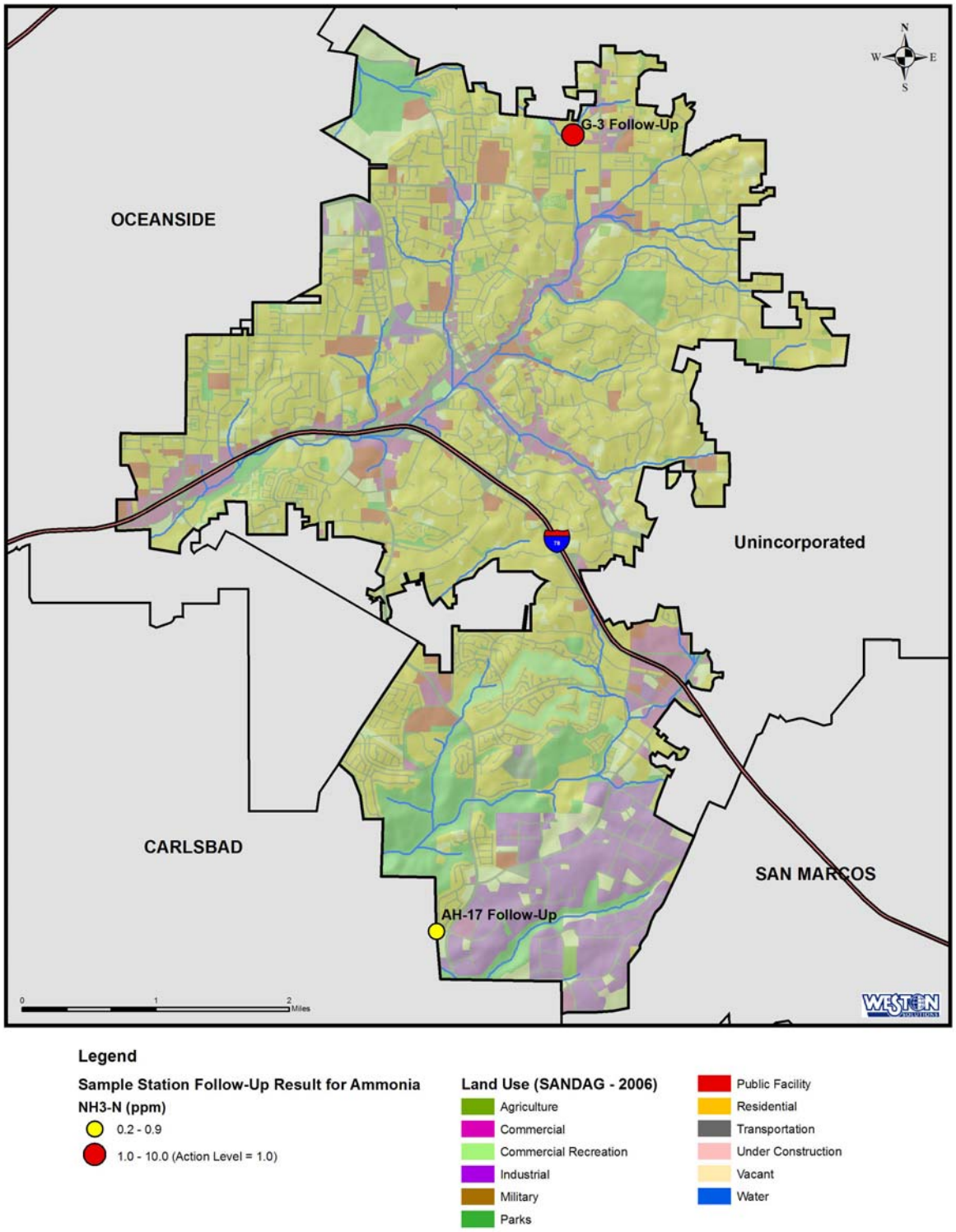

Figure 4-2: Follow-up Field Screening Results for Ammonia.

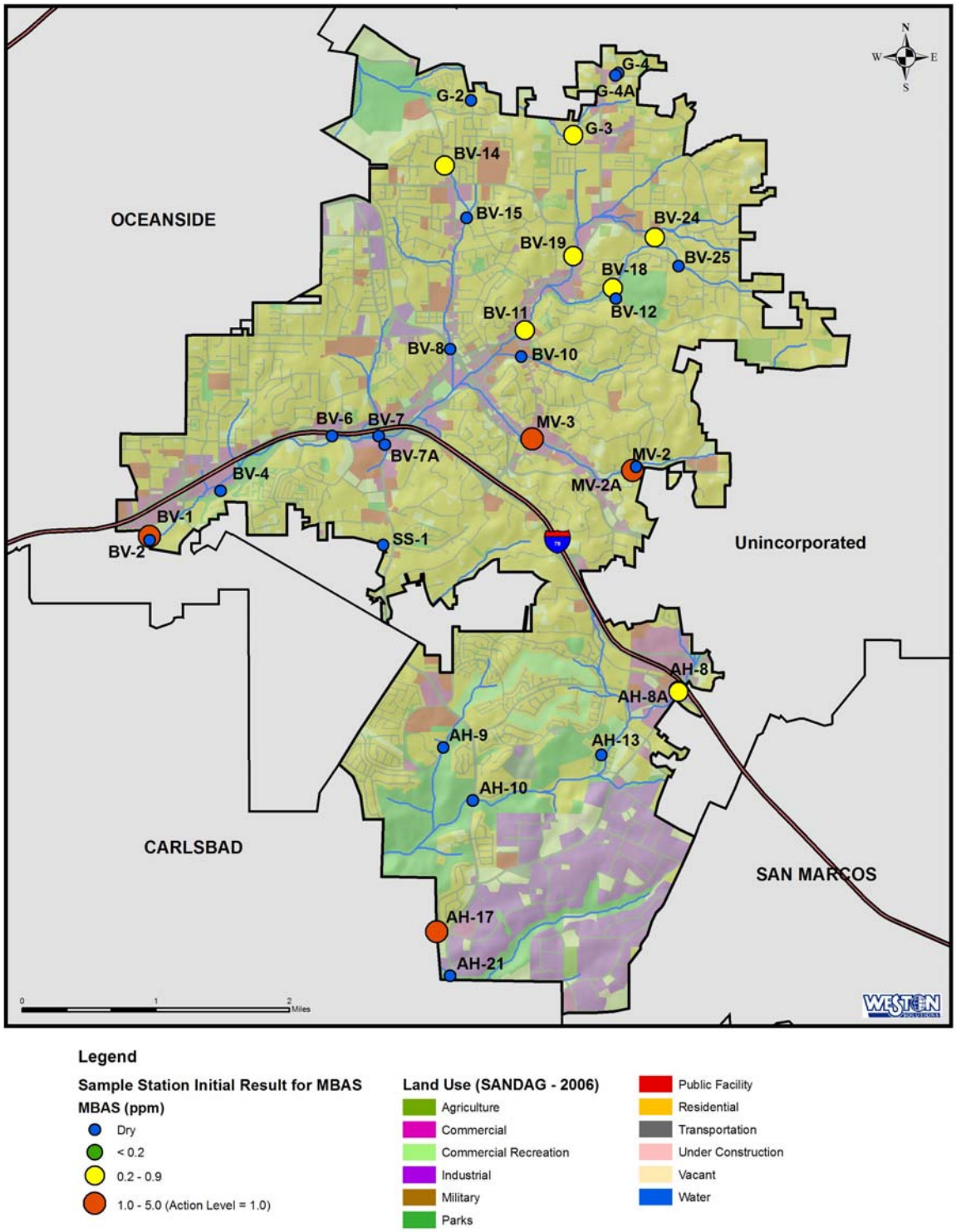

Figure 4-3: Initial Field Screening Results for MBAs.

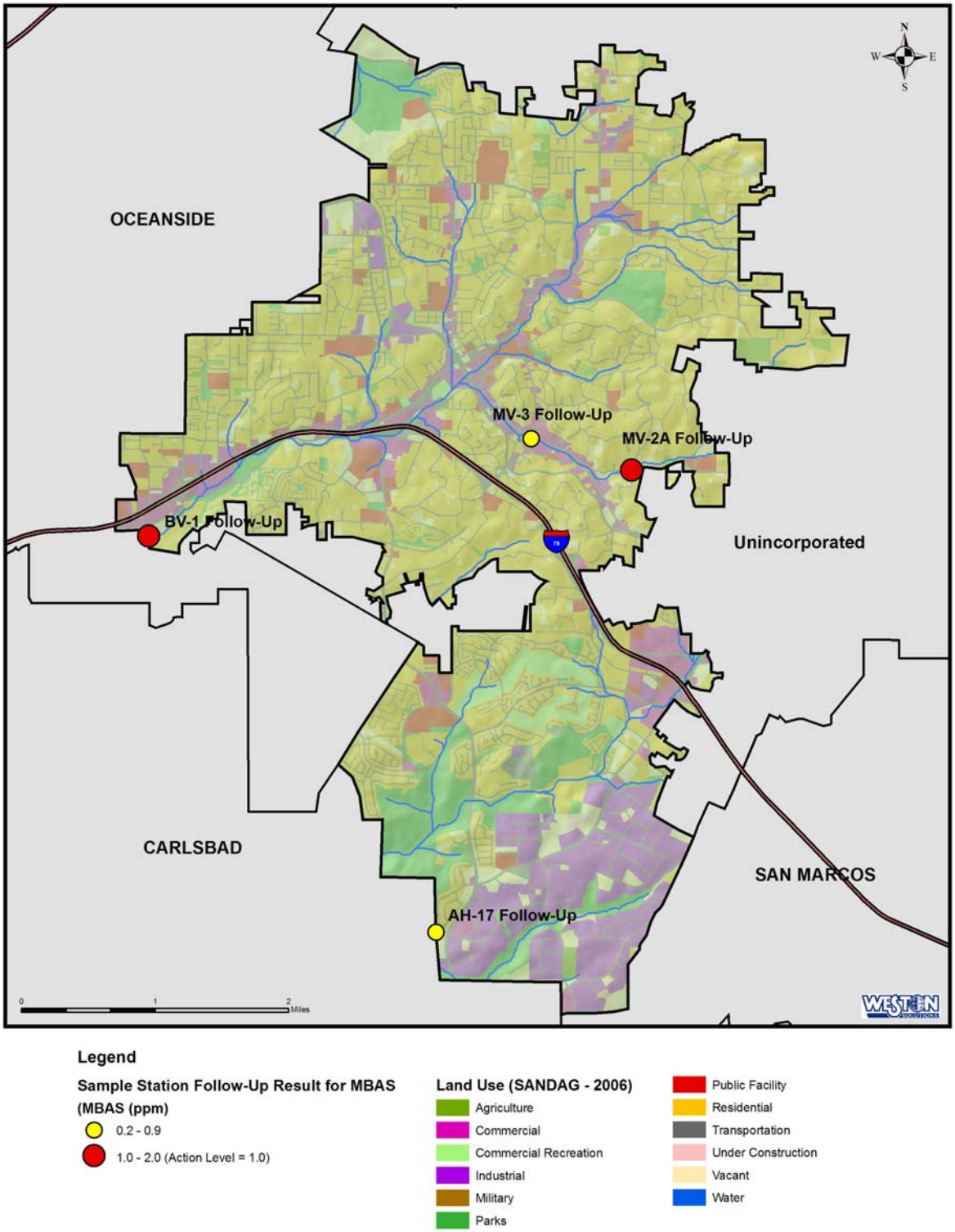

Figure 4-4: Follow-up Field Screening Results for MBAs.

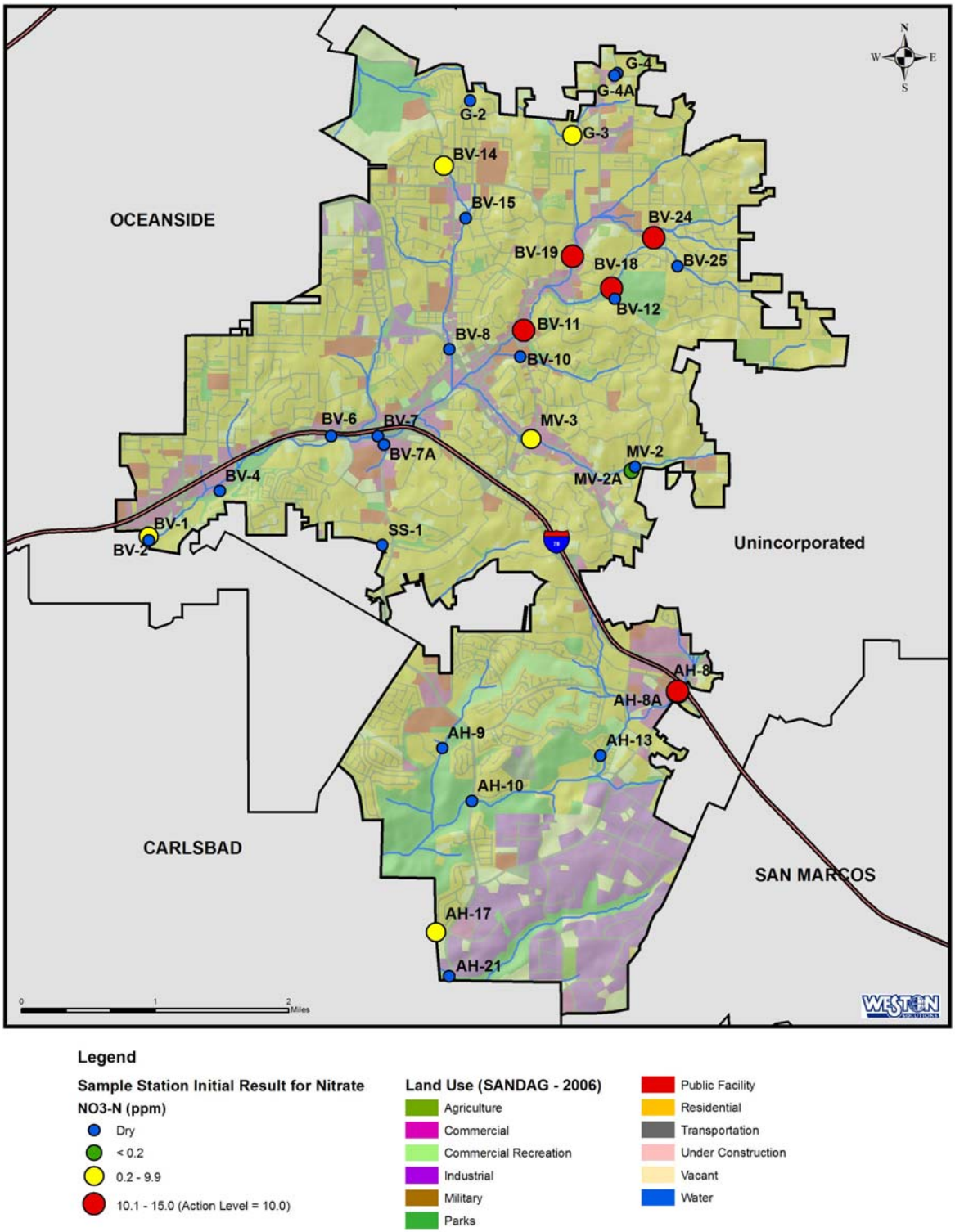

Legend

Sample Station Initial Result for Nitrate
NO3-N (ppm)
- Dry
- < 0.2
- 0.2 - 9.9
- 10.1 - 15.0 (Action Level = 10.0)

Land Use (SANDAG - 2006)
- Agriculture
- Commercial
- Commercial Recreation
- Industrial
- Military
- Parks
- Public Facility
- Residential
- Transportation
- Under Construction
- Vacant
- Water

Figure 4-5: Initial Field Screening Results for Nitrate.

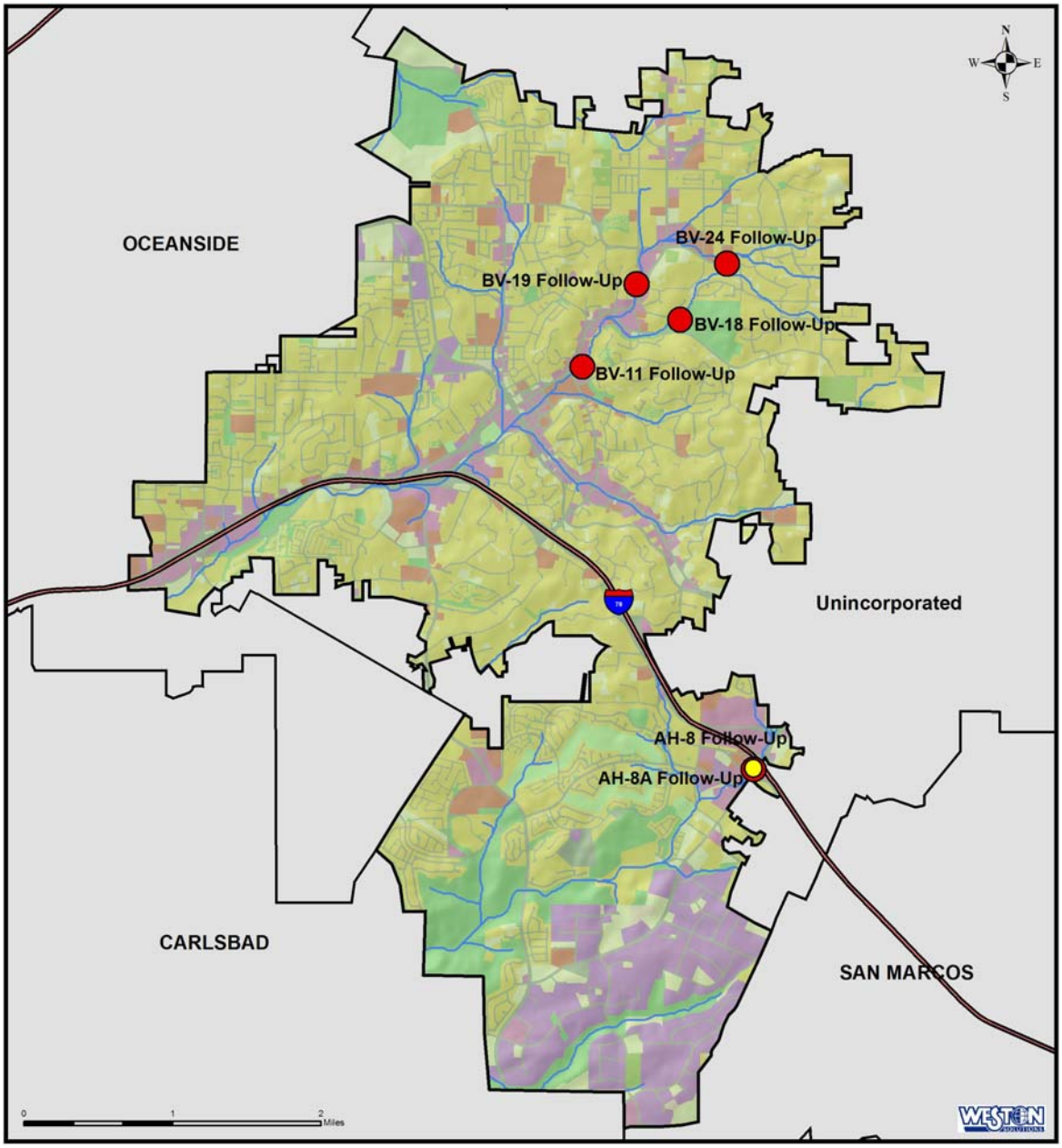

Legend

Sample Station Follow-Up Result for Nitrate

NO3 -N (ppm)

- 0.2 - 9.9
- 10.0 - 22.5 (Action Level = 10.0)

Land Use (SANDAG - 2006)

- Agriculture
- Commercial
- Commercial Recreation
- Industrial
- Military
- Parks
- Public Facility
- Residential
- Transportation
- Under Construction
- Vacant
- Water

Figure 4-6: Follow-up Field Screening Results for Nitrate.

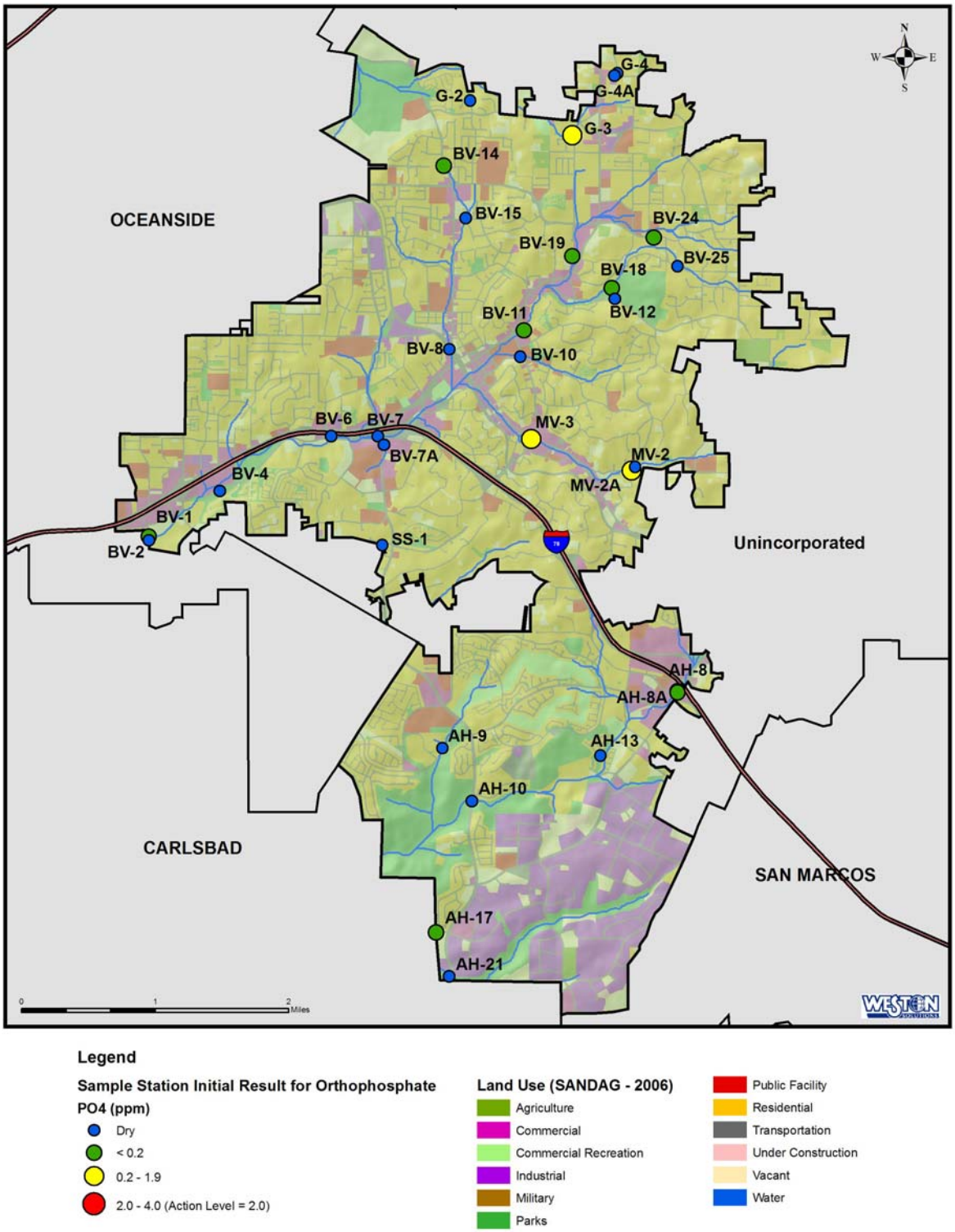

Legend

Sample Station Initial Result for Orthophosphate PO4 (ppm)

- Dry
- < 0.2
- 0.2 - 1.9
- 2.0 - 4.0 (Action Level = 2.0)

Land Use (SANDAG - 2006)

- Agriculture
- Commercial
- Commercial Recreation
- Industrial
- Military
- Parks
- Public Facility
- Residential
- Transportation
- Under Construction
- Vacant
- Water

Figure 4-7: Initial Field Screening Results for Orthophosphate.

5.0 RECEIVING WATER MONITORING

The City of Vista also undertakes a receiving water monitoring program as part of its watershed program. The aim of the receiving water monitoring is to provide background creek water quality data for the Watershed Urban Runoff Management Program (WURMP). The 2007 monitoring program reduced the number of sampling sites from seven to five. These sites were geographically located to best assess the water quality of creeks in the different sub-watersheds. Monitoring was conducted concurrently with the Dry Weather Monitoring but monitoring results were not designed to be compared against Dry Weather action levels for follow-up activities.

5.1 Receiving Water Sampling Locations

The creek monitoring locations are depicted in Figure 5-1 and Figure 5-2. The creek monitoring locations and characteristics are also presented in Table 5-1.

Qualitative site observations from the creek site monitoring are presented in Table 5-2. Field parameter monitoring results are presented below in Table 5-3.

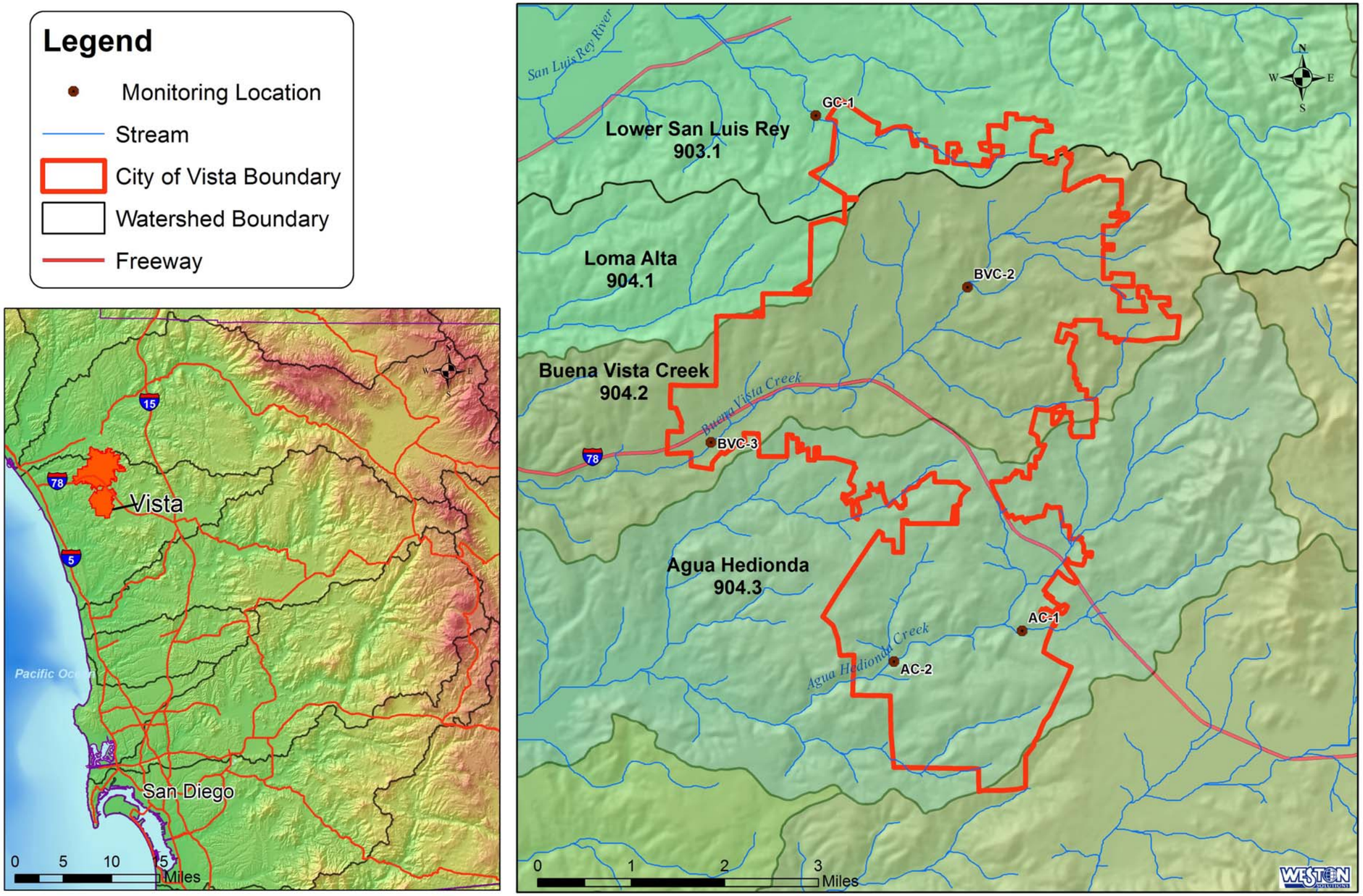

Figure 5-1: City of Vista Vicinity Map and 2007 Creek Monitoring Locations.

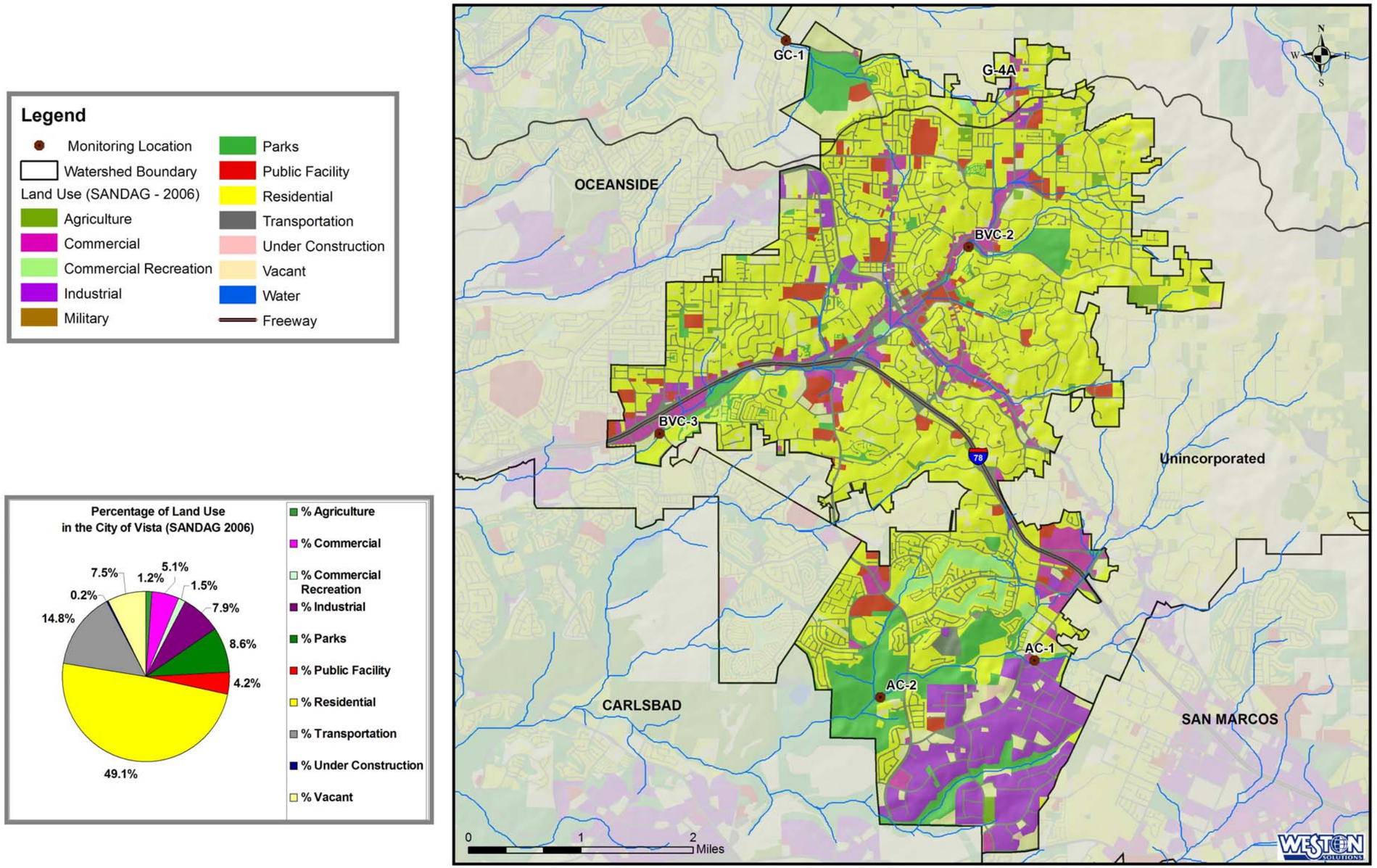

Figure 5-2: City of Vista Land Use Map and 2007 Creek Monitoring Locations.

Table 5-1: City of Vista 2007 Creek Monitoring Locations and Drainage Basin Characteristics.

Site ID	Sample Date	Sample Time	Hydrologic Unit	Hydrologic Area	Vista Sub-Drainage Basin	Location Description	Latitude	Longitude	Drainage Area Land Use	Conveyance Type	Conveyance Construction
AC-1	6/18/2007	09:30	Carlsbad	Agua Hedionda	Agua Hedionda	Green Oak Road, east end, south of Yellow Gate	33.15623	-117.22232	Commercial	Earthen Channel	Natural
AC-2	6/20/2007	09:30	Carlsbad	Agua Hedionda	Agua Hedionda	Junction of Agua Hedionda Creek and North Branch	33.15128	-117.24593	Open	Natural Creek	Natural
BVC-2	6/18/2007	11:30	Carlsbad	Buena Vista Creek	Foothill/Vale Terrace	East Vista Way & Frances Drive	33.20954	-117.23303	Commercial	Natural Creek	Natural
BVC-3	6/18/2007	12:30	Carlsbad	Buena Vista Creek	Buena Vista Creek	Emerald Drive Bridge & Via Center	33.18504	-117.28019	Commercial	Natural Creek	Natural
GC-1	6/19/2007	11:45	Carlsbad	Lower San Luis Rey	Guajome Lake	Melrose and Rancho Sante Fe	33.23601	-117.26174	Residential/Agricultural	Natural Creek	Natural

Table 5-2: City of Vista 2007 Creek Monitoring Site Results – Qualitative Observations.

Site ID	Date Sampled	Sample Time	Light Conditions	Odor	Color	Clarity	Floatables	Vegetation	Biological Resources
AC-1	6/18/2007	09:30	Partly cloudy	Musty	Yellow	Clear	Trash & Sheen & Leaf Debris & Organic Sheen	Normal	Algae & Snails & Fish & Tadpoles & Crayfish
AC-2	6/20/2007	09:30	Sunny	None	None	Clear	Trash & Leaf Debris	Normal	Insects & Algae & Tadpoles & Bivalves
BVC-2	6/18/2007	11:30	Sunny	None	None	Clear	Trash & Leaf Debris	Normal	Insect & Algae
BVC-3	6/18/2007	12:30	Sunny	None	None	Clear	None	Excessive	None
GC-1	6/19/2007	11:45	Sunny	None	None	Clear	Trash & Leaf Debris	Normal	Insect & Fish & Crayfish

Table 5-3: City of Vista 2007 Dry Weather Monitoring – Creek Monitoring Field Parameter Results.

Site ID	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (µS/cm)	Nitrate (mg/L)	Ammonia (mg/L)	Reactive Phosphorus (mg/L)	Surfactants (MBAS) (mg/L)
Dry Weather Action Level	**BPJ**	**<6.5 or >9.0**	**BPJ**	**BPJ**	**10.0**	**1.0**	**2.0**	**1.00**
Creek Monitoring Sites								
AC-1	20.3	7.29	17.3	4.91	0	**1.5**	0.1961	0.50
AC-2	18.4	7.63	1.82	2.3	0.6	0.2	0.0654	0.25
BVC-2	21.0	7.69	1.69	1.63	**15**	0.1	0.0327	0.25
BVC-3	23.7	8.15	2.82	2.1	1.5	0.1	0.0327	0.25
GC-1	18.9	7.73	6.61	2.71	0.8	0.3	0.0654	0.25

Table 5-4: City of Vista 2007 – Creek Site Laboratory Analytical Results.

Analytes	MRL		Dry Weather Monitoring Stations				
		Sample Date:	6/18/2007	6/20/2007	6/18/2007	6/18/2007	6/19/2007
		Dry Weather Action Level	AC-1	AC-2	BVC-2	BVC-3	GC-1
Conventional Constituents							
MBAS (surfactants) (mg/L)	0.5	1	ND	ND	ND	ND	ND
Oil and Grease (mg/L)	1	15	ND	ND	ND	ND	ND
Total Hardness (mg/L CaCO3)	10	N/A	1620	884	848	626	788
Dissolved Cadmium (mg/L)	0.005	CTR	ND	ND	ND	ND	ND
Dissolved Copper (mg/L)	0.005	CTR	ND	ND	ND	ND	ND
Dissolved Lead (mg/L)	0.005	CTR	ND	ND	ND	ND	ND
Dissolved Zinc (mg/L)	0.02	CTR	0.04	ND	ND	ND	ND
Diazinon (ug/L)	0.05	0.5	ND	ND	ND	ND	ND
Chlorpyrifos (ug/L)	0.05	0.5	ND	ND	ND	ND	ND
Total Coliform (MPN/100ml)	20	50,000	80,000	700	5,000	5,000	13,000
Fecal Coliform (MPN/100ml)	20	20,000	1,400	140	800	1,400	500
Enterococcus (MPN/100ml)	10	10,000	5,000	110	500	130	2,800

"yellow" – exceeded dry weather water quality guidelines
CTR - California Toxics Rule
Blank space – not measured
Check dissolved metals levels against hardness

5.1.1 Agua Hedionda - Creek Sites

Creek monitoring sites located in the Agua Hedionda HA included AC-1 and AC-2. Field screening parameter results for the 2007 dry weather monitoring program are presented in Table 5-3 while laboratory analysis results are presented in Table 5-4.

When compared with the dry weather monitoring program exceedance levels, ammonia levels exceeded at AC-1 (1.5 mg/L). In addition, total coliform concentrations were elevated at AC-1.

5.1.2 Buena Vista Creek - Creek Sites

Creek monitoring sites located in the Buena Vista Creek HA were BVC-2 and BVC-3. Field screening parameter results for the 2007 dry weather monitoring program are presented in Table 5-3 while laboratory analysis results are presented in Table 5-4.

Nitrate levels exceeded the dry weather action level (10 mg/L) at BVC-2 had an exceedance of 15 mg/L.

5.1.3 Lower San Luis Rey - Creek Site

One creek monitoring site was located in the San Luis Rey HA at GC-1. There were no exceedances at this site.

6.0 IC/ID INVESTIGATIONS

6.1 Investigation Results by Location

Illicit connection/ illicit discharge investigations were conducted at nine sites. Sites were selected for IC/ID investigation if action levels were exceeded for the same constituent on initial and subsequent follow-up visits. During the IC/ID investigation, field samples were collected upstream of the site in question until either a source of contamination could be identified or until the stream of water could no longer be followed. Results of the IC/ID investigation were provided to the Code Compliance Officer or Storm Water Manager for the City of Vista when a likely source or cause for the elevated constituent concentration could be identified.

Investigation of Elevated Nitrate at Site AH-8A

Weston's field staff investigated elevated levels of nitrate at site AH-8A on August 31st, 2007. A water sample taken at site AH-8A yielded a value of 15.0 mg/L which was above the dry weather action level of 10.0 mg/L. An upstream investigation led to the location of approximately 15 manholes and inlets in the general area of AH-8A, none of which revealed evidence of flow. There were two manholes that were not investigated because one was located in the middle of Sycamore Avenue (traffic issues presented a health and safety risk) and the other was located behind the Shell gas station and could not be opened due to corrosion. The conveyance system in the area upstream of AH-8A could be investigated further with the use of conveyance maps, possible confined space investigation and help from the City's street division to handle traffic concerns near Site AH-8A.

Investigation of Elevated Nitrate at Site BV-11

Weston's field staff investigated elevated levels of nitrate at site BV-11 on August 31st, 2007. A water sample taken at site BV-11 yielded a value of 15.0 mg/L which was above the dry weather action level of 10.0 mg/L. An upstream investigation led Weston field staff behind local small businesses. No outlets or runoff were observed. The only noticeable observation was trash along the banks of the creek along this area. No further action was deemed necessary at this time since no IC/ID was observed.

Investigation of Elevated Nitrate at Site BV-18

Weston's field staff investigated elevated levels of nitrate at site BV-18 on August 31st, 2007. A water sample taken at site BV-18 yielded a value of 15.0 mg/L which was above the dry weather action level of 10.0 mg/L. An upstream investigation led Weston field staff around Brengle Terrace Park. No outlets or runoff were observed. The only noticeable observation was trash along the banks of the creek along this area. It was observed that this area may be frequented by homeless people. No further action was deemed necessary at this time since no IC/ID was observed.

Investigation of Elevated Nitrate at Site BV-19

Weston's field staff investigated elevated levels of Nitrate at site BV-19 on August 31st, 2007. A water sample taken at site BV-19 yielded a value of 30.0 mg/L which was above the dry weather action level of 10.0 mg/L. An upstream investigation led Weston field staff behind local small businesses. No outlets or runoff were observed. No further action was deemed necessary at this time since no IC/ID was observed.

Investigation of Elevated Nitrate at Site BV-24

Weston's field staff investigated elevated levels of nitrate at site BV-24 on August 31st, 2007. A water sample taken at site BV-24 yielded a value of 22.5 mg/L which was above the dry weather action level of 10.0 mg/L. An upstream investigation led Weston field staff into a residential area. The homes are larger with equally large yards and landscapes. At one residence of Independence Way, an irrigation pipe was observed with noticeable flow coming from it. The investigation of this pipe led to a backyard where a person was draining water from a koi pond. A nitrate sample was taken and yielded a value of 6.0 mg/L. The property owner was spoken to and he was told of the possible IC/ID violation. The person was very helpful and was pursuing ways to purge water into his sewer system instead of using stormwater conveyance. No further action was deemed necessary at this time.

6.1.1 Investigation of Elevated Conductivity/Surfactants at Site BV-1

Weston's field staff investigated elevated levels of conductivity and surfactants (MBAS) at site BV-1 on July 25th, 2007. A small amount of flow was apparent at the outlet. The flow had decreased since the previous sampling visit. A water sample taken at site BV-1 yielded a value of 0.75mg/L for surfactants (MBAS) which was under the dry weather action level of 1.0 mg/L. A value of 6.06 m/S was taken for conductivity which was above the dry weather action level of 5.0 m/S or Best Professional Judgment (BPJ). The investigation began upstream of site BV-1. Weston's field staff investigated several manholes upstream of the site; however, no water was flowing in the conveyance. No evidence of discharge was observed behind businesses located along Hacienda Drive and all curb inlets were dry. It is possible there is a conveyance connection located between the outlet and Via Centre Drive which could be contributing to the elevated levels apparent at BV-1. No further action was deemed necessary at that time since flow could not be located.

Figure 6-1: Site conditions at BV-1

Figure 6-2: Looking downstream above BV-1

6.1.2 Investigation of Elevated Temperature/pH levels at Site BV-14 (Top)

Elevated temperature was investigated at Site BV-14 Top on June 27th, 2007. A water sample collected during the investigation upstream from BV-14T had a temperature of 27.8°C and a value 27.4°C upon follow up investigation. The field staff proceeded upstream to further investigate manholes or inlets around the area; however no potential source of the elevations was found.

It is possible that the high temperature at BV-14 Top is caused by sunlight directly heating N. Santa Fe Avenue, warming the water flowing in the pipe as it crosses just under the street. No further action was deemed necessary as the elevated temperatures are likely a result of the flow passing under the street at this location.

Figure 6-3: Site conditions at Site BV-14 Top 8 inch pipe

6.1.3 Investigation of Elevated Surfactants (MBAS) for Site MV-2A

Weston's field staff investigated elevated levels of surfactants (MBAS) at site MV-2A on July 26th, 2007. A water sample taken at site MV-2A yielded a value of 0.50 mg/L which was below the dry weather action level of 1.0 mg/L. A brief investigation upstream led to a neighborhood with large homes and equally large yards and landscapes. There was no evidence of over-irrigation, washing of automobiles or anything else that may have contributed to elevated levels of surfactants (MBAS). No further action was deemed necessary at this time since no IC/ID was observed.

Figure 6-4: Site condition at MV-2A

6.1.4 Investigation of Elevated Ammonia Levels at Site G-3

Elevated ammonia concentrations were investigated at site G-3 on June 27th, 2007. A water sample taken at G-3 had an ammonia concentration of 5.0 mg/L (action level: 1.0 mg/L) and a follow up value of 10 mg/L. The field crew proceeded upstream of the site in an attempt to locate the source of the ammonia. The main flow to site G-3 was apparent in a manhole just upstream of the outlet. A sample was collected and field measurements taken. The ammonia concentration was below dry weather action level of 0.2 mg/L. A small area pipe was also located and tested but was also below dry weather action levels. There was trace nuisance flow located along the curb but a sample was not taken because the water was turbid and discolored from sediment and leaf debris. No other flow was detected and there was no direct link between the high ammonia values at Site G-3 and flow entering the site. It is probable that the elevated ammonia was associated with highly decomposed leaf matter, trash and over-irrigation.

Table 6-1: City of Vista Dry Weather Monitoring – IC/ID Investigation Results.

Site ID	Conductivity	Temperature	Ammonia (mg/L)	Nitrate (mg/L)	Surfactants (MBAS) (mg/L)
Dry Weather Action Level	**Best Professional Judgment**	**Best Professional Judgment**	**1.0**	**10.0**	**1.0**
AH-8A	-	-	-	15	-
BV-1	6.06 m/S	-	-	-	Below action level
BV-11	-	-	-	15	-
BV-18	-	-	-	15	-
BV-19	-	-	-	30	-
BV-24	-	-	-	22.5	-
BV-14 Top	-	27.4	-	-	-
G-3	-	-	10.0	-	-
MV-2A	-	-	-	-	Below action level

" - " parameter not analyzed

It is also note-worthy that IC/ID investigations in 2006 found elevated ammonia concentrations at Site G-3. In that investigation the elevated levels were attributed to over-irrigation and organic material.

Figure 6-5 shows the manholes located at Site G-3. The manhole on right tested below action level for ammonia.

Figure 6-5: Site G-3 manholes located just above outlet

Figure 6-6: Flow apparent in manhole at Site G-3

6.2 Historical Data Analysis

Historical dry weather monitoring data (1995 – 2006) were combined with 2007 dry weather field monitoring data and are presented in Figure 6-7 through Figure 6-11, below. A non-parametric trend analysis was conducted for each constituent at individual sites. This analysis was performed to determine whether conditions at individual sites are improving or if there is any detectable change over time.

6.2.1 Methods

Historical dry weather monitoring data were combined with 2007 data and non-detects were included at one half the detection limit. Some sample sites were dry during 2007 sampling, and therefore do not have values.

Using a dataset that included the field results for the years 1995-2007, a non-parametric trend analysis was conducted. The Mann-Kendall trend test, including Sen's slope estimator, was chosen because it has been shown to be more robust when analyzing environmental data. It is often employed in the analysis of time series data. The test does not assume any single distribution for the data being tested, which is an advantage when analyzing environmental data. This test does not incorporate magnitude, but instead calculates the number of positive and negative differences between years. A significance level of 0.05, meaning that the number positive or negative differences needed to exceed the critical value, was used in this analysis (Gilbert, 1987).

Only those constituents and sites with a significant trend result are presented in the results.

6.2.2 Results

The results of the Mann-Kendall analysis suggests that one site, G-3, has a significant increasing turbidity trend. This trend is based on five data points. Phosphates were determined to be decreasing at site BV-15 based on six data points with no data collected in 2006 or 2007. Nitrate concentrations decreased over time at G-3 and AH-17. Ammonia concentrations appear to be decreasing at site BV-1 (based on six data points from 2002 through 2007).

Table 6-2: Results of Mann-Kendall Trend Analysis at individual monitoring sites

	BV-1	G-3	BV-15	AH-17
Turbidity	-	Increasing	-	-
Phosphates	-	-	Decreasing	-
Nitrate	-	Decreasing	-	Decreasing
Ammonia	Decreasing	-	-	-

No other sites had significant trends based on historical data.

The results presented in Figure 6-7 show historical nitrate concentrations in Agua Hedionda, Buena Vista and lower San Luis Rey subwatersheds. The results demonstrate that elevated nitrates have been frequently located throughout the Buena Vista dry weather monitoring locations.

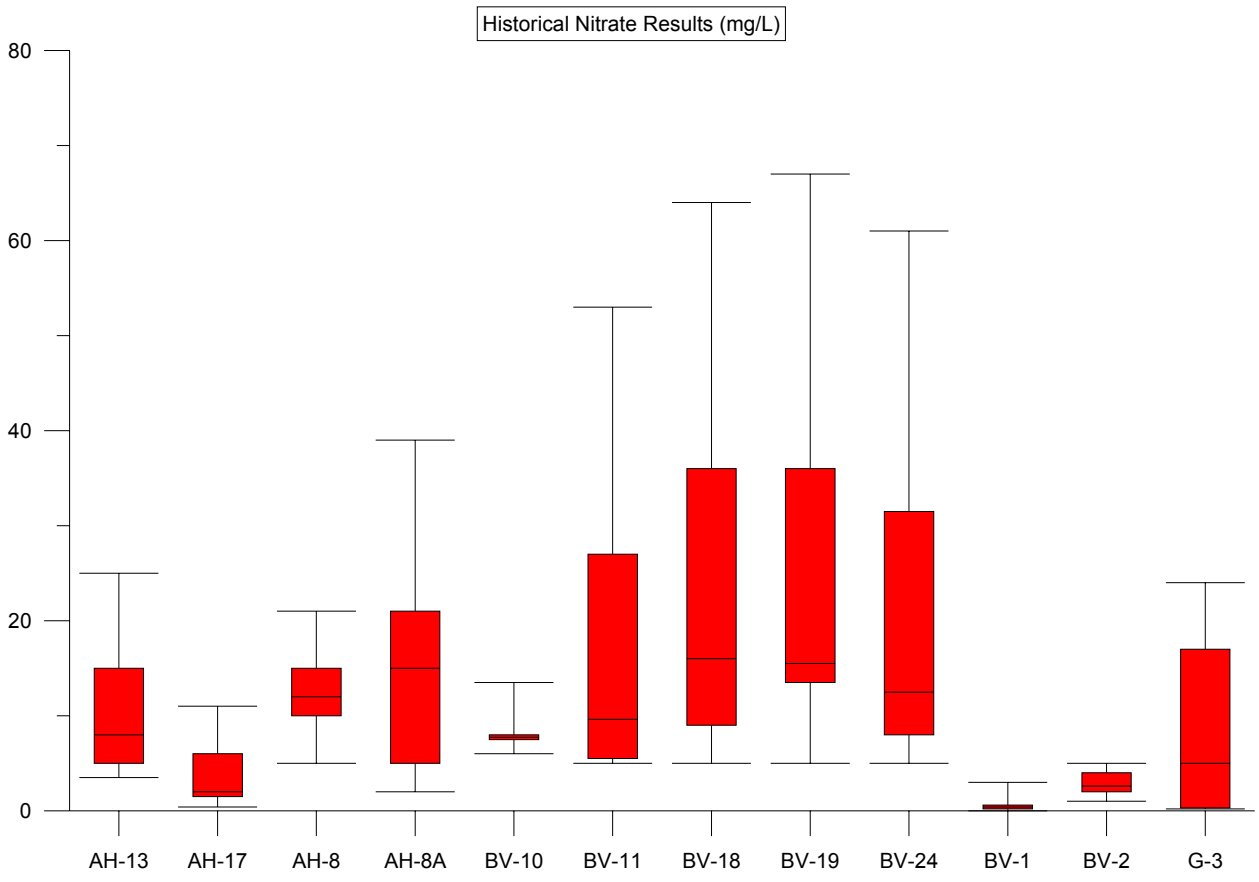

Figure 6-7: Historical data analysis for nitrates (2002 – 2007) by site

Figure 6-8 illustrates the historical phosphate concentrations in the three watersheds. The dry weather monitoring action level for phosphate is 2 mg/L. Historical analysis shows that, for the most part, phosphate concentrations were below the action level. There was no any spatial difference in phosphate concentration.

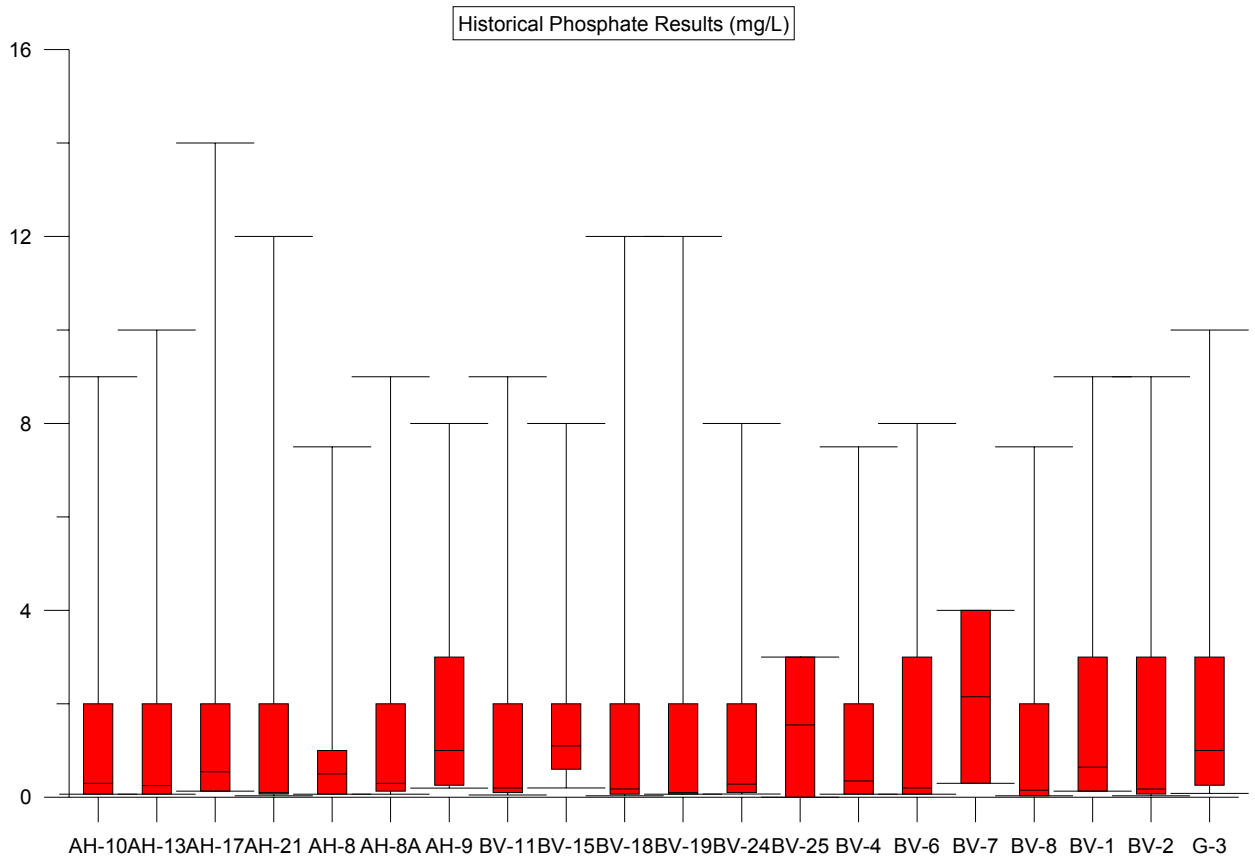

Figure 6-8: Historical data analysis for phosphate (2002 – 2007) by site

Figure 6-9 illustrates the historical compiled data for turbidity. The dry weather action level for turbidity is 20 NTU. It can be seen that some sites have elevated turbidity. It should be noted that BV-7 and G-4 are the result of only two data points while BV-14 is the result on one elevated reading in 2005 (220 NTU). All other means were below the dry weather action level.

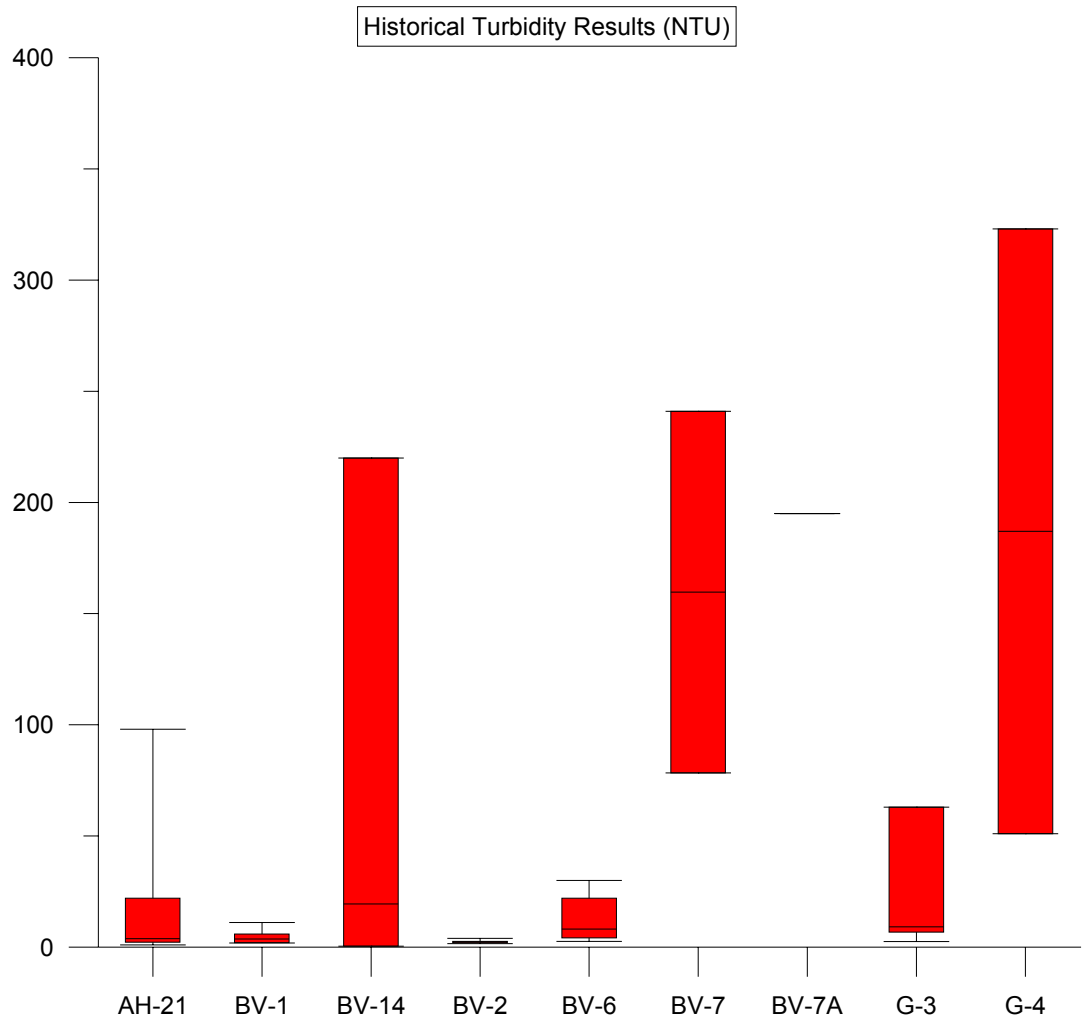

Figure 6-9: Historical data analysis for turbidity (2002 – 2007) by site

Figure 6-10 illustrates the historical data for ammonia. The dry weather action level for ammonia is 1 mg/L. Results show that ammonia rarely occurs at levels higher than the action level.

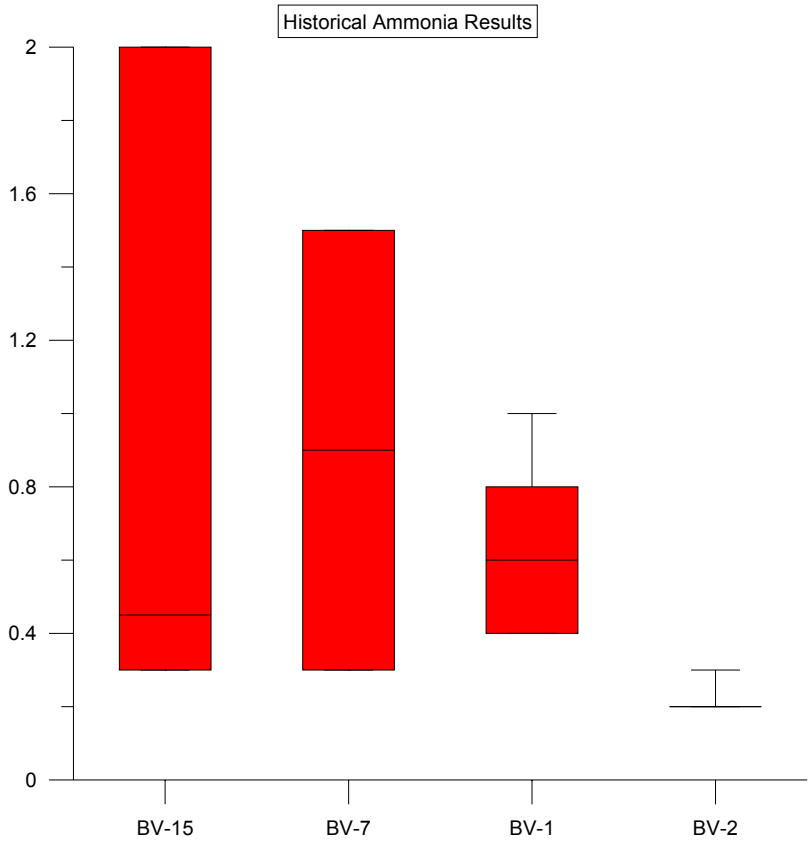

Figure 6-10: Historical data analysis for ammonia (2002 – 2007) by site

Figure 6-11 illustrates historical data collected at sites for surfactants (MBAs). The dry weather action level for surfactants is 1 mg/L. The box and whisker plot shows that most sites fall below this action level routinely. Exceptions to this are BV-7 and MV-2 where it should be noted that only two data points exist for each site.

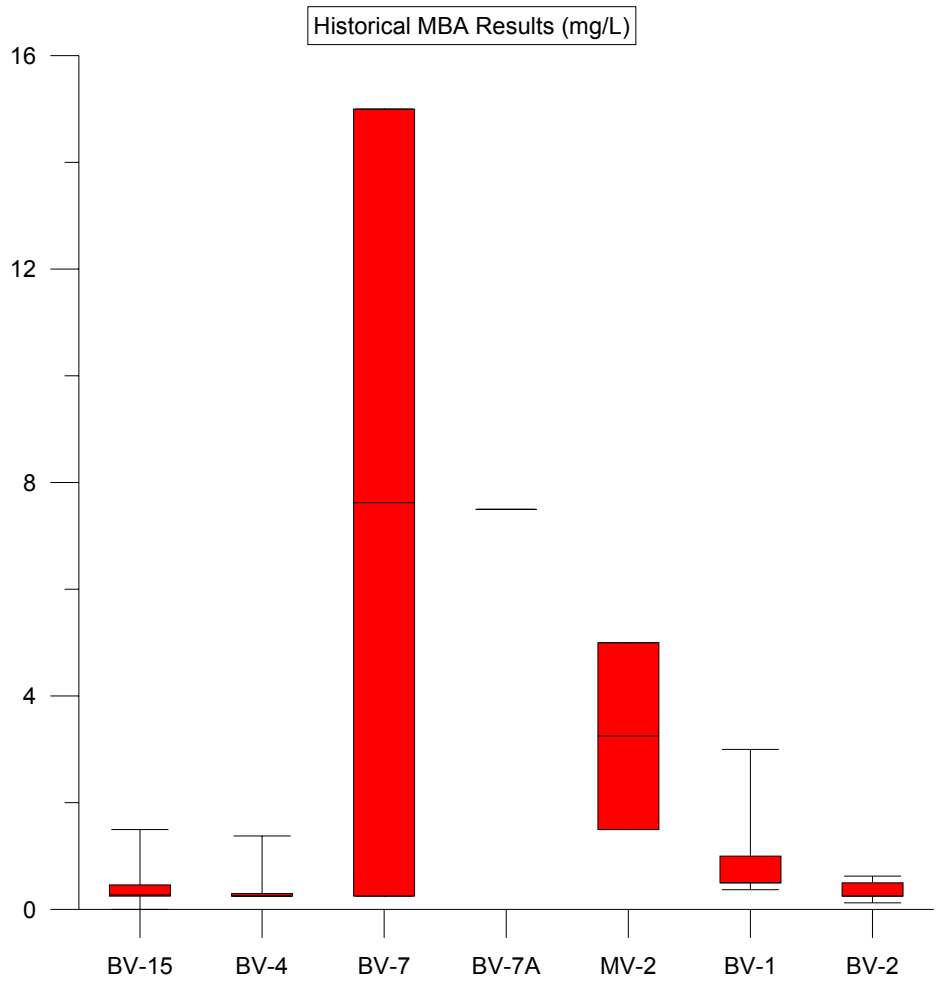

Figure 6-11: Historical data analysis for MBAs (2002 – 2007) by site

7.0 CONCLUSIONS AND RECOMMENDATIONS

A number of conclusions and recommendations can be drawn from the results of the 2007 City of Vista Dry Weather Monitoring Program. This section presents those conclusions and recommendations based on an overview of the 2007 results and review of historical data.

7.1 Conclusions

Chronic exceedances
With the exception of nitrate concentrations, which are discussed below, no significant chronic exceedances were found during the 2007 dry weather monitoring program. Chronic exceedances can be defined as those exceedances which occurred at initial, follow-up and IC/ID inspections. The only sites where such exceedances occurred were:

- BV-1 - where conductivity was elevated based on best professional judgment (BPJ). Flows at this site were extremely low and up-gradient investigations found no flow and no attributable point source.
- BV-14 (top) - where temperature was elevated based on BPJ. The temperature exceedance was attributed to underground passage of the stormwater during the peak of summer.
- G-3 - where ammonia was elevated. Since no exceedances were observed up-gradient of this site, the ammonia exceedance was attributed to the decomposition of organic material.

Chronic nitrate exceedances:
Nitrate concentrations were routinely elevated in the Buena Vista subwatershed; specifically at sites BV-11, BV-18, BV-19 and BV-24. Follow-up investigations concluded that sites in the upper eastern subwatershed continue to have elevated nitrate with no traceable point source.

Historical data would suggest that these levels are attributable, in great part, to groundwater seepage. Confined space investigations in 2006 determined that groundwater was percolating into the conveyance system at a significant flow (Weston, 2006). This groundwater was found to contain high concentrations of nitrate. In addition, three groundwater wells in Vista were monitored in 1987 and all had nitrate concentrations in excess of 45mg/L (*pers. comm*., Bob Pierotti, California Dept. of Water Resources).

In addition nitrate concentrations were elevated at the Agua Hedionda site AH-8A. This correlates with elevated chronic nitrate concentrations in previous years at both AH-8 and AH-8A. This evidence again suggests the influence of groundwater surcharge as the source of elevated nitrates.

7.2 Recommendations

Program adaptations for new permit requirements:
Under the new NPDES permit No. R9-2007-0001 dry weather monitoring should continue as part of Urban Runoff Monitoring. The site selection process should be revised as per the new

permit (Sec B.B.3.a) to appropriately locate future sampling sites. In addition, an assessment of trash presence should be included in the study design.

Drainage maps:
The City of Vista is currently developing a detailed MS4 drainage map. The completion of this project prior to the next dry weather monitoring program will significantly assist in tracing storm water conveyances and would assist in IC/ID investigations.

Effectiveness monitoring:
It will be necessary to assess the effectiveness of the municipal programs overall and in the dry weather program specifically. This effectiveness monitoring should include:

Level 1 – Documentation
Level 2 – Raising awareness
Level 3 – Changing behavior
Level 4 – Reducing loads from sources
Level 5 – Improving runoff quality
Level 6 – Protecting receiving water quality

Education:
It is recommended that the City of Vista continue its efforts to educate the residents and commercial business owners about the City's pollution prevention programs, specifically in regards to proper trash disposal and fertilizer use.

Residential: Residents should be encouraged to reduce over-irrigation that results in dry weather flows in storm water conveyances. This provides the added benefits of reducing the City's water consumption in addition to reducing nuisance dry weather flows. Additional educational programs should include other household activities such as car washing. Under the new requirements of the permit it will also be necessary to assess the behavioral changes associated with educational programs such as Level 2 - raised awareness and Level 3 – changing behavior.

Commercial: Commercial educational programs should include both the proprietors and their employees. Significant commercial ventures should include mobile businesses such as carpet cleaning and detailing.

8.0 REFERENCES

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Pierotti, Robert. Personal communication. San Diego County Dept of Water Resources. July 2nd, 2007. Via email with Ms. Jayne Strommer, City of Vista.

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Standard Methods for the Examination of Water and Wastewater 20th Edition. 1998. American Public Health Association, American Water Works Association and Water Environment Federation.

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U.S. Environmental Protection Agency (EPA). 1993. Investigation of Inappropriate Pollutant Entries Into the Storm Drainage System: A user's guide. Report PB93-131472. Prepared by Alabama University in Birmingham.

Weston Solutions. 2006. City of Vista Dry Weather Report.

APPENDIX A

Site Photos

A.1 Dry Weather Sites

Site AH-8

Natural open channel
Located at southwest corner of Sycamore Avenue and Highway 78

Site AH-8A

12’ concrete box outfall
Located at 643 Sycamore Avenue

Site AH-9

Large concrete outfall
Located at Antigua Drive and Shadowridge Drive

Site AH-10

Natural creek
Located at west side of Melrose Drive and Green Oak Drive

Site AH-13

Natural creek
Located at Cottontail Lane and Sandy Lane

Site AH-17

Concrete outfall
Located at west end of Faraday Drive

Site AH-21

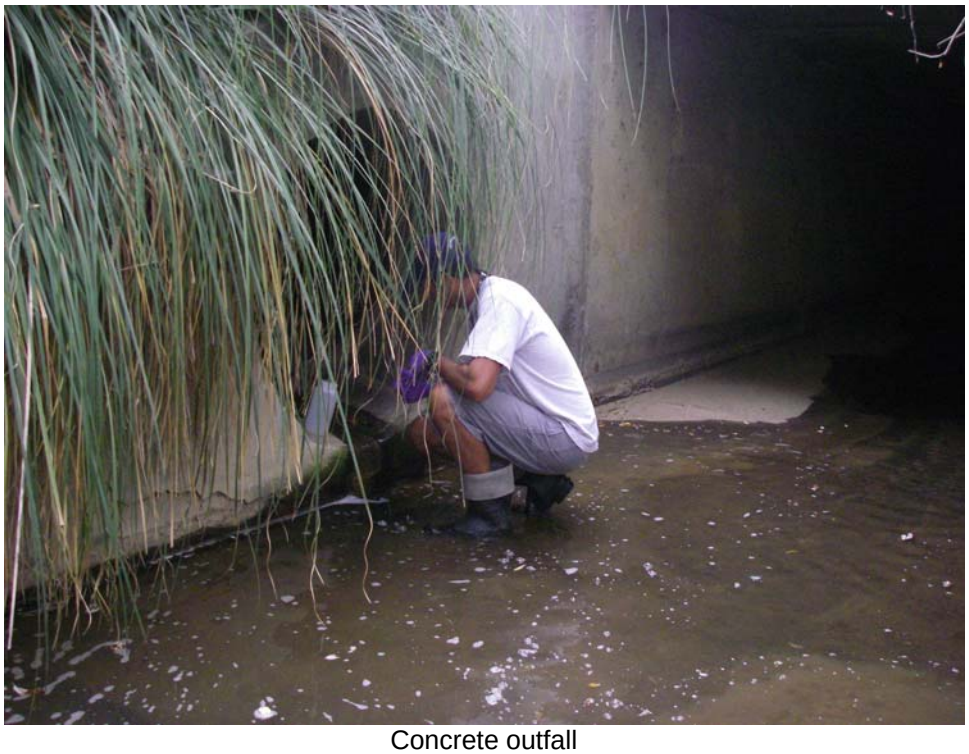

Concrete outfall
Located at south end of Melrose Drive

Site BV-1

48” RCP outfall
Located behind 4241 Tiberon Drive

Site BV-2

20’ open concrete channel
Located at east of 4241 Tiberon Drive

Site BV-4

Twin concrete box outfall
Approximately located at 1740 Hacienda Drive

Site BV-6

Natural creek
Located at Hacienda Drive and Breeze Hill Road

Site BV-7

Natural creek
Located on Hacienda across from car wash

Site BV-7A

Site BV-8

Concrete channel
Located at Goetting Way and Olive Avenue

Site BV-10

Concrete channel
Located at Eucalyptus Avenue and Escondido Avenue

Site BV-11

Natural creek
Located under the footbridge in the Wildwood Park on East Vista Way

Site BV-12

Natural creek
Located on Bengal Terrace Park

Site BV-14 (Top)

Concrete Catch Basin
North Santa Fe & Weston Circle

Site BV-14 (Bottom)

Catchbasin
Located on North Santa Fe Drive and Weston Circle

Site BV-15

Concrete outfall
Located on the north side of Cananea Street at Citrus Avenue

Site BV-18

Natural channel
Located at the north side of Brengle Terrace Park

Site BV-19

Earthen channel
Located behind 1040 East Vista Way

Site BV-24

48” outfall
Located at 1427 Foothill Drive

Site BV-25

Natural creek
Located at 1661 Foothill Dr.

Site G-2

Manhole
Located on the north end of Jules

Site G-3

Concrete channel
Located at the north end of Calle Jules

Site G-4

Manhole
Located at 2395 Warmlands

Site G-4A

Natural outlet
Corner of Vista Grande & E. Warmlands

Site MV-2

Manhole
Located on Cypress across from #1073

Site MV-2A

Natural outlet
Located at Monte Vista Drive & Cypress – NW corner

Site MV-3

Manhole
Located on Santa Fe and Escondido Ave

Site SS-1

Natural creek
Located at Escondido Avenue and Melrose Drive

A.2 Creek Monitoring Sites

Site AC-1

Concrete outfall
Located at the east end of Green Oak Road, off Sycamore Road

Site AC-2

Natural creek
Located 0.35 miles southwest of Melrose Drive and Green Oak Road

Site BVC-1

Concrete channel
Located at East Vista Way, south of Palomar Place

Site BVC-2

Natural creek
Located at East Vista Way, across from Frances Drive
Site visited 11:40 6/20/06

Site BVC-3

Natural creek
Located 200 feet west of Emerald Drive Bridge
Site visited 09:50 6/23/06

Site GC-1

Natural creek
Located at Melrose Drive and Santa Fe Drive

APPENDIX B

Field Observations

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For (nitrate)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-8	Latitude	33.16661	Watershed	Hydrologic Unit	
Location	623 Sycamore Ave	Longitude	-117.21545		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	1025	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height:_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☒ Mussels/Barnacles (bivalves)	☐ Other ___

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.5	NH_3-N (mg/L)	0.1	NO_3-N (mg/L)	13.5	React PO_4 (mg/L)	0.2
pH (pH units)	8.48	TURB (NTU)	0.60	COND (mS/cm)	1829 uS	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	2 ft	ft
Depth	1.5 in	ft
Velocity	1 ft/s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation ☒ IC/ID Follow-Up For Nacate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-8	Latitude	33.16661	Watershed	Hydrologic Unit	
Location	623 S Yucamore Ave	Longitude	-117.21545		Hydrologic Area	
Date	6.21.07	TB Page			Hydrologic Subarea (Optional)	
Time	0810	Observer	EG + SC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Ch

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☒ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive	bitches	☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☒ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	9	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	2 ft	ft
Depth	1.5 in	ft
Velocity	1 ft / 1 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For (n. trate)

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	A48A	Latitude	33.16641	Watershed	Hydrologic Unit	
Location	634 Sycamore Ave	Longitude	-117.21539		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	1035	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☒ Mussels/Barnacles (bivalves)	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.4°C	NH_3-N (mg/L)	0.2	NO_3-N (mg/L)	15.0	React PO_4 (mg/L)	0.2
pH (pH units)	7.88	TURB (NTU)	0.49	COND (mS/cm)	1742 µS	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	1.5	ft
Depth	1.5 in	ft
Velocity	1.44/15	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-81	Latitude	33.16641	Watershed	Hydrologic Unit	
Location	6233 Sycamore Ave.	Longitude	-117.21539		Hydrologic Area	
Date	6/21/07	TB Page			Hydrologic Subarea (Optional)	
Time	0840	Observer	CC & SC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Ch

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☒ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☒ Mussels/Barnacles (Invasive)	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	15	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	1.5 ft	ft
Depth	1 in	ft
Velocity	1 ft/1 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 4/20/2001

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X (C/ID) Follow-Up For Nebrake

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-8A	Latitude		Watershed	Hydrologic Unit	
Location		Longitude			Hydrologic Area	
Date	8-31-07	TB Page			Hydrologic Subarea (Optional)	
Time	0700	Observer	e		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☐ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other leaf debris
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	15	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	3"	ft
Depth	1"	ft
Velocity	1/1	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: manhole w/on sycamore, tremendous amount of traffic - not able to lift - same as last year
No other inputs visible or observed/located
Oiled 1st site H2O
1st DI

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-9	Latitude	33.16008	Watershed	Hydrologic Unit	
Location	Shadowridge and Antigua Dr.	Longitude	-117.24570		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	1120	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty slight	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow slightly	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other eq. debris
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ___
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☒ Other tadpole

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.1°C	NH_3-N (mg/L)	0.4	NO_3-N (mg/L)	0.3	React PO_4 (mg/L)	0.6
pH (pH units)	7.57	TURB (NTU)	1.06	COND (mS/cm)	2.29 mS	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	8 ft	ft
Depth	4 in	ft
Velocity	1 ft/9 sec	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

Analytical ☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-10	Latitude	33.15442	Watershed	Hydrologic Unit	
Location	Melrose and Green Oak Rd	Longitude	-117.24246		Hydrologic Area	
Date	6/18/07	TB Page			Hydrologic Subarea (Optional)	
Time	0845	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other (eaf debris
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☒ Other tadpole

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.1 °C	NH_3-N (mg/L)	0.1	NO_3-N (mg/L)	1.0	React PO_4 (mg/L)	0.2
pH (pH units)	7.58	TURB (NTU)	1.08	COND (mS/cm)	2.56 mS	MBAS	0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6	ft
Depth	4"	ft
Velocity	1 ft/2sec	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: sample time 0845

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH -13	Latitude	33.15927	Watershed	Hydrologic Unit	
Location	Cottontail Lane and Sandy Lane	Longitude	-117.22537		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	1155	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other pollen/leaves
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☒ Mussels/Barnacles (bivalves)	☒ Other crayfish

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.2°C	NH_3-N (mg/L)	0.2	NO_3-N (mg/L)	~~6.0~~ 6.0	React PO_4 (mg/L)	0.2
pH (pH units)	7.90	TURB (NTU)	4.74	COND (mS/cm)	1819 µS	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	3 ft	ft
Depth	1 in	ft
Velocity	1 ft/1 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Water Temp 19.3 NH_3-N 0.2 NO_3-N 6.0 React PO_4 0.4
pH 7.97 TURB 4.55 COND 1909 µS MBAS 0.25

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For Ammonia, MBAS

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-17	Latitude	33.14003	Watershed	Hydrologic Unit	
Location	Faraday Dr., west end	Longitude	-117.24638		Hydrologic Area	
Date	6/26/07	TB Page			Hydrologic Subarea (Optional)	
Time	0830	Observer	EG, LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other red color
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)	0.6	NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS	0.75

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	4 in	ft
Depth	1/8 in	ft
Velocity	1.ft/1.s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: released ammonia tracer on Oct. [illegible] because of area is residential area [illegible] that

Revised 4/20/2001

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

* Analytical

Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-21	Latitude	33.13532	Watershed	Hydrologic Unit	
Location	South end of Melrose Dr	Longitude	-117.24462		Hydrologic Area	
Date	6/18/07	TB Page			Hydrologic Subarea (Optional)	
Time	~~1130~~ 730	Observer	FG, LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Ch

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☒ Yellow slightly	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	15.30 C	NH_3-N (mg/L)	0.6	NO_3-N (mg/L)	0.2	React PO_4 (mg/L)	*
pH (pH units)	7.90	TURB (NTU)	2.68	COND (mS/cm)	3.12 mS	MBAS	.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert (Pipe)

Width	4 in	ft
Depth	1/8 in	ft
Velocity	1 ft/sec	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: Sample time ~~1130~~ EK 730

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow Up For Copper, Zinc, Entero

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-21	Latitude		Watershed	Hydrologic Unit	
Location	S Melrose Drive	Longitude			Hydrologic Area	
Date	07/11/2007	TB Page			Hydrologic Subarea (Optional)	
Time	0830	Observer	NW/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other Leaf Debris
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ___
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken: ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No 0830 Copper, Zinc, Entero

temp blank

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	1	~~mL~~ liter
Time to Fill	20	sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For Zinc, Total Col.

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-21	Latitude		Watershed	Hydrologic Unit	
Location	outfall	Longitude			Hydrologic Area	
Date	7.31.07	TB Page			Hydrologic Subarea (Optional)	
Time	0915	Observer			Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☐ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow slightly	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	3"	ft
Depth	1/8"	ft
Velocity	1/1.5	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: flow similar as past

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For Zinc, Total Col.

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-21A	Latitude	33.13659	Watershed	Hydrologic Unit	
Location	corner of S. Melrose Dr and Aspen Way	Longitude	117.24417		Hydrologic Area	
Date	7.31.07	TB Page			Hydrologic Subarea (Optional)	
Time	1000	Observer	W		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow slightly	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other leaf debris
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	3"	ft
Depth	1/8"	ft
Velocity	1/1	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: area full of large commercial buildings. Hard to locate flow above site. Manholes located on inside of busy S. Melrose Dr. Need conveyance map

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation ☒ IC/ID Follow-Up For Zwe, Total Col.

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-21 B	Latitude	33.13725	Watershed	Hydrologic Unit	
Location	Just Above 1380 Aspen	Longitude	117.24214		Hydrologic Area	
Date	Across From Ameron Turn. 7-31-07	TB Page			Hydrologic Subarea (Optional)	
Time	1045	Observer	CC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow slightly	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	2"	ft
Depth	1/8"	ft
Velocity	1/1	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	SS-1	Latitude	33.18229	Watershed	Hydrologic Unit	
Location	~~6/25/07~~ Escondido Ave & Melrose Dr.	Longitude	-117.25367		Hydrologic Area	
Date	6/25/07	TB Page			Hydrologic Subarea (Optional)	
Time	0915	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet concrete ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog
Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.
Last Rain: ☒ > 72 hours ☐ < 72 hours
Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.1 °C	NH_3-N (mg/L)	0.3	NO_3-N (mg/L)	0.3	React PO_4 (mg/L)	0.3
pH (pH units)	7.87	TURB (NTU)	9.60	COND (mS/cm)	1076 mS	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	1 ft	ft
Depth	1 in	ft
Velocity	10 ft / 15 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Temp 20.1 Cond. 1107 NH3 - 0.3 NO3-N - 0.3 PO4 - 0.3
pH 7.79 MBAS - 0.25

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For (MBAS) Fe

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-1	Latitude	33.18273	Watershed	Hydrologic Unit	
Location	4241 Tiberon	Longitude	-117.28393		Hydrologic Area	
Date	6/25/07	TB Page			Hydrologic Subarea (Optional)	
Time	~~1010~~ 1025	Observer	EK/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet (concrete) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other Pollen
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects (larval)	☒ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.7°C	NH_3-N (mg/L)	0.4	NO_3-N (mg/L)	0.4	React PO_4 (mg/L)	0.4
pH (pH units)	8.23	TURB (NTU)	1.86	COND (mS/cm)	8.21 mS	MBAS	1.0

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	1 ft	ft
Depth	1/4 in	ft
Velocity	~~N/A~~ 1 ft/2s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 12/02/04

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For EC, MBAS

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-1	Latitude	33.18273	Watershed	Hydrologic Unit	
Location	4241 Tiberon	Longitude	-117.28393		Hydrologic Area	
Date	6/26/07	TB Page			Hydrologic Subarea (Optional)	
Time	0830	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet concrete ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height:_____ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow slightly	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other pollen
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects larvae	☒ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)	6.58 mS	MBAS	2.0

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	1 ft	ft
Depth	4 in	ft
Velocity	1 ft/2 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X (IC/ID) Follow-Up For COND, MBAS

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-1	Latitude	33.18205	Watershed	Hydrologic Unit	
Location	4241 Tiburon dr.	Longitude	117.298598		Hydrologic Area	
Date	7.25.07	TB Page			Hydrologic Subarea (Optional)	
Time	0955	Observer	LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Ch

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: ____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty slightly	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☐ None	☒ Yellow slightly	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☒ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: trash

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)	6.06 mS	MBAS	.75

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	4	ft
Depth	4"	ft
Velocity	1/10	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: water level at site dropped thus creating small amount of flow

MBAS - below
COND - above.

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X (C/TD) Follow-Up For Coliform, nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-CA	Latitude	33.18401	Watershed	Hydrologic Unit	
Location		Longitude	117.28390		Hydrologic Area	
Date	7-25-07	TB Page			Hydrologic Subarea (Optional)	
Time	1100	Observer	CC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☐ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: Location directly upstream on moist - no flow

Nothing conclusive

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For Cond, Nitrs

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	RV - 1 B	Latitude	33.18403	Watershed: Hydrologic Unit	
Location	behind 1974 bridal showcase	Longitude	117.28352	Hydrologic Area	
Date	7-28-02	TB Page		Hydrologic Subarea (Optional)	
Time	1105	Observer	LL	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog
Tide: ☐ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.
Last Rain: ☐ > 72 hours ☐ < 72 hours
Rainfall: ☐ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☐ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: Moist - possible evidence of conductivity - standing on bottom of conveyance

Nothing conclusive

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-2	Latitude	33.18251	Watershed	Hydrologic Unit	
Location	behind 4241 Tiberon	Longitude	-117.28405		Hydrologic Area	
Date	6/25/07	TB Page			Hydrologic Subarea (Optional)	
Time	1020	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ___
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☐ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☒ Other ducks

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.4°C	NH_3-N (mg/L)	0.2	NO_3-N (mg/L)	2.5	React PO_4 (mg/L)	0.1
pH (pH units)	7.98	TURB (NTU)	1.98	COND (mS/cm)	1759 uS	mg/L	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	16 ft	ft
Depth	2 in	ft
Velocity	1 ft/1 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	SV-4	Latitude	33.18756	Watershed	Hydrologic Unit	
Location	1740 Hacienda Dr.	Longitude	-117.27511		Hydrologic Area	
Date	6/27/07 6/25/2007	TB Page			Hydrologic Subarea (Optional)	
Time	11:30	Observer	FG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet (concrete) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☐ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.1°C	NH_3-N (mg/L)	0.1	NO_3-N (mg/L)	0.3	React PO_4 (mg/L)	0.2
pH (pH units)	8.66	TURB (NTU)	1.98 NTU	COND (mS/cm)	1.795 mS	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6 ft	ft
Depth	1/4 in	ft
Velocity	1 ft / 1.5 sec	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

* Analytical ☒ Routine Investigation ☒ IC/ID Follow-Up For Nitrate EC

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-6	Latitude		Watershed	Hydrologic Unit	
Location	Haverida Dr. and Breeze Hill Dr.	Longitude			Hydrologic Area	
Date	6/18/07	TB Page			Hydrologic Subarea (Optional)	
Time	1030	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	20.8	NH_3-N (mg/L)	0.1	NO_3-N (mg/L)	7.5	React PO_4 (mg/L)	0.2
pH (pH units)	7.14	TURB (NTU)	4.18	COND (mS/cm)	1747.0		0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	12 ft	ft
Depth	1 in	ft
Velocity	1.56/10x	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Sample time 1030

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For Total & Fecal Coliforms

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-6	Latitude		Watershed	Hydrologic Unit	
Location	Hacienda Drive & Breeze Hill	Longitude			Hydrologic Area	
Date	07/11/2007	TB Page			Hydrologic Subarea (Optional)	
Time	0950	Observer	NW/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other Leaf Debris
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☒ Other Mud

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No Total & Fecal Coliform 0950

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: flow appears to be same as last time. possible homeless camp in area.

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-7	Latitude	33.19392	Watershed	Hydrologic Unit	
Location	Melrose and Hacienda	Longitude	-117.25446		Hydrologic Area	
Date	6/25/07	TB Page			Hydrologic Subarea (Optional)	
Time	1130	Observer	Ecs		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet (concrete) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☐ Yes ☒ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: DRY

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-7A	Latitude	33.19305	Watershed	Hydrologic Unit	
Location	Melrose and Hacienda	Longitude	-117.25375		Hydrologic Area	
Date	~~6/10~~ 6/25/07	TB Page			Hydrologic Subarea (Optional)	
Time	1140	Observer	FG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet concrete ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

DRY

Odor	☒ None	~~☐ Musty~~	~~☐ Rotten Eggs~~	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	~~☐ Brown~~	~~☐ White~~	~~☐ Gray~~	☐ Other ___
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☐ Yes ☒ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: DRY

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

* Analyticp ☒ Routine Investigation X IC/ID Follow-Up For (pH)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-8	Latitude	33.20344	Watershed	Hydrologic Unit	
Location	Olive and Goetting	Longitude	-117.24574		Hydrologic Area	
Date	6/19/07	TB Page			Hydrologic Subarea (Optional)	
Time	0907	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.5	NH_3-N (mg/L)	0.1	NO_3-N (mg/L)	0.8	React PO_4 (mg/L)	0.1
pH (pH units)	8.75	TURB (NTU)	1.51	COND (mS/cm)	1252 ✓	MBAS	0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	3'	ft
Depth	1/2"	ft
Velocity	1/1.5	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Sample time 0915

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For (Ammon, MBAS)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-17	Latitude	33.14003	Watershed	Hydrologic Unit	
Location	Faraday Dr. west end	Longitude	-117.24638		Hydrologic Area	
Date	6/25/07	TB Page			Hydrologic Subarea (Optional)	
Time	0840	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet (EG) (concrete channel) ☐ Concrete Channel ☒ Natural Creek (EG) ☐ Earthen Ch

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☒ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other (leaf debris)
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ___
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.4 °C	NH_3-N (mg/L)	6	NO_3-N (mg/L)	0.4	React PO_4 (mg/L)	0.4
pH (pH units)	9.19	TURB (NTU)	7.25	COND (mS/cm)	1927 µS	MBAS	1.0

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	4 in	ft
Depth	1/8 in	ft
Velocity	1 ft / 1 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: directly next to construction work.

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation ☒ IC/ID Follow-Up For ~~pH~~

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-8	Latitude	33.20344	Watershed	Hydrologic Unit	
Location	Olive and Goetting	Longitude	-117.24574		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	0740	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

DDT w/ excess

Flow Observed ☐ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other: ____

Photo Taken ☐ Yes ☒ No Photo # ____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)	6.27	TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	3'	ft
Depth	1/2"	ft
Velocity	1/1.5	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: ____

Revised 1/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For Enterco

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-80	Latitude		Watershed	Hydrologic Unit	
Location	Near Olive Ave & Goeting	Longitude			Hydrologic Area	
Date	07/11/2007	TB Page			Hydrologic Subarea (Optional)	
Time	0930	Observer	NW/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ___
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☐ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No Enterco 0930

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermit ees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-10	Latitude	33.20234	Watershed	Hydrologic Unit	
Location	Eucalyptus Ave + Escondido Ave	Longitude	-117.23592		Hydrologic Area	
Date	6/25/07	TB Page			Hydrologic Subarea (Optional)	
Time	1230	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other leaves
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.1	NH3-N (mg/L)	0.1	NO3-N (mg/L)	7.5	React PO4 (mg/L)	0
pH (pH units)	8.07	TURB (NTU)	0.46 NTU	COND (mS/cm)	1582 uS	µg BAS	0.5

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	3 ft	ft
Depth	1/4 in	ft
Velocity	1 ft/25	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpn

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For N. [illegible]

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-11	Latitude	33.20554	Watershed	Hydrologic Unit	
Location	Footbridge in Wildwood Park	Longitude	-117.28574		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	0900	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other [illegible]
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.3	NH_3-N (mg/L)	0.4	NO_3-N (mg/L)	22.5	React PO_4 (mg/L)	0.15
pH (pH units)	8.25	TURB (NTU)	1.09 NTU	COND (mS/cm)	1.66 mS	[illegible]	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	10 ft	ft
Depth	3 in	ft
Velocity	2.5	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2001

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation ☒ IC/ID Follow-Up For nitrate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-11	Latitude	33.20554	Watershed	Hydrologic Unit	
Location	Footbridge in Wildwood Park	Longitude	-117.23574		Hydrologic Area	
Date	6/27/07	TB Page			Hydrologic Subarea (Optional)	
Time	0845	Observer	EGLC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: ____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other coff cup
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: ____

Photo Taken ☐ Yes ☒ No Photo # ____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	22.5	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	10 ft	ft
Depth	3 in	ft
Velocity	1 ft / 2 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: ____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For N. Vale

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-11	Latitude		Watershed	Hydrologic Unit	
Location		Longitude			Hydrologic Area	
Date	8.31.07	TB Page			Hydrologic Subarea (Optional)	
Time	0800	Observer	CC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☐ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other leaf debris
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	15	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	4	ft
Depth	3	ft
Velocity	1/1	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: walked ~~north~~ upstream 1/4 mile behind businesses. No wipes located along creek - no evidence of run off. lots of trash along in creek upstream
Diluted 1 ml sample into 10 ml DI

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-12	Latitude	33.20918	Watershed	Hydrologic Unit	
Location	Brengle Terrace Park S. Side	Longitude	-117.22414		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	~~6/20/07~~ 0815	Observer	EK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Ch

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☐ Yes ☒ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	~~15~~ EK	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: DRY

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For tewe ?

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-14 Top Pipe	Latitude	33.22313	Watershed	Hydrologic Unit	
Location	N. Santa Fe and Western Circle	Longitude	-117.24597		Hydrologic Area	
Date	6/26/07	TB Page			Hydrologic Subarea (Optional)	
Time	0950	Observer	FG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin concrete ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.8	NH_3-N (mg/L)	0.1	NO_3-N (mg/L)	0.4	React PO_4 (mg/L)	0.1
pH (pH units)	8.57	TURB (NTU)	0.47	COND (mS/cm)	1208 u	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	250 ml	mL
Time to Fill	20	sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: 8 in pipe

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For temp

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-14 top pipe	Latitude	33.22313	Watershed: Hydrologic Unit	
Location	N. Santa Fe and Western Circle	Longitude	-117.24597	Hydrologic Area	
Date	6/27/07	TB Page		Hydrologic Subarea (Optional)	
Time	0905	Observer	EG/LC	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin concrete ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	27.4	NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	250 ml	mL
Time to Fill	20 sec	sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: 8 in pipe. Look across the street to find where flow was coming from, but couldn't find anything.

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BU - 14 Bottom Pipe	Latitude	33.22313	Watershed	Hydrologic Unit	
Location	N Santa Fe and Western Circle	Longitude	-117.24597		Hydrologic Area	
Date	6/26/07	TB Page			Hydrologic Subarea (Optional)	
Time	1010	Observer	EG/LC	Discharge Area (Optional)		

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin concrete ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.0	NH_3-N (mg/L)	0.2	NO_3-N (mg/L)	1.0	React PO_4 (mg/L)	0.4
pH (pH units)	7.92	TURB (NTU)	0.51	COND (mS/cm)	4.66 mS	MRP	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	500	mL
Time to Fill	20	sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

Analytical ☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-15	Latitude	33.21759	Watershed	Hydrologic Unit	
Location	Carmelo Ave and Citrus Ave.	Longitude	-117.24339		Hydrologic Area	
Date	6/19/07	TB Page			Hydrologic Subarea (Optional)	
Time	0856	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☐ Yes ☒ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sc
Flow		gpm

COMMENTS: DRY

Revised 4/20/2001

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

* Analytical ☒ Routine Investigation X IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-18	Latitude	33.21057	Watershed	Hydrologic Unit	
Location	Broyle Terrace Park, N side	Longitude	-117.22483		Hydrologic Area	
Date	6/19/07	TB Page			Hydrologic Subarea (Optional)	
Time	1055	Observer	Eb		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☒ Chemical (Cl ~~chlorine~~)	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☒ Other crayfish

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.9°C	NH_3-N (mg/L)	0.2	NO_3-N (mg/L)	22.5	React PO_4 (mg/L)	0.2
pH (pH units)	7.55	TURB (NTU)	8.19	COND (mS/cm)	2.21 mS	MBAS	0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6 ft	ft
Depth	3 in	ft
Velocity	1 ft/10s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Sample time 1055

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For nitrate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-18	Latitude	33.21051	Watershed	Hydrologic Unit	
Location	Bernardo Terrace Park, N Side	Longitude	-117.22483		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	0815	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	15	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6 ft	ft
Depth	2 in	ft
Velocity	1 ft/10 sec	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-18	Latitude		Watershed	Hydrologic Unit	
Location		Longitude			Hydrologic Area	
Date	8-31-07	TB Page			Hydrologic Subarea (Optional)	
Time	0840	Observer	CE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☐ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☒ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other crawfish

Flow Observed: ☒ Yes CE ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	15	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: lots of trash / possible homeless people. Drove around entire park - No irrigation evident.

water appeared ponded at sample point, but flow was evident downstream. Diluted 1 ml site H_2O 14 ml DI

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

*Analytical ☒ Routine Investigation X IC/ID Follow-Up For (Nitrate)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-19	Latitude	33.21320	Watershed	Hydrologic Unit	
Location	1040 East Vista Way	Longitude	-117.22943		Hydrologic Area	
Date	6/19/07	TB Page			Hydrologic Subarea (Optional)	
Time	1000	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☒ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ___
Biology	☐ None	☒ Insects (larval)	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.9°C	NH_3-N (mg/L)	0.2	NO_3-N (mg/L)	EG ~~4.5~~ 13.5	React PO_4 (mg/L)	0.02
pH (pH units)	7.77	TURB (NTU)	0.64	COND (mS/cm)	1534 uS	MBAS	0.50

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	5 ft	ft
Depth	4 in	ft
Velocity	1 ft/4s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sc
Flow		gpm

COMMENTS: Sample time 1010
choked full of vegetation. There's a new parking lot and new fence. They cleared all the brush and palms so now the smaller vegetation is choking the creek.

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV19	Latitude	33.21320	Watershed	Hydrologic Unit	
Location	1040 East Vista Way	Longitude	-117.22943		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	0750	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☒ Earthen Ch

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: ____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: ____

Photo Taken ☐ Yes ☒ No Photo # ____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	15	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	5 ft	ft
Depth	4 in	ft
Velocity	1 ft/45	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: ____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X ☒ Follow-Up For Nitrate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-19	Latitude		Watershed	Hydrologic Unit	
Location		Longitude			Hydrologic Area	
Date	8.31.07	TB Page			Hydrologic Subarea (Optional)	
Time	1025	Observer	CE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other crawfish

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	30	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	3.5	ft
Depth	3	ft
Velocity	1/1.5	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Drove around back side of business – no evidence of overland flow NO irrigation

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For Nuisance

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-24	Latitude	33.21574	Watershed	Hydrologic Unit	
Location	1427 Foothill Dr.	Longitude	-117.2914		Hydrologic Area	
Date	6/26/07	TB Page			Hydrologic Subarea (Optional)	
Time	10:45	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet (concrete) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.2	NH_3-N (mg/L)	0.6	NO_3-N (mg/L)	18.0	React PO_4 (mg/L)	0.3
pH (pH units)	8.25	TURB (NTU)	22.4	COND (mS/cm)	1601.0	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter	48 in	ft
Depth	1/4 in	ft
Velocity	1.5 / 1.4	ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-24	Latitude	33.21574	Watershed	Hydrologic Unit	
Location	1427 Foothill Dr	Longitude	-117.21914		Hydrologic Area	
Date	6/27/07	TB Page			Hydrologic Subarea (Optional)	
Time	0920	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet (Concrete) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: ____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	12.0	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter	4/8 in	ft
Depth	1/4 in	ft
Velocity	1.5 s/1 ft	ft/se
Flow		gpm

COMMENTS: nitrate sample was taken to be analyzed at the lab.

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X (IC/ID) Follow-Up For Nuisance

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BU-24	Latitude		Watershed	Hydrologic Unit	
Location		Longitude			Hydrologic Area	
Date	8-31-07	TB Page			Hydrologic Subarea (Optional)	
Time	0915	Observer	ce		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☐ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☐ > 72 hours ☐ < 72 hours

Rainfall: ☐ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other leaf
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other debris
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	22.5	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: No evidence of overland flow - Drove throughout neighborhood - no evidence of runoff - did locate and test a man flushing his koi pond. Took sample and had a result of 6 mg/L. Informed him of possible violation from fish waste nothing else found. 1331 Inspection was

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City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-25	Latitude		Watershed	Hydrologic Unit	
Location	1661 Foothill Drive	Longitude			Hydrologic Area	
Date	6-26-07	TB Page			Hydrologic Subarea (Optional)	
Time	1200	Observer			Discharge Area (Optional)	

Land Use (Primary) (Check one only)	☐ Residential	☐ Commercial	☐ Industrial	☐ Agricultural	☐ Parks	☐ Open
Land Use (Secondary) (Optional, greater than 10%)	☐ Residential	☐ Commercial	☐ Industrial	☐ Agricultural	☐ Parks	☐ Open
Conveyance (Check one only)	☐ Manhole	☐ Catch Basin	☐ Outlet	☐ Concrete Channel	☐ Natural Creek	☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☐ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: _____ ft.
Last Rain	☐ > 72 hours	☐ < 72 hours				
Rainfall	☐ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed ☐ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	MV-2	Latitude	33.19088	Watershed: Hydrologic Unit	
Location	Monte Vista Dr. & Cypress-1073 Cypress	Longitude	-117.22102	Hydrologic Area	
Date	6/27/07	TB Page		Hydrologic Subarea (Optional)	
Time	1100	Observer	EG/LC	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin concrete ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☐ Yes ☒ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: not enough water to sample

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For MBAS

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	MV-2A	Latitude	33.19045	Watershed: Hydrologic Unit	
Location	NW corner of Monte Vista and Cyn	Longitude	-117.22162	Hydrologic Area	
Date	6/28/07	TB Page		Hydrologic Subarea (Optional)	
Time	0905	Observer	EG	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☒ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☒ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☒ Sheen	☐ Fecal Matter	☒ Other capdebris
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects & larvae	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☐ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.5	NH_3-N (mg/L)	0.5	NO_3-N (mg/L)	0.1	React PO_4 (mg/L)	3.0
pH (pH units)	8.12	TURB (NTU)	32.0	COND (mS/cm)	923 uS	MBAS	1.5

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: new site because MV-2 is unsampleable: too much sediment in catch basin, and too shallow

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☐ Routine Investigation ☒ IC/ID Follow-Up For MBAS

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	MV-2A	Latitude	33.19012	Watershed: Hydrologic Unit	
Location	NW corner of Montevista & cypress	Longitude	-117.22494	Hydrologic Area	
Date	6/28/07	TB Page		Hydrologic Subarea (Optional)	
Time	1420	Observer	EG/NW	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet into an earthen channel ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☐ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS	1.5

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Follows from sample collection ~5 hours ago.

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For surfactants IC10

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	MV-2A	Latitude	33.19045	Watershed	Hydrologic Unit	
Location	NW corner of Monte Vista & Lagoon	Longitude	-117.22662		Hydrologic Area	
Date	1/26/07	TB Page			Hydrologic Subarea (Optional)	
Time	1250	Observer	E. Lee		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet natural ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☐ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS	0.50

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: ID for surf. below action level - drain around neighborhood - nothing observed. Suspected irrigation - car washing.

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For (TVR, MBAS)

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	MV-3	Latitude	33.19860	Watershed	Hydrologic Unit	
Location	Santa Fe Dr and Escondido	Longitude	-117.23435		Hydrologic Area	
Date	6/27/07	TB Page			Hydrologic Subarea (Optional)	
Time	1130	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin (concrete) ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None (faint)	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other dirt/asphalt
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other ____
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ____
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☐ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.2	NH_3-N (mg/L)	0.8	NO_3-N (mg/L)	1.0	React PO_4 (mg/L)	0.8
pH (pH units)	7.94	TURB (NTU)	126 NTU	COND (mS/cm)	1159 uS	MBAS	2.0

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: manhole in front of residence/street

pH 7.95 Ammonia 0.8 Nitrate 1.0 React PO4 0.8
temp 24.3 Turb 130 NTU cond 1110 uS MBAS 1.5

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For turb, MBAS

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	MV-3	Latitude	33.19360	Watershed	Hydrologic Unit	
Location	Santa Fe and Escondido, in front of [illegible]	Longitude	-117.23435		Hydrologic Area	
Date	6/28/07	TB Page			Hydrologic Subarea (Optional)	
Time	0830	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin concrete ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☐ Yellow	☒ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)	60.8	COND (mS/cm)		MBAS	.75

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing ~~Creek or Box Culvert~~ Curb Inlet

Width	4 in	ft
Depth	1/2 in	ft
Velocity	1 ft/s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: flow was increased due to overland flow. We followed overland flow to the source. It was sprinkler from an apartment complex 235, 239 Paja Vista Dr.

Coronado de Sol 243 #(760)506-4918 - The building next door may not be the same ownership (owner).

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	G-2	Latitude	33.23058	Watershed	Hydrologic Unit	
Location	Corner of Woodlawn and Ah	Longitude	-117.24318		Hydrologic Area	
Date	6/26/07	TB Page			Hydrologic Subarea (Optional)	
Time	1210	Observer	FG		Discharge Area (Optional)	

Land Use (Primary) (Check one only)	☒ Residential	☐ Commercial	☐ Industrial	☐ Agricultural	☐ Parks	☐ Open
Land Use (Secondary) (Optional, greater than 10%)	☐ Residential	☒ Commercial	☐ Industrial	☐ Agricultural	☐ Parks	☐ Open
Conveyance (Check one only)	☐ Manhole	☒ Catch Basin (concrete)	☐ Outlet	☐ Concrete Channel	☐ Natural Creek	☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

came back 6-28-07 and took samples

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other (leaves)
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed ☐ Yes ☒ No (moist) ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☒ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: not enough water to sample

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	G-2	Latitude	33.23938	Watershed	Hydrologic Unit	
Location	Corner of Ahern and Goodwin	Longitude	-117.22967		Hydrologic Area	
Date	6/28/07	TB Page			Hydrologic Subarea (Optional)	
Time	0945	Observer	EG/CC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin concrete ☒ Outlet pipe ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other Cemes
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.7°C	NH_3-N (mg/L)	0.3	NO_3-N (mg/L)	0.2	React PO_4 (mg/L)	0.8
pH (pH units)	8.35	TURB (NTU)	1.72	COND (mS/cm)	849 uS	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: flow was too slight to measure

Temp - 23.8°C Amon - 0.3 Nitrate - 0.2 React PO4 - 0.8

pH - 8.31 Turb 1.76 cond .849 uS MBAS - 0.25

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For Ammonia

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	6-3	Latitude	33.226080	Watershed: Hydrologic Unit	
Location	Calle Jules N. End	Longitude	117.22967	Hydrologic Area	
Date	6-26-07	TB Page		Hydrologic Subarea (Optional)	
Time	1225	Observer	CE	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow slightly	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other Leaves
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☐ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	22.5	NH_3-N (mg/L)	5	NO_3-N (mg/L)	0.3	React PO_4 (mg/L)	3.0
pH (pH units)	7.88	TURB (NTU)	6.80	COND (mS/cm)	14.84	MBAS	0.50

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Temp 22.5 Ammonia 5 Nitrate 0.3 PO 3.6
pH 7.88 Cond Turb. MBAS 0.50

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For Ammonia

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	G-3	Latitude	33.22680	Watershed	Hydrologic Unit	
Location	Calle Jules N. End	Longitude	-117.2467		Hydrologic Area	
Date	6/27/07	TB Page			Hydrologic Subarea (Optional)	
Time	1010	Observer	EG/LL		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet (concrete) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other (cap debris
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☐ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)	10.0	NO_3-N (mg/L)	~~10.0~~ EG	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	G-4	Latitude	33.23335	Watershed	Hydrologic Unit	
Location	2395 warmlands	Longitude	-117.22405		Hydrologic Area	
Date	6/26/07	TB Page			Hydrologic Subarea (Optional)	
Time	1155	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☒ Catch Basin concrete ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ____
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☐ Yes ☒ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: NOT ENOUGH WATER TO SAMPLE

revisited on 6/28/07 - again not enough water to sample

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	G-4A	Latitude	33.23332	Watershed	Hydrologic Unit	
Location	Corner of Vista Grande and E. Warmlands	Longitude	-117.22424		Hydrologic Area	
Date	6/28/07	TB Page			Hydrologic Subarea (Optional)	
Time	1030	Observer	FG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☒ Earthen Channel

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☒ Sheen	☐ Fecal Matter	☒ Other Vent/debris
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☒ Yes (trickle) ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.0°C	NH_3-N (mg/L)	0.8	NO_3-N (mg/L)	0.6	React PO_4 (mg/L)	3.0
pH (pH units)	7.96	TURB (NTU)	14.9 NTU	COND (mS/cm)	844 uS	MBAS	0.50

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Water was ponded with a very slight trickle of flow. Sample location is directly across the street from G-4. The water flows from G-4 inlet/manhole across the street to G-4A

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

* Analytical ☒ Routine Investigation X IC/ID Follow-Up For (AMMON)

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AC-1	Latitude	33.15618	Watershed	Hydrologic Unit	
Location	Green Oak Rd South of Yellow Cut Out of Sycamore	Longitude	-117.22231		Hydrologic Area	
Date	6/18/07	TB Page			Hydrologic Subarea (Optional)	
Time	~~0845~~ EG 0930	Observer	EG/VC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog
Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.
Last Rain: ☒ > 72 hours ☐ < 72 hours
Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow Slightly	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☒ Sheen	☐ Fecal Matter	☒ Other leaves organic film
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ___
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☐ Insects	☒ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☒ Other tadpoles crayfish

Flow Observed: ☐ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.30 C	NH_3-N (mg/L)	1.5	NO_3-N (mg/L)	0	React PO_4 (mg/L)	0.6
pH (pH units)	7.29	TURB (NTU)	17.3	COND (mS/cm)	4.91 mS	MBAS	0.50

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: ~~sample time EG~~ sample time 0930

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation ☒ IC/ID Follow-Up For Ammonia

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	A-C-1	Latitude	32.15618	Watershed	Hydrologic Unit	
Location	off Sycamore - Green Lake Rd east end	Longitude	-117.22231		Hydrologic Area	
Date	6/19/07	TB Page			Hydrologic Subarea (Optional)	
Time	0807	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☐ None	☒ Yellow Slightly	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☒ Sheen	☐ Fecal Matter	☒ Other (cause organic film)
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☒ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☒ Other tadpoles

Flow Observed: ☐ Yes ☐ No ☒ Ponded ☒ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)	1.0	NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 1/20/2001

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation X IC/ID Follow-Up For Total Coliform Zinc

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	~~AHL-1~~ AC-1	Latitude		Watershed	Hydrologic Unit	
Location		Longitude			Hydrologic Area	
Date	07/11/2017	TB Page			Hydrologic Subarea (Optional)	
Time	0905	Observer	NW/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☐ None	☐ Yellow	☒ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☒ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☒ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☐ Yes ☐ No ☒ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☒ Yes ☐ No Total Coliform, Zinc

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

*Analytical ☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AC-2	Latitude	33.15128	Watershed	Hydrologic Unit	
Location	.35 m SW of Melrose Dr + Green Oak	Longitude	-117.24593		Hydrologic Area	
Date	6/20/07	TB Page			Hydrologic Subarea (Optional)	
Time	0930	Observer	FG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Ch

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☒ Other ~~fecal~~ piles bivalves

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.4°C	NH_3-N (mg/L)	0.2	NO_3-N (mg/L)	0.6	React PO_4 (mg/L)	0.2
pH (pH units)	7.63	TURB (NTU)	1.82	COND (mS/cm)	2.30 mS	MBAS	0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	8 ft	ft
Depth	2 in	ft
Velocity	1 ft/1.5 s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Revised 12/02/2001

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☒ Routine Investigation X IC/ID Follow-Up For (Nitrate)

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BVC-1	Latitude	33.22221	Watershed: Hydrologic Unit	
Location	E. Vista Village Way NW corner of Royal Crest Trailer Park	Longitude	-117.22815	Hydrologic Area	
Date	6/26/07	TB Page		Hydrologic Subarea (Optional)	
Time	1135	Observer	PG/LC	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ___
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.0 °C	NH_3-N (mg/L)	0.3	NO_3-N (mg/L)	30	React PO_4 (mg/L)	0.2
pH (pH units)	8.00	TURB (NTU)	0.16	COND (mS/cm)	1542 uS	MBAS	0.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe (water → 16 in across)

Diameter	54 in	ft
Depth	3-4 in	ft
Velocity	1.41 fps	ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BVC-1	Latitude	33.22221	Watershed	Hydrologic Unit	
Location	E. Vista Village Way. Nw corner of Regal Lake Trailer Park	Longitude	-117.22865		Hydrologic Area	
Date	6/27/07	TB Page			Hydrologic Subarea (Optional)	
Time	0945	Observer	EG/LC		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog
Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.
Last Rain: ☒ > 72 hours ☐ < 72 hours
Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other ____
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	22.5	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

water-level in access

Flowing Pipe

Diameter	3/4 in	ft
Depth	3/4 in	ft
Velocity	1 ft/1s	ft/se
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

* Analytical ☒ Routine Investigation ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BVC-2	Latitude	33.20955	Watershed	Hydrologic Unit	
Location	East Vista Way and Frances	Longitude	-117.23298		Hydrologic Area	
Date	6/18/07	TB Page			Hydrologic Subarea (Optional)	
Time	1130	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other Vegetable
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.0 °C	NH_3-N (mg/L)	0.1	NO_3-N (mg/L)	15	React PO_4 (mg/L)	0.1
pH (pH units)	7.69	TURB (NTU)	1.69 NTU	COND (mS/cm)	1630 uS	MBAS	0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6 ft	ft
Depth	6 in	ft
Velocity	1.5 ft/sec	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Sample time 1130

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BVC-2	Latitude	33.20955	Watershed	Hydrologic Unit	
Location	East Vista Way and Frances	Longitude	-117.23298		Hydrologic Area	
Date	~~6/19/07~~ 6/19/07	TB Page			Hydrologic Subarea (Optional)	
Time	0835	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaf debris
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other ___
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ___

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)	15	React PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6 ft	ft
Depth	6 in	ft
Velocity	1.5/1.5	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 1/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☒ Analytical ☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BRC-3	Latitude	33.18546	Watershed	Hydrologic Unit	
Location	Emerald Drive and Hawanda	Longitude	-117.27985		Hydrologic Area	
Date	6/18/07	TB Page			Hydrologic Subarea (Optional)	
Time	1230	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather: ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ____
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed: ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	23.7	NH_3-N (mg/L)	0.1	NO_3-N (mg/L)	1.5	React PO_4 (mg/L)	0.1
pH (pH units)	8.12	TURB (NTU)	2.82	COND (mS/cm)	2.10 mS	mBAS	.25

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	20 ft	ft
Depth	2 ft	ft
Velocity	1 ft/2s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/se
Flow		gpm

COMMENTS: _____

Field Dup Amon 0.1 Phos 0.0 Tuch 351 Cond. 1903 uS
Nitrate 1.5 MBAS 0.25 Temp 25.0°C pH 7.87

Revised 3/20/2001

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program

Dry Weather Monitoring Field Datasheet

☐ Routine Investigation (X) IC/ID Follow-Up For ~~pH~~

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BVC-3	Latitude	33.18546	Watershed	Hydrologic Unit	
Location	Emerald Dr Bridge near Hacienda	Longitude	-117.27985		Hydrologic Area	
Date	6/19/07	TB Page			Hydrologic Subarea (Optional)	
Time	0822	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only)	☐ Residential	☒ Commercial	☐ Industrial	☐ Agricultural	☐ Parks	☐ Open
Land Use (Secondary) (Optional, greater than 10%)	☐ Residential	☐ Commercial	☐ Industrial	☐ Agricultural	☐ Parks	☐ Open
Conveyance (Check one only)	☐ Manhole	☐ Catch Basin	☐ Outlet	☐ Concrete Channel	☒ Natural Creek	☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☐ Partly Cloudy	☒ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: ____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

Not Exceed

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ____
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ____
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ____
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other ____
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails/Fish	☐ Mussels/Barnacles	☐ Other ____

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		React PO_4 (mg/L)	
pH (pH units)	7.92	TURB (NTU)		COND (mS/cm)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	20 ft	ft
Depth	2 ft	ft
Velocity	1 ft/2s	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sc
Flow		gpm

COMMENTS: _____

Revised 4/20/2004

San Diego Stormwater Copermittees
City of San Diego Storm Water Pollution Prevention Program
Dry Weather Monitoring Field Datasheet

Analytical ☒ Routine Investigation X IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	GC-1	Latitude	33.23592	Watershed	Hydrologic Unit	
Location	Melrose and N. Santa Fe Dr.	Longitude	-117.26137		Hydrologic Area	
Date	6/19/07	TB Page			Hydrologic Subarea (Optional)	
Time	1145	Observer	EG		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Cha

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other ___
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other ___
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other ___
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☒ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other ___
Biology	☐ None	☒ Insects	☐ Algae	☒ Snails/Fish	☐ Mussels/Barnacles	☒ Other crayfish

Flow Observed ☒ Yes ☐ No ☐ Ponded ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.9 °C	NH_3-N (mg/L)	0.3	NO_3-N (mg/L)	0.8	React PO_4 (mg/L)	0.2
pH (pH units)	7.73	TURB (NTU)	6.61	COND (mS/cm)	2.71 mS	MBAS	0.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	5 ft	ft
Depth	6 in	ft
Velocity	1 ft / 2 sec	ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Sample time 1155 There are fish and crayfish, but a lotty crayfish are dead

Water Temp °C 19.0 NH_3-N 0.3 NO_3-N 0.8 React PO_4 0.2
pH 7.76 Turb 7.10 COND 2.38 mS MBAS 0.25

Revised 4/20/2004

APPENDIX C

Laboratory Results

29 June 2007

Weston Solutions, Inc. - Carlsbad
Attn: Gretel Roberts
2433 Impala Drive
Carlsbad, CA 92008-1514

EMA Log #: 0706437

Project Name: City of Vista Dry Weather Monitoring
Project Desc./#: 2007

Enclosed are the results of analyses for samples received by the laboratory on 06/27/07 14:50. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706437

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BU-24	0706437-01	Water	06/27/07 09:30	06/27/07 14:50

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706437

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BU-24 (0706437-01) Water Sampled: 06/27/07 09:30 Received: 06/27/07 14:50									
Nitrate as N	**8.45**	1.25	mg/l	25	7062831	06/28/07	06/28/07	SM4500 NO3 E	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706437

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062831										
Blank (7062831-BLK1)				Prepared & Analyzed: 06/28/07						
Nitrate as N	ND	0.05	mg/l							
LCS (7062831-BS1)				Prepared & Analyzed: 06/28/07						
Nitrate as N	0.56	0.05	mg/l	0.500		112	80-120			
LCS Dup (7062831-BSD1)				Prepared & Analyzed: 06/28/07						
Nitrate as N	0.54	0.05	mg/l	0.500		108	80-120	4	20	
Duplicate (7062831-DUP1)		**Source: 0706316-06**		Prepared & Analyzed: 06/28/07						
Nitrate as N	4.00	0.50	mg/l		4.23			6	20	
Matrix Spike (7062831-MS1)		**Source: 0706316-06**		Prepared & Analyzed: 06/28/07						
Nitrate as N	9.71	0.50	mg/l	5.00	4.23	110	80-120			
Matrix Spike Dup (7062831-MSD1)		**Source: 0706316-06**		Prepared & Analyzed: 06/28/07						
Nitrate as N	9.71	0.50	mg/l	5.00	4.23	110	80-120	0	20	
Reference (7062831-SRM1)				Prepared & Analyzed: 06/28/07						
Nitrate as N	4.10	0.50	mg/l	4.41		93	39.8-107.48			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Carlsbad Ca.

Phone: 760 908 5760 | Fax:

Email:

Billing Address:

Project ID: City of Vista Dry Weather

Project #: 2007 | PO#:

SAMPLE DETAILS

#	Client Sample ID	Sample Date/Time	Sample Matrix	Container(s) # of / Type	Oil & Grease 413.1 413.2 1664	418.1 (Total Recoverable Petroleum Hydrocarbons)	8015B (TPH) Gas Diesel Ext AS MTBE	624 / 8260 (VOC) Full BTXE MTBE	625 / 8270 (Semi Volatile Organics) PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	pH Conductivity (EC) TSS TDS	Nitrate Nitrite TKN NH3	TTLC Metals (CAC Title 22) / (CAM 17)	STLC Metals (CAC Title 22) / (CAM 17)	TCLP (RCRA) Metals Organics	Cd Cr Cu Pb Ni Ag Zn Dissolved	Coliform, Total (MTF) Fecal (MTF) Coliler	Enterococcus, MTF Idexx	Heterotrophic Plate Count (HPC)	X Nitrate
01	BU-24	6-27-07 0930	H20	1 1 Lt.																			X
02																							
03																							
04																							
05																							
06																							
07																							
08																							
09																							
10																							

Sample Matrix Codes: GW=ground water WW=waste water DW=drinking water SW=storm water

A=air SED=sediment O=oil T=tissue S=solid other (specify) L=liquid other (specify)

Shipped By: Courier UPS FedEx USPS Client drop off Other

[1]Turnaround Time: Same day 24 hr 48 hr 3 day 4 day 5 day X STD (7 day)

[1]Reporting Requirements: Fax PDF Excel Geotracker EDF Other

[1]Sample Disposal: By Laboratory [2]Return to client: P/U or Delivery Archive until ___/___/___

SAMPLE INTEGRITY

Correct Containers: Yes No N/A | Containers Properly Preserved: Yes No N/A

Custody Seals Intact: Yes No N/A | Temperature @ Receipt: 3°C

COC/Labels Agree: Yes No N/A | Sampled By: X Client EMA Autosampler

Project Comments:

CHAIN-OF-CUSTODY RECORD

RELINQUISHED BY	RECEIVED BY
Signature [signature]	Signature [signature]
Print	Print Joe Leon
Company Western Solutions	Company EMA
Signature	Signature
Print	Print
Company	Company
Signature	Signature
Print	Print
Company	Company

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

White - EMA Canary - Accounting Pink - Client (w/Report) Golde

Note: By relinquishing samples to EnviroMatrix Analytical, Inc., client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

02 July 2007

Weston Solutions, Inc. - Carlsbad
Attn: Gretel Roberts
2433 Impala Drive
Carlsbad, CA 92008-1514

EMA Log #: 0706332

Project Name: City of Vista Dry Weather Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 06/20/07 14:17. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AC-2	0706332-01	Water	06/20/07 09:30	06/20/07 14:17
AC-2	0706332-02	Water	06/20/07 09:30	06/20/07 14:17

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Metals (Dissolved) by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AC-2 (0706332-01) Water Sampled: 06/20/07 09:30 Received: 06/20/07 14:17									
Cadmium	ND	0.005	mg/l	1	7062714	06/27/07	06/27/07	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AC-2 (0706332-01) Water Sampled: 06/20/07 09:30 Received: 06/20/07 14:17									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	7062602	06/26/07	06/29/07	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*82 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*102 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AC-2 (0706332-01) Water Sampled: 06/20/07 09:30 Received: 06/20/07 14:17									
Hardness (Total)	**884**	100	mg CaCO3/L	10	7062114	06/21/07	06/25/07	EPA 200.7	
Methylene Blue Active Substances	ND	0.5	mg/l	1	7062408	06/21/07	06/21/07	SM5540 C	
Oil & Grease	ND	5	"	"	7062502	06/25/07	06/26/07	EPA 1664	
AC-2 (0706332-02) Water Sampled: 06/20/07 09:30 Received: 06/20/07 14:17									
Ammonia as N	ND	0.10	mg/l	1	7062214	06/22/07	06/22/07	SM4500 NH3 B,C	
Nitrate as N	**0.79**	0.05	"	"	7062831	06/28/07	06/28/07	SM4500 NO3 E	W-02
Orthophosphate as P	**0.13**	0.05	"	"	7062103	06/21/07	06/21/07	SM4500 P E	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062714										
Blank (7062714-BLK1)				Prepared & Analyzed: 06/27/07						
Cadmium	ND	0.005	mg/l							
Copper	ND	0.005	"							
Lead	ND	0.005	"							
Zinc	ND	0.020	"							
LCS (7062714-BS1)				Prepared & Analyzed: 06/27/07						
Cadmium	0.097	0.005	mg/l	0.100		97	75-125			
Copper	0.092	0.005	"	0.100		92	75-125			
Lead	0.100	0.005	"	0.100		100	75-125			
Zinc	0.095	0.020	"	0.100		95	75-125			
LCS Dup (7062714-BSD1)				Prepared & Analyzed: 06/27/07						
Lead	0.099	0.005	mg/l	0.100		99	75-125	1	20	
Copper	0.091	0.005	"	0.100		91	75-125	1	20	
Zinc	0.102	0.020	"	0.100		102	75-125	7	20	
Cadmium	0.096	0.005	"	0.100		96	75-125	1	20	
Duplicate (7062714-DUP1)		**Source: 0706332-01**		Prepared & Analyzed: 06/27/07						
Copper	0.001	0.005	mg/l		0.002			67	20	QR-04
Lead	ND	0.005	"		ND				20	
Zinc	ND	0.020	"		ND				20	
Cadmium	ND	0.005	"		ND				20	
Matrix Spike (7062714-MS1)		**Source: 0706332-01**		Prepared & Analyzed: 06/27/07						
Lead	0.127	0.005	mg/l	0.100	ND	127	75-125			QM-06
Copper	0.089	0.005	"	0.100	0.002	87	75-125			
Cadmium	0.113	0.005	"	0.100	ND	113	75-125			
Zinc	0.107	0.020	"	0.100	ND	107	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062714										
Matrix Spike Dup (7062714-MSD1)		**Source: 0706332-01**		Prepared & Analyzed: 06/27/07						
Cadmium	0.116	0.005	mg/l	0.100	ND	116	75-125	3	20	
Zinc	0.109	0.020	"	0.100	ND	109	75-125	2	20	
Copper	0.090	0.005	"	0.100	0.002	88	75-125	1	20	
Lead	0.123	0.005	"	0.100	ND	123	75-125	3	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062602										
Blank (7062602-BLK1)				Prepared: 06/26/07 Analyzed: 06/28/07						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.179*		"	*0.250*		*72*	*60-130*			
Surrogate: Tribuytlphosphate	*0.195*		"	*0.250*		*78*	*60-130*			
LCS (7062602-BS1)				Prepared: 06/26/07 Analyzed: 06/28/07						
Bolstar	0.37	0.10	ug/l	0.500		74	60-130			
Diazinon	0.41	0.05	"	0.500		82	60-130			
Ethoprop	0.42	0.05	"	0.500		84	60-130			
Mevinphos	0.41	0.25	"	0.500		82	60-130			
Methyl parathion	0.35	0.10	"	0.500		70	60-130			
Phorate	0.40	0.05	"	0.500		80	60-130			
Ronnel	0.39	0.25	"	0.500		78	60-130			
Trichlorinate	0.39	0.05	"	0.500		78	60-130			
Surrogate: Triphenyl phosphate	*0.180*		"	*0.250*		*72*	*60-130*			
Surrogate: Tribuytlphosphate	*0.199*		"	*0.250*		*80*	*60-130*			
LCS Dup (7062602-BSD1)				Prepared: 06/26/07 Analyzed: 06/28/07						
Bolstar	0.38	0.10	ug/l	0.500		76	60-130	3	30	
Diazinon	0.42	0.05	"	0.500		84	60-130	2	30	
Ethoprop	0.45	0.05	"	0.500		90	60-130	7	30	
Mevinphos	0.40	0.25	"	0.500		80	60-130	2	30	
Methyl parathion	0.37	0.10	"	0.500		74	60-130	6	30	
Phorate	0.41	0.05	"	0.500		82	60-130	2	30	
Ronnel	0.41	0.25	"	0.500		82	60-130	5	30	
Trichlorinate	0.42	0.05	"	0.500		84	60-130	7	30	
Surrogate: Triphenyl phosphate	*0.164*		"	*0.250*		*66*	*60-130*			
Surrogate: Tribuytlphosphate	*0.200*		"	*0.250*		*80*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062103										
Blank (7062103-BLK1)				Prepared & Analyzed: 06/21/07						
Orthophosphate as P	ND	0.05	mg/l							
LCS (7062103-BS1)				Prepared & Analyzed: 06/21/07						
Orthophosphate as P	0.51	0.05	mg/l	0.500		102	80-120			
LCS Dup (7062103-BSD1)				Prepared & Analyzed: 06/21/07						
Orthophosphate as P	0.49	0.05	mg/l	0.500		98	80-120	4	20	
Duplicate (7062103-DUP1)		**Source: 0706332-02**		Prepared & Analyzed: 06/21/07						
Orthophosphate as P	0.11	0.05	mg/l		0.13			17	20	
Matrix Spike (7062103-MS1)		**Source: 0706332-02**		Prepared & Analyzed: 06/21/07						
Orthophosphate as P	0.62	0.05	mg/l	0.500	0.13	98	80-120			
Matrix Spike Dup (7062103-MSD1)		**Source: 0706332-02**		Prepared & Analyzed: 06/21/07						
Orthophosphate as P	0.62	0.05	mg/l	0.500	0.13	98	80-120	0	20	
Batch 7062114										
Blank (7062114-BLK1)				Prepared: 06/21/07 Analyzed: 06/25/07						
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (7062114-DUP1)		**Source: 0706343-05**		Prepared: 06/21/07 Analyzed: 06/25/07						
Hardness (Total)	232	10	mg CaCO3/L		224			4	20	
Batch 7062214										
Blank (7062214-BLK1)				Prepared & Analyzed: 06/22/07						
Ammonia as N	ND	0.10	mg/l							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062214										
LCS (7062214-BS1)				Prepared & Analyzed: 06/22/07						
Ammonia as N	0.81	0.10	mg/l	0.820		99	80-120			
LCS Dup (7062214-BSD1)				Prepared & Analyzed: 06/22/07						
Ammonia as N	0.76	0.10	mg/l	0.820		93	80-120	6	20	
Duplicate (7062214-DUP1)		**Source: 0706204-02**		Prepared & Analyzed: 06/22/07						
Ammonia as N	0.14	0.10	mg/l		0.12			15	20	
Matrix Spike (7062214-MS1)		**Source: 0706204-02**		Prepared & Analyzed: 06/22/07						
Ammonia as N	0.90	0.10	mg/l	0.820	0.12	95	80-120			
Matrix Spike Dup (7062214-MSD1)		**Source: 0706204-02**		Prepared & Analyzed: 06/22/07						
Ammonia as N	1.02	0.10	mg/l	0.820	0.12	110	80-120	12	20	
Batch 7062408										
Blank (7062408-BLK1)				Prepared & Analyzed: 06/21/07						
Methylene Blue Active Substances	ND	0.5	mg/l							
LCS (7062408-BS1)				Prepared & Analyzed: 06/21/07						
Methylene Blue Active Substances	0.9	0.5	mg/l	1.00		90	80-120			
LCS Dup (7062408-BSD1)				Prepared & Analyzed: 06/21/07						
Methylene Blue Active Substances	1.0	0.5	mg/l	1.00		100	80-120	11	20	
Duplicate (7062408-DUP1)		**Source: 0706305-01**		Prepared & Analyzed: 06/21/07						
Methylene Blue Active Substances	ND	0.5	mg/l		ND				20	

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Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062408										
Matrix Spike (7062408-MS1)		**Source: 0706305-01**		Prepared & Analyzed: 06/21/07						
Methylene Blue Active Substances	1.0	0.5	mg/l	1.00	ND	100	80-120			
Matrix Spike Dup (7062408-MSD1)		**Source: 0706305-01**		Prepared & Analyzed: 06/21/07						
Methylene Blue Active Substances	1.0	0.5	mg/l	1.00	ND	100	80-120	0	20	
Batch 7062502										
Blank (7062502-BLK1)				Prepared: 06/25/07 Analyzed: 06/26/07						
Oil & Grease	ND	5	mg/l							
LCS (7062502-BS1)				Prepared: 06/25/07 Analyzed: 06/26/07						
Oil & Grease	89	5	mg/l	111		80	75-125			
LCS Dup (7062502-BSD1)				Prepared: 06/25/07 Analyzed: 06/26/07						
Oil & Grease	83	5	mg/l	94.4		88	75-125	7	20	
Batch 7062831										
Blank (7062831-BLK1)				Prepared & Analyzed: 06/28/07						
Nitrate as N	ND	0.05	mg/l							
LCS (7062831-BS1)				Prepared & Analyzed: 06/28/07						
Nitrate as N	0.56	0.05	mg/l	0.500		112	80-120			
LCS Dup (7062831-BSD1)				Prepared & Analyzed: 06/28/07						
Nitrate as N	0.54	0.05	mg/l	0.500		108	80-120	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706332

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062831										
Duplicate (7062831-DUP1)		**Source: 0706316-06**		Prepared & Analyzed: 06/28/07						
Nitrate as N	4.00	0.50	mg/l		4.23			6	20	
Matrix Spike (7062831-MS1)		**Source: 0706316-06**		Prepared & Analyzed: 06/28/07						
Nitrate as N	9.71	0.50	mg/l	5.00	4.23	110	80-120			
Matrix Spike Dup (7062831-MSD1)		**Source: 0706316-06**		Prepared & Analyzed: 06/28/07						
Nitrate as N	9.71	0.50	mg/l	5.00	4.23	110	80-120	0	20	
Reference (7062831-SRM1)				Prepared & Analyzed: 06/28/07						
Nitrate as N	4.10	0.50	mg/l	4.41		93	39.8-107.48			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

W-02	The sample for nitrate analysis was preserved with H2SO4 after the nitrite portion of the analysis was completed to extend the holding time for the sample. Nitrate results are corrected for the nitrite contribution per the method.
QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
QM-06	Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

COMPANY: Weston Solutions

ADDRESS: see above

PHONE/FAX: see above

SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE CONTAINERS	Oil and Grease 1664	Dissolved Metals (Cu, Cd, Pb, Zn)	TSS	Hardness	Organo Pesticides 8141	PRESERVED HOW/ COMMENTS	SAMPLE TEMP. UPON RECEIPT
AC-2	6/20/07	0930	H_2O	EBr/LC	2 Amber 2 Poly	X	X	X	X	X	ice	

SPECIAL INSTRUCTIONS/COMMENTS:

sampled by Laurence Campagna

SHIPPING:

Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY
[signature]	[signature]			
Signature: Weston Sol.	Signature: EMA	Signature	Signature	Signature
Firm: 6-20-07	Firm: 6/20	Firm	Firm	Firm
Date/Time: 1417	Date/Time: 14:17	Date/Time	Date/Time	Date/Time

T-701

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

COMPANY: Weston Solution

ADDRESS: see above

PHONE/FAX: see above

SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE CONTAINERS	Ammonia as N	Nitrate	Orthophosphate			PRESERVED HOW/ COMMENTS	SAMPLE TEMP. UPON RECEIPT
AC-2	6/20/07	0930	H_2O	EG/CC	2 poly lamber	X	X	X			ice	

SPECIAL INSTRUCTIONS/COMMENTS:

sampled by Laurence Campagna

SHIPPING:

Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY
[signature]	[signature]			
Signature: Weston Sol	Signature: EMA	Signature	Signature	Signature
Firm: 6-20-07	Firm: 6/20	Firm	Firm	Firm
Date/Time: 1417	Date/Time: 1417	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

EnviroMatrix Analytical, Inc.

29 June 2007

Weston Solutions, Inc. - Carlsbad
Attn: Gretel Roberts
2433 Impala Drive
Carlsbad, CA 92008-1514

EMA Log #: 0706289

Project Name: City of Vista Dry Weather Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 06/18/07 15:09. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BVC-3	0706289-01	Water	06/18/07 12:30	06/18/07 15:09
BVC-2	0706289-02	Water	06/18/07 11:30	06/18/07 15:09
BV-6	0706289-03	Water	06/18/07 10:30	06/18/07 15:09
AC-1	0706289-04	Water	06/18/07 09:30	06/18/07 15:09
AH-10	0706289-05	Water	06/18/07 08:45	06/18/07 15:09
AH-21	0706289-06	Water	06/18/07 07:30	06/18/07 15:09

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Metals (Dissolved) by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BVC-3 (0706289-01) Water Sampled: 06/18/07 12:30 Received: 06/18/07 15:09									
Cadmium	ND	0.005	mg/l	1	7062009	06/20/07	06/20/07	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
BVC-2 (0706289-02) Water Sampled: 06/18/07 11:30 Received: 06/18/07 15:09									
Cadmium	ND	0.005	mg/l	1	7062009	06/20/07	06/20/07	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
BV-6 (0706289-03) Water Sampled: 06/18/07 10:30 Received: 06/18/07 15:09									
Cadmium	ND	0.005	mg/l	1	7062009	06/20/07	06/20/07	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
AC-1 (0706289-04) Water Sampled: 06/18/07 09:30 Received: 06/18/07 15:09									
Cadmium	ND	0.005	mg/l	1	7062009	06/20/07	06/20/07	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.040**	0.020	"	"	"	"	"	"	
AH-10 (0706289-05) Water Sampled: 06/18/07 08:45 Received: 06/18/07 15:09									
Cadmium	ND	0.005	mg/l	1	7062009	06/20/07	06/20/07	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Metals (Dissolved) by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0706289-06) Water Sampled: 06/18/07 07:30 Received: 06/18/07 15:09									
Cadmium	ND	0.005	mg/l	1	7062009	06/20/07	06/20/07	EPA 6020	
Copper	**0.005**	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.030**	0.020	"	"	"	"	"	"	

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Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BVC-3 (0706289-01) Water Sampled: 06/18/07 12:30 Received: 06/18/07 15:09									
Chlorpyrifos	ND	0.05	ug/l	1	7061807	06/18/07	06/20/07	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*81 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*85 %*	*60-130*		"	"	"	"	
BVC-2 (0706289-02) Water Sampled: 06/18/07 11:30 Received: 06/18/07 15:09									
Chlorpyrifos	ND	0.05	ug/l	1	7061807	06/18/07	06/20/07	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*81 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*82 %*	*60-130*		"	"	"	"	
BV-6 (0706289-03) Water Sampled: 06/18/07 10:30 Received: 06/18/07 15:09									
Chlorpyrifos	ND	0.05	ug/l	1	7061807	06/18/07	06/20/07	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*87 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*84 %*	*60-130*		"	"	"	"	
AC-1 (0706289-04) Water Sampled: 06/18/07 09:30 Received: 06/18/07 15:09									
Chlorpyrifos	ND	0.05	ug/l	1	7062119	06/21/07	06/28/07	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*88 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*89 %*	*60-130*		"	"	"	"	

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Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-10 (0706289-05) Water Sampled: 06/18/07 08:45 Received: 06/18/07 15:09									
Chlorpyrifos	ND	0.05	ug/l	1	7062119	06/21/07	06/28/07	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*76 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*90 %*	*60-130*		"	"	"	"	
AH-21 (0706289-06) Water Sampled: 06/18/07 07:30 Received: 06/18/07 15:09									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	7062119	06/21/07	06/28/07	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*82 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*94 %*	*60-130*		"	"	"	"	

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Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BVC-3 (0706289-01) Water Sampled: 06/18/07 12:30 Received: 06/18/07 15:09									
Hardness (Total)	**626**	100	mg CaCO3/L	10	7061917	06/19/07	06/20/07	EPA 200.7	
Methylene Blue Active Substances	ND	0.5	mg/l	1	7061925	06/19/07	06/19/07	SM5540 C	
Oil & Grease	ND	5	"	"	7062118	06/21/07	06/21/07	EPA 1664	
BVC-2 (0706289-02) Water Sampled: 06/18/07 11:30 Received: 06/18/07 15:09									
Hardness (Total)	**848**	100	mg CaCO3/L	10	7061917	06/19/07	06/20/07	EPA 200.7	
Methylene Blue Active Substances	ND	0.5	mg/l	1	7061925	06/19/07	06/19/07	SM5540 C	
Oil & Grease	ND	5	"	"	7062118	06/21/07	06/21/07	EPA 1664	
BV-6 (0706289-03) Water Sampled: 06/18/07 10:30 Received: 06/18/07 15:09									
Hardness (Total)	**566**	100	mg CaCO3/L	10	7061917	06/19/07	06/20/07	EPA 200.7	
Methylene Blue Active Substances	ND	0.5	mg/l	1	7061925	06/19/07	06/19/07	SM5540 C	
Oil & Grease	ND	5	"	"	7062118	06/21/07	06/21/07	EPA 1664	
AC-1 (0706289-04) Water Sampled: 06/18/07 09:30 Received: 06/18/07 15:09									
Hardness (Total)	**1620**	100	mg CaCO3/L	10	7061917	06/19/07	06/20/07	EPA 200.7	
Methylene Blue Active Substances	ND	0.5	mg/l	1	7061925	06/19/07	06/19/07	SM5540 C	
Oil & Grease	ND	5	"	"	7062118	06/21/07	06/21/07	EPA 1664	
AH-10 (0706289-05) Water Sampled: 06/18/07 08:45 Received: 06/18/07 15:09									
Hardness (Total)	**799**	100	mg CaCO3/L	10	7061917	06/19/07	06/20/07	EPA 200.7	
Methylene Blue Active Substances	ND	0.5	mg/l	1	7061925	06/19/07	06/19/07	SM5540 C	
Oil & Grease	ND	5	"	"	7062118	06/21/07	06/21/07	EPA 1664	
AH-21 (0706289-06) Water Sampled: 06/18/07 07:30 Received: 06/18/07 15:09									
Hardness (Total)	**1040**	100	mg CaCO3/L	10	7061917	06/19/07	06/20/07	EPA 200.7	
Methylene Blue Active Substances	ND	0.5	mg/l	1	7061925	06/19/07	06/19/07	SM5540 C	
Oil & Grease	ND	5	"	"	7062118	06/21/07	06/21/07	EPA 1664	

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Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062009										
Blank (7062009-BLK1)				Prepared & Analyzed: 06/20/07						
Cadmium	ND	0.005	mg/l							
Copper	ND	0.005	"							
Lead	ND	0.005	"							
Zinc	ND	0.020	"							
LCS (7062009-BS1)				Prepared & Analyzed: 06/20/07						
Cadmium	0.098	0.005	mg/l	0.100		98	75-125			
Copper	0.100	0.005	"	0.100		100	75-125			
Lead	0.099	0.005	"	0.100		99	75-125			
Zinc	0.098	0.020	"	0.100		98	75-125			
LCS Dup (7062009-BSD1)				Prepared & Analyzed: 06/20/07						
Lead	0.099	0.005	mg/l	0.100		99	75-125	0	20	
Copper	0.099	0.005	"	0.100		99	75-125	1	20	
Zinc	0.097	0.020	"	0.100		97	75-125	1	20	
Cadmium	0.099	0.005	"	0.100		99	75-125	1	20	
Duplicate (7062009-DUP1)		**Source: 0706305-04**		Prepared & Analyzed: 06/20/07						
Lead	ND	0.005	mg/l		ND				20	
Copper	0.002	0.005	"		0.002			0	20	
Zinc	ND	0.020	"		ND				20	
Cadmium	ND	0.005	"		ND				20	
Matrix Spike (7062009-MS1)		**Source: 0706305-04**		Prepared & Analyzed: 06/20/07						
Cadmium	0.099	0.005	mg/l	0.100	ND	99	75-125			
Copper	0.087	0.005	"	0.100	0.002	85	75-125			
Lead	0.098	0.005	"	0.100	ND	98	75-125			
Zinc	0.103	0.020	"	0.100	ND	103	75-125			

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Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062009										
Matrix Spike Dup (7062009-MSD1)		**Source: 0706305-04**		Prepared & Analyzed: 06/20/07						
Zinc	0.105	0.020	mg/l	0.100	ND	105	75-125	2	20	
Lead	0.098	0.005	"	0.100	ND	98	75-125	0	20	
Copper	0.088	0.005	"	0.100	0.002	86	75-125	1	20	
Cadmium	0.103	0.005	"	0.100	ND	103	75-125	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7061807										
Blank (7061807-BLK1)				Prepared: 06/18/07 Analyzed: 06/20/07						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.205*		"	*0.250*		*82*	*60-130*			
Surrogate: Tribuytlphosphate	*0.225*		"	*0.250*		*90*	*60-130*			
LCS (7061807-BS1)				Prepared: 06/18/07 Analyzed: 06/21/07						
Bolstar	0.48	0.10	ug/l	0.500		96	60-130			
Diazinon	0.47	0.05	"	0.500		94	60-130			
Ethoprop	0.49	0.05	"	0.500		98	60-130			
Mevinphos	0.51	0.25	"	0.500		102	60-130			
Methyl parathion	0.48	0.10	"	0.500		96	60-130			
Phorate	0.47	0.05	"	0.500		94	60-130			
Ronnel	0.49	0.25	"	0.500		98	60-130			
Trichlorinate	0.46	0.05	"	0.500		92	60-130			
Surrogate: Triphenyl phosphate	*0.233*		"	*0.250*		*93*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		"	*0.250*		*96*	*60-130*			
LCS Dup (7061807-BSD1)				Prepared: 06/18/07 Analyzed: 06/21/07						
Bolstar	0.42	0.10	ug/l	0.500		84	60-130	13	30	
Diazinon	0.48	0.05	"	0.500		96	60-130	2	30	
Ethoprop	0.52	0.05	"	0.500		104	60-130	6	30	
Mevinphos	0.49	0.25	"	0.500		98	60-130	4	30	
Methyl parathion	0.46	0.10	"	0.500		92	60-130	4	30	
Phorate	0.50	0.05	"	0.500		100	60-130	6	30	
Ronnel	0.48	0.25	"	0.500		96	60-130	2	30	
Trichlorinate	0.46	0.05	"	0.500		92	60-130	0	30	
Surrogate: Triphenyl phosphate	*0.331*		"	*0.250*		*132*	*60-130*			*S-GC*
Surrogate: Tribuytlphosphate	*0.277*		"	*0.250*		*111*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062119										
Blank (7062119-BLK1)				Prepared: 06/21/07 Analyzed: 06/28/07						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.182*		*"*	*0.250*		*73*	*60-130*			
Surrogate: Tribuytlphosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
LCS (7062119-BS1)				Prepared: 06/21/07 Analyzed: 06/28/07						
Bolstar	0.32	0.10	ug/l	0.500		64	60-130			
Diazinon	0.37	0.05	"	0.500		74	60-130			
Ethoprop	0.36	0.05	"	0.500		72	60-130			
Mevinphos	0.35	0.25	"	0.500		70	60-130			
Methyl parathion	0.37	0.10	"	0.500		74	60-130			
Phorate	0.33	0.05	"	0.500		66	60-130			
Ronnel	0.37	0.25	"	0.500		74	60-130			
Trichlorinate	0.39	0.05	"	0.500		78	60-130			
Surrogate: Triphenyl phosphate	*0.182*		*"*	*0.250*		*73*	*60-130*			
Surrogate: Tribuytlphosphate	*0.255*		*"*	*0.250*		*102*	*60-130*			
LCS Dup (7062119-BSD1)				Prepared: 06/21/07 Analyzed: 06/28/07						
Bolstar	0.35	0.10	ug/l	0.500		70	60-130	9	30	
Diazinon	0.33	0.05	"	0.500		66	60-130	11	30	
Ethoprop	0.33	0.05	"	0.500		66	60-130	9	30	
Mevinphos	0.32	0.25	"	0.500		64	60-130	9	30	
Methyl parathion	0.33	0.10	"	0.500		66	60-130	11	30	
Phorate	0.34	0.05	"	0.500		68	60-130	3	30	
Ronnel	0.32	0.25	"	0.500		64	60-130	14	30	
Trichlorinate	0.34	0.05	"	0.500		68	60-130	14	30	
Surrogate: Triphenyl phosphate	*0.194*		*"*	*0.250*		*78*	*60-130*			
Surrogate: Tribuytlphosphate	*0.239*		*"*	*0.250*		*96*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7061917										
Blank (7061917-BLK1)				Prepared: 06/19/07 Analyzed: 06/20/07						
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (7061917-DUP1)		**Source: 0706273-01**		Prepared & Analyzed: 06/19/07						
Hardness (Total)	153	10	mg CaCO3/L		193			23	20	QR-02
Batch 7061925										
Blank (7061925-BLK1)				Prepared & Analyzed: 06/19/07						
Methylene Blue Active Substances	ND	0.5	mg/l							
LCS (7061925-BS1)				Prepared & Analyzed: 06/19/07						
Methylene Blue Active Substances	0.9	0.5	mg/l	1.00		90	80-120			
LCS Dup (7061925-BSD1)				Prepared & Analyzed: 06/19/07						
Methylene Blue Active Substances	0.9	0.5	mg/l	1.00		90	80-120	0	20	
Duplicate (7061925-DUP1)		**Source: 0706289-01**		Prepared & Analyzed: 06/19/07						
Methylene Blue Active Substances	ND	0.5	mg/l		ND				20	
Matrix Spike (7061925-MS1)		**Source: 0706289-01**		Prepared & Analyzed: 06/19/07						
Methylene Blue Active Substances	1.0	0.5	mg/l	1.00	ND	100	80-120			
Matrix Spike Dup (7061925-MSD1)		**Source: 0706289-01**		Prepared & Analyzed: 06/19/07						
Methylene Blue Active Substances	1.0	0.5	mg/l	1.00	ND	100	80-120	0	20	
Batch 7062118										
Blank (7062118-BLK1)				Prepared & Analyzed: 06/21/07						
Oil & Grease	ND	5	mg/l							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Weston Solutions, Inc. - Carlsbad
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 0706289

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7062118										
LCS (7062118-BS1)				Prepared & Analyzed: 06/21/07						
Oil & Grease	86	5	mg/l	98.1		88	75-125			
LCS Dup (7062118-BSD1)				Prepared & Analyzed: 06/21/07						
Oil & Grease	79	5	mg/l	95.7		83	75-125	8	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogates.
QR-02	The RPD result exceeded the QC limits due to non-homogeneity of sample.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Weston

ADDRESS see above

PHONE/FAX see above

SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE CONTAINERS	Oil and Grease 1664	Pesticides 8141	Dissolved metals (Cu Pb)	MBAS	Hardness	PRESERVED HOW/ COMMENTS	SAMPLE TEMP UPON REC
BVC-3	6/18/07	1230	H_2O	EG/LC	2 Amber/ 2 Poly	X	X	X	X	X	ice	
BVC-2	↓	1130	↓	↓	↓	X	X	X	X	X	↓	
BV-6	↓	1030	↓	↓	↓	X	X	X	X	X	↓	
AC-1	↓	0930	↓	↓	↓	X	X	X	X	X	↓	
AH-10	↓	0845	↓	↓	↓	X	X	X	X	X	↓	
AH-21	↓	0730	↓	↓	↓	X	X	X	X	X	↓	

SPECIAL INSTRUCTIONS/COMMENTS: T=3°C TAT=21

Sampled by C. Campasna

SHIPPING:

Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED
[signature]	[signature]			
Signature Weston Sol.	Signature	Signature	Signature	Signature
Firm 6-18-07	Firm EMA	Firm	Firm	Firm
Date/Time 1509	Date/Time 6/18/07 1509	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Weston Solutions, Inc

Analytical Report

Client: City of Vista
Project: Vista Dry Weather Monitoring
Number of Samples: 1 sample-see below

Date Received: June 20, 2007
Date Test Started: June 20, 2007
Date Test Ended: June 25, 2007
Matrix: Water

Bacterial Analysis Using Multiple Tube Fermentation/MPN

Methods: SM 9221B & E and SM 9230B

Microorganisms Tested: Total/Fecal Coliforms and Enterococci

Bacterial Summary

Coliform analyses based on dilutions providing results between 20-1,600,000 MPN/100mL
Analyses for Enterococci are based on dilutions providing results between 20-160,000 MPN/100mL

Client Sample ID	Weston Sample ID	Date Sample Taken	Time Taken	Total Coliforms MPN/100 mL	Fecal Coliforms MPN/100 mL	Enterococci MPN/100 mL
AC-2	062007 AC-2	6/20/2007	0930	700	140	110

QA/QC Officer (Rosabel Dias) — Date: 07/02/2007

Microbiology Lab Supervisor (Anthony Trinh) — Date: 7/2/07

Weston

ADDRESS
see above

PHONE/FAX
see above

SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE CONTAINERS	Total Coliform	Fecal Coliform	Enterococci	Temperature		PRESERVED HOW/ COMMENTS	SAM TEM UPO REC
AC-2	6/20/07	0930	H_2O	EK/LC	1/100mL	X	X	X			ice	-
Temp									X			7.

SPECIAL INSTRUCTIONS/COMMENTS:

sampled by Esther Goldstein and Lawrence Campagna

SHIPPING:

Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED
Esther D. Goldstein	L. Smith-Kruch			
Signature Weston	Signature Weston Solutions	Signature	Signature	Signature
Firm 6/20/07 1240	Firm 6/20/07 1240	Firm	Firm	Firm
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Weston Solutions, Inc

Analytical Report

Client:	City of Vista	**Date Received:**	June 18, 2007
Project:	Vista Dry Weather Monitoring	**Date Test Started:**	June 18, 2007
Number of Samples:	6 Samples - See Below	**Date Test Ended:**	June 23, 2007
		Matrix:	Water

Bacterial Analysis Using Multiple Tube Fermentation/MPN

Methods: SM 9221B & E and SM 9230B

Microorganisms Tested: Total/Fecal Coliforms and Enterococci

Bacterial Summary

Coliform analyses based on dilutions providing results between 20-1,600,000 MPN/100mL
Analyses for Enterococci are based on dilutions providing results between 20-160,000 MPN/100mL

Client Sample ID	Weston Sample ID	Date Sample Taken	Time Taken	Total Coliforms MPN/100 mL	Fecal Coliforms MPN/100 mL	Enterococci MPN/100 mL
BVC-3	061807 BVC-3	6/18/2007	1230	5,000	1,400	130
BVC-2	061807 BVC-2	6/18/2007	1130	5,000	800	500
BV-6	061807 BV-6	6/18/2007	1030	240,000	240,000	230
AC-1	061807 AC-1	6/18/2007	0930	80,000	1,400	5,000
AH-10	061807 AH-10	6/18/2007	0845	2,200	500	500
AH-21	061807 AH-21	6/18/2007	0730	30,000	17,000	28,000

QA/QC Officer (Rosabel Dias) — Date: 07/02/2007

Microbiology Lab Supervisor (Anthony Trinh) — Date: 7/2/07

Weston

ADDRESS: see above

PHONE/FAX: see above

	SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE CONTAINERS	Total Coliform	Fecal coliform	Enterococ	temp		PRESERVED HOW/ COMMENTS	SAM TEM UPO REC
✓	BVC-3	6/18/07	1230	H_2O	EG/LC	1/100mL	X	X	X			ST/4°C	
✓	BVC-2		1130										
✓	BV-6		1030										
E ✓	AC-1		0930										
-	AH-10		0845										
T/F	AH-21		0730										
	temp		0845							X			5

SPECIAL INSTRUCTIONS/COMMENTS:

sampled by EG/LC (ESTHER GOLDSTEIN / LAURENCE CAMPAGNA)

SHIPPING:

Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED
Signature: Weston	Signature: Weston Solutions	Signature	Signature	Signature
Firm: 6/18/07 1313	Firm: 6/18/07 1313	Firm	Firm	Firm
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Weston Solutions, Inc

Analytical Report

Client: City of Vista
Project: Vista Dry Weather Monitoring
Number of Samples: 4 Samples-see below

Date Received: June 19, 2007
Date Test Started: June 19, 2007
Date Test Ended: June 24, 2007
Matrix: Water

Bacterial Analysis Using Multiple Tube Fermentation/MPN

Methods: SM 9221B & E and SM 9230B

Microorganisms Tested: Total/Fecal Coliforms and Enterococci

Bacterial Summary

Coliform analyses based on dilutions providing results between 20-1,600,000 MPN/100mL
Analyses for Enterococci are based on dilutions providing results between 20-160,000 MPN/100mL

Client Sample ID	Weston Sample ID	Date Sample Taken	Time Taken	Total Coliforms MPN/100 mL	Fecal Coliforms MPN/100 mL	Enterococci MPN/100 mL
GC-1	061907 GC-1	6/19/2007	1155	13,000	500	2,800
BV-19	061907 BV-19	6/19/2007	1010	5,000	20	230
BV-18	061907 BV-18	6/19/2007	1055	7,000	700	1,300
BV-8	0619807 BV-8	6/19/2007	0915	13,000	800	17,000

QA/QC Officer (Rosabel Dias) — Date: 07/02/2007

Microbiology Lab Supervisor (Anthony Trinh) — Date: 7/2/07

Weston Solutions

ADDRESS: See above

PHONE/FAX: See above

	SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE CONTAINERS	Total Coliform	Fecal Coliform	Enterococci	Temperature		PRESERVED HOW/ COMMENTS	SAMPLE TEMP UPON REC
	GC-1	6/19/07	1155	H_2O	FG/LC	1/100ml	X	X	X			ST/ice	
E	BV-19	↓	1010	↓	↓	↓	X	X	X			↓	
	BV-18	↓	1055	↓	↓	↓	X	X	X			↓	
TP	BV-8	↓	0915	↓	↓	↓	X	X	X			↓	
	temp	↓	1055	↓	↓	↓				X		↓	6

SPECIAL INSTRUCTIONS/COMMENTS:

sampled by EG / LC Esther Goldstein and Laurence Campagna

SHIPPING:

Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED
Esther Q. Goldstein	[signature]			
Signature: Weston	Signature: Weston Solutions	Signature	Signature	Signature
Firm: 6/19/07 1257	Firm: 6/19/07 1257	Firm	Firm	Firm
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Weston Solutions, Inc

Analytical Report

Client: City of Vista
Project: Vista Dry Weather Monitoring
Number of Samples: 4 samples-see below

Date Received: July 11, 2007
Date Test Started: July 11, 2007
Date Test Ended: July 16, 2007
Matrix: Water

Bacterial Analysis Using Multiple Tube Fermentation/MPN

Methods: SM 9221B & E and SM 9230B

Microorganisms Tested: Total/Fecal Coliforms and Enterococci

Bacterial Summary

Coliform analyses based on dilutions providing results between 20-1,600,000 MPN/100mL
Analyses for Enterococci are based on dilutions providing results between 20-160,000 MPN/100mL

Client Sample ID	Weston Sample ID	Date Sample Taken	Time Taken	Total Coliforms MPN/100 mL	Fecal Coliforms MPN/100 mL	Enterococci MPN/100 mL
AH-21	071107 AH-21	7/11/2007	0830	80,000	3,000	17,000
AC-1	071107 AC-1	7/11/2007	0910	>1,600,000	80,000	>160,000
BV-6	071107 BV-6	7/11/2007	0950	5,000*	230	800
BV-8	071107 BV-8	7/11/2007	0930	35,000	1,700	5,000

*Duplicate sample was out of range for total coliforms. All other quality assurance data were acceptable.

QA/QC Officer (Rosabel Dias) — Date: 07/17/2007

Microbial Services Director (Larissa Aumand) — Date: 7/17/07

COMPANY: Weston Solutions

ADDRESS: Seabrook

PHONE/FAX:

	SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE CONTAINERS (Fill in)	Zn Acetate	total Cyanide	Cyanide Cl2	Temp		PRESERVED HOW/ COMMENTS	SAMPLE TEMP. UPON RECEIPT
	AH-21	7-11-07	0830	H2O	LL	1 liter	X					HCl/ST	
	AC-1	0910	~~0910~~	LL				X					
TF	BU-6		0950						X				
E	BU-8		0930				X						
	Temp		0830							X			7°C

SPECIAL INSTRUCTIONS/COMMENTS:

Sampled by: ~~E. Campos~~ Lawrence Xavier Campos

SHIPPING:

Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY
Signature	Signature	Signature	Signature	Signature
Firm: Weston Sol.	Firm: Weston Solutions	Firm	Firm	Firm
Date/Time: 7-11-07 1055	Date/Time: 7/11/07 1055	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

Weston Solutions, Inc

Analytical Report

Client: City of Vista
Project: Vista Dry Weather Monitoring
Number of Samples: 3 samples-see below

Date Received: July 31, 2007
Date Test Started: July 31, 2007
Date Test Ended: August 3, 2007
Matrix: Water

Bacterial Analysis Using Multiple Tube Fermentation/MPN

Methods: SM 9221B

Microorganisms Tested: Total Coliforms

Bacterial Summary

Coliform analyses based on dilutions providing results between 20-1,600,000 MPN/100mL

Client Sample ID	Weston Sample ID	Date Sample Taken	Time Taken	Total Coliforms MPN/100 mL
AH-21	073107 AH-21	7/31/2007	0915	110,000
AH-21A	073107 AH-21A	7/31/2007	1000	130,000
AH-21B	073107 AH-21B	7/31/2007	1040	500,000

QA/QC Officer (Rosabel Dias) — Date: 08/09/2007

Microbiology Laboratory Supervisor (Anthony Trinh) — Date: 8/9/07

ADDRESS See Above

PHONE/FAX

SAMPLE I.D.	DATE	TIME	MATRIX	INITIALS	NUMBER & TYPE OF CONTAINERS	Total Volume	Temp				PRESERVED HOW/ COMMENTS	SAMPLE TEMP UPON REC
AH-21	7.31.07	0915	H2O	LL	1 liter	X					HCl/ST	
AH-21 A	↓	1000	↓	↓	↓	X					↓	
AH-21 B	↓	1040	↓	↓	↓	X					↓	
TEMP	↓	1040	↓	↓	↓		X				↓	

SPECIAL INSTRUCTIONS/COMMENTS:

Sampled by Lawrence Crispacona

SHIPPING:

Shipping VIA: Airbill No:

SAMPLE CONDITION UPON RECEIPT (FOR WESTON USE ONLY):

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED
[signature]	[signature]			
Signature Weston Sol.	Signature Weston	Signature	Signature	Signature
Firm 7.31.07	Firm 7/31/07 1130	Firm	Firm	Firm
Date/Time 1130	Date/Time	Date/Time	Date/Time	Date/Time

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

APPENDIX F

F-1 NEWSPAPER ARTICLE ON CLEAN WATER KEEPERS

F-2 NEWSPAPER ARTICLE ON CREEK CLEANUP

THE VISTA NEWS

School project checks water quality

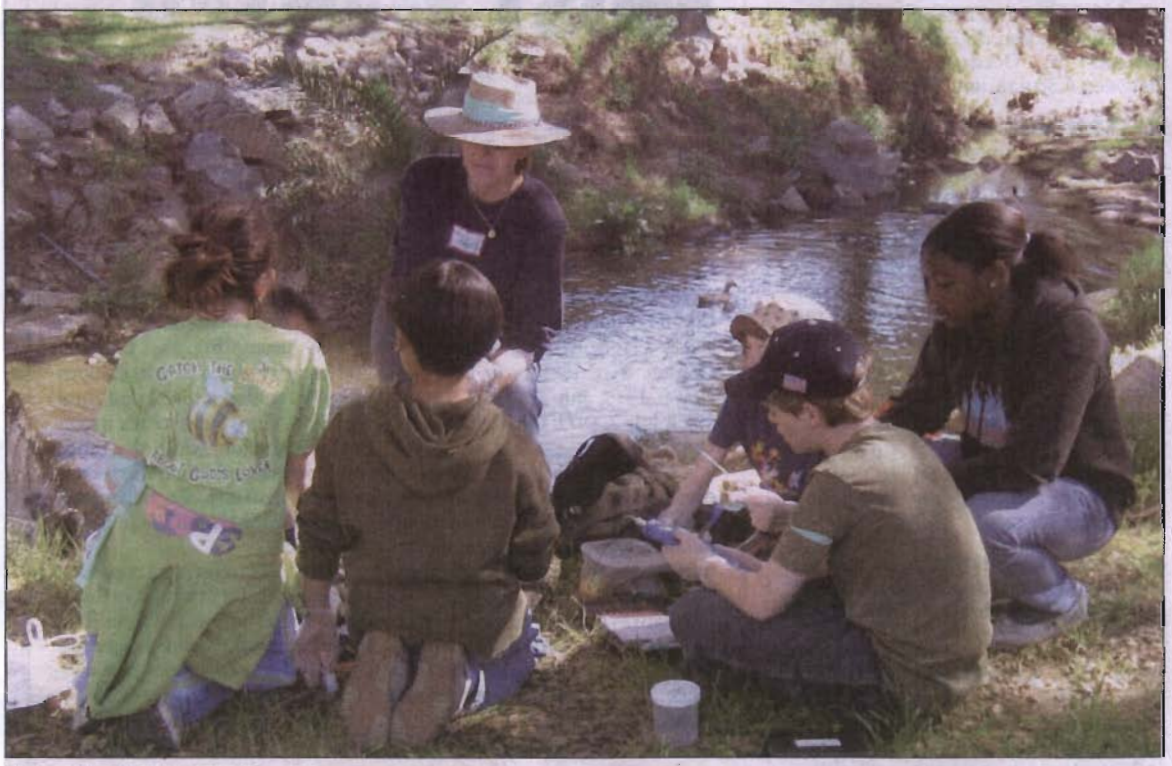

CLEAN WATER KEEPERS Claudia Marsh, a parent at Guajome Park Academy, helps middle school students conduct chemistry tests for water quality as part of the Clean Water Keepers project. The City Council recognized the hands-on educational program with a proclamation at its meeting May 8. *Courtesy photo*

By Leslie Simpson

VISTA — Guajome Park Academy students recently found themselves up to their ankles in hands-on science at a marsh just a stone's throw from their classroom. Their investigative work in water quality testing of Vista's natural waterways earned a proclamation at the City Council meeting on May 8.

Through the Clean Water Keepers program, high school seniors taught sixth-graders at the academy how to test the water quality in creeks and marshes at the University of California Dawson Reserve as well as Green Oaks Ranch. Students filled test tubes with water to be examined under a microscope, gathered and sorted bug larva and examined water erosion, said Geoff Birch, middle school science teacher and department chair at the academy.

Birch said he always looks

TURN TO WATER ON 16

WATER

CONTINUED FROM 7

for opportunities to get students out of the classroom, so they can make real-life connections with their studies. Instead of just reading about water quality in a textbook, he said students observed that the chemical balance of water may change quickly as the current flows, but bugs act as long-term indicators of water quality. Some larva can only exist in very clean water, he explained, so students learned a lot about the water quality simply by collecting and identifying bug larva.

"The real beauty of it is in getting students to see that science is not abstract, but something they can do to influence their community," Birch said. "I want to see this program grow more in the future."

Merle O'Neill, executive director of Communities Alive in Nature and facilitator of Clean Water Keepers, said her organization uses grant funds to bring applied science to North County schools and communities. She said students doubled the usefulness of the information gathered during the project by assisting the city in monitoring water quality. The city benefits from the student project, and the students make a lasting connection between what they learn and what their community needs, she said.

"I'm interested in developing a cadre of citizen monitors for water quality," O'Neill said. "If we start them out as students, they can continue as adults."

The city is interested in building partnerships with the community to inform the public about water quality issues, said Jayne Strommer, Vista's water quality protection program manager. The Communities Alive in

Nature program helps to paint a clearer picture of water health, she said, and the relationship of small creeks to overall water quality. Raising the awareness of students can have a domino effect throughout the community, she said.

"I hope this project has sparked the interest of students to continue their research because there's a lot more to be done," Strommer said. "The more we find out, the more we realize we don't know everything."

Guajome Park Academy 12th- grader Emily Asbury, 18, said her two years of involvement in the water quality project have inspired her to choose a career path in science field work. She said performing water quality tests that help the city showed how she could use science to help people. Teaching sixth-grade students how to perform field tests helped her retain the information, she said, and motivated her to study more.

"It's a lot different to learn about this stuff in the classroom versus actually doing what scientists do out in the field," Asbury said. "I don't want to work inside all day. I want to be outside, in the environment, doing things."

Last modified Saturday, September 16, 2006 9:33 PM PDT

Local volunteers clear Buena Creek

By: SHAYNA CHABNER - Staff Writer

VISTA --- Armed with gloves, rakes, trash bags, and a few machetes, Vista residents tackled an unruly neighbor Saturday: dead vegetation and litter.

More than 130 residents and volunteers turned out Saturday morning to help clean up Buena Creek as part of an international Coastal Cleanup Day. The local event, hosted by South Vista Communities ---- a neighborhood group made up of residents who live south of Highway 78 ---- drew Boy Scout troops, community service and city workers, as well as employees from nearby retailers.

"We really want to beautify the city," said event captain Jan Fiedler, environmental chairwoman for South Vista Communities.

By the early morning, workers had hauled out a dirt-caked blue shopping cart, uncovered a makeshift camping site ---- fitted with mattresses and clothes on hangers ---- and removed loads of dead branches and plants.

Rick Cole, a member of Vista's Beautification Committee and a resident of the city for 54 years, said he helped clean up the creek because he wants people to appreciate the city's natural landscape and resources.

"It's easy to keep your trash in your car," Cole said. " You don't need to throw it out."

For the most part, however, Vista's volunteers spent the morning clearing out brush rather than picking up trash.

Vista resident Frank Koller cuts dead brush and vegetation along Vista's Buena Creek, as one of more than 130 local volunteers who turned out to clean up the creek Saturday. The South Vista Communities-sponsored event was one of several held around the county as part of the 22nd annual California Coastal Cleanup.
***SHAYNA CHABNER** Staff Photographer*
Order a copy of this photo
Visit our Photo Gallery

Frank Koller steadily chopped down dead branches and pulled out rotting vegetation from the creek, which runs along Sycamore Avenue and is across the street from his house. Koller paused between swings of the machete to catch his breath.

"We have a lot to do," he said, surveying the creek and other workers' efforts.

Across San Diego County, from the U.S.-Mexico border to Oceanside, more than 60 other groups cleaned up coastal and inland sites Saturday for the 22nd annual California Coastal Cleanup Day. Thousands supported the effort to clear beaches, rivers, and lagoons locally, as well as internationally. More than 100 countries participated in the cleanup, Fiedler said.

This is the first time that South Vista Communities has participated in the state's fall volunteer effort, but Fiedler said it's only the beginning of a long, lasting relationship.

Sponsors for the event included the city of Vista, Urgent Signs, Postal Annex, Starbucks, Shadowridge Veterinarian Hospital, Sam's Club, North County Solution for Change and the Alpha Project Casa Rafael.

"It's great that people see the need for this and want to beautify the city," said Jayne Strommer, Vista's water quality program manager, who helped organize the event.

For more information about South Vista Communities and upcoming volunteer or beautification efforts, visit www.southvistacommunities.org or e-mail southvistacommunities@cox.net.

Contact staff writer Shayna Chabner at (760) 631-6604 or schabner@nctimes.com.

APPENDIX G

REGIONAL WATER QUALITY CONTROL BOARD
2005-06 JURMP ANNUAL REPORT REVIEW LETTER

California Regional Water Quality Control Board

San Diego Region

Over 50 Years Serving San Diego, Orange, and Riverside Counties

Recipient of the 2004 Environmental Award for Outstanding Achievement from USEPA

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Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

September 12, 2007

Certified Mail No. 7005 1160 0000 4217 5676

Rita L. Geldert
City Manager
City of Vista
600 Eucalyptus Avenue
Vista, CA 92084

In reply refer to:
CWU:10-5020.02:peurp

Dear Ms. Geldert:

SUBJECT: REVIEW OF JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM FY 2005-2006 ANNUAL REPORT FOR THE CITY OF VISTA, ORDER NO. 2001- 01, NPDES NO. CAS108758

We have completed our review of the City of Vista (City) Urban Runoff Management Plan Fiscal Year 2005-2006 Annual Report (report). Our comments include requests for additional information needed to fully assess program implementation and compliance during the reporting period. Some comments may also request information in order to help ensure program compliance for future reporting periods. This year, review of the report was focused on the Industrial, Municipal, Commercial, Construction, Illicit Connections and Illegal Discharges (IC/ID) and Land-Use Planning (SUSMP only) components. Revisions and any responses to comments should be addressed in this year's (Fiscal Year 2006 – 2007) Annual Report which is due in January of 2008. All of our comments are numbered for reference in your responses.

COMMENTS ON THE CITY OF VISTA ANNUAL REPORT

Annual Report Section 2.0 (Municipal):

1. Section 2.1.5 of the report discusses inspection of municipal facilities. It is indicated that both "routine informal self-inspections and annual facility inspections" were performed. Table 2.4 shows the dates on which annual inspections were performed at six municipal facilities. However, for 11 of 17 high priority municipal areas, formal inspection reports were not generated. The report notes that these facilities are streets, parking lots, the MS4, the sewer system and flood control facilities. Section 2.8.3 of the Jurisdictional Urban Runoff Plan (JURMP) for the City of Vista (titled Inspection Frequencies) specifies that, "At a minimum, each site that is determined to be high priority will be formally inspected by the Engineering staff annually." Therefore, 11 high priority municipal facilities are not being inspected annually as the JURMP requires.

   In addition, Section 2.8.2 of the JURMP discusses criteria for performing self-

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SEP 14 2007

inspections. It is indicated that, "At a minimum, a self-inspection checklist, noting date, time, conditions, and inspection date, must be kept on-site and made available for inspection, if requested. Self inspections are to be performed according to the following schedule: Before every rainfall event that is predicted to produce observable runoff and after every rainfall event, that produces observable runoff: and at 24-hour intervals during extended rainfall events." The City should be conducting formal, annual inspections at all high priority facilities, as specified in the JURMP. Also, where self-inspections are performed, checklists should be generated and the checklists should be summarized in the Annual Report (in accordance with the requirement to provide a comprehensive description of all activities at municipal facilities - Section I.1.a.F.3 of Order No. 2001- 01, NPDES NO. CAS108758, i.e. the Municipal Permit). Future Annual Reports should address these requirements. If checklists from self-inspections have been generated, your response should include a summary of this information. If such checklists are not being produced, please explain why.

Annual Report Section 3.0 (Industrial):

2. In Section 3.1.1 it is stated that, "In total, 55 facilities initially identified as high or potentially high priority industrial at the end of 2004-2005 were inspected during this reporting period (Appendix B-2)." Appendix B-2 (titled "2005-2006 High Priority Industrial Inventory") lists a total of six high priority sites, five potentially high priority sites and a number of other sites that were given a lower priority or listed as "not applicable" for various reasons. Appendix B-1 also includes a list of high priority industrial sites and a total of 19 high priority sites are listed here. Based on the information provided, it is not clear what the total number of high priority industrial sites is. Please identify which sites are to be considered high priority and report the total number of these sites.

3. As noted above, Appendix B-1 also lists a total of five sites that are designated as "potential high priority" sites. The table indicates that none of these sites had been inspected. Please provide, in your response, clarification on the status of these sites. If the sites have been inspected since the Annual Report was issued please update the status of these sites.

4. In Section 3.1.3 of the report, it is indicated that eight facilities were found to not be meeting the storm water monitoring requirement. The report states that, "These businesses were notified of their requirement to conduct monitoring as specified by the Industrial Permit." There is no indication that any enforcement action was taken. Please note that failure to monitor is a serious violation of the Industrial Permit. Please address this issue in your response. Also, please indicate whether or not these facilities are now in compliance with the requirement to perform monitoring.

Annual Report Section 8.0 (Illicit Connections and Illegal Discharges):

5. Appendix E includes reports for various Illicit Connections and Illegal Discharges (IC/ID) investigations which were conducted because of exceedences of action levels for specific monitored parameters. On Page 55 (under "Future Recommendations") it is stated that, "Several storm water conveyances were not traceable since the City of Vista does not currently have a detailed MS4 map on the level needed to perform the IC/ID program efficiently." Attachment E of the Municipal Permit requires that, "Each Copermittee shall develop or obtain an up-to-date labeled map of its entire municipal separate storm water system (MS4) and the corresponding drainage watersheds within its jurisdiction." The City should initiate, as soon as possible, an effort to complete the mapping of the MS4. Your response should address this requirement.

6. At one of the monitoring points (monitoring point AC-1) discussed in Appendix E, a total coliform concentration of 3,000,000 MPN/100 ml was detected. This is significantly higher than the Dry Weather Action Level of 50,000 MPN/100 ml. The fecal coliform and ammonia concentrations also exceeded Action Levels at this location. It was determined during the subsequent upstream investigation that an illicit discharge from the Jensen Meat Company (a facility enrolled under the Industrial Permit) caused the exceedences. One photograph in Appendix E (dated July 19, 2006) shows a large accumulation of dirty water surrounding a floor drain. It is indicated in the report that the discharge was attributed to condensate from a refrigeration unit that used ammonia as the refrigerant. Numerous storm water violations including an apparent earlier unauthorized release of ammonia condensate were documented in a City report dated May 26, 2005 (about a year earlier). It appears, therefore, that the discharge of ammonia condensate has been a recurring problem. The 2005 report also notes serious housekeeping problems (including the need for proper containment of meat products), lack of adequate BMP implementation and failure to perform monitoring. The Regional Board was aware of the violations in 2005 and participated in related enforcement activities. However, there is no record of the Regional Board being notified of the problems that were found in July of 2006. Please note that Section B.6. of Attachment C of the Municipal Permit requires Copermittees to, "develop criteria by which to evaluate events of non-compliance to determine whether they pose a threat to human health or the environment." The criteria are to be used to determine whether it is necessary to report the threat to the Regional Board. Section 3.8 of the City's JURMP includes a list of criteria to be considered when determining whether such a report is necessary. The list includes such factors as material discharged, estimated volume of discharge, proximity of site to a sensitive water body, etc.. However, because only a listing of factors is provided in Section 3.8, it is not clear how such

criteria might be applied in a situation such as the discharge at the Jensen Meat Company. Given the very high total coliform found in the receiving water, the recurrent nature of the unauthorized discharge, and the history of serious violations at the Jensen Meat Company, it appears that the threat to human health and the environment posed by this facility's activities may have been and continues to be significant. Please include in your response a discussion of how the criteria listed in Section 3.8 of the JURMP were applied at the Jensen Meat Company facility and how the criteria are applied in general. If this process should be improved, recommendations for modifications in the protocol for assessing threats to human health and the environment should be included.

If you have any questions or would like to discuss these comments further, please contact Pete Peuron at (858) 637-7137 or Ppeuron@waterboards.ca.gov.

The heading portion of this letter includes a Regional Board code number noted after "In reply refer to:" In order to assist us in the processing of your correspondence, please include this code number in the heading or subject line portion of all correspondence and reports to the Regional Board pertaining to this matter.

Respectfully,

Brian D. Kelley

Brian D. Kelley
Senior Water Resources Control Engineer

BDK:cmc:pmp

cc: Larry Pierce, Director of Engineering/Public Works, City of Vista
Jayne Strommer, Stormwater Program Manager, City of Vista

APPENDIX H

POLLUTANT DISCHARGE POTENTIAL ASSESSMENT FIGURES FROM THE 2006-07 BUSINESS INSPECTION PROGRAM

FIGURE H-1
SEDIMENT PDP SCORES

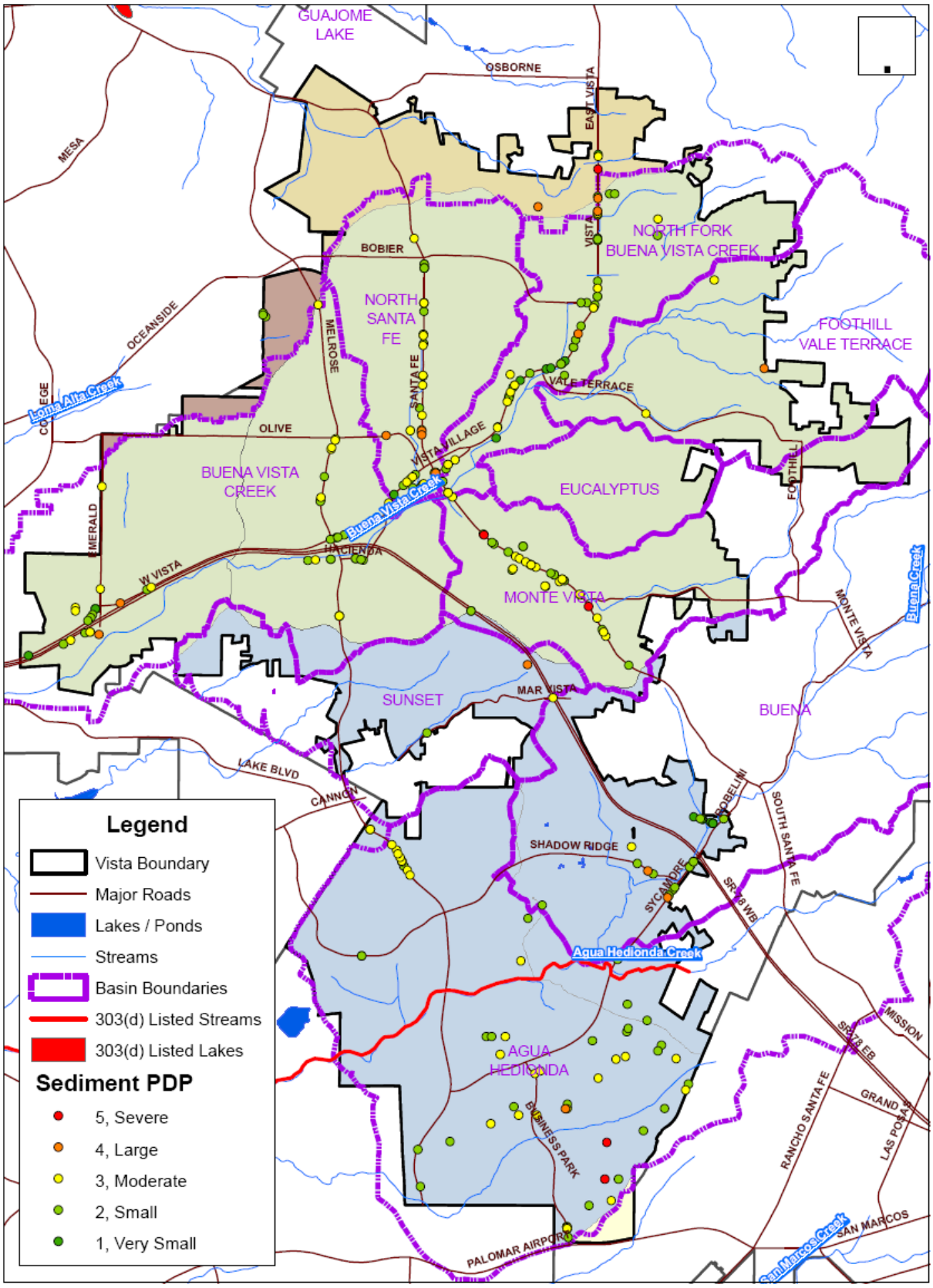

Orange/Yellow = SLR; Green = BV; Red = LA; Blue = AH

FIGURE H-2
NUTRIENTS PDP SCORES

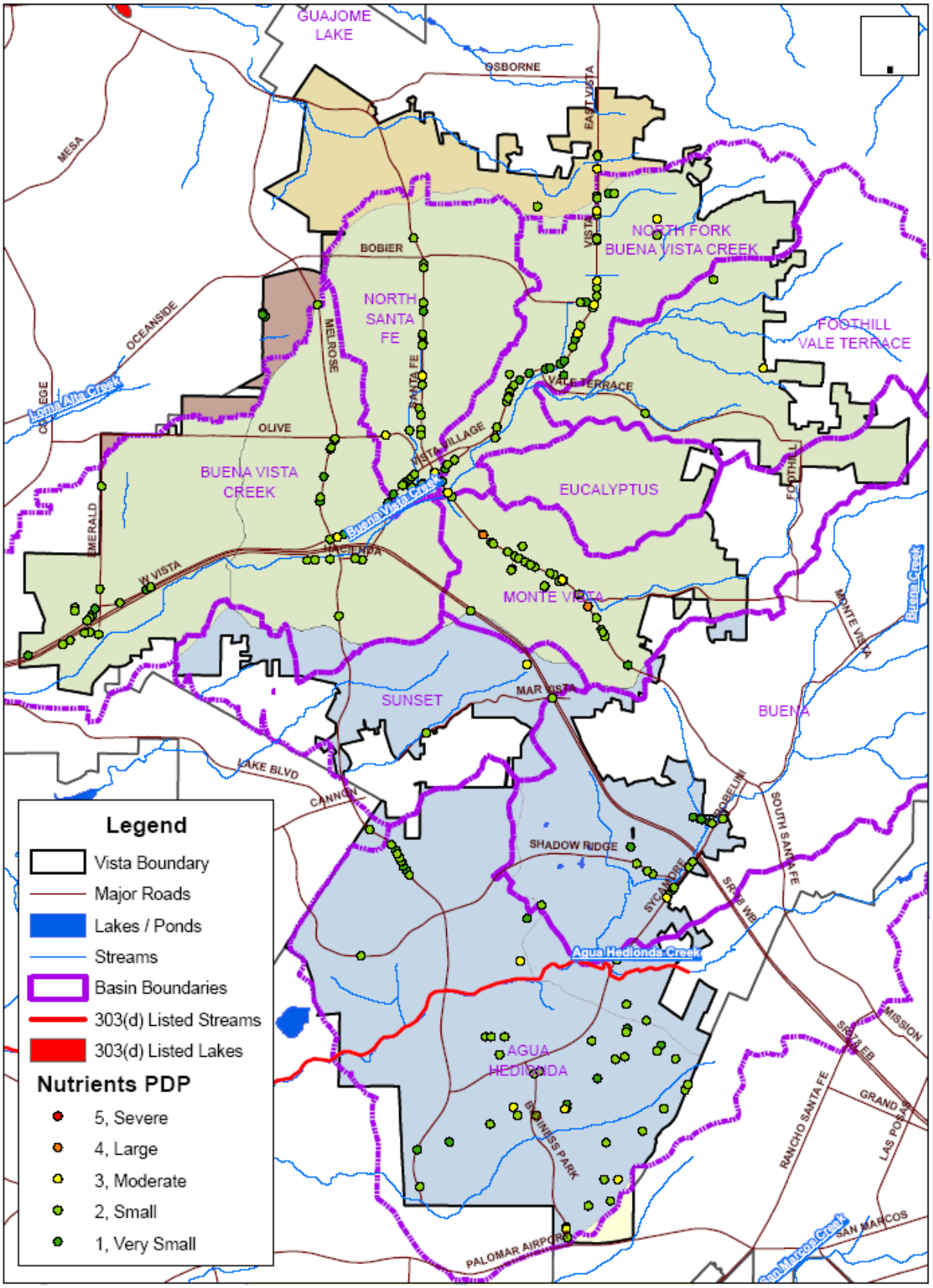

Orange/Yellow = SLR; Green = BV; Red = LA; Blue = AH

FIGURE H-3
HEAVY METALS PDP SCORES

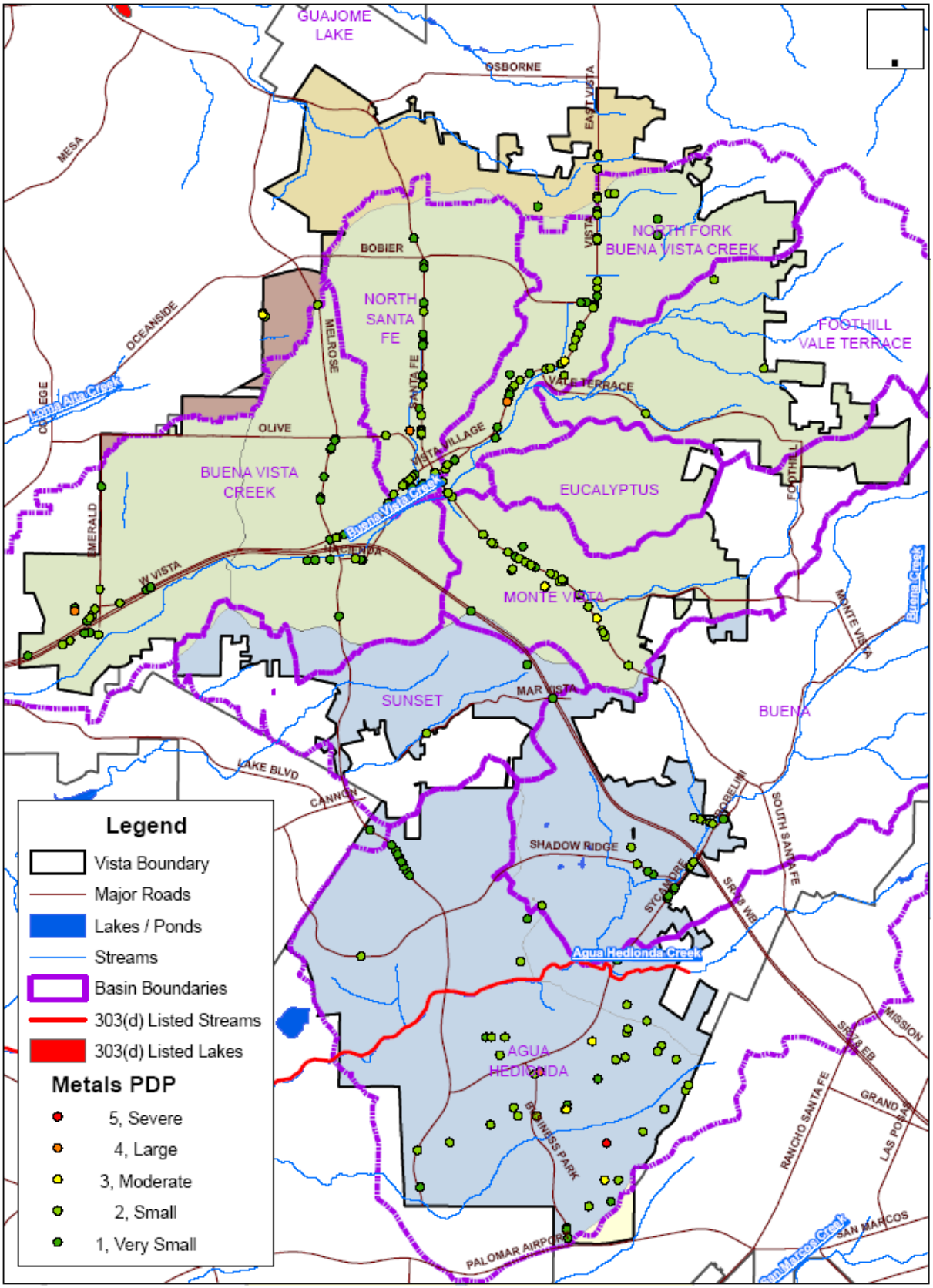

Orange/Yellow = SLR; Green = BV; Red = LA; Blue = AH

FIGURE H-4
TRASH AND DEBRIS PDP SCORES

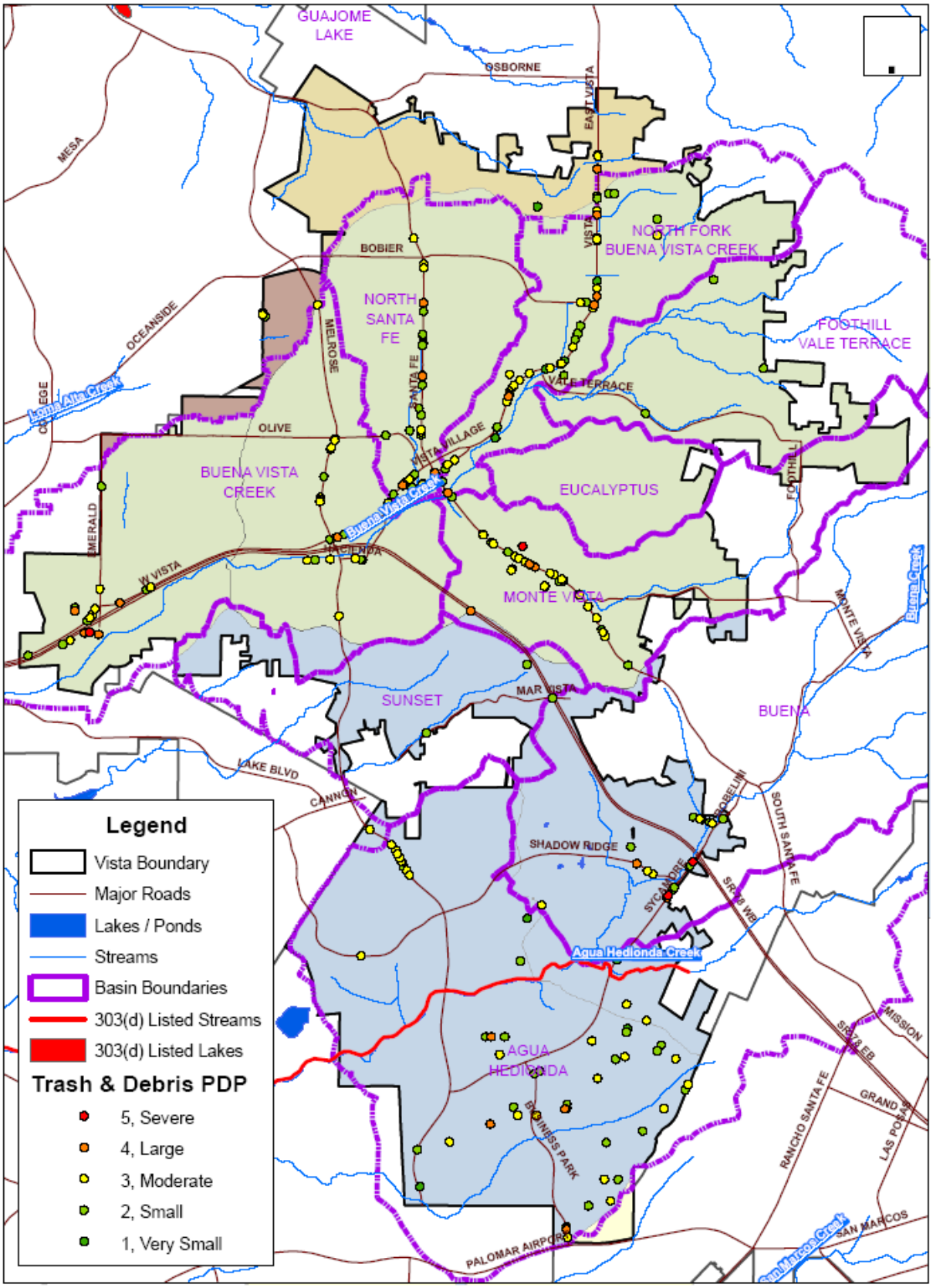

Orange/Yellow = SLR; Green = BV; Red = LA; Blue = AH

FIGURE H-5
OIL AND GREASE PDP SCORES

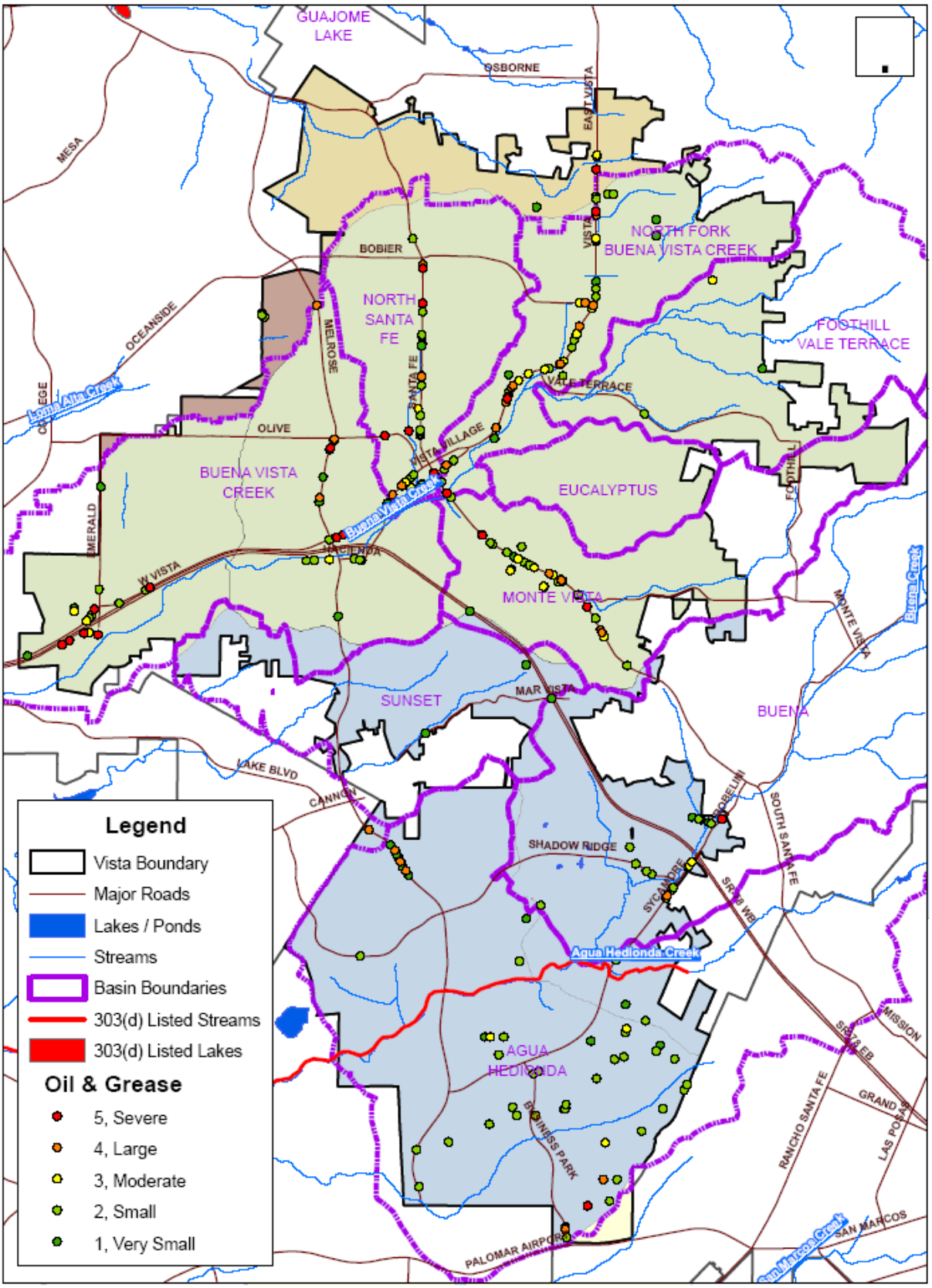

Orange/Yellow = SLR; Green = BV; Red = LA; Blue = AH

FIGURE H-6
BACTERIA PDP SCORES

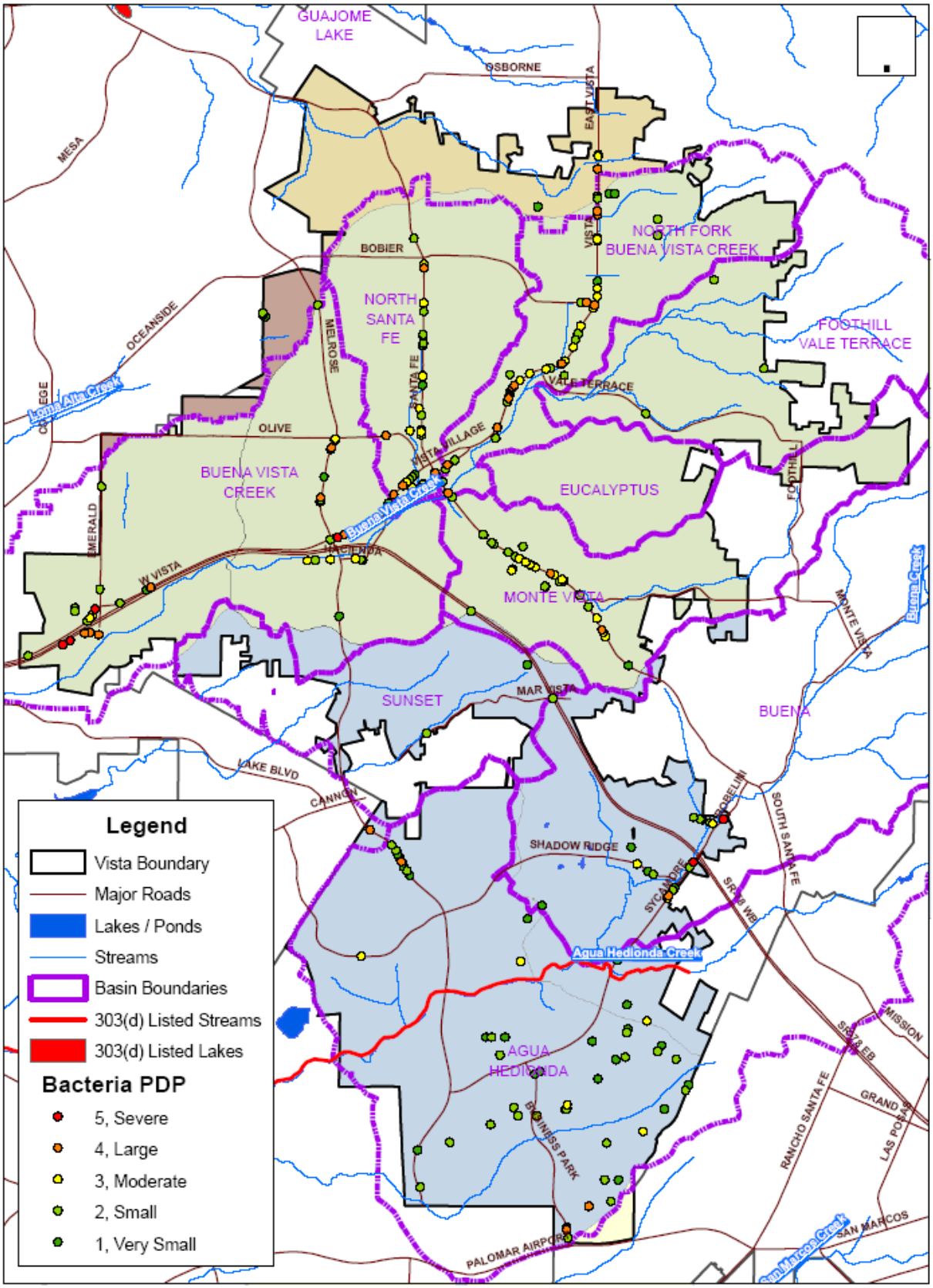

Orange/Yellow = SLR; Green = BV; Red = LA; Blue = AH

CITY OF VISTA

2007-08 JURMP Annual Report

Submitted September 2008

Prepared by:
City of Vista Engineering Department

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

for **Rita L. Geldert**
City Manager
City of Vista

Lawrence D. Pierce
Director of Engineering
City of Vista

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Executive Summary

Introduction

This Annual Report provides information for FY 2008: July 1, 2007, to June 30, 2008. This is a unique reporting period because there were two JURMPs in effect during this period. One JURMP covering the period between July 1st, 2007 through March 23rd, 2008 and a revised JURMP covering the period between March 24th, 2008 through June 30th, 2008.

The City has attempted to report all activities under the 2008 JURMP reporting requirements; however, this was not always possible. As the reporting for this particular reporting period may be confusing, the City has attempted to simplify the information presented by identifying, where appropriate, when the information and data pertains only to the first three quarters of the reporting period and therefore under the 2002 JURMP only.

Program Overview

The City of Vista is located thirty-five miles north of downtown San Diego and seven miles east of the Pacific Ocean. It covers an area of approximately 18.6 square miles between Oceanside and Carlsbad to the west and San Marcos and unincorporated areas of San Diego to the east. The City has a population of about 95,000 people. The majority of the City (55%) is classified as residential. The remaining land use types are categorized as undeveloped land (13%), parks and recreation (9%), industrial (8%), commercial (6%) and agriculture (2%). Other land uses comprise the remaining 7% of the area.

The City of Vista's urban runoff management program is intended to protect water quality during planning for new development, construction, and on-going use of existing development. The reduction of pollutant discharges to the maximum extent practicable from the City's storm drain system is achieved through the implementation of Best Management Practices (BMPs). This includes both structural and non-structural BMPs. The City continues to develop and improve on methods to assess the effectiveness of these BMPs, and feeds this information back into the program planning loop to focus future activities.

The following JURMP program components are covered in this annual report:

- Existing development (Municipal, Industrial, Commercial, and Residential);
- Land use planning for new and redevelopment;
- Construction;
- Illicit discharge detection and elimination;
- Education;
- Public participation;
- Assessment of the JURMP effectiveness;

- Fiscal analysis of FY 06-07 and the upcoming year's budget (FY 07-08);
- JURMP revisions; and
- Special investigations.

Following is a summary of accomplishments during the reporting period and plans for the coming year by JURMP component.

Municipal

Program Strengths

The municipal facilities continued to implement their Storm Water Pollution Prevention Plans and to conduct self-inspections of their facilities. Additionally, all high priority municipal sites were inspected during FY 07-08 by an outside contractor. In-house trainings continued to remind field personnel on proper implementation of appropriate BMPs and other storm water issues. The City also continued to make significant progress in updating both the Storm Drain and Sewer Master Plans. Updated plans will provide prioritization of network repairs and also assist in identifying problem areas that may require more attention from Public Works staff for cleaning, maintenance and/or repairs.

During FY 07-08, approximately 8,000 curb miles of streets were swept, removing an estimated 860 tons of materials. This was accomplished under a new street sweeping contractor. City staff inspected and cleaned approximately 1,427 catch basins removing an estimated 229 tons of materials. This improvement was accomplished through the use of a new City owned vacuum truck. Approximately 1009 tons of materials were removed open channels. In total, 1,248 tons of materials were removed from the City's MS4.

Industrial

Program Strengths

During the reporting period, the City conducted 29 industrial facility inspections. Detailed information on industrial permit issues was provided during inspections and in the report. The inspections included assessment of facility operator knowledge of storm water issues and facility BMP implementation. Additionally, all facilities were assessed using the Pollutant Discharge Potential Assessment form conducted as a pilot during the previous fiscal year. Two facilities were found to require coverage under the Industrial Permit, but had not yet filed a Notice of Intent. Overall, only one facility required a follow-up inspection to verify corrective actions that were recommended during the initial inspection.

Commercial

Program Strengths

The major accomplishment for this component during the reporting year was the inspection of 135 high priority commercial facilities. Only 20 facilities required follow-up inspections due to non-compliance. The City obtained compliance for all 20 facilities. The City aggressively pursued restaurant compliance for grease handling and storage requirements.

Other strengths included the continued use of the knowledge and BMP implementation assessments conducted during inspections, as well as the use of the PDPA form that was conducted during the previous year as a pilot project.

Residential

Program Strengths

The City continued to actively conduct residential outreach as well as complaint investigations to obtain compliance with BMP requirements for high priority residential areas and activities. Also the continued its operation of the household hazardous waste and used oil collection programs. During the reporting period 608,923 lbs of hazardous wastes were disposed of by residents at the HHW facility. These programs continue to play a vital role in the City's efforts to facilitate proper disposal of hazardous wastes

Land Use Planning and Development

Program Strengths

During the reporting period, the City continued to implement its SUSMP requirements for all projects. Since the RWQCB SUSMP Program audits, the City has made a concerted effort towards obtaining conformance with the SUSMP requirements for site design and source control implementation. This has been accomplished and the resulting BMPs have been progressing toward Low Impact Development types. The more natural types of BMPs have also crossed from site design into treatment control BMPs. During the reporting period the City reviewed all projects as part of the urban runoff approval process. Of these, 26 were determined to be priority development projects.

Construction

Program Strengths

The construction component strengths during the reporting period were the site inspections conducted at all priority sites. As City inspectors have become more educated through training sessions, and their own experiences, the inspections and contractor compliance has improved. Once again, there were very few legitimate construction related complaints received during the reporting period.

In addition, program staff spent a considerable amount of time with the Building Department inspectors training them on proper storm water BMPs and key areas to inspect.

Illicit Discharge Detection and Elimination

Program Strengths

The City will report on its Illicit Discharge Detection and Elimination Program in December 2008 to comply with Addendum No. 2 of the City's Municipal Stormwater Permit.

Education

Program Strengths

The City conducted substantial education and outreach efforts to all target audiences during the reporting period. These target audiences include municipal staff, new development and construction communities, residents and the general public, and "underserved communities". A total of 128 municipal personnel were trained on multiple stormwater topics during the reporting period. Several community events held during the reporting provided opportunities for City staff to provide education and outreach concerning household BMPs including household hazardous wastes disposal and used oil recycling.

Public Participation

Program Strengths

The City provided various opportunities to the public to encourage their participation in the development and implementation of its JURMP. The public participation component is largely linked to the City's education component which centers on providing education and outreach to the community regarding its pollution prevention program. The City encouraged proper disposal of HHW through the facilitation of its HHW and Used Oil collection programs. At community events water quality presentations were conducted and outreach materials were distributed to the public. Events can create an atmosphere that facilitates individual and group discussions concerning pollution prevention. Public participation is also encouraged through City staff field observations. During enforcement at residential and commercial sites, City staff emphasized the importance of BMP implementation in preserving receiving water quality. Outreach materials were distributed to aid the City in its compliance and education efforts.

Program Assessment

Program Strengths

The City of Vista continued to use the Copermittee developed JURMP Effectiveness Assessment Framework for its JURMP assessment. This framework provides guidance that aims to move from a permit compliance-based documentation process toward an assessment strategy

that focuses on the ultimate goal of reducing pollutants and improving water quality. Through the planning, implementation and assessment processes, the City works to identify pollutant sources, implement effective BMPs, and refine programs in order to eliminate or reduce the identified pollutants as efficiently as possible.

The City tracks program compliance activities as well as higher levels of program assessment. Knowledge changes were assessed with pre- and post- tests for school children. Knowledge and BMP implementation were assessed by inspectors for municipal, commercial and industrial facilities. Load reductions are estimated for maintenance activities, including street sweeping and storm drain maintenance.

Fiscal Assessment

Program Strengths

The City continued to fund its storm water management program to comply with Permit requirements. Additionally, the City pursued and obtained grants for education and watershed planning activities.

Conclusions

The City has been successfully implementing the JURMP and identifying areas for program refinement. Through the iterative process of implementation and evaluation, these activities and procedures are modified in order to more efficiently and effectively implement BMPs to reduce pollutant discharges in urban runoff to the Maximum Extent Practicable. As the program continues to be implemented, more data will be collected in order to help evaluate the impacts of the program on water quality.

The City's JURMP is a citywide program, implemented by multiple departments and numerous City staff. Successful implementation and continued compliance depends on good communication and direction, education, and continued collaboration. Increased collaboration helps the City implement the JURMP as efficiently and effectively as possible.

Over this next year, the City will be updating and expanding the JURMP in order to comply with newly issued Order No. R9-2007-0001. This will also include updating Watershed and Regional Urban Runoff Management programs. The City will continue to actively participate and collaborate with Copermittees and various stakeholders to update and implement the Carlsbad and San Luis Rey Watershed Urban Runoff Management Plans, as well as the Regional Urban Runoff Management Program currently under development.

1.0 INTRODUCTION

1.1 BACKGROUND

In 2002, the City of Vista (City) developed a Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2001-01 (NPDES Permit CAS0108758). On January 24, 2007, an updated permit, Order No. R9-2007-0001 (Order) was adopted. This new Order requires the City and each Copermittee (as defined in Section B of the Order) to update its JURMP to comply with the new requirements, and to annually submit reports on JURMP implementation. On March 24, 2008, the City submitted an updated JURMP to the RWQCB and began implementation. However, as stated in a letter from the RWQCB, the City took the opportunity to begin implementation of some program elements prior to March 24, 2008.

This Annual Report provides information for FY 2008: July 1, 2007, to June 30, 2008. This is a unique reporting period because there were two JURMPs in effect during this period. One JURMP covering the period between July 1st, 2007 through March 23rd, 2008 and a revised JURMP covering the period between March 24th, 2008 through June 30th, 2008.

The City has attempted to report all activities under the 2008 JURMP reporting requirements; however, this was not always possible. As the reporting for this particular reporting period may be confusing, the City has attempted to simplify the information presented by identifying, where appropriate, when the information and data pertains only to the first three quarters of the reporting period and therefore under the 2002 JURMP only.

1.2 PURPOSE AND OBJECTIVES

The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Orders 2001-01 and R9-2007-0001. This annual report describes the activities conducted by the City during the Fiscal Year and reporting period of July 1, 2007 through June 30, 2008. The City's program is described in its JURMPs, dated February 2002, with subsequent revisions, and March 2008. This annual report is presented in the standardized format developed collectively by the Copermittees.

Section 1 Introduction
Section 2 Development Planning Component
Section 3 Construction Component
Section 4 Municipal Component
Section 5 Industrial and Commercial Component
Section 6 Residential Component
Section 7 Illicit Discharge Detection and Elimination Component
Section 8 Education Component

Section 9 Public Participation Component
Section 10 Fiscal Analysis Component
Section 11 Effectiveness Assessment Component
Section 12 Special Investigations
Section 13 Modifications to the JURMP
Section 14 Conclusions and Recommendations

Appendices

2.0 DEVELOPMENT PLANNING COMPONENT

2.1 INTRODUCTION

The City continued to implement the Land-Use Planning and Development Components of the JURMP to reduce the impacts of new development and redevelopment on storm water quality. Highlights of the City's Land Use Planning Component during FY 2008 include implementation of the pervious and recently updated *Storm Water Standards Manual* and continued progress towards the City's General Plan update.

2.2 LAND USE PLANNING

2.2.1 SOURCE CHARACTERIZATION

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are ones typically associated with development as defined in the City's JURMP and Standards Manual.

2.2.2 PROGRAM IMPLEMENTATION

The City's General Plan update was initiated in 2007 and continues to make progress towards a spring 2010 completion. The elements and complete schedule can be found in the City's 2008 JURMP submitted in March 2008.

2.3 ENVIRONMENTAL REVIEW PROCESS

The City updated its environmental review process to incorporate a review of Low Impact Development design measures consistent with Order R9-2007-0001 permit requirements effective March 2008 as stated in the City's 2008 JURMP. The overall environmental review process has not changed and remains as stated below:

> The City's Environmental Review Process begins with the Initial Study Checklist (CEQA Guidelines, Appendix G). Based on the results of the checklist, the City will require the project applicant to provide additional studies to elaborate on the environmental impacts or recommend denial of the permit that the project applicant is seeking.

2.4 DEVELOPMENT PROJECT APPROVAL AND VERIFICATION PROCESS

2.4.1 SOURCE CHARACTERIZATION

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are ones typically associated with development as defined in the City's JURMP and Standards Manual.

2.4.2 BEST MANAGEMENT PRACTICE REQUIREMENTS

The City completed BMP requirement modifications during the reporting period. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001. These modifications were documented in the 2008 City of Vista JURMP and the reader should direct their attention to that document for details.

The primary modifications were related to the emphasis on Low Impact Development Site Design BMP requirements. Additionally, the City modified its Stormwater Standards Manual to reflect these BMP requirement modifications.

2.4.3 PROGRAM IMPLEMENTATION

2.4.3.1 SUSMP

The City maintains listings of development projects that have been initiated and completed during the reporting period. A Storm Water Applicability Checklist is a required submittal during the project application process as a part of the urban runoff approval process. City project reviewers do not approve construction drawings until the recommendations of the Storm Water Management Plans are incorporated onto the plans. This is the system in place to ensure that the projects incorporate all requirements of the urban runoff approval process. The tracking system in place is an Accela database which was initiated in January 2008.

During FY 2008, the City reviewed all projects as a part of the urban runoff approval process. Of these, 26 were determined to be priority development projects. Appendix A contains a listing of the projects for which SUSMP priority development project requirements were applied during FY 2008. The City confirms that all applicable SUSMP BMP requirements were applied to all priority development projects during the reporting period. The applicability and confirmation of these requirements is tracked in an Accela database. The City evaluated all of its Capital Improvement Program (CIP) Projects as part of the urban runoff approval process. None of the CIP projects were determined to be priority development projects.

As a result of the urban runoff approval process, no projects received a SUSMP waiver during FY 2008. The City does not have a waiver program for SUSMP requirements. Additionally, no projects were allowed to implement low efficiency treatment control BMPs with their projects unless they were used in conjunction with a medium or high efficiency BMPs.

Located in Appendix B is a synopsis of a development project that was conditioned to meet SUSMP requirements. Included in the synopsis are the base project information and a description of the required BMPs.

2.4.3.2 TREATMENT CONTROL

A watershed-based database has been implemented to track and inventory treatment control BMPs and maintenance within the jurisdiction. See Appendix C for an updated Treatment Control BMP inventory. During the reporting period, the City initiated its field verifications and inspections of the established inventory.

During FY 2008, 54 private development projects listed in the City's inventory were visited for treatment control BMP inspections. Of the remaining 25 projects in the inventory, nine were still under construction, eight were still in the plan check phase and eight did not develop plans, i.e., the project is on hold in the development review phase. The following table identifies the results of the site visits.

Table 2-1 Treatment Control Inspection Results

BMP Type	Total No.	Well-Maintained – No Visible or Apparent Problems	Could not be Located	Other Maintenance Issues
Drainage Inserts	103	23	47	33
Bio-Filters	4	4	-	-
Extended Detention Basins	15	13	-	2
Hydrodynamic Vortex Separator	7	1	-	6
Media Filters	2	2	-	-
Vegetated Swales	39	29	-	10
Wet Vault	5	3	-	2
Other	2	-	-	2

The City will be following up with sites that possess BMPs in need of maintenance as necessary.

During the inspection process it was determined that some treatment control BMPs could not be located. The City will be conducting research regarding these projects and require installation of treatment control BMPs as required by each project's maintenance agreement.

In addition to City conducted inspections, the Municipal Permit requires annual verification of operation and maintenance of treatment control BMPs installed within the City's jurisdiction. Annual verification must be provided by the party responsible for treatment control BMP maintenance and must be obtained by the City prior to the start of the wet season (October 1st). Since the new City's 2008 JURMP did not go into effect until March 2008, towards the end of the wet

season, the City did not require annual maintenance verification of treatment control BMP maintenance prior to the 2007-2008 wet season, which began October 1, 2007. The City did, however, begin the process of obtaining annual BMP maintenance verifications for FY 2009.

A BMP maintenance verification form and letter were developed in FY 2008, see Appendix D for an example. Using the property owner names and addresses recorded in the City's BMP database, BMP maintenance verification forms will be mailed to all the projects included in the City's BMP database in early FY 2009. As maintenance verification forms are returned to the City, results will be documented in the City's BMP Database and summarized in the next annual report.

2.4.3.3 Hydromodification Management Plan

The City has been involved in the Hydromodification Management Plan (HMP). The City staff was involved the two workgroups formed to develop the HMP. One workgroup is a Copermittee group whose responsibilities are to oversee the HMP development and guide the consultant team's work. The other workgroup is the Technical Advisory Committee whose responsibilities include providing technical guidance to the consultant team. The City is an active participant in both groups and in the review of all documents that are generated as a part of the HMP development.

Interim HMP requirements were established during the reporting period. Since the HMP requirements took affect, the City has not had any priority development projects greater than 50 acres triggering HMP requirements.

2.4.3.4 Enforcement

No enforcement occurred during FY 2008 related to Land Use Planning and Development.

2.4.3.5 Education and Training

City staff receives training aimed at reducing or eliminating the discharge of pollutants from specific activities (activity-specific training) and in general storm water issues and requirements. On February 29, 2008, the Community Development Department, including Planning and Land Development, received in depth training related to the Land Use Planning and Development Component of the City's JURMP. The training was attended by the entire professional staff of 12 and included topics of:

- Laws and regulations
- BMPs
- Urban runoff concepts
- LID BMP techniques
- Watershed concepts
- Hydromodification

In addition to the trainings noted above, land development staff received copies of the City's URMP Chapter 4 covering staff responsibilities.

3.0 CONSTRUCTION COMPONENT

3.1 INTRODUCTION

The City continued to implement the Construction Component of its Urban Runoff Management Plan (URMP) in FY 2008 to prevent and reduce pollutants in runoff from construction activities within the City.

3.2 SOURCE CHARACTERIZATION

During the entire reporting period, the City maintained a regularly updated construction site inventory. Through the reporting period, the City met the minimum JURMP requirement of making monthly updates, additions and deletions of sites, to the inventory.

The City's inventory is managed in Microsoft Access, an electronic database. Additions to the inventory are made when projects enter the construction phase of their development process. The project information is entered into the database along with the project's inspection frequency priority. The inspection forms that trigger inspections are initiated from the inventory based on the inspection frequency priority assigned to each project. Deletions are entered into the database when inspection forms are returned by the inspectors with notations that the project is complete.

3.3 UPDATES TO ORDINANCES AND APPROVAL PROCESSES

The City completed ordinance modifications during the reporting period. These changes were completed in order to provide the authority to require development projects to comply with the City of Vista's 2008 JURMP requirements. These modifications were documented in the 2008 City of Vista JURMP and the reader should direct their attention to that document for details.

3.4 BEST MANAGEMENT PRACTICE REQUIREMENTS

The City completed BMP requirement modifications during the reporting period. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001. These modifications were documented in the 2008 City of Vista JURMP and the reader should direct their attention to that document for details.

3.5 PROGRAM IMPLEMENTATION

3.5.1 CONSTRUCTION URBAN RUNOFF APPROVAL PROCESS

All new projects are required to submit plans and apply for a Stormwater permit as part of the urban runoff approval process, which are checked for compliance with municipal permit requirements. Tracking is done through an Accela database, which was initiated in January 2008.

3.5.2 BMP IMPLEMENTATION

Through the development approval and construction inspection processes, the City confirms that all designated BMPs were required to be implemented and implemented throughout the reporting period for all construction sites. During the active construction phase of projects, if BMPs were not implemented or properly implemented, the inspection program identified such deficiencies and required implementation and/or modifications to be completed.

3.5.3 MAXIMUM DISTURBED AREA FOR GRADING

The City began implementing the maximum disturbed area for grading activities on March 24th, 2008. From March 24th, 2008 through June 30th, 2008, the City did not have any projects in the development process, planning phase through construction phase, that met the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.4 ADVANCED TREATMENT SITES

The City began implementing the advanced treatment requirements for grading activities on March 24th, 2008. From March 24th, 2008 through June 30th, 2008, the City did not have any projects enter the development process that met the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.5 INSPECTIONS

Construction sites are required to be inspected based on the frequency schedule set forth in the City's URMP. Inspectors from the Engineering Department inspect BMPs associated with grading permits (private projects) and public projects.

During FY 2008, the City inspectors did not conduct all the documented stormwater specific BMP inspections per the frequencies described in the JURMP. The City inspectors were performing inspections on site during those weeks of the missing stormwater specific inspections and although not formally documenting stormwater inspections, part of their inspection routine is to evaluate stormwater BMPs for adequate implementation thereby ensuring that the sites are adequately protected against non-storm water and/or pollutant discharges. Appendix E contains examples of non-stormwater specific BMP inspections that demonstrate that inspectors reviewed BMPs during non-stormwater specific inspections. These examples include Daily Reports filed by an inspector related to stormwater BMP observations and corrective actions given to the contractors.

To address this issue of missed documented stormwater specific inspections, training was conducted in both August and September 2008 at which emphasis on appropriately documenting and tracking inspections were stressed to the inspection staff. Additionally, the City staff has taken immediate steps to improve

the inspection tracking process, primarily by enhancing the electronic database system used to track inspections. Marked improvements will be demonstrated in the next Annual Report.

Appendix E lists all of the construction projects active during the reporting period and the following corresponding information on a project by project basis:

- Project Location
- Storm Water Priority (Inspection Frequency)
- # of weeks active in the Rainy Season
- # of documented Stormwater inspections in Rainy Season
- # of documented Stormwater inspections in Dry Season
- Total # of documented Stormwater inspections for the site during the reporting period
- # of non-Stormwater inspections in Rainy Season
- # of non-Stormwater inspections in Dry Season

During FY 2008, 31 construction sites were in the active construction phase: 8 high priority; 6 medium priority; and, 17 low priority. In total, the Engineering Department conducted over 90 stormwater specific inspections throughout the reporting period.

In order to ensure that inspections addressed all required inspection steps, the inspectors used a standard computer generated form for inspections.

3.5.6 CONSTRUCTION ENFORCEMENT

Inspectors will generally coordinate with the contractor to immediately correct any storm water issues or potential violations. If issues are not resolved and violations occur, enforcement escalates. Corrective Notices were issued through direct correspondence with the responsible contractors. The City is currently improving its electronic tracking systems that will allow enforcement actions to be tallied and summarized for reporting purposes.

As a result of the investigations conducted by the Water Quality Protection Program the following enforcement actions were taken at construction sites.

Table 3-1. FY 2008 Summary of Code Compliance Enforcement Actions for Construction Activities

Construction Enforcement Actions Taken	Number Issued in FY 2008
Civil Penalty	0
NOV	2
Citation	0

4.0 MUNICIPAL COMPONENT

4.1 INTRODUCTION

This section describes the implementation of the Municipal Component of the JURMP during FY 2008. The program section was implemented to: (1) reduce municipal discharges of pollutants from the MS4 to the MEP, and; (2) prevent municipal discharges from the MS4 from causing or contributing to a violation of water quality standards.

This section addresses two types of municipal operations: fixed or stationary facilities; and field activities. A fixed facility is a specific building or physical location at which municipal operations occur. An example is a corporate yard. Conversely, field activities are actions or programs that staff or City contractors implement as a part of their work duties at various locations across the City. An example is street maintenance.

4.2 MUNICIPAL ACTIVITIES

4.2.1 SOURCE CHARACTERIZATION

During the reporting period, there were no additions or deletions to the City's municipal activity inventory, including the: MS4 system; street sweeping routes; wastewater collection system; or, special event venues. Additionally, there were no changes to the prioritization of the City's storm drain facilities.

4.2.2 BEST MANAGEMENT PRACTICE REQUIREMENTS

During the reporting period, the City made changes to its BMP requirements for the municipal activities as a part of the 2008 JURMP update. These changes were primarily focused on special events requirements. For more details on the changes, please see the 2008 JURMP submitted in March 2008.

The required BMPs for all municipal activities were implemented and required to be implemented through contracts, agreements or permits.

4.2.3 PROGRAM IMPLEMENTATION

During the reporting period, the City made changes to its municipal activities program implementation as a part of the 2008 JURMP update. The changes were focused on inspections and cleaning of storm drain facilities, street sweeping frequencies, and special events inspections. For more details on the changes, please see the 2008 JURMP submitted in March 2008.

The following sub-sections discuss the program implementation for the municipal activities programs.

4.2.3.1 MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PROGRAM

During the reporting period, the City made changes to its program implementation as a part of the 2008 JURMP update. The changes were focused on inspections and cleaning of storm drain facilities. For more details on the changes, please see the 2008 JURMP submitted in March 2008.

The following table summarizes the inspection and cleaning program during FY 2008.

Table 4-1 MS4 Inspection and Cleaning Summary

Item	Quantity	Inspected	Cleaned	Amount Removed
Debris Curtain in Buena Vista Creek*	1	12 times	4 times	7.5 tons
Oil Separators*	4		1 time ea.	2.4 tons
Insert Baskets (City Maintained)*	2	2 times	2 times	0.3 tons
Insert Baskets (Contractor Maintained)*	6	4 times	4 times	0.28 tons
Catch Basins and Inlets	1427	1.8 times (some inspected twice)	1.8 times (some cleaned twice)	228.5 tons
Total distance of MS4 Pipe	37 miles	-	Unknown	Unknown
Total distance of Open Channels	5.3 miles (improved)	5.3 miles**	4.7 miles	1,009.5 tons

*Municipal Treatment Controls
**All lengths of open channels with anthropogenic litter.

4.2.3.2 STREET SWEEPING PROGRAM

During the reporting period, the City made changes to its program implementation as a part of the 2008 JURMP update. The changes were focused on street sweeping frequencies based on the relative generation of trash and debris on streets. For more details on the changes, please see the 2008 JURMP submitted in March 2008.

The following table summarizes the street sweeping program during FY 2008.

Table 4-2 Street Sweeping Summary

Volume of Trash Generation	Street Types	Total Curb-Miles	Minimum Frequency	Minimum Frequency Achieved?
High	Commercial	68	2X per month	Yes
Moderate	Residential	88	1X per month	Yes
Low	Other Streets and Parking Facilities	7	1X per year	Yes

The total amount of curb-miles swept during FY 2008 was 8,000 miles. The City sweeps 7 of its 18 municipal parking lots approximately once per week. The total amount of material collected by the street sweeping program for the reporting period was 850 tons for the streets and 10 tons for the parking facilities.

4.2.3.3 Pesticide, Herbicide and Fertilizer Management

During the reporting period, the City made changes to its program implementation as a part of the 2008 JURMP update. For more details on the changes, please see the 2008 JURMP submitted in March 2008. The City confirms that appropriate BMPs were implemented by the City staff with respect to the Pesticide, Herbicide and Fertilizer Management requirements of the JURMP.

4.2.3.4 Wastewater Element

In an effort to maintain the wastewater collection system and to identify potential problem areas in the system, the City conducted 32 miles of video inspection, CCTV, of the wastewater system. The video inspection program is in place to prevent and/or eliminate infiltration from the wastewater system to the MS4. The snap shot video program is on-going and during the reporting period, did not identify any leaky systems.

Of the approximately 311 miles of the wastewater collection system, approximately 303 miles were cleaned as part of the regular schedule of inspection and cleaning.

4.2.3.5 Special Events

During the reporting period, the City made changes to its program implementation as a part of the 2008 JURMP update. The changes were focused on BMP requirements for special events as well as inspection requirements for the City to ensure that the MS4 is protected during such events. For more details on the changes, please see the 2008 JURMP submitted in March 2008.

During the reporting period between March 2008 and June 30, 2008, the City had three special events that required BMPs to be implemented. The City confirmed BMP implementation through a two-part process: first by requiring special event permit applicants to receive and review a supplemental stormwater BMP packet; and, secondly by performing inspections after the event to ensure that clean up is appropriate to prevent pollutants from entering the MS4.

4.2.3.6 Non-Emergency Fire Fighting Flows

During the reporting period, the City continued to implement the non-emergency fire fighting BMPs as described in the Fire Department SWPPP. For more details on the BMPs or non-emergency fire fighting activities conducted by the City's Fire Department, please see the 2008 JURMP submitted in March 2008.

4.3 MUNICIPAL FACILITIES

4.3.1 SOURCE CHARACTERIZATION

During the reporting period, the City modified its municipal facilities and activities inventory on two separate occasions. The first was modifications came as a part of the 2008 JURMP development. For more details on the changes, please see the 2008 JURMP submitted in March 2008. The second occasion was after submittal of the City's 2008 JURMP. The modifications were focused on modifications to the types of activities and pollutants identified at each individual site and justified by the site inspections and evaluation of what is actually present at the sites. The revised inventory can be found in Appendix F.

4.3.2 INSPECTIONS

The City conducted facility inspections for each of its high priority facilities during FY 2008. The purpose of these inspections was to ensure that BMPs (including those for pollution prevention) were being implemented. Of the 30 high priority municipal areas, 28 are actual municipally operated sites/facilities, while the remainders are networks including: (1) streets and roads; and, (2) the sanitary sewer system.

Per the JURMP, the City formally inspects all high priority municipal sites. Municipal sites are considered to be fixed facilities where high priority municipal activities occur. The networks, as described above, are routinely inspected under various programs such as street sweeping, streets maintenance, MS4 inspections and cleaning and the sanitary sewer system video inspection and cleaning program. Formal inspection forms are not generated for the general routine inspections performed of these municipal network areas.

Table 4-3 provides a summary of the formal annual stormwater inspections performed for the municipally operated sites/facilities by the City's inspection contractor.

The results of the inspections can be found in Appendix G. For each facility, recommendations for follow-up corrective actions were listed. In general, the corrective actions included: asphalt repairs; cleaning of accumulated oils from parking lots; closing of dumpster lids; and, good housekeeping practices. The corrective actions were implemented after the inspections were completed and verified by City staff.

4-3 Summary of Annual Stormwater Inspections for Municipal Facilities

MUNICIPAL FACILITY	RESPONSIBLE DEPARTMENT	INSPECTION DATE
Brengle Terrace Maintenance Yard	Parks and Community Services	6/24/08
Bub Williamson Park	Parks and Community Services	6/23/08
Civic Center Park	Parks and Community Services	6/23/08

MUNICIPAL FACILITY	RESPONSIBLE DEPARTMENT	INSPECTION DATE
Moonlight Amphitheater	Parks and Community Services	6/24/08
Rancho Buena Vista Park	Parks and Community Services	6/23/08
Townsite Park	Parks and Community Services	6/24/08
The Wave Waterpark	Parks and Community Services	6/23/08
Main St @ Indiana Parking Lot	Public Works & Parks and Community Services	6/23/08
523 S. Santa Fe Ave Parking Lot	Public Works & Parks and Community Services	6/23/08
Satellite Yard	Public Works Department	6/19/08
Avo Playhouse	Parks and Community Services	6/23/08
Breeze Hill Park	Parks and Community Services	6/23/08
Indian Rock	Parks and Community Services	6/24/08
Broadway @ Haynes Parking Lot	Public Works & Parks and Community Services	6/23/08
Main St @ Michigan Parking Lot	Public Works & Parks and Community Services	6/23/08
300 Main St Parking Lot	Public Works & Parks and Community Services	6/23/08
W. Vista Way @ Emerald Pkg Lot	Public Works & Parks and Community Services	6/23/08
Public Works Yard (Main)	Public Works Department	6/24/08
HHW Facility	Public Works Department	6/20/08
Raintree Park	Parks and Community Services	6/24/08
Shadowridge Park	Parks and Community Services	6/23/08
Thibido Park	Parks and Community Services	6/23/08
Wildwood Park	Parks and Community Services	6/23/08
Cypress Detention Basin	Public Works	6/30/08
Monte Vista Basin	Public Works	6/30/08
Brengle Terrace Basin	Public Works	6/30/08

4.4 ENFORCEMENT

There were no enforcement actions taken at any municipal activities or facilities during FY 2008.

5.0 INDUSTRIAL AND COMMERCIAL COMPONENT

5.1 INTRODUCTION

The objective of this component is to reduce industrial and commercial discharges of pollutants from the MS4 to the MEP and prevent industrial and commercial discharges from the MS4 from causing or contributing to a violation of water quality standards. To accomplish the objective during the FY 2008 reporting period, the City provided education and outreach, conducted inspections, and used enforcement actions when necessary. Commercial facilities include facilities and activities that provide services, such as cleaning, repair, entertainment, or food service; in contrast to industrial facilities where the primary activity involves the conversion of raw materials into an intermediate or final product, often with the generation of by-products and waste. Activities associated with various industrial and commercial businesses have the potential to contribute pollutants to the MS4. Information on Mobile businesses is included in section 5.3.

5.2 STATIONARY INDUSTRIAL AND COMMERCIAL SITES / SOURCES ELEMENT

5.2.1 BACKGROUND

In the City's JURMP, the City compiled a list of industrial and commercial sources and developed BMP requirements, including pollution prevention measures, for each source and activity. The City also developed a Stormwater Standards Manual which established a set of minimum BMPs for industrial and commercial businesses.

Facilities such as restaurants and automotive repair facilities have a significant potential to pollute storm water runoff. These facility types make up the majority of the City's inventory and high TTWQ list. Several restaurant and automotive facilities were inspected as part of the City's required annual inspections program. During inspections several activities were evaluated for BMP compliance including grease and waste management, housekeeping, and employee training.

During the FY 2008 reporting period, the City notified facilities of the City's BMP requirements through its inspection program and from industrial and commercial investigations that were generated from City staff follow up inspections, proactive enforcement, and public reports. The City used various enforcement mechanisms to ensure compliance at industrial and commercial facilities. The City provided education and outreach to promote further awareness regarding the City's pollution prevention program and BMP requirements.

5.2.2 SOURCE CHARACTERIZATION

The City of Vista modified its stationary industrial and commercial inventory as a result of inspections conducted during FY 2008. Several businesses were found to have moved and were either vacant or replaced with another business. The

updated watershed based Inventories of industrial and commercial facilities within the City of Vista are included in Appendix H and I, respectively.

5.2.3 Best Management Practices

The City completed BMP modifications during the reporting period. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001. These modifications were documented in the 2008 City of Vista JURMP and the reader should direct their attention to that document for details.

5.2.4 Program Implementation

During the FY 2008 reporting period, the City of Vista conducted inspections and provided education and outreach so that regulated stationary businesses were aware of the City's BMP requirements. The City inspected a segment of its inventoried businesses to evaluate compliance with its BMP requirements. City staff also conducted numerous storm water inspections generated from public reports and City staff field observations. At facilities where storm water violations were observed City staff required responsible parties to implement the required BMPs. The City provided various storm water educational brochures and guides to facility representatives which served as tools for managing runoff at their facility.

5.2.4.1 Best Management Practices

Through the City's required annual inspections and stormwater investigations, the City confirmed that all designated BMPs were required to be implemented and implemented throughout the reporting period for all stationary facilities. City staff required BMP implementation at facilities where BMP violations were observed. In many instances, follow-up inspections were conducted to verify BMP compliance.

5.2.4.2 Inventory and Inspections

The City of Vista modified its stationary industrial and commercial inventory as a result of inspections conducted during FY 2008. As of June 30th, 2008, the total number of inventoried industrial and commercial facilities in the City of Vista is 213 and 723 (936 total), respectively. Several businesses were found to have moved and were either vacant or replaced with another business. In the City's 2008 JURMP, the City initially identified a total of 785 stationary industrial and commercial facilities.

In determining what facilities received an inspection the City used a prioritization process which incorporated several factors which are listed in the City's JURMP and Municipal Storm Water Permit (Order No. 2007-0001). Some of the main factors include compliance history, site's degree of exposure of storage and activities, and its proximity to a receiving water body. Using this process, the City identified each facility as a low, medium, or high threat to water quality (TTWQ).

The City of Vista decided it was going to inspect 100 % of its high TTWQ facilities in FY 2008 and an additional 21 sites that have General Industrial Permit coverage, but are not identified as high TTWQ. Of the initial 785 facilities, the City inspected 29 industrial facilities and 135 commercial facilities for a total of 164 facilities (21% of the entire inventory). This meets the requirement set forth in the City's Municipal Storm Water Permit (Order No. 2007-0001) which requires that Copermittees inspect at least 20% of its inventory during the first reporting period of the Permit (FY 2008). All facilities selected for inspection were visited or accounted for. Accounted for means that the business was inspected, assessed during a site visit and found to not need an inspection, or found to not need an inspection when called to schedule a site visit. Facilities that were inspected during FY 2008 are included in Appendix H and I.

The City of Vista confirmed that all inspections conducted addressed all the required inspection steps to determine full compliance. Inspection reports which accounted for the City's BMP requirements were completed for all facilities that were selected for inspection. A copy of the commercial and industrial inspection form is included in Appendix O. Follow up inspections were conducted at some facilities to ensure corrective actions identified during the initial inspection were implemented. D-Max Engineering, Inc. submitted to the City a Storm Water Compliance Inspection Program report which included copies of all the inspection reports and confirmed that all facilities selected for inspections were inspected.

5.2.4.3 ENFORCEMENT

During the reporting period, City staff used enforcement at stationary industrial and commercial facilities to gain compliance. The City confirmed that the required BMPs were implemented in all of its enforcement cases. City staff observed 66 stormwater violations, the most common being illegal discharges and connections, and BMP violations. For illegal discharge and connection cases, City staff required responsible parties to correct the violation immediately. Follow-up inspections were necessary to verify compliance in cases involving BMP violations. Enforcement mechanisms used to gain compliance included verbal and written warnings (Letters and Notice of Violation Forms). City staff issued 45 verbal warnings, 16 N.O.Vs, and 5 citations. A summary of enforcement actions is included in Table 5.1. In their warnings, City staff referenced the applicable BMP sections of the City's Stormwater Management and Discharge Control Program Ordinance (Municipal Code Chapter 13.18) and Stormwater Standards Manuals. A summary of all the City's enforcement cases is included in Appendix J.

Table 5-1 Enforcement Cases for Stationary Facilities and Mobile Businesses

	Referral Source				
	Inspections	**Complaints (reported to City)**	**Proactive (Municipal Staff observations)**	**Mobile Businesses**	**Totals**
# of Violations	20	22	24	9	75
# of Enforcement Actions	20	22	24	9	75
Types of Enforcement Actions	Verbal Warning = 54, NOV =16, Citation = 5				

During the reporting period, the City contracted with D-Max Engineering, Inc. to conduct its industrial inspections. In addition to looking at general BMP implementation, NAICS codes, and/or SIC codes the Industrial Permit Compliance status was evaluated including identifying facilities who were found to require coverage under the Industrial Permit, but had not yet filed a Notice of Intent (NOI).

Two businesses were found to require coverage under the Industrial Permit, but had not yet filed a Notice of Intent (NOI):

- Western CNC, Inc. - Located at 1001 Park Center Drive
- Artistic Tile and Stone – Located at 325 South Santa Fe Avenue

During the inspection of these facilities, facility representatives were instructed to file a Notice of Intent with the Regional Water Quality Control Board. The City plans on contacting the facility representatives and Regional Water Quality Control to ensure the necessary documents have been filed.

5.3 MOBILE SOURCES ELEMENT

5.3.1 BACKGROUND

The regulation of mobile businesses is an important aspect of the City's Storm Water Pollution Prevention Program. It is also a requirement in the City's Municipal Storm Water Permit (Order No. 2007-0001). Mobile businesses, like stationary industrial and commercial facilities, have the potential to pollute storm water and illegal discharges tend to be the major area of concern. Similarly, mobile businesses like stationary facilities need to be regulated and be required to implement best management practices in their daily operations. Since it can be difficult to identify when and where mobile operations are occurring the regulation of mobile businesses can be a challenge. Generally, storm water investigations for mobile businesses are conducted as a result of City staff observations in the field and from public reports. City staff implements enforcement procedures similar to that of stationary facilities including providing

education and outreach and requiring implementation of the City's required BMPs. All BMPs required for stationary facilities are also required for mobile businesses. The mobile businesses known to operate in the City of Vista are included in the City's stationary commercial inventory (Appendix H and I). The City annually updates its mobile sources inventory using available business licenses and as a result of reported incidents and observations made by City staff.

5.3.2 Source Characterization

For the FY 2008 reporting period, the City modified its mobile sources inventory to include additional mobile businesses that were identified by the City. The mobile businesses known to operate in the City of Vista are included in the City's Industrial and Commercial Inventory (Appendix H and I).

5.3.3 Best Management Practice Requirements

The City completed BMP modifications during the reporting period. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001. These modifications were documented in the 2008 City of Vista JURMP and the reader should direct his or her attention to that document for details.

5.3.4 Program Implementation

During FY 2008 reporting period, the City of Vista conducted storm water investigations and provided education and outreach so that regulated mobile businesses were aware of the City's BMP requirements. Mobile businesses and their operations are difficult to detect due the "mobile" aspect of their business. Similar to the City's stationary facilities program, the City learned of mobile business storm water violations through public reports and through City staff observations. In the latter, the City proactively enforced its BMP requirements when violations were observed in the field. This proves and continues to be an important mechanism the City uses to regulate mobile businesses. For mobile businesses, the City follows the same enforcement approach as with stationary facilities which include providing education and outreach and requiring appropriate BMP implementation. As stated in the City's 2008 JURMP, the City intends to participate in a watershed or regional inventory and/or tracking system for mobile businesses as it is developed by the San Diego County Copermittees.

5.3.4.1 Best Management Practices

Through stormwater investigations, the City confirmed that all designated BMPs were required to be implemented and implemented throughout the reporting period for all mobile businesses. City staff required BMP implementation at mobile business sites where BMP violations were observed. In many instances follow-up inspections were conducted to verify BMP compliance

5.3.4.2 ENFORCEMENT

During the reporting period, City staff used enforcement at mobile business sites to gain compliance. The City confirmed that the required BMPs were implemented in all of its enforcement cases. City staff observed 9 stormwater violations involving mobile businesses. Enforcement mechanisms used to gain compliance included verbal and written warnings (Letters and Notice of Violation Forms). City staff issued 9 verbal warnings to mobile businesses for the violations referenced above. In their warnings, City staff referenced the applicable BMP sections of the City's Stormwater Management and Discharge Control Program Ordinance (Municipal Code Chapter 13.18) and Stormwater Standards Manuals. A summary of all the City's enforcement cases is included in Appendix J.

6.0 RESIDENTIAL COMPONENT

6.1 INTRODUCTION

The City continued to implement the residential component of the City's JURMP to prevent or reduce pollutants in runoff from residential land use areas and activities. To achieve this goal, the City conducted residential education and outreach efforts, promoted its household hazardous waste and used oil collection programs and used enforcement when necessary.

6.2 SOURCE CHARACTERIZATION

During the reporting period, the City focused on all high threat to water quality residential areas and activities. These areas and activities are listed in the City's 2008 JURMP.

6.3 BEST MANAGEMENT PRACTICE REQUIREMENTS.

The City completed BMP modifications during the reporting period. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001. These modifications were documented in the 2008 City of Vista JURMP and the reader should direct his or her attention to that document for details.

6.4 PROGRAM IMPLEMENTATION

To manage runoff from residential sites the City uses enforcement and provides education and outreach to residents.

During the reporting period, the City required and verified BMP compliance at residential sites. These efforts were conducted primarily through stormwater investigations resulting from public reports and City staff observations in the field. Corrective actions were required at sites where BMP violations were observed and City staff conducted follow-up inspections to verify compliance. City staff used enforcement actions including verbal and written warnings to gain compliance at residential sites.

The City believes education and outreach plays a vital role in its management of urban runoff from residential sites. During the reporting period, the City provided education and outreach to residents through stormwater investigations, community events, the City's Newsletter (Inside Vista) and the City's website.

6.4.1 REGIONAL RESIDENTIAL EDUCATION PROGRAM

Under the City of Vista's Municipal Storm Water Permit (Order No. 2007-0001 / F.1) the City is required to collaborate with other San Diego County Copermittees to develop and implement a regional residential education program. The focuses of the program are included in Section F.1 of the Permit. A program was developed and implemented on March 24, 2008.

During the reporting period, the regional stormwater outreach subcommittee developed a Regional Residential Education Plan to accomplish program goals. The outreach subcommittee consists of representatives from San Diego County Copermittees. The Plan serves as an implementing document that outlines program goals and strategies over the five year permit cycle. The goals of the plan are to increase public awareness and knowledge, improve attitudes toward stormwater pollution and provide a foundation for changing behaviors that contribute to stormwater pollution. The Plan is included in Appendix K.

Goals for the next reporting period include developing a five year implementation schedule. This schedule will be designed to provide more detail on the implementation of the Regional Residential Education Plan.

6.4.2 Best Management Practices

Through residential stormwater investigations conducted by City staff, the City confirmed that all designated BMPs were required to be implemented and implemented throughout the reporting period. City staff required BMP implementation where BMP violations were observed. Follow-up inspections were conducted to verify BMP compliance.

Household Hazardous Waste Collection Center

The City of Vista continued to provide its residents with a household hazardous waste (HHW) collection facility at the Auxiliary Corporation Yard at 1165 East Taylor Street, as well as the option of HHW curbside pickup. The facility is open to Vista residents and operates every Saturday from 9:00 am to 3:00 pm. Residents may dispose of a variety of wastes including paints, chemicals, u-wastes, e-wastes, automotive wastes, home generated sharps, and pharmaceutical wastes. The City's curbside pickup program offers free door-to-door collection services to citizens 65 or older and to households possessing a registered handicap placard. As detailed in Table 6.1, a total of 608,923 lbs of HHW were disposed of by residents during the reporting period. Information on the types and amounts of HHW that were disposed of is included in Appendix L.

During the reporting period, education and outreach played a major role in promoting the HHW collection facility and facilitating the proper disposal of HHW. Educational brochures on HHW disposal were provided for distribution at several City facilities visited regularly by the public including the City Hall, City Public Works, and City Engineering lobbies. City staff provided education and outreach during enforcement efforts that related to hazardous waste spills and BMP violations. Community events also provided opportunities for the City to provide education and outreach on HHW disposal. At event booths, City staff conducted water quality presentations that included discussions on how to properly dispose of HHW. HHW literature and promotional items were also made available to the general public at events. The City included a storm water article in the City's fall 2007 Newsletter that contained information about the collection facility and

procedures on how to dispose of HHW. The City's website (www.cityofvista.com) also contains information on HHW disposal.

Used Oil and Filter Collection Programs

The City also offers residents options for disposing of used oil, filters, and other oil products. At certified used oil collection centers and used oil filter collection events, residents may dispose of used oil, filters, and other oil products. Several certified used oil collection centers operated during the reporting period (Table 6.2). These services are often free to Vista residents from funding provided through the City's used Oil Block Grant. As detailed in Table 6.1, a total of 63, 773 gallons of used oil were disposed of by residents at the certified collection centers. The certified collection centers located in the City of Vista are included in Table 6.2. Also, two used oil filter collection events were hosted at Kragen Auto Parts stores (January 26, 2008 and June 28, 2008) during the reporting period. A total of 170 used oil filters were disposed of during the events. As Kragen Auto Parts stores are certified used oil drop off centers, these events further promoted awareness to residents regarding the proper disposal of used oil.

To facilitate these programs, the City continued its contract with the Solana Center for Environmental Innovation. Solana Center efforts consist of actively reaching out to the Vista residents to educate and inform them about used motor oil and oil filter recycling and working with the collection centers to best manage the used oil and wastes. During several community events held during the reporting period, Solana staff provided education and outreach to residents regarding HHW and used oil recycling. These events included the Rod Run Automotive, Dimension One Spa Health and Wellness Fair, Kragen Auto Parts Used Oil Filter Events (two events), and the Pepper Tree Day Festival. Solana staff conducted recycling presentations and provided literature on used oil recycling and HHW.

Table 6-1 Total Amount of Disposed Household Hazardous Wastes and Used Oil

Facility or Activity	Amount of Hazardous Waste Disposed of (excluding motor oil, and oil products)	Amount of Used Oil Disposed of	Total
Household Hazardous Waste Collection Center	574,541 lbs	34,382 lbs	608,923 lbs
Curbside Pickup	4,266 lbs	490 lbs	4,756 lbs
Used Oil Collection Centers	N/A	63,773 gal.	63,773 gal.

Table 6-2 City of Vista Certified Used Oil Collection Centers

Certified Collection Center	Address
Tony's Mobil	801 South Santa Fe Avenue
Kragen Auto Parts	1250 South Santa Fe Avenue
Autozone	1410 North Santa Fe Avenue
Autozone	573 West Vista Way
Kragen Auto Parts	1220 East Vista Way
Jiffy Lube	1231 East Vista Way
Masterlube	243 Sycamore Avenue
EZLube	786 East Vista Way
North County Import Specialist	1215 North Melrose Drive
Santa Fe Auto Repair	1045 North Santa Fe Avenue

6.4.3 OVERSIGHT AND ENFORCEMENT

During the reporting period, the City of Vista did not perform any evaluation of its methods used for oversight of residential areas and activities.

During the reporting period, City staff used enforcement at residential sites to gain compliance. The City confirmed that the required BMPs were implemented in all of its enforcement cases. City staff observed 98 stormwater violations which included illegal discharges and connections, and BMP violations. In illegal discharge and connection cases, City staff required responsible parties to correct the violation immediately. Follow-up inspections were necessary to verify compliance in cases involving BMP violations. Enforcement mechanisms used to gain compliance included verbal and written warnings (Letters and Notice of Violation Forms). City staff issued 73 verbal warnings, 24 N.O.Vs, and 1 citation. In their warnings, City staff referenced the applicable BMP sections of the City's Stormwater Management and Discharge Control Program Ordinance (Municipal Code Chapter 13.18) and Stormwater Standards Manuals.

Summaries of all the City's enforcement cases are included in Appendix J.

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION

Addendum No. 2 to Order No. R9-2007-001 extends the annual reporting deadline associated with Illicit Discharge Detection and Elimination Program component from September 30th to December 15th. The City of Vista will submit Section 7.0 as a separate report prior to December 15th, 2008.

8.0 EDUCATION COMPONENT

8.1 INTRODUCTION

Education is an important tool the City uses to improve water quality and it is a requirement in the City's Municipal Storm Water Permit (Order No. 2007-0001). To achieve these objectives the City developed an education program in its JURMP which addresses education for multiple target audiences. These audiences include municipal staff, new development and construction communities, residents, the general public, and "underserved" communities. The City provides education and outreach to these communities to increase their awareness of pollution prevention and to comply with the Permit. During the reporting period the City conducted several education and outreach efforts for these audiences.

8.2 STAFF TRAINING ELEMENT

Personnel from various Municipal departments were trained on stormwater topics during the reporting period. These topics included general information from the City's JURMP and Municipal Storm Water Permit, program wide BMP requirements, and instructions to detect and eliminate illegal discharges. Municipal staff training is summarized below in Table 8-1.

Table 8-1 FY 2008 Municipal Staff Training

Workshop/Training	Audience	#	Location	Host	Date
JURMP training - Fiscal Analysis	Finance	2	Vista	City of Vista Program Mgr	4/29/2008
BMPs for Ready Mix trucks	Stormwater	2	Oceanside	Palomar Transit Mix	6/9/2008
Stormwater Training on pollutants, BMPs & ICID reporting	Parks & Community Services Dept.	62	Vista	City of Vista Program Mgr	5/20/2008
JURMP training - MS4 Program	PW Street Support	8	Vista	City of Vista Program Mgr & MOE	5/19/2008
JURMP Training - Wastewater element	PW Wastewater	2	Vista	City of Vista Program Mgr	5/1/2008
Current Issues in Storm Water Regulation in CA	PW Stormwater	2	San Diego	Lorman	4/30/2008
Stormwater Regulations	Parks & Community Services - mgrs	12	Vista	City of Vista Program Mgr	5/1/2008
HMP, LID BMPs, Permit, regulations	Community Development	12	Vista	MOE	2/29/2008

Workshop/Training	Audience	#	Location	Host	Date
Stormwater noncompliance that may endanger health or environment	Water Quality Protection Program	3	Vista	City of Vista Program Mgr	4/23/2008
JURMP Construction Inspections & BMPs	Engineering Inspections	10	Vista	MOE	4/24/2008
Assessing Effectiveness of Municipal Programs	Stormwater	1	Webcast	US EPA	6/4/2008
Storm water Treatment BMPs	Various City staff	12	Vista	Bio Clean Environmental	6/5/2008
TOTAL NUMBER OF STAFF TRAINED - 128					

8.3 EDUCATIONAL OUTREACH ELEMENT

8.3.1 DESCRIPTION OF HOW EDUCATION EFFORTS TARGETED UNDERSERVED TARGET AUDIENCES, HIGH RISK BEHAVIORS, AND "ALLOWABLE" BEHAVIORS AND DISCHARGERS.

During the reporting period the City conducted education and outreach efforts that targeted high risk behaviors and "undeserved" communities. The City held several community events which provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors areas. The events are summarized in Table 8-3. Brochures and items promoting the City's Household Hazardous Waste and Used Oil Collection Programs were distributed along with BMP guides for car washing, less toxic yard and garden care, pet waste cleanup, and recycling. The events were equally successful in providing outreach to Spanish communities as several brochures and promotional items were available in Spanish. Volunteers, City contractors, and personnel who were present at event booths, conducted water quality presentations and were available to answer questions about the City's Water Quality Protection program.

During the reporting period, City staff provided education and outreach to the community regarding many "allowable" behaviors and discharges. Through City investigations, City staff educated responsible parties on the importance of best management practices to prevent and/or reduce pollutant runoff. City staff conducted several stormwater investigations involving over-irrigation, oil leaks from automobiles, sediment discharges from private properties, and trash accumulation. In each incident, City staff recommended appropriate BMPs and educated the responsible party on the importance of maintaining BMPs to prevent further discharges of pollutants. BMP guides were also provided to the responsible parties.

A storm water article was included in the City's fall 2007 newsletter (Inside Vista) which discussed various household BMPs relating to "allowable" behaviors and discharges. The newsletter was sent to 36,000 residences. The article

presented BMP tips in several “allowable” areas including pesticide and fertilizer use, less toxic alternatives, and trash disposal. The City’s website is a valuable resource that provides pollution prevention tips in several categories of “allowable” behaviors and discharges. The section, Storm water Pollution Prevention Tips For Homeowners, provides information on various household BMPs including cleaning up after your pet, buying non-toxic products, caring for your car, and reducing the use of landscape chemicals. Also available on the City’s website are instructions and BMPs for how to control pests in and around your home. The City continues to advertise its website on various printed materials including the City’s Newsletter.

8.3.2 Description Of Education Efforts Conducted For The New Development And Construction Communities.

Education efforts for the new development and construction communities continued during FY 07-08 reporting period. Education efforts consisted of individual interactions with contractors and/or developers and City staff through counter interaction, attendance at all pre-construction meetings, and construction site inspections. The City’s Engineering (includes stormwater and inspection divisions) and Planning department staffs were primarily responsible for communicating information to the new development and construction communities about the City’s Water Quality Protection program. At each pre-construction meeting, stormwater staff, provided a synopsis of the City’s program and discussed the City’s BMP requirements. City staff conducted **21** pre-construction meetings during the reporting period. Through municipal staff training conducted throughout FY 07-08 (refer to the staff training element, section 8.2), City staff learned about the new BMP requirements in the City’s JURMP and communicated this information to contractors and developers. City staff also had access to and referenced the City’s Stormwater Ordinance (Municipal Code, Chapter 13.18 Stormwater Management and Discharge Control Program) and Stormwater Standards Manual in their dealings with contractors and developers.

Prior to the rainy season City inspectors hand delivered letters to contractors and developers at all construction sites reminding them of the City’s BMP requirements. Approximately, 20 letters were distributed.

8.3.3 Jurisdictional Education Efforts Conducted For Residents, The General Public, And School Children.

The City conducted substantial education and outreach efforts to residents, the general public, and school children during FY 07-08 reporting period.

Residents and the General Public

City staff provided considerable education and outreach to residents, businesses, and the general public during storm water enforcement efforts. Enforcement efforts were generated from drive by observations made in the field (proactive enforcement) and through reported incidents. Proactive enforcement continues to be a significant mechanism the City uses to regulate and educate residents and the general public. Through various enforcement mechanisms including verbal and written warnings (Letters and Notice of Violations) City staff consistently educated residents on BMP requirements and the importance of pollution prevention. City staff also provided various storm water BMP brochures and referred residents to the City's Municipal Code and Stormwater Standards Manual listed on the City's website. During the reporting period, City staff distributed approximately **280** brochures and booklets in response to complaint investigations and through proactive enforcement.

The City conducted education and outreach efforts at certain stationary industrial and commercial facilities during this reporting period. Through the City's required annual inspections of stationary industrial and commercial facilities, facility representatives were educated on the City's storm water requirements. During each inspection, City staff introduced the storm water program and provided educational materials specific to the business. Table 8-2 summarizes the educational materials distributed to stationary facilities. Also, before beginning the inspection process, the City prepared and mailed a letter to the businesses selected for inspection. The letter provided general information about the program and informed each business owner of the upcoming inspection.

Table 8-2 Educational Materials Distributed to Stationary Facilities

Educational Material	Number Distributed
Restaurant Poster	85
Grease Bin Handout	51
Automotive Poster	10
NONA / NEC Paperwork	3
NOI Handout	2
Inspection Notification Letter	164
Total # of Educational Materials	**315**

Community events provided opportunities for the City to conduct education and outreach efforts regarding its Water Quality Protection Program. A summary of the events is provided in Table 8-3. For the City's annual Public Works Day and

several special events, City staff hosted booths and provided storm water literature and promotional items which included such items as IPM pest cards, HHW Disposal brochures, pencils, pens, bottle bags, and used oil rags. At some event booths, City staff conducted watershed presentations using its Enviroscape Model. Using this 3 dimensional model City staff can demonstrate the adverse affects of storm water runoff in a watershed; it continues to be a very effective visual tool in educating the community, especially children. These events also provided a classroom atmosphere in which residents and the general public could ask questions and receive answers about various aspects of the City's program.

Table 8-3 Educational Events

Date	Event	Estimated Attendance
8/5/07	Vista Rod Run	hundreds
9/20/07	Citizens Leadership Academy	35
3/30/08	Pepper Tree Day Festival	300
3/30/08	North County Earth Fair – Mission San Luis Rey	hundreds
4/20/08	Vista Cascade MHP Earth Day	30
4/26/08	Dumpster Day	41
5/22/08	Public Works Day	207
5/25/08	Chocolate Festival	200
6/8/08	Civitan Classic Car Show	65
6/20/08	San Diego County Fair	250
6/28/08	Kragen Used Oil Filter Exchange Event	55

The City used other mechanisms to provide education and outreach to residents and the general public during the reporting period. The City included a storm water article in the City's Fall 2007 Newsletter that contained information on residential BMPs and instructions on how to properly dispose of household hazardous wastes (Appendix M). The City continued to operate its Storm Water Hotline number (760) 726-1340, x 1686; the City received 14 stormwater reports from residents and the general public. The City lists the hotline number on its website and includes it in other printed materials including City Newsletter articles. The City's website (www.cityofvista.com) is an important source that residents and the general public may use to learn more about the City's Pollution Prevention program. It contains comprehensive information of all aspects of the City's Program and includes links to the City' Municipal Code, Stormwater Standards Manual, and various BMP guides and booklets. Printed educational brochures were provided for distribution at several City facilities visited regularly by the public including City Hall, City Public Works and Engineering lobbies.

School Children

The City continued its education and outreach efforts to schools during the reporting period. A total of 42 classroom presentations were conducted at 7 different elementary schools, reaching 879 students. Each presentation included a demonstration using the Enviroscape Model, an Eco Quiz, and a discussion of household best management practices to prevent the runoff of pollutants into a watershed. In addition to a City of Vista magnet, a watershed poster and recycling and household hazardous waste disposal guides, students were also given pledge cards to sign and take home to their parents.

9.0 PUBLIC PARTICIPATION COMPONENT

9.1 INTRODUCTION

During the reporting period, the City continued with its implementation of the Public Participation Component of the City's JURMP. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms.

The public participation component is largely linked to the City's education component. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Also, as residents become aware of the City's program goals they are more apt to provide their perspectives, comments, and suggestions.

9.2 MECHANISMS

9.2.1 PUBLIC NOTIFICATIONS

The City of Vista provided a press release to the public concerning adoption of the City's 2008 JURMP. On March 11, 2008, a press release was sent out to the public and was also posted on the City's website informing residents that the City recently updated its JURMP and that it was to be submitted to the Board on March 21, 2008. The City welcomed any comments and questions prior to March 21st and after since the JURMP document is updated annually.

9.2.2 PROGRAMS, COMMUNITY EVENTS, AND EDUCATIONAL ACTIVITIES

Household Hazardous Waste and Used Oil Collection Programs

During the reporting period the City continued to operate its household hazardous waste and used oil collection programs. These programs enable the public to properly dispose of used oil and hazardous wastes. During the reporting period, the City advertised these programs to the public through the City's website, outreach at community events, and a stormwater article in the fall 2007 City Newsletter (Appendix M). Several services offered in the Used Oil Collection Program were free to City of Vista Residents. By making these programs available and encouraging the public to properly dispose of these materials, it is expected that less illegally disposed materials will end up in the City receiving waters.

Community Events

During the reporting period several community events were held in the City of Vista that encouraged participation from the public. These events are included in Table 8-3 of Section 8.0 – Education Component. At event booths water quality

presentations were conducted and promotional items were distributed to the public. This setting can create a classroom atmosphere that facilitates discussions about aspects of the City's pollution prevention program including watershed management and pollution prevention. It also provides a mechanism for residents to provide comments and suggestions that may assist the City in its program implementation efforts.

Educating Residents and the General Public

City staff provided education and outreach on pollution prevention during stormwater investigations. Several investigations were conducted at residential and commercial sites during the reporting period (See Sections 5.0 and 6.0). One aspect of the City's enforcement procedure is to provide education and outreach so that responsible parties learn about the importance of pollution prevention in preserving water quality. City staff introduces the City's storm water program and explains the importance of implementing appropriate BMPs to preserve water quality in the City's receiving waters. Educational materials are distributed which serve as tools for managing urban runoff. Through these education and outreach efforts, it is expected that improvements will be made in managing urban runoff.

Educating School Children

Educating school children plays a significant role in the City's execution of its Public Participation component. During the reporting period, a total of 42 classroom presentations were conducted reaching 879 students. Each presentation included a watershed demonstration using the Enviroscape Model during which students were asked to participate. Students learned about various aspects of the City's pollution prevention program including watershed management and household best management practices. Students were encouraged to share the information they learned with their parents to promote the use of best management practices at their homes.

9.2.3 WATERSHED

The City is an active participant in both the Carlsbad and San Luis Rey River Watershed public participation activities. This includes participation in the Carlsbad Watershed Network (CWN), comprised of a variety of stakeholders including representatives from other municipalities in the watershed, environmental organizations, conservancies, the Regional Water Quality Control Board, and other members of the public. During the reporting period, City staff attended monthly meetings for both watersheds when available.

Several sections of the Agua Hedionda Watershed Management Plan were developed during FY 2008. During FY 2007, the City of Vista was awarded a $500,000 Proposition 40 Grant from the State Water Board to develop a watershed management plan for Agua Hedionda Watershed. As plan development is a stakeholder driven process a Watershed Planning Group was established to work with consultants on the plan's development. Several

meetings were conducted during the reporting period as stakeholders worked collaboratively to develop the plan. The plan is due for completion in October 2008.

9.2.4 OTHER MECHANISMS

Stormwater Hotline/Other Contact Information

The City continued to operate its Stormwater Hotline for English (760-726-1340 x1686) and Spanish (760-726-1340 x1698) speaking residents during the reporting period. The City encourages residents to call the stormwater hotline to report any observed illicit connections, illegal discharges, or other activity that may contribute pollutants to the City's storm drain system. The City advertises the Stormwater Hotline on various educational materials and the City's website. A total of 16 stormwater reports were received by City Staff during the reporting period. These are included in Appendix P.

The City also posts City departmental phone numbers on the City's website and on educational materials. These departments include Public Works, Community Development, and Engineering.

Website

During the reporting period, the City continued to use its website to provide stormwater information to the public, including hotline information and access to printed materials.

10.0 FISCAL ANALYSIS COMPONENT

FY 2008 and FY 2009 FUNDING SOURCE AND BUDGET

The City's Jurisdictional Urban Runoff Management Program is funded through the City's Sewer Enterprise fund and is typically based on a two-year budgeting cycle.

Additionally, the City continues to pursue and utilize funding from grant sources. Some of the education activities are funded through the Used Oil Block Grant. The City will also pursue other State Funds as part of watershed collaboration efforts.

Table 10-1 City of Vista Budget Summary

Stormwater Program Item	2007-08 Budget	2008-09 Budget
Staff *		
• Salaries, benefits, vehicle, uniforms	$ 224,523	$ 328,467
MS4 Maintenance		
• Storm Drain Maintenance & staff		
• Waste Testing & Disposal	$ 1,029,879	$ 1,766,376
• Equipment Rental & Purchase		
• Street Sweeping Contracts		
Monitoring		
• Wet and Dry Weather Monitoring		
• Storm drain materials testing	$ 122,800	$ 132,448
• Spill Response Sampling		
Business Inspection & Enforcement		
• Industrial/Commercial Inspections	$ 90,000	$ 95,000
• Database updates/management		
Permit Fees		
• SWRCB Permit Fee	$ 15,300	$ 15,606
Education		
• Events		
• Training & conferences (internal/external)	$ 25,140	$ 25,745
• Materials Development		
• Used Oil Block Grant (1/2)		
WURMP and Regional Program		
• WURMP coordination		
• TMDL monitoring, cost share	$ 334,500	$ 70,000
• Hydromodification Mgmt Plan		
Administrative Expenses		
• Supplies and small tools	$ 3,955	$ 5,286
Total =	**$ 1,846,097**	**$2,438,928**

The City has begun the tracking of implementation costs across all City functions related to the WQPP during FY 2008. However, the efforts are not complete at this time and to report partial data would present non-comprehensive conclusions of fiscal analysis. Rather, the City will continue its efforts to collect this information and report upon it in the next annual report.

The City is also participating in the regional efforts to develop standards for Fiscal Reporting with other Copermittees.

11.0 EFFECTIVENESS ASSESSMENT COMPONENT

The following section describes how the City of Vista (City) will approach the annual assessment of the effectiveness of its Jurisdictional Urban Runoff Management Program (JURMP) (Permit sections I.1 and J.1.a.(1)(l)).

11.1 INTRODUCTION AND EFFECTIVENESS ASSESSMENT APPROACH

The requirements of the Municipal Storm Water Permit (Permit) specify that the City shall annually assess the effectiveness of its JURMP implementation. At a minimum, the assessment shall assess the effectiveness of each Significant Activity or BMP implemented, implementation of each major permit component (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination, and Education), and the overall JURMP. This section outlines the assessment that the City will use to assess the effectiveness of its efforts at improving surface water quality

Assessment of the JURMP is a joint activity between multiple departments of the City. Direction on assessment measures and methods will be provided and based on assessment tables that list the Permit required activities, targeted outcomes, assessment methods, and assessment measures. Assessment tables will be included within each Permit component section of the Annual Report.

The City assesses its JURMP based on the framework set out in the San Diego Municipal Stormwater Copermittee document *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*. Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts to maximize resources. Like most management programs, the City uses assessment as part of an iterative feedback loop (Figure 11-1) involving (1) Planning, (2) Implementation, and (3) Assessment.

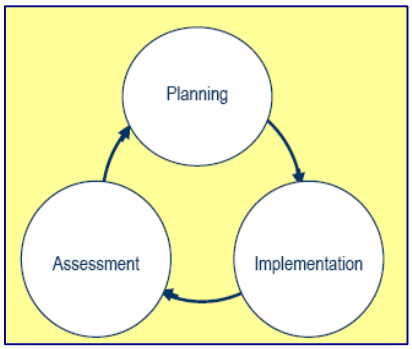

Figure 11-1 CASQA Iterative Program Management Process

The City will also assess the effectiveness of its JURMP in addressing the constituents of concern (COCs) determined from dry weather, MS4, and §303(d) listed constituents, other monitoring programs, and best professional judgment. Areas of the Permit that apply to the COCs will be pin-pointed, and additional data may be collected for these activities. Additionally, scientific literature may be used to help supplement information for the applicable activities.

The JURMP program will be reviewed and modified annually or as needed to ensure compliance with the Permit. If any portion of the JURMP is determined to be out of compliance, steps will be taken immediately to modify the program to

ensure future compliance. The following steps will be completed to help improve and modify the JURMP program.

Step 1. During the annual planning phase of the JURMP program, information collected through assessment will be used to update the list of targeted COCs within the City. This list will be re-evaluated periodically to give accurate direction for future Significant Activity selection.

Step 2. Based on the Significant Activity/BMP selected for implementation each year, management questions will be formed to address targeted COCs

Step 3. Targeted outcomes, assessment methods, and assessment measures will be defined for each Significant Activity/BMP.

Step 4. The JURMP program and significant activities/BMPs will be implemented.

Step 5. Implementation Assessment will be performed by reporting compliance with the Permit.

Step 6. Information gathered through Significant Activity, program assessment, and other data sources will be used to determine update and/or refine the COC prioritization list. This list will be used as the basis for activity selection during the following year.

In addition to the steps outlined in the Figure 11-2, the City will also determine if re-allocation of resources is necessary to optimize pollutant reduction. During annual program review, the City will evaluate whether measurable targeted outcomes, assessment measures, and assessment methods adequately target COCs or management questions. If it is found that assessment data are difficult to obtain, or do not address the purpose of the activity; outcomes, measures, and methods may be adjusted as necessary.

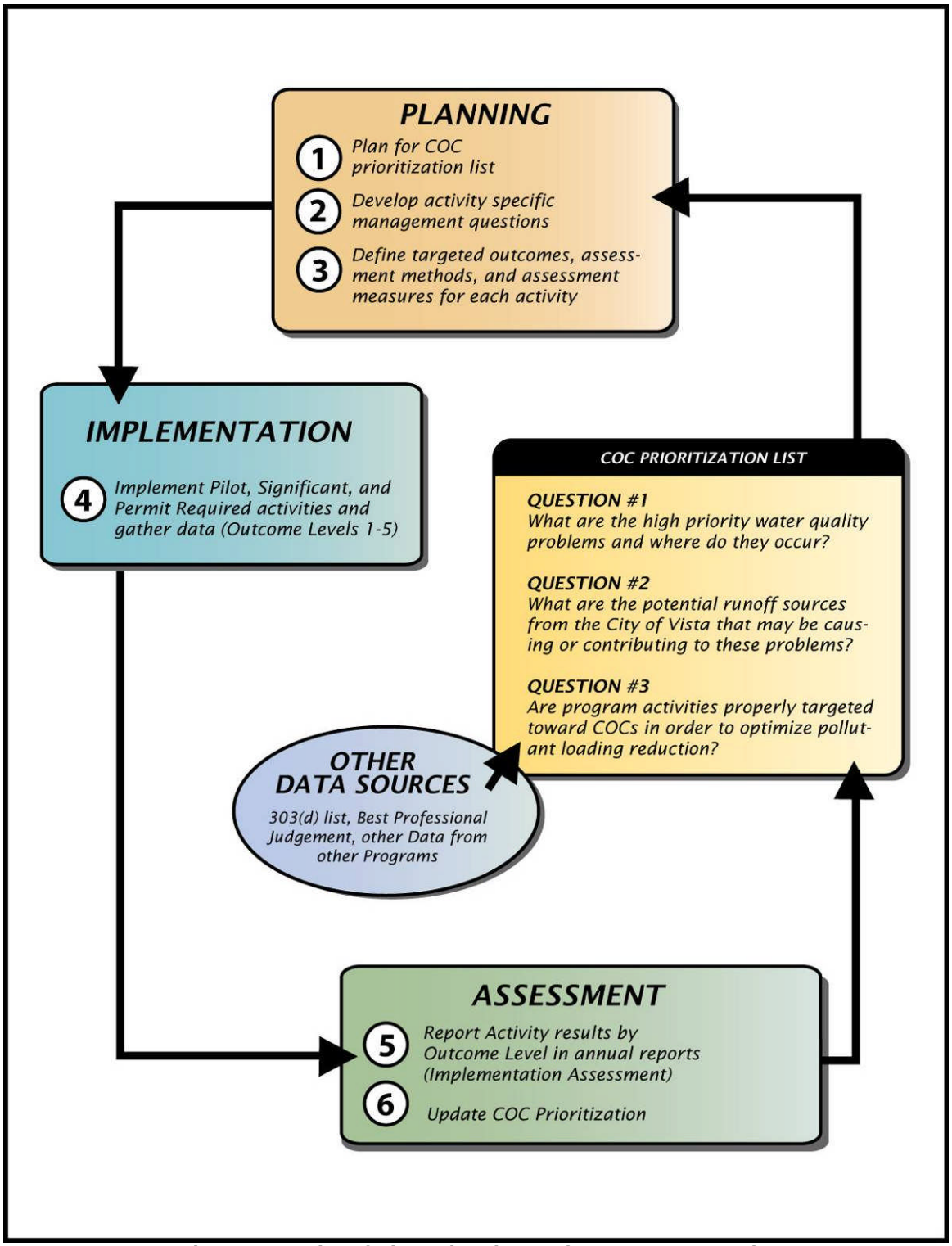

Figure 11-2 City of Vista Planning and Assessment Cycle

11.2 IMPLEMENTATION ASSESSMENT

The City assessed the implementation of its JURMP, Permit Components, and significant activities for compliance with the Permit during FY 2008. Compliance assessment for individual components was completed by comparing FY 2008 results to compliance tables developed following the Permit outline. The tables include targeted outcomes, assessment measures, and assessment methods. Results of individual component assessments can be found within each component section of the Annual Report. A summary of the compliance results for each component is presented in Table 11-1 below.

Overall, the combined compliance of each component of the Permit demonstrates JURMP program compliance. The City did well implementing the Permit during FY 2008, educating 128 municipal staff, collecting and disposing of 860 tons of debris through street and parking lot sweeping, and ensuring that all BMPs were properly implemented at construction sites. Areas for improvement during FY 2009 will include developing a Mobile Water Use Permit to regulate businesses that use water to conduct cleaning operations, and complete inspections of the 25 private development projects currently underway.

Table 11-1 Municipal Permit Component Targeted Outcome Assessment Results Annual Summary

Municipal Permit Component	Targeted Outcome Assessment Result	Compliance Assessment Highlights	Conclusions and Recommendations
Section 2-Development Planning	Met all targeted outcomes; with exception of 48% of site inspections	• Reviewed and applied Stormwater Standards Manual to all projects for urban runoff requirements • Fifty-four (54) private development projects listed in the City's inventory were visited for treatment control BMP inspections.	Of the remaining twenty-five (25) private development projects, nine (9) were still under construction, eight (8) were still in the plan check phase, and eight (8) did not develop plans, i.e., the project is on hold in the development review phase. Since the new 2008 JURMP did not go into effect until March 2008, at the end of the wet season, the City did not require annual maintenance verification of treatment control BMP maintenance prior to the 2007-2008 wet season, which began October 1, 2007. The City did, however, begin the process of obtaining annual BMP maintenance verifications for FY 2009.
Section 3-Construction	Met all targeted outcomes	• All required BMPs were implemented at construction sites	Construction Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended
Section 4-Municipal	Met all targeted outcomes; with exception of 3% of wastewater collection systems	• All Department-Specific minimum BMP requirements were met • 1,249 pounds of debris were removed from storm drain cleanings • For street sweeping, for the 8,000 curb miles swept there were 850 tons removed from streets and 10 tons removed from parking lots • Out of 311 miles of the wastewater collection system, approximately 303 were cleaned as part of the regular schedule of inspection and cleaning • All high priority facilities were inspected during FY 2008	Municipal Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended

Table 11-1 Municipal Permit Component Targeted Outcome Assessment Results Annual Summary

Municipal Permit Component	Targeted Outcome Assessment Result	Compliance Assessment Highlights	Conclusions and Recommendations
Section 5- Industrial and Commercial	Met all targeted outcomes	• 18% of the City's commercial and industrial inventory received site visits and/or inspections • 213 industrial and 723 commercial sites were inventoried by the City in FY 2008 • As a result of these inspections, sixteen (16) NOVs, five (5) citations and fifty-four (54) verbal warnings were issued	The City is developing a Mobile Water Use Permit to regulate businesses that use water to conduct cleaning operations. Illegal discharges associated with these businesses can occur when they do not implement BMPs to contain and capture runoff. The permit will allow Mobile Water Users to conduct its operations provided they implement the City's required best management practices. Applicants will be required to complete a permit application and pass an inspection prior to receiving a permit. The applicant will be required to demonstrate that their pressure washer and water reclamation system is working properly and show containment and prevention of runoff into City streets and storm drains
Section 6- Residential	Met all targeted outcomes	• Twenty-four (24) NOVs, one (1) citation and seventy-three (73) verbal warnings were issued	Residential Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended
Section 7- Illicit Discharge Detection and Elimination	Reported in December	• Report to be Submitted in December	Illicit Discharge Detection and Elimination Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended

Table 11-1 Municipal Permit Component Targeted Outcome Assessment Results Annual Summary

Municipal Permit Component	Targeted Outcome Assessment Result	Compliance Assessment Highlights	Conclusions and Recommendations
Section 8-Education	Met all targeted outcomes	• The City conducted education and outreach efforts targeting high risk behaviors and "undeserved" communities. Several community events provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors areas. Brochures and items promoting the City's Household Hazardous Waste and Used Oil Collection Programs were distributed along with BMP guides for car washing, less toxic yard and garden care, pet waste cleanup, and recycling. • A total of 128 municipal staff were trained • Education efforts for new development and construction committees consisted of individual interactions with contractors and/or developers and City staff through counter interaction, attendance at all pre-construction (# of pre-con) meetings, and construction site inspections. • 315 educational materials were distributed to stationary facilities • A total of 42 classroom presentations were conducted at 7 different elementary schools, reaching 879 students.	Education Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended
Section 9-Public Participation	Met all targeted outcomes	• City staff distributed approximately **280** brochures and booklets in response to complaint investigations and through proactive enforcement. • The City continued to operate its Storm Water Hotline number and received sixteen (16) phone calls from residents and the general public.	Public Participation Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended

11.3 SIGNIFICANT ACTIVITY ASSESSMENT

A Significant Activity was selected during FY 2008 that addressed one of the COCs identified to target pollutant reduction activities, total dissolved solids draining to Agua Hedionda Creek. This activity proved effective at load reduction, by stopping nuisance flow draining to Agua Hedionda Creek. A summary of the information obtained is presented in Table 11-2, and detailed assessment results are presented below.

Table 11-2 Significant Activity Effectiveness Assessment Results Summary

Significant Activity	Outcome Levels			
	Level 1	Level 2	Level 3	Level 4
Detect and Eliminate High Priority COCs	Identified one unidentified nuisance flow (not part of the annual dry weather monitoring program)	NA	NA	Runoff eliminated

FY 2008 Significant Activity assessment follows:

Activity 1. Detect and Eliminate High Priority COCs: Component - Municipal	
Management Questions	• What are the potential sources of COCs, and where do they occur? • What is the most effective method for eliminating COC runoff into the storm drain?
Targeted Measurable Outcome(s)	• Eliminate COC-contaminated runoff into the storm drain • Develop measures to prevent further runoff
Assessment Method(s)	• Monitoring (e.g., collect samples of runoff to measure COC concentrations)
Assessment Measures, Assessment Outcome Levels & Data	• Location of storm drain contaminant source (Outcome Level 1) • Load reduction of runoff (Outcome Level 4)

Figure 11-3: (Top) Hillside soil; (Bottom) Runoff into curb conveyance

The Significant Activity for FY 2008 was developed to investigate potential contaminants in the rust-colored water running downhill from Amron International. This activity was selected to address COC Prioritization List questions #1 and #2.

The rust-colored water originated from ground water surfacing at the base of a hill located in the back of the Amron complex (Figure 11- and 13-4). This water slowly filled a small sump, and was then pumped down a small 12" RCP conveyance, out onto a curb conveyance, and down Aspen Way. It then followed the path of the curb conveyance before running into an inlet at the bottom of Aspen Way and Melrose Drive. It finally ended up in the creek near City of Vista dry weather monitoring site AH-21 via an outfall. Agua Hedionda creek is §303(d) listed for the following major contaminants: Manganese, Selenium, TDS and Sulfates.

Methodology

Upon analyzing water samples from the site, the laboratory results showed contaminant levels to be above compliance levels in the Vista Municipal Code. Thus the targeted outcome of the Significant Activity is to develop an efficient method for eliminating COC runoff into the storm drain. The success of this activity was measured by monitoring the resulting runoff load reduction.

Figure 11-4: (Left and Right) Capped sump pump

To implement this Significant Activity, Amron International proceeded with steps to become compliant under the direction of Supervisor Bill Taylor. The first step was to disable the sump pump and cease artificial discharge of any water from their property, which was accomplished by June 17th (Outcome Level 1). On June 19th, 2008 they met with contractor Hamann Construction, to discuss the ground water situation. A French drain was routed around the North side of the property to egress on the west side into a partially vegetated swale (Figure 13-5). The swale was upgraded to a complete grassy swale and extended 25 feet to allow further infiltration runoff before it reaches the drain oulet to the street. The attachment to the storm drain, which runs through Amron's property for the Thomasville building behind them, was disconnected by Hamann and capped off. The estimated deadline for the Notice of Violation resolution was July 31st, 2008.

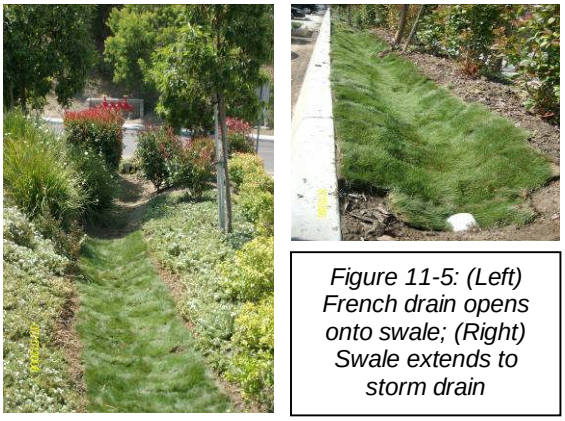

Figure 11-5: (Left) French drain opens onto swale; (Right) Swale extends to storm drain

Analysis and Results

Further assessment of the activity's success reveals that runoff has been eliminated (Outcome Level 4). All that remains is routine maintenance of the improvements implemented.

11.4 PROGRAM REVIEW AND MODIFICATION

Program review and modification will follow the six steps outlined in Section 13.1.

Program Implementation Modifications

Step 5: Overall, the City successfully implemented the Permit during FY 2008. Several changes and enhancements will be completed during FY 2009. (Step 5 of the Planning, Implementation, and Assessment process)

Significant Activity Modifications

Step 1 and Step 6: Following the implementation and assessment steps detailed in Section 13.1, above, the City updated its COC list (Step 1). This list was used to give direction for selection of the Significant Activity for FY 2009 (Step 6).

Table 11-3 Constituents of Concern: §303(d) Analytes

Water Body	Pollutant/Stressor
Buena Vista Creek	Sediment Toxicity
Buena Vista Lagoon	Indicator Bacteria, Nutrients, Sedimentation/Siltation
Agua Hedionda Creek	Manganese, Selenium, Sulfates, Total Dissolved Solids
Agua Hedionda Lagoon	Indicator Bacteria, Sedimentation/Siltation

Step 2 through Step 4: A Significant Activity was selected for implementation during FY 2009, targeted toward reductions of indicator bacteria in Buena Vista Creek.

The FY 2009 Significant Activity will involve Buena Vista Creek cleanups. Debris, invasive species, and downed trees have been identified in Buena Vista Creek (BVC) as potential fire hazards, breeding grounds for pests, and contributors to downstream water quality problems. Periodic cleanups of BVC have been organized to address these hazards and concerns. Collection of water quality and flow data in addition to periodic debris cleanups will allow the City of Vista (City) to report load reductions of constituents of concern (COCs) identified in its Jurisdictional Urban Runoff Management Plan (JURMP).

Significant Activity FY 2009 – Buena Vista Creek Cleanups	
Component - Municipal	
Management Questions	• Does improving natural flow in the Buena Vista Creek result in load reductions of COCs? • Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?
Targeted Measurable Outcome(s)	• Achieve load reduction of debris from Creek cleanups • Achieve load reduction of bacteria and nutrients
Assessment Method(s)	• Quantification (e.g., compare data collected before and after cleanup to estimate load reduction) • Monitoring (e.g., collect special study information on concentrations and creek flows to estimate load reduction) • Tabulation (e.g., amount of money spent on cleanups) • Reporting (e.g., estimates of load reduction for cleanups)
Assessment Measures, Assessment Outcome Levels & Data:	• Amount of money spent on cleanups (Outcome Level 1) • Pre and post cleanup flow and concentration results (Outcome Level 1) • Upstream and downstream flow and concentration results (Outcome Level 1) • Estimated load reductions upstream and downstream, pre and post cleanup (Outcome Level 4) • Tons of debris collected from each cleaning (Outcome Level 4) • Stream miles of cleaned creek (linear ft) (Outcome Level 1) • Total number and location (X,Y) of all creek cleanups (Outcome Level 1) • Removal of invasive vegetation from creek (Outcome Level 1)

While BVC itself is not §303(d) listed for bacteria or nutrients, areas downstream of BVC have been identified for bacteria and nutrients (Buena Vista Lagoon). The goal of this Significant Activity is to determine whether or not cleanups in BVC result in load reductions of these COCs in waters draining from the City to Buena Vista Lagoon. This goal will be addressed by answering the COC Prioritization List questions presented in Figure 11-2.

To determine if the Significant Activity is a success, targeted measurable outcomes of debris, bacteria, and nutrient load reductions have been identified. Data will be collected and analyzed to report flow and COC concentrations, load estimates, and the cost of implementing the activity.

At each of the proposed cleanup sites, data will be collected before cleanup occurs (three samples both upstream and downstream of the cleanup site) for comparison with sampling that will be completed after cleanup occurs (three samples upstream and downstream). There will be a total of one upstream and one downstream sample location for each clean up site. The location will be sampled three times over the course of one week (no more than once per day). The amount of debris removed will be recorded, and visual observations obtained during sampling and cleanup will also be used to assess the results of the Significant Activity. If flow is observed before cleanup occurs, it will be estimated and compared to post-cleanup flows. A summary of the frequency of sampling and analytes to test is included in Table 11-4.

Table 11-4 Sampling Summary

Constituent of Concern (Analytes)	Analysis Method	Frequency*
Nitrate-N	Field Test Kit or Analytical Lab	12
Total Nitrogen	Analytical Lab	12
Orthophosphate-P	Field Test Kit or Analytical Lab	12
Total Phosphorus	Analytical Lab	12
Ammonia-N	Field Test Kit or Analytical Lab	12
Enterococcus	Analytical Lab	12
Total Coliform	Analytical Lab	12
Fecal Coliform	Analytical Lab	12
Conductivity	Field Monitor	12
Temperature	Field Monitor	12
pH	Field Monitor	12
Dissolved Oxygen	Field Monitor	12
Turbidity	Field Monitor	12
Total Suspended Solids	Analytical Lab	12
Flow	Field Measurements	12
Debris (Tons)	Waste Disposal Report	1

*Based on one creek cleanup

11.5 LONG-TERM ASSESSMENT RESULTS

Water quality and integrated assessments will be performed at long-term intervals, and the results will be presented in the Annual Report. These

assessments will include information collected from regional, watershed, jurisdictional, and Municipal Permit-required programs (e.g., TMDL programs) and will be compiled and assessed for areas within the City's jurisdiction. In the future, MS4 and receiving water data will be analyzed separately to assist in the development of Outcome Level 5 and 6 assessments. This will also aid in the five year regional long-term assessment. Qualitative assessments will also be completed.

12.0 SPECIAL INVESTIGATIONS

There were no special investigations conducted during the FY 2007-08 Annual Reporting period.

13.0 JURMP REVISIONS

In order to comply with the City's Municipal Permit (Order No. 2007-0001) and to improve the efficiency and effectiveness of the City's efforts in protecting and improving water quality, the City updated its Jurisdictional Urban Runoff Management Plan (JURMP) in March 2008. To continue these efforts the City made modifications to its 2008 JURMP during the reporting period. The revisions to the City's 2008 JURMP are summarized in the table below.

Table 13-1 FY 2008 Summary of JURMP Revisions

Section	JURMP Revisions
5.0 Industrial and Commercial Component	The City is in the process of developing a Mobile Water Use Permit to regulate businesses that use water to conduct cleaning operations. Certain mobile businesses use pressure washer systems to conduct outside cleaning of parking lots, sidewalks, buildings, and automobiles, but it is these same businesses that often commit storm water violations, namely, illegal discharges. Illegal discharges associated with mobile businesses can occur from businesses not implementing BMPs to contain and capture runoff (i.e. Spill berm and reclamation system). The permit will allow Mobile Water Users to conduct its operations provided they implement the City's required best management practices. Applicants will be required to complete a permit application and pass an inspection prior to receiving a permit. The applicant will be required to demonstrate that their pressure washer and water reclamation system is working properly and show the City other BMPs that will be used to contain and prevent runoff from entering City streets and storm drains The City believes that this permitting program will assist the City in its efforts to regulate mobile water use businesses. The City plans on instituting this program during FY 08-09. Copies of the draft appropriate documents are included in Appendix N of this annual report.
4.0 Municipal Component	During the reporting period, the City developed a municipal corrective action form to track stormwater compliance during municipal site inspections. The corrective action form was completed for any inspected site where a stormwater violation(s) was observed. Each form included the corrective action(s) that were implemented and required a signature by the pertinent municipal staff. Municipal staff were required to submit forms to the City's stormwater division prior to follow-up inspections. A copy of the corrective action form is included in Appendix Q.

14.0 CONCLUSIONS AND RECOMMENDATIONS

This JURMP annual report marks the end of the City of Vista's seventh reporting period (June 2007 to March 2008) for compliance with Order 2001-01 and the first reporting period (March 2008 to June 2008). The Order was renewed on January 24, 2007, and the City began planning for and updating current programs to comply with Order R9-2007-0001, in addition to actively implementing the programmatic activities defined in the City's Jurisdictional Urban Runoff Management Plan (JURMP). The City's JURMP revision was complete and submitted to the RWQCB on March 24, 2008. Some of the key areas of implementation of the JURMP during this period included increasing and improving storm drain and street maintenance activities, expanding inspections and compliance activities, approving more high efficiency and natural BMPs for new development, assessing water quality, obtaining grants for education and watershed management planning, and encouraging citywide and community participation. The City also continued contributing to the development and implementation of the programs in two watersheds (Carlsbad and San Luis Rey Watersheds).

14.1 ITERATIVE PROCESS

The City's stormwater program continued to evolve. The City's JURMP states that the program will require periodic revision. The City of Vista is committed to working with its staff, other Copermittees and the RWQCB to improve and adapt the plan and efforts as necessary to comply with the permit requirements. The City's program continues to be dynamic requiring changes in the daily operations and implementation based on lessons learned and City staff input. The assessment information, including the strengths and improvement areas identified in this report, will continue to direct improved program activities, and the City completed its update of the JURMP to meet the requirement of new Order R9-2007-0001.

14.2 PROGRAM FOCUS

The City continued to focus on implementing program requirements at municipal facilities and operations. These efforts were through: (1) staff training and education (both internally and externally); (2) implementation of facility Storm Water Pollution Prevention Plans; (3) facility inspections; (4) maintenance of structural BMPs; and (5) improving maintenance activities.

The City implemented its SUSMP requirements and emphasized natural treatment control BMPs and LID Site Design BMPs. The City's strong construction inspection process also continued over the last year, with an emphasis on education at pre-con meetings and construction site BMP implementation.

Inspections of the industrial and commercial businesses were focused during the reporting period on high priority industries and specific commercial facilities. All high priority industrial facilities were inspected along with all inventoried restaurants, nurseries and greenhouses. Assessment programs continued to be implemented and the Pollutant Discharge Potential Assessment was expanded to all inspected facilities.

The City continued to actively seek and eliminate illicit connections and discharges through the Dry Weather Monitoring Program and complaint investigations. The report on the City's Dry Weather Monitoring Program will be submitted in December 2008 to comply with Addendum No. 2 of Order No. 2007-0001. Complaint investigations and follow-up inspections were successfully conducted. Compliance was achieved through education or enforcement as necessary. The City also actively responded to private sewer lateral spills to minimize any discharges to the storm drain system.

Education of all target audiences continued to be a key element for the success of the program. During this year, a significant amount of educational materials were disseminated. Thousands of school children and adults attended educational presentations. The City also provided opportunities for public participation through creek cleanups, public meetings, and stakeholder meetings, including a watershed planning group to help develop the Agua Hedionda Watershed Management Plan whose final draft was released in July 2008.

14.3 FUNDING SOURCES

The Water Quality Protection Program activities are funded through the sewer enterprise fund. Some storm water education programs were funded through the California Integrated Waste Management Board Used Oil Block Grant. The City also implemented various grants during the year, including a grant form the Metropolitan Water District to conduct the Clean Water Keepers pilot school education program and a Proposition 40 grant from the State Water Board to develop a watershed management plan for the Agua Hedionda watershed.

14.4 WATER QUALITY DATA ANALYSIS

The City has been collecting dry weather water quality data for many years under the previous Municipal Permit (Order 90-42). The requirements for monitoring changed under Orders 2001-01 and 2007-0001 as did the City's monitoring efforts. The City has collected several seasons of data under these new requirements and continues to evaluate these data to determine the City's main constituents of concern. Programs will continue to be focused on the main constituents of concern.

14.5 CITYWIDE PARTICIPATION

The City's Water Quality Protection Program is administered by the Engineering Department management and staff. However, the JURMP is a citywide program with its continuing success dependent upon all City staff participation. During this reporting period the program was successfully integrated into many citywide programs which will help to ensure continued program compliance.

14.6 WATERSHED COLLABORATION

The City will continue to collaborate and focus on implementing the activities developed in the Carlsbad and San Luis Rey Watershed Urban Runoff Management

Plans with the appropriate Copermittees, organizations and stakeholders within these watersheds.

14.7 PROGRAMMATIC RECOMMENDATIONS

The Water Quality Protection Program and various City staff continue to look for ways to improve the City's JURMP implementation. This includes several areas of focus to build on program success. An outline of these recommended plans is presented below:

Municipal

- Improve and utilize newly populated storm drain and sanitary sewer system GIS layers
- Pursue channel maintenance permits
- Continue to hire an outside contractor to annually inspect the main high priority municipal facilities and parking lots

Industrial

- Increase enforcement for monitoring violations
- Improve internal procedures to provide proper notification to the Regional Board for facilities in which noncompliance may endanger health or the environment

Commercial

- Focus inspections on restaurants and repeat offenders
- Increase compliance activities

Residential

- Implement increased education, investigation and enforcement programs through the addition of new staff in order to reduce stormwater pollutants from high priority residential areas and activities

Land Use Development

- Collaborate with Copermittees toward regional SUSMP requirements, including LID and HMP requirements.

Construction

- Continue addressing storm water issues at pre-con meetings
- Improve databases to track construction projects and post-construction BMPs

Illicit Discharge Detection and Elimination

- Review dry weather monitoring locations and adjust as needed
- Continue to develop a Fats, Oils and Grease program
- Add a Stormwater email address and publicize it to facilitate reporting from the public

Education

- Develop an education strategy to address specific audiences, pollutants and behaviors
- Continue to collaborate with watershed and regional education workgroups
- Continue to conduct classroom presentations

Public participation

- Continue to involve stakeholders in program development

Effectiveness Assessment

- Work with Copermittees to develop standardized assessment methods and tools

Fiscal analysis

- Continue to pursue a stable funding source for the City's Jurisdictional Urban Runoff Management Program
- Work collaboratively with the regional Copermittees to develop standardized tracking and reporting standards

APPENDIX A

SUSMP Project Listing

City of Vista FY 2008 SUSMP Projects

Resolution No.	PC Number	Project Name	Description	Approval Date
PC2007-26	19-055	Urban West Strategies/Torry Investors - TSM	59 SFR's and 46 live/work condos	5/15/2007
PC2007-30	14-251A1	Citymark Development Corp.	10 Building Office Park	6/19/2007
PC2007-32	14-260	Marc Perlman - SDP	2-Story Medical Office Building	6/19/2007
PC2007-36	2-082	TSHG Vista1, LLC--TSM (Pheasant Hills)	15 SFR's	6/19/2007
ZA2007-13	23-321	Nasland Engineering	Wal-Mart @ 1800 University Drive	8/6/2007
PC2007-38	14-253	David Gregory -- SDP	Charter Bus Maintenance & Storage Facility	8/7/2007
PC2007-42	8-168	Calvary Chapel -- SUP	Church and Private School Facility	9/4/2007
PC2007-46	8-174	Target Corporation	Target Commercial Center	10/16/2007
PC2007-50	24-020	Sycamore Vista Partners (Green Oak Villas) SDP	115 Condo Residential Units	11/6/2007
ZA2007-27	14-254	Dr. Robert Brombacher	Office addition @ 167 Cedar Road	11/8/2007
ZA2007-26	3-180	Debbie Avey	4 Residential lots @ 125 Kilby Lane	11/29/2007
ZA2007-30	23-317	Wilco Investments LLC	Industrial Building @ 2633 Progress Street	12/18/2007
PC2007-57	4-060	Franz-Melrose, LLC -- SDP	Medical Office Building	12/18/2007
ZA2007-31	3-187	William Rowling	Create 4 residential lots @ 270 Knoll Road	12/31/2007
ZA2008-01	23-328	Mark Nelson	2nd Unit @ 1501 Via Pedro	1/7/2008
PC2008-06	14-258	Verizon Wireless -- SDP	Wireless Telephone Switching Facility	2/5/2008
PC2008-07	8-046	Vista Samoan Seventh-Day Adventist Church	Multi-purpose Hall Addition	2/19/2008
PC2008-08	14-263	Investec Commercial, Inc.	Commercial Building	2/19/2008
PC2008-10	2-100	Matthew Altman	10-lot SFR subdivision	3/4/2008
ZA2008-04	11-236	H. Zamorano	Guesthouse @ 1030 Maryland Drive	3/11/2008
PC2008-16	14-269	Vista Community Clinic	Community Clinic	5/6/2008
PC2008-18	2-090	Randall C. McManus	18 SFR's	5/6/2008
PC2008-22	14-221	Farzaneh Raissi	Retail Building	5/20/2008
ZA2008-07	3-193	Cary Snodgrass	Create 4 residential lots @ 1010 Miramar Dr.	5/27/2008
PC2008-26	4-061	Vista Village Plaza - SUP, SDP, TSM, CSP	Retail, Office Spaces & Townhouses	6/3/2008
ZA2008-08	3-181	Lake 2-lot Map	Create 4 residential lots @ 1847 Alta Vista	6/16/2008

APPENDIX B

SUSMP Project Synopsis

Verizon Wireless Building

Project name: Verizon Wireless Building

Development Type: Industrial with greater than 15 parking spaces

Project Size: 5.56 ac

Project Description: Development of industrial lot with a 64,000sf building, 36,000sf parking lot including 118 parking spaces

Conditioned for Site Design? Yes

Conditioned for Source Control? Yes

Conditioned for Treatment Control? Yes

Site Design Control:
a. Minimize impervious area

b. Detention of peak flows to minimize downstream effects of hydro-modification.

Source Control:
a. Landscaped slopes

b. Covered outdoor material storage areas with roofs. (WM-1 per CASQA Handbook)

c. Trash storage areas with roofs. (SD-32 per CASQA Handbook)

d. Loading dock protection (SC-30 per CASQA Handbook)

e. Parking area drainage (SC-43 per CASQA Handbook)

f. Landscape irrigation breakage protection devices (SC-41 per CASQA Handbook)

g. Storm drain stenciling (SD-13 per CASQA Handbook)

h. Integrated Pest Management (SC-61 per CASQA Handbook)

i. Employee training

Treatment Control BMPs:
a. Approximately 100 linear feet of vegetated swale (TC-30) will filter runoff from the south side of the project prior to entering the detention basin.

b. The flows from the north half of the project will enter a Bioretention (TC-40) Treatment Area with a volume capacity based on 85th percentile storm event. The bioretention area is underlain by a french drain so that it will drain within a maximum time of 48 hours after filling.

See following pages for site plan / BMP plan sheet

Outlet to 30" RCP
Total Site Pre Development Q_{100} = 11.9 cfs
Total Site Post Development Q_{100} = 37.6 cfs
Q_{100} w/Detention = 11.7 cfs

Bioretention
Treatment Bed Area = 1,663 ft^2

Drainage Area 1000
V_{BMP} = 8,332 ft^3

Main Office

Drainage Area 2000
Q_{BMP} = 0.41 cfs

Loading Dock Area

Trash Storage Area

Outlet to 18" RCP

Vegetated Swale
Q_{BMP} Residence Time = 8.4 min

BUSINESS PARK DRIVE

POST CONSTRUCTION BMP LEGEND

- Bioretention
- Vegetated Swale
- Loading Area
- Trash Storage Area
- Landscaping
- Flow Direction
- Storm Drain Flow Direction
- Storm Drain
- Drainage Area Divide

Bioretention Detail
N.T.S.

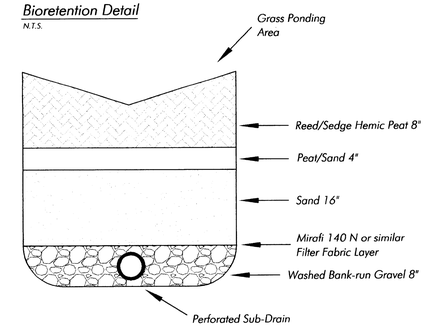

Vegetated Swale Detail
N.T.S.

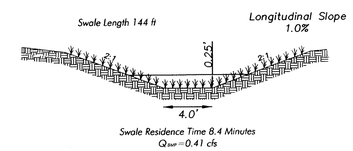

SCALE: 1" = 30'

30 15 0 30 60 90
GRAPHIC SCALE IN FEET

CITY of VISTA

STORMWATER MANAGEMENT PLAN
VERIZON- VISTA MSC

PROJECT NUMBER 2594.01A
SCALE: 1" = 30'
DATE: SEP 2007

FUSCOE ENGINEERING
full circle thinking

APPENDIX C

Treatment Control BMP Inventory

GP #	BMP loc ID	Project Name	Location	CASQA BMP ID	BMP Type	BMP Detail	BMP manufacturer, if applicable	BMP Model #, if applicable	Watershed
03-019	1	1206 S. Santa Fe Drive	Santa Fe-S 1206	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
03-019	2	1206 S. Santa Fe Drive	Santa Fe-S 1206	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
03-019	3	1206 S. Santa Fe Drive	Santa Fe-S 1206	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
03-019	4	1206 S. Santa Fe Drive	Santa Fe-S 1206	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
03-019	5	1206 S. Santa Fe Drive	Santa Fe-S 1206	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
04-007	1	1210 Distribution Way	Distriution Way-1210	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-007	2	1210 Distribution Way	Distriution Way-1210	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-078	1	1230 Activity Drive	Activity Dr-1230	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
02-078	2	1230 Activity Drive	Activity Dr-1230	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-078	3	1230 Activity Drive	Activity Dr-1230	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-078	4	1230 Activity Drive	Activity Dr-1230	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-078	5	1230 Activity Drive	Activity Dr-1230	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-078	6	1230 Activity Drive	Activity Dr-1230	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-078	7	1230 Activity Drive	Activity Dr-1230	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
06-006	1	3181 Business Park Dr.	Business Park Drive-3181	TC-22	Extended Detention Basin	Detention Pond			Agua Hedionda
03-013	1	3225 Executive Ridge	Executive Ridge-3225	--	Bio-Filter	Gravel Swale above sub drain			Agua Hedionda
03-013	2	3225 Executive Ridge	Executive Ridge-3225	--	Bio-Filter	Gravel Swale above sub drain			Agua Hedionda
03-013	3	3225 Executive Ridge	Executive Ridge-3225	--	Bio-Filter	Gravel Swale above sub drain			Agua Hedionda
04-044	1	338 Plymouth Dr. Condos	Plymouth Dr-338	TC-30	Vegetated Swale	Vegetated Swale			Buena Vista Creek
04-044	2	338 Plymouth Dr. Condos	Plymouth Dr-338	TC-30	Vegetated Swale	Vegetated Swale			Buena Vista Creek
04-044	3	338 Plymouth Dr. Condos	Plymouth Dr-338	TC-30	Vegetated Swale	Vegetated Swale			Buena Vista Creek
03-044	1	800 Silver Dr Subdivision	Silver Dr-800	MP-52	Drain insert	Fossil Filter	Kristar/ FloGard	High Capacity Insert	Buena Vista Creek
03-044	2	800 Silver Dr Subdivision	Silver Dr-800	MP-52	Drain insert	Fossil Filter	Kristar/ FloGard	High Capacity Insert	Buena Vista Creek
03-044	3	800 Silver Dr Subdivision	Silver Dr-800	--	Slope Protection	Rip Rap Field			Buena Vista Creek
02-049	1	828 N Santa Fe Ave	Santa Fe Ave-N 828	MP-52	Drain insert	Fossil Filter			Buena Vista Creek
02-049	2	828 N Santa Fe Ave	Santa Fe Ave-N 828	MP-52	Drain insert	Fossil Filter	FlowGard	PS-15-69	Buena Vista Creek
02-054	1	Aloha Motors (Classic Chariots)	Vista Way-W 1611	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
02-054	2	Aloha Motors (Classic Chariots)	Vista Way-W 1611	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
02-054	3	Aloha Motors (Classic Chariots)	Vista Way-W 1611	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
03-078	1	Amron internation	Aspen Way-1380	TC-30	Vegetated Swale	Vegetated Swale			Agua Hedionda
03-078	2	Amron internation	Aspen Way-1380	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
05-024	1	Bio-Forms	Executive Ridge-3215	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
05-024	2	Bio-Forms	Executive Ridge-3215	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
05-024	3	Bio-Forms	Executive Ridge-3215	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
05-024	4	Bio-Forms	Executive Ridge-3215	TC-22	Extended Detention Basin	Detention Pond			Agua Hedionda
05-024	5	Bio-Forms	Executive Ridge-3215	MP-52	Drain Insert	downspouts w/ fossil filters			Agua Hedionda
04-051	1	Breeze Hill	La Tortuga Dr-495	TC-30	Vegetated Swale	Grassy Swale			Buena Vista Creek
04-051	2	Breeze Hill	La Tortuga Dr-495	TC-30	Vegetated Swale	Grassy Swale			Buena Vista Creek

GP #	BMP loc ID	Project Name	Location	CASQA BMP ID	BMP Type	BMP Detail	BMP manufacturer, if applicable	BMP Model #, if applicable	Watershed
04-051	3	Breeze Hill	La Tortuga Dr-495	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek
04-051	4	Breeze Hill	La Tortuga Dr-495	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek
04-051	5	Breeze Hill	La Tortuga Dr-495	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
04-051	6	Breeze Hill	La Tortuga Dr-495	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
06-012/06-013	1	Breeze Hill Promenade	Melrose Dr-S. 635	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda/ Buena Vista Creek
06-012/06-013	2	Breeze Hill Promenade	Melrose Dr-S. 635	MP-52	Drain Insert	Fossil Filter	Suntree Technologies	Curb Inlet Basket System	Agua Hedionda/ Buena Vista Creek
06-012/06-013	3	Breeze Hill Promenade	Melrose Dr-S. 635	MP-52	Drain Insert	Fossil Filter			Agua Hedionda/ Buena Vista Creek
06-012/06-013	4	Breeze Hill Promenade	Melrose Dr-S. 635	MP-52	Drain Insert	Fossil Filter			Agua Hedionda/ Buena Vista Creek
06-012/06-013	5	Breeze Hill Promenade	Melrose Dr-S. 635	MP-52	Drain Insert	Fossil Filter			Agua Hedionda/ Buena Vista Creek
06-012/06-013	6	Breeze Hill Promenade	Melrose Dr-S. 635	MP-50	Wet Vault	Bio-Filter	Suntree Technologies	NSBB 5-10-84	Agua Hedionda/ Buena Vista Creek
06-012/06-013	7	Breeze Hill Promenade	Melrose Dr-S. 635	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda/ Buena Vista Creek
06-012/06-013	8	Breeze Hill Promenade	Melrose Dr-S. 635	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda/ Buena Vista Creek
02-071	1	Directed Electronics Inc	Viper Way-1	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-071	2	Directed Electronics Inc	Viper Way-1	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-071	3	Directed Electronics Inc	Viper Way-1	--	Permanent Erosion Control	Silt Fence??			Agua Hedionda
05-019	1	DJ Orthopedics	Decision St-1430	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
05-019	2	DJ Orthopedics	Decision St-1430	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
05-019	3	DJ Orthopedics	Decision St-1430	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
02-089	1	El Pollo Loca	Melrose Dr-S. 495	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
02-080	1	Focus Industrial Center	Grand Ave-2460	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-081	1	Focus Industrial Center	Cades Way-2441	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-081	1	Focus Industrial Center	Cades Way-2441	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-080	2	Focus Industrial Center	Grand Ave-2460	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
05-008	1	Fortuna Ave.	Fortuna Ave	TC-22	Extended Detention Basin	Detention Pond			Lower San Luis
03-085	1	Frame Residence	Eucalyptus Ave-819	MP-52	Drain insert	Fossil Filter	FlowGard Plus		Buena Vista Creek
03-085	2	Frame Residence	Eucalyptus Ave-819	TC-30	Vegetated Swale	Vegetated Swale			Buena Vista Creek
07-023	1	Hacienda Professional Center	La Tortuga Dr-465	TC-30	Vegetated Swale	Grassy Swale			Buena Vista Creek
07-023	2	Hacienda Professional Center	La Tortuga Dr-465	TC-30	Vegetated Swale	Grassy Swale			Buena Vista Creek
05-030	1	Hill Drive	Hill Dr-336	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek
05-030	2	Hill Drive	Hill Dr-336	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek

GP #	BMP loc ID	Project Name	Location	CASQA BMP ID	BMP Type	BMP Detail	BMP manufacturer, if applicable	BMP Model #, if applicable	Watershed
05-030	3	Hill Drive	Hill Dr-336	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek
05-030	4	Hill Drive	Hill Dr-336	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek
04-010	1	Home Depot	Melrose Dr-S. 2430	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-010	2	Home Depot	Melrose Dr-S. 2430	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-010	3	Home Depot	Melrose Dr-S. 2430	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-010	4	Home Depot	Melrose Dr-S. 2430	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-010	5	Home Depot	Melrose Dr-S. 2430	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-010	6	Home Depot	Melrose Dr-S. 2430	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-010	7	Home Depot	Melrose Dr-S. 2430	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-010	8	Home Depot	Melrose Dr-S. 2430	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-010	9	Home Depot	Melrose Dr-S. 2430	MP-51	Hydrodynamic Vortex Separator	Treatment Unit	Vortechnics Treatment	9000	Agua Hedionda
04-010	10	Home Depot	Melrose Dr-S. 2430	--	Underground Det. Sys	7400 cu ft VOL			Agua Hedionda
06-044	1	Isabella Way	Oak Dr-1375	TC-40	Media Filter	StormTreat Sys	Bio Clean	StormTreat System	Buena Vista Creek
06-044	2	Isabella Way	Oak Dr-1375	TC-40	Media Filter	StormTreat Sys	Bio Clean	StormTreat System	Buena Vista Creek
06-044	3	Isabella Way	Oak Dr-1375	MP-52	Drain insert	Fossil Filter			Buena Vista Creek
06-044	4	Isabella Way	Oak Dr-1375	MP-52	Drain insert	Fossil Filter			Buena Vista Creek
06-044	5	Isabella Way	Oak Dr-1375	MP-52	Drain insert	Fossil Filter			Buena Vista Creek
06-044	6	Isabella Way	Oak Dr-1375	MP-52	Drain insert	Fossil Filter			Buena Vista Creek
02-061	1	Jury & Clark development	Cades Way-2435	MP-52	Drain Insert	Fossil Filter	Kristar	FF-18-18	Agua Hedionda
02-061	2	Jury & Clark development	Cades Way-2435	MP-52	Drain Insert	Fossil Filter	Kristar	--	Agua Hedionda
02-061	3	Jury & Clark development	Cades Way-2435	MP-52	Drain Insert	Fossil Filter	Kristar	--	Agua Hedionda
02-061	4	Jury & Clark development	Cades Way-2435	MP-52	Drain Insert	Fossil Filter	Kristar	FF-18-18	Agua Hedionda
03-021	1	Monarch Apts	Thibido Rd-1850	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	CDS Technologies	PMSU_20_20/ PMSU_20_15_ 4	Agua Hedionda
03-021	2	Monarch Apts	Thibido Rd-1850	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	CDS Technologies	PMSU_20_20/ PMSU_20_15_ 4	Agua Hedionda
03-021	3	Monarch Apts	Thibido Rd-1850	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	CDS Technologies	PMSU_20_20/ PMSU_20_15_ 4	Agua Hedionda
03-021	4	Monarch Apts	Thibido Rd-1850	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	CDS Technologies	PMSU_20_20/ PMSU_20_15_ 4	Agua Hedionda
03-057	1	Moxie Industrial Building	Corporate View-3260	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda

GP #	BMP loc ID	Project Name	Location	CASQA BMP ID	BMP Type	BMP Detail	BMP manufacturer, if applicable	BMP Model #, if applicable	Watershed
03-057	2	Moxie Industrial Building	Corporate View-3260	--	Bio-Filter	Gravel Swale above sub drain			Agua Hedionda
03-057	3	Moxie Industrial Building	Corporate View-3260	TC-22	Extended Detention Basin	Detention Pond			Agua Hedionda
03-057	4	Moxie Industrial Building	Corporate View-3260	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
04-067	1	Moxie Pacific Palomar Park	Corporate View-3270	TC-22	Extended Detention Basin	Pond w/ fossil filter			Agua Hedionda
04-067	2	Moxie Pacific Palomar Park	Corporate View-3270	MP-52	Drain insert	Clean out w/ hydrocarbon filter			Agua Hedionda
04-067	3	Moxie Pacific Palomar Park	Corporate View-3270	MP-52	Drain insert	Fossil Filter			Agua Hedionda
04-067	4	Moxie Pacific Palomar Park	Corporate View-3270	MP-52	Drain insert	downspouts w/ fossil filters			Agua Hedionda
02-036	1	Multi Tennant Industrial	Activity Dr-1235	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-036	2	Multi Tennant Industrial	Activity Dr-1235	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-024	1	Nettleton Self Storage	Nettleton-124	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
04-024	2	Nettleton Self Storage	Nettleton-124	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
04-024	3	Nettleton Self Storage	Nettleton-124	TC-30	Vegetated Swale	Grassy Swale			Buena Vista Creek
04-024	4	Nettleton Self Storage	Nettleton-124	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
04-024	5	Nettleton Self Storage	Nettleton-124	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
02-058	1	North Island Finacial Credit Union	University Dr-1960	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-033	1	Poinsettia Industrial	Poinsettia ave-921-925	TC-30	Vegetated Swale	Vegetated Swale			Agua Hedionda
04-033	2	Poinsettia Industrial	Poinsettia ave-921-925	MP-52	Drain Insert	Filter with hydrocarbon boom			Agua Hedionda
04-033	3	Poinsettia Industrial	Poinsettia ave-921-925	TC-30	Vegetated Swale	Vegetated Swale			Agua Hedionda
04-033	4	Poinsettia Industrial	Poinsettia ave-921-925	TC-30	Vegetated Swale	Vegetated Swale			Agua Hedionda
03-005	1	Poinsettia Ridge	Activity Dr-1201-1211	MP-50	Wet Vault	Sand/ Oil Seperator			Agua Hedionda
03-005	2	Poinsettia Ridge	Activity Dr-1201-1211	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
03-005	3	Poinsettia Ridge	Activity Dr-1201-1211	MP-50	Wet Vault	Stormwater Treatment	Stormceptor	STC 2400	Agua Hedionda
03-005	4	Poinsettia Ridge	Activity Dr-1201-1212	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
03-005	5	Poinsettia Ridge	Activity Dr-1201-1213	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
03-005	6	Poinsettia Ridge	Activity Dr-1201-1214	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
03-005	7	Poinsettia Ridge	Activity Dr-1201-1215	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-015	1	Red Line towing	Olive Ave-451	MP-52	Drain Insert	Fossil Filter			Buena Vista Creek
03-079	1	Ruby/Ravine Subdivision	Steeple Chase Lane	TC-30	Vegetated Swale	Vegetated Swale			Buena Vista Creek
03-079	2	Ruby/Ravine Subdivision	Steeple Chase Lane	MP-52	Drain insert	Fossil Filter			Buena Vista Creek
03-079	3	Ruby/Ravine Subdivision	Steeple Chase Lane	MP-52	Drain insert	Fossil Filter			Buena Vista Creek
04-048	1	Sunset Heights Subdivision	Vale View Dr - 787	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-048	2	Sunset Heights Subdivision	Vale View Dr - 787	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-048	3	Sunset Heights Subdivision	Vale View Dr - 787	TC-22	Extended Detention Basin	Detention Pond			Agua Hedionda
06-038	1	Sycamore Medical Center	SycamoreAve-902	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
05-049	1	Sycamore Point Business Park	Hot Spring Way-1315	TC-30	Vegetated Swale	Vegetated Swale			Agua Hedionda
04-062	1	Sycamore Vista Bus Pk	La Mirada Dr-2200	TC-30	Vegetated Swale	Grassy Swale above sub drain			Agua Hedionda
04-062	2	Sycamore Vista Bus Pk	La Mirada Dr-2200	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
04-062	3	Sycamore Vista Bus Pk	La Mirada Dr-2200	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
02-082	1	Sycamore Vista Business Center	Sycamore Ave-1425	MP-52	Drain Insert	Fossil Filter			Agua Hedionda

GP #	BMP loc ID	Project Name	Location	CASQA BMP ID	BMP Type	BMP Detail	BMP manufacturer, if applicable	BMP Model #, if applicable	Watershed
02-082	2	Sycamore Vista Business Center	Sycamore Ave-1425	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-082	3	Sycamore Vista Business Center	Sycamore Ave-1425	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-082	4	Sycamore Vista Business Center	Sycamore Ave-1425	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-082	5	Sycamore Vista Business Center	Sycamore Ave-1425	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-082	6	Sycamore Vista Business Center	Sycamore Ave-1425	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-082	7	Sycamore Vista Business Center	Sycamore Ave-1425	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
02-082	8	Sycamore Vista Business Center	Sycamore Ave-1425	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-006	1	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	2	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	3	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	4	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	5	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	6	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	7	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	8	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	9	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	10	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	11	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
04-006	12	Sycamore Vista Business Park	La Mirada Dr-2200	MP-52	Drain insert	Fossil Filter	FlowGard		Agua Hedionda
05-025	1	Thomasville Furniture	Park Center Drive-1389	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
05-025	2	Thomasville Furniture	Park Center Drive-1389	TC-30	Vegetated Swale	Grassy Swale			Agua Hedionda
06-025	1	Vista Kidney Dialysis Center	Hacienda Dr-950	TC-30	Vegetated Swale	Grassy Swale			Buena Vista Creek
06-025	2	Vista Kidney Dialysis Center	Hacienda Dr-950	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek
05-017	1	Vista Point Medical Plaza	Melrose Dr-S. 326	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek
05-017	2	Vista Point Medical Plaza	Melrose Dr-S. 326	MP-52	Drain insert	Fossil Filter			Buena Vista Creek
06-009	1	Vista Village Famous Daves BBQ	Vista Village Dr-307	TC-30	Vegetated Swale	Grassy Swale			Buena Vista Creek
06-009	2	Vista Village Famous Daves BBQ	Vista Village Dr-307	MP-50	Wet Vault	Bio-Filter	Suntree Technologies	NSBB 5-10-84	Buena Vista Creek
06-009	3	Vista Village Famous Daves BBQ	Vista Village Dr-307	MP-50	Wet Vault	Bio-Filter	Suntree Technologies	NSBB 5-10-84	Buena Vista Creek
04-020/05-054	1	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	2	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	3	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	4	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	5	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	6	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	7	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	8	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	9	Walgreens	Sycamore Ave-310	MP-52	Drain Insert	Fossil Filter			Agua Hedionda
04-020/05-054	10	Walgreens	Sycamore Ave-310	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment			Agua Hedionda
04-020/05-054	11	Walgreens	Sycamore Ave-310	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment			Agua Hedionda

GP #	BMP loc ID	Project Name	Location	CASQA BMP ID	BMP Type	BMP Detail	BMP manufacturer, if applicable	BMP Model #, if applicable	Watershed
05-041	1	Warmland Estates	Grandview Rd-1434	TC-22	Extended Detention Basin	Detention Pond			Buena Vista Creek
04-001	1	Watkin Manufacturing Inc	Hot Spring Way-1280	MP-52	Drain Insert	Fossil Filter	FlowGard		Agua Hedionda
04-001	2	Watkin Manufacturing Inc	Hot Spring Way-1280	TC-30	Vegetated Swale	landscaped swale surronding area drains to sub drain			Agua Hedionda
07-003	1	Wilborn (Fast-n-Clean Carwash)	Vista Way-W 1661	TC-30	Vegetated Swale	Gravel			Buena Vista Creek
07-003	2	Wilborn (Fast-n-Clean Carwash)	Vista Way-W 1661	TC-30	Vegetated Swale	Gravel			Buena Vista Creek

APPENDIX D

Example of BMP Maintenance Verification Form and Letter

Month, Day, Year

Property Owner name
Address
Vista, CA 92084

Subject: Treatment Control Best Management Practices Maintenance Requirements
(APN No.??????????, Grading Plan No. ????, Storm Drain BMP Maintenance Agreement Doc ?????

Dear Property Owner Name,

The City is providing for your convenience the following information regarding the City's Treatment Control Best Management Practice maintenance requirements.

City records indicate that treatment control BMPs were installed at Address during a past development project. The City conducted an inspection of the treatment control BMPs and compiled an inventory (enclosed). The inventory indicates the type, condition, and corrective actions required of all treatment control BMPs located on your property. Corrective actions must be taken immediately for those BMPs the City has identified as high priority. Corrective actions may include immediately servicing a BMP as it was observed to be ineffective in treating storm water runoff and/or installing the required treatment control BMP at a location where the BMP was found not to exist.

To comply with the City's treatment control BMP maintenance requirements the City is requesting that you:

(1) Conduct immediate corrective actions for those locations that were identified as high priority on the BMP Inventory.
(2) Maintain and service all BMPs as frequent as necessary to ensure proper functioning. You may find BMP maintenance information on California Association of Storm Water Quality's website at www.cabmphandbooks.com. Property managers have often established servicing contracts with environmental firms who have the experience, qualifications, and training in servicing particular BMP devices such as storm drain filter inserts. However, the City is by no means requiring this.
(3) Provide periodically (City recommends following every BMP servicing event), copies of BMP maintenance documents, photographs, and certifications to the City which the City will need in verifying that the BMPs are being maintained and operating effectively. The City is requesting copies of maintenance records starting in January 1, 2006.

(4) Conduct periodic inspections of your treatment control BMPs and take corrective actions (repair, clean, service, etc.) when necessary.

Under the City's Storm Water Management and Discharge Control Program Ordinance (Municipal Code, Chapter 13.18), Storm Water Standards Manual (Section G), and local, state, and federal law property owners are responsible for ensuring that treatment control BMPs located on their property are maintained, serviced, and effective in treating pollutants in storm water. Treatment Control BMPs are generally installed as a condition of approval for specific land development projects. Upon project approval, the property owner and City enter into an official agreement, known as a Storm Drain BMP Maintenance Agreement. This agreement indicates the responsibility of the owner and each successive owner for maintaining the property's BMPs (Storm Drain BMP Maintenance Agreement Document-enclosed). These requirements also include providing the City with maintenance documents, certifications, and other related documentation to verify that the BMPs are being properly maintained and are effective in treating stormwater runoff.

To ensure compliance, the City will be conducting follow-up inspections at sites where corrective actions were required. Additionally, the City will be conducting annual inspections to ensure continued compliance. The City recommends that you carefully review this letter and enclosed materials ("Frequently Asked Questions", Inventory, and photographs-if applicable) and take the appropriate actions in this matter.

The City requests that you send copies of maintenance and certification documents and photographs to:

City of Vista
Engineering Dept/Stormwater Division
600 Eucalyptus Avenue
Vista, CA 92084

The City appreciates your assistance and compliance in this matter. If I can be of further assistance please call me at (760) 726-1340 ext 1333.

Sincerely,

Doug Coppi
Sr. Environmental Specialist

Enclosure

FREQUENTLY ASKED QUESTIONS REGARDING TREATMENT CONTROL BMPS

What is a Treatment Control BMP?
A Treatment Control BMP (BMP means best management practice) is an engineered system designed and constructed to remove pollutants from storm water. Examples of Treatment Control BMP's include storm drain inlet filter inserts, detention basins, and vegetative swales.

What Treatment Control BMP devices are located on my property?
The City Grading Plan provides the locations of the BMPs located on your property. Copies of City Grading Plans may be obtained by visiting the City's Development Services Division located at City Hall. Also, refer to the enclosed materials including the treatment control BMP inventory and photographs (if applicable).

In addition to being a requirement, why is it important to remove pollutants from storm water runoff?
Pollutant discharges to the storm water conveyance system are known to contribute to pollution in the City of Vista's receiving waters. Pollutants (include but are not limited to sediment, trash, debris, detergents, pesticides, green waste, construction waste, and automotive waste) can be picked up by storm water runoff and discharge into the City's streets, structural channels, and other drainage systems. This drainage system is designed to carry runoff from our streets to the City's receiving waters. In the City of Vista these receiving waters include Agua Hedionda Creek, Buena Creek, Buena Vista Creek, San Marcos Creek, Loma Alta Creek, and Guajome Creek. However, unlike the City's sanitary sewer system, storm water runoff does not get treated. Polluted storm water runoff may cause water quality degradation and affect the health and habitats of fish, wildlife, and humans. Hence, pollution prevention is of utmost importance.

City of Vista Treatment BMP Inspection Form

Date:_____ Time:_____ GP Number:_____ Inspector:_____

I. REASON FOR INSPECTION

☐ Initial ☐ Follow-up ☐ Other
☐ Routine ☐ Response to Complaint Inspection Priority:_____

II. PROJECT INFORMATION

1. ID# or Assessor Parcel Number:_____ 2. Year of Installation:_____
3. Project Type: ☐ Residential SF ☐ Residential Multi-family ☐ Residential Subdivision ☐Industrial ☐Road
   ☐ Institutional ☐Commercial – retail ☐Com – restaurant ☐Com – auto ☐Com – gas station ☐Other _____
4. Facility Name:_____
   Site Address:_____
   Contact Name:_____Phone:_____
5. If the property owner is different than the contact name, fill out information below:
   Owner Name:_____ Title:_____
   Owner's Address:_____ Phone:_____
6. If the BMP Operator is different that the contact name, fill out information below:
   Name:_____ Title:_____
   Address:_____ Phone:_____
7. Maintenance Documentation: ☐Reviewed ☐Not Reviewed ☐Not Available ☐Other:_____
8. Party Responsible for O&M Documentation: ☐Property Owner ☐ BMP Operator ☐ Contractor
   ☐Other:_____
   Number of BMPs associated with this site: _____

III. BMP TYPE CODE TABLE (Use codes for "BMP Type Code #" field under the "BMP type and inspection results table")

#	Structural	#	Biofiltration
1	Drain Insert MP-52	11	Vegetated Swale TC-30
2	Porous Pavement	12	Vegetated Buffer Strip TC-31
3	Media Filter TC-40 or MP-40	13	Bioretention TC-32
4	Hyrodynamic Separator	14	Roof Gardens
5	Vortex Separator MP-51	15	Planter Boxes
6	Water Quality Inlet TC-50	--	**Detention**
--	**Infiltration**	16	Extended Detention Basin TC-22
7	Infiltration Basin TC-11	17	Underground Det. Systems
8	Infiltration Trench TC-10	18	Wet Pond TC-20
9	Exfiltration Trench	19	Wet Vault MP-50
10	Retention/Irrigation TC-12	20	Wetland TC-21 or MP-20

IV. BMP TYPE AND INSPECTION RESULTS (Use Codes from "Potential Inspection Results with Definitions" Sheet)

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____
_____
_____
_____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____
_____
_____
_____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____
_____
_____
_____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____
_____
_____
_____

IV. BMP TYPE AND INSPECTION RESULTS - Continued (Use Codes from "Potential Inspection Results with Definitions" Sheet)

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

BMP ID # ____ Location: _____
BMP Type Code # ____ Describe if other:_____
Inspection Code # ____ Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Describe corrective actions needed: _____

V. INSPECTION RESULTS AND FOLLOW-UP ACTIONS (Use Codes from "Potential Inspection Results with Definitions" Sheet)

1. Describe corrective actions needed:_____
_____
_____
_____
_____
_____
_____

2. Describe materials distributed (brochures, BMP's, etc.): _____
_____

3. Describe Enforcement Action (Case Number if applicable: SW# _____)
   - ☐ None ☐ Warning Notice ☐ NOV
   - ☐ Administrative Citation ☐ Administrative Action with Penalty/Fine ☐ Civil Action
   - ☐ Criminal Action ☐ Referral for Enforcement_____

4. Follow Up required? ☐ No ☐ Yes (describe below)
   - ☐ Operator to Submit Records _____
   - ☐ Return inspection needed _____
   - ☐ Other _____

5. Priority for re-inspection: ☐ High ☐ Medium ☐Low

6. Required Compliance Date:_____ Date Corrected:_____

VI. FOLLOW-UP AND RE-INSPECTION INFORMATION

Re-inspection Date: _____ Time: _____ Inspector: _____

Results:
☐ No violations noted at this time (corrections verified)
☐ Violation of City's storm water ordinance Case Opened – SW#_____

Describe Enforcement Action
- ☐ None ☐ Warning Notice ☐ NOV
- ☐ Administrative Citation ☐ Administrative Action with Penalty/Fine ☐ Civil Action
- ☐ Criminal Action ☐ Referral for Enforcement_____

Corrective Actions Needed: _____
_____
_____
_____

Facility Representative:_____ Inspector:_____

Potential Inspection Results with Definitions

ID	Inspection Results	Definitions
	I. ALL BMP Types	
1	No Visible / Apparent Problems	No Visible or apparent problems with BMP function. BMP appears to be well-maintained.
2	Significant Engineering Design /Flaws	BMP observed to have significant engineering/design flaws which lessen its effectiveness as a stormwater treatment measure.
3	Unauthorized Modifications	Any modification that lessens the effectiveness of the BMP; any modification not authorized by the City, designated agency or other regulatory agency.
4	BMP Destroyed or Eliminated	BMP destroyed, removed or eliminated from property.
5	Trash/Debris Accumulation or Dumping	Trash & debris accumulates within and/or on the BMP; any modification not authorized by the City, designated agency or other regulatory agency
6	Evidence of Contaminants & Pollution	Evidence or presence of oil, gasoline, contaminants or other pollutants.
7	BMP Access Obstructed	Access to BMP obstructed or limited.
8	Obnoxious Odors	Unpleasant odors within/from BMP.
9	Fencing-Missing or Broken Bars	Any defect in or damage to the fence or gate that permits easy entry to a facility.
10	BMP cannot be located	BMP cannot be located for inspection.
	II. Biofiltration (Bioretention, Vegetated Buffer Strip, Vegetated Swale, Roof Gardens, Planter Boxes)	
	A. General	
11	Uneven or Clogged Flow Spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed across the BMP.
12	Leaking or Malfunctioning Irrigation System	Irrigation system leaking or malfunctioning
	B. Sediment and Erosion Problems	
13	Sediment Accumulation	Sediment depth exceed 2 inches on more than 10%of the vegetated treatment area; or sediment interferes with BMP performance.
14	Erosion/Scouring	Eroded or scoured areas due to flow channelization, higher flows, wind or water.
	C. Vegetation Maintenance Issues	
15	Poor Vegetation Coverage	Planted vegetation is sparse or bare or eroded patches occur in more than 10% of the BMP. Growth of planted vegetation is poor because sunlight does not reach swale.
16	Invasive/Nuisance Vegetation or Weeds	Planted vegetation is excessively tall; nuisance weeds, invasive or noxious vegetation are overgrown; vegetation reduces free movement of water through BMP.
17	Tree/Bush Growth	Growth does not allow maintenance access or interferes with maintenance activity.
	D. Drainage Problems	
18	Standing Water/Excessive Ponding/Soggy Soil	Water is observed within the BMP (between storms) and appears not to drain freely or silo s excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
19	Mosquito Habitat	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
20	Clogged or Obstructed Inlets/Outlets	Inlet/Outlet clogged or obstructed with sediment and /or debris
21	Constant Baseflow Damage	Small quantities of water flow through the vegetated swale, even when it has been dry for weeks, and an eroded, muddy channel has formed in the swale bottom; constant baseflow from irrigation runoff.
	III. Detention and Infiltration (Extended Detention Basin, Wet Pond, Wetland, Exfiltration Trench, Infiltration Basin orTrench, Retention/Irrigation)	
	A. Vegetation Maintenance Issues	
22	Invasive/Nuisance Vegetation or Weeds	Invasive, nuisance vegetation or weeds present.
23	Tree/Brush Growth & Hazard Trees	Growth does not allow maintenance access or interferes with maintenance activity; dead, diseased or dying trees; tree growth on berms or emergency spillway >4 feet in height or covering more than 10% of spillway.
	B. Sediment and Erosion Problems	
24	Sediment Accumulation	Detention BMPs – sediment on bottom preventing water flow in/out of the facility. Infiltration BMP's - Sediment in storage areas, rock filters, and pre-settling ponds and vaults preventing infiltration.
25	Erosion	Eroded damage over 2 inches deep; potential for continued erosion; any erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
	C. Animal Pests	
26	Rodent Holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping though dam or rodent holes.
27	Insects (wasps, hornets, bees)	Insects (wasps, hornets, bees) interfere with maintenance activities. Excessive or nuisance levels
	D. Drainage Problems	
28	Standing Water/Excessive Ponding/Soggy Soil	Water is observed within the BMP (between storms) and appears not to drain freely or silo s excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
29	Mosquito Habitat*	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
30	Empty Cell	First cell of wet pond does not hold water.
31	Unlevel Berm Surface	Unlevel internal berm divding wet pond cells.
	E. Unique to Certain BMPs	
32	Uneven or Clogged Flow Spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed across the BMP.
33	Oil sheen on Water (Wet Ponds)	Prevalent and visible oil sheen.
34	Damaged/Missing Bars 9Debris Barriers)	Bars are missing, loose, bent out of shape, or detiorating due to excessive rust.
35	Leaking or malfunctioning irrigation system	Irrigation system leaking or malfunctioning.
36	Embankment Settlement Lower Than Design Elevation	Embankment settlement four inches lower than the design elevation.

	III. Structural, Non-landscaped Based (Drain Insert, Hydrodynamic Separator, Media Filter, Pouros Pavement, Vortex Separator, Wet Vault, Water Quality Inlet, Underground Detention Systems)	
	A. General	
37	Mosquito Habitat*	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
38	Access Cover Damaged/Difficult to Remove/Not in Place	Cover cannot be opened, corrosion/deformation of cover; maintenance person cannot remove cover using the normal lifting pressure; cover is missing or only partially in place.
39	Deteriorating Paint or Protective Coating	Part or parts that have a rusting or scaling condition and have affected structural adequacy.
40	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than ½ inch of thread (may not apply to self-locking lids)
	B. Ineffective Filter Material, Liners and/or Membranes	
41	Sediment Accumulation	Sediment depth exceeds acceptable levels (varies between BMPs)
42	Ineffective Media Insert/Filter Media	Media insert/filter media ineffective in doing intended function and needs to be replaced; filter is beyond the typical average life of product.
43	Rock Lining Out of Place/Missing (Sand Filters)	Soil beneath the rock lining is visible.
44	Visible Liner with Holes or Damage	Liner is visible and has more than three ¼-inch holes in it or is damaged.
45	Compromised Membrane or Roof Structure	Membrane or roof structure is compromised by either roots and/or water discharge.
46	Short Circuiting	Flows do not properly enter filter cartridges (media filters); seepage/flows occur along the vault walls and corners (sand filters); Sand eroding near inflow area (sand filters); flows become concentrated over one section of the sand rather than disperse (sand filters)
	C. Pipe or Pipe Join Problems	
47	Damaged Pipes	Any part of the piping that is crushed, deformed, damaged, in need of repair or any other failure to the piping; protective coating is damaged.
48	Missing Debris Barrier/Not Attached to Pipe	Entire barrier is missing or is not attached to pipe.
49	Sediment in Drainage Pipes/Cleanouts	Drain pipes and/or cleanouts are full of sediment and/or debris.
50	Joints Between Tanks/Pipe Section	Any openings or voids allowing material to be transported into facility.
51	Tank Pipe bent Out of Shape	Any part of tank/pipe is bent out of shape more than 10% of its design shape.
	D. Underground Vaults/Containers, Chambers, Tank Issues	
52	Sediment Accumulation	Sediment depth exceeds acceptable levels (varies between BMPs), 20% of the diameter of the pipe/design depth or interferes with proper BMP function.
53	Vault Structure Damage	Vault structures which are observed to have cracks in walls, bottom damage to frame and/or top slab.
54	Damaged Baffles and/or Weir	Baffles which are corroded, cracked, warped and/or showing signs of failure as determined by maintenance person. Weir is observed to be damaged by maintenance person.
55	Access Ladder Damage	Ladder is corroded or deteriorated, not functioning properly, not securing attached to structural wall, missing rungs, has cracks and or/is misaligned.
56	Oil Accumulation (Water Quality Inlet, Vortex Separator)	Oil accumulations that exceed 1-inch at the surface of the water.
57	Blocked, Damaged, or Plugged Air Vents	One-half of a cross section of a vent is blocked at any point or the vent is damaged.
	E. Unique to Certain BMPs	
58	Damaged Coalescing Plates (Water Quality Inlet)	Plate media broken, deformed, cracked and/or showing signs of failure.
59	Clogged Porous Pavement	By visual inspection, little or no water flows through pavement during heavy rain storms, or usually causing ponding; clogging due to debris, organic matter or sediment.
60	Damaged Internal Walls (Sand Filter Media)	Internal walls are corroded, cracked, warped and/or showing signs of failure as determined by maintenance person.
61	Prolonged Flows (Sand Filter Media)	Sand is saturated for long periods of time (several weeks) and does not dry out between storms due to continuous base flow or prolonged flows from detention facilities.
	IV. Other	
62	Other	Inspection Results which are not defined

If mosquitoes or mosquito larvae are observed within a BMP, report condition to: *San Diego County Vector Control District, xxx street, San Diego, CA 99999; phone: (858) 694-2888; vector@sdcounty.ca.gov; Website:www.sdfightthebite.com*

Standard Stormwater Treatment BMP Inspection Data Collection Form

Background Data for BMP Type

The *Standard Stormwater Treatment BMP Inspection Data Collection Form* (Inspection Form) lists twenty stormwater treatment BMP types (see Section III). Inspectors, data entry staff and others who use the Inspection Form can refer to the California Stormwater Quality Association (CASQA). The CASQA Fact Sheets are numbered, and are located in the CASQA *Stormwater BMP Handbook for New Development and Redevelopment*. The CASQA handbook is available online at www.cabmphandbooks.org.

APPENDIX E

Construction Inspection Listing

Project	Address	Priority	No. Weeks Active in Rainy Season	No. of Rainy Season Inspections	No. of Dry Season Inspections	Total No. of Stormwater Inspections	Non-Stormwater - Rainy Season Inspections	Non-Stormwater - Dry Season Inspections
14 homes- Willowen Ridge	2261 Edgehill Rd	High	31	14	3	17	16	10
56 Townhomes	719 Copper Dr.	High	31	13	5	18	4	5
Industrial Bldg	760 Shadowridge Dr.	High	12	8	2	10	39	18
Pocina Properties (24 lot subdivion)	877 Sycamore Ave.	High	31	13	4	17	14	7
Premier Crossing	2301 S. Melrose Dr.	High	29	12	1	13	13	4
Rough Grading for PC 2-043- 9 lot subdivision	385 Taylor St	High	12	10	5	15	23	9
Warmlands 13	1434 Grandview,	High	12	6	3	9	13	6
North Coast Church		High	31	-	-	-	62	29
3 SFR	2346 Warmlands Ave.	Medium	31	4	3	7	9	5
5 Lot Sub	2565 Oleandar	Medium	31	5	5	10	4	1
Grading Plan No 01	1276 Melrose Way	Medium	21	3	1	4	8	0
No Activity- Grading Plan No 3	702 HILO WAY	Medium	Unknown	1	3	4	0	0
SFR	1805 Sunset Dr.	Medium	Unknown	0	0	0	3	0
Vista Executive Plaza/ permit issued 11/1/05	326 Melrose S.	Medium	23	2	0	2	18	1
Business Park Car Wash	3181 Business Park Dr.	Low	31	5	3	8	6	0
COMM	2545 Fortune Way1	Low		3	2	5	2	2
Intersection	Emerald/Grapevine-Intersections	Low	Unknown	1	0	1	-	-

Project	Address	Priority	No. Weeks Active in Rainy Season	No. of Rainy Season Inspections	No. of Dry Season Inspections	Total No. of Stormwater Inspections	Non-Stormwater - Rainy Season Inspections	Non-Stormwater - Dry Season Inspections
Saic Test Lane Demonstration - Parking Lot	3105 Scott St.	Low	Unknown	3	1	4	3	0
SFD	1226 Sunset Dr	Low	25	4	3	7	8	0
SFD	696 Hilo Way	Low	15	2	0	2	3	0
SFR	1090 Golden Trail	Low	18	1	0	1	3	0
SFR	1311 Ridge Rd	Low	31	3	3	6	4	2
SFR	1438 Alta Vista	Low	3	1	3	4	0	2
SFR	1834 Knapp Dr.	Low	31	4	3	7	9	10
SFR	572 E. Bobier	Low	Unknown	1	2	3	1	0
SFR	627 Rolling Hills	Low	Unknown	0	2	2	0	0
SFR	690 Hilo Way	Low	15	2	0	2	3	0
SFR	930 Sunset Dr.	Low	Unknown	0	0	0	1	0
SFR	760 Rocking Horse Rd	Low	Unknown	0	3	3	1	0
SFR (Sorges Residence)	1020 Miramar DR.	Low	13	3	2	5	6	0
Sycamore Montessori School	867 Sycamore Ave.	Low	0	0	3	3	0	7

Engineering Inspection Daily Report

Sheet_1__ of _5__

Project: 2346 Warmlands
G.P. No. 03-036
Date: Wednesday 1-31-2007
Weather: cloudy w/ showers

Inspected: Grading X Erosion Control/SWPPP Street Imp. Sewer Storm Drain Traffic Control Traffic Signal Utilities R/W Permit Other

After the rain event last night sediment from the lower lot of this project traveled through the West facing fence onto the adjacent residence at 2378 Warmlands. The home owner of 2386 Warmlands (Jim Taylor) complained that a large amount of mud and debris infiltrated through his fence and washed into his brand new pool filling it with silt. I notified Robert Soto and he responded immediately to the situation and made plans to rectify the problem. After walking the two sites that received silt I noticed that the uncompacted soil from Mr. Taylor's pool excavation had large rivulets in it and led directly towards his pool. It also appeared that some of his silt could have come off of the denuded landscape of 2378 Warmlands. If Mr. Soto had not removed his silt fencing for the placement of the retaining wall run off could have been reduced.

SILT RUNOFF FROM EAST

SILT RUNOFF ONTO 2378

2378 WARMLANDS

LOOKING WEST TOWARDS 2386

LOOKING WEST TOWARDS 2386

LOOKING OVER FENCE FROM 2378 INTO 2386

POOL at 2386 WARMLANDS

Construction Inspector

600 Eucalyptus, Vista California, 92084-6240 (760) 726-1340 www.ci.vista.ca.us

City of Vista

Engineering Department – Inspection Division
Daily Construction Report – Private Development

Project Name:	**Soto Residences**	**Report of (day, date):**	**Wednesday, 1 August 2007**
Grading Permit No.:	**Gp03-036**	**Shift Hours:**	
Project Address / Location:	2346 warmlands	**WEATHER – Begin:** **Midday:** **End:**	sunny
Contractor:	Bob Soto	**Contractor's Super:**	
Design Engineer:	Excel	**Owner:**	Bob Soto
Architect:		**CoV Bldg Inspector:**	
Project Start Date:		**CoV Eng Inspector:**	Kurt Groscup

Narrative Report of Operation: weather was sunny

Building is ongoing for these two houses. The BMP's are holding up well and most of the construction debris is kept to a minimum.

House #2 framing

House #1 framing

(End of Narrative Report)

___Project Manager _X_Project Inspector	*Signature:* ***Kurt Groscup***

City of Vista

Engineering Department – Inspection Division
Daily Construction Report – Private Development

Project Name:	**Soto Residence**	**Report of (day, date):**	**Tuesday, 3 April 2007**
Grading Permit No.:	**GP 03-036**	**Shift Hours:**	
Project Address / Location:	2346 Warmlands	**WEATHER – Begin:** **Midday:** **End:**	Clear and sunny
Contractor:	Bob Soto	**Contractor's Super:**	Bob Soto
Design Engineer:	Excel	**Owner:**	Bob Soto
Architect:		**CoV Bldg Inspector:**	George Meyer
Project Start Date:		**CoV Eng Inspector:**	Kurt Groscup

Narrative Report of Operation: framing is ongoing with this project. The BMP"s are holding up well and have been effective during the last rain events.

Framing on 1st house

(End of Narrative Report)

___Project Manager _X_Project Inspector	*Signature:* ***Kurt Groscup***

APPENDIX F

Updated Municipal Inventory

Appendix B-4 Municipal Inventory and Required BMPs

Name	Address	Description	Pollutant Generating Activities																	Potential Pollutants Generated											
			Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances	303(d)*	High Priority	Watershed
Avo Playhouse	303 Main St	Theater	X	X				X				X	X	X		X		X		X	X	X				X	X				BV
Breeze Hill Park	645 S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X			X	BV
Brengle Terrace Park	1200 Vale Terrace Dr.	Maintenance Yard and Park	X	X				X			X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X		X	BV
Bub Williamson Park	530 Grapevine Rd	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	BV
Buena Vista Park	1851 S. Melrose Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X		X	AH
Chamber of Commerce	201 Indiana	Administrative Building	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
City Hall	600 Eucalyptus	City Hall	X	X								X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Civic Center Park	635 Alta Vista	Park & Tennis Courts	X	X								X	X	X		X		X	X	X	X	X	X	X	X	X	X	X		X	BV
Community Center	1150 Lupine Hills	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Fire Station #1	175 Melrose Dr	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Fire Station #2	1050 Valley Drive	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Fire Station #3	1070 Old Taylor St.	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			SLR
Fire Station #4	2121 Thibodo	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Gloria McClellan Senior Center	1400 Vale Terrace Dr.	Senior Center and Parking lot	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Indian Rock	343 Apollo Dr	Park										X	X					X		X	X	X		X			X	X			BV
La Mirada Canyon	1219 Park Center	Open Space	X	X								X	X	X				X		X	X	X		X			X	X			AH
Library	700 Eucalyptus	Library	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Lifeline - North County	200 Michigan Ave.	Community Services	X											?											X						BV
Moonlight Amphitheater	1200 Vale Terrace	Amphitheater	X	X				X				X	X	X		X		X		X	X	X		X		X	X			X	BV
Parking Lot	E. Broadway - Hanes Pl.	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	Main St / S. Indiana Ave. S/E corner	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	Main St - Michigan Ave.	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	523 S. Santa Fe	Parking Lot	X											X						X	X	X	X	X	X	X				X	BV
Parking Lot	300 blk Main St	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Park-N-Ride	W. Vista Way @ S. Emerald	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Police Sub-Station	1477 Moon Rd	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Police Sub-Station	2082 Thibodo	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Police Sub-Station	340 E. Townsite	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Publc Works Yard	1165 E. Taylor Street	Corporate Yard	X	X	X	X	X	X	X		X	X	X	X				X		X	X	X	X		X	X	X	X		X	BV
PW Satellite Yard	2430 Lupine Hills Dr.	Storage and Corporate Yard	X	X				X	X		X	X	X	X						X	X	X	X	X	X	X	X	X		X	AH
PW Auxillary / HHW	1145 E. Taylor St	Household Haz Waste Collection Ctr	X	X				X	X	X		X		X				X		X	X	X	X		X	X	X	X		X	BV
PW Yard / Inactive WWTP	2525 Lupine Hills	Buena Station 52 & Corporate Yard																													AH
Raintree Park	545 Townsite Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	BV

Appendix B-4 Municipal Inventory and Required BMPs

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Rancho Buena Vista Adobe	640 Alta Vista	Attraction	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Rancho Buena Vista Park	1851 S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH
Senior Center	Vista Village @ Michigan	Senior Center and old Railroad Station bldg	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Sewer Pump Station	2685 S. Melrose Dr.	Wastewater - Raceway Pump Station	X	X								X		X														X		X	AH
Sewer Pump Station	2080 S. Melrose Dr.	Buena Pump Station	X	X								X		X														X		X	AH
Shadowridge Park	2101 Lupine Hills	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH
Tennis Courts	1200 Vale Terrace	Tennis courts										X		X				X													BV
The Wave	101 Wave Dr.	Waterpark	X	X				X	X			X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	BV
Thibodo Park	1150 Lupine Hills Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH
Townsite Community Center	642 Vista Village Dr.	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Townsite Park	340 E.Townsite Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X		X	BV
Vista Village Walk	Vista Village Dr / Michigan Ave.	Green Belt Walkway																													BV
Wildwood Park	651 E. Vista Way	Park	X	X								X	X	X		X		X		X	X	X		X			X	X		X	BV
Brengle Terrace Basin	1100 Vale Terrace Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Cypress Basin	Monte Vista Dr. & Cypress Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Monte Vista Basin	Monte Vista Dr. & Valley Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Creekwalk / BV channel	Main St. & Wave Dr.	Flood control channel																	X	x	X	X	X	X	X	X	X	X		X	BV
Field Activities																															
Road and Street Maintenance		Varies													X															X	
Plaza and Sidewalk Cleaning		Varies														X														X	
Landscape Maintenance		Varies																X													
Waste Handling and Disposal		Varies										X								X	X	X	X	X	X	X	X	X			
MS4 Maintenance		Varies	See Section 6																	See Section 6											
Wastewater Utility Maintenance		Varies	See Section 6																	See Section 6											

APPENDIX G

Municipal Inspections

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 240 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PARKING LOT	Facility Name
Street Address MAIN ST/S. INDIANA S/E CORNER	Street Address ☐ change
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s)
Title: PW OP MGR	Title:
Facility Telephone # ( ) - ext. 1603	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☐ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Is the facility leased to another party? ☐ Yes ☐ No _____

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: PARKING

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods			X		GROSS ACCUMULATION IN PARKING STALLS & DEAD VEGETATION IN STALL CURB AREAS
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods			X		
Keep outdoor areas free of spills and leaks			X		
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	X				
Keep trash area free of litter and debris, liquids, powders, sediment	X				
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	X				
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

REMOVE GREASE/OIL & SWEEP LEAVES ETC

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 5:00 AM/PM

Type of Inspection: ☑ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PARKING LOT	Facility Name
Street Address 523 S. SANTA FE AVE	Street Address ☐ change
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s)
Title: PW OP MGR	Title:
Facility Telephone # ( ) - ext. 1603	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☐ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Is the facility leased to another party? ☐ Yes ☐ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: PARKING

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☑ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal :_____square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods			X		ASPHALT HAS ERODED & TRACKING/ RUNOFF OF SEDIMENT OCCURS.
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods			X		
Keep outdoor areas free of spills and leaks			X		STAINS PREVELANT IN LOT
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	X				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible	X				☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)			X		ASPHALT IS DEGRADING AREAS NEAREST STREET (MEDIANT (LE) HAVE RUN-OFF.
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	X				
Keep trash area free of litter and debris, liquids, powders, sediment	X				
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	X				
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

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D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

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☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

REPAIR ASPHALT, TO PREVENT EROSION & SEDIMENT DISCHARGE; REMOVE STAINS/AREAS/OILS.

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location: 523 S. SANTA FE AVE - PARKING LOT

Date	Location (Ex. D.1)	Corrective Actions Implemented
8/27/08	D.1 D.2	CHUCK HOLES FILLED CLEANED & REPAVED

Note: Please organize sheets per location and add additional sheets if necessary.

Completed by (Sign Name): [signature]

Print Name: RUDY LUNA

Date: 08/28/08

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6 23 10 8 Time 2:30 AM ~~PM~~

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name AVO PLAYHOUSE	Facility Name
Street Address 303 MAIN ST.	Street Address ☐ change
Responsible Person(s) ALEX SCOLLON	Responsible Person(s)
Title: THEATRE FACILITY MGR	Title:
Facility Telephone # ( ) - ext. 1525	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (CLOSED)

B. FACILITY/SITE INFORMATION

Principal activity: ENTERTAINMENT

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		X			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible	X				☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)	X				
Reduce over watering/over-irrigation	X				
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	X				
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

THIS BUILDING IS ENCLOSED & NO OUTSIDE STORAGE IT DOES NT GENERATE POLLUTANTS.

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA / HELTMARH Date 6/23/08 Time 4:00 AM (PM)

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name BREEZE HILL PARK	Facility Name
Street Address 645 S. MELROSE DR	Street Address
	☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST. DIRECTOR OF PARKS	Title:
Facility Telephone # ( ) - ext. 1148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal :_____square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOGGIE WASTE BAGS PROVIDED.
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. Recommended City Actions**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SUTOLA/HELTMACH Date 6 24 / 08 Time 10:00 AM / PM

Type of Inspection: ☑ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name BRENDLE TERRACE PARK	Facility Name
Street Address 1200 VALE TERRACE	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST. DIRECTOR OF PARKS	Title:
Facility Telephone # ( ) - ext. 1148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☑ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☑ No

Is the facility leased to another party? ☐ Yes ☑ No

Facility personnel present for inspection : NONE.

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☑ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		X			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage				X	
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)			X		CONCRETE SWALE ADJACENT TO ROAD LEADING TO YARD FULL OF LEAVES. CONCRETE SWALE LEADING WEST FROM YARD FULL OF VEGETATI
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport			X		TWO STOCKPILES WITH NO COVER/ONE W/OUT PERIMETER PROTECTION IN YARD AREA
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			AT YARD: METAL BOXES, PIPE JOINTS, PLASTIC BOXES ON GROUND OUTSIDE
Adequately cover materials stored outside			X		- UNCOVERED BAGS OF SOIL PREP SPLIT AND ON GROUND OUTSIDE - OPENED, UNCOVERED BAGS OF PLASTIC CEMENT ON GROUND OUTSIDE - UNCOVERED, OPEN BAGS OF COMPOST ON WOOD PALLET OUTSIDE
Prevent run-on from contacting materials stored outdoors			X		SAME AS ABOVE
Properly label outdoor storage containers		X			
Provide an accessible, functional spill response kit		X			
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials			X		4 PAINT CANS STORED ON GROUND OUTSIDE
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris		X			

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOGGIE BAGS PROVIDED.
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

...ny illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. Recommended City Actions**

CLEAN AND MAINTAIN CONCRETE SWALES. KEEP INACTIVE STOCKPILES COVERED AND PERIMETER PROTECTION. PROPERLY STORE OR DISPOSE OF 4 PAINT CANS. PROVIDE COVER FOR STORED MATERIALS AND KEEP OFF GROUND (BAGS OF PLASTIC CEMENT, BAGS OF SOIL PREP, BAGS OF COMPOST), CONSIDER STORAGE SHED. DO THE SAME FOR METAL BOXES, PLASTIC BOXES AND PIPE JOINTS; OR DISPOSE OF/RECYCLE IF WASTE.

Follow Up Inspection Priority: ☐ Priority 1 ☒ Priority 2 ☐ Priority 3

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☒ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☒ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

PARK

1200 VALE TERRACE

PROTECTED.

UNCOVERED BAGS / OPEN BAG OF PLASTIC CEMENT ON GROUND AT YARD.

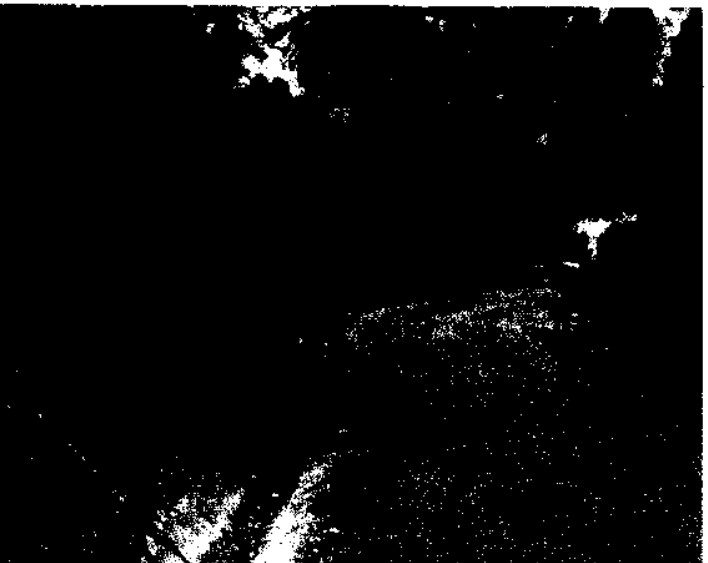

TWO STOCKPILES UNCOVERED. ONE W/OUT PERIMETER PROTECTION IN YARD AREA.

STORAGE OF METAL & PLASTIC BOXES, AND PIPE JOINT

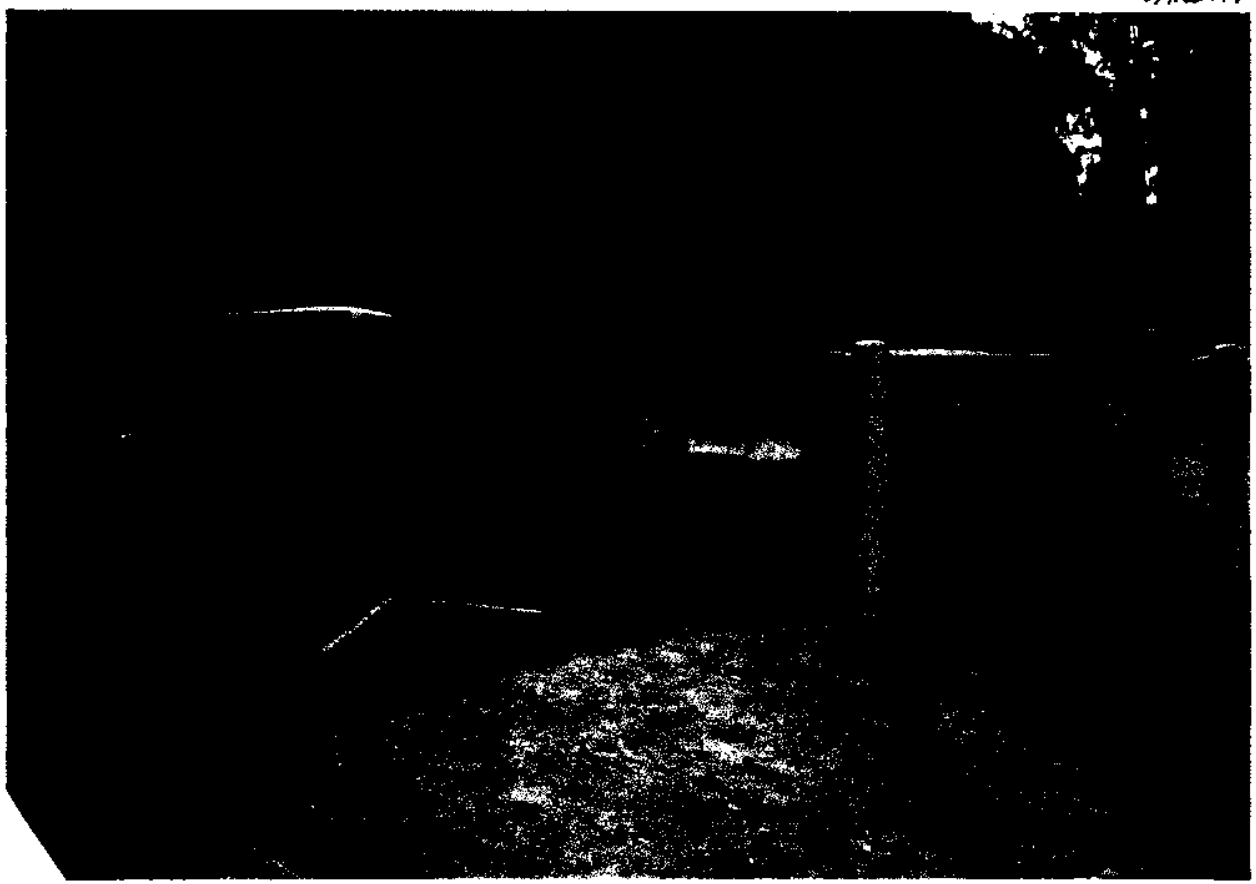

COVERED OPENED BAGS OF COMPOST,

CONCRETE SWALE LEADING WEST FROM

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location (Continue): Brengle Terrace Park

CORRECTIVE ACTIONS IMPLEMENTED

Date	Location (Ex: Civic Center Park)	Inspection Form Ref. (Ex: D.1)	Corrective Actions Implemented
7/28	Brengle Terrace park	D.1	Stencil on order for Drain Inlet Verbage.
7/28	B.T. Park	D.2	Remove Debris Clean Swale
7/28	B.T. Park	D.2	Install perimeter Around stock piles Remove misc. parts OFF Ground
7/28	B.T Park	D.3	Cover all soil bags Remove open bags of concrete cover compost on pallet Remove paint Stored on ground

Completed by (Sign Name): [signature]

Print Name: John Meneses Park Supervisor

Date: 7/29/08

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 400 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name BUB WILLIAMSON PARK	Facility Name _____
Street Address 530 GRAPEVINE RD	Street Address _____
	☐ change _____
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s) _____
Title: ASST. DIR. PARKS	Title: _____
Facility Telephone # ( ) ____ - ____ ext. 1148	Facility Telephone # ( ) ____ - ____ ext. ____
Contact Telephone # ( ) ____ - ____	Contact Phone # ( ) ____ - ____

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No _____

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		X			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage				X	
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water			X		- DUMPSTER LIDS CLOSED ✓ - TRASH BAG THROWN BEHIND DUMPSTER.
Keep trash area free of litter and debris, liquids, powders, sediment				X	2 X 5gal BUCKETS w/ UNK. CHEMICALS IN DUMPSTER AREA. 4 OLD TIRES/WHEELS IN DUMPSTER AREA.
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOGGIE BAGS PROVIDED
Identify and eliminate illicit connections and illegal discharges					
Provide storm water training for appropriate employees					
Develop a written procedure for spill prevention and response					

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. Recommended City Actions**

PROPERLY DISPOSE OF OLD TIRES/WHEELS & 5gal BUCKETS, MAKE SURE ALL TRASH GETS IN DUMPSTER

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☒ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☒ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

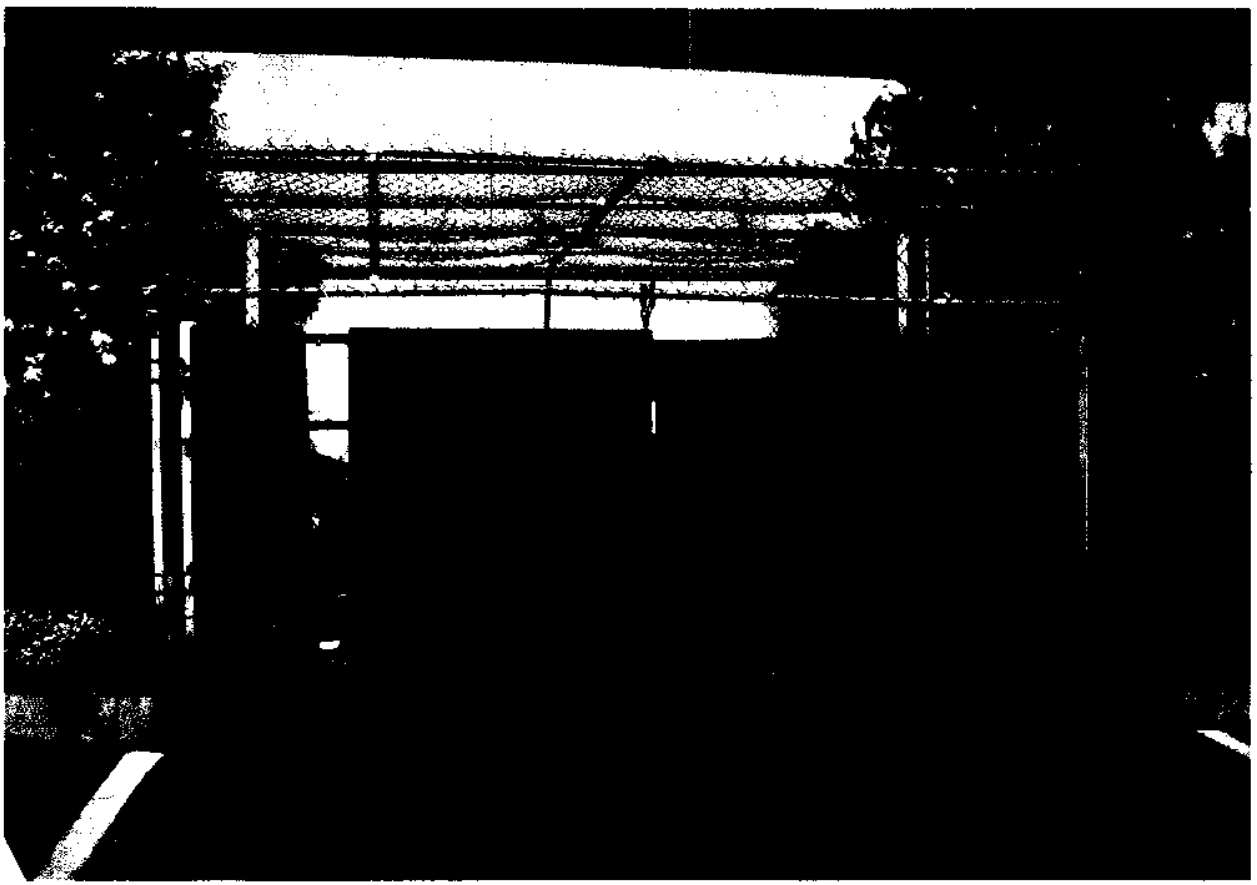

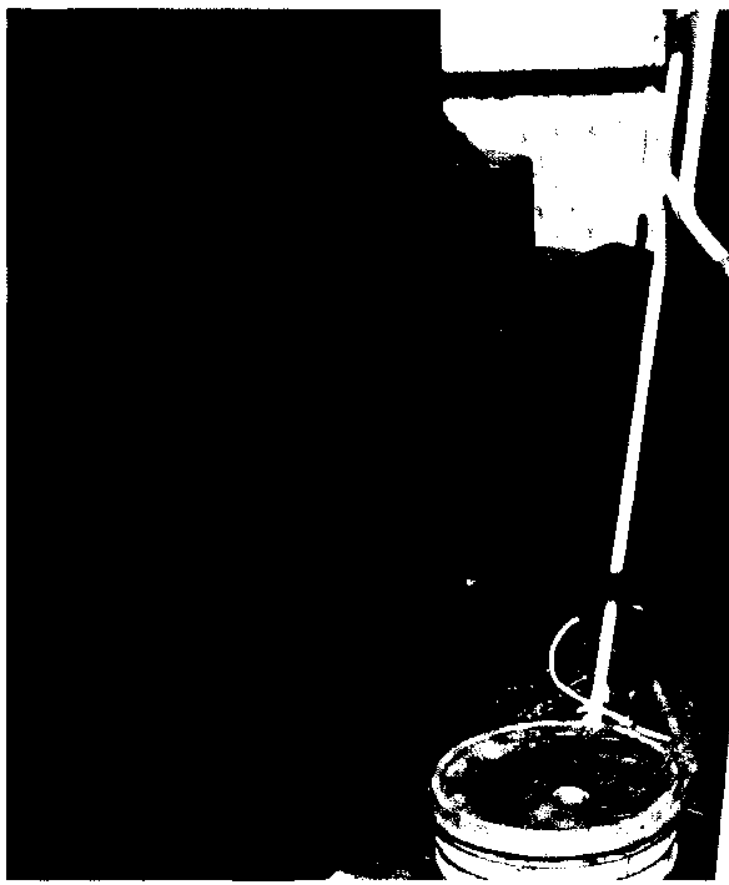

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location: BOB WILLIAMSON PARK

Date	Inspection Form Ref. #	Corrective Actions Implemented
7/27/08	D-3	DUMPSTER AREA CLEANED OUT.

Note: Please organize sheets per location and add additional sheets if necessary.

Completed by (Sign Name): SEE ATTACHED E-MAIL

Print Name: ROD KRUEGER

Date: 7/28/08

BUB WILLIAMSON PARK 530 GRAPEVINE RD.

For Stormwater Staff Only

Corrective Action Verified 7/23/08 by [signature]
Date City of Vista Representative

Comments: SEE ATTACHED PHOTO.

7/22/08

Robert Heltmach

From: Rod Krueger
Sent: Wednesday, July 23, 2008 1:06 PM
To: Sandra Sotola
Cc: Robert Heltmach; Bill Fortmueller
Attachments: Storm Water Compliance Bub W. and Civic Ctr Pk 7-22-08 001.jpg; Storm Water Compliance Bub W. and Civic Ctr Pk 7-22-08 002.jpg

Hi Sandy,

Storm water compliance issues at Bub Williamson Park and Civic Center Park:
The dumpster area at Bub Williamson Park has been cleaned out.
The 36" drain grate and drain basin at Civic Center Park has been cleaned out.
Pictures attached.

Rod Krueger
City of Vista
Community Services Dept
rkrueger@cityofvista.com

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 3:30 AM/PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name BUENA VISTA PARK (& MAINTENANCE YARD)	Facility Name
Street Address 1851 S. MELROSE DR	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST DIR PARKS	Title:
Facility Telephone # ( ) - ext. 1148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal :_____square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage				X	
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside		X			
Prevent run-on from contacting materials stored outdoors		X			
Properly label outdoor storage containers		X			
Provide an accessible, functional spill response kit		X			
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOGGIE WASTE BAGS PROVIDED.
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

NONE.

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 2:15 AM/PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name CIVIC CENTER PARK	Facility Name
Street Address 635 ALTA VISTA	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST. DIR PARK	Title:
Facility Telephone # (___) ___ - ___ ext 1148	Facility Telephone # (___) ___ - ___ ext.
Contact Telephone # (___) ___ - ___	Contact Phone # (___) ___ - ___

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods			X		SOME TRASH/DEBRIS IN STORM DRAIN INLET NEAR SKATEPARK (TO WEST OF RESTROOMS)
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		X			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOGGIE WASTE BAGS PROVIDED
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

NONE.

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

CLEAN OUT TRASH/DEBRIS FROM STORM DRAIN INLET NEAR SKATEPARK TO THE WEST OF PUBLIC RESTROOMS.

Follow Up Inspection Priority: ☐ **Priority 1** ☒ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

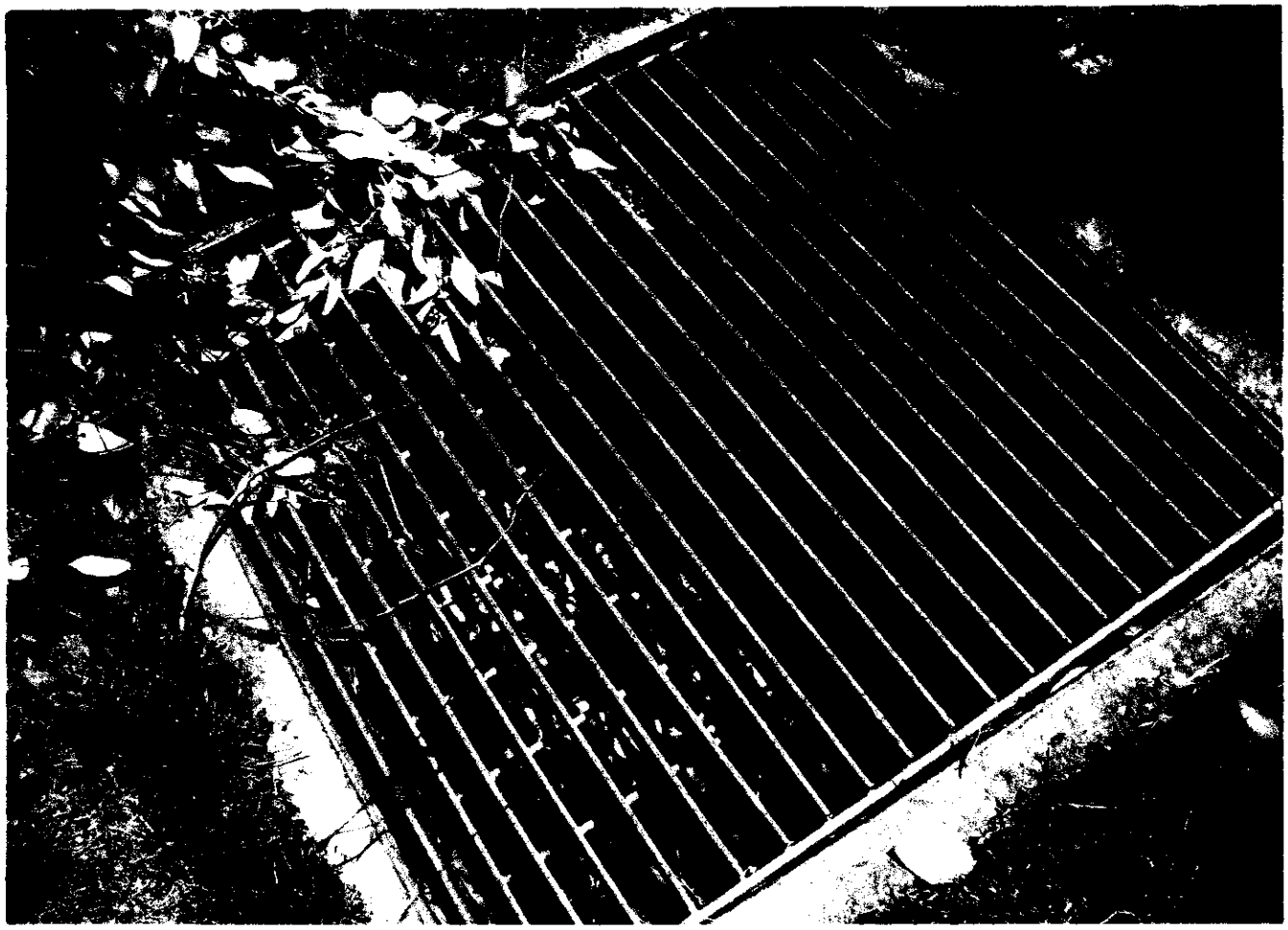

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location: CIVIC CENTER PARK

Date	Inspection Form Ref. (Ex. D.1)	Corrective Actions Implemented
7/22/08	D.1	DRAIN GRATE AND BASIN CLEANED OUT

Note: Please organize sheets per location and add additional sheets if necessary.

Completed by (Sign Name): SEE ATTACHED E MAIL

Print Name: ROD KRUEGER

Date: 7/23/08

CIVIC CENTER PARK 635 ALTA VISTA

For Stormwater Staff Only

Corrective Action Verified 7/23/08 by [signature]
Date City of Vista Representative

Comments: SEE ATTACHED PHOTO.

7/22/08

Robert Heltmach

From: Rod Krueger
Sent: Wednesday, July 23, 2008 1:06 PM
To: Sandra Sotola
Cc: Robert Heltmach; Bill Fortmueller
Attachments: Storm Water Compliance Bub W. and Civic Ctr Pk 7-22-08 001.jpg; Storm Water Compliance Bub W. and Civic Ctr Pk 7-22-08 002.jpg

Hi Sandy,

Storm water compliance issues at Bub Williamson Park and Civic Center Park:
The dumpster area at Bub Williamson Park has been cleaned out.
The 36" drain grate and drain basin at Civic Center Park has been cleaned out.
Pictures attached.

Rod Krueger
City of Vista
Community Services Dept
rkrueger@cityofvista.com

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/24/08 Time 1105 AM PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name INDIAN ROCK (LITERALLY A ROCK HOUSED W/IN GATES)	Facility Name
Street Address 343 APOLLO DR	Street Address
	☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST. DIR PARKS	Title:
Facility Telephone # ( ) - ext. 1148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☐ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Is the facility leased to another party? ☐ Yes ☐ No _____

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: PRESERVATION OF HISTORICAL SITE

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods					
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods					
Keep outdoor areas free of spills and leaks					
Collect water from pressure washing or hosing and dispose of appropriately					☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants					
Dispose of water from fire sprinkler maintenance activities appropriately					☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible					☐ Unknown Landscaping Co.
Employ adequate erosion prevention measures (vegetation or physical stabilization)					
Reduce over watering/over-irrigation					
Properly store stockpiles to prevent material transport					
Properly store and dispose of green waste					☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water					
Keep trash area free of litter and debris, liquids, powders, sediment					
Adequately cover materials stored outside					
Prevent run-on from contacting materials stored outdoors					
Properly label outdoor storage containers					
Provide an accessible, functional spill response kit					
Equip liquid storage containers with spill containment					
Keep spill containment free of spills and rainwater					
Properly store and dispose of hazardous materials					
Maintain up-to-date inventory of hazardous materials					
Keep loading and unloading areas, including drains, free of debris					

No public access

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately					
Dispose of pool, spa, fountain, and filter backwash water properly					☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system					
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)					
Use drip pans to collect leaks/spills					
Drain fluids from all non-operational vehicles stored outdoors					
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks					
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4					
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff					
Identify and eliminate illicit connections and illegal discharges					
Provide storm water training for appropriate employees					
Develop a written procedure for spill prevention and response					

No Public Areas

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

X OFFICER HELTMACH & I CIRCUMVENTED THE WHOLE OF THE SITE. AREA'S VEGETATED & FENCED; NO VISIBLE RUN-OFF OR EROSION.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMAN Date 6/24/08 Time 9:30 AM/PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name MOONLIGHT AMPHITHEATER	Facility Name
Street Address 1200 VALE TERRACE	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST DIR PARKS	Title:
Facility Telephone # ( ) - ext. 148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☐ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Is the facility leased to another party? ☐ Yes ☐ No

Facility personnel present for inspection: NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: ENTERTAINMENT

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal: _____ square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible	X				☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)	X				
Reduce over watering/over-irrigation	X				
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment				X	PORTABLE TOILETS REQUIRE SPILL PANS UNDERNEATH THEM
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris		X			

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	X				
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

PROVIDE SECONDARY CONTAINMENT UNDER PORTABLE TOILETS

Follow Up Inspection Priority: ☐ **Priority 1** ☒ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location (Continue): Moon Light Ampth.

CORRECTIVE ACTIONS IMPLEMENTED			
Date	Location	Employee	Corrective Actions Implemented
7/28	Brengle Terrace Moon Light Ampth	D. 3	Removal of units

Completed by (Sign Name): [signature]

Print Name: John Menezes Parks Supervisor

Date: 7/29/08

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/MELTMACH Date 6/23/08 Time 240 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PARKING LOT	Facility Name
Street Address E. BROADWAY @ HANES PL	Street Address ☐ change
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s)
Title: AV OP MGR	Title:
Facility Telephone # ( ) - ext. 1603	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☐ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Is the facility leased to another party? ☐ Yes ☐ No _____

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: PARKING

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	X				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	X				
Keep trash area free of litter and debris, liquids, powders, sediment	X				
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 250 AM / PM

Type of Inspection: ☑ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Cohtact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PARKING LOT	Facility Name
Street Address MAIN ST @ MICHIGAN AVE	Street Address ☐ change
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s)
Title: PW OP MGR	Title:
Facility Telephone # ( ) - ext. 1603	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☐ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Is the facility leased to another party? ☐ Yes ☐ No _____

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: PARKING

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	X				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	X				
Keep trash area free of litter and debris, liquids, powders, sediment	X				
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	X				
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☑ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 300 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PARKING LOT	Facility Name _____
Street Address 300 BUCK MAN ST	Street Address _____
	☐ change _____
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s) _____
Title: PW OP MGR	Title: _____
Facility Telephone # ( ) ____ - _____ ext. 1603	Facility Telephone # ( ) ____ - _____ ext. ____
Contact Telephone # ( ) ____ - _____	Contact Phone # ( ) ____ - _____

Mobile Business? ☐ Yes ☐ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Is the facility leased to another party? ☐ Yes ☐ No _____

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: PARKING

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	X				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	X				
Keep trash area free of litter and debris, liquids, powders, sediment	X				
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

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SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

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☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 330 AM/PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PARKING LOT	Facility Name
Street Address W. VISTA WAY @ EMERALD	Street Address ☐ change
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s)
Title: PW OP Mgr	Title:
Facility Telephone # ( ) - ext. 603	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☐ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Is the facility leased to another party? ☐ Yes ☐ No _____

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: PARKING

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods					
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks					
Collect water from pressure washing or hosing and dispose of appropriately					☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants					
Dispose of water from fire sprinkler maintenance activities appropriately					☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	X				
Keep trash area free of litter and debris, liquids, powders, sediment	X				
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

PRESENTLY UNDER CONSTRUCTION AS CIP PROJECT

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA / HELTMACH Date 6/19/08 Time 11:30 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PW SATELITE YARD	Facility Name _____
Street Address 2430 LUPINE HILLS DR	Street Address _____ ☐ change _____
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s) _____
Title: PW'S OPERATION MGR	Title: _____
Facility Telephone # ( ) ___ - ___ ext. ___	Facility Telephone # ( ) ___ - ___ ext. ___
Contact Telephone # ( ) X1603	Contact Phone # ( ) ___ - ___

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No _____

Facility personnel present for inspection : NO PERSONNEL AT SITE 'UNMANNED SITE'

B. FACILITY/SITE INFORMATION

Principal activity: STORAGE OF PW'S MATERIALS

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods			✓		TRASH/DEBRIS AROUND DUMPSTERS
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods	✓				
Keep outdoor areas free of spills and leaks		✓			
Collect water from pressure washing or hosing and dispose of appropriately	✓				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	✓				
Dispose of water from fire sprinkler maintenance activities appropriately	✓				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	✓				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible	✓				☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		✓			NO SIGNS OF EROSION
Reduce over watering/over-irrigation	✓				
Properly store stockpiles to prevent material transport				✓	STOCKPILES ON COVER PAD UNCOVERED. RAW MATERIALS (ROCK/SAND) ON COVER PAD UNCOVERED.
Properly store and dispose of green waste		✓			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water				✓	40 YD DUMPSTERS UNCOVERED
Keep trash area free of litter and debris, liquids, powders, sediment			✓		TRASH/DEBRIS ADJUND DUMPSTERS
Adequately cover materials stored outside			✓		RUSTY METALS & PLASTICS STORED OUTSIDE W/OUT COVER.
Prevent run-on from contacting materials stored outdoors			✓		SAME AS ABOVE REF. UNCOVERED STORAGE OF MATERIALS
Properly label outdoor storage containers	✓				
Provide an accessible, functional spill response kit	✓				
Equip liquid storage containers with spill containment	✓				
Keep spill containment free of spills and rainwater	✓				
Properly store and dispose of hazardous materials	✓				
Maintain up-to-date inventory of hazardous materials	✓				
Keep loading and unloading areas, including drains, free of debris	✓				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	✓				
Dispose of pool, spa, fountain, and filter backwash water properly	✓				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	✓				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	✓				
Use drip pans to collect leaks/spills	✓				
Drain fluids from all non-operational vehicles stored outdoors	✓				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	✓				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	✓				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	✓				
Identify and eliminate illicit connections and illegal discharges	✓				
Provide storm water training for appropriate employees		✓			
Develop a written procedure for spill prevention and response		✓			

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

CLEAN TRASH/DEBRIS AROUND DUMPSTERS AND COVER WHEN NOT IN USE. COVER & PLACE PERIMETER BARRIER AROUND STOCKPILES. COVER RUSTY MATERIALS STORED OUTSIDE AND GET THEM OFF THE GROUND.

Follow Up Inspection Priority: ☐ **Priority 1** ☒ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☒ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

2430 LUPINE HILLS DR.

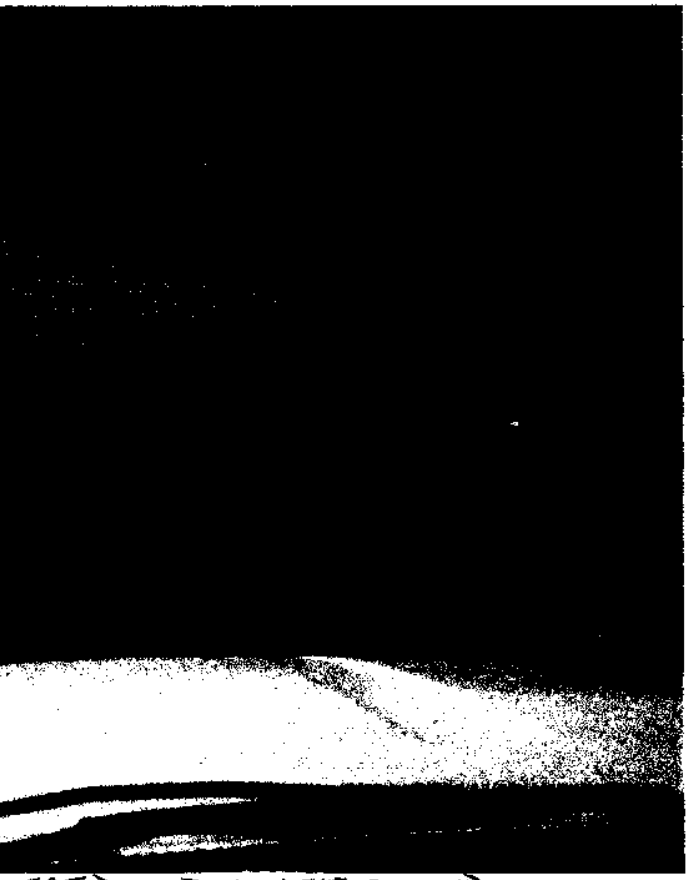

VERED AND ON THE GROUND,

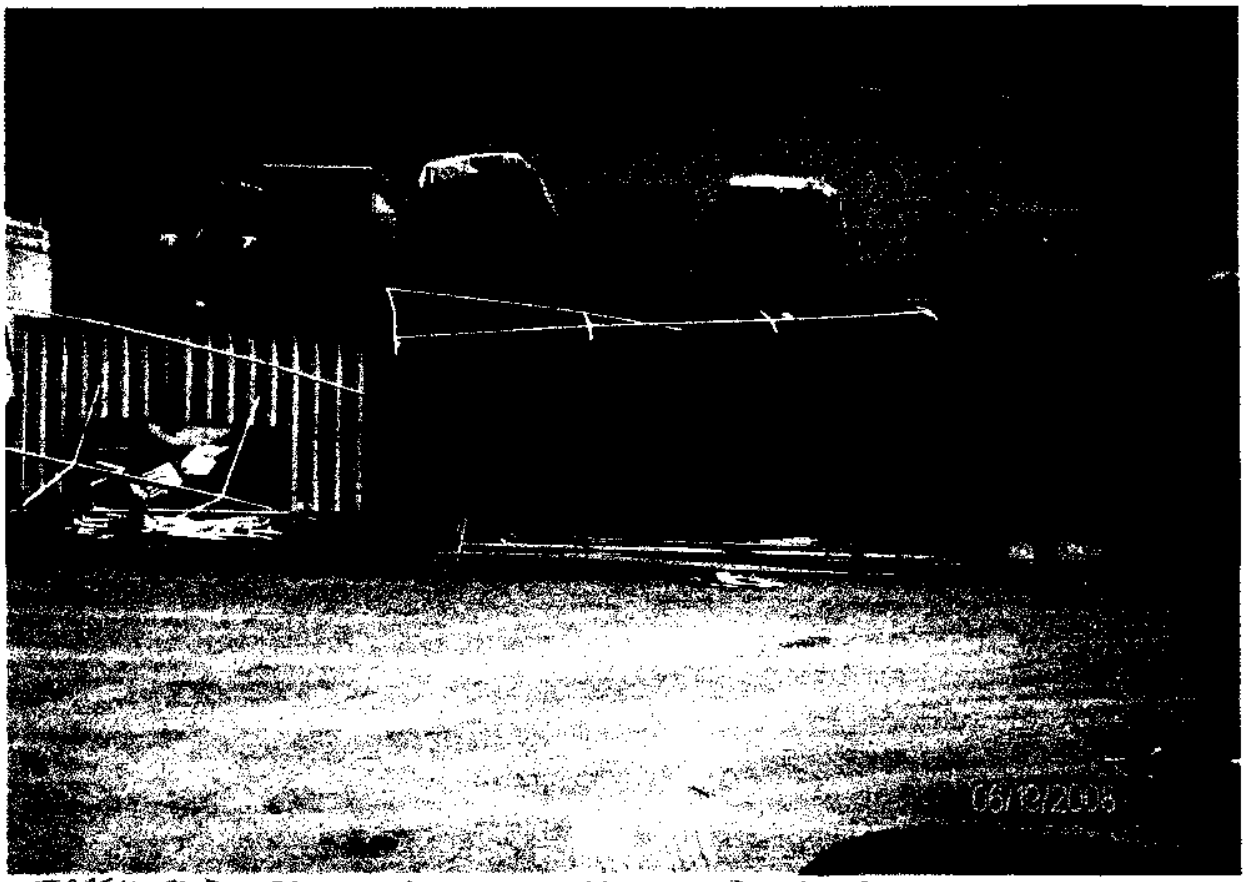

TRASH AND DEBRIS AROUND DUMPSTER. DUMPSTER UNCOVERED.

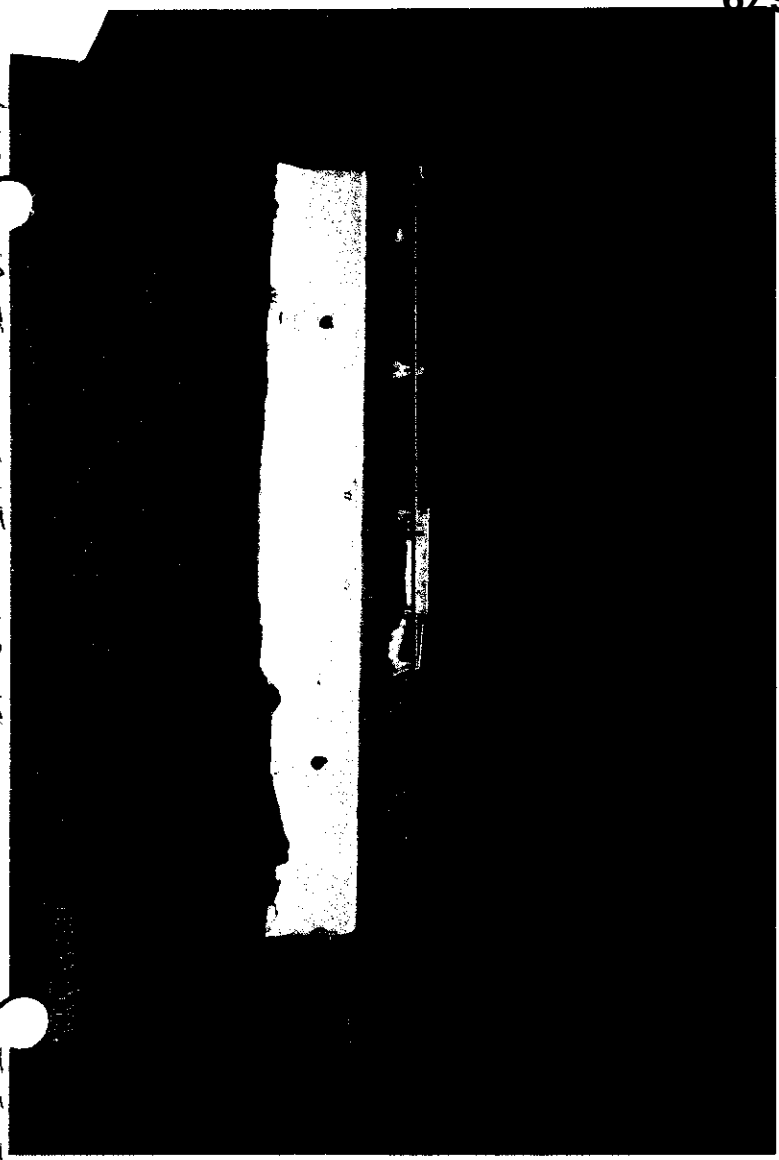

IL/SAND STOCKPILES IN UPPER LOT UNCOVERED WITH NO PERIMETER PROTECTION TO FRONT.

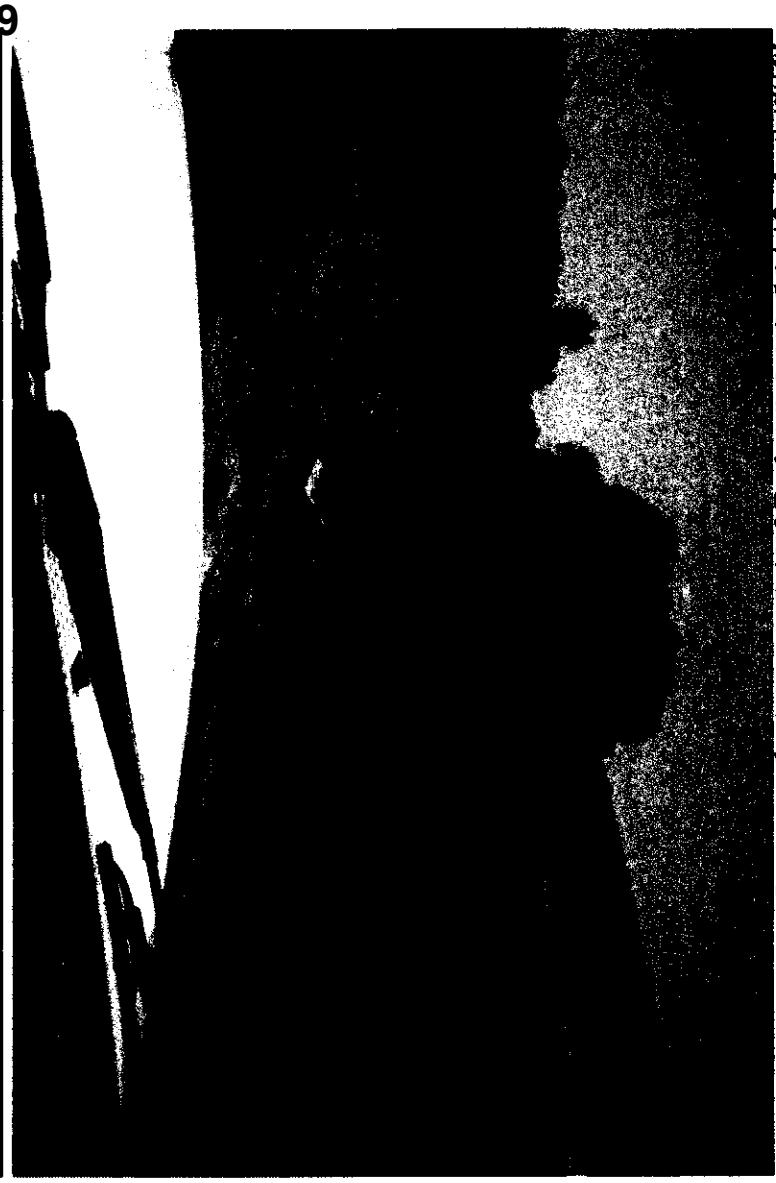

MATERIALS STORED ON GROUND OUTSIDE OF COVERED LOCKERS.

LOWER LOT WITH UNCOVERED STOCKPILES/SPOILS WITH NO PERIMETER PROTECTION.

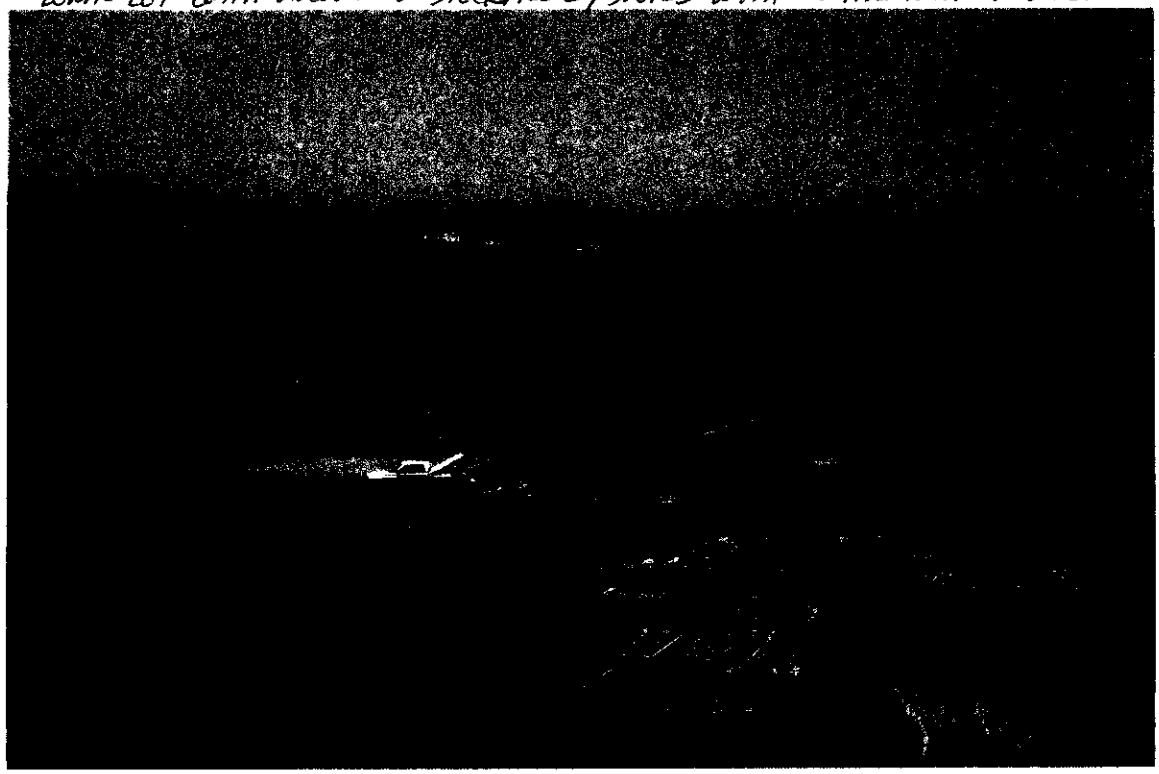

RECEIVED
JUL 22 2008
ENGINEERING DEPT.

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location: PW SATELLITE YARD – LUPINE HILLS DRIVE

Date	Inspection Form Ref. (Ex. D.1)	Corrective Actions Implemented
WEEK OF 7/14/08	D.1	TRASH & DEBRIS LOADED INTO DUMPSTERS
WEEK OF 7/14/08	D.2	STOCKPILES HAVE PERIMETER BMPS INSTALLED
WEEK OF 7/14/08	D.3	TRASH & DEBRIS AROUND DUMPSTERS PICKED UP METALS STORED OFF OF GROUND AND COVERED DUMPSTERS COVERED WHEN RAINFALL IS EXPECTED

Note: Please organize sheets per location and add additional sheets if necessary.

Completed by (Sign Name): [signature]

Print Name: CRAIG TRAMMEL

Date: 7/18/04

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA / HELTMACH Date 6 24 / 08 Time 9:30 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PUBLIC WORKS YARD	Facility Name _____
Street Address 1165 E. TAYLOR ST	Street Address _____ ☐ change _____
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s) _____
Title: PW OP MGR	Title: _____
Facility Telephone # ( ) ____ - _____ ext. 1603	Facility Telephone # ( ) ____ - _____ ext. ____
Contact Telephone # ( ) ____ - _____	Contact Phone # ( ) ____ - _____

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No _____

Facility personnel present for inspection : NONE

B. FACILITY/SITE INFORMATION

Principal activity: CITY MAINTENANCE / STORAGE

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		X			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport		X			
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside		X			
Prevent run-on from contacting materials stored outdoors		X			
Properly label outdoor storage containers		X			
Provide an accessible, functional spill response kit		X			
Equip liquid storage containers with spill containment		X			
Keep spill containment free of spills and rainwater		X			
Properly store and dispose of hazardous materials		X			
Maintain up-to-date inventory of hazardous materials		X			
Keep loading and unloading areas, including drains, free of debris		X			

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)		X			
Use drip pans to collect leaks/spills		X			
Drain fluids from all non-operational vehicles stored outdoors		X			
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks		X			
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4		X			
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	X				
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response		X			

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA Date 6/20/08 Time 10:30 AM/PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name PW HHW FACILITY	Facility Name
Street Address 1145 E. TAYLOR ST	Street Address ☐ change
Responsible Person(s) GRACA TRAMMELL	Responsible Person(s)
Title: PW OPERATIONS MGR	Title:
Facility Telephone # ( ) - ext. 1603	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : SELF-INSPECTED AS WORKERS WERE PROCESSING RECYCLABLES

B. FACILITY/SITE INFORMATION

Principal activity: RECYCLING WASTE

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		✓			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		✓			
Keep outdoor areas free of spills and leaks		✓			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		✓			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	X				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		✓			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		✓			
Reduce over watering/over-irrigation		✓			
Properly store stockpiles to prevent material transport		✓			
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		✓			
Keep trash area free of litter and debris, liquids, powders, sediment		✓			
Adequately cover materials stored outside		✓			
Prevent run-on from contacting materials stored outdoors		✓			
Properly label outdoor storage containers		✓			
Provide an accessible, functional spill response kit		✓			
Equip liquid storage containers with spill containment		✓			
Keep spill containment free of spills and rainwater		✓			
Properly store and dispose of hazardous materials		✓			
Maintain up-to-date inventory of hazardous materials		✓			
Keep loading and unloading areas, including drains, free of debris		✓			

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately		✓			
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)		✓			
Use drip pans to collect leaks/spills		✓			
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks		✓			
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	X				
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		✓			
Develop a written procedure for spill prevention and response		✓			

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues: NA ☐1 ☐2 ☐3 ☐4 ☐5

Level of cleanliness, BMP implementation, orderliness of site: ☐1 ☐2 ☐3 ☐4 ☐5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOCAI HELTMACH Date 6 24 08 Time 10:00 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name RAINTREE PARK	Facility Name
Street Address 545 TOWNSITE DR	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER Title ASST DIR PARK	Responsible Person(s) Title:
Facility Telephone # ( ) - ext. 1148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOGGIE WASTE BAGS PROVIDED
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

NONE.

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. Recommended City Actions**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMARH Date 6/23/08 Time 4:22 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name RANCHO BUENA VISTA PARK	Facility Name _____
Street Address 1851 S. MELROSE DR	Street Address _____
	☐ change _____
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s) _____
Title: ASST DIR PARK	Title: _____
Facility Telephone # ( ) ____ - _____ ext. 1148	Facility Telephone # ( ) ____ - _____ ext. ____
Contact Telephone # ( ) ____ - _____	Contact Phone # ( ) ____ - _____

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No _____

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		X			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation			X		SIGNS OF OVER WATERING IN S/E PARKING LOT.
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside		X			
Prevent run-on from contacting materials stored outdoors		X			
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOGGIE WASTE BAGS PROVIDED
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. Recommended City Actions**

ABATE OVER WATERING / OVER IRRIGATION IN AREAS AROUND EAST PARKING LOT.

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☒ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

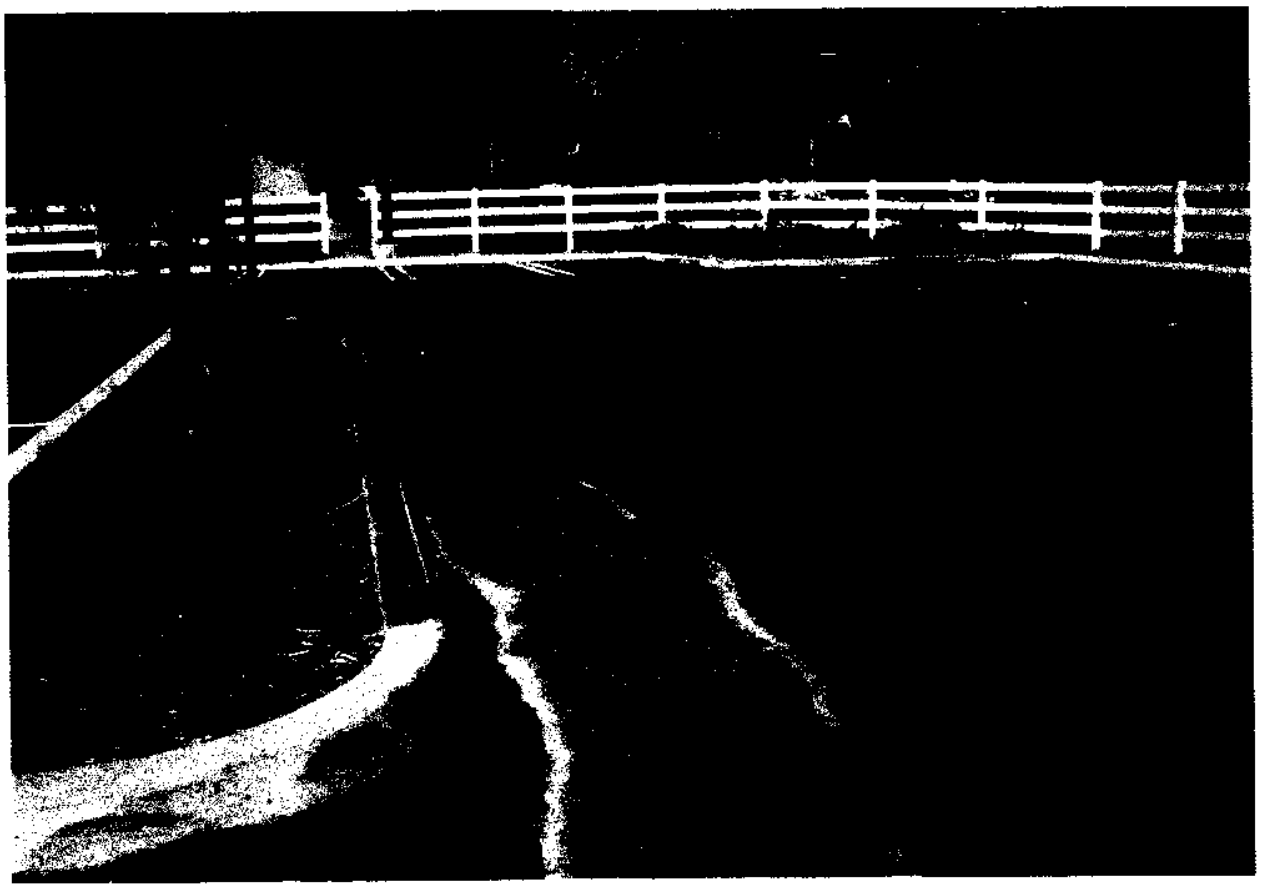

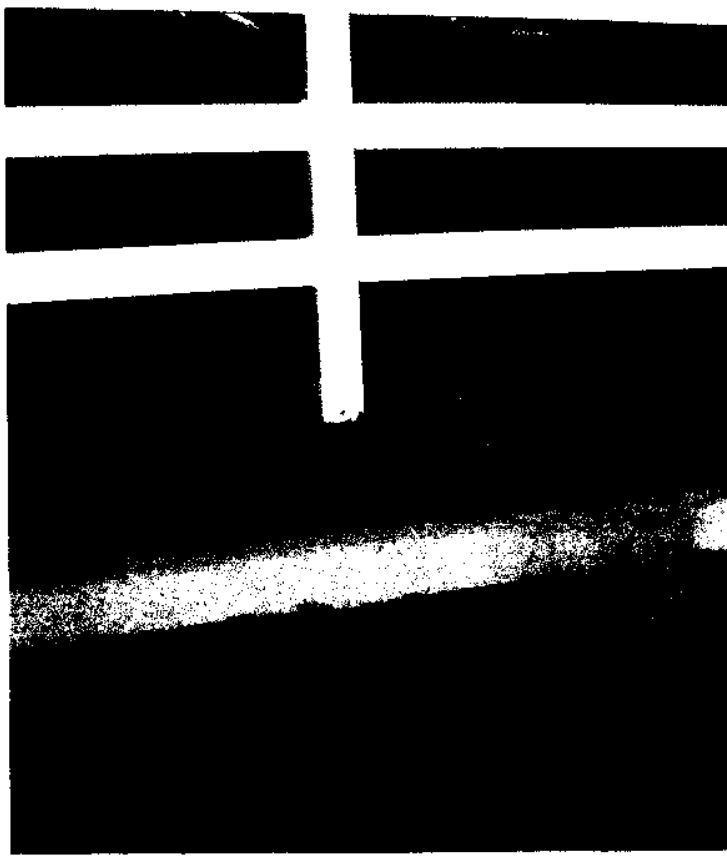

RANCHO BUENA VISTA PARK

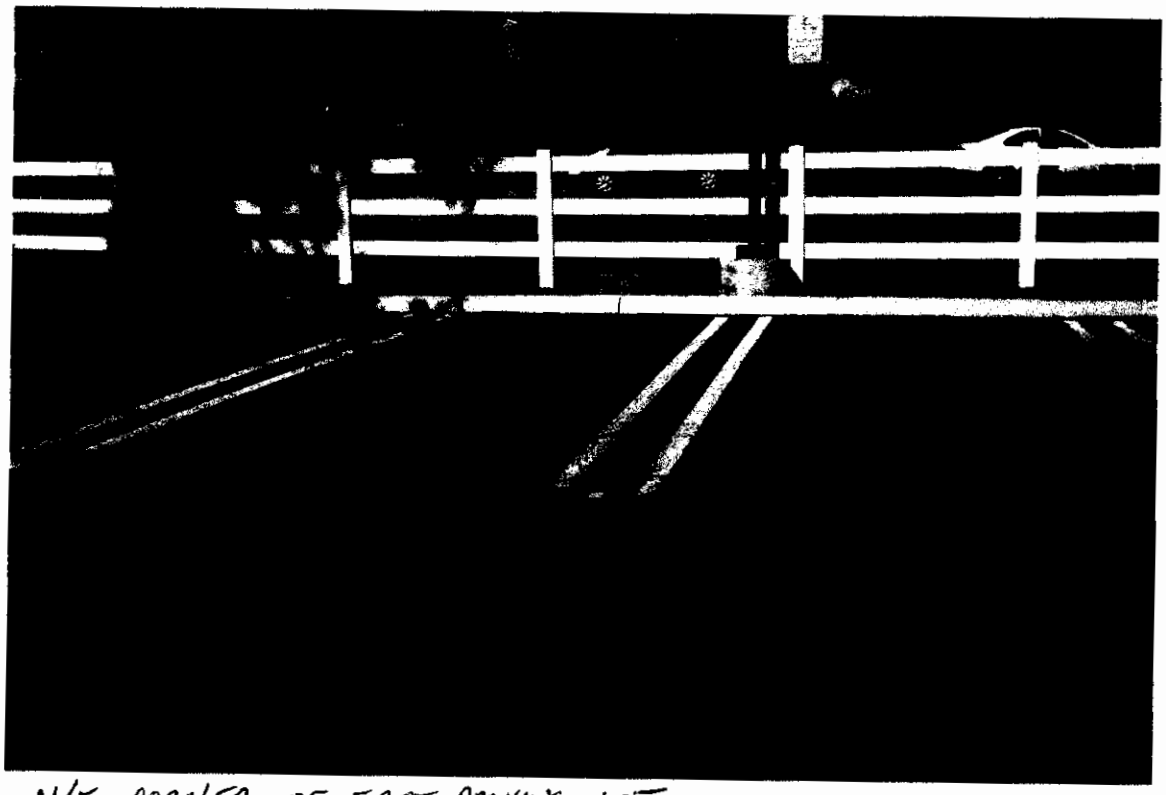

N/E CORNER OF EAST PARKING LOT.

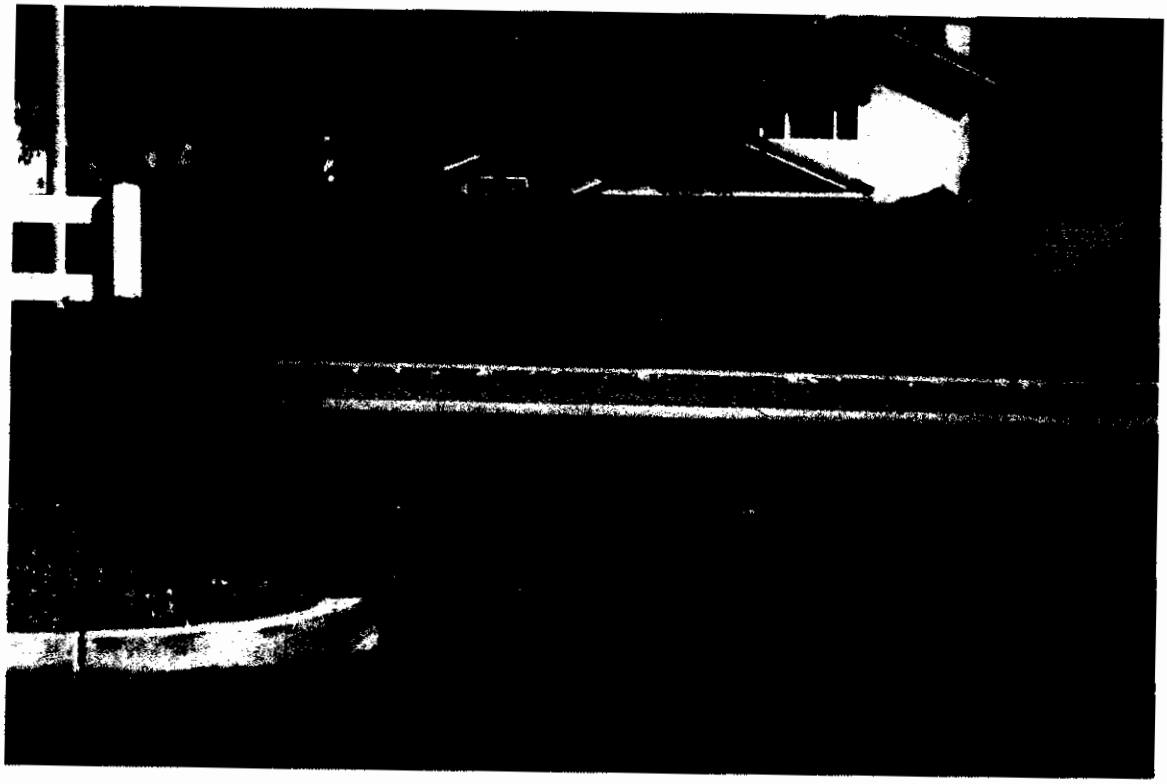

SOUTH ENTRANCE FROM SHADOWRIDGE DR. TO EAST PARKING LOT.

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location (Continue): Buena Vista Park

CORRECTIVE ACTIONS IMPLEMENTED			
Date	Location	Inspection Point	Corrective Action Implemented
7/28	Buena Vista Park	D. 2	Reduced water times

Completed by (Sign Name): [signature]

Print Name: John Menezes Park Supervisor

Date: 7/29/08

Page 2 of 2

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTO CA / HELTMACH Date 6/23/08 Time 4:15 AM/PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name SHADOWRIDGE PARK	Facility Name
Street Address 2101 LUPINE HILLS	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST DIR PARK	Title:
Facility Telephone # ( ) - ext. 1148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RETRO-TION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal :_____square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		X			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOG WASTE BAGS PROVIDED.
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

NONE.

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. Recommended City Actions**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6/23/08 Time 4:30 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name THIBODO PARK	Facility Name
Street Address 7150 LUPINE HILLS DR	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST DIR PARK	Title:
Facility Telephone # ( ) - ext. 1148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants		X			
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOG WASTE BAGS PROVIDED.
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

NONE.

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. Recommended City Actions**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☒ 4 →	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACK Date 6/24/08 Time 10:00 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name TOWNSITE PARK	Facility Name
Street Address 340 E. TOWNSITE DR	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST DIR PARK	Title:
Facility Telephone # ( ) - ext. 1148	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal :_____square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)			X		AREA ON TOWNSITE DR NEAR RED GYM SET... DE-NUDED TO SIDEWALK WITH EVIDENCE OF EROSION.
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers		X			
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOG BAGS AVAILABLE
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees	X				
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☒ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. Recommended City Actions**

LOWER SOIL BELOW SIDEWALK LEVEL ADJACENT TO SIDEWALK. FIBER ROLL ADJACENT TO SIDEWALK UNTIL DENUDED AREA CAN BE VEGITATED.

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☒ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location (Continue): LUZ DURAN PARK (Formerly TOWNSITE)

CORRECTIVE ACTIONS IMPLEMENTED

Date	Location	Inspection Item	Corrective Actions Implemented
7/28	TOWNSITE (LUZ DURAN) PARK	D.2	Installed Soil Retention Devices (Straw Wattle)

Completed by (Sign Name): [signature]

Print Name: John Menezes Park Supervisor

Date: 7/29/08

ORIGINAL

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA / HELTMACH Date 6/23/08 Time 2:45 AM/PM

Type of Inspection: ☐ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name THE WAVE WATERPARK	Facility Name
Street Address 101 WAVE DR VISTA, CA	Street Address ☐ change
Responsible Person(s) NATALIE LIVINGSTON	Responsible Person(s)
Title: FACILITY MGR	Title:
Facility Telephone # ( ) - ext. 1550	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☒ Yes ☐ No BACKYARD GRILL (FOOD BAR)

Facility personnel present for inspection : TIFFANY LUTHER (ASST PARK MGR), BRIAN TROXELL OF BACKYARD GRILL (SEE ATTACHED CARD)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal: _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP Assessment

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods				X	LEAVES / FLOWER @ FRONT EXCESSIVE ACCUMULATION
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods				X	"
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately				X	☐ Unknown Performed by: BRIAN @ GRILL HOSES & PW's INTO AREA DRAINS
Direct roof downspouts away from areas of potential pollutants				X	
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage				X	
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				PARK HAS A LANDSCAPE CONTRACTOR
Properly store and dispose of green waste	X				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water				X	KEEP LIDS DOWN - WIND & CRITTERS
Keep trash area free of litter and debris, liquids, powders, sediment				X	ACCUMULATION OF DRIED & WET FLUIDS ON PAVEMENT
Adequately cover materials stored outside				X	CARDBOARD BOXES @ GRILL
Prevent run-on from contacting materials stored outdoors				X	TIRES, GAS CANS, OLD MECHANICAL EQUIPMENT ETC REAR OF PUMP ROOM.
Properly label outdoor storage containers		X			
Provide an accessible, functional spill response kit		X			
Equip liquid storage containers with spill containment		X			
Keep spill containment free of spills and rainwater		X			
Properly store and dispose of hazardous materials				X	~~GAS CANS STORED~~
Maintain up-to-date inventory of hazardous materials		X			how much is on site is there a business plan for inventory
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly		X			☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system		X			
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	X				
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response		X			SWPPP ON SITE

D.6 Additional Required Actions

1. HAVE SWPPP AVAILABLE ON SITE (COPY ATTACHED).
2. CLEAR/CLEAN WHISTLE DRAIN @ SOUTHWEST CORNER & DISPOSE OF METAL AWNING SECTIONS.

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☑ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. Recommended City Actions**

IMPLEMENT BMPS ACCORDING TO SWPPP REQUIREMENTS. SEE "FOOD ESTABLISHMENT ASSESSMENT FORM FOR + COMMENT NOTES REGARDING GREASE TRAP BAFFLE - CEASE FURTHER PRESSURE WASHING UNLESS RECLAIMED.

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA
FOOD ESTABLISHMENT STORM WATER BMP ASSESSMENT

Inspected by D-MAX Engineering, Inc.

Business Name BACKYARD GRILLE, BRIAN TROXELL, OWNER

How long has the manager worked at the business? ☐ < 3 months ☒ 3-6 months ☐ 7-12 months ☐ > 1 year ☐ Unknown

Is the facility manager also the owner? ☐ Yes ☒ No ☐ Unknown

Property management company: CITY OF VISTA (BILL FORTMUELLER) Business Telephone # (760) 726-1340 ext. 1148

Mailing address: _____

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Keep grease bin and area surrounding grease bin free of grease stains/spills*		X			
Keep storm drain inlets free of grease and other food debris			X		SOME PRESSURE WASHING IS OCCURRING @ OUTDOOR GRILL.

*If grease bin and area surrounding grease bin are not kept free of grease stain/spills, the City requires that spill containment and overhead cover be provided for the grease bin to eliminate exposure of grease to storm water. Examples of acceptable spill containment and overhead coverage are shown on the Spill Containment and Overhead Coverage Examples handout. Please contact the City if you wish to use alternative methods.

Additional Questions	Comments
Does facility have a grease trap or grease interceptor?	☐ No ☒ Grease Trap ☐ Grease Interceptor ☐ Unknown (SEE NOTE BELOW *)
What is the reported maintenance frequency for the grease trap or interceptor?	☐ Annual ☐ Every 6 mn ☐ Quarterly ☐ Monthly ☐ Every 2 wks ☐ Weekly ☐ > Weekly ☒ Unknown
How many grease fryers are at the facility? NONE	
About how often is fryer oil replaced? NA ~~☐ Monthly ☐ Every 2 weeks ☐ Weekly ☐ Twice/week ☐ Daily~~ ☐ Don't change	
How is used oil disposed of? NA ~~☐ Outside rendering service ☐ Sanitary sewer/sink ☐ Dumpster~~	
How are outdoor areas (patio, loading dock, parking lot, dumpster area, etc.) cleaned? (check all that apply)	
☒ Hose (If yes, see relevant question in Section D.1 of main form)	
☒ Sweep	
☒ Power wash (If yes, see relevant question in Section D.1 of main form)	
☒ Pick up trash – METAL RACK @ BACK DOOR W/ CARDBOARD BOXES MOVE UNDER COVER	
☐ Outside company/property management	
☐ Do not clean	

* WITHIN THE GREASE TRAP IT WAS STATED BY BRIAN TROXELL THAT A BAFFLE HAS DETERIORATED & NO LONGER FUNCTIONAL. WHILE THE BUSINESS NO LONGER USES A FRYER, THE WATER FROM THE SINK STILL FLOWS THROUGH THE TRAP. THEREFORE HAVE GREASE TRAP REPAIRED TO FUNCTIONING STANDARDS.

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES – CORRECTIVE ACTION FORM

Location: Wave Waterpark (101 Wave Drive – Vista, CA 92083)

Date	Inspection Form Ref.	Corrective Actions Implemented
07/18/08	D-1	Continued focus on maintaining cleanliness of grounds and debris. Informed staff of focus of flowers in front parking lot area. Grille (outside company) was advised on proper methods of cleaning grounds and will not power wash into drains.
07/18/08	D-3	Implemented cleaning of trash area daily, and weekly detailed cleaning. Grille (outside company) moved outdoor boxes to receive adequate coverage. All old equipment, machines have been picked up and properly disposed of or recycled.
07/18/08	D-5	SWPPP copy now available on site
07/18/08	Other	Drain cleared @ southwest corner and metal awnings disposed of. New straw and netting protective barrier placed around drain. Baffle @ concessions stand was inspected by Wave Facility Maintenance, still functional as is – will monitor and inspect.

Completed By: Natalie Livingston & Gilbert Obregon

Signature: _____

Date: 07/18/08

For Storm Water Staff Only

Corrective Action Verified 7/18/08 by _____
Date City of Vista Representative

Comments: _____

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name SOTOLA/HELTMACH Date 6 23 08 Time 1:30 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name WILDWOOD PARK	Facility Name
Street Address 657 E. VISTA WAY	Street Address ☐ change
Responsible Person(s) BILL FORTMUELLER	Responsible Person(s)
Title: ASST DIR PARK	Title:
Facility Telephone # ( ) - ext. 1147	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) -	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:**_____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE (UNMANNED)

B. FACILITY/SITE INFORMATION

Principal activity: RECREATION

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other_____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		X			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods		X			
Keep outdoor areas free of spills and leaks		X			
Collect water from pressure washing or hosing and dispose of appropriately	X				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	X				
Dispose of water from fire sprinkler maintenance activities appropriately	X				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		X			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		X			
Reduce over watering/over-irrigation		X			
Properly store stockpiles to prevent material transport	X				
Properly store and dispose of green waste		X			☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water		X			
Keep trash area free of litter and debris, liquids, powders, sediment		X			
Adequately cover materials stored outside	X				
Prevent run-on from contacting materials stored outdoors	X				
Properly label outdoor storage containers	X				
Provide an accessible, functional spill response kit	X				
Equip liquid storage containers with spill containment	X				
Keep spill containment free of spills and rainwater	X				
Properly store and dispose of hazardous materials	X				
Maintain up-to-date inventory of hazardous materials	X				
Keep loading and unloading areas, including drains, free of debris	X				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	X				
Dispose of pool, spa, fountain, and filter backwash water properly	X				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	X				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	X				
Use drip pans to collect leaks/spills	X				
Drain fluids from all non-operational vehicles stored outdoors	X				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	X				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	X				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff		X			DOG WASTE BAGS PROVIDED.
Identify and eliminate illicit connections and illegal discharges	X				
Provide storm water training for appropriate employees		X			
Develop a written procedure for spill prevention and response	X				

D.6 ADDITIONAL REQUIRED ACTIONS

NONE.

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. Recommended City Actions**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☒ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name Doug Coppi Date 6 / 30 / 2008 Time 10:30 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☒ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name Cypress Basin (Dentention Basin)	Facility Name _____
Street Address Monte Vista Dr. and Cypress Drive	Street Address _____ ☐ change _____
Responsible Person(s) Craig Tilammell	Responsible Person(s) _____
Title: Public Works Operations Manager	Title: _____
Facility Telephone # ( ) ____ - ____ ext. ____	Facility Telephone # ( ) ____ - ____ ext. ____
Contact Telephone # ( ) ____ - x 1603	Contact Phone # ( ) ____ - ____

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No _____

Facility personnel present for inspection : None

B. FACILITY/SITE INFORMATION

Principal activity: Storm Water BMP - Dentention Basin

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 3710

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		✓			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods	✓				
Keep outdoor areas free of spills and leaks	✓				
Collect water from pressure washing or hosing and dispose of appropriately	✓				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	✓				
Dispose of water from fire sprinkler maintenance activities appropriately	✓				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	✓				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		✓			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		✓			
Reduce over watering/over-irrigation	✓				
Properly store stockpiles to prevent material transport	✓				
Properly store and dispose of green waste	✓				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	✓				
Keep trash area free of litter and debris, liquids, powders, sediment	✓				
Adequately cover materials stored outside	✓				
Prevent run-on from contacting materials stored outdoors	✓				
Properly label outdoor storage containers	✓				
Provide an accessible, functional spill response kit	✓				
Equip liquid storage containers with spill containment	✓				
Keep spill containment free of spills and rainwater	✓				
Properly store and dispose of hazardous materials	✓				
Maintain up-to-date inventory of hazardous materials	✓				
Keep loading and unloading areas, including drains, free of debris	✓				

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	✓				
Dispose of pool, spa, fountain, and filter backwash water properly	✓				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	✓				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	✓				
Use drip pans to collect leaks/spills	✓				
Drain fluids from all non-operational vehicles stored outdoors	✓				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	✓				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	✓				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	✓				
Identify and eliminate illicit connections and illegal discharges		✓			
Provide storm water training for appropriate employees		✓			
Develop a written procedure for spill prevention and response	✓				

D.6 ADDITIONAL REQUIRED ACTIONS

None

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☒ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☒ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☒ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. Recommended City Actions**

N/A

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name Doug Coppi Date 6 /30 /2008 Time 11:00 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☒ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name MONTE VISTA BASIN	Facility Name
Street Address MONTE VISTA DRIVE AND VALLEY DRIVE	Street Address ☐ change
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s)
Title: PUBLIC WORKS OPERATIONS MANAGER	Title:
Facility Telephone # ( ) - ext.	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) - X 1603	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No _____

Facility personnel present for inspection : NONE

B. FACILITY/SITE INFORMATION

Principal activity: STORM WATER BMP - DETENTION BASIN

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		✓			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods	✓				
Keep outdoor areas free of spills and leaks	✓				
Collect water from pressure washing or hosing and dispose of appropriately	✓				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	✓				
Dispose of water from fire sprinkler maintenance activities appropriately	✓				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	✓				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		✓			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		✓			
Reduce over watering/over-irrigation	✓				
Properly store stockpiles to prevent material transport	✓				
Properly store and dispose of green waste	✓				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	✓				
Keep trash area free of litter and debris, liquids, powders, sediment	✓				
Adequately cover materials stored outside	✓				
Prevent run-on from contacting materials stored outdoors	✓				
Properly label outdoor storage containers	✓				
Provide an accessible, functional spill response kit	✓				
Equip liquid storage containers with spill containment	✓				
Keep spill containment free of spills and rainwater	✓				
Properly store and dispose of hazardous materials	✓				
Maintain up-to-date inventory of hazardous materials	✓				
Keep loading and unloading areas, including drains, free of debris	✓				

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	✓				
Dispose of pool, spa, fountain, and filter backwash water properly	✓				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	✓				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	✓				
Use drip pans to collect leaks/spills	✓				
Drain fluids from all non-operational vehicles stored outdoors	✓				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	✓				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	✓				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	✓				
Identify and eliminate illicit connections and illegal discharges		✓			
Provide storm water training for appropriate employees		✓			
Develop a written procedure for spill prevention and response	✓				

D.6 ADDITIONAL REQUIRED ACTIONS

None

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☑ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

N/A

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name Doug Coppi ~~BRANGLE TERRACE BASIN~~ Date 6 /30 /2008 Time 11:25 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☒ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name BRANGLE TERRACE BASIN	Facility Name
Street Address 1100 VALE TERRACE DR.	Street Address ☐ change
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s)
Title: PUBLIC WORKS OPERATIONS MANAGER	Title:
Facility Telephone # ( ) - ext.	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) - x 1603	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No _____

Facility personnel present for inspection : NONE

B. FACILITY/SITE INFORMATION

Principal activity: STORMWATER BMP - DETENTION BASIN

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0 _____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		✓			
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods	✓				
Keep outdoor areas free of spills and leaks	✓				
Collect water from pressure washing or hosing and dispose of appropriately	✓				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	✓				
Dispose of water from fire sprinkler maintenance activities appropriately	✓				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	✓				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		✓			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		✓			
Reduce over watering/over-irrigation	✓				
Properly store stockpiles to prevent material transport	✓				
Properly store and dispose of green waste	✓				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	✓				
Keep trash area free of litter and debris, liquids, powders, sediment	✓				
Adequately cover materials stored outside	✓				
Prevent run-on from contacting materials stored outdoors	✓				
Properly label outdoor storage containers	✓				
Provide an accessible, functional spill response kit	✓				
Equip liquid storage containers with spill containment	✓				
Keep spill containment free of spills and rainwater	✓				
Properly store and dispose of hazardous materials	✓				
Maintain up-to-date inventory of hazardous materials	✓				
Keep loading and unloading areas, including drains, free of debris	✓				

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	✓				
Dispose of pool, spa, fountain, and filter backwash water properly	✓				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	✓				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	✓				
Use drip pans to collect leaks/spills	✓				
Drain fluids from all non-operational vehicles stored outdoors	✓				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	✓				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	✓				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	✓				
Identify and eliminate illicit connections and illegal discharges		✓			
Provide storm water training for appropriate employees		✓			
Develop a written procedure for spill prevention and response	✓				

D.6 ADDITIONAL REQUIRED ACTIONS

NONE

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☒ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☒ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☒ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☒ No Corrective Actions Required at this Time.

G. Recommended City Actions**

N/A

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR MUNICIPAL FACILITIES

Inspector Name Doug Coppi Date 6 /30 /2008 Time 1215 AM / PM

Type of Inspection: ☒ Routine ☐ Follow-up ☐ Complaint

Result: ☒ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by _____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Facility Name CREEK WALK / BV CHANNEL	Facility Name
Street Address MAIN ST. AND WAVE DRIVE	Street Address ☐ change
Responsible Person(s) CRAIG TRAMMELL	Responsible Person(s)
Title: PUBLIC WORKS OPERATIONS MANAGER	Title:
Facility Telephone # ( ) - ext.	Facility Telephone # ( ) - ext.
Contact Telephone # ( ) - X 1603	Contact Phone # ( ) -

Mobile Business? ☐ Yes ☒ No **APN:** _____

Is this facility located in a multi-suite complex? ☐ Yes ☒ No

Is the facility leased to another party? ☐ Yes ☒ No

Facility personnel present for inspection : NONE

B. FACILITY/SITE INFORMATION

Principal activity: STORM WATER BMP - FLOOD CONTROL CHANNEL

Status Update (if no longer active in City or does not need an inspection): ☐ Not a Municipal Facility ☐ Duplicate ☐ Not Inventoried ☐ Other _____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☒ Yes ☐ No WDID: 9 37I0

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

Approximate area covered by municipal : _____ square feet

Approximate % impervious surface of this area _____ %

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods		✓			DAMS USED TO COLLECT SEDIMENT BUILDUP
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods	✓				
Keep outdoor areas free of spills and leaks	✓				
Collect water from pressure washing or hosing and dispose of appropriately	✓				☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants	✓				
Dispose of water from fire sprinkler maintenance activities appropriately	✓				☐ Unknown Performed by:
Mark drains/inlets on site with "no dumping, drains to ocean" or similar signage	✓				
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible		✓			☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)		✓			
Reduce over watering/over-irrigation	✓				
Properly store stockpiles to prevent material transport	✓				
Properly store and dispose of green waste	✓				☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water	✓				
Keep trash area free of litter and debris, liquids, powders, sediment	✓				
Adequately cover materials stored outside	✓				
Prevent run-on from contacting materials stored outdoors	✓				
Properly label outdoor storage containers	✓				
Provide an accessible, functional spill response kit	✓				
Equip liquid storage containers with spill containment	✓				
Keep spill containment free of spills and rainwater	✓				
Properly store and dispose of hazardous materials	✓				
Maintain up-to-date inventory of hazardous materials	✓				
Keep loading and unloading areas, including drains, free of debris	✓				

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately	✓				
Dispose of pool, spa, fountain, and filter backwash water properly	✓				☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system	✓				
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)	✓				
Use drip pans to collect leaks/spills	✓				
Drain fluids from all non-operational vehicles stored outdoors	✓				
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks	✓				
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4	✓				
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff	✓				
Identify and eliminate illicit connections and illegal discharges		✓			
Provide storm water training for appropriate employees		✓			
Develop a written procedure for spill prevention and response	✓				

D.6 ADDITIONAL REQUIRED ACTIONS

NONE

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration ☐ Unknown
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A ☐ Unknown
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☑ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☑ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☑ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. State General Industrial Permit Compliance*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

Specific action(s) required to correct the violation described above*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. Corrective Action Summary

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☑ No Corrective Actions Required at this Time.

G. Recommended City Actions**

N/A

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

Assessment

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

APPENDIX H

Industrial Facilities Inventory

APPENDIX H
2007-2008 Industrial Inventory

Business Name:	Street Address:	Zip	TTWQ	Inspected	watershed	mobile
Artistic Tile & Stone	325 S. Santa Fe Ave.	92083	High	X	Buena Vista	
H2O F/X	1230 Activity Drive E & F	92081	High	X	Agua Hedionda	
Lee Steel & Supply	1305 Lee Dr	92081	High	X	Loma Alta	
Lee's Iron Inc	1315 Lee Dr	92083	High	X	Loma Alta	
Oggi's Pizza & Brewing Co.	425 S. Melrose Dr.	92081	High	X	Buena Vista	
OSMONICS (GE)	760 Shadowridge Dr.	92083	High	X	Agua Hedionda	
Quality Discount Ice Cream Inc	2465 Coral St	92081	High	X	Agua Hedionda	
Versaform Corp	1377 Specialty Dr	92081	High	X	Agua Hedionda	
West Coast Refrigerated Trucking	1330 Distribution Way Suite B	92081	High	X	Agua Hedionda	
A D G Industrial Supply	2055 Thibodo Rd M	92081	Low		Agua Hedionda	
Aea Wireless, Inc.	1489 Poinsettia Ave 134	92083	Low		Agua Hedionda	
Aperio Technologies, Inc.	1430 Vantage Ct 106	92083	Low		Agua Hedionda	
Applied Control Concepts / CNC Dynamics	1209 Activity Dr	92081	Low		Agua Hedionda	
Armorcraft Off-Road Corp	2312 La Mirada Drive	92081	Low		Agua Hedionda	
Armorfab Custom Cycles	538 Olive Ave	92083	Low		Buena Vista	
Arshia Custom Cabinet	2525 Pioneer Ave, #5	92081	Low		Agua Hedionda	
Bekaert Progressive Composites	2455 Ash St	92083	Low		Agua Hedionda	
Big Fish Motorsports	925 Poinsettia Ave A-5	92083	Low		Agua Hedionda	
Brightco Machining	2336 La Mirada Dr 200	92081	Low		Agua Hedionda	
C Enterprises, LP	2445 Cades Way	92081	Low		Agua Hedionda	
Ceragem	1031 S Santa Fe Ave E	92083	Low		Buena Vista	
CH Products	970 Park Center Dr.	92083	Low		Agua Hedionda	
D J Orthopedics, L L C	2985 Scott St.	92083	Low		Agua Hedionda	
Denso International America Inc. Dba L A Labs	3250 Business Park Dr	92081	Low		Agua Hedionda	
Digital On-Demand, Inc.	1390 Decision St B	92081	Low		Agua Hedionda	
Dutek Inc.	2248 Oak Ridge Way	92083	Low		Agua Hedionda	
E & J Stone	795 North Avenue, Suite E	92081	Low		Loma Alta	
Exhibitart Displays, Inc.	1250 Distribution Way	92083	Low		Agua Hedionda	

HRE Performance Wheels	2611 Commerce Way Suite D	92081	Low		Agua Hedionda	
Hudson Printing, Inc.	1497 Poinsettia Ave, #153	92081	Low		Agua Hedionda	
I C P America, Inc.	1070 Joshua Way	92083	Low		Agua Hedionda	
IDL Tech Tools	2438 Cades Way	92084	Low		Agua Hedionda	
International Lottery & Totalizator Systems, Inc.	2310 Cousteau Court	92081	Low		Agua Hedionda	
K'S Refrigerated Transport, L L C	2591 Pioneer Ave C	92081	Low		Agua Hedionda	
Lemken Kuhlwerk	2330 La Mirada Dr Suite 200	92081	Low		Agua Hedionda	
Leucadia Surf Design, Llc	2755 Dos Aarons Way B	92081	Low		Agua Hedionda	
M C R Auto Machine Shop	452 Olive Ave K	92083	Low		Buena Vista	
Manzo's Metal Works	797 North Avenue, # D	92081	Low		Loma Alta	
Michael A. Eddy Painting	1930 Watson Way # I	92083	Low		Agua Hedionda	
Micronel U.S.	1280 Liberty Way	92083	Low		Agua Hedionda	
Minor Fab	1205 N. Melrose Suite M	92084	Low		Loma Alta	
Monserate Biotech, L L C	1396 Poinsettia Ave	92081	Low		Agua Hedionda	
Natural Alternatives Int'l Inc	1215 Park Center Dr.	92081	Low		Agua Hedionda	
Oceanside Marble Cromade, Inc.	921 Poinsettia Ave B-10	92081	Low		Agua Hedionda	
Oceanside Sales & Marketing Inc.	2560 Progress St C	92083	Low		Agua Hedionda	
Orlimar Golf Company	1385 Park Center Dr	92083	Low		Agua Hedionda	
Orthodontic Design & Production, Inc.	1370 Decision St. Suite D	92081	Low		Agua Hedionda	
Outreach Inc	2230 Oak Ridge Way	92081	Low		Agua Hedionda	
Ozivert	921 Poinsettia Ave 3	92081	Low		Agua Hedionda	
Pacific Aero Press	1133 Lark Hill Dr.	92084	Low		Buena Vista	
Pacific Aquatic Furniture Design	2515 Pioneer Ave 4	92081	Low		Agua Hedionda	
Pacific Stair Products	2241 La Mirada Drive	92081	Low		Agua Hedionda	
Pelican Packaging Inc	2365 Oak Ridge Way	92083	Low		Agua Hedionda	
Plangea Cutting, L L C	1487 Poinsettia Ave, Suite #120	92083	Low		Agua Hedionda	
Poweron	1185 Park Center Dr. S	92083	Low		Agua Hedionda	
Predator Motorsports	1250 Distribution Way	92081	Low		Agua Hedionda	
Promach	2438 Cades Way	92081	Low		Agua Hedionda	
Proteus Dimensional Technologies, Inc	1260 Distribution Way	92083	Low		Agua Hedionda	

Sherline Products, Inc.	3235 Executive Ridge Dr.	92083-8257	Low		Agua Hedionda	
Sound Away Corporation	1175 Park Center Dr A	92081	Low		Agua Hedionda	
Stines Machine Inc	2481 Coral St.	92083	Low		Agua Hedionda	
Sue Spray Woodworks	925 Poinsettia Ave A-9	92081	Low		Agua Hedionda	
Teaco Welding And Fabrication	793 North Ave C-D	92083	Low		Loma Alta	
Technical Tooling & Gage	2598 Fortune Way , Suite # F	92083	Low		Agua Hedionda	
The Brass Ring	1495 Poinsettia Ave 150	92081	Low		Agua Hedionda	
The Vista News (Coast News Group)	640 Escondido Ave 112	92084	Low		Buena Vista	
T-Rex Clothing & Graphics	1349 Bonair Rd	92084	Low		Buena Vista	
U S Compower LLC	1386 Poinsettia Ave , Suite #D	92083	Low		Agua Hedionda	
Vision Manufacturing Inc	1198 Joshua Way	92081	Low		Agua Hedionda	
West Prints	1185 Park Center Dr F	92081	Low		Agua Hedionda	
2s2, Inc.	1330 Specialty Dr # C	92081	Medium		Agua Hedionda	
A T Machine	2515 Pioneer Ave , Suite # 3	92083	Medium		Agua Hedionda	
A W R/Racing Cages	2865 Scott Street #106-107	92081	Medium		Agua Hedionda	
Accutech, LLC	2641 La Mirada Dr.	92083	Medium		Agua Hedionda	
Aero Vision International	2780 La Mirada Dr. Suite # C	92083	Medium		Agua Hedionda	
Air Tech Streamlining	2530 Fortune Way	92083	Medium		Agua Hedionda	
Alvarado Micro-Precision	2475 Coral St. , Suite #C	92083	Medium		Agua Hedionda	
American Faucet & Coatings Corp	3280 Corporate View Dr.	92083	Medium		Agua Hedionda	
American Peptide Company	1271 Avenida Chelsea	92083	Medium	X	Agua Hedionda	
Apollo Sprayers Inc	1030 Joshua Way	92083	Medium		Agua Hedionda	
Applied Membranes, Inc.	2325 Cousteau Ct	92083	Medium		Agua Hedionda	
Applied Technology Co.	1280 Liberty Way	92083	Medium		Agua Hedionda	
B & C Nutritional Products Inc	2550 Pioneer Ave	92083	Medium		Agua Hedionda	
B/E Aerospace	2555 Birch St.	92083	Medium		Agua Hedionda	
BAE Systems Advanced Ceramics Inc	991 Park Center Dr.	92083	Medium	X	Agua Hedionda	
BAE Systems, Advanced Ceramics	1960 Watson Way	92083	Medium	X	Agua Hedionda	
Bendmac Manufacturing	440 Olive Ave , Suite # P	92084	Medium		Buena Vista	
Big Box 999 Dba Mattress Studio""	320 Sycamore Ave B	92084	Medium		Agua Hedionda	

Bilandzija Cabinets	2588 Progress St, Suite # 5	92083	Medium		Agua Hedionda	
BOJ	611 Mercantile St.	92083	Medium		Buena Vista	
Bravo Screen Print	1230 Activity Rd # D	92081	Medium		Agua Hedionda	
Bristol S.G., Inc.	2525 Pioneer Ave , Suite # 6	92083	Medium		Agua Hedionda	
Bruning Engineering Inc	2598 Fortune Way , Suite # M	92083	Medium		Agua Hedionda	
By Oceana, Inc.	1253 Activity Dr A	92081	Medium		Agua Hedionda	
C N C Precision Machining	797 North Ave , Suite # C	92083	Medium		Loma Alta	
Carlsbad Custom Cabinets	1341 Distribution Way , Suite #14	92083	Medium		Agua Hedionda	
Coast Intelligen, Inc.	2460 Ash St	92083	Medium		Agua Hedionda	
Concept Machining	1230 Activity Dr #C	92081	Medium		Agua Hedionda	
Cookies Con Amore	2330 La Mirada Dr #700	92081	Medium		Agua Hedionda	
Cornerstone Sensors Inc	1304 N Melrose Dr. Suite #C	92083	Medium		Loma Alta	
Costa Miramar Royal Prestige	902 S Santa Fe Ave A2	92084	Medium		Buena Vista	
Cousins Signs Inc	350 E Broadway	92084	Medium		Buena Vista	
Creative Printing	1132 N Melrose Dr	92083	Medium		Buena Vista	
Crown Industrial Products, Inc.	2440 La Mirada Dr.	92081	Medium		Agua Hedionda	
C-Shoes	797 North Ave , Suite # D	92083	Medium		Loma Alta	
Csi Technologies, Inc.	2595 Commerce Way	92083	Medium		Agua Hedionda	
Custom Machined Products	1338 N Melrose Dr. , Suite # E	92083	Medium		Loma Alta	
Dart Plastics & Engineering, Inc.	1240 Activity Dr. Suite # A	92083	Medium		Agua Hedionda	
Dime Water, Inc.	2575 Fortune Way, Suite #J	92083	Medium		Agua Hedionda	
Distinctive Plastics, Inc.	1385 Deision St.	92085	Medium		Agua Hedionda	
Diversified Manufacturing Of Ca	2555 Progress St.	92083	Medium		Agua Hedionda	
Diversified Tool & Die	2585 Birch St.	92083	Medium	**X**	Agua Hedionda	
Douglas Wheel, Inc.	1340 N. Melrose Dr.	92083	Medium		Loma Alta	
Earthlite Massage Tables Inc dba	3210 Executive Ridge Dr.	92083	Medium		Agua Hedionda	
Eaton Leonard Robolix, Inc	1391 Specialty Dr. Suite # A	92083	Medium		Agua Hedionda	
Econo Plastics, Inc. (Progressive Molding)	1210 N. Melrose Dr, Suite # A	92083	Medium		Loma Alta	
Elite Metal Finishing	1392 Poinsettia Ave, Suite # C	92083	Medium		Agua Hedionda	
Elixir Steel Framing Corp	2611 Commerce Way # D	92081	Medium		Agua Hedionda	

E-World Recyclers	2480 Ash Street	92081	Medium	X	Agua Hedionda	
F&T Precision Products	980 Park Center Dr, Suite # I	92083	Medium		Agua Hedionda	
Fax Foods	1392 Poinsettia Ave, Suite # A&B	92083	Medium		Agua Hedionda	
Ferro Electronic Materials Systems	1395 Aspen Way	92083	Medium	X	Agua Hedionda	
Flotron	2485 Coral St	92083	Medium		Agua Hedionda	
Frito Lay Inc	1390 Vantage Ct	92081	Medium	X	Agua Hedionda	
Funktion	1930 Watson Way Suite # P	92083	Medium		Agua Hedionda	
Graphic Converting, Inc.	1370 Decision St.	92083	Medium		Agua Hedionda	
Grilla	1235 Activity Dr Ste F	92081	Medium		Agua Hedionda	
H F Johnston Mfg. Co.	2475 Ash St	92083	Medium		Agua Hedionda	
Hargett Precision Products	2865 Scott St 108	92081	Medium		Agua Hedionda	
HI REZ DIGITAL SOLUTIONS	1235 Activity Drive, Suite # E	92081	Medium		Agua Hedionda	
Hi Tech Swiss Machining Inc	2410 La Mirada Dr.	92083	Medium		Agua Hedionda	
Hippo Golf Company, Inc. (Ca)	2755 Dos Aaron Way, Suite # A	92083	Medium		Agua Hedionda	
Hocking Intl Labs	970 Park Center Dr. Ste C	92081	Medium	X	Agua Hedionda	
Horstman Manufacturing Co Inc	2510 Pioneer Ave	92083	Medium		Agua Hedionda	
Hydrocomponents & Technologies, Inc.	1175 Park Center Dr, Suite # H	92083	Medium		Agua Hedionda	
I W Technologies, Inc.	2446 Cades Way	92083	Medium		Agua Hedionda	
Intellectual Technology, Inc.	1040 Joshua Way	92083	Medium		Agua Hedionda	
J & D Laboratories	2640 Progress St	92083	Medium		Agua Hedionda	
J Mark Manufacturing Inc	2480 Coral St , Suite #C	92083	Medium		Agua Hedionda	
JAVO Beverage Co.	1311 Specialty Drive	92081	Medium	X	Agua Hedionda	
Jeld-Wen Summit Windows And Patio Doors	2760 Progress St	92083	Medium	X	Agua Hedionda	
Jensen Meat Co Inc	2525 Birch St	92083	Medium	X	Agua Hedionda	
Jif-Pak Manufacturing, Inc.	1451 Engineer St.	92083	Medium		Agua Hedionda	
Jugueria La Tropicana #2	1839 W Vista Way B	92083	Medium		Buena Vista	
Killion Industries Inc	1380 Poinsettia Ave	92083	Medium		Agua Hedionda	
Killion Industries, Inc.	2811 La Mirada Drive	92083	Medium		Agua Hedionda	
Lightwave Audio Systems, Inc.	1384 Poinsettia Ave, Suite #F	92083	Medium		Agua Hedionda	
M Klemme Technology, Corp	1386 Poinsettia Ave, Suite #A	92083	Medium		Agua Hedionda	

M M Precision Machining	2525 Pioneer Ave, Suite #4	92083	Medium		Agua Hedionda	
Magna Coatings Corp	1440 Decision Street	92083	Medium		Agua Hedionda	
Magnacore Inc.	1386 Poinsettia Ave, Suite #B	92083	Medium		Agua Hedionda	
Magnum Offroad	1235 Activity Dr A	92081	Medium		Agua Hedionda	
Maria Gutierrez Bazan	2465 Coral St	92085	Medium		Agua Hedionda	
Martin Enterprises	3235 Executive Ridge Dr.	92083	Medium		Agua Hedionda	
Meridian Laboratory Inc	1330 N. Melrose Dr, Suite #E	92083	Medium		Loma Alta	
Mihal Enterprises dba JT- Designs	1250 Activity Dr # E	92081	Medium		Agua Hedionda	
MODERN MEDICAL SUPPLY	1235 Activity Drive, F	92083	Medium		Agua Hedionda	
Newsail Marine & Energy	730 Sycamore Ave E	92083	Medium		Agua Hedionda	
NML, LLC	2575 Pioneer Ave. Suite 105	92081	Medium		Agua Hedionda	
Nutritional Engineering Inc.	1208 Avenida Chelsea	92083	Medium		Agua Hedionda	
Oem Production LLC	2875 Scott St 101-102	92081	Medium		Agua Hedionda	
Pacific Ceet, Inc.	1220 Liberty Way	92083	Medium		Agua Hedionda	
Pacific Dream Enterprises, Inc.	1351 Distribution Way , Suite #4	92083	Medium		Agua Hedionda	
Palmac Design & Manufacturing	2445 La Mirada Dr.	92083	Medium		Agua Hedionda	
Phoenix Wheel Company, Inc. (HRE Performance)	2453 Cades Way , Suite #A	92083	Medium		Agua Hedionda	
Pixel Imaging Media	2595 Fortune Way	92081	Medium		Agua Hedionda	
Power Craft Autoparts	452 Olive , Suite #L	92084	Medium		Buena Vista	
Pozza Manufacturing Inc.	1185 Park Center Dr. , Suite #Q	92083	Medium		Agua Hedionda	
Precise Manufacturing	1495 Poinsettia Ave, Suite #148	92083	Medium		Agua Hedionda	
Print House Inc	2630 Progress St	92083	Medium		Agua Hedionda	
Print Inc	1225 Park Center Dr. , Suite #A	92083	Medium	X	Agua Hedionda	
Pro Designer Plastics Inc Pdp	1260 Liberty Way , Suite #D	92083	Medium		Agua Hedionda	
Professional Water Technologies	1048 La Mirada Ct	92081	Medium	X	Agua Hedionda	
Quantum Focus Instruments	990 Park Center Dr. D	92083	Medium		Agua Hedionda	
R Jesse & Company Inc	1226 Keystone Way	92083	Medium		Agua Hedionda	
Ray Allen Company, Inc.	2525 Pioneer Ave # 8	92081	Medium		Agua Hedionda	
Rayzist Photomask Inc	955 Park Center Dr.	92083	Medium	X	Agua Hedionda	
Renee Machine, Inc.	1185 Park Center Dr. , Suite #E	92083	Medium		Agua Hedionda	

Reybro, Inc. dba Quality Recycling	149 Nettleton Rd	92083	Medium	X	Buena Vista	
Roadway Express Inc.	1392 Engineer St	92083	Medium	X	Agua Hedionda	
Sandel Avionics, Inc.	2401 Dogwood Way	92081	Medium		Agua Hedionda	
Seber Tech L L C	2438 Cades Way	92083	Medium		Agua Hedionda	
Security Systems, Inc	2585 Fortune Way, B	92081	Medium		Agua Hedionda	
Shadowridge Water Reclamation Facility	2525 Lupine Hill Rd	92083	Medium	X	Agua Hedionda	
Silicon Solar, Inc.	1236 Activity Dr B	92081	Medium		Agua Hedionda	
Skylark Sport Marketing dba, PRANA	3275 Corporate View	92081	Medium		Agua Hedionda	
Somethin' More Tasty@Vista's Icebox	2260 Oak Ridge Way	92081	Medium		Agua Hedionda	
Speedy Cut Inc	2565 Progress St.	92083	Medium		Agua Hedionda	
STINKY FAB.	2588 Progress Street, #15	92081	Medium		Agua Hedionda	
Tech 22	1160 Joshua Way	92083	Medium		Agua Hedionda	
Tecxel/R Zamora Corp.	2826 La Mirada Dr, Suite #D	92083	Medium		Agua Hedionda	
Tedco Tool	1175 Park Center Dr. Suite #C	92084	Medium		Agua Hedionda	
The Art Of Coffee, Inc.	1311 Specialty Drive	92083	Medium		Agua Hedionda	
The Pressroom	843 Williamston St.	92084	Medium		Buena Vista	
Tri Digital	1495 Poinsettia Ave, Suite #144	92083	Medium		Agua Hedionda	
Trinity Innovations	1250 Keystone Way	92083	Medium		Agua Hedionda	
U S I Inc.	1185 Park Center Dr. , Suite #0	92083	Medium		Agua Hedionda	
Urgent Signs	2336 La Mirada Dr #1000	92081	Medium		Agua Hedionda	
US Post Office	960 Postal Way	92084	Medium		Buena Vista	
V Q S Enterprises, Inc.	1081 Poinsettia Ave	92083	Medium		Agua Hedionda	
Vista Industrial Products Inc	1395 Park Center Dr.	92083	Medium		Agua Hedionda	
W5 Machining, Inc.	2365 Oak Ridge Way	92083	Medium		Agua Hedionda	
Watkins Manufacturing Corp	1280 Park Center Dr.	92083	Medium	X	Agua Hedionda	
Westbridge Agricultural Products	1260 Avenida Chelsea	92081	Medium		Agua Hedionda	
Western CNC, Inc	1001 Park Center Dr.	92083	Medium	X	Agua Hedionda	
Youngdale Manufacturing Corp	2449 Cades Way	92083	Medium		Agua Hedionda	
Excellent Coatings Inc	1285 Distribution Way	92083-8817	Moved/Out of Business		Agua Hedionda	
Westbridge Research Group	1150 Joshua Way	92081	Moved/Out of Business	X	Agua Hedionda	

G & F Custom Plastering	664 E. Vista Way #E	92084	High		Buena Vista	**X**

APPENDIX I

Commercial Facilities Inventory

APPENDIX I
2007-2008 Commercial Inventory

Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
99¢ Only Stores	705 E. Vista Way	92084	High	X	Buena Vista	
Adelita's Cocina Mexicana	918 S Santa Fe Ave	92084	High	X	Buena Vista	
Agrispect, Inc.	2591 Pioneer Ave #B	92083	High	X	Agua Hedionda	
Albertacos Mex Food Inc	601 Sycamore Ave	92083	High	X	Agua Hedionda	
Albertson's #6201	1301 E Vista Way	92084	High	X	Buena Vista	
Albertson's #6797	1601 S Melrose Dr	92081	High	X	Agua Hedionda	
Allen's Auto	718 E Vista Way	92084	High	X	Buena Vista	
Arashi Japanese Cuisine	962 S. Santa Fe Ave.	92084	High	X	Buena Vista	
Armandos Mexican Food	770 Sycamore Ave Suite #L	92083	High	X	Agua Hedionda	
Aschbrenner, Inc. dba Spectrum Floral Service	2505 Commerce Way	92083-8441	High	X	Agua Hedionda	
Bara Bean Café & Donuts	771 E. Vista Way #102A	92084	High	X	Buena Vista	
Cal-Americas	2834 La Mirada Dr	92081	High	X	Agua Hedionda	
California Pizza Kitchen	307 Vista Village Drive	92085	High	X	Buena Vista	
Casa Linda	721 S. Santa Fe Ave	92083	High	X	Buena Vista	
Chicks Natural Roasted Chicken	950 E VIista Way, Suite #H & I	92084	High	X	Buena Vista	
Chin's Szechwan Vista, Inc.	600 E Vista Way	92083	High	X	Buena Vista	
Coast Equipment Rental	1713 W. Vista Way	92083	High	X	Buena Vista	
Colima's Mexican Food	1850 Hacienda Dr. Suite#22	92081	High	X	Buena Vista	
Coopers Cactus	1097 Crestview Rd	92083	High	X	Agua Hedionda	
Del Taco 212	1037 Bobier Dr.	92083	High	X	Buena Vista	
El Asadero Restaurant	1717 E Vista Way , Suite #106	92084	High	X	Buena Vista	
El Callejon Vista	20 Main St, H-100	92083	High	X	Buena Vista	
El Caporal Mexican Food	800 Escondido Ave, Ste B	92084	High	X	Buena Vista	
El Ranchero	226 Main St.	92084	High	X	Buena Vista	
El Rinconcito Mexican Seafood Resturant	1033 S Santa Fe Ave, Suite # E	92084	High	X	Buena Vista	
El Vaqueros Mexican Food	1740 E. Vista Way	92084	High	X	Buena Vista	
Elk's Lodge Restaurant	1947 E Vista Way	92085	High	X	San Luis Rey	
Eriberto's Mexican Food	1805 Hacienda Dr	92081	High	X	Buena Vista	
Esperanza Growers	1455 E. Taylor St	92084	High		Buena Vista	
Feliccias	1011 S Santa Fe Ave, Suite C	92083	High	X	Buena Vista	
Fiamengo Nursery	1715 Monte Mar Rd	92083	High	X	Buena Vista	
Filibertos Mexican Food	960 E Vista Way	92084	High	X	Buena Vista	
Foodmaker Inc 55 - Jack In The Box	815 E Vista Way	92084	High	X	Buena Vista	

APPENDIX I
2007-2008 Commercial Inventory

Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Frank's Mexican Grill	122 W. California Ave	92083	High	X	Buena Vista	
French Bakery Cafe	1223 E Vista Way A	92083	High	X	Buena Vista	
Giant New York Pizza	1250 S. Santa Fe Ave Suite # E	92084	High	X	Buena Vista	
Glitter Wash	1140 S. Santa Fe Ave	92083	High	X	Buena Vista	
Homeland Petroleum	1740 East Vista Way	92084	High	X	Buena Vista	
In N Out Burger #61	2010 Hacienda Dr	92083	High	X	Buena Vista	
International House Of Pancakes 814	632 Sycamore Ave	92083	High	X	Agua Hedionda	
Jack in the Box #3019	1471 N. Santa Fe Ave	92084	High	X	Buena Vista	
Jack In The Box #3029	260 S Melrose Dr	92083	High	X	Buena Vista	
Jj's Deli Cafe #5	1495 Poinsettia Ave # 152	92081	High	X	Agua Hedionda	
Jumping Bean Café	785 Shadowridge Dr	92081	High	X	Agua Hedionda	
Juniors Taco Shop	1680 S. Melrose Dr. # 110	92083	High	X	Agua Hedionda	
Kentucky Fried Chicken	840 E Vista Way	92084	High	X	Buena Vista	
La Favorita Market	932 Vista Village Drive	92084	High	X	Buena Vista	
La Mexicana Market	440 N Santa Fe Ave	92083	High	X	Buena Vista	
Los Cabos Mexican & Seafood	760 E Vista Way	92084	High	X	Buena Vista	
Mama & Papa's Pizza Grotto	988 Escondido Ave Suite A	92084	High	X	Buena Vista	
Mc Donalds 12791	1470 N. Santa Fe Ave	92083	High	X	Buena Vista	
Mexiplus Vista, LLC dba Taco Pablo's	530 Hacienda Dr Suite #101	92081	High	X	Buena Vista	
Mi Pueblito Mexican & Seafood Inc.	815 N. Santa Fe Ave	92084	High	X	Buena Vista	
Mobile Food Service Hub	365 Olive Ave Suite A	92084	High	X	Buena Vista	
Northgate Market	1150 E. Vista Way	92083	High	X	Buena Vista	
Nucci's Italian Cafe Pizza Pas	1580 S. Melrose Dr Suite # 108	92081	High	X	Agua Hedionda	
Oscar's Mexican Food	822 E Vista Way	92084	High	X	Buena Vista	
Panda Express #1262	316 Sycamore Ave	92083	High	X	Agua Hedionda	
Pepper Tree Frosty	270 S Santa Fe Ave	92083	High	X	Buena Vista	
Pho Lucky	770 Sycamore Ave # E & F	92081	High	X	Agua Hedionda	
Pick Up Stix-Vista #7214	251 S. Melrose Dr. Suite #303	92081	High	X	Buena Vista	
Popeyes Fried Chicken	1817 W. Viista Way Suite #F	92083	High	X	Buena Vista	
Primo Food Market	1535 W. Vista Way	92083	High	X	Buena Vista	
Rainbow Gardens	1444 E. Taylor St	92084	High	X	Buena Vista	
Rancho del Oro	1281 N. Santa Fe Ave #K	92083	High	X	Buena Vista	
Rancho Garcia Nursery	1640 Bonair Rd.	92084	High	X	Buena Vista	

APPENDIX I
2007-2008 Commercial Inventory

Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Rancho Grande Mexican & Seafood	102 S Santa Fe Ave	92084	High	X	Buena Vista	
Rodeos Meat Market	356 Vista Village Dr	92083	High	X	Buena Vista	
Round Table Pizza	923 E Vista Way	92084	High	X	Buena Vista	
Royal Pho	1717 E Vista Way #101-102	92084	High	X	Buena Vista	
Rubio's Baja Grill	1711 University Ave Suite #110	92083	High	X	Agua Hedionda	
Rudys Coyote Cafe	1450 N. Santa Fe Ave Suite #Y	92083	High	X	Buena Vista	
Santa Fe Auto Repair	1045 N Santa Fe Ave	92083	High	X	Buena Vista	
Sarika Thai Kitchen	1011 S. Santa Fe Ave	92083	High	X	Buena Vista	
Sea Witch Marine, Inc	1085 S. Santa Fe Ave	92083	High	X	Buena Vista	
Security Chevrolet Inc	1100 E. Vista Way	92084	High	X	Buena Vista	
SKS, Inc. Petroleum Distributors	620 S Santa Fe Avenue	92083	High	X	Buena Vista	
Southern California Auto House, Inc	968 Vista Village Dr	92084	High	X	Buena Vista	
Subway Sandwiches & Salads 2208	950 E Vista Way	92084	High	X	Buena Vista	
Sunrise Cafe	1250 S. Santa Fe Ave #3	92083	High	X	Buena Vista	
Ted's Auto Service	727 E Vista Way	92083	High	X	Buena Vista	
The Picket Fence	945 S. Santa Fe Ave	92084	High		Buena Vista	
Tony's Meats @ Rancho Vista Market	988 Escondido Ave H	92083	High	X	Buena Vista	
Torres Asuncion Growers	1712 Anza Ave.	92084	High	X	San Luis Rey	
Uncle Tony's Italian Cuisine	770 Sycamore Ave, H	92083	High	X	Buena Vista	
Village Cafe	406 Main St	92083	High	X	Buena Vista	
Vista Car Care	444 S Santa Fe Avenue, Suite A	92083	High	X	Buena Vista	
Vista Equipment Rentals Inc	1121 S. Santa Fe Ave	92083	High	X	Buena Vista	
Vista Transmission Service	427 Redlands Street, Suite B	92083	High	X	Buena Vista	
Vista Way Cafe	868 E Vista Way	92084	High	X	Buena Vista	
Vista's Ice Box	777 E. Vista Way Suite # 204	92084	High	X	Buena Vista	
Vons Grocery #2121	940 S. Santa Fe Ave.	92083	High	X	Buena Vista	
Wasabi Japanese Cuisine	1688 S. Melrose Dr Suite # 212	92083	High	X	Agua Hedionda	
Watts Brothers, L L C Dba Submarina	320 Sycamore Ave D	92083	High	X	Agua Hedionda	
Wendy's Restaurant #16	567 W. Vista Way	92083	High	X	Buena Vista	
Wienerschnitzal 288	901 S Santa Fe Ave	92083	High	X	Buena Vista	
7 Eleven #15923	1501 N Santa Fe Avenue	92083	Low		Buena Vista	
7 Eleven #24085	900 N Santa Fe Avenue	92083	Low		Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
A Smog Test Only	414 N. Santa Fe Ave, Suite A	92083	Low		Buena Vista	
A+ Automotive	257 N Emerald Dr # A	92083	Low		Buena Vista	
A-1 Radiator	1903 W Vista Way, Suite C	92083	Low		Buena Vista	
A-B-C Smog	1415 S Santa Fe Ave	92084	Low		Buena Vista	
Acells Corp	3121 Scott St	92081	Low		Agua Hedionda	
Advance Auto Center	1352 N. Melrose, Suites L-K	92083	Low		Loma Alta	
Advance Micro Components Inc	2475 Coral St - B	92083	Low		Agua Hedionda	
Ai Sushi	1910 Shadowridge Dr Suite #106	92083	Low		Agua Hedionda	
All Tune & Lube	257 N Emerald Drive, Suite B	92083	Low		Buena Vista	
Alta Mechanic	446 Olive Ave Suite F & G	92083	Low		Buena Vista	
American Concrete Cutting & Cor	1217 Distribution Way	92083	Low		Agua Hedionda	
American Horticultural Supply, Inc.	1345 Specialty Dr # A	92081	Low		Agua Hedionda	
American Legacy Products, Inc.	2575 Fortune Way , Suite # G	92083	Low		Agua Hedionda	
AMERICAN SPORT BIKE	1341 Distribution Way # 22	92081	Low		Agua Hedionda	
Apro Llc #30	485 N. Melrose Dr	92083	Low		Buena Vista	
Arby's	40 Main St Suite E-110	92083	Low		Buena Vista	
Arco AM PM #6315	1403 South Santa Fe Avenue	92083	Low		Buena Vista	
Argosy Industries Inc	2640 Business Park Dr	92083	Low		Agua Hedionda	
Austin Doors (same office-Kaylimd Commercial Contr	1351 Distribution Way # 1	92085	Low		Agua Hedionda	
Auto Europa Cars	737 Townsite Dr # 743	92084	Low		Buena Vista	
Auto Smog	2070 Hacienda Dr Suite J	92081	Low		Buena Vista	
Auto Spa	851 W. Vista Way	92083	Low		Buena Vista	
Autocare USA	414 N. Santa Fe Ave, Suites B & C	92083	Low		Buena Vista	
Autotyme Automotive, Inc.	1146 N Melrose Drive, #801	92083	Low		Buena Vista	
B & D Auto Repair and Service	1350 N Melrose Drive	92083	Low		Loma Alta	
B N J Ultraservices, Inc. (Ultra Max)	381 Olive Ave	92083	Low		Buena Vista	
BANKER DIRECT AUTO SALES	536 N. Santa Fe Ave	92083	Low		Buena Vista	
Betz Concrete, Inc.	1217 Distribution Way	92084	Low		Agua Hedionda	
Big O Tires	636 S Santa Fe Avenue	92084	Low		Buena Vista	
Bob Workman's European Auto Service	1304 N Melrose Drive, Suite A	92083	Low		Loma Alta	
Bombay Cafe	1280 E Vista Way, Suite # 4	92084	Low		Buena Vista	
British Masters	715 Mercantile Street	92083	Low		Buena Vista	
Budget Rent A Car	1859 W. Vista Way	92083	Low		Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Budget Rent A Car Systems, Inc.	241 N. Emerald Dr.	92083	Low		Buena Vista	
Budget Smog	1205 N Melrose Drive, Suite G	92083	Low		Loma Alta	
Budget Smog Test Only Center	538 Olive Ave 300-C	92083	Low		Buena Vista	
Buena Creek Nursery	1280 Sunset Dr	92083	Low		Agua Hedionda	
C P C	1126 N. Melrose	92083	Low		Buena Vista	
Cafe Oasis	1175 Park Center Drive, Suite F	92081	Low		Agua Hedionda	
Cal Mex Wholesale Growers & Shipper, Inc	2680 La Mirada Dr	92083	Low		Agua Hedionda	
California Breakers, Inc.	2490 Grand Ave	92083	Low		Agua Hedionda	
California Specialty Produce	1330 Keystone, Suite #A	92083	Low		Agua Hedionda	
Capitol Paving Inc	408 Olive St	92083	Low		Buena Vista	
Carl's Jr. #1390	660 Hacienda Dr	92083	Low		Buena Vista	
CESAR'S AUTO MECHANICS	452 Olive Ave, Suite L	92083	Low		Buena Vista	
Chaparro's Mexican Food, Inc.	2595 Commerce Way	92081	Low		Agua Hedionda	
Chevron Station #1497	2295 S Melrose Drive	92081	Low		Agua Hedionda	
Chevron USA	224 Emerald Dr	92083	Low		Buena Vista	
Chevron USA (Foothill Chevron)	1211 E. Vista Way	92084	Low		Buena Vista	
Chili Coast Burgers	1330 E Vista Way, Suite # 2	92084	Low		Buena Vista	
Christina Bakery	1110 N. Santa Fe Ave Suite D	92083	Low		Buena Vista	
Christin's Café	2515 Pioneer Ave # 5	92081	Low		Agua Hedionda	
Cirincione's Ristorante & Pizzeria	1450 N. Santa Fe Ave Suite # E	92083	Low		Buena Vista	
Classic Datsun Motorsports	345 Olive Avenue	92083	Low		Buena Vista	
Clutchworks	1205 North Melrose Drive, Suite D	92083	Low		Loma Alta	
Cms Inc/Spring Parts Div Of Cms Inc.	1341 Distribution Way, Suite # 11	92083	Low		Agua Hedionda	
Cold Stone Creamery	30 Main St #120	92084	Low		Buena Vista	
Control Technology	2416 Cades Way	92083	Low		Agua Hedionda	
Courtesy Auto Repair	826 N. Santa Fe Ave	92083	Low		Buena Vista	
C-SBI changed to: To West Coast Refrigerated Truck	1330 Distribution Way # B	92083	Low		Agua Hedionda	
D & D Tool & Supply	1445 Engineer St	92083	Low		Agua Hedionda	
D D H Enterprise, Inc	2220 Oak Ridge Way	92083	Low		Agua Hedionda	
Dairy Queen - Shadowridge	1580 S. Melrose Dr Suite #116	92081	Low		Agua Hedionda	
Danish & Donuts	1450 Santa Fe Ave.N. Ste I	92083	Low		Buena Vista	
Desert Theater II	800 Sunset Dr	92083	Low		Agua Hedionda	
Dion's Automotive	1210 N. Melrose Drive, Suite D	92083	Low		Loma Alta	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Donut Factory	1839 Vista Way W. Ste C	92083	Low		Buena Vista	
Drew's Automotive Repair	538 Olive Ave., Suite D	92083	Low		Buena Vista	
Driveline Vista	253 N Emerald Drive, Suite A & B	92083	Low		Buena Vista	
E G M Auto Sales & Leasing	835 N. Santa Fe Ave #A	92084	Low		Buena Vista	
East Of Java	3231 Business Park Dr. Ste.1	92081	Low		Agua Hedionda	
Edco Distributing Inc	3150 Scott St	92083	Low		Agua Hedionda	
El Dorado Express Grill	3265 Business Park Dr Ste B	92084	Low		Agua Hedionda	
El Puertesito Mexican Restaurant	1450 N. Santa Fe Ave Suite # R	92084	Low		Buena Vista	
El Torito Market	249 N. Emerald Dr	92083	Low		Buena Vista	
Elaines Cake Boutique	1021 N. Santa Fe Ave.	92084	Low		Buena Vista	
Emerald Shell	145 N Emerald Dr, Vista, CA	92083	Low		Buena Vista	
Enterprise Rent-A-Car Lsg 3249	875 W. Vista Way	92083	Low		Buena Vista	
Euro Pacific Paint & Body	1210 N. Melrose Drive, Suite B	92083	Low		Loma Alta	
Euro Pacific, Inc.	1210 N Melrose Drive, Suite B	92083	Low		Loma Alta	
Evans Tire & Service Centers	2070 Hacienda Drive, Suite A	92083	Low		Buena Vista	
Express Tire & Certified Auto Service	2030 Hacienda Drive, Suite 100	92083	Low		Buena Vista	
FDO Auto Service	446 Olive Avenue, Suite A	92083	Low		Buena Vista	
Fernando Sons Fer's Auto Repair	446 Olive Avenue, Suite F	92083	Low		Buena Vista	
Fiesta Giant Pizza	1120 N. Santa Fe Ave.	92083	Low		Buena Vista	
Flamingo Holland Inc	1250 Avenida Chelsea	92081	Low		Agua Hedionda	
Food 4 Less 300	500 Hacienda Drive	92083	Low		Buena Vista	
Foothill Chevron	1211 East Vista Way	92084	Low		Buena Vista	
Fountain Car Wash	1352 N. Santa Fe Ave	92083	Low		Buena Vista	
Francis Biddle International, Inc.	2506 Pioneer Ave	92083	Low		Agua Hedionda	
Franciscos Mexican Deli	821 N. Santa Fe Ave	92084	Low		Buena Vista	
Frazier Farms	225 Vista Village Drive	92083	Low		Buena Vista	
Futuretronix, Inc.	1489 Poinsettia Ave #134	92081	Low		Agua Hedionda	
General Transmission	427 Redlands Street, Suite B	92083	Low		Buena Vista	
Geogrid Retaining Wall Systems, Inc	1295 Distribution Way	92083	Low		Agua Hedionda	
George's Auto Sales, Inc.	1211 N. Melrose Dr. # B	92083	Low		Loma Alta	
Gillco Products Inc	1228 Keystone Way	92083	Low		Agua Hedionda	
GM Exclusive	1215 N Melrose Drive, Suite B	92083	Low		Loma Alta	
Godwins Café	325 S Melrose Dr.	92083	Low		Buena Vista	
Golden Wrench Automotive	241 N Emerald Dr, Suite B	92083	Low		Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Greentrees Hydroponics, Inc.	2581 Pioneer Ave, Suite # D	92083	Low		Agua Hedionda	
H2Odyssey & Ocean Divers USA	975 Park Center Dr.	92083	Low		Agua Hedionda	
Happy Auto Sales	721 N. Santa Fe Ave	92084	Low		Buena Vista	
Hello Deli	2820 La Mirada Dr. Ste. A	92081	Low		Agua Hedionda	
Hera's Auto Shop Mufflers & Brakes	808 N Santa Fe Ave, Suite A	92083	Low		Buena Vista	
Herman Tuning	1903 W. Vista Wary	92083	Low		Buena Vista	
Horizon Meat & Seafood Of San Diego	980 Park Center Dr # C	92081	Low		Agua Hedionda	
Horticultural Sales, Inc.	1330 Distribution Way # E	92081	Low		Agua Hedionda	
House of Thanon Thai Cuisine	485 S. Melrose Dr. # 108 & 109	92081	Low		Buena Vista	
Icebox Jr	2260 Oak Ridge Way, Suite D	92081	Low		Agua Hedionda	
Import And Commercial Export	925 Poinsettia Ave A8	92081	Low		Agua Hedionda	
Intaglio Physicians & Surgeons	1260 Avenida Chelsea	92081	Low		Agua Hedionda	
International Poly Bag, Inc	990 Park Center Dr # G	92083	Low		Agua Hedionda	
Islands Fine Burgers & Drinks	240 S Melrose Dr.	92083	Low		Buena Vista	
J & C Leasing Carolyn Culkin	1112 Nash Ln	92083	Low		Buena Vista	
J F Japanese Cafe	35 Main St. Suite #150	92083	Low		Buena Vista	
Jackpot Painting	391 Olive Ave	92083	Low		Buena Vista	
Jack's Auto Repair	427 Redlands St, Suite A	92083	Low		Buena Vista	
JCM Auto Repair	452 Olive Avenue, Suite J	92083	Low		Buena Vista	
JEANNIE HYDE PACKAGING, INC.	2442 Cades Way	92083	Low		Agua Hedionda	
Jiffy Lube #432	1213 East Vista Way	92084	Low		Buena Vista	
Joseph Webb Foods Inc	1201 Park Center Dr	92083	Low		Agua Hedionda	
Juan's Auto Electric	808 N Santa Fe Ave, Suite B	92083	Low		Buena Vista	
Juba Juba	680 Hacienda Dr	92083	Low		Buena Vista	
Juice N Tea	30 Main St #180	92083	Low		Buena Vista	
Kabab Cuisine	1688 S. Melrose Dr. #206	92081	Low		Agua Hedionda	
Kragen Auto Parts	1250 S. Santa Fe Ave. #A	92084	Low		Buena Vista	
LA CANTINA DOORS, INC.	1340 Specialty Drive, Suite J	92081	Low		Agua Hedionda	
La Gordita	1275 S. Santa Fe Ave Suites #117, 118	92083	Low		Buena Vista	
Lamppost Pizza	15 Main St.	92083	Low		Buena Vista	
LM Retail, LP dba Shell Gasoline	2131 E Vista Way	92084	Low		San Luis Rey	
Ludwick's Automotive, Inc.	460 Olive Avenue	92083	Low		Buena Vista	
M C C Enterprises, Inc	1201 Park Center Dr.	92083	Low		Agua Hedionda	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Mariscos El Pacifico	702 S Santa Fe Ave	92084	Low		Buena Vista	
Matt's Mobil Auto Repair	253 N Emerald Drive, Suite D	92083	Low		Buena Vista	
Mc Kenzie Distributing	1330 Keystone Way # D	92083	Low		Agua Hedionda	
Medel Painting	934 N Santa Fe Ave	92083	Low		Buena Vista	
Melrose Shell	210 S Melrose Drive	92081	Low		Buena Vista	
Mexican & Greek Fast Food	573 W. Vista Way	92083	Low		Buena Vista	
Mexicano Tires	428 N Santa Fe Ave #A	92083	Low		Buena Vista	
Mi Tiendita Market	700 Townsite Drive	92084	Low		Buena Vista	
Michael's Electric	611 South Santa Fe Avenue	92083	Low		Buena Vista	
Mikes Landscape & Nursery Co	753 N. Emerald Dr.	92083	Low		Buena Vista	
Mr. A's Liquor Deli	254 Vista Village Dr	92084	Low		Buena Vista	
Napa Auto Parts Vista	1334 N Melrose Drive, G/H	92083	Low		Loma Alta	
Nongnit's Treasures	1340 Specialty Dr G	92081	Low		Agua Hedionda	
North County Ford	450 W. Vista Way	92083	Low	X	Buena Vista	
North County Import Specialist	1215 N Melrose Drive, Suite A	92083	Low		Loma Alta	
Novak Auto Repair	723 Olive Ave., Suite B	92083	Low		Buena Vista	
Nu Blocks, LLC	2420 Grand Ave, B	92081	Low		Agua Hedionda	
OAK TREE VANS LTD	1386 Poinsettia Ave., Suite E	92081	Low		Agua Hedionda	
Oceanside Towing & Services, Inc.	1352 N. Melrose Dr, #E	92083	Low		Loma Alta	
Olive Tire Shop	365 Olive Ave Suite B	92083	Low		Buena Vista	
Olympic Auto Body and Paint	119 Terracina Way	92083	Low		Buena Vista	
Oriental Market of Vista	1021 N. Santa Fe Ave # F	92084	Low		Buena Vista	
Pacific Coast Smog Check	1310 N. Melrose	92083	Low		Loma Alta	
Padilla Construction	552 Olive St	92083	Low		Buena Vista	
Paleteria La Mixteca	1110 N Santa Fe Ave, Suite F	92083	Low		Buena Vista	
Palomar Pizza & Pasta	3265 Business Park Dr # A	92081	Low		Agua Hedionda	
Pam's Donuts & Ice Cream	510 Hacienda Dr. # 109	92081	Low		Buena Vista	
Pan Don Felipe's Mexican Bakery	613 S. Santa Fe Ave	92084	Low		Buena Vista	
Panera Bread	401 Vista Village Dr, Ste. A	92083	Low		Buena Vista	
Papa John's Pizza	485 S. Melrose Dr. Suite # E	92083	Low		Buena Vista	
Pauley Equipment	348 N. Santa Fe Ave	92083	Low		Buena Vista	
Perfect Timing Auto Service	1224 Keystone Way	92083	Low		Agua Hedionda	
Performance Auto Body	1330 N Melrose Drive, Suite A	92083	Low		Loma Alta	
Pineapple Joe's	35 Main St. C-140	92083	Low		Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Pitawanakwat Auto Repair	538 Olive Ave Suite 304	92083	Low		Buena Vista	
PlusPharma	2460 Coral St	92081	Low		Agua Hedionda	
Prudential Overall Supply	2485 Ash St	92083	Low		Agua Hedionda	
Quality Laser Source, Inc.	1310 N. Melrose Dr # C	92083	Low		Loma Alta	
Quick Check Smog	835 N Santa Fe Ave	92083	Low		Buena Vista	
Quizno's Subs	485 S Melrose Dr #112	92081	Low		Buena Vista	
R & F Repair	538 Olive Ave 301	92083	Low		Buena Vista	
R K Iron Works	1124 N.Melrose , Suite # 203	92083	Low		Buena Vista	
Rancho Del Oro Towing	2260 La Mirada Dr.	92081	Low		Agua Hedionda	
Raylen Tasker's Auto Center	1806 E Vista Way	92083	Low		Buena Vista	
RC Auto and Smog	1410 South Santa Fe Avenue, Suite B	92084	Low		Buena Vista	
Red Line Towing & Fleet Maintenance, Inc.	451 Olive Ave	92083	Low		Buena Vista	
Redline	2510 Commerce Way	92083	Low		Agua Hedionda	
Reliable Transmission/Vista Towing	810 N Santa Fe Avenue	92083	Low		Buena Vista	
RESTORONICS OF SAN DIEGO	1340 Specialty Drive #C	92083	Low		Agua Hedionda	
Rice King	3265 Business Park Drive, Suite C	92081	Low		Agua Hedionda	
Richard's Performance Muffler	1352 N. Melrose Dr # A	92083	Low		Loma Alta	
Rin's Coffee Car @ Vista Medical Plaza	2067 W. Vista Way # 160	92083	Low		Buena Vista	
Rollin Renches Inc.	1212 Distribution Way	92083	Low		Agua Hedionda	
Roma Gourmet Food Ent Of Ca	2825 La Mirada Dr.	92083	Low		Agua Hedionda	
Romeo's Car Wash	352 N. Santa Fe Ave	92083	Low		Buena Vista	
Rosa Gonzales Plants Inc	377 Olive	92083	Low		Buena Vista	
S & R Service Center	245 N Emerald Drive, Suite C	92083	Low		Buena Vista	
Salsa Market	1100 N. Santa Fe Ave	92083	Low		Buena Vista	
San Giorgio Lucano Corp (EZ Pasta, Inc)	1280 E Vista Way Suite # 106	92084	Low		Buena Vista	
Santorini Island Grill Vista, L L C	3295 Business Park Dr. Suite D	92081	Low		Agua Hedionda	
Semco	1430 Vantage Ct	92083-8596	Low		Agua Hedionda	
Service Clinic	436 Vista Village Dr	92083	Low		Buena Vista	
Smog Centers of California	485 N. Melrose Dr.	92083	Low		Buena Vista	
Solano Bakery	203 Main St	92084	Low		Buena Vista	
South Coast Orchids	805 Mar Vista Dr	92081	Low		Agua Hedionda	
Sport Car Motion	2332 La Mirada St # 1100	92084	Low		Agua Hedionda	
Standard Process of Southern California Inc.	981 Park Center Drive	92081	Low		Agua Hedionda	
Starbucks Coffee	1385 E. Vista Way	92084	Low		Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Starbuck's Coffee #6676	30 Main St, # 190	92083	Low		Buena Vista	
Starbucks Coffee #6792	1631 Melrose Dr	92081	Low		Agua Hedionda	
Stark Painting Inc	2525 Pioneer Dr # 1	92083	Low		Agua Hedionda	
Starline Windows	1350 Specialty Dr, B	92081	Low		Agua Hedionda	
Stater Bros. Market #157	1451 N. Santa Fe Ave.	92084	Low		Buena Vista	
Structural Materials Co.	2770 La Mirada Drive	92084	Low		Agua Hedionda	
Sub Shop # 195	1289 E. Vista Way	92084	Low		Buena Vista	
Submarina (Business Park)	3231 Business Park Dr. Suite 4	92081	Low		Agua Hedionda	
Subway #32111	20 Main St. Suite #150	92084	Low		Buena Vista	
Sundance Machinery Sales, Inc.	1489 Poinsettia Ave , Suite #132	92083	Low		Agua Hedionda	
Sunset Deli Provisions, Inc.	2820 La Mirada Dr. Ste. A	92083	Low		Agua Hedionda	
Superior Plant Sales Inc	2581 Pioneer Ave # B	92083	Low		Agua Hedionda	
Sushi Cafe	3245 Business Park Dr. Suite #2	92081	Low		Agua Hedionda	
T I M Services (Mazda Services)	245 N Emerald Drive, Suite A	92083	Low		Buena Vista	
Teo's Auto Electric	446 Olive Ave, Suite H	92083	Low		Buena Vista	
Texmate Inc	995 Park Center Dr.	92083	Low		Agua Hedionda	
The Transmission Source	538 Olive Ave Suite 101-103	92083	Low		Buena Vista	
The Village Bagel Co. (Guerin Mngmt)	485 S. Melrose Dr. #106	92081	Low		Buena Vista	
TJ Properties, Inc Chevron Olive	485 N Melrose Drive	92083	Low		Buena Vista	
Tom Kennedy Auto Repair	1330 N Melrose Drive, Suite D	92083	Low		Loma Alta	
Tri City Tire & Automotive	241 N Emerald Dr # A	92083	Low		Buena Vista	
Tri-city Smog	245 N Emerald # B	92083	Low		Buena Vista	
TRITTON TECHNOLOGIES, INC.	1340 Specialty Drive # B	92081	Low		Agua Hedionda	
Turf Star, Inc.	2110 La Mirada Dr	92083	Low		Agua Hedionda	
Upper Crust Pizza	1330 E Vista Way , Suite # 2	92084	Low		Buena Vista	
V R Truck And Auto Service	538 Olive Ave 401	92083	Low		Buena Vista	
Vadnais Corporation	2130 La Mirada Dr	92081	Low		Agua Hedionda	
Victor's Brake & Auto Specialists	1352 N. Melrose Dr, Suite G	92083	Low		Loma Alta	
Vista Car Sales	1420 S. Santa Fe Ave	92084	Low		Buena Vista	
Vista Chinese Food	828 N. Santa Fe Ave # A1	92083	Low		Buena Vista	
Vista Firestone Brake and Smog	711 S Santa Fe Avenue	92083	Low		Buena Vista	
Vista Independent Volvo Service	538 Olive Ave., Suite C-303	92083	Low		Buena Vista	
Vista Muffler and Radiator	435 Redlands Street	92083	Low		Buena Vista	
Vista Santa Fe Car Wash	521 N. Santa Fe Ave	92083	Low		Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Vista Valley Auto Center	1803 E. Vista Way	92084	Low		Buena Vista	
Vista Village Motors	350 Vista Village Dr	92083	Low		Buena Vista	
West Coast Imports Sales & Conversions	1386 Poinsettia Ave # E	92083	Low		Agua Hedionda	
Western Concrete Pumping, Inc	2181 La Mirada Dr.	92083	Low		Agua Hedionda	
Wholesale Tube Bending #2	257 N Emerald Drive, Suite C	92083	Low		Buena Vista	
Wizard Auto Repair	446 Olive Avenue, Suite C	92083	Low		Buena Vista	
Wrought Iron Concepts, Inc.	1124 N Melrose Drive	92083	Low		Buena Vista	
X R-Bob's Harley Davidson Repair	329 Olive Avenue	92083	Low		Buena Vista	
Ye Olde Car Shoppe	555 Mercantile Street	92084	Low		Buena Vista	
Yogurt Giant	1817 W. Vista Way Suite # E	92083	Low		Buena Vista	
Z S R Auto Repair	446 Olive Ave D	92083	Low		Buena Vista	
Zimmermann Autosport/ZAS	1304 N Melrose Drive, Suite B	92083	Low		Loma Alta	
Ziphouse, LLC	1330 Specialty Dr, D	92081	Low		Agua Hedionda	
7 Eleven #32326 A 2111	3251 Business Park Dr	92083	Medium		Agua Hedionda	
A 1 Vista Repair	916 Postal Way	92083	Medium		Buena Vista	
A M Cars & Trucks Enterprises	1830 Hacienda Dr. # 4	92083	Medium		Buena Vista	
AA Marine	901 W Vista Way	92084	Medium		Buena Vista	
Abuelitas	1004 S Santa Fe Ave	92084	Medium	X	Buena Vista	
Adams Automotive	158 Olive Ave, Suite A	92083	Medium		Buena Vista	
Agg Mat/WYROC	1385 Sycamore Ave	92083	Medium		Agua Hedionda	
Aibertos Mexican Food	435 N. Santa Fe Ave	92084	Medium		Buena Vista	
AJ Smog	660 E Vista Way	92084	Medium		Buena Vista	
Allen's Alley Cafe	124 Hanes Pl	92084	Medium	X	Buena Vista	
American Metal Packaging Company	1185 Park Center Dr. Suite #C	92083	Medium		Agua Hedionda	
Ammex Oil, Inc. Fillco	1244 N. Santa Fe Ave.	92083	Medium	X	Buena Vista	
Andy's Automotive Specialist	1069 S Santa Fe Avenue	92083	Medium		Buena Vista	
Apro #27	976 Escondido Ave	92083	Medium		Buena Vista	
Arellano Growers Whsl	2015 Foothill Dr	92084	Medium	X	Buena Vista	
Armandos Taco Shop	625 N. Santa Fe Ave	92083	Medium		Buena Vista	
Auto Diagnostic Repair	1752 E Vista Way	92084	Medium		Buena Vista	
Auto Diagnostic Repair	1752 E Vista Way	92084	Medium		Buena Vista	
Auto Precision	1024 Service Place, Suite 101	92084	Medium		Buena Vista	
B & C Auto Repair	918 Postal Way	92083	Medium		Buena Vista	
Baja Fresh Mexican Grill	620 Hacienda Dr Suite # 101	92081	Medium	X	Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Bare Back Skateboards, Inc.	2835 La Mirada Dr, Suite # B	92083	Medium		Agua Hedionda	
Barnicles Express Gasoline	845 E Vista Way	92084	Medium		Buena Vista	
Briggs Tree Company Inc	1111 Poinsettia Ave	92083	Medium		Agua Hedionda	
Burger King	377 Vista Village Dr.	92084	Medium		Buena Vista	
Burger King #10512	1650 S. Melrose Dr	92081	Medium	X	Agua Hedionda	
C & M Motors Inc/ NationaLease	1902 Via Centre	92083	Medium		Buena Vista	
Caldwell Development Inc	1271 Activity Dr.	92083	Medium		Agua Hedionda	
Carl's Jr. Restaurant and the Green Burrito	1790 University Dr	92083	Medium	X	Agua Hedionda	
Carl's Tavern	1565 W. Vista Way	92083	Medium		Buena Vista	
Casa Blanca Products	1255 Activity Dr., Suite # D	92083-8517	Medium		Agua Hedionda	
Chili's Grill & Bar	255 Vista Village Dr.	92083	Medium		Buena Vista	
China Coast Buffet California, Inc	1810 University Dr	92083	Medium		Agua Hedionda	
China Szechwan	959 E. Vista Way	92084	Medium		Buena Vista	
Chin's Express & Teriyaki	1711 University Dr. Suite #130	92083	Medium		Agua Hedionda	
Chipotle Mexican Grill	30 Main St #G-100	92084	Medium		Buena Vista	
Choo Choo Donuts	1597 Vista Way E. Ste.B	92084	Medium		Buena Vista	
Chuck E. Cheese's	1861 University Dr	92083	Medium		Agua Hedionda	
Ciao Restaurant	2015 E. Vista Way	92084	Medium	X	San Luis Rey	
Closet World Inc.	1335 Park Center Dr, Suite # A	92083	Medium		Agua Hedionda	
Coastal Express	2680 La Mirada Dr.	92081	Medium		Agua Hedionda	
Coco's 882	605 W. Vista Way	92083	Medium	X	Buena Vista	
Corona Used Tires/AJ Smog	658-660 E Vista Way	92084	Medium		Buena Vista	
Cox Auto Service	1018 Service Place	92084	Medium		Buena Vista	
Crossbow Enterprises	2326 Foothill Dr	92084	Medium		Buena Vista	
Curbside Cafe	307 Main St	92084	Medium	X	Buena Vista	
Cutters Source	1334 N. Melrose Dr # C	92083	Medium		Loma Alta	
D' Elegantes Restaurant	2004 E. Vista Way	92084	Medium		San Luis Rey	
D W Masonry Wright	1919 Sunset Dr	92083	Medium		Agua Hedionda	
D. Chamber Creations LLC dba Coldstone Creamery	1711 University Dr Suite #140	92083	Medium		Agua Hedionda	
Dairy Queen	1031 S Santa Fe Dr, Suite # A	92083	Medium	X	Buena Vista	
Daisy's Floral Decorations	1318 N Santa Fe Dr Ste C	92083	Medium		Buena Vista	
Danny's Donuts	102 Eucalyptus Ave	92084	Medium		Buena Vista	
Denny's	540 Vista Way	92083	Medium	X	Buena Vista	
Diamond Donuts	730 Sycamore Ave # F	92083	Medium		Agua Hedionda	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Diamond Imports Of Vista	964 Vista Village Dr.	92084	Medium		Buena Vista	
Diesel Pollution Solutions (D.P.S)	1448 Oakcreek Lane	92081	Medium		Agua Hedionda	
Dils Roofing	2230 La Mirada Dr	92081	Medium		Agua Hedionda	
Dinner Studio	1850 Hacienda Dr. Suite#12	92084	Medium		Buena Vista	
Discount Alignment	1024 Service Place, Suite 100	92084	Medium		Buena Vista	
Discount Tire Co., Inc.	1007 Service Place	92083	Medium		Buena Vista	
Dominos Pizza 7731	1021 E Bobier Dr	92083	Medium		Buena Vista	
Dominos Pizza 8300	603 E. Sycamore Ave	92083	Medium	X	Agua Hedionda	
Dos Amigos Restaurant	1651 S. Melrose Dr, Suite D	92081	Medium		Agua Hedionda	
Dos Gringos	3260 Corporate View Dr.	92081	Medium		Agua Hedionda	
Doug Miller Equipment Rental	135 E Broadway	92084	Medium		Buena Vista	
Drift Tech / Discount Towing and Auto Repair	635 Mercantile ST # C	92083	Medium		Buena Vista	
Drucker Subway Sr, Inc	1651 S. Melrose Dr Suite #B	92081	Medium		Agua Hedionda	
E & J Cactus	1111 Sunset Dr	92081	Medium		Agua Hedionda	
E Vista Way Exxon	911 E Vista Way	92083	Medium		Buena Vista	
E Z Buy Auto Information Service	952 Postal Way # 4G	92083	Medium		Buena Vista	
Eddie's Market	415 N Santa Fe	92084	Medium		Buena Vista	
El Mago Paint and Body	427 Red Lands St Suite C	92083	Medium		Buena Vista	
El Pollo Loco #3492	495 S. Melrose Dr.	92083	Medium		Buena Vista	
El Ranchero Restaurant	1565 N. Santa Fe Ave	92084	Medium		Buena Vista	
EMS Construction	3160 Scott St	92081	Medium		Agua Hedionda	
Enterprise Car Sales	875 W. Vista Way	92084	Medium		Buena Vista	
Erika Restaurant	1851 W. Vista Way Suite #C	92083	Medium		Buena Vista	
European Deli & Restaurant	573 W. Vista Way	92083	Medium	X	Buena Vista	
European Motorsports	2588 Progress Street, Suite 11	92081	Medium		Agua Hedionda	
Evans Tire & Service Center	865 E Vista Way	92084	Medium		Buena Vista	
Exxon Mobil Oil Corporation	710 Sycamore Avenue	92083	Medium		Agua Hedionda	
EZ Lube	786 E Vista Way	92084	Medium		Buena Vista	
F Piersalls Vista Buggy Bath	1759 E. Vista Way	92083	Medium		Buena Vista	
Famous Dave's	303 Vista Village Dr	92083	Medium		Buena Vista	
Festival Fun Parks, L L C - Arcade	1525 W. Vista Way	92083	Medium		Buena Vista	
Fiesta Flowers, Llc	2820 La Mirada Dr D	92081	Medium		Agua Hedionda	
Fish House Foods, Inc.	3285 Corporate View Dr.	92083	Medium		Agua Hedionda	
Fortune Palace Restaurant	785 Shadowridge Dr.	92083	Medium		Agua Hedionda	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Fred's Auto Sales	1725 E. Vista Way	92084	Medium		Buena Vista	
Fred's Automotive	1725 E Vista Way	92084	Medium		Buena Vista	
Freeberg Industrial Fabrication	985 Poinsettia Ave	92083	Medium		Agua Hedionda	
Frogy's Donuts and Bakery	602 E Vista Way, Suite A	92084	Medium		Buena Vista	
George's Auto Repair and Smog	1740 E Vista Way #B	92084	Medium		Buena Vista	
German Auto Clinic	912 Postal Way	92083	Medium	X	Buena Vista	
Golden Donut	1281 N. Santa Fe Ave # Z	92083	Medium		Buena Vista	
Golden Dragon Restaurant	1350 E. Vista Way Suite #10	92084	Medium	X	Buena Vista	
Golden State Gasoline, Inc.	535 N Santa Fe Avenue, Suite 4	92083	Medium		Buena Vista	
Hanjo Auto Repair	452 Olive Avenue, Suite M	92083	Medium		Buena Vista	
Hennessey's	224 Main St	92084	Medium		Buena Vista	
HMS Co.	1400 Palomar Place	92084	Medium	X	Buena Vista	
Honor Life Memorials	955 Park Center Dr	92083	Medium		Agua Hedionda	
Humberto's Auto Repair	444 S Santa Fe Avenue, Suite B	92083	Medium		Buena Vista	
J & J Automotive	635 Mercantile St, # A	92083	Medium		Buena Vista	
J B Coating	219 S. Santa Fe Ave # 137	92083	Medium		Buena Vista	
Jack In The Box #3002	740 Sycamore Ave	92083	Medium		Agua Hedionda	
Jack In The Box #3032	3281 Business Park Dr	92081	Medium		Agua Hedionda	
Java Hut Drive-Thru	949 S. Santa Fe Ave.	92084	Medium		Buena Vista	
Java Hut Drive-Thru	823 E. Vista Way	92084	Medium		Buena Vista	
Jeld Wen Co. Warehouse	935 Poinsettia Ave	92083	Medium		Agua Hedionda	
Jims Vista Lounge	1587 E. Vista Way Suite # A & B	92084	Medium		Buena Vista	
John's AMPM	625 Sycamore Avenue	92083	Medium		Agua Hedionda	
Juanita's Taco Shop	248 Main St	92083	Medium		Buena Vista	
K & H Steak, Inc. dba Steak Escape	35 Main St # 110	92083	Medium	X	Buena Vista	
Kenny's Kar Klinic	420 Vista Village Drive	92083	Medium		Buena Vista	
Key Electronics Mfg	1120 Sycamore Ave # I	92083	Medium		Agua Hedionda	
Knockout Pizzeria Dba K04 Vista L L C	2440 S Melrose Dr 104	92081	Medium		Agua Hedionda	
La Estancia Mexican Food	573 W Vista Way	92083	Medium		Buena Vista	
La Paloma Restaurant & Cocktail	116 Escondido Ave # 104-05	92084	Medium		Buena Vista	
Less Time & More	1236 Activity Dr #A	92081	Medium		Agua Hedionda	
Little Caesars Pizza	1041 E. Vista Way	92084	Medium		Buena Vista	
Little Kids Nutrition	1021 N Santa Fe Ave B	92083	Medium		Buena Vista	
Los Amigos Market	1350 E Vista Way 9	92084	Medium		Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Lucy's Place Ice Cream	1583 E Vista Way #4	92084	Medium		Buena Vista	
M P Creations	1611 S Melrose Dr P	92081	Medium		Agua Hedionda	
Marco Italian Restaurant	1825 E. Vista Way	92084	Medium		Buena Vista	
Mario's Taco's	224 N Emerald Dr	92083	Medium		Buena Vista	
Marisco Carina	1234 S Santa Fe Ave	92084	Medium	X	Buena Vista	
Martha's Bakery	995 Postal Way #110	92083	Medium		Buena Vista	
Masterlube, Inc.	243 Sycamore Avenue	92084	Medium		Agua Hedionda	
Matsu Japanese Restaurant	530 Hacienda Dr 104-105	92081	Medium		Buena Vista	
Mayra's Restaurant & Bakery	828 N Santa Fe Ave C	92083	Medium		Buena Vista	
Mc Donalds 1959	827 S. Santa Fe Ave	92083	Medium		Buena Vista	
Midas Shop	1150 S Santa Fe Ave	92084	Medium		Buena Vista	
Mike and Pancho's Auto Repair	635 Mercantile St., Suite B	92083	Medium		Buena Vista	
Millenium Building Services, Inc.	1068 La Mirada Ct	92081	Medium		Agua Hedionda	
Monica's Garden	2304 Azure Ln	92081	Medium		Agua Hedionda	
N.Y. Giant Pizza	800 Escondido Ave #F	92084	Medium	X	Buena Vista	
Naked Bean - Vista	530 Hacienda Dr Suite #101	92083	Medium		Buena Vista	
New Panda Buffet	1040 E Vista Way	92084	Medium		Buena Vista	
North County Auto Exchange	1082 S. Santa Fe Ave	92084	Medium		Buena Vista	
Nuevo Vallarta Restaurant	825 Williamston St.	92083	Medium		Buena Vista	
Nurserymens Exchange, Inc.	1330 Distribution Way Suite C	92081	Medium		Agua Hedionda	
Ohana Hawaiian BBQ	620 Hacienda Dr #106	92081	Medium		Buena Vista	
Ortiz Bakery Panaderia Oaxaquetia	1275 S Santa Fe Ave 108	92083	Medium		Buena Vista	
Pam Soto's Pets @Simbah's Dog House	573 W Vista Way #E	92083	Medium		Buena Vista	
Panda Express, Inc.	20 Main St. Suite #160	92084	Medium		Buena Vista	
Passion Growers West	1352 Decision St.	92081	Medium		Agua Hedionda	
Patrick Flynn's Collision and Frame Repair	1013 Service Place	92084	Medium		Buena Vista	
Piancone Gourmet International	203 Main St	92083	Medium		Buena Vista	
Picket Fence	945 S Santa FE Ave	92083	Medium	X	Buena Vista	
Pizza Factory	1910 Shadowridge Dr. Suite #101	92081	Medium		Agua Hedionda	
Pizza Hut Inc	1591 E. Vista Way Suite #B	92084	Medium		Buena Vista	
Playa Azul Seafood Restaurant	1281 N Santa Fe Ave Suite # X, Y	92084	Medium		Buena Vista	
Precision Concrete	1495 Poinsettia Ave # 145	92083	Medium		Agua Hedionda	
Qed Information Systems	1120 Sycamore Ave 2F	92083-7803	Medium		Agua Hedionda	
Rayne Water Of North County	2011 W.Vista Way	92083	Medium		Buena Vista	

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Restaurant y Panderia Montealban	1275 S Santa Fe Ave 108	92083	Medium		Buena Vista	
Revidalize, Inc.	1331 Specialty Dr	92081	Medium		Agua Hedionda	
Richardson Equipment Services	3366 E Vista Way	92084	Medium		Buena Vista	
Robert Jury & Associates	2435 Cades Way	92081	Medium		Agua Hedionda	
Rob's Auto Repair	1124 N Melrose Drive, Suite 202	92083	Medium		Buena Vista	
S N C I, Inc.	1680 S Melrose Dr	92084	Medium		Agua Hedionda	
Santa Fe Car Wash	980 S. Santa Fe Ave	92084	Medium		Buena Vista	
Seltzer Companies, Inc.	1389 Park Center Dr	92083	Medium		Agua Hedionda	
Seven Mfg	1420 Decision St B	92081	Medium		Agua Hedionda	
Shadowridge 76, Inc./Vollmer Petroleum	636 Sycamore Avenue	92083	Medium		Agua Hedionda	
Shadowridge Country Club	1980 Gateway Dr	92083	Medium		Agua Hedionda	
Shell Oil Products U.S.	400 Sycamore Ave	92083	Medium		Agua Hedionda	
Slater's Donut Shop	625 N. Santa Fe Ave	92083	Medium		Buena Vista	
Smitty's Downtown	119 E. Broadway	92083	Medium		Buena Vista	
Souplantation	1860 University Dr	92083	Medium		Agua Hedionda	
South Melrose Arco	1590 S. Melrose Drive.	92081	Medium	X	Agua Hedionda	
Specialized Paint & Body Works	553 Mercantile St.	92083	Medium		Buena Vista	
Spectra Gases Inc	1261 Activity Dr	92083	Medium		Agua Hedionda	
Stagecoach Inn	1865 W. Vista Way	92083	Medium		Buena Vista	
Starbucks Coffee #11339	790 Sycamore Ave A	92081	Medium		Agua Hedionda	
Starbucks Coffee #5366	1711 University Dr # 150	92083	Medium		Agua Hedionda	
Starbucks Coffee #5838	251 S. Melrose Dr Suite # 301	92081	Medium	X	Buena Vista	
Stater Bros Market #156	780 Sycamore Ave	92083	Medium		Agua Hedionda	
Submarina	942 S. Santa Fe Ave	92084	Medium		Buena Vista	
Subway #24598/Subway Life, Inc.	1711 University Dr Suite # 120	92083	Medium		Agua Hedionda	
Subway #36756	2440 S Melrose Dr 101	92081	Medium		Agua Hedionda	
Subway Sandwiches & Salads #22847	1031 S Santa Fe Ave, Suite # B	92083	Medium		Buena Vista	
Sun Hing Buffet LLC	1960 Hacienda Dr	92081	Medium	X	Buena Vista	
Sunrise Farms	9110 Scott St.	92083	Medium		Agua Hedionda	
Super Pescaderia El Puerto	403 N Santa Fe Ave	92084	Medium		Buena Vista	
Super Taco	1072 E. Vista Way	92084	Medium		Buena Vista	
Swanson Studios	339 Olive Ave	92083	Medium		Buena Vista	
Sycamore Texaco	400 Sycamore Ave	92083	Medium		Agua Hedionda	
T.D. Tile	1485 Poinsettia Ave	92083	Medium		Agua Hedionda	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Taco Bell 15435	1800 University Dr.	92083	Medium		Agua Hedionda	
Taco Bell 17787	910 E Vista Way	92084	Medium		Buena Vista	
Taco Bell 20413	3271 Business Park Dr.	92081	Medium		Agua Hedionda	
Tempo Research Corp	1390 Aspen Way	92083	Medium		Agua Hedionda	
Thai Pasta	1876 Hacienda Dr.	92081	Medium		Buena Vista	
The Lawn Center	603 S. Santa Fe Ave	92083	Medium		Buena Vista	
The Original Pancake House	435 S. Melrose Dr.	92081	Medium		Buena Vista	
The Snack House	1580 S. Melrose Dr. Suite #117	92084	Medium	X	Agua Hedionda	
Tom's No. 24 Restaurant	1110 Sycamore Ave	92083	Medium	X	Agua Hedionda	
Tony's Mobil	801 S Santa Fe Avenue	92083	Medium		Buena Vista	
Tortilleria Hermanos Reyes	402 Olive Ave	92084	Medium		Buena Vista	
Tortilleria Los Reyes	218 Main St	92084	Medium		Buena Vista	
Tri City Transmission	1147 S Santa Fe Avenue	92083	Medium		Buena Vista	
Tropical Juice & Deli	1116 Sycamore Ave. #F	92081	Medium		Agua Hedionda	
Two Brothers From Italy	1651 S. Melrose Dr. Suite #C	92081	Medium		Agua Hedionda	
Two Brothers From Italy	986 E Vista Way	92083	Medium		Buena Vista	
United Plant Growers, Inc.	1054 Mar Vista	92081	Medium		Agua Hedionda	
United Site Services of CA, Inc	157 Nettleton Rd	92083	Medium		Buena Vista	
Used Car Depot	1036 S. Santa Fe Ave	92084	Medium		Buena Vista	
Vanessa's Mexican Food #2	224 N Emerald Drive	92083	Medium		Buena Vista	
Vista Auto Group Inc.	267 S Santa Fe AVE	92083	Medium		Buena Vista	
Vista Brake Service and Supply	790 E Vista Way	92084	Medium		Buena Vista	
Vista Donuts	879 S Santa Fe Ave	92083	Medium		Buena Vista	
Vista Entertainment Center	435 W. Vista Way	92083	Medium		Buena Vista	
Vista Motorcycle	1155 S Santa Fe Avenue, Suite G	92083	Medium		Buena Vista	
Vista Santa Fe Transmissions, Inc.	1144 S Santa Fe Avenue	92083	Medium		Buena Vista	
Vista Unocal	976 Escondido Avenue	92083	Medium		Buena Vista	
Vista Way Smog	911 E Vista Way	92083	Medium		Buena Vista	
Vista's Ice Box	777 E Vista Way , Suite # 204	92084	Medium		Buena Vista	
Volvo Works	1211 N Melrose Drive, Suite A	92083	Medium		Loma Alta	
Warmland Nursery	1850 Warmlands Ave	92084	Medium		Buena Vista	
Western States Petroleum LLC dba Chevron	600 Hacienda Drive	92083	Medium		Buena Vista	
Wicked Good Pizza	749 Shadowridge Dr.	92081	Medium		Agua Hedionda	
Yum Yum Donut Franchise 5050d	924 S Santa Fe Ave	92083	Medium		Buena Vista	

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
ZUITSPORTS, INC.	2880 Scott Stree, #101-102	92081	Medium		Agua Hedionda	
Around Town Power Wash			High			X
Attention to Detail			High			X
First Class Maintenance			High			X
Integrity Pressure Wash			High			X
Jeff's Mobile Detailing			High			X
Lot Management			High			X
RB Mobile Wash			High			X
STAR AUTO	261 Pala Vista Drive #5	92083	High			X
Steve Batsch Painting			High			X
(cho)2 Home Services	955 Postal Way #56	92083	Low		Buena Vista	X
A A Same Day Exterminators	807 N. Santa Fe Ave	92084	Low		Buena Vista	X
A C Coating	512 W. California Ave # 116	92083	Low		Buena Vista	X
Altura Paint & Supply	1850 Hacienda Dr # 15	92083	Low		Buena Vista	X
Antonio Maola Concrete Pumping	603 Rancho Vista Rd	92083	Low		Buena Vista	X
Araiza Paving & Grading	550 W. Vista Way #110	92083	Low		Buena Vista	X
Barlow's Pest Control	375 Windy Lane	92083	Low			X
Big Boy Detailing	1622 Rush Ave.	92084				X
Big Dog Sausage & Hot Dogs	1200 Vale Terrace	92084	Low			X
Bradleys Pest Control	147 Valencia Dr	92083	Low			X
Calvert Painting	1161 Lark Hill Dr.	92084	Low		San Luis Rey	X
Capital Painting Corporation	216 E. Broadway	92084	Low		Buena Vista	X
Capital Painting Corporation 1	512 W California Ave # 204	92084	Low		Buena Vista	X
Capt N Kidd Services, Inc	1590 Tierra Del Ciel	92084	Low		Buena Vista	X
Coastal Pro Painting	935 Alta Vista Drive # 3	92084	Low			X
Cornerstone Marble Gran & Tile	1205 Avenida Chelsea # B	92083	Low		Agua Hedionda	X
Dan Boteler Landscaping	579 Mar Vista Dr	92083	Low		Agua Hedionda	X
Dc Concrete And Masonry	1710 Jonathon St.	92083	Low		Buena Vista	X
El Carpi Jr. Construction	610 Cocapah St.	92083	Low		Buena Vista	X
Euro Tile	383 N Melrose Dr # B	92083	Low			X
Fred A. Jones Painting	1407 Bonair Dr.	92084	Low		Buena Vista	X
Garza Grading & Paving	755 North Dr.	92083	Low		Loma Alta	X
Gemini Pest Control Inc	1058 Taylor St	92083	Low		San Luis Rey	X
Innovations In Marble And Tile	1128 Portola St.	92084	Low		Buena Vista	X

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Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Insect And Rodent Solutions	941 Poinsettia Ave B4	92081	Low			X
J S Custom Painting	1722 Foothill	92084	Low		Buena Vista	X
J.B. Handyman	326 San Del Dr	92083	Low		Buena Vista	X
Joe Lane Custom Painting	1105 Collinswood Ln	92083	Low		Buena Vista	X
K.O. Enterprises	512 W California Ave # 204	92083	Low		Buena Vista	X
Kennedy Pest Control, Inc.	114 Natal Way	92083	Low		Buena Vista	X
L D G Mobile	1205 N Melrose Dr Ste I	92083	Low			X
Lopez Demolition	318 Arnel Ave	92083	Low		Buena Vista	X
Main Painting Co	121 Hanes Pl	92084	Low		Buena Vista	X
On The Move Mobile Auto & Truck	538 Olive Ave Suite B	92083	Low		Buena Vista	X
Orkin Pest Control D Glassmaker	2420 Grand Ave # J	92083	Low		Agua Hedionda	X
Perfect Paving Grading & Seal	1641 Monte Mar Dr	92083	Low		Buena Vista	X
Pestgon Inc	519 S. Santa Fe	92083	Low		Buena Vista	X
Prestige Tile And Marble Installation Co	2168 Opal Ridge	92084	Low		Agua Hedionda	X
Prestige Tile And Marble Installation Co	2168 Opal Ridge	92084	Low		Agua Hedionda	X
Prototypworks	1798 Club Heights Ln	92083	Low		Agua Hedionda	X
Rainbow Painting	561 Emerald Drive	92083	Low			X
Rancho Tree Service	425 Redlands St	92085	Low		Buena Vista	X
Rivera's Painting	239 Pala Vista Dr # 11	92083	Low		Buena Vista	X
Ronald W. Card	758 Lazy Cir	92083	Low		Agua Hedionda	X
Ryan's Painting	666 Townsite Dr	92084	Low		Buena Vista	X
Santa Fe Paving	602 Lemon Ave	92084	Low		Buena Vista	X
Sketch & Paint By C D B	1120 Meadowlake Dr 1	92083	Low			X
Slobo Landscaping	1735 Stormy Ln	92084	Low		Buena Vista	X
T J Crossman's Mobile Auto Repair	1330 N Melrose Dr	92083	Low			X
Terry's Painting	533 Sunset Dr	92083	Low		Agua Hedionda	X
Three Sisters Catering, Inc.	1589-A East Vista Way	92084	Low		Buena Vista	X
Vision Painting	810 N Citrus	92084	Low		Buena Vista	X
Wag N Wheels Mobile Pet Grooming	1613 Ravine Rd	92083	Low			X
Willis Exterminators	2475 Coral St # B	92084	Low		Agua Hedionda	X
Advance Carpet Cleaning & Bldg.	278 Paseo Marguerit	92084	Medium		San Luis Rey	X
Affordable Carpet Care And Jch Enterprises	1611 S Melrose Ave #170-a	92081	Medium			X
Affordable Carpet Care&Jch Ent	418 Santa Clara Dr	92083	Medium		Buena Vista	X
Alliance Disaster & Restoration Services	1487 Poinsettia Ave #126	92083	Medium		Agua Hedionda	X

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Alta Vista Lawn Care	534 W. California Ave #4	92083	Medium		Buena Vista	X
Andres Gardening & Hndymn Svc	1984 Warmlands Ave	92084	Medium		Buena Vista	X
Andy's Carpet Cleaner	352 N Santa Fe Ave	92083	Medium			X
Artistic View	405 Palmbark	92083	Medium		Buena Vista	X
Baldwin Yard And Maintenance	855 Francis Dr	92084	Medium			X
Bautista Maintenance	1721 Rush Ave	92084	Medium			X
Bobby Watkins Family Pool & Spa Service	943 Crescent Dr	92084	Medium			X
Bob's Pool Cleaning	2002 Redwood Crest	92081	Medium			X
Brians Landscape And Maintenance	452 W Los Angeles Dr	92083	Medium			X
Brother's In Law Landscaping	343 Gail Dr	92084	Medium			X
Brothers Maint	320 Acatena Dr	92083	Medium		Buena Vista	X
C & J Discount Carpet Care	1004 Marlin Dr.	92084	Medium			X
Cables Landscaping	1521 Sunrise Dr	92084	Medium			X
Cali Bunga Pool Cleaning	1260 Winchester Ct	92083	Medium			X
Casas Tree Service	755 Highland Dr.	92083	Medium		Buena Vista	X
Castillo Landscaping	1424 Bonair Road # 11	92084	Medium			X
Chlorophyll Kid	916 Judilyn Dr	92083	Medium		Buena Vista	X
Classic Touch Landscape Maint	2185 Hawlwy Dr.	92084	Medium		San Luis Rey	X
Clean As A Whistle Carpet Care	2220 Watson Way # 193	92083	Medium		Agua Hedionda	X
Cole Landscape	824 Earth Dr	92083	Medium			X
Condominium Services Company	402 Olive Ave # B	92083	Medium		Buena Vista	X
Coppock Pool & Spa	719 Sunset Dr.	92083	Medium		Agua Hedionda	X
Cortez Tree Service	720 W. California Ave	92083	Medium		Buena Vista	X
Countryside Landscape	2049 E. Vista Way	92084	Medium		San Luis Rey	X
Cox Landscape	947 Sheffield Dr	92081	Medium			X
D & S And Sons Landscaping	133 Bellevive Ct	92084	Medium			X
Darrel D Rose Landscaping	508 Moa Dr	92083	Medium		Buena Vista	X
Double J Pool Service	1215 Allea Lane	92083	Medium			X
Enrique Chavez	209 Hawthorne Circle	92083	Medium			X
Felipe Ramirez Perez	2112 E Vista Way 21	92084	Medium			X
Fernando's Tree Service	280 Alestar St # 4	92083	Medium			X
G&F Landscape	1593 E. VISTA WAY # A	92084	Medium		Buena Vista	X
Gonzalez Tree Svc & Lndscpng	314 Acatena Ave	92084	Medium		Buena Vista	X
Got Pool Cleaning And Repair	1569 Green Oak Road	92081	Medium			X

APPENDIX I
2007-2008 Commercial Inventory

Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Green Meadows Lawn Service	1243 Arcadia Ave # C	92084	Medium		Buena Vista	X
Green Weaver Landscaping Services	527 Huff St.	92083	Medium			X
Greenness Design	1146 Sunset Dr.	92083	Medium		Agua Hedionda	X
Heaven's Best Carpet & Upholstery	104 Hill Dr	92083	Medium		Buena Vista	X
Hernandez Gardening	401 W California Ave #17	92083	Medium			X
Hernandez Lndscpg & Grdng Svc	952 Wellpott Pl	92084	Medium		Buena Vista	X
Hydra Vac	1037 Glenmere Rd	92084	Medium		Buena Vista	X
Integrity Pool Services	915 Marlin Drive	92084	Medium			X
Invision Landscape Inc.	1366 Brewley Lane	92083	Medium			X
J. R. Landscaping & Maintenance	950 Arcadia Ave. #40	92084	Medium			X
Jackson Landscape Construction	2202 Baxter Canyon Rd	92083	Medium		Agua Hedionda	X
Jerry's Carpet Cleaning	1331 Arcadia Ave	92084	Medium			X
Jmb Landscaping & Tree Service	310 Bandini Pl	92083	Medium		Buena Vista	X
Joel Hernandez R	1804 Christi Dr	92084	Medium			X
Kaufman Masonry & Landscape Supply	845 W. Vista Way	92083	Medium		Buena Vista	X
Las Palmas Landscape Mtc	309 Lado De Loma Dr	92083	Medium		Buena Vista	X
Leahi Pool & Spa	510 N Melrose Ave #P-7	92083	Medium			X
Leituala Tree Work And General Maintenance	156 Pond Place #23	92083	Medium			X
Life Gardening Svcs	1803 Manzanita Ct	92083	Medium		Agua Hedionda	X
Living Waters Carpet & Upholstery	18045 Saticoy St	91335	Medium		Mobile: Not in City	X
Martin Zurita	1150 Meadow Lake Dr 6	92084	Medium			X
Mckenna's Carpet	1275 Tower Dr	92083	Medium			X
Miller Carpet Care	512 W. California Ave.	92083	Medium		Agua Hedionda	X
Mobile Handyman And Landscape	848 Smith Dr	92084	Medium			X
Mobile Wash Works	1125 Cabrillo Circle	92084	Medium			X
N J Landscaping	2330 Azure Lane	92081	Medium			X
Nanco Landscape	420 Pollyanna Terr	92083	Medium			X
Paul's Pressure Washing	751 E. Vista Way # 81	92084	Medium		Buena Vista	X
Pool Genie	1453 Sunrise Dr # B	92084	Medium		Buena Vista	X
Pool Perfection	801 Hillside Terr # 8	92084	Medium		Buena Vista	X
Progressive Gardening Landscape	1117 Mullen Way	92083	Medium			X
Rafael Sanchez Maint	206 W. California Ave	92083	Medium		Buena Vista	X
Ramirez Landscaping/Gardening Service	223 Nevada Ave 19	92084	Medium			X
Rancho Carpet Cleaning Inc.	1157 S Santa Fe Ave	92083	Medium			X

APPENDIX I
2007-2008 Commercial Inventory

Business Name:	Street Address:	Zip	TTWQ	Inspected	Watershed	Mobile
Rancho Vista Landscaping Inc.	1335 Warmlands Ave	92084	Medium		Buena Vista	X
Randy's Pressure Washing	1205 N. Santa Fe # 62	92083	Medium		Buena Vista	X
Rey & Sons Landscaping	1653 Rush Ave	92084	Medium			X
River Carpet Cleaning	1610 Calle Jules	92084	Medium			X
Robles Landscaping	247 E. Bobier Dr.	92084	Medium		Buena Vista	X
S & A Pool Service	528 Collyn St	92083	Medium			X
Showcase Textile Care	904 Judilyn Dr	92083	Medium		Buena Vista	X
Sierra's Landscaping	1640 Calle Colorado	92084	Medium			X
Superior Carpet Cleaning	926 Westport Ln	92084	Medium			X
Tanis Landscaping	1104 Warmlands Ave	92084	Medium			X
Tesoro Landscape / So Cal Landscape Svc	1045 Highland Dr.	92083	Medium		Buena Vista	X
The Torrey Pines Co., Inc.	2560 Fortune Way	92083	Medium		Agua Hedionda	X
The Vintage Rose	2057 Paseo Ladera	92084	Medium		San Luis Rey	X
Thompson's Xtreme Cleaning Co.	200 Plymouth Dr.	92084	Medium			X
Tree Barber Enterprises, Inc.	1923 Goodwin Dr.	92084	Medium		San Luis Rey	X
Trotta Landscape	460 Oceanview Dr.	92084	Medium		Buena Vista	X
Watters Clean! Pool Service	1974 Wellington Lane 57	92081	Medium			X

APPENDIX J

Stormwater Complaints Summary

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-105 **Type** Private Lateral **Location Address** 1341 Foothill Dr. **Watershed** Buena Vista Creek **Call Date** 12/27/2007 **Case Closed** 12/27/2007	Private lateral spill into roadway	Wastewater crews were on scene. Property owner contacted plumber and they were told to discontinue using water. Plumber arrived and cleared line. Wastewater crew did a wash down and cleared scene.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line **Follow-up Actions** Verify line is cleared **Actions completed** Line cleared.
SW No. SW08-014 **Type** Private Lateral **Location Address** 227 Astro Ct. **Watershed** Buena Vista Creek **Call Date** 01/14/2008 **Case Closed** 01/14/2008	Sewage spill to right-of-way	Property owner stated plumbing problems of sewage backed up into house. Plumber snaked line but clean-out is down on Peters Dr. and snake won't reach to City main. Another plumber was called. This plumber (Arrow) cleared line from Peters Dr. and allowed sewage to leave site with no BMP protection. I called out City wastewater crew with Vactor to prevent it leaving Peters Dr. and entering into Lado de Loma (main thoroughfare). Plumber contacted a private wash down company to remove sewage. Area was washed down and line repaired. No NOV was written as property owner resolved the problem that day.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line. **Follow-up Actions** Witnessed line clear and area mitigated. **Actions completed** Area clear.
SW No. SW08-021 **Type** Private Lateral **Location Address** 184 Pala Vista Dr. **Watershed** Buena Vista Creek **Call Date** 02/13/2008 **Case Closed** 02/13/2008	Sewage Spill	While up the road @ 215 Pala Vista I noticed a trail of white specks traveling north on Pala Vista. I traced it to 184 Pala Vista and a sewage spill had occurred. I contacted the property owner and requested a plumber to clear the line. Plumber cleared line and cleaned up sewage. Scene cleared.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear line **Follow-up Actions** Verify line is clear **Actions completed** Line cleared - water running

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-038 **Type** Private Lateral **Location Address** 2112 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 03/10/2008 **Case Closed** 06/12/2008	Sewage Spill into roadway.	Residential private lateral spilling sewage into roadway. Wastewater crew on scene. Plumber enroute. 3/26/08, received a call from Morningview Associates regarding 2112 E. Vista Way #30. 3/28/08, they have contracted with Arrow Pipeline.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Provide camera (video/DVD) of line; provide invoice of plumber suggested repair; provide copy of contract by plumber for professional regular maintenance of private lateral. **Follow-up Actions** Receipt of camera, invices and contract. **Actions completed** 6/11/08, Contract received: plumber will maintain condo plumbing annually.
SW No. SW08-043 **Type** Private Lateral **Location Address** 337 W. Los Angeles **Watershed** Buena Vista Creek **Call Date** 03/20/2008 **Case Closed** 03/24/2008	Sewer blocked - Chronic condition	Sewer was blocked and had previous discharge, according to Wastewater Dept.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Repair Line **Follow-up Actions** Verify line is clear - contact plumber (Pacific Drain) **Actions completed** Line repaired after jetting line. Video camera was used to check line - showed root intrusion.
SW No. SW08-055 **Type** Private Lateral **Location Address** 300 Peters Dr **Watershed** Buena Vista Creek **Call Date** 06/03/2008 **Case Closed** 06/26/2008	Sewer lateral spill (possible nicked/cut line per Wastewater) just west of 300 / 302 Eddie Dr.	Wastewater tested line from clean-out with dye. Water came up through hole in asphlat roadway just west of 302 Eddie Dr. Private lateral leads uphill and south to 300 Peters Dr. Wastewater tested toilet with dye at 302 Eddie Dr. to confirm not their private lateral. 6/23/08, exploritory hole dug in street at site of seepage with metal plate over and cones. 6/25/08, per Cox Communications construction supervisor, one of their sub-contractors "Sunshine Communication" is repairing the damaged sewer line.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Repair line and provide copy of plumber's invoice. **Follow-up Actions** Verify that line is repaired; contact plumber. Several attempts made to contact property owner with negative results form 6/4/08 through 6/23/08. 6/24/08 and 6/25 08, calls to Vista Irrigation District and Cox Communications in reference to exploritory hole dug with metal plate over it. 6/26/08, contacted the Building Dept. in reference to this repair work. They will handle project and conduct inspections. **Actions completed** Line repaired but not to code and done without a permit by Sunshine Communications. Building Dept. will handle, requiring permit by licensed plumber prior to Building Dept. re-inspecting the line repair.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-080 **Type** Commercial **Location Address** 1037 Bobier Dr. **Watershed** Buena Vista Creek **Call Date** 07/11/2007 **Case Closed** 07/11/2007	Washing off pavement and not capturing the discharge.	Area was wet and 'Caution Wet Surface' signs were positioned at the front door. The whole of area was wet and discharge had left site and entered right-of-way and extended down to inlet 200 yds south. The Manager has been iinstructed for at least 4 years not to discharge water off site and to reclaim all cleaning water. A D-Max inspection was done on 1/16/07 and they (Del Taco) told D-Max they hose off site. I performed a follow-up inspection and again told Manager not to hose off site. I contacted the area Director. He assured me no further discharge would occur. I recommended professional pressure wash companies that do reclaim discharge.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge and reclaim all fluids thereafter. **Follow-up Actions** Intermittent inspections **Actions completed** Intermittent inspections
SW No. SW07-084 **Type** Commercial **Location Address** 620 S. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 07/11/2007 **Case Closed** 08/22/2007	Un-manned fueling station with stormwater violations and no contact responding to D-Max inspection.	7/11/07, attempted contact with available phone numbers. Visited site and contact information was illegible. Contacted Business License and was provided with current information. Dialed the number - no connection. 8/3/07, placed two calls to a different number; was placed on hold and directed to a voice messanger with no connection. Recontacted operator and was put through directly into voice message. Representative would be returning 8/8/07. 8/9/07, contacted Rep. and agreed to meet on site, same day. He explained site and flow is directed to storm ceptor. Clear water is then discharged to storm drain. 8/14/07, Requested schematic of storm ceptor by Rinker Materials - distributer of the unit. 8/15/07, sent NOV via fax to Rep.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Provide second containment and overhead coverage for hazmat drum; remove trash and debris from site and maintain; label emergency information. **Follow-up Actions** Photo verify **Actions completed** Drum moved inside and area clean. Emergency information is legible.
SW No. SW07-081 **Type** Commercial **Location Address** 2316 La Mirada Dr. **Watershed** Agua Hedionda Creek **Call Date** 07/18/2007 **Case Closed** 08/15/2007	Metal shavings, trash and debris throughout site.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge; remove metal shavings, trash and debris throughout site; keep lids closed on dumpsters; **Follow-up Actions** Photo verify **Actions completed** Bins have lids closed. Area has bee swept, trash removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-082 **Type** Commercial **Location Address** 1025 Service Pl **Watershed** Buena Vista Creek **Call Date** 07/24/2007 **Case Closed** 08/03/2007	Leaking sprinkler	8/1/07, Owner contacted me regarding irrigation and wanted clarification	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, repair system **Follow-up Actions** Photo verify **Actions completed** Area dry
SW No. SW07-085 **Type** Commercial **Location Address** 345 Olive Ave. **Watershed** Buena Vista Creek **Call Date** 08/09/2007 **Case Closed** 08/17/2007	Lack of BMPs throughout site. Batteries on ground; leaking transmissions; no coverage for oil drums; trash and debris throughout.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs; cover oil drums, batteries etc. **Follow-up Actions** Photo verify. **Actions completed** Area has had some clean-up work - drums are covered; batteries removed; engine with pallets and tarps. Business owner stated he would continue to improve and maintain area.
SW No. SW07-091 **Type** Commercial **Location Address** 1713 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 08/31/2007 **Case Closed** 10/10/2007	Sediment discharging off site	Following Labor Day weekend, site was inspected. The street sweeper owned by Coast Rental was cleaning perimeter. The area requires continual maintenance as rental equipment enters/exits all day long.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Remove sediment discharging off site. Provide maintenance schedule for cleaning and maintain continually. **Follow-up Actions** Photo verify and receipt of maintenance schedule **Actions completed** 9/1/07, Faxed received copy of Coast maintenance schedule. 9/26/07, inspected site - area not maintained well enough as sediment/mud is still being tracked on to right-of-way. Issue citation. 10/8/07, property owner increased cleaning schedule and area is maintained.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-096 **Type** Commercial **Location Address** 408 Olive Ave **Watershed** Buena Vista Creek **Call Date** 11/20/2007 **Case Closed** 12/05/2007	High Volume of water discharging off site.	I spoke with John Burzinsky of PWLCI, Inc. Landscape Management at the site. Trucks had been washed and allowed to discharge to roadway. While at site, I addressed additional violations and issued a NOV.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge and implement all requested BMPs. **Follow-up Actions** Photo verify **Actions completed** Area mitigated and corrective action verified. NOV signed on site and given to business representative.
SW No. SW07-104 **Type** Commercial **Location Address** 420 Olive Ave **Watershed** Buena Vista Creek **Call Date** 12/07/2007 **Case Closed** 01/15/2008	Mud tracking to right-of-way.	With Olive Ave. improvements, other violations of BMP failure becomes prevelant. Noticeable dirt/mud is being tracked off 420 Olive Ave into right-of-way. Rain events had occurred, so site was monitored to determine origin of mud.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge. Implement perimeter protection. **Follow-up Actions** Photo verify. 1/4/08, Fiber rolls in place but installed incorrectly. Sent verifying letter to property owner. **Actions completed** Fiber rolls secured.
SW No. SW08-015 **Type** Commercial **Location Address** 316 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 01/22/2008 **Case Closed** 03/12/2008	Spill containment that was previously in place is no longer in or under grease recycle bin or dumpster enclosure. Grease and fluid spill migrating out of enclosure.	As of 1/22/08, citation #1306 still outstanding per our Code Enforcement Dept. Observed as described in Complaint Description. 2/7/08, I contacted Panda Express Propery Management and spoke with Chi Phan. He stated there was a health issue with urine and feces from transients using spill tray for a toilet so they removed the spill tray. Chi felt "it was no big deal". I reiterated it is a "big deal" and the grease recycler was required to have spill containment or the APS installment as promised in 2006. Presently, neither exist and grease is discharging off the site. I further stated that I had not received any communication from anyone at Panda Express. When I requested corrective action by 2/7/08 at 8 a.m. it was to be done and sending an explanation letter from Panda Express was not corrective action. Chi said he would contact the on-site Manager to replace the 'cleaned' pan. Chi wanted to know what other businesses had the same BMP requirements. I told him all businesses in Vista and directed him to food businesses up and down Sycamore. (I had previously addressed this very question in 2006.)	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; implement BMPs. **Follow-up Actions** Photo verify 2/7/08, no correction. Call Panda before issuing next citations **Actions completed** 2/14/08, Yellow soft sided tray installed under grease bin. 3/12/08, monitored area - pan is functional

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-022 **Type** Commercial **Location Address** 2351 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 02/04/2008 **Case Closed** 06/27/2008	Received a complaint from the County. Sediment is leaving site entering E. Vista Way. Some inadequate BMPs are in place.	Observed as described in Complaint Description. 2/5/08, I spoke with tenant and he stated that his brother is upgrading BMPs. 2/12/08, Green mesh fence installed. 2/26/08, on followup investigation, some BMPs have been placed but inappropriately. 2/29/08, call from brother and he has started with more BMPs - silt fencing, discussed additional BMPs (sandbags) for large gully to prevent sediment discharge. Follow-up today with photos. Wednesday, 3/5/08, additional photos. Sandbags in place in large rut. Additional silt fencing in place; however, installed incorrectly. 3/12/08. Site inspection; most BMPs in place (silt fence & sandbags). 6/24/08, Area vegitiated and other BMPs in place (silt fencing and sandbags- check dams).	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Upgrade existing BMPs **Follow-up Actions** Photo verify. Meet with property owner to discuss proper installation of BMPs and walk property; get literature to property owner in reference to BMPs. **Actions completed** Silt fencing in place, sand bag check dams in place. Denuded areas vegitated.
SW No. SW08-024 **Type** Commercial **Location Address** 826 N. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 02/21/2008 **Case Closed** 03/16/2008	Fluids from car parts and improper storage of hazmat drums - no spill containment or overhead coverage.	Observed as described in Complaint Description. I spoke with tenant and he requested a Spanish translator. A delivery person provided English/Spanish.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove fluids from pavement using dry method. Remove hazmat drums from enclosure or provide second containment and overhead coverage. Do not work on vehicles outside. **Follow-up Actions** Photo verify. 2/29/08, some work done - allocated additional time as drums needed to be emptied to relocate drums. 3/6/08, most corrective action has occurred, recheck for completion on Monday, 3/10/08. **Actions completed** Area cleaned. Some racks and empty drums remain but do not appear to impede the drainage ditch flow from the apartment complex to the west.
SW No. SW08-056 **Type** Commercial **Location Address** 1380 Aspen Way **Watershed** Agua Hedionda Creek **Call Date** 03/10/2008 **Case Closed** 07/17/2008	Reporting person from Public Works called in reference to red colored water with possible pollutants flowing down Aspen Way to inlet at S. Melrose Dr.	Found rusty colored water running from outlet in front of 1380 Aspen Way. Sump at northeast corner of property slowly filling with ground water and being pumped to a curb outlet into the City curb conveyance system. Water then travels westbound to a storm drain inlet near the corner at S. Melrose Dr. Weston Solutions, Inc., hired to test pumped groundwater discharge at point source and outfall, found levels of manganese, sulfates and TDS exceeding the water quality objectives; therefore, groundwater is considered contaminated.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** 6/10/08, immediately cease the illegal discharge of contaminated ground water from the property and abate the violation. Contact Officer Heltmach immediately and no later that 6/25/08 with information and a timeline on how Amron International will resolve this issue. **Follow-up Actions** 6/24/08, left voice mail for the Manager to remind him to send an e-mail with plan of action and timeline. 6/24/08, e-mails to/from Manager referencing plan and timeline. Photo verify **Actions completed** Corrective actions verified. 270' vegetated (grass) bio-swale, no signs of discharge from property.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-045 **Type** Commercial **Location Address** 444-B S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 03/20/2008 **Case Closed** 04/21/2008	Leaky car fluids, leaky oil drums. Using hose faucet outside bathroom with 5 gal. buxket to wash hands.	3/27/08, complaint confirmed as in Complaint Description and photo documented. Also, car parts were on the ground, lid was off garbage can, vehicle fluids/grease/oil on driveway/lot and a vehicle was being worked on outside.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clean car fluids with dry sweep method. Clean secondary containment under oil drums, spilled oil. Clean tops of oil drums. Clean asphalt area around oil drums and garbage can. Cover garbage can. Put all car parts inside or under cover. No working on vehicles outside. Install sink in the bathroom for hand washing (no more use of hose faucet and bucket). **Follow-up Actions** Photo verify. 4/1/08, several areas cleaned with other areas still unsatisfactory. Issued NOV. 4/9/08, Photos; progress made, given until 4/11/08 to complete. Warning was given for working on vehicles outside. 4/11/09, Photos; area clean of car fluids, oil drums clean and secondary containment cleaned. Asphalt around drums and garbage can is clean; lid is on garbage can, no car parts are outside, no vehicles are being worked on outside. Still installing sink. **Actions completed** BMPs are in place and being maintained. Areas cleaned satisfactorily.
SW No. SW08-044 **Type** Commercial **Location Address** 1535 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 03/25/2008 **Case Closed** 03/31/2008	Office Heltmach and I witnessed employee brooming a milky discharge off into road.	Further investigation indicated numerous stormwater discharge violations; open trash dumpster, food, trash and debris throughout site.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge, hereafter, use no water unless all is reclaimed. **Follow-up Actions** Photo and visually verify. Continuously monitor area. **Actions completed** Area dry since 3/26/08.
SW No. SW08-047 **Type** Commercial **Location Address** 444 S. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 04/11/2008 **Case Closed** 04/17/2008	Repairs on vehicles outside, potential for illegal discharge	On an unscheduled site inspection (previous case # MISC 0708-067) I observed a mechanic repairing a vehicle outdoors in violation of V.M.C. 13.18.090.E.1 - vehicle repair and maintain BMPs. Previously warned on 3/27/08. Mechanic admitted to repairing hoses on the van. Photographed violation, issued NOV to management.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** No vehicle repairs nor maintenance unless performed indoors under a permanent roof. **Follow-up Actions** Photo verify. Routine unscheduled site inspections. **Actions completed** No repairs being done outside. Spoke with the on-site manager and informed him that any future violations are citable.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-049 **Type** Commercial **Location Address** 845 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 04/14/2008 **Case Closed** 05/08/2008	Several oil drums outside on the ground in the yard, unprotected. No secondary containment nor overhead coverage present.	Confirmed as in Complaint Description. Additionally, there is evidence that the business is servicing vehicles in the yard area and service bay (small single stall garage). Lack of minimum BMPs for vehicle repair and maintenance (exposed car parts, oil spills not cleaned up, open/exposed 5 gallon buckets of used oil).	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Immediately abate the violations, install/maintain BMPs **Follow-up Actions** Photo verify **Actions completed** Areas were cleaned and BMPs were in place.
SW No. SW08-048 **Type** Commercial **Location Address** 1275 S. Santa Fe Ave #117 & 118 **Watershed** Buena Vista Creek **Call Date** 04/15/2008 **Case Closed** 05/09/2008	No secondary containment or overhead coverage for grease recycle drums.	Confirmed as in Complaint Description. Additionally, lid on the trash bin was left open with trash overflowing. Trash and debris in parking and sidewalk area.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Immediately abate each violation; immediately cease illegal discharge. Install and maintain BMPs. **Follow-up Actions** Photo verify **Actions completed** BMPs in place; secondary containment and overhead coverage were installed for grease recycle drum. Trash and debris were not overflowing from dumpster and the parking lot and sidewalk areas were free of trash and debris.
SW No. SW08-050 **Type** Commercial **Location Address** 151 Vista Village Dr. **Watershed** Buena Vista Creek **Call Date** 04/26/2008 **Case Closed** 05/28/2008	Overwatering and not reclaiming runoff.	Eastside Garden Center had watered plants due to extreme high temperature. Water was allowed to run off pavement and entered storm drain inlet. Previous training and BMP Spill Management Plan by Lowe's Corp. in Sept. 2007 stated they would not allow runoff. I spoke with the Assistant Manager and issued a citation.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge; remove sediment tthrough site ditches, curb/gutters; remove outside storage immediately and hereafter. **Follow-up Actions** Monitor for compliance. **Actions completed** Area clean and dry.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-052 **Type** Commercial **Location Address** 316 Sycamore Ave **Watershed** Buena Vista Creek **Call Date** 05/12/2008 **Case Closed** 05/15/2008	Grease entering City wastewater sewer system from grease interceptor.	No receipt was readily available to provide documentation of cleaning grease interceptor. Secondary containment under grease recycle bin damaged/ineffective/not properly installed. Grease accumulation under/around grease recycle bin.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clean grease accumulation around grease recycle bin. Install secondary containment properly. Provide documentation of grease interceptor cleaning/maintenance to include amount of grease removed. **Follow-up Actions** Photo verify, check e-mail, get copy of grease interceptor cleaning ticket. **Actions completed** Dumpster area cleaned, grease recycle bin cleaned and will be removed tomorrow as A.P.S. unit is installed and now being used. Grease interceptor cleaned this morning. Copy of invoice/receipt provided, will have cleaned/serviced monthly.
SW No. SW08-057 **Type** Commercial **Location Address** 444-B S. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 06/11/2008 **Case Closed** 06/24/2008	Repairs being done on vehicles outside. Potential for illegal discharge. (Proactive)	Stormwater Code Enforcement Officers observed two mechanics repairing vehicles outdoors and not under the permanent roof for the business - in violation of Vista Municipal Code 13.18.090.E.1, Vehicle Repair and Maintenance BMPs. Photographed violation.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** No vehicle repairs nor maintenance unless performed indoors under a remanent roof. **Follow-up Actions** Photo verify. Routine, unscheduled site inspections. **Actions completed** All vehicle repairs being done under cover with drip pans.
SW No. SW08-059 **Type** Commercial **Location Address** 1045 N. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 06/20/2008 **Case Closed** 07/07/2007	Annual Stormwater Inspection indicates lack of general housekeeping maintenance.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Mitigate all appropriate BMPs for location. **Follow-up Actions** Photo verify **Actions completed** All corrections have been made - area greatly improved.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-058 **Type** Industrial **Location Address** 3285 Corporate View Dr. **Watershed** Agua Hedionda Creek **Call Date** 06/16/2008 **Case Closed** 07/02/2008	Grease spill and tracking into roadway and gutters from a 55 gal. drum.	Observed as described in Complaint Description. Further investigation indicated lack of housekeeping throughout site. Loading dock and compactor had accumulation of fluids. Storm drain inlet on east side was clogged. Trash and debris throught site, grease at parking stalls - excessive in areas.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge. Remove grease drum from exterior location; remove grease accumulation throughout site pavement. **Follow-up Actions** Photo verify site and receive Spill Containment Plan information. **Actions completed** 6/24/08, Area mitigated - Spill Containment Plan received.
SW No. SW07-086 **Type** Residential **Location Address** 1131 Lime Pl. **Watershed** Buena Vista Creek **Call Date** 07/26/2007 **Case Closed** 09/12/2007	Sediment discharge to right-of-way	Observed as in Complaint Description. I spoke with property owner and requested sediment be removed.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove loose dirt. Implement perimeter protection and entrance/exit driveway. **Follow-up Actions** Photo verify 8/1/07, Some removal - driveway not addressed - issue NOV. 8/27/07, area improved; driveway has no BMPs - callled property owner and she stated that the gravel is to be placed the week of 9/10/07. One owner is in construction and is familiar with entrance/exit BMPs. **Actions completed** Dirt driveway has gravel and area is cleared of loose sediment and frontage.
SW No. SW07-083 **Type** Residential **Location Address** 721 Oceanview Dr. **Watershed** Buena Vista Creek **Call Date** 07/26/2007 **Case Closed** 08/02/2007	I received a call from our Code Enforcement Officer. Site is in disrepair and failing BMPs.	I contacted the property owner and requested clean-up. He stated he would submit plans next week as well as clean-up.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Area requires maintenance and securing of perimeter. Referred to Code Enforcement. **Follow-up Actions** Photo verify **Actions completed** Due to plan submittal and BMPs, while in disrepair, seem to be functional, it was requested to upgrage BMPs throughout site before October 1, 2007. Property owner agreed - Area will be monitored. Case referred to Code Enforcement.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-087 **Type** Residential **Location Address** 535 Rancho Vista Rd **Watershed** Buena Vista Creek **Call Date** 08/13/2007 **Case Closed** 08/30/2007	Vegetation accumulating in drainage ditch.	Observed as in Complaint Description. I have spoken twice previously with property owner.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation and maintain. **Follow-up Actions** Photo verify **Actions completed** Area clean.
SW No. SW07-093 **Type** Residential **Location Address** 115 E. Connecticut **Watershed** Buena Vista Creek **Call Date** 08/14/2007 **Case Closed** 10/08/2007	Hosing off property into alleyway creating erosion of west slope and degradation of alley.	Observed two male maintenance workers hosing off apt. complex and driveway/alley area. The water continues to run-off down west slope creating erosion that collects on dumpster enclosure pavement below. This water and dirt continues across pavement and into business parking lot to street.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease hosing water discharge; reduce over-irrigation; do not wash off trash cans into alleyway. **Follow-up Actions** Monitor intermittently **Actions completed** Monitor intermittently
SW No. SW07-090 **Type** Residential **Location Address** 211-215 E. Connecticut Ave. **Watershed** Buena Vista Creek **Call Date** 08/28/2007 **Case Closed** 08/29/2007	Excessive car washing, cleaning trash cans out at curbside.	Chronic car washing and hosing off site. A spanish translator spoke with grouped residences requesting water reduction and no trash can cleaning at curbside.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease excessive water discharge; do not clean trash cans at roadway; sweep (do not hose off) area; provide shut off nozzle on hose while in use. **Follow-up Actions** Intermittent monitoring **Actions completed** Intermittent monitoring

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-089 **Type** Residential **Location Address** 205-209 E. Connecticut Ave. **Watershed** Buena Vista Creek **Call Date** 08/28/2007 **Case Closed** 08/29/2007	Excessive car washing, cleaning trash cans out at curbside.	Chronic car washng and hosing off site. A Spanish translator spoke with grouped residences requesting water reduction and no trash can cleaning at curbside.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease excessive water discharge; do not clean trash cans at roadway; sweep - do not hose off - the area; **Follow-up Actions** Intermittent monitoring **Actions completed** Intermittent monitoring
SW No. SW07-095 **Type** Residential **Location Address** 209 Casper Ln **Watershed** Buena Vista Creek **Call Date** 10/26/2007 **Case Closed** 11/20/2007	Cigarette butts, boxes, trash and debris accumulating at corner of Casper Ln. and Alta Vista Dr.	Area is congested with cigarette butts, boxes and trash. I have seen people cross the street from 700 Alta Vista Apts. I spoke with two women requesting clean-up and maintenance. They would inform the Manager. 11/13/07, I sent a letter to the property owner as the site was still being littered. Property owner left message providing us with the name of site manager. Site manager stated transient characters associating with one tenant is to blame for the litter. She stated that an eviction notice has been served. I requested maintenance of location. Site manager stated the complex is SMOKE FREE so tenants cross the street. I told her the litter was a code violation. The area will be monitored for compliance.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove litter and cease further discharge. **Follow-up Actions** Monitor for trash removal and site maintenance. **Actions completed** Area clean.
SW No. SW07-094 **Type** Residential **Location Address** 1696 Countryside Dr. **Watershed** Agua Hedionda Creek **Call Date** 11/12/2007 **Case Closed** 11/15/2007	Concrete washed into curb/gutter	Concrete residue apparent throughout the east side of Countryside Dr. Left NOV at 1696 Countryside Dr.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove all concrete residue from street, curb/gutter and private driveways. **Follow-up Actions** Photo verify **Actions completed** I received a call from the property owner who had an accident with a concrete mixer and now cleaned all of the area. Before and after photos indicate area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-102 **Type** Residential **Location Address** 2668 Magellan **Watershed** Agua Hedionda Creek **Call Date** 11/30/2007 **Case Closed** 12/27/2007	Sediment discharge from denuded frontage	Area was clean. Rain event pending for 12/7/07. Recheck if run-off occurs. 12/7/07, area had sediment discharge off property.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment and implement BMP at perimeter. **Follow-up Actions** Photo verify **Actions completed** Area swept. Dirt appears lower behind concrete driveway.
SW No. SW07-101 **Type** Residential **Location Address** 818 Crescent Dr. **Watershed** Buena Vista Creek **Call Date** 12/03/2007 **Case Closed** 01/30/2008	Sediment discharge	The denuded slopes discharge to a City right-of-way and asphalt road at a corner. Sediment tracks up and down the street.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs to prevent further discharge and vegetate slopes and any denuded property. **Follow-up Actions** Property owner requested an extension. 1/10/08, area has some fiber rolls but inadequate. I contacted the property owner to request further upgrade by adding more fiber rolls along toe of slope. I scratched location of fiber rolls on toe to indicate additional BMP placement. The property owner stated he would locate it upon return from work that evening. 1/22/08, no further corrective action. Placed call property owner requesting the ETA of additional BMPs. **Actions completed** All BMPs have been implemented at perimeter of property.
SW No. SW07-100 **Type** Residential **Location Address** 812 Crescent Dr. **Watershed** Buena Vista Creek **Call Date** 12/03/2007 **Case Closed** 01/17/2008	Sediment discharge	Slope is somewhat vegetated. Easement in front of toe has been referred to Public Works Dept. for correction.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Continue to allow vegetation to mature. **Follow-up Actions** Monitor **Actions completed** Vegetation is established and run-off is not visible.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-099 **Type** Residential **Location Address** 832 Crescent **Watershed** Buena Vista Creek **Call Date** 12/03/2007 **Case Closed** 01/30/2008	Sediment discharge, denuded lot	Property is a vacant lot next to a residence. Area ditch has drainage running parallel to road and property. The property has little vegetation on it.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs, remove dirt from roadway. **Follow-up Actions** Some vegetations is growing but insufficient - sent NOV. **Actions completed** BMPs installed.
SW No. SW07-098 **Type** Residential **Location Address** 1802 Monte Vista Dr. **Watershed** Buena Vista Creek **Call Date** 12/03/2007 **Case Closed** 01/16/2008	Mud discharge from 1802 Monte Vista onto school parking lot to the west and below.	I spoke with someone from the Vista Unified School District (VUSD). He state that the property at 1802 has a clogged drain inlet and it causes flooding below and onto the school lot. 12/3/07, drain inlet is not shown on any of our maps or easement documents. 1/8/07, I contacted VUSD for their plans.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** implement BMPs and cease further discharge **Follow-up Actions** Photo verify. 1/16/08, bags in place. **Actions completed** corrective action taken - BMPs are in place
SW No. SW07-097 **Type** Residential **Location Address** 749 Rincon **Watershed** Buena Vista Creek **Call Date** 12/04/2007 **Case Closed** 12/26/2007	Washer outside and not plumbed to sewer system. Water discharging off property and into roadway.	Observed as described in Complaint Description. I spoke with tenant. She understood only some English.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove washer from location; cease discharge; or plumb to sewer system. **Follow-up Actions** Photo or verify by observation. 12/20/07, contacted Engineering Inspector for Spanish translation as tenant did not correct violation. **Actions completed** Washer removed from site.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-103 **Type** Residential **Location Address** 1174 Sunset Dr **Watershed** Buena Vista Creek **Call Date** 12/19/2007 **Case Closed** 03/17/2008	Lack of BMPs at perimeter allowing mud to discharge to storm drainage system to rear of property.	Observed as described in Complaint Description. Additionally, much mud cascaded into the neighbors rear garage and property at 1049 Buena Vista Dr. 2/15/08, I rechecked with our Land Development Dept for a phone number for property owner, none listed. Used Reverse Directory and found a number, dialed and heard the busy signal. Redialed and his son answered. He explained that the dirt piles are for his BMX bike track. I recommended he continue to allow vegetation to grow on mounds. Contacted property owner and arranged to meet on site on 2/19/08. 2/19//08, Land Development Assoc. Eng. and I met with the propery owner. Propery owner explained water from both east and west residences directed water run-off to his property creating erosion on his property leading to creek. We asked him to fill in drainage trench he created at rear of property and to allow vegetation to establish. We would recheck property in two weeks. 3/5/08, follow-up shows vegetation being established, drainage trench not filled in. Contacted property owner. 3/11/08, contacted property owner. He has started work on trench filling. I told him I sent a letter to 1192 Sunset Dr. requesting a pipe extension to avoid further run-off crossing properties.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge. Implement perimeter protection. **Follow-up Actions** Photo verify. 1/3/08, no corrective action - issue NOV. 1/16/08, Stormwater Program Manager and I did a site visit. Hay bales are insufficient; issue citation. Stock piles are not covered and recently dug trench has potential to spill. 2/1/08, Additional silt fence; sediment still running off property. Issue second citations. 2/14/08, inspected site during rain and mud is still flowing off property. **Actions completed** Silt fences repaired, trenches filled and vegetation established.
SW No. SW07-106 **Type** Residential **Location Address** 627 Shuboro St. **Watershed** Buena Vista Creek **Call Date** 12/31/2007 **Case Closed** 12/31/2007	Flushing radiator into storm drain inlet. Chronic abuse - washes cars, semi truck , flushes into inlet. Late evening or weekend activity. Storm drain inlet overflows regularly.	I spoke with property owner. I saw no indication of car fluids. I provided a HELP brochure and requested that nothing go into the storm drain system. They asked about car washing and I suggested to wash car on lawn or use a car wash. (referred to Public Works and Code Compliance)	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease any further discharge. **Follow-up Actions** Monitor for compliance **Actions completed** Property owner stated that he would wash the car on the lawn.
SW No. SW08-008 **Type** Residential **Location Address** 1132 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/28/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president has been notified with copies of NOV / letter **Actions completed** Area clean & sediment removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-007 **Type** Residential **Location Address** 1128 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/28/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president notified with copies of NOV / letter **Actions completed** Area clean and sediment removed.
SW No. SW08-006 **Type** Residential **Location Address** 1124 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/28/2008	Failure to maintain drainage ditch, sediment dishcarge and trash.	Observed as described in Complaint Description. 1/28/08, I spoke with propery owner. He is extremely frustrated with the home owners association. I requested he maintain his portion of his property.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president notified with copies of NOV / letter. **Actions completed** Area clean. I contacted the property owner that area is clean but will require maintenance hereafter.
SW No. SW08-005 **Type** Residential **Location Address** 1122 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/28/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description. 1/22/08, received call from property owner. I explained the concern and she was going to speak w/ HOA president to correct the chronic problems. I explained enforcement escalates if issues are not resolved.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash. **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president notified with copies of NOV / letter. **Actions completed** Area clean and sediment removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-004 **Type** Residential **Location Address** 1118 Cochise Ct. **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/28/2008	Failure to maintain drainage ditch, sediment discharge and trash.	Observed as described in Complaint Description. 1/20/08, I spoke with property owner. He cleared his area Saturday. I requested he maintain area and encourage tenants to assist in maintenance of frontage and properties.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president was notified with copies of NOV / letter. **Actions completed** Area clean and sediment removed.
SW No. SW08-002 **Type** Residential **Location Address** 351 E. Indian Rock Rd. **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/22/2008	Failure to maintain drainage ditch.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Ditch clean
SW No. SW08-013 **Type** Residential **Location Address** 1149 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/22/2008	Failure to maintain drainage ditch. Sediment discharge and trash	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Trash and sediment removed - HOA president also notified.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-009 **Type** Residential **Location Address** 1133 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/23/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Area cleared. HOA notified.
SW No. SW08-003 **Type** Residential **Location Address** 1114 Coshise Ct. **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/28/2008	Failure to maintain drainage ditch. Sediment discharge and trash present.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president was notified with copies of NOV/ letter. **Actions completed** Area clean & sediment removed.
SW No. SW08-012 **Type** Residential **Location Address** 1145 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/23/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Area cleared - HOA notified.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-010 **Type** Residential **Location Address** 1137 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/23/2008	Failure to maintain drainage ditch. Sediment discharge and trash	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Area cleared - HOA notified
SW No. SW08-011 **Type** Residential **Location Address** 1141 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 01/02/2008 **Case Closed** 01/23/2008	Failure to maintain drainage ditch. Sediment discharge and trash	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Area cleared - HOA notified.
SW No. SW08-001 **Type** Residential **Location Address** 619 Rolling Hills Rd **Watershed** Agua Hedionda Creek **Call Date** 01/07/2008 **Case Closed** 01/15/2008	Clean-out cap not secure. Cap not appropriate for pipe. Pipe not ABS.	Observed as in Complaint Description. I spoke with the property owner. She stated plumbing work had been done 3 weeks prior and she wasn't experiencing any ploblems. The clean-out caps on the line were not replaced by plumbers.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Replace line with appropriate cap. **Follow-up Actions** Photo or view verify **Actions completed** Cap installed with appropriate ABS pipe.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-016 **Type** Residential **Location Address** 356 Peters Dr. **Watershed** Buena Vista Creek **Call Date** 01/15/2008 **Case Closed** 03/31/2008	Sediment run-off due to eroding driveway and lawn parking.	Observed as described in Complaint Description. Also referred this complaint to City Code Enforcement and Building Dept.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and implement perimeter protection **Follow-up Actions** Visual / Photo **Actions completed** 3/31/08, Area monitored and no sediment discharge. The potential remains as cars still park parallel and on dirt. The area will be monitored for sediment spills.
SW No. SW08-019 **Type** Residential **Location Address** 1264 Peach Grove Ln **Watershed** Buena Vista Creek **Call Date** 01/24/2008 **Case Closed** 03/24/2008	Obstructing water course with trash, debris metal bars and toys.	Observed as described in Complaint Description. 1/30/08, I left a HELP brochure and photos plus Chpt 13.18.045 Section at 1618 York Dr. Code Enforcement Officers contacted tenants on 1/21/08. Some clean-up occurred but trash/bars not removed. 2/25/08, Property owner of 1254 Peach Grove Ln. came to the Engineering Dept. to complain about soil/debris build-up along west fence line. On site inspection indicates greater accumulation of sediment. Spoke with tenant and stated recommendation to remove excessive mud and informed him that I would be contacting the property owner. E-mailed pictures to property owner with explanation. 3/4/08, returned phone call to neighbor (complainant), advised progress on case, that we spoke with tenant and have communication with property owner to meet this week. Requested that they resend letters and attachments that were sent to City Manager, Rita Geldert. Scheduled to meet with property owner on 3/6/08 at 4:30 p.m. 3/24/08, Bamboo stumps removed from watercourse, photos taken.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove obstruction, trash, debris, toys, etc.. **Follow-up Actions** Photo verify. **Actions completed** Debris and trash removed from water course. What was in the water course is now on side of water course on the uphill slope of rear yard of 1264 Peach Grove Ln. Bamboo stums removed from water course at 1254 Peach Grove Ln.
SW No. SW08-031 **Type** Residential **Location Address** 3423 Rebecca **Watershed** Buena Vista Creek **Call Date** 02/07/2008 **Case Closed** 03/14/2008	Sediment accumulation and vegetation encroaching into drainage ditch on west side of property.	Observed as described in Complaint Description with a concrete block obstruction in ditch below fence. 3/12/08, received a call from owner stating area is clean and would like an inspection on 3/14/08 at 4:30 p.m.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment and vegetation, maintain thereafter. Remove obstruction. **Follow-up Actions** Photo verify. **Actions completed** Area ditch clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-030 **Type** Residential **Location Address** 311 W. Taylor St. **Watershed** Buena Vista Creek **Call Date** 02/07/2008 **Case Closed** 03/17/2008	Denuded soil driveway discharging sediment into right-of-way.	Observed as described in Complaint Description. 3/11/08, resent letter/photo to Carlsbad address. 3/17/08, met on site with property owner and provided suggestions to prevent sediment discharge.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement perimeter protection to prevent further discharge. **Follow-up Actions** Photo verify **Actions completed** BMP in place and property owner is establishing vegetation.
SW No. SW08-029 **Type** Residential **Location Address** 301 W. Taylor St **Watershed** Buena Vista Creek **Call Date** 02/07/2008 **Case Closed** 03/17/2008	Sediment accumulation and vegetation encroaching into drainage ditch on west side of property.	Observed as described in Complaint Description. 3/10/08, letter came back (addressed to 310 W. Taylor St) …no such address. Resent to 301 W. Taylor St.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation and sediment; maintain thereafter. **Follow-up Actions** Photo verify **Actions completed** Area in ditch has been cleared.
SW No. SW08-027 **Type** Residential **Location Address** 307 Taylor St **Watershed** Buena Vista Creek **Call Date** 02/07/2008 **Case Closed** 03/17/2008	Sediment accumulcation and vegetation encroaching into drainage ditch on south and west side of property.	Observed as described in Complaint Description. 3/10/08, Property owner came into the office requesting additional time to clear ditch. I left message stating additional time, a consideration with an end date.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation and sediment; maintain thereafter. **Follow-up Actions** Photo verify **Actions completed** Ditch cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-026 **Type** Residential **Location Address** 305 W. Taylor St. **Watershed** Buena Vista Creek **Call Date** 02/07/2008 **Case Closed** 03/17/2008	Sediment, trash and vegetation accumulating in drainage ditch.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove accumulation and maintain ditch. **Follow-up Actions** Photo verify **Actions completed** Ditch cleaned.
SW No. SW08-025 **Type** Residential **Location Address** 357 W. Taylor St **Watershed** Buena Vista Creek **Call Date** 02/07/2008 **Case Closed** 04/17/2008	Sediment discharge from property to right-of-way	Area not maintained. Gravel and dirt cascade across panhandle driveway and enters drainage ditch at west site of downhill properties. Dirt is tracked to north and out to right-of-way. 3/5/08, letter returned with forwarding address - resent.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement perimeter protection and maintain. **Follow-up Actions** Photo verify **Actions completed** Gravel bags implemented - area cleaner.
SW No. SW08-028 **Type** Residential **Location Address** 309 W. Taylor St **Watershed** Buena Vista Creek **Call Date** 02/07/2008 **Case Closed** 04/22/2008	Sediment accumulation and vegetation encroaching into drinage ditch on north and west side of property	Observed as decribed in Complaint Description. 3/26/08, spoke with daughter requesting owner call us. 3/31/08, Contacted owner. They are hiring a contractor to clear the ditch. We agreed on an extension until 4/7/08 or citations will be issued.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation and sediment, maintain thereafter. **Follow-up Actions** Photo verify. 2/17/08, follow-up showed no corrective action taken, issue NOV. 4/9/08, Substantial corrective action taken, photos taken - issue warning letter to finish the clean-up. 4/22/08, follow-up letter sent. **Actions completed** 4/15/08, corrective action taken. Areas clear of trash, vegetation and sediment.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-033 **Type** Residential **Location Address** 758 Bonita Dr. **Watershed** Buena Vista Creek **Call Date** 02/12/2008 **Case Closed** 03/25/2008	Sediment discharge from driveway that has no perimeter protection or asphalt/concrete.	Observed as described in Complaint Description. Tracking is visible. Monitor, as driveway appears to be ready for concrete pour.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement perimeter protection and establish driveway cover. **Follow-up Actions** Photo verify. 2/29/08, no change - issue warning letter. 3/18/08, north property has concrete driveway poured. Chronic tracking off curb into roadway - issue NOV. **Actions completed** 33/25/08, A tree planter box was positioned in driveway and area cleaner. Public Works Supervisor spoke with property owner and requested discontinuation of driving over curb/gutter.
SW No. SW08-032 **Type** Residential **Location Address** 1105 Olive Ave **Watershed** Buena Vista Creek **Call Date** 02/12/2008 **Case Closed** 03/11/2008	Sediment discharge from driveway that has no perimeter protection or asphalt / concrete.	Observed as described in Complaint Description. Tracking is visible. Monitor as driveway appears to be ready for concrete pour. 3/6/08, Owner discussed solution. He will place gravel until concrete driveway is poured in June. Check on Monday for gravel placement.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement perimeter protection and establish driveway cover. **Follow-up Actions** Photo verify. 2/29/08, no change, issue warning letter. **Actions completed** 3/11/08, gravel in place at driveway. No sediment into roadway. Attempted call to owner, number no longer in service.
SW No. SW08-036 **Type** Residential **Location Address** 1192 Sunset Dr **Watershed** Buena Vista Creek **Call Date** 02/19/2008 **Case Closed** 03/17/2008	Considerable impervious surface directed to lower neighbor's property creating erosion and sediment run-off to water course.	Observed as described in Complaint Description. 3/12/08, I received 2 letters (dated 3/10/08 & 3/11/08) from the property owner requesting suggestions.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Redirect water to prevent erosion and sediment into the water course. **Follow-up Actions** Photo verify **Actions completed** A pipe extension has been added and outfall leads to a rip-rap dissipater to the far south of property.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-040 **Type** Residential **Location Address** 642 Vale View **Watershed** Buena Vista Creek **Call Date** 02/25/2008 **Case Closed** 03/31/2008	Sediment discharge from property into roadway and into storm drain inlet.	Observed as described in Complaint Description. Evidence of discharge run-off from property to roadway and into storm drain inlet. 3/12/08, no corrective actions taken by property owners. 3/19/08, met with property owners daughter-in-law and discussed sediment discharge at the street. Will put in silt fence. Discussed tracking of sediment by vehicles and adding stone before cars get to City easement road. Will also dry sweep area. Asked about dirt piles on property; said we would have to talk to her husband about that. Will cover to prevent run-off. 3/20/08, spoke with City Wastewater Supervisor regarding the City-style swing gate at 642 Vale View public sewer easement driveway leading to residence to rear of property and why has the gate not been locked like other City gates. He would send a crew to location to investigate. Private contract between 1006 & 642 Vale View Dr. established the public sewer easement on north side of 642 property. City Right-of-Way Agent provided substantiating documentation. 3/24/08, Site inspection. Silt fence installed near street. Installed improperly. Swept area clean. Contacted property owner about silt fence and he will have it installed properly by tomorrow evening. Sand bags will be installed to divert any water from flowing off paved sewer easement road onto property at 636 Vail View Dr. Silt fence installed around mounds of dirt. 3/26/08, Silt fence installed correctly, no sand bags at driveway and area is swept clean. 3/31/08, spoke with City Inspector regarding stockpiles and additional deliveries last week. He hasn't addressed this yet but is working on another project with owner and will address stockpiles with him before moving forward on the other project. 3/31/08, received a phone call from owner, he will put sandbags adjacent to driveway to prevent any funoff from going onto neighbor's property at 636 Vale View Dr.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment from right-of-way using a dry sweep method and implement perimeter protection. **Follow-up Actions** Photo verify. 3/12/08, no corrective action taken by property owner. Warning letter sent 3/14/08 **Actions completed** Area swept clean, silt fencing installed.
SW No. SW08-037 **Type** Residential **Location Address** 337 Palm Canyon Dr. **Watershed** Buena Vista Creek **Call Date** 02/29/2008 **Case Closed** 04/15/2008	Fluids dripping from vehicle parked on roadway in front of residence. Additional spill stains behind vehicle.	2/29/08, compaint confirmed as in Complaint Description. Photos taken and left HELP brochure. 3/5/08, no action to correct violation. 3/6/08, warning letter sent. 3/12/08, still no corrective action taken. Took photos. 3/14/08, NOV letter sent via regular mail and certified mail. 4/15/08, Phone call from property owner requesting to cancel second citation. Advised BMPs are inadequate.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Utilize dry sweep method to remove accumulation of oil, grease and vehicle fluids from the roadway in front of the residence. Use no water unless all discharge is reclaimed. **Follow-up Actions** Photo verify. 3/24/08, dry absorbant under the front of vehicle. Vehicle fluids and grease still under vehicle and behind vehicle. Issued citation. Referred to City Code Enforcement. 4/3/08, Vehicle fluids and grease still under and behind vehicle. Issued 2nd citation. Referred to California Highway Patrol. 4/14/08, Area cleaned with dry absorbant, but absorbant was left under and in front of vehicle. **Actions completed** Area cleaned with dry absorbant (unable to remove staining). Will continue to monitor and clean as necessary until property owner can repair or sell vehicle.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-042 **Type** Residential **Location Address** 746 Matagual Dr. **Watershed** Buena Vista Creek **Call Date** 03/04/2008 **Case Closed** 03/25/2008	Tracking sediment into street from unimproved driveway.	Confirmed complaint as in Complaint Description. Took Photo. Contacted the son of the property owner and gave him a HELP brochure. Explained the problem and need for implementation of BMPs. 3/12/08, rock/stone sidewalk put in along curb but no BMPs put in driveway to prevent further tracking of sediment.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs to prevent further tracking of sediment from driveway onto street. **Follow-up Actions** Photo verify **Actions completed** Gravel entrance/exit installed.
SW No. SW08-053 **Type** Residential **Location Address** 1272 Remington Ct. **Watershed** San Luis Rey **Call Date** 04/30/2008 **Case Closed** 05/27/2008	Vehicle oil, grease and fluids on the street and driveway in front of residence.	Confirmed as in Complaint Description. Accumulation of oil, grease, and car fluids observed on driveway under a white mini-van and on the street in front of residence.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Abate violation immediately to cease the illegal discharge. Utilize dry sweep method to remove accumulation of oil, grease and vehicle fluids from driveway and roadway. **Follow-up Actions** Photo verify **Actions completed** Area cleaned of the oil, grease and vehicle fluids.
SW No. SW08-051 **Type** Residential **Location Address** 300 W. Los Angeles **Watershed** Buena Vista Creek **Call Date** 05/08/2008 **Case Closed** 05/14/2008	Lack of BMPs on property during remodel.	Dirt piles uncovered. Dirt run-off through site area; water and dirt discharging to street.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement appropriate BMPs throughout area. **Follow-up Actions** 5/14/08, visual or photo inspection verification **Actions completed** BMPs appropriately placed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-054 **Type** Residential **Location Address** 1586 Sunrise Dr. **Watershed** Buena Vista Creek **Call Date** 05/13/2008 **Case Closed** 06/24/2008	Dirt/sediment in roadway and "caked" on asphalt. Adjacent to new fence construction.	Some sediment in street. Denuded/fluffed soil under fence adjacent to roadway has the potential for discharge of sediment. Entrance to upper parking area adjacent to street has signs of tracking sediment onto street.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Eliminate the polution potential being dischared into the City's storm drain system by implementing sediment control and tracking control BMPs **Follow-up Actions** Photo verify. Will monitor effectiveness of BMPs. **Actions completed** BMPs installed. Fiber roll over denuded soil, asphalt grind on upper driveway.
SW No. SW08-060 **Type** Residential **Location Address** 506 Lado de Loma Dr. **Watershed** Buena Vista Creek **Call Date** 06/03/2008 **Case Closed** 07/15/2008	Accumulated trash and debris in brow ditch.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove impediments **Follow-up Actions** Photo verify. 7/7/08, no corrective action - issue NOV **Actions completed** Corrective action verified. Ditches are clean. Rip rap dead ends and does not leave site to join NCTD ditch.
SW No. SW08-065 **Type** Residential **Location Address** 413 Grapevine Rd **Watershed** Buena Vista Creek **Call Date** 06/09/2008 **Case Closed** 09/16/2008	Accumulation of vegetation and debris in the drainage ditch/swale located on the property creating obstacles in the watercourse causing pollution and flooding.	Confirmed above complaint. Warning letter sent to property owner and tenant. 7/14/08, no corrective action. 7/16/08, sent NOV and letter. 7/30/08, no corrective action taken. Letter returned with note from property owner - they no longer own property. 7/31/08, Contacted County Assesor Office for current property owner information. GIS was incorrect. Warning letter sent to new property owner. 8/4/08, received a phone call from property owner requesting more time - until end of month. E-mailed Public Works requesting cleaning first 15 ft (easement). 9/2/08, no clearing. Sent reminder to Public Works referring SRO (service request order). Property owner requested extension through 9/12/08.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove the excessive vegetation, debris and other obstacles in the ditch/watercourse. **Follow-up Actions** Photo verify **Actions completed** Cleared excessive vegetation, debris and other obstacles in the ditch/watercourse which could pollute and/or retard the flow of water.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-064 **Type** Residential **Location Address** 1278 Winchester Ct **Watershed** San Luis Rey **Call Date** 06/11/2008 **Case Closed** 07/06/2008	Excessive oil stains on driveway.	Confirmed as in Compalint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clean using dry absorbant and sweep method. Don't use water unless reclaimed. Maintain thereafter. **Follow-up Actions** Photo verify; on 6/26/08, no corrective action taken. 7/7/08, photo verify; no corrective action taken. Sent NOV **Actions completed** Driveway cleaned.
SW No. SW08-073 **Type** Residential **Location Address** 451 Pina Ln **Watershed** Buena Vista Creek **Call Date** 06/20/2008 **Case Closed** 07/03/2008	Vista Irrigation District (VID) called stating a water leak was noted in front and to the west of 451 Pina Ln.	Upon investigation, there is a drill hole in the roadway where water is seeping out. Blue paint marks are in the same location giving appearance VID had marked the street for repair. Could not detect any odor and believed it to be a potable water leak. I left a HELP flyer on the door for property owner to contact me. 6/23/08, Property owner contact me and we set a time to meet and I contacted Wastewater for assistance on a dy test to rule out sewage leak. Dye test performed with results indicating no sewage leak. We suggested property owner to contact VID for investigation. 6/30/08, property owner stated VID will repair leak. 7/3/08, property owner reported that VID had repaired the line early A.M.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to VID for repair. **Follow-up Actions** Confirm repair with property owner. **Actions completed** Line repaired.
SW No. SW08-077 **Type** Residential **Location Address** 1272 Melrose Way **Watershed** Buena Vista Creek **Call Date** 06/24/2008 **Case Closed** 07/03/2008	On septic and washer discharge is directed to grass swale at frontage.	No discharge was detectable. Yard has accumulation of junk. Out building behind house holds washer/dryer. A 4" pipe protrudes from swale bank at frontage which discharges running the length of frontage.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease Discharge. Monitor location to discover washer discharge. **Follow-up Actions** Photo verify **Actions completed** After three drive-bys, no discharge was noted.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-023 **Type** Construction **Location Address** 1127 Alta Calle **Watershed** Buena Vista Creek **Call Date** 02/19/2008 **Case Closed** 02/28/2008	Considerable erosion causing sediment discharge	Observed considerable erosion due to extensive recent rain events after grading/scraping on property. Some BMPs in place; however, evidence of discharge sediment observed entering area. 2/20/08, met with owner and they are in the process of repair & upgrade of BMPs. 2/27/08, Met with City Land Development Principal Engineer, owner, Mr. Walton (Engineer) and my fellow Code Enforcement Officer. A NOV was issued to verify compliance. 2/28/08, met with owner. BMPs have been implemented to the Maximum Extend Practicable (MEP). Fax follow-up letter to owner qualifying continual maintenance thereafter.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Upgrade existing BMPs **Follow-up Actions** Photo verify. Monitor at next rain event. Send NOV corrective action verified to property owner. **Actions completed** 2/28/08, Some new BMPs installed; will monitor after next rain event.
SW No. SW08-046 **Type** Construction **Location Address** 495 Oceanview Dr. **Watershed** Buena Vista Creek **Call Date** 03/05/2008 **Case Closed** 04/21/2008	Extensive erosion due to recent rain events. BMPs ineffective. Property owner not responding to correction notice by Engineering Inspector.	Confirmed as in the Complaint Description. BMPs are deficient. Sediment run-off creating gullys down to 116 Terrace Dr. and into parking lot to the west at 526 S. Santa Fe Ave. Potential for pollutants to enter storm drain system. 4/7/08, Met w/contractor. BMPs removed but not replaced. Roadway carved from 116 Terrace Dr. to lot. Discussed re-installing BMPs and issued a NOV. (Contractor thought BMPs were only needed during the rainy season)	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement an erosion control plan per erosion control notes approved by the Engineer and The City. **Follow-up Actions** Photo verity. 4/14/08, still no BMPs installed. Issued citation. 4/17/08, Phone call from Engineering Inspector, BMPs installed per erosion control plans. 4/21/08, Confirmed installation of sediment/erosion control BMPs (silt fencing, sand bags, sediment basin, secondary containment spill pan under porta potty). **Actions completed** BMPs installed, photo verified.
SW No. SW07-092 **Type** Other **Location Address** 1130 E. Taylor **Watershed** Buena Vista Creek **Call Date** 09/04/2007 **Case Closed** 10/03/2007	Chronic sediment discharge leaving site. Unable to contact responsible party.	I met with the Reverend and discussed pollution concerns. He will enlist congregation to assist in clean-up and maintenance of site.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment along perimeter and implement preventative measures to maintain discharge. **Follow-up Actions** Photo verify **Actions completed** Area clean and measures have been implemented to prevent run-off. A low block wall was installed and dirt removed from back of planter curbs.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW06-113 **Type** Other **Location Address** Kevin Dr. & Gail Dr. **Watershed** Buena Vista Creek **Call Date** 11/06/2007 **Case Closed** 12/12/2006	Sediment run-off into right-of-way, trash and debris, no perimeter protection	Observed as in Complaint Description. I contacted Public Works supervisor for storm drain cleaning regarding street area and any storm drain inlets on the block as dirt obscurred curbing. Contacted Risk Management personnel regarding overgrown ficus corrupting road and sidewalk. Sent NOV to property owner.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, remove all sediment from brow ditch and roadway; remove trash and debris and install perimeter BMP's **Follow-up Actions** Photo verify. 12/6/06, e-mailed property owner for status - much has been accomplished but not 100% complete. 12/7/06, met on site with owner and he understands what needs to be accomplished and contacting with contractors. We spoke with person - contract for Benward project (above this property). He runs water hydrant hose through this property - we came to an agreement with proper BMP runoff. BMPs shoud be in place within two weeks. **Actions completed** 12/12/06, Area much improved. Sand bags were placed at frontage, cul-de-sac swept, brow ditch cleaned of impacted mud and gate will be installed to keep out trespassers. Stock piles removed, trash and debris gone.
SW No. SW08-018 **Type** Other **Location Address** Creekwalk - Vista Village **Watershed** Buena Vista Creek **Call Date** 01/30/2008 **Case Closed** 02/07/2008	Illegal discharge was reported by the Regional Water Quality Control Board representative. Aztec Landscaping was hosing off hard scape (sediment) into channel and not reclaiming.	1/31/08 Stormwater Program Manager, Public Works Right-of-Way Maintenance Supervisor and Stormwater Code Enforcement Officer met to discuss photos taken by RWQCB person on 1/25/08. I contacted Aztec Landscaping and explained violations. They (Aztec Rep and PW Supervisor) will meet on site to discuss mitigation policy for future cleaning. 2/5/08, met at Creek Walk Park with all parties involved. Objective was to discuss solutions to clean Creek Walk hardscape with discharging sediment to the creek. Much was discussed and final policy/procedure is to be determined in the next few days. P. W.s Supervisor witll notify me when Aztec will try updated methods. Photo op for files.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge; provide policy of creek walk area cleaning and 2007 employee training documents. **Follow-up Actions** Receipt of logs and current cleaning method. **Actions completed** Received training log. Cleaning method approved by Public Works Supervisor. Area to be maintained by mechanical sweeper. I was able to take photos of sweeper in action.
SW No. SW08-020 **Type** Other **Location Address** 1531 Thibodo Rd **Watershed** Buena Vista Creek **Call Date** 02/06/2008 **Case Closed** 02/20/2008	Septic spill into storm drain	Septic is over filled and seeping onto property and into roadway and inlet.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Repair septic, cease further discharge **Follow-up Actions** Photo & verbal verify **Actions completed** 2/6/08, trench dug to prevent further discharge. Septic contractor cleaned tank. County is on scene to verify the septic is not discharging. 2/20/08, County Health Septic Officer verified system repaired.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-034 **Type** Other **Location Address** 1371 Business Park Dr. **Watershed** Agua Hedionda Creek **Call Date** 02/28/2008 **Case Closed** 03/10/2008	Sediment discharge into the City right-of-way.	Observed considerable erosion due to extensive rain events and possible run-off from sediment spoils at top of unimproved roadway at northwest corner of property. No BMPs in place (only a K-rail at entrance). No vegetation. Sediment piled up at and around K-rail. 2/29/08, Contacted Code Enforcement Officer regarding dumping on property. 3/3/08, On-Site Manager/Target; called and left a message. 3/5/08, spoke with On-Site Manager and discussed implementation of BMPs. He reported that after hearing the voice message he contacted his general contractor and instructed them to install BMPs. BMPs should be installed no later than Monday, March 10th. NOV faxed to On-Site Manager at Target. 3/10/08, photo verified BMPs in place. NOV corrective action faxed to On-Site Manager at Target.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Immediately cease illegal discharge of sediment. Install, maintain and upgrade BMPs. Allow area to vegetate. Corrective actions completed immediately and no later than 3/10/08 by 8:00 a.m. **Follow-up Actions** Photo verify **Actions completed** BMPs in place. Photo verified.
SW No. SW08-039 **Type** Other **Location Address** 116 Terrace Dr. **Watershed** Buena Vista Creek **Call Date** 03/05/2008 **Case Closed** 04/03/2008	Extensive erosion due to recent rain events from graded lot @ 495 Oceanview Dr. (APN- 175-296-09) with discharge down to 116 Terrace Dr. (an undeveloped vacant lot). BMPs ineffective.	Confirmed as in Compalint Description. Observed evidence of sediment discharge into storm drains from 116 Terrace Dr. 3/12/08, received a call back from property owner and discussed implementation of BMPs by 3/14/08 for prevention of further discharge. 3/17/08, contacted property owner and discussed implementation of additional BMPs to be installed by 3/26/08. 3/27/08, met with property owner on site. Discussed and provided literature for proper implementation of BMPs that he installed. Mailed additional literature and warning letter.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Establish BMPs to prevent further sediment discharge. **Follow-up Actions** Photo Verify. 3/17/08, some BMPs in place; sand bags and silt fencing. Re-contacted owner in reference to additional BMPs (ie. Sweep driveway, straw wattles to right and left of driveway.) 4/3/08, Photo verify. **Actions completed** 3/17/08, Some BMPs in place. Additional BMPs still required. 4/3/08, BMPs installed.
SW No. SW08-123 **Type** Other **Location Address** Guajome & Mercantile **Watershed** Buena Vista Creek **Call Date** 05/28/2008 **Case Closed** 06/10/2008	Stockpiling on staging area being utilized by Sierra Pacsific, contractor.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement appropriate BMPs **Follow-up Actions** Photo verify **Actions completed** BMPs implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-063 **Type** Other **Location Address** 400 blk of Lado de Loma Dr. **Watershed** Buena Vista Creek **Call Date** 06/03/2008 **Case Closed** 08/13/2008	Erosion and sediment discharge	7/15/08, Engineer hired by owner contacted me stating BMPs will be placed within the next two weeks and he would call if completed sooner. 8/7/08, company hired to mitigate. Recheck on 8/18/08.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further dishcarge and erosion. **Follow-up Actions** Photo verify **Actions completed** 8/12/08, received a call from the Engineer stating that the BMPs have been implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-029 **Type** Private Lateral **Location Address** 301 Huff St. **Watershed** Buena Vista Creek **Call Date** 10/29/2007 **Case Closed** 10/29/2007	Sewage spill	Area clear upon my arrival. Sewage spilt into excavated retaining wall footing. Wastewater crew chief stated he felt sewage was 99% into footing. Property owner cleared blockage with snake.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line **Follow-up Actions** Verify plumbing is functional **Actions completed** Property owner snaked line, cleared blockage and capped clean out. Wastewater crew cleared scene.
SW No. MISC 0708-031 **Type** Private Lateral **Location Address** 1619 Montgomery Dr. **Watershed** Buena Vista Creek **Call Date** 11/7/2007 **Case Closed** 11/8/2007	Sewage spill	VAC crew already on scene. Clean out visibly crushed. I contacted property owner - she called plumber.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line. **Follow-up Actions** Verify work done through invoice copy. **Actions completed** Line cleared and repaired.
SW No. MISC 0708-005 **Type** Commercial **Location Address** 1025 Service Pl., Suite #103 **Watershed** Buena Vista Creek **Call Date** 7/24/2007 **Case Closed** 7/24/2007	Fundraiser car wash held @ Keystone Mar Vista by Jr. Sheriff Association.	I provided educational information and all were willing to implement pollution prevention measures.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, implement BMPs to prevent runn-off **Follow-up Actions** Monitor & verify **Actions completed** Area was secured and storm drain outlet blocked with wet/dry shop vacuum ready should run-off occur

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-004 **Type** Commercial **Location Address** 807 N. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 7/24/2007 **Case Closed** 7/30/2007	Leaking faucet on north side of building	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair fauct **Follow-up Actions** Verify repair. **Actions completed** Faucet repaired.
SW No. MISC 0708-014 **Type** Commercial **Location Address** 1902 Via Contre **Watershed** Buena Vista Creek **Call Date** 7/26/2007 **Case Closed** 8/31/2007	Automotive not on annual report list.	City employee reported a business that appeared to have heavy accumulation in areas on the property while reviewing an aerial map. Upon investigation it was an automotive business that had not been noted on a business license list.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove accumulation of atuo parts and upgradeBMPs throughout. **Follow-up Actions** Photo verify **Actions completed** Area improved greatly - contacted business owner informed them that they need to maintain location and expect an annual inspection.
SW No. MISC 0708-009 **Type** Commercial **Location Address** 515 Olive Ave **Watershed** Buena Vista Creek **Call Date** 8/9/2007 **Case Closed** 8/9/2007	Blue stains eminating from black pipe.	Observed as in Complaint Description. Pipe originates at rear of building where a hose is used near a drainage swale. I contacted the Company and informed them of discharge violation, spill kit and spill reclamation.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and inform employees. **Follow-up Actions** Monitor intermittantly. **Actions completed** Monitor intermittantly.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-013 **Type** Commercial **Location Address** 940 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 8/22/2007 **Case Closed** 8/23/2007	Excessive water spilling from pipe and discharging to an inlet with accumulated trash & debris.	Observed as in Complaint Description. I spoke with Construction Superintendent - the water is condestate from roof air conditioners	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove all debris from loading dock area so only air conditioning condensate is discharged into inlet. **Follow-up Actions** Photo verify **Actions completed** Area clean.
SW No. MISC 0708-021 **Type** Commercial **Location Address** 157 Nettleton Rd. **Watershed** Buena Vista Creek **Call Date** 9/27/2007 **Case Closed** 9/27/2007	Dumping muriatic acid , oven cleaner and bleach into dirt pit while cleaning portable toilets.	This site was inspected on 2/2/07 by Stormwater Code Enforcement Officer and D-Max independently. The area was discharged to dirt area and did not leave site.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None required as discharge does not leave site. **Follow-up Actions** Suggested good housekeeping practice. **Actions completed** Business as unual
SW No. MISC 0708-023 **Type** Commercial **Location Address** 1301 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 10/2/2007 **Case Closed** 10/2/2007	Pressure wash and not reclaiming water	Complainant had photos of area - Some blurry. No pictures of employees actively in violation; nor machinery - just water on parking lot	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** I contacted property management for details and notice of complaint. **Follow-up Actions** Further instruct employees to adhere to Stormwater practices and cease discharge. **Actions completed** I spoke with property manager, stated any further violations that I witness will be issued a citation.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-033 **Type** Commercial **Location Address** 627 Escondido Ave **Watershed** Buena Vista Creek **Call Date** 11/9/2007 **Case Closed** 11/9/2007	Washing off pavement - not collecting discharge.	Upon arrival employee was not washing pavement. He was sweeping area behind building. I spoke with business manager and requested future reclamation or sweep only.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge; reclaim water or sweep **Follow-up Actions** Monitor for future compliance **Actions completed** Swept site and did not use hose any further.
SW No. MISC 0708-037 **Type** Commercial **Location Address** 2465 N. Santa Fe Ave **Watershed** Guajome **Call Date** 12/10/2007 **Case Closed** 12/10/2007	Red dye discharged to roadway to creek.	Observed as in Complaint Description. I spoke with the business owner - a floral bucket filled with red dye tipped over into a drainage trough. They were cleaning up the fluid and mud leading to the creek. This is County area. I notified County; Oceanside Public Works Dept and our Vista Stormwater Public Works. All responded.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and mitigate site. **Follow-up Actions** Referred to County and City of Oceanside **Actions completed** Mud and fluid removed from location.
SW No. MISC 0708-065 **Type** Commercial **Location Address** 875 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 1/8/2008 **Case Closed** 3/31/2008	Water run-off from car wash rack. (Enterprise Car Rental)	Vehicles are too large for rack area. Overspray is also contributing to water as well as a broken sprinkler.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge hereafter. **Follow-up Actions** Monitor hereafter. **Actions completed** Owner will be relocating business and the problem will go to new owner. 3/31/08, I spoke with the Manager and he understands that, until the move, he will be required to perform maintenance or he will immediately be cited.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-050 **Type** Commercial **Location Address** 2485 Ash St. **Watershed** Agua Hedionda Creek **Call Date** 2/14/2008 **Case Closed** 2/14/2008	White color discharge from outlet ditch at Prudential Overall Supply.	I contacted the Plant Superintendent at Overall Supply Company. He stated a portion of the roof was painted two days prior.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge. Prevent further discharge by allowing ample drying time during rainy season. **Follow-up Actions** Provide MSDS sheet (Material Safety Data Sheet) on product, speak with manufacturer of the product. **Actions completed** Received MSDS sheet and spoke with the manufacturer. Product is water soluable and not hazardous to the environment.
SW No. MISC 0708-053 **Type** Commercial **Location Address** Broadway & S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 2/27/2008 **Case Closed** 3/3/2008	Car wash water discharging off property from mobile car detailer.	observed wash water discharging down parking lot to driveway entrance. No reclamation system. Photos taken of mobile detail truck, trailer, and of discharge.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Discussed use of BMPs and reclamation procedures. No car washing at home address for business purposes. **Follow-up Actions** Investigate business license for mobile car wash. Re-contact owner/manager to advise on license details/ restrictions. **Actions completed** Owner knows to only wash vehicles at VUSD using water clarifier.
SW No. MISC 0708-062 **Type** Commercial **Location Address** 1470 N. Santa Fe **Watershed** Buena Vista Creek **Call Date** 2/29/2008 **Case Closed** 3/10/2008	Run-off, not reclaiming water.	Milk colored run-off originated from McDonald's dumpster. I contacted owner and he stated they had a new maintenance company cleaning the grounds. I requested he speak with them regarding appropriate BMPs and that I will monitor the area for improvement in the next week.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Educate new company in spill prevention/reclamation. **Follow-up Actions** Monitor in a week **Actions completed** Area dry. Owner assured me that top priority is training the employees.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-055 **Type** Commercial **Location Address** 1281 Liverty Way **Watershed** Agua Hedionda Creek **Call Date** 2/29/2008 **Case Closed** 3/5/2008	Illegal dumping into storm drain in parking lot at northwest corner in front of 1281 Liberty Way.	No evidence of dumping into storm drain; unfounded. On follow-up found illegal camping in motorhome in parking lot at southeast corner.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** not applicable **Follow-up Actions** Referred motorhome camping to Code Enforcement. **Actions completed** monitor when in area.
SW No. MISC 0708-057 **Type** Commercial **Location Address** 1042 S. Rancho Santa FE **Watershed** Buena Vista Creek **Call Date** 3/11/2008 **Case Closed** 3/13/2008	Pressure washing building with discharge into street	Evidence of discharge (sediment, dirt, vegetation, gravel, paint chips) running towards and into street/curb. Contacted the property owner	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** dry clean method by 3/12/08 at 3:00 p.m. **Follow-up Actions** Photo verify. **Actions completed** Dry sweep method employed. Parking lot is clear of sediment, dirt, vegetation, gravel and paint chips.
SW No. MISC 0708-058 **Type** Commercial **Location Address** 2020 E. Vista Way **Watershed** San Luis Rey **Call Date** 3/13/2008 **Case Closed** 3/14/2008	Construction with concrete work. No BMPs in place for concrete pumper and no washout area. Run-off into creek behind business.	3/13/08, 12:00 p.m. - Concrete work completed; framing started. Some evidence of concrete wash spill on soil at northeast corner of parking lot. Contacted construction general contractor; discussed BMPs and clean-up of wash.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clean-up dry concrete wash using a dry method, maintain proper construction site BMPs. **Follow-up Actions** Photo verify **Actions completed** Site cleaned of all concrete wash.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-097 **Type** Commercial **Location Address** 2020 E. Vista Way **Watershed** San Luis Rey **Call Date** 3/13/2008 **Case Closed** 5/13/2008	Extensive erosion caused during last rain events "after City cut curb to allow water run-off from street" on the south end of his property, flowing westbound from street between 2020 and 2012 E. Vista Way	3/13/08, extensive erosion confirmed and photographed. Evidence of sediment traveling toward creek bed behind and to the west of the property. 3/14/08, Photo taken. 3/18/08, e-mailed Public Works Dept. to verify the City cutting the curb (verified). 3/24/08, e-mail sent to Stormwater Program Manager with photos and also discussed this situation with her (she will speak with the Asst. Director of Eng.) 3/27/08, e-mail from Stormwater Program Manager to meet with our Principal Engineer re: overlay work. 3/31//08, Met with the P.E. Overlay work only going north to Arcadia Ave. This area is not scheduled for road widening for 10 + years. Suggests that Public Works fan out gully and line with rip-rap to slow down water and therby prevent further erosion. Also we need permission from property owner in reference to going on his property. 5/12/08, Phone call from property owner of 2012 & 2004 E. Vista Way referring to grading being done in a natrual water course. Contacted our Principal Engineer in Land Development and he stated no grading permit was issued. 5/13/08, photos of grading… E-mail from P.E. in Land Development stating that they will handle this situation.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** investigate curb cutting with City of Vista Public Works Dept. to determine responsible part. 3/20/08, per Public Works, curb was cut apprx. 15 years ago by City Public Works Dept. **Follow-up Actions** Contacted Land Development Engineer - They will handle the illegal grading without a permit. Case referred to Community Development. **Actions completed** e-mail from Land DevelopmentCommunity Development Engineer verifying that they will handle this case.
SW No. MISC 0708-060 **Type** Commercial **Location Address** 224 N. Emerald Dr. **Watershed** Buena Vista Creek **Call Date** 3/14/2008 **Case Closed** 3/17/2008	One or two days ago reporting person observed employee or owner of Chevron gas station pressure washing parking lot without reclaiming discharge/run-off into roadway.	No violation observed.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Use BMPs when cleaning walkway and parking lot with pressure washer to prevent dishcarge into street and storm drains. **Follow-up Actions** Periodic unscheduled monitoring of the business. **Actions completed** None needed.
SW No. MISC 0708-061 **Type** Commercial **Location Address** 2067 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 3/24/2008 **Case Closed** 3/25/2008	Dumpster in enclosure. Property owner agent (maintenance) requested a site inspection fro an exception to leave lids off dumpsters. Maintenance Supervisor wants to be in compliance with City codes. EDCO sent him a letter saying they were required to have lids in place on dumpsters. Due to the dumpster enclosure's low roof they are unable to lift lids to throw in trash unless they wheel out dumpsters, thereby creating a safety issue.	3/25/08, Dumpster is fully enclosed and very clean. Roof over dumpsters does not allow rain water to enter. This is a medical facility and all trash is double bagged so there is no chance of leakage from bags to the soil or the interior or exterior of the business. No medical waste is being placed in these dumpsters. There is no staining on the concrete (no evidence of leaks). .	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No corrective action required at this time because the dumpsters are fully enclosed with a roof over them. Rain water can't get in and there is no evidence of leaky dumpsters. Use discretion to leave lids of dumpsters in open position due to all aforementioned circumstances and for safety reasons. **Follow-up Actions** Unscheduled intermittent monitoring of dumpsters **Actions completed** Not needed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-067 **Type** Commercial **Location Address** 444 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 3/27/2008 **Case Closed** 4/1/2008	Work being done on vehicles outside. Car parts (engines, transmission, etc) on ground. No secondary containment for recycle oil drums. Excessive junk/trash in yard. Car parts in truck bed without cover.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Contacted Mgr/Business Owner. Requested no more vehicle service outside. All car parts or to be under cover (preferably indoors or in a shed. Secondary containment for oil drums and clean junk/trash from yard. **Follow-up Actions** Photo verify. **Actions completed** Yard junk/trash cleaned. No vehicles being worked on outside. Car parts no longer on ground. All are in bins and covered. Secondary spill containment installed under drums.
SW No. MISC 0708-064 **Type** Commercial **Location Address** 910 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 3/27/2008 **Case Closed** 3/27/2008	Pressure Wash - no reclaiming of water	3/27/08, confirmed complaint. Photos were taken. Contacted St. Mar Enterprises (Taco Bell Corporate Offices). 3/31/08, contacted Corporate Offices and spoke with the supervisor and informed him on the City of Vista's requirements for reclamation of power washing fluids and the necessity of prevention of discharge into stormwater conveyance system.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Immediately cease and desist illegal discharge. No additional pressure washing in Vista without a reclamation process in place. **Follow-up Actions** Contact Taco Bell Corporate Office to advise them of City requirements for pressure washing. Drive by location later in the morning to verify that power washing contractor did not start work again. **Actions completed** Violation abated. 3/27/08, power washing contractor packed up and left without finishing work.
SW No. MISC 0708-077 **Type** Commercial **Location Address** 1525 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 3/28/2008 **Case Closed** 4/21/2008	Algae and chronic water discharging into storm drain conveyance system.	4/9/08, Confirmed as in Complaint Description. Photos taken. Contacted General Manager and showed him photos. Explained violation and civil liability. He said he will repair and inform. 4/14/08, still discharging water. Workers (employees) repairing water lines. Photos taken.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair sprinklers (overwatering) or water pipe by 4/16/08 to eliminate discharge. **Follow-up Actions** Photo verify **Actions completed** Leaky water pipes repaired. Area dry and clean except for one irrigation drip system head watering a tree in City right-of-way. 4/21/08, Irrigaton system at tree repaired. No more water running into gutter and storm drain.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-068 **Type** Commercial **Location Address** 1244 N. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 4/1/2008 **Case Closed** 4/3/2008	Car washes on Saturdays (3/23/08 & 3/30/08) at Fillco gas station at N. Santa Fe & W. Indian Rock. Not reclaiming water.	4/3/08, contacted property manager and he admitted hosting a car wash for "Victory Outreach"	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No car washes unless proper BMPs are followed. Have charity groups contact contact Vista Stormwater Program for regulations. **Follow-up Actions** Unscheduled intermittent checks for compliance. **Actions completed** Store Manager has been educated on car wash/pressre wash regulations. Agreed to follow stormwater regulations.
SW No. MISC 0708-074 **Type** Commercial **Location Address** 444-C S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 4/11/2008 **Case Closed** 4/17/2008	Not using proper vehicle repair and maintenance BMPs. Proactive - as observed by City employee.	As in Complaint Description. Oil and car fluid leaks not cleaned in driveway and parking area; working on a vehicle outdoors. Contacted the business owner, warned and educated.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No vehicle repairs nor mainenance unless performed indoors under a permanent roof. Clean oil and car fluids from driveway and parking lot using a dry absorbant sweep method. **Follow-up Actions** Photo verify. Intermittent and unscheduled checks on business. **Actions completed** Driveway and parking area are cleaned of vehicle fluids. Currently, not working on vehicles outside.
SW No. MISC 0708-073 **Type** Commercial **Location Address** 1144 S. Santa Ave Ave. **Watershed** Buena Vista Creek **Call Date** 4/15/2008 **Case Closed** 4/4/2008	N/A - proactive.	Observed pressure washing of building with no BMPs in place. Immediately stopped worker. Contacted business manager and educated regarding proper BMPs for power washing.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Discontinue power washing unless proper BMPs are in place. **Follow-up Actions** Photo verify. Intermittent and unscheduled site inspections. **Actions completed** Corrective action taken. Area swept clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-086 **Type** Commercial **Location Address** 650-B Sycamore Dr. **Watershed** Buena Vista Creek **Call Date** 5/21/2008 **Case Closed** 5/27/2008	5 gallon bucket with used motor oil left in parking lot without lid.	Confirmed as in Complaint Description. Found 2 buckets with rags, clothing and debris inside used motor oil buckets.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Dispose/recycle used oil. Take debris and buckets to the hazardous waste yard. The contacted person at business said they would comply. **Follow-up Actions** Photo verify **Actions completed** Area cleaned of used oil buckets.
SW No. MISC 0708-091 **Type** Commercial **Location Address** 1335 Park Center **Watershed** Agua Hedionda Creek **Call Date** 5/22/2008 **Case Closed** 6/11/2008	Chronic water in roadway to inlet	Overwatering from irrigation system	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Reduce water for irrigation **Follow-up Actions** Photo verify **Actions completed** -
SW No. MISC 0708-090 **Type** Commercial **Location Address** 1055 La Mirada Ct. **Watershed** Agua Hedionda Creek **Call Date** 6/3/2008 **Case Closed** 6/4/2008	Washing vehicles (off-road vehicles, trailer, etc) with pressure washer in parking lot.	Confirmed as in Compalint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Immediately abate the violation and cease illegal discharge. No more pressure washing off-road vehicles unless drain inlet is protected and water is reclaimed. **Follow-up Actions** Unscheduled intermittent checks. Contact responsible party to call if witnesses another illegal discharge without propert BMPs. **Actions completed** Immediately ceased illegal discharge. No signs of additional pressure washing of vehicles on 6/4/08.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-093 **Type** Commercial **Location Address** 1240 Activity Dr. **Watershed** Agua Hedionda Creek **Call Date** 6/9/2008 **Case Closed** 6/11/2008	Water & erosion from east of dock area.	Overwatering - I contacted Vista Irrigation District and they contacted property management.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Property management will reduce irrigation. **Follow-up Actions** No water left the site. **Actions completed** Area was drier on drive through by inspector.
SW No. MISC 0708-011 **Type** Residential **Location Address** 2130 Sunset **Watershed** Buena Vista Creek **Call Date** 7/2/2007 **Case Closed** 8/20/2007	55 gal drum next to creek at Space #143 - Green Valley Mobile Home Park	Observed as in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove drum **Follow-up Actions** verify with Code Enforcement of disposition. **Actions completed** Drums removed - Forwarded information to Code.
SW No. MISC 0708-001 **Type** Residential **Location Address** 1123 Bluegrass Rd **Watershed** Buena Vista Creek **Call Date** 7/2/2007 **Case Closed** 7/2/2007	Wash down of jetter equipment by Nu Flow employees and discharging to storm drain system.	I contacted property owner at 1123 Bluegrass Rd. He gave me Nu Flow contact information.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Provide cleaning policy for jetter equipment and cease further discharge to storm drain system. **Follow-up Actions** Verify compliance and education of employees by verbal and receipt of policy. **Actions completed** Received policy via e-mail and spoke with business owner who assured me he would discuss incident with employees and correct violation.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-002 **Type** Residential **Location Address** 1808 Calle Antonio **Watershed** Buena Vista Creek **Call Date** 7/3/2007 **Case Closed** 7/3/2007	Pool Discharge - white substance	White chalky substance not visible. Tree debris in street in front of residence.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove tree debris and maintain. Consider pool drainage alternatives. **Follow-up Actions** Intermittent inspection **Actions completed** Will monitor location intermittently.
SW No. MISC 0708-003 **Type** Residential **Location Address** 717 W. California Ave. **Watershed** Buena Vista Creek **Call Date** 7/10/2007 **Case Closed** 7/10/2007	Radiator flush inside garage and down driveway	Observed as in Complaint Description. Wash down, diluted with water and had not reached street	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease any further discharge. Take vehicle to dealer or service location for any future repairs. **Follow-up Actions** None. Management will reiterate to all tenants to car repair or washing on site. **Actions completed** Person ceased discharge and stated she would no longer discharge fluids
SW No. MISC 0708-006 **Type** Residential **Location Address** 134-142 Santa Clara Dr. **Watershed** Buena Vista Creek **Call Date** 7/30/2007 **Case Closed** 7/30/2007	Grease stains on road	I spoke with resident. She stated EDCO Waste & Recycle truck was there for a long time.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** EDCO cleaned location appropriately prior to my investication - no migration of fluids into curb. **Follow-up Actions** none required **Actions completed** none required.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-007 **Type** Residential **Location Address** 2668 Magellan Ln **Watershed** Agua Hedionda Creek **Call Date** 7/30/2007 **Case Closed** 8/8/2007	Neighbor was hosing off property and dirt into gutter.	Observed as in Compalint Description. Neighbor dispute between 2662 and 2668 Magellan Ln. I spoke with the homeowner at 2662 Magellan Ln and she will redirect the water. I contacted Building Inspection for "history" as 2668 Magellan had a Building Permit. Neighbor stated a mound of dirt/grass swale prevented run-off to next door downhill property. Construction removed mound.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment and implement perimeter protection. **Follow-up Actions** Photo verify. **Actions completed** Area is clean. I spoke at length with both neighbors and both are willing to comply.
SW No. MISC 0708-008 **Type** Residential **Location Address** 755 & 803 Beverly Dr. **Watershed** Buena Vista Creek **Call Date** 8/2/2007 **Case Closed** 8/8/2007	Fish died in private pond.	I visited site - fish had died the week prior and were buried. Stormwater Manager suggested property owner contact Board.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred property owner to Board - provided web link **Follow-up Actions** None **Actions completed** None
SW No. MISC 0708-012 **Type** Residential **Location Address** 356 Apollo Dr. **Watershed** Buena Vista Creek **Call Date** 8/15/2007 **Case Closed** 8/21/2007	Dirt onto sidewalk and into roadway	Observed as in Complaint Description	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove dirt from sidewalk and gutter; install perimeter protection. **Follow-up Actions** Photo verify **Actions completed** Area clean - a rock border has been placed - monitor for discharge and determine if refinement is necessary

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-015 **Type** Residential **Location Address** 395 Anns Way **Watershed** Buena Vista Creek **Call Date** 8/15/2007 **Case Closed** 8/30/2007	Eroding street and dirt discharge	Private issue - New home construction at 395 Ann's Way used Delta Lane as construction access. Complainant stated construction traffic eroded street. I spoke with Engineering Inspector who stated street was in poor condition prior to construction and is a private road. Therefore, it is a private issue between property owners. I contacted complainant and explained City stance on street.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private property/ private issue **Follow-up Actions** None **Actions completed** None
SW No. MISC 0708-010 **Type** Residential **Location Address** 1612 Warmlands **Watershed** Buena Vista Creek **Call Date** 8/17/2007 **Case Closed** 8/17/2007	Discharging pool water onto property and also pool filter	Private issue on private property	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private Issue **Follow-up Actions** Private Issue **Actions completed** Private Issue
SW No. MISC 0708-016 **Type** Residential **Location Address** 1205 N. Sana Fe, Sp #44 **Watershed** Buena Vista Creek **Call Date** 8/30/2007 **Case Closed** 9/5/2007	Discharge of fluids and trash accumulation.	The area in front of the mobile home -Sp 44- had fluids noteable. None had reached any outlet but remained in park ground. (Surrounding the home was excessive storage of furniture and junk. I contacted part owner and requested tenent cease further discharge.)	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private issue **Follow-up Actions** Private issue **Actions completed** Private issue

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-019 **Type** Residential **Location Address** 2220 Eastbrook Rd **Watershed** Agua Hedionda Creek **Call Date** 9/26/2007 **Case Closed** 9/26/2007	Washing off vehicle engine.	Code Enforcement Officer and Stormwater Code Enforcement Officer spoke with child sitter. No washing took place of vehicle in driveway. No water residue.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Code Enforcement for vehicle on jacks. **Follow-up Actions** None **Actions completed** None required
SW No. MISC 0708-025 **Type** Residential **Location Address** 900 blk of Heather **Watershed** Buena Vista Creek **Call Date** 9/27/2007 **Case Closed** 9/27/2007	Pressure washing pool plastering equipment.	I spoke with the site foreman for Gardner Pool Plastering. I requested the discharge to cease and the employees stopped. I asked to speak to the supervisor and got a phone number, called him and explained the necessity to reclaim.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge - reclaim in the future. **Follow-up Actions** Contact supervisor **Actions completed** Supervisor contacted
SW No. MISC 0708-022 **Type** Residential **Location Address** 2604 Coronado **Watershed** Agua Hedionda Creek **Call Date** 9/28/2007 **Case Closed** 10/2/2007	Pressure washing roof and not reclaiming discharge	Red tile particles were discharged to inlet.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove discharge and implement BMPs for future pressure washing. **Follow-up Actions** Photo verify **Actions completed** Area cleaner. I spoke with property owner and also left message with contractor to request stormwater prevention alternatives in the future.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-024 **Type** Residential **Location Address** Hutchinson & Blackwell **Watershed** Buena Vista Creek **Call Date** 10/2/2007 **Case Closed** 10/2/2007	Property owner raking manure into drainage swale.	Complainant stated property owner has 5 horses and rakes manure to Hutchinson side and allows it to go down a 3-4' embankment and into natural drainage ditch.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to County Stormwater Hotline. **Follow-up Actions** Gave complainant the HOTLINE # and suggested he call also. **Actions completed** Referred to County Stormwater Hotline.
SW No. MISC 0708-028 **Type** Residential **Location Address** 2384 Foothill Ranch Rd. **Watershed** Buena Vista Creek **Call Date** 10/15/2007 **Case Closed** 10/18/2007	Property owner concerned about her drainage on property.	I met with property owner, Re: the natural drainage course through her property. Her concern is drainage being blocked at City street. After research with Engineer, this area will be developed when west side property owner begins development (that may be a while).	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Maintain clear drainage path **Follow-up Actions** None **Actions completed** Area is cleaned regularly.
SW No. MISC 0708-027 **Type** Residential **Location Address** 1868 Autumn Ln **Watershed** Buena Vista Creek **Call Date** 10/16/2007 **Case Closed** 10/16/2007	Diamataceous earth discharge on possibly 10/14/07.	Area still shows some white powdery residue, but not originating to one location.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease future backwash on pool filters and disharging it to storm drain system. **Follow-up Actions** Monitor **Actions completed** Monitor

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-026 **Type** Residential **Location Address** 1619 Montgomery Dr. **Watershed** Buena Vista Creek **Call Date** 10/30/2007 **Case Closed** 11/1/2007	Couch in street and water discharging from pipe.	Area is in County. I contacted complainant and directed her to County, VID (Vista Irrigation District) and Sheriff's Dept.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Contact County, VID, and Sheriff's as necessary **Follow-up Actions** None **Actions completed** None
SW No. MISC 0708-034 **Type** Residential **Location Address** 635 Tatum **Watershed** **Call Date** 11/21/2007 **Case Closed** 11/21/2007	Smelly discharge	No such addess. I drove up Cocapah St. onto Onley Dr. and down Tatum St. No discharge found,	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Unfounded **Follow-up Actions** Unfounded **Actions completed** Unfounded
SW No. MISC 0708-036 **Type** Residential **Location Address** 1708El Dorado **Watershed** Buena Vista Creek **Call Date** 12/3/2007 **Case Closed** 12/3/2007	Discharging red colored water into roadway	Property owner had contractor pressure wash a red tile roof. I spoke with property owner requesting reclamation.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge and reclaim. **Follow-up Actions** Verify compliance **Actions completed** Contractor made preparations to reclaim further discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-035 **Type** Residential **Location Address** 2130 Sunset Dr. **Watershed** Buena Vista Creek **Call Date** 12/4/2007 **Case Closed** 12/4/2007	Tree cut down in creek area adjacent to Green Valley Mobile Home Park.	Private Property, Private Issue. Referred complainant to Park Manager.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private Issue / Private Property **Follow-up Actions** Private Issue / Private Property **Actions completed** Private Issue / Private Property
SW No. MISC 0708-039 **Type** Residential **Location Address** 1195 Miramar Dr. **Watershed** Agua Hedionda Creek **Call Date** 12/6/2007 **Case Closed** 12/7/2007	Mud off property due to pool construction.	Mud/sediment has edged to sidewalk and off to road.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove mud/sediment and protect further discharge **Follow-up Actions** Photo verify **Actions completed** Area swept and clean, dirt lowered at sidewalk edge.
SW No. MISC 0708-040 **Type** Residential **Location Address** 1303 Barbara Dr **Watershed** Buena Vista Creek **Call Date** 12/18/2007 **Case Closed** 12/19/2007	Mud collecting in front of 1303 Barbara Dr.	Area is County but next door, at 1311 Santa Barbara, area is City. No sediment discharge was noted at 1311 Santa Barbara.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None private property issue, area in County **Follow-up Actions** None **Actions completed** None needed

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-041 **Type** Residential **Location Address** 1653 Mesa Verde Dr. **Watershed** Buena Vista Creek **Call Date** 12/19/2007 **Case Closed** 12/21/2007	Pouring paint in lot next to next to 1653 Mesa Verde Dr.	Unfounded - I walked the area near 1653 Mesa Verde and no paint was noticeable.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Unfounded **Follow-up Actions** Unfounded **Actions completed** Unfounded
SW No. MISC 0708-043 **Type** Residential **Location Address** 109 Woodland Dr. **Watershed** Agua Hedionda Creek **Call Date** 12/26/2007 **Case Closed** 12/26/2007	Discharging grease onto ground and not removing it.	House yard has numerous vehicles in various stages of disrepair. Dirt is dark, like grease spills. I photographed area and referred this to the County by e-mail (with photos).	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to County **Follow-up Actions** None - County area **Actions completed** Referred to County.
SW No. MISC 0708-045 **Type** Residential **Location Address** 1353 Bluegrass Rd **Watershed** Buena Vista Creek **Call Date** 1/8/2008 **Case Closed** 1/8/2008	Washing engines and painting cars.	I contacted City Code Enforcement Officer to accompany me. Resident was in the process of cleaning his personally owned vehicle. A paint spray booth was set up in the driveway. A friend was spray painting the body of a car. The Code Enforcement Officer stated code requirements and requested the property owner to move the vehicle inside the garage.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease any further discharge. **Follow-up Actions** Monitor **Actions completed** He stated he would contain all runoff.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-046 **Type** Residential **Location Address** Moa Dr. **Watershed** Buena Vista Creek **Call Date** 1/14/2008 **Case Closed** 1/18/2008	Oil on pavement.	1/18/08. vehicle (in photo) not in the vicinity. After some investigation an approximation of the location showed two grease/oil spots, but faded. Either the oil absorbed into the pavement or it had been removed. Unable to determine violator as vehicle was not at location (as shown in photos brought in by complainant).	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Monitor area. **Follow-up Actions** Monitor area. **Actions completed** Monitor area.
SW No. MISC 0708-049 **Type** Residential **Location Address** 1803 Ithaca Dr **Watershed** Agua Hedionda Creek **Call Date** 2/7/2008 **Case Closed** 2/14/2008	Grease spill on roadway	Observed as described in Complaint Description. I spoke with the Foreman at the residence. A constructon project is active with contractors coming and going. A carpet estimator had a can of oil on the rear of his truck. Upon leaving the location, driving uphill, the oil can tipped and spilt onto the road. The property owner cleaned the area with Professional Absorb.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove oil **Follow-up Actions** Cat litter (Professional Absorb) was used. Visual verification **Actions completed** Cat litter (Professional Absorb) was used. Visual verification
SW No. MISC 0708-054 **Type** Residential **Location Address** 1336 Calera St **Watershed** Buena Vista Creek **Call Date** 2/11/2008 **Case Closed** 3/5/2008	Wash water discharging off property.	Washer situated under patio cover in mid driveway - not hooked up. Several appliances in driveway. Spoke with tenant. I requested no further discharge, obtain permit to plumb to sewer system or remove washer (s). 2/25/08, Property owner came to English/Spanish translation by Spanish speaking City employee. She understood inoperable washers were to be removed and no further discharge. 2/29/08, Washers still on site. Have City spanish speaking employee recontact her. 3/3/08, Contacted tenant, machines outside behind gate, tenant said he would take machines to "Yingst Iron Yard" tonight. Advised tenant that I would follow-up on Wed., 3/5/08. 3/5/08, Washer removed, photo verified.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove or plumb washer **Follow-up Actions** Photo verified **Actions completed** Wahers removed by tenant.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-051 **Type** Residential **Location Address** 1130 Prospect Pl **Watershed** Buena Vista Creek **Call Date** 2/20/2008 **Case Closed** 2/20/2008	Sediment from one property to another	I contacted the complainant and explained that it is a private property, private issue.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None needed - Private Property/Private Issue **Follow-up Actions** None needed - Private Property/Private Issue **Actions completed** None needed - Private Property/Private Issue
SW No. MISC 0708-052 **Type** Residential **Location Address** 300 Block of Huff St. **Watershed** Buena Vista Creek **Call Date** 2/25/2008 **Case Closed** 2/29/2008	Excessive water leaking / discharging into street.	Some water discharge from curb-coring irrigation pipes into street. Appears to be rain water (clear) run-off from hillside to the east dumping onto these properties.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None **Follow-up Actions** Monitor area and re-check in a few weeks to see if dry. Photo verify. **Actions completed** Monitor when in the area.
SW No. MISC 0708-070 **Type** Residential **Location Address** 1626 Rush Ave **Watershed** Buena Vista Creek **Call Date** 2/29/2008 **Case Closed** 4/7/2008	Overwatering with discharge of water into street.	Observed as in Complaint Description. Photos taken on 2/29/08. 3/12/08, lower drain pipe and utility pole dry. Upper drain near driveway and address sign still wet and draining.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Correct excessive water discharge (due to overwatering) from flowing into street **Follow-up Actions** Photo verify and recheck during dry season. 3/14/08, area dry. Photos taken. 4/7/08, area still dry. Photos taken. **Actions completed** No longer overwatering. Area is dry.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-059 **Type** Residential **Location Address** 525 & 527 Rancho Vista Rd **Watershed** Buena Vista Creek **Call Date** 2/29/2008 **Case Closed** 3/17/2008	Sediment discharge into road and storm drain.	Evidence of possible discharge from behind landscape retaining barrier (broken); gravel and sediment, also evidence of gravel/sediment discharge from area adjacent to driveway (west of driveway).	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair landscape retaining board to prevent further discharge. Suggest something more permanent (stronger). Clean/prevent discharge from area near driveway and establish BMPs. 3/12/08, area swept but board not repaired. Photos taken. 3/13/08, Telephoned property owner. Requested that they repair board and prevent further discharge and also keep driveway easement swale clear of debris and vegetation. Property owner stated that he will get there tonight and tomorrow (he lives in Riverside) to **Follow-up Actions** Photo verify. **Actions completed** BMPs in place. Landscape barrier repaired to hold back soil. Large ceramic pots to barricade area from further vehicle damage. Area swept clean.
SW No. MISC 0708-066 **Type** Residential **Location Address** 447 Chad Ct. **Watershed** Buena Vista Creek **Call Date** 3/19/2008 **Case Closed** 3/31/2008	White pipe with hose at sidewalk	A retaining wall french drain section is laying on sidewalk. The wall may have failed and is under construction as area is covered in plastic. The area is dry. No one home at this address to question.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Prevent any water intrusion into system if polluted. **Follow-up Actions** None required as area is dry. **Actions completed** Possibly repair wall and incorporate pipe at base of wall.
SW No. MISC 0708-071 **Type** Residential **Location Address** 1366 Marabou Ln **Watershed** Buena Vista Creek **Call Date** 3/24/2008 **Case Closed** 4/9/2008	Green pool water.	As observed in Complaint Description. Fear that the homeowners may drain water before treating it.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Do not discharge green pool water into storm drain system. **Follow-up Actions** Photo verify **Actions completed** Pool water clear.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-063 **Type** Residential **Location Address** 230 Grapevine **Watershed** Buena Vista Creek **Call Date** 3/25/2008 **Case Closed** 3/26/2008	Fluid leaking from vehicle.	Blue Mazda Miata was leaking antifreeze. I spoke with vehicle owner. She stopped the leak with a towel. I requested cat litter or professional absorbant material to remove remaining fluids.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and remove fluids. **Follow-up Actions** Photo verify **Actions completed** Professional absorbant material was used to remove remaining fluid on pavement - no leaks were visible.
SW No. MISC 0708-076 **Type** Residential **Location Address** 1106 Vista Bonita Dr. **Watershed** Buena Vista Creek **Call Date** 3/27/2008 **Case Closed** 4/21/2008	Wall construction material is blocking sewer access.	Monitored area. Material is being relocated.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove wall construction material **Follow-up Actions** Photo verify **Actions completed** Wall material relocated.
SW No. MISC 0708-069 **Type** Residential **Location Address** 1720 Rush Ave. **Watershed** Buena Vista Creek **Call Date** 4/3/2008 **Case Closed** 4/3/2008	Water flowing from irrigation pipe in driveway, down curb/gutter for 3 blocks.	Observed water flowing down curb/gutter in 1600 block of Rush Ave., followed to 1720 Rush Ave. Found hose, faucet was left on and water flowing.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Use care when watering plants so as not to overwater. Do not leave hose running when away. **Follow-up Actions** Unscheduled intermittent checks for compliance. **Actions completed** Received return phone call from property owner. She will use more care when watering. She mentioned this incident was accidental.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-072 **Type** Residential **Location Address** 1357 Marabou Ln **Watershed** Buena Vista Creek **Call Date** 4/15/2008 **Case Closed** 4/16/2008	Subject mows the lawn and picks weeds and dumps clippings in curb/gutter of street for street sweeper to pick-up.	Confirmed as noted in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation debris and dirt from City right-of-way by 4/16/08. Contacted property owners's adult son who admitted violation and took responsibility to correct. **Follow-up Actions** Photo verify. **Actions completed** Area cleaned. Corrective action was taken.
SW No. MISC 0708-075 **Type** Residential **Location Address** 1260 Winchester Ct. **Watershed** Buena Vista Creek **Call Date** 4/16/2008 **Case Closed** 4/17/2008	Car fluids, oil, grease on driveway.	Confirmed as in Complaint Description. There are two small spills of car fluids in driveway. Left business card and requested that they contact us.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clean oil, grease and car fluids from driveway using the dry sweep method. Do not use water unless it is reclaimed. **Follow-up Actions** Photo verify **Actions completed** Driveway cleaned.
SW No. MISC 0708-078 **Type** Residential **Location Address** 1266 Winchester Ct **Watershed** Buena Vista Creek **Call Date** 4/23/2008 **Case Closed** 4/25/2008	White Dodge Caravan in street in front of residence is leaking/dripping motor oil.	Confirmed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clean oil and car fluids using dry method, unless water is reclaimed. **Follow-up Actions** Photo verify **Actions completed** Area cleaned, vehicle in driveway with a drip pan under it.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-079 **Type** Residential **Location Address** 1836 Goodwin Dr. **Watershed** Buena Vista Creek **Call Date** 5/1/2008 **Case Closed** 5/8/2008	Trailer in driveway leaking fluids into street	5/5/08, evidence of trailer leaking unknown fluids (stains on driveway). Also, observed older Jeep in driveway leakng oil, grease and car fluids onto driveway. Photos taken	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Contacted property owner and explained violations; illegal storage of wastes and illegal discharge. Remove or cover trailer, clean driveway using dry sweep method and repair Jeep using drip pan in interim. Property owner showed receipt for gasket to repair vehicle. **Follow-up Actions** Photo verify. **Actions completed** Trailer covered securely with tarp and driveway cleaned. No evidence of leaks from Jeep.
SW No. MISC 0708-083 **Type** Residential **Location Address** 1991 Cambridge Ct. **Watershed** Agua Hedionda Creek **Call Date** 5/8/2008 **Case Closed** 5/15/2005	Toilet tissue in driveway and street from recent private lateral spill. Also, dog poop in yard. Proactive - as observed by City employee.	Observed as in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Dry sweep debris from driveway and street. Pick up dog waste. **Follow-up Actions** Photo verify **Actions completed** Area swept clean. Dog waste removed.
SW No. MISC 0708-084 **Type** Residential **Location Address** 414 Escondido Ave **Watershed** Buena Vista Creek **Call Date** 5/13/2008 **Case Closed** 5/15/2008	Proactive/observed by City employee. Sediment discharge from denuded soil on property onto City right-of-way/sidewalk and into City curb/gutter conveyance system.	As described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Sweep clean sediment discharge. Maintain BMPs. Suggested to vegitate denuded area. **Follow-up Actions** Photo verify **Actions completed** Area was cleared of sediment discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-080 **Type** Residential **Location Address** 706 Monterey Ln **Watershed** Buena Vista Creek **Call Date** 5/13/2008 **Case Closed** 5/13/2008	Contractor is running water in area of 714 Monterey Ln. Water flowing down curb/gutter to drain inlet.	Pool contractor is draining pool (Poolscape Unlimited). Contacted the Foreman on the job, water appeared clear. Tested water, was dechlorinated and no signs of algae- tested ok.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None. N/A Exception to the prohibition in City of Vista Municipal Code, Section 13.18.050 to the Maximum Extent Practicable by State Law. **Follow-up Actions** None. N/A **Actions completed** None - complaint unfounded. Exception to City of Vista Municipal Code Section 13.18.050.
SW No. MISC 0708-089 **Type** Residential **Location Address** 329 Selmalita Terr. **Watershed** Buena Vista Creek **Call Date** 5/14/2008 **Case Closed** 6/2/2008	Pro-active	Possible washing machine connection hooked up on side yard with evidence of gray water being dischared under north fence and into apartment complex slope and down to driveway. 5/15/08, Contacted tenant; dirty water was due to plumbing problem in laundry room wash basin/sink.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Don't use backed-up sink in laundry room area until it can be repaired by plumber. Tenant will recontact property owner for repair and will relay my information to property owner. **Follow-up Actions** Photo verify **Actions completed** Washing maching removed from front yard and plumbed in laundry room.
SW No. MISC 0708-087 **Type** Residential **Location Address** 1360 Palomar Pl **Watershed** Buena Vista Creek **Call Date** 5/15/2008 **Case Closed** 5/28/2008	Water running down curb and gutter from Palomar Pl. & Monique Ct. Possible pressure washing per Public Works employee. He observed water all the way to E. Vista Way.	Followed water to an apartment complex at 1360 Palomar Pl. Extensive irrigation of common areas causing run-off.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Contacted the on-site Manager. She stated that she would contact the property management to adjust sprinklers and shorten duration for watering. **Follow-up Actions** Photo verify - Contact property owner. **Actions completed** Area dry. No sighs of run-off.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-088 **Type** Residential **Location Address** 605 Townsite Dr **Watershed** Buena Vista Creek **Call Date** 5/27/2008 **Case Closed** 5/29/2008	Washer discharge hose protruding through window to exterior	I spoke with Parks Dept. employee and he stated he has witnessed washer water discharging from pipe protruding from window.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge; remove hose from window and discharge wash water to sanitary sewer. **Follow-up Actions** Photo verify **Actions completed** Hose removed from window. Forwarded to Code Enforcement Dept.
SW No. MISC 0708-095 **Type** Residential **Location Address** 2505 Coronado Pl **Watershed** Agua Hedionda Creek **Call Date** 6/17/2008 **Case Closed** 6/19/2008	White substance originating from 2505 Coronado Pl .	Observed as in Complaint Description. White substance has been discharged down to 2571 Coronado Pl. and entered storm drain inlet. Appears powdery and can be reclaimed.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove white substance from 2505 to 2571 Coronado Pl. **Follow-up Actions** Photo verify **Actions completed** White substance removed.
SW No. MISC 0708-096 **Type** Residential **Location Address** 653 Townsite Dr. **Watershed** Buena Vista Creek **Call Date** 6/19/2008 **Case Closed** 6/24/2008	Pipe sticking out of dirt bank in front of residence with water/sediment discharged into street.	Confirmed as described in Complaint Description. Photo document. Contact resident on 6/23/08 at 10:55 a.m. Said the drain is from the back yard. Water is from empyting a childs pool.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Dry sweep method of street and driveway. Discussed BMPs (sweeping, vegitation/landscape, rip-rap, etc) **Follow-up Actions** Photo verify. **Actions completed** Area swept clean of sediment. BMPs in place (concrete swale). Will monitor for effectiveness.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-038 **Type** Construction **Location Address** S. Melrose @ Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 12/17/2007 **Case Closed** 12/17/2007	Pipe drainage flowing to storm drain	I contacted site construction inspector and we spoke with site superindendent. A filtered de-watering bag was draining an earthen swale on a construction site. Gravel bags were placed to slow down and trap water discharging to street. Water was running clear.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** BMP maintenance **Follow-up Actions** Verify compliance through visual inspection. **Actions completed** Implemented appropriate BMPs to filter water.
SW No. MISC 0708-048 **Type** Construction **Location Address** 400 Block of Plymouth Dr. **Watershed** Buena Vista Creek **Call Date** 2/5/2008 **Case Closed** 2/7/2008	Sediment discharging off construction site and parking lot.	Contacted superintendent at construction site and requested BMPs for erosion and dirt run-off	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Install BMPs; gravel, fiber rolls, etc….that are appropriate to the site. **Follow-up Actions** Visual and photo verify **Actions completed** Additional gravel was installed and some dirt removal done as well as sweeping.
SW No. MISC 0708-092 **Type** Construction **Location Address** Guajome @ Mercantile **Watershed** Buena Vista Creek **Call Date** 6/3/2008 **Case Closed** 6/11/2008	Lack of BMPs as reported by Regional Board.	I spoke with an Engineering Inspector. He spoke with site superintendent and stated that area is to be secured. A Field Notice was issued by Engineering Inspector.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Secure site and maintain BMPs continually. **Follow-up Actions** Site secured. **Actions completed** Plastic cover over remaining stock piles and fiber rolls on perimeter of site.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-017 **Type** Other **Location Address** N. Santa Fe @ North Ave **Watershed** Buena Vista Creek **Call Date** 9/10/2007 **Case Closed** 9/10/2007	Truck discharging fluids onto roadway and not containing spill.	Observed as in Complaint Description. I spoke with company representative and owner. I requestes his trucks that enter Vista have spill kits on board. They stated they would have spill kits on trucks.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, contain spill and remove fluids. **Follow-up Actions** verify **Actions completed** Area clean
SW No. MISC 0708-018 **Type** Other **Location Address** Phillips and Escondido Ave **Watershed** Buena Vista Creek **Call Date** 9/12/2007 **Case Closed** 9/13/2007	Dirt in roadway from construction site.	City Construction Inspector wrote a correction notice to remove dirt from roadway.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove dirt from roadway **Follow-up Actions** verify that area is clean **Actions completed** Area clean
SW No. MISC 0708-020 **Type** Other **Location Address** 685 W. Taylor **Watershed** Buena Vista Creek **Call Date** 9/25/2007 **Case Closed** 9/27/2007	Dumping and dirt stock piling.	Observed as in Complaint Description. Located in County	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to County **Follow-up Actions** Contact complainant and gave information to County referral **Actions completed** Referred to County

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-030 **Type** Other **Location Address** 1130 E. Taylor St. **Watershed** Buena Vista Creek **Call Date** 10/30/2007 **Case Closed** 10/31/2007	Irrigation sprinkler broken	I contacted the Reverend of the Samoan church. He was speaking with the landscapers to repair line.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line **Follow-up Actions** Verify sprinkler was repaired **Actions completed** No water was flowing from sprinkler head.
SW No. MISC 0708-032 **Type** Other **Location Address** Townsite @ E. Vista Way **Watershed** Buena Vista Creek **Call Date** 11/8/2007 **Case Closed** 11/8/2007	Water from pipe running into gutter	AT&T was flushing a manhole vault. The water was clear (a sample was taken by workers). I requested procedure information and authorization to flush vault. A protocal sheet listed a WDID# . I was also given the name and number of the supervisor. I also contacted Traffic Dept. regarding volume across traffic.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None, however, asked AT&T to clear gutters down stream in the future. **Follow-up Actions** None **Actions completed** None
SW No. MISC 0708-042 **Type** Other **Location Address** Agua Hedionda-21 Monitor Site **Watershed** Agua Hedionda Creek **Call Date** 12/18/2007 **Case Closed** 12/19/2007	Greyish color in pools at outfall.	Rain event occurred prior to viewing location. Pictures taken during rain event indicate area clear of any discoloration.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Attempted to locate possible discharge and educate discharger. **Follow-up Actions** Monitor AH-21 by company contractor **Actions completed** I contacted City Engineering Technician for maps of possible dischargers; unable to locate any violations at business in area.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-047 **Type** Other **Location Address** 1531 Thibodo Rd **Watershed** **Call Date** 1/29/2008 **Case Closed** 1/30/2008	Septic spill	I spoke with tenant. Septic line was repaired and spill was on private property. Code Enforcement Officer and County Septic Officer also informed me of same.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None - Unfounded **Follow-up Actions** None required - all was referred to County. **Actions completed** None required.
SW No. MISC 0708-056 **Type** Other **Location Address** 1518 Monte Vista Dr. **Watershed** Buena Vista Creek **Call Date** 3/4/2008 **Case Closed** 3/11/2008	Leaking septic tank.	I contacted County Septic. She visited site and found nothing leaking	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Unfounded **Follow-up Actions** Unfounded **Actions completed** Unfounded
SW No. MISC 0708-081 **Type** Other **Location Address** 900 Blk of Sierra Verde Dr. **Watershed** Buena Vista Creek **Call Date** 4/15/2008 **Case Closed** 5/14/2008	Encampment with trash, debris, clothing, etc..in storm drain.	Confirmed as stated in Complaint Description.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Code Enforcement, illegal camping. Public Works to clean easement area per City of Vista Right-of-Way Agent. **Follow-up Actions** Photo Verify **Actions completed** Area cleared of trash, debris, clsothing, blankets, etc.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-082 **Type** Other **Location Address** Gateway Dr. @ Shadowridge Dr. **Watershed** Agua Hedionda Creek **Call Date** 4/30/2008 **Case Closed** 5/15/2008	Irrigation runoff (dischrage) into gutter (stormwater conveyance system) possibly due to over watering.	Observed as in Complaint Description with evidence of sediment discharge as well.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Dry sweep sediment on sidewalk. Install BMPs to Maximum Extent Practicable **Follow-up Actions** Photo verify. **Actions completed** Area cleaned of sediment discharge. No additional signs of over watering.
SW No. MISC 0708-085 **Type** Other **Location Address** 650 Sycamore Ave. **Watershed** Buena Vista Creek **Call Date** 5/13/2008 **Case Closed** 5/27/2008	Landscape waste blocking water course and palm tree (fan palm) growing in water course (near bridge to parking lot area) impeding water flow.	Landscape waste (tree clippings) and palm tree in the water course; however, no signs of significant impediment to water flow.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Request removal of landscape waste during next scheduled maintenance clean-up of water course. Complaint unfounded; however, because no signs of significant impediment to water flow. **Follow-up Actions** Photo verify **Actions completed** Landscape waste was removed from water course.
SW No. MISC 0708-094 **Type** Other **Location Address** Frances Dr. & E. Vista Way **Watershed** Buena Vista Creek **Call Date** 6/17/2008 **Case Closed** 6/17/2008	Mud and water cascading off Frances onto E. Vista Way.	Vista Irrigation District on scene. A pipe burst at the top of Frances Dr. washing sediment to E. Vista Way and curb/gutter and into inlet. Gravel bags at inlet.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Vista Irrigation District to repair line and remove sediment **Follow-up Actions** Photo verify **Actions completed** Area mud removed and line repaired. New asphalt placed on street.

APPENDIX K

Regional Residential Education Plan

Regional URMP Attachment 2.0

Regional Residential Education Plan

FINAL – March 20, 2008

Submitted by the San Diego Stormwater Copermittees in partial fulfillment of the requirements of San Diego Regional Water Quality Control Board Order No. R9-2007-0001 (the San Diego Municipal Stormwater Permit)

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1.0 INTRODUCTION

The Regional Residential Education Program is a joint effort by the Copermittees of the Municipal Stormwater Permit (Order No. R9-2007-0001, NPDES No. CAS0108758). The Regional Residential Education Plan (Plan) contains recommended strategies for the successful development and implementation of the Regional Residential Education Program. Per section F.1 of the Permit, as amended by Addendum No. 1 on December 12, 2007, this program must be collaboratively developed and implemented by March 24, 2008.

In the past, Copermittees have been limited in their ability to pursue strategies which may have a much greater potential to influence knowledge and behavioral change in residential populations. There are several benefits to implementing an enhanced regional program to target residential sources of stormwater pollution. First, it will encourage the development of consistent messages throughout the region. Second, a regional approach will enable Copermittees to better leverage resources and utilize economies of scale. Finally, stormwater and urban runoff pollution frequently cross jurisdictional boundaries, making collaborative approaches a necessity. While the regional program will be coordinated extensively among the Copermittees, it is not meant to supplant the jurisdictional and watershed programs.

The overall goals of the program are to increase awareness and knowledge, improve attitudes toward stormwater pollution and provide a foundation for changing behaviors that contribute to stormwater pollution. Based on extensive input from the Copermittee Regional Stormwater Management Committee (RMC) and the Education & Residential Sources Workgroup, as well as an independent analysis of existing educational efforts, the following objectives were developed to support these goals:

1. Maintain a consistent image, message, and brand
2. Use positive messages to increase knowledge and awareness, and ultimately change behavior
3. Develop community partnerships to leverage resources

4. Develop assessment strategies for program effectiveness

The Regional Education & Residential Sources Workgroup advises the RMC on regional shared outreach activities as necessary to support the requirements of the Permit. The Education & Residential Sources Workgroup plans, develops, and implements the various aspects of the stormwater education program. Education & Residential Sources Workgroup participants have traditionally combined efforts to reach business, industrial, and residential communities across the San Diego region. However, in accordance with the most recent NPDES Permit, this Plan represents a distinct effort to target residential sources of stormwater pollution.

Messages developed by the Education & Residential Sources Workgroup are designed to increase knowledge and awareness of regional stormwater issues and encourage positive changes in behavior. Assessment methods and measures have also been developed to evaluate the effectiveness of these messages and the strategies used to deliver them. Program evaluation methods and strategies will evolve as various program elements are implemented. Regional assessment methods will measure knowledge, awareness, and attitudes of residents. Program elements that are determined to be ineffective or least effective will be replaced by more effective elements or improved upon as needed. The regional program will also facilitate the measurement of changes in pollutant generating behaviors by the jurisdictional and watershed programs.

As a basis for developing this Regional Residential Education Plan, the Copermittees contracted with TRG & Associates to develop *Recommended Options for the San Diego Regional Stormwater Educational Program*. This document contains a number of recommended strategies for the successful development and implementation of a regional residential education program. It includes an extensive literature review, an analysis of existing educational programs in San Diego, and a comprehensive list of public awareness surveys. The literature review outlines other programs in the State that have

successfully implemented regional residential stormwater education programs. The document also summarizes the strengths and weaknesses of existing residential education efforts, provides suggestions for how they can be improved, provides a brief analysis of baseline public awareness surveys that have been implemented locally within the last five years, and offers recommendations for improving assessment methods and survey instruments.

2.0 SOURCE CHARACTERIZATION

The San Diego region occupies 4,261 square miles with a population of approximately 3 million people. Estimates for the year 2007 indicate that the San Diego regional population is 29% Hispanic and 71% non-Hispanic. Non-Hispanic persons include African Americans, American Indians, Native Hawaiians, Asians, and persons of a multitude of races, ethnicities, and cultures. SANDAG currently estimates that the median household income in the San Diego region is $68,388. According to the US Census Bureau in 2004 only 10.9% of San Diego's population was living below the poverty level, compared to 13.2% Statewide. Other estimates indicate that as much as 25% of California's population is living below the poverty level. Much of the region's quality of life revolves around the water resources.

Residential areas have been shown to be a prevalent source of urban runoff in the San Diego region, although less than ten percent of the region is developed as residential land. Most of the urban activity is clustered in the western third of the county, near coastal areas. However; residential land–based activities throughout the entire region contribute to polluted stormwater runoff.

The Regional Residential Education Program will focus efforts on high priority residential pollution sources that are common throughout the San Diego region. Water quality monitoring data and source characterization studies have provided the Copermittees with useful information in determining regional residential sources of stormwater pollution and constituents of concern. Regional threats to water quality were initially outlined in the Report of Waste Discharged and finalized in the Permit. Section

F.1.a of the Permit describes the process for determining which pollutants will be addressed by the program.

2.1. Regional Constituents of Concern

The following constituents of concern were determined to be the primary pollutants from residential sources for the San Diego region:

- Bacteria
- Nutrients
- Sediment
- Pesticides
- Trash

Some jurisdictions may have additional high priority pollutants. Each jurisdiction will be individually responsible for addressing additional pollutants and their sources. The pollutants listed above will remain the focus of the Regional Residential Education Program.

2.2. Pollutant-generating Activities and Constituents of Concern

Table 1 outlines residential pollutant generating activities and associated constituents of concern generated by residential areas in the San Diego region.

Table 1) Pollutant Generating Activities

Pollutant Generating Activities	Priority Constituents				
	Bacteria	Nutrients	Pesticides	Sediments	Trash
• Leaving pet waste in yard, street or sidewalk • Improper disposal of pet waste	X	X			
• Over-irrigation • Improper irrigation and system maintenance	X	X	X	X	
• Fertilizer use • Pesticide use • Landscaping activities	X	X	X	X	
• Cleaning outdoor impervious surfaces (i.e., driveways and patios)	X	X		X	X
• Improper waste disposal	X	X	X	X	X

2.3. Target Audiences

As described above, this program is intended to address the entire residential community of the San Diego region. This residential audience will be further described in terms of two specific target audiences in order to design more effective education and outreach strategies. The target audiences for the Regional Residential Education Program have been identified based on information gathered by the consultant (TRG and Associates), who utilized data from market research conducted by the County and City of San Diego and surveys gathered from other case studies. Although there may be other smaller groups of target audiences, regional outreach must realistically target the highest priority demographics in order to effectively utilize program funds. The following describes the target audiences for the campaign:

1. Primary Target Audience- English speaking residents and homeowners
2. Underserved Target Audience- Spanish speaking communities and Low Socio-Economic Status (SES)

One of the challenges of program implementation will be to develop messages that appeal to these communities. While creating content and developing materials for the primary target audience may be relatively straightforward, methods and approaches will need to be modified in order to engage the Underserved Target Audience. For example; some messages will be more conducive to translation into the Spanish language than others. Once translated, Spanish language media will be used to disseminate these messages.

According to the US Census Bureau, 33% of San Diego County residents speak a language other than English at home (2000). The same data indicates that 26.7 % of the regional population is Hispanic or Latino. Although this number varied within jurisdictions from 49.5% in Chula Vista to 11.7% in Carlsbad, it is clear that every jurisdiction in the region has significant populations of Hispanic or Latino residents. Therefore, although there are many languages spoken in San Diego, Spanish speaking communities are likely the most common throughout the region.

Research indicates that the motivating factors in Spanish speaking communities are 1) health and commitment to family, 2) children, and 3) finances. Similar priorities are found within the low SES communities. Hence, some messages will resonate more strongly with the communities among the Underserved Target Audience. Other messages may need to be modified in order to create a more appealing campaign. Low SES in California is defined as household annual income less than $25,000. Low SES residents tend to obtain information and resources from different sources than the residents within the Primary Target Audience. Again, message delivery becomes a key issue. In order to address all of these issues, specific outreach strategies will need to be developed in order to effectively reach the Underserved Target Audience.

3.0 TARGETED CHANGES TO KNOWLEDGE, AWARENESS AND BEHAVIOR

The overall goals of the Regional Residential Education Program are to raise the levels of knowledge and awareness with regards to stormwater pollution among residents, while encouraging changes to behaviors that are harmful to San Diego's waterways. The program will generally educate residents on 1) The difference between stormwater conveyance systems and sanitary sewer systems 2) the connection of storm drains to local waterways and 3) common residential sources of urban run-off. These are the general knowledge and awareness concepts upon which more specific messages will be built.

Recent research indicates that many residents do not understand that storm drains and sanitary sewer systems are completely separate. While sewage is treated, everything that goes down a storm drain goes directly to a creek, bay, or the ocean. The City of San Diego conducted a public opinion survey in 2007 in which 91% of respondents said they had heard the term "storm drain" before. However, only 46% knew that the water entering storm drains is not treated. This is a fundamental stormwater pollution prevention issue and general awareness concept. Awareness of the stormwater conveyance system is the first step towards understanding pollution prevention. Increasing knowledge and awareness that the system leads directly to local waterways will help residents to understand that urban sources of pollution have a direct effect on water quality. The awareness and knowledge of these issues are precursors to adjustments in attitudes (i.e.: increased concern for preventing this type of pollution).

Ultimately, it is anticipated that the program's targeting increased awareness and knowledge of these concepts will lead to positive changes in attitude. Furthermore, improved attitudes toward the importance of stormwater issues can provide motivation for changing pollutant generating behaviors.

In keeping with the program goals, the Copermittees have agreed on a number of positive behavior outcomes for each stormwater issue presented to the target audience. Pollutant generating activities are listed in Table 2, along with the knowledge required to understand the significance of the stormwater impacts. Also listed are numerous examples of desired behavior outcomes. Since it may not be feasible to craft messages that address each of the desired behavior outcomes listed in Table 2, some behaviors may be considered primary and targeted before others. Secondary behaviors will be targeted only if the initial efforts are determined to be unsuccessful. It is important to recognize that the Copermittees agreed on these issues and the associated behaviors, and some may wish to further utilize the concepts listed in Table 2 in their jurisdictional and/or watershed programs.

Table 2) Pollutant Generating Activities and Examples of Positive Behavior

Pollutant Generating Activities	Knowledge/Awareness	Examples of Desired Behavior Outcomes
• Leaving pet waste in yard, street or sidewalk • Improper disposal of pet waste	Pet waste left in the yard and streets may introduce solids, bacteria, and nutrients to the storm drain and/or receiving water bodies.	• **Pick up pet waste during walks** • Pick up pet waste around home • **Properly dispose of pet waste in trash can or bin**
• Over-irrigation • Improper irrigation and system maintenance	Over-irrigation causes water and pollutants in its path to run into the storm drain and/or receiving water bodies.	• **Reduce over-irrigation** • Use irrigation controller technology to reduce the amount of over-watering • **Inspect and maintain irrigation system regularly** • Adjust irrigation schedule according to seasonal changes
• Fertilizer use • Pesticide use • Landscaping activities	Fertilizers and pesticides become pollutants that can be harmful to natural ecosystems when entering receiving water bodies. Soil, sediment, and yard waste can clog storm drains and/or receiving water bodies.	• Use plants that reduce the need for fertilizers (i.e.: native plants) • Apply chemical fertilizers and pesticides only as needed and at the appropriate time • **Use organic or slow-release fertilizers** • **Use Integrated Pest Management** • Store chemicals inside in a shed or storage cabinet where they are protected from rainfall • **Collect grass clippings and yard waste** • **Dispose of grass clippings and yard waste in the proper containers** • Protect exposed soil from rain with a tarp, vegetation, and/or mulch
• Cleaning outdoor impervious surfaces (i.e.: driveways and patios)	When it rains, trash, dirt, and chemicals that have built up on these surface can run into the street, the storm drain, and eventually local waterways.	• **Clean driveways, walkways, and patios by sweeping instead of hosing** • Direct wash water to soak in to lawn or garden
• Improper waste disposal	Litter and debris dropped on the ground will be washed into storm drains and local water bodies.	• **Put litter and cigarette butts in trash cans or bins** • Keep lids closed on trash cans or bins

Although many positive behaviors have been identified that may be encouraged by the messages developed in this program, the following have been selected as the primary desired behaviors to result from the changes to knowledge, awareness, and attitudes:

- Pick up pet waste and properly dispose of in trash can or bin
- Reduce over-irrigation by regularly inspecting and maintaining irrigation systems
- Reduce fertilizer use by applying chemical fertilizer only as needed and using organic or slow-release fertilizers
- Reduce chemical pesticide use through Integrated Pest Management
- Collect grass clippings and yard waste and place them in the appropriate disposal container in order to prevent them from entering the storm drain systems
- Sweep up outside areas such as driveways, walkways, and patios instead of hosing them down
- Put litter and cigarette butts in trash cans or bins

Specific messages will be designed to increase knowledge and awareness, and therefore encourage the behaviors listed above. Regional messages will be initially developed to address only the primary targeted behaviors. Once a baseline is established and program implementation is underway, Copermittees will have the opportunity to evaluate the knowledge, awareness, and willingness of the residential target audiences to adopt these behaviors. Other positive behaviors from Table 2 may also be substituted, if necessary.
It can reasonably be expected that the regional program will be able to measure success in terms of increasing knowledge and awareness, and improving attitudes, of residents.

Knowledge describes the accuracy of one's beliefs and awareness indicates recognition of the severity of the issues whereas attitude can be described as an individual's evaluation of it (favorable or unfavorable).

As a result of the regional efforts, Copermittees expect to see an increase in the general awareness of storm drain systems and their connection to local waterways, as well the sources of urban run-off. Specifically, residents should understand the difference between the stormwater conveyance system and sanitary sewer systems. They should become aware that water entering storm drains flows untreated to local waterways. Residents should also be able to accurately identify sources of stormwater pollution (i.e.: pet waste). Attitudes toward stormwater pollution should also improve. Ideally, there will be an increase in the numbers of households or individuals engaging in the desired behavior outcomes as a result of their increased knowledge and awareness. These targets will be measured using the assessment methods described in Section 6.0.

The primary assessment tool will be the public opinion surveys. A baseline regional residential telephone survey will be conducted in 2008 and, ideally, at one other point during the current permit cycle. The numeric objectives for survey results are set so that they exceed the statistical margin of error of 2.5 percent (assuming a sample size of 1000) so that if they are achieved, they will be statistically significant. In addition, the objectives are intentionally set high, with the understanding that they are intended as a point of reference rather than a pass/fail measure. With that in mind, Copermittees have set a target of a 10% change in knowledge that storm drains are separate from sanitary sewer systems, a 10% increase in the awareness that all storm drains are connected to local waterways, and a 15% increase in the number of participants who can identify residential sources of stormwater pollution.

4.0 EDUCATIONAL METHODS AND APPROACHES

A variety of methods and approaches will be utilized to implement the program objectives. As described above, the Regional Residential Education Program objectives are 1) to maintain a consistent image and brand 2) use positive messages to change behavior 3) develop community partnerships and 4) develop strategies to assess program effectiveness. The following regional program elements are designed to meet these objectives:

- Standardized Regional Brand (Think Blue)
- Regional Think Blue Website
- Mass Media (Broadcast and Outdoor)
- Regional Outreach Materials (Development and Distribution)
- Regional Outreach Event
- Partnerships
- Regional Stormwater Hotline
- Public Relations

Some of the elements are designed for program management whereas others are outreach methods. Program management elements include standardizing the Think Blue brand, message and material development, and partnership development. The program will have a multi-faceted outreach approach utilizing a regional website, mass media (broadcast and outdoor), public relations, printed materials and promotional items, and regional outreach such as a community event. Implementation of all the recommendations is dependent on funding for each year. Therefore, some activities may be feasible only if sufficient or additional funds are available in a given year.

4.1 Standardized Regional Brand (Think Blue)

The Think Blue campaign has created a locally recognizable brand that has demonstrated effectiveness in stormwater outreach. Expanding the brand to the regional program has obvious benefits for all of the Copermittees. With a consistent look and brand, the Copermittees can continue to conduct their own outreach; however they can use the Think Blue brand in conjunction with their materials for consistency. There will be a Think Blue Graphic Standards Guide that provides the correct fonts, colors and standards to be used for all outreach materials. This will help reinforce the Think Blue brand and provide standards for its use in messages and materials. Messages and materials may need to be continuously revised in order to keep current and effectively reach target audiences.

4.2 Regional Think Blue Website

A regional Think Blue website will help build upon and reinforce the branding strategy. The Internet is a powerful means of communication. Web sites can reach large audiences with relatively minimal effort. The regional website will be developed and maintained by a contractor. It could contain easy to download, user friendly information sheets, links to Copermittees websites, and short surveys or quizzes. The regional web site, along with the new logo and slogan, will increase program visibility.

4.3 Mass Media

Although the website is an important component of the outreach efforts, many residents still get the great bulk of their environmental messages from more traditional venues such as the television and radio (broadcast media). Public Service Announcements (PSA) and advertisements are the most common forms of broadcast media. Some PSAs have already been developed under the Think Blue campaign and through the combined efforts of the Copermittees. The Copermittees can utilize funds to expand or complement the existing Think Blue campaign. The public relations component will involve news coverage such as news stories, interviews, and event coverage. Public relations provide

valuable outreach opportunities that will be sought whenever possible. Outdoor media such as bus placards and billboards can also be utilized for outreach. The location of outdoor media advertisements will need to be carefully placed in order to reach the regional target audience.

4.4 Regional Outreach Materials and Community Events

Print materials and promotional items are critical items for successful outreach. Materials include items like fact sheets, brochures, flyers, booklets, coupon booklets, posters, and doorknob hangers. These materials are easily created and the target audience can refer to them repeatedly. Promotional materials are good for promoting the regional brand, increasing knowledge and awareness, and encouraging simple actions to prevent stormwater pollution. They will be designed to also serve as visual prompts that remind people to choose behaviors that protect and improve water quality.

A regional outreach event can be an energizing and successful venue for distributing outreach messages. Careful attention should be given to participating in a community event so that the effort reaches residents from the entire region. Extensive planning, material or display development, coordination, and marketing will be necessary in order to prepare for one successful regional outreach event. This is an endeavor that will involve identifying events that reach the entire region as well as coordinating, funding, and staffing the selected event. The Copermittees expect to participate in up to two regional events over the duration of this permit cycle. Some examples of regional events that may be considered are the San Diego County Fair, the Miramar Air Show, or a local sports venue.

4.5 Partnerships

Partnerships are both a management and outreach element of the program. A partnership is a voluntary collaboration of agencies, organizations, or other groups or individuals that have joined to work toward a common goal. The Copermittees can maximize resources through the use of partnerships. The potential for partnerships is immense for the

Copermittees. Potential partnerships include local water districts (combine conservation and pollution prevention messages), hardware stores and nurseries, pet stores, and Homeowner's Associations and Property Management Companies. Initial development of partnerships with businesses and business organizations, nonprofits, other government agencies, will be necessary before the full benefits can be realized. Copermittees may then encourage partners to distribute materials or spread messages through signage, advertising and websites. Partnerships will require time to develop and may not be fully recognized until later in the permit cycle.

4.6 Regional Stormwater Hotline

Although a regional stormwater hotline is already in place, successful outreach may lead to an increase in hotline calls. The regional hotline can also help the public gain access to information quickly and easily. The hotline will be promoted through the website, media advertising and other promotional venues. The number of calls to the hotline can be tabulated to help gauge whether some advertising is effective (if the call to action is a hotline call). Since the hotline will also be an important measure of program success, careful consideration will be given to managing the hotline as the program implementation moves forward.

4.7 Behavior Specific Outreach Methods

Table 3 lists the primary target behaviors for the program during this permit cycle. The table indicates which of the outreach methods described above may be utilized to deliver messages designed for each behavior. These were selected as the primary targets because they have current appeal. Primary target behaviors may be updated as program evaluation progresses. If necessary, resources may be reallocated to address the other (secondary) target behaviors previously listed in Table 2.

Table 3) Applicability of Outreach Methods to Primary Target Behaviors

Primary Target Behaviors	Potential Methods of Outreach						
	Website	Mass Media Broadcast	Mass Media Outdoor	Public Relations	Material Distribution	Partnerships	Regional Community Events
Pick up pet waste and dispose of in trash bin	X	X	X	X	X	X	
Reduce over-irrigation by regularly inspecting and maintaining irrigation systems	X			X	X	X	X
Apply chemicals to lawn and garden only as needed	X	X		X	X	X	X
Use organic or slow-release fertilizers	X	X		X	X	X	X
Collect grass clippings and dispose of them in the proper container	X				X		
Employ Integrated Pest Management	X	X	X		X	X	X
Sweep outside areas instead of hosing them down	X		X		X		
Put litter and cigarette butts in trash cans or bins	X			X	X	X	X

Specific messages will be developed to increase knowledge and awareness that will lead to each desired behavior outcome

4.8 Program Implementation

While the overall goals of the program are to educate the general public in order promote knowledge and awareness and decrease pollutant generating behaviors, a successful program will also require coordination among the Copermittees. Program planning and message development are key components of the program that will precede full implementation. Message delivery will be ongoing. Subsequently, as results from assessments are reviewed, messages and delivery methods will need to be revised. Therefore, there are essentially three steps in the program implementation process 1)

development, 2) implementation, and 3) assessment. For the purposes of this report, the development phase includes planning projects as well as developing materials and messages. Implementation includes initiating a program element (such as media outreach) as well as maintaining the ongoing nature of the element once it is in place. Assessment includes all levels of determining the effectiveness of program elements, as well as making revisions that reflect the knowledge gained through assessment.

Table 4 charts the schedule of program implementation over the 5-year permit cycle. Strategies to achieve these objectives will be implemented over the 5-year permit cycle. Because some upfront planning and development is necessary, the first year will focus on standardizing a regional brand, developing messages, and determining the most appropriate methods for disseminating messages on a regional scale (i.e.: a regional website). Copermittees may also begin fostering partnerships in the initial years of the program. Subsequent years will build on this foundation. Copermittees may decide to refine messages and could begin leveraging resources through partnerships.

Table 4) Projected General Implementation Schedule

Program Elements	Year 1: 2007-08	Year 2: 2008-09	Year 3: 2009-10	Year 4: 2010-11	Year 5: 2011-12
Branding	D	D, I, A	I, A	I, A	I,
Regional Website	D	D, I, A	I, A	I, A	I,
Regional Hotline	D	D, I	I, A	I, A	I,
Mass Media	D	D, I	I, A	D, A	I,
Regional Outreach (Marketing and Community Events)	D	D, I	I, A	D, A	I,
Materials Development & Distribution	D	D, I, A	D, I, A	D, A	D, I
Public Relations	D	D, I	I, A	D, A	I,
Market Research & Assessment Tools	D, I, A	D, I, A	D, I, A	D, I, A	D, I,
Partnerships	D, I	D, I,	I, A	I, A	I

Development (D), Implementation (I), Assessment (A)

4.9 Social Marketing Approaches

In all of the aforementioned efforts, a variety of social marketing approaches will be utilized whenever possible. There are so many techniques described as social marketing that it is not possible to utilize them all, especially with limited staff and budgets. Social marketing uses many of the principles of social psychology and marketing techniques to bring about behavior change. Rather than being product oriented, social marketing focuses on people and their behaviors. All social marketing approaches use audience research to learn how to motivate an audience to change one or more recurring actions.

Social marketing consists of several basic components that result in delivering messages that will increase knowledge and awareness, thereby prompting people to change certain behaviors. The challenge is to present the new behavior in a positive way and emphasize the benefits to adopting a new behavior. Forming strategic partnerships with community resources can help to achieve the end goal of behavior change. Social marketing campaigns deliver messages that are strategically created and positioned to give people a compelling reason to adopt a new behavior. In order to overcome the barriers to action it is necessary to understand what the barriers are and why they exist. Researching and understanding the audience is a critical step in developing a social marketing campaign. Messages are conveyed through advertising, websites, materials and other communications. Messages should be simple, memorable and easy to follow. There should be one simple message for each of the targeted areas of knowledge and awareness. Each message needs to be used consistently in communications.

Community Based Social Marketing (CBSM) is a type of social marketing. It has gained popular appeal among the environmental community as an effective alternative to traditional information-based marketing approaches. CBSM packages basic principles of behavior change and social science research in a way that provides a usable framework for practitioners working to promote positive behavior change.

A key element of the CBSM approach is to pilot test the program with a small representative segment of the community, and compare the results to a control group. For example, a small jurisdiction may implement a project that essentially serves as a pilot for the regional program. If the pilot is not successful, the strategy should be refined and then pilot tested again. If the pilot is successful at changing behavior, the strategy can be implemented more broadly throughout the community or on a regional level. Once the successful pilot program has been widely implemented CBSM requires that the program be carefully evaluated at several points to measure continued success.

The Copermittees have agreed that CBSM offers a solid foundation for developing an effective program. However, it may not always be feasible to utilize the CBSM approach on a regional scale, hence the need for a combined approach that uses traditional social marketing techniques as well as CBSM. Some methods will lend themselves more readily to developing CBSM based approaches. When implementing each of the methods, a CBSM approach will be pursued whenever feasible.

5.0 RELATIONSHIP OF REGIONAL, WATERSHED, AND JURISDICTIONAL OUTREACH

The Regional Residential Education Program is designed to meet the Permit requirements for residential education based on regional needs and issues. The first step in meeting these requirements is to establish a regional brand and consistent image. The City of San Diego's regionally recognized Think Blue logo will be utilized as the Regional Residential Education Program's brand. During the implementation phase of the permit cycle the Copermittees will work collaboratively with the City of San Diego to update and standardize the Think Blue brand. A Graphics Standards Manual will be developed by the City of San Diego and adopted by the Copermittees in order to facilitate ease of material development and ensure a consistent regional image. Existing jurisdictional programs may also choose to use the Think Blue brand, maintain individuality, or

combine both programs for maximum impact. In a similar manner, watershed activities may be coordinated under the Think Blue brand, so long as the standards are adhered to.

Copermittees will hire a contractor to build and maintain a regional Think Blue website. The website may include links to jurisdictional program, watershed program websites, and other regional websites such as Project Clean Water. The regional Think Blue website will provide user friendly information for the public in a single location, thereby promoting consistency and coordination among the regional, jurisdictional, and watershed programs.

In addition, the Education & Residential Sources Workgroup provides a platform for integration of regional, jurisdictional, and watershed messages. The Education & Residential Sources Workgroup also coordinates activities between non-profit organizations, private institutions, and governmental agencies providing environmental and water quality education. Regular meetings will continue to provide a forum for educators, trainers, and public information officers to collaborate, share methods and materials, and seek policy level support and direction.

Watershed and jurisdictional programs should look to the Regional Residential Education Program when designing residential educational activities. The Regional Residential Education Program can thereby serve as a basis for developing these other programs. Some specific watershed or jurisdictional issues may not be covered by the Regional Residential Education Program, and must still be met by the individual or Watershed Copermittees as required by the Permit. These issues will be addressed in the watershed or jurisdictional programs. In this manner, the watershed and jurisdictional programs can supplement the Regional Residential Education Program in order to ensure that all requirements are met. As a result, each jurisdictional program may be unique in some respects and elements of the watershed programs may go beyond those in the regional program.

While the regional program may play a role in encouraging behavior changes, it is more feasible for jurisdictional programs to be able to measure actual behavioral changes resulting from increased knowledge and awareness because of their ability to implement pilots on a small scale. The broad based regional program will be implementing methods and utilizing assessment tools that most accurately gauge attitudes, knowledge, and awareness. Positive changes in attitudes and awareness are generally accepted as precursors to behavior change. Therefore, due to the difficulty of assessing behavior change on a regional level, demonstrating behavior change will therefore reside with the jurisdictional and watershed programs. In order to facilitate the assessment of jurisdictional and watershed programs, the Plan outlines assessment tools for measuring changes in knowledge and awareness through the regional program. These measures can also be tailored to meet the needs of the jurisdictional and watershed programs that implement CBSM pilots or focused outreach efforts, which provide excellent opportunities to assess behavior change. Section 6.0 describes assessment tools in further detail.

6.0 ASSESSMENT OF REGIONAL EDUCATION ACTIVITIES

In order to evaluate whether the various components of the program are resulting in the targeted knowledge and awareness outcomes, a number of assessment methods may be utilized. A random digit dial telephone survey will be the primary tool for measuring changes resulting from implementation of the regional program. Different types of assessment methods will be employed in order to gauge the outcomes of each activity and thereby determine effectiveness. Copermittees will review and assess existing survey data while developing the new regional baseline survey. Public opinion surveys will be alternated with other assessment methods to adequately assess the overall effectiveness of the Regional Residential Education Program. Copermittees have agreed to work cooperatively on funding and conducting market research and surveys. Measurement tools outlined in the Plan may be modified somewhat to correspond with different program elements. The Plan basically provides a model for program effectiveness

assessment. Specific assessment methods will depend on the type of outreach or education activity conducted and other constraints.

Copermittees will work with the City of San Diego to conduct a county-wide random digit dial telephone survey in order to obtain baseline information on knowledge, awareness, attitudes, and behaviors pertaining to stormwater. Results of the survey will guide further adaptation of the program objectives. Ideally, another public opinion survey will be conducted later in the permit cycle to assess any changes resulting from program implementation. Once the baseline is established, future permit cycles may involve one or more public opinion surveys. Additional evaluation methods may be utilized once specific media, promotions, and outreach activities are implemented. Results will enable Copermittees to determine the most effective outreach methods and make modifications to the programs as needed.

Outcome levels used in this program are based on the Hierarchy of Targeted Outcomes Pyramid referred to in the NPDES Permit, which includes outcome levels 1-6. Outcome levels 1-3 will be most applicable to educational and outreach activities. Table 5 illustrates potential assessment methods that may be utilized for each of the activities being considered. Level 1 outcomes indicate compliance with permit based activities. This is the most basic means of assessing program effectiveness. Measuring Level 2 outcomes will indicate changes in attitudes, knowledge and awareness. Surveys and quizzes provide the most common means for measuring Level 2 outcomes. Level 3 outcomes provide an opportunity to measure behavioral changes and implementation of Best Management Practices (BMPs). This can be accomplished through observations and program specific counts. For example, tracking sales of less toxic pesticides in a store where IPM information is available may indicate changes in the behavior of consumers. Level 4 outcomes indicate actual load reduction, and are more practical for activities such as clean up events or Household Hazardous Waste collection activities, which are sometimes associated with outreach activities.

Table 5) Potential Program Element Assessment Measures

Activity/ Level		Type of Assessment Measure

Branding

1	Updating materials to reflect new regional brand.
2	Count number of survey respondents who are aware of brand/program.
3	N/A
4	N/A

Website

1	Count number of hits to website, interactive use/quizzes taken, etc.
2	Administer survey/quiz to assess attitude/knowledge of web users.
3	Administer survey/quiz to assess behavior change and compare to pilot, historical, or control data. Downloads of informational brochures.
4	N/A

Mass Media/Public Service Announcement (PSA)/Public Relations

1	Count number of household/individuals reached.
2	Administer survey/quiz to assess attitude/knowledge of PSA recipients.
3	Comments and feedback received regarding PSA via the hotline or website.
4	N/A

Outreach Materials (i.e.: fact sheets and brochures)

1	Count number of fact sheet/brochures handed out.
2	Administer survey/quiz to assess attitude/knowledge of fact sheet/brochure recipients
3	Administer survey/quiz to assess behavior change and compare to pilot, historical, or control data.
4	N/A

Regional Outreach Event

1	Count number of visitors to booths, brochures handed out, surveys/quizzes completed, etc.
2	Count number of mail-in cards, number of volunteers to organization, number of persons who attended community event. Administer survey/quiz to assess attitude/knowledge of visitors
3	Administer survey/quiz to assess behavior change and compare to pilot, historical, or control data.
4	N/A

Partnerships

1	Count number of incentives distributed, participants in the program.
2	Survey or quiz to assess attitude/knowledge of volunteers pre- and post- participation
3	Administer survey to assess behavior change in program participants or count observable behavior of program participants and compare to pilot data, historical data, and/or control group. Count number of mail-in cards, number of volunteers to organization, or number of persons who signed a petition directed from incentive program.
4	Count amount of load reduction in targeted residential area or count amount of load removed from targeted area

Hotline

1	Count number of calls to hotline.
2	Administer survey/quiz to assess attitude/knowledge of hotline users.
3	Administer survey to assess behavior change of participants in program and compare to pilot, historical, or control data, count observable behavior of participants in program and compare to pilot data and/or control group.
4	N/A

7.0 CONCLUSIONS AND RECOMMENDATIONS

The San Diego region has widely diverse socio-economic, ethnic, biological, and physical characteristics. These characteristics create the region's appeal and present many challenges to the entities charged with developing and implementing an effective Regional Urban Runoff Management Program (RURMP).

The Regional Residential Education Program is a component of the San Diego RURMP. This program is designed to increase knowledge and awareness of stormwater issues and potentially change pollutant generating behaviors. Research indicates that these are attainable goals under a well-funded, long term, multi-faceted and strategic public outreach campaign.

In order to implement program goals, the Copermittees have agreed on general objectives: 1) maintain a consistent image, message and brand 2) use positive messages to increase knowledge and awareness, thereby increasing the likelihood of behavior change 3) develop community partnerships and 4) develop strategies to assess program effectiveness. In order to efficiently accomplish these objectives, Copermittees have agreed to adopt Think Blue as the regional flagship brand. In addition, strong and

focused outreach messages will be selected to increase knowledge and awareness and ultimately target the primary pollutant generating behaviors from residential activities.

The basic program elements include an array of methods and approaches that will be utilized for program management, message delivery, and effectiveness assessment. Over time, the Regional Residential Education Program will be adapted to utilize the most effective outreach and education strategies practicable while maintaining a clear focus for the entire region. Annual reports will summarize progress and provide an opportunity to reflect on the year's successes and shortcomings. At the end of the 5-year permit cycle, Copermittees will be able to assess of the program's progress and develop more effective regional outreach strategies.

APPENDIX L

Household Hazardous Waste Disposal Information

H. WASTE VOLUMES COLLECTED

		Poway	Vista	Total PHHWCF	Carlsbad	Del Mar	Encinitas	Escondido	National City	Poway	San Marcos	Santee	Solana Beach	Vista
		(in pounds)			14.7%	0.3%	7.9%	1.7%	0.0%	35.8%	10.0%	0.4%	1.3%	28.0%
1. Flammable & Poison	Flammable solid/liquid	15,800	53,093	**68,893**	10,107	194	5,441	1,139	0	24,693	6,865	256	894	19,303
	Bulked flammable liquids	8,100	34,100	**42,200**	6,191	119	3,333	698	0	15,125	4,205	157	548	11,824
	Oil-base paint	12,800	84,000	**96,800**	14,201	272	7,645	1,601	0	34,695	9,646	360	1,257	27,122
	Poison (excl.aerosols)	8,000	21,100	**29,100**	4,269	82	2,298	481	0	10,430	2,900	108	378	8,153
	Reactive and explosive		30	**30**	4	0	2	0	0	11	3	0	0	8
	Subtotal	**44,700**	**192,323**	**237,023**										
2. Acid	Inorganic and organic acid	**1,850**	**7,500**	**9,350**	1,372	26	738	155	0	3,351	932	35	121	2,620
3. Base	Inorganic and organic base	**1,450**	**6,300**	**7,750**	1,137	22	612	128	0	2,778	772	29	101	2,171
4. Oxidizer	Neutral oxidizers, organic peroxides, Oxidizing acid, oxidizing base	**1,700**	**1,310**	**3,010**	442	8	238	50	0	1,079	300	11	39	843
5. PCB-containing	PCB-containing paint	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Other PCB waste	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Subtotal	**0**	**0**	**0**										
6. Reclaimable	Antifreeze	3,699	9,437	**13,136**	1,927	37	1,037	217	0	4,708	1,309	49	171	3,681
	Car batteries	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Latex paint	58,000	130,600	**188,600**	27,669	530	14,895	3,119	0	67,598	18,794	702	2,449	52,843
	Motor oil/oil products	20,784	34,382	**55,166**	8,093	155	4,357	912	0	19,773	5,497	205	716	15,457
	Oil filters	250	900	**1,150**	169	3	91	19	0	412	115	4	15	322
	Subtotal	**82,733**	**175,319**	**258,052**										
7. Asbestos		**800**	**3,100**	**3,900**	572	11	308	65	0	1,398	389	15	51	1,093
8. Universal Waste (UW)	Mercury containing waste	0	30	**30**	4	0	2	0	0	11	3	0	0	8
	Thermostats/switches/thermometers	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Lamps	7,530	7,860	**15,390**	2,258	43	1,215	255	0	5,516	1,534	57	200	4,312
	Rechargeable batteries	650	1,300	**1,950**	286	5	154	32	0	699	194	7	25	546
	Household batteries	12,300	5,600	**17,900**	2,626	50	1,414	296	0	6,416	1,784	67	232	5,015
	Subtotal	20,480	14,790	**35,270**										
Electronic Waste (UW)	SB20/50 video display devices	41,380	73,284	**114,664**	16,822	322	9,056	1,897	0	41,098	11,427	427	1,489	32,127
	Non SB20/50 video display devices	6,810	0	**6,810**	999	19	538	113	0	2,441	679	25	88	1,908
	Consumer electronic devices	42,674	100,529	**143,203**	21,009	403	11,310	2,369	0	51,327	14,271	533	1,859	40,123
	Subtotal	90,864	173,813	**264,677**										
Aerosol Containers (UW)	Non-empty aerosol containers	6,400	14,500	**20,900**	3,066	59	1,651	346	0	7,491	2,083	78	271	5,856
	Other	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	All UW subtotal	**117,744**	**203,103**	**320,847**										
9. Other HHW	Home-generated sharps	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Pharmaceutical Waste	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Compressed gas cylinder	1,069	4,018	**5,087**	746	14	402	84	0	1,823	507	19	66	1,425
	Non-UW aerosol containers (corrosive, flammable, poison)	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Treated Wood	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Other	15,700	15,950	**31,650**	4,643	89	2,500	523	0	11,344	3,154	118	411	8,868
	Subtotal	**16,769**	**19,968**	**36,737**										
10. Grand Total		**267,746**	**608,923**	**876,669**			68,700							
		267,746	608,923	876,669										

APPENDIX M

Stormwater Newsletter Article

Help **PREVENT** stormwater pollution

Storm drains are intended to take rainwater straight to the ocean to avoid area flooding. Rainwater or even runoff from sprinklers or hoses carries contaminants like litter, animal waste, automobile fluids, fertilizers and pesticides into the storm drains and pollutes our local waters. This creates a health risk for children, kills marine life and contributes to localized flooding and beach closures.

Everyone contributes to stormwater pollution each day. Dropping cigarette butts on the ground, allowing paper or trash to blow into the street, and hosing leaves or dirt into the street are just a few examples of things people do to contribute to stormwater pollution.

Waters that flow over streets, parking lots, construction sites and industrial facilities carry these pollutants through the storm drain network directly into the ocean.

Since stormwater is not treated before it reaches the ocean, it is everyone's responsibility to make sure storm drains and waterways are free of pollutants. Here are a few tips that can help protect our environment:

- Do not put anything in the storm drains but rainwater
- Properly dispose of all trash
- Pick up after your pet
- Recycle your motor oil. Find locations at **www.earth911.org**
- Bag, compost or recycle grass, tree limbs, leaves and other yard waste
- Use yard waste as mulch, as natural fertilizer or as ground cover
- Encourage local businesses to start a recycling program
- Use double-sided photocopies
- Replace hazardous household chemicals with less toxic alternatives
- Report illegal dumping to (760) 726-1340, x1686
- Do not over water pesticides or fertilizers or apply them before it rains
- Purchase re-refined motor oil for your vehicle

For more information, visit www.earth911.org

Dispose of household hazardous waste properly

Residents may drop off household hazardous waste for free on Saturdays from 9 am to 3 pm at the City's collection facility located at 1145 E. Taylor Street.

Used motor oil, oil filters, antifreeze, auto batteries, paint, pesticides, household cleaners, batteries, fingernail polish remover, pool and photo chemicals, and other household hazardous waste can be disposed of at this drive through facility. E-waste such as computers, televisions and toaster ovens are also accepted.

No commercial loads are allowed, and the facility is closed on holiday weekends.

Free door-to-door collection services are available to disabled citizens and those aged 65 year and older.

Please call (800) 444-4244 to schedule an appointment.

VISTA
CALIFORNIA

APPENDIX N

Draft Mobile Water Use Permit (including attachments)

CITY OF VISTA
Mobile Water Use Permit

Permit No. _____ Date _____

I/We the undersigned respectively petition that a Mobile Water Use Permit be granted to authorize the non-fixed point use of water for _____(specify use). This permit is required in order to allow the City's Storm Water inspector(s) to review and inspect my/our water retention system used in conjunction with my/our business. I/We understand that this permit does not relieve me/us of the responsibility to maintain a valid Business License for any work done within the City of Vista. I/We further understand that, should I/we fail to abide by the terms of this permit, both my/our business license and the associated Mobile Water Use Permit may be revoked.

The following items are required to accompany this application:

1. A detailed, written description of your water reclamation system, and how it operates.

2. A completed Business License application and Home Occupation Permit application (if applicable).

3. A completed Storm Water Best Management Practices Implementation and Wash water Disposal affidavit.

4. Proof of liability insurance as outlined below.

In accepting this Permit, I/We understand and agree to the conditions listed (must be initialed by applicants), and such other conditions as may be levied by the Zoning Administrator/City Planner as a condition(s) of granting this Permit.

Applicant Information:

Business name: _____

Owner(s) name: _____

Address: _____

Phone: _____

E-Mail: _____

Signature: _____

Conditions

Applicants must comply with the conditions as set forth herein, prior to or upon approval and granting for a Mobile Water Use Permit.

Initial

1. I will obtain property owner/manager's approval prior to conducting business at any facility. _____

2. By accepting such a permit, the permittee(s) agrees to defend, indemnify and hold harmless the City of Vista, its officers, employees and agents for any and all liability arising out of the actions permitted by said Mobile Water Use Permit, and the permittee(s_____

600 Eucalyptus Avenue * Vista, CA 92084 * 760-639-6100 * Fax 760-639-6101

agrees to pay on behalf of the City of Vista, all claims, damages, judgments, legal and court cost, adjuster fees, and attorney fees related thereto. _____

Initial

3. The permittee(s) agree to provide to the City of Vista, a Certificate of Liability insurance naming the City of Vista as additional insured, and which includes coverage for the effective date(s) of said Mobile Water Use Permit, and with a minimum limit of liability of $1,000,000 (one million dollars). An updated Certificate shall be provided to the City on an annual basis. _____

4. A valid business license to conduct business within the City of Vista shall be maintained for the duration of this Mobile Water Use Permit. _____

5. Payment of fee(s) in accordance with current fee schedule. _____

Additional conditions (if necessary): _____

_____

_____

A City of Vista Storm Water Official will be contacting you to schedule an inspection of your water reclamation system. Deficiencies that are identified by the City must be corrected prior to receiving City approval of your water reclamation system.

Official Use Only

Storm Water Official Approval: _____ Date: _____

The Zoning Administrator hereby grants a Mobile Water Use Permit to conduct a

_____

_____

_____

All activities shall be conducted in compliance with the provisions of Sections 18.67.020 and 13.18 of the City Code, a copy of which is attached.

_____ _____

for Zoning Administrator Date

C: Business License, Storm Water Inspection, Planning

600 Eucalyptus Avenue * Vista, CA 92084 * 760-639-6100 * Fax 760-639-6101

Storm Water Best Management Practices Implementation and Wash Water Disposal Affidavit

I _____ (Business Owner Name) owner /authorized officer of _____ (Business Name) located at _____ (Address) have reviewed and will implement the Best Management Practices as applicable in Section C (3.15 & 3.19) of the City of Vista's Storm Water Manuals, and listed under "Best Management Practices for Surface Cleaning and Automobile Detailing" (both enclosed). Should the aforementioned business be inspected by the City and observed not to be implementing the required Best Management Practices, fines/further action will be taken against the business owner per the City of Vista's **Storm Water Management and Discharge Control Program Ordinance (Municipal Code, Chapter 13.18).**

I _____ have also reviewed the wash water disposal requirements listed under the above mentioned, "Best Management Practices for Surface Cleaning and Automobile Detailing " and agree to dispose of all wash water in accordance with applicable local, state and federal laws, which may include disposal to the Sanitary Sewer System if in accordance with Encina Wastewater Authority policies and procedures. Encina Wastewater Authority may be contacted by calling (760) 438-3941.

Signature: _____

(By Owner or Authorized Officer Only)

Date: _____

For Official Use Only

Business SIC Code: _____

Business Activity: _____

JURMP Priority: _____

City of Vista
Water Quality Protection Program
Mobile Water Use Permit – Inspection Form

Date of Inspection:	Name of Business:	Address:
Name of Contact and Phone Number:	Vehicle(s)/Equipment Trailer(s) License Plate Number:	Permit Number:

Inspection Results				
	Area Inspected	Yes	No	If No, Corrective Actions Needed
1	Are your water reclamation and pressure washer systems working properly (no leaks, etc.)?-Demonstrate?			
2	Do you have appropriate containment devices (i.e. berms) to contain wash water runoff prior to collection?			
3	Do gasoline and other liquid containers have appropriate covers and will they be secure during transport and operations?			
4	Are absorbent or other materials or devices available to remove gasoline, chemical, and other liquid spills that could occur?			
5	Are you aware of the City's requirements to prevent the runoff of pollutants into the City's Storm Water Conveyance System and receiving waters?			
6	Other:			

Corrective Actions Implemented	**City Approved (Y/N)**
1	
2	
3	
4	
5	
6	

City of Vista
Water Quality Protection Program
Mobile Water Use Permit – Inspection Form

The City's authorized Storm Water Official listed below has reviewed, inspected, and approved your water reclamation system.

Signature of City Official: _____ Date: _____

Printed Name: _____

BEST MANAGEMENT PRACTICES
FOR SURFACE CLEANING AND AUTOMOBILE DETAILING

Wash water generated from your operations is prohibited from being discharged to the storm drain, street, and gutter. As an alternative, you may consider discharging this water to the Sanitary Sewer System. Making use of the following Best Management Practices (BMPs) for surface cleaning and automobile detailing activities will improve your ability to meet the requirements of the City's Municipal Code and Encina Wastewater Authority (EWA). If you have any questions regarding these BMPs, please contact EWA's Source Control Program at (760) 438-3941.

1. Sidewalks and Plazas
   Sweep, collect, and dispose of debris in solid waste containers. If you must use water and detergents, do so sparingly, using only biodegradable detergents. Seal the storm drains in the vicinity and collect the wash water. Wash water may be discharged to the sewer with the property owner's permission, via a sink, floor drain, or private clean–out.

2. Drive-throughs, Driveways, Parking Lots, Garages, and Service Stations
   Sweep, collect, and dispose of debris in solid waste containers. Dry clean oil spots with absorbent and dispose of absorbent in a legal manner. If you must use water and detergents, do so sparingly, using only biodegradable detergents. Seal storm drains in the vicinity and collect the wash water. This wash water may contain elevated levels of oil & grease and/or metals, which will require treatment prior to discharge to the sewer. This is typically accomplished by discharging the wash water through an oil/water separator. Oil/water separators must receive routine maintenance to ensure effective operation.

3. Building Exteriors, Roofs, and Decks
   Seal storm drains in the vicinity and collect the wash water. Wash water from cleaning glass and steel buildings may be discharged to the sewer with the property owner's permission, via a sink, floor drain, or private clean–out. Buildings painted prior to 1978, must be tested for the presence of lead. If the paint does not contain lead, the wash water may be discharged to the sewer. If the paint does contain lead, the wash water must be tested to determine if it meets EWA's local limit for lead of 1.8 mg/L. Wash water is excess of this limit may not be discharged to the sewer and must be hauled off-site for disposal at an approved waste facility.

4. Graffiti Removal
   Use water sparingly. Seal storm drains in the vicinity and collect the wash water. If sand blasting is conducted, solids must be removed prior to disposal of the wash water to the sewer. If a cleaning compound is used, contact EWA to determine if pretreatment of the wash water is required prior to discharge to the sewer.

5. Acid Washing of Masonry
   Wash water from acid cleaning must be collected and neutralized to a pH between 5.5 and 11.0 prior to discharge. Contact EWA for further information.

BEST MANAGEMENT PRACTICES
FOR SURFACE CLEANING AND AUTOMOBILE DETAILING

6. Automobile Detailing

Wash water is prohibited from entering City storm drains, streets, and gutters. All water runoff must be contained, collected, and disposed of using appropriate equipment and methods. Use berms and/or other containment systems at the site and storm drain inlet to contain wash water and prevent it from entering the storm drain. Collect wash water and rinse water using an approved water reclamation system. Wash water may be discharged to the sewer system provided you follow disposal requirements from EWA and obtain approval from the property owner.

APPENDIX O

Industrial and Commercial Inspection Form

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR INDUSTRIAL AND COMMERCIAL FACILITIES

Inspected by D-MAX Engineering, Inc.

Inspector Name _____ Date____/____/_____Time_____AM / PM

Type of Inspection: ☐ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Duplicate ☐ Refused ☐ Mobile

A. CONTACT INFORMATION

Original	Changes
Business Name_____	Business Name_____
_____	_____
Street Address _____	Street Address_____
_____	☐ change _____
Responsible Person(s)_____	Responsible Person(s)_____
Title:_____	Title:_____
Business Telephone # **(____)** _____ **-**_____ext._____	Business Telephone # **(____)** _____ **-**_____ext._____
Business Fax # **(_____)** _____ **-** _____	Business Fax # **(_____)** _____ **-** _____

Home Based? ☐ Yes ☐ No Mobile Business? ☐ Yes ☐ No **APN**:_____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Facility personnel present:_____

Property management company:_____ Business Telephone # **(____)**____ -_____ext.____

Mailing address:_____

B. FACILITY/SITE INFORMATION

Principal activity:_____ Number of Employees_____

Assigned NAICS code(s) _____ _____ _____ _____ and/*or* SIC Code(s) _____ _____ _____ _____

Does NAICS Code best represent principal activity: ☐ Yes ☐ No SIC? ☐ Yes ☐ No

Recommended change of NAICS Code(s)?_____ _____ _____ _____ Of SIC? _____ _____ _____ _____

Existing NAICS code(s) _____ _____ _____ _____ *and* **SIC Code(s)** _____ _____ _____ _____

Status Update (if no longer active in City or does not need an inspection)**:** ☐ Moved/Out of Business ☐ Duplicate ☐ Not Inventoried ☐ Out of Jurisdiction

Does facility have a current business certificate? ☐ Yes ☐ No #_____ Exp._____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Approximate distance to receiving water body: ☐ < 200 ft. ☐ 200 – 1000 ft. ☐ > 1000 ft.

Discharge points: _____

_____

Approximate area covered by industrial or commercial activities:_____square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods					
Keep parking lots, sidewalks, and streets free of sediment and debris using dry methods					
Keep outdoor areas free of spills and leaks					
Collect water from pressure washing or hosing and dispose of appropriately					☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants					
Dispose of water from fire sprinkler maintenance activities appropriately					☐ Unknown Performed by:
Mark drains/inlets on site with “no dumping, drains to ocean” or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible					☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)					
Reduce over watering/over-irrigation					
Properly store stockpiles to prevent material transport					
Properly store and dispose of green waste					☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water					
Keep trash area free of litter and debris, liquids, powders, sediment					
Adequately cover materials stored outside					
Prevent run-on from contacting materials stored outdoors					
Properly label outdoor storage containers					
Provide an accessible, functional spill response kit					
Equip liquid storage containers with spill containment					
Keep spill containment free of spills and rainwater					
Properly store and dispose of hazardous materials					
Maintain up-to-date inventory of hazardous materials					
Keep loading and unloading areas, including drains, free of debris					

BMPs	No Corrections Required		Corrections Required		Comments *
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Dispose of water generated by processing activities appropriately					
Dispose of pool, spa, fountain, and filter backwash water properly					☐ Unknown Performed by:
Clean floor mats in locations that do not drain to street or storm drain system					
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)					
Use drip pans to collect leaks/spills					
Drain fluids from all non-operational vehicles stored outdoors					
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks					
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4					
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff					
Identify and eliminate illicit connections and illegal discharges					
Provide storm water training for appropriate employees					
Develop a written procedure for spill prevention and response					
D.6 ADDITIONAL REQUIRED ACTIONS					

☐ Based on inspection findings, it appears likely that significant levels of _____ would be present in storm water discharges from this site. Take action to reduce the levels of _____ to the maximum extent practicable. Treatment control BMPs are likely necessary.

Owner/operator has been notified of recommended corrective actions both verbally and by: ☐ Hand ☐ Mail ☐ Fax

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A

If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster Grease Bin Handout

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

☐ In the future, under a new Industrial Permit, which has not yet been adopted, this facility may be able to qualify for exemption from Permit coverage based on no outdoor exposure.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6 and E of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this Time.

G. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

APPENDIX P

Stormwater Hotline Calls

STORMWATER HOTLINE CALLS for FY 2007-2008

DATE	NAME / TIME OF CALL	ADDRESS	PHONE	COMPLAINT	ACTION TAKEN	PERSON LOGGING CALL
08/23/2007	Evelyn Hill (10:55 a.m.)		(858) 967-2638 (7:00 am - 3:30 pm)	Evelyn is an Insect Detection Specialist with the County of San Diego. She was at the Lakeview Nursery at 2535 Guajome Lake Rd and reported that on the NW corner of the property there was copious runoff to the street and draining to a reparian area. She asks that our Stormwater person take a look at it. I referred this call to Sandra Sotola, Stormwater Code Enforcement Officer.	I spoke with Evelyn Hill at the County and told her that the Lakeview Nursery was in the County area. She said she was new to all of this and would verify it on the map. This issue is therefore outside of Vista jurisdiction. Sandra Sotola, Storm Water Code Enforcement Officer 8/27/07	mh
09/08/2007	Arlene Green 11:24 am (Sat.)		760-758-1547	Ms. Green called to request that a street light be repaired at 490 Pina Ln. I forwarded this call to Public Works.	Not a stormwater issue.	mh
09/25/2007	Cynthia Mallett Environmental Specialist cmallett@ci.oceanside.ca.us 760-435-5807 (3:29 p.m.)	City of Oceanside 300 N. Coast Highway Oceanside, CA 92054	(760) 419-0656	Cynthia call to report that some landscapers are depositing soil and sand in an open lot near the creek. There are no BMPs in place to keep this from entering the creek when it rains. Address given is 770 W. Taylor St. She called the County and the County stated that this is City area.	Forwarded voice mail to Sandra Sotola, Stormwater Code Enforcement Officer. 9/27/07, it will be forwarded to the county hotline with the photos I took this morning. It definitely is county and I will call back the complainant. Sandra Sotola, Storm Water Code Enforcement Officer,City of Vista	mh
09/26/2007	Charles Crable (12:19p.m.)		(760) 597-0476	Forwarded this voice message to Stormwater Code Enforcement Officer. (Stormwater Officer and Code Dept Officer)	Stormwater Officer and Code Dept Officer both went to site. They saw engine parts but saw no evidence of oils/liquids. They were given a HELP brochure from Stormwater Officer and Code Officer gave them a Notice of Violation and explained the need to remove the items from the front of the house.	mh
09/28/2007	Unidentified Caller (2:54 p.m.)			Code Enforcement Officer was in the office and able to listen to the complaint. She took the information and left for the site.	9/28/07, investigated location, spoke with property owner who will clean up. 10/1/07, area cleaned. SES	mh

STORMWATER HOTLINE CALLS for FY 2007-2008

DATE	NAME / TIME OF CALL	ADDRESS	PHONE	COMPLAINT	ACTION TAKEN	PERSON LOGGING CALL
10/08/2007	Thomas Galloway (11:51 a.m.)			Called # 1) To report that someone was hosing the sidewalk in front of Washington Middle School on Olive Ave. They were not reclaiming the water. (Saturday 10-6-07) --- #2) Several times he has witnessed the hosing off of the bus Station area on Olive Ave, by the Vista Village intersection, and he feels that is also in violation.	Tranferred call to Stormwater Code Enforcement Officer. Stormwater Code Enf. Officer called the Vista Unified School District to inform them of the necessity to cease this practice or reclaim the water. Complainant was notified of the Bus Station's practice of reclaiming water.	mh
10/10/2007	Soda (11:58 a.m.)		(760) 842-8552	Caller wanted to report that there were two containers of trash on the corner lot at Alvarado and Palm Dr. She thought it looked trashy and possibly suspicious. It has been there for a while.	Forwarded voice mail to Sandra Sotola, Stormwater Code Enforcement Officer. She referred this to the City Code Enforcement Dept.	mh
10/16/2007	John Johnson (5:01 p.m.)		(760) 295-3019	Caller reported that a neighbor was dumping diatomaceous earth into a gutter.	Stormwater Code Enforcement Officer went out and found white powdery substance. Neighbor was not home. She left a HELP brochure and a Pool brochure at the home.	mh
10/25/2007	Ruth Alvarado (10:40 a.m.)	502 Gail Dr.	(760) 643-7545	Caller wanted to report that the neighbor and 490 Gail Dr. was washing down cars and driveway after the firestorms of 2007 in So. Calif.	Her call was returned same day and it was explained that with all the ash and debris from the fires it was difficult to enforce each individuals property clean-up. We have the City website available on-line with guidelines concerning this type of clean-up. She did not want to speak to the neighbor because they did not get along well.	mh
10/31/2007	Hilda (9:32 a.m.)		(760) 842-8552	Wanted to report trash bags and a mattress dumped on an empty lot. She gave an address of 463 but failed to name the street.	The message was forwarded to the Public Works Dept. They would return the call and take care of the trash per the secretary.	mh
11/27/2007	2:28 p.m.	**HANG -UP**	(760) 414-1514		No message was in voice mail --- I returned the call and the woman who answered said that nobody called this number. I asked if there was a problem and they responded "no".	mh

STORMWATER HOTLINE CALLS for FY 2007-2008

DATE	NAME / TIME OF CALL	ADDRESS	PHONE	COMPLAINT	ACTION TAKEN	PERSON LOGGING CALL
12/05/2007	Whitney Perkins 2:54 p.m.	1264 Jessie Ln.	(760) 945-1446	Ms. Perkins resides at 1264 Jessie Ln. She lives right next to the Sprinter railroad line. Within the fenced area of the tracks a storm drain is already overflowing from last weeks rain and a weekend of rain is predicted this week. She is concerned for her property.	Call was referred to our Stormwater Code Compliance Office. Her response follows: " I spoke with the caller. I gave her NCTD's number and email for Steve Hoyle, Sprinter Project Officer. She was familiar with Steve and had talked with him previously, but wanted to check with me first. I reiterated that it is a private issue between property owners."	mh
12/18/2007	Dylene Lindsey (8:05 a.m.)	208/206 Goetting Way	(760) 941-3290	Storm drains at 208/206 Goetting Way are clogged and need cleaning before the rains come. She mentioned that this is the second call. This is the first call we received, not aware of a previous call.	Forwarded message to Stormwater Code Enforcement Office and, also, to Public Works Dept. This call was forwarded to Lisa at our Public Works Dept. Her reply: "I've forwarded this to Chuck Crist in Streets who is in charge of the storm drains".	mh
01/16/2008	Jeanette Spangler (1:50 p.m.	2508 E. Vista Way	760-724-9093	Storm drains are clogged not allowing water to flow through and everything is a muddy mess since the rain. They own a nursery. (Exotica Nursery)	This call was forwarded to Lisa at our Public Works Dept. Her reply: "I've forwarded this to Chuck Crist in Streets who is in charge of the storm drains".	mh
01/28/2008	Pete Perone (11:22 & 11:24 a.m.)	Melrose & N. Santa Fe	858-637-7137	Pete is with the San Diego Regional Water Quality Control Board. Construction site of North County Church and also a road widening. Sediment present. He called a second time to inform us that this is actually Oceanside territory.	This information was forwarded to Frank D., Construction Inspector and also to Sandra Sotola, Stormwater Code Enforcement Officer. They will contact Mr. Perone and handle this matter.	mh

APPENDIX Q

Municipal Corrective Action Form

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

Location: _____

Date	Inspection Form Ref. (Ex. D.1)	Corrective Actions Implemented

Note: Please organize sheets per location and add additional sheets if necessary.

Completed by (Sign Name): _____

Print Name: _____Date: _____

City of Vista
Storm Water Pollution Prevention Program
BEST MANAGEMENT PRACTICES - CORRECTIVE ACTION FORM

For Stormwater Staff Only

Corrective Action Verified _____
by_____
Date City of Vista Representative

Comments:_____
_____
_____
_____
_____

APPENDIX R

Permit Component Tables

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Development Planning	1	A description of any amendments to the General Plan, the environmental review process, development project approval processes, or development project requirements.	1	Confirmation	Confirmed	2.2.2
	2	Confirmation that all development projects were required to undergo the Copermittee's urban runoff approval process and meet the applicable project requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
	3	A listing of the development projects to which SUSMP requirements were applied.	1	Confirmation	See Appendix A for listing	
	4	Confirmation that all applicable SUSMP BMP requirements were applied to all priority development projects, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
	5	At least one example of a priority development project that was conditioned to meet SUSMP requirements and a description of the required BMPs.	1	Confirmation	See Appendix B for example	
	6	A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.	1	Confirmation	None	
	7	An updated treatment control BMP inventory.	1	Confirmation	See Appendices C	
	8	The number of treatment control BMPs inspected, including a summary of inspection results and findings.	1	Confirmation	177 BMPs inspected	2.4.3.2
	9	A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.	1	Confirmation	See Section 2.4.3.2	
	10	Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.	1	Confirmation	Not applicable for the reporting period	
	11	A listing of any projects which received a SUSMP waiver.	1	Confirmation	No Waiver Program In Place - No waivers issued	
	12	A description of implementation of any SUSMP waiver mitigation program.	1	Confirmation		
	13	A description of Hydromodification Management Plan (HMP) development collaboration and participation.	1	Confirmation	See Section 2.4.3.3	
	14	A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.	1	Confirmation	Since the interim HMP requirements took effect, there have been no development projects that trigger HMP requirements	
	15	A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.	1	Confirmation		
	16	A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.	1	Confirmation		
	17	The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	None	2.4.3.4

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Construction	1	Confirmation that all construction sites were required to undergo the Copermittee's construction urban runoff approval process and meet the applicable construction requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	3.5.1
	2	Confirmation that a regularly updated construction site inventory was maintained, including a description of how the inventory was managed.	1	Confirmation	Confirmed	3.2
	3	A description of modifications made to the construction and grading ordinances and approval processes.	1	Confirmation	Completed changes in FY 2008	3.3
	4	Confirmation that the designated BMPs were implemented, or required to be implemented, for all construction sites.	1	Confirmation	Confirmed	3.4
	5	Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.	1	Confirmation	Since the maximum disturbed area and advanced treatment requirements took effect, no projects have triggered	3.5.3
	6	A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.	1	Confirmation		3.5.4
	7	For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.	1 & 3	Confirmation / Tabulation / Inspection	See Section 3.5.5. and Appendix E	
	8	A description of the general results of the inspections.	1	Confirmation	Confirmed	3.5.5
	9	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	3.5.5
	10	The number of violations and enforcement actions (including types) taken for construction sites, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	NOV = 4	3.4.6

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Municipal	1	Any updates to the municipal inventory and prioritization.	1	Confirmation	Appendix F	
	2	Confirmation that the designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	1	Confirmation	Confirmed	4.2.2
	3	A description of inspections and maintenance conducted for municipal treatment controls.	1	Confirmation	Section 4.3.2	
	4	Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	1 / 3	Tabulation / Inspection	Inventory = 1,427 Inspected = 2,570 (some inspected twice) Catch Basins/Inlets Cleaned = 2,570 (some inspected twice)	4.2.3.1
	5	Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	1	Tabulation	Total Distance of MS4 pipes = 37 miles None Inspected (the City's MS4 are designed to not catch any debris therefore the City does not conduct inspections) None	4.2.3.1
	6	Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.	1	Tabulation	Open Channels = 5.3 miles (improved) Inspected = 5.3 miles Cleaned = 4.7 miles	4.2.3.1
	7	Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.	4	Quantification	Catch Basins/Inlets = 228.5 tons MS4 Pipes=None Open Channels=1,009.5 tons	4.2.3.1
	8	Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding.	1	Confirmation	None at this time	-
	9	Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	1	Confirmation	Confirmed	4.2.3.3
	10	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	68 miles	4.2.3.2
	11	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	88 miles	4.2.3.2
	12	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	-	4.2.3.2
	13	Identification of the total distance of curb-miles swept.	1	Tabulation	8,000 miles	4.2.3.2

Municipal (continued)	14	Identification of the number of municipal parking lots, the number of municipal parking lots swept, and the frequency of sweeping.	1	Confirmation	Lots = 18 Swept = 7 @ Once a week	4.2.3.2
	15	Amount of material (tons) collected from street and parking lot sweeping.	4	Quantification	Street Sweeping = 850 tons Parking Lots = 10 tons	4.2.3.2
	16	A description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4	1	Confirmation	See Section 4.2.3.4	
	17	Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of the inspections.	3	Inspection	Sites requiring inspections = 26 Sites inspected = 26 Frequency of inspections = 1X per year	4.3.2
	18	A description of the general results of the inspections.	1	Confirmation	See Section 4.3.2	
	19	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	4.3.2
	20	The number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	None	4.4

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Industrial and Commercial	1	Any updates to the industrial and commercial inventory.	1	Confirmation	See Section 5.2.2 and Appendix H and I	
	2	Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	1	Confirmation	Confirmed	5.2.4.1
	3	A description of efforts taken to notify owners/operators of industrial and commercial sites/sources of BMP requirements, including mobile businesses.	1	Confirmation	Through inspections and investigations	5.2.4.1 & 5.3.4.1
	4	Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	1 / 3	Confirmation / Inspection / Tabulation	As of June 30th, 2008 the City's inventory includes 213 industrial and 723 commercial facilities 164 sites were visited for inspection purposes	5.2.4.2
	5	Justification and rationale for why the industrial and commercial sites/sources inspected were chosen for inspection.	1	Confirmation	See Section 5.2.4.2	
	6	Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	5.2.4.2
	7	Identification of the number of third party inspections conducted.	1	Confirmation	None	-
	8	Identification of efforts conducted to verify third party inspection effectiveness.	1	Confirmation	None	-
	9	A description of efforts implemented to address mobile businesses.	1	Confirmation	See Section 5.3	
	10	The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	NOV = 16 Citation = 5 Verbal Warning = 54	5.2.4.3
	11	A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	1	Confirmation	See Section 5.2.4.3	

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Residential	1	Identification of the high threat to water quality residential areas and activities that were focused on.	1	Confirmation	See Section 6.2	
	2	Confirmation that the designated BMPs were implemented, or required to be implemented, for residential areas and activities.	1	Confirmation	Confirmed	6.4.2
	3	A description of efforts implemented to facilitate proper management and disposal of used oil and other household hazardous materials.	1	Confirmation	See Section 6.4.2	
	4	Types and amounts of household hazardous wastes collected, if applicable.	1	Confirmation	See Section 6.4.2 & Appendix L	
	5	A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.	1	Confirmation	None	_
	6	The number of violations and enforcement actions (including types) taken for residential areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation	NOV = 24 Citation = 1 Verbal Warning = 73	6.4.3
	7	A description of collaboration efforts taken to develop and implement the Regional Residential Education Program.	1	Confirmation	See Section 6.4.1	

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Education	1	A description of education efforts conducted for each target community.	1	Confirmation	Section 8	
	2	A description of how education efforts targeted underserved target audiences, high-risk behaviors, and “allowable” behaviors and discharges.	1	Confirmation	Section 8.3.1	
	3	A description of education efforts conducted for municipal departments and personnel.	1	Confirmation	Section 8.2	
	4	A description of education efforts conducted for the new development and construction communities.	1	Confirmation	Section 8.3.2	
	5	A description of jurisdictional education efforts conducted for residents, the general public, and school children.	1	Confirmation	Section 8.3.3	

	No.	Compliance Item	Outcome Level	Assessment Method	Section / Appendix
Miscellaneous	1	A description of public participation efforts conducted.	1	Confirmation	Section 9
	2	An assessment of the effectiveness of the Jurisdictional Urban Runoff Management Program	1	Confirmation	Section 11
	3	A description of any efforts conducted to reduce pollutant discharges from non-emergency fire fighting flows.	1	Confirmation	See Section 4.2
	4	A fiscal analysis of the Copermittee's urban runoff management programs	1	Confirmation	Section 10
	5	A description of any special investigations conducted.	1	Confirmation	Section 12
	6	A description of any proposed revisions to the JURMP.	1	Confirmation	Section 13

CITY OF VISTA

2007-08 JURMP Annual Report

Illicit Discharge Detection and Elimination Component

December 2008

Prepared by:
City of Vista
Water Quality Protection Program

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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City Manager
City of Vista

December 11, 2008
Date

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12/11/08
Date

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7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

7.1 INTRODUCTION

In accordance with Addendum No. 2 to Order No. R9-2007-0001, the City of Vista is submitting Section 7.0 as one report separate from the JURMP Annual Report, submitted in September 2008. The Addendum extended the annual reporting deadline associated with the Illicit Discharge Detection and Elimination Program component from September 30th to December 15th, 2008.

This report includes sections covering:

- Public Reporting of Illicit Discharges and Connections for FY 07-08,
- Spill Reporting, Response, and Prevention for FY 07-08,
- Urban Runoff Monitoring including the Dry Weather Monitoring Program for 2008, the MS4 Outfall Monitoring Program for FY 07-08, and the Source ID Monitoring Program for FY 07-08,
- Follow-up and Enforcement Activities for FY 07-08, including complaint responses and dry weather follow-up actions,
- Effectiveness Assessment of the components of the IDDE Program,
- Review and Modifications to the IDDE Program.

Each of these sections includes descriptions of the notable activities conducted to manage illicit discharges and connections.

7.2 PUBLIC REPORTING OF ILLICIT DISCHARGES AND CONNECTIONS

This section describes the City's efforts to publicize and facilitate public reporting of illicit discharges (Permit section J.3.a.(3)(f)xi), including a public hotline. It also includes the number of times the hotline was called, as compared to previous reporting periods, and a summary of the calls (Permit section J.3.a.(3)(f)x).

The City's local stormwater hotline(s), (760) 726-1340 ext 1686 and 1698, accept(s) information from callers in English and Spanish, respectively. The hotline is operated by the City of Vista's Stormwater Division (Engineering Department) and provides a 24-hour voicemail for the public to report stormwater complaints. The City includes the stormwater hotline number on its website and printed materials including stormwater brochures and the City newsletter.

During the reporting period, the City publicized and facilitated public reporting of illegal discharges. The City's Stormwater division frequently includes stormwater articles in the City's Newsletter (Inside Vista). During the reporting period, the City included a stormwater article in the fall 2007 Newsletter edition (Appendix A) which provided the hotline number for residents to report illegal discharges. The newsletter was sent to 36,000 residences. The City held eleven community events that provided opportunities for the City to educate the City's English and Hispanic communities regarding best management practices. Stormwater brochures, which include instructions for reporting illegal discharges, were provided to the public at events. At

event booths, presentations using the Enviroscape watershed model were conducted that further emphasized the importance of reporting illegal discharges to the City. The City conducted 42 classroom presentations (879 students) at seven elementary schools in which students and instructors engaged in positive discussions about the environment and pollution prevention. Students were provided with stormwater brochures and giveaway items and were encouraged to share what they learned with their parents. Through these educational efforts at schools, it is the intent that parents will also become educated about pollution prevention. Through complaint investigations and annual commercial and industrial inspections, City staff encouraged residents and business owners to report illegal discharges and illicit connections to the City.

During the reporting period, the City received 14 calls through the hotline. A summary of the hotline calls is included in Appendix B. Table 7-1 shows the number of hotline calls the City received during the past 3 Fiscal years.

Table 7-1 Hotline Calls (2005-2008)

	FY 05-06	FY 06-07	FY 07-08
Number of Hotline Calls	19	14	14

In addition to the 14 hotline calls, the City's Stormwater division received 174 stormwater complaints during the reporting period. These complaints were reported by residents and City field personnel. It is not uncommon for residents to report stormwater complaints through City phone lines other than the hotline. City departmental phone numbers are listed on the City's Newsletter (Inside Vista) and website and included in various stormwater educational brochures. City staff often observe stormwater incidents in the field and report them to the Stormwater division. Through the City's Municipal Stormwater training program, City personnel are directed to report stormwater incidents observed in the field or reported from residents to the Stormwater division.

7.3 SPILL REPORTING, RESPONSE, AND PREVENTION

This section describes the City's efforts to prevent and respond to sewage and other spills into its MS4 from any source (including private laterals and failing septic systems). This section includes the following:

- Identification and description of all spills to the MS4 and response to the spills (Permit section J.3.a.(3)(f)vii).
- A description of activities implemented to prevent sewage and other spills from entering the MS4 (Permit section J.3.a.(3)(f)viii).
- A description of the mechanism whereby notification of sewage spills from private laterals and septic systems was received (Permit section J.3.a.(3)(f)ix).

7.3.1 Spill Response and Reporting

During the reporting period, the City reported and responded to 11 private lateral sewer spills and 4 City sewer system overflows. Appendix I includes a summary of FY 07-08 sanitary sewer system overflow incidents. In responding to spills, the City follows the procedures included in

the City's Sanitary Sewer Overflow Prevention & Response Plan (SSOPRP). The City revised its SSOPRP in May 2008 to coincide with the Regional Water Quality Control Board Order No. WQ 2008-0002-EXEC. This replaces all previous versions of the City's SSOPRP that had been designed to comply with State Water Resources Control Board Order No. 96-04. All spills are reported online through California Integrated Water Quality System Project (CIWQS).

During the reporting period, the City followed its SSOPRP in responding to all reported City sewer overflows and private lateral spills. This Plan details all the procedures that are implemented during any type of sanitary sewer overflow. The procedures include: (1) evaluating the situation and determining what resources are needed to remedy it, (2) taking digital pictures of sewer overflow emergencies to determine the spill amount for reporting and documentation, (3) taking steps to protect the health and safety of the public, and (4) commencing steps to mitigate the overflow. The City Public Works department is responsible for responding to and abating public sewer discharges to the City's MS4. Since most residents and businesses do not have the equipment to abate a private lateral spill, private lateral spills are also often abated by Public Works or a City contractor. Upon arrival at an overflow incident, containment is a priority. The City's Public Works department operates three Vactor trucks which are essential in the containment and cleanup of spills.

In addition to the procedures stated above, the City conducts compliance efforts in private lateral and septic system spills. In the City's SSOPRP, Stormwater Code Enforcement staff is to be notified immediately upon a private lateral spill. Code Enforcement staff conducts an investigation to identify a responsible party and to require BMP implementation; this is important to ensure responsible parties take the necessary steps to prevent spills from reoccurring. The BMPs most often implemented include immediately contacting a plumber to remove roots, grease, or other debris that is causing blockage in the lateral and implementing an ongoing maintenance plan to ensure continued compliance. When necessary, City staff may utilize escalating enforcement measures to gain compliance, including verbal and written warnings, Notices of Violations, and/or Administrative Citations.

The City's Fire Department also responded to 27 hazardous materials incidents during the reporting period. These included gasoline, oil, other flammable, and other chemical releases. For all incidents where the release may have entered the MS4, the fire department notified the San Diego County Department of Environmental Health and/or the City of San Diego Hazardous Materials Response Team. Where containment was necessary, the City's public works crews were mobilized to provide support and containment. Where required, appropriate agencies were contacted by the incident responders.

7.3.2 Spill Prevention

Preventive maintenance is the primary BMP implemented to prevent wastewater pollution from entering the storm drain system and receiving waters. The City's Wastewater Division annually cleans and inspects the wastewater collection system. During the reporting period, the City conducted its annual inspection and cleaning of the wastewater collection system. The City implemented the preventative maintenance activities listed in the City's 2008 JURMP including:

1. Sanitary sewer inspections,
2. Increased maintenance at “hotspot” areas which are prone to grease buildup and root intrusion,
3. Daily inspections of sewer manholes,
4. Recording of and response to public and City staff complaints, and
5. Replacement and upgrade of sewer main and manholes, as needed.

Crews are vigilant in looking for problem areas and pay particular attention to areas of known potential problems (e.g., older lines, historical blockage areas, etc). While conducting inspections, City crews patrol main sewer lines looking for any leaks in the system and from private laterals.

During the reporting period the City initiated a sewer line video inspection and assessment program. This program was recommended as part of the City’s Sewer Master Plan which was updated in January 2008 to comply with State Water Resources Control Board Order No. 2006-003-DWQ. The Sewer Master Plan provides a set of recommended projects that aim to minimize the potential for sewer system overflows. Video inspections enable the City to effectively assess the condition of the City’s wastewater collection system. The City will use information gathered from the inspections to prioritize and help define capital improvement projects and operational maintenance activities. During the reporting period, the City conducted video inspections of 32 miles of the City’s wastewater collection system and did not detect any discharges to the MS4. The City plans on completing inspections on the entire wastewater collection system during FY 08-09 and using the deliverables in implementing the Capital Improvement and Operational programs.

During the reporting period, the City implemented other activities to prevent sewage and other spills from entering the City’s MS4. These activities include conducting education and outreach efforts to all audiences, conducting annual inspections of commercial and industrial facilities, and conducting complaint investigations. The City reported on these activities in the City of Vista’s FY 07-08 annual JURMP report (Sections 3.0, 4.0, 5.0, 6.0, and 8.0) that was submitted in September 2008.

7.3.3 Spill Notification

Generally, the City is notified of spills to the MS4 by residents and City personnel. During the reporting period, the City operated its local stormwater hotline, (City Eng dept / stormater division) (760) 726-1340 ext 1686 and 1698 which provides reporting instructions to residents. Residents also reported spills to the City through other phone lines and departments including the Public Works Department. City departmental contact information is included on the City’s website, in the City’s Newsletter (Inside Vista), and in other printed materials. Through the City’s stormwater training program, City staff is directed to report spills to the Engineering and Public Works departments.

In the reporting of spills, the City follows the notification procedures in the City’s SSOPRP. During the reporting period, the City followed these procedures in response to all reported public and private sewer system overflows. In these procedures, the Public Works Supervisor is to be contacted immediately. The supervisor makes all appropriate agency and inter-agency notifications including notification to the City’s Stormwater Division.

7.4 URBAN RUNOFF MONITORING

This section describes the results of the City's Urban Runoff Monitoring Programs (Dry Weather Field Screening and Analytical Monitoring, MS4 Outfall Monitoring, and Source Identification Monitoring) conducted during the reporting period. The section includes the following (Permit sections J.3.a.(3)(f)i-iii):

- Reporting of all dry weather field screening and analytical monitoring results.
- Dry weather field screening and analytical monitoring consultant reports generated.
- Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.

7.4.1 Dry Weather Field Screening and Analytical Monitoring Program (May 1, 2008 – September 30, 2008)

The City of Vista designated 29 primary monitoring stations in its 2008 Dry Weather Monitoring Program. Monitoring was conducted at all sites in August 2008 by D-Max Engineering, Inc, (the City's contractor) and was based on the requirements in the City's Municipal Stormwater Permit, Order No. 2007-0001. An updated map of the City's Dry Weather Monitoring Sites and MS4 is included in Appendix H.

Monitoring efforts include field screening and analyses, laboratory analyses, trash assessments, and data assessment. Of the 29 primary monitoring stations, 25 had sufficient flow to collect samples. For the other four stations, designated alternate sites were monitored. Eight of the field testing sites was sampled for laboratory analyses, which met the Permit requirement that laboratory analysis be completed for at least 25% of monitored sites.

Monitoring data is compared to action levels for indications of potential illegal discharges and connections to the City of Vista's MS4. During the initial sampling, five sites had nitrate exceedances, three had total coliform exceedances, one had a pH exceedance, and one had an ammonia exceedance. A summary of these exceedances is included in Table 7-2.

As required in section D.4.d.(2) of the Illicit Discharge Detection and Elimination Component of the Permit, Copermittees shall, within two business days of receiving field screening and analytical laboratory results, conduct an investigation to identify the source of the discharge or provide rational for why the discharge does not pose a threat to water quality and does not need further investigation. In following this requirement, the City conducted all of its follow-up investigations according to the following procedure:

- Sites that had initial exceedances were re-sampled within one to two business days of receiving field screening and/or laboratory analytical results. This is done to determine if a parameter(s) is continually exceeding its action level. In the City's 2008 Dry Weather Monitoring Report, the City referred to this as the confirmation sample. During site visits, sampling staff also investigated the immediate vicinity of the site and used best professional judgment in determining pollutant sources.
- When confirmation sampling confirmed continued exceedance of action levels, a follow-up investigation was conducted within one to two business days of receiving sampling results. This included moving upstream in the drainage system and when necessary collecting samples to measure the parameter(s) in exceedance.

- Where the source of the exceedance was known and not the result of an illicit discharge or connection to the MS4, a full follow-up investigation was not necessary.
- If, at any time it was determined that an illegal discharge was occurring, an immediate upstream investigation was conducted and City staff was notified.

Five stations were identified for follow-up investigations, three for nitrate-nitrogen exceedances and two for total coliform exceedances. Information on follow-up investigations is included in Section 7.5 of this report and the complete results and discussion of the monitoring efforts are included in the City of Vista's 2008 Dry Weather Field Screening and Analytical Monitoring Program Report (Appendix C).

Table 7-2 2008 Action Level Exceedances

Station	pH	Ammonia-N	Nitrate-N	Total Coliform
AH-8A			✓	
AH-21				✓
AH-35*			✓	
BV-8*				✓
BV-10			✓	
BV-18*			✓	
BV-24*			✓	
G-3		✓		
G-4	✓			
SS-1*				✓

*Stations identified for follow-up investigations.

7.4.2 Trash Assessment (May 1, 2008 - September 30, 2008)

As required in Section II.B.3.c.(7) of the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Permit, a trash assessment was conducted at each primary and alternate dry weather monitoring station. This assessment is designed to provide information on the spatial extent and relative amount of trash present, as well at the nature and origin of the trash at the site. A Trash Assessment Form was completed for each site.

A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form includes five categories to describe the amount and extent of trash. The five categories include optimal, sub-optimal, marginal, sub-marginal, and poor. Sites are also evaluated for the potential threat to human health and/or aquatic health. No sites posed a threat to human or aquatic health. Definitions of the categories for trash assessments and for threat assessments are included below in Table 7-3.

In this program, a higher priority was given to sites that received a rating of sub-marginal or lower. For sub-marginal and poor sites, an additional assessment is made as to the potential route and source of the trash. Two sites, AH-8A and G-3, received sub-marginal ratings, but no site received a poor rating. A summary of the trash assessment results is included in Figure

7.1. Completed Trash Assessment Forms for all dry weather monitoring stations are included in the City's 2008 Dry Weather Field Screening and Analytical Monitoring Program Report (Appendix C).

Table 7-3 Definitions for Amount and Extent of Trash

Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).
Site Evaluation for Threat to Human Health and/or Aquatic Health	
Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc…). Comments should be added for clarification.
Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

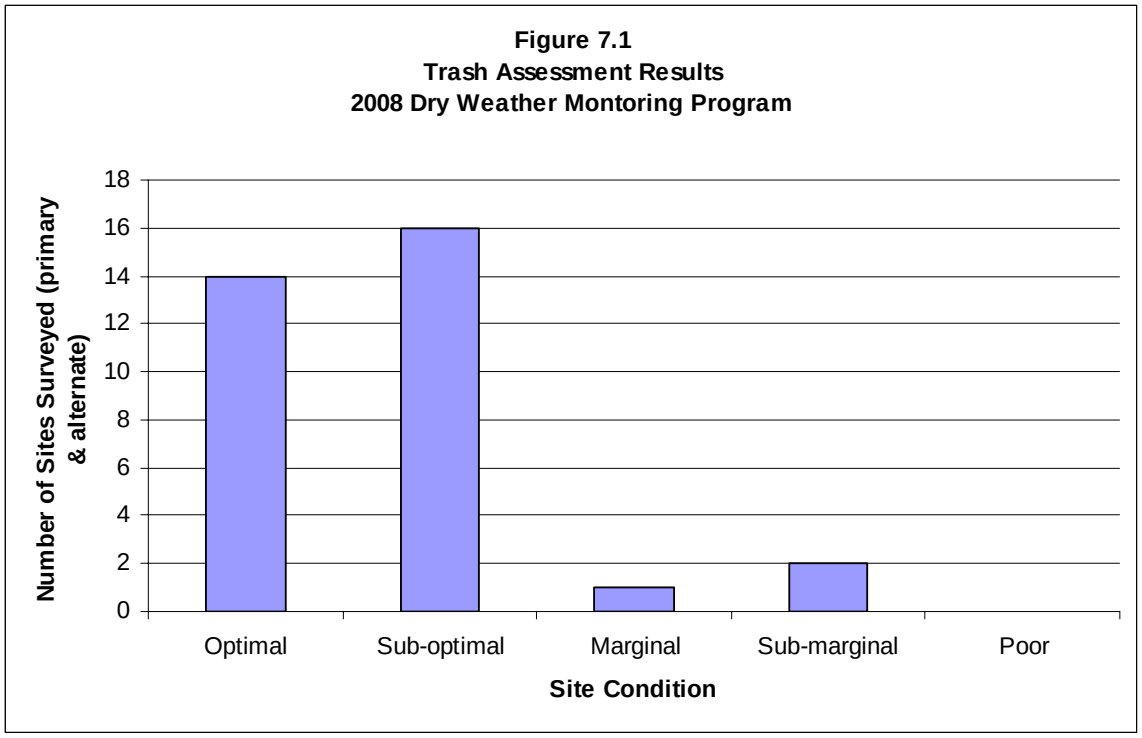

7.4.3 MS4 Outfall Monitoring Program

The goal of this monitoring program is to characterize pollutant discharges from MS4 outfalls and to assess whether these discharges contribute to the water quality problems in the receiving waters in San Diego County Watersheds. The MS4 Outfall Monitoring Program is divided into 4 sub-programs which include the Targeted Dry Weather, Targeted Wet Weather, Random Dry Weather, and Random Wet Weather programs. The monitoring design is based on a combination of random and targeted sampling of discharges from MS4 outfalls that drain into receiving waters. During the reporting period, the City of Vista, along with other San Diego County Copermitees took part in the development of the Program Work Plan (Municipal Separate Storm Sewer System (MS4) Outfalls Monitoring Program in San Diego County Watershed Management Areas Work Plan - June 25, 2008). A copy of the Plan is included in Appendix D.

To meet permit requirements in FY 07-08, the initial year of the program, Copermittees collected one targeted dry weather sample from each of the nine Watershed Management Areas (WMAs). Beginning in FY 08-09 monitoring year, the Targeted Dry Weather, Random Wet Weather, and Random Dry Weather programs will be initiated. Copermittees are developing a work plan for the Targeted Wet Weather program.

The MS4 outfall monitoring data collected for 2007-2008 will be included in the San Diego County Municipal Copermittees Urban Runoff Monitoring Annual Report to be submitted January 31, 2009 as required by the Permit.

7.4.4 Source Identification Monitoring Program

The goal of this monitoring program is to identify and assess the sources of discharges of constituents related to urban runoff causing high priority water quality problems in the receiving water(s) within each watershed management area (WMA). During the reporting period, the City of Vista, along with other San Diego County Copermittees took part in the development of the Program Work Plan (Urban Runoff Source Identification Monitoring Program in San Diego County Watersheds Work plan – June 25, 2008). A copy of the Work Plan is included in Appendix E.

For the FY 08-09 monitoring year, two dry weather source identification studies are scheduled to be conducted in the cities of La Mesa and Carlsbad. Both studies will focus predominantly on irrigation runoff and related pollutants in single-family residential neighborhoods. The La Mesa study will include a small area of commercial development that will be analyzed separately and provide additional insight on dry weather flows from mixed use areas.

Copermittees are required to implement this program during FY 08-09. The San Diego Copermittee's Regional Monitoring Annual Report will include a description of the source identification monitoring implemented during FY 08-09 and will be submitted in January 2010.

7.5 FOLLOW-UP AND ENFORCEMENT

This section describes the City's efforts to investigate and follow up on complaints and dry weather monitoring results which indicate potential for illicit discharges and illicit connections. This section includes:

- A brief description of any investigations and follow-up activities for illicit discharges and connections (Permit section J.3.a.(3)(f)iv).
- The number and brief description of illicit discharges and connections identified. (Permit section J.3.a.(3)(f)v).
- The number of illicit discharges and connections eliminated (Permit section J.3.a.(3)(f)vi).
- The number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion will exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance (Permit section J.3.a.(3)(f)xii).

7.5.1 Complaint Investigations

During the reporting period, the City responded to stormwater complaints in accordance with procedures detailed in the City's JURMP, updated in March 2008. All reported complaints were logged electronically and responded to by the City's Stormwater Code Enforcement staff. Most complaints were received from the public and City field staff.

A total of 135 complaint cases involving illegal discharges and illicit connections were investigated by the City's Stormwater division during the reporting period. This amounted to 72% of all complaint cases investigated during FY 07-08 (188 total). The remaining 53 cases involved BMP violations and were reported on in the City of Vista's 2008 Annual JURMP Report that was submitted in September 2008. Of the 135 generated complaints, 111 were confirmed as violations. A summary of all FY 07-08 complaint cases is included in Appendix F.

Enforcement actions were conducted in the majority of confirmed complaint cases. During the reporting period, all confirmed illegal discharges and illicit connections were eliminated. Of the 111 confirmed complaint cases, City staff issued enforcement actions in 104 of these cases which included 70 verbal warnings, 28 Notice of Violations, and six Citations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. Stormwater education was always communicated to the responsible party. Table 7-4 below includes information on the type, source, and actions taken in all illegal discharges and illicit connection cases.

Table 7-4 Summary of Actions Relating to Illegal Discharges and Illicit Connections

Complaint Type	Complaints Investigated/Source						Complaints Confirmed	Violations Eliminated	Enforcement Action			
	Residential	Commercial	Industrial	Construction	Other	Totals			Verbal	Notice of Violation	Citation	Totals
Illegal Discharges	78	30	1	5	4	118	98	98	65	20	6	91
Illicit Connection	4	–	–	–	–	4	2	2	2	–	–	2
Private Lateral and Septic Spills	13	–	–	–	–	13	11	11	3	8	–	11
Totals	95	30	1	5	4	*135	111	111	70	28	6	104

* This does not include all complaints for FY 07-08. FY 07-08 Total = 188
(this includes other complaint type cases i.e. BMP violations)

7.5.2 Dry Weather Monitoring Investigations (May 1, 2008 – September 30, 2008)

During the initial sampling, ten sites exceeded action levels, each for one parameter (Table 7-2). These stations were re-sampled to confirm if the parameter continued to be present in concentrations above its action level. Of the ten stations, eight continued to exceed action levels. Generally, a full follow-up investigation was conducted at stations that showed continued exceedances, unless it was concluded that conditions at the site were the likely cause of the

exceedance. Procedures for follow-up investigations are included in Section 7.4.1 of this report. Summaries of Dry Weather Action Level Exceedances and Follow-up Actions are included in Table 7-5. Following Table 7-5 are summaries of the follow-up investigations by pollutant type.

Table 7-5 Summaries of Dry Weather Action Level Exceedances and Follow-up Actions

Site	Constituent Exceedance	Confirmed	Follow-up Conducted	Suspected Source
AH-8A	Nitrate-N	Yes	No	Groundwater seepage
AH-21	Total Coliform	Yes	No	Decomposing organic matter
AH-35	Nitrate-N	Yes	Yes	Unknown, but possibly originating in the City of San Marcos.
BV-8	Total Coliform	Yes	Yes	Trash, decaying organic debris
BV-10	Nitrate-N	No	No	Transient flow
BV-18	Nitrate-N	Yes	Yes	Groundwater seepage
BV-24	Nitrate-N	Yes	Yes	Groundwater seepage
G-3	Ammonia-N	No	No	Decomposing organic matter and possibly homeless activity
G-4	pH	Yes	No	Algal photosynthesis
SS-1	Total Coliform	Yes	Yes	Decomposing leaves, low flow rate

.

Total Coliform Bacteria

Site BV-8

A follow-up investigation was conducted for site BV-8 to identify total coliform sources. The initial (110,000 MPN/100 ml) and confirmation (98,000 MPN/100 ml) samples had concentration levels above the action level. A sample was collected at upstream location, BV-8-1 to determine potential total coliform sources. At BV-8-1 the total coliform concentration measured at 186, 000 MPN/100 ml and was higher than the concentrations measured at BV-8. Sampling staff observed a substantial amount of food packaging and decaying organic debris in the exposed channel upstream of site BV-8 and continuing through upstream location BV-8-1. Based on these observations and the sampling results it was determined that the exposed channel was a likely source of total coliform bacteria.

Site SS-1

A follow-up investigation was conducted for site SS-1 to identify total coliform sources. The initial (80,000 MPN/100 ml) and confirmation (98,000 MPN/100 ml) samples had concentration levels above the action level. Site SS-1 did contain a significant amount of decomposing leaves and had a shallow, slow moving flow. Sampling staff identified an upstream sampling location, SS-1-1. At SS-1-1, total coliform concentrations measured below the action level. Based on the sampling results and initial site conditions (decomposing leaves and low flow) it was determined that the high total coliform concentrations were likely the result of conditions at the site.

Nitrate-N

Site AH-35

A follow-up investigation was conducted for site AH-35 to identify nitrate sources. Nitrate concentrations measured during the initial and confirmation visit were above the action level (46.87 mg/l and 42.99 mg/l, respectively). Runoff flows to site AH-35 from conveyance systems located northeast and southwest from the site. Sampling staff identified upstream sample locations in both areas (sites AH-35-1 and AH-35-2). Nitrate concentrations measured at 11.26 mg/l at site AH-35-1 and 38.76 mg/l at site AH-35-2. Nitrate concentrations at site AH-35-2 closer resembled concentrations at primary site, AH-35. Construction activities were underway at the road intersection upstream of site AH-35-2, but no runoff was observed entering storm drains. As staff identified water coming from areas east and northeast from site AH-35-2 it was determined that further upstream investigations will need to be conducted in those areas; both areas were identified to be within the City of San Marcos. The City of San Marcos has been notified and both the City of Vista and City of San Marcos are in the process of conducting a joint investigation to identify the nitrate source(s).

Sites BV-18 and BV-24

A follow-up investigation was conducted for sites BV-18 and BV-24 to identify a nitrate source(s). Sites BV-18 and BV-24 are located in the same stormwater conveyance system; BV-18 is in a natural creek and site BV-24 is upstream from BV-18. Both sites had nitrate exceedances during the initial and confirmation sample events. At BV-18, nitrate concentrations were measured at 18.92 mg/l and 15.65 mg/l respectively. At BV-24 nitrate concentrations were measured at 13.80 mg/l and 13.42 mg/l. Three main conveyance systems contribute flow to site BV-24 from the southeast, east, and northeast. During the follow-up investigation, the east and southeast conveyance systems were dry, but flow was observed in the northeastern line. The northeastern line moves through a private residence at 1450 Foothill Drive just before reaching site BV-24. Staff observed areas upstream of 1450 Foothill Drive were dry. A City investigation years ago, identified some water seepage on at the property. Based on the follow-up investigative results and sampling history of the area, staff concluded that nitrate sources are most likely originating from seepage in the vicinity of 1450 Foothill Drive. Attempts were made during this dry weather season to contact the property owner to conduct further investigations of the current source of water, but the resident could not be reached. The City is in the process of conducting further investigations to indentify the nitrate source(s).

7.5.3 Trash Assessment Results and Follow Up Actions (May 1, 2008 – September 30, 2008)

At dry weather monitoring sites where significant amounts of trash were noted, sites were prioritized for cleanup. City staff has conducted trash abatement at marginal (MV-3) and sub-marginal (AH-8A and G-3) rated sites. There were no sites rated as poor. At these sites, the most prevalent sources of trash appear to be food related waste. This type of waste will be addressed further in the commercial inspections program in FY 08-09.

7.6 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT EFFECTIVENESS ASSESSMENT

7.6.1 Introduction

The effectiveness assessment of the IDDE component of the JURMP consists of assessing effectiveness of program activities and BMPs required by the permit, the IDDE component as a whole, and will lead to an integrated assessment as sufficient water quality data is collected and integrated into the program planning process. The assessment process utilizes outcome levels 1-6 as described in Attachment C of Order 2007-0001. The assessment of the program activities and BMPs is presented in Section 7.6.2. The assessment of the IDDE component follows in Section 7.6.3. Section 7.6.4 describes potential water quality assessments with examples of how these may lead to an integrated assessment of water quality and program effectiveness in the future.

7.6.2 Activity/BMP Assessment

Each of the program activities and BMPs required under Section D.4 of the Permit (IDDE) is listed in an outcome based table provided in Appendix G. In the table, each required element is confirmed as implemented during FY 07-08 and reported on in the preceding sections. A recent improvement to the activities includes revisions to the Dry Weather Monitoring Program sites, allowing for increased coverage of the MS4, and leading to a more effective monitoring program. A potential area for improvement in the future is to increase the use of the stormwater hotline. Currently City Staff report complaints via a number of phone lines, depending on personnel available. In the future, the stormwater staff will work with City departments in annual training sessions to promote the stormwater hotline as a centralized reporting phone number for stormwater related complaints.

7.6.3 Component Assessment

As a whole, the IDDE Program appears to be effective in its main objective: to actively seek and eliminate illicit connections and illicit discharges to the MS4, thus minimizing potentially negative impacts of human activities on receiving water bodies. (JURMP 2008)

From a basic compliance standpoint using level 1 outcomes, the City's program is satisfying permit requirements and implementing the program in accordance with the Order. This assessment is summarized in Table 7-6 below and supported further in Appendix G. The table compliments Table 11-1 of the City's JURMP Annual Report submitted in September 2008.

Table 7-6 Municipal Permit Component Targeted Outcome Assessment Results Annual Summary

Municipal Permit Component	Targeted Outcome Assessment Result	Compliance Assessment Highlights	Conclusions and Recommendations
Section 7- Illicit Discharge Detection and Elimination	Met all targeted outcomes	Responded to 188 stormwater related complaints leading to the identification and elimination of 109 illicit discharges and 2 illicit connections; 28 Notices of Violation and 6 Citations were issued for these violations; Dry Weather Monitoring was completed and follow-up investigations were performed or are ongoing.	Illicit Discharge Detection and Elimination Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended

Changes in knowledge and behavior, levels 2 and 3 are difficult to assess with data collected under this component. Changes in knowledge are assumed due to the amount of educational information distributed as a part of the program. In responding to 188 complaints during FY 07-08, educational information was conveyed in each case where violations or potential violations were evident. Changes in behavior were evident in that in all illicit discharge and connection investigations, all illegal discharges and connections were eliminated. Through the response efforts, including education and enforcement, behaviors were changed. Follow-up investigations ensured continued compliance.

Load reductions are not explicitly calculated for this component. However, with the elimination of 109 illicit discharges and 2 illicit connections, pollutant loading to the MS4 has been reduced. Pollutants addressed often included sediment, bacteria, nutrients, and may have included others depending on the nature of the discharge. Downstream receiving waters are 303(d) listed for some or all of these pollutants. With the successful elimination of over 100 illicit discharges and connections, load reductions of these constituents have occurred as a result of this component of the program. Absent detailed data collection such as flow and constituent concentrations from the illicit discharges, true estimates of load reductions are not feasible.

Improvements to discharge and receiving water quality, leading to the restoration of beneficial uses for the water bodies, are one goal of the stormwater programs. Data collected under the IDDE Component may be helpful in determining where changes in water quality have occurred over time. While the primary goal of the Dry Weather Monitoring Program is to detect and eliminate illicit discharges and connections to the MS4, the program also gathers data that may be used to characterize water quality in the MS4 and in receiving waters. Using data collected at key sampling locations over time, changes in water quality may be detected. It should be noted however, that the data is collected only once per dry season, representing a snapshot of the conditions at that particular location.

7.6.4 Integrated Assessment

With the addition of monitoring programs such as the MS4 Outfall and Source Identification Programs and the addition of monitoring sites such as the temporary watershed assessment stations (TWAS), more data will be available in the future, allowing for more detailed and statistically valid assessments. In the mean time, Copermittees have collected many years of data through the Dry Weather Monitoring Programs and the Regional Programs. In general, the Dry Weather Programs focus on the MS4, while the Regional Programs focus on the receiving waters. Comparisons of the data collected in the two programs may allow for assessments to be made of the existing conditions in each system and may illustrate relationships between the two.

Examples of how the data may be used include:

- Comparisons over time at sites with sufficient data to detect improving or declining water quality.
- Comparisons between sites to determine areas where pollutant loading is more significant, thereby requiring more attention.
- Comparisons between sets of data in different sub-basins to determine where focused efforts may be necessary.
- Comparisons of receiving water data over time and spatially to determine trends.

These assessments have not been performed to this point, most often due to a lack of data. It may be feasible however, to combine data sets on a hydrologic area level or via other groupings for assessments, depending on the amount of data available. These combinations may make for more accurate water quality assessments.

Where assessments of MS4 and/or receiving water quality are feasible, these data may be used to drive management actions and to formulate study designs for activities in the future. As data is available, the program will be able to evaluate the accuracy of the constituents of concern, determined by the 303(d) listings to date at this time. With a more accurate picture of the water quality problems, programs will be able to adapt and improve in the future.

Leading up to the next JURMP planning phase, the City will take steps to further assess existing water quality data in an attempt to focus programs where problems are identified and to develop an appropriate significant activity for FY 09-10.

7.7 JURMP REVISIONS

The implementation of the Jurisdictional Urban Runoff Management Plan is an iterative process that involves annually assessing program effectiveness and making modifications when needed to improve programs and maintain compliance. In following this practice, the City made modifications to its 2008 JURMP that included hiring additional stormwater staff and modifying its list of dry weather monitoring stations. Revisions to the JURMP are summarized in Table 7-7 below.

Table 7-7 FY 07-08 JURMP Revisions

Section	JURMP Revision
Applicable to multiple sections	During the reporting period, the City's Engineering Department hired additional Stormwater staff. In March and May 2008, the City hired a Stormwater Code Enforcement Officer and Senior Environmental Specialist. Both positions are employed in the Stormwater Division and assist the Stormwater Manager in the implementation of the City's Jurisdictional Urban Runoff Management Plan.
7.0 Illicit Discharge Detection and Elimination Component	During the reporting period, the City modified its Dry Weather Monitoring Stations. Prior to the 2008 Dry Weather Monitoring event, City staff modified its Dry Weather Monitoring stations to increase coverage of the City's MS4. The Station Identifications did not change (ex. AH-35), only their locations within the City's MS4 did. The revised list of Dry Weather Monitoring Stations is included in Appendix C.

APPENDIX A

Stormwater Newsletter Article

Help **PREVENT** stormwater pollution

Storm drains are intended to take rainwater straight to the ocean to avoid area flooding. Rainwater or even runoff from sprinklers or hoses carries contaminants like litter, animal waste, automobile fluids, fertilizers and pesticides into the storm drains and pollutes our local waters. This creates a health risk for children, kills marine life and contributes to localized flooding and beach closures.

Everyone contributes to stormwater pollution each day. Dropping cigarette butts on the ground, allowing paper or trash to blow into the street, and hosing leaves or dirt into the street are just a few examples of things people do to contribute to stormwater pollution.

Waters that flow over streets, parking lots, construction sites and industrial facilities carry these pollutants through the storm drain network directly into the ocean.

Since stormwater is not treated before it reaches the ocean, it is everyone's responsibility to make sure storm drains and waterways are free of pollutants. Here are a few tips that can help protect our environment:

- Do not put anything in the storm drains but rainwater
- Properly dispose of all trash
- Pick up after your pet
- Recycle your motor oil. Find locations at **www.earth911.org**
- Bag, compost or recycle grass, tree limbs, leaves and other yard waste
- Use yard waste as mulch, as natural fertilizer or as ground cover
- Encourage local businesses to start a recycling program
- Use double-sided photocopies
- Replace hazardous household chemicals with less toxic alternatives
- Report illegal dumping to (760) 726-1340, x1686
- Do not over water pesticides or fertilizers or apply them before it rains
- Purchase re-refined motor oil for your vehicle

For more information, visit www.earth911.org

Dispose of household hazardous waste properly

Residents may drop off household hazardous waste for free on Saturdays from 9 am to 3 pm at the City's collection facility located at 1145 E. Taylor Street.

Used motor oil, oil filters, antifreeze, auto batteries, paint, pesticides, household cleaners, batteries, fingernail polish remover, pool and photo chemicals, and other household hazardous waste can be disposed of at this drive through facility. E-waste such as computers, televisions and toaster ovens are also accepted.

No commercial loads are allowed, and the facility is closed on holiday weekends.

Free door-to-door collection services are available to disabled citizens and those aged 65 year and older.

Please call (800) 444-4244 to schedule an appointment.

VISTA
CALIFORNIA

APPENDIX B

FY 07-08 Stormwater Hotline Calls

FY 07-08 STORMWATER HOTLINE CALLS

DATE	TIME OF CALL	ADDRESS	PHONE	COMPLAINT	ACTION TAKEN
8/23/2007	10:55 a.m.	2535 Guajome Lake Rd.	(858) 967-2638 (7:00 am - 3:30 pm)	Resident is an Insect Detection Specialist with the County of San Diego. She was at the Lakeview Nursery at 2535 Guajome Lake Rd and reported that on the NW corner of the property there was copious runoff to the street and draining to a reparian area. She asked that our Stormwater person take a look at it. I referred this call to Sandra Sotola, Stormwater Code Enforcement Officer.	I spoke with Evelyn Hill at the County and told her that the Lakeview Nursery was in the County area. She said she was new to all of this and would verify it on the map. This issue is therefore outside of Vista jurisdiction. Sandra Sotola, Storm Water Code Enforcement Officer 8/27/07
9/8/2007	11:24 am (Sat.)	490 Pina Ln.	760-758-1547	Resident called to request that a street light be repaired at 490 Pina Ln. I forwarded this call to Public Works.	Not a stormwater issue.
9/25/2007	3:29 p.m.	770 W. Taylor St.	(760) 419-0656	Resident called to report that some landscapers are depositing soil and sand in an open lot near the creek. There are no BMPs in place to keep this from entering the creek when it rains. Address given is 770 W. Taylor St. She called the County and the County stated that this is City area.	Forwarded voice mail to Sandra Sotola, Stormwater Code Enforcement Officer. 9/27/07, it was forwarded to the county hotline (Evaluz Zarnes 888-846-0800) with the photos I took this morning. It definitely is county and I will call back the complainant. Sandra Sotola, Storm Water Code Enforcement Officer,City of Vista
9/26/2007	12:19p.m.	2220 Eastbrook Rd.	(760) 597-0476	Engine Parts in the front yard of residence.	Stormwater Officer and Code Dept Officer both went to site. They saw engine parts but saw no evidence of oils/liquids. They were given a HELP brochure from Stormwater Officer and Code Officer gave them a Notice of Violation and explained the need to remove the items from the front of the house.
9/28/2007	2:54 p.m.	2604 Coronado Pl.	(760) 597-8857	Pressure washing red tile roof and discharging into street.	9/28/07, investigated location, spoke with property owner who will clean up red tile sediment in curb gutter. 10/1/07, area cleaned. SES

FY 07-08 STORMWATER HOTLINE CALLS

DATE	TIME OF CALL	ADDRESS	PHONE	COMPLAINT	ACTION TAKEN
10/8/2007	11:51 a.m.	Alvarado Ter. & Palm Dr.		Called # 1) To report that someone was hosing the sidewalk in front of Washington Middle School on Olive Ave. They were not reclaiming the water. (Saturday 10-6-07) --- #2) Several times he has witnessed the hosing off of the bus Station area on Olive Ave, by the Vista Village intersection, and he feels that is also in violation.	Transferred call to Stormwater Code Enforcement Officer. Stormwater Code Enf. Officer called the Vista Unified School District to inform them of the necessity to cease this practice or reclaim the water. Complainant was notified of the Bus Station's practice of reclaiming water.
10/10/2007	11:58 a.m.		(760) 842-8552	Caller wanted to report that there were two containers of trash on the corner lot at Alvarado and Palm Dr. She thought it looked trashy and possibly suspicious. It has been there for a while.	Forwarded voice mail to Sandra Sotola, Stormwater Code Enforcement Officer. She referred this to the City Code Enforcement Dept.
10/16/2007	5:01 p.m.		(760) 295-3019	Caller reported that a neighbor was dumping diatomaceous earth into a gutter.	Stormwater Code Enforcement Officer went out and found white powdery substance. Neighbor was not home. She left a HELP brochure and a Pool brochure at the home.
10/25/2007	10:40 a.m.	490 Gail Dr.	(760) 643-7545	Caller wanted to report that the neighbor and 490 Gail Dr. was washing down cars and driveway after the firestorms of 2007 in So. Calif.	Her call was returned same day and it was explained that with all the ash and debris from the fires it was difficult to enforce each individuals property clean-up. We have the City website available on-line with guidelines concerning this type of clean-up. She did not want to speak to the neighbor because they did not get along well.
10/31/2007	9:32 a.m.		(760) 842-8552	Wanted to report trash bags and a mattress dumped on an empty lot. She gave an address of 463 but failed to name the street.	The message was forwarded to the Public Works Dept. They would return the call and take care of the trash per the secretary.
11/27/2007	2:28 p.m.	**HANG -UP**	(760) 414-1514		No message was in voice mail --- I returned the call and the woman who answered said that nobody called this number. I asked if there was a problem and they responded "no".

FY 07-08 STORMWATER HOTLINE CALLS

DATE	TIME OF CALL	ADDRESS	PHONE	COMPLAINT	ACTION TAKEN
12/5/2007	2:54 p.m.	1264 Jessie Ln.	(760) 945-1446	Ms. Perkins resides at 1264 Jessie Ln. She lives right next to the Sprinter railroad line. Within the fenced area of the tracks a storm drain is already overflowing from last weeks rain and a weekend of rain is predicted this week. She is concerned for her property.	Call was referred to our Stormwater Code Compliance Office. Her response follows: " I spoke with the caller. I gave her NCTD's number and email for Steve Hoyle, Sprinter Project Officer. She was familiar with Steve and had talked with him previously, but wanted to check with me first. I reiterated that it is a private issue between property owners."
12/18/2007	8:05 a.m.	208/206 Goetting Way	(760) 941-3290	Storm drains at 208/206 Goetting Way are clogged and need cleaning before the rains come. She mentioned that this is the second call. This is the first call we received, not aware of a previous call.	Forwarded message to Stormwater Code Enforcement Office and, also, to Public Works Dept. This call was forwarded to Lisa at our Public Works Dept. Her reply: "I've forwarded this to Chuck Crist in Streets who is in charge of the storm drains".
1/16/2008	1:50 p.m.	2508 E. Vista Way	760-724-9093	Storm drains are clogged not allowing water to flow through and everything is a muddy mess since the rain. They own a nursery. (Exotica Nursery)	This call was forwarded to Lisa at our Public Works Dept. Her reply: "I've forwarded this to Chuck Crist in Streets who is in charge of the storm drains".
1/28/2008	11:22 & 11:24 a.m.	Melrose & N. Santa Fe	858-637-7137	Pete is with the San Diego Regional Water Quality Control Board. Construction site of North County Church and also a road widening. Sediment present. He called a second time to inform us that this is actually Oceanside territory.	This information was forwarded to Frank D., Construction Inspector and also to Sandra Sotola, Stormwater Code Enforcement Officer. They will contact Mr. Perone and handle this matter.

APPENDIX C

2008 Dry Weather Field Screening and Analytical Monitoring Program Report

City of Vista
Dry Weather Field Screening and Analytical Monitoring Program
2008

Submitted to:

City of Vista
600 Eucalyptus Avenue
Vista, CA 92084

Prepared by:

D-Max Engineering, Inc.
7220 Trade Street, Suite 119
San Diego, CA 92121
Tel: (858) 586-6600
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D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

November 21, 2008
Project No. 200837W-1

Paul Hartman
Water Quality Protection Program Manager
City of Vista
Engineering Department
600 Eucalyptus Avenue
Vista, CA 92084-6240

Re: 2008 Dry Weather Field Screening and Analytical Monitoring Program
City of Vista, California

Dear Mr. Hartman:

Per your request D-MAX Engineering, Inc (D-MAX) conducted the routine phase of the 2008 Dry Weather Field Screening and Analytical Monitoring Program. This report presents the results of the monitoring program and follow-up investigations for the City of Vista during the 2008 dry weather season. The contents include field screening data and analytical laboratory test results, analyses of collected data, trash assessments, and photographs of sampling locations. The report also presents the results of follow-up investigations and our recommendations for additional actions.

Review comments from the draft report submitted to the City have been incorporated into this final report. It has been our pleasure working with the City of Vista on this project. If you have any questions regarding this report, please call me at (858) 586-6600 ext. 22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

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1 INTRODUCTION

1.1 Regulatory Requirements

In accordance with San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit), each of the Copermittees, including the City of Vista, is required to annually perform dry weather field screening of discharges into its stormwater conveyance system. This procedure is comprised of recording field observations, estimating observed flow rates, and conducting field testing at selected locations along the stormwater conveyance system during the dry weather season, May 1 through September 30. The Municipal Permit also necessitates that Copermittees conduct laboratory analyses for at least 25 percent of the visited sites with flowing or ponded water. If a sampling location is dry, meaning there is no flowing or ponded water, an alternate sampling station should be visited. If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days. A more detailed trash assessment component has also been required. The Dry Weather Monitoring Program is an integral part of the City of Vista's Urban Runoff Monitoring Program.

1.2 Program Overview

The primary purpose of the Dry Weather Monitoring Program is to detect and eliminate illicit connections and illegal discharges (IC/ID) to the stormwater conveyance system, minimizing the negative impacts of human activities on receiving water bodies. The Dry Weather Monitoring Program consists of the following three components.

- Field screening observations
- Field analytical testing
- Laboratory analytical testing

Information collected from the dry weather monitoring is used to characterize dry weather discharges to the stormwater conveyance system and identify conveyances that are discharging elevated levels of pollutants. Follow-up studies and source investigations were conducted as necessary to detect and eliminate the sources of these pollutants.

1.3 Hydrologic Setting

The City of Vista (City) consists of approximately 18.7 square miles, the majority of which is in the Carlsbad hydrologic unit (HU). A small portion to the north of the City is part of the San Luis Rey HU. Within the Carlsbad HU, Vista is comprised of three hydrologic areas (HA), namely Agua Hedionda, Buena Vista and Loma Alta. The Lower San Luis HA is part of the San Luis Rey HU. Table 1-1 presents the percent of land of each hydrologic area within the City.

The following drainage basins have been identified within the City's HAs:

- Agua Hedionda
- Buena
- Buena Vista
- Eucalyptus
- Foothill/ Vale Terrace
- Guajome Lake
- Monte Vista
- North Fork Buena Vista Creek
- North Santa Fe
- Sunset

TABLE 1-1
HYDROLOGIC AREAS

Hydrologic Area	Hydrologic Area No.	% Land Area of Vista	Receiving Water Body
Carlsbad Hydrologic Unit			
Agua Hedionda	904.3	38	Agua Hedionda Creek and Lagoon
Buena Vista	904.2	55	Buena Vista Creek and Lagoon
Loma Alta	904.1	1	Loma Alta Creek and Slough
San Luis Rey Hydrologic Unit			
Lower San Luis	903.1	6	San Luis Rey River

Land use within each drainage basin determines the potential for generating both runoff and pollutants into receiving water bodies. Based on available water quality data, the Copermittees have identified bacteria as the high priority water quality problem in the Buena Vista and Loma Alta HAs, and bacteria, sediments, and nutrients as the high priority water quality problem in the Agua Hedionda HA. The constituents of concern in the San Luis Rey HU are bacteria and nutrients.

1.4 Previous Work

The numbers of historical dry weather monitoring sites since 2002 are presented in Table 1-2. Historical dry weather monitoring data is included in Appendix A.

TABLE 1-2
SUMMARY OF HISTORICAL DRY WEATHER SITES [1]

Year	Number of Field Screening Sites [2]	Number of Flowing Sites	Number of Ponded Sites	Number of Dry Sites	Number of Lab Analysis Sites
2002	21	21	0	0	6
2003	22	20	2	0	5
2004	22	data not available		4	6
2005	27	18	9	3	7
2006	28 [3]	21	7	5	6
2007	26 [3]	23	3	6	6

Notes:
[1] Table does not include sampling that took place at creek sites, which are considered to be an additional study.
[2] Number of Sites Screened = Number Flowing + Number Ponded. Field screening cannot be conducted at sites found to be dry. Dry sites are replaced by either a flowing or ponded site.
[3] Site BV-14 was counted as three sites: BV-14, BV-14-top, and BV-14-bottom. Each site was tested for all field constituents.

1.5 Report Outline

Section 1, Introduction, includes regulatory background, a program overview, a discussion of the City of Vista's hydrologic setting and constituents of concern, a summary of historical field screening data, and the report outline.

Section 2, Sampling Locations, describes the field screening sampling locations and site selection criteria.

Section 3, Field and Laboratory Analytical Methods, includes field screening and laboratory analytical procedures, quality assurance protocols, and follow-up action levels.

Section 4, Field Screening Results, presents qualitative observations of the sampling locations and results of the field screening analyses.

Section 5, Trash Assessment, discusses the procedure and results of the trash assessment.

Section 6, Laboratory Analytical Results, presents results of the laboratory analyses.

Section 7, Data Analysis, provides an analysis of field and laboratory data collected in 2008, as well as a comparison of past results.

Section 8, Upstream Investigations, details the results of follow-up investigations undertaken to isolate the sources of water contamination detected during the field screening program.

Section 9, Summary and Recommendations, provides a summary of the program results and recommendations for follow-up actions.

Appendix A Historical Dry Weather Monitoring Table

Appendix B Photographs of the Investigated Sites

Appendix C Laboratory Analytical Reports

Appendix D Field Data Sheets

2 SAMPLING LOCATIONS

The City of Vista's 2008 Dry Weather Monitoring Program consists of 29 designated primary monitoring stations, eight of which are designated sampling sites for laboratory analysis. If a primary station was dry, an alternate station with flowing or ponded water was selected. During the 2008 Dry Weather Monitoring Program, AH-34, BV-7A, BV-15, and MV-3 were dry, and alternate sites AH-38, BV-12, BV-34, and G-6 were sampled.

Table 2-1 provides the hydrologic area, site number, location, conveyance configuration, land uses, hydrological subarea (HSA), and GPS coordinates of the sampling locations that were visited. Sites are labeled according to their respective drainage area using the following abbreviations:

AH = Aqua Hedionda Lagoon BV = Buena Vista Lagoon G = Guajome Lake

SS = Sunset MV = Monte Vista.

A complete map of the sampling locations and drainage basins is included as Figure A at the end of the report, followed by Figure B, a map of the watersheds in the City of Vista broken down into hydrologic subareas. Photographs of sampling locations are included as Appendix B.

TABLE 2-1
2008 DRY WEATHER MONITORING STATIONS

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
Agua Hedionda HA							
AH-8A	Between 632 and 636 Sycamore Avenue, north of Thibodo Road/Plumesa Avenue	Outlet	Commercial	None	904.32	33.16641	-117.21544
AH-9	Shadowridge and Antigua Drive in Buena Vista Park, northeast side of pond	Outlet	Residential	Parks	904.31	33.15865	-117.24642
AH-17	Southeast of the Faraday Street and Brookhaven Pass intersection, in the corner of the detention basin	Outlet	Residential	Commercial	904.31	33.14003	-117.24637
AH-21	2687 S. Melrose Drive (southern end of Melrose Drive)	Outlet	Industrial	None	904.31	33.13534	-117.24466
AH-30	Southwestern corner of Chaparral Drive and Thibodo Road intersection	Earthen Channel	Residential	None	904.32	33.17023	-117.22548
AH-31	Live Oak Road near southern intersection with Cordoba Way, west sidewalk by golf course fence	Manhole	Residential	None	904.31	33.16715	-117.23827
AH-32	Southwest corner of the La Mirada Drive and Sycamore Avenue intersection	Manhole	Industrial	None	904.31	33.15156	-117.22630
AH-33	East end of La Mirada Drive off of Business Park Drive, in canyon by 2260 La Mirada Drive	Outlet	Industrial	None	904.31	33.15225	-117.23074
AH-34 *	West end of Keystone Way, near Scott Street	Manhole	Industrial	None	904.31	33.13576	-117.23425
AH-35	Across from 1210 Activity Drive	Manhole	Industrial	Agricultural	904.31	33.14406	-117.21800
AH-36	West side of Cottontail Road, southwest of Mapleleaf Drive	Outlet	Residential	Parks	904.32	33.15912	-117.22548
AH-37	Southeast corner of the Green Oak Road and S. Melrose Drive intersection	Manhole	Residential	None	904.31	33.15503	-117.24137

TABLE 2-1
2008 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
AH-38 *	South side of Shadowridge Drive, east of White Birch Drive	Manhole	Residential	None	904.31	33.15786	-117.24758
SS-1	South side of Escondido Avenue, west of Melrose Drive	Outlet	Residential	None	904.31	33.18235	-117.25365
Buena Vista Creek HA							
BV-1	Behind 4241 Tiberon Drive	Outlet	Residential	None	904.21	33.18271	-117.28387
BV-4	Across the street from 1725 Hacienda Drive, south of the fence, in the canyon	Outlet	Commercial	Residential	904.21	33.18780	-117.27434
BV-7A*	West sidewalk of South Melrose Drive, south of Hacienda, next to gas station	Manhole	Commercial	None	904.22	33.19300	-117.25372
BV-8	Olive Avenue and Goething Way, southwest corner	Concrete Channel	Residential	Commercial	904.22	33.20350	-117.24564
BV-10	Northwest corner of Eucalyptus Avenue and Escondido Avenue intersection	Concrete Channel	Residential	Commercial	904.22	33.20242	-117.23605
BV-12 *	Brengle Terrace Park, across from 1425 Vale Terrace Drive, west side of bridge	Earthen Channel	Residential	Parks	904.22	33.20639	-117.21933
BV-15 *	Northwest of the Canenea Avenue and Citrus Avenue intersection	Outlet	Residential	Commercial	904.22	33.21770	-117.24340
BV-18	Brengle Terrace Park, northwest side	Natural Creek	Residential	Parks	904.22	33.21044	-117.22496
BV-24	1427 Foothill Drive	Outlet	Residential	None	904.22	33.21571	-117.21909
BV-30	Parking lot (business: Boomer's) east of Grapevine Road, south of Date Street	Manhole	Residential	None	904.31	33.19243	-117.27395

TABLE 2-1
2008 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
BV-31	Southwest corner of the North Melrose Drive and Copper Drive intersection	Manhole	Residential	Commercial	904.22	33.19910	-117.25601
BV-32	Olive Avenue and Maryland Drive, southwest corner of Washington Middle School's back parking lot, in fenced area	Outlet	Residential	None	904.22	33.20272	-117.25966
BV-33	North side of West Los Angelos Drive, near North Santa Fe Avenue	Manhole	Residential	Commercial	904.22	33.21198	-117.24572
BV-34 *	Across from 220 Huff Street, next to sidewalk	Manhole	Residential	Industrial	904.21	33.19162	-117.27726
MV-3 *	Southeast corner of the Escondido Avenue and South Santa Fe Avenue intersection, on sidewalk	Manhole	Commercial	Residential	904.22	33.19369	-117.23432
Lower San Luis HA							
G-3	North end of Calle Jules	Outlet	Residential	None	903.11	33.22679	-117.22972
G-4	Northwest corner of the Warmlands Avenue and Vista Grande Drive intersection	Outlet	Residential	None	903.11	33.23335	-117.22420
G-5	North Santa Fe Avenue, south of Camino Largo, in bike lane on east side of the street (just north of storm drain on sidewalk)	Manhole	Residential	Commercial	903.11	33.23251	-117.24966
G-6 *	Museum Way, west of North Santa Fe Avenue, in front of Guajome Park Academy, by the fence	Outlet	Residential	Commercial	903.11	33.23052	-117.25066

Note: * Alternate sites AH-38, BV-12, BV-34 and G-6 were substituted for dry primary sites AH-34, BV-7A, BV-15 and MV-3.

3 FIELD AND LABORATORY ANALYTICAL METHODS

3.1 Field Screening Procedures and Methods

Field screening techniques consist of flow measurement, quantitative field analyses of selected water quality parameters, and qualitative field observations. Information relating to weather conditions, the amount of time since last rainfall, and the type of stormwater conveyance are recorded. Specific observations and results of the field water quality analyses are documented on field data sheets, which are included in Appendix D. The data sheets also serve as a record of the field visit and are completed for every site visit regardless of whether or not samples were collected.

For 2008, field data sheets were updated to include three categories of visits. Previously data sheets included check boxes for either routine field screening or follow-up visits. This year there are check boxes for routine field screening, confirmation, and IC/ID follow-up visits. A confirmation visit is a revisit of the original site, whereas an IC/ID follow-up is an upstream investigation. For the purposes of this report, confirmation and IC/ID follow-up visits are both referred to as "follow-up" visits.

Field screening and analyses were conducted according to the following procedures and methods.

Qualitative Observations

Irrespective of flow, qualitative field observations are made during each site visit. These observations provide a general site assessment and describe factors like water odor, clarity, the presence of floatables, visible deposits or stains, vegetation and biological organisms. Evidence of present or past illicit connections and illegal discharges to the stormwater conveyance system may also be ascertained through careful field observations. Each field screening location is photographed to provide additional information and documentation of site conditions. Photographs are included in Appendix B.

Flow Measurement

Flow measurements can be utilized to estimate pollutant mass loading, prioritize storm drains for future investigation, and identify significant changes in discharge that may indicate an illegal discharge upstream. Various field methods are used in formulas to estimate the flow rate. These include measuring the velocity, depth and width of the flowing water; recording the amount of time required to fill a bottle of known volume with sample water; or, if measuring flow within a cylindrical pipe, measuring the pipe diameter as well as the depth and velocity of the flow. Low levels of flow may also be estimated visually.

Field Water Quality Analyses

At each site with ponded or flowing water, grab samples were collected and analyzed in the field for the following constituents:

- Specific conductance
- Temperature
- pH
- Turbidity
- Surfactants (MBAS)*
- Nitrate-Nitrogen (Nitrate-N)
- Ammonia-Nitrogen (Ammonia-N)
- Orthophosphate-Phosphorus (Orthophosphate-P)

* Surfactants are also referred to as detergents

The methods that were used to perform the aforementioned field analyses along with each method's reporting limit, range and accuracy, are listed in Table 3-1.

3.2 Laboratory Analytical Methods

Consistent with the Municipal Permit's requirements, samples were collected for laboratory analyses at eight sites, representing over 25 percent of all sites where ponded or flowing water was observed. These samples were submitted to EnviroMatrix Analytical, Inc., a California Department of Health Services-certified laboratory, for analysis of the following constituents:

- Oil and Grease
- Total Hardness
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Diazinon
- Chlorpyrifos
- Total Coliform Bacteria
- Fecal Coliform Bacteria
- *Enterococcus* Bacteria

The methods used to perform each laboratory analysis along with method detection limits and holding times are listed in Table 3-2.

TABLE 3-1
FIELD ANALYTICAL METHODS

Parameter	Method	Reporting Limit	Range	Accuracy
Specific Conductance	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.01 mS/cm	0 – 20 mS/cm	± 2% of functional sensitivity[1]
Temperature	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.1°C	0.0°C – 60.0°C	± 0.5°C
pH	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.01	0.00 – 14.00	± 0.01 pH
Turbidity	Hanna Instruments HI 93703-11 Portable Turbidity Meter***	0.01 NTU	0.01 – 50.00 NTU and 50 – 1000 NTU	± 0.5 NTU or 5% of reading (whichever is greater)
Surfactants	CHEMetrics CHEMets Kit (K-9400) Methylene Blue Active Substances	0.13 mg/L	0.0 mg/L – 3.0 mg/L*	± 0.13 & ± 0.5 mg/L[2]
Nitrate-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Nitrate 3 Vacu-vials® (K-6933) Cadmium reduction[3]***	2.26 mg/L**	2.26 mg/L –13.6 mg/L**	± 30%
Ammonia-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Ammonia 3 Vacu-vials® (K-1403) Salicylate***	0.10 mg/L**	0.10 mg/L – 3.00 mg/L**	Varies with measured concetration[4,5]
Ortho-phosphate-P	CHEMetrics V-2000 Multi-Analyte LED Photometer – Phosphate 2 Vacu-vials® (K-8513) Stannous chloride chemistry[6]***	0.25 mg/L**	0.25 mg/L – 2.61 mg/L**	Varies with measured concetration[4,5]

Notes:

[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.

[2] ± 0.13 for the range of 0.0 to 1.0 mg/L, ± 0.25 mg/L for the range of 1.0 to 2.0 mg/L and 0.5 mg/L for the range of 2.0 to 3.0 mg/L.

[3] This method determines the concentration of nitrate in mg/L NO_3. To determine the amount of nitrate-nitrogen, the concentration of nitrogen must be adjusted for the presence of oxygen in the NO_3 molecule. Therefore, the result is multiplied by a conversion factor of 0.226, the ratio of the molecular weight of N (14 g/mol) to NO_3 (62 g/mol). The detection limit for nitrate is 10.0 mg/L; however, the detection limit for nitrate-nitrogen is lowered due to the conversion.

[4] Practical Detection Limit (PDL) is defined as the lower limit of the stated test range.

[5] Percent error adjusts as follows: ±30% at PDL, ±20% for 25% of full range, ±10% for 75% of full range, ±10% for 120% of full range. "Full range" is equal to the upper limit of the test kit's range.

[6] This method determines the concentration of orthophosphate in mg/L PO_4. To determine the amount of orthophosphate-P, the concentration of phosphate must be adjusted for the presence of oxygen in the PO_4 molecule. Oxygen is 67.4% of phosphate by mass but is not a plant nutrient in this form. Therefore, the result is multiplied by a conversion factor of 0.326, the ratio of the molecular weight of P (31 g/mol) to PO_4 (95 g/mol). The detection limit for orthophosphate is 0.75 mg/L; however, the detection limit for orthophosphate-P is lowered due to the conversion.

*Extended ranges in chemical analyses can be achieved through dilutions. Accuracies decrease proportionally with further dilutions.

** Readings below the PDL have increased percent error; measurements are reported, but are flagged as being below the PDL.

***Reporting limit, range, and accuracy information taken from Hanna Instruments and CHEMetrics manuals, available online at www.hannainst.com and www.chemetrics.com. Additional information regarding CHEMetrics accuracy was obtained from the manufacturer via email.

TABLE 3-2
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Detection Limit	Maximum Holding Time [1]
Oil and Grease	EPA 1664	5 mg/L	28 days
Total Hardness	EPA 200.7	10 mg/L	14 days
Dissolved Cadmium	EPA 6020	0.005 mg/L	24 hours
Dissolved Copper	EPA 6020	0.005 mg/L	24 hours
Dissolved Lead	EPA 6020	0.005 mg/L	24 hours
Dissolved Zinc	EPA 6020	0.020 mg/L	24 hours
Diazinon	EPA 8141A	0.05 µg/L	7 days
Chlorpyrifos	EPA 8141A	0.05 µg/L	7 days
Total Coliforms	SM 9221	20 – 1,600,000 MPN/100 mL [2]	6 hours
Fecal Coliforms	SM 9221	20 – 160,000 MPN/100 mL [2]	6 hours
Enterococcus	SM 9230	20 – 160,000 MPN/100 mL [2]	6 hours
Total Coliforms	SM 9223 (IDEXX Colilert) [3]	10 – 2,400,000 MPN/100 mL	6 hours
Escherichia coli (*E. coli*) [4]	SM 9223 (IDEXX Colilert) [3]	10 – 2,400,000 MPN/100 mL	6 hours
Enterococcus	IDEXX Enterolert [3]	10 – 240,000 MPN/100 mL	6 hours

Notes:

µg/L = micrograms per liter

MPN/100 mL = most probable number (of colony-forming units) per 100 milliliters

[1] Maximum Holding Time values listed here apply to samples collected and preserved in accordance with the quality assurance and quality control procedures listed in Section 3.3.2.

[2] For D-MAX's Dry Weather Monitoring Program, EnviroMatrix Analytical, Inc. (EMA) performs standard dilutions for total coliforms to quantify from 20-1,600,000 most probable number per 100 milliliters (MPN/100 mL). For fecal coliforms and *Enterococci*, EMA performs standard dilutions to quantify from 20-160,000 MPN/100 mL. During the analysis and interpretation of the results, the number of tubes used to quantify the sample must fit the MPN index table from Standard Method 9221. The dilution set used will determine the detection limit. A standard dilution analysis is set up with 15 tubes at different concentrations. The reporting limit will always be adjusted depending on the dilution factor used for quantifying the actual results based on the MPN table. If the result for the analysis was less than 16,000 MPN/100 mL, the reporting limit will always be 20, and the dilution factor will be 10. As the dilution factor goes up, the reporting limit listed in the results from EMA will also go up based on the calculation made with EMA's data system. However, the lowest quantifiable number or reporting limit would still be 20 based on how the standard tubes for the sample is set up.

[3] IDEXX Colilert and Enterolert tests are performed by EnviroMatrix Analytical. This test is used during upstream investigations only.

[4] Number of fecal coliforms is derived from number of *E. coli* through the following formula:
Fecal Coliforms = *E. coli* / 0.85. The converted fecal coliform count, not the number of *E. coli*, is reported in this report's data tables.

3.3 Quality Assurance and Quality Control (QA/QC)

The QA/QC Plan utilized for this project includes the United States Environmental Protection Agency (EPA) approved test methods for the field and laboratory analysis of water samples, calibration of test equipment, and pre- and post-rinsing of sample collection containers and test vials. Key components of the QA/QC Plan are described below.

3.3.1 Field Sampling and Analysis QA/QC

The pH meters are calibrated periodically with sodium/potassium phosphate, monobasic buffer solutions with pH values equal to 4.00 ± 0.01, 7.00 ± 0.01, and 10.00 ± 0.01 units. The glass electrode tube is kept moist to preserve the meter's accuracy during fieldwork. The turbidity meter is calibrated and periodically checked for accuracy using standard solutions. The conductivity meter is checked periodically with standard solutions and calibrated as necessary.

Field sample collection containers are first rinsed with distilled water and then with the sample water before sample collection. Upon completion of sampling at each site, sample collection containers, test vials, and ion-sensitive electrodes were rinsed twice with distilled water and dried.

The accuracy of field analytical techniques is assessed at the beginning of each sampling week by analyzing solutions of known concentrations for ammonia-nitrogen, surfactants, nitrate, and orthophosphate. The results of the assessment are shown in Table 3-3.

TABLE 3-3
FIELD ANALYSIS QA/QC RESULTS

Date	Analyte	Known Concentration (mg/L)	Acceptable Range* (mg/L)	Field Test Kit Results (mg/L)
8/19/08	Ammonia-Nitrogen	1.0	0.8 – 1.2	0.892
8/19/08	Surfactants	1.0	0.75 – 1.25	1.0
8/19/08	Nitrate *	44.3	31.0 – 57.6	52.74
8/19/08	Orthophosphate *	1.0	0.75 – 1.25	0.820
8/25/08	Ammonia-Nitrogen	1.0	0.8 – 1.2	0.930
8/25/08	Surfactants	1.0	0.75 – 1.25	1.0
8/25/08	Nitrate *	44.3	31.0 – 57.6	47.29
8/25/08	Orthophosphate *	1.0	0.75 – 1.25	0.890

Notes:
* Acceptable range is calculated based on the error associated with the methods as listed in Table 3-1.

** Nitrate and orthophosphate are converted to nitrate-nitrogen and orthophosphate-phosphorus, respectively, when conducting standard field screening. This is accomplished by multiplying the results by 0.226 for nitrate and 0.326 for orthophosphate. To simplify the calibration process, the unconverted numbers are used when calibrating the instruments.

3.3.2 Laboratory Sampling and Analysis QA/QC

Samples for laboratory analysis are collected concurrently with field samples and utilized the same sampling procedures. Pre-sterilized sample bottles are obtained from the laboratory and thus do not require rinsing with sample water prior to sample collection. After sample collection, all laboratory samples are kept in a cooler on ice until picked up by the lab. Strict chain of custody procedures are followed, and samples are delivered and analyzed within the appropriate holding times, as listed in Table 3-2. Completed chain-of-custody forms are included in Appendix C.

3.4 Follow-up Action Levels

Based on dry weather field screening results, immediate follow-up investigations may be required to identify and eliminate pollutant sources. In order to determine whether an immediate source investigation is necessary, numeric action levels and best professional judgment are used to interpret the field screening results. If visual and/or analytical evidence of gross contamination are present at a site (e.g., substantial petroleum sheen, high ammonia concentration indicative of sewage release, etc.), then an immediate source identification investigation is initiated. For sites that exceed numeric action levels but are not perceived as an immediate threat to water quality, a re-sampling is conducted within one day. An upstream pollutant source investigation is conducted thereafter if elevated concentrations persist and no sources can be identified in the immediate vicinity of the monitoring station. If elevated levels of pollutants are detected by the laboratory analyses, a comprehensive follow-up pollutant source investigation is conducted within two days of receiving the analytical reports from the lab. The results of these investigations are included in Section 8 of this report. Recommendations based on these investigations are included in Section 9.

The following three methods are employed to determine whether immediate or comprehensive follow-up investigations are necessary: (1) Numeric Action Levels; (2) California Toxics Rule (CTR); and (3) Best Professional Judgment. All three approaches are described in detail below and presented in Table 3-4.

Numeric Action Levels

Numeric action levels are used as the primary approach for interpreting pH, orthophosphate-P, nitrate-N, ammonia-N, surfactants, oil and grease, diazinon, chlorpyrifos, total coliforms, fecal coliforms, and *Enterococcus* analytical results (see Table 3-4). Prior to the 2003 dry weather season, no standard action levels had been adopted for use throughout San Diego County. D-MAX calculated the current set of numeric action levels, which are based on county-wide sampling data and have been used by all Copermittees since the 2003 dry weather season. If pH, orthophosphate-P, nitrate-N, ammonia-N, or surfactants are observed above the numeric action level, a follow-up investigation is conducted within one day to investigate the source unless best professional judgment indicates otherwise. If oil and grease, diazinon, chlorpyrifos, total coliforms, fecal coliforms, or *Enterococcus* laboratory analytical results exceed numeric action levels, then source investigations are conducted within two business days of receiving the test results from the lab.

California Toxics Rule

The CTR criterion maximum concentration (CMC) is used to determine appropriate action levels for dissolved trace metals, including cadmium, copper, lead, and zinc. The CTR equations, as provided in EPA Federal Register Doc. 40 Code of Federal Regulations (CFR) Part 131, are used to calculate benchmarks based on the total

hardness of the sampled water, with the action levels increasing as hardness increases. More information on the CTR is available at http://www.epa.gov/region09/water/ctr.

Best Professional Judgment

Best professional judgment is utilized as the primary approach for interpreting turbidity, water temperature, and conductivity and as a secondary approach for interpreting the results of all other field and laboratory analyses. Under best professional judgment, the need for a follow-up investigation is left to the discretion of the field crew due to their knowledge of typical levels for the tested parameters. Best professional judgment may indicate that results which either exceed certain action levels or statistical outliers may be the result of natural or background factors.

TABLE 3-4
ACTION LEVELS FOR FIELD SCREENING AND LABORATORY PARAMETERS

Field Screening Analytes	Action Levels[1]	Source/ Notes
pH	<6.5 or >9.0	Basin Plan, w/ allowance for elevated pH due to excessive photosynthesis. Elevated pH is especially problematic in combination with high ammonia.
Orthophosphate-P (mg/L)	2.0	EPA Multi-sector General Permit
Nitrate-N (mg/L)	10.0	Basin Plan, and drinking water standards
Ammonia-N (mg/L)	1.0	Based on Workgroup experience. May also consider unionized ammonia fraction.
Surfactants (MBAS) (mg/L)	1.0	Basin Plan, with allowance based on Workgroup field experience and possible field reagent interferences.
Turbidity (NTU)	Best Professional Judgment	WQOs relevant to inland surface waters are not available. Base judgment on channel type and bottom, time since last rain, background levels, and most importantly visual observation (e.g. unusual colors and lack of clarity), and unusual odors.
Temperature (^{o}C)	Best Professional Judgment	Base judgment on season, air temperature, channel type, shading, etc.
Conductivity (mS/cm)	Best Professional Judgment	Values > 5 mS/cm may indicate IC/ID however; EC may be highly elevated in some regions due to high-TDS groundwater exfiltration to surface water, mineral dissolution, drought, and seawater intrusion. Normal source ID and discharge elimination work is not effective in these situations. Knowledge of area background conditions is important. Values < 0.75 mS/cm may indicate excessive potable water discharge or flushing.
Laboratory Analytes	**Action Levels**	**Source/ Notes**
Oil and Grease (mg/L)	15	EPA Multi-sector General Permit. If petroleum sheen is observed, the sample should be collected from the water surface. Visual observations may justify immediate investigation.
Diazinon (µg/L)	0.5	Response to diazinon and chlorpyrifos levels above 0.5 µg/L should focus on education and outreach to potential dischargers in the target drainage basin. Highly elevated levels should be investigated aggressively as with other potential IC/IDs.
Chlorpyrifos (µg/L)	0.5	
Dissolved Cadmium (µg/L)	California Toxic Rule	Use California Toxics Rule Table, 1-hour criteria to determine appropriate action level for individual samples. Table provides benchmarks based on hardness and dissolved metals concentration. For example, at 300 mg/L hardness the following action levels would apply: Cd – 14 ppb; Cu – 38 ppb; Pb – 209 ppb; and Zn – 297 ppb.
Dissolved Copper (µg/L)	California Toxic Rule	
Dissolved Lead (µg/L)	California Toxic Rule	
Dissolved Zinc (µg/L)	California Toxic Rule	
Total Coliform (MPN/ 100 mL)	50,000	Bacteria levels in many storm drains are likely to exceed public health guidance criteria. Use confidence interval test and best professional judgment to identify conveyances for source ID.
Fecal Coliform (MPN/ 100 mL)	20,000	
Enterococcus (MPN/ 100 mL)	10,000	

Notes:

[1]The referenced action levels should not be the sole criteria for initiating a source identification investigation. Dry Weather Monitoring Program data should be interpreted using a variety of available information. Factors that should be considered include within-site and between-site sample variability.

°C	degrees Celsius
mS/cm	milliSiemens per centimeter
mg/L	milligram per liter
IC/ID	illegal connection/illicit discharge
MBAS	methylene blue active substances
MPN/100 mL	most probable number per 100 milliliters
NTU	nephelometric turbidity unit
ppb	parts per billion
EPA	United States Environment Protection Agency
WQO	Water Quality Objectives

4 FIELD SCREENING RESULTS

The Dry Weather Monitoring Program was conducted in August 2008. Field screening was conducted at the 29 sites where ponded or flowing water was observed. Primary sampling station sites AH-34, BV-7A, BV-15 and MV-3 were dry and replaced with alternate sites AH-38, BV-12, BV-34, and G-6. Confirmation visits were performed at seven sites at which a field constituent was found to exceed specified action levels. Field data sheets for each site visit are included in Appendix D.

4.1 Qualitative Observations

Qualitative observations, which are a routine part of the Dry Weather Monitoring Program, are summarized below and presented in Table 4-1.

Light Conditions
Light conditions were primarily sunny, with six samples taken during overcast or partly cloudy weather.

Odor
Water samples from the majority of sites were odorless. Four samples had a musty odor.

Color
Water samples taken from most of the sites were colorless, with the exception of eight yellow water samples.

Clarity
Aside from negligible amounts of suspended particles, all but one site had clear water samples. The one site had partly cloudy water.

Floatable Materials
During routine field screening visits, trash was assessed at each site. Fourteen sites displayed some evidence of trash. Section 5 of this report includes the complete results of the Trash Assessment. At one site, bubbles were present on the surface, and one site had a dusty sheen.

Deposits
Sediment and fine particulates were observed at most sites. No stains or oily deposits were observed.

Vegetation
Taking into account exposure to sunlight and soil, nearly all sites displayed appropriate vegetation. Manholes lacking soil and sunlight showed no vegetation. Concrete channels displayed either limited or normal vegetation, and the natural creeks showed normal vegetative growth. One site had excessive vegetation.

Biology
The presence of aquatic flora and fauna can indicate healthy water conditions. Algal growth is an indicator of persistent water flow. Many of the sampling locations were home to insects, snails, fish, and/or tadpoles.

TABLE 4-1
FIELD OBSERVATIONS

Site No.	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
AH-8A	8/20/08	11:10	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	Limited	Algae, Tadpoles
AH-8A (Confirmation)	8/21/08	15:30	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	Limited	Algae
AH-9	8/21/08	10:45	Sunny	Musty	None	Clear	Trash	Fine Particulates	Normal	Insects, Algae, Fish
AH-17	8/25/08	13:50	Sunny	None	Yellow	Slightly Cloudy	None	Fine Particulates	None	None
AH-21	8/21/08	9:10	Overcast	None	None	Clear	Trash	Fine Particulates	None	None
AH-30	8/26/08	17:00	Sunny	Musty	None	Clear	Trash	Sediment, Fine Particulates	Normal	Insects
AH-31	8/26/08	12:30	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	Snails, Spiders
AH-32	8/25/08	14:35	Sunny	None	None	Clear	None	None	None	None
AH-33	8/25/08	15:30	Sunny	Musty	None	Clear	Trash	Sediment, Fine Particulates	Normal	Insects
AH-34	8/26/08	14:15	Sunny	ns	ns	ns	ns	Fine Particulates	None	None
AH-35	8/25/08	14:50	Sunny	None	None	Clear	None	Fine Particulates	None	None
AH-35 (Confirmation)	8/26/08	14:00	Sunny	None	None	Clear	None	Fine Particulates	None	None
AH-36	8/26/08	15:40	Sunny	None	Yellow	Clear	None	Fine Particulates	Normal	Algae
AH-37	8/25/08	16:45	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	None	None

TABLE 4-1
FIELD OBSERVATIONS (CONTINUED)

Site No.	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
AH-38	8/27/08	16:15	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	None
BV-1	8/25/08	10:15	Overcast	None	Yellow	Clear	Trash	Sediment, Fine Particulates	Normal	Insects, Algae
BV-4	8/21/08	11:40	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae
BV-7A	8/25/08	11:50	Overcast	ns	ns	ns	ns	Sediment, Fine Particulates	None	None
BV-8	8/20/08	12:00	Sunny	None	None	Clear	Trash	Sediment/Gravel	Limited	Insects, Algae, Larvae
BV-10	8/20/08	15:40	Sunny	None	None	Clear	None	Fine Particulates	None	Algae
BV-10 (Confirmation)	8/21/08	14:45	Sunny	None	None	Clear	None	Fine Particulates	None	Algae
BV-12	8/27/08	10:00	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	Normal	Insects, Snails
BV-15	8/19/08	16:20	Sunny	ns	ns	ns	ns	Sediment/Gravel	Limited	None
BV-18	8/20/08	9:40	Partly Cloudy	None	None	Clear	Trash	Sediment, Fine Particulates	Normal	Insects, Fish, Snails, Tadpoles
BV-18 (Confirmation)	8/21/08	13:30	Sunny	None	None	Clear	Trash	Sediment, Fine Particulates	Normal	Insects, Fish, Snails, Tadpoles, Crawfish
BV-24	8/20/08	14:50	Sunny	None	None	Clear	Bubbles	Fine Particulates	None	Insects, Algae
BV-24 (Confirmation)	8/21/08	14:05	Sunny	None	None	Clear	None	Fine Particulates	None	Insects, Algae
BV-30	8/22/08	11:50	Sunny	None	None	Clear	None	Fine Particulates	None	None

TABLE 4-1
FIELD OBSERVATIONS (CONTINUED)

Site No.	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
BV-31	8/22/08	9:30	Overcast	None	None	Clear	Trash	Sediment	None	Spiders
BV-32	8/26/08	10:10	Sunny	None	Yellow	Clear	Trash	Sediment, Fine Particulates	Normal	Insects
BV-33	8/26/08	11:15	Sunny	None	Yellow	Clear	None	Fine Particulates	None	Spiders
BV-34	8/27/08	12:10	Sunny	None	None	Clear	None	Sediment, Fine Particulates	None	None
G-3	8/19/08	14:20	Sunny	Musty	Yellow	Clear	Trash	Sediment/Gravel	Excessive	Insects, Algae, Snails
G-3 (Confirmation)	8/20/08	14:15	Sunny	None	None	Clear	Trash	Sediment/Gravel	Excessive	Insects, Algae, Snails
G-4	8/19/08	13:45	Sunny	None	Yellow	Clear	Trash, Sheen dust	Sediment, Fine Particulates	Normal	Algae, Larvae
G-4 (Confirmation)	8/20/08	9:10	Overcast	None	Yellow	Clear	Trash	Sediment, Fine Particulates	Normal	Insects, Algae, Larvae
G-5	8/19/08	15:40	Sunny	None	None	Clear	None	Sediment	None	Spiders
G-6	8/27/08	11:15	Sunny	None	None	Clear	None	Sediment, Fine Particulates	Normal	Insects, Algae
MV-3	8/19/08	12:00	Sunny	ns	ns	ns	ns	Sediment, Fine Particulates	None	None
SS-1	8/22/08	10:45	Overcast	None	Yellow	Clear	None	Sediment, Fine Particulates	Normal	Insects

Notes:

denotes a confirmation visit

ns = not sampled (dry site)

4.2 Field Analytical Results

Field analyses are conducted at all sites with flowing or ponded water. The measured constituents are described below.

Flow rates are the measurements of the volume of fluid passing through a given surface per unit time. Flow rate measurements are needed to calculate the load or particular amount of a pollutant discharged.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Also, the aquatic habitat must remain within a certain temperature range in order to sustain sensitive aquatic life. In the field, water temperature is measured immediately upon sample collection at each site with ponded or flowing water.

The **pH** is an expression of acidity or alkalinity of a water sample. The pH of an aquatic system will drive a variety of chemical reactions, including the availability of nutrients or the solubility of chemical substances, particularly heavy metals.

Turbidity describes the clarity or cloudiness of a water sample, or the degree to which light is blocked by suspended material in the water. Turbid waters not only limit the amount of light that reaches submerged vegetation, thus reducing photosynthetic capacity, but excessive suspended particles can also absorb heat and increase water temperatures.

Specific Conductance (Conductivity) values indicate the total concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially help indicate the presence of dissolved pollutants.

Surfactant concentrations in water samples often reflect illegal discharge from industrial, commercial, or residential sources. Pollution resulting from surfactants alters the surface tension of water and disrupts the breathing mechanisms of fish gills and other aquatic organisms.

Ammonia-Nitrogen (ammonia-N) is an indicator of pollution from decomposing organic matter, agricultural or household fertilizer runoff, or the presence of sewage. Ammonia occurs naturally in the environment; however, in higher quantities it can become toxic to fish and other organisms.

Nitrate-Nitrogen (nitrate-N) is a common sign of nutrient pollution from agricultural or household fertilizer runoff. Nitrate pollution can cause excessive algal growth, which can deplete oxygen from the water during decomposition and eventually suffocate other aquatic life. During the field analysis, nitrate is measured in milligrams per liter (mg/L) NO_3 and converted into mg/L nitrate-N using a conversion factor of 0.226. This process is explained in Note 3 of Table 3-1.

Orthophosphate-Phosphorus (orthophosphate-P) is also an indicator of nutrient pollution from agricultural or household fertilizer runoff. Similar to nitrate-N, orthophosphate-P pollution can cause nutrient enrichment (eutrophication), stimulate algal growth, and thus deplete oxygen in the water to levels that are dangerous for aquatic life. Even low levels of orthophosphate-P can cause significant algal growth, as it is commonly the limiting nutrient in plant growth. During the field analysis, orthophosphate is measured in mg/L PO_4 and converted into mg/L orthophosphate-P using a conversion factor of 0.326. This process is explained in Note 6 of Table 3-1.

A statistical summary of the routine field analytical results is presented in Table 4-2. Table 4-3 shows the results of all field analyses conducted at the sampled sites. Graphs of the

various parameters and appropriate action levels for follow-up investigations are included at the end of this section.

TABLE 4-2
FIELD ANALYSIS STATISTICAL SUMMARY [1]

Parameter (units)	Maximum	Minimum	Average	Median	Standard Deviation	Number of Exceedances	Graph Number
Flow Rate (gpm)	23	<1	4.0	3.0	5.0	0	4-1
Temperature (ºC)	28.4	19.6	24.3	24.5	2.1	0	4-2
pH	9.1	7.0	7.7	7.8	0.5	1	4-3
Turbidity (NTU)	17.18	0.01	5.09	3.55	5.20	0	4-4
Conductivity (mS/cm)	11.34	0.97	2.83	2.08	2.20	0	4-5
Surfactants (mg/L MBAS)	0.88	0.13	0.40	0.25	0.24	0	4-6
Ammonia-N (mg/L)	2.88	0.01[2]	0.33	0.19	0.51	1	4-7
Nitrate-N (mg/L NO_3-N)	46.87	0.53 [2]	5.69	1.53	9.54	5	4-8
Orthophosphate-P (mg/L PO_4-P)	1.94	0.03[2]	0.34	0.15	0.42	0	4-9

Notes:
gpm = gallons per minute
[1] Calculations include complete routine visit data only. Confirmation visits, follow-up visits, and dry sites are not incorporated.
[2] value reported is below the Practical Detection Limit

TABLE 4-3
FIELD ANALYTICAL RESULTS

Site Name	Date	Time	Flow (gpm)	Temp. °C	pH	Turbidity NTU	Conductivity mS/cm	Surfactants mg/L MBAS	Ammonia mg/L NH_3-N	Nitrate mg/L NO_3-N	Ortho-phosphate-P mg/L PO_4-P
AH-8A	8/20/08	11:10	3	22	7.7	0.01	2.36	0.25	0.22	**18.37**	0.14*
AH-8A (Confirmation)	8/21/08	15:30	3	22.5	7.9	na	2.37	na	na	**17.01**	na
AH-9	8/21/08	10:45	15	22.1	7.1	1.65	2.88	0.25	0.23	0.98*	0.27
AH-17	8/25/08	13:50	5	24.8	7.8	16.15	3.64	0.25	0.55	2.03*	0.76
AH-21	8/21/08	9:10	1	20.3	7.8	0.01	3.24	0.38	0.11	0.91*	0.05*
AH-30	8/26/08	17:00	Ponded	25.2	7.3	6.15	2.77	0.50	0.52	1.06*	0.30
AH-31	8/26/08	12:30	<1	24.2	7.8	9.72	1.47	0.50	0.18	1.52*	1.04
AH-32	8/25/08	14:35	5	25.2	7.3	12.34	7.15	0.68	0.38	2.12*	0.03*
AH-33	8/25/08	15:30	2	24.1	7.3	16.96	1.23	0.75	0.34	1.42*	0.67
AH-34(Dry)	8/26/08	14:15	Dry	ns	ns	ns	ns	ns	ns	ns	ns
AH-35	8/25/08	14:50	2	24.1	7.9	0.27	6.11	0.75	0.19	**46.87**	0.06*
AH-35 (Confirmation)	8/26/08	14:00	2	23.8	7.9	ns	5.98	ns	ns	**42.99**	ns
AH-36	8/26/08	15:40	< 1	24.5	8.0	8.07	1.31	0.75	0.15	2.19*	0.30
AH-37	8/25/08	16:45	<1	28.0	8.4	0.81	1.04	0.13	0.07*	1.03*	0.24*
AH-38	8/27/08	16:15	1	25.4	7.8	3.55	1.97	0.25	0.13	1.48*	0.48

TABLE 4-3
FIELD ANALYTICAL RESULTS (CONTINUED)

Site Name	Date	Time	Flow (gpm)	Temp. °C	pH	Turbidity NTU	Conductivity mS/cm	Surfactants mg/L MBAS	Ammonia mg/L NH_3-N	Nitrate mg/L NO_3-N	Ortho-phosphate-P mg/L PO_4-P
BV-1	8/25/08	10:15	3	23.0	7.8	1.5	11.34	0.75	0.61	0.63*	0.15*
BV-4	8/21/08	11:40	10	23.2	8.1	1.76	1.94	0.38	0.07*	0.86*	0.14*
BV-7A(Dry)	8/25/08	11:50	Dry	ns	ns	ns	ns	ns	ns	ns	ns
BV-8	8/20/08	12:00	23	28.4	8.4	1.11	1.70	0.13	0.17	9.57	0.08*
BV-10	8/20/08	15:40	10	24.4	7.6	8.3	2.03	0.25	0.25	**11.47**	0.04*
BV-10 (Confirmation)	8/21/08	14:45	10	25.7	8.5	na	1.94	na	na	9.58	na
BV-12	8/27/08	10:00	3	22.1	7.8	2.32	2.55	0.13	0.19	6.68	0.09*
BV-15(Dry)	8/19/08	16:20	Dry	ns	ns	ns	ns	ns	ns	ns	ns
BV-18	8/20/08	9:40	5	19.6	7.3	1.66	2.22	0.25	0.24	**18.92**	0.11*
BV-18 (Confirmation)	8/21/08	13:30	5	21.2	7.5	na	2.19	na	na	**15.65**	na
BV-24	8/20/08	14:50	2	25.5	8.0	1.37	1.95	0.25	0.17	**13.80**	0.09*
BV-24 (Confirmation)	8/21/08	14:05	2	24.3	8.0	na	2.00	na	na	**13.42**	na
BV-30	8/22/08	11:50	3	22.3	8.0	5.54	2.08	0.13	0.19	0.52*	0.10*
BV-31	8/22/08	9:30	5	26.0	7.2	0.01	1.49	0.13	0.01*	1.52*	0.07*
BV-32	8/26/08	10:10	Ponded	25.6	7.0	3.91	5.31	0.88	0.30	7.62	0.46

TABLE 4-3
FIELD ANALYTICAL RESULTS (CONTINUED)

Site Name	Date	Time	Flow (gpm)	Temp. °C	pH	Turbidity NTU	Conductivity mS/cm	Surfactants mg/L MBAS	Ammonia mg/L NH_3-N	Nitrate mg/L NO_3-N	Ortho-phosphate-P mg/L PO_4-P
BV-33	8/26/08	11:15	2	26.7	7.3	8.31	3.56	0.75	0.40	1.69*	1.13
BV-34	8/27/08	12:10	3	24.5	8.0	7.08	1.69	0.25	0.14	0.75*	0.08*
G-3	8/19/08	14:20	3	23.7	7.4	17.18	1.90	0.5	**2.88**	0.60*	1.94
G-3 (Confirmation)	8/20/08	14:15	3	25.3	8.1	na	1.97	na	0.17	na	0.04*
G-4	8/19/08	13:45	Ponded	28.2	**9.1**	2.97	0.97	0.25	0.17	0.66*	0.31
G-4 (Confirmation)	8/20/08	9:10	Ponded	22.3	7.4	na	0.97	na	na	na	na
G-5	8/19/08	15:40	5	24.6	7.8	3.6	2.92	0.25	0.35	2.89	0.22*
G-6	8/27/08	11:15	2	25.0	7.4	0.01	2.08	0.50	0.19	6.26	0.05*
MV-3(Dry)	8/19/08	12:00	Dry	ns	ns	ns	ns	ns	ns	ns	ns
SS-1	8/22/08	10:45	1	21.9	7.4	5.37	1.22	0.25	0.13	0.643*	0.34
PRACTICAL DETECTION LIMIT				**	**	**	**	**	**0.10**	**2.26**	**0.25**
ACTION LEVEL				**BPJ**	**< 6.5 > 9.0**	**BPJ**	**BPJ**	**1.00**	**1.00**	**10.00**	**2.00**

Notes:

* value reported is below the Practical Detection Limit

** not applicable, PDL applies only to constituents measured using the CHEMetrics V2000 meter. See Table 3-1 for applicable ranges and reporting limits.

ns = not sampled (dry site)
nd = not detected
na = not analyzed
BPJ = Best Professional Judgment
Red Bold values denotes action level exceeded
denotes a confirmation visit
denotes a location sampled for laboratory analysis

GRAPH 4-1: Flow

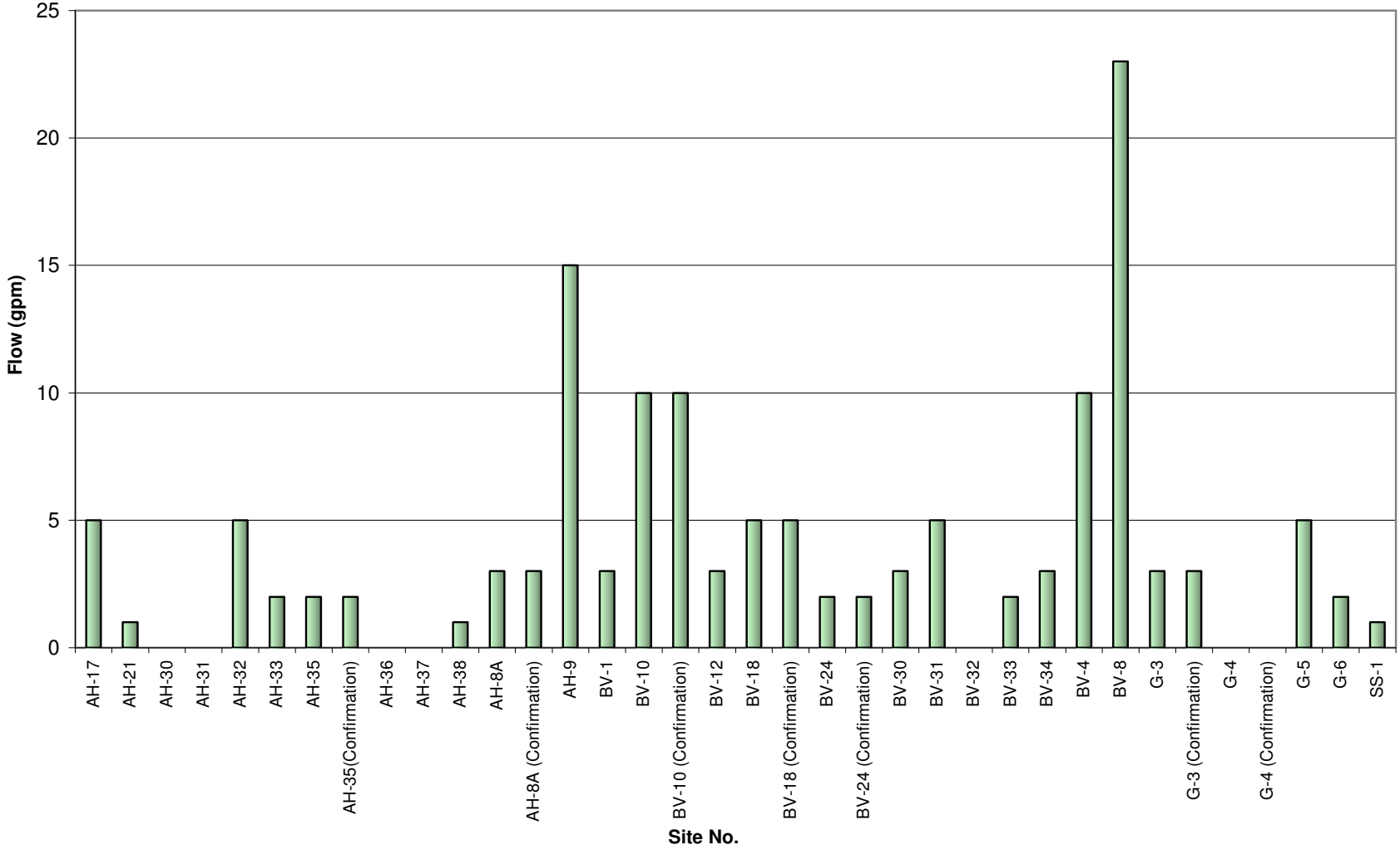

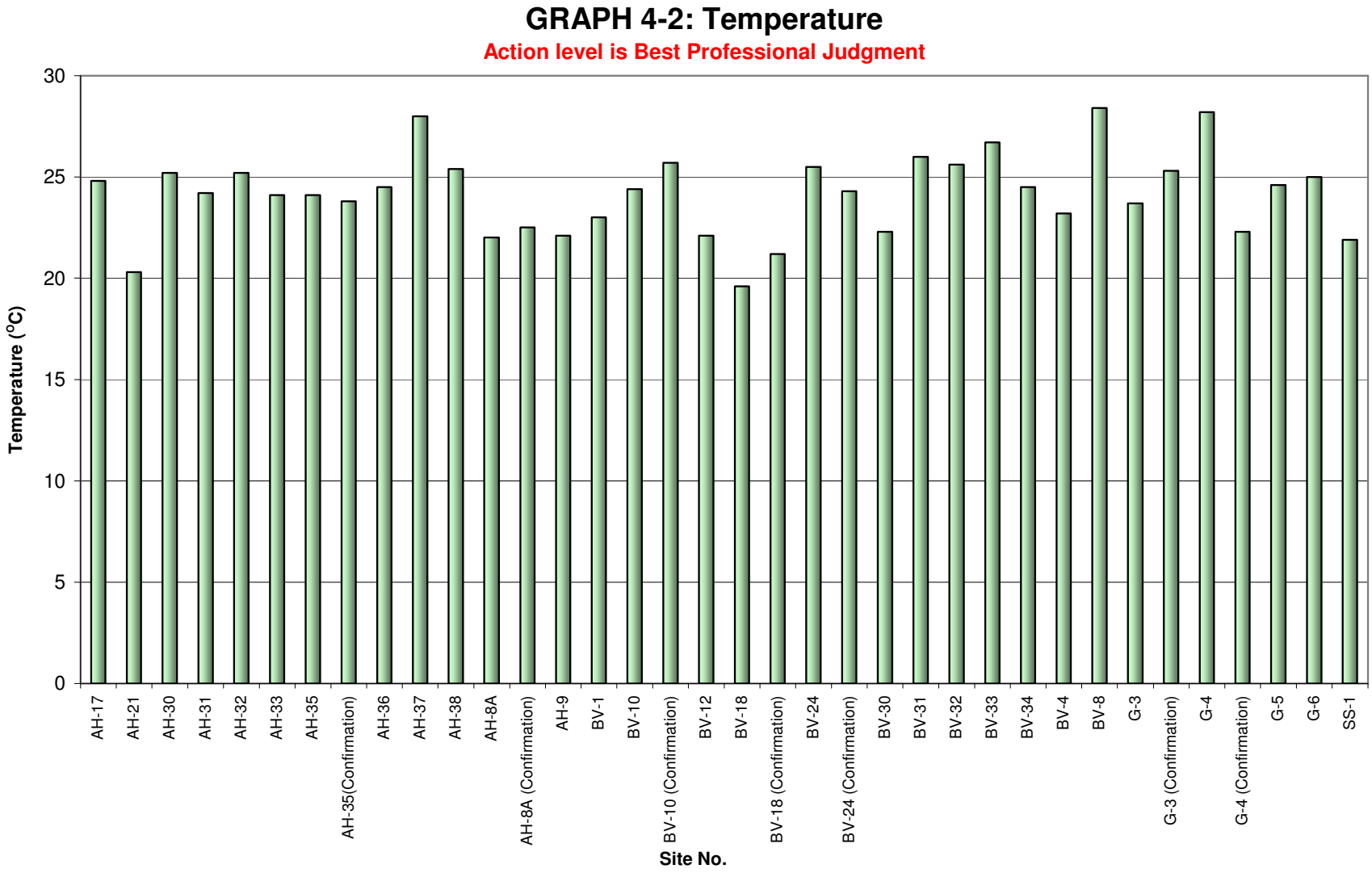
GRAPH 4-2: Temperature
Action level is Best Professional Judgment
Temperature (°C)
30
25
20
15
10
5
0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-35
AH-35(Confirmation)
AH-36
AH-37
AH-38
AH-8A
AH-8A (Confirmation)
AH-9
BV-1
BV-10
BV-10 (Confirmation)
BV-12
BV-18
BV-18 (Confirmation)
BV-24
BV-24 (Confirmation)
BV-30
BV-31
BV-32
BV-33
BV-34
BV-4
BV-8
G-3
G-3 (Confirmation)
G-4
G-4 (Confirmation)
G-5
G-6
SS-1
Site No.

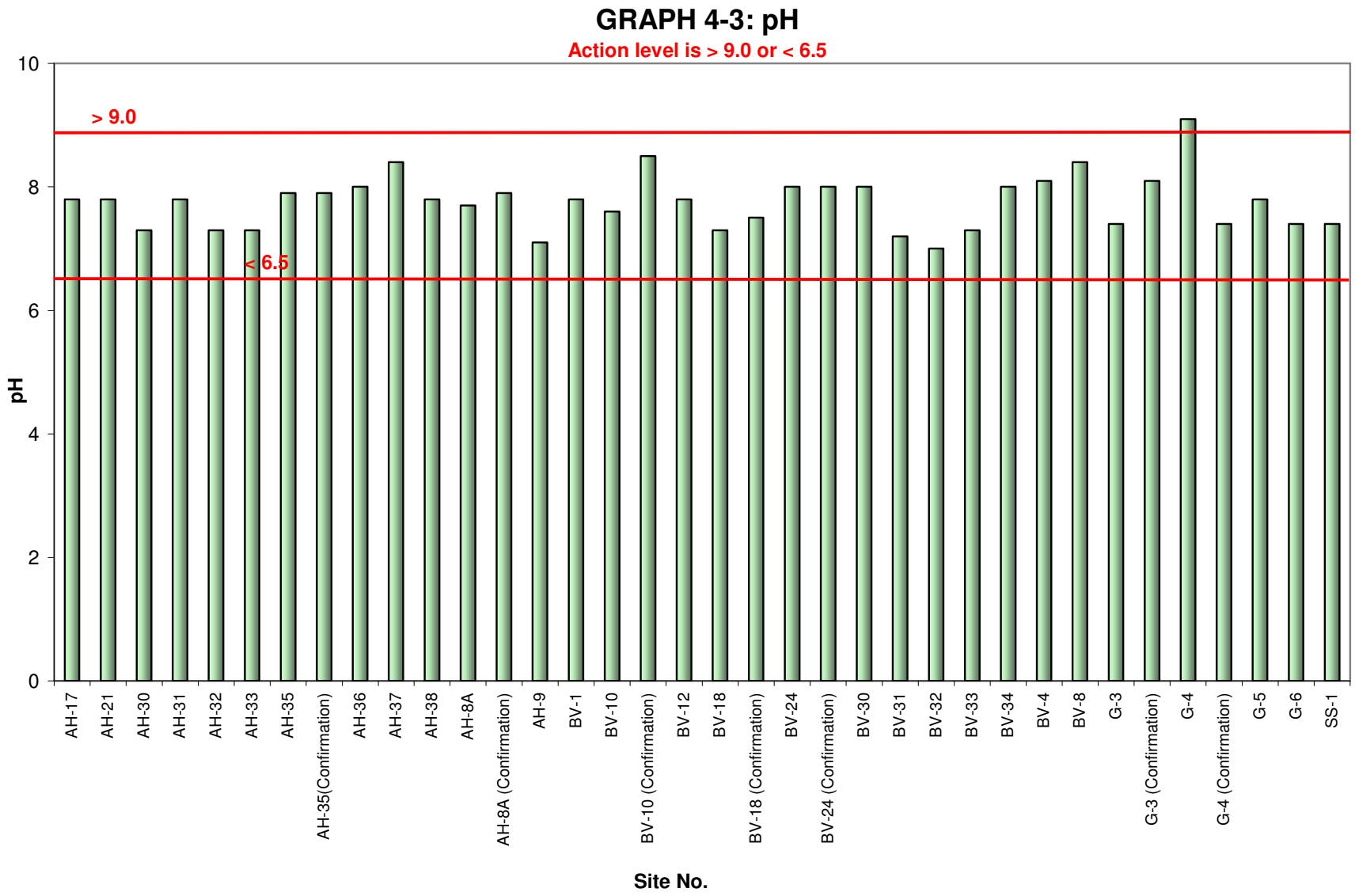
GRAPH 4-3: pH
Action level is > 9.0 or < 6.5
> 9.0
< 6.5
pH
10
8
6
4
2
0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-35
AH-35(Confirmation)
AH-36
AH-37
AH-38
AH-8A
AH-8A (Confirmation)
AH-9
BV-1
BV-10
BV-10 (Confirmation)
BV-12
BV-18
BV-18 (Confirmation)
BV-24
BV-24 (Confirmation)
BV-30
BV-31
BV-32
BV-33
BV-34
BV-4
BV-8
G-3
G-3 (Confirmation)
G-4
G-4 (Confirmation)
G-5
G-6
SS-1
Site No.

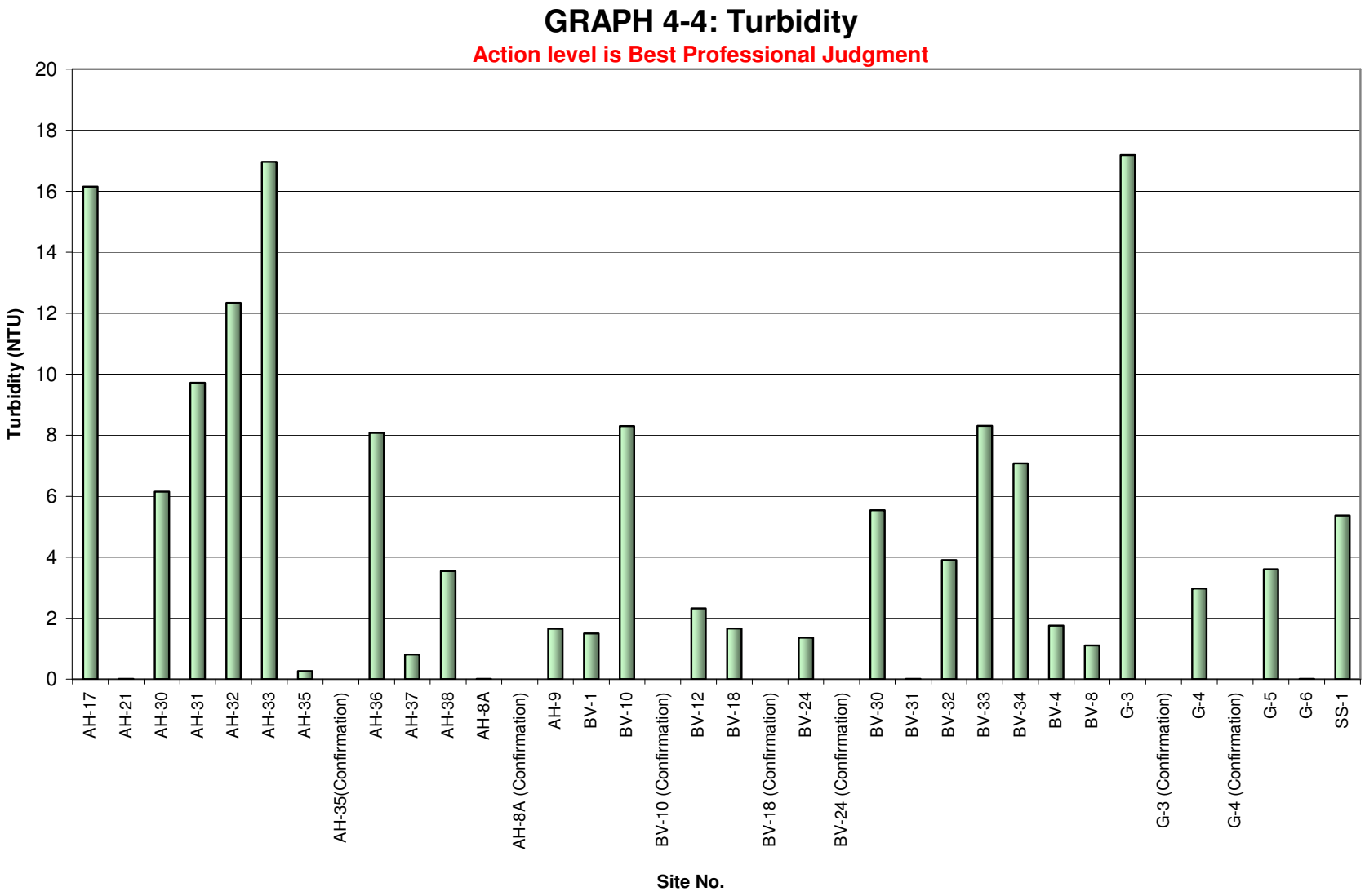
GRAPH 4-4: Turbidity
Action level is Best Professional Judgment
Turbidity (NTU)
0
2
4
6
8
10
12
14
16
18
20
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-35
AH-35(Confirmation)
AH-36
AH-37
AH-38
AH-8A
AH-8A (Confirmation)
AH-9
BV-1
BV-10
BV-10 (Confirmation)
BV-12
BV-18
BV-18 (Confirmation)
BV-24
BV-24 (Confirmation)
BV-30
BV-31
BV-32
BV-33
BV-34
BV-4
BV-8
G-3
G-3 (Confirmation)
G-4
G-4 (Confirmation)
G-5
G-6
SS-1
Site No.

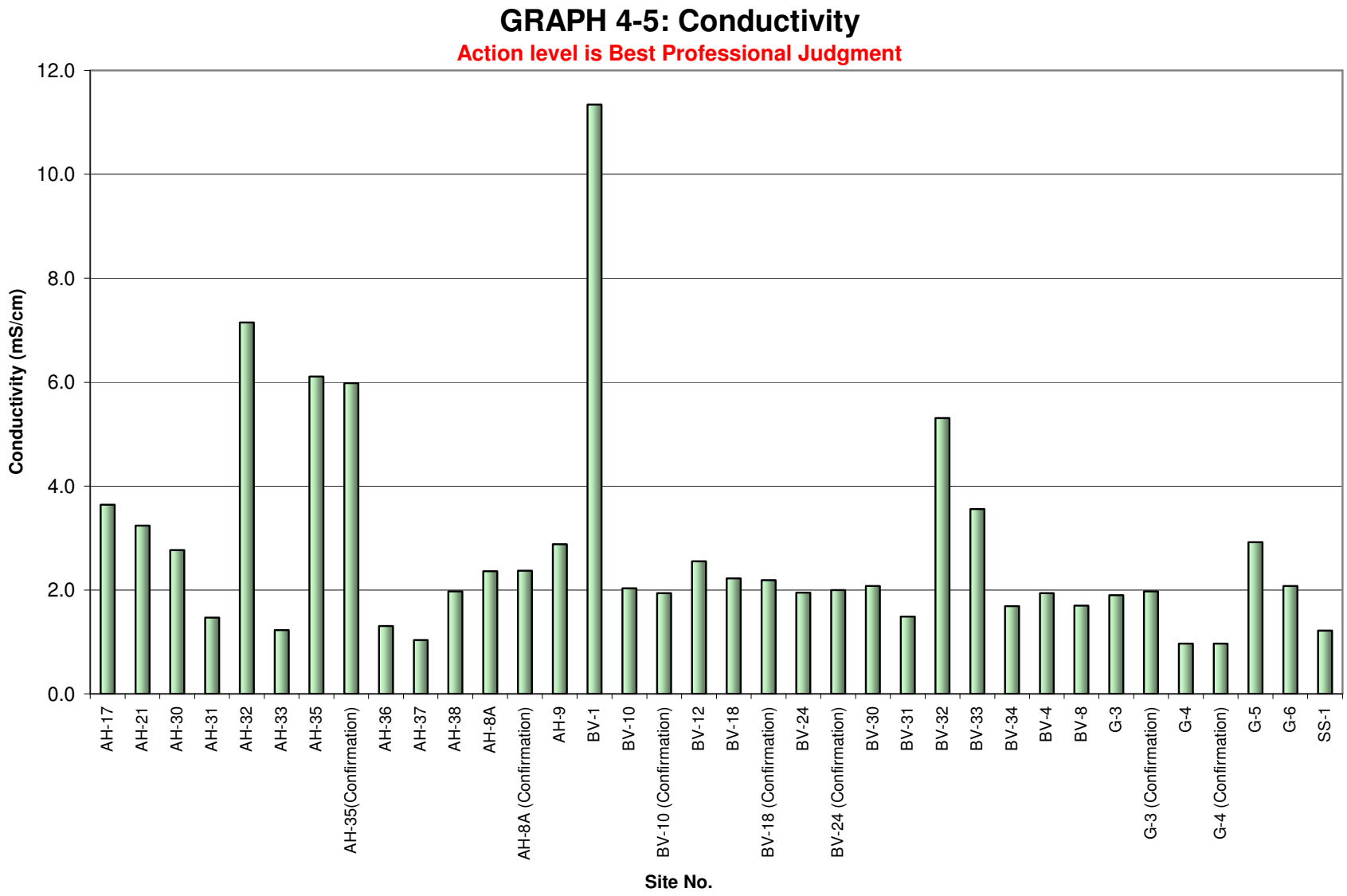
GRAPH 4-5: Conductivity
Action level is Best Professional Judgment
Conductivity (mS/cm)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-35
AH-35(Confirmation)
AH-36
AH-37
AH-38
AH-8A
AH-8A (Confirmation)
AH-9
BV-1
BV-10
BV-10 (Confirmation)
BV-12
BV-18
BV-18 (Confirmation)
BV-24
BV-24 (Confirmation)
BV-30
BV-31
BV-32
BV-33
BV-34
BV-4
BV-8
G-3
G-3 (Confirmation)
G-4
G-4 (Confirmation)
G-5
G-6
SS-1
Site No.

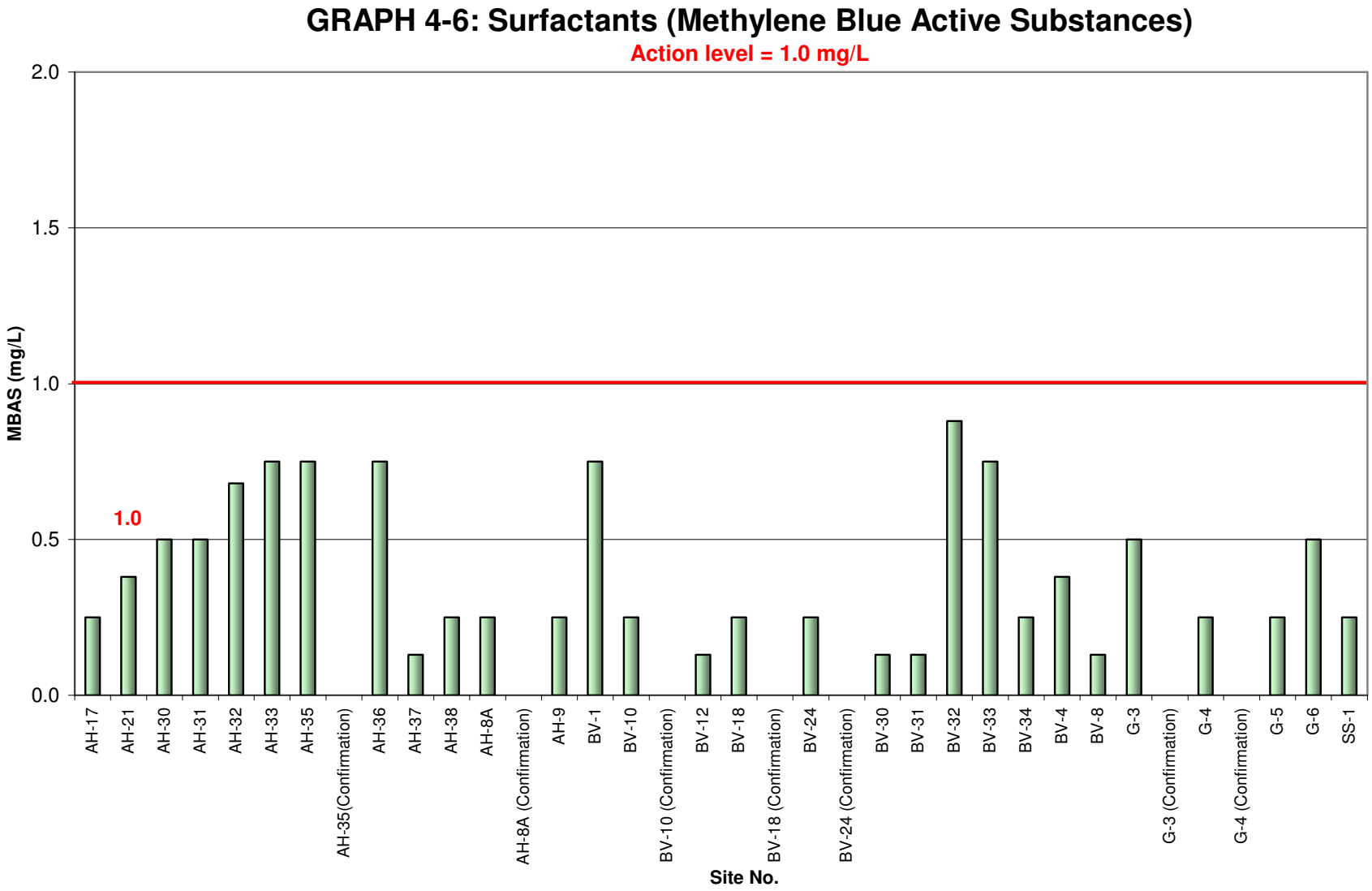
GRAPH 4-6: Surfactants (Methylene Blue Active Substances)
Action level = 1.0 mg/L
MBAS (mg/L)
2.0
1.5
1.0
0.5
0.0
1.0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-35
AH-35(Confirmation)
AH-36
AH-37
AH-38
AH-8A
AH-8A (Confirmation)
AH-9
BV-1
BV-10
BV-10 (Confirmation)
BV-12
BV-18
BV-18 (Confirmation)
BV-24
BV-24 (Confirmation)
BV-30
BV-31
BV-32
BV-33
BV-34
BV-4
BV-8
G-3
G-3 (Confirmation)
G-4
G-4 (Confirmation)
G-5
G-6
SS-1
Site No.

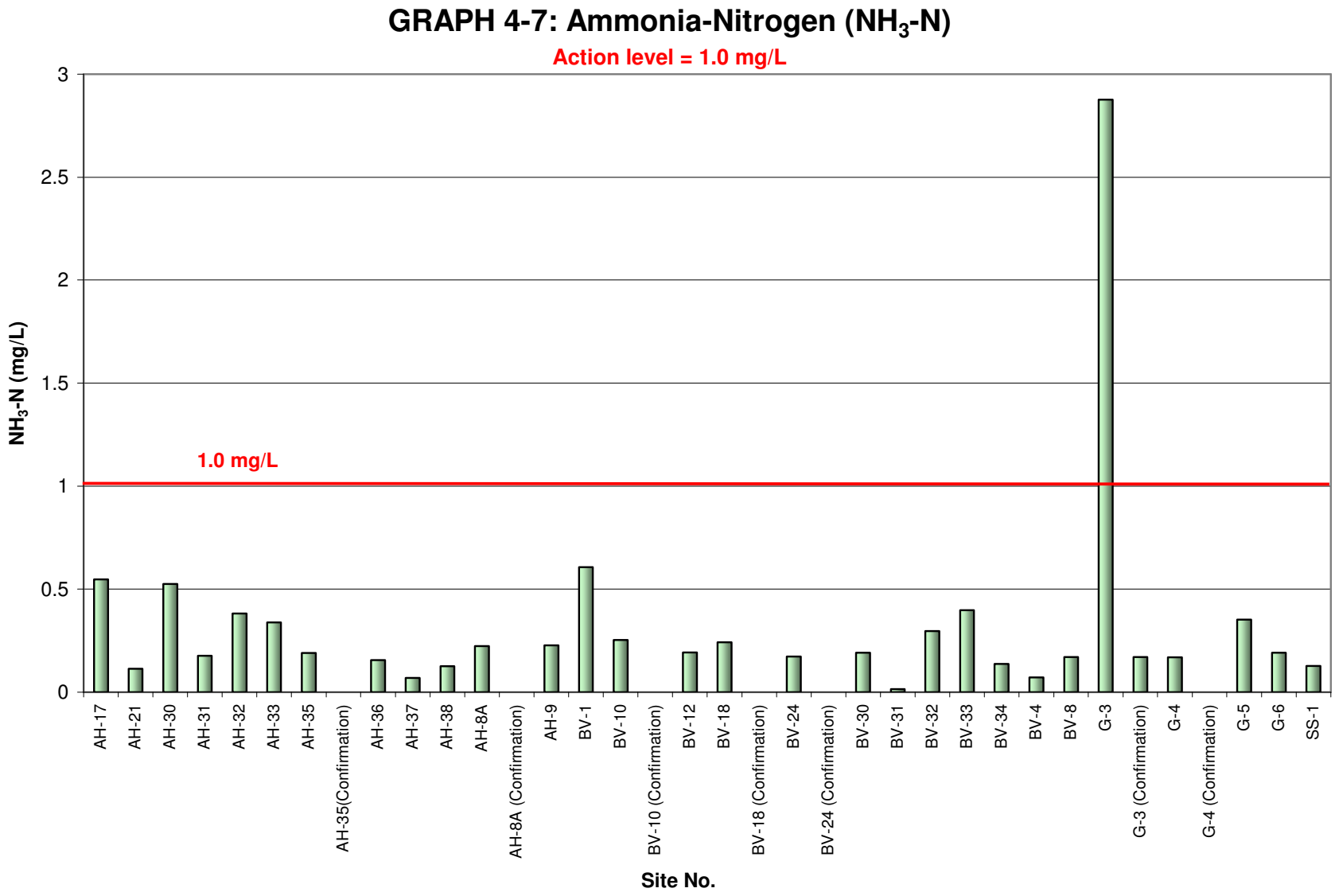
GRAPH 4-7: Ammonia-Nitrogen (NH_3-N)
Action level = 1.0 mg/L
1.0 mg/L
NH_3-N (mg/L)
3
2.5
2
1.5
1
0.5
0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-35
AH-35(Confirmation)
AH-36
AH-37
AH-38
AH-8A
AH-8A (Confirmation)
AH-9
BV-1
BV-10
BV-10 (Confirmation)
BV-12
BV-18
BV-18 (Confirmation)
BV-24
BV-24 (Confirmation)
BV-30
BV-31
BV-32
BV-33
BV-34
BV-4
BV-8
G-3
G-3 (Confirmation)
G-4
G-4 (Confirmation)
G-5
G-6
SS-1
Site No.

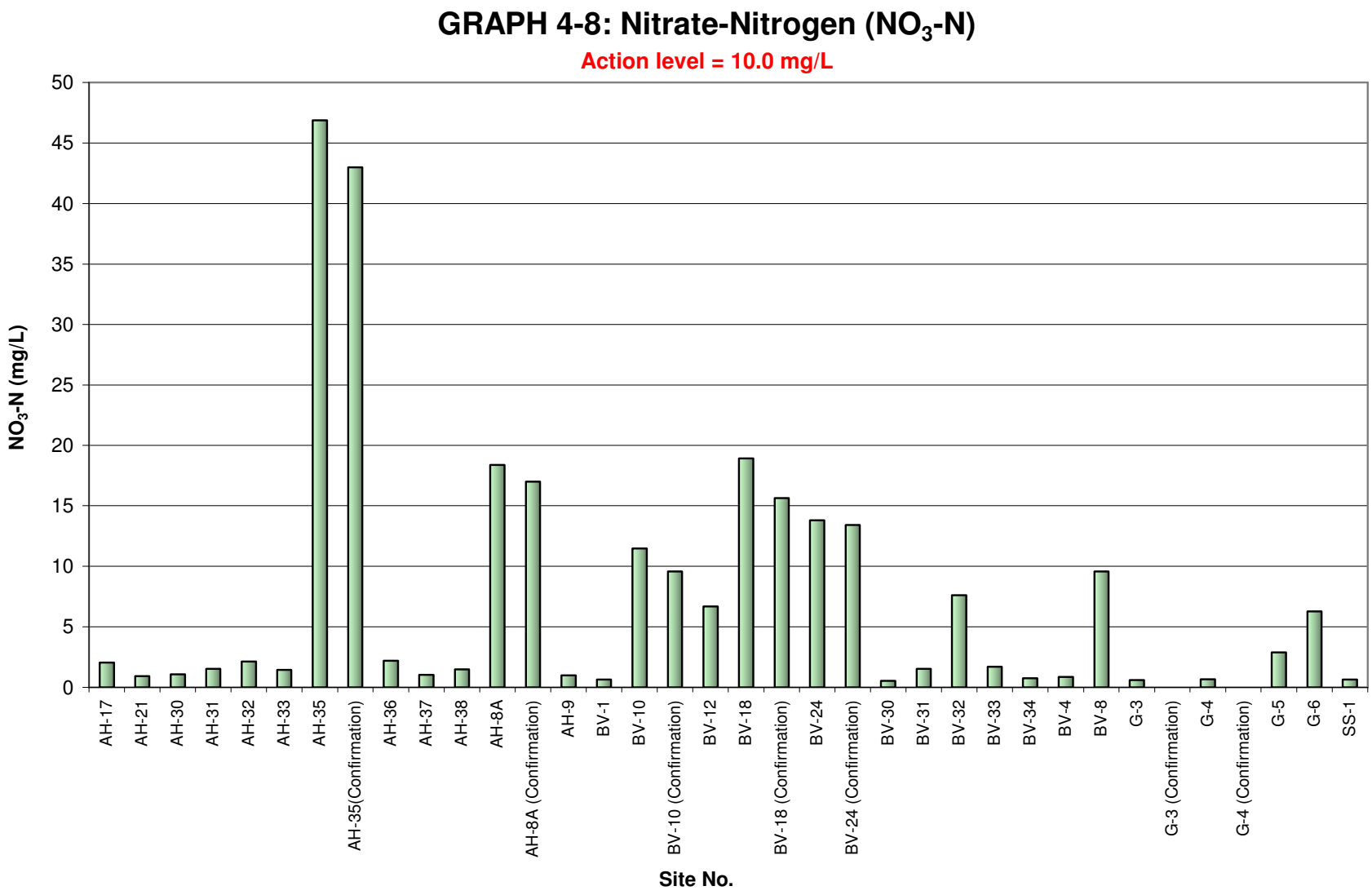
GRAPH 4-8: Nitrate-Nitrogen (NO_3-N)
Action level = 10.0 mg/L
NO_3-N (mg/L)
50
45
40
35
30
25
20
15
10
5
0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-35
AH-35(Confirmation)
AH-36
AH-37
AH-38
AH-8A
AH-8A (Confirmation)
AH-9
BV-1
BV-10
BV-10 (Confirmation)
BV-12
BV-18
BV-18 (Confirmation)
BV-24
BV-24 (Confirmation)
BV-30
BV-31
BV-32
BV-33
BV-34
BV-4
BV-8
G-3
G-3 (Confirmation)
G-4
G-4 (Confirmation)
G-5
G-6
SS-1
Site No.

GRAPH 4-9: Orthophosphate-Phosphorus (PO_4-P)

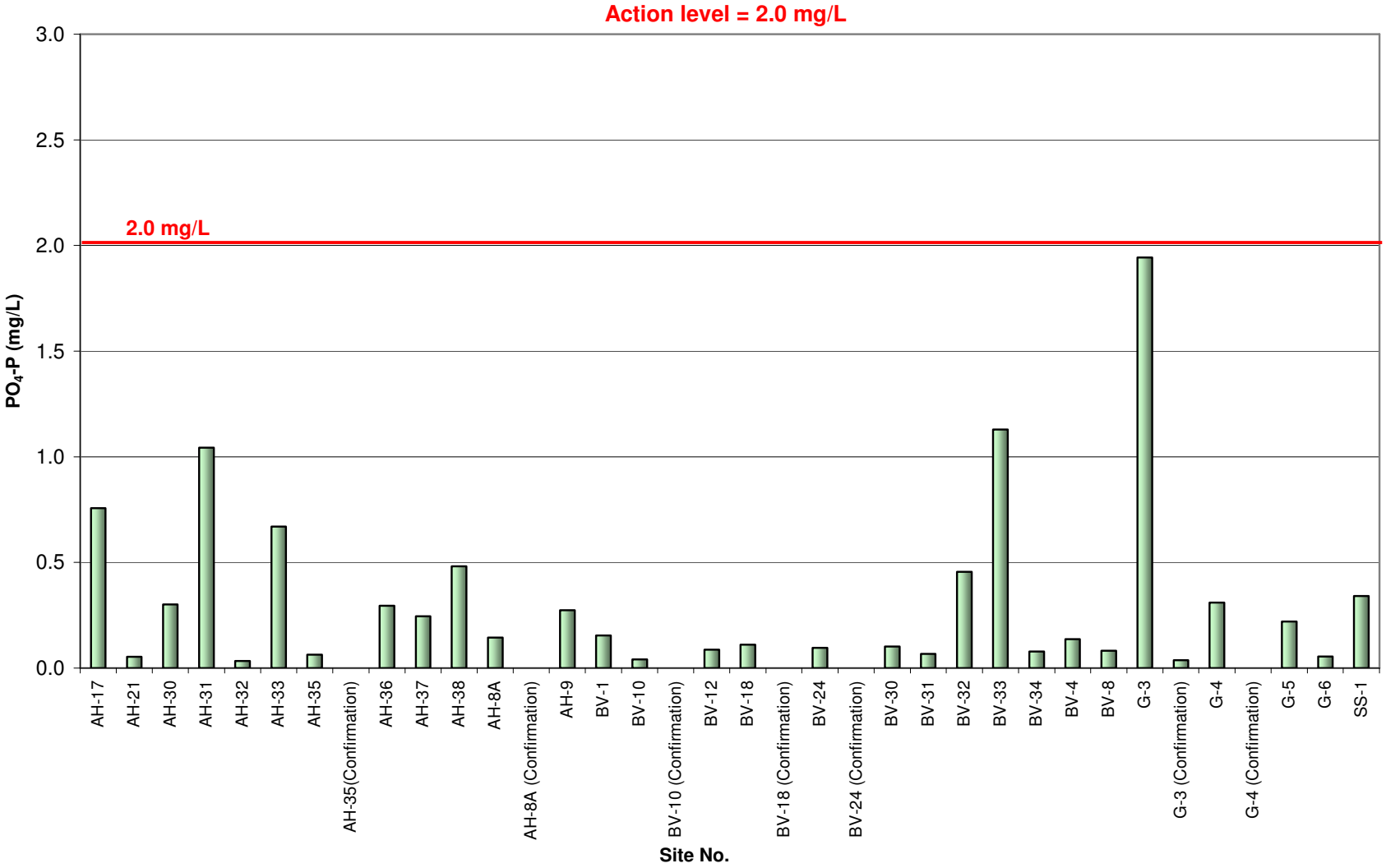

5 TRASH ASSESSMENT

5.1 Regulatory Requirements

Section II.B.3.C.(7) of the Municipal Permit's Receiving Waters and Urban Runoff Monitoring and Reporting Program requires Copermittees to assess the presence of trash in receiving waters and urban runoff at each dry weather field screening site. This trash assessment program is designed to provide information on the spatial extent and relative amount of trash present, as well at the nature and origin of the trash at the site.

5.2 Procedure and Definitions

The San Diego Copermittee Dry Weather Monitoring Workgroup developed a two-page Trash Assessment Form to document the amount and extent of trash and the threat to human and aquatic health. The first page is completed at every site. The second page, which includes information about the types, prevalence, potential routes, and sources of trash, is also completed at sites where a larger amount of trash is observed.

A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form includes five categories to describe the amount and extent of trash. The definitions are primarily qualitative, although numbers of trash pieces are also included in each category as a rough guideline. The five categories are listed below.

- *Optimal:* On first glance, no trash is visible. Little or no trash (<10 pieces) is evident when the evaluated area is closely examined for litter and debris.
- *Suboptimal:* On first glance, little or no trash is visible. After close inspection, small levels of trash (~10-50 pieces) are evident in the evaluated area.
- *Marginal:* Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing are present.
- *Submarginal:* Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100-400 pieces). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing are present.
- *Poor:* Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

The threat to human health and threat to aquatic health is assessed at each site using the following definitions:

- *Threat to Human Health* - Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris have the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g., medical waste, diapers, human waste), or have the potential for physical harm (sharps, entanglement, nails, etc.).
- *Threat to Aquatic Health* – Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc.) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and

other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category.

In the event that a site is noted as potentially posing a threat to human or aquatic health, additional descriptive comments are recorded in the "Comments" section of the Trash Assessment Form.

If a site is labeled as submarginal or poor, it is then assessed for types of trash present (e.g., automotive, biohazard, food waste), which are ranked based on the prevalence and potential threat to water quality of the items. Lastly, the potential mechanism through which trash reached the site (e.g., dumping, littering, upstream sources) and the potential source of the trash (e.g., construction, commercial, transient) are identified.

5.3 Trash Assessment Results

Table 5-1 and Graph 5-1 summarize the trash assessment results. Figure 5-1 provides a map of sampling sites and their corresponding trash assessment.

TABLE 5-1
TRASH ASSESSMENT RESULTS

Optimal (14 sites)	**Suboptimal** (16 sites)	**Marginal** (1 site)	**Submarginal** (2 sites)	**Poor** (0 sites)
AH-17 AH-31 AH-32 AH-34 AH-35 AH-36 AH-38 BV-1 BV-30 BV-33 BV-4 G-5 G-6 SS-1	AH-9 AH-21 AH-30 AH-33 AH-37 BV-7A BV-8 BV-10 BV-12 BV-15 BV-18 BV-24 BV-31 BV-32 BV-34 G-4	MV-3	AH-8A G-3	(None)

GRAPH 5-1
TRASH ASSESSMENT SUMMARY

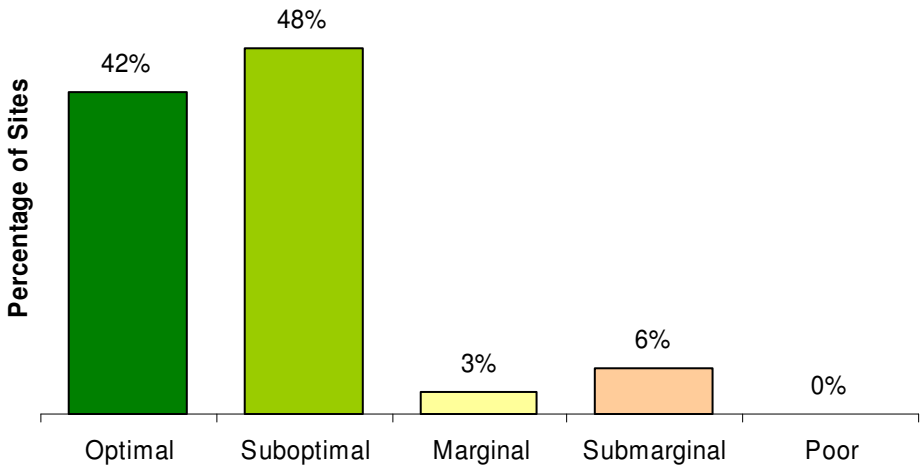

The majority of sites sampled in the City of Vista received either an "optimal" or "suboptimal" trash rating. One site was considered "marginal," and two sites were rated "submarginal." None of the sites were considered to have "poor" trash levels. No sites posed a threat to human or aquatic health.

5.3.1 Submarginal Sites

TABLE 5-2
BREAKDOWN OF SUBMARGINAL SITES

Site	Types of Trash	Ranking	Potential Route 1	Potential Route 2	Potential Source 1	Potential Source 2
AH-8A	Food Packaging	1	Littering	Upstream	Commercial	--
	Business Related	2	Littering	Upstream	Commercial	--
G-3	Food Packaging	1	Littering	Upstream	Household	--
	Household	2	Littering	Upstream	Household	--

Site AH-8A is an outlet located on Sycamore Avenue, downstream of high-traffic streets and a shopping center. Many small pieces of litter were evident, comprised primarily of food packaging. This included styrofoam cups, plastic bottles, and food wrappers. There were also pieces of paper and plastic bags, possibly washed downstream from the shopping center.

Site G-3 is an outlet located at the north end of Calle Jules. The site had an excessive amount of vegetation in which trash had collected. The observed trash included plastic bags, plastic bottles, cardboard packaging, paper plates, and styrofoam. This likely results from littering or from upstream sources. As Site G-3 is located in a residential area, households are the likely source of trash to this site.

Additionally, the site had evidence of homeless inhabitance such a shopping cart, a sleeping bag, and broken glass bottles. However, since these items were located on a concrete area apart from the flow of water, they were not included in the trash assessment rating or breakdown.

FIGURE 5-1
TRASH ASSESSMENT GIS MAP

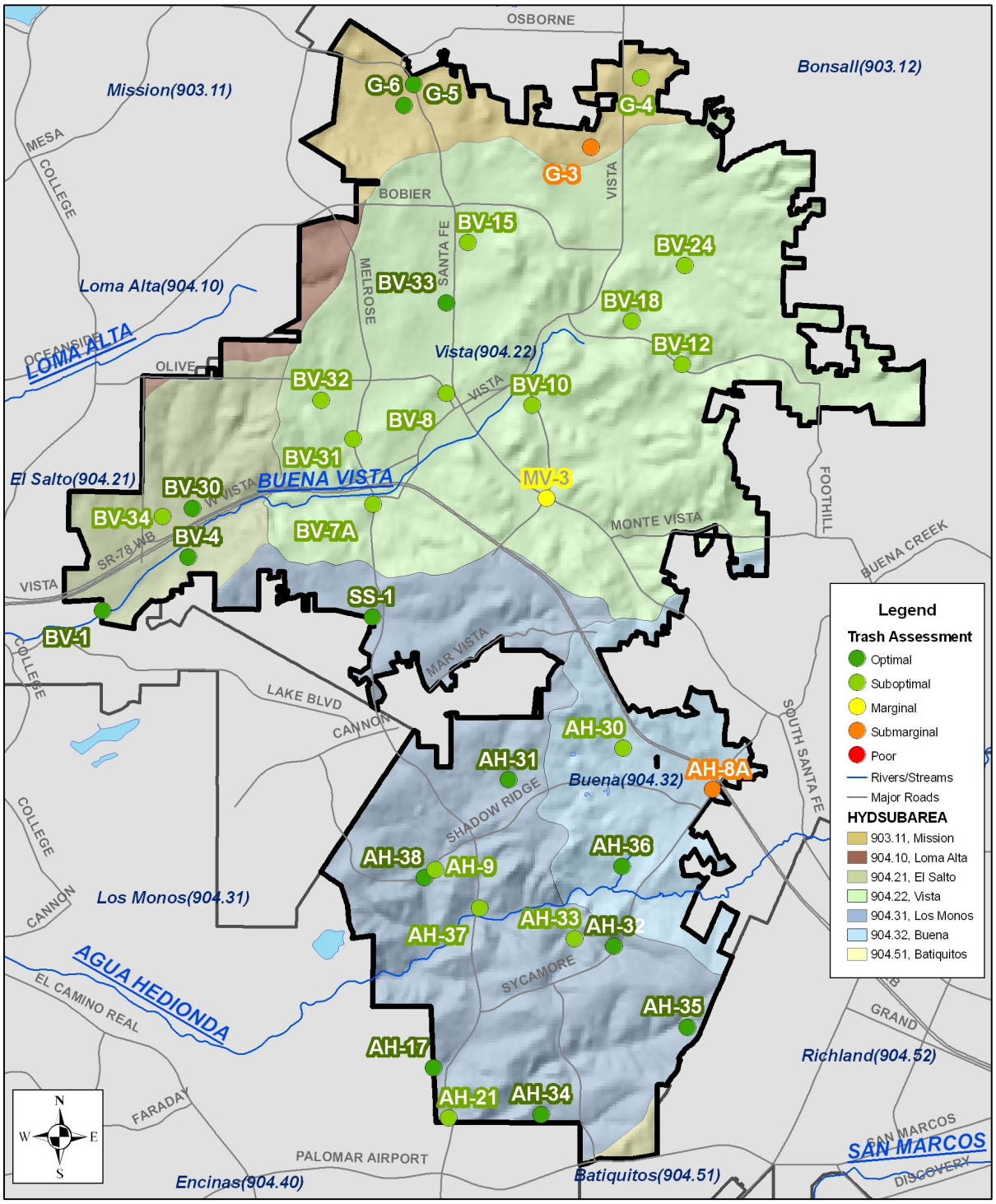

Base Data Sources: USGS, SANDAG, SanGIS, City of Vista

6 LABORATORY ANALYTICAL RESULTS

6.1 Summary

Laboratory analyses were conducted at eight sites, representing over 25 percent of all primary sites. The laboratory constituents measured are defined below.

Oil and grease analysis is used to detect hydrocarbon pollution from a variety of sources, including parking lots and streets, washing activities, illegal discharges, and automobile repair facilities.

Total hardness measures the amount of calcium and magnesium ions in a water sample, with the result expressed in mg/L of $CaCO_3$. Hardness itself is not considered a pollutant, but is measured to calculate CTR limits for dissolved metals. Hardness affects the solubility of dissolved metals as well as other minerals and ions.

Diazinon and **chlorpyrifos** are organophosphate pesticides that can be harmful to aquatic organisms if transported in urban runoff. Diazinon and chlorpyrifos are highly toxic to birds, mammals, and insects. They are also highly toxic to freshwater fish and invertebrates following acute exposure.

Metal contamination of water can arise from a variety of sources, including automobile operation, automobile repair, vehicle washing, galvanizing of metal, and electronics manufacturing. Certain dissolved metals are toxic pollutants that are hazardous to the survival and development of aquatic organisms. The California Toxics Rule for Dissolved Metals in Fresh Waters defines metal toxicity as a function of water hardness, with toxicity decreasing as hardness increases.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts and are naturally found in most surface waters and soils. Testing water samples for total coliform bacteria is a standard practice in public health. Total coliform is measured as an indicator of pathogens. Pathogens are generally present in much smaller quantities and are difficult to detect. Total coliform concentrations may also be indicative of other bacteria present in the environment that may be naturally occurring and not associated with fecal contamination.

Fecal coliform, a subset of coliform bacteria, and ***Enterococcus*** are found primarily in the gastro-intestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. A host of human diseases, particularly those of the gastro-intestinal tract, are spread through water contaminated with fecal matter. Without the use of significantly more expensive methods, such as ribotyping, it is not possible to determine whether the source of fecal material was human or animal. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain.

A summary of the laboratory analytical results is presented in Table 6-1. Table 6-2 presents the laboratory results from all samples. Laboratory reports are included in Appendix C.

TABLE 6-1
LABORATORY ANALYSIS STATISTICAL SUMMARY

Parameter (units)	Maximum	Minimum	Number of Exceedances
Total Hardness (mg/L $CaCO_3$)	1.240	338	--
Oil and Grease (mg/L)	nd	nd	0
Cadmium (dissolved, mg/L)	nd	nd	0
Copper (dissolved, mg/L)	0.005	nd	0
Lead (dissolved, mg/L)	nd	nd	0
Zinc (dissolved, mg/L)	0.03	nd	0
Diazinon (µg/L)	nd	nd	0
Chlorpyrifos (µg/L)	nd	nd	0
Total Coliforms (MPN/100 mL)	130,000	300	3
Fecal Coliforms (MPN/100 mL)	13,000	20	0
Enterococci (MPN/100 mL)	3,000	20	0

Notes:
nd = not detected
* Total hardness is not considered a pollutant (see section 3.4 for details), and thus has no established action level for the purposes of dry weather monitoring.
Calculations include complete routine visit data only. Confirmation visits, follow-up visits, and dry sites are not incorporated.

TABLE 6-2
LABORATORY ANALYTICAL RESULTS

Site No.	Date	Time	Oil & Grease mg/L	Total Hardness mg/L $CaCO_3$	Cadmium mg/L	Copper mg/L	Lead mg/L	Zinc mg/L	Diazinon µg/L	Chlorpyrifos µg/L	Total Coliforms MPN/ 100 mL	Fecal Coliforms MPN/ 100 mL	*Enterococci* MPN/ 100 mL
AH-8A	8/20/08	11:10	nd	911	nd	nd	nd	nd	nd	nd	8,000	1,700	230
AH-9	8/21/08	10:45	nd	969	nd	nd	nd	nd	nd	nd	23,000	5,000	3,000
AH-21	8/21/08	9:10	nd	1,240	nd	0.005	nd	0.03	nd	nd	**130,000**	5,000	1,700
AH-21 (Confirmation)	8/28/08	13:00	na	na	na	na	na	na	na	na	**64,900**	127	na
BV-4	8/21/08	11:40	nd	561	nd	nd	nd	nd	nd	nd	8,000	5,000	2,300
BV-8	8/20/08	12:00	nd	431	nd	nd	nd	nd	nd	nd	**110,000**	5,000	1,700
BV-8 (Confirmation)	8/28/08	12:30	na	na	na	na	na	na	na	na	**98,000**	874	na
BV-18	8/20/08	9:40	nd	862	nd	nd	nd	nd	nd	nd	5,000	3,000	1,700
BV-31	8/22/08	9:30	nd	354	nd	nd	nd	nd	nd	nd	300	20	20
SS-1	8/22/08	10:45	nd	338	nd	0.005	nd	nd	nd	nd	**80,000**	13,000	1,700
SS-1 (Confirmation)	8/28/08	11:30	na	na	na	na	na	na	na	na	**98,000**	1,529	na
Reporting Limits			**5.0**	**10**	**0.005**	**0.005**	**0.005**	**0.02**	**0.05**	**0.05**	**20**	**20**	**20**
Action Levels			**15.0**	*****	**CTR**	**CTR**	**CTR**	**CTR**	**0.50**	**0.50**	**50,000**	**20,000**	**10,000**

Notes:
Red Bold Type = value exceeds action level
denotes a confirmation visit
nd = not detected; na = not analyzed
CTR = California Toxics Rule; CTR action levels for metals are calculated based upon on the total hardness value of the water sample.
* Total hardness is not considered a pollutant (see section 3.4 for details), and thus has no established action level for the purposes of dry weather monitoring.

7 DATA ANALYSIS

The first part of this section provides an overall evaluation of test results obtained from the 2008 Dry Weather Monitoring Program. The second portion of this section describes historical trends for various constituent exceedances.

7.1 2008 Results

The predominant action level exceedance in the City of Vista is that of nitrate-nitrogen, believed to be from groundwater sources (see Section 8). Total coliform levels were in exceedance at three sites; one site had a transient pH exceedance, and another site had a transient ammonia-nitrogen exceedance. Table 7-1 provides a snapshot of the 2008 action level exceedances.

TABLE 7-1
2008 EXCEEDANCES AT A GLANCE

Site No.	pH	Ammonia-N	Nitrate-N	Total Coliforms
AH-8A			✓	
AH-21				✓
AH-35			✓	
BV-8				✓
BV-10			✓	
BV-18			✓	
BV-24			✓	
G-3		✓		
G-4	✓			
SS-1				✓

Note: Table reflects exceedances occurring during routine visits only, not confirmation or follow-up visits.

7.2 Previous Results

Historical results of exceedances are presented in Table 7-2, Graph 7-1, and Graph 7-2. Table 7-2 shows the percentage of sampled sites that have had exceedances each year of the Dry Weather Monitoring Program. Graph 7-1 illustrates the percentage of exceedances for field constituents, and Graph 7-2 presents the percentage exceedances by year for laboratory analyses.

Beginning in 2002, no exceedances were measured in cadmium, copper, lead, zinc, diazinon, or chlorpyrifos. Thus, these constituents have not been included in the following table or graphs. Oil and grease was detected above the action level only in 2002. Although the historical data shows varied exceedances over the years, it is apparent that nitrate-nitrogen has generally been the field constituent with the most exceedances.

TABLE 7-2
PERCENT OF SITES WITH EXCEEDANCES BY YEAR

Year	Field Screening								Laboratory Analyses				
	Number of Field Screening Sites	Temperature	pH	Turbidity	Surfactants	Ammonia-N	Nitrate-N	Orthophosphate-P	**Number of Laboratory Sampling Sites**	Oil & Grease	Total Coliforms	Fecal Coliforms	*Enterococci*
2002	21	0	5	0	0	5	29	0	6	0	0	0	0
2003	22	0	5	0	0	5	9	0	5	40	40	40	20
2004	22	0	9	0	5	9	41	5	6	0	0	0	0
2005	27	0	4	0	15	15	26	11	7	0	0	0	0
2006	28	7	11	0	11	11	11	7	6	0	33	0	0
2007	26	4	0	4	15	8	23	0	6	0	17	17	33
2008	29	0	3	0	0	3	17	0	8	0	38	0	0

Note: Results based on complete routine visits only. Confirmation visits, follow-up visits, and dry sites not included.

GRAPH 7-1
PERCENT OF SITES WITH FIELD CONSTITUENT EXCEEDANCES BY YEAR

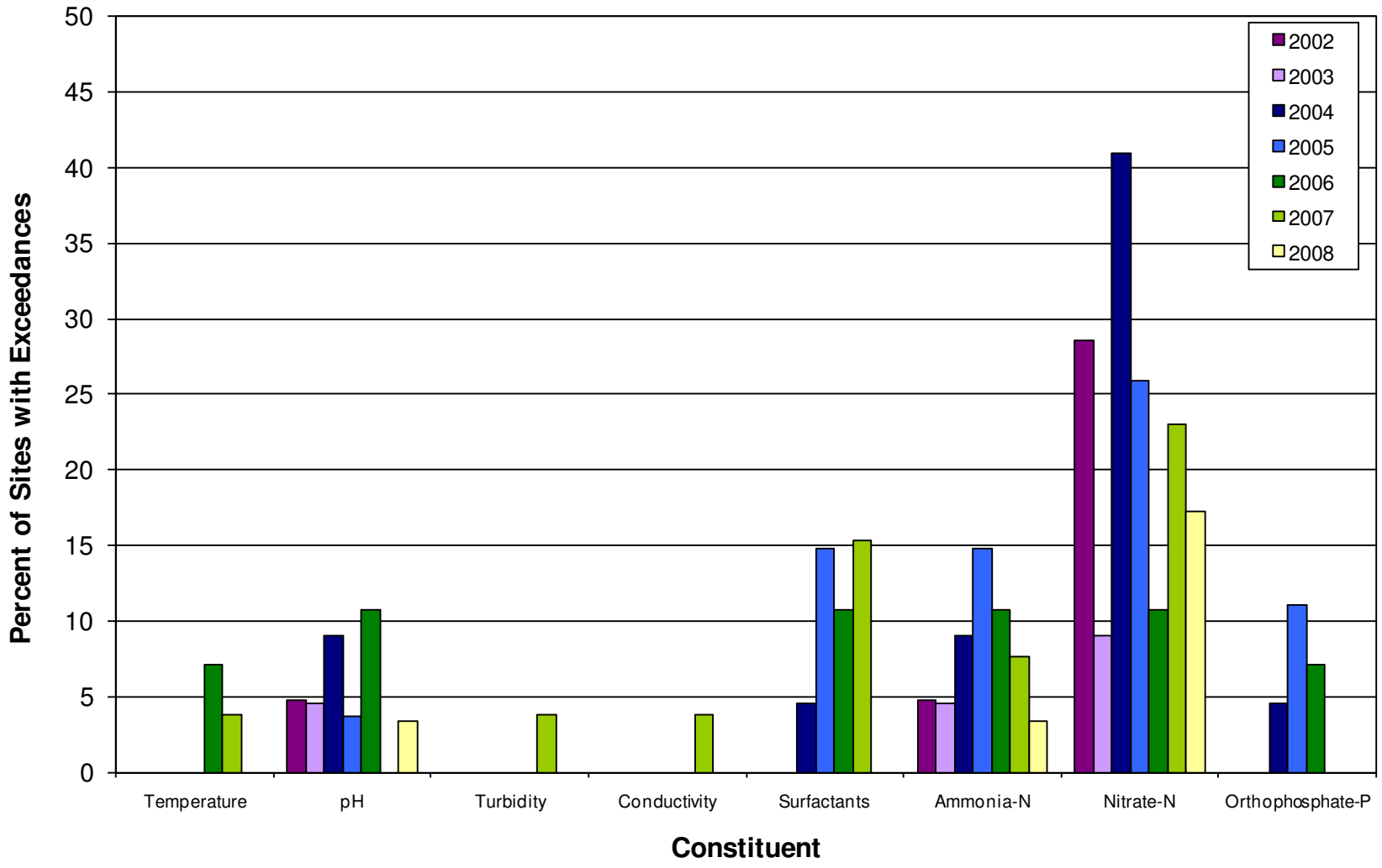

GRAPH 7-2
PERCENT OF SITES WITH LABORATORY ANALYSIS EXCEEDANCES BY YEAR

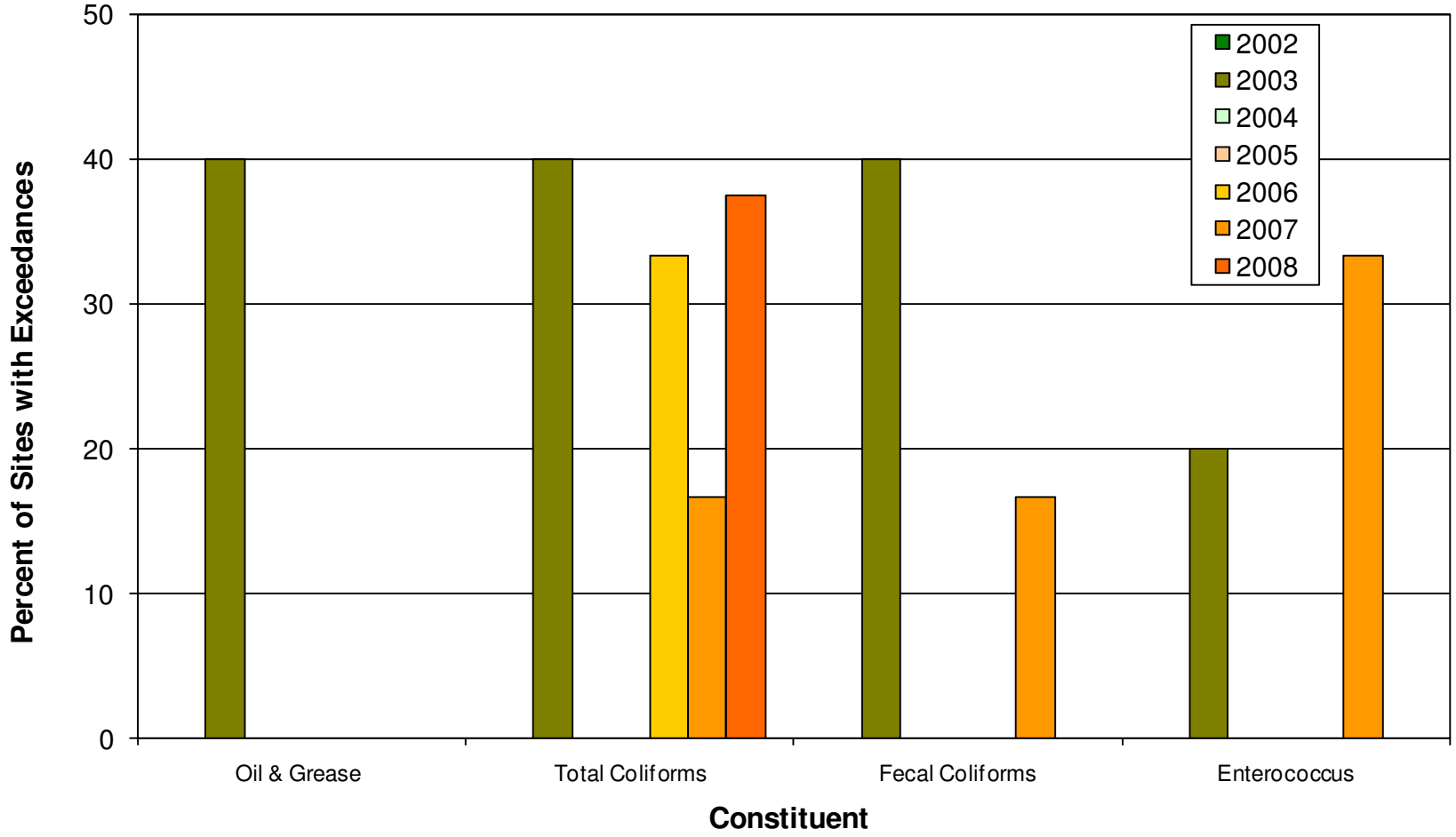

8 FOLLOW-UP INVESTIGATIONS

One of the main purposes of the Dry Weather Monitoring Program is to identify IC/IDs. Both field screening and laboratory analytical results are compared to regionally developed action levels (Table 3-4). When a parameter is measured at or above its action level, it is possible that an IC/ID is present. To further investigate potential IC/IDs, additional investigation is initiated whenever action levels are exceeded. Procedures for such investigations are described below.

8.1 Investigation Procedures

When Dry Weather Monitoring Program results exceed action levels, the City either conducts an investigation to identify the source of the discharge or provides rationale for why the discharge does not pose a threat to water quality and does not need further investigation. An immediate source identification investigation is initiated if visual and/or analytical evidence of gross contamination is present at a site during a routine investigation. Examples of gross contamination include substantial petroleum sheens, constituent concentrations well above action levels, abnormal colors or odors not attributable to natural site conditions, or evidence of a sewage release; such conditions may be considered a threat to human health or the environment. Immediate source identification investigations are conducted when surfactants exceedances are noted. Past experience has shown that an immediate investigation is much more likely to identify the source of the exceedance for this particular constituent. This is because such exceedances are often related to washing activities, which are typically intermittent in nature.

When further investigation is needed but an immediate upstream investigation is not necessary, the City initially confirms the results by resampling within two business days of being informed of the exceedance. For field screening, this is within two business days of the initial test. The overall time frame for laboratory analytical results depends on the time that results are received from the lab, but investigations are conducted within two days of receiving the data. These investigations are labeled as “confirmation” visits in this report, and they are used to guide further upstream investigations where necessary.

When confirmation sampling confirms continued exceedance of action levels, then the City conducts further investigation to identify the source of the exceedance. This type of investigation is referred to as “follow-up” in this report. Additional investigation is not conducted when exceedances are not noted during the confirmation visit or when the exceedance is known not to be the result of IC/IDs. As noted earlier, when gross contamination is observed during a routine visit, an immediate upstream source investigation is initiated. Prior to beginning an upstream source investigation, field staff review previous dry weather monitoring reports and consult MS4 maps to plan the investigation.

Dry weather flows are generally traced from the site in an upstream direction along the conveyance system. Photos, narrative descriptions of relevant visual observations made, and GPS coordinates are recorded to aid in documentation and in potential enforcement procedures. Water samples are collected at upstream confluences for analyses of the constituent(s) being tracked. All samples are documented through the completion of field data sheets, which are provided in Appendix D. If the samples are being submitted for laboratory analysis, they are delivered within the appropriate holding time, and all appropriate chain-of-custody procedures are followed. Sampling and analysis methods are typically the same as those used for the routine portion of the Dry Weather Monitoring Program, with the exception of bacteria analyses. During confirmation and follow-up sampling IDEXX Colilert

and Enterolert methods are used instead of the multiple tube fermentation (MTF) methods used for routine visits. The IDEXX methods provide faster turn-around time than the MTF methods: results can be provided within 24 hours instead of several days. Shorter turn-around time allows investigators to conduct further follow-up testing sooner where necessary. The IDEXX methods are also less expensive than MTF methods, which allows field investigators to take samples from a larger number of locations.

If the results of the upstream investigation indicate that an IC/ID may be present, appropriate City personnel are notified. Where appropriate and feasible, field staff may also contact the party responsible for the discharge directly regarding the IC/IDs and potential BMPs.

8.2 Investigated Sites

During the 2008 Dry Weather Monitoring Program additional investigations for potential IC/IDs were performed at ten sites; seven for field constituent exceedances and three sites for total coliforms. A brief description of each site, the testing results, photographs of selected upstream locations, and the results of upstream investigations are included in this section. Table 9-2 in Section 9 of this report provides a summary of the investigation results.

AGUA HEDIONDA HA

Site AH-8A is an outlet located between 632 and 636 Sycamore Avenue, on the eastern boundary of the City. Consistent with the site's history, nitrate levels were above the 10.00 mg/L action level, measuring at 18.37 mg/L during routine screening and 17.01 mg/L at the confirmation visit.

Water flows to Site AH-8A mainly from hills in the northeast, which have residential developments and expanses of landscaping. A shopping center at the base of the hill was investigated, but no runoff or source of nitrates were observed. Several manholes and outlets checked along Robelini Drive, Primrose Avenue, and Lobelia Drive were dry, and no runoff was observed along Sycamore Avenue. Investigations in previous years also found upstream locations to be dry, despite a flow at the site.

The source of water to Site AH-8A is not clear. Because no surface flow was observed upstream but consistent flow was present at the site, a likely source is nitrate-containing groundwater or interflow seepage from the higher elevation area upstream.

Site AH-21 is an outlet located on Melrose Drive, near the southern boundary of the City of Vista. Total coliforms were measured at 130,000 MPN/100 mL during the routine visit and 64,900 MPN/100 mL at the confirmation visit, both of which are above the 50,000 MPN/100 mL action level.

Two known stormwater conveyance branches contribute to this site. The shorter line from the north on Melrose Drive was dry. The other, a line from the northeast, collects water from an industrial park. During the upstream investigation in the industrial park, a manhole on Aspen Way and Melrose Drive was examined but did not have enough flow to sample. The surrounding streets appeared fairly clean, and it did not appear as though significant outdoor activities were conducted at these facilities. The very small amounts of irrigation runoff were observed did not provide enough water to take any samples.

Site AH-21 had a light amount of trash, comprised of food packaging and food waste. It is possible that decomposition at the site is the cause of total coliform growth. Since no obvious sources of total coliforms were observed upstream, it is likely that the source of bacteria is mainly related to decomposition of organic matter at Site AH-21 itself.

Site AH-35 is a manhole more than 30 feet deep, across from 1210 Activity Drive. Nitrate-nitrogen levels at this site were 46.87 mg/L at the initial visit and 42.99 mg/L at the confirmation visit, both above the action level.

Photo 8-1: Upstream location AH-35-1

Field investigation found some differences between the MS4 connections observed in the field and the MS4 as presented in the City's GIS layer. As shown in Figure 8-1, the GIS file indicates water flows northeast to southwest from AH-35-2 to AH-35 to AH-35-1, and then from AH-35-1 to the northwest until it joins a channel essentially parallel to Progress Street. During the site visit it was discovered that the connection from the line with the three investigated locations on it to the channel parallel to Progress Street is actually located at AH-35, not at AH-35-1. Water from AH-35-1 flows to the northeast to AH-35. Therefore, Site AH-35 is the junction between two lines, one from the northeast, and one from the southwest.

Upstream location AH-35-1 is a manhole on the driveway of 1240 Activity Drive (Photo 8-1). The nitrate-nitrogen concentration was 11.26 mg/L, significantly less than that of Site AH-35 but still above the action level. No overland flow was observed on this southwestern line. One possible source of flow here is from the slope to the east of Poinsettia Avenue. According to field observations and land use maps, the portion of the slope draining to AH-35-1 is comprised of more residential areas than agricultural land.

PHOTO 8-2: Upstream location AH-35-2

On the northeastern line, a sample was taken at upstream location AH-35-2, a manhole near the intersection of Activity Drive and Poinsettia Drive (Photo 8-2). The nitrate-nitrogen level was 38.76 mg/L. Construction activities were underway at the intersection upstream, but no runoff was observed entering the storm drains. The area farther upstream, east of Poinsettia Drive, is in the City of San Marcos. The area in San Marcos is at a higher elevation than and slopes relatively steeply down towards the area in Vista. Some of this land is used for agricultural activities, and the area appears to drain to Site AH-35. The investigation identified water coming from the area east and northeast of the site in the jurisdiction of the City of San Marcos as the source of the nitrate exceedance measured at Site AH-35. The exact origin of the water is unknown but is outside the City of Vista.

Table 8-1 provides the flow and nitrate levels for Site AH-35 and upstream sampling locations.

TABLE 8-1
SITE AH-35 UPSTREAM INVESTIGATION

Site	Location	Flow (gpm)	Nitrate (mg/L)
AH-35	Across from 1210 Activity Drive	2	**46.87**
AH-35 (Confirmation)	"	2	**42.99**
AH-35-1	Driveway of 1240 Activity Drive	1	**11.26**
AH-35-2	East sidewalk of Activity Drive, near Poinsettia Avenue	1	**38.76**

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-1
SITE AH-35 UPSTREAM INVESTIGATION MAP

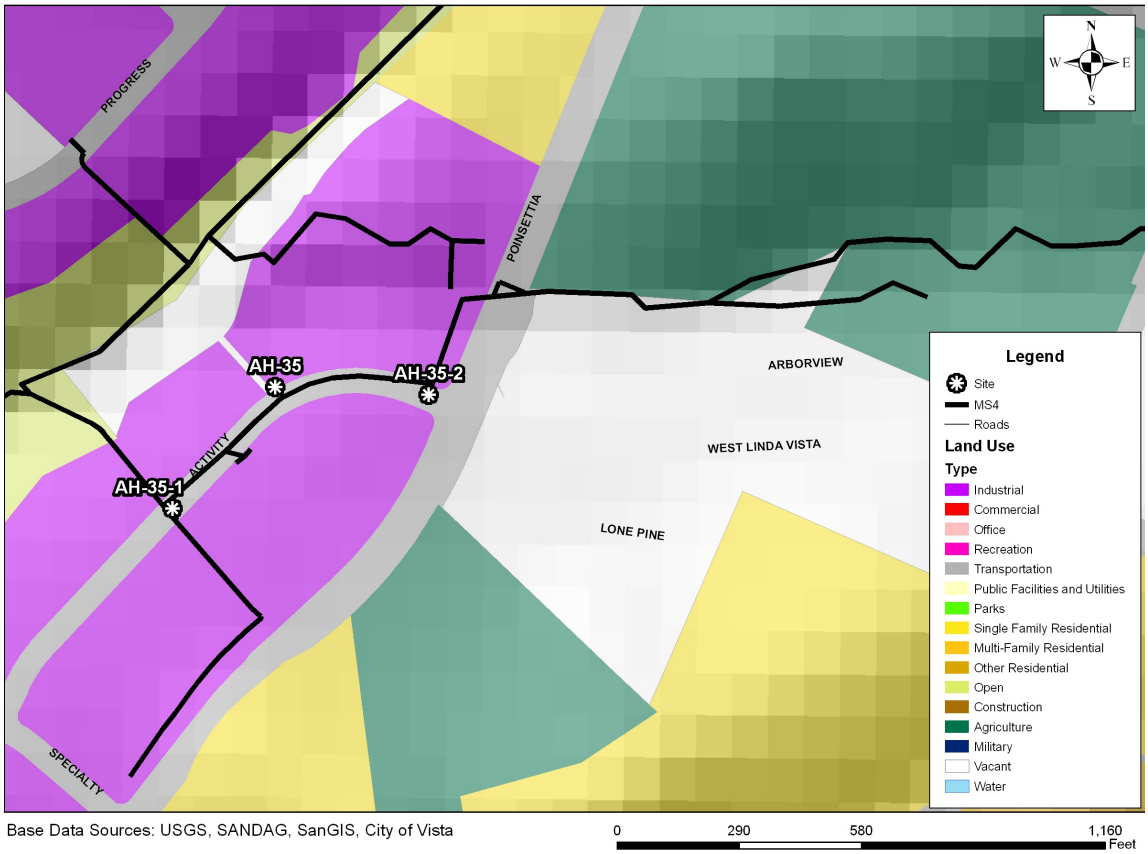

Note: The area east of Poinsettia Avenue is in the City of San Marcos, while the area west of Poinsettia is in the City of Vista.

Site SS-1 has two outlets on the south side of Escondido Avenue, west of Melrose Drive (Photo 8-3). A sample was taken from the confluence of the two outlets. The 1 gpm flow was yellow and had a high total coliform count of 80,000 MPN/100 mL. At the confirmation visit, the water was no longer yellow, but the total coliforms count was slightly higher at 98,000 MPN/100 mL.

PHOTO 8-3: Decomposing leaves at Site SS-1

Upstream of Site SS-1, the storm water conveyance runs from an outlet to open channel through a park parallel to Escondido Avenue. The channel contained some algae and light leaf debris; the park was generally clean and free of trash. Just west of the outlet, upstream location SS-1-1 (Photo 8-4) had a total coliform count of 46,100 MPN/100 mL, below the 50,000 MPN/100 mL action level.

Photo 8-4: Upstream location SS-1-1

Based on visual observations and follow-up sampling results, the most probable source of high total coliforms was located at Site SS-1. The site contained a significant amount of decomposing leaves and had a shallow, slow-moving flow. These conditions are likely to promote growth of total coliform bacteria.

TABLE 8-2
SITE SS-1 UPSTREAM INVESTIGATION

Site	Location	Flow (gpm)	Total Coliforms (MPN/ 100 mL)
SS-1	South side of Escondido Avenue, west of Melrose Drive	1	**80,000**
SS-1 (Confirmation)	"	1	**98,000**
SS-1-1	Escondido Avenue, west of Hitching Point, in fenced park next to horse stables	< 1	46,100

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-2
SITE SS-1 UPSTREAM INVESTIGATION MAP

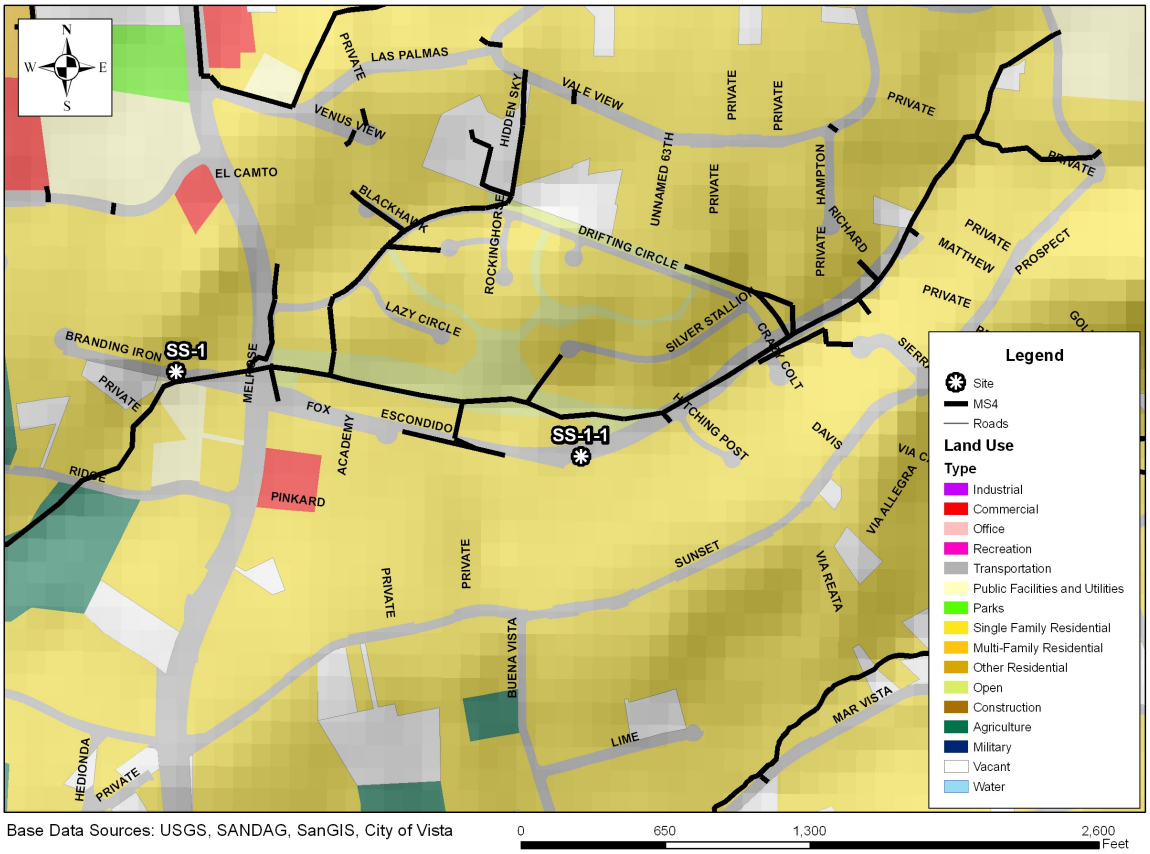

BUENA VISTA HA

Site BV-8 is located in a concrete channel at the intersection of Olive Avenue and Goething Way (Photo 8-5). Aluminum cans and food packaging litter were observed at the site. The total coliform count was 110,000 MPN/100 mL, followed by 98,000 MPN/100 mL at the confirmation visit.

PHOTO 8-5: Site BV-8

Three main conveyances contribute to this site from the north, passing primarily through commercial and residential neighborhoods. The lines converge at the corner of Orange Avenue and Redlands Street. The eastern conveyance was dry, and the western line contributed only a trickle of flow. The central line had an approximate flow of 20 gpm. Since this constituted the majority of the 27 gpm flow at Site BV-8 downstream, a sample was taken of this central line at the southwest corner of the West California Avenue and Redlands Street intersection. This location, BV-8-1, is a concrete channel with trash and a rotten-egg odor (Photo 8-6). Total coliforms

were high at BV-8-1, measuring at 186,000 MPN/100 mL.

The exposed channel upstream of Site BV-8 and continuing through upstream location BV-8-1 is a likely source of total coliform bacteria as it contained a substantial amount of food packaging and decaying organic debris. The exposure to sunlight and shallow but persistent flow may encourage bacterial growth.

Table 8-2 provides the flow and total coliform levels for Site BV-8 and upstream location BV-8-1.

PHOTO 8-6: Upstream location BV-8-1

TABLE 8-3
SITE BV-8 UPSTREAM INVESTIGATION

Site	Location	Flow (gpm)	Total Coliforms (MPN/ 100 mL)
BV-8	Olive Avenue and Goething Way, southwest corner	23	**110,000**
BV-8 (Confirmation)	"	27	**98,000**
BV-8-1	Southwest corner of the Redlands Street and West California Avenue intersection	20	**186,000**

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-3
SITE BV-8 UPSTREAM INVESTIGATION MAP

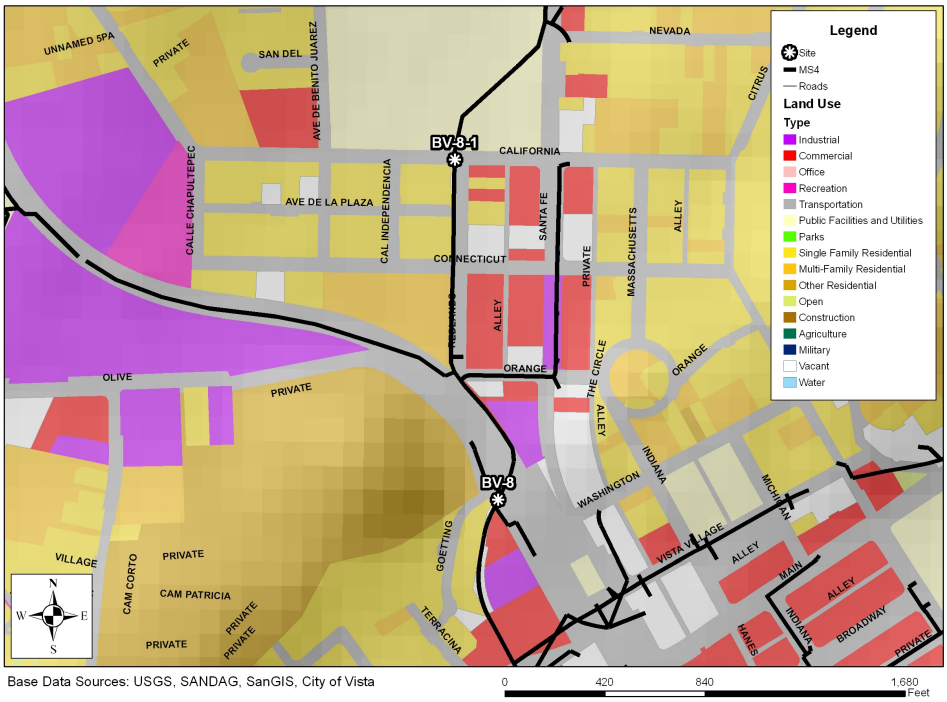

Site BV-10 is a concrete channel on the corner of Eucalyptus Avenue and Escondido Avenue. The nitrate-nitrogen level was high at the routine visit, measuring 11.47 mg/L. At the confirmation visit, the nitrate-nitrogen level was 9.58 mg/L, below the 10.00 mg/L action level.

The site receives water from the east along Eucalyptus Avenue. No runoff was observed at the time of the investigation. It was concluded that the high level of nitrates was due to a transient flow.

Sites BV-18 and BV-24

Sites BV-18 and BV-24 had exceedances in nitrate-nitrogen levels. Since Site BV-24 is located upstream of Site BV-18 on the same stormwater conveyance system, the two sites are discussed together below.

Site BV-18 is located in a natural creek on the northwest side of Brengle Terrace Park. Nitrate-nitrogen was measured at 18.92 mg/L during routine testing and 15.65 mg/L the following day. Upstream is Site BV-24, an outlet across from 1427 Foothill Drive. Nitrate-nitrogen was measured at 13.80 mg/L and 13.42 mg/L at this location. Three main branches contribute to Site BV-24 from the southeast, east and northeast directions. The southeastern and eastern lines were dry at the time of the upstream investigation. The 2 gpm flow observed at Site BV-24 came from the northeastern line, which drains mainly rural and residential areas and a nursery further upstream.

The northeastern line moves through a private residence at 1450 Foothill Drive just before reaching Site BV-24. Immediately upstream of the residence, on Calle Las Moras and on the bridge at 1550 Elm Drive, all inspected storm water conveyances were dry Based on these observations , the source of water to this line likely originates on the property at 1450 Foothill Drive. An investigation several years ago identified some seepage on this property. Attempts were made during this dry weather season to contact the homeowner for further investigation of the current source of water, however the resident could not be reached.

In this general vicinity, elevation increases toward the north and east, from which water flows downhill toward the site. Based on the lack of overland flow in the area, the most likely source of the nitrate exceedances recorded at sites BV-18 and BV-24 was seepage that surfaces in the vicinity of 1450 Foothill Drive.

TABLE 8-4
SITES BV-18 AND BV-24 NITRATE LEVELS

Site	Location	Flow (gpm)	Nitrate (mg/L)
BV-18	Brengle Terrace Park, northwest side	5	**18.92**
BV-18 (Confirmation)	"	5	**15.65**
BV-24	1427 Foothill Drive	2	**13.80**
BV-24 (Confirmation)	"	2	**13.42**

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-4
MAP OF SITES BV-18 AND BV-24

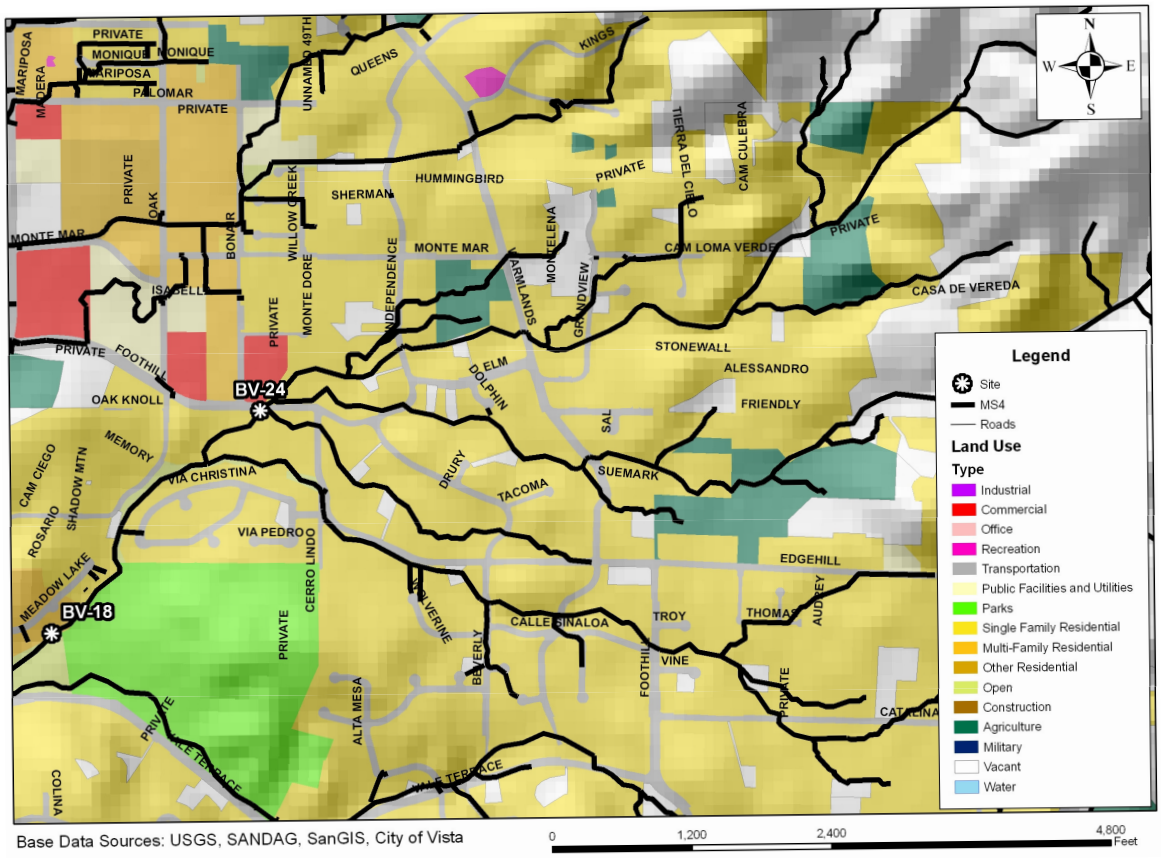

Lower San Luis HA

Site G-3 is an outlet at the north end of Calle Jules. The site had dense vegetation, which collected a significant amount of trash and decomposing organic material. Apart from the water, the site had evidence of inhabitation by a homeless person, including a shopping cart and a sleeping bag.

During routine screening, a sample was taken from the water as it flowed through the vegetation, resulting in an ammonia-nitrogen concentration of 2.88 mg/L. A confirmation sample was taken the next day. To avoid influences of the decomposing material and debris at the site, and in order to take a sample representative of the upstream drainage area's flow, the confirmation sample was taken about 1 foot upstream of the previous sample. This sample, taken from inside the concrete outlet, had an ammonia-nitrogen level of 0.17 mg/L.

One possible explanation for the initial ammonia exceedance may have been due to homeless activity in the area. Alternatively, decomposing organic matter at the site, such as food waste and dead leaves, are likely to produce ammonia as a byproduct. The flow inside the outlet contained an ammonia-nitrogen level within acceptable limits.

Site G-4 is an outlet located in the northwest corner of Warmlands Avenue and Vista Grande Drive (Photo 8-7). During the routine visit, the water was ponded with a layer of algae

coating the surface. The pH was measured at 9.1 during the routine visit. At the confirmation visit the following morning, the water's pH was 7.4, no longer in exceedance.

PHOTO 8-7: Algal and vegetative growth at Site G-4

The initial high pH reading may have resulted from algal photosynthesis and increased temperature, which remove carbon dioxide from the water. Because carbon dioxide forms carbonic acid when dissolved in water, removal of carbon dioxide from water makes the water more basic and results in higher pH readings. Typically the pH increases during daylight hours as sunlight stimulates algal photosynthesis and carbon dioxide is removed from water. During the night when algae is not photosynthesizing, the carbon dioxide level in the water increases due to biological respiration and physical diffusion of carbon dioxide from air into water, and the pH decreases. Because the solubility of gas in water is inversely proportional to the water temperature, carbon dioxide is less soluble in warmer water. Sunlight heats the ponded water at the site, resulting in lower solubility for carbon dioxide later in the day when the water is warmer. The effects of temperature and algal photosynthesis lead to lower pH values in the morning and higher values in the afternoon.

9.0 SUMMARY AND RECOMMENDATIONS

9.1 Summary of Field Screening and Laboratory Analysis Data

Twenty-nine primary sampling sites were visited in the City of Vista 2008 Dry Weather Monitoring Program. Since primary monitoring sites AH-34, BV-7A, BV-15, and MV-3 were dry, alternate sites AH-38, BV-12, BV-34, and G-6 were sampled. Eight of the field testing sites were also sampled for laboratory analyses, which meets the Municipal Permit requirement that laboratory analysis be completed for at least 25% of monitored sites.

Confirmation visits and, where necessary, upstream investigations were conducted for 10 sites at which constituents were measured at or above their respective action levels during the routine visit. Nitrate was the constituent most commonly measured above its action level, typically resulting from groundwater seepage. Total coliform exceedances were also observed at three locations. This was attributed to the decomposition of organic matter such as trash or leaf debris. Note that no exceedances were reported for fecal coliforms or *Enterococci*, which are more closely associated with contamination from potentially pathogenic sources like fecal matter.

A new trash assessment component was incorporated into the Dry Weather Monitoring Program in 2008. This program includes classifying sites into one of five categories based on the level of trash observed. Including three dry sites, 14 sites were rated “optimal”; 16 sites were “suboptimal”; one site was “marginal”; and two sites were “submarginal.” No sites received a rating of “poor.” Section 5 of this report provides more detail about the trash assessment.

9.1.1 Hydrologic Area Summaries

Action level exceedances and follow-up investigation conclusions are presented in this section by hydrologic area.

Agua Hedionda HA

Field screening was conducted at 13 sites within the Agua Hedionda HA. Two sites had nitrate-nitrogen exceedances, and two sites had total coliforms above the action level. Summaries of these exceedances and investigations are presented in Table 9-1 and Table 9-2.

TABLE 9-1
AGUA HEDIONDA ACTION LEVEL EXCEEDANCES

Field Screening (13 Samples)		
Analyte	**Number of Exceedances**	**Site(s) Exceeding Action Level**
Nitrate-N	2	AH-8A, AH-35
Laboratory Analyses (4 Samples)		
Analyte	**Number of Exceedances**	**Site(s) Exceeding Action Level**
Total Coliforms	2	AH-21, SS-1

TABLE 9-2
AGUA HEDIONDA SUMMARY OF UPSTREAM INVESTIGATIONS

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
AH-8A	Nitrate-N		Seepage containing nitrates percolating into MS4 pipes
AH-21		Total Coliforms	Decomposition of organic matter at the site
AH-35	Nitrate-N		Seepage water from a hilly, largely-agricultural area located in the City of San Marcos, east of the site
SS-1		Total Coliforms	Decomposing leaves at the site

Buena Vista HA

The 2008 Dry Weather Monitoring Program included 12 sites within the Buena Vista HA, three of which had nitrate-nitrogen above the action level. One site also had a total coliforms exceedance. Table 9-3 and Table 9-4 summarize the exceedances and follow-up investigations within the Buena Vista HA.

TABLE 9-3
BUENA VISTA ACTION LEVEL EXCEEDANCES

Field Screening (12 Samples)		
Analyte	**Number of Exceedances**	**Site(s) Exceeding Action Level**
Nitrate-N	3	BV-10, BV-18, BV-24
Laboratory Analyses (4 Samples)		
Analyte	**Number of Exceedances**	**Site(s) Exceeding Action Level**
Total Coliforms	1	BV-8

TABLE 9-4
BUENA VISTA FOLLOW-UP INVESTIGATIONS

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
BV-8	---	Total Coliforms	Decomposing organic material in the open channel at the site and upstream
BV-10	Nitrate-N	---	Transient flow
BV-18	Nitrate-N	---	Seepage water containing nitrates and surfacing in the vicinity of 1450 Foothill Drive
BV-24	Nitrate-N	---	

Lower San Luis HA

Four sites from the Lower San Luis HA were sampled in the 2008 Dry Weather Monitoring Program. Two sites had constituent measurements above respective action levels; one in ammonia-nitrogen and one for pH. Summary of the exceedances and follow-up actions are presented in Table 9-5 and Table 9-6.

TABLE 9-5
LOWER SAN LUIS ACTION LEVEL EXCEEDANCES

Field Screening (4 Samples)		
Analyte	Number of Exceedances	Site(s) Exceeding Action Level
Ammonia-N	1	G-3
pH	1	G-4

TABLE 9-6
LOWER SAN LUIS FOLLOW-UP INVESTIGATIONS

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
G-3	Ammonia-N	---	Decomposing organic matter at the site
G-4	pH	---	Algal photosynthesis removing carbonic acid from water, which increases pH

9.2 Recommendations

Based on the results of the 2008 Dry Weather Monitoring Program, the following actions are recommended for consideration.

9.2.1 Maintenance

- Remove trash from submarginal Site AH-8A.
- Remove trash from Site AH-21.
- Clean up trash from the concrete channel upstream of Site BV-8 and upstream location BV-8-1.
- Remove trash from submarginal Site G-3.

- To the extent allowable, consider clearing vegetation at Site G-3 to prevent trapping of trash.
- Clean out the stormwater conveyance at Site MV-3, which was rated “marginal.”
- Remove the dead leaves that have accumulated at Site SS-1.

9.2.2 Further Investigation

- For the landscaped areas on Primrose Avenue and Lobelia Drive, upstream of Site AH-8A, contact property managers to investigate fertilizer use. Distribute educational material regarding fertilizer use and irrigation best management practices as needed.
- Notify the City of San Marcos of nitrate exceedances in water entering the City of Vista from the area in the City San Marcos of east of Poinsettia Avenue, upstream of Site AH-35.
- Request access from residents of 1450 Foothill Drive, upstream of sites BV-24 and BV-18, to investigate the origin of water on their property.

9.2.3 MS4 Updates

- Update the City’s MS4 map to reflect flow from the northeast and southwest draining to Site AH-35, and then to flowing to the northwest. See the discussion in Section 8 for details.
- Consider changing Site G-3 to a manhole located several feet upstream on Calle Jules. The water at Site G-3 is generally ponded, but the water just upstream in the manhole is usually flowing.

10 REFERENCES

Demographics for Vista. City of Vista.
http://www.cityofvista.com/business/Demographics.cfm

Weston Solutions, Inc., *City of Vista 2005 Dry Weather Field Screening Program*. January 2006.

Weston Solutions, Inc., *City of Vista 2006 Dry Weather Field Screening and IC/ID Program*. December 2006.

Weston Solutions, Inc., *City of Vista 2007 Dry Weather Field Screening and IC/ID Program*. September 2007.

Base Data Sources: SanGIS, SANDAG, City of Vista

FIGURE B
CITY OF VISTA DRAINAGE BASINS & HYDROLOGIC SUBAREA MAP

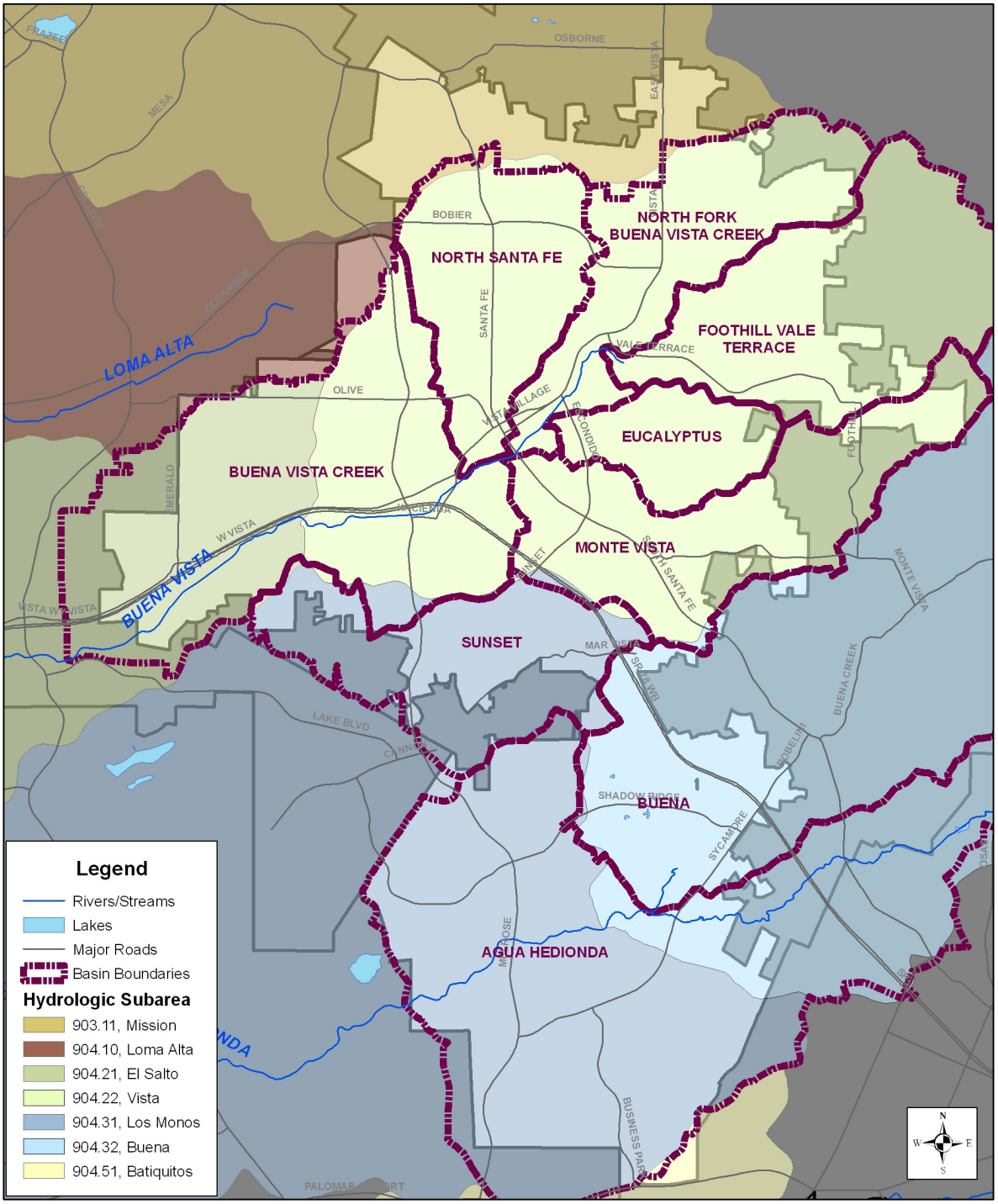

Base Data Sources: USGS, SANDAG, SanGIS, City of Vista

0 0.5 1 2 Miles

Appendix A

Historical Dry Weather Monitoring Data

2002

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-14 Top	BV-14 Bottom	BV-15	BV-18
Temp. ℃	20	21	27	21	22	22	20	21	21	20	19.5			28	22.5	19					22	21
pH	8	7.6	8.2	8	7.8	8.4	8.2	8.2	8.2	8.5	7			9.3	7.3	8.1					7.5	8
Conductivity, µS/cm	1839	2480	2920	1898	1808	3100	3220	8510	2937	1662	2010			1109	2150	2090					2450	2260
Turbidity, NTU	8.92	44.82	6.48	0.37	2.82	3.59	2.3	11.1	1.61	4.35	10.22			2.36	4.4	0.62					3.22	1.15
Ammonia-N, mg/l NH3-N	0.3	0.8	0.4	0.3	0.2	1	0.1	2	0.2	0.2	0.2			0.2	0.1	0.2					0.6	0.2
Nitrate-N, mg/l NO3-N	10	16	nd	nd	5	1.75	0.2	0.2	1	0.2	5			0.4	8	8					0.2	32
Orthophosphate-P, mg/l PO4-P	0.07	0.23	0.489	0.163	0.2	0.489	0.0815	0.489	0.489	0.26	0.2			0.2	0.07	0.0978					1.304	0.16
Surfactants, mg/l MBAS (Field test)	0.37	0.37	0.25	0.25	0.5	0.37	0.25	0.5	0.13	0.25	0.37			0.25	0.25	0.25					0.25	0.25
Surfactants, mg/l MBAS (Lab test)				nd			nd		nd					nd		nd						
Oil and Grease, mg/l				5.4			2.2		1.9					2		10						
Total Hardness, mg/l CaCO3				662			1030		617					289		725						
Cadmium, mg/l				nd			nd		nd					nd		nd						
Copper, mg/l				nd			nd		nd					nd		nd						
Lead, mg/l				nd			nd		nd					nd		nd						
Zinc, mg/l				nd			nd		nd					nd		nd						
Diazinon, µg/L				nd			nd		nd					nd		nd						
Chlorpyrifos, µg/L				nd			nd		nd					nd		nd						
Total Coliform, MPN/100ml				1600			2400		5000					2400		24000						
Fecal Coliform, MPN/100ml				900			1300		2400					800		5000						
Enterococcus, MPN/100ml				130			1300		70					230		3000						

2003

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-14 Top	BV-14 Bottom	BV-15	BV-18
Temp. ℃	19	19	22	18.5	18	18	16	17	17	17	17			20	20	18	21				18	20
pH	8.5	8.1	8.5	8.4	8.4	8.3	8.4	8.4	8.2	8.7	8.3			9	8.3	8.4	7.6				7.8	8.2
Conductivity, µS/cm	2480	2770	3090	2630	2560	4470	2720	4130	2520	2410	2230			1280	1846	2410	3660				3800	2560
Turbidity, NTU	2.46	1.42	7.85	2.3	0.72	1.31	5.03	5.91	2.51	1.87	6.07			2.57	1.49	1.94	7.18				5.62	2.8
Ammonia-N, mg/l NH3-N	0.2	0.2	0.3	0.2	0.3	0.6	0.2	0.8	0.2	0.1	0.1			0.1	0.2	0.2	0.5				0.3	0.1
Nitrate-N, mg/l NO3-N	8	2	0.1	3	8	2	0.5	0.6	2	0.2	4.5			1	8	8	nd				0.1	20
Orthophosphate-P, mg/l PO4-P	0.13	0.13	0.26	0.07	0.07	0.13	0.07	0.13	0.07	0.07	0.07			0.03	nd	0.1	0.13				0.2	0.03
Surfactants, mg/l MBAS (Field test)	0.25	0.25	0.25	0.25	0.25	0.5	0.25	0.5	0.5	0.25	0.25			0.25	0.25	0.25	0.25				0.25	0.25
Surfactants, mg/l MBAS (Lab test)				nd			nd							nd		nd						
Oil and Grease, mg/l				nd			147							nd		nd						
Total Hardness, mg/l CaCO3				763			744							333		733						
Cadmium, mg/l				nd			nd							nd		nd						
Copper, mg/l				nd			0.007							nd		nd						
Lead, mg/l				nd			nd							nd		nd						
Zinc, mg/l				nd			0.024							nd		nd						
Diazinon, µg/L				nd			nd							nd		nd						
Chlorpyrifos, µg/L				nd			nd							nd		nd						
Total Coliform, MPN/100ml				8,000			>160,000							5,000		8000						
Fecal Coliform, MPN/100ml				3,000			>160,000							3,000		3000						
Enterococcus, MPN/100ml				800			50,000							800		1,300						

2002

Site No.	BV-19	BV-20	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	22		22		18		21			28											
pH	8.1		7.8		8.2		8.3			8.6											
Conductivity, µmhos/cm	1712		2050		2420		2380			1640											
Turbidity, NTU	1.91		4.02		28.71		2.55			0.99											
Ammonia-N, mg/l NH3-N	0.1		0.2		0.5		0.1			0.2											
Nitrate-N, mg/l NO3-N	20		28		4.5		14			12											
Orthophosphate-P, mg/l PO4-P	0.08		0.26		0.0978		0.08			0.49											
Surfactants, mg/l MBAS (Field test)	0.25		0.37		0.25		0.37			0.13											
Surfactants, mg/l MBAS (Lab test)					nd																
Oil and Grease, mg/l					3																
Total Hardness, mg/l CaCO3					812																
Cadmium, mg/l					nd																
Copper, mg/l					nd																
Lead, mg/l					nd																
Zinc, mg/l					nd																
Diazinon, µg/L					nd																
Chlorpyrifos, µg/L					nd																
Total Coliform, MPN/100ml					24000																
Fecal Coliform, MPN/100ml					3000																
Enterococcus, MPN/100ml					1300																

2003

Site No.	BV-19	BV-20	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	21		23	28			28			20						16	17	21	19	21	18
pH	8.4		8.4	8.2			8.7			8.9						8.1	8.3	8.4	8.3	8.5	8.5
Conductivity, µmhos/cm	2160		1848	1647			1566			1904						2560	2760	2380	2650	1951	3560
Turbidity, NTU	1.96		2.13	4.89			9.13			2.25						9.66	3.41	2.62	5.83	2.77	6.99
Ammonia-N, mg/l NH3-N	0.2		0.2	1			0.2			0.1						0.5	0.1	0.2	0.1	0.2	0.4
Nitrate-N, mg/l NO3-N	20		8	2			3			8						0.6	1.5	32	5	1.5	4
Orthophosphate-P, mg/l PO4-P	0.07		0.07	1.55			0.26			0.03						0.07	0.2	0.065	0.07	0.07	0.1
Surfactants, mg/l MBAS (Field test)	0.25		0.25	0.5			0.5			0.25						0.25	0.25	0.25	0.25	0.25	0.25
Surfactants, mg/l MBAS (Lab test)										nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l										368						8	149	nd	nd	nd	nd
Total Hardness, mg/l CaCO3										703						613	761	840	825	608	920
Cadmium, mg/l										nd						nd	nd	nd	nd	nd	nd
Copper, mg/l										nd						0.028	nd	nd	nd	nd	nd
Lead, mg/l										nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l										nd						0.104	nd	0.068	nd	0.032	nd
Diazinon, µg/L										nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L										nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml										160,000						90,000	8,000	1,100	8,000	5,000	50,000
Fecal Coliform, MPN/100ml										90,000						50,000	5,000	800	3,000	2,300	30,000
Enterococcus, MPN/100ml										1,300						110	170	40	230	80	3,000

2004

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-14 Top	BV-14 Bottom	BV-15	BV-18
Temp. ℃	20.1	20.1	21	18.6	18.4	19.8	18.3	20.6	19.9	19.7	20.2			25.2	20	19.3	ns	26.8			21.4	18.4
pH	8.53	8.04	7.68	8.09	8.15	8.1	8.04	8.35	8.08	8.63	7.73			9.5	8.15	8.06	ns	9.07			7.6	7.93
Conductivity, µS/cm	1619	1947	1738	1790	1872	3250	1989	983	1682	1657	1637			1206	1791	1817	ns	1816			2420	1983
Turbidity, NTU	3.26	3.82	7.04	1.07	5.48	3.53	1.03	2.38	2.59	2.94	2.58			1.15	9.84	2.28	ns	37			4.13	1.36
Ammonia-N, mg/l NH3-N	0.4	0.3	0.3	0.3	0.2	0.8	0.6	0.8	0.2	0.2	0.3			0.1	0.2	0.2	ns	0.6			2	0.3
Nitrate-N, mg/l NO3-N	12	22.5	0.2	2	12	2.5	1.5	0.4	2.5	1	4.5			1	18	31.5	ns	2			0.1	36
Orthophosphate-P, mg/l PO4-P	0.6	0.3	1	0.2	0.2	0.6	0.2	0.8	0.1	0.3	0.2			0.1	0.1	0.2	ns	1			2	0.1
Surfactants, mg/l MBAS (Field test)	0.25	0.5	0.25	0.15	0.25	0.25	0.25	0.5	0.25	0.25	0			0	0.3	0.5	ns	0.5			2	0.25
Surfactants, mg/l MBAS (Lab test)				nd			nd		nd					nd		ND						
Oil and Grease, mg/l				3			nd		2					2		2						
Total Hardness, mg/l CaCO3				833			756		511					315		720						
Cadmium, mg/l				nd			nd		nd					nd		nd						
Copper, mg/l				nd			nd		nd					nd		nd						
Lead, mg/l				nd			nd		nd					nd		nd						
Zinc, mg/l				nd			nd		0.032					nd		nd						
Diazinon, µg/L																						
Chlorpyrifos, µg/L																						
Total Coliform, MPN/100ml				3000			22000		13000					500		8000						
Fecal Coliform, MPN/100ml				1100			500		2300					130		170						
Enterococcus, MPN/100ml				62			197		187					41		160						

2005

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-14 Top	BV-14 Bottom	BV-15	BV-18
Temp. ℃	20	19.6	18.9	17.4	19.7	18.75	17.9	20	21.4	19.6	20.5	17.1	17.1	25.7	21.1	21.3	15.8	24.8			19.6	17.9
pH	8.71	8.05	7.56	8.14	8.33	7.65	8.02	8.5	7.48	8.64	8.12	8.41	8.04	8.41	8.35	8.01	7.99	8.09			7.74	7.87
Conductivity, µS/cm	1770	2090	2380	1880	1770	3190	1510	6510	1886	1410	1940	1190	904	1604	1610	1939	2560	5260			2430	2260
Turbidity, NTU	10	10	8	10	10	15	98	2	2.28	6	22	78.4	195	1.3	9	1.4	2.67	220			1	2.44
Ammonia-N, mg/l NH3-N	0.2	0.6	0.4	0.2	0.4	0.1	1	0.4	0.3	0.2	0.2	1.5	1	0.2	0.2	0.3	0.4	0.6			0.3	0.2
Nitrate-N, mg/l NO3-N	15	15	0.8	7.5	15	1	1	0.2	4.5	0.2	7.5	0.2	0.2	1.5	6	12	0.2	1			1.5	15
Orthophosphate-P, mg/l PO4-P	1	0.4	1	0.6	0.6	0.3	0.2	1	0.2	0.4	0.2	6	2	0.3	0.1	0.2	0.3	0.4			0.9	0.3
Surfactants, mg/l MBAS (Field test)	0.5	0.5	0.5	0.3	0.5	0.8	1	0.8	0.5	0.3	0.8	15	7.5	0.3	0.5	0.5	0.25	0.8			0.8	0.5
Surfactants, mg/l MBAS (Lab test)				nd			nd				nd										nd	nd
Oil and Grease, mg/l				nd			nd				nd										nd	nd
Total Hardness, mg/l CaCO3				1100			865				637										699	1040
Cadmium, mg/l				nd			nd				nd										nd	nd
Copper, mg/l				nd			0.02				nd										nd	nd
Lead, mg/l				nd			nd				nd										nd	nd
Zinc, mg/l				nd			0.089				nd										nd	nd
Diazinon, µg/L				nd			nd				nd										nd	nd
Chlorpyrifos, µg/L				nd			nd				nd										nd	nd
Total Coliform, MPN/100ml				3000			11000				23000										3500	195(E)
Fecal Coliform, MPN/100ml				300			800				800										700	80
Enterococcus, MPN/100ml				132			592				97										581	404

2004

Site No.	BV-19	BV-20	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	19.4	ns	17.9	ns			22.8			22.5			ns	18.8		21	19.6	21.2	20.2	20	17.9
pH	8.12	ns	8.43	ns			7.98			8.88			ns	7.78		7.96	7.66	7.94	7.75	8.35	7.59
Conductivity, µS/cm	1715	ns	1684	ns			2440			1694			ns	949		1667	1792	1806	1745	1631	2.5
Turbidity, NTU	2.67	ns	1.92	ns			38.5			1.76			ns	6.94		3.1	1.5	1.86	2.38	2.79	4.46
Ammonia-N, mg/l NH3-N	0.3	ns	0.3	ns			1			0.2			ns	0.6		0.8	0.3	0.2	0.3	0.3	0.3
Nitrate-N, mg/l NO3-N		ns	31.5	ns			0.2			22.5			ns	0.4		1	0.3	27	22.5	3.5	0.2
Orthophosphate-P, mg/l PO4-P	0.2	ns	0.1	ns			2			0.1			ns	0.6		0.3	0.7	0.2	0.2	0.1	0.1
Surfactants, mg/l MBAS (Field test)	0.25	ns	0.25	ns			0.5			0.25			ns	0.75		0.25	0.25	0.3	0.25	0	0
Surfactants, mg/l MBAS (Lab test)										nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l										nd						11	nd	2	nd	2	2
Total Hardness, mg/l CaCO3										684						624	762	828	722	484	735
Cadmium, mg/l										nd						ND	nd	nd	nd	nd	nd
Copper, mg/l										nd						0.005	nd	nd	0.011	nd	nd
Lead, mg/l										nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l										nd						0.032	nd	0.032	0.032	nd	nd
Diazinon, µg/L																					
Chlorpyrifos, µg/L																					
Total Coliform, MPN/100ml										700						50000	1700	13000	700	800	5000
Fecal Coliform, MPN/100ml										300						3000	170	3000	500	40	300
Enterococcus, MPN/100ml										386						1679	110	275	428	31	417

2005

Site No.	BV-19	BV-20	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	21.7		17.8	26.5		ns	ns	23.3		24.5	18.5		ns	19.3		19.9	17.4	20.4	19.5	21.6	20.2
pH	8.06		8.12	7.82		ns	ns	9.1		8.75	7.77		ns	7.99		7.78	8.14	8.17	8.24	7.95	8.16
Conductivity, µmhos/cm	1737		1960	2430		ns	ns	821		1760	1280		ns	13,000		5310	1760	1842	1610	1874	2250
Turbidity, NTU	2.2		1.28	1		ns	ns	323		0.5	22.9		ns	9		10	0	0.21	22	2.26	89
Ammonia-N, mg/l NH3-N	0.3		0.3	0.4		ns	ns	0.8		0.2	1.5		ns	0.6		0.4	0.2	0.3	0.4	0.3	0.6
Nitrate-N, mg/l NO3-N	15		15	0.2		ns	ns	0.2		7.5	0.2		ns	0.1		0.1	7.5	15	9	3	7.5
Orthophosphate-P, mg/l PO4-P	0.2		0.5	3		ns	ns	0.6		0.2	3		ns	0.4		0.1	0.6	0.3	0.6	0.2	0.4
Surfactants, mg/l MBAS (Field test)	0.5		0.5	0.75		ns	ns	0.5		0.3	1.5		ns	0.5		0.5	0.5	0.5	0.5	0.5	0.3
Surfactants, mg/l MBAS (Lab test)	nd									nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l	nd									nd						nd	nd	nd	nd	nd	nd
Total Hardness, mg/l CaCO3	968									970						2260	1100	1100	983	773	742
Cadmium, mg/l	nd									nd						nd	nd	nd	nd	nd	nd
Copper, mg/l	nd									nd						nd	nd	nd	nd	nd	nd
Lead, mg/l	nd									nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l	nd									nd						nd	nd	nd	nd	nd	nd
Diazinon, µg/L	nd									nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L	nd									nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml	8000									7000						5000	800	1700	500	8000	5000
Fecal Coliform, MPN/100ml	80									260						40	500	300	300	80	230
Enterococcus, MPN/100ml	197									298						109	145	131	185	41	183

2006

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-14 Top	BV-14 Bottom	BV-15	BV-18
Temp. ℃	21.6	22.4	23.5	20.8	23.8	22.6	24.9	19.8	20.2	24	21.1	24.3	ns	24.7	25.8	20	ns		30.2	25.3	ns	20.3
pH	8.97	8.7	8.44	8.21	8.68	8.57	7.93	8.82	8.68	8.84	8.6	8.63	ns	9.46	8.73	8.75	ns		9.11	8.55	ns	8.44
Conductivity, mS/cm	1.91	2.14	2	2	1.18	3.17	0.664	5.75	2.03	1.72	1.67	1.72	ns	1.43	1.77	1.88	ns		2.04	3.58	ns	1.88
Turbidity, NTU	2	1	34	43	308	60	22	5	4	12	30	241	ns	3	33	nd	ns		0	2	ns	152
Ammonia-N, mg/l NH3-N	0.4	0.2	0.4	nd	0.1	0.9	0.4	0.4	0.2	0.3	0.2	0.3	ns	nd	0.1	0.2	ns		0.1	0.4	ns	0.1
Nitrate-N, mg/l NO3-N	12	15	0.2	6	3.5	1.5	0.1	nd	1	0.3	3	2.4	ns	0.8	7.5	5.5	ns		0.4	0.8	ns	9
Orthophosphate-P, mg/l PO4-P	0.4	0.3	1.5	0.4	0.3	0.6	0.1	0.3	0.15	0.6	0.4	0.3	ns	0.2	0.2	0.2	ns		0	0	ns	0.2
Surfactants, mg/l MBAS (Field test)	0.25	0.25	0.5	0.5	0.25	0.5	0.25	3	0.25	0.5	0.25	0.25	ns	0.25	0.25	0.25	ns		0.25	0.5	ns	0.2
Surfactants, mg/l MBAS (Lab test)				nd			nd				nd			nd							ns	nd
Oil and Grease, mg/l				nd			nd				nd			nd							ns	nd
Total Hardness, mg/l CaCO3				726			188				538			431							ns	818
Cadmium, mg/l				nd			nd				nd			nd							ns	nd
Copper, mg/l				nd			nd				nd			nd							ns	nd
Lead, mg/l				nd			nd				nd			nd							ns	nd
Zinc, mg/l				nd			0.056				nd			nd							ns	nd
Diazinon, µg/L				nd			nd				nd			nd							ns	nd
Chlorpyrifos, µg/L				nd			nd				nd			nd							ns	nd
Total Coliform, MPN/100ml				5000			230				60000			60000							ns	5000
Fecal Coliform, MPN/100ml				170			20				3000			50000							ns	700
Enterococcus, MPN/100ml				800			40				1100			3000							ns	1300

2007

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-14 Top	BV-14 Bottom	BV-15	BV-18
Temp. ℃	18.5	19.4	20.1	18.1	19.2	20.4	18.3	19.7	19.4	21.1	20.8	ns	ns	22.5	23.1	18.3	ns		27.8	22	ns	18.9
pH	8.48	7.88	7.54	7.58	7.9	8.19	7.9	8.23	7.98	8.66	7.74	ns	ns	8.75	8.07	8.25	ns		8.57	7.92	ns	7.55
Conductivity, mS/cm	1.829	1.742	2.29	2.56	1.82	1.927	3.12	8.21	1.759	1.795	1.747	ns	ns	1.252	1.582	1.668	ns		1.808	4.66	ns	2.21
Turbidity, NTU	0.6	0.49	1.06	1.08	4.74	7.25	2.68	1.86	1.98	1.98	4.18	ns	ns	1.51	0.46	1.09	ns		0.47	0.51	ns	8.19
Ammonia-N, mg/l NH3-N	0.1	0.2	0.4	0.1	0.2	6	0.6	0.4	0.2	0.1	0.1	ns	ns	0.1	0.1	0.4	ns		0.1	0.2	ns	0.2
Nitrate-N, mg/l NO3-N	13.5	15	0.3	1	6	0.4	0.2	0.4	2.5	0.3	4.5	ns	ns	0.8	7.5	22.5	ns		0.4	1	ns	22.5
Orthophosphate-P, mg/l PO4-P	0.0654	0.0654	0.1961	0.0654	0.0654	0.1307	0.0327	0.131	0.033	0.065	0.065	ns	ns	0.033	nd	0.049	ns		0.1327	0.1307	ns	0.065
Surfactants, mg/l MBAS (Field test)	0.25	0.25	0.25	0.25	0.25	1	0.25	2	0.25	0.25	0.25	ns	ns	0.25	0.5	0.25	ns		0.25	0.25	ns	0.25
Surfactants, mg/l MBAS (Lab test)				nd			nd				nd			nd							ns	nd
Oil and Grease, mg/l				nd			nd				nd			nd							ns	nd
Total Hardness, mg/l CaCO3				799			1040				566			388							ns	920
Cadmium, mg/l				nd			nd				nd			nd							ns	nd
Copper, mg/l				nd			0.005				nd			nd							ns	nd
Lead, mg/l				nd			nd				nd			nd							ns	nd
Zinc, mg/l				nd			0.03				nd			nd							ns	nd
Diazinon, µg/L				nd			nd				nd			nd							ns	nd
Chlorpyrifos, µg/L				nd			nd				nd			nd							ns	nd
Total Coliform, MPN/100ml				2,200			30,000				240,000			35,000							ns	7,000
Fecal Coliform, MPN/100ml				500			17,000				240,000			1,700							ns	700
Enterococcus, MPN/100ml				500			28,000				230			17,000							ns	1,300

2006

Site No.	BV-19	BV-20	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	20.6		27.6	32.4		ns	24.3	22.8		22.6	27		ns	22.1	21.4	22.7	21.7	22	20.6	21.3	19.4
pH	8.67		8.92	9.37		ns	8.37	8.7		8.89	8.84		ns	8.35	8.33	8.41	8.47	8.45	8.56	8.31	8.5
Conductivity, mS/cm	1.68		1.8	1.89		ns	2.1	0.855		1.83	1.15		ns	1.18	4.03	4.07	1.99	1.85	1.84	1.82	2.26
Turbidity, NTU	3		3	196		ns	63	51		5	133		ns	8	22	26	2	nd	26	5	13
Ammonia-N, mg/l NH3-N	0.1		0.2	0.6		ns	1.5	1.5		0.1	4		ns	2	0.6	8	0.2	0.3	0.1	0.2	0.4
Nitrate-N, mg/l NO3-N	37.5		9	nd		ns	0.2	nd		15	0.4		ns	0.1	0.4	0.2	3.8	12	13.5	2	0.8
Orthophosphate-P, mg/l PO4-P	0.1		0.6	nd		ns	1	4		0.1	6		ns	0.6	1.5	0.4	0.5	0.2	0.3	0.2	0.3
Surfactants, mg/l MBAS (Field test)	0.5		0.5	0.75		ns	0.75	1.5		0.3	5		ns	0.75	0.5	0.5	0.5	0.5	0.25	0.25	0.7
Surfactants, mg/l MBAS (Lab test)	nd									nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l	nd									nd						5	nd	nd	nd	nd	nd
Total Hardness, mg/l CaCO3	696									736						1410	709	739	650	602	757
Cadmium, mg/l	nd									nd						nd	nd	nd	nd	nd	nd
Copper, mg/l	nd									nd						nd	nd	nd	nd	nd	nd
Lead, mg/l	nd									nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l	nd									nd						0.047	nd	nd	nd	nd	nd
Diazinon, µg/L	nd									nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L	nd									nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml	7000									5000						3,000,000	1100	30,000	3,000	3,000	5000
Fecal Coliform, MPN/100ml	130									300						80,000	40	800	170	500	300
Enterococcus, MPN/100ml	358									3000						5000	300	2300	500	300	750E

2007

Site No.	BV-19	BV-20	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	20.8		21.2	ns		23.7	22.5	ns	21		ns	20.5	24.2	20.1		20.3	18.4		21	23.7	18.9
pH	7.77		8.25	ns		8.35	7.84	ns	7.96		ns	8.12	7.94	7.87		7.29	7.63		7.69	8.15	7.73
Conductivity, mS/cm	1.534		1.6	ns		0.849	1.484	ns	0.844		ns	0.928	1.16	1.076		4.91	2.3		1.63	2.1	2.71
Turbidity, NTU	0.64		22.4	ns		1.72	6.8	ns	14.9		ns	32.6	126	9.6		17.3	1.82		1.69	2.82	6.61
Ammonia-N, mg/l NH3-N	0.2		0.6	ns		0.3	10	ns	0.8		ns	0.8	0.8	0.3		1.5	0.2		0.1	0.1	0.3
Nitrate-N, mg/l NO3-N	15		18	ns		0.2	0.3	ns	0.6		ns	0.1	1	0.3		nd	0.6		15	1.5	0.8
Orthophosphate-P, mg/l PO4-P	0.065		0.098	ns		0.261	0.98	ns	0.98		ns	0.98	0.261	0.098		0.196	0.065		0.033	0.033	0.065
Surfactants, mg/l MBAS (Field test)	0.5		0.25	ns		0.25	0.5	ns	0.5		ns	1.5	2	0.25		0.5	0.25		0.25	0.25	0.25
Surfactants, mg/l MBAS (Lab test)	nd															nd	nd		nd	nd	nd
Oil and Grease, mg/l	nd															nd	nd		nd	nd	nd
Total Hardness, mg/l CaCO3	799															1,620	884		848	626	788
Cadmium, mg/l	nd															nd	nd		nd	nd	nd
Copper, mg/l	nd															nd	nd		nd	nd	nd
Lead, mg/l	nd															nd	nd		nd	nd	nd
Zinc, mg/l	nd															0.04	nd		nd	nd	nd
Diazinon, µg/L	nd															nd	nd		nd	nd	nd
Chlorpyrifos, µg/L	nd															nd	nd		nd	nd	nd
Total Coliform, MPN/100ml	5,000															80,000	700		5,000	5,000	13,000
Fecal Coliform, MPN/100ml	20															1,400	140		800	1,400	500
Enterococcus, MPN/100ml	230															5,000	110		500	130	2,800

Appendix B

Photographs of Sampling Locations

Site AH-8A	
Site AH-9	
Site AH-17	

Site AH-21	
Site AH-30	
Site AH-31	

Site AH-32	
Site AH-33	
Site AH-34	

Site AH-35	
Site AH-36	
Site AH-37	

Site AH-38	
Site BV-1	
Site BV-4	

Site BV-7A	
Site BV-8	
Site BV-10	

Site BV-12	
Site BV-15	
Site BV-18	

Site BV-24	
Site BV-30	
Site BV-31	

Site BV-32	
Site BV-33	
Site BV-34	

Site G-3	
Site G-4	
Site G-5	

Site G-6	
Site MV-3	
Site SS-1	

Appendix C

Laboratory Analytical Reports

EnviroMatrix Analytical, Inc.

27 August 2008

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0808366

Project Name: Vista Dry Weather
Project Desc./#:200825W-1

Enclosed are the results of analyses for samples received by the laboratory on 08/20/08 15:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-18	0808366-01	Water	08/20/08 09:40	08/20/08 15:25
AH-8A	0808366-02	Water	08/20/08 11:10	08/20/08 15:25
BV-8	0808366-03	Water	08/20/08 12:00	08/20/08 15:25

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

Metals (Dissolved) by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-18 (0808366-01) Water Sampled: 08/20/08 09:40 Received: 08/20/08 15:25									
Cadmium	ND	0.005	mg/l	1	8082516	08/25/08	08/25/08	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
AH-8A (0808366-02) Water Sampled: 08/20/08 11:10 Received: 08/20/08 15:25									
Lead	ND	0.005	mg/l	1	8082516	08/25/08	08/25/08	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
Cadmium	ND	0.005	"	"	"	"	"	"	
BV-8 (0808366-03) Water Sampled: 08/20/08 12:00 Received: 08/20/08 15:25									
Cadmium	ND	0.005	mg/l	1	8082516	08/25/08	08/25/08	EPA 6020	
Zinc	ND	0.020	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Copper	ND	0.005	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-18 (0808366-01) Water Sampled: 08/20/08 09:40 Received: 08/20/08 15:25									
Chlorpyrifos	ND	0.05	ug/l	1	8082111	08/21/08	08/22/08	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*120 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*87 %*	*60-130*		"	"	"	"	
AH-8A (0808366-02) Water Sampled: 08/20/08 11:10 Received: 08/20/08 15:25									
Chlorpyrifos	ND	0.05	ug/l	1	8082111	08/21/08	08/22/08	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*110 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*86 %*	*60-130*		"	"	"	"	
BV-8 (0808366-03) Water Sampled: 08/20/08 12:00 Received: 08/20/08 15:25									
Chlorpyrifos	ND	0.05	ug/l	1	8082111	08/21/08	08/22/08	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*116 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*84 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-18 (0808366-01) Water Sampled: 08/20/08 09:40 Received: 08/20/08 15:25									
Hardness (Total)	**862**	100	mg CaCO3/L	10	8082035	08/20/08	08/21/08	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	8082032	08/21/08	08/21/08	EPA 1664A	
AH-8A (0808366-02) Water Sampled: 08/20/08 11:10 Received: 08/20/08 15:25									
Hardness (Total)	**911**	100	mg CaCO3/L	10	8082035	08/20/08	08/21/08	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	8082032	08/21/08	08/21/08	EPA 1664A	
BV-8 (0808366-03) Water Sampled: 08/20/08 12:00 Received: 08/20/08 15:25									
Hardness (Total)	**431**	100	mg CaCO3/L	10	8082035	08/20/08	08/21/08	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	8082032	08/21/08	08/21/08	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-18 (0808366-01) Water Sampled: 08/20/08 09:40 Received: 08/20/08 15:25									
Total Coliforms	**5000**	200	MPN/100 ml	100	8082423	08/20/08	08/24/08	SM 9221 B, E	
Fecal Coliforms	**3000**	200	"	"	"	"	08/23/08	"	
Enterococcus	**1700**	20	"	10	8082424	"	08/24/08	SM 9230 A, B	
AH-8A (0808366-02) Water Sampled: 08/20/08 11:10 Received: 08/20/08 15:25									
Total Coliforms	**8000**	200	MPN/100 ml	100	8082423	08/20/08	08/24/08	SM 9221 B, E	
Fecal Coliforms	**1700**	20	"	10	"	"	08/23/08	"	
Enterococcus	**230**	20	"	"	8082424	"	08/24/08	SM 9230 A, B	
BV-8 (0808366-03) Water Sampled: 08/20/08 12:00 Received: 08/20/08 15:25									
Total Coliforms	**110000**	2000	MPN/100 ml	1000	8082423	08/20/08	08/24/08	SM 9221 B, E	
Fecal Coliforms	**5000**	200	"	100	"	"	08/23/08	"	
Enterococcus	**1700**	20	"	10	8082424	"	08/24/08	SM 9230 A, B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082516										
Blank (8082516-BLK1)				Prepared & Analyzed: 08/25/08						
Copper	ND	0.005	mg/l							
Cadmium	ND	0.005	"							
Lead	ND	0.005	"							
Zinc	ND	0.020	"							
LCS (8082516-BS1)				Prepared & Analyzed: 08/25/08						
Cadmium	0.112	0.005	mg/l	0.100		112	75-125			
Zinc	0.117	0.020	"	0.100		117	75-125			
Lead	0.108	0.005	"	0.100		108	75-125			
Copper	0.102	0.005	"	0.100		102	75-125			
LCS Dup (8082516-BSD1)				Prepared & Analyzed: 08/25/08						
Zinc	0.112	0.020	mg/l	0.100		112	75-125	5	20	
Cadmium	0.106	0.005	"	0.100		106	75-125	6	20	
Lead	0.103	0.005	"	0.100		103	75-125	5	20	
Copper	0.097	0.005	"	0.100		97	75-125	5	20	
Duplicate (8082516-DUP1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Zinc	ND	0.020	mg/l		ND				20	
Cadmium	ND	0.005	"		ND				20	
Copper	0.010	0.005	"		0.009			12	20	
Lead	ND	0.005	"		ND				20	
Matrix Spike (8082516-MS1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Zinc	0.106	0.020	mg/l	0.100	ND	106	75-125			
Lead	0.115	0.005	"	0.100	ND	115	75-125			
Copper	0.102	0.005	"	0.100	0.009	94	75-125			
Cadmium	0.099	0.005	"	0.100	ND	99	75-125			

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Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082516										
Matrix Spike Dup (8082516-MSD1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Cadmium	0.101	0.005	mg/l	0.100	ND	101	75-125	2	20	
Lead	0.115	0.005	"	0.100	ND	115	75-125	0.2	20	
Copper	0.104	0.005	"	0.100	0.009	95	75-125	1	20	
Zinc	0.108	0.020	"	0.100	ND	108	75-125	2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082111										
Blank (8082111-BLK1)				Prepared: 08/21/08 Analyzed: 08/22/08						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.238*		*"*	*0.250*		*95*	*60-130*			
Surrogate: Tribuytlphosphate	*0.188*		*"*	*0.250*		*75*	*60-130*			
LCS (8082111-BS1)				Prepared: 08/21/08 Analyzed: 08/22/08						
Bolstar	0.38	0.10	ug/l	0.500		75	60-130			
Diazinon	0.43	0.05	"	0.500		86	60-130			
Ethoprop	0.45	0.05	"	0.500		90	60-130			
Mevinphos	0.38	0.25	"	0.500		76	60-130			
Methyl parathion	0.44	0.10	"	0.500		88	60-130			
Phorate	0.40	0.05	"	0.500		80	60-130			
Ronnel	0.43	0.25	"	0.500		85	60-130			
Trichlorinate	0.38	0.05	"	0.500		77	60-130			
Surrogate: Triphenyl phosphate	*0.266*		*"*	*0.250*		*106*	*60-130*			
Surrogate: Tribuytlphosphate	*0.289*		*"*	*0.250*		*116*	*60-130*			
LCS Dup (8082111-BSD1)				Prepared: 08/21/08 Analyzed: 08/22/08						
Bolstar	0.37	0.10	ug/l	0.500		74	60-130	2	30	
Diazinon	0.42	0.05	"	0.500		84	60-130	3	30	
Ethoprop	0.42	0.05	"	0.500		85	60-130	6	30	
Mevinphos	0.38	0.25	"	0.500		76	60-130	0	30	
Methyl parathion	0.44	0.10	"	0.500		89	60-130	1	30	
Phorate	0.43	0.05	"	0.500		86	60-130	7	30	
Ronnel	0.41	0.25	"	0.500		83	60-130	3	30	
Trichlorinate	0.43	0.05	"	0.500		86	60-130	12	30	
Surrogate: Triphenyl phosphate	*0.231*		*"*	*0.250*		*92*	*60-130*			
Surrogate: Tribuytlphosphate	*0.294*		*"*	*0.250*		*118*	*60-130*			

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Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808366

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082032										
Blank (8082032-BLK1)				Prepared & Analyzed: 08/20/08						
Oil & Grease	ND	5	mg/l							
LCS (8082032-BS1)				Prepared & Analyzed: 08/20/08						
Oil & Grease	32	5	mg/l	40.0		81	75-125			
LCS Dup (8082032-BSD1)				Prepared & Analyzed: 08/20/08						
Oil & Grease	31	5	mg/l	40.0		77	75-125	5	20	
Matrix Spike (8082032-MS1)		**Source: 0808309-01**		Prepared & Analyzed: 08/20/08						
Oil & Grease	35	5	mg/l	40.0	ND	87	0-200			
Batch 8082035										
Blank (8082035-BLK1)				Prepared: 08/20/08 Analyzed: 08/21/08						
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (8082035-DUP1)		**Source: 0808275-02**		Prepared: 08/20/08 Analyzed: 08/21/08						
Hardness (Total)	431	100	mg CaCO3/L		430			0.3	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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San Diego, CA 92121

Phone (858) 586-6680 Fax: (858) 586-6644

Email:

Billing Address: Same

Project ID: Vista Dry Weather

Project #: 200825W-1 PO#:

SAMPLE DETAILS

#	Client Sample ID	Sample Date/Time		Sample Matrix	Container(s) # of / Type	Oil & Grease 413.1	413.2	1664	418.1 (Total Recoverable Petroleum Hydrocarbons)	8015B (TPH) Gas Diesel Ext AS	624 / 8260 (VOC) Full BTXE MTBE	625 / 8270 (Semi Volatile Organics) PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides) Dia	TBT (Organotin Compounds)	pH Conductivity (EC) TSS TDS	Nitrate Nitrite TKN NH3	TTLC Metals (CAC Title 22) / (CAM 17)	STLC Metals (CAC Title 22) / (CAM 17)	TCLP (RCRA) Metals Organics	Cd Cr Cu Pb Ni Ag Zn Dissolved	Coliform, Total (MTF) Fecal (MTF) Coliform	Enterococcus, MTF Idexx	Heterotrophic Plate Count (HPC)	Total Hardness
01	BV-18	8/20/08	9:40	Water	3G/3P	X									X							X	X	X		X
02	AH-8A	"	11:10	"	2G/3P	X									X							X	X	X		X
03	BV-8	"	12:00	"	2G/3P	X									X							X	X	X		X
04																										
05																										
06																										
07																										
08																										
09																										
10																										

Sample Matrix Codes: GW=ground water WW=waste water DW=drinking water SW=storm water

A=air SED=sediment O=oil T=tissue S=solid other (specify) L=liquid other (specify)

Shipped By: Courier UPS FedEx USPS Client drop off Other_____

[1]**Turnaround Time:** Same day 24 hr 48 hr 3 day 4 day 5 day STD (7 day)

[1]**Reporting Requirements:** Fax PDF Excel Geotracker EDF Other _____

[1]**Sample Disposal:** By Laboratory [2]Return to client: P/U or Delivery Archive until ____/____/____

SAMPLE INTEGRITY

Correct Containers: Yes No N/A

Containers Properly Preserved: Yes No N/A

Custody Seals Intact: Yes No N/A

Temperature @ Receipt: _____

COC/Labels Agree: Yes No N/A

Sampled By: Client EMA Autosampler

Project Comments:

Please do not include Malathion results in the Lab report.

CHAIN-OF-CUSTODY RECORD

RELINQUISHED BY	RECEIVED BY
Signature: Manouchehr Dadkhah	Signature: Kelly Leyden
Print: Manouchehr Dadkhah	Print: Kelly Leyden
Company: D-Max Eng.	Company: EMA
Signature: Kelly Leyden	Signature:
Print: Kelly Leyden	Print: Seem Flory
Company: EMA	Company: EMA Inc.
Signature	Signature
Print	Print
Company	Company

White - EMA Canary - Accounting Pink - Client (w/Report) Goldenr

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

Note: By relinquishing samples to EnviroMatrix Analytical, Inc., client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days fro disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T= 4°C On Ice

EnviroMatrix Analytical, Inc.

29 August 2008

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0808387

Project Name: Vista Dry Weather
Project Desc./#:200825W-1

Enclosed are the results of analyses for samples received by the laboratory on 08/21/08 15:05. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH-21	0808387-01	Water	08/21/08 09:10	08/21/08 15:05
AH-9	0808387-02	Water	08/21/08 10:45	08/21/08 15:05
BV-4	0808387-03	Water	08/21/08 11:40	08/21/08 15:05

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Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

Metals (Dissolved) by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0808387-01) Water Sampled: 08/21/08 09:10 Received: 08/21/08 15:05									
Cadmium	ND	0.005	mg/l	1	8082516	08/25/08	08/25/08	EPA 6020	
Copper	**0.005**	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.030**	0.020	"	"	"	"	"	"	
AH-9 (0808387-02) Water Sampled: 08/21/08 10:45 Received: 08/21/08 15:05									
Lead	ND	0.005	mg/l	1	8082516	08/25/08	08/25/08	EPA 6020	
Copper	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
Cadmium	ND	0.005	"	"	"	"	"	"	
BV-4 (0808387-03) Water Sampled: 08/21/08 11:40 Received: 08/21/08 15:05									
Cadmium	ND	0.005	mg/l	1	8082516	08/25/08	08/25/08	EPA 6020	
Zinc	ND	0.020	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Copper	ND	0.005	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0808387-01) Water Sampled: 08/21/08 09:10 Received: 08/21/08 15:05									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	8082512	08/25/08	08/28/08	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*121 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*90 %*	*60-130*		"	"	"	"	
AH-9 (0808387-02) Water Sampled: 08/21/08 10:45 Received: 08/21/08 15:05									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	8082512	08/25/08	08/28/08	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*121 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*86 %*	*60-130*		"	"	"	"	
BV-4 (0808387-03) Water Sampled: 08/21/08 11:40 Received: 08/21/08 15:05									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	8082512	08/25/08	08/28/08	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*120 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*109 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0808387-01) Water Sampled: 08/21/08 09:10 Received: 08/21/08 15:05									
Hardness (Total)	**1240**	100	mg CaCO3/L	10	8082518	08/25/08	08/26/08	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	8082032	08/21/08	08/21/08	EPA 1664A	
AH-9 (0808387-02) Water Sampled: 08/21/08 10:45 Received: 08/21/08 15:05									
Hardness (Total)	**969**	100	mg CaCO3/L	10	8082518	08/25/08	08/26/08	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	8082032	08/21/08	08/21/08	EPA 1664A	
BV-4 (0808387-03) Water Sampled: 08/21/08 11:40 Received: 08/21/08 15:05									
Hardness (Total)	**561**	100	mg CaCO3/L	10	8082518	08/25/08	08/26/08	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	8082032	08/21/08	08/21/08	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0808387-01) Water Sampled: 08/21/08 09:10 Received: 08/21/08 15:05									
Total Coliforms	**130000**	2000	MPN/100 ml	1000	8082612	08/21/08	08/25/08	SM 9221 B, E	
Fecal Coliforms	**5000**	200	"	100	"	"	08/24/08	"	
Enterococcus	**1700**	20	"	10	8082613	"	08/25/08	SM 9230 A, B	
AH-9 (0808387-02) Water Sampled: 08/21/08 10:45 Received: 08/21/08 15:05									
Total Coliforms	**23000**	2000	MPN/100 ml	1000	8082612	08/21/08	08/25/08	SM 9221 B, E	
Fecal Coliforms	**5000**	200	"	100	"	"	08/24/08	"	
Enterococcus	**3000**	200	"	"	8082613	"	08/25/08	SM 9230 A, B	
BV-4 (0808387-03) Water Sampled: 08/21/08 11:40 Received: 08/21/08 15:05									
Total Coliforms	**8000**	200	MPN/100 ml	100	8082612	08/21/08	08/25/08	SM 9221 B, E	
Fecal Coliforms	**5000**	200	"	"	"	"	08/24/08	"	
Enterococcus	**2300**	200	"	"	8082613	"	08/25/08	SM 9230 A, B	

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Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082516										
Blank (8082516-BLK1)				Prepared & Analyzed: 08/25/08						
Zinc	ND	0.020	mg/l							
Lead	ND	0.005	"							
Cadmium	ND	0.005	"							
Copper	ND	0.005	"							
LCS (8082516-BS1)				Prepared & Analyzed: 08/25/08						
Cadmium	0.112	0.005	mg/l	0.100		112	75-125			
Copper	0.102	0.005	"	0.100		102	75-125			
Zinc	0.117	0.020	"	0.100		117	75-125			
Lead	0.108	0.005	"	0.100		108	75-125			
LCS Dup (8082516-BSD1)				Prepared & Analyzed: 08/25/08						
Zinc	0.112	0.020	mg/l	0.100		112	75-125	5	20	
Lead	0.103	0.005	"	0.100		103	75-125	5	20	
Copper	0.097	0.005	"	0.100		97	75-125	5	20	
Cadmium	0.106	0.005	"	0.100		106	75-125	6	20	
Duplicate (8082516-DUP1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Copper	0.010	0.005	mg/l		0.009			12	20	
Cadmium	ND	0.005	"		ND				20	
Lead	ND	0.005	"		ND				20	
Zinc	ND	0.020	"		ND				20	
Matrix Spike (8082516-MS1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Cadmium	0.099	0.005	mg/l	0.100	ND	99	75-125			
Copper	0.102	0.005	"	0.100	0.009	94	75-125			
Zinc	0.106	0.020	"	0.100	ND	106	75-125			
Lead	0.115	0.005	"	0.100	ND	115	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082516										
Matrix Spike Dup (8082516-MSD1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Copper	0.104	0.005	mg/l	0.100	0.009	95	75-125	1	20	
Cadmium	0.101	0.005	"	0.100	ND	101	75-125	2	20	
Lead	0.115	0.005	"	0.100	ND	115	75-125	0.2	20	
Zinc	0.108	0.020	"	0.100	ND	108	75-125	2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082512										
Blank (8082512-BLK1)				Prepared: 08/25/08 Analyzed: 08/28/08						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.259*		*"*	*0.250*		*104*	*60-130*			
Surrogate: Tribuytlphosphate	*0.206*		*"*	*0.250*		*82*	*60-130*			
LCS (8082512-BS1)				Prepared: 08/25/08 Analyzed: 08/28/08						
Bolstar	0.41	0.10	ug/l	0.500		81	60-130			
Diazinon	0.43	0.05	"	0.500		86	60-130			
Ethoprop	0.47	0.05	"	0.500		93	60-130			
Mevinphos	0.45	0.25	"	0.500		91	60-130			
Methyl parathion	0.50	0.10	"	0.500		99	60-130			
Phorate	0.42	0.05	"	0.500		85	60-130			
Ronnel	0.46	0.25	"	0.500		92	60-130			
Trichlorinate	0.47	0.05	"	0.500		93	60-130			
Surrogate: Triphenyl phosphate	*0.292*		*"*	*0.250*		*117*	*60-130*			
Surrogate: Tribuytlphosphate	*0.216*		*"*	*0.250*		*86*	*60-130*			
LCS Dup (8082512-BSD1)				Prepared: 08/25/08 Analyzed: 08/28/08						
Bolstar	0.43	0.10	ug/l	0.500		86	60-130	6	30	
Diazinon	0.44	0.05	"	0.500		88	60-130	2	30	
Ethoprop	0.46	0.05	"	0.500		92	60-130	2	30	
Mevinphos	0.43	0.25	"	0.500		87	60-130	5	30	
Methyl parathion	0.47	0.10	"	0.500		95	60-130	5	30	
Phorate	0.40	0.05	"	0.500		81	60-130	5	30	
Ronnel	0.47	0.25	"	0.500		94	60-130	3	30	
Trichlorinate	0.45	0.05	"	0.500		89	60-130	4	30	
Surrogate: Triphenyl phosphate	*0.295*		*"*	*0.250*		*118*	*60-130*			
Surrogate: Tribuytlphosphate	*0.208*		*"*	*0.250*		*83*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808387

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082032										
Blank (8082032-BLK1)				Prepared & Analyzed: 08/20/08						
Oil & Grease	ND	5	mg/l							
LCS (8082032-BS1)				Prepared & Analyzed: 08/20/08						
Oil & Grease	32	5	mg/l	40.0		81	75-125			
LCS Dup (8082032-BSD1)				Prepared & Analyzed: 08/20/08						
Oil & Grease	31	5	mg/l	40.0		77	75-125	5	20	
Matrix Spike (8082032-MS1)		**Source: 0808309-01**		Prepared & Analyzed: 08/20/08						
Oil & Grease	35	5	mg/l	40.0	ND	87	0-200			
Batch 8082518										
Blank (8082518-BLK1)				Prepared: 08/25/08 Analyzed: 08/26/08						
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (8082518-DUP1)		**Source: 0808406-01**		Prepared: 08/25/08 Analyzed: 08/26/08						
Hardness (Total)	357	100	mg CaCO3/L		354			0.9	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

San Diego, CA 92121

Phone (858) 586-6600 | Fax (858) 586-6644

Email:

Billing Address: Same

Project ID: Vista Dry Weather

Project #: 200825W-1 | PO#:

SAMPLE DETAILS

#	Client Sample ID	Sample Date/Time		Sample Matrix	Container(s) # of / Type	Oil & Grease ☐413.1 ☐413.2 X1664	418.1 (Total Recoverable Petroleum Hydrocarbons)	8015B (TPH) ☐Gas ☐Diesel ☐Ext ☐AST	624 / 8260 (VOC) ☐Full ☐BTXE ☐MTBE ☐	625 / 8270 (Semi Volatile Organics) ☐ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	(8141) (Organophosphorus Pesticides) Dia/	TBT (Organotin Compounds)	☐pH ☐Conductivity (EC) ☐TSS ☐TDS	☐Nitrate ☐Nitrite ☐TKN ☐NH3	TTLC Metals (CAC Title 22) / (CAM 17)	STLC Metals (CAC Title 22) / (CAM 17)	TCLP (RCRA) ☐Metals ☐Organics	Cd Cr Pb Ni Ag Dissolved	Coliform, Total (MTF) Fecal (MTF) ☐Colilert	Enterococcus, MTF ☐Idexx	Heterotrophic Plate Count (HPC)	Total Hardness
01	AH-21	8/21/08	9:10	Water	3G/3P	X							X							X	X	X		X
02	AH-9	"	10:45	"	2G/3P	X							X							X	X	X		X
03	BV-4	"	11:40	"	2G/3P	X							X							X	X	X		X
04																								
05																								
06																								
07																								
08																								
09																								
10																								

Sample Matrix Codes: GW=ground water WW=waste water DW=drinking water SW=storm water

A=air SED=sediment O=oil T=tissue S=solid other (specify) L=liquid other (specify)

Shipped By: ☐Courier ☐UPS ☐FedEx ☐USPS ☐Client drop off ☐Other_____

[1]**Turnaround Time:** ☐Same day ☐24 hr ☐48 hr ☐3 day ☐4 day X5 day ☐STD (7 day)

[1]**Reporting Requirements:** ☐Fax ☐PDF ☐Excel ☐Geotracker EDF ☐Other _____

[1]**Sample Disposal:** ☐By Laboratory ☐[2]Return to client: P/U or Delivery ☐Archive until ____/____/____

SAMPLE INTEGRITY

Correct Containers: Yes No N/A | Containers Properly Preserved: Yes No N/A

Custody Seals Intact: Yes No N/A | Temperature @ Receipt: 20C

COC/Labels Agree: Yes No N/A | Sampled By: ☐Client ☐EMA ☐Autosampler

Project Comments:

Please dont include Malathion results in The Lab report

CHAIN-OF-CUSTODY RECORD

RELINQUISHED BY	RECEIVED BY
Signature: Manouchehr Dadkhah	Signature: Kelley Leyden
Print: Manouchehr Dadkhah	Print: Kelly L
Company: D-Max Eng.	Company: E
Signature: Kelley Leyden	Signature:
Print: Kelly Leyden	Print: Sean Flora
Company: EMA	Company: EMA Inc
Signature	Signature
Print	Print
Company	Company

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

White - EMA Canary - Accounting Pink - Client (w/Report) Golden

Note: By relinquishing samples to EnviroMatrix Analytical, Inc., client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days fr disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

29 August 2008

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0808406

Project Name: Vista Dry Weather
Project Desc./#:200825W-1

Enclosed are the results of analyses for samples received by the laboratory on 08/22/08 12:55. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-31	0808406-01	Water	08/22/08 09:30	08/22/08 12:55
SS-1	0808406-02	Water	08/22/08 10:45	08/22/08 12:55

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

Metals (Dissolved) by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-31 (0808406-01) Water Sampled: 08/22/08 09:30 Received: 08/22/08 12:55									
Zinc	ND	0.020	mg/l	1	8082516	08/25/08	08/25/08	EPA 6020	
Cadmium	ND	0.005	"	"	"	"	"	"	
Copper	ND	0.005	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
SS-1 (0808406-02) Water Sampled: 08/22/08 10:45 Received: 08/22/08 12:55									
Copper	**0.005**	0.005	mg/l	1	8082516	08/25/08	08/25/08	EPA 6020	
Cadmium	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-31 (0808406-01) Water Sampled: 08/22/08 09:30 Received: 08/22/08 12:55									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	8082512	08/25/08	08/28/08	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*116 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*91 %*	*60-130*		"	"	"	"	
SS-1 (0808406-02) Water Sampled: 08/22/08 10:45 Received: 08/22/08 12:55									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	8082512	08/25/08	08/28/08	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*117 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*96 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-31 (0808406-01) Water Sampled: 08/22/08 09:30 Received: 08/22/08 12:55									
Hardness (Total)	**354**	100	mg CaCO3/L	10	8082518	08/25/08	08/26/08	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	8082918	08/29/08	08/29/08	EPA 1664A	
SS-1 (0808406-02) Water Sampled: 08/22/08 10:45 Received: 08/22/08 12:55									
Hardness (Total)	**338**	100	mg CaCO3/L	10	8082518	08/25/08	08/26/08	EPA 200.7	
Oil & Grease	ND	5	mg/l	1	8082918	08/29/08	08/29/08	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-31 (0808406-01) Water Sampled: 08/22/08 09:30 Received: 08/22/08 12:55									
Total Coliforms	**300**	20	MPN/100 ml	10	8082614	08/22/08	08/26/08	SM 9221 B, E	
Fecal Coliforms	**20**	20	"	"	"	"	08/25/08	"	
Enterococcus	**20**	20	"	"	8082615	"	08/26/08	SM 9230 A, B	
SS-1 (0808406-02) Water Sampled: 08/22/08 10:45 Received: 08/22/08 12:55									
Total Coliforms	**80000**	2000	MPN/100 ml	1000	8082614	08/22/08	08/26/08	SM 9221 B, E	
Fecal Coliforms	**13000**	200	"	100	"	"	08/25/08	"	
Enterococcus	**1700**	20	"	10	8082615	"	08/26/08	SM 9230 A, B	

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Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082516										
Blank (8082516-BLK1)				Prepared & Analyzed: 08/25/08						
Cadmium	ND	0.005	mg/l							
Copper	ND	0.005	"							
Lead	ND	0.005	"							
Zinc	ND	0.020	"							
LCS (8082516-BS1)				Prepared & Analyzed: 08/25/08						
Lead	0.108	0.005	mg/l	0.100		108	75-125			
Zinc	0.117	0.020	"	0.100		117	75-125			
Cadmium	0.112	0.005	"	0.100		112	75-125			
Copper	0.102	0.005	"	0.100		102	75-125			
LCS Dup (8082516-BSD1)				Prepared & Analyzed: 08/25/08						
Cadmium	0.106	0.005	mg/l	0.100		106	75-125	6	20	
Zinc	0.112	0.020	"	0.100		112	75-125	5	20	
Lead	0.103	0.005	"	0.100		103	75-125	5	20	
Copper	0.097	0.005	"	0.100		97	75-125	5	20	
Duplicate (8082516-DUP1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Lead	ND	0.005	mg/l		ND				20	
Zinc	ND	0.020	"		ND				20	
Cadmium	ND	0.005	"		ND				20	
Copper	0.010	0.005	"		0.009			12	20	
Matrix Spike (8082516-MS1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Copper	0.102	0.005	mg/l	0.100	0.009	94	75-125			
Cadmium	0.099	0.005	"	0.100	ND	99	75-125			
Zinc	0.106	0.020	"	0.100	ND	106	75-125			
Lead	0.115	0.005	"	0.100	ND	115	75-125			

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Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

Metals (Dissolved) by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082516										
Matrix Spike Dup (8082516-MSD1)		**Source: 0808344-05**		Prepared & Analyzed: 08/25/08						
Zinc	0.108	0.020	mg/l	0.100	ND	108	75-125	2	20	
Lead	0.115	0.005	"	0.100	ND	115	75-125	0.2	20	
Copper	0.104	0.005	"	0.100	0.009	95	75-125	1	20	
Cadmium	0.101	0.005	"	0.100	ND	101	75-125	2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082512										
Blank (8082512-BLK1)				Prepared: 08/25/08 Analyzed: 08/28/08						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.259*		*"*	*0.250*		*104*	*60-130*			
Surrogate: Tribuytlphosphate	*0.206*		*"*	*0.250*		*82*	*60-130*			
LCS (8082512-BS1)				Prepared: 08/25/08 Analyzed: 08/28/08						
Bolstar	0.41	0.10	ug/l	0.500		81	60-130			
Diazinon	0.43	0.05	"	0.500		86	60-130			
Ethoprop	0.47	0.05	"	0.500		93	60-130			
Mevinphos	0.45	0.25	"	0.500		91	60-130			
Methyl parathion	0.50	0.10	"	0.500		99	60-130			
Phorate	0.42	0.05	"	0.500		85	60-130			
Ronnel	0.46	0.25	"	0.500		92	60-130			
Trichlorinate	0.47	0.05	"	0.500		93	60-130			
Surrogate: Triphenyl phosphate	*0.292*		*"*	*0.250*		*117*	*60-130*			
Surrogate: Tribuytlphosphate	*0.216*		*"*	*0.250*		*86*	*60-130*			
LCS Dup (8082512-BSD1)				Prepared: 08/25/08 Analyzed: 08/28/08						
Bolstar	0.43	0.10	ug/l	0.500		86	60-130	6	30	
Diazinon	0.44	0.05	"	0.500		88	60-130	2	30	
Ethoprop	0.46	0.05	"	0.500		92	60-130	2	30	
Mevinphos	0.43	0.25	"	0.500		87	60-130	5	30	
Methyl parathion	0.47	0.10	"	0.500		95	60-130	5	30	
Phorate	0.40	0.05	"	0.500		81	60-130	5	30	
Ronnel	0.47	0.25	"	0.500		94	60-130	3	30	
Trichlorinate	0.45	0.05	"	0.500		89	60-130	4	30	
Surrogate: Triphenyl phosphate	*0.295*		*"*	*0.250*		*118*	*60-130*			
Surrogate: Tribuytlphosphate	*0.208*		*"*	*0.250*		*83*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808406

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8082518										
Blank (8082518-BLK1)				Prepared: 08/25/08	Analyzed: 08/26/08					
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (8082518-DUP1)		**Source: 0808406-01**		Prepared: 08/25/08	Analyzed: 08/26/08					
Hardness (Total)	357	100	mg CaCO3/L		354			0.9	20	
Batch 8082918										
Blank (8082918-BLK1)				Prepared & Analyzed: 08/29/08						
Oil & Grease	ND	5	mg/l							
LCS (8082918-BS1)				Prepared & Analyzed: 08/29/08						
Oil & Grease	32	5	mg/l	40.0		80	75-125			
LCS Dup (8082918-BSD1)				Prepared & Analyzed: 08/29/08						
Oil & Grease	32	5	mg/l	40.0		81	75-125	2	20	
Matrix Spike (8082918-MS1)		**Source: 0808449-04**		Prepared & Analyzed: 08/29/08						
Oil & Grease	32	5	mg/l	40.0	ND	79	0-200			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

San Diego, CA 92121

Phone: (858) 586-6600 | Fax: (858) 586-6644

Email:

Billing Address: Same

Project ID: Vista Dry Weather

Project #: 200825W-1 | PO#:

SAMPLE DETAILS

#	Client Sample ID	Sample Date/Time	Sample Matrix	Container(s) # of / Type	Oil & Grease ☐413.1 ☐413.2 ☒1664	418.1 (Total Recoverable Petroleum Hydrocarbons)	8015B (TPH) ☐Gas ☐Diesel ☐Ext	624 / 8260 (VOC) ☐Full ☐BTXE ☐MTBE	625 / 8270 (Semi Volatile Organics) ☐ PAH	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	(8141) (Organophosphorus Pesticides) Diazinon	TBT (Organotin Compounds)	☐pH ☐Conductivity (EC) ☐TSS ☐TDS	☐Nitrate ☐Nitrite ☐TKN ☐NH3	TTLC Metals (CAC Title 22) / (CAM 17)	STLC Metals (CAC Title 22) / (CAM 17)	TCLP (RCRA) ☐Metals ☐Organics	(Cd) Cr (Cu) (Pb) Ni Ag (Zn) ☒Dis	Coliform, ☒Total (MTF) ☒Fecal (MTF) ☐C	Enterococcus, ☒MTF ☐Idexx	Heterotrophic Plate Count (HPC)	Total Hardness		
01	BV-31	8/22/08 9:30	Water	3G/3P	X							X						X	X	X		X		
02	SS-1	" 10:45	"	2G/2P	X							X						X	X	X		X		
03																								
04																								
05																								
06																								
07																								
08																								
09																								
10																								

Sample Matrix Codes: GW=ground water WW=waste water DW=drinking water (SW)=storm water

A=air SED=sediment O=oil T=tissue S=solid other (specify) L=liquid other (specify)

Shipped By: ☐Courier ☐UPS ☐FedEx ☐USPS ☐Client drop off ☐Other_____

[1]**Turnaround Time:** ☐Same day ☐24 hr ☐48 hr ☐3 day ☐4 day ☒5 day ☐STD (7 day)

[1]**Reporting Requirements:** ☐Fax ☐PDF ☐Excel ☐Geotracker EDF ☐Other _____

[1]**Sample Disposal:** ☐By Laboratory ☐[2]Return to client: P/U or Delivery ☐Archive until ____/____/____

SAMPLE INTEGRITY

Correct Containers: Yes No N/A | Containers Properly Preserved: Yes No N/A

Custody Seals Intact: Yes No N/A | Temperature @ Receipt: _____

COC/Labels Agree: Yes No N/A | Sampled By: ☐Client ☐EMA ☐Autosampler

Project Comments:

Please dont include Malathion results in the Lab results

CHAIN-OF-CUSTODY RECORD

RELINQUISHED BY	RECEIVED BY
Signature: Manouchehr Dadkhah	Signature: Kelly Ley
Print: Manouchehr Dadkhah	Print: Kelly Le
Company: D-Max Eng.	Company: E
Signature: Kelly Leyden	Signature:
Print: Kelly Leyden	Print: Sean Flores
Company: EMA	Company: EMA In.
Signature	Signature
Print	Print
Company	Company

White - EMA Canary - Accounting Pink - Client (w/Report) Golden

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

Note: By relinquishing samples to EnviroMatrix Analytical, Inc., client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days fr disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T=7° On Ice

EnviroMatrix Analytical, Inc.

04 September 2008

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0808508

Project Name: Vista Dry Weather
Project Desc./#: 200825W-2

Enclosed are the results of analyses for samples received by the laboratory on 08/28/08 16:16. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808508

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-8-1	0808508-01	Water	08/28/08 12:00	08/28/08 16:16
BV-8	0808508-02	Water	08/28/08 12:30	08/28/08 16:16
AH-21	0808508-03	Water	08/28/08 13:00	08/28/08 16:16

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808508

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Date Prepared Date Analyzed	Method	Notes
BV-8-1 (0808508-01) Water Sampled: 08/28/08 12:00 Received: 08/28/08 16:16								
Total Coliforms	**186000**	1000	MPN/100 ml	1000	8082908	08/28/08 16:40 08/29/08 16:40	SM9223	
E. Coli	**1150**	10	"	10	"	08/28/08 16:40 08/29/08 16:40	"	
BV-8 (0808508-02) Water Sampled: 08/28/08 12:30 Received: 08/28/08 16:16								
Total Coliforms	**98000**	100	MPN/100 ml	100	8082908	08/28/08 16:40 08/29/08 16:40	SM9223	
E. Coli	**743**	10	"	10	"	08/28/08 16:40 08/29/08 16:40	"	
AH-21 (0808508-03) Water Sampled: 08/28/08 13:00 Received: 08/28/08 16:16								
Total Coliforms	**64900**	100	MPN/100 ml	100	8082908	08/28/08 16:40 08/29/08 16:40	SM9223	
E. Coli	**108**	10	"	10	"	08/28/08 16:40 08/29/08 16:40	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808508

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

San Diego, CA 92121

Phone: 858-586-6600 Fax: 858-586-6644

Email:

Billing Address: Same

Project ID: Vista Dry Weather

Project #: 200825W-2 PO#:

SAMPLE DETAILS

#	Client Sample ID	Sample Date/Time		Sample Matrix	Container(s) # of / Type	Oil & Grease ☐1664 ☐413.1 ☐413.2	418.1 (Total Recoverable Petroleum Hydrocarb	8015B (TPH) ☐Gas ☐Diesel ☐Ext ☐	624 / 8260 (VOC) ☐Full ☐BTXE ☐MTBE	625 / 8270 (Semi Volatile Organics) ☐ PAH c	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	☐pH ☐Conductivity (EC) ☐TSS ☐TDS	☐Nitrate ☐Nitrite ☐TKN ☐NH3	TTLC Metals (CAC Title 22) / (CAM 17)	STLC Metals (CAC Title 22) / (CAM 17)	TCLP (RCRA) ☐Metals ☐Organics	Cd Cr Cu Pb Ni Ag Zn ☐Diss	Coliform, ☐Total (MTF) ☐Fecal (MTF) ☐Co	Enterococcus, ☐MTF ☐Idexx	Heterotrophic Plate Count (HPC)			
01	BV-8-1	8/28/08	12:00	water	1P															X					
02	BV-8	"	12:30	"	1P															X					
03	AH-21	"	13:00	"	1P															X					
04																									
05																									
06																									
07																									
08																									
09																									
10																									

Sample Matrix Codes: GW=ground water WW=waste water DW=drinking water SW=storm water

A=air SED=sediment O=oil T=tissue S=solid other (specify) L=liquid other (specify)

Shipped By: ☐Courier ☐UPS ☐FedEx ☐USPS ☐Client drop off ☐Other_____

[1]**Turnaround Time:** ☐Same day ☐24 hr ☐48 hr ☐3 day ☐4 day ☒5 day ☐STD (7 day)

[1]**Reporting Requirements:** ☐Fax ☐PDF ☐Excel ☐Geotracker EDF ☐Other _____

[1]**Sample Disposal:** ☐By Laboratory ☐[2]Return to client: P/U or Delivery ☐Archive until ____/____/____

SAMPLE INTEGRITY

Correct Containers: Yes No N/A

Containers Properly Preserved: Yes No N/A

Custody Seals Intact: Yes No N/A

Temperature @ Receipt: _____

COC/Labels Agree: Yes No N/A

Sampled By: ☐Client ☐EMA ☐Autosampler

Project Comments:

CHAIN-OF-CUSTODY RECORD

RELINQUISHED BY	RECEIVED BY
Signature: Manouchehr Dadkhah	Signature: [signature]
Print: Manouchehr Dadkhah	Print: Sean Flory
Company: D-Max Eng	Company: EMA Inc.
Signature	Signature
Print	Print
Company	Company
Signature	Signature
Print	Print
Company	Company

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

White - EMA Canary - Accounting Pink - Client (w/Report) Goldenro

Note: By relinquishing samples to EnviroMatrix Analytical, Inc., client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days fror disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T=5°c on ice

EnviroMatrix Analytical, Inc.

04 September 2008

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0808522

Project Name: Vista Dry Weather
Project Desc./#: 200825W-2

Enclosed are the results of analyses for samples received by the laboratory on 08/29/08 12:58. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808522

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-1-1	0808522-01	Water	08/29/08 11:00	08/29/08 12:58
SS-1	0808522-02	Water	08/29/08 11:30	08/29/08 12:58

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808522

Microbiological Parameters by Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Date Prepared Date Analyzed	Method	Notes
SS-1-1 (0808522-01) Water Sampled: 08/29/08 11:00 Received: 08/29/08 12:58								
Total Coliforms	**46100**	100	MPN/100 ml	100	8083004	08/29/08 13:50 08/30/08 14:00	SM9223	
E. Coli	**583**	10	"	10	"	08/29/08 13:50 08/30/08 14:00	"	
SS-1 (0808522-02) Water Sampled: 08/29/08 11:30 Received: 08/29/08 12:58								
Total Coliforms	**98000**	100	MPN/100 ml	100	8083004	08/29/08 13:50 08/30/08 14:00	SM9223	
E. Coli	**1300**	10	"	10	"	08/29/08 13:50 08/30/08 14:00	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Vista Dry Weather

EMA Log #: 0808522

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

San Diego, CA 92121

Phone: 858-586-6600 Fax: 858-586-6644

Email:

Billing Address: same

Project ID: Vista Dry Weather

Project #: 200825W-2 PO#:

SAMPLE DETAILS

#	Client Sample ID	Sample Date/Time	Sample Matrix	Container(s) # of / Type	Oil & Grease ☐413.1 ☐413.2 ☐1664	418.1 (Total Recoverable Petroleum Hydrocarb	8015B (TPH) ☐Gas ☐Diesel ☐Ext ☐	624 / 8260 (VOC) ☐Full ☐BTXE ☐MTBE	625 / 8270 (Semi Volatile Organics) ☐ PAH c	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	☐pH ☐Conductivity (EC) ☐TSS ☐TDS	☐Nitrate ☐Nitrite ☐TKN ☐NH3	TTLC Metals (CAC Title 22) / (CAM 17)	STLC Metals (CAC Title 22) / (CAM 17)	TCLP (RCRA) ☐Metals ☐Organics	Cd Cr Cu Pb Ni Ag Zn ☐Diss	Coliform, ☐Total (MTF) ☐Fecal (MTF) ☐Co	Enterococcus, ☐MTF ☐Idexx	Heterotrophic Plate Count (HPC)		
01	SS-1-1	8/29/08 11:00	SW	1 P															X					
02	SS-1	8/29/08 11:30	SW	1 P															X					
03																								
04																								
05																								
06																								
07																								
08																								
09																								
10																								

Sample Matrix Codes: GW=ground water WW=waste water DW=drinking water SW=storm water

A=air SED=sediment O=oil T=tissue S=solid other (specify) L=liquid other (specify)

Shipped By: ☐Courier ☐UPS ☐FedEx ☐USPS ☐Client drop off ☐Other_____

[1]**Turnaround Time:** ☐Same day ☐24 hr ☐48 hr ☐3 day ☐4 day ☒5 day ☐STD (7 day)

[1]**Reporting Requirements:** ☐Fax ☐PDF ☐Excel ☐Geotracker EDF ☐Other _____

[1]**Sample Disposal:** ☐By Laboratory ☐[2]Return to client: P/U or Delivery ☐Archive until ____/____/____

SAMPLE INTEGRITY

Correct Containers: Yes No N/A | Containers Properly Preserved: Yes No N/A

Custody Seals Intact: Yes No N/A | Temperature @ Receipt: _____

COC/Labels Agree: Yes No N/A | Sampled By: ☐Client ☐EMA ☐Autosampler

Project Comments:

CHAIN-OF-CUSTODY RECORD

RELINQUISHED BY	RECEIVED BY
Signature [signature]	Signature [signature]
Print Sara Dadkhah	Print Sean Flores
Company D-Max Engineering	Company EMA Inc.
Signature	Signature
Print	Print
Company	Company
Signature	Signature
Print	Print
Company	Company

[1]Additional costs may apply, consult a project manager for details.

[2]EMA reserves the right to return any samples that do not match our waste profile.

White - EMA Canary - Accounting Pink - Client (w/Report) Goldenro

Note: By relinquishing samples to EnviroMatrix Analytical, Inc., client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days fro disposed of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T=6°C on ice

Appendix D

Field Data Sheets

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-8A		Latitude	33.16641	Watershed	Hydrologic Unit	904
Location	Between 632 and 636 Sycamore Ave. north of Thibodo Rd / Plumosa Ave		Longitude	-117.21544		Hydrologic Area	904.3
			TB Page	1108-B4		Hydrologic Subarea (Optional)	904.32
Date	8/20/08	Time 11:10	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☑ Other tadpoles

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 15-16, 17

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	22.0	NH_3-N (mg/L)	0.223	NO_3 (mg/L)	81.27	Ortho-PO_4 (mg/L)	0.446
pH (pH units)	7.7	TURB (NTU)	0.01	NO_3-N (mg/L)	18.37	Ortho-PO_4-P (mg/L)	0.145
COND (mS/cm)	2.36	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash sig - see trash assess for notes.

Trash Assessment Form

SITE ID: AH-8A DATE: 8/20/08

LOCATION: TIME: 11:10

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☐ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☑ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

AH-8A
8/20/08

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related	2		✓	✓				✓				
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging	1		✓	✓				✓				
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: - Submarginal
- styrofoam / styrofoam cups, plastic bottles, food packaging

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-8A		Latitude	33.16641	Watershed	Hydrologic Unit	904
Location	Between 632 and 636 Sycamore Ave, north of Thibodo Rd / Plumosa Ave		Longitude	-117.21544		Hydrologic Area	904.3
			TB Page	1108-B4		Hydrologic Subarea (Optional)	904.32
Date	8/21/08	Time 15:30	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☒ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☒ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.5	NH_3-N (mg/L)	na	NO_3 (mg/L)	75.27	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.9	TURB (NTU)	na	NO_3-N (mg/L)	17.011	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	2.37	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-9		Latitude	33.15865	Watershed	Hydrologic Unit	904
Location	Shadowridge & Antigua Dr, in Buena Vista park, north side of pond		Longitude	-117.24642		Hydrologic Area	904.3
			TB Page	1107-H5		Hydrologic Subarea (Optional)	904.31
Date	08/21/08	Time 10:45	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☑ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☑ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 28, 29, 30, 31-35

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	22.1	NH_3-N (mg/L)	0.227	NO_3 (mg/L)	4.338	Ortho-PO_4 (mg/L)	0.842
pH (pH units)	7.1	TURB (NTU)	1.65	NO_3-N (mg/L)	0.980	Ortho-PO_4-P (mg/L)	0.274
COND (mS/cm)	2.88	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	15	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: trash- paper plate, styrofoam cup, bottles, tennis balls, baseball
vegetation is dense & traps trash

Trash Assessment Form

SITE ID: AH - 9 DATE: 8/21/2008

LOCATION: TIME: 10:45

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 2

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-17		Latitude	33.14003	Watershed	Hydrologic Unit	904
Location	southeast of Faraday St & Brookhaven Pass intersection, in the corner of the detention basin		Longitude	-117.24637		Hydrologic Area	904.3
			TB Page	1127- H1		Hydrologic Subarea (Optional)	904.31
Date	8/25/08	Time 13:50	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 51-53

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.8	NH_3-N (mg/L)	0.547	NO_3 (mg/L)	8.998	Ortho-PO_4 (mg/L)	2.322
pH (pH units)	7.8	TURB (NTU)	16.15	NO_3-N (mg/L)	2.033	Ortho-PO_4-P (mg/L)	0.757
COND (mS/cm)	3.64	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: 1-2 pieces of trash - food packages
many leaves

Trash Assessment Form

SITE ID: AH-17 **DATE:** _____

LOCATION: SW corner of Brockhaven pass Faraday intersection. @ corner of detention basin **TIME:** 13:50

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L X W (FT): 5 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-21		Latitude	33.13534	Watershed	Hydrologic Unit	904
Location	2687 Melrose Drive, (south end of Melrose)		Longitude	-117.24466		Hydrologic Area	904.3
			TB Page	1127-H1		Hydrologic Subarea (Optional)	904.31
Date	8/21/08	Time 09:10	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☑ ~~Bubbles/Foam~~	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☑ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 25-27

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	20.3	NH_3-N (mg/L)	0.113	NO_3 (mg/L)	4.048	Ortho-PO_4 (mg/L)	0.162
pH (pH units)	7.8	TURB (NTU)	0.01	NO_3-N (mg/L)	0.915	Ortho-PO_4-P (mg/L)	0.053
COND (mS/cm)	3.24	MBAS (mg/L)	0.38	Others			

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: - Bubbles just downstream of outfall
- Trash - one styrofoam food package, 1 bag of chips

Trash Assessment Form

SITE ID: AH-21 DATE: 8/21/08

LOCATION: 2687 Melrose Dr TIME: 09:10

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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☐ Field Screening ☒ Confirmation For Total Calif. ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-21		Latitude	33.13534	Watershed	Hydrologic Unit	904
Location	2687 Melrose Dr. (South end of Melrose)		Longitude	-117.24466		Hydrologic Area	904.3
			TB Page	1127-H1		Hydrologic Subarea (Optional)	904.31
Date	8/28/08	Time 13:00	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.0	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.9	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	3.70	MBAS (mg/L)	na	Others	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	/	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash - one food wrapper

San Diego Stormwater Copermittees
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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-30		Latitude	33.17023	Watershed	Hydrologic Unit	904
Location	southwestern corner of Chaparral Dr & Thibodo Rd intersection		Longitude	-117.22548		Hydrologic Area	904.3
			TB Page	1108-A3		Hydrologic Subarea (Optional)	904.32
Date	8/26/08	Time 17:00	Observer	MD SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☑ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☑ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☐ Algae ☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 77-78

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	25.3	NH_3-N (mg/L)	0.525	NO_3 (mg/L)	4.680	Ortho-PO_4 (mg/L)	0.924
pH (pH units)	7.3	TURB (NTU)	6.15	NO_3-N (mg/L)	1.058	Ortho-PO_4-P (mg/L)	0.301
COND (mS/cm)	2.77	MBAS (mg/L)	0.60	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Lots of leaves trash - a few plastic bottles

Trash Assessment Form

SITE ID: AH-30 **DATE:** 8/26/08

LOCATION: SW corner of Chaparral Dr & Thibado Rd **TIME:** 17:00

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-31		Latitude	33.16715	Watershed	Hydrologic Unit	904
Location	Live Oak Rd near southern intersection with Cordoba Way, west sidewalk by golf course fence		Longitude	-117.23827		Hydrologic Area	904.3
			TB Page	~~1087~~ 1107 - J4		Hydrologic Subarea (Optional)	904.31
Date	8/26/08	Time 12:30	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other spiders

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 69-70

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.2	NH_3-N (mg/L)	0.176	NO_3 (mg/L)	6.742	Ortho-PO_4 (mg/L)	3.198
pH (pH units)	7.8	TURB (NTU)	9.72	NO_3-N (mg/L)	1.524	Ortho-PO_4-P (mg/L)	1.043
COND (mS/cm)	1.47	MBAS (mg/L)	0.50	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: animal waste
No trash

Trash Assessment Form

SITE ID: AH-31 **DATE:** 8/26/08

LOCATION: Live Oaks Rd, near southern entrance of Cordoba Way, by golf course fence, west sidewalk **TIME:** 12:30

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4 x 2

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-32		Latitude	33.15156	Watershed	Hydrologic Unit	904
Location	southwest corner of La Mirada Drive & Sycamore Ave intersection		Longitude	-117.22636		Hydrologic Area	904.3
			TB Page	1108-A6		Hydrologic Subarea (Optional)	904.31
Date	8/25/08	Time 14:35	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☑ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☑ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 54-55

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	25.2	NH_3-N (mg/L)	0.381	NO_3 (mg/L)	9.381	Ortho-PO_4 (mg/L)	0.102
pH (pH units)	7.3	TURB (NTU)	12.34	NO_3-N (mg/L)	2.120	Ortho-PO_4-P (mg/L)	0.0333
COND (mS/cm)	7.15	MBAS (mg/L)	0.68	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: No trash

Trash Assessment Form

SITE ID: AH-32 **DATE:** 8/25/2008

LOCATION: Northwest corner of La Marada Dr & Sycamore Ave intersection **TIME:** 14:35

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 5 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-33		Latitude	33.15225	Watershed	Hydrologic Unit	904
Location	east end of La Murada Dr off of Business Park Dr. in canyon by 2260 La Murada Dr		Longitude	-117.23074		Hydrologic Area	904.3
			TB Page	1107-J6		Hydrologic Subarea (Optional)	904.31
Date	8/25/08	Time 15:30	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☑ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage			☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray			☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque				☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter			☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits			☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive				☐ Other
Biology	☐ None	☑ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 56-58

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.1	NH_3-N (mg/L)	0.338	NO_3 (mg/L)	6.293	Ortho-PO_4 (mg/L)	2.055
pH (pH units)	7.3	TURB (NTU)	16.96	NO_3-N (mg/L)	1.422	Ortho-PO_4-P (mg/L)	0.670
COND (mS/cm)	1.23	MBAS (mg/L)	0.75	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash - plastic bags, & caution tape, fertilizer bag

Trash Assessment Form

SITE ID: AH-33 **DATE:** 8/25/08

LOCATION: East end of La Mirada Dr. off of Business Park Dr.; in canyon by 2260 La Mirada Dr. **TIME:** 15:30

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 X 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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City of Vista
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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-34		Latitude	33.13576	Watershed	Hydrologic Unit	904
Location	W End of Keystone Wy, near Scott St		Longitude	-117.23425		Hydrologic Area	904.3
			TB Page	1127-J1		Hydrologic Subarea (Optional)	904.31
Date	8/26/08	Time 14:15	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor NS	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color NS	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity NS	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables NS	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 71-72

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 -P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	DRY	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Just leaf debris No trash

Trash Assessment Form

SITE ID: AH-34 **DATE:** 8/26/08

LOCATION: west end of keystone way, near Scott St **TIME:** 14:15

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3x3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH - 35		Latitude	33.14406	Watershed	Hydrologic Unit	904
Location	Across from 1210 Activity Road		Longitude	-117.21800		Hydrologic Area	904.3
			TB Page	1108-B7		Hydrologic Subarea (Optional)	904.31
Date	8/25/08	Time 14:50	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae ☐ Fish ☐ Snails		☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 73-74

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.1	NH_3-N (mg/L)	0.191	NO_3 (mg/L)	207.4	Ortho-PO_4 (mg/L)	0.192
pH (pH units)	7.9	TURB (NTU)	0.27	NO_3-N (mg/L)	46.872	Ortho-PO_4 -P (mg/L)	0.063
COND (mS/cm)	6.11	MBAS (mg/L)	0.75	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: No trash
water appears bright/luminecent

Trash Assessment Form

SITE ID: AH-35 **DATE:** 8/26/08

LOCATION: across from 1210 activity RD **TIME:** 14:50

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
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☐ Field Screening ☒ Confirmation For NO_3 ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-35		**Latitude**	33.14406	**Watershed**	**Hydrologic Unit**	904
Location	across from 1210 activity Rd		**Longitude**	-117.21800		**Hydrologic Area**	904.3
			TB Page	1108-B7		**Hydrologic Subarea** (Optional)	904.31
Date	8/26/08	**Time** 14:00	**Observer**	MD, SD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.8	NH_3-N (mg/L)	na	NO_3 (mg/L)	190.2	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.9	TURB (NTU)	na	NO_3-N (mg/L)	42.99	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	5.98	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: No trash

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☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For NO3

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-35-1		Latitude	33.14326	Watershed	Hydrologic Unit	904
Location	in driveway of 1240 Activity Dr		Longitude	-117.21879		Hydrologic Area	904.3
			TB Page	1108-B7		Hydrologic Subarea (Optional)	904.31
Date	8/27/08	Time 16:50	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☑ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☐ No **Photo #** 94 - 96

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	49.84	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	11.26	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: NO trash

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☐ Field Screening ☐ Confirmation For _____ ☑ IC/ID Follow-Up For NO_3

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-35-2		**Latitude**	33.14409	**Watershed**	**Hydrologic Unit**	904
Location	East sidewalk of Activity Dr, near Poinsettia Ave.		**Longitude**	-117.21681		**Hydrologic Area**	904.3
			TB Page	1108-B7		**Hydrologic Subarea** (Optional)	904.31
Date	8/28/08	**Time** 15:30	**Observer**	MD, SD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 105-106

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	171.5	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	38.759	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-36		Latitude	33.15912	Watershed	Hydrologic Unit	904
Location	Cottontail Road, southeast of Mapleleaf Dr, west side of road		Longitude	-117.22548		Hydrologic Area	904.3
			TB Page	1108-A5		Hydrologic Subarea (Optional)	904.32
Date	8/26/08	Time 1540	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ~~☒ None~~

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	~~☒ None~~	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 75-76

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	24.5	NH_3-N (mg/L)	0.155	NO_3 (mg/L)	9.696	Ortho-PO_4 (mg/L)	0.907
pH (pH units)	8.0	TURB (NTU)	8.07	NO_3-N (mg/L)	2.191	Ortho-PO_4-P (mg/L)	0.296
COND (mS/cm)	1.31	MBAS (mg/L)	0.75	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: No trash

Trash Assessment Form

SITE ID: AH-36 DATE: 8/26/08

LOCATION: Cottontail Rd, SE of Mapleleaf Dr, West side of road TIME: 15:40

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	AH-37		Latitude	33.15503	Watershed	Hydrologic Unit	904
Location	Green Oak & Melrose Dr intersection, southeast corner		Longitude	-117.24137		Hydrologic Area	904.3
			TB Page	1107 H6		Hydrologic Subarea (Optional)	904.31
Date	8/25/08	Time 16:45	Observer	MD, BD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☑ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 59-61, upstream 62-63

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	28	NH_3-N (mg/L)	0.069	NO_3 (mg/L)	4.539	Ortho-PO_4 (mg/L)	0.751
pH (pH units)	8.4	TURB (NTU)	0.81	NO_3-N (mg/L)	1.026	Ortho-PO_4-P (mg/L)	0.245
COND (mS/cm)	1.04	MBAS (mg/L)	0.13	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS:
- Leaf debris
- 1 candy package, small food wrappers
- Runoff from 2002 Oak Creek Ct, algae in runoff

Trash Assessment Form

SITE ID: AH - 37 **DATE:** 8/24/08

LOCATION: Southeast corner of Green Oak & Melrose intersection **TIME:** 16:45

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-38		Latitude	33.15786	Watershed	Hydrologic Unit	904
Location	South side of Shadowridge Dr. east of White Birch Dr		Longitude	-117.24758		Hydrologic Area	904.3
			TB Page	1107-G5		Hydrologic Subarea (Optional)	904.31
Date	8/27/08	Time 16:15	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 91-93

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	25.4	NH_3-N (mg/L)	0.126	NO_3 (mg/L)	6.546	Ortho-PO_4 (mg/L)	1.474
pH (pH units)	7.8	TURB (NTU)	3.55	NO_3-N (mg/L)	1.479	Ortho-PO_4-P (mg/L)	0.481
COND (mS/cm)	1.97	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: No trash
Deep manhole

Trash Assessment Form

SITE ID: AH-38 DATE: 8/27/08

LOCATION: south side of shadowridge Dr, east of white Birch Dr TIME: 16:15

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-1		Latitude	33.18271	Watershed	Hydrologic Unit	904
Location	Behind 4241 Tiberon Dr		Longitude	-117.28387		Hydrologic Area	904.2
			TB Page	1087-C2		Hydrologic Subarea (Optional)	904.21
Date	8/25/08	Time 10:15	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	~~☒ None~~	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 4748

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.0	NH_3-N (mg/L)	0.607	NO_3 (mg/L)	2.785	Ortho-PO_4 (mg/L)	0.473
pH (pH units)	7.8	TURB (NTU)	1.50	NO_3-N (mg/L)	0.629	Ortho-PO_4 -P (mg/L)	0.154
COND (mS/cm)	11.34	MBAS (mg/L)	0.75	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash - 1 piece of paper litter

Trash Assessment Form

SITE ID: BV-1 DATE: 8/25/2008

LOCATION: Behind 4241 Tiburon Dr TIME: 10:15

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): —

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-4		Latitude	33.18780	Watershed	Hydrologic Unit	904
Location	~~1740 Hacienda Drive~~ across street from 1725 Hacienda Dr, in canyon, south of fence		Longitude	-117.27434		Hydrologic Area	904.2
			TB Page	1087-E7		Hydrologic Subarea (Optional)	904.21
Date	8/21/08	Time 11:40	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 36-36

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.2	NH_3-N (mg/L)	0.071	NO_3 (mg/L)	3.787	Ortho-PO_4 (mg/L)	0.419
pH (pH units)	8.1	TURB (NTU)	1.76	NO_3-N (mg/L)	0.856	Ortho-PO_4-P (mg/L)	0.137
COND (mS/cm)	1.94	MBAS (mg/L)	0.38	Others			

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	10	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: - bubbles downstream in creek
- No trash

Trash Assessment Form

SITE ID: BV-4 DATE: 8/21/08

LOCATION: across street from 1725 Hacienda, south of fence, in canyon TIME: 11:40

OBSERVER: MA, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-7A		Latitude	33.19300	Watershed	Hydrologic Unit	904
Location	west sidewalk of S Melrose Dr, south of Hacienda, next to Chevron gas station		Longitude	-117.25372		Hydrologic Area	904.2
			TB Page	1087-G7		Hydrologic Subarea (Optional)	904.22
Date	8/25/08	Time 11:50	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	NS	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	NS	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	NS	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	NS	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits		☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation		☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology		☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 49-50

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	DRY	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: trash - small food wrappers
large amt of ~~trash~~ leaf debris

Trash Assessment Form

SITE ID: BV-7A **DATE:** 8/25/2008

LOCATION: South of Hacienda, ~~S Melrose Dr.~~ west sidewalk of S Melrose Dr next to Chevron gas station **TIME:** 11:40

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-8		Latitude	33.20350	Watershed	Hydrologic Unit	904
Location	Olive Ave & Goetting Way, southwest corner		Longitude	-117.24564		Hydrologic Area	904.2
			TB Page	1087-G6		Hydrologic Subarea (Optional)	904.22
Date	8/20/08	Time 12:00	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects ☑ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail	☑ Other larvae

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 18-19

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	28.4	NH3-N (mg/L)	0.171	NO3 (mg/L)	42.33	Ortho-PO4 (mg/L)	0.253
pH (pH units)	8.4	TURB (NTU)	1.11	NO3-N (mg/L)	9.567	Ortho-PO4 -P (mg/L)	0.082
COND (mS/cm)	1.70	MBAS (mg/L)	0.13	Others			

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	30.2	in 30
Depth	0.25	in 1
Velocity	10/10	ft/sec 6
Flow	23	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Few pieces of litter - soda / beer cans, food packaging

Trash Assessment Form

SITE ID: BV-8 **DATE:** 8/20/08

LOCATION: Southwest corner of Olive Ave & Goetting Way intersection **TIME:** 12:00

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 40 x 8

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees

City of Vista

Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For Total Coliforms ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-8		Latitude	33.20350	Watershed	Hydrologic Unit	904
Location	Olive Ave & Goetting Way, southwest corner		Longitude	-117.24864		Hydrologic Area	904.2
			TB Page	1087-G6		Hydrologic Subarea (Optional)	904.22
Date	8/28/08	Time 12:30	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☐ Algae ☐ Fish ☑ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 103-104

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	27.9	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.3	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	1.59	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	35	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	27	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Total Coliforms

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BU-8-1		**Latitude**	33.20743	**Watershed**	**Hydrologic Unit**	904
Location	southwest corner of Redlands St and W California Ave intersection		**Longitude**	-117.24628		**Hydrologic Area**	904.2
			TB Page	1087-G5		**Hydrologic Subarea** (Optional)	904.22
Date	8/28/08	**Time** 12:00	**Observer**	MD, SD		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☒ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☒ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** ~~97~~ 101-102

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	na	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	na	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	na	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	20	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash - volleyball, food wrappers, paper plates & cups; site smells a little rotten.

San Diego Stormwater Copermittees
City of Vista
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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-10		Latitude	33.20242	Watershed	Hydrologic Unit	904
Location	Eucalyptus Ave & Escondido Ave intersection, Northwest corner		Longitude	-117.23605		Hydrologic Area	904.2
			TB Page	1087-J6		Hydrologic Subarea (Optional)	904.22
Date	8/20/08	Time 15:40	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 23-24

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.4	NH_3-N (mg/L)	0.252	NO_3 (mg/L)	50.74	Ortho-PO_4 (mg/L)	0.127
pH (pH units)	7.6	TURB (NTU)	8.30	NO_3-N (mg/L)	11.467	Ortho-PO_4 -P (mg/L)	0.041
COND (mS/cm)	2.03	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	10	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: tire rim-only trash observed

Trash Assessment Form

SITE ID: BV-10 **DATE:** 8/20/08

LOCATION: Eucalyptus & Escondido intersection, NW corner **TIME:** 15:40

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 50 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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☐ Field Screening ☒ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-10		Latitude	33.20242	Watershed	Hydrologic Unit	904
Location	Eucalyptus Ave & Escondido Ave.		Longitude	-117.23605		Hydrologic Area	904.2
			TB Page	1087-J6		Hydrologic Subarea (Optional)	904.22
Date	8/21/08	Time 14:45	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	25.7	NH_3-N (mg/L)	na	NO_3 (mg/L)	42.40	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.5	TURB (NTU)	na	NO_3-N (mg/L)	9.582	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	1.94	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	10	gpm				Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-17		Latitude	33.20639	Watershed	Hydrologic Unit	904
Location	Brengle Terrace Park, across from 1425 Vale Terrace Dr. west side of bridge		Longitude	117.21933		Hydrologic Area	904.2
			TB Page	1088 - A5		Hydrologic Subarea (Optional)	904.22
Date	8/27/08	Time 10:00	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☒ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects ☐ Algae	☐ Fish	☑ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 79-81

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	22.1	NH_3-N (mg/L)	0.193	NO_3 (mg/L)	29.54	Ortho-PO_4 (mg/L)	0.266
pH (pH units)	7.8	TURB (NTU)	2.32	NO_3-N (mg/L)	6.676	Ortho-PO_4-P (mg/L)	0.087
COND (mS/cm)	2.55	MBAS (mg/L)	0.13	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	3	gpm				Flow		gpm

COMMENTS: Trash - aluminum can, styrofoam plate

Trash Assessment Form

SITE ID: BV-12 DATE: 8/27/2008

LOCATION: Brengle Terrace Park, across from 1425 Vale Terrace Dr. west side of bridge TIME: 10:00

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	BV-15		Latitude	33.21770	Watershed	Hydrologic Unit	904
Location	Canonea Ave & Citrus Ave intersection		Longitude	-117.24340		Hydrologic Area	904.2
			TB Page	1087 - H4		Hydrologic Subarea (Optional)	904.22
Date	08/19/08	Time 16:20	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	NS	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	NS	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	NS	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	NS	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits		☐ None	☑ Sediment ☑ Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation		☐ None	☑ Limited	☐ Normal	☐ Excessive		☐ Other
Biology		☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 11-12

Field Screening Samples Collected? ☐ Yes ☑ No NS

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	DRY	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash - newspaper, food packaging, cigarettes

Trash Assessment Form

SITE ID: BU-15 **DATE:** 8/19/08

LOCATION: Cameneca Ave & Citrus Ave intersection **TIME:** 16:20

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☑ Receiving Water

Site ID	BV-18		Latitude	33.21044	Watershed	Hydrologic Unit	904
Location	Brengle Terrace Park, northwest side		Longitude	-117.22496		Hydrologic Area	904.2
			TB Page	1088-A5		Hydrologic Subarea (Optional)	904.22
Date	8/20/08	Time 9:40	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☑ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects ☐ Algae	☑ Fish ☑ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail	☑ Other tadpoles

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 13-14

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	19.6	NH_3-N (mg/L)	0.242	NO_3 (mg/L)	83.73	Ortho-PO_4 (mg/L)	0.342
pH (pH units)	7.3	TURB (NTU)	1.66	NO_3-N (mg/L)	18.923	Ortho-PO_4-P (mg/L)	0.111
COND (mS/cm)	2.22	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: trash - food carton, beer bottle

Trash Assessment Form

SITE ID: BV-18 DATE: 8/26/08

LOCATION: Brengle Terrace Park, north side west TIME: 9:40

OBSERVER: MD. SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 8 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	BV-18		Latitude	33.21044	Watershed	Hydrologic Unit	904
Location	Brengle Terrace Park, northwest side		Longitude	117.22496		Hydrologic Area	904.2
			TB Page	1088 - A5		Hydrologic Subarea (Optional)	904.22
Date	8/21/08	Time 13:30	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects ☐ Algae	☑ Fish ☑ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae	☐ Insect/ Snail	☑ Other tadpoles, crawfish

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☑ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	21.2	NH_3-N (mg/L)	na	NO_3 (mg/L)	69.24	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.5	TURB (NTU)	na	NO_3-N (mg/L)	15.648	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	21.9	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-24		Latitude	33.21571	Watershed	Hydrologic Unit	904
Location	1427 Foothill Drive		Longitude	-117.21909		Hydrologic Area	904.2
			TB Page	1088-B4		Hydrologic Subarea (Optional)	904.22
Date	8/20/08	Time 14:50	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☑ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/Barnacles ☐ Insect/Algae ☐ Insect/Snail ☑ Other larvae

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 22

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	25.5	NH_3-N (mg/L)	0.173	NO_3 (mg/L)	61.04	Ortho-PO_4 (mg/L)	0.291
pH (pH units)	8.0	TURB (NTU)	1.37	NO_3-N (mg/L)	13.80	Ortho-PO_4-P (mg/L)	0.095
COND (mS/cm)	1.95	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	0	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash - paper, styrofoam, cups, plastic bottle
Bubbles where water splashed the most, did not appear to be soapy

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

Trash Assessment Form

SITE ID: B-24 DATE: 8/20/08

LOCATION: 1427 Foothill Dr TIME: 14:50

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 8 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
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☐ Field Screening ☒ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BK 24		Latitude	33.21571	Watershed	Hydrologic Unit	904
Location	1427 Foothill Dr.		Longitude	-117.21909		Hydrologic Area	904.2
			TB Page	1088 · B4		Hydrologic Subarea (Optional)	904.22
Date	8-21-08	Time 14:05	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.3	NH_3-N (mg/L)	na	NO_3 (mg/L)	59.37	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.0	TURB (NTU)	na	NO_3-N (mg/L)	13.418	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	2.00	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-30		Latitude	33.19243	Watershed	Hydrologic Unit	904
Location	Parking lot (business: Boomers) East of Grapevine, south of Date St.		Longitude	-117.27395		Hydrologic Area	904.3
			TB Page	1087 - D7		Hydrologic Subarea (Optional)	904.31
Date	8/22/08	Time 11:50	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 45-46

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.3	NH_3-N (mg/L)	0.192	NO_3 (mg/L)	2.321	Ortho-PO_4 (mg/L)	0.315
pH (pH units)	8.0	TURB (NTU)	5.54	NO_3-N (mg/L)	0.525	Ortho-PO_4-P (mg/L)	0.103
COND (mS/cm)	2.08	MBAS (mg/L)	0.13	Others			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: No trash

Trash Assessment Form

SITE ID: BV - 30 **DATE:** 8/22/08

LOCATION: [Boomers] parking lot, East of Grapevine, South of Date St. **TIME:** 11:50

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-31		Latitude	33.19916	Watershed	Hydrologic Unit	904
Location	southwest corner of Melrose & Copper Dr intersection		Longitude	-117.25601		Hydrologic Area	904.2
			TB Page	1087-F7		Hydrologic Subarea (Optional)	904.22
Date	8/22/08	Time 9:30	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☒ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other spiders

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 39-40

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	26.0	NH_3-N (mg/L)	0.014	NO_3 (mg/L)	6.746	Ortho-PO_4 (mg/L)	0.205
pH (pH units)	7.2	TURB (NTU)	0.01	NO_3-N (mg/L)	1.525	Ortho-PO_4-P (mg/L)	0.067
COND (mS/cm)	1.49	MBAS (mg/L)	0.13	Others			

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	5	gpm				Flow		gpm

COMMENTS: Trash - cardboard food package. Flow from north & west

Trash Assessment Form

SITE ID: BV-31 DATE: 8/22/08

LOCATION: southwest corner of Melrose Dr & copper dr intersection TIME: 9:30

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-32		Latitude	33.20272	Watershed	Hydrologic Unit	904
Location	southwest corner of Washington middle School back parking lot, in gated area ~~(near Olive St & Maryland St)~~		Longitude	-117.25966		Hydrologic Area	904.2
			TB Page	1087-F6		Hydrologic Subarea (Optional)	904.22
Date	8/26/08	Time 10:10	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other

Biology ☐ None ☑ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 64-66

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	25.6	NH_3-N (mg/L)	0.296	NO_3 (mg/L)	33.72	Ortho-PO_4 (mg/L)	1.399
pH (pH units)	7.0	TURB (NTU)	3.91	NO_3-N (mg/L)	7.621	Ortho-PO_4-P (mg/L)	0.456
COND (mS/cm)	5.31	MBAS (mg/L)	0.88	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	PONDED	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash- a basketball, small litter.

Trash Assessment Form

SITE ID: BU-32 DATE: 8/26/08

LOCATION: southwest corner of Washington Middle School back parking lot TIME: 10:10

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-33		Latitude	33.21198	Watershed	Hydrologic Unit	904
Location	West Los angelos Dr, near N Santa Fe Ave, north side of Street		Longitude	-117.24572		Hydrologic Area	904.2
			TB Page	1087-G5		Hydrologic Subarea (Optional)	904.22
Date	8/26/08	Time 11:15	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☐ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☐ None ☑ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☑ Other spiders

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 67-68

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	26.7	NH_3-N (mg/L)	0.397	NO_3 (mg/L)	7.470	Ortho-PO_4 (mg/L)	3.463
pH (pH units)	7.3	TURB (NTU)	8.31	NO_3-N (mg/L)	1.688	Ortho-PO_4-P (mg/L)	1.129
COND (mS/cm)	3.56	MBAS (mg/L)	0.75	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: No trash

Trash Assessment Form

SITE ID: BV-33 DATE: 8/26/08

LOCATION: W Los Angeles near Melrose, north side of Street TIME: 11:15

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	BV-34			Latitude	33.19162	Watershed: Hydrologic Unit	904
Location	Across from 220 Huff Street, next to sidewalk			Longitude	-117.27726	Hydrologic Area	904.2
				TB Page	1107-D1	Hydrologic Subarea (Optional)	904.21
Date	8/27/08	Time	12:10	Observer	MD, SD	Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 85-87

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.5	NH_3-N (mg/L)	0.137	NO_3 (mg/L)	3.333	Ortho-PO_4 (mg/L)	0.241
pH (pH units)	8.0	TURB (NTU)	7.08	NO_3-N (mg/L)	0.753	Ortho-PO_4-P (mg/L)	0.079
COND (mS/cm)	1.69	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash - 1 aluminum can.

Trash Assessment Form

SITE ID: BV-34 DATE: 8/27/08

LOCATION: across ~~street~~ from 220 Huff St, next to sidewalk TIME: 12:10

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	G-3		Latitude	33.22679	Watershed	Hydrologic Unit	903
Location	Calle Sules, north end		Longitude	-117.22972		Hydrologic Area	903.1
			TB Page	1087-J3		Hydrologic Subarea (Optional)	903.11
Date	8/19/08	Time 14:20	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☑ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☐ None ☑ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☑ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☑ Normal ☑ Excessive ☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☑ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Flies, Dragonflies

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 8

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.7	NH_3-N (mg/L)	2.876	NO_3 (mg/L)	2.649	Ortho-PO_4 (mg/L)	5.961
pH (pH units)	7.4	TURB (NTU)	17.18	NO_3-N (mg/L)	0.600	Ortho-PO_4-P (mg/L)	1.943
COND (mS/cm)	1.90	MBAS (mg/L)	0.5	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	3	gpm				Flow		gpm

COMMENTS: Trash - bottles, cardboard, paper plate; ~~upstream~~ nearby, but not in water - shopping cart, blanket, glass

Trash Assessment Form

SITE ID: G-3 DATE: 8/19/2008

LOCATION: Calle Jules, north end TIME: 14:70

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☑ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

G-3
8/19/2008

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging	1		✓	✓		✓						
Food Waste												
Household	2		✓	✓		✓						
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: Evidence of transient inhabitant - shopping cart, ~~broken glass~~, blanket. However these items are on concrete area away from water flow & not included in assessment.

There was also broken glass in this area.

Many plastic bags, plastic bottle, cardboard packaging, paper plates, styrofoam. Thick vegetation has captured /trapped trash.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For Ammonia ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	G-3		Latitude	33.22679	Watershed	Hydrologic Unit	903
Location	Calle Jules, north end		Longitude	-117.22973		Hydrologic Area	903.1
			TB Page	1087-J3		Hydrologic Subarea (Optional)	903.11
Date	8/20/08	Time 14:15	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☑ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ ~~Sediment~~/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ~~☑ Normal~~ ☑ Excessive ☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☑ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 20-21

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	25.3	NH_3-N (mg/L)	0.171	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	0.116
pH (pH units)	8.1	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	0.038
COND (mS/cm)	1.97	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: orthophosphate, had not been above the action level but was retested since value was borderline; irrigation runoff visible, some w/ algae

San Diego Stormwater Copermittees
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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	G-4		Latitude	33.23335	Watershed	Hydrologic Unit	903
Location	Northwest Corner of Warmlando Ave & Vista Grande Dr, ~~across st from G4~~		Longitude	-117.22420		Hydrologic Area	903.1
			TB Page	1088-A2		Hydrologic Subarea (Optional)	903.11
Date	8/19/08	Time 13:45	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☐ None ☑ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☑ Trash ☐ Bubbles/Foam ☑ Sheen (Dust) ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☑ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☑ Other larvae

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 6-7

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	28.2	NH_3-N (mg/L)	0.170	NO_3 (mg/L)	2.932	Ortho-PO_4 (mg/L)	0.951
pH (pH units)	9.1	TURB (NTU)	2.97	NO_3-N (mg/L)	0.663	Ortho-PO_4-P (mg/L)	0.310
COND (mS/cm)	0.97	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	PONDED	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Trash - food wrappers

Trash Assessment Form

SITE ID: G-4A **DATE:** 8/19/08

LOCATION: Northwest corner of Warmlands Ave & Vista Grande Dr, across street from site G-4 **TIME:** 13:45

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation For DH ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	G-4	Latitude	33.23335	Watershed	Hydrologic Unit	903
Location	Northwest corner of wanklands Ave & Vista Grande Dr. ~~across from Site G-4~~	Longitude	-117.22420		Hydrologic Area	903.1
		TB Page	1088-A2		Hydrologic Subarea (Optional)	903.11
Date	8/20/08	Time	9:10	Observer	MD, SD	Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects (mosquitos) ☑ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☑ Other larvae

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☑ No **Photo #** _____

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	22.3	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.4	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	0.97	MBAS (mg/L)	na	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	G-5		Latitude	33.23251	Watershed	Hydrologic Unit	903
Location	North Santa Fe Ave, South of Camino Largo - in bike lane on E side of st. (just North of storm drain on sidewalk)		Longitude	-117.24966		Hydrologic Area	903.1
			TB Page	1087-G2		Hydrologic Subarea (Optional)	903.11
Date	8/19/08	Time 15:40	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☑ Other spiders

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 9-10

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.6	NH_3-N (mg/L)	0.352	NO_3 (mg/L)	12.78	Ortho-PO_4 (mg/L)	0.676
pH (pH units)	7.8	TURB (NTU)	3.60	NO_3-N (mg/L)	2.888	Ortho-PO_4-P (mg/L)	0.220
COND (mS/cm)	2.92	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: No trash, just a few floating leaves.

Trash Assessment Form

SITE ID: G-5 **DATE:** 8/19/08

LOCATION: North Santa Fe Ave, South of Camino Largo, East side of St in bike lane (few ft North of storm drain on sidewalk) **TIME:** 15:46

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	G-6			Latitude	33.23052	Watershed: Hydrologic Unit	903
Location	By fence on museum way, west of N Santa Fe Ave, in front of Guajome Park Academy			Longitude	-117.25066	Hydrologic Area	903.1
				TB Page	1087-G2	Hydrologic Subarea (Optional)	903.11
Date	8/27/08	Time	11:15	Observer	MD, SM	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☑ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☑ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☑ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☑ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☑ Normal ☐ Excessive ☐ Other

Biology ☐ None ☑ Insects ☑ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 82-84

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	25.0	NH_3-N (mg/L)	0.192	NO_3 (mg/L)	27.72	Ortho-PO_4 (mg/L)	0.1666
pH (pH units)	7.4	TURB (NTU)	0.01	NO_3-N (mg/L)	6.265	Ortho-PO_4-P (mg/L)	0.054
COND (mS/cm)	2.08	MBAS (mg/L)	0.5	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: - No trash
- water starts from the ground, at the base of a hill

Trash Assessment Form

SITE ID: G - 6 DATE: 8/27/2008

LOCATION: By fence on museum way, west of N Santa Fe Av in front of ~~school by fence~~ Guaycinet Park Academy TIME: 11:15

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): _____

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ Threat Human Health	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ Threat to Aquatic Health	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

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☑ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☑ MS4 ☐ Receiving Water

Site ID	MV-3		Latitude	33.19369	Watershed	Hydrologic Unit	904
Location	southeast corner of Escondido Ave & S Santa Fe Ave intersection, on sidewalk		Longitude	-117.23432		Hydrologic Area	904.2
			TB Page	1087-J7		Hydrologic Subarea (Optional)	904.22
Date	08/19/08	Time 12:00	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ns ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ns ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ns ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ns ☐ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☑ Sediment/Gravel ☑ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☑ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☑ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal * damp

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 1-3

Field Screening Samples Collected? ☐ Yes ☑ No ns

Water Temp (°C)	ns	NH_3-N (mg/L)	ns	NO_3 (mg/L)	ns	Ortho-PO_4 (mg/L)	ns
pH (pH units)	ns	TURB (NTU)	ns	NO_3-N (mg/L)	ns	Ortho-PO_4-P (mg/L)	ns
COND (mS/cm)	ns	MBAS (mg/L)	ns	Others			

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	DRY	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS:
- trash - signif. amount of food wrappers, plastic bags, paper
- lots of leaves
- spiderwebs

Trash Assessment Form

SITE ID: MV-3 **DATE:** 08/19/2008

LOCATION: southeast corner of Escondido Ave & S. Santa Fe Ave intersection, on sidewalk **TIME:** 12:00

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☒ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	SS-1		Latitude	33.18235	Watershed	Hydrologic Unit	904.
Location	South side of Escondido Av, west of Melrose Dr		Longitude	-117.25365		Hydrologic Area	904.3
			TB Page	1107-G2		Hydrologic Subarea (Optional)	904.31
Date	8/22/08	Time 10:45	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 41 - 43

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	~~22.0~~ 21.9	NH_3-N (mg/L)	0.128	NO_3 (mg/L)	2.846	Ortho-PO_4 (mg/L)	1.049
pH (pH units)	~~7.4~~ 7.4	TURB (NTU)	5.37	NO_3-N (mg/L)	0.643	Ortho-PO_4-P (mg/L)	0.342
COND (mS/cm)	1.22	MBAS (mg/L)	0.25	Others			

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: 8 piles of trash downstream - hose, plastic bags, plastic flower pot

Trash Assessment Form

SITE ID: SS-1 DATE: 8/22/08

LOCATION: south side of Escondido Ave, west of Melrose Dr. TIME: 10:45

OBSERVER: MD, SD

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Threat to Human Health and/or Aquatic Health	
☐ **Threat Human Health**	Site poses a threat to human health via swimming, wading, or walking through the area. Trash and debris has the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g. medical waste, diapers, human waste), or has the potential for physical harm (sharps, entanglement, nails, etc...). Comments should be added for clarification.
☐ **Threat to Aquatic Health**	Site poses a threat to aquatic health or other wildlife (via contact, ingestion, entanglement, etc...) from the trash and debris present. Trash and debris such as small floatable material that is persistent and can be transported long distances may resemble food and may be ingested. Wire, plastic, fishing line, and other material that has the potential for entanglement. Oil and other visible chemicals or chemical containers falls in this category. Comments should be added for clarification.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Total Coliforms ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	SS-1		Latitude	33.18735	Watershed	Hydrologic Unit	904
Location	South side of Escondido Ave, West of Melrose Dr		Longitude	-117.25365		Hydrologic Area	904.3
			TB Page	1107-G2		Hydrologic Subarea (Optional)	904.31
Date	8/29/08	Time 11:30	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☒ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ~~☐ No~~ **Photo #** 111-113

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.8	NH_3-N (mg/L)	na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.1	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	1.31	MBAS (mg/L)	na	Others	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Total Coliforms

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	SS-1-1		Latitude	33.181~~32~~35	Watershed	Hydrologic Unit	904
Location	Escondido Ave. west of Hitching Point, in fenced park next to stables		Longitude	117.24769		Hydrologic Area	904.3
			TB Page	1107-G2		Hydrologic Subarea (Optional)	904.31
Date	8/29/08	Time 11:00	Observer	MD, SD		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☒ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☒ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 109-110

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3 (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		NO_3-N (mg/L)		Ortho-PO_4-P (mg/L)	
COND (mS/cm)		MBAS (mg/L)		Others			

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: several 100 yards - open channel
appears that water is added as goes downstream
area around channel muddy/wet after irrigation
some leaves here - many more downstream

APPENDIX D

MS4 Outfall Monitoring Program

Municipal Separate Storm Sewer System (MS4) Outfall Monitoring Program in San Diego County Watershed Management Areas

Final Workplan

Prepared For:

The County of San Diego and Municipal Stormwater Copermittees

June 25, 2008

Municipal Separate Storm Sewer System (MS4) Outfall Monitoring Program in San Diego County Watershed Management Areas

Final Workplan

Prepared For:

The County of San Diego and Municipal Stormwater Copermittees

Prepared By:

Weston Solutions, Inc.
2433 Impala Drive
Carlsbad, California 92010

June 25, 2008

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1.0 INTRODUCTION

In January 2007, the Regional Water Quality Control Board, San Diego (RWQCB) issued a National Pollutant Discharge Elimination System (NPDES) Permit Order No. R9-2007-0001 (Permit) for discharges of urban runoff from the municipal separate stormwater sewage systems (MS4s) to the San Diego Municipal Copermittees (Copermittees). The Permit includes an attachment that describes specific mandates for the Receiving Waters and Urban Runoff Monitoring and Reporting Program. This *Monitoring and Reporting Program* was designed to address the following core management questions:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

A new requirement of the Permit is a MS4 outfall monitoring program. The purpose of the program is to characterize pollutant discharges from MS4 outfalls and to assess whether these discharges contribute to the water quality problems in the receiving waters to address question 3 above. The Permit states:

"The Copermittees shall collaborate to develop and implement a monitoring program to characterize pollutant discharges from MS4 outfalls in each watershed during wet and dry weather. The program shall include rationale and criteria for selection of outfalls to be monitored. The program shall at a minimum include collection of samples for those pollutants causing or contributing to violations of water quality standards within the watershed. This monitoring program shall be implemented within each watershed and shall begin within the 2007-2008 monitoring year."

This report describes the program proposed by the Copermittees to comply with this Permit requirement. The Copermittees through the Regional Monitoring Workgroup collaborated for three meetings during the summer of 2007 to develop the conceptual framework for this program. Additional details were determined during the spring of 2008. The MS4 outfall monitoring program will focus on the assessment of the water quality of discharges from MS4 outfalls and their relative contributions to receiving waters within each defined watershed management area (WMA).

The Permit provides the Copermittees flexibility to develop a workable MS4 outfall monitoring program. Specifically, section II.A.10 of the Permit Fact Sheet states:

"*Since a monitoring program for MS4 discharges is new, the Copermittees are provided significant leeway in the development and implementation of the program. The Copermittees can utilize the flexibility incorporated into the monitoring and reporting program to develop program that is workable for them while providing the necessary information."*

BACKGROUND

The Southern California Stormwater Monitoring Coalition (SMC) developed the five core management questions identified in the Permit through a consensus building effort that included regulators, municipal copermittees, Heal the Bay and Southern California Coastal Water Research Project (SCCWRP) scientists. A guidance document entitled, "Model Storm Water Monitoring Program for Municipal Separate Storm Water Sewer Systems in Southern California" (Model Monitoring Program) was issued in 1994 (www.sccwrp.org). The Regional Board incorporated much of the Model Monitoring Program in the monitoring requirements of the Permit including MS4 outfall monitoring and a source identification monitoring program.

The Model Monitoring Program provides the following additional background on the nature of the MS4 outfall monitoring studies:

"Once monitoring or other studies demonstrate that there is a current or potential impact to receiving waters (Question 1) and describe the problem's extent and magnitude (Question 2), decisions about any management responses depend on information about the source(s) of the problem. The model monitoring framework breaks this source identification into two parts (Figure 2-1), represented by Questions 3 and 4. The purpose of this two-step process is to prioritize more detailed source identification efforts in Question 4 at only those problems for which urban runoff is a significant contributor. Question 3 begins this process by taking the information from Questions 1 and 2 and beginning to work upstream, both literally and figuratively, to better define the overall contribution of urban runoff to receiving water problems. It is important to clarify that this two-step process involving Questions 3 and 4 is not intended in any way to diminish or replace municipalities' permit requirements to reduce contaminant inputs to the maximum extent practicable. It is rather intended to help determine when additional, more detailed and extensive, upstream source identification efforts should be conducted by a municipality, with the goal of ensuring that the full burden of source identification work not be shifted to the MS4 permittees where action by them would not solve the larger problem.

The model monitoring framework assumes that, if urban runoff contributes only a very small percentage to the receiving water problem, then there would be no need for a municipal permittee to independently carry out substantial source identification efforts in addition to those activities usually carried out under the municipal stormwater permit. For a first-cut estimation, therefore, Question 3 requires only minimal resolution, including at least a rough estimate of the identity and magnitude of the non-urban runoff contributions. In many situations, aggregate estimates of the non-urban runoff contribution, rather than source-by-source estimates, may be adequate and may already be available from previous characterization and/or monitoring studies. Only if urban runoff is found to contribute significantly to receiving water problems would a municipality be required to take the lead on conducting further source identification studies at greater resolution (as described in Question 4)."

"The model monitoring framework for assessing the relative urban runoff contribution to both recreational water quality and habitat problems is primarily a matter of loads estimation at a fixed downstream reference point. Similar loads estimation approaches apply to both recreational water quality and habitat indicators, as described in the following sections, including expert judgment, visual reconnaissance, land use modeling, empirical tributary monitoring, the use of

conservative tracers, and the evaluation of existing data. The actual combination of methods in any particular instance will depend on the quantity and quality of historical data, the nature of the receiving water problem, the number and types of potential sources, and the physical structure and hydrography of the watershed."

1.1 Monitoring Goal

The goal of this monitoring program is to characterize pollutant discharges from MS4 outfalls and their relative contributions to the high priority water quality problems identified in the receiving waters within each WMA.

1.2 Monitoring Objectives

Management Question 3:

"What is the relative urban runoff contribution to the receiving water problem(s)?

The collection and analysis of discharge samples from MS4 outfalls to receiving waters will address management question 3. The MS4 outfall monitoring design is based on a combination of random and targeted samples to be collected during dry weather and wet weather periods. According to the Permit, the dry weather period is from May 1st through September 30th and the wet weather period is from October 1st through April 30th.

Random sampling will be conducted to address the following subquestions:

1. What are the characteristics of the discharges from MS4 outfalls in regard to high priority pollutants?
2. Are constituent loadings changing over time?

The probability-based design in which stations are located randomly provides the ability to draw statistically valid inferences about the region as a whole, rather than just the station itself. In the proposed design the region will be divided into nine strata that are each defined by a WMA. The six samples will be selected randomly within each strata or WMA.

Targeted sampling will be conducted to address the following subquestions:

1. Which of the targeted MS4 outfalls have the greatest pollutant loading?
2. Are the pollutant loadings decreasing over time from these MS4 outfalls?

Targeted sampling will be conducted to assess the relative contribution of a particular constituent discharged from MS4 outfalls to the high priority problems of the receiving waters. The site-specific station design of the targeted program will generate information to support source prioritization in each WMA and will assess constituent trends over time.

2.0 MONITORING DESIGN

The monitoring design is based on a combination of random and targeted sampling of discharges from MS4 outfalls that drain into receiving waters (Table 2-1). Both types of monitoring will be applied to dry weather and wet weather periods.

Table 2-1: Summary of the Proposed MS4 Outfall Monitoring Design

Season	Design Type	Outfall Diameter	Number of Samples
Dry	Random	≥36 inches	54 per year
	Targeted	Any	200 per year
Wet	Random	≥36 inches	54 per year
	Targeted	Any	9 per Permit cycle

2.1 Dry Weather Sampling

2.1.1 Random Sampling Approach

This approach is based on a stratified random study design to characterize the discharges of six MS4 outfalls discharging to receiving waters during dry weather periods in each of the nine WMAs. In this design the region is divided into nine strata that are each defined by a WMA. The six samples are selected randomly within each strata or WMA.

2.1.1.1 Selection of Sampling Locations

Sampling locations are selected by first identifying all outfalls equal or greater than 36 inches in diameter that discharge at the base or the nearest safely accessible upstream location of the MS4s drainage basin or canyon to a receiving water (includes rivers, streams, bays, estuaries, and the Pacific Ocean). To ensure that the selected outfalls are representative of all the outfalls, the entire list of outfalls will be used in the randomized selection process. Only MS4 outfalls that the jurisdictions have access to through easements and where safe access is available on foot will be included. If an outfall is not accessible or safe, the next nearest and safe outfall will be sampled

Samples of the discharges from MS4 outfalls will be collected in the order of the random selection. Outfalls without dry weather flows will be noted and the next outfall on the randomized list will be visited for sampling. Outfalls will be randomly selected each year within each WMA from the most up to date list.

2.1.1.2 Sampling Frequency

Six random sample locations will be collected annually during the dry weather season from each of the nine (9) WMAs. Precision is based on sample size. With six samples collected from each WMA (54 samples total for the region), the precision of the regional estimate of condition will be +- 10% with a 90% confidence. Each site will be sampled during an index period beginning 4 weeks following the last significant rainfall (0.2 inches or greater), but after April 30, and ending

August 1. In addition, no sampling shall occur within 72 hours of any measurable (greater than 0.1 inch) rainfall. Completing the sampling by August 1 will allow the incorporation of the results in the Annual Report and increase the likelihood of wet sites following a year of low rainfall. Without prior knowledge of rainfall, the default dry index period for this program will occur from May 1 to August 1.

2.1.1.3 Laboratory Analyses

Random samples of the discharges from the MS4 outfalls will be analyzed for the following analytes:

- Total Suspended Solids
- Total Phosphorus
- Total Nitrogen
- Total Coliforms
- Fecal Coliform, and
- Enterococcus.

These analytes are typical high priority water quality pollutants identified in the Watershed Urban Runoff Management Plans (Table 2-2). Pollutants analyzed will be the same across all WMAs so that the results will be combined and conditions assessed throughout the region.

Table 2-2: High Priority Water Quality Problems Identified in the Watershed Urban Runoff Management Plans

Watershed Management Area	Hydrologic Area	High Priority Pollutants
Santa Margarita	All	Nutrients, Sediment
San Luis Rey	All	Bacteria, Nutrients
Carlsbad	904.1, 904.2, 904.3, 904.5, 904.6	Bacteria/Pathogens
	904.3, 904.6	Sediment
	904.1, 904.2, 904.6	Nutrients
San Dieguito	All	Bacteria/Pathogens
	906.1	Sediment
Penasquitos	All	Bacteria/Pathogens
	906.1	Sediment
Mission Bay	All	Bacteria/Pathogens, Heavy Metals, Nutrients
San Diego River	All	Bacteria, Phosphorous, Total Dissolved Solids, Low Dissolved Oxygen, Turbidity
San Diego Bay	908.1	Bacteria, Gross Pollutants*, Metals, Oil & Grease, Pesticides
	908.2	Bacteria, Metals, Sediment, Trash, Pesticides
	908.3	Bacteria, Sediment, Trash

Watershed Management Area	Hydrologic Area	High Priority Pollutants
	909.1	Bacteria
	909.2	Pesticides
	910.1	Bacteria, Gross Pollutants*
	910.2	Bacteria
Tijuana River	911.1	Bacteria/Pathogens, Total Suspended Solids, Turbidity, Pesticides, Gross Pollutants*, Metals, Organics
	911.3	Manganese, pH, Color
	911.4	Bacteria/Pathogens, Turbidity, Phosphorus
	911.5	pH, Manganese, Color

2.1.2 Targeted Sampling Approach

The targeted sampling approach focuses monitoring efforts on those MS4 outfalls that are most likely to contribute to receiving water problems (e.g., largest potential pollutant loading). Through a consensus-building workshop process, the Regional Monitoring Workgroup proposes to collect 200 discharge samples from targeted MS4 outfalls in the region. The choice of 200 was based on the realistic number of MS4 outfalls that have water during dry weather and are most likely to contribute to receiving waters problems in the region. To fairly distribute the 200 samples across the region, a formula based on population and land area within a WMA was used. A summary of the estimated number of samples for each jurisdiction by watershed is presented in Appendix A. These are estimates and local conditions may require adjustments.

The Dry Weather Monitoring (DWM) Workgroup was tasked by the Regional Monitoring Workgroup with the following:

(1) Identify preliminary targeted MS4 outfall monitoring locations.
(2) Provide the rationale supporting the selection of the sites, and
(3) Provide a preliminary list of pollutants for chemical analysis for each WMA.

The preliminary program developed by the DWM Workgroup was then provided to the Watershed Urban Runoff Management Workgroup for their review and opportunity to update sample locations and analytes.

2.1.2.1 Selection of Sampling Locations

The DWM Workgroup met three times to develop consensus on the details of the targeted MS4 outfall program for dry weather. A tiered approach (primary and secondary criteria) was used to select the outfall sampling locations.

The primary selection criteria are based on three outfall characteristics presented below. Each of the proposed outfall locations at a minimum met these primary selection criteria. Once the primary selection criteria were met, the secondary criteria were applied to further refine outfall site selection. A list of both primary and secondary criteria is presented below.

Primary Criteria

1. Any size outfall
2. Reported or likely to have dry weather flow
3. Outfall discharges to receiving water

Secondary Criteria

1. Surrounding land-use
2. Concentration of potential source activities
3. Reported exceedances in water quality monitoring
4. Presence of Clean Water Act 303(d) list of impaired waterbodies
5. Flow Rate
6. Best Professional Judgment and Experience

The DWM Workgroup compiled the data submitted by the individual jurisdictions into the attached table (Appendix A). The table contains information related to each outfall including the site name, the jurisdiction responsible for monitoring, coordinates, and proposed analysis. The number of sites varies proportionally by watershed and jurisdiction. The proposed analysis is based on the watershed water quality priorities, and where applicable, the 303(d) listed impairments within the watershed.

The number of MS4 Outfall Monitoring sites is set at approximately 200. The jurisdiction of Del Mar was not able to provide the required number of sampling locations due to the limited number of outfalls within their jurisdiction into receiving water known to have dry weather flow.

Each jurisdiction has also identified potential alternative sites. These alternative sites, not presented in Appendix A, may be used to substitute for the current sites after the first year of full program implementation, if any of the current locations need to be replaced. For example, if flow is eliminated at an outfall. These substitutions will be provided as needed.

2.1.2.2 Sampling Frequency

Beginning in 2008-2009, targeted dry weather sampling will occur once each year at preselected outfalls. The 200 proposed sampling locations are presented in Appendix A. In 2007-2008, one sample will be collected in each watershed to comply with the Permit that indicates the following in section II.B.1 of the Receiving Waters and Urban Runoff Monitoring program of the Permit:

"This monitoring program shall be implemented within each watershed and shall begin within the 2007-2008 monitoring year."

Based on the Permit, the dry season is from May 1 to September 30. Each site will be sampled during an index period beginning 4 weeks following the last significant rainfall (0.2 inches or greater), but after April 30, and ending August 1. In addition, no sampling shall occur within 72 hours of any measurable (greater than 0.1 inch) rainfall. Completing the sampling by August 1 will allow the incorporation of the results into the Annual Report and increase the likelihood of wet sites following a year of low rainfall. Without prior knowledge of rainfall, the default dry index period will occur from May 1 to August 1.

2.1.2.3 Laboratory Analyses

Targeted samples of the discharges from the MS4 outfalls will be analyzed for the analytes detailed in Appendix A. The selection of the analytes was developed through collaboration between the DWM and the WURMP Workgroups. The following factors were considered:

- WMA high priority pollutants
- Baseline long-term effectiveness assessment and the potential identified threats to water quality
- 2006 Clean Water Act 303(d) list of impaired waterbodies
- Total maximum daily loads
- Historical water quality data

2.2 Wet Weather Sampling

2.2.1 Random Sampling Approach

This approach is based on a stratified random study design to characterize the discharges of six MS4 outfalls discharging to receiving waters during wet weather periods in each of the nine WMAs. In this design the region is divided into 9 strata that are each defined by a WMA. The six samples are selected randomly within each strata or WMA.

This approach for MS4 outfall sample selection is analogous with the random sampling approach proposed for dry weather in section 2.1.1. The only difference is that random samples will be conducted throughout the expected wet weather season (October 1st through April 30th). Random wet weather samples will be collected during any part of a storm with at least 0.1 inch of predicted total rainfall. To the extent practical, the first storm events of the wet season will be equally sampled with subsequent storms during the later part of the wet weather season. The purpose will be to collect a distribution of grab samples from the MS4 outfalls in storms that are representative of the entire wet weather season. Sample selection, sample frequency and laboratory analyses will be as proposed for the dry weather random sampling that was presented in section 2.1.1.1, 2.1.1.2 and 2.1.1.3, respectively.

2.2.2 Targeted Sampling Approach

The targeted sampling approach is based on quantifying the relative loading of pollutants from MS4 outfalls that impact receiving waters. This approach focuses monitoring efforts on those MS4 outfalls that are most likely to contribute to receiving water problems (e.g., largest potential pollutant loading).

Only outfalls that discharge directly (or the nearest safely accessible upstream location) to a river, stream, bay, estuary, or the Pacific Ocean will be targeted for sampling. It is anticipated that one wet weather sample (composite or pollutograph sampling event) will be conducted once in each WMA over the 5 year Permit period. During Year 2 of the Permit, details of this program will be developed through a consensus process in the Copermittees' workgroups. Details of the program will be submitted in the Scope of Work due to the RWQCB on September 1, 2009.

3.0 SAMPLING METHODS

For this program the dry weather sampling period is defined as the period from May 1 (but at least 4 weeks after a 0.2 inch or greater rainfall) through August 1 not including any periods less than 72 hours after a rainfall of 0.1 inch or greater. The wet weather sampling period is from October 1st through April 30th during a predicted rainfall event of 0.1-inch or greater.

3.1.1 Sample Collection

3.1.1.1 Dry Weather Samples

Random and targeted dry weather samples will be collected as grab samples. Dry weather flow in the outlet discharging to receiving water will be measured quantitatively using standard USGS protocols (Rantz, 1982). If the discharge flows are too small to measure with instrumentation, the indirect methods described by USGS may be used to estimate flow (e.g., float method, Manning formula).

3.1.1.2 Wet Weather Samples

Random wet weather samples will be collected as grab samples at any point in the hydrograph that is still influenced by urban runoff. Samples are not collected when flows have returned to within 10% of antecedent conditions as this represents baseflow driven primarily by ground water. To the extent practical, wet weather flow in the outlet discharging to the receiving waters will be measured using standard USGS protocols (Rantz, 1982). As previously mentioned above, the targeted wet sampling will be developed during year 2 of the Permit through a consensus process in the Copermittees' workgroups. Details of the program will be submitted in the Scope of Work due to the RWQCB on September 1, 2009.

3.1.2 Sample Handling

All samples collected will be stored in the appropriate container type for the analytical method to be performed. Water quality samples will be labeled with the following information:

- project name
- sample identification number
- site location
- date and time collected
- analyses to be performed
- sample preservation
- samplers initials

Samples will then be stored on ice (4°C) for transfer to the proper analytical laboratory. The sample containers used will be certified as clean and sterile by the laboratory performing the analyses prior to sample collection. Samples will be delivered to the appropriate laboratory and analyses initiated within specified holding times. Sample storage and holding times are summarized in Table 3-1.

3.1.3 Sample Analyses

Analysis of samples should be conducted by a California ELAP certified laboratory. Random wet samples will use the same analytical methods and detection methods used in the San Diego County Municipal Copermittees 2006-2007 Urban Runoff Monitoring Report (Weston Solutions, 2008) and are presented in Table 3-2. Random dry samples will follow the protocols of the jurisdiction's dry weather program or as summarized in Table 3-1.

3.1.4 Chain of Custody

Chain-of-custody forms will be completed for each sample and accompany the samples to the appropriate laboratories.

Samples will be considered to be in custody if they are:

- In the custodian's possession or view,
- Retained in a secured place (under lock) with restricted access, or
- Placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal.

Chain-of-custody procedures will be used for all samples throughout the collection, transport, and analytical process. Chain-of-custody procedures will be initiated during sample collection. A Chain-of-custody record will be provided with each sample or group of samples. Each person who will have custody of the samples will sign the form and ensure the samples will not be left unattended unless properly secured.

Documentation of sample handling and custody includes the following:

- Sample identifier
- Sample collection date and time
- Any special notations on sample characteristics or analysis
- Initials of the person collecting the sample
- Date the sample was sent to the analytical laboratory
- Shipping company and waybill information.

Completed Chain-of-custody forms will be placed in a plastic envelope and kept inside the container containing the samples. Once delivered to the analytical laboratory, the person receiving the samples will sign the Chain-of-custody form. The condition of the samples will be noted and recorded by the receiver. Chain-of-custody records will be included in the final reports prepared by the analytical laboratories and are considered an integral part of the report.

3.1.5 Quality Assurance/Quality Control

Quality assurance and quality control for sampling processes will include proper collection of the samples in order to minimize the possibility of contamination. All samples will be collected in laboratory supplied, laboratory-certified, contaminant-free sample bottles.

Evaluation of sample contamination will be performed by collecting on field blank per every 9 samples of the random samples or 6 blanks each for wet and dry weather annually. The field blank will be used to assess the sample collection, container, and transport of the samples to the analytical laboratory.

Evaluation of sample variability will be performed by collecting one sample duplicate per every 9 samples of the random samples or 6 duplicates each for wet and dry weather annually. The relative percent difference between sample duplicates will be assessed.

The chemistry analyses of the samples will be performed under the guidelines of the quality assurance and quality control programs established by the state-certified laboratory.

The dry weather targeted samples will comply with the quality assurance/ quality control requirements of the dry weather program presented in the Jurisdictional Urban Runoff Management Plan for the jurisdiction that collects the sample.

Table 3-1. Summary of Sample Analytical Methods and Requirements for Methods.

Constituent	Volume Required	Method	Target Reporting Limit	Units	Max Holding Time
General Physical and Inorganic Non-Metals					
Total Dissolved Solids (TDS)	100 ml	SM 2540C	20	mg/l	7D
Total Suspended Solids (TSS)	100 ml	SM2540D	20	mg/l	7D
Turbidity	100 ml	SM 2130A-B	0.1	NTU	48H
Total Hardness	150 ml	SM 2340B	10	mg/l	6M
pH	In field	EPA 150.1	0.1	S.U.	-
Specific Conductance	In field	SM 2510B	1	umhos/cm	-
Temperature	In field	Meter	-	-	-
Dissolved Phosphorus	250 ml	SM 4500PE	0.05	mg/l	48H
Total Phosphorus	250 ml	SM 4500PE	0.05	mg/l	28D
Nitrate as N	200 ml	SM4500NO3E	0.1	mg/l	48H
Nitrite as N	200 ml	SM4500NO2B	0.05	mg/l	48H
Total Nitrogen (sum of TKN, Nitrate as N, and Nitrite as N)	NA	Calculated	NA	NA	NA
Total Kjeldahl Nitrogen (TKN)	500 ml	SM4500C	0.1	mg/l	28D
Ammonia	250 ml	SM 4500NH3D	0.1	mg/l	28D
Biological Oxygen Demand, 5-day (BOD)	1000 ml	SM5210B	2	mg/l	48H
Chemical Oxygen Demand (COD)	25 ml	EPA 410.4	25	mg/l	28D
Organics					
Oil and Grease (O&G)	500 ml	EPA 1664	5	mg/l	14D
Diazinon	1 liter	EPA 625	0.05	ug/l	14D
Chlorpyrifos	1 liter	EPA 625	0.05	ug/l	14D
Malathion	1 liter	EPA 625	0.05	ug/l	14D
Methylene Blue Active Substances (MBAS)	250 ml	SM 5540C	1	mg/l	48H
Metals, Dissolved					
Antimony (Sb)	75 ml	EPA 200.8	0.002	mg/l	6M
Arsenic (As)	75 ml	EPA 200.8	0.001	mg/l	6M
Cadmium (Cd)	75 ml	EPA 200.8	0.001	mg/l	6M
Chromium (Cr)	75 ml	EPA 200.8	0.005	mg/l	6M
Copper (Cu)	75 ml	EPA 200.8	0.001	mg/l	6M
Lead (Pb)	75 ml	EPA 200.8	0.001	mg/l	6M
Nickel (Ni)	75 ml	EPA 200.8	0.002	mg/l	6M
Selenium (Se)	75 ml	EPA 200.8	0.002	mg/l	6M
Zinc (Zn)	75 ml	EPA 200.8	0.02	mg/l	6M
Metals, Total					
Antimony (Sb)	75, ml	EPA 200.8	0.002	mg/l	6M
Arsenic (As)	75, ml	EPA 200.8	0.001	mg/l	6M
Cadmium (Cd)	75, ml	EPA 200.8	0.001	mg/l	6M
Chromium (Cr)	75, ml	EPA 200.8	0.005	mg/l	6M
Copper (Cu)	75, ml	EPA 200.8	0.001	mg/l	6M
Lead (Pb)	75, ml	EPA 200.8	0.001	mg/l	6M
Nickel (Ni)	75, ml	EPA 200.8	0.002	mg/l	6M
Selenium (Se)	75 ml	EPA 200.8	0.002	mg/l	6M
Zinc (Zn)	75, ml	EPA 200.8	0.02	mg/l	6M
Bacteriological					
Total Coliform	200 ml	SM 9221B[1]	*	MPN/100ml	6H
Fecal Coliform	200 ml	SM9221E[1]	*	MPN/100ml	6H
Enterococcus	200 ml	SM 9230[1]	*	MPN/100ml	6H

*** To 6 dilutions for wet weather samples – results will be reported as a number not as a greater than value**

1. Membrane filtration techniques SM9222B, SM9222D, SM9230C and other approved wastewater methods for Bacteria are acceptable.

4.0 ASSESSMENT AND REPORTING

4.1 Assessment

Management Question 3:

"What is the relative urban runoff contribution to the receiving water problem(s)?

The collection and analysis of water samples discharging from MS4 outfalls to receiving waters will be used to address Management Question 3, above. Collection of analytical and flow data from random and targeted sample sites is useful for calculating the contribution, on a load basis, from the MS4. Samples collected during dry and wet weather will be used to estimate the urban runoff contribution of pollutants to receiving waters on a regional basis, and can also be used to target local potential pollutant sources draining to the MS4.

The following sub-questions, organized by random and targeted sampling, will be used to understand the load contribution from the MS4:

Random sampling will be conducted to address the following sub-questions:

1. What are the characteristics of the pollutants discharged from the MS4s?
2. Are pollutant loadings changing over time?

Random sampling is conducted to assess overall water quality of the discharge from the MS4 outfalls. Because stations are randomly selected, the results of analysis can be applied to the region, rather than just the station itself. The region will be divided into nine strata, based on the watershed management areas (WMA) defined in the Permit (Order R9-2007-0001). Six wet and six dry samples will be collected in each WMA each year, resulting in a total of 54 wet samples and 54 dry samples respectively for the region (108 total per year). Over the 5 year period each WMA will have a total of 30 wet and 30 dry samples over the permit cycle.

Targeted sampling will be conducted to address the following sub-questions:

1. Which of the targeted MS4 outfalls have the greatest pollutant loading?
2. Are the pollutant loadings decreasing over time from these MS4 outfalls?

Targeted sampling is conducted to assess the relative contribution of a particular pollutant discharged from MS4 outfalls to the high priority problems of the receiving waters. The site-specific station design of the targeted program will generate information to support source prioritization in each WMA and will assess pollutant trends over time.

Annual presentation of results may include summary data tables and graphs of random and targeted sites, as well as comparison to water quality benchmarks. Although water samples collected from MS4 outfalls may not be required to meet water quality benchmarks, the comparison is useful for interpretation of results.

Further annual assessment will include frequency analysis for the number of water quality benchmark exceedances, descriptive statistics of the central tendency, and distributional qualities of the results. In addition, information from randomly selected outfalls that do not have flow during dry periods will be used to estimate the percent of drains without dry weather nuisance flows in the region. Figure 4-1 gives an example of the proportion of sites above water quality benchmarks.

Long term sampling will provide information on the success of the overall storm water management program. After five years of sampling, the data will be combined and assessed for trends. Additionally, after 5 years, a rolling five-year window can be used to assess trends in spatial extent. After five years, there will be 30 samples in each WMA, which will provide additional assessment at the WMA level (Figure 4-2).

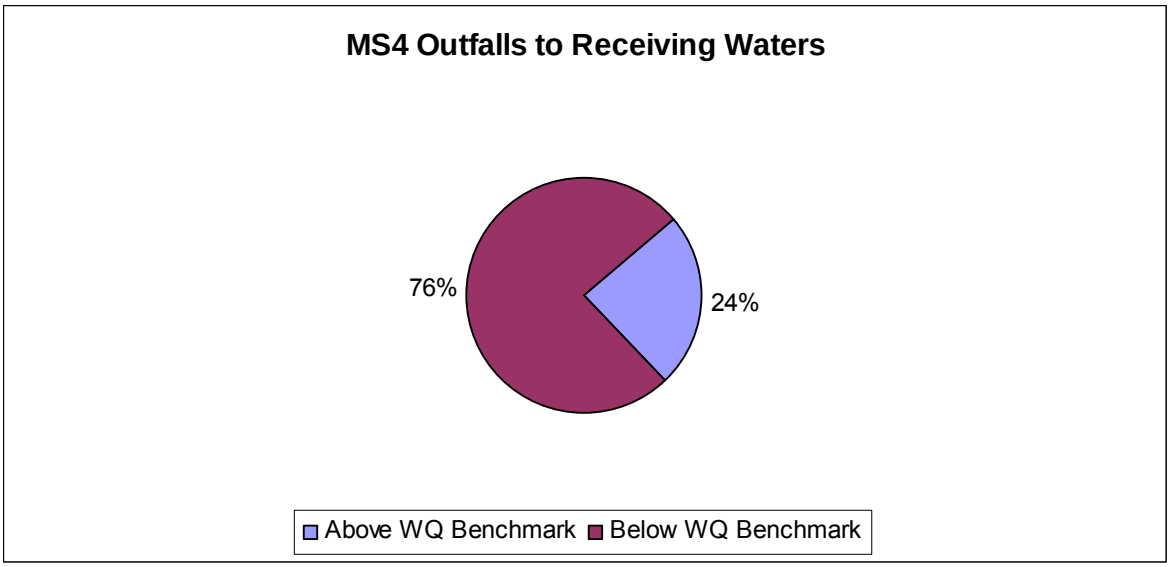

Figure 4-1: Example Graphic of Percent of Outfall Results Compared to Water Quality Benchmarks

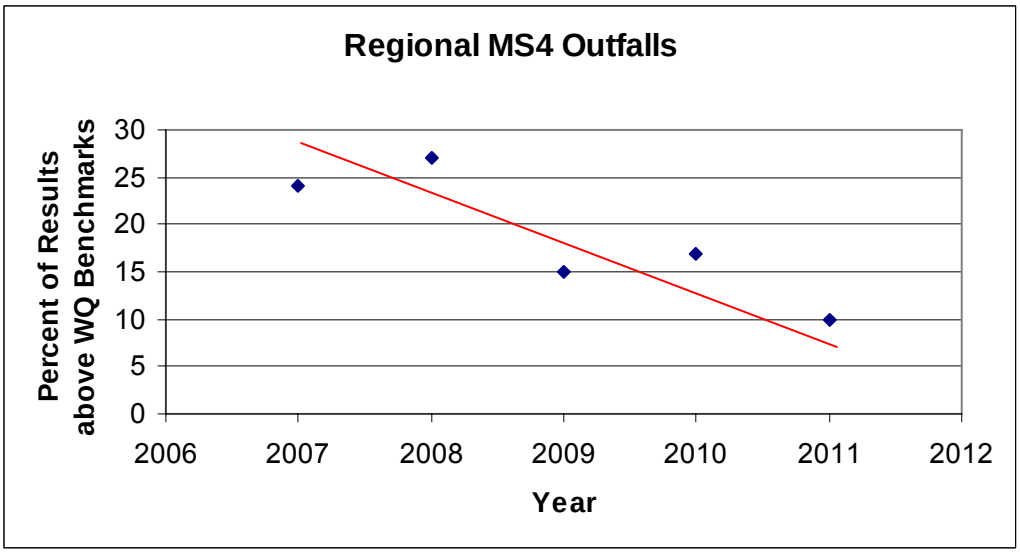

Figure 4-2: Example Graphic of Trend of MS4 Outfall Results Above Water Quality Benchmarks

Targeted outfall monitoring results will be combined and assessed for trends at outfalls that are sampled annually. Concentrations of pollutants will be presented in data tables and displayed graphically on maps showing sampling locations. Two measures of MS4 outfall condition will be reported using data collected in the targeted sampling program: (1) Relative loading from each outfall monitored – normalized by drainage area, and (2) Percent of overall loading from each outfall monitored. The relative loading will be normalized by the size of the drainage are so that results between drainages of different sizes can be compared. Examples of graphics that report these measures are presented below (Figures 4-3 and 4-4).

These data will be considered by jurisdictions and watersheds in prioritizing source identification studies and in planning efforts for Best Management Practices (BMP).

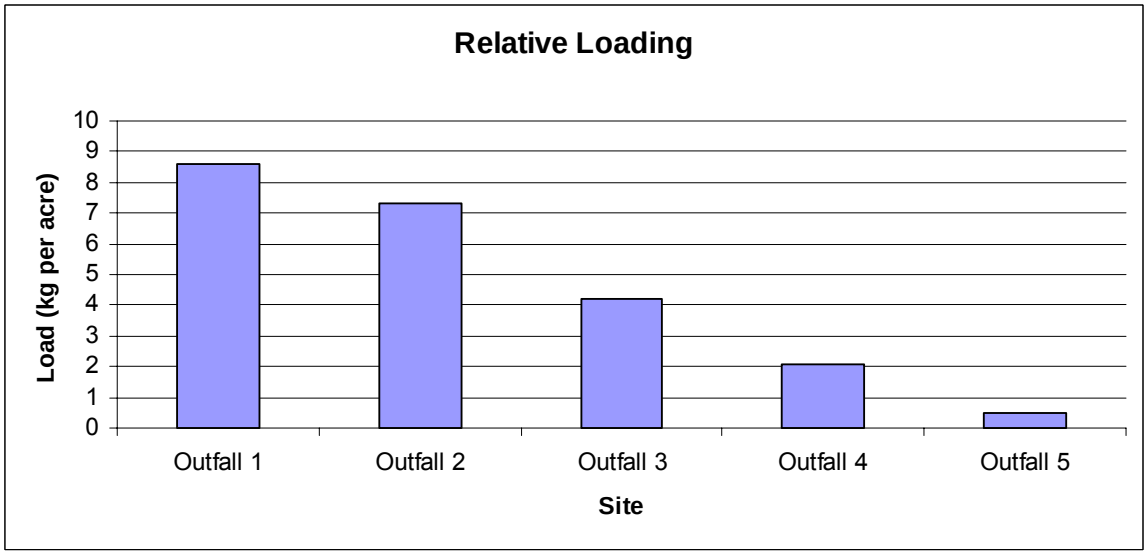

Figure 4-3: Example Graphic of Estimated Pollutant Load from the MS4

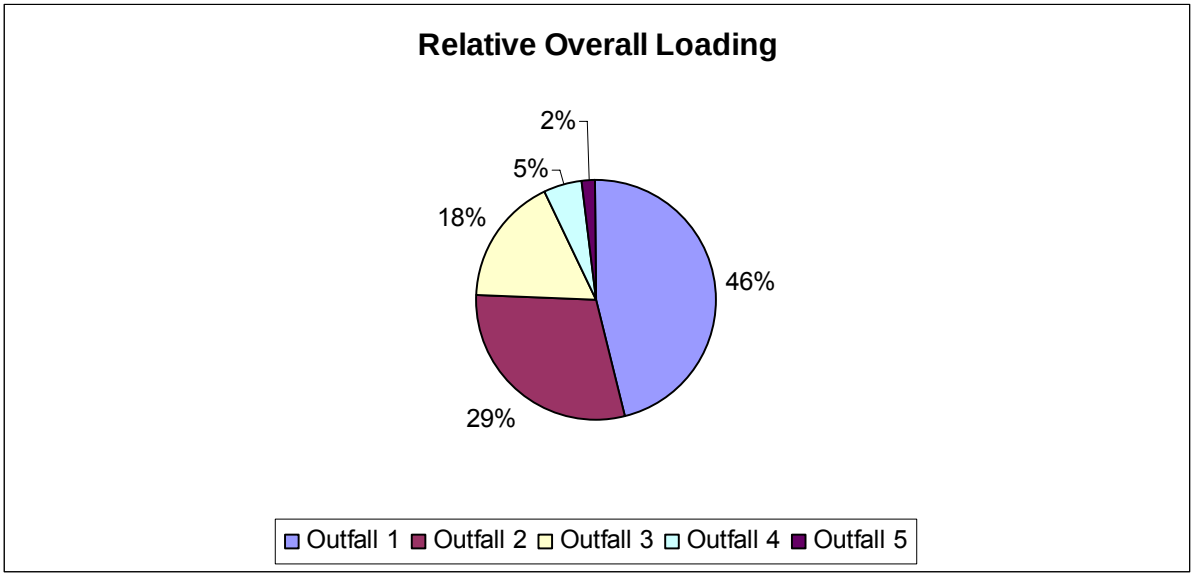

Figure 4-4: Example Graphic of Percent of Overall Loading from MS4 Outfalls Monitored

4.2 Reporting

The MS4 outfall monitoring data and analysis of the data will be included in the San Diego County Municipal Copermittees Urban Runoff Monitoring Annual Report as required by the Permit. When appropriate, these data will be used by the regional group, watershed groups and/or jurisdictions to focus additional source identification studies. The data may also help guide the selection of management actions where appropriate.

4.3 Program Review and Modification

As stated previously in this document, Order 2007-0001 provides the Copermittees flexibility to develop a workable MS4 outfall monitoring program. Specifically, section II.A.10 of the Permit Fact Sheet states:

"*Since a monitoring program for MS4 discharges is new, the Copermittees are provided significant leeway in the development and implementation of the program. The Copermittees can utilize the flexibility incorporated into the monitoring and reporting program to develop program that is workable for them while providing the necessary information.*"

The program described in this document meets the Permit criteria for a MS4 outfall monitoring program. As stated previously in this program, to meet permit compliance in the initial year of the program in 2007-2008, the Copermittees will collect one targeted dry weather sample from each of the nine WMAs. Beginning in 2008-2009 monitoring year, the random wet and dry sample program and the targeted dry weather program will be fully implemented. Beginning in 2009-2010 the targeted wet weather program will be fully implemented. This phased approach of the program allows Copermittees' time to fully develop a comprehensive program.

Because the program is newly developed and has not yet been field tested, it is appropriate to assume that modifications may need to be made after an initial assessment of the data collected. Copermittees intend to evaluate the data and determine where and how program modification will be made. More importantly, Copermittees need to ensure that the data they collect can be directly related to making management decisions (i.e., source investigations, increased BMPs, etc) and to water quality improvements.

5.0 REFERENCES

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APPENDIX A

Appendix A: Targeted MS4 Sample Locations and Target Analytes

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
Carlsbad	1D-21	33.18039	-117.32911	904.21	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P
Carlsbad	1D-20	33.18060	-117.32720	904.21	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P
Carlsbad	1C-21	33.17903	-117.34093	904.21	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P
Carlsbad	16C-61	33.14596	-117.33774	904.31	Bacteria, TSS
Carlsbad	21C-14	33.13670	-117.33414	904.31	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P
Carlsbad	19C-1	33.14647	-117.28160	904.31	Bacteria, TDS, TSS, Manganese, Selenium, Sulfates
Chula Vista	TCC-03	32.64726	-116.96885	909.11	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	TCC-04	32.62016	-117.07230	909.11	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	CEN-01	32.62922	-117.09507	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	RCC-02	32.63830	-117.06551	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	SUN-06	32.67141	-116.99702	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	SVS-01	32.64912	-117.06474	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	BAY-01	32.60820	-117.09235	910.20	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	JUD-01	32.59465	-117.06675	910.20	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	PRD-02	32.60622	-117.04353	910.20	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
Chula Vista	SCR-01	32.64567	-116.94713	910.20	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
City of El Cajon	El Cajon Sampling Site 5	32.82665	-116.98226	907.13	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
City of El Cajon	El Cajon Sampling Site 2	32.80363	-116.96548	907.13	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
City of El Cajon	El Cajon Sampling Site 41	32.80209	-116.97163	907.13	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
City of El Cajon	El Cajon Sampling Site 101	32.81850	-116.97560	907.13	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
City of San Diego	DW010	32.99879	-117.09812	905.12	Bacteria, TDS, TSS
City of San Diego	DW336	33.00489	-117.14439	905.12	Bacteria, TDS, TSS

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
City of San Diego	DW006	33.04130	-117.07782	905.21	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH
City of San Diego	DW002	33.03711	-117.06806	905.22	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH, Sulfates, Chloride
City of San Diego	DW012	33.01872	-117.06439	905.22	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH, Sulfates, Chloride
City of San Diego	DW017	32.96954	-117.13830	906.10	Bacteria, TDS, TSS
City of San Diego	DW021	32.90593	-117.08503	906.10	Bacteria, TDS, TSS, Diazinon
City of San Diego	DW025	32.92164	-117.14905	906.10	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Cu(dissolved)
City of San Diego	DW026	32.90592	-117.15768	906.10	Bacteria, TDS, TSS, Cu(dissolved), Diazinon, MBAS
City of San Diego	DW027	32.90409	-117.15680	906.10	Bacteria, TDS, TSS
City of San Diego	DW272	32.88494	-117.19715	906.1	Bacteria, TDS, TSS, pH, Total Nitrogen-N, Total Phosphate-P
City of San Diego	DW289	32.94306	-117.13025	906.10	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
City of San Diego	DW428	32.89142	-117.15572	906.1	Bacteria, TDS, TSS
City of San Diego	DW018	32.94497	-117.11653	906.20	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
City of San Diego	DW247	32.96909	-117.09382	906.20	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
City of San Diego	DW391	32.92347	-117.02618	906.20	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
City of San Diego	DW151	32.81753	-117.27324	906.30	Bacteria, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW152	32.81183	-117.27011	906.30	Bacteria, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW153	32.80802	-117.26523	906.30	Bacteria, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
City of San Diego	DW156	32.79984	-117.25853	906.3	Bacteria, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW056	32.85413	-117.22855	906.40	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW058	32.86064	-117.20931	906.40	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW104	32.80960	-117.21950	906.40	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW262	32.84254	-117.19169	906.40	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW273	32.81921	-117.22409	906.40	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW106	32.80861	-117.17597	906.50	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW562	32.82125	-117.19226	906.50	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW108	32.81291	-117.17455	906.50	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW165	32.76205	-117.23456	906.50	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW275	32.82403	-117.17834	906.50	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW069	32.83138	-117.08420	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
City of San Diego	DW453	32.78140	-117.05924	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
City of San Diego	DW084	32.79052	-117.10449	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, MBAS
City of San Diego	DW088	32.78151	-117.09025	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
City of San Diego	DW089	32.78226	-117.09621	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, Temperature

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
City of San Diego	DW093	32.78914	-117.11425	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
City of San Diego	DW094	32.80231	-117.08275	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
City of San Diego	DW096	32.81614	-117.06343	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
City of San Diego	DW101	32.79970	-117.01858	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
City of San Diego	DW143	32.75652	-117.23443	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
City of San Diego	DW296	32.80202	-117.13304	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, EC
City of San Diego	DW553	32.73586	-117.16248	908.21	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW123	32.74524	-117.11697	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW128	32.73054	-117.14332	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW183	32.70884	-117.04983	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), MBAS, Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW192	32.72608	-117.08429	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW196	32.72965	-117.09024	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, pH, Chlorpyrifos, Malathion, Total Nitrogen-N, MBAS
City of San Diego	DW201	32.70093	-117.10104	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Total Nitrogen-N, Total Phosphate-P, Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW203	32.69642	-117.12240	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Total Nitrogen-N, Total Phosphate-P, pH, Diazinon, Chlorpyrifos, Malathion

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
City of San Diego	DW207	32.71100	-117.12136	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Total Nitrogen-N, Total Phosphate-P, pH, Temperature, Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW312	32.70713	-117.09347	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW325	32.69627	-117.10471	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW330	32.75137	-117.08648	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW461	32.70901	-117.10989	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
City of San Diego	DW188	32.69766	-117.07322	908.31	Bacteria, TSS, Oil and Grease, Total Nitrogen-N
City of San Diego	DW235	32.67071	-117.04612	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW219	32.58908	-117.06097	910.20	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW468	32.58989	-117.02303	910.20	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW225	32.57624	-117.08793	910.20	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
City of San Diego	DW227	32.56726	-117.05334	911.11	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P, Pesticides, DO, (Cu, Zn, Cd, Pb (dissolved)), Nickel (dissolved), Thallium (dissolved)
City of San Diego	DW322	32.57197	-117.02695	911.11	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P, Pesticides, DO, (Cu, Zn, Cd, Pb (dissolved)), Nickel (dissolved), Thallium (dissolved), pH
City of San Diego	DW303	32.54941	-116.99105	911.12	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P, Pesticides, DO, (Cu, Zn, Cd, Pb (dissolved)), Nickel (dissolved), Thallium (dissolved)

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
City of San Diego	DW304	32.54900	-116.99106	911.12	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P, Pesticides, DO, (Cu, Zn, Cd, Pb (dissolved)), Nickel (dissolved), Thallium (dissolved)
Coronado	11	32.68205	-117.18091	910.10	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
Coronado	35	32.70003	-117.17182	910.10	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
County	SMG13	33.37100	-117.25819	902.13	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Diazinon, Chlorpyrifos, Malathion
County	SMG08	33.42184	-117.32179	902.21	Bacteria, Iron, Manganese, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
County	SMG07	33.41460	-117.24904	902.22	Iron, Manganese, Sulfates, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
County	SMG11	33.42936	-117.19531	902.22	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
County	SMG12	33.41396	-117.23754	902.22	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
County	SMG14	33.39892	-117.24979	902.22	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
County	SLR01	33.28360	-117.21868	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR02	33.26568	-117.23320	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR12	33.33312	-117.23551	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR13	33.34736	-117.24027	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR14	33.29335	-117.22396	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides, Oil & Grease

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
County	SLR17	33.32363	-117.15744	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR26	33.28959	-117.22525	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR27	33.31514	-117.19418	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR29	33.28808	-117.08333	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR31	33.30205	-117.21691	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR32	33.33138	-117.15067	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR33	33.32901	-117.24475	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR34	33.25872	-117.23931	903.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, Chlorides
County	SLR10	33.20494	-117.12968	903.13	Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P, Bacteria
County	SLR15	33.22614	-117.08330	903.21	Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P, Bacteria
County	SLR30	33.33488	-117.13120	903.21	TDS, Chlorides, Bacteria, Total Nitrogen-N, Total Phosphate-P
County	CAR05	33.17239	-117.20997	904.32	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Pesticides, Manganese, Selenium, Sulfates
County	CAR16	33.15629	-117.21513	904.32	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Pesticides, Manganese, Selenium, Sulfates
County	CAR13	33.12012	-117.20997	904.52	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
County	CAR09	33.01084	-117.23985	904.61	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
County	CAR02	33.09901	-117.13047	904.62	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
County	CAR08	33.17810	-117.09193	904.62	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
County	CAR15	33.17084	-117.10002	904.62	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
County	SDG07	32.97771	-117.18116	905.11	Bacteria, TDS, TSS
County	SDG08	33.01962	-117.11974	905.11	Bacteria, TDS, TSS
County	SDG13	32.99640	-117.19196	905.11	Bacteria, TDS, TSS
County	SDG14	32.99924	-117.17513	905.11	Bacteria, TDS, TSS
County	SDG15	33.01189	-117.17405	905.12	Bacteria, TDS, TSS
County	SDG09	33.07326	-117.08373	905.23	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH, Aluminum
County	SDG02	33.02243	-116.89673	905.41	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH
County	SDG03	33.03379	-116.93608	905.41	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH
County	SDR13	32.86204	-116.94466	907.12	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, pH, Diazinon, Chlorpyrifos, Malathion
County	SDR15	32.85716	-116.91278	907.12	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, pH
County	SDR38	32.85972	-116.91877	907.12	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, pH
County	SDR35	32.82058	-116.96480	907.13	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, pH
County	SDR37	32.81708	-116.96354	907.13	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, pH

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
County	SDR08	32.83599	-116.90040	907.14	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, pH
County	SDR34	32.85565	-116.93548	907.14	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, pH, Oil & Grease
County	SDR20	32.99628	-116.84387	907.23	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, Chloride, Manganese, pH, Sulfates
County	SDR01	32.84127	-116.80540	907.33	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, Manganese, pH
County	SDR22	32.84232	-116.80839	907.33	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Low Dissolved Oxygen, Manganese, pH
County	SWT02	32.66558	-117.02409	909.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
County	SWT05	32.66692	-117.02325	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
County	SWT07	32.70114	-117.00927	909.12	Total Nitrogen-N, Total Phosphate-P, Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
County	SWT26	32.64788	-117.05900	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
County	SWT28	32.65228	-117.04958	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
County	SWT29	32.66905	-117.01747	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
County	SWT22	32.71963	-116.88031	909.21	Total Nitrogen-N, Total Phosphate-P, Bacteria, DO, Diazinon, Chlorpyrifos, Malathion
County	SWT25	32.73968	-116.95245	909.21	Diazinon, Chlorpyrifos, Malathion, DO
County	SWT32	32.71586	-116.97659	909.21	Diazinon, Chlorpyrifos, Malathion, DO
County	SWT10	32.74445	-116.93002	909.22	Bacteria, DO, Total Nitrogen-N, Total Phosphate-P, Diazinon, Chlorpyrifos, Malathion
County	SWT18	32.81499	-116.83601	909.23	Diazinon, Chlorpyrifos, Malathion, DO

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
County	SWT20	32.81978	-116.75175	909.26	Diazinon, Chlorpyrifos, Malathion, DO
County	OTY03	32.63624	-116.88456	910.36	Iron, Manganese, Total Nitrogen-N, Total Phosphate-P, pH, Bacteria
County	TIJ02	32.83776	-116.53725	911.41	Bacteria, Total Nitrogen-N, Total Phosphate-P, TSS
Encinitas	ENC-10	33.04777	-117.28583	904.51	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
Encinitas	LCS-1	33.05861	-117.26305	904.51	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
Encinitas	CBS-2	33.01666	-117.28138	904.61	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
Encinitas	ESC-1	33.05389	-117.21639	904.61	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
Escondido	874.2.0	33.15614	-117.11984	904.52	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
Escondido	813.0.0	33.10271	-117.12315	904.62	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
Escondido	818.0.0	33.11283	-117.10827	904.62	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
Escondido	825.0.2	33.14073	-117.05329	904.62	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
Escondido	840.0.0	33.11952	-117.09576	904.62	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
Escondido	816.1.1	33.10954	-117.11181	904.62	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
Escondido	862.0.0	33.08482	-117.06175	905.21	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH
Escondido	861.2.3	33.09985	-117.05087	905.24	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH
Imperial Beach	K-2	32.58832	-117.10747	910.20	Bacteria, (Cu, Zn, Cd, Pb (dissolved))
Imperial Beach	E-1B	32.57292	-117.12313	911.10	Bacteria, TSS, Total Nitrogen-N, Total Phosphate-P, Pesticides, DO, (Cu, Zn, Cd, Pb (dissolved)), Nickel (dissolved), Thallium (dissolved)
La Mesa	907-ALV-002	32.77414	-117.02287	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
La Mesa	907-ALV-590	32.78180	-117.01328	907.11	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
La Mesa	908-UNI-001	32.75473	-117.04813	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
La Mesa	908-UNI-002	32.75516	-117.04584	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
Lemon Grove	DW9	32073259.00000	-117.03357	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
Lemon Grove	31	32.74021	-117.05111	908.22	Bacteria, TSS, (Cu, Zn, Cd, Pb (dissolved)), Diazinon, Chlorpyrifos, Malathion
National City	45	32.68739	-117.09690	908.31	Bacteria, TSS
National City	13A	32.66942	-117.10326	908.32	Bacteria, TSS
National City	46	32.67584	-117.09539	908.32	Bacteria, TSS
National City	32	32.65887	-117.08274	909.12	Bacteria, TDS, (Cu, Zn, Cd, Pb (dissolved))
Oceanside	S006	33.20747	-117.38482	903.11	Bacteria, Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	S075	33.22234	-117.35305	903.11	Bacteria, Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	S122	33.22181	-117.35628	903.11	Bacteria, Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	S123	33.22710	-117.34289	903.11	Bacteria, Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
Oceanside	S119	33.25528	-117.31996	903.11	Bacteria, Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	S106	33.26023	-117.26414	903.11	Bacteria, Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	S116	33.25568	-117.29310	903.11	Bacteria, Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	S107	33.26346	-117.24859	903.11	Bacteria, Chlorides, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	L027	33.20192	-117.33708	904.10	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	L009	33.20590	-117.28512	904.10	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	L054	33.18350	-117.36476	904.10	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	L111	33.20420	-117.30985	904.10	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
Oceanside	B002	33.18073	-117.34243	904.21	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
Port	Anchorage Lane 145	32.71888	-117.23140	908.10	Bacteria, (Cu, Zn, Cd, Pb (dissolved)), Oil and Grease, Diazinon, Chlorpyrifos, Malathion
Poway	129	33.00705	-117.05055	905.22	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH, Sulfates, Chloride
Poway	136	33.01853	-117.04646	905.22	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, pH, Sulfates, Chloride
Poway	18A	32.96015	-117.03840	906.20	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
Poway	19	32.95502	-117.03398	906.20	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
Poway	21	32.95595	-117.02257	906.20	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
Poway	105	32.94860	-117.06208	906.20	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P

Jurisdiction	Name	Lat	Long	Watershed	Suggested Analytes
San Marcos	A-10	33.10229	-117.20961	904.51	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
San Marcos	B-02	33.14600	-117.16024	904.52	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
San Marcos	B-04	33.17041	-117.15407	904.52	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
San Marcos	C-05A	33.13962	-117.13943	904.52	Bacteria, TDS, Total Nitrogen-N, Total Phosphate-P
Santee	O40b	32.84851	-116.96392	907.12	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
Santee	G30c	32.84501	-116.99122	907.12	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
Santee	S5c	32.84363	-116.98795	907.12	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen
Santee	U10a	32.83744	-116.99586	907.13	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Dissolved Oxygen, pH
Solana Beach	Seascape Outfall	32.98552	-117.27330	905.11	Bacteria
Vista	BV-1	33.18273	-117.28393	904.21	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
Vista	BV-7A	33.19295	-117.25370	904.22	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P
Vista	AH-17	33.14008	-117.24635	904.31	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates
Vista	AH-21	33.13532	-117.24462	904.31	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphate-P, Manganese, Selenium, Sulfates

APPENDIX E

Urban Runoff Source Identification Monitoring Program

Urban Runoff Source Identification Program in San Diego County Watersheds

Final Workplan

Prepared by:

The County of San Diego and Municipal Stormwater Copermittees

June 25, 2008

Urban Runoff Source Identification Monitoring Program in San Diego County Watersheds

Final Workplan

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June 25, 2008

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1.0 INTRODUCTION

In January 2007, the San Diego Regional Water Quality Control Board (RWQCB) issued a new National Pollutant Discharge Elimination System (NPDES) for discharges of urban runoff from the municipal separate stormwater sewage systems (MS4s) Permit (Permit) (Order No. R9-2007-0001) to the San Diego Municipal Copermittees (Copermittees). The Permit includes an attachment that describes specific mandates for the Receiving Waters and Urban Runoff Monitoring and Reporting Program. This *Monitoring and Reporting Program* was designed to address the following core management questions:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

A new requirement of the Permit is a Source Identification Program. The purpose of the program is to identify sources of discharges of constituents causing water quality problems in receiving waters to address question 4 above. This Permit language states:

> *The Copermittees shall collaborate to develop and implement a monitoring program to identify sources of discharges of pollutants causing the priority water quality problems within each watershed. The monitoring program shall include focused monitoring which moves upstream into each watershed as necessary to identify sources. The monitoring program shall use source inventories and "Threat to Water Quality" analysis to guide monitoring efforts. This monitoring program shall be implemented within each watershed and shall begin no later than the 2008-2009 monitoring year.*

This report describes the program proposed by the Copermittees to comply with this Permit requirement. The source identification monitoring program will focus on the assessment of specific activities that may be expected to contribute pollutants, as well as targeting drainage areas where monitoring information suggests urban runoff is a major contributor to the problem.

The Permit provides the Copermittees flexibility to develop a workable source identification monitoring program. Specifically, section II.A.11 of the Permit Fact Sheet states:

"*Since a monitoring program for source identification is mostly new, the Copermittees are provided significant leeway in the development and implementation of the program. The Copermittees can utilize the flexibility incorporated into the monitoring and reporting program to develop a program that is workable for them while providing the necessary information.*"

The source identification studies are special projects, and therefore, by their nature are anticipated to be focused and of relatively short duration that will be targeted to answer specific questions. These studies will be reviewed and modified as necessary to more effectively meet the goals of the program.

1.1 Background

The Southern California Stormwater Monitoring Coalition (SMC) developed the five core management questions identified in the Permit through a consensus building effort that included regulators, municipal copermittees, Heal the Bay and Southern California Coastal Water Research Project (SCCWRP) scientists. A guidance document entitled, "Model Storm Water Monitoring Program for Municipal Separate Storm Water Sewer Systems in Southern California" (Model Monitoring Program) was issued in 1994 (www.sccwrp.org). The Regional Board incorporated much of the Model Monitoring Program in the monitoring requirements of the Permit including MS4 outfall monitoring and a source identification monitoring program.

The Model Monitoring Program provides the following additional background on the nature of the source identification studies:

"More detailed source identification studies address Question 4: What are the sources to urban runoff that contribute to receiving water problems? These are almost always special studies and are conducted when preliminary source identification work under Question 3 shows that urban runoff constitutes a significant portion of the source(s) of a receiving water problem. Information from these more detailed special projects can help refine receiving water monitoring, improve fundamental understanding of stormwater contamination processes, and help guide management actions intended to reduce sources and their attendant impacts.

Only if urban runoff is found to contribute significantly (as discussed below, 5 to 10 % of the problem) to receiving water problems would watershed Copermittees be required to take the lead on conducting further source identification studies at greater resolution (as described in Question 4).

The committee engaged in substantial discussion of criteria for prioritizing source identification work and agreed that several factors should be taken into account in each instance, including:

- *The severity of the problem;*
- *The type of pollutant(s) involved;*
- *The potential for human health risk;*
- *The relative certainty of the estimates of relative contribution from different sources. If the estimate of urban contribution is very low, then even high uncertainty might not be important. However, if the estimate is higher, e.g., 10%, and the uncertainty is high (e.g., could be as high as 30%) then that would be a different situation;*
- *Whether the problem occurs during dry and/or wet weather, since dry weather problems may be more easily dealt with;*
- *The biological resources at issue;*
- *Regulations and other legal mechanisms that require source identification and/or control;*
- *Stakeholder involvement such as watershed group planning priorities.*

The committee agreed that source identification work should be prioritized based on the factors above, and that the threshold level for further independent source identification efforts by the permittees should be somewhere between 5 – 10%.

In the context of Question 4, "sources" can refer to multiple layers of sources, such as a golf course that is the source of pesticides, which are in turn the source of toxicity in the receiving water. Thus, questions about sources should be framed carefully in order to clarify both the spatial definition of "upstream source" as well as the level of causality that is the central focus of the investigation.

The types of data products appropriate for answering Question 4 for both recreational water quality and habitat include:

- *Prioritization of receiving water sites in terms of severity of impact (ranked list of sites);*
- *Description of all potential urban runoff sources of inputs to the higher priority receiving waters (map of potential sources);*
- *Determination of actual sources of urban runoff and their relative magnitude (table of concentrations and flows by source with estimated levels of confidence);*
- *Quantitative estimates of the loads from urban runoff sources (table of loads by source with estimated levels of confidence)."*

1.2 Monitoring Goal

The goal of this monitoring program is to identify and assess the sources of discharges of constituents related to urban runoff causing high priority water quality problems in the receiving water(s) within each watershed management area (WMA).

1.3 Monitoring Objectives

Management Question 4:
"What are the sources of urban runoff that contribute to receiving water problems?"

This management question will be addressed by the collection and analysis of urban runoff within MS4 conveyances. The main purpose of the program is to find the urban sources of discharge(s) of constituents so that appropriate management action can be applied to eliminate the pollutant(s) from adversely impacting the water quality of receiving waters. Approaches that may be utilized to identify urban sources of high priority pollutant discharges include:

1. Monitor immediately downstream of an activity or a cluster of activities that could potentially discharge a high priority pollutant to the MS4 conveyance (Specific Activity Monitoring). If there is evidence suggesting that the activity is a potential source of the high priority pollutant(s), corresponding monitoring should occur immediately upstream of the potential source activity to ensure other sources are not contributing.

2. Monitor the MS4 conveyances upstream of a high priority water quality problem identified in the receiving water. Use the results to guide additional upstream monitoring in the MS4 conveyance until the potential source of the pollutant discharge is identified or isolated (MS4 Monitoring Upstream of High Priority Water Problem).

Additionally, other factors will be considered in the design of the specific source studies including the watershed priorities, leveraging information from other watershed studies and considering guidance from the Model Monitoring Program.

2.0 MONITORING DESIGN

The overall monitoring design is based on a combination of both specific activity sampling and sampling within MS4 conveyances upstream of an identified high priority water quality problem in the receiving water(s). The type of monitoring design used depends on the type of information available concerning identified threats to water quality or receiving water quality problems. If adequate information already exists on activities in the watershed that could potentially release high priority constituents, then the sampling is focused on those activities. For example, if chromium is a high priority water quality problem, then activities that could potentially results in the discharge of chromium, such as metal plating or fabrication facilities, would be located within the watershed and their threat to water quality would be evaluated to determine a monitoring strategy. If water quality problems are identified by other monitoring programs and insufficient information exists on the location of specific activities that could be a potential source, then sampling within the MS4 conveyance upstream of the identified water quality problem is a strategy that may be used to track the potential source of the discharge.

2.1 Specific Activity Monitoring Approach

This approach focuses monitoring on areas where identified activities could potentially release the pollutant and therefore, be a potential threat to water quality. This sampling approach consists of four steps (Figure 2-1):

1. Identify activities that could potentially release the constituent that may cause exceedances of water quality benchmarks or action levels in the receiving waters (e.g., Threats to Water Quality from the Baseline Long-term Effectiveness Assessment).

2. Identify locations for monitoring in MS4 outfalls or conveyance sites that drain from areas containing concentrations of these activities.

3. Collect water samples and/or flow data from the outlet(s) downstream from each activity or cluster of activities.

4. Initiate additional investigations of potential sources of constituents in those drainage areas upstream of the outfall where exceedances of water quality benchmarks or action levels are identified if previous steps do not isolate the source.

Monitoring locations selected for sampling will be based on a survey of the sources and/or activities that could potentially release the constituent. The survey should identify clusters of activities that are to the extent practical hydrologically isolated. The survey of the location of activities that could potentially release the pollutant will identify a location at which a sample and flow measurement can logistically be taken downstream of the identified sources. This location is generally where sheet flow begins to concentrate in a channel, ditch or pipe, and may entail sampling from a manhole above the conveyance.

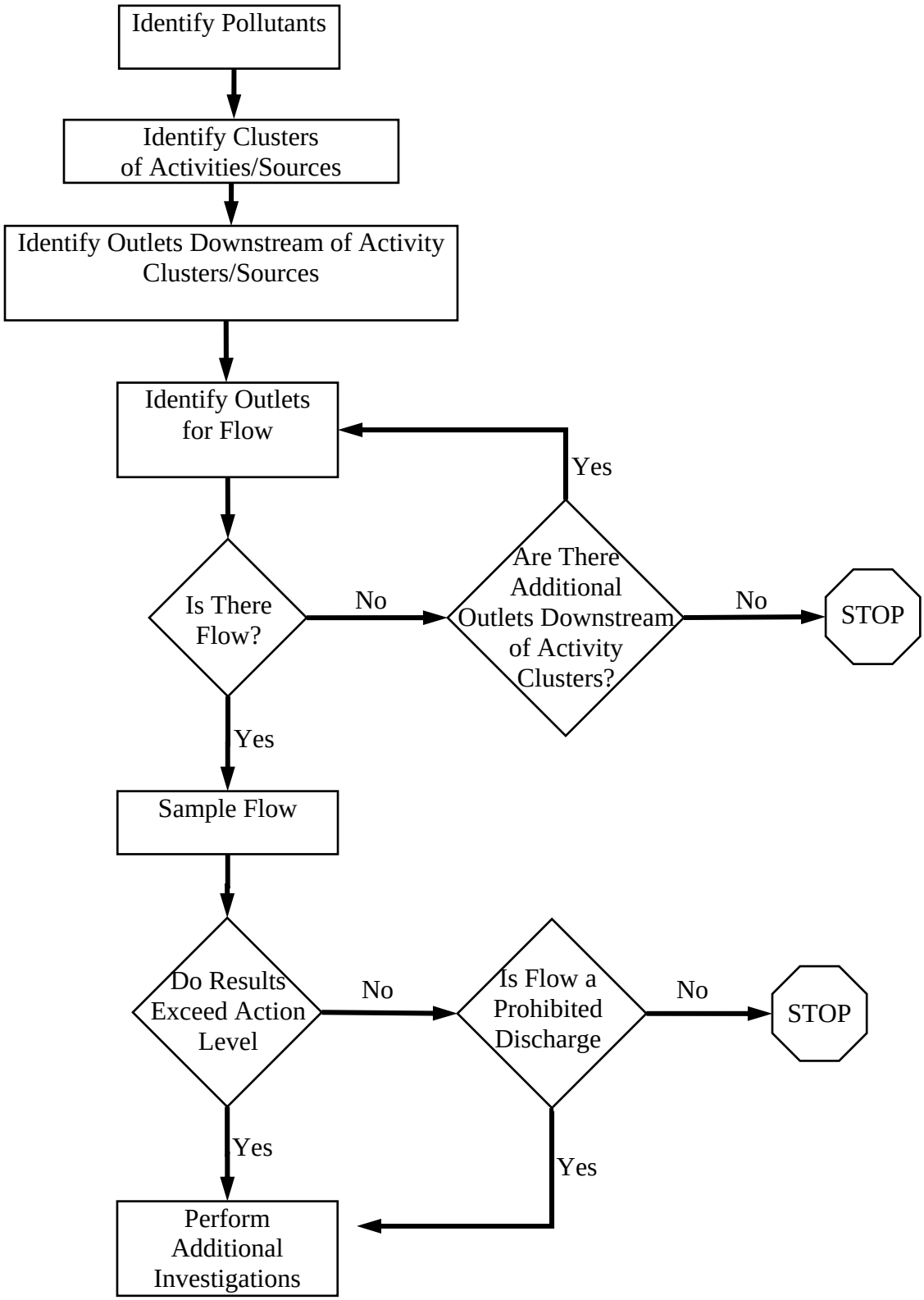

Figure 2-1: Specific Activity Sampling Flow Chart

2.2 Monitoring in MS4 Upstream of Water Quality Problem in Receiving Water Approach

This approach targets sampling locations upstream of identified problems based on results from the MS4 outfalls, mass loading stations, temporary watershed assessment stations, dry weather sites, or visual observations. This monitoring approach consists of four steps (Figure 2-2):

1. Identify a high priority pollutant in a receiving water(s) of a watershed.

2. Conduct a review of MS4 maps and/or field reconnaissance to identify potential subwatersheds (hydraulically separate) in the MS4 conveyances.

3. Conduct additional sampling and/or flow monitoring upstream of the receiving water. This sampling is performed at outfalls from drainages with observed flows.

4. Initiate an investigation of activities that could potentially release the pollutant in those drainage areas upstream of the outfall where exceedances of water quality benchmarks or action levels are identified.

Using this approach, the sampling will start at the location of the observed water quality problem. Further sampling will focus on upstream sites within the MS4 conveyance. The chemistry and/or flow results from the samples collected upstream will be used to target other locations even further up stream. This cyclical process will continue to the extent practical to identify specific sources contributing to the high priority pollutants in the receiving waters.

2.3 Other Considerations in the Design

Table 2-1 summarizes the high priority pollutants identified in the Region's 2008 Watershed Urban Runoff Management Plans. These priorities may be for portions of the watershed, not the entire watershed. This table may be used as a starting point in conjunction with other information to develop a pollutant-specific strategy.

A challenge the Copermittees face is how to leverage resources and identify collaborators with the myriad of ongoing and recent studies to design cost-efficient and effective source identification studies. Table 2-2 summarizes ongoing and recent studies by watershed that will be considered in the future design of source identification studies.

The Model Monitoring Program provides additional guidance that will be considered in the specific source identification monitoring for recreational and habitat-focused studies:

"The model monitoring framework for detailed source identification for both recreational water quality and habitat involves two kinds of studies. The first are studies at downstream stations to gain additional insight into the sources of the problem. For bacteria, this may include more traditional sanitary survey methods and/or more sophisticated biological testing. For habitat, this may include toxicity tests with a broader suite of test organisms, toxicity identification evaluations (TIEs), or more detailed analyses of the pattern of impact in communities or on key

organisms. The second kind of study will be upstream source tracking and source identification studies that may use a variety of methods. In general, however, they will share the same design, which will involve using a basic indicator of impact (e.g., bacterial indicator, toxicity) to trace the strength of the impact signal upstream, in either wet or dry weather, combined with more powerful and/or targeted methods (e.g., genetic source identification, TIEs, chemical reconnaissance, physical reconnaissance) to locate the specific source(s) of pollution.

The committee also recognized the need to supplement these method descriptions with more explicit starting and stopping rules for detailed source identification studies. Starting rules are necessary for ensuring that source identification studies, which can be costly and time consuming, are triggered where and when monitoring data strongly suggest the presence of a persistent problem. Such rules are also needed to focus available resources on the highest priority problems. Stopping rules are essential for ensuring that source identification studies do not continue indefinitely, but end when reasonable and realistic expectations have been met. Such rules are proposed for receiving water problems associates with both recreational water quality and habitat."

Examples of the triggers identified for recreational and habitat focused source identification studies from the Model Monitoring Program are presented in Figures 2-3 and 2-4.

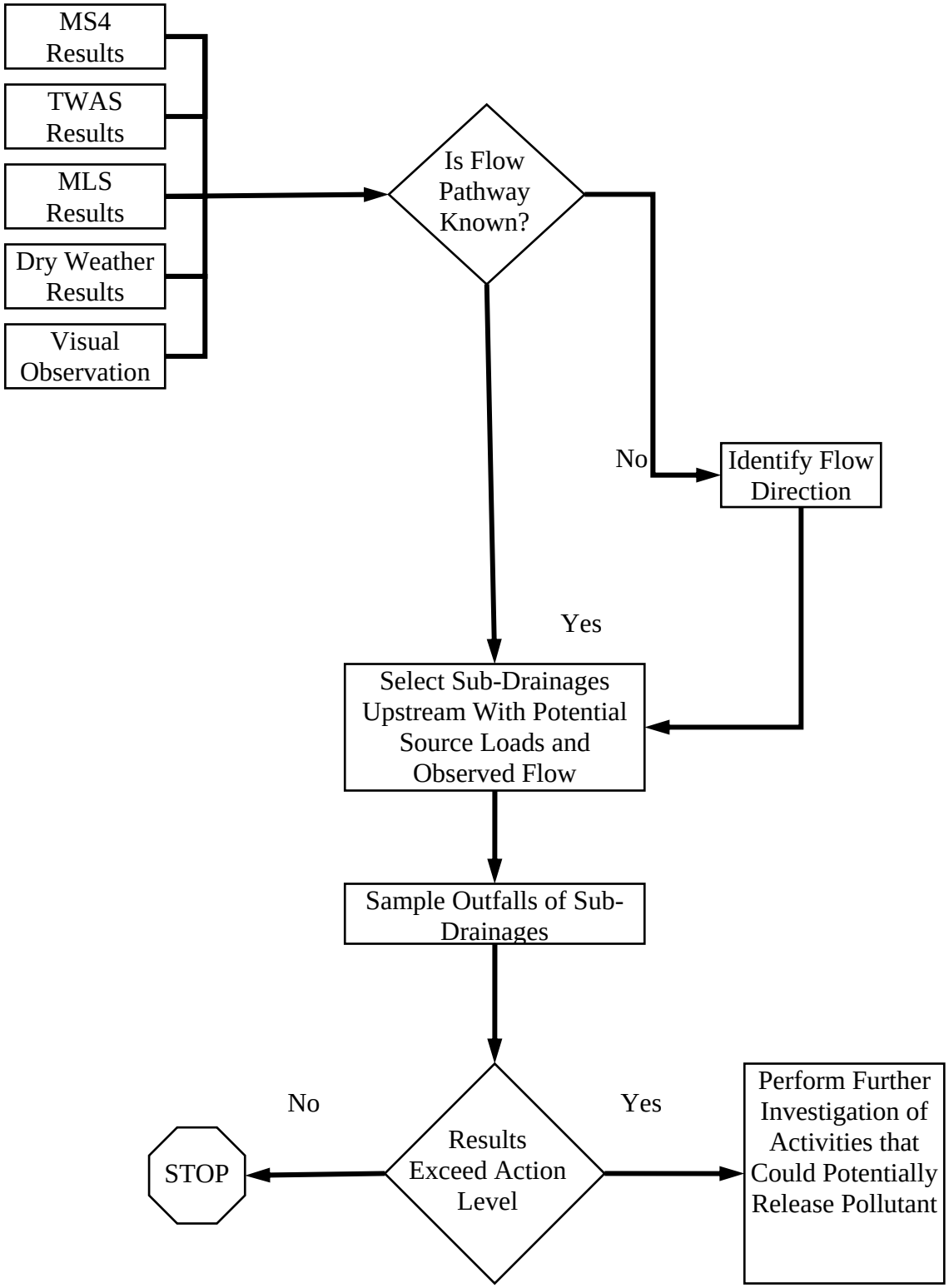

Figure 2-2: Monitoring in MS4s Upstream of Water Quality Problem in Receiving Water

Stormwater Monitoring Coalition Decision Tree for Upstream Bacterial Source Identification Study

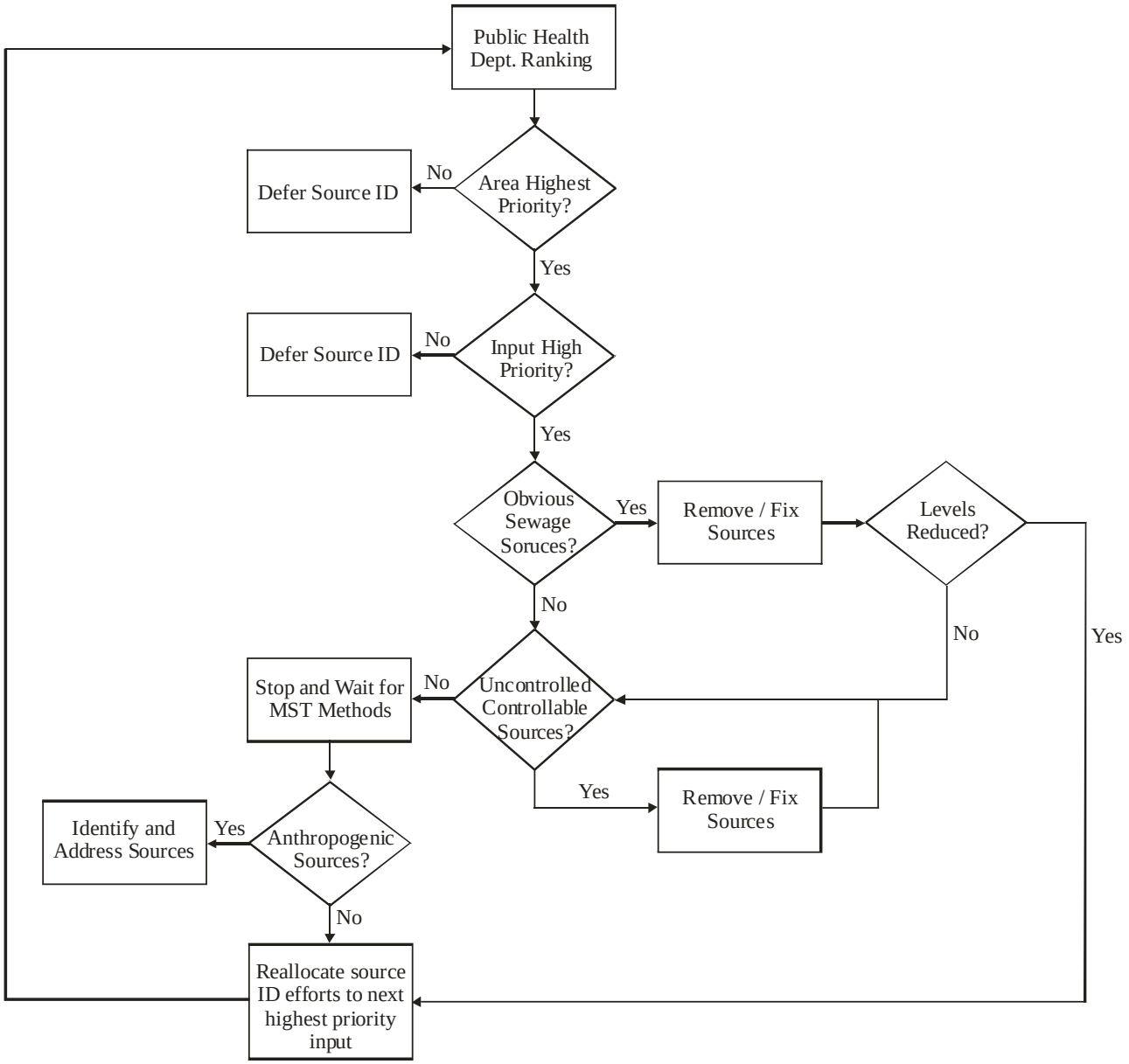

Figure 2-3: Decision tree that organizes starting and stopping rules for upstream bacterial source identification efforts. MST refers to microbial source tracking methods (Modified Figure 7 of the Model Monitoring Program).

Stormwater Monitoring Coalition Decision Tree for Upstream Bacterial Source Identification Study Targeted at Habitat

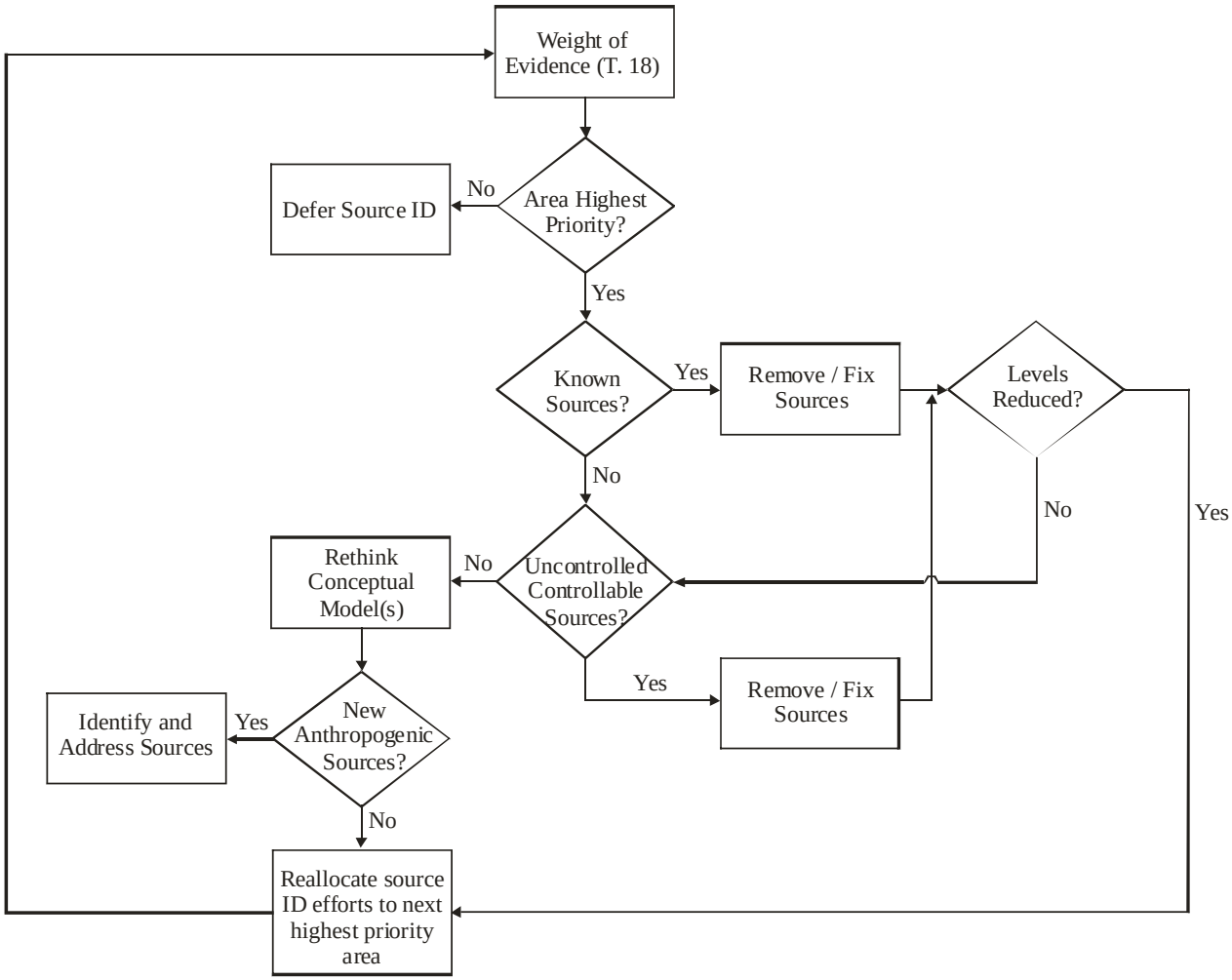

Figure 2-4: Decision tree that organizes starting and stopping rules for upstream source identification efforts targeted at habitat. (Modified Figure 8 of the Model Monitoring Program)

Table 2-1: High Priority Water Quality Problems Identified in the Watershed Urban Runoff Management Plans

Watershed Management Area	Hydrologic Area	High Priority Water Quality Problems
Santa Margarita	All	Nutrients, Sediment
San Luis Rey	All	Bacteria, Nutrients
Carlsbad	904.1, 904.2, 904.3, 904.5, 904.6	Bacteria/Pathogens
	904.3, 904.6	Sediment
	904.1, 904.2, 904.6	Nutrients
San Dieguito	All	Bacteria/Pathogens
	906.1	Sediment
Penasquitos	All	Bacteria/Pathogens
	906.1	Sediment
Mission Bay	All	Bacteria/Pathogens, Heavy Metals, Nutrients
San Diego River	All	Bacteria, Phosphorous, Total Dissolved Solids, Low Dissolved Oxygen, Turbidity
San Diego Bay	908.1	Bacteria, Gross Pollutants*, Metals, Oil & Grease, Pesticides
	908.2	Bacteria, Metals, Sediment, Trash, Pesticides
	908.3	Bacteria, Sediment, Trash
	909.1	Bacteria
	909.2	Pesticides
	910.1	Bacteria, Gross Pollutants*
	910.2	Bacteria
Tijuana River	911.1	Bacteria/Pathogens, Total Suspended Solids, Turbidity, Pesticides, Gross Pollutants*, Metals, Organics
	911.3	Manganese, pH, Color
	911.4	Bacteria/Pathogens, Turbidity, Phosphorus
	911.5	pH, Manganese, Color

***** Gross Pollutants are ammonia, biological oxygen demand, chemical oxygen demand, conductivity, dissolved oxygen, methylene blue activated substances, and pH.

Table 2-2: Recent and Ongoing Studies Conducted in San Diego County Watersheds – Potential Leverage Opportunities for the Source Identification Monitoring (List of known studies as of June 25, 2008. Other 3rd party studies may exist).

Watershed Management Area	HA*	Project Names	Project Dates	Project Contact	Approximate Project Costs	Project Summary
Santa Margarita	902.1 902.2	Assessment of Nutrient and Sediment Reducing BMPs in Santa Margarita Watershed	12/2007 to 4/2009	Joanna Wisniewska, County of San Diego	$800,000 Prop 40/50 Grant	Test effectiveness of manure buffer strips, efficient irrigation systems and minimizing fertilizer use to reducing nutrient and sediment loads from agricultural fields
Santa Margarita	902.2	Rainbow Creek Nutrient Reduction TMDL Implementation	12/2005 to 12/2008	Sheri McPherson County of San Diego	$380,000 319(h) Grant	Prepare Nutrient Reduction Management Plan and test effectiveness of efficient irrigation and use of plant biofilter for removing nutrients from nursery irrigation runoff in Rainbow Creek
Santa Margarita	902.1	Lagoon Study to Comply with RWQCB Order 2006-076	10/2007 to 4/2009	Greg Krzys US Bureau of Reclamation	$370,000	Collect data for TMDL eutrophication modeling effort by RWQCB including loadings during dry and wet weather and during 4 index periods
San Luis Rey	903.1	Lower San Luis Rey Bacteria Source Identification Project	5/2008 to 2/2010	Mo Lahsaie, City of Oceanside	$696,125 (Prop 50 CBI + match)	The goal of the study is to identify the sources and quantify the loading of bacterial contamination in the lower San Luis Rey River and river mouth using a tiered approach including FIB analysis, genetic source tracking technology and an intensive visual observation program. The project will also utilize the information from the City of Oceanside and the County of San Diego's joint monthly monitoring program of the SLRR. The specific objectives are: • Identify point and non-point sources of bacterial contamination in the lower San Luis Rey River and at the river mouth during dry and wet

Watershed Management Area	HA*	Project Names	Project Dates	Project Contact	Approximate Project Costs	Project Summary
						weather. • Estimate wet and dry bacterial loadings from tributaries and along the main stem of the SLRR. Recommend BMPs to reduce and/or eliminate bacterial sources.
Carlsbad	904.1 904.2 904.3 904.6	Lagoon TMDL Investigative Order	2007/2008	Erik Steenblock City of Encinitas	$1,900,000	Collect data in support of TMDL development for lagoons including sediment, nutrient, bacteria, and TDS constituents.
	904.3	Agua Hedionda Watershed Management Plan	2007-Present	Jayne Strommer City of Vista	$500,000	Development of comprehensive watershed management plan for the Agua Hedionda Watershed
Peñasquitos	906.1	Peñasquitos Lagoon - Lagoon Investigation Order - TMDL	2007/2008	Ruth Kolb City of San Diego	$277,000	Los Peñasquitos Watershed Activity is a Level 1 Effectiveness Outcome – the results will be used to develop the TMDL and set load allocations. Next phase should include source ID followed by Tier I&II BMP Implementation.
Mission Bay	906.5	Tecolote Creek Bacterial Study – Source ID Study – TMDL and Permit	2007/2008	Ruth Kolb City of San Diego	$250,000	This is a Level 1 Effectiveness Outcome Activity- Provides Level 4, 5 and 6 data to allow for the assessment of watershed activities that will be implemented based on study findings. This is a Tier II activity that includes Source ID studies and Design Storm determination – next phase should include developing Tier I & II BMPs to reduce bacteria loadings per the study findings – a phase II study may be needed to better define anthropogenic vs. non-anthropogenic sources to creek.

Watershed Management Area	HA*	Project Names	Project Dates	Project Contact	Approximate Project Costs	Project Summary
						Sampling will include assessment of contribution of MS4 compared to sediment and ponded areas in the creek. The source of dry weather flows will also be noted (e.g. over-irrigation, car washing, etc.) in order to better understand the sources of flows.
Mission Bay	906.3	ASBS Monitoring – Sediment and Pollutograph Monitoring - TMDL	2007/2008	Ruth Kolb City of San Diego	$185,000	This is a Level 1 Effectiveness Outcome Activity- Provides Level 4, 5 and 6 data to assess potential and future BMPs. The activity is linked to Tier II BMPs as it provides source data and design storm determination – results will be used to develop Tier I, II and III BMPs resulting in load reduction of sediments. The methods for this survey are being developed through the Bight08 program. Second phase to be used to conduct a second wet weather event to verify the results of the first phase that indicated a clear difference in sediment type and contribution from the upper open space portion and the lower developed portion of the watershed. Once the Bight 08 methods are finalized and the Exception Process permitting program is initiated, the biological surveys can then be performed next fiscal year.
San Diego River	907.1	Famosa Slough Lagoon Monitoring – Lagoon Investigation Order - TMDL	2007/2008	Ruth Kolb City of San Diego	$520,000	Activity is a Level 1 Effectiveness Outcome – the results will be used to develop the TMDL and set load allocations. Next phase should include a Tier II source ID study followed by Tier I&II BMP Implementation. Three additional index period sampling events will be completed by November 2008.
San Diego Bay	908.2 906.3	Air Deposition Follow-up Study – TMDL	2007/2008	Ruth Kolb City of San Diego	$260,000	Activity is a Level 1 Effectiveness Outcome – the results will be used to identify portion of metals loading from air deposition contributing to TMDL

Watershed Management Area	HA*	Project Names	Project Dates	Project Contact	Approximate Project Costs	Project Summary
		YEAR 2 of 3				load allocations. Linkage to Tier I Source Control activities – participation in Copper Brake Bad Partnership, and to Aggressive Street Sweeping project – Effectiveness of street sweeping to address metals loading form air deposition being assessed – as well as optimal frequency and sweeping method.
San Diego Bay	908.2	La Mesa /Lemon Grove Storm Water Sampling - TMDL	2007/2008 Year 2 of 2	Ruth Kolb City of San Diego	$150,000	San Diego Bay Watershed Management Area – Chollas Creek Watershed This is a Level 1 Outcome Project that will provide Level 6 data for baseline assessment data, and jurisdictional pollutant load data for TMDL implementation.
San Diego Bay	908.2	Pueblo San Diego Watershed Pesticide Investigation - TMDL	2007/2008	Ruth Kolb City of San Diego	$80,000	This is a Level 1 Outcome Project. The data obtained from this study is consistent with the Tier II Source study program to provide data on Tier I and II BMPs. Based on the results of this study, Phase II may consist of a source study program for Chollas and Paleta Creeks.

Watershed Management Area	HA*	Project Names	Project Dates	Project Contact	Approximate Project Costs	Project Summary
San Diego Bay	908.2	Use Attainability Study for Chollas Creek – TMDL and Basin Plan	2007/2008	Ruth Kolb City of San Diego	$80,000	This is a Level 1 Outcome Project. The project is consistent with the Tier I BMP implementation strategy under the Basin Plan amendment activity as described in the Strategic Plan. The applicability of the Use Attainability for Shell and REC1 was discussed with the City and was decided to proceed with the first steps in this process with a focus on the Shell designation. These first steps include evaluating the historical records for past use, historical and current access to the site, and an evaluation of the habitat for shellfish at the mouth.
San Diego Bay	908.2 906.3 906.5	Street Sweeping BMP Effectiveness Monitoring	2007/2008	Drew Kleis City of San Diego	$165,000	Chollas Creek, Tecolote and La Jolla Shores ASBS Watersheds This is a Level 1 Outcome Activity. The data generated from this study will provide Level 4 load reduction data to assess the effectiveness of the aggressive street sweeping program that is a Level 4 outcome activity.
San Diego Bay	908.2	Strategic Monitoring – Target Sub-watershed for Master Plan	2007/2008	Drew Kleis City of San Diego	$100,000	San Diego Bay Watershed Management Area – Chollas Creek Watershed This is a Level 1 Outcome Project. The data obtained from this study will provide baseline Level 5 data to assess the multi-tiered BMPs effectiveness that will be implemented under a Master Plan for the selected sub-watershed San Diego Bay Watershed Management Area – Chollas Creek Watershed The project is consistent with the Tier I BMP implementation strategy under the Basin Plan amendment activity as described in the Strategic Plan.

Watershed Management Area	HA*	Project Names	Project Dates	Project Contact	Approximate Project Costs	Project Summary
						The applicability of the Use Attainability for Shell and Rec 1 was discussed with the City and was decided to proceed with the first steps in this process. These first steps include evaluating the historical records for past use and to evaluate the design storm requirements under the Bact-1 TMDL for Rec 1.
San Diego Bay	908.1	Shelter Island TMDL Monitoring	2007/2008	Ruth Kolb City of San Diego	$15,000	The site reconnaissance has been completed and the work plan has been prepared. Samples were collected during a storm event in March.
Tijuana River	911.1	Tijuana River Bacterial Source Tracking Study/CBI Grant	2008-Present	Judith Keir City of Imperial Beach	$1,300,000 CBI Grant	CBI Grant/Bacterial Source Tracking Study in the Tijuana River on the U.S. Side of the Border. Goal is to develop concept designs for BMP development to reduce bacterial loads.
All Watersheds		Rain Barrel Pilot Program – Watershed Activities	2007/2008	Drew Kleis	$45,000	This activity is a Level 4 Outcome. The implementation of the rain barrels and planters will result in a load reduction that will be measured. Rain barrels are a Tier II BMP.
Chollas Creek, Tecolote, and La Jolla Shores ASBS Watersheds	908.2 906.3 906.5	BMP Baseline Effectiveness Monitoring	2007/2008	Drew Kleis City of San Diego	$125,000	This is a Level 1 Outcome Activity. The results provide Level 4 and 5 baseline data to assess the effectiveness of the BMPs that will be installed at these sites. This is the baseline monitoring that will be followed by effectiveness assessment monitoring following installation.

*** HA = Hydrologic Area**

2.4 Work Plan Development

Details of the Source Identification Study will be due as part of the Scope of Work submitted to the RWQCB on September 1 of each year beginning in 2009 for the current monitoring year. For the 2008-2009 monitoring year, the Copermittees from the Regional Monitoring and WURMP Workgroups will support two dry weather Source Identification Studies scheduled to be conducted in the cities of La Mesa and Carlsbad. Both studies will focus on predominantly single-family residential neighborhoods. The La Mesa study will include a small area of commercial development that will be analyzed separately and provide additional insight on dry weather flows from mixed use areas. Key study questions for these investigations may include:

1. When are the dry weather or nuisance flows detected from single-family residences (during what part of the day/week)?
2. What is the water quality and load of constituents of dry weather or nuisance flows from single-family residences?
3. What are the potential sources of dry weather flows from single-family residences?

The data will provide information on the sources of dry weather/nuisance flows from single family residences. These data can then be used by Copermittees to develop effective BMP strategies for residential areas, which is one of the most common land uses in the San Diego region.

The Copermittees intend to leverage the results of the Proposition 50 Nonpoint Source Pollution Control Program Grant entitled "Evaluating Best Management Practices (BMPs) Effectiveness to Reduce Volumes of Runoff and Improve the Quality of Runoff from Urban Environments" that is being conducted by Dr. Darren Haver of the University of California, Davis. Dr. Haver is coordinating the collection of wet and dry samples from four residential communities in Sacramento and four residential communities in Orange County. First, baseline samples will be collected and then after an intensive outreach program to encourage reduced water runoff through the implementation of BMPs, additional water quality/water quantity samples will be collected to evaluate the effectiveness of BMP implementation. A similar model will be implemented by the Copermittees, however, only enough water quality data will be collected within the City of La Mesa to verify that the University of California Study results apply to the San Diego Region. This U.C. Davis source identification study will potentially apply to all watersheds in the San Diego Region. Additional details of the proposed study are presented in the following section.

Elements

Quality Assurance
Standardized quality assurance procedures will be developed for this specific project to include minimum requirements for sampling methods, analytical methods, and procedural controls to ensure a sound and comparable study. Elements include defining the roles and responsibilities of the persons conducting the study and the assessment measurements and controls. This study is primarily focused on analyzing continuous flows from a residential land use area. UC Davis is conducting a long term assessment of a residential drainage area as discussed above. The Copermittees' study will utilize the analytical data from the UC Davis study to assess loads from

the residential area by combining the flow data collected through the Copermittees' study. Water quality samples will be collected from a limited set of samples from a commercial area in the City of La Mesa and selected sets in the residential areas to verify the UC Davis study results.

Monitoring Plan

A monitoring plan will be developed that includes location of sampling sites, frequency of sampling, and the duration of sampling. The plan will also include other pertinent information, such as instrumentation to be used, calibration, and other information with respect to site access and safety.

Location of sample sites—sample location should be placed with respect to capturing representative flow conditions from the defined land use area and should not include areas of mixed land use. It is preferred to have a location that drains a single land use.

Frequency of Sampling— flow monitoring will be conducted such that flow measurements can be determined every 5 minutes over a 24-hour period. Continuous flows will be recorded over the period of 6 months to 1 year. Sample downloads will occur every month to provide monthly records of flow.

Flow Monitoring

Flow in the MS4 outlet or conveyance sites will be measured quantitatively using standard USGS protocols (Rantz, 1982). If the flows are too small to measure with instrumentation, the indirect methods described by USGS may be used to estimate flow (e.g., float method, Manning formula). Specific control elements include conducting a survey of the cross sectional area, determination of the slope of the water flow longitudinal axis, determination of the surface roughness, calibration or verification of water level instrumentation, water velocity, and the appropriate calculations to be used for the determination of flow in cubic feet per second (cfs).

Special site visits may be needed if a weir is installed for low flow measurements. Storm events pose a threat of flooding if a weir is installed. Installation of a weir may cause debris to be collected and result in flooding of areas upstream of the location. Weather monitoring will be required and any weirs will be removed 3 days prior to any forecasted storm event.

Field Equipment

Automated field sampling equipment will be used to collect long term flow monitoring data. The specific instrumentation to be used will be determined following a field inspection of the sample location area. Once the equipment need is determined (e.g. pressure transducer, area velocity sensor, weir, etc…) the appropriate standard operating procedures will be developed. Water quantity instruments will be calibrated per the manufacturer's specifications during the installation. Equipment quality checks of the calibration will be performed at a predetermined frequency (e.g. bi-monthly, or monthly). Recalibration will be performed as needed.

Field crews will perform site visits to ensure the sampling equipment is in proper working order, batteries are fully charged, data is being logged successfully at the predetermined logging interval, and that sufficient data storage capacity is available. All site visits will include documenting all pertinent information on a field log sheet created for this project. Field

measurement equipment will be checked for operation in accordance with the manufacturer's specifications.

Analytical Monitoring in a Commercial Drainage Area

Samples will be collected from a commercial area to determine differences in loads between the residential and commercial specific areas. Analytical constituents to be monitored will be based at a minimum on the watersheds high priority constituents or based on regional priorities. Field technicians will be responsible for preparing sampling kits that include field logs, chain of custody forms, sample labels, sampling bottles, decontamination equipment and tools.

Quality assurance and quality control for sampling processes begin with proper collection of the samples in order to minimize the possibility of contamination. Water samples will be collected in laboratory-certified, contaminant-free sample bottles. Samples will be collected in the correct container per the specific method for each analysis. Samples will be labeled with all pertinent information including the sample location, sample ID, sample date and time, analysis to be performed, and initials of the person collecting the sample.

Field blanks will be collected at a rate of 1 sample per sampling event or as determined to be representative of the sample conditions and time frame. Field blanks are check samples that monitor contamination originating from the collection, transport, or storage of environmental samples. A field blank is analyte-free water that is poured into the sample collection device immediately following equipment decontamination and sub-sampled for chemistry analyses to verify that field cleansing procedures are adequate and sampling handling and transportation does not introduce any analytes of interest.

Field duplicates will be collected at a rate of 1 sample per event or as determined to be representative of the sample conditions and time frame. Field duplicate samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision; therefore, the results may have more variability than laboratory duplicates which measure only laboratory performance.

Chain of custody (COC) forms will accompany all samples and will be initiated immediately following sample collection. The COC will be used to document and track the possession of the samples to the appropriate laboratory for analysis and also indicates which analyses will be performed on each sample. All samples will be stored in a secured cooler on ice or per the method specified holding conditions. Delivery of the samples to the laboratory will be made with sufficient time to meet the method specified holding times for analysis.

The chemistry analysis of the samples collected will be performed by a California Department of Health Services ELAP accredited laboratory. All analyses will be conducted following the method specified on the COC or as included in the workplan provided to the laboratory and will follow the minimum quality control checks specified by the method.

In future years, the Regional Monitoring Workgroup will continue to work collaboratively with the WURMP Workgroup in the development of a list of potential source identification areas and will prioritize the list based on the guidance presented in the Model Monitoring Program. Additionally, the watershed priority problems in Table 2-1 developed by the WURMP Workgroups and the leveraging of information from the studies presented in Table 2-2 will be considered in the prioritization of potential source identification studies.

3.0 ASSESSMENT AND REPORTING

3.1 Reporting

The Annual Regional Monitoring Report submitted January 31 will include a description of the source identification monitoring that was implemented in the past Permit year. To be reported are the locations, constituents sampled, the results of the sampling, and follow-up actions taken.

Copermittees will consider the results of the studies in the implementation of their Jurisdictional Urban Runoff Management Programs and Watershed Urban Runoff Management Programs.

3.2 Program Review and Modification

As stated previously in this document, Order 2007-0001 provides the Copermittees flexibility to develop a workable source identification monitoring program. Specifically, section II.A.11 of the Permit Fact Sheet states:

"*Since a monitoring program for source identification is mostly new, the Copermittees are provided significant leeway in the development and implementation of the program. The Copermittees can utilize the flexibility incorporated into the monitoring and reporting program to develop a program that is workable for them while providing the necessary information.*"

The program described in this document meets the Permit criteria for a source identification monitoring program. As stated previously in this program, the initial year of the program will focus on data analysis collected in the MS4s and on developing a list of potential source identification studies. The prioritization will include watershed priorities and leveraging resources with other watershed studies. Copermittees should ensure that the data they collect can be directly related to making management decisions (such as site cleanups and improved BMPs) for water quality improvements.

The source identification studies are special studies, and therefore, by their nature are anticipated to be focused studies of relatively short duration that will be targeted to answer specific questions. The studies will be reviewed and modified as necessary to more effectively meet the goals of the program.

4.0 REFERENCES

Model Monitoring Technical Committee. 2004. *Model monitoring program for municipal separate storm sewer systems in southern California.* Southern California Coastal Water Research Project, Westminster, CA. Online at: ftp://ftp.sccwrp.org/pub/download/PDFs/419_smc_mm.pdf

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APPENDIX F

FY 07-08
Stormwater Complaints Summary

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-105 **Type** Private Lateral **Location Address** 1341 Foothill Dr. **Watershed** Buena Vista Creek **Call Date** 12/27/2007 **Case Closed** 12/27/2007	Private lateral spill into roadway	Wastwater crews were on scene. Property owner contacted plumber and they were told to discontinue using water. Plumber arrived and cleared line. Wastewater crew did a wash down and cleared scene.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line **Follow-up Actions** Verify line is cleared **Actions completed** Line cleared.
SW No. SW08-014 **Type** Private Lateral **Location Address** 227 Astro Ct. **Watershed** Buena Vista Creek **Call Date** 1/14/2008 **Case Closed** 1/14/2008	Sewage spill to right-of-way	Property owner stated plumbing problems of sewage backed up into house. Plumber snaked line but clean-out is down on Peters Dr. and snake won't reach to City main. Another plumber was called. This plumber (Arrow) cleared line from Peters Dr. and allowed sewage to leave site with no BMP protection. I called out City wastewater crew with Vactor to prevent it leaving Peters Dr. and entering into Lado de Loma (main thoroughfare). Plumber contacted a private wash down company to remove sewage. Area was washed down and line repaired. No NOV was written as property owner resolved the problem that day.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line. **Follow-up Actions** Witnessed line clear and area mitigated. **Actions completed** Area clear.
SW No. SW08-021 **Type** Private Lateral **Location Address** 184 Pala Vista Dr. **Watershed** Buena Vista Creek **Call Date** 2/13/2008 **Case Closed** 2/13/2008	Sewage Spill	While up the road @ 215 Pala Vista I noticed a trail of white specks traveling north on Pala Vista. I traced it to 184 Pala Vista and a sewage spill had occurred. I contacted the property owner and requested a plumber to clear the line. Plumber cleared line and cleaned up sewage. Scene cleared.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear line **Follow-up Actions** Verify line is clear **Actions completed** Line cleared - water running

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-038 **Type** Private Lateral **Location Address** 2112 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 3/10/2008 **Case Closed** 6/12/2008	Sewage Spill into roadway.	Residential private lateral spilling sewage into roadway. Wastewater crew on scene. Plumber enroute. 3/26/08, received a call from Morningview Associates regarding 2112 E. Vista Way #30. 3/28/08, they have contracted with Arrow Pipeline.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Provide camera (video/DVD) of line; provide invoice of plumber suggested repair; provide copy of contract by plumber for professional regular maintenance of private lateral. **Follow-up Actions** Receipt of camera, invices and contract. **Actions completed** 6/11/08, Contract received: plumber will maintain condo plumbing annually.
SW No. SW08-043 **Type** Private Lateral **Location Address** 337 W. Los Angeles **Watershed** Buena Vista Creek **Call Date** 3/20/2008 **Case Closed** 3/24/2008	Sewer blocked - Chronic condition	Sewer was blocked and had previous discharge, according to Wastewater Dept.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Repair Line **Follow-up Actions** Verify line is clear - contact plumber (Pacific Drain) **Actions completed** Line repaired after jetting line. Video camera was used to check line - showed root intrusion.
SW No. SW08-055 **Type** Private Lateral **Location Address** 300 Peters Dr **Watershed** Buena Vista Creek **Call Date** 6/3/2008 **Case Closed** 6/26/2008	Sewer lateral spill (possible nicked/cut line per Wastewater) just west of 300 / 302 Eddie Dr.	Wastewater tested line from clean-out with dye. Water came up through hole in asphlat roadway just west of 302 Eddie Dr. Private lateral leads uphill and south to 300 Peters Dr. Wastewater tested toilet with dye at 302 Eddie Dr. to confirm not their private lateral. 6/23/08, exploritory hole dug in street at site of seepage with metal plate over and cones. 6/25/08, per Cox Communications construction supervisor, one of their sub-contractors "Sunshine Communication" is repairing the damaged sewer line.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Repair line and provide copy of plumber's invoice. **Follow-up Actions** Verify that line is repaired; contact plumber. Several attempts made to contact property owner with negative results form 6/4/08 through 6/23/08. 6/24/08 and 6/25 08, calls to Vista Irrigation District and Cox Communications in reference to exploritory hole dug with metal plate over it. 6/26/08, contacted the Building Dept. in reference to this repair work. They will handle project and conduct inspections. **Actions completed** Line repaired but not to code and done without a permit by Sunshine Communications. Building Dept. will handle, requiring permit by licensed plumber prior to Building Dept. re-inspecting the line repair.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-080 **Type** Commercial **Location Address** 1037 Bobier Dr. **Watershed** Buena Vista Creek **Call Date** 7/11/2007 **Case Closed** 7/11/2007	Washing off pavement and not capturing the discharge.	Area was wet and 'Caution Wet Surface' signs were positioned at the front door. The whole of area was wet and discharge had left site and entered right-of-way and extended down to inlet 200 yds south. The Manager has been iinstructed for at least 4 years not to discharge water off site and to reclaim all cleaning water. A D-Max inspection was done on 1/16/07 and they (Del Taco) told D-Max they hose off site. I performed a follow-up inspection and again told Manager not to hose off site. I contacted the area Director. He assured me no further discharge would occur. I recommended professional pressure wash companies that do reclaim discharge.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge and reclaim all fluids thereafter. **Follow-up Actions** Intermittent inspections **Actions completed** Intermittent inspections
SW No. SW07-084 **Type** Commercial **Location Address** 620 S. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 7/11/2007 **Case Closed** 8/22/2007	Un-manned fueling station with stormwater violations and no contact responding to D-Max inspection.	7/11/07, attempted contact with available phone numbers. Visited site and contact information was illegible. Contacted Business License and was provided with current information. Dialed the number - no connection. 8/3/07, placed two calls to a different number; was placed on hold and directed to a voice messanger with no connection. Recontacted operator and was put through directly into voice message. Representative would be returning 8/8/07. 8/9/07, contacted Rep. and agreed to meet on site, same day. He explained site and flow is directed to storm ceptor. Clear water is then discharged to storm drain. 8/14/07, Requested schematic of storm ceptor by Rinker Materials - distributer of the unit. 8/15/07, sent NOV via fax to Rep.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Provide second containment and overhead coverage for hazmat drum; remove trash and debris from site and maintain; label emergency information. **Follow-up Actions** Photo verify **Actions completed** Drum moved inside and area clean. Emergency information is legible.
SW No. SW07-081 **Type** Commercial **Location Address** 2316 La Mirada Dr. **Watershed** Agua Hedionda Creek **Call Date** 7/18/2007 **Case Closed** 8/15/2007	Metal shavings, trash and debris throughout site.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge; remove metal shavings, trash and debris throughout site; keep lids closed on dumpsters; **Follow-up Actions** Photo verify **Actions completed** Bins have lids closed. Area has bee swept, trash removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-082 **Type** Commercial **Location Address** 1025 Service Pl **Watershed** Buena Vista Creek **Call Date** 7/24/2007 **Case Closed** 8/3/2007	Leaking sprinkler	8/1/07, Owner contacted me regarding irrigation and wanted clarification	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, repair system **Follow-up Actions** Photo verify **Actions completed** Area dry
SW No. SW07-085 **Type** Commercial **Location Address** 345 Olive Ave. **Watershed** Buena Vista Creek **Call Date** 8/9/2007 **Case Closed** 8/17/2007	Lack of BMPs throughout site. Batteries on ground; leaking transmissions; no coverage for oil drums; trash and debris throughout.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs; cover oil drums, batteries etc. **Follow-up Actions** Photo verify. **Actions completed** Area has had some clean-up work - drums are covered; batteries removed; engine with pallets and tarps. Business owner stated he would continue to improve and maintain area.
SW No. SW07-091 **Type** Commercial **Location Address** 1713 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 8/31/2007 **Case Closed** 10/10/2007	Sediment discharging off site	Following Labor Day weekend, site was inspected. The street sweeper owned by Coast Rental was cleaning perimeter. The area requires continual maintenance as rental equipment enters/exits all day long.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Remove sediment discharging off site. Provide maintenance schedule for cleaning and maintain continually. **Follow-up Actions** Photo verify and receipt of maintenance schedule **Actions completed** 9/1/07, Faxed received copy of Coast maintenance schedule. 9/26/07, inspected site - area not maintained well enough as sediment/mud is still being tracked on to right-of-way. Issue citation. 10/8/07, property owner increased cleaning schedule and area is maintained.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-096 **Type** Commercial **Location Address** 408 Olive Ave **Watershed** Buena Vista Creek **Call Date** 11/20/2007 **Case Closed** 12/5/2007	High Volume of water discharging off site.	I spoke with John Burzinsky of PWLCI, Inc. Landscape Management at the site. Trucks had been washed and allowed to discharge to roadway. While at site, I addressed additional violations and issued a NOV.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge and implement all requested BMPs. **Follow-up Actions** Photo verify **Actions completed** Area mitigated and corrective action verified. NOV signed on site and given to business representative.
SW No. SW07-104 **Type** Commercial **Location Address** 420 Olive Ave **Watershed** Buena Vista Creek **Call Date** 12/7/2007 **Case Closed** 1/15/2008	Mud tracking to right-of-way.	With Olive Ave. improvements, other violations of BMP failure becomes prevelant. Noticeable dirt/mud is being tracked off 420 Olive Ave into right-of-way. Rain events had occurred, so site was monitored to determine origin of mud.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge. Implement perimeter protection. **Follow-up Actions** Photo verify. 1/4/08, Fiber rolls in place but installed incorrectly. Sent verifying letter to property owner. **Actions completed** Fiber rolls secured.
SW No. SW08-015 **Type** Commercial **Location Address** 316 Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 1/22/2008 **Case Closed** 3/12/2008	Spill containment that was previously in place is no longer in or under grease recycle bin or dumpster enclosure. Grease and fluid spill migrating out of enclosure.	As of 1/22/08, citation #1306 still outstanding per our Code Enforcement Dept. Observed as described in Complaint Description. 2/7/08, I contacted Panda Express Propery Management and spoke with Chi Phan. He stated there was a health issue with urine and feces from transients using spill tray for a toilet so they removed the spill tray. Chi felt "it was no big deal". I reiterated it is a "big deal" and the grease recycler was required to have spill containment or the APS installment as promised in 2006. Presently, neither exist and grease is discharging off the site. I further stated that I had not received any communication from anyone at Panda Express. When I requested corrective action by 2/7/08 at 8 a.m. it was to be done and sending an explanation letter from Panda Express was not corrective action. Chi said he would contact the on-site Manager to replace the 'cleaned' pan. Chi wanted to know what other businesses had the same BMP requirements. I told him all businesses in Vista and directed him to food businesses up and down Sycamore. (I had previously addressed this very question in 2006.)	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease discharge; implement BMPs. **Follow-up Actions** Photo verify 2/7/08, no correction. Call Panda before issuing next citations **Actions completed** 2/14/08, Yellow soft sided tray installed under grease bin. 3/12/08, monitored area - pan is functional

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-022 **Type** Commercial **Location Address** 2351 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 2/4/2008 **Case Closed** 6/27/2008	Received a complaint from the County. Sediment is leaving site entering E. Vista Way. Some inadequate BMPs are in place.	Observed as described in Complaint Description. 2/5/08, I spoke with tenant and he stated that his brother is upgrading BMPs. 2/12/08, Green mesh fence installed. 2/26/08, on followup investigation, some BMPs have been placed but inappropriately. 2/29/08, call from brother and he has started with more BMPs - silt fencing, discussed additional BMPs (sandbags) for large gully to prevent sediment discharge. Follow-up today with photos. Wednesday, 3/5/08, additional photos. Sandbags in place in large rut. Additional silt fencing in place; however, installed incorrectly. 3/12/08. Site inspection; most BMPs in place (silt fence & sandbags). 6/24/08, Area vegitiated and other BMPs in place (silt fencing and sandbags-check dams).	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Upgrade existing BMPs **Follow-up Actions** Photo verify. Meet with property owner to discuss proper installation of BMPs and walk property; get literature to property owner in reference to BMPs. **Actions completed** Silt fencing in place, sand bag check dams in place. Denuded areas vegitated.
SW No. SW08-024 **Type** Commercial **Location Address** 826 N. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 2/21/2008 **Case Closed** 3/16/2008	Fluids from car parts and improper storage of hazmat drums - no spill containment or overhead coverage.	Observed as described in Complaint Description. I spoke with tenant and he requested a Spanish translator. A delivery person provided English/Spanish.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove fluids from pavement using dry method. Remove hazmat drums from enclosure or provide second containment and overhead coverage. Do not work on vehicles outside. **Follow-up Actions** Photo verify. 2/29/08, some work done - allocated additional time as drums needed to be emptied to relocate drums. 3/6/08, most corrective action has occurred, recheck for completion on Monday, 3/10/08. **Actions completed** Area cleaned. Some racks and empty drums remain but do not appear to impede the drainage ditch flow from the apartment complex to the west.
SW No. SW08-056 **Type** Commercial **Location Address** 1380 Aspen Way **Watershed** Agua Hedionda Creek **Call Date** 3/10/2008 **Case Closed** 7/17/2008	Reporting person from Public Works called in reference to red colored water with possible pollutants flowing down Aspen Way to inlet at S. Melrose Dr.	Found rusty colored water running from outlet in front of 1380 Aspen Way. Sump at northeast corner of property slowly filling with ground water and being pumped to a curb outlet into the City curb conveyance system. Water then travels westbound to a storm drain inlet near the corner at S. Melrose Dr. Weston Solutions, Inc., hired to test pumped groundwater discharge at point source and outfall, found levels of manganese, sulfates and TDS exceeding the water quality objectives; therefore, groundwater is considered contaminated.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** 6/10/08, immediately cease the illegal discharge of contaminated ground water from the property and abate the violation. Contact Officer Heltmach immediately and no later that 6/25/08 with information and a timeline on how Amron International will resolve this issue. **Follow-up Actions** 6/24/08, left voice mail for the Manager to remind him to send an e-mail with plan of action and timeline. 6/24/08, e-mails to/from Manager referencing plan and timeline. Photo verify **Actions completed** Corrective actions verified. 270' vegetated (grass) bio-swale, no signs of discharge from property.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-045 **Type** Commercial **Location Address** 444-B S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 3/20/2008 **Case Closed** 4/21/2008	Leaky car fluids, leaky oil drums. Using hose faucet outside bathroom with 5 gal. buxket to wash hands.	3/27/08, complaint confirmed as in Complaint Description and photo documented. Also, car parts were on the ground, lid was off garbage can, vehicle fluids/grease/oil on driveway/lot and a vehicle was being worked on outside.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clean car fluids with dry sweep method. Clean secondary containment under oil drums, spilled oil. Clean tops of oil drums. Clean asphalt area around oil drums and garbage can. Cover garbage can. Put all car parts inside or under cover. No working on vehicles outside. Install sink in the bathroom for hand washing (no more use of hose faucet and bucket). **Follow-up Actions** Photo verify. 4/1/08, several areas cleaned with other areas still unsatisfactory. Issued NOV. 4/9/08, Photos; progress made, given until 4/11/08 to complete. Warning was given for working on vehicles outside. 4/11/09, Photos; area clean of car fluids, oil drums clean and secondary containment cleaned. Asphalt around drums and garbage can is clean; lid is on garbage can, no car parts are outside, no vehicles are being worked on outside. Still installing sink. **Actions completed** BMPs are in place and being maintained. Areas cleaned satisfactorily.
SW No. SW08-044 **Type** Commercial **Location Address** 1535 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 3/25/2008 **Case Closed** 3/31/2008	Office Heltmach and I witnessed employee brooming a milky discharge off into road.	Further investigation indicated numerous stormwater discharge violations; open trash dumpster, food, trash and debris throughout site.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge, hereafter, use no water unless all is reclaimed. **Follow-up Actions** Photo and visually verify. Continuously monitor area. **Actions completed** Area dry since 3/26/08.
SW No. SW08-047 **Type** Commercial **Location Address** 444 S. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 4/11/2008 **Case Closed** 4/17/2008	Repairs on vehicles outside, potential for illegal discharge	On an unscheduled site inspection (previous case # MISC 0708-067) I observed a mechanic repairing a vehicle outdoors in violation of V.M.C. 13.18.090.E.1 - vehicle repair and maintain BMPs. Previously warned on 3/27/08. Mechanic admitted to repairing hoses on the van. Photographed violation, issued NOV to management.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** No vehicle repairs nor maintenance unless performed indoors under a permanent roof. **Follow-up Actions** Photo verify. Routine unscheduled site inspections. **Actions completed** No repairs being done outside. Spoke with the on-site manager and informed him that any future violations are citable.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-049 **Type** Commercial **Location Address** 845 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 4/14/2008 **Case Closed** 5/8/2008	Several oil drums outside on the ground in the yard, unprotected. No secondary containment nor overhead coverage present.	Confirmed as in Complaint Description. Additionally, there is evidence that the business is servicing vehicles in the yard area and service bay (small single stall garage). Lack of minimum BMPs for vehicle repair and maintenance (exposed car parts, oil spills not cleaned up, open/exposed 5 gallon buckets of used oil).	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Immediately abate the violations, install/maintain BMPs **Follow-up Actions** Photo verify **Actions completed** Areas were cleaned and BMPs were in place.
SW No. SW08-048 **Type** Commercial **Location Address** 1275 S. Santa Fe Ave #117 & 118 **Watershed** Buena Vista Creek **Call Date** 4/15/2008 **Case Closed** 5/9/2008	No secondary containment or overhead coverage for grease recycle drums.	Confirmed as in Complaint Description. Additionally, lid on the trash bin was left open with trash overflowing. Trash and debris in parking and sidewalk area.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Immediately abate each violation; immediately cease illegal discharge. Install and maintain BMPs. **Follow-up Actions** Photo verify **Actions completed** BMPs in place; secondary containment and overhead coverage were installed for grease recycle drum. Trash and debris were not overflowing from dumpster and the parking lot and sidewalk areas were free of trash and debris.
SW No. SW08-050 **Type** Commercial **Location Address** 151 Vista Village Dr. **Watershed** Buena Vista Creek **Call Date** 4/26/2008 **Case Closed** 5/28/2008	Overwatering and not reclaiming runoff.	Eastside Garden Center had watered plants due to extreme high temperature. Water was allowed to run off pavement and entered storm drain inlet. Previous training and BMP Spill Management Plan by Lowe's Corp. in Sept. 2007 stated they would not allow runoff. I spoke with the Assistant Manager and issued a citation.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge; remove sediment tthrough site ditches, curb/gutters; remove outside storage immediately and hereafter. **Follow-up Actions** Monitor for compliance. **Actions completed** Area clean and dry.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-052 **Type** Commercial **Location Address** 316 Sycamore Ave **Watershed** Buena Vista Creek **Call Date** 5/12/2008 **Case Closed** 5/15/2008	Grease entering City wastewater sewer system from grease interceptor.	No receipt was readily available to provide documentation of cleaning grease interceptor. Secondary containment under grease recycle bin damaged/ineffective/not properly installed. Grease accumulation under/around grease recycle bin.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clean grease accumulation around grease recycle bin. Install secondary containment properly. Provide documentation of grease interceptor cleaning/maintenance to include amount of grease removed. **Follow-up Actions** Photo verify, check e-mail, get copy of grease interceptor cleaning ticket. **Actions completed** Dumpster area cleaned, grease recycle bin cleaned and will be removed tomorrow as A.P.S. unit is installed and now being used. Grease interceptor cleaned this morning. Copy of invoice/receipt provided, will have cleaned/serviced monthly.
SW No. SW08-057 **Type** Commercial **Location Address** 444-B S. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 6/11/2008 **Case Closed** 6/24/2008	Repairs being done on vehicles outside. Potential for illegal discharge. (Proactive)	Stormwater Code Enforcement Officers observed two mechanics repairing vehicles outdoors and not under the permanent roof for the business - in violation of Vista Municipal Code 13.18.090.E.1, Vehicle Repair and Maintenance BMPs. Photographed violation.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** No vehicle repairs nor maintenance unless performed indoors under a remanent roof. **Follow-up Actions** Photo verify. Routine, unscheduled site inspections. **Actions completed** All vehicle repairs being done under cover with drip pans.
SW No. SW08-059 **Type** Commercial **Location Address** 1045 N. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 6/20/2008 **Case Closed** 7/7/2007	Annual Stormwater Inspection indicates lack of general housekeeping maintenance.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Mitigate all appropriate BMPs for location. **Follow-up Actions** Photo verify **Actions completed** All corrections have been made - area greatly improved.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-058 **Type** Industrial **Location Address** 3285 Corporate View Dr. **Watershed** Agua Hedionda Creek **Call Date** 6/16/2008 **Case Closed** 7/2/2008	Grease spill and tracking into roadway and gutters from a 55 gal. drum.	Observed as described in Complaint Description. Further investigation indicated lack of housekeeping throughout site. Loading dock and compactor had accumulation of fluids. Storm drain inlet on east side was clogged. Trash and debris throught site, grease at parking stalls - excessive in areas.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge. Remove grease drum from exterior location; remove grease accumulation throughout site pavement. **Follow-up Actions** Photo verify site and receive Spill Containment Plan information. **Actions completed** 6/24/08, Area mitigated - Spill Containment Plan received.
SW No. SW07-086 **Type** Residential **Location Address** 1131 Lime Pl. **Watershed** Buena Vista Creek **Call Date** 7/26/2007 **Case Closed** 9/12/2007	Sediment discharge to right-of-way	Observed as in Complaint Description. I spoke with property owner and requested sediment be removed.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove loose dirt. Implement perimeter protection and entrance/exit driveway. **Follow-up Actions** Photo verify 8/1/07, Some removal - driveway not addressed - issue NOV. 8/27/07, area improved; driveway has no BMPs - callled property owner and she stated that the gravel is to be placed the week of 9/10/07. One owner is in construction and is familiar with entrance/exit BMPs. **Actions completed** Dirt driveway has gravel and area is cleared of loose sediment and frontage.
SW No. SW07-083 **Type** Residential **Location Address** 721 Oceanview Dr. **Watershed** Buena Vista Creek **Call Date** 7/26/2007 **Case Closed** 8/2/2007	I received a call from our Code Enforcement Officer. Site is in disrepair and failing BMPs.	I contacted the property owner and requested clean-up. He stated he would submit plans next week as well as clean-up.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Area requires maintenance and securing of perimeter. Referred to Code Enforcement. **Follow-up Actions** Photo verify **Actions completed** Due to plan submittal and BMPs, while in disrepair, seem to be functional, it was requested to upgrage BMPs throughout site before October 1, 2007. Property owner agreed - Area will be monitored. Case referred to Code Enforcement.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-087 **Type** Residential **Location Address** 535 Rancho Vista Rd **Watershed** Buena Vista Creek **Call Date** 8/13/2007 **Case Closed** 8/30/2007	Vegetation accumulating in drainage ditch.	Observed as in Complaint Description. I have spoken twice previously with property owner.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation and maintain. **Follow-up Actions** Photo verify **Actions completed** Area clean.
SW No. SW07-093 **Type** Residential **Location Address** 115 E. Connecticut **Watershed** Buena Vista Creek **Call Date** 8/14/2007 **Case Closed** 10/8/2007	Hosing off property into alleyway creating erosion of west slope and degradation of alley.	Observed two male maintenance workers hosing off apt. complex and driveway/alley area. The water continues to run-off down west slope creating erosion that collects on dumpster enclosure pavement below. This water and dirt continues across pavement and into business parking lot to street.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** cease hosing water discharge; reduce over-irrigation; do not wash off trash cans into alleyway. **Follow-up Actions** Monitor intermittently **Actions completed** Monitor intermittently
SW No. SW07-090 **Type** Residential **Location Address** 211-215 E. Connecticut Ave. **Watershed** Buena Vista Creek **Call Date** 8/28/2007 **Case Closed** 8/29/2007	Excessive car washing, cleaning trash cans out at curbside.	Chronic car washing and hosing off site. A spanish translator spoke with grouped residences requesting water reduction and no trash can cleaning at curbside.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease excessive water discharge; do not clean trash cans at roadway; sweep (do not hose off) area; provide shut off nozzle on hose while in use. **Follow-up Actions** Intermittent monitoring **Actions completed** Intermittent monitoring

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-089 **Type** Residential **Location Address** 205-209 E. Connecticut Ave. **Watershed** Buena Vista Creek **Call Date** 8/28/2007 **Case Closed** 8/29/2007	Excessive car washing, cleaning trash cans out at curbside.	Chronic car washng and hosing off site. A Spanish translator spoke with grouped residences requesting water reduction and no trash can cleaning at curbside.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease excessive water discharge; do not clean trash cans at roadway; sweep - do not hose off - the area; **Follow-up Actions** Intermittent monitoring **Actions completed** Intermittent monitoring
SW No. SW07-095 **Type** Residential **Location Address** 209 Casper Ln **Watershed** Buena Vista Creek **Call Date** 10/26/2007 **Case Closed** 11/20/2007	Cigarette butts, boxes, trash and debris accumulating at corner of Casper Ln. and Alta Vista Dr.	Area is congested with cigarette butts, boxes and trash. I have seen people cross the street from 700 Alta Vista Apts. I spoke with two women requesting clean-up and maintenance. They would inform the Manager. 11/13/07, I sent a letter to the property owner as the site was still being littered. Property owner left message providing us with the name of site manager. Site manager stated transient characters associating with one tenant is to blame for the litter. She stated that an eviction notice has been served. I requested maintenance of location. Site manager stated the complex is SMOKE FREE so tenants cross the street. I told her the litter was a code violation. The area will be monitored for compliance.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove litter and cease further discharge. **Follow-up Actions** Monitor for trash removal and site maintenance. **Actions completed** Area clean.
SW No. SW07-094 **Type** Residential **Location Address** 1696 Countryside Dr. **Watershed** Agua Hedionda Creek **Call Date** 11/12/2007 **Case Closed** 11/15/2007	Concrete washed into curb/gutter	Concrete residue apparent throughout the east side of Countryside Dr. Left NOV at 1696 Countryside Dr.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove all concrete residue from street, curb/gutter and private driveways. **Follow-up Actions** Photo verify **Actions completed** I received a call from the property owner who had an accident with a concrete mixer and now cleaned all of the area. Before and after photos indicate area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-102 **Type** Residential **Location Address** 2668 Magellan **Watershed** Agua Hedionda Creek **Call Date** 11/30/2007 **Case Closed** 12/27/2007	Sediment discharge from denuded frontage	Area was clean. Rain event pending for 12/7/07. Recheck if run-off occurs. 12/7/07, area had sediment discharge off property.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment and implement BMP at perimeter. **Follow-up Actions** Photo verify **Actions completed** Area swept. Dirt appears lower behind concrete driveway.
SW No. SW07-100 **Type** Residential **Location Address** 812 Crescent Dr. **Watershed** Buena Vista Creek **Call Date** 12/3/2007 **Case Closed** 1/17/2008	Sediment discharge	Slope is somewhat vegetated. Easement in front of toe has been referred to Public Works Dept. for correction.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Continue to allow vegetation to mature. **Follow-up Actions** Monitor **Actions completed** Vegetation is established and run-off is not visible.
SW No. SW07-099 **Type** Residential **Location Address** 832 Crescent **Watershed** Buena Vista Creek **Call Date** 12/3/2007 **Case Closed** 1/30/2008	Sediment discharge, denuded lot	Property is a vacant lot next to a residence. Area ditch has drainage running parallel to road and property. The property has little vegetation on it.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs, remove dirt from roadway. **Follow-up Actions** Some vegetations is growing but insufficient - sent NOV. **Actions completed** BMPs installed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-101 **Type** Residential **Location Address** 818 Crescent Dr. **Watershed** Buena Vista Creek **Call Date** 12/3/2007 **Case Closed** 1/30/2008	Sediment discharge	The denuded slopes discharge to a City right-of-way and asphalt road at a corner. Sediment tracks up and down the street.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs to prevent further discharge and vegetate slopes and any denuded property. **Follow-up Actions** Property owner requested an extension. 1/10/08, area has some fiber rolls but inadequate. I contacted the property owner to request further upgrade by adding more fiber rolls along toe of slope. I scratched location of fiber rolls on toe to indicate additional BMP placement. The property owner stated he would locate it upon return from work that evening. 1/22/08, no further corrective action. Placed call property owner requesting the ETA of additional BMPs. **Actions completed** All BMPs have been implemented at perimeter of property.
SW No. SW07-098 **Type** Residential **Location Address** 1802 Monte Vista Dr. **Watershed** Buena Vista Creek **Call Date** 12/3/2007 **Case Closed** 1/16/2008	Mud discharge from 1802 Monte Vista onto school parking lot to the west and below.	I spoke with someone from the Vista Unified School District (VUSD). He state that the property at 1802 has a clogged drain inlet and it causes flooding below and onto the school lot. 12/3/07, drain inlet is not shown on any of our maps or easement documents. 1/8/07, I contacted VUSD for their plans.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** implement BMPs and cease further discharge **Follow-up Actions** Photo verify. 1/16/08, bags in place. **Actions completed** corrective action taken - BMPs are in place
SW No. SW07-097 **Type** Residential **Location Address** 749 Rincon **Watershed** Buena Vista Creek **Call Date** 12/4/2007 **Case Closed** 12/26/2007	Washer outside and not plumbed to sewer system. Water discharging off property and into roadway.	Observed as described in Complaint Description. I spoke with tenant. She understood only some English.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove washer from location; cease discharge; or plumb to sewer system. **Follow-up Actions** Photo or verify by observation. 12/20/07, contacted Engineering Inspector for Spanish translation as tenant did not correct violation. **Actions completed** Washer removed from site.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW07-103 **Type** Residential **Location Address** 1174 Sunset Dr **Watershed** Buena Vista Creek **Call Date** 12/19/2007 **Case Closed** 3/17/2008	Lack of BMPs at perimeter allowing mud to discharge to storm drainage system to rear of property.	Observed as described in Complaint Description. Additionally, much mud cascaded into the neighbors rear garage and property at 1049 Buena Vista Dr. 2/15/08, I rechecked with our Land Development Dept for a phone number for property owner, none listed. Used Reverse Directory and found a number, dialed and heard the busy signal. Redialed and his son answered. He explained that the dirt piles are for his BMX bike track. I recommended he continue to allow vegetation to grow on mounds. Contacted property owner and arranged to meet on site on 2/19/08. 2/19//08, Land Development Assoc. Eng. and I met with the propery owner. Propery owner explained water from both east and west residences directed water run-off to his property creating erosion on his property leading to creek. We asked him to fill in drainage trench he created at rear of property and to allow vegetation to establish. We would recheck property in two weeks. 3/5/08, follow-up shows vegetation being established, drainage trench not filled in. Contacted property owner. 3/11/08, contacted property owner. He has started work on trench filling. I told him I sent a letter to 1192 Sunset Dr. requesting a pipe extension to avoid further run-off crossing properties.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge. Implement perimeter protection. **Follow-up Actions** Photo verify. 1/3/08, no corrective action - issue NOV. 1/16/08, Stormwater Program Manager and I did a site visit. Hay bales are insufficient; issue citation. Stock piles are not covered and recently dug trench has potential to spill. 2/1/08, Additional silt fence; sediment still running off property. Issue second citations. 2/14/08, inspected site during rain and mud is still flowing off property. **Actions completed** Silt fences repaired, trenches filled and vegetation established.
SW No. SW07-106 **Type** Residential **Location Address** 627 Shuboro St. **Watershed** Buena Vista Creek **Call Date** 12/31/2007 **Case Closed** 12/31/2007	Flushing radiator into storm drain inlet. Chronic abuse - washes cars, semi truck , flushes into inlet. Late evening or weekend activity. Storm drain inlet overflows regularly.	I spoke with property owner. I saw no indication of car fluids. I provided a HELP brochure and requested that nothing go into the storm drain system. They asked about car washing and I suggested to wash car on lawn or use a car wash. (referred to Public Works and Code Compliance)	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease any further discharge. **Follow-up Actions** Monitor for compliance **Actions completed** Property owner stated that he would wash the car on the lawn.
SW No. SW08-008 **Type** Residential **Location Address** 1132 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/28/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president has been notified with copies of NOV / letter **Actions completed** Area clean & sediment removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-010 **Type** Residential **Location Address** 1137 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/23/2008	Failure to maintain drainage ditch. Sediment discharge and trash	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Area cleared - HOA notified
SW No. SW08-009 **Type** Residential **Location Address** 1133 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/23/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Area cleared. HOA notified.
SW No. SW08-002 **Type** Residential **Location Address** 351 E. Indian Rock Rd. **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/22/2008	Failure to maintain drainage ditch.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Ditch clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-007 **Type** Residential **Location Address** 1128 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/28/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president notified with copies of NOV / letter **Actions completed** Area clean and sediment removed.
SW No. SW08-006 **Type** Residential **Location Address** 1124 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/28/2008	Failure to maintain drainage ditch, sediment dishcarge and trash.	Observed as described in Complaint Description. 1/28/08, I spoke with propery owner. He is extremely frustrated with the home owners association. I requested he maintain his portion of his property.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president notified with copies of NOV / letter. **Actions completed** Area clean. I contacted the property owner that area is clean but will require maintenance hereafter.
SW No. SW08-005 **Type** Residential **Location Address** 1122 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/28/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description. 1/22/08, received call from property owner. I explained the concern and she was going to speak w/ HOA president to correct the chronic problems. I explained enforcement escalates if issues are not resolved.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash. **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president notified with copies of NOV / letter. **Actions completed** Area clean and sediment removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-003 **Type** Residential **Location Address** 1114 Coshise Ct. **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/28/2008	Failure to maintain drainage ditch. Sediment discharge and trash present.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president was notified with copies of NOV/ letter. **Actions completed** Area clean & sediment removed.
SW No. SW08-013 **Type** Residential **Location Address** 1149 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/22/2008	Failure to maintain drainage ditch. Sediment discharge and trash	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Trash and sediment removed - HOA president also notified.
SW No. SW08-004 **Type** Residential **Location Address** 1118 Cochise Ct. **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/28/2008	Failure to maintain drainage ditch, sediment discharge and trash.	Observed as described in Complaint Description. 1/20/08, I spoke with property owner. He cleared his area Saturday. I requested he maintain area and encourage tenants to assist in maintenance of frontage and properties.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify. 1/22/08, no corrective action - issue NOV. HOA president was notified with copies of NOV / letter. **Actions completed** Area clean and sediment removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-012 **Type** Residential **Location Address** 1145 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/23/2008	Failure to maintain drainage ditch. Sediment discharge and trash.	Observed as described in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Area cleared - HOA notified.
SW No. SW08-011 **Type** Residential **Location Address** 1141 Cochise Ct **Watershed** Buena Vista Creek **Call Date** 1/2/2008 **Case Closed** 1/23/2008	Failure to maintain drainage ditch. Sediment discharge and trash	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clear ditch, implement perimeter protection and remove trash **Follow-up Actions** Photo verify **Actions completed** Area cleared - HOA notified.
SW No. SW08-001 **Type** Residential **Location Address** 619 Rolling Hills Rd **Watershed** Agua Hedionda Creek **Call Date** 1/7/2008 **Case Closed** 1/15/2008	Clean-out cap not secure. Cap not appropriate for pipe. Pipe not ABS.	Observed as in Complaint Description. I spoke with the property owner. She stated plumbing work had been done 3 weeks prior and she wasn't experiencing any ploblems. The clean-out caps on the line were not replaced by plumbers.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Replace line with appropriate cap. **Follow-up Actions** Photo or view verify **Actions completed** Cap installed with appropriate ABS pipe.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-016 **Type** Residential **Location Address** 356 Peters Dr. **Watershed** Buena Vista Creek **Call Date** 1/15/2008 **Case Closed** 3/31/2008	Sediment run-off due to eroding driveway and lawn parking.	Observed as described in Complaint Description. Also referred this complaint to City Code Enforcement and Building Dept.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and implement perimeter protection **Follow-up Actions** Visual / Photo **Actions completed** 3/31/08, Area monitored and no sediment discharge. The potential remains as cars still park parallel and on dirt. The area will be monitored for sediment spills.
SW No. SW08-019 **Type** Residential **Location Address** 1264 Peach Grove Ln **Watershed** Buena Vista Creek **Call Date** 1/24/2008 **Case Closed** 3/24/2008	Obstructing water course with trash, debris metal bars and toys.	Observed as described in Complaint Description. 1/30/08, I left a HELP brochure and photos plus Chpt 13.18.045 Section at 1618 York Dr. Code Enforcement Officers contacted tenants on 1/21/08. Some clean-up occurred but trash/bars not removed. 2/25/08, Property owner of 1254 Peach Grove Ln. came to the Engineering Dept. to complain about soil/debris build-up along west fence line. On site inspection indicates greater accumulation of sediment. Spoke with tenant and stated recommendation to remove excessive mud and informed him that I would be contacting the property owner. E-mailed pictures to property owner with explanation. 3/4/08, returned phone call to neighbor (complainant), advised progress on case, that we spoke with tenant and have communication with property owner to meet this week. Requested that they resend letters and attachments that were sent to City Manager, Rita Geldert. Scheduled to meet with property owner on 3/6/08 at 4:30 p.m. 3/24/08, Bamboo stumps removed from watercourse, photos taken.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove obstruction, trash, debris, toys, etc.. **Follow-up Actions** Photo verify. **Actions completed** Debris and trash removed from water course. What was in the water course is now on side of water course on the uphill slope of rear yard of 1264 Peach Grove Ln. Bamboo stums removed from water course at 1254 Peach Grove Ln.
SW No. SW08-026 **Type** Residential **Location Address** 305 W. Taylor St. **Watershed** Buena Vista Creek **Call Date** 2/7/2008 **Case Closed** 3/17/2008	Sediment, trash and vegetation accumulating in drainage ditch.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove accumulation and maintain ditch. **Follow-up Actions** Photo verify **Actions completed** Ditch cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-025 **Type** Residential **Location Address** 357 W. Taylor St **Watershed** Buena Vista Creek **Call Date** 2/7/2008 **Case Closed** 4/17/2008	Sediment discharge from property to right-of-way	Area not maintained. Gravel and dirt cascade across panhandle driveway and enters drainage ditch at west site of downhill properties. Dirt is tracked to north and out to right-of-way. 3/5/08, letter returned with forwarding address - resent.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement perimeter protection and maintain. **Follow-up Actions** Photo verify **Actions completed** Gravel bags implemented - area cleaner.
SW No. SW08-027 **Type** Residential **Location Address** 307 Taylor St **Watershed** Buena Vista Creek **Call Date** 2/7/2008 **Case Closed** 3/17/2008	Sediment accumulcation and vegetation encroaching into drainage ditch on south and west side of property.	Observed as described in Complaint Description. 3/10/08, Property owner came into the office requesting additional time to clear ditch. I left message stating additional time, a consideration with an end date.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation and sediment; maintain thereafter. **Follow-up Actions** Photo verify **Actions completed** Ditch cleaned.
SW No. SW08-028 **Type** Residential **Location Address** 309 W. Taylor St **Watershed** Buena Vista Creek **Call Date** 2/7/2008 **Case Closed** 4/22/2008	Sediment accumulation and vegetation encroaching into drinage ditch on north and west side of property	Observed as decribed in Complaint Description. 3/26/08, spoke with daughter requesting owner call us. 3/31/08, Contacted owner. They are hiring a contractor to clear the ditch. We agreed on an extension until 4/7/08 or citations will be issued.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation and sediment, maintain thereafter. **Follow-up Actions** Photo verify. 2/17/08, follow-up showed no corrective action taken, issue NOV. 4/9/08, Substantial corrective action taken, photos taken - issue warning letter to finish the clean-up. 4/22/08, follow-up letter sent. **Actions completed** 4/15/08, corrective action taken. Areas clear of trash, vegetation and sediment.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-029 **Type** Residential **Location Address** 301 W. Taylor St **Watershed** Buena Vista Creek **Call Date** 2/7/2008 **Case Closed** 3/17/2008	Sediment accumulation and vegetation encroaching into drainage ditch on west side of property.	Observed as described in Complaint Description. 3/10/08, letter came back (addressed to 310 W. Taylor St) …no such address. Resent to 301 W. Taylor St.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation and sediment; maintain thereafter. **Follow-up Actions** Photo verify **Actions completed** Area in ditch has been cleared.
SW No. SW08-030 **Type** Residential **Location Address** 311 W. Taylor St. **Watershed** Buena Vista Creek **Call Date** 2/7/2008 **Case Closed** 3/17/2008	Denuded soil driveway discharging sediment into right-of-way.	Observed as described in Complaint Description. 3/11/08, resent letter/photo to Carlsbad address. 3/17/08, met on site with property owner and provided suggestions to prevent sediment discharge.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement perimeter protection to prevent further discharge. **Follow-up Actions** Photo verify **Actions completed** BMP in place and property owner is establishing vegetation.
SW No. SW08-031 **Type** Residential **Location Address** 3423 Rebecca **Watershed** Buena Vista Creek **Call Date** 2/7/2008 **Case Closed** 3/14/2008	Sediment accumulation and vegetation encroaching into drainage ditch on west side of property.	Observed as described in Complaint Description with a concrete block obstruction in ditch below fence. 3/12/08, received a call from owner stating area is clean and would like an inspection on 3/14/08 at 4:30 p.m.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment and vegetation, maintain thereafter. Remove obstruction. **Follow-up Actions** Photo verify. **Actions completed** Area ditch clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-032 **Type** Residential **Location Address** 1105 Olive Ave **Watershed** Buena Vista Creek **Call Date** 2/12/2008 **Case Closed** 3/11/2008	Sediment discharge from driveway that has no perimeter protection or asphalt / concrete.	Observed as described in Complaint Description. Tracking is visible. Monitor as driveway appears to be ready for concrete pour. 3/6/08, Owner discussed solution. He will place gravel until concrete driveway is poured in June. Check on Monday for gravel placement.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement perimeter protection and establish driveway cover. **Follow-up Actions** Photo verify. 2/29/08, no change, issue warning letter. **Actions completed** 3/11/08, gravel in place at driveway. No sediment into roadway. Attempted call to owner, number no longer in service.
SW No. SW08-033 **Type** Residential **Location Address** 758 Bonita Dr. **Watershed** Buena Vista Creek **Call Date** 2/12/2008 **Case Closed** 3/25/2008	Sediment discharge from driveway that has no perimeter protection or asphalt/concrete.	Observed as described in Complaint Description. Tracking is visible. Monitor, as driveway appears to be ready for concrete pour.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement perimeter protection and establish driveway cover. **Follow-up Actions** Photo verify. 2/29/08, no change - issue warning letter. 3/18/08, north property has concrete driveway poured. Chronic tracking off curb into roadway - issue NOV. **Actions completed** 33/25/08, A tree planter box was positioned in driveway and area cleaner. Public Works Supervisor spoke with property owner and requested discontinuation of driving over curb/gutter.
SW No. SW08-036 **Type** Residential **Location Address** 1192 Sunset Dr **Watershed** Buena Vista Creek **Call Date** 2/19/2008 **Case Closed** 3/17/2008	Considerable impervious surface directed to lower neighbor's property creating erosion and sediment run-off to water course.	Observed as described in Complaint Description. 3/12/08, I received 2 letters (dated 3/10/08 & 3/11/08) from the property owner requesting suggestions.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Redirect water to prevent erosion and sediment into the water course. **Follow-up Actions** Photo verify **Actions completed** A pipe extension has been added and outfall leads to a rip-rap dissipater to the far south of property.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-040 **Type** Residential **Location Address** 642 Vale View **Watershed** Buena Vista Creek **Call Date** 2/25/2008 **Case Closed** 3/31/2008	Sediment discharge from property into roadway and into storm drain inlet.	Observed as described in Complaint Description. Evidence of discharge run-off from property to roadway and into storm drain inlet. 3/12/08, no corrective actions taken by property owners. 3/19/08, met with property owners daughter-in-law and discussed sediment discharge at the street. Will put in silt fence. Discussed tracking of sediment by vehicles and adding stone before cars get to City easement road. Will also dry sweep area. Asked about dirt piles on property; said we would have to talk to her husband about that. Will cover to prevent run-off. 3/20/08, spoke with City Wastewater Supervisor regarding the City-style swing gate at 642 Vale View public sewer easement driveway leading to residence to rear of property and why has the gate not been locked like other City gates. He would send a crew to location to investigate. Private contract between 1006 & 642 Vale View Dr. established the public sewer easement on north side of 642 property. City Right-of-Way Agent provided substantiating documentation. 3/24/08, Site inspection. Silt fence installed near street. Installed improperly. Swept area clean. Contacted property owner about silt fence and he will have it installed properly by tomorrow evening. Sand bags will be installed to divert any water from flowing off paved sewer easement road onto property at 636 Vail View Dr. Silt fence installed around mounds of dirt. 3/26/08, Silt fence installed correctly, no sand bags at driveway and area is swept clean. 3/31/08, spoke with City Inspector regarding stockpiles and additional deliveries last week. He hasn't addressed this yet but is working on another project with owner and will address stockpiles with him before moving forward on the other project. 3/31/08, received a phone call from owner, he will put sandbags adjacent to driveway to prevent any funoff from going onto neighbor's property at 636 Vale View Dr.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment from right-of-way using a dry sweep method and implement perimeter protection. **Follow-up Actions** Photo verify. 3/12/08, no corrective action taken by property owner. Warning letter sent 3/14/08 **Actions completed** Area swept clean, silt fencing installed.
SW No. SW08-037 **Type** Residential **Location Address** 337 Palm Canyon Dr. **Watershed** Buena Vista Creek **Call Date** 2/29/2008 **Case Closed** 4/15/2008	Fluids dripping from vehicle parked on roadway in front of residence. Additional spill stains behind vehicle.	2/29/08, compaint confirmed as in Complaint Description. Photos taken and left HELP brochure. 3/5/08, no action to correct violation. 3/6/08, warning letter sent. 3/12/08, still no corrective action taken. Took photos. 3/14/08, NOV letter sent via regular mail and certified mail. 4/15/08, Phone call from property owner requesting to cancel second citation. Advised BMPs are inadequate.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☑ Citation/Fine **Correction Actions Required** Utilize dry sweep method to remove accumulation of oil, grease and vehicle fluids from the roadway in front of the residence. Use no water unless all discharge is reclaimed. **Follow-up Actions** Photo verify. 3/24/08, dry absorbant under the front of vehicle. Vehicle fluids and grease still under vehicle and behind vehicle. Issued citation. Referred to City Code Enforcement. 4/3/08, Vehicle fluids and grease still under and behind vehicle. Issued 2nd citation. Referred to California Highway Patrol. 4/14/08, Area cleaned with dry absorbant, but absorbant was left under and in front of vehicle. **Actions completed** Area cleaned with dry absorbant (unable to remove staining). Will continue to monitor and clean as necessary until property owner can repair or sell vehicle.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-042 **Type** Residential **Location Address** 746 Matagual Dr. **Watershed** Buena Vista Creek **Call Date** 3/4/2008 **Case Closed** 3/25/2008	Tracking sediment into street from unimproved driveway.	Confirmed complaint as in Complaint Description. Took Photo. Contacted the son of the property owner and gave him a HELP brochure. Explained the problem and need for implementation of BMPs. 3/12/08, rock/stone sidewalk put in along curb but no BMPs put in driveway to prevent further tracking of sediment.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement BMPs to prevent further tracking of sediment from driveway onto street. **Follow-up Actions** Photo verify **Actions completed** Gravel entrance/exit installed.
SW No. SW08-053 **Type** Residential **Location Address** 1272 Remington Ct. **Watershed** San Luis Rey **Call Date** 4/30/2008 **Case Closed** 5/27/2008	Vehicle oil, grease and fluids on the street and driveway in front of residence.	Confirmed as in Complaint Description. Accumulation of oil, grease, and car fluids observed on driveway under a white mini-van and on the street in front of residence.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Abate violation immediately to cease the illegal discharge. Utilize dry sweep method to remove accumulation of oil, grease and vehicle fluids from driveway and roadway. **Follow-up Actions** Photo verify **Actions completed** Area cleaned of the oil, grease and vehicle fluids.
SW No. SW08-051 **Type** Residential **Location Address** 300 W. Los Angeles **Watershed** Buena Vista Creek **Call Date** 5/8/2008 **Case Closed** 5/14/2008	Lack of BMPs on property during remodel.	Dirt piles uncovered. Dirt run-off through site area; water and dirt discharging to street.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement appropriate BMPs throughout area. **Follow-up Actions** 5/14/08, visual or photo inspection verification **Actions completed** BMPs appropriately placed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-054 **Type** Residential **Location Address** 1586 Sunrise Dr. **Watershed** Buena Vista Creek **Call Date** 5/13/2008 **Case Closed** 6/24/2008	Dirt/sediment in roadway and "caked" on asphalt. Adjacent to new fence construction.	Some sediment in street. Denuded/fluffed soil under fence adjacent to roadway has the potential for discharge of sediment. Entrance to upper parking area adjacent to street has signs of tracking sediment onto street.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Eliminate the polution potential being dischared into the City's storm drain system by implementing sediment control and tracking control BMPs **Follow-up Actions** Photo verify. Will monitor effectiveness of BMPs. **Actions completed** BMPs installed. Fiber roll over denuded soil, asphalt grind on upper driveway.
SW No. SW08-062 **Type** Residential **Location Address** 446 Lado de Loma Dr. **Watershed** Buena Vista Creek **Call Date** 6/3/2008 **Case Closed** 10/14/2008	Erosion and sediment discharge off property	Observed as described in Complaint Description. Some BMPs in place with fiber roll and hydroseeding. Extensive research causing delay. 8/7/08, left message for owner explaining enforcement delay. 9/17/08, called owner requesting BMP implementation as neighbor is installing BMPs also. Sent NOV letter. 10/10/08, left message requesting update. Owner called and stated that some bags are in place and will place additional bags over the weekend.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease erosion and discharge **Follow-up Actions** Photo verify **Actions completed** Gravel bags placed to collect dirt and prevent dishcarge onto North County Transit District property and into City drainage.
SW No. SW08-060 **Type** Residential **Location Address** 506 Lado de Loma Dr. **Watershed** Buena Vista Creek **Call Date** 6/3/2008 **Case Closed** 7/15/2008	Accumulated trash and debris in brow ditch.	Observed as described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove impediments **Follow-up Actions** Photo verify. 7/7/08, no corrective action - issue NOV **Actions completed** Corrective action verified. Ditches are clean. Rip rap dead ends and does not leave site to join NCTD ditch.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-061 **Type** Residential **Location Address** 452 Lado de Loma Dr. **Watershed** Buena Vista Creek **Call Date** 6/3/2008 **Case Closed** 10/14/2008	Erosion and sediment discharge off property	Observed as described in Complaint Description. Letter received from John Ivens regarding responsibility. Refer case to legal dept. Discussed with Land Development Principal Engineer after research with our GIS Specialist to determine property line.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Mitigate erosion and sediment discharges with appropriate BMPs. **Follow-up Actions** Photo verify. 7/7/08, received letter from John Ivens stating he would seek an attorney. Land Development Principal Engineer suggested meeting with Asst. City Attorney Pete Grover, etal. 7/14/08, Met with Peter Grover, City Principal Engineer, Stormwater Program Manager and other Stormwater personnel. Further research is needed to accurately delegate rightful responsibility for mitigation. 7/23/08, field trip to site with etal (mentioned above) , met with owner of 494 Lado de Loma. He stated ditch existed and Mr. Ivens was with North County Transit District for 40 yrs and had a bi-polar type personality; was nice **Actions completed** BMP placed surrounding rock grouping; gravel placed on sloping driveway dirt on north and south sides. Dirt removed behind gravel bags on east site.
SW No. SW08-065 **Type** Residential **Location Address** 413 Grapevine Rd **Watershed** Buena Vista Creek **Call Date** 6/9/2008 **Case Closed** 9/16/2008	Accumulation of vegetation and debris in the drainage ditch/swale located on the property creating obstacles in the watercourse causing pollution and flooding.	Confirmed above complaint. Warning letter sent to property owner and tenant. 7/14/08, no corrective action. 7/16/08, sent NOV and letter. 7/30/08, no corrective action taken. Letter returned with note from property owner - they no longer own property. 7/31/08, Contacted County Assesor Office for current property owner information. GIS was incorrect. Warning letter sent to new property owner. 8/4/08, received a phone call from property owner requesting more time - until end of month. E-mailed Public Works requesting cleaning first 15 ft (easement). 9/2/08, no clearing. Sent reminder to Public Works referring SRO (service request order). Property owner requested extension through 9/12/08.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove the excessive vegetation, debris and other obstacles in the ditch/watercourse. **Follow-up Actions** Photo verify **Actions completed** Cleared excessive vegetation, debris and other obstacles in the ditch/watercourse which could pollute and/or retard the flow of water.
SW No. SW08-064 **Type** Residential **Location Address** 1278 Winchester Ct **Watershed** San Luis Rey **Call Date** 6/11/2008 **Case Closed** 7/6/2008	Excessive oil stains on driveway.	Confirmed as in Compalint Description.	**Enforcement Action** ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Clean using dry absorbant and sweep method. Don't use water unless reclaimed. Maintain thereafter. **Follow-up Actions** Photo verify; on 6/26/08, no corrective action taken. 7/7/08, photo verify; no corrective action taken. Sent NOV **Actions completed** Driveway cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-073 **Type** Residential **Location Address** 451 Pina Ln **Watershed** Buena Vista Creek **Call Date** 6/20/2008 **Case Closed** 7/3/2008	Vista Irrigation District (VID) called stating a water leak was noted in front and to the west of 451 Pina Ln.	Upon investigation, there is a drill hole in the roadway where water is seeping out. Blue paint marks are in the same location giving appearance VID had marked the street for repair. Could not detect any odor and believed it to be a potable water leak. I left a HELP flyer on the door for property owner to contact me. 6/23/08, Property owner contact me and we set a time to meet and I contacted Wastewater for assistance on a dy test to rule out sewage leak. Dye test performed with results indicating no sewage leak. We suggested property owner to contact VID for investigation. 6/30/08, property owner stated VID will repair leak. 7/3/08, property owner reported that VID had repaired the line early A.M.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to VID for repair. **Follow-up Actions** Confirm repair with property owner. **Actions completed** Line repaired.
SW No. SW08-077 **Type** Residential **Location Address** 1272 Melrose Way **Watershed** Buena Vista Creek **Call Date** 6/24/2008 **Case Closed** 7/3/2008	On septic and washer discharge is directed to grass swale at frontage.	No discharge was detectable. Yard has accumulation of junk. Out building behind house holds washer/dryer. A 4" pipe protrudes from swale bank at frontage which discharges running the length of frontage.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease Discharge. Monitor location to discover washer discharge. **Follow-up Actions** Photo verify **Actions completed** After three drive-bys, no discharge was noted.
SW No. SW08-023 **Type** Construction **Location Address** 1127 Alta Calle **Watershed** Buena Vista Creek **Call Date** 2/19/2008 **Case Closed** 2/28/2008	Considerable erosion causing sediment discharge	Observed considerable erosion due to extensive recent rain events after grading/scraping on property. Some BMPs in place; however, evidence of discharge sediment observed entering area. 2/20/08, met with owner and they are in the process of repair & upgrade of BMPs. 2/27/08, Met with City Land Development Principal Engineer, owner, Mr. Walton (Engineer) and my fellow Code Enforcement Officer. A NOV was issued to verify compliance. 2/28/08, met with owner. BMPs have been implemented to the Maximum Extend Practicable (MEP). Fax follow-up letter to owner qualifying continual maintenance thereafter.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Upgrade existing BMPs **Follow-up Actions** Photo verify. Monitor at next rain event. Send NOV corrective action verified to property owner. **Actions completed** 2/28/08, Some new BMPs installed; will monitor after next rain event.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-046 **Type** Construction **Location Address** 495 Oceanview Dr. **Watershed** Buena Vista Creek **Call Date** 3/5/2008 **Case Closed** 4/21/2008	Extensive erosion due to recent rain events. BMPs ineffective. Property owner not responding to correction notice by Engineering Inspector.	Confirmed as in the Complaint Description. BMPs are deficient. Sediment run-off creating gullys down to 116 Terrace Dr. and into parking lot to the west at 526 S. Santa Fe Ave. Potential for pollutants to enter storm drain system. 4/7/08, Met w/contractor. BMPs removed but not replaced. Roadway carved from 116 Terrace Dr. to lot. Discussed re-installing BMPs and issued a NOV. (Contractor thought BMPs were only needed during the rainy season)	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Implement an erosion control plan per erosion control notes approved by the Engineer and The City. **Follow-up Actions** Photo verity. 4/14/08, still no BMPs installed. Issued citation. 4/17/08, Phone call from Engineering Inspector, BMPs installed per erosion control plans. 4/21/08, Confirmed installation of sediment/erosion control BMPs (silt fencing, sand bags, sediment basin, secondary containment spill pan under porta potty). **Actions completed** BMPs installed, photo verified.
SW No. SW07-092 **Type** Other **Location Address** 1130 E. Taylor **Watershed** Buena Vista Creek **Call Date** 9/4/2007 **Case Closed** 10/3/2007	Chronic sediment discharge leaving site. Unable to contact responsible party.	I met with the Reverend and discussed pollution concerns. He will enlist congregation to assist in clean-up and maintenance of site.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment along perimeter and implement preventative measures to maintain discharge. **Follow-up Actions** Photo verify **Actions completed** Area clean and measures have been implemented to prevent run-off. A low block wall was installed and dirt removed from back of planter curbs.
SW No. SW06-113 **Type** Other **Location Address** Kevin Dr. & Gail Dr. **Watershed** Buena Vista Creek **Call Date** 11/6/2007 **Case Closed** 12/12/2006	Sediment run-off into right-of-way, trash and debris, no perimeter protection	Observed as in Complaint Description. I contacted Public Works supervisor for storm drain cleaning regarding street area and any storm drain inlets on the block as dirt obscurred curbing. Contacted Risk Management personnel regarding overgrown ficus corrupting road and sidewalk. Sent NOV to property owner.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, remove all sediment from brow ditch and roadway; remove trash and debris and install perimeter BMP's **Follow-up Actions** Photo verify. 12/6/06, e-mailed property owner for status - much has been accomplished but not 100% complete. 12/7/06, met on site with owner and he understands what needs to be accomplished and contacting with contractors. We spoke with person - contract for Benward project (above this property). He runs water hydrant hose through this property - we came to an agreement with proper BMP runoff. BMPs shoud be in place within two weeks. **Actions completed** 12/12/06, Area much improved. Sand bags were placed at frontage, cul-de-sac swept, brow ditch cleaned of impacted mud and gate will be installed to keep out trespassers. Stock piles removed, trash and debris gone.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-018 **Type** Other **Location Address** Creekwalk - Vista Village **Watershed** Buena Vista Creek **Call Date** 1/30/2008 **Case Closed** 2/7/2008	Illegal discharge was reported by the Regional Water Quality Control Board representative. Aztec Landscaping was hosing off hard scape (sediment) into channel and not reclaiming.	1/31/08 Stormwater Program Manager, Public Works Right-of-Way Maintenance Supervisor and Stormwater Code Enforcement Officer met to discuss photos taken by RWQCB person on 1/25/08. I contacted Aztec Landscaping and explained violations. They (Aztec Rep and PW Supervisor) will meet on site to discuss mitigation policy for future cleaning. 2/5/08, met at Creek Walk Park with all parties involved. Objective was to discuss solutions to clean Creek Walk hardscape with discharging sediment to the creek. Much was discussed and final policy/procedure is to be determined in the next few days. P. W.s Supervisor witll notify me when Aztec will try updated methods. Photo op for files.	**Enforcement Action** ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine **Correction Actions Required** Cease further discharge; provide policy of creek walk area cleaning and 2007 employee training documents. **Follow-up Actions** Receipt of logs and current cleaning method. **Actions completed** Received training log. Cleaning method approved by Public Works Supervisor. Area to be maintained by mechanical sweeper. I was able to take photos of sweeper in action.
SW No. SW08-020 **Type** Other **Location Address** 1531 Thibodo Rd **Watershed** Buena Vista Creek **Call Date** 2/6/2008 **Case Closed** 2/20/2008	Septic spill into storm drain	Septic is over filled and seeping onto property and into roadway and inlet.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Repair septic, cease further discharge **Follow-up Actions** Photo & verbal verify **Actions completed** 2/6/08, trench dug to prevent further discharge. Septic contractor cleaned tank. County is on scene to verify the septic is not discharging. 2/20/08, County Health Septic Officer verified system repaired.
SW No. SW08-034 **Type** Other **Location Address** 1371 Business Park Dr. **Watershed** Agua Hedionda Creek **Call Date** 2/28/2008 **Case Closed** 3/10/2008	Sediment discharge into the City right-of-way.	Observed considerable erosion due to extensive rain events and possible run-off from sediment spoils at top of unimproved roadway at northwest corner of property. No BMPs in place (only a K-rail at entrance). No vegetation. Sediment piled up at and around K-rail. 2/29/08, Contacted Code Enforcement Officer regarding dumping on property. 3/3/08, On-Site Manager/Target; called and left a message. 3/5/08, spoke with On-Site Manager and discussed implementation of BMPs. He reported that after hearing the voice message he contacted his general contractor and instructed them to install BMPs. BMPs should be installed no later than Monday, March 10th. NOV faxed to On-Site Manager at Target. 3/10/08, photo verified BMPs in place. NOV corrective action faxed to On-Site Manager at Target.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Immediately cease illegal discharge of sediment. Install, maintain and upgrade BMPs. Allow area to vegetate. Corrective actions completed immediately and no later than 3/10/08 by 8:00 a.m. **Follow-up Actions** Photo verify **Actions completed** BMPs in place. Photo verified.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. SW08-039 **Type** Other **Location Address** 116 Terrace Dr. **Watershed** Buena Vista Creek **Call Date** 3/5/2008 **Case Closed** 4/3/2008	Extensive erosion due to recent rain events from graded lot @ 495 Oceanview Dr. (APN- 175-296-09) with discharge down to 116 Terrace Dr. (an undeveloped vacant lot). BMPs ineffective.	Confirmed as in Compalint Description. Observed evidence of sediment discharge into storm drains from 116 Terrace Dr. 3/12/08, received a call back from property owner and discussed implementation of BMPs by 3/14/08 for prevention of further discharge. 3/17/08, contacted property owner and discussed implementation of additional BMPs to be installed by 3/26/08. 3/27/08, met with property owner on site. Discussed and provided literature for proper implementation of BMPs that he installed. Mailed additional literature and warning letter.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Establish BMPs to prevent further sediment discharge. **Follow-up Actions** Photo Verify. 3/17/08, some BMPs in place; sand bags and silt fencing. Re-contacted owner in reference to additional BMPs (ie. Sweep driveway, straw wattles to right and left of driveway.) 4/3/08, Photo verify. **Actions completed** 3/17/08, Some BMPs in place. Additional BMPs still required. 4/3/08, BMPs installed.
SW No. SW08-123 **Type** Other **Location Address** Guajome & Mercantile **Watershed** Buena Vista Creek **Call Date** 5/28/2008 **Case Closed** 6/10/2008	Stockpiling on staging area being utilized by Sierra Pacsific, contractor.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Implement appropriate BMPs **Follow-up Actions** Photo verify **Actions completed** BMPs implemented.
SW No. SW08-063 **Type** Other **Location Address** 400 blk of Lado de Loma Dr. **Watershed** Buena Vista Creek **Call Date** 6/3/2008 **Case Closed** 8/13/2008	Erosion and sediment discharge	7/15/08, Engineer hired by owner contacted me stating BMPs will be placed within the next two weeks and he would call if completed sooner. 8/7/08, company hired to mitigate. Recheck on 8/18/08.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further dishcarge and erosion. **Follow-up Actions** Photo verify **Actions completed** 8/12/08, received a call from the Engineer stating that the BMPs have been implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-029 **Type** Private Lateral **Location Address** 301 Huff St. **Watershed** Buena Vista Creek **Call Date** 10/29/2007 **Case Closed** 10/29/2007	Sewage spill	Area clear upon my arrival. Sewage spilt into excavated retaining wall footing. Wastewater crew chief stated he felt sewage was 99% into footing. Property owner cleared blockage with snake.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line **Follow-up Actions** Verify plumbing is functional **Actions completed** Property owner snaked line, cleared blockage and capped clean out. Wastewater crew cleared scene.
SW No. MISC 0708-031 **Type** Private Lateral **Location Address** 1619 Montgomery Dr. **Watershed** Buena Vista Creek **Call Date** 11/7/2007 **Case Closed** 11/8/2007	Sewage spill	VAC crew already on scene. Clean out visibly crushed. I contacted property owner - she called plumber.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line. **Follow-up Actions** Verify work done through invoice copy. **Actions completed** Line cleared and repaired.
SW No. MISC 0708-005 **Type** Commercial **Location Address** 1025 Service Pl., Suite #103 **Watershed** Buena Vista Creek **Call Date** 7/24/2007 **Case Closed** 7/24/2007	Fundraiser car wash held @ Keystone Mar Vista by Jr. Sheriff Association.	I provided educational information and all were willing to implement pollution prevention measures.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, implement BMPs to prevent runn-off **Follow-up Actions** Monitor & verify **Actions completed** Area was secured and storm drain outlet blocked with wet/dry shop vacuum ready should run-off occur

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-004 **Type** Commercial **Location Address** 807 N. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 7/24/2007 **Case Closed** 7/30/2007	Leaking faucet on north side of building	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair fauct **Follow-up Actions** Verify repair. **Actions completed** Faucet repaired.
SW No. MISC 0708-014 **Type** Commercial **Location Address** 1902 Via Contre **Watershed** Buena Vista Creek **Call Date** 7/26/2007 **Case Closed** 8/31/2007	Automotive not on annual report list.	City employee reported a business that appeared to have heavy accumulation in areas on the property while reviewing an aerial map. Upon investigation it was an automotive business that had not been noted on a business license list.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove accumulation of atuo parts and upgradeBMPs throughout. **Follow-up Actions** Photo verify **Actions completed** Area improved greatly - contacted business owner informed them that they need to maintain location and expect an annual inspection.
SW No. MISC 0708-009 **Type** Commercial **Location Address** 515 Olive Ave **Watershed** Buena Vista Creek **Call Date** 8/9/2007 **Case Closed** 8/9/2007	Blue stains eminating from black pipe.	Observed as in Complaint Description. Pipe originates at rear of building where a hose is used near a drainage swale. I contacted the Company and informed them of discharge violation, spill kit and spill reclamation.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and inform employees. **Follow-up Actions** Monitor intermittantly. **Actions completed** Monitor intermittantly.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-013 **Type** Commercial **Location Address** 940 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 8/22/2007 **Case Closed** 8/23/2007	Excessive water spilling from pipe and discharging to an inlet with accumulated trash & debris.	Observed as in Complaint Description. I spoke with Construction Superintendent - the water is condestate from roof air conditioners	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove all debris from loading dock area so only air conditioning condensate is discharged into inlet. **Follow-up Actions** Photo verify **Actions completed** Area clean.
SW No. MISC 0708-021 **Type** Commercial **Location Address** 157 Nettleton Rd. **Watershed** Buena Vista Creek **Call Date** 9/27/2007 **Case Closed** 9/27/2007	Dumping muriatic acid , oven cleaner and bleach into dirt pit while cleaning portable toilets.	This site was inspected on 2/2/07 by Stormwater Code Enforcement Officer and D-Max independently. The area was discharged to dirt area and did not leave site.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None required as discharge does not leave site. **Follow-up Actions** Suggested good housekeeping practice. **Actions completed** Business as unual
SW No. MISC 0708-023 **Type** Commercial **Location Address** 1301 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 10/2/2007 **Case Closed** 10/2/2007	Pressure wash and not reclaiming water	Complainant had photos of area - Some blurry. No pictures of employees actively in violation; nor machinery - just water on parking lot	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** I contacted property management for details and notice of complaint. **Follow-up Actions** Further instruct employees to adhere to Stormwater practices and cease discharge. **Actions completed** I spoke with property manager, stated any further violations that I witness will be issued a citation.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-033 **Type** Commercial **Location Address** 627 Escondido Ave **Watershed** Buena Vista Creek **Call Date** 11/9/2007 **Case Closed** 11/9/2007	Washing off pavement - not collecting discharge.	Upon arrival employee was not washing pavement. He was sweeping area behind building. I spoke with business manager and requested future reclamation or sweep only.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge; reclaim water or sweep **Follow-up Actions** Monitor for future compliance **Actions completed** Swept site and did not use hose any further.
SW No. MISC 0708-037 **Type** Commercial **Location Address** 2465 N. Santa Fe Ave **Watershed** Guajome **Call Date** 12/10/2007 **Case Closed** 12/10/2007	Red dye discharged to roadway to creek.	Observed as in Complaint Description. I spoke with the business owner - a floral bucket filled with red dye tipped over into a drainage trough. They were cleaning up the fluid and mud leading to the creek. This is County area. I notified County; Oceanside Public Works Dept and our Vista Stormwater Public Works. All responded.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and mitigate site. **Follow-up Actions** Referred to County and City of Oceanside **Actions completed** Mud and fluid removed from location.
SW No. MISC 0708-065 **Type** Commercial **Location Address** 875 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 1/8/2008 **Case Closed** 3/31/2008	Water run-off from car wash rack. (Enterprise Car Rental)	Vehicles are too large for rack area. Overspray is also contributing to water as well as a broken sprinkler.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge hereafter. **Follow-up Actions** Monitor hereafter. **Actions completed** Owner will be relocating business and the problem will go to new owner. 3/31/08, I spoke with the Manager and he understands that, until the move, he will be required to perform maintenance or he will immediately be cited.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-050 **Type** Commercial **Location Address** 2485 Ash St. **Watershed** Agua Hedionda Creek **Call Date** 2/14/2008 **Case Closed** 2/14/2008	White color discharge from outlet ditch at Prudential Overall Supply.	I contacted the Plant Superintendent at Overall Supply Company. He stated a portion of the roof was painted two days prior.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge. Prevent further discharge by allowing ample drying time during rainy season. **Follow-up Actions** Provide MSDS sheet (Material Safety Data Sheet) on product, speak with manufacturer of the product. **Actions completed** Received MSDS sheet and spoke with the manufacturer. Product is water soluable and not hazardous to the environment.
SW No. MISC 0708-053 **Type** Commercial **Location Address** Broadway & S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 2/27/2008 **Case Closed** 3/3/2008	Car wash water discharging off property from mobile car detailer.	observed wash water discharging down parking lot to driveway entrance. No reclamation system. Photos taken of mobile detail truck, trailer, and of discharge.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Discussed use of BMPs and reclamation procedures. No car washing at home address for business purposes. **Follow-up Actions** Investigate business license for mobile car wash. Re-contact owner/manager to advise on license details/ restrictions. **Actions completed** Owner knows to only wash vehicles at VUSD using water clarifier.
SW No. MISC 0708-062 **Type** Commercial **Location Address** 1470 N. Santa Fe **Watershed** Buena Vista Creek **Call Date** 2/29/2008 **Case Closed** 3/10/2008	Run-off, not reclaiming water.	Milk colored run-off originated from McDonald's dumpster. I contacted owner and he stated they had a new maintenance company cleaning the grounds. I requested he speak with them regarding appropriate BMPs and that I will monitor the area for improvement in the next week.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Educate new company in spill prevention/reclamation. **Follow-up Actions** Monitor in a week **Actions completed** Area dry. Owner assured me that top priority is training the employees.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-055 **Type** Commercial **Location Address** 1281 Liverty Way **Watershed** Agua Hedionda Creek **Call Date** 2/29/2008 **Case Closed** 3/5/2008	Illegal dumping into storm drain in parking lot at northwest corner in front of 1281 Liberty Way.	No evidence of dumping into storm drain; unfounded. On follow-up found illegal camping in motorhome in parking lot at southeast corner.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** not applicable **Follow-up Actions** Referred motorhome camping to Code Enforcement. **Actions completed** monitor when in area.
SW No. MISC 0708-057 **Type** Commercial **Location Address** 1042 S. Rancho Santa FE **Watershed** Buena Vista Creek **Call Date** 3/11/2008 **Case Closed** 3/13/2008	Pressure washing building with discharge into street	Evidence of discharge (sediment, dirt, vegetation, gravel, paint chips) running towards and into street/curb. Contacted the property owner	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** dry clean method by 3/12/08 at 3:00 p.m. **Follow-up Actions** Photo verify. **Actions completed** Dry sweep method employed. Parking lot is clear of sediment, dirt, vegetation, gravel and paint chips.
SW No. MISC 0708-058 **Type** Commercial **Location Address** 2020 E. Vista Way **Watershed** San Luis Rey **Call Date** 3/13/2008 **Case Closed** 3/14/2008	Construction with concrete work. No BMPs in place for concrete pumper and no washout area. Run-off into creek behind business.	3/13/08, 12:00 p.m. - Concrete work completed; framing started. Some evidence of concrete wash spill on soil at northeast corner of parking lot. Contacted construction general contractor; discussed BMPs and clean-up of wash.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clean-up dry concrete wash using a dry method, maintain proper construction site BMPs. **Follow-up Actions** Photo verify **Actions completed** Site cleaned of all concrete wash.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-097 **Type** Commercial **Location Address** 2020 E. Vista Way **Watershed** San Luis Rey **Call Date** 3/13/2008 **Case Closed** 5/13/2008	Extensive erosion caused during last rain events "after City cut curb to allow water run-off from street" on the south end of his property, flowing westbound from street between 2020 and 2012 E. Vista Way	3/13/08, extensive erosion confirmed and photographed. Evidence of sediment traveling toward creek bed behind and to the west of the property. 3/14/08, Photo taken. 3/18/08, e-mailed Public Works Dept. to verify the City cutting the curb (verified). 3/24/08, e-mail sent to Stormwater Program Manager with photos and also discussed this situation with her (she will speak with the Asst. Director of Eng.) 3/27/08, e-mail from Stormwater Program Manager to meet with our Principal Engineer re: overlay work. 3/31//08, Met with the P.E. Overlay work only going north to Arcadia Ave. This area is not scheduled for road widening for 10 + years. Suggests that Public Works fan out gully and line with rip-rap to slow down water and therby prevent further erosion. Also we need permission from property owner in reference to going on his property. 5/12/08, Phone call from property owner of 2012 & 2004 E. Vista Way referring to grading being done in a natrual water course. Contacted our Principal Engineer in Land Development and he stated no grading permit was issued. 5/13/08, photos of grading… E-mail from P.E. in Land Development stating that they will handle this situation.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** investigate curb cutting with City of Vista Public Works Dept. to determine responsible part. 3/20/08, per Public Works, curb was cut apprx. 15 years ago by City Public Works Dept. **Follow-up Actions** Contacted Land Development Engineer - They will handle the illegal grading without a permit. Case referred to Community Development. **Actions completed** e-mail from Land DevelopmentCommunity Development Engineer verifying that they will handle this case.
SW No. MISC 0708-060 **Type** Commercial **Location Address** 224 N. Emerald Dr. **Watershed** Buena Vista Creek **Call Date** 3/14/2008 **Case Closed** 3/17/2008	One or two days ago reporting person observed employee or owner of Chevron gas station pressure washing parking lot without reclaiming discharge/run-off into roadway.	No violation observed.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Use BMPs when cleaning walkway and parking lot with pressure washer to prevent dishcarge into street and storm drains. **Follow-up Actions** Periodic unscheduled monitoring of the business. **Actions completed** None needed.
SW No. MISC 0708-061 **Type** Commercial **Location Address** 2067 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 3/24/2008 **Case Closed** 3/25/2008	Dumpster in enclosure. Property owner agent (maintenance) requested a site inspection fro an exception to leave lids off dumpsters. Maintenance Supervisor wants to be in compliance with City codes. EDCO sent him a letter saying they were required to have lids in place on dumpsters. Due to the dumpster enclosure's low roof they are unable to lift lids to throw in trash unless they wheel out dumpsters, thereby creating a safety issue.	3/25/08, Dumpster is fully enclosed and very clean. Roof over dumpsters does not allow rain water to enter. This is a medical facility and all trash is double bagged so there is no chance of leakage from bags to the soil or the interior or exterior of the business. No medical waste is being placed in these dumpsters. There is no staining on the concrete (no evidence of leaks). .	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No corrective action required at this time because the dumpsters are fully enclosed with a roof over them. Rain water can't get in and there is no evidence of leaky dumpsters. Use discretion to leave lids of dumpsters in open position due to all aforementioned circumstances and for safety reasons. **Follow-up Actions** Unscheduled intermittent monitoring of dumpsters **Actions completed** Not needed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-067 **Type** Commercial **Location Address** 444 S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 3/27/2008 **Case Closed** 4/1/2008	Work being done on vehicles outside. Car parts (engines, transmission, etc) on ground. No secondary containment for recycle oil drums. Excessive junk/trash in yard. Car parts in truck bed without cover.	Observed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Contacted Mgr/Business Owner. Requested no more vehicle service outside. All car parts or to be under cover (preferably indoors or in a shed. Secondary containment for oil drums and clean junk/trash from yard. **Follow-up Actions** Photo verify. **Actions completed** Yard junk/trash cleaned. No vehicles being worked on outside. Car parts no longer on ground. All are in bins and covered. Secondary spill containment installed under drums.
SW No. MISC 0708-064 **Type** Commercial **Location Address** 910 E. Vista Way **Watershed** Buena Vista Creek **Call Date** 3/27/2008 **Case Closed** 3/27/2008	Pressure Wash - no reclaiming of water	3/27/08, confirmed complaint. Photos were taken. Contacted St. Mar Enterprises (Taco Bell Corporate Offices). 3/31/08, contacted Corporate Offices and spoke with the supervisor and informed him on the City of Vista's requirements for reclamation of power washing fluids and the necessity of prevention of discharge into stormwater conveyance system.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Immediately cease and desist illegal discharge. No additional pressure washing in Vista without a reclamation process in place. **Follow-up Actions** Contact Taco Bell Corporate Office to advise them of City requirements for pressure washing. Drive by location later in the morning to verify that power washing contractor did not start work again. **Actions completed** Violation abated. 3/27/08, power washing contractor packed up and left without finishing work.
SW No. MISC 0708-077 **Type** Commercial **Location Address** 1525 W. Vista Way **Watershed** Buena Vista Creek **Call Date** 3/28/2008 **Case Closed** 4/21/2008	Algae and chronic water discharging into storm drain conveyance system.	4/9/08, Confirmed as in Complaint Description. Photos taken. Contacted General Manager and showed him photos. Explained violation and civil liability. He said he will repair and inform. 4/14/08, still discharging water. Workers (employees) repairing water lines. Photos taken.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair sprinklers (overwatering) or water pipe by 4/16/08 to eliminate discharge. **Follow-up Actions** Photo verify **Actions completed** Leaky water pipes repaired. Area dry and clean except for one irrigation drip system head watering a tree in City right-of-way. 4/21/08, Irrigaton system at tree repaired. No more water running into gutter and storm drain.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-068 **Type** Commercial **Location Address** 1244 N. Santa Fe Ave. **Watershed** Buena Vista Creek **Call Date** 4/1/2008 **Case Closed** 4/3/2008	Car washes on Saturdays (3/23/08 & 3/30/08) at Fillco gas station at N. Santa Fe & W. Indian Rock. Not reclaiming water.	4/3/08, contacted property manager and he admitted hosting a car wash for "Victory Outreach"	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No car washes unless proper BMPs are followed. Have charity groups contact contact Vista Stormwater Program for regulations. **Follow-up Actions** Unscheduled intermittent checks for compliance. **Actions completed** Store Manager has been educated on car wash/pressre wash regulations. Agreed to follow stormwater regulations.
SW No. MISC 0708-074 **Type** Commercial **Location Address** 444-C S. Santa Fe Ave **Watershed** Buena Vista Creek **Call Date** 4/11/2008 **Case Closed** 4/17/2008	Not using proper vehicle repair and maintenance BMPs. Proactive - as observed by City employee.	As in Complaint Description. Oil and car fluid leaks not cleaned in driveway and parking area; working on a vehicle outdoors. Contacted the business owner, warned and educated.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** No vehicle repairs nor mainenance unless performed indoors under a permanent roof. Clean oil and car fluids from driveway and parking lot using a dry absorbant sweep method. **Follow-up Actions** Photo verify. Intermittent and unscheduled checks on business. **Actions completed** Driveway and parking area are cleaned of vehicle fluids. Currently, not working on vehicles outside.
SW No. MISC 0708-073 **Type** Commercial **Location Address** 1144 S. Santa Ave Ave. **Watershed** Buena Vista Creek **Call Date** 4/15/2008 **Case Closed** 4/4/2008	N/A - proactive.	Observed pressure washing of building with no BMPs in place. Immediately stopped worker. Contacted business manager and educated regarding proper BMPs for power washing.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Discontinue power washing unless proper BMPs are in place. **Follow-up Actions** Photo verify. Intermittent and unscheduled site inspections. **Actions completed** Corrective action taken. Area swept clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-086 **Type** Commercial **Location Address** 650-B Sycamore Dr. **Watershed** Buena Vista Creek **Call Date** 5/21/2008 **Case Closed** 5/27/2008	5 gallon bucket with used motor oil left in parking lot without lid.	Confirmed as in Complaint Description. Found 2 buckets with rags, clothing and debris inside used motor oil buckets.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Dispose/recycle used oil. Take debris and buckets to the hazardous waste yard. The contacted person at business said they would comply. **Follow-up Actions** Photo verify **Actions completed** Area cleaned of used oil buckets.
SW No. MISC 0708-091 **Type** Commercial **Location Address** 1335 Park Center **Watershed** Agua Hedionda Creek **Call Date** 5/22/2008 **Case Closed** 6/11/2008	Chronic water in roadway to inlet	Overwatering from irrigation system	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Reduce water for irrigation **Follow-up Actions** Photo verify **Actions completed** -
SW No. MISC 0708-090 **Type** Commercial **Location Address** 1055 La Mirada Ct. **Watershed** Agua Hedionda Creek **Call Date** 6/3/2008 **Case Closed** 6/4/2008	Washing vehicles (off-road vehicles, trailer, etc) with pressure washer in parking lot.	Confirmed as in Compalint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Immediately abate the violation and cease illegal discharge. No more pressure washing off-road vehicles unless drain inlet is protected and water is reclaimed. **Follow-up Actions** Unscheduled intermittent checks. Contact responsible party to call if witnesses another illegal discharge without propert BMPs. **Actions completed** Immediately ceased illegal discharge. No signs of additional pressure washing of vehicles on 6/4/08.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-093 **Type** Commercial **Location Address** 1240 Activity Dr. **Watershed** Agua Hedionda Creek **Call Date** 6/9/2008 **Case Closed** 6/11/2008	Water & erosion from east of dock area.	Overwatering - I contacted Vista Irrigation District and they contacted property management.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Property management will reduce irrigation. **Follow-up Actions** No water left the site. **Actions completed** Area was drier on drive through by inspector.
SW No. MISC 0708-011 **Type** Residential **Location Address** 2130 Sunset **Watershed** Buena Vista Creek **Call Date** 7/2/2007 **Case Closed** 8/20/2007	55 gal drum next to creek at Space #143 - Green Valley Mobile Home Park	Observed as in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove drum **Follow-up Actions** verify with Code Enforcement of disposition. **Actions completed** Drums removed - Forwarded information to Code.
SW No. MISC 0708-001 **Type** Residential **Location Address** 1123 Bluegrass Rd **Watershed** Buena Vista Creek **Call Date** 7/2/2007 **Case Closed** 7/2/2007	Wash down of jetter equipment by Nu Flow employees and discharging to storm drain system.	I contacted property owner at 1123 Bluegrass Rd. He gave me Nu Flow contact information.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Provide cleaning policy for jetter equipment and cease further discharge to storm drain system. **Follow-up Actions** Verify compliance and education of employees by verbal and receipt of policy. **Actions completed** Received policy via e-mail and spoke with business owner who assured me he would discuss incident with employees and correct violation.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-002 **Type** Residential **Location Address** 1808 Calle Antonio **Watershed** Buena Vista Creek **Call Date** 7/3/2007 **Case Closed** 7/3/2007	Pool Discharge - white substance	White chalky substance not visible. Tree debris in street in front of residence.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove tree debris and maintain. Consider pool drainage alternatives. **Follow-up Actions** Intermittent inspection **Actions completed** Will monitor location intermittently.
SW No. MISC 0708-003 **Type** Residential **Location Address** 717 W. California Ave. **Watershed** Buena Vista Creek **Call Date** 7/10/2007 **Case Closed** 7/10/2007	Radiator flush inside garage and down driveway	Observed as in Complaint Description. Wash down, diluted with water and had not reached street	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease any further discharge. Take vehicle to dealer or service location for any future repairs. **Follow-up Actions** None. Management will reiterate to all tenants to car repair or washing on site. **Actions completed** Person ceased discharge and stated she would no longer discharge fluids
SW No. MISC 0708-006 **Type** Residential **Location Address** 134-142 Santa Clara Dr. **Watershed** Buena Vista Creek **Call Date** 7/30/2007 **Case Closed** 7/30/2007	Grease stains on road	I spoke with resident. She stated EDCO Waste & Recycle truck was there for a long time.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** EDCO cleaned location appropriately prior to my investication - no migration of fluids into curb. **Follow-up Actions** none required **Actions completed** none required.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-007 **Type** Residential **Location Address** 2668 Magellan Ln **Watershed** Agua Hedionda Creek **Call Date** 7/30/2007 **Case Closed** 8/8/2007	Neighbor was hosing off property and dirt into gutter.	Observed as in Compalint Description. Neighbor dispute between 2662 and 2668 Magellan Ln. I spoke with the homeowner at 2662 Magellan Ln and she will redirect the water. I contacted Building Inspection for "history" as 2668 Magellan had a Building Permit. Neighbor stated a mound of dirt/grass swale prevented run-off to next door downhill property. Construction removed mound.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove sediment and implement perimeter protection. **Follow-up Actions** Photo verify. **Actions completed** Area is clean. I spoke at length with both neighbors and both are willing to comply.
SW No. MISC 0708-008 **Type** Residential **Location Address** 755 & 803 Beverly Dr. **Watershed** Buena Vista Creek **Call Date** 8/2/2007 **Case Closed** 8/8/2007	Fish died in private pond.	I visited site - fish had died the week prior and were buried. Stormwater Manager suggested property owner contact Board.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred property owner to Board - provided web link **Follow-up Actions** None **Actions completed** None
SW No. MISC 0708-012 **Type** Residential **Location Address** 356 Apollo Dr. **Watershed** Buena Vista Creek **Call Date** 8/15/2007 **Case Closed** 8/21/2007	Dirt onto sidewalk and into roadway	Observed as in Complaint Description	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove dirt from sidewalk and gutter; install perimeter protection. **Follow-up Actions** Photo verify **Actions completed** Area clean - a rock border has been placed - monitor for discharge and determine if refinement is necessary

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-015 **Type** Residential **Location Address** 395 Anns Way **Watershed** Buena Vista Creek **Call Date** 8/15/2007 **Case Closed** 8/30/2007	Eroding street and dirt discharge	Private issue - New home construction at 395 Ann's Way used Delta Lane as construction access. Complainant stated construction traffic eroded street. I spoke with Engineering Inspector who stated street was in poor condition prior to construction and is a private road. Therefore, it is a private issue between property owners. I contacted complainant and explained City stance on street.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private property/ private issue **Follow-up Actions** None **Actions completed** None
SW No. MISC 0708-010 **Type** Residential **Location Address** 1612 Warmlands **Watershed** Buena Vista Creek **Call Date** 8/17/2007 **Case Closed** 8/17/2007	Discharging pool water onto property and also pool filter	Private issue on private property	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private Issue **Follow-up Actions** Private Issue **Actions completed** Private Issue
SW No. MISC 0708-016 **Type** Residential **Location Address** 1205 N. Sana Fe, Sp #44 **Watershed** Buena Vista Creek **Call Date** 8/30/2007 **Case Closed** 9/5/2007	Discharge of fluids and trash accumulation.	The area in front of the mobile home -Sp 44- had fluids noteable. None had reached any outlet but remained in park ground. (Surrounding the home was excessive storage of furniture and junk. I contacted part owner and requested tenent cease further discharge.)	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private issue **Follow-up Actions** Private issue **Actions completed** Private issue

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-019 **Type** Residential **Location Address** 2220 Eastbrook Rd **Watershed** Agua Hedionda Creek **Call Date** 9/26/2007 **Case Closed** 9/26/2007	Washing off vehicle engine.	Code Enforcement Officer and Stormwater Code Enforcement Officer spoke with child sitter. No washing took place of vehicle in driveway. No water residue.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Code Enforcement for vehicle on jacks. **Follow-up Actions** None **Actions completed** None required
SW No. MISC 0708-025 **Type** Residential **Location Address** 900 blk of Heather **Watershed** Buena Vista Creek **Call Date** 9/27/2007 **Case Closed** 9/27/2007	Pressure washing pool plastering equipment.	I spoke with the site foreman for Gardner Pool Plastering. I requested the discharge to cease and the employees stopped. I asked to speak to the supervisor and got a phone number, called him and explained the necessity to reclaim.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge - reclaim in the future. **Follow-up Actions** Contact supervisor **Actions completed** Supervisor contacted
SW No. MISC 0708-022 **Type** Residential **Location Address** 2604 Coronado **Watershed** Agua Hedionda Creek **Call Date** 9/28/2007 **Case Closed** 10/2/2007	Pressure washing roof and not reclaiming discharge	Red tile particles were discharged to inlet.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove discharge and implement BMPs for future pressure washing. **Follow-up Actions** Photo verify **Actions completed** Area cleaner. I spoke with property owner and also left message with contractor to request stormwater prevention alternatives in the future.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-024 **Type** Residential **Location Address** Hutchinson & Blackwell **Watershed** Buena Vista Creek **Call Date** 10/2/2007 **Case Closed** 10/2/2007	Property owner raking manure into drainage swale.	Complainant stated property owner has 5 horses and rakes manure to Hutchinson side and allows it to go down a 3-4' embankment and into natural drainage ditch.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to County Stormwater Hotline. **Follow-up Actions** Gave complainant the HOTLINE # and suggested he call also. **Actions completed** Referred to County Stormwater Hotline.
SW No. MISC 0708-028 **Type** Residential **Location Address** 2384 Foothill Ranch Rd. **Watershed** Buena Vista Creek **Call Date** 10/15/2007 **Case Closed** 10/18/2007	Property owner concerned about her drainage on property.	I met with property owner, Re: the natural drainage course through her property. Her concern is drainage being blocked at City street. After research with Engineer, this area will be developed when west side property owner begins development (that may be a while).	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Maintain clear drainage path **Follow-up Actions** None **Actions completed** Area is cleaned regularly.
SW No. MISC 0708-027 **Type** Residential **Location Address** 1868 Autumn Ln **Watershed** Buena Vista Creek **Call Date** 10/16/2007 **Case Closed** 10/16/2007	Diamataceous earth discharge on possibly 10/14/07.	Area still shows some white powdery residue, but not originating to one location.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease future backwash on pool filters and disharging it to storm drain system. **Follow-up Actions** Monitor **Actions completed** Monitor

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-026 **Type** Residential **Location Address** 1619 Montgomery Dr. **Watershed** Buena Vista Creek **Call Date** 10/30/2007 **Case Closed** 11/1/2007	Couch in street and water discharging from pipe.	Area is in County. I contacted complainant and directed her to County, VID (Vista Irrigation District) and Sheriff's Dept.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Contact County, VID, and Sheriff's as necessary **Follow-up Actions** None **Actions completed** None
SW No. MISC 0708-034 **Type** Residential **Location Address** 635 Tatum **Watershed** **Call Date** 11/21/2007 **Case Closed** 11/21/2007	Smelly discharge	No such addess. I drove up Cocapah St. onto Onley Dr. and down Tatum St. No discharge found,	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Unfounded **Follow-up Actions** Unfounded **Actions completed** Unfounded
SW No. MISC 0708-036 **Type** Residential **Location Address** 1708El Dorado **Watershed** Buena Vista Creek **Call Date** 12/3/2007 **Case Closed** 12/3/2007	Discharging red colored water into roadway	Property owner had contractor pressure wash a red tile roof. I spoke with property owner requesting reclamation.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge and reclaim. **Follow-up Actions** Verify compliance **Actions completed** Contractor made preparations to reclaim further discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-035 **Type** Residential **Location Address** 2130 Sunset Dr. **Watershed** Buena Vista Creek **Call Date** 12/4/2007 **Case Closed** 12/4/2007	Tree cut down in creek area adjacent to Green Valley Mobile Home Park.	Private Property, Private Issue. Referred complainant to Park Manager.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Private Issue / Private Property **Follow-up Actions** Private Issue / Private Property **Actions completed** Private Issue / Private Property
SW No. MISC 0708-039 **Type** Residential **Location Address** 1195 Miramar Dr. **Watershed** Agua Hedionda Creek **Call Date** 12/6/2007 **Case Closed** 12/7/2007	Mud off property due to pool construction.	Mud/sediment has edged to sidewalk and off to road.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove mud/sediment and protect further discharge **Follow-up Actions** Photo verify **Actions completed** Area swept and clean, dirt lowered at sidewalk edge.
SW No. MISC 0708-040 **Type** Residential **Location Address** 1303 Barbara Dr **Watershed** Buena Vista Creek **Call Date** 12/18/2007 **Case Closed** 12/19/2007	Mud collecting in front of 1303 Barbara Dr.	Area is County but next door, at 1311 Santa Barbara, area is City. No sediment discharge was noted at 1311 Santa Barbara.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None private property issue, area in County **Follow-up Actions** None **Actions completed** None needed

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-041 **Type** Residential **Location Address** 1653 Mesa Verde Dr. **Watershed** Buena Vista Creek **Call Date** 12/19/2007 **Case Closed** 12/21/2007	Pouring paint in lot next to next to 1653 Mesa Verde Dr.	Unfounded - I walked the area near 1653 Mesa Verde and no paint was noticeable.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Unfounded **Follow-up Actions** Unfounded **Actions completed** Unfounded
SW No. MISC 0708-043 **Type** Residential **Location Address** 109 Woodland Dr. **Watershed** Agua Hedionda Creek **Call Date** 12/26/2007 **Case Closed** 12/26/2007	Discharging grease onto ground and not removing it.	House yard has numerous vehicles in various stages of disrepair. Dirt is dark, like grease spills. I photographed area and referred this to the County by e-mail (with photos).	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to County **Follow-up Actions** None - County area **Actions completed** Referred to County.
SW No. MISC 0708-045 **Type** Residential **Location Address** 1353 Bluegrass Rd **Watershed** Buena Vista Creek **Call Date** 1/8/2008 **Case Closed** 1/8/2008	Washing engines and painting cars.	I contacted City Code Enforcement Officer to accompany me. Resident was in the process of cleaning his personally owned vehicle. A paint spray booth was set up in the driveway. A friend was spray painting the body of a car. The Code Enforcement Officer stated code requirements and requested the property owner to move the vehicle inside the garage.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease any further discharge. **Follow-up Actions** Monitor **Actions completed** He stated he would contain all runoff.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-046 **Type** Residential **Location Address** Moa Dr. **Watershed** Buena Vista Creek **Call Date** 1/14/2008 **Case Closed** 1/18/2008	Oil on pavement.	1/18/08. vehicle (in photo) not in the vicinity. After some investigation an approximation of the location showed two grease/oil spots, but faded. Either the oil absorbed into the pavement or it had been removed. Unable to determine violator as vehicle was not at location (as shown in photos brought in by complainant).	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Monitor area. **Follow-up Actions** Monitor area. **Actions completed** Monitor area.
SW No. MISC 0708-049 **Type** Residential **Location Address** 1803 Ithaca Dr **Watershed** Agua Hedionda Creek **Call Date** 2/7/2008 **Case Closed** 2/14/2008	Grease spill on roadway	Observed as described in Complaint Description. I spoke with the Foreman at the residence. A constructon project is active with contractors coming and going. A carpet estimator had a can of oil on the rear of his truck. Upon leaving the location, driving uphill, the oil can tipped and spilt onto the road. The property owner cleaned the area with Professional Absorb.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove oil **Follow-up Actions** Cat litter (Professional Absorb) was used. Visual verification **Actions completed** Cat litter (Professional Absorb) was used. Visual verification
SW No. MISC 0708-054 **Type** Residential **Location Address** 1336 Calera St **Watershed** Buena Vista Creek **Call Date** 2/11/2008 **Case Closed** 3/5/2008	Wash water discharging off property.	Washer situated under patio cover in mid driveway - not hooked up. Several appliances in driveway. Spoke with tenant. I requested no further discharge, obtain permit to plumb to sewer system or remove washer (s). 2/25/08, Property owner came to English/Spanish translation by Spanish speaking City employee. She understood inoperable washers were to be removed and no further discharge. 2/29/08, Washers still on site. Have City spanish speaking employee recontact her. 3/3/08, Contacted tenant, machines outside behind gate, tenant said he would take machines to "Yingst Iron Yard" tonight. Advised tenant that I would follow-up on Wed., 3/5/08. 3/5/08, Washer removed, photo verified.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove or plumb washer **Follow-up Actions** Photo verified **Actions completed** Wahers removed by tenant.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-051 **Type** Residential **Location Address** 1130 Prospect Pl **Watershed** Buena Vista Creek **Call Date** 2/20/2008 **Case Closed** 2/20/2008	Sediment from one property to another	I contacted the complainant and explained that it is a private property, private issue.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None needed - Private Property/Private Issue **Follow-up Actions** None needed - Private Property/Private Issue **Actions completed** None needed - Private Property/Private Issue
SW No. MISC 0708-052 **Type** Residential **Location Address** 300 Block of Huff St. **Watershed** Buena Vista Creek **Call Date** 2/25/2008 **Case Closed** 2/29/2008	Excessive water leaking / discharging into street.	Some water discharge from curb-coring irrigation pipes into street. Appears to be rain water (clear) run-off from hillside to the east dumping onto these properties.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None **Follow-up Actions** Monitor area and re-check in a few weeks to see if dry. Photo verify. **Actions completed** Monitor when in the area.
SW No. MISC 0708-070 **Type** Residential **Location Address** 1626 Rush Ave **Watershed** Buena Vista Creek **Call Date** 2/29/2008 **Case Closed** 4/7/2008	Overwatering with discharge of water into street.	Observed as in Complaint Description. Photos taken on 2/29/08. 3/12/08, lower drain pipe and utility pole dry. Upper drain near driveway and address sign still wet and draining.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Correct excessive water discharge (due to overwatering) from flowing into street **Follow-up Actions** Photo verify and recheck during dry season. 3/14/08, area dry. Photos taken. 4/7/08, area still dry. Photos taken. **Actions completed** No longer overwatering. Area is dry.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-059 **Type** Residential **Location Address** 525 & 527 Rancho Vista Rd **Watershed** Buena Vista Creek **Call Date** 2/29/2008 **Case Closed** 3/17/2008	Sediment discharge into road and storm drain.	Evidence of possible discharge from behind landscape retaining barrier (broken); gravel and sediment, also evidence of gravel/sediment discharge from area adjacent to driveway (west of driveway).	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Repair landscape retaining board to prevent further discharge. Suggest something more permanent (stronger). Clean/prevent discharge from area near driveway and establish BMPs. 3/12/08, area swept but board not repaired. Photos taken. 3/13/08, Telephoned property owner. Requested that they repair board and prevent further discharge and also keep driveway easement swale clear of debris and vegetation. Property owner stated that he will get there tonight and tomorrow (he lives in Riverside) to **Follow-up Actions** Photo verify. **Actions completed** BMPs in place. Landscape barrier repaired to hold back soil. Large ceramic pots to barricade area from further vehicle damage. Area swept clean.
SW No. MISC 0708-066 **Type** Residential **Location Address** 447 Chad Ct. **Watershed** Buena Vista Creek **Call Date** 3/19/2008 **Case Closed** 3/31/2008	White pipe with hose at sidewalk	A retaining wall french drain section is laying on sidewalk. The wall may have failed and is under construction as area is covered in plastic. The area is dry. No one home at this address to question.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Prevent any water intrusion into system if polluted. **Follow-up Actions** None required as area is dry. **Actions completed** Possibly repair wall and incorporate pipe at base of wall.
SW No. MISC 0708-071 **Type** Residential **Location Address** 1366 Marabou Ln **Watershed** Buena Vista Creek **Call Date** 3/24/2008 **Case Closed** 4/9/2008	Green pool water.	As observed in Complaint Description. Fear that the homeowners may drain water before treating it.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Do not discharge green pool water into storm drain system. **Follow-up Actions** Photo verify **Actions completed** Pool water clear.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-063 **Type** Residential **Location Address** 230 Grapevine **Watershed** Buena Vista Creek **Call Date** 3/25/2008 **Case Closed** 3/26/2008	Fluid leaking from vehicle.	Blue Mazda Miata was leaking antifreeze. I spoke with vehicle owner. She stopped the leak with a towel. I requested cat litter or professional absorbant material to remove remaining fluids.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and remove fluids. **Follow-up Actions** Photo verify **Actions completed** Professional absorbant material was used to remove remaining fluid on pavement - no leaks were visible.
SW No. MISC 0708-076 **Type** Residential **Location Address** 1106 Vista Bonita Dr. **Watershed** Buena Vista Creek **Call Date** 3/27/2008 **Case Closed** 4/21/2008	Wall construction material is blocking sewer access.	Monitored area. Material is being relocated.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove wall construction material **Follow-up Actions** Photo verify **Actions completed** Wall material relocated.
SW No. MISC 0708-069 **Type** Residential **Location Address** 1720 Rush Ave. **Watershed** Buena Vista Creek **Call Date** 4/3/2008 **Case Closed** 4/3/2008	Water flowing from irrigation pipe in driveway, down curb/gutter for 3 blocks.	Observed water flowing down curb/gutter in 1600 block of Rush Ave., followed to 1720 Rush Ave. Found hose, faucet was left on and water flowing.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Use care when watering plants so as not to overwater. Do not leave hose running when away. **Follow-up Actions** Unscheduled intermittent checks for compliance. **Actions completed** Received return phone call from property owner. She will use more care when watering. She mentioned this incident was accidental.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-072 **Type** Residential **Location Address** 1357 Marabou Ln **Watershed** Buena Vista Creek **Call Date** 4/15/2008 **Case Closed** 4/16/2008	Subject mows the lawn and picks weeds and dumps clippings in curb/gutter of street for street sweeper to pick-up.	Confirmed as noted in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove vegetation debris and dirt from City right-of-way by 4/16/08. Contacted property owners's adult son who admitted violation and took responsibility to correct. **Follow-up Actions** Photo verify. **Actions completed** Area cleaned. Corrective action was taken.
SW No. MISC 0708-075 **Type** Residential **Location Address** 1260 Winchester Ct. **Watershed** Buena Vista Creek **Call Date** 4/16/2008 **Case Closed** 4/17/2008	Car fluids, oil, grease on driveway.	Confirmed as in Complaint Description. There are two small spills of car fluids in driveway. Left business card and requested that they contact us.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clean oil, grease and car fluids from driveway using the dry sweep method. Do not use water unless it is reclaimed. **Follow-up Actions** Photo verify **Actions completed** Driveway cleaned.
SW No. MISC 0708-078 **Type** Residential **Location Address** 1266 Winchester Ct **Watershed** Buena Vista Creek **Call Date** 4/23/2008 **Case Closed** 4/25/2008	White Dodge Caravan in street in front of residence is leaking/dripping motor oil.	Confirmed as in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Clean oil and car fluids using dry method, unless water is reclaimed. **Follow-up Actions** Photo verify **Actions completed** Area cleaned, vehicle in driveway with a drip pan under it.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-079 **Type** Residential **Location Address** 1836 Goodwin Dr. **Watershed** Buena Vista Creek **Call Date** 5/1/2008 **Case Closed** 5/8/2008	Trailer in driveway leaking fluids into street	5/5/08, evidence of trailer leaking unknown fluids (stains on driveway). Also, observed older Jeep in driveway leakng oil, grease and car fluids onto driveway. Photos taken	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Contacted property owner and explained violations; illegal storage of wastes and illegal discharge. Remove or cover trailer, clean driveway using dry sweep method and repair Jeep using drip pan in interim. Property owner showed receipt for gasket to repair vehicle. **Follow-up Actions** Photo verify. **Actions completed** Trailer covered securely with tarp and driveway cleaned. No evidence of leaks from Jeep.
SW No. MISC 0708-083 **Type** Residential **Location Address** 1991 Cambridge Ct. **Watershed** Agua Hedionda Creek **Call Date** 5/8/2008 **Case Closed** 5/15/2005	Toilet tissue in driveway and street from recent private lateral spill. Also, dog poop in yard. Proactive - as observed by City employee.	Observed as in Complaint Description	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Dry sweep debris from driveway and street. Pick up dog waste. **Follow-up Actions** Photo verify **Actions completed** Area swept clean. Dog waste removed.
SW No. MISC 0708-084 **Type** Residential **Location Address** 414 Escondido Ave **Watershed** Buena Vista Creek **Call Date** 5/13/2008 **Case Closed** 5/15/2008	Proactive/observed by City employee. Sediment discharge from denuded soil on property onto City right-of-way/sidewalk and into City curb/gutter conveyance system.	As described in Complaint Description.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Sweep clean sediment discharge. Maintain BMPs. Suggested to vegitate denuded area. **Follow-up Actions** Photo verify **Actions completed** Area was cleared of sediment discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-080 **Type** Residential **Location Address** 706 Monterey Ln **Watershed** Buena Vista Creek **Call Date** 5/13/2008 **Case Closed** 5/13/2008	Contractor is running water in area of 714 Monterey Ln. Water flowing down curb/gutter to drain inlet.	Pool contractor is draining pool (Poolscape Unlimited). Contacted the Foreman on the job, water appeared clear. Tested water, was dechlorinated and no signs of algae- tested ok.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None. N/A Exception to the prohibition in City of Vista Municipal Code, Section 13.18.050 to the Maximum Extent Practicable by State Law. **Follow-up Actions** None. N/A **Actions completed** None - complaint unfounded. Exception to City of Vista Municipal Code Section 13.18.050.
SW No. MISC 0708-089 **Type** Residential **Location Address** 329 Selmalita Terr. **Watershed** Buena Vista Creek **Call Date** 5/14/2008 **Case Closed** 6/2/2008	Pro-active	Possible washing machine connection hooked up on side yard with evidence of gray water being dischared under north fence and into apartment complex slope and down to driveway. 5/15/08, Contacted tenant; dirty water was due to plumbing problem in laundry room wash basin/sink.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Don't use backed-up sink in laundry room area until it can be repaired by plumber. Tenant will recontact property owner for repair and will relay my information to property owner. **Follow-up Actions** Photo verify **Actions completed** Washing maching removed from front yard and plumbed in laundry room.
SW No. MISC 0708-087 **Type** Residential **Location Address** 1360 Palomar Pl **Watershed** Buena Vista Creek **Call Date** 5/15/2008 **Case Closed** 5/28/2008	Water running down curb and gutter from Palomar Pl. & Monique Ct. Possible pressure washing per Public Works employee. He observed water all the way to E. Vista Way.	Followed water to an apartment complex at 1360 Palomar Pl. Extensive irrigation of common areas causing run-off.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Contacted the on-site Manager. She stated that she would contact the property management to adjust sprinklers and shorten duration for watering. **Follow-up Actions** Photo verify - Contact property owner. **Actions completed** Area dry. No sighs of run-off.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-088 **Type** Residential **Location Address** 605 Townsite Dr **Watershed** Buena Vista Creek **Call Date** 5/27/2008 **Case Closed** 5/29/2008	Washer discharge hose protruding through window to exterior	I spoke with Parks Dept. employee and he stated he has witnessed washer water discharging from pipe protruding from window.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease further discharge; remove hose from window and discharge wash water to sanitary sewer. **Follow-up Actions** Photo verify **Actions completed** Hose removed from window. Forwarded to Code Enforcement Dept.
SW No. MISC 0708-095 **Type** Residential **Location Address** 2505 Coronado Pl **Watershed** Agua Hedionda Creek **Call Date** 6/17/2008 **Case Closed** 6/19/2008	White substance originating from 2505 Coronado Pl .	Observed as in Complaint Description. White substance has been discharged down to 2571 Coronado Pl. and entered storm drain inlet. Appears powdery and can be reclaimed.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Remove white substance from 2505 to 2571 Coronado Pl. **Follow-up Actions** Photo verify **Actions completed** White substance removed.
SW No. MISC 0708-096 **Type** Residential **Location Address** 653 Townsite Dr. **Watershed** Buena Vista Creek **Call Date** 6/19/2008 **Case Closed** 6/24/2008	Pipe sticking out of dirt bank in front of residence with water/sediment discharged into street.	Confirmed as described in Complaint Description. Photo document. Contact resident on 6/23/08 at 10:55 a.m. Said the drain is from the back yard. Water is from empyting a childs pool.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Dry sweep method of street and driveway. Discussed BMPs (sweeping, vegitation/landscape, rip-rap, etc) **Follow-up Actions** Photo verify. **Actions completed** Area swept clean of sediment. BMPs in place (concrete swale). Will monitor for effectiveness.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-038 **Type** Construction **Location Address** S. Melrose @ Sycamore Ave **Watershed** Agua Hedionda Creek **Call Date** 12/17/2007 **Case Closed** 12/17/2007	Pipe drainage flowing to storm drain	I contacted site construction inspector and we spoke with site superindendent. A filtered de-watering bag was draining an earthen swale on a construction site. Gravel bags were placed to slow down and trap water discharging to street. Water was running clear.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** BMP maintenance **Follow-up Actions** Verify compliance through visual inspection. **Actions completed** Implemented appropriate BMPs to filter water.
SW No. MISC 0708-048 **Type** Construction **Location Address** 400 Block of Plymouth Dr. **Watershed** Buena Vista Creek **Call Date** 2/5/2008 **Case Closed** 2/7/2008	Sediment discharging off construction site and parking lot.	Contacted superintendent at construction site and requested BMPs for erosion and dirt run-off	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Install BMPs; gravel, fiber rolls, etc….that are appropriate to the site. **Follow-up Actions** Visual and photo verify **Actions completed** Additional gravel was installed and some dirt removal done as well as sweeping.
SW No. MISC 0708-092 **Type** Construction **Location Address** Guajome @ Mercantile **Watershed** Buena Vista Creek **Call Date** 6/3/2008 **Case Closed** 6/11/2008	Lack of BMPs as reported by Regional Board.	I spoke with an Engineering Inspector. He spoke with site superintendent and stated that area is to be secured. A Field Notice was issued by Engineering Inspector.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Secure site and maintain BMPs continually. **Follow-up Actions** Site secured. **Actions completed** Plastic cover over remaining stock piles and fiber rolls on perimeter of site.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-017 **Type** Other **Location Address** N. Santa Fe @ North Ave **Watershed** Buena Vista Creek **Call Date** 9/10/2007 **Case Closed** 9/10/2007	Truck discharging fluids onto roadway and not containing spill.	Observed as in Complaint Description. I spoke with company representative and owner. I requestes his trucks that enter Vista have spill kits on board. They stated they would have spill kits on trucks.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge, contain spill and remove fluids. **Follow-up Actions** verify **Actions completed** Area clean
SW No. MISC 0708-018 **Type** Other **Location Address** Phillips and Escondido Ave **Watershed** Buena Vista Creek **Call Date** 9/12/2007 **Case Closed** 9/13/2007	Dirt in roadway from construction site.	City Construction Inspector wrote a correction notice to remove dirt from roadway.	**Enforcement Action** ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine **Correction Actions Required** Remove dirt from roadway **Follow-up Actions** verify that area is clean **Actions completed** Area clean
SW No. MISC 0708-020 **Type** Other **Location Address** 685 W. Taylor **Watershed** Buena Vista Creek **Call Date** 9/25/2007 **Case Closed** 9/27/2007	Dumping and dirt stock piling.	Observed as in Complaint Description. Located in County	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to County **Follow-up Actions** Contact complainant and gave information to County referral **Actions completed** Referred to County

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-030 **Type** Other **Location Address** 1130 E. Taylor St. **Watershed** Buena Vista Creek **Call Date** 10/30/2007 **Case Closed** 10/31/2007	Irrigation sprinkler broken	I contacted the Reverend of the Samoan church. He was speaking with the landscapers to repair line.	**Enforcement Action** ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Cease discharge and repair line **Follow-up Actions** Verify sprinkler was repaired **Actions completed** No water was flowing from sprinkler head.
SW No. MISC 0708-032 **Type** Other **Location Address** Townsite @ E. Vista Way **Watershed** Buena Vista Creek **Call Date** 11/8/2007 **Case Closed** 11/8/2007	Water from pipe running into gutter	AT&T was flushing a manhole vault. The water was clear (a sample was taken by workers). I requested procedure information and authorization to flush vault. A protocal sheet listed a WDID# . I was also given the name and number of the supervisor. I also contacted Traffic Dept. regarding volume across traffic.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None, however, asked AT&T to clear gutters down stream in the future. **Follow-up Actions** None **Actions completed** None
SW No. MISC 0708-042 **Type** Other **Location Address** Agua Hedionda-21 Monitor Site **Watershed** Agua Hedionda Creek **Call Date** 12/18/2007 **Case Closed** 12/19/2007	Greyish color in pools at outfall.	Rain event occurred prior to viewing location. Pictures taken during rain event indicate area clear of any discoloration.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Attempted to locate possible discharge and educate discharger. **Follow-up Actions** Monitor AH-21 by company contractor **Actions completed** I contacted City Engineering Technician for maps of possible dischargers; unable to locate any violations at business in area.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-047 **Type** Other **Location Address** 1531 Thibodo Rd **Watershed** **Call Date** 1/29/2008 **Case Closed** 1/30/2008	Septic spill	I spoke with tenant. Septic line was repaired and spill was on private property. Code Enforcement Officer and County Septic Officer also informed me of same.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** None - Unfounded **Follow-up Actions** None required - all was referred to County. **Actions completed** None required.
SW No. MISC 0708-056 **Type** Other **Location Address** 1518 Monte Vista Dr. **Watershed** Buena Vista Creek **Call Date** 3/4/2008 **Case Closed** 3/11/2008	Leaking septic tank.	I contacted County Septic. She visited site and found nothing leaking	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Unfounded **Follow-up Actions** Unfounded **Actions completed** Unfounded
SW No. MISC 0708-081 **Type** Other **Location Address** 900 Blk of Sierra Verde Dr. **Watershed** Buena Vista Creek **Call Date** 4/15/2008 **Case Closed** 5/14/2008	Encampment with trash, debris, clothing, etc..in storm drain.	Confirmed as stated in Complaint Description.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Referred to Code Enforcement, illegal camping. Public Works to clean easement area per City of Vista Right-of-Way Agent. **Follow-up Actions** Photo Verify **Actions completed** Area cleared of trash, debris, clsothing, blankets, etc.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No. MISC 0708-082 **Type** Other **Location Address** Gateway Dr. @ Shadowridge Dr. **Watershed** Agua Hedionda Creek **Call Date** 4/30/2008 **Case Closed** 5/15/2008	Irrigation runoff (dischrage) into gutter (stormwater conveyance system) possibly due to over watering.	Observed as in Complaint Description with evidence of sediment discharge as well.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Dry sweep sediment on sidewalk. Install BMPs to Maximum Extent Practicable **Follow-up Actions** Photo verify. **Actions completed** Area cleaned of sediment discharge. No additional signs of over watering.
SW No. MISC 0708-085 **Type** Other **Location Address** 650 Sycamore Ave. **Watershed** Buena Vista Creek **Call Date** 5/13/2008 **Case Closed** 5/27/2008	Landscape waste blocking water course and palm tree (fan palm) growing in water course (near bridge to parking lot area) impeding water flow.	Landscape waste (tree clippings) and palm tree in the water course; however, no signs of significant impediment to water flow.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Request removal of landscape waste during next scheduled maintenance clean-up of water course. Complaint unfounded; however, because no signs of significant impediment to water flow. **Follow-up Actions** Photo verify **Actions completed** Landscape waste was removed from water course.
SW No. MISC 0708-094 **Type** Other **Location Address** Frances Dr. & E. Vista Way **Watershed** Buena Vista Creek **Call Date** 6/17/2008 **Case Closed** 6/17/2008	Mud and water cascading off Frances onto E. Vista Way.	Vista Irrigation District on scene. A pipe burst at the top of Frances Dr. washing sediment to E. Vista Way and curb/gutter and into inlet. Gravel bags at inlet.	**Enforcement Action** ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine **Correction Actions Required** Vista Irrigation District to repair line and remove sediment **Follow-up Actions** Photo verify **Actions completed** Area mud removed and line repaired. New asphalt placed on street.

APPENDIX G

Outcome Based Assessment Table

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.	1, 3	Confirmation Inspection	Updated map provided	Appendix C & H
2	Reporting of all dry weather field screening and analytical monitoring results. The data should be presented in tabular and graphical form. The reporting shall include station locations, all dry weather field screening and analytical monitoring results, identification of sites where results exceeded action levels, follow-up and elimination activities for potential illicit discharges and connections, the rationale for why follow-up investigations were not conducted at sites where action levels were exceeded, any Copermittee or consultant program recommendations/changes resulting from the monitoring, and documentation that these recommendations/changes have been implemented. Dry weather field screening and analytical monitoring reporting shall comply with all monitoring and standard reportingrequirements in Attachment B of Order No. R9-2007-0001 and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001.	1, 3, 4	Confirmation Inspection Monitoring Quantification	Confirmed in Text and Appendix	Section 7.4.1 and Appendix C & H
3	Any dry weather field screening and analytical monitoring consultant reports generated, to be provided as an attachment to the annual report.	1	Confirmation Reporting	Confirmed	Appendix C
4	A brief description of any other investigations and follow-up activities for illicit discharges and connections.	1	Confirmation	171 other complaints	Sections 7.2 and 7.5.1; Appendix J
5	The number and brief description of illicit discharges and connections identified.	1	Confirmation Tabulation	108	Section 7.5.1
6	The number of illicit discharges and connections eliminated.	1, 4	Confirmation Tabulation	108	Section 7.5.1
7	Identification and description of all spills to the MS4 and response to the spills.	1	Confirmation Tabulation	15	Section 7.3.1
8	A description of activities implemented to prevent sewage and other spills from entering the MS4.	1	Confirmation	Confirmed	Section 7.3.2
9	A description of the mechanism whereby notification of sewage spills from private laterals and septic systems is received.	1	Confirmation	Confirmed	Section 7.3.3
10	Number of times the hotline was called, as compared to previous reporting periods, and a summary of the calls.	1	Tabulation	14	Section 7.2 Table 7.1
11	A description of efforts to publicize and facilitate public reporting of illicit discharges.	1, 2	Confirmation	Confirmed	Section 7.2
12	The number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation Tabulation	Confirmed	Section 7.5.1
13	A description of notable activities conducted to manage illicit discharges and connections.	1	Confirmation	Confirmed	Section 7

APPENDIX H

2008 Dry Weather Monitoring Sites and MS4 Map

City of Vista

2008 Dry Weather Monitoring Sites and MS4 Map

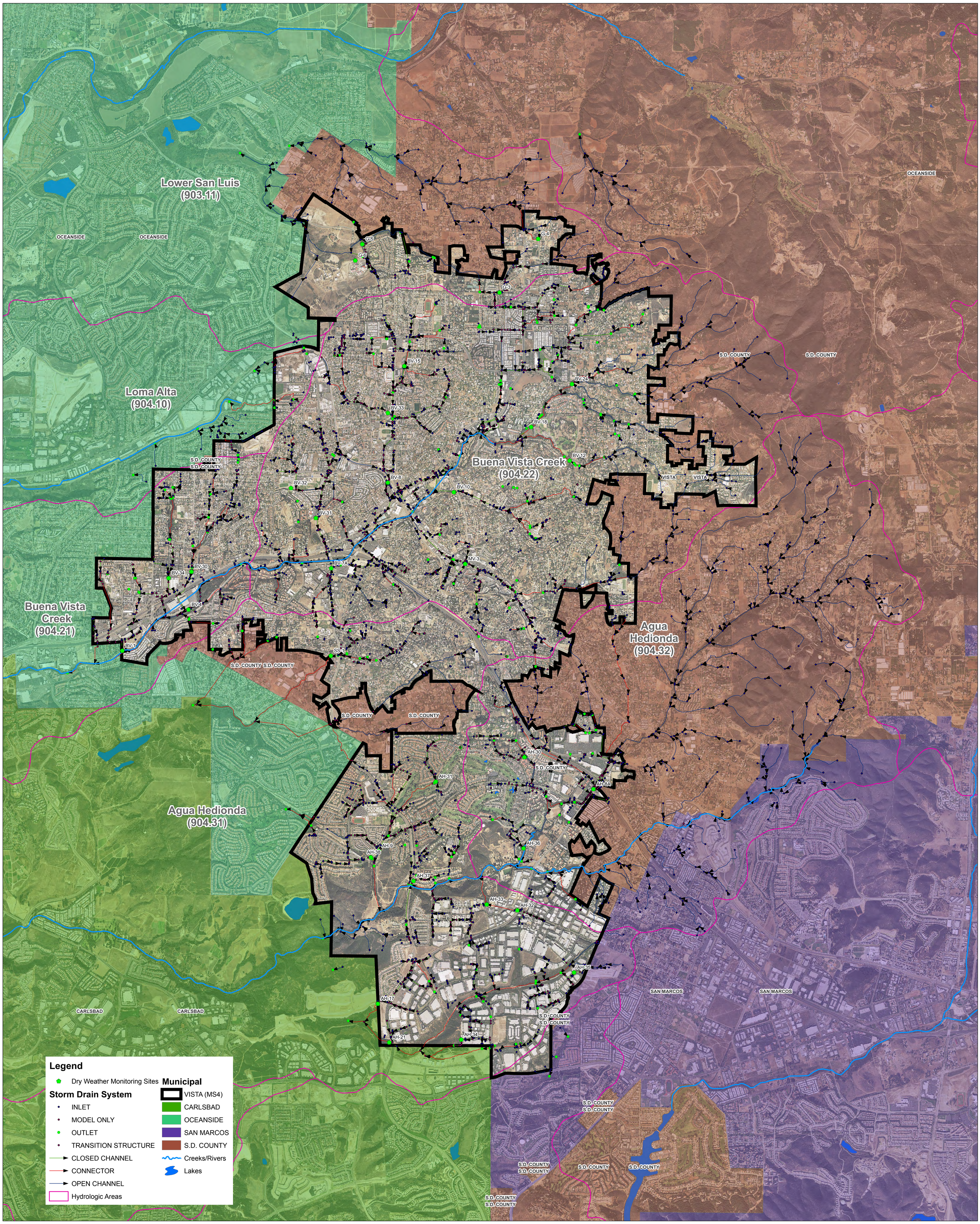

APPENDIX I

Summary of FY 07-08 Sanitary Sewer System Overflow Incidents

Appendix I
Summary of FY 07-08 Sanitary Sewer System Overflow Incidents

Date	Location	Source (City/Private)	Spill Volume (gal's)	Recovered (gal's)	Released (gal's)	Cause
12/27/2007	1341 Foothill Dr.	Private lateral	N/A*	Yes	No	Lateral blockage
2/13/2008	184 Pala Vista Dr.	Private lateral	N/A*	Yes	Yes	Lateral blockage
1/14/2008	227 Astro Ct.	Private lateral	N/A*	Yes	No	Lateral blockage
7/13/2007	1197 Little Gopher Canyon	Private lateral	10	0	0	Accidental break of sewer lateral
11/11/2007	614 Terrace Drive	City	75	0	0	Grease deposition
7/31/2007	Durian St. / Hill Dr.	City	4,000	1,000	3,000	Root intrusion
7/26/2007	401 Durian St.	City	620	220	400	Debris buildup
12/9/2007	1515 Melrose Dr.	Private lateral	650	0	650	Private lateral blockage
11/8/2007	548 Plumosa Ave	Private lateral	2	2	0	Root intrusion
11/7/2007	1619 Montgomery Dr.	Private lateral	5	5	0	Root intrusion
1/4/2008	West Vista Way	City	400	400	0	Pipe structural failure
3/10/2008	2112 East Vista Way	Private lateral	22	22	0	Private lateral
10/29/2007	301 Huff Street	Private lateral	90	10	50	Root intrusion
10/21/2007	800 Watson Way	Private lateral	50	40	10	Debris buildup
2/6/2008	1531 Thibodo Rd.	Private septic	5	2	3	System blockage

* Information not recorded

CITY OF VISTA

Fiscal Year 2008-09

JURMP Annual Report

Submitted September 2009

Prepared by:
City of Vista Engineering Department
Water Quality Protection Program

Printed on 100% Recycled Paper

City of Vista

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Patrick Johnson

Patrick Johnson
Assistant City Manager
City of Vista

9/22/2009
Date

Lawrence D. Pierce
Director of Engineering
City of Vista

9/22/09
Date

EXECUTIVE SUMMARY

In March of 2008, the City of Vista (City) developed and submitted its Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2007-0001 (NPDES Permit CAS0108758). This JURMP includes several new programs and updates to existing programs describing how the City of Vista will comply with the requirements in the municipal stormwater permit. This Annual Report describes program activities for Fiscal Year 2008-09: July 1, 2008 to June 30, 2009, and is the second JURMP Annual Report submitted under Order 2007-0001. The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Order R9-2007-0001. A brief synopsis of each component of the program is provided below.

Development Planning Component

The City's Development Planning Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2008-09. All development projects were required to undergo the urban runoff approval process, ensuring that projects were designed with applicable best management practices (BMPs) to mitigate urban runoff and stormwater pollution during and after construction. This component includes a new program designed to ensure that all required treatment control BMPs (TCBMPs) are constructed, operating, and maintained as designed. The TCBMP program was improved during this Fiscal Year, including increased education and outreach to the owners of the BMPs and an improved inspection and certification program. These program improvements ensure that TCBMPs are operating and maintained effectively and that the program operates effectively and efficiently. Further detail describing the Development Planning Component of the Program can be found in Section 2.

Construction Component

The Construction Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2008-09. All projects were required to undergo the urban runoff approval process, ensuring that projects are constructed with applicable best management practices (BMPs) in place to mitigate urban runoff and stormwater pollution during construction. Improvements were made to the inspection tracking process this year, assisting staff in tracking the construction inventory and performing the required site inspections at the necessary frequencies. The inspections staff underwent reorganization this fiscal year, placing the grading inspectors in the Land Development Division. This is expected to be beneficial as the inspectors will be more integrated into the process in development of private projects. The state of the local economy presented challenges to the inspectors this year in regards to idle sites. In instances where development was halted due to funding difficulties, financial institutions foreclosed on some parcels. With foreclosures pending and in some cases proceeding, it was necessary for inspection staff to use enforcement, bonds, or other measures to ensure that BMPs were implemented, even as construction was discontinued. These sites presented unique challenges to City staff. Details regarding the Construction Component can be found in Section 3. The construction inventory, inspection data, and summaries are located in Appendix B.

Municipal Component

The Municipal Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2008-09. The municipal inventory, located in Appendix C, was updated and all inspections were performed as required. All MS4 facilities and open channels in the City were inspected and cleaned as required, with nearly all catch basins and inlets being inspected and cleaned twice during the year. The street sweeping program continued to be implemented according to the JURMP. This component includes the Special Events Program, a new program under Order 2007-0001. This program was improved this year, with the formal inclusion of the stormwater program staff on the City's Special Events Committee, and revisions to application and BMP packets. All special events were reviewed and prioritized, with staff contacting and educating all applicants regarding required BMPs, and performing necessary inspections to ensure that BMPs were implemented as required. Details describing the Municipal Component are included in Section 4.

Industrial and Commercial Component

The Industrial Commercial Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2008-09. The business inventory was updated as required, totaling nearly 900 stationary facilities, and approximately 200 mobile businesses. This year, stormwater inspections were performed at 269 stationary facilities. These inspections also included all high priority inspections required under the City's Fats, Oils, and Grease (FOG) program, leveraging the stormwater inspections program and increasing efficiency. There were 75 follow-up inspections required and performed as a result of the initial stormwater inspections. These follow-ups are detailed in Appendix D. Additionally, stormwater staff addressed 66 complaints related to industrial and commercial facilities during this fiscal year. Details further describing this component can be found in Section 5 of this report.

Residential Component

The Residential Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2008-09. In the City's JURMP, the Residential Component focuses primarily on activities that have been deemed a high threat to water quality including: vehicle and boat repair/maintenance, automobile washing, automobile parking, home and garden care activities, home care and maintenance, manure and pet waste management, private sewer laterals and septic systems, and street sweeping of private roads/streets. Because these activities occur throughout all residential areas, all residential areas are then by default deemed a high threat to water quality. Nearly 700,000 pounds of household hazardous waste (HHW) generated in Vista were disposed of at the City's HHW collection center this fiscal year. Stormwater staff investigated 137 residential complaints this year, stemming from sources such as residential construction, spills, washing, and over-irrigation. Additional details about the Residential Component can be found in Section 6.

Illicit Discharge Detection and Elimination Component

The Illicit Discharge Detection and Elimination (IDDE) Component was implemented according to the JURMP and was in compliance with all Permit requirements during this fiscal year. Because of the inclusion of the Dry Weather Monitoring Program in this component, spanning May through September, it is not feasible to report on all data at this time. As allowed under the Permit, the IDDE Component will be submitted under separate cover, due by December 15, 2009.

Education Component

The Education Component was implemented according to the JURMP and was in compliance with all Permit requirements during FY 2008-09. This component addresses education for multiple target audiences including municipal departments and personnel, new development and construction communities, industrial and commercial business owners and operators, residents, general public, and school children. Municipal training this year included staff involved in planning, construction, streets maintenance, wastewater, parks, and stormwater inspections. Outreach to the construction and development community was performed primarily through one on one interaction throughout the development process. The business community was educated extensively via one on one interaction during inspections and follow-up investigations, as well as through complaint response efforts. Residents and the general public were educated through many outreach events. The City continued to utilize a contractor to perform in classroom outreach to school children as well, educating over 1500 students during Fiscal Year 2008-09. In each outreach effort, the City strived to ensure that the underserved target audiences were reached and the allowable discharges were addressed. The City developed several new outreach brochures this year and implemented a new email address for the Water Quality Protection Program as well. Further details regarding outreach and education are located in Section 8.

Public Participation Component

The Public Participation Component was implemented according to the JURMP and was in compliance with all Permit requirements during FY 2008-09. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Further details regarding the Public Participation Component of the program are located in Section 9 of this report.

Fiscal Analysis Component

The Fiscal Analysis for the program this year was performed using two methods, one according to the JURMP and a second according to the recently developed Standardized Fiscal Analysis Method. Both analyses are compliance with all Permit requirements. The first method shows the operating budgets for the stormwater program for the Fiscal Years 2008-09 and 2009-10. Due to recent economic difficulties, the budget was reduced from approximately $2.7 million in FY 2008-09 to approximately $1.5 million for FY 2009-10. The Standardized Method provides increased detail in the operating expenses, looking back at the estimated expenditures for the program over the past year. This method provides estimated costs for each component of the program. Using the this method, the FY 2008-09 costs for the program were $ 3,604,290 with the majority of the costs in municipal and inspections components of the program. Details of the fiscal analyses performed can be found in Section 10 of this report.

Effectiveness Assessment Component

The Effectiveness Assessment Component was performed according to the JURMP and is in compliance with all Permit requirements. This year's assessment focused on the individual components of the program and utilized levels 1-4 of the assessment matrix, looking at compliance, changes in knowledge and behavior, and load reductions. BMPs specific to each component were examined to determine whether they were effective or needed some modifications. They were also examined for programmatic efficiencies where possible. Where feasible, analysis of MS4 and receiving water quality was also provided. Significant findings of the effectiveness assessment include: positive impacts of inspections on the operation and maintenance of treatment control BMPs; the positive effect of preconstruction meetings related to BMP implementation on construction sites; positive effects of the municipal inspections program and load reductions associated with MS4 maintenance; the business inspection program, while in compliance with permit requirements, does not always result in full compliance at commercial sites from year to year; residential areas and activities appear to be well focused; and the education and outreach program appears to be effective and well focused. Water quality assessments are consistent with findings at the watershed level. High priority water quality problems identified include bacteria and nutrients during dry weather and bacteria and sediment during wet weather. The assessment then attempts to relate JURMP programs back to water quality findings. Further details on the effectiveness assessments can be found in Section 11.

Special Investigations

During 2008-2009, two specific creek cleanup efforts within Buena Vista Creek were undertaken to address water quality and obstruction concerns. Prior to creek cleanup efforts, a monitoring plan was developed for data collection based on the significant activity goals outlined in Section 12. The data collected were used to answer the proposed management questions: (1) Does improving natural flow in the Buena Vista Creek result in load reductions of COCs? (2) Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs? The study focused primarily on nutrients and bacteria. While there were confounding factors in the monitoring and analysis, the creek cleanups were successful in that flows were increased and significant amounts of trash and debris were removed from the creek. There were some indications of reduced pollutant loads after the cleanups, although these determinations are confounded by flows entering the creek segments that were not monitored. Full details of the project are included in Section 12.

Modifications to the JURMP

The only significant modifications to the JURMP are focused on new programs recently implemented under Order 2007-0001. These include the treatment control BMP inspection program and the special events program. Both programs were improved significantly and showed positive results. Increased outreach and oversight in each resulted in improved compliance from the community. Details regarding these program modifications and other changes to the JURMP that were less significant are provided in Section 13.

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1.0 INTRODUCTION

1.1 BACKGROUND

In 2002, the City of Vista (City) developed a Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2001-01 (NPDES Permit CAS0108758). On January 24, 2007, an updated permit, Order No. R9-2007-0001 (Order) was adopted. This new Order requires the City and each Copermittee (as defined in Section B of the Order) to update its JURMP to comply with the new requirements, and to annually submit reports on JURMP implementation. On March 24, 2008, the City submitted an updated JURMP to the RWQCB and began implementation.

This Annual Report provides information for FY 2009: July 1, 2008, to June 30, 2009.

1.2 PURPOSE AND OBJECTIVES

The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Order R9-2007-0001. This annual report describes the activities conducted by the City during the Fiscal Year and reporting period of July 1, 2008 through June 30, 2009. The City's program is described in its JURMP, dated March 2008, and in updates to the JURMP included in this Report. This annual report is presented in the standardized format developed collectively by the Copermittees.

Section 1	Introduction
Section 2	Development Planning Component
Section 3	Construction Component
Section 4	Municipal Component
Section 5	Industrial and Commercial Component
Section 6	Residential Component
Section 7	Illicit Discharge Detection and Elimination Component
Section 8	Education Component
Section 9	Public Participation Component
Section 10	Fiscal Analysis Component
Section 11	Effectiveness Assessment Component
Section 12	Special Investigations
Section 13	Modifications to the JURMP
Section 14	Conclusions and Recommendations
Appendices	

2.0 Development Planning Component

2.1 Introduction

The City continued to implement the Land-Use Planning and Development Components of the JURMP to reduce the impacts of new development and redevelopment on storm water quality. Table 2.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 2.1 Annual Reporting Requirements, Development Planning Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	A description of any amendments to the General Plan, the environmental review process, development project approval processes, or development project requirements.	1	Confirmation	Confirmed	2.2.2, 2.3
2	Confirmation that all development projects were required to undergo the Copermittee's urban runoff approval process and meet the applicable project requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
3	A listing of the development projects to which SUSMP requirements were applied.	1	Confirmation	See Appendix A-1 for listing	
4	Confirmation that all applicable SUSMP BMP requirements were applied to all priority development projects, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
5	At least one example of a priority development project that was conditioned to meet SUSMP requirements and a description of the required BMPs.	1	Confirmation	See Appendix A-2 for example	
6	A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.	1	Confirmation	2.4.3.1	
7	An updated treatment control BMP inventory.	1	Confirmation	See Appendix A-3	
8	The number of treatment control BMPs inspected, including a summary of inspection results and findings.	1	Confirmation	108 BMPs inspected	Appendix A-3
9	A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.	1	Confirmation	See Section 2.4.3.2.2	
10	Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.	1	Confirmation	2.4.3.1	
11	A listing of any projects which received a SUSMP waiver.	1	Confirmation	No Waiver Program In Place - No waivers issued	
12	A description of implementation of any SUSMP waiver mitigation program.	1	Confirmation		
13	A description of Hydromodification Management Plan (HMP) development collaboration and participation.	1	Confirmation	See Section 2.4.3.3	

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
14	A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.	1	Confirmation	Since the interim HMP requirements took effect, there have been no development projects that trigger HMP requirements (all were less than 50 acres)	
15	A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.	1	Confirmation		
16	A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.	1	Confirmation		
17	The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	None	2.4.3.4

2.2 Land Use Planning

2.2.1 Source Characterization

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are typically associated with development as defined in the City's JURMP and Standards Manual.

2.2.2 Program Implementation

The City's General Plan update was initiated in 2007 and continues to make progress towards a Spring 2010 completion following the schedule provided in the 2008 JURMP. Up-to-date information regarding the General Plan update, Vista 2030, can be found at the City's website at www.cityofvista.com under the Community Development web pages.

2.3 Environmental Review Process

The City's environmental review process incorporates a review of Low Impact Development design measures consistent with Order R9-2007-0001 permit requirements effective March 2008 as stated in the City's 2008 JURMP. During the reporting period the environmental review process has not changed and remains as stated below:

> The City's Environmental Review Process begins with the Initial Study Checklist (CEQA Guidelines, Appendix G). Based on the results of the checklist, the City will require the project applicant to provide additional studies to elaborate on the environmental impacts or recommend denial of the permit that the project applicant is seeking.

2.4 Development Project Approval and Verification Process

2.4.1 Source Characterization

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are typically associated with development as defined in the City's JURMP and Standards Manual.

2.4.2 Best Management Practice Requirements

Since the development and submittal of the City's 2008 JURMP, there have been no modifications to the BMP requirements for land development projects. However, during the reporting period the City was involved in the revisions to the Regional Model SUSMP. The City began the process of updating the Stormwater Standards Manual and associated municipal code sections in order to implement the new SUSMP requirements no later than January 2010.

2.4.3 Program Implementation

2.4.3.1 SUSMP

The City's development process incorporates urban runoff requirements from the first stages of the process. A Storm Water Applicability review is performed at the time of application as a part of the urban runoff approval process to determine the level of SUSMP applicability. During the permitting and plan check processes, staff makes sure that all applicable requirements are incorporated into the project documents. City project reviewers do not approve construction drawings until the recommendations of the Storm Water Management Plans are incorporated onto the plans. This system is in place to ensure that the projects incorporate all requirements of the urban runoff approval process. The tracking system in place is an Accela database which was initiated in January 2008.

During FY 2008-09, the City reviewed all projects as a part of the urban runoff approval process. Of these, 15 were determined to be priority development projects. Appendix A-1 contains a listing of the projects for which SUSMP priority development project requirements were applied during FY2008-09. The City confirms that all applicable SUSMP BMP requirements were applied to all priority development projects during the reporting period. The applicability and confirmation of these requirements is tracked by the Water Quality Technical Reports (WQTRs) submitted by the project applicants. The WQTRs are required to include all project information, BMPs incorporated to fulfill the requirements and justification to support the BMPs.

The City evaluated all of its Capital Improvement Program (CIP) Projects as part of the urban runoff approval process. During the reporting period, there were five active projects that were determined to be priority development projects, including: 1) Moonlight Amphitheater Improvements; 2) Vista Community Park; 3) Civic Center; 4) Fire Station No. 5; and 6) Fire Station No. 6. All of the projects have LID site design, source control and treatment control BMPs designed in their plans.

After projects are complete but prior to occupancy, the City verifies the proper installation and construction of all required post-construction BMPs. BMPs are verified in the field by the inspector in the Land Development Division and are confirmed on the

as-built plans. The engineer of work verifies that the BMPs were constructed per plan when (s)he signs the as-built drawings, which are then confirmed by the inspector upon signature. Once the as-built plans have been completed, Land Development staff notifies the Senior Environmental Specialist to shift the newly constructed BMP from the pending list to the active inventory for treatment control BMPs. This process was performed for all priority development projects prior to occupancy.

As a result of the urban runoff approval process, no projects received a SUSMP waiver during FY 2008-09. The City does not have a waiver program for SUSMP requirements. Additionally, no projects were allowed to implement low efficiency treatment control BMPs for their projects unless they were used in conjunction with a medium or high efficiency BMPs.

Located in Appendix A-2 is a synopsis of a development project that was conditioned to meet SUSMP requirements. Included in the synopsis are the base project information and a description of the required BMPs. This particular project is a City owned project and is a significant redevelopment project as defined by Order R9-2007-0001. The City's own City Hall was designed and is currently under construction to be completed as the City of Vista Civic Center by summer 2010.

As a part of its SUSMP process, the City has provided a template BMP Plan Sheet to be used during the development phase of a project. This new template is described in more detail in the Notable Activities Section below.

2.4.3.2 Treatment Control

During the reporting period, the City, through its inspections and annual verification program, verified that all approved TCBMPs were maintained and operating effectively in removing pollutants from stormwater.

2.4.3.2.1 Inventory

The City uses a watershed-based inventory database to track the inventory of treatment control BMPs (TCBMPs) and their maintenance and functionality. The City's current watershed-based TCBMP inventory for private development projects includes 54 development project sites, including six sites added during FY 2008-09. These projects contain 216 approved TCBMPs. Appendix A-3 contains the City's current TCBMP inventory for private development as well as a summary of the verification and inspection results.

Until recently, the City has not had any municipal projects falling under the SUSMP requirements. However, in the past, several treatment control BMPs were installed to remove pollutants at key locations in the MS4. All municipal treatment control BMPs are inspected and cleaned routinely as described in Table 4.2 in the Municipal Component. The municipal treatment control inventory is included in Appendix A-7. During FY 2008-09, several projects were under construction that meet the priority project requirements. The TCBMPs associated with these capital projects are expected to come online during FY 2009-10 and will be reported on accordingly.

As required under Permit 2007-0001, the City is required to prioritize all projects with approved TCBMPs into high, medium, and low categories which then determine the

frequencies of inspections. Updates to the prioritization process can be found in the JURMP Revisions section of this Annual Report.

2.4.3.2.2 Annual Verifications

In order to comply with the Permit and JURMP requirements for Annual Verifications of TCBMPs, the City initiated an inspection of all projects with TCBMPs during the summer of 2008. As required by the program changes (as a result of Order R9-2007-0001) the City began developing the TCBMP inventory in the spring and summer of 2008. The inspections provided three necessary pieces of information for the program: 1) verification of the existence or absence of the TCBMPs; 2) visual confirmation as to the maintenance status of the TCBMPs; and, 3) information about each TCBMP for the City's inventory and verification tracking systems. These inspections also satisfied the requirement for annual verification prior to the 2008-09 rainy season.

As a part of the TCBMP program development and implementation, during the reporting period the City mailed a TCBMP Program information packet to property owners of all inventoried sites to provide educational materials regarding the City's TCBMP requirements - see Appendix A-4 for an Example TCBMP packet.
The City required that all TCBMP responsible parties maintain their TCBMPs as necessary and annually certify that their TCBMPs were maintained and are operating effectively in removing pollutants from stormwater. The mailed out packet included the following:

1) Letter w/ "Frequently Asked Questions"
2) Site TCBMP list
3) Blank Annual Certification Form
4) Project specific TCBMP photographs
5) Storm Drain BMP Maintenance Agreement
6) CASQA TCBMP guides
7) TCBMP Operation and Maintenance Guidelines.

In order to ensure that all projects are informed of the verification requirements, as new project sites were added to the BMP inventory, the City mailed out the TCBMP Program information packet to the responsible party of each site providing education on the City's TCBMP maintenance and verification requirements.

In the initial mail out, the City required responsible parties to complete, sign, and return their Annual Certification form by April 30th, 2009. As a part of their response, responsible parties were instructed to provide information about the maintenance work performed during the time period from April 30th, 2008 – April 30th, 2009, including documentation such as photographs and contractor maintenance records. On the Annual Certification forms, responsible parties certified that during the one year time period, all TCBMPs under their responsibility were maintained and effective in removing pollutants from stormwater.

The City received responses from **100 percent** of all Annual Certification forms that were mailed out. Two sites were not mailed forms as they were residential sites that had foreclosed and a responsible party could not be identified. The City did verify through inspection that the TCBMPs located at those two properties were functioning properly. The City did not mail out Annual Certification forms for three other sites as they were added to the TCBMP inventory towards the end of the reporting period after the initial

mail out was sent. The City mailed Certification forms to the responsible party/property owners at those sites in early July 2009.

Annual Certification results are identified in the TCBMP inventory – see Appendix A-3. City staff reviewed all Annual Certification forms to verify the accuracy of the information provided and based on the information/documentation provided by the responsible parties, ensure that all TCBMPs were being maintained and operating effectively.

In July 2009, the City sent out a second mailer that has a due date for annual certification submittals no later than August 30th, 2009 and annually on August 30th thereafter. This will ensure that verification of operation and maintenance is provided to the City prior to the rainy season each year. The City requires that the responsible party verifies their TCBMP maintenance and functional operations for a one year period, between August 1st and July 30th of the following year.

2.4.3.2.3 Annual Inspections

During the reporting period the City conducted its required annual inspections of TCBMPs. Of the 54 inventoried TCBMP project sites, 20 sites (including 14 High TTWQ and 6 Medium TTWQ sites) were inspected in June 2009 to ensure that the BMPs were operating and maintained prior to the rainy season. The number of projects inspected meets the JURMP (and Order R9-2007-0001) inspection requirements. Table 2.2 contains these minimum requirements and the numbers of inspections performed to meet these requirements.

Table 2.2 TCBMP Inspection Requirements

Project Priority	Inspections Required per Permit (Percentage)	Inspections Required per Permit (Number)	Inspections Performed (Number)
High	100%	14	14
Medium	meet 20% total	0	6
Overall	20%	11	20
	50%with drain inserts*	18	18

*12 of the 14 high priority sites have drainage inserts and count toward the requirement to inspect 50% of the sites with these types of BMPs. Additionally, the 6 medium priority sites inspected have drain inserts, totaling 18 sites with drainage inserts inspected, of the 35 on the inventory.

During inspections, City staff documented the conditions of each TCBMP through photographs and completion of the City's TCBMP Inspection form - see Appendix A-5 for a copy of a revised inspection form. Inspection results are summarized in the TCBMP Inventory, Appendix A-3.

As a result of the inspections in June, City staff identified TCBMP violations at six TCBMP project sites. Corrective action letters were mailed to the responsible parties for the six project sites. Follow-up on these corrective actions are taking place in the current reporting period and will be reported in the annual report for FY 2009-10. Examples of recommended corrective actions include repairing a damaged drainage insert and providing adequate vegetation coverage for a swale. These corrective actions are summarized in Appendix A-3.

In addition to the private developments discussed above, the City also conducted inspections and maintenance at City owned TCBMPs. For more information regarding the maintenance of these TCBMPs, refer to Section 4 of this Annual Report.

2.4.3.3 Hydromodification Management Plan

The City has been involved in the development of the regional Hydromodification Management Plan (HMP). During the reporting period, City staff was involved in the two workgroups formed to develop the HMP. One workgroup is a Copermittee group whose responsibilities are to oversee the HMP development and guide the consultant team's work. The other workgroup is the Technical Advisory Committee whose responsibilities include providing technical guidance to the consultant team. The City is an active participant in both groups and in the review of all documents that are generated as a part of the HMP development.

The Regional Copermittees are on schedule to deliver the Final HMP on December 29, 2009 to the RWQCB for final review and acceptance.

Interim HMP requirements were established during the previous reporting period. During FY 2008-09, the City did not have any priority development projects greater than 50 acres triggering HMP requirements.

2.4.3.4 Enforcement

No enforcement occurred during FY 2008-09 related to Development Planning. Compliance with all TCBMP requirements was obtained via open and ongoing communication with the responsible parties.

2.4.3.5 Education and Training

Typically, City staff receives training aimed at reducing or eliminating the discharge of pollutants from specific activities (activity-specific training) and in general storm water issues and requirements. During the reporting period, Land Development received activity specific training. Topics included applicable laws, regulations, BMPs, LID BMP techniques, watershed concepts and hydromodification topics were covered during provided training.

The City anticipates that staff will continue to participate in both in-house training and professional organization training for the above-mentioned topics during the FY 2009-10 reporting period. The FY 2009-10 reporting period will have many new land development program impacts, e.g., hydromodification and new SUSMP requirements in effect.

All staff responsible for construction and grading review also received storm water training prior to the rainy season on September 25 and October 10, 2008. The training included the following topics:

- Relationship between Land Development and Urban Runoff
- Relationship between Construction Activities and Urban Runoff
- Urban Runoff Pollutant Impacts
- City of Vista Stormwater Program – Construction Component
- Inspection Requirements
- Low Impact Development BMPs

- Treatment Control BMPs
- Watershed Concepts
- Pollution Prevention BMPs
- Dos and Don'ts

In addition to the training noted above, land development staff received copies of the City's JURMP Chapter 4 covering staff responsibilities.

2.5 Notable Activities

During the reporting period, the City conducted notable activities with respect to its Treatment Control BMP Program, including:

1) TCBMP Informational Packets
2) Multiple Contacts with Responsible Parties
3) Revised TCBMP Inspection Form
4) Required BMP Plan Sheet

The City's informational packets that were mailed out (February 2009) to each responsible party were developed with the end user in mind. The City recognized that many of the responsible parties may not have been familiar with the TCBMPs within their responsibility. The City put forth great efforts to identify many specific features of each TCBMP that was constructed under the SUSMP process during the past seven years. Having this information allowed the City to develop project specific informational packets that could be used by the responsible parties to more easily understand their TCBMPs and the City's requirements. Each packet included:

- Letter w/ "Frequently Asked Questions"
- Project specific TCBMP list
- Blank Annual Certification form
- Project specific TCBMP photographs
- Storm Drain BMP Maintenance Agreement
- CASQA TCBMP guides for the specific TCBMPs at each project site
- TCBMP Operation and Maintenance Guidelines

The 100 percent return of all Annual Certification forms can be attributed to both the user friendly informational packets as well as City staff who were responsive to questions/issues from the responsible parties.

In addition, the City sent out a second mailer (July 2009) in order to have multiple contacts with the responsible parties. The second mailer included:

- A "Thank You" for responding to the initial mailer
- Additional maintenance requirements and frequency guidelines for the specific TCBMP types
- Expectations for the August 2009 certification
- Maintenance form template that could be used throughout the year by the responsible party to track the maintenance of their TCBMPs

The City expects that the second mailer will be useful in providing the responsible parties with as much information and support as possible to encourage proper maintenance and tracking for reporting purposes.

Another notable activity for the reporting period is a revision to the City's TCBMP Inspection Form. The changes were focused on improving the usefulness and efficiency of the form. After performing a number of inspections using the previous form, the City determined that revisions would be necessary. A copy of the revised reporting form can be found in Appendix A-5.

The last notable activity for Development Planning is the development of a BMP Plan sheet to be utilized for the development phase of a project. Project applicants must submit BMP plan sheet(s) which show the project's site design, source control and treatment control BMPs. The City developed the template to provide for a consistent approach to strengthen the verification and certification processes and ensure each required BMP is installed prior to occupancy. At the "as-built" phase of a project, the City requires that the Engineer of Work certifies that all BMPs were constructed and installed per approved plans. The City has also implemented a requirement that no field changes may occur during construction that are related to the approved BMPs. This will ensure that if BMPs need to be revised during construction because of field conditions, the Land Development staff will review any modifications and ensure that adequate LID site design, source controls and treatment controls remain a part of the final project.

The City has posted the template BMP sheet on its website for download by applicants, developers and engineers. A copy of the template BMP sheet can be found in Appendix A-6 and online at http://www.cityofvista.com/departments/communitydev/forms.cfm.

3.0 CONSTRUCTION COMPONENT

3.1 Introduction

The City continued to implement the Construction Component of its Jurisdictional Urban Runoff Management Plan (JURMP) in FY 2008-09 to prevent and reduce pollutants in runoff from construction activities within the City. Table 3.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 3.1 Annual Reporting Requirements, Construction Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Confirmation that all construction sites were required to undergo the Copermittee's construction urban runoff approval process and meet the applicable construction requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	3.5.1
2	Confirmation that a regularly updated construction site inventory was maintained, including a description of how the inventory was managed.	1	Confirmation	Confirmed	3.2
3	A description of modifications made to the construction and grading ordinances and approval processes.	1	Confirmation	Completed changes in FY 2008	3.3
4	Confirmation that the designated BMPs were implemented, or required to be implemented, for all construction sites.	1	Confirmation	Confirmed	3.4
5	Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.	1	Confirmation	Since the maximum disturbed area and advanced treatment requirements took effect, no projects have triggered these requirements	3.5.3
6	A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.	1	Confirmation		3.5.4
7	For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.	1 & 3	Confirmation / Tabulation / Inspection	See Section 3.5.5. and Appendix B-1	
8	A description of the general results of the inspections.	1	Confirmation	Confirmed	Appendix B-1
9	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	3.5.5 Appendix B-2
10	The number of violations and enforcement actions (including types) taken for construction sites, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	NOV = 2	3.5.6

3.2 Source Characterization

During the entire reporting period, the City maintained a regularly updated construction site inventory. Through the reporting period, the City met the minimum JURMP requirement of making monthly updates, additions and deletions of sites, to the inventory.

The City's inventory is managed in Microsoft Access, an electronic database. Additions to the inventory are made when projects enter the construction phase of their development process. The project information is entered into the database along with the project's inspection frequency priority. The inspection forms that trigger inspections are initiated from the inventory based on the inspection frequency priority assigned to each project. Deletions are entered into the database when inspection forms are returned by the inspectors with notations that the project is complete.

3.3 Updates to Ordinances and Approval Processes

As a part of the City's 2008 JURMP, modifications to the municipal code and land development approval processes were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2008-09 reporting period, the City did not make updates to its municipal code or its land development approval process.

3.4 Best Management Practice Requirements

As a part of the City's 2008 JURMP, modifications to the requirements for construction and grading requirement were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2008-09 reporting period the City did not make modifications to its best management requirements for construction and grading projects. All projects were required to implement BMPs as set forth in the City's JURMP.

3.5 Program Implementation

3.5.1 Construction Urban Runoff Approval Process

All new projects are required to submit plans and apply for a Stormwater permit as part of the urban runoff approval process, which are checked for compliance with municipal permit requirements. Tracking of the projects submittals is done through an Accela database. In following procedures as described in the JURMP, all construction sites were required to undergo the urban runoff approval process.

3.5.2 BMP Implementation

Through the development approval and construction inspection processes, the City confirms that all designated BMPs were required to be implemented and also implemented throughout the reporting period for all construction sites. During the active construction phase of projects, if BMPs were not implemented or were improperly implemented, the inspection program identified such deficiencies and required implementation and/or modifications to be completed.

3.5.3 Maximum Disturbed Area for Grading

The City began implementing the maximum disturbed area for grading activities in March 2008. During the reporting period the City did not have any projects in the development process, planning phase through construction phase, which met the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.4 Advanced Treatment Sites

The City began implementing the advanced treatment requirements for grading activities in March 2008. During the reporting period, the City did not have any projects enter the development process that met the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.5 Inspections

Construction sites are required to be inspected based on the frequency schedule set forth in the City's JURMP. Inspectors from the Community Development Department's Land Development Division inspect BMPs associated with grading permits (private projects) and public projects.

During FY 2008-09, the City inspectors conducted all the documented Stormwater specific BMP inspections per the frequencies described in the JURMP. Stormwater inspections were officially logged and documented, along with pertinent information regarding the specific construction site.

To ensure appropriate documentation of FY 2008-09 stormwater specific inspections, training was conducted in August, September and October 2008, where emphasis on appropriately documenting and tracking inspections was stressed to the inspection staff. Additionally, the City staff has taken steps to improve the inspection tracking process, primarily by enhancing the electronic database system and process used to track inspections. These enhancements are described below in the Notable Activities section.

Appendix B-1 is a summary of the construction project inspections of active projects during the reporting period and includes the following information on a project by project basis:

- Project Location
- Storm Water Priority (Inspection Frequency)
- # of weeks active in the Rainy Season
- # of documented Stormwater inspections in Rainy Season
- # of documented Stormwater inspections in Dry Season
- Total # of documented Stormwater inspections for the site during the reporting period
- # of non-Stormwater inspections in Rainy Season
- # of non-Stormwater inspections in Dry Season
- Project specific summary of inspection findings

During FY 2008-09, 51 construction sites were in the active construction phase: 19 high priority; 8 medium priority; and 24 low priority. In total, the Engineering Department conducted 586 inspections throughout the reporting period. A summary of the inspection statistics are included in Appendix B-2.

In order to ensure that inspections addressed all required inspection steps as per Order R9-2007-0001 Section D.2.d(6)(a-f), the inspectors used a standard computer generated form for inspections, included in Appendix B-3.

3.5.6 Construction Enforcement

Inspectors generally coordinated with the contractor to immediately correct any storm water issues or potential violations. If issues are not resolved and violations occur, enforcement escalates. During the reporting period, 26 verbal warnings and five correction notices were issued through direct correspondence with the responsible contractors. All verbal warnings and correction notices were followed up at the following inspection (or in some cases earlier depending on the severity of the issue) to ensure that no further enforcement actions were necessary.

If verbal discussions and correction notices were not successful at achieving compliance at a project site, enforcement actions were escalated. The construction inspection staff escalated enforcement by requesting an investigation from the Water Quality Protection Program Code Enforcement Officer. As a result of the investigations conducted by the Water Quality Protection Program the following enforcement actions were taken at construction sites. In each case, follow-ups were performed and full compliance was achieved.

Table 3.2 FY 2009 Summary of Code Compliance Enforcement Actions for Sites of Construction Activities

Construction Enforcement Actions Taken	Number Issued in FY 2009
Verbal Warning	7
NOV	2
Citation	0

3.6 Notable Activities

During the reporting period, the City conducted notable activities with respect to its construction activities component, including:

1) Modifications to the inspection tracking process
2) Reorganization – resulting in inspectors changing departments
3) Effectively addressing required BMPs on inactive sites.

The tracking process changes include modifications to the database in order to capture information about individual project inspections. The revised database allows the user to more easily identify if inspections forms are not entered into the system. This creates a safety system to ensure that inspections are conducted, documented and logged at the required frequencies. Additional information can be found in the JURMP Revisions chapter of this Annual Report.

The City reorganized several departments during the reporting period. As a result, the construction inspection staff was moved from the Engineering Department to the Land Development Division of the Community Development Department. To date, this reorganization has not resulted in modifications to the construction component of the JURMP.

With the current state of the economy, it is not unusual to locate properties where the owners are having financial difficulties, often resulting in a lack of resources to continue a project and occasionally resulting in foreclosure on the property. In these instances, obtaining proper BMP implementation for the idle sites becomes difficult. In these situations, the City has utilized various options, including escalated enforcement and pulling bonds, to ensure that the sites are adequately protected.

4.0 MUNICIPAL COMPONENT

4.1 Introduction

This section describes the implementation of the Municipal Component of the JURMP during FY 2008-09. The program section was implemented to: (1) reduce municipal discharges of pollutants from the MS4 to the MEP, and; (2) prevent municipal discharges from the MS4 from causing or contributing to a violation of water quality standards.

This section addresses two types of municipal operations: fixed or stationary facilities; and field activities. A fixed facility is a specific building or physical location at which municipal operations occur. An example is a corporate yard. Conversely, field activities are actions or programs that staff or City contractors implement as a part of their work duties at various locations across the City. An example is street maintenance.

Table 4.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 4.1 Annual Reporting Requirements, Municipal Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Any updates to the municipal inventory and prioritization.	1	Confirmation	Appendix C-2	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	1	Confirmation	Confirmed	4.2.2, 4.2.3.5, 4.3.2
3	A description of inspections and maintenance conducted for municipal treatment controls.	1	Confirmation	Section 4.2.3.1, Table 4-2	
4	Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	1 / 3	Tabulation / Inspection	Inventory = 806 Inspected = 1569 (some inspected twice) Catch Basins/Inlets Cleaned = 1569 (some inspected twice)	4.2.3.1, Table 4-2
5	Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	1	Tabulation	Total Distance of MS4 pipes = 37 miles 597 linear feet inspected 62 linear feet cleaned	4.2.3.1, Table 4-2
6	Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.	1	Tabulation	Open Channels = 5.3 miles (improved) Inspected = 5.3 miles Cleaned = 4.7 miles	4.2.3.1, Table 4-2

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
7	Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.	4	Quantification	Catch Basins/Inlets = 455 tons MS4 Pipes=1.6 tons Open Channels=2493 tons	4.2.3.1, Table 4-2
8	Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding.	1	Confirmation	None at this time	-
9	Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	1	Confirmation	Confirmed	4.2.3.3
10	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	100 miles	4.2.3.2, Table 4-3
11	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	300 miles	4.2.3.2, Table 4-3
12	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	200 miles	4.2.3.2, Table 4-3
13	Identification of the total distance of curb-miles swept.	1	Tabulation	8,000 miles	4.2.3.2
14	Identification of the number of municipal parking lots, the number of municipal parking lots swept, and the frequency of sweeping.	1	Confirmation	Lots = 18 Swept = 7 @ Once a week	4.2.3.2
15	Amount of material (tons) collected from street and parking lot sweeping.	4	Quantification	Street Sweeping = 279 tons Parking Lots = 5 tons	4.2.3.2
16	A description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4	1	Confirmation	See Section 4.2.3.4	
17	Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of the inspections.	3	Inspection	Sites requiring inspections =28 Sites inspected = 28 Frequency of inspections = 1X per year	4.3.2, Table 4-5
18	A description of the general results of the inspections.	1	Confirmation	See Section 4.3.2, Appendix C-3	
19	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	4.3.2

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
20	The number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	None	4.4, Appendix C-3

4.2 Municipal Activities

4.2.1 Source Characterization

During the reporting period, there were six municipal activities included in the inventory. These are: street maintenance, plaza and sidewalk cleaning, landscape maintenance, waste handling and disposal, MS4 maintenance, and wastewater utility maintenance. Of these six, road and street maintenance and sidewalk and plaza cleaning were high priority activities. These activities and priorities remained unchanged from the 2008 JURMP inventory. Both activities received inspections in FY 2008-09.

4.2.2 Best Management Practice Requirements

As a part of the City's 2008 JURMP, modifications to the municipal BMPs were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2008-09 reporting period the City did not make modifications to its best management requirements for municipal facilities and activities. All BMPs required in the JURMP were implemented during this reporting period.

4.2.3 Program Implementation

As a part of the City's 2008 JURMP, modifications to the municipal activities program were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the reporting FY 2008-09 reporting period the City did not make modifications to its municipal program implementation processes or procedures.

The following sub-sections discuss the program implementation for the municipal activities programs during the reporting period.

4.2.3.1 Municipal Separate Storm Sewer System (MS4) Program

Table 4.2 summarizes the MS4 inspection and cleaning program during FY2008-09.

Table 4.2 MS4 Inspection and Cleaning Program Data

Item	Quantity	Inspected	Cleaned	Amount Removed
Debris Curtain in Buena Vista Creek[1]	1	12 times	4 times	39 tons
Hydrodynamic Separators[1]	3	1 time ea.	1 time ea.	6.0 tons
Insert Baskets (City Maintained)[1]	2	2 times	2 times	0.6 tons
Insert Baskets (Contractor Maintained)[1]	6	3 times	3 times	0.33 tons
Catch Basins and Inlets	806	1,569 (some cleaned more than once)	1,569 (some cleaned more than once)	455 tons
Total distance of MS4 Pipe	37 miles	597 linear feet	62 linear feet	1.6 tons
Total distance of Open Channels	5.3 miles (improved)	5.3 miles[2]	4.7 miles[3]	2,493 tons[4]
Under Sidewalk Drains	Unknown	121	121	22 tons
Natural Area & Brow Ditches	Unknown	Unknown	Unknown	250 tons
Rain Patrol & Gutters	Unknown	Unknown	Unknown	200 tons

[1] Municipal Treatment Controls
[2] All lengths of open channels with anthropogenic litter.
[3] Some open channels could not be cleaned because of soft bottoms.
[4] Approximately 1% of removed tonnage in form of trash/litter, 99% deposited sediments.

Over 3,470 tons were removed during the reporting period. New installed BMPs include an improved channel debris collection device at Krikorian Theatre and South Santa Fe.

4.2.3.2 Street Sweeping Program

During the previous reporting period, the City made changes to its program implementation as a part of the 2008 JURMP update. The changes were focused on street sweeping frequencies based on the relative generation of trash and debris on streets. For more details on the changes, please see the 2008 JURMP submitted in March 2008. Additional changes were made during the current reporting period. Areas classified as moderate or low priority for trash generation were swept twice per month, up from once per month in moderate priority areas and once per year in low priority areas during FY 2007-08. Sweeping frequency of high priority areas remained at twice per month.

Table 4.3 summarizes the street sweeping program during FY 2008-09.

Table 4.3 Street Sweeping Program

Volume of Trash Generation	Street Types	Total Curb-Miles	Minimum Frequency	Minimum Frequency Achieved?
High	Commercial	100	2X per month	Yes
Moderate	Residential	300	2X per month	Yes
Low	Other Streets and Parking Facilities	200	2X per month	Yes

A total of approximately 8,000 curb-miles were swept during FY 2008-09. The total amount of material collected by the street sweeping program for the reporting period was 278.77 tons for the streets, 5 tons for the parking facilities, and 1 ton within the operations yards.

4.2.3.3 Pesticide, Herbicide and Fertilizer Management

The City confirms that appropriate BMPs were implemented by the City staff with respect to the Pesticide, Herbicide and Fertilizer Management requirements of the JURMP.

4.2.3.4 Wastewater Element

In an effort to maintain the wastewater collection system and to identify potential problem areas in the system, the City conducted 78 miles of video inspection, CCTV, of the wastewater system. The increase from FY 2007-08 was representative of the division's snap shot video program, in which an extra shift was dedicated to the program and is not indicative of normal operations. The video inspection program is in place to prevent and/or eliminate infiltration from the wastewater system to the MS4.

Of the approximately 311 miles of the wastewater collection system, approximately 322.8 miles were cleaned as part of the regular schedule of inspection and cleaning. Some portions of the collection system were cleaned twice due to priority and build up of materials.

Approximately 300 linear feet of the City's collection system was repaired during the reporting period. These repairs were conducted as spot repairs at specific locations where the collection system may have been failing or where infrastructure failure was imminent.

A total of 1 public spills and 5 private spills occurred during the reporting period. Spills were mitigated by constructing berms and dykes using sand bags and rubber blocks (when available) to prevent the effluent from entering curb inlets. A copy of the sewer spill report log is located in Appendix C-1.

The City has also established mechanisms for the public at large to provide notification of sewage spills to the City through the use of several hotlines. Additionally, the City posts its reporting phone numbers on sewage easement gates as well as other visible locations. Lastly, the City published the hotline number in the Vista Focus Magazine that was mailed out to Vista residents.

4.2.3.5 Special Events

During the reporting period, the City updated and expanded the storm water special events program. These changes are highlighted below in the Notable Activities section as well as included in the JURMP revisions chapter of this Annual Report.

Pre-event and post-event inspections were conducted based on the size and location of the event, planned activities, number of participants and spectators, and whether or not City staff would be present to monitor the event and BMPs. It was determined that pre/post-event inspections were necessary at three special events:

1) Burger Run Car Show
2) Hennessey's St. Patrick's Day Event
3) Vista Chocolate Festival

Storm water staff was present at these events and conducted the required inspections. Additionally, City staff trained in storm water BMPs were present at the other special events, even though a formal inspection form was not completed. If BMP issues were

noticed, the event organizers were notified and corrective actions taken. The most common BMPs required at the special events were providing trash receptacles; staff to monitor trash containers and to collect renegade trash; portable toilet location and secondary containment; spill kits; BMP training to staff and vendors; storm drain inlet protection; and trash/debris clean up and removal of BMPs after the event. All required BMPs were implemented during this reporting period.

During the reporting period, City staff met with the event organizers prior to the issuance of their special event permits so that it was clearly understood what the City's storm water requirements were for the specific event type and venue.

Table 4.4 summarizes the special events program activities during FY 2008-09.

Table 4.4 Summary of Annual Storm Water Activities for Special Events

Event Name	Event Date(s)	Pre-Communication / Meeting with Organizer	BMPs Required to be Implemented	Full Stormwater Inspection	City Staff Present at Event	Event Venue
Christmas Parade	12/6/08	Yes	Yes	No	Yes	South Santa Fe Ave.
Burger Run Car Show	1/10/09	Yes	Yes	Yes	Yes	Eucalytpus Avenue
Hennessey's St. Patrick's Day	3/17/09	Yes	Yes	Yes	No	Sidewalk @ 224 Main St.
Cinco de Mayo Celebration	5/9/09	Yes	Yes	No	No	Townsite Community Center
Vista Village Chocolate Festival	5/24/09	Yes	Yes	Yes	Yes	Historic Downtown Vista
Moonlight Fundraiser	6/6/09	Yes	Yes	No	Yes	Avo Theater
Taste of Vista	6/19/09	Yes	Yes	No	Yes	Main St.
Summer Music Concert Series	6/19/09 & 6/26/09	Yes	Yes	No	Yes	Main St.
Scottish Highland Games	6/27/09 & 6/28/09	Yes	Yes	No	Yes	Brengle Terrace Park

4.2.3.6 Non-Emergency Fire Fighting

BMPs are used to reduce the discharge of pollutants from non-emergency fire fighting activities. The City has developed and implemented a program to reduce pollutants from these activities in accordance with the Permit. During the reporting period, BMPs were implemented as described in the JURMP when performing the following activities:

- Maintenance of fire and emergency vehicles and equipment
- Training exercises
- Facilities maintenance
- Post-emergency rehabilitation of response equipment.

Additionally, two new fire stations were under construction during the reporting period. Each has included treatment control BMPs in their design including porous pavement, vegetated swales, diversion valves, and an underground detention basin. Construction was completed in the beginning of FY 2009-10.

4.3 Municipal Facilities

4.3.1 Source Characterization

During the previous reporting period, two changes were made to the City's Municipal Inventory: the deletion of the Civic Center Park which was demolished as a part of the City's project to redevelop the Civic Center; and the deletion of Indian Rock which is a City owned property that has no public access and is essentially an open space property with no facilities. The most up-to-date inventory can be found in Appendix C-2. The inventory includes 28 high priority municipal facilities.

4.3.2 Inspections

The City conducted facility inspections for each of its high priority facilities and activities during FY 2008-09. The purpose of these inspections was to ensure that BMPs (including those for pollution prevention) were being implemented. The inspections followed all required inspections steps to determine full compliance with the City's JURMP.

Per the JURMP, the City formally inspects all high priority municipal sites. Municipal sites are considered to be fixed facilities where high priority municipal activities occur. Two high priority municipal activities were also inspected, a street/curb repair and sidewalk cleaning. The networks (streets & roads and wastewater collection system) are routinely inspected under various programs such as street sweeping, streets maintenance, MS4 inspections and cleaning and the sanitary sewer system video inspection and cleaning program. Formal inspection forms are not generated for the general routine inspections performed of these municipal network areas.

Table 4.5 provides a summary of the formal annual stormwater inspections performed for the municipally operated sites/facilities by the City.

The results of the inspections can be found in Appendix C-3. For each facility, recommendations for follow-up corrective actions were listed. In general, the corrective actions included: asphalt repairs; cleaning of accumulated oils from parking lots; closing of dumpster lids; and, good housekeeping practices. The corrective actions were implemented after the inspections were completed and verified by City staff. All BMPs required in the JURMP were implemented at all municipal facilities during this reporting period.

Table 4.5 Summary of Annual Stormwater Inspections for Municipal Facilities and Activities

	Name	Address		Inspection Date
Municipal Facilities				
1	Breeze Hill Park	645	S. Melrose Dr.	1/14/2009
2	Brengle Terrace Park	1200	Vale Terrace Dr.	1/14/2009
3	Bub Williamson Park	530	Grapevine Rd	1/14/2009
4	Buena Vista Park	1851	S. Melrose Dr.	1/14/2009
5	Moonlight Amphitheater	1200	Vale Terrace	1/14/2009
6	Parking Lot		E. Broadway - Hanes Pl.	1/13/2009
7	Parking Lot		Main St / S. Indiana Ave. S/E corner	1/13/2009
8	Parking Lot		Main St - Michigan Ave.	1/13/2009
9	Parking Lot	523	S. Santa Fe	1/13/2009
10	Parking Lot	300 blk	Main St	1/13/2009
11	Park-N-Ride		W. Vista Way @ S. Emerald	1/14/2009
12	Public Services Yard	1165	E. Taylor Street	1/14/2009
13	PS Satellite Yard	2430	Lupine Hills Dr.	1/14/2009
14	PS Auxillary / HHW	1145	E. Taylor St	1/14/2009
15	PS Yard / Inactive WWTP	2525	Lupine Hills	1/14/2009
16	Raintree Park	545	Townsite Dr.	1/14/2009
17	Rancho Buena Vista Park	1851	S. Melrose Dr.	1/14/2009
18	Sewer Pump Station	2685	S. Melrose Dr.	1/16/2009
19	Sewer Pump Station	2080	S. Melrose Dr.	1/16/2009
20	Shadowridge Park	2101	Lupine Hills	1/14/2009
21	The Wave	101	Wave Dr.	1/21/2009
22	Thibodo Park	1150	Lupine Hills Dr.	1/14/2009
23	Townsite Park	340	E.Townsite Dr.	1/14/2009
24	Wildwood Park	651	E. Vista Way	1/13/2009
25	Brengle Terrace Basin	1100	Vale Terrace Dr.	5/7/2009
26	Cypress Basin		Monte Vista Dr. & Cypress Dr.	5/7/2009
27	Monte Vista Basin		Monte Vista Dr. & Valley Dr.	5/7/2009
28	Creekwalk / BV channel		Main St. & Wave Dr.	5/7/2009
Municipal Field Activities				
29	Road and Street Maintenance	Varies		10/23/2008
30	Plaza and Sidewalk Cleaning	Varies		1/20/2009

4.4 Enforcement

Three enforcement actions were taken during the reporting period. These included verbal warnings for trash removal at the W. Vista Way and Emerald Parking Lot, sediment removal in the Cypress Detention Basin brow ditches, and addressing spill kit availability at the Public Services Buena Yard. Subsequent follow-up inspections to the sites ensured proper actions had been taken; no further actions were necessary.

4.5 Notable Activities

During the reporting period, the City conducted notable activities with respect to its municipal activities component, including:

1) Modifications to the Special Events Program
2) Snap Shot CCTV Program

Some significant changes to the processing of special events were made, with respect to storm water, during the reporting period to help facilitate a better education and implementation process for BMP implementation at the special events.

Revisions were made to the Application for Special Events Permit General Information and Instructions packet. Information, in the form of guidance and requirements, was added and changes were made so that these sections would be more accurate, complete and helpful to the applicants.

Changes were also made to the Special Event Permit Storm Water Best Management Practices packet that is attached to the event permit application. The sections of this document were expanded to include additional BMP information and requirements. A Storm Drain Protection section and Vehicles, Equipment and Hydraulic Rides section were also added. Special event permit applicants are required to receive and review this storm water BMP packet as part of the application approval process, and they must also train event staff and vendors of their required BMPs.

Additionally, changes were made to the Application for Special Events Permit. These changes were made to include additional information relating to storm water BMP requirements. A site map requirement section was added with a sample site map, the Sanitation section was expanded, the Storm Water Protection section was expanded and a storm water staff review section was added to this document.

These three updated and expanded documents are available to the public via the City of Vista website through the “Departments and Services/Administrative Services/Special Event Permit Information” links and are all part of the special events application process. In addition to revising the three aforementioned documents, a Special Events Inspection Report was created to be utilized by City Storm Water staff for pre-event and post-event inspections. These special events documents are included in Appendix C-4.

All applications for Special Events Permits are forwarded from the City Risk Manager and reviewed by City Storm Water Program staff to identify any storm water concerns. The focus of this review is to identify BMP requirements for the events as well as inspection requirements for the City to ensure that the MS4 is protected during such events. Communications are established between Storm Water staff, the City Risk Manager and the event sponsor/organizer to identify and address any storm water concerns.

In an effort to maintain the wastewater collection system and to identify potential problem areas in the system, the City conducted 78 miles of video inspection, CCTV, of the wastewater system. The increase from FY 2007-08 was representative of the division’s snap shot video program, in which an extra shift was dedicated to the program and is not indicative of normal operations. The video inspection program is in place to prevent and/or eliminate infiltration from the wastewater system to the MS4.

5.0 INDUSTRIAL AND COMMERCIAL COMPONENT

5.1 Introduction

During the reporting period, the City successfully implemented the industrial and commercial component of its JURMP. The program is instrumental in reducing and/or preventing pollutants from entering the City's MS4 and receiving waters. In achieving this goal, the City implemented several JURMP activities during the reporting period. These included conducting stormwater complaint investigations, providing education and outreach to business owners and operators, and conducting commercial and industrial inspections.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP. Annual reporting requirements for the industrial and commercial component are listed in Section J of the Permit. As indicated in Table 5.1, the City successfully met all reporting requirements for the industrial and commercial component of this JURMP Annual Report.

Table 5.1 JURMP Annual Report Compliance

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Industrial and Commercial	1	Any updates to the industrial and commercial inventory.	1	Confirmation	See Section 5.2.2 and Appendix D-1, D-2 and D-3	
	2	Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	1	Confirmation	Confirmed	5.2.4.1
	3	A description of efforts taken to notify owners/operators of industrial and commercial sites/sources of BMP requirements, including mobile businesses.	1	Confirmation	Confirmed	5.2.4.1 & 5.3.4.1
	4	Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	1 / 3	Confirmation / Inspection / Tabulation	899 Total sites inventoried 330 total sites visited. 269 Total Sites inspected (130 high TTWQ and 139 additional Sites)	5.2.4.2
	5	Justification and rationale for why the industrial and commercial sites/sources inspected were chosen for inspection.	1	Confirmation	See Section 5.2.4.2	
	6	Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	5.2.4.1 & 5.2.4.2
	7	Identification of the number of third party inspections conducted.	1	Confirmation	N/A	-
	8	Identification of efforts conducted to verify third party inspection effectiveness.	1	Confirmation	N/A	-

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
	9	A description of efforts implemented to address mobile businesses.	1	Confirmation	See Section 5.3.4.1 & 5.3.4.2	
	10	The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	NOV = 32 (includes MBs and Stationary facilities) Citation = 5 (Includes MBs and Stationary facilities) Warnings = 78 (includes MBs and Stationary facilities)	5.2.4.3, 5.3.4.2 & Appendix D-6
	11	A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	1	Confirmation	See Section 5.2.4.3	

5.2 Stationary Industrial and Commercial Sites / Sources Element

5.2.1 Background

There is no background information to report.

5.2.2 Source Characterization

Prior to conducting the FY 2008-09 inspections the City modified its Beginning of the Year inventory to include additional stationary commercial and industrial facilities. In particular, were the additions of several Food Service Establishments (FSEs), identified during the development of the City's FOG program. Other facilities were added after City staff monthly reviews of new business licenses. Upon inclusion of the additional facilities, the inventory stood at 899 stationary commercial and industrial facilities.

The City modified this inventory following inspections conducted during late FY 2008-09. During inspections, the City found several businesses had closed or moved to another location and were often replaced by another business. Reflecting these changes, is the City's End of the Year stationary commercial and industrial inventory which totals 805 stationary facilities (594 commercial and 211 industrial facilities). The End of the Year commercial and industrial inventories is included in Appendix D-1and D-2, respectively.

5.2.3 Best Management Practices

The City did not make any modifications to its best management practice requirements (JURMP 2008).

5.2.4 Program Implementation

5.2.4.1 Best Management Practices

Stormwater Complaint Investigations

From investigations into stormwater complaint cases, the City often required owners and operators of stationary commercial and industrial facilities to implement the City's required best management practices (BMPs) to prevent pollutants from entering the City's MS4 and receiving waters. During the reporting period, City staff investigated 66 complaints regarding stationary commercial facilities (none from industrial sources). A

summary of all FY 2008-09 commercial complaint cases is included in Appendix D-5. Of the 66 complaints, stormwater violations were confirmed in 60 of them. Stormwater complaint investigations were conducted by City Stormwater Code Enforcement staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the 60 confirmed complaints, 37 of them were generated from pro-active enforcement.

During the reporting period, the City verified BMP compliance in all confirmed complaints. At commercial sites where stormwater violations were observed, City staff required facility owners to implement appropriate BMPs. City staff also provided stormwater literature relative to the type of violation in each stormwater complaint case. This further emphasized the importance of BMP compliance. In all commercial and industrial complaint cases, follow-up inspections were performed to verify BMP compliance.

Education

During stormwater complaint investigations, City staff provided pollution prevention brochures to facility owners to aid them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods consistent with the City's BMP requirements. These brochures included the following:

What's Cooking Guide
Car Washing
Pet Waste
Swimming Pools
Yard Maintenance
Cigarettes
Painting
Power Washing
Concrete and Mortar
Livestock Care
Green Wrench Guide
Motor Oil

During the reporting period, the City operated its website (www.cityofvista.com) providing owners and operators of commercial and industrial facilities with information regarding the City's BMP requirements. The website contains a section dedicated to informing facility owners of BMPs common to all types of businesses. These BMPs which are consistent with the City's BMP requirements include the following:

Keep your trash and dumpster lids closed.
Do not allow landscape waste, pet waste, dirt, chemicals or other pollutants to enter a storm drain or be thrown into a creek bed.
All dirt slopes must have erosion control measures in place to prevent dirt from entering the street or storm drain.
Wash water used to clean equipment, indoor and outdoor areas, parking lots and sidewalks is prohibited from entering storm drains. Sweep instead. If you must use water, either mop the area or make sure the waste water is fully reclaimed and disposed of properly.
All chemicals must be properly labeled and stored in a contained, roofed area to avoid contact with rainwater.

Do not over-irrigate your landscaping.
Sewage releases into the street from blocked or cracked laterals are illegal. If a spill occurs, arrange for correction and contact the City immediately.

Stationary Commercial and Industrial Inspections
In executing the City's inspection program during FY 2008-09, the City informed owners and operators of commercial and industrial facilities of its BMP requirements. The City contracted with D-Max Engineering Inc. to conduct several segments of the City's inspection program during FY 2008-09.

In several segments of the inspection process, facility owners and/or operators were informed of the City's BMP requirements specific to their business. Each inspection started with a face to face discussion during which D-Max staff educated facility owners on the City's Stormwater Program and BMP requirements. D-Max staff then conducted a complete site inspection assessing BMP effectiveness and compliance and identifying any occurring or potential illicit discharges and connections. At the conclusion of the each inspection, D-Max staff summarized the inspection results identifying corrective actions (BMPs) for any observed stormwater violations that the owner would need to implement to gain compliance. BMP guides and posters were provided to each facility representative to aid them in selecting appropriate corrective actions and managing urban runoff at their site.

D-Max staff instructed facility owners to implement timely corrective actions as City staff would be conducting a follow-up inspection to verify compliance. As a reminder to facility owners to implement appropriate and timely corrective actions, each inspected facility was mailed a letter and copy of the inspection report. A copy of the Stormwater Compliance Inspection report is included in Appendix D-4. The inspection report identified the specific BMP violations and included D-Max's recommended corrective actions. Refer to section 5.2.4.3 for information describing follow-up and enforcement actions. The importance of implementing effective BMPs was further emphasized in the letter as the City stated that BMP compliance was important to ensure overall compliance with the City's Stormwater Permit and Municipal Code. To assist owners in selecting appropriate corrective actions, a link to the City's Stormwater Standards Manual was also provided in the letter.

5.2.4.2 Inventory and Inspections
Prior to conducting its required annual inspections, the City's stationary commercial and industrial inventory (pre-inspection) consisted of 899 commercial and industrial facilities. The City determined its required inspection numbers using this inventory.

In selecting facilities for inspection all inventoried facilities were prioritized into high, medium, and low threat to water quality (TTWQ) categories (Order 2007-001). During the reporting period, City staff worked with its Contractor, D-Max Engineering Inc. in prioritizing all inventoried facilities. Prioritization was based on the following criteria:

JURMP Prioritization process (JURMP 2008)
City staff field experience
Facilities in proximity to Agua Hedionda Creek due to the impending Agua Hedionda Lagoon TMDL.

The total number of facilities inspected was based on the City's Municipal Storm Water permit requirements (Order 2007-0001) which require that 100 percent of high TTWQ facilities (130) and 25 percent of the City's total inventoried sites are inspected (225 total). In meeting both requirements, the City inspected a total of 269 stationary facilities during the reporting period. All high TTWQ facilities (130) and an additional 139 facilities were inspected. The additional facilities that were selected for inspection were sites in close proximity to Agua Hedionda Creek and sites that either had no previous inspection records or had not been inspected in a number of years. City staff worked with D-Max Engineering in selecting those sites.

The City requested D-Max to perform fats, oils, and grease (FOG) inspections at several food service establishments to assess compliance with the City's newly adopted FOG ordinance. Most of these inspections were conducted in conjunction with the stormwater inspections. One hundred thirty-eight facilities received both a FOG and Stormwater inspection.

Full inspections were conducted at 43 industrial and 199 commercial facilities during the reporting period for a total of 242 (full inspections are tabulated in the inventory Appendices, D-1 and D-2). A full inspection includes those facilities that received a complete inspection as defined in the City's Commercial and Industrial Facility Inspection procedure (JURMP 2008).

The City is taking credit for and reporting on an additional 27 inspections bringing the total number of inspections to 269 (see Table 5.2). Because facilities move/go out of business, are duplicates of other businesses listed on the City's inventory, or are conducting activities for which inclusion on the City's inventory is not necessary, full inspections are not conducted at all visited sites. Since time and effort is spent in visiting these facilities, visits where a full inspection is not conducted are considered equivalent to one half of a full inspection. The only time a site visit would not count as half of a full inspection is if the facility moved and was replaced by a facility where a full inspection was conducted or the facility was a duplicate of another facility selected for inspection. In total, the City visited 330 sites for inspection purposes. The City applied the above approach at 55 sites where a full inspection was not conducted. Therefore, using the credit of one half inspection for one site visited, the City is including the addition of 27(1/2 of 55) equivalent full inspections.

Table 5.2 Summary of Stationary Commercial and Industrial Inspections

Facility Category	Equivalent Full Inspections Conducted	Percentage of Total Inventory (total inventory = 899 Sites)
High TTWQ Sites	130	14% (100% of TTWQ sites)
Additional Sites	139	15%
Total Full Inspections	**269**	**29%**
Total Sites Visited	330	37%

The City confirms that all full inspections addressed the inspection steps required in Order 2007-0001. These inspections steps are included in the City's 2008 JURMP and were followed by D-Max staff during all full inspections. In section 5.2.4.1, the City describes the required inspection steps D-Max staff followed during FY 2008-09 inspections. Additionally, D-Max staff reviewed BMP implementation plans, facility

monitoring data, and checked all inspected industrial facilities for coverage under the Industrial Permit.

Enforcement

Commercial and Industrial Complaints
City staff investigated a total of 66 complaints during the reporting period. Of the 66 reported complaints, 60 were confirmed to involve a stormwater violation. Confirmed violations included illegal discharges, illicit connections, private lateral spills, and BMP violations. Of the 60 confirmed complaints, City staff issued enforcement actions in all of these cases rendering 32 verbal warnings, 23 notices of violation and 5 citations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. During the reporting period, the City confirmed that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected). A summary of enforcement actions implemented at stationary commercial and industrial sites is included in Appendix D-6.

Commercial and Industrial Inspections
At facilities where stormwater violations were observed during the initial inspection, City staff conducted follow-up inspections to verify stormwater compliance. As a result of the inspections, D-MAX recommended follow-up investigations at 75 commercial and industrial facilities. As mentioned in section 5.4.2.1 (BMP requirements), D-MAX staff instructed facility owners to implement timely corrective actions for stormwater violations observed during the inspection. During inspections where D-Max staff observed an illegal discharge or illicit connection, City Stormwater staff was contacted immediately to respond.

The City conducted follow-up investigations at all 75 commercial and industrial facilities. Upon investigation, City staff confirmed compliance at 31 sites, but found the other 44 facilities in violation of the City's Stormwater Ordinance. As with reported complaints, City staff opened up complaint cases for all 44 sites. City staff implemented enforcement actions at all sites, rendering 35 warnings and nine notices of violation. A summary of enforcement actions implemented during commercial and industrial follow-up investigations is included in Appendix D-6. Also, a summary of inspections results for facilities at which a follow-up inspection was conducted is included in Appendix D-7. During the reporting period, the City verified that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected).

General Industrial Permit Compliance
In addition to assessing BMP compliance, General Industrial Permit compliance status was evaluated at each inspected industrial facility. During initial inspections, D-MAX staff identified nine facilities that were found to require coverage under the Industrial Permit, but had not yet filed a Notice of Intent (NOI). Similarly, D-MAX staff identified 24 facilities, conditionally subject to the permit, that had not filed their NONA paper work certifying their No Exposure status (No Exposure Certification). Nutritional Engineering Inc (1208 Avenida Chelsea) was one of the nine facilities determined to need coverage under the General Permit. During the City follow-up inspection at Nutritional Engineering Inc. (1208 Avenida Chelsea) the City found that the facility had no outdoor exposure. The facility representative stated that the facility only stores empty and clean 55 gallon drums outside. City staff verified this during the follow-up inspection. City staff consulted with D-MAX staff and determined that NONA filing would be appropriate for

Nutritional Engineering. This is reflected in Table 5.3 which includes in total, 25 facilities needing NONA coverage and eight facilities needing to file NOI paperwork for coverage under the General Permit. During inspections, D-MAX staff recommended to facility owners/managers to file appropriate NOI or NONA paperwork to ensure compliance with the Regional Water Quality Control Board. A summary of the Permit Status evaluations are included in Table 5.3. The City will follow-up with those facilities that were determined to need coverage under the General Industrial Permit.

FY 07-08 General Industrial Permit Compliance

During FY 07-08, the City identified two industrial facilities requiring coverage under the General Industrial Permit but had not filed an NOI. Artistic Tile and Stone (325 South Santa Fe Avenue) closed its business during the early part of FY 2008-09 so that business was taken off the inventory. At Western CNC Inc (1001 Park Center Drive), the City determined during FY 2008-09 that the facility did not need coverage under the Industrial Permit. The City conducted an additional inspection of Western CNC during the reporting period and found the facility not to have any outside exposure. City staff consulted with D-MAX Engineering and both concluded that Western CNC's current No Exposure Certification is valid and NOI paperwork did not need to be submitted.

Table 5.3 General Industrial Permit Compliance Status

#	BUSINESS NAME	ADDRESS	Permit Subjectivity	Actions To Correct Violation				
				File NOI	Develop SWPPP	Develop and Implement Storm Water Monitoring Program	File NONA/NEC	Other Actions/Comments
1	ACCUTECH, LLC	2641 LA MIRADA DR	Conditional				✓	
2	AID & M	1351 DISTRIBUTION WAY 4	Conditional				✓	Ensure outdoor areas are kept free of sawdust to maintain compliance with NONA/NEC
3	APTERA MOTORS, INC.	3151 SCOTT ST	Conditional	✓	✓	✓		
4	COASTLINE EMBROIDERY	1330 KEYSTONE WAY D	Conditional				✓	
5	COFFEE CART BIZ	1150 JOSHUA WAY	Conditional	✓	✓	✓		
6	COOKIES CON AMORE	2330 LA MIRADA DR 700	Conditional				✓	
7	CROWN INDUSTRIAL PRODUCTS, INC.	2440 LA MIRADA DR	Conditional				✓	
8	D B S ASSOCIATES, INC.	2480 GRAND AVE	Conditional				✓	
9	EPITECH	1120 SYCAMORE AVENUE I	Conditional	✓	✓	✓		
10	FINELINE APPAREL PRINTING	1485 POINSETTIA AVE 105	Conditional				✓	
11	FINISHING TOUCH CUSTOM DRAPERY	2835 LA MIRADA DR C	Conditional				✓	

#	BUSINESS NAME	ADDRESS	Permit Subjectivity	Actions To Correct Violation				
				File NOI	Develop SWPPP	Develop and Implement Storm Water Monitoring Program	File NONA/NEC	Other Actions/Comments
12	FISH HOUSE FOODS, INC.	3285 CORPORATE VIEW DR	Conditional				✓	
13	FMD	2308 LA MIRADA DRIVE	Conditional				✓	
14	FWD SCREENPRINTING	2336 LA MIRADA DRIVE 1000	Conditional				✓	
15	GREEN FLASH BREWING COMPANY	1430 VANTAGE CT	Conditional	✓	✓	✓		
16	HARGETT PRECISION PRODUCTS	2865 SCOTT ST 108	Conditional				✓	
17	HI TECH SWISS MACHINING INC	2410 LA MIRADA DR	Conditional				✓	
18	J & D LABORATORIES	2640 PROGRESS ST	Conditional	✓	✓	✓		
19	KILLION INDUSTRIES, INC.	2811 LA MIRADA DR	Conditional				✓	
20	MAGNUM OFFROAD	1235 ACTIVITY DR A	Conditional				✓	
21	MERICAL INC.	2550 PIONEER AVE	Conditional	✓	✓	✓		
22	MS MARBLE	1338 N MELROSE DR J	Mandatory	✓	✓	✓		

#	BUSINESS NAME	ADDRESS	Permit Subjectivity	Actions To Correct Violation				
				File NOI	Develop SWPPP	Develop and Implement Storm Water Monitoring Program	File NONA/NEC	Other Actions/Comments
23	NATURAL ALTERNATIVES INT'L INC	1215 PARK CENTER DR	Conditional					Equip liquid storage with secondary containment to comply with NONA/NEC paper work
24	NUTRITIONAL ENGINEERING INC.	1208 AVENIDA CHELSEA	Conditional				✓	
25	OGGI'S PIZZA & BREWING CO.	425 S MELROSE DR	Conditional				✓	
26	O-NAVI, L L C	1260 ACTIVITY DR B	Conditional				✓	
27	PALMAC DESIGN & MANUFACTURING	2445 LA MIRADA DR	Conditional	✓	✓	✓		
28	RAVEON TECHNOLOGIES	2780 LA MIRADA DRIVE C	Conditional				✓	
29	SEVEN MFG	1420 DECISION ST C	Conditional				✓	
30	SMART ENGINEERING SYSTEMS	2308 LA MIRADA DRIVE	Conditional				✓	
31	TECXEL/R ZAMORA CORP.	2826 LA MIRADA DR D	Conditional				✓	
32	TEMPO RESEARCH CORP	1390 ASPEN WAY	Conditional				✓	
33	TITEFLEX CORPORATION	2755 DOS ARRONS WAY C	Conditional				✓	
34	U S I INC.	1185 PARK CENTER DR 0	Conditional				✓	

5.3 Mobile Sources Element

5.3.1 Background

The City continued to implement its Mobile Sources element of its JURMP. During the reporting period, the City implemented JURMP activities to prevent and/or reduce pollutant runoff from mobile business activities. These included requiring BMP implementation through complaint investigations and providing education and outreach to mobile businesses regarding the City's BMP requirements.

Source Characterization

The City modified its Mobile Business inventory to include additional mobile businesses the City identified during the reporting period. The additional mobile businesses were identified through stormwater complaint investigations and from monthly reviews of new business licenses. The mobile businesses known to operate in the City of Vista (205 total) are included in Appendix D-3.

Best Management Practice Requirements

During the reporting period, the City did not modify its BMP requirements for mobile businesses (JURMP 2008).

Program Implementation

5.3.4.1 Best Management Practices

Stormwater Complaint Investigations

From investigations into stormwater complaint cases, the City required owners and operators of Mobile Businesses to implement the City's required best management practices (BMPs) to prevent pollutants from entering the City's MS4 and receiving waters. During the reporting period, City staff investigated 12 complaints regarding mobile businesses. A summary of all FY 2008-09 mobile business complaint cases is included in Appendix D-5. Of the 12 complaints, stormwater violations were confirmed in 11 of them. Stormwater complaint investigations were conducted by City Stormwater Code Enforcement staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the 11 confirmed complaints, 8 of them were generated from pro-active enforcement.

The City verified BMP compliance in all confirmed complaints involving mobile businesses. At mobile business operational sites where stormwater violations were observed, City staff required mobile business representatives to implement appropriate BMPs (corrective actions). City staff also provided stormwater literature relative to the type of violation in each stormwater complaint case. This further emphasized the importance of BMP compliance. In most complaint cases, follow-up inspections were necessary to verify BMP compliance. Of the 11 confirmed complaints, 9 required follow-up inspections that were performed to verify compliance.

Education

During stormwater complaint investigations, City staff provided pollution prevention brochures to mobile business representatives to aid them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods consistent with the City's BMP requirements. These brochures included the following:

What's Cooking Guide
Car Washing
Pet Waste
Swimming Pools
Yard Maintenance
Cigarettes
Painting
Power Washing
Concrete and Mortar
Livestock Care
Green Wrench Guide
Motor Oil

During the reporting period, the City operated its website (www.cityofvista.com) providing owners and operators of mobile businesses with information regarding the City's BMP requirements. The website contains a section dedicated to informing business owners of BMPs common to all types of business activities. These BMPs which are consistent with the City's BMP requirements include the following:

Keep your trash and dumpster lids closed.
Do not allow landscape waste, pet waste, dirt, chemicals or other pollutants to enter a storm drain or be thrown into a creek bed.
All dirt slopes must have erosion control measures in place to prevent dirt from entering the street or storm drain.
Wash water used to clean equipment, indoor and outdoor areas, parking lots and sidewalks is prohibited from entering storm drains. Sweep instead. If you must use water, either mop the area or make sure the waste water is fully reclaimed and disposed of properly.
All chemicals must be properly labeled and stored in a contained, roofed area to avoid contact with rainwater.
Do not over-irrigate your landscaping.
Sewage releases into the street from blocked or cracked laterals are illegal. If a spill occurs, arrange for correction and contact the City immediately.

Enforcement
During the reporting period, City staff investigated 12 complaints involving mobile businesses. Of the 12 reported complaints, 11 were confirmed to involve a stormwater violation. Confirmed violations included illegal discharges and BMP violations. Of the 11 confirmed complaints, City staff issued enforcement actions in all of them (all verbal warnings). When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. The City verified that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected). A summary of enforcement actions implemented in mobile business complaint cases is included in Appendix D-6.

5.3.4.3 Notable Activities Conducted to Manage Urban Runoff

FOG Program
Under the current FOG (Fats, Oils, and Grease) requirements (Order No. 2006-0003-DWQ) the City was required to develop and implement a FOG inspection program

starting in FY 2008-09. As most Food Service Establishments (FSEs) were included in both the City's FOG and Storm Water inventories those FSEs received combined inspections. During the reporting period, 138 FSEs received both a FOG and Stormwater Inspection. The FOG inspections addressed several BMPs to reduce Sanitary Sewer Overflows, which were in addition to the FOG related stormwater BMPs typically addressed during stormwater inspections. These included installing drain screens in prep sinks, dry wiping pans, and regularly inspecting and maintaining grease control devices. As the City is required to conduct an annual FOG inspection program, the City believes it will continue to be effective in regulating FSEs and in preventing pollutant runoff at those facilities.

Participation in the Regional Industrial and Commercial Workgroup

The Regional Industrial and Commercial Workgroup (RICW) was formed during the reporting period to provide regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to industrial and commercial activities and sources. Furthermore, the formation of the RICW was necessary to address requirements in the 2007 Municipal Stormwater Permit. The City of Vista served as the secretary for the RICW during the reporting period attending and participating at all RICW meetings (seven meetings total). A summary of the meeting notes will be submitted in the Regional Urban Runoff Program Annual Report in January 2010. The City will continue to attend and participate at future Regional Industrial and Commercial Workgroup meetings.

Participation in the Mobile Business Sub-workgroup

The Mobile Business sub-workgroup was formed to help accomplish deliverables for the Regional Industrial and Commercial Workgroup. The sub-workgroup was tasked with establishing a set of minimum BMPs for the 12 categories of mobile businesses identified in the Permit. The group met several times during the reporting period to meet this objective. City staff attended and participated at three Mobile Business sub-workgroup meetings (February 23rd, April 17th, and June 17th). In those meetings the group progressed significantly in establishing the set of core minimum BMPs for mobile businesses that were eventually approved by the Regional Industrial and Commercial Workgroup on June 23, 2009.

Geographic Selection of Inspected sites based on proximity to Agua Hedionda Creek

During the reporting period, the City conducted its required commercial and industrial inspections. The City met both inspection requirements which included inspecting all high TTWQ facilities and ensuring 25% of the City's entire inventory be inspected. In meeting the latter requirement, the City inspected an additional 139 facilities. Due to the pending Agua Hedionda Lagoon TMDL, (the lagoon is downstream of Agua Hedionda Creek) the City decided to initiate efforts to assess stormwater compliance at stationary commercial and industrial facilities in an industrial area of the City that discharge stormwater to the creek. The City used GIS to determine what facilities were proximal to the creek and received inspections.

6.0 Residential Component

6.1 Introduction

The City continued to implement the residential component of the City's JURMP to prevent or reduce pollutants in runoff from residential land use areas and activities. In achieving this goal, the City implemented several JURMP activities during the reporting period. These included conducting residential stormwater complaint investigations, providing outreach to residents, and facilitating proper disposal and management of household hazardous waste and used oil.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP. Annual reporting requirements for the residential component are listed in section J of the Permit. As indicated in Table 6.1, the City successfully met all reporting requirements for the residential component of this JURMP Annual Report.

Table 6.1 JURMP Annual Reporting Compliance

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Residential	1	Identification of the high threat to water quality residential areas and activities that were focused on.	1	Confirmation	See Section 6.2	
	2	Confirmation that the designated BMPs were implemented, or required to be implemented, for residential areas and activities.	1	Confirmation	Confirmed	6.4.1
	3	A description of efforts implemented to facilitate proper management and disposal of used oil and other household hazardous materials.	1	Confirmation	See Section 6.4.1	
	4	Types and amounts of household hazardous wastes collected, if applicable.	1	Confirmation	See Section 6.4.1 & Appendix E-1	
	5	A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.	1	Confirmation	Confirmation	6.4.2
	6	The number of violations and enforcement actions (including types) taken for residential areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation	NOV = 18 Citation = 1 Verbal Warning = 100	6.4.2 & Appendix E-2
	7	A description of collaboration efforts taken to develop and implement the Regional Residential Education Program.	1	Confirmation	See Section 6.5	

6.2 Source Characterization

During the reporting period, the City focused on all high threat to water quality (TTWQ) residential areas and activities. These areas and activities are listed in the City's 2008 JURMP.

In the City's JURMP, the Residential Component focuses primarily on activities that have been deemed a high threat to water quality including: vehicle and boat repair/maintenance, automobile washing, automobile parking, home and garden care activities, home care and maintenance, manure and pet waste management, private sewer laterals and septic systems, and street sweeping of private roads/streets. Because these activities occur throughout all residential areas, all residential areas are then by default deemed a high threat to water quality.

The JURMP further describes the mechanisms the City utilizes to implement the Residential Component and to ensure that all BMPs are implemented. Implementation includes the designation of activity specific BMPs and pollution prevention methods, outreach, complaint response, used oil and waste collection, and enforcement where necessary. Outreach and complaint response are the two methods used to disseminate educational and BMP information throughout the residential areas. Because outreach and complaint response efforts target all residential areas and specifically those high threat to water quality activities in those areas, the residential community is not broken down by areas related to the treat to water quality. Instead, all residential areas are considered a high treat to water quality.

Routine work activities conducted throughout the City provide opportunities for the City to focus attention on high TTWQ residential areas. During complaint investigations, Stormwater Code Enforcement staff customarily observes the areas and occurring activities in route to and from and in the vicinity of the complaint case, being observant for any stormwater violations being committed. It is not uncommon for Code Enforcement staff to observe and respond to violations unrelated to the case that is being investigated. Similarly, field staffs from other City departments (includes staff from Parks, Streets, Wastewater, Building, and Construction divisions) report stormwater violations to the City's Stormwater division during routine work activities. These staffs are knowledgeable about the City's Storm Water Program and are trained on how to detect a stormwater violation. These practices are termed pro-active enforcement and the City continues to rely on them in its maintenance and implementation of its Water Quality Protection Program. During the reporting period, 89 residential complaint cases (137 total residential cases reported) were generated by pro-active enforcement.

During the reporting period, Stormwater staff responded to 137 complaint cases in residential areas. In review of all residential complaint cases, the City identified five common source types (including spills-all types, illegal washing, sediment discharge, trash and debris, and over-irrigation) and calculated the number and percentages of each to show the prevalent source types (See Table 6.2 and Figure 6.1). Sediment sources were the most common at 28%, followed by trash and debris (23%) and spills (23%). Over-irrigation and illegal washing continue to be significant sources of urban runoff at 14% and 8% respectively.

Table 6.2 Residential Complaint Source Types (numbers)

Spills	Washing	Sediment	Trash and Debris	Over-irrigation	Other
31	11	39	31	19	6

Figure 6.1 Percentages of Residential Complaint Sources

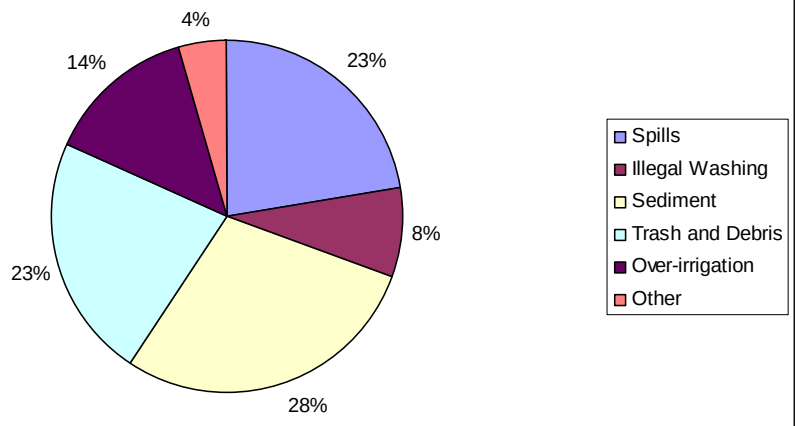

The City's website (www.cityofvista.com) was operated during the reporting period providing best management practices (BMPs) information to residents regarding several high TTWQ activities. These activities and BMPs included:

- Manure and Pet Waste Management
- Vehicle Maintenance
- Home Care Maintenance
- Home and Garden Care Activities and Product Use
- Automobile Washing

Community events held during the reporting period provided opportunities for the City to disseminate stormwater information regarding several high TTWQ activities. Stormwater and recycling presentations were conducted at several City events and BMP guides and givewaway items were provided to residents. Included in the BMP guides were pollution prevention tips for car washing, less toxic yard and garden care, pet waste cleanup, and recycling.

These outreach efforts covered several high TTWQ activities including manure and pet waste management, vehicle maintenance, home care maintenance, home and garden care activities, and product use, and automobile washing. Details on the education and outreach provided at City events are included in Section 8 of this Annual JURMP report.

6.3 Best Management Practice Requirements.

During the reporting period, the City did not modify its Best Management Requirements (2008 JURMP).

6.4 Program Implementation

6.4.1 Best Management Practices

Stormwater Complaint Investigations
The City required residents to implement the City's required best management practices (BMPs) to prevent pollutants from entering the City's MS4 and receiving waters. Most often, these BMPs were required as a result of stormwater complaints. During the reporting period, City staff investigated 137 residential complaints. A summary of all FY 08-09 residential complaint cases is included in Appendix E-2. Storm water investigations were conducted by City Stormwater Code Enforcement staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the 123 confirmed complaints, 89 were generated by pro-active enforcement.

During the reporting period, the City verified BMP compliance in all confirmed complaints (123 Complaint cases confirmed). At residential sites where a stormwater violation was confirmed, City staff required residents to implement the City's required BMPs. City staff also provided stormwater literature relative to the type of violation in each stormwater complaint case. This further emphasized the importance of BMP compliance. In all residential complaint cases, follow-up inspections were conducted to verify compliance.

Education
During stormwater complaint investigations, City staff provided pollution prevention brochures to residents to guide them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods that are consistent with the City's BMP requirements. These brochures included the following:

- Motor Oil
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- General Help brochure

During the reporting period, the City held several community events informing residents of the City's BMP requirements. Stormwater and recycling presentations were conducted and various BMP brochures and giveaway items geared towards residential activities were made available to residents. Details on the community events are covered in Section 8 (Education) of this Annual JURMP report. The City also holds an annual Citizens Academy where members of the public can learn about the different City departments; on the Engineering Department evening, the City's Water Quality Protection Program was discussed.

The City also operated its website during the reporting period (www.cityofvista.com) providing multiple pollution prevention tips for homeowners. These tips, which are consistent with the City's BMP requirements included the following:

- Cleanup after your pets
- Care for your cars
- Sweep or rake yard waste and debris, do not hose them into the street.
- Reduce use of landscape chemicals
- Control erosion
- Plant natives
- Buy non-toxic products
- Integrated Pest Management tip cards for ants, aphids, cockroaches, earwigs, fleas, and good bugs.

Household Hazardous Waste Collection Center

The City of Vista continued to provide its residents with a household hazardous waste (HHW) collection facility at the Auxiliary Corporation Yard at 1165 East Taylor Street, as well as the option of HHW curbside pickup. The facility is open to Vista residents and operates every Saturday from 9:00 am to 3:00 pm. Residents may dispose of a variety of wastes including paints, chemicals, u-wastes, e-wastes, automotive wastes, home generated sharps, and pharmaceutical wastes. The City's curbside pickup program offers free door-to-door collection services to citizens 65 or older and to households possessing a registered handicap placard.

During the reporting period, education and outreach played a major role in promoting the HHW collection facility and facilitating the proper disposal of HHW. Educational brochures on HHW disposal were provided for distribution at several City facilities visited regularly by the public including the City Hall, City Public Works, and City Engineering lobbies. Community events also provided opportunities for the City to provide education and outreach on HHW disposal. At event booths, City staff conducted water quality presentations that included discussions on how to properly dispose of HHW. HHW literature and promotional items were also made available to the general public at events. The City's website (www.cityofvista.com) also contains information on HHW disposal.

As summarized in Table 6.4, a total of 675,474 lbs of HHW were disposed of by residents at the HHW collection facility during the reporting period. This amounted to an increase of 66,551 lbs (or 11%) of HHW disposed of from last year (608,923 lbs). Similarly, 7,024 lbs of HHW was disposed of by residents using curbside pickup during FY 08-09, amounting to an increase of 2,268 (or 48%) lbs of HHW disposed of from last year (4,756 lbs). Information on the types and amounts of HHW that were disposed of is included in Appendix E-1.

Used Oil and Filter Collection Programs

The City also offers residents options for disposing of used oil, filters, and other oil products. At certified used oil collection centers and used oil filter collection events, residents may dispose of used oil, filters, and other oil products. Table 6.3 includes a list of certified used oil collection centers that operated during the reporting period. These services are often free to Vista residents from funding provided through the City's Used Oil Block Grant. During the reporting period, the City used funds from its Cycle 14 Used Oil Block Grant to implement these services.

As detailed in Table 6.4, a total of 27,422 gallons of used oil were disposed of by residents at the certified collection centers. Also, one Used Oil Filter Exchange event

was hosted at Kragen Auto Parts store during the reporting period (March 3, 2009). A total of 192 used oil filters were disposed of by Vista residents during the event. As Kragen Auto Parts stores are certified used oil drop off centers, the event further promoted awareness to residents regarding the proper disposal of used oil.

To facilitate the Used Oil and Filter Collection Programs, the City continued its contract with the Solana Center for Environmental Innovation. Solana Center efforts consist of actively reaching out to the Vista residents to educate and inform them about used motor oil and oil filter recycling and working with the collection centers to best manage the used oil and wastes.

During several community events held during the reporting period, Solana staff provided education and outreach to residents regarding household hazardous waste disposal, used oil recycling, less toxic yard and garden care, pet waste cleanup, and recycling. These events included the Rod Run Automotive, Dimension One Spa Health and Wellness Fair, Kragen Auto Parts Used Oil Filter Exchange Event, and Earth Day. Information on these events is included in the Education section of this Annual JURMP report (Section 8).

Table 6.3 City of Vista Certified Used Oil Collection Centers

Certified Collection Center	Address
Tony's Mobil	801 South Santa Fe Avenue
Kragen Auto Parts	1250 South Santa Fe Avenue
Autozone	1410 North Santa Fe Avenue
Autozone	573 West Vista Way
Kragen Auto Parts	1220 East Vista Way
Jiffy Lube	1231 East Vista Way
Masterlube	243 Sycamore Avenue
EZLube	786 East Vista Way
North County Import Specialist	1215 North Melrose Drive
Santa Fe Auto Repair	1045 North Santa Fe Avenue

Table 6.4 Total Amount of Disposed Household Hazardous Wastes And Used Oil

Facility or Activity	Amount of Hazardous Waste Disposed of (excluding motor oil, and oil products)	Amount of Used Oil and filters Disposed of	Total
Household Hazardous Waste Collection Center	643,454 lbs	32,020 lbs	675,474 lbs
Curbside Pickup	7,020 lbs	4 lbs	7,024 lbs
Used Oil Collection Centers	N/A	27, 422 gals	27,422 gals

6.4.2 Oversight and Enforcement

During the reporting period, the City of Vista began to evaluate the methods used for oversight of residential areas and activities. An important step in evaluating the City's oversight methods is to identify what the prevalent sources of pollutants are in the City. City staff reviewed its FY 08-09 residential complaints to determine the prevalent source types (see Section 6.2 and Fig 6.1). As case information also provides the location of

the complaint, the City may use this criterion to map the various pollutant sources in the future. These source evaluations may help the City determine the effectiveness of current oversight methods and furthermore, what, if any, modifications can be made to the methods.

A total of 137 complaint cases involving residential sites were investigated by the City's Stormwater division during the reporting period. This amounted to approximately 49% of all complaint cases investigated during FY 08-09 (279 total). Of the 137 complaints, 123 were confirmed to involve a stormwater violation. Confirmed violations included illegal discharges, illicit connections, private lateral spills, and BMP violations. Figure 6.2 indicates the percentages of each violation type (reported) with Illegal discharges being the most prevalent (79% of all reported cases). Of the 123 confirmed complaint cases, City staff implemented enforcement actions in all of these cases rendering 104 verbal warnings, 18 Notice of Violations, and one Citation. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. A summary of enforcement actions implemented in residential complaint cases is included in Appendix E-2. During the reporting period, the City verified that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected).

Figure 6.2 Residential Stormwater Violation Types FY 08-09

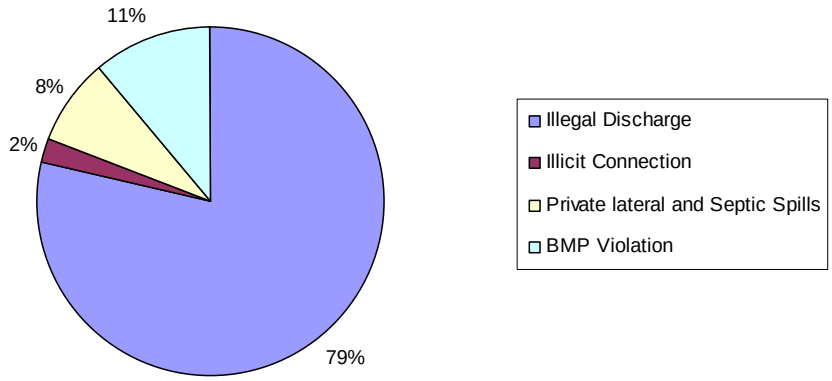

6.5 Regional Residential Education Program

The Education and Residential Sources Workgroup (ERSW) is tasked with implementing the Regional Residential Education Program. The program, which was developed to comply with the Municipal Stormwater Permit (Order 2007-0001), focuses on implementing a variety of educational activities that would target all residential audiences and be effective in reducing urban runoff pollution. During the reporting period, the City of Vista took part in developing and implementing FY 08-09 program activities by attending and participating in ERSW meetings. To effectively implement the Regional Residential Education Plan, the workgroup decided to divide itself into sub-committees. These subcommittees include the following:

- Mass Media and Public Relations

- Undeserved Target Audience
- Market Research and Assessment Tools
- Partnership Development
- Materials Development and Distribution.
- Regional Website
- Regional Brand
- Regional Events

During the reporting period, the subcommittees made significant progress in implementing the Regional Residential Education Program. These efforts will be reported on in the Regional Urban Runoff Management Program Annual report due for submittal in January 2010.

8.0 EDUCATION COMPONENT

8.1 Introduction

Education is an important tool the City uses to improve water quality and it is a requirement in the City's Municipal Storm Water Permit (Order No. 2007-0001). To achieve these objectives the City developed an education program in its JURMP which addresses education for multiple target audiences. These audiences include municipal staff, new development and construction communities, industrial and commercial business owners and operators, residents, general public, and school children. The City provides education and outreach to these communities to increase their awareness of pollution prevention and to comply with the Permit. During the reporting period the City conducted several education and outreach efforts for these audiences.

Per the permit, the City is required to implement an education program using all appropriate media and targeting specific communities. Table 8.1 provides an overview of the target communities and the applicable section and table numbers specific to those communities.

Table 8.1 FY 2008-09 Outreach Efforts with Target Communities

	No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
Education	1	A description of education efforts conducted for each target community.	1	Confirmation	Section 8	
	2	A description of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.	1	Confirmation	Section 8.3.1	
	3	A description of education efforts conducted for municipal departments and personnel.	1	Confirmation	Section 8.2 Table 8.2	
	4	A description of education efforts conducted for the new development and construction communities.	1	Confirmation	Section 8.3.2	
	5	A description of jurisdictional education efforts conducted for residents, the general public, and school children.	1	Confirmation	Section 8.3.3 Tables 8.3 & 8.4	

8.2 Staff Training Element

Personnel from various Municipal departments were trained on stormwater topics during the reporting period. These topics included general information from the City's JURMP and Municipal Storm Water Permit, program wide BMP requirements, BMPs specific to their activities, and instructions to detect, eliminate, and report illegal discharges. Municipal staff training is summarized below in Table 8.2. Staff meetings are held every two weeks, during which time topics are reviewed and discussed including,

industrial/commercial inspections, complaints, outreach & education, and watershed issues; these meetings serve as excellent training venues in that ideas are exchanged and discussed, often resulting is clarity around a given topic and refinement of internal procedures and policies.

Table 8.2 FY 2008-09 Municipal Staff Training

Workshop/Training	Audience	#	Location	Host	Date
SUSMP BMP Training	Municipal Staff	6	City Hall	Meleah Ashford	08/12/08
Rainy Season BMP Requirements Training	Construction Inspection & Storm- water Inspection staff	10	City Hall	MOE	09/25/08
Rainy Season BMP Requirements	Municipal Staff	10	City Hall	MOE	10/10/08
Sanitary Sewer Overflow Prevention and Response Plan	Stormwater Staff	5	City Hall	Doug Coppi	04/08/09
Hazwoper Training	Stormwater Staff	3	San Diego, CA	Pacific Safety Council	05/04/09 & 05/05/09
Stormwater Issues: Construction Water Handling Solutions	Construction Inspection Staff	2	Riverside, CA	Hall & Foreman	05/15/09
Stormwater Training	Public Services Street Maintenance Staff	20	Public Services Yard – City of Vista	City of Vista Water Quality Manager	05/28/09
Stormwater and FOG Training	Public Services Wastewater Division Staff	18	Public Services Yard – City of Vista	City of Vista Water Quality Manager	06/03/09
Stormwater Training	Municipal Staff	16	City Hall	City of Vista Water Quality Manager	06/10/09
Treatment Control BMP Training	Stormwater Staff	3	City Hall	MOE	06/22/09
Stormwater Training	Parks and Recreation Staff	3	City Hall	City of Vista Water Quality Manager	06/23/09
TOTAL NUMBER OF STAFF TRAINED – 96					

8.3 Educational Outreach Element

Staff attended meetings of the Regional Education and Residential Sources Workgroup. Workshop topics included, partnership development, regional branding, regional website, and mass media campaign development and implementation.

8.3.1 Description Of How Education Efforts Targeted Underserved Target Audiences, High Risk Behaviors, And "Allowable" Behaviors and Dischargers

During the reporting period the City conducted education and outreach efforts that targeted high risk behaviors and "undeserved" communities. The City held several community events which provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors areas. The events are summarized in Table 8.3. Brochures and items promoting the City's Household Hazardous Waste and Used Oil Collection Programs were distributed along with BMP guides for car washing, less toxic yard and garden care, pet waste cleanup, and recycling. The events were equally successful in providing outreach to Spanish communities as several brochures and promotional items were available in Spanish. Volunteers, City contractors, and personnel who were present at event booths, conducted water quality presentations and were available to answer questions about the City's Water Quality Protection program.

During the reporting period, City staff provided education and outreach to the community regarding many "allowable" behaviors and discharges. Through City investigations, City staff educated responsible parties on the importance of best management practices to prevent and/or reduce pollutant runoff. City staff conducted several stormwater investigations involving allowable discharges, such as: over-irrigation, swimming pool discharges, residential carwashing, and groundwater. In each incident, City staff recommended appropriate BMPs and educated the responsible party on the importance of maintaining BMPs to prevent further discharges of pollutants. BMP guides were also provided to the responsible parties.

A storm water article was included in the City's Summer 2008 newsletter (Inside Vista) which discussed yard chemicals and their potential affects on local creeks, lagoons, and the ocean. The newsletter was sent to 36,000 residences. The article explained the pathway from yards to the ocean and provided gardening tips for less toxic alternatives, and organic products. The City's website is a valuable resource that provides pollution prevention tips in several categories of "allowable" behaviors and discharges. The section, Stormwater Pollution Prevention Tips for Homeowners, provides information on composting, buying organic or non-toxic products, native plants, and water conservation. Also available on the City's website are instructions and BMPs for how to control pests in and around your home. The City continues to advertise its website on various printed materials including the City's Newsletter.

8.3.2 Description Of Education Efforts Conducted For The New Development And Construction Communities

Education efforts for the new development and construction communities continued during FY 2008-09 reporting period. Education efforts consisted of individual interactions with contractors and/or developers and City staff through counter interaction, attendance at all pre-construction meetings, and construction site inspections. The City's Engineering (includes stormwater and inspection divisions) and Planning department staffs were primarily responsible for communicating information to the new development and construction communities about the City's Water Quality Protection program. At each pre-construction meeting, stormwater staff, provided a synopsis of the City's program and discussed the City's BMP requirements. City staff conducted **21** pre-construction meetings during the reporting period. Additionally, construction BMP brochures were distributed upon issuance of building permits.

Through municipal staff training conducted throughout FY 2008-09 (refer to the staff training element, section 8.2), City staff learned about the new BMP requirements in the City's JURMP and communicated this information to contractors and developers. City staff also had access to and referenced the City's Stormwater Ordinance (Municipal Code, Chapter 13.18 Stormwater Management and Discharge Control Program) and Stormwater Standards Manual in their dealings with contractors and developers.

Prior to the rainy season City inspectors hand delivered letters to contractors and developers at all construction sites reminding them of the City's BMP requirements. Approximately, 74 letters were distributed.

8.3.3 Education Efforts Conducted For Residents, The General Public, And School Children.

The City conducted substantial education and outreach efforts to residents, the general public, and school children during FY 2008-09 reporting period.

Residents and the General Public

Community events provided opportunities for the City to conduct education and outreach efforts regarding its Water Quality Protection Program. A summary of the events is provided in Table 8.3. The City holds an annual Citizens Academy where members of the public can learn about the different City departments; on the Engineering Department evening, the City's Water Quality Protection Program was discussed. At some event booths, City staff conducted watershed presentations using its EnviroScape Model. Using this 3 dimensional model, City staff can demonstrate the adverse affects of storm water runoff in a watershed; it continues to be a very effective visual tool in educating the community, especially children. These events also provided a classroom atmosphere in which residents and the general public could ask questions and receive answers about various aspects of the City's program.

Table 8.3 Educational Events

Date	Event	Estimated Attendance
08/03/08	Vista Rod Run	1,500
9/11/08	Dimensions 1 Spas Health and Wellness Fair	250
9/20/08	Coastal Creek Clean Up (co-sponsored)	60
03/07/09	Kragen used Oil Filter Event	90
04/26/09	Mission San Luis Rey Earth Day	3,000
05/24/09	Chocolate Festival	8,000
6/20/09	Enviro Fair	58,045

City staff provided considerable education and outreach to residents, businesses, and the general public during storm water enforcement efforts. Enforcement efforts were generated from drive by observations made in the field (proactive enforcement) and through reported incidents. Proactive enforcement continues to be a significant mechanism the City uses to regulate and educate residents and the general public. Through various enforcement mechanisms including verbal and written warnings (Letters and Notice of Violations) City staff consistently educated residents on BMP requirements and the importance of pollution prevention. City staff also provided various

storm water BMP brochures and referred residents to the City's Municipal Code and Stormwater Standards Manual listed on the City's website. During the reporting period, City staff distributed approximately **280** brochures and booklets in response to complaint investigations and through proactive enforcement.

The City conducted education and outreach efforts at certain stationary industrial and commercial facilities during this reporting period. Through the City's required annual inspections of stationary industrial and commercial facilities, facility representatives were educated on the City's storm water requirements. During each inspection, City staff introduced the storm water program and provided educational materials specific to the business. Table 8.4 summarizes the educational materials distributed to stationary facilities. Also, before beginning the inspection process, the City prepared and mailed a letter to the businesses selected for inspection. The letter provided general information about the program and informed each business owner of the upcoming inspection.

Table 8.4 Educational Materials Distributed to Stationary Facilities

Educational Material	Number Distributed
Restaurant Poster	110
Automotive Poster	3
What's Cookin' – English	111
What's Cookin' – Spanish	20
Green Wrench Guide – English	14
Green Wrench Guide – Spanish	2
Conditional Waiver No. 4 Information	3
Industrial/Commercial Brochure	135
NONA / NEC Paperwork	33
NOI Handout	9
Inspection Notification Letter	229
Total # of Educational Materials	**469**

The City used other mechanisms to provide education and outreach to residents and the general public during the reporting period. The City included a storm water article in the City's summer 2008 Newsletter that contained information on yard chemicals and their potential affects on local creeks, lagoons, and the ocean (Appendix M). The City continued to operate its Storm Water Hotline number (760) 726-1340, x1686; the City received seven stormwater reports from residents and the general public. The City lists the hotline number on its website and includes it in other printed materials including City Newsletter articles. The City's website (www.cityofvista.com) is an important source that residents and the general public may use to learn more about the City's Pollution Prevention program. It contains comprehensive information of all aspects of the City's Program and includes links to the City' Municipal Code, Stormwater Standards Manual, and various BMP guides and booklets. Printed educational brochures were provided for distribution at several City facilities visited regularly by the public including City Hall, City Public Works and Engineering lobbies.

School Children

The City continued its education and outreach efforts to schools during the reporting period. A total of 67 classroom presentations were conducted at 8 different elementary schools and 2 different middle schools, reaching 1,541 students. Each presentation included a demonstration using the EnviroScape Model, an Eco Quiz, and a discussion of household best management practices to prevent the runoff of pollutants into a watershed. In addition to a City of Vista magnet, a watershed poster and recycling and household hazardous waste disposal guides, students were also given pledge cards to sign and take home to their parents.

8.4 Notable Activities

The City developed a number of new educational materials, including: a FOG brochure, poster, and door hanger; a "Do More" brochure; an Agua Hedionda Watershed Management Plan brochure; and a survey for use in 2009-10 touching on a variety of water quality topics. Examples of the new educational materials can be found in Appendices G-1 through G-5.

A new email address was created this year to facilitate communication between the public and the City's water quality protection program; the new email address is waterquality@cityofvista.com.

9.0 PUBLIC PARTICIPATION COMPONENT

9.1 Introduction

During the reporting period, the City continued with its implementation of the Public Participation Component of the City's JURMP. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms.

The public participation component is largely linked to the City's education component. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Also, as residents become aware of the City's program goals they are more apt to provide their perspectives, comments, and suggestions.

9.2 Mechanisms

9.2.1 Public Notifications

The City of Vista provides advanced notice to the public via the website for projects requiring City Council approval. The public has an opportunity to comment on any City project during the Council meetings. During FY 2008-2009, two stormwater related projects were brought before Council: 1) the adoption of the Agua Hedionda Watershed Management Plan (WMP), and 2) approval of a TMDL cost-sharing agreement for Agua Hedionda Watershed public agency stakeholders. At the Council meeting for adoption of the WMP, several members of the public chose to speak in support of adoption of the WMP.

9.2.2 Programs, Community Events, and Educational Activities

Household Hazardous Waste and Used Oil Collection Programs

During the reporting period the City continued to operate its household hazardous waste and used oil collection programs. These programs enable the public to properly dispose of used oil and hazardous wastes. During the reporting period, the City advertised these programs to the public through the City's website, outreach at community events, and a stormwater article in the summer 2008 City Newsletter (Appendix H). Several services offered in the Used Oil Collection Program were free to City of Vista Residents. By making these programs available and encouraging the public to properly dispose of these materials, it is expected that less illegally disposed materials will end up in the City receiving waters.

Community Events

During the reporting period several community events were held in the City of Vista that encouraged participation from the public. These events are included in Table 8.3 of Section 8.0 – Education Component. At event booths water quality presentations were conducted and promotional items were distributed to the public. This setting can create a classroom atmosphere that facilitates discussions about aspects of the City's pollution prevention program including watershed management and pollution prevention. It also

provides a mechanism for residents to provide comments and suggestions that may assist the City in its program implementation efforts.

Educating Residents and the General Public
City staff provided education and outreach on pollution prevention during stormwater investigations. Several investigations were conducted at residential and commercial sites during the reporting period (See Sections 5.0 and 6.0). One aspect of the City's enforcement procedure is to provide education and outreach so that responsible parties learn about the importance of pollution prevention in preserving water quality. City staff introduces the City's storm water program and explains the importance of implementing appropriate BMPs to preserve water quality in the City's receiving waters. Educational materials are distributed which serve as tools for managing urban runoff. Through these education and outreach efforts, it is expected that improvements will be made in managing urban runoff.

Educating School Children
Educating school children plays a significant role in the City's execution of its Public Participation component. During the reporting period, a total of 67 classroom presentations were conducted reaching 1,541 students. Each presentation included a watershed demonstration using the Enviroscape Model during which students were asked to participate. Students learned about various aspects of the City's pollution prevention program including watershed management and household best management practices. Students were encouraged to share the information they learned with their parents to promote the use of best management practices at their homes.

9.2.3 Watershed
The City is an active participant in both the Carlsbad and San Luis Rey River Watershed public participation activities. This includes participation in the Carlsbad Watershed Network (CWN), comprised of a variety of stakeholders including representatives from other municipalities in the watershed, environmental organizations, conservancies, the Regional Water Quality Control Board, and other members of the public. During the reporting period, City staff attended monthly meetings for both watersheds when available.

The Agua Hedionda Watershed Management Plan was finalized and adopted by City Council during FY 2008-09. During FY 2006-07, the City of Vista was awarded a $500,000 Proposition 40 Grant from the State Water Board to develop a watershed management plan for Agua Hedionda Watershed. Outreach meetings were held with local governments, and project reports were posted on a project website to provide wider public access to materials. Public comments were received on the draft plan, and responses to these comments were documented within an appendix to the report. The City will launch the preliminary design phase for one of the projects identified in the Watershed Management Plan during FY 2009-10.

9.2.4 Other Mechanisms

Stormwater Hotline/Other Contact Information
The City continued to operate its Stormwater Hotline for English (760-726-1340 x1686) and Spanish (760-726-1340 x1698) speaking residents during the reporting period. The City encourages residents to call the stormwater hotline to report any observed illicit connections, illegal discharges, or other activity that may contribute pollutants to the

City's storm drain system. The City advertises the Stormwater Hotline on various educational materials and the City's website. A total of seven stormwater reports were received by City Staff during the reporting period. These will be included with submittal of the Illicit Discharge Detection and Elimination Section under separate cover, due December 15, 2009.

The City also posts City departmental phone numbers on the City's website and on educational materials. These departments include Public Works, Community Development, and Engineering. Additionally, the City encourages residents to email stormwater concerns at: waterquality@cityofvista.com.

Website
During the reporting period, the City continued to use its website to provide stormwater information to the public, including hotline information and access to printed materials.

9.2.5 Notable Activities

The City completed the Agua Hedionda Watershed Management Plan, which involved significant public input. The Plan was presented to City Council in April 2009 and adopted by a vote of 5-0.

Adjustments were made to the stormwater hotline to provide better service to the public. Mechanisms were put in place to ensure that the hotline is continually answered during business hours, with staff support at all times.

10.0 FISCAL ANALYSIS COMPONENT

10.1 Introduction

The Standardized Fiscal Analysis Method and Format (Fiscal Analysis Method) was collaboratively developed and adopted by the Copermittees in January 2009 in accordance with Sections G, J.1.a(3)(k), and J.1.c(1)(d) of NPDES Order No. R9-2007-0001. The Fiscal Analysis Method document was submitted to the San Diego RWQCB by January 31, 2009, as Attachment 1 of the Regional Urban Runoff Management Plan (RURMP) Annual Report for FY 2007-08. The Copermittees are required to utilize the standardized fiscal analysis method beginning in January 2010, presumably to be submitted in the JURMP Annual Report due in September 2010. In order to prepare internally for the upcoming reporting needs, the City decided to move forward with the Standardized Method for reporting during the FY 2008-09. In this Annual Report, the traditional method for reporting budgets was utilized (Table 10.1) as well as the Standardized Method (Table 10.2). The Standardized Method allows for categorization of expenditures by permit component and is much more detailed than previous fiscal analyses. The Standardized Method may undergo further revisions during FY 2009-2010.

10.2 General Budget Information

The City's Jurisdictional Urban Runoff Management Program is funded through the City's Sewer Enterprise fund and is typically based on a two-year budgeting cycle. However, due to current economic conditions, the budgeting cycle has been revisited and is now performed annually. The City continues to pursue and utilize funding from grant sources. Some of the education activities are funded through the Used Oil Block Grant. The City will also pursue other State Funds as part of watershed collaboration efforts as available.

10.3 Fiscal Analysis Methods

In past years, the City has presented budgetary information for the reporting period and for the upcoming fiscal year. This method allows for a breakdown of anticipated expenditures within the program, but has not necessarily followed the permit sections. The analysis was performed along the lines of the budget blocks, set up within the departments performing the related stormwater tasks. For consistency with previous years, the results of this analysis are shown below in Table 10.1.

The City has participated in the regional efforts to develop standards for Fiscal Reporting with other Copermittees. In order to prepare for the standardized analysis, the City begun the tracking of implementation costs across all City functions related to the WQPP in 2008. The City began to develop ways to track staff time and expenditures according to permit components. The individual jurisdictional components are tracked, as well as watershed and regional expenditures. According to the Permit, the City is not required to utilize the Standardized Method until submittal of the JURMP Annual Report for FY 2009-10, due in September 2010. However, to better prepare for this requirement, the City has performed this component analysis according to the Standardized Fiscal Analysis Method for FY 2008-09. Table 10.2 below contains results of this analysis for FY 2008-09.

10.4 Fiscal Analysis Results

10.4.1 Traditional Method – FY 2008-09 and FY 2009-10 Budgets

Table 10.1 Stormwater Budget Summary

Stormwater Program Item	2008-09 Budget	2009-10 Budget
Staff *		
Salaries, benefits, vehicle, uniforms	$ 328,467	$ 312,902
MS4 Maintenance		
Storm Drain Maintenance & staff		
Waste Testing & Disposal		
Equipment Rental & Purchase		
Street Sweeping Contracts	$ 1,766,376	$ 749,162
Monitoring		
Wet and Dry Weather Monitoring		
Storm drain materials testing		
Spill Response Sampling	$ 132,448	$ 126,700
Business Inspection & Enforcement		
Industrial/Commercial Inspections		
Database updates/management	$ 95,000	$ 95,000
Permit Fees		
SWRCB Permit Fee	$ 15,606	$ 17,999
Education		
Events		
Training & conferences (internal/external)		
Materials Development		
Used Oil Block Grant (1/2)	$ 25,745	$ 29,907
WURMP and Regional Program		
WURMP coordination		
TMDL monitoring, cost share		
Hydromodification Mgmt Plan	$ 334,500	$ 171,000
Administrative Expenses		
Supplies and small tools	$ 5,286	$ 3,616
Total =	**$ 2,703,428**	**$ 1,506,286**

*Includes staff in WQPP, but not other Planning, Development, Construction, Building, Parks, Public Works Maintenance, or Administrative staff implementing storm water requirements within their work units.

10.4.2 Standardized Fiscal Analysis Method

Table 10.2 Stormwater Budget Summary by Component FY 2008-09

JURISDICTIONAL COMPONENTS		
ADMINISTRATION	$	97,312
DEVELOPMENT PLANNING	$	27,670
CONSTRUCTION	$	73,419
MUNICIPAL	$	2,548,606
INDUSTRIAL AND COMMERCIAL	$	124,615
RESIDENTIAL	$	24,475
IDDE	$	120,389
EDUCATION	$	23,811
PUBLIC PARTICIPATION	$	13,105
SPECIAL INVESTIGATIONS	$	189,087
NON-EMERGENCY FIREFIGHTING	$	235,200
Jurisdictional Total	$	3,477,688

WATERSHED		
Carlsbad	$	56,031
San Luis Rey	$	2,372
Watershed Total	$	58,403

REGIONAL		
Copermitttee Cost Share of Regional Budget	$	68,198
Regional Total	$	68,198

TOTAL COST	***$ 3,604,290***

*Includes staff in Water Quality Protection Program, Planning, Development, Construction, Building, Parks, Public Works Maintenance, and Administrative staff implementing storm water requirements within their work units.

10.4.3 Funding Sources

The City's Water Quality Protection Program is funded nearly 100% by enterprise funds. These funds are generated from sewer utilities within the City of Vista and the Buena Sanitation District. Approximately 70% of the Program is funded by the City sewer enterprise fund and the remaining 30% is funded by the Buena Sanitation District sewer enterprise fund. The program is supported by a Used Oil Block Grant and a Department of Conservation Recycling Grant as well. Each generate approximately $25,000 per year and support the program's outreach and education activities, as well as the City's recycling program, and household hazardous waste collection programs. Additionally, the City constructed two new Fire Stations during the reporting period using funding from a voter approved sales tax increase (Proposition L). This is a one time funding source for these specific projects.

Table 10.3 illlustrates a summary of the Funding Sources for the program.

Table 10.3 Summary of Funding Sources

FUNDING BY SOURCE		
GENERAL FUND	$	-
STORMWATER FEE	$	-
PERMIT FEES	$	-
DEVELOPER DEPOSITS AND FEES	$	-
REGISTRATION AND INSPECTION FEES	$	-
FLOOD CONTROL FEES	$	-
FRANCHISE FEES	$	-
GAS TAX	$	-
UTILITY TAX	$	-
ROAD FUND	$	-
ENTERPRISE FUNDS	$	3,319,090
TRUST FUNDS	$	-
SPECIAL ASSESSMENT DISTRICTS	$	-
STATE APPROPRIATED FUNDS	$	-
GRANT FUNDS	$	-
OTHER	$	-
TOTAL	$	3,319,090

ONE-TIME FUNDING		
GRANTS	$	50,000
Proposition L	$	235,200
TOTAL	$	285,200

TOTAL FUNDING	$	3,604,290

11.0 Effectiveness Assessment Component

The following section describes the City's annual assessment of the effectiveness of its Jurisdictional Urban Runoff Management Program (JURMP) (Permit sections I.1 and J.1.a.(1)(l)).

11.1 Introduction

The requirements of the Municipal Storm Water Permit (Permit) specify that the City shall annually assess the effectiveness of its JURMP implementation. At a minimum, the assessment shall assess the effectiveness of each Significant Activity or BMP implemented, implementation of each major permit component (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination, and Education), and the overall JURMP. This section outlines the assessment that the City will use to assess the effectiveness of its efforts at improving surface water quality.

Assessment of the JURMP is a joint activity between multiple departments of the City. Assessment measures and methods will be based on assessment tables that list the Permit required activities, targeted outcomes, assessment methods, and assessment measures. Assessment tables are included within each Permit component section of this Annual Report.

The City assesses its JURMP based on the framework set out in the San Diego Municipal Stormwater Copermittee document *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*. Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts to maximize resources. Like most management programs, the City uses assessment as part of an iterative feedback loop involving (1) Planning, (2) Implementation, and (3) Assessment.

The City will also assess the effectiveness of its JURMP in addressing the constituents of concern (COCs) determined from dry weather, MS4, and §303(d) listed constituents, other monitoring programs, and best professional judgment. Areas of the Permit that apply to the COCs will be pin-pointed, and additional data may be collected for these activities. Additionally, scientific literature may be used to help supplement information for the applicable activities.

The City will also determine if re-allocation of resources is necessary to optimize pollutant reduction. During the annual program review, the City will evaluate whether measurable targeted outcomes, assessment measures, and assessment methods adequately target COCs or management questions. If it is found that assessment data are difficult to obtain, or do not address the purpose of the activity; outcomes, measures, and methods may be adjusted as necessary.

11.2 Effectiveness Assessment Results

The City assessed implementation and effectiveness of individual Permit Components and of the JURMP as a whole. Where enough data exists, preliminary water quality assessments are also possible and explained below. Ideally, an integrated assessment is possible after examining program components, the overall program, and water quality. Where feasible, some conclusions were drawn and are further explained below.

11.2.1 Implementation Assessment

Compliance assessment for individual components was completed by comparing FY 2008-09 results to compliance tables developed following the Permit outline. The tables include targeted outcomes, assessment measures, and assessment methods. Results of individual component assessments can be found within each component section of the Annual Report. A brief summary of the compliance results is provided below.

Additionally, in an attempt to correlate permit components with water quality, a brief discussion of potential pollutant impacts is provided per component. This discussion is based on activities conducted related to the specific component.

Finally, the City strives to implement these programs effectively, but efficiently as well. Where possible, operational effectiveness pertaining to programmatic components is addressed.

11.2.1.1 Development Planning Component

The development planning component is focused on ensuring that all new development and redevelopment projects minimize impacts on water quality via implementation of all SUSMP, treatment control, and hydromodification requirements. During the reporting period, all projects underwent the urban runoff approval process, ensuring that SUSMP, treatment control, and HMP requirements were met. Additionally, systems are in place to track compliance related items for this component, ensuring that all inventories are kept up to date, all inspections are performed, and requirements are met for each site. Table 2.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2008-09. (Level 1)

Water quality impacts related to this program tend to be site specific. Where feasible, treatment control BMPs (TCBMPs) are designed to remove multiple pollutants from their sites. Historically, the more common BMPs required were storm drain inserts and larger hydrodynamic separators. These are designed to target trash and larger debris, hydrocarbons, some metals, and sediments in the larger units. At this time, these are the most prevalent types of treatment controls in place. Newer projects have moved towards more natural types of treatment, utilizing vegetated swales, on-site detention, and other filtration methods. These BMPs may be better suited to treat nutrient and sedimentation concerns, and potentially have a positive impact on bacteria concentrations, heavy metals, and oil/grease.

In remaining compliant with Permit requirements, all sites incorporate LID into site design and include treatment control BMPs where applicable. Via the inspection program required for these BMPs, the City has gained a better perspective on the functionality of the BMPs. As the TCBMP program is relatively new, only two years of data have been collected. In evaluating the program, in its infancy, the effectiveness is examined two ways. First, the number of maintenance deficiencies following each round of inspections is tabulated and compared. Second, the number of maintenance deficiencies is then compared to the certifications submitted annually.

Figure 11.1 illustrates the number of maintenance issues by BMP type for the first and second years of the inspection program. During the first year (FY 2007-08), all inventoried BMPs were inspected, while during year two (FY 2008-09), sites were prioritized according to the permit and approximately 50% of the BMPs received

inspections. To account for this difference, calculations were performed by BMP, not by project, and the data was normalized by the total number of BMPs inspected.

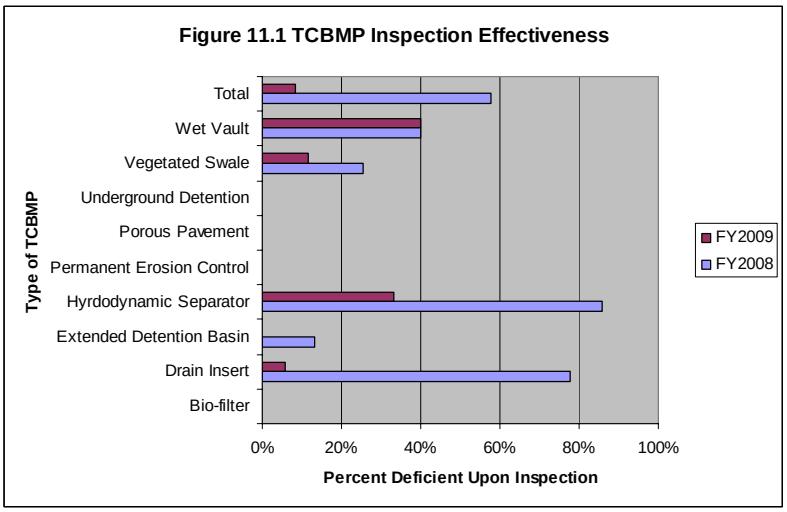

The figure illustrates that overall deficiencies were significantly reduced from FY 2007-08 to FY 2008-09. With the exception of wet vaults, less deficiencies were found across all BMP types during the second year of the program. With an overall reduction of problems, from 57.6% to 8.3%, the inspection program appears to be effective at insuring these BMPs are maintained properly. With fewer deficiencies in the BMPs, indicating proper operation and maintenance over 90% of the time in FY 2008-09, it is evident that:

- the inspection program has been effective in raising awareness (level 2) for those responsible for TCBMP maintenance,
- the inspection program has changed behavior positively (level 3) in that initially very few BMPs were maintained as designed and recently most BMPs were maintained effectively, and
- the inspection program is effective in reducing pollutant loading from these sites. (level 4)

However, without empirical data to support the efficiency of the BMPs at removing different types of pollutants, it is not feasible to calculate reductions in pollutant loading at this time.

From a programmatic standpoint, the outreach and inspections appear to be gaining the desired results, which are proper operation and maintenance of the TCBMPs. However, at this time, as the program develops, staff spends a great deal of time researching the projects and compiling the necessary data to prepare the site specific outreach material and prepare for the inspections. While the research is necessary, it will likely decrease as data collection and tracking becomes more efficient. From an effectiveness standpoint, it appear that the most beneficial approach to the program in the coming years will be to utilize some combination of outreach and inspections. It is expected that while the outreach was intensive during the first two years, this level will not be necessary moving forward. Some outreach will continue to occur, but the program is expected to largely focus on inspections and inspection results.

With the new Fiscal Analysis Method, staff time is currently tracked by program component. As the program moves forward, outreach efforts, inspections, and results will be tracked, along with staff time, providing a more complete assessment of program operations. Using this data, the program will achieve a balance, allowing the City to remain in full compliance, while utilizing its limited resources effectively and efficiently.

11.2.1.2 Construction Component

The construction component is focused on ensuring that all construction projects minimize impacts on water quality via implementation of all required BMPs. During the reporting period, all construction projects underwent the urban runoff approval process, ensuring that they were prioritized according to specific criteria and inspected accordingly. Additionally, new systems were put in place to track compliance related items for this component, ensuring that the construction inventory is updated continually, all inspections are performed at the required frequency, and BMP requirements are met for each site. Table 3.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2008-09. (Level 1)

Water quality impacts related to the construction component focus mostly on sediment. The majority of BMPs implemented on construction sites are designed to limit the amount of sediment mobilized in stormwater, thereby limiting the quantities of sediment leaving the site during storm events. In order to increase the implementation of BMPs on construction sites, thereby decreasing sediment loads, the City has been inspecting construction sites according to the frequencies described in the Permit for many years. In doing so, much data has been collected, but it is difficult to draw valid conclusions to assess the effectiveness of the program. Education and outreach efforts are a key element to the inspection program and are most often difficult to quantify and correlate with a result.

However, in examining several years of data, some information may be obtained. For this assessment, data was compiled annually related to the number of sites, number of inspections, numbers of enforcement cases, and numbers of pre-construction meetings with stormwater staff in attendance. Data was compared from year to year beginning in FY 2001-02, the first year of Order 2001-01. Several trends are evident as are illustrated in Figures 11.2 and 11.3.

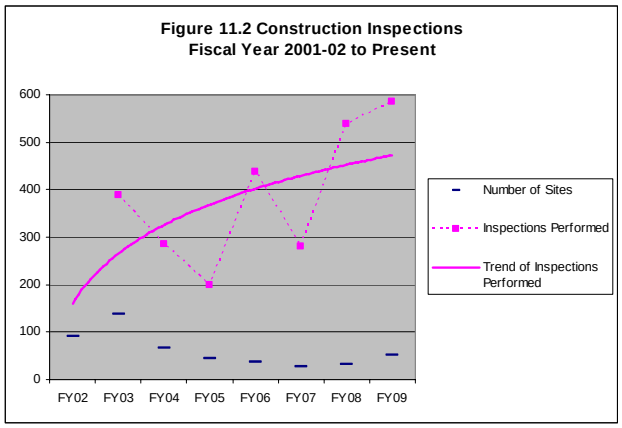

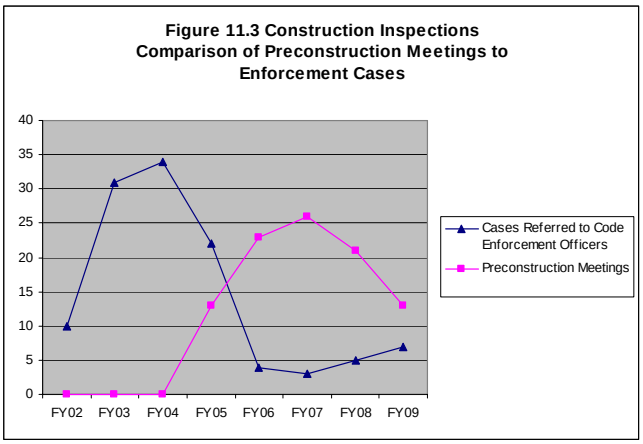

The number of active construction sites has decreased over the period from FY 2001-02 to FY 2008-09, with the height of the construction period during FY 2002-03. Because of the increased regulatory pressures, the number of inspections on these active sites has increased over the time period. Conversely, the number of enforcement cases related to construction has declined over the time period. Upon further examination using regression analyses, it appears that the positive correlation is stronger between the number of sites per year and enforcement cases (R^2=0.41) than the expected negative correlation between number of inspections and enforcement cases (R^2=0.23). In other words, the number of enforcement cases relates better to the total number of sites than to the number of inspections, indicating that an increase in inspections would not have a significant added value, in terms of decreasing enforcement, i.e. violations. However, with the inherent variables related to construction and sediment runoff, these correlations are speculative.

Data was also available to compare the numbers of enforcement cases to the number of preconstruction meetings at which stormwater staff was in attendance. Stormwater Code Enforcement staff began to attend these preconstruction meetings in FY 2004-05. In each meeting, the City inspectors, project superintendents, and all others in attendance, received site specific education related to the required BMPs on their project. Through this education, it appears that the number of enforcement cases declined substantially through the time period of record. A regression comparing the number of preconstruction meetings to the number of enforcement cases per year indicates a stronger correlation (R^2=0.59) than those discussed above. (level 2)

From this assessment, it appears that increased site specific education may be effective in ensuring the construction sites remain in compliance through the year. The decrease in enforcement cases indicates a general trend of increase compliance, via increased BMP implementation. This demonstrates a positive change in behavior over time related to the preconstruction meetings. (level 3)

Inherent to increased compliance and BMP implementation are load reductions related to sediment. While it is believed that this is the case, as the BMPs are designed to retain sediment on-site, there is little data to support the hypothesis. Without site specific data, including baseline data where no BMPs are in place, it is not feasible to quantify a load reduction at this time. However, anecdotally, there are fewer problems related to sediment discharges on construction sites in recent years. (level 4)

11.2.1.3 Municipal Component

The municipal component is focused on ensuring that all municipal facilities and operations minimize impacts on water quality via implementation of all required BMPs. This component is broad in scope, covering programs including municipal staff training, inspections, street sweeping, MS4 cleaning, IPM implementation, and special events review and compliance. Each of these programs requires tracking of specific data for compliance purposes and for effectiveness assessments. Table 4.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2008-09. (Level 1)

Water quality impacts related to the municipal component are also diverse. City staff are involved in operations that may generate solids, nutrients, pesticides, oils and grease, and other pollutants. Additionally, through programs such as street sweeping and MS4 maintenance, large volumes of pollutants such as heavy metals and sediment are removed from the MS4, preventing the discharge of these loads during rain events. Education and outreach efforts are a key element to the municipal program. It is necessary to provide specific training to City staff involved in activities with the potential to release pollutants into the MS4.

In meeting the JURMP and Permit requirements to train municipal personnel, employees were provided specific information pertaining to their discipline. This training translates into an increase in knowledge across the City's workforce. However, in the past, measures have not been in place to directly track a change in this knowledge base. During this reporting period, a survey was developed to assist in assessing this change. The survey was distributed at the beginning of FY 2009-10 and will be given at the end of each FY following. In the future, the survey will provide the basis for evaluating the change in knowledge of municipal staff. (level 2)

However, even without measured increases in knowledge, changes in behavior are evident. These changes in behavior are examined in further detail in relation to the inspection program and the IDDE complaints program.

With the implementation of Order R9-2007-0001, new requirements related to the inspection of municipal facilities caused the high priority municipal inventory to increase to 30 sites. With the increased scope of inspections, data collected can provide a baseline from which to assess changes in knowledge and behavior. This is accomplished by comparing corrective actions resulting from routine inspections. Table 11.1 includes data collected during the past two years of municipal inspections. This small set of data shows improvements in BMP implementation at the municipal sites inspected, in that fewer sites had corrective actions in FY 2008-09 and there were fewer corrective actions required per site.

Table 11.1 Municipal Inspections Corrective Actions Summary

	FY 2008	FY 2009
Percentage of Sites with Corrective Actions	33%	13%
Average Number of Corrective Actions per Site*	1.7	1.0

*of the sites with corrective actions

In relating the level of awareness of municipal employees and attempting to assess where this may be increasing or decreasing, the IDDE data may be

useful. Although not previously tracked, this year, data was collected assessing the numbers of complaints reported by municipal staff. Of 232 total complaints received, 144 were reported by municipal staff, or 62%. This data will be tracked in the future for comparison purposes in an effort to show changes in knowledge among City staff (level 2).

Additionally, intensive outreach efforts focused on specific special events occurring during this reporting period. BMP packets were revised and the applications were amended to incorporate more stormwater specific requirements. Applications were reviewed for nine special events and in all cases, contact was made between the stormwater code enforcement officer and the event organizer. With this level of outreach, it is expected that the application packets will be more complete in future years and the time spent on each application, the level of outreach, and the need for inspection and enforcement will decrease accordingly. Because this is a relatively new program, there are insufficient data to provide assessments at this time. In the future, it may be useful to collect additional data to determine the effectiveness of the special events program. These data may include: the number of Applications Reviewed, the number of applications that were inadequate due to stormwater concerns, the number of acceptable applications, and the number of contacts made prior to the events. These data can then be related to inspections and enforcement data to evaluate the effectiveness of the program.

The City's MS4 cleaning and street sweeping programs are continually removing pollutants from these systems that would otherwise end up in receiving waters. Each program provides load reductions (level 4) which are reported annually in Section 4 of this report. Comparisons from year to year may provide relative estimates of the amounts of material being prevented from entering the MS4. Table 11.2 presents data compiled from MS4 cleaning activities since the beginning of Order 2007-0001, over the past two years.

Table 11.2 Street Sweeping and MS4 Cleaning Removal Rates (tons per year)

	FY 2007-08	FY 2008-09
Streets - Sweeping	850	280
Parking Lots - Sweeping	10	5
Catch Basins/Inlets	230	455
Open Channels	1010	2493

Data collected as part of the disposal process can be used to estimate actual load reductions for particular constituents. Estimations of metals load reductions obtained via MS4 cleaning and street sweeping may be presented in future years where specific constituent data is available that is related to the high priority water quality problems. It should be noted that neither MS4 nor receiving water monitoring data indicate water quality impacts related to heavy metals.

Using these assessments, it appears that the municipal component of the program is operating effectively and efficiently.

The inspections program seems to be effective at reducing the number of BMP violations at municipal sites, as shown in Table 11.1 above. However, with only two

years of comparable data, strong conclusions are not feasible at this time. The City will continue to track this type of data to monitor the effectiveness of the inspection program.

The special events program has taken significant staff time and effort to develop. With this level of effort, it appears that the program is effectively regulating special events. As the program continues, it is expected that less time will be spent educating and instructing applicants, as they are often the same from year to year. This reduction in effort should help to maximize the efficiency of the program, while maintaining its effectiveness. The City will continue to track data presented in Table 11.2 to measure the program's effectiveness in the future.

11.2.1.4 Industrial Commercial Component

The industrial/commercial component is focused on ensuring that all industrial/commercial (IC) facilities and operations minimize impacts on water quality via implementation of all required BMPs. This component consists of outreach and education, inspections, complaint response, and enforcement of stationary and mobile businesses. The IC program requires tracking of specific data for compliance purposes and for effectiveness assessments. Table 5.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2008-09. (Level 1)

Water quality impacts related to the IC component are also diverse. Local businesses operate facilities that may generate solids, nutrients, bacteria, oils and grease, and other pollutants. Inspections are the key element of the IC program. Inspections allow the City to assess compliance of the business with the Permit and local ordinances, assess the level of stormwater knowledge of the employees, assess the level of BMP implementation at the site, and to provide one on one education to the employees at the facility.

Figure 11.4 illustrates the changes in knowledge (level 2) and changes in behavior/BMP implementation (level 3) as detected over the past five years of the industrial/commercial inspection program. The trends show a general increase in knowledge over the years, while a slightly downward trend in BMP implementation is evident. These changes may be due to many factors, including changes in inspectors, facilities inspected, and permit requirements. However, with the large numbers of inspections per year, it is expected that the numbers are representative of conditions observed during inspections over time. This information will continue to be tracked.

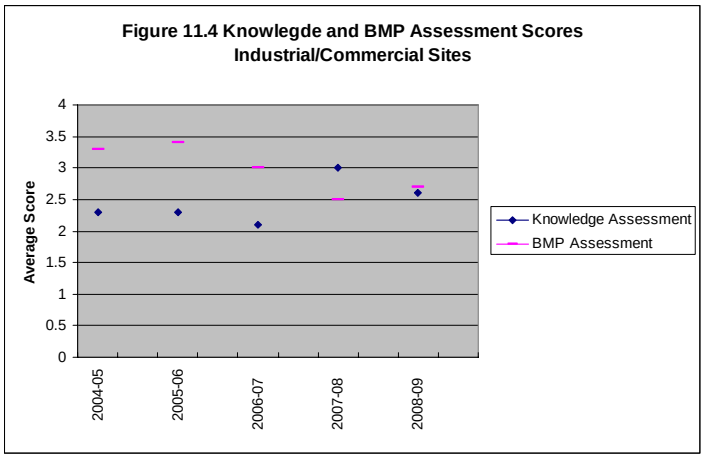

In assessing compliance of the businesses, enforcement actions may also be compared over time to get an idea of changes in knowledge and BMP implementation. However, because of the relatively large number of businesses inspected, and the fact that some may never have been inspected, it is not feasible to draw conclusions from this type of data. To provide a more accurate assessment, a subset of the inspections can be summarized, focusing on the high priority sites only. Because these businesses are inspected consistently from year to year, this may provide a better measure of the effectiveness of the program in increasing knowledge (level 2) and BMP implementation (level 3). Figure 11.5 illustrates the follow-up actions for the high priority businesses during the past three years of inspections. Priority 1 (P1) follow-ups are generally for discharges occurring at the time of inspection, priority 2 (P2) follow-ups are for BMP violations, and priority 3 (P3) follow-ups are for minor BMP violations.

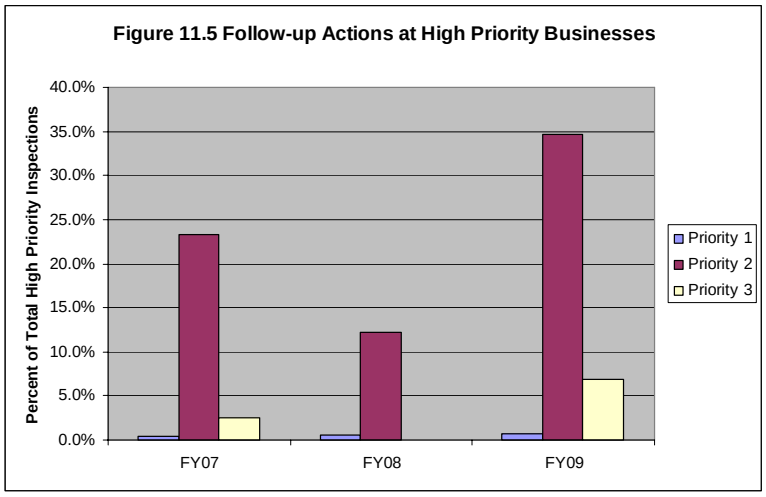

In each year, there was only one P1 follow-up at a high priority site during the inspection program, indicating the businesses generally know that nothing may be discharged off-site. P2 follow-ups increased this year, with no evident trend over the three years of inspections. Because of the increase, this level of follow-up will require further analysis, see below. The P3 follow-ups show a slight increase this year, but are relatively minor in nature.

Of the P2 follow-ups, which are the majority of the cases, it appears that many of the same facilities continue to have corrective actions from year to year. It is important to note that all facilities where corrective actions were required were followed up on and compliance was achieved following the inspections. Using the FY 2008-09 inspections as a baseline, 60% of the facilities with P2 corrective actions had P2 corrective actions in the previous two years. Of these, 78% (21/27) were restaurants. The remainder of the facilities with repeat corrective actions includes grocery stores (2/27), automotive shops (3/27), and an equipment rental facility (1/27).

Because of the numbers of repeated corrective actions needed from year to year at these facilities, it appears the more efforts are needed to ensure that the facilities remain in compliance year round. In the coming year, the City will examine ways to better regulate these facilities, with a primary focus on restaurants. It is expected that this may include enhanced outreach, which may be accomplished in conjunction with the City's FOG program, and/or modification of the inspection program to provide better oversight

of the restaurants. In further analyzing the corrective actions, the City may also gain insight by examining in greater detail the common types of corrective actions at the restaurants, allowing a more focused outreach campaign.

At this time, estimates of load reductions, level 4, are not feasible as no data has been evaluated that is specific to industrial/commercial sources.

With the assessments above, it is evident that the City is in compliance with the requirements of the permit. However, with further evaluation of changes in knowledge, behaviors, and corrective actions, it appears that annual routine inspections may not be the most efficient way to ensure that businesses remain in compliance. In the coming year, the City will continue to perform inspections as required in the permit, but will examine ways to make the inspections more effective in an effort to gain continued compliance from all businesses.

11.2.1.5 Residential Component

The residential component is focused on ensuring that residential areas and activities minimize impacts on water quality via implementation of all required BMPs. This component is focused on those high priority activities identified in the permit and JURMP including:

- Automobile repair, maintenance, washing, and parking;
- Home and garden activities and product use;
- Disposal of trash, pet waste, green waste, and HHW;
- Sanitary sewer spills from private laterals;
- Residential areas tributary to a Clean Water Act Section 303(d) impaired waterbody, where the residence generates pollutants for which the waterbody is impaired;
- Any residential areas within or directly adjacent to or discharging directly to a coastal lagoon or other receiving waters within an environmentally sensitive area;
- Any other residential source that the City determines may contribute a significant pollutant load to the MS4.

Table 6.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2008-09. (Level 1) The residential requirements of the Permit are generally implemented via outreach and education, site visits, and complaint response. An assessment of the outreach component will be presented in Section 11.2.1.7 below, therefore the assessment of the residential section will focus primarily on complaint response efforts.

An analysis of the numbers of residential complaints over the past five years shows that the numbers of complaints, although variable, are relatively steady. Figure 11.6 illustrates the percentage of the total complaints that were related to residential activities over the past five years.

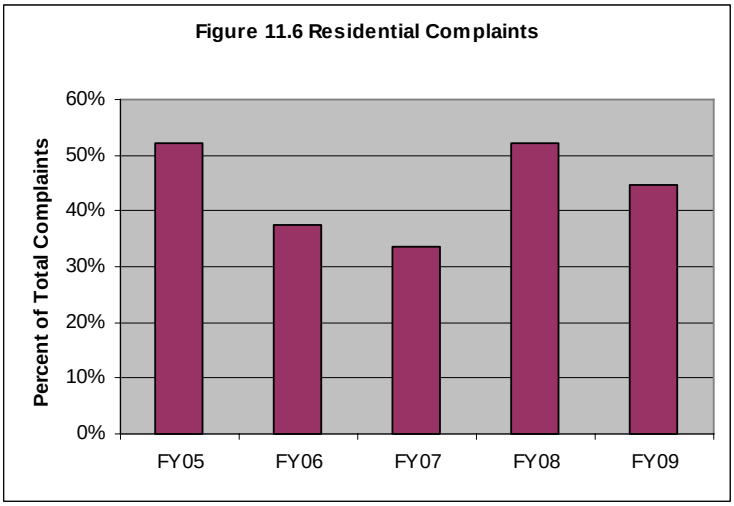

In Section 6 of this report, the types of residential complaints are presented. Generally, the types of residential complaints most often responded to involve sediment, spills, trash/debris, over irrigation, and washing. These are listed from most common to least. Figure 6.1 illustrates a detailed breakdown of these complaints. It appears that each of these is included in the high priority residential activities as proposed in the JURMP, leading to the conclusion that the program is focused on the appropriate residential activities.

In the future, this type of analysis may help to refine the focus of the residential program. It is expected that by performing more detailed analysis of the residential complaints, the outreach programs may be modified to focus on the most prevalent types of problems encountered in the field.

At this time, it appears that the high priority residential activities generally occur throughout the residential areas in Vista, therefore there have been no areas specifically designated as high priority, rather all residential areas are treated as high priority. In the future, if feasible, a GIS exercise may be used to further analyze the types and locations of complaints to verify this approach.

Another methods of evaluating the City's residential component as it relates to outreach is to track the amount of household hazardous waste collected each year at the City's collection facility. Table 11.3 contains HHW data over the past five years. A definite increasing trend is evident over the past four year, indicating a successful outreach program to residents related to the proper disposal of HHW. (level 2 and level 3)

Table 11.3 HHW Collection per Fiscal Year

Fiscal Year	Pounds of HHW Collected
FY 2008-09	682,498
FY2007-08	613,679
FY 2006-07	247,027
FY2005-06	213,609
FY2004-05	442,725

The City remains in compliance with the residential requirements in the Permit. However, assessing the effectiveness of the program is difficult because of the types of data collected. In general, it appears that the majority of the residential areas in the City are continually in compliance with the required BMPs. Where this is not the case, complaints are received by the Water Quality Protection Program, addressed promptly, and resolved.

11.2.1.6 IDDE Component

The IDDE Section of the JURMP Annual Report is due on December 15, 2009 under separate cover. The effectiveness assessment of this component will also be included with this submittal.

11.2.1.7 Education Component

The education component is focused on ensuring that all target audiences are education on stormwater principals so as to minimize impacts on water quality via implementation of all required BMPs specific to their disciplines. This component consists of outreach and education to:

- municipal departments and personnel,
- construction site owners and developers,
- industrial and commercial owners and operators,
- residential community, general public, school children, and
- underserved target audiences.

The goals of the program are to measurably increase the knowledge of these target communities and to measurably change the behavior of target communities, leading to reductions in pollutant releases to the MS4 and the environment. Table 8.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2008-09. (Level 1)

<u>Municipal Departments and Personnel</u>

Municipal staff training is performed annually for several departments. During FY 2008-09, these included public services, stormwater, and development services. In public services, the training was specific to the type of activities performed by the divisions and included training specific to streets activities, wastewater activities, storm drain maintenance activities, and parks maintenance activities. Training for stormwater staff was occurring continually throughout the year, covering relevant topics such as spill response, code enforcement, dispute resolution, industrial/commercial inspections, monitoring, etc. Development services staff were trained on construction related topics such as permitting, site inspections, BMP selection and inspection, and post construction BMPs. In examining the scope of the training provided during FY 2008-09, it appears that the appropriate staff was trained in stormwater concepts.

However, it is always a challenge to detect changes in knowledge/awareness (level 2) and changes in behavior (level 3). One method that was initiated this year is to track complaints that are reported by City personnel. In previous years, their numbers were not assessed, so the data for FY 2008-09 will serve as a baseline. Table 11.4 contains data related to proactive reporting of complaints.

Table 11.4 Pro-Active Complaints by Type, FY 2008-09

Type	Pro-Active	Total	Percentage
Residential	89	137	65%
Commercial/Industrial	37	66	56%
Mobile Businesses	8	12	67%
Construction	8	11	73%
Other	2	6	33%
Total	144	232	62%

The baseline data shows that City staff are vigilant while in the field and actively involved in reporting complaints, with 62% of the total complaints reported by employees. In future years, this data will be tracked, however it may not be truly representative of employees' knowledge, as the percentage will also be dependent on the number of complaints reported by the public.

Another method to track changes in awareness (level 2) is through surveys. This year, the City developed a survey targeting municipal staff to obtain a baseline for their knowledge related to stormwater and watershed concepts. The survey was developed late in FY 2008-09 and administered for the first time in early FY 2009-10. The survey, or variations of, will be administered to staff annually to gauge changes in knowledge and awareness. The initial data will be reported in the FY 2009-10 JURMP Annual Report.

Changes in behavior (level 3) are tracked via municipal inspections and corrective actions. Because the municipal inspections program changed with the implementation of Order 2007-0001, the first year of this permit is used as the baseline. Two years of data have been collected and assessed, as presented in Table 11.1. This data shows that less municipal sites had corrective actions during inspections this year as compared to last, indicating a positive change in behavior and better implementation of required BMPs by employees responsible for high priority municipal sites.

Construction Site Owners and Developers

Educational information is provided to construction site owners and developers in several ways. These include one on one interaction throughout the development review and construction process, annual distribution of information regarding rainy season requirements and preparation, pre-construction meetings, and via information on the City's website.

As discussed in Section 11.2.1.2, data was analyzed this year to determine whether the number of enforcement actions was related closer to the total number of sites or the total number of inspections. One would expect a positive correlation between the number of sites and enforcement actions and a negative correlation between the number of inspections and enforcement activity. In examining eight years of data, these expected correlations were weak.

Another variable analyzed examined the number of preconstruction meetings that stormwater staff attended related to enforcement activity. Stormwater presence at pre-construction meetings began regularly in 2005. At each pre-construction meeting, stormwater staff provided a synopsis of the City's program and discussed the City's BMP

requirements. This education correlates well with a significant decrease in enforcement activity at the sites. The decrease in enforcement activities indicates that contractors' and developers' knowledge of stormwater and the City's requirements increased as a result of the preconstruction meetings (level 2) and that positive behavior changes, i.e. better BMP implementation (level 3) followed. With these encouraging results, mechanisms are in place to ensure that stormwater staff continues to attend all preconstruction meetings.

Industrial and Commercial Owners and Operators

Information is provided to the commercial and industrial community primarily based on the inspections scheduled to be conducted for the fiscal year. In preparation for the inspections, a letter is sent to the business owners indicating that they have been selected for an inspection. During the inspections and follow-up actions, one on one education is performed that is specific to the site and activities performed. As presented in Table 8.4, educational information is distributed during and following these inspections as well.

As illustrated in Figure 11.4, it appears that a consistent increase in knowledge (level 2) is occurring at the facilities inspected. However, the same figure shows that there has been a decline in BMP implementation (level 3) over time at these facilities. It also appears that many of the violations are occurring at the same businesses from year to year. While the majority of businesses are in compliance each year, approximately ¼ to ½ of the high priority sites inspected each year have corrective actions. This analysis indicates that the education and outreach may be working (level 2) but the resulting desired affect, an increase in BMP implementation, is not observed. It appears that more focus and perhaps increased enforcement are required at the facilities that continue to be problematic in order to ensure that they are continually in compliance with all stormwater requirements. This may include increased outreach to and/or increased presence at and around these particular sites. Options for improving performance at these sites will be examined and evaluated during FY 2009-10 and implemented where feasible.

Residential Community, General Public, School Children

Outreach efforts to the residential community and general public are typically performed via public events such as fairs, clean-up events, used oil collection events; direct contact via complaint response efforts; the City's website and publications; and other City sponsored programs such as the Citizens Academy. It is generally difficult to directly measure changes in knowledge and/or behavior resulting from these efforts. One method considered is by comparing residential complaints from year to year. Figure 11.7 illustrates the numbers of residential complaints received over the last five years as a percentage of the total complaints. From this comparison, it appears that the number of residential complaints is reasonably consistent from year to year. Conclusions are difficult to draw from this comparison though, because complaints may vary as a result of a more informed general public or vary due to an increase in number of violations. These reasons for variability may be accounted for by comparing the numbers of proactive residential complaints filed each year, assuming City staff that is reporting complaints are knowledgeable and consistent. Proactive complaints were tracked this year, with 65% of the total residential complaints reported by City staff. This data will be tracked in future years to assist in these types of comparisons.

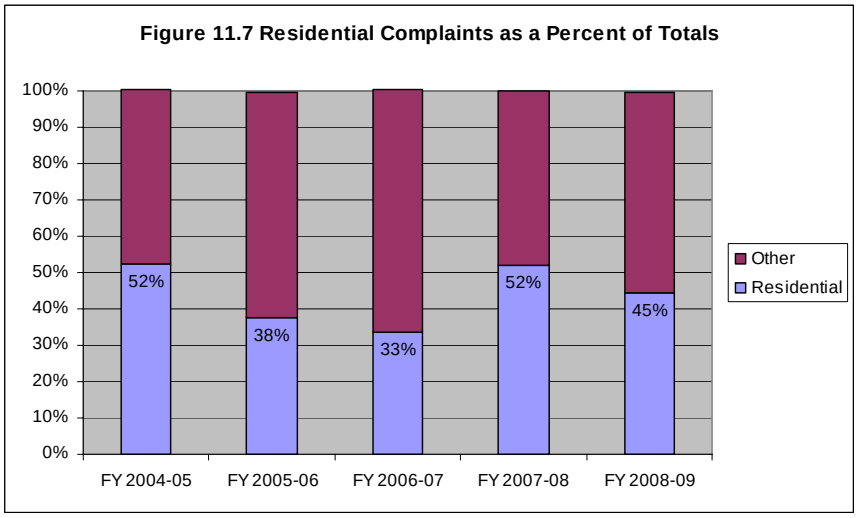

The City continued its education and outreach efforts to schools during the reporting period. A total of 67 classroom presentations were conducted at 8 different elementary schools and 2 different middle schools, reaching 1,541 students. Each presentation included a demonstration using the EnviroScape Model, an Eco Quiz, and a discussion of household best management practices to prevent the runoff of pollutants into a watershed. In addition to a City of Vista magnet, a watershed poster and recycling and household hazardous waste disposal guides, students were also given pledge cards to sign and take home to their parents.

Underserved Target Audiences

During the reporting period the City conducted education and outreach efforts that targeted undeserved communities. The City held several community events which provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors areas. The events were equally successful in providing outreach to Spanish communities as several brochures and promotional items were available in Spanish. At the present time, this is the primary outreach mechanism for the underserved audiences. In the future, the City will evaluate methods to increase outreach to the Hispanic community in Vista. Ideas include developing all new brochures in Spanish and English; increasing outreach related to FOG via inspections, new brochures, and targeting apartment complexes found to be contributing FOG; and including outreach in reading materials distributed to the Hispanic community such as church bulletins.

11.2.1.8 Public Participation Component

The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, and watershed group participation. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Also, as

residents become aware of the City's program goals they are more apt to provide their perspectives, comments, and suggestions. At this time, assessment tools are not in place to determine the effectiveness of this program.

In the coming year, the City will be reworking its website to make it more user friendly. These changes are expected to benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. With these enhancements, these stormwater hotline and email addresses will be better advertised. Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

11.2.2 JURMP Assessment

Overall, the JURMP appears to be effective in reducing urban runoff related pollution in the City. The City remains in compliance with all requirements and through the iterative process, has made several improvements to new and existing programs over the past year. Each component of the program was implemented successfully and most were shown to be effective. In the coming year, improvements will continue, with a focus on increasing the effectiveness of the industrial commercial inspections program and improving efficiencies in other programs. With reduced staffing and budgets, the City will continue to look for ways to balance the effectiveness of the programs with efficiencies.

11.2.3 Water Quality Assessment

Overview

The City of Vista is a part of five distinct watersheds in the San Luis Rey and Carlsbad Hydrologic Units. These include (from north to south): San Luis Rey Hydrologic Unit - 903, Loma Alta Hydrologic Area (HA) – 904.1, Buena Vista HA – 904.2, Agua Hedionda HA – 904.3, and San Marcos HA – 904.5. The majority of the land area in Vista is in the Buena Vista HA and the Agua Hedionda HA. Most of the water quality data collected within the City has been collected these two watersheds. The Buena Vista HA drains to Buena Vista Creek, Buena Vista Lagoon, and enters the Pacific Ocean between at the boarder of Carlsbad and Oceanside. The Agua Hedionda HA drains to Buena and Agua Hedionda Creeks, leading to Agua Hedionda Lagoon and entering the Pacific Ocean in Carlsbad near the power plant.

MS4 Water Quality

Ambient (Dry Weather)

The primary source of MS4 water quality data is through the City's Dry Weather (DW) Monitoring Program. Data has been collected at approximately 30 sites since the inception of Order 2001-01, beginning in the summer of 2002. This provides only a snapshot of conditions in the MS4, but the set of data is beginning to become large enough to provide some insight. The DW program only collects analytical data at 25% of sites with flow, as required in the permit. In some cases, these sites may change year to year, so a complete set of data is not always available.

In evaluating bacteria concentrations, samples were collected at multiple sites over the monitoring period from 2002-2009. Figure 11.8 illustrates fecal coliform data collected

across 15 sites within Agua Hedionda and Buena Vista HAs. In each year, between five and eight samples were collected, providing an overall sample size of 49.

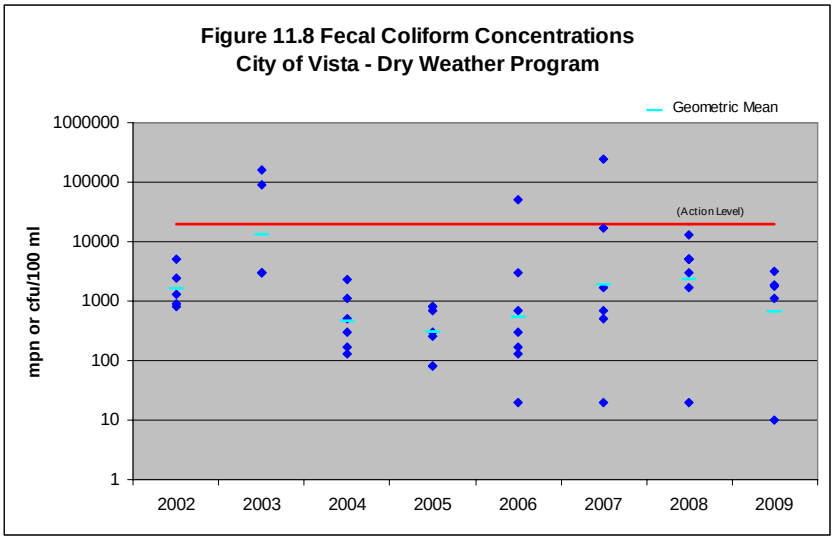

While no clear trend is evident, it is apparent that the majority of values are less than the dry weather action level of 20,000 cfu/100 ml. Only four of the 49 samples exceeded the action level. Furthermore, 43 of 49 samples (88%) contained bacteria concentrations that were less than half of the dry weather action level.

Dry weather nutrient data is collected at all sites using field sample kits based on colorimetric analyses. The sample kits do not produce data of analytical quality but are used to trigger upstream investigations and for source tracking. Nitrates and ortho-phosphate kits are utilized to assess nutrient concentrations in the MS4.

In examining historical data for nitrate-nitrogen from 1998-2008, it appears that in most years there were multiple exceedances of the dry weather action level (10 mg/l). In total, 13 sites exhibited elevated nitrate-nitrogen concentrations. Of the 13 sites, seven of them show elevated concentrations from year to year, indicating a consistent source of the nutrients. In these cases, nutrified groundwater is suspected to be the source of nitrate-nitrogen. The remainder of the sites have had few exceedances over the years, more likely attributable to illicit discharges or other sources.

The data set for ortho-phosphate was examined for the past four years, from 2005-2008. Previous data is labeled as phosphate data, and due to the uncertainty of the form of phosphorous analyzed, this data was excluded from the analysis. In total, there were four sites that exceeded the dry weather action level (2.0 mg/l) for ortho-phosphate. Each had only one exceedance over the four years of monitoring. It appears that each was an isolated incident triggering an upstream source investigation. At this time, data regarding each source investigation has not been compiled.

The dry weather monitoring program does not collect data related directly to sediment. It is well accepted that sedimentation is generally a wet weather problem caused by erosion. Typically the erosion is from a variety of sources including open space, construction sites, residential areas, and creek bed and bank erosion. In Vista, all are potential sources of sediment during wet weather.

Based on the data collected in the dry weather program and using dry weather action levels for comparison, it appears that bacteria is not typically a dry weather problem. This may not be the case with nitrate-nitrogen, as exceedances are more frequently observed. Ortho-phosphate measurements appear to occur at random locations, likely the result of illicit discharges. In the future, the sources of nutrients in the dry weather program will be further evaluated based on the results of past upstream investigations. Although no data is collected during the dry weather program to monitor sedimentation, it does not appear to be a dry weather problem.

Wet Weather (Storm Event)
At this time, very little wet weather MS4 data has been collected. Under the newly developed regional MS4 outfall monitoring program, samples have been collected across the Carlsbad HU as part of four components of the program: random dry and wet weather sampling, and targeted dry and wet weather sampling. This program began during the previous reporting period and the initial data will be reported in the FY 2008-09 Regional Monitoring Report. Upon its availability, the data will be incorporated into future water quality assessments at the jurisdictional and watershed levels.

Receiving Water Quality

Ambient (Dry Weather)
The main receiving waters within the City of Vista are Buena Vista and Agua Hedionda Creeks. In an effort to better understand dry weather conditions in its receiving waters, the City began to collect limited data in the creeks in conjunction with the dry weather program. The focus of the analysis remains on the high priority water quality problems in an effort to understand their dynamics in the receiving waters.

Dry weather bacteria samples have been collected in the two creeks each year since 2003. While the sample set is relatively small, comparisons of concentrations over time show that water quality appears to improve from the upstream sample site to the downstream sites. Although the sample sets are small, a decrease in bacteria concentrations is evident from upstream to downstream sample locations in both creeks. A full order of magnitude decrease, over 90%, in bacteria concentration is observed in Agua Hedionda Creek. While the difference in Buena Vista Creek is not as pronounced, there is still a substantial decrease of over 60%. In Agua Hedionda and in Buena Vista Creeks, improvements in water quality are noted as the creeks flow from east to west through the City. If feasible in the coming years, data will continue to be collected to enlarge the data set and test this hypothesis. With the size of the current data set, these observations need to be validated further.

Nutrient concentrations during dry weather are based on field test kits only. With the limited set of data at each location ($n<10$) and the lack of analytical quality data, it is not feasible to perform an analysis with an acceptable level of confidence. However, a cursory look at the data that has been collected generally shows increasing nitrate-nitrogen concentrations from upstream to downstream in Agua Hedionda Creek and decreasing concentrations of nitrate-nitrogen in from upstream to downstream in Buena Vista Creek. The ortho-phosphate concentrations are relatively low, all less than or equal to 0.4 mg/l. Due to the sensitivity of the analysis and reporting limits, it is not feasible to analyze this data.

At this time, there has been no data collected related to sedimentation in the Creeks during dry weather. Sediment is generally a constituent of concern during wet weather, most often triggered by erosion. There has been no observed evidence of sedimentation problems during dry weather.

Wet Weather (Storm Event)
No data has been collected to evaluate wet weather conditions in the Creeks within the City of Vista. Sample collection under wet weather conditions is performed by a contractor under the Regional Monitoring Program. Analyses discussed below were obtained from the San Diego County Municipal Copermittees 2007-2008 Urban Runoff Monitoring Report, January 2009, Weston Solutions.

Data has been collected at the Mass Loading Station on Agua Hedionda Creek since 1998. This monitoring station is downstream in the watershed, located near the mouth of Agua Hedionda Lagoon, above the tidal prism. In general, increasing trends for total and fecal coliform, TSS and turbidity, and dissolve (ortho) phosphate are evident. Total and fecal coliform and TSS are typically above Basin Plan water quality objectives. Nitrate and ortho-phosphate concentrations are relatively low. Preliminary nutrient numeric endpoint assessments (NNE) performed under the Regional Monitoring Program indicated that most beneficial uses related to nutrients appear to be supported, including WARM, Rec-1, Rec-2, and MUN. There were indications of potential impairments related to dissolved organic carbon (DOC) concentrations, one of the four lines of evidence used in the analysis. However, there is no direct linkage between DOC and the BU impairments. Generally, benthic algal biomass, pH, and dissolved oxygen concentrations indicated that the beneficial uses were supported. These analyses are based on small sets of data and will be further evaluated in the future.

Storm event data was collected at a Temporary Watershed Assessment Station for two storms in the rainy season 2007-08. Data collected indicated that fecal coliform, TSS, and turbidity were above Basin Plan water quality objectives. With the small set of data, no trend assessments are possible at this time. Nutrient concentrations appear to be below water quality objectives during the two storms monitored. The NNE assessments indicate that beneficial uses appear to be supported when looking at DO and pH, however the benthic algal biomass indicates that the WARM beneficial use may be impaired. At this time, the NNE assessments are based on a very limited set of data and will continue to be evaluated in the future.

High Priority Water Quality Problems
In determining the water quality problems in the City, several sources of information were used including current 303(d) listings (2006), recent watershed assessments, and current and historical water quality data from MS4 and receiving waters monitoring programs. In the coming year, it is anticipated that the 303(d) list will be updated to include several new listings as well as removal of several local listings.

Table 11.5 contains the 303(d) listings of impaired waters in the City of Vista and for the receiving waters downstream.

Table 11.5 Impaired Water Quality Limited Segments, City of Vista, 2006 303(d) List

Receiving Water	Hydrologic Unit/Area	Chloride	TDS	Bacteria	Nutrients	Sediment Toxicity	Sedimentation	DDE	DDT	Mn	Se	Sulfate
San Luis Rey River (SLR)	903	X	X									
Pacific Ocean at SLR outlet	903			X								
Loma Alta Slough (LAS)	904.1			X	X							
Pacific Ocean at LAS outlet	904.1			X								
Buena Vista Creek (BVC)*	904.2					X						
Buena Vista Lagoon (BVL)	904.2			X	X		X					
Pacific Ocean at BVL outlet	904.2			X								
Buena Creek (BC)	904.3				X				X			
Agua Hedionda Creek (AHC)	904.3		X							X	X	X
Agua Hedionda Lagoon (AHL)	904.3			X			X					
San Marcos Creek (SMC)	904.5				X	X		X				

*Shaded areas indicate primary watersheds in the City of Vista

Recent watershed assessments generally take into account the 303(d) listed constituents, as well as available water quality data. These assessments determine which of the identified water quality problems are high priorities for the watershed. These assessments are performed on a larger scale using available data collected in the regional monitoring programs and some dry weather data. Because of the complexity in the assessments, the conclusions may not always be accurate in representing high priority problems on a jurisdictional scale. The high priority water quality problems identified in the Watershed Urban Runoff Management Programs (WURMPs) are identified in Table 11.6.

Table 11.6 WURMP High Priority Water Quality Problems

Receiving Water	Hydrologic Unit/Area	Bacteria	Nutrients	Sedimentation
San Luis Rey River HU	903	X	X	
Loma Alta HA	904.1	X		
Buena Vista HA	904.2	X		
Agua Hedionda HA	904.3	X	X	X
San Marcos Creek (SMC)	904.5		X	

Comparing the two tables, the primary watersheds in the City of Vista (Buena Vista and Agua Hedionda) generally have identified bacteria, nutrients, and sedimentation as common high priority water quality problems.

The local water quality assessments presented above attempt to examine the data with respect to MS4 and Receiving Waters during ambient and wet weather (storm event) conditions. This closer look and better understanding of the data and data gaps may help guide programs in the future. The assessment this year focused on those problems identified in the Carlsbad WURMP. A summary of the results of this preliminary analysis are presented in Table 11.7. A yes means that there are data indicative of a problem related to the pollutant, a no means that the data collected does not appear to indicate a problem, and no data means that there is no data to guide a decision at this time.

Table 11.7 Local Water Quality Assessment Results

	Ambient			Storm Event		
	Bacteria	Nutrients	Sediment	Bacteria	Nutrients	Sediment
MS4	No	Yes	No	No Data	No Data	No Data
Receiving Water	Yes	Yes	No	Yes	No	Yes

All three pollutants are identified as a WURMP priority for Agua Hedionda Lagoon. This seems justified in that bacteria concentrations are generally elevated as compared to Rec-1 objectives, nutrients are generally elevated in the upper parts of the watershed in Buena Creek, and sedimentation is evident as observed through bed and bank erosion in Agua Hedionda Creek. These findings are consistent with those problems identified in the Agua Hedionda Watershed Management Plan (TetraTech, 2008) as well.

Although, only indicator bacteria is identified as a high priority water quality problem in Buena Vista HA in the WURMP, it may be appropriate to address all three pollutants. With evidence of eutrophication and sedimentation downstream in Buena Vista Lagoon, these pollutants are considered high priority water quality problems by the City.

To further these findings, local assessments indicate that under ambient conditions, nutrients tend to be problematic in the MS4 and receiving waters and bacteria appears to be problematic in receiving waters. Sedimentation does not appear to be a problem under ambient conditions. There is very little wet weather data available in the MS4, therefore no assessments are feasible at this time. Under wet weather conditions, it appears that bacteria and sedimentation are problematic in the receiving waters.

In summary, the City has identified indicator bacteria, nutrients, and sedimentation as high priority water quality problems, focusing on bacteria and nutrients during dry weather, and bacteria and sedimentation during wet weather. From the combined assessment, using impairment listings, watershed and regional assessments, and local water quality assessments, the City has selected bacteria, sediment, and nutrients as high priority water quality problems as presented in Table 11.8.

Table 11.8 City of Vista, High Priority Water Quality Problems

	Ambient			Storm Event		
	Bacteria	Nutrients	Sediment	Bacteria	Nutrients	Sediment
High Priority	Yes	Yes	No	Yes	No	Yes

11.2.4 Integrated Assessment

Integrating water quality assessments into programs is difficult as many BMPs and municipal program have not been linked to specific water quality problems. However,

certain focus can be gained with an understanding of the priority water quality problems in the City.

11.2.4.1 Bacteria

According to the assessment above, bacteria appears to be problematic during ambient and wet weather conditions. In order to focus efforts appropriately, each condition must be considered independently.

Under ambient conditions, experience shows that sources of bacteria are mostly related to illicit discharges. These range from sanitary sewer overflows to illegal washing. The City is presently beginning a sewer rehabilitation program to aggressively address infrastructure concerns related to the sanitary sewer. The City has also recently developed a FOG program, with inspections concurrent with stormwater inspections as food service establishments. Furthermore, the City responds to, contains, and cleans up after all reported sewer overflows, with very few reaching storm drains or receiving waters. Other illegal discharges are addressed via the complaint response program, with stormwater code enforcement staff aggressively enforcing the City's stormwater ordinances. With these programs in place, it is expected that the sources of dry weather bacteria will be minimized.

In the assessment of local data above, this is illustrated in Figure 11.7 which shows that the majority of samples collected in the MS4 under ambient conditions are below action levels. Data collected in receiving waters are compared to Rec-1 water quality objectives. Local ambient data suggests that bacteria concentrations in the creek, although mostly above water quality objectives, are much improved as the creeks flow from up to downstream. This suggests that ambient flows from the MS4 are having limited impacts on the receiving waters. However, the data sets in the receiving waters are limited at this time. In the future, data assessments should take into account Natural Loading Studies performed to quantify the amount of bacteria present in natural watersheds. In comparing this type of data to existing conditions in local watersheds, municipalities may gain a better understanding of their contributions to the bacteria loading.

Under wet weather conditions, i.e. storm events, the sources of bacteria are different. These sources may be more related to structural BMPs such as trash enclosures and overhead coverage of water containers, good housekeeping practices, animal waste disposal, and homeless encampment issues. The maintenance of the MS4 may also play a role in wet weather bacteria concentrations. With standards regarding trash enclosures, waste areas, and grease storage areas in place, the City has taken steps to ensure that these sources of bacteria are limited in new development. Existing development is addressed through inspections programs, including municipal, TCBMP, industrial commercial, and FOG inspections. Extensive outreach is performed to the community to educate pet owners on proper disposal methods. MS4 maintenance is performed at all facilities twice per year, including once prior to the rainy season. Other sources, typically beyond the scope of the stormwater program, including encampments and natural sources are difficult to reduce. These likely contribute significant loads of bacteria during wet weather.

Data has not been collected during storm events in the MS4, but receiving water concentrations typically exceed Rec-1 objectives. In the future, data assessments should take into account Natural Loading Studies performed to quantify the amount of

bacteria present in natural watersheds. This may assist City's in better understanding and managing their contributions to the bacteria loads.

11.2.4.2 Nutrients

According to the assessments performed above, nutrients appear to be predominantly a dry weather/ambient problem. It is suspected that the primary source of nutrients during dry weather is from nutrified groundwater. However, occasional nutrient contributions may come from fertilizer applications and from tailwater related to nurseries and agriculture. Programs in place to address nutrients during dry weather include outreach related to fertilizer applications, inspections of nurseries and agriculture, and general complaint response.

The consistency of nitrate concentrations collected under ambient conditions suggests the groundwater plays a significant role in nutrient loading. Several sites in the dry weather program are influenced by groundwater, suspected to be contributing to nutrient concentrations. The City will continue to verify this as a source. Data also indicates occasional illicit discharges contributing nitrate-nitrogen and ortho-phosphates. These are typically one time incidents that are eliminated as they are detected. The compliant response efforts are also vigilant for these types of discharges. In the future, as more data is collected and nutrient studies are performed at the Regional level, nutrient contributions to receiving water problems will be better understood.

11.2.4.3 Sediment

Local, watershed, and regional assessments have concluded that sedimentation is primarily a problem during storm events. Sources of sedimentation may include erosion of open space, stream beds and banks, construction sites, and residential areas. While open space sedimentation is not addressed, the City strives to address these sources in other areas. Erosion of the stream bed and banks are addressed by hydromodification requirements and low impact development and design. Additionally, the City may be able to perform a Creek restoration project along Agua Hedionda Creek in the future, pending grant funding. This will also address erosion concerns in the Creek. Erosion and sediment controls on construction sites are strictly enforced via routine construction site inspections. At this point, construction sites typically have extensive BMPs in place, reducing the potential for sedimentation. With the adoption of the new State General Construction Permit, these requirements will be further enhanced, also continuing to reduce the potential for sediment discharges. Residential areas are typically addressed through the complaint response program, with stormwater code enforcement staff maintaining vigilance for sedimentation concerns.

Data collected at the Mass Loading and Temporary Stations indicate that sedimentation rates are increasing. The City will continue to identify potential sources and address them where possible.

11.3 Program Review and Modification

11.3.1 Development Planning Component

The effectiveness assessment for this program component focused on the TCBMP program, as it is a new and developing program. Results showed that after two years of inspections, the program has been successful in ensuring that TCBMPs throughout the City are maintained and operating properly. However, because the program is relatively new, significant amounts of staff time have been expended focusing on outreach,

inspections, and follow-ups for these sites. In the future, the City should look for ways to develop a more efficient program while continuing to gain full compliance with its ordinances and the permit. It is expected that as the program evolves, efficiencies will be gained. Additionally, as inspection data is collected, it should be evaluated against the current prioritization criteria. This comparison will ensure that inspections are focused on BMPs that are the most problematic in regards to operation and maintenance, and BMPs that require less attention will be inspected less often. Ensuring adequate operation and maintenance of these BMPs is expected to reduce bacteria, sedimentation, and nutrient loading.

11.3.2 Construction Component

With the implementation of a new spreadsheet tracking tool in Fiscal Year 2008-09, the program was able to better track inspections and compliance information. In the coming year, it is anticipated that the inspections tracking will transition to an Accela database. The City's permitting and land development tracking system currently operates in Accela. Integrating the stormwater construction inspections into the rest of the land development software should be beneficial, allowing for better tracking and management of the inspections program.

As shown in the effectiveness assessment of this component, it appears that site compliance is directly related to pre-construction meetings. Beginning in 2005, stormwater staff began to attend pre-construction meetings, providing an opportunity for stormwater staff to give one on one site specific education related to the project. This practice will continue, with stormwater staff attending all pre-construction meetings in the future. With continued focus on construction inspections, impacts of sedimentation from construction sites should be minimized.

11.3.3 Municipal Component

Several new sets of data were tracked related to the municipal program this year. It is anticipated that as these data are compiled in future years, they will provide useful information related to effectiveness assessment of the component. In the coming year, the database used to track complaints will be modified to track those reported by City staff (proactive) and those from the public. Additional data will also be tracked to evaluate the effectiveness of the special events program. With continued efforts dedicated to MS4 cleaning, bacteria and sediment contributions will be addressed.

11.3.4 Industrial/Commercial Component

The industrial commercial program will continue to operate in compliance with permit requirements, ensuring that all high priority businesses and a minimum of 25% of the businesses on the inventory are inspected. During the coming year, the program will provide notifications of the site/source specific BMP requirements to each of the remaining facilities on the inventory that have not been inspected since the beginning of the permit. As indicated in the effectiveness assessment, several of the high priority facilities have stormwater violations from year to year. The program will evaluate methods to gain compliance at these facilities year round and improve the program to ensure that continued compliance in obtained. Improved compliance at these locations may reduce contributions of bacteria to the MS4, mostly during wet weather events.

11.3.5 Residential Component

The effectiveness assessment of this component is focused on the types of complaints related to residential activities. In comparing the types of residential complaints and

sources of pollution identified, it appears that the high priority activities listed in the JURMP are properly focused. In the future, the City may use this data to enhance its education and outreach to the residential community. Continued focus on pet waste, fertilizer management, and sedimentation issues will help to reduce the impacts of these pollutants from residential sources.

11.3.6 Education Component

The education component strives to educate a broad range of people regarding urban runoff and other environmental concerns. In general, the program appears to be effective at conveying the message to the targeted audiences. In the coming year, it is expected that more measures will be implemented to assess changes in knowledge resulting from the outreach. The program will also evaluate ways to improve the outreach to specific target audiences. For example, with the verified effectiveness of the pre-construction meetings, stormwater staff will ensure that they are present at all pre-construction meetings and may continue to develop the methods of outreach provided. Other methods of outreach to the underserved target audiences may also be evaluated, including outreach to citizens via bulletins and through the outreach component of the FOG program.

11.3.7 Public Participation Component

The City currently has several options for public participation in the program. In the coming year, the City will be reworking its website to make it more user friendly. These changes are expected to benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. With these enhancements, these stormwater hotline and email addresses will be better advertised. Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

11.3.8 Fiscal Analysis Component

The fiscal analysis component included an evaluation this year using the Standardized Method for Fiscal Analysis. While not required until the FY 2009-10 Annual Report, the City chose to utilize this level of analysis a year early to ensure that proper tracking mechanisms are in place prior to its mandatory implementation for FY 2009-10. It is expected that improvements to the tracking and budgeting system will be made this year to allow for an easier fiscal analysis of each component. With the collection of this first year of data, a baseline has been established and in the coming years, it is expected that year to year comparisons between programs and potentially some level of cost/benefit analyses will be feasible.

11.3.9 Effectiveness Assessment Component

The effectiveness assessment of the program will continue to evolve. As new methods of evaluation are developed, additional supporting data will be tracked. It is expected that as more water quality data is collected, better evaluations of MS4 and receiving water quality will be feasible. Where possible, relationships between program components, BMPs, and water quality will be evaluated, however at this time, these links are difficult to establish.

13.0 Effectiveness Assessment Component 13-1
13.1 Introduction 13-1
13.2 Effectiveness Assessment Approach 13-1
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13.0 EFFECTIVENESS ASSESSMENT COMPONENT

This section describes the City's approach to annually assessing the effectiveness of its Jurisdictional Urban Runoff Management Program (JURMP), in accordance with the requirements of Order R9-2007-0001 (Order).

13.1 INTRODUCTION

The requirements of the Order specify that the City shall annually assess the effectiveness of its JURMP implementation. At a minimum, this shall include an assessment of the effectiveness of each significant activity or BMP implemented, implementation of each major JURMP component (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination, and Education), and the overall JURMP. This section outlines the strategy that the City will use to assess the effectiveness of the JURMP to reduce the discharge of pollutants from the MS4 to the MEP, and to prevent urban runoff discharges from the MS4 from causing or contributing to a violation of water quality standards.

Assessment of the JURMP is a joint activity between multiple departments of the City. Direction on assessment measures and methods will be provided and based on assessment tables that list the required activities, targeted outcomes, assessment methods, and assessment measures. Assessment tables are included within each applicable JURMP section in this plan, and may be updated or revised in subsequent Annual Reports.

13.2 EFFECTIVENESS ASSESSMENT APPROACH

The City assesses its JURMP based on the framework set out in the San Diego Municipal Stormwater Copermittee document *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*. Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts to maximize resources. Like most management programs, the City uses assessment as part of an iterative feedback loop (Figure 13-1) involving (1) Planning, (2) Implementation, and (3) Assessment.

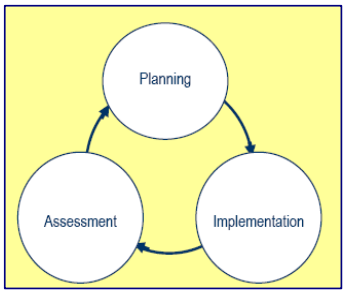

Figure 13-1. Iterative Program Management Process

The City will also assess the effectiveness of its JURMP in addressing the constituents of concern (COCs) which will be determined from various sources, including data from dry weather, MS4, and other monitoring programs, local §303(d) listed water segments, and best professional judgment. Areas of the Order that apply to the COCs may be pin-pointed, and additional data may be collected for these activities. Additionally, scientific literature may be used to help supplement information for the applicable activity assessment.

13.2.1 Implementation Assessment

The City will annually assess the implementation of its JURMP, components, and significant activities for compliance with the Order through the annual reporting process. Compliance assessment will follow assessment tables that identify targeted outcomes, assessment measures, and assessment methods.

JURMP compliance with the Order will be documented through a system of checks and balances broken down into the specific JURMP component sections. Compliance with the component sections of the Order will be compiled to show overall JURMP compliance.

Components of the JURMP will be assessed based on the assessment tables included within each Component section of the Annual Report. Refer to the individual component sections for the complete assessment tables.

Significant activities will be selected from the components each year to provide more information related to a COC. A minimum of one significant activity will be selected, and will be focused on an Order-required activity or BMP. When selecting a significant activity, questions and data needs will also be determined. The purpose of significant activity selection will be to collect additional information for use in answering questions such as BMP efficiency and activity effectiveness. Data may be collected in addition to Order requirements, or compiled from existing data sources or literature reviews.

13.2.2 Water Quality Assessment

Water quality assessment is an assessment conducted to evaluate the condition of non-storm water and storm water discharges, and the water bodies which receive these discharges.

As part of this assessment, the City will review available water quality data collected within the City, as well as other pertinent data that may be collected through watershed, regional, or TMDL programs. When sufficient data are available, these data will be evaluated annually and long-term to identify changes in water quality such as trends or comparisons between areas within the City.

The purpose is to evaluate these data and attempt to answer the following questions:

- What are the high priority water quality problems and where do they occur?
- What are the potential urban runoff sources from the City of Vista MS4 that may be causing or contributing to these problems?

13.2.3 Integrated Assessment

Integrated assessment is used to evaluate whether program implementation is properly targeted to and resulting in the protection and improvement of water quality. This assessment attempts to bridge the gap between implementation assessment and water quality assessment, and will be used to establish program priorities. Ideally, direct relationships could be established between load reductions from program implementation and improvements in water quality, but there are many confounding issues (other jurisdictional, watershed, and regional

BMPs implemented) and uncontrollable sources of pollutants to local receiving water (air deposition, geology, imported water, wildlife, natural erosion, groundwater, etc.) that would hinder this determination. While the majority of JURMP activities are required by the Order and cannot be deleted, the priorities and designation and assessment of significant activities may change based on changes of COCs. The primary question from this assessment is:

Are program activities properly targeted toward identified COCs in order to optimize pollutant loading reduction?

This information will then feed back into the program planning loop (see Figure 13-1) to annually review and set priorities.

13.3 Program Review and Modification

The JURMP program will be reviewed and modified annually or as needed to ensure compliance with the Permit. If any portion of the JURMP is determined to be out of compliance, steps will be taken immediately to modify the program to ensure future compliance. The following steps will be completed to help improve and modify the JURMP program (Figure 13-2).

Step 1. During the annual planning phase of the JURMP program, information collected through assessment will be used to update the list of targeted COCs within the City. This list will be re-evaluated periodically to give accurate direction for future significant activity selection.

Step 2. Based on the significant activity/BMP(s) selected for evaluation each year, management questions will be formed to address targeted COCs.

Step 3. Targeted outcomes, assessment methods, and assessment measures will be defined for each significant activity/BMP.

Step 4. The JURMP program and significant activities/BMPs will be implemented.

Step 5. Implementation Assessment will be performed by reporting compliance with the Permit.

Step 6. Information gathered through significant activity, program assessment, and other data sources will be used to determine, update and/or refine the COC prioritization list. This list will be used as the basis for significant activity selection during the following year.

In addition to the steps outlined in Figure 13-2, the City will also determine if re-allocation of resources is necessary to optimize pollutant reduction. During annual program review, the City will evaluate whether measurable targeted outcomes, assessment measures, and assessment methods adequately target COCs or management questions. If it is found that assessment data are difficult to obtain, or do not address the purpose of the activity, then outcomes, measures, and methods maybe adjusted as necessary.

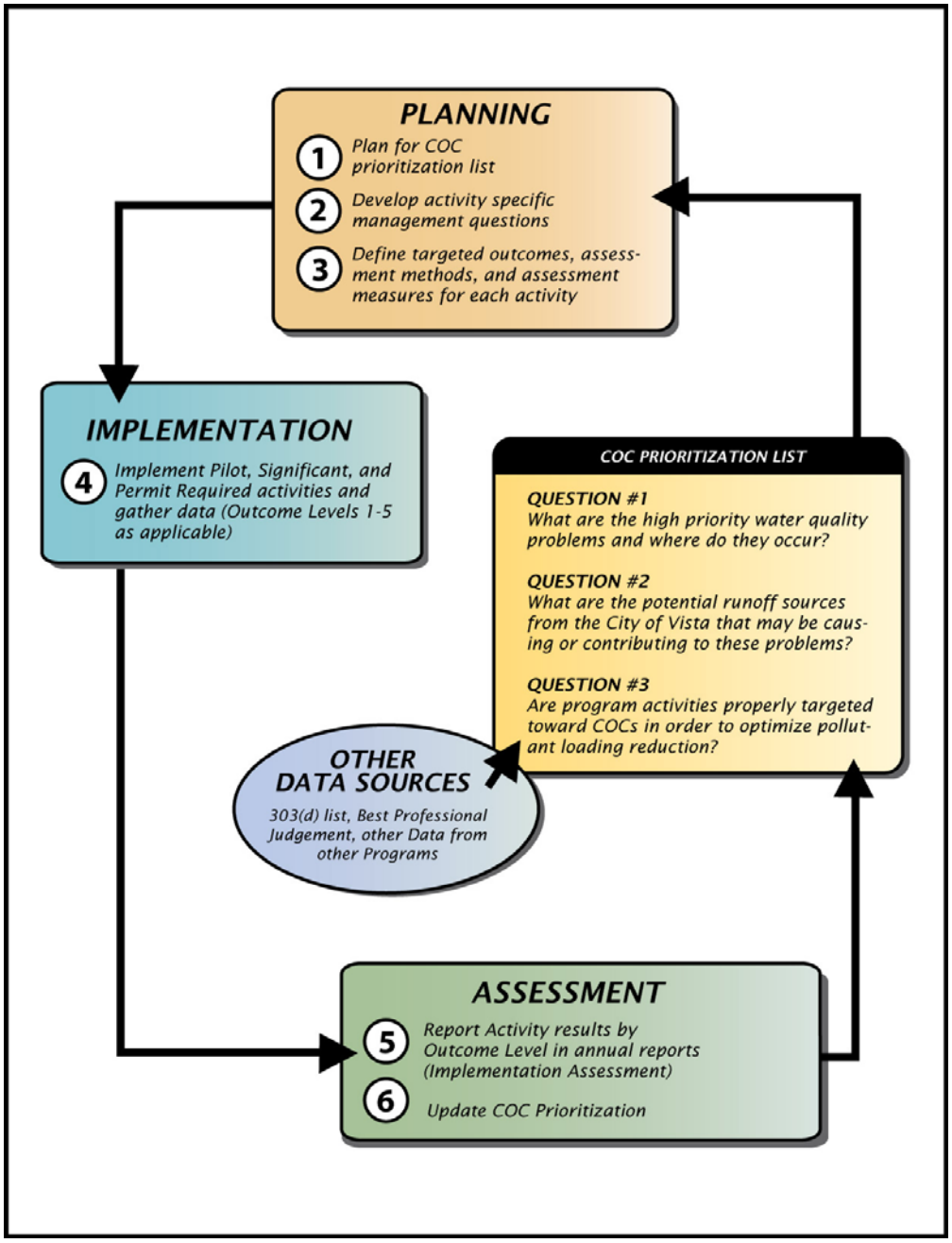

Figure 13-2. City of Vista Planning and Assessment Cycle

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Figure 2-1: City Of Vista Organizational Chart ..... **Error! Bookmark not defined.**

2.0 ADMINISTRATIVE AND LEGAL PROCEDURES

2.1 CITY ROLES AND RESPONSIBILITIES

The City of Vista is a charter city operating under a Council-Manager form of government. The City Council is the governing body of the Vista Municipal Government. The City Council is composed of four elected Council members who serve four-year terms and an elected Mayor who serves a four-year term. The City Council adopts City ordinances, and reviews and approves all major policy matters, fiscal concerns and City projects. Therefore, the Mayor and Council have important roles and responsibilities for complying with the Order, which are summarized below:

Mayor and City Council

- Adopt ordinance revisions to carry out new Order requirements
- Secure fiscal resources and approve budgets
- Provide public participation at City Council meetings
- Enter into formal agreements with Copermittees to define management structure, responsibilities, cost sharing, and decision making procedures for implementation of the Order
- Review and approve related policies and plans (SUSMP, JURMP, WURMP), as needed
- Sign reports or have principal executive officer sign in compliance with the signatory and certification requirements of 40 CFR 122.41(k)

Personnel from various City departments are involved in the implementation of the City's Jurisdictional Urban Runoff Management Program. The following is a list of departments, divisions, and sections within the City that conduct urban runoff related activities. Additionally, a diagram of all City departments can be found in Figure 2-1 at the end of this section.

City Manager

- Oversee implementation of JURMP across multiple departments
- Coordinate public participation and outreach information via the City's Communication Officer
- Sign and certify reports submitted to the RWQCB

Administrative services

- Assist with implementation of proper urban runoff controls through Special Event permits
- Provide information for JURMP Update and JURMP Annual Reports

Information Technology Services

- Oversee use of GIS and other databases for JURMP related purposes

City Clerk

- Maintain records applicable to previous and current JURMP implementation activities
- Process public record requests related to JURMP implementation

City Attorney's Office

- Draft and approve ordinances and assist with enforcement as needed
- Ensure and certify adequate legal authority

Engineering Department

- Water Quality Protection Program
    - Administer the Urban Runoff Management Program
    - Maintain inventory and conduct inspections and enforcement of industrial and commercial facilities
    - Responsible for enforcement of municipal areas and activities
    - Provide enforcement support for construction activities
    - Oversee illicit discharge detection and elimination program, including dry weather monitoring, investigation, enforcement, and hotline response
    - Assist with training of municipal personnel, and industrial and commercial facilities
    - Provide educational materials and outreach for various target audiences
    - Provide education for residents, general public, and school children
    - Maintain the treatment control BMP inventory and oversee maintenance tracking activities
    - Act as representative in Carlsbad and San Luis Rey Watersheds and several Regional Copermittee Management activities
    - Coordinate annual report preparation
    - Serve as liaison to City Departments regarding implementation of the Order and JURMP
    - Provide information for JURMP Update and JURMP Annual Reports
- Capital Improvement Projects (CIP)
    - Ensure that public projects meet new development standards
    - Update construction site inventory
    - Modify development requirements
    - Assist with treatment Control BMP maintenance tracking
    - Contribute to education and outreach for construction audience
    - Provide information for JURMP Update and JURMP Annual Reports
- Right-of-Ways
    - Maintain inventory of municipal facilities and areas
    - Provide information for JURMP Update and JURMP Annual Reports
- Sanitation Engineering
    - Design, review, and approve all publicly owned and maintained sewer infrastructure
    - Conduct plan checks and sewer permit issuance for private development connecting to the public sewer system

Community Development Department

- Planning
  - Update the City's General Plan and Environmental Review process
  - Ensure that land uses in the City comply with the City codes, General Plan, Council and Planning Commission policies, and state requirements
  - Contribute to education and outreach for new development and construction activities
  - Provide information for JURMP Update and JURMP Annual Reports
- Land Development
  - Modify development requirements as needed
  - Implement and update SUSMP
  - Maintain inventory of permits
  - Contribute to treatment control BMP maintenance tracking
  - Implement Hydromodification Plan (interim and final)
  - Assist with development site enforcement
  - Contribute to education for new development and construction activities
  - Provide information for JURMP Update and JURMP Annual Reports
- Land Development Inspection Division
  - Responsible for Ordinance and construction BMP updates
  - Maintain construction site inventory
  - Conduct inspections and regulate construction sites regarding erosion, sediment control and other site management activities
  - Report non-compliant sites
  - Conduct BMP verification
  - Contribute to education and outreach for construction audience
  - Provide information for JURMP Update and JURMP Annual Reports
- Building
  - Contribute to treatment control BMP maintenance tracking
  - Conduct development site enforcement for building activities
  - Provide education for new development and construction activities
  - Provide information for JURMP Update and JURMP Annual Reports

Public Works

- Administrative
  - Manage contracts for solid waste disposal and HHW activities
- Streets Maintenance
  - Administer street sweeping program
  - Provide education and outreach for municipal employees and contractors
  - Provide information for JURMP Update and JURMP Annual Reports
- Street Support
  - Operate and maintain the City's storm water system and structural controls
  - Conduct preventative maintenance
  - Manage pesticides, herbicides, and fertilizers as applicable
  - Provide education and outreach for municipal personnel and contractors

    - Provide information for JURMP Update and JURMP Annual Reports
- Wastewater Maintenance
    - Operate and maintain the City's sanitary sewer system
    - Respond to sewage spills and contain and clean up such spills to prevent or minimize discharge to storm drain systems
    - Provide education and outreach for municipal personnel and contractors
    - Provide information for JURMP Update and JURMP Annual Reports
- Fleet Maintenance
    - Implement facility BMPs
    - Contribute to education and outreach for municipal personnel
    - Provide information for JURMP Update and JURMP Annual Reports

Parks and Community Services Department

- Park Maintenance Division
    - Manage pesticides, herbicides, and fertilizer activities of staff and contractors
    - Implement BMPs at City Parks and facilities
    - Provide education and outreach for municipal personnel and contractors
    - Provide information for JURMP Update and JURMP Annual Reports
- Building Maintenance Division
    - Provides general, routine maintenance, and BMP implementation to select City-owned buildings
    - Contribute to education and outreach for municipal personnel and contractors
    - Provide information for JURMP Update and JURMP Annual Reports

Fire Department

- Implement BMPs at fire stations and during non-emergency activities
- Provide education and outreach for fire personnel
- Provide information for JURMP Update and JURMP Annual Reports

Finance Department

- Assist with business inventory though use of the business license database
- Provide Fiscal Analysis information for JURMP Annual Reports

City of Vista Organizational Charts for the departments listed above are presented in Appendix A-4.

JURMP Implementation across Departments

Successfully implementing a municipal urban runoff management program requires the cooperation of many different departments and personnel. Each department is responsible for implementing the urban runoff Order requirements for their activities. Because this Order is so comprehensive, impacting almost every City department, it is critical that the City Manager, who has authority over all departments, act as the lead to direct department implementation. The Department heads are responsible for the Order requirements to be carried out within their departments. The following are recommended steps to implement the elements of the program that apply to each department.

1. Approve and Confirm

The first step toward implementation is to approve the JURMP. The City Manager and department heads must approve and confirm that the department will implement the Plan.

2. Distribute

The second step is to distribute the JURMP to the affected divisions within the department with the appropriate transmittal requiring them to begin implementation. The department will distribute copies of the JURMP or applicable sections to all appropriate personnel.

3. Train/Develop Awareness

The department must schedule and ensure necessary training for all personnel engaged in activities covered by the JURMP. The department must maintain records of the personnel trained so that the status of the training can be reported annually.

4. Practice/Implement

The next step is to apply the practices, policies, and procedures to daily activities within the department. Personnel must be informed to apply the practices in the JURMP that are applicable to their activities.

5. Assess/Inspect/Review

Periodically, the department, Water Quality Protection Program, and/or outside contractors will assess and review the practices that the department has applied to its daily activities. They will record any practice that needs modification or any new practices, policies or procedures that should be adopted. Self-assessment and independent inspections or audits may be required and are important elements of the JURMP. Inspections will verify implemented practices and policies, and will assess program effectiveness.

6. Update

When needed to improve performance or ensure compliance, the practices and guidelines may be updated by the department or Water Quality Protection Program, and any changes will be reviewed and approved by the department. Once approved, the department will train employees on the new activities.

7. Report

The department will need to maintain their records and provide reports to the Water Quality Protection Program, as well as providing required information to the Regional Board on request (records must be maintained for at least 3 years). The Water Quality Protection Program will help compile reports for all City departments for annual report preparation, but the reports must be prepared by the responsible departments.

8. Certify

Each department will sign and return a statement of compliance along with the department's required reporting data to the Water Quality Protection Program in August of each year for annual reporting purposes. These statements will be provided to the City Manager for review, and the City Manager will provide a final signature prior to JURMP Annual Report submittal to the Regional Board.

2.2 LEGAL AUTHORITY

The City has established and maintains its legal authority to control pollutant discharges into and from its MS4 as specified in Section C.1 of the Order. The City will continue to ensure that it has the legal authority to require BMP implementation, to prohibit all identified illicit discharges which are not exempt pursuant to Section B.2 of the Order, to prohibit and eliminate illicit connections to the MS4, and to control the discharge of spills, dumping, and disposal of materials other than storm water to its MS4. Section 3 of this document provides more information on discharge prohibitions.

The City has local ordinances and Municipal Code sections that provide legal authority for enforcing urban runoff requirements. The primary ordinances relating to storm water and urban runoff requirements include the following:

- Municipal Code Chapter 13.18: City of Vista Storm Water Management and Discharge Control Program Ordinance
- Development Code Chapter 17.56: Grading and Erosion Control Ordinance

The above Ordinances are included in Appendix A-1 and A-2, respectively, of this document. The City also has litter and public nuisance ordinances, which are not specific to storm water but may in some cases be used to support JURMP implementation.

2.2.1 CERTIFICATION OF LEGAL AUTHORITY

The City Attorney for the City of Vista has prepared a letter certifying that the City has adequate legal authority to implement and enforce the requirements contained in 40 CFR 122.26(d)(2)(i)(A-F) and RWQCB Order No. R9-2007-0001. This letter is included in Appendix A-3.

2.2.2 ENFORCEMENT PROCEDURES

Compliance with the City's ordinances is determined through a variety of means, including inspections, responses to hotline calls, and the City's Dry Weather Monitoring Program. Where violations are observed, administrative and judicial procedures may be employed to ensure compliance with the City's requirements. The goals of the City's enforcement program are as follows:

- To educate the regulated community
- To encourage compliance with the laws and regulations within the regulated community
- To return violators to compliance in a timely manner to eliminate any threats posed due to non-compliance
- To initiate and conclude enforcement activities in a timely manner
- To penalize violators, as appropriate, and to deprive violators of any significant benefit gained from violations
- To prevent any business from having an unfair business advantage through non-compliance

- To treat similar facility owners and operators equally and consistently with regard to the same types of violations

The various administrative and judicial enforcement measures that may be employed by the City are described in the following sections.

2.2.2.1 Administrative Enforcement Procedures

The City typically employs a tiered, escalating enforcement system. However, the City reserves the right to apply stricter initial enforcement measures where significant non-compliance is noted or when the enforcement official otherwise believes there is a significant potential for the violation to have a negative impact on water quality, such as when a rain event is imminent. When an administrative enforcement measure is taken, the cited party may appeal through the process described in the City's Municipal Code. The following summaries provide more information about the administrative tools that may be used to enforce the City's storm water requirements.

Warnings

Minor violations are often corrected through voluntary compliance upon issuance of a warning. Warnings are documented by City staff. Education and voluntary compliance are typically used for first-time, minor violations, whereas more serious violations or continued non-compliance warrants a more aggressive and enforcement-oriented approach. Increasingly severe enforcement actions will be taken until compliance is achieved and any corrections have been made.

Serious violations or situations where an attempt has been made to educate a responsible party, but compliance is not achieved, requires a more aggressive and enforcement-oriented approach.

Notice of Violation

If the deficiency noted in the documented warning is not corrected by the designated time frame or the severity of the violation is such, that a warning is not strong enough, a written Notice of Violation may be issued describing the infraction to be corrected and the time frame for correction and for a follow-up inspection. A copy of the notice will be given to the violator and placed in the active case file. If the violation has been corrected to the satisfaction of City staff, it is documented.

Notice and Order to Clean, Test, or Abate

Written and/or verbal orders may be issued to perform work such as cleaning up spills or discharges, testing discharges, and mitigating discharges.

Administrative Citations

An administrative citation follows the format of a Notice of Violation, and includes a monetary penalty. Penalties start at $100 per violation and increase in accordance with the process described in the City's Municipal Code Chapter 1.13.

Cease and Desist Orders

Written and/or verbal orders may be issued to stop illegal discharges and/or remove illegal connections.

Public Nuisance Abatement

Violations that are deemed to be a threat to public health, safety, welfare or water quality may be identified as a public nuisance. If violations noted in written warnings are not corrected by the violator within a given time frame, an authorized enforcement official may abate any violation considered to be a public nuisance. City costs for pollution detection and abatement, if not paid in full by the discharger in addition to any other penalties, may be made a lien against the property in accordance with the abatement procedure. Costs for pollution detection and abatement may be recovered from the discharger in addition to any other penalties.

Enforcement of Contracts

If a contractor is performing work for the City of Vista, then the City may use the provisions within the contract for enforcement of non-compliance. Such contract provisions may allow the City to refuse payment, stop work (without time penalties), and/or revoke contracts if contractors performing activities do not comply with all appropriate permits, laws, regulations, and ordinances.

Stop Work Orders

Whenever work is being done contrary to the provisions of the City code or other requirements, a stop work order may be issued by the appropriate City official. Stop work orders prohibit further activity until the problem is resolved. The stop work order describes the infraction and specifies what corrective action must be taken. A copy of the stop work order is given to the owner or contractor and placed in the active inspection file. To restart work once a stop work order has been issued, the responsible party must request that the inspector re-inspect the site, to verify that the deficiencies have been satisfactorily corrected. Once the inspector verifies that the appropriate corrections have been implemented, activities may resume. Within 5 working days of the issuance of a stop work order for a construction violation, the issuing Division (Building or Engineering Inspection) will provide a copy of the stop work notice to the RWQCB.

Denial or Revocation of Permits

In severe cases of non-compliance or significant discharges relating to development and/or construction activities, the City can revoke the building or grading permits that a contractor is working under for the project or deny future permits on the project. The responsible party then needs to re-apply for permits and meet the requirements the City may have placed on the project before resuming the project.

2.2.2.2 JUDICIAL ENFORCEMENT PROCEDURES

In addition to employing administrative tools, the City may also enforce its storm water requirements through judicial procedures. Because such legal action is typically time consuming and expensive, the City generally does not pursue judicial enforcement measures unless administrative measures have not been effective in bringing about compliance, or the violation is severe such that additional penalties are warranted.

Civil Penalties and Remedies

The City Attorney is authorized to file civil actions and to seek civil penalties and/or other remedies to enforce the City's ordinances. There is no requirement that administrative enforcement procedures be pursued before such actions are filed.

Injunction/Abatement of Public Nuisance

The City may pursue enforcement by judicial action for preliminary or permanent injunctive relief for violations of its Ordinances or when the violation threatens to cause a condition of contamination, pollution, or nuisance.

Criminal Penalties

The assistance of a peace officer may be enlisted to arrest violators as provided in the California Penal Code (Ordinance 5, 5c and 5d, Title 3, Part 2). A citation and/or a notice to appear may also be issued as prescribed in the Penal Code (Ordinance 5c of Title 1376 3, Part 2 including Section 853.6 or as amended).

Figure 2-1 CITY OF VISTA ORGANIZATIONAL CHART

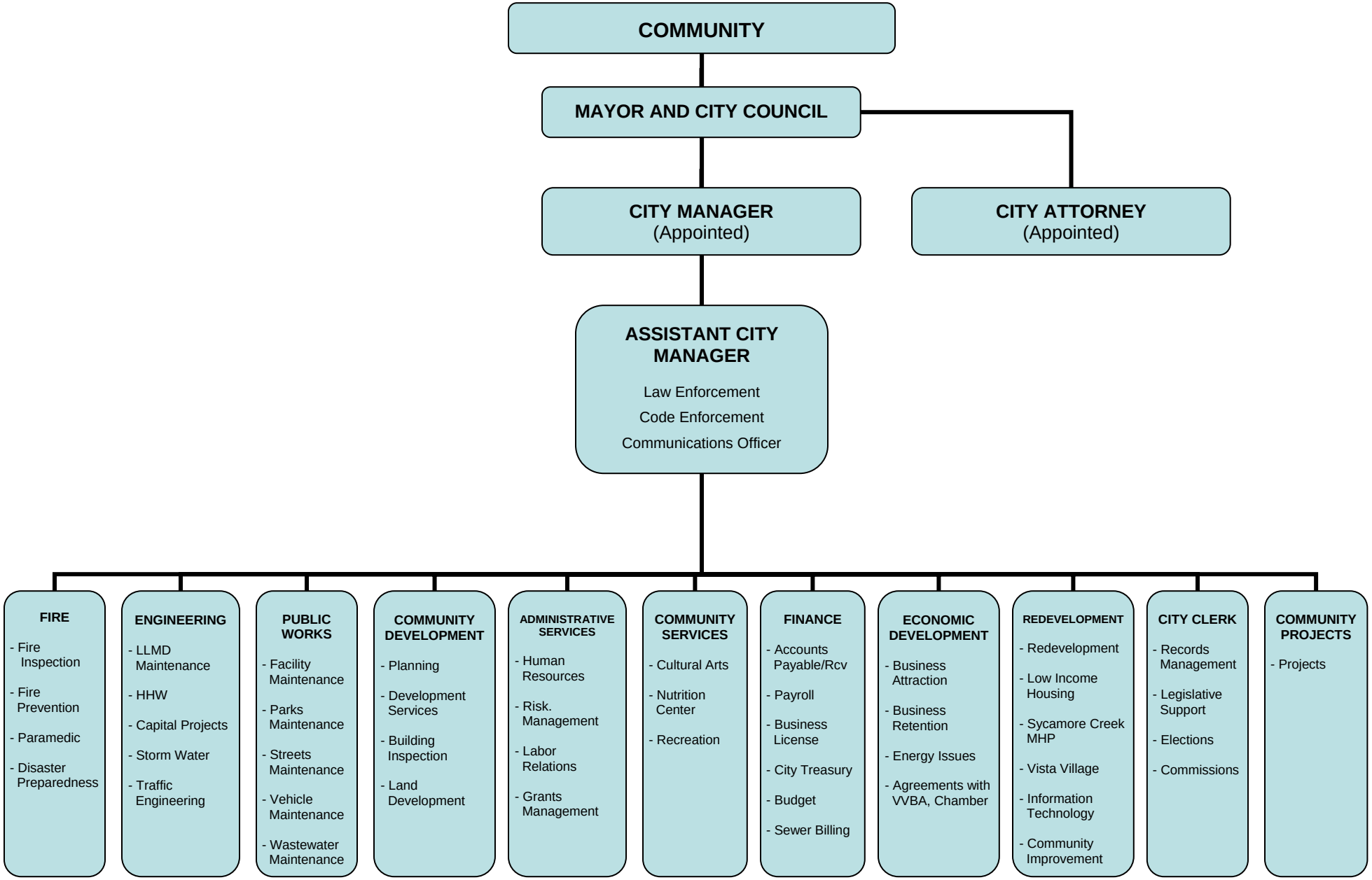

UPDATED 08/25/2008

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4.0 DEVELOPMENT PLANNING COMPONENT

4.1 INTRODUCTION

This section describes the responsibilities of staff with respect to implementation of the Development Planning Component of the JURMP. This program section is intended to: (1) reduce Development Project discharges of pollutants from the MS4 to the MEP; (2) prevent Development Project discharges from the MS4 from causing or contributing to a violation of water quality standards, and; (3) manage increases in runoff discharge rates and durations from Development Projects that are likely to cause increased erosion of stream beds and banks, silt pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.

The development planning process is a comprehensive process that includes planning, engineering, construction and post-construction phases. Each phase includes review, conditional requirements and verification that the requirements have been satisfied. The construction portion of the development process is described in Section 5.0 of the JURMP. Because the process weaves through various phases, there are several City Departments/Divisions involved in the development process, including, Planning, Land Development, Engineering, Construction Inspection and the Building Department. Figure 4-1 shows the relationship between the land development phases and the City departments involved. Department Organizational Charts are presented in Appendix A-4.

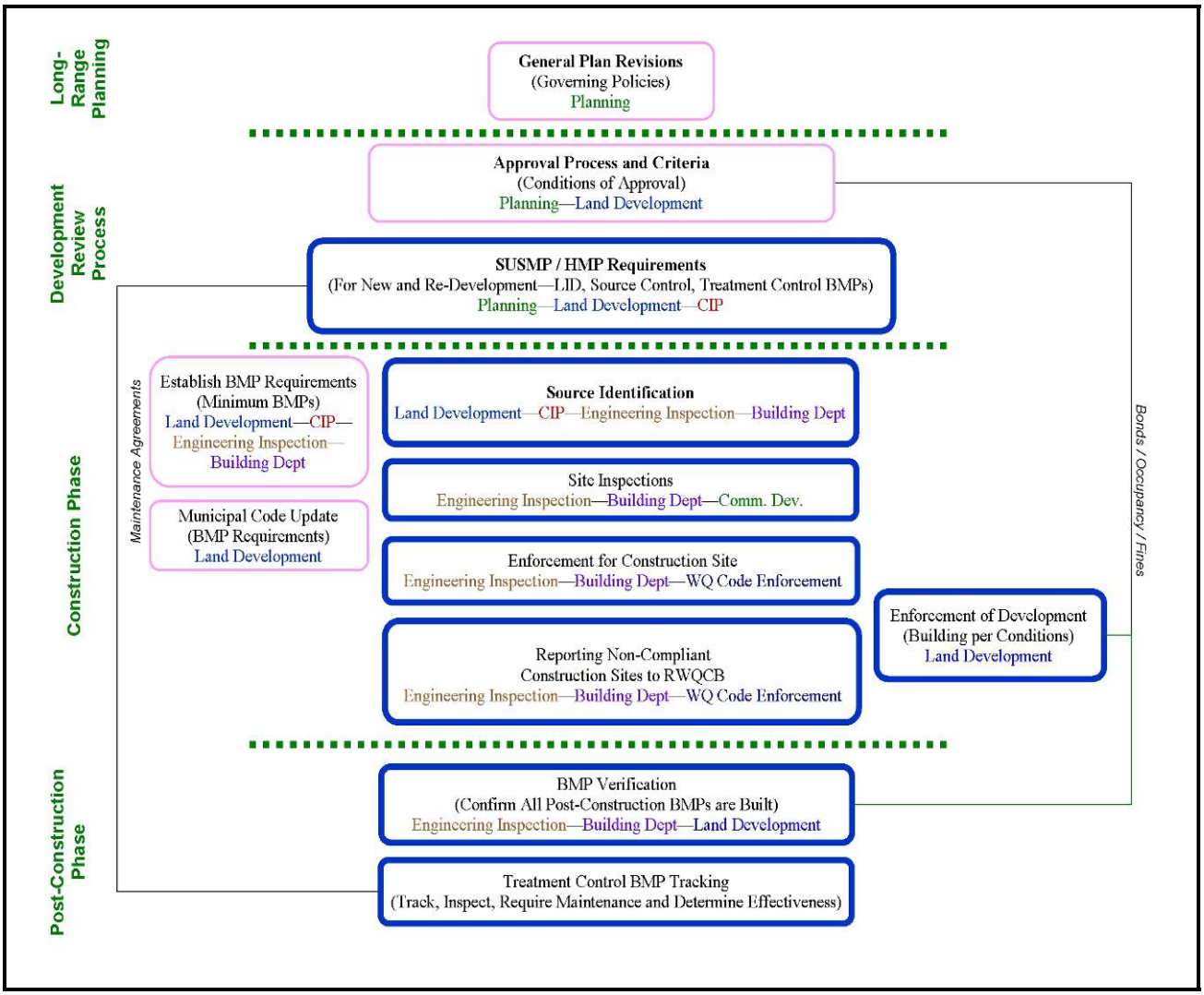

Figure 4-1: Land Development Phases

4.2 LAND USE PLANNING

4.2.1 BACKGROUND

The City is tasked with ensuring that land uses in Vista comply with City codes, the General Plan, City Council and Planning Commission policies, and state law requirements. Approval of projects through the planning process is required prior to issuing grading and building permits. The Planning Division also handles environmental review of public and private projects.

4.2.2 PROGRAM IMPLEMENTATION

The City relies on the General Plan to provide guidance for the conservation, development and utilization of natural resources within the City, including water resources. The main objectives of the Conservation Element are: to provide a safe and adequate water supply; prevent and control the pollution of streams and other surface waters; regulate the use of land near streams

and rivers to accomplish the City's conservation objectives; and control erosion of soils and shores. The Land Use Element identifies the general distribution and location of land for various uses, including residential, commercial, industrial, public, open space, and education. The Land Use Element also identifies general goals, objectives, and policies to direct land use decisions consistent with the City's plan for future development.

In June 2007, the City hired a consultant to perform a comprehensive review and update to the City's General Plan. The review and update will include updates to both the Land Use and Conservation Elements of the General Plan to include the following water quality and watershed protection principles:

(1) Minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and where feasible slow runoff and maximize on-site infiltration of runoff;

(2) Implement pollution prevention methods supplemented by pollutant source controls and treatment. Use small collection strategies located at, or as close as possible to, the source (i.e., the point where water initially meets the ground) to minimize the transport of urban runoff and pollutants offsite into an MS4.

(3) Preserve, and where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones. Encourage land acquisition of such areas.

(4) Limit disturbances of natural water bodies and natural drainage systems caused by development including roads, highways, and bridges.

(5) Prior to making land use decisions, utilize methods available to estimate increases in pollutant loads and flows resulting from projected future development. Require incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads and flows.

(6) Avoid development of areas that are particularly susceptible to erosion and sediment loss; or establish development guidance that identifies these areas and protects them from potential erosion and sediment loss.

(7) Reduce pollutants associated with vehicles and increasing traffic resulting from development. Coordinate local traffic management reduction efforts with the San Diego County Congestion Management Plan.

(8) Implement the San Diego Association of Governments' (SANDAG) recommendations, as found in the Water Quality Element of its Regional Growth Management Strategy.

(9) Post-development runoff from a site shall not contain pollutant loads which cause or contribute to an exceedance of receiving water quality objectives or which have not been reduced to the maximum extent practicable.

The current schedule for the General Plan Update is as follows:

Table 4-1: General Plan Schedule

Task Name	Start	Finish
Start-up Meetings	Mon 5/14/07	Fri 5/25/07
Public Outreach Program	Mon 6/4/07	Tue 2/2/10
Kick-off meeting with City Staff	Thu 6/21/07	Thu 6/21/07
(3) Kick-off Visioning Workshops	Mon 8/6/07	Fri 9/14/07
Visioning Workshop 1	Thu 8/16/07	Thu 8/16/07
Visioning Workshop 2	Thu 9/6/07	Thu 9/6/07
Visioning Workshop 3	Thu 9/13/07	Thu 9/13/07
1st Youth Visioning Session	Tue 9/18/07	Tue 9/18/07
2nd Youth Visioning session	Tue 10/16/07	Tue 10/16/07
(8) Stakeholder meetings	Mon 9/17/07	Mon 10/15/07
(3) Focused Issue Community Workshops	Tue 4/1/08	Fri 8/29/08
Community Workshop 1 - Land Use/Community Identity	Thu 4/17/08	Thu 4/17/08
Community Workshop 2 - Circulation	Thu 6/19/08	Thu 6/19/08
Community Workshop 3 - Open Space/Conservation/Community Health	Thu 8/28/08	Thu 8/28/08
Public Hearings for Plan Adoption	Mon 11/16/09	Tue 1/26/10
2 Public Hearings with Planning Commission	Tue 12/1/09	Tue 12/15/09
2 Public Hearings with City Council	Tue 1/12/10	Tue 3/2/10
General Plan Update Open House and Reception	Tue 3/16/10	Tue 3/16/10
Baseline Study	Mon 5/21/07	Wed 10/31/07
Preparation of Technical Analyses	Mon 5/21/07	Fri 9/28/07
Land Use	Mon 5/21/07	Fri 9/28/07
Geology, Soils, and Mineral Resources	Mon 5/21/07	Fri 9/28/07
Biological Resources	Mon 5/21/07	Fri 9/28/07
Hydrology and Water Quality	Mon 5/21/07	Fri 9/28/07
Cultural and Historical Resources	Mon 5/21/07	Fri 9/28/07
Noise	Mon 5/21/07	Fri 9/28/07
Air Quality & Climate	Mon 5/21/07	Fri 9/28/07
Aesthetics & Visual Resources	Mon 5/21/07	Fri 9/28/07
Transportation/Circulation	Mon 5/21/07	Fri 9/28/07
Hazards and Hazardous Materials	Mon 5/21/07	Fri 9/28/07
Other Issues (Recreation, Public Services/Utilities, Population and Housing)	Mon 5/21/07	Fri 9/28/07
Prepare Draft Baseline Study Document	Mon 10/8/07	Wed 10/31/07
Prepare General Plan Elements	Wed 1/2/08	Wed 12/31/08
Land Use Element, including Economic Analysis	Wed 1/2/08	Thu 8/7/08
Circulation Element – RBF	Tue 4/1/08	Fri 10/31/08
Open Space and Conservation Element – J & S	Tue 4/1/08	Fri 8/1/08
Community Health (Noise, Safety, Air Quality) Element – J & S	Fri 8/1/08	Fri 10/31/08
Draft GP Update	Mon 11/3/08	Wed 12/31/08
Final GP Update	Tue 12/1/09	Tue 3/2/10
Program Environmental Impact Report	Mon 1/5/09	Fri 10/30/09
Project Initiation/CEQA Document Scoping/Development of Project Description	Thu 1/15/09	Thu 1/15/09
Preparation of Technical Analysis for Administrative Draft PEIR	Mon 2/2/09	Thu 4/30/09
Prepare Administrative Draft PEIR	Fri 5/1/09	Fri 5/29/09
Internal Screencheck Reviews and Public Review	Mon 6/1/09	Fri 10/30/09
Revise and Submit Final PEIR, Findings of Fact and MMRP	Thu 10/1/09	Mon 11/30/09
Sphere of Influence Analysis and Feasibility Study	Tue 9/4/07	Thu 12/20/07

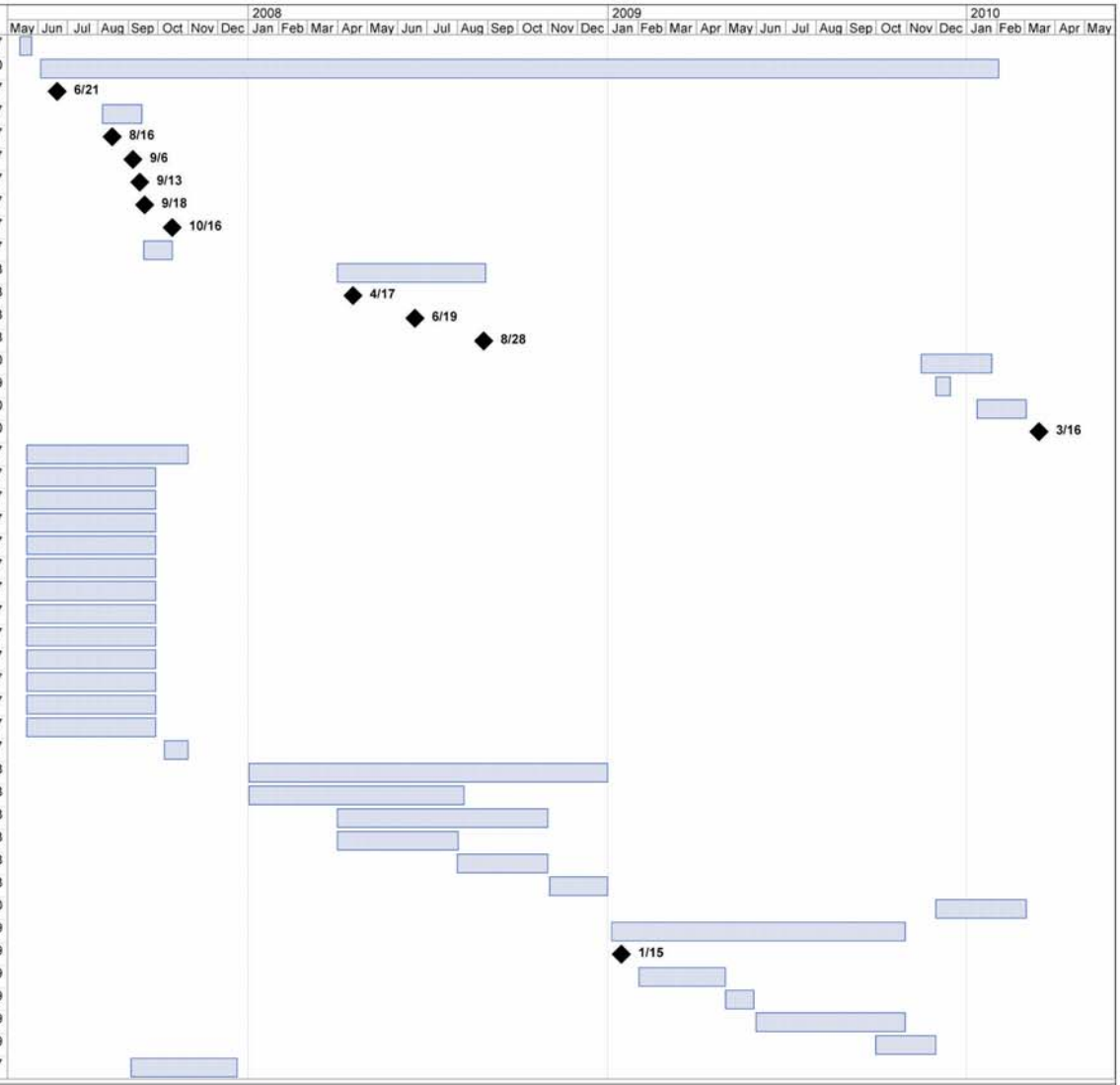

Project: City of Vista GP Update_EIR
Date: Thu 4/19/07

Task | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Milestone | Rolled Up Progress | Split | External Tasks | Project Summary | Group By Summary | Deadline

The City uses several BMP principles and tools to implement the requirements of the URMP in its land use planning process. These include:

- General Plan
- Municipal Code
- Standards Manual
- Standard Conditions of Approval
- Grading, Improvements, Building and Landscape Inspections
- Certifications, e.g., Occupancy
- Outreach to the Development Community
- Staff Training and Education

To address water quality issues, the development project approval process includes specific development project requirements and conditions of approval to address water quality issues.

The City of Vista has actively participated in revisions of the regional model Standard Urban Stormwater Mitigation Plan and development of the Hydromodification Plan that are required in the permit.

4.3 Environmental Review Process

As part of the permitting process for the Planning Division, a proposed project is required to undergo an environmental review pursuant to the California Environmental Quality Act (CEQA). CEQA requires that the lead agency (the City of Vista) prepare an Initial Study (CEQA Guidelines, Appendix G – Initial Study Checklist) to determine whether an Environmental Impact Report (EIR), Negative Declaration (ND), or a Mitigated Negative Declaration (MND) is prepared (see Table 4.2 for example of Hydrology and Water Quality Checklist). The determination is based on whether a proposed project would not have a significant effect on the environment (ND); could have a significant effect on the environment, but due to revisions and mitigation measures in project design would not have a significant impact (MND); or may have a significant effect on the environment (EIR). Based on the chosen environmental document, the City would require the project proponent to provide additional technical studies (e.g., air quality, hydrology, etc.) to analyze potential environmental impacts from project implementation. If mitigation measures are required to reduce potentially significant impacts to less than significant levels, the City prepares a Mitigation Monitoring and Reporting Program (MMRP) that identifies the measures, staff monitor(s), the timing of compliance, and date of compliance. The City also requires the project proponent's signature in the environmental document acknowledging the required mitigation measures. The MMRP and the environmental document (with project proponent signature page) are then incorporated into the project's conditions of approval.

Table 4-2: Initial Study Checklist Example

HYDROLOGY AND WATER QUALITY. *Could the project:*
a. Violate any water quality standards or waste discharge requirements, including but not limited to increasing pollutant discharges to receiving waters (Consider temperature, dissolved oxygen, turbidity, and other typical storm water pollutants)?
b. Have potentially significant adverse impacts on ground water quality, including but not limited to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial/increased erosion or siltation on- or offsite?
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site and/or significant adverse environmental impacts?
e. Cause significant alteration of receiving water quality during or following construction?
f. Cause an increase in impervious surfaces and associated runoff?
g. Cause potentially significant adverse impact on ground water quality?
h. Cause or contribute to an exceedance of applicable surface or ground water receiving water quality objectives or degradation of beneficial uses?
i. Is the project tributary to an already impaired water body, as listed on the Clean Water Act Section 303(d) list of impaired waterbodies. If so, can it result in an increase in any pollutant for which the water body is already impaired?
j. Create or exacerbate already existing environmentally sensitive areas (ESAs)?
k. Create potentially significant environmental impact on surface water quality, to either marine, fresh, or wetland waters?
l. Impact aquatic, wetland, or riparian habitat?

4.4 Development Project Approval and Verification Process

4.4.1 Source Characterization

Land Development in the City of Vista consists of various types of projects, ranging from single family homes to commercial and industrial projects. Considering that the City is near a build-out condition (93% build-out), the forecast for development includes relatively smaller in-fill projects as well as redevelopment projects.

Because Land Use Planning addresses all development projects, including municipal capital projects, essentially all pollutants of concern, sources and activities are addressed through this program component.

This component addresses the sources, activities and pollutants prior to their existence, therefore, the requirements and implementation of this component is of great importance.

4.4.2 Best Management Practice Requirements

Each land development project in the City must meet the minimum requirements of incorporating both site design and source control BMPs. Some projects are Priority Development Projects, per Order R9-2007-0001 (Section D.1.d.(1)) and require additional Treatment Control BMPs to be incorporated into the project.

The site design BMPs (a.k.a. Low Impact Development Site Design BMPs) are intended to mimic a project site's pre-project hydrology by using design features and elements to effectively capture, filter, store, evaporate, detain and infiltrate runoff within the development footprint.

Source control BMPs are intended to control the sources of pollutants – not allowing for the pollutants to come into contact with runoff or to be discharged from a development site. Source control BMPs are sometimes physical features and elements, however, they are often practices that are implemented to counteract or modify the actions taken by residents, businesses and employees that may cause pollution.

Treatment control BMPs are considered part of the tools available to treat runoff from developments that have been determined to be a threat to water quality, based on existing water quality conditions or the activities associated with the development. These BMPs are considered a necessary part of controlling pollutants from entering the receiving waters, however, emphasis should be placed on site design and source control BMPs.

The City, in cooperation with the other Copermittees under the San Diego Municipal Permit, developed and adopted a Model Standard Urban Stormwater Mitigation Plan (SUSMP) for the entire region that was collectively adopted by the Copermittees. Order R9-2007-0001 requires an update to the Model SUSMP and the City has participated in the updating process. The Model SUSMP was finalized and approved by the Regional Board in March 2009. Based on the updated Model SUSMP, the City is in process of updating it's local SUSMP.

The City's local SUSMP implementation document identifies specific post-construction LID site design, source control and treatment control storm water BMPs that must be incorporated into the Priority Development Projects. The City is in process of updating its local SUSMP implementation document, the Stormwater Standards Manual-Section G, to incorporate appropriate requirements in response to Order R9-2007-0001. The SUSMP/Stormwater Standards Manual-Section G provides information on selection and implementation of the LID site design, source control and treatment control BMPs.

In addition to the Model SUSMP update, the City has participated in the development of the regional Hydromodification Management Plan (HMP). The HMP, like the SUSMP document, will require that development projects incorporate BMPs into their design to maximize infiltration and mimic pre-project hydrologic characteristics. Once the HMP is complete and acceptable to the RWQCB, the City will revise its JURMP and Stormwater Standards Manual to reflect the HMP requirements.

4.4.3 PROGRAM IMPLEMENTATION

The City relies on its Grading and Stormwater Runoff Control and Drainage codes as the foundation for its development planning implementation. The Municipal Code requires new development and significant redevelopment projects to incorporate into their project plans and specifications, stormwater best management practices to control stormwater pollution and potential impacts to downstream channels from erosive flows.

The development process is comprehensive in that it encompasses planning, engineering and building plan check, construction and inspections and final verification of construction in accordance with permit requirements. Figure 4-2 below provides a broad overview of the City Development Process, and the text describes this process.

If a project is determined to be a Priority Project, the SUSMP treatment control BMP requirements become a requirement of the project. Figure 4- is a flow diagram that explains the City's current process for Implementation of the SUSMP requirements.

The City has developed a database to track the information required of the Treatment Control BMP Maintenance element of the program. Initial project information is tracked in the early planning phases of the project. As more definitive data and information is developed, it is incorporated into the database for tracking and inspection purposes.

City Development Process

Pre Application Meeting (if requested)

Planning Application Submittal
(Site Plan, Plot Plan, Special Use Permit, Minor Use Permit, Tentative Subdivision Map, Tentative Parcel Map)

Letter of Incompleteness (if applicable)

Re-submittal of Complete Application

Environmental Review (if required)

Discretionary Decision – Conditions of Approval
(City Planner, Zoning Administrator, Planning Commission, City Council)

Engineering Plan, Landscape Plan and Planning Final Mylar Submittal
(Final Map, Grading Plans, Improvement Plans to Engineering,
Landscape Plans and final Mylar to Planning)
NOTE: Water and Utility Plans should be submitted to service providers

Engineering Plan, Landscape Plan and Planning Final Mylar Check Processes

Final Map Approval, Improvement Plan Approval, Grading Permit Issued,
Improvement Bonding, Landscape Plan Approval, Planning Final Mylar Approval

Submittal of Building and Finish Grading Plans

Building and Finish Grading Plans Checked

Pre-Construction Meeting Held

Engineering Inspections

Rough Grading Approval

Building and Finish Grading Permits Issued

Planning, Landscape, Engineering, Fire, Building and Treatment Control BMP Inspections

Fire Department Annual Permits

Building Final / Meter Release / Certificate of Occupancy

Fire Inspections

Submittal and Approval of As-Build Engineering Plans

Bond Release

Figure 4-2: City of Vista's Current Development Process

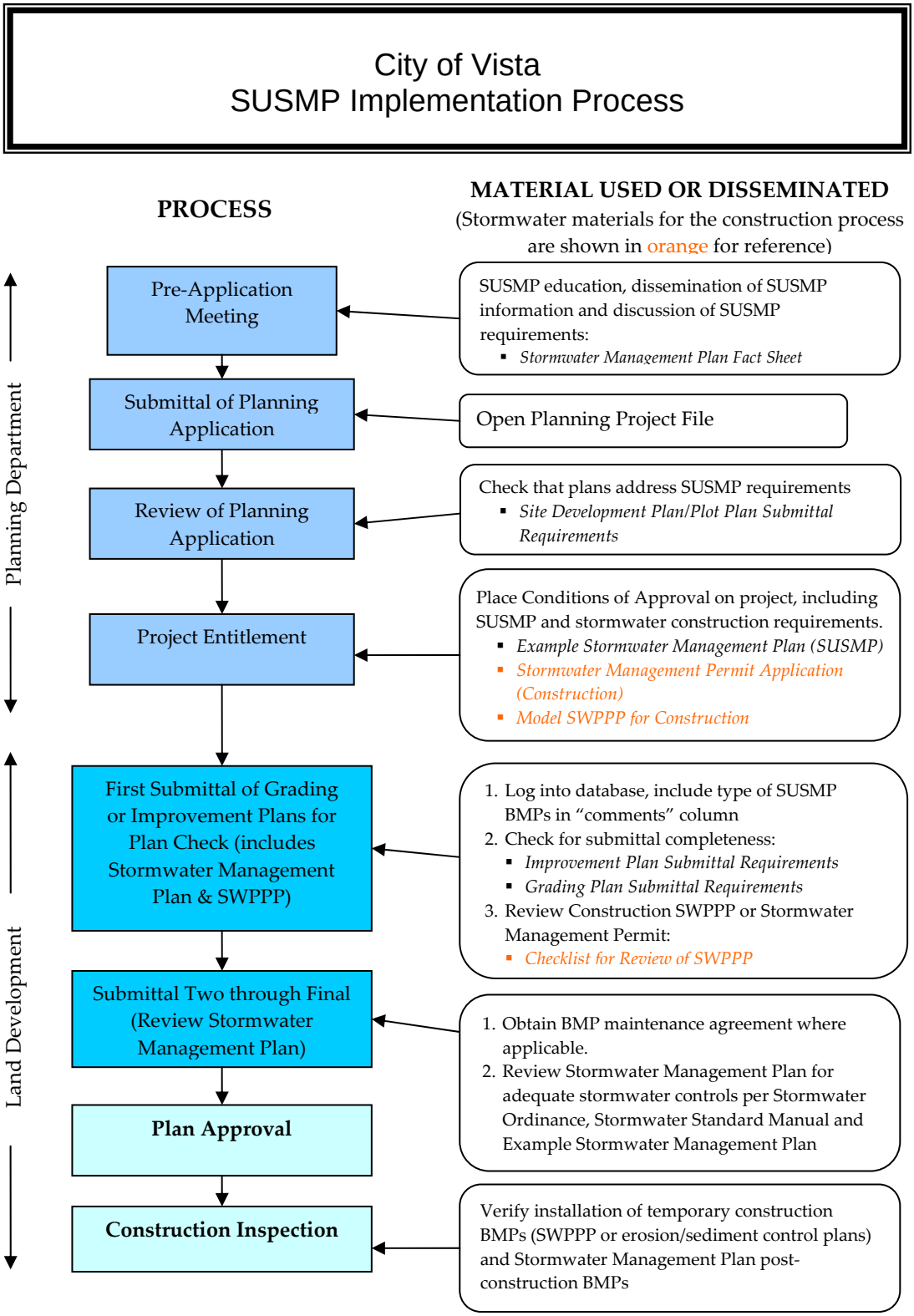

Figure 4-3: City of Vista's SUSMP Implementation Process

4.4.3.1 PLANNING PHASE

During the planning phase, the applicants submit a project application. Sometimes a pre-application meeting is held in which City staff explains the stormwater requirements. If a pre-application meeting is held, it is typically at this point where it is determined whether the project is a Priority Project that requires treatment control BMPs.

Project conceptual plans are proposed to the City Community Development Department (Planning Division) for preliminary review and/or processing. At this point the project needs to include the appropriate documents for the project application to be deemed complete. These documents include the following which can be found in Section G of the City's Stormwater Standards Manual, included in Appendix C of this document.

- Priority Project status (SUSMP – treatment control required?)
- Urban Runoff Threat Assessment Form
- If necessary - Preliminary Water Quality Technical Report (WQTR)

Planning maintains coordination with the project proponent throughout the permitting process. Planning reviews the conceptual project, the existing and proposed General Plan and Zoning designations, and informational studies, and determines the level of review process – staff level, Planning Commission or City Council. Several departments, including Planning, Building, Engineering, Public Works, and Fire review the conceptual plans for various issues, including impacts to water quality as a result of the proposed land use and construction. The various departments provide Planning with specific project conditions for permit approval that address project issues, including water quality. A list of the current standard conditions of approval can be found in the Stormwater Standards Manual in Appendix C.

The governing bodies provide conditional approval to acceptable projects for the applicable permit. Once a project has been conditionally approved, the project proponent begins the plan check process.

4.4.3.2 PLAN CHECK PHASE

During the plan check phase, the project proponent submits plans and studies that describe the proposed project in detail. Several departments review the projects for conformance with the conditions of approval, engineering, zoning, public right-of-way, building code and other issues. Once the plan check process is complete and the project plans are approved for all of the applicable permits, the permits are issued and construction of the project may begin.

This part of the process includes the submittal of the final Water Quality Technical Report (WQTR) that demonstrates that all required site design, source control and treatment control BMPs have been incorporated. The specific requirements of the WQTR are provided in the City's Stormwater Standards Manual (Appendix C). All treatment control BMPs will be assigned a priority level based on the criteria and process described in the Stormwater Standards Manual. This priority level is used for the purposes of determining the frequency at

which the treatment control post-construction BMPs are inspected for maintenance and effectiveness.

The City has adopted an approach for ensuring verification that all permanent post construction BMPs are constructed per the requirements of the approved plans. To ensure that all permanent post construction BMPs for a particular project are installed/constructed at the conclusion of the project, the City is requiring developer preparation of a single plan BMP sheet as part of the plan submittals. An AutoCAD template of the BMP sheet can be found at www.cityofvista.com or http://www.cityofvista.com/departments/communitydev/forms.cfm.

The single plan BMP sheet will include a site plan of the project calling out the location of each required LID site design, source control and treatment control BMP. In addition, the plan will contain a matrix listing of the required BMPs cross referenced with a list of the specific construction drawing sheet where the specified BMP construction is detailed. A copy of the single plan BMP sheet will be attached to each construction drawing set (building, mass grading, finished grading, improvements, and grading) highlighting the BMPs.

At the conclusion of project construction, before occupancy permits are granted or construction securities are returned, a City inspector(s) will make a final inspection of the construction site using the single plan BMP sheet to verify installation of all required BMPs for the project. The City also requires that the Engineer of Work provide a certification that all BMPs were installed per approved plans.

4.4.3.3 Construction Verification Process (Prior to Occupancy and release of Bonds)

Construction Inspectors in the Land Development Division inspect the construction and installation of BMPs that are associated with engineering permits (grading permits and public improvement permits) and Capital Improvement Program (CIP) projects. The Construction Inspectors review the projects for compliance with the water quality requirements for the project and the storm water ordinances. For Capital Improvement Projects that are Priority Development Projects, enforcement may include withholding operational acceptance or notification of completion until it is verified that post-construction BMPs are installed.

Building Inspectors in the Community Development Department inspect the construction and installation of BMPs that are associated with private development that requires a demolition or building permit. For Priority Development Projects that are private developments, the Certificate of Occupancy will not be issued unless the BMPs have been inspected and signed off as being constructed properly.

Prior to certifying a project ready for occupancy (one of the final project releases) or returning the applicant's bonds, the City will verify that each post-construction BMP that was to be incorporated has been constructed/implemented. Based on the single plan BMP sheet approach described above, Land Development Inspection and the Building Department Inspection will have key items to review and confirm their construction on the plan sheet itself.

4.4.3.4 POST-CONSTRUCTION PHASE

Treatment Control BMP Maintenance Tracking

The City will implement a watershed-based database to track and inventory treatment control BMPs and treatment control BMP maintenance within the jurisdiction. The database will be used to verify that treatment control BMPs are regularly maintained by the responsible parties. All treatment control BMPs will be prioritized based on treatment efficiency; the BMP priority shall determine the inspection frequency.

The information for the database is to be collected throughout the development process starting during development review and completing during the construction verification process. The information to be collected and entered into the database includes:

1. Site Identifier
2. Project Name
3. Geographic Location (northing and easting)
4. BMP Type (CASQA identifier)
5. BMP Description (general type description)
6. BMP detail (specific type description)
7. BMP Manufacturer, if applicable
8. BMP Model No. or manufacture code if applicable
9. BMP installation date
10. Inspection frequency
11. Maintenance frequency
12. Maintenance agreement, if provided
13. Watershed
14. Responsible Party
15. Responsible Party address
16. Responsible Party telephone number

A TCBMP project is logged into the inventory once the project status becomes "As-Built". "As–Built" status indicates that the Grading Plan has been signed off by a City official verifying that all approved post-construction BMPs have been installed.

As required under Order R9-2007-0001, the City is to prioritize all projects with approved TCBMPs into high, medium, and low categories. TTWQ ratings are given to projects sites that are on the City's TCBMP inventory.

In order to prioritize the projects, a Project scoring matrix was developed. This process involves five different variables (location of site, drainage route, pollutants anticipated to be generated, TCBMP type, and BMP quantity) each with different scoring criteria. The scoring matrix places an emphasis on site location and recommended maintenance frequency. Scores from each field were totaled and placed into high, medium, or low prioritization categories. As required in

Order R9-2007-0001, sites with drain inserts, received at least a medium priority rating. The Project scoring matrix is shown in Table 4-3.

Table 4-3 – Project scoring matrix

Score	Location of site	Drainage route	Pollutants anticipated to be generated[1]	TCBMP type[2]	BMP quantity	O&M problems[3]
1	Not within 200′ of any water body	Not tributary to a water body	Receiving water bodies on 303(d) list for different pollutant	Highest BMP type rating is 'Low'	1 BMP per site	N/A
2	Within 200′ of any non 303d listed water body	Indirectly tributary to a water body, commingled	Secondary, tertiary, quaternary, etc., receiving water bodies on 303(d) list for same pollutants	Highest BMP type rating is 'Medium'	2 to 4 BMPs per site	N/A
3	Within 200′ of a 303(d) listed water bodies	Directly tributary to a water body	Primary receiving water body on 303(d) list for same pollutants	Highest BMP type rating is 'High'	5 or more BMPs per site	N/A

[1] City of Vista Stormwater Standards Manual – Table G-2, Anticipated and Potential Pollutants Generated by Land Use.

[2] Data obtained from Table 4-4

[3] O&M problems criteria was not used in FY 08-09. As O&M problems are identified in future years, the City may use this criteria in its scoring system.

The parcels of each project are mapped in GIS to determine the following:

- Primary, secondary, tertiary, etc., receiving water bodies of each project
- Distances to receiving water bodies
- Storm water drainage routes to water bodies

The receiving water quality and likely pollutants of the site are determined by referencing the following:

- The 2006 San Diego Regional Water Quality Board 303(d) list
- City of Vista Stormwater Standards Manual – Table G-2, Anticipated and Potential Pollutants Generated by Land Use Type.
- DMax Commercial/Industrial Pollutant List

A second scoring matrix (TCBMP type – Table 4-4) was developed to determine the individual priority rating for each TCBMP type. This scoring matrix places an emphasis on maintenance frequency requirements. Information for Table 4-4 was obtained by referencing the CASQA BMP handbooks as well as experience from field inspections.

Table 4-4 – TCBMP type scoring matrix

Score	TCBMP Size	Maintenance Frequency	TCBMP Potential Pollutants
1	Small	Less than annually	Low
2	Medium	Semi-annually to annually	Sediment
3	Large	Quarterly to semi-annually	Sediment and/or Bacteria
4	--	Monthly to quarterly	--
5	--	Weekly to monthly	--

Once the total scores are obtained for each scoring matrix, the different low, medium, and high ranges still need to be determined. This is an iterative process of setting the boundaries and assessing the results. The final ranges of the scores were those that most appropriately distributed the different TCBMP types or projects among the various prioritization categories.

The results for prioritizing the individual TCBMP types (using Table 4-3) are shown in Table 4-5. TCBMP types that require a greater amount of maintenance received the highest priority ratings.

Table 4-5 – TCBMP type prioritization results

TCBMP Type	CASQA I.D.	TCBMP Size	Maintenance Frequency	Potential Pollutants	Total Score	Priority Rating
Manufactured Wetland	(MP-20)	2	2	1	5	Low
Manufactured Media Filter	(MP-40)	2	4	2	8	High
Wet Vault*	(MP-50)	2	2	3	7	Medium
Vortex Separator*	(MP-51)	2	2	3	7	Medium
Drain Inserts*	(MP-52)	1	5	2	8	High
Infiltration Trench	(TC-10)	2	3	2	7	Medium
Infiltration Basin	(TC-11)	2	3	2	7	Medium
Retention/Irrigation	(TC-12)	2	4	1	7	Medium
Wet Ponds	(TC-20)	3	3	1	7	Medium
Constructed Wetlands	(TC-21)	3	3	1	7	Medium
Extended Detention Basin*	(TC-22)	3	2	2	7	Medium
Vegetated Swale*	(TC-30)	2	3	1	6	Low
Vegetated Buffer Strip	(TC-31)	2	3	1	6	Low
Bioretention	(TC-32)	2	4	1	7	Medium
Media Filter	(TC-40)	2	4	2	8	High
Water Quality Inlet	(TC-50)	2	1	1	4	Low
Gravel Swale*	N/A	2	2	1	5	Low
Underground Det. Sys.*	N/A	3	1	3	7	Medium
Porous Pavement*	N/A	2	2	1	5	Low

*TCBMP on Vista's TCBMP inventory

The results from prioritizing each individual TCBMP project (using Table 4-5) are reflected in the TCBMP inventory in each Annual Report. As a result, 14 projects were rated high, 27 rated medium, and 13 rated as low. Out of the 35 projects that had drain inserts, 12 were rated high. All sites within 200' of a 303(d) listed water body, or directly discharged to any water body, were rated as high priority. 67% of all sites anticipated to generate pollutants that match the 303(d) listed impairment of the site's primary receiving water body were rated a high priority.

Annual Inspection Program

The BMP priorities are determined during the plan-check phase and based on the efficiency of removal for the pollutants of concern for the project. The City will inspect treatment control BMPs on the following schedule:

- High Priority – 100% of BMPs Inspected Annually
- Medium Priority – 50 % of BMPs Inspected Annually
- Low Priority – BMPs will be Inspected on an As-Needed Basis

The City will review its inventory and projects approved each year with treatment controls. At a minimum, the City will inspect 20% of the total number of projects with treatment control BMPs and a maximum of 200% of the average number of projects with treatment control BMPs approved per year. These inspections will be completed prior to October 1st each year.

The inspection process will include records review prior to a site inspection. The inspector will review the site for the following:

- Properly maintained BMP
- Effective operations of the BMP(s)

A copy of the proposed inspection form is included in Appendix D-4.

Annual Verification Program

The City has developed an annual verification of effective operation and maintenance of constructed treatment control BMPs. It is anticipated that there will be a learning curve for responsible parties as they have not been required to provide verification as to the maintenance and operation of the treatment control BMPs within their purview. The City will likely cooperate with the responsible parties for the first year of the verification program implementation.

The City's treatment control BMP verification program will utilize the following steps to verify the effective operation and maintenance of each treatment control BMP constructed under the City's SUSMP process:

1) Utilize the treatment control BMP inventory to create a list of sites, responsible parties, addresses and the associated BMPs.
2) Annually mail out a verification form to be returned to the City. The form will include the following information:

a. BMPs to verified

b. Description of maintenance taken during previous year

c. Requirement to supply information to demonstrate maintenance and/or operating status (vendor invoices, photos etc.)

d. Certification from the responsible party that the BMP(s) were maintained and are operating

3) In the event that a responsible party does not respond, a Notice of Violation will be issued and sent with a second notice to the responsible party.

4) In the event that there is no response to the second notice and NOV, the City will issue a citation and follow the enforcement actions required in Section 2.

4.4.3.5 ENFORCEMENT

The City has several mechanisms for enforcing land development activities. In general, enforcement actions related to land development may be necessary if project proponents are not fulfilling the requirements of their project conditions of approval or permit. The following are the mechanisms along with a brief description as to their applicability that the City has available for land development activity enforcement:

- Withholding Permit
- Withholding Occupancy
- Bonds

Prior to permit issuance, the City will deny permit approval until all urban runoff requirements have been met to the satisfaction of the discretion authorized by the City.

Once a project has been permitted, the City has two mechanisms available to enforce the development requirements, withholding the occupancy and calling bonds that have been established for the project. By withholding occupancy, the City has rendered the property illegal to use. If use does occur at the property, the City can utilize other enforcement mechanisms as described in Section 2 to enforce the withheld occupancy. Bonds are issued to project developers to ensure that City requirements are fulfilled. In the event that the City is not satisfied with the fulfillment of the requirements, the City may call for the bonds. Typically, this costs the developer money as well as diminishes their credit rating and therefore it can be used as leverage to obtain action by the developer to fulfill the requirements.

Municipal Code 17.88 also provides for enforcement actions for violations of the provisions of the Subdivision Map Act or of City ordinances related to development.

When non-permitted grading activities are discovered, the City takes action to immediately stop the illegal grading activities and implement appropriate BMPs to prevent erosion and sediment discharges. The Land Development division sends a letter to the property owner to inform them that a grading permit is required. Additionally, the Water Quality Protection

Program Code Enforcement Officer uses general enforcement mechanisms to bring the site into compliance with erosion and sediment control BMPs.

4.4.3.6 EDUCATION AND TRAINING

As a part of the Development Planning component, the City will conduct staff training and educate the development community, which may include applicants, developers, contractors, property owners, community planning groups and other responsible parties. In general, this program will consist of both formal and informal education regarding specific requirements, BMPs and issues related to land development activity in Vista. The City's comprehensive education program is described in further detail in Section 10.0 EDUCATION of this document.

4.5 EFFECTIVENESS ASSESSMENT

The JURMP effectiveness assessment strategy is detailed in Section 13 of this document. An annual assessment of this entire component and significant activities will be conducted in accordance with this strategy with results detailed in Annual Reports. Table 4- below lists items that will be tracked and reported in accordance with the Order.

Table 4-6: Annual Report Tracking and Assessment

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
General Plan, Environmental Review Process	1	Confirmation	Y/N	Description of any amendments to General Plan, environmental review process, development project approval process or development project requirements
Approval Process Criteria and Requirements for all Development Projects	1	Confirmation	Y/N	Text confirming that BMPs were approved using the BMP approval process, and how they were tracked
Standard Urban Storm Water Mitigation Plans SUSMPs	1	Confirmation	Y/N	List of development projects to which SUSMP requirements were applied
	1	Confirmation	Y/N	Text confirming that all applicable SUSMP BMP requirements were applied to all priority dev projects, include description of how tracked
	1	Confirmation	Y/N	Narrative of at least one example of a project conditioned to meet SUSMP requirements, and description of required BMPs

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
	1	Confirmation	Y/N	A list of any priority projects allowed to implement low removal efficiency BMPs, include feasibility analyses
	1	Confirmation	Y/N	A list of any projects which received a SUSMP waiver and a description of implementation of any SUSMP waiver mitigation program
Treatment Control BMP Maintenance Tracking and BMP Verification	1	Confirmation	Y/N	Updated treatment control inventory
	1 3	Confirmation Tabulation Inspection	Y/N ## Implementa-tion	Number of treatment control BMPs inspected, including summary results and findings
	1	Confirmation	Y/N	Description of annual verification of operation and maintenance of BMPs, include summary of verification results and findings
	1	Confirmation	Y/N	Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, and a description of how this information was tracked
BMP Verification	1 3	Confirmation Inspection	Y/N Implementa-tion	• Description of implementation verification inspection program and results • Inspect BMP implementation for compliance with all aspects of the Order
Hydromodification limitations on increases of runoff discharge rates and durations	1	Confirmation	Y/N	A description of Hydromodification Management Plan (HMP) development collaboration and participation
	1	Confirmation	Y/N	Listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
	1	Confirmation	Y/N	List of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements
	1	Confirmation	Y/N	List of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project
Enforcement of Development Sites	1	Confirmation Tabulation	Y/N ##	• Number of violations and enforcement actions taken, including follow-up • Describe actions being taken to achieve compliance on active cases
Other	1	Confirmation	Y/N	Description of notable activities conducted to manage urban storm water runoff

4.6 PROGRAM REVIEW AND MODIFICATION

Jurisdictional Urban Runoff Management Program implementation is an iterative process that involves annually assessing program effectiveness and making modifications when needed to improve programs and maintain compliance. Jurisdictional Urban Runoff Management Program modifications may be made by the RWQCB Executive Officer or by the Copermittees. Any City requests for modifications will be incorporated, as appropriate, into the Annual Reports. The City will use this section to reserve a location for identifying and documenting future modifications to the Development Planning component.

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5.0 CONSTRUCTION COMPONENT

5.1 INTRODUCTION

This section describes the responsibilities of staff with respect to implementation of the Construction Component of the JURMP. This program section is intended to: (1) reduce construction site discharges of pollutants from the MS4 to the MEP, and; (2) prevent construction site discharges from the MS4 from causing or contributing to a violation of water quality standards.

The construction process is part of a comprehensive process that includes planning, engineering, construction and post-construction phases. Each phase includes review, conditional requirements and verification that the requirements have been satisfied. The land development portion of the development process is described in Section 4.0 of the JURMP. Because the process weaves through various phases, there are several City Departments/Divisions involved in the development process, including, Planning, Land Development, Engineering, Construction Inspection and the Building Department. Figure 5-1 shows the relationship between the land development phases and the City departments involved. Department Organizational Charts are presented in Appendix A-4.

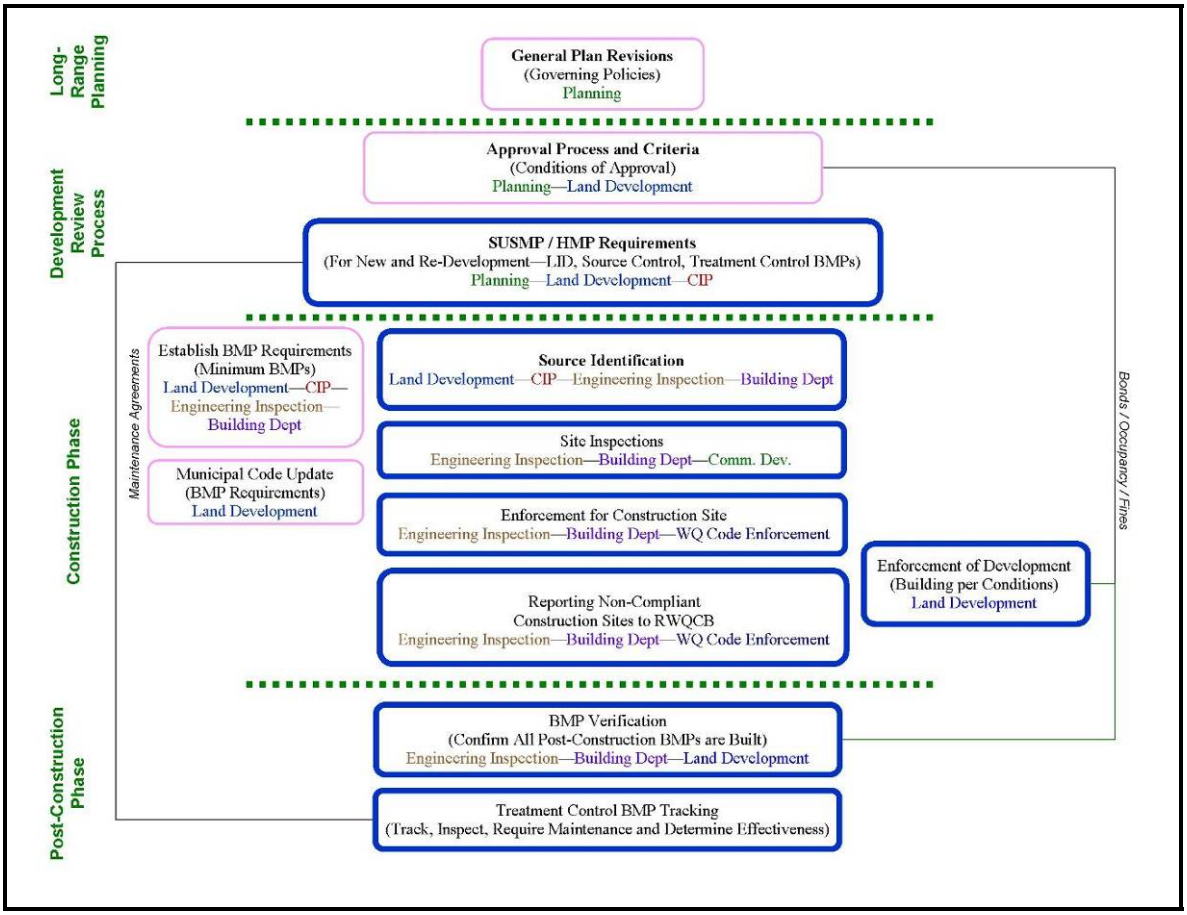

Figure 5-1: Land Development Phases

5.2 SOURCE CHARACTERIZATION

Construction sites include any site where an activity such as grading, excavation, clearing, structure and road construction, or demolition results in a disturbance of soil. Sources identified by the City of Vista include: City-issued Construction Permits, and Capital Improvement Program (CIP) Projects.

Generally erosion discharges are the most visible and significant source of pollutants (sediments). However, based on the specific activities at construction sites, other pollutant types are also likely to be generated. The following table lists those activity/pollutant combinations:

Table 5-1: Construction Activity Potential Pollutants

Construction Activity	Pollutants						
	Sediment	Nutrients	Trace Metals	Pesticides	Oil, Grease, Fuels	Other Toxic Chemicals	Miscellaneous Wastes
Construction Practices							
Grading/Excavation Activities	X						
Dewatering Operations	X					X	
Paving Operations	X			X	X	X	X
Structure Construction/Painting			X			X	X
Material Management							
Material Delivery and Storage	X	X	X	X	X	X	
Material Use		X	X	X	X	X	
Waste Management							
Solid Waste	X	X					X
Hazardous Waste						X	
Contaminated Spills	X					X	
Concrete Waste							X
Sanitary/Septic Waste							X
Vehicle/Equipment Management							
Vehicle/Equipment Fueling						X	X
Vehicle/Equipment Maintenance						X	X

Modified from CASQA Stormwater Best Management Practice Handbook-Construction, January 2003

Several City departments maintain databases which contain land development and construction project information. These departments include Community Development (Planning, Building, and Land Development), Redevelopment & Housing, and Engineering. The information in each of these databases varies depending on the tracking needs and the responsibilities of that

department. In accordance with Section D.2.b. of Order R9-2007-0001 and in order to identify potential sources of pollution due to construction activity, these databases were reviewed and utilized to establish a comprehensive inventory of all the ongoing construction projects within the City. This current inventory is included in Appendix B-3 of this document and reflects construction activity within the City as of March 2008. The inventory includes the following information for each project:

- Location Information (APN, Address, WMA and HA);
- Permit Information (Grading Permit, Planning Case Number);
- Project Information (Name, Type, Area, Start Date);
- Priority;
- Percent Complete;
- Site Contact (Name & Number);
- 24-Hour Contact Number;
- State General Construction Permit Information (NOI, SWPPP, WDID); and
- Developer/Engineer/Contractor Contact Information.

This database will continue to be expanded and improved to include additional information as the program evolves and additional needs are defined.

5.2.1 Threat to Water Quality Prioritization

For the purposes of determining the frequencies of inspection during the wet season (October 1st through April 30th) the following rationale and methodology are used. One of three inspection frequency priorities is assigned to projects; high, medium, or low. See section 5.5 for more details on project inspection frequencies and procedures.

At a minimum, the following project types will be considered high priority for the purposes of inspection frequency as described in Section 5.5:

- All sites 50 acres or more in size and grading will occur during the wet season, or
- All sites 1 acre or more, and tributary to a CWA section 303(d) water body segment impaired for sediment or within or directly adjacent to or discharging directly to a receiving water within an ESA.
- Other projects may qualify as high priority for the purposes of inspection frequency based on the following criteria:
    1. Project Size
    2. Planned Period of Grading
    3. Vicinity of the Project to Environmentally Sensitive Water Bodies
    4. Project Type

5. Past Record of Compliance by the Operators of the Construction Site
6. Presence of Significant Erodible Slopes
7. Potential to Produce Significant Non-Stormwater Discharge or Pollutants

The evaluation of the above criteria is described in more detail in the Stormwater Standards Manual found in Appendix C of this JURMP. Project applicants will complete the City's Urban Runoff Threat Assessment Form (URTA), found in Section F of the Stormwater Standards Manual. The completion of the URTA determines the construction priority level that is used by the City to determine the frequency of inspection.

At a minimum, the following project type will be considered medium priority for the purposes of inspection frequency as described in Section 5.5:

- All sites with one acre or more of soil disturbance not meeting the criteria specified above for high priority construction sites

At a minimum, the following project type will be considered low priority for the purposes of inspection frequency as described in Section 5.5:

- All sites less than one acre in size

5.2.2 Inventory Updates

Once a grading, improvement or capital project enters the construction phase, the Water Quality Protection Program staff enters the project information into a database that contains the data listed in Section 5.2 above. As inspections are performed, the inspection staff provides updates to project status, including project completion. At the time that a project is deemed complete, the "Active Project" field is deactivated so that automatic inspection forms are no longer generated, however the project information is retained in the event that it is necessary. During the dry season when inspection frequencies have the potential to be less than monthly, the inspection staff supplies project status to the Water Quality Protection Program staff on a monthly basis in order to maintain an accurate project inventory.

The inventory of projects that require Building Permits are tracked in a database as well and are updated on a daily basis. Project information is entered into the database immediately by counter staff. At any time, staff can query the database for information related to each project, including TTWQ priority, inspection frequency (if applicable), inspection history and enforcement history.

5.3 ORDINANCE UPDATES

5.3.1 Grading Ordinance Update

The City's Grading Ordinance, Municipal Code Chapter 17.56 Grading & Erosion Control, has been updated. A copy of the revised ordinance is in Appendix A-2.

In general, the stormwater related revisions to this ordinance include (1) addition of text to incorporate requirements of Order R9-2007-0001; and (2) replacement of specific erosion control requirements with references to the City's Stormwater Ordinance. The purpose of these revisions are twofold, (1) to ensure erosion control information contained in the grading ordinance is consistent with the Stormwater Ordinance which provides the detailed requirements for erosion control and all other required BMPs; and (2) to ensure that project proponents will reference and use the City's Stormwater Ordinance for comprehensive site management and permit compliance.

5.4 BEST MANAGEMENT PRACTICE REQUIREMENTS

5.4.1 BMP Requirements

5.4.1.1 POLLUTION PREVENTION

The City's construction component emphasizes pollution prevention during both the preconstruction and the onsite construction phases of projects. As previously detailed in Section 4.0 DEVELOPMENT PLANNING COMPONENT, new construction projects are subject to additional submittal requirements during the project planning phases and prior to receiving City approvals for construction. These requirements are project-specific and may include:

- Further impact analysis during environmental review of the project,
- Implementation of the City's Standard Urban Stormwater Mitigation Plan (SUSMP) requirements, and/or
- Additional coverage under appropriate permits (e.g. State Water Resource Control Board's (SWRCB) State General Construction and/or Industrial Permit(s), etc). Each proposed project will be reviewed to determine the applicability of additional preconstruction requirements.

Additionally, all projects - regardless of size, location, site conditions and/or type of construction activity - require a Stormwater Management Permit from the City, prior to issuance of other required project permits (i.e. building, grading permits, etc.). This stormwater permit application process is discussed further in Appendix C, Stormwater Standards Manual.

The preconstruction requirements are expected to facilitate onsite pollution prevention once construction activity commences. Pollution prevention practices are required at all project sites during construction. In accordance with the City's Stormwater Ordinance (Municipal Code Chapter 13.18), project proponents, which may include owners, developers and/or contractors, are required to implement a system of minimum best management practices (BMPs) onsite year-round. Erosion control practices must be implemented by contractors as the most important "first line of defense" BMPs. Supplemental to erosion control BMPs, the remaining BMP system components include sediment control and management of onsite practices, materials and potential pollutants. These requirements are applicable to capital improvement projects (CIPs), private development projects, and utility projects.

5.4.1.2 CONSTRUCTION BMPS

It is the responsibility of the project proponent to select, install and maintain appropriate BMPs. BMPs must be installed in accordance with an industry recommended standard (for example: Caltrans or California Stormwater BMP handbooks) or in accordance with the State's General Permit for Construction Activities.

At a minimum, the City requires that BMPs from each subcategory below are installed and maintained for all grading and building projects.

- Erosion Control
- Perimeter Protection
- Sediment Control

The responsible parties must implement an effective combination of BMPs to prevent onsite erosion to the MEP and to prevent sediment from leaving the project site. These BMPS are listed in Tables 1 and 2 of the City's Stormwater Management Permit included in Section F of the Stormwater Standards Manual. Depending on project scope and potential associated discharges, additional BMPs may be needed. If the project proponent proposes to use a BMP not listed in the Stormwater Standards Manual, approval from the City is required prior to installation.

If a BMP is selected and implemented, but fails in actual use causing sediment or other pollutants to be discharged from the site, applicable regulations will have been violated, and the BMP must be repaired or replaced with an effective BMP. Similarly, the ability to deploy standby BMPs within 48 hours does not substitute for actual protection of slopes during storm events. Excessive erosion and sediment discharges are prohibited even if they result from a dry season storm that arrives with less than 48 hours notice.

5.4.2 Additional Controls for Construction Sites

For project sites that are tributary to 303(d) water body segments that are impaired for sediment, the following BMPs must be implemented at all times:

- Maintain vegetative cover as much as possible by developing the project in a phased approach to reduce the amount of exposed soil at any one time.
- Limit the areas of active construction to five acres at any one time.
- Provide 100 percent soil cover for all areas of inactive construction throughout the entire time of construction, on a year-round basis.
- Provide appropriate perimeter control at all appropriate locations along the site perimeter and at all inlets to the storm drain system at all times during the rainy season.
- Provide vegetated buffer strips between the active construction area and any water bodies.
- Provide stabilized construction entrances and limit all vehicle and foot traffic to those entrances.

5.4.3 Maximum Disturbed Area for Erosion Controls

The active disturbed soil area of any project site shall be not more than 50 acres for an individual grading permit or a combination of grading permits under an associated Tentative of Final Map. The City Engineer may approve, on a case-by-case basis, expansions of the active disturbed soil area limit if adequate site protection is demonstrated. At all times, sufficient soil stabilization and sediment control materials shall be maintained on site to provide adequate site protection.

Disturbed soil areas shall be considered active whenever the soil disturbing activities have occurred, continues to occur or will occur during the ensuing 10 days. Non-active areas shall be protected within 10 days of cessation of soil disturbing activities or prior to the onset of precipitation, whichever occurs first.

5.4.4 Advanced Treatment Methods

If a project meets the following criteria, advanced treatment will be required:

1. All or part of the site is within 200 feet of waters named on the CWA Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity;
2. The disturbance area is greater than five acres, including all phases of the development;
3. The disturbed slopes are steeper than 4:1 with at least 10 feet of relief, and drain toward a Section 303(d) listed receiving water for sedimentation or turbidity;
4. The site contains a predominance of soils with USDA-NRCS Erosion factors k_f greater than or equal to 0.4.

Advanced treatment may be required on sites that do not meet all four of the criteria for exceptional threat to water quality listed above at the discretion of the City Engineer based on a record on non-compliance.

Treatment effluent water quality shall meet or exceed the water quality objectives for sediment, turbidity, pH, and toxicity as listed in the Water Quality Control Plan for the San Diego Basin (9) for inland surface waters and lagoons and estuaries for the appropriate hydrologic unit.

Prior to obtaining a grading permit, the applicant shall submit, to the satisfaction of the City Engineer, the following:

1. An operations and maintenance schedule for all advanced treatment methods.
2. A monitoring plan for all required BMPs and water quality for all proposed work deemed necessary to achieve project water quality goals.
3. A written training plan for certification and documentation of necessary training and refreshers of staff.

The discharger shall either deploy Advanced Treatment Methods or comply with source control procedures described below.

- Maintain vegetative cover as much as possible by developing the project in a phased approach to reduce the amount of exposed soil at any one time.
- Limit the areas of active construction to five acres at any one time.
- Provide 100 percent soil cover for all areas of inactive construction throughout the entire time of construction, on a year-round basis.
- Provide appropriate perimeter control at all appropriate locations along the site perimeter and at all inlets to the storm drain system at all times during the rainy season.
- Provide vegetated buffer strips between the active construction area and any water bodies.
- Provide stabilized construction entrances and limit all vehicle and foot traffic to those entrances.

5.5 PROGRAM IMPLEMENTATION

5.5.1 Education and Staff Training

In accordance with the Order and as part to of the City's comprehensive education and outreach program, the City will implement an education component for the construction community. In general, this program will consist of both formal and informal education for both the construction community and internal City staff regarding specific requirements, BMPs and issues related to construction activity in Vista. The City's comprehensive education program is described in further detail in Section 10.0 EDUCATION of this document.

5.5.2 Construction and Grading Approval Process

Because most construction activities involve soil disturbance and/or potential non-storm water discharges, the City's project approval process has been modified to require project proponents to incorporate stormwater protection and urban runoff management into their projects, prior to, during, and following construction activities. The City utilizes the following elements when processing and approving projects for construction related activities.

5.5.2.1 STORMWATER MANAGEMENT PERMIT

As previously mentioned and required by the City's Stormwater Ordinance Chapter 13.18.140, project proponents are required to submit an application and the required plans for a Stormwater Management Permit regardless of size, location, site conditions and/or type of construction activity. City staff will use this permit and the accompanying stormwater management plans and/or erosion control plans to evaluate the permit application for compliance with the City's Stormwater and Grading Ordinances. This application process, as described in the Stormwater Standards Manual, will also provide City staff with the information necessary to determine: (1) if the project is exempt, (2) if the project requires additional permit coverage (e.g. State General Construction Permit); (3) if the project is subject

to the City's Standard Urban Stormwater Mitigation Plan (SUSMP) requirements, and; (4) the project's inspection frequency priority.

The Stormwater Management permitting process requires project proponents to do the following:

- Implement a plan to manage stormwater and non-stormwater discharges from the site at all times;
- Minimize grading during the wet season and coincide grading with seasonal dry weather periods to the extent feasible. If grading does occur during the wet season, require project proponent to implement additional BMPs for any rain events that may occur;
- Emphasize erosion prevention as the most important measure for keeping sediment onsite during construction;
- Utilize sediment controls as a supplement to erosion prevention for keeping sediment onsite during construction, and never as the single or primary method;
- Minimize areas that are cleared and graded to only the portion of the site that is necessary for construction;
- Minimize exposure time of disturbed soil areas;
- Temporarily stabilize and/or re-seed disturbed soil areas as rapidly as possible;
- Permanently re-vegetate or landscape as early as feasible;
- Stabilize all slopes; and
- When applicable, provide evidence of existing coverage under the State's General NPDES Permit for Construction Activities.

Project proponents obtain information from the City's public permit counter, which includes submittal requirements for grading permits, building permits, and other applicable discretionary and ministerial permit information. Additionally, construction project proponents will receive a complete packet of information for stormwater management which contains the following:

- Stormwater Management Permit application;
- Minimum required BMP checklist and plan submittal requirements;
- Stormwater Management Permit fee information/schedule;
- Certificate of Exemption;
- SUSMP submittal requirements;
- State General NPDES Permit for Construction application and information;
- Model Construction Stormwater Pollution Prevention Plan (SWPPP); and
- Sample construction site self-inspection forms.

Depending on the type of construction work to be performed, projects fall within one of the following categories:

- Exempt projects;
- Building permit projects;
- Grading/Building projects not subject to the requirements of the State NPDES General Construction Permit; and
- Grading/Building Projects that are required to obtain the State NPDES General Construction Permit.

5.5.2.2 EXEMPT PROJECTS

To qualify for an exclusion from stormwater BMPs and documentation requirements, project proponents are required to complete a certification of exemption prior to the issuance of any regulatory approval or permit. Approvals of exemptions are limited to only those projects where *all* activity, including storage and handling of construction-related materials and any wastes or spills, will be completely enclosed (i.e. not exposed to stormwater) and no conduit to storm drains or surface waters exist (except for sanitary sewer system). Examples of types of activities that may be categorized as exempt include:

- Interior remodeling;
- Mechanical permit work;
- Electrical permit work;
- Tenant improvements;
- Signs;
- Changes of use within an existing building;
- Temporary mobile home and trailer permits;
- Minor permits accessory to an existing building such as patio covers, decks and carports; and
- Emergency construction activities required for immediate protection of public health and safety.

These exemptions do not relieve the project proponents from preventing any construction-related materials, wastes, spills or residues from entering stormwater conveyance systems.

5.5.2.3 PROJECT REQUIRING BUILDING PERMIT

For construction activities requiring a building permit, but which are not exempt, project applicants are required to complete a Stormwater Management Permit application and implement the minimum BMPs specified by this permit. These requirements include site management, construction materials, and waste management controls, as well as off-site sediment tracking and transport. Because some activities with the potential to disturb soil (e.g. landscaping, grading less than permit threshold) may not require grading permits, minimum

BMPs are still required to address basic erosion and sediment control practices. Educational materials are provided with building information.

5.5.2.4 Projects Not Subject to the State General Construction Permit

Similarly, for projects that require a grading permit and where the amount of soil being disturbed is less than one acre, project proponents are required to submit a Stormwater Management Permit application and implement the City's minimum BMPs.

5.5.2.5 Projects Subject to the State General Construction Permit

For activities that will disturb greater than one acre of soil, project applicants are required to select and implement erosion control, sediment control and non-stormwater BMPs to prevent the discharge of contaminants off-site or to a stormwater conveyance system. In addition to meeting the City's minimum BMP requirements, the project proponent must provide evidence of coverage under the State General Construction Permit. The City has adopted the Caltrans model Stormwater Pollution Prevention Plan (SWPPP) that may be completed and used to satisfy this requirement by the SWRCB. Upon submittal to the SWRCB, the project proponent must also submit a copy of the Notice of Intent (NOI), proof of fee payment, and the completed SWPPP to the City for review and file. The project proponent may substitute the SWPPP for the BMP checklist included in the Stormwater Management Permit application.

5.5.2.6 Plan Checks

During plan checks, City staff will review the submittal to see if the minimum required BMPs are addressed and that the applicant-selected BMPs are reasonable and appropriate according to the construction activities planned for the site and in accordance with the City's Stormwater Ordinance Chapters 13.18.140 and 13.18.150. Plan check staff also serves as a source of information to project applicants on applicability of BMPs.

5.5.3 Contract Specifications

The stormwater requirements for construction activities are applicable to all City Capital Improvement Projects as well. The following are standard provisions to be included in each contract for construction related activities.

WATER POLLUTION CONTROL

Add the following to Section 7-8.6:

The Contractor shall be informed regarding, and shall adhere to, the requirements of the California Regional Water Quality Control Board (RWQCB), and those of the local San Diego area district. All work shall be performed in accordance with RWQCB Order R9-2007-0001. As part of the application for City of Vista Stormwater Management Permit, the Contractor shall submit plans showing all pollution prevention, erosion and

sediment control, site management practices, and a Storm Water Pollution Prevention Plan (SWPPP) when required by the RWQCB, to the Engineer for review and acceptance, and shall implement and maintain all appropriate measures to prevent polluted discharges from entering storm water conveyance facilities. The Stormwater Management Permit application and SWPPP must be prepared and submitted by the Contractor and accepted by the Engineer before the Notice to Proceed is issued.

The Contractor shall designate a qualified person who is trained and competent in the use of Best Management Practices (BMPs) and who shall be on the site daily, although not necessarily full time, to evaluate the conditions of the site with respect to storm water pollution prevention. This person shall ensure the implementation of the conditions of the City of Vista Stormwater Management Permit, the SWPPP, the Contract Documents, and other State and local regulations and ordinances with respect to control of erosion, sediment and other forms of water pollution, as well as other waste management regulations. Further, this person shall be responsible for monitoring weather and implementation of any emergency plans as needed. The weather shall be monitored on a five-day forecast plan and a full BMP protection plan shall be activated when a 40% chance of rain is forecasted. This person shall also be responsible for overseeing any site grading operations and evaluating the effectiveness of the BMPs. This person shall modify the BMPs as necessary to keep the site in compliance. This person or other designated site management staff shall be responsible to inspect the BMPs routinely and ensure maintenance measures are implemented.

The Contractor shall educate all employees, subcontractors, and suppliers about storm water pollution prevention and mitigation measures needed during various construction activities to prevent the impact of construction discharges. The Contractor shall ensure that all personnel are trained in basic urban runoff management. A list of attendees and copies of the educational materials shall be kept on file at the site and submitted to the Engineer at the conclusion of each training session, upon request.

The Contractor shall protect with BMPs, such as gravel bags and filter fabric, all new and existing storm water conveyance system structures and other facilities from sedimentation or other related construction debris and discharges, or by any other equal product that is approved by the Engineer. The Contractor shall prevent any discharge of concrete rinse water or other pollutant into a stormwater conveyance facility with physical barriers.

The Contractor shall show on the Stormwater Management Permit plans and/or SWPPP the locations for concrete washout, vehicle maintenance, staging, and storage areas. Further, the Contractor shall show pollutant control measures to be used (BMPs) to confine construction waste in these designated areas, including construction entrance stabilization and wheel-wash measures to reduce the tracking or deposition of sediment onto public and private roads.

During the dry season (May 1 through September 30 each year), the Contractor shall inspect at least monthly all pollutant control measures installed to mitigate potential

discharges during the dry season. For the duration of the project, the Contractor shall submit, with each progress payment request, documentation that these pollutant control measures were inspected, including detailed inspection reports.

During the rainy season (October 1 through April 30 each year), the Contractor shall inspect at least weekly all pollutant control measures, inspect before and after every rain event and every 24 hours during any prolonged rain event. For the duration of the project, the Contractor shall submit, with each progress payment request, documentation that these pollutant control measures were inspected, including detailed inspection reports.

The contractor shall perform routine maintenance of all pollution control measures continuously for the duration of the project. The Contractor shall implement special maintenance measures before and after every rain event and every 24 hours during any prolonged rain event. The Contractor shall maintain and repair all pollutant control measures as soon as possible after the conclusion of each rain event as worker safety allows. For the duration of the project, the Contractor shall submit, with each progress payment request, documentation that these pollutant control measures were maintained, including detailed reports on daily routine work and special maintenance work that was performed, and a list of BMPs that were found to be inadequate and what modifications were made.

Monthly progress payments are conditioned upon the Owner having received from the Contractor the pollution control inspection and maintenance reports.

The Contractor shall mark with a stencil, concrete stamp, or ceramic tile every storm drain inlet within the project boundaries to indicate that no dumping is allowed in storm drainage facilities that discharge in the ocean. The stencil or tiles are available from the Engineer, with five days advance notice. On curb inlets, the stencil shall be placed at the curb line on the inlet roof, the stamp should be placed on the inlet roof or in the sidewalk behind the inlet, and the tile shall be affixed to the gutter with pavement-marker adhesive or inset in the concrete in the center of the inlet opening. On catch basins, the stencil, stamp, and tile shall be placed or imprinted next to the inlet grate. Extra concrete may be required next to the grate to accommodate the stencil, stamp, or tile dimensions.

If an unmitigated non-stormwater discharge leaves the project site, the Contractor shall immediately stop all the activity causing the discharge and mitigate the discharge. The Contractor shall also immediately notify the Engineer of the discharge. As soon as practical, any and all waste material, sediment, debris or other pollution from any discharge shall be removed from the drainage system by the Contractor.

DRAINAGE AND EROSION CONTROL

Add the following to Section 7-8.7:

Before commencement, and until final acceptance of the Work by the City, the Contractor shall provide all measures necessary to avoid erosion and adverse drainage conditions, in conformance with the requirements of the National Pollutant Discharge Elimination System (NPDES) Number CAS0108758 (RWQCB Order R9-2007-0001). Such measures shall prevent the impounding of runoff, nuisance water, sediment movement, and debris movement from the construction site onto adjacent properties or from adjacent properties onto the construction site. If the Engineer determines that the Contractor's measures are not adequate, the Contractor shall provide whatever additional measures are required.

Payment for all work necessary for preventing storm water pollution and providing drainage and erosion control, as specified, will be as shown in the Bid Schedule, and no additional compensation will be allowed.

5.5.4 BMP Implementation

In accordance with Order R9-2007-0001, the City established a set of minimum BMPs for all projects to be implemented year-round. Because all sites, regardless of the priority, must be protected to prevent discharges to the maximum extent practicable, the minimum BMP requirements are the same for each priority. Each site must be protected by an effective combination of erosion and sediment controls, materials and waste management controls, and site management controls. These minimum requirements are included in the Stormwater Management Permit application.

If particular BMPs are infeasible at any specific site, the project proponent must install other equivalent BMPs. At any time of the year, an inactive site must be fully protected from erosion and discharges of sediment. A site will be considered inactive if construction activities have ceased for a period of ten or more consecutive days. It is also the project proponent's responsibility at both active and inactive sites to implement a plan to address all potential non-stormwater discharges.

5.5.4.1 Dry Season Requirements

The following are the minimum BMPs that must be in place at all sites during the dry season, which is defined as May 1st through September 30th.

- All manufactured slopes and cleared slopes 3:1 and greater must have erosion protection BMPs properly installed. Manufactured and cleared slopes flatter than 3:1 (Horizontal vs. Vertical) do not need erosion control, provided that properly designed desilting basins will capture their runoff.
- All flat areas of less than 5% slope (e.g. building pads, parking areas, etc.) must be protected with erosion control and backed up with sediment control practices. If construction is underway on a pad, then weather triggered BMPs must be provided on standby and the remainder of the pad protected.
- Adequate perimeter protection BMPs must be installed and maintained.

- Adequate sediment control BMPs must be installed and maintained.
- Adequate BMPs to control offsite sediment tracking must be installed and maintained.
- A minimum of 125% of the material needed to install standby BMPs to protect the exposed areas from erosion and prevent sediment discharges, must be stored onsite. Areas already protected from erosion using physical stabilization or established vegetation stabilization BMPs are not considered to be "exposed" for purposes of this requirement.
- The project proponent must have an approved "weather triggered" action plan and be able to deploy standby BMPs to completely protect the exposed portions of the site within 48 hours of a predicted storm event (a predicted storm event is defined as a forecasted, 30% chance of rain). On request, the project proponent must provide proof of this capability that is acceptable to the City.
- Deployment of physical or vegetation erosion control BMPs must commence as soon as slopes are completed. The project proponent may not continue to rely on the ability to deploy standby BMP materials to prevent erosion of slopes that have been completed.
- The area that can be cleared, graded, and left exposed at one time is limited to the amount of acreage that the contractor can adequately protect prior to a predicted rainstorm. For larger sites grading should be phased. It may be necessary to deploy erosion and sediment control BMPs in areas that are not completed, but are not actively being worked before additional grading is done.

5.5.4.2 Rainy Season Requirements

In addition to the dry season requirements, the following must be implemented during the rainy season, which is defined as October 1st through April 30th:

- Perimeter protection and sediment control BMPs must be upgraded if necessary to provide sufficient protection for storms likely to occur during the rainy season.
- Adequate physical or vegetation erosion control BMPs must be installed and established for all completed slopes prior to the start of the rainy season. These BMPs must be maintained throughout the rainy season. If a selected BMP fails, it must be repaired and improved, or replaced with an acceptable alternate as soon as it is safe to do so. The failure of a BMP indicates it was not adequate for the circumstances in which it was used. Repairs or replacements must therefore include a more robust BMP.
- The amount of exposed soil allowed at one time shall not exceed that which can be adequately protected by deploying standby erosion control and sediment control BMPs prior to a predicted rainstorm.
- A disturbed area that is not completed but that is not being actively graded must be fully protected from erosion if left for 10 or more days. The ability to deploy standby BMP materials is not sufficient for these areas. BMPs must actually be deployed.

5.5.5 Inspection of Construction Sites

5.5.5.1 Inspection Procedures

The City currently inspects all ongoing construction projects including both private projects and City CIPs. A team of Land Development Inspectors and one Supervising Inspector are responsible for all grading, infrastructure, right-of-way and engineering projects, while a team of Building Inspectors and one Supervising Inspector, are responsible for all building projects within the City. Inspectors are responsible for ensuring construction activities are being performed in accordance with the project plans, building and grading permits, and all applicable codes, regulations and ordinances. Currently, if inspected sites do not meet the City's requirements or do not comply with City ordinances, City inspection staff immediately directs compliance and conducts follow-up inspections to assure compliance is attained. Enforcement procedures are used when necessary and may include verbal or written warnings, stop work orders, revocation of permits, and/or legal action.

In accordance with Order R9-2007-0001, the City's inspection procedures will continue to include the following:

- Review the site erosion control and BMP implementation plans and determine whether they are being properly implemented;
- Assessment of BMP effectiveness including implementation of an effective combination of erosion, sediment and non-stormwater BMPs to meet the City's minimum water quality protection requirements and prevent the discharge of pollutants into stormwater and receiving waters;
- Checking for coverage under the General Construction Permit (NOI and/or WDID No.) during initial inspection;
- Ensure compliance with the City's applicable ordinances, permits and other site-specific requirements;
- Visual observations for non-stormwater discharges, potential illicit connections and potential discharge of pollutants in stormwater runoff;
- Education and outreach on stormwater pollution prevention as needed; and,
- Creation of a written or electronic inspection report.

The primary mechanism inspectors use to determine if minimum water quality protection requirements and BMPs for construction activities are being met is to assess the site against the minimum BMP requirements that are designated by the City in the required Stormwater Management Permit. A list of minimum BMP requirements can be found in the City's Stormwater Management Permit, or the Caltrans Model SWPPP. The minimum BMP requirements are intended to be easy to interpret field observations that allow an assessment of site conditions during both dry and wet conditions.

For projects subject to the State General Construction Permit, the RWQCB is responsible for verifying and enforcing requirements of the General Construction Permit. The City inspection

staff will continue to work with RWQCB staff in assuring compliance at these sites. City staff will document observations of potential violations and will notify the RWQCB of the noncompliance in accordance with Order R9-2007-0001 if the noncompliance may endanger health or the environment.

5.5.5.2 INSPECTION FREQUENCIES

In accordance with Order R9-2007-0001, the inspection frequencies for determining compliance with the City's requirements are based upon the threat to water quality prioritization of sites which is described in Section 5.2.1. of this document.

At a minimum, each site that is determined to be high priority will be inspected at least every two weeks during the rainy season (October 1st through April 30th). Medium and low priority projects are to be inspected at least monthly during the rainy season. Construction sites will be inspected for stormwater management compliance on an as needed basis during the dry season and at a minimum will be inspected every other month or based on complaints or observed violations. Site specific inspection frequencies will be reevaluated periodically, particularly when grading activities are being conducted during the rainy season. The need for additional inspections may vary depending upon several factors including:

- Site conditions;
- Previous violations;
- History of developer or contractor past performance;
- Grading during rainy season; and
- Weather patterns.

The inventory database is also the tracking mechanism for confirming that the required numbers of inspections were completed for each project based on its required inspection frequency. Based on the status of the "Active Project" and the inspection frequency priority fields in the database, the required number of inspections can be calculated for the period of time that the construction project was active during the reporting period. The number of inspections conducted and the timing of the inspections (bi-weekly or monthly) is then compared to the required number of inspections and timing of inspections (bi-weekly or monthly) to verify that at a minimum, the required number of inspections and also the timing of inspections meet the requirements on an individual project by project basis. This will be confirmed in each Annual Report.

5.5.5.3 DEVELOPER/CONTRACTOR SELF INSPECTIONS

Construction is a dynamic operation where changes are expected. BMPs for construction sites are usually temporary measures that require frequent maintenance for effectiveness and may require relocation, revision and reinstallation, particularly as project grading progresses. Therefore, developer/construction self-inspections are required, particularly during the rainy season.

There are four primary purposes of the self-inspections conducted by developers, owners and contractors:

- To ensure that the owners/developers/contractors take full responsibility to prevent stormwater pollution that may be caused by their activities;
- To ensure that BMPs are properly implemented and functioning effectively;
- To identify maintenance (e.g., sediment removal) and repair needs;
- To ensure that the project proponents implement their stormwater management plans.

When requested, contractors/developers will need to provide self-inspection checklists for City inspectors' reviews.

Owners, developers and/or contractors of projects subject to the State General Construction Permit are required to perform self-inspections. In addition, self-inspections are required for high priority projects. At a minimum, a self-inspection checklist, noting date, time, and inspection findings, must be kept on-site and made available for inspection, if requested. Self-inspections must be performed according to the following schedule:

- Before every predicted rainfall event and after every rainfall event that produces observable runoff, and
- At 24-hour intervals during extended rainfall events.

5.5.6 Enforcement at Construction Sites

The City's inspectors, Engineering staff, and Code Enforcement staff have enforcement authority and are responsible for enforcing stormwater management and protection requirements for construction projects. City staff document violations observed and use enforcement when needed to obtain compliance. Depending on the severity of the violation, enforcement can range from a warning to fines, and enforcement is escalated when needed. The enforcement mechanisms available for violations occurring from construction activities are the same as those described in Section 2.2.2 of this document. An enforcement decision chart showing conditions for enforcement mechanism use and escalation is shown in Figure 5-.

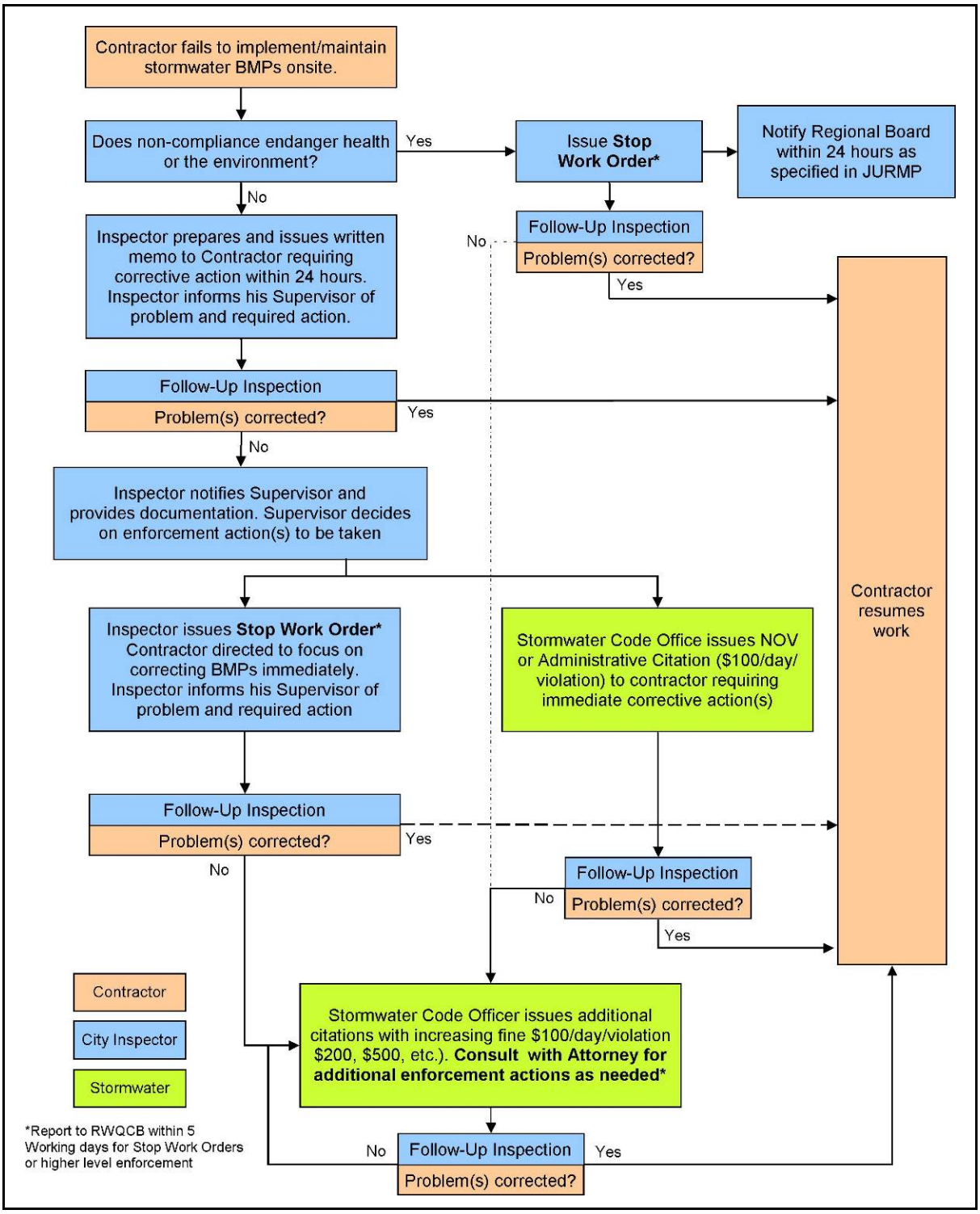

Figure 5-2: Construction Site Stormwater BMP Corrective Action and Enforcement Procedures

5.5.7 Reporting of Non-Compliant Sites

The City will provide oral notification to the RWQCB of non-compliant sites that may endanger health or the environment within 24 hours of the discovery of non-compliance, in accordance with Order R9-2007-0001. This will be followed by a written report within 5 days using the form provided in Appendix D-1.

The City will notify the RWQCB when a stop work order or other high level enforcement action is issued to a construction site as a result of a storm water violation. Within 5 working days of the issuance of the stop work orders, the issuing Division (Building or Engineering Inspection) will provide a copy of the stop work notice to the RWQCB.

5.6 EFFECTIVENESS ASSESSMENT

The JURMP effectiveness assessment strategy is detailed in Section 13 of this document. An annual assessment of this entire component and significant activities will be conducted in accordance with this strategy with results detailed in Annual Reports. Table 5-2 below lists items that will be tracked and reported in accordance with the Order.

Table 5-2: Annual Report Tracking and Assessment

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
Construction Ordinance Update	1	Confirmation	Y/N	Description of modifications made to construction and grading ordinances and the approval process, if applicable.
	1	Confirmation	Y/N	Text confirming that designated BMPs were required / implemented for all construction sites
	1	Confirmation	Y/N	Text describing how all construction sites underwent urban runoff review process, met construction requirements, and how the information was tracked
Construction Source Identification	1	Confirmation	Y/N	Text describing how a regularly updated construction site inventory was maintained
Construction BMP Implementation	1	Confirmation	Y/N	Confirmation that designated BMPs were implemented / required to be implemented for all construction sites

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
	1	Confirmation	Y/N	Confirmation that maximum disturbed area for grading was applied to applicable construction sites
	1	Confirmation	Y/N	An inventory of construction sites with conditions requiring advanced treatment and that advanced treatments were implemented.
Construction Site Inspections	1 3	Confirmation Tabulation Inspection	Y/N ## Implementa-tion	By category (high, medium, low) a listing of the duration a project was active and number of inspections conducted during the wet season. Also, the number of inspections during the dry season and total number of inspections.
	1	Confirmation	Y/N	• A description of the general results of inspections. • Confirmation that inspections conducted addressed all required inspection steps to determine full compliance
Construction Site Enforcement	1	Confirmation Tabulation	Y/N ##	Inventory of the number of violation and types of enforcement actions, including a description of follow-up actions. Include notation of compliance with violations / enforcement actions, or if pending describe the actions currently being taken.
Other	1	Confirmation	Y/N	Describe any notable activities conducted to manage urban runoff from construction sites.

5.7 PROGRAM REVIEW AND MODIFICATION

Jurisdictional Urban Runoff Management Program implementation is an iterative process that involves annually assessing program effectiveness and making modifications when needed to improve programs and maintain compliance. Jurisdictional Urban Runoff Management Program modifications may be made by the RWQCB Executive Officer or by the Copermittees. Any City requests for modifications will be incorporated, as appropriate, into the Annual Reports. The City will use this section to reserve a location for identifying and documenting future modifications to the Construction component.

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6.0 MUNICIPAL COMPONENT

This section describes the responsibilities of municipal staff with respect to implementation of the Municipal Component of the JURMP. This program section is intended to: (1) reduce municipal discharges of pollutants from the MS4 to the MEP, and; (2) prevent municipal discharges from the MS4 from causing or contributing to a violation of water quality standards.

6.1 INTRODUCTION

The City of Vista (City) Public Works Department is charged with maintaining the City streets, drainage system, sanitary sewers and other right-of-way components such as trees, street lights, traffic signals and signs. Public Works is also responsible for graffiti removal, fleet maintenance, and various contract services including solid waste management and HHW collection. The Parks and Community Services Department maintains City parks and facilities, and operates the Wave Waterpark, Avo and Moonlight Theaters. A general organizational chart is provided in Figure 6-1 below and department organizational charts can be found in Appendix A-4.

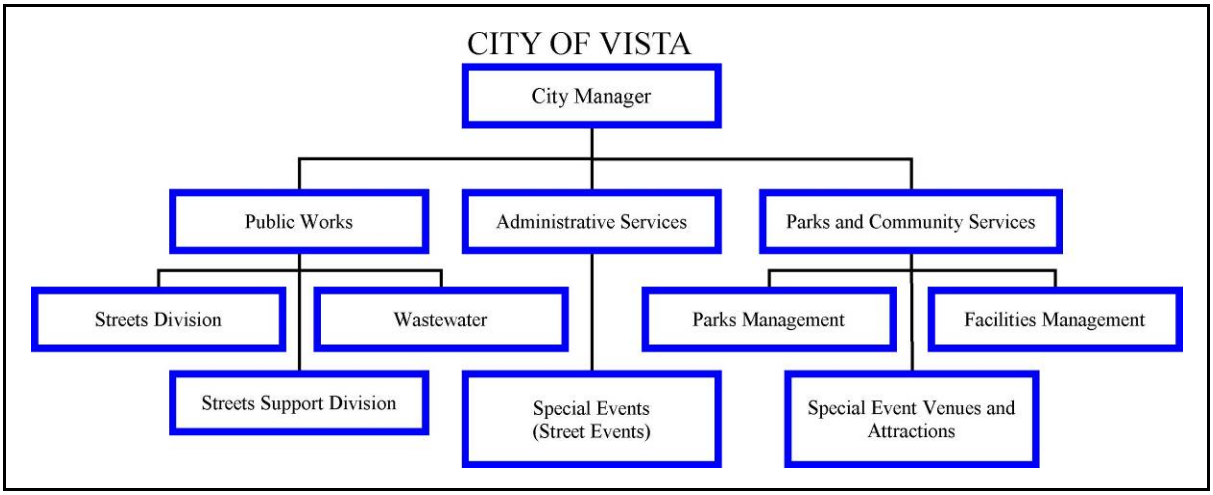

Figure 6-1: Organizational Chart for departments related to urban runoff

While the City conducts activities that remove pollutants from the MS4, such as parking lot sweeping, street sweeping and storm drain cleaning, various City facilities and maintenance activities can be sources of stormwater pollutants if BMPs are not in place to contain spills, manage trash, and handle non-stormwater discharges. This section describes the municipal facilities, activities and the BMPs that are implemented to protect water quality. This program section is intended to reduce municipal discharges of pollutants from the MS4 to the maximum extent practicable (MEP), and to prevent municipal discharges from the MS4 from causing or contributing to a violation of water quality standards.

This chapter is organized to help City departments effectively implement the Best Management Practices (BMPs) that are specific to each of their departments or activities. Each section addresses a City responsibility, which can be specific to one department or shared by multiple departments. It is the responsibility of each department to secure the budget for planning, implementation, construction of BMPs, maintenance of BMPs, education and training, and reporting for the JURMP, as applicable. The recommended steps to implement the elements of the program that apply to each department are summarized in Section 2.1 of this Plan.

6.2 SOURCE CHARACTERIZATION

This section addresses two types of municipal operations: fixed or stationary facilities; and field activities. A fixed facility is a specific building or physical location at which municipal operations occur. An example is a corporate yard. Conversely, field activities are actions or programs that staff or City contractors implement as a part of their work duties at various locations across the City. An example is street maintenance.

The City's inventory includes all of the applicable fixed facilities and activities that make up the City's Municipal Operations that may impact water quality. The City has identified the potential pollutants that may be generated at each of the facilities in the municipal inventory, as well as from field activities. Where applicable the following information is provided for each fixed facility or activity:

- Name;
- Address (if applicable);
- Watershed;
- Description;
- Potential pollutants generated; and
- Determination as to whether the facility is tributary to a 303(d) water body and generates pollutants for which the water body is impaired

The current inventory of the City's fixed facilities and field activities is found in Appendix B-4. The inventory also identifies high priority facilities and activities. These include the following, listed in Section D.3.a.(7) of Order R9-2007-0001:

- Roads, streets, highways and parking facilities
- Flood management projects and flood control devices
- Areas and activities tributary to a CWA 303(d) impaired water body, where an area or activity generates pollutants for which the water body is impaired.
- Corporate yards
- Household hazardous waste collection facilities
- Parks and recreation facilities
- Sanitary sewage collection systems

- Special event venues following special events (festivals, sporting events, etc.)
- Power washing
- Other municipal areas and activities that the City determines may contribute a significant pollutant load to the MS4.

6.3 BMP IMPLEMENTATION

6.3.1 POLLUTION PREVENTION

Pollution prevention is defined as practices and processes that reduce or eliminate the generation of pollutants, in contrast to source control BMPs, treatment control BMPs or disposal. The City implements pollution prevention BMPs at its municipal facilities and activities, as applicable. General Pollution Prevention BMPs that are applicable to all municipal personnel and operations include good housekeeping practices and recycling. Those pollution prevention methods that are applicable to specific municipal areas and activities are described in Section E of the Stormwater Standards Manual.

6.3.2 MINIMUM BMPS

The City has designated a minimum set of BMPs for all municipal facilities and activities. Collectively, the BMPs are listed in Section E of the Stormwater Standards Manual found in Appendix C of this document. In order to associate the BMPs with specific facilities or activities, the BMPs are grouped by pollutant generating activities.

Appendix B-4 lists the designated BMPs that are required to be implemented at each facility or field activity.

6.4 MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PROGRAM

6.4.1 MAINTENANCE

The City's Public Works Department is responsible for the routine and emergency maintenance of the City's stormwater conveyance system and flood control channels. The City storm drain maintenance crews (or contractors) inspect and clean catch basins, curb inlets, cleanouts, under sidewalk drains, channels and culverts using manual procedures and equipment, including backhoes, excavators and a vactor truck.

The City's MS4 has been inventoried and mapped in GIS. A copy of the current system map is found in Appendix B-1.

The City will implement the following schedule for inspection and cleaning of the MS4:

- Between May 1 and September 30 of each year, the City will inspect all MS4 facilities that receive or collect high volumes of trash and debris. All remaining MS4 facilities will be inspected at any time during the year.

- Any catch basin or storm drain inlet that has accumulated trash and debris greater than 33% of design capacity will be cleaned in a timely manner. Any MS4 facility that is designed to be self cleaning will be cleaned of any accumulated trash and debris immediately. Open channels will be cleaned of observed anthropogenic litter in a timely manner.

When practical, work is to be done when conditions are dry. Sediment control BMPs will be implemented to prevent materials from discharging downstream of the site of the cleaning activities.

Additionally, City staff members perform "rain patrol," in order to survey City streets for damage due to rain or flooding, and to provide emergency erosion and sediment control and clear debris from inlets, grates, pipe openings and road shoulders.

Additional information can be found in the City's drainage manual in Appendix E-1.

6.4.2 Flood Control Devices

The City currently operates a trash and debris net in the Buena Vista Flood Control Channel. This is a retrofit for water quality purposes. The City will continue to evaluate existing flood control devices to determine if retrofitting the device to provide additional pollutant removal from urban runoff is feasible. Evaluating feasibility of a retrofit will entail a review of existing research papers, potential retrofit structures, flow analysis, potential pollutant removal benefits, and costs. Final selection of a retrofit for a particular application needs to be done after careful consideration of site-specific factors to ensure effectiveness of the retrofit and no adverse impact to flood control. The City is completing a quality control check of the recently populated stormwater GIS layer, and will prioritize flood control devices for retrofit analysis after completion of the GIS layer.

6.5 Street Sweeping Program

Street sweeping is widely recognized as an effective BMP for reducing the amount of pollutants (sediment, litter, and excessive green waste) on street surfaces that may impact stormwater. The City currently contracts out its street sweeping services. City streets are swept on a revolving schedule at a rate of approximately 670 curb miles every month (approximately 8,000 curb miles per year).

The City has mapped all of its improved streets that include curb and gutter and has developed a minimum frequency for street sweeping based City needs and on the requirements of Order R9-2007-0001. The street sweeping program and schedule has been adjusted to coordinate street sweeping with trash and recycling pick-up schedules and to meet minimum sweeping frequencies for high, moderate and low volumes of trash and debris generating areas within the City. For the purposes of the street sweeping program, the terms high, moderate and low are used only to classify or rank the streets with relation to each other, NOT to qualify the streets as generating significant or non-significant amounts of trash and debris.

Sweeping occurs during the week except for holidays. New signs have been installed and routes are enforced by the City's Code Enforcement Unit. The fine for parking in a "No Parking" zone is $50. Door hangers were distributed to notify residents and businesses of the program requirements.

At a minimum, the following street sweeping frequencies will be adhered to for the identified improved streets (concrete curb and gutter) and improved parking facilities within the City:

- High Volume – Commercial Streets - Minimum of twice per month
- Moderate Volume – Residential Streets - Minimum of monthly
- Low Volume – Other streets and parking facilities - Minimum of once per year

The street sweeping debris is collected and contained in a temporary storage area and protected from storm water runoff at the Public Works Yard. The material is then disposed of through an approved disposal facility. Additional information can be found in the City's streets manual in Appendix E-2.

6.6 Pesticide, Herbicide, and Fertilizer Management

The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations cover a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. These certifications require the implementation of Integrated Pest Management (IPM) practices during maintenance activities. All City staff who apply pesticides and herbicides in "agricultural use" areas such as parks, golf courses, rights-of-way and recreation areas are certified in accordance with state regulations, and are familiar with and responsible for implementing safety precautions in Materials Safety Data Sheets. All certifications are kept on file at the City's Parks Department. Contracts for landscape maintenance include similar requirements.

Following are minimum BMPs implemented by City staff:

- Use of IPM practices;
- Use of native vegetation;
- Education on safe handling, application, and disposal;
- Schedules for irrigation and chemical application; and
- Collection and proper disposal of unused pesticides, herbicides and fertilizers.

Pesticide, herbicide and fertilizer management BMPs are implemented at all applicable public rights-of-ways, parks, recreational facilities, and other landscaped areas. More specific information can be found in the Section E of the Stormwater Standards Manual (Appendix C) or municipal manuals in Appendix E -3.

6.7 WASTEWATER ELEMENT

The City provides wastewater collection and transmission for its residents and businesses. The average daily wastewater flow for the City is approximately 8.25 million gallons per day (mgd). The City's collection system includes a network of approximately 280 miles of pipeline which range in size from 6-inch to 42-inch in diameter and approximately 7,000 manholes. The system also includes three pump stations (two within the City limits) and several metering stations. Sewage is conveyed to the 35 mgd Encina Wastewater Treatment Plant located in Carlsbad.

Best Management Practices

Preventive maintenance and response are the primary BMPs that are implemented to prevent wastewater pollution from entering the storm drain system and receiving waters. The following is a summary of the BMPs that will be implemented by the City for the Wastewater operations. More detailed implementation procedures are described in the Wastewater Manual found in Appendix E-4.

Sewer System Overflow Response

In order to minimize the potential human and environmental impacts caused by sewage spills, the City has a Sewer System Overflow Response Plan (SSORP) which is implemented by the City's Public Works Wastewater Division, with support from the Engineering staff. The SSORP details all of the procedures that are implemented during any type of sanitary sewer overflow. The document itself is a Best Management Practice that includes procedures for response, clean-up and reporting. The plan was submitted to the State as part of the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SWRCB Order No. 2006-0003-DWQ), and is updated as needed.

System Cleaning

The City has an extensive preventative maintenance program for maintaining its sewage collection system. The City's Public Works Wastewater Division consists of a crew of 16 staff members who are responsible for cleaning and maintaining the system on a daily basis. Crews operate three vactor trucks, four support vehicles, hydro-jetters, power rodders, generators, and trash pumps.

The schedule of this program is such that daily maintenance activities result in cleaning every accessible pipeline segment within the City's jurisdiction, twice yearly. Pipeline segments identified by the staff as "enhanced maintenance areas" as a result of root intrusion or other recurring problems, are cleaned more frequently or on an as-needed basis. Crews routinely look for problem areas and automatically respond to areas of known potential problems (e.g., older lines, historical blockage areas, etc.) to check lines after significant rainfall events.

Video Inspection

Another primary function of the Wastewater Division is to perform video inspections of the sanitary sewer collection systems to identify potential problems and to prioritize the City's maintenance and rehabilitation program.

Utility Crew Work

The Wastewater Division performs general utility work, including maintenance and modifications to sanitary sewer manholes and point repairs in the sanitary sewer collection system. These activities fall under a general construction activity, with the additional impacts related to working with sanitary sewage. The City also periodically contracts out some repair work.

6.7.1 Wastewater Master Plan

The City has initiated an aggressive five year sewer improvement program starting with a Sewer Master Plan Update and system wide Closed Circuit Television (CCTV) pipeline condition investigation and assessment. Identified projects will range from capacity driven sewer pipeline replacement projects to age, material, or condition-related sewer pipeline rehabilitation projects. Project sites are located in the City of Vista, City of Carlsbad, and unincorporated areas of San Diego County. Projects occur in the public right-of-way, paved streets, easements, canyons, and creeks. The first phase of sewer improvement projects are currently in the design and permitting stage with construction starting in early 2010. The total sewer improvement program cost is currently estimated to be in the vicinity of 100 million dollars.

6.7.2 Fats, Oils, and Grease Program

The City recently implemented a formal program to control Fats, Oils, and Grease (FOG) discharges to the sanitary sewer system, as required by Order 2006.0003-DWQ. The FOG program is intended to reduce the frequency of sanitary sewer overflows (SSOs) caused by grease. The program includes public outreach, FOG disposal methods, ordinance revisions, inspections of food service establishments (FSEs), and the identification and maintenance of enhanced maintenance areas. In order to increase efficiency, the City has coordinated FOG inspections with stormwater inspections at FSEs.

6.8 Special Events

Periodically the City is host to special events, including parades, car shows, and street fairs. In general, Special Event Permits are required for events held on public property. Special Event Permit applications must be filed at least 10 days in advance of the planned event. The Administrative Services Department has been designated by the City Manager to coordinate the review of applications for those events that require the temporary closure of City streets. A Special Event Permit through this process is required if street closure(s) or other traffic control measures on any public street, sidewalk or alley are needed. Event organizers complete a permit application then meet with a Council appointed committee. This committee typically includes the Administrative Services Director, Parks & Community Services Director, Deputy Fire Chief, Transportation Operations Manager, Public Works Operations Manager, City Planner, Code Compliance Manager, Director of Economic Development, Stormwater Program Manager, Sheriff's Captain, and a representative from the North County Transit District.

All applications for Special Events Permits are forwarded to and reviewed by City Storm Water Program staff to identify any storm water concerns. The focus of this review is to identify BMP requirements for the events as well as inspection requirements for the City to ensure that the MS4 is protected during such events. Communications are established between Storm Water staff, the City Risk Manager and the event sponsor/organizer to identify and address any storm water concerns.

Special events typically have a high density of people per square foot raising the potential for pollutant generation. The pollutant generating activities and their potential pollutant types at special events typically include:

- Setup and teardown of equipment booths - illicit discharges, trash generation, and organic materials
- Booth operation – trash generation, illicit discharges,
- Food/drink preparation and consumption –trash generation, illicit discharges, and organic materials
- Hydraulic rides – oil and grease
- Portable restrooms – chemicals and bacteria

Best Management Practices

The following Best Management Practices represent the minimum requirements for special events that are expected to generate significant trash and litter. The City may improve or modify these BMPs at any time if it is determined to provide equal or greater protection.

All Event Organizers must comply with the following required Storm Water Best Management Practices (BMPs), and should train event staff and notify vendors of their storm water pollution prevention responsibilities:

Food and beverage, and all chemical and liquid activities or products:

Event Hosts/Organizers and vendors should have spill cleanup materials in or adjacent to their work area. Spill cleanup materials include: paper towels, cloth towels, kitty litter and/or sand. All spilled materials must be picked up out of the public right of way once the spilled material is absorbed off the ground. Spills leaving the event venue area into the surrounding streets must be captured and prevented from entering the surrounding non-event area(s) and storm drains.

Storm Drain Protection:

a. Event Hosts/Organizers must identify all storm drain inlets and catch basins on permit application site plans.
b. If inlets are in the event area, organizers and the City must consider appropriateness of additional inlet protection such as screens.
c. All impacted inlets or catch basins identified on the special events site plan must be visually inspected and cleaned, if necessary, following the special event and prior to an anticipated rain event (40 percent chance or greater of rain in the forecast).

Craft/Art Creative Areas and Post Event Public Art Removal:

a. All craft/art creative areas must have spill cleanup materials on hand (see above).

b. Post event clean-up of these areas includes removal of temporary public art (chalk, paint, charcoal, clay, etc). Event/vendor staff may use wet-mops, with proper disposal of any bucket water into the sanitary sewer (for example, through a sink), or released over a landscaped area that has adequate capacity to contain the liquids and the pollutant without allowing discharge onto sidewalks, curbs, gutters streets and drains. Power washing may occur if all wash water is contained, removed and properly disposed.

Trash and Debris:

a. Adequate trash containers must be provided throughout the event venue, including at the exit and entry points. All trash containers must be covered. Regular collection of renegade trash and debris is required.

b. Temporary Fencing will be required to be put into place if the event, or any portion thereof, is determined to pose a threat of wind blown debris into any water bodies.

c. Post event sweeping of the entire venue area (improved streets and parking facilities) may be required.

Portable Restrooms:

a. All portable restrooms must be placed away from all storm drain inlets, drainage swales, water bodies, and any other locations that have the potential to impact the storm drain system.

b. All portable restrooms are required to have a secondary containment pan or additional BMPs in place around the restrooms for possible overflows.

c. The contact information for the company responsible for the restrooms must be clearly marked on or around the restrooms.

6.9 Education and Staff Training

As a part of the Municipal component, the City will conduct training and ensure that staff and City contractors are educated on BMPs. In general, this program will consist of both formal and informal education regarding specific requirements, BMPs and issues related to job specific municipal operations. The City's comprehensive education program is described in further detail in Section 10.0 EDUCATION of this document.

6.10 Inspections and Corrective Actions

Facility inspections are the primary mechanisms used to verify implementation of the designated BMPs at municipal facilities and activities. High Priority fixed facilities are formally inspected at least once per year using the form in Appendix D-2 as applicable. Inspections are conducted for the following reasons:

- To ensure that BMPs are properly implemented and functioning effectively;
- To identify maintenance (e.g., material removal) and repair needs;
- To ensure the proper implementation of stormwater management
- Plans, and;
- To make sure that staff is aware of the stormwater management requirements.

Inspection information, including any corrective actions, is maintained in the City's commercial and industrial facility database. When deficiencies in BMP implementation are found during inspections, the inspector will document corrective actions required to bring the site/activity into compliance. The corrective actions will be given to appropriate staff and once corrected, the inspection/corrective action documentation will be updated to demonstrate resolution.

Any complaints received related to municipal facilities and activities are investigated by Water Quality Code Enforcement staff and documented in accordance with the procedures detailed in section 9.0 of this document.

6.11 ENFORCEMENT

The City is required to have an enforcement program to enforce compliance at its municipal facilities. The City staff conducting municipal facilities inspections will document all violations observed. Depending on the severity of the violation, enforcement can range from a warning to disciplinary actions. If the non-compliance is a result of negligence by a contractor to the City, the enforcement action could range from a warning to the assessment of fines. Section 2.2.2 of this document provides a complete description of the enforcement mechanisms and actions that the City may implement to achieve compliance with urban runoff requirements. The typical progressive enforcement steps are:

- Warnings; Corrective Action Notice;
- Notice of Violation; Notice to Clean;
- Disciplinary actions taken against a municipal employee;
- Enforcement of contracts (Municipal contracts);
- Stop work orders (Municipal contracts);
- Citation and fines (Municipal contracts);
- Denial or revocation of permits (Municipal contracts); and
- Civil and or criminal court actions.

Enforcement steps will be implemented on a basis case-by-case, as needed to ensure compliance. City staff will keep a record of the number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. City staff will conduct follow-up inspections to determine if corrective actions have been taken in accordance with the City's JURMP, ordinances, and minimum BMP requirements. This information will be included in the City of Vista's JURMP

Annual Reports, and the discussion will exhibit that compliance has been achieved or will describe actions that are being taken to achieve compliance.

If a significant and/or immediate threat to water quality is observed by a City's inspector, action will be taken to require the responsible party to immediately cease the discharge. Any non-compliance that may endanger health or the environment will be reported to the RWQCB within 24 hours, and a written report will be submitted within 5 days of discovery of the non-compliance (see Appendix D-1 for the report form).

6.12 Municipal Component Effectiveness Assessment

The JURMP effectiveness assessment strategy is detailed in Section 13 of this document. An annual assessment of this entire component and significant activities will be conducted in accordance with this strategy with results detailed in Annual Reports. Table 6-1 below lists items that will be tracked and reported in accordance with the Order.

Table 6-1: Annual Report Tracking and Assessment

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
Source Identification Municipal Inventory:	1	Confirmation	Y/N	Updated inventory of all municipal facilities and activities
BMP Implementation: Municipal pollution prevention	1	Confirmation	Y/N	Confirm that designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events
BMP Implementation: BMPs for Municipal areas and special events	1	Confirmation	Y/N	Confirm that designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events
O&M MS4 Inspections: inspection/ maintenance of MS4	1 3	Tabulation Inspection	Action Implementa-tion	Identification of total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned
O&M MS4 Implementation: Maintenance activities	1	Confirmation	Y/N	Minimum yearly inspection between May1 and Sept 30 for all MS4 facilities that receive or collect high volumes of trash. All other MS4 facilities minimum once/year
	1	Confirmation	Y/N	• After 2 years inspection, any MS4 facility that requires inspection/cleaning less than annually may be inspected as needed, but not less than once every other year • Identification of any MS4 facility found to require inspection less than annually following two years of inspection,

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
				including justification for the finding
	1 3	Inspection Tabulation	Implementa-tion	• Any catch basin or storm drain inlet that has accumulated trash and debris greater than 33% of design capacity shall be cleaned in a timely manner. Any MS4 facility designed to be self-cleaning shall be cleaned of accumulated trash/debris immediately. Open channels shall be cleaned of observed anthropogenic litter in a timely manner • Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
	4	Quantification	Loading	Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category
Pesticide / Herbicide Management: Implement BMPs	1	Confirmation	Y/N	Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented for municipal areas
Municipal Sweeping: Implement: High Volume area sweeping	1	Tabulation	Implementa-tion	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
				and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways
Municipal Sweeping: Implement: Moderate Volume area sweeping	1	Tabulation	Implementa-tion	Identification of total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping for such
Municipal Sweeping Implement: Low Volume area sweeping	1	Tabulation	Implementa-tion	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as frequency of sweeping associated with such.
Municipal Sweeping	1	Tabulation	Implementa-tion	Identification of the total distance of curb-miles swept
	1	Tabulation	Implementa-tion	Identification of number of municipal parking lots, number of municipal parking lots swept, and frequency of sweeping
	4	Quantification	Loading	Amount of material (tons) collected from street and parking lot sweeping
Prevent Sanitary Sewer Infiltration to MS4:	1	Confirmation	Y/N	Description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4
Inspection of Municipal Areas and Activities:	1	Confirmation	Y/N	Description of inspections and maintenance conducted for municipal treatment controls of high priority areas
	3	Inspection	Implementa-tion	A description of general results of the inspections

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
Inspection of Municipal Areas and Activities: Follow-up inspections based on initial findings	1	Confirmation	Y/N	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance
	3	Inspection	Implementa-tion	Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of inspection
	1	Confirmation	Y/N	Description of notable activities conducted to manage urban runoff from municipal areas and activities
Non-Emergency Fire Fighting	1	Confirmation	Y/N	Description of any efforts conducted to reduce pollutant discharges from non-emergency fire fighting flows.
Enforcement of Municipal Areas and Activities:	1	Confirmation	Y/N	Number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance

6.13 PROGRAM MODIFICATION AND REVIEW

Jurisdictional Urban Runoff Management Program implementation is an iterative process that involves annually assessing program effectiveness and making modifications when needed to improve programs and maintain compliance. Jurisdictional Urban Runoff Management Program modifications may be made by the RWQCB Executive Officer or by the Copermittees. Any City requests for modifications will be incorporated, as appropriate, into the Annual Reports. The City will use this section to reserve a location for identifying and documenting future modifications to the Municipal component.

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7.0 INDUSTRIAL AND COMMERCIAL

7.1 INTRODUCTION

Commercial facilities include facilities and activities that provide services, such as cleaning, repair, entertainment, or food service; in contrast to industrial facilities where the primary activity involves the conversion of raw materials into an intermediate or final product, often with the generation of by-products and waste. Activities associated with various industrial and commercial businesses have the potential to contribute pollutants to the MS4. The City has compiled a list of industrial and commercial sources and developed BMP requirements, including pollution prevention measures, for each source and activity. The objective of this component is to reduce industrial and commercial discharges of pollutants from the MS4 to the MEP and prevent industrial and commercial discharges from the MS4 from causing or contributing to a violation of water quality standards.

7.2 INDUSTRIAL AND COMMERCIAL SITES / SOURCES ELEMENT

7.2.1 BACKGROUND

The City's industrial and commercial inventories include over 750 businesses. Examples of industrial facilities include manufacturing facilities and trucking businesses. Stationary commercial facilities include auto repair shops, restaurants, and wholesalers of many kinds but do not include mobile commercial facilities. For the rest of Section 7, "stationary commercial" facilities will imply "commercial facilities" that are not mobile. Mobile commercial facilities are detailed in Section 7.3.

Each facility has the potential to discharge pollutants into the MS4 and hence impact local water quality. In this program, pollution prevention methods are used as an initial mechanism for reducing commercial discharges of pollutants into the MS4. Often, the most cost effective and simple solution to reducing pollution is to implement pollution prevention techniques at the source. The City also requires minimum site and activity specific BMPs to be implemented, and education, inspection and enforcement activities are conducted to verify or achieve compliance and, in some cases, to provide more site-specific direction for BMP implementation.

7.2.2 SOURCE CHARACTERIZATION

A watershed-based inventory of the industrial facilities and commercial sites/sources within the City's jurisdiction has been compiled and prioritized based on Threat to Water Quality (TTWQ). Initial business inventory information was obtained from various sources including the City of Vista business license database, windshield surveys, and business listings. Business information such as facility name, address, North American Industry Classification System (NAICS) code, and a narrative description was entered into a database, along with any detailed inspection information. Pollutants potentially generated by the site/source are also included in the database and each site/source was assessed to determine whether the site/source is tributary

to a Clean Water Act section 303(d) water body segment and generates pollutants for which the water body segment is impaired.

The inventories will be updated annually through reviewing business license records for new businesses, performing routine inspections, and responding to reported incidents. All industrial and commercial facilities that meet at least one of the following criteria are included in the inventories:

Industrial facilities

- Industrial Facilities, as defined at 40 CFR § 122.26(b)(14)
- Facilities subject to the statewide General Industrial Permit or other individual NPDES permits
- Operating and closed landfills
- Facilities subject to section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA)
- Hazardous waste treatment, disposal, storage and recovery facilities

Commercial facilities

- Automobile repair, maintenance, fueling, or cleaning
- Airplane repair, maintenance, fueling, or cleaning
- Boat repair, maintenance, fueling, or cleaning
- Equipment repair, maintenance, fueling, or cleaning
- Automobile and other vehicle body repair, or painting
- Automobile (or other vehicle) parking lots and storage facilities
- Retail or wholesale fueling
- Contractors with significant storage yards
    - Painting and coating
    - Cement mixing or cutting
    - Masonry
    - Landscaping
    - Other contractors
- Eating or drinking establishments, including food markets
- Botanical or zoological gardens and exhibits
- Nurseries and greenhouses
- Golf courses, parks and other recreational areas/facilities
- Cemeteries
- Marinas
- Building material retailers and storage
- Animal facilities
- Portable sanitary services

Other categories of commercial businesses that are explicitly mobile are listed in Section 7.3 of this document. Some business categories may include both mobile and stationary businesses, particularly contractors. To distinguish between contractors with and without storage yards, the City assessed the land use of each inventoried business. Contractors in industrial areas were assumed to have storage yards, while contractors in other areas of the City were deemed

unlikely to have storage yards and were marked as mobile businesses. Both mobile and stationary businesses are included on the commercial inventory in Appendix B-6 of this JURMP document.

Other Inventoried Industrial and Commercial facilities

In addition to the types of businesses listed above, the businesses meeting the following criteria were inventoried.

- All other commercial or industrial sites/sources tributary to a CWA Section 303(d)-impaired waterbody segment, where the site/source generates pollutants for which the waterbody segment is impaired
- All other commercial or industrial sites/sources within or directly adjacent to (i.e., within 200 ft.) or discharging directly to coastal lagoons or other receiving waters within an ESA.
- All other commercial or industrial sites/sources that the City determines may contribute a significant pollutant load to the MS4. Dry weather field screening and analytical monitoring results were evaluated to identify any commercial or industrial sites/sources that contribute significant pollutant loads to the MS4. Reported incidents, violations, and field investigation reports were also reviewed, when available, to identify such sites.

Inventories of industrial and commercial facilities within the City of Vista are included in Appendix B-5 and B-6, respectively. The inventories include name, address, NAICS code, watershed, a category designation that describes the products or services provided by each site or source, and whether the business is mobile. The businesses have also been geocoded so that the City may track them via GIS. Waste Discharge Identification (WDID) numbers are included for sites that are covered under the General Industrial Permit or an individual NPDES permit. The City will track its inventory, including the fields mentioned above along with inspection results, through the use of a business inventory database.

The TTWQ prioritization, assigned via the process described in Section 7.2.2.1, is noted on the inventories as well. Table 7-1 lists the pollutants that may be generated by each category of business. The pollutants that may be generated by each individual business can be determined by matching the category of business, which is noted for each of the businesses in Appendices B-5 and B-6, with the category in Table 7-1 and its corresponding pollutants.

Table 7-1: Pollutant Loading Potentials of Industrial and Commercial Sources

Source Category	Permit Commercial Category*	Heavy Metals**	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Oxygen Demanding	Bacteria/ Viruses	Trash
Auto Repair	i	L	L	L	PO	UL	UL	PO	UL	PO
Airplane Repair	ii	L	L	L	PO	UL	UL	PO	UL	PO
Boat Repair	iii	L	L	L	PO	UL	UL	PO	UL	PO
Equipment Repair	iv	L	L	L	PO	UL	UL	PO	UL	PO
Pest Control	ix	PO	PO	UL	PO	L	UL	PO	UL	PO
Auto Paint/Body	v	L	L	PO	PO	UL	UL	PO	UL	PO
Vehicle Washing	vi	PO	L	PO	PO	UL	UL	PO	UL	PO
Vehicle Parking/Storage	vii	L	L	L	L	UL	UL	PO	UL	PO
Fueling	viii	L	L	L	PO	UL	UL	PO	UL	PO
Eating/Drinking Establishments	x	UL	UL	L	PO	UL	UL	L	L	L
Carpet/Furniture Cleaning	xi	UL	PO	UL	PO	UL	UL	PO	UL	PO
Cement Mixing/Cutting	xii	UL	UL	PO	L	UL	UL	PO	UL	PO
Masonry	xiii	UL	UL	PO	L	UL	UL	PO	UL	PO
Painting/Coating	xiv	PO	PO	PO	PO	UL	UL	PO	UL	PO
Cemeteries	xix	UL	UL	UL	PO	L	L	PO	PO	PO
Botanical/Zoological Exhibits	xv	UL	PO	UL	PO	L	L	PO	L	PO
Landscaping	xvi	UL	PO	UL	PO	L	L	PO	UL	PO
Nurseries/Greenhouses	xvii	UL	PO	UL	L	L	L	PO	PO	PO
Golf courses/Parks	xviii	UL	UL	UL	PO	L	L	PO	PO	PO
Pool/Fountain Cleaning	xx	UL	UL	UL	PO	UL	UL	UL	UL	UL
Marinas	xxi	L	PO	L	PO	UL	UL	PO	PO	PO
Portable Sanitation	xxii	UL	PO	PO	PO	UL	L	PO	L	PO
Building Materials	xxiii	PO	UL	PO	L	PO	PO	PO	UL	L
Animal Facilities	xxiv	UL	UL	UL	PO	UL	L	L	L	PO
Power Washing	xxv	PO	PO	PO	PO	UL	UL	UL	UL	UL

Source Category	Permit Commercial Category*	Heavy Metals**	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Oxygen Demanding	Bacteria/ Viruses	Trash
Aggregates		PO	UL	UL	L	UL	UL	PO	UL	UL
Air Transit		PO	PO	PO	PO	UL	UL	UL	UL	UL
Airfields		L	PO	L	PO	UL	UL	PO	UL	PO
Entertainment		UL	UL	UL	UL	UL	UL	PO	PO	L
Ground Transportation		L	PO	L	PO	UL	UL	PO	UL	PO
Landfills		PO	PO	PO	L	PO	PO	L	L	L
Manufacturing, Biotech/Pharmaceutical		UL	PO	UL	PO	UL	UL	PO	UL	PO
Manufacturing, Chemicals		UL	PO	PO	PO	PO	UL	PO	UL	PO
Manufacturing, Concrete		PO	UL	PO	L	UL	UL	PO	UL	PO
Manufacturing, Electronics		PO	UL	PO	PO	UL	UL	PO	UL	PO
Manufacturing, Equipment		PO	UL	PO	PO	UL	UL	PO	UL	PO
Manufacturing, Fabric/Clothes		UL	UL	UL	PO	UL	UL	PO	PO	PO
Manufacturing, Fabricated Metal		L	UL	PO	PO	UL	UL	PO	UL	PO
Manufacturing, Food/Drink		UL	UL	PO	PO	UL	UL	PO	L	PO
Manufacturing, Misc.		PO	PO	PO	PO	UL	UL	PO	UL	PO
Manufacturing, Paper		UL	UL	UL	PO	UL	UL	PO	PO	PO
Manufacturing, Plastic/Rubber		UL	PO	PO	PO	UL	UL	PO	UL	PO
Manufacturing, Primary Metal		L	UL	PO	PO	UL	UL	PO	UL	PO
Manufacturing, Stone/Glass		UL	UL	UL	L	UL	UL	PO	UL	PO
Manufacturing, Structural Steel		L	UL	UL	PO	UL	UL	PO	UL	PO
Manufacturing, Wood/Furniture		UL	UL	UL	PO	UL	UL	PO	PO	PO
Other Contractor		PO	PO	PO	PO	UL	UL	PO	UL	PO
Other Recreation		UL	UL	UL	UL	UL	UL	PO	PO	L
POTWs		PO	UL	UL	PO	UL	PO	L	UL	PO
Power Generation		PO	PO	PO	L	UL	UL	UL	UL	UL
Printing		PO	PO	UL	PO	UL	UL	PO	PO	PO
Recycling		L	PO	PO	L	PO	PO	PO	UL	PO

Source Category	Permit Commercial Category*	Heavy Metals**	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Oxygen Demanding	Bacteria/ Viruses	Trash
Sewage Sludge		PO	PO	PO	PO	PO	L	L	L	PO
Vehicle/Equipment Rental		L	UL	L	PO	UL	UL	PO	UL	PO
Waste Management		PO	PO	PO	L	UL	PO	L	L	L
Water Transit		PO	L	PO	PO	UL	PO	PO	PO	PO
Wholesale Food		UL	UL	PO	PO	UL	UL	L	PO	PO
Wholesale/Storage/Warehousing		UL	UL	PO	PO	UL	UL	PO	PO	PO

Notes

L = Likely, PO = Possible, UL= Unlikely

* The Municipal Permit lists a number of specific commercial categories. Other categories on this list were mainly created for industrial facilities, which the Municipal Permit mainly defines via a broad reference to the Code of Federal Regulations rather than listing specific categories. Some commercial categories not specifically listed in the Municipal Permit are also included.

** Heavy metals are a possible pollutant for any facility that has a parking lot.

This table is based on the field experience of D-MAX Engineering and on tables in the Copermittees' Baseline LTEA. D-MAX has conducted more than 1,000 industrial and commercial inspections during which it assessed the pollutant discharge potentials of the inspected facilities.

7.2.2.1 PRIORITIZATION

The City of Vista evaluated the potential TTWQ of each business by incorporating factors specified by the Order and by using past experience. A flow chart summarizing the prioritization process is provided at the end of this section as Figure 7-1. A summary of the factors used in assigning TTWQ prioritization is listed below:

- Results from inspections and institutional knowledge
    - Non-storm water discharges
    - Size of facility and total area of the site
    - Facility design, including degree of exposure of storage and/or activities
    - Compliance history
- If the receiving waterbody is 303(d) listed, whether the business has a "likely" pollutant discharge potential for pollutants for which the waterbody is impaired
    - Business activity type, based primarily on NAICS code.
    - Materials used and wastes generated
- Pollutant discharge potential
- Coverage under the General Industrial Permit
- Proximity to the receiving waterbody

The City evaluated pollutant discharge potential and types of materials used and wastes generated via the assignment of business activity type categories based on NAICS codes. Additional verification of category assignments was conducted by reviewing the business names and in some cases conducting searches for the business on the internet. A majority of the facilities listed in the business inventory were inspected during the previous year's inspection program. Results from inspections and other institutional knowledge were used to assess the likelihood of non-storm water discharges, potential pollutants generated, the size of the facility and total area of the site, facility design, and the compliance history. The State's online database of businesses that have obtained coverage under the General Industrial Permit was referenced to ensure that permitted businesses located in Vista are included on the inventory. Evaluation of aerial photos was also used to help assess the degree of exposure, and GIS analysis was used to determine land use, watershed, receiving waterbody, and distance to receiving waterbodies. Note that while Figure 7-1 includes being less than 200 feet from a receiving waterbody among its criteria, when preparing the JURMP the distance to the waterbodies was calculated based on geocoded addresses, which results in the facility location being plotted along a street center line. Because it is possible for a portion of the site to be within 200 feet of a waterbody even if the point on the street center line is more than 200 feet away, to be conservative all facilities for which the geocoded point was within 500 feet of the receiving waterbody were categorized as being within 200 feet of the waterbody. This will be revised in future Annual Reports as more site specific information is obtained through inspections and individual visits. Land use was used to help differentiate between mobile and stationary businesses, as businesses in single family residential areas are typically mobile.

Industrial and commercial businesses that, based on past inspections and institutional knowledge, are known to have poor compliance history or otherwise have a high potential for pollutant discharge were classified as high TTWQ. In future years, if these sites develop a satisfactory pattern of compliance, a lower priority may be assigned so that the City will continue to direct its inspection resources where they are most needed.

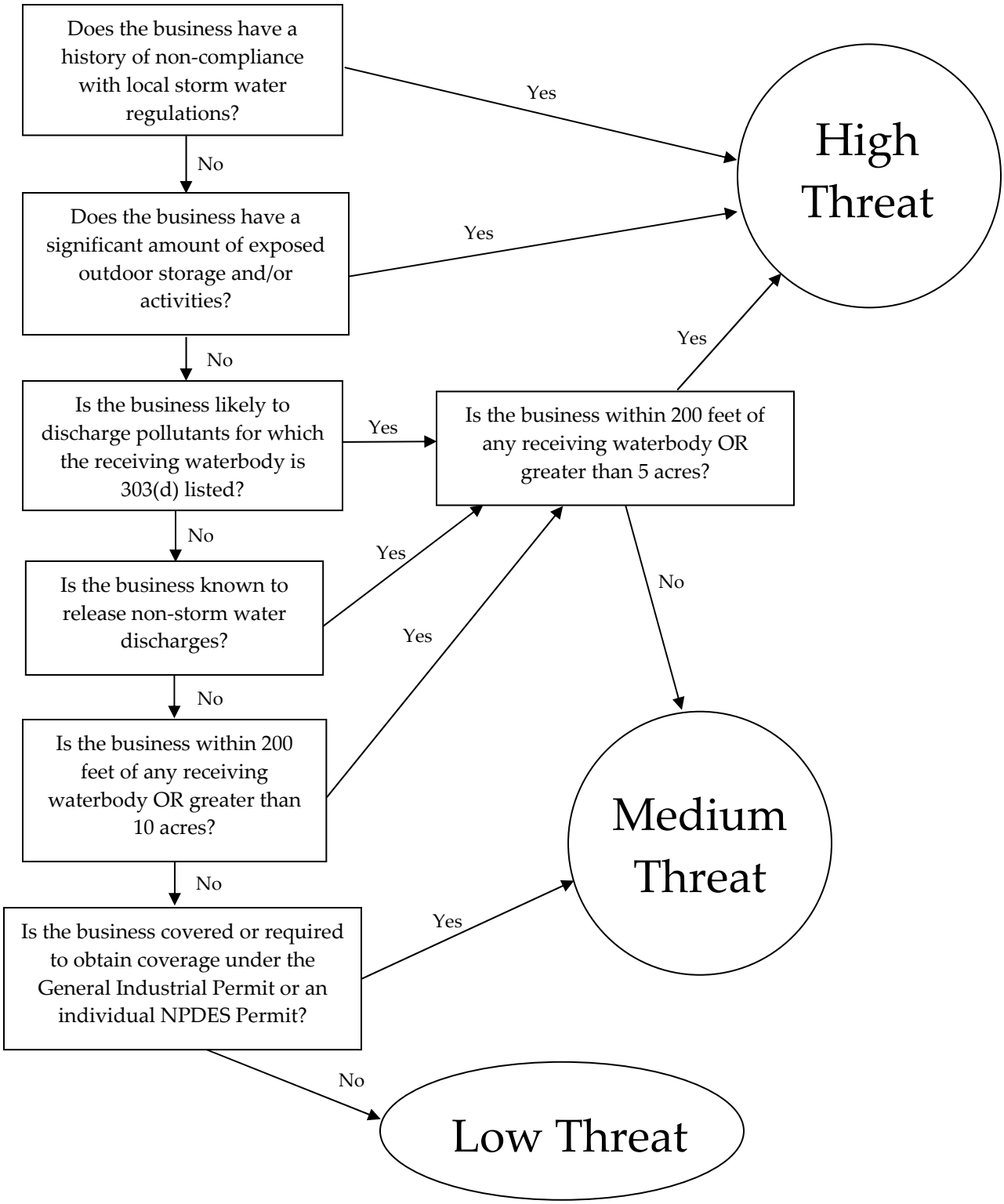

Note: The City reserves the right to assign higher TTWQ ratings than those dictated by this flow chart if deemed appropriate based on field observations during inspections or other investigations.

Figure 7-1: TTWQ Prioritization Flow Chart for Industrial and Commercial Sources

7.2.2.2 BMP REQUIREMENTS

Pollution prevention methods are cost-effective BMPs that eliminate or reduce the generation of pollutants at their sources. Industrial and commercial facilities produce a range of pollutants, both indoors and outdoors, that can threaten human and environmental health if washed into the storm drain system by way of urban runoff. Businesses can benefit from pollution prevention methods by reducing labor time associated with excess pollutant waste handling, thereby re-directing labor time more efficiently to production, as well as the accompanying costs of storage, disposal or treatment.

The following pollution prevention methods shall be considered and implemented by businesses where appropriate:

- Reduce quantity of toxic materials used or substitute less-toxic materials
- Display pollution prevention methods prominently to remind or instruct employees and customers
- Eliminate over-irrigation runoff
- Install native plant landscaping where possible and use Integrated Pest Management principles to prevent or minimize chemical use
- Implement a spill response plan
- Segregate and recycle wastes
- Conduct preventive maintenance and maintain equipment in good operating condition to prevent leaks
- Reduce waste through more efficient production processes
- Recycle wastes as part of the production process (most preferred), offsite or on site (least preferred)

In addition to the pollution prevention BMPs described above, the City has also established a set of minimum BMPs for industrial and commercial businesses. The City has developed a Stormwater Standards Manual, which contains detailed information on BMPs relevant to different businesses and related activities. The Stormwater Standards Manual can be found in Appendix C.

7.2.2.3 ADDITIONAL CONTROLS FOR INDUSTRIAL AND COMMERCIAL SITES / SOURCES

The following pollutants have been identified on the 303(d) listing of impaired waterbodies in the City: TDS, nitrate and nitrite, phosphate, manganese, selenium, sulfates, and DDT. The City's TTWQ prioritization process assigns higher priorities to the businesses that are likely to generate the pollutants listed above. No businesses in the City are known to generate significant levels of manganese, selenium, sulfates, DDT, or TDS. Cement mixing or cutting businesses were assigned higher priorities as a proactive measure related to TDS. Nurseries, greenhouses, and other businesses likely to be using fertilizer products containing nitrate, nitrite, and phosphates were also assigned higher priorities.

During inspections of businesses that drain to 303(d) listed receiving waters or other ESAs, the City will conduct more detailed investigations into whether the businesses are potential sources

of the pollutants of concern or may otherwise negatively impact the ESA. If a business is believed to be a significant source of key pollutants and the standard BMPs are not adequate, the City will require additional BMPs so that discharges of these pollutants will be reduced to the MEP. The City's municipal code also allows the City to require such businesses to prepare SWPPPs, even if they are not subject to the General Industrial Permit.

7.2.3 Program Implementation

The City of Vista provides education and outreach so that regulated businesses are aware of the City's storm water requirements. The City also inspects its inventoried businesses to evaluate compliance with its BMP requirements. Enforcement actions are taken as necessary to bring violators into compliance.

7.2.3.1 Education and Outreach

The City of Vista provides information and training regarding storm water quality to industrial and commercial owners and operators. Businesses are given educational materials outlining pollution prevention methods and BMPs during inspections, where appropriate. Inspectors also give recommendations to businesses where necessary. Based on the City's experience, this site-specific, personal education is among the most effective methods of outreach. The educational program for industrial and commercial businesses is described in more detail in Section 10 of this document.

The City of Vista will provide each inventoried industrial or commercial business a notification of the City's updated BMP requirements that are applicable to the site/source within the first three (3) years of implementation of the updated JURMP. The City will conduct this notification during site inspections where feasible; businesses that cannot be inspected within the first three years of program implementation will be notified through other means, which may include direct mail or mailing with business license renewal packets.

7.2.3.2 Staff Training

Staff responsible for conducting storm water compliance inspections and enforcement of industrial and commercial facilities is trained annually on inspection and enforcement procedures, BMP implementation, and reviewing monitoring data, as described in Section 10 of this document.

7.2.3.3 Facility Inspections

Before beginning the inspection process, the City prepares a list of businesses selected for inspection. The following methods may be used to evaluate compliance of industrial and commercial sites/sources.

Site Inspection
The site inspection procedure involves a thorough examination of the facility and all outdoor activities with the potential to generate urban runoff pollution. An inspection form is completed at each site to document the visit (Appendix D-2). If the business is a duplicate or

cannot be contacted, an inspection form is still completed to document the outcome of the inspection in order to update the database.

Pre-Inspection

Prior to beginning the site inspection, the inspector completes the first section containing contact information and facility/site information by using information from the prioritized inventory. This information includes business name, address and the assigned NAICS code and TTWQ prioritization, as appropriate. The inspectors also update the approximate distance to waterbodies if necessary. Upon arrival at the site, initial observations from a perimeter walk, as feasible, are documented in *"Initial Observations."*

Meeting With Manager/Responsible Party

Upon meeting the manager/responsible party, the inspector introduces the stormwater program and the purpose of the inspection, using this opportunity to assess stormwater knowledge of the manager/responsible party and to provide education regarding stormwater compliance. The introduction to the program includes a brief overview of the federal and state water quality laws, municipal permit requirements, impacts of urban runoff, and a description of the local waterbodies and pollutants of concern. The inspector also describes BMPs as a mechanism to eliminate pollutant discharges to the storm drain system and distributes educational material provided by the City.

After the introduction, the inspector verifies the existing information including the business address and phone number and notes any changes on the form as necessary. The inspector also evaluates the NAICS code to verify that the code accurately reflects the principal activity of the business. If the NAICS code does not reflect the principal activity of the business, an applicable NAICS code is recommended (this may be provided in a follow up communication).

BMP Assessment

After the introductory meeting, the inspector conducts a comprehensive walk-through of the facility, generally accompanied by the manager/responsible party, to inspect all areas exposed to stormwater and to evaluate existing BMPs and their effectiveness. The inspector also uses this time to identify possible IC/IDs to the City stormwater conveyance system. If specific BMPs are not implemented or are found to be ineffective, the areas of deficiency are noted. If the facility manager/responsible party accompanies the inspector, recommendations are made verbally as well as recorded on the inspection form. The BMP evaluation and associated notes are recorded on the inspection form in *"BMP Summary"*. Any improvements that must be made are summarized in *"Corrective Actions Required by the City"*. While inspectors do not typically prescribe exact BMP solutions, the inspectors generally do attempt to work with site contacts to provide examples of BMPs solutions that could be implemented. Effective, low cost solutions are sought whenever possible, although in some cases more expensive BMPs are needed to reduce pollutant discharges to the MEP.

Based on observations during the inspection, the inspector may determine that the TTWQ rating of the business should be changed, either from a lower to higher priority or vice versa. Any such changes will be reflected in inventory updates submitted in future JURMP Annual Reports.

The business is also evaluated for its staff training. If the facility has a SWPPP and storm water monitoring program, both are assessed. The BMPs in the SWPPP are reviewed, and the results from the storm water monitoring program are also reviewed and compared with RWQCB benchmark values. Typically only sites that are covered under the General Industrial Permit have these documents. The inspector checks for coverage under the General Industrial Permit where applicable. If the inspector finds reason to believe that the business might need coverage under the General Industrial Permit but has not obtained such coverage, the RWQCB is notified.

Storm Water Quality Inspection Summary and Conclusion

At the completion of the walk-through, the inspector summarizes the recommended corrective actions and/or violations on the inspection form and discusses any corrective actions with the manager/responsible party. The manager/responsible party is provided a photocopy or fax of the inspection summary for their own records.

Inspection Frequency

During the first year of implementation, the City will inspect at least 50 percent of the stationary industrial and commercial facilities inventoried as high TTWQ. The City will inspect all the high TTWQ stationary industrial and commercial facilities the following year, and annually thereafter, in accordance with the Order requirements. Note that if the RWQCB inspects an industrial site in the City, the City will not need to inspect the site itself during that reporting period.

At least 20 percent of all stationary inventoried sites will be inspected in the first year of program implementation. In subsequent years at least 25 percent of the stationary inventoried businesses will be inspected. Generally, each year all high TTWQ sites will be selected for inspection, and then other, lower priority businesses will be selected based largely on their perceived potential to contribute pollutants of concern for local receiving waterbodies. If high TTWQ stationary sites comprise more than 25 percent of the inventory in a given year, the City will still inspect all high priority sites. Note that mobile businesses are not included when determining the inspection requirements based on percentages of the inventory. The City will track its inspections during each reporting period to ensure that it meets the minimum inspection frequencies required by the Order. More specific detail about the sites selected for inspection in 2007-2008 is provided later in this subsection.

The City will also continue to investigate all reported incidents of illegal discharges from industrial or commercial facilities, including those arising from the results of the Dry Weather Monitoring Program. Investigations are performed according to the procedures described in Section 9.5 of this document.

As required by the Order, the City has identified the businesses it plans to inspect within the first year of program implementation. The City's present industrial and commercial inventories include a total of 785 stationary facilities, of which 143 are identified as high TTWQ, 337 are classified as medium TTWQ, and 305 are classified as low TTWQ. Twenty percent of the stationary facility inventory is 157 sites, and 50 percent of the high TTWQ inventory would be 72 sites. As of this writing, the City plans to inspect all its stationary high TTWQ facilities in 2007-2008 and an additional 21 sites that have General Industrial Permit coverage, but are not

included on the City's high TTWQ inventory. A column indicating whether the City plans to inspect the business in 2007-2008 has been added to the inventories included in Appendix B-5 and B-6. The City reserves the right to amend the planned inspection list as it deems necessary; rationale for changes, if necessary, will be explained in the JURMP Annual Report.

7.2.3.4 ENFORCEMENT

The City ensures that pollution prevention methods and BMPs are implemented by enforcing its ordinance. City inspectors and staff members properly document each observed violation at facilities failing to comply with stormwater requirements, and enforcement action is taken where necessary to bring about compliance.

In some cases compliance is achieved and observed at the time the initial enforcement action is taken, and no follow-up is necessary. In other cases, City inspectors conduct follow-up inspections to determine if corrective actions have been taken to come into compliance with City ordinances and minimum BMP requirements.

In instances where a City inspector observes a significant and/or immediate threat to water quality, immediate enforcement action is taken to require the facility owner or operator to remedy the problem. Stop work orders may be issued in such cases if necessary. If the City determines that the business noncompliance may endanger health of the environment, the City will verbally notify the RWQCB within 24 hours of the discovery of non-compliance, and follow-up with a written report within five days of the time that the City becomes aware of the noncompliance using the form in Appendix D-1.

Depending on the severity of the infraction, enforcement can range from verbal warnings to monetary fines. Escalating enforcement steps, providing flexibility for the inspectors to establish appropriate compliance time frames on a case-by-case basis, are used as needed to ensure compliance. More detail about the City's enforcement procedures can be found in Section 2 of this document. Note that the City does maintain the authority to require businesses to prepare SWPPPs or to conduct sampling and analysis where deemed necessary by the City.

Reporting of Industrial Non-Filers

In each JURMP Annual Report the City of Vista will provide a list of industrial sites that may require coverage under the General Industrial Permit but which, to the City's knowledge, have not filed NOIs. At minimum the list includes the name, address, and an assessment of the NAICS code of each business.

7.3 MOBILE SOURCES

7.3.1 BACKGROUND

Illegal discharges tend to be the major area of concern with mobile businesses. Due to the nature of their activities, mobile businesses are regulated differently than other businesses. Mobile businesses can be difficult to identify because many do not have City business licenses. Additionally, new mobile businesses are started and previously existing mobile businesses go out of business on a relatively regular basis. For the reasons listed above and also simply

because they are not consistently present at a fixed location, regular inspections of mobile businesses are not a feasible option.

7.3.2 Source Characterization

The mobile businesses known to operate within the City's jurisdiction are noted on the City's commercial inventory. The following business types are addressed by the mobile sources element of the City's industrial and commercial program.

- Mobile automobile or other vehicle washing
- Pest control services
- Mobile carpet, drape or furniture cleaning
- Mobile construction trades
  - Painting and coating
  - Cement mixing or cutting
  - Masonry
  - Other contractors
- Landscaping
- Pool and fountain cleaning
- Power washing services

Because not all mobile businesses have obtained business licenses in the City or have a base of operation in the City, the City expects that a continual process of refining and updating its inventory will be needed. Sources for such inventory updates will include reported incidents, general observations by City staff, and available business licenses. The City intends to participate in a watershed or regional inventory and/or tracking system for mobile businesses as it is developed.

7.3.3 Best Management Practice Requirements

7.3.3.1 BMP Requirements

All BMPs required for stationary sources, listed in Section 7.2.2.2 of this document, are also required for mobile business where applicable. The most important BMPs for most mobile businesses typically involve non-storm water discharge control, and spill prevention, control, and cleanup.

7.3.3.2 Additional Controls for Mobile Sources

Regardless of where the activity occurs, the City categorically prohibits illegal discharges from mobile businesses. Aside from washing, cleaning, or other activities that may cause illegal discharges, mobile businesses are not likely to conduct activities that produce significant pollutant discharges. If in the future the City finds that even in the absence of illegal discharges the activities of mobile businesses are contributing pollutants of concern to a CWA section 303(d) impaired waterbody segments or are negatively impacting ESAs, additional controls will be required for those activities. Further, if the City has reason to believe that mobile businesses are generating significant illegal discharges in a given area of the City that is tributary to a

303(d) listed waterbody (and the discharges contain pollutants causing the impairment) or is within, directly adjacent to, or directly discharges to a waterbody within an ESA, City staff may more regularly visit those areas and/or take other actions to address the illegal discharges.

7.3.4 Program Implementation

7.3.4.1 Education and Outreach

The City of Vista will continue to provide information and outreach regarding storm water quality to mobile business owners and operators. Businesses are given educational materials outlining pollution prevention methods and other BMPs related to their activities during inspections and complaint investigations. Inspectors also give recommendations to businesses, where appropriate. Because a specific element of the industrial and commercial program is being newly developed for this revised JURMP, it is anticipated that some mobile businesses are not aware of stormwater requirements and that education will need to be a significant portion of the program. The educational program is described in more detail in Section 10 of this document.

7.3.4.2 Owner/ Operator Notifications

The City of Vista will notify the owner/operator of each inventoried mobile business of applicable BMP requirements within the first three (3) years of implementation of the updated JURMP.

7.3.4.3 Inter-Jurisdictional Cooperation

A regional workgroup was established in FY 2009 to coordinate activities related to Industrial and Commercial Stormwater Regulation. The City is the secretary of the workgroup and is an active participant. The workgroup has facilitated the creation of a regional inventory of mobile businesses and the standardization of BMP requirements across jurisdictions. In the future, the workgroup will address the sharing of enforcement action information, and/or the development and distribution of standardized educational materials, as well as other standardized activities related to Mobile Sources.

7.3.4.4 Staff Training

Staff responsible for conducting stormwater compliance inspections and enforcement of mobile sources is trained as needed on inspection and enforcement procedures and BMP implementation as they relate to mobile businesses. It is likely that this training will occur concurrently with the training for other facilities. City staff is also encouraged to be vigilant for illegal discharges from mobile businesses when working in the City and to report businesses that are not in compliance to the storm water hotline.

7.3.4.5 Inspections

Mobile sites/sources are inspected by the City on an as-needed basis. The most common triggers for these inspections are anticipated to be receipts of incident reports and direct visual observations by City staff. The inspections generally follow the same procedure described in

7.2.4.4 of this document, although the main focus of most mobile business inspections is on discharge control BMPs.

7.3.4.6 ENFORCEMENT

Most violations associated with mobile businesses are typically related to illegal discharges. The City's enforcement approach to such discharges requires the discharge to be stopped and cleaned up as needed. Education may also be provided to operators who are not aware of the City's stormwater requirements. Businesses that do not possess the materials necessary to implement the required BMPs may be required to demonstrate to the City that they have obtained such materials and can properly use them before the City allows such businesses to resume operations in the City. Mobile businesses that do not have City business licenses are required to obtain them. The types of enforcement measures available to the City are discussed in Section 2 of this document. Also, discharges related to noncompliance that may endanger health or the environment are reported using the same process described earlier and reported using the form in Appendix D-1.

7.4 INDUSTRIAL AND COMMERCIAL COMPONENT EFFECTIVENESS ASSESSMENT

The JURMP effectiveness assessment strategy is detailed in Section 13 of this document. An annual assessment of this entire component and significant activities will be conducted in accordance with this strategy with results detailed in Annual Reports. Table 7-2 below lists items that will be tracked and reported in accordance with the Order.

Table 7-2: Annual Report Tracking and Assessment

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
Source Identification	1	Confirmation	Y/N	Maintain and update annually a watershed-based inventory of all industrial and commercial sites/sources
BMP Implementation	1	Confirmation	Y/N	Require the use of pollution prevention methods by all industrial/commercial sites/sources.
	1	Confirmation	Y/N	Notify owner/operator of each inventoried industrial/commercial site/source of applicable BMPs within 3 years of updated JURMP implementation.
	1	Confirmation	Y/N	Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
Inspection of Industrial and Commercial Sites/Sources	1	Confirmation	Y/N	Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.
Inspection of Industrial and Commercial Sites/Sources	1 3	Confirmation Inspection	Y/N Implementa-tion	Inspect minimum 50% of all sites (excluding mobile sources) determined to be **high** threat, increasing to 100% in the second and subsequent years. Include justification and rational for selection
	1 3	Confirmation Inspection Tabulation	Y/N Implementa-tion ##	• Inspect minimum 20% of inventoried industrial/commercial sites, increasing to 25% the second and subsequent years. • Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.
	1 3	Confirmation Inspection Tabulation	Y/N Implementa-tion ##	• d. D.3.b.3.c *may* be achieved using a 3rd party inspection program. • Identification of the number of third party inspections conducted, if applicable and efforts to verify third party inspection effectiveness.
	1	Confirmation	Y/N	Number of enforcement and follow-up actions.
Regulation of Mobile Businesses	1	Confirmation	Y/N	Inventory mobile businesses. Copermittee coordination is permitted.
Enforcement of Industrial / Commercial Sites/Sources	1 3	Confirmation Tabulation	Y/N ##	The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
Reporting of Industrial Non-Filers	1	Confirmation	Y/N	Report list of industrial sites to the SDRWQCB that may require 'General Industrial Permit' coverage and have not filed a NOI.
	1	Confirmation	Y/N	A description of notable activities conducted to manage urban runoff from industrial and commercial sites/sources.

7.5 PROGRAM REVIEW AND MODIFICATION

Jurisdictional Urban Runoff Management Program implementation is an iterative process that involves annually assessing program effectiveness and making modifications when needed to improve programs and maintain compliance. Jurisdictional Urban Runoff Management Programs modifications may be made by the RWQCB Executive Officer or by the Copermittees. Any City requests for modifications will be incorporated, as appropriate, into the Annual Reports. The City will use this section to reserve a location for identifying and documenting future modifications to the Industrial and Commercial component.

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9-1 Complaint Investigation and Response Log

9.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION

9.1 INTRODUCTION

Illicit connections and illicit discharges (IC/ID) can result in unauthorized discharges of pollutants to MS4s. Illicit discharges may be associated with activities such as surface cleaning, or dewatering without the implementation of appropriate BMPs. Illicit connections may include sewer pipes that have purposefully or mistakenly been configured to discharge into an MS4 pipe as well as other prohibited connections to the MS4. Unless promptly detected, contained, and captured, IC/IDs may flow untreated into receiving waters.

A list of prohibited discharges, non-storm water discharge exemptions (allowable discharges), and a process for evaluating whether non-storm water discharge exemptions are allowed has been developed by the City, and is described in Section 3 of this document. IC/IDs can be defined as the following:

- An ***illicit connection*** is a connection that conveys an illicit discharge to the MS4 (pipe, drain, channel, catch basin, grated inlet, junction box, etc.).
- An ***illicit discharge*** is the act of disposing of any pollutant that is prohibited by the City (Section 3) either intentionally or unintentionally to the MS4. This does not include non-storm water exemptions and discharges resulting from emergency fire fighting activities.

The main objective of the illicit discharge detection and elimination component of the City's storm water program is to actively seek and eliminate IC/IDs into the MS4. Eliminating IC/IDs helps minimize potentially negative impacts of human activities on receiving water bodies.

The City uses various municipal personnel to assist in actively seeking, identifying, and reporting IC/IDs during their daily activities. Detection and prevention of IC/IDs is achieved by

1. Operating a public complaint hotline
2. Inspecting local businesses, municipal facilities and construction sites
3. Conducting a dry weather field screening and analytical monitoring program
4. Maintaining municipal MS4 and sewer systems
5. Educating the local community

The City investigates, inspects, and appropriately follows-up on every IC/ID that is reported or detected, to identify the source or sources of the discharge. Voluntary compliance and escalating enforcement mechanisms are implemented to immediately eliminate the IC/ID once the source has been identified. Educational materials are distributed to help prevent future IC/ID occurrences. The City has worked with Copermittees to develop regional MS4 outfall and source identification monitoring programs, which are anticipated to aid in identifying IC/IDs. The Region has begun to implement these new programs as required in the Permit.

9.2 PUBLIC REPORTING OF ILLICIT DISCHARGES AND CONNECTIONS

To further aid the process of identifying illicit discharges, the City encourages the public and City staff to report IC/IDs. Maintenance and operations personnel are also trained to promptly refer potential storm water violations observed while working in the field to the hotline or City Engineering Department.

A public complaint hotline, operated in both English and Spanish, has been developed and is currently operated by the City of Vista Engineering Department:

English: (760) 726-1340 x1686

Spanish: (760) 726-1340 x1698

Additionally, the City operates an email account to assist residents and businesses with stormwater related complaints or inquiries. The email address is waterquality@cityofvista.com. Residents of the City may also call the County's toll-free regional hotline at 1-888-846-0800 or the Think Blue Hotline at 1-888-Think-Blue. Both lines are answered by County personnel Monday through Friday 8:00 a.m. – 5:00 p.m. Alternatively, the County of San Diego Department of Environmental Health (DEH) receives and responds to complaints at (888) 846-0800. The hotline is answered Monday through Friday, 8:00 a.m. – 5:00 p.m. and provides a voice mail message for 24-hour public access in both English and Spanish.

Each complaint is dealt with as follows:

Collection of Essential Information

Complainant information, responsible party information, location, and description of the discharge materials and waste involved is collected using a standardize form, which is either logged onto hard copy forms or input directly into a database. A copy of the form used to input data into the database is included in Appendix D-3. This page can also be printed so that the user can log a hard copy of the form to be entered into the database at a later time.

Prioritization

Table 9-1, below, summarizes the criteria used to determine what action(s) should be taken in response to complaints.

Routing/Referral

Based on the prioritization, complaints are routed to the appropriate City personnel or department or other appropriate agency, and the City confirms receipt. All reported incidents are summarized in each year's JURMP Annual Report. If it is determined that the discharge may endanger human health or the environment, the incident is reported to the RWQCB on report form (Appendix D-1) within the required reporting timelines.

Table 9-1: Complaint Response Prioritization

Criterion	Action
Is a hazardous or unknown material involved?	The local fire department is dispatched to investigate. Fire departments contact the San Diego Hazardous Incident Response Team (HIRT) if needed.
Is the spill or discharge currently occurring?	An immediate referral is made to the appropriate agency if the spill is still occurring. Discharges that have ended may not need immediate investigation. Investigations follow procedures outlined in Section 9.3 of this document.
Is there an immediate threat to health or the environment?	The discharge is eliminated immediately as described in Section 9.3.2 and/or Section 9.5.3 and a report is made within 24 hours to the Regional Board with written report on form D-1 submitted within 5 days of incident discovery.

9.3 Spill Reporting, Response, and Prevention

The City implements spill prevention, spill response, and reporting mechanisms to prevent, respond to, contain, and clean up all sewage and other spills that discharge to its MS4 from any source.

9.3.1 Sewage Spill Prevention

Spill prevention measures outlined below are implemented to prevent overflows, spills, and infiltration of seepage from sanitary sewer systems to the MS4.

Preventive Maintenance Activities

Many spills can be avoided by putting effective preventative measures in place. The City actively maintains its sewer collection system and MS4 as described in Section 6 of this document and implements the following measures:

- Sanitary sewer inspection
- MS4 inspection
- Thorough, routine preventive maintenance of both the sanitary sewer system and the MS4
- Increased maintenance at enhanced maintenance areas (EMAs), which are known to be prone to grease build up and root intrusion
- Preventative maintenance of City sewage pumping stations
- Dry weather monitoring
- Recording of and response to public and City staff complaints
- Replacement and upgrade of sewer main and manholes, as needed
- Routine patrol of main trunk lines

- Video inspection of problematic lines to check for problems and new lines to ensure proper connections

Sewer System Management Plan (SSMP)

On May 2, 2006, the SWRCB adopted Order No. 2006-0003-DWQ for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems. On February 14, 2007, the RWQCB adopted Order No. R9-2007-0005 as a supplement to the requirements prescribed in Order 2006-0003-DWQ. These orders address regulations for sewer system maintenance and reporting with respect to Sanitary Sewer Overflows (SSOs). These regulations are met mainly through the development and implementation of a Sewer System Management Plan (SSMP), which provides a plan and schedule to properly manager, operate, and maintain all parts of the sanitary sewer system. On October 30, 2007, the City formally adopted a SSMP development plan. The City has completed and is implementing its SSMP, as required by SWRCB Order No. 2006-0003-DWQ.

The City will continue to maintain a Sanitary Sewer Overflow Response Plan (SSORP). The SSORP addresses the organization and major activities of the City's wastewater operations and City staff in responding to, evaluating, mitigating, and reporting SSOs.

The City has developed a comprehensive Fats, Oil, and Grease (FOG) control program, as part of the City's SSMP. The primary purposes of this program are to reduce the amount of FOG introduced into the sanitary sewer system by residents and businesses, minimize the potential formation of blockages to the flow of wastewater as a result of grease accumulations, and eliminate sewage spills that may result from such blockages.

The Order also requires that sewage discharges that are caused by blockages or other problems within a privately owned lateral or failing septic systems be dealt with appropriately. If a spill from a private sewer lateral is not being contained and no action is being taken by the responsible party to repair the lateral, the City can take necessary action to contain the spill, repair the lateral, and seek cost recovery from the responsible party. The City's Stormwater Code Enforcement staff handles these citations. The County DEH is responsible for sewage spills due to failing septic systems at private residences; however, the City will respond to, contain, and cleanup all spills that have the potential to reach the storm drain system.

9.3.2 Sewage Spill Response

Spills from the sanitary sewer entering the MS4 may be discovered during routine maintenance activities or observed and reported to the City by citizens and sewer and maintenance workers. Any reports by the public or City staff are called in to the Public Works division and are immediately reported to the Wastewater Division. During regular working hours, a dispatcher receives reports of an SSO and based on information collected, reports the SSO to the responsible agency. If the SSO is in the City's service area, the Wastewater crews are notified and dispatched to the location. During off-duty hours, reports go to an after-hours emergency line. Crews are dispatched immediately if necessary. Sewer spills are reported using the procedure in Section 9.3.5 of this document, and action is taken to address the spill.

Depending on the nature of the spill, either the City of Vista or the County Department of Environmental Health (DEH) takes action to control, contain, and clean up the discharged materials (Table 9-2). Any spills from private sewer laterals from residents or businesses are the responsibility of the property owner, but the City will ensure that the spill is contained, cleaned up and reported. Remedial actions are implemented to the extent that they are applicable to the discharge; the following are common remedial actions:

- Interception and rerouting of sewage flows around the sewage line failure
- Vactor truck recovery of SSO materials and wash down water
- Use of portable aerators where complete recovery of the SSO is not practicable and where severe oxygen depletion in existing surface waters is expected
- Cleanup of debris of sewage origin at the overflow site

Table 9-2: Responsible Agency for Sewage Spills

Source	Responsible Agency
Leaks and spills from publicly owned collection system	City of Vista
Private property (failing septic systems) lateral	(County DEH) or Private Owner
Any spill reaching MS4	City of Vista

9.3.3 Other Spill Prevention and Mitigation Procedures

The City coordinates spill prevention, containment, and response activities throughout all appropriate departments, programs, and agencies so that maximum water quality protection is obtained at all times.

Spills are prevented and mitigated through the implementation and enforcement of BMPs, which are described for the Development Planning, Municipal, Construction, Industrial and Commercial, and Residential components.

9.3.4 Hazardous Waste Disposal

The City of Vista facilitates the proper disposal of used oil, toxic materials, and other HHW through education, providing public information, and providing dedicated collection centers. Further information can be found in Section 8.4 of this document.

9.3.5 Spill Reporting

The City reports all SSOs online using the California Integrated Water Quality Management System (CIWQS) database, as required by SWRCB Order No. 2006-0003-DWQ. Initial reports are sent to the CIWQS within three days, and final, certified reports are sent within 15 days. The City reports all SSOs that are at least 1,000 gallons and all SSOs that cause a beach closure (regardless of volume) to the CIWQS within 2 hours. All IC/IDs are reported annually in the City's JURMP Annual Report, which includes specific IC/IDs and their resolution, inspections conducted, and enforcement actions taken. The City follows additional reporting requirements

specific to sewage spills, including sewage spills from private laterals and failing septic systems, which are described below:

County of San Diego Department of Environmental Health (DEH)
California Health and Safety Code Section 5411.5 requires sewage spills be reported immediately to the DEH, 24 hours a day. During standard work hours (Monday through Friday, 7:30 a.m. to 4:30 p.m.), reports can be called in to the Proposition 65/Recreational Water Duty Specialist at (619) 338-2386. After hours, reports are directed to the County Communications office at (858) 565-5255, and the Environmental Health Specialist may be contacted.

State Office of Emergency Services (OES)
California Water Code Section 13271 and the California Code of Regulations Section 2250 require that the OES be notified of sewage spills of 1,000 gallons or more by telephone at (800) 825-7550 and by fax at (916) 262-1677 (follow-up only).

Regional Water Quality Control Board (RWQCB)
As required in the Order, the City will provide oral notification to the RWQCB of all IC/IDs within its jurisdiction that are determined to endanger health or the environment within 24 hours of the discovery of non-compliance. Oral notification will be followed up by a written report to the RWQCB within five days of the incidence of non-compliance (see report form in Appendix D-1). All sewage spill are reported to the RWQCB through the CIWQS system within the reporting periods prescribed by Orders 2006-0003-DWQ and R9-2007-0005

The City complies with the sewage spill reporting requirements outlined in Table 9-3 below:

Table 9-3: Summary of Sewage Spill Reporting Requirements

Spill Volume	Criteria	Agency Receiving Report	Reporting Period
Any	Spills to waters of the State	SWRCB online RWQCB DEH	3 days (initial) 2 hours Immediate
Any	Order non-compliance that may endanger human or environmental health	RWQCB	24 hours verbal and 5 days written
Any	Mitigated spills (absorbed, cleaned up, or captured)	DEH	24 hours
Any	Unmitigated spills to areas with potential public contact	DEH	Immediate
Any	Unmitigated spills to areas without potential public contact	DEH	24 hours
>1000 gallons	Anywhere	OES RWQCB DEH SWCRB online	Immediate 2 hours Immediate 3 days (initial)

9.4 URBAN RUNOFF MONITORING

The Regional Urban Runoff Monitoring Program has developed MS4 Outfall Monitoring and Source Identification Monitoring Programs as required by the Permit. The City is working with other jurisdictions in its watersheds to develop tailored MS4 and Source ID Programs. Details of these programs were submitted to the RWQCB on July 1, 2008. Both programs were developed and implemented on a regional level and will be reported on in the Annual Regional Monitoring Reports. The City continues to implement its jurisdictional Dry Weather Monitoring Program as well.

9.4.1 MS4 OUTFALL MONITORING

Regional guidance for the MS4 Outfall Monitoring Program has been developed by the Copermittees. The goal of this monitoring program is to characterize pollutant discharges from MS4 outfalls and their relative contributions to the high priority water quality problems identified in the receiving waters within each Watershed Management Area. The program will include the following:

- Rationale and criteria for selection of outfalls
- Type of samples collected, including pollutants causing or contributing to violations of water quality standards within the watershed

The program includes random and targeted components and sampling during dry weather periods and storm events. Details of the program were submitted to the Regional Board as required by July 1, 2008.

The MS4 outfall monitoring program began during FY 08-09 and is being implemented as designed.

9.4.2 SOURCE IDENTIFICATION MONITORING

Regional guidance for the Source Identification Monitoring Program has been developed by the Copermittees. The program is designed to identify sources of discharges of pollutants causing the priority water quality problems within each watershed. This program includes the following:

- Focused monitoring which moves upstream into each watershed as necessary to identify sources
- Use of source inventories and "Threat to Water Quality" analysis to guide monitoring efforts

Monitoring under the Source ID Program began during the 2008-2009 monitoring year.

9.4.3 DRY WEATHER FIELD SCREENING AND ANALYTICAL MONITORING

The Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program) is a crucial part of the City's Illicit Discharge Detection and Elimination program. The City has been conducting dry weather monitoring each year since 1995. The updated

requirements of the Dry Weather Monitoring Program component in the Order are very similar to those in the previous Order (No. 2001-01). Notable changes in the new Order include requirements for a more detailed trash assessment component and a requirement that follow-up investigations be conducted within two business days of receiving results.

There are three components to the Dry Weather Monitoring Program:

- Field observations (site description and qualitative observations)
- Field screening monitoring (testing of sample while at site and flow estimation)
- Analytical monitoring (performing further tests of sample later at a laboratory)

Over the last five years, the City has successfully conducted its Dry Weather Monitoring Program. Through the process of implementation, some refinements to the site selection and the program procedures have been made. The City has also updated its program to reflect the changes required by the new Order, and these changes are discussed in the sections below. Results of the Dry Weather Monitoring Program will be presented each year in the City of Vista JURMP Annual Reports.

9.4.3.1 Dry Weather Field Screening and Analytical Monitoring Stations

The City of Vista has identified 29 primary monitoring stations where data is collected during the Dry Weather Monitoring Program. Additionally, 4 alternate stations have been identified that are monitored if any of the primary stations exhibit no flowing or ponded water. The selected primary and alternate monitoring stations, their locations, land-use, and drainage areas are presented in Appendix F-1. A map of the MS4 with primary and alternate sampling station locations and drainage basins is included in Appendix F-8.

Based on years of field experience, the City has selected primary dry weather monitoring stations that provide adequate coverage of the entire MS4 system. The selected stations meet the following criteria:

- Downstream of any sources of suspected illicit discharge or illicit activity
- Located within the storm drain system, not within local creeks or waterways
- Located downstream of major or large conveyance areas
- Take into account hydrological conditions, total drainage area of the site, traffic density, age of the structures or buildings in the area, history of the area, and land use types

9.4.3.2 MS4 Map

The City has developed a labeled map of its entire MS4 that includes MS4 facilities, dry weather monitoring stations, and drainage basins. Each drainage area within the City's jurisdiction contains at least one station. When field staff note inaccuracies in the map during dry weather monitoring, the inaccuracies will be reported to the appropriate City staff so that updates can be made in the GIS database. The need for updates to the map will be assessed at least annually, and at that time updates will be made where necessary. A copy of the current MS4 maps is in appendix B-1.

9.4.3.3 Sampling Frequencies

Dry weather monitoring is conducted at least once at each primary station where flowing or ponded water is observed during the dry season (May 1 – September 30). An alternate station is visited instead when no flow is observed at the primary stations. Dry weather monitoring is only conducted when there has been at least 72 hours of dry weather prior to the time of the sampling. Samples are collected for laboratory analysis at a minimum of 25 percent of the stations where water is present.

9.4.3.4 Sampling Procedures

Field screening and analytical sampling is conducted according to the procedures outlined in Appendix F-2 (Dry Weather Monitoring Sampling Manual). Additional field reference materials are available at all times including MS4 maps, contact numbers, and field equipment operating manuals and procedures. All field screening and laboratory analytical monitoring results are recorded on a Dry Weather Monitoring Field Datasheet (Appendix F-3). This datasheet is based on a standard form developed by the Dry Weather Monitoring Workgroup, and it may be modified in the future if directed by the workgroup.

Field screening includes the following major components:

Field Observations
Qualitative observations at the site are recorded on the Dry Weather Monitoring Field Data Sheet.

Trash Assessment
Visual estimates of the amount of trash present at the site are recorded on Trash Assessment Form, which is attached in Appendix F-4. The form will be completed in accordance with the regional standards for trash assessment submitted to the RWQCB by the Regional Monitoring Workgroup during 2007.

Flow Estimation
At sites where flowing water is observed, an estimate of the flow rate is recorded on the Dry Weather Monitoring Field Data Sheet.

Field water quality analyses
Samples are collected if flowing or ponded runoff is observed. The collected water is analyzed in the field for the following constituents:

- Conductivity
- Turbidity
- pH
- Reactive Phosphorus (Orthophosphate phosphorus)
- Nitrate Nitrogen
- Ammonia
- Surfactants (MBAS)*
- Temperature**

*Surfactant concentration is measured as Methylene Blue Active Substances (MBAS).
**Although the Order does not require temperature to be recorded, the City will continue to record this parameter for consistency. Field analytical methods are described in Appendix F-5.

Analytical Monitoring
At a minimum of 25 percent of the sites where ponded or flowing water is observed, samples are collected and submitted to a California Department of Health Services certified laboratory for analysis of the following constituents using the standard methods presented in Appendix F-6, which are consistent with 40 CFR part 136:

- Total hardness
- Surfactants (MBAS)
- Oil and grease
- Diazinon and Chlorpyrifos
- Cadmium (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Copper (Dissolved)
- *Enterococcus* bacteria*
- Total Coliform bacteria*
- Fecal Coliform bacteria*

*Colilert and Enterolert may be used as alternative methods, with fecal coliform determined by calculations. A conversion factor of 1.2 can be used to calculate estimates from *E. coli* to fecal coliform.

Beginning during the dry season of 2008, the City will begin conducting dry weather monitoring in accordance with the procedures outlined above. The City collects data during the period of May 1 – September 30 each year and reports the results of the dry weather monitoring in its JURMP Annual Report.

A follow-up investigation is conducted at sites where dry weather monitoring results indicate elevated pollutant levels and potential IC/IDs upstream. Numeric action levels and best professional judgment (described in Section 9.5) are used to interpret the field screening results.

9.5 FOLLOW-UP AND ENFORCEMENT

All potential IC/IDs are investigated and eliminated in a timely manner after the City is notified of their occurrence. IC/IDs are mainly identified through routine inspections of businesses and municipal facilities, through public complaints and referrals, and the Dry Weather Monitoring Program. Procedures for follow-up investigations related to inspections and public complaints are discussed earlier in this section. Dry Weather Monitoring Program data is compared to the regionally developed actions levels, which are summarized below and listed in more detail in Appendix F-7. The Dry Weather Monitoring Workgroup may update these action levels in the future, and the City will follow the most current standards.

Numeric Action Levels
Numeric action levels are used as the primary approach for interpreting pH, orthophosphate, nitrate, ammonia, surfactants, oil and grease, diazinon, chlorpyrifos, total coliform, fecal coliform, and enterococcus analytical results.

California Toxics Rule
The California Toxics Rule (CTR) Criteria Maximum Concentration (CMC) is used as action level for dissolved trace metals, including cadmium, copper, lead, and zinc. The CTR equations provide benchmarks based on the total hardness of the sampled water, with the action levels increasing as hardness increases.

Best Professional Judgment
Best professional judgment is used as the primary approach for interpreting turbidity, conductivity, and water temperature. Best professional judgment is also the secondary approach for interpreting the results of all other field and laboratory analyses. Best professional judgment may indicate that results which either exceed certain action levels or are statistical outliers that may be the result of natural or background factors.

When action level exceedances are noted, the City will follow up within two business days for further investigation or provide a rationale for why the discharge does not pose a threat to water quality and does not require follow-up. Procedures for follow-up investigations are described below.

9.5.1 Field Investigation Procedures

Field Investigation Preparation
Before leaving for an investigation, staff assembles needed information and equipment. Staff are prepared to conduct field screening analyses, sample for laboratory analysis, and document the discharge for any future enforcement. A list of required equipment is given in Appendix F-2.

Field Investigation Procedure
An immediate source identification investigation is initiated if visual and/or analytical evidence of gross contamination is present at a site during a routine investigation. Examples of gross contamination include substantial petroleum sheens, constituent concentrations well above action levels, abnormal colors or odors not attributable to natural site conditions, or evidence of a sewage release.

When Dry Weather Monitoring Program results exceed action levels, the City either conducts an investigation to identify the source of the discharge or provides rationale for why the discharge does not pose a threat to water quality and does not need further investigation. When further investigation is needed, the City initially confirms the results by resampling within two business days of being informed of the exceedance. For field screening, this is within two business days of the initial test. The overall time frame for laboratory analytical results depends on the time that results are received from the lab, but investigations will be conducted within two days of receiving the data. The results of the follow-up sampling are used to guide further upstream investigations where necessary.

9.5.2 SOURCE INVESTIGATION PROCEDURES

When follow-up sampling confirms continued exceedance of action levels, then the City conducts further investigation to identify the source of the exceedance. Additional investigation is not conducted when results are below the action levels during the follow-up visit, as it is unlikely that a source can be identified without elevated levels to track upstream. As noted earlier, when gross contamination is observed during a routine visit, an immediate upstream source investigation is initiated. Prior to beginning an upstream source investigation, field staff review previous dry weather monitoring reports and consult MS4 maps to plan the investigation.

Dry weather flows are generally traced from the site in an upstream direction along the conveyance system. Water samples are collected at upstream confluences for analyses of the constituent(s) being tracked. All samples are documented. If the samples are being submitted for laboratory analysis, they are delivered within the appropriate holding time, and all appropriate chain-of-custody procedures are followed. Photos and GPS coordinates are taken to aid in documentation and in potential enforcement procedures.

For dry weather flows that are traced to a specific source, a sample of water from the source is collected at the curb or public right of way and may be submitted for analysis. Investigators take care to ensure the sample includes only water from the specific source and has not commingled with other discharges. If analysis of the sample indicates that an IC/ID may be present, appropriate City personnel will be notified. Where appropriate and feasible, field staff may also contact the party responsible for the discharge directly regarding the IC/IDs and potential BMPs. IC/IDs are required to be eliminated; appropriate procedures employed by the City are listed in Section 9.5.3 and Section 9.5.4.

In some cases, no above ground source can be located, and a below ground source such as an illicit connection or groundwater seepage may be the source of the water. In other cases, it may not be clear whether a potential source is connected to the downstream conveyance. The following techniques may be used by the City where appropriate:

Water Discharges

Water may be discharged from a potential source to note the location of the discharge downstream. This establishes a hydraulic connection between the source and the discharge connection. Water discharges are preferred to dye testing and smoke testing, described below, and can be utilized under most conditions. Where water is discharged during an investigation, the water is diverted to landscape where feasible or recovered by other methods.

Dye Testing

Dye testing is useful to confirm hydraulic connections between the potential source and the location downstream. Fluorescent dye is discharged at the source of the potential IC/ID and is monitored downstream. This method is used only when necessary because the public and appropriate regulatory agencies in the surrounding area need to be informed of the cause of the water discoloration. When dye testing is used in the MS4, all water is recovered.

Video Monitoring
Mobile video cameras may be used to record observations in an underground storm water conveyance facility. The public and regulatory agencies generally do not need to be informed prior to initiating this kind of investigation.

Potential Sewage IC/IDs
Further testing of suspected sewage-related flows is conducted when visual and odor observations do not adequately confirm the presence of sewage.

- Ammonia - Sewage frequently contains ammonia levels of 30 mg/L or greater. This can be measured with an inexpensive field screening kit.
- Bacteria - Sewage generally has high levels of total and fecal coliforms and *Enterococci*. Sewage treatment plants and many laboratories routinely conduct these indicator analyses. Water samples must be collected in sterile containers provided by the laboratory and delivered within the appropriate holding time.

9.5.3 ELIMINATION OF IC/IDS

Action is taken to eliminate all detected IC/IDs and their sources as soon as possible after detection. IC/IDs that pose a serious threat to public health or the environment are eliminated immediately. IC/IDs that are not deemed to pose serious threats to public health or the environment are eliminated through an escalating series of enforcement actions, which are described in Section 9.5.4.

Remove Illicit Connections
The City ensures that the violator takes appropriate action to disconnect, block, stop, or divert drainage facilities and pipe connections that are determined to discharge pollutants to the MS4. Appropriate actions may include the following:

- Re-route plumbing or plug drains that are discharging illicit materials to the storm drain system
- Disconnect all drainage pipes found to discharge illicit pollutants to the storm drain system
- Dispose of illicit materials via the sanitary sewer or other appropriate disposal or storage methods
- Divert illicit discharges to the sanitary sewer or treat on-site

Note that in some cases special permits from the local wastewater authority are needed before material can be discharged to the sanitary sewer system.

Discontinue Illicit Discharges
As applicable to each individual circumstance, the City ensures that responsible parties implement the procedures outlined below to eliminate discharges that transport pollutant materials to the MS4.

- Eliminate the source of the discharge
- Remove pollutant materials from the site
- Prevent pollutant materials from coming in contact with the discharge
- Contain potential illicit discharges on site for treatment or proper disposal

9.5.4 ENFORCEMENT

The City implements and enforces its ordinances, orders, or other legal authority to prevent illicit discharges and connections to its MS4. Enforcement mechanisms are implemented on an escalating scale to obtain compliance, and follow-up inspections are conducted to ensure compliance has been achieved. The purpose of the City's enforcement program is to educate the violator(s), promote compliance with applicable laws and regulations, return violators to compliance, penalize violators, as appropriate, and to deprive violators of any significant benefit gained from violations. When a violation is observed, the City takes the following actions, when applicable:

- Assess the threat to public health and the environment
- Sample the discharge(s)
- Identify the responsible party
- Identify individuals involved in the activity
- Photograph the violation(s)
- Obtain reports or records related to the incident
- Issue an NOV or other action to the responsible party
- Make appropriate referrals to other regulator agencies and request assistance

Enforcement Mechanisms

The administrative tools listed below are used as necessary to eliminate IC/IDs, and the City may also use judicial procedures. Detailed descriptions of both administrative and judicial procedures are given in Section 2 of this document.

- Warnings
- Notices of Violation
- Administrative Citations
- Suspension, revocation, or denial of permits
- Civil and/or criminal court actions
- Stop work orders (Construction projects) or Cease and Desist Orders
- Additional penalties or fines

The nature of the City's enforcement approach is determined on a case-by-case basis and is based on factors such as the severity of the violation, the threat to human or environmental health, site-specific circumstances, and past compliance history. If the situation is determined to pose an immediate risk to public health or the environment, the City may coordinate with other agencies or teams that are specially trained to assess and mitigate emergency situations (e.g., those involving hazardous wastes/materials, etc.). The discharge is also reported to the RWQCB as required by the Order.

Enforcement Documentation

During every investigation, any observed non-compliance is documented. The following is a list of information that may be gathered during investigations where available and applicable:

- Chronology of events
- Case summary
- Time and expense log
- Inspection reports
- Complaints
- Phone conversation records
- Correspondence
- Maps and diagrams
- Photographs
- Reports from regulatory agencies
- Witness list
- Explanation of the violations
- Request-to-file form
- Field notes
- Emergency incident reports
- Lab results
- Chain-of-custody for samples
- Permit applications
- Sampling plans
- Other supporting documents

9.6 Illicit Discharge Detection and Elimination Component Effectiveness Assessment

The JURMP effectiveness assessment strategy is detailed in Section 13 of this document. An annual assessment of this entire component and significant activities will be conducted in accordance with this strategy with results detailed in Annual Reports. Table 9-4 below lists items that will be tracked and reported in accordance with the Order.

Table 9-4: Annual Report Tracking and Assessment

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
Develop / Maintain MS4 Map	1 3	Confirmation Inspection	Y/N	Submit Updated MS4 map and corresponding drainage areas
Dry Weather Field Screening and Analytical Monitoring	1 3 5	Confirmation Inspection Monitoring	Y/N Inspection Tabulation	• Present dry weather data in tabular and graphical form • Include station IDs, all dry weather monitoring results, identification of sites exceeding action levels, follow-up and elimination of illicit discharges and connections, rationale for why exceedances not followed-up, and documentation of changes • Attach consultant program recommendations/changes resulting from monitoring

JURMP Reporting Requirements	Outcome Level	Assessment Type Method	Assessment Measure	Specifically Address and Include these Data
Investigation/ Inspection and Follow-up	1 3	Confirmation Reporting Inspections		• Brief description of investigations and follow-up activities • Time taken to follow up (working days)
	1	Tabulation Confirmation	## Y/N	Number of illicit discharges and connections observed
Elimination of Illicit Discharges and Connections	1	Tabulation Confirmation	## Y/N	Number of illicit discharges and connections eliminated
	1	Confirmation Tabulation	## Y/N	• Number of spills to MS4 • Narrative of spill response
Enforce Ordinances	1	Confirmation Tabulation	Y/N ##	Number of violations and enforcement actions taken
Prevent and respond to sewage spills and other spills	1	Confirmation		Description of activities implemented to prevent sewage and other spills to the MS4 and response to the spills
Facilitate public reporting of illicit discharges and connections-public hotline	1	Confirmation		Description of mechanisms for sewage spill notification
	1	Confirmation Tabulation	##	Number of times hotline was called, as compared to previous reporting periods, and a summary of the calls
Facilitate public reporting	1	Confirmation	Y/N	Description of efforts to publicize and facilitate public reporting of illicit discharges
Other	1	Confirmation	Y/N	Description of notable activities conducted to manage illicit discharges and connections

9.7 PROGRAM REVIEW AND MODIFICATION

Jurisdictional Urban Runoff Management Program implementation is an iterative process that involves annually assessing program effectiveness and making modifications when needed to improve programs and maintain compliance. Jurisdictional Urban Runoff Management Programs modifications may be made by the RWQCB Executive Officer or by the Copermittees. Any City requests for modifications will be incorporated, as appropriate, into the Annual Reports. The City will use this section to reserve a location for identifying and documenting future modifications to the Illicit Discharge Detection and Elimination component.

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Table 12-1: City of Vista Budget Summary 12-5

12.0 FISCAL ANALYSIS

12.1 INTRODUCTION

The City of Vista secures the resources necessary to meet all requirements of the Order. These resources come from a variety of sources, which may include money from grants, the general fund and enterprise funds. These funding mechanisms, sources and reporting are described in this section.

12.2 FISCAL ANALYSIS METHODS

Governments differ from business organizations in their accounting practices. The accounting system for local government is organized on the basis of funds, each of which is considered a separate accounting entity. The purpose of this method is to fairly display specific activities or objectives in accordance with special regulations, restrictions, or limitations while conforming to generally accepted accounting principles.

The operations of each fund are accounted for by providing a separate set of self-balancing accounts; meaning that the "books" for each fund stand alone and comprise its assets, liabilities, fund equity, revenues and expenditures or expenses, as appropriate. The City applies all applicable standards of the Governmental Accounting Standards Board, an independent, private-sector, not-for-profit organization.

The City utilizes fund types which are categorized as being governmental or proprietary.

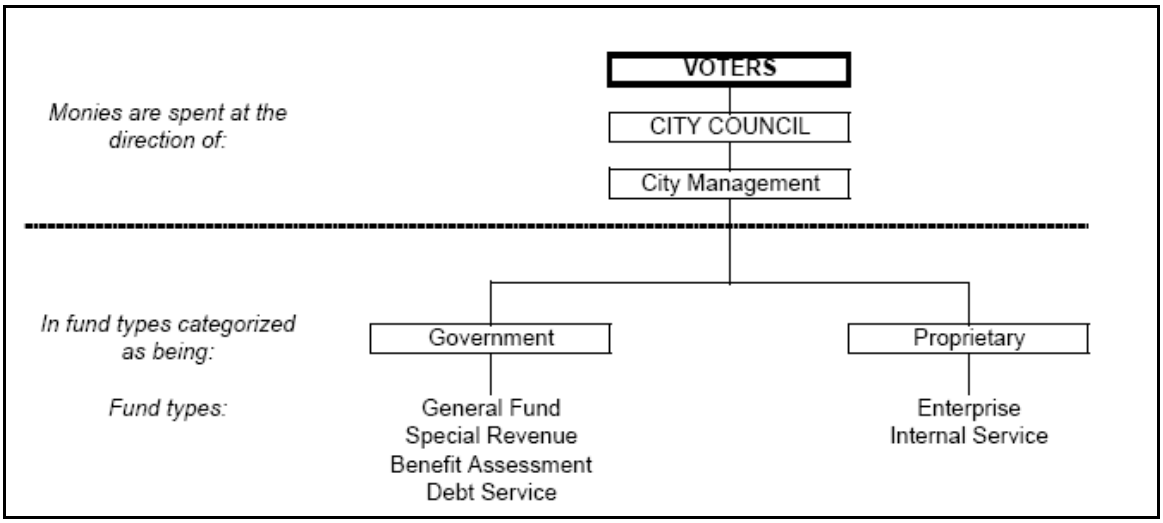

The Order requires the City to conduct an annual fiscal analysis. A standardized process for conducting this analysis is under development. The standardized method will be implemented by Copermittees by January 31, 2010 in accordance with the Order. In the meantime, the City will annually provide the following information:

- The City's expenditures for the previous fiscal year;

- The City's budget for the current fiscal year; and
- A description of the source of funds.

To gather data for future reports, urban runoff budgeting forms will be used to assist department heads in assessing their upcoming budget needs and expenditures related to JURMP activities.

12.2.1 PROGRAM FUNDING

Adequately funding all aspects of the Order can be a challenge, as funds available for urban runoff management programs have become increasingly scarce as sources of municipal revenues have declined. The provisions of Proposition 218, requiring voter approval of new taxes and assessments, have significantly diminished the prospects for developing new or alternative funding sources. The City of Vista seeks to fully comply with the Order in the most effective and cost efficient manner possible. Therefore, the City makes use of available funds as allowed and within the restrictions of these funding sources.

The City does not have one specific funding source to implement all requirements of the Order. Rather, multiple funding sources are used in order to carry out the requirements in the most cost effective manner possible. Additionally, since the JURMP is a city-wide program implemented by multiple departments, various program costs are associated with specific department budgets. Funding for these department budgets may come through the City's General Fund, through Enterprise Funds, or through Grant funds as appropriate.

Descriptions of funds included in the Operating Budget that may be partially used for JURMP implementation activities are as follows:

General Fund **Fund type: Governmental**

The General Fund is used to account for all financial resources not accounted for in other funds. Because the general fund is not subject to as exacting legal requirements as other funds, it typically receives a higher level of scrutiny. Typical expenses include basic governmental functions such as elected and professional management, legal and financial expertise; public safety; planning and engineering of publicly built and maintained infrastructure and facilities as well as the permitting and inspection of privately built structures; maintenance of parks, parkways, and medians; and the organization of recreation programs. As such, the General Fund is the primary funding source for a majority of employee costs. Major revenue sources include property and sales tax, revenue from other government agencies, and charges for services.

Gas Tax **Fund Type: Special Revenue**

The State of California Streets and Highways Code Sections 2105, 2106, 2107, and 2107.5 dictate the allocation and distribution of Highway Users Tax monies to local government. Gas taxes paid at the pump statewide are pooled and a portion is then distributed to the City. Sections 2105, 2106, 2107 are restricted to the construction, improvement, and/or maintenance of public

streets and roads. Section 2107.5 allows for public street engineering costs and administrative/labor expenditures.

City Sewer Fund **Fund Type: Enterprise**

The City Sewer Fund is used to account for the provision of sewer services for parcels located in the City (exclusive of parcels served by the Buena Sanitation District). Funding is provided primarily by annual sewer service charges to approximately 16,000 parcels, levied on the tax roll, and collected through property taxes. The City is a joing member of the Encina Wastewater Authority, and the annual cost of sewage treatment and plant facility construction represents the funds most significant expenditure. Additional costs include administration, engineering, maintenance of the sewer system, and stormwater monitoring.

Buena Sanitation District Fund **Fund Type: Enterprise**

The Buena Sanitation District Fund is used to account for the provision of sewer services for parcels located within the District (exclusive of parcels served by the City Sewer Fund). Funding is provided primarily by annual sewer service charges to approximately 5,600 parcels, levied on the tax roll, and collected through property taxes. The District is a joint member of the Encina Wastewater Authority and the annual cost of sewage treatment and plant facility construction represents the funds most significant expenditure. Additional costs include administration, and maintenance of the sewer system.

The City may also utilize State grant funds for stormwater related activities, as available and applicable based on the terms of the grant agreement. The Used Oil Block Grant, administered by the California Integrated Waste Management Board, allows up to 50 percent of the annual funds to be used for stormwater mitigation, which is defined as "…the prevention of stormwater pollution from used oil and oil byproducts and the reduction or alleviation of the effect of stormwater pollution from used oil and oil byproducts by means of action taken on public property. Mitigation includes the installation of devices and implementation of practices that prevent used oil and oil byproducts from causing stormwater pollution. Mitigation does not include the cleanup or restoration of polluted areas."

12.2.2 Urban Runoff Management Programs

Implementing the Urban Runoff Management Programs required by the Order involves various expenditure categories:

- Staff: Personnel costs
- Operating Budgets: Normal costs of operation and maintenance of equipment and facilities. Some operations may be contracted by the City.
- Capital Costs: Capital expenditures such as supplies, equipment purchases and improvement retrofit projects.

Personnel from various City departments are involved in the implementation of the City's JURMP and therefore have expenditures in their programs. The departments with the largest roles for JURMP implementation are listed below. Refer to Section 2 and the City's certification

letter in Appendix A of this document for further detail regarding the responsibilities of various departments.

- Public Works
- Engineering
- Community Development
- Parks and Community Services
- Administrative Services
- Fire

Other Order expenditures include shared costs for watershed and regional urban runoff management programs. These costs will be included in future Annual Reports submitted to the RWQCB.

12.2.3 Expenditure and Budget Reporting

The City presents its expenditures for the fiscal year as well as a proposed budget for the next fiscal year in the Annual Report. To gather data for future reports, urban runoff budgeting forms will be used to assist department heads in assessing their upcoming budget needs related to the JURMP. Table 12-1 shows the City of Vista budget summary for Order requirements.

Table 12-1: City of Vista Budget Summary

Stormwater Program Item	2006-07 Budget	2007-08 Budget
Staff *		
• Salaries, benefits, vehicle, uniforms	$ 212,884	$ 224,523
MS4 Maintenance		
• Storm Drain Maintenance & staff		
• Waste Testing & Disposal	$ 1,169,607	$ 1,029,879
• Equipment Rental & Purchase		
• Street Sweeping Contracts		
Monitoring		
• Wet and Dry Weather Monitoring		
• Storm drain materials testing	$ 111,150	$ 122,800
• Spill Response Sampling		
Business Inspection & Enforcement		
• Industrial/Commercial Inspections	$ 120,450	$ 90,000
• Database updates/management		
Permit Fees		
• SWRCB Permit Fee	$ 15,000	$ 15,300
Education		
• Events		
• Training & conferences (internal/external)	$ 34,381	$ 25,140
• Materials Development		
• Used Oil Block Grant (1/2)		
WURMP and Regional Program		
• WURMP coordination		
• TMDL monitoring, cost share	$ 67,000	$ 334,500
• Hydromodification Mgmt Plan		
Administrative Expenses		
• Supplies and small tools	$ 1,195	$ 3,955
Total =	**$ 1,731,667**	**$ 1,846,097**

*Includes staff in WQPP, but not other Planning, Development, Construction, Building, Parks, Public Works Maintenance, or Administrative staff implementing storm water requirements within their work units.

12.3 Update to Fiscal Analysis Methods

The Copermittees have developed the *Standardized Method and Format for Annually Conducting and Reporting Fiscal Analyses of Copermittee Urban Runoff Management Programs*, as required by the Order. The City began to utilize this analysis and reporting method to meet the standards of the newly developed format for the FY 2008-09.

12.0 SPECIAL INVESTIGATIONS

12.1 Introduction

The City conducted two special investigations this Fiscal Year. The first was related to the Effectiveness Assessment of the program, identified as a significant activity last year. The project was centered around clean-ups efforts along two sections of Buena Vista Creek and the resulting impacts on water quality. The second investigation was participation in and collection of data under the Lagoon Investigative Order. This was a combined effort among the Copermittees in the Carlsbad Hydrologic Unit (CHU) designed to collect the necessary monitoring data within the lagoons in the CHU to develop TMDLs.

12.2 Buena Vista Creek Cleanups

During FY 2008-09, two specific creek cleanup efforts within Buena Vista Creek were undertaken to address water quality and obstruction concerns. Prior to creek cleanup efforts, a monitoring plan was developed for data collection based on the significant activity goals outlined in Table 12.1 below. The data collected were used to answer the proposed management questions.

Clean up activities were conducted at the former Sycamore Creek Mobile Home Park Property (Sycamore) located at 751 E. Vista Way, and Buena Vista Creek (BV Creek) located between Foothill Drive and Brengle Terrace Park. The Sycamore clean up encompassed 1,700 linear feet and the BV Creek cleanup encompassed 2,100 linear feet of Buena Vista Creek (Figure 1).

Table 12.1 Significant Activity Summary

Significant Activity FY 2008-09 – Buena Vista Creek Cleanups	
Management Questions	• Does improving natural flow in the Buena Vista Creek result in load reductions of COCs? • Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?
Targeted Measurable Outcome(s)	• Achieve load reduction of debris from Creek cleanups • Achieve load reduction of bacteria and nutrients
Assessment Method(s)	• Monitoring (e.g., collect special study information on concentrations and creek flows to estimate load reduction) • Tabulation (e.g., amount of money spent on cleanups) • Quantification (e.g., compare data collected before and after cleanup to estimate load reduction) • Reporting (e.g., estimates of load reduction for cleanups)
Assessment Measures, Assessment Outcome Levels & Data:	• Amount of money spent on cleanups (Outcome Level 1) • Pre and post cleanup flow and concentration results (Outcome Level 1) • Upstream and downstream flow and concentration results (Outcome Level 1) • Estimated load reductions upstream and downstream, pre and post cleanup (Outcome Level 4) • Tons of debris collected from each cleaning (Outcome Level 4) • Stream miles of cleaned creek (linear ft) (Outcome Level 1) • Total number and location of all creek cleanups (Outcome Level 1) • Removal of invasive vegetation from creek (Outcome Level 1)

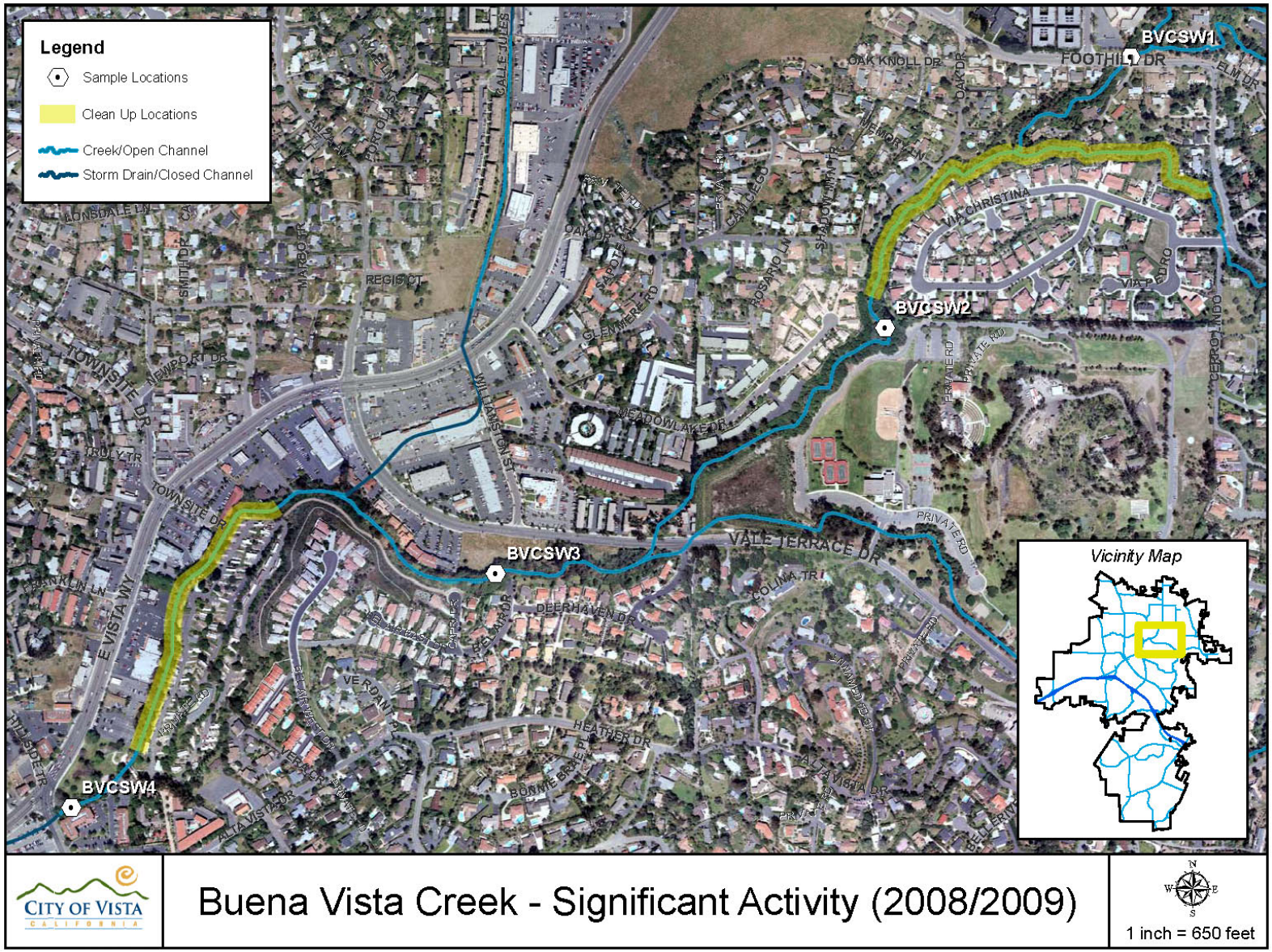

Figure 12.1 Map of Buena Vista Creek Cleanup Locations

12.2.1 Methods

Monitoring was conducted upstream and downstream of the cleanup sites prior to cleanup in September 2008 and after cleanup during March/April 2009. Sites BVCSW1 and BVCSW2 were upstream and downstream of the upper site (BV Creek) and Sites BVCSW3 and BVCSW4 were upstream and downstream of the lower site (Sycamore). Three samples were collected over three consecutive days at the four monitoring locations prior to and following cleanup activities. Flow estimates, bacteria, nutrient, and physical analyses were conducted during each event (Table 12.2). The amount of debris removed during the cleanup projects was recorded, and visual observations obtained during sampling and cleanup were also recorded.

Table 12.2 Sampling Summary

Analytes	Analysis Method	Frequency*
Nitrate-N	Field Test Kit or Analytical Lab	12
Total Nitrogen	Analytical Lab	12
Orthophosphate-P	Field Test Kit or Analytical Lab	12
Total Phosphorus	Analytical Lab	12
Ammonia-N	Field Test Kit or Analytical Lab	12
Enterococcus	Analytical Lab	12
Total Coliform	Analytical Lab	12
Fecal Coliform	Analytical Lab	12
Conductivity	Field Monitor	12
Temperature	Field Monitor	12
pH	Field Monitor	12
Dissolved Oxygen	Field Monitor	12
Turbidity	Field Monitor	12
Total Suspended Solids	Analytical Lab	12
Flow	Field Measurements	12
Debris (Tons)	Waste Disposal Report	1

*Based on one creek cleanup

Instantaneous loads were estimated using the observed flow and the measured contaminant levels. Loads were estimated to allow for direct comparison between the two monitoring events. During the September event, the observed flows were lower than the March/April observed flows. Therefore, estimation of the instantaneous loads was necessary to standardize the results prior to comparison. Instantaneous loads were estimated using Equation 1 for analytical concentration data and Equation 2 for bacterial indicators.

Contaminant Concentration(mg/L) x Flow(GPM) x 8.345×10^{-6}*=pound/minute*
(Equation1)

Bacterial Indicator(MPN/100mL) x Flow(GPM) x 37.854=MPN/minute
(Equation 2)

A paired t-test was performed to determine if differences between upstream and downstream contaminant levels were statistically different between the pre-cleanup condition and the post-cleanup condition. Prior to analysis, the data were tested for normality using the Shaprio-Wilk and the Kolmogorov-Smirnov tests. For analytes that did not pass normality testing, the data were log transformed and tested again using the same method. For those analytes that did not pass either test, a Wilcoxon Ranked Sum test was used to test the hypothesis. Ammonia and total suspended solids were not

included in the testing, because the proportion of non-detects was too high for the analysis results to be valid. For more information on these tests, please refer to Zar, 1999.

12.2.2 Results

Over 220 tons of vegetative debris was removed from Buena Vista Creek. Additionally, approximately 10 bags of urban debris (trash) were removed. At the downstream location (Sycamore) between 50 and 60 palm trees were stumped, and 15 non-native trees were also stumped. Castor bean was also removed from the Sycamore site. Only two trees were stumped at the upstream location (BV Creek) and some invasive plants, mostly fig, were removed. At both locations, dead plant growth on tree trunks was removed up to 30 feet off of the ground, all palm fronds were removed, and dead vegetation that had collected over the years on the ground was removed. The cleanup results are presented in Table 12.3, the analytical results are presented in Attachment A, Table 1, and the instantaneous load estimates are presented in Attachment A, Table 2.

Table 12.3 Summary of Activities at Two Buena Vista Creek Cleanup Sites

Activity	Sycamore	BV Creek
Dead Vegetation Removal	yes	yes
Palm Trees Stumped (number)	50-60	2
Non-Natives Stumped (number)	15	NA
Invasive Plants Removed	yes	yes
Vegetative Debris Removed (Tons)	59.07	163.34
Urban Debris Removed	yes	yes
Total Cost	$42,000	$42,000

Flow and General Chemistry Results

Flow

Flow monitoring pre and post cleanup showed increased flows at all stations during the post-cleanup sampling event. The post-cleanup event occurred in March/April of 2009, after the wet season when groundwater tables were higher. The increased flow may have been a function of the time of year. Another difference between pre and post-cleanup flow was that flow between BVCSW2 and BVCSW3 decreased during the pre-cleanup event, but increased between BVCSW2 and BVCSW3 during the post-cleanup event (Figure 12.2).

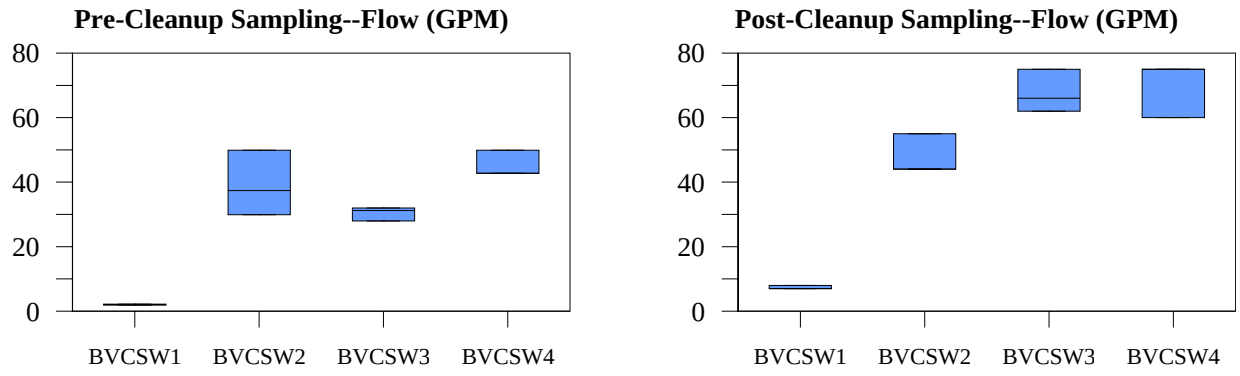

Figure 12.2 Pre and Post-Cleanup Flow Rates Observed in Buena Vista Creek

Dissolved Oxygen

Dissolved oxygen concentrations were higher at all stations during post-cleanup monitoring than during pre-cleanup monitoring. Concentrations followed the same pattern from upstream to downstream during both sampling events, with relatively higher concentrations at site BVCSW1, a drop in concentration at BVCSW2, and then increased downstream to site BVCSW4 (Figure 12.). However, during the post-cleanup monitoring dissolved oxygen concentrations were higher at BVCSW4 than at BVCSW1. Evaluation of the dissolved oxygen instantaneous loads shows that during the post-cleanup event, levels of dissolved oxygen increased steadily from upstream to downstream. During pre-cleanup monitoring there was a dip in dissolved oxygen between site BVCSW2 and BVCSW3 (Figure 12.4).

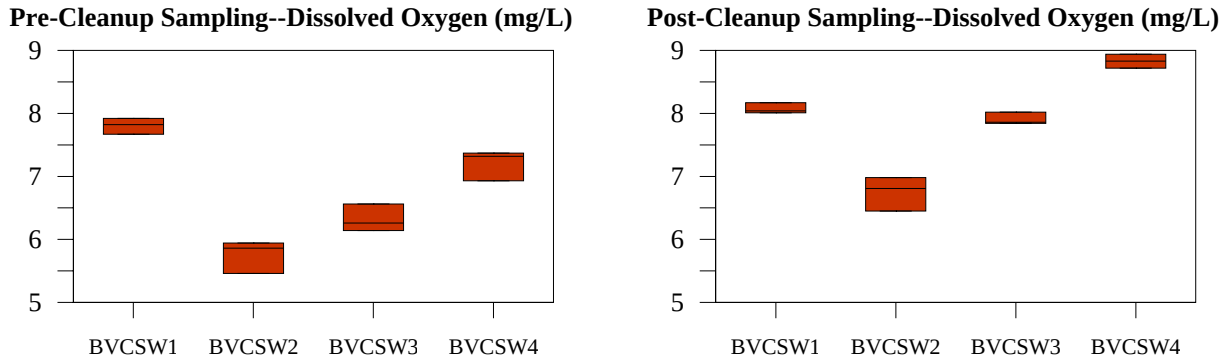

Figure 12.3 Dissolved Oxygen Concentrations Observed in Buena Vista Creek Pre and Post-Cleanup Monitoring

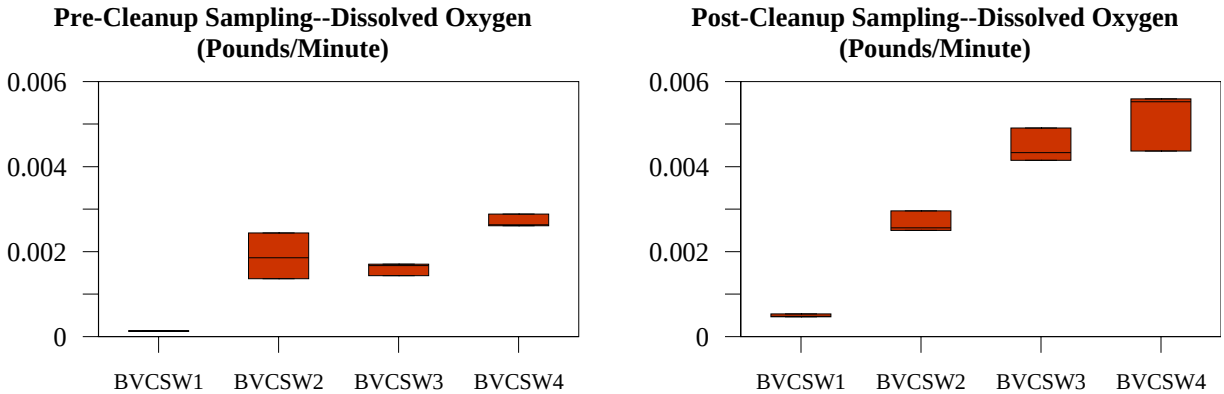

Figure 12.4 Dissolved oxygen instantaneous loads observed in Buena Vista Creek

Nutrients

Nutrient concentration results were similar when comparing pre and post-cleanup monitoring, with lower results for nitrate as nitrogen and total nitrogen upstream of each cleanup area compared to downstream at each cleanup area (Attachment A, Figure 1). Total phosphorus, ortho-phosphate, and total kjeldahl nitrogen results remained somewhat similar from up to downstream (Attachment A, Figure 1).

Instantaneous loads were calculated for all contaminants, and tested for normality prior to analysis. Normality testing of the data revealed that dissolved oxygen, nitrate as nitrogen, ortho-phosphate, total nitrogen, and total phosphorus were normally distributed, and therefore the t-test was used to check for differences between upstream and downstream instantaneous loads at each cleanup site. The distribution for total kjeldahl nitrogen was unknown, and therefore the Wilcoxon Ranked Sum test was used to test for differences (Attachment A, Table 3).

The results of the statistical tests at the upstream cleanup site (BV Creek) showed that site BVCSW2 was significantly higher than site BVCSW1 during pre-cleanup monitoring for instantaneous loads of nitrate as nitrogen, ortho-phosphate, total kjeldahl nitrogen, total nitrogen, and total phosphorus. During post-cleanup monitoring this difference was less apparent for ortho-phosphate and total phosphorus (Figure 12. and Attachment A, Table 3). There was no change in relationship for nitrate as nitrogen, total nitrogen, or total kjeldahl nitrogen. This means that there were fewer contaminants entering the creek between site BVCSW1 and BVCSW2 during post-cleanup monitoring for ortho-phosphate and total phosphorus, but the contribution between BVCSW1 and BVCSW2 remained unchanged for nitrate as nitrogen, total nitrogen, and total kjeldahl nitrogen.

Downstream, at the Sycamore cleanup site, differences during pre-cleanup monitoring in instantaneous loads at the upstream site (BVCSW3) were significantly lower than the downstream site (BVCSW4) for nitrate as nitrogen and total nitrogen (Attachment A, Table 3). During post-cleanup monitoring, there was still a significant difference between sites BVCSW3 and BVCSW4 for nitrate as nitrogen and total nitrogen. However, there was less of a distinction between median results (shown on the box and whisker plots as the line in the middle of the colored rectangle) for nitrate as nitrogen and total nitrogen than there were for pre-cleanup monitoring (Figure 12.). Additionally, the median instantaneous load for ortho-phosphate, total phosphorus, and total kjeldahl nitrogen were lower at BVCSW4 than BVCSW3 during post-cleanup monitoring. These results suggest that fewer contaminants were contributed between BVCSW3 and BVCSW4 during post-cleanup monitoring than during pre-cleanup monitoring (Figure 4 and Attachment A, Table 3).

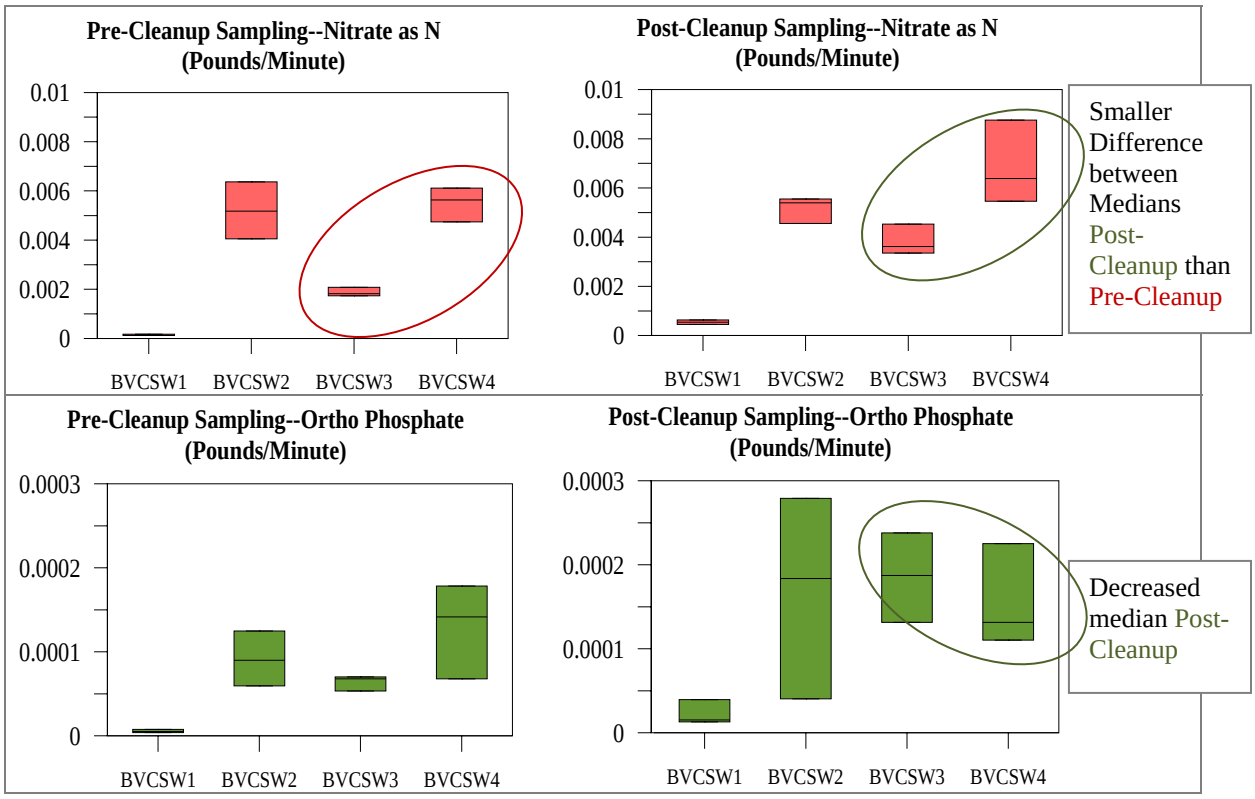

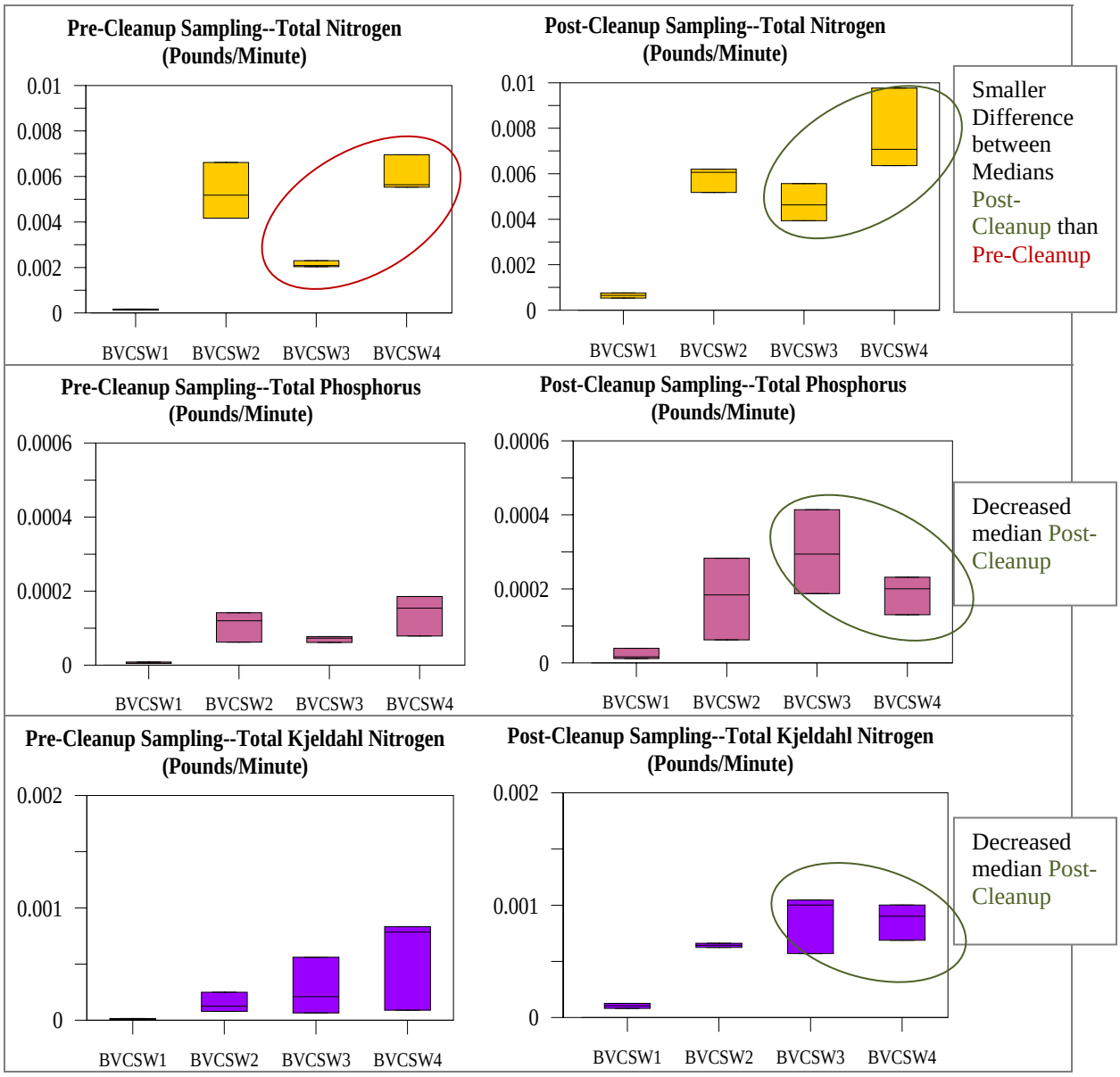

Figure 12.5 Box and Whisker plots of Pre and Post-Cleanup Instantaneous Loads for Buena Vista Creek

Indicator Bacteria Results

Bacteria concentrations for the pre-cleanup sampling were lower at the sites upstream of each cleanup area (BVCSW1 and BVCSW3) compared to their respective downstream sites (BVCSW2 and BVCSW4) (Attachment A, Figure 1). During post-cleanup monitoring the concentrations, on a log scale, did not change from the upstream site (BVCSW1) to the downstream site (BVCSW4) (Attachment A, Figure 1).

Instantaneous loads were also calculated for bacterial indicators and assessed using a paired t-test for enterococcus and fecal coliform, and the Wilcoxon Ranked Sum test for total coliform. The results show that the instantaneous loads at all downstream sites (except BV Creek for total coliform) were significantly higher than their respective upstream sites. However, during the post-cleanup monitoring the downstream instantaneous loads were not significantly higher than their respective upstream instantaneous loads at each cleanup site (except total coliform at Sycamore cleanup site). This result means that although instantaneous loads for all indicator bacteria are

somewhat higher at the furthest downstream site (BVCSW4) when compared to BVCSW1, overall there does not appear to be any load contribution from within the Sycamore cleanup area (Figure 12.6). There may be some contribution within the BV Creek cleanup area, but that might be attributed to the other branch of the creek entering the cleanup area

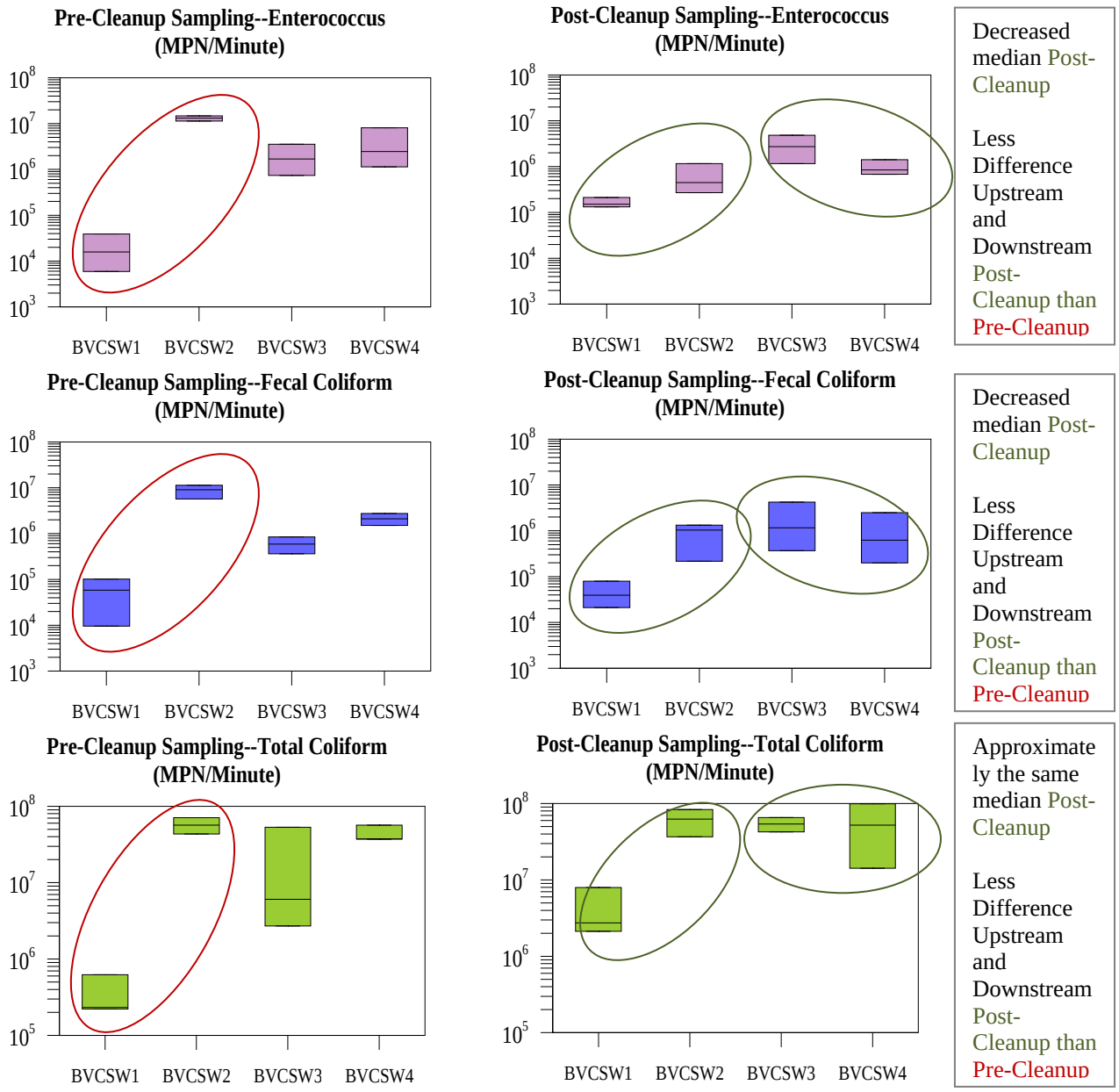

Figure 12.6 Bacteria Instantaneous Loads for Pre and Post Cleanup Monitoring at Buena Vista Creek

12.2.3 Discussion and Conclusions

The creek cleanups were conducted to help improve water quality and address obstruction concerns. The following two management questions were addressed to determine the success of the project:

- Does improving natural flow in the Buena Vista Creek result in load reductions of COCs?

- Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?

When answering these two questions it is important to remember that creek cleanups are not analogous to natural treatment systems, which treat water in a natural stream and help remove contaminants. Therefore, the measure of success is based on the relative difference of contaminant contribution between the upstream and downstream monitoring location at each cleanup site during the post-cleanup event. Any debris removal from the creeks is a benefit to the health of the creek, the improvement of water flow, and aesthetic appeal.

The two stream cleanups conducted in Buena Vista Creek resulted in over 220 tons of vegetative debris and 20 bags of urban debris removed. Any removal of debris is considered an outcome level 4 (load reduction) and therefore the cleanups were successful for removing debris.

General Chemistry and Flow Discussion and Conclusions

Flow levels were higher during the post-cleanup monitoring event than the pre-cleanup event. This lead to larger instantaneous loads during the second event, but because the relative difference between upstream and downstream monitoring was the measure of success this confounding factor had less impact on the analysis of success.

Dissolved oxygen results were elevated during the second event compared to the first event. Evaluation of the concentration results showed that the pattern of dissolved oxygen concentrations from upstream to downstream remained the same. However, because dissolved oxygen concentrations at site BVCSW1 remained approximately the same during both events, and the furthest downstream site had much higher concentrations of dissolved oxygen during the second event, the increase in dissolved oxygen downstream may be attributed (at least in part) to the cleanup efforts.

During the pre-cleanup monitoring event, instantaneous loads of all nutrients were significantly higher downstream of the BV Creek than upstream of the cleanup site. After the cleanup occurred ortho-phosphate and total phosphorus were no longer significantly higher. However, there is a confounding issue at this location because one branch of the creek (flowing into the upstream portion of the cleanup area) was not monitored. It is not known whether this branch contributed nutrient loads after cleanup or not.

At the Sycamore (downstream) cleanup site, all nutrient instantaneous loads were also higher during pre-cleanup monitoring downstream of the cleanup area, but only nitrate and total nitrogen were significantly higher. After the cleanup, the relative difference between upstream and downstream was less for all nutrients. Additionally, median ortho-phosphate, total phosphorus, and total kjeldahl nitrogen instantaneous loads were lower downstream of the Sycamore cleanup site.

- Does improving natural flow in the Buena Vista Creek result in load reductions of COCs?
    - Flow was improved within the Creek, even though all flows were generally higher after cleanup the relative difference in flow between the upstream and downstream monitoring locations (BVCSW1 and BVCSW4) was greater during the post-cleanup monitoring.
    - Based on the monitoring results, particularly at the Sycamore site (downstream) fewer contaminants were contributed between the upstream and downstream monitoring locations. Additionally, dissolved oxygen concentrations were higher during the post-cleanup monitoring,

conductivity results were more consistent from upstream to downstream, and temperature readings were approximately five degrees Celsius cooler over all at all stations.

- Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?
    - Contaminants associated with decaying vegetative debris, such as nitrogen, phosphorus, and dissolved oxygen were generally improved after the cleanup. This result was noted especially at the Sycamore cleanup area. Therefore, yes the removal of debris and vegetation helps to improve water quality in the Creek.

Indicator Bacteria Discussion and Conclusions

Instantaneous loads of indicator bacteria were significantly higher downstream of the BV Creek cleanup site than the upstream site during the pre-cleanup monitoring. During the post-cleanup monitoring, only total coliform was significantly higher at the downstream site, and the difference between medians for the upstream and downstream instantaneous load was less than one log.

Bacterial instantaneous loads at Sycamore creek were not significantly different pre-cleanup monitoring for enterococcus or fecal coliform, but they were for total coliform. During post-cleanup monitoring the downstream median instantaneous load for all bacterial indicators was less than the upstream instantaneous load.

- Does improving natural flow in the Buena Vista Creek result in load reductions of COCs?
    - Based on the monitoring results, particularly at the Sycamore site (downstream) fewer bacterial indicators were contributed between the upstream and downstream monitoring locations.
- Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?
    - At the Sycamore site, cleanup of the creek debris appears to have reduced the amount of bacteria contributed to the Creek in the cleanup area.

Summary of Activity Assessment

There were several confounding issues raised during data analysis, including the fact that a larger tributary enters the upper cleanup site (BV Creek) downstream of the monitoring location. Additionally, a small tributary enters Buena Vista creek downstream of BVCSW3 and into the downstream cleanup area (Sycamore). These inputs have unknown effects at this time. The intention of the monitoring plan was to monitor immediately upstream and downstream of the cleanup areas. Monitoring at Foothill drive (BVCSW1), while on the main creek, does not entirely capture the water quality and flow upstream of the upper cleanup area.

A summary of the significant activity results is presented in Table 12.4. These results were used to answer the two management questions posed for the activity:

Overall, the cleanup project resulted in several benefits to Buena Vista creek, including removal of water loving palm trees, removal of invasive species, more sunlight reaching the creek itself, observations of wildlife after cleanup and removal of habitat for wood rats. In addition, improvements to water quality were achieved through the removal of contaminant related vegetative debris.

Table 12.4 Summary of Results

Buena Vista Creek Cleanups		Results
Assessment Measures, Assessment Outcome Levels & Data:	Amount of money spent on cleanups (Outcome Level 1)	$84,000
	Pre and post cleanup flow and concentration results (Outcome Level 1)	Higher levels of dissolved oxygen, lower levels of bacteria, lower levels of total phosphorus, ortho phosphate
	Upstream and downstream flow and concentration results (Outcome Level 1)	Lower concentrations relative to upstream at Sycamore cleanup site
	Estimated load reductions upstream and downstream, pre and post cleanup (Outcome Level 4)	Reductions in the contribution of nitrate, ortho phosphate, total nitrogen, total phosphorus, total kjeldahl nitrogen, enterococcus, fecal coliform, and total coliform
	Tons of debris collected from each cleaning (Outcome Level 4)	220 tons removed
	Stream miles of cleaned creek (linear ft) (Outcome Level 1)	3,800 linear stream feet
	Total number and location of all creek cleanups (Outcome Level 1)	2 locations, Sycamore and BV Creek
	Removal of invasive vegetation from creek (Outcome Level 1)	Yes

12.2.4 References

Zar, 1999. Biostatistical Analysis, 4th Edition. Prentice Hall, Upper Saddle River, NJ 07458

Attachment A

Table 1 Buena Vista Creek Pre and Post Cleanup Contaminant Concentrations

Location ID	Date	Flow (gpm)	Ammonia-Nitrogen (mg/L)	Dissolved Oxygen (mg/L)	Nitrate-Nitrogen (mg/L)	Orthophosphate-Phosphorus (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Total Suspended Solids (mg/L)	Enterococcus (MPN/100mL)	Fecal Coliforms (MPN/100mL)	Total Coliforms (MPN/100mL)	Turbidity (NTU)	pH	Temp. (°C)	Conductivity (mS/cm)
BVCSW1	9/10/2008	1.948	0.50	7.82	7.50	0.23	0.90	8.40	0.28	10.00	80	130	3000	1.78	8.26	21.90	1.91
BVCSW1	9/11/2008	2.0626	0.50	7.92	7.30	0.44	0.60	7.90	0.48	10.00	500	1300	8000	1.72	8.25	19.70	1.92
BVCSW1	9/12/2008	2.19	0.50	7.67	9.18	0.28	0.25	9.20	0.30	10.00	190	700	2800	3.30	8.24	19.40	1.91
BVCSW1	3/30/2009	7	0.15	8.17	9.30	0.26	1.80	11.10	0.28	10.00	500	80	30000	3.98	8.13	15.20	1.93
BVCSW1	3/31/2009	7	0.22	8.01	7.72	0.22	1.40	9.10	0.20	10.00	800	300	8000	2.20	8.07	13.70	0.28
BVCSW1	4/1/2009	8	0.50	8.04	9.50	0.59	1.90	11.40	0.59	10.00	500	130	9000	2.54	8.01	13.80	1.52
BVCSW2	9/10/2008	29.922	0.50	5.46	16.20	0.36	0.50	16.70	0.48	10.00	13000	8000	50000	1.14	7.64	21.10	2.14
BVCSW2	9/11/2008	49.87	0.50	5.86	15.30	0.30	0.60	15.90	0.34	10.00	7000	3000	23000	1.35	7.66	19.80	2.16
BVCSW2	9/12/2008	37.402	0.50	5.94	16.60	0.19	0.25	16.60	0.20	10.00	8000	8000	50000	1.25	7.73	19.30	2.15
BVCSW2	3/30/2009	44	0.24	6.98	12.40	0.11	1.70	14.10	0.17	10.00	700	800	50000	0.94	7.73	15.90	2.10
BVCSW2	3/31/2009	55	0.25	6.45	12.10	0.40	1.40	13.50	0.40	10.00	130	500	30000	1.20	7.78	15.60	2.05
BVCSW2	4/1/2009	44	0.50	6.81	14.70	0.76	1.80	16.50	0.77	10.00	270	130	22000	1.07	7.76	15.20	1.91
BVCSW3	9/10/2008	28	0.50	6.14	7.80	0.29	0.90	8.70	0.33	10.00	700	800	50000	0.44	7.95	21.30	2.34
BVCSW3	9/11/2008	32	0.50	6.26	6.50	0.20	2.10	8.60	0.23	10.00	1400	300	5000	1.05	8.03	20.20	2.34
BVCSW3	9/12/2008	31.169	0.50	6.56	8.01	0.27	0.25	8.00	0.28	10.00	3000	500	2300	0.90	8.00	19.00	2.36
BVCSW3	3/30/2009	62	0.21	8.02	6.48	0.46	1.10	7.60	0.80	10.00	500	500	23000	1.40	8.12	14.70	1.84
BVCSW3	3/31/2009	75	0.11	7.84	5.78	0.21	1.60	7.40	0.47	10.00	1700	130	23000	1.42	8.11	13.40	0.92
BVCSW3	4/1/2009	66	0.50	7.86	8.22	0.34	1.90	10.10	0.34	10.00	1100	1700	17000	2.71	8.13	13.90	1.83

Location ID	Date	Flow (gpm)	Ammonia-Nitrogen (mg/L)	Dissolved Oxygen (mg/L)	Nitrate-Nitrogen (mg/L)	Orthophosphate-Phosphorus (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Total Suspended Solids (mg/L)	Enterococcus (MPN/100mL)	Fecal Coliforms (MPN/100mL)	Total Coliforms (MPN/100mL)	Turbidity (NTU)	pH	Temp. (°C)	Conductivity (mS/cm)
BVCSW4	9/10/2008	42.746	1.44	7.37	13.30	0.50	2.20	15.50	0.52	10.00	700	1300	23000	4.12	7.99	22.20	2.03
BVCSW4	9/11/2008	49.87	0.50	6.93	14.70	0.34	2.00	16.70	0.37	10.00	1300	800	30000	4.91	8.14	20.70	2.04
BVCSW4	9/12/2008	42.746	0.50	7.32	15.80	0.19	0.25	15.80	0.22	10.00	5000	1700	23000	3.78	8.08	20.00	2.02
BVCSW4	3/30/2009	60	0.19	8.72	10.90	0.22	1.80	12.70	0.26	10.00	300	1100	23000	0.64	8.33	17.40	1.61
BVCSW4	3/31/2009	75	0.50	8.83	10.20	0.21	1.10	11.30	0.32	10.00	500	220	5000	1.09	8.36	17.10	2.00
BVCSW4	4/1/2009	75	0.50	8.94	14.00	0.36	1.60	15.60	0.37	10.00	300	70	35000	0.94	8.33	16.60	1.95

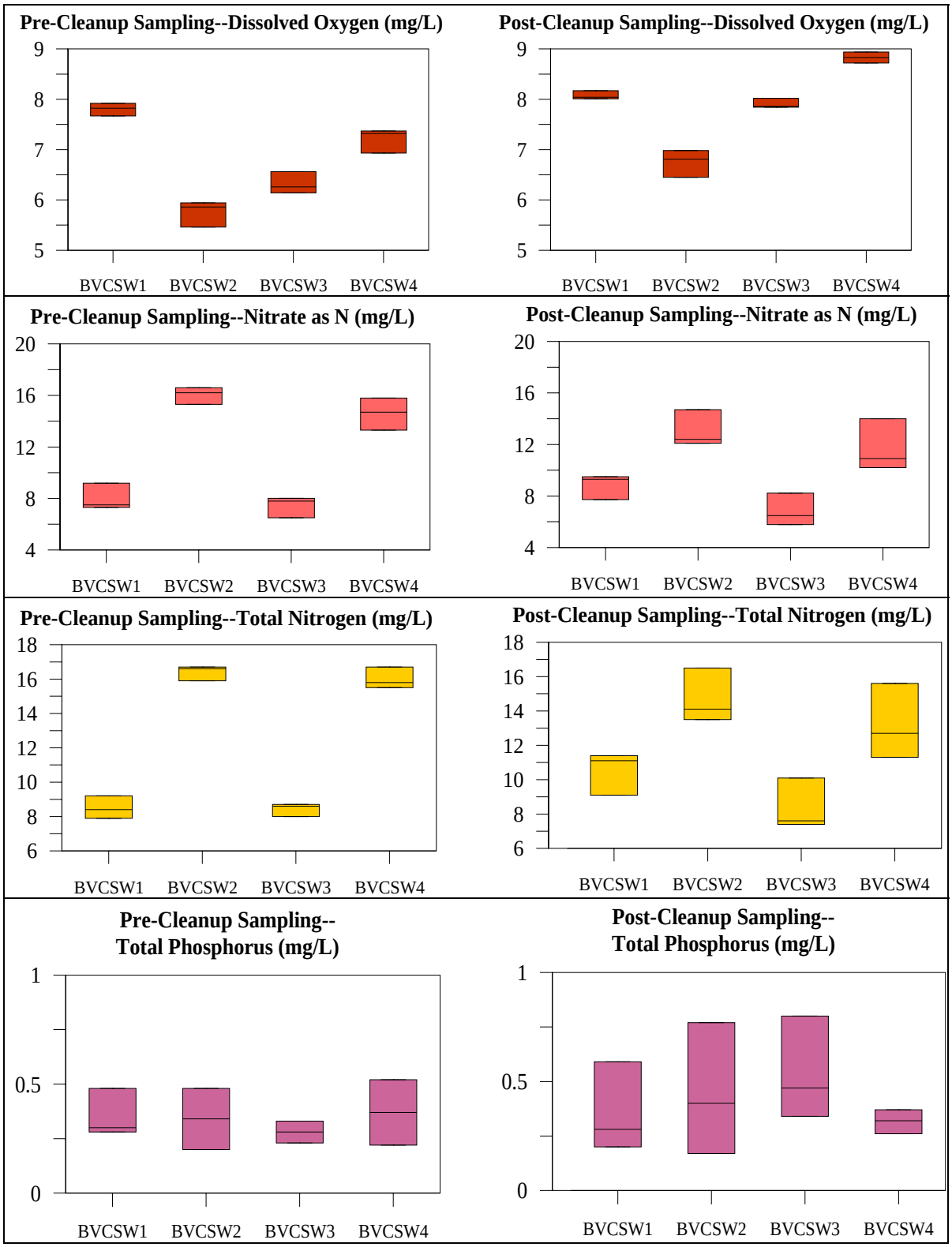
Pre-Cleanup Sampling--Dissolved Oxygen (mg/L)
9
8
7
6
5
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--Dissolved Oxygen (mg/L)
9
8
7
6
5
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--Nitrate as N (mg/L)
20
16
12
8
4
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--Nitrate as N (mg/L)
20
16
12
8
4
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--Total Nitrogen (mg/L)
18
16
14
12
10
8
6
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--Total Nitrogen (mg/L)
18
16
14
12
10
8
6
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--
Total Phosphorus (mg/L)
1
0.5
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Total Phosphorus (mg/L)
1
0.5
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4

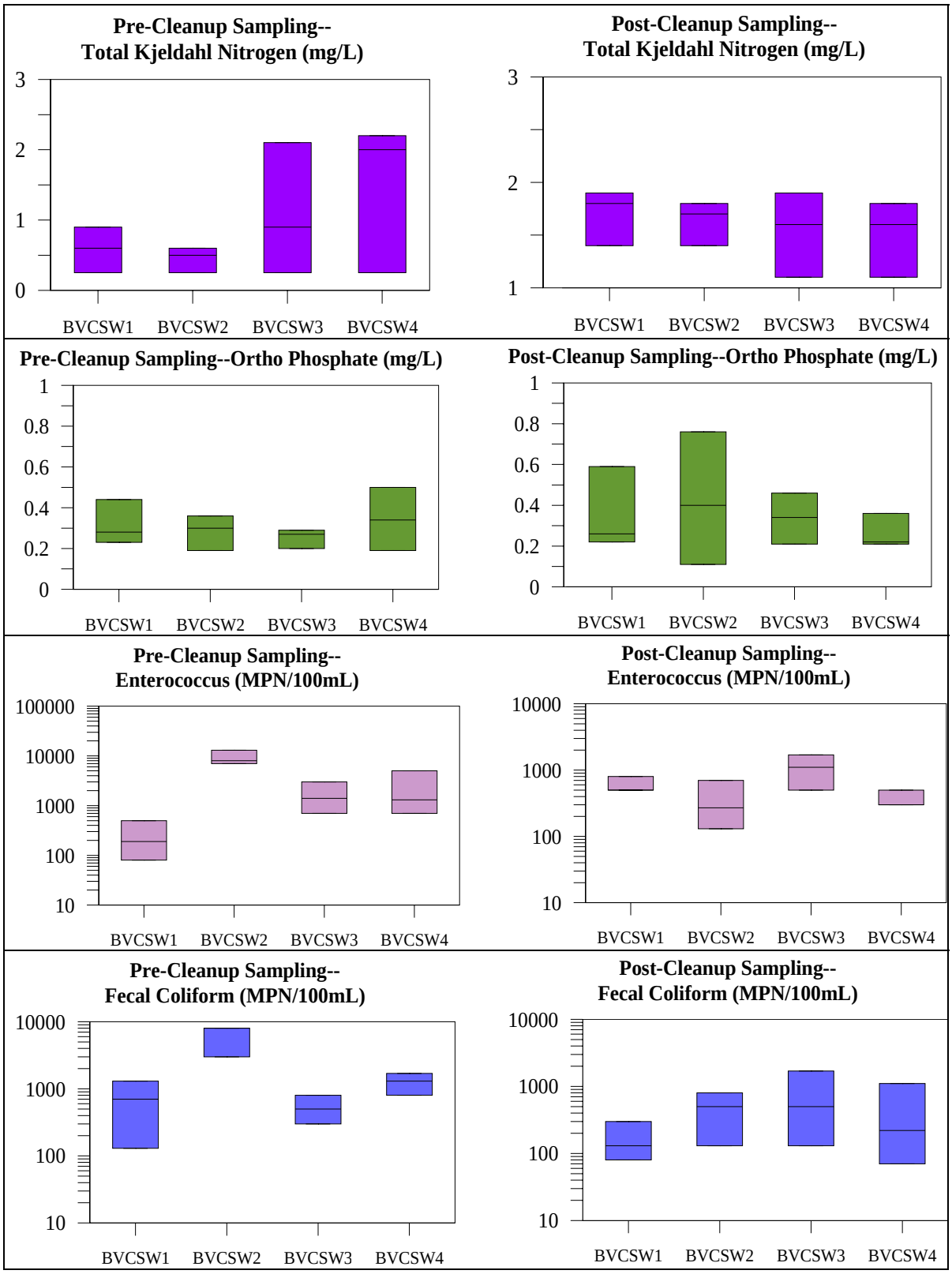
Pre-Cleanup Sampling--
Total Kjeldahl Nitrogen (mg/L)
3
2
1
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Total Kjeldahl Nitrogen (mg/L)
3
2
1
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--Ortho Phosphate (mg/L)
1
0.8
0.6
0.4
0.2
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--Ortho Phosphate (mg/L)
1
0.8
0.6
0.4
0.2
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--
Enterococcus (MPN/100mL)
100000
10000
1000
100
10
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Enterococcus (MPN/100mL)
10000
1000
100
10
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--
Fecal Coliform (MPN/100mL)
10000
1000
100
10
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Fecal Coliform (MPN/100mL)
10000
1000
100
10
BVCSW1
BVCSW2
BVCSW3
BVCSW4

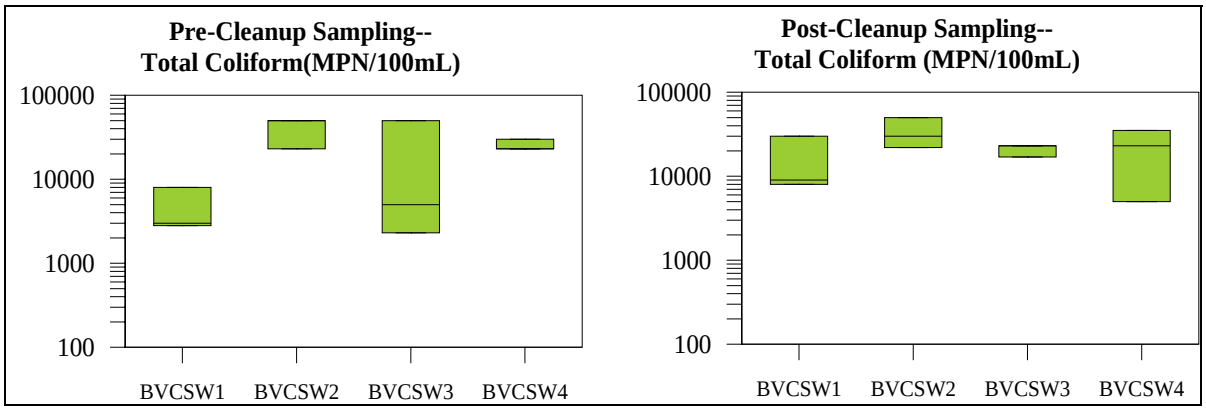
Pre-Cleanup Sampling--
Total Coliform(MPN/100mL)
100000
10000
1000
100
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Total Coliform (MPN/100mL)
100000
10000
1000
100
BVCSW1
BVCSW2
BVCSW3
BVCSW4

Table 2 Buena Vista Creek Pre and Post Cleanup Instantaneous Loads

Location ID	Date	Ammonia-Nitrogen (pounds/min)	Dissolved Oxygen (pounds/min)	Nitrate-Nitrogen (pounds/min)	Orthophosphate-Phosphorus (pounds/min)	Total Kjeldahl Nitrogen (pounds/min)	Total Nitrogen (pounds/min)	Total Phosphorus (pounds/min)	Total Suspended Solids (pounds/min)	Enterococcus (MPN/min)	Fecal Coliforms (MPN/min)	Total Coliforms (MPN/min)
BVCSW 1	9/10/2008	8.13E-06	1.27E-04	1.22E-04	3.74E-06	1.46E-05	1.37E-04	4.55E-06	1.63E-04	5899	9586	221219
BVCSW 1	9/11/2008	8.61E-06	1.36E-04	1.26E-04	7.57E-06	1.03E-05	1.36E-04	8.26E-06	1.72E-04	39039	101501	624623
BVCSW 1	9/12/2008	9.14E-06	1.40E-04	1.68E-04	5.12E-06	4.57E-06	1.68E-04	5.48E-06	1.83E-04	15751	58030	232121
BVCSW 1	3/30/2009	8.76E-06	4.77E-04	5.43E-04	1.52E-05	1.05E-04	6.48E-04	1.64E-05	5.84E-04	132489	21198	7949365
BVCSW 1	3/31/2009	1.29E-05	4.68E-04	4.51E-04	1.29E-05	8.18E-05	5.32E-04	1.17E-05	5.84E-04	211983	79494	2119831
BVCSW 1	4/1/2009	3.34E-05	5.37E-04	6.34E-04	3.94E-05	1.27E-04	7.61E-04	3.94E-05	6.68E-04	151416	39368	2725496
BVCSW 2	9/10/2008	1.25E-04	1.36E-03	4.05E-03	8.99E-05	1.25E-04	4.17E-03	1.20E-04	2.50E-03	14724722	9061367	56633546
BVCSW 2	9/11/2008	2.08E-04	2.44E-03	6.37E-03	1.25E-04	2.50E-04	6.62E-03	1.42E-04	4.16E-03	13214494	5663355	43419052
BVCSW 2	9/12/2008	1.56E-04	1.85E-03	5.18E-03	5.93E-05	7.80E-05	5.18E-03	6.24E-05	3.12E-03	11326558	11326558	70790986
BVCSW 2	3/30/2009	8.81E-05	2.56E-03	4.55E-03	4.04E-05	6.24E-04	5.18E-03	6.24E-05	3.67E-03	1165907	1332465	83279059
BVCSW 2	3/31/2009	1.15E-04	2.96E-03	5.55E-03	1.84E-04	6.43E-04	6.20E-03	1.84E-04	4.59E-03	270657	1040988	62459294
BVCSW 2	4/1/2009	1.84E-04	2.50E-03	5.40E-03	2.79E-04	6.61E-04	6.06E-03	2.83E-04	3.67E-03	449707	216526	36642786

Location ID	Date	Ammonia-Nitrogen (pounds/min)	Dissolved Oxygen (pounds/min)	Nitrate-Nitrogen (pounds/min)	Orthophosphate-Phosphorus (pounds/min)	Total Kjeldahl Nitrogen (pounds/min)	Total Nitrogen (pounds/min)	Total Phosphorus (pounds/min)	Total Suspended Solids (pounds/min)	Enterococcus (MPN/min)	Fecal Coliforms (MPN/min)	Total Coliforms (MPN/min)
BVCSW3	9/10/2008	1.17E-04	1.43E-03	1.82E-03	6.78E-05	2.10E-04	2.03E-03	7.71E-05	2.34E-03	741941	847932	52995765
BVCSW3	9/11/2008	1.34E-04	1.67E-03	1.74E-03	5.34E-05	5.61E-04	2.30E-03	6.14E-05	2.67E-03	1695864	363400	6056659
BVCSW3	9/12/2008	1.30E-04	1.71E-03	2.08E-03	7.02E-05	6.50E-05	2.08E-03	7.28E-05	2.60E-03	3539625	589937	2713712
BVCSW3	3/30/2009	1.09E-04	4.15E-03	3.35E-03	2.38E-04	5.69E-04	3.93E-03	4.14E-04	5.17E-03	1173478	1173478	53979972
BVCSW3	3/31/2009	6.88E-05	4.91E-03	3.62E-03	1.31E-04	1.00E-03	4.63E-03	2.94E-04	6.26E-03	4826400	369078	65298353
BVCSW3	4/1/2009	2.75E-04	4.33E-03	4.53E-03	1.87E-04	1.05E-03	5.56E-03	1.87E-04	5.51E-03	2748209	4247232	42472320
BVCSW4	9/10/2008	5.14E-04	2.63E-03	4.74E-03	1.78E-04	7.85E-04	5.53E-03	1.86E-04	3.57E-03	1132678	2103546	37216579
BVCSW4	9/11/2008	2.08E-04	2.88E-03	6.12E-03	1.42E-04	8.32E-04	6.95E-03	1.54E-04	4.16E-03	2454120	1510228	56633546
BVCSW4	9/12/2008	1.78E-04	2.61E-03	5.64E-03	6.78E-05	8.92E-05	5.64E-03	7.85E-05	3.57E-03	8090561	2750791	37216579
BVCSW4	3/30/2009	9.51E-05	4.37E-03	5.46E-03	1.10E-04	9.01E-04	6.36E-03	1.30E-04	5.01E-03	681374	2498372	52238683
BVCSW4	3/31/2009	3.13E-04	5.53E-03	6.38E-03	1.31E-04	6.88E-04	7.07E-03	2.00E-04	6.26E-03	1419529	624593	14195294
BVCSW4	4/1/2009	3.13E-04	5.60E-03	8.76E-03	2.25E-04	1.00E-03	9.76E-03	2.32E-04	6.26E-03	851718	198734	99367059

Table 3 Paired t-test and Wilcoxon Ranked Sum Results

Analyte	Cleanup Area	Normality Testing Results	Test	Pre Cleanup Monitoring (p-value)	Post Cleanup Monitoring (p-value)
Ammonia	Upper (BVCSW2-BVCSW1)	NA	NA	NA*	NA*
Ammonia	Lower (BVCSW4-BVCSW3)	NA	NA	NA*	NA*
Dissolved Oxygen	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.030	0.005
Dissolved Oxygen	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.008	0.489
Nitrate as Nitrogen	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.017	0.005
Nitrate as Nitrogen	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.013	0.040
Ortho-Phosphate	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.042	0.149
Ortho-Phosphate	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.199	0.611
TKN	Upper (BVCSW2-BVCSW1)	Distribution Unknown	Wilcoxon rank test	0.040	0.040
TKN	Lower (BVCSW4-BVCSW3)	Distribution Unknown	Wilcoxon rank test	0.191	0.412
Total Nitrogen	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.018	0.004
Total Nitrogen	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.009	0.036
Total Phosphorus	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.048	0.117
Total Phosphorus	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.164	0.363
TSS	Upper (BVCSW2-BVCSW1)	NA	NA	NA*	NA*
TSS	Lower (BVCSW4-BVCSW3)	NA	NA	NA*	NA*
Enterococcus	Upper (BVCSW2-BVCSW1)	Log Normal	paired t-test	0.006	0.255
Enterococcus	Lower (BVCSW4-BVCSW3)	Log Normal	paired t-test	0.289	0.149
Fecal Coliform	Upper (BVCSW2-BVCSW1)	Log Normal	paired t-test	0.035	0.135
Fecal Coliform	Lower (BVCSW4-BVCSW3)	Log Normal	paired t-test	0.042	0.666
Total Coliform	Upper (BVCSW2-BVCSW1)	Distribution Unknown	Wilcoxon rank test	0.040	0.040
Total Coliform	Lower (BVCSW4-BVCSW3)	Distribution Unknown	Wilcoxon rank test	0.188	0.500

* No result because too many non-detects in the sample results (>85%)

12.3 Lagoon Investigative Order 2006-0076

The San Diego Regional Water Quality Control Board issued Investigative Order 2006-0076 to the dischargers to the creeks and lagoons in San Diego County that are 303(d) listed as impaired for bacteria, nutrients, sedimentation, and/or TDS. With five lagoons in the Carlsbad Hydrologic Unit (CHU), the listed dischargers in the Order that are present in the CHU determined that the monitoring would be best approached as a group. The Investigative Order covers four of the five lagoons in the CHU including: Loma Alta Slough, Buena Vista Lagoon, Agua Hedionda Lagoon, and San Elijo Lagoon.

In the CHU, monitoring under the Order began in October 2007 and was completed in October 2008. Several stations in each lagoon and watershed were monitored including stations at the mouth of the watershed prior to entry into the lagoons, at segments in the lagoons, at the ocean inlets to the lagoons, and at transect within the lagoons. Samples were collected continuously for certain parameters using deployable data sondes and loggers, while other constituents were monitored during storm events and dry weather index periods only. The monitoring effort was intensive for a period of one full year.

As the monitoring was completed in October 2008, the final data reports were due and submitted to the Regional Board by June 30, 2009. For more information on the monitoring conducted and results, refer to the Carlsbad Hydrologic Unit Lagoon Monitoring Report, San Diego Regional Water Quality Control Board, Investigative Order No. R9-2006-0076, June 2009, as prepared by MacTec on behalf of the dischargers in the Carlsbad Hydrologic Unit.

14.0 Conclusions and Recommendations

This JURMP annual report covers the second reporting period (July 1, 2008 to June 30, 2009) under Order 2007-0001. Some of the key areas of implementation of the JURMP during this period included updates to the TCBMP and Special Events programs, expanding inspections and compliance activities to include FOG requirements, approving more high efficiency and natural BMPs for new development, assessing water quality, obtaining grants for education and watershed management planning, and encouraging citywide and community participation. The City also continued contributing to the development and implementation of the programs in two watersheds (Carlsbad and San Luis Rey Watersheds).

14.1 Iterative Process

The City's stormwater program continued to evolve. The City's JURMP states that the program will require periodic revision. The City of Vista is committed to working with its staff, other Copermittees and the RWQCB to improve and adapt the plan and efforts as necessary to comply with the permit requirements. The City's program continues to be dynamic requiring changes in the daily operations and implementation based on lessons learned and City staff input. The assessment information, including the strengths and improvement areas identified in this report, will continue to direct improved program activities. Examples of the iterative process and changes to the JURMP that were made this year include: updates to the TCBMP and Special Events Programs, and implementation of new tracking mechanisms for construction inspections.

14.2 Program Focus

The City continued to focus on implementing program requirements at municipal facilities and operations. These efforts were through: (1) staff training and education (both internally and externally); (2) implementation of facility Storm Water Pollution Prevention Plans; (3) facility inspections; (4) maintenance of structural BMPs; and (5) improving maintenance activities.

The City implemented its SUSMP requirements and emphasized natural treatment control BMPs and LID Site Design BMPs. The City's strong construction inspection process also continued over the last year, with an emphasis on education at pre-con meetings and construction site BMP implementation.

Inspections of the industrial and commercial businesses were focused during the reporting period on high priority industries and specific commercial facilities. All high priority industrial facilities were inspected. The inspections program also included FOG inspections at all food service establishments receiving stormwater inspections this year.

The City continued to actively seek and eliminate illicit connections and discharges through the Dry Weather Monitoring Program and complaint investigations. The report on the City's Dry Weather Monitoring Program will be submitted in December 2009 to comply with Addendum No. 2 of Order No. 2007-0001. Complaint investigations and follow-up inspections were successfully conducted. Stormwater staff received and responded to approximately 274 stormwater related complaints this year. Compliance was achieved through education or enforcement as necessary. The City also actively responded to private sewer lateral spills to minimize any discharges to the storm drain system.

Education of all target audiences continued to be a key element for the success of the program. During this year, a significant amount of educational materials were disseminated. Thousands of school children and adults attended educational presentations. The City also provided opportunities for public participation through creek cleanups, public meetings, and stakeholder meetings, including a watershed planning group to help develop the Agua Hedionda Watershed Management Plan.

14.3 Funding Sources

The Water Quality Protection Program activities are funded through the sewer enterprise fund. Some storm water education programs were funded through the California Integrated Waste Management Board Used Oil Block Grant. The City also implemented various grants during the year, including a grant from the Department of Conservation and a Proposition 40 grant from the State Water Board to develop a watershed management plan for the Agua Hedionda watershed.

14.4 Water Quality Data Analysis

The City has been collecting dry weather water quality data for many years under the previous Municipal Permits. The City has collected several seasons of data under these new requirements and continues to evaluate these data to determine the City's main constituents of concern. Programs will continue to be focused on the main constituents of concern. Water quality assessments are consistent with findings at the watershed level. High priority water quality problems identified include bacteria and nutrients during dry weather and bacteria and sediment during wet weather.

14.5 Citywide Participation

The City's Water Quality Protection Program is administered by the Engineering Department management and staff. However, the JURMP is a citywide program with its continuing success dependent upon all City staff participation. During this reporting period the program was successfully integrated into many citywide programs which will help to ensure continued program compliance. One significant change involved the Engineering Grading Inspectors, who were moved to the Land Development Division of Community Services.

14.6 Watershed Collaboration

The City will continue to collaborate and focus on implementing the activities developed in the Carlsbad and San Luis Rey Watershed Urban Runoff Management Plans with the appropriate Copermittees, organizations and stakeholders within these watersheds.

14.7 Program Accomplishments

The Water Quality Protection Program and various City staff continue to look for ways to improve the City's JURMP implementation. This includes several areas of focus to build on program success. An outline of these recommendations is presented below:

Development Planning Component

The City continued to develop its Treatment Control BMP Program. Informational packets were mailed out (February 2009) to each responsible party.

The 100 percent return of all Annual Certification forms can be attributed to both the user friendly informational packets as well as City staff who were responsive to questions/issues from the responsible parties. In addition, the City sent out a second mailer (July 2009) in order to have multiple contacts with the responsible parties. The City expects that the

second mailer will be useful in providing the responsible parties with as much information and support as possible to encourage proper maintenance and tracking for reporting purposes. The TCBMP Inspection Form was also revised and improved during the reporting period. The changes were focused on improving the usefulness and efficiency of the form.

Construction Component

During the reporting period, the City conducted several activities with respect to its construction activities component, designed to improve operations and compliance. Enhancements were made to the database in order to capture information about individual project inspections and improve tracking of required inspections. Operationally, the City reorganized several departments during the reporting period. As a result, the construction inspection staff was moved from the Engineering Department to the Land Development Division of the Community Development Department. Additionally, with the current state of the economy, it was not unusual to locate properties where the owners were having financial difficulties. In these instances, obtaining proper BMP implementation for the idle sites becomes difficult. In these situations, the City has utilized various options, including escalated enforcement and bonds, to ensure that the sites are adequately protected.

Municipal Component

The City made enhancements to the Special Events Program and implemented a Snap Shot CCTV Program of the City's sanitary sewer lines. Improvements to the Special Events Program include revisions to the application and BMP packets, increased contact with the event organizers, and development of an inspection form specific to special events. Additionally, the Stormwater Program Manager was officially added to the Special Events Committee. In an effort to maintain the wastewater collection system and to identify potential problem areas in the system, the City conducted 78 miles of video inspection, CCTV, of the wastewater system. The video inspection program is in place to prevent and/or eliminate infiltration from the wastewater system to the MS4.

Industrial/Commercial Component

There were several notable activities and accomplishments related to the industrial commercial component of the program in FY 2008-09. These included: combination inspections for stormwater and FOG at the food service establishments selected for inspection; the selection of facilities based on their proximity of Agua Hedionda Creek, attempting to inspect all industrial and commercial facilities in a small geographic area near the creek; and participation in the Regional Industrial and Commercial Workgroup (as the secretary) and in the Mobile Business Sub-workgroup.

Residential Component

Accomplishments related to the Residential Component included a new method of assessment, investigating the sources of the residential pollutants. In categorizing the types of residential complaints, the program confirmed that the high priority activities listed in the JURMP were appropriate. Additionally, this assessment will help the program focus on specific types of pollutant discharges related to the residential areas.

Education Component

The City developed a number of new educational materials, including: a FOG brochure, poster, and door hanger; a "Do More" stormwater brochure; an Agua Hedionda Watershed Management Plan brochure; and a survey for use in 2009-10 touching on a variety of water quality topics. Additionally, a new email address was created this year to facilitate

communication between the public and the City's water quality protection program; the new email address is waterquality@cityofvista.com.

Public Participation Component
The City completed the Agua Hedionda Watershed Management Plan, which involved significant public input. The Plan was presented to City Council in April 2009 and adopted by a vote of 5-0. Adjustments were also made to the stormwater hotline to provide better service to the public. Mechanisms were put in place to ensure that the hotline is continually answered during business hours, with staff support at all times.

Fiscal Analysis Component
The City chose to implement the Standardized Fiscal Analysis Method for this reporting period. This implementation is a year earlier than required, but was undertaken to ensure that proper tracking systems are in place to accurately incorporate the Method in the future. This method allowed the City to assess the costs related to each permit component.

Effectiveness Assessment Component
A comprehensive effectiveness assessment was performed this year. Conclusions from the assessment are incorporated into the recommendations below.

14.8 Program Recommendations

Development Planning Component
The effectiveness assessment for this program component focused on the TCBMP program, as it is a new and developing program. Results showed that after two years of inspections, the program has been successful in ensuring that TCBMPs throughout the City are maintained and operating properly. However, because the program is relatively new, significant amounts of staff time have been expended focusing on outreach, inspections, and follow-ups for these sites. In the future, the City should look for ways to develop a more efficient program while continuing to gain full compliance with its ordinances and the permit. It is expected that as the program evolves, efficiencies will be gained. Additionally, as inspection data is collected, it should be evaluated against the current prioritization criteria. This comparison will ensure that inspections are focused on BMPs that are the most problematic in regards to operation and maintenance, and BMPs that require less attention will be inspected less often.

Construction Component
With the implementation of a new spreadsheet tracking tool in Fiscal Year 2008-09, the program was able to better track inspections and compliance information. In the coming year, it is anticipated that the inspections tracking will transition to an Accela database. The City's permitting and land development tracking system currently operates in Accela. Integrating the stormwater construction inspections into the rest of the land development software should be beneficial, allowing for better tracking and management of the inspections program.

As shown in the effectiveness assessment of this component, it appears that site compliance is directly related to pre-construction meetings. Beginning in 2005, stormwater staff began to attend pre-construction meetings, providing an opportunity for stormwater staff to give one on one site specific education related to the project. This practice will continue, with stormwater staff attending all pre-construction meetings in the future.

Municipal Component
Several new sets of data were tracked related to the municipal program this year. It is anticipated that as these data are compiled in future years, they will provide useful information related to effectiveness assessment of the component. In the coming year, the database used to track complaints will be modified to track those reported by City staff (proactive) and those from the public. Additional data will also be tracked to evaluate the effectiveness of the special events program.

Industrial/Commercial Component
The industrial commercial program will continue to operate in compliance with permit requirements, ensuring that all high priority businesses and a minimum of 25% of the businesses on the inventory are inspected. During the coming year, the program will provide notifications of the site/source specific BMP requirements to each of the remaining facilities on the inventory that have not been inspected since the beginning of the permit. As indicated in the effectiveness assessment, several of the high priority facilities have stormwater violations from year to year. The program will evaluate methods to gain compliance at these facilities year round and improve the program to ensure that continued compliance in obtained.

Residential Component
The effectiveness assessment of this component is focused on the types of complaints related to residential activities. In comparing the types of residential complaints and sources of pollution identified, it appears that the high priority activities listed in the JURMP are properly focused. In the future, the City may use this data to enhance its education and outreach to the residential community.

Education Component
The education component strives to educate a broad range of people regarding urban runoff and other environmental concerns. In general, the program appears to be effective at conveying the message to the targeted audiences. In the coming year, it is expected that more measures will be implemented to assess changes in knowledge resulting from the outreach. The program will also evaluate ways to improve the outreach to specific target audiences. For example, with the verified effectiveness of the pre-construction meetings, stormwater staff will ensure that they are present at all pre-construction meetings and may continue to develop the methods of outreach provided. Other methods of outreach to the underserved target audiences may also be evaluated, including outreach to citizens via bulletins and through the outreach component of the FOG program.

Public Participation Component
The City currently has several options for public participation in the program. In the coming year, the City will be reworking its website to make it more user friendly. These changes are expected to benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. With these enhancements, these stormwater hotline and email addresses will be better advertised. Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

Fiscal Analysis Component

The fiscal analysis component included an evaluation this year using the Standardized Method for Fiscal Analysis. While not required until the FY 2009-10 Annual Report, the City chose to utilize this level of analysis a year early to ensure that proper tracking mechanisms are in place prior to its mandatory implementation for FY 2009-10. It is expected that improvements to the tracking and budgeting system will be made this year to allow for an easier fiscal analysis of each component. With the collection of this first year of data, a baseline has been established and in the coming years, it is expected that year to year comparisons between programs and potentially some level of cost/benefit analyses will be feasible.

Effectiveness Assessment Component

The effectiveness assessment of the program will continue to evolve. As new methods of evaluation are developed, additional supporting data will be tracked. It is expected that as more water quality data is collected, better evaluations of MS4 and receiving water quality will be feasible. Where possible, relationships between program components, BMPs, and water quality will be evaluated, however at this time, these links are difficult to establish.

APPENDIX A-1

SUSMP Listings

Appendix A-1
SUSMP Priority Development Projects
FY 2008-09

Project ID	Project Name	SUSMP Requirements Applied? (Y/N)	Site Design BMPs for Project Included? (Y/N)	Source Control BMPs for Project Included? (Y/N)	Priority Development Project? (Y/N)	Treatment Control BMPs Included? (Y/N)	Was project required to meet Interim or HMP requirements?	If HMP is NOT required - why was it exempt from HMP requirements?
06-008	Palomar Unitarian Church	Y	Y	Y	Y	Y	N	Too small (<50 acres)
07-007	Liberty Family Partnership	Y	Y	Y	Y	Y	N	Too small (<50 acres)
07-022	Vista Sports Park	Y	Y	Y	Y	Y	N	Too small (<50 acres)
07-029	561 Vale View - SFD	N	N	N	N	N	N	Too small (<50 acres)
07-039	Dowsing Building	Y	Y	Y	Y	Y	N	Too small (<50 acres)
07-045	1306 Kelglen Lane - SFD	N	N	N	N	N	N	Too small (<50 acres)
08-001	960 Quails Trail - SFD	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-006	Vista Civic Center	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-007	Vista Community Clinic	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-009	Moonlight Amphitheatre	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-011	Wilco Investment Bldg.	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-012	Faith Lutheran Church	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-015	Brengle Tennis Courts	Y	Y	Y	N	N	N	Too small (<50 acres)
08-016	Snodgrad SFD	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-017	Enaqua Building	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-018	Somaon Church	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-023	J&D Labs	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-024	KSW Property	Y	Y	Y	Y	Y	N	Too small (<50 acres)
08-025	905 Orchid - SFD	Y	Y	Y	N	N	N	Too small (<50 acres)
09-002	909 Orchid - SFD	Y	Y	Y	N	N	N	Too small (<50 acres)

APPENDIX A-2

SUSMP Example Project

City of Vista Civic Center

Project name: City of Vista Civic Center

Development Type: Municipal Facility

Project Size: The project site is 12.7 acres

Project Description: A new Civic Center developed where the existing City Hall was located. Approximately 100,000 square feet of office space and public facilities.

Conditioned for Site Design? Yes

Conditioned for Source Control? Yes

Conditioned for Treatment Control? Yes

Site Design Control:
1. Minimize Impervious Footprint:
Including use of pervious pavement and vegetated landscape buffers as alternative surfaces.

2. Minimize Directly Connected Impervious Areas:
Draining rooftops into adjacent landscaping prior to discharging to the storm drain. Disconnect impervious areas by use of pervious pavement and vegetated landscaped buffers between hardscape areas.

Source Control:
1. Landscaping
Manufactured slopes will be landscaped with suitable ground cover or installed with a temporary erosion control system if the permanent landscaping has not been installed.

2. Urban Housekeeping:
Landscapers will be educated as to the proper use, storage, and disposal of these potential stormwater contaminants

3. Integrated Pest Management:
Keeping pests out of building and landscaping using barriers, screens and caulking. Physical pest elimination techniques such as weeding, squashing, trapping, washing or pruning out pests.

4. Storm Water Systems stenciling and signage.

5. Trash Storage Areas

All trash enclosures will be paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash.

6. Efficient Irrigation Practices
All landscaped areas will include rain shutoff devices to prevent irrigation during and after precipitation. Flow reducers and shutoff valves triggered by pressure drop will be used to control water loss from broken sprinklers heads or lines.

Treatment Control BMPs: Bio-Filtration strips (TC-32) are located throughout the site which will provide high level of treatment. Additionally stormfilter unit was included for treatment of the 85th percentile rain events.

See following pages for site plan and BMP plan sheet

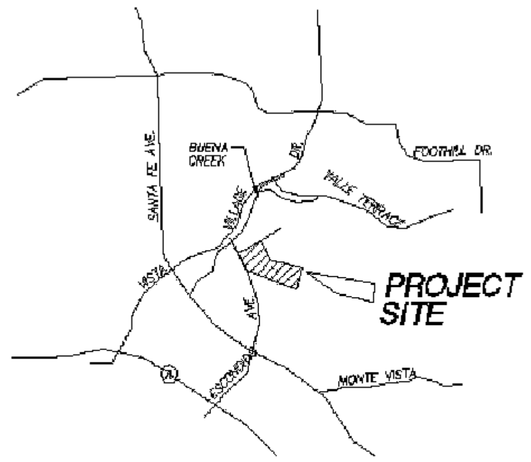

VICINITY MAP

NTS

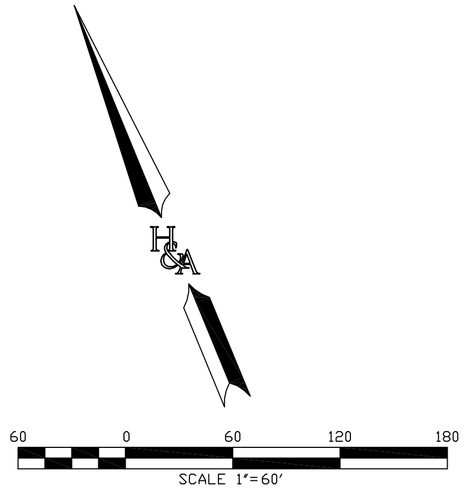

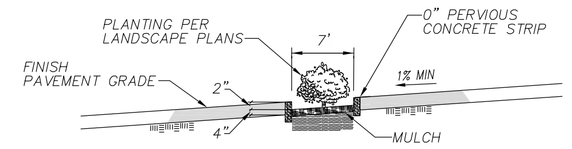

VEGETATED LANDSCAPED BUFFER

NOT TO SCALE

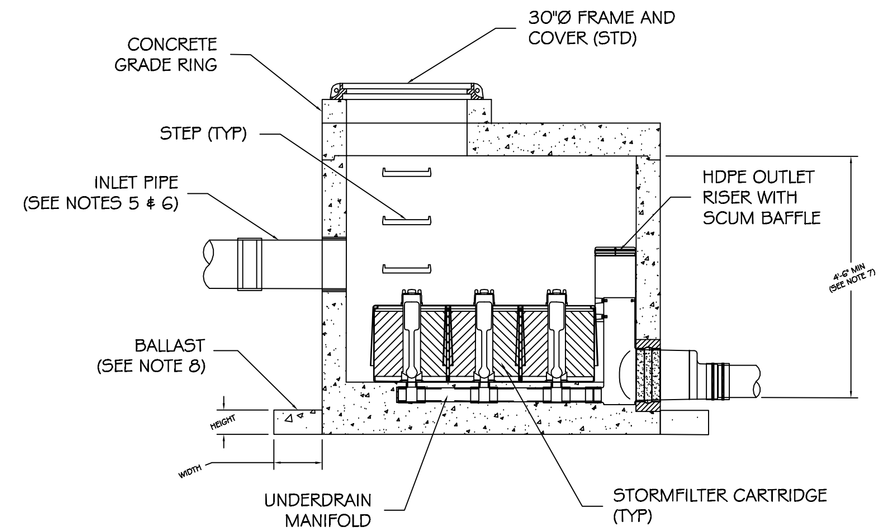

STORMFILTER - SECTION VIEW

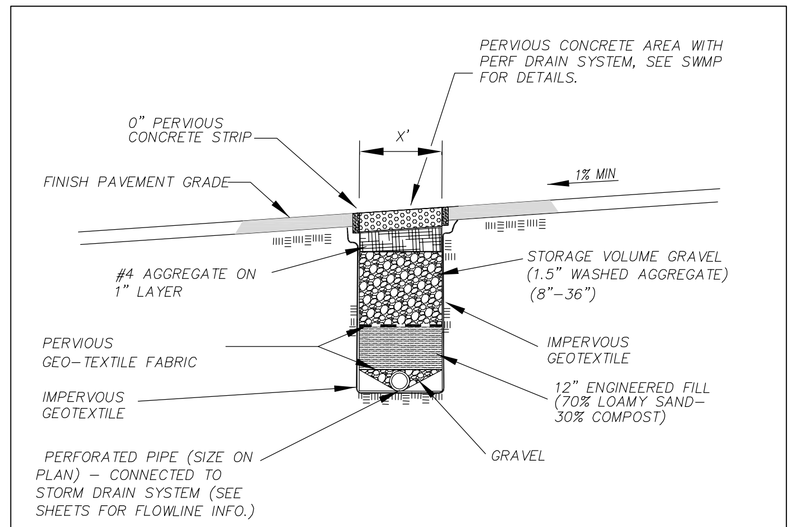

TYPICAL BIORETENTION STRIP SECTION

NOT TO SCALE

SITE DESIGN BMPs & LOW IMPACT DESIGN:

- MINIMIZE IMPERVIOUS FOOTPRINT
  - CONSTRUCTING STREETS, SIDEWALKS, AND PARKING LOTS TO THE MINIMUM WIDTHS NECESSARY TO COMPLY WITH CITY OF VISTA REQUIREMENTS WITHOUT COMPROMISING PUBLIC SAFETY.
- MINIMIZE DIRECTLY CONNECTED IMPERVIOUS AREAS
  - DRAINING ROOFDRAINS, ROADS, SIDEWALKS AND IMPERVIOUS TRAILS INTO ADJACENT LANDSCAPING AND PERVIOUS SURFACES.
- SLOPE & CHANNEL PROTECTION / HILLSIDE LANDSCAPING
  - STABILIZE PERMANENT CHANNEL CROSSINGS.
  - PLANTING NATIVE OR DROUGHT TOLERANT VEGETATION ON SLOPES.
  - ENERGY DISSIPATERS, SUCH AS RIPRAP, AT THE OUTLETS OF NEW STORM DRAINS, CULVERTS, CONDUITS, OR CHANNELS THAT ENTER UNLINED CHANNELS.

TREATMENT CONTROL BMPs:

- BIO-RETENTION LID (TC-32)
- FILTRATION (TC-40)

LEGEND

- VEGETATED AREA
- POURUS PAVEMENT /BIO–RETENTION BMP
- VEGETATED LANDSCAPE BUFFER
- STORMFILTER FILTRATION BMP
- PET WASTE STATION
- DISCONECTED ROOF DRAIN

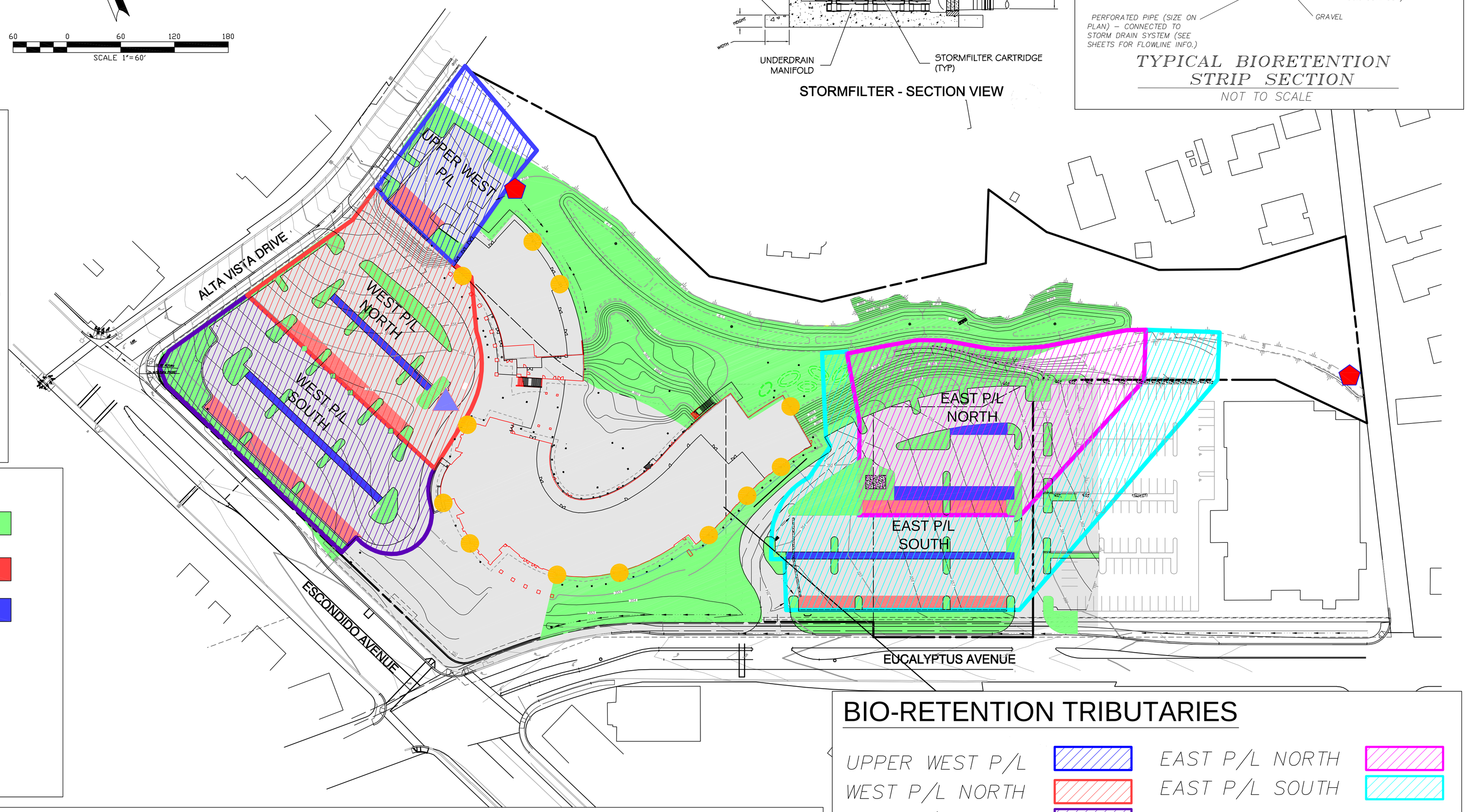

BIO-RETENTION TRIBUTARIES

- UPPER WEST P/L
- WEST P/L NORTH
- WEST P/L SOUTH
- EAST P/L NORTH
- EAST P/L SOUTH

SOURCE CONTROL BMPs:

- LANDSCAPING
  MANUFACTURED SLOPES SHALL BE LANDSCAPED WITH SUITABLE GROUND COVER OR INSTALLED WITH AN EROSION CONTROL SYSTEM.
- URBAN HOUSEKEEPING
  LANDSCAPERS SHOULD BE EDUCATED AS TO THE PROPER USE, STORAGE, AND DISPOSAL OF THESE POTENTIAL STORMWATER CONTAMINANTS
- INTEGRATED PEST MANAGEMENT
  KEEPING PESTS OUT OF BUILDINGS AND LANDSCAPING USING BARRIERS, SCREENS AND CAULKING. PHYSICAL PEST ELIMINATION TECHNIQUES SUCH AS WEEDING, SQUASHING, TRAPPING, WASHING OR PRUNING OUT PESTS. RELY ON NATURAL ENEMIES TO EAT PESTS.
- STORM WATER SYSTEMS STENCILING AND SIGNAGE
- TRASH STORAGE AREAS
  ALL TRASH ENCLOSURES WILL BE PAVED WITH AN IMPERVIOUS SURFACE, DESIGNED NOT TO ALLOW RUN-ON FROM ADJOINING AREAS, SCREENED OR WALLED TO PREVENT OFF-SITE TRANSPORT OF TRASH. PROVIDE ATTACHED LIDS ON ALL TRASH CONTAINERS THAT EXCLUDE RAIN, ROOF OR AWNING TO MINIMIZE DIRECT PRECIPITATION.
- EFFICIENT IRRIGATION PRACTICES
  ALL LANDSCAPED AREAS WILL INCLUDE RAIN SHUTOFF DEVICES TO PREVENT IRRIGATION DURING AND AFTER PRECIPITATION. FLOW REDUCERS AND SHUTOFF VALVES TRIGGERED BY PRESSURE DROP WILL BE USED TO CONTROL WATER LOSS FROM BROKEN SPRINKLER HEADS OR LINES.

PREPARED BY:

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BMP EXHIBIT FOR

VISTA CIVIC CENTER

CITY OF VISTA, CALIFORNIA

SHEET 1 OF 1

APPENDIX A-3

TCBMP Inventory - Inspection Summary

TCBMP Inventory - Inspection Summary

Project Name: Red Line towing
GP#: 02-015 **Watershed (HA):** Buena Vista
Address: 451 Olive Ave
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: Bio Clean
TTWQ priority rating: Medium

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Multi Tennant Industrial
GP#: 02-036 **Watershed (HA):** Agua Hedionda
Address: 1235 Activity Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Multi Tennant Industrial
GP#: 02-036 **Watershed (HA):** Agua Hedionda
Address: 1235 Activity Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 828 N Santa Fe Ave
GP#: 02-049 **Watershed (HA):** Buena Vista
Address: 828 N Santa Fe Ave
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 828 N Santa Fe Ave
GP#: 02-049 **Watershed (HA):** Buena Vista
Address: 828 N Santa Fe Ave
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: FlowGard
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Aloha Motors (Classic Chariots)
GP#: 02-054 **Watershed (HA):** Buena Vista
Address: 1611 W Vista Way
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: Bio Clean
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Aloha Motors (Classic Chariots) **Site ID:** 2 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 02-054 **Watershed (HA):** Buena Vista **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 1611 W Vista Way **BMP Manufacturer:** Bio Clean **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Aloha Motors (Classic Chariots) **Site ID:** 3 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 02-054 **Watershed (HA):** Buena Vista **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 1611 W Vista Way **BMP Manufacturer:** Bio Clean **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: North Island Finacial Credit union **Site ID:** 1 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 02-058 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 1960 University Dr **BMP Manufacturer:** Hydro International **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Jury & Clark development **Site ID:** 1 **CASQA ID:** MP-52 **Inspection Date:** 6/18/2009 **By:** Coppi
GP#: 02-061 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2435 Cades Way **BMP Manufacturer:** Kristar **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Jury & Clark development **Site ID:** 2 **CASQA ID:** MP-52 **Inspection Date:** 6/18/2009 **By:** Coppi
GP#: 02-061 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2435 Cades Way **BMP Manufacturer:** Kristar **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Directed Electronics Inc **Site ID:** 1 **CASQA ID:** MP-52 **Inspection Date:** 6/11/2009 **By:** Heltmach
GP#: 02-071 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 1 Viper Way **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Directed Electronics Inc **Site ID:** 2 **CASQA ID:** MP-52 **Inspection Date:** 6/11/2009 **By:** Heltmach
GP#: 02-071 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 1 Viper Way **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Directed Electronics Inc
GP#: 02-071 **Watershed (HA):** Agua Hedionda
Address: 1 Viper Way
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** --
BMP Type: Permanent Erosion Control
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/11/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 1230 Activity Drive
GP#: 02-078 **Watershed (HA):** Agua Hedionda
Address: 1230 Activity Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 1230 Activity Drive
GP#: 02-078 **Watershed (HA):** Agua Hedionda
Address: 1230 Activity Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 1230 Activity Drive
GP#: 02-078 **Watershed (HA):** Agua Hedionda
Address: 1230 Activity Dr
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 1230 Activity Drive
GP#: 02-078 **Watershed (HA):** Agua Hedionda
Address: 1230 Activity Dr
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 1230 Activity Drive
GP#: 02-078 **Watershed (HA):** Agua Hedionda
Address: 1230 Activity Dr
FY 2009 Certification Received: yes

Site ID: 5 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 1230 Activity Drive
GP#: 02-078 **Watershed (HA):** Agua Hedionda
Address: 1230 Activity Dr
FY 2009 Certification Received: yes

Site ID: 6 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 1230 Activity Drive
GP#: 02-078 **Watershed (HA):** Agua Hedionda
Address: 1230 Activity Dr
FY 2009 Certification Received: yes
Site ID: 7 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Focus Industrial Center
GP#: 02-080 **Watershed (HA):** Agua Hedionda
Address: 2460 Grand Ave
FY 2009 Certification Received: yes
Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Focus Industrial Center
GP#: 02-080 **Watershed (HA):** Agua Hedionda
Address: 2460 Grand Ave
FY 2009 Certification Received: yes
Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Focus Industrial Center
GP#: 02-081 **Watershed (HA):** Agua Hedionda
Address: 2441 Cades Way
FY 2009 Certification Received: yes
Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Focus Industrial Center
GP#: 02-081 **Watershed (HA):** Agua Hedionda
Address: 2441 Cades Way
FY 2009 Certification Received: yes
Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Sycamore Vista Business Center
GP#: 02-082 **Watershed (HA):** Agua Hedionda
Address: 2330 La Mirada Dr
FY 2009 Certification Received: yes
Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: Liner for filter damaged/ torn/ not properly connected to unit
Corrective Actions Needed: Repair Liner

Project Name: Sycamore Vista Business Center
GP#: 02-082 **Watershed (HA):** Agua Hedionda
Address: 2330 La Mirada Dr
FY 2009 Certification Received: yes
Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: Liner for filter damaged/ torn/ not properly connected to unit
Corrective Actions Needed: Repair Liner

Project Name: Sycamore Vista Business Center **Site ID:** 3 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 02-082 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2330 La Mirada Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Sycamore Vista Business Center **Site ID:** 4 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 02-082 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2330 La Mirada Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Sycamore Vista Business Center **Site ID:** 5 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 02-082 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2302 La Mirada Drive **BMP Manufacturer:** Kristar **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Sycamore Vista Business Center **Site ID:** 6 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 02-082 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** Liner for filter damaged/ torn/ not properly connected to unit
Address: 2302 La Mirada Drive **BMP Manufacturer:** Kristar **Corrective Actions Needed:** Repair Liner
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Sycamore Vista Business Center **Site ID:** 7 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 02-082 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2300 La Mirada Drive **BMP Manufacturer:** Kristar **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Sycamore Vista Business Center **Site ID:** 8 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 02-082 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** Filter media pouch in need of replacement
Address: 2300 La Mirada Drive **BMP Manufacturer:** Kristar **Corrective Actions Needed:** Replace filter media pouch
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: El Pollo Loca **Site ID:** 1 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 02-089 **Watershed (HA):** Buena Vista **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 495 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Poinsettia Ridge
GP#: 03-005 **Watershed (HA):** Agua Hedionda
Address: 1201 Activity Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-50
BMP Type: Wet Vault
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/24/2009 **By:** Coppi
Inspection Notes: Minor sediment accumulation
Corrective Actions Needed: None

Project Name: Poinsettia Ridge
GP#: 03-005 **Watershed (HA):** Agua Hedionda
Address: 1201 Activity Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Poinsettia Ridge
GP#: 03-005 **Watershed (HA):** Agua Hedionda
Address: 1201 Activity Dr
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** MP-50
BMP Type: Wet Vault
BMP Manufacturer: Imbrium/ Stormceptor
TTWQ priority rating: High

Inspection Date: 6/24/2009 **By:** Coppi
Inspection Notes: Manhole lid too tight. Cannot open manhole with crobar and sledge hammer
Corrective Actions Needed: Need access

Project Name: Poinsettia Ridge
GP#: 03-005 **Watershed (HA):** Agua Hedionda
Address: 1201 Activity Dr
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Poinsettia Ridge
GP#: 03-005 **Watershed (HA):** Agua Hedionda
Address: 1201 Activity Dr
FY 2009 Certification Received: yes

Site ID: 5 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Poinsettia Ridge
GP#: 03-005 **Watershed (HA):** Agua Hedionda
Address: 1201 Activity Dr
FY 2009 Certification Received: yes

Site ID: 6 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Poinsettia Ridge
GP#: 03-005 **Watershed (HA):** Agua Hedionda
Address: 1201 Activity Dr
FY 2009 Certification Received: yes

Site ID: 7 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 3225 Executive Ridge
GP#: 03-013 **Watershed (HA):** Agua Hedionda
Address: 3225 Executive Ridge
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** --
BMP Type: Gravel/Bio-Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 3225 Executive Ridge
GP#: 03-013 **Watershed (HA):** Agua Hedionda
Address: 3225 Executive Ridge
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** --
BMP Type: Gravel/Bio-Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 1206 S. Santa Fe Drive
GP#: 03-019 **Watershed (HA):** Buena Vista
Address: 1406 S Santa Fe Av
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 1206 S. Santa Fe Drive
GP#: 03-019 **Watershed (HA):** Buena Vista
Address: 1406 S Santa Fe Av
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 1206 S. Santa Fe Drive
GP#: 03-019 **Watershed (HA):** Buena Vista
Address: 1406 S Santa Fe Av
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 1206 S. Santa Fe Drive
GP#: 03-019 **Watershed (HA):** Buena Vista
Address: 1406 S Santa Fe Av
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Monarch Apts
GP#: 03-021 **Watershed (HA):** Agua Hedionda
Address: 1850 Thibido Rd
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-51
BMP Type: Vortex Separator
BMP Manufacturer: CDS Technologies
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Monarch Apts
GP#: 03-021 **Watershed (HA):** Agua Hedionda
Address: 1850 Thibido Rd
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-51
BMP Type: Vortex Separator
BMP Manufacturer: CDS Technologies
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Monarch Apts
GP#: 03-021 **Watershed (HA):** Agua Hedionda
Address: 1850 Thibido Rd
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** MP-51
BMP Type: Vortex Separator
BMP Manufacturer: CDS Technologies
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Monarch Apts
GP#: 03-021 **Watershed (HA):** Agua Hedionda
Address: 1850 Thibido Rd
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** MP-51
BMP Type: Vortex Separator
BMP Manufacturer: CDS Technologies
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 800 Silver Dr Subdivision
GP#: 03-044 **Watershed (HA):** Buena Vista
Address: 800 Silver Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: Kristar/ FloGard
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: 800 Silver Dr Subdivision
GP#: 03-044 **Watershed (HA):** Buena Vista
Address: 800 Silver Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: Kristar/ FloGard
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Moxie Industrial Building
GP#: 03-057 **Watershed (HA):** Agua Hedionda
Address: 3260 Corporate View
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Moxie Industrial Building
GP#: 03-057 **Watershed (HA):** Agua Hedionda
Address: 3260 Corporate View
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** --
BMP Type: Gravel/Bio-Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Moxie Industrial Building
GP#: 03-057 **Watershed (HA):** Agua Hedionda
Address: 3260 Corporate View
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Moxie Industrial Building
GP#: 03-057 **Watershed (HA):** Agua Hedionda
Address: 3260 Corporate View
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Amron internation
GP#: 03-078 **Watershed (HA):** Agua Hedionda
Address: 1380 Aspen Way
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Amron internation
GP#: 03-078 **Watershed (HA):** Agua Hedionda
Address: 1380 Aspen Way
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Ruby/Ravine Subdivision
GP#: 03-079 **Watershed (HA):** Buena Vista
Address: Steeple Chase Lane
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/18/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Ruby/Ravine Subdivision
GP#: 03-079 **Watershed (HA):** Buena Vista
Address: Steeple Chase Lane
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/18/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Ruby/Ravine Subdivision
GP#: 03-079 **Watershed (HA):** Buena Vista
Address: Steeple Chase Lane
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/18/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Frame Residence
GP#: 03-085 **Watershed (HA):** Buena Vista
Address: 819 Eucalyptus Ave
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: FlowGard Plus
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: Minor debris accumulation
Corrective Actions Needed: None

Project Name: Frame Residence
GP#: 03-085 **Watershed (HA):** Buena Vista
Address: 819 Eucalyptus Ave
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Watkin Manufacturing Inc
GP#: 04-001 **Watershed (HA):** Agua Hedionda
Address: 1320 Hot Spring Way
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Watkin Manufacturing Inc
GP#: 04-001 **Watershed (HA):** Agua Hedionda
Address: 1320 Hot Spring Way
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Sycamore Vista Business Park
GP#: 04-006 **Watershed (HA):** Agua Hedionda
Address: 2200 La Mirada Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: Triton
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Sycamore Vista Business Park
GP#: 04-006 **Watershed (HA):** Agua Hedionda
Address: 2200 La Mirada Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: Triton
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Sycamore Vista Business Park
GP#: 04-006 **Watershed (HA):** Agua Hedionda
Address: 2200 La Mirada Dr
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: Triton
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Sycamore Vista Business Park **Site ID:** 4 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Sycamore Vista Business Park **Site ID:** 5 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Sycamore Vista Business Park **Site ID:** 6 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Sycamore Vista Business Park **Site ID:** 7 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** Triton **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Sycamore Vista Business Park **Site ID:** 8 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** Triton **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Sycamore Vista Business Park **Site ID:** 9 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Sycamore Vista Business Park **Site ID:** 10 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Sycamore Vista Business Park **Site ID:** 11 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Sycamore Vista Business Park **Site ID:** 12 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-006 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2200 La Mirada Dr **BMP Manufacturer:** Triton **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: 1210 Distribution Way **Site ID:** 1 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-007 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 1210 Distriution Way **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: 1210 Distribution Way **Site ID:** 2 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-007 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 1210 Distriution Way **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Home Depot **Site ID:** 1 **CASQA ID:** MP-52 **Inspection Date:** 6/19/2009 **By:** Coppi
GP#: 04-010 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2430 S Melrose Dr **BMP Manufacturer:** FlowGard Plus **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Home Depot **Site ID:** 2 **CASQA ID:** MP-52 **Inspection Date:** 6/19/2009 **By:** Coppi
GP#: 04-010 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2430 S Melrose Dr **BMP Manufacturer:** FlowGard Plus **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Home Depot **Site ID:** 3 **CASQA ID:** MP-52 **Inspection Date:** 6/19/2009 **By:** Coppi
GP#: 04-010 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2430 S Melrose Dr **BMP Manufacturer:** FlowGard Plus **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Home Depot
GP#: 04-010 **Watershed (HA):** Agua Hedionda
Address: 2430 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: FlowGard Plus
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Home Depot
GP#: 04-010 **Watershed (HA):** Agua Hedionda
Address: 2430 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 5 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: FlowGard Plus
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Home Depot
GP#: 04-010 **Watershed (HA):** Agua Hedionda
Address: 2430 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 6 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: FlowGard Plus
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Home Depot
GP#: 04-010 **Watershed (HA):** Agua Hedionda
Address: 2430 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 7 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: FlowGard Plus
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Home Depot
GP#: 04-010 **Watershed (HA):** Agua Hedionda
Address: 2430 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 8 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: FlowGard Plus
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Home Depot
GP#: 04-010 **Watershed (HA):** Agua Hedionda
Address: 2430 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 9 **CASQA ID:** MP-51
BMP Type: Vortex Separator
BMP Manufacturer: Vortechnics Treatment
TTWQ priority rating: High

Inspection Date: 6/22/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Home Depot
GP#: 04-010 **Watershed (HA):** Agua Hedionda
Address: 2430 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 10 **CASQA ID:** --
BMP Type: Underground Detention System
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/22/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 5 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 6 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 7 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 8 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 9 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 10 **CASQA ID:** MP-51
BMP Type: Vortex Separator
BMP Manufacturer: CDS Technologies
TTWQ priority rating: High

Inspection Date: 6/22/2009 **By:** Coppi
Inspection Notes: Minor sediment accumulation
Corrective Actions Needed: None

Project Name: Walgreens
GP#: 04-020 **Watershed (HA):** Agua Hedionda
Address: 310 Sycamore Ave
FY 2009 Certification Received: yes

Site ID: 11 **CASQA ID:** MP-51
BMP Type: Vortex Separator
BMP Manufacturer: CDS Technologies
TTWQ priority rating: High

Inspection Date: 6/24/2009 **By:** Coppi
Inspection Notes: Signifacant sediment accumulation, sump almost full
Corrective Actions Needed: Sediment needs removal by vactor truck

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Project Name: Nettleton Self Storage
GP#: 04-024 **Watershed (HA):** Buena Vista
Address: 124 Nettleton Rd
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Nettleton Self Storage
GP#: 04-024 **Watershed (HA):** Buena Vista
Address: 124 Nettleton Rd
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Nettleton Self Storage
GP#: 04-024 **Watershed (HA):** Buena Vista
Address: 124 Nettleton Rd
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Nettleton Self Storage **Site ID:** 4 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-024 **Watershed (HA):** Buena Vista **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 124 Nettleton Rd **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Nettleton Self Storage **Site ID:** 5 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-024 **Watershed (HA):** Buena Vista **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 124 Nettleton Rd **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Poinsettia Industrial **Site ID:** 1 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 04-033 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 921 Poinsettia ave **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Poinsettia Industrial **Site ID:** 2 **CASQA ID:** MP-52 **Inspection Date:** None **By:** N/A
GP#: 04-033 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 921 Poinsettia ave **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Poinsettia Industrial **Site ID:** 3 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 04-033 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 921 Poinsettia ave **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: Poinsettia Industrial **Site ID:** 4 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 04-033 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 921 Poinsettia ave **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

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Project Name: 338 Plymouth Dr. Condos **Site ID:** 1 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 04-044 **Watershed (HA):** Buena Vista **BMP Type:** Drain insert **Inspection Notes:** Minor amout of trash in filter
Address: 338 Plymouth Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: 338 Plymouth Dr. Condos
GP#: 04-044 **Watershed (HA):** Buena Vista
Address: 338 Plymouth Dr
FY 2009 Certification Received: yes
Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: High
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Sunset Heights Subdivision
GP#: 04-048 **Watershed (HA):** Agua Hedionda
Address: 787 Vale View Dr
FY 2009 Certification Received: yes
Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Sunset Heights Subdivision
GP#: 04-048 **Watershed (HA):** Agua Hedionda
Address: 787 Vale View Dr
FY 2009 Certification Received: yes
Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Sunset Heights Subdivision
GP#: 04-048 **Watershed (HA):** Agua Hedionda
Address: 787 Vale View Dr
FY 2009 Certification Received: yes
Site ID: 3 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill
GP#: 04-051 **Watershed (HA):** Buena Vista
Address: 495 La Tortuga Dr
FY 2009 Certification Received: yes
Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill
GP#: 04-051 **Watershed (HA):** Buena Vista
Address: 495 La Tortuga Dr
FY 2009 Certification Received: yes
Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill
GP#: 04-051 **Watershed (HA):** Buena Vista
Address: 495 La Tortuga Dr
FY 2009 Certification Received: yes
Site ID: 3 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium
Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill
GP#: 04-051 **Watershed (HA):** Buena Vista
Address: 495 La Tortuga Dr
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill
GP#: 04-051 **Watershed (HA):** Buena Vista
Address: 495 La Tortuga Dr
FY 2009 Certification Received: yes

Site ID: 5 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill
GP#: 04-051 **Watershed (HA):** Buena Vista
Address: 495 La Tortuga Dr
FY 2009 Certification Received: yes

Site ID: 6 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Sycamore Vista Bus Pk
GP#: 04-062 **Watershed (HA):** Agua Hedionda
Address: 2270 La Mirada Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Sycamore Vista Bus Pk
GP#: 04-062 **Watershed (HA):** Agua Hedionda
Address: 2270 La Mirada Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Sycamore Vista Bus Pk
GP#: 04-062 **Watershed (HA):** Agua Hedionda
Address: 2270 La Mirada Dr
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Moxie Pacific Palomar Park
GP#: 04-067 **Watershed (HA):** Agua Hedionda
Address: 3270 Corporate View
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Moxie Pacific Palomar Park
GP#: 04-067 **Watershed (HA):** Agua Hedionda
Address: 3270 Corporate View
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Fortuna Ave.
GP#: 05-008 **Watershed (HA):** Lower San Luis
Address: Fortuna Ave
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Vista Point Medical Plaza
GP#: 05-017 **Watershed (HA):** Buena Vista
Address: 326 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Vista Point Medical Plaza
GP#: 05-017 **Watershed (HA):** Buena Vista
Address: 326 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: DJ Orthopedics
GP#: 05-019 **Watershed (HA):** Agua Hedionda
Address: 1430 Decision St
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: DJ Orthopedics
GP#: 05-019 **Watershed (HA):** Agua Hedionda
Address: 1430 Decision St
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: DJ Orthopedics
GP#: 05-019 **Watershed (HA):** Agua Hedionda
Address: 1430 Decision St
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Bio-Forms
GP#: 05-024 **Watershed (HA):** Agua Hedionda
Address: 3215 Executive Ridge
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Bio-Forms
GP#: 05-024 **Watershed (HA):** Agua Hedionda
Address: 3215 Executive Ridge
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Bio-Forms
GP#: 05-024 **Watershed (HA):** Agua Hedionda
Address: 3215 Executive Ridge
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Bio-Forms
GP#: 05-024 **Watershed (HA):** Agua Hedionda
Address: 3215 Executive Ridge
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Bio-Forms
GP#: 05-024 **Watershed (HA):** Agua Hedionda
Address: 3215 Executive Ridge
FY 2009 Certification Received: yes

Site ID: 5 **CASQA ID:** --
BMP Type: Gravel/Bio-Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Thomasville Furniture
GP#: 05-025 **Watershed (HA):** Agua Hedionda
Address: 1389 Park Center Drive
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Thomasville Furniture
GP#: 05-025 **Watershed (HA):** Agua Hedionda
Address: 1389 Park Center Drive
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Hill Drive
GP#: 05-030 **Watershed (HA):** Buena Vista
Address: 331 Hill Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Hill Drive
GP#: 05-030 **Watershed (HA):** Buena Vista
Address: 339 Hill Dr
FY 2009 Certification Received: No

Site ID: 2 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Hill Drive
GP#: 05-030 **Watershed (HA):** Buena Vista
Address: 327 Hill Dr
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Hill Drive
GP#: 05-030 **Watershed (HA):** Buena Vista
Address: 335 Hill Dr
FY 2009 Certification Received: No

Site ID: 4 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Warmland Estates
GP#: 05-041 **Watershed (HA):** Buena Vista
Address: 1434 Grandview Rd
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Sycamore Point Business Park
GP#: 05-049 **Watershed (HA):** Agua Hedionda
Address: 1315 Hot Spring Way
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 3181 Business Park Dr.
GP#: 06-006 **Watershed (HA):** Agua Hedionda
Address: 3181 Business Park Drive
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Vista Village Famous Daves BBQ **Site ID:** 1 **CASQA ID:** TC-30 **Inspection Date:** 6/23/2009 **By:** Coppi
GP#: 06-009 **Watershed (HA):** Buena Vista **BMP Type:** Vegetated Swale **Inspection Notes:** No Visible/Apparent Problems
Address: 307 Vista Village Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Vista Village Famous Daves BBQ **Site ID:** 2 **CASQA ID:** MP-50 **Inspection Date:** 6/23/2009 **By:** Coppi
GP#: 06-009 **Watershed (HA):** Buena Vista **BMP Type:** Wet Vault **Inspection Notes:** No trash, minor sediment accumulation
Address: 307 Vista Village Dr **BMP Manufacturer:** Suntree Technologies **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Vista Village Famous Daves BBQ **Site ID:** 3 **CASQA ID:** MP-50 **Inspection Date:** 7/3/2009 **By:** Coppi
GP#: 06-009 **Watershed (HA):** Buena Vista **BMP Type:** Wet Vault **Inspection Notes:** No trash, minor sediment accumulation
Address: 307 Vista Village Dr **BMP Manufacturer:** Suntree Technologies **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Gordon Property **Site ID:** 1 **CASQA ID:** -- **Inspection Date:** None **By:** N/A
GP#: 06-010 **Watershed (HA):** Loma Alta **BMP Type:** Gravel/Bio-Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: Straton Dr/Madison Ln **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: No **TTWQ priority rating:** Low

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Project Name: Breeze Hill Promenade **Site ID:** 1 **CASQA ID:** TC-30 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 06-012 **Watershed (HA):** Buena Vista **BMP Type:** Vegetated Swale **Inspection Notes:** No Visible/Apparent Problems
Address: 635 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Breeze Hill Promenade **Site ID:** 2 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 06-012 **Watershed (HA):** Buena Vista **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 635 S Melrose Dr **BMP Manufacturer:** Suntree Technologies **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Breeze Hill Promenade **Site ID:** 3 **CASQA ID:** MP-52 **Inspection Date:** 6/10/2009 **By:** Heltmach
GP#: 06-012 **Watershed (HA):** Buena Vista **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 635 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

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Project Name: Breeze Hill Promenade
GP#: 06-012 **Watershed (HA):** Buena Vista
Address: 635 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 4 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill Promenade
GP#: 06-012 **Watershed (HA):** Buena Vista
Address: 635 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 5 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: Minor debris accumulation
Corrective Actions Needed: None

Project Name: Breeze Hill Promenade
GP#: 06-012 **Watershed (HA):** Buena Vista
Address: 635 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 6 **CASQA ID:** MP-50
BMP Type: Wet Vault
BMP Manufacturer: Suntree Technologies
TTWQ priority rating: High

Inspection Date: 6/23/2009 **By:** Coppi
Inspection Notes: Significant amount of trash
Corrective Actions Needed: Trash needs removal

Project Name: Breeze Hill Promenade
GP#: 06-012 **Watershed (HA):** Buena Vista
Address: 635 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 7 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill Promenade
GP#: 06-012 **Watershed (HA):** Buena Vista
Address: 635 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 8 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Breeze Hill Promenade
GP#: 06-012 **Watershed (HA):** Buena Vista
Address: 635 S Melrose Dr
FY 2009 Certification Received: yes

Site ID: 9 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Vista Kidney Dialysis Center
GP#: 06-025 **Watershed (HA):** Buena Vista
Address: 950 Hacienda Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: Grass seeding ineffective
Corrective Actions Needed: Needs additional seeding or planting

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Project Name: Vista Kidney Dialysis Center
GP#: 06-025 **Watershed (HA):** Buena Vista
Address: 950 Hacienda Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-22
BMP Type: Extended Detention Basin
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/10/2009 **By:** Heltmach
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Sycamore Medical Center
GP#: 06-038 **Watershed (HA):** Agua Hedionda
Address: 902 SycamoreAve
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Fortune Business Park
GP#: 06-072 **Watershed (HA):** Agua Hedionda
Address: 2545 Fortune Way
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Fortune Business Park
GP#: 06-072 **Watershed (HA):** Agua Hedionda
Address: 2545 Fortune Way
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Fortune Business Park
GP#: 06-072 **Watershed (HA):** Agua Hedionda
Address: 2545 Fortune Way
FY 2009 Certification Received: yes

Site ID: 3 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 1 **CASQA ID:** --
BMP Type: Porous Pavement
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 2 **CASQA ID:** --
BMP Type: Porous Pavement
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 3 **CASQA ID:** --
BMP Type: Porous Pavement
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: Porous Pavement not built/Area of site not constructed yet
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 4 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: Construction BMPs exist and are in poor conditon. Area of site not constructed yet
Corrective Actions Needed: Maintain Construction BMPs

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 5 **CASQA ID:** --
BMP Type: Porous Pavement
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: Porous Pavement not built/Area of site not constructed yet
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 6 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: Construction BMPs exist and are in poor conditon. Area of site not constructed yet
Corrective Actions Needed: Maintain Construction BMPs

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 7 **CASQA ID:** --
BMP Type: Porous Pavement
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 8 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: Construction BMPs exist and are in poor conditon. Area of site not constructed yet
Corrective Actions Needed: Maintain Construction BMPs

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 9 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: Construction BMPs exist and are in poor conditon. Area of site not constructed yet
Corrective Actions Needed: Maintain Construction BMPs

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 10 **CASQA ID:** --
BMP Type: Underground Detention System
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 11 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 12 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: Construction BMPs exist and are in poor conditon. Area of site not constructed yet
Corrective Actions Needed: Maintain Construction BMPs

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 13 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: Construction BMPs exist and are in poor conditon. Area of site not constructed yet
Corrective Actions Needed: Maintain Construction BMPs

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 14 **CASQA ID:** MP-52
BMP Type: Drain Insert
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: North Avenue Business Park
GP#: 06-075 **Watershed (HA):** Loma Alta
Address: 775 North Ave
FY 2009 Certification Received: No

Site ID: 15 **CASQA ID:** --
BMP Type: Underground Detention System
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/19/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Shadowridge Business Ctr-2
GP#: 07-002 **Watershed (HA):** Agua Hedionda
Address: 2065 Thibido Rd
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: High

Inspection Date: 6/2/2009 **By:** Coppi
Inspection Notes: No Visible/Apparent Problems
Corrective Actions Needed: None

Project Name: Shadowridge Business Ctr-2 **Site ID:** 2 **CASQA ID:** TC-30 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** No Visible/Apparent Problems
Address: 2065 Thibido Rd **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Shadowridge Business Ctr-2 **Site ID:** 3 **CASQA ID:** MP-52 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 2065 Thibido Rd **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Shadowridge Business Ctr-2 **Site ID:** 4 **CASQA ID:** TC-30 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** No Visible/Apparent Problems
Address: 2065 Thibido Rd **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Shadowridge Business Ctr-2 **Site ID:** 5 **CASQA ID:** MP-52 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** Minor accumulation of debris
Address: 2065 Thibido Rd **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Shadowridge Business Ctr-2 **Site ID:** 6 **CASQA ID:** TC-30 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Patches of non growth exists
Address: 2065 Thibido Rd **BMP Manufacturer:** N/A **Corrective Actions Needed:** Needs additional planting
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Shadowridge Business Ctr-2 **Site ID:** 7 **CASQA ID:** MP-52 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 760 Shadowridge Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Shadowridge Business Ctr-2 **Site ID:** 8 **CASQA ID:** MP-52 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** No Visible/Apparent Problems
Address: 760 Shadowridge Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Shadowridge Business Ctr-2 **Site ID:** 9 **CASQA ID:** MP-52 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Drain Insert **Inspection Notes:** Minor accumulation of debris
Address: 760 Shadowridge Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Shadowridge Business Ctr-2 **Site ID:** 10 **CASQA ID:** TC-30 **Inspection Date:** 6/2/2009 **By:** Coppi
GP#: 07-002 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Area of site not constructed yet
Address: 760 Shadowridge Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** High

---

Project Name: Wilborn (Fast-n-Clean Carwash) **Site ID:** 1 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-003 **Watershed (HA):** Buena Vista **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 1661 W Vista Way **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Low

---

Project Name: Wilborn (Fast-n-Clean Carwash) **Site ID:** 2 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-003 **Watershed (HA):** Buena Vista **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 1661 W Vista Way **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Low

---

Project Name: Premier Crossing Condos **Site ID:** 1 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 2 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 3 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 4 **CASQA ID:** TC-22 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Extended Detention Basin **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 5 **CASQA ID:** TC-22 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Extended Detention Basin **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 6 **CASQA ID:** TC-22 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Extended Detention Basin **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 7 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 8 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 9 **CASQA ID:** TC-22 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Extended Detention Basin **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 10 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 11 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 12 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 13 **CASQA ID:** TC-22 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Extended Detention Basin **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: Premier Crossing Condos **Site ID:** 14 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-008 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 2301 S Melrose Dr **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: yes **TTWQ priority rating:** Medium

---

Project Name: 24 hour fitness **Site ID:** 1 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-020 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 324 Sycamore Ave **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: No **TTWQ priority rating:** Medium

---

Project Name: 24 hour fitness **Site ID:** 2 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-020 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 324 Sycamore Ave **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: No **TTWQ priority rating:** Medium

---

Project Name: 24 hour fitness **Site ID:** 3 **CASQA ID:** TC-30 **Inspection Date:** None **By:** N/A
GP#: 07-020 **Watershed (HA):** Agua Hedionda **BMP Type:** Vegetated Swale **Inspection Notes:** Inspection not required due to TTWQ priority rating
Address: 324 Sycamore Ave **BMP Manufacturer:** N/A **Corrective Actions Needed:** None
FY 2009 Certification Received: No **TTWQ priority rating:** Medium

---

Project Name: 24 hour fitness
GP#: 07-020 **Watershed (HA):** Agua Hedionda
Address: 324 Sycamore Ave
FY 2009 Certification Received: No

Site ID: 4 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 24 hour fitness
GP#: 07-020 **Watershed (HA):** Agua Hedionda
Address: 324 Sycamore Ave
FY 2009 Certification Received: No

Site ID: 5 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 24 hour fitness
GP#: 07-020 **Watershed (HA):** Agua Hedionda
Address: 324 Sycamore Ave
FY 2009 Certification Received: No

Site ID: 6 **CASQA ID:** MP-52
BMP Type: Drain insert
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 24 hour fitness
GP#: 07-020 **Watershed (HA):** Agua Hedionda
Address: 324 Sycamore Ave
FY 2009 Certification Received: No

Site ID: 7 **CASQA ID:** --
BMP Type: Underground Detention System
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: 24 hour fitness
GP#: 07-020 **Watershed (HA):** Agua Hedionda
Address: 324 Sycamore Ave
FY 2009 Certification Received: No

Site ID: 8 **CASQA ID:** --
BMP Type: Gravel/Bio-Swale
BMP Manufacturer: N/A
TTWQ priority rating: Medium

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Hacienda Professional Center
GP#: 07-023 **Watershed (HA):** Buena Vista
Address: 465 La Tortuga Dr
FY 2009 Certification Received: yes

Site ID: 1 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

Project Name: Hacienda Professional Center
GP#: 07-023 **Watershed (HA):** Buena Vista
Address: 465 La Tortuga Dr
FY 2009 Certification Received: yes

Site ID: 2 **CASQA ID:** TC-30
BMP Type: Vegetated Swale
BMP Manufacturer: N/A
TTWQ priority rating: Low

Inspection Date: None **By:** N/A
Inspection Notes: Inspection not required due to TTWQ priority rating
Corrective Actions Needed: None

APPENDIX A-4

TCBMP Mail-Out-Package

City of Vista

July 27, 2009

Property Owner
Owner Address
Vista, CA ZIP

Subject: Treatment Control Best Management Practices Maintenance Requirements for Site Address, Vista, CA (APN No. ###-###-##-##, Grading Plan No. ##-###, Storm Drain BMP Maintenance Agreement Document No. #####-#######)

To Whom It May Concern:

The purpose of this letter is to provide you with information regarding the City's Treatment Control Best Management Practice (BMP) maintenance requirements.

A treatment control BMP is defined as any engineered system designed to remove pollutants [from stormwater] by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical, biological or chemical process. (Order No. R9-2007-0001, California Regional Water Quality Control Board (RWQCB), San Diego Region) Examples of Treatment Control BMPs include detention basins, vegetated swales, storm drain filters/inserts, and vortex separators.

Treatment control BMPs are generally installed as a condition of approval for specific land development projects. Upon installation, the property owner assumes responsibility for the proper operation and maintenance of the BMP. This responsibility is transferred to each successive owner of the property into perpetuity. Property owners are responsible for ensuring that treatment control BMPs located on their property are maintained, serviced, and effective in treating pollutants in storm water. Installation and maintenance of these BMPs are mandated by recent Municipal Storm Water Permits, Orders 2001-01 and 2007-0001, issued to all cities in San Diego County by the RWQCB. The intent of the storm water permits is to protect and restore water quality in local creeks, lagoons, and the ocean. Based on the requirements of the storm water permits, the City of Vista has modified its storm water ordinance, Vista Municipal Code (VMC) Section 13.18, to support these requirements.

The City reviewed its grading plans to verify the locations of all required BMPs throughout the City and compiled an inventory. Subsequently, the City conducted inspections of the treatment control BMPs to verify their construction, operation and maintenance.

City records indicate that treatment control BMPs were required at Site Address during a past development project. Enclosed is a list of BMPs required during the development of this property. The list indicates the type, condition, and corrective actions (if required) for all treatment control BMPs located on your property. Where necessary, corrective actions must be taken immediately, as the rainy season has begun. Corrective actions may include servicing a BMP to provide effective treatment for storm water runoff and/or installing the required treatment control BMP at a location where the BMP was found not to exist.

To comply with the City's treatment control BMP maintenance requirements, the City is requesting the following:

(1) Corrective actions must be taken within 30 days of receipt of this letter for those locations that were identified as requiring installation or maintenance on the BMP list (see attached). Please notify the City's Senior Environmental Specialist by phone or email when the corrective actions are completed. A City representative will re-inspect your site to verify compliance.
(2) Maintain all other treatment control BMPs as necessary to ensure proper operation. Maintenance information for each type of BMP is enclosed and may also be found on the California Association of Storm Water Quality (CASQA) website at www.cabmphandbooks.com.
(3) Annual Certification of proper operation and maintenance of each approved BMP must be provided to the City. Complete and return the Annual Certification Form (enclosed) by April 30, 2009 and annually thereafter.
(4) Conduct regular inspections of your treatment control BMPs and take corrective actions (repair, clean, service, etc.) as needed.

To ensure compliance with the above requirements, the City will be conducting follow-up inspections within 60 days at sites where corrective actions were required. Additionally, the City will be conducting annual inspections to ensure continued compliance. The City recommends that you carefully review this letter and enclosed materials ("Frequently Asked Questions", BMP List, Annual Certification Form, CASQA BMP sheets, and photographs-if applicable) and take the appropriate actions in this matter.

The City appreciates your assistance and compliance in this matter. Please contact Doug Coppi, Senior Environmental Specialist, at (760) 726-1340 ext 1333 or dcoppi@cityofvista.com with any questions concerning these requirements.

Sincerely,

Paul Hartman
Stormwater Program Manager

Enclosures

FREQUENTLY ASKED QUESTIONS REGARDING TREATMENT CONTROL BMPS

What is a Treatment Control Best Management Practice (BMP)?
A Treatment Control BMP is any engineered system designed to remove pollutants from stormwater by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical, biological or chemical process. Examples of Treatment Control BMPs include storm drain inlet filter inserts, detention basins, and vegetative swales.

What Treatment Control BMP devices are located on my property?
The City Grading Plan displays the BMPs located on your property. A copy of the City Grading Plan may be obtained by visiting the City's Development Services Division located at City Hall. Also, refer to the enclosed materials including the treatment control BMP list and photographs (if applicable).

In addition to being a requirement, why is it important to remove pollutants from storm water runoff?
Pollutant discharges to the storm water conveyance system are known to contribute to pollution in the City of Vista's receiving waters. Pollutants (include but are not limited to sediment, trash, debris, detergents, pesticides, green waste, construction waste, and automotive waste) can be picked up by storm water runoff and discharge into the City's streets, structural channels, and other drainage systems. This drainage system is designed to carry runoff from our streets to the City's receiving waters. In the City of Vista these receiving waters include Agua Hedionda Creek, Buena Creek, Buena Vista Creek, San Marcos Creek, Loma Alta Creek, and Guajome Creek. However, unlike the City's sanitary sewer system, storm water runoff does not get treated. Polluted storm water runoff may cause water quality degradation and affect the health and habitats of fish, wildlife, and humans. Hence, pollution prevention is of utmost importance.

DOC # 2007-0023196

JAN 11, 2007 12:00 PM

OFFICIAL RECORDS
SAN DIEGO COUNTY RECORDER'S OFFICE
GREGORY J. SMITH, COUNTY RECORDER
FEES: 0.00
PAGES: 5

2007-0023196

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7107

RECORDING REQUESTED BY:
CITY OF VISTA
AFTER RECORDING, PLEASE
MAIL THIS INSTRUMENT TO:
CITY OF VISTA
ATTN: CITY CLERK
600 EUCALYPTUS AVE.
VISTA, CA 92084

Documentary Transfer Tax _____
Signature _____
THIS DOCUMENT BEING RECORDEDWITHOUT FEE TO BENEFIT THE CITYOF VISTA

STORM DRAIN SWPCF MAINTENANCE AGREEMENT
APN NO. 166-150-35-00 950 HACIENDA DRIVE
PC 14-237 GP 06-025

THIS AGREEMENT for the maintenance and repair of Storm Water Pollution Control Facilities (SWPCFs), as identified in the San Diego County Assessor Tax Roll for 2006 as APN NO. 166-150-35-00 and commonly known as 950 Hacienda Drive, is entered into between the CITY OF VISTA, (hereinafter referred to as "CITY") and **KILYA PROPERTIES, A CALIFORNIA CORPORATION,** (hereinafter referred to as "OWNER"), for the benefit of current and future owners who will use the Storm Water Pollution Control Facilities as installed per City of Vista **Grading Plan No. 06-025.**

WHEREAS, this Agreement is required as a Condition of Approval of property development by the CITY; and

WHEREAS, OWNER is the owner of certain real property being developed that will use and enjoy the benefit of said Storm Water Pollution Control Facilities. A complete legal description of said real property is: "PARCEL A, IN THE CITY OF VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AS SHOWN AT PAGE 10627 OF PARCEL MAPS FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, OCTOBER 28, 1980, said property being in the City of Vista, County of San Diego, State of California." Said real property is hereinafter referred to as the PROPERTY; and

WHEREAS, it is the mutual desire of the parties hereto that said Storm Water Pollution Control Facilities be maintained in a safe and usable condition by the OWNERS and its tenants; and

WHEREAS, it is the mutual desire of the parties hereto to establish a method for the maintenance and repair of said Storm Water Pollution Control Facilities; and

WHEREAS, the CITY shall be deemed a party hereto with the right but not the obligation to enforce full compliance with the terms and conditions of this Agreement; and

STORM DRAIN SWPCF MAINTENANCE AGREEMENT
APN NO. 166-150-35-00 950 HACIENDA DRIVE
PC 14-237 GP 06-025
Page 2

WHEREAS, it is the mutual intention of the parties that this Agreement constitute a covenant running with the land, binding upon each successive OWNER of all or any portion of the property;

NOW, THEREFORE, IT IS HEREBY AGREED AS FOLLOWS:

1. The PROPERTY is benefited by this Agreement, and present and successive OWNERS of all or any portion of the property are expressly bound hereby for the benefit of the land.

2. The cost and expense of maintaining the Storm Water Pollution Control Facilities shall be the responsibility of and paid by the OWNER or the heirs, assigns and successors in interest of each such owner. These Storm Water Pollution Control Facilities constructed by the OWNERS, or their successors, including, but not limited to onsite inlet filters installed with City-approved **Grading Plan No. 06-025** on file with the City of Vista.

3. In the event any of the herein described parcels of land are subdivided further, the OWNERS, heirs, assigns and successors in interest of each such newly created parcel shall be liable under this Agreement for their then pro rata share of expenses and such pro rate shares of expenses shall be computed to reflect such newly created parcels.

4. Repair and maintenance responsibilities for all post-construction structural SWPCFs and required Best Management Practices associated with the project are set forth in the most current Water Quality Management Plan (WQMP). Said plan was initially approved by the City with **Grading Plan No. 06-025**, and is on file with the City. The plan must be kept and updated and in conformance with any and all changes required to maintain performance under all applicable manufacturer recommendations, rules and standard, and is subject to City Review at any time. At all times the plan shall specify by name and title the persons or entities responsible for maintenance and reporting activity, the persons or entities responsible for funding, schedules and procedures for inspection and maintenance of the SWPCFs and implementation of worker training requirements, and any other activities necessary to ensure BMP maintenance. The plan shall provide for servicing of all post-construction structural SWPCFs as needed and at least once within 60 days prior to October 1st, for the retention of inspection and maintenance records for at least three (3) years. Moreover, adherence to the plan shall result in effective Storm Water pollution control.

5. City shall have the right to inspect the Storm Water Pollution Control Facilities and records as needed to ensure the Storm Water Pollution Control Facilities are being properly maintained.

6. Any extraordinary repair required to correct damage to said Storm Water Pollution Control Facilities that results from action taken or contracted for by parties hereto or their successors in interest shall be paid for by the party taking action or party contracting for work which caused the necessity for the extraordinary repair. The repair shall be such as to restore the Storm Water Pollution Control Facilities to the condition existing prior to said damage.

7. It is agreed that OWNER will do all acts necessary to accomplish the repairs and maintenance required and/or authorized under this Agreement.

STORM DRAIN SWPCF MAINTENANCE AGREEMENT
APN NO. 166-150-35-00 950 HACIENDA DRIVE
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8. Indemnity Provision.

(a) Lot Owners shall jointly and severally indemnify and hold the City harmless against any and all liability, loss, damage, fine, penalty, expense, claim, or cost (including without limitation costs and fees of litigation) of every nature (collectively, "Liability") arising out of or in connection with this Agreement or its performance (including acts of omission) except for Liability caused by the City's sole negligence or willful misconduct.

(b) For purposes of this Section, the "City" includes City's officers, officials, employees, agents, representatives, and certified volunteers.

(c) It is expressly understood and agreed that the foregoing provisions will survive termination of this Agreement.

(d) The indemnity protections provided by this Section are not intended to exceed the indemnity available under applicable law. If the indemnity protections are found by a court to be unlawful in any way, the protection shall be curtailed or adjusted, but only to the minimum extent required to conform to applicable law.

Nothing in the Agreement, the specifications or other contract documents or CITY approval of the plans and specifications or inspection of the work is intended to include a review, inspection, acknowledgment of any responsibility for any such matter, and CITY, CITY'S engineer, and their consultants, and each of their officials, directors, officers, employees and agents, shall have absolutely no responsibility or liability thereof.

9. If in the CITY'S sole judgment said Storm Water Pollution Control Facilities are not being maintained to standards set forth in paragraph 4 of this Agreement, the CITY may thereupon provide written notice to OWNER to initiate repairs or construction within thirty (30) days. Upon failure to demonstrate good faith to make repairs or construction within thirty (30) days, the OWNER agrees that the CITY may make all needed repairs to said Storm Water Pollution Control Facilities and/or construct said Storm Water Pollution Control Facilities to meet the standards set forth in paragraph 4 and to then assess costs to OWNER. The agent shall be responsible for collecting the assessments and ensuring payment to the CITY. Service of the written notice under this section to the OWNER shall be deemed sufficient either by personally serving the OWNER with the notice or sending it by certified mail, return receipt requested, to the person shown as the owner of the land on the last equalized assessment roll.

10. If the City elects to make necessary repairs in accordance with paragraph 9 above, said work shall be without warranty. Said repair shall be accepted "as is" by the OWNER without any warranty of workmanship and be guaranteed and indemnified by them in accordance with paragraph 8.

11. It is the purpose of the signators hereto that this instrument be recorded to the end and intent that the obligation hereby created shall be and constitute a covenant running with the land and any subsequent Purchaser of all or any portion thereof, by acceptance of delivery of a deed and/or conveyance regardless of form, shall be deemed to have consented to and become bound by these presents, including without limitation, the right of any person entitled to enforce the terms of this Agreement to institute legal action as provided in paragraph 8 hereof, such remedy to be cumulative and in addition to other remedies provided in this Agreement and to all other remedies at law or in equity.

12. It is understood and agreed that the covenants herein contained shall be binding on the heirs, executors, administrators, successors, and assigns of the OWNER.

STORM DRAIN SWPCF MAINTENANCE AGREEMENT
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13. The terms of this Agreement may be amended in writing upon majority approval of the OWNER and the CITY.

14. This Agreement shall be governed by the laws of the State of California. In the event that any of the provisions of this Agreement are held to be unenforceable or invalid by any court of competent jurisdiction, the validity, and enforceability of the remaining provisions shall not be affected thereby.

KILYA PROPERTIES, A CALIFORNIA CORPORATION

James A. Ramenofsky
OWNER – Print Name

Lauren M. Ramenofsky
OWNER – Print Name

OWNER – Signature

Lauren M. Ramenofsky
OWNER – Signature

WHEN SIGNING AS A CORPORATION: Provide name and address of the corporation. Necessary signatures: President or Vice-President AND Secretary OR Assistant Secretary. Others may sign for the corporation IF the City is furnished a certified copy of a resolution of the Corporate Board of Directors authorizing them to do so.

NOTE: MUST ATTACH CALIFORNIA ALL PURPOSE NOTARY ACKNOWLEDGMENT FOR ALL SIGNATURES ABOVE

CITY OF VISTA:
DATED: 12/18/06

ATTEST:

BY: _____
LAWRENCE D. PIERCE, CITY ENGINEER

Marci Kilian
MARCI KILIAN, CITY CLERK

APPROVED AS TO FORM
DAROLD PIEPER, CITY ATTORNEY
By _____ Date _____

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California
County of SAN DIEGO } ss.

On DEC. 14, 2006 (Date) before me, EUGENE E. PERNA, NOTARY PUBLIC (Name and Title of Officer (e.g., "Jane Doe, Notary Public")) personally appeared JAMES A. ROMENOFSKY / LAUREN M. ROMENOFSKY (Name(s) of Signer(s))

☐ personally known to me
☒ proved to me on the basis of satisfactory evidence

EUGENE E. PERNA
Commission # 1465029
Notary Public - California
San Diego County
My Comm. Expires Jan 25, 2008

to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Eugene E. Perna
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Description of Attached Document

Title or Type of Document: STORM DRAIN Maint. Agreement

Document Date: _____ Number of Pages: 4

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer

Signer's Name: _____

☐ Individual
☒ Corporate Officer — Title(s): PRES. + SEC.
☐ Partner — ☐ Limited ☐ General
☐ Attorney-in-Fact
☐ Trustee
☐ Guardian or Conservator
☐ Other: _____

Signer Is Representing: _____

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

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TREATMENT CONTROL BMP LIST

Address:
City, State, Zip:
Grading Plan Number:
Agrmt. Document Number:

BMP Type*	BMP No.	Location	Photographs Enclosed	Corrective Actions Needed	Observations/ Comments
TC-30, Vegetated Swale	1	South end of property	Yes	Yes	Grass is dying
TC-22, Extended Detention Basin	2	Just east of the eastern driveway entrance to complex	Yes	No	Service according to BMP maintenance specifications

* Definitions and Maintenance Guidelines for BMP's can be found online at http://www.cabmphandbooks.com/Development.asp

BMP #2
BMP #1

TREATMENT CONTROL BEST MANAGEMENT PRACTICES (BMP) ANNUAL CERTIFICATION FORM

This form must be completed, signed, and returned to the City of Vista by ***April 30, 2009*** *. Include all BMP servicing and maintenance work performed during the entire year.*

Address:
City, State, Zip:
Grading Plan Number:
Storm Drain BMP Maintenance Agreement Document No.(if applicable)

TREATMENT CONTROL BEST MANAGEMENT PRACTICES MAINTENANCE RECORDS - Site Address - April 30th, 2008 - April 30th, 2009

BMP Type[1]	BMP No.	Location	BMP Servicing and Maintenance Work Performed[2]	Date(s) of Maintenance	Is BMP operating properly? (YES/NO*) *EXPLAIN in Corrective Actions Implemented Sec.
Example : MP-52, Drain Inserts	1	South end of property	Remove leaves and trash from storm drain filter insert	7/1/2008	Yes
TC-30, Vegetated Swale	1	South end of property			

[1]BMP definitions and maintenance requirements can be found online @ www.cabmphandbooks.com
[2]Provide documentation for contractor or self-servicing of BMPs (i.e. maintenance records, photographs, invoices, and contractor contact information)

TREATMENT CONTROL BEST MANAGEMENT PRACTICES MAINTENANCE RECORDS - Site Address - April 30th, 2008 - April 30th, 2009

BMP Type[1]	BMP No.	Location	BMP Servicing and Maintenance Work Performed[2]	Date(s) of Maintenance	Is BMP operating properly? (YES/NO*) *EXPLAIN in Corrective Actions Implemented Sec.
TC-22, Extended Detention Basin	2	Just east of the eastern driveway entrance to			

CORRECTIVE ACTIONS IMPLEMENTED - Provide information (including dates) on corrective actions that were or will be implemented to ensure proper BMP operation.

ATTACH ADDITIONAL SHEETS IF NECESSARY

[1]BMP definitions and maintenance requirements can be found online @ www.cabmphandbooks.com

[2]Provide documentation for contractor or self-servicing of BMPs (i.e. maintenance records, photographs, invoices, and contractor contact information)

Certification Statement: I Certify that all Treatment Control Best Management Practices located on my property were maintained and operating effectively to remove pollutants from stormwater. Based on my management of the Treatment Control BMPs located on my property, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Print Name _____ Company / Title: _____

Sign Name _____ Date _____

Phone Number (required) _____

Return this form to: Engineering
Dept/Stormwater
City of Vista
600 Eucalyptus Avenue
Vista, California 92084

[1]BMP definitions and maintenance requirements can be found online @ www.cabmphandbooks.com
[2]Provide documentation for contractor or self-servicing of BMPs (i.e. maintenance records, photographs, invoices, and contractor contact information)

Vegetated Swale

TC-30

Maintenance Concerns, Objectives, and Goals

- Channelization
- Vegetation/Landscape Maintenance
- Vector Control
- Aesthetics
- Hydraulic and Removal Efficacy

General Description

Vegetated swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. They are designed to treat runoff through filtering by the vegetation in the channel, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Swales can be natural or manmade. They trap particulate pollutants (suspended solids and trace metals), promote infiltration, and reduce the flow velocity of stormwater runoff. Vegetated swales can serve as part of a stormwater drainage system and can replace curbs, gutters and storm sewer systems. Therefore, swales are best suited for residential, industrial, and commercial areas with low flow and smaller populations.

Targeted Constituents

☑	Sediment	▲
☑	Nutrients	●
☑	Trash	●
☑	Metals	▲
☑	Bacteria	●
☑	Oil and Grease	▲
☑	Organics	▲
☑	Oxygen Demanding	▲

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

Inspection/Maintenance Considerations

It is important to consider that a thick vegetative cover is needed for vegetated swales to function properly. Usually, swales require little more than normal landscape maintenance activities such as irrigation and mowing to maintain pollutant removal efficiency. Swales can become a nuisance due to mosquito breeding in standing water if obstructions develop (e.g., debris accumulation, invasive vegetation) and/or if proper drainage slopes are not implemented and maintained. The application of fertilizers and pesticides should be minimized.

TC-30 Vegetated Swale

Inspection Activities	Suggested Frequency
■ Inspect after seeding and after first major storms for any damages.	Post construction
■ Inspect for signs of erosion, damage to vegetation, channelization of flow, debris and litter, and areas of sediment accumulation. Perform inspections at the beginning and end of the wet season. Additional inspections after periods of heavy runoff are desirable.	Semi-annual
■ Inspect level spreader for clogging, grass along side slopes for erosion and formation of rills or gullies, and sand/soil bed for erosion problems.	Annual
Maintenance Activities	**Suggested Frequency**
■ Mow grass to maintain a height of 3–4 inches, for safety, aesthetic, or other purposes. Litter should always be removed prior to mowing. Clippings should be composted. ■ Irrigate swale during dry season (April through October) or when necessary to maintain the vegetation. ■ Provide weed control, if necessary to control invasive species.	As needed (frequent, seasonally)
■ Remove litter, branches, rocks blockages, and other debris and dispose of properly. ■ Maintain inlet flow spreader (if applicable). ■ Repair any damaged areas within a channel identified during inspections. Erosion rills or gullies should be corrected as needed. Bare areas should be replanted as necessary.	Semi-annual
■ Declog the pea gravel diaphragm, if necessary. ■ Correct erosion problems in the sand/soil bed of dry swales. ■ Plant an alternative grass species if the original grass cover has not been successfully established. Reseed and apply mulch to damaged areas.	Annual (as needed)
■ Remove all accumulated sediment that may obstruct flow through the swale. Sediment accumulating near culverts and in channels should be removed when it builds up to 3 in. at any spot, or covers vegetation, or once it has accumulated to 10% of the original design volume. Replace the grass areas damaged in the process. ■ Rototill or cultivate the surface of the sand/soil bed of dry swales if the swale does not draw down within 48 hours.	As needed (infrequent)

Vegetated Swale TC-30

Additional Information

Recent research (Colwell et al., 2000) indicates that grass height and mowing frequency have little impact on pollutant removal. Consequently, mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.

References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

Extended Detention Basin TC-22

Maintenance Concerns, Objectives, and Goals

- Vector/Pest Control
- Sediment and Trash Removal
- Vegetation/Landscape Maintenance
- Re-suspension of settled material
- Clogging of the Outlet

General Description

Dry extended detention ponds (a.k.a. dry ponds, extended detention basins, detention ponds, extended detention ponds) are basins whose outlets have been designed to detain the stormwater runoff from a water quality design storm for some minimum time (e.g., 72 hours) to allow particles and associated pollutants to settle. Unlike wet ponds, these facilities do not have a large permanent pool. They can also be used to provide flood control by including additional flood detention storage.

Inspection/Maintenance Considerations

Inspections should be conducted semi-annually and after significant storm events to identify potential problems early. Most maintenance efforts will need to be directed toward vegetation management and vector control, which may focus on basic housekeeping practices such as removal of debris accumulations and vegetation management to ensure that the basin dewaters completely (recommended 72 hour residence time or less) to prevent creating mosquito and other vector habitats.

Targeted Constituents

☑	Sediment	▲
☑	Nutrients	●
☑	Trash	■
☑	Metals	▲
☑	Bacteria	▲
☑	Oil and Grease	▲
☑	Organics	▲
☑	Oxygen Demanding	▲

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

TC-22 Extended Detention Basin

Inspection Activities	Suggested Frequency
■ Inspect after several storm events for bank stability, vegetation growth, and to determine if the desired residence time has been achieved. ■ Inspect outlet structure for evidence of clogging or outflow release velocities that are greater than design flow.	Post construction
■ Inspect for the following issues: differential settlement, cracking; erosion of pond banks or bottom, leakage, or tree growth on the embankment; the condition of the riprap in the inlet, clogging of outlet and pilot channels; standing water, slope stability, presence of burrows; sediment accumulation in the basin, forebay, and outlet structures; trash and debris, and the vigor and density of the grass turf on the basin side slopes and floor.	Semi-annual, after significant storms, or more frequent
■ Inspect for the following issues: subsidence, damage to the emergency spillway; inadequacy of the inlet/outlet channel erosion control measures; changes in the condition of the pilot channel, accumulated sediment volume, and semi-annual inspection items.	Annual
■ During inspections, changes to the extended storage pond or the contributing watershed should be noted, as these may affect basin performance.	Annual inspection
Maintenance Activities	**Suggested Frequency**
■ If necessary, modify the outlet orifice to achieve design values if inspection indicates modifications are necessary. ■ Repair undercut or eroded areas. ■ Mow side slopes. ■ Manage pesticide and nutrients. ■ Remove litter and debris. ■ Control vectors as necessary.	As needed
■ Remove accumulated trash and debris from the basin, around the riser pipe, side slopes, embankment, emergency spillway, and outflow trash racks. The frequency of this activity may be altered to meet specific site conditions. ■ Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.	Semi-annual, or more frequent, as needed
■ Seed or sod to restore dead or damaged ground cover. ■ Repair erosion to banks and bottom as required.	Annual maintenance (as needed)
■ Supplement wetland plants if a significant portion have not been established (at least 50% of the surface area). ■ Remove nuisance plant species.	Annual maintenance (if needed)
■ Remove sediment from the forebay to reduce frequency of main basin cleaning.	3- to 5-year maintenance
■ Monitor sediment accumulation and remove accumulated sediment and regrade about every 10 years or when the accumulated sediment volume exceeds 10-20% of the basin volume, or when accumulation reaches 6 inches or if resuspension is observed. Clean in early spring so vegetation damaged during cleaning has time to re-establish.	Every 10-25 years

Extended Detention Basin TC-22

Additional Information

In most cases, sediment from extended detention basin does not contain toxins at levels posing a hazardous concern. Studies to date indicate that pond sediments are likely to meet toxicity limits and can be safely landfilled or disposed of onsite. Onsite sediment disposal is always preferable (if local authorities permit it) as long as the sediments are deposited away from the shoreline to prevent their re-entry into the pond.

Sediments should be tested for toxin in compliance with current disposal requirements if land uses in the catchment include commercial or industrial zones, or if visual or olfactory indications of pollution are noticed.

References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

APPENDIX A-5

TCBMP Inspection Form

City of Vista Treatment BMP Inspection Form

Date:_____ Time:_____ GP Number:_____ Inspector:_____

I. REASON FOR INSPECTION

☐ Initial ☐ Follow-up ☐ Other
☐ Routine ☐ Response to Complaint Inspection Priority:_____

II. PROJECT INFORMATION

1. ID# or Assessor Parcel Number:_____ 2. Year of Installation:_____
3. Project Type: ☐ Residential SF ☐ Residential Multi-family ☐ Residential Subdivision ☐Industrial ☐Road
   ☐ Institutional ☐Commercial – retail ☐Com – restaurant ☐Com – auto ☐Com – gas station ☐Other _____
4. Facility Name:_____
   Site Address:_____
   Contact Name:_____Phone:_____
5. If the property owner is different than the contact name, fill out information below:
   Owner Name:_____ Title:_____
   Owner's Address:_____ Phone:_____
6. If the BMP Operator is different that the contact name, fill out information below:
   Name:_____ Title:_____
   Address:_____ Phone:_____
7. Maintenance Documentation: ☐Reviewed ☐Not Reviewed ☐Not Available ☐Other:_____
8. Party Responsible for O&M Documentation: ☐Property Owner ☐ BMP Operator ☐ Contractor
   ☐Other:_____
   Number of BMPs associated with this site: _____

III. BMP TYPE CODE TABLE (Use codes for "BMP Type Code #" field under the "BMP type and inspection results table")

#	Biofiltration	#	Structural
1	Vegetated Swale TC-30	11	Drain Insert MP-52
2	Vegetated Buffer Strip TC-31	12	Porous Pavement
3	Bioretention TC-32	13	Media Filter TC-40 or MP-40
4	Roof Gardens	14	Hydrodynamic Vortex Separator MP-51
5	Planter Boxes	15	Water Quality Inlet TC-50
	Detention		**Infiltration**
6	Extended Detention Basin TC-22	16	Infiltration Basin TC-11
7	Underground Det. Systems	17	Infiltration Trench TC-10
8	Wet Pond TC-20	18	Exfiltration Trench
9	Wet Vault MP-50	19	Retention/Irrigation TC-12
10	Wetland TC-21 or MP-20	20	Other (Biofiltration/Detention/Structural/Infiltration)

IV. BMP TYPE AND INSPECTION RESULTS (Use Codes from "Potential Inspection Results with Definitions" Sheet)

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Comments/ Corrective Actions Needed:_____
_____
_____
_____

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Comments/ Corrective Actions Needed:_____
_____
_____
_____

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private

Comments/ Corrective Actions Needed:_____ _____ _____ _____	Comments/ Corrective Actions Needed:_____ _____ _____ _____
IV. BMP TYPE AND INSPECTION RESULTS - Continued **(Use Codes from "Potential Inspection Results with Definitions" Sheet)**	
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____

BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____ _____ _____

V. INSPECTION RESULTS AND FOLLOW-UP ACTIONS (Use Codes from "Potential Inspection Results with Definitions" Sheet)

1. Describe corrective actions needed:_____
   _____
   _____
   _____
   _____
   _____
   _____

2. Describe materials distributed (brochures, BMP's, etc.): _____
   _____

3. Describe Enforcement Action (Case Number if applicable: SW# _____)
   ☐ None ☐ Warning Notice ☐ NOV
   ☐ Administrative Citation ☐ Administrative Action with Penalty/Fine ☐ Civil Action
   ☐ Criminal Action ☐ Referral for Enforcement_____

4. Follow Up required? ☐ No ☐ Yes (describe below)
   ☐ Operator to Submit Records _____
   ☐ Return inspection needed _____
   ☐ Other _____

5. Priority for re-inspection: ☐ High ☐ Medium ☐Low

6. Required Compliance Date:_____ Date Corrected:_____

VI. FOLLOW-UP AND RE-INSPECTION INFORMATION

Re-inspection Date: _____ Time: _____ Inspector: _____

Results:
☐ No violations noted at this time (corrections verified)
☐ Violation of City's storm water ordinance Case Opened – SW#_____

Describe Enforcement Action
☐ None ☐ Warning Notice ☐ NOV
☐ Administrative Citation ☐ Administrative Action with Penalty/Fine ☐ Civil Action
☐ Criminal Action ☐ Referral for Enforcement_____

Corrective Actions Needed: _____

_____
_____
_____

Facility Representative:_____ Inspector:_____

Potential Inspection Results with Definitions

ID	Inspection Results	Definitions
	I. ALL BMP Types	
1	No Visible / Apparent Problems	No Visible or apparent problems with BMP function. BMP appears to be well-maintained.
2	Significant Engineering Design /Flaws	BMP observed to have significant engineering/design flaws which lessen its effectiveness as a stormwater treatment measure.
3	Unauthorized Modifications	Any modification that lessens the effectiveness of the BMP; any modification not authorized by the City, designated agency or other regulatory agency.
4	BMP Destroyed or Eliminated	BMP destroyed, removed or eliminated from property.
5	Trash/Debris Accumulation or Dumping	Trash & debris accumulates within and/or on the BMP; any modification not authorized by the City, designated agency or other regulatory agency
6	Evidence of Contaminants & Pollution	Evidence or presence of oil, gasoline, contaminants or other pollutants.
7	BMP Access Obstructed	Access to BMP obstructed or limited.
8	Obnoxious Odors	Unpleasant odors within/from BMP.
9	Fencing-Missing or Broken Bars	Any defect in or damage to the fence or gate that permits easy entry to a facility.
10	BMP cannot be located	BMP cannot be located for inspection.
	II. Biofiltration (Bioretention, Vegetated Buffer Strip, Vegetated Swale, Roof Gardens, Planter Boxes)	
A.	**General**	
11	Uneven or Clogged Flow Spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed across the BMP.
12	Leaking or Malfunctioning Irrigation System	Irrigation system leaking or malfunctioning
B.	Sediment and Erosion Problems	
13	Sediment Accumulation	Sediment depth exceed 2 inches on more than 10%of the vegetated treatment area; or sediment interferes with BMP performance.
14	Erosion/Scouring	Eroded or scoured areas due to flow channelization, higher flows, wind or water.
C.	Vegetation Maintenance Issues	
15	Poor Vegetation Coverage	Planted vegetation is sparse or bare or eroded patches occur in more than 10% of the BMP. Growth of planted vegetation is poor because sunlight does not reach swale.
16	Invasive/Nuisance Vegetation or Weeds	Planted vegetation is excessively tall; nuisance weeds, invasive or noxious vegetation are overgrown; vegetation reduces free movement of water through BMP.
17	Tree/Bush Growth	Growth does not allow maintenance access or interferes with maintenance activity.
D.	Drainage Problems	
18	Standing Water/Excessive Ponding/Soggy Soil	Water is observed within the BMP (between storms) and appears not to drain freely or silo s excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
19	Mosquito Habitat	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
20	Clogged or Obstructed Inlets/Outlets	Inlet/Outlet clogged or obstructed with sediment and /or debris
21	Constant Baseflow Damage	Small quantities of water flow through the vegetated swale, even when it has been dry for weeks, and an eroded, muddy channel has formed in the swale bottom; constant baseflow from irrigation runoff.
	III. Detention and Infiltration (Extended Detention Basin, Wet Pond, Wetland, Exfiltration Trench, Infiltration Basin or Trench, Retention/Irrigation)	
A.	**Vegetation Maintenance Issues**	
22	Invasive/Nuisance Vegetation or Weeds	Invasive, nuisance vegetation or weeds present.
23	Tree/Brush Growth & Hazard Trees	Growth does not allow maintenance access or interferes with maintenance activity; dead, diseased or dying trees; tree growth on berms or emergency spillway >4 feet in height or covering more than 10% of spillway.
B.	Sediment and Erosion Problems	
24	Sediment Accumulation	Detention BMPs – sediment on bottom preventing water flow in/out of the facility. Infiltration BMP's - Sediment in storage areas, rock filters, and pre-settling ponds and vaults preventing infiltration.
25	Erosion	Eroded damage over 2 inches deep; potential for continued erosion; any erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
C.	Animal Pests	
26	Rodent Holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping though dam or rodent holes.
27	Insects (wasps, hornets, bees)	Insects (wasps, hornets, bees) interfere with maintenance activities. Excessive or nuisance levels
D.	Drainage Problems	
28	Standing Water/Excessive Ponding/Soggy Soil	Water is observed within the BMP (between storms) and appears not to drain freely or silo s excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
29	Mosquito Habitat*	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
30	Empty Cell	First cell of wet pond does not hold water.
31	Unlevel Berm Surface	Unlevel internal berm divding wet pond cells.
E.	Unique to Certain BMPs	
32	Uneven or Clogged Flow Spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed across the BMP.

33	Oil sheen on Water (Wet Ponds)	Prevalent and visible oil sheen.
34	Damaged/Missing Bars 9Debris Barriers)	Bars are missing, loose, bent out of shape, or detiorating due to excessive rust.
35	Leaking or malfunctioning irrigation system	Irrigation system leaking or malfunctioning.
36	Embankment Settlement Lower Than Design Elevation	Embankment settlement four inches lower than the design elevation.
	III. Structural, Non-landscaped Based (Drain Insert, Hydrodynamic Separator, Media Filter, Porous Pavement, Vortex Separator, Wet Vault, Water Quality Inlet, Underground Detention Systems)	
	A. General	
37	Mosquito Habitat*	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
38	Access Cover Damaged/Difficult to Remove/Not in Place	Cover cannot be opened, corrosion/deformation of cover; maintenance person cannot remove cover using the normal lifting pressure; cover is missing or only partially in place.
39	Deteriorating Paint or Protective Coating	Part or parts that have a rusting or scaling condition and have affected structural adequacy.
40	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than ½ inch of thread (may not apply to self-locking lids)
	B. Ineffective Filter Material, Liners and/or Membranes	
41	Sediment Accumulation	Sediment depth exceeds acceptable levels (varies between BMPs)
42	Ineffective Media Insert/Filter Media	Media insert/filter media ineffective in doing intended function and needs to be replaced; filter is beyond the typical average life of product.
43	Rock Lining Out of Place/Missing (Sand Filters)	Soil beneath the rock lining is visible.
44	Visible Liner with Holes or Damage	Liner is visible and has more than three ¼-inch holes in it or is damaged.
45	Compromised Membrane or Roof Structure	Membrane or roof structure is compromised by either roots and/or water discharge.
46	Short Circuiting	Flows do not properly enter filter cartridges (media filters); seepage/flows occur along the vault walls and corners (sand filters); Sand eroding near inflow area (sand filters); flows become concentrated over one section of the sand rather than disperse (sand filters)
	C. Pipe or Pipe Join Problems	
47	Damaged Pipes	Any part of the piping that is crushed, deformed, damaged, in need of repair or any other failure to the piping; protective coating is damaged.
48	Missing Debris Barrier/Not Attached to Pipe	Entire barrier is missing or is not attached to pipe.
49	Sediment in Drainage Pipes/Cleanouts	Drain pipes and/or cleanouts are full of sediment and/or debris.
50	Joints Between Tanks/Pipe Section	Any openings or voids allowing material to be transported into facility.
51	Tank Pipe bent Out of Shape	Any part of tank/pipe is bent out of shape more than 10% of its design shape.
	D. Underground Vaults/Containers, Chambers, Tank Issues	
52	Sediment Accumulation	Sediment depth exceeds acceptable levels (varies between BMPs), 20% of the diameter of the pipe/design depth or interferes with proper BMP function.
53	Vault Structure Damage	Vault structures which are observed to have cracks in walls, bottom damage to frame and/or top slab.
54	Damaged Baffles and/or Weir	Baffles which are corroded, cracked, warped and/or showing signs of failure as determined by maintenance person. Weir is observed to be damaged by maintenance person.
55	Access Ladder Damage	Ladder is corroded or deteriorated, not functioning properly, not securing attached to structural wall, missing rungs, has cracks and or/is misaligned.
56	Oil Accumulation (Water Quality Inlet, Vortex Separator)	Oil accumulations that exceed 1-inch at the surface of the water.
57	Blocked, Damaged, or Plugged Air Vents	One-half of a cross section of a vent is blocked at any point or the vent is damaged.
	E. Unique to Certain BMPs	
58	Damaged Coalescing Plates (Water Quality Inlet)	Plate media broken, deformed, cracked and/or showing signs of failure.
59	Clogged Porous Pavement	By visual inspection, little or no water flows through pavement during heavy rain storms, or usually causing ponding; clogging due to debris, organic matter or sediment.
60	Damaged Internal Walls (Sand Filter Media)	Internal walls are corroded, cracked, warped and/or showing signs of failure as determined by maintenance person.
61	Prolonged Flows (Sand Filter Media)	Sand is saturated for long periods of time (several weeks) and does not dry out between storms due to continuous base flow or prolonged flows from detention facilities.
	IV. Other	
62	Other	Inspection Results which are not defined

***If mosquitoes or mosquito larvae are observed within a BMP, report condition to:** San Diego County Vector Control District, xxx street, San Diego, CA 99999; phone: (858) 694-2888; vector@sdcounty.ca.gov; Website:www.sdfightthebite.com*

Standard Stormwater Treatment BMP Inspection Data Collection Form

Background Data for BMP Type

The *Standard Stormwater Treatment BMP Inspection Data Collection Form* (Inspection Form) lists twenty stormwater treatment BMP types (see Section III). Inspectors, data entry staff and others who use the Inspection Form can refer to the California

Stormwater Quality Association (CASQA). The CASQA Fact Sheets are numbered, and are located in the CASQA *Stormwater BMP Handbook for New Development and Redevelopment*. The CASQA handbook is available online at www.cabmphandbooks.org.

APPENDIX A-6

BMP Plan Sheet

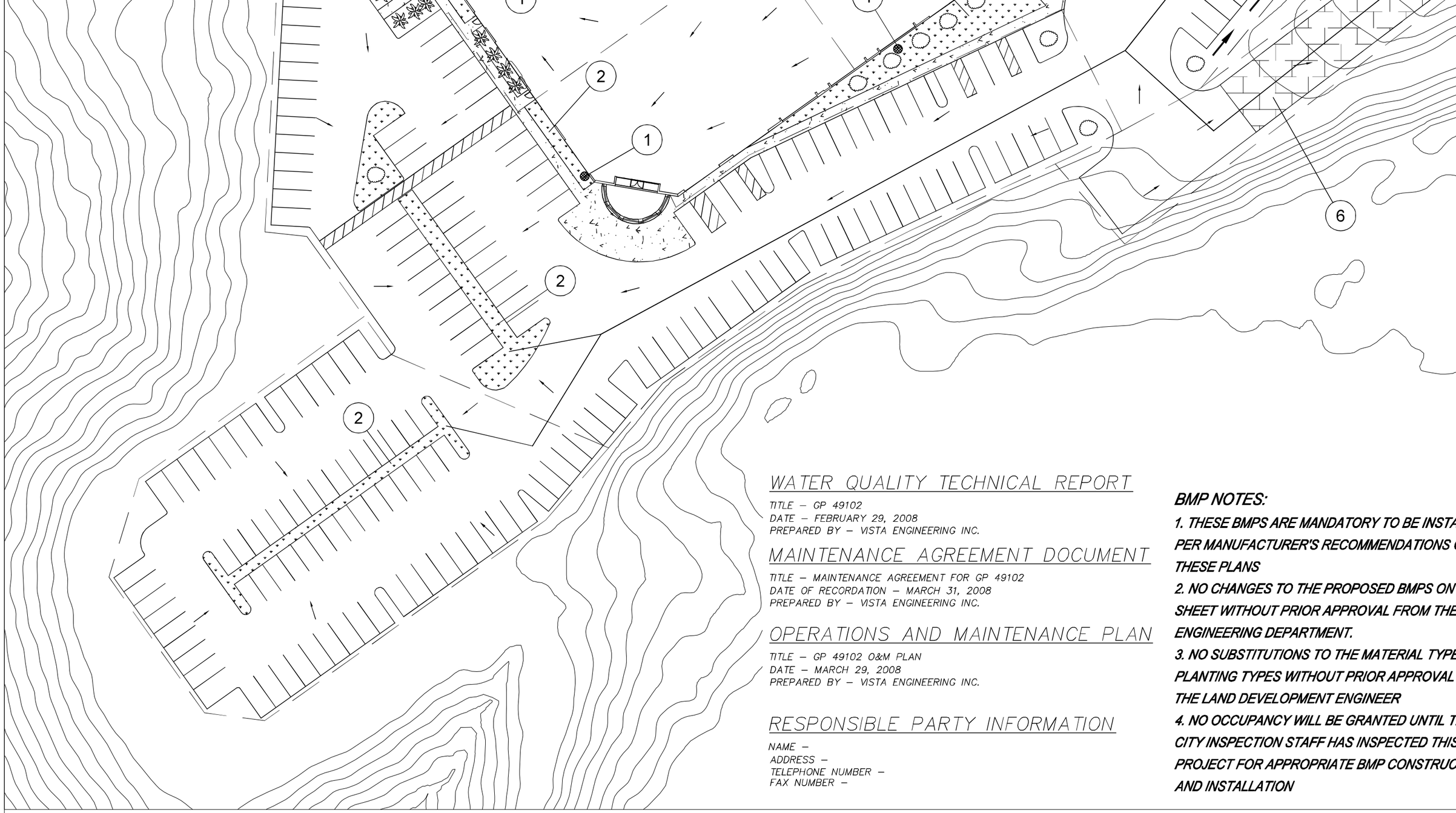

WATER QUALITY TECHNICAL REPORT

TITLE – GP 49102
DATE – FEBRUARY 29, 2008
PREPARED BY – VISTA ENGINEERING INC.

MAINTENANCE AGREEMENT DOCUMENT

TITLE – MAINTENANCE AGREEMENT FOR GP 49102
DATE OF RECORDATION – MARCH 31, 2008
PREPARED BY – VISTA ENGINEERING INC.

OPERATIONS AND MAINTENANCE PLAN

TITLE – GP 49102 O&M PLAN
DATE – MARCH 29, 2008
PREPARED BY – VISTA ENGINEERING INC.

RESPONSIBLE PARTY INFORMATION

NAME –
ADDRESS –
TELEPHONE NUMBER –
FAX NUMBER –

BMP NOTES:

1. THESE BMPS ARE MANDATORY TO BE INSTA
PER MANUFACTURER'S RECOMMENDATIONS
THESE PLANS
2. NO CHANGES TO THE PROPOSED BMPS ON
SHEET WITHOUT PRIOR APPROVAL FROM THE
ENGINEERING DEPARTMENT.
3. NO SUBSTITUTIONS TO THE MATERIAL TYPE
PLANTING TYPES WITHOUT PRIOR APPROVAL
THE LAND DEVELOPMENT ENGINEER
4. NO OCCUPANCY WILL BE GRANTED UNTIL T
CITY INSPECTION STAFF HAS INSPECTED THIS
PROJECT FOR APPROPRIATE BMP CONSTRUC
AND INSTALLATION

CITY OF VISTA FIRE DEPARTMENT	VISTA IRRIGATION DISTRICT	CITY OF VISTA SANITATION DEPARTMENT
	THE APPROVAL GIVEN HERE IS FOR THE GRADING LAYOUT AND IS NOT FOR THE CONSTRUCTION OF ANY PUBLIC WATER FACILITIES THAT MAY BE SHOWN HEREON. NOR DOES IT IMPLY THAT WATER SERVICE WILL BE PROVIDED.	BASIN:
APPROVED DATE	APPROVED RCE DATE	APPROVED DATE

NO.	DESCRIPTION	CITY	DATE	VID	DATE
	APPROVED CHANGES				

ENGINEER D

COV REVISION: 8/01/2004

APPENDIX A-7

Public TCBMP Inventory

Appendix A-7
Municipal Treatment Control BMP Inventory
FY 2008-09

PROJECT SITE	PROJECT ADDRESS	LAT_DEG	LONG_DEG	CASQA ID	BMP TYPE	MANUFACTURER	MODEL	WATERSHED
Vista Village	Vista Village Dr	33.2017044635	-117.2454000000	MP-51	Vortex Separator	CDS Technologies	PSW 20-20	Buena Vista
Vista Village	Vista Village Dr	33.1992016544	-117.2471000000	MP-51	Vortex Separator	CDS Technologies	PSW 50-50	Buena Vista
Vista Village	Vista Village Dr	33.1986504797	-117.2450000000	MP-51	Vortex Separator	CDS Technologies	PSW 50-42	Buena Vista
City of Vista Civic Center	600 Eucalyptus Ave	33.2019864318	-117.2333000000	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista
City of Vista Library	700 Eucalyptus Ave	33.2021285207	-117.2332000000	MP-52	Drain Insert	FloGard	FGP-12F	Buena Vista
City of Vista Library	700 Eucalyptus Ave	33.2023295426	-117.2332000000	MP-52	Drain Insert	FloGard	FGP-12F	Buena Vista
City of Vista Library	700 Eucalyptus Ave	33.2100363964	-117.2243000000	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista
Vista Village	101 Wave Dr	33.1997241602	-117.2460000000	MP-52	Drain Insert	FloGard	FF-1836SD	Buena Vista
Brengle Terrace Park	1200 Vale Terrace Dr	33.2025667912	-117.2354000000	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista

APPENDIX B-1

Construction Projects Inspections Summaries

Project Name: Vista Target **Address:** 3150 Business Park Dr. **Site ID#:** 696 **Site Size (Acres):** 17.5 (16.0 Disturbed) **Grading Plan #:** 07-026 **Inspector:** S. Rytell	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 01 July 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received verbal warnings for slope hydroseeding, installing new BMPs to control erosion, equipment lacking secondary containment trays, and silt fence repairs. The project was 99% complete at the end of the reporting period.
Project Name: Verizon Wireless Switch Facility **Address:** 2430 Business Park Dr. **Site ID#:** 695 **Site Size (Acres):** 6.09 (6.0 Disturbed) **Grading Plan #:** 07-041 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 29 **Dry Inspections:** 5 **Total Inspections:** 34 **Start Date:** 01 July 2008 **End Date:** 19 June 2009	**Summary of Inspection Findings:** The site received verbal warnings for silt fence repairs and a hydraulic fluid spill. The project was completed during the reporting period.
Project Name: Pocina Properties (24-Lot Sub) **Address:** 877 Sycamore Ave. **Site ID#:** 670 **Site Size (Acres):** 5.03 **Grading Plan #:** 06-054, 06-070, 06-020 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 1 **Dry Inspections:** 4 **Total Inspections:** 5 **Start Date:** 26 April 2007 **End Date:** 06 October 2008	**Summary of Inspection Findings:** The site received a verbal warning for silt fence and gravel bag repair. With the initial grading completed, the project was abandoned during the reporting period. Responsibility was handed over to Stormwate Code Enforcement.
Project Name: Commercial Building (Medical Office) **Address:** 1950 Via Centre **Site ID#:** 712 **Site Size (Acres):** 5.0 (5.0 Disturbed) **Grading Plan #:** 07-006 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 2 **Total Inspections:** 32 **Start Date:** Prior to FY09 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received a verbal warning for silt fence repair The project was reported idle during the reporting period as it was awaiting City approval of project revisions.

Project Name: 24 Hr Fitness
Address: 324 Sycamore Ave.
Site ID#: 703
Site Size (Acres): 2.0 (1.0 Disturbed)
Grading Plan #: 04-020, 07-020
Inspector: K. Groscup

Priority: High
Wet Inspections: 18
Dry Inspections: 0
Total Inspections: 18
Start Date: 17 September 2008
End Date: 17 February 2009

Summary of Inspection Findings:
The site received a verbal warning for the absence of BMPs surrounding storm drain inlets. A correction notice was issued due to unprotected stockpiles of mulch/soil on the asphalt lot. The project was completed during the reporting period.

Project Name: Rough Grading for PC 2-043-9
Address: 385 Taylor St. (Hayden Ranch)
Site ID#: 242
Site Size (Acres): 7.04 (0.5 Disturbed)
Grading Plan #: 01-020
Inspector: K. Groscup

Priority: High
Wet Inspections: 28
Dry Inspections: 5
Total Inspections: 33
Start Date: During 2002
End Date: Ongoing

Summary of Inspection Findings:
The site received verbal warnings directing the owner to place additional check damns and to clean up silt on the adjacent roadway.

Project Name: 56 Townhomes
Address: 719 Copper Dr.
Site ID#: 677
Site Size (Acres): 6.1 (6.0 Disturbed)
Grading Plan #: 05-020
Inspector: K. Groscup

Priority: High
Wet Inspections: 28
Dry Inspections: 5
Total Inspections: 33
Start Date: 20 April 2006
End Date: Ongoing

Summary of Inspection Findings:
The site received a verbal warning for excessive weed growth around the project perimeter, and the owner was directed to mow the area. The project was reported on-hold during the reporting period.

Project Name: 14 Homes (Willowen Ridge)
Address: 2261 Edgehill Rd.
Site ID#: 689
Site Size (Acres): 8.74 (8.0 Disturbed)
Grading Plan #: 06-047
Inspector: K. Groscup

Priority: High
Wet Inspections: 28
Dry Inspections: 5
Total Inspections: 33
Start Date: 09 July 2007
End Date: Ongoing

Summary of Inspection Findings:
The site received verbal warnings for a check dam failure and silt fence repair. The project was reported on-hold during the reporting period.

Project Name: Gordon Properties
Address: 1025 Cielita Linda
Site ID#: 662
Site Size (Acres): 20 (15 Disturbed)
Grading Plan #: 06-010
Inspector: F. Durazo

Priority: High
Wet Inspections: 2
Dry Inspections: 0
Total Inspections: 2
Start Date: 09 March 2009
End Date: 12 March 2009

Summary of Inspection Findings:
No issues. Grading was completed during the reporting period, but the project was then idle.

Project Name: 4 Commercial Buildings **Address:** 2291 S. Melrose Dr. **Site ID#:** 721 **Site Size (Acres):** 4.0 (4.0 Disturbed) **Grading Plan #:** 07-007 **Inspector:** S. Rytell	**Priority:** High **Wet Inspections:** 14 **Dry Inspections:** 2 **Total Inspections:** 16 **Start Date:** 20 January 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received verbal warnings for replacing the Port-o-John containment tray, silt fence repair, and addressing stock piles. Construction was ongoing at the end of the reporting period.
Project Name: North Coast Church **Address:** 2405 N. Santa Fe **Site ID#:** 702 **Site Size (Acres):** 10+ (10+ Disturbed) **Grading Plan #:** 06-022 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 3 **Total Inspections:** 33 **Start Date:** 01 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: Vista Civic Center **Address:** 600 Eucalyptus Ave. **Site ID#:** 713 **Site Size (Acres):** 13 (13 Disturbed) **Grading Plan #:** 08-006 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 27 **Dry Inspections:** 2 **Total Inspections:** 29 **Start Date:** 19 August 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received verbal warnings for completing the installation of wattles around stock piles and instructing the owner to clean out inlet BMPs. Construction was ongoing at the end of the reporting period.
Project Name: Fire Station 5 (CIP 8135) **Address:** 2009 S. Melrose Dr. **Site ID#:** 714 **Site Size (Acres):** 1.86 (1.0 Disturbed) **Grading Plan #:** CIP 8135 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 25 **Dry Inspections:** 0 **Total Inspections:** 25 **Start Date:** 17 October 2008 **End Date:** 21 April 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Vista Sports Park **Address:** 555 W. Bobier Dr. **Site ID#:** 723 **Site Size (Acres):** 47 (47 Disturbed) **Grading Plan #:** 07-022 **Inspector:** S. Rytell	**Priority:** High **Wet Inspections:** 12 **Dry Inspections:** 2 **Total Inspections:** 12 **Start Date:** 09 February 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** Silt fence repairs were required as some discharge was evident during the wet season. Construction was ongoing at the end of the reporting period.

Project Name: Industrial Buildings **Address:** 2710 Progress St. **Site ID#:** 724 **Site Size (Acres):** 3.0 (3.0 Disturbed) **Grading Plan #:** 08-023 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 8 **Dry Inspections:** 2 **Total Inspections:** 10 **Start Date:** 09 March 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: Fire Station 6 (CIP 8136) **Address:** 651 E. Vista Way **Site ID#:** 715 **Site Size (Acres):** 1.5 (1.0 Disturbed) **Grading Plan #:** 07-035 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 25 **Dry Inspections:** 0 **Total Inspections:** 25 **Start Date:** 17 October 2008 **End Date:** 21 April 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Moonlight Amphitheatre (CIP 8139) **Address:** 1200 Vale Terrace Dr. **Site ID#:** 716 **Site Size (Acres):** 3.0 (2.0 Disturbed) **Grading Plan #:** 08-009 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 25 **Dry Inspections:** 2 **Total Inspections:** 27 **Start Date:** 20 October 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received a verbal warning for trash & debris clean-up adjacent to trash cans. Construction was ongoing at the end of the reporting period.
Project Name: Premier Crossing **Address:** 2301 S. Melrose Dr. **Site ID#:** 692 **Site Size (Acres):** 5.9 (5.9 Disturbed) **Grading Plan #:** 07-008 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 0 **Dry Inspections:** 2 **Total Inspections:** 2 **Start Date:** 09 October 2007 **End Date:** 01 August 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Industrial Buildings **Address:** 760 Shadowridge Dr. **Site ID#:** 694 **Site Size (Acres):** N/A **Grading Plan #:** 07-002 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 2 **Dry Inspections:** 3 **Total Inspections:** 5 **Start Date:** 24 January 2008 **End Date:** 07 October 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.

Project Name: Grading for Industrial Building **Address:** 2633 Progress St. **Site ID#:** 732 **Site Size (Acres):** 6.24 (6.24 Disturbed) **Grading Plan #:** 08-011 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 18 May 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No Issues. Construction was ongoing at the end of the reporting period.
Project Name: Oak Ridge Business Park **Address:** 2410 Birch St. **Site ID#:** 718 **Site Size (Acres):** 1.2 (1.2 Disturbed) **Grading Plan #:** 08-017 **Inspector:** K. Groscup	**Priority:** Medium **Wet Inspections:** 4 **Dry Inspections:** 2 **Total Inspections:** 6 **Start Date:** 26 January 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: Condos (42) Oak Drive Villas **Address:** 1375 Oak Dr. **Site ID#:** 690 **Site Size (Acres):** 3.1 (3.1 Disturbed) **Grading Plan #:** 06-044 **Inspector:** K. Groscup	**Priority:** Medium **Wet Inspections:** 7 **Dry Inspections:** 3 **Total Inspections:** 10 **Start Date:** 01 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** The site was issued a verbal warning to remove damaged gravel bags from the storm drain inlets. The project was reported on-hold during the reporting period.
Project Name: Intersection **Address:** Vista Village @ W. Vista Way **Site ID#:** 717 **Site Size (Acres):** 0.20 (0.20 Disturbed) **Grading Plan #:** DWG 3934 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 2 **Dry Inspections:** 0 **Total Inspections:** 2 **Start Date:** 01 November 2008 **End Date:** 15 December 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: 5 Lot Sub **Address:** 2565 Oleander **Site ID#:** 625 **Site Size (Acres):** 3.5 (3.0 Disturbed) **Grading Plan #:** 01-022 **Inspector:** K. Groscup	**Priority:** Medium **Wet Inspections:** 4 **Dry Inspections:** 3 **Total Inspections:** 7 **Start Date:** Prior to FY09 **End Date:** 17 February 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.

Project Name: Commercial Building (Vista Café) **Address:** 315 Broadway **Site ID#:** 644 **Site Size (Acres):** 0.25 (0.25 Disturbed) **Grading Plan #:** 04-061 **Inspector:** J. Fretwell	**Priority:** Medium **Wet Inspections:** 8 **Dry Inspections:** 2 **Total Inspections:** 10 **Start Date:** 22 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** The project was issued a verbal warning for site erosion. Construction was ongoing at the end of the reporting period.
Project Name: SFR (Pedroza Residence) **Address:** 536 Rudd Rd. **Site ID#:** 697 **Site Size (Acres):** 0.88 (0.80 Disturbed) **Grading Plan #:** 06-062 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 7 **Dry Inspections:** 3 **Total Inspections:** 10 **Start Date:** Prior to FY09 **End Date:** 01 May 2009	**Summary of Inspection Findings:** The project was idle during FY09. A correction notice was issued as appropriate wet-season BMPs were not installed. The site owner does not have money to continue and the grading permit expired during the reporting period. The job is no longer to be inspected.
Project Name: 3 SFR **Address:** 2346 Warmlands Ave. **Site ID#:** 656 **Site Size (Acres):** 1.78 (1.2 Disturbed) **Grading Plan #:** 03-036 **Inspector:** K. Groscup	**Priority:** Medium **Wet Inspections:** 0 **Dry Inspections:** 3 **Total Inspections:** 3 **Start Date:** 12 April 2006 **End Date:** 20 July 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Broadway Lighting & Sidewalk CIP **Address:** Broadway **Site ID#:** 722 **Site Size (Acres):** < 1 (< 1 Disturbed) **Grading Plan #:** N/A **Inspector:** J. Fretwell	**Priority:** Medium **Wet Inspections:** 3 **Dry Inspections:** 0 **Total Inspections:** 3 **Start Date:** 05 January 2009 **End Date:** 24 February 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: SFR (Haro Residence) **Address:** 1834 Knapp Dr. **Site ID#:** 679 **Site Size (Acres):** 0.5 **Grading Plan #:** 03-050 **Inspector:** S. Rytell	**Priority:** Low **Wet Inspections:** 4 **Dry Inspections:** 3 **Total Inspections:** 7 **Start Date:** 10 October 2006 **End Date:** 20 January 2009	**Summary of Inspection Findings:** The site received two verbal warnings for silt fence repair. The project was completed during the reporting period.

Project Name: Retaining Walls
Address: 1045-A Alta Calle
Site ID#: 700
Site Size (Acres): 0.5
Grading Plan #: 06-050
Inspector: K. Groscup

Priority: Low
Wet Inspections: 7
Dry Inspections: 3
Total Inspections: 10
Start Date: 01 September 2008
End Date: Ongoing

Summary of Inspection Findings:
No Issues. The project was reported idle during the reporting period.

Project Name: SFR (Sutter Residence)
Address: 216 Acropolis Way
Site ID#: 699
Site Size (Acres): 0.83 (0.83 Disturbed)
Grading Plan #: 06-074
Inspector: S. Rytell

Priority: Low
Wet Inspections: 7
Dry Inspections: 3
Total Inspections: 10
Start Date: 01 September 2008
End Date: Ongoing

Summary of Inspection Findings:
The site was issued a verbal warning for minor silt fence repairs. The project was reported idle during the reporting period.

Project Name: SFR (Thompson Residence)
Address: 675 Vale View
Site ID#: 708
Site Size (Acres): 0.5 (0.5 Disturbed)
Grading Plan #: 07-030
Inspector: J. Fretwell

Priority: Low
Wet Inspections: 7
Dry Inspections: 2
Total Inspections: 9
Start Date: 10 January 2005
End Date: Ongoing

Summary of Inspection Findings:
No issues. The project was reported on-hold during the reporting period.

Project Name: SFR (Vernoy Residence)
Address: 2320 Foothill Dr.
Site ID#: 709
Site Size (Acres): 1.04 (0.32 Disturbed)
Grading Plan #: 07-051
Inspector: J. Fretwell

Priority: Low
Wet Inspections: 7
Dry Inspections: 1
Total Inspections: 8
Start Date: 22 September 2008
End Date: 21 May 2009

Summary of Inspection Findings:
No issues. The project was completed during the reporting period.

Project Name: SFR (Livingston Residence)
Address: 491 Ocean View Dr.
Site ID#: 707
Site Size (Acres): 0.5 (0.5 Disturbed)
Grading Plan #: 07-027
Inspector: J. Fretwell

Priority: Low
Wet Inspections: 7
Dry Inspections: 2
Total Inspections: 9
Start Date: 22 September 2008
End Date: Ongoing

Summary of Inspection Findings:
The site was issued a correction notice for inadequate BMPs leading to sediment runoff. The project was reported idle and a stop work was issued during the reporting period.

Project Name: SFR (Heart Residence) **Address:** 495 Ocean View Dr. **Site ID#:** 706 **Site Size (Acres):** 0.35 (0.35 Disturbed) **Grading Plan #:** 06-045 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 2 **Total Inspections:** 9 **Start Date:** 22 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received a correction notice for sediment runoff. The property entered foreclosure and construction was idle at the end of the reporting period.
Project Name: SFD **Address:** 706 Hilo Way **Site ID#:** 705 **Site Size (Acres):** 0.50 (0.50 Disturbed) **Grading Plan #:** 07-053 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 0 **Total Inspections:** 7 **Start Date:** 28 May 2008 **End Date:** 27 April 2009	**Summary of Inspection Findings:** The site was issued a verbal warning for erosion and runoff. The project was completed during the reporting period.
Project Name: Palomar Unitarian Friendship **Address:** 1600 Buena Vista Dr. **Site ID#:** 719 **Site Size (Acres):** 1.89 (1.89 Disturbed) **Grading Plan #:** 06-008 **Inspector:** S. Rytell, J. Fretwell	**Priority:** Low **Wet Inspections:** 4 **Dry Inspections:** 2 **Total Inspections:** 6 **Start Date:** 19 January 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: Detached Garage **Address:** 960 Quails Trail **Site ID#:** 720 **Site Size (Acres):** 0.6 (0.6 Disturbed) **Grading Plan #:** 08-001 **Inspector:** S. Rytell	**Priority:** Low **Wet Inspections:** 4 **Dry Inspections:** 2 **Total Inspections:** 6 **Start Date:** 19 January 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No Issues. The project was 99% complete at the end of the reporting period.
Project Name: Vista Community Clinic **Address:** 134 Grapevine Rd. **Site ID#:** 711 **Site Size (Acres):** 0.50 (0.50 Disturbed) **Grading Plan #:** 08-007 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 2 **Total Inspections:** 9 **Start Date:** 22 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.

Project Name: SFD **Address:** 696 Hilo Way **Site ID#:** 687 **Site Size (Acres):** 0.33 (0.33 Disturbed) **Grading Plan #:** 06-043 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 3 **Total Inspections:** 3 **Start Date:** 17 April 2007 **End Date:** 28 September 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Tennis Courts (Brengle Terrace) **Address:** 1200 Vale Terrace Dr. **Site ID#:** 698 **Site Size (Acres):** 0.75 **Grading Plan #:** 08-015 **Inspector:** K. Groscup	**Priority:** Low **Wet Inspections:** 4 **Dry Inspections:** 2 **Total Inspections:** 6 **Start Date:** 01 August 2008 **End Date:** 20 October 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Medical Office Building **Address:** 169 Cedar Rd. **Site ID#:** 710 **Site Size (Acres):** 0.25 (0.25 Disturbed) **Grading Plan #:** 08-002 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 4 **Dry Inspections:** 0 **Total Inspections:** 4 **Start Date:** 22 September 2008 **End Date:** 29 January 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: SFR **Address:** 1000 Miramar Dr. **Site ID#:** 726 **Site Size (Acres):** 1.5 (1.0 Disturbed) **Grading Plan #:** 08-016 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 1 **Dry Inspections:** 2 **Total Inspections:** 3 **Start Date:** 20 April 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: SFD **Address:** 1306 Kelglen Ln. **Site ID#:** 728 **Site Size (Acres):** 0.25 (0.25 Disturbed) **Grading Plan #:** 07-045 **Inspector:** J. Fretwell, F. Durazo	**Priority:** Low **Wet Inspections:** 1 **Dry Inspections:** 2 **Total Inspections:** 3 **Start Date:** 20 April 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.

Project Name: Parking Lot **Address:** 1232 Tower Dr. **Site ID#:** 729 **Site Size (Acres):** 0.25 (0.25 Disturbed) **Grading Plan #:** 07-011 **Inspector:** F. Durazo	**Priority:** Low **Wet Inspections:** 1 **Dry Inspections:** 2 **Total Inspections:** 3 **Start Date:** 20 April 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: Samoan Church **Address:** 1175 Melrose Way **Site ID#:** 730 **Site Size (Acres):** N/A **Grading Plan #:** 08-018 **Inspector:** F. Durazo	**Priority:** Low **Wet Inspections:** 1 **Dry Inspections:** 2 **Total Inspections:** 3 **Start Date:** 20 April 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: Lutheran Church **Address:** 700 Bobier Dr. **Site ID#:** 731 **Site Size (Acres):** N/A **Grading Plan #:** 08-012 **Inspector:** F. Durazo	**Priority:** Low **Wet Inspections:** 1 **Dry Inspections:** 2 **Total Inspections:** 3 **Start Date:** 20 April 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: KSW Properties **Address:** 460 Olive Ave. **Site ID#:** 733 **Site Size (Acres):** 1.8 (1.8 Disturbed) **Grading Plan #:** 08-024 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 15 June 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: SFR **Address:** 690 Hilo Way **Site ID#:** 693 **Site Size (Acres):** 1.8 (1.8 Disturbed) **Grading Plan #:** 06-042, 03-026 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 17 April 2007 **End Date:** 03 July 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.

Project Name: Storm Drain **Address:** 130 Olive Ave. **Site ID#:** 701 **Site Size (Acres):** 1.0 (1.0 Disturbed) **Grading Plan #:** 07-043 **Inspector:** K. Groscup	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** Prior to FY09 **End Date:** 15 September 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: SFR **Address:** 436 Avalon Dr. **Site ID#:** 704 **Site Size (Acres):** 0.25 (0.25 Disturbed) **Grading Plan #:** 07-009 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 02 September 2008 **End Date:** 21 October 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Intersection **Address:** Emerald @ Grapevine **Site ID#:** 617 **Site Size (Acres):** 0.25 (0.25 Disturbed) **Grading Plan #:** CIP **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 07 March 2008 **End Date:** 31 July 2008	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.

APPENDIX B-2

Construction Inspections Summary Statistics

Appendix B-2
Construction Inspections Summary Statistics
FY 2008-09

Project	Address	Priority	Start Date	End Date	Wet Season			Dry Season			Total Inspections for FY 2009
					Active Weeks	Required Inspections	Stormwater Inspections	Active Months	Required Inspections	Stormwater Inspections	
14 homes- Willowen Ridge	2261 Edgehill Rd.	High	7/9/2007	10/27/2008 On Hold	5	3	28	3	2	5	33
56 Townhomes	719 Copper Dr.	High	4/20/2006	10/22/2008 On Hold	4	2	28	3	2	5	33
Industrial Bldg	760 Shadowridge Dr.	High	1/24/2008	10/7/2008	1	1	2	3	2	3	5
Pocina Properties (24 lot subdivion)	877 Sycamore Ave.	High	4/26/2007	10/6/08 Abandoned	1	1	1	3	2	4	5
Premier Crossing	2301 S. Melrose Dr.	High	10/9/2007	8/1/2008	0	0	0	2	1	2	2
Rough Grading for PC 2-043-9 lot subdivision	385 Taylor St.	High	2002	ongoing	30	15	28	5	3	5	33
Moonlight Amphitheater Stage House	1200 Vale Terrace	High	10/20/2008	ongoing	28	14	25	2	1	2	27
Commercial - Medical Office Bldg	1950 Via Centre	High	12/5/2005	ongoing	30	15	30	2	1	2	32
Fire Station # 5	2009 S. Melrose Dr.	High	10/17/2007	4/21/2009	25	13	25	0	0	0	25
4 Commercial Bldgs	2291 S. Melrose Dr.	High	1/19/2009	ongoing	14	7	14	2	1	2	16
North Coast Church	2405 N. Santa Fe	High	9/1/2008	ongoing	30	15	30	3	2	3	33
Verizon Wireless Switch Facility	2430 Business Park Dr.	High	7/1/2008	6/19/2009	29	15	29	3	2	5	34
Industrial Bldg	2633 Progress St.	High	5/18/2009	ongoing	0	0	0	1	1	1	1
Industrial Bldg	2710 Progress St.	High	3/9/2009	ongoing	8	4	8	2	1	2	10
Target Store	3150 Business Park Dr.	High	7/1/2008	ongoing	30	15	30	5	3	5	35
24 Hr. Fitness	342 Sycamore Ave.	High	9/17/2008	2/17/2009	18	9	18	0	0	0	18
Vista Sports Park	555 W. Bobier Dr.	High	2/9/2009	ongoing	12	6	12	2	1	2	14
Fire Station # 6	651 E. Vista Way	High	10/17/2008	4/21/2009	25	13	25	0	0	0	25
Vista Civic Center	Vista Civic Center	High	8/19/2008	ongoing	27	14	27	2	1	2	29
3 SFR	2346 Warmlands Ave.	Medium	4/12/2006	7/20/2009	0	0	0	3	2	3	3
SFR	536 Rudd Rd.	Medium	Prior to FY09	5/1/09 Permit Expired	4	1	7	3	2	3	10
Intersection	Vista Village Dr. & W. Vista Way	Medium	11/1/2008	12/15/2008	6	2	2	0	0	0	2
5 lot subdivision	2565 Oleander	Medium	Prior to 2007	2/17/2009	20	4	4	3	2	3	7
42 Condos	1375 Oak Dr.	Medium	9/1/2008	ongoing	30	7	7	3	2	3	10
Commercial - Oak Ridge Business Park	2410 Birch St.	Medium	1/26/2009	ongoing	14	4	4	2	1	2	6
Vista Café	315 Broadway	Medium	9/22/2008	ongoing	30	7	8	2	1	2	10
CIP 8143	Broadway Lighting & Sidewalk CIP	Medium	1/5/2009	2/24/2009	8	2	3	0	0	0	3

Appendix B-2
Construction Inspections Summary Statistics
FY 2008-09

Project	Address	Priority	Start Date	End Date	Wet Season			Dry Season			Total Inspections for FY 2009
					Active Weeks	Required Inspections	Stormwater Inspections	Active Months	Required Inspections	Stormwater Inspections	
SFR	1834 Knapp Dr.	Low	10/10/2006	1/20/2009	15	4	4	3	2	3	7
Intersection	Emerald/Grapevine	Low	3/7/2008	7/31/2008	0	0	0	1	1	1	1
SFD	696 Hilo Way	Low	4/17/2007	9/28/2008	0	0	0	3	2	3	3
SFR	690 Hilo Way	Low	4/17/2007	7/3/2008	0	0	0	1	1	1	1
SFR	1306 Kelglen Ln.	Low	4/20/2009	ongoing	2	1	1	2	1	2	3
Parking Lot	1232 Tower Dr.	Low	4/20/2009	ongoing	2	1	1	2	1	2	3
Samoan Church	1175 Melrose Way	Low	4/20/2009	ongoing	2	1	1	2	1	2	3
Faith Lutheran Church	700 Bobier Dr.	Low	4/20/2009	ongoing	2	1	1	2	1	2	3
SFR	216 Acropolis Way	Low	9/1/2008	ongoing	30	7	7	3	2	3	10
Palomar Unitarian Fellowship	1600 Buena Vista Dr.	Low	1/19/2009	ongoing	15	4	4	2	1	2	6
detached garage	960 Quails Trail	Low	1/19/2009	ongoing	15	4	4	2	1	2	6
BT Park Imp	1200 Vale Terrace	Low	8/1/2008	10/20/2008	3	1	4	2	1	2	6
Retaining walls	1045-A Alta Calle	Low	9/1/2008	ongoing	30	7	7	3	2	3	10
SFR	436 Avalon Dr.	Low	9/2/2008	10/21/2008	3	1	1	0	0	0	1
SFR	706 Hilo Way	Low	5/28/2008	4/27/2009	30	7	7	0	0	0	7
SFR	495 Ocean View Dr.	Low	9/22/2008	10/21/08 Foreclosure	3	1	7	0	0	2	9
SFR	491 Ocean View Dr.	Low	9/22/2008	ongoing	30	7	7	2	1	2	9
SFR	675 Vale View	Low	1/10/2005	10/29/08 On Hold	4	1	7	0	0	2	9
SFR	2320 Foothill Dr.	Low	9/22/2008	5/21/2009	30	7	7	1	1	1	8
Medical Office Bldg	169 Cedar Rd.	Low	9/22/2008	1/29/2009	17	4	4	0	0	0	4
Vista Community Clinic	134 Grapevine Rd.	Low	9/22/2008	ongoing	30	7	7	2	1	2	9
SFR	1000 Miramar Dr.	Low	4/20/2009	ongoing	2	1	1	2	1	2	3
SFR - remodel	561 Vale View	Low	4/20/2009	ongoing	2	1	1	2	1	2	3
Commercial - KWS Properties	460 Olive Ave.	Low	6/15/2009	ongoing	0	0	0	1	1	1	1

APPENDIX B-3

Construction Inspection Form

Appendix B-3

Municipal NPDES Stormwater Permit

PRIORITY: ____

Site ID: _____

CONSTRUCTION ACTIVITIES INSPECTION FORM

Project Name/Description: _____ APN: _____

Inspector: _____ Project Location: _____ Size of Site (acres): _____

Covered under Statewide General Construciton Permit? ☐ Check if YES If yes, is SWPPP on-site? ☐ Check if YES WDID: _____

Contact Person: _____ Contact Phone: _____ Emergency Phone: _____

Bldg. Permit No: _____ Grading Plan No: _____ Disturbed area (acres): _____

INSPECTION TYPE: ☐ Regular (Weekly/Monthly) ☐ Follow-Up ☐ Post-Rain Event

DATE OF INSPECTION _____ **% COMPLETE:** _____

Checking the boxes below means that the particular BMP is implemented-even if it is ineffective. If it is ineffective - note action and comments below.

PHASE: _____

Erosion Control BMPs: Is there evidence of erosion at the project site? YES ☐ No ☐

☐ Preserving Existing Vegetation ☐ Hydroseeding ☐ Soil Binders, Hydraulic Mulch ☐ Permanent Landscaping

☐ Geotextiles, Plastic Covers, Erosion Control Blankets/Mats ☐ Diversion Channel for Run-On ☐ Other Type: _____

Sediment Control BMPs: Is there evidence of offsite sediment or sediment discharge? YES ☐ No ☐

Perimeter Protection: ☐ N/A ☐ Gravel Bags ☐ Silt Fencing ☐ Fiber Rolls ☐ Other _____

Slope Protection: ☐ N/A ☐ Silt Fencing ☐ Fiber Rolls ☐ Slope Drains ☐ Other _____

Sediment Capture: ☐ N/A ☐ Detention Basin ☐ Desilting Basin ☐ Other _____

Velocity Reduction: ☐ N/A ☐ Check Dams ☐ Rip Rap ☐ Other _____

Off-Site Sediment Tracking: ☐ N/A ☐ Gravel Entrance ☐ Temporary Construction Road ☐ Other _____

Inlet Protection: ☐ N/A ☐ Gravel Bags ☐ Gravel Rolls ☐ Fiber Rolls ☐ Other _____

Other Type: _____

Materials Management BMPs: Are activities or storage of materials/wastes resulting in discharge offsite? [For example-paints, concrete, plastering] Yes ☐ No ☐

Spill Prevention and Control Program (employee education and training)

Fuel Chemicals Stored On-Site: ☐ N/A ☐ Secondary Containment ☐ Leak Detection ☐ Other _____

Equipment Related Wastes: ☐ N/A ☐ Covered ☐ Secondary Containment ☐ Other _____

Stockpile On-Site (Solids): ☐ N/A ☐ Covered ☐ Secondary Containment ☐ Other _____

Trash/Litter On-Site: ☐ N/A ☐ Receptacles Provided ☐ Covered ☐ Secondary Containment

☐ Other _____

Concrete Waste: ☐ N/A ☐ Designated Washout Area ☐ Secondary Containment ☐ Other _____

Sanitary Waste: ☐ N/A ☐ Secondary Containment ☐ Located away from inlets ☐ Other _____

Comments:

Enforcement Action: ☐ No Action ☐ Verbal Warning ☐ Correction Notice ☐ Stop Work ☐ Admin Cite ☐ NOV

Follow Up? ☐ Follow Up Date: _____

Signature _____ **Date:** _____

Version - June 2008

Supervisor Review: _____

APPENDIX C-1

Sewer Spill Report Log

Appendix C-1

FACILITY AT-A GLANCE REPORT

Here is your Customized Facility at-a Glance Report!

SEARCH CRITERIA:

Display Type Facility Name (**City of Vista CS**), Zip Code (**92084**), City (**Vista**), County (**San Diego**)

DRILLDOWN HISTORY:

PLACE ID: **631628**

General Information

Region	Place ID	Place Name	Place Type	Place Address	Place County
9	631628	City Of Vista CS	Collection_System	1165 East Taylor Vista, CA, 92084	San Diego

Related Parties

Total Related Parties:8

Regulatory Measures

Total Reg Measures:2

Violations

Violation ID	Occurred Date	Violation Type	(+) Violation Description	Status	Priority	Source
176117	03/20/2000	SSOS	Sanitary sewer overflow. 15,000 gallons spilled resulting in a discharge to Bue	Violation	N	Report
178599	06/20/2000	SSOS	4000 gal total, 3000 gal recovered. Recreational waters closed. See Region 9 SE	Violation	Y	Report
199286	11/16/2000	SSOS	750 gallon sanitary sewer overflow due to grease. 750 gallons recovered.	Violation	N	Report
199287	11/22/2000	SSOS	330 gallon sanitary sewer overflow due to roots. Entered storm drain. 200 gall	Violation	N	Report
199289	11/27/2000	SSOS	5 gallon sanitary sewer overflow due to roots and grease. 3 gallons recovered.	Violation	N	Report
199288	11/27/2000	SSOS	50 gallon sanitary sewer overflow due to roots and grease. No overflow recovere	Violation	N	Report
199290	12/06/2000	SSOS	3,000 gallon sanitary sewer overflow due to roots. Entered storm drain and Buen	Violation	N	Report
199291	02/15/2001	SSOS	50 gallon sanitary sewer overflow due to roots. Entered storm drain. No overfl	Violation	N	Report
199292	04/09/2001	SSOS	3 gallon sanitary sewer overflow due to vandalism. Entered storm drain and Buen	Violation	N	Report
227602	03/31/2003	SSOS	There were three SSOs during the Jan-Mar quarterly reporting period. All less t	Violation	N	Report
197532	04/23/2003	SSOS	A 30-gallon spill (25 recovered) occurred on 4/23/03. This spill was the only s	Violation	N	Report
242427	09/16/2003	SSOS	4,425-13,275 gal sanitary sewer overflow , 1,200 gal recovered. Entered storm d	Violation	N	Report
207974	02/26/2004	SSOS	7,400-gallon sewage spill.	Violation	N	Report
251803	04/29/2004	SSOS	1 SSO during the January- March 2004 reporting period. The City was issued a NOV	Violation	N	Report
251802	07/29/2004	SSOS	1 SSO during the April- June 2004 reporting period	Violation	N	Report
229347	01/09/2005	SSOS	21,000-gallon SSO at City's Raceway Pump Station caused by infiltration during h	Violation	N	Report
229348	01/11/2005	SSOS	2,300-gallon SSO at City's Raceway Pump Station caused by infiltration during he	Violation	N	Report
432607	09/08/2006	SSOS	The City of Vista (City) notified this office of a 6,000-gallon sanitary sewer o	Violation	N	SSO
463125	01/22/2007	SSOS	The City of Vista notified the Regional Board of a 2,925-gallon sanitary sewer	Violation	N	SSO
614313	04/02/2007	SSOS	Discharge of untreated sewage from Raceway Pump Station to	Violation	N	SSO

			mitigation area and A			
605869	04/02/2007	SSOS	The City of Vista had a 203,000-gallon sanitary sewer overflow (SSO) from its wa	Violation	N	SSO
614314	04/03/2007	SSOS	Discharge of untreated sewage from Raceway Pump Station to mitigation area and A	Violation	N	SSO
614316	04/06/2007	SSOS	Discharge of untreated sewage from Raceway Pump Station to mitigation area and A	Violation	N	SSO
804446	01/28/2009	SSOS	PRIVATE LATERAL SPILL	Dismissed	N	SSO
809233	02/26/2009	SSOS	ROOTS IN PRIVATE LATERAL CAUSED SPILL TO RUN ONTO CITY RIGHT-OF-WAY	Dismissed	N	SSO
809622	03/05/2009	SSOS	PRIVATE LATERAL SPILL	Dismissed	N	SSO
812009	03/23/2009	SSOS	PRIVATE LATERAL SPILL	Dismissed	N	SSO
816716	04/24/2009	SSOS	SPILL CAUSED BY CONTRACTOR WORKING FOR VISTA IRRIGATION DISTRICT. VISTA IRRIGAT	Potential	N	SSO
821005	05/18/2009	SSOS	PRIVATE LATERAL GREASE BLOCKAGE	Dismissed	N	SSO

Total Violations: 29 **Priority Violations: 1**

Violation Types
SSOS = Sanitary Sewer Overflow/Spill/

Enforcement Actions

Total Enf Actions:16

Inspections

Total Inspections:6 **Last Inspection:04/04/2007**

The current report was generated with data as of: Monday, July 20, 2009

APPENDIX C-2

Municipal Inventory

Appendix C-2
Municipal Inventory FY 2008-09

Name	Address	Description	Pollutant Generating Activities																	Potential Pollutants Generated											
			Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances	303(d)*	High Priority	Watershed
Avo Playhouse	303 Main St	Theater	X	X				X				X	X	X		X		X		X	X	X				X	X				BV
Breeze Hill Park	645 S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X			X	BV
Brengle Terrace Park	1200 Vale Terrace Dr.	Maintenance Yard and Park	X	X				X			X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X		X	BV
Bub Williamson Park	530 Grapevine Rd	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	BV
Buena Vista Park	1851 S. Melrose Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X		X	AH
Chamber of Commerce	201 Indiana	Administrative Building	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
City Hall	600 Eucalyptus	City Hall	X	X								X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Community Center	1150 Lupine Hills	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Fire Station #1	175 Melrose Dr	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Fire Station #2	1050 Valley Drive	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Fire Station #3	1070 Old Taylor St.	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			SLR
Fire Station #4	2121 Thibodo	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Gloria McClellan Senior Center	1400 Vale Terrace Dr.	Senior Center and Parking lot	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
La Mirada Canyon	1219 Park Center	Open Space	X	X								X	X	X				X		X	X	X		X			X	X			AH
Library	700 Eucalyptus	Library	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Lifeline - North County	200 Michigan Ave.	Community Services	X											?											X						BV
Moonlight Amphitheater	1200 Vale Terrace	Amphitheater	X	X				X				X	X	X		X		X		X	X	X		X		X	X			X	BV
Parking Lot	E. Broadway - Hanes Pl.	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	Main St / S. Indiana Ave. S/E corner	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	Main St - Michigan Ave.	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	523 S. Santa Fe	Parking Lot	X											X						X	X	X	X	X	X	X				X	BV
Parking Lot	300 blk Main St	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Park-N-Ride	W. Vista Way @ S. Emerald	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Police Sub-Station	1477 Moon Rd	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Police Sub-Station	2082 Thibodo	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Police Sub-Station	340 E. Townsite	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Publc Works Yard	1165 E. Taylor Street	Corporate Yard	X	X	X	X	X	X	X		X	X	X	X				X		X	X	X	X		X	X	X	X		X	BV
PW Satellite Yard	2430 Lupine Hills Dr.	Storage and Corporate Yard	X	X				X	X		X	X	X	X						X	X	X	X	X	X	X	X	X		X	AH
PW Auxillary / HHW	1145 E. Taylor St	Household Haz Waste Collection Ctr	X	X				X	X	X		X		X				X		X	X	X	X		X	X	X	X		X	BV
PW Yard / Inactive WWTP	2525 Lupine Hills	Buena Station 52 & Corporate Yard																												X	AH
Raintree Park	545 Townsite Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	BV
Rancho Buena Vista Adobe	640 Alta Vista	Attraction	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Rancho Buena Vista Park	1851 S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH
Senior Center	Vista Village @ Michigan	Senior Center and old Railroad Station bldg	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Sewer Pump Station	2685 S. Melrose Dr.	Wastewater - Raceway Pump Station	X	X								X		X														X		X	AH
Sewer Pump Station	2080 S. Melrose Dr.	Buena Pump Station	X	X								X		X														X		X	AH
Shadowridge Park	2101 Lupine Hills	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH
Tennis Courts	1200 Vale Terrace	Tennis courts										X		X				X													BV
The Wave	101 Wave Dr.	Waterpark	X	X				X	X			X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	BV
Thibodo Park	1150 Lupine Hills Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH
Townsite Community Center	642 Vista Village Dr.	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Townsite Park	340 E.Townsite Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X		X	BV

Appendix C-2
Municipal Inventory FY 2008-09

Name	Address	Description	Pollutant Generating Activities																		Potential Pollutants Generated												
			Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances	303(d)*	High Priority	Watershed
Vista Village Walk	Vista Village Dr / Michigan Ave.	Green Belt Walkway																															BV
Wildwood Park	651 E. Vista Way	Park	X	X								X	X	X		X		X		X	X	X		X			X	X		X	BV
Brengle Terrace Basin	1100 Vale Terrace Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Cypress Basin	Monte Vista Dr. & Cypress Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Monte Vista Basin	Monte Vista Dr. & Valley Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Creekwalk / BV channel	Main St. & Wave Dr.	Flood control channel																	X	x	X	X	X	X	X	X	X	X		X	BV
Field Activities																																	
Road and Street Maintenance	Varies														X															X	
Plaza and Sidewalk Cleaning	Varies															X														X	
Landscape Maintenance	Varies																	X													
Waste Handling and Disposal	Varies											X								X	X	X	X	X	X	X	X	X			
MS4 Maintenance	Varies		See Section 6																	See Section 6											
Wastewater Utility Maintenance	Varies		See Section 6																	See Section 6											

APPENDIX C-3

Municipal Inspections Summary

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	In-door theater is enclosed and surrounded by concrete pavement. No outside storage. Area is free of trash and debris.The sidewalk and plaza is cleaned utilizing a small sweeper. The unit was reclaiming discharge water-no run-off was visible.	Enforcement Action:	None
Inspection Date:	1/20/2009			
Facility Name:	Avo Playhouse/Plaza and Sidewalk Cleaning		Corrective Actions Required:	No
Address:	303 Main St			
			Corrective Action Description:	
Contact:	Alex Scollon, Theater Manager			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park is well maintained, no visible trash or debris.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Breeze Hill Park		Corrective Actions Required:	No
Address:	645 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	City of Vista's larger park is well maintained. It is frequented by all ages throughout the day and evening. No visible trash. Parking stalls clean. Parks maintenance yard is organized and clean.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Brengle Terrace Park & Maintenance Yard		Corrective Actions Required:	No
Address:	1200 Vale Terrace			
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park clean and free of trash and debris. Area is well maintained.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Bub Williamson Park		Corrective Actions Required:	No
Address:				
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park has a 'duck' pond. Area is continually serviced and is well maintained. Doggie bags are provided. Maintenance Yard is organized; storage lockers are labeled, portable toilets have secondary containment.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Buena Vista Park and Maint Yard		Corrective Actions Required:	No
Address:	1851 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Moonlight Amphitheater is well maintained.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Moonligh Amphitheater		Corrective Actions Required:	No
Address:	1200 Vale Terrance			
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	1/13/2009			
Facility Name:	parking lot		Corrective Actions Required:	No
Address:	E. Broadway @ Hanes Pl			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	1/13/2009			
Facility Name:	parking lot		Corrective Actions Required:	No
Address:	Main St & Michigan Ave			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Lot is maintained. No visible trash or debris.	Enforcement Action:	None
Inspection Date:	1/13/2009			
Facility Name:	parking lot		Corrective Actions Required:	No
Address:	Maint St @ S. Indiana s/e corner			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This public parking lot is frequented by a hotel to the south. It has no landscaping. The area is maintained and no visible trash and debris.	Enforcement Action:	None
Inspection Date:	1/13/2009			
Facility Name:	parking lot		Corrective Actions Required:	No
Address:	523 S. Santa Fe Ave			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	1/13/2009			
Facility Name:	parking lot		Corrective Actions Required:	No
Address:	300 Blk Main St			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This is a public parking lot used for 'park and ride'. It was recently assigned to Public Services for maintenance.	Enforcement Action:	Verbal
Inspection Date:	1/14/2009			
Facility Name:	park and ride lot		Corrective Actions Required:	Yes
Address:	W. Vista Way @ Emerald			
			Corrective Action Description:	
			Area collecting trash-remove and maintain.	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sandra Sotola		Follow Up Inspection Date:	2/2/2009
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	The Satelite Yard is unmanned and used primarily as a storage facility for large Public Services items; light poles, K-rails, concrete manhole elevation rings etc. Area (upper and lower yards) is organized and dynamic. Large tank is empty and stored for future use.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Public Services Satelite Yard		Corrective Actions Required:	No
Address:	2430 Lupine Hills Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	The Public Services Yard is overall organized and clean. Haz Mat properly labeled and spill kits readily available throughout the site. Materials are covered and secure.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Public Services Yard		Corrective Actions Required:	No
Address:	1165 E. Taylor St			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This facility is maintained by Clean Harbors Environmental Services and is under the supervision of Public Services Dept. Clean Harbors maintains a high level of cleanliness. The area is well maintained, organized and efficient in the small space allocated for the reclamation process. They follow an efficient plan to accept, catorgorize, then dispose of household hazardous waste.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Public Services Household Haz Waste		Corrective Actions Required:	No
Address:	1145 E. Taylor St			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park is clean and well maintained. Leaves are removed daily and dog bags are provided.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Rain Tree Park		Corrective Actions Required:	No
Address:	545 Townsite Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park is well used with continual activity. It is well maintained, clean and no visible trash, debris etc.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Rancho Buena Vista Park		Corrective Actions Required:	No
Address:	1851 S. Melrose Dr			
			Corrective Action Description:	
			Water times were reduced.	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park is clean and well maintained. Leaves are removed daily and dog bags are provided.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Shadowridge Park		Corrective Actions Required:	No
Address:	2101 Lupine Hills			
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Thibodo Park has a tennis court and meeting room w/parking stalls. Area is utilized regularly and is clean and well maintained. Dog bags are provided.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Thibodo Park		Corrective Actions Required:	No
Address:	1150 Lupine Hills Dr			
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Dog bags are available. Park is well maintained.	Enforcement Action:	None
Inspection Date:	1/14/2009			
Facility Name:	Townsite Park-Luz Duran		Corrective Actions Required:	No
Address:	340 E. Townsite Dr			
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This is a seasonal water park. SWPPP is on site and followed. Drain inlet in service yard congested with debris. Minor spills of soda pop like fluid in service yard. The overall park is well maintained, no visible trash and debris.	Enforcement Action:	Verbal
Inspection Date:	1/21/2009			
Facility Name:	The Wave Waterpark		Corrective Actions Required:	Yes
Address:	101 Wave Dr			
			Corrective Action Description:	
			Remove grate and clean drain inlet, remove spill stains.	
Contact:	Natalie Livingston			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sandra Sotola		Follow Up Inspection Date:	1/22/2009
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Park is clean and well maintained. Dog bags provided. There is adequate waste containers.	Enforcement Action:	None
Inspection Date:	1/13/2009			
Facility Name:	Wildwood Park		Corrective Actions Required:	No
Address:	651 E. Vista Way			
			Corrective Action Description:	
Contact:	Bill Fortmueller, Director of Parks			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	sediment in brow ditches	Enforcement Action:	Verbal
Inspection Date:	5/7/2009			
Facility Name:	Cypress Detention Basin		Corrective Actions Required:	Yes
Address:	Monte Vista Dr and Cypress Dr			
			Corrective Action Description:	
			remove sediment from brow ditches	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Doug Coppi		Follow Up Inspection Date:	7/20/2009
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Basin clean, no actions necessary.	Enforcement Action:	None
Inspection Date:	5/7/2009			
Facility Name:	Monte Vista Detention Basin		Corrective Actions Required:	No
Address:	Monte Vista Dr and Valley Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Doug Coppi		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Basin clean, no actions necessary.	Enforcement Action:	None
Inspection Date:	5/7/2009			
Facility Name:	Brengle Terrace Detention Basin		Corrective Actions Required:	No
Address:	1100 Vale Terrace			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Doug Coppi		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This channel area is utilized for flood control and recreational walking.	Enforcement Action:	None
Inspection Date:	5/7/2009			
Facility Name:	Creek Walk/Buena Vista Channel		Corrective Actions Required:	No
Address:	Main St and Wave Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Doug Coppi		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Sidewalk/curb area required repair and replacement. City crews implemted perimeter protection to avoid run off of concrete at location. No residual was visible after repair/replacement.	Enforcement Action:	None
Inspection Date:	10/23/2008			
Facility Name:	city sidewalk/curb repair		Corrective Actions Required:	No
Address:	942 Ruby Lane			
			Corrective Action Description:	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This yard is utilized by Storm Drain Maintenance and Waste Water Crews	Enforcement Action:	Verbal
Inspection Date:	1/14/2009			
Facility Name:	PS Yard-Buena Yard		Corrective Actions Required:	yes
Address:	2525 Lupine Hills Dr			
			Corrective Action Description:	
			provide spill kit in accessible area.	
Contact:	Craig Trammell, Pub Ser Operation Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	yes
Inspector:	Sandra Sotola		Follow Up Inspection Date:	1/25/2009
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Pump station is unmanned. The area within and without is very clean and well maintained.	Enforcement Action:	None
Inspection Date:	1/16/2009			
Facility Name:	Buena Pump Station		Corrective Actions Required:	No
Address:	2080 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Eugene Casada - EWA rep			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
Municipal Inspections Summary Table FY 2008-09

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Pump station is unmanned. The area within and without is very clean and well maintained.	Enforcement Action:	None
Inspection Date:	1/16/2009			
Facility Name:	Raceway Pump Station		Corrective Actions Required:	No
Address:	2685 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Eugene Casada - EWA rep			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

APPENDIX C-4

Special Events – BMP Packets, Application and Inspection Form

APPLICATION FOR SPECIAL EVENTS PERMIT
General Information and Instructions

The following general information is provided to assist you in planning your special event. Periodically the City is host to special events. In general, Special Event Permits are required for events held on public property. Special Event Permit applications must be filed with the City Manager's office at least 10 days in advance of the planned event.

The Administrative Services Department has been designated by the City Manager to coordinate the review of applications for those events that require the temporary closure of City streets. A Special Event Permit through this process is required if street closure(s) or other traffic control measures on any public street, sidewalk or alley are needed. Event organizers complete a permit application then meet with a Council appointed committee. This committee typically includes the Administrative Services Director, Parks & Community Services Director, Deputy Fire Chief, Transportation Operations Manager, Public Works Operations Manager, City Planner, Code Compliance Manager, Director of Economic Development, Storm Water Program Manager, Sheriff's Captain, and a representative from the North County Transit District. If you have questions or need more specific information, please contact the Administrative Services Department at (760) 726-1340 x1407.

1. **INTERESTED PARTY NOTICES:**
   The Special Events Committee takes the opinions and concerns of the individuals affected by an event very seriously. To assure that all interested parties (this includes residents and businesses in the special event area) have the opportunity to express those concerns, applicants are required to notify those that may be affected.

2. **ACCESSIBILITY PLAN:**
   As an event organizer, you are required to comply with all City, County, State and Federal Disability Access Requirements applicable to your event. Information concerning access requirements will be made available during the special event permit review process.

   All temporary venues, related structures, and outdoor sites for special events shall be accessible to persons with disabilities. If a portion of the area cannot be made accessible, an alternate area must be provided with the same activities that are in the inaccessible areas. It cannot, however, be offered only to patrons with disabilities.

Disability access may include parking, rest rooms, telephones, clear paths of travel, transportation, signage, accessible vendors and booths. If all areas are not accessible, a map or program must be provided to attendees indicating the accessible rest rooms, parking, telephones, drinking fountains, etc.

3. **ALCOHOL:**
   If alcohol is present at the event, a permit from the California Department of Alcoholic Beverage Control is required. For more information, call (760) 471-4237.

4. **SECURITY:**
   As an event organizer, you are required to provide a safe and secure environment for your event. This is accomplished through sound preplanning by anticipating potential problems and concerns related to the event activities and surrounding environment. The size, type, time of day and location of your event, as well as the overall activities are all areas that need to be analyzed in-depth and addressed through your security plan. If you plan on serving alcohol, your event will need security personnel. These personnel must be visible as security, be able to communicate between each other and with law enforcement, and be on site at all times the event is in progress.

5. **EMERGENCY MEDICAL REQUIREMENTS:**
   If your event poses potential risk of injury to persons, you may be required to hire an on -site emergency medical technician and/or ambulance service.

6. **INSURANCE:**
   The City of Vista requires a minimum of one million dollars in liability coverage. Events with higher risk levels will require additional insurance coverage as required by the City Manager. These include, but are not limited to, athletic events, those that include alcohol, and those with pyrotechnics. Before final permit approval, you will need to submit a certificate of insurance and endorsement to your commercial general liability insurance policy that names as Additional Insured, the “City of Vista, its officers, employees, and agents.” The name of the insured on the certificate/endorsement you submit must match the name of the host organization. Insurance coverage must be maintained for the duration of the event including setup and dismantle dates.

7. **SANITATION, TRASH AND DEBRIS:**
   As an event organizer, you must provide trash receptacles and provide for proper disposal of waste and garbage throughout the term of your event. Immediately upon conclusion of the event the area must be returned to a clean condition within four (4) hours. A cleaning deposit may be required and will be returned to you after your event provided the event area is left clean and there is no damage to public property within the event area. Street sweeping may be required as part of this clean up. Should the cost to repair the damage exceed the deposit

amount, you will be billed for the cost of repair/clean up. In addition, failure to reimburse the City for costs to repair any damage may result in denial of future special event permits.

8. BUSINESS LICENCE:

If an event includes vendors, each vendor should be in possession of a City of Vista Business License. Vendors participating in certain qualifying events may be relieved of this obligation. In such case, the event organizer must provide a complete Vendor List form (Attachment B) of anticipated vendors to City staff at least five (5) days prior to the event. Whenever possible, the vendor list and payment should be provided and approved prior to the special event permit committee meeting.

The vendor list and payment must be submitted at least five (5) days prior to the commencement of the qualified special event per Vista Municipal Code (VMC) §.12.12.040C. However, if the qualified special event involves the use of pyrotechnics or involves the closure or partial closure of an arterial or collector street, as provided in VMC § 12.12.040B, the vendor list and payment must be submitted at least ten (10) day prior to the commencement of the event.

9. STORM WATER PROTECTION:

The City has an intricate storm drain system designed to move rainwater from the streets to creeks, lagoons and the ocean in order to prevent flooding. Any materials left or disposed of on streets and sidewalks can reach the storm drain system, which flow untreated to our waterways, threatening our natural resources. VMC § 13.18 prohibits the discharge of wash water, cleaning water, trash, debris and other pollutants to the storm drain system. Storm Water Best Management Practices are included with the application materials and should be reviewed prior to completing the Special Event Permit Application. Please contact the City's Storm Water Protection Program at (760) 726-1340 ext. 1375 for specific information and assistance with your event planning.

10. REIMBURSEMENT OF COSTS INCURRED:

Certain costs incurred by the City of Vista related to a Special Event Permit may be invoiced for reimbursement. These costs include, but are not limited to, staff time for street closures, stormwater inspection, vehicle rental, and fire inspection fees. For an estimate of costs related to your event, please contact the City Manager's office at (760) 639-6131.

CITY OF VISTA SPECIAL EVENT PERMIT
Storm Water Best Management Practices

Periodically the City of Vista (City) is host to special events, including parades, car shows, and street fairs. Due to the types of activities at special events, and that they typically have a high density of people per square foot, the potential for pollutant generation increases. Therefore, the City's Storm Water Program requires all event organizers, staff and vendors to install, implement and maintain minimum Best Management Practices (BMPs) for all special events.

BMPs are practices designed to prevent or reduce the discharge of pollutants to the Municipal Separate Storm Sewer System (MS4) to the Maximum Extent Practicable (MEP). The MS4 or drainage system includes storm drains, streets, and gutters and serves the purpose of carrying rainwater away from developed areas to receiving waters (creeks, rivers, lakes, lagoons, and oceans) to prevent flooding. .As rainwater flows through the drainage system it can pick up pollutants and deposit them into our local creeks. Unlike the sanitary sewer system, urban runoff does not get treated. Polluted runoff is known to cause water quality degradation and affect the health and habitats of fish, wildlife, and humans. Thus, pollution prevention is of utmost importance.

Sources of water pollution like industrial waters from factories have been greatly reduced in recent years. However, now the majority of water pollution occurs from things like cars leaking oil or fluids, fertilizers from farms, lawns and gardens, pet waste, sediment (soil and dirt) discharges, residential car washing, and failing septic tanks or sanitary sewer lines. Discharges from these sources can enter the the City's MS4 and receiving waters.. All of these and other sources add up to a pollution problem; so, we must all do our part to implement and practice good BMPs. The City of Vista and other north county cities educate their communities on pollution prevention by promoting the phrase, "Only Rain in the Storm Drain".

The pollutant generating activities and their potential pollutant types at special events typically include:

- Setup and teardown of equipment booths – illicit discharges, trash generation, and organic materials
- Booth operation – trash generation, illicit discharges
- Food/drink preparation and consumption – trash generation, illicit discharges, and organic materials
- Vehicles, equipment and hydraulic rides – oil, grease, and other fluids
- Portable restrooms – chemicals and bacteria

Best Management Practices

The following BMPs represent the minimum requirements for special events that are expected to generate significant pollutants. The City may improve or modify these BMPs at any time if it is determined to provide equal or greater protection.

All event hosts/organizers, staff and vendors must comply with the following required storm water

BMPs. Event organizers must train event staff and vendors of the storm water BMPs that follow:

Storm Drain Protection:

a. Event hosts/organizers must identify all storm drain inlets and catch basins (both on private property and on City streets/right of way) on the permit application site map.

b. If inlets are in the event area, organizers and the City must consider using appropriate inlet protection such as gravel bag barriers, sandbag barriers, curb/inlet guards, inlet filters, inlet screens, absorbent roll or sock barriers, etc.

c. All impacted private property inlets or catch basins identified on the special events site plan must be visually inspected and cleaned, if necessary, following the special event and prior to an anticipated rain event (40 percent chance or greater of rain in the forecast).

Craft/Art Creative Areas and Post Event Public Art Removal:

a. All craft/art creative areas must secure, cover and label all liquid and chemical products. Additionally, they must have a spill kit in or adjacent to their work area, clearly labeled and accessible.

Spill kit materials may include: drip pans, absorbent pillows, rolls, socks and/or sand for containment of spills; paper towels, cloth towels, absorbent pads, a mop and mop bucket, professional dry absorbent and/or kitty litter to absorb spills; and a shovel, broom, dust pan, and/or a dry/wet vacuum, and disposal bags with ties to pick up and dispose of the absorbed spilled material.

Most of the spill kit items can be contained in a large container like a covered drum or sturdy garbage can, large buckets, or a mobile spill cart. Examples of spill kits and the items they include can be seen online at www.spill911.com, www.dewginc.com, and www.spill-kit.com. You can also type the key words “spill kits” on a search engine and you will find many other websites with companies that provide spill kits.

b. Post event clean-up of these areas includes removal of temporary public art (chalk, paint, charcoal, clay, etc). Event staff and vendors may use wet-mops, with proper disposal of any bucket water into the sanitary sewer (for example, through a sink), or released over a landscaped area that has adequate capacity to contain the liquids and the pollutant without allowing discharge onto sidewalks, curbs, gutters streets and drains. Power washing may occur if all wash water is contained, removed and properly disposed.

Trash and Debris:

a. Adequate trash containers with covers must be provided throughout the event venue, including at the exit and entry points. Monitoring trash containers and regular collection of renegade trash and debris is required throughout the event.

b. Temporary Fencing may be required to be put into place if the event, or any portion thereof, is determined to pose a threat of wind blown debris into any water bodies.

c. Immediately upon conclusion of the event, all trash, debris and other pollutants must be removed from the event area including any streets and sidewalks. Post event sweeping of the entire venue area (improved streets and parking facilities) may be required.

Food and Beverage, and all chemical and liquid activities or products:

Event hosts/organizers and vendors must secure, cover and label all chemical and liquid products. Additionally, they must have a spill kit in or adjacent to their work area, clearly labeled and accessible. For examples of what materials may be included in spill kits, see the Craft/Art Creative Areas section above.

All spilled materials must be picked up out of the public right of way once the spilled material is absorbed off the ground. Spills leaving the event venue area into the surrounding streets must be captured and prevented from entering the storm drains and surrounding non-event areas.

Vehicles, Equipment and Hydraulic Rides:

Event hosts/organizers and vendors must secure, cover and label all chemical and liquid products. Additionally, they must have a spill kit in or adjacent to their work area, clearly labeled and accessible. For examples of what materials may be included in spill kits, see the Craft/Art Creative Areas section above.

All spilled materials must be picked up out of the public right of way once the spilled material is absorbed off the ground. Spills leaving the event venue area into the surrounding streets must be captured and prevented from entering storm drains and the surrounding non-event areas. If a spill can not be contained and controlled, immediately notify the Fire Department Dispatch Center at 858-756-3006.

Portable Restrooms:

a. All portable restrooms must be identified on the site map and placed away from all storm drain inlets, drainage swales, water bodies, and any other locations that have the potential to impact the storm drain system.

b. All portable restrooms are required to have a secondary containment pan. Additional BMPs (i.e. sand bag perimeter barrier, absorbent roll perimeter barrier, etc.) may be necessary around the restrooms to contain possible spills. .

c. Where possible, portable restrooms should be placed on pervious surfaces.

d. The contact information for the company responsible for the restrooms must be clearly marked on or around the restrooms.

APPLICATION FOR SPECIAL EVENTS PERMIT

City of Vista, 600 Eucalyptus Avenue, Vista, CA 92084
(760) 726-1340 x1407; (760) 639-6132 fax

1. Event Type ☐ Street Event ☐ Block Party ☐ Creekwalk Event ☐ Parade
☐ *Vendor Business License Exemption Request* ☐ Park Event

2. Event Description & Purpose _____

_____

3. Location Requested _____ City Facility? ☐ Yes ☐ No

4. Site Map
A site map is required on all Special Events. The site map must identify the boundaries of the event, street closures and the location of storage areas, catch basins, storm drain inlets and portable restrooms. Feel free to use as many pages as necessary.
Is a site map attached? ☐ Yes ☐ No

5. Event Schedule

Days (Mon, Tues, etc.)	Date	Arrival Time	Event Begins	Event Ends	Departure Time

6. Event Sponsor _____ ( ) _____
Name Phone

7. Sponsor Type ☐Commercial Entity ☐tax-exempt, non-profit 501(c)(3) (attach certification)

☐ Other_____

8. Contact Information

Sponsor Address _____

Contact Name _____ Daytime Phone Number ( ) _____
Fax Number ( ) _____
Email Address _____ Alternate Phone Number ( ) _____

9. Estimated Attendance

Participants: _____ Spectators: _____ Vehicles: _____ Total: _____

Percentage of Vista Residents? _____ Age Range: _____

10. Temporary Street Closures

Are temporary street closures necessary? ☐ Yes ☐ No If Yes, you must include information on the application site map clearly showing route, assembly area, parking areas, barricades and other pertinent information. A "clear path of travel (16 feet)" must be available throughout the event venue. *(Note: If any temporary road closures are required for this event, the closures and accompanying traffic control will be conducted by City of Vista staff. Fees incurred by the City will be reimbursed by the Event Sponsor. Please contact the Risk Management office for current rates and cost estimates.)*

Names of streets to be closed, add more sheets if necessary:

_____ between _____ and _____

_____ between _____ and _____

_____ between _____ and _____

_____ between _____ and _____

Parking will be available at the following locations: _____

_____

11. Have the affected businesses been notified? ☐ Yes ☐ No (A signature list must be submitted prior to the event.)

12. Sound/Electricity Requirements

A) Will there be amplified sound? ☐ Yes ☐ No
If Yes, please describe: ☐ Live Band ☐ DJ ☐ Other, please describe _____

Proposed Start Time: _____ End Time: _____

B) How will power be supplied? _____

13. Sanitation, Trash and Debris

A) Will restrooms be provided at the event? ☐ Yes ☐ No
Number of ADA accessible restrooms: _____ Total number of restrooms: _____

B) If restrooms are being provided, will they be portable restrooms? ☐ Yes ☐ No
If yes, secondary containment pans are required and restrooms must be placed away from storm drains.

C) Will trash receptacles be provided? ☐ Yes ☐ No Total number provided: _____

D) Will event staff be assigned to monitor trash containers and to collect renegade trash and debris throughout event? ☐ Yes ☐ No Total number of staff. _____

E) Will there be post-event street sweeping? ☐ Yes ☐ No

14. Signage (Municipal code 18.52.020 outlines minimum signs standards)

What sort of signage is proposed for the event? _____

Where are the proposed sign locations? _____

15. Safety

A) First Aid
What arrangements have been made for first aid or emergency medical services? _____

_____

B) Security (Any event that includes alcohol must have security onsite and ABC licensing)

Description of proposed security arrangements: _____

Security company name: _____ Contact Person: _____

Contact information: _____

16. Equipment

A) Type of equipment (chairs, tables, vehicles, canopies, PA system etc) planned for this event:

_____

B) Number of tents and/or canopies _____ Size of canopies _____
Please note that tents/canopies larger than 20' X 20' will require a fire permit.

C) City-owned equipment requested for this event. (Fees may be incurred): _____

_____

17. Food/Beverage

A) Food
Will there be cooking or warming of food or any other open flame devices? ☐ Yes ☐ No
Will the event include food concession and/or preparation areas? ☐ Yes ☐ No
If yes, Section 17 Vendors must be completed with accompanying documentation

B) Beverages
Will alcoholic beverages be served? ☐ Yes ☐ No Type: _____
(Note: If alcohol is present at the event, a permit from the California Department of Alcoholic Beverage Control is required. For more information call 760-471-4237)

18. Vendor Information

Does Event Organizer maintain a current City of Vista Business License? ☐ Yes ☐ No
License Number: _____
Will items (including food and beverages) or services be sold at your event? ☐ Yes ☐ No
If yes, please indicate number of vendors planned: _____
Has a Vendor List for Special Event Business License exemption been attached? ☐ Yes ☐ No
Anticipated date of submission (must be 10 days prior to event): _____
Will items or services sold at your event present unique liability issues (e.g., body piercing, massage, animal rides, etc.?) ☐ Yes ☐ No If yes, please explain: _____

19. Fees

Will fees be charged? ☐ Yes ☐ No
☐ Entrance $_____ ☐ Vendor $_____ ☐ Other $_____

20. Insurance Information

Name of insurance company: _____

Policy Number: _____ Copy Attached ☐ Yes ☐ No

City of Vista Named as Additional Insured? ☐ Yes ☐ No Endorsement? ☐ Yes ☐ No

21. Storm Water Protection

Have you reviewed the Storm Water Best Management Practices (BMPs) information?
☐ Yes ☐ No You are required to comply with storm water BMPs and must train event staff and vendors of their required BMPs. How will you train them?_____
_____
_____

Please contact the City's Storm Water Protection Program at (760) 726-1340 Ext. 1375 if you have any questions regarding the required storm water BMPs.

BMPs must be effectively implemented to prevent the runoff of any pollutant into the storm drain system. What BMPs will be implemented at your event?

Check the appropriate boxes and describe any other BMPs in the empty boxes.

Describe BMPs	Yes	No	N/A
Spill Kit(s) If yes, how many?_____			
Secure, cover and label all chemical and liquid products.			
Storm Drain Protection (i.e. gravel bag barriers, sandbag barriers, curb/inlet guards, inlet filters, inlet screens, absorbent roll or sock barriers, etc.)			
Temporary Fencing to prevent wind blown debris going into water bodies			
Other BMPs: (list)			

(Note: An event may require an inspection from City Stormwater staff. Fees incurred by the City will be reimbursed by the Event Sponsor. Please contact the Risk Management office for current rates and cost estimates.)

Based upon your event site plan and components, Vista Fire Department & the Vista Building Department may require an inspection of your venue at your cost before and/ or during the event. Generally the use of a barbecue, bleachers, food preparation, heating devices, inflatable/hot air balloons, open flame, tent/canopy, or vehicles indoors will require a Fire Department inspection with an approximate charge of $127.00.

Please initial the following:

- **The applicant agrees, within four (4) hours of the event, to remove all trash, debris, and other pollutants from the event area, including any streets and sidewalks. _____**
- **The applicant agrees to carry the permit during the event and show it upon demand to the City's representatives. _____**

To the maximum extent permitted by law, the permit holder shall indemnify and hold harmless the City of Vista, its officers, agents and employees, from any and all claims, causes of action, penalties, losses, expenses (including reasonable attorney's fees) and any other liability for injuries or damage to persons or property which relate to the special event (collectively "losses"), including, without limitation, losses attributable or caused by those attending the special event, resulting from the manner in which the street event is conducted or which were caused by the omissions or authorized acts of the Permittee's officers, agents or employees. If City property is destroyed or damaged by reasons of Permittee's use, event or activity, the Permittee shall reimburse the City for the actual replacement or repair cost of the destroyed property.

The indemnity protections provided herein are not intended to exceed the indemnity available under applicable law. If the indemnity protections are found by a court to be unlawful in any way, the protection shall be curtailed or adjusted but only to the minimum extent required to conform to applicable law. All requirements for insurance on the part of Permitee are in supplementation of this indemnity and shall not limit or excuse Permitee's indemnification obligations. Notwithstanding the foregoing, Permittee shall have no obligation to indemnify City for losses resulting from City's sole negligence or willful misconduct.

_____ _____

Signature of Person Responsible Date

For Storm Water Staff Use Only

☐ Reviewed Application and Site Map	☐ No Further Action Required	☐ Communication/Meeting with Organizer Required	☐ Pre/Post-Event Inspections Required

SUPPLEMENTAL PARADE INFORMATION

(To be submitted with Special Events Permit Application)

Name: _____ Name of Event: _____

1. Is parade to be conducted for, on behalf of or by an organization? ☐ YES ☐ NO
   If yes, complete below, if no, go to #2
   a. Name of organization: _____

      Address of organization: _____

      Authorized and responsible Official(s): _____

2. If the parade is designated to be held by, on behalf of or for any person or organization other than the applicant, the applicant for such permit shall file with the Director of Community Services a written communication from the person or organization other than the applicant, proposing to hold the parade, authorizing the applicant to apply for the permit on behalf of such person or organization.
3. Parade Chairperson:
   Name: _____ Address: _____

   Phone number: _____ Alternate number: _____

4. Parade Participants:
   Number of People: _____ Number of Animals: _____ Type: _____

   Number of vehicles: _____ Description: _____

   Other elements: _____

5. Time of assembly: _____ am / pm Length of parade: _____ Interval between units: _____
6. Will parade occupy all or only a portion of the width of the streets proposed? ALL PORTION
7. Give location by streets:
   a. Assembly area: _____

   b. Dispersal area: _____

   c. Parking area: _____

   d. Parade route: _____
      (attach a diagram of route to be followed, clearly marking starting and termination points. Also include the barricade locations)

I agree to compensate the City for any damage to public property and:

a. that the site shall be cleaned and restored to the condition found prior to the holding of the special event within the time frame specified on my permit application or:

b. I shall agree to deposit cash in an amount sufficient to guarantee the cleaning up of the site and the removal of any debris left as a result of my holding of a special event.

_____ _____

Organization Official Parade Chairman

SPECIAL EVENT PERMIT

Applicant must carry this permit during the entire event.

CITY USE ONLY

The Special Event Permit Committee Chair hereby grants a Special Event Permit to conduct a:

_____
Event Name

on _____ during the hours of _____at _____.
(day/date) *location*

All activities shall be conducted in compliance with the provisions of Section 12.12 of the City Code. This authorization shall be carried with the event sponsor during the permitted activity.

_____ _____
Special Event Permit Committee Chair *Date of Approval*

☐ All insurance requirements met

☐ Other City department approvals

☐ Deposits received

☐ Fire/Sheriff's approval granted

☐ Business License Verification

☐ Other _____

Cc: Fire
DSC
Code Compliance
Sheriff
Stormwater Program

Special Events Notice of Affected Businesses

Before final approval of your special events permit can be granted, it is required that you notify and obtain written documentation from **ALL AFFECTED BUSINESSES** within your event location.

Please use the attached sheet to obtain the necessary documentation and return to: City of Vista, c/o Dolores Gascon, City Manager (Special Events Committee), 600 Eucalyptus Avenue, Vista, CA 92084, fax: (760) 639-6132.

Event: _____ **Event Date/Time:** _____

Business Name	Address	Phone #	Contact Name (print)	Signature	Approval (Yes/No)	Additional Comments

Business Name	Address	Phone #	Contact Name (print)	Signature	Approval (Yes/No)	Additional Comments

Main Street Area

Appendix C-4

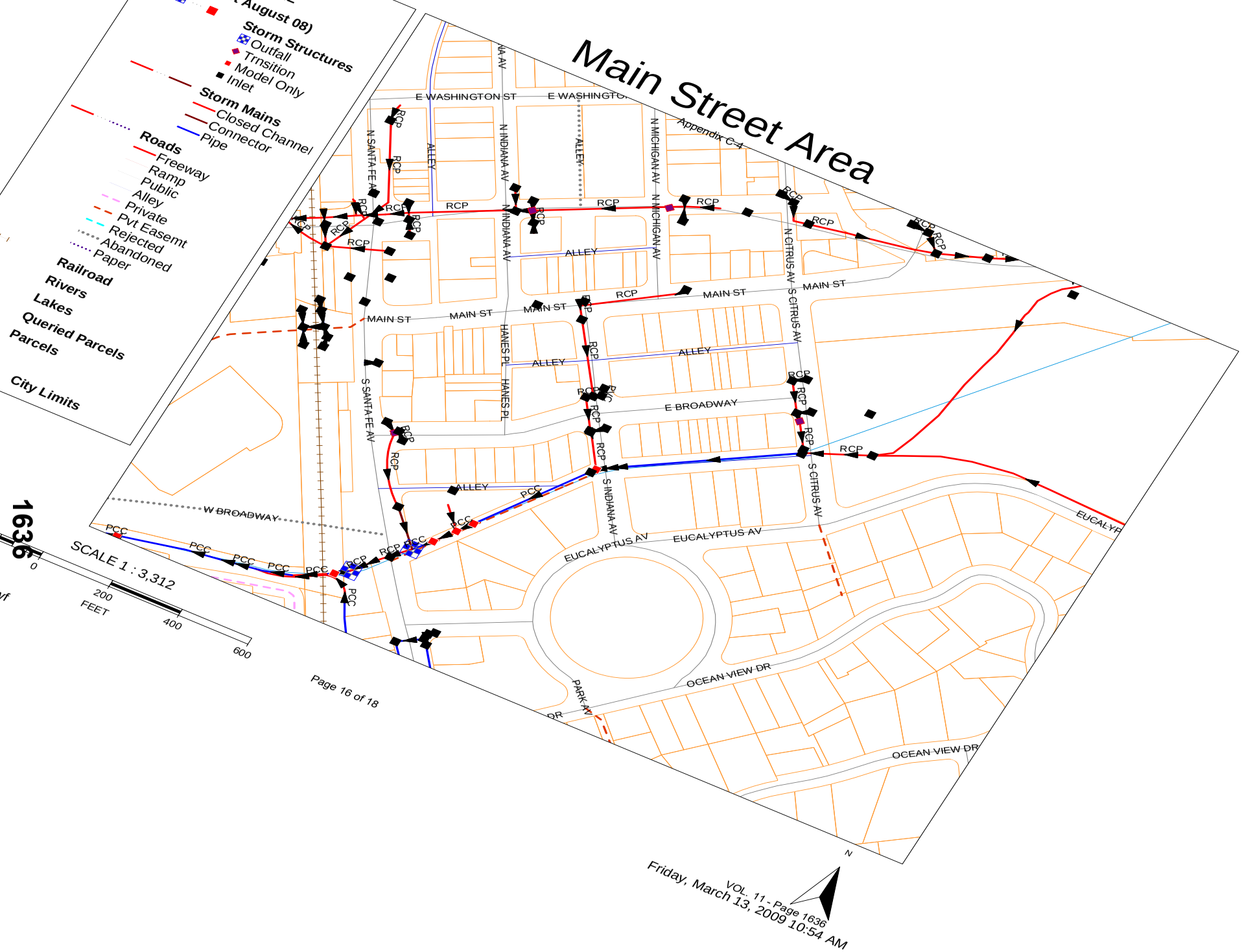

Special Events Inspection Report

Pursuant to VMC 13.18

Inspector:	**Date**		
Event Name		**Event Type**	
Event Location		**Event Address**	
Contact Name		**Contact Phone**	
Weather Conditions	☐ **Heavy Rain** ☐ **Light Rain** ☐ **Sunny** ☐ **Cloudy** ☐ **Partly Cloudy** ☐ **Rain Expected at ___% chance**		

PRE-EVENT (1)									**POST-EVENT (2)**								
Time In/Out:	**BMPS NEEDED**								**BMPS NEEDED**								**Time In/Out:**
SOURCE	**N/A**	**Containment**	**Cover**	**Cleaning**	**Training**	**Other BMP**	**Adequate**	**ID Observed**	**N/A**	**Containment**	**Cover**	**Cleaning**	**Training**	**Other BMP**	**Adequate**	**ID Observed**	**COMMENTS**
Solid Waste Storage and Disposal																	
Waste Containers																	
Grease Storage																	
Recycling Containers																	
Disposal Areas																	
Vehicles and Heavy Equipment																	
Washing Area																	
Spill Kit																	
Storage Area																	
Food Preparation and Eating Areas																	
Spill Kits																	
Food Disposal																	
Eating Areas																	
Grounds Maintenance and Housekeeping																	
Spill Response																	
Event Area																	
MS4																	
Staff/Vendor Training																	
Training																	
Portable Restrooms																	
Location																	
2C																	

OBSERVATIONS

❒ **No violations observed during the inspection.**	❒ **No violations observed during the inspection.**
❒ **Violations observed during the inspection**	❒ **Violations observed during the inspection**
❒ **Implement Corrective Actions As Required Below**	❒ **Implement Corrective Actions As Required Below**

CORRECTIVE ACTION REQUIRED: **1** ☐ **2** ☐ Photos Taken

1	**2**	
☐	☐	Prevent trash/recycling from overflowing.
☐	☐	**Immediately** clean up oil/grease spills and leaks.
☐	☐	Post-event street sweeping required.
☐	☐	Provide immediate protection for storm drain inlets.
☐	☐	Clean in and around storm drains.
☐	☐	Train staff, vendors, and participants..

1	**2**	
☐	☐	Remove trash and debris and dispose of properly.
☐	☐	**Immediately** discontinue outdoor washing or hosing.
☐	☐	Cover dumpsters and trash containers.
☐	☐	Provide spill kit(s) in required areas.
☐	☐	Provide secondary containment for portable restroom(s).

Other _____

Implement corrective actions by_____am/pm. City Storm Water Staff will return to verify that corrective actions were implemented as required. If you have any questions or comments, please contact the Storm Water Staff at 760- cell.

Responsible Party - Signature	Responsible Party – Please Print	City Storm Water Staff ☐ Mailed	Date

Corrective Action Verified Date/Time by City Storm Water Staff

Original to City Staff Copy to Responsible Party

EVENT SUMMARY

PRE-EVENT	POST-EVENT

IMPROVEMENTS AND RECOMENDATIONS

ADDITIONAL INFORMATION

Potential Pollutants	☐ **Bacteria** ☐ **Gross Pollutants** ☐ **Metals** ☐ **Nutrients** ☐ **Oil and Grease** ☐ **Organics** ☐ **Pesticides** ☐ **Sediments** ☐ **Trash** ☐ **Hazardous Materials** ☐ **Other**		
Enforcement Required	☐ Verbal Warning ☐ Notice of Violation ☐ Administrative Citation/Fine		
BMP Assessment (circle one)	**5 4 3 2 1**	**Knowledge Assessment (circle one)**	**5 4 3 2 1** ☐ **Contact not available**

Comments/Notes

APPENDIX D-1

2008-09 Stationary Commercial Inventory

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
7 Eleven #15923	1501 N Santa Fe Ave	92083	Low	5541	Fueling	Buena Vista	
7 Eleven #24085	900 N Santa Fe Ave	92083	Low	5541	Fueling	Buena Vista	Y
7 Eleven #32326 A 2111	3251 Business Park Dr	92083	Medium	5541	Fueling	Agua Hedionda	
78 Sign Company	830 E Vista Way	92083	High	1799	Printing	Buena Vista Creek	Y
7-ELEVEN #2111-13625G	470 N MELROSE DR	92083	Medium	5541	Eating/Drinking Establishments	Buena Vista Creek	Y
7-ELEVEN #21795B-2111	1595 E Vista Way	92084	High	5411	Eating/Drinking Establishments	Buena Vista Creek	Y
7-Eleven #23302A	895 E Vista Way	92084	High	5411	Eating/Drinking Establishments	Buena Vista Creek	Y
7-ELEVEN #33160T-2111	298 Sycamore Ave	92083	High	5411	Eating/Drinking Establishments	Agua Hedionda	Y
99¢ Only Stores	705 E Vista Way	92084	High	5411	Eating/Drinking Establishments	Buena Vista Creek	Y
A 1 Vista Repair	916 Postal Way	92083	Medium	7538	Auto Repair	Buena Vista	
A Smog Test Only	414 Santa Fe Ave A	92083	Low	7549	Auto Repair	Buena Vista	
A+ Automotive	257 Emerald Dr A	92083	Low	7538	Auto Repair	Buena Vista	
A-1 Radiator	1903 Vista Way C	92083	Low	7539	Auto Repair	Buena Vista	
AA Marine	901 Vista Way	92084	Medium	5551	Vehicle Dealers	Buena Vista	
A-B-C Smog	1415 Santa Fe Ave	92084	Low	7549	Auto Repair	Buena Vista	
Abuelitas	1004 Santa Fe Ave	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista Creek	
Acells Corp	3121 Scott St	92081	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
Adams Automotive	158 Olive Ave A	92083	Medium	7549	Auto Repair	Buena Vista	
Adelita's Cocina Mexicana	918 S Santa Fe Ave	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Advance Auto Center	1352 Melrose Dr L-K	92083	Low	7538	Auto Repair	Loma Alta	
Advance Micro Components Inc	2475 Coral St B	92083	Low	5063	Wholesale/Storage/Warehousing	Agua Hedionda	
Agg Mat/WYROC	1385 Sycamore Avenue	92083	Medium	5211	Building Materials	Agua Hedionda	
Agrispect, Inc.	2591 Pioneer Ave B	92083	High	5193	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Ai Sushi	1910 Shadowridge Dr 106	92083	Low	5812	Eating/Drinking Establishments	Agua Hedionda	
Aibertos Mexican Food	435 Santa Fe Ave	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
AJ Smog	660 Vista Way	92084	Medium	7549	Auto Repair	Buena Vista	

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Albertacos Mex Food Inc	601 Sycamore Ave	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Albertson's #6201	1301 E Vista Way	92084	High	5411	Eating/Drinking Establishments	Buena Vista	Y
Albertson's #6797	1601 S Melrose Dr	92081	High	5411	Eating/Drinking Establishments	Agua Hedionda	Y
All Tune & Lube	257 Emerald Dr B	92083	Low	7538	Auto Repair	Buena Vista	
Allen's Alley Cafe	124 HANES PL	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	Y
Allen's Auto	718 E Vista Way	92084	High	7538	Auto Repair	Buena Vista	Y
Allison Transmission Dr.	2525 Pioneer Ave 3	92081	Medium	7538	Auto Repair	Agua Hedionda	
Alta Mechanic	446 Olive Ave F, G	92083	Low	7538	Auto Repair	Buena Vista	
American Concrete Cutting & Cor	1217 Distribution Way	92083	Low	1799	Other Contractor	Agua Hedionda	
American Legacy Products, Inc.	2575 Fortune Way G	92083	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
American Metal Packaging Company	1185 Park Center Dr C	92083	Medium	3674	Wholesale/Storage/Warehousing	Agua Hedionda	
AMERICAN SPORT BIKE	1341 Distribution Way 22	92081	Low	5571	Vehicle Dealers	Agua Hedionda	
Ammex Oil, Inc. Fillco	1244 N Santa Fe Ave.	92083	Medium	5541	Fueling	Buena Vista	
Andy's Automotive Specialist	1069 Santa Fe Ave	92083	Medium	7536	Auto Repair	Buena Vista	
Aniata Cheese Co	2332 La Mirada Dr 1000	92081	Medium	5143	Eating/Drinking Establishments	Agua Hedionda	Y
Apex Windows & Doors, Inc	1315 Hot Spring Way 108	92081	Medium	5031	Manufacturing, Fabricated Metal	Agua Hedionda	Y
APRO # 37	535 N Santa Fe Ave	92084	Medium	5541	Fueling	Buena Vista Creek	Y
Apro #27	976 Escondido Ave	92083	Medium	5541	Fueling	Buena Vista	
Apro Llc #30	485 Melrose Dr	92083	Low	5541	Fueling	Buena Vista	
Aquatic Fitness Concepts	1495 Ponsettia Avenue 145	92081	Medium	5999	Wholesale/Storage/Warehousing	San Marcos	Y
Arashi Japanese Cuisine	962 S Santa Fe Ave	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Arby's	40 Main St E-110	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Arco AM PM #6315	1403 Santa Fe Ave	92083	Low	5541	Fueling	Buena Vista	

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Arellano Growers Whsl	2015 FOOTHILL DR	92084	Medium	5193	Wholesale/Storage/Warehousing	Buena Vista	
Argosy Industries Inc	2640 Business Park Dr	92083	Low	5063	Wholesale/Storage/Warehousing	Agua Hedionda	
Armandos Mexican Food	770 Sycamore Ave L	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Armandos Taco Shop	625 Santa Fe Ave	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Aschbrenner, Inc. dba Spectrum Floral Service	2505 Commerce Way	92083-8441	High	5193	Nurseries/Greenhouses	Agua Hedionda	Y
Austin Doors (same office-Kaylimd Commercial Contr	1351 Distribution Way 1	92085	Low	1751	Other Contractor	Agua Hedionda	
Auto Diagnostic Repair	1752 Vista Way	92084	Medium	7538	Auto Repair	Buena Vista	
Auto Diagnostic Repair	1752 Vista Way	92084	Medium	7538	Auto Repair	Buena Vista	
Auto Europa Cars	737 Townsite Dr 743	92084	Low	5521	Vehicle Dealers	Buena Vista	
Auto Precision	1024 Service Place 101	92084	Medium	7538	Auto Repair	Buena Vista	
Auto Smog	2070 Hacienda Dr J	92081	Low	7549	Auto Repair	Buena Vista	
Auto Spa	851 Vista Way	92083	Low	7542	Vehicle Washing	Buena Vista	
Autocare USA	414 Santa Fe Ave B, C	92083	Low	7538	Auto Repair	Buena Vista	
Automotive Concepts	538 Olive Ave A102-103	92083	Medium	7538	Auto Repair	Buena Vista Creek	Y
Autotyme Automotive, Inc.	1146 Melrose Dr 801	92083	Low	7538	Auto Repair	Buena Vista	
B & C Auto Repair	918 Postal Way	92083	Medium	7538	Auto Repair	Buena Vista	
B & D Auto Repair and Service	1350 Melrose Dr	92083	Low	7538	Auto Repair	Loma Alta	
B N J Ultraservices, Inc. (Ultra Max)	381 Olive Ave	92083	Low	5169	Wholesale/Storage/Warehousing	Buena Vista	
BANKER DIRECT AUTO SALES	536 Santa Fe Ave	92083	Low	5521	Vehicle Dealers	Buena Vista	
Bara Bean Café & Donuts	771 E Vista Way 102A	92084	High	5461	Eating/Drinking Establishments	Buena Vista Creek	Y

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Bare Back Skateboards, Inc.	2835 La Mirada Dr B	92083	Medium	5091	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Barnicles Express Gasoline	845 Vista Way	92084	Medium	5541	Fueling	Buena Vista	
Benvics Auto Repair	1352 N Melrose Dr K	92083	Medium	7538	Auto Repair	Loma Alta	Y
Betz Concrete, Inc.	1217 Distribution Way	92084	Low	1771	Other Contractor	Agua Hedionda	
Big Lots #267	760 Sycamore Ave	92083	Medium	5411	Eating/Drinking Establishments	Agua Hedionda	Y
Big O Tires	636 Santa Fe Ave	92084	Low	7549	Auto Repair	Buena Vista	
Bilcan Inc. Dba El Camino Rental	1121 S Santa Fe Ave	92083	High	7359	Vehicle/Equipment Rental	Buena Vista Creek	Y
BLACK FOREST BISTRO	485 S MELROSE DR	92081	Medium	5812	Eating/Drinking Establishments	Buena Vista Creek	
Bob Workman's European Auto Service	1304 Melrose Dr A	92083	Low	7538	Auto Repair	Loma Alta	
Bombay Cafe	1280 Vista Way 4	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
BOOMERS VISTA	1525 W Vista Way	92083	High	5812	Eating/Drinking Establishments	Buena Vista Creek	Y
Briggs Tree Company Inc	1111 Poinsettia Ave	92083	Medium	0181	Nurseries/Greenhouses	Agua Hedionda	Y
British Masters	715 Mercantile St	92083	Low	7538	Auto Repair	Buena Vista	
Budget Rent A Car	1859 Vista Way	92083	Low	7514	Vehicle/Equipment Rental	Buena Vista	
Budget Rent A Car Systems, Inc.	241 Emerald Dr	92083	Low	7514	Vehicle/Equipment Rental	Buena Vista	
Budget Smog	1205 Melrose Dr G	92083	Low	7538	Auto Repair	Loma Alta	
Budget Smog Test Only Center	538 Olive Ave 300-C	92083	Low	7549	Auto Repair	Buena Vista	
Buena Creek Nursery	1280 SUNSET DR	92083	Low	5193	Nurseries/Greenhouses	Agua Hedionda	
Burger King	377 Vista Village Dr	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Burger King #10512	1650 S MELROSE DR	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
C & M Motors Inc/ NationaLease	1902 VIA CENTRE	92083	Medium	7538	Vehicle Dealers	Buena Vista	Y
C P C	1126 Melrose Dr	92083	Low	5099	Wholesale/Storage/Warehousing	Buena Vista	
Cal Mex Wholesale Growers & Shipper, Inc	2680 La Mirada Dr	92083	Low	5193	Wholesale/Storage/Warehousing	Agua Hedionda	

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Cal-Americas	2834 LA MIRADA DR	92081	High	5193	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Caldwell Development Inc	1271 Activity Dr	92083	Medium	3519	Wholesale/Storage/Warehousing	Agua Hedionda	
California Breakers, Inc.	2490 Grand Ave	92083	Low	5063	Wholesale/Storage/Warehousing	Agua Hedionda	
California Pizza Kitchen	307 Vista Village Dr	92085	High	5812	Eating/Drinking Establishments	Buena Vista	Y
California Specialty Produce	1330 KEYSTONE WAY A	92083	Low	5148	Wholesale Food	Agua Hedionda	Y
Calmex Wholesale Growers & Shippers Inc.	2680 La Mirada Drive	92081	Medium	5193	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Capitol Paving Inc	408 Olive Ave	92083	Low	1799	Other Contractor	Buena Vista	
Carlos Auto Body	538 Olive Ave 100	92083	High	7532	Auto Repair	Buena Vista Creek	Y
Carl's Jr. #1390	660 Hacienda Dr	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	Y
Carl's Jr. Restaurant and the Green Burrito	1790 University Dr 648	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Carl's Tavern	1565 Vista Way	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Casa Blanca Products	1255 Activity Dr D	92081	Medium	5149	Wholesale Food	Agua Hedionda	
Casa Linda	721 S Santa Fe Ave	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
CESAR'S AUTO MECHANICS	452 Olive Ave L	92083	Low	7538	Auto Repair	Buena Vista	
Chaparro's Mexican Food, Inc.	2595 Commerce Way	92081	Low	5411	Wholesale Food	Agua Hedionda	
Chevron Station #1497	2295 Melrose Dr	92081	Low	5541	Fueling	Agua Hedionda	
Chevron USA	224 Emerald Dr	92083	Low	5541	Fueling	Buena Vista	
Chevron USA (Foothill Chevron)	1211 Vista Way	92084	Low	5541	Fueling	Buena Vista	
Chicks Natural Roasted Chicken	950 E Vista Way H, I	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Chicos Panaderia	1110 N Santa Fe Ave	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista Creek	Y
Chili Coast Burgers	1330 Vista Way	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
Chili's Grill & Bar	255 Vista Village Dr	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
China Szechwan	959 Vista Way	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Chin's Express & Teriyaki	1711 University Dr 130	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Chin's Szechwan Vista, Inc.	600 E Vista Way	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Chipotle Mexican Grill	30 Main St G-100	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Choo Choo Donuts	1597 Vista Way B	92084	Medium	5461	Eating/Drinking Establishments	Buena Vista	
Christina Bakery	1110 Santa Fe Ave D	92083	Low	5461	Eating/Drinking Establishments	Buena Vista	
Christin's Café	2515 Pioneer Ave 5	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	
Chuck E. Cheese's	1861 University Dr	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Ciao Restaurant	2015 E VISTA WAY	92084	Medium	5812	Eating/Drinking Establishments	San Luis Rey	
Classic Datsun Motorsports	345 Olive Ave	92083	Low	7532	Auto Paint/Body	Buena Vista	
Closet World Inc.	1335 Park Center Dr A	92083	Medium	2521	Other Contractor	Agua Hedionda	
Clutchworks	1205 Melrose Dr D	92083	Low	7537	Auto Repair	Loma Alta	
Cms Inc/Spring Parts Div Of Cms Inc.	1341 Distribution Way 11	92083	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
Coast Equipment Rental	1713 W Vista Way	92083	High	7359	Vehicle/Equipment Rental	Buena Vista	Y
Coco's 882	605 W Vista Way	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	Y
Cold Stone Creamery	30 Main St 120	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
Colima's Mexican Food	1850 Hacienda Dr 22	92081	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Control Technology	2416 Cades Way	92083	Low	5063	Wholesale/Storage/Warehousing	Agua Hedionda	
Coopers Cactus	1097 CREST VIEW RD	92083	High	0181	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Corona Used Tires/AJ Smog	658 Vista Way	92084	Medium	7534	Auto Repair	Buena Vista	
COSTCO WHOLESALE #124	1755 Hacienda Dr	92081	High	5099	Wholesale/Storage/Warehousing	Buena Vista Creek	Y
Courtesy Auto Repair	826 Santa Fe Ave	92083	Low	7538	Auto Repair	Buena Vista	
Cox Auto Service	1018 Service Place	92084	Medium	7538	Auto Repair	Buena Vista	
Coyote Café	1450 N Santa Fe Ave Y	92083	Medium	5812	Eating/Drinking Establishments	Loma Alta	Y
C-SBI changed to: To West Coast Refrigerated Truck	1330 Distribution Way B	92083	Low	5193	Wholesale/Storage/Warehousing	Agua Hedionda	

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Curbside Cafe	307 Main St	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	Y
D & D Tool & Supply	1445 Engineer St	92083	Low	5084	Wholesale/Storage/Warehousing	Agua Hedionda	
D D H Enterprise, Inc	2220 Oak Ridge Way	92083	Low	5063	Wholesale/Storage/Warehousing	Agua Hedionda	
D' Elegantes Restaurant	2004 Vista Way	92084	Medium	5813	Eating/Drinking Establishments	San Luis Rey	
D. Chamber Creations LLC dba Coldstone Creamery	1711 University Dr 140	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
Dairy Queen	1031 S SANTA FE AVE, SUITE #A	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Dairy Queen - Shadowridge	1580 Melrose Dr 116	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	
Daisy's Floral Decorations	1318 N Santa Fe Dr Ste C	92083	Medium		Nurseries/Greenhouses	Buena Vista	
Danish & Donuts	1450 N Santa Fe Ave I	92083	Low	5461	Eating/Drinking Establishments	Buena Vista	Y
Danny's Donuts	102 Eucalyptus Ave	92084	Medium	5461	Eating/Drinking Establishments	Buena Vista	
Dealers Business Services, LLC dba The Car Zone	968 Vista Village Drive	92084	Medium	7549	Auto Repair	Buena Vista Creek	Y
Del Taco 212	1037 BOBIER DR	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Denny's	540 W Vista Way	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista Creek	Y
Desert Theater II	800 SUNSET DR	92083	Low	5193	Nurseries/Greenhouses	Agua Hedionda	
Diamond Donuts	730 Sycamore Ave F	92083	Medium	5461	Eating/Drinking Establishments	Agua Hedionda	Y
Diesel Pollution Solutions (D.P.S)	1448 Oakcreek Lane	92081	Medium		Auto Repair	Agua Hedionda	
Dils Roofing	2230 La Mirada Dr	92081	Medium	1761	Other Contractor	Agua Hedionda	Y
Dinner Studio	1850 Hacienda Dr 12	92084	Medium	5812	*Not Inventoried*	Buena Vista	
Dion's Automotive	1210 Melrose Dr D	92083	Low	7538	Auto Repair	Loma Alta	
Discount Alignment	1024 Service Place 100	92084	Medium	7538	Auto Repair	Buena Vista	
Discount Tire Co., Inc.	1007 Service Place	92083	Medium	5531	Auto Repair	Buena Vista	
Dominos Pizza 7731	1021 Bobier Dr	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Dominos Pizza 8300	603 E Sycamore Ave	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Donut Factory	1839 Vista Way C	92083	Low	5461	Eating/Drinking Establishments	Buena Vista	

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Dos Amigos Restaurant	1651 Melrose Dr D	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
Dos Gringos	3260 Corporate View Dr	92081	Medium	5193	Nurseries/Greenhouses	San Marcos	Y
Dr. Java @ Vista Medical Plaza	2067 W Vista Way	92083	Low	5812	Eating/Drinking Establishments	Buena Vista Creek	
Drew's Automotive Repair	538 Olive Ave D	92083	Low	7538	Auto Repair	Buena Vista	
Drift Tech / Discount Towing and Auto Repair	635 Mercantile St C	92083	Medium	7538	Auto Repair	Buena Vista	
Driveline Vista	253 Emerald Dr A, B	92083	Low	7538	Auto Repair	Buena Vista	
Drucker Subway Sr, Inc	1651 Melrose Dr B	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
E & J Cactus	1111 Sunset Dr	92081	Medium		Nurseries/Greenhouses	Agua Hedionda	
E G M Auto Sales & Leasing	835 Santa Fe Ave A	92084	Low	5511	Vehicle Dealers	Buena Vista	
E Vista Way Exxon	911 Vista Way	92083	Medium	5541	Fueling	Buena Vista	
East Of Java	3231 Business Park Dr 1	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Edco Distributing Inc	3150 Scott St	92083	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
Eddie's Market	415 Santa Fe Ave	92084	Medium	5411	Eating/Drinking Establishments	Buena Vista	
El Asadero Restaurant	1717 E Vista Way 106	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
El Burrito Catering (Mobile Food Service Hub)	365 Olive Ave A	92084	High	5963	Eating/Drinking Establishments	Buena Vista	Y
El Callejon Vista	20 S Main St H-100	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
El Dorado Express Grill	3265 Business Park Dr B	92084	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
El Mago Paint and Body	427 Redlands St C	92083	Medium	7532	Auto Paint/Body	Buena Vista	
El Pollo Loco #3492	495 Melrose Dr	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
El Puertesito Mexican Restaurant	1450 N Santa Fe Ave R	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	Y
El Pulpo Caliente	1234 S Santa Fe Ave	92083	Low	5812	Eating/Drinking Establishments	Buena Vista Creek	
El Ranchero	226 Main St	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y

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El Ranchero Restaurant	1565 N SANTA FE AVE	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
El Rinconcito Mexican Seafood Resturant	1033 S Santa Fe Ave E	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
El Torito Market	249 Emerald Dr	92083	Low	5411	Eating/Drinking Establishments	Buena Vista	
Elaines Cake Boutique	1021 Santa Fe Ave	92084	Low	5461	Eating/Drinking Establishments	Buena Vista	
Elk's Lodge Restaurant	1947 E Vista Way	92085	High	5812	Eating/Drinking Establishments	San Luis Rey	Y
Emerald Shell	145 Emerald Dr	92083	Low	5541	Fueling	Buena Vista	
EMS Construction	3160 Scott St	92081	Medium	1761	Other Contractor	Agua Hedionda	
Enterprise Car Sales	875 Vista Way	92084	Medium	5511	Vehicle Dealers	Buena Vista	Y
Enterprise Rent-A-Car Lsg 3249	875 Vista Way	92083	Low	7514	Vehicle/Equipment Rental	Buena Vista	
Eriberto's Mexican Food	1805 Hacienda Dr	92081	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Erika Restaurant	1851 Vista Way C	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Esperanza Growers	1455 E TAYLOR ST	92084	High	0181	Nurseries/Greenhouses	Buena Vista	
Euro Pacific Paint & Body	1210 Melrose Dr B	92083	Low	7532	Auto Paint/Body	Loma Alta	
Euro Pacific, Inc.	1210 Melrose Dr B	92083	Low	7532	Auto Paint/Body	Loma Alta	
European Deli & Restaurant	573 W Vista Way D	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	Y
European Motorsports	2588 Progress St 11	92081	Medium	7538	Auto Repair	Agua Hedionda	
Evans Tire & Service Center	865 Vista Way	92084	Medium	7534	Auto Repair	Buena Vista	
Evans Tire & Service Centers	2070 Hacienda Dr A	92083	Low	7534	Auto Repair	Buena Vista	
Exhibitart Displays, Inc.	1250 Distribution Way	92083	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
Express Tire & Certified Auto Service	2030 Hacienda Dr 100	92083	Low	7538	Auto Repair	Buena Vista	
EZ Lube	786 Vista Way	92084	Medium	7549	Auto Repair	Buena Vista	
F Piersalls Vista Buggy Bath	1759 Vista Way	92083	Medium	7542	Vehicle Washing	Buena Vista	
Famous Dave's	303 Vista Village Dr	92083	Medium		Eating/Drinking Establishments	Buena Vista	
FDO Auto Service	446 Olive Ave A	92083	Low	7538	Auto Repair	Buena Vista	

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Feliccias	1011 S Santa Fe Ave C	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Fernando Sons Fer's Auto Repair	446 Olive Ave F, G	92083	Low	7538	Auto Repair	Buena Vista	
Festival Fun Parks, L L C - Arcade	1525 Vista Way	92083	Medium	7999	Entertainment	Buena Vista	
Fiamengo Nursery	1715 MONTE MAR RD	92083	High	0181	Nurseries/Greenhouses	Buena Vista	
Fiesta Giant Pizza	1120 N Santa Fe Ave	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	Y
Filibertos Mexican Food	960 E Vista Way	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
FILLCO	1244 N SANTA FE AV	92083	Medium	5541	Eating/Drinking Establishments	Buena Vista Creek	Y
Flamingo Holland Inc	1250 AVENIDA CHELSEA	92081	Low	5193	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Food 4 Less 300	500 Hacienda Dr	92083	Low	5411	Eating/Drinking Establishments	Buena Vista	
Foodmaker Inc 55 - Jack In The Box	815 E Vista Way	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Foothill Chevron	1211 Vista Way	92084	Low	5541	Fueling	Buena Vista	
Fountain Car Wash	1352 Santa Fe Ave	92083	Low	7542	Vehicle Washing	Buena Vista	
Francis Biddle International, Inc.	2506 Pioneer Ave	92083	Low	5193	Wholesale/Storage/Warehousing	Agua Hedionda	
Franciscos Mexican Deli	821 N Santa Fe Ave	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	Y
Frank's Mexican Grill	122 W CALIFORNIA AVE	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Frazier Farms	225 Vista Village Dr	92083	Low	5411	Eating/Drinking Establishments	Buena Vista	Y
Fred's Automotive	1725 E Vista Way	92084	Medium	5521	Auto Repair	Buena Vista	Y
Freeberg Industrial Fabrication	985 Poinsettia Ave	92083	Medium	5084	Wholesale/Storage/Warehousing	Agua Hedionda	
French Bakery Cafe	1223 E Vista Way A	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Frogy's Donuts and Bakery	602 Vista Way A	92084	Medium	5461	Eating/Drinking Establishments	Buena Vista	

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Futuretronix, Inc.	1489 Poinsettia Ave 134	92081	Low	5065	Wholesale/Storage/Warehousing	Agua Hedionda	
General Transmission	427 Redlands St B	92083	Low	7537	Auto Repair	Buena Vista	
Geogrid Retaining Wall Systems, Inc	1295 Distribution Way	92083	Low	1741	Other Contractor	Agua Hedionda	
George's Auto Repair and Smog	1740 Vista Way B	92084	Medium	7538	Auto Repair	Buena Vista	
George's Auto Sales, Inc.	1211 Melrose Dr B	92083	Low	5511	Vehicle Dealers	Loma Alta	
German Auto Clinic	912 Postal Way	92083	Medium	7538	Auto Repair	Buena Vista	
Giant New York Pizza	1250 S Santa Fe Ave E	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Glitter Wash	1140 S Santa Fe Ave	92083	High	7542	Vehicle Washing	Buena Vista	Y
Global Plastics Sheeting	1331 Specialty Drive	92081	Medium	5162	Wholesale/Storage/Warehousing	Agua Hedionda	Y
GM Exclusive	1215 Melrose Dr B	92083	Low	7538	Auto Repair	Loma Alta	
Godwins Café	325 Melrose Dr	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Golden Donut	1281 Santa Fe Ave Z	92083	Medium	5461	Eating/Drinking Establishments	Buena Vista	
Golden Dragon Restaurant	1350 E VISTA WAY Suite #10	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Golden State Gasoline, Inc.	535 Santa Fe Ave 4	92083	Medium	5541	Fueling	Buena Vista	
Golden Wrench Automotive	241 Emerald Dr B	92083	Low	7538	Auto Repair	Buena Vista	
Greentrees Hydroponics, Inc.	2581 Pioneer Ave D	92083	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
H2Odyssey & Ocean Divers USA	975 Park Center Dr	92083	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
Hanjo Auto Repair	452 Olive Ave M	92083	Medium	7538	Auto Repair	Buena Vista	
Happy Auto Sales	721 Santa Fe Ave	92084	Low	5521	Vehicle Dealers	Buena Vista	
Hello Deli	2820 La Mirada Dr A	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Hennessey's	224 Main St	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	Y
Henry's Auto Body	635 Mercantile B	92083	Medium	7532	Auto Repair	Buena Vista Creek	Y

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Hera's Auto Shop Mufflers & Brakes	808 Santa Fe Ave A	92083	Low	7533	Auto Repair	Buena Vista	
Herman Tuning	1903 Vista Way	92083	Low	7699	Auto Repair	Buena Vista	
Hippo Golf Company, Inc. (Ca)	2755 Dos Aaron Way A	92083	Medium	5091	Wholesale/Storage/Warehousing	Agua Hedionda	
HMS Co.	1400 Arcadia Ave.	92084	Medium	5193	Wholesale/Storage/Warehousing	Buena Vista	
Holy Smoke Bar-B-Que	1237 Green Oak Rd	92081	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Homeland Petroleum	1740 E Vista Way	92084	High	5541	Fueling	Buena Vista	Y
Horticultural Sales, Inc.	1330 Distribution Way E	92081	Low	5193	Wholesale/Storage/Warehousing	Agua Hedionda	
House of Thanon Thai Cuisine	485 Melrose Dr 108, 109	92081	Low	5812	Eating/Drinking Establishments	Buena Vista	
Humberto's Auto Repair	444 Santa Fe Ave B	92083	Medium	7538	Auto Repair	Buena Vista	
Icebox Jr	2260 Oak Ridge Way D	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Import And Commercial Export	925 Poinsettia Ave A8	92081	Low	4731	Wholesale/Storage/Warehousing	Agua Hedionda	
In N Out Burger #61	2010 Hacienda Dr	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Intaglio Physicians & Surgeons	1260 Avenida Chelsea	92081	Low	5122	Wholesale/Storage/Warehousing	Agua Hedionda	
International House Of Pancakes 814	632 Sycamore Ave	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
International Poly Bag, Inc	990 Park Center Dr G	92083	Low	5162	Wholesale/Storage/Warehousing	Agua Hedionda	
Islands Fine Burgers & Drinks	240 Melrose Dr	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
J & C Leasing Carolyn Culkin	1112 NASH LN	92083	Low	7514	Vehicle Parking/Storage	Buena Vista	
J & J Automotive	635 Mercantile St A	92083	Medium	7538	Auto Repair	Buena Vista	
J B Coating	219 Santa Fe Ave 137	92083	Medium	1721	Painting/Coating	Buena Vista	
J F Japanese Cafe	35 Main St 150	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Jack In The Box #3002	740 Sycamore Ave	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Jack in the Box #3019	1471 N Santa Fe Ave	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y

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Jack In The Box #3029	260 S Melrose Dr	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Jack In The Box #3032	3281 Business Park Dr	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Jackpot Painting	391 Olive Ave	92083	Low	1799	Other Contractor	Buena Vista	
Jack's Auto Repair	427 Redlands St A	92083	Low	7538	Auto Repair	Buena Vista	
Java Hut Drive-Thru	823 Vista Way	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Java Hut Drive-Thru	949 Santa Fe Ave	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
JCM Auto Repair	452 Olive Ave J	92083	Low	7538	Auto Repair	Buena Vista	
JEANNIE HYDE PACKAGING, INC.	2442 Cades Way	92083	Low	5085	Wholesale/Storage/Warehousing	Agua Hedionda	
Jeld Wen Co. Warehouse	935 Poinsettia Ave	92083	Medium	4225	Wholesale/Storage/Warehousing	Agua Hedionda	
Jiffy Lube #432	1213 Vista Way	92084	Low	7549	Auto Repair	Buena Vista	
Jims Vista Lounge	1587 Vista Way A, B	92084	Medium	5813	Eating/Drinking Establishments	Buena Vista	
Jj's Deli Cafe #5	1495 Poinsettia Ave 152	92081	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
John's AMPM	625 Sycamore Avenue	92083	Medium	5541	Fueling	Agua Hedionda	
Joseph Webb Foods Inc	1201 Park Center Dr	92083	Low	5142	Wholesale Food	Agua Hedionda	
Juanita's Taco Shop	248 E Main St	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	Y
Juan's Auto Electric	808 Santa Fe Ave B	92083	Low	7539	Auto Repair	Buena Vista	
Juba Juba	680 Hacienda Dr	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Juice N Tea	30 Main St 180	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Jumping Bean Café	785 Shadowridge Dr	92081	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Juniors Taco Shop	1680 Melrose Dr 110	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
K & H Steak, Inc. dba Steak Escape	35 Main St #110	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Kabab Cuisine	1688 Melrose Dr 206	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	
KAND MEDICAL INC.	1341 Distribution Way D-17	92081	Medium	5047	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Kenny's Kar Klinic	420 Vista Village Dr	92083	Medium	7532	Auto Paint/Body	Buena Vista	
Kentucky Fried Chicken	840 E Vista Way	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y

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KJ Carpet Wholesale, Inc.	1341 Distribution Way 14	92081	Medium	5023	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Knockout Pizzeria Dba K04 Vista L L C	2440 S Melrose Dr 104	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Kragen Auto Parts	1250 Santa Fe Ave A	92084	Low	5531	Auto Supplies	Buena Vista	
KRIKORIAN PREMIERE THEATRES	25 Main St	92084	High	7832	Eating/Drinking Establishments	Buena Vista Creek	Y
LA CANTINA DOORS, INC.	1340 Specialty Dr J	92081	Low	1751	Other Contractor	Agua Hedionda	
La Estancia Mexican Food	573 W Vista Way	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	Y
La Favorita Market	932 Vista Village Dr	92084	High	5411	Eating/Drinking Establishments	Buena Vista Creek	Y
La Favorita Market #3	1450 N Santa Fe Ave K-M	92084	Medium		Eating/Drinking Establishments	Loma Alta	
La Gordita	1275 Santa Fe Ave 117, 118	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
La Mexicana Market	440 N Santa Fe Ave	92083	High	5411	Eating/Drinking Establishments	Buena Vista	Y
La Paloma Restaurant & Cocktail	116 Escondido Ave 104, 105	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Lamppost Pizza	15 Main St	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Lee Steel & Supply	1305 LEE DR	92081	High	5051	Wholesale/Storage/Warehousing	Loma Alta	Y
Less Time & More	1236 Activity Dr A	92081	Medium	5199	Wholesale/Storage/Warehousing	Agua Hedionda	
LITAS FISH MARKET	1078 E Vista Way	92084	High	5421	Eating/Drinking Establishments	Buena Vista Creek	Y
LITTLE CAESARS PIZZA	2020 Hacienda Dr	92081	High	5812	Eating/Drinking Establishments	Buena Vista Creek	Y
Little Caesars Pizza	1041 Vista Way	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Little Kids Nutrition	1021 N Santa Fe Ave B	92083	Medium		Eating/Drinking Establishments	Buena Vista	
LM Retail, LP dba Shell Gasoline	2131 Vista Way	92084	Low	5541	Fueling	San Luis Rey	
Los Amigos Market	1350 E Vista Way 9	92084	Medium		Eating/Drinking Establishments	Buena Vista	
Los Cabos Mexican & Seafood	760 E Vista Way	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y

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Lucy's Place Ice Cream	1583 Vista Way 4	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Ludwick's Automotive, Inc.	460 Olive Ave	92083	Low	7539	Auto Repair	Buena Vista	
M C C Enterprises, Inc	1201 Park Center Dr	92083	Low	5144	Wholesale Food	Agua Hedionda	
M P Creations	1611 S Melrose Dr P	92081	Medium		Eating/Drinking Establishments	Agua Hedionda	
Mama & Papa's Pizza Grotto	988 Escondido Ave A	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Marco Italian Restaurant	1825 Vista Way	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Mario's Taco's	224 N Emerald Dr	92083	Medium		Eating/Drinking Establishments	Buena Vista	
Marisco Carina	1234 Santa Fe Ave	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista Creek	
Mariscos El Pacifico	702 Santa Fe Ave	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
Mariscos Las Palmas Mexican Food	777 E Vista Way 206	92084	High	5812	Eating/Drinking Establishments	Buena Vista Creek	Y
Martha's Bakery	995 Postal Way 110	92083	Medium	5461	Eating/Drinking Establishments	Buena Vista	
Masterlube, Inc.	243 Sycamore Avenue	92084	Medium	7538	Auto Repair	Agua Hedionda	
Matsu Japanese Restaurant	530 Hacienda Dr 104-105	92081	Medium		Eating/Drinking Establishments	Buena Vista	
Matt's Mobil Auto Repair	253 Emerald Dr D	92083	Low	7538	Auto Repair	Buena Vista	
Mayra's Restaurant & Bakery	828 N Santa Fe Ave C	92083	Medium	5461	Eating/Drinking Establishments	Buena Vista	Y
Mc Donalds 12791	1470 N Santa Fe Ave	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Mc Donalds 1959	827 Santa Fe Ave	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Medel Painting	934 Santa Fe Ave	92083	Low	1799	Painting/Coating	Buena Vista	
Melrose Shell	210 Melrose Dr	92081	Low	5541	Fueling	Buena Vista	
Mexican & Greek Fast Food	573 Vista Way	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Mexicano Tires	428 Santa Fe Ave A	92083	Low	7534	Auto Repair	Buena Vista	
Mi Pueblito Mexican & Seafood Inc.	815 N Santa Fe Ave	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Mi Tiendita Market	700 Townsite Dr	92084	Low	5411	Eating/Drinking Establishments	Buena Vista	
Michael's Electric	611 Santa Fe Ave	92083	Low	7539	Auto Repair	Buena Vista	
Midas Shop	1150 Santa Fe Ave	92084	Medium	7538	Auto Repair	Buena Vista	

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Mike and Pancho's Auto Repair	635 Mercantile St B	92083	Medium	7538	Auto Repair	Buena Vista	
Mikes Landscape & Nursery Co	753 Emerald Dr	92083	Low	0181	Nurseries/Greenhouses	Buena Vista	
Millenium Building Services, Inc.	1068 La Mirada Ct	92081	Medium	1521	Building Materials	Agua Hedionda	Y
Mobil Mart #11433	710 Sycamore Ave	92083	Medium	5541	Fueling	Agua Hedionda	Y
Mr. A's Liquor Deli	254 Vista Village Dr	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
N.Y. Giant Pizza	800 Escondido Ave F	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista Creek	
Naked Bean - Vista	530 Hacienda Dr 101	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Napa Auto Parts Vista	1334 Melrose Dr G, H	92083	Low	5531	Auto Supplies	Loma Alta	
New Life Nutrition	1281 N Santa Fe Ave J	92083	Low	5812	Eating/Drinking Establishments	Buena Vista Creek	
New Panda Buffet	1040 Vista Way	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Nongnit's Treasures	1340 Specialty Dr G	92081	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
North County Auto Exchange	1082 Santa Fe Ave	92084	Medium	5521	Vehicle Dealers	Buena Vista	
North County Ford	450 Vista Way	92083	Low	5511	Vehicle Dealers	Buena Vista	
North County Import Specialist	1215 Melrose Dr A	92083	Low	7538	Auto Repair	Loma Alta	
North County Pool Center	777 W Vista Way A	92083	Medium	5091	Other Contractor	Buena Vista	Y
Northgate Market	1150 E Vista Way	92083	High	5411	Eating/Drinking Establishments	Buena Vista Creek	Y
Novak Auto Repair	723 Olive Ave B	92083	Low	7538	Auto Repair	Buena Vista	
Nu Blocks, LLC	2420 Grand Ave B	92081	Low	8731	*Not Inventoried*	Agua Hedionda	
Nucci's Italian Cafe Pizza Pas	1580 S Melrose Dr 108	92081	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Nuevo Vallarta Restaurant	825 WILLIAMSTON ST	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	Y
Nurserymens Exchange, Inc.	1330 Distribution Way C	92081	Medium	5193	Nurseries/Greenhouses	Agua Hedionda	Y
OAK TREE VANS LTD	1386 Poinsettia Ave E	92081	Low	1799	Other Contractor	Agua Hedionda	

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Oceanside Sales & Marketing Inc.	2560 Progress St C	92083	Low	5099	Wholesale/Storage/Warehousing	Agua Hedionda	
Oceanside Towing & Services, Inc.	1352 Melrose Dr E	92083	Low	7538	Auto Repair	Loma Alta	
Ohana Hawaiian BBQ	620 Hacienda Dr 106	92081	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Olive Tire Shop	365 Olive Ave B	92083	Low	7534	Auto Repair	Buena Vista	
Olympic Auto Body and Paint	119 Terracina Way	92083	Low	7532	Auto Paint/Body	Buena Vista	
Oriental Market of Vista	1021 Santa Fe Ave F	92084	Low	5411	Eating/Drinking Establishments	Buena Vista	
Ortiz Bakery Panaderia Oaxaquetia	1275 S Santa Fe Ave 108	92083	Medium		Eating/Drinking Establishments	Buena Vista	
Oscar's Mexican Food	822 E Vista Way	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Pacific Coast Smog Check	1310 Melrose Dr	92083	Low	7549	Auto Repair	Loma Alta	
Pacific Pride Carwash Co. Inc	980 Park Center Dr. #C	92081	Medium	5087	Vehicle Washing	Agua Hedionda	Y
Padilla Construction	552 Olive Ave	92083	Low	1742	Other Contractor	Buena Vista	
Paleteria La Mixteca	1110 N Santa Fe Ave F	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	Y
Palomar Pizza & Pasta	3265 Business Park Dr A1	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Pam Soto's Pets @Simbah's Dog House	573 W Vista Way #E	92083	Medium		Animal Facilities	Buena Vista	
Pam's Donuts & Ice Cream	510 Hacienda Dr 109	92081	Low	5461	Eating/Drinking Establishments	Buena Vista	
Pan Don Felipe's Mexican Bakery	613 Santa Fe Ave	92084	Low	5461	Eating/Drinking Establishments	Buena Vista	
Panda Express #1262	316 Sycamore Ave	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Panda Express, Inc.	20 Main St 160	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Panera Bread	401 Vista Village Dr A	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Papa John's Pizza	485 Melrose Dr E	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Passion Growers West	1352 Decision St	92081	Medium	5193	Nurseries/Greenhouses	Agua Hedionda	Y

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Patrick Flynn's Collision and Frame Repair	1013 Service Place	92084	Medium	7532	Auto Paint/Body	Buena Vista	
Pauley Equipment	348 Santa Fe Ave	92083	Low	7359	Equipment Repair	Buena Vista	
Pepper Tree Frosty	270 S Santa Fe Ave	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Perfect Timing Auto Service	1224 Keystone Way	92083	Low	7538	Auto Repair	Agua Hedionda	
Performance Auto Body	1330 Melrose Dr A	92083	Low	7532	Auto Paint/Body	Loma Alta	
Pho Lucky	770 Sycamore Ave E, F	92081	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Piancone Gourmet International	203 Main St	92083	Medium		Eating/Drinking Establishments	Buena Vista	
Pick Up Stix-Vista #7214	251 S Melrose Dr 303	92081	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Picket Fence	945 S SANTA FE AVE	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Pineapple Joe's	35 Main St C-140	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Pitawanakwat Auto Repair	538 Olive Ave 304	92083	Low	7538	Auto Repair	Buena Vista	
Pizza Factory	1910 Shadowridge Dr 101	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
Pizza Hut Inc	1591 Vista Way B	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Plangea Cutting, L L C	1487 Poinsettia Ave 120	92083	Low	5137	Manufacturing, Fabric/Clothes	Agua Hedionda	
Platinum Auto Detail Shop @ Buggy Bath	1759 E Vista Way	92083	High	7542	Vehicle Washing	Buena Vista Creek	
Playa Azul Seafood Restaurant	1281 Santa Fe Ave X, Y	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
PLAZA MEAT MARKET	1717 E Vista Way	92084	High	5411	Eating/Drinking Establishments	Buena Vista Creek	Y
PlusPharma	2460 Coral St	92081	Low	5122	Wholesale/Storage/Warehousing	Agua Hedionda	
Popeyes Fried Chicken	1817 W Vista Way F	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Primo Food Market	1535 W Vista Way	92083	High	5411	Eating/Drinking Establishments	Buena Vista	Y

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Prudential Overall Supply	2485 Ash St	92083	Low	7211	*Not Inventoried*	Agua Hedionda	
Quality Discount Ice Cream Inc	2465 CORAL ST	92081	High	4214	Ground Transportation	Agua Hedionda	Y
Quality Laser Source, Inc.	1310 Melrose Dr C	92083	Low	5063	Wholesale/Storage/Warehousing	Loma Alta	
Quick Check Smog	835 Santa Fe Ave	92083	Low	7549	Auto Repair	Buena Vista	
Quizno's Subs	485 Melrose Dr 112	92081	Low	5812	Eating/Drinking Establishments	Buena Vista	
R & F Repair	538 Olive Ave 301	92083	Low	7538	Auto Repair	Buena Vista	
R K Iron Works	1124 Melrose Dr	92083	Low	5051	Wholesale/Storage/Warehousing	Buena Vista	
Rainbow Gardens	1444 E TAYLOR ST	92084	High	0181	Nurseries/Greenhouses	Buena Vista	
Rancho del Oro	1281 N Santa Fe Ave K	92083	High	5411	Eating/Drinking Establishments	Buena Vista	Y
Rancho Del Oro Towing	2260 La Mirada Dr	92081	Low	7549	Auto Repair	Agua Hedionda	
Rancho Garcia Nursery	1640 Bonair Rd	92084	High	5193	Wholesale/Storage/Warehousing	Buena Vista	Y
RANCHO VISTA CAR WASH	600 Hacienda Dr	92081	High	7542	Vehicle Washing	Buena Vista Creek	Y
Raylen Tasker's Auto Center	1806 Vista Way	92083	Low	7538	Auto Repair	Buena Vista	
Rayne Water Of North County	2011 Vista Way	92083	Medium	5499	Eating/Drinking Establishments	Buena Vista	
RC Auto and Smog	1410 Santa Fe Ave B	92084	Low	7538	Auto Repair	Buena Vista	
Red Line Towing & Fleet Maintenance, Inc.	451 Olive Ave	92083	Low	7549	Auto Repair	Buena Vista	
Redline	2510 Commerce Way	92083	Low	5013	Auto Supplies	Agua Hedionda	
Reliable Transmission/Vista Towing	810 Santa Fe Ave	92083	Low	7537	Auto Repair	Buena Vista	
Restaurant y Panderia Montealban	1275 Santa Fe Ave	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
RESTORONICS OF SAN DIEGO	1340 Specialty Dr C	92083	Low	7629	Equipment Repair	Agua Hedionda	
Rice King	3265 Business Park Dr C	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y

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Richard's Performance Muffler	1352 Melrose Dr A	92083	Low	7533	Auto Repair	Loma Alta	
Rin's Coffee Car @ Vista Medical Plaza	2067 Vista Way 160	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Robert Jury & Associates	2435 Cades Way	92081	Medium	5064	Wholesale/Storage/Warehousing	Agua Hedionda	
Rob's Auto Repair	1124 Melrose Dr 202	92083	Medium	7538	Auto Repair	Buena Vista	
Rodeos Meat Market	356 Vista Village Dr	92083	High	5421	Eating/Drinking Establishments	Buena Vista	Y
Rollin Renches Inc.	1212 Distribution Way	92083	Low	7538	Auto Repair	Agua Hedionda	
Romeo's Car Wash	352 Santa Fe Ave	92083	Low	7542	Vehicle Washing	Buena Vista	Y
Rosa Gonzales Plants Inc	377 Olive Ave	92083	Low	5193007	Wholesale/Storage/Warehousing	Buena Vista	
Round Table Pizza	923 E Vista Way	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Royal Pho	1717 E Vista Way 101-102	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Rubio's Baja Grill	1711 University Dr 110	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
S & R Service Center	245 Emerald Dr C	92083	Low	7538	Auto Repair	Buena Vista	
S N C I, Inc.	1680 S Melrose Dr	92084	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
Salsa Market	1100 N Santa Fe Ave	92083	Low	5411	Eating/Drinking Establishments	Buena Vista	Y
Sams Club #6234	1900 University Dr	92083	Medium	5411	Eating/Drinking Establishments	Agua Hedionda	Y
San Giorgio Lucano Corp (EZ Pasta, Inc)	1280 Vista Way 106	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
Santa Fe Auto Repair	1045 N Santa Fe Ave	92083	High	7538	Auto Repair	Buena Vista	Y
Santa Fe Car Wash	980 Santa Fe Ave	92084	Medium	7542	Vehicle Washing	Buena Vista	
Santa Fe Petroleum, Inc. Dba Arco Am/Pm	1403 S Santa Fe Ave	92083	High	5541	Fueling	Buena Vista Creek	Y
Santorini Island Grill Vista, L L C	3295 Business Park Dr D	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Sarika Thai Kitchen	1011 S Santa Fe Ave	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Sea Aloe Inc.	1253 Activity Drive A	92081	Medium	5122	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Sea Witch Marine, Inc	1085 S Santa Fe Ave	92083	High	5551	Vehicle Dealers	Buena Vista	Y
Security Chevrolet Inc	1100 E Vista Way	92084	High	5511	Vehicle Dealers	Buena Vista	Y
Seltzer Companies, Inc.	1389 Park Center Dr	92083	Medium	4214	Eating/Drinking Establishments	Agua Hedionda	Y

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Semco	1430 VANTAGE CT	92083-8596	Low	5063	Wholesale/Storage/Warehousing	Agua Hedionda	
Service Clinic	436 Vista Village Dr	92083	Low	7538	Auto Repair	Buena Vista	
Shadowridge 76, Inc./Vollmer Petroleum	636 Sycamore Avenue	92083	Medium	5541	Fueling	Agua Hedionda	
Shadowridge Country Club	1980 GATEWAY DR	92083	High	7997	Golf courses/Parks	Agua Hedionda	Y
Shell Oil Products U.S.	400 Sycamore Avenue	92083	Medium	5541	Fueling	Agua Hedionda	
SKS, Inc. Petroleum Distributors	620 S Santa Fe Ave	92083	High	5541	Fueling	Buena Vista	Y
Slater's Donut Shop	625 Santa Fe Ave	92083	Medium		Eating/Drinking Establishments	Buena Vista	
Smitty's Downtown	119 Broadway	92083	Medium	5813	Eating/Drinking Establishments	Buena Vista	
Smog Centers of California	485 Melrose Dr	92083	Low	7549	Auto Repair	Buena Vista	
Solano Bakery	203 Main St	92084	Low	5461	Eating/Drinking Establishments	Buena Vista	
Souplantation	1860 University Dr	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
South Melrose Arco	1590 S Melrose Drive.	92081	Medium	5541	Fueling	Agua Hedionda	
Specialized Paint & Body Works	553 Mercantile St	92083	Medium	7532	Auto Paint/Body	Buena Vista	
Spectra Gases Inc	1261 Activity Dr	92083	Medium	5169	Wholesale/Storage/Warehousing	Agua Hedionda	
Sport Car Motion	2332 La Mirada Dr 1100	92084	Low	7549	Auto Repair	Agua Hedionda	
Stagecoach Inn	1865 Vista Way	92083	Medium	5813	Eating/Drinking Establishments	Buena Vista	
Standard Process of Southern California Inc.	981 Park Center Dr	92081	Low	5199	Wholesale/Storage/Warehousing	Agua Hedionda	
Starbucks Coffee	1385 Vista Way	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
Starbucks Coffee #11339	790 Sycamore Ave A	92081	Medium		Eating/Drinking Establishments	Agua Hedionda	
Starbucks Coffee #5838	251 S MELROSE DR Suite #301	92081	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Starbuck's Coffee #6676	30 Main St 190	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Starbucks Coffee #6792	1631 Melrose Dr	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	
Stark Painting Inc	2525 Pioneer Ave 1	92083	Low	1721	Other Contractor	Agua Hedionda	

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Starline Windows	1350 Specialty Dr B	92081	Low	1793	Other Contractor	Agua Hedionda	
Stater Bros Market #156	780 Sycamore Ave	92083	Medium	5411	Eating/Drinking Establishments	Agua Hedionda	Y
Stater Bros. Market #157	1451 N Santa Fe Ave	92084	Low	5411	Eating/Drinking Establishments	Buena Vista	Y
Structural Materials Co.	2770 La Mirada Dr	92084	Low	5039	Building Materials	Agua Hedionda	
Sub Shop # 195	1289 Vista Way	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
Submarina	942 Santa Fe Ave	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Submarina (Business Park)	3231 Business Park Dr 4	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Submarina (Watts Brothers, LLC)	320 Sycamore Ave 40	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Subway	510 Hacienda Dr 101A	92081	Low	5812	Eating/Drinking Establishments	Buena Vista Creek	
Subway 44268	790 Sycamore Ave B	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Subway #24598/Subway Life, Inc.	1711 University Dr 120	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Subway #32111	20 Main St 150	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
Subway #36756	2440 S Melrose Dr 101	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Subway Sandwiches & Salads #22847	1031 Santa Fe Ave B	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Subway Sandwiches & Salads 2208	950 E Vista Way	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Sun Hing Buffet LLC	1960 Hacienda Dr	92081	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Sundance Machinery Sales, Inc.	1489 Poinsettia Ave 132	92083	Low	5084	Wholesale/Storage/Warehousing	Agua Hedionda	
Sunrise Cafe	1250 S Santa Fe Ave 3	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Sunrise Farms	3110 Scott St	92083	Medium	5148	Nurseries/Greenhouses	Agua Hedionda	Y
Sunset Deli Provisions, Inc.	2820 LA MIRADA DR A	92083	Low	5147	Wholesale Food	Agua Hedionda	Y
Super Pescaderia El Puerto	403 N Santa Fe Ave	92084	Medium		Eating/Drinking Establishments	Buena Vista	

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Super Taco	1072 Vista Way	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Superior Plant Sales Inc	2581 Pioneer Ave B	92083	Low	5193	Wholesale/Storage/Warehousing	Agua Hedionda	Y
Sushi Cafe	3245 Business Park Dr 2	92081	Low	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Swanson Studios	339 Olive Ave	92083	Medium	1793	Masonry	Buena Vista	Y
Sycamore Texaco	400 Sycamore Avenue	92083	Medium	5541	Fueling	Agua Hedionda	
T C'S Garage	1315 Hot Spring Way	92081	Low		Auto Supplies	Agua Hedionda	
T I M Services (Mazda Services)	245 Emerald Dr A	92083	Low	7538	Auto Repair	Buena Vista	
Taco Bell 17787	910 Vista Way	92084	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Taco Bell 20413	3271 Business Park Dr	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
TARGET STORE #T1040	1751 University Dr	92083	High	5411	Eating/Drinking Establishments	Agua Hedionda	Y
Ted's Auto Service	727 Vista Village Drive	92083	High	7538	Auto Repair	Buena Vista	Y
Teo's Auto Electric	446 Olive Ave H	92083	Low	7539	Auto Repair	Buena Vista	
Texmate Inc	995 Park Center Dr	92083	Low	5063	Wholesale/Storage/Warehousing	Agua Hedionda	
Thai Pasta	1876 Hacienda Dr	92081	Medium	5812	Eating/Drinking Establishments	Buena Vista	
The Car Zone	964 Vista Village Drive	92084	Medium	5511	Auto Supplies	Buena Vista Creek	Y
The Daily Fix Cafe	2067 W Vista Way	92084	Low		Eating/Drinking Establishments	Lower San Luis	
The Lawn Center	603 Santa Fe Ave	92083	Medium	5261	Nurseries/Greenhouses	Buena Vista	Y
The Original Pancake House	435 Melrose Dr	92081	Medium	5812	Eating/Drinking Establishments	Buena Vista	
The Picket Fence	945 S Santa Fe Ave	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
The Snack House	1580 S MELROSE DR Suite #117	92084	Medium	5461	Eating/Drinking Establishments	Agua Hedionda	
The Transmission Source	538 Olive Ave 101-103	92083	Low	7537	Auto Repair	Buena Vista	
The Village Bagel Co. (Guerin Mngmt)	485 Melrose Dr 106	92081	Low	5461	Eating/Drinking Establishments	Buena Vista	
TJ Properties, Inc Chevron Olive	485 Melrose Dr	92083	Low	5541	Fueling	Buena Vista	

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Tom Kennedy Auto Repair	1330 Melrose Dr D	92083	Low	7538	Auto Repair	Loma Alta	
Tom's No. 24 Restaurant	1110 SYCAMORE AVE	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
Tony's Meats @ Rancho Vista Market	988 Escondido Ave H	92083	High	5421	Eating/Drinking Establishments	Buena Vista	Y
Tony's Mobil	801 Santa Fe Ave	92083	Medium	5541	Fueling	Buena Vista	
Torres Asuncion Growers	1712 Anza Ave	92084	High	0181	Nurseries/Greenhouses	San Luis Rey	Y
Tortilleria Hermanos Reyes	402 Olive Ave	92084	Medium	2099	Eating/Drinking Establishments	Buena Vista	
Tortilleria Los Reyes	218 Main St	92084	Medium		Eating/Drinking Establishments	Buena Vista	Y
Tri City Tire & Automotive	241 Emerald Dr A	92083	Low	7534	Auto Repair	Buena Vista	
Tri City Transmission	1147 Santa Fe Ave	92083	Medium	7537	Auto Repair	Buena Vista	
Tri-city Smog	245 Emerald Dr B	92083	Low	7549	Auto Repair	Buena Vista	
TRITTON TECHNOLOGIES, INC.	1340 Specialty Dr B	92081	Low	5045	Wholesale/Storage/Warehousing	Agua Hedionda	
Tropical Juice & Deli	1116 Sycamore Avenue F	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
Tropicana Rancho Market	829 N Santa Fe Ave	92084	Medium	5411	Eating/Drinking Establishments	Buena Vista Creek	Y
Turf Star, Inc.	2110 La Mirada Dr	92083	Low	0782	Landscaping	Agua Hedionda	
Two Brothers From Italy	986 Vista Way	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	
Two Brothers From Italy	1651 Melrose Dr C	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Uncle Tony's Italian Cuisine	770 Sycamore Ave H	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
United Plant Growers, Inc.	1054 Mar Vista	92081	Medium	5193	Wholesale/Storage/Warehousing	Agua Hedionda	
United Site Services of CA, Inc	157 Nettleton Rd	92083	Medium	7359	Portable Sanitation	Buena Vista	
Upper Crust Pizza	1330 Vista Way 2	92084	Low	5812	Eating/Drinking Establishments	Buena Vista	
Urbn Coal Fired Llc	203 Main St	92084	Low		Eating/Drinking Establishments	Buena Vista Creek	
Used Car Depot	1036 Santa Fe Ave	92084	Medium	5521	Vehicle Dealers	Buena Vista	

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
V R Truck And Auto Service	538 Olive Ave 401	92083	Low		Auto Repair	Buena Vista	
Vadnais Corporation	2130 La Mirada Dr	92081	Low		Other Contractor	Agua Hedionda	
Valentinas Mexican Grill	320 Sycamore Ave	92083	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Vanessa's Mexican Food #2	224 N Emerald Drive	92083	Medium		Eating/Drinking Establishments	Buena Vista	
Victor's Brake & Auto Specialists	1352 Melrose Dr G	92083	Low	7539	Auto Repair	Loma Alta	
Village Cafe	406 Main St	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Vista Auto Group Inc.	267 Santa Fe Ave	92083	Medium	5521	Vehicle Dealers	Buena Vista	
Vista Brake Service and Supply	790 Vista Way	92084	Medium	7539	Auto Repair	Buena Vista	
Vista Car Care	444 S Santa Fe Ave A	92083	High	7538	Auto Repair	Buena Vista	Y
Vista Car Sales	1420 Santa Fe Ave	92084	Low	5521	Vehicle Dealers	Buena Vista	
Vista Chinese Food	828 N Santa Fe Ave A1	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	Y
Vista Donuts	879 Santa Fe Ave	92083	Medium	5461	Eating/Drinking Establishments	Buena Vista	
Vista Entertainment Center	435 Vista Way	92083	Medium	5812	Eating/Drinking Establishments	Buena Vista	
Vista Firestone Brake and Smog	711 Santa Fe Ave	92083	Low	7538	Auto Repair	Buena Vista	
Vista Independent Volvo Service	538 Olive Ave C-303	92083	Low	7538	Auto Repair	Buena Vista	
Vista Motorcycle	1155 Santa Fe Ave G	92083	Medium	7699	Auto Repair	Buena Vista	
Vista Muffler and Radiator	435 Redlands St	92083	Low	7538	Auto Repair	Buena Vista	
Vista Santa Fe Car Wash	521 Santa Fe Ave	92083	Low	7542	Vehicle Washing	Buena Vista	
Vista Santa Fe Transmissions, Inc.	1144 Santa Fe Ave	92083	Medium	7538	Auto Repair	Buena Vista	
Vista Transmission Service	427 Redlands Street B	92083	High	7537	Auto Repair	Buena Vista	Y

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Vista Unocal	976 Escondido Avenue	92083	Medium	5541	Fueling	Buena Vista	
Vista Valley Auto Center	1803 Vista Way	92084	Low	5521	Vehicle Dealers	Buena Vista	
Vista Village Motors	350 Vista Village Dr	92083	Low	5521	Vehicle Dealers	Buena Vista	
Vista Way Cafe	868 E Vista Way	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Vista Way Smog	911 Vista Way	92083	Medium	7549	Auto Repair	Buena Vista	
Vista's Ice Box	777 E Vista Way 204	92084	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Volvo Works	1211 Melrose Dr A	92083	Medium	7538	Auto Repair	Loma Alta	
Vons Grocery #2121	940 S Santa Fe Ave	92083	High	5411	Eating/Drinking Establishments	Buena Vista	Y
WALMART #2094	1800 University Dr	92083	High	5411	Eating/Drinking Establishments	Agua Hedionda	Y
Warmland Nursery	1850 Warmlands Ave	92084	Medium	0181	Nurseries/Greenhouses	Buena Vista	
Wasabi Japanese Cuisine	1688 S Melrose Dr 212	92083	High	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Wendy's Restaurant #16	567 W Vista Way	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
West Coast Imports Sales & Conversions	1386 Poinsettia Ave E	92083	Low	5521	Vehicle Dealers	Agua Hedionda	
West Coast Refrigerated Trucking	1330 Distribution Way B	92081	High	4212	Ground Transportation	Agua Hedionda	Y
Western Concrete Pumping, Inc	2181 La Mirada Dr	92083	Low	1623	Other Contractor	Agua Hedionda	
Western States Petroleum LLC dba Chevron	600 Hacienda Dr	92083	Medium	5541	Fueling	Buena Vista	
Wholesale Tube Bending #2	257 Emerald Dr C	92083	Low	7533	Auto Repair	Buena Vista	
Wholesale Tube Bending #2	257 N Emerald Dr C	92083	Medium		Auto Repair	Buena Vista Creek	
Wicked Good Pizza	749 Shadowridge Dr	92081	Medium	5812	Eating/Drinking Establishments	Agua Hedionda	Y
Wienerschnitzal 288	901 S Santa Fe Ave	92083	High	5812	Eating/Drinking Establishments	Buena Vista	Y
Wings N Things Restaurant	35 Main St C140	92083	Low		Eating/Drinking Establishments	Buena Vista Creek	
Wizard Auto Repair	446 Olive Ave C	92083	Low	7538	Auto Repair	Buena Vista	

Business Name:	Address	Zip	TTWQ	SIC	Category:	Watershed	Full Inspections '08/'09
Wrought Iron Concepts, Inc.	1124 Melrose Dr	92083	Low	1799	Other Contractor	Buena Vista	
X R-Bob's Harley Davidson Repair	329 Olive Ave	92083	Low	7699	Auto Repair	Buena Vista	
YAME CAFE	680 Hacienda Dr	92081	High	5812	Eating/Drinking Establishments	Buena Vista Creek	Y
Ye Olde Car Shoppe	555 Mercantile St	92084	Low	7538	Auto Repair	Buena Vista	
Yogurt Giant	1817 Vista Way E	92083	Low	5812	Eating/Drinking Establishments	Buena Vista	
Yum Yum Donut Franchise 5050d	924 Santa Fe Ave	92083	Medium	5461	Eating/Drinking Establishments	Buena Vista	
Z S R Auto Repair	446 Olive Ave D	92083	Low		Auto Repair	Buena Vista	
Zimmermann Autosport/ZAS	1304 Melrose Dr B	92083	Low	7532	Auto Paint/Body	Loma Alta	
Ziphouse, LLC	1330 Specialty Dr D	92081	Low	5162	Wholesale/Storage/Warehousing	Agua Hedionda	
ZUITSPORTS, INC.	2880 Scott St 101-102	92081	Medium	5136	Wholesale/Storage/Warehousing	Agua Hedionda	
Total Stationary Commercial Inventory = 594							

APPENDIX D-2

2008-09 Stationary Industrial Inventory

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
2s2, Inc.	1330 Specialty Dr C	92081	Medium	3679	Manufacturing, Electronics	Agua Hedionda	
A D G Industrial Supply	2055 Thibodo Rd M	92081	Low	3999	Manufacturing, Fabricated Metal	Agua Hedionda	
A T Machine	2515 Pioneer Ave 3	92083	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
A W R/Racing Cages	2865 Scott St 106-107	92081	Medium	3711	Manufacturing, Equipment	Agua Hedionda	
Abramo Industrial Design & Mfg.	1341 Distribution Way 21	92081	Low	3999	Manufacturing, Misc	Agua Hedionda	
Abramo Industrial Design and Manufacturing	1351 Distribution Way 4	92081	Low	2434	Manufacturing, Wood/Furniture	Agua Hedionda	
Accutech, LLC	2641 La Mirada Dr	92083	Medium	2835	Manufacturing, Biotech/Pharmaceutical	Agua Hedionda	Y
Advance Web Offset, Inc.	2260 Oak Ridge Way	92081	Low	2752	Printing	Agua Hedionda	
Advanced Rework Solutions, L L C	2142 Industrial Ct B	92081	Low	3482	Manufacturing, Electronics	Agua Hedionda	
Aea Wireless, Inc.	1489 Poinsettia Ave 134	92083	Low	3679	Manufacturing, Electronics	Agua Hedionda	
AID & M	1351 Distribution Way 4	92081	Medium	2434	Manufacturing, Wood/Furniture	Agua Hedionda	Y
Air Tech Streamlining	2530 Fortune Way	92083	Medium	3714	Manufacturing, Equipment	Agua Hedionda	
Alvarado Micro-Precision	2475 Coral St C	92083	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	
American Faucet & Coatings Corp	3280 CORPORATE VIEW DR	92083	Medium	3499	Manufacturing, Fabricated Metal	San Marcos Creek	
American Peptide Company	1271 Avenida Chelsea	92083	Medium	2834	Manufacturing, Biotech/Pharmaceutical	Agua Hedionda	
Aperio Technologies, Inc.	1430 VANTAGE CT 106	92083	Low	3826	Manufacturing, Electronics	Agua Hedionda	
Apollo Sprayers Inc	1030 Joshua Way	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	
Applied Control Concepts / CNC Dynamics	1209 Activity Dr	92081	Low	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
Applied Membranes, Inc.	2325 COUSTEAU CT	92083	Medium	3589	Manufacturing, Equipment	Agua Hedionda	
Applied Technology Co.	1280 Liberty Way	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	
Aptera Motors, Inc.	3151 Scott St	92081	High	3711	Manufacturing, Misc	Agua Hedionda	Y
Armorcraft Off-Road Corp	2312 La Mirada Dr	92081	Low	3711	Manufacturing, Equipment	Agua Hedionda	
Armorfab Custom Cycles	538 Olive Ave	92083	Low	2599	Manufacturing, Equipment	Buena Vista	
Arshia Custom Cabinet	2525 Pioneer Ave 5	92081	Low	2434	Manufacturing, Wood/Furniture	Agua Hedionda	
B/E Aerospace	2555 BIRCH ST	92083	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
BAE Systems Advanced Ceramics Inc	991 PARK CENTER DR	92083	Medium	3297	Manufacturing, Stone/Glass	Agua Hedionda	
BAE Systems, Advanced Ceramics	1960 Watson Way	92083	Medium	3297	Manufacturing, Stone/Glass	Agua Hedionda	
Bekaert Progressive Composites	2455 Ash St	92083	Low	3089	Manufacturing, Plastic/Rubber	Agua Hedionda	
Bendmac Manufacturing	440 Olive Ave P	92084	Medium	3498	Manufacturing, Fabricated Metal	Buena Vista	
Big Fish Motorsports	925 Poinsettia Ave A-5	92083	Low	3999	Manufacturing, Fabricated Metal	Agua Hedionda	
Bilandzija Cabinets	2588 Progress St 5	92083	Medium	2434	Manufacturing, Wood/Furniture	Agua Hedionda	
BOJ	611 Mercantile St	92083	Medium	2434	Manufacturing, Wood/Furniture	Buena Vista	
Bravo Screen Print	1230 Activity Dr D	92081	Medium	2759	Printing	Agua Hedionda	
Brightco Machining	2336 La Mirada Dr 200	92081	Low	3999	Manufacturing, Fabricated Metal	Agua Hedionda	
Bristol S.G., Inc.	2525 Pioneer Ave 6	92083	Medium	3679	Manufacturing, Misc	Agua Hedionda	
Bruning Engineering Inc	2598 Fortune Way M	92083	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	
C Enterprises, LP	2445 Cades Way	92081	Low	3357	Manufacturing, Fabricated Metal	Agua Hedionda	
C N C Precision Machining	797 North Ave C	92083	Medium	3599	Manufacturing, Fabricated Metal	Loma Alta	
CH Products	970 Park Center Dr	92083	Low	3699	Manufacturing, Equipment	Agua Hedionda	
Coast Intelligen, Inc.	2460 Ash St	92083	Medium	3621	Manufacturing, Equipment	Agua Hedionda	
Coastline Embroidery	1330 Keystone Way D	92081	High	2281	Manufacturing, Fabric/Clothes	Agua Hedionda	Y
Coffee Cart Biz	1150 Joshua Way	92081	High	2541	Manufacturing, Fabricated Metal	Agua Hedionda	Y
Concept Machining	1230 Activity Dr C	92081	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
Cookies Con Amore	2330 La Mirada Dr 700	92081	Medium	2052	Manufacturing, Food/Drink	Agua Hedionda	Y
Cornerstone Sensors Inc	1304 Melrose Dr C	92083	Medium	3676	Manufacturing, Electronics	Loma Alta	
Cousins Signs Inc	350 EBROADWAY	92084	Medium	3993	Printing	Buena Vista	
Creative Printing	1132 Melrose Dr	92083	Medium	2759	Printing	Buena Vista	
Crown Industrial Products, Inc.	2440 La Mirada Dr	92081	Medium	3714	Manufacturing, Equipment	Agua Hedionda	Y
C-Shoes	797 North Ave D	92083	Medium	3499	Manufacturing, Fabricated Metal	Loma Alta	
Csi Technologies, Inc.	2595 Commerce Way	92083	Medium	3629	Manufacturing, Equipment	Agua Hedionda	
Custom Machined Products	1338 Melrose Dr E	92083	Medium	3499	Manufacturing, Fabricated Metal	Loma Alta	
D B S Associates, Inc.	2480 Grand Ave	92081	High	3585	Manufacturing, Equipment	Agua Hedionda	Y
D J Orthopedics, L L C	2985 Scott St	92083	Low	3482	Manufacturing, Electronics	Agua Hedionda	

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
Dart Plastics & Engineering, Inc.	1240 Activity Dr A	92083	Medium	3808	Manufacturing, Plastic/Rubber	Agua Hedionda	
Denso International America Inc. Dba L A Labs	3250 Business Park Dr	92081	Low	2833	Manufacturing, Biotech/Pharmaceutical	San Marcos	
Digital On-Demand, Inc.	1390 Decision St B	92081	Low	3482	Manufacturing, Electronics	Agua Hedionda	
Dime Water, Inc.	2575 Fortune Way J	92083	Medium	3589	Manufacturing, Equipment	Agua Hedionda	
Distinctive Plastics, Inc.	1385 Decision St	92085	Medium	3089	Manufacturing, Plastic/Rubber	Agua Hedionda	
Diversified Manufacturing Of Ca	2555 Progress St	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	
Diversified Tool & Die	2585 BIRCH ST	92083	Medium	3469	Manufacturing, Fabricated Metal	Agua Hedionda	
Douglas Wheel, Inc.	1340 Melrose Dr	92083	Medium	3714	Manufacturing, Equipment	Loma Alta	
Dutek Inc.	2248 Oak Ridge Way	92083	Low	3679	Manufacturing, Electronics	Agua Hedionda	
E & J Stone	795 North Ave E	92081	Low	3281	Manufacturing, Stone/Glass	Loma Alta	
Earthlite Massage Tables Inc dba	3210 Executive Ridge Dr	92083	Medium	2599	Manufacturing, Wood/Furniture	Agua Hedionda	
Eaton Leonard Robolix, Inc	1391 Specialty Dr A	92083	Medium	3542	Manufacturing, Equipment	Agua Hedionda	
Econo Plastics, Inc. (Progressive Molding)	1210 Melrose Dr A	92083	Medium	3089	Manufacturing, Plastic/Rubber	Loma Alta	
Elite Metal Finishing	1392 Poinsettia Ave C	92083	Medium	3471	Manufacturing, Fabricated Metal	Agua Hedionda	
Elixir Steel Framing Corp	2611 Commerce Way D	92081	Medium	3444	Manufacturing, Fabricated Metal	Agua Hedionda	
Epitech	1120 Sycamore Avenue I	92081	Medium	3496	Manufacturing, Electronics	Agua Hedionda	Y
E-World Recyclers	2480 Ash Street	92081	Medium	5093	Recycling	Agua Hedionda	
F&T Precision Products	980 Park Center Dr I	92083	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
Fax Foods	1392 Poinsettia Ave A, B	92083	Medium	3089	Manufacturing, Plastic/Rubber	Agua Hedionda	
Ferro Electronic Materials Systems	1395 ASPEN WAY	92083	Medium	3675	Manufacturing, Electronics	Agua Hedionda	
Fineline Apparel Printing	1485 Poinsettia Ave 105	92083	High	2759	Manufacturing, Fabric/Clothes	San Marcos	Y

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
Finishing Touch Custom Drapery	2835 La Mirada Dr C	92081	Medium	2391	Manufacturing, Fabric/Clothes	Agua Hedionda	Y
Fish House Foods, Inc.	3285 CORPORATE VIEW DR	92083	Medium	2038	Manufacturing, Food/Drink	San Marcos Creek	Y
Flotron	2485 Coral St	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	
FMD	2308 La Mirada Drive	92081	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	Y
Frito Lay Inc	1390 VANTAGE CT	92081	Medium	4214	Ground Transportation	Agua Hedionda	
Fruttos Yogurt	347 Vista Village Dr 104	92083	Medium	2013	Manufacturing, Food/Drink	Buena Vista Creek	
Funktion	1930 Watson Way P	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	
Fwd Screenprinting	2336 La Mirada Drive 1000	92081	Medium	2759	Printing	Agua Hedionda	Y
Graphic Converting, Inc.	1370 Decision St	92083	Medium	2657	Manufacturing, Paper	Agua Hedionda	
Green Flash Brewing Company	1430 Vantage Ct	92081	Medium	2082	Manufacturing, Food/Drink	San Marcos	Y
Grilla	1235 Activity Dr F	92081	Medium	3714	Manufacturing, Equipment	Agua Hedionda	
H F Johnston Mfg. Co.	2475 Ash St	92083	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
Hargett Precision Products	2865 Scott St 108	92081	Medium	3592	Manufacturing, Misc	Agua Hedionda	Y
HI REZ DIGITAL SOLUTIONS	1235 Activity Dr E	92081	Medium	2759	Printing	Agua Hedionda	
Hi Tech Swiss Machining Inc	2410 La Mirada Dr	92083	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	Y
Hocking Intl Labs	970 Park Center Dr. Ste C	92081	Medium	2841	Manufacturing, Chemicals	Agua Hedionda	
Horstman Manufacturing Co Inc	2510 Pioneer Ave	92083	Medium	3799	Manufacturing, Equipment	Agua Hedionda	
HRE Performance Wheels	2611 Commerce Way D	92081	Low	3714	Manufacturing, Equipment	Agua Hedionda	
Hudson Printing, Inc.	1497 Poinsettia Ave 153	92081	Low	2759	Printing	Agua Hedionda	
Hydrocomponents & Technologies, Inc.	1175 Park Center Dr H	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	
I C P America, Inc.	1070 Joshua Way	92083	Low	3676	Manufacturing, Electronics	Agua Hedionda	

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
I W Technologies, Inc.	2446 Cades Way	92083	Medium	3999	Manufacturing, Equipment	Agua Hedionda	
IDL Tech Tools	2438 Cades Way	92084	Low	3423	Manufacturing, Fabricated Metal	Agua Hedionda	
Intellectual Technology, Inc.	1040 Joshua Way	92083	Medium	3577	Manufacturing, Electronics	Agua Hedionda	
International Lottery & Totalizator Systems, Inc.	2310 Cousteau Court	92081	Low	3482	Manufacturing, Electronics	Agua Hedionda	
J & D Laboratories	2640 PROGRESS ST	92083	Medium	2834	Manufacturing, Biotech/Pharmaceutical	Agua Hedionda	Y
J Mark Manufacturing Inc	2480 Coral St C	92083	Medium	3499	Manufacturing, Structural Steel	Agua Hedionda	
JAVO Beverage Co.	1311 Specialty Drive	92081	Medium	2095	Manufacturing, Food/Drink	Agua Hedionda	Y
Jeld-Wen Summit Windows And Patio Doors	2760 PROGRESS ST	92083	Medium	3442	Manufacturing, Structural Steel	Agua Hedionda	
Jensen Meat Co Inc	2525 BIRCH ST	92083	Medium	2013	Manufacturing, Food/Drink	Agua Hedionda	
Jif-Pak Manufacturing, Inc.	1451 ENGINEER ST	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	
Jugueria La Tropicana #2	1839 W Vista Way B	92083	Medium	2013	Manufacturing, Food/Drink	Buena Vista	
Killion Industries Inc	1380 Poinsettia Ave	92083	Medium	2541	Manufacturing, Wood/Furniture	Agua Hedionda	
Killion Industries, Inc.	2811 La Mirada Dr	92083	Medium	3585	Manufacturing, Wood/Furniture	Agua Hedionda	Y
K'S Refrigerated Transport, L L C	2591 Pioneer Ave C	92081	Low	4212	Ground Transportation	Agua Hedionda	
Lee's Iron Inc	1315 LEE DR	92083	High	5093	Recycling	Loma Alta	Y
Lemken Kuhlwerk	2330 La Mirada Dr 200	92081	Low	2434	Manufacturing, Wood/Furniture	Agua Hedionda	
Leucadia Surf Design, Llc	2755 Dos Aarons Way B	92081	Low	2599	Manufacturing, Equipment	Agua Hedionda	
Lightwave Audio Systems, Inc.	1384 Poinsettia Ave F	92083	Medium	3679	Manufacturing, Electronics	Agua Hedionda	
M C R Auto Machine Shop	452 Olive Ave K	92083	Low	3999	Manufacturing, Fabricated Metal	Buena Vista	
M Klemme Technology, Corp	1386 Poinsettia Ave A	92083	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	
M M Precision Machining	2525 Pioneer Ave 4	92083	Medium	3345	Manufacturing, Equipment	Agua Hedionda	
Magna Coatings Corp	1440 Decision St	92083	Medium	2851	Manufacturing, Chemicals	Agua Hedionda	
Magnacore Inc.	1386 Poinsettia Ave B	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	
Magnum Offroad	1235 Activity Dr A	92081	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	Y
Manzo's Metal Works	797 North Ave D	92081	Low	3599	Manufacturing, Fabricated Metal	Loma Alta	
Martin Enterprises	3235 Executive Ridge Dr	92083	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
Merical Inc.	2550 Pioneer Ave	92083	Medium	2834	Manufacturing, Biotech/Pharmaceutical	Agua Hedionda	Y
Meridian Laboratory Inc	1330 Melrose Dr E	92083	Medium	3499	Manufacturing, Fabricated Metal	Loma Alta	
Michael A. Eddy Painting	1930 Watson Way I	92083	Low	3479	Manufacturing, Fabricated Metal	Agua Hedionda	
Micronel U.S.	1280 Liberty Way	92083	Low	3999	Manufacturing, Misc	Agua Hedionda	
Mihal Enterprises dba JT-Designs	1250 Activity Dr E	92081	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
Minor Fab	1205 Melrose Dr M	92084	Low	3499	Manufacturing, Fabricated Metal	Loma Alta	
MODERN MEDICAL SUPPLY	1235 Activity Dr F	92083	Medium	2599	Manufacturing, Equipment	Agua Hedionda	
Monserate Biotech, L L C	1396 Poinsettia Ave	92081	Low	2833	Manufacturing, Biotech/Pharmaceutical	San Marcos	
MS Marble	1338 N Melrose Dr J	92083	Medium	3281	Manufacturing, Stone/Glass	Loma Alta	Y
Natural Alternatives Int'l Inc	1215 Park Center Dr	92081	Low	2833	Manufacturing, Biotech/Pharmaceutical	Agua Hedionda	Y
Newsail Marine & Energy	730 Sycamore Ave E	92083	Medium	3999	Manufacturing, Fabricated Metal	Agua Hedionda	
NML, LLC	2575 Pioneer Ave 105	92081	Medium	3999	Manufacturing, Misc	Agua Hedionda	
Nutritional Engineering Inc.	1208 AVENIDA CHELSEA	92083	Medium	2834	Manufacturing, Biotech/Pharmaceutical	Agua Hedionda	Y
Oceanside Marble Cromade, Inc.	921 Poinsettia Ave B-10	92081	Low	3999	Manufacturing, Fabricated Metal	Agua Hedionda	
Oem Production LLC	2875 Scott St 101-102	92081	Medium	3949	Manufacturing, Plastic/Rubber	Agua Hedionda	
Oggi's Pizza & Brewing Co.	425 S Melrose Dr	92081	High	2082	Manufacturing, Food/Drink	Buena Vista	Y
O-Navi, L L C	1260 Activity Dr B	92081	High	3672	Manufacturing, Electronics	Agua Hedionda	Y
Orlimar Golf Company	1385 Park Center Dr	92083	Low	3999	Manufacturing, Misc	Agua Hedionda	
Orthodontic Design & Production, Inc.	1370 Decision St D	92081	Low	3843	Manufacturing, Equipment	Agua Hedionda	
OSMONICS (GE)	760 Shadowridge Dr	92083	High	3999	Manufacturing, Misc	Agua Hedionda	Y
Outreach Inc	2230 Oak Ridge Way	92081	Low	2759	Printing	Agua Hedionda	
Ozivert	921 Poinsettia Ave 3	92081	Low	3999	Manufacturing, Fabricated Metal	Agua Hedionda	
Pacific Aero Press	1133 LARK HILL DR	92084	Low	2731	Printing	San Luis Rey	
Pacific Aquatic Furniture Design	2515 Pioneer Ave 4	92081	Low	2434	Manufacturing, Wood/Furniture	Agua Hedionda	
Pacific Ceet, Inc.	1220 Liberty Way	92083	Medium	3999	Manufacturing, Misc	Agua Hedionda	

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
PACIFIC STAIR PRODUCTS	2241 La Mirada Dr	92081	Low	2541	Manufacturing, Wood/Furniture	Agua Hedionda	
Palmac Design & Manufacturing	2445 La Mirada Dr	92083	Medium	3585	Manufacturing, Fabricated Metal	Agua Hedionda	Y
Phoenix Wheel Company, Inc. (HRE Performance)	2453 Cades Way A	92083	Medium	3499	Manufacturing, Equipment	Agua Hedionda	
Pixel Imaging Media	2595 Fortune Way	92081	Medium	2759	Printing	Agua Hedionda	
Power Craft Autoparts	452 Olive Ave L	92084	Medium	3999	Manufacturing, Misc	Buena Vista	
Poweron	1185 Park Center Dr S	92083	Low	3999	Manufacturing, Misc	Agua Hedionda	
Pozza Manufacturing Inc.	1185 Park Center Dr Q	92083	Medium	3599	Manufacturing, Equipment	Agua Hedionda	
Precise Manufacturing	1495 Poinsettia Ave 148	92083	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
Predator Motorsports	1250 Distribution Way	92081	Low	2599	Manufacturing, Equipment	Agua Hedionda	
Print House Inc	2630 Progress St	92083	Medium	2759	Printing	Agua Hedionda	
Print Inc	1225 PARK CENTER DR, Suite #A	92083	Medium	2759	Printing	Agua Hedionda	
Pro Designer Plastics Inc Pdp	1260 Liberty Way D	92083	Medium	3089	Manufacturing, Plastic/Rubber	Agua Hedionda	
Professional Water Technologies	1048 La Mirada Ct	92081	Medium	2899	Manufacturing, Chemicals	Agua Hedionda	Y
Promach	2438 Cades Way	92081	Low	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
Proteus Dimensional Technologies, Inc	1260 Distribution Way	92083	Low	3999	Manufacturing, Misc	Agua Hedionda	
Quantum Focus Instruments	990 Park Center Dr D	92083	Medium	3826	Manufacturing, Electronics	Agua Hedionda	
R Jesse & Company Inc	1226 KEYSTONE WAY	92083	Medium	3645	Manufacturing, Equipment	Agua Hedionda	
Raveon Technologies	2780 La Mirada Drive C	92081	Medium	3663	Manufacturing, Equipment	Agua Hedionda	Y
Ray Allen Company, Inc.	2525 Pioneer Ave 8	92081	Medium	3593	Manufacturing, Equipment	Agua Hedionda	
Rayzist Photomask Inc	955 Park Center Dr	92083	Medium	3281	Manufacturing, Stone/Glass	Agua Hedionda	Y
Renee Machine, Inc.	1185 Park Center Dr E	92083	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	
Reybro, Inc. dba Quality Recycling	149 NETTLETON RD	92083	Medium	5093	Recycling	Buena Vista	Y

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
Roadway Express Inc.	1392 Engineer St	92083	Medium	4212	Ground Transportation	Agua Hedionda	
Safe-Way Moving Inc.	1330 Distribution Way A	92081	High	4225	Ground Transportation	Agua Hedionda	Y
Sandel Avionics, Inc.	2401 Dogwood Way	92081	Medium	3812	Manufacturing, Electronics	Agua Hedionda	
Seber Tech L L C	2438 Cades Way	92083	Medium	3999	Manufacturing, Fabricated Metal	Agua Hedionda	
Security Systems, Inc	2585 Fortune Way B	92081	Medium	3629	Manufacturing, Equipment	Agua Hedionda	
Seven Mfg	1420 Decision St C	92083	Medium	2834	Eating/Drinking Establishments	Agua Hedionda	Y
Shadowridge Water Reclamation Facility	2525 LUPINE HILLS RD	92083	Medium	4952	POTWs	Agua Hedionda	
Sherline Products, Inc.	3235 Executive Ridge Dr	92083-8257	Low	3499	Manufacturing, Fabricated Metal	Agua Hedionda	
SKYLARK SPORT MARKETING dba, PRANA	3275 Corporate View	92081	Medium	2329	Manufacturing, Fabric/Clothes	San Marcos Creek	
Smart Engineering Systems	2308 La Mirada Drive	92081	Medium	3625	Manufacturing, Equipment	Agua Hedionda	Y
Sound Away Corporation	1175 Park Center Dr A	92081	Low	3482	Manufacturing, Electronics	Agua Hedionda	
Speedy Cut Inc	2565 Progress St	92083	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	
Stines Machine Inc	2481 Coral St	92083	Low	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
STINKY FAB.	2588 Progress St 15	92081	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	
Sue Spray Woodworks	925 Poinsettia Ave A-9	92081	Low	2434	Manufacturing, Wood/Furniture	Agua Hedionda	
Teaco Welding And Fabrication	793 North Ave C-D	92083	Low	3999	Manufacturing, Fabricated Metal	Loma Alta	
Tech 22	1160 Joshua Way	92083	Medium	3679	Manufacturing, Electronics	Agua Hedionda	
Tech M3, Inc	1281 Activity Dr	92081	High	3479	Manufacturing, Misc	Agua Hedionda	Y
Technical Tooling & Gage	2598 Fortune Way F	92083	Low	3999	Manufacturing, Fabricated Metal	Agua Hedionda	
Tecxel/R Zamora Corp.	2826 La Mirada Dr D	92083	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	Y
Tedco Tool	1175 Park Center Dr C	92084	Medium	3728	Manufacturing, Equipment	Agua Hedionda	
Tempo Research Corp	1390 ASPEN WAY	92083	Medium	3679	Wholesale/Storage/Warehousing	Agua Hedionda	Y
The Art Of Coffee, Inc.	1311 Specialty Dr	92083	Medium	2095	Manufacturing, Food/Drink	Agua Hedionda	
The Brass Ring	1495 Poinsettia Ave 150	92081	Low	3999	Manufacturing, Fabricated Metal	San Marcos	
The Pressroom	843 Williamston St	92084	Medium	2759	Printing	Buena Vista	
The Vista News (Coast News Group)	640 Escondido Ave 112	92084	Low	2731	Printing	Buena Vista	

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed	Full Inspections FY 08-09
Titeflex Corporation	2755 Dos Arrons Way C	92081	High	3052	Manufacturing, Plastic/Rubber	Agua Hedionda	Y
T-Rex Clothing & Graphics	1349 Bonair Rd	92084	Low	2731	Printing	Buena Vista	
Tri Digital	1495 Poinsettia Ave 144	92083	Medium	2759	Printing	Agua Hedionda	
Trinity Innovations	1250 KEYSTONE WAY	92083	Medium	3993	Manufacturing, Misc	Agua Hedionda	
U S I Inc.	1185 Park Center Dr 0	92083	Medium	2833	Manufacturing, Biotech/Pharmaceutical	Agua Hedionda	Y
US Post Office	960 Postal Way	92084	Medium	4311	Ground Transportation	Buena Vista	
V Q S Enterprises, Inc.	1081 Poinsettia Ave	92083	Medium	2752	Printing	Agua Hedionda	
Versaform Corp	1377 Specialty Dr	92081	High	3728	Manufacturing, Equipment	Agua Hedionda	Y
Vicki Loh, Dba US Gifts, US Ceramic's	1487 Poinsettia Ave 122	92083	High	3281	Manufacturing, Stone/Glass	Agua Hedionda	
Vision Manufacturing Inc	1198 Joshua Way	92081	Low	3672	Manufacturing, Electronics	Agua Hedionda	
Vista Industrial Products Inc	1395 Park Center Dr	92083	Medium	3499	Manufacturing, Fabricated Metal	Agua Hedionda	
W5 Machining, Inc.	2365 Oak Ridge Way	92083	Medium	3545	Manufacturing, Equipment	Agua Hedionda	
Watkins Manufacturing Corp	1280 PARK CENTER DR	92083	Medium	3088	Manufacturing, Plastic/Rubber	Agua Hedionda	
West Prints	1185 Park Center Dr F	92081	Low	2731	Printing	Agua Hedionda	
Westbridge Agricultural Products	1260 Avenida Chelsea	92081	Medium	2879	Manufacturing, Chemicals	Agua Hedionda	
Western CNC, Inc	1001 PARK CENTER DR	92083	Medium	3599	Manufacturing, Fabricated Metal	Agua Hedionda	
Youngdale Manufacturing Corp	2449 Cades Way	92083	Medium	3429	Manufacturing, Fabricated Metal	Agua Hedionda	
Total Stationary Industrial Facilities = 211							

APPENDIX D-3

2008-09 Mobile Business Inventory

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed
(cho)2 Home Services	955 Postal Way 56	92083	Low	1799	Painting/Coating	Buena Vista
A A Same Day Exterminators	807 Santa Fe Ave	92084	Low	7342	Pest Control	Buena Vista
A C Coating	512 California Ave 116	92083	Low	1721	Painting/Coating	Buena Vista
A.S.P. Home Repair	1008 Georgia Ln	92083	Low		Other Contractor	
Accurate Colors Inc.	2811 Metropolitan Place	91767			Painting/Coating	
Advance Carpet Cleaning & Bldg.	278 PASEO MARGUERIT	92084	Medium	7217	Carpet/Furniture Cleaning	San Luis Rey
Affordable Carpet Care And Jch	1611 Melrose Dr 170-A	92081	Medium	7217	Carpet/Furniture Cleaning	Agua Hedionda
Affordable Carpet Care&Jch Ent	418 SANTA CLARA DR	92083	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Aguilar Carpet Cleaning					Carpet/Furniture Cleaning	
Alexis M. Palos	371 N Melrose Dr C	92083	Low		Wholesale/Storage/Warehousing	
Alliance Disaster & Restoration Services	1487 Poinsettia Ave 126	92083	Medium	7217	Carpet/Furniture Cleaning	Agua Hedionda
Alta Vista Lawn Care	534 California Ave 4	92083	Medium	0782	Landscaping	Buena Vista
Altura Paint & Supply	1850 Hacienda Dr 15	92083	Low	1799	Other Contractor	Buena Vista
Andres Gardening & Hndymn Svc	1984 Warmlands Ave	92084	Medium	0782	Landscaping	Buena Vista
Andy's Carpet Cleaner	352 Santa Fe Ave	92083	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Antonio Maola Concrete Pumping	603 RANCHO VISTA RD	92083	Low	1799	Other Contractor	Buena Vista
Araiza Paving & Grading	550 Vista Way 110	92083	Low	1611	Other Contractor	Buena Vista
Around Town Power Wash			High		Power Washing	
Artistic View	405 PALMBARK	92083	Medium	0782	Landscaping	Buena Vista
ASM Cleaning Service	2703 Via Festivo	92010			Carpet/Furniture Cleaning	
Attention to Detail			High		Vehicle Washing	
Azland Handyman Service	802 Lemon Ave	92084	Low		Other Contractor	
B And R Lanscaping	1360 Foothill Dr 64	92084	Low		Landscaping	
Baldwin Yard And Maintenance	855 Francis Dr	92084	Medium		Landscaping	Buena Vista
Barlow's Pest Control	375 Windy Lane	92083	Low	7342	Pest Control	Buena Vista
Bautista Maintenance	1721 Rush Ave	92084	Medium		Landscaping	Buena Vista
Big Boy Detailing	1622 Rush Ave	92084			Vehicle Washing	
Big Dog Sausage & Hot Dogs	1200 VALE TERRACE	92084	Low		Eating/Drinking Establishments	Buena Vista
Blue Diamond Detail	1611-A S. Melrose Dr #119	92081			Vehicle Washing	
Bobby Watkins Family Pool & Spa	943 Crescent Dr	92084	Medium	7389	Pool/Fountain Cleaning	Buena Vista
Bob's Pool Cleaning	2002 Redwood Crest	92081	Medium		Pool/Fountain Cleaning	Agua Hedionda
Bradleys Pest Control	147 Valencia Dr	92083	Low		Pest Control	Buena Vista
Brandi's Haneys Grooming	475 Gail Dr	92084	Low		Animal Facilities	Buena Vista
Brians Landscape And Maintenance	452 Los Angeles Dr	92083	Medium	0782	Landscaping	Buena Vista
Brother's In Law Landscaping	343 Gail Dr	92084	Medium	0782	Landscaping	Buena Vista
Brothers Maint	320 ACATENO AVE	92083	Medium	0782	Landscaping	Buena Vista

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed
Bugs Out Window & Door Screens	1235 Grandview Rd	92084	Low		Manufacturing, Fabricated Metal	
C & J Discount Carpet Care	1004 Marlin Dr	92084	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Cables Landscaping	1521 Sunrise Dr	92084	Medium		Landscaping	Buena Vista
Cali Bunga Pool Cleaning	1260 Winchester Ct	92083	Medium		Pool/Fountain Cleaning	Buena Vista
Calvert Painting	1161 LARK HILL DR	92084	Low	1799	Other Contractor	San Luis Rey
Capital Painting Corporation	216 Broadway	92084	Low	1799	Other Contractor	Buena Vista
Capital Painting Corporation 1	512 California Ave 204	92084	Low	1799	Painting/Coating	Buena Vista
Capt N Kidd Services, Inc	1590 TIERRA DEL CIEL	92084	Low	1741	Masonry	Buena Vista
Cardenas Painting	510 N Melrose Dr E-4	92083	Medium		Painting/Coating	
Carlos Ajanel	166 Camino Corto c	92083	Low		Landscaping	
Casas Tree Service	755 HIGHLAND DR	92083	Medium	0783	Landscaping	Buena Vista
Castillo Landscaping	1424 Bonair Road 11	92084	Medium	0782	Landscaping	Buena Vista
Chlorophyll Kid	916 JUDILYN DR	92083	Medium	0782	Landscaping	Buena Vista
Classic Touch Landscape Maint	2185 HAWLEY DR	92084	Medium	0782	Landscaping	San Luis Rey
Clean As A Whistle Carpet Care	2220 Watson Way 193	92083	Medium	7217	Carpet/Furniture Cleaning	Agua Hedionda
Coastal Pro Painting	935 Alta Vista Drive 3	92084	Low		Painting/Coating	Buena Vista
Cole Landscape	824 Earth Dr	92083	Medium	0782	Landscaping	Buena Vista
Condominium Services Company	402 Olive Ave B	92083	Medium	0781	Landscaping	Buena Vista
Coppock Pool & Spa	719 SUNSET DR	92083	Medium	1799	Pool/Fountain Cleaning	Agua Hedionda
Cornerstone Marble Gran & Tile	1205 Avenida Chelsea B	92083	Low	1799	Other Contractor	Agua Hedionda
Cortes Auto, RV, Boat detailing					Vehicle Washing	
Cortez Tree Service	720 California Ave	92083	Medium	0783	Landscaping	Buena Vista
Countryside Landscape	2049 Vista Way	92084	Medium	0782	Landscaping	San Luis Rey
Cox Landscape	947 Sheffield Dr	92081	Medium	0782	Landscaping	Agua Hedionda
D & S And Sons Landscaping	133 Bellevive Ct	92084	Medium		Landscaping	Buena Vista
Dan Boteler Landscaping	579 MAR VISTA DR	92083	Low	0782	Other Contractor	Agua Hedionda
Darrel D Rose Landscaping	508 MOA DR	92083	Medium	0782	Landscaping	Buena Vista
Dawg's Drain Service	1041 Meadowlade Dr	92084	Low		Other Contractor	
Dc Concrete And Masonry	1710 JONATHON ST	92083	Low	1741	Masonry	Buena Vista
Dogs On The Run	2229 Baxter Canyon Rd	92081	Low		Animal Facilities	Agua Hedionda
Double J Pool Service	1215 Allea Ln	92083	Medium	7389	Pool/Fountain Cleaning	Buena Vista
El Carpi Jr. Construction	610 COCAPAH ST	92083	Low	1799	Painting/Coating	Buena Vista
Enrique Chavez	209 Hawthorne Circle	92083	Medium	0782	Landscaping	Buena Vista
Euro Tile	383 Melrose Dr B	92083	Low	1741	Masonry	Buena Vista
F J R Earthworks Dba Ayro Enterprises	2531 Walinca Way	92084	Low		Other Contractor	
Felipe Ramirez Perez	2112 E Vista Way 21	92084	Medium		Landscaping	San Luis Rey

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed
Fernando's Tree Service	280 Alestar St 4	92083	Medium	0782	Landscaping	Buena Vista
First Class Maintenance			High		Power Washing	
Frank's Mobile Auto Detailing	10269 Pinon Pl	92040			Vehicle Washing	
Fred A. Jones Painting	1407 BONAIR DR	92084	Low	1799	Other Contractor	Buena Vista
G M Landscape Service	158 Mar Vista Dr	92083	Low		Landscaping	
G&F Landscape	1593 Vista Way A	92084	Medium	0781	Landscaping	Buena Vista
Garza Grading & Paving	755 North Ave	92083	Low	1611	Other Contractor	Loma Alta
Gemini Pest Control Inc	1058 TAYLOR ST	92083	Low	7342	Pest Control	San Luis Rey
Gonzalez Tree Svc & Lndscpng	314 ACATENO AVE	92084	Medium	0782	Landscaping	Buena Vista
Got Pool Cleaning And Repair	1569 Green Oak Road	92081	Medium	7389	Pool/Fountain Cleaning	Agua Hedionda
Green Meadows Lawn Service	1243 Arcadia Ave C	92084	Medium	0782	Landscaping	Buena Vista
Green Weaver Landscaping Services	527 Huff St	92083	Medium	0782	Landscaping	Buena Vista
Greenness Design	1146 SUNSET DR	92083	Medium	0782	Landscaping	Agua Hedionda
Heaven's Best Carpet & Upholstery	104 Hill Dr	92083	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Hernandez Gardening	401 California Ave 17	92083	Medium	0782	Landscaping	Buena Vista
Hernandez Lndscpg & Grdng Svc	952 Wellpott Pl	92084	Medium	0782	Landscaping	Buena Vista
Hernandez Maintenance	2263 Warmlands Ave	92084	Low		Other Contractor	
High Low Drywall	1639 Calle Jules	92084	Low		Other Contractor	
Hydra Vac	1037 GLENMERE RD	92084	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Idle Properties Maintenance	550 W California Ave	92083	Low		Landscaping	
Innovations In Marble And Tile	1128 PORTOLA ST	92084	Low	1799	Other Contractor	Buena Vista
Insect And Rodent Solutions	941 Poinsettia Ave B4	92081	Low		Pest Control	Agua Hedionda
Integrity Pool Services	915 Marlin Drive	92084	Medium	7389	Pool/Fountain Cleaning	Buena Vista
Integrity Pressure Wash			High		Power Washing	
Invision Landscape Inc.	1366 Brewley Lane	92083	Medium	0782	Landscaping	Agua Hedionda
J S Custom Painting	1722 FOOTHILL	92084	Low	1799	Other Contractor	Buena Vista
J. R. Landscaping & Maintenance	950 Arcadia Ave 40	92084	Medium	0782	Landscaping	Buena Vista
J.B. Handyman	326 SAN DEL DR	92083	Low	1799	Painting/Coating	Buena Vista
Jackson Landscape Construction	2202 BAXTER CANYON RD	92083	Medium	0782	Landscaping	Agua Hedionda
Jeff's Mobile Detailing			High		Vehicle Washing	
Jerry's Carpet Cleaning	1331 Arcadia Ave	92084	Medium		Carpet/Furniture Cleaning	Buena Vista
Jmb Landscaping & Tree Service	310 BANDINI PL	92083	Medium	0783	Landscaping	Buena Vista
Joe Lane Custom Painting	1105 COLLINSWOOD LN	92083	Low	1721	Painting/Coating	Buena Vista
Joel Hernandez R	1804 Christi Dr	92084	Medium	0782	Landscaping	San Luis Rey
Joe's Paving	28419 Cole Grade Rd	92082			Manufacturing, Concrete	
Jonny's Carpet Cleaning	865 Gina Lane	92069			Carpet/Furniture Cleaning	

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed
K G Painting	746 Sunset Dr	92081	Medium		Painting/Coating	
K.O. Enterprises	512 California Ave	92083	Low	1751	Other Contractor	Buena Vista
Kaufman Masonry & Landscape Supply	845 Vista Way	92083	Medium	5211	Landscaping	Buena Vista
Kennedy Pest Control, Inc.	114 NATAL WAY	92083	Low	7342	Pest Control	Buena Vista
L D G Mobile	1205 N Melrose Dr I	92083	Low		Auto Repair	Loma Alta
L.T. Backflow	869 Highland Dr	92083	Low		Other Contractor	
Landscape Da Vinci	752 Marsopa Dr	92081	Low		Landscaping	
Landscaping Baltazar	1052 Anza Ave	92084	Low		Landscaping	
Las Palmas Landscape Mtc	309 LADO DE LOMA DR	92083	Medium	0782	Landscaping	Buena Vista
Leahi Pool & Spa	510 Melrose Dr P-7	92083	Medium	7389	Pool/Fountain Cleaning	Buena Vista
Leituala Tree Work And General	156 Pond Place 23	92083	Medium	0782	Landscaping	Buena Vista
Leopoldo Resendiz Mata	1904 Yettford Rd	92083	Medium		Painting/Coating	
Life Gardening Svcs	1803 MANZANITA CT	92083	Medium	0782	Landscaping	Agua Hedionda
Living Waters Carpet & Upholstery	18045 SATICOY ST	91335	Medium	7217	Carpet/Furniture Cleaning	Mobile: Not in City
Local Lumber	1138 Beverly Dr	92084	Low		Other Contractor	
Lopez Demolition	318 Arnel Ave	92083	Low	1799	Other Contractor	Buena Vista
Los Altos Landscaping	312 Palm Dr	92084	Low		Landscaping	
Lot Management			High		Power Washing	
Main Painting Co	121 HANES PL	92084	Low	1799	Other Contractor	Buena Vista
Martin Zurita	1150 Meadow Lake Dr 6	92084	Medium		Landscaping	Buena Vista
McCabe Construction	1027 Marbo Ter	92084	Low		Other Contractor	
Mckenna's Carpet	1275 Tower Dr	92083	Medium	7217	Carpet/Furniture Cleaning	Agua Hedionda
Middleton Skid, Steer And Hauling Svcs	480 Valerie Dr	92084	Low		Other Contractor	
Miller Carpet Care	512 California Ave	92083	Medium	7217	Carpet/Furniture Cleaning	Agua Hedionda
Mobile Handyman And Landscape	848 Smith Dr	92084	Medium	0782	Landscaping	Buena Vista
Mobile Wash Works	1125 Cabrillo Circle	92084	Medium	5087	Vehicle Washing	Buena Vista
Montecitos Landscape	2232 Primrose Ave 1	92083	Low		Landscaping	
N J Landscaping	2330 Azure Lane	92081	Medium	0781	Landscaping	Agua Hedionda
Nanco Landscape	420 Pollyanna Terr	92083	Medium		Landscaping	Buena Vista
On The Move Mobile Auto & Truck	538 Olive Ave B	92083	Low	7538	Auto Repair	Buena Vista
Orkin Pest Control D Glassmaker	2420 Grand Ave J	92083	Low	7342	Pest Control	Agua Hedionda
Orozco Construction	1174 Sunset Dr	92081	Low		Other Contractor	
Pacific Detailing Co.	43795 Corte Amaya	92592			Vehicle Washing	
Paul's Pressure Washing	751 Vista Way 81	92084	Medium	7349	Power Washing	Buena Vista
Pedro Rodriguez	858 Anns Way	92083	Low		Other Contractor	
Perfect Paving Grading & Seal	1641 MONTE MAR DR	92083	Low	1799	Other Contractor	Buena Vista

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed
Pestgon Inc	519 Santa Fe Ave	92083	Low	7342	Pest Control	Buena Vista
Pool And Poop Patrol	831 Lantana Way 143	92081	Medium		Pool/Fountain Cleaning	
Pool Genie	1453 SUNRISE DR B	92084	Medium	1799	Pool/Fountain Cleaning	Buena Vista
Pool Perfection	801 HILLSIDE TER 8	92084	Medium	7389	Pool/Fountain Cleaning	Buena Vista
Precision Aquatics	633 Ascot Dr 1	92083	Medium		Pool/Fountain Cleaning	
Premium Landscape	424 Garey Dr	92084	Low		Landscaping	
Pressure Washing Solutions					Power Washing	
Prestige Tile And Marble Installation Co	2168 OPAL RIDGE	92084	Low	1741	Masonry	Agua Hedionda
Prestige Tile And Marble Installation Co	2168 OPAL RIDGE	92084	Low		Masonry	Agua Hedionda
Progressive Gardening Landscape	1117 Mullen Way	92083	Medium		Landscaping	Buena Vista
Prototypworks	1798 CLUB HEIGHTS LN	92083	Low	1799	Other Contractor	Agua Hedionda
Rac General Contractor	1432 Alta Vista Dr	92084	Low		Other Contractor	
Rafael Sanchez Maint	206 California Ave	92083	Medium	0782	Landscaping	Buena Vista
Rainbow Painting	561 Emerald Drive	92083	Low	1799	Painting/Coating	Buena Vista
Ramirez Landscaping/Gardening Service	223 Nevada Ave 19	92084	Medium		Landscaping	Buena Vista
Rancho Carpet Cleaning Inc.	1157 Santa Fe Ave	92083	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Rancho Tree Service	425 Redlands St	92085	Low	1799	Other Contractor	Buena Vista
Rancho Vista Landscaping Inc.	1335 Warmlands Ave	92084	Medium	0782	Landscaping	Buena Vista
Randy's Pressure Washing	1205 Santa Fe Ave 62	92083	Medium	7349	Power Washing	Buena Vista
RB Mobile Wash			High		Vehicle Washing	
Rey & Sons Landscaping	1653 Rush Ave	92084	Medium		Landscaping	Buena Vista
River Carpet Cleaning	1610 Calle Jules	92084	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Rivera's Painting	239 Pala Vista Dr 11	92083	Low	1721	Painting/Coating	Buena Vista
Robles Handyman Work	1369 Bonair Rd	92084	Low		Other Contractor	
Robles Landscaping	247 Bobier Dr	92084	Medium	0782	Landscaping	Buena Vista
Ronald W. Card	758 LAZY CIR	92083	Low	1721	Painting/Coating	Agua Hedionda
Ryan's Painting	666 Townsite Dr	92084	Low	1721	Painting/Coating	Buena Vista
S & A Pool Service	528 Collyn St	92083	Medium	7389	Pool/Fountain Cleaning	Buena Vista
S&N Palm & Tree Service					Landscaping	
Santa Fe Paving	602 LEMON AVE	92084	Low	1799	Other Contractor	Buena Vista
Showcase Textile Care	904 JUDILYN DR	92083	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Sierra's Landscaping	1640 Calle Colorado	92084	Medium		Landscaping	Buena Vista
Silac Landscape And Design	1112 Louie Pl	92084	Low		Landscaping	
Silva Asphalt					Manufacturing, Concrete	
Sketch & Paint By C D B	1120 Meadowlake Dr 1	92083	Low		Painting/Coating	Buena Vista
Slobo Landscaping	1735 STORMY LN	92084	Low	1799	Other Contractor	Buena Vista

Business Name	Address	Zip	TTWQ	SIC	Category	Watershed
Solutions For Utilities, Inc.	1192 Sunset Dr	92081	Low		Other Contractor	
Stands By Me	942 Sierra Ct	92081	Low		Manufacturing, Wood/Furniture	
STAR AUTO	261 Pala Vista Dr 5	92083	Medium		Auto Repair	Buena Vista
Stasik Specialized Carpentry	365 Pomelo Dr A15	92081	Low		Other Contractor	
Steam Power Wash	4345 Ashworth St	90712			Power Washing	
Steve Batsch Painting			High		Painting/Coating	
Sunterra Tile & Stone	1072 Chelsea Ct	92084	Medium		Masonry	
Superior Carpet Cleaning	926 Westport Ln	92084	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
T J Crossman's Mobile Auto Repair	1330 N Melrose Dr	92083	Low		Auto Repair	Loma Alta
Tanis Landscaping	1104 Warmlands Ave	92084	Medium		Landscaping	Buena Vista
Terry's Painting	533 SUNSET DR	92083	Low	1799	Other Contractor	Agua Hedionda
Tesoro Landscape / So Cal Landscape	1045 HIGHLAND DR	92083	Medium	0782	Landscaping	Buena Vista
The Torrey Pines Co., Inc.	2560 Fortune Way	92083	Medium	7217	Carpet/Furniture Cleaning	Agua Hedionda
The Vintage Rose	2057 PASEO LADERA	92084	Medium	5992	Landscaping	San Luis Rey
Thompson's Xtreme Cleaning Co.	200 Plymouth Dr	92084	Medium	7217	Carpet/Furniture Cleaning	Buena Vista
Three Sisters Catering, Inc.	1589 Vista Way A	92084	Low	5812	Eating/Drinking Establishments	Buena Vista
Travis Goin Concrete Services	1109 Tower Dr	92083	Medium		Manufacturing, Concrete	
Tree Barber Enterprises, Inc.	1923 GOODWIN DR	92084	Medium	0783	Landscaping	San Luis Rey
Trotta Landscape	460 OCEANVIEW DR	92084	Medium	0781	Landscaping	Buena Vista
Velasquez Tree Service Landscaping	1424 Bonair Rd 4	92084	Low		Landscaping	
Vision Painting	810 Citrus	92084	Low	1799	Painting/Coating	Buena Vista
Wag N Wheels Mobile Pet Grooming	1613 Ravine Rd	92083	Low		Animal Facilities	Buena Vista
Waterfall And Fountain Emporium	2223 Alta Vista Dr	92084	Low		Other Contractor	
Watters Clean! Pool Service	1974 Wellington Lane 57	92081	Medium		Pool/Fountain Cleaning	Agua Hedionda
Willis Exterminators	2475 Coral St B	92084	Low	7342	Pest Control	Agua Hedionda
Total Mobile Business Inventory = 205						

APPENDIX D-4

Stormwater Compliance Inspection Report Form

Appendix D-4 Stormwater Compliance Inspection Report Form

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR INDUSTRIAL AND COMMERCIAL FACILITIES

Inspected by D-MAX Engineering, Inc.

Inspector Name _____ Date____/____/_____Time_____AM / PM

Type of Inspection: ☐ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Refused ☐ Mobile ☐ Duplicate of_____

A. CONTACT INFORMATION

Original	Changes
Business Name_____	Business Name_____
_____	_____
Street Address _____	Street Address_____
_____	☐ change _____
Responsible Person(s)_____	Responsible Person(s)_____
Title:_____	Title:_____
Business Telephone # **(____)** _____ -_____ext._____	Business Telephone # **(____)** _____ -_____ext._____
Business Fax # **(_____)** _____ - _____	Business Fax # **(_____)** _____ - _____

Home Based? ☐ Yes ☐ No Mobile Business? ☐ Yes ☐ No **APN**:_____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Facility personnel present:_____

Property management company:_____ Business Telephone # **(____)**____ -_____ext.____

Mailing address:_____

B. FACILITY/SITE INFORMATION

Principal activity:_____ Number of Employees_____

Assigned NAICS code(s) _____ _____ _____ _____ and/*or* SIC Code(s) _____ _____ _____ _____

Does NAICS Code best represent principal activity: ☐ Yes ☐ No SIC? ☐ Yes ☐ No

Recommended change of NAICS Code(s)?_____ _____ _____ _____ Of SIC? _____ _____ _____ _____

Existing NAICS code(s) _____ _____ _____ _____ *and* **SIC Code(s)** _____ _____ _____ _____

Status Update (if no longer active in City or does not need an inspection): ☐ Moved/Out of Business ☐ Duplicate ☐ Not Inventoried ☐ Out of Jurisdiction

Does facility have a current business certificate? ☐ Yes ☐ No #_____ Exp._____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date: _____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Discharge points: _____

_____

Approximate area covered by industrial or commercial activities:_____square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		**Corrections Required**		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
D.1 General					
Keep site free of litter, debris, and sediment using dry methods					
Keep storm drains on site free of litter and debris					
Keep outdoor areas free of spills and leaks					
Collect water from pressure washing or hosing and dispose of appropriately					☐ Unknown Performed by:
Direct roof downspouts away from areas of potential pollutants					
Mark drains/inlets on site with “no dumping, drains to ocean” or similar signage					
D.2 Landscaping					
Properly manage pesticides/fertilizer; use IPM when feasible					☐ Unknown Landscaping Co:
Employ adequate erosion prevention measures (vegetation or physical stabilization)					
Reduce over watering/over-irrigation					
Properly store stockpiles to prevent material transport					
Properly store and dispose of green waste					☐ Unknown
D.3 Materials and Wastes					
Protect trash area from contact with storm water					
Keep trash area free of litter and debris, liquids, powders, sediment					
Adequately cover materials stored outside					
Prevent run-on from contacting materials stored outdoors					
Properly label outdoor storage containers					
Provide an accessible, functional spill response kit					
Equip liquid storage containers with spill containment					
Keep spill containment free of spills and rainwater					
Properly store and dispose of hazardous materials					
Keep loading and unloading areas, including drains, free of debris					
Dispose of water generated by processing activities appropriately					

Dispose of pool, spa, fountain, and filter backwash water properly					☐ Unknown Performed by:

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Clean floor mats in locations that do not drain to street or storm drain system					
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)					
Use drip pans to collect leaks/spills					
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks					
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4					
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff					
Identify and eliminate illicit connections and illegal discharges					
Provide storm water training for appropriate employees					
Develop a written procedure for spill prevention and response					
D.6 Additional Required Actions					

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A
If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A

Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Restaurant Poster Automotive Poster B Grease Bin Handout WC WCS GW GWS Agri

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

- ☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

F. CITY OF VISTA MUNICIPAL CODE COMPLIANCE

☐ Significant non-compliance: Illegal discharge(s) of pollutants to the storm drain system or to receiving waters
☐ Significant non-compliance: Illegal connection(s) to the storm drain system
☐ Significant non-compliance: Littering
☐ Significant non-compliance: Failure to properly implement required BMPs

G. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6, E, and F of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this time.

H. RECOMMENDED CITY ACTIONS**

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

APPENDIX D-5

2008-09 Complaints Summaries

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-035 Type: Residential Location Address: 1114 Monte Vista Dr. Watershed: Buena Vista Creek Call Date: 12/14/2008 Case closed date: 3/17/2008	Sediment descharging off property and into right-of-way.	Observed as described in Complaint Description. BMP indaequate and installed improperly. BMPs are allowing dirt to wash off property.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Upgrade BMPs Follow-up Action: Photo verify Actions completed: Fiber rolls implemented appropriately.
SW No.: SW08-068 Type: Commercial Location Address: 2012 E. Vista Way Watershed: Buena Vista Creek Call Date: 7/2/2008 Case closed date: 7/2/2008	Discharge to creek by fire extinguishing company.	Unfounded. After circumventing perimeter of business no dishcarge was detected; areas were dry. We spoke with owner of 24 Hour Fire Protection. He stated a worker had washed out a bucket that spilled over to Aloha Veternarian Hospital property. The creek is 30' to the south of spill (5 gallons at the most). There is an ongoing dispute between the two businesses regarding storm water way between properties. Discharge to private property was removed prior to our arrival. Complaint was unfounded.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded Follow-up Action: Unfounded Actions completed: None required.
SW No.: SW08-072 Type: Commercial Location Address: 1072 E. Vista Way Watershed: Buena Vista Creek Call Date: 7/3/2008 Case closed date: 7/18/2008	Vista Irrigation District contacted City Wastewater Dept. who contacted Stormwater Dept. that a grease trap behind Super Taco was spillng into driveway at rear of business.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, clean trap and line. Provide written monthly contract of cleaning by contract company. Provide second containment and overhead coverage for grease drum or move drum indoors. Follow-up Action: Receipt of contract. 7/7/08, grease company cleaned trap. Actions completed: BMPs impemented. Grease drum relocated to interioir of business.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-074 Type: Commercial Location Address: 1713 W. Vista Way Watershed: Buena Vista Creek Call Date: 7/3/2008 Case closed date: 7/21/2008	Failure to maintain BMPs.	Observed as described in Complaint Description. Whole of site has become lackadaisical with regards to BMP implementation. We spoke with an employee. We viewed photos taken on site while discussing violations and resolutions. Employee stated that he would forward the NOV to the owner. The business is going through transition due to CIP street widening project. 7/8/08, owner contacted me regarding NOV. He felt invaded and wanted to be notified of when we enter his property. I explained City Policy, D-Max is required in June to have correction resolved, etc. He was feeling less invaded at the conclusion of our conversation and said he would have area cleaned by 7/21/08.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement and maintain site BMPs Follow-up Action: Photo verify Actions completed: All BMPs implemented. NOV signed at site.
SW No.: SW08-075 Type: Commercial Location Address: 1281 N. Santa Fe Ave, #K Watershed: Buena Vista Creek Call Date: 7/3/2008 Case closed date: 8/25/2008	BMP failure	Existing secondary containment/overhead coverage is dysfunctional, food refuse accumulating around grease recycler, trash, boxes, buckets, old food, mop/bucket, broom, floor mat discarded outside, grease stains on pavement (front and rear) and lids open on dumpster.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify. 7/30/08, secondary containment/overhead coverage implemented. Other violations still outstanding-issue cit. 8/15/08, follow-up on site. Called store mngr -believes landlord responsible for junk removal. I reqst'd landlord's name & phone. Store mngr. wasn't well but would get info at store. Called store mngr later -still wasn't well but would go to store to get ph.#. Called w/in 1/2hr: all fixed & I could inspect. I said I still need Landlord's ph.# and would check back Mon. 8/18/08, Area cleaner & junk removed. Junk on roof (appears new). Spoke w/ landlord: understood need to not store outside. Called store mngr & requested roof junk removal & I would close case; to check back on 8/21/08 Actions completed: 8/25/08, Area is cleaner and dumpster is placed in enclosure. Trash on roof is removed. Lids closed on dumpster. Outside storage has been removed.
SW No.: SW08-076 Type: Commercial Location Address: 365 Olive Ave #A Watershed: Buena Vista Creek Call Date: 7/3/2008 Case closed date: 7/22/2008	Failure to maintain BMPs throughout site.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Implement BMPs throughout site. Follow-up Action: Photo verify Actions completed: BMPs related to stormwater have been implemented. However, junk and car parts remain. This information was forwarded to Code Enforcement as the condition is chronic.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-078 Type: Commercial Location Address: 1078 E. Vista Way Watershed: Buena Vista Creek Call Date: 7/7/2008 Case closed date: 7/21/2008	Trash & debris is in lot at rear of business. Recycled oil drum at rear of business is unprotected.	Observed as described in Complaint Description. Cardboard boxes and debris in lot at rear of business. A 55 gal. recycled oil drum in lot at rear of business with no overhead cover or secondary containment.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean all trash and debris immediately. Provide secondary containment and overhead coverage for 55 gal. recycled oil drum or re-locate to interior with secondary containment (spill pan). Employee was cleaning up trash and debris prior to my leaving. Follow-up Action: Photo verify Actions completed: Corrective actions verified.
SW No.: SW08-079 Type: Commercial Location Address: 968 Vista Village Dr. Watershed: Buena Vista Creek Call Date: 7/7/2008 Case closed date: 7/21/2008	Debris and sediment on site including in area around storm drain inlet. Puddles on site and evidence of water used to wash vehicles being disposed of improperly.	Confirmed as in Complaint Description. Evidence of hosing down vehicles and hosing down parking lot. Property Manager admitted that worker hoses down parking lot. Water stains on asphalt seen leading to storm drain inlet from business parking lto. Moisture and sediment leading to storm drain inlet. Sediment and debris throughout parking lot, including under vehicles.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate the violations and cease illegal discharges. Install and maintain BMPs. No hosing down parking lot or vehicles unless all water is reclaimed. Dry sweep sediment and debris from parking lot (including under vehicles) and maintain thereafter. Follow-up Action: Photo verify. Actions completed: Corrective actions verified.
SW No.: SW08-081 Type: Residential Location Address: 1275 & 1279 Peach Grove Ln. Watershed: Buena Vista Creek Call Date: 7/8/2008 Case closed date: 7/16/2008	Black pipe sticking our in right-of-way as reported.	Black pipe appears to be for area drainage. Owner of 1275 Peach Grove contacted me (I left messages at both residences). He stated water from Alta Vista runs off to his property and undermines his rear yard. He asked the City to rectify run-off and received no response. He implemented drainage for his back yard and pipe discharges to within backside of curb. Owner stated street erosion has been occurring for 10 years. Property owner of 1279 Peach Grove contacted me. Lines have been in existence for many years. It carries rain water from Alta Vista above Peach Grove. She stated house was built in 1963. Both pipes are not in violation. Referred to Public Works Dept for road repair.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Reduce overhang of one of the black pipes, as a suggestion. Follow-up Action: Referred to Public Works Dept,for road repair. Actions completed: Referred to Public Works Dept. for road repair.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-082 Type: Private Lateral Location Address: 151 Vista Village Dr. Watershed: Buena Vista Creek Call Date: 7/10/2008 Case closed date: 7/10/2008	Private manhole discharged sewage to pavement and into inlet.	A 6 inch private line was blocked causing manhole to discharge sewage to pavement and into inlet. Wastewater crew on scene mitigated until plumber was contacted to clear line.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, clear line and provide invoice from plumbing contractor. Follow-up Action: Receive plumber invoice and verify verbally by contractor that line has been cleared. Actions completed: Line cleared and invoice received.
SW No.: SW08-084 Type: Commercial Location Address: 1058 La Mirada Watershed: Agua Hedionda Creek Call Date: 7/8/2008 Case closed date: 7/14/2008	Light construction and land disturbance. Dirt on parking lot area with unprotected storm drain nearby. Caller requests construction company be educated on stormwater codes and BMPs.	Observed as in Complaint Description. Discussed proper BMPs with business owner.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep area nightly after work day is complete. Protect drain inlet when pressure washing parking lot after work is complete. Follow-up Action: Photo verify. Actions completed: Area clean. No signs of illegal discharge.
SW No.: SW08-085 Type: Residential Location Address: 1149 Lime Pl Watershed: Buena Vista Creek Call Date: 7/10/2008 Case closed date: 7/14/2008	Prior septic problems at this residence. Pipes hooked up to septic look suspicious (possibly not to code). Lots of tenants. Area smells of sewage.	Referred to County Health (via telephone and e-mail)	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to County Healty Follow-up Action: Referred to County Healty Actions completed: Referred to County Healty

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-086 Type: Residential Location Address: 500 Lado de Loma Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 1/8/2009	Previous natural drainage has become obscured through earth fill-in by property owner and others	Observed as described in Complaint Description. Property is not maintained and no preventative maintenance is noticeable. While area appears vegetated, erosion and sediment discharge is noticeable. Sections of previous concrete ditch are noticeable. 9/10/08, I spoke with property owner and sent him information on Pyramat, California Drainage Law and requested to coordinate with neighbors. 10/23/08, I phoned property owner requesting his attendance at meeting on 10/29/08 to discuss erosion concern.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs to prevent further erosion and discharge. Follow-up Action: 8/25/08, Spoke with property owner. He will mitigate area by 9/4/08. 10/21/08, Spoke with property owner. He is out of work - he asked if there is any alternative. Will set up a meeting with City Staff. Actions completed: A subsequent letter written by Paul Hartman, Stormwater Program Manager, states a concrete ditch is preferred. Area will be monitored by Stormwater Staff and property owner will be notified if further BMPs are necessary. Case closed.
SW No.: SW08-087 Type: Residential Location Address: 494 Lado de Loma Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 1/8/2009	Previous natural drainage has become obscured through earth fill-in by property owners and others.	Observed as described in Complaint Description. While property within fence line has been landscaped the rear property outside the fence line has sediment discharge and erosion leaving site. Sections of previous concrete ditch are noticeable. 9/10/08, I spoke with property owner and provided information on Pyramat, California Drainage Law and a request to work with neighbors. 9/23/08, I contacted property owner. He stated he saw the meeting of 506 Lado de Loma property owners & Engineers. He told me he put red apple in the ditch but hadn't watered it yet. I informed him the meeting established that an earthen swale was inadequate and that a concrete ditch was most likely needed. 9/26/08, I took a photo of the read apple in the area of the 5' drainage easement. None of the cuttings had been planted. All was layed on the hard pan surface. Some had died. 10/29/08, meeting with property owners and City personnel.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs to prevent further erosion and sediment discharge. Photo verify Follow-up Action: Photo verify Actions completed: A subsequent letter written by Paul Hartman, Stormwater Program Manager, states a concrete ditch is preferred. Area will be monitored by Stormwater Staff and property owners will be notified if further BMPS are necessary. Case closed.
SW No.: SW08-088 Type: Other Location Address: 490 Lado de Loma Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 1/8/2009	Brow ditch on property not maintained.	Observed as described in Complaint Description. 7/23/08, investigated perimeter ditch for flow direction. Rip rap at base of ditch is congested with dirt and vegetation. Research continues for appropriate property owner responsibility. 8/4/08, Property owner contacted me for clarification. He understood that he needed to remove dirt and debris for keeping ditch clean. Would like to further discuss continuation of ditch through rear drainage easement to connect with 494 Lado de Loma. 10/29/08, meeting with property owners and City personnel concluded min. BMPs are required to conclude case.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove congestion of trash, debris and vegetation. Maintain thereafter. Follow-up Action: Photo verify Actions completed: 9/1/08, vegetation and debris, trees trimmed along and in ditch. 1/8/09, BMPs have been implemented, a subsequent letter written by Storm Water Program Manager, Paul Hartman, states a concrete ditch is preferred. Area will be monitored by Stormwater Staff and property owner will be notifiied if further BMPs are necessary. Case closed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-089 Type: Commercial Location Address: 1389 Park Center Dr. Watershed: Agua Hedionda Creek Call Date: 7/17/2008 Case closed date: 8/29/2008	Trash, debris and vegetation in catch basin. Trash & debris in bio-swale adjacent to west property line.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean trash, debris and vegetation from catch basin. Clean trash and debris from vegetated bio-swale adjacent to west property line. Maintain thereafter. Follow-up Action: Photo verify Actions completed: BMPs implemented. Areas cleaned.
SW No.: SW08-090 Type: Residential Location Address: 445Lado de Loma Dr. Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 8/4/2008	Sediment discharge to right-of-way from denuded driveway.	Observed as in Complaint Description. I spoke with property owner on 7/21/08 at the Development Services counter. She wants to install an appropriate driveway. She asked for contractors, Engineering Inspectors provided 3 names. These were forwarded to her.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease sediment dishcarge; implement appropriate BMPs. Follow-up Action: Photo verify Actions completed: Corrective action verified.
SW No.: SW08-091 Type: Residential Location Address: 469 Lado de Loma Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 10/24/2008	Sediment discharge from chuckholes and loose perimeter area to right-of-way.	Observed as described in Complaint Description. (I was contacted by east side neighbor @ 475 Lado de Loma). 8/18/08, issued NOV as some areas continue to discharge soil to street. 8/25/08, paid a site visit. No one home. 8/29/08, No response from property owner. I contacted neighbor and requested assistance from him asking to have neighbor call me; also, to encourage further vegetation on slopes. 9/2/08, Visited site and spoke with tenant. I again requested property owner to call me and encouraged vegetation on loose sloped areas. 9/9/08, site visit - spoke with tenant and again requested owner to call me. 9/10/08, Property owner called me. He will begin vegetating slope. I told him I would like to see something on slope by 9/17/08. 9/17/08, Slopes covered with cloth - monitor for rain event. 9/30/08, received a call from property owner - discussed cloth on slope and consider vegetation and tack down at toe of slope. He will adjust accordingly. I told him I would monitor area.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease sediment discharge; repair chuckholes and secure perimeter. Follow-up Action: Photo verify. Some asphalt has been placed in driveway but perimeter has discharge from sloped areas. Actions completed: Fiber cloth is placed on slope. Monitor. 10/24/08, Cloth working, no sediment is discharging; no rain event to date.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-092 Type: Residential Location Address: 475 Lado de Loma Dr Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 8/19/2008	Sediment discharge to right-of-way from chuck holes and loose perimeter.	Observed as in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and implement appropriated BMPs. Follow-up Action: Photo verify Actions completed: BMPs implemented.
SW No.: SW08-093 Type: Residential Location Address: 481 Lado De Loma Dr Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 10/20/2008	Sediment discharge to right-of-way from denuded driveway and frontage.	Observed as described in Complaint Description. I spoke with property owner. He will implement appropriate BMPs. He stated that he is the Stormwater Compliance Representative for his company. 8/12/08, I spoke with property owner at length re: corrective action. He is willing to proceed and has been working with neighbors. 8/18/08, phoned for update. 9/3/08, phoned propery owner and requested decision on driveway. 9/15/08, received a voice message from property owner - unable to come to a decision. I left message for him to contact an asphalt company for alternative suggestions. 9/26 - 9/29/08, New driveway installed. Dirt still in run-off channel. 9/30/08, contacted property owner with status on dirt disposition.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease sediment discharge; implement appropriate BMPs. Follow-up Action: Photo verify. 8/15/08, No corrective action, issue NOV Actions completed: Driveway in (by property owner) and easement asphalted (by Public Works Dept).
SW No.: SW08-094 Type: Residential Location Address: 487 Lado de Loma Dr. Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 8/4/2008	Sediment discharge to right-of-way from gopher disturbance on perimeter of frontage and driveway.	Observed as in Complaint Description. I spoke with property owner and he stated he would remove the loose dirt.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease sediment discharge; implement appropriate BMPs. Follow-up Action: Photo verify Actions completed: Corrective action verified.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-095 Type: Residential Location Address: 491 Lado de Loma Dr. Watershed: Buena Vista Creek Call Date: 7/16/2008 Case closed date: 8/4/2008	Sediment discharge to right-of-way from denuded embankment and frontage.	Observed as in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease sediment dishcarge; implement appropriate BMPs. Follow-up Action: Photo verify Actions completed: Corrective action verified.
SW No.: SW08-096 Type: Commercial Location Address: S. Melrose at Buena Vista Watershed: Buena Vista Creek Call Date: 7/21/2008 Case closed date: 7/21/2008	Water runnning into roadway for 4 days.	Landscaper repairing broken sprinkler head. After contacting Vista Irrigation District (who confirmed the broken sprinkler) I contacted property management to verify.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease water runoff and repair system. Follow-up Action: Visual Actions completed: Area dry.
SW No.: SW08-097 Type: Residential Location Address: 554 Hilldale Cir Watershed: Buena Vista Creek Call Date: 7/18/2008 Case closed date: 8/4/2008	Accumulation of vegetation in and around concrete drainage ditches behind residence. Bed frame, matresses and trash in back yard.	Observed as described in Complaint Description. 7/31/08, no corrective action taken.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Have contracted weed abatement company remove vegetation that was left in and around concrete drainage ditches on back side of vacant property. Follow-up Action: 7/21/08, Contact Vista Fire Dept. and verify recent weed abatement. Request contracted weed abatement company finish abaitement and clean-up. Refer trash in yard to Code Enforcement Dept. 7/31/08, contacted Vista Fire Dept. via e-mail / still no clean-up. Actions completed: BMPs implemented. Concrete drainage ditches cleaned of debris and vegetation.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-098 Type: Commercial Location Address: 1040-1090 E. Vista Way Watershed: Buena Vista Creek Call Date: 7/3/2008 Case closed date: 8/19/2008	Call from Public Works in reference to grease trail spill into parking lot.	While on scene, other Stormwater violations were noted in common outdoor areas. Dumpster lids left in open position. Dumpster lids broken off. Stains on concrete around dumpster areas. Dumpsters overflowing with trash. Old furniture, trash and deris throughout lot.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Upgrade and maintain BMPs for problems mentioned in Site Investigation Comments. Contact EDCO Waste & Recycle and tenants regarding dumpster lids must be closed and repaired or replaced. Remove stains on concrete around dumpster areas. Old furniture, trash and debris throughout lot needs to be picked up and properly disposed of. Follow-up Action: Photo verify. Actions completed: 8/4/08, most BMPs implemented, however, stains on concrete around dumpster areas to the west of building still needs to be cleaned. 8/1/9/08, BMPs fully implemented.
SW No.: SW08-099 Type: Commercial Location Address: 1580 S. Melrose Dr. #106 Watershed: Agua Hedionda Creek Call Date: 7/22/2008 Case closed date: 8/6/2008	Water flowing from box outlet of parking lot to City street curb/gutter. Water has odor of pollutants.	Observed as described in Complaint Description. Unable to determine source. Public Works Wastewater called out and they felt it was non-sewer related, possible irrigation. Contacted Vista Irrigation District, they responded and were unable to determine source. 7/23/08, returned to site with City Sr. Environmentalist Specialist and he requested Public Works Wastewater perform dye test at newly installed grease interceptor clean-out to see if possible connection to storm drain pipe tested positive for illegal connection. Tested positive.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate violation, cease illegal discharge and clean (jet) storm drain line from illegal connection at grease interceptor to storm drain outlet and reclaim all water not allowing it to enter street curb/gutter. Follow-up Action: Photo verify. Obtain copies of plumbing repair and cleaning receipts as well as final inspection permit approval. Actions completed: Water discharge immediately abated (water not being used in business). Storm drain line jetted/cleaned. Illicit connection disconnected, repaired and reconnected to sewer line.
SW No.: SW08-100 Type: Residential Location Address: 1218 Countrywood Ln. Watershed: Agua Hedionda Creek Call Date: 7/30/2008 Case closed date: 7/30/2008	Grey water running down curb.	Observed as in Complaint Description. Spoke with the property owner at 1218 Countrywood Ln. A blanket was too large for the washing machine so they washed it by hand and hosed it off in the backyard. Property owner stated they would not discharge detergent again.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge Follow-up Action: Monitor Actions completed: Property owner stated he would cease future discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-101 Type: Residential Location Address: 216 The Circle Watershed: Buena Vista Creek Call Date: 7/30/2008 Case closed date: 8/28/2008	Dirt in street curb & gutter	Accumulation of dirt and vegetation in curb/gutter right-of-way. Appears it has been there for some time. 8/14/08, no clean-up yet. Sent reminder letter to Public Works.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Requested SRO (Service Request Order) from Public Works for clean-up. (Refered to Public Works) Follow-up Action: Photo verify. Monitor area thereafter. Actions completed: BMPs implemented. Area cleaned.
SW No.: SW08-102 Type: Other Location Address: Phillips St. Watershed: Buena Vista Creek Call Date: 7/30/2008 Case closed date: 7/31/2008	Mobile carpet cleaner poured effluent into curb/gutter. Reporting person wanted clarificaton of legality.	I spoke with reporting person who stated that she hired Johnny's Carpet Cleaning. I informed her that it was a violation to pour dirty water into curb. She provided information and I contacted the company and mailed stormwater information	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge Follow-up Action: Code Enforcement Dept. was informed of violator. Actions completed: Preporting person would inform future business contractor(s) to dispose of effluent appropriately.
SW No.: SW08-103 Type: Residential Location Address: 421-423 N. Citrus Ave Watershed: Buena Vista Creek Call Date: 7/24/2008 Case closed date: 8/19/2008	Sediment discharge into roadway	Observed as described in Complaint Description. Land distrubance on frontage area appears to have a dirt driveway. Sediment is discharging off site. House is on a curve. Traffic moves fast on this curve.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from curb/gutter, implement perimeter protection and on driveway. Follow-up Action: Photo verify Actions completed: Concrete driveway installed

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-104 Type: Residential Location Address: 320 Pomelo Dr. Watershed: Buena Vista Creek Call Date: 7/31/2008 Case closed date: 7/31/2008	Broken sprinklers - excessive discharge of water	Reporting person stated sprinklers come on at 8 p.m. and broken sprinklers flood the property and streets with water run-off. I contacted Vista Irrigation District and left a message. Also contacted property management, Sunset Springs. I requested sprinklers be repaired. 8/1/08, property manager called and clarified concern and would investigate.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and repair sprinklers. Follow-up Action: Referred to Vista Irrigaton District. Actions completed: Referred to Vista Irrigaton District.
SW No.: SW08-105 Type: Other Location Address: 981 Vale Terrace Watershed: Buena Vista Creek Call Date: 8/4/2008 Case closed date: 8/5/2008	Reporting person stated trash was behind Eagles Peak School and going into creek.	Two dumpsters to east side and rear of school had trash behind the dumpsters. I contacted school maintenance and they retrieved items. Nothing had migrated to creek .	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove trash Follow-up Action: Photo verify Actions completed: Trash removed
SW No.: SW08-106 Type: Residential Location Address: 300 Escondido Ave Watershed: Buena Vista Creek Call Date: 7/29/2008 Case closed date: 8/4/2008	Sediment discharge into Ciy right of way (onto sidewalk).	Observed as in Complaint Description. Contacted property owner at residence to advise of violation and to request corrective action.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep sidewalk and maintain thereafter. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-107 Type: Residential Location Address: 340 Escondido Ave Watershed: Buena Vista Creek Call Date: 7/29/2008 Case closed date: 8/4/2008	Sediment, debris and vegetation into City right-of-way (onto sidewalk and driveway apron).	Observed as described in Complaint Description. 8/1/08, Contacted property owner via telephone to advise of violation and to request corrective action.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cut back vegetation. Dry sweep sidewalk and driveway apron of dead vegetation, debris and sediment. Follow-up Action: photo verify Actions completed: BMPs implemented. Area cleared and cleaned.
SW No.: SW08-108 Type: Residential Location Address: 408/410 Escondido Ave Watershed: Buena Vista Creek Call Date: 7/29/2008 Case closed date: 8/21/2008	Sediment discharge from yard onto driveway, driveway apron and onto City right-of-way sidewalk and curb/gutter	Observed as in Complaint Description. 8/6/08, returned phone from property owner - advised and explained violations and requested corrective action. Property owner will contact his management company today and he requests two weeks to get it scheduled for clean-up and educating tenants. 8/12/08, spoke with property management and sent e-mail with photos of violations.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep affected areas and maintain thereafter. Adjust irrigation that is causing run-off of sediment. Consider permanent seeding/vegetation in the debuded areas. Educate tenents regarding BMP maintenance. Follow-up Action: Photo Verify Actions completed: BMPs implemented. Both 408 and 410 areas clean.
SW No.: SW08-109 Type: Residential Location Address: 414 & 416 Escondido Ave Watershed: Buena Vista Creek Call Date: 7/29/2008 Case closed date: 9/12/2008	Sediment discharge into City right-of-way onto sidewalk from denuded yard near driveway. Sediment seeping through retaining wall blocks.	Observed as in Complaint Description. Contacted property manager to advise of violation and to request corrective action. Property manager states chronic problem if not maintained and he forgot to address BMPs with new tenants to dry sweep on a regular basis. 8/7/08, 414 Escondido Ave - cleaned. 416 Escondido Ave - no corrective action. Spoke to female tenant referring to violation. It will be swept this weekend. 8/26/08 re-opened case due to sediment discharge onto sidewalk at 414 Escondido Ave. due to failed BMPs. 8/27/08, property management called to report that the gardner will install perimeter and vegetate. Will be done this week. 9/2/08, No BMPs installed. Gardner was unable to get it done - will be done within a week. 9/9/l08, left voice mail to property management referencing a permanent solution to this chronic problem.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep affected areas and maintain thereafter. Consider permanent seeding/vegetation in the denuded areas. Follow-up Action: Photo verify Actions completed: BMPs implemented. Area clean. 9/9/08, Area cleaned. Some soil removed/lowered; however, denuded area still needs perimeter protection and permanent vegitation to prevent potential discharge. 9/12/08, additional BMPs implemented. Perimeter protection and vegetation installed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-110 Type: Residential Location Address: 424 / 426 Escondido Ave. Watershed: Buena Vista Creek Call Date: 7/29/2008 Case closed date: 8/4/2008	Sediment descharge into City right-of-way; onto sidewalk	Observed as in Complaint Description. Sediment seeping through retaining wall blocks. 8/1/08, left message for property owner. 8/4/09, contacted property owner to advise of violation and to request corrective action. Property owner advised chronic problem due to gophers. Will clean and have area maintained.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep affected areas and maintain thereafter. Follow-up Action: Photo verify Actions completed: BMPs implemented. Areas cleaned.
SW No.: SW08-111 Type: Residential Location Address: 1985 Las Lomas Watershed: Buena Vista Creek Call Date: 7/30/2008 Case closed date: 9/12/2008	Clearing/scraping property with a D9 Dozer. No BMPs implemented.	Observed as described in Complaint Description. Large area on slope up to residence was cleared/denuded of vegetation (per Fire Dept. request). No BMPs for land disturbance implemented. Natural water course left unprotected for potential sediment discharge. Area of water course filled with sediment and dead vegetation where dozer crossed. Additionally, storm drain inlet at east end of Kings Way unprotected for potential sediment discharge from denuded property above (to the southeast).	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Install erosion control/stabalization BMPs on slope that was cleared. Install perimeter sediment discharge BMPs. Remove fill and dead vegetation that is blocking the natural water course. Follow-up Action: Photo verify Actions completed: BMPs installed/implemented.
SW No.: SW08-112 Type: Commercial Location Address: 2530 Fortune Way Watershed: Agua Hedionda Creek Call Date: 8/7/2008 Case closed date: 9/8/2008	County Hazmat and Fire Dept made inspection of facility. Numerous fire code and hazmat violations. Witness staining on driveway possibly run-off to store drain.	Observed hose near sanding rack and run-off into parking lot. Drainage ditch congested with seeds from palm trees, miscellaneous trash, debris and furniture through loading dock area on northeast side of building. We spoke with tenant and walked the site with him and gave him a brochure for Commercial/Industrial Businesses.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Remove vegetation, trash and debris throughtout site and maintain good housekeeping practices. Cease further discharge unless reclaimed. Follow-up Action: Photo verify. 8/25/08, ditch cleaned; landscape sprinkler repaired. Employee hosing off product, flowing to drain. Contacted tenant & requested he inform employees to stop washing parts (motorcycle bodies), or reclaim run-off. Said I would monitor area. He thought bike being washed is prob'ly his. Don't believe tenant understands run-off isn't allowed. Reiterated alternative needs to be used to prevent run-off & further discharge is citable offense. He agreed nonchalantly. 8/20/08, message to HazMat for help w/ business. Samples show fiberglass, which is hazmat. County Health Dept. will take him to court. 8/29/08, cit. issued. 9/3/08, Spoke w/ owner & he will discuss concern w/ tenant. Actions completed: Area dry. Monitoring will occur to verify on-going compliance. Letter of present compliance sent to property owner as well as tenant; notified Couty Hazmat.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-113 Type: Residential Location Address: 1913 West Dr. Watershed: Buena Vista Creek Call Date: 8/11/2008 Case closed date: 8/11/2008	Carpet cleaner discharging effluent to street.	Observed as in Complaint Description. City Code Enforcement Officer was on scene to provide translation. We provided a brochure for pressure washing as no brochure exists for carpet cleaning other than Standards Manual Chapter 3.C.11. We also provided copy of that section of carpet cleaning to Mr. Aguilar of Aguilar Carpet Cleaning.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge. Dispose of carpet cleaning to sanitation sewer. Follow-up Action: Monitor Actions completed: Stated he would dispose of effluent to sanitation sewer.
SW No.: SW08-114 Type: Residential Location Address: 555 / 557 Kleaveland Pl Watershed: Buena Vista Creek Call Date: 8/11/2008 Case closed date: 8/19/2008	Washing car & hosing down driveway about 4 times per week in the mornings. Personal vehicles only.	No violations observed during investigation or follow-up.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Curtail the number of times washing personal vehicles each week, consider using professional or self-service car washes that reclaim water. Follow-up Action: Photo verify. Monitor location. Actions completed: No discharges observed. No additional reports of discharges by complainant.
SW No.: SW08-115 Type: Residential Location Address: 172 Vera Cir. Watershed: Buena Vista Creek Call Date: 8/12/2008 Case closed date: 8/12/2008	Large flow of water down street curb/gutter in 700 blk of Alta Vista - coming from curb outlet box near 742 Alta Vista.	Observed as in Complaint Description. Found community pool being drained across from 172 Vera Circle. Pump hose going directly into storm drain. Pool water tested positive for chlorine.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Immediately cease illegal discharge. Dechlorinate water before discharging into storm drain. Follow-up Action: Disconnected pump. Contact property management company to advise of violation. Contact pool company to warn of violation. Actions completed: Pool company employee states he dechlorinated pool but didn't use test-strip to verify. He will test pool water to verify it is dechlorinated before any further discharges.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-116 Type: Commercial Location Address: 342 Eucalyptus Ave. Watershed: Buena Vista Creek Call Date: 8/12/2008 Case closed date: 9/2/2008	Dead vegetation and debris in concrete drainage ditches that lead from parking lot behind church to storm water concrete open channel.	Observed as in Complaint Description. 8/28/08, no clean-up. Telephoned Public Works to remind them of SRO (Service Request Order).	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove dead vegetation and debris from concrete drainage ditches. Follow-up Action: SRO to P. W. for assissance. Photo verify. Actions completed: BMPs implemented. Drainage dithches cleaned.
SW No.: SW08-117 Type: Commercial Location Address: 102 Eucalyptus Ave Watershed: Buena Vista Creek Call Date: 8/13/2008 Case closed date: 8/13/2008	Washing off pavement in front of business.	Water was present on the pavement in and around flower planters and business walk-up window. I spoke with owner and he stated his wife had watered the plants.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further hosing of pavement unless reclaimed. Follow-up Action: Monitor Actions completed: Stated he would not hose pavement in future.
SW No.: SW08-118 Type: Commercial Location Address: 1011 S. Santa Fe Ave #C Watershed: Buena Vista Creek Call Date: 8/12/2008 Case closed date: 8/12/2008	Man washing off tarps behind business using pressure washer, hose and sudsy water. Not reclaiming water.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Immediately cease illegal discharge and reclaim. Follow-up Action: Monitor Actions completed: Employee used mop and mop bucket to reclaim water and agreed not to discharge in the future.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-119 Type: Residential Location Address: 1218 Countrywood Ln Watershed: Agua Hedionda Creek Call Date: 8/13/2008 Case closed date: 8/13/2008	Water flowing down curb/gutter conveyance from irrigation pipe.	Very little water coming from irrigation pipe at this location. No illegal discharge observed. Heavier flow in 1100 block of Countrywood Ln. near Jardine Ct. due to historic artesian well that drains from properties in the area. ADDENDUM: 7/7/09, "VID found a small, slow, chronic leak in a main line. The repair apparently corrected the artesian well theory." per Tim Shell, by S. Sotola.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: If any hosing down of backyard patio and dishcarge into landscape irrigation drainage system is occurring, please discontinue. Follow-up Action: Complainant will assist by monitoring for discharge Actions completed: None at this time as complaint was unfounded regarding illegal discharge.
SW No.: SW08-120 Type: Commercial Location Address: 553 Mercantile St Watershed: Buena Vista Creek Call Date: 8/13/2008 Case closed date: 8/13/2008	Hose run-off discharging to street and into storm drain inlet across the street.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease all discharge off site. Follow-up Action: Monitor Actions completed: Area will be monitored for compliance.
SW No.: SW08-121 Type: Commercial Location Address: 701 Mercantile St. Watershed: Agua Hedionda Creek Call Date: 8/13/2008 Case closed date: 8/13/2008	Water discharging off property and into right-of-way from area drain pipes at Westturf Landscape Management.	Observed as in Complaint Description. I spoke with office secretary. She stated she had hosed off the back area. I gave her a Commercial/Industrial BMPs brochure and requested no more discharge unless water is reclaimed.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge and reclaim run-off Follow-up Action: Monitor Actions completed: Secretary stated she would cease further dishcarge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-122 Type: Residential Location Address: 824 Earth Dr. Watershed: Buena Vista Creek Call Date: 8/18/2008 Case closed date: 9/8/2008	Sediment discharge from storm drain outlet near residence.	Neighbors at 837 Grapevine released pool water and it went under fence into ditch at 824 Earth Dr. and into cul-de-sac. Spoke to both parties to implement appropriate BMPs. Referred to Public Works for street sweeping. Spoke with owners and they asked for clarification of cleaning ditch. They stated they would clear ditch and maintain it.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove dirt and debris from ditch at 824 Earth Dr. Follow-up Action: Photo verify Actions completed: Area cleaned.
SW No.: SW08-124 Type: Residential Location Address: 821 Earth Dr. Watershed: Buena Vista Creek Call Date: 8/18/2008 Case closed date: 8/25/2008	Vegetation and debris in concrete drainage ditch adjacent to north property line.	Observed as described in Complaint Description. Left HELP brochure explaining violation and request to implement BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove vegetation and debris from concrete drainage ditch (do not wash out with water). Follow-up Action: Photo verify. Actions completed: BMPs implemented. Vegetation and debris removed from drainage ditch.
SW No.: SW08-125 Type: Other Location Address: 117 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 8/14/2008 Case closed date: 8/25/2008	Sediment discharge from slope at entrance to Krikorian Plaza on Main St.	Observed as described in Complaint Description. Referred to Public Works for clean-up. Public Works stated that it really was a Parks issue. I checked with an engineer who stated the area is owned by NCTD but leased to private businesses. The business on the corner is now defunct. Engineer stated Parks did add bark on the bank to beautify the entrance and possibly Parks should maintain it. I e-mailed Parks for clarification.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment and maintain. Follow-up Action: Monitor area for clean-up. Actions completed: Area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-126 Type: Private Lateral Location Address: 1275 N. Citrus Ave. Watershed: Buena Vista Creek Call Date: 8/20/2008 Case closed date: 8/27/2008	Private lateral sewer spill	Private lateral sewer spill from apartment complex side yard adjacent to street. All discharge remaining on site; none was cascading over the sidewalk or reaching the curb/gutter conveyance system.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Abate violation and immediately cease illegal discharge. Repair/clean sewer lateral and provide a copy of the plumber's invoice showing the same. Follow-up Action: Get copy of plumber's invoice showing cleaning and/or repair of line. Photo verify. Actions completed: Line cleared by ASAP Drain Guys and Plumbing, Inc. Area dry.
SW No.: SW08-127 Type: Commercial Location Address: 521 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 8/19/2008 Case closed date: 9/9/2008	Sediment discharge, broken concrete; rubble, trash and debris throughout side and rear of business.	Observed as described in Complaint Description. 9/4/08, Owner called and stated he was working with tenant to secure the location. He stated he would need additional time.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove rubble, lose dirt, concrete, trash, etc. and implement permanent surface material. Follow-up Action: Photo verify Actions completed: Area cleared of rubble. Vegetation is recommended for area as property owner does not want to asphalt pavement in middle of side yard. Area will be monitored.
SW No.: SW08-128 Type: Residential Location Address: 475 Oceanview Watershed: Buena Vista Creek Call Date: 8/27/2008 Case closed date: 9/2/2008	Mud, sediment, debris and standing water in curb & gutter from S. Santa Fe Dr. at Terrace to S. Santa Fe Dr. at Guajome St. on east curb of S. Santa Fe Dr.	Observed as described in Complaint Description. Water and sediment came from triple storm drain outfall in front of 180 Terrace. Storm main mapping shows the outfall comes from a closed storm drain channel that leads to an inlet in the 400 block of Oceanview Dr., two homes with pools per GIS. Will follow-up possible pool discharge tomorrow. 8/28/08, origin of discharge appears to be in area of 475 Oceanview with fresh asphalt patches in roadway. Contacted resident at 460 Oceanview who stated that several work trucks had the street closed and water was shut off. Contacted VID (Vista Irrigation District) who said water main break happened yesterday. Advised of sediment discharge and areas that need cleaning (460-445 Oceanview north lane, 180 Terrace to S. Santa Fe north side of road, and northbound lane of S. Santa Fe curb/gutter from Terrace to Guajome). VID said they would shovel and sweep sediment/debris tomorrow.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean sediment and debris from City street. Follow-up Action: Photo verify Actions completed: BMPs implemented. Areas shoveled/swept clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-129 Type: Residential Location Address: 219 Plymouth Watershed: Buena Vista Creek Call Date: 8/27/2008 Case closed date: 9/29/2008	Oil stains on driveway.	No. 213 Plymouth on GIS or Fire Map. No. 119 Plymouth on GIS or Fire Map. Attempted a call back to reporting party via spanish tranlator-no answer. Unable to verify address. Checked area of 219 Plymouth and residences in area for violations with negative results. Unable to locate. Unfounded for now.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: N/A - Unfounded for now. Follow-up Action: None - Unfounded for now. Actions completed: N/A - Unfounded for now.
SW No.: SW08-130 Type: Commercial Location Address: 4445 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 8/27/2008 Case closed date: 10/9/2008	Vehicle repairs being done outside on driveway in front of business, not under cover and without drip pans or other spill containment. Accumulation of oil on pavement, inoperable vehicle with no hood or doors, etc. in lot.	Observed as described in Complaint Description. 9/17/08, Accumulation of oil cleaned off pavement, inoperable vehicle removed. 9/22/08, vehicle repairs/maintenance being done outside and not under cover. Drip pans not being utilized. Citation. 9/29/08, no violations observed. Using canopy and drip pans. 10/8/08, No violantions observed, using canopies and drip pans on vehicles outside of indoor stalls.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: No vehicle repairs nor maintenance to be done unless performed indoors or under cover, drip pans or spill containment utilized at all times during repair. Clean oil spills with dry absorbent Follow-up Action: Monitor, photo verify. Actions completed: 9/17/08, Accumulation of oil on pavement cleaned, inoperable vehicle removed. Spoke with business owner about getting temporary covers to put over vehicles if working on outside and always use drip pans/spill containment. 9/29/08, No violations observed. BMPs implemented, using canopies and drip pans on vehicles outside of indoor stalls.
SW No.: SW08-131 Type: Residential Location Address: 815 Escondido Ave Watershed: Buena Vista Creek Call Date: 9/2/2008 Case closed date: 9/9/2008	Washing maching gray water discharge flowing from backyard, under fence and to adjacent property storm drain channel/inlet.	Observed as described in Complaint Description. Washing machine in backyard hooked up to electrical via extension cord. Discharge hose leading under fence to storm drain channel and inlet.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate violation and cease illegal discharge. Disconnect machine and remove from property or have it plumbed to sanitary sewer system. Follow-up Action: Photo verify Actions completed: Machine removed from premises.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-132 Type: Residential Location Address: 320 Escondido Ave. Watershed: Buena Vista Creek Call Date: 9/4/2008 Case closed date: 9/4/2008	Damaged/failed BMPs. Sediment discharge on sidewalk.	Observed as described in Complaint Description. Perimeter BMPs at front yard corner of driveway/sidewalk damaged with sediment discharge on sidewalk and driveway apron.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep sediment. Repair BMPs Follow-up Action: Photo verify. Actions completed: BMPs repaired. Sediment swept clean.
SW No.: SW08-133 Type: Private Lateral Location Address: 1123 Cabrillo Cir Watershed: Buena Vista Creek Call Date: 9/4/2008 Case closed date: 9/15/2008	Private Lateral sewer spill	Private lateral sewer spill from area adjacent to driveway leading from Anza Ave to residence on Cabrillo Cir. Discharge remained on site, but had the potential to enter the City street conveyance. It's Fixed Plumbing arrived and began clearing line.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Abate violation and immediately cease discharge. Clean, clear an/or repair sewer lateral and provide a copy of the plumber's invoice showing the same. Follow-up Action: Get copy of plumber's invoice showing cleaning, clearing and/or repair of line. 9/10/08, Contacted plumbing company: water now flowing. 9/15/08, received copy of plumber's invoice showing cleaning, clearing and repair of line. 9/22/08, received copy of plumbing permit and added to file. Actions completed: Cleaned out line; unclogged. Water is flowing. Clean out found under ground with leaking cap. Extended cleanout to ground level repairing leaking cap.
SW No.: SW08-134 Type: Commercial Location Address: 898 E. Vista Way Watershed: Buena Vista Creek Call Date: 9/11/2008 Case closed date: 9/11/2008	Pressure washing parking lot without reclaiming water.	Water discharging to street curb/gutter from asphalt parking lot. Building is also wet. Contacted worker of Accurate Colors, Inc. who said they were pressure washing roof using no chemicals. Contacted Citibank employee and explained violation. Debris is in parking lot.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Immediately cease illegal discharge and abate violation. No pressure washing unless water is reclaimed. Dry sweep debris from parking lot. Follow-up Action: Contact business owner of Accurate Colors to discuss/warn in reference to City of Vista Municipal Code viloation referencing pressure washing and illegal discharging. Actions completed: Worker and business owner both agreed to reclaim all water if pressure washing in Vista in the future.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-135 Type: Residential Location Address: 217 Eaton Way Watershed: Buena Vista Creek Call Date: 9/10/2008 Case closed date: 9/11/2008	Water discharge.	Irrigation area drain/outfall to asphalt cul-de-sac. Area was dry. Contacted tenant who admitted to having recent problems with irrigation system with sprinklers sticking in "on" position'. Tenant said problem was fixed and will continue to monitor the system to prevent runoff.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Monitor irrigation and adjust as necessary to prevent further run-off. Follow-up Action: Photo verify Actions completed: Repaired/adjusted sprinklers.
SW No.: SW08-136 Type: Private Lateral Location Address: 420 Durian St Watershed: Buena Vista Creek Call Date: 9/22/2008 Case closed date: 9/22/2008	Private sewer lateral leaking	Area around cleanout had been excavated exposing private lateral. Property owner has had 3 plumbers and pulled up roots. The line was camera'd and the blockage was under the sidewalk. We explained to the property owner that it was a private property issue and to contact another plumber to assist in clearing the line. No sewage was leaking into City property as trench is at least 10' deep and all was pooling in there. Property owner is using a portable toilet and not allowing any water to enter system.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Private property / Private issue. Follow-up Action: Private property / Private issue. Actions completed: Private property / Private issue.
SW No.: SW08-138 Type: Commercial Location Address: 1275 S. Santa Fe Ave. Watershed: Buena Vista Creek Call Date: 9/23/2008 Case closed date: 9/23/2008	Pressure washing without reclaiming water in front of strip mall.	Pressure washer hooked up to hose bib in front of businesses and leaking. Evidence of pressure washing sidewalk in front of businesses. Worker scraping sidewalk in front of businesses. Contacted property owner and advised of violation.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Immediately cease illegal discharge. Dry sweep prior to pressure washing. No further pressure washing unless all water is reclaimed. Follow-up Action: N / A Actions completed: Property owner had workers discontinue and agreed to reclaim water when pressure washing in the future.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-139 Type: Commercial Location Address: 2485 Ash St. Watershed: Agua Hedionda Creek Call Date: 9/22/2008 Case closed date: 10/7/2008	Over watering and congested brow ditches.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair broken sprinklers, remove excessive accumulation of solids in catch basin and outfall boxes as well as all brow ditches. Follow-up Action: Photo verify Actions completed: 9/30/08 (1:40 p.m.), all cleaned in excetion of collection pond catch basin. Recheck 10/7/08. 10/7/08, pond catch basin cleaned. Run-off water remained. I spoke with employee of Cobian's Landscape Co. He stated they are to clean pond basin quarterly. Left message of corrective action to Pevron of Water Board
SW No.: SW08-140 Type: Residential Location Address: 1260 Amador Ave Watershed: Buena Vista Creek Call Date: 9/24/2008 Case closed date: 10/7/2008	Water seeping from front yard. Has odor and is going over curb into gutter.	Met with Public Works on site. Per Public Works, sewer spill is unfounded. Two broken/leaking sprinkler heads. 10/1/08, No corrective action taken. 10/2/08, located phone number for property owner. Contacted husband of owner and advised of discharge violation. He said he will have it repaired and have his wife call. 10/6/08, phoned property owner and was told that irrigation system has been repaired.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair irrigation system (sprinkler heads leaking) to prevent further run-off. Follow-up Action: Photo verify Actions completed: Irrigation system repaired (no longer leaking). BMPs implimented; no further discharge.
SW No.: SW08-141 Type: Residential Location Address: 1157 Amador Ave Watershed: Buena Vista Creek Call Date: 9/24/2008 Case closed date: 10/1/2008	Uncovered/unprotected stockpiles of woodchips in front yard and driveway of residence.	Observed as described in Complaint Description. A potential for discharge into the storm drain, curb/gutter and coveyance system. Small amounts already shed into curb/gutter. 9/25/08, Phone call from property owner. Discussed violations and corrective action required.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove or cover and perimeter stockpiles to prevent the potential for discharge into the storm drain conveyance system. Perimeter containment at curb line to prevent discharge into street from areas of front yard utilizing woodchips as landscaping. Follow-up Action: Photo verify Actions completed: BMPs implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-142 Type: Residential Location Address: 460 Lado De Loma Watershed: Buena Vista Creek Call Date: 9/25/2008 Case closed date: 11/7/2008	Congested perimeter drainage ditches	Observed as described in Complaint Description. Due to involvement of all neighbors in this immediate watershed, this location was addressed last. I spoke to property owner regarding clearing perimeter ditches once south side properties had implemented their BMPs in early June 2008. He agreed to begin clearing the ditches.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clear and maintain ditches Follow-up Action: 10/21/08, Photos showing corrective action. Clearing ditch full length still required. Actions completed: Drainage ditch cleared of dirt and debris.
SW No.: SW08-143 Type: Residential Location Address: 2902 Camden Dr., Vista, Watershed: Buena Vista Creek Call Date: 9/23/2008 Case closed date: 10/6/2008	Water discharge into curb & gutter from overwatering/irrigation run-off	Observed as described in Complaint Description. 9/26/08, Spoke with realtor who contacted property owner. Property owner contacted their gardener. Spoke with gardner who is repairing broken irrigation timer.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Curtail over watering and repair and/or adjust irrigation system to prevent further run-off/discharge. Follow-up Action: Photo verify Actions completed: curb/gutter dry. Irrigation system repaired and/or adjusted to prevent discharge.
SW No.: SW08-144 Type: Residential Location Address: 2906 Camden Dr. Watershed: Buena Vista Creek Call Date: 9/25/2008 Case closed date: 10/6/2008	Water discharge into curb and gutter from over watering/irrigation run-off	Observed as described in Complaint Description. Contacted property owner and advised of violaton and corrective action required. Property owner stated broken/leaking sprinkler heads in back yard. Will have repaired.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Curtail over watering and repair and/or adjust irrigation system to prevent further run-off/discharge. Follow-up Action: Photo verify Actions completed: Curb/gutter is dry. Irrigation system repaired and/or adjusted to prevent discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-145 Type: Commercial Location Address: 210 S. Melrose Dr. Watershed: Buena Vista Creek Call Date: 9/25/2008 Case closed date: 9/29/2008	Charity car wash for U.S.M.C.	Evidence of car wash (water run-off). Additionally, sediment and debris (leaves) in south curb and gutter of lot to storm drain inlet. Contacted the manager and advised/educated him in reference to violations. 9/26/08, Contacted owner to advise/educate in reference to violations.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: No more charity car washes at location. Dry sweep curb & gutter on south perimeter behind business to storm drain inlet in southwest corner of lot. Follow-up Action: Photo verify Actions completed: Curb/Gutter and storm drain inlet cleaned of sediment and debris. Management and owner agree not to host any more charity car washes.
SW No.: SW08-146 Type: Construction Location Address: 1025 Cielita Linda Watershed: Loma Alta Creek Call Date: 9/25/2008 Case closed date: 10/23/2008	Graded residential construction site "on hold" due to economy. Check for BMPs and monitor through rainy season.	9/26/08, Most BMPs are in place. Some broken gravel bags at porta-potie, trash boxes need to be emptied, paint cans to be removed, trash in Cuesta Ct. cul-de-sac, a few small stockpiles need to be covered with plastic, broken gravel bags perimeter on 1st lot southeast corner of Stratton Dr., unprotected perimeter of denuded slope outside of fence adjacent to sidewalk at southwest construction entrance of Stratton Dr. 10/9/08, most BMP corrective actions verified. Some debris in concrete ditch on west perimeter of property. Uncovered trash bin in front of Lot #40. Uncovered stockpiles on lots #37 and 38. Broken/ineffective gravel bags at front perimeter to lot #37.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Replace broken gravel bags. Empty trash bins throughout site. Remove old paint cans and any other trash/rubble on site. Cover stockpiles. Perimeter protection on denuded slope outside of construction entrance at southwest corner of project (and/or fiber blanket). 10/9/08. clean/sweep concrete ditch on west side of property. Empty or cover trash bin in front of lot #40. Cover or remove stockpiles on lots #37 and 38. Remove broken gravel bags in front of lot #37 and replace with silt fence. Follow-up Action: Photo vreify. Monitor after significant rain event. Actions completed: BMPs implemented.
SW No.: SW08-147 Type: Construction Location Address: 877 Sycamore Ave Watershed: Buena Vista Creek Call Date: 9/25/2008 Case closed date: 10/24/2008	Graded residential construction site "on hold" due to economy. Check for BMPs and monitor through rainy season.	9/26/08, few BMPs in place. Some fiber rolls installed on east perimeter. Silt fencing installed along north and most of west perimeter with vegetation. Sandbags in curb/gutter. Lots are lower than curb. Leaves accumulated on east service road. 10/9/08, Most BMPs implemented. Tackifier incomplete on west and north perimeter slopes.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: 9/26/08, finish installation of BMPs along east, south and west perimeters of project site (including silt fencing, sandbags, fiber rolls and bonded fiber matrix/tackifier). 10/9/08, Finish protecting west and north perimeter slopes. Lower dirt or install fiber roll along concrete ditch on east side near box inlet (east side of ditch). Follow-up Action: Photo verify. Monitor after significant rain event. Actions completed: BMPs implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-148 Type: Construction Location Address: 1045 Sycamore Ave Watershed: Buena Vista Creek Call Date: 9/25/2008 Case closed date: 10/10/2008	Graded residential construction site on "hold" due to economy. Check for BMPs and monitor through rainy season.	BMPs in place. Some damaged fiber rolls in curb/gutter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove debris from damaged fiber rolls from curb/gutter. Follow-up Action: Photo verify. Monitor after significant rain event. Actions completed: Curb/gutter cleaned. BMPs implemented throughout site.
SW No.: SW08-149 Type: Other Location Address: 118 Knoll Rd Watershed: Buena Vista Creek Call Date: 9/29/2008 Case closed date: 9/29/2008	Oil from transformer on telephone pole had leaked into soil & onto asphalt on roadway. (Struck by lightning)	Hazmat crew was on scene and sweeping up dry absorbant and contaminated soil. This was placed into plastic lined 55 gal drum and was to be removed by Hazmat Divistion of San Diego Gas & Electric. No oil migrated from scene.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove Oil Follow-up Action: Photo verify Actions completed: All oil was removed and absorbed and disposed of by SDG&E hazmat crew.
SW No.: SW08-150 Type: Commercial Location Address: 680 Hacienda Dr. Watershed: Buena Vista Creek Call Date: 9/29/2008 Case closed date: 11/21/2008	Sediment discharge off slope onto sidewalk and into gutter.	Observed as described in Complaint Description. Rain event on 9/29/08 created run-off denuded slopes at LA Fitness perimeter. Photos taken and management company was contacted for BMP implementation. I will monitor area for corrective action for two weeks. 9/30/08, e-mailed District Operations Manager three pictures of the location with a request to mitigate denuded slopes. 10/6/08, no response from District Operations Manager. Phoned him (left message) to question if e-mail photos were received. Stated I would fax information if necessary. Requested a response. 11/6/08, dirt run-off to street - rain event 11/4/08.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove discharge from sidewalks and gutter. Implement BMPs at perimeter. Follow-up Action: 10/21/08, e-mailed District Operations Manager for status. Actions completed: Landscaped slopes have mulch, plants and straw roll perimeters. E-mailed District Operations Manager to be vigilant, particularly after rain events.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-151 Type: Residential Location Address: 1292 Amador Ave Watershed: Buena Vista Creek Call Date: 10/1/2008 Case closed date: 10/28/2008	Stockpiles in backyard observed during follow-up at unrelated residence on Amador Ave. Also, an accumulation of junk in backyard.	As described in Complaint Description. Referred accumulation of junk in backyard to Code Enforcement.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Stockpiles must be covered and perimetered or removed. Follow-up Action: Photo verify Actions completed: Stockpiles removed.
SW No.: SW08-152 Type: Commercial Location Address: 1070 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 9/30/2008 Case closed date: 11/6/2008	Congested brow ditch to rear and above commercial strip center. Excessive trash and debris.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean ditches and maintain regularly. Follow-up Action: 10/21/08, Some mitigation on lower areas. Spoke with property owner, remainder will be cleared in a week. 10/28/08, property owner stated he had to get his orchard in first then next week he would work on the ditch. No rain is in the forecast. One additional week allocated. Actions completed: Area cleared. Ditches have been mitigated.
SW No.: SW08-153 Type: Construction Location Address: 1950 Via Centre Watershed: Buena Vista Creek Call Date: 10/1/2008 Case closed date: 10/10/2008	Lack of maintenance of existing BMPs on construction site.	Perimeter BMPs are degrading, some improperly installed. Stockpiles of dirt and spoils are uncovered. A watercourse runs to the south of this site. Engineering Inspector for location wrote a correction notice as on site superintendent did not respond to Inspector's verbal request. 10/6/08, Inspector visited site on 10/3/08, no corrective action was occurring. Superintendent told Inspector he would fix all on 10/9/08. I left a message stating BMPs are to be completed by 10/9/08 at 8:00 a.m. and immediately to respond to Inspector's correction notice and NOV is issued.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair, replace and upgrade site BMPs. Follow-up Action: Photo verify Actions completed: BMPs implemented and site is secured.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-154 Type: Residential Location Address: 1338 Olive Ave Watershed: Buena Vista Creek Call Date: 10/7/2008 Case closed date: 10/9/2008	Staining and sediment in curb gutter in front of 1354 Olive Ave and in front of houses to the east.	Observed as described in Complaint Description. Beige colored sediment originating from curb/gutter in front of 1338 Olive Ave. Contacted property owner who admitted sediment was from the work wash water from last week. Re-contacted reporting party and advised.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Never again dump waste water in curb/gutter. Use dry sweep method to clean curb/gutter. Don't hose down with water. Follow-up Action: Photo verify Actions completed: BMPs implemented. Curb / gutter sweet clean. Property owner said violation would not be repeated.
SW No.: SW08-155 Type: Residential Location Address: 430 Escondido Ave Watershed: Buena Vista Creek Call Date: 10/6/2008 Case closed date: 10/21/2008	Irrigation system leaking into neighbors yard at 426 Escondido Ave. for several months. Now pooling and running down driveway and discharging into street, per Vista Irrigation District, water coming from 430 Escondido, Ave.	Observed as described in Complaint Description. Contacted property management, explained dishcarge violation and requested corrective action. 10/9/08, Property management thinks it is an overspray issue. 10/13/08, Still leaking onto street. Recontacted property management. They said they would have plumber turn off water to the house for 20 minutes and the meter stopped. Therefore, they don't feel it is their irrigation system. Requested they contact property owner at 426 Escondido Ave to coordinate repair. 10/15/08, still leaking. Phone call from property management for 430 Escondido Ave. They dug up the line and it doesn't belong to their property. It is definitely a water line for 426 Escondido Ave. 10/16/08. Contacted property owner for 426 Escondido Ave. Water line is being repaired today. It was the main line to his residence.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair leaking irrigation system to prevent further discharge into City's storm drain conveyance system. Follow-up Action: Photo verify Actions completed: Leak repaired at 426 Escondido Ave. No further discharge into street.
SW No.: SW08-156 Type: Residential Location Address: 1050 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 10/8/2008 Case closed date: 11/7/2008	Excessive irrigation water discharging from property into the City right-of-way.	Observed as described in Complaint Description, with sediment discharging from property as well. Water flowing onto and crossing over City street. Contacted Vector Control regarding standing water. Tenant said the property owner may be out of the country on business. 1/22/08, No corrective action. Left note and business card on property owners gate. Also, left voice mail for property owner. 10/23/08, spoke with property owner. He just got back from being out of the country. 10/17/08, contacted property owner, still arguing - not his property that is discharging. He stated he had the irrigation system looked at and everything was functioning properly, also said it was coming from properties above. He stated he received a copy of letter and NOV. Took additional photos. Still very wet. Contacted Vista Irrigation District water conservation and advised of situation. 10/28/08, met with property owner on site. Per property owner, gardener found broken sprinkler head at top of driveway causing flooding and made repairs. He will sweep sediment from driveway, street and area should start to dry out within the next few days. 11/3/08, Area swept clean of sediment. Street dry, including low spot in street.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Eliminate pollution potential being discharged into the City storm drain conveyance system by curtailing excessive irrigation. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Irrigation system repaired. Sediment swept clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-157 Type: Residential Location Address: 1500 Shadowridge Dr. Watershed: Agua Hedionda Creek Call Date: 10/7/2008 Case closed date: 10/14/2008	Chronic water leaving the complex entrance causing algae and creating a slip hazard	Observed as described in Complaint Description, location is at the southwest entrance to complex. Contacted property manager. Water seepage is chronic due to water table (past 10 years). Vista Irrigation District and irrigation professionals couldn't find any leaks and concur. They also turned off irrigation for two weeks during dry season and seepage still occurred.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean algae, slip hazard, from curbs/gutter and driveway entrance and maintain thereafter. Follow-up Action: Photo verify Actions completed: BMPs implemented. Algae cleaned/removed.
SW No.: SW08-158 Type: Residential Location Address: 317 Apollo Dr. Watershed: Buena Vista Creek Call Date: 10/8/2008 Case closed date: 10/9/2008	Faint white substance on roadway.	Observed as described in Complaint Description. Appears to be dimataceous earth from pool filter back flush. GIS maps indicate only one pool in the area and about 10 houses up. The white powder is faint and perhaps old.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Education and future prevention. Follow-up Action: Drive by when in neighborhood for status. Actions completed: None needed as identification was not possible.
SW No.: SW08-159 Type: Other Location Address: Lincoln Middle School, 151 Escondido Ave., Watershed: Buena Vista Creek Call Date: 10/9/2008 Case closed date: 11/13/2008	BMP failure on drain inlet	Observed as described in Complaint Description. E-mail to Vista Unified School District (VUSD) for repair of failed BMP. 10/22/08, No corrective action. E-mailed (VUSD) with update. 10/27/08, city employee reported straw roll was placed but later destroyed by sport event traffic. I e-mailed VUSD again to suggest bollard to protect inlet. 11/4/08, grounds keeper for VUSD called with suggestions. I requested a filter cloth to cover grate and upon rain event completely cover grate. Monitor water flow and if area is not affected, consider a permanent cover.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair / replace BMPs around inlet Follow-up Action: Photo verify Actions completed: Filter cloth covers the inlet and is surrounded by a staked fiber roll. Area to be monitored during rain event.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-160 Type: Residential Location Address: 230 Grapevine Rd. Watershed: Buena Vista Creek Call Date: 10/14/2008 Case closed date: 10/21/2008	Over watering from apartment complex with chronic water flowing south down City street.	Observed as described in Complaint Description. Water coming from curb coring irrigation drain to street. Contacted Community Director and informed of viloation. She will contact their landscape company to adjust irrigation system.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Curtail over watering to decrease/eliminate run-off into City street curb/gutter. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Irrigation system repaired. No further discharge/area dry.
SW No.: SW08-161 Type: Commercial Location Address: 1820 E. Vista Way Watershed: Buena Vista Creek Call Date: 10/14/2008 Case closed date: 10/11/2008	Dumping of dirt, soil and broken apshalt into the drainage ditch adjacent to property.	Observed as described in Complaint Description on the south perimeter of the property. Additionally, there is excessive vegetation blocking the drainpipe under the southwest driveway entrance.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove piles of asphalt, dirt and sod from drainage ditch and clear ONLY the vegetation necessary to unblock the drainpipe. Do not remove other healthy bank vegetation. Follow-up Action: Photo verify Actions completed: Asphalt, dirt and sod removed from drainage ditch. Excessive vegetation removed to unblock drainpipe.
SW No.: SW08-162 Type: Commercial Location Address: 650 Sycamore Ave. Watershed: Agua Hedionda Creek Call Date: 10/15/2008 Case closed date: 10/22/2008	Cutting down and clearing trees in watercourse in front of Burlington Coat Factory.	Evidence of some tree cutting within the watercourse. Contacted tree service company owner who was hired to trim trees in parking lot and cut back trees and vegetation in watercourse. Contacted California Dept. of Fish & Game who said a permit would be required.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Any future maintenance in the watercourse other than removing loose dead vegetation or trash and debris pollutants, notify the Department of Fish & Game of your planned activity through the 1602 permit notification process. Follow-up Action: None - Referred to the California Department of Fish & Game. Actions completed: Immediately ceased activity and will obtain 1602 Permit from Fish & Game prior to any future clearing/cutting activities in the watercourse.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-163 Type: Residential Location Address: 1291 Amador Ave. Watershed: Buena Vista Creek Call Date: 10/13/2008 Case closed date: 10/22/2008	Denuded front yard, no vegetation with potential for discharge. Complainant upset over open case on his property for uncovered stockpiles.	Complaint unfounded. Sloping front yard to street is vegetated with an area of rock rip-rap at the curb line. Dirt driveway is compacted with some stone. No signs of tracking from the driveway. No evidence of sediment discharge from yard.	Enforcement Action: ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: None at this time. Follow-up Action: Monitor after rain event Actions completed: N/A
SW No.: SW08-164 Type: Residential Location Address: 1283 Amador Ave. Watershed: Buena Vista Creek Call Date: 10/13/2008 Case closed date: 10/22/2008	Denuded front yard. No vegetation with potential for discharge. Complainant upset over open case on his property for uncovered stock piles.	Complaint unfounded. No evidence of sediment discharge from yard. No signs of tracking from stone covered driveway. Front yard is compressed and vegetated with dry low-cut, natural vegetation (weeds and dry grass).	Enforcement Action: ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: None at this time. Follow-up Action: Monitor after rain event. Actions completed: N/A
SW No.: SW08-165 Type: Residential Location Address: 696 Hilo Way Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 10/21/2008	Possible grey water discharge into roadway.	RV had a water leak. Property owner turned off potable water and run-off ceased	Enforcement Action: ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge Follow-up Action: Photo verify Actions completed: Run-off stopped when property owner turned off faucet. Contacted complainant for status update.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-166 Type: Residential Location Address: 1913 West Dr. Watershed: Buena Vista Creek Call Date: 10/20/2008 Case closed date: 11/5/2008	Dumping of trash in the watercourse (creek) that runs through the backside of the property.	Accumulation of oil, grease and or car fluids in visitor parking area adjacent to watercourse that runs through northeast corner of property. Large metal box, trash,debris and dead loose vegetation creating obstacles and polluting watercourse. 10/23/08, Contacted property management and faxed NOV. Mailed (certified) NOV. Also, contacted Vector Control in reference to standing water. 10/24/08, Phone call from property manager to also fax NOV to regional property manager. Phone call from regional manager who will handle complaint and clean-up.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Utilize a dry absorbent sweep method to remove the accumulation of oil, grease and vehicle fluids from visitor parking area. Remove large metal box, trash, debris and other obstacles from the watercourse. Maintain thereafter. Follow-up Action: Photo verify Actions completed: BMPs implemented. Trash and debris was removed from watercourse. The accumulation of oil, grease and car fluids has been cleaned.
SW No.: SW08-167 Type: Residential Location Address: 398 Paseo Marguerita Watershed: San Luis Rey Call Date: 10/21/2008 Case closed date: 10/29/2008	Sediment discharge into street gutter	Observed as described in Complaint Description. Discharge from front yard into street. Contacted property owner on site. Explained violation of sediment discharge. Property owner said it is caused by new landscape after installing new pool. Gave them educational information. Also, observed sediment and sandbags in curb/gutter on N. Sante Fe Ave. at Paseo Marguerita. Contacted Vista Irrigation District on 10/22/08 to have them remove and clean sandbags and sediemnt left by them in this area after water main break.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep sediment from street gutter. Install BMPs to prevent further discharge into street. Follow-up Action: Photo verify Actions completed: BMPs implemented. Sediment swept from street and curb/gutters. Dirt lowered below curb to prevent further sediment runoff. Old sandbags removed.
SW No.: SW08-168 Type: Private Lateral Location Address: 1902 Via Centre Watershed: Buena Vista Creek Call Date: 10/23/2008 Case closed date: 10/23/2008	Illicit connection into sewer manhole shaft.	Wastewater employee met us on site. After orienting our location we drove over to medical construction site and located manhole. We found a 4 inch sewer lateral protruding into the manhole shaft. We requested tenant at C & M Motors to flush their toilet - water streamed out of protruding pipe into sewer manhole. Verified with Sanitation Dept. that a permit was pulled 3/26/88. This is a legal connection.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: None - unfounded Follow-up Action: None - unfounded Actions completed: None - unfounded

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-169 Type: Residential Location Address: 942 Ruby Ln Watershed: Buena Vista Creek Call Date: 10/22/2008 Case closed date: 10/23/2008	Excessive water eminating from property at 942 Ruby Ln.	House is vacant; overwatering is excessive. Water is filtering to low point and destroying curb/sidewalk/roadway area. I contacted management for property. A landscaper was dispatched to adjust sprinkler.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease excessive watering. Follow-up Action: Photo verify Actions completed: Water was drying up and Public Services crew was pouring new sidewalk.
SW No.: SW08-170 Type: Residential Location Address: 1174 Sunset Dr Watershed: Buena Vista Creek Call Date: 10/23/2008 Case closed date: 12/31/2008	BMPs in disrepair	Observed as described in Complaint Description. I contacted property owner and requested maintenance and repair of existing BMPs.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair and upgrade existing BMPs. Follow-up Action: Photo Verify Actions completed: Area vegetated to the point that will slow water velocity and collect discharge.
SW No.: SW08-172 Type: Residential Location Address: 1149 Lime Pl Watershed: Call Date: 10/22/2008 Case closed date: 10/23/2008	RV dumping sewage on property.	RV appears to be inhabited as well as garage. No discharge was discovered from RV. This case was referred to Code Enforcement for RV/Garage violation.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded Follow-up Action: Unfounded Actions completed: Unfounded

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-173 Type: Commercial Location Address: 635 S. Melrose Dr. Watershed: Buena Vista Creek Call Date: 10/15/2008 Case closed date: 11/13/2008	Stagnant water, sediment discharge into parking lot.	Observed as described in Complaint Description. 10/24/08, contacted property management. They will respond. Plants were stolen and landscaper is replacing them.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Prevent sediment discharge and correct water flow direction. Follow-up Action: Photo verify. 10/28/08, e-mailed property management. 11/5/08, area swept. Check with Engineering Inspector for correction acceptance. 11/7/08, Inspector stated area has not been corrected. I e-mailed property management for status update. 11/13/08, Inspector and our Sr. Environmental Specialist will speak with property management regarding post-construction BMPs. Area no longer involves Stromwater Enforcement. Actions completed: New upgraded landscape has been implemented. Run-off from eroded slope has been remarkedly reduced due to landscaping.
SW No.: SW08-174 Type: Residential Location Address: 1012 Glenmere Rd Watershed: Buena Vista Creek Call Date: 10/24/2008 Case closed date: 11/4/2008	Pool draining to commercial business from residence above.	1972 pool permit per our Permit Center. Red clay pipe is directed from pool equipment shed to rear commercial driveway. Deck and stairs appear illegal.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease pool discharge to rear of property. Follow-up Action: Request complainant to report further discharge. Actions completed: No discharge reported. Referred building structure to Building Dept.
SW No.: SW08-175 Type: Construction Location Address: 536 Rudd Rd Watershed: Buena Vista Creek Call Date: 10/21/2008 Case closed date: 12/3/2008	Erosion control/land disturbance BMPs have not been installed according to the approved grading plan.	Observed as described in Complaint Description. Few BMPs implemented. Denuded slopes unprotected. 11/6/08, left message for property owner at 9:19 a.m. to have him call me to discuss BMP installation. 3:49 p.m. left another similar message for property owner; 6:17 p.m. left 3rd message. 11/7/08, contacted property owner by phone. Although property is in forclosure, he wants to comply with erosion control - was going to perimeter with gravel bags. 11/10/08, met with property owner on site. Discussed implementation of BMPs. He requested and extension of time to install the BMPs. 11/17/08, received a phone message from property owner; was unable to install BMPs due to finances. States he will purchase supplies and have them delivered to site this week and install this weekend. 11/18/08, spoke with property owner who will call when materials have been delivered - if no materials delivered by Friday, escalated enforcement. If materials are delivered, BMPs must be installed this weekend and completed on Monday 11/24/08. If not, increased enforcement. 11/21/08, per Stormwater Program Manager, if BMPs are not installed to our satisfaction by Sunday, Engineering & Land Development is going to pull the cash deposit to hire a contractor to install BMPs by Monday, 11/24/08. 11/24/08, site was now being handled by Land Developlmentand the Engineering Inspector who is having Contractor (Nissho) install the BMPs.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Install appropriate BMPs per approved grading plans; sheet 6 of 7 and 7 of 7. Follow-up Action: Photo verify Actions completed: BMPs implemented by contractor (Nissho of California) per Engineer Inspector and Land Development.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-176 Type: Commercial Location Address: 302 N. Emerald Dr. Watershed: Buena Vista Creek Call Date: 10/27/2008 Case closed date: 11/5/2008	Water and sediment discharge into street curb/gutter.	Observed as described in Complaint Description. 4" water line break pushed sediment into street. Also, water pumped into planter box that over flowed into street taking sediment with it. 10/29/08, phoned property maintenance supervisor. Plumbers still fixing line. Cleaned street and sand bagged. May be done tomorrow with repair to line. 11/5/08, Water line repaired. Area dry. No further discharge. Area swept clean of sediment.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair damaged/leaking water line. Sandbag to prevent further sediment discharge. Clean curb/gutter of sediment using shovel and sweep. Do not hose down. Follow-up Action: Photo verify Actions completed: Water line repaired; no further discharge. Driveway and curb/gutter shoveled and swept clean of sediment. Gravel bags removed.
SW No.: SW08-177 Type: Residential Location Address: 700 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 10/28/2008 Case closed date: 11/3/2008	Accumulation of leaves and debris in curb/gutter in front of apartment complex	Observed as described in Complaint Description. 10/29/08,received a returned call from property management; explained violdation and discussed corrective action.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: 10/29/08, requested that management clean leaves from curb/gutter using dry sweep method. No hosing off. Maintain thereafter. Follow-up Action: Photo verify Actions completed: Curb/gutter swept clean of excessive leaves and debris.
SW No.: SW08-178 Type: Residential Location Address: 1169 Meadow Lake Dr Watershed: Buena Vista Creek Call Date: 10/30/2008 Case closed date: 11/7/2008	Dog waste thrown over fence into Buena Creek habitat area	Observed as described in Complaint Description. Contacted property owner and warned/educated and referenced violation, requesting corrective action.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean/remove dog waste and dispose of properly (bagged in trash or flushed down toilet). Follow-up Action: Photo verify. Actions completed: Dog waste removed/cleaned from area. Property owner agreed to use BMPs in future.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-179 Type: Residential Location Address: 2045 Oak Glen Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 12/9/2008	Congested brow ditches	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: I spoke with property owner on site. Ditch is clear. She stated her landscaper cleans it monthly.
SW No.: SW08-180 Type: Residential Location Address: 2037 Oak Glen Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 12/24/2008	Congested brow ditches	Observed as described in Complaint Description. 11/7/08 Received a call from property owner. He clears his ditch regularly. Water goes to Park Hill side.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify. Actions completed: Ditch cleaned. Spoke with property owner and requested regular maintenance.
SW No.: SW08-181 Type: Residential Location Address: 2029 Oak Glen Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 12/9/2008	Congested brow ditches	Observed as described in Complaint Description. 11/7/08, received a call from property owner. His ditch is clean. He stated the stormwater officer can enter right side of house - no gate.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter Follow-up Action: Photo Verify Actions completed: Ditch cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-182 Type: Residential Location Address: 2021 Oak Glen Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 12/9/2008	Congested brow ditches.	Observed as described in Complaint Description. 11/10/08, Received a phone call from property owner. Area is clean. Lift up gate to enter property.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: Ditch cleaned.
SW No.: SW08-183 Type: Residential Location Address: 2013 Oak Glen Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 12/10/2008	Congested brow ditches.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: Ditch cleaned.
SW No.: SW08-184 Type: Residential Location Address: 1358 Lupine Hills Dr Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 12/3/2008	Congested brow ditches.	Observed as described in Complaint Description. 11/12/08, Received a call from property owner. I left a message explaining letter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: Area clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-185 Type: Residential Location Address: 1350 Lupine Hills Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 12/3/2008	Congested brow ditches	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: Area clean.
SW No.: SW08-186 Type: Residential Location Address: 1342 Lupine Hills Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 1/7/2009	Congested brow ditches.	Observed as described in Complaint Description. 12/24/08, spoke with neighbor who stated the house is in escrow. I will attempt to contact realtor. 12/30/08, left message with property owner. 12/31/08, contacted realtor, they will have owner call me. 1/6/09, No response. Re-contacted realtor for further assistance.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: House is not occupied as it is on the real estate market. I communicated with agent who verified ditch was cleared on 12/31/08.
SW No.: SW08-187 Type: Residential Location Address: 1328 Lupine Hills Dr Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 11/18/2008	Congested brow ditches.	Observed as described in Complaint Description. 11/12/08, Owner requested I contact Land Development Engineer as developer cleared ditch previously. I spoke with the Engineer and he stated that when development was new (2001) the developer cleaned ditch. Homeowner is now responsible to clear ditch.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: Area has been cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-188 Type: Residential Location Address: 1320 Lupine Hills Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 11/25/2008	Congested brow ditches	Observed as described in Complaint Description. 11/21/08, property owner contacted me for clarification and would clean ditch by December 1st.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: Photo from property owner indicates area has been cleaned.
SW No.: SW08-189 Type: Residential Location Address: 1312 Lupine Hills Dr Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 12/19/2008	Congested brow ditches.	Observed as described in Complaint Description. 11/12/08, property owner called with questions. He would begin clearing ditch and would like access through locked gate to north of property. I contacted HOA Associate with Stonegate. He would contact the property owner. 12/5/08, left message with property owner's sec'y. Received a returned call from property owner and work to clear area begins on 12/11/08. Will check next week.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter. Follow-up Action: Photo verify Actions completed: Drains cleaned. Photo's from property owner - digital via e-mail
SW No.: SW08-190 Type: Residential Location Address: 1187 Miramar Dr. Watershed: Agua Hedionda Creek Call Date: 10/20/2008 Case closed date: 11/19/2008	Congested brow ditches.	Observed as described in Complaint Description. 11/10/08, property owner called with questions. I stated we are trying to eliminate the problem on your property and please clean your ditch.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditches within property lines and maintain thereafter Follow-up Action: Photo verify Actions completed: Area clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-191 Type: Residential Location Address: 699 Ascot Dr. Watershed: Buena Vista Creek Call Date: 11/5/2008 Case closed date: 11/6/2008	Neighbor witnessed tenant dumping unkown fluids (possible motor oil) into storm drain inlet.	No evidence of oil dumped into storm drain. Contacted tenant who said he poured dirty water into drain inlet, not motor oil, but didn't know it was a violation. Discussed illegal discharge violation with tenant and gave educational info.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: No further pouring of anything into the storm drain system. Dirty water should be dumped into toilet or landscaping in the future. Follow-up Action: None Actions completed: Tenant agrees not to pour/dump anything into the storm drain system in the future.
SW No.: SW08-192 Type: Residential Location Address: 718 Ascot Dr. Watershed: Buena Vista Creek Call Date: 11/6/2008 Case closed date: 11/6/2008	Unknown fluids from garage onto driveway.	Staining of asphlat driveway in front of garage. No fluids. Appears to be very light sediment. Contacted tenant who said she hosed down the pan of her gerbil cage last night in front of her garage after removing the cedar chips. Believes that is why area was wet this morning. Discussed illegal discharge violation and gave educational information to her.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: No hosing off items in driveway in the future. When cleaning gerbil cage pan in the future, clean in sink, bathtub or over landscaping. Follow-up Action: None Actions completed: Tenant agrees not to hose off any items in her garage or driveway in the future.
SW No.: SW08-193 Type: Residential Location Address: 307 E. Orange Watershed: Buena Vista Creek Call Date: 11/7/2008 Case closed date: 12/10/2008	Sediment discharge into street right-of-way from dirt area adjacent to driveway.	11/7/08, Observed as described in Complaint Description. Sediment in street curb gutter. Denuded area next to driveway. Vacant property. 11/10/08, bank owned by HSBC per County Tax Assessor. Per HSBC, e-mail only for their forclosuure services. E-mail sent to HSBC requesting contact. 11/21/08, e-mailed warning letter to property management. E-mail from property management that a work order was placed to abate the violation. 11/24/08, met with contractor to discuss implementation of BMPs. 12/4/08, BMPs implemented but sediment not removed for right-of-way. Recontacted contractor and informed him of this. They will have worker go back within next couple of days and remove sediment from curb gutter. 12/9/08, BMPs implemented.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from right-of-way and eliminate the pollution potential by implementing appropriate BMPs Follow-up Action: Photo verify Actions completed: BMPs implemented. Curb gutter swept clean; fiber rolls and straw matting installed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-194 Type: Residential Location Address: 315 E. Orange Watershed: Buena Vista Creek Call Date: 11/7/2008 Case closed date: 11/17/2008	Sediment discharge into street right-of-way from dirt area adjacent to driveway.	11/7/08, Observed as described in Complaint Description. Denuded front yard area, also, next to driveway. Spoke with tenant in reference to violation and discussed implementation of BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep driveway and street curb/gutter of sediment. Install approopriate BMPs to prevent further sediment discharge. Follow-up Action: Photo verify Actions completed: Area swept clean. BMPs installed.
SW No.: SW08-195 Type: Residential Location Address: 326 N. Citrus Ave Watershed: Buena Vista Creek Call Date: 11/7/2008 Case closed date: 11/17/2008	Lawn parking on side yard with potential for tracking.	11/7/08, Vehicle parked on side yard on hard-packed dirt mixed with little gravel. No signs of discharge or tracking. Spoke with propery owner's teenage daughter about lawn parking being a violation and potential for tracking. Discussed consideration of additional gravel on side yard or vegetate area to prevent any potential for sediment tracking discharge. 11/17/08, Area still clean with no signs of discharge or tracking. A different vehicle parked on side yard.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Maintain curb and gutter free of any tracking or sediment discharge. Consider use of additional gravel. Follow-up Action: Recheck for sediment discharge and/or tracking (none seen). Referred to Code Enforcement Dept. for lawn parking. Actions completed: Referred to Code Enforcement Dept. for lawn parking.
SW No.: SW08-196 Type: Private Lateral Location Address: 1370 Calle Jules Watershed: Buena Vista Creek Call Date: 11/13/2008 Case closed date: 11/21/2008	Private lateral sewer spill into right-of-way.	Private lateral sewer spill from driveway into curb/gutter right-of-way. Contained and cleaned by City of Vista Wastewater crew. Plumber (GMJ Maintenance) on scene to clear line. 11/17/08, Contacted manager and discussed spill prevention and containment plan. 11/19/08, Met with property maintenance to review spill prevention and containment plan. Will make minor changes and drop off tomorrow. 11/20/08, met with property manager and reviewed requested documents.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate violation and cease illegal discharge by clearing private lateral. Provide copy of plumber's invoice showing clearing of line. Provide a copy of spill prevention and containment plan. Follow-up Action: Contact property management and receive copies of plumber's invoice and spill prevention and containment plan. Actions completed: Sewer line cleared of roots, property manager provided copy of plumber's invoice; a spill prevention and containment plan and recent news letter to tenants.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-197 Type: Residential Location Address: 1428 Chestnut Ln Watershed: Buena Vista Creek Call Date: 11/10/2008 Case closed date: 12/15/2008	Sediment and vegetation congesting drainage ditch.	Observed as described in Complaint Description. 11/19/08, phone call from property owner. He received warning letter and is working to clean ditch. 12/1/08, much progress made. Vegetation cut back and removed, debris and trash removed. Some sediment remains. Property owner requested one additional week to shovel out remaining sediment.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove vegetation, sediment, debris and/or trash from west perimeter drainage ditch. Follow-up Action: Photo verify Actions completed: BMPs implemented. Drainage ditch cleared/cleaned.
SW No.: SW08-198 Type: Residential Location Address: 1432 Chestnut Ln Watershed: Buena Vista Creek Call Date: 11/10/2008 Case closed date: 12/15/2008	Congested drainage ditch	West perimeter drainage ditch congested with vegetation, sediment, debris and/or trash.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove vegetation, sediemnt, debris and/or trash from west perimeter drainage ditch. Follow-up Action: Photo verify Actions completed: BMPs implemented. Drainage ditch cleared/cleaned.
SW No.: SW08-199 Type: Residential Location Address: 1436 Chestnut Ln Watershed: Buena Vista Creek Call Date: 11/10/2008 Case closed date: 12/22/2008	Congested drainage ditch.	West perimeter drainage ditch congested with vegetation, sediment, debris and/or trash. 12/1/08, BMPs implemented, drainage ditch cleaned/cleared with exception of one small area of sediment/mud and vegitation. 12/2 - spoke with property owner who will clean remaining sediment and vegitation from ditch this week.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove vegetation, sediment, debris and/or trash from west perimeter drainage ditch. Follow-up Action: Photo verify Actions completed: BMPs implemented. Drainage ditch cleared/cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-200 Type: Other Location Address: Kevin Circle Watershed: Buena Vista Creek Call Date: 11/10/2008 Case closed date: 11/13/2008	BMPs maintenance.	BMPs are being upgraded regularly and are in good condition.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Maintain and upgrade BMPs as necessary. Follow-up Action: Intermittent and after a rain event. Actions completed: BMPs upgraded and maintained BMPs throughout site.
SW No.: SW08-201 Type: Other Location Address: Escondido Ave / Ocean View Dr. Watershed: Buena Vista Creek Call Date: 11/17/2008 Case closed date: 11/18/2008	Sediment accumulated in curb gutter with sand bags on Escondido Ave south of Ocean View Dr.	Contacted Vista Irrigation District on Ocean View, just west of Escondido Ave. They placed the BMPs/gravel bags along curb and gutter to contain sediment from a damaged water line being repaired on Ocean View. Gravel bag BMPs effective in collecting sediment on Ocean View and on Escondido Ave before reachng storm drain inlet.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: After repairing water line, remove BMPs and sweep/clean all sediment deposited. Follow-up Action: Photo verify Actions completed: Gravel bags removed. Sediment swept clean.
SW No.: SW08-202 Type: Residential Location Address: 735 E. Bobier Watershed: Buena Vista Creek Call Date: 11/17/2008 Case closed date: 11/18/2008	Commercial business, washing cars on driveway. 11/17/08, 10:34 a.m. I surveyed location - no vehicles or washing of cars.	I spoke with business owner/resident at 735 E. Bobier. She stated they use a dry sweep method with their 2 sweepers. Any effluent removed from sweep process is disposed of at offsite specified locations. Vehicles are serviced off site also. 'Clean Sweeps' has a valid business license. No violations observed, property owner complained "that 'nut job neighbor' complains about nothing". There appears to be a chronic contentious issue between neighbors.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow guidelines in brochure Follow-up Action: None Actions completed: Property owner restated maintenance and service company policy.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-203 Type: Other Location Address: Emerald & Hacienda Watershed: Buena Vista Creek Call Date: 11/10/2008 Case closed date: 11/10/2008	Vehicle upside down in creek.	Vehicle had been removed. Hazmat, Fire Dept and Public Services Dept were on scene. Hazmat stated flow of creek was such that PPM (part per million) was below cause for concern.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease hazmat discharge into creek Follow-up Action: Remove vehicle and confirm PPM of spill. Actions completed: Vehicle removed. Hazmat cleared area as "No Concern". Fire Dept report 2008-0008173-000.
SW No.: SW08-204 Type: Commercial Location Address: 151 Vista Village Dr. Watershed: Buena Vista Creek Call Date: 11/18/2008 Case closed date: 11/24/2008	Wash off of grey powdery (concrete) like substance and hosing of inside garden center discharging to storm drain on east side of service entrance. (Ford lot overwatering also).	Observed as described in Complaint Description. I spoke with Lowes store manager. He has been on the site for only 3 weeks and will correct the hosing off issues.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge; remove grey powdery accumulation near inlet. Follow-up Action: Photo verify Actions completed: Area clean and stain substance removed.
SW No.: SW08-205 Type: Residential Location Address: 649 Beacon Ct Watershed: Buena Vista Creek Call Date: 11/17/2008 Case closed date: 11/25/2008	Congested drainage ditch.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean ditch Follow-up Action: Photo verify Actions completed: Ditch cleared.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-206 Type: Residential Location Address: 1030 Heather Dr. Watershed: Buena Vista Creek Call Date: 11/19/2008 Case closed date: 11/19/2008	Discharge chlorinated pool water	Smell of chlorine was prevelant. Spoke with property owner. She requested her pool contractor to cease further discharge and test water.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and dissapate chlorine. Follow-up Action: Monitor for future discharges Actions completed: Property owner ceased discharge and requested contractor to test water.
SW No.: SW08-207 Type: Residential Location Address: 1208 Sunset Dr. Watershed: Buena Vista Creek Call Date: 11/12/2008 Case closed date: 12/9/2008	Cut trees and left shrubbery in drainage channel.	I was finally able to contact property owner by phone. He is out of state and will remove shrubbery upon return.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove cut tree limbs and leaves from drainage course. Follow-up Action: Photo verify Actions completed: Vegetation removed.
SW No.: SW08-208 Type: Commercial Location Address: 950 Escondido Ave Watershed: Buena Vista Creek Call Date: 11/20/2008 Case closed date: 11/20/2008	Detailer not reclaiming water.	Blue Diamond Detail was not reclaiming discharge water and did not have a business license. Code Enforcement Dept issued a citation. Water had not left the site.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and reclaim all water. Follow-up Action: None Actions completed: Ceased discharge and left location

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-209 Type: Residential Location Address: Hidden Sky Ct Watershed: Buena Vista Creek Call Date: 11/20/2008 Case closed date: 11/24/2008	No BMP protection on inlet at road repair.	Asphalt road removed due to aligatoring and saturation. No BMPs implemented to protect inlets. Resident stated it was to be a 3-day job and water leak was discovered. Land Development Inspector and Engineering Inspector will visit site to discuss this with contractor. Referred to Engineer Inspectors.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Protect inlet and repair leak/road as soon as possible. Follow-up Action: Photo verify and discuss with Engineering Inspectors. Actions completed: Street is in. Completed.
SW No.: SW08-210 Type: Residential Location Address: 1014 Bartlett Dr. Watershed: Buena Vista Creek Call Date: 11/24/2008 Case closed date: 11/24/2008	Water discharging from residence that is unoccupied.	Wastewater on scene - VID (Vista Irrigation Districsct) was notified as water discharge is potable.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge of potable water for conservation. Follow-up Action: None Actions completed: Referred to VID
SW No.: SW08-211 Type: Other Location Address: 1551 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 12/1/2008 Case closed date: 12/17/2008	Sediment discharge into City street/right-of-way. Public Services Dept. already notified for clean-up	Observed as described in Complaint Description. Erosion along south property line near southeast corner of lot discharging over curb onto Sycamore Ave. 12/2/08, left message for property mgmt. about erosion. Scheduled to meet on site 12/4/08. Met with property mgmt. on site. Looked at erosion and discussed implementation of BMPs by next week; they will call with updates and when complete. 12/11/08, Follow-up inspection - BMPs implemented. 12/16/08, BMPs effective after significant rain event.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement approporiate BMPs to eliminate the pollution potential / sediment discharge from entering the street, curb and gutter conveyance system. Monitor effectiveness and maintain thereafter. Follow-up Action: Photo verify Actions completed: BMPs implemented. Straw fiber rolls and gravel bags for perimeter protection. Gravel bag check dams and dirt berm also implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-212 Type: Other Location Address: 2121 Thibodo Rd Watershed: Buena Vista Creek Call Date: 12/1/2008 Case closed date: 12/2/2008	Water intrusion into living quarters at Vista Fire Station #4 from unknown origin.	Spoke with Fire personnel and proceeded to GE OSMONICS. The Manager and I walked the site. No sprinklers were malfunctioning. Rain events occurred 11/25/08 and 11/27/08. This created a 'Flush' run-off, all directed to low point - Fire Station #4 on north side of building. Manager would monitor any discharge from GE OSMONICS.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded as unable to establish run-off origin other than rain water to low point. Follow-up Action: GE OSMONICS will monitor run-off fromtheir site. Fire Chief Berg to log run-off events and their research results Actions completed: Close case til further research by Fire Dept and GE OSMONICS can be gathered.
SW No.: SW08-213 Type: Residential Location Address: 1050 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 12/3/2008 Case closed date: 12/10/2008	Standing water adjacent to street at the low point in the street in front of residence.	Observed as described in Complaint Description. Some of this water may have been residual from recent rain events, while some appears to have originated from the property as there are signs of sediment discharge onto the driveway. Contacted property owner who said he had standing water/flooding trapped in low spot of front yard. Landscapers were working yesterday and today cutting drains to release this water. He said this concentrated release caused the discharge and flooding in street low spot.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep sediment discharge from driveway. Monitor irrigation system to verify no additional discharge of water is occurring. Follow-up Action: Photo verify Actions completed: Area dry and swept. So signs of excessive irrigation run-off
SW No.: SW08-214 Type: Residential Location Address: 702 Hilo Way Watershed: Buena Vista Creek Call Date: 12/2/2008 Case closed date: 12/8/2008	Rear of property has denuded soil that is discharging to private roadway.	Observed as described in Complaint Description. I spoke with homeowner - they are finishing a retaining wall and will correct this over the weekend.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify Actions completed: Fiber roll implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-215 Type: Construction Location Address: 2405 N. Santa Fe Ave. Watershed: Loma Alta Creek Call Date: 12/17/2008 Case closed date: 12/17/2008	Sediment discharge	Sediment discharge from extensive rain event. This is an active site and is under Engineering Inspection purview.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge Follow-up Action: Site verification Actions completed: Area secured.
SW No.: SW08-216 Type: Construction Location Address: 877 Sycamore Ave Watershed: Buena Vista Creek Call Date: 12/16/2008 Case closed date: 1/12/2009	Some BMPs on site are failing.	12/16/08. some BMPs are failing after heavy rain event. Erosion and damaged silt fence at southwest corner of site. Erosion from lot on east perimeter (denuded slope). 12/17/08, repaired damaged areas of silt fence. Gravel bags placed in erosion rills. Gravel bags used as check dams and to reinforce perimeter protection. 12/19/08, additional BMPs installed today, 12/20 and 12/22, including berms, plastic to stabilize slopes and additional silt fencing. 12/23/08, additional BMPs noted; berms, plastic new silt fence on perimenter, additional check dams for each lot, additional gravel bags, pads graded. 12/29/08, spoke with property manager in reference to BMPs. Also plans on getting bids for additional soil binder application on all perimeter slopes and part way up the pads. 1/12/09, Streets swept clean. Not going to install additional soil binders at this time since erosion areas already addressed. Will monitor and maintain existing BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair, upgrade and maintain existing BMPs. Repair damaged areas of silt fence. Install additonal BMPs in areas of erosion; especially at southwest corner of site and east perimeter near inlet. Remove sediment that accumulated behind gravel bag inlet protection. Follow-up Action: Photo verify Actions completed: 12/23/08, additional BMPs added to site; berms (graded), plastic on eroded slopes, new silt fence on perimeter, additional check dams for each lot, and additional gravel bags throughout site, pads regraded to drain towards front of lots. 1/12/09, streets swept clean. They will monitor and maintain BMPs on site.
SW No.: SW08-217 Type: Construction Location Address: 1045 Sycamore Watershed: Buena Vista Creek Call Date: 12/16/2008 Case closed date: 1/12/2009	BMPs effective after rain event; however, maintenance required.	12/16/08, accumulation of sediment behind gravel bags and hay bales in street at entrance. 12/18/08, sediment removed on 12/16/08 but re-collected behind gravel bag chevrons again after rain event on 12/17/08. 12/29/08, sediment removed from street behind chevrons. 1/2/09, contractors did not show. Property manager will meet then on site 1/5/09 to have additional BMPs installed.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: 12/16/08, Remove sediment from street using shovel and dry sweep method. Reinforce gravel bag chevrons in curb/gutter so that sediment can't get beyond that point. 12/29/08, Implement additional BMPs to reduce sediment from curb coring. Follow-up Action: Photo verify. Monitor site after rain events and periodically to check condition of BMPs. Actions completed: 12/16/08, sediment removed from street behind gravel bags and hay bales. 12/29/08, additional BMPs installed. Sediment removed from street from behind chevrons. 1/12/09, additional BMPs installed to prevent sediment from leaving site. Additional gravel bags, sand bags and hay bales, also, entire street swept clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-218 Type: Other Location Address: 400 N. Melrose Dr. Watershed: Buena Vista Creek Call Date: 12/18/2008 Case closed date: 6/15/2009	School District not maintaining ditch and creating a health hazard for mobile home residences.	12/20/08, continued research for responsibility; indications are that it is Vista Unified School District (VUSD) property. School offices out for Christmas break. 12/31/08, left e-mail message with maintenance manager at the district office. 1/4/09, received an e-mail from maintenance manager stating that a biologist is working at the creek issue and it would be about 2 weeks. 1/5/09, e-mailed maintenance manager my concerns. 1/22/09, left message, will go to district office to meet w/maintenance manager. 1/26/09, met with maintenance mgr. and grounds supr. at VUSD. They are working w/ Dudek to devise a mitigation plan. A NOV was isssued to help VUSD prod Dudek to move plan into action. 2/12/09, e-mailed grounds supr. For update status. 2/17/09, ice plant and dirt removal. 2/23/09, Complainant called for an update. E-mailed grounds supr. 4/10/09, current photos from grounds supr. indicate much mitigation on school drainage concrete swales. 4/30/09, Engineering Consultant met with me at drainage outlet near N. Melrose. He would like to see plans of inlet. I contacted our Right-of-Way Agent for assistance. 5/26/09, I spoke with our Public Services Right-of-Way Maintenance Supr. He stated under the street and inside the grate of the channel is city responsibility. However, the channel and outside grate is VUSD property responsibility. 6/2/09, left message w/grounds supr. for clean-up, still not removed. 6/10/09, channel will be clear before 6/15/09.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Mitigate ditch Follow-up Action: photo verify Actions completed: Area cleared and mitigated.
SW No.: SW08-219 Type: Residential Location Address: 1066 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 12/17/2008 Case closed date: 1/8/2009	Sediment discharge from denuded slopes into street and collecting in front of 1041 Alta Vista Dr.	Observed as described in Complaint Description. Attempted to contact reporting party on 12/17/08 at 12:00 noon and again on 12/22/08 at 2:14 p.m. with negative results. 1/6/09 received right-of-way information from Vista Right-of-Way Agent. Right-of-way = 55' or 27.5' from center line. 1/7/09, discussed right-of-way issues with Stormwater Program Manager at staff meeting.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove accumulated sediment from driveway and right-of-way using dry sweep method. Implement appropriate BMPs for erosion control and sediemnt control. Follow-up Action: Photo verify. Actions completed: BMPs implemented including straw fiber rolls, sand bags, vegetation, minor grading and mulching.
SW No.: SW08-220 Type: Residential Location Address: 327 Hill Dr. Watershed: Buena Vista Creek Call Date: 12/18/2008 Case closed date: 12/24/2008	Sediment, vegetation and trash in ditch	Observed as described in Complaint Description. Research required. I spoke with son of owner at 327 Hill Dr. He was unaware who was to clean ditch. Research indicates the ditch was installed on perimeter of new homes during construction. I called the property owner - he will clean ditch.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove accumulation from ditch Follow-up Action: Photo verify Actions completed: Ditch cleaned. I contacted property owner thanking her and family for clearing ditch and requested maintenance thereafter.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-221 Type: Commercial Location Address: 2020 E. Vista Way Watershed: San Luis Rey Call Date: 12/19/2008 Case closed date: 12/29/2008	Erosion to the back of the property as a result of land disturance and failure to install appropriate BMPs.	Observed as described in Complaint Description. Also, uncovered stockpiles of concrete rubble mixed with asphlat. 12/22/08, met with property owner and his contractor to discuss BMP requirements. Issued NOV	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate erosion control, run-off velocity reduction and sediment control BMPs to prevent further erosion and illegal discharges from the site. Cover stockpiles to prevent run-off unitil they can be removed. Remove any asphalt from watercourse. Follow-up Action: Photo verify Actions completed: 12/24/08, BMPs implemented. 12/29/08, asphalt removed from water course.
SW No.: SW08-222 Type: Commercial Location Address: 771 E. Vista Way Watershed: Buena Vista Creek Call Date: 12/16/2008 Case closed date: 12/16/2008	Ditch accumulation and undermining	Observed as described in Complaint Description. After visiting the site, it was noted that water from street enters an inlet at curbside and proceeds past Java Hut, parking lot traveling southwest behind clinic then west toward Vista Ice Box. A ditch runs parallel with creek prior to entering just west of strip center. City Right-of-Way Agent requested storm water refer this case to Engineering as he believes ditch is City jurisdiction.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clear ditch Follow-up Action: Referred to Engineering Dept. for clearing. Actions completed: Research pending with City Depts. Water flow is not compromised by ditch congestion, therefore, is not a Stormwater violation.
SW No.: SW08-223 Type: Construction Location Address: N. Melrose & N. Santa Fe Ave Watershed: Loma Alta Creek Call Date: 12/17/2008 Case closed date: 12/17/2008	Sediment discharge	Engineering Inspector for site conferred with contractors who repaired damaged BMPs. North Coast Church site.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge Follow-up Action: Verify with Engineering Inspector. Actions completed: Discharge mitigated by contractors per Engineering Inspector.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-224 Type: Residential Location Address: 1212 Calle Jules Watershed: Buena Vista Creek Call Date: 12/22/2008 Case closed date: 4/8/2009	Sediment discharge into curb/gutter.	Congested and damaged storm drain. Contacted property manager and showed her the problem. Property manager contacted two plumbers (Drain Patrol & ASAP). Both had difficulty removing driveway grate catch-basin/inlet to clean. Both said they would have to remove concrete sidewalk outfall because it is too congested. 01/02/09, Property manager spoke with her supervisor, they will clean catch basin and manhole on their property and request City's Public Service Dept repair and clean the curb outlet. 1/5/09, call from property manager stating catch basin and manhole are cleaned out. 1/8/09, corrective action verified. SRO (service request order) to Public Services to repair curb outlet.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: 12/23/08, Clean and repair storm drain. Clean sediment from driveway apron and right-of-way using dry sweep method. 1/2/09, SRO request to Public Services Dept to repair and unclog City's storm drain curb outlet. Follow-up Action: Photo verify. Actions completed: 12/29/08, sediment removed from right-of-way. Property manager agreed to hire contractor to clean/remove the sediment from the catch basin and manhole, which are on private property leading to the City's storm drain curb outlet. 1/8/09, Catch basin and manhole cleaned out.
SW No.: SW08-225 Type: Residential Location Address: 1220 Calle Jules Watershed: Buena Vista Creek Call Date: 12/22/2008 Case closed date: 12/29/2008	Sediment discharge into curb/gutter	Sediment discharge at southeast corner of property from opening in retaining wall; onto sidewalk and driveway apron. Contacted property manager and showed her the problem.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from sidewalk and driveway apron using dry sweep method. Install appropriate BMPs (gravel bags, silt fence or complete retaining wall) to prevent further descharges. Follow-up Action: Photo verify Actions completed: Sediment discharge removed/shoveled and swept clean. BMPs implemented, gravel bag perimeter protecton.
SW No.: SW08-226 Type: Residential Location Address: 1949 White Birch Dr. Watershed: Buena Vista Creek Call Date: 12/10/2008 Case closed date: 12/24/2008	Dirt discharging off property onto sidewalk and into right-of-way.	I spoke with property owner and presented a HELP brochure. I requested implementing BMPs and stated I would check back on 12/24/08.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify Actions completed: BMPs implemented. I spoke with property owner, thanked her for the assistance and requested monitoring until area is vegetated and established.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW08-227 Type: Residential Location Address: 1218 Countrywood Ln Watershed: Buena Vista Creek Call Date: 12/29/2008 Case closed date: 1/2/2009	Degreasing/hosing vehicle engine compartment in driveway in front of residence.	No evidence at location. Resident is not home. Left business card and brochures on door with note on HELP bochure. Explained the violation in detail and corrective action with request to call me to discuss the violation.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: No further discharges of any kind into the street curb/gutter except rain water run-off. Follow-up Action: 12/31/08, Attempted to locate, find phone number for owner via City reverse directory book and other computer sources to call owner to discuss violation with negative results. 1/2/09, Attempted to contact resident again at residence. Actions completed: Spoke with owner in person. He received educational pamphlets left on his door. Discussed illegal discharges. Property owner agreed to follow BMPs and to have no further illegal discharges.
SW No.: SW08-228 Type: Other Location Address: La Tortuga Dr. @ Casa Bonita Way Watershed: Buena Vista Creek Call Date: 12/31/2008 Case closed date: 12/31/2008	Transmission fluid spill in roadway on La Tortuga Dr. @ Casa Bonita Way	Staining on roadway at La Tortuga Dr. & Casa Bonita Way. No fluids present, therefore, dry absorbent would be ineffective at this time.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Public Services street sweeper swept the stained area of asphalt street. Follow-up Action: None. Public Services Referral Actions completed: Public Services, Street Maintenance, agreed to sweep the stained area of asphalt with City street sweeper.
SW No.: SW09-001 Type: Residential Location Address: 102 Guajome St Watershed: Buena Vista Creek Call Date: 1/2/2009 Case closed date: 1/2/2009	Observed male subject walking dog. Dog defecated in right-of-way and subject didn't pick up dog waste.	Observed as described in Complaint Description. Contacted subject who said he didn't have a pet waste bag. I explained the violation to subject, educated him on the severity and gave him a brochure and pet waste bags with dispenser.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Pick up pet waste from City right-of-way and dispose of properly. Follow-up Action: Wait for subject to return to location and take corrective action. Actions completed: Subject removed pest waste from City right-of-way using provided doggie pet waste bag and disposed of in trash can.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-002 Type: Residential Location Address: 1315 Tower Dr. Watershed: Buena Vista Creek Call Date: 1/7/2009 Case closed date: 2/2/2009	BMX track on property with potential for erosion and no BMPs in place.	Observed as described in Complaint Description. Erosion rills in denuded areas of property. Property slopes downward toward natural watercourse with a potential for sediment discharge. There is also a deadwall outfall at the edge of the property with a dirt/vegetated channel leading to the creek with no rip-rap energy dissipater to prevent erosion. 1/27/09, BMPs implemented. Requested a few modifications and additions to BMPs. 1/29/09, met with Vista Irrigation Facilities Manager on site to discuss release valve outfall and erosion potential. They agreet to install three 3-6" rip-rap channel. 2/4/09, 6" rip-rap has been installed in channel.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Install erosion and sediment control BMPs; silt fencing, straw fiber rolls, gravel bags, detention basin, check dams, energy dissipater to prevent sediment from leaving the property and entering the natural watercourse. Follow-up Action: Photo verify Actions completed: BMPs implemented. Sediment control BMPs on perimeter including straw fiber rolls and silt fencing. Erosion control BMPs on site including sand bags, mulch and rip-rap.
SW No.: SW09-003 Type: Commercial Location Address: 200 Lado de Loma Watershed: Buena Vista Creek Call Date: 12/3/2008 Case closed date: 1/2/2009	Trash and debris in curb/gutter and overwatering	I contacted Redevelopment Dept which is responsible for the Ford lot lease. I was given a contact person, called him requesting maintenance and monitoring.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Maintain and monitor perimeter of lot Follow-up Action: Photo verify Actions completed: 12/18/08, area clean, no indication of overwatering. Redevelopment stated the lot may be taken back by City. 1/2/09, I contacted Redevelopment, lot is still with Ford.
SW No.: SW09-004 Type: Commercial Location Address: 976 Escondido Ave Watershed: Buena Vista Creek Call Date: 1/8/2009 Case closed date: 1/20/2009	Pressure washing parking lot, pumps, and structures. Possibly not reclaiming water because there was a stream of water in the curb/gutter in that area flowing into an inlet between Postal Way and S. Santa Fe Ave	Area dry. Contacted onsite manager and explained violation and gave her educational brochures. Obtained regional manager's contact information.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: No wash water to leave the site in the future. On-site manager to supervise pressure washers in future to verify they are reclaiming water and not allowing it to leave the site. Follow-up Action: 1/9/09, Contacted United Oil Supervisor and discussed violation. He said that the company he hired does have reclamation equipment. I explained that the pressure wash company also needs a business license for Vista. 1/12/09, Sent e-mail to United Oil supervisor reiterating our previous discussion and requesting pressure washing company information. 1/20/09, Spoke with employee of Steam Power Wash; discussed violatons and necessity of having a Vista Business License. Actions completed: 1/12/09, Steam Power Wash was contacted by United Oil supervisor who explained violations and BMPs for future; stated Vista Business License is required; was asked to contact Vista Stormwater Officer Heltmach for more information. 1/20/09, Steam Power Wash has reclamation equipment; will train employees to make sure no water leaves the site; will get a Vista Business License.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-005 Type: Residential Location Address: 600 Blk of W. Bel Air Dr Watershed: Buena Vista Creek Call Date: 1/14/2009 Case closed date: 1/20/2009	Water flowing down curb/gutter on Alta Vista to Escondido Ave.	Water coming from curb outlet fed by concrete drainage ditch. Tested negative for chlorine. Potable water. Followed drainage ditch up to source; revealed water bubbling out of ground of greenbelt on east side of street near drainage ditch. Possible water line or irrigation line break.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to Vista Irrigation District (VID) Follow-up Action: Photo verify. Actions completed: Leak repaired. Area dry.
SW No.: SW09-006 Type: Commercial Location Address: 1220 Calle Jules Watershed: Buena Vista Creek Call Date: 1/14/2009 Case closed date: 1/14/2009	Cleaning truck discharging to creek.	I contacted complainant. He witnessed ASM Cleaning Service discharge fluids into creek behind his business. Photo taken by complainant.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge. Follow-up Action: Tony Tirado translated and spoke business owner. Correct procedure and enforcement policies were stated. Business owner would be fined if activity continues. Actions completed: Business owner stated he would comply. ASM Cleaning Service information on e-file under "Carpet Cleaning Companies".
SW No.: SW09-007 Type: Residential Location Address: 522 Raintree Dr. Watershed: Buena Vista Creek Call Date: 1/12/2009 Case closed date: 1/30/2009	Recent embedment of black plastic pipe discharging onto City park.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove black pipe. Follow-up Action: Photo verify Actions completed: Pipe removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-008 Type: Residential Location Address: 530 Raintree Watershed: Buena Vista Creek Call Date: 1/12/2009 Case closed date: 2/19/2009	Black pipe embedded in slope w. fluid discharge creating erosion. Pets are in yard.	Observed as described in Complaint Description. There are dogs in the rear yard and a hose. Potential to wash pavement with fecal matter into drain which runs down the park embankment to a play yard. Erosion on slope prevalent requiring BMP implementation by Recreation and Community Services Dept. to prevent further damage and discharge.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove black pipe. Follow-up Action: Photo verify. 2/5/09, no corrective action - issue NOV Actions completed: Pipe removed.
SW No.: SW09-009 Type: Residential Location Address: 630 W. Bel Air Dr. Watershed: Buena Vista Creek Call Date: 1/14/2009 Case closed date: 2/5/2009	Sediment discharge from congested drainage ditch into street curb/gutter. Sediment discharge on sidewalk adjacent to greenbelt.	Observed as described in Complaint Description. Concrete drainage ditch congested with sediment, soil and vegetation. Sediment discharge on sidewalk below retaining wall do to gophers on slope. 1/20/09, located and contacted H.O.A. President, walked site and explained violatons.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs to eliminate/reduce sediment discharge from common area. Sweep sidewalk, clean off sediment and maintain clean thereafter with scheduled routine sweeping. Remove vegetation and soil/sediment from concrete drainage ditch and curb outlet and maintain clear and clean thereafter. Implement BMPs (straw fiber rolls/sandbags) to prevent further sediment discharge into concrete drainage ditch. Follow-up Action: Photo verify Actions completed: BMPs implemented: sidewalk swept clean; vegetation and sediment removed from drainage ditch and curb outlet. Fiber folls (straw wattle) installed along drainage ditch.
SW No.: SW09-010 Type: Commercial Location Address: 224 Emerald Dr. Watershed: Buena Vista Creek Call Date: 1/20/2009 Case closed date: 1/22/2009	Milk jug (with top cut off) full of motor oil located behind the gas station.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove oil from location and secure it in container with tight lid. Store used oil until it can be disposed of properly at Vista Household Hazardous Waste site. Follow-up Action: Photo verify Actions completed: Container of oil removed preventing a spill hazard.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-011 Type: Commercial Location Address: 410 S. Santa Fe Ave. Watershed: Buena Vista Creek Call Date: 1/14/2009 Case closed date: 1/21/2009	Possible leaking/broken irrigation system. Water discharging from planter on south side of property, across sidewalk, into curb/gutter and into drop storm drain inlet	No signs of water or sediment discharge. Contacted Select Realtors in Ste #103, who advised the valve to the irrigation lines is leaking and they turned off the valve. They requested information on who is responsible to fix the leaky valve. He was advised that the property owner or Vista Irrigation District (VID) was responsible.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Keep leaky valve turned off while sprinklers are not in use until it can be repaired or replaced. Follow-up Action: None. Referred tenant to VID and/or property owner/property management Actions completed: Tenant will keep leaky valve turned off until it can be repaired or replaced.
SW No.: SW09-012 Type: Residential Location Address: 1701-1731 Calle Jules Watershed: Buena Vista Creek Call Date: 1/14/2009 Case closed date: 3/4/2009	Chronic overwatering causing damage to City street between 1701 and 1731 Calle Jules.	Observed as described in Complaint Description. Excessive irrigation (overwatering) to vegetation of complex adjacent to sidewalk; flowing over sidewalk onto Calle Jules; causing alligatoring of asphalt and pot holes in street. 1/26/09, left message with Property Manager. Spoke with Property Manager and they will have gardeners adjust frequency and duration of sprinklers. 1/29/09, met, on site, with Property Manager and Director of Maintenance. History of problems with ground water. Had to install two sump pumps on property for ground water. Will turn off irritation over the weekend to let it dry out. Leak detection company was unable to find any leaks in irrigation system, but valves will be replaced. 2/2/09, met with Director of Maintenance on site. Area is drier; no run-off over sidewalk, still has water flow in curb/gutter. Possible ground water. Maintenance Director will contact Vista Irrigation District (VID) to have water lines looked at and will repair driveway entrance (low spot where water pools) by 2/7/09. 2/9/09, VID found no leaks on City side, recommended lines to condo's be checked for leaks. 2/13/09, found leak at valves for irrigation- repaired. 2/25/09, Area much drier, no run-off observed. Very Little water in curb/gutter and low spot of driveway apron. 3/2/09, Driveway apron repaired. No run-off. 3/4/09, Cones/sandbags removed. Area remains dry. Met with Regional Mgr., they will continue to monitor.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Review and revise irrigation practices to elliminate any over irrigation discharge from the property. Repair any problems/leaks in irrigation system. Follow-up Action: Photo verify Actions completed: 1/2/09 Landscape gardener adjusted frequency and duration of sprinklers. 2/3/09, contacted VID to investigate. 2/13/09, Leak detectors found leaky irrigation valves. 2/24/09, had all valves replaced and a pressure regulator installed to main line. Repaired leak at water meter. 3/2/09, Driveway apron (low spot) repaired. 3/4/09, cones and sandbags removed.
SW No.: SW09-013 Type: Commercial Location Address: 2826 La Mirada Dr. Watershed: Agua Hedionda Creek Call Date: 1/26/2009 Case closed date: 1/26/2009	Individual washing off forklifts and not reclaiming discharge.	Observed as described in Complaint Description. We contacted owner of 'The Lift Doctor'; he was cleaning forklifts that are for sale. We explained violations, presented brochure and requested reclamation.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and/or reclaim water. Follow-up Action: Photo verify and verbal confirmation that reclamation will occur in future. Actions completed: Individual stopped further washing and stated he would reclaim all discharge and consider taking vehicles to self service car wash.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-014 Type: Residential Location Address: 415 Plymouth Dr. Watershed: Buena Vista Creek Call Date: 1/26/2009 Case closed date: 1/30/2009	Oil discharged from car in right-of-way.	1/26/09, I contacted property owner of apartment complex. He stated absorbant had been placed on spill and clean-up. He stated tenant in Apt #18 had spilled the oil.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove spilled oil, cease further car maintenance in roadway. Follow-up Action: Photo verify. Actions completed: Area clean
SW No.: SW09-015 Type: Residential Location Address: 286 Alestar St Watershed: Buena Vista Creek Call Date: 1/27/2009 Case closed date: 1/30/2009	Cleanout cap off washer line and discharging along driveway.	Observed as described in Complaint Description. I contacted property owner, explained violation, provided options and requested status by 1/30/09. I recommended an immediate lock on utility door until problem is corrected.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and repair line. Follow-up Action: Photo verify and check that door is locked. Actions completed: 1/29/09, door is locked. Plumber has been called. Property owner will be on site 1/30/09. 1/30/09, Plumber cleared line, replaced cleanout cap.
SW No.: SW09-016 Type: Residential Location Address: Green Oaks Way @ Sandy Ln Watershed: Agua Hedionda Creek Call Date: 1/27/2009 Case closed date: 2/12/2009	Vehicle discharged fluids.	Blue and white Ford Mustang has discharged fluids onto roadway and has not removed it. I contacted rightful owner (@ 1040 Heron Dr.) through a cross reference index. I left a brochure for Motor Oil on vehicle and left a message on phone. 1/30/09, I spoke with property owner's brother. He received my voice message and will mitigate grease spill over the weekend. 2/4/09, requested dirt clean-up as rain event is pending. 2/5/09, no response from property owner.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove oil and dispose of it in trash. Prevent further dishcarges. Follow-up Action: Photo verify. Actions completed: 2/2/09, Dirt now on grease spill. I left message to remove dirt and requested a call back. 2/12/09, Area is now clean and dirt absorbed majority of oil. No surface oil is apparent.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-017 Type: Commercial Location Address: 1430 Decision St. Watershed: Agua Hedionda Creek Call Date: 1/6/2009 Case closed date: 1/27/2009	Washing cars and not reclaiming water	Site has been monitored since 1/6/09 and no observance of violation was occurring. 1/27/09, violation of not reclaiming was observed. I spoke with employee of Bella Detail. She stated she was hired by person at D J Ortho to wash cars. I explained requirements to all involved.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Reclaim all discharge Follow-up Action: Notify business when mobile detailing procedure is implemented. Actions completed: Discharge ceased.
SW No.: SW09-018 Type: Commercial Location Address: 100 blk Escondido Ave Watershed: Buena Vista Creek Call Date: 1/27/2009 Case closed date: 1/27/2009	Large amounts of dry absorbent left on City street and in curb/gutter in the 100 blk of Escondido Ave. after a traffic collision.	Observed as described in Complaint Description. Contacted Sheriff's dispatch to determine the tow company that responded to the collision. Contacted Rancho Del Oro Towing and advised of the violation; requested corrective action. Contacted Vista Sheriff's Traffic Sergeant and informed him of the lack of clean-up by the contracted tow company.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep the dry absorbent that was left behind within an hour. Follow-up Action: Photo verify Actions completed: Most of dry absorbent was swept clean. Recontacted towing company and requested additional dry sweep clean-up to remove remaining dry absorbent, within 40 minutes, the area was swept clean.
SW No.: SW09-019 Type: Commercial Location Address: 1275 S. Santa Fe Ave. Watershed: Buena Vista Creek Call Date: 1/27/2009 Case closed date: 2/2/2009	Trash and greasy items in and around dumpster enclosure.	Observed as described in Complaint Description. Numerous cardboard boxes piled up in parking lot outside of the dumpster area. Trash, debris and sediment (gravel, soil, ground asphalt) under dumpster and in an around dumpster area. 1/30/09, spoke with responsible party via phone and explained violations and corrective action required. Faxed NOV and letter. E-mailed photos, NOV and letter. Hard copies sent by certified mail on 2/2/09.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cardboard boxes must be broken down and placed in dumpster. Remove all trash, debris and sediment from areas under dumpster, and in and around dumpster enclosure using dry sweep method. If power washing, all water must be reclaimed and disposed properly. Maintain these BMPs to prevent further violations. Follow-up Action: Photo verify Actions completed: BMPs implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-020 Type: Private Lateral Location Address: 1032 Marbo Ter Watershed: Buena Vista Creek Call Date: 1/28/2009 Case closed date: 1/29/2009	Private sewer lateral discharge	Observed as described in Complaint Description. Wastewater on scene and property owner notified of violation, states he will make repairs himself.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and repair private lateral. Follow-up Action: Photo verify and run water through line. Actions completed: Property owner repaired line - 4" ABS was crushed and cracked. This section was removed and replaced with new 4"ABS pipe. Water was running through line.
SW No.: SW09-021 Type: Residential Location Address: 417 N. Melrose Dr. Watershed: Buena Vista Creek Call Date: 1/28/2009 Case closed date: 1/29/2009	Oil container placed on sidewalk, tipped over onto sidewalk and into curb/gutter.	An anonymous caller contacted Public Services Dept. A crew was dispatched to clean up with dry absorbant. It did not reach inlet.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and remove oil from sidewalk and gutter. Follow-up Action: Photo verify Actions completed: Dry absorbant implemented - oil removed.
SW No.: SW09-023 Type: Private Lateral Location Address: 1127 Cabrillo Cir Watershed: Buena Vista Creek Call Date: 1/29/2009 Case closed date: 2/2/2009	Private lateral sewer spill.	Cross-reference to SW09-022; shared sewer lateral. Private lateral sewer spill from cleanout adjacent to driveway entrance between 1134 & 1138 Anza Ave. City Wastewater Crew responded with vac-truck to clean spill. Spill flowed along Anza Ave and dried up at 1112 Anza; it did not enter any stom drain inlet. Plumber arrived at 7:30 p.m. and had line cleaned/cleared by 8:00 p.m. Completed repair to cracked pipe on 1/30 by 11:35 a.m.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean and/or repair line to prevent further discharge. Provide copy of plumber's invoice showing cleaning/repairs. Camera the line and provide copy of tape. Follow-up Action: Photo verify 1/30/09 & 2/2/09 Actions completed: Line cleaned and repaired. Received copy of plumber's invoice and tape of line camera. Building Dept. verified that the plumber got a City permit for repairs and inspection.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-024 Type: Residential Location Address: 516 Raintree Dr. Watershed: Buena Vista Creek Call Date: 2/2/2009 Case closed date: 2/2/2009	Erosion on west side yard. Emanating from crack in garden wall, discharges (whether from hosing or rain) are creating rills in park slope.	Observed as described in Complaint Description, however, no discharge was visible. It is apparent that some discharge is causing erosion.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge and direct water to street. Follow-up Action: Monitor Actions completed: Monitor
SW No.: SW09-025 Type: Residential Location Address: 540 Raintree Dr Watershed: Buena Vista Creek Call Date: 2/2/2009 Case closed date: 2/2/2009	Park caretaker witnessed property owner dump 5 gal. bucket onto park slope. He asked her to cease further dishcarge and she professed she could only speak Spanish.	White caked material collected on slope. It has the appearance of detergent residue. Two dogs were in yard and a 5 gal. bucket was next to dishcarge residue area. The slope was dry.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further dishcarge, dispose of bucket fluids into sanitation sewer and direct surface water to street. Follow-up Action: Monitor Actions completed: Monitor
SW No.: SW09-026 Type: Commercial Location Address: 1275 S. Santa Fe #103 Watershed: Buena Vista Creek Call Date: 2/4/2009 Case closed date: 2/23/2009	Grease recycle drums stored outdoors near dumpster without overhead coverage or secondary containment. Oil accumulation/spill near drums. Numerous cardboard boxes piled up outside of dumpster on ground. All is near dumpster area on north side of parking lot.	Observed as described in Complaint Description. Two restaurants on north end of strip mall that would use grease, and boxes are from food and restaurant supplies. Contacted owners of Tamales Dolores and Ortiz Bakery restaurants. Both admitted to piling boxes for a recycler who used to pick up every other day. Both also said they shared the grease drums. Issued a NOV (related to case SW09-027). 2/11/09, call from tenant and they are working on getting North County Grease to pick up their drum. Will talk to Bakery to see if they have contact information, refer other two, if not, they will contact North County Grease to ask them to take all three. Will call back today with update. 2/13/09, Grease haller to pick up two unused barrel/bins. 2/17/09, Secondary containment & overhead coverage for grease drum.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate the violation and cease illegal discharge by disposing of all trash/cardboard boxes and cleaning of oil spill from soil and asphalt with shovel and dry absorbent/ sweep method. Provide overhead coverage and secondary spill containment for grease recycle drums or relocate indoors with spill pan. Follow-up Action: Photo verify. Actions completed: 2/5/09, all trash and cardboard boxes disposed. Oil spill cleaned; dirt removed and asphalt cleaned with dry absorbent. 2/11/09, dumpster area swept clean and lids in closed position. 2/17/09, overhead coverage and secondary spill containment provided for grease durm. 2/23/09, extra grease drum and grease bin removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-027 Type: Commercial Location Address: 1275 S. Santa Fe #108 Watershed: Buena Vista Creek Call Date: 2/4/2009 Case closed date: 2/23/2009	Grease recycle drums stored outdoors near dumpster without overhead coverage or secondary containment. Oil accumulation/spill near drums. Numerous cardboard boxes piled up outside of dumpster on ground. All is near dumpster area on north side of parking lot.	Observed as described in Complaint Description. Two restaurants on north end of strip mall that would use grease, and boxes are from food and restaurant supplies. Contacted owners of Tamales Dolores and Ortiz Bakery restaurants. Both admitted to piling boxes for a recycler who used to pick up every other day. Both also said they shared the grease drums. Issued a NOV (related to case SW09-026). 2/12/09, tenant of Tamales Dorores Restaurant agreed to purchase overhead coverage & secondary containment container today for Ortiz Bakery.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate the violation and cease illegal discharge by disposing of all trash and cardboard boxes and cleaning oil spill from soil and asphalt with shovel and dry absorbent and sweep method. Provide overhead coverage and secondary spill containment for grease recycle drums or relocate indoors with spill pan. Follow-up Action: Photo verify Actions completed: 2/5/09, all trash and cardboard boxes disposed. Oil spill cleaned; dirt removed and asphalt cleaned with dry absorbent. 2/11/09, dumpster area swept clean and lids in closed position. 2/17/09, overhead coverage and secondary spill containment provided for grease durm. 2/23/09, grease drum and grease bin removed.
SW No.: SW09-028 Type: Residential Location Address: 810 Centennial Dr. Watershed: Buena Vista Creek Call Date: 2/3/2009 Case closed date: 2/9/2009	Slope/driveway run-off to drain inlet at rear property.	Observed as described in Complaint Description. I spoke with property owner who would implement fiber roll at perimeter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and implement perimeter protection Follow-up Action: Photo verify Actions completed: Fiber rolls installed. I forwarded verification to complainant.
SW No.: SW09-029 Type: Residential Location Address: 1170 Phillips St Watershed: Buena Vista Creek Call Date: 1/4/2009 Case closed date: 3/9/2009	Driveway reconstruction with area drains leading to storm water conveyance system.	Observed as described in Complaint Description. I spoke with resident's son. I requested mitigation of sediment discharge. He stated he would forward this information to his mother, the tenant. I requested a phone call from the tenant.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further sediment discharge and install BMP perimeter protection. Follow-up Action: 2/9/09, Owner contacted me. He will install a cover on his driveway. 2/12/09, No corrective action. 2/18/09, Met with Public Service Supervisor and owner on site. Discussed possibilities. Owner stated he would implement driveway corrections. 2/23/09, Some mitigation has begun. Actions completed: Driveway poured.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-030 Type: Commercial Location Address: 500 Blk S. Santa Fe Watershed: Buena Vista Creek Call Date: 2/10/2009 Case closed date: 2/11/2009	Sediment on east curb/gutter in the 500 blk of S. Santa Fe.	Observed as described in Complaint Description. Contacted business owners in area that said this is a low spot on S. Santa Fe that pools during heavy rains and all the sediment from S. Santa Fe and surrounding streets settles in this low spot. I could not locate a specific point source. It appears sediment is draining from steep rural streets above, without curbs and gutters, to an inlet on Oceanview that has an outfall onto Terrace, just above S. Santa Fe. This is added to sediment accumulated on S. Santa Fe which all settles in low-point. I contacted a builder at 495 Oceanview who agreed to shovel/sweep the sediment. Although this site may have contributed a small amount of sediment, it did not appear to be the primary source as BMPs were in place and appeared effective.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Request shovel/dry sweep curb and gutter to remove accumulated sediment from low spot on S. Santa Fe Ave. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Street curb/gutter swept clean.
SW No.: SW09-031 Type: Residential Location Address: 140 Nettleton Dr. Watershed: Buena Vista Creek Call Date: 2/9/2009 Case closed date: 2/27/2009	Sediment discharge	Observed as described in Complaint Description. No perimeter protection or BMPs to prevent discharge. The location appears to be an old house, yet numerous 'commercial' vehicles labeled 'Molly Maid' are parked in front. 2/17/09, received a call from property owners requesting an extension. I suggested they make plans, contact Development Services for regulations and see what can be done within the time goal of 2/27/09. I gave them the phone number for Development Services. There are two houses on the property and a garage which is used for their landscape business	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and implement BMPs Follow-up Action: Photo verify Actions completed: BMPs implemented.
SW No.: SW09-032 Type: Commercial Location Address: 150 Nettleton Rd. Watershed: Buena Vista Creek Call Date: 2/9/2009 Case closed date: 3/17/2009	Sediment discharge.	Observed as described in Complaint Description. Frontage has no perimeter protection and tracking is visible. 2/18/09, received a call from Management Office requesting verification of property line. She believes dirt is tracked by patrons of recycling center across the street. 3/3/09, left message with manager at 150 Nettleton Rd and spoke with owner. He intends to put in delineators and gravel but his business has been very busy. He requested an additional month and I expalined they have already had four weeks. I requested something be put in place by next week.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and implement BMPs. Follow-up Action: 3/10/09, No corrective action. I spoke with owner. He will be installing railroad ties and mulch and won't allow parking on his property at the the frontage. He stated he would begin work this week. Actions completed: BMPs implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-033 Type: Residential Location Address: 536 Raintree Dr. Watershed: Buena Vista Creek Call Date: 2/2/2009 Case closed date: 2/13/2009	Park caretaker witnessed property owner dump 5-gal. bucket onto park slope.	White caked material collected on slope. It has the appearance of detergent residue. Two dogs were in the yard & a 5-gallon bucket was next to discharge residue area. The slope was dry.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge. Dispose of bucket fluids into sanitiation sewer and direct surface water to street. Follow-up Action: Monitor Actions completed: Monitor
SW No.: SW09-034 Type: Residential Location Address: 1051 Corvalla Rd Watershed: Buena Vista Creek Call Date: 2/13/2009 Case closed date: 2/13/2009	Septic discharge to creek	No odors were detected. Creek running clear. No sewage visible anywhere on property. Informed complainant and stated info will be referred to county septic as an FYI.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: None Follow-up Action: None Actions completed: None
SW No.: SW09-035 Type: Other Location Address: 885 E. Vista Way Watershed: Buena Vista Creek Call Date: 2/12/2009 Case closed date: 2/13/2009	Foamy stuff in creek near ARCO AM/PM and Auto Repair Shop.	After walking the full length of the Conservancy Trail off of Bel Air Dr. (east) and Capri Dr, it was noted two areas with semi-foamy distrubance in the natural water course that runs parallel to Vale Terrace and E. Vista Way. We spoke with businesses regarding their wash/hose practices. There is no indication that any businesses are discharging. The one area behind Calvary Chapel school yard had no point source. Our assumption is: the first flush after a major rain event is churning parking lot residue creating a mini vortex (similar to the action of a washing machine). Car oils (particularly engine oils) have a detergent in them. In this agitated mini vortex of white foam was oil, grease, and asphalt colored streaks. The additional area was near a water fall discharge over a rocked abutment dam. The action of the falling water created foam that quickly dissapated.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Point source was indeterminate. Follow-up Action: After ensuing rain events, consider revisiting location for chronic vortex of sudsing. Actions completed: I contacted complainant for findings report.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-036 Type: Residential Location Address: 915 Marlin Dr Watershed: Buena Vista Creek Call Date: 2/18/2009 Case closed date: 2/19/2009	Vehicle repairs being done in parking stall outside of 915 Marlin (condo complex). Radiator fluid with anit-freeze spilled.	Observed as described in Complaint Description. Anti-freeze water spill stayed on site and did not reach the storm drain inlet. Contacted owner of vehicle and her friend who was working on it. Educational material was given to them and we discussed the violation. They cleaned spill with paper towels and followed with professional dry absorbent. 2/19/09, dry absorbent has been swept up.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Use absorbent towels followed by dry absorbent to remove/clean spill. Dry sweep absorbent and dispose of properly. Follow-up Action: Photo verify Actions completed: Removed fluids with absorbent paper towels followed by a professional dry absorbent. Dry absorbent swept up.
SW No.: SW09-037 Type: Commercial Location Address: 760 E. Vista Way Watershed: Buena Vista Creek Call Date: 2/19/2009 Case closed date: 2/23/2009	Accumulation of sand all over parking lot after paving. Concerned about forecasted rain early next week.	Observed as described in Complaint Description. Contacted paving contractor foreman of Joe's Paving and discussed the violation and potential for illegal discharge. Issued a N.O.V. to paving contractor. Contractor has a valid City of Vista Business License.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate the violation and cease the potential for illegal discharge. Remove the accumulation of sand in the parking lot, using a dry sweep method, by 4:00 p.m. today. Follow-up Action: Photo verify Actions completed: Area swept clean.
SW No.: SW09-038 Type: Residential Location Address: 1276 Coventry Rd. Watershed: Buena Vista Creek Call Date: 2/23/2009 Case closed date: 3/9/2009	Broken irrigation as water is discharging into roadway.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair irrigation and cease overwatering. Follow-up Action: Photo verify Actions completed: Drier than previous dates. The area is more likely a low lying drain area and not associated with broken irrigation system.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-039 Type: Residential Location Address: 1542 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 2/23/2009 Case closed date: 3/9/2009	Overwatering	Recent irrigation indicates an excessive overwatering discharge. City road appears to have surface erosion and degredation adjacent to residence.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Reduce overwatering Follow-up Action: Monitor Actions completed: Area consistently dry since 2/25/09.
SW No.: SW09-040 Type: Residential Location Address: 554 Hildale Cir. Watershed: Buena Vista Creek Call Date: 2/23/2009 Case closed date: 3/2/2009	Congested brow ditches behind residence.	Observed as described in Complaint Description. Clippings/trimmings appear to have been from string trimming backyard slope and left in brow ditches. House vacant. Contacted realty company and they will have it cleaned by 2/26/09.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep brow ditches. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Brow ditches swept clean.
SW No.: SW09-041 Type: Residential Location Address: 1536 Sunrise Dr Watershed: Buena Vista Creek Call Date: 2/23/2009 Case closed date: 2/23/2009	Water intrusion from north side neighbor at 1524 Sunrise.	An irrigation line broke and flooded west side neighbor creating a deluge of potable water. This water ponded in a low lying garden. I explained to complainant that it was affecting private property as nothing visible had entered a storm drain. Therefore, Stormwater Enforcement was not a possibility but I would investigate any pool discharge, as was originally purported.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair broken irrigation line. Follow-up Action: Visual verify Actions completed: Irrigation line was capped to prevent further discharge. Area will dry out.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-042 Type: Residential Location Address: 1010 E. Bobier Dr. Watershed: Buena Vista Creek Call Date: 2/25/2009 Case closed date: 3/5/2009	Vegetation overgrown and congesting the street curb and gutter in the 1400 blk of Calle Jules.	Observed as described in Complaint Description. Bushes adjacent to the 1400 Blk of Calle Jules are overgrown and congesting the curb and gutter. Contacted resident manager of the Mobile Home Park and explained violation. Gave verbal warning and educational brochure. 3/4/09, trimming started. Remaining trimming and clean-up should be done before end of day. 3/5/09, corrective actions taken and verified.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement yard work BMPs by removing / cutting back vegetation that is encroaching into the City right-of-way curb and gutter. Use dry sweep method to remove any debris. Do not hose down clippings. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Vegetation cut back and removed from right-of-way. Street curb/gutter swept clean of all clippings and debris.
SW No.: SW09-043 Type: Commercial Location Address: 444 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 2/26/2009 Case closed date: 3/16/2009	Repairs on vehicles outside.	Two vehicles being repaired on asphalt driveway in front of Auto Repair Shop. Work not being done undercover. No methods of drip and spill containment being utilized. An accumulation of grease, oil and/or other vehicle fluids under one of the vehicles. Contacted the manager and advised of violations, gave them educatonal booklets. Issued citation to business owner. 3/5/09, no violations observed. 3/11/09, no violations observed. 3/13/09, no violations observed.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Abate violations immediately and hereafter. No vehicle repairs or maintenance unless indoors or under cover. Spill containment/drip pans must be utilized at all times during repairs or maintenance of vehicles. Clean up all spills immediately using dry clean methods. Follow-up Action: Photo verify. Routine unscheduled site inspections. Actions completed: BMPs implemented. All repairs on vehicles being done indoors. Accumulation of oil/grease/car fluids removed using dry absorbent clean method.
SW No.: SW09-044 Type: Commercial Location Address: 2140 Primrose Ave Watershed: Agua Hedionda Creek Call Date: 2/25/2009 Case closed date: 3/10/2009	Possible broken water line. Vista Irrigation District (VID) was called out to investigate.	VID investigation indicated that a person left a tanker water truck on a rear lot at 2140 Primrose. Person said that "kids" turned on his truck spigot and released the water. VID reported no odors, coloration or sheen to the discharge. Referred to VID and County. County issued a citation warning on 3/3/09.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Cease any like discharge. Follow-up Action: Verification of VID response. Actions completed: Received e-mail statement listing enforcement action. Waters below were not tested upon San Diego Haz Mat recommendation as water volume dissapated any discharge. City Stormwater staff visually checked downstream and found nothing deleterious.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-045 Type: Private Lateral Location Address: 1112 Monte Vista Dr Watershed: Buena Vista Creek Call Date: 2/27/2009 Case closed date: 3/6/2009	Private lateral spill into right-of-way.	Wastewater crew supervisor had received a sewer spill report from Rancho Dispatch at 11:00 p.m. on 2/26/09. 1-800-ANYTIME Plumbing was called to locate private lateral. After plumber was unable to locate lateral, Wastewater crew dirt bermed the area and checked it intermittently during evening until daylight. I received a call from Wastewater at 7:30 a.m. on 2/27/09. We were unalbe to locate property owner after numerous attempts. I contacted ASAP Drain Guys, who responded. Line was detected, excavated, with a double sweep installed. Sewage didn't leave immediate area.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge; repair private lateral Follow-up Action: Verify with plumber, City Wastewater and/or tenants that system is functional. Actions completed: 2/28/09, property owner called to state plumber repaired line. 3/2/09, Requested and received plumber invoice detailing repair. 3/9/09, requested and received Wastewater statement of incident.
SW No.: SW09-046 Type: Residential Location Address: 327 Acateno Ave Watershed: Buena Vista Creek Call Date: 3/4/2009 Case closed date: 3/13/2009	Dirty gray water discharging from driveway to city street curb/gutter.	Observed as described in Complaint Description. Found washing machine discharge hose not plumbed to stand pipe/sanitary sewer system but running to side yard gate and driveway. Contacted owner's roommate who said that the line was clogged so they have been discharging water from washing machine to the driveway. Issued NOV. Property owner called and violation was explained. She plans to have plumber clear the line as soon as possible so she can use/keep the machine. Owner was warned, no further discharge into street, disconnect machine until repairs are complete. Gave a deadline for repairs as 3/13/09. 3/12/09, Received copy of plumber's invoice. Washing machine is properly plumbed. Running water test is OK.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate violation and cease illegal discharge. Disconnect and remove washing machine until it can be connected to sanitary sewer system. Provide copy of plumber's invoice. Follow-up Action: Photo verify. Running water tested after line cleared by plumber. Copy of plumber's invoice. Actions completed: BMPs implemented. Plumber cleared line. Washing machine now properly hooked up to sanitary sewer system.
SW No.: SW09-047 Type: Private Lateral Location Address: 840 Townsite Dr. Watershed: Buena Vista Creek Call Date: 3/5/2009 Case closed date: 7/2/2009	Sewer spill into channel that runs parallel to creek	Wastewater contacted me and stated a medical building was spilling sewer into the concrete channel that runs parallel to Buena Creek. Wastewater crew were able to mitigate spill prior to reaching creek. Property owner was notified and plumber arrived promptly and cleared line. The private lateral chronically spills. Camera inspection is required. NOV issured with camera inspection request given. 3/13/09, VHS tape received and reviewed. Line has root intrusion, some long bellies. Plumber did not inspect all the way to city main as required. Requested re-camera of line for verification of responsibility. 3/17/09, 2nd camera inspection indicates that private lateral is off-set from saddle and property owner will need to repair. Roger B., with our Sanitation Dept., viewed WHS tape with me and confirmed off-set of private lateral.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clear line and camera private lateral Follow-up Action: Receipt of DVD / VHS camera inspection. Actions completed: Okay to close per Stormwater Program Manager under the condition that if another chronic spill occurs again we will require line to be completely replaced; follow-up NOV letter states such.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-048 Type: Commercial Location Address: 2465 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 3/5/2009 Case closed date: 3/13/2009	Red dye and water discharging from business.	Unable to locate any discharge. I spoke with property owner. He stated red dye was discharged accidently in 2007 but not since. A sink within a tent was stubbed to a pipe laying in a cut groove of the asphalt curb discharging to raodway. I requested removal of pipe. I notified County as this is county area.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge to roadway. Follow-up Action: Photo verify Actions completed: Pipe was removed.
SW No.: SW09-049 Type: Other Location Address: Green Oaks @ Sandy Ln Watershed: Agua Hedionda Creek Call Date: 3/9/2009 Case closed date: 3/13/2009	Abandoned vehicle leaking oil onto pavement.	White Ford pick up was parked on west side of Green Oaks. A pool of oil was on pavement under vehicle. I left 'motor oil' brochure on windshield requesting mitigation.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove oil and prevent further discharge Follow-up Action: Photo verify Actions completed: Vehicle no longer at site. Oil was removed.
SW No.: SW09-050 Type: Commercial Location Address: 365 Olive Ave Watershed: Buena Vista Creek Call Date: 3/10/2009 Case closed date: 4/10/2009	Chemicals on vehicle parts being discharged off property.	Water/chemicals were not visibly running off property, however, numerous stains are prevalent. This is a chronic business that stores derelict vehicles while running a catering business and tire shop. We educated the property owner and requested clean-up and no dishcarge. This was referred to Code Enforcement Dept. I sent current photos to Code Officer. Area will be monitored for any discharge. 4/9/09, met with Code Officer on site. We spoke with the son of the property owner. He agreed to continue to remove old junk and debris from site. Code Officer issued a NOV for compliance.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge off site. Follow-up Action: Verbal and photo verify Actions completed: Area dry. Spoke with son of property owner. He stated they are not washing any vehicle parts in that area.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-051 Type: Commercial Location Address: 302 N. Emerald Dr. Watershed: Buena Vista Creek Call Date: 3/17/2009 Case closed date: 3/27/2009	Accumulation of water in low spot of intersection of N. Emerald Ave. & West Dr. Chronic problem causing damage to asphalt at intersection.	Observed as described in Complaint Description. Traced water in curb/gutter to Tri-City Christian Schools/Church. Water coming out of area drains. Appears to be a combination of ground water seepage during rainy season with over irrigation. There is no storm drain inlet between church property and low spot of intersection at Emerald Ave & West Dr., so water from irrigation pools there.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Curtail the amount of water leaving the property through the area drains by adjusting the frequency and duration of the irrigation system and by locating and repairing any damaged lines. Follow-up Action: Photo verify Actions completed: Area dry; adjusted frequency and duration of irrigation. Also, repaired a broken line. BMPs being implemented are effective.
SW No.: SW09-052 Type: Commercial Location Address: 811 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 3/16/2009 Case closed date: 7/17/2009	Cross connection from utility sink to storm drain, no drip pans, no clarifier on wash rack.	Observed as described in Complaint Description. Tenant stated bathroom floods during rain event. Bathroom is adjacent to a utility sink plumbed to area drain. Area drains are plumbed to storm drain system. 3/23/09, Tenant called for clarification of NOV. 3/27/09, sink removed and wash rack is blocked from use. 4/9/09, Site camera'd and dye tested. No cross connection.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs throughout site. Camera line at utility sink. Follow-up Action: Provide written and photographic documentation for camera inspection; photo verify site. Actions completed: Offset at 15-16' of private lateral is not significantly retarding the flow. Requested on good faith to have private lateral hydrojetted and maintained regularly. Okay to close per Stormwater Program Manager.
SW No.: SW09-053 Type: Commercial Location Address: 950 Escondido Ave Watershed: Buena Vista Creek Call Date: 3/17/2009 Case closed date: 3/19/2009	BMPs have been moved at curb side of renovated building	Building is being renovated / silt fence to prevent sediment above sidewalk from rolling down slope and into street. Some plumbing trenching has left an area of slope without BMPs. Potential exists for sediment discharge.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Reinstall appropriate BMPs on denuded slope. Follow-up Action: Photo verify Actions completed: BMPs installed at sidewalk slope edge with plastic covering the slope.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-054 Type: Other Location Address: 175 N. Melrose Dr. Watershed: Buena Vista Creek Call Date: 3/25/2009 Case closed date: 3/25/2009	Citizen witnessed City Fire employees hosing off foam into curb.	I contacted Fire Battallion Chief (facilities and disaster preparedness) at Stateion #1. He stated a new fire truck had a valve malfunction with it's suppression foam. The foam dissipates with air. Some remaining foam was hosed to diffuse it. This water migrated to the curb. An MSDS (Material Safety Data Sheet) sheet was faxed over to Stormwater to verify product is inert. Fire Dept. employee called to verify MSDS had been received by Stormwater.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge. Repair valve malfunction. Follow-up Action: Received MSDS sheet from Fire Chief. Actions completed: MSDS states product has no restrictions to the environment.
SW No.: SW09-055 Type: Private Lateral Location Address: 1279 Tower Dr. Watershed: Buena Vista Creek Call Date: 3/26/2009 Case closed date: 4/10/2009	Leach line of septic system failing.	Received a call from our Public Services Acting Wastewater Supervisor regarding a citizen complaint of septic leaking between private properties. I contacted complainant for greater details. It was noted that it has been occurring for about a month and a half. The residents at 1279 Tower Dr. have concreted over the surface of the leach line area. I contacted County Health Septic. This location will be investigated. I e-mailed same information to to County Healty Septic for their records.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair/replace septic leach system that has a chronic leak condition or condemn house by County order. Follow-up Action: Verify correction through County contact. Actions completed: A condemnation order has required occupants to vacate the premises. County will monitor location for any re-occupancy as will Code Enforcement. Case closed per Stormwater Program Manager.
SW No.: SW09-056 Type: Residential Location Address: 785 Vale View Dr Watershed: Buena Vista Creek Call Date: 3/26/2009 Case closed date: 4/7/2009	Sediment coming off property during rain events. Discharging under fence in backyard of 785 Vale View Dr. and into concrete brow dtch of 789 Hidden Sky Ct. Brow ditch carries polluted water to street curb/gutter and into curb inlet.	Observed as described in Complaint Description. Sediment in brow ditch and some seen in curb/gutter near inlet. Inlets lead to detention basin that discharges into storm drain system. Property owner at 789 Hidden Sky Ct. said he constantly has to clean brown ditch. 3/27/09, spoke with property owner of 785 Vale View via telephone in reference to erosion and sediment discharge. They will work with tenenants to install BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Install BMPs to control sediment from discharging off property. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Earth dike/berm and fiber rolls installed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-057 Type: Residential Location Address: 2081 Courage St Watershed: Buena Vista Creek Call Date: 3/24/2009 Case closed date: 3/27/2009	White discharge - looks like detergent	The east area of driveway has a white stain but not wet. It has the appearance of detergent. I knocked at front door - no answer. I left business card and HELP brochure requesting no further discharge unless reclaimed.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge Follow-up Action: Monitor Actions completed: No further discharge - area dry.
SW No.: SW09-058 Type: Residential Location Address: 720 Lemon Ave. Watershed: Buena Vista Creek Call Date: 3/30/2009 Case closed date: 4/4/2009	Allowing illegally plumbed shed to run-off on property and neighbor's property.	I received a call from Public Service's Streets Supervisor stating a anonymous caller informed him that residents at 720 Lemon Ave. have partitioned off interior rooms and are renting out spaces. Additionally, shed like structures in rear of propery are plumbed to surface and run-off is directed to neighbors. I contacted Development Services for legal addition permits. It was stated by this dept. that records indicate, since 1997 to current date, there have been 4 anonymous calls for same violations. I contacted Building Dept. regarding violations. Public Service's Streets Supervisor (for continuity and Spanish translation) will meet on-site on 3/31/09 to verify the run-off issue. He confirmed that it was still a private issue and would be referred to Building Dept. A meeting with Code, Fire and Building Depts. is scheduled for 4/7/09 to coordinate efforts. 4/7/09, all other Depts. will proceed with individual cases to rectify violations.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to other City Dept's as grey water on private property does not fall under Stormwater jurisdiction. Follow-up Action: Referred to other City Dept's Actions completed: Referred to other City Dept's
SW No.: SW09-059 Type: Commercial Location Address: 444 B S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 4/7/2009 Case closed date: 4/8/2009	Leaky engine parts on driveway.	Observed as described in Complaint Description. No overhead coverage or secondary containment. Issued NOV	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Abate the violation. Cease discharge by using dry absorbant to clean oil / fluid spills. Provide secondary containment and cover all vehicle parts being stored outdoors. Follow-up Action: Photo verify Actions completed: Engine parts removed. Area cleaned with dry absorbant.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-060 Type: Other Location Address: 1230 Activity Dr. Watershed: Agua Hedionda Creek Call Date: 4/7/2009 Case closed date: 4/7/2009	Mobile auto detailer pressure washing a vehicle in parking lot of commercial business without reclaiming discharged water.	Observed as described in Complaint Description. Contacted worker/owner of auto detailing company and had him stop work immediately. Educated him on the illegal discharge violation and the importance of reclaiming the discharged water. Informed him that a Business License is required for every city he works in. (Added his information to the mobile business inventory in our office).	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Immediately cease illegal discharge and abate the violation. No further pressure washing/auto detailing in Vista without a City Business License, Mobile Water Use Permit and proper reclamation equipment. Follow-up Action: None Actions completed: Stopped pressure washing immediately and agreed to discontinue auto detailing in Vista until he acquires reclamation equipment and City Business License / Permit.
SW No.: SW09-061 Type: Residential Location Address: 750 Crescent Dr. Watershed: Buena Vista Creek Call Date: 4/13/2009 Case closed date: 5/11/2009	Chronic overwatering with discharge running to Escondido Ave. Street erosion is apparent.	Observed as described in Complaint Description. The GIS photo shows water run-off. I spoke with tenant regarding the water usage, left a HELP brochure. Tenant stated the owner would come by the house later that day. Tenant would not give me his last name, ph. # or owner info. Tenant wouldn't open the house front door but spoke to me through a kitchen window. 4/15/09, re-checked house at 7:30 a.m. Irrigation system was spraying and water was cascading down almost to Escondido Ave. I rang the door bell, no one answered. I went to the east side of the front yard and a man on a cell phone came to the irrigation control box and turned off the spraying system. He didn't see me. When I said "good morning" the man was startled. He ended his phone conversation. I introduced myself and explained the need to prevent run-off. We further discussed water conservancy, street erosion and pollution. I asked that he prevent further run-off to right-of-way and he promised. We shook hands, looked directly into my eyes and promised again. A final handshake and I left. 4/16/09, Complainant stated water was turned on again late at night and still on in the morning. I went by the location and the area was wet and street showed signs of water accumulation. I contacted complainant and stated I would check very early Monday, 4/20/09. If the property owner continues to disregard request an NOV would be issued. I will update Vista Irrigation District (VID) of status. 4/20/09, some water discharge. Run-off did not reach peach grove. 4/21/09, Area dry, I contacted complainant and VID and will monitor location.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease excessive overwatering Follow-up Action: Photo verify Actions completed: Area is now consistently dry.
SW No.: SW09-062 Type: Residential Location Address: 400 Blk of Knoll Rd Watershed: Buena Vista Creek Call Date: 4/20/2009 Case closed date: 5/19/2009	Pool draining with mud discharge into private drainage ditch on south side of 380 Plymouth Dr.	No visible signs of pool or mud discharge. Concrete ditch between 380 and 400 Plymouth is congested with overgrowth of vegetation. I contacted property owner at 400 Plymouth who gave me property management info. I e-mailed warning letter, with photos, to Elite Management. It was stated by management employee that because this is an HOA (they meet every two months) she will need clearing cost approval prior to commencement. I explained the necessity to promptly clear the area as it is creating a flooding condition to a property owner in the HOA area. 5/8/09, e-mail stating landscaping crews are clearing the ditch.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove overgrowth of vegetation from concrete ditch and maintain. Follow-up Action: Photo verify Actions completed: 5/11/09 Some clearing has removed congestion in ditch. I e-mailed Elite Management to inform them much of cut vegetation remains in ditch and to remove promptly. 5/19/09, ditches cleared.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-063 Type: Residential Location Address: across from 445 Rancho Vista Rd. Watershed: Buena Vista Creek Call Date: 4/13/2009 Case closed date: 4/21/2009	People at a group of cars are washing off engines and allowing discharge to run on road.	I contacted complainant (via voice mail) and requested more detail and definite location. Site visit shows water ponding on asphlat with white stain. No vehicles were present. 4/21/09, No response from complainant.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge Follow-up Action: Contact violators, once identified, and provide educational information. Actions completed: No response from complainant. Respond to location when notified in future of any violations.
SW No.: SW09-064 Type: Commercial Location Address: 3215 Executive Ridge Watershed: Agua Hedionda Creek Call Date: 4/14/2009 Case closed date: 4/27/2009	Broken irrigation system spraying water into roadway.	I spoke with manager of business (Jazzy Expo). She stated a sprinkler head had sprayed water across Poinsettia at approx. 9:00 a.m. She has contacted property management company, DXW. She is concerned about water waste. I spoke with an employee at DXW. He has contacted Vista Irrigation District (VID). He has not been able to locate any controller to identify how to shut off for repairs. I contacted VID Conservation. They monitored location and found one controller with a high water use. He will contact DXW to focus on that controller.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease excessive water discharge by repairing irrigation. Follow-up Action: Referred to VID Actions completed: Repaired spigot.
SW No.: SW09-065 Type: Commercial Location Address: 1200 E. Taylor St. Watershed: Buena Vista Creek Call Date: 4/29/2009 Case closed date: 4/29/2009	Pressure washing and not capturing discharge.	I spoke with employee at Silva Asphalt who was pressure washing the concrete driveway entrance. Slurry seal spilt on concrete and he was attempting to remove it. I presented a Pressure Wash brochure and requested all discharge be collected.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge and collect all water. Follow-up Action: Contact Supervisor at Silva Asphalt and provide educational information to prevent discharge reoccurrence. Actions completed: Phone number provided by employee was no longer in service. I contacted complainant to provide status. Contractor was logged into "Violator Companies" in Stormwater file for future reference.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-066 Type: Residential Location Address: 1442 Via Christina Watershed: Buena Vista Creek Call Date: 4/24/2009 Case closed date: 5/5/2009	A water cistern is connected to and pumping from a pond in Buena Creek.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove cistern, trash and debris Follow-up Action: Photo verify Actions completed: Cistern and 99% of trash is removed. Engineering Dept. employee stated a contract mitigation crew will be clearing out remaining debris and trash.
SW No.: SW09-067 Type: Other Location Address: 1235 Activity Dr. Watershed: Agua Hedionda Creek Call Date: 4/30/2009 Case closed date: 4/30/2009	Mobile auto detailer servicing a vehicle on the street in the business district in front of 1235 Activity Dr. No water being used.	Observed as described in Complaint Description. Waxing vehicle only, although, detailing truck has a water tank and pressure washer. Contacted worker/owner of auto detailing company and educated him on BMPs. He had a good working knowledge of BMPs and had reclamation equipment. Informed him that a Business License is required and added his business to the Mobile Business Inventory.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: No pressure washing vehicles without a City Business License, Mobile Water UsePermit and the use of effective water reclamation equipment. Follow-up Action: None Actions completed: Subject agreed to discontinue auto detailing in Vista until he acquires a City license and permit.
SW No.: SW09-068 Type: Residential Location Address: 329-383 N. Melrose Dr. Watershed: Buena Vista Creek Call Date: 4/29/2009 Case closed date: 6/10/2009	Apartment landscapers were seen blowing trash and leaves into street.	Code's Code Enforcement Officer forwarded a similar call to me. I spoke with report party - she stated this occurs usually on Wednesdays around 9:00 a.m. An accumulation of leaves were visible in the gutter in front of the apartments. 5/6/09, I contacted reporting person - no leaf blowers today.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge to storm drain and remove all debris and trash from gutter area. Prevent discharge in future by altering maintenance practices. Follow-up Action: Photo verify Actions completed: After monitoring the site, the violation has not been repeated. The case is closed but area will be monitored intermittently.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-069 Type: Residential Location Address: 2081 Courage St Watershed: Agua Hedionda Creek Call Date: 5/5/2009 Case closed date: 5/11/2009	Clothes washer discharge into street from garage.	City staff observed white stain in gutter directly in front of garage and in garage. Owner confirmed mechanical problems of clothes washer is causing water to run off into street.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge and repair clothes washer. Follow-up Action: Monitor Actions completed: Running water test on new washer installation passed. No further gray water discharge is expected.
SW No.: SW09-070 Type: Private Lateral Location Address: 402 Olive Dr. Watershed: Buena Vista Creek Call Date: 5/18/2009 Case closed date: 5/18/2009	Yellow/green milky substance discharging off property into roadway.	Observed as described in Complaint Description. I contacted owner and requested he contact a plumber to clear the private lateral. On 5/12/09 Diamond International cleaned the grease trap and stated the private lateral was blocked. No one called a plumber to clear line and all corn water from tortilla processing continued to fill and then spill out onto parking lot then into roadway. A call from Vista Irrigation District (VID) to Wastewater triggered our stormwater response.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, clear line and consider regular maintenance. Follow-up Action: Receipt of plumber invoice indicating line was cleared and maintenance proposal. Actions completed: Line cleared and invoice copy received. Property owner will contract with plumber to clear line three times a year.
SW No.: SW09-071 Type: Other Location Address: 921 Poinsettia Ave, Ste B5 Watershed: Agua Hedionda Creek Call Date: 5/7/2009 Case closed date: 5/14/2009	Smell of dead meat in manhole.	No odor detectable. Site canvased for origin. Grease interceptor - no odor. Meat bagged in dumpster on extreme south side (approx. 100 yds) from manhole, had a strong odor. Questionable disposal practice was referred to County Health.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: None required Follow-up Action: None required Actions completed: County Health said bagged meat in dumpster was an acceptable disposal practice. I informed complainant of same. No further "manhole" odor ever detected.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-072 Type: Commercial Location Address: 3260 Corporate View Dr. Watershed: Agua Hedionda Creek Call Date: 5/26/2009 Case closed date: 6/30/2009	Illegal discharge; hosing down loading dock area, overflowing from sanitary sewer grate inlet to storm water grate drain inlet.	Observed as described in Complaint Description. Additionally, the plant has moisture discharge from trash compactor going to storm drain inlet. Plant debris in loading dock area. 6/10/09, left message for manager. 6/11/09 manager returned call; still waiting for order of drain covers and dry absorbent to arrive, will follow-up on order today and call back with ETA information. 6/16/09, Dry absorbent delivered yesterday and hope to receive drain covers today. Plan meeting tomorrow @ 2:00 p.m. 6/17/09, most BMPs implemented. Areas clean and dry. Drain covers/seals ordered but still have not arrived. Saw receipt for the same. Minor vehicle oil stains still need to be removed. Dry absorbent needs to be swept up from area around trash compactor. Eventually wants to install drip pan under trash compactor so that clean-up will not have to be done daily. Training log prepared, however, first formal storm water training not done yet. 6/30/09, BMPs implemented. Covers over drains, dry absorbent is swept up from trash compactor area. Storm water training conducted. Minor vehicle oil stains routinely being picked up with dry absorbent. Site is clean and dry.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate the violation and cease further illegal discharge. Install/maintain BMPs. Cover/seal over grate inlet. Use interior drain closet for plant water disposal and discontinue using blue drum to floor drains at bay door entrance. Clean debris from loading dock area and maintain free of debris. Clean staining around trash compactors using dry absorbent/sweep method. No washing of vehicles on site. Post storm drain inlets. Provide written BMP procedures. Follow-up Action: Photo Verify Actions completed: 6/9/09, Completed written procedure for spill prevention and response. 6/17/09, No illegal discharges. Interior drain closet being used and no longer using blue drum to drain to floor drains at bay entrance, loading dock areas clean and free of debris, dry absorbent on stains around trash compactor. Debris removed from around storm drain. Storm drain inlets posted. 6/30/09, All other BMPs implemented; site dry and clean, covers over strom drains and training conducted.
SW No.: SW09-073 Type: Commercial Location Address: 1250 Avenida Chelsea Watershed: Agua Hedionda Creek Call Date: 5/27/2009 Case closed date: 6/15/2009	Over-irrigation on slope to the north of business causing erosion, sediment discharge to brow ditch at toe of slope that drains to loading dock storm drain inlet.	5/25/09, Observed as described in Complaint Description. Brow ditch congested with sediment, debris (leaves) and trash, drains to loading dock at northeast corner of building, sediment buildup in corner of loading dock to storm drain inlet. Sediment in and around inlet. Contacted supervisor and referenced violation and corrective actions required. 6/1/09, left voice mail for the manager. 6/2/09, spoke with manager and discussed violation and corrective actions required. Additional time was requested (until 6/11/09) to implement erosion control BMPs (fiber rolls or sandbags). 6/10/09, still installing fiber rolls and plan to have it completed tomorrow. 6/15/09, follow-up site inspection and BMPs implemented.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: 5/28/09, remove sediment from inside and around inlet. Remove sediment accumulated on loading dock using dry sweep method. Remove sediment, debris (leaves) and trash from brow ditch. Curtail over-irrigation until slope is established with more vegetation. 6/2/09, Implement erosion control BMPs (fiber roll or gravel bags) at toe of slope to prevent further discharge, maintain BMPs thereafter. Follow-up Action: Photo verify Actions completed: 6/14/09, sediment removed from, in and around drain inlet. Sediment removed from loading dock. Sediment, debris and trash removed from brow ditch. Discontinued irrigation until fiber rolls can be installed. Fiber rolls should be installed by 6/11/09. 6/15/09, fiber rolls and erosion blanket installed on slope. Other BMPs being maintained; concrete brow ditch and drains are still clean; loading dock area clean.
SW No.: SW09-074 Type: Commercial Location Address: 822 E. Vista Way Watershed: Buena Vista Creek Call Date: 6/3/2009 Case closed date: 6/30/2009	Occasionally, the parking lot is maintained and washed. It is unkown if water is being reclaimed. Also, this is a D-Max follow-up.	No signs of hosing down parking lot. Accumulation of grease, oil and vehicle fluids in parking stalls and drive-thru area. Dumpster lids left open. No secondary containment or overhead coverage for grease recycle bin. Spills around grease bin need cleaning. Contacted property owner via phone; meeting for 10:00 a.m. tomorrow with property owner and business owner. 6/4/09, met with business owner/mgr. and property owner on site. Discussed violations and corrective actions required. Dustributed educational information.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean accumulation of grease, oil and vehicle fluids in parking stalls and drive-thru area. Provide secondary containment and overhead coverage for grease recycle bin. Remove grease stains around recycle bin. Use dry absorbent/sweep method. If pressure washing, all water must be reclaimed and properly disposed. Dumpster lids to remain closed when not in use. *Property owner may have parking lot sealed. Follow-up Action: Photo verify. Actions completed: Parking lot cleaned and resurfaced (sealed). Garbage can lids closed. Dumpster area cleaned. Overhead coverage and secondary containment for 55 gal drums. Removed grease bin. All BMPs implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-075 Type: Commercial Location Address: 950 Escondido Ave Watershed: Buena Vista Creek Call Date: 6/5/2009 Case closed date: 6/15/2009	Sloppy remodel construction site with possible stormwater violations.	Trash, litter and construction waste throughout site. Makeshift waste boxes with no covers in parking lot are inadequate and overflowing; perimeter BMPs failing; silt fencing torn, missing and not installed properly (not keyed in). Plastic cover on slope for erosion control not properly secured.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate violations and potential for discahrges. Install, maintain and upgrade BMPs. Clean all trash, litter and construction waste from site. Trash must be put in proper dumpster(s) and removed from makeshift waste boxes. Remove makeshift waste boxes from parking lot. Repair/replace and properly install silt fencing at toe of slope and plastic erosion covering on slope. Maintain site clean of trash, litter and construction waste thereafter. Follow-up Action: Photo verify. Actions completed: 6/5/09, 40 yd dumpster delivered. Trash and waste cleaned from site. 6/10/09, makeshift trash boxes emptied into dumpster and disassembled. BMPs implemented on slope, but silt fencing not properly installed. 6/15/09, BMPs installed properly and functioning.
SW No.: SW09-076 Type: Commercial Location Address: 1805 Hacienda Watershed: Buena Vista Creek Call Date: 5/14/2009 Case closed date: 7/8/2009	Litter, debris and grease stains	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove litter, debris and grease stains. Follow-up Action: Photo verify Actions completed: Area clean.
SW No.: SW09-077 Type: Commercial Location Address: 1225 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/10/2009 Case closed date: 6/11/2009	Questionable business practices for a transmission shop - no facilities to install or repair transmissions.	Observed a new sign advertising transmission parts and motors. The rear of business had tow cars that appeared to be in a repair state. Broken glass/mirrors, grafitti on wall, lose lumber trash dumped, broken fence. Tires not covered. I contacted Code Enforcement to inform them of business practice.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: No Stormwater violations Follow-up Action: None required. Referred to Code Enforcement for municipal violations. Actions completed: Referred to Code Enforcement.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-078 Type: Commercial Location Address: 2680 La Mirada Dr. Watershed: Agua Hedionda Creek Call Date: 6/18/2009 Case closed date: 7/2/2009	Illegal discharge (washing down sediment) in concrete brow ditch.	Evidence of discharge complaint and Mgr/Owner admitted workers cleaned opening of brow ditch with water. Also, workers in warehouse were cleaning floor and allowing discharge to leave through bay door into parking lot.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately cease illegal discharge and reclaim, upgrade BMPs to prevent further illegal discharges. No further cleaning brow ditch with water (unless reclaimed); use a dry sweep method. Do not allow discharge to leave the building in the future. Provide copy of written stormwater BMPs procedures and provice training to employee in reference to the same. Follow-up Action: Photo verify. Review requested documents. Actions completed: BMPs implemented: site clean and dry. No illegal discharges observed. Written storm water BMPs prepared for business. Logs of employee training for the same.
SW No.: SW09-079 Type: Commercial Location Address: 2465 Coral St Watershed: Agua Hedionda Creek Call Date: 6/16/2009 Case closed date: 7/23/2009	Brow ditch on west side of property totally congested.	Observed as described in Complaint Description. Brow ditch full of vegetation and debris. Also loading dock area covered with very dirty, sludgy ice that's melting and entering the storm drain. Parking lot has accumulation of vehicle oil, grease and fluids in parking stalls throughout.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately abate violation and cease illegal discharge by removing dirty, sludgy ice from loading dock and clean litter/trash from area. Clean parking lot of vehicle grease, oil and fluids that have accumulated in stalls using dry absorbent/sweep method. Replace filters and absorbent booms for storm drain inlets. Maintain BMPs thereafter. Follow-up Action: Photo verify. Actions completed: All BMPs for corrective actions requested have been implemented. Daily maintenance of parking lot being done to absorb any vehicle fluid spills using dry absorbent and sweep method.
SW No.: SW09-080 Type: Commercial Location Address: 298 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 5/22/2009 Case closed date: 6/30/2009	Organic debris and trash in storm drains. Oil/vehicle fluid stains in parking lot. Dumpster lids open. Debris in trash enclosure. 55 gal. drum of oil not labeled and no secondary containment. No records of hazmat (oil) disposal. No records of storm water training for employees.	Observed as described in Complaint Description. However, 55 gal drum doesn't have oil or fluids inside. It has solids (dry absorbent and absorbent rags) so there is no need for secondary containment. Additionally, they have records of haz-mat disposal for solids in 55 gal. drum.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean debris and trash from storm drains. Remove (clean) any wet or accumulated oil, grease and/or vehicle fluids from parking lot. Properly label 55 gal drum, keep dumpster lids closed when not in use and keep dumpster area swept of debris and trash. Follow-up Action: Photo verify Actions completed: BMPs implemented. All storm drains cleaned out of trash and debris. Dumpster enclosure clean of debris and trash with dumpster lids closed. 55 gal drum of solids clearly labeled. Parking area clean with no wet or accumulated vehicle fluids (oil, grease, etc.). Provided copy of logs for 55 gal drum of dry absorbent (haz-mat). Storm water BMPs for Commercial & Industrial Businesses posted for employee training and will create a signature log.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-081 Type: Commercial Location Address: 601 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 5/21/2009 Case closed date: 6/23/2009	Minor oil stains in parking lot. Dumpster lids left open. Grease spills and stains around grease recycle drums in trash enclosure. No storm water training documented for employees.	Minor oil, grease and vehicle fluid stains in parking lot. Dumpster lids closed (ok). Minor trash and debris in trash enclosure. Grease spill near recycle container. Outside of grease recycle container is soiled with grease. Minor fluid staining on stairs/sidewalk leading to dumpsters. Trash and minor staining on sidewalk at back door.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Use dry absorbent/sweep method to clean vehicle fluids from parking lot. Sweep dumpster area of trash and debris and keep clean. Clean grease from on and around grease recycle container. Clean fluid stains from stairs, sidewalk and back door areas. Follow-up Action: Photo verify. Actions completed: BMPs were implemented. Using What's Cookin booklet and log to train employees. Using BMPs for Commercial Businesses pamphlet for written spill prevention and response. Vehicle fluids, grease and oil cleaned with dry absorbent. Dumpster area swept and cleaned with dry absorbent. Dumpster lids closed. Recycled grease container cleaned. Fluid stains cleaned from stairs, sidewalk and back door areas.
SW No.: SW09-082 Type: Commercial Location Address: 770 Sycamore Ave # L Watershed: Agua Hedionda Creek Call Date: 5/22/2009 Case closed date: 7/23/2009	Dumpster lids open. Litter and debris in trash enclosure. No secondary containment for grease bin. Accumulation of grease in dumpster area on and around grease recycle bin. Trash and debris collected in storm drains in shared parking area. No documented storm water training for employees.	Observed as described in Complaint Description. Property management company (Meissner - Jacquet Investment Management Services) responsible for common area storm drain cleaning in shared parking lot. There was also a pile of waste at the back door of the business. 6/24/09, e-mail to property management to clean storm drains of trash and debris and to write a letter to all tenants to keep dumpster lids closed when not in use and to place all trash in dumpster. 6/25/09, property management prepared letter to tennants. Storms drains will be cleaned on 6/27/09 (Saturday). 6/30/09, site inspection. 7/16/09, follow-up inspection, all BMPs implemented.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean all litter at back door and in dumpster area. Keep dumpster lids closed when not in use. Remove the accumulation of grease from dumpster area on and around grease recycle bin using a dry absorbent sweep method. If pressure washing, all water must be reclaimed and disposed of properly. Provide overhead coverage and secondary containment for grease recycle drum, train employees. Property management to clean out common storm drains and write letter to tennants regarding dumpster lids and dumping trash. Follow-up Action: Photo verify. Actions completed: 6/30/09, Most BMPs implemented. Employees trained, written storm water procedure for spill prevention and response posted (Commercial/Industrial BMPs pamphlet). Back door area and dumpster area clean of trash and debris. Dumpster lids closed. Accumulation of grease removed from dumpster area near recycle drum; however, still needs secondary containment and overhead coverage. Property management wrote letter to tennants regarding dumpster lids and dumping trash. Still needs storm drains cleaned. 7/16/09, Storm drains cleaned and secondary containment and overhead coverage installed. All BMPs implemented.
SW No.: SW09-083 Type: Commercial Location Address: 770 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 5/22/2009 Case closed date: 7/23/2009	Grease deposit and trash littered within trash enclosure.	Refer, also, to case SW09-082. This is a property management issue, but Armando's Mexican Food directed to conduct corrective action. (same address, different tenant) Site visit confirmed complaint description/condition of facility reported by D-Max.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove grease deposits and trash within trash enclosure area. Keep dumster lids closed when not in use. Follow-up Action: Verify compliance via site visits and photographs. Actions completed: 6/30/09, As followed through by Stormwater Code Enforcement Officer in case # SW009-82. Most BMPs implemented, employees trained. Written stormwater regulations for spill response and prevention is posted. Dumpster lids closed. Accumulated grease removed from dumpster area. Property manager wrote letter to tenants in reference to dumpster lids and dumping trash.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-084 Type: Industrial Location Address: 1215 Park Center Dr. Watershed: Agua Hedionda Creek Call Date: 5/27/2009 Case closed date: 7/23/2009	Absorbent material used to clean up hydraulic fluid spill had not been picked up; left on side of trash compactor. Liquid storage continers do not have secondary containment. (needed also to compy with NONA).	Observed as described in Complaint Description. Overhead coverage exists for 55 gal. durms	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove absorbent material ensuring all hydrocarbons are soaked up. Provide secondary containment for several liquid storage containers. Follow-up Action: Verify compliance for recommended corrective actions. Expect installation of secondary containment for liquid drum storage by end of July Actions completed: 6/29/09, absorbent material was removed. 7/23/09, secondary containment implemented-- overhead coverage pre-existent.
SW No.: SW09-085 Type: Private Lateral Location Address: 1425 Philmar Ln Watershed: Buena Vista Creek Call Date: 6/22/2009 Case closed date: 6/23/2009	Leaking sewer box at bottom of hill in front of 1417 Philmar Ln.	Sewage discharge from cleanout box; traveled down Philmar on surface and soaked into dirt; no discharge to right-of-way although flowing since 6/13/09 according to neighbors; check down stream to intersection of Hannalei/Avocado and no evidence of discharge.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clear blockage and provide tape of lateral by 5:00 p.m. 6/22/09. Follow-up Action: none Actions completed: Line cleared, verified on-site prior to leaving (12:15 p.m.). Tape verified that line is clear; root problems apparent at transition from ABS to cast iron pipe.
SW No.: SW09-086 Type: Industrial Location Address: 1311 Specialty Dr Watershed: Agua Hedionda Creek Call Date: 5/12/2009 Case closed date: 7/21/2009	Debris and sediment in parking areas. Leaks around trash dumpster. No coverage on dumpster. Liquids, litter and debris around dumpster. 55 gal drums stored outside without labels	Observed as described in Complaint Description. 40 yard dumpster leaking and has no cover. Unmarked 55 gal drums were removed. Trash enclosures contained trash and debris.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Sweep debris, trash and sediment from parking and trash areas and maintain thereafter. Clean spills from around 40 yard dumpster using dry absorbent or wet vac. Cover 40 yard dumpster when not in use. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Site clean and dry. 40 yard dumpster covered with tarp.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-087 Type: Residential Location Address: 945 Bellwood Ln Watershed: Agua Hedionda Creek Call Date: 6/15/2009 Case closed date: 7/13/2009	Two goats on back slope of property. Complainant does not believe the property owner is cleaning manure. Possible violation V.M.C. 13.18.110.D.1	Contacted property owner. Has two goats on back slope of property and brings them into cage nightly. Covered trash can on side yard near cage half-full of manure. Site is very clean and there is very little manure only on the top 1/4 of slope. Goats do not go down slope any further. Slope is obviously being cleaned regularly. Owner states she rakes and sweeps in the evenings daily. Entire slope is covered heavily with vegetation, so run-off to dry creek bed below is unlikely. 7/13/09, contacted complainant and explained there are no storm water issues in reference to manure management and that the property owner is in compliance with storm water codes. There may be Code Enforcement issues and complainant has already contacted Vista Code Enforcement.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: None. Continue to use good BMPs in reference to manure management. Follow-up Action: None - Complaint unfounded. Actions completed: Will continue to implement manure management BMPs to avoid discharge to the storm water conveyance system or receiving waters.
SW No.: SW09-088 Type: Commercial Location Address: 1980 Gateway Dr Watershed: Agua Hedionda Creek Call Date: 6/22/2009 Case closed date: 7/29/2009	Evidence of mats being washed with discharge to storm drain. Dumpster lids open. Old lawn mowers stored in loading dock area. Cigarette butts and litter in loading dock area. No documented storm water training for employees. No secondary containment or overhead coverage for grease recycle drums.	6/23/09, contacted business manager and discussed violations, minor water discharge into storm drain inlet catch basin from outdoor mop sink area and ice machine. Dumpster lid open. Old lawn mowers had been removed. Cigarette butts and litter had been cleaned from loading dock area. No secondary containment or overhead coverage for grease recycle drums. No employee training in reference to storm water BMPs. 7/22/09, condensation from ice machine evaporating before getting to storm drain inlet. Dumpster lids closed. Loading dock area clean of trash, debris, cigarette butts. Cover place over storm drain in catch basin. Will pump basin weekly and before rain. Employees trained. Waiting for secondary containment and overhead coverage to be delivered. 7/28/09, secondary containment and overhead coverage installed.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Avoid liquid (water) spills from outdoor mop sink. Wash all mats in mop sink. Do not allow discharge to enter the storm drain; provide cover over storm drain inlet catch basin. Provide secondary containment and overhead coverage for grease recycle drums. Keep loading dock area free of trash, litter and debris. Train employees on storm water BMPs. Follow-up Action: Photo verify. Actions completed: 7/22/09, All BMPs implemented except secondary containment and overhead coverage. Waiting for unit to be delivered. 7/28/09, secondary containment and overhead coverage unit installed.
SW No.: SW09-089 Type: Commercial Location Address: 20 S. Main St. H-100 Watershed: Buena Vista Creek Call Date: 5/20/2009 Case closed date: 7/27/2009	Minor litter and trash in dumpster area. Dumpster lids left open. Grease spills on outside of grease recycle container and surrounding concrete.	6/23/09, Spoke with Asst. Manager. Dumpster area was clean of trash and litter; however, the dumpster lids were left open. The recycle grease bin and area around it needs to be cleaned of spills. Gave storm water educational information for employee training. 7/13/09, Contacted business owner who stated dumpster area and grease recycle bin is shared and therefore the property management responsibility. 7/16/09, contacted property management and requested BMP letter to tenants that share dumpster enclosure and request cleaning of grease bin and area around it. 7/22/09, Site inspection; BMPs implemented.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Keep dumpster area clean of trash and debris. Keep dumpster lids closed when not in use. Clean grease recycle bin and area around it of spills and maintain thereafter. Letter to tenants from property management referring to the same. Follow-up Action: Photo verify Actions completed: BMPs implemented. Dumpster lids closed. Dumpster area clean and free of trash and debris. Grease bin and the area around it clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-090 Type: Commercial Location Address: 307 Main St. Watershed: Buena Vista Creek Call Date: 5/20/2009 Case closed date: 7/20/2009	No secondary containment or overhead coverage for grease recycle drum. No documented storm water training for employees.	6/23/09, All outdoor areas, including dumpster enclosure very clean. Met with head waitress. Discussed need for secondary containment and overhead coverage and gave literature with examples. Discussed need for stormwater training. 6/30/09, call from business owner with questions about secondary containment and overhead coverage. 7/16/09, site visit. Training completed (observed log). Needs 55 gal drum emptied to install secondary containment pan. 7/20/09, secondary containment and overhead coverage requirement implemented.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Provide secondary containment and overhead coverage for grease recycle drum. Provide storm water training to employees and produce log for the same. Follow-up Action: Photo verify. Review training log. Actions completed: BMPs implemented; secondary containment and overhead coverage installed. Training of employees completed.
SW No.: SW09-091 Type: Commercial Location Address: 1755 Hacienda Dr Watershed: Buena Vista Creek Call Date: 6/23/2009 Case closed date:	Trash area around trash compactor has trash, debris, liquid and powder on concrete pad. Some debris in loading dock areaa. No documented storm water training for employees.	6/23/09, Loading dock area clean of debris. Trash compactor area as described in Complaint Description. Storm water training being conducted during safety training meetings. Reviewed logs and obtained copy of storm water spill prevention and response document. Trash and debris in storm drain inlets.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean trash compactor area of trash, debris, powdery substance and liquid spills and maintain thereafter using a dry absorbent sweep method. If water is used for cleaning, it all must be reclaimed and disposed properly. Have trash and debris cleaned from storm drains. Follow-up Action: Photo verify Actions completed: 7/22/09, Trash compactor area cleaned and fiber rolls being used to contain any leaks/spills from compactor. Downstream Services was hired to clean storm drains throughout site.
SW No.: SW09-092 Type: Commercial Location Address: 251 S. Melrose Dr. #303 Watershed: Buena Vista Creek Call Date: 5/14/2009 Case closed date: 7/20/2009	Spils observed in the trash enclosure area; some trash and debris on the ground. Grease bin is without secondary containment and overhead coverage.	Observed some trash behind the grease bin. Most spills are dried except a few under the grease bin. Verified that grease bin is without secondary containment and overhead coverage.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove trash from enclosure area. Tenant plans on power washing inside the trash enclosure area and directly in front to remove grease deposits. Tenant was made aware of power washing BMP requirements. Tenant stated he plans on removing grease bin and purchasing a smaller one and storing it inside. Follow-up Action: Verify compliance via site visit / photo BMPs. Week of July 6th, expect call back or verification that grease bin is removed. Actions completed: Trash cleaned up and tenant stated power washing was done on 6/29/09. Appears to look alot cleaner, as several grease spots were cleaned. 7/20/09, verified grease bin was removed from trash enclosure area.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-093 Type: Commercial Location Address: 840 E. Vista Way Watershed: Buena Vista Creek Call Date: 6/3/2009 Case closed date: 7/21/2009	D-Max inspection; overwatering, liquid spill in trash area, no documented storm water training for employees, and no second containment or overhead coverage for grease recycle bins.	Met with manager. Several BMPs implemented. Irrigation system repaired. Trash area very clean. Lids down on dumpsters. Gave "What's Cookin' " booklet for employee training and commercial BMPs pamphlet for written spill prevention and response procedures. No secondary containment or overhead coverage for grease recycle bins; however, containers and areas under and around them are very clean. 7/13/09, discussions with stormwater manager and staff that secondary containment and overhead coverage will not be required if the recycle bins are being maintained, free of spills and in compliance with storm water codes.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair irrigation immediately in future to prevent discharges. Maintain existing BMPs. Provide secondary containment and overhead coverage for grease recycle bins. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Secondary containment and overhead coverage not required at this time. Irrigation system repaired. Trash dumpster areas clean and free of spills, trash and debris. Training log being implemented in "what's Cookin' " booklet.
SW No.: SW09-094 Type: Commercial Location Address: 777 E. Vista Way #206 Watershed: Buena Vista Creek Call Date: 6/4/2009 Case closed date: 7/2/2009	Litter and debris in storm drains, dumpster lids open, trash and debris in trash enclosure. No records of employee training. No overhead coverage or secondary containment for grease recycle drums.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean trash and debris from storm drains. Keep dumpster lids closed when not in use, clean trash enclosure of trash, debris and grease. Clean trash and debris from around storage container. Provide secondary containment and overhead coverage for grease recycle drum. Train employees in reference to stromwater BMPs. Maintain BMPs thereafter. Follow-up Action: Photo verify Actions completed: BMPs implemented; storm drains cleaned. Dumpster lids closed. Trash, debris and grease cleaned from dumpster enclosures and from around storage container. Secondary containment and overhead coverage for grease recycle drum. Log of employee training is in "What's Cookin" booklet. Using BMPs for Commercial & Industrial Businesses pamphlet for written spill prevention and response.
SW No.: SW09-095 Type: Commercial Location Address: 1301 E. Vista Way Watershed: Buena Vista Creek Call Date: 6/24/2009 Case closed date:	Litter, debris and liquid spills around trash compactor. No documented storm water training for employees.	Observed as described in Complaint Description. Additionally; trash, debris and sediment in loading dock area, especially under storage trailer. 7/23/09, trash compactor area cleaned. Employees trained. Loading dock area still needs cleaning.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean area under and around trash compactor of trash, debris and greasy liquid spills using a dry absorbent sweep method. If pressure washed, all water must be reclaimed and disposed properly. Also, clean loading dock area of sediment, trash and debris using same method. Follow-up Action: Photo verify Actions completed: 7/23/09, Trash compactor area cleaned, observed training log with What's Cookin' booklet used for training.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-096 Type: Commercial Location Address: 1947 E> Vista Way Watershed: Buena Vista Creek Call Date: 6/24/2009 Case closed date: 7/30/2009	Sediment along driveway. Erosion control needed for area being landscaped. Evidence of floor mats being washed in parking lot. No documented storm water training for employees. No secondary containment for grease recycle drum.	Observed as described in Complaint Description. Trash overflowing. Contacted manager and discussed violations. Gave educational information for employee training. 7/23/09, fiber folls installed. Trash enclosure area clean. Now two stock piles of soil need to be covered and contained or removed from parking lot. 7/28/09, BMPs implemented. See corrective actions taken by responsible party. 7/30/09, secondary containment and overhead coverage implemented.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Install erosion control (fiber rolls, gravel bags or silt fence) at toe of slope where landscaping is being done. Dry sweep sediment from driveway. No further washing of floor mats in parking lot; must be done in mop sink. Do not allow trash to overflow. Provide secondary containment for grease recycle drum. Train employees on storm water BMPs. Follow-up Action: Photo verify Actions completed: 7/23/09, Some BMPs implemented. Fiber rolls installed. Trash enclosure area clean. Other BMPs still need to be implemented. 7/28/09, sediment from driveway swept clean. Stockpiles of soil removed. Employee training has begun (keeping log). Trash enclosure clean. Secondary containment bucket purchased and will be implemented within next few days after recycled grease has been removed from drum. 7/30/09, Secondary containment and overhead coverage implemented.
SW No.: SW09-097 Type: Commercial Location Address: 307 Vista Village Dr. Watershed: Buena Vista Creek Call Date: 6/25/2009 Case closed date:	Minor organic debris in shared parking lot storm drain. Mops left outside to dry. No secondary containment or overhead coverage for grease recycle bin, no documented storm water training for employees, grease recycle bin and area around it are clean and free of spills.	Storm drains are ok. One goes through grassy swale before entering a clean catch basin inlet. The other two drain to a baffle system that was recently cleaned by Downstream Services in May/June. Met with manager and provided educational information for training. Mops being stored indoors in mop sink area.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cover/Seal storm drain inlet near grease recycle bin and trash dumpster. Provide storm water training to staff. Follow-up Action: Photo verify Actions completed: 7/22/09, Storm drain cover ordered. Storm water training started.
SW No.: SW09-098 Type: Commercial Location Address: 901 S. Sanata Fe Ave Watershed: Buena Vista Creek Call Date: 6/25/2009 Case closed date: 7/27/2009	Oil stains around area drain in drive-thru. The secondary containment and overhead coverage for grease recycle drums is failing and inadequate. No documented storm water training for employees.	Observed as described in Complaint Description. Additionally, trash dumpster/grease recycle drum area has accumulation of trash and debris as well as grease. The secondary containment and overhead coverage is not adequate and needs to be disposed. Business owner was given literature for employee storm water training. 7/22/09, Some BMPs implemented. Dumpster area cleaned but not good enough. Drive-thru area drain cleaned, but concrete area around drain needs additional cleaning of vehicle fluids and food spills. Different grease bin was obtained, but doesn't meet secondary containment and overhead coverage requirements. 7/27/09, Corrective actions BMPs verified.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean/remove accumulation of vehicle oils and fluids from drive-thru area using a dry sweep method. Clean/remove accumulation of trash, debris and grease from dumpster and grease recycle drum area using a dry sweep method. Dispose of makeshift secondary containment and overhead coverage container and provide functional secondary containment and overhead coverage. Maintain BMPs therafter. Follow-up Action: Photo verify Actions completed: BMPs implemented; trash area free of trash and debris and accumulation of grease removed/cleaned from trash area, secondary containment and overhead coverage for grease recycle drums. Drive-thru area clean and free of food spills and accumulation of vehicle oil/grease/fluids.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-099 Type: Industrial Location Address: 1352 Decision St Watershed: Agua Hedionda Creek Call Date: 5/26/2009 Case closed date: 7/3/2009	Minor trash and debris on loading dock stairs, and surrounding area. Three 55 gal. containers of liquid plant food stored without secondary containment & overhead coverage.	Observed trash and debris on loading dock stairs as mentioned in Compalint Description. Plant food exists under 18 wheel truck acts as overhead coverage, but, no secondary containment exists with inlet only 30' away.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove trash and debris on loading dock stairs. Was stated that they plan on storing liquid plant food indoors. Follow-up Action: Verify compliance via site visit / photographs. Actions completed: Debris on loading dock stairs was cleaned up. Three 55 gal. drums of plant food removed from original location to inside.
SW No.: SW09-100 Type: Commercial Location Address: 1403 S. Santa Fe Ave. Watershed: Buena Vista Creek Call Date: 6/3/2009 Case closed date: 7/3/2009	Liquid hazardous waste stored in 55 gal. drum without secondary containment and overhead coverage.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Install appropriate secondary containment and overhead coverage. Follow-up Action: Verify compliance via site visit / photographs Actions completed: 7/3/09, Grainger type secondary containment system installed to house 55 gal. liquid waste drum.
SW No.: SW09-101 Type: Commercial Location Address: 1250 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/9/2009 Case closed date: 7/23/2009	Dumpster lids in back were left open. Sediment, trash and grease on ground within and around trash dumpster area. Grease bins need appropriate secondary containment and overhead coverage (currently, just three 55 gal. drums).	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Re-configure all drums to allow covers to close. Clean-up sediment, trash and grease. Provide secondary containment/overhead coverage to grease bins. Follow-up Action: Verify compliance via visit/photographs. 7/23/09, spoke with property owner - he has not checked on the tenants and feels it really is business owner's responsibility. Actions completed: Verified clean-up of sediment, litter and grease. Grease drum removed. Business owner is storing grease in 5 gal. jug and taking it to Encinitas store to recycle.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-102 Type: Commercial Location Address: 945 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/2/2009 Case closed date:	Lids on dumpsters were open. No secondary containment and overhead coverage on grease bin. Lots of trash within trash enclosure area.	Observed as described in Complaint Description. 7/23/09, case reassigned to Stormwater Code Enforcement Officer. I spoke with business owner. They will be storing their grease in 5 gallon buckets within a closet at the rear service door. Large recycler will be removed.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Close dumpster lids when not in use. Install secondary containment and overhead coverage. Clean up trash in trash enclosure area. Follow-up Action: Verify compliance achieved via site visit/photographs. Actions completed: Trash dumpster lids are closed. All trash is cleaned up - looks great.
SW No.: SW09-103 Type: Commercial Location Address: 770 Sycamore Ave Ste H Watershed: Agua Hedionda Creek Call Date: 5/22/2009 Case closed date: 7/23/2009	Grease deposits and trash littered within trash enclosure. Dumpster lids open. No secondary containment or overhead coverage for grease bin.	Refer to case # SW09-082. This is a property management issue, but, Armando's Mexican Food (same address; different tenant) was directed to conduct corrective actions. Site visit confirmed Complaint Description and conditions of facility reported by D-Max.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove grease deposits and trash from trash enclosure area. Install appropriate secondary containment and overhead coverage for grease bin. Follow-up Action: Verify compliance via site visits and photographs. Actions completed: 6/30/09, As followed through in case SW09-082, most BMPs implemented. Employees trained. Written stormwater procedure for spill prevention and response posted (Commercial BMPs pamhlet). Dumpster area clean of trash and debris. Dumpster lids closed. Accumulation of grease removed from dumpster. However, still neeeds secondary containment and overhead coverage. Property manager wrote letter to tenants in reference to dumpster lids and dumping trash. 7/16/09, appropriate secondary containment and overhead coverage for grease bins installed.
SW No.: SW09-104 Type: Commercial Location Address: 1580 S. Melrose Dr Watershed: Agua Hedionda Creek Call Date: 5/13/2009 Case closed date: 7/22/2009	Trash and leaves on ground within trash enclosure area. Material (black in color) exists in small storm drain located outside back door of building.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Pick up trash and leaves within trash enclosure. Clean out debris in small storm drain inlet behind building. Follow-up Action: Verify compliance via site visit / photographs Actions completed: 7/3/09, Confirmed clean-up of trash and leaves in trash enclosure area. Storm drain inlet was not cleaned out. 7/22/09 confirmed inlet was cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-107 Type: Commercial Location Address: 1250 S. Santa Fe Ave #3 Watershed: Buena Vista Creek Call Date: 6/9/2009 Case closed date: 7/22/2009	Sediment and trash around dumpsters. Lids left open. No spill kit. No documented storm water training for employees. No second containment or overhead coverage for grease recycle bin.	Observed as described in Complaint Description. Met with business owner and discussed violations. Also, noted sediment in parking stalls near front door. Gave them a What's Cookin' booklet with log to train employees on storm water. Provided Commercial BMPs pamphlet for written spill prevention and response prodecures.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dry sweep accumulated sediment and trash from dumpster area and parking stalls. Keep dumpster lids closed when not in use. Maintain BMPs thereafter. Provide accessible spill kit. Provide secondary containment and overhead covereage for 55 gal. recycle drum. Follow-up Action: Photo verify Actions completed: BMPs implemented. Sediment and trash removed from dumpster area and parking stalls. Obtained functional spill kit. Obtained secondary containment and overhead coverage for 55 gal. grease recycle drum.
SW No.: SW09-108 Type: Commercial Location Address: 538 Olive Ave #100 Watershed: Buena Vista Creek Call Date: 6/11/2009 Case closed date: 7/16/2009	Dirt, trash, no trash can lid, rusty metal, paint can.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove trash, debris and dirt Follow-up Action: Photo verify Actions completed: Area cleaned.
SW No.: SW09-110 Type: Commercial Location Address: 1850 Hacienda Dr Watershed: Buena Vista Creek Call Date: 6/29/2009 Case closed date: 7/13/2009	D-Max inspection noted grease recycler was subpar. Trash & debris around establishment.	Observed as described in Complaint Description. Storage of food cart, trash can and laundry hamper outside, also.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair, clean and upgrade grease recycler overhead coverage, remove all outside equipment to interior. Follow-up Action: Photo verify Actions completed: All repaired and/or removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-111 Type: Commercial Location Address: 1450 N. Santa Fe Ave, Y Watershed: Buena Vista Creek Call Date: 6/10/2009 Case closed date: 7/9/2009	Grease accumulation at recycler and dumpsters lids are up.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove grease accumulation and put dumpster lids down Follow-up Action: Photo verify. Actions completed: Area has been cleaned and dumpster lids are closed.
SW No.: SW09-113 Type: Commercial Location Address: 1037 Bobier Dr. Watershed: Buena Vista Creek Call Date: 6/19/2009 Case closed date:	No secondary containment or overhead coverage for grease recycler	Observed as described in Complaint Description. 6/30/09, I spoke with Manager/District Representative for Del Taco. They are ordering a secondary containment and overhead coverage for the grease recycler.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease grease discharge; remove grease recycler or provide secondary containment/overhead coverage. Follow-up Action: Photo verify Actions completed:
SW No.: SW09-114 Type: Commercial Location Address: 815 N. Santa Je Ave Watershed: Buena Vista Creek Call Date: 6/11/2009 Case closed date: 7/8/2009	Secondary containment to shallow	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Provide adequate secondary containment for grease drum. Follow-up Action: Photo verify Actions completed: Adequate secondary containment implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-118 Type: Commercial Location Address: 1725 E. Vista Way Watershed: Buena Vista Creek Call Date: 6/24/2009 Case closed date:	No secondary containment or overhead coverage for some of the recycle drums.	Observed as described in Complaint Description. 7/20/09, I spoke with owner; he has ordered a secondary containment and overhead coverage for drums. 7/27/09, secondary containment and overhead coverage arrived, however, to small. Business owner is researching Grainger.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement secondary containment and overhead coverage for drums. Follow-up Action: Photo verify Actions completed:
SW No.: SW09-119 Type: Commercial Location Address: 1338 N. Melrose Dr. Watershed: Buena Vista Creek Call Date: 6/25/2009 Case closed date: 7/20/2009	Sediment, dumpster lid open, parts and scraps in rear service yard.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs Follow-up Action: Photo verify Actions completed: Area cleaned.
SW No.: SW09-120 Type: Commercial Location Address: 406 Main St. Watershed: Buena Vista Creek Call Date: 5/20/2009 Case closed date: 7/9/2009	Grease spills around grease bin. No secondary containment.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove grease spills and install secondary containment under grease bin. Follow-up Action: Photo verify Actions completed: Secondary containment installed, area clean

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-121 Type: Commercial Location Address: 122 W. California Ave Watershed: Buena Vista Creek Call Date: 6/13/2009 Case closed date: 7/13/2009	Litter of soda cans, paint cans, miscellaneous trash and debris	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs throughout site. Remove hazmat items. Follow-up Action: Photo verify Actions completed: Area cleared of paint cans, etc…..
SW No.: SW09-123 Type: Commercial Location Address: 436 Vista Village Dr Watershed: Buena Vista Creek Call Date: 6/11/2009 Case closed date: 7/13/2009	Oil stains, no lids on trash cans, engines uncovered and conducting work outside with no overhead coverage.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove oil stains, cover trash cans, remove engine to indoors or provide overhead coverage. Work on vehicles in bay area. Follow-up Action: Photo verify Actions completed: BMPs implemented.
SW No.: SW09-124 Type: Commercial Location Address: 932 Vista Village Dr. Watershed: Buena Vista Creek Call Date: 6/11/2009 Case closed date:	Litter, debris, sediment discharge, pothole in parking lot, dumpster lids up and oil stains on parking lot.	Observed as described in Complaint Description. 6/30/09, I spoke with store employee. She provided a number for the store owner. I met with owner, walked site and expressed information and suggestions regarding corrective action on 7/15/09. 7/27/09, business owner having trouble with landlord in addressing dirt discharge	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs throughout site. Follow-up Action: Photo verify. Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-131 Type: Commercial Location Address: 427 Redlands St., B Watershed: Buena Vista Creek Call Date: 6/15/2009 Case closed date: 7/13/2009	Unswept absorbant, vehicle fluid stains, rusting auto parts, vehicle repair outside with no cover	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove unswept absorbant, old auto parts, oil stains and cease working on vehicles outside. Follow-up Action: Photo verify Actions completed: Approopriate BMPs have been implemented.
SW No.: SW09-133 Type: Commercial Location Address: 1712 Anza Ave Watershed: Call Date: 6/12/2009 Case closed date:			Enforcement Action ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:
SW No.: SW09-137 Type: Commercial Location Address: 603 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/19/2009 Case closed date: 7/28/2009	Dirt, sediment, excessive accumulation of lawn mowers and old engine parts; no BMPs implemented to protect run-off.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, remove old mechanical items, provide employee training to prevent hosing off site Follow-up Action: Photo verify. 7/20/09, Progress--still more to clear Actions completed: Area now has canopy cover and items are in plastic rectangle containers. Tenant was requested to provide regular maintenance hereafter.

APPENDIX D-6

Enforcement Actions Taken at Commercial and Industrial Sites/Sources

Appendix D-6 Enforcement Actions taken at Commercial and Industrial Sites/Sources

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION				
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal Warning	Written Warning	Notice of Violation	Citation	**Totals**
Commercial (complaints)	49	2	3	12		66	60	60	32		23	5	60
Commercial (inspections)	16			25		41	41	41		32	9		41
Industrial (complaints)						0							0
Industrial (inspections)				3		3	3	3		3			3
Mobile Business	11			1		12	11	11	11				11
TOTALS	76	2	3	41	0	122	115	115	43	35	32	5	115

APPENDIX D-7

Commercial and Industrial Inspection Summaries

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: 7 Eleven #24085	**Inspection Date:** 5/28/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 900 N Santa Fe Ave	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Light litter Cigarette butts in parking lot). Keep outdoor areas free of spills and leaks (Inspector comment: Oil stains & Soda spills in parking lot). Protect trash area from contact with storm water (Inspector comment: Dumpster lids open). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Trash around dumpster; including food waste). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/22/2009
Contact: Singh, Amar & Satinder - Franchise Owner				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: 7-Eleven #33160T-2111	**Inspection Date:** 5/22/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 298 Sycamore Ave	**Needed Corrective Actions:** Clean debris and trash from storm drains. Remove (clean) any wet or accumulated oil, grease and/or vehicle fluids from parking lot. Properly label 55 gal drum, keep dumpster lids closed when not in use and keep dumpster area swept of debris and trash.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/19/2009 6/30/2009
Contact: Tawab Amir - manager				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: 99¢ Only Stores	**Inspection Date:** 6/8/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 705 E Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Litter). Protect trash area from contact with storm water (Inspector comment: Lids open). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Sediment/litter). Keep loading and unloading areas, including drains, free of debris (Inspector comment: Sediment). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/24/2009
Contact: Mark Braves				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Adelita's Cocina Mexicana	**Inspection Date:** 6/2/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 918 S Santa Fe Ave	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Light litter in shared parking area). Keep outdoor areas free of spills and leaks (Inspector comment: Stain from past grease bin leak/spill; oil stain in shared parking lot). Provide storm water training for appropriate employees. Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Leaks on & around large stain on wall below bin)			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/29/2009
Contact: Kelly Humann-manager				**Inspector:** Coppi
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Albertacos Mex Food Inc	**Inspection Date:** 5/21/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 601 Sycamore Ave	**Needed Corrective Actions:** Use dry absorbent/sweep method to clean vehicle fluids from parking lot. Sweep dumpster area of trash and debris and keep clean. Clean grease from on and around grease recycle container. Clean fluid stains from stairs, sidewalk and back door areas.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/19/2009 6/23/2009
Contact: Servando Bernde				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Albertson's #6201	**Inspection Date:** 6/5/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1301 E. Vista Way	**Needed Corrective Actions:** Clean area under and around trash compactor of trash, debris and greasy liquid spills using a dry absorbent sweep method. If pressure washed, all water must be reclaimed and disposed properly. Also, clean loading dock area of sediment, trash and debris using same method.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/24/2009 7/31/2009
Contact: Ben Hernandez - assistant manager				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Allen's Alley Cafe	**Inspection Date:** 6/18/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 124 HANES PL	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Sediment). Keep outdoor areas free of spills and leaks (Inspector comment: Oil and trash stains/spills). Keep trash area free of litter and debris, liquids, powders, and sediment. Provide an accessible, functional spill response kit. Provide storm water training for appropriate employees. Maintain accessible grease spill response materials			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/29/2009
Contact: Alicia Harb				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Allen's Auto	**Inspection Date:** 6/11/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 718 E Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Sediment). Keep outdoor areas free of spills and leaks (Inspector comment: Oil stains). Adequately cover materials stored outside (Inspector comment: Engine parts, tire, rusty metal). Prevent run-on from contacting materials stored outdoors (Inspector comment: Engine parts, tire, rusty metal). Keep secondary containment free of spills and rainwater (Inspector comment: Spills). Conduct outdoor activities within contained areas (garage, under canopy, work shop). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009
Contact: Allen Nguygen - Owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Armandos Mexican Food	**Inspection Date:** 5/22/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Notice of Violation
Address: 770 Sycamore Ave # L	**Needed Corrective Actions:** Clean all litter at back door and in dumpster area. Keep dumpster lids closed when not in use. Remove the accumulation of grease from dumpster area on and around grease recycle bin using a dry absorbent sweep method. If pressure washing, all water must be reclaimed and disposed of properly. Provide overhead coverage and secondary containment for grease recycle drum, train employees. Property management to clean out common storm drains and write letter to tennants regarding dumpster lids and dumping trash.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/19/2009 7/16/2009
Contact: Ruben Gonzalez - manager				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Aschbrenner, Inc. dba Spectrum Floral Service	**Inspection Date:** 5/27/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 2505 Commerce Way	**Needed Corrective Actions:** Keep drains on site free of litter and debris (Inspector comment: Some debris from flowers). Reduce over watering/over-irrigation (Inspector comment: Marks on pavement from over watering). Protect trash area from contact with storm water. Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Some flower debris, sediment). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/23/2009
Contact: Greg Smith - Plant Manager				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Benvics Auto Repair	**Inspection Date:** 6/22/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1352 N Melrose Dr K	**Needed Corrective Actions:** Protect trash area from contact with storm water (Inspector comment: lids open). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: litter). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 7/9/2009
Contact: Victor Banuelos - Co-owner				**Inspector:** Sotola
Watershed: Loma Alta				**Corrective Actions Verified:** Yes
Facility Name: Boomers Vista	**Inspection Date:** 6/8/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1525 W. Vista Way	**Needed Corrective Actions:** Clean grease accumulated on concrete where grease recycle drums had been stored using a dry sweep method. If water is used, it all must be reclaimed and disposed of properly. Train all employees.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 7/20/2009 7/27/2009
Contact: Mark Williams				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: California Pizza Kitchen	**Inspection Date:** 6/1/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 307 Vista Village Dr.	**Needed Corrective Actions:** Cover/Seal storm drain inlet near grease recycle bin and trash dumpster. Provide storm water BMP training to staff.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/25/2009 8/13/2009
Contact: Margarito Lopez				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Calmex Wholesale Growers & Shippers	**Inspection Date:** 6/18/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Notice of Violation
Address: 2680 La Mirada Dr.	**Needed Corrective Actions:** Immediately cease illegal discharge and reclaim, upgrade BMPs to prevent further illegal discharges. No further cleaning brow ditch with water (unless reclaimed); use a dry sweep method. Do not allow discharge to leave the building in the future. Provide copy of written stormwater BMPs procedures and provice training to employee in reference to the same.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/17/2009 7/2/2009
Contact: Luiz Cervantes				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Carlos Auto Body	**Inspection Date:** 6/11/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 538 Olive Ave #100	**Needed Corrective Actions:** Remove trash, debris and dirt			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/16/2009
Contact: Genaro Bedolla - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Chicos Panaderia	**Inspection Date:** 6/10/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1110 N Santa Fe Ave	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Litter). Keep drains on site free of litter and debris (Inspector comment: Litter). Keep outdoor areas free of spills and leaks (Inspector comment: Oil stains). Protect trash area from contact with storm water (Inspector comment: Lids open). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Food and litter). Provide an accessible, functional spill response kit. Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009
Contact: Miguel Carmona				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Coast Equipment Rental	**Inspection Date:** 6/8/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1713 W Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Litter, sediment). Protect trash area from contact with storm water (Inspector comment: Lids open). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Litter). Adequately cover materials stored outside (Inspector comment: Tires, engine). Prevent run-on from contacting materials stored outdoors (Inspector comment: Tires). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/29/2009
Contact: Sony Clonts - Manager				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Colima's Mexican Food	**Inspection Date:** 6/29/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Notice of Violation
Address: 1850 Hacienda Dr	**Needed Corrective Actions:** Repair, clean and upgrade grease recycler overhead coverage, remove all outside equipment to interior.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/13/2009
Contact: Rafael Verduzco - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Costco Wholesale #124	**Inspection Date:** 6/23/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1755 Hacienda Dr	**Needed Corrective Actions:** Clean trash compactor area of trash, debris, powdery substance and liquid spills and maintain thereafter using a dry absorbent sweep method. If water is used for cleaning, it all must be reclaimed and disposed properly. Have trash and debris cleaned from storm drains.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/23/2009 8/3/2009
Contact: Adam Shomer - manager				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Coyote Café	**Inspection Date:** 6/10/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1450 N. Santa Fe Ave, Y	**Needed Corrective Actions:** Remove grease accumulation and put dumpster lids down			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/9/2009
Contact: Rudy Videjouski - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Curbside Café	**Inspection Date:** 5/20/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 307 Main St.	**Needed Corrective Actions:** Provide secondary containment and overhead coverage for grease recycle drum. Provide storm water training to employees and produce log for the same.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/23/2009 7/20/2009
Contact: John Randall - owner				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Del Taco 212	**Inspection Date:** 6/13/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1037 Bobier Dr.	**Needed Corrective Actions:** Cease grease discharge; remove grease recycler or provide secondary containment/overhead coverage.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009
Contact: Veronica Ramos				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Dils Roofing	**Inspection Date:** 6/16/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 2230 La Mirada Dr	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Debris). Protect trash area from contact with storm water. Keep trash area free of litter and debris, liquids, powders, and sediment. Adequately cover materials stored outside (Inspector comment: Oil container). Properly label outdoor storage containers (Inspector comment: Oil container). Equip liquid storage containers with secondary containment (Inspector comment: Oil container). Properly store and dispose of hazardous materials (Inspector comment: Oil container). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/29/2009
Contact: Brent Dils				**Inspector:** Sotola
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Dos Gringos	**Inspection Date:** 5/26/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Notice of Violation
Address: 3260 Corporate View Dr.	**Needed Corrective Actions:** Immediately abate the violation and cease further illegal discharge. Install/maintain BMPs. Cover/seal over grate inlet. Use interior drain closet for plant water disposal and discontinue using blue drum to floor drains at bay door entrance. Clean debris from loading dock area and maintain free of debris. Clean staining around trash compactors using dry absorbent/sweep method. No washing of vehicles on site. Post storm drain inlets. Provide written BMP procedures.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 5/26/2009 6/30/2009
Contact: Gabriel Gill - manager				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: El Burrito Catering (Mobile Food Service Hub)	**Inspection Date:** 6/11/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 365 Olive Ave A	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment and light litter). Keep outdoor areas free of spills and leaks (Inspector comment: some oil stains on lot). Protect trash area from contact with storm water (Inspector comment: one recycling container with no cover). Adequately cover materials stored outside (Inspector comment: some rusty metal and car batteries). Prevent run-on from contacting materials stored outdoors (Inspector comment: some rusty metal and car batteries). Provide storm water training for appropriate employees. Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: spills on bins and in bermed area)			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009
Contact: Lidia Hernandez - Owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: El Callejon Vista	**Inspection Date:** 5/20/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 20 S. Main St. H-100	**Needed Corrective Actions:** Keep dumpster area clean of trash and debris. Keep dumpster lids closed when not in use. Clean grease recycle bin and area around it of spills and maintain thereafter. Letter to tenants from property management referring to the same.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/23/2009 7/22/2009
Contact: Miguel Raeyes				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: El Ranchero	**Inspection Date:** 5/19/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 226 Main St	**Needed Corrective Actions:** Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: large grease stain in covered trash area). Provide storm water training for appropriate employees. Store grease bins with secondary containment (Inspector comment: grease stain on concrete pad). Keep grease bin and surrounding area free of grease stains/spills			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/23/2009
Contact: Ezequiel Felis				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Elk's Lodge Restaurant	**Inspection Date:** 6/24/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1947 E. Vista Way	**Needed Corrective Actions:** Install erosion control (fiber rolls, gravel bags or silt fence) at toe of slope where landscaping is being done. Dry sweep sediment from driveway. No further washing of floor mats in parking lot; must be done in mop sink. Do not allow trash to overflow. Provide secondary containment for grease recycle drum. Train employees on storm water BMPs.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/24/2009 7/30/2009
Contact: Richard Young				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Epitech	**Inspection Date:** 6/19/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1120 Sycamore Avenue I	**Needed Corrective Actions:** Keep drains on site free of litter and debris (Inspector comment: Minor organic debris collection in and around storm drains in shared parking area). Keep outdoor areas free of spills and leaks (Inspector comment: Liquid storage container appears to have a small/slow leak staining the parking area). Reduce over watering/over-irrigation (Inspector comment: Staining in shared parking area likely from over irrigation). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Minor organic debris collected in shared dumpster area; covered). Adequately cover materials stored outside (Inspector comment: Liquid storage). Properly label outdoor storage containers (Inspector comment: Large tanks outside). Equip liquid storage containers with secondary containment (Inspector comment: Large storage tank by roll up door). Properly store and dispose of hazardous materials (Inspector comment: Large storage container by roll up door)			**Follow-up Inspection Required:** Yes
Inspection Type: Industrial				**Follow-up Inspection Date(s):** 6/29/2009
Contact: Bill Gravis Jr.				**Inspector:** Sotola
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Eriberto's Mexican Food	**Inspection Date:** 5/14/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1805 Hacienda	**Needed Corrective Actions:** Remove litter, debris and grease stains.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/15/2009 7/8/2009
Contact: Mario Ruiz				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Flamingo Holland Inc	**Inspection Date:** 5/27/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1250 AVENIDA CHELSEA	**Needed Corrective Actions:** Employ adequate erosion prevention measures (vegetation or physical stabilization). Reduce over watering/over-irrigation. Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Leaf litter)dumpster area outside)). Keep loading and unloading areas, including drains, free of debris (Inspector comment: Sediment). Identify and eliminate illicit connections and illegal discharges (Inspector comment: Illegal discharge of sediment). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 5/28/2009
Contact: Karen Britton - Inventory Specialist				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Franciscos Mexican Deli	**Inspection Date:** 6/11/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Notice of Violation
Address: 821 N. Santa Fe Ave	**Needed Corrective Actions:** Provide secondary containment and overhead coverage			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/23/2009
Contact: Analilia Lara - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Frank's Mexican Grill	**Inspection Date:** 6/13/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 122 W. California Ave	**Needed Corrective Actions:** Implement appropriate BMPs throughout site. Remove hazmat items.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/13/2009
Contact: Frank Sarmiento				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Giant New York Pizza	**Inspection Date:** 6/9/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1250 S. Santa Fe Ave	**Needed Corrective Actions:** Re-configure all drums to allow covers to close. Clean-up sediment, trash and grease. Provide secondary containment/overhead coverage to grease bins.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/25/2009 7/23/2009
Contact: Evel Hanna - owner				**Inspector:** Coppi/Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: In N Out Burger #61	**Inspection Date:** 6/16/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 2010 Hacienda Dr	**Needed Corrective Actions:** Provide storm water training for appropriate employees. Store grease bins with overhead coverage. Keep grease bin and surrounding area free of grease stains/spills			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 7/9/2009
Contact: Eric Miranda				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: International House Of Pancakes 814	**Inspection Date:** 5/15/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 632 Sycamore Ave	**Needed Corrective Actions:** Keep outdoor areas free of spills and leaks. Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Some liquids). Provide an accessible, functional spill response kit. Provide storm water training for appropriate employees. Maintain accessible grease spill response materials			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/15/2009
Contact: Phillip Kelly - Manager				**Inspector:** Sotola
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Jack In The Box #3032	**Inspection Date:** 5/11/2009	**Inspector:** Crystal Grover	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 3281 Business Park Dr	**Needed Corrective Actions:** Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: Sediment transport from planter by trash enclosure). Protect trash area from contact with storm water (Inspector comment: Dumpster lids open). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Litter in area). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/15/2009
Contact: Lucy Stanciu - Manager				**Inspector:** Sotola
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: JAVO Beverage Co.	**Inspection Date:** 5/12/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1311 Specialty Dr	**Needed Corrective Actions:** Sweep debris, trash and sediment from parking and trash areas and maintain thereafter. Clean spills from around 40 yard dumpster using dry absorbent or wet vac. Cover 40 yard dumpster when not in use.			**Follow-up Inspection Required:** Yes
Inspection Type: Industrial				**Follow-up Inspection Date(s):** 6/22/2009 7/16/2009
Contact: Aytunc Atabek - director				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Juanita's Taco Shop	**Inspection Date:** 5/20/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 248 E Main St	**Needed Corrective Actions:** Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Minor debris collected in shared trash area). Provide storm water training for appropriate employees. Store grease bins with secondary containment. Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Grease stains in shared trash area (covered))			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 7/9/2009
Contact: Gonzalez, Ricardo/ Alma - owners				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Kentucky Fried Chicken	**Inspection Date:** 6/3/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 840 E. Vista Way	**Needed Corrective Actions:** Repair irrigation immediately in future to prevent discharges. Maintain existing BMPs. Provide secondary containment and overhead coverage for grease recycle bins.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/24/2009 7/16/2009
Contact: Victor Garcia - manager				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: LITTLE CAESARS PIZZA	**Inspection Date:** 5/14/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 2020 Hacienda Dr	**Needed Corrective Actions:** Protect trash area from contact with storm water (Inspector comment: Lids open). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Dumpster too full, overflowing) Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/15/2009
Contact: Carmen Lopez - Manager				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Mariscos Las Palmas Mexican Food	**Inspection Date:** 6/4/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 777 E. Vista Way #206	**Needed Corrective Actions:** Clean trash and debris from storm drains. Keep dumpster lids closed when not in use, clean trash enclosure of trash, debris and grease. Clean trash and debris from around storage container. Provide secondary containment and overhead coverage for grease recycle drum. Train employees in reference to stromwater BMPs. Maintain BMPs thereafter.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/24/2009 7/2/2009
Contact: Efrain B Buenrostro				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: McDonalds 12791	**Inspection Date:** 6/10/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1470 N. Santa Fe Ave	**Needed Corrective Actions:** Cease discharge and implement secondary containment and overhead coverage for grease recycler.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009
Contact: Dale Lein - Supervisor				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Mi Pueblito Mexican & Seafood Inc.	**Inspection Date:** 6/11/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 815 N. Santa Je Ave	**Needed Corrective Actions:** Provide adequate secondary containment for grease drum.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/8/2009
Contact: Francisco Torres - manager				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Mobil Mart #11433	**Inspection Date:** 5/15/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 710 Sycamore Ave	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Debris). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Some debris). Adequately cover materials stored outside (Inspector comment: Liquid storage). Prevent run-on from contacting materials stored outdoors (Inspector comment: Liquid storage). Equip liquid storage containers with secondary containment. Properly store and dispose of hazardous materials. Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/22/2009
Contact: Roxanne Franklin - Manager				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: MS Marble	**Inspection Date:** 6/25/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1338 N. Melrose Dr.	**Needed Corrective Actions:** Implement appropriate BMPs			**Follow-up Inspection Required:** Yes
Inspection Type: Industrial				**Follow-up Inspection Date(s):** 7/9/2009
Contact: Jaime P Mata - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Natural Alternatives Int'l Inc.	**Inspection Date:** 5/27/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1215 Park Center Dr.	**Needed Corrective Actions:** Remove absorbent material ensuring all hydrocarbons are soaked up. Provide secondary containment for several liquid storage containers.			**Follow-up Inspection Required:** Yes
Inspection Type: Industrial				**Follow-up Inspection Date(s):** 6/24/2009 7/23/2009
Contact: Mike Larson				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Northgate Market	**Inspection Date:** 6/10/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1150 E. Vista Way	**Needed Corrective Actions:** Remove storage, cease fluid discharge and close lids			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/23/2009
Contact: Oscar Plaza - Store Director				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Nucci's Italian Cage Pizza Pas	**Inspection Date:** 5/13/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1580 S. Melrose Dr	**Needed Corrective Actions:** Pick up trash and leaves within trash enclosure. Clean out debris in small storm drain inlet behind building.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/29/2009 7/22/2009
Contact: Tanya Gyves				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Nutritional Engineering Inc.	**Inspection Date:** 5/12/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1208 AVENIDA CHELSEA	**Needed Corrective Actions:** Keep outdoor areas free of spills and leaks (Inspector comment: Evidence of previous spills). Protect trash area from contact with storm water (Inspector comment: Lids open). Adequately cover materials stored outside. Properly label outdoor storage containers. Provide an accessible, functional spill response kit. Equip liquid storage containers with secondary containment. Keep secondary containment free of spills and rainwater. Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Industrial				**Follow-up Inspection Date(s):** 6/25/2009
Contact: Tony Tong - Director				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Oggi's Pizza & Brewing	**Inspection Date:** 6/15/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 425 S. Melrose Dr.	**Needed Corrective Actions:** Professionally pressure wash dumpster pavement and maintain.			**Follow-up Inspection Required:** Yes
Inspection Type: Industrial				**Follow-up Inspection Date(s):** 6/29/2009 7/17/2009
Contact: Dan Borshell - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Oscar's Mexican Food	**Inspection Date:** 6/11/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Notice of Violation
Address: 822 E. Vista Way	**Needed Corrective Actions:** Clean accumulation of grease, oil and vehicle fluids in parking stalls and drive-thru area. Provide secondary containment and overhead coverage for grease recycle bin. Remove grease stains around recycle bin. Use dry absorbent/sweep method. If pressure washing, all water must be reclaimed and properly disposed. Dumpster lids to remain closed when not in use. *Property owner may have parking lot sealed.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/18/2009 6/18/2009
Contact: Patricia Pinalos - owner				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Passion Growers West	**Inspection Date:** 5/26/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1352 Decision St	**Needed Corrective Actions:** Remove trash and debris on loading dock stairs. Was stated that they plan on storing liquid plant food indoors.			**Follow-up Inspection Required:** Yes
Inspection Type: Industrial				**Follow-up Inspection Date(s):** 6/25/2009 7/3/2009
Contact: Merian Maldonado - accountant				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Pho Lucky	**Inspection Date:** 5/22/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 770 Sycamore Ave	**Needed Corrective Actions:** Remove grease deposits and trash within trash enclosure area. Keep dumster lids closed when not in use.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/19/2009 6/30/2009
Contact: John Huynh				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Pick Up Stix-Vista #7214	**Inspection Date:** 5/14/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 251 S. Melrose Dr. #303	**Needed Corrective Actions:** Remove trash from enclosure area. Tenant plans on power washing inside the trash enclosure area and directly in front to remove grease deposits. Tenant was made aware of power washing BMP requirements. Tenant stated he plans on removing grease bin and purchasing a smaller one and storing it inside.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/24/2009 7/20/2009
Contact: Jack Yang - manager				**Inspector:** Coppi
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Primo Food Market	**Inspection Date:** 6/8/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1535 W Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Sediment/litter). Keep outdoor areas free of spills and leaks (Inspector comment: Oil stains). Adequately cover materials stored outside (Inspector comment: Fridge, oven). Prevent run-on from contacting materials stored outdoors (Inspector comment: Fridge, oven). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 7/20/2009
Contact: Sam Assi				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Rancho del Oro	**Inspection Date:** 6/16/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1281 N Santa Fe Ave K	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Debris and litter throughout site). Keep drains on site free of litter and debris (Inspector comment: Debris collected in storm drain in rear (shared)). Keep outdoor areas free of spills and leaks (Inspector comment: Spill from grease trap). Protect trash area from contact with storm water (Inspector comment: Lids on shared dumpster open). Provide storm water training for appropriate employees. Ensure grease trap and area surrounding grease trap is kept free of spills/leaks. Prevent grease trap from overflowing.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009
Contact: Mike Assi - Manager				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Salsa Market	**Inspection Date:** 6/10/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Notice of Violation
Address: 1100 N. Santa Fe Ave	**Needed Corrective Actions:** Cease further discharge, remove trash/food on pavement, keep lids closed on dumpster and replace grease recycler's to comply with stormwater requirements.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/30/2009
Contact: Stewart Weinstock - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Santa Fe Petroleum, Inc Dba Arco Am/Pm	**Inspection Date:** 6/3/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1403 S. Santa Fe Ave.	**Needed Corrective Actions:** Install appropriate secondary containment and overhead coverage.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/25/2009 7/3/2009
Contact: Chris Salem - owner				**Inspector:** Coppi
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Shadowridge Country Club	**Inspection Date:** 6/22/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1980 Gateway Dr	**Needed Corrective Actions:** Avoid liquid (water) spills from outdoor mop sink. Wash all mats in mop sink. Do not allow discharge to enter the storm drain; provide cover over storm drain inlet catch basin. Provide secondary containment and overhead coverage for grease recycle drums. Keep loading dock area free of trash, litter and debris. Train employees on storm water BMPs.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/23/2009 7/28/2009
Contact: David Neil - Food & Beverage Director				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: SKS, Inc. Petroleum Distributors	**Inspection Date:** 6/2/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 620 S Santa Fe Ave	**Needed Corrective Actions:** Keep drains on site free of litter and debris (Inspector comment: Mud w/oily sheen in catch basin). Keep outdoor areas free of spills and leaks (Inspector comment: Heavy oil stains in fueling area and around catch basin). Provide storm water training for appropriate employees (Inspector comment: Unknown; business representative unavailable)			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 7/16/2009
Contact: Newell Bowden				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Souplantation	**Inspection Date:** 5/29/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1860 University Dr	**Needed Corrective Actions:** Equip liquid storage containers with secondary containment (Inspector comment: Cleaning agents). Keep secondary containment free of spills and rainwater (Inspector comment: Cleaning agents). Properly store and dispose of hazardous materials (Inspector comment: Cleaning agents). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/25/2009
Contact: Rebecca Weisz - Manager				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Sunrise Café	**Inspection Date:** 6/9/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1250 S. Santa Fe Ave #3	**Needed Corrective Actions:** Dry sweep accumulated sediment and trash from dumpster area and parking stalls. Keep dumpster lids closed when not in use. Maintain BMPs thereafter. Provide accessible spill kit. Provide secondary containment and overhead covereage for 55 gal. recycle drum.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/16/2009
Contact: Lora Jones - owner				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Sunrise Farms	**Inspection Date:** 6/5/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 3110 Scott St	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Some produce and sediment on ground). Keep outdoor areas free of spills and leaks (Inspector comment: Leak - next to drum of cleaning product). Protect trash area from contact with storm water (Inspector comment: Some containers of rotten fruit lack coverage). Equip liquid storage containers with secondary containment (Inspector comment: One drum of cleaning product. All other liquids indoors.). Provide storm water training for appropriate employees			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/25/2009
Contact: Kenneth Shull				**Inspector:** Heltmach
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Taco Bell 20413	**Inspection Date:** 5/12/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 3271 Business Park Dr	**Needed Corrective Actions:** Keep outdoor areas free of spills and leaks (Inspector comment: Grease & oil stains). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Some litter & debris). Provide storm water training for appropriate employees. Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Some stains)			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/22/2009
Contact: Terry Stepson - General Manager				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Ted's Auto Service	**Inspection Date:** 6/11/2009	**Inspector:** Ian Todd	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 436 Vista Village Dr	**Needed Corrective Actions:** Remove oil stains, cover trash cans, remove engine to indoors or provide overhead coverage. Work on vehicles in bay area.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/13/2009
Contact: Tina Vo - manager				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Tempo Research Corp	**Inspection Date:** 6/22/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1390 ASPEN WAY	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Minor sediment and organic debris collected throughout site). Keep drains on site free of litter and debris (Inspector comment: Minor organic debris collected in on site storm drains). Keep outdoor areas free of spills and leaks (Inspector comment: Stains in parking area at eastern border of site). Reduce over watering/over-irrigation. Protect trash area from contact with storm water (Inspector comment: Lids on dumpster open). Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Minor sediment and debris collected in dumpster area). Keep loading and unloading areas, including drains, free of debris (Inspector comment: Liquid and trash/debris collected in loading dock drain). Provide storm water training for appropriate employees. Develop a written procedure for spill prevention and response, investigate and abate the source of the large orange/rusty stains along the eastern border of parking area.			**Follow-up Inspection Required:** Yes
Inspection Type: Industrial				**Follow-up Inspection Date(s):** 7/9/2009
Contact: Lori Mahoney				**Inspector:** Sotola
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: The Picket Fence	**Inspection Date:** 6/2/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 945 S. Santa Fe Ave	**Needed Corrective Actions:** Close dumpster lids when not in use. Install secondary containment and overhead coverage. Clean up trash in trash enclosure area.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/25/2009 8/24/2009
Contact: Rod Jensen - owner				**Inspector:** Coppi/Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Torrese Asuncion Growers	**Inspection Date:** 6/12/2009	**Inspector:** David Kunugi	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 1712 Anza Ave	**Needed Corrective Actions:** Implement appropriate BMPs			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 8/18/2009
Contact: Calixto M. Torres - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Tropicana Rancho Market	**Inspection Date:** 6/11/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Notice of Violation
Address: 829 N. Santa Fe Ave	**Needed Corrective Actions:** Remove outside storage, close lids			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 8/3/2009
Contact: Sirmed Hurmed - manager				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Uncle Tony's Italian Cuisine	**Inspection Date:** 5/22/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 770 Sycamore Ave Ste H	**Needed Corrective Actions:** Remove grease deposits and trash from trash enclosure area. Install appropriate secondary containment and overhead coverage for grease bin.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/22/2009 7/23/2009
Contact: Tony Bono - owner				**Inspector:** Coppi
Watershed: Agua Hedionda Creek				**Corrective Actions Verified:** Yes
Facility Name: Village Cage	**Inspection Date:** 5/20/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 406 Main St.	**Needed Corrective Actions:** Remove grease spills and install secondary containment under grease bin.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/15/2009 7/9/2009
Contact: Fred Narian - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information			Follow-up Inspection
Facility Name: Vista Car Care	**Inspection Date:** 6/2/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 444 S Santa Fe Ave A	**Needed Corrective Actions:** Protect trash area from contact with storm water (Inspector comment: Recycling bins lacked lids). Adequately cover materials stored outside (Inspector comment: Scrap parts bin, some rusty metal). Equip liquid storage containers with secondary containment (Inspector comment: Large container for scrap parts had a couple of inches of oil and no secondary containment). Properly store and dispose of hazardous materials (Inspector comment: Oil in open scrap parts bin). Provide storm water training for appropriate employees (Inspector comment: Become familiar with storm water best management practices)			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/25/2009
Contact: Carlos Montoya				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Vista Transmission Service	**Inspection Date:** 6/15/2009	**Inspector:** Jacques Beriau	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 427 Redlands St., B	**Needed Corrective Actions:** Remove unswept absorbant, old auto parts, oil stains and cease working on vehicles outside.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/30/2009 7/13/2009
Contact: Robert Lee - owner				**Inspector:** Sotola
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes
Facility Name: Wienerschnitzal	**Inspection Date:** 6/25/2009	**Inspector:** Tad Nakatani	**Corrective Action Required:** Yes	**Enforcement Action:** Written Warning
Address: 901 S. Santa Fe Ave	**Needed Corrective Actions:** Clean/remove accumulation of vehicle oils and fluids from drive-thru area using a dry sweep method. Clean/remove accumulation of trash, debris and grease from dumpster and grease recycle drum area using a dry sweep method. Dispose of makeshift secondary containment and overhead coverage container and provide functional secondary containment and overhead coverage. Maintain BMPs therafter.			**Follow-up Inspection Required:** Yes
Inspection Type: Commercial				**Follow-up Inspection Date(s):** 6/25/2009 7/27/2009
Contact: Darren Snow - manager				**Inspector:** Heltmach
Watershed: Buena Vista Creek				**Corrective Actions Verified:** Yes

APPENDIX E-1

FY 08-09 HHW Disposal Types and Amounts

Appendix E-1
2008-09 Household Hazardous Waste Disposal Amounts and Types

		Poway	Vista	Total PHHWCF	Carlsbad	Del Mar	Encinitas	Escondido	National City	Poway	San Marcos	Santee	Solana Beach	Vista
		(in pounds)	(in pounds)	(in pounds)	**14.9%**	**0.2%**	**7.2%**	**1.3%**	**0.0%**	**37.5%**	**10.4%**	**0.2%**	**0.8%**	**27.5%**
1. Flammable & Poison	Flammable solid/liquid	29,148	86,230	**115,378**	17,237	180	8,269	1,452	0	43,314	11,989	276	943	31,717
	Bulked flammable liquids	1,200	26,600	**27,800**	4,153	43	1,992	350	0	10,436	2,889	66	227	7,642
	Oil-base paint	34,950	75,000	**109,950**	16,426	172	7,880	1,384	0	41,277	11,425	263	899	30,225
	Poison (excl.aerosols)	4,500	8,600	**13,100**	1,957	20	939	165	0	4,918	1,361	31	107	3,601
	Reactive and explosive	5	110	**115**	17	0	8	1	0	43	12	0	1	32
	Subtotal	**69,803**	**196,540**	**266,343**										
2. Acid	Inorganic and organic acid	**2,640**	**7,000**	**9,640**	1,440	15	691	121	0	3,619	1,002	23	79	2,650
3. Base	Inorganic and organic base	**1,520**	**6,720**	**8,240**	1,231	13	591	104	0	3,093	856	20	67	2,265
4. Oxidizer	Neutral oxidizers, organic peroxides, Oxidizing acid, oxidizing base	**910**	**2,740**	**3,650**	545	6	262	46	0	1,370	379	9	30	1,003
5. PCB-containing	PCB-containing paint	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Other PCB waste	220	73	**293**	44	0	21	4	0	110	30	1	2	81
	Subtotal	**220**	**73**	**293**										
6. Reclaimable	Antifreeze	4,892	6,589	**11,481**	1,715	18	823	145	0	4,310	1,193	27	94	3,156
	Car batteries	9,440	28,000	**37,440**	5,593	58	2,683	471	0	14,055	3,891	89	306	10,292
	Latex paint	37,600	124,200	**161,800**	24,172	253	11,595	2,037	0	60,742	16,813	387	1,323	44,479
	Motor oil/oil products	25,543	31,270	**56,813**	8,487	89	4,071	715	0	21,328	5,904	136	465	15,618
	Oil filters	690	750	**1,440**	215	2	103	18	0	541	150	3	12	396
	Subtotal	**78,165**	**190,809**	**268,974**										
7. Asbestos		**350**	**400**	**750**	112	1	54	9	0	282	78	2	6	206
8. Universal Waste (UW)	Mercury containing waste	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Thermostats/switches/thermometers	40	60	**100**	15	0	7	1	0	38	10	0	1	27
	Fluorescent Lamps	4,359	4,460	**8,819**	1,318	14	632	111	0	3,311	916	21	72	2,424
	Rechargeable batteries	1,840	1,880	**3,720**	556	6	267	47	0	1,397	387	9	30	1,023
	Household batteries	5,700	10,400	**16,100**	2,405	25	1,154	203	0	6,044	1,673	38	132	4,426
	Subtotal	**11,939**	**16,800**	**28,739**										
Electronic Waste (UW)	SB20/50 video display devices	53,564	103,522	**157,086**	23,468	245	11,258	1,977	0	58,972	16,323	375	1,285	43,183
	Non SB20/50 video display devices	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Consumer electronic devices	50,544	95,063	**145,607**	21,753	227	10,435	1,833	0	54,663	15,131	348	1,191	40,027
	Subtotal	**104,108**	**198,585**	**302,693**										
Aerosol Containers (UW)	Non-empty aerosol containers	800	1,600	**2,400**	359	4	172	30	0	901	249	6	20	660
	Other	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	All UW subtotal	**116,847**	**216,985**	**333,832**										
9. Other HHW	Home-generated sharps	700	1,810	**2,510**	375	4	180	32	0	942	261	6	21	690
	Pharmaceutical Waste	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Compressed gas cylinder	4,491	8,557	**13,048**	1,949	20	935	164	0	4,898	1,356	31	107	3,587
	Non-UW aerosol containers (corrosive, flammable, poison)	4,800	18,300	**23,100**	3,451	36	1,655	291	0	8,672	2,400	55	189	6,350
	Treated Wood	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Other	14,549	25,540	**40,089**	5,989	63	2,873	505	0	15,050	4,166	96	328	11,020
	Subtotal	**24,540**	**54,207**	**78,747**										
10. Grand Total		**294,995**	**675,474**	**970,469**			66,678							
		294,995	675,474	970,469										

Carlsbad	**1,626**	14.9%
Del Mar	**17**	0.2%
Encinitas	**780**	7.2%
Escondido	**137**	1.3%
National City	**0**	0.0%
Poway	**4,086**	37.5%
San Marcos	**1,131**	10.4%
Santee	**26**	0.2%
Solana Beach	**89**	0.8%
Vista	**2,992**	27.5%
Total	**10,884**	

APPENDIX E-2

Enforcement Actions Taken In Residential Cases

Appendix E-2 Enforcement Actions Taken in Residential Cases

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION			
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal	Notice of Violation	Citation	**Totals**
Residential	107	3	11	15	1	137	123	123	104	18	1	123
TOTALS	107	3	11	15	1	137	123	123	104	18	1	123

APPENDIX F

IDDE Appendices
Submitted by
December 15, 2009

APPENDIX G-1

FOG Poster

Best Management Practices

To Manage Fats, Oil and Grease

CITY OF VISTA

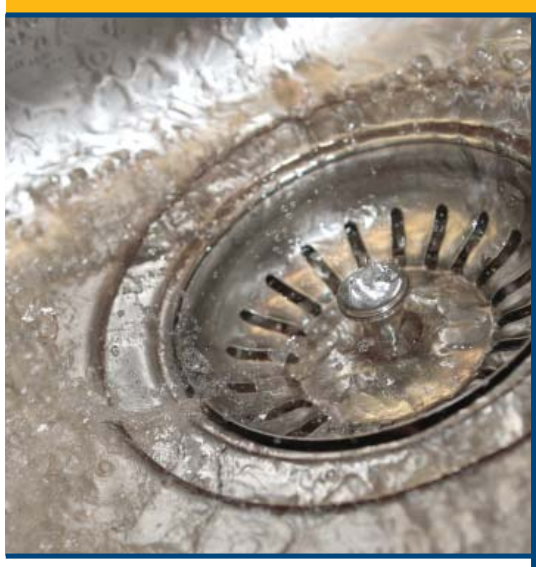

Drain screens should be installed on all drainage pipes in food preparation and kitchen areas.

Pantallas de drenaje debe ser instalado en todas las tuberías de drenaje en la preparación de alimentos y áreas de cocina

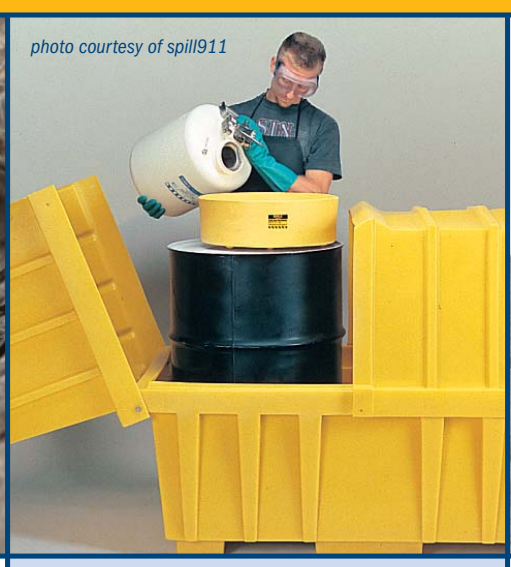

photo courtesy of spill911

All waste cooking oil should be collected and stored properly on recycling barrels or drums

Todos los residuos de aceite de cocina deben recogerse y almacenarse adecuadamente sobre el reciclado de barriles o tambores.

All food wastes should be placed in enclosed plastic bags and disposed of directly with the trash or garbage – not in sinks or toilets.

Todos los residuos de alimentos que deben ser colocados en bolsas de plástico cerrados y eliminados directamente con la basura o basura
- no en los fregaderos o inodoros.

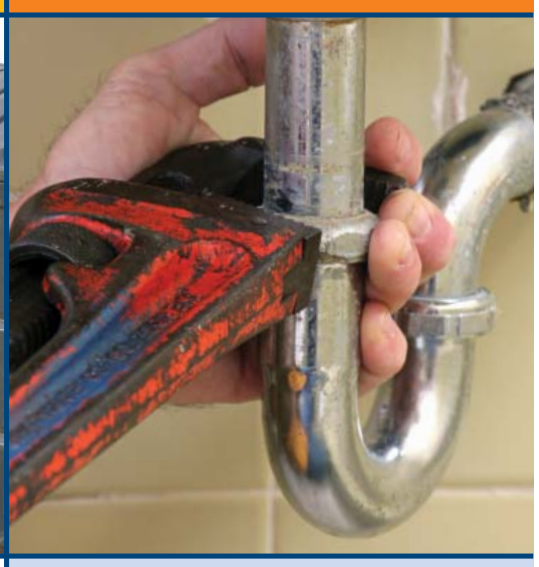

Disconnect or minimize the use of garbage disposals.

Desconecte o reducir al mínimo el uso de las cesiones de basura

"Dry wipe" pots, pans, dishware, and work areas prior to washing.

Con un paño o raspador, limpie todas las ollas, sartenes, platos y áreas de trabajo antes de lavar.

photo courtesy of spill911

Use absorbent products to contain and clean up spills before mopping the floor.

Uso de productos absorbentes para contener y limpiar derrames antes de trapear el piso.

Clean floor mats inside a utility sink. Never wash floor mats outside of building.

Limpieza alfombras utilidad dentro de un fregadero. Nunca lave alfombras fuera del edificio

Inspect and maintain grease traps and interceptors regularly.

Inspeccionar y mantener las trampas de grasa y de interceptores de grasa con regularidad.

CITY OF VISTA
CALIFORNIA

Don't Slow the Flow...
Fight the FOG Clear the Clog

For more information:
City of Vista Engineering Department Fats, Oil & Grease Program
www.cityofvista.com/fightfog • waterquality@cityofvista.com
(760) 726-1340 x1686 600 Eucalyptus Avenue, Vista, CA 92084

CITY OF VISTA
FOG
FATS, OIL & GREASE PROGRAM
Fight the Fog Clear the Clog

APPENDIX G-2

FOG Door Hanger

CITY OF VISTA
CALIFORNIA

Don't Slow the Flow...

Fight the FOG Clear the Clog

HELP!

While performing work in your area, waste water maintenance crews observed a buildup of fats, oils, and grease (FOG) in the city's sewer line. This can lead to sewage backups and overflows to the environment.

Make a change to the drain!

Properly dispose of fats, oils, and grease.

Instead of liquid drain cleaners & plumbers, try following these three easy tips to help us maintain a clean environment.

1) Do not pour fats, oils, and grease down the sink or garbage disposal. Use the trash, not the drain.

2) Scrape and dry wipe pots, pan and dishes before washing.

3) Cool fats, oils, and grease and place them into a container such as an empty glass jar or coffee can. Once the container is full, secure the lid and place it in the trash.

Changing what goes in the drain prevents overflows, preventing possible damage to your home, business, property, the environment and your pocketbook.

The discharge of FOG to the sewer system is a violation of Vista Municipal Code Section 14.12.030 and may result in enforcement actions where necessary.

For more information:
City of Vista Engineering Department
Fats, Oil & Grease Program
www.cityofvista.com/fightfog
waterquality@cityofvista.com
(760) 726-1340 x1686
600 Eucalyptus Avenue, Vista, CA 92084

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CITY OF VISTA
CALIFORNIA

Basta de Grasas!

Ayude!

Mientras se realiza el trabajo en su área, las tripulaciones de mantenimiento de aguas residuales observó una acumulación de aceites y grasas (FOG) en las cañerías. Grasa en las tuberías puede dar lugar a desbordamientos de aguas residuales y las copias de seguridad para el medio ambiente.

Mantenga los tubos de drenaje que fluye!

Eliminar correctamente las grases y aceites. En lugar de líquidos limpiadores de drenaje y fontaneros, intente seguir estos quatro consejos simples para que nos ayuden a mantener un medio ambiente limpio.

1) Nunca vierta grasas y aceites (FOG) por el fregadero o recogida de basuras.

2) Arroje desperdicios de comida a la basura, no al fregadero.

3) Limpie ollas, sartenes y platos con toallas de papel secas antes de enjuagarlos o lavarlos.

4) Enjuague los platos y las ollas con agua fría antes de colocarlos en el lavavajillas. El agua caliente derrite las grasas y los aceites (FOG) de los platos y pasan directamente a las cañerías. Más tarde el agua caliente se enfría y el FOG obstruye la cañerías.

Cuando usted y su cambio de los vecinos qué entra en el dren usted previenen los desbordamientos, previniendo daño posible a su hogar, negocio, la característica, el ambiente y su cuaderno.

La descarga de grasa al sistema de alcantarillado es una violación del Código Municipal de Vista Sección 14.12.030 y puede resultar en la ejecución acciones en caso necesario.

For more information:
City of Vista Engineering Department
Fats, Oil & Grease Program
www.cityofvista.com/fightfog
waterquality@cityofvista.com
(760) 726-1340 x1686
600 Eucalyptus Avenue, Vista, CA 92084

FOG
FATS, OILS, AND GREASE PROGRAM
Fight the Fog Clear the Clog

APPENDIX G-3

FOG Trifold Brochure

FOG: Fats, Oils, and Grease

FOG Facts:

Fats, oil, and grease (FOG) clog the sewer lines. When these byproducts are disposed of improperly, they can cause sewage backups. Sewer systems are not designed or equipped to handle the grease buildup from the fats, oils, and grease. The buildup can cause property damage, environmental problems, and other health hazards.

FOG gets into the sewers mainly from improper disposal. This often occurs in residential areas, as well as commercial food preparation establishments that do not have adequate grease control devices in place, such as grease interceptors.

All too often, FOG is washed into the plumbing system, usually through kitchen sinks and floor drains found in food preparation areas. They stick to the inside of sewer pipes both on your property and in the City's sewer pipes.

Over time, FOG builds up and eventually blocks the entire pipe, causing sewage backups and overflows.

FOG Costs:

To your business: As your sewer pipes back up, the sewage and food particles that accumulate can attract insects and other vermin, cause unpleasant odors, and create health hazards. Property damage can also result from sewage backups and lead to expensive cleanup and plumbing repairs. Health code violations or closures can greatly impact your business. Potential fines can be costly.

To the Environment: Blocked sewers lead to overflows. As sewage overflows onto streets, it enters the storm drain system and is carried to our local creeks and beaches, creating health risks for swimmers and degrading habitat for aquatic lite.

To the City: Increased sewer blockages and overflows lead to costly maintenance and can result in fines from State regulatory agencies.

How to Keep FOG Out of Sewer System

Use less oil; consider using liquid oil
instead of solid grease or lard

Drain screens
should be installed on all drainage pipes in food preparation and kitchen areas

"Dry wipe"
pots, pans, dishware, and work areas prior to washing

All waste cooking oil
should be collected and stored properly in recycling barrels or drums

Disconnect or minimize the use of food grinders
(garbage disposals)

Dispose of food waste directly into the trash

Clean mats inside over a utility sink
Never wash floor mats outside of building

Use absorbent products
to contain and clean up spills before mopping the floor

Inspect and service grease traps and interceptors regularly

Capture the oil accumulated
in ventilation and exhaust hoods for proper disposal

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How do you benefit from the City of Vista FOG Control Program?

All across the U.S. the build-up of fats, oils and grease (FOG) in sewer lines is one of the leading causes of sewer blockages. For this reason, the State of California Water Resources Control Board has mandated that cities address FOG, where it is determined to be problematic.

FOG blockages may cause wastewater to backup into homes and businesses. Where sanitary sewer overflows occur, sewage may enter storm drains and surface waters such as creeks, lagoons, and ultimately the ocean.

Sanitary sewer overflows may pollute surface waters, adversely affecting aquatic life, and may threaten public health. Where the blockage causes a sewer overflow, the city and property owner may face fines for the discharge to the environment.

Many sanitary sewer overflows are preventable with adequate and appropriate facilities, source control measures, and operation and maintenance of the sanitary system. When homes, restaurants, and commercial kitchens follow proper FOG handling procedures, blockages and resulting sanitary sewer overflows are prevented. The FOG program is designed to assist residents and businesses in complying with new FOG regulations and in preventing blockages and sanitary sewer overflow caused by FOG.

FOG – "Fats, Oils and Grease"

One of the leading causes of sewer backups for homes and businesses is FOG. When poured down the drain, soap and hot water do not break down the grease. These "cleaning" products merely carry the oil and grease further down the pipes – then the water cools, oils begin to congeal in the pipes, and with time a wall of grease is created which can obstruct the flow of water in the pipes. Residents are asked to absorb FOG with absorbent waste such as paper towels, kitty litter, coffee grounds, or shredded newspaper before discarding in the trash. Food service establishments are required to store FOG in containers that are picked up by permitted recycling and rendering facilities. These facilities convert the FOG into viable resources such as biodiesel, a renewable fuel made from waste cooking oils and renewable energy crops.

Photo courtesy of Spill 911

Put Fats, Oils & Grease where they belong.

CITY OF VISTA
FOG
FATS, OILS, AND GREASE PROGRAM
Fight the Fog Clear the Clog

For more information City of Vista Engineering Department
Fats, Oils and Grease Program **(760) 726-1340 x1375**
www.cityofvista.com/fightfog • waterquality@cityofvista.com

600 Eucalyptus Avenue, Vista, CA 92084

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APPENDIX G-4

Storm Water Trifold Brochure

Be part of the Solution to Water Pollution.

Every one of us contributes pollution to our creeks, lagoons, and the Pacific Ocean. The wastewater, dirt, and debris of our lives eventually drain downstream. Each of us must minimize our contribution to keep our waterways healthy and enjoyable

You can prevent pollution getting into the storm drain system by:

- Not hosing waste away, instead sweep it up
- Cleaning up any spills immediately and not letting them flow into the storm drain
- Clearing the gutters in front of your home of debris including leaves and grass clippings
- Putting litter in trash bins, which are closed and covered, including cigarette butts
- Picking up all animal droppings
- Disposing of excess paint and chemicals at the Household Hazardous Waste Collection sites
- Washing your car on the grass or in a commercial car wash – this stops detergent, oils and greases getting into the storm drain system
- Keeping your car in good running condition. This stops leaking oil getting into the storm drain system - it only takes one quart of oil to contaminate one million gallons of water

Reporting Pollution

Provide as much descriptive information as you can about the location and type of pollution incident. Thorough information helps locate the problem and the source.

When reporting, if possible, provide:

- Date & time of discovery
- Incident location
- Closest intersection, street address
- Description of the problem - include the odor, color and direction of the pollutant
- Suspected violator (if known)
- Your contact information - although not required, this data allows the agency handling the incident to gather additional information if needed, and provide you with the opportunity to receive an incident update once available.

CITY OF VISTA
CALIFORNIA

Water Quality Protection Program
waterquality@cityofvista.com
600 Eucalyptus Avenue
Vista, CA 92084
(760) 639-6111

Reporting Hotline
(760) 726-1340 x1686

Do More. Don't Ignore.

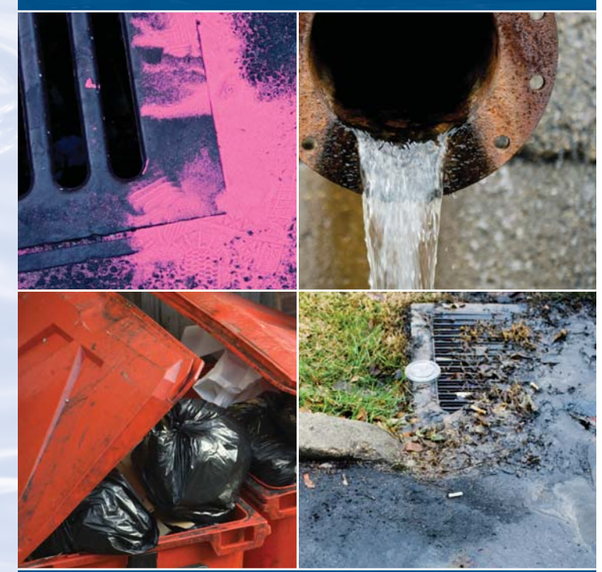

A Citizens Guide to

Reporting Stormwater, Sewer and Street Drain Incidents

CITY OF VISTA

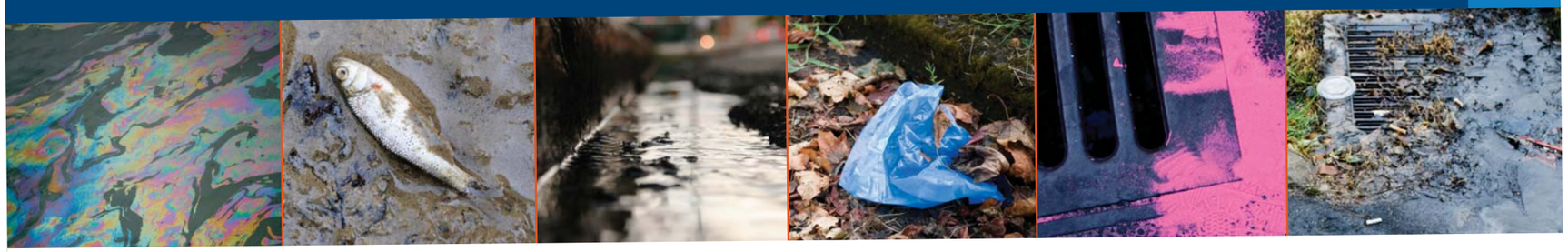

Identify and Report

As a resident of the City of Vista, you can help protect your water quality by reporting to the appropriate agency any activity which may be causing water pollution.

Storm Drain System Urban Runoff

Unlike water that flows down household drains and into the sewer system, the water flowing into the storm drain system is not filtered or treated for pollution.

Urban runoff refers to rain that falls and carries pollutants along the streets and into the storm drain system. Any discharge into these systems, other than stormwater, is considered "illicit".

In the City of Vista, reports of an illicit discharge and surface water pollution are handled by the Water Quality Protection Program (WQPP). When pollution is reported, a field inspector will respond, investigate and require clean up of the incident.

If you witness something suspect running into the storm drain system or see any type of suspect connection, please report it to the hotline.

CITY OF VISTA
Water Quality Protection Program

The City of Vista
Water Quality Protection Program
Reporting Hotline (760) 726-1340 x 1686

Do More. Don't Ignore.

Examples of pollutants to report include:

- Leaking automobiles
- Concrete dumped on the street
- Paint poured down a drain
- Discarding yard waste in the storm drain system
- Coarse sediments, oil, grease, litter and debris in street gutters, and storm drains.

To report Storm Drain pollution
Call the Storm Water Hotline
(760) 726-1340 x 1686

Sewer System Spills

A sewage system spill occurs when the wastewater being transported by underground pipes overflows through a manhole, clean out or broken pipe. Sewage spills can cause health hazards, damage to homes and businesses, and threaten the environment, local waterways, and the beaches. Sewage spills can be a very obvious gushing of water from a manhole, or a slow leak that may take time to be noticed. Don't dismiss unaccounted for wet areas.

Look for:

- Drain backups inside a building
- Wet ground and water leaking around manhole lids onto your street
- Leaking water from cleanouts or outside drains
- Unusual odorous wet areas: sidewalks, external walls, ground / landscape around a building

Keep people and pets away from the affected area. Untreated sewage has high levels of disease-causing viruses and bacteria.

Any sewer spill in the City of Vista is one too many. Call the Public Works Department to report a sewer spill.

To report a Sewage Spill
Call the City of Vista
Public Works Department
(760) 726-6328
After hours reporting Call (858) 756-3006

Street Drain Problems

You can report street drain problems, including clogged storm drains and faded or missing storm drain stencils.

To report Street Drain Problems
Call Public Works
(760) 639-6176

Water System- Leaks and Line Break

If you notice a leak in the Water system (Vista Irrigation District System) report the issue immediately—24 hours a day. Do not wait until business hours to call as this delays repairs to the system, wastes water, and can potentially decrease water supply in your area.

To report a Water System Leak
Call the Vista Irrigation District
(760) 597-3100

If you notice a leak in your private system, you should contact a plumber or landscaper for assistance.

APPENDIX G-5

Watershed Survey 2009

Watershed Survey City of Vista

For each of the questions below, please doubleclick inside the box next to the answer you feel is correct, to check that box. Your answers won't be shared with anyone else and will help us develop a watershed curriculum for our community! Thank you for participating in our survey process!

1. A watershed is…?

- ☐ An area that retains water, like a swamp
- ☐ Area of land that drains into a specific waterbody
- ☐ A small building used to store water
- ☐ Don't know/Not sure

2. Where does stormwater (rain water) go after it enters a storm drain or roadside ditch?

- ☐ Directly to lakes and streams with out treatment
- ☐ To lakes and streams after some treatment
- ☐ To a sewage treatment plant
- ☐ Don't know/Not sure

3. Where does the excess sediment (dirt) in our waterbodies come from?

- ☐ Construction sites
- ☐ Eroding hillsides
- ☐ Home improvement projects
- ☐ Agricultural activities
- ☐ Yards and gardens
- ☐ All of the above
- ☐ Don't know/Not sure

4. How do you wash your car?

- ☐ Take it to a car wash
- ☐ On the yard/lawn
- ☐ In the driveway
- ☐ Other:_____
- ☐ Don't have a car

5. Where do you drain the water from your pool, spa, or fountain?

- ☐ To landscaped areas (yards, lawn, etc)
- ☐ To the street
- ☐ To the sewer (via cleanout)
- ☐ Other:_____
- ☐ Don't have a pool/spa/fountain

6. Which of the following can pollute our creeks, lagoons, etc.?

- ☐ Fertilizers, pesticides, and insecticides
- ☐ Automobile fluids (oils, anti-freeze, etc.)
- ☐ Home repair materials (paint, cement, etc.)
- ☐ Pet and human waste
- ☐ Soap from car washing
- ☐ Hazardous chemicals (like pool chlorine, etc.)
- ☐ Soil erosion from construction
- ☐ Leaves and grass clippings from yards
- ☐ Don't know/Not sure
- ☐ All of the above

7. How does dog waste left on the ground impact our health and environment? *(check all that apply)*

- ☐ Disease causing organisms found in dog waste are washed into the streets and storm drains and out into our waterbodies where we swim and fish
- ☐ Excess nutrients found in dog waste are washed into creeks and lagoons can cause algae blooms, cloudy water, and kill fish
- ☐ Dog waste on the ground has no impact on us or the environment
- ☐ Don't know/Not sure

8. What do you do with your grass clippings, leaves, and other yard waste?

- ☐ Leave them on the lawn/Mulch the lawn
- ☐ Compost them in our yard
- ☐ Put them in the yard waste recycle bin
- ☐ Sweep out into the street
- ☐ Don't have a yard

9. Watersheds within the City of Vista include?

- ☐ Agua Hedionda
- ☐ San Luis Rey
- ☐ Buena Vista
- ☐ Loma Alta
- ☐ All of the above
- ☐ None of the above

10. Where do you dispose of household hazardous wastes (like paint, motor oil, batteries, pesticides)?

- ☐ With the regular trash
- ☐ At a collection facility

☐ Down a storm drain or roadside ditch
☐ Other: _____

Do you know the City of Vista – Stormwater Hotline number? It is **760-726-1340 x1686**

APPENDIX G-6

Aqua Hedionda Watershed Trifold Brochure

What will the happen to the Agua Hedionda watershed?

Increased urban development and loss of open space in the Agua Hedionda watershed will lead to increased flooding, soil erosion and pollution in our waterways.

A watershed management plan has been developed that shows us how we can specifically protect and restore the structure and function of the Agua Hedionda watershed. The plan identifies what actions will be most effective and where to apply them.

Acquiring open space, restoring streams, riparian buffers and wetlands, managing the flow of storm water, and enlisting citizens to reduce pollution can lead to a healthy functioning watershed that supports more wildlife and provides greater recreational opportunities.

Help protect our watershed.
It doesn't take much to make a difference!

The Agua Hedionda watershed we live in is changing!

The 2030 Regional Growth Forecast indicates nearly all current agricultural land is planned for development; while, open space will be reduced 33% from 2007 levels to make room for more residents.

Parking lots, rooftops and buildings increase storm runoff and the risk of floods causing property damage and soil erosion that degrades our streams, pollutes our waterways and chokes aquatic life.

Storm drains go directly to the ocean – untreated, urban runoff contains pollutants such as oil, grease, pet waste, pesticides, trash, toxins and even human pathogens that can cause illnesses.

You can be part of the solution.

Working Together

The Agua Hedionda Watershed Management Plan was developed by local jurisdictions, conservationists, and other stake holders working together to maintain and restore our watershed. To assist plan adoption & implementation, call 760-726-1340 x 1373 or go to: www. carlsbadwatershednetwork.org/ahwmp.html.

Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation of for use. (Gov. Code 7550, 40 CFR 31.20) A cooperative effort of the City of Vista, Tthe Carlsbad Watershed Network, Preserve Calavera, and other stake holders.

By making small changes we can:

Small chang

Aqua Hedionda Watershed

Enhance Public Health

Reclaim Natural Beauty

Reduce Pollution

Improve Wildlife Health

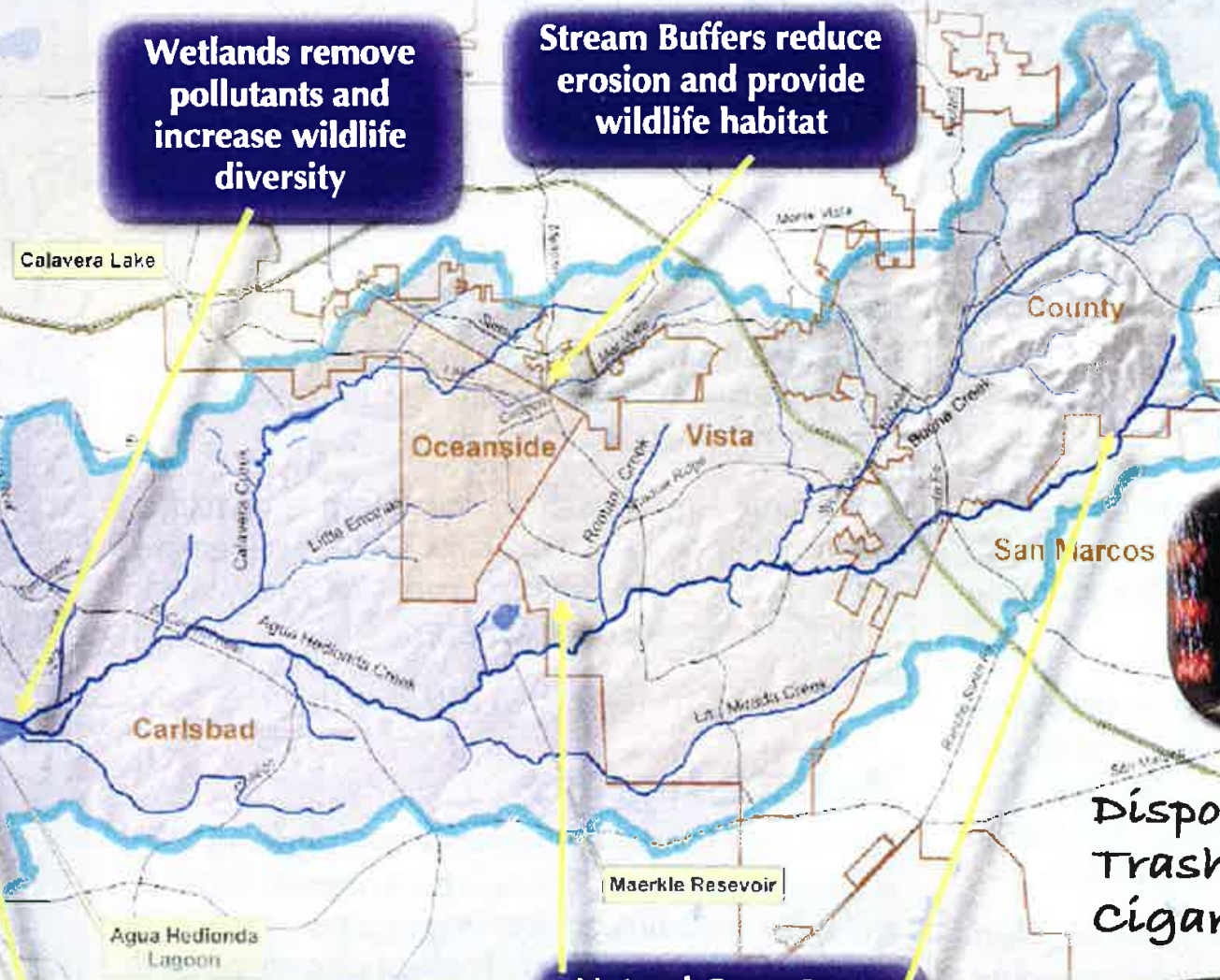

Dispo
Trash
Cigar

Photos: Courtesy of William Kloetzer and Isabelle Kay

...the cumulative impact will help restore the natural function and beauty of our creeks, streams, and lagoons an

APPENDIX H

Inside Vista
Summer 2008

VISTA CALIFORNIA

summer 2008

Inside VISTA

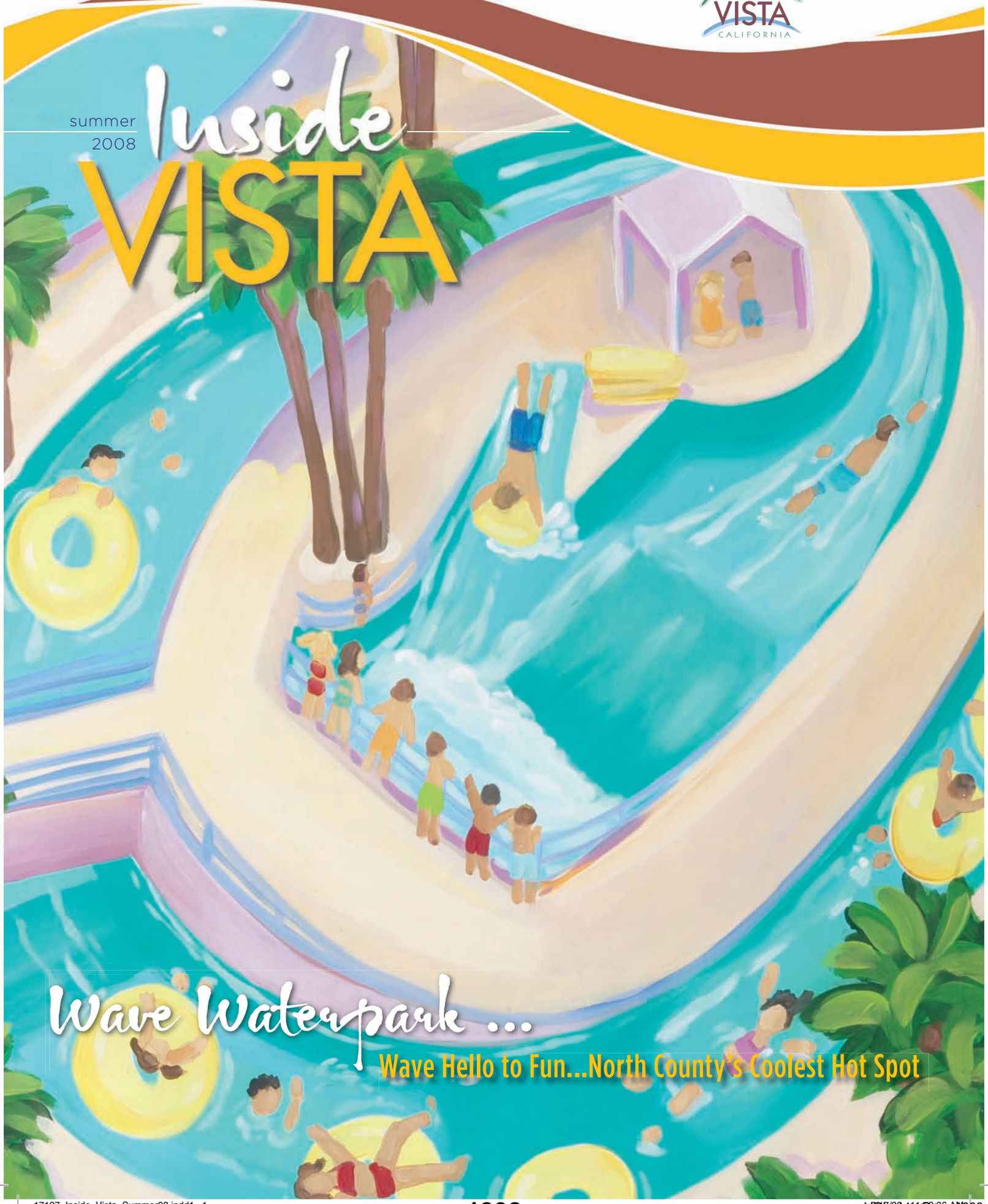

Wave Waterpark ...

Wave Hello to Fun...North County's Coolest Hot Spot

Inside VISTA
A publication of the City of Vista

Vista City Council
Mayor: Morris B. Vance
Mayor Pro Tem: Frank Lopez
Council Members:
Bob Campbell
Steve Gronke
Judy Ritter
City Manager: Rita L. Geldert
Asst. City Manager: Patrick Johnson

Vista City Council Meetings
Second and Fourth Tuesday at 5:30 pm

Council Chambers,
600 Eucalyptus Avenue

Meetings are cablecast on the Friday after each meeting at 5 pm on Cox Communications (Channel 19) and Time Warner Cable (Channel 24). Webcast archives are also available online at www.cityofvista.com.

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Cover art created by: Susan Daniels

Para recibir un resumen de este boletín en español, por favor llame al (760) 726-1340.

VISTA CALIFORNIA

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Check out North County's coolest hot spot for the summer season.

4 Redevelopment Plan Amendment
Utilizing redevelopment resources to improve more areas of the city.

5 Community Projects Update
Construction begins on several community projects.

6 Local Artist Street Paints in China
Vista resident Lori Escalera travels to China to create art.

7 Healthy Garden, Healthy Home

Moonlight Cultural Foundation Capital Campaign

The new Moonlight Amphitheatre Stage House would be incomplete without state of the art sound and lighting equipment. The Moonlight Cultural Foundation is proud to work with the community on a capital campaign to raise $675,000 to pay for new equipment.

To be a part of this exciting project, contact Diana Slaughter Aaron at (760) 630-7650 or e-mail diana@moonlightfoundation.com.

Catch the Wave at North County's Coolest Hot Spot

Owned and operated by the City of Vista, the Wave Waterpark is North County's coolest hot spot with over 100,000 visitors annually. The nationally recognized Waterpark provides the perfect fun during the dog days of summer. Located in Vista Village, the waterpark offers first-class aquatic fun for the whole family. Water park enthusiasts will enjoy the popular Flow Rider (surf on simulated waves); competition pool with both shallow and deep ends; and the El Rio Loco where fun seekers can swim or tube through the "crazy river". In addition, children ages 12 years and under can have fun at the playground attraction which features Rippity's Rainforest. Rippity's allows the young visitors to climb through four stories of slides, nets and tunnels. Other water park activities include tube and body slides off of a 35-foot tower - Salsa Twist, Tubulation, Slam Dunk, and the Flash Flood and Riptide.

www.thewavewaterpark.com • (760) 940-WAVE (9283)

The Wave website – www.thewavewaterpark.com - has information on all of the fun activities listed below, plus much more.

Movies: Join your neighbors for the Wave's Splash Sunday Dive-In movie events. On select Sunday nights, bring the family, float in the large pool area, and watch the movie on a gigantic screen (upcoming movies: Daddy Day Care; Happy Feet; and Finding Nemo).

Swim Lessons: Are open for six months to adult ages.

Camps: Sign up for a week full of education and fun! Camp themes include: Superheroes (Water Safety/Rescue); Movie Stars (First Aid); Pirates (CPR Skills); Boot Camp (Move it! Splash it! Build it!).

Exercise: Enjoy aqua aerobics or lap swim in the heated recreation/competition pool from 6 – 8 a.m. on Monday, Wednesday, and Friday mornings.

Learn: Community CPR and first aid classes are offered every month.

The Wave Waterpark is open through Labor Day. Visit the Wave Waterpark web site to learn more about classes, operating days and hours and the fee schedule. The Waterpark is located at 101 Wave Drive in Vista.

Moonlight's Summer Season Ends, New Construction Begins

Following the success of Moonlight Stage Productions' Musical Season opener, Guys and Dolls, the Summer Season of Musicals continues with Andrew Lloyd Webber/Tim Rice's celebration of story-telling, Joseph and the Amazing Technicolor Dreamcoat, directed by Carlos Mendoza, and starring James Royce Edwards in the leading role. Director Steven Glaudini is in the midst of rehearsals for the Southern California Regional Musical Theatre Premiere of Les Miserables, opening August 20th on the Moonlight Amphitheatre stage. Moonlight's production of this global sensation stars Kevin Earley, who played the student leader Enjolras on Broadway and in National Tours. His counterpart Javert will be played by Sean Smith, who was celebrated for playing starring roles in Moonlight's musical productions of Phantom and Chess.

This summer season marks the last on the Moonlight's current stage, as the city's Moonlight stage house renovation project is set to start construction at the end of this season. The new stage house will feature a fly loft with electronic rigging for scenery and curtains, a lighting and audio canopy over the front portion of the stage, an orchestra pit, a rehearsal room and other backstage support facilities. Various site and accessibility improvements will also be made around and within the Amphitheatre. When completed in time to open the 2009 Summer Season, the new stage house and related improvements will not only enhance the overall experience of Moonlight Stage Productions' audiences, but will also provide opportunities for increased programming, rentals, and usage of the Amphitheatre throughout the year. Exciting potential usage of the Moonlight will include expanded programming for children and family-themed events, concerts, touring productions, art shows, exhibitions, festivals and community fund-raising events.

The Moonlight staff would love to know what kinds of cultural arts programming the community would be interested in seeing in the Amphitheatre. **Please visit www.moonlightstage.com and take the online survey to provide your opinion on future programming in the Amphitheatre.**

Benefits of the Redevelopment Plan Amendment

With the anticipated adoption of the proposed redevelopment plan amendment this summer, the Community Development Commission will be able to utilize redevelopment resources to improve more areas of the city that are in need. The amendment proposes to expand the current redevelopment project area by 1,707 acres.

Redevelopment funds can only be used in the redevelopment project area, which is the reason for adding residential neighborhoods in need of infrastructure improvements. Expanding the project area along the city's major commercial corridors, such as Santa Fe Avenue, will foster new development in areas that are currently too narrow or do not have funds appropriated for new projects.

This past spring, the City Council confirmed the Project Area Committee, or "PAC," for Vista's redevelopment project area. The PAC serves as an advisory body to the City Council and Community Development Commission on redevelopment matters, including the plan amendment. PAC members represent the following community stakeholder groups: resident owner-occupants, tenant occupants, businesses, and community organizations. PAC meetings take place twice a month, on the first and third Mondays at 5:30pm in Council Chambers located at Vista's City Hall, 600 Eucalyptus Avenue. PAC meetings are open to the public.

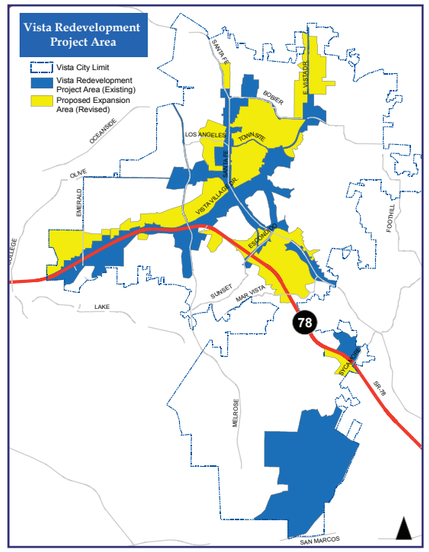

If you have any questions about the redevelopment plan amendment, please call the Redevelopment & Housing Department at (760) 639-6191. Staff would be happy to speak or meet with you. Information is also available on the City of Vista's web site at www.cityofvista.com, under the Redevelopment & Housing section.

The Vista Redevelopment Plan Amendment ...

... Will allow the Community Development Commission (CDC) to spend money to improve infrastructure like streets, sidewalks, lighting, storm drains, parks, etc.

... Will allocate more money to support our schools.

... Will allow the CDC to add community amenities like new restaurants, shops, and housing.

... Will create more jobs.

... Will keep more of your property tax dollars here locally, to be invested back into your community.

... Will raise property values.

... Will promote the creation of new affordable housing.

... Will allow the CDC to expand its revitalization efforts to make the City of Vista an even better place for all.

AND

... Will not allow the CDC to acquire your residentially zoned house through the use of eminent domain.

... Will not change zoning.

... Will not take money from public safety or other public services.

Construction Begins on Several Community Projects

The City of Vista broke ground earlier this year on its two new fire stations. The stations are the fifth and sixth fire facilities to be built in the City of Vista. The South Melrose Fire Station (No. 5), located at S. Melrose Drive and Green Oak Road will serve the community in south Vista, and the Wildwood Fire Station (No. 6), located on E. Vista Way near Escondido Avenue will serve the community in central and north Vista.

South Melrose Fire Station (No. 5)

"The two new stations will allow the Fire Department to better serve Vista residents and businesses," said Fire Chief Gary Fisher. "We are excited about the new locations and the opportunities they offer. Once these two new stations are occupied, Vista will have comprehensive fire protection coverage, which will help to reduce our response times and ultimately save lives and property."

The buildings will utilize many energy-saving techniques throughout and the city expects both stations will earn certification from the Leadership in Energy and Environmental Design Green Building Rating System (LEED). LEED is the nationally accepted benchmark for the design, construction and operation of high performance green buildings.

Wildwood Fire Station (No. 6)

The design of the facilities was led by Jeff Katz Architecture. The builder is Erickson-Hall Construction Company. Costs for construction are $12.2 million for both buildings. Construction of both stations is occurring concurrently and the projected completion date for both stations is spring, 2009.

Funding for the new facilities was made possible through increased revenue provided by Proposition L, a half-cent sales tax increase approved by Vista voters in November, 2006. In addition to the fire station construction project, other community projects supported by the voters include the seismic retrofit and renovation of Fire Station No. 1, construction of the new civic center, a new sports park and the renovation of the stage house for the Moonlight Amphitheatre (see related article on page 3). Information on each project is available at www.cityofvista.com under "Community Projects".

CITY SOARS WITH NEW SCULPTURE EXHIBIT

Robert Rochin's The Big Blue Kite sculpture is part of the new Kites Over Vista sculpture exhibit presently on display in downtown Vista.

Other kite sculptures on display include: Melissa Ralston's Tail Spin; Christie Beniston's Kinetic Box Kite; Lori Escalera and Christy Berberet's L'onda di Tessera; Robert Maya's Family Flying Fun; Buddy Smith's Which Direction?; Josh Bowman's Joy Figure; and Charles Bronson's, Sea Breeze.

To download a Vista Art & Sculpture Walking Tour map, go to **www.cityofvista.com.**

Get Involved: Register for Citizens' Academy

Sign up for the Vista Citizens' Leadership Academy and discover how the City of Vista functions. Meet with the City Council, City Manager and department directors; tour city facilities; learn how decisions are made; and discuss issues such as traffic concerns, public safety, development and more.

The fall program begins September 25 and sessions are held each Thursday evening for eight consecutive weeks (5 p.m. to 8 p.m.). **To learn more, go to www.cityofvista.com or call (760) 726-1340 ext. 1419. Space is limited, register early!**

17197_Inside_Vista_Summer08.indd4-5 4-5

VOL. 111 Page 1840

Lori Escalera sits with a fan. The artwork depicts a beloved classic novel to China which is still very popular

Local Artist Paints in China

Vista resident Lori Escalera coordinated a group of San Diegan chalk art street painting artists who traveled in early May to Xi'an, China to create chalk drawings at a street painting festival held in honor of the 2008 Summer Olympics. Aerosol artist Jason Hailey, a North County native who recently relocated to San Francisco, was also part of the artistic team. The selected artists all originated from the San Diego area and collectively created ten artworks.

Urban street painting is an ancient art and was initially used to convey messages of business or political nature on walls throughout the Mediterranean area. Chalking art (Madonnari) dates back to the 1600's as a type of performance art, initially used as a means for artists to make money in Italy. Today, large temporary artworks are created in a short period of time (days) and street painting is experienced by the public as "process" art.

Lori Escalera began chalk painting in 1994 and has been averaging five to six street paintings per year. Escalera has extensive experience working with youth at risk and anti graffiti artwork protection. In addition, she painted the 44 foot mural, Vista View North, on the corner of North Santa Fe Avenue and Vista Village Drive and collaborated with artist Christy Berberet to create the L'onda di Tessera new kite sculpture in front of the Wave Waterpark.

Jason Hailey began his career by creating aerosol art on several city owned properties in Vista. In 2006, he painted a soccer-themed mural on a building owned by the City of Vista in Luz Duran Park. More recently, he completed a railroad-themed mural on the concrete barrier near the SPRINTER tracks in central Vista. In addition, he painted a 50-foot mural in the San Diego Children's Museum.

Ms. Escalera is available to present information about her trip, the artwork, and the culture to interested groups. She can be reached at (760) 295-4665.

What Will Future Development in Vista Look Like?

Where will new housing be built and at what density? What new or additional commercial uses do we need and where are they best located? These and other land-use related issues will be topics of discussion at upcoming public meetings hosted by the City's Community Development Department.

As work continues on the general plan update, this meeting will be focused on land use planning for the next 20 years. We invite you to come and participate in this very important discussion. For additional information and public meeting dates, please visit the Vista2030 web site at www.cityofvista.com or call (760) 643-2891.

New Signs Slated for City Streets

New street signs are starting to pop up all over the City of Vista as part of a new federal standard intended to assist safety personnel in locating streets and to accommodate people who are visually impaired. The City's Public Works Department recently initiated the first phase of its five-year street sign replacement program. As old or damaged street signs are scheduled for replacement, or when a new street opens, the new signs will be installed. The updated signs will use enhanced reflective sheeting and will incorporate white lettering on a blue background. In addition, the letter size will increase by two inches. Public street signs will incorporate the city seal into its design, while private street signs will not display the city seal. Overhead signs located on traffic signal poles will also be scheduled for sign replacement.

Back-To-School Safety Fair for Parents and Students

Prepare for the upcoming school year at the Back-to-School Safety Fair. The event takes place on August 9 from 10 a.m. to 2 p.m. at Longs Drug parking lot, located at 635 S. Melrose Drive in Vista.

Learn more about child safety, crime prevention, water safety, bullying prevention, Internet safety, bicycle safety, and more. Child ID finger-printing services will be available. Giveaways, prizes, and refreshments available!

Healthy Garden, Healthy Home

Did you know that common garden and yard chemicals, used incorrectly, can pollute local creeks, lagoons and the Pacific Ocean? Overwatering and rainy weather can wash these chemicals into the storm drains. Once in the storm drain system, these products can end up in the creeks and lagoons harming fish and wildlife. It is possible to grow a vibrant garden, and have a green lawn by using less-toxic pesticides and organic pest control methods. In addition, the creation of healthy soil, planting native plants for Vista, and following good irrigation practices help create a safer place for you, your family, and our environment.

GREEN GARDEN TIPS:

Create healthy soil - By adding compost, you can create soil with the proper levels of organic matter and nutrients to grow strong healthy plants that can resist disease and insect attacks without pesticides.

More is not better - If you must use commercial pesticides, always follow the directions for proper use.

Properly dispose of unwanted garden chemicals -Never pour any garden or yard chemical into street drains, your household inside drain or into the garbage. Vista residents can drop off household hazardous waste (including garden and lawn chemicals) for free on Saturdays from 9 a.m. to 3 p.m. at the city collection facility located at 1145 E. Taylor Street.

Add native plants to your landscape - Native plants are adapted to this region, and tend to grow well with little water, fertilization, and pesticides. Most nurseries in the area carry native plants. Some common and attractive natives include wild strawberry, California holly, coast live oak, California sycamore, western redbud, monkey flower, and numerous varieties of sage.

Use environmentally friendly pesticide products - With just a bit of research, you can find safer, "green" insecticide products. Look for pesticides made from essential oils, mint, or citrus.

Be water wise - Test irrigation systems for leaks, breaks, and misaligned sprinkler heads to ensure that irrigation systems operate at peak efficiency. This simple task can save homeowners up to 20 gallons a day per sprinkler head. According to the San Diego County Water Authority, reducing each irrigation cycle for lawn or landscape by one to three minutes from the normal summer schedule can save 15-25 gallons for each minute; or, eliminate one irrigation cycle per week and save up to 250 gallons per cycle.

When you put into action some of the information provided on chemical-free and less-toxic alternatives for the home and garden, you reduce the amount of toxic pollutants discharged to the city storm drain system.

Thank you for doing your part to create a safer environment.

For more information, please visit the Healthy Garden, Healthy Home web page at www.projectcleanwater.org or email stormwater@cityofvista.com.

Vanpool...

Your Passport to Freedom

Vanpooling is a comfortable, cost-effective, and convenient way for groups of people to share the ride. RideLink can get you started by providing a list of people to vanpool with. The San Diego Association of Governments (SANDAG) provides up to $400 per month for each qualified vanpool. That's money back in your pocket and cars off the road.

With more than 500 vans on the road in San Diego County each year - there's room for you to join one or create your own. Contact RideLink by dialing 511 or take a voyage over to www.RideLink.org and learn how you can have your very own passport to freedom ... from traffic and from high commute costs!

Adopt-A-Unit

The City of Vista has adopted Marine Squadron 369, based out of Camp Pendleton in support and appreciation for the military families in the community. To learn more, go to www.cityofvista.com or call (760) 639-6131.

VISTANS ROC!

Vistans ROC!
(Revitalizing Our Community)
is the City's annual neighborhood revitalization program. The program teams up volunteers with homeowners to paint, landscape, and clean-up homes in specific neighborhoods. This year's event is slated for Saturday, October 4. For more information, go to www.cityofvista.com.

Appendix H

City Telephone Directory

Phone numbers are 760 area code, unless otherwise noted.

Dial 9-1-1 for fire, sheriff and medical emergencies.

Avo Playhouse Tickets	724-2110
Brengle Terrace Park Recreation Center	639-6156
Building	639-6105
Building Inspections	639-6106
Business License	639-6174
Chamber of Commerce	726-1122
City Attorney	639-6119
City Clerk	639-6125
City Council	639-6130
City Hall	726-1340
City Manager	639-6131
Code Enforcement	639-6141
Communications	643-2708
Development Services	639-6108
Economic Development	639-6165
Engineering	639-6111
Engineering Inspections	639-6113
Finance	639-6170
Fire Department (Non-Emergency)	643-2801
Fire Prevention Bureau	639-6140
Gloria E. McClellan Senior Center	639-6160
Graffiti Hotline	726-1340, x1611
Household Hazardous Waste	(800) 444-4244
Housing	639-6191
Human Resources	639-6145
Humane Society	757-4357
Job Hotline	639-6147
Library	643-5100
Mayor	639-6130
Moonlight Amphitheatre	639-6199
Moonlight Amphitheatre Tickets	724-2110
Parks and Community Services	639-6151
Parking Tickets	639-6141
Planning	639-6100
Public Works	639-6176
Rancho Buena Vista Adobe	639-6164
Recreation	639-6150
Redevelopment	639-6191
Senior Center	639-6160
Sheriff (Non-Emergency)	940-4551
Traffic Engineering	639-6116
Traffic Information	511
Vistix Office	724-2110
Wave Waterpark	940-9283

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CITY OF VISTA

2008-09 JURMP Annual Report

Illicit Discharge Detection and Elimination Component

December 2009

Prepared by:
City of Vista
Water Quality Protection Program

City of Vista

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita L. Geldert
City Manager
City of Vista

December 4, 2009
Date

Lawrence D. Pierce
Director of Engineering
City of Vista

12/4/09
Date

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7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

7.1 INTRODUCTION

In accordance with Addendum No. 2 to Order No. R9-2007-0001, the City of Vista is submitting Section 7.0 as one report separate from the JURMP Annual Report, submitted in September 2009.

This report includes sections covering:

- Public Reporting of Illicit Discharges and Connections for FY 08-09,
- Spill Reporting, Response, and Prevention for FY 08-09,
- Urban Runoff Monitoring including the Dry Weather Monitoring Program for 2009, the MS4 Outfall Monitoring Program for FY 08-09, and the Source ID Monitoring Program for FY 08-09,
- Follow-up and Enforcement Activities for FY 08-09, including complaint responses and dry weather follow-up actions,
- Effectiveness Assessment of the components of the IDDE Program,
- Review and Modifications to the IDDE Program.
- Notable activities conducted to manage illicit discharges and connections.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP document. Annual Reporting requirements for the Illicit Discharge Detection and Elimination Component are listed in section J of the Permit. As indicated in Table 7.1, the City of Vista successfully met all reporting requirements for the Illicit Discharge Detection and Elimination component of this JURMP Annual Report.

Table 7.1 JURMP Annual Report Compliance

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.	1, 3	Confirmation Inspection	Updated map provided	Appendix F-3

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
2	Reporting of all dry weather field screening and analytical monitoring results. The data should be presented in tabular and graphical form. The reporting shall include station locations, all dry weather field screening and analytical monitoring results, identification of sites where results exceeded action levels, follow-up and elimination activities for potential illicit discharges and connections, the rationale for why follow-up investigations were not conducted at sites where action levels were exceeded, any Copermittee or consultant program recommendations/changes resulting from the monitoring, and documentation that these recommendations/changes have been implemented. Dry weather field screening and analytical monitoring reporting shall comply with all monitoring and standard reporting requirements in Attachment B of Order No. R9-2007-0001 and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001.	1, 3, 4	Confirmation Inspection Monitoring Quantification	Confirmed in Text and Appendix	Section 7.4.1, 7.4.2, 7.5.2 and Appendix F-4
3	Any dry weather field screening and analytical monitoring consultant reports generated, to be provided as an attachment to the annual report.	1	Confirmation Reporting	Confirmed	Appendix F-4
4	A brief description of any other investigations and follow-up activities for illicit discharges and connections.	1	Confirmation	191 other confirmed complaints	Sections 7.2, 7.5.1 and Table 7-9
5	The number and brief description of illicit discharges and connections identified.	1	Confirmation Tabulation	191	Section 7.5.1 and Table 7-9
6	The number of illicit discharges and connections eliminated.	1, 4	Confirmation Tabulation	191	Section 7.5.1 and Table 7-9
7	Identification and description of all spills to the MS4 and response to the spills.	1	Confirmation Tabulation	9	Section 7.3.1 and Appendix F-2
8	A description of activities implemented to prevent sewage and other spills from entering the MS4.	1	Confirmation	Confirmed	Section 7.3.2
9	A description of the mechanism whereby notification of sewage spills from private laterals and septic systems is received.	1	Confirmation	Confirmed	Section 7.3.3
10	Number of times the hotline was called, as compared to previous reporting periods, and a summary of the calls.	1	Tabulation	FY 06-07 – 14 FY 07-08 – 14 FY 08-09 - 8	Section 7.2, Table 7-2, and Appendix F-1
11	A description of efforts to publicize and facilitate public reporting of illicit discharges.	1, 2	Confirmation	Confirmed	Section 7.2

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
12	The number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation Tabulation	191 violations and 191 enforcement actions	Section 7.5.1 and Table 7-9
13	A description of notable activities conducted to manage illicit discharges and connections.	1	Confirmation	Confirmed	Section 7.6

7.2 PUBLIC REPORTING OF ILLICIT DISCHARGES AND CONNECTIONS

This section describes the City's efforts to publicize and facilitate public reporting of illicit discharges (Permit section J.3.a.(3)(f)xi), including a public hotline. It also includes the number of times the hotline was called, as compared to previous reporting periods, and a summary of the calls (Permit section J.3.a.(3)(f)x).

The City's local stormwater hotline(s), (760) 726-1340 ext 1686 and 1698, accept(s) information from callers in English and Spanish, respectively. The hotline is operated by the City of Vista's Stormwater Division (Engineering Department). The City includes the stormwater hotline number on its website and printed materials including stormwater brochures and the City newsletter.

During the reporting period, the City received eight stormwater reports through the hotline. A summary of the hotline calls is included in Appendix F-1. Table 7.2 shows the number of hotline calls the City received during the past three fiscal years.

Table 7.2 Hotline Calls (2007-2009)

	FY 06-07	FY 07-08	FY 08-09
Number of Hotline Calls	14	14	8

In addition to the hotline reports, the City's Stormwater division received 213 stormwater complaints involving illicit discharges, connections, and private lateral sewer overflows during the reporting period. These made up the majority or 79% of all complaints (FY 08-09 total complaints= 270 and includes BMP violations also). These complaints were reported by the general public and City field personnel. It is not uncommon for the general public to report stormwater complaints through City phone lines other than the hotline. City departmental phone numbers are listed on the City's Newsletter (Inside Vista) and website and included in various stormwater educational brochures. City staff often observe stormwater incidents in the field and report them to the Stormwater division. Complaint cases generated in this fashion are termed proactive. Of the 191 confirmed cases, 121 were proactive (63%). Through the City's Municipal Stormwater training program, City personnel are directed to report stormwater incidents observed in the field or reported from residents to the Stormwater division.

A new email address was created this year to facilitate communication between the public and the City's Water Quality Protection Program; the new email address is waterquality@cityofvista.com.

The City held seven community events that provided opportunities for the City to educate the City's English and Hispanic communities regarding best management practices. Stormwater brochures, which include instructions for reporting illegal discharges, were provided to the public at events. At some event booths, presentations using the Enviroscape watershed model were conducted that further emphasized the importance of reporting illegal discharges to the City.

The City conducted 67 classroom presentations (1,541 students) at eight elementary schools in which students and instructors engaged in positive discussions about the environment and pollution prevention. Students were provided with stormwater brochures and giveaway items and were encouraged to share what they learned with their parents including the importance of reporting spills to the City. Through these educational efforts at schools, it is the intent that parents will also become educated about pollution prevention. Additionally, through complaint investigations and annual commercial and industrial inspections, City staff encouraged residents and business owners to report illegal discharges and illicit connections to the City.

7.3 SPILL REPORTING, RESPONSE, AND PREVENTION

This section describes the City's efforts to prevent and respond to sewage and other spills into its MS4 from any source (including private laterals and failing septic systems). This section includes the following:

- Identification and description of all spills to the MS4 and response to the spills (Permit section J.3.a.(3)(f)vii).
- A description of activities implemented to prevent sewage and other spills from entering the MS4 (Permit section J.3.a.(3)(f)viii).
- A description of the mechanism whereby notification of sewage spills from private laterals and septic systems was received (Permit section J.3.a.(3)(f)ix).

7.3.1 Spill Response and Reporting

During the reporting period, the City responded to ten private lateral sewer spill and four public sewer system overflows reports. Appendix F-2 includes a summary of sanitary sewer system overflow incidents that occurred during fiscal year 2008-09. Of the ten private sewer spills, three were contained resulting in no discharges to the City's stormwater conveyance system. Similarly, of the four public sewer overflows, two were contained resulting in no discharges to the conveyance system. In responding to spills, the City follows the procedures included in the City's Sanitary Sewer Overflow Prevention & Response Plan (SSORP). All spills are reported online through California Integrated Water Quality System Project (CIWQS).

During the reporting period, the City followed its SSORP in responding to all reported City sewer overflows and private lateral spills. This Plan details all the procedures that are implemented during any type of sanitary sewer overflow. The procedures include: (1) evaluating the situation and determining what resources are needed to remedy it, (2) taking digital pictures of sewer overflow emergencies to determine the spill amount for reporting and documentation, (3) taking steps to protect the health and safety of the public, and (4) commencing steps to mitigate the

overflow. The City Public Services Department is responsible for responding to and abating public sewer discharges. Since most residents and businesses do not have the equipment to abate a private lateral spill, private lateral spills are also often abated by Public Services or a City contractor. Upon arrival at an overflow incident, containment is a priority. The City's Public Services Department operates three Vactor trucks which are essential in the containment and cleanup of spills.

In addition to the procedures stated above, the City conducts compliance efforts in private lateral and septic system spills. In the City's SSORP, Stormwater Code Enforcement staff is to be notified immediately upon a private lateral spill. Code Enforcement staff conducts an investigation to identify a responsible party and to require BMP implementation; this is important to ensure responsible parties take the necessary steps to prevent spills from reoccurring. The BMPs most often implemented include immediately contacting a plumber to remove roots, grease, or other debris that is causing blockage in the lateral and implementing an ongoing maintenance plan to ensure continued compliance. When necessary, City staff may utilize escalating enforcement measures to gain compliance, including verbal and written warnings, Notices of Violations, and/or Administrative Citations.

The City's Fire Department also responded to 19 hazardous materials incidents during the reporting period. These included gasoline, oil, bio hazard, chemical, and other flammable releases. For all incidents where the release may have entered the MS4, the fire department notified the San Diego County Department of Environmental Health and/or the City of San Diego Hazardous Materials Response Team. Where containment was necessary, the City's public works crews were mobilized to provide support and containment. Where required, appropriate agencies were contacted by the incident responders.

7.3.2 Spill Prevention

Preventive maintenance is the primary BMP implemented to prevent wastewater pollution from entering the storm drain system and receiving waters. The City's Wastewater Division annually cleans and inspects the wastewater collection system. Of the approximately 311 miles of the wastewater collection system, approximately 322.8 miles were cleaned as part of the regular schedule of inspection and cleaning. Some portions of the collection system were cleaned twice due to priority and build up of materials.

Below are activities the Wastewater Division conducts as part of its annual waste water collection system cleaning and inspection program. They include:

1. Sanitary sewer inspections including the inspections of sewer manholes. Inspections are typically conducted during cleaning events.
2. Increased maintenance at enhanced maintenance areas which are prone to grease buildup and root intrusion,
3. Replacement and upgrade of sewer main and manholes, as needed.
4. Maintaining easements to ensure access to the collection system for inspection and maintenance activities.

Wastewater staff often conducts visual and video inspections collectively to ensure the wastewater collection system is effectively maintained. While conducting visual inspections, Wastewater staff patrol main sewer lines looking for any leaks in the system and from private

laterals paying particular attention to known or potential problem areas (e.g., older lines, historical blockage areas, etc). Video inspections are also conducted to further assist Wastewater staff in their inspection efforts. Results from video inspections are often used to further assess the problems staff identified during the visual inspection.

Approximately 300 linear feet of the City's collection system was repaired during the reporting period. These repairs were conducted as spot repairs at specific locations where the collection system may have been failing or where infrastructure failure was imminent.

In compliance with State Water Resources Control Board Order No. 2006-003-DWQ, the City has prepared a Sewer System Management Plan (SSMP). The SSMP documents maintenance and engineering activities for the sewer collection system and sets annual goals with the intention of preventing sewer system overflows. The City's Sewer Master Plan utilizes a hydraulic model to evaluate adequate current, future and wet weather capacity of each individual pipe segment in the sewer collection system. Any current or future capacity deficiencies are identified and placed into prioritized sets of recommended projects that aim to minimize the potential for sewer system overflows by ensuring adequate pipeline capacity for peak wet weather flows plus a safety factor.

During the reporting period the City completed its sewer line video inspection and assessment program for the entire City of Vista and Buena Sanitation District sewer collection systems. The City conducted video inspections of over 300 miles of the City's wastewater collection system and did not detect any discharges to the MS4. This program was recommended as part of the City's Sewer Master Plan which was updated in January 2008. Video inspections enable the City to effectively assess the condition of the City's wastewater collection system. The City will use information gathered from the inspections to prioritize and help define capital improvement projects and operational maintenance activities. The results of the system wide video and condition assessment program are in hard copy and GIS data base format. Two engineering consultants, one for Vista and one for Buena, are using the GIS data base to design sewer rehabilitation bid packages for pipelines with root intrusions or other defects.

During the reporting period, the City implemented other significant activities to prevent sewage and other spills from entering the City's MS4. These activities include conducting education and outreach efforts to all audiences, conducting annual inspections of commercial and industrial facilities, and conducting complaint investigations. The City reported on these activities in the City of Vista's FY 08-09 annual JURMP report (Sections 3.0, 4.0, 5.0, 6.0, and 8.0) that was submitted in September 2009.

The City implemented a Fats, Oils, and Grease (FOG) program to comply with the State Water Resources Control Board Waste Discharge Requirements (WDR) for Sanitary Sewer Systems, Oder No. 2006-0003-DWQ. The intent of this program is to prevent sanitary sewer overflow incidents. During fiscal year 2008-09, the City modified its Sewer Ordinance (Chapter 14) to include a section for the regulation of fats, oils and grease at food service establishments (Chapter 14.12, Control and Regulation of Fats, Oils, and Grease). Food service establishments (FSEs) are required to implement best management practices (BMPs) to prevent overflows. These include maintaining grease control devices (GCDs), training employees on FOG BMPs, dry wiping pots and pans, eliminating food grinders, and installing drain screens in food preparation and kitchen areas.

The City decided to inspect several FSEs to assess each facility's compliance with the Ordinance and success in managing FOG. In selecting facilities for inspections, the City focused on enhanced maintenance areas located throughout the City. The City conducted FOG assessments at 168 FSEs during the reporting period. A FOG inspection form and procedure was developed during the reporting period and used during the inspection process to ensure inspections addressed requirements in the Sewer Ordinance and evaluate a facility's compliance in meeting the FOG requirements.

7.3.3 Spill Notification

Generally, the City is notified of spills to the MS4 by residents and City personnel. During the reporting period, the City operated its local stormwater hotline, (City Eng dept / stormater division) (760) 726-1340 ext 1686 and 1698 which provides reporting instructions to residents. Residents also reported spills to the City through other phone lines and departments including the Public Services Department. City departmental contact information is included on the City's website, in the City's Newsletter (Inside Vista), and in other printed materials. Through the City's stormwater training program, City staff is directed to report spills to the Engineering and Public Services Departments.

In the reporting of spills, the City follows the notification procedures in the City's Sanitary Sewer Overflow Response Plan (SSORP). During the reporting period, the City followed these procedures in response to all reported public and private sewer system overflows. In these procedures, the Public Services Supervisor is to be contacted immediately. The supervisor makes all appropriate agency and inter-agency notifications including notification to the City's Stormwater Division.

7.4 URBAN RUNOFF MONITORING

This section describes the results of the City's Urban Runoff Monitoring Programs (Dry Weather Field Screening and Analytical Monitoring, MS4 Outfall Monitoring, Source Identification Monitoring, and Receiving Waters Monitoring) conducted during the reporting period. The section includes the following (Permit sections J.3.a.(3)(f)i-iii):

- Reporting of all dry weather field screening and analytical monitoring results.
- Dry weather field screening and analytical monitoring consultant reports generated.
- Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.

7.4.1 Dry Weather Field Screening and Analytical Monitoring Program (May 1, 2009 – September 30, 2009)

The City of Vista designated 29 primary monitoring stations in its 2009 Dry Weather Monitoring Program. Monitoring was conducted at all sites in June 2009 by D-Max Engineering, Inc, (the City's contractor) and was based on the requirements in the City's Municipal Stormwater Permit, Order No. 2007-0001. An updated map of the City's 2009 Dry Weather Monitoring Sites and MS4 is included in Appendix F-3.

Monitoring efforts include field screening and analyses, laboratory analyses, trash assessments, and data assessment. Field screening activities consists of making qualitative observations and

measuring screening parameters in the field. The qualitative observations (includes light conditions, odor, color, clarity, floatables, deposits, vegetation, and biology) are intended to provide a general assessment of the site and can be helpful in assessing a site for potential illicit discharges and connections. Field screening parameters include flow, temperature, pH, turbidity, conductivity, surfactants (MBAS), ammonia, nitrate, and orthophosphate. Field screening results are documented on Dry Weather Monitoring Field Datasheets. Completed datasheets for all sites are included in Appendix F-4. Samples that are collected for laboratory analysis are measured for oil and grease, diazinon, chlorpyrifos, dissolved metals (cadmium, copper, lead, and zinc), and bacteria (total coliform, fecal coliform, and enterococcus). As required in the Permit, laboratory analysis must be conducted for at least 25% of the monitored sites. Information on trash assessment is included in section 7.4.2 below.

Of the 29 primary monitoring stations, 23 had sufficient flow or ponded water to collect samples and six sites were dry. Sites AH-8A, AH-34, AH-37, BV-7A, BV-15, and MV-3 were dry, and in their place, alternate sites AH-38, BV-12, BV-34, BV-35, BV-36, and G-6 were sampled. Sites AH-21, AH-9, BV-18, BV-31, BV-4, BV-8, G-6, SS-1 (eight sites total and 28% of the total number of sites monitored-29) were sampled for laboratory analyses, which met the Permit requirement that laboratory analysis be completed for at least 25% of monitored sites.

Monitoring data is compared to action levels for indications of potential illegal discharges and connections to the City of Vista's MS4. During the initial sampling, two sites had nitrate exceedances (AH-35 and BV-18), two had ammonia exceedances (G-4 and SS-1), and one had a surfactants exceedance (BV-32). There were no exceedances of laboratory analytes at any sites. A summary of the exceedances is included in Table 7.3.

Table 7.3 2009 DWM Action Level Exceedances

Station	Surfactants	Ammonia-N	Nitrate-N
AH-35*			✓
BV-18			✓
BV-32	✓		
G-4		✓	
SS-1*		✓	

*Sites where full follow-up investigations were conducted.

As required in section D.4.d.(2) of the Illicit Discharge Detection and Elimination Component of the Permit, Copermittees shall, within two business days of receiving field screening and analytical laboratory results, conduct an investigation to identify the source of the discharge or provide rational for why the discharge does not pose a threat to water quality and does not need further investigation. In following this requirement, the City conducted all of its follow-up investigations according to the following procedure:

- Sites that had initial exceedances were re-sampled within one to two business days of receiving field screening results. Re-sampling is performed to confirm the initial action level exceedance. In the City's 2009 Dry Weather Monitoring Report, the City referred to this as the confirmation sample. During site visits, sampling staff also investigated the immediate vicinity of the site and used best professional judgment in determining

pollutant sources. Note: Due to a rainfall in excess of 0.1 inches the day after the initial sampling at site G-4, the confirmation sample was postponed until 72 hours after the rain event.

- When confirmation sampling confirmed the exceedance of action levels, a full follow-up investigation was conducted. This included moving upstream in the drainage system to identify possible sources and when necessary collecting samples to measure the parameter(s) in exceedance. Typically, upstream investigations are conducted on the same day the confirmatory samples are collected.
- Where the source of the exceedance was known and not the result of an illicit discharge or connection to the MS4, a full follow-up investigation was not necessary.
- If, at any time it was determined that an illegal discharge was occurring, an immediate upstream investigation was conducted and City staff was notified. This did not occur during the 2009 dry weather monitoring season.

Confirmatory sampling was conducted at all five stations where exceedances were identified during the initial sampling. Full follow-up investigations were conducted at two sites to determine the sources of the exceedances (Sites AH-35 and SS-1). Information on follow-up investigations is included in Section 7.5 of this report and the complete results and discussion of the monitoring efforts are included in the City of Vista's 2009 Dry Weather Field Screening and Analytical Monitoring Program Report (Appendix F-4).

7.4.2 Trash Assessment (May 1, 2009 - September 30, 2009)

As required in Section II.B.3.c.(7) of the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Permit, a trash assessment was conducted at each primary and alternate dry weather monitoring station. This assessment is designed to provide information on the spatial extent and relative amount of trash present, as well at the nature and origin of the trash at the site. A Trash Assessment Form was completed for each site.

A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form includes five categories to describe the amount and extent of trash. The five categories include optimal, sub-optimal, marginal, sub-marginal, and poor. Sites are also evaluated for the potential threat to human health and/or aquatic health. Definitions of the categories for trash assessments and for threat assessments are included below in Table 7.4.

Table 7.4 Definitions for Amount and Extent of Trash	
Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).
Site Evaluation for Threat to Human Health and/or Aquatic Health	
Threat Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in ponded water due to trash. All subject to best professional judgement. Describe potential threat on back of form.
Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence of large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgement. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

In this program, a higher priority is given to sites that receive a rating of sub-marginal or lower. For sub-marginal and poor sites, an additional assessment is made as to the potential route and source of the trash. During the 2009 monitoring event, there were 26 optimal, seven suboptimal, one marginal, and one submarginal rated site. No sites were observed to have posed a threat to human or aquatic health. Site MV-3 received a marginal rating and site BV-18 received a submarginal rating. Site MV-3, an inlet at the intersection of South Santa Fe Ave and Escondido Ave, contained trash and debris. Site BV-18, located in Buena Vista Creek, contained trash and other debris indicative of a homeless encampment. A summary of the trash assessment results is included in Figure 7.1. Completed Trash Assessment Forms for all dry weather monitoring stations are included in the City's 2009 Dry Weather Field Screening and Analytical Monitoring Program Report (Appendix F-4).

Prior to the dry weather monitoring event, the Trash Assessment Form was modified to include a more detailed standard for evaluating the potential threat to human health and/or aquatic health and establish consistency amongst the copermittees. Copermittees commented that the standards were too general and not specific enough to effectively evaluate threats to human and aquatic health. Upon request from the Regional Monitoring Workgroup the Dry Weather

Workgroup Monitoring Workgroup was assigned the task of modifying the Form. A significant change on the form was the inclusion of quantifiable criteria in evaluating threats. For example, there could be a potential threat to aquatic life, if a large amount of persistent buoyant litter such as hard plastic was prevalent in the assessed monitoring area. Large amount equates to 50 pieces or more. These improved guidelines should assist copermittees in conducting effective and consistent threat evaluations thereby establishing consistency amongst the copermittees in completing the Trash Assessment Forms. These changes are reflected in Table 7.4, Site Evaluation for Threat to Human and/or Aquatic Health and in the 2009 Trash Assessment Form, Appendix F-5.

Figure 7.1
Trash Assessment Results
2009 Dry Weather Montoring Program

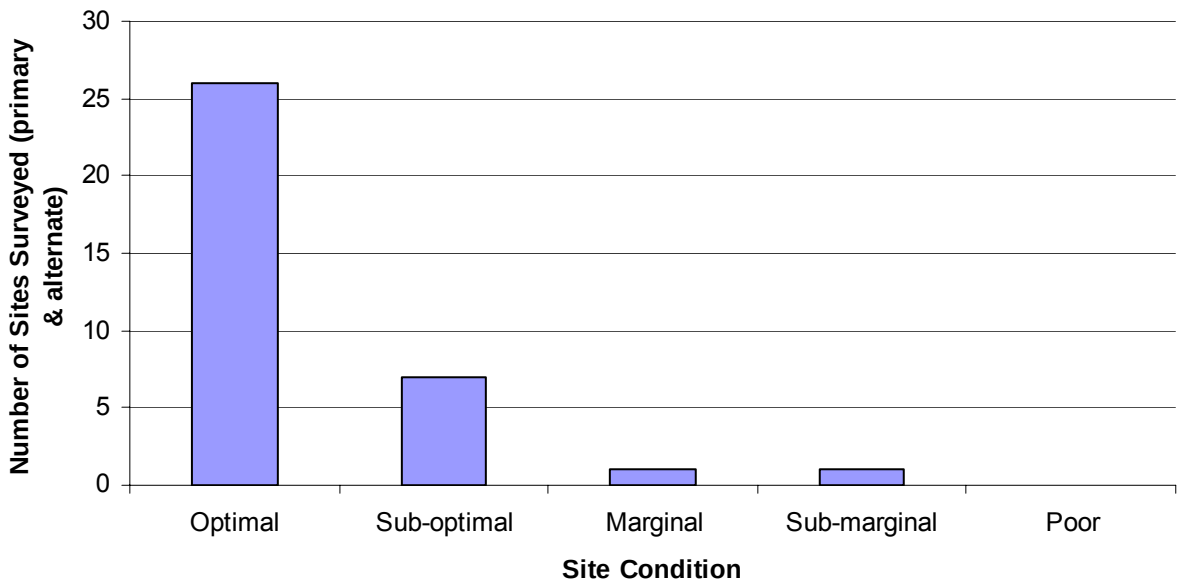

Proposed San Diego County Copermittee Action Levels for FY 09-10

The Regional Monitoring Workgroup in November 2008 requested the Dry Weather Monitoring Sub-workgroup to evaluate dry weather action levels that were submitted in April 2003 by the County of San Diego on behalf of the Copermittees. The current action levels have been used by copermittees in their dry weather programs since 2003. The levels were adopted in 2003 and based on an analysis of the results from copermittees dry weather monitoring in 2002. To maintain an effective illicit discharge detection sampling program, it is the understanding that action levels should be accurate and reflective of the most recent and robust data collected. As additional data has been collected since 2003, the Regional Monitoring Workgroup determined it would be appropriate to review and analyze the current levels. After review of the current set of action levels, the Dry Weather Sub-workgroup determined that the bacterial indicators action levels required additional analysis, but all other action levels were deemed appropriate.

The Dry Weather Sub-workgroup conducted an evaluation of historical bacterial data collected from dry weather monitoring from 2002 through 2007. The Regional Monitoring Workgroup on May 19, 2009 evaluated the recommendations of the Dry Weather Sub-workgroup and selected the 80th percentile values to be proposed as the dry weather action levels for bacterial indicators beginning on May 1, 2010. The current levels and the levels proposed to be effective as of May 1, 2010 are presented in Table 7.5.

Table 7.5 Bacterial Indicators Action Levels For Dry Weather Monitoring Program

	Total Coliform (MPN/100 mL)	Fecal Coliform (MPN/100 mL)	Enterococcus (MPN/100mL)
Current	50,000	20,000	10,000
Proposed	130,000	13,000	7,000

7.4.3 Receiving Water Monitoring

The main receiving waters within the City of Vista are Buena Vista and Agua Hedionda Creeks. These creeks lie in the Buena Vista (904.2) and Agua Hedionda (904.3) Hydrologic Areas (HA), respectively; both together, drain the largest percentage of the City (93%). In an effort to better understand dry weather (ambient) conditions in its receiving waters, the City began to collect limited data in the creeks in conjunction with the dry weather program. The focus of the analysis remains on the high priority water quality problems in an effort to understand their dynamics in the receiving waters. In this receiving water study, the City selected upstream and downstream sites where the creeks enter and leave City boundaries. Results and data from the study may be used to further assist the City in identifying, if any, contributions to water quality problems within its jurisdictional area. Section 11.2.3 of the JURMP Annual report (September 2009) provides a preliminary water quality assessment based on data collected to date.

In June 2009, monitoring was conducted at six receiving water sites in conjunction with the sampling conducted under the Dry Weather Program. D-MAX Engineering, Inc (the City's contractor) conducted the monitoring. These sites included AHC-10, AHC-20, AHC-21, BEC-36, and BVC-3 and are situated within Buena Vista Creek, Agua Hedionda Creek, and La Mirada Creek. (La Mirada Creek is tributary to Agua Hedionda Creek). Information on the sampling locations is included in Table 1 of Appendix F-6. Monitoring results are included in Tables 2, 3, and 4 of Appendix F-6. A map showing the locations of the monitoring sites is included in Figure 7.2. The entire 2009 Receiving Waters Monitoring Report is included in Appendix F-7.

Similar to the Dry Weather Program, monitoring activities consisted of field screening, qualitative observations, sample collection for laboratory analysis, and data assessment. Qualitative observations, intended to provide a general assessment of the site, included variables such as odor, water clarity, floatables, deposits, vegetation, and biology. Grab samples were collected for on site field screening and laboratory analysis using the same methods and procedures as in the Dry Weather Program (see 2009 DWM report, Appendix F-4).

Field screening parameters included:

- Specific Conductance
- Temperature
- pH
- Turbidity
- Dissolved Oxygen

In selecting the laboratory analytes to be measured the City focused on the high priority water quality problems that have been identified through watershed management assessments.

These analytes included:

- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- Ammonia-Nitrogen
- Total Phosphorous
- Orthophosphate-Phosphorous
- Total Nitrogen (including Nitrate/Nitrite as N and Total Kjeldahl Nitrogen)
- Total Coliform Bacteria
- Fecal Coliform Bacteria
- Enterococcus Bacteria

Additionally, sites located in the Agua Hedionda Watershed (HA) were monitored for total manganese, total selenium, and sulfates.

Overall, the monitoring results varied, but they did reveal some positive signs concerning water quality in Vista's receiving waters. At all sites, field screening parameters including temperature, pH, turbidity, dissolved oxygen were measured at levels below or above water quality objectives (with dissolved oxygen, optimal levels to support beneficial uses are above 5 mg/l). Fecal coliform concentrations were below the water quality benchmark at the downstream site in Agua Hedionda Creek, but above the water quality benchmark at the upstream site. Total dissolved solids were above the water quality benchmark at all sites and manganese levels were above water quality benchmark at sites where manganese was measured (Agua Hedionda sites). In its assessment of the water quality data, the City used the water quality benchmarks referenced in the copermittees regional monitoring program. Other results from the study are summarized below.

Agua Hedionda Creek

Bacteria results in Agua Hedionda Creek indicated higher concentration levels at the upstream site (AHC-10) where the Creek enters the City and lower concentration levels at the downstream site (AHC-20) where the Creek leaves the City. A comparison of these concentrations is presented in Figure 7.3. Although, trash assessments were not conducted for this study, trash was not observed at any site.

Buena Vista Creek

Except for TDS, all other field screening and laboratory measurements were below the water quality objectives and benchmarks at Site BVC-3. These included temperature, pH, turbidity,

total suspended solids, ammonia-N, total phosphorous, orthophosphate, total nitrogen, nitrate/nitrite, total kjeldahl nitrogen, total coliforms, fecal coliforms, and enterococci. The TDS concentration was measured at 1,276 mg/L.

The Receiving Waters Special Study Report is included as Appendix F-7.

FIGURE 7.2 CITY OF VISTA RECEIVING WATER SAMPLING SITES

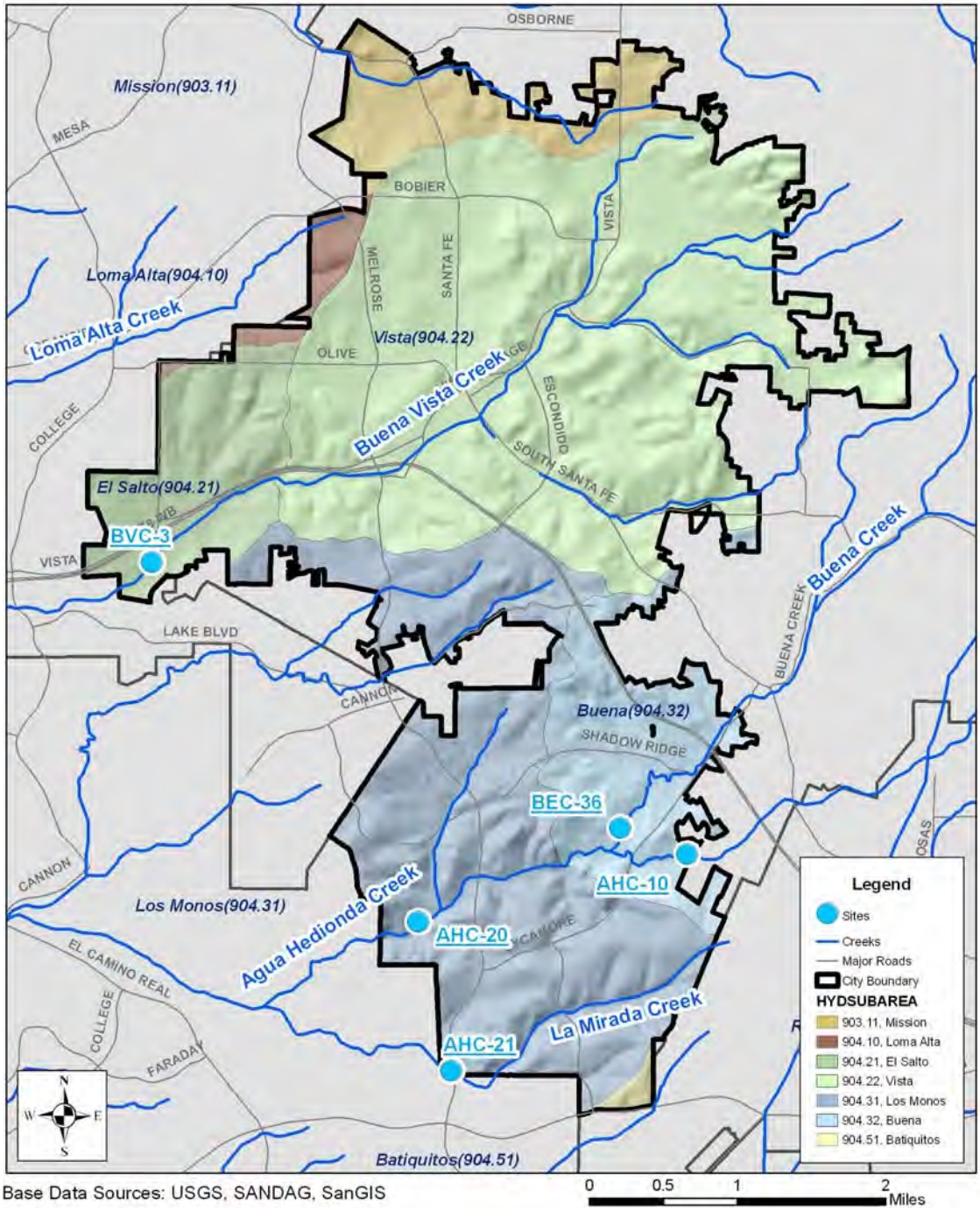

Base Data Sources: USGS, SANDAG, SanGIS

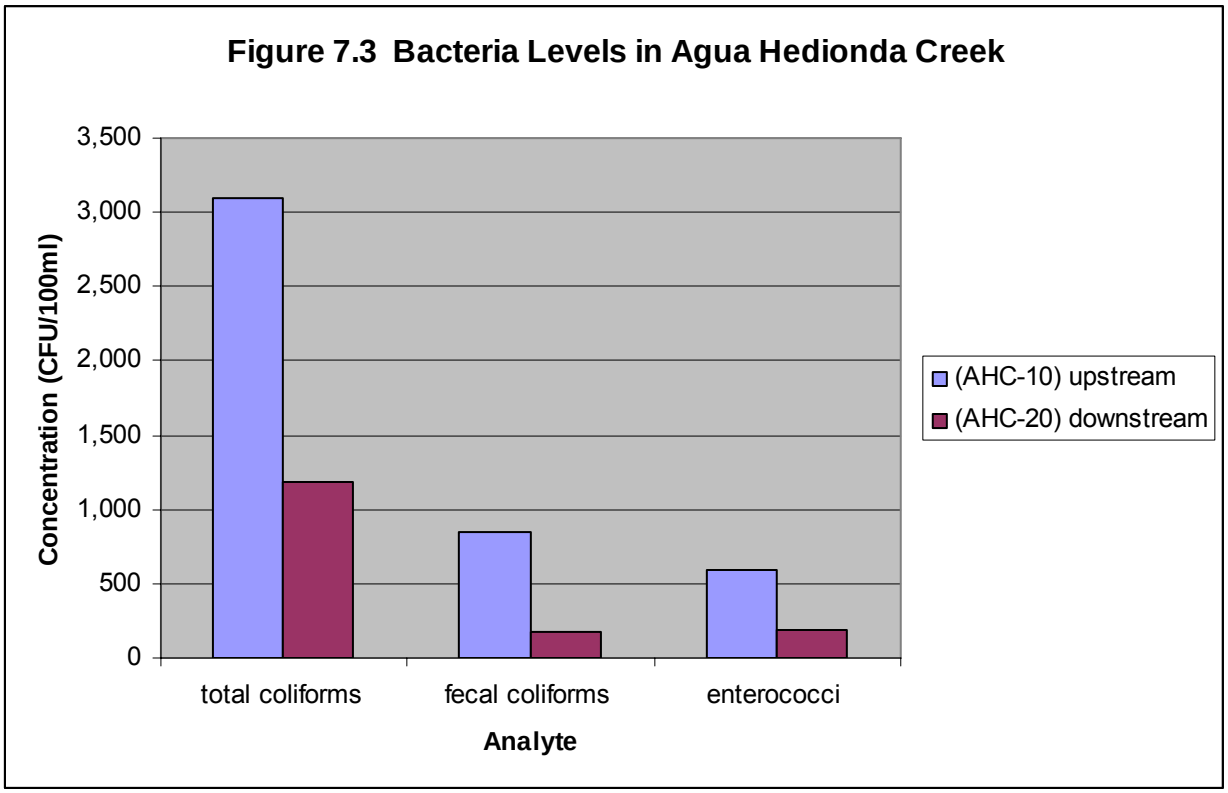

7.4.4 MS4 Outfall Monitoring Program

The goal of this monitoring program is to characterize pollutant discharges from MS4 outfalls and to assess whether these discharges contribute to the water quality problems in the receiving waters in San Diego County Watersheds. The MS4 Outfall Monitoring Program is divided into four sub-programs which include the Targeted Dry Weather, Targeted Wet Weather, Random Dry Weather, and Random Wet Weather programs. The monitoring design is based on a combination of random and targeted sampling of discharges from MS4 outfalls that drain into receiving waters.

All four sub-programs are conducted in accordance with the work plan, “Municipal Separate Storm Sewer System (MS4) Outfalls Monitoring Program in San Diego County Watershed Management Areas (WMA) “(June 2008). The number of samples that will be collected region wide under each program is included in Table 7.6. As this work plan provides an overall framework and conceptual design for the MS4 program, specific scopes of works or work plans may be developed to provide more detail on the random and targeted sampling approaches during the permit cycle. Following Table 7.6 are summaries of the activities conducted under each monitoring sub-program during fiscal year 2008-09.

Table 7.6 Summary of the MS4 Outfall Monitoring Design

Season	Design Type	Outfall Diameter	Number of Samples
Dry	Random	≥36 inches	54 per year
	Targeted	Any	200 per year
Wet	Random	≥36 inches	54 per year
	Targeted	Any	9 per Permit cycle

Targeted Dry Weather Program

During the reporting period, the City conducted its Targeted Dry Weather program which included the monitoring of 4 outfalls, AH-17, AH-21, BV-1, and BV-4, located in the City of Vista. In this program, each copermittee is responsible for conducting the monitoring of the outfalls located within the copermittee's jurisdiction. The monitoring was completed in June 2009 by D-Max Engineering, Inc. (the City's contractor).

Monitoring activities consisted of making qualitative observations (i.e. color, odor, etc.), conducting field screening tests, and collecting samples for laboratory analysis. Sample collection for laboratory analysis was conducted in accordance with the MS4 Work plan. The analytes selected were based primarily on the high priority pollutants identified in all San Diego County Watershed Management Areas. Water samples from each site were also analyzed for field screening parameters including specific conductance, temperature, pH, turbidity, and dissolved oxygen. Laboratory samples were collected and analyzed for total coliform, fecal coliform, enterococcus, total suspended solids (TSS), total dissolved solids (TDS), total nitrogen (includes both nitrate-N and total kjeldahl nitrogen), and total phosphorous. Additionally, samples collected at sites (AH-17 and AH-21) located within Agua Hedionda HA were analyzed for manganese (total), selenium (total), and sulfates. Each copermittee submitted its results in a data sharing format to the regional monitoring contractor for inclusion into the Regional Monitoring report that is due to be submitted in January 2010 by the County.

During the sampling event, Site BV-7A was dry, and alternate site, BV-4 was sampled in its place. By the Dry Weather Monitoring Program standards, no MS4 outfall monitoring results exceeded action levels. Information on the sampling locations and results is included in Tables 7.7 and 7.8 below. A map showing the locations of the monitoring sites is included in Figure 7.4.

Random Dry and Wet Weather Programs

In the Random Dry Weather and Random Wet Weather programs the monitoring was conducted by the San Diego County Copermittees regional contractor. The Random Dry Weather Program was conducted in the spring of 2009. A total of 40 sites were sampled within the county's nine WMAs. Several sites were not sampled since they had no flow or ponded water. The attempt was made to collect six samples per each WMA (total of 54 = 6 x 9) as indicated in the MS4 Work plan. When a dry site was encountered, field staff selected the next random site on the random inventory. Up to twelve sites, maximum, were visited per WMA; a total of 98 sites were visited. In the Random Wet Weather Program, 38 random MS4 outfall wet weather events were monitored in 2008-2009. Within most of the WMAs only four sites were monitored except in the San Dieguito and Los Penasquitos WMAs in which fives sites were

monitored. The goal of monitoring at six sites within each WMA was not met due to insufficient rainfall events during the wet season.

Targeted Wet Weather Program

The San Diego copermittees submitted to the RWQCB a work plan for the Targeted Wet Weather program on August 28, 2009 ("San Diego Regional Copermittees Targeted Wet Weather Monitoring Program For Municipal Separate Storm Sewer System Outfalls"). During the reporting period, the San Diego copermittees along with Weston Solutions, the monitoring contractor, collectively developed the work plan. The Watershed Urban Runoff Management Program (WURMP) workgroups were asked to select a primary and alternate outfall in each WMA. As a shareholder in the Carlsbad WMA, the City of Vista recommended that Site SW-1 be the primary monitoring location for the Carlsbad WMA. The outfall drains primarily commercial and industrial areas in the Agua Hedionda Watershed, in which Agua Hedionda creek and lagoon are 303d listed. Site SW-1 was selected as the primary monitoring location and included in the final work plan. It is anticipated that nine samples (one in each WMA) will be collected over the course of the permit cycle. Implementation of the work plan will begin in year 3 of the permit cycle (09-10 monitoring season).

FY 08-09 results from the MS4 Outfall Monitoring Program are included in the San Diego County Municipal Copermittees Urban Runoff Monitoring Annual Report to be submitted January 31, 2010 as required by the Permit.

Table 7.7

2009 MS4 Outfall Monitoring Sampling Locations

Site	Location	HSA	Latitude	Longitude	TBPage	TBGrid	Primary Land Use	Secondary Land Use	Conveyance
Agua Hedionda Hydrologic Area									
AH-17	Southeast of the Faraday Street and Brookhaven Pass intersection, in the corner of the detention basin	904.31	33.14003	-117.24637	1127	H1	Residential	Commercial	Outlet
AH-21	2687 S. Melrose Drive (south end of Melrose Drive)	904.31	33.13534	-117.24466	1127	H1	Industrial	None	Outlet
Buena Vista Hydrologic Area									
BV-1	Behind 4241 Tiberon Drive	904.21	33.18271	-117.28387	1107	C2	Residential	None	Outlet
BV-4	Across the street from 1725 Hacienda Drive, south of the fence, in the canyon	904.21	33.18780	-117.27434	1087	E7	Commercial	Residential	Outlet
BV-7A (Dry)	West sidewalk of South Melrose Drive, south of Hacienda, next to gas station	904.22	33.19300	-117.25372	1087	G7	Commercial	None	Manhole

Table 7.8

2009 MS4 Outfall Monitoring Results

Site	Flow (gpm)	Total Coliform (CFU/100 mL)	Fecal Coliform (CFU/100 mL)	Enterococcus (CFU/100 mL)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Nitrogen-N (mg/L)	Total Phosphorus-P (mg/L)	Manganese (mg/L)	Selenium (mg/L)	Sulfates (mg/L)
AH-17	6	13,100	4,100	5,800	3,668	16	5.1	0.39	0.058	0.011	692
AH-21	<1	7,100	3,155	1,925	2,263	15	1.9	0.65	0.643	<0.002	809
BV-1	2	860	440	420	5,975	43	2.1	0.19	na	na	na
BV-4	16	16,400	1,805	405	1,278	12	1.8	0.13	na	na	na

Figure 7.4 City of Vista 2009 MS4 Monitoring Locations

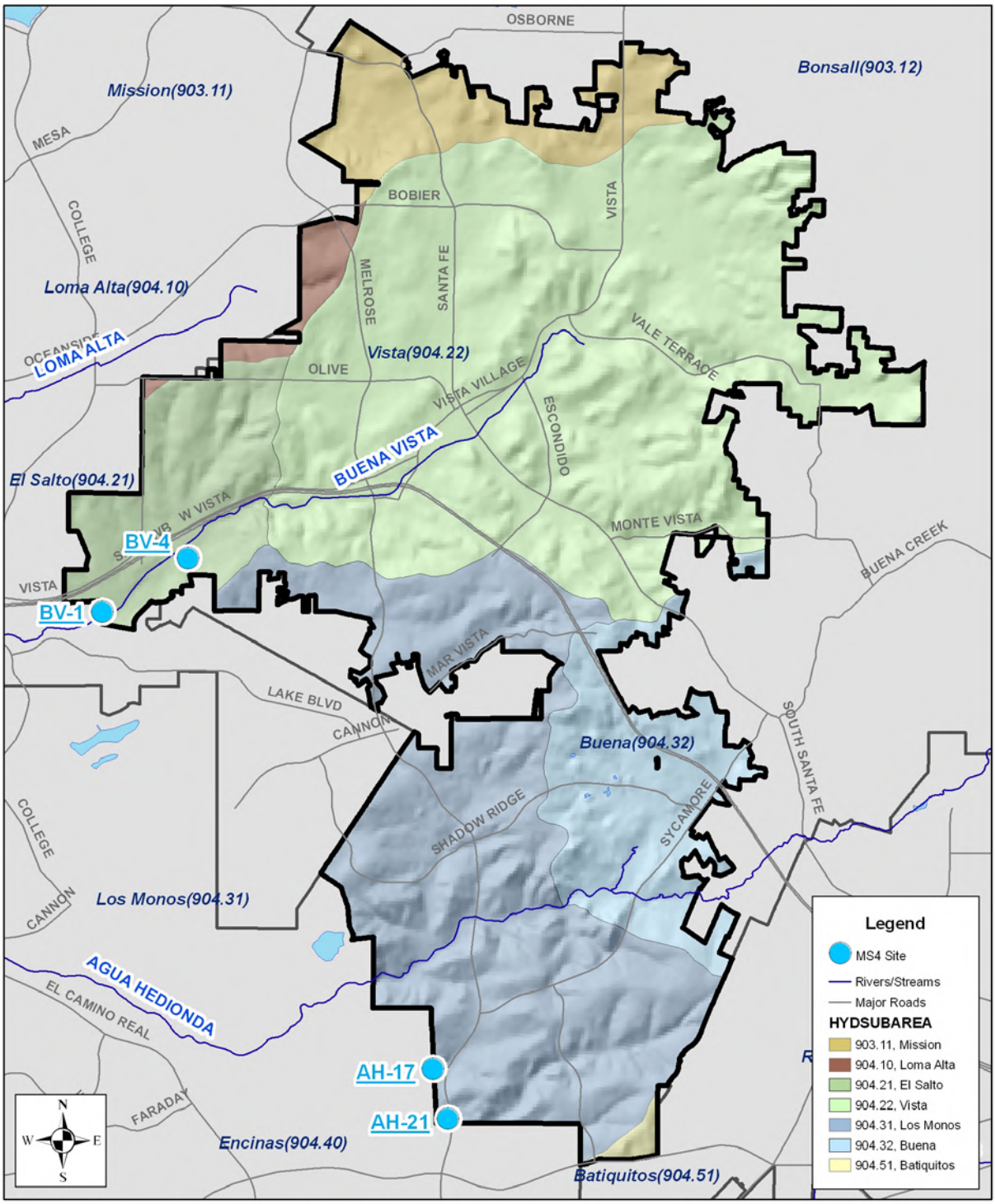

7.4.5 Source Identification Monitoring Program

The goal of this monitoring program is to identify and assess the sources of discharges of constituents related to urban runoff causing high priority water quality problems in the receiving water(s) within each watershed management area (WMA). The Copermittees provided a framework for source identification studies entitled "Urban Runoff Source Identification Program in San Diego County Watersheds" (2008). This framework described the conceptual monitoring to be conducted during the 2008-2009 Permit Year. One change occurred since the framework was submitted. The City of Carlsbad study area was changed to the City of Del Mar. Similar to the MS4 Program, specific scopes of works may be developed to provide more detail on the methodologies for Source Identification studies that will be implemented during the permit cycle. For the proposed 2008-09 Source ID study, the copermittees developed a work plan specific to the study.

The "2008-2009 Source Identification Monitoring Residential Area Runoff Assessment" Work plan (Submitted to the RWQCB on March 13, 2009) provided the methods and procedures for conducting the source identification study in the Cities of La Mesa and Del Mar. The goal of this study was to compare dry weather residential land use discharge data in San Diego County to data collected from an intensive residential land use runoff study under a Proposition 50 grant in Orange and Sacramento Counties (Haver 2007). The data will provide information on dry weather nuisance flows from single family residences. In this study, flow monitoring was conducted to estimate dry weather loads from each drainage area. Loads were estimated by using concentration data obtained by both chemistry and bacteria collected under this program and from Dr. Darren Haver's (UC Davis) residential sampling efforts. The study was completed in the spring of 2009.

Results from this study are included in the San Diego County Municipal Copermittees FY 2008-09 Urban Runoff Monitoring Annual Report to be submitted January 31, 2010 as required by the Permit.

7.5 FOLLOW-UP AND ENFORCEMENT

This section describes the City's efforts to investigate and follow up on complaints and dry weather monitoring results which indicate potential for illicit discharges and illicit connections. This section includes:

- A brief description of any investigations and follow-up activities for illicit discharges and connections (Permit section J.3.a.(3)(f)iv).
- The number and brief description of illicit discharges and connections identified. (Permit section J.3.a.(3)(f)v).
- The number of illicit discharges and connections eliminated (Permit section J.3.a.(3)(f)vi).
- The number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion will exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance (Permit section J.3.a.(3)(f)xii).

7.5.1 Complaint Investigations

During the reporting period, the City responded to stormwater complaints in accordance with procedures detailed in the City's JURMP, updated in March 2008. All reported complaints were

logged electronically in an Access database and responded to by the City's Stormwater Code Enforcement staff. Most complaints were received from the public and City field staff.

A total of 213 complaint cases involving illegal discharges, illicit connections, and private lateral sewer overflows were investigated by the City's Stormwater division during the reporting period. This amounted to 79% of all complaint cases investigated during FY 08-09 (270 total). The remaining 57 cases involved BMP violations that did not result in an illegal discharge or connection to the City's stormwater conveyance system. Examples of BMP violations may include improper grease storage, uncovered stockpiles, and ineffective housekeeping practices. Of the 213 investigated complaints, 191 were confirmed as violations. A summary of all FY 08-09 stormwater complaint cases was included in appendix D of the City's JURMP Annual Report that was submitted to the RWQCB in September 2009.

During the reporting period, all confirmed illegal discharges and illicit connections were eliminated. Of the 191 confirmed complaint cases, City staff issued enforcement actions in all of these cases including 132 verbal warnings, 13 written warnings, 41 Notice of Violations, and five citations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. Stormwater education was always communicated to the responsible party. Table 7.9 below, includes information on the type, source, and actions taken in all illegal discharges, illicit connection, and private lateral spill incidents**.**

Table 7.9 Summary of ICID Enforcement Actions

Complaint Type	Complaints Investigated/Source						Proactive	Complaints Confirmed	Violations Eliminated	Enforcement Action				
	Residential	Commercial	Industrial	Construction	Other	Totals				Verbal	Written Warning	Notice of Violation	Citation	Totals
Illegal Discharges	107	76	-	5	5	193	112	177	177	126	13	33	5	177
Illicit Connection	3	2	_	1	_	6	4	4	4	3	-	1	_	4
Private Lateral and Septic Spills	11	3	_	_	_	14	5	10	10	3		7	_	10
Totals	121	81	-	6	5	213	121	191	191	132	13	41	5	191

7.5.2 Dry Weather Monitoring Investigations (May 1, 2008 – September 30, 2008)

During the initial sampling, five sites exceeded an action level for one parameter (Table 7-3). These stations were re-sampled to confirm if the parameter continued to be present in concentrations above its action level. Of the five stations, two sites (AH-35 and SS-1) continued to exceed action levels. Generally, a full follow-up investigation was conducted at stations that showed continued exceedances, unless it was concluded that natural conditions at the site were the likely cause of the exceedance. Procedures for follow-up investigations are included in Section 7.4.1 of this report. Summaries of the dry weather action level exceedances and follow-up actions are included in Table 7.10. Following Table 7.10 are summaries of the follow-up investigations by pollutant type.

Table 7.10 Summaries of Dry Weather Action Level Exceedances and Follow-up Actions

Site	Constituent Exceedance	Confirmed	Follow-up Conducted	Suspected Source
AH-35	Nitrate-N	Yes	Yes	Groundwater seepage
SS-1	Ammonia-N	Yes	Yes	Decomposing organic matter at site
BV-18	Nitrate-N	No	No	Groundwater seepage
BV-32	Surfactants	No	No	No obvious sources were noted, possibly transient flow
G-4	Ammonia-N	No	No	Decomposing organic matter

Nitrate

Site AH-35

A follow-up investigation was conducted to identify possible nitrate sources at site AH-35. The nitrate concentrations were in exceedance of the action level for the initial (38.45 mg/L) and confirmation (33.65 mg/L) sampling. Upstream investigations southwest and northeast of AH-35 indicated that the nitrate source was likely located upstream in the City of San Marcos. Two conveyance systems converge at AH-35, one from the southwest and one from the northeast. Nitrate concentrations measured at site AH-35-1, southwest of AH-35, measured at 4.29 mg/L, which was below the action level and significantly different that the concentrations measured at AH-35. Conversely, nitrate concentrations measured at site AH-35-2 (22.11 mg/L) and AH-35-3 (24.4 mg/L) northeast of AH-35, were above the action level and relatively consistent with the concentrations measured at AH-35. Site AH-35-3, located in Vista, lies in a small creek that originates in the City of San Marcos. The flow at this location appears to originate just upstream at the base of the hill upon which a nursery is situated. The creek transitions into a storm drain pipe system when it leaves the City of San Marcos and enters the City of Vista. As a result of this investigation and investigations conducted in the spring of 2008 and February 2009 (City of Vista and San Marcos joint investigation), the City believed the nitrate source is likely the result of groundwater seepage and/or agricultural activities. A summary of the February 2009 joint investigation is included below.

Summary of the February 2009 Joint Investigation:

Based on the 2008 results, staff from the City of Vista, City of San Marcos, and D-Max Engineering, Inc. conducted a joint investigation in February 2009 to identify nitrate sources concerning site AH-35. During dry weather monitoring in 2008, nitrate concentrations were measured above the action level during the initial and confirmation visits and at upstream sites during the follow-up investigation.

In addition to the sites monitored during the 2008 and 2009 monitoring events, other sites located in the vicinity of the creek and nursery were selected for monitoring. Nitrate concentrations at all sites ranged from 32.41 mg/L to 50.15 mg/L well above the action level and consistent with concentrations measured during dry weather monitoring in 2008 and 2009. During the investigation, water in the vicinity of the creek and nursery was observed to be seeping out of the hillside and began flowing at lower elevations towards the creek. During previous investigations in this area, nursery staff informed D-Max staff that fertilizers are infrequently used at the nursery property that drains to the natural channel upstream of site AH-35. However, fertilizers are used more frequently in a growing area located farther south, and plants are periodically transferred from that area to the area that does drain to the channel. Damp soil and evidence of minor erosion at the slope from the nursery to the channel indicated that some irrigation runoff to the channel is likely, but no runoff was observed at the time of the investigation. It was concluded that the nitrate source was likely related to groundwater and/or agricultural uses, but the source was still unclear at that time.

Ammonia

Site SS-1

A follow-up investigation was conducted for site SS-1 to identify possible ammonia sources. The ammonia concentration measured during the initial visit was 6.49 mg/L, above the 1 mg/L action level. SS-1 is located in a densely vegetated area and at the time of the initial visit, the water was ponded with large amounts of decomposing leaves in and around the water. Confirmatory sampling conducted the next day indicated high ammonia levels (7.67 mg/L). An upstream investigation was conducted to identify potential ammonia sources. Upstream sites, SS-1-1 and SS-1-2 were analyzed for ammonia with results indicated levels below the action level (.44 mg/L and .02 mg/L, respectively) and much lower than the concentrations measured at SS-1. No other conveyance systems contribute runoff to site SS-1. It was concluded that the conditions at the site (densely vegetated area and decomposing leaves) were responsible for the elevated ammonia levels.

7.5.3 Trash Assessment Results and Follow Up Actions (May 1, 2009 – September 30, 2009)

At dry weather monitoring sites where significant amounts of trash were noted, sites were prioritized for cleanup. City staff has conducted trash abatement at marginal (MV-3) and sub-marginal (BV-18) rated sites. There were no sites rated as poor. At these sites, the most prevalent sources of trash appeared to be food related waste and other wastes indicative of a homeless encampment (BV-18).

7.6 NOTABLE ACTIVITIES CONDUCTED TO MANAGE ILLICIT DISCHARGES AND CONNECTIONS

This section describes notable activities the City conducted to manage illicit discharges and connections (Permit section J.3.a.(3)(f)xiii).

Under the current FOG (Fats, Oils, and Grease) requirements (Order No. 2006-0003-DWQ) the City was required to develop and implement a FOG inspection program starting in FY 2008-09. As most Food Service Establishments (FSEs) were included in both the City's FOG and Storm Water inventories those FSEs received combined inspections. During the reporting period, 138 FSEs received both a FOG and Stormwater Inspection; a total of 168 facilities received a FOG inspection. The FOG inspections addressed several BMPs to reduce sanitary sewer overflows, which were in addition to the FOG related stormwater BMPs typically addressed during stormwater inspections. These included installing drain screens in prep sinks, dry wiping pans, and regularly inspecting and maintaining grease control devices. As the City is required to conduct a FOG program, the City believes it will continue to be effective in regulating FSEs and in preventing sanitary sewer overflows at those facilities.

The City developed a number of new educational materials, including: a FOG brochure, poster, and door hanger; and a "Do More, Don't Ignore" brochure. The City disemminated the FOG related materials during the FOG inspections. These outreach materials were included in Appendix G of the City's JURMP Annual Report that was submitted to the RWQCB on September 2009.

A new email address was created this year to facilitate communication between the public and the City's Water Quality Protection Program; the new email address is waterquality@cityofvista.com.

7.7 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT EFFECTIVENESS ASSESSMENT

7.7.1 Introduction

The effectiveness assessment of the IDDE component of the JURMP consists of assessing effectiveness of program activities and BMPs required by the permit, the IDDE component as a whole, and will lead to an integrated assessment as sufficient water quality data is collected and integrated into the program planning process. The assessment process utilizes outcome levels 1-6 as described in Attachment C of Order 2007-0001. The assessment of the program activities and BMPs is presented in Section 7.7.2. The assessment of the IDDE component follows in Section 7.7.3. Section 7.7.4 describes potential water quality assessments with examples of how these may lead to an integrated assessment of water quality and program effectiveness in the future.

7.7.2 Activity/BMP Assessment

Each of the program activities and BMPs required under Section D.4 of the Permit (IDDE) is listed in an outcome based table provided in Table 7-1. In the table, each required element is confirmed as implemented during FY 08-09 and reported on in the preceding sections. A recent improvement to the activities included the creation of a new email address (waterquality@cityofvista.com) facilitating communication between the general public and City's

Water Quality Protection Program. A potential area for improvement in the future is to increase the use of the stormwater hotline. Currently City Staff report complaints via a number of phone lines, depending on personnel available. In the future, the stormwater staff will work with City departments in annual training sessions to promote the stormwater hotline as a centralized reporting phone number for stormwater related complaints.

7.7.3 Component Assessment

As a whole, the IDDE Program appears to be effective in its main objective: to actively seek and eliminate illicit connections and illicit discharges to the MS4, thus minimizing potentially negative impacts of human activities on receiving water bodies. (JURMP 2008)

From a basic compliance standpoint using level 1 outcomes, the City's program is satisfying permit requirements and implementing the program in accordance with the Order. This assessment is summarized in Table 7.11 below.

Table 7.11 Municipal Permit Component Targeted Outcome Assessment Results Annual Summary

Municipal Permit Component	Targeted Outcome Assessment Result	Compliance Assessment Highlights	Conclusions and Recommendations
Section 7- Illicit Discharge Detection and Elimination	Met all targeted outcomes	Responded to 213 stormwater related complaints leading to the identification and elimination of 177 illicit discharges, 4 illicit connections, and 10 private lateral sewer overflows; 41 Notices of Violation and 5 Citations were issued for these violations; Dry Weather Monitoring was completed and follow-up investigations were performed or are ongoing.	Illicit Discharge Detection and Elimination Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended

Changes in knowledge and behavior, levels 2 and 3 are difficult to assess with data collected under this component. Changes in knowledge are assumed due to the amount of educational information distributed as a part of the program. In responding to 213 complaints during FY 08-09, educational information was conveyed in each case where violations or potential violations were evident. Changes in behavior were evident in that in all confirmed illicit discharge and connection reports, all illegal discharges and connections were eliminated. Through the response efforts, including education and enforcement, behaviors were changed. Follow-up investigations ensured continued compliance.

Load reductions are not explicitly calculated for this component. However, with the elimination of 177 illicit discharges and 4 illicit connections, pollutant loading to the MS4 has been reduced.

Pollutants addressed often included sediment, bacteria, nutrients, and may have included others depending on the nature of the discharge. Downstream receiving waters are 303(d) listed for some or all of these pollutants. With the successful elimination of over 180 illicit discharges and connections, load reductions of these constituents have occurred as a result of this component of the program. Absent detailed data collection such as flow and constituent concentrations from the illicit discharges, true estimates of load reductions are not feasible.

Improvements to discharge and receiving water quality, leading to the restoration of beneficial uses for the water bodies, are one goal of the stormwater programs. Data collected under the IDDE Component may be helpful in determining where changes in water quality have occurred over time. While the primary goal of the Dry Weather Monitoring Program is to detect and eliminate illicit discharges and connections to the MS4, the program also gathers data that may be used to characterize water quality in the MS4 and in receiving waters. Using data collected at key sampling locations over time, changes in water quality may be detected. It should be noted however, that the data is collected only once per dry season, representing a snapshot of the conditions at that particular location. Data from the monitoring programs described in this section have been integrated into the Water Quality Assessment presented in section 11.2.3 of the JURMP Annual Report.

7.7.4 Integrated Assessment

With the addition of monitoring programs such as the MS4 Outfall and Source Identification Programs and the addition of monitoring sites such as the temporary watershed assessment stations (TWAS), more data will be available in the future, allowing for more detailed and statistically valid assessments. In the mean time, Copermittees have collected many years of data through the Dry Weather Monitoring Programs and the Regional Programs. In general, the Dry Weather Programs focus on the MS4, while the Regional Programs focus on the receiving waters. Comparisons of the data collected in the two programs may allow for assessments to be made of the existing conditions in each system and may illustrate relationships between the two.

Examples of how the data may be used include:

- Comparisons over time at sites with sufficient data to detect improving or declining water quality.
- Comparisons between sites to determine areas where pollutant loading is more significant, thereby requiring more attention.
- Comparisons between sets of data in different sub-basins to determine where focused efforts may be necessary.
- Comparisons of receiving water data over time and spatially to determine trends.

These assessments have not been performed to this point, most often due to a lack of data. It may be feasible however, to combine data sets on a hydrologic area level or via other groupings for assessments, depending on the amount of data available. These combinations may make for more accurate water quality assessments.

Where assessments of MS4 and/or receiving water quality are feasible, these data may be used to drive management actions and to formulate study designs for activities in the future. As data is available, the program will be able to evaluate the accuracy of the constituents of concern, determined by the 303(d) listings to date at this time. Section 11.2.3 of the City's JURMP

Annual Report (September 2009) provides a preliminary water quality assessment based on data collected to date. With a more accurate picture of the water quality problems, programs will be able to adapt and improve in the future.

Leading up to the next JURMP planning phase, the City will take steps to further assess existing water quality data in an attempt to focus programs where problems are identified.

APPENDIX F-1

Summary of FY 08-09 Stormwater Hotline Calls

Appendix F-1, Summary of FY 08-09 Stormwater Hotline Calls

DATE	TIME OF CALL	ADDRESS	COMPLAINT	ACTION TAKEN
12/30/2008	10:23 a.m.	Casa Bonita and La Tortuga	Unidentified caller left a message on the hotline reporting something that looks like transmission oil/fluid was spilled and is trailing down the street.	This message was forwarded to Stormwater Code Enforcement. Site inspection revealed the streets had staining but no fluids, area dry. Referred to Public Services for street sweeping.
01/26/2009	7:52 a.m.	1040 Heron Drive	Lady called the Spanish Hotline (to report an abandoned car in the area of Green Oaks and Sycamore Ave. Vehicle was leaking oil.	Our Stormwater Code Enforcement Officer was already aware of the situation and when visiting the site, Code Enforcement was out there tagging the vehicle. Stormwater case # SW09-016 describes details including observation of oil spill. Spill was cleaned up appropriately.
1/27/2009	9:23 a.m.	286 Alestar (apts)	Cap for laundry room drainage is off and sudsy water is flowing onto the asphalt next door at 296 Alestar (Apts).	Stormwater Enforcement Officer visited site and opened SW09-015. Officer spoke with the owner and informed him of his options to comply. Plumber subsequently repaired drain line.
2/17/2009	11:53 a.m.	150 Nettleton Rd	Sediment, gravel and debris coming off property into roadway.	Referred call to Stormwater Enforcement - Case SW09-032 was opened. Situation was the responsibility of two property owners. Appropriate BMPs were implemented to prevent off-site movement of sediment.
3/20/2009	11:17 a.m.	caller's address not given	Caller reported that grey water or soap water from washing machine was draining down driveway at 2081 Courage St.and into gutter to storm drain. Soap residue is on driveway and in the basin to the clear water storm drain. It was stated that this has been going on for 6 mos.	Voice mail was forwarded to stormwater code enforcement officers. This call was received on our Flex Friday. Stormwater Code Enforcement Officer visited home - no answer. Left business card and HELP brochure and requested no further discharge unless reclaimed.
4/13/2009	6:26 p.m.	445 Rancho Vista Rd.	Called to report that the people on the easement behind him have lined up all their cars with the hoods open and power washed them with the water running down the driveway and into drain.	This call was forwarded to Stormwater Code Enforcement Officer on 4/14/09. Stormwater case SW09-063 opened. Investigation revealed some ponding of water and stains, but complaint wasn't confirmed.
4/29/2009	9:07 a.m.	400 N. Melrose Drive	Resident called to inform us of the landscapers at the condominiums across the street blow all of the debris into the street.	Referred call to Stormwater Enforcement - Case SW09-068 was opened. Location of complaint is at 329-383 N. Melrose (condominiums). Follow-up visits to site revealed violation has been terminated.
5/18/2009	4:20 p.m.	1047 Swallow Dr.	Call came in on our **Flex Friday**. Caller reported a black couch was left out (dumped) at given location.	On Monday, May 18th, the call was transferred to our Public Services Dept. by our Stormwater Code Enforcement Officer.
Note; Information on stormwater cases was included in Appendix D of the JURMP Annual Report (September 2009)				

APPENDIX F-2

Summary of FY 08-09 Sanitary Sewer Overflow Incidents

Appendix F-2
Summary of FY 08-09 Sanitary Sewer System Overflow Incidents

Date	SSO Event ID	Location	Source (Public/Private)	Spill Volume (gal's)	Recovered (gal's)	Released (gal's)	Sewer Collection System	Cause/Comment
8/20/2008	725539	Private	Private	5	5	0	Vista	Root intrusion
9/4/2008	N/A	Private	Private	0	0	0	Vista	Spill was contained and did not enter conveyance system
9/22/2008	N/A	Private	Private	0	0	0	Vista	Spill was contained, did not enter conveyance system
11/13/2008	729246	Private	Private	*	*	*	Vista	Private lateral problem
1/28/2009	732771	Private	Private	25	25	0	Vista	Private lateral problem
2/26/2009	734491	Private	Private	4	4	0	Vista	Private lateral problem
3/5/2009	734626	Private	Private	10	10	0	Vista	Root intrusion
3/23/2009	735484	Private	Private	30	30	0	Vista	Septic system leak
5/18/2009	738169	Private	Private	500	500	0	Vista	Grease buildup
6/22/2009	N/A	Private	Private	0	0	0	Vista	Spill was contained, did not enter conveyance system
9/24/2008	726832	Tylee Street and Hill Drive	Public	725	652	73	Vista	Debris in manhole caused blockage
11/13/2008	729287	1867 Avocado Drive	Public	86,800	35,600	51,200	Buena	Damaged pipe by unreported traffic collision
12/13/2008	730542	863 Via Felicidad	Public	80	0	0	Vista	Root intrusion. Spill contained in backyard and percolated into ground.
4/24/2009	736839	850 Anns Way	Public	380	380	0	Vista	Asphalt mistakenly filled in mahole during City contracting resurfacing work, eventually hardening and causing a blockage.

* - Information not recorded
N/A - not applicable

APPENDIX F-3

Map of 2009 Dry Weather Monitoring Sites and MS4

City of Vista

2009 Dry Weather Monitoring Sites and MS4 Map

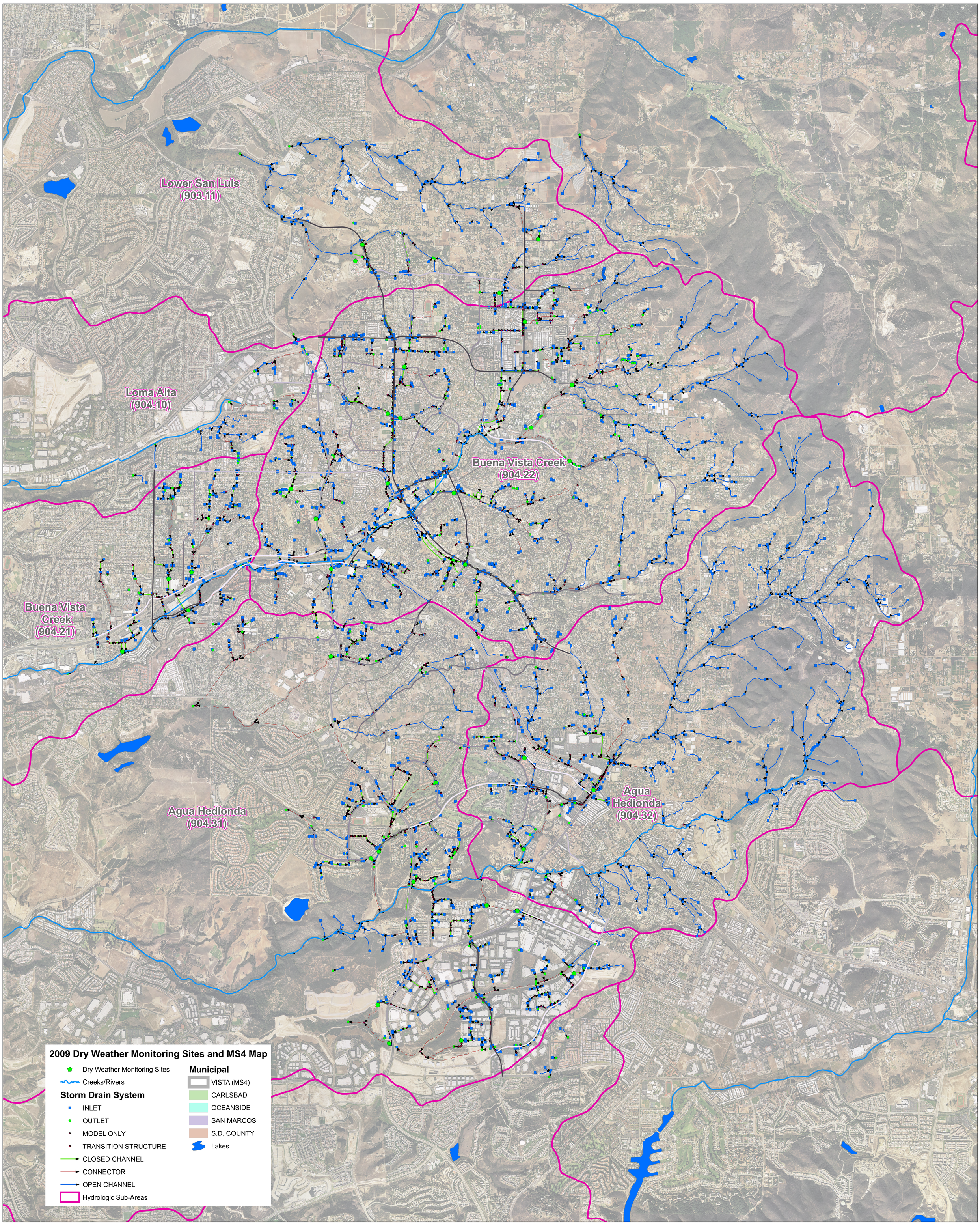

APPENDIX F-4

2009 Dry Weather Field Screening and Analytical Monitoring Program Report

CITY OF VISTA
DRY WEATHER FIELD SCREENING AND ANALYTICAL MONITORING PROGRAM
2009

Submitted to:

City of Vista
Engineering Department
600 Eucalyptus Avenue
Vista, CA 92084

Prepared by:

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D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

October 30, 2009
Project No. 200910W

Paul Hartman
Water Quality Protection Program Manager
City of Vista
Engineering Department
600 Eucalyptus Avenue
Vista, CA 92084-6240

Re: 2009 Dry Weather Field Screening and Analytical Monitoring Program City of Vista, California

Dear Mr. Hartman:

Enclosed please find our final report for the City of Vista 2009 Dry Weather Field Screening and Analytical Monitoring Program. This report presents the results of the monitoring program conducted in the City of Vista during the 2009 dry weather season. The contents include field screening data and analytical laboratory test results, analyses of the collected data, trash assessments, and photographs of sampling locations. The report also presents the results of follow-up investigations conducted to identify the sources of pollutants detected during the field screening program and our recommendations for additional actions.

Review comments from the draft report submitted to the City have been incorporated into this final report. It has been our pleasure working with the City of Vista on this project. If you have any questions regarding this report, please call me at (858) 586-6600 ext. 22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

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1 INTRODUCTION

1.1 Program Overview

The purpose of the Dry Weather Field Screening and Analytical Monitoring Program is to detect and eliminate illicit connections and illegal discharges (IC/ID) to the stormwater conveyance system, minimizing the negative impact of human activities on receiving water bodies. The Dry Weather Monitoring Program consists of the following components:

- Field screening observations
- Field screening analytical monitoring
- Trash assessments
- Laboratory analytical monitoring

The data gathered from dry weather monitoring is used to characterize discharges to the stormwater conveyance system and identify conveyances that are discharging elevated levels of pollutants. Follow-up studies and source investigations are conducted as required to detect and eliminate the sources of these pollutants. The results from the current year's Dry Weather Monitoring Program conducted by D-MAX Engineering, Inc., (D-MAX) are presented herein.

1.2 Regulatory Requirements

In accordance with San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit), each of the Copermittees, including the City of Vista, is required to annually perform dry weather monitoring of discharges into its stormwater conveyance system. During the dry weather season, May 1 through September 30, selected locations along the stormwater conveyance system are evaluated. This procedure is comprised of recording field observations, estimating observed flow rates, and conducting field testing. The Municipal Permit also necessitates that Copermittees conduct laboratory analyses for at least 25 percent of the visited sites with flowing or ponded water. If a sampling location is dry, meaning there is no flowing or ponded water, an alternate sampling station should be selected. If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days.

1.3 Hydrologic Setting

The City of Vista (City) consists of approximately 18.7 square miles, the majority of which is in the Carlsbad Hydrologic Unit (HU). A small portion to the north of the City is part of the San Luis Rey HU. Within the Carlsbad HU, Vista is comprised of three hydrologic areas (HA), namely Agua Hedionda, Buena Vista and Loma Alta. The Lower San Luis HA is part of the San Luis Rey HU. Table 1-1 presents the percent of land of each hydrologic area within the City.

The following drainage basins have been identified within the City's HAs:

- Agua Hedionda
- Buena
- Buena Vista
- Eucalyptus
- Foothill/ Vale Terrace
- Guajome Lake
- Monte Vista
- North Fork Buena Vista Creek
- North Santa Fe
- Sunset

TABLE 1-1
HYDROLOGIC AREAS

Hydrologic Area	Hydrologic Area No.	% Land Area of Vista	Receiving Water Body
Carlsbad Hydrologic Unit			
Agua Hedionda	904.3	38	Agua Hedionda Creek and Lagoon
Buena Vista	904.2	55	Buena Vista Creek and Lagoon
Loma Alta	904.1	1	Loma Alta Creek and Slough
San Luis Rey Hydrologic Unit			
Lower San Luis	903.1	6	San Luis Rey River

Land use within each drainage basin determines the potential for generating both runoff and pollutants into receiving water bodies. Based on available water quality data, the Copermittees have identified bacteria as the high priority water quality problem in the Buena Vista and Loma Alta HAs, and bacteria, sediments, and nutrients as the high priority water quality problem in the Agua Hedionda HA. The constituents of concern in the San Luis Rey HU are bacteria and nutrients.

1.4 Previous Work

The numbers of historical dry weather monitoring sites since 2002 are presented in Table 1-2. Historical dry weather monitoring data is included in Appendix A.

TABLE 1-2
SUMMARY OF HISTORICAL DRY WEATHER SITES [1]

Year	Number of Field Screening Sites [2]	Number of Flowing Sites	Number of Ponded Sites	Number of Dry Sites	Number of Lab Analysis Sites
2002	21	21	0	0	6
2003	22	20	2	0	5
2004	22	data not available		4	6
2005	27	18	9	3	7
2006	28 [3]	21	7	5	6
2007	26 [3]	23	3	6	6
2008	29	25	4	4	8

Notes:
[1] Table does not include sampling that took place at creek sites, which are considered to be an additional study.
[2] Number of Sites Screened = Number Flowing + Number Ponded. Field screening cannot be conducted at sites found to be dry. Dry sites are replaced by either a flowing or ponded site.
[3] Site BV-14 was counted as three sites: BV-14, BV-14-top, and BV-14-bottom. Each site was tested for all field constituents.

1.5 Report Outline

Section 1, Introduction, includes a program overview, regulatory background, a discussion of the City of Vista's hydrologic setting and constituents of concern, a summary of historical field screening data, and the report outline.

Section 2, Sampling Locations, describes the field screening sampling locations and site selection criteria.

Section 3, Field and Laboratory Analytical Methods, includes field screening and laboratory analytical procedures, quality assurance protocols, and follow-up action levels.

Section 4, Field Screening Results, presents qualitative observations of the sampling locations and results of the field screening analyses.

Section 5, Trash Assessment, discusses the procedure and results of the trash assessment.

Section 6, Laboratory Analytical Results, presents results of the laboratory analyses.

Section 7, Data Analysis, provides an analysis of field and laboratory data collected in 2009, as well as a comparison of past results.

Section 8, Follow-up Investigations, details the results of follow-up investigations undertaken to isolate the sources of water contamination detected during the field screening program.

Section 9, Summary and Recommendations, provides a summary of the program results and recommendations for follow-up actions.

Appendix A Historical Dry Weather Monitoring Table

Appendix B Photographs of Sampling Locations

Appendix C Laboratory Analytical Reports

Appendix D Field Data and Trash Assessment Sheets

2 SAMPLING LOCATIONS

The City of Vista's 2009 Dry Weather Monitoring Program consisted of 29 designated primary monitoring stations, eight of which are designated sampling sites for laboratory analysis. If a primary station was dry, an alternate station with flowing or ponded water was selected. In 2009, sites AH-8A, AH-34, AH-37, BV-7A, BV-15, and MV-3 were dry, and alternate sites AH-38, BV-12, BV-34, BV-35, BV-36 and G-6 were sampled. Two of these sites, BV-35 and BV-36, were new alternate sites added this year.

Table 2-1 provides the site name, location, conveyance configuration, land uses, hydrological subarea (HSA), and GPS coordinates of the sampling locations organized by hydrologic area. Sites are labeled according to their respective drainage area using the following abbreviations:

AH = Agua Hedionda

SS = Sunset (Agua Hedionda)

BV = Buena Vista

MV = Monte Vista (Buena Vista)

G = Guajome Lake (San Luis Rey)

A complete map of the sampling locations and drainage basins is included as Figure A at the end of the report, followed by Figure B, a map of the watersheds in the City of Vista broken down into hydrologic subareas. Photographs of sampling locations are included as Appendix B.

TABLE 2-1
2009 DRY WEATHER MONITORING STATIONS

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
Agua Hedionda HA							
AH-8A*	Between 632 and 636 Sycamore Avenue, north of Thibodo Road/Plumesa Avenue	Outlet	Commercial	None	904.32	33.16641	-117.21544
AH-9	Shadowridge and Antigua Drive in Buena Vista Park, northeast side of pond	Outlet	Residential	Parks	904.31	33.15865	-117.24642
AH-17	Southeast of the Faraday Street and Brookhaven Pass intersection, in the corner of the detention basin	Outlet	Residential	Commercial	904.31	33.14003	-117.24637
AH-21	2687 South Melrose Drive (southern end of Melrose Drive)	Outlet	Industrial	None	904.31	33.13534	-117.24466
AH-30	Southwestern corner of Chaparral Drive and Thibodo Road intersection	Earthen Channel	Residential	None	904.32	33.17023	-117.22548
AH-31	Live Oak Road near southern intersection with Cordoba Way, west sidewalk by golf course fence	Manhole	Residential	None	904.31	33.16715	-117.23827
AH-32	Southwest corner of the La Mirada Drive and Sycamore Avenue intersection	Manhole	Industrial	None	904.31	33.15156	-117.22630
AH-33	East end of La Mirada Drive off of Business Park Drive, in canyon by 2260 La Mirada Drive	Outlet	Industrial	None	904.31	33.15225	-117.23074
AH-34*	West end of Keystone Way, near Scott Street	Manhole	Industrial	None	904.31	33.13576	-117.23425
AH-35	Across from 1210 Activity Drive	Manhole	Industrial	Agricultural	904.31	33.14406	-117.21800
AH-36	West side of Cottontail Road, southwest of Mapleleaf Drive	Outlet	Residential	Parks	904.32	33.15912	-117.22548
AH-37*	Southeast corner of the Green Oak Road and South Melrose Drive intersection	Manhole	Residential	None	904.31	33.15503	-117.24137

TABLE 2-1
2009 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
AH-38 *	South side of Shadowridge Drive, east of White Birch Drive	Manhole	Residential	None	904.31	33.15786	-117.24758
SS-1	South side of Branding Iron Circle, west of Melrose Drive	Outlet	Residential	None	904.31	33.18235	-117.25365
Buena Vista Creek HA							
BV-1	Behind 4241 Tiberon Drive	Outlet	Residential	None	904.21	33.18271	-117.28387
BV-4	Across the street from 1725 Hacienda Drive, south of the fence, in the canyon	Outlet	Commercial	Residential	904.21	33.18780	-117.27434
BV-7A*	West sidewalk of South Melrose Drive, south of Hacienda, next to gas station	Manhole	Commercial	None	904.22	33.19300	-117.25372
BV-8	Olive Avenue and Goetting Way, southwest corner	Concrete Channel	Residential	Commercial	904.22	33.20350	-117.24564
BV-10	Northwest corner of Eucalyptus Avenue and Escondido Avenue intersection	Concrete Channel	Residential	Commercial	904.22	33.20242	-117.23605
BV-12 *	Brengle Terrace Park, across from 1425 Vale Terrace Drive, west side of bridge	Earthen Channel	Residential	Parks	904.22	33.20639	-117.21933
BV-15 *	Northwest of the Canenea Avenue and Citrus Avenue intersection	Outlet	Residential	Commercial	904.22	33.21770	-117.24340
BV-18	Brengle Terrace Park, northwest side	Natural Creek	Residential	Parks	904.22	33.21044	-117.22496
BV-24	1427 Foothill Drive	Outlet	Residential	None	904.22	33.21571	-117.21909
BV-30	Parking lot (business: Boomer's) east of Grapevine Road, south of Date Street	Manhole	Residential	None	904.31	33.19243	-117.27395

TABLE 2-1
2009 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
BV-31	Southwest corner of the North Melrose Drive and Copper Drive intersection	Manhole	Residential	Commercial	904.22	33.19910	-117.25601
BV-32	Olive Avenue and Maryland Drive, southwest corner of Washington Middle School's back parking lot, in fenced area (access from 821 Silver Drive)	Outlet	Residential	None	904.22	33.20272	-117.25966
BV-33	North side of West Los Angelos Drive, near North Santa Fe Avenue	Manhole	Residential	Commercial	904.22	33.21198	-117.24572
BV-34 *	Across from 220 Huff Street, next to sidewalk	Manhole	Residential	Industrial	904.21	33.19162	-117.27726
BV-35 *	Northeast corner of the Palomar Place and East Vista Way intersection, in sidewalk by bus stop	Manhole	Residential	None	904.22	33.22333	-117.22600
BV-36 *	In front of 128 Townsite Drive, east of North Santa Fe Avenue	Manhole	Residential	Parks	904.22	33.21144	-117.24394
MV-3 *	Southeast corner of the Escondido Avenue and South Santa Fe Avenue intersection, on sidewalk	Manhole	Commercial	Residential	904.22	33.19369	-117.23432
Lower San Luis HA							
G-3	North end of Calle Jules	Outlet	Residential	None	903.11	33.22679	-117.22972
G-4	Northwest corner of the Warmlands Avenue and Vista Grande Drive intersection	Outlet	Residential	None	903.11	33.23335	-117.22420
G-5	North Santa Fe Avenue, south of Camino Largo, in bike lane on east side of the street (just north of storm drain on sidewalk)	Manhole	Residential	Commercial	903.11	33.23251	-117.24966
G-6 *	Museum Way, west of North Santa Fe Avenue, in front of Guajome Park Academy, by the fence	Outlet	Residential	Commercial	903.11	33.23052	-117.25066

Note: * Alternate sites AH-38, BV-12, BV-34, BV-35, BV-36 and G-6 were substituted for dry primary sites AH-8A, AH-34, AH-37, BV-7A, BV-15 and MV-3.

3 FIELD AND LABORATORY ANALYTICAL METHODS

3.1 Field Screening Procedures and Methods

Field screening techniques consist of qualitative field observations, flow measurement, and quantitative field analyses of selected water quality parameters. Weather conditions, time since last rainfall, and the type of stormwater conveyance are recorded as well. Specific observations and results of the field water quality analyses are documented on field datasheets, which also serve as a record of the field visit. Datasheets are completed for every site visit regardless of whether or not samples were collected. Check boxes on the datasheets indicate if the visit is for routine field screening, confirmation of an exceedance, or an IC/ID follow-up visit. A confirmation visit is a revisit of the original site, whereas an IC/ID follow-up is an upstream investigation. Datasheets from the 2009 Dry Weather Monitoring Program are included as Appendix D.

Field screening and analyses were conducted according to the following procedures and methods:

Qualitative Observations

Qualitative field observations are made during each site visit. These observations include a general site assessment and record water odor, clarity, the presence of floatable materials, visible deposits or stains, vegetation, and biological organisms. Evidence of present or past illicit connections and illegal discharges to the storm drain system can also be discovered through careful field observations. Each field screening location is photographed to document site conditions. Photographs are included in Appendix B.

Flow Measurement

Flow measurements can help estimate pollutant mass loading, prioritize storm drains for future investigation, and identify significant changes in a discharge that may be indicative of an illegal discharge. Various field methods are used in formulas to estimate the flow rate. These include measuring the velocity, depth, and width of the flowing water; recording the amount of time required to fill a bottle of known volume with sample water; or, if measuring flow within a cylindrical pipe, measuring the pipe diameter as well as the depth and velocity of the flow. Low levels of flow may also be assessed visually.

Field Water Quality Analyses

At each site with ponded or flowing water, water samples were collected and analyzed in the field for the following constituents:

- Specific Conductance
- Temperature
- pH
- Turbidity
- Surfactants, measured as methylene blue active substances (MBAS)*
- Nitrate-Nitrogen (Nitrate-N)
- Ammonia-Nitrogen (Ammonia-N)
- Orthophosphate-Phosphorus (Orthophosphate-P)

* Surfactants are also referred to as detergents.

The methods used to perform the above field analyses, along with the reporting limit, range, and accuracy of each method, are listed in Table 3-1.

TABLE 3-1
FIELD ANALYTICAL METHODS

Parameter	Method	Reporting Limit	Range	Accuracy
Specific Conductance	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.01 mS/cm	0 – 20 mS/cm	± 2% of functional sensitivity[1]
Temperature	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.1°C	0.0°C – 60.0°C	± 0.5°C
pH	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter***	0.01	0.00 – 14.00	± 0.01 pH
Turbidity	Hanna Instruments HI 93703 Portable Turbidity Meter***	0.01 NTU	0.01 – 50.00 NTU and 50 – 1000 NTU	± 0.5 NTU or 5% of reading (whichever is greater)
Surfactants	CHEMetrics CHEMets Kit (K-9400) methylene blue active substances	0.13 mg/L	0.00 mg/L – 3.00 mg/L*	± 0.13 & ± 0.5 mg/L [2]
Nitrate-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Nitrate 3 Vacu-vials® (K-6933) Cadmium reduction[3]***	1.13 mg/L**	1.13 mg/L – 113 mg/L**	± 30%of practical detection limit[4]
Ammonia-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Ammonia 3 Vacu-vials® (K-1403) Salicylate***	0.100 mg/L**	0.10 mg/L – 3.000 mg/L**	Varies with measured concetration[4,5]
Ortho-phosphate-P	CHEMetrics V-2000 Multi-Analyte LED Photometer – Phosphate 2 Vacu-vials® (K-8513) Stannous chloride chemistry[6]***	0.098 mg/L**	0.098 mg/L – 2.608 mg/L**	Varies with measured concetration[4,5]
Dissolved Oxygen	Hanna Instruments HI 9145 Portable Dissolved Oxygen Meter	0.00 mg/L	0.00 to 45.00 mg/L	± 1.5% of range

Notes:

EC = electrical conductivity

mS/cm = millisiemens per centimeter

°C = Degrees Celsius

NTU = nephelometric turbidity unit

mg/L = milligrams per liter

LED = light-emitting diode

[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.

[2] ± 0.13 for the range of 0.0 to 1.0 mg/L, ± 0.25 mg/L for the range of 1.0 to 2.0 mg/L and 0.5 mg/L for the range of 2.0 to 3.0 mg/L.

[3] This method determines the concentration of nitrate in mg/L NO_3. To determine the amount of nitrate-nitrogen, the concentration of nitrogen must be adjusted for the presence of oxygen in the NO_3 molecule. Therefore, the result is multiplied by a conversion factor of 0.226, the ratio of the molecular weight of N (14g/mol) to NO_3 (62 g/mol). The practical detection limit for nitrate is 5.0 mg/L; however, the practical detection limit for nitrate-nitrogen is lowered due to the conversion.

[4] Practical Detection Limit (PDL) is defined as the lower limit of the stated test range.

[5] Percent error adjusts as follows: ±30% at PDL, ±20% for 25% of full range, ±10% for 75% of full range, ±10% for 120% of full range.

[6] This method determines the concentration of orthophosphate in mg/L PO_4. To determine the amount of orthophosphate-P, the concentration of phosphate must be adjusted for the presence of oxygen in the PO_4 molecule. Oxygen is 67.4% of phosphate by mass but is not a plant nutrient in this form. Therefore, the result is multiplied by a conversion factor of 0.326, the ratio of the molecular weight of P (31g/mol) to PO_4 (95 g/mol). The practical detection limit for orthophosphate is 0.3 mg/L; however, the detection limit for orthophosphate-phosphorus is lowered due to the conversion.

*Extended ranges in chemical analyses can be achieved through dilutions. Accuracies decrease proportionally with further dilutions.

** Readings below the PDL have increased percent error; measurements are reported, but are flagged as being below the PDL.

***Test method information taken from Hanna Instruments and CHEMetrics manuals, available online at www.hannainst.com and www.chemetrics.com.

3.2 Laboratory Analytical Methods

In accordance with Order R9-2007-0001, laboratory samples were collected at eight sites, representing 25 percent of the sites where ponded or flowing water was observed. Samples were submitted to Encina Wastewater Authority (EWA), a laboratory certified through the Environmental Laboratory Accreditation Program (ELAP), for analysis of the following constituents:

- Total hardness
- Oil and grease
- Diazinon
- Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Total Coliform bacteria
- Fecal Coliform bacteria
- *Enterococcus* bacteria

EWA sent some of the required testing to EnviroMatrix Analytical (EMA), a laboratory certified by the California Department of Health Services for analysis.

The methods used to perform each of the above laboratory analyses along with method reporting limits and holding times are listed in Table 3-2.

TABLE 3-2
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Reporting Limit	Maximum Holding Time [1]
Oil and Grease	EPA 1664A	5 mg/L	28 days
Total Hardness	SM 2340C	10 mg/L	14 days
Dissolved Cadmium	EPA 200.8	0.001 mg/L	24 hours
Dissolved Copper	EPA 200.8	0.001 mg/L	24 hours
Dissolved Lead	EPA 200.8	0.001 mg/L	24 hours
Dissolved Zinc	EPA 200.8	0.020 mg/L	24 hours
Diazinon	EPA 8141A	0.05 µg/L	7 days
Chlorpyrifos	EPA 8141A	0.05 µg/L	7 days
Total Coliforms	SM 9221B	10 – 1,600,000 CFU/100 mL	6 hours
Fecal Coliforms	SM 9222D	10 – 160,000 CFU/100 mL	6 hours
Enterococci	EPA 1600	10 – 160,000 CFU/100 mL	6 hours

Notes:
µg/L = micrograms per liter
CFU/100 mL = colony-forming units per 100 milliliters
[1] Maximum Holding Time values listed here apply to samples collected and preserved in accordance with the quality assurance and quality control procedures listed in Section 3.3.2.

3.3 Quality Assurance and Quality Control (QA/QC)

The QA/QC Plan utilized for this project includes the United States Environmental Protection Agency (EPA) approved test methods for the field and laboratory analysis of water samples, calibration of test equipment, and pre- and post-rinsing of sample collection containers and test vials. Key components of the QA/QC Plan are described below.

3.3.1 Field Sampling and Analysis QA/QC

The pH meters, turbidity meter, and conductivity meter are calibrated daily before field screening begins. The pH meters are adjusted as needed with sodium/potassium phosphate, monobasic buffer solutions with pH values equal to 4.00 ± 0.01, 7.00 ± 0.01, and 10.00 ± 0.01 units. The glass electrode tube is kept moist to preserve the meter's accuracy during fieldwork. The turbidity meter and conductivity meter are calibrated as needed using standard solutions.

Field sample collection containers are rinsed first with distilled water and then with the sample water prior to sample collection. Upon completion of sampling and testing at each site, sample collection containers, test vials, and ion-sensitive electrodes were rinsed twice with distilled water and dried.

The accuracy of field analytical techniques and equipment is assessed at the beginning of each sampling week by analyzing solutions of known concentrations for ammonia-nitrogen, surfactants, nitrate, and orthophosphate. The results of the assessment are shown in Table 3-3.

3.3.2 Laboratory Sampling and Analysis QA/QC

Samples for laboratory analysis were collected concurrently with field samples and utilized the same sampling procedures. Pre-sterilized sample bottles are obtained from the laboratory and thus do not require rinsing with sample water prior to sample collection. After sample collection, all laboratory samples are kept in a cooler on ice until picked up by the lab. Strict chain of custody procedures are followed, and samples are delivered and analyzed within the appropriate holding times, as listed in Table 3-2. Completed chain of custody forms are included in Appendix C.

3. 4 Follow-up Action Levels

Based on dry weather field screening results, immediate follow-up investigations are sometimes necessary to identify and eliminate pollutant sources. In order to determine whether an immediate source investigation is necessary, numeric action levels and best professional judgment are used to interpret the field screening results. If visual and/or analytical evidence of gross contamination are present at a site (e.g., substantial petroleum sheen, extremely high ammonia concentration, evidence of a sewage release, etc.), then an immediate source identification investigation is initiated. For sites that exceed numeric action levels but are not perceived as an immediate threat to water quality, a re-sampling is typically conducted within one day; this is termed the confirmation sampling. An upstream pollutant source investigation is conducted thereafter if elevated concentrations persist and no sources can be identified in the immediate vicinity of the monitoring station. For field screening, confirmation visits are always conducted within two business days of the initial test. If elevated levels of pollutants are detected by the laboratory analyses, a comprehensive follow-up pollutant source investigation is conducted within two days of receiving the analytical reports from the lab.

The results of these investigations are included in Section 8 of this report. Recommendations based on these investigations are included in Section 9.

TABLE 3-3
FIELD ANALYSIS QA/QC RESULTS

Date	Analyte	Known Concentration (mg/L)	Acceptable Range* (mg/L)	Field Test Kit Results (mg/L)
05/28/09	Ammonia-Nitrogen	0.82	0.66 – 0.98	0.714
05/28/09	Surfactants	1.0	0.75 – 1.25	1.0
05/28/09	Nitrate *	44.3	31.0 – 57.6	38.61
05/28/09	Orthophosphate *	3.07	2.45 – 3.68	2.510
06/02/09	Ammonia-Nitrogen	0.82	0.66 – 0.98	0.694
06/02/09	Surfactants	1.0	0.75 – 1.25	1.0
06/02/09	Nitrate *	44.3	31.0 – 57.6	46.43
06/02/09	Orthophosphate *	3.07	2.45 – 3.68	2.692
06/08/09	Ammonia-Nitrogen	0.82	0.66 – 0.98	0.863
06/08/09	Surfactants	1.0	0.75 – 1.25	1.0
06/08/09	Nitrate *	44.3	31.0 – 57.6	46.42
06/08/09	Orthophosphate *	3.07	2.45 – 3.68	3.014

Notes:
* Acceptable range is calculated based on the error associated with the methods as listed in Table 3-1.

** Nitrate and orthophosphate are converted to nitrate-nitrogen and orthophosphate-phosphorus, respectively, when conducting standard field screening. This is accomplished by multiplying the results by 0.226 for nitrate and 0.326 for orthophosphate. To simplify the calibration process, the unconverted numbers are used when calibrating the instruments.

The following three methods are employed to determine whether immediate or comprehensive follow-up investigations are necessary: (1) Numeric Action Levels; (2) California Toxics Rule (CTR); and (3) Best Professional Judgment. All three approaches are described in detail below and presented in Table 3-4.

Numeric Action Levels
Numeric action levels are used as the primary approach for interpreting pH, orthophosphate-P, nitrate-N, ammonia-N, surfactants, oil and grease, diazinon, chlorpyrifos, total coliforms, fecal coliforms, and *Enterococcus* analytical results (see Table 3-4). Prior to the 2003 dry weather season, no standard action levels had been adopted for use throughout San Diego County. D-MAX calculated the current set of numeric action levels, which are based on county-wide sampling data and have been used by all Copermittees since the 2003 dry weather season.

California Toxics Rule
The CTR criterion maximum concentration (CMC) is used to determine appropriate action levels for dissolved trace metals, including cadmium, copper, lead, and zinc. The CTR equations, as provided in USEPA Federal Register Doc. 40 Code of Federal Regulations (CFR) Part 131, are used to calculate benchmarks based on the total

hardness of the sampled water, with the action levels increasing as hardness increases. More information on the CTR is available at http://www.epa.gov/region09/water/ctr.

Best Professional Judgment

Best professional judgment is utilized as the primary approach for interpreting turbidity, water temperature, and conductivity and as a secondary approach for interpreting the results of all other field and laboratory analyses. Under best professional judgment, the need for a follow-up investigation is left to the discretion of the D-MAX field crew. Best professional judgment may indicate that results which either exceed certain action levels or statistical outliers may be the result of natural or background factors.

TABLE 3-4
ACTION LEVELS FOR FIELD SCREENING AND LABORATORY PARAMETERS

Field Screening Analytes	Action Levels[1]	Source/ Notes
pH	<6.5 or >9.0	Basin Plan[2], with allowance for elevated pH due to excessive photosynthesis. Elevated pH is especially problematic in combination with high ammonia.
Orthophosphate-P (mg/L)	2.0	USEPA Multi-sector General Permit
Nitrate-N (mg/L)	10.0	Basin Plan and drinking water standards
Ammonia-N (mg/L)	1.0	Based on Workgroup experience. May also consider unionized ammonia fraction.
Turbidity (NTU)	Best Professional Judgment	WQOs relevant to inland surface waters are not available. Base judgment on channel type and bottom, time since last rain, background levels, and most importantly visual observation (e.g. unusual colors and lack of clarity) and unusual odors.
Temperature (°C)	Best Professional Judgment	Base judgment on season, air temperature, channel type, shading, etc.
Conductivity (mS/cm)	Best Professional Judgment	Conductivity may be highly elevated in some regions due to high TDS, groundwater exfiltration to surface water, mineral dissolution, drought, and seawater intrusion. Normal source ID and discharge elimination work is not effective in these situations. Knowledge of area background conditions is important. Values <0.75 may indicate excessive potable water discharge or flushing.
Laboratory Analytes	**Action Levels**	**Source/ Notes**
Oil and Grease (mg/L)	15	USEPA Multi-sector General Permit. If petroleum sheen is observed, the sample should be collected from the water surface. Visual observations may justify immediate investigation.
Diazinon (µg/L)	0.5	Response to diazinon and chlorpyrifos levels above 0.5 µg/L should focus on education and outreach to potential dischargers in the target drainage basin. Highly elevated levels should be investigated aggressively as with other potential IC/IDs.
Chlorpyrifos (µg/L)	0.5	
Dissolved Cadmium (µg/L)	California Toxics Rule	Use California Toxics Rule, 1-hour criteria to determine appropriate action level for individual samples. Table provides benchmarks based on hardness and dissolved metals concentration. For example, at 300 mg/L hardness the following action levels would apply: Cd – 14 ppb; Cu – 38 ppb; Pb – 209 ppb; and Zn – 297 ppb.
Dissolved Copper (µg/L)	California Toxics Rule	
Dissolved Lead (µg/L)	California Toxics Rule	
Dissolved Zinc (µg/L)	California Toxics Rule	
Total Coliforms (MPN/100 mL)	50,000	Bacteria levels in many storm drains are likely to exceed public health guidance criteria. Use confidence interval test and best professional judgment to identify conveyances for source ID.
Fecal Coliforms (MPN/100 mL)	20,000	
Enterococci (MPN/100 mL)	10,000	

Notes:

[1] The referenced action levels should not be the sole criteria for initiating a source identification investigation. Dry weather monitoring data should be interpreted using a variety of available information. Factors that should be considered include within-site and between-site sample variability.

[2] Basin Plan = Water Quality Control Plan for the San Diego Basin

WQO = Water Quality Objective

ppb = parts per billion

4 FIELD SCREENING RESULTS

The Dry Weather Monitoring Program was conducted during May and June of 2009. Field screening was conducted at the 29 sites where ponded or flowing water was observed. Primary sampling station sites AH-8A, AH-34, AH-37, BV-7A, BV-15 and MV-3 were dry and replaced with alternate sites AH-38, BV-12, BV-34, BV-35, BV-36 and G-6. A total of 35 sites were visited. Confirmation visits were performed at the five sites at which a field constituent was found to exceed specified action levels. Field data sheets for each site visit are included in Appendix D.

4.1 Qualitative Observations

Qualitative observations noted as part of routine dry weather monitoring visits are summarized below and presented in Table 4-1.

Light Conditions
Light conditions were primarily overcast or cloudy, with four visits occurring during sunny weather.

Odor
Water samples from the majority of sites were odorless. One sample had a musty odor.

Color
Water samples taken from most of the sites were colorless, with the exception of one yellow and one brown water sample.

Clarity
Aside from negligible amounts of suspended particles, samples from most sites were clear. Five sites had slightly cloudy water.

Floatable Materials
Most sites were free of floatable material. Four sites had floating trash and three had bubbles or foam. One site had trash, bubbles, foam, an oily sheen, and leaves.

Deposits
Sediment, gravel, fine particulates, or a combination of these, were observed at almost all sites. There were no sites having stains or oily deposits. Only two sites were without any visible deposits.

Vegetation
Most sites had either normal or no vegetation. One site had excessive vegetation in the surrounding area. All earthen channels and natural creeks had normal vegetation, and sites lacking sunlight or soil typically did not contain vegetation.

Biology
The presence of aquatic flora and fauna can indicate healthy water conditions. Algal growth is an indicator of persistent water flow, and was present at 13 sites. Insects were seen at 17 sites, and many sites were home to other organisms including snails, fish, spiders, frogs, and crayfish.

TABLE 4-1
FIELD OBSERVATIONS

Site No.	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
AH-17	6/4/09	9:55	Partly Cloudy	None	None	Slightly Cloudy	None	Fine Particulates	None	Algae
AH-21	6/3/09	14:30	Partly Cloudy	None	None	Clear	None	Fine Particulates	None	Algae
AH-30	6/10/09	10:20	Overcast	None	None	Clear	None	Sediment/Gravel	Normal	Insects
AH-31	6/8/09	15:40	Sunny	None	None	Clear	None	Fine Particulates	None	None
AH-32	6/3/09	15:55	Partly Cloudy	None	None	Slightly Cloudy	None	Fine Particulates	None	None
AH-33	6/5/09	12:15	Partly Cloudy	Musty	None	Slightly Cloudy	Trash	Sediment, Fine Particulates	Normal	None
AH-34(Dry)	6/4/09	15:10	Partly Cloudy	ns	ns	ns	ns	Sediment/Gravel	None	None
AH-35	6/4/09	15:35	Partly Cloudy	None	None	Clear	None	Sediment/Gravel	None	None
AH-35 (Confirmation)	06/05/09	10:15	Partly Cloudy	None	None	Clear	None	Sediment/Gravel	None	None
AH-36	6/10/09	9:35	Overcast	None	None	Clear	None	Fine Particulates	None	Insect/Algae
AH-37 (Dry)	6/8/09	15:10	Sunny	ns	ns	ns	ns	Sediment, Fine Particulates	None	None
AH-38	6/9/09	12:45	Partly Cloudy	None	None	Clear	None	None	None	None
AH-8A (Dry)	6/9/09	12:20	Partly Cloudy	ns	ns	ns	ns	Sediment, Fine Particulates	Excessive	Insects
AH-9	6/9/09	11:15	Partly Cloudy	None	None	Clear	Trash	Sediment, Fine Particulates	Normal	Insect/Algae, Fish
BV-1	6/4/09	12:50	Partly Cloudy	None	None	Clear	Bubbles/Foam	Sediment/Gravel	Normal	Snails, Insect/Algae
BV-10	6/9/09	15:40	Partly Cloudy	None	None	Clear	None	Sediment/Gravel, Fine Particulates	None	Snails, Insect/Algae
BV-12	6/10/09	11:35	Overcast	None	None	Non	None	Sediment, Fine Particulates	Normal	Insect/Algae

TABLE 4-1
FIELD OBSERVATIONS (CONTINUED)

Site No.	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
BV-15 (Dry)	6/10/09	11:20	Overcast	ns	ns	ns	ns	Sediment/Gravel	None	None
BV-18	5/28/09	12:40	Overcast	None	None	Clear	None	Sediment/Gravel	Normal	Insects, Crayfish
BV-18 (Confirmation)	05/29/09	9:40	Overcast	None	None	Clear	None	Sediment/Gravel	Normal	Insects, Crayfish
BV-24	5/29/09	10:30	Overcast	None	None	Clear	None	Sediment/Gravel	None	Insect/Algae
BV-30	5/29/09	14:50	Overcast	None	None	Clear	None	Sediment	None	None
BV-31	5/28/09	14:00	Overcast	None	None	Clear	None	Sediment/Gravel	None	None
BV-32	6/5/09	15:15	Partly Cloudy	None	Yellow	Slightly Cloudy	Trash, Bubbles/Foam	Fine Particulates	Normal	Insect/Algae, Frog
BV-32 (Confirmation)	06/08/09	9:45	Partly Cloudy	None	Yellow	Clear	None	Fine Particulates	Normal	Snails, Insect/Algae
BV-33	6/5/09	14:00	Partly Cloudy	None	None	Clear	None	Sediment, Fine Particulates	None	Insects
BV-34	6/10/09	12:20	Overcast	None	None	Clear	None	Fine Particulates	None	None
BV-35	6/10/09	14:40	Overcast	None	None	Clear	None	Sediment/Gravel	None	None
BV-36	6/10/09	15:45	Overcast	None	None	Clear	None	None	None	None
BV-4	6/8/09	10:45	Partly Cloudy	None	None	Clear	None	Sediment, Fine Particulates	None	Insect/ Algae
BV-7A (Dry)	6/8/09	10:20	Overcast	ns	ns	ns	ns	Sediment/Gravel	None	None
BV-8	5/28/09	11:15	Overcast	None	None	Clear	None	Sediment, Fine Particulates	None	Insect/Algae
G-3	5/29/09	11:20	Overcast	None	None	Clear	None	Sediment	Normal	Insects

TABLE 4-1
FIELD OBSERVATIONS (CONTINUED)

Site No.	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
G-4	5/29/09	14:20	Overcast	None	Brown	Slightly Cloudy	Trash, Bubbles/Foam, Sheen, Leaves	Sediment, Fine Particulates	Normal	Snails, Insect/Algae
G-4 (Confirmation)	06/03/09	12:40	Overcast	None	Yellow	Clear	Trash	Sediment, Fine Particulates	Normal	Snails, Insect/Algae
G-5	5/29/09	14:00	Overcast	None	None	Clear	None	Sediment	None	Spiders
G-6	6/9/09	13:30	Partly Cloudy	None	None	Clear	None	Fine Particulates	None	Insect/Algae, Crayfish
MV-3 (Dry)	6/10/09	11:05	Overcast	ns	ns	ns	ns	Sediment/Gravel	None	None
SS-1	6/8/09	12:50	Partly Cloudy	None	None	Clear	None	Sediment	Normal	None
SS-1 (Confirmation)	06/09/09	9:45	Overcast	None	None	Clear	None	Sediment, Fine Particulates	Normal	None

Notes:

denotes a confirmation visit

ns = not sampled (dry site)

4.2 Field Analytical Results

Field analyses are conducted at all sites with flowing or ponded water. The measured constituents are described below.

Flow rate quantifies the volume of fluid passing across a given surface per unit time. Flow rate measurements are needed to calculate the load or particular amount of a pollutant discharged.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Also, the aquatic habitat must remain within a certain temperature range in order to sustain sensitive aquatic life. In the field, water temperature is measured immediately upon sample collection at each site with ponded or flowing water.

The **pH** is an expression of acidity or alkalinity of a water sample. The pH of an aquatic system can affect a variety of chemical reactions, including the availability of nutrients and the solubility of chemical substances, particularly heavy metals.

Turbidity describes the clarity or cloudiness of a water sample, or the degree to which light is blocked by suspended material in the water. Turbid waters not only limit the amount of light that reaches submerged vegetation, thus reducing photosynthetic capacity, but excessive suspended particles can also absorb heat and increase water temperatures.

Specific Conductance (Conductivity) values indicate the total concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially help indicate the presence of dissolved pollutants.

Surfactant concentrations in water samples often reflect illegal discharge from industrial, commercial, or residential sources. Pollution resulting from surfactants alters the surface tension of water and disrupts the breathing mechanisms of fish gills and other aquatic organisms.

Ammonia-Nitrogen (ammonia-N) may indicate pollution from decomposing organic matter, agricultural or household fertilizer runoff, or the presence of sewage. Ammonia occurs naturally in the environment; however, in higher quantities it can become toxic to fish and other organisms.

Nitrate-Nitrogen (nitrate-N) is a common sign of nutrient pollution from agricultural or household fertilizer runoff. Nitrate pollution can cause excessive algal growth, resulting in oxygen depletion as the algae begin to decompose. This eventually suffocates other aquatic life. Nitrate is measured during field monitoring, and the amount of nitrate-N is derived using a conversion factor of 0.226. This process is explained in Note 3 of Table 3-1.

Orthophosphate-Phosphorus (orthophosphate-P) can be an indicator of nutrient pollution from agricultural or household fertilizer runoff, industrial chemicals, or detergents. Similar to nitrate-N, orthophosphate-P pollution can cause nutrient enrichment (eutrophication), stimulate algal growth, and thus deplete oxygen in the water to levels that are dangerous for aquatic life. Even low levels of orthophosphate-P can cause significant algal growth, as it is commonly the limiting nutrient in plant growth. During the field analysis, orthophosphate is measured and the amount of orthophosphate-P is calculated using a conversion factor of 0.326. This process is explained in Note 6 of Table 3-1.

A statistical summary of the routine field analytical results is presented in Table 4-2. Table 4-3 shows the results of all field analyses conducted at the sampled sites. Graphs of the various parameters and appropriate action levels for follow-up investigations are included at the end of this section.

TABLE 4-2
FIELD ANALYSIS STATISTICAL SUMMARY [1]

Parameter (units)	Maximum	Minimum	Average	Median	Standard Deviation	Number of Exceed-ances	Graph Number
Flow Rate (gpm)	33	0	4.2	2.0	6.9	0	4-1
Temperature (ºC)	23.7	17.3	20.5	20.6	1.8	0	4-2
pH	8.7	7.4	7.9	7.9	0.3	0	4-3
Turbidity (NTU)	40.17	0.01	8.97	2.06	12.12	0	4-4
Conductivity (mS/cm)	8.35	0.68	2.57	1.82	1.92	0	4-5
Ammonia-N (mg/L)	6.490	nd	0.425	0.128	1.193	2	4-6
Surfactants (mg/L MBAS)	1.50	0.13	0.45	0.50	0.28	1	4-7
Nitrate-N (mg/L)	38.45	nd	3.42	0.81	7.46	2	4-8
Orthophosphate-P (mg/L)	0.841	0.022*	0.229	0.125	0.226	0	4-9

Notes:
gpm = gallons per minute
nd = not detected, below reporting limit
* Value reported is below the Practical Detection Limit
[1] Calculations include complete routine visit data only. Confirmation visits, follow-up visits, and dry sites are not incorporated.

TABLE 4-3
FIELD ANALYTICAL RESULTS

Site Name	Date	Time	Flow (gpm)	Temp. (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia (mg/L)	Nitrate (mg/L)	Ortho-phosphate-P (mg)
AH-8A	6/9/09	12:20	dry	ns	ns	ns	ns	ns	ns	ns	ns
AH-9	6/9/09	11:15	10	20.1	7.4	0.46	2.91	0.50	0.195	0.18*	0.363
AH-17	6/4/09	9:55	6	21.0	7.8	38.46	4.49	0.50	0.447	2.21*	0.269
AH-21	6/3/09	14:30	<1	20.6	7.8	1.14	2.96	0.50	0.257	0.43*	0.022*
AH-30	6/10/09	10:20	ponded	18.8	7.8	1.92	1.70	0.25	nd	0.23*	0.370
AH-31	6/8/09	15:40	<1	22.0	8.0	1.91	1.17	0.25	0.030*	0.26*	0.841
AH-32	6/3/09	15:55	3	21.7	7.4	30.41	7.35	0.50	0.500	0.19*	0.036*
AH-33	6/5/09	12:15	<1	18.5	7.5	40.17	1.53	0.75	0.148	0.36*	0.642
AH-34 (Dry)	6/4/09	15:10	dry	ns	ns	ns	ns	ns	ns	ns	ns
AH-35	6/4/09	15:35	3	20.8	8.1	1.63	6.21	0.63	0.171	**38.45**	0.073*
AH-35 (Confirmation)	06/05/09	10:15	2	21.2	7.9	na	5.91	na	na	**33.65**	na
AH-36	6/10/09	9:35	<1	17.8	8.2	1.09	1.44	0.25	0.011*	0.35*	0.249*
AH-37 (Dry)	6/8/09	15:10	dry	ns	ns	ns	ns	ns	ns	ns	ns
AH-38	6/9/09	12:45	<1	21.1	7.9	18.11	1.40	0.13	0.104	1.06*	0.266
BV-1	6/4/09	12:50	2	22.2	8.1	1.90	8.35	0.75	0.194	0.05*	0.125*
BV-4	6/8/09	10:45	16	20.4	8.2	1.36	2.01	0.38	0.026*	0.15*	0.082*

TABLE 4-3
FIELD ANALYTICAL RESULTS (CONTINUED)

Site Name	Date	Time	Flow (gpm)	Temp. (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia (mg/L)	Nitrate (mg/L)	Ortho-phosphate-P (mg)
BV-7A (Dry)	6/8/09	10:20	dry	ns	ns	ns	ns	ns	ns	ns	ns
BV-8	5/28/09	11:15	33	20.7	8.3	0.78	1.56	0.25	0.032*	3.65	0.022*
BV-10	6/9/09	15:40	5	23.0	8.7	3.95	1.82	0.25	0.195	4.55	0.024*
BV-12	6/10/09	11:35	2	17.3	8.1	2.06	2.17	0.25	0.088*	0.94*	0.052*
BV-15 (Dry)	6/10/09	11:20	dry	ns	ns	ns	ns	ns	ns	ns	ns
BV-18	5/28/09	12:40	16	18.9	7.7	0.10	2.08	0.50	0.160	**11.64**	0.051*
BV-18 (Confirmation)	05/29/09	9:40	19	17.4	7.5	1.73	2.08	na	na	7.15	na
BV-24	5/29/09	10:30	5	17.3	7.8	1.50	1.89	0.25	0.125	4.28	0.123*
BV-30	5/29/09	14:50	3	17.8	8.1	17.66	1.82	0.25	0.091*	0.18*	0.109*
BV-31	5/28/09	14:00	5	23.2	7.6	0.01	1.36	0.25	0.005*	0.67*	0.035*
BV-32	6/5/09	15:15	<1	23.7	7.4	23.15	1.44	**1.50**	0.747	2.27	0.404
BV-32 (Confirmation)	06/08/09	9:45	ponded	20.3	7.1	5.33	3.71	0.88	na	na	na
BV-33	6/5/09	14:00	1	23.6	7.6	5.12	5.35	0.75	0.317	1.48*	0.418
BV-34	6/10/09	12:20	3	19.3	8.1	3.62	1.54	0.13	0.014*	nd	0.053*
BV-35	6/10/09	14:40	<1	21.2	8.3	8.50	0.98	0.50	0.274	0.03*	0.291
BV-36	6/10/09	15:45	<1	21.0	7.9	10.32	1.68	0.25	0.108	4.60	0.231*

TABLE 4-3
FIELD ANALYTICAL RESULTS (CONTINUED)

Site Name	Date	Time	Flow (gpm)	Temp. (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia (mg/L)	Nitrate (mg/L)	Ortho-phosphate-P (mg)
G-3	5/29/09	11:20	3	20.1	8.1	0.01	1.78	0.50	0.113	9.76	0.061*
G-4	5/29/09	14:20	ponded	19.0	7.4	28.07	0.68	0.75	**1.199**	5.38	0.647
G-4 (Confirmation)	06/03/09	12:40	ponded	22.7	8.2	na	1.01	na	0.167	na	na
G-5	5/29/09	14:00	1	19.7	7.7	2.41	2.76	0.50	0.128	1.52*	0.141*
G-6	6/9/09	13:30	2	22.7	7.9	0.01	1.89	0.25	0.114	0.19*	0.032*
MV-3 (Dry)	6/10/09	11:05	dry	ns	ns	ns	ns	ns	ns	ns	ns
SS-1	6/8/09	12:50	ponded	20.4	7.5	14.21	2.12	0.50	**6.490**	0.68*	0.608
SS-1 (Confirmation)	06/09/09	9:45	ponded	18.3	7.3	na	2.63	na	**7.670**	na	na

Notes:

* value reported is below the Practical Detection Limit

** not applicable, PDL applies only to constituents measured using the CHEMetrics V2000 meter. See Table 3-1 for applicable ranges and reporting limits.

ns = not sampled (dry site)
nd = not detected
na = not analyzed
BPJ = Best Professional Judgment
Red Bold values denotes action level exceeded
denotes a confirmation visit
denotes a location sampled for laboratory analysis

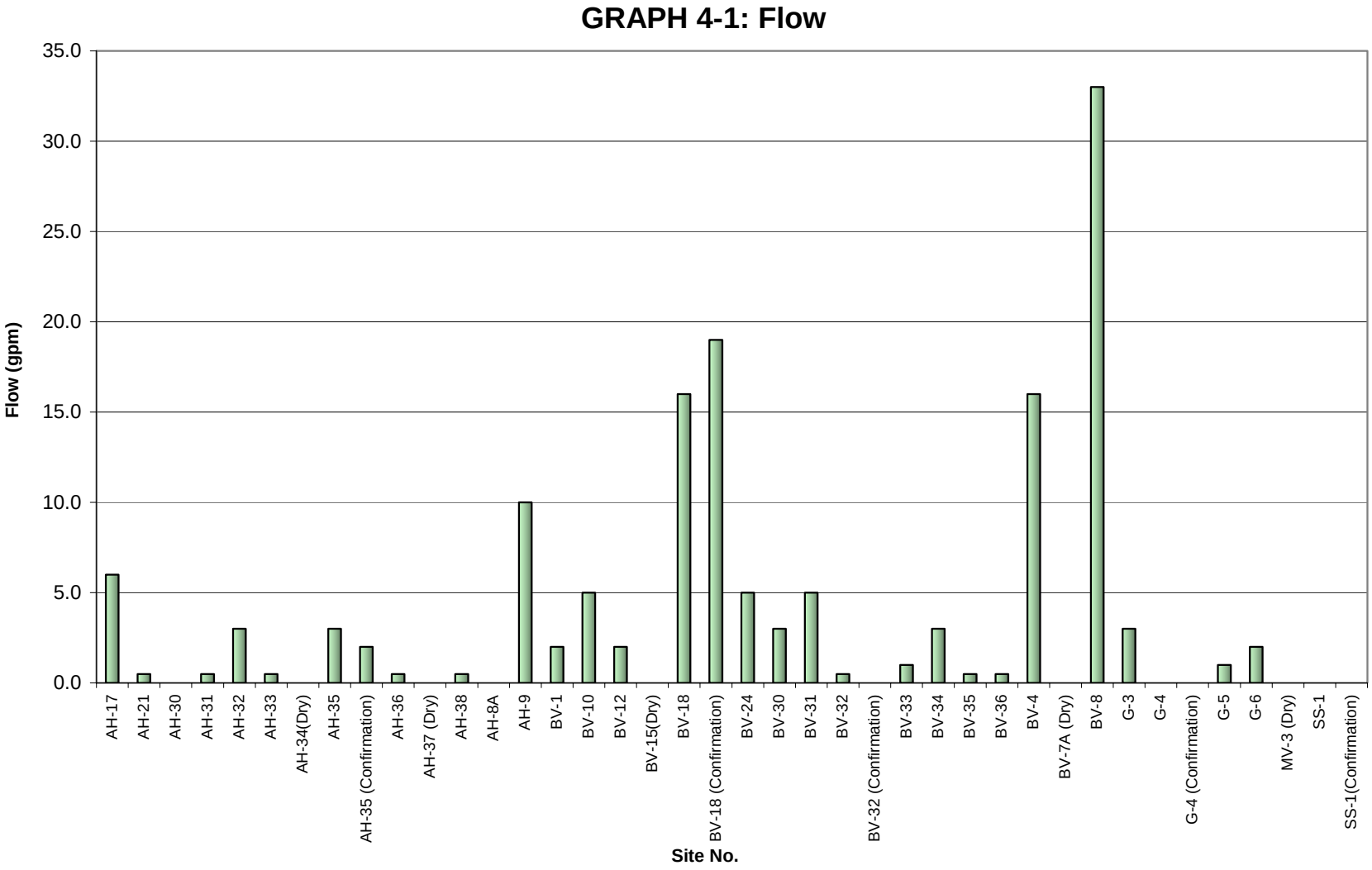
GRAPH 4-1: Flow
Flow (gpm)
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-34(Dry)
AH-35
AH-35 (Confirmation)
AH-36
AH-37 (Dry)
AH-38
AH-8A
AH-9
BV-1
BV-10
BV-12
BV-15(Dry)
BV-18
BV-18 (Confirmation)
BV-24
BV-30
BV-31
BV-32
BV-32 (Confirmation)
BV-33
BV-34
BV-35
BV-36
BV-4
BV-7A (Dry)
BV-8
G-3
G-4
G-4 (Confirmation)
G-5
G-6
MV-3 (Dry)
SS-1
SS-1(Confirmation)
Site No.

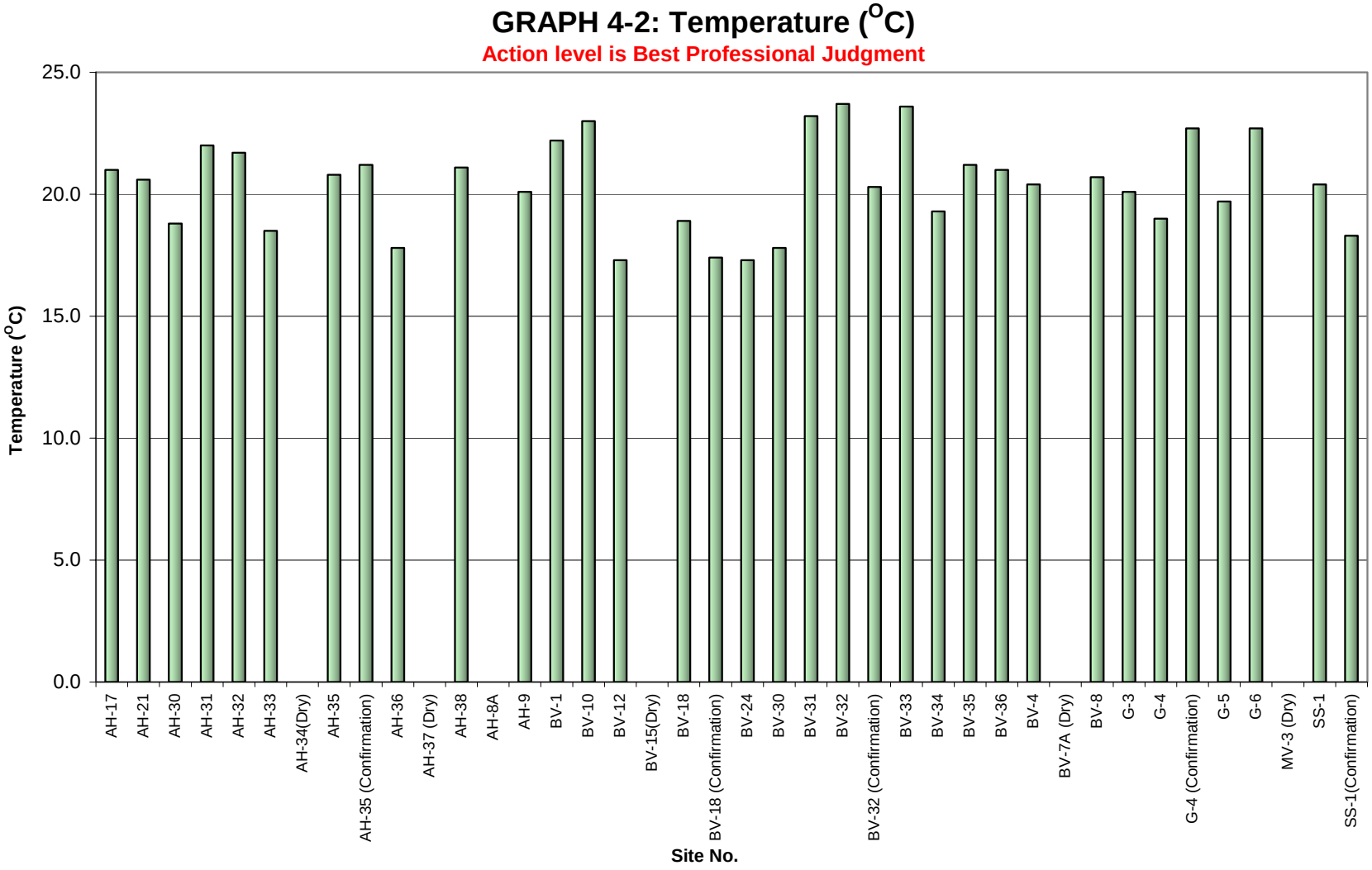
GRAPH 4-2: Temperature (°C)
Action level is Best Professional Judgment
Temperature (°C)
25.0
20.0
15.0
10.0
5.0
0.0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-34(Dry)
AH-35
AH-35 (Confirmation)
AH-36
AH-37 (Dry)
AH-38
AH-8A
AH-9
BV-1
BV-10
BV-12
BV-15(Dry)
BV-18
BV-18 (Confirmation)
BV-24
BV-30
BV-31
BV-32
BV-32 (Confirmation)
BV-33
BV-34
BV-35
BV-36
BV-4
BV-7A (Dry)
BV-8
G-3
G-4
G-4 (Confirmation)
G-5
G-6
MV-3 (Dry)
SS-1
SS-1(Confirmation)
Site No.

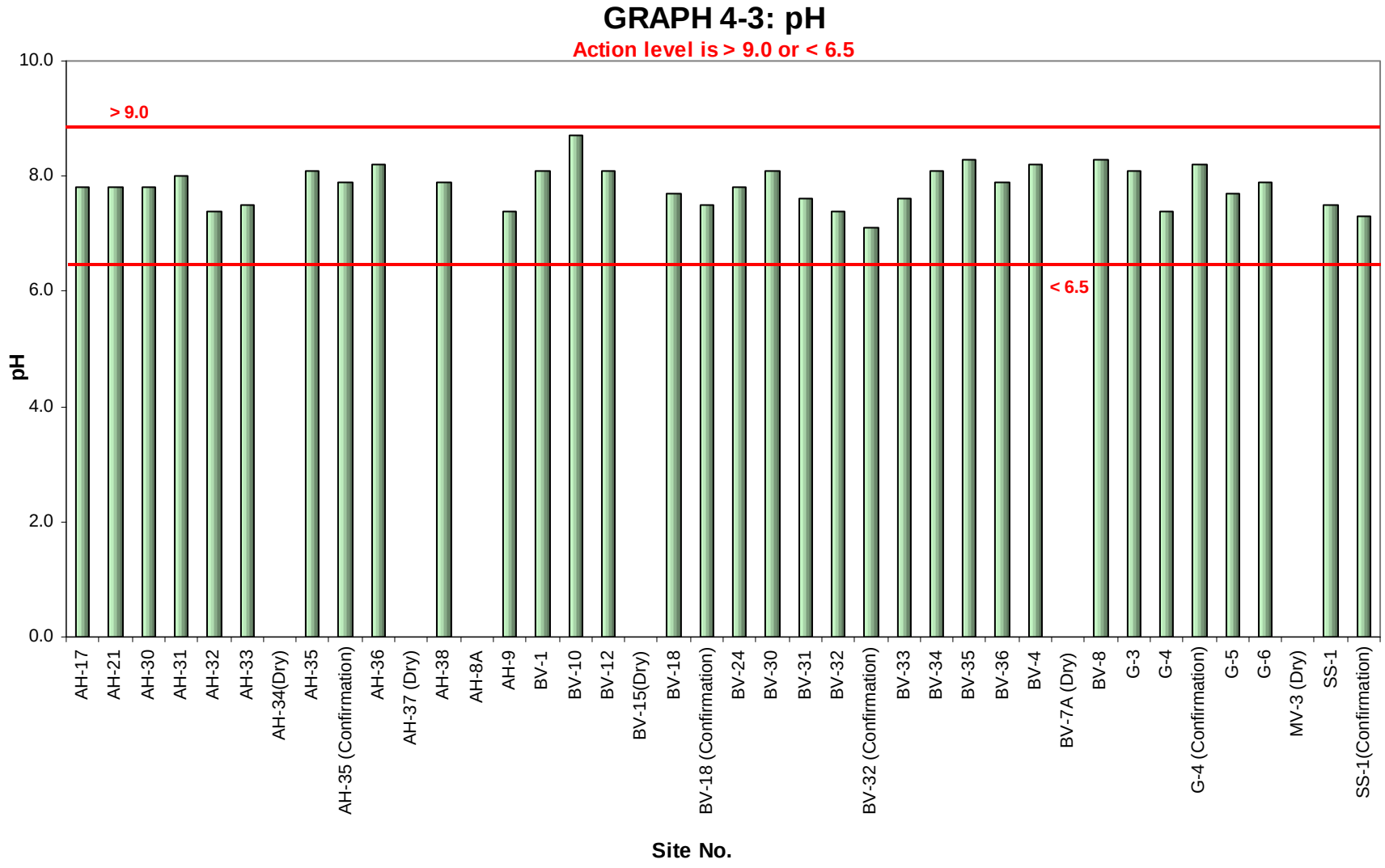
GRAPH 4-3: pH
Action level is > 9.0 or < 6.5
> 9.0
< 6.5
pH
10.0
8.0
6.0
4.0
2.0
0.0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-34(Dry)
AH-35
AH-35 (Confirmation)
AH-36
AH-37 (Dry)
AH-38
AH-8A
AH-9
BV-1
BV-10
BV-12
BV-15(Dry)
BV-18
BV-18 (Confirmation)
BV-24
BV-30
BV-31
BV-32
BV-32 (Confirmation)
BV-33
BV-34
BV-35
BV-36
BV-4
BV-7A (Dry)
BV-8
G-3
G-4
G-4 (Confirmation)
G-5
G-6
MV-3 (Dry)
SS-1
SS-1(Confirmation)
Site No.

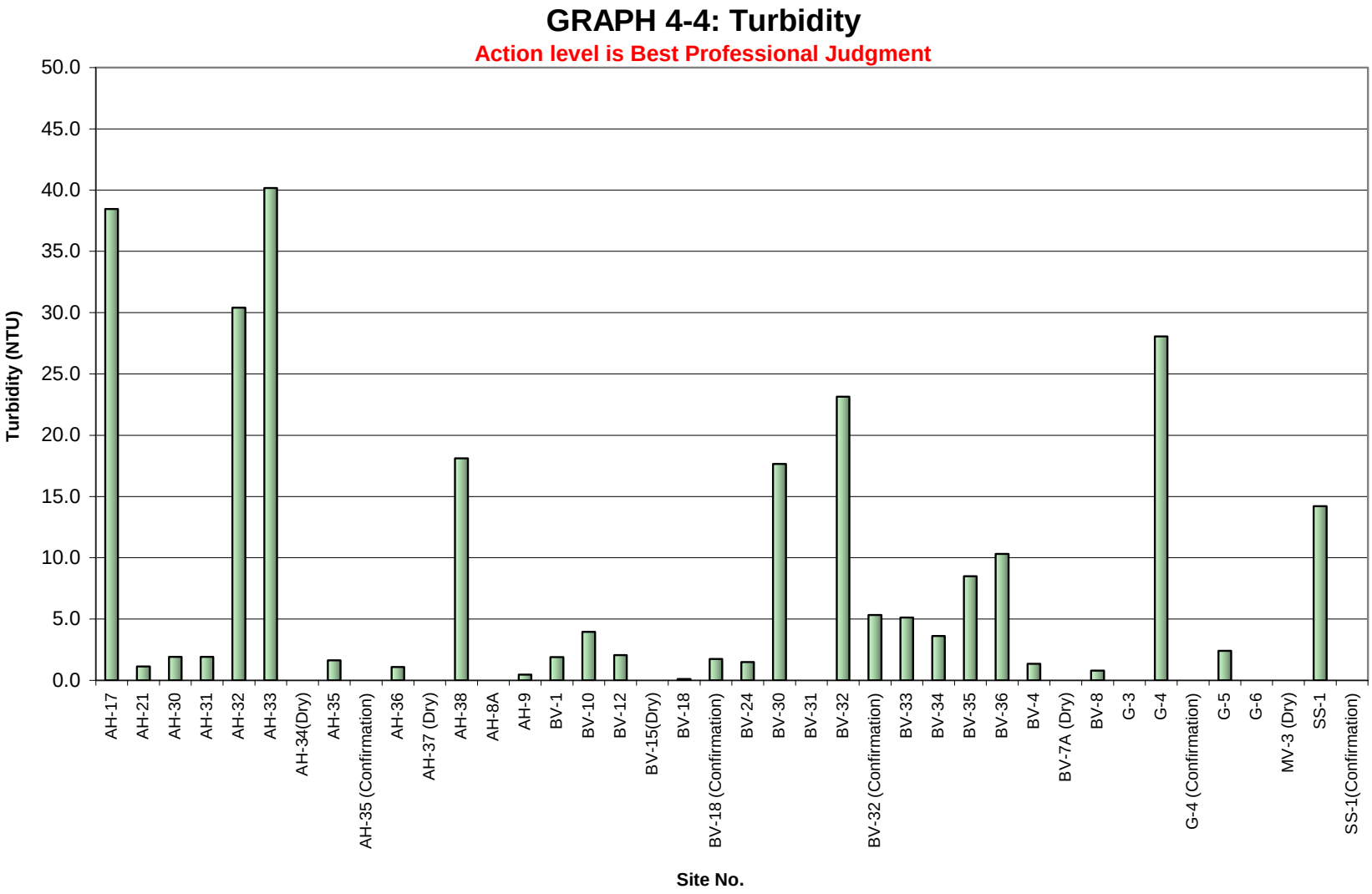
GRAPH 4-4: Turbidity
Action level is Best Professional Judgment
Turbidity (NTU)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-34(Dry)
AH-35
AH-35 (Confirmation)
AH-36
AH-37 (Dry)
AH-38
AH-8A
AH-9
BV-1
BV-10
BV-12
BV-15(Dry)
BV-18
BV-18 (Confirmation)
BV-24
BV-30
BV-31
BV-32
BV-32 (Confirmation)
BV-33
BV-34
BV-35
BV-36
BV-4
BV-7A (Dry)
BV-8
G-3
G-4
G-4 (Confirmation)
G-5
G-6
MV-3 (Dry)
SS-1
SS-1(Confirmation)
Site No.

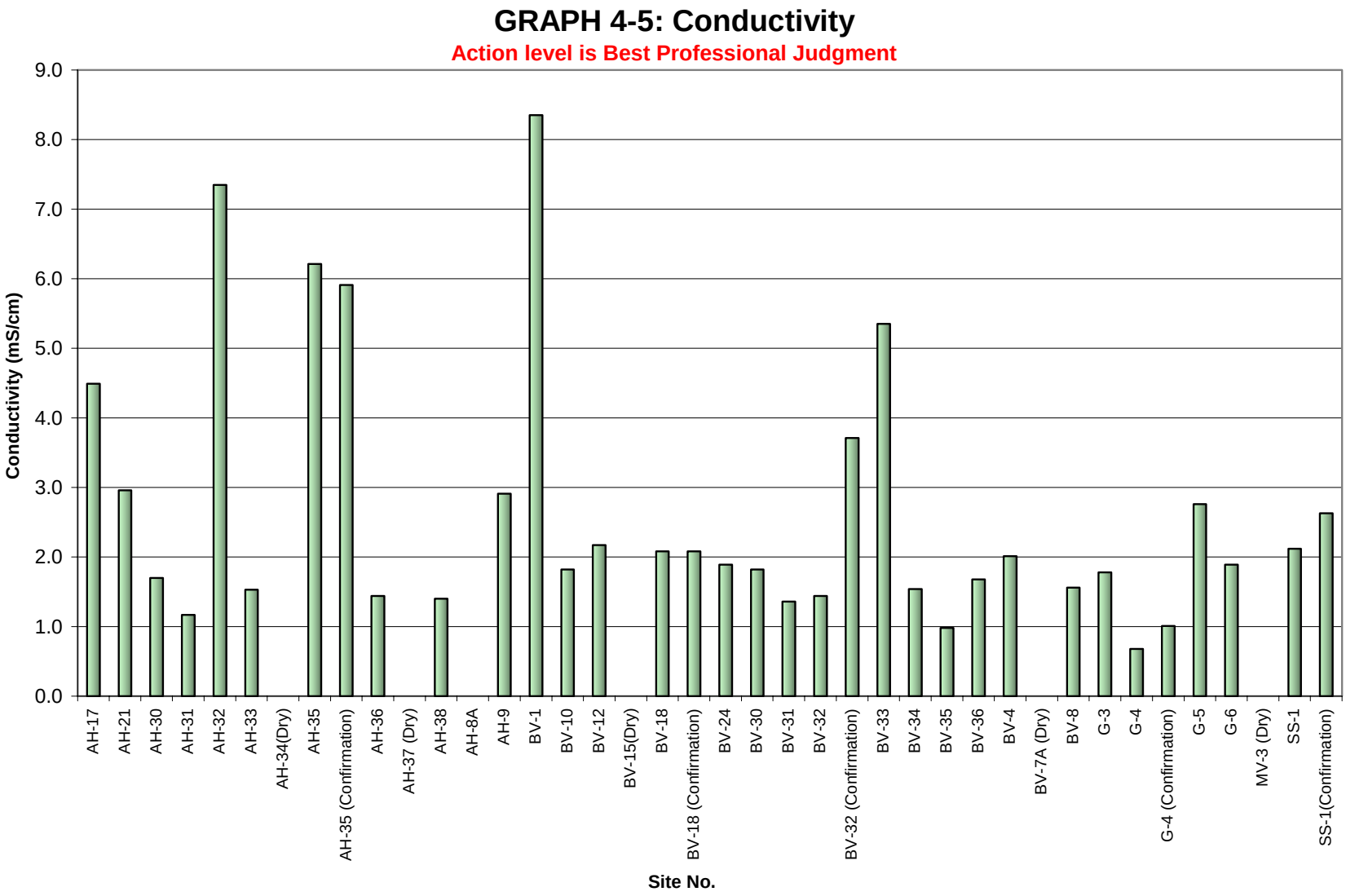
GRAPH 4-5: Conductivity
Action level is Best Professional Judgment
Conductivity (mS/cm)
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-34(Dry)
AH-35
AH-35 (Confirmation)
AH-36
AH-37 (Dry)
AH-38
AH-8A
AH-9
BV-1
BV-10
BV-12
BV-15(Dry)
BV-18
BV-18 (Confirmation)
BV-24
BV-30
BV-31
BV-32
BV-32 (Confirmation)
BV-33
BV-34
BV-35
BV-36
BV-4
BV-7A (Dry)
BV-8
G-3
G-4
G-4 (Confirmation)
G-5
G-6
MV-3 (Dry)
SS-1
SS-1(Confirmation)
Site No.

GRAPH 4-6: Surfactants (Methylene Blue Active Substances)

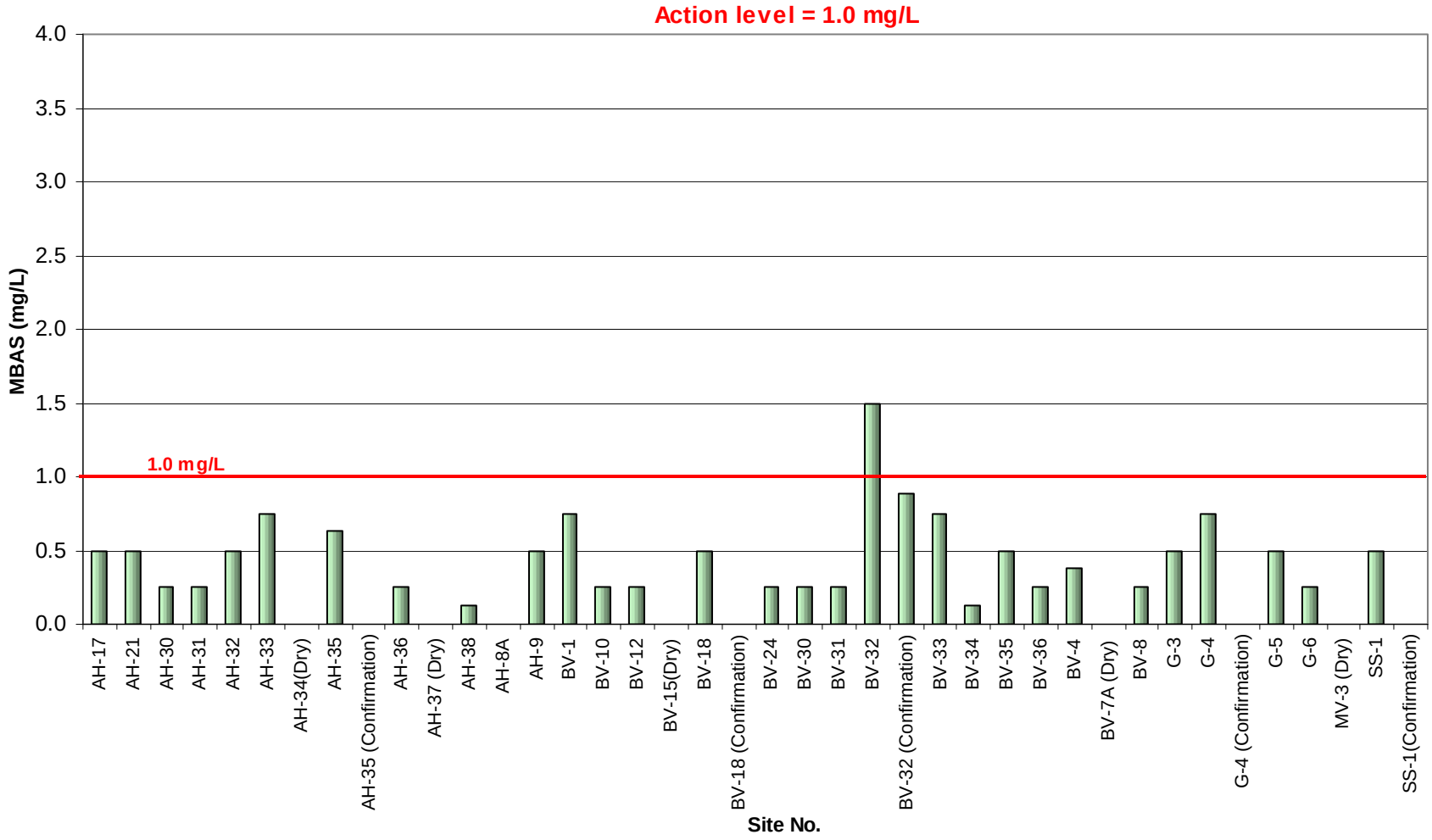

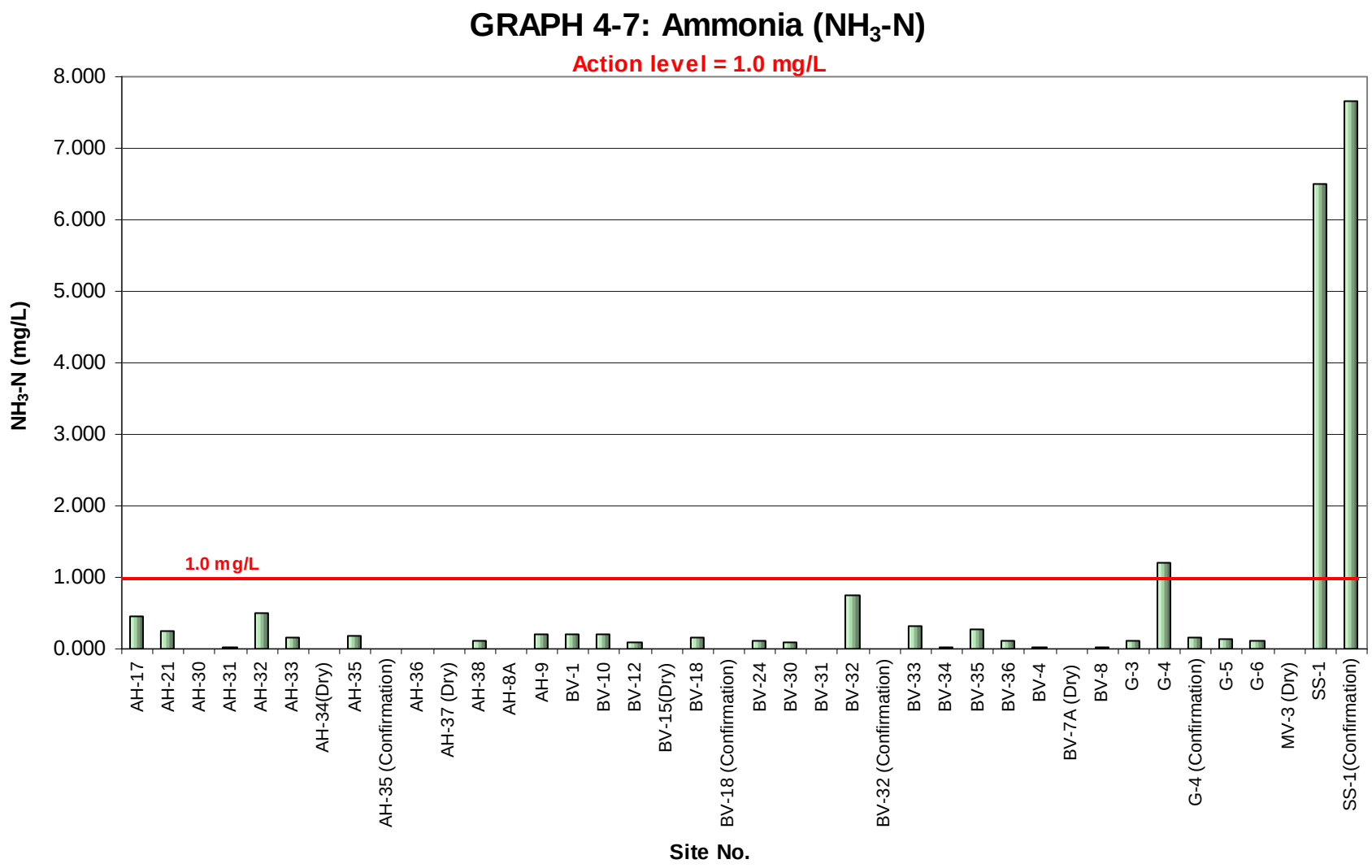
GRAPH 4-7: Ammonia (NH_3-N)
Action level = 1.0 mg/L
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
NH_3-N (mg/L)
1.0 mg/L
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-34(Dry)
AH-35
AH-35 (Confirmation)
AH-36
AH-37 (Dry)
AH-38
AH-8A
AH-9
BV-1
BV-10
BV-12
BV-15(Dry)
BV-18
BV-18 (Confirmation)
BV-24
BV-30
BV-31
BV-32
BV-32 (Confirmation)
BV-33
BV-34
BV-35
BV-36
BV-4
BV-7A (Dry)
BV-8
G-3
G-4
G-4 (Confirmation)
G-5
G-6
MV-3 (Dry)
SS-1
SS-1(Confirmation)
Site No.

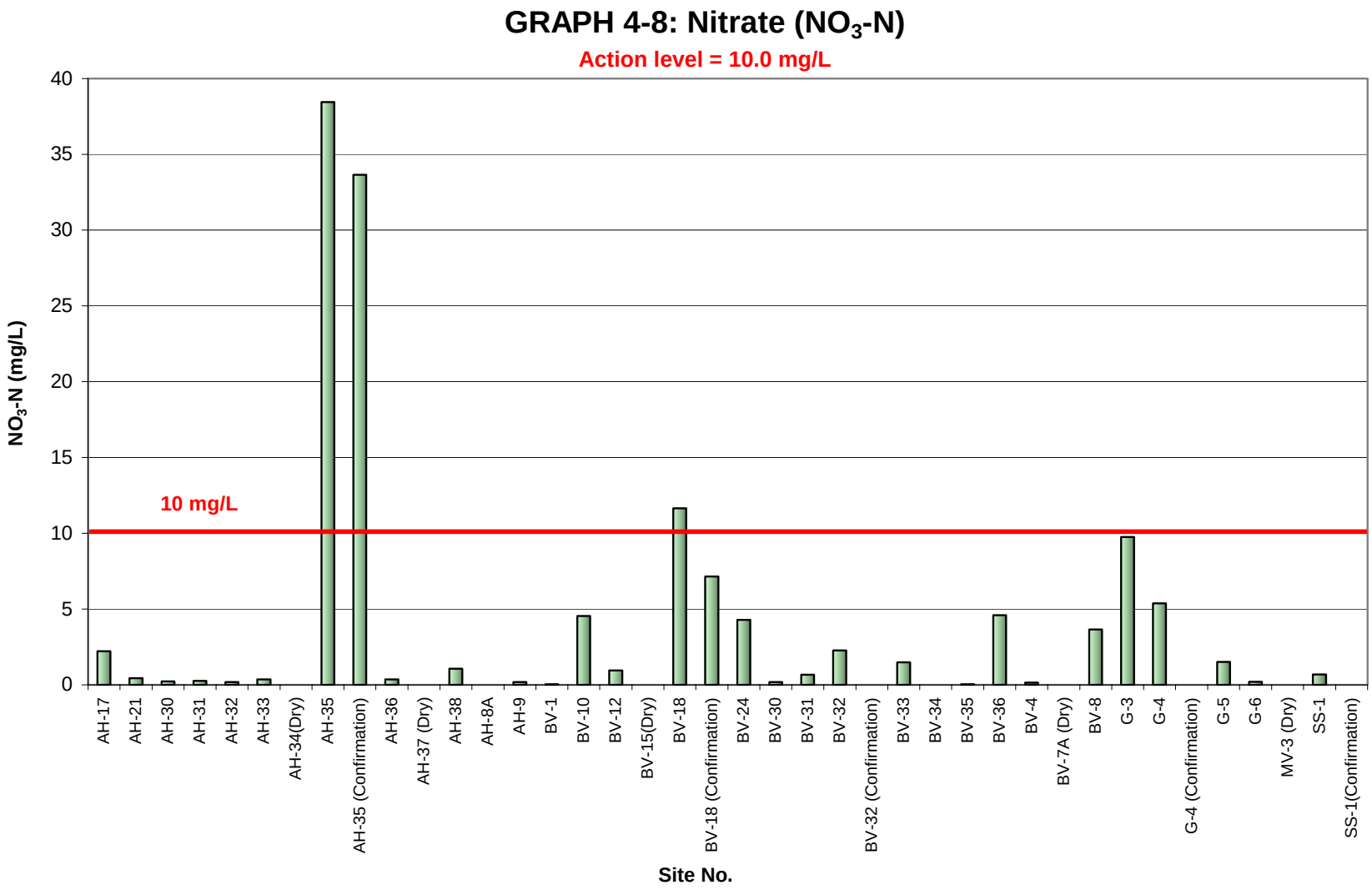
GRAPH 4-8: Nitrate (NO_3-N)
Action level = 10.0 mg/L
10 mg/L
NO_3-N (mg/L)
0
5
10
15
20
25
30
35
40
AH-17
AH-21
AH-30
AH-31
AH-32
AH-33
AH-34(Dry)
AH-35
AH-35 (Confirmation)
AH-36
AH-37 (Dry)
AH-38
AH-8A
AH-9
BV-1
BV-10
BV-12
BV-15(Dry)
BV-18
BV-18 (Confirmation)
BV-24
BV-30
BV-31
BV-32
BV-32 (Confirmation)
BV-33
BV-34
BV-35
BV-36
BV-4
BV-7A (Dry)
BV-8
G-3
G-4
G-4 (Confirmation)
G-5
G-6
MV-3 (Dry)
SS-1
SS-1(Confirmation)
Site No.

GRAPH 4-9: Orthophosphate-Phosphorus (PO_4-P)

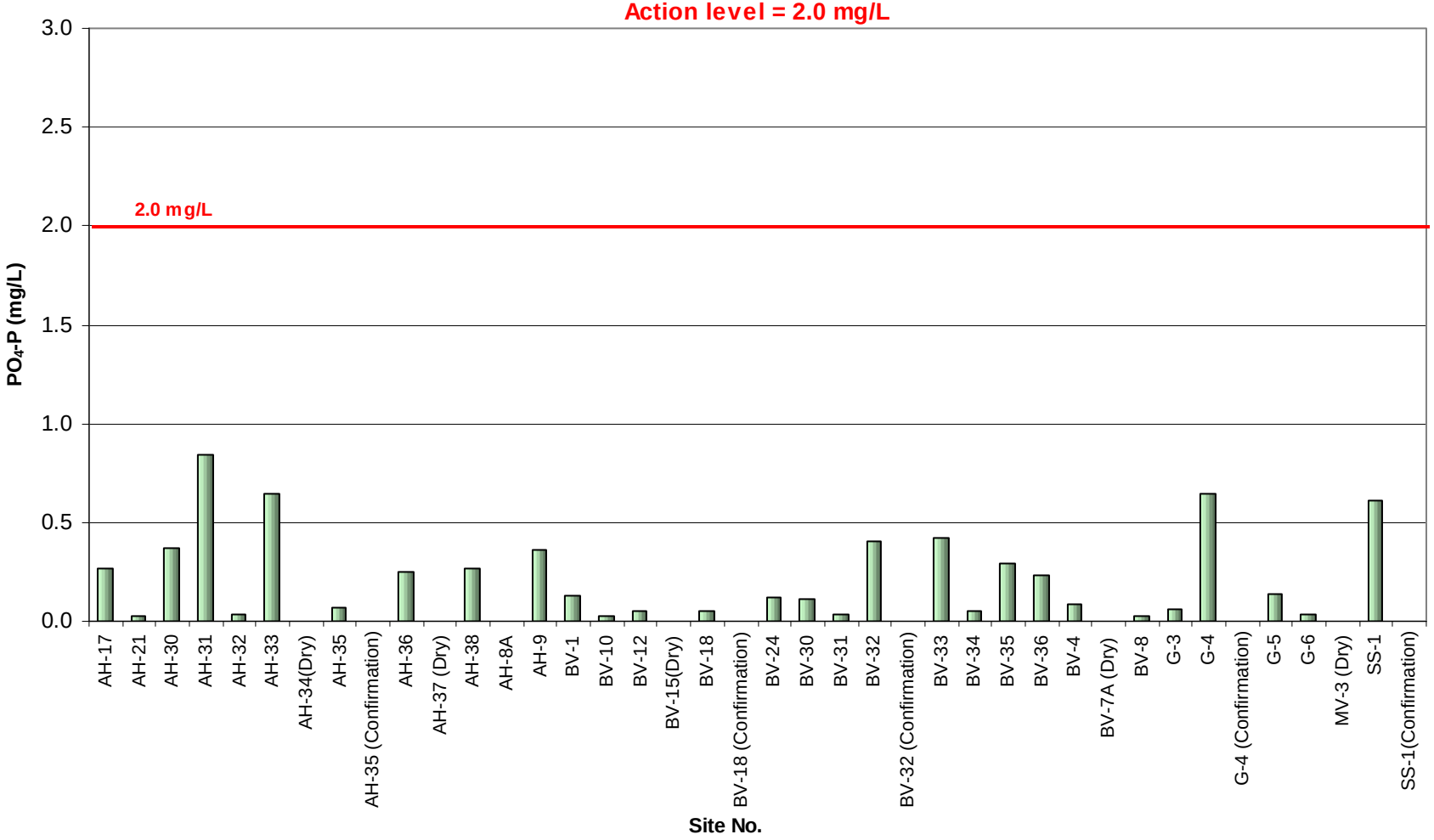

5 TRASH ASSESSMENT

5.1 Regulatory Requirements

Section II.B.3.C.(7) of the Municipal Permit's Receiving Waters and Urban Runoff Monitoring and Reporting Program requires Copermittees to assess the presence of trash in receiving waters and urban runoff at each dry weather monitoring site. This trash assessment program is designed to provide information on the spatial extent and relative amount of trash present, as well at the nature and origin of the trash at the site.

5.2 Procedure and Definitions

The San Diego Copermittee Dry Weather Monitoring Workgroup developed a Trash Assessment Form to document the amount and extent of trash at each evaluated site. The form categorizes the site into one of five trash categories: optimal, suboptimal, marginal, submarginal, or poor. The form also addresses any potential threats that the trash may pose to human or aquatic health. For sites rating submarginal or poor, the form includes a section to record types, prevalence, potential routes, and sources of trash.
A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form's five categories are primarily qualitative descriptions of the amount and extent of trash although a number of trash pieces is also included in each category as a rough guideline. The five categories are defined as follows.

- Optimal: On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
- Suboptimal: On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
- Marginal: Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
- Submarginal: Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (~100-400 pieces). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
- Poor: Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

The threat to human health and threat to aquatic health is assessed at each site using the following definitions:

- *Threat to Human Health* – Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment.
- *Threat to Aquatic Health* – Large amount (50 pieces or more) of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amounts of settleable, degradable, and nontoxic debris; cigarette butts. Presence of

more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence of large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment.

In the event that a site is noted as potentially posing a threat to human or aquatic health, additional descriptive comments are recorded in the "Comments" section of the Trash Assessment Form.

If a site is labeled as submarginal or poor, it is assessed for types of trash present (e.g., automotive, biohazard, food waste), which are ranked based on their prevalence and the potential threat to water quality. Lastly, the potential mechanism through which trash reached the site (e.g., dumping, littering, upstream sources) and the potential source of the trash (e.g., construction, commercial, transient) are noted.

5.3 Trash Assessment Results

The majority of sites visited in the City of Vista received an "optimal" trash rating, with 26 sites falling within this category. The second most frequent rating was "suboptimal" with seven sites. One site was considered "marginal," and one site received a "submarginal" rating. None of the sites were considered to be "poor" in the trash assessment. Table 5-1 and Graph 5-1 summarize the trash assessment results. Figure 5-1 presents a map of sampling sites and corresponding trash assessments. Table 5-2 presents the breakdown of debris present at the "submarginal" site.

TABLE 5-1
TRASH ASSESSMENT RESULTS

Optimal (26 sites)		**Suboptimal** (7 sites)	**Marginal** (1 site)	**Submarginal** (1 site)	**Poor** (0 sites)
AH-17	BV-30	AH-9	MV-3	BV-18	(None)
AH-21	BV-31	AH-30			
AH-31	BV-33	AH-33			
AH-32	BV-34	BV-10			
AH-34	BV-35	BV-15			
AH-35	BV-36	BV-32			
AH-36	BV-4	G-3			
AH-37	BV-7A				
AH-38	BV-8				
AH-8A	G-4				
BV-1	G-5				
BV-12	G-6				
BV-24	SS-1				

GRAPH 5-1
TRASH ASSESSMENT SUMMARY

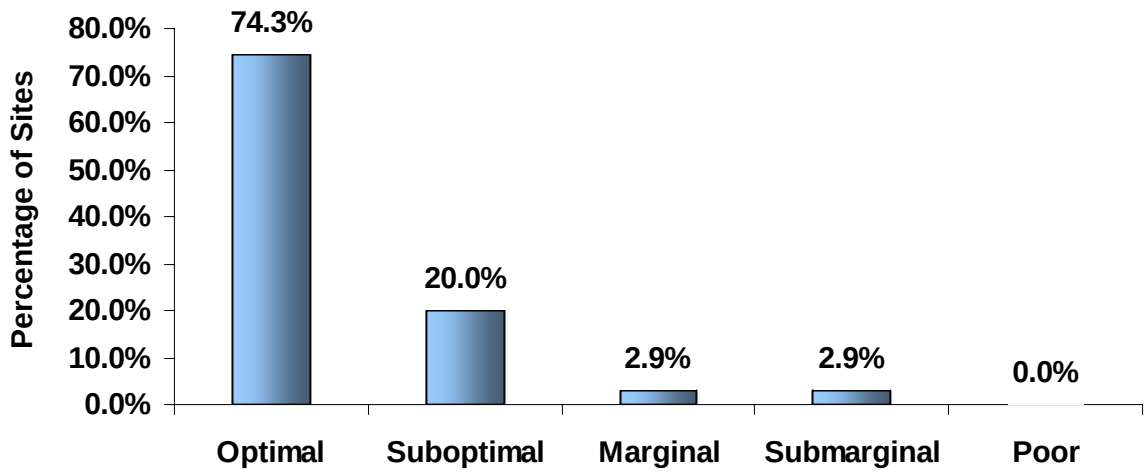

5.3.1 Submarginal Site

Site BV-18 is a natural creek located in Brengle Terrace Park, on the northwest side of the park. A 32 gallon sized trash bag had been dumped on the bank of the creek and its contents strewn across the site. Much of the contents consisted of household garbage including empty bottles of cleaners, food packaging, and miscellaneous paper and plastic debris. Additional trash present was likely the result of littering and some was potentially carried to the site from an upstream source. The site showed evidence of human habitation including clothing, used toilet paper, and human feces. The presence of feces resulted in the site being labeled a potential threat to human health and was reported to the City immediately. A breakdown of the types, prevalence ranking, potential routes, and potential sources of trash to Site BV-18 is presented in Table 5-2.

TABLE 5-2
BREAKDOWN OF SUBMARGINAL SITE TRASH

Site	Types of Trash	Ranking	Potential Route 1	Potential Route 2	Potential Source 1	Potential Source 2
BV-18	Household	1	Dumping	Littering	Household	--
	Food Packaging	2	Dumping	Littering	Household	Transient
	Biohazard Waste	3	Dumping	--	Transient	--
	Fabric/ Clothing	4	Littering	Upstream	Transient	Household

FIGURE 5-1
TRASH ASSESSMENT GIS MAP

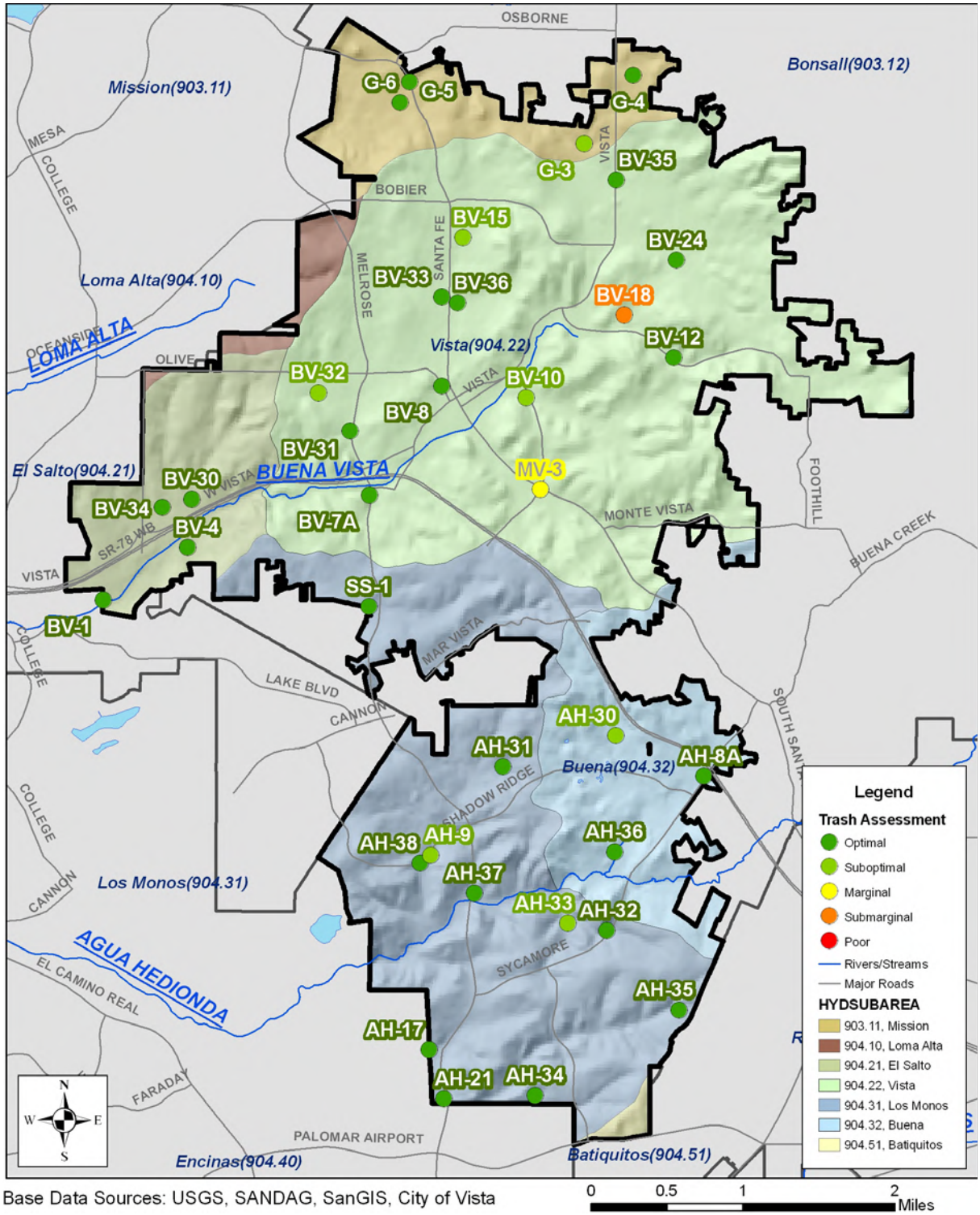

Base Data Sources: USGS, SANDAG, SanGIS, City of Vista

6 LABORATORY ANALYTICAL RESULTS

6.1 Summary

Laboratory analyses were conducted at eight sites, representing over 25 percent of all primary monitoring locations. The laboratory constituents measured are defined below.

Oil and grease analysis is used to detect hydrocarbon pollution from a variety of sources, including parking lots and streets, washing activities, illegal discharges, and automobile repair facilities.

Total hardness measures the amount of calcium and magnesium ions in a water sample, with the result expressed in mg/L of $CaCO_3$. Hardness itself is not considered a pollutant, but is measured to calculate CTR limits for dissolved metals. Hardness affects the solubility of dissolved metals as well as other minerals and ions.

Diazinon and **chlorpyrifos** are organophosphate pesticides that can be harmful to aquatic organisms if transported in urban runoff. Diazinon and chlorpyrifos are highly toxic to birds, mammals, and insects. They are also highly toxic to freshwater fish and invertebrates following acute exposure.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts and are naturally found in most surface waters and soils. Testing water samples for total coliform bacteria is a standard practice in public health. Total coliform is measured as an indicator of pathogens. Pathogens are generally present in much smaller quantities and are difficult to detect. Total coliform concentrations may also be indicative of other bacteria present in the environment that may be naturally occurring and not associated with fecal contamination.

Fecal coliform, a subset of coliform bacteria, and ***Enterococcus*** are found primarily in the gastro-intestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. Without the use of significantly more expensive methods, such as ribotyping, it is not possible to determine whether the source of fecal material is human or animal. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain.

Metal contamination of water can arise from a variety of sources, including automobile operation, automobile repair, vehicle washing, galvanizing of metal, and electronics manufacturing. Certain dissolved metals are toxic pollutants that are hazardous to the survival and development of aquatic organisms.

The California Toxics Rule for Dissolved Metals in Fresh Waters defines metal toxicity as a function of water hardness, with toxicity decreasing as hardness increases. For a specific hardness, each dissolved metal has a Criterion Maximum Concentration (CMC), a short term concentration limit in which aquatic life can be sustained. The laboratory samples are analyzed for the presence of dissolved cadmium, copper, lead, and zinc. Table 6-1 shows the sites with detectable metal concentrations, the measured total hardness of the sample, and the associated CMC.

A summary of the laboratory analytical results for dissolved metals is presented in Table 6-1 along with a comparison of the results to the Criterion Maximum Concentration. Table 6-2 presents a laboratory analysis statistical summary of all sampling sites. Laboratory reports are included in Appendix C.

TABLE 6-1
CTR – CMC FOR DISSOLVED METALS

Dissolved Copper			
Site	**Total Hardness (mg/L)**	**Concentration (mg/L)**	**CMC (mg/L)**
AH-21	1150	0.003	0.050
AH-9	880	0.003	0.050
BV-18	800	0.003	0.050
BV-31	300	0.003	0.038
BV-4	500	0.001	0.050
BV-8	400	0.004	0.050
SS-1	640	0.004	0.050
Dissolved Zinc			
Site	**Total Hardness (mg/L)**	**Concentration (mg/L)**	**CMC (mg/L)**
AH-21	1150	0.046	0.379
BV-18	800	0.060	0.379
BV-31	300	0.133	0.297

Note: Sites listed are those at which a particular dissolved metal was detected. For equations and constants used in California Toxics Rule calculations, see http://www.epa.gov/ost/standards/ctr/toxic.pdf

TABLE 6-2
LABORATORY ANALYSIS STATISTICAL SUMMARY [1]

Parameter (units)	Maximum	Minimum	Number of Exceedances
Total Hardness (mg/L $CaCO_3$)	1,150	300	na [2]
Oil and Grease (mg/L)	5	nd	0
Diazinon (µg/L)	nd	nd	0
Chlorpyrifos (µg/L)	nd	nd	0
Cadmium (dissolved, mg/L)	nd	nd	0
Copper (dissolved, mg/L)	0.004	0.001	0
Lead (dissolved, mg/L)	nd	nd	0
Zinc (dissolved, mg/L)	0.133	0.046	0
Total Coliform (MPN/100 mL)	16,400	30	0
Fecal Coliform (MPN/100 mL)	3,155	<10	0
Enterococcus bacteria (MPN/100 mL)	1,925	40	0

Notes:
nd = not detected
[1] Calculations include complete routine visit data only. Confirmation visits, follow-up visits, and dry sites are not incorporated.
[2] Total hardness is not considered a pollutant (see section 3.4), and thus has no established action level for the purposes of dry weather monitoring.

TABLE 6-3
LABORATORY ANALYTICAL RESULTS

Site No.	Date	Time	Oil & Grease mg/L	Total Hardness mg/L $CaCO_3$	Cadmium mg/L	Copper mg/L	Lead mg/L	Zinc mg/L	Diazinon µg/L	Chlorpyrifos µg/L	Total Coliform MPN/ 100mL	Fecal Coliform MPN/ 100mL	*Enterococcus* MPN/ 100mL
AH-21	6/3/09	14:30	nd	1,150	nd	0.003	nd	0.046	nd	nd	7,100	3,155	1,925
AH-9	6/9/09	11:15	nd	880	nd	0.003	nd	nd	nd	nd	4,600	1,130	560
BV-18	5/28/09	12:40	nd	800	nd	0.003	nd	0.060	nd	nd	2,900	1,400	1,900
BV-31	5/28/09	14:00	nd	300	nd	0.003	nd	0.133	nd	nd	30	<10	40
BV-4	6/8/09	10:45	nd	500	nd	0.001	nd	nd	nd	nd	16,400	1,805	405
BV-8	5/28/09	11:15	nd	400	nd	0.004	nd	nd	nd	nd	6,500	1,400	400
G-6	6/9/09	13:30	5	600	nd	nd	nd	nd	nd	nd	2,365	490	115
SS-1	6/8/09	12:50	nd	640	nd	0.004	nd	nd	nd	nd	640	185	140
Reporting Limits			**5**	**10**	**0.001**	**0.001**	**0.001**	**0.02**	**0.05**	**0.05**	**10**	**10**	**10**
Action Levels			**15**	*****	**CTR**	**CTR**	**CTR**	**CTR**	**0.5**	**0.5**	**50,000**	**20,000**	**10,000**

Notes:

nd = not detected
CTR = California Toxics Rule; CTR action levels for metals are calculated based upon on the total hardness value of the water sample.
* Total hardness is not considered a pollutant (see section 3.4), and thus has no established action level for the purposes of dry weather monitoring.

7 DATA ANALYSIS

The section provides an overall evaluation of the results of the 2009 Dry Weather Monitoring Program, as well as a discussion of historical trends for various constituent exceedances.

7.1 2009 Results

In 2009, two sites within the City of Vista had nitrate-nitrogen exceedances, two sites had ammonia-nitrogen exceedances, and one site had a surfactants exceedance. No exceedances were measured in laboratory samples this year. Table 7-1 provides a snapshot of the 2009 action level exceedances.

TABLE 7-1
2009 EXCEEDANCES AT A GLANCE

Site No.	Surfactants	Ammonia-N	Nitrate-N
AH-35			✓
BV-18			✓
BV-32	✓		
G-4		✓	
SS-1		✓	

Note: Table reflects exceedances occurring during routine visits only, not confirmation or follow-up visits.

7.2 Previous Results

Historical results of exceedances are presented in Table 7-2, Graph 7-1, and Graph 7-2. Table 7-2 shows the percentage of sampled sites that have had exceedances each year of the Dry Weather Monitoring Program. Graph 7-1 illustrates the percentage of exceedances by year for field constituents, and Graph 7-2 presents the percentage exceedances by year for laboratory analyses.

Since 2002, no exceedances have been found for cadmium, copper, lead, zinc, diazinon, or chlorpyrifos. Thus, these constituents have not been included in the following table or graphs. Oil and grease was detected above the action level only in 2002. Although the historical data shows varied exceedances over the years, it is apparent that nitrate-nitrogen has been the field constituent with the most frequent exceedances. These occurrences have been generally declining since their peak in 2002. In addition to nitrate-nitrogen, ammonia-nitrogen exceedances have also been observed in all years since 2002. Since these graphs have been based on only eight years of data, conclusions regarding pollution trends cannot be drawn with a large degree of certainty.

TABLE 7-2
PERCENT OF SITES WITH EXCEEDANCES BY YEAR

Year	Field Screening								Laboratory Analyses				
	Number of Field Screening Sites	Temperature	pH	Turbidity	Surfactants	Ammonia-N	Nitrate-N	Orthophosphate-P	**Number of Laboratory Sampling Sites**	Oil & Grease	Total Coliforms	Fecal Coliforms	*Enterococci*
2002	21	0	5	0	0	5	29	0	6	0	0	0	0
2003	22	0	5	0	0	5	9	0	5	40	40	40	20
2004	22	0	9	0	5	9	41	5	6	0	0	0	0
2005	27	0	4	0	15	15	26	11	7	0	0	0	0
2006	28	7	11	0	11	11	11	7	6	0	33	0	0
2007	26	4	0	4	15	8	23	0	6	0	17	17	33
2008	29	0	3	0	0	3	17	0	8	0	38	0	0
2009	29	0	0	0	3	7	7	0	8	0	0	0	0

Note: Results based on complete routine visits only. Confirmation visits, follow-up visits, and dry sites not included.

GRAPH 7-1
PERCENT OF SITES WITH FIELD CONSTITUENT EXCEEDANCES BY YEAR

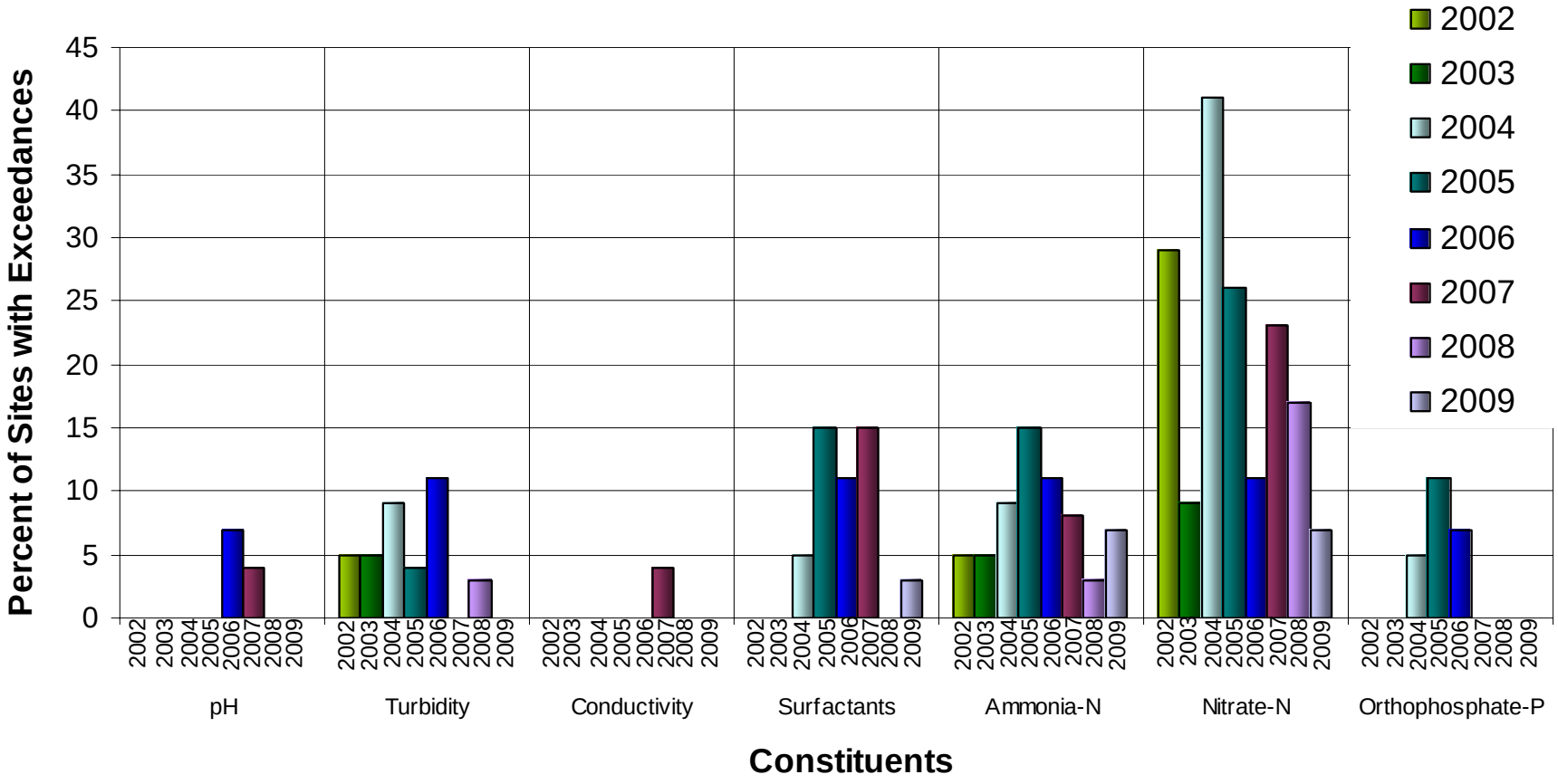

GRAPH 7-2
PERCENT OF SITES WITH LABORATORY ANALYSIS EXCEEDANCES BY YEAR

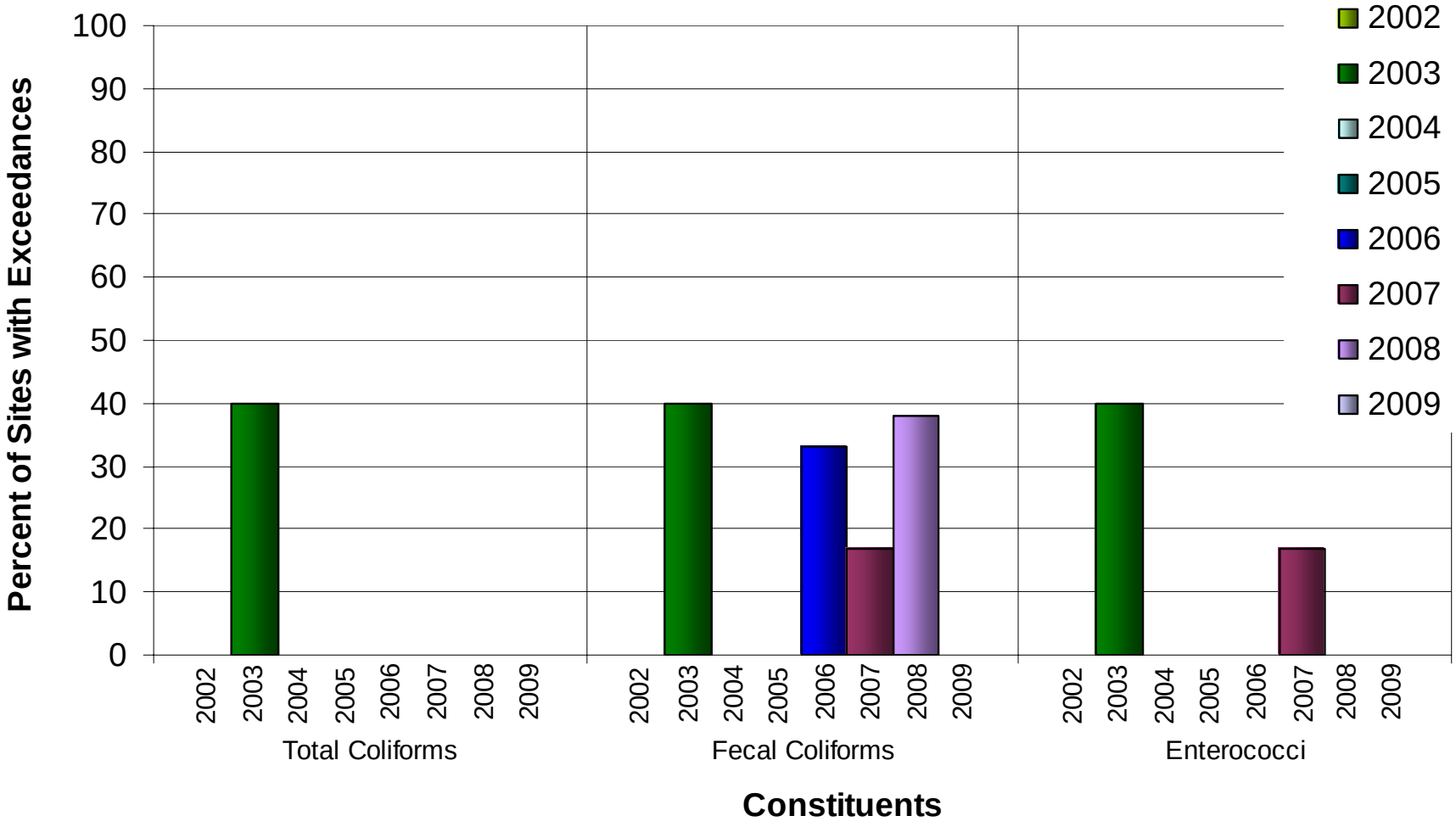

8 FOLLOW-UP INVESTIGATIONS

One of the main purposes of the Dry Weather Monitoring Program is to identify IC/IDs. Both field screening and laboratory analytical results are compared to regionally developed action levels (Table 3-4). When a parameter is measured at or above its action level, it is possible that an IC/ID is present. To further investigate potential IC/IDs, additional investigation is initiated when action levels are exceeded. Procedures for such investigations are described below.

8.1 Investigation Procedures

When Dry Weather Monitoring Program results exceed action levels, an investigation is conducted to identify the source of the discharge or provides rationale for why the discharge does not pose a threat to water quality and does not need further investigation. An immediate source identification investigation is initiated if visual and/or analytical evidence of gross contamination is present at a site during a routine investigation. Examples of gross contamination include substantial petroleum sheens, constituent concentrations well above action levels, abnormal colors or odors not attributable to natural site conditions, or evidence of a sewage release; such conditions may be considered a threat to human health or the environment. Additionally, past experience has shown that immediate investigations are much more likely to identify the source of surfactants exceedances, which are often related to washing activities and are typically intermittent in nature.

When an action level is exceeded at a site, re-sampling is typically conducted within one day of being informed of the exceedance in order to confirm the exceedance (confirmation sampling). For field screening, confirmation samples are always collected within two business days of the initial test. The overall time frame for laboratory analytical results depends on the time that results are received from the lab, but confirmation visits are conducted within two business days of receiving the data.

When confirmation sampling confirms a continued action level exceedance, an upstream investigation is conducted to identify the source of the exceedance. An upstream investigation is not necessarily conducted when the source of the exceedance is identified and not the result of IC/IDs. For example, natural sources may be identified that would not warrant continual follow-up investigations. Prior to beginning an upstream source investigation, field staff review previous dry weather monitoring reports and consult MS4 maps to plan the investigation. .

Dry weather flows are generally traced from the site in an upstream direction along the conveyance system. Photos, narrative descriptions of relevant visual observations, and GPS coordinates are recorded to aid in documentation and in potential enforcement procedures. Water samples are collected at upstream confluences for analyses of the constituent(s) being tracked. All samples are documented through the completion of field data sheets, which are provided in Appendix D.

If the results of the upstream investigation indicate that an IC/ID may be present, appropriate City personnel are notified. Where appropriate and feasible, field staff may also contact the party responsible for the discharge directly regarding the IC/IDs and potential BMPs.

8.2 Investigated Sites

During the 2009 Dry Weather Monitoring Program, additional investigations for potential IC/IDs were performed at five sites for field constituent exceedances. No samples measured

above established action levels for laboratory-analyzed constituents in 2009. A brief description of each site, the testing results, photographs of selected upstream locations, and the results of upstream investigations are included in this section. Table 9-2 in Section 9 of this report provides a summary of the investigation results.

AGUA HEDIONDA HYDROLOGIC AREA

Site AH-35

Site AH-35 is a manhole more than 30 feet deep, across from 1210 Activity Drive. During the initial visit to the site, nitrate-nitrogen was measured at 38.45 mg/L, above the 10 mg/L action level. The return visit the next day confirmed high levels of nitrate-nitrogen at 33.65 mg/L.

The flows at Site AH-35 was measured to be 2 gpm on the day of the upstream investigation. A manhole in the driveway of 1240 Activity Drive (location AH-35-1) was sampled and was contributing a flow of 1 gpm to Site AH-35. Nitrate-nitrogen was measured at 4.29 mg/L, within acceptable limits. Upstream location AH-35-2 is at a manhole on the northwest corner of the Activity Drive and Poinsettia Drive intersection, and was also contributing a flow of 1 gpm to Site AH-35. Nitrate-nitrogen was elevated at 22.11 mg/L. Further upstream, on the east side of Poinsettia Drive, the team sampled location AH-35-3, a small creek flowing at a rate of 1 gpm just south of the Briggs Tree Company nursery (Photo 8-1). The nitrate-nitrogen level here was also above the action level at 24.4 mg/L. The flow at this location originated just upstream at the base of the hill upon which the nursery is situated.

Photo 8-1: Flow at upstream location AH-35-3

Since no exceedance of nitrate-nitrogen was found to the southwest of AH-35, the source of excess nitrate-nitrogen was coming from the northeast. The results of this investigation, in conjunction with the results of a more in-depth investigation of the site in February 2009, led the team to conclude that the elevated nitrate-nitrogen levels at Site AH-35 originate in the City of San Marcos, and could be the result of groundwater seepage or agricultural activities in the area. Table 8-1 provides the flow and nitrate levels for Site AH-35 and upstream sampling locations, illustrated by Figure 8-1.

TABLE 8-1
SITE AH-35 UPSTREAM INVESTIGATION

Site	Location	Flow (gpm)	Nitrate (mg/L)
AH-35	Across from 1210 Activity Drive	3	**38.45**
AH-35 (Confirmation)	"	2	**33.65**
AH-35-1	Driveway of 1240 Activity Drive	1	**4.29**
AH-35-2	Northwest corner of the Activity Drive and Poinsettia Drive intersection	1	**22.11**
AH-35-3	Northeast of the Activity Drive and Poinsettia Drive intersection, in creek just south of the Briggs Tree Company	1	**24.4**

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-1
SITE AH-35 UPSTREAM INVESTIGATION MAP

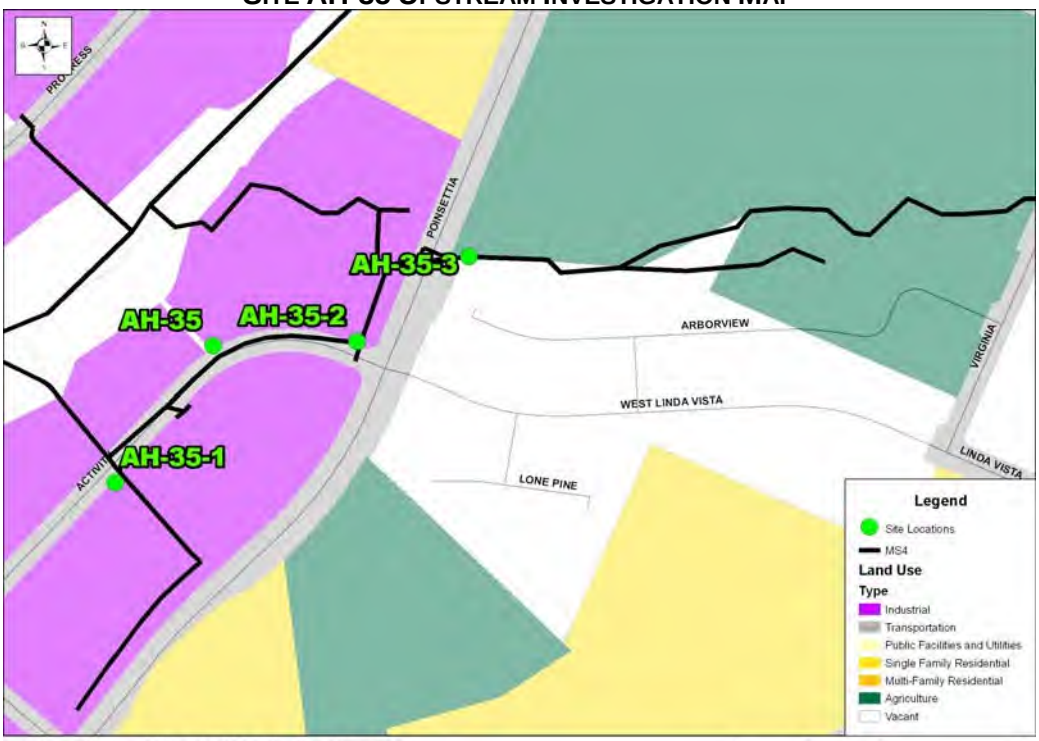

Base Data Sources: USGS, SANDAG, SanGIS, City of Vista

Note: The area east of Poinsettia Avenue is in the City of San Marcos' jurisdiction.

Site SS-1

Site SS-1 has two outlets on the south side of Branding Iron Circle, west of Melrose Drive, in a densely vegetated area. At the time of the initial visit, the water was ponded, with large amounts of decomposing leaves in and around the water (Photo 8-2). Ammonia-nitrogen was measured at of 6.49 mg/L, above the 1 mg/L action level. A visit to the site the following day confirmed high levels of ammonia-nitrogen, measuring 7.67 mg/L.

Photo 8-2: Conditions at Site SS-1

Upstream of the site was a ponded area in a rock and concrete channel in the Carriage Hill Community Park (upstream location SS-1-2). An ammonia-nitrogen concentration of 0.02 mg/L was measured. Walking east along the channel, the team encountered only one outfall contributing flow to the channel from the north side of the park, at a rate of less than 1 gpm (upstream location SS-1-1). The ammonia-nitrogen concentration at this location measured 0.44 mg/L. Figure 8-2 is a map of the selected upstream locations.

Since the only sampling location having an ammonia-nitrogen exceedance was Site SS-1 itself, the team concluded that conditions at the site, and not an upstream source, were responsible for the elevated levels of ammonia-nitrogen. The site had shallow, ponded water and contained a large amount of decomposing leaves and was shallow and ponded. These conditions are likely to produce high concentrations of ammonia-nitrogen as a byproduct of the decomposition process.

TABLE 8-2
SITE SS-1 UPSTREAM INVESTIGATION

Site	Location	Flow (gpm)	Ammonia (mg/L)
SS-1	South side of Branding Iron Circle, west of South Melrose Drive	ponded	**6.49**
SS-1 (Confirmation)	"	ponded	**7.67**
SS-1-1	Outfall on north side of channel in Carriage Hill Community Park. First outfall walking from Melrose Drive to the east.	< 1	0.44
SS-1-2	Carriage Hill Community Park channel on west side of South Melrose Drive	ponded	0.02

Note: **Red Bold Type** = value exceeds action level

FIGURE 8-2
SITE SS-1 UPSTREAM INVESTIGATION MAP

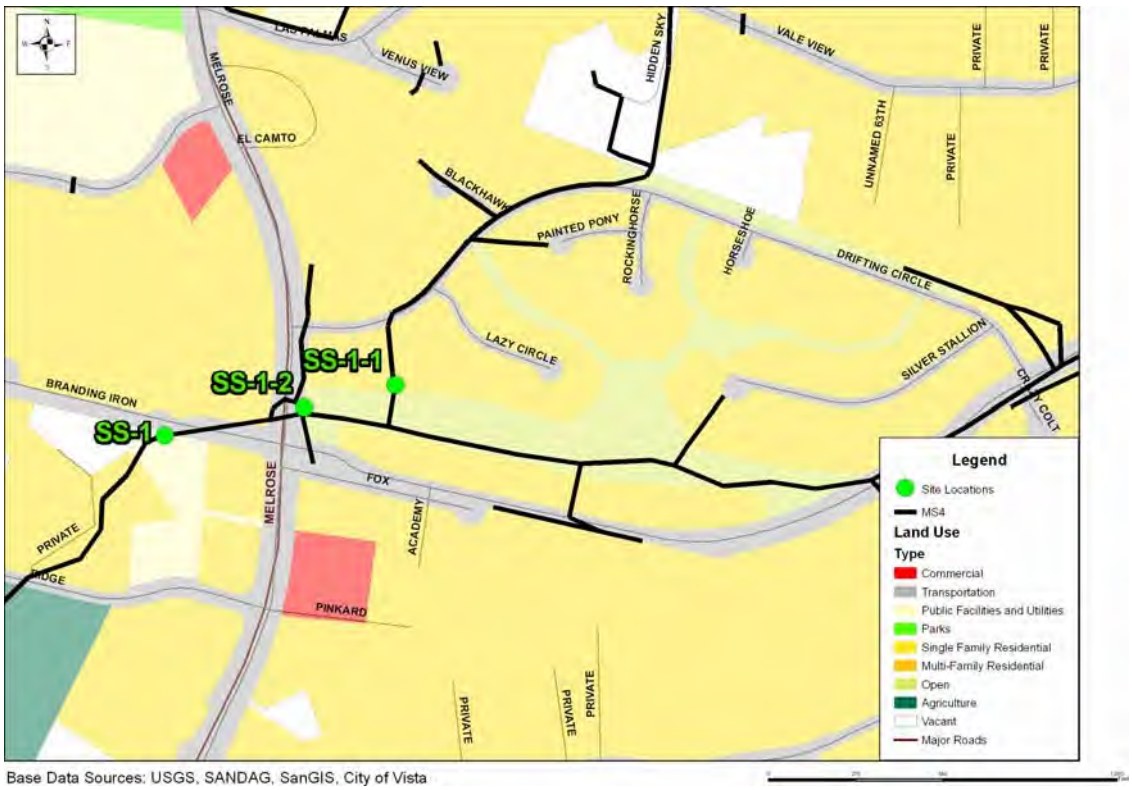

BUENA VISTA HYDROLOGIC AREA

Site BV-18

Site BV-18 is located in a natural creek on the northwest side of Brengle Terrace Park. At the time of the initial visit, the nitrate-nitrogen level was measured at 11.64 mg/L, exceeding the action level of 10 mg/L. At the time of the confirmation visit the following day, nitrate-nitrogen levels were below the action level at 7.15 mg/L. No upstream investigation was required for the transient exceedance; however, historical nitrate-nitrogen exceedances along Buena Vista Creek prompted an in depth study by the City in February 2009. The study concluded that nitrate-containing groundwater seeping into the creek was responsible for the frequent high levels of nitrate-nitrogen in this area.

Site BV-32

Site BV-32 is located at an outlet behind Washington Middle School, near the intersection of Olive Drive and Maryland Avenue. During the initial visit, a flow of less than 1 gpm was noted, and bubbles were apparent on the surface (Photo 8-3). The water was yellow in color and slightly cloudy, with a surfactants level of 1.50 mg/L, above

Photo 8-3: Bubbles visible on the surface of the water at Site BV-32

the action level of 1.00 mg/L. While multiple sources of irrigation runoff were observed in the residential area upstream of the site, no obvious sources of surfactants were noted. At the confirmation visit the following day, the water was free of bubbles on the surface and surfactants were measured at 0.88 mg/L, below the action level. It was concluded that the initial surfactants exceedance was due to a transient flow.

LOWER SAN LUIS HYDROLOGIC AREA

Site G-4

Site G-4 is located at an outlet in the northwest corner of the Warmlands Avenue and Vista Grande Drive intersection. The water was ponded, brown in color, and had insect larvae, snails, and decomposing organic matter present, indicating that the water had been stagnant for some time. Photo 8-4 depicts conditions at the site during the initial visit. Ammonia-nitrogen was measured at 1.199 mg/L, exceeding the 1 mg/L action level. The catch basin immediately upstream of the site was dry, and no other source of water to the site was noted. The surrounding neighborhoods appeared to be clean, without any notable accumulation of leaves or trash.

Photo 8-4 Ponded water at Site G-4

Due to a rainfall in excess of 0.1 inch the following day, the confirmation sample was postponed until 72 hours after the rain event in accordance with the Municipal Permit. At the second visit to the site, the water was again ponded but had lightened to a yellow color. The ammonia-nitrogen concentration was measured at 0.167 mg/L, below the action level. It was concluded that the transient ammonia-nitrogen exceedance was likely due to the accumulation of byproducts produced by the decomposition of organic material in the ponded water, concentrated by evaporation. The rainfall between the initial and confirmation visit probably diluted the ponded water, decreasing the ammonia-nitrogen concentration.

9.0 SUMMARY AND RECOMMENDATIONS

9.1 Summary of Field Screening and Laboratory Analysis Data

All 29 primary sampling sites were visited in the City of Vista 2009 Dry Weather Monitoring Program. Since primary monitoring sites AH-8A, AH-34, AH-37, BV-7A, BV-15, and MV-3 were dry, alternate sites AH-38, BV-12, BV-34, BV-35, BV-36 and G-6 were sampled instead. Two of these sites, BV-35 and BV-36, were new alternate sites added this year. Eight of the field testing sites were also sampled for laboratory analyses.

Follow-up testing was conducted for five sites at which field constituents were measured at or above their respective action levels. No action level exceedances were measured in laboratory samples. Ammonia-nitrogen and nitrate-nitrogen were the most common exceedances in 2009. The most common source of ammonia-nitrogen was the decomposition of organic material, occurring at sites with shallow, ponded water. Nitrate-nitrogen exceedances occurred at two sites with a history of high nitrate-nitrogen levels, for which the City performed an in-depth study in February 2009. The study identified nitrate-containing groundwater seepage into the stormwater conveyance system to be the primary source of the nitrate-nitrogen to these sites.

Trash assessments were completed for all 29 primary sites and six alternate sites. Assessments resulted in 20 “optimal” sites, seven “suboptimal” sites, one “marginal” site, one “submarginal” site, and no sites rating “poor.” One site was identified as a potential threat to human health for the presence of human feces.

9.2 Hydrologic Area Summaries

Action level exceedances and follow-up investigation conclusions are discussed by hydrologic area in the following section.

9.2.1 AGUA HEDIONDA HYDROLOGIC AREA

Field screening was performed at 11 sites within the Agua Hedionda HA. One site had an exceedance of nitrate-nitrogen, and one site had an exceedance of ammonia-nitrogen. Summaries of these exceedances and investigations are presented in Table 9-1 and Table 9-2.

TABLE 9-1
AGUA HEDIONDA ACTION LEVEL EXCEEDANCES

Field Screening (11 Samples)		
Analyte	Number of Exceedances	Sites Exceeding Action Level
Nitrate-N	1	AH-35
Ammonia-N	1	SS-1

TABLE 9-2
AGUA HEDIONDA SUMMARY OF UPSTREAM INVESTIGATIONS

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
AH-35	Nitrate-N	--	Seepage water from a hilly, largely-agricultural area located east of the site, in the City of San Marcos
SS-1	Ammonia-N	--	Decomposition of organic material in shallow, ponded water at the site

9.2.2 BUENA VISTA HYDROLOGIC AREA

The 2009 Dry Weather Monitoring Program included 14 sites within the Buena Vista HA. Within the Buena Vista HA, one site had a nitrate-nitrogen exceedance, and one with a surfactants exceedance. Table 9-3 and Table 9-4 summarize the exceedances and follow-up investigations within the Buena Vista HA.

TABLE 9-3
BUENA VISTA ACTION LEVEL EXCEEDANCES

Field Screening (14 Samples)		
Analyte	Number of Exceedances	Sites Exceeding Action Level
Nitrate-N	1	BV-18
Surfactants	1	BV-32

TABLE 9-4
BUENA VISTA FOLLOW-UP INVESTIGATIONS

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
BV-18	Nitrate-N	---	Transient flow
BV-32	Surfactants	---	Transient flow

9.2.3 LOWER SAN LUIS HYDROLOGIC AREA

Four sites from the Lower San Luis HA were sampled during the 2009 Dry Weather Monitoring Program. One site had ammonia-nitrogen measurements above the action level. A summary of the exceedance and follow-up investigation is presented in Table 9-5 and Table 9-6.

TABLE 9-5
LOWER SAN LUIS ACTION LEVEL EXCEEDANCE

Field Screening (4 Samples)		
Analyte	Number of Exceedances	Site Exceeding Action Level
Ammonia-N	1	G-4

TABLE 9-6
LOWER SAN LUIS FOLLOW-UP INVESTIGATION

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
G-4	Ammonia-N	---	Transient flow, likely caused by the decomposition of organic materials

9.3 Recommendations

Based on the results of the 2009 Dry Weather Monitoring Program, the following actions are recommended.

9.3.1 Maintenance

- Remove human waste and household debris from Site BV-18, which had a submarginal trash rating.
- Remove accumulated sediment, cigarette butts, food wrappers, and other plastic trash from Site MV-3, which had a marginal trash rating.

9.3.2 MS4 Updates

- Consider removing Site AH-35 from the City's list of primary monitoring locations since a large amount of the flow at this site is from activities outside of the City's jurisdiction. A potential replacement could be upstream location AH-35-1, a manhole southwest of Site AH-35 in the driveway of 1240 Activity Drive, primarily receiving flow from within City limits.

9.3.3 Further Investigation

- Notify the City of San Marcos of the continued nitrate-nitrogen exceedance at Site AH-35.

10 REFERENCES

Demographics for Vista. City of Vista.
http://www.cityofvista.com/business/Demographics.cfm

Weston Solutions, Inc., *City of Vista 2005 Dry Weather Field Screening Program*. January 2006.

Weston Solutions, Inc., *City of Vista 2006 Dry Weather Field Screening and IC/ID Program*. December 2006.

Weston Solutions, Inc., *City of Vista 2007 Dry Weather Field Screening and IC/ID Program*. September 2007.

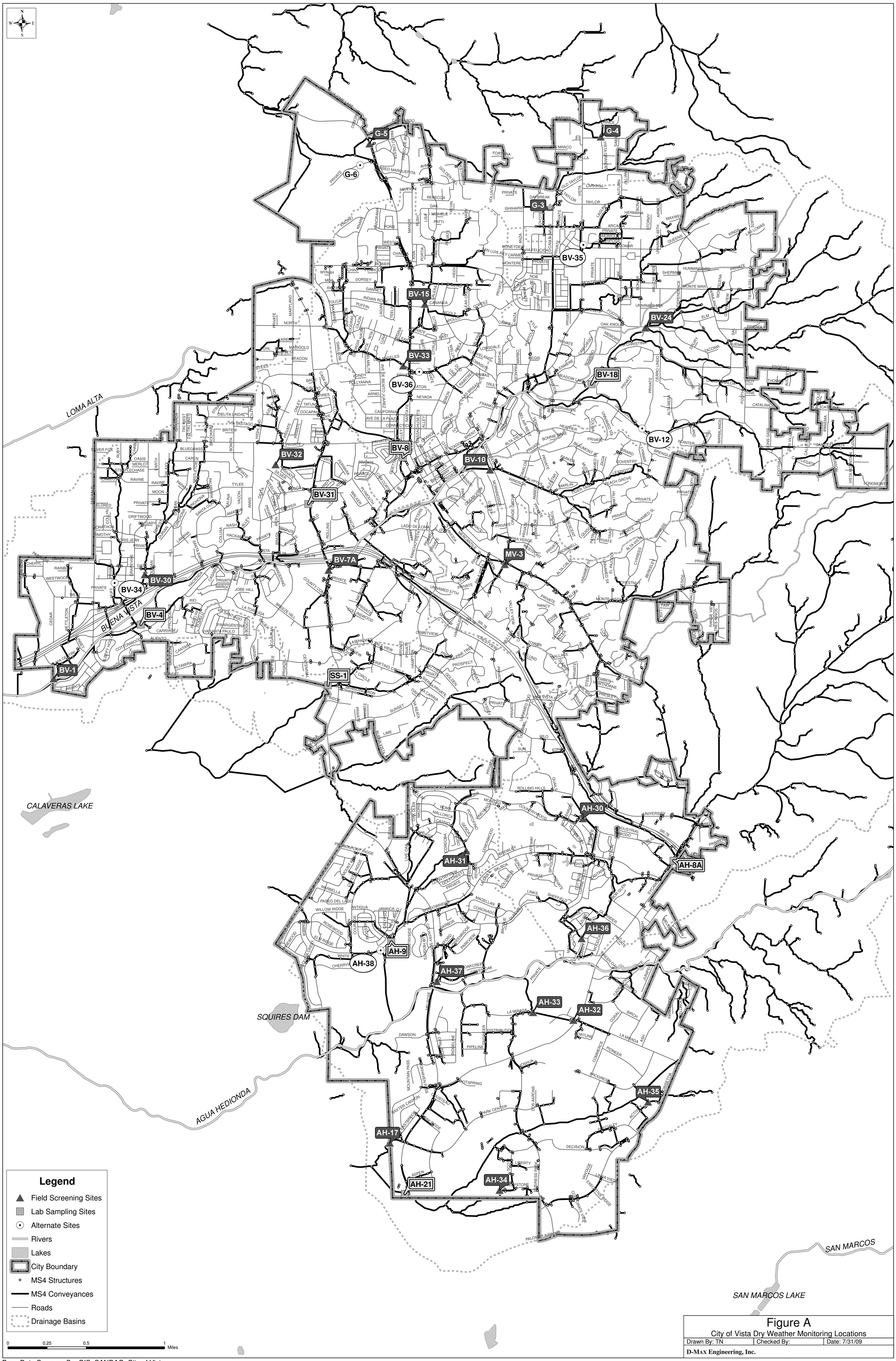

Figure A

City of Vista Dry Weather Monitoring Locations

Drawn By: TN	Checked By:	Date: 7/31/09

D-MAX Engineering, Inc.

Base Data Sources: SanGIS, SANDAG, City of Vista

FIGURE B
CITY OF VISTA DRAINAGE BASINS & HYDROLOGIC SUBAREA MAP

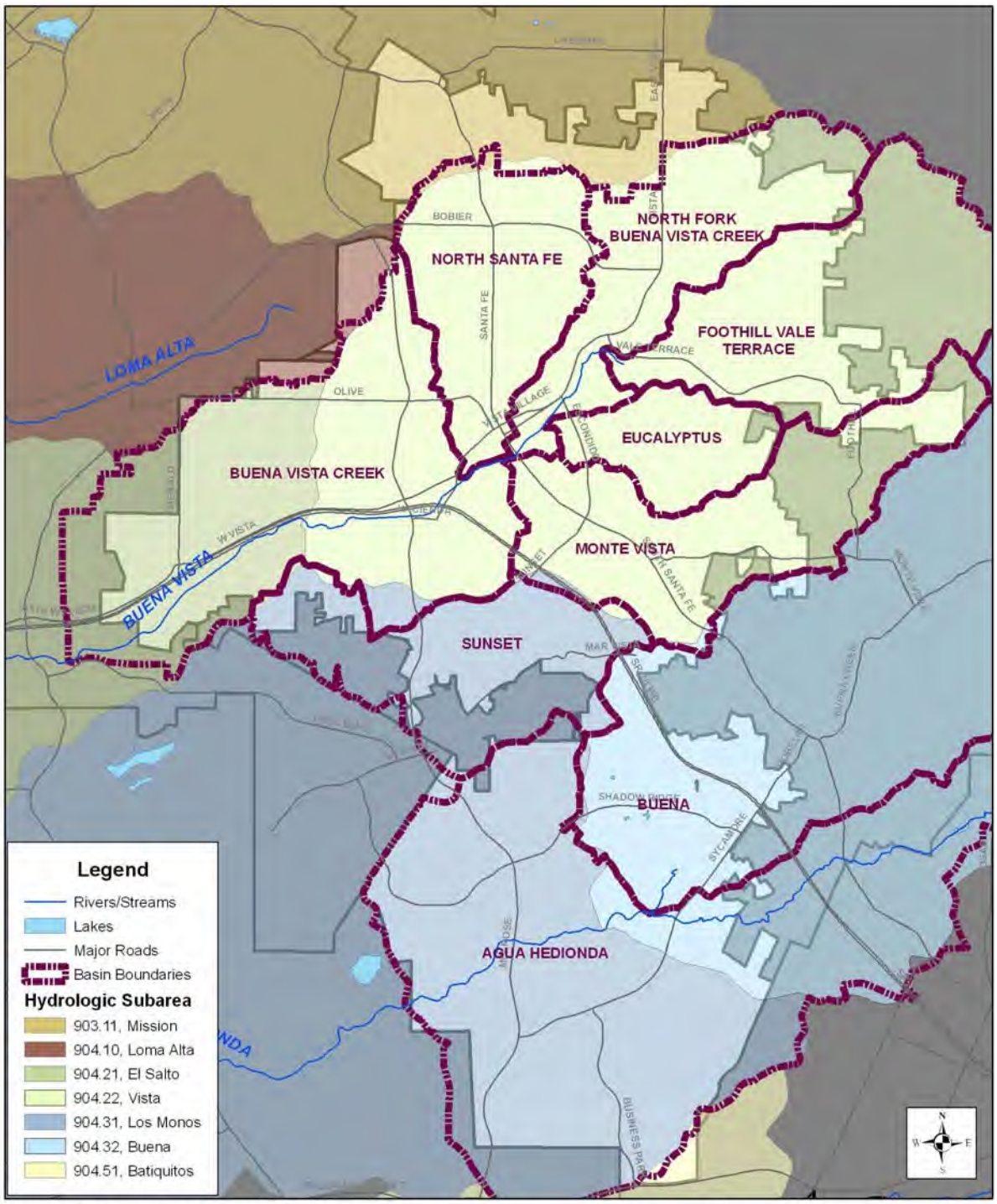

Base Data Sources: USGS, SANDAG, SanGIS, City of Vista

0 0.5 1 2 Miles

Appendix A

Historical Dry Weather Monitoring Data

City of Vista Dry Weather Historical Data

2002

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. ℃	20	21	27	21	22	22	20	21	21	20	19.5			28	22.5	19			22	21
pH	8.0	7.6	8.2	8.0	7.8	8.4	8.2	8.2	8.2	8.5	7.0			**9.3**	7.3	8.1			7.5	8.0
Conductivity, µS/cm	1,839	2,480	2,920	1,898	1,808	3,100	3,220	8,510	2,937	1,662	2,010			1,109	2,150	2,090			2,450	2,260
Turbidity, NTU	8.92	44.82	6.48	0.37	2.82	3.59	2.3	11.1	1.61	4.35	10.22			2.36	4.4	0.62			3.22	1.15
Ammonia, mg/l NH3-N	0.3	0.8	0.4	0.3	0.2	**1.0**	0.1	**2.0**	0.2	0.2	0.2			0.2	0.1	0.2			0.6	0.2
Nitrate, mg/l NO3-N	**10.0**	**16.0**	nd	nd	5.0	1.75	0.2	0.2	1.0	0.2	5.0			0.4	8.0	8.0			0.2	**32.0**
Reactive Phosphorus, mg/l PO4-P	0.07	0.23	0.489	0.163	0.2	0.489	0.0815	0.489	0.489	0.26	0.2			0.2	0.07	0.0978			1.304	0.16
Detergents, mg/l MBAS	0.37	0.37	0.25	0.25	0.5	0.37	0.25	0.5	0.13	0.25	0.37			0.25	0.25	0.25			0.25	0.25
Surfactants, mg/l MBAS				nd			nd		nd					nd		nd				
Oil and Grease, mg/l				5.4			2.2		1.9					2.0		10				
Total Hardness, mg/l CaCO3				662			1,030		617					289		725				
Cadmium, mg/l				nd			nd		nd					nd		nd				
Copper, mg/l				nd			nd		nd					nd		nd				
Lead, mg/l				nd			nd		nd					nd		nd				
Zinc, mg/l				nd			nd		nd					nd		nd				
Diazinon, µg/L				nd			nd		nd					nd		nd				
Chlorpyrifos, µg/L				nd			nd		nd					nd		nd				
Total Coliform, MPN/100ml				1,600			2,400		5,000					2,400		24,000				
Fecal Coliform, MPN/100ml				900			1,300		2,400					800		5,000				
Enterococcus, MPN/100ml				130			1,300		70					230		3,000				

2003

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. ℃	19	19	22	18.5	18	18	16	17	17	17	17			20	20	18	21		18	20
pH	8.5	8.1	8.5	8.4	8.4	8.3	8.4	8.4	8.2	8.7	8.3			**9.0**	8.3	8.4	7.6		7.8	8.2
Conductivity, µS/cm	2,480	2,770	3,090	2,630	2,560	4,470	2,720	4,130	2,520	2,410	2,230			1,280	1,846	2,410	3,660		3,800	2,560
Turbidity, NTU	2.46	1.42	7.85	2.3	0.72	1.31	5.03	5.91	2.51	1.87	6.07			2.57	1.49	1.94	7.18		5.62	2.8
Ammonia, mg/l NH3-N	0.2	0.2	0.3	0.2	0.3	0.6	0.2	0.8	0.2	0.1	0.1			0.1	0.2	0.2	0.5		0.3	0.1
Nitrate, mg/l NO3-N	8.0	2.0	0.1	3.0	8.0	2.0	0.5	0.6	2.0	0.2	4.5			1.0	8.0	8.0	nd		0.1	**20.0**
Reactive Phosphorus, mg/l PO4-P	0.13	0.13	0.26	0.07	0.07	0.13	0.07	0.13	0.07	0.07	0.07			0.03	nd	0.1	0.13		0.2	0.03
Detergents, mg/l MBAS	0.25	0.25	0.25	0.25	0.25	0.5	0.25	0.5	0.5	0.25	0.25			0.25	0.25	0.25	0.25		0.25	0.25
Surfactants, mg/l MBAS				nd			nd							nd		nd				
Oil and Grease, mg/l				nd			**147**							nd		nd				
Total Hardness, mg/l CaCO3				763			744							333		733				
Cadmium, mg/l				nd			nd							nd		nd				
Copper, mg/l				nd			0.007							nd		nd				
Lead, mg/l				nd			nd							nd		nd				
Zinc, mg/l				nd			0.024							nd		nd				
Diazinon, µg/L				nd			nd							nd		nd				
Chlorpyrifos, µg/L				nd			nd							nd		nd				
Total Coliform, MPN/100ml				8,000			**>160,000**							5,000		8000				
Fecal Coliform, MPN/100ml				3,000			**>160,000**							3,000		3000				
Enterococcus, MPN/100ml				800			**50,000**							800		1,300				

2004

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. ℃	20.1	20.1	21	18.6	18.4	19.8	18.3	20.6	19.9	19.7	20.2			25.2	20	19.3	ns	26.8	21.4	18.4
pH	8.53	8.04	7.68	8.09	8.15	8.1	8.04	8.35	8.08	8.63	7.73			**9.5**	8.15	8.06	ns	**9.07**	7.6	7.93
Conductivity, µS/cm	1,619	1,947	1,738	1,790	1,872	3,250	1,989	983	1,682	1,657	1,637			1,206	1,791	1,817	ns	1,816	2,420	1,983
Turbidity, NTU	3.26	3.82	7.04	1.07	5.48	3.53	1.03	2.38	2.59	2.94	2.58			1.15	9.84	2.28	ns	37	4.13	1.36
Ammonia-N, mg/l NH3-N	0.4	0.3	0.3	0.3	0.2	0.8	0.6	0.8	0.2	0.2	0.3			0.1	0.2	0.2	ns	0.6	**2.0**	0.3
Nitrate-N, mg/l NO3-N	**12.0**	**22.5**	0.2	2.0	**12.0**	2.5	1.5	0.4	2.5	1.0	4.5			1.0	18	31.5	ns	2.0	0.1	**36.0**
Orthophosphate-P, mg/l PO4-P	0.6	0.3	1.0	0.2	0.2	0.6	0.2	0.8	0.1	0.3	0.2			0.1	0.1	0.2	ns	1.0	2.0	0.1
Surfactants, mg/l MBAS (Field test)	0.25	0.5	0.25	0.15	0.25	0.25	0.25	0.5	0.25	0.25	0			0	0.3	0.5	ns	0.5	**2.0**	0.25
Surfactants, mg/l MBAS (Lab test)				nd			nd		nd					nd		ND				
Oil and Grease, mg/l				3			nd		2					2		2				
Total Hardness, mg/l CaCO3				833			756		511					315		720				
Cadmium, mg/l				nd			nd		nd					nd		nd				
Copper, mg/l				nd			nd		nd					nd		nd				
Lead, mg/l				nd			nd		nd					nd		nd				
Zinc, mg/l				nd			nd		0.032					nd		nd				
Diazinon, µg/L																				
Chlorpyrifos, µg/L																				
Total Coliform, MPN/100ml				3,000			22,000		13,000					500		8,000				
Fecal Coliform, MPN/100ml				1,100			500		2,300					130		170				
Enterococcus, MPN/100ml				62			197		187					41		160				

City of Vista Dry Weather Historical Data

2002

Site No.	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	22	22		18		21			28											
pH	7.8	7.8		8.2		8.3			8.6											
Conductivity, µmhos/cm	1,712	2,050		2,420		2,380			1,640											
Turbidity, NTU	1.91	4.02		28.71		2.55			0.99											
Ammonia, mg/l NH3-N	0.1	0.2		0.5		0.1			0.2											
Nitrate, mg/l NO3-N	**20.0**	**28.0**		4.5		**14.0**			**12.0**											
Reactive Phosphorus, mg/l PO4-P	0.08	0.26		0.0978		0.08			0.49											
Detergents, mg/l MBAS	0.25	0.37		0.25		0.37			0.13											
Surfactants, mg/l MBAS				nd																
Oil and Grease, mg/l				3																
Total Hardness, mg/l CaCO3				812																
Cadmium, mg/l				nd																
Copper, mg/l				nd																
Lead, mg/l				nd																
Zinc, mg/l				nd																
Diazinon, µg/L				nd																
Chlorpyrifos, µg/L				nd																
Total Coliform, MPN/100ml				24,000																
Fecal Coliform, MPN/100ml				3,000																
Enterococcus, MPN/100ml				1,300																

2003

Site No.	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AHC-1	AHC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	21	23	28			28			20						16	17	21	19	21	18
pH	8.4	8.4	8.2			8.7			8.9						8.1	8.3	8.4	8.3	8.5	8.5
Conductivity, µmhos/cm	2,160	1,848	1,647			1,566			1,904						2,560	2,760	2,380	2,650	1,951	3,560
Turbidity, NTU	1.96	2.13	4.89			9.13			2.25						9.66	3.41	2.62	5.83	2.77	6.99
Ammonia, mg/l NH3-N	0.2	0.2	**1.0**			0.2			0.1						0.5	0.1	0.2	0.1	0.2	0.4
Nitrate, mg/l NO3-N	**20.0**	8.0	2.0			3.0			8.0						0.6	1.5	**32.0**	5.0	1.5	4.0
Reactive Phosphorus, mg/l PO4-P	0.07	0.07	1.55			0.26			0.03						0.07	0.2	0.065	0.07	0.07	0.1
Detergents, mg/l MBAS	0.25	0.25	0.5			0.5			0.25						0.25	0.25	0.25	0.25	0.25	0.25
Surfactants, mg/l MBAS									nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l									**368**						8.0	**149**	nd	nd	nd	nd
Total Hardness, mg/l CaCO3									703						613	761	840	825	608	920
Cadmium, mg/l									nd						nd	nd	nd	nd	nd	nd
Copper, mg/l									nd						0.028	nd	nd	nd	nd	nd
Lead, mg/l									nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l									nd						0.104	nd	0.068	nd	0.032	nd
Diazinon, µg/L									nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L									nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml									**160,000**						**90,000**	8,000	1,100	8,000	5,000	**50,000**
Fecal Coliform, MPN/100ml									**90,000**						**50,000**	5,000	800	3,000	2,300	**30,000**
Enterococcus, MPN/100ml									1,300						110	170	40	230	80	3,000

2004

Site No.	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	19.4	17.9	ns			22.8			22.5			ns	18.8		21	19.6	21.2	20.2	20	17.9
pH	8.12	8.43	ns			7.98			8.88			ns	7.78		7.96	7.66	7.94	7.75	8.35	7.59
Conductivity, µS/cm	1,715	1,684	ns			2,440			1,694			ns	949		1,667	1,792	1,806	1,745	1,631	3
Turbidity, NTU	2.67	1.92	ns			38.5			1.76			ns	6.94		3.1	1.5	1.86	2.38	2.79	4.46
Ammonia-N, mg/l NH3-N	0.3	0.3	ns			**1.0**			0.2			ns	0.6		0.8	0.3	0.2	0.3	0.3	0.3
Nitrate-N, mg/l NO3-N		**31.5**	ns			0.2			**22.5**			ns	0.4		1.0	0.3	**27.0**	**22.5**	3.5	0.2
Orthophosphate-P, mg/l PO4-P	0.2	0.1	ns			2.0			0.1			ns	0.6		0.3	0.7	0.2	0.2	0.1	0.1
Surfactants, mg/l MBAS (Field test)	0.25	0.25	ns			0.5			0.25			ns	0.75		0.25	0.25	0.3	0.25	0	0
Surfactants, mg/l MBAS (Lab test)									nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l									nd						11	nd	2	nd	2	2
Total Hardness, mg/l CaCO3									684						624	762	828	722	484	735
Cadmium, mg/l									nd						ND	nd	nd	nd	nd	nd
Copper, mg/l									nd						0.005	nd	nd	0.011	nd	nd
Lead, mg/l									nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l									nd						0.032	nd	0.032	0.032	nd	nd
Diazinon, µg/L																				
Chlorpyrifos, µg/L																				
Total Coliform, MPN/100ml									700						**50,000**	1,700	13,000	700	800	5,000
Fecal Coliform, MPN/100ml									300						3,000	170	3,000	500	40	300
Enterococcus, MPN/100ml									386						1,679	110	275	428	31	417

City of Vista Dry Weather Historical Data

2005

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. ℃	20	19.6	18.9	17.4	19.7	18.75	17.9	20	21.4	19.6	20.5	17.1	17.1	25.7	21.1	21.3	15.8	24.8	19.6	17.9
pH	8.71	8.05	7.56	8.14	8.33	7.65	8.02	8.5	7.48	8.64	8.12	8.41	8.04	8.41	8.35	8.01	7.99	8.09	7.74	7.87
Conductivity, µS/cm	1,770	2,090	2,380	1,880	1,770	3,190	1,510	6,510	1,886	1,410	1,940	1,190	904	1,604	1,610	1,939	2,560	5,260	2,430	2,260
Turbidity, NTU	10	10	8	10	10	15	98	2.0	2.28	6	22	78.4	195	1.3	9	1.4	2.67	220	1	2.44
Ammonia, mg/l NH3-N	0.2	0.6	0.4	0.2	0.4	0.1	**1.0**	0.4	0.3	0.2	0.2	**1.5**	**1.0**	0.2	0.2	0.3	0.4	0.6	0.3	0.2
Nitrate, mg/l NO3-N	**15.0**	**15.0**	0.8	7.5	**15.0**	1.0	1.0	0.2	4.5	0.2	7.5	0.2	0.2	1.5	6.0	12	0.2	1.0	1.5	**15.0**
Reactive Phosphorus, mg/l PO4-P	1.0	0.4	1.0	0.6	0.6	0.3	0.2	1.0	0.2	0.4	0.2	**6.0**	**2.0**	0.3	0.1	0.2	0.3	0.4	0.9	0.3
Detergents, mg/l MBAS	0.5	0.5	0.5	0.3	0.5	0.8	**1.0**	0.8	0.5	0.3	0.8	**15.0**	7.5	0.3	0.5	0.5	0.25	0.8	0.8	0.5
Surfactants, mg/l MBAS				nd			nd				nd								nd	nd
Oil and Grease, mg/l				nd			nd				nd								nd	nd
Total Hardness, mg/l CaCO3				1,100			865				637								699	1,040
Cadmium, mg/l				nd			nd				nd								nd	nd
Copper, mg/l				nd			0.02				nd								nd	nd
Lead, mg/l				nd			nd				nd								nd	nd
Zinc, mg/l				nd			0.089				nd								nd	nd
Diazinon, µg/L				nd			nd				nd								nd	nd
Chlorpyrifos, µg/L				nd			nd				nd								nd	nd
Total Coliform, MPN/100ml				3,000			11,000				23,000								3,500	195(E)
Fecal Coliform, MPN/100ml				300			800				800								700	80
Enterococcus, MPN/100ml				132			592				97								581	404

2006

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. ℃	21.6	22.4	23.5	20.8	23.8	22.6	24.9	19.8	20.2	24	21.1	24.3	dry	24.7	25.8	20	dry	30.2	dry	20.3
pH	8.97	8.7	8.44	8.21	8.68	8.57	7.93	8.82	8.68	8.84	8.6	8.63	dry	**9.46**	8.73	8.75	dry	**9.11**	dry	8.44
Conductivity, mS/cm	1.91	2.14	2	2	1.18	3.17	0.664	5.75	2.03	1.72	1.67	1.72	dry	1.43	1.77	1.88	dry	3.58	dry	1.88
Turbidity, NTU	2	1	34	43	308	60	22	5	4	12	30	241	dry	3	33	nd	dry	2	dry	152
Ammonia, mg/l NH3-N	0.4	0.2	0.4	nd	0.1	0.9	0.4	0.4	0.2	0.3	0.2	0.3	dry	nd	0.1	0.2	dry	0.4	dry	0.1
Nitrate, mg/l NO3-N	**12.0**	**15.0**	0.2	6.0	3.5	1.5	0.1	nd	1.0	0.3	3.0	2.4	dry	0.8	7.5	5.5	dry	0.8	dry	9.0
Reactive Phosphorus, mg/l PO4-P	0.4	0.3	1.5	0.4	0.3	0.6	0.1	0.3	0.15	0.6	0.4	0.3	dry	0.2	0.2	0.2	dry	nd	dry	0.2
Detergents, mg/l MBAS	0.25	0.25	0.5	0.5	0.25	0.5	0.25	**3.0**	0.25	0.5	0.25	0.25	dry	0.25	0.25	0.25	dry	0.5	dry	0.2
Surfactants, mg/l MBAS				nd			nd				nd			nd					dry	nd
Oil and Grease, mg/l				nd			nd				nd			nd					dry	nd
Total Hardness, mg/l CaCO3				726			188				538			431					dry	818
Cadmium, mg/l				nd			nd				nd			nd					dry	nd
Copper, mg/l				nd			nd				nd			nd					dry	nd
Lead, mg/l				nd			nd				nd			nd					dry	nd
Zinc, mg/l				nd			0.056				nd			nd					dry	nd
Diazinon, µg/L				nd			nd				nd			nd					dry	nd
Chlorpyrifos, µg/L				nd			nd				nd			nd					dry	nd
Total Coliform, MPN/100ml				5,000			230				**60,000**			**60,000**					dry	5,000
Fecal Coliform, MPN/100ml				170			20				3,000			**50,000**					dry	700
Enterococcus, MPN/100ml				800			40				1,100			3,000					dry	1,300

City of Vista Dry Weather Historical Data

2005

Site No.	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	21.7	17.8	26.5		dry	dry	23.3		24.5	18.5		dry	19.3		19.9	17.4	20.4	19.5	21.6	20.2
pH	8.06	8.12	7.82		dry	dry	**9.1**		8.75	7.77		dry	7.99		7.78	8.14	8.17	8.24	7.95	8.16
Conductivity, µmhos/cm	1,737	1,960	2,430		dry	dry	821		1,760	1,280		dry	13,000		5,310	1,760	1,842	1,610	1,874	2,250
Turbidity, NTU	2.2	1.28	1		dry	dry	323		0.5	22.9		dry	9		10	0	0.21	22	2.26	89
Ammonia, mg/l NH3-N	0.3	0.3	0.4		dry	dry	0.8		0.2	**1.5**		dry	0.6		0.4	0.2	0.3	0.4	0.3	0.6
Nitrate, mg/l NO3-N	**15.0**	**15.0**	0.2		dry	dry	0.2		7.5	0.2		dry	0.1		0.1	7.5	**15.0**	9.0	3.0	7.5
Reactive Phosphorus, mg/l PO4-P	0.2	0.5	**3.0**		dry	dry	0.6		0.2	**3.0**		dry	0.4		0.1	0.6	0.3	0.6	0.2	0.4
Detergents, mg/l MBAS	0.5	0.5	0.75		dry	dry	0.5		0.3	**1.5**		dry	0.5		0.5	0.5	0.5	0.5	0.5	0.3
Surfactants, mg/l MBAS	nd								nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Total Hardness, mg/l CaCO3	968								970						2,260	1,100	1,100	983	773	742
Cadmium, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Copper, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Lead, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Diazinon, µg/L	nd								nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L	nd								nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml	8,000								7,000						5,000	800	1,700	500	8,000	5,000
Fecal Coliform, MPN/100ml	80								260						40	500	300	300	80	230
Enterococcus, MPN/100ml	197								298						109	145	131	185	41	183

2006

	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	20.6	27.6	32.4		dry	24.3	22.8		22.6	27		dry	22.1	21.4	22.7	21.7	22	20.6	21.3	19.4
pH	8.67	8.92	**9.37**		dry	8.37	8.7		8.89	8.84		dry	8.35	8.33	8.41	8.47	8.45	8.56	8.31	8.5
Conductivity, mS/cm	1.68	1.8	1.89		dry	2.1	0.855		1.83	1.15		dry	1.18	4.03	4.07	1.99	1.85	1.84	1.82	2.26
Turbidity, NTU	3	3	196		dry	63	51		5	133		dry	8	22	26	2	nd	26	5	13
Ammonia, mg/l NH3-N	0.1	0.2	0.6		dry	**1.5**	**1.5**		0.1	**4.0**		dry	**2.0**	0.6	**8.0**	0.2	0.3	0.1	0.2	0.4
Nitrate, mg/l NO3-N	**37.5**	9.0	nd		dry	0.2	nd		**15.0**	0.4		dry	0.1	0.4	0.2	3.8	**12.0**	**13.5**	2.0	0.8
Reactive Phosphorus, mg/l PO4-P	0.1	0.6	nd		dry	1.0	**4.0**		0.1	**6.0**		dry	0.6	1.5	0.4	0.5	0.2	0.3	0.2	0.3
Detergents, mg/l MBAS	0.5	0.5	0.75		dry	0.75	**1.5**		0.3	**5.0**		dry	0.75	0.5	0.5	0.5	0.5	0.25	0.25	0.7
Surfactants, mg/l MBAS	nd								nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l	nd								nd						5	nd	nd	nd	nd	nd
Total Hardness, mg/l CaCO3	696								736						1410	709	739	650	602	757
Cadmium, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Copper, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Lead, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l	nd								nd						0.047	nd	nd	nd	nd	nd
Diazinon, µg/L	nd								nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L	nd								nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml	7,000								5,000						**3,000,000**	1,100	30,000	3,000	3,000	5,000
Fecal Coliform, MPN/100ml	130								300						**80,000**	40	800	170	500	300
Enterococcus, MPN/100ml	358								3,000						5,000	300	2,300	500	300	750E

City of Vista Dry Weather Historical Data

2007

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	AH-30	AH-31	AH-32	AH-33	AH-34	AH-35	AH-36	AH-37	AH-38	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. ℃	18.5	19.4	20.1	18.1	19.2	20.4	18.3										19.7	19.4	21.1	20.8	dry	dry	22.5	23.1	18.3	dry	27.8	dry	18.9
pH	8.48	7.88	7.54	7.58	7.9	8.19	7.9										8.23	7.98	8.66	7.74	dry	dry	8.75	8.07	8.25	dry	8.57	dry	7.55
Conductivity, mS/cm	1.829	1.742	2.29	2.56	1.82	1.927	3.12										8.21	1.759	1.795	1.747	dry	dry	1.252	1.582	1.668	dry	4.66	dry	2.21
Turbidity, NTU	0.6	0.49	1.06	1.08	4.74	7.25	2.68										1.86	1.98	1.98	4.18	dry	dry	1.51	0.46	1.09	dry	0.51	dry	8.19
Ammonia, mg/l NH3-N	0.1	0.2	0.4	0.1	0.2	6	0.6										0.4	0.2	0.1	0.1	dry	dry	0.1	0.1	0.4	dry	0.2	dry	0.2
Nitrate, mg/l NO3-N	13.5	15	0.3	1	6	0.4	0.2										0.4	2.5	0.3	4.5	dry	dry	0.8	7.5	22.5	dry	1	dry	22.5
Reactive Phosphorus, mg/l PO4-P	0.0654	0.0654	0.1961	0.0654	0.0654	0.1307	0.0327										0.131	0.033	0.065	0.065	dry	dry	0.033	nd	0.049	dry	0.131	dry	0.065
Detergents, mg/l MBAS	0.25	0.25	0.25	0.25	0.25	1	0.25										2	0.25	0.25	0.25	dry	dry	0.25	0.5	0.25	dry	0.25	dry	0.25
Surfactants, mg/l MBAS				nd			nd													nd			nd					dry	nd
Oil and Grease, mg/l				nd			nd													nd			nd					dry	nd
Total Hardness, mg/l CaCO3				799			1040													566			388					dry	920
Cadmium, mg/l				nd			nd													nd			nd					dry	nd
Copper, mg/l				nd			0.005													nd			nd					dry	nd
Lead, mg/l				nd			nd													nd			nd					dry	nd
Zinc, mg/l				nd			0.03													nd			nd					dry	nd
Diazinon, µg/L				nd			nd													nd			nd					dry	nd
Chlorpyrifos, µg/L				nd			nd													nd			nd					dry	nd
Total Coliform, MPN/100ml				2,200			30,000													240,000			35,000					dry	7,000
Fecal Coliform, MPN/100ml				500			17,000													240,000			1,700					dry	700
Enterococcus, MPN/100ml				500			28,000													230			17,000					dry	1,300

2008

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	AH-30	AH-31	AH-32	AH-33	AH-34	AH-35	AH-36	AH-37	AH-38	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. ℃		22	22.1			24.8	23	25.2	24.2	25.2	24.1	dry	24.1	24.5	28	25.4	23		23.2			dry	28.4	24.4		22.1		dry	19.6
pH		7.7	7.1			7.8	7.9	7.3	7.8	7.3	7.3	dry	7.9	8.0	8.4	7.8	7.8		8.1			dry	8.4	7.6		7.8		dry	7.3
Conductivity, mS/cm		2.36	2.88			3.64	3.7	2.77	1.47	7.15	1.23	dry	6.11	1.31	1.04	1.97	11.34		1.94			dry	1.7	2.03		2.55		dry	2.22
Turbidity, NTU		0.01	1.65			16.15	0.01	6.15	9.72	12.34	16.96	dry	0.27	8.07	0.81	3.55	1.5		1.76			dry	1.11	8.3		2.32		dry	1.66
Ammonia, mg/l NH3-N		0.223	0.227			0.547	0.113	0.525	0.176	0.381	0.338	dry	0.191	0.155	0.069	0.126	0.607		0.071			dry	0.171	0.252		0.193		dry	0.242
Nitrate, mg/l NO3-N		**18.37**	0.98			2.033	0.915	1.058	1.524	2.12	1.422	dry	**46.872**	2.191	1.026	1.479	0.629		0.856			dry	9.567	**11.467**		6.676		dry	**18.923**
Reactive Phosphorus, mg/l PO4-P		0.145	0.274			0.757	0.053	0.301	1.043	0.033	0.67	dry	0.063	0.296	0.245	0.481	0.154		0.137			dry	0.082	0.041		0.087		dry	0.111
Detergents, mg/l MBAS		0.25	0.25			0.25	0.38	0.5	0.5	0.68	0.75	dry	0.75	0.75	0.13	0.25	0.75		0.38			dry	0.13	0.25		0.13		dry	0.25
Oil and Grease, mg/l		nd	nd				nd												nd				nd						nd
Total Hardness, mg/l CaCO3		911	969				1,240												561				431						nd
Cadmium, mg/l		nd	nd				nd												nd				nd						nd
Copper, mg/l		nd	nd				0.005												nd				nd						nd
Lead, mg/l		nd	nd				nd												nd				nd						nd
Zinc, mg/l		nd	nd				0.03												nd				nd						nd
Diazinon, µg/L		nd	nd				nd												nd				nd						nd
Chlorpyrifos, µg/L		nd	nd				nd												nd				nd						nd
Total Coliform, MPN/100ml		8,000	23,000				**130,000**												8,000				**186,000**						5,000
Fecal Coliform, MPN/100ml		1,700	5,000				5,000												5,000				5,000						3,000
Enterococcus, MPN/100ml		230	3,000				1,700												2,300				1,700						1,700

City of Vista Dry Weather Historical Data

2007

Site No.	BV-19	BV-24	BV-25	BV-30	BV-31	BV-32	BV-33	BV-34	G-1	G-2	G-3	G-4	G-5	G-6	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃	20.8	21.2	dry							23.7	22.5	dry			21		dry	20.5	24.2	20.1		20.3	18.4		21	23.7	18.9
pH	7.77	8.25	dry							8.35	7.84	dry			7.96		dry	8.12	7.94	7.87		7.29	7.63		7.69	8.15	7.73
Conductivity, mS/cm	1.534	1.6	dry							0.849	1.484	dry			0.844		dry	0.928	1.16	1.076		4.91	2.3		1.63	2.1	2.71
Turbidity, NTU	0.64	22.4	dry							1.72	6.8	dry			14.9		dry	32.6	126	9.6		17.3	1.82		1.69	2.82	6.61
Ammonia, mg/l NH3-N	0.2	0.6	dry							0.3	10	dry			0.8		dry	0.8	0.8	0.3		1.5	0.2		0.1	0.1	0.3
Nitrate, mg/l NO3-N	15	18	dry							0.2	0.3	dry			0.6		dry	0.1	1	0.3		nd	0.6		15	1.5	0.8
Reactive Phosphorus, mg/l PO4-P	0.065	0.098	dry							0.261	0.98	dry			0.98		dry	0.98	0.261	0.098		0.196	0.065		0.033	0.033	0.065
Detergents, mg/l MBAS	0.5	0.25	dry							0.25	0.5	dry			0.5		dry	1.5	2	0.25		0.5	0.25		0.25	0.25	0.25
Surfactants, mg/l MBAS	nd																					nd	nd		nd	nd	nd
Oil and Grease, mg/l	nd																					nd	nd		nd	nd	nd
Total Hardness, mg/l CaCO3	799																					1,620	884		848	626	788
Cadmium, mg/l	nd																					nd	nd		nd	nd	nd
Copper, mg/l	nd																					nd	nd		nd	nd	nd
Lead, mg/l	nd																					nd	nd		nd	nd	nd
Zinc, mg/l	nd																					0.04	nd		nd	nd	nd
Diazinon, µg/L	nd																					nd	nd		nd	nd	nd
Chlorpyrifos, µg/L	nd																					nd	nd		nd	nd	nd
Total Coliform, MPN/100ml	5,000																					80,000	700		5,000	5,000	13,000
Fecal Coliform, MPN/100ml	20																					1,400	140		800	1,400	500
Enterococcus, MPN/100ml	230																					5,000	110		500	130	2,800

2008

Site No.	BV-19	BV-24	BV-25	BV-30	BV-31	BV-32	BV-33	BV-34	G-1	G-2	G-3	G-4	G-5	G-6	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. ℃		25.5		22.3	26	25.6	26.7	24.5			23.7	28.2	24.6	25					dry	22.8							
pH		8.0		8.0	7.2	7.0	7.3	8.0			7.4	**9.1**	7.8	7.4					dry	7.4							
Conductivity, mS/cm		2.0		2.08	1.49	5.31	3.56	1.69			1.9	0.97	2.92	2.08					dry	1.31							
Turbidity, NTU		1.37		5.54	0.01	3.91	8.31	7.08			17.18	2.97	3.6	0.01					dry	5.37							
Ammonia, mg/l NH3-N		0.173		0.192	0.014	0.296	0.397	0.137			**2.876**	0.17	0.352	0.192					dry	0.128							
Nitrate, mg/l NO3-N		**13.80**		0.525	1.525	7.621	1.688	0.753			0.6	0.663	2.888	6.265					dry	0.643							
Reactive Phosphorus, mg/l PO4-P		0.095		0.103	0.067	0.456	1.129	0.079			1.943	0.31	0.22	0.054					dry	0.342							
Detergents, mg/l MBAS		0.25		0.13	0.13	0.88	0.75	0.25			0.5	0.25	0.25	0.5					dry	0.25							
Oil and Grease, mg/l					nd															nd							
Total Hardness, mg/l CaCO3					354															338							
Cadmium, mg/l					nd															nd							
Copper, mg/l					nd															0.005							
Lead, mg/l					nd															nd							
Zinc, mg/l					nd															nd							
Diazinon, µg/L					nd															nd							
Chlorpyrifos, µg/L					nd															nd							
Total Coliform, MPN/100ml					300															**80,000**							
Fecal Coliform, MPN/100ml					20															13,000							
Enterococcus, MPN/100ml					20															1,700							

Appendix B

Photographs of Sampling Locations

Site AH-8A	
Site AH-9	
Site AH-17	

Site AH-21	
Site AH-30	
Site AH-31	

Site AH-32	
Site AH-33	
Site AH-34	

Site AH-35	
Site AH-36	
Site AH-37	

Site AH-38	
Site BV-1	
Site BV-4	

Site BV-7A	
Site BV-8	
Site BV-10	

Site BV-12	
Site BV-15	
Site BV-18	

Site BV-24	
Site BV-30	
Site BV-31	

Site BV-32	
Site BV-33	
Site BV-34	

Site BV-35	
Site BV-36	
Site G-3	

Site G-4	
Site G-5	
Site G-6	

Site MV-3	
Site SS-1	

Appendix C

Laboratory Analytical Reports

ENCINA WASTEWATER AUTHORITY
A Public Agency
6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

SAMPLE RESULTS REPORT

Report Date : 6/19/2009

REPORT TO

D-Max Engineering, Inc.
7220 Trade Street, Ste 119
San Diego, CA 92121
Attention: Ms. Sara Dadkhah

Sample Delivery Group (SDG): 090618090842

ELAP Certification No. 1441

Ref. No. EC: 09- 0130

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA20823	**Collected: 05/28/2009**	**Time: 11:15**			
SPECIAL	BV-8	Total Coliform, MF	6500	Colonies/100ml	SM9221B
SPECIAL	BV-8	Fecal Coliform, MF	1400	Colonies/100ml	SM9222D
SPECIAL	BV-8	Enterococcus	400	Colonies/100ml	EPA 1600
SPECIAL	BV-8	Hardness	400	mg/L CaCO3	SM2340C
AA20824	**Collected: 05/28/2009**	**Time: 12:40**			
SPECIAL	BV-18	Total Coliform, MF	2900	Colonies/100ml	SM9221B
SPECIAL	BV-18	Fecal Coliform, MF	1400	Colonies/100ml	SM9222D
SPECIAL	BV-18	Enterococcus	1900	Colonies/100ml	EPA 1600
SPECIAL	BV-18	Hardness	800	mg/L CaCO3	SM2340C
AA20825	**Collected: 05/28/2009**	**Time: 14:00**			
SPECIAL	BV-31	Total Coliform, MF	30	Colonies/100ml	SM9221B
SPECIAL	BV-31	Fecal Coliform, MF	<10	Colonies/100ml	SM9222D
SPECIAL	BV-31	Enterococcus	40	Colonies/100ml	EPA 1600
SPECIAL	BV-31	Hardness	300	mg/L CaCO3	SM2340C
AA20826	**Collected: 06/03/2009**	**Time: 11:15**			
SPECIAL	AHC-20	Total Coliform, MF	1180	Colonies/100ml	SM9221B
SPECIAL	AHC-20	Fecal Coliform, MF	180	Colonies/100ml	SM9222D
SPECIAL	AHC-20	Enterococcus	185	Colonies/100ml	EPA 1600
SPECIAL	AHC-20	Total Suspended Solids	2.0	mg/L	SM2540D
SPECIAL	AHC-20	Solids, Total Dissolved	1639	mg/L	SM2540C
SPECIAL	AHC-20	NH3 Electrode	<0.1	mg/L NH3-N	SM4500NH3-D
SPECIAL	AHC-20	Phosphorus Total	0.11	mg/L as PO4	Hach 8190
SPECIAL	AHC-20	Sulfate Wet	334	mg/L	EPA 375.4
AA20827	**Collected: 06/03/2009**	**Time: 12:00**			
SPECIAL	AHC-10	Total Coliform, MF	3100	Colonies/100ml	SM9221B
SPECIAL	AHC-10	Fecal Coliform, MF	845	Colonies/100ml	SM9222D
SPECIAL	AHC-10	Enterococcus	590	Colonies/100ml	EPA 1600
SPECIAL	AHC-10	Total Suspended Solids	28	mg/L	SM2540D
SPECIAL	AHC-10	Solids, Total Dissolved	5036	mg/L	SM2540C
SPECIAL	AHC-10	NH3 Electrode	0.35	mg/L NH3-N	SM4500NH3-D

SERVING THE CITY OF VISTA, CITY OF CARLSBAD, BUENA SANITATION DISTRICT, VALLECITOS WATER DISTRICT, LEUCADIA COUNTY WATER DISTRICT AND CITY OF ENCINITAS
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SAMPLE RESULTS REPORT

Report Date : 6/19/2009

REPORT TO

D-Max Engineering, Inc.
7220 Trade Street, Ste 119
San Diego, CA 92121
Attention: Ms. Sara Dadkhah

Sample Delivery Group (SDG): 090618090842

ELAP Certification No. 1441

Ref. No. EC: 09- 0130

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
SPECIAL	AHC-10	Phosphorus Total	<0.05	mg/L as PO4	Hach 8190
SPECIAL	AHC-10	Sulfate Wet	696	mg/L	EPA 375.4
AA20828	**Collected: 06/03/2009**	**Time: 14:30**			
SPECIAL	AH-21	Total Coliform, MF	7100	Colonies/100ml	SM9221B
SPECIAL	AH-21	Fecal Coliform, MF	3155	Colonies/100ml	SM9222D
SPECIAL	AH-21	Enterococcus	1925	Colonies/100ml	EPA 1600
SPECIAL	AH-21	Hardness	1150	mg/L CaCO3	SM2340C
SPECIAL	AH-21	Total Suspended Solids	15	mg/L	SM2540D
SPECIAL	AH-21	Solids, Total Dissolved	2263	mg/L	SM2540C
SPECIAL	AH-21	Phosphorus Total	0.65	mg/L as PO4	Hach 8190
SPECIAL	AH-21	Sulfate Wet	809	mg/L	EPA 375.4
AA20829	**Collected: 06/04/2009**	**Time: 09:55**			
SPECIAL	AH-17	Total Coliform, MF	13100	Colonies/100ml	SM9221B
SPECIAL	AH-17	Fecal Coliform, MF	4100	Colonies/100ml	SM9222D
SPECIAL	AH-17	Enterococcus	5800	Colonies/100ml	EPA 1600
SPECIAL	AH-17	Total Suspended Solids	16	mg/L	SM2540D
SPECIAL	AH-17	Solids, Total Dissolved	3668	mg/L	SM2540C
SPECIAL	AH-17	Phosphorus Total	0.39	mg/L as PO4	Hach 8190
SPECIAL	AH-17	Sulfate Wet	692	mg/L	EPA 375.4
AA20830	**Collected: 06/04/2009**	**Time: 11:20**			
SPECIAL	AHC-21	Total Coliform, MF	1005	Colonies/100ml	SM9221B
SPECIAL	AHC-21	Fecal Coliform, MF	225	Colonies/100ml	SM9222D
SPECIAL	AHC-21	Enterococcus	150	Colonies/100ml	EPA 1600
SPECIAL	AHC-21	Total Suspended Solids	54	mg/L	SM2540D
SPECIAL	AHC-21	Solids, Total Dissolved	1792	mg/L	SM2540C
SPECIAL	AHC-21	Phosphorus Total	0.05	mg/L as PO4	Hach 8190
SPECIAL	AHC-21	Sulfate Wet	221	mg/L	EPA 375.4
SPECIAL	AHC-21	NH3 Electrode	<0.1	mg/L NH3-N	SM4500NH3-D
AA20831	**Collected: 06/04/2009**	**Time: 12:00**			
SPECIAL	BEC-36	Total Coliform, MF	4200	Colonies/100ml	SM9221B
SPECIAL	BEC-36	Fecal Coliform, MF	760	Colonies/100ml	SM9222D
SPECIAL	BEC-36	Enterococcus	670	Colonies/100ml	EPA 1600

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SAMPLE RESULTS REPORT

Report Date : 6/19/2009

REPORT TO

D-Max Engineering, Inc.
7220 Trade Street, Ste 119
San Diego, CA 92121
Attention: Ms. Sara Dadkhah

Sample Delivery Group (SDG): 090618090842

ELAP Certification No. 1441

Ref. No. EC: 09- 0130

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
SPECIAL	BEC-36	Total Suspended Solids	17	mg/L	SM2540D
SPECIAL	BEC-36	Solids, Total Dissolved	1450	mg/L	SM2540C
SPECIAL	BEC-36	Phosphorus Total	0.17	mg/L as PO4	Hach 8190
SPECIAL	BEC-36	NH3 Electrode	<0.1	mg/L NH3-N	SM4500NH3-D
AA20832	**Collected: 06/04/2009**	**Time: 12:50**			
SPECIAL	BV-1	Total Coliform, MF	860	Colonies/100ml	SM9221B
SPECIAL	BV-1	Fecal Coliform, MF	440	Colonies/100ml	SM9222D
SPECIAL	BV-1	Enterococcus	420	Colonies/100ml	EPA 1600
SPECIAL	BV-1	Total Suspended Solids	43	mg/L	SM2540D
SPECIAL	BV-1	Solids, Total Dissolved	5975	mg/L	SM2540C
SPECIAL	BV-1	Phosphorus Total	0.19	mg/L as PO4	Hach 8190
AA20833	**Collected: 06/08/2009**	**Time: 10:45**			
SPECIAL	BV-4	Total Coliform, MF	16400	Colonies/100ml	SM9221B
SPECIAL	BV-4	Fecal Coliform, MF	1805	Colonies/100ml	SM9222D
SPECIAL	BV-4	Enterococcus	405	Colonies/100ml	EPA 1600
SPECIAL	BV-4	Hardness	500	mg/L CaCO3	SM2340C
SPECIAL	BV-4	Total Suspended Solids	12	mg/L	SM2540D
SPECIAL	BV-4	Solids, Total Dissolved	1278	mg/L	SM2540C
SPECIAL	BV-4	Phosphorus Total	0.13	mg/L as PO4	Hach 8190
AA20834	**Collected: 06/08/2009**	**Time: 12:00**			
SPECIAL	BVC-3	Total Coliform, MF	1180	Colonies/100ml	SM9221B
SPECIAL	BVC-3	Fecal Coliform, MF	205	Colonies/100ml	SM9222D
SPECIAL	BVC-3	Enterococcus	50	Colonies/100ml	EPA 1600
SPECIAL	BVC-3	Total Suspended Solids	11	mg/L	SM2540D
SPECIAL	BVC-3	Solids, Total Dissolved	1276	mg/L	SM2540C
SPECIAL	BVC-3	Phosphorus Total	0.08	mg/L as PO4	Hach 8190
SPECIAL	BVC-3	NH3 Electrode	<0.1	mg/L NH3-N	SM4500NH3-D
AA20835	**Collected: 06/08/2009**	**Time: 12:50**			
SPECIAL	SS-1	Total Coliform, MF	640	Colonies/100ml	SM9221B
SPECIAL	SS-1	Fecal Coliform, MF	185	Colonies/100ml	SM9222D
SPECIAL	SS-1	Enterococcus	140	Colonies/100ml	EPA 1600
SPECIAL	SS-1	Hardness	640	mg/L CaCO3	SM2340C

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SAMPLE RESULTS REPORT

Report Date : 6/19/2009

REPORT TO

D-Max Engineering, Inc.
7220 Trade Street, Ste 119
San Diego, CA 92121
Attention: Ms. Sara Dadkhah

Sample Delivery Group (SDG): 090618090842

ELAP Certification No. 1441

Ref. No. EC: 09- 0130

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA20836	**Collected: 06/09/2009**	**Time: 11:15**			
SPECIAL	AH-9	Total Coliform, MF	4600	Colonies/100ml	SM9221B
SPECIAL	AH-9	Fecal Coliform, MF	1130	Colonies/100ml	SM9222D
SPECIAL	AH-9	Enterococcus	560	Colonies/100ml	EPA 1600
SPECIAL	AH-9	Hardness	880	mg/L CaCO3	SM2340C
AA20837	**Collected: 06/09/2009**	**Time: 13:30**			
SPECIAL	G-6	Total Coliform, MF	2365	Colonies/100ml	SM9221B
SPECIAL	G-6	Fecal Coliform, MF	490	Colonies/100ml	SM9222D
SPECIAL	G-6	Enterococcus	115	Colonies/100ml	EPA 1600
SPECIAL	G-6	Hardness	600	mg/L CaCO3	SM2340C

Certified By: Doug Campbell Date: 6/25/2009

Doug Campbell, Laboratory Supervisor

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EnviroMatrix Analytical, Inc.

09 June 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906041

Project Name: Encina Wastewater Authority Laboratory

Enclosed are the results of analyses for samples received by the laboratory on 06/01/09 14:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority Laboratory

EMA Log #: 0906041

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-8	0906041-01	Water	05/28/09 11:15	06/01/09 14:25
BV-18	0906041-02	Water	05/28/09 12:40	06/01/09 14:25
BV-31	0906041-03	Water	05/28/09 14:00	06/01/09 14:25

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority Laboratory

EMA Log #: 0906041

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-8 (0906041-01) Water Sampled: 05/28/09 11:15 Received: 06/01/09 14:25									
Cadmium	ND	0.001	mg/l	1	9060339	06/03/09	06/03/09	EPA 200.8	
Copper	**0.004**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
BV-18 (0906041-02) Water Sampled: 05/28/09 12:40 Received: 06/01/09 14:25									
Cadmium	ND	0.001	mg/l	1	9060339	06/03/09	06/03/09	EPA 200.8	
Copper	**0.003**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	**0.060**	0.020	"	"	"	"	"	"	
BV-31 (0906041-03) Water Sampled: 05/28/09 14:00 Received: 06/01/09 14:25									
Cadmium	ND	0.001	mg/l	1	9060339	06/03/09	06/03/09	EPA 200.8	
Copper	**0.003**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	**0.133**	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering	**EMA Log #: 0906041**
Project Name: Encina Wastewater Authority Laboratory	

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-8 (0906041-01) Water Sampled: 05/28/09 11:15 Received: 06/01/09 14:25									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9060248	06/02/09	06/06/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*120 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*112 %*	*60-130*		"	"	"	"	
BV-18 (0906041-02) Water Sampled: 05/28/09 12:40 Received: 06/01/09 14:25									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9060248	06/02/09	06/06/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*104 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*108 %*	*60-130*		"	"	"	"	
BV-31 (0906041-03) Water Sampled: 05/28/09 14:00 Received: 06/01/09 14:25									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9060248	06/02/09	06/06/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*100 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*100 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority Laboratory

EMA Log #: 0906041

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-8 (0906041-01) Water Sampled: 05/28/09 11:15 Received: 06/01/09 14:25									
Oil & Grease	ND	5	mg/l	1	9060821	06/08/09	06/08/09	EPA 1664A	
BV-18 (0906041-02) Water Sampled: 05/28/09 12:40 Received: 06/01/09 14:25									
Oil & Grease	ND	5	mg/l	1	9060821	06/08/09	06/08/09	EPA 1664A	
BV-31 (0906041-03) Water Sampled: 05/28/09 14:00 Received: 06/01/09 14:25									
Oil & Grease	ND	5	mg/l	1	9060821	06/08/09	06/08/09	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority Laboratory

EMA Log #: 0906041

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060339										
Blank (9060339-BLK1)				Prepared & Analyzed: 06/03/09						
Copper	ND	0.001	mg/l							
Cadmium	ND	0.001	"							
Lead	ND	0.001	"							
Zinc	ND	0.020	"							
LCS (9060339-BS1)				Prepared & Analyzed: 06/03/09						
Lead	0.045	0.001	mg/l	0.0500		90	75-125			
Cadmium	0.048	0.001	"	0.0500		96	85-115			
Zinc	0.048	0.020	"	0.0500		96	85-115			
Copper	0.048	0.001	"	0.0500		97	85-115			
LCS Dup (9060339-BSD1)				Prepared & Analyzed: 06/03/09						
Lead	0.047	0.001	mg/l	0.0500		94	75-125	4	20	
Zinc	0.049	0.020	"	0.0500		98	85-115	2	20	
Copper	0.049	0.001	"	0.0500		98	85-115	2	20	
Cadmium	0.049	0.001	"	0.0500		98	85-115	2	20	
Duplicate (9060339-DUP1)		**Source: 0906036-03**		Prepared & Analyzed: 06/03/09						
Lead	ND	0.001	mg/l		ND				20	
Zinc	0.027	0.020	"		0.027			0.07	20	
Copper	0.009	0.001	"		0.009			0.8	20	
Cadmium	ND	0.001	"		ND				20	
Matrix Spike (9060339-MS1)		**Source: 0906036-03**		Prepared & Analyzed: 06/03/09						
Zinc	0.074	0.020	mg/l	0.0500	0.027	95	70-130			
Lead	0.051	0.001	"	0.0500	ND	102	75-125			
Cadmium	0.048	0.001	"	0.0500	ND	96	70-130			
Copper	0.056	0.001	"	0.0500	0.009	93	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority Laboratory

EMA Log #: 0906041

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060339										
Matrix Spike Dup (9060339-MSD1)		**Source: 0906036-03**		Prepared & Analyzed: 06/03/09						
Copper	0.055	0.001	mg/l	0.0500	0.009	93	70-130	0.5	20	
Zinc	0.074	0.020	"	0.0500	0.027	95	70-130	0.5	20	
Lead	0.050	0.001	"	0.0500	ND	99	75-125	2	20	
Cadmium	0.048	0.001	"	0.0500	ND	95	70-130	0.9	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority Laboratory

EMA Log #: 0906041

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060248										
Blank (9060248-BLK1)				Prepared: 06/02/09 Analyzed: 06/06/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.230*		*"*	*0.250*		*92*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS (9060248-BS1)				Prepared: 06/02/09 Analyzed: 06/06/09						
Bolstar	0.37	0.10	ug/l	0.500		74	60-130			
Diazinon	0.46	0.05	"	0.500		92	60-130			
Ethoprop	0.42	0.05	"	0.500		84	60-130			
Mevinphos	0.42	0.25	"	0.500		84	60-130			
Methyl parathion	0.39	0.10	"	0.500		78	60-130			
Phorate	0.39	0.05	"	0.500		78	60-130			
Ronnel	0.43	0.25	"	0.500		86	60-130			
Trichlorinate	0.44	0.05	"	0.500		88	60-130			
Surrogate: Triphenyl phosphate	*0.250*		*"*	*0.250*		*100*	*60-130*			
Surrogate: Tribuytlphosphate	*0.260*		*"*	*0.250*		*104*	*60-130*			
LCS Dup (9060248-BSD1)				Prepared: 06/02/09 Analyzed: 06/06/09						
Bolstar	0.36	0.10	ug/l	0.500		72	60-130	3	30	
Diazinon	0.45	0.05	"	0.500		90	60-130	2	30	
Ethoprop	0.39	0.05	"	0.500		78	60-130	7	30	
Mevinphos	0.39	0.25	"	0.500		78	60-130	7	30	
Methyl parathion	0.39	0.10	"	0.500		78	60-130	0	30	
Phorate	0.41	0.05	"	0.500		82	60-130	5	30	
Ronnel	0.44	0.25	"	0.500		88	60-130	2	30	
Trichlorinate	0.44	0.05	"	0.500		88	60-130	0	30	
Surrogate: Triphenyl phosphate	*0.260*		*"*	*0.250*		*104*	*60-130*			
Surrogate: Tribuytlphosphate	*0.260*		*"*	*0.250*		*104*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority Laboratory

EMA Log #: 0906041

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060821										
Blank (9060821-BLK1)				Prepared & Analyzed: 06/08/09						
Oil & Grease	ND	5	mg/l							
LCS (9060821-BS1)				Prepared & Analyzed: 06/08/09						
Oil & Grease	33	5	mg/l	40.0		82	78-114			
LCS Dup (9060821-BSD1)				Prepared & Analyzed: 06/08/09						
Oil & Grease	35	5	mg/l	40.0		86	78-114	6	20	
Matrix Spike (9060821-MS1)		**Source: 0905768-01**		Prepared & Analyzed: 06/08/09						
Oil & Grease	32	5	mg/l	40.0	ND	79	78-114			

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Notes and Definitions

GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

* DMAX - manouchehr Dadkhah

DATE	TIME	SAMPLE LOCATION	GRAB	COMPOSITE	LIQUID	SOLID	COLILERT	GENERAL PHYSICAL	HETEROTROPHIC PLATE COUNT	OTHER	(TP) TOP PRIORITY OR (R) ROUTINE	NUMBER OF CONTAINERS	ANAL
			SAMPLE TYPE										* Bill D
5/28/09	11:15	BV-8	X									1	1664 O'G
5/28/09	11:15	BV-8	X									1	200.8 Dis
5/28/09	11:15	BV-8	X									2	8141
5/28/09	12:40	BV-18	X									1	1664 O'G
5/28/09	12:40	BV-18	X									1	200.8 Dis
5/28/09	12:40	BV-18	X									2	8141
5/28/09	14:00	BV-31	X									1	1664 O'G
5/28/09	14:00	BV-31	X									1	200.8 Dis
5/28/09	14:00	BV-31	X									2	8141
													*Normal

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
	6/1/09 12:23		6/1/09
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
	6/1/09 1425		6/1/09

8°

EnviroMatrix Analytical, Inc.

10 July 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906165

Project Name: Encina Wastewater Authority

Enclosed are the results of analyses for samples received by the laboratory on 06/04/09 16:57. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BEC-36	0906165-01	Liquid	06/04/09 12:00	06/04/09 16:57
BEC-36	0906165-02	Liquid	06/04/09 12:00	06/04/09 16:57
BV-1	0906165-03	Liquid	06/04/09 12:50	06/04/09 16:57
AHC-21	0906165-04	Liquid	06/04/09 11:20	06/04/09 16:57
AHC-21	0906165-05	Liquid	06/04/09 11:20	06/04/09 16:57
AHC-21	0906165-06	Liquid	06/04/09 11:20	06/04/09 16:57
AH-17	0906165-07	Liquid	06/04/09 09:55	06/04/09 16:57
AH-17	0906165-08	Liquid	06/04/09 09:55	06/04/09 16:57

NOTE: The TKN analysis was performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AHC-21 (0906165-06) Liquid Sampled: 06/04/09 11:20 Received: 06/04/09 16:57									
Manganese	**0.231**	0.005	mg/l	1	9060715	06/07/09	06/17/09	EPA 200.8	
Selenium	ND	0.002	"	"	"	"	06/18/09	"	
AH-17 (0906165-08) Liquid Sampled: 06/04/09 09:55 Received: 06/04/09 16:57									
Manganese	**0.058**	0.005	mg/l	1	9060715	06/07/09	06/17/09	EPA 200.8	
Selenium	**0.011**	0.002	"	"	"	"	06/18/09	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BEC-36 (0906165-01) Liquid Sampled: 06/04/09 12:00 Received: 06/04/09 16:57									
Nitrate/Nitrite as N	**7.85**	2.50	mg/l	50	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**9.8**	0.5	"	1	9061906	06/17/09	06/17/09	Calculation	
BEC-36 (0906165-02) Liquid Sampled: 06/04/09 12:00 Received: 06/04/09 16:57									
Orthophosphate as P	**0.23**	0.05	mg/l	1	9060535	06/05/09	06/05/09	SM4500 P E	
BV-1 (0906165-03) Liquid Sampled: 06/04/09 12:50 Received: 06/04/09 16:57									
Nitrate/Nitrite as N	**0.09**	0.05	mg/l	1	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**2.1**	0.5	"	"	9061906	06/17/09	06/17/09	Calculation	
AHC-21 (0906165-04) Liquid Sampled: 06/04/09 11:20 Received: 06/04/09 16:57									
Nitrate/Nitrite as N	**0.06**	0.05	mg/l	1	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**1.2**	0.5	"	"	9061906	06/17/09	06/17/09	Calculation	
AHC-21 (0906165-05) Liquid Sampled: 06/04/09 11:20 Received: 06/04/09 16:57									
Orthophosphate as P	**0.26**	0.05	mg/l	1	9060535	06/05/09	06/05/09	SM4500 P E	
AH-17 (0906165-07) Liquid Sampled: 06/04/09 09:55 Received: 06/04/09 16:57									
Nitrate/Nitrite as N	**3.40**	0.25	mg/l	5	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**5.1**	0.5	"	1	9061906	06/17/09	06/17/09	Calculation	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060715										
Blank (9060715-BLK1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	ND	0.002	mg/l							
Manganese	ND	0.005	"							
LCS (9060715-BS1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Manganese	0.101	0.005	mg/l	0.100		101	85-115			
Selenium	0.112	0.002	"	0.100		112	75-125			
LCS Dup (9060715-BSD1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.107	0.002	mg/l	0.100		107	75-125	4	20	
Manganese	0.103	0.005	"	0.100		103	85-115	1	20	
Duplicate (9060715-DUP1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.0004	0.002	mg/l		ND				20	
Manganese	0.012	0.005	"		0.012			0.7	20	
Matrix Spike (9060715-MS1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.103	0.002	mg/l	0.100	ND	103	75-125			
Manganese	0.113	0.005	"	0.100	0.012	101	70-130			
Matrix Spike Dup (9060715-MSD1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.104	0.002	mg/l	0.100	ND	104	75-125	0.7	20	
Manganese	0.113	0.005	"	0.100	0.012	100	70-130	0.2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060535										
Blank (9060535-BLK1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9060535-BS1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.54	0.05	mg/l	0.500		108	80-120			
LCS Dup (9060535-BSD1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.54	0.05	mg/l	0.500		108	80-120	0.7	20	
Duplicate (9060535-DUP1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.22	0.05	mg/l		0.23			2	20	
Matrix Spike (9060535-MS1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.75	0.05	mg/l	0.500	0.23	105	80-120			
Matrix Spike Dup (9060535-MSD1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.73	0.05	mg/l	0.500	0.23	100	80-120	3	20	
Batch 9060539										
Blank (9060539-BLK1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9060539-BS1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		102	80-120			
LCS Dup (9060539-BSD1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		98	80-120	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060539										
Duplicate (9060539-DUP1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	5.71	0.50	mg/l		5.87			3	20	
Matrix Spike (9060539-MS1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	17.7	1.25	mg/l	12.5	5.87	95	80-120			
Matrix Spike Dup (9060539-MSD1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	19.1	1.25	mg/l	12.5	5.87	106	80-120	8	20	
Reference (9060539-SRM1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.70	0.05	mg/l	0.688		102	8.81-109.0			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering	**EMA Log #: 0906165**
Project Name: Encina Wastewater Authority	

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760-438-3941 Fax: 760 476 9852

Email:

Billing Address: same

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □	8015B (TPH) □ Gas □ Diesel □ E	624/8260 (VOC) Full BTXE MTB	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pestic	608 / 8082 (Polychlorinated Biph	8141 (Organophosphorus Pesticid	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Orga	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal
1	BEC-36	6/4/09	1200	L	2														
2	BEC-36	6/4/09	1200	L	1														
3	BV-1	6/4/09	1250	L	2														
4	AHC-21	6/4/09	1120	L	2														
5	AHC-21	6/4/09	1120	L	1														
6	AHC-21	6/4/09	1120	L	1														
7	AH-17	6/4/09	0955	L	2														
8	AH-17	6/4/09	0955	L	1														
9																			
10																			

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

	RELINQUISHED BY	DATE/TIME
Signature	Rachael Morgan	6/4/09
Print	Rachael Morgan	1445
Company:	Encino wastewater	
Signature	[illegible]	6/4/09
Print	Gary Hunter	1657
Company:	EMA	
Signature		
Print		
Company:		

Project/Sample Comments:

T=10° on ic

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

19 June 2009

D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log#: 0906165

Project Name: Encina Wastewater Authority

Enclosed with this letter are the test results performed by subcontract laboratory for the following analyses:

- Nitrogen, TKN - Liquid

The samples were received by EnviroMatrix Analytical, Inc. intact and with chain-of-custody documentation. The test results and pertinent quality assurance/quality control data are listed on the attached tables.

I certify that this data report is in compliance both technically and for completeness. Release of the data contained in this hard copy data report has been authorized by the following signature.

Dan Verdon
Laboratory Director

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jennifer Beyer

Project: 0906165

Sampled: 06/04/09
Received: 06/10/09
Issued: 06/19/09 16:17

NELAP #01108CA California ELAP#2706 CSDLAC #10256 AZ #AZ0671 NV #CA01531

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
ISF1191-01	0906165-01	Water
ISF1191-02	0906165-03	Water
ISF1191-03	0906165-04	Water
ISF1191-04	0906165-07	Water

Reviewed By:

TestAmerica Irvine

D.J. Watson
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jennifer Beyer

Project ID: 0906165
Report Number: ISF1191

Sampled: 06/04/09
Received: 06/10/09

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: ISF1191-01 (0906165-01 - Water)					**Sampled: 06/04/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**2.0**	1	6/17/2009	6/17/2009	
Sample ID: ISF1191-02 (0906165-03 - Water)					**Sampled: 06/04/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**2.0**	1	6/17/2009	6/17/2009	
Sample ID: ISF1191-03 (0906165-04 - Water)					**Sampled: 06/04/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**1.1**	1	6/17/2009	6/17/2009	
Sample ID: ISF1191-04 (0906165-07 - Water)					**Sampled: 06/04/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**1.7**	1	6/17/2009	6/17/2009	

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jennifer Beyer

Project ID: 0906165
Report Number: ISF1191

Sampled: 06/04/09
Received: 06/10/09

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 9F17124 Extracted: 06/17/09										
Blank Analyzed: 06/17/2009 (9F17124-BLK1)										
Total Kjeldahl Nitrogen	ND	0.50	mg/l							
LCS Analyzed: 06/17/2009 (9F17124-BS1)										
Total Kjeldahl Nitrogen	19.9	0.50	mg/l	20.0		99	85-120			
Matrix Spike Analyzed: 06/17/2009 (9F17124-MS1)					**Source: ISF1760-04**					
Total Kjeldahl Nitrogen	10.9	0.50	mg/l	10.0	1.68	92	85-120			
Matrix Spike Dup Analyzed: 06/17/2009 (9F17124-MSD1)					**Source: ISF1760-04**					
Total Kjeldahl Nitrogen	10.9	0.50	mg/l	10.0	1.68	92	85-120	0	15	

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.	Project ID: 0906165	
4340 Viewridge Avenue, Suite A		Sampled: 06/04/09
San Diego, CA 92123	Report Number: ISF1191	Received: 06/10/09
Attention: Jennifer Beyer		

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.	Project ID: 0906165	
4340 Viewridge Avenue, Suite A		Sampled: 06/04/09
San Diego, CA 92123	Report Number: ISF1191	Received: 06/10/09
Attention: Jennifer Beyer		

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
SM4500-Norg C	Water		X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906165

ISF1191

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jennifer Beyer

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906165-01	**Water**	**Sampled:06/04/09 12:00**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 12:00		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906165-03	**Water**	**Sampled:06/04/09 12:50**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 12:50		
Containers Supplied:				
125 ml Poly - H2SO4 (B)				
Sample ID: 0906165-04	**Water**	**Sampled:06/04/09 11:20**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 11:20		
Containers Supplied:				
125 ml Poly - H2SO4 (B)				
Sample ID: 0906165-07	**Water**	**Sampled:06/04/09 09:55**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 09:55		
Containers Supplied:				
125 ml Poly - ~~Unpres (B)~~ (C)	Rec pres w/H2SO4			

Send report to jbeyer@enviromatrixinc.com, lluick@enviromatrixinc.com, and reports@enviromatrixinc.com

0.0 6/11/09 5:20

Released By	Date	Received By	Date
[illegible]	6/10/09 1438	[illegible] TA	6-10-09 14:30
[illegible] TA	6-10-09 17:55	[illegible]	6/10/09 1755

#005

Carlsbad CA 92011

Phone: 760-438-3941 Fax: 760 476 9852

Email:

Billing Address: same

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 166	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticid	608 / 8082 (Polychlorinated Biphen	8141 (Organophosphorus Pesticides	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTL	TCLP (RCRA) □ Metals □ Organi	Cd Cr Cu Pb Ni Ag Zn □	Coliform, □ Total (MTF) □ Fecal (M	Colilert, T+E.Coli □ P/A □ Enumer
1	BEC-36	6/4/09	1200	L	2															
2	BEC-36	6/4/09	1200	L	1															
3	BV-1	6/4/09	1250	L	2															
4	AHC-21	6/4/09	1120	L	2															
5	AHC-21	6/4/09	1120	L	2															
6	AHC-21	6/4/09	1120	L	1															
7	AH-17	6/4/09	0955	L	2															
8	AH-17	6/4/09	0955	L	1															
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt: _____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY		DATE/TIME
Signature	Rachael Morgan	6/4/09 1445
Print	Rachael Morgan	
Company:	Fricino wastewater	
Signature	[illegible]	6/4/09 1657
Print	Gary Hunter Jr	
Company:	EMA	
Signature		
Print		
Company:		

Project/Sample Comments:

T= 10° on ic

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (v

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906165

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jennifer Beyer

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906165-01	**Water**	**Sampled:06/04/09 12:00**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 12:00		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906165-03	**Water**	**Sampled:06/04/09 12:50**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 12:50		
Containers Supplied:				
125 ml Poly - H2SO4 (B)				
Sample ID: 0906165-04	**Water**	**Sampled:06/04/09 11:20**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 11:20		
Containers Supplied:				
125 ml Poly - H2SO4 (B)				
Sample ID: 0906165-07	**Water**	**Sampled:06/04/09 09:55**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 09:55		
Containers Supplied:				
125 ml Poly - Unpres (B)				

Send report to jbeyer@enviromatrixinc.com, lluich@enviromatrixinc.com, and reports@enviromatrixinc.com

Released By	Date	Received By	Date
[illegible]	6/10/09 1438	[illegible] TA	6-10-09 14:30

EnviroMatrix Analytical, Inc.

10 July 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906166

Project Name: Encina Wastewater Authority

Enclosed are the results of analyses for samples received by the laboratory on 06/04/09 16:58. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AHC-10	0906166-01	Stormwater	06/03/09 12:00	06/04/09 16:58
AHC-20	0906166-02	Stormwater	06/03/09 11:15	06/04/09 16:58
AH-21	0906166-03	Stormwater	06/03/09 14:30	06/04/09 16:58

NOTE: The TKN analysis was performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AHC-10 (0906166-01) Stormwater Sampled: 06/03/09 12:00 Received: 06/04/09 16:58									
Manganese	**0.092**	0.005	mg/l	1	9060715	06/07/09	06/17/09	EPA 200.8	
Selenium	**0.005**	0.002	"	"	"	"	"	"	
AHC-20 (0906166-02) Stormwater Sampled: 06/03/09 11:15 Received: 06/04/09 16:58									
Manganese	**0.091**	0.005	mg/l	1	9060715	06/07/09	06/17/09	EPA 200.8	
Selenium	ND	0.002	"	"	"	"	"	"	
AH-21 (0906166-03) Stormwater Sampled: 06/03/09 14:30 Received: 06/04/09 16:58									
Manganese	**0.643**	0.005	mg/l	1	9061723	06/17/09	06/18/09	EPA 200.8	
Selenium	ND	0.002	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0906166-03) Stormwater Sampled: 06/03/09 14:30 Received: 06/04/09 16:58									
Cadmium	ND	0.001	mg/l	1	9060712	06/07/09	06/17/09	EPA 200.8	
Copper	**0.003**	0.001	"	"	"	"	06/18/09	"	
Lead	ND	0.001	"	"	"	"	06/17/09	"	
Zinc	**0.046**	0.020	"	"	"	"	06/18/09	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering	**EMA Log #: 0906166**
Project Name: Encina Wastewater Authority	

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0906166-03) Stormwater Sampled: 06/03/09 14:30 Received: 06/04/09 16:58									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061007	06/10/09	06/12/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*132 %*	*60-130*		"	"	"	"	*S-02, S-04*
Surrogate: Tribuytlphosphate		*116 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AHC-10 (0906166-01) Stormwater Sampled: 06/03/09 12:00 Received: 06/04/09 16:58									
Nitrate/Nitrite as N	**2.66**	0.50	mg/l	10	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**4.9**	0.5	"	1	9061906	06/17/09	06/17/09	Calculation	
Orthophosphate as P	**0.12**	0.05	"	"	9060535	06/05/09	06/05/09	SM4500 P E	
AHC-20 (0906166-02) Stormwater Sampled: 06/03/09 11:15 Received: 06/04/09 16:58									
Nitrate/Nitrite as N	**0.68**	0.05	mg/l	1	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**1.5**	0.5	"	"	9061906	06/17/09	06/17/09	Calculation	
Orthophosphate as P	**0.40**	0.05	"	"	9060535	06/05/09	06/05/09	SM4500 P E	
AH-21 (0906166-03) Stormwater Sampled: 06/03/09 14:30 Received: 06/04/09 16:58									
Nitrate/Nitrite as N	**0.50**	0.05	mg/l	1	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**1.9**	0.5	"	"	9061906	06/17/09	06/17/09	Calculation	
Oil & Grease	ND	5	"	"	9061132	06/11/09	06/11/09	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060715										
Blank (9060715-BLK1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	ND	0.002	mg/l							
Manganese	ND	0.005	"							
LCS (9060715-BS1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Manganese	0.101	0.005	mg/l	0.100		101	85-115			
Selenium	0.112	0.002	"	0.100		112	75-125			
LCS Dup (9060715-BSD1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.107	0.002	mg/l	0.100		107	75-125	4	20	
Manganese	0.103	0.005	"	0.100		103	85-115	1	20	
Duplicate (9060715-DUP1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.0004	0.002	mg/l		ND				20	
Manganese	0.012	0.005	"		0.012			0.7	20	
Matrix Spike (9060715-MS1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Manganese	0.113	0.005	mg/l	0.100	0.012	101	70-130			
Selenium	0.103	0.002	"	0.100	ND	103	75-125			
Matrix Spike Dup (9060715-MSD1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Manganese	0.113	0.005	mg/l	0.100	0.012	100	70-130	0.2	20	
Selenium	0.104	0.002	"	0.100	ND	104	75-125	0.7	20	
Batch 9061723										
Blank (9061723-BLK1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Manganese	ND	0.005	mg/l							
Selenium	ND	0.002	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061723										
LCS (9061723-BS1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Manganese	0.093	0.005	mg/l	0.100		93	85-115			
Selenium	0.098	0.002	"	0.100		98	75-125			
LCS Dup (9061723-BSD1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Selenium	0.099	0.002	mg/l	0.100		99	75-125	0.7	20	
Manganese	0.095	0.005	"	0.100		95	85-115	2	20	
Duplicate (9061723-DUP1)		**Source: 0906299-02**		Prepared: 06/17/09		Analyzed: 06/18/09				
Selenium	0.001	0.002	mg/l		ND				20	
Manganese	0.001	0.005	"		0.001			14	20	
Matrix Spike (9061723-MS1)		**Source: 0906299-02**		Prepared: 06/17/09		Analyzed: 06/18/09				
Manganese	0.087	0.005	mg/l	0.100	0.001	86	70-130			
Selenium	0.095	0.002	"	0.100	ND	95	75-125			
Matrix Spike Dup (9061723-MSD1)		**Source: 0906299-02**		Prepared: 06/17/09		Analyzed: 06/18/09				
Selenium	0.096	0.002	mg/l	0.100	ND	96	75-125	1	20	
Manganese	0.090	0.005	"	0.100	0.001	89	70-130	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060712										
Blank (9060712-BLK1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Zinc	ND	0.020	mg/l							
Cadmium	ND	0.001	"							
Copper	ND	0.001	"							
Lead	ND	0.001	"							
LCS (9060712-BS1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Zinc	0.050	0.020	mg/l	0.0500		99	85-115			
Cadmium	0.052	0.001	"	0.0500		104	85-115			
Copper	0.052	0.001	"	0.0500		104	85-115			
Lead	0.051	0.001	"	0.0500		102	75-125			
LCS Dup (9060712-BSD1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Lead	0.050	0.001	mg/l	0.0500		101	75-125	1	20	
Copper	0.051	0.001	"	0.0500		102	85-115	2	20	
Cadmium	0.050	0.001	"	0.0500		101	85-115	3	20	
Zinc	0.048	0.020	"	0.0500		96	85-115	3	20	
Duplicate (9060712-DUP1)		**Source: 0906164-05**		Prepared: 06/07/09		Analyzed: 06/17/09				
Lead	ND	0.001	mg/l		ND				20	
Zinc	0.007	0.020	"		0.007			4	20	
Cadmium	ND	0.001	"		ND				20	
Copper	0.003	0.001	"		0.003			0.4	20	
Matrix Spike (9060712-MS1)		**Source: 0906164-05**		Prepared: 06/07/09		Analyzed: 06/18/09				
Zinc	0.053	0.020	mg/l	0.0500	0.007	91	70-130			
Lead	0.050	0.001	"	0.0500	ND	101	75-125			
Copper	0.048	0.001	"	0.0500	0.003	91	70-130			
Cadmium	0.045	0.001	"	0.0500	ND	90	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060712										
Matrix Spike Dup (9060712-MSD1)		**Source: 0906164-05**		Prepared: 06/07/09	Analyzed: 06/17/09					
Lead	0.050	0.001	mg/l	0.0500	ND	100	75-125	0.5	20	
Copper	0.048	0.001	"	0.0500	0.003	92	70-130	0.7	20	
Zinc	0.053	0.020	"	0.0500	0.007	91	70-130	0.3	20	
Cadmium	0.042	0.001	"	0.0500	ND	84	70-130	7	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061007										
Blank (9061007-BLK1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.270*		*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS (9061007-BS1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.39	0.10	ug/l	0.500		78	60-130			
Diazinon	0.46	0.05	"	0.500		92	60-130			
Ethoprop	0.50	0.05	"	0.500		100	60-130			
Mevinphos	0.39	0.25	"	0.500		78	60-130			
Methyl parathion	0.41	0.10	"	0.500		82	60-130			
Phorate	0.41	0.05	"	0.500		82	60-130			
Ronnel	0.47	0.25	"	0.500		94	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
LCS Dup (9061007-BSD1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.40	0.10	ug/l	0.500		80	60-130	3	30	
Diazinon	0.45	0.05	"	0.500		90	60-130	2	30	
Ethoprop	0.50	0.05	"	0.500		100	60-130	0	30	
Mevinphos	0.43	0.25	"	0.500		86	60-130	10	30	
Methyl parathion	0.40	0.10	"	0.500		80	60-130	2	30	
Phorate	0.43	0.05	"	0.500		86	60-130	5	30	
Ronnel	0.46	0.25	"	0.500		92	60-130	2	30	
Trichlorinate	0.46	0.05	"	0.500		92	60-130	2	30	
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060535										
Blank (9060535-BLK1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9060535-BS1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.54	0.05	mg/l	0.500		108	80-120			
LCS Dup (9060535-BSD1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.54	0.05	mg/l	0.500		108	80-120	0.7	20	
Duplicate (9060535-DUP1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.22	0.05	mg/l		0.23			2	20	
Matrix Spike (9060535-MS1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.75	0.05	mg/l	0.500	0.23	105	80-120			
Matrix Spike Dup (9060535-MSD1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.73	0.05	mg/l	0.500	0.23	100	80-120	3	20	
Batch 9060539										
Blank (9060539-BLK1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9060539-BS1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		102	80-120			
LCS Dup (9060539-BSD1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		98	80-120	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060539										
Duplicate (9060539-DUP1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	5.71	0.50	mg/l		5.87			3	20	
Matrix Spike (9060539-MS1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	17.7	1.25	mg/l	12.5	5.87	95	80-120			
Matrix Spike Dup (9060539-MSD1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	19.1	1.25	mg/l	12.5	5.87	106	80-120	8	20	
Reference (9060539-SRM1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.70	0.05	mg/l	0.688		102	8.81-109.0			
Batch 9061132										
Blank (9061132-BLK1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	ND	5	mg/l							
LCS (9061132-BS1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		84	78-114			
LCS Dup (9061132-BSD1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		82	78-114	2	20	
Matrix Spike (9061132-MS1)		**Source: 0906245-01**		Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0	ND	83	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760 - 438 - 3941 Fax: 760 ~~438~~ 476-9852 X

Email:

Billing Address: D-MAX

* Please Bill to D-MAX

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 X	8015B (TPH) □ Gas □ Diesel □ E	624/8260 (VOC) Full BTXE MT	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pestic	608 / 8082 (Polychlorinated Biphe	8141 (Organophosphorus Pesticid	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Orga	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal
1	AHC-10	6/3/09	12:00	SW	4														
2	AHC-20	6/3/09	11:15	SW	4														
3	AH-21	6/3/09	14:30	SW	2 (7)	X						X						X	
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: X Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY	DATE/TIME
Signature: Rachael Mora	6/4/09 1445
Print: Rachael Mora	
Company: Encina Wastewater Authority	
Signature: [illegible]	6/4/09 1658
Print: [illegible]	
Company: EMA	
Signature	
Print	
Company:	

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

* 8141 Diazinon, Chlorpyrifos, Malathion

Total Nitrogen - 1 preserved
1 unpreserved

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 d of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

19 June 2009

D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log#: 0906166

Project Name: Encina Wastewater Authority

Enclosed with this letter are the test results performed by subcontract laboratory for the following analyses:

- Nitrogen, TKN - Liquid

The samples were received by EnviroMatrix Analytical, Inc. intact and with chain-of-custody documentation. The test results and pertinent quality assurance/quality control data are listed on the attached tables.

I certify that this data report is in compliance both technically and for completeness. Release of the data contained in this hard copy data report has been authorized by the following signature.

Dan Verdon
Laboratory Director

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project: 0906166

Sampled: 06/03/09
Received: 06/10/09
Issued: 06/19/09 16:18

NELAP #01108CA California ELAP#2706 CSDLAC #10256 AZ #AZ0671 NV #CA01531

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
ISF1190-01	0906166-01	Water
ISF1190-02	0906166-02	Water
ISF1190-03	0906166-03	Water

Reviewed By:

TestAmerica Irvine

D.J. Watson
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906166
Report Number: ISF1190

Sampled: 06/03/09
Received: 06/10/09

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: ISF1190-01 (0906166-01 - Water)					**Sampled: 06/03/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**2.2**	1	6/17/2009	6/17/2009	
Sample ID: ISF1190-02 (0906166-02 - Water)					**Sampled: 06/03/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**0.84**	1	6/17/2009	6/17/2009	
Sample ID: ISF1190-03 (0906166-03 - Water)					**Sampled: 06/03/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**1.4**	1	6/17/2009	6/17/2009	

TestAmerica Irvine

D.J. Watson
Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906166
Report Number: ISF1190

Sampled: 06/03/09
Received: 06/10/09

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 9F17124 Extracted: 06/17/09										
Blank Analyzed: 06/17/2009 (9F17124-BLK1)										
Total Kjeldahl Nitrogen	ND	0.50	mg/l							
LCS Analyzed: 06/17/2009 (9F17124-BS1)										
Total Kjeldahl Nitrogen	19.9	0.50	mg/l	20.0		99	85-120			
Matrix Spike Analyzed: 06/17/2009 (9F17124-MS1)					**Source: ISF1760-04**					
Total Kjeldahl Nitrogen	10.9	0.50	mg/l	10.0	1.68	92	85-120			
Matrix Spike Dup Analyzed: 06/17/2009 (9F17124-MSD1)					**Source: ISF1760-04**					
Total Kjeldahl Nitrogen	10.9	0.50	mg/l	10.0	1.68	92	85-120	0	15	

TestAmerica Irvine

D.J. Watson
Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.	Project ID: 0906166	
4340 Viewridge Avenue, Suite A		Sampled: 06/03/09
San Diego, CA 92123	Report Number: ISF1190	Received: 06/10/09
Attention: Jamey A. Cote		

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica Irvine

D.J. Watson
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.	Project ID: 0906166	
4340 Viewridge Avenue, Suite A		Sampled: 06/03/09
San Diego, CA 92123	Report Number: ISF1190	Received: 06/10/09
Attention: Jamey A. Cote		

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
SM4500-Norg C	Water		X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Irvine

D.J. Watson
Project Manager

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SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906166

IS F1190

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jamey A. Cote

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906166-01	**Water**	**Sampled:06/03/09 12:00**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 12:00		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906166-02	**Water**	**Sampled:06/03/09 11:15**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 11:15		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906166-03	**Water**	**Sampled:06/03/09 14:30**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 14:30		
Containers Supplied:				
125 ml Poly - Unpres (G)				

Send report to jbeyer@enviromatrixinc.com, llwick@enviromatrixinc.com, and reports@enviromatrixinc.com

0.0
6/11/09
5:25

Released By	Date	Received By	Date
[illegible]	6-10-09 1438	[illegible] TA.	6-10-09 14:38
[illegible] TA.	6-10-09 17:55	[illegible]	6/10/09 1755

CA-93001 CA 93011

Phone: 760 - 438 - 3941 Fax: 760 ~~438~~ 476-9852

Email:

Billing Address: D-MAX

* Please Bill to D-MAX

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticide	608 / 8082 (Polychlorinated Biphen	8141 (Organophosphorus Pesticides	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTL	TCLP (RCRA) □ Metals □ Organ	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal (	Colilert, T+E.Coli □ P/A □ Enumer
1	AHC-10	6/3/09	12:00	SW	4															
2	AHC-20	6/3/09	11:15	SW	4															
3	AH-21	6/3/09	14:30	SW	4 (67)	X						X						X		
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY		DATE/TIME
Signature	Rachael Mora	6/4/09 1445
Print	Rachael Mora	
Company:	Encino Waste Water Authority	
Signature	Danny Fuller	6/4/09 1658
Print		
Company:	EMA	
Signature		
Print		
Company:		

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt: _____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

* 8141 Diazinon, Chlorpyrifos, Malathion

Total Nitrogen - 1 preserved
1 unpreserved

[1]Additional costs may apply, consult a project manager for details. White- EMA Canary - Accounting Pink - Client (v

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906166

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jamey A. Cote

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906166-01	**Water**	**Sampled:06/03/09 12:00**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 12:00		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906166-02	**Water**	**Sampled:06/03/09 11:15**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 11:15		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906166-03	**Water**	**Sampled:06/03/09 14:30**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 14:30		
Containers Supplied:				
125 ml Poly - Unpres (G)				

Send report to jbeyer@enviromatrixinc.com, llvick@enviromatrixinc.com, and reports@enviromatrixinc.com

Released By	Date	Received By	Date
[illegible]	6-10-09 1438	Edwin Figueroa TA.	6-10-09 14:38

EnviroMatrix Analytical, Inc.

24 June 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906246

Project Name: Encina Wastewater Authority

Enclosed are the results of analyses for samples received by the laboratory on 06/08/09 16:04. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-4	0906246-01	Stormwater	06/08/09 10:45	06/08/09 16:04
SS-1	0906246-02	Stormwater	06/08/09 12:50	06/08/09 16:04
BVC-3	0906246-03	Stormwater	06/08/09 12:00	06/08/09 16:04

NOTE: The TKN analysis was performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									
Cadmium	ND	0.001	mg/l	1	9061707	06/17/09	06/18/09	EPA 200.8	
Chromium	ND	0.005	"	"	"	"	"	"	
Copper	**0.001**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									
Cadmium	ND	0.001	mg/l	1	9061707	06/17/09	06/18/09	EPA 200.8	
Chromium	ND	0.005	"	"	"	"	"	"	
Copper	**0.004**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061007	06/10/09	06/12/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*132 %*	*60-130*		"	"	"	"	*S-02, S-04*
Surrogate: Tribuytlphosphate		*112 %*	*60-130*		"	"	"	"	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061007	06/10/09	06/12/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*84 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*108 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									
Nitrate/Nitrite as N	**0.07**	0.05	mg/l	1	9060902	06/09/09	06/09/09	SM4500 NO3 E	
Total Nitrogen	**1.8**	0.5	"	"	9062232	06/19/09	06/19/09	Calculation	
Oil & Grease	ND	5	"	"	9061132	06/11/09	06/11/09	EPA 1664A	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									
Oil & Grease	ND	5	mg/l	1	9061132	06/11/09	06/11/09	EPA 1664A	
BVC-3 (0906246-03) Stormwater Sampled: 06/08/09 12:00 Received: 06/08/09 16:04									
Nitrate/Nitrite as N	**2.37**	0.25	mg/l	5	9060902	06/09/09	06/09/09	SM4500 NO3 E	
Total Nitrogen	**3.5**	0.5	"	1	9062232	06/19/09	06/19/09	Calculation	
Orthophosphate as P	**0.10**	0.05	"	"	9061014	06/10/09	06/10/09	SM4500 P E	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061707										
Blank (9061707-BLK1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Lead	ND	0.001	mg/l							
Cadmium	ND	0.001	"							
Chromium	ND	0.005	"							
Copper	ND	0.001	"							
LCS (9061707-BS1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Lead	0.053	0.001	mg/l	0.0500		106	75-125			
Cadmium	0.051	0.001	"	0.0500		103	85-115			
Chromium	0.051	0.005	"	0.0500		103	75-125			
Copper	0.052	0.001	"	0.0500		104	85-115			
LCS Dup (9061707-BSD1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Cadmium	0.052	0.001	mg/l	0.0500		103	85-115	0.2	20	
Lead	0.052	0.001	"	0.0500		105	75-125	0.8	20	
Copper	0.052	0.001	"	0.0500		104	85-115	0.2	20	
Chromium	0.051	0.005	"	0.0500		103	75-125	0.06	20	
Duplicate (9061707-DUP1)		**Source: 0906342-03**		Prepared: 06/17/09		Analyzed: 06/18/09				
Cadmium	ND	0.001	mg/l		ND				20	
Chromium	ND	0.005	"		ND				20	
Copper	ND	0.001	"		ND				20	
Lead	ND	0.001	"		ND				20	
Matrix Spike (9061707-MS1)		**Source: 0906342-03**		Prepared: 06/17/09		Analyzed: 06/18/09				
Copper	0.052	0.001	mg/l	0.0500	ND	104	70-130			
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130			
Lead	0.051	0.001	"	0.0500	ND	103	75-125			
Chromium	0.050	0.005	"	0.0500	ND	100	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061707										
Matrix Spike Dup (9061707-MSD1)		**Source: 0906342-03**		Prepared: 06/17/09	Analyzed: 06/18/09					
Chromium	0.050	0.005	mg/l	0.0500	ND	99	75-125	0.3	20	
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130	0.2	20	
Copper	0.052	0.001	"	0.0500	ND	104	70-130	0.06	20	
Lead	0.053	0.001	"	0.0500	ND	106	75-125	3	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061007										
Blank (9061007-BLK1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.270*		*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS (9061007-BS1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.39	0.10	ug/l	0.500		78	60-130			
Diazinon	0.46	0.05	"	0.500		92	60-130			
Ethoprop	0.50	0.05	"	0.500		100	60-130			
Mevinphos	0.39	0.25	"	0.500		78	60-130			
Methyl parathion	0.41	0.10	"	0.500		82	60-130			
Phorate	0.41	0.05	"	0.500		82	60-130			
Ronnel	0.47	0.25	"	0.500		94	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
LCS Dup (9061007-BSD1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.40	0.10	ug/l	0.500		80	60-130	3	30	
Diazinon	0.45	0.05	"	0.500		90	60-130	2	30	
Ethoprop	0.50	0.05	"	0.500		100	60-130	0	30	
Mevinphos	0.43	0.25	"	0.500		86	60-130	10	30	
Methyl parathion	0.40	0.10	"	0.500		80	60-130	2	30	
Phorate	0.43	0.05	"	0.500		86	60-130	5	30	
Ronnel	0.46	0.25	"	0.500		92	60-130	2	30	
Trichlorinate	0.46	0.05	"	0.500		92	60-130	2	30	
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060902										
Blank (9060902-BLK1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9060902-BS1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		98	80-120			
LCS Dup (9060902-BSD1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.50	0.05	mg/l	0.500		101	80-120	3	20	
Duplicate (9060902-DUP1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.01	0.05	mg/l		0.01			26	20	QR-04
Matrix Spike (9060902-MS1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.48	0.05	mg/l	0.500	0.01	93	80-120			
Matrix Spike Dup (9060902-MSD1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.44	0.05	mg/l	0.500	0.01	86	80-120	8	20	
Batch 9061014										
Blank (9061014-BLK1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9061014-BS1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500		111	80-120			
LCS Dup (9061014-BSD1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.56	0.05	mg/l	0.500		111	80-120	0.5	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061014										
Duplicate (9061014-DUP1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.11	0.05	mg/l		0.10			11	20	
Matrix Spike (9061014-MS1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.62	0.05	mg/l	0.500	0.10	106	80-120			
Matrix Spike Dup (9061014-MSD1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.63	0.05	mg/l	0.500	0.10	107	80-120	1	20	
Batch 9061132										
Blank (9061132-BLK1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	ND	5	mg/l							
LCS (9061132-BS1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		84	78-114			
LCS Dup (9061132-BSD1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		82	78-114	2	20	
Matrix Spike (9061132-MS1)		**Source: 0906245-01**		Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0	ND	83	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: Fax:

Email:

Billing Address:

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 X	8015B (TPH) □ Gas □ Diesel □ E	624/8260 (VOC) Full BTXE MT	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesti	608 / 8082 (Polychlorinated Biph	8141 (Organophosphorus Pesticic	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □N	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Org	(Cd) (Cr) (Cu) (Pb) Ni Ag Zn	Coliform, □ Total (MTF) □ Feca
1	BV-4	6/8/09	1045	SW	6	X						X						X	
2	SS-1	6/8/09	12:50	SW	4	X						X						X	
3	BVC-3	6/8/09	12:00	SW	3														
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY	DATE/TIME
Signature	6/9/09 1520
Print: JLAW	
Company: EMA	
Signature: Kelly Lenden	6/9/09 16:04
Print: Kelly Lenden	
Company: EMA	
Signature	
Print	
Company:	

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

Bill TO DMAX

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T = 9°C Blue Ice

EnviroMatrix Analytical, Inc.

26 June 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906246

Project Name: Encina Wastewater Authority

Enclosed are the results of analyses for samples received by the laboratory on 06/08/09 16:04. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-4	0906246-01	Stormwater	06/08/09 10:45	06/08/09 16:04
SS-1	0906246-02	Stormwater	06/08/09 12:50	06/08/09 16:04
BVC-3	0906246-03	Stormwater	06/08/09 12:00	06/08/09 16:04

NOTE: The TKN analysis was performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									
Cadmium	ND	0.001	mg/l	1	9061707	06/17/09	06/18/09	EPA 200.8	
Chromium	ND	0.005	"	"	"	"	"	"	
Copper	**0.001**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									
Cadmium	ND	0.001	mg/l	1	9061707	06/17/09	06/18/09	EPA 200.8	
Chromium	ND	0.005	"	"	"	"	"	"	
Copper	**0.004**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061007	06/10/09	06/12/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*132 %*	*60-130*		"	"	"	"	*S-02, S-04*
Surrogate: Tribuytlphosphate		*112 %*	*60-130*		"	"	"	"	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061007	06/10/09	06/12/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*84 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*108 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									
Nitrate/Nitrite as N	**0.07**	0.05	mg/l	1	9060902	06/09/09	06/09/09	SM4500 NO3 E	
Total Nitrogen	**1.8**	0.5	"	"	9062232	06/19/09	06/19/09	Calculation	
Oil & Grease	ND	5	"	"	9061132	06/11/09	06/11/09	EPA 1664A	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									
Oil & Grease	ND	5	mg/l	1	9061132	06/11/09	06/11/09	EPA 1664A	
BVC-3 (0906246-03) Stormwater Sampled: 06/08/09 12:00 Received: 06/08/09 16:04									
Nitrate/Nitrite as N	**2.37**	0.25	mg/l	5	9060902	06/09/09	06/09/09	SM4500 NO3 E	
Total Nitrogen	**3.5**	0.5	"	1	9062232	06/19/09	06/19/09	Calculation	
Orthophosphate as P	**0.10**	0.05	"	"	9061014	06/10/09	06/10/09	SM4500 P E	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061707										
Blank (9061707-BLK1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Cadmium	ND	0.001	mg/l							
Chromium	ND	0.005	"							
Copper	ND	0.001	"							
Lead	ND	0.001	"							
Zinc	ND	0.020	"							
LCS (9061707-BS1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Cadmium	0.051	0.001	mg/l	0.0500		103	85-115			
Chromium	0.051	0.005	"	0.0500		103	75-125			
Copper	0.052	0.001	"	0.0500		104	85-115			
Zinc	0.052	0.020	"	0.0500		105	85-115			
Lead	0.053	0.001	"	0.0500		106	75-125			
LCS Dup (9061707-BSD1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Chromium	0.051	0.005	mg/l	0.0500		103	75-125	0.06	20	
Cadmium	0.052	0.001	"	0.0500		103	85-115	0.2	20	
Zinc	0.054	0.020	"	0.0500		108	85-115	3	20	
Copper	0.052	0.001	"	0.0500		104	85-115	0.2	20	
Lead	0.052	0.001	"	0.0500		105	75-125	0.8	20	
Duplicate (9061707-DUP1)		**Source: 0906342-03**		Prepared: 06/17/09		Analyzed: 06/18/09				
Zinc	0.002	0.020	mg/l		0.0005			106	20	QR-04
Cadmium	ND	0.001	"		ND				20	
Chromium	ND	0.005	"		ND				20	
Copper	ND	0.001	"		ND				20	
Lead	ND	0.001	"		ND				20	
Matrix Spike (9061707-MS1)		**Source: 0906342-03**		Prepared: 06/17/09		Analyzed: 06/18/09				
Copper	0.052	0.001	mg/l	0.0500	ND	104	70-130			
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130			
Lead	0.051	0.001	"	0.0500	ND	103	75-125			
Zinc	0.051	0.020	"	0.0500	0.0005	102	70-130			
Chromium	0.050	0.005	"	0.0500	ND	100	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061707										
Matrix Spike Dup (9061707-MSD1)		**Source: 0906342-03**		Prepared: 06/17/09	Analyzed: 06/18/09					
Chromium	0.050	0.005	mg/l	0.0500	ND	99	75-125	0.3	20	
Zinc	0.051	0.020	"	0.0500	0.0005	102	70-130	0.08	20	
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130	0.2	20	
Lead	0.053	0.001	"	0.0500	ND	106	75-125	3	20	
Copper	0.052	0.001	"	0.0500	ND	104	70-130	0.06	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061007										
Blank (9061007-BLK1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.270*		*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS (9061007-BS1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.39	0.10	ug/l	0.500		78	60-130			
Diazinon	0.46	0.05	"	0.500		92	60-130			
Ethoprop	0.50	0.05	"	0.500		100	60-130			
Mevinphos	0.39	0.25	"	0.500		78	60-130			
Methyl parathion	0.41	0.10	"	0.500		82	60-130			
Phorate	0.41	0.05	"	0.500		82	60-130			
Ronnel	0.47	0.25	"	0.500		94	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
LCS Dup (9061007-BSD1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.40	0.10	ug/l	0.500		80	60-130	3	30	
Diazinon	0.45	0.05	"	0.500		90	60-130	2	30	
Ethoprop	0.50	0.05	"	0.500		100	60-130	0	30	
Mevinphos	0.43	0.25	"	0.500		86	60-130	10	30	
Methyl parathion	0.40	0.10	"	0.500		80	60-130	2	30	
Phorate	0.43	0.05	"	0.500		86	60-130	5	30	
Ronnel	0.46	0.25	"	0.500		92	60-130	2	30	
Trichlorinate	0.46	0.05	"	0.500		92	60-130	2	30	
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060902										
Blank (9060902-BLK1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9060902-BS1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		98	80-120			
LCS Dup (9060902-BSD1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.50	0.05	mg/l	0.500		101	80-120	3	20	
Duplicate (9060902-DUP1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.01	0.05	mg/l		0.01			26	20	QR-04
Matrix Spike (9060902-MS1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.48	0.05	mg/l	0.500	0.01	93	80-120			
Matrix Spike Dup (9060902-MSD1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.44	0.05	mg/l	0.500	0.01	86	80-120	8	20	
Batch 9061014										
Blank (9061014-BLK1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9061014-BS1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500		111	80-120			
LCS Dup (9061014-BSD1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.56	0.05	mg/l	0.500		111	80-120	0.5	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061014										
Duplicate (9061014-DUP1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.11	0.05	mg/l		0.10			11	20	
Matrix Spike (9061014-MS1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.62	0.05	mg/l	0.500	0.10	106	80-120			
Matrix Spike Dup (9061014-MSD1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.63	0.05	mg/l	0.500	0.10	107	80-120	1	20	
Batch 9061132										
Blank (9061132-BLK1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	ND	5	mg/l							
LCS (9061132-BS1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		84	78-114			
LCS Dup (9061132-BSD1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		82	78-114	2	20	
Matrix Spike (9061132-MS1)		**Source: 0906245-01**		Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0	ND	83	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: Fax:

Email:

Billing Address:

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 X	8015B (TPH) □ Gas □ Diesel □ E	624/8260 (VOC) Full BTXE MT	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesti	608 / 8082 (Polychlorinated Biph	8141 (Organophosphorus Pesticic	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □N	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Org	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Feca
1	BV-4	6/8/09	1045	SW	6	X						X						X	
2	SS-1	6/8/09	12:50	SW	4	X						X						X	
3	BVC-3	6/8/09	12:00	SW	3														
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME
Signature	6/9/09 1520
Print JLAW	
Company: EMA	
Signature	6/9/09 16:04
Print Kelly Lenden	
Company: EMA	
Signature	
Print	
Company:	

Project/Sample Comments:

Bill TO DMAX

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T = 9°C Blue Ice

23 June 2009

D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log#: 0906246

Project Name: Encina Wastewater Authority
Project Number: None

Enclosed with this letter are the test results performed by subcontract laboratory for the following analyses:

- Nitrogen, TKN - Liquid

The samples were received by EnviroMatrix Analytical, Inc. intact and with chain-of-custody documentation. The test results and pertinent quality assurance/quality control data are listed on the attached tables.

I certify that this data report is in compliance both technically and for completeness. Release of the data contained in this hard copy data report has been authorized by the following signature.

Dan Verdon
Laboratory Director

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project: 0906246

Sampled: 06/08/09
Received: 06/12/09
Issued: 06/23/09 16:04

NELAP #01108CA California ELAP#2706 CSDLAC #10256 AZ #AZ0671 NV #CA01531

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
ISF1415-01	0906246-01	Water
ISF1415-02	0906246-03	Water

Reviewed By:

TestAmerica Irvine

D.J. Watson
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906246
Report Number: ISF1415

Sampled: 06/08/09
Received: 06/12/09

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: ISF1415-01 (0906246-01 - Water)								
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F19121	0.50	**1.7**	1	6/19/2009	6/19/2009	
Sample ID: ISF1415-02 (0906246-03 - Water)								
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F19121	0.50	**1.1**	1	6/19/2009	6/19/2009	

TestAmerica Irvine

D.J. Watson
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906246
Report Number: ISF1415

Sampled: 06/08/09
Received: 06/12/09

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 9F19121 Extracted: 06/19/09										
Blank Analyzed: 06/19/2009 (9F19121-BLK1)										
Total Kjeldahl Nitrogen	ND	0.50	mg/l							
LCS Analyzed: 06/19/2009 (9F19121-BS1)										
Total Kjeldahl Nitrogen	20.2	0.50	mg/l	20.0		101	85-120			
Matrix Spike Analyzed: 06/19/2009 (9F19121-MS1)					**Source: ISF1413-02**					
Total Kjeldahl Nitrogen	12.0	0.50	mg/l	10.0	3.08	90	85-120			
Matrix Spike Dup Analyzed: 06/19/2009 (9F19121-MSD1)					**Source: ISF1413-02**					
Total Kjeldahl Nitrogen	12.0	0.50	mg/l	10.0	3.08	90	85-120	0	15	

TestAmerica Irvine

D.J. Watson
Project Manager

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17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906246
Report Number: ISF1415

Sampled: 06/08/09
Received: 06/12/09

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica Irvine

D.J. Watson
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906246
Report Number: ISF1415

Sampled: 06/08/09
Received: 06/12/09

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
SM4500-Norg C	Water		X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

IS F1415

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906246

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jamey A. Cote

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906246-01	**Water**	**Sampled:06/08/09 10:45**	[redacted]	
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/06/09 10:45		
Containers Supplied:				
250 mL Poly H2SO4 (E)				
Sample ID: 0906246-03	**Water**	**Sampled:06/08/09 12:00**	[redacted]	
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/06/09 12:00		
Containers Supplied:				
250 mL Poly H2SO4 (C)				

Send report to jbeyer@enviromatrixinc.com, llwick@enviromatrixinc.com and reports@enviromatrixinc.com

Aug 6/13/09 7:30

Released By	Date	Received By	Date
	6/12/09 1319	Silvia Figueroa TA.	6-12-09 13:19
Silvia Figueroa TA.	6-12-09 18:30		6/12/09 1820
Released By	Date	Received By	Date
FF031			3-1 50

Page 1 of 1

Phone: Fax:

Email:

Billing Address:

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 X 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyl	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □ TDS	□ Nitrate □ Nitrite □ TKN □ NH3	CAC Title 22/CAM17 Metals □ TTLC	TCLP (RCRA) □ Metals □ Organic	Cd Cr Cu Pb Ni Ag Zn X	Coliform, □ Total (MTF) □ Fecal (M	Colilert, T+E.Coli □ P/A □ Enumera
1	BV-4	6/8/09	1045	SW	6	X						X						X		
2	SS-1	6/8/09	12:50	SW	4	X						X						X		
3	BVC-3	6/8/09	12:00	SW	3															
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
Signature	6/8/09 1520	Signature	
Print JLAu		Print	
Company: EMA		Company:	
Signature Kelly Leander	6/8/09 16:04	Signature	
Print Kelly Leander		Print	
Company: EMA		Company:	
Signature		Signature	
Print		Print	
Company:		Company:	

Project/Sample Comments:

Bill TO DMAX

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T = 9°C Blue Ice

EnviroMatrix Analytical, Inc.

19 June 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906364

Project Name: Encina Wastewater Authority

Enclosed are the results of analyses for samples received by the laboratory on 06/11/09 12:46. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906364

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
G-6	0906364-01	Liquid	06/09/09 13:30	06/11/09 12:46
AH-9	0906364-02	Liquid	06/09/09 11:15	06/11/09 12:46

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906364

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
G-6 (0906364-01) Liquid Sampled: 06/09/09 13:30 Received: 06/11/09 12:46									
Cadmium	ND	0.001	mg/l	1	9061707	06/17/09	06/18/09	EPA 200.8	
Copper	ND	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
AH-9 (0906364-02) Liquid Sampled: 06/09/09 11:15 Received: 06/11/09 12:46									
Cadmium	ND	0.001	mg/l	1	9061707	06/17/09	06/18/09	EPA 200.8	
Copper	**0.003**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906364

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
G-6 (0906364-01) Liquid Sampled: 06/09/09 13:30 Received: 06/11/09 12:46									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061519	06/15/09	06/17/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*120 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*88 %*	*60-130*		"	"	"	"	
AH-9 (0906364-02) Liquid Sampled: 06/09/09 11:15 Received: 06/11/09 12:46									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061519	06/15/09	06/17/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*116 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*112 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906364

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
G-6 (0906364-01) Liquid Sampled: 06/09/09 13:30 Received: 06/11/09 12:46									
Oil & Grease	**5**	5	mg/l	1	9061719	06/17/09	06/17/09	EPA 1664A	
AH-9 (0906364-02) Liquid Sampled: 06/09/09 11:15 Received: 06/11/09 12:46									
Oil & Grease	ND	5	mg/l	1	9061719	06/17/09	06/17/09	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906364

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061707										
Blank (9061707-BLK1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Copper	ND	0.001	mg/l							
Cadmium	ND	0.001	"							
Lead	ND	0.001	"							
Zinc	ND	0.020	"							
LCS (9061707-BS1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Lead	0.053	0.001	mg/l	0.0500		106	75-125			
Cadmium	0.051	0.001	"	0.0500		103	85-115			
Zinc	0.052	0.020	"	0.0500		105	85-115			
Copper	0.052	0.001	"	0.0500		104	85-115			
LCS Dup (9061707-BSD1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Lead	0.052	0.001	mg/l	0.0500		105	75-125	0.8	20	
Zinc	0.054	0.020	"	0.0500		108	85-115	3	20	
Copper	0.052	0.001	"	0.0500		104	85-115	0.2	20	
Cadmium	0.052	0.001	"	0.0500		103	85-115	0.2	20	
Duplicate (9061707-DUP1)		**Source: 0906342-03**		Prepared: 06/17/09		Analyzed: 06/18/09				
Lead	ND	0.001	mg/l		ND				20	
Zinc	0.002	0.020	"		0.0005			106	20	QR-04
Copper	ND	0.001	"		ND				20	
Cadmium	ND	0.001	"		ND				20	
Matrix Spike (9061707-MS1)		**Source: 0906342-03**		Prepared: 06/17/09		Analyzed: 06/18/09				
Zinc	0.051	0.020	mg/l	0.0500	0.0005	102	70-130			
Lead	0.051	0.001	"	0.0500	ND	103	75-125			
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130			
Copper	0.052	0.001	"	0.0500	ND	104	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906364

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061707										
Matrix Spike Dup (9061707-MSD1)		**Source: 0906342-03**		Prepared: 06/17/09	Analyzed: 06/18/09					
Copper	0.052	0.001	mg/l	0.0500	ND	104	70-130	0.06	20	
Zinc	0.051	0.020	"	0.0500	0.0005	102	70-130	0.08	20	
Lead	0.053	0.001	"	0.0500	ND	106	75-125	3	20	
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130	0.2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906364

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061519										
Blank (9061519-BLK1)				Prepared: 06/15/09 Analyzed: 06/17/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.210*		*"*	*0.250*		*84*	*60-130*			
LCS (9061519-BS1)				Prepared: 06/15/09 Analyzed: 06/17/09						
Bolstar	0.39	0.10	ug/l	0.500		78	60-130			
Diazinon	0.41	0.05	"	0.500		82	60-130			
Ethoprop	0.41	0.05	"	0.500		82	60-130			
Mevinphos	0.37	0.25	"	0.500		74	60-130			
Methyl parathion	0.48	0.10	"	0.500		96	60-130			
Phorate	0.38	0.05	"	0.500		76	60-130			
Ronnel	0.42	0.25	"	0.500		84	60-130			
Trichlorinate	0.41	0.05	"	0.500		82	60-130			
Surrogate: Triphenyl phosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS Dup (9061519-BSD1)				Prepared: 06/15/09 Analyzed: 06/17/09						
Bolstar	0.39	0.10	ug/l	0.500		78	60-130	0	30	
Diazinon	0.40	0.05	"	0.500		80	60-130	2	30	
Ethoprop	0.40	0.05	"	0.500		80	60-130	2	30	
Mevinphos	0.32	0.25	"	0.500		64	60-130	14	30	
Methyl parathion	0.50	0.10	"	0.500		100	60-130	4	30	
Phorate	0.38	0.05	"	0.500		76	60-130	0	30	
Ronnel	0.39	0.25	"	0.500		78	60-130	7	30	
Trichlorinate	0.37	0.05	"	0.500		74	60-130	10	30	
Surrogate: Triphenyl phosphate	*0.270*		*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906364

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061719										
Blank (9061719-BLK1)				Prepared & Analyzed: 06/17/09						
Oil & Grease	ND	5	mg/l							
LCS (9061719-BS1)				Prepared & Analyzed: 06/17/09						
Oil & Grease	32	5	mg/l	40.0		81	78-114			
LCS Dup (9061719-BSD1)				Prepared & Analyzed: 06/17/09						
Oil & Grease	34	5	mg/l	40.0		84	78-114	3	20	
Matrix Spike (9061719-MS1)		**Source: 0906354-02**		Prepared & Analyzed: 06/17/09						
Oil & Grease	39	5	mg/l	40.0	ND	98	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760-438-3941 Fax: 760-476-9852

Email:

Billing Address:

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ex	624/8260 (VOC) Full BTXE MTB	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pestici	608 / 8082 (Polychlorinated Biphen	8141 (Organophosphorus Pesticide	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TT	TCLP (RCRA) □ Metals □ Organ	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal (
1	G-6	6/9/09	1330	L	4	X						X						X	
2	AH9	6/9/09	1115	L	4	X						X						X	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY	DATE/TIME
Signature: [signature]	6/11/09 1120
Print: J. Camarillo	
Company: EMA	
Signature: [signature]	6-11-09 1246
Print: Danny Huerta	
Company: EMA	
Signature	
Print	
Company:	

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:
*Bill To DMAX

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Clien

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

Appendix D

Field Data and Trash Assessment Sheets

a8

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-8A		Latitude	33.16641	Watershed	Hydrologic Unit	904
Location	Between 652 and 636 Sycamore Avenue, north of Thibodo rd/ Plumosa Avenue		Longitude	-117.21544		Hydrologic Area	904.3
			TB Page	1108, BH		Hydrologic Subarea (Optional)	904.32
Date	06/09/09	Time 12:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other N/A
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other N/A
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other N/A
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other N/A
Deposits	☐ None	☒ Sediment/~~Gravel~~	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other
Biology	☐ None	☒ Insects ☐ Algae ☐ Fish ☐ Snails		☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 2 94,95

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NS		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	Dry	gpm				Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: AH-8A **DATE:** 06/09/09

LOCATION: Between 6332 and 6336 Sycamore Avenue, North of Thibado rd/Plumosa Ave **TIME:** 12:20

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Submarginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-9		**Latitude**	33.15865	**Watershed**	**Hydrologic Unit**	904
Location	Shadow Ridge and Antigua Drive in Buena Vista Park, northeast side of pond		**Longitude**	-117.2464 2		**Hydrologic Area**	904.3
			TB Page	1107, H5		**Hydrologic Subarea** (Optional)	904.31
Date	06/09/09	**Time** 11:15	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/~~Gravel~~	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☒ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 89-93

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.1	NH_3-N (mg/L)	0.195	NO_3 (mg/L)	0.790	Ortho-PO_4 (mg/L)	1.115
pH (pH units)	7.4	TURB (NTU)	0.46	NO_3-N (mg/L)	0.179	Ortho-PO_4-P (mg/L)	0.363
COND (mS/cm)	2.91	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	10	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: bottles, Styrofoam, toy balls, misc. plastic

2009 Trash Assessment Form

SITE ID: AH-9 **DATE:** 06/09/09

LOCATION: Shadow Ridge and Antigua Drive in Buena vista park, northeast side of pond **TIME:** 11:15

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 25

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-17			Latitude	33.14003	Watershed: Hydrologic Unit	904
Location	Southeast of the Faraday St. and Brookhaven Pass intersection, in the corner of the detention basin			Longitude	-117.24637	Hydrologic Area	904.3
				TB Page	1127, H1	Hydrologic Subarea (Optional)	904.31
Date	06/04/09	Time	9:55	Observer	MD/AK	Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 37, 38

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.0	NH_3-N (mg/L)	0.447	NO_3 (mg/L)	9.775	Ortho-PO_4 (mg/L)	0.826
pH (pH units)	7.8	TURB (NTU)	38.46	NO_3-N (mg/L)	2.209	Ortho-PO_4-P (mg/L)	0.269
COND (mS/cm)	4.49	MBAS (mg/L)	0.5	DO (mg/L)	6.10		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	8	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	6	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: AH-17 **DATE:** 06/04/2009

LOCATION: Southeast of the Farnday St. and Brookhaven Pass intersection in the corner of the detention basin **TIME:** 9:55

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-21		Latitude	33.13534	Watershed	Hydrologic Unit	904
Location	2687 S. Melrose dr. (Southern end of Melrose dr.)		Longitude	-117.24466		Hydrologic Area	904.3
			TB Page	1127, H1		Hydrologic Subarea (Optional)	904.31
Date	06/03/2009	Time 1430	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** ~~35~~ 29-34

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.6	NH_3-N (mg/L)	0.257	NO_3 (mg/L)	1.912	Ortho-PO_4 (mg/L)	0.068
pH (pH units)	7.8	TURB (NTU)	1.14	NO_3-N (mg/L)	0.432	Ortho-PO_4-P (mg/L)	0.022
COND (mS/cm)	2.96	MBAS (mg/L)	0.5	DO (mg/L)	6.92		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

1

2009 Trash Assessment Form

SITE ID: AH-21 **DATE:** 06/03/09

LOCATION: 2687 Melrose Dr. (southern end of Melrose Dr.) **TIME:** 14:30

OBSERVER: MD/AR

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 3x3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-30		**Latitude**	33.16715	**Watershed**	**Hydrologic Unit**	904
Location	Southwestern corner of Chaparral Drive and Thibodo Road intersection		**Longitude**	-117.23827		**Hydrologic Area**	904.3
			TB Page	1108, A3		**Hydrologic Subarea** (Optional)	904.32
Date	04/10/09	**Time** 10:20	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☒ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 107 - 109

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.8	NH_3-N (mg/L)	ND	NO_3 (mg/L)	1.015	Ortho-PO_4 (mg/L)	1.135
pH (pH units)	7.8	TURB (NTU)	1.92	NO_3-N (mg/L)	0.229	Ortho-PO_4-P (mg/L)	0.370
COND (mS/cm)	1.70	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2009 Trash Assessment Form

SITE ID: AH-30 **DATE:** 06/10/09

LOCATION: Southwestern corner of Chaparral Drive and Thibodo Road intersection **TIME:** 10:20

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-31		**Latitude**	33.16715	**Watershed**	**Hydrologic Unit**	904
Location	Live oak rd. near Southern intersection with Cordoba Way, west side walk by golf course fence		**Longitude**	-117.23827		**Hydrologic Area**	904.3
			TB Page	1107, J4		**Hydrologic Subarea** (Optional)	904.31
Date	06/08/09	**Time** 1540	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** ____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ~~☒ None~~ ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 76, 77

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.0	NH_3-N (mg/L)	0.030	NO_3 (mg/L)	1.153	Ortho-PO_4 (mg/L)	2.579
pH (pH units)	8.0	TURB (NTU)	1.91	NO_3-N (mg/L)	0.261	Ortho-PO_4 -P (mg/L)	0.841
COND (mS/cm)	1.17	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: AH-31 **DATE:** 06/08/09

LOCATION: Live Oak rd. near Southern intersection with Cordoba Way, west sidewalk by golf course fence **TIME:** 1540

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

a 8

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-32		Latitude	33.15156	Watershed	Hydrologic Unit	904
Location	Southwest corner of Mela Miranda Dr. and Sycamore Ave Intersection		Longitude	-117.22630		Hydrologic Area	904.3
			TB Page	1108, A6		Hydrologic Subarea (Optional)	904.31
Date	06/03/2009	Time 1555	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☐ Clear ☒ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 2 35-36

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.7	NH_3-N (mg/L)	0.5	NO_3 (mg/L)	0.818	Ortho-PO_4 (mg/L)	0.111
pH (pH units)	7.4	TURB (NTU)	30.41	NO_3-N (mg/L)	0.185	Ortho-PO_4-P (mg/L)	0.036
COND (mS/cm)	7.35	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: AM-32 **DATE:** 06/08/09

LOCATION: Southwest corner of the La Mirada Dr and Sycamore Ave Intersection **TIME:** 1555

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 8x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

a4

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-33		Latitude	33.15225	Watershed	Hydrologic Unit	904
Location	East end of La Mirada Dr. off of Business park Dr., in canyon by 2260 La Mirada Dr.		Longitude	-117.23074		Hydrologic Area	904.3
			TB Page	1107, J6		Hydrologic Subarea (Optional)	904.31
Date	06/05/2009	Time 12:15	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☒ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/~~Gravel~~	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ~~☒ Ponded~~ ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 57, 58

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.5	NH_3-N (mg/L)	0.148	NO_3 (mg/L)	1.597	Ortho-PO_4 (mg/L)	1.968
pH (pH units)	7.5	TURB (NTU)	40.17	NO_3-N (mg/L)	0.361	Ortho-PO_4-P (mg/L)	0.642
COND (mS/cm)	1.53	MBAS (mg/L)	~~##~~ 0.75	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	~~ponded~~ <1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Drink containers, food wrappers, food debris, misc plastic, lemons, decaying leaves

2009 Trash Assessment Form

SITE ID: AH-33 DATE: 06/05/09

LOCATION: East end of La Miranda Dr. off of business park Dr. in canyon by 2260 La Miranda Dr. TIME: 12:15

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25x10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-34		Latitude	33.13576	Watershed	Hydrologic Unit	904
Location	West end of Keystone Way, near Scott street.		Longitude	-117.23425		Hydrologic Area	904.3
			TB Page	1127, J1		Hydrologic Subarea (Optional)	904.31
Date	06/04/09	Time 1510	Observer	MD / AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other N/A
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other N/A
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other N/A
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other N/A
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 2 48, 49

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NS		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: AH-34 DATE: 06/04/09

LOCATION: west end of Keystone Way, near Scott Street TIME: 1510

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☐ Receiving Water

Site ID	AH-35-1		**Latitude**	33.14318	**Watershed**	**Hydrologic Unit**	904
Location	In driveway of business at 1240 Activity Dr.		**Longitude**	-117.21880		**Hydrologic Area**	904.3
			TB Page	1108, B7		**Hydrologic Subarea** (Optional)	904.31
Date	06/05/09	**Time** 11:15	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/~~Gravel~~ ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 53, 54

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	18.99	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	4.29	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	4.91	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-35-2		**Latitude**	33.14410	**Watershed**	**Hydrologic Unit**	904
Location	Activity Dr., Northwest corner of Activity Dr. & Poinsettia Dr. intersection		**Longitude**	-117.21681		**Hydrologic Area**	904.3
			TB Page	1108, B7		**Hydrologic Subarea** (Optional)	904.31
Date	06/05/09	**Time** 10:50	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment ~~Gravel~~	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 50-52

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	97.81	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	22.11	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Nitrate

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-35-3		Latitude	32.14470	Watershed	Hydrologic Unit	904
Location	Northeast of Activity Dr. and Poinsettia Ave. intersection. on Poinsettia Ave. in creek just South of Brigss Tree Company		Longitude	-117.21589		Hydrologic Area	904.3
			TB Page	1108, B7		Hydrologic Subarea (Optional)	904.31
Date	06/05/09	Time 1145	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☐ Clear ☒ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 55,56

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	NA	NH_3-N (mg/L)	NA	NO_3 (mg/L)	108.0	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	24.4	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	7.06	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-35		Latitude	33.14406	Watershed	Hydrologic Unit	904
Location	Across from 1210 Activity Dr.		Longitude	-117.21800		Hydrologic Area	904.3
			TB Page	1108, B7		Hydrologic Subarea (Optional)	904.31
Date	06/04/2009	Time 1535	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 2 50,51

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.8	NH_3-N (mg/L)	0.171	NO_3 (mg/L)	170.14	Ortho-PO_4 (mg/L)	0.225
pH (pH units)	8.1	TURB (NTU)	1.63	NO_3-N (mg/L)	38.45	Ortho-PO_4 -P (mg/L)	0.073
COND (mS/cm)	6.21	MBAS (mg/L)	0.63	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: AH-35 DATE: 06/04/09

LOCATION: Across from 1210 Activity Dr. TIME: 1535

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
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☐ Field Screening ☒ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-35		Latitude	33.14406	Watershed	Hydrologic Unit	904
Location	Across from 1210 Activity Dr.		Longitude	-117.21800		Hydrologic Area	904.3
			TB Page	1108, B7		Hydrologic Subarea (Optional)	904.31
Date	06/09/09	Time 10:15	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☒ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	148.9	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.9	TURB (NTU)	NA	NO_3-N (mg/L)	33.65	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	5.91	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

AK

San Diego Stormwater Copermittees
City of Vista
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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-36		Latitude	33.15912	Watershed	Hydrologic Unit	904
Location	west side of Cottontail Road, Southwest of Maplelent Dr.		Longitude	-117.22548		Hydrologic Area	904.3
			TB Page	1108, A5		Hydrologic Subarea (Optional)	904.32
Date	06/10/09	Time 9:35	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutt

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 103 - 106

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	17.8	NH_3-N (mg/L)	0.011	NO_3 (mg/L)	1.562	Ortho-PO_4 (mg/L)	0.765
pH (pH units)	8.2	TURB (NTU)	1.09	NO_3-N (mg/L)	0.353	Ortho-PO_4-P (mg/L)	0.249
COND (mS/cm)	1.44	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2009 Trash Assessment Form

SITE ID: AM-36 **DATE:** 06/10/09

LOCATION: West side of cottontail road Southwest of Mapleleaf Drive **TIME:** 9:35

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-37		**Latitude**	33.15503	**Watershed**	**Hydrologic Unit**	904
Location	Southeast corner of the Green Oak Road & S. Melrose Dr. intersection		**Longitude**	-117.24137		**Hydrologic Area**	904.3
			TB Page	1107, H6		**Hydrologic Subarea** (Optional)	904.31
Date	06/08/09	**Time** 1510	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☒ Other N/A

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☒ Other N/A

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☒ Other N/A

Floatables ☒ ~~None~~ ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☒ Other N/A

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 74, 75

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NS		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: AH-37 **DATE:** 06/08/09

LOCATION: Southeast corner of the Green Oaks rd. & Melrose Dr. intersection **TIME:** 1510

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	AH-38		Latitude	33.15786	Watershed	Hydrologic Unit	904
Location	South side of Shadowridge Dr., east of White Birch Dr.		Longitude	-117.24758		Hydrologic Area	904.3
			TB Page	1107, G5		Hydrologic Subarea (Optional)	904.31
Date	06/09/09	Time 1245	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 9697

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.1	NH_3-N (mg/L)	0.104	NO_3 (mg/L)	4.684	Ortho-PO_4 (mg/L)	0.817
pH (pH units)	7.9	TURB (NTU)	18.11	NO_3-N (mg/L)	1.059	Ortho-PO_4 -P (mg/L)	0.266
COND (mS/cm)	1.40	MBAS (mg/L)	0.13	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: AH-38 **DATE:** 06/09/09

LOCATION: South side of Shadowridge Dr. east of White Birch Dr. **TIME:** 1245

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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DM

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	AHC-10		Latitude	33.158665	Watershed	Hydrologic Unit	904
Location	Upstream of site AC-1, Juniper Lane on east side of bridge		Longitude	-117.21756		Hydrologic Area	904.3
			TB Page	1108, B5		Hydrologic Subarea (Optional)	904.32
Date	06/03/09	Time 12:00	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ~~☒ Insects~~ ~~☒ Algae~~ ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 25-28

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.4	TURB (NTU)	1.88	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	6.59	MBAS (mg/L)	NA	DO (mg/L)	5.68		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	10	in
Depth		in
Velocity		ft/sec
Flow	10	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	AHC-20		Latitude	33.15000	Watershed	Hydrologic Unit	904
Location	Downstream of site AC-2, by Dawson Dr. in the canyon under a bridge		Longitude	-117.24875		Hydrologic Area	904.3
			TB Page	1107, H6		Hydrologic Subarea (Optional)	904.31
Date	06/03/09	Time 11:15	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other crayfish

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 22-24

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.6	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.5	TURB (NTU)	~~NA~~ 1.75	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.27	MBAS (mg/L)	NA	DO (mg/L)	6.71		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	38	in
Depth	.75	in
Velocity	10/10	ft/sec
Flow	89	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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a4

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	AHC-21		Latitude	33.13539	Watershed	Hydrologic Unit	904
Location	Just upstream of site AH-21, at 2687 South Melrose Dr. at the Southern end of Melrose Dr.		Longitude	-117.24472		Hydrologic Area	904.3
			TB Page	1127, H1		Hydrologic Subarea (Optional)	904.31
Date	06/04/09	Time 11:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 39-43

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.72	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.6	TURB (NTU)	3.76	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.53	MBAS (mg/L)	NA	DO (mg/L)	5.98		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	25	in
Depth	0.25	in
Velocity	12/10	ft/sec
Flow	23	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	BEC-36		**Latitude**	32.15937	**Watershed**	**Hydrologic Unit**	904
Location	Just upstream of site AH-36, East side of cottontail rd., South west of Maplelaf Dr.		**Longitude**	-117.22533		**Hydrologic Area**	904.3
			TB Page	1108, A5		**Hydrologic Subarea** (Optional)	904.32
Date	06/04/2009	**Time** 12:00	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 44 - 45

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.5	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.8	TURB (NTU)	8.65	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.10	MBAS (mg/L)	NA	DO (mg/L)	5.76		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	40	in
Depth	0.5	in
Velocity	10/10	ft/sec
Flow	62	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-1		Latitude	33.18271	Watershed	Hydrologic Unit	904
Location	Behind 4241 Tiberon Dr.		Longitude	-117.28387		Hydrologic Area	904.2
			TB Page	1107, C2		Hydrologic Subarea (Optional)	904.21
Date	06/04/09	Time 12:50	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 2 46,47

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.2	NH_3-N (mg/L)	0.194	NO_3 (mg/L)	0.221	Ortho-PO_4 (mg/L)	0.382
pH (pH units)	8.1	TURB (NTU)	1.90	NO_3-N (mg/L)	0.030	Ortho-PO_4-P (mg/L)	0.125
COND (mS/cm)	8.35	MBAS (mg/L)	0.75	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-1 DATE: 06/04/09

LOCATION: Behind 4241 Tiberon Dr. TIME: 12:50

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-4		Latitude	33.18780	Watershed	Hydrologic Unit	904
Location	Across the street from 1725 Hacienda Dr., South of the fence in the canyon		Longitude	-117.27434		Hydrologic Area	904.2
			TB Page	1087, E7		Hydrologic Subarea (Optional)	904.21
Date	06/08/2009	Time 10:45	Observer	MDIAK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/~~Gravel~~ ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 3 65-67

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.4	NH_3-N (mg/L)	0.026	NO_3 (mg/L)	0.649	Ortho-PO_4 (mg/L)	0.250
pH (pH units)	8.2	TURB (NTU)	1.36	NO_3-N (mg/L)	0.147	Ortho-PO_4-P (mg/L)	0.082
COND (mS/cm)	2.01	MBAS (mg/L)	0.38	DO (mg/L)	6.62		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	20	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	16	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-4 **DATE:** 06/08/09

Across the street from 1725 Hacienda Dr.

LOCATION: South of the fence, in the canyon **TIME:** 10:45

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-7A		Latitude	33.19300	Watershed	Hydrologic Unit	904
Location	West sidewalk of South Melrose Dr, South of Hacienda, next to gas station		Longitude	-117.25372		Hydrologic Area	904.2
			TB Page	1087, G7		Hydrologic Subarea (Optional)	904.22
Date	06/08/2009	Time 10:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other	N/A
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other	N/A
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other	N/A
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other	N/A
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other	
Biology	☒ None	☐ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 2 63-64

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	ns	NH_3-N (mg/L)	ns	NO_3 (mg/L)	ns	Ortho-PO_4 (mg/L)	ns
pH (pH units)	ns	TURB (NTU)	ns	NO_3-N (mg/L)	ns	Ortho-PO_4-P (mg/L)	ns
COND (mS/cm)	ns	MBAS (mg/L)	ns	DO (mg/L)	ns		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-7A **DATE:** 06/08/09

LOCATION: West sidewalk of South Melrose Dr. South of Hacienda, next to gas station **TIME:** 10:20

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-8		Latitude	33.20350	Watershed	Hydrologic Unit	904
Location	Olive Avenue and Goetting Way Southwest corner		Longitude	-117.24564		Hydrologic Area	904.2
			TB Page	1087-G6		Hydrologic Subarea (Optional)	904.22
Date	05/28/2009	Time 11:15	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/~~Gravel~~ ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 1, 2

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.7	NH_3-N (mg/L)	0.032	NO_3 (mg/L)	16.17	Ortho-PO_4 (mg/L)	0.068
pH (pH units)	8.3	TURB (NTU)	0.78	NO_3-N (mg/L)	3.65	Ortho-PO_4-P (mg/L)	0.022
COND (mS/cm)	1.56	MBAS (mg/L)	0.25	DO (mg/L)	NA		

3p 3g

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	42	in
Depth	.25	in
Velocity	10/10	ft/sec
Flow	33	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Some beverage containers, food packages, <10 pieces

2009 Trash Assessment Form

SITE ID: BV-8 Olive Ave and Goething Way

DATE: 05/28/2009

LOCATION: Southwest corner

TIME: 11:15

OBSERVER: MDIAK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 40 x 20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

a4

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-10		Latitude	33.20242	Watershed	Hydrologic Unit	904
Location	Northwest corner of Eucalyptus Avenue and Escondido Avenue intersection		Longitude	-117.23605		Hydrologic Area	904.2
			TB Page	1087, J6		Hydrologic Subarea (Optional)	904.22
Date	06/09/09	Time 15:40	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☒ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 101, 102

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.0	NH_3-N (mg/L)	0.195	NO_3 (mg/L)	20.15	Ortho-PO_4 (mg/L)	0.072
pH (pH units)	8.7	TURB (NTU)	3.95	NO_3-N (mg/L)	4.55	Ortho-PO_4-P (mg/L)	0.024
COND (mS/cm)	1.82	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2009 Trash Assessment Form

SITE ID: BV-10 DATE: 06/09/09

LOCATION: Northwest corner of Eucalyptus Ave and Escondido Ave. intersection TIME: 15:40

OBSERVER: MD / AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): ~~10 x 20~~ 20 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-12		Latitude	33.20639	Watershed	Hydrologic Unit	904
Location	Brengle Terrace Park, across from 1425 Vale Terrace Dr., west side of bridge		Longitude	-117.21933		Hydrologic Area	904.2
			TB Page	1088, A5		Hydrologic Subarea (Optional)	904.22
Date	06/10/09	Time 11:35	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☒ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/~~Gravel~~	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 3 114-116

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	17.03	NH_3-N (mg/L)	0.088	NO_3 (mg/L)	4.166	Ortho-PO_4 (mg/L)	0.159
pH (pH units)	8.1	TURB (NTU)	2.06	NO_3-N (mg/L)	0.942	Ortho-PO_4-P (mg/L)	0.052
COND (mS/cm)	2.17	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-12 **DATE:** 06/10/09

LOCATION: Brengle Terrace Park, across from 1428 Vale Terrace Dr., west side of bridge **TIME:** 1135

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 12

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-15		Latitude	33.21770	Watershed	Hydrologic Unit	904
Location	Northwest of the Canenea Ave. and Citrus Ave. intersection		Longitude	-117.24340		Hydrologic Area	904.2
			TB Page	1087, H4		Hydrologic Subarea (Optional)	904.22
Date	06/10/09	Time 11:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other N/A
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other N/A
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other N/A
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other N/A
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 112, 113

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 -P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	Dry	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Umbrella, misc. food wrappers, paper trash

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2009 Trash Assessment Form

SITE ID: BV-15 **DATE:** 06/10/09

LOCATION: Northwest of the Cameron Ave and Citrus Ave. intersection **TIME:** 11:20

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 40 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-18		Latitude	33.21044	Watershed	Hydrologic Unit	904
Location	Brengle Terrace Park, northwest side		Longitude	-117.22496		Hydrologic Area	904.2
			TB Page	1088-A5		Hydrologic Subarea (Optional)	904.22
Date	05/28/2009	Time 12:40	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other crayfish

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 3-6 4

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.9	NH_3-N (mg/L)	0.160	NO_3 (mg/L)	51.50	Ortho-PO_4 (mg/L)	0.156
pH (pH units)	7.7	TURB (NTU)	0.1	NO_3-N (mg/L)	11.64	Ortho-PO_4-P (mg/L)	0.051
COND (mS/cm)	2.08	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	20	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	16	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Human feces, large amount of household waste, plastic bags, styrofoam

2009 Trash Assessment Form

SITE ID: BV-18 DATE: 05/28/2009

LOCATION: Brengle Terrace Park, northwest side TIME: 12:40

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☒ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☒ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste	3	X									X	
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing	4		X	X		X					X	
Food Packaging	2	X	X			X					X	
Food Waste												
Household	1	X	X			X						
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: Human waste and toilet paper present. 32 gallon trash bag on bank, contents scattered around site and include a household cleaner bottle, food packaging, and miscellaneous paper and plastic debris.

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San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation For Nitrate ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-18		Latitude	33.21044	Watershed	Hydrologic Unit	904
Location	Brengle Terrace Park, northwest side		Longitude	-117.22496		Hydrologic Area	904.2
			TB Page	1088-A5		Hydrologic Subarea (Optional)	904.22
Date	05/29/2009	Time 9:40	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other crayfish

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	17.4	NH_3-N (mg/L)	NA	NO_3 (mg/L)	31.65	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.5	TURB (NTU)	1.73	NO_3-N (mg/L)	7.15	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.08	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	25	in
Depth	0.25	in
Velocity	10/10	ft/sec
Flow	19	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-24		Latitude	33.21971	Watershed	Hydrologic Unit	904
Location	1427 Foothill Drive		Longitude	-117.21909		Hydrologic Area	904.2
			TB Page	1088-B4		Hydrologic Subarea (Optional)	904.22
Date	05/29/2009	Time 10:30	Observer	MD / AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	~~☒ Normal~~	☐ Excessive		☐ Other
Biology	☐ None	~~☒ Insects~~ ~~☒ Algae~~	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 10, 11

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	17.3	NH_3-N (mg/L)	0.125	NO_3 (mg/L)	18.92	Ortho-PO_4 (mg/L)	0.377
pH (pH units)	7.8	TURB (NTU)	1.50	NO_3-N (mg/L)	4.28	Ortho-PO_4-P (mg/L)	0.123
COND (mS/cm)	1.89	MBAS (mg/L)	0.25	DO (mg/L)	NA		

0.356 0.377 0.389

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-24 **DATE:** 05/29/2009

LOCATION: 1427 Foothill Drive **TIME:** 10:30

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-30		Latitude	33.19243	Watershed	Hydrologic Unit	904
Location	Parking lot (business: Boomer's) east of Grapevine Road, south of Date street		Longitude	-117.27395		Hydrologic Area	904.3
			TB Page	1087-D7		Hydrologic Subarea (Optional)	904.31
Date	05/29/2009	Time 14:50	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/~~Gravel~~	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 20, 21

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	17.8	NH_3-N (mg/L)	0.091	NO_3 (mg/L)	0.793	Ortho-PO_4 (mg/L)	0.333
pH (pH units)	8.1	TURB (NTU)	17.66	NO_3-N (mg/L)	0.179	Ortho-PO_4-P (mg/L)	0.109
COND (mS/cm)	1.82	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-30 **DATE:** 05/29/2009

LOCATION: Parking lot (business: Boomers) east of Grapevine Rd, south of Date St. **TIME:** 1450

OBSERVER: MD / AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-31		Latitude	33.19910	Watershed	Hydrologic Unit	904
Location	Southwest corner of ~~Melrose~~ North Melrose Dr. and Copper Dr. intersection		Longitude	-117.25601		Hydrologic Area	904.2
			TB Page	1087, F7		Hydrologic Subarea (Optional)	904.22
Date	05/28/2009	Time 14:00	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 3 7-9

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.2	NH_3-N (mg/L)	0.005	NO_3 (mg/L)	2.975	Ortho-PO_4 (mg/L)	0.107
pH (pH units)	7.6	TURB (NTU)	~~0.0~~ 0.01	NO_3-N (mg/L)	0.672	Ortho-PO_4-P (mg/L)	0.035
COND (mS/cm)	1.36	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-31 **DATE:** 05/28/2009

LOCATION: Southwest corner of North Melrose Dr & Copper Dr. intersection **TIME:** 14:00

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-32		Latitude	33.20272	Watershed	Hydrologic Unit	904
Location	Olive Avenue and Maryland Dr. Southwest corner of Washington middle school's back parking lot, in fenced area. (access from 821 Silver Dr.)		Longitude	-117.25966		Hydrologic Area	904.2
			TB Page	1087, F6		Hydrologic Subarea (Optional)	904.22
Date	06/06/09	Time 1515	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☒ Other frog

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** ~~63,64~~ 61,62

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.7	NH_3-N (mg/L)	0.747	NO_3 (mg/L)	10.05	Ortho-PO_4 (mg/L)	1.240
pH (pH units)	7.4	TURB (NTU)	23.15	NO_3-N (mg/L)	2.27	Ortho-PO_4-P (mg/L)	0.404
COND (mS/cm)	1.44	MBAS (mg/L)	1.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Tire, basketballs, food wrappers, beverage containers

2009 Trash Assessment Form

SITE ID: BV-32 DATE: 06/05/09

LOCATION: Olive Ave & Maryland Dr, S.W. corner of Washington middle School's back parking lot, in fenced area. (Access from 821 Silver Dr. TIME: 1515

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 25 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

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☐ Field Screening ☒ Confirmation For MBAS ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-32		**Latitude**	33.20272	**Watershed**	**Hydrologic Unit**	904
Location	Olive Avenue and Maryland Dr. Southwest corner of Washington middle school's back parking lot, in fenced area (access from 821 Silver Dr.)		**Longitude**	-117.25966		**Hydrologic Area**	904.2
			TB Page	1087, F6		**Hydrologic Subarea** (Optional)	904.22
Date	06/08/09	**Time** 0945	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☐ None ☒ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ~~☒ Trash~~ ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☒ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.3	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.1	TURB (NTU)	5.33	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	3.71	MBAS (mg/L)	0.88	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-33		Latitude	33.21198	Watershed	Hydrologic Unit	904
Location	North side of West Los Angeles Dr., near North Santa Fe Ave.		Longitude	-117.24572		Hydrologic Area	904.2
			TB Page	1087, G5		Hydrologic Subarea (Optional)	904.22
Date	06/05/09	Time 1400	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment ~~Gravel~~ ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ~~☒ None~~ ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 59, 60

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.6	NH_3-N (mg/L)	0.317	NO_3 (mg/L)	6.552	Ortho-PO_4 (mg/L)	1.282
pH (pH units)	7.6	TURB (NTU)	5.12	NO_3-N (mg/L)	1.481	Ortho-PO_4-P (mg/L)	0.418
COND (mS/cm)	5.35	MBAS (mg/L)	0.75	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-33 DATE: 06/08/09

LOCATION: North side of West Los Angeles Dr. Near North Santa Fe Ave. TIME: 1400

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-34		Latitude	33.19162	Watershed	Hydrologic Unit	904
Location	Across from 220 Hulf st. next to sidewalk		Longitude	-117.27726		Hydrologic Area	904.2
			TB Page	1107, D1		Hydrologic Subarea (Optional)	904.21
Date	06/10/09	Time 12:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☒ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 117, 118

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.3	NH_3-N (mg/L)	0.014	NO_3 (mg/L)	ND	Ortho-PO_4 (mg/L)	0.162
pH (pH units)	8.1	TURB (NTU)	3.62	NO_3-N (mg/L)	ND	Ortho-PO_4 -P (mg/L)	0.053
COND (mS/cm)	1.54	MBAS (mg/L)	0.13	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-34 **DATE:** 06/10/09

LOCATION: Across from 220 Huff st., next to sidewalk **TIME:** 1220

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

DM

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-35		Latitude	33.22333	Watershed	Hydrologic Unit	904
Location	Northeast corner of the Palomar Place and E. Vista Way intersection, in sidewalk by bus stop		Longitude	-117.22600		Hydrologic Area	904.2
			TB Page	1088, A3		Hydrologic Subarea (Optional)	904.22
Date	06/10/09	Time 1440	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☒ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 121 - 122

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.2	NH_3-N (mg/L)	0.274	NO_3 (mg/L)	0.143	Ortho-PO_4 (mg/L)	0.892
pH (pH units)	8.3	TURB (NTU)	8.5	NO_3-N (mg/L)	0.032	Ortho-PO_4-P (mg/L)	0.291
COND (mS/cm)	0.98	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-35 **DATE:** 06/10/09

LOCATION: Northeast corner of the Palomar Place and E. Vista Way intersection, in sidewalk by bus station **TIME:** 1440

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): NA

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

DM

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BV-36		Latitude	33.21144	Watershed	Hydrologic Unit	904
Location	In front of 128 Townsite Dr. east of N. Santa Fe		Longitude	-117.24394		Hydrologic Area	904.2
			TB Page	1087, H5		Hydrologic Subarea (Optional)	904.22
Date	06/10/09	Time 15:45	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutt

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 123-124

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.0	NH_3-N (mg/L)	0.108	NO_3 (mg/L)	20.36	Ortho-PO_4 (mg/L)	0.709
pH (pH units)	7.9	TURB (NTU)	10.32	NO_3-N (mg/L)	4.60	Ortho-PO_4-P (mg/L)	0.231
COND (mS/cm)	1.68	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: BV-36 **DATE:** 06/10/09

LOCATION: In front of 128 Townsite Dr, east of N. Santa Fe **TIME:** 1545

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): NA

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ ~~MS4~~ ☒ Receiving Water

Site ID	BVC-3		**Latitude**	33.18504	**Watershed**	**Hydrologic Unit**	904
Location	2150 Sunset Drive, near 1900 Via Centre, in creek to Southeast		**Longitude**	-117.28019		**Hydrologic Area**	904.2
			TB Page	1107-C2		**Hydrologic Subarea** (Optional)	904.21
Date	04/08/09	**Time** 12:00	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other	
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other	
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other	
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other	
Deposits	☐ None	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other	
Biology	☐ None	☒ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☒ Other crayfish

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.6	NH_3-N (mg/L)	~~0.138~~ na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.2	TURB (NTU)	1.97	NO_3-N (mg/L)	na	Ortho-PO_4-P (mg/L)	na
COND (mS/cm)	1.06	MBAS (mg/L)	na	DO (mg/L)	8.83		

Analytical Lab Samples Collected? ☒ **Yes** ☐ **No**

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	70	in
Depth	0.5	in
Velocity	10.10	ft/sec
Flow	109	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Drink bottle groupings, plastics, styrofoam, paper, spray paint cans, misc. towels and fabrics, metal parts

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	G-3		Latitude	33.22679	Watershed	Hydrologic Unit	903
Location	North end of Calle Jules		Longitude	-117.22420		Hydrologic Area	903.1
			TB Page	1087, E6J3		Hydrologic Subarea (Optional)	903.11
Date	05/29/2009	Time 11:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 12-15

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.1	NH_3-N (mg/L)	0.113	NO_3 (mg/L)	43.20	Ortho-PO_4 (mg/L)	0.186
pH (pH units)	8.1	TURB (NTU)	0.01	NO_3-N (mg/L)	9.76	Ortho-PO_4-P (mg/L)	0.061
COND (mS/cm)	1.78	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	3	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Beverage containers, food wrappers, toys

2009 Trash Assessment Form

SITE ID: G-3 DATE: 05/29/2009

LOCATION: Northend of Calle Jules TIME: 11:20

OBSERVER: MD/AL

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Submarginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	G-4		**Latitude**	33.23335	**Watershed**	**Hydrologic Unit**	903
Location	Northwest corner of the Warmlands Avenue and Vista Grande Drive intersection		**Longitude**	-117.22420		**Hydrologic Area**	903.1
			TB Page	1088 - A2		**Hydrologic Subarea** (Optional)	903.11
Date	05/29/2009	**Time** 14:20	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☒ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☒ Bubbles/Foam	☒ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☒ Sediment/~~Gravel~~	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☒ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 2 16, 17

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.0	NH_3-N (mg/L)	1.199	NO_3 (mg/L)	23.80	Ortho-PO_4 (mg/L)	1.985
pH (pH units)	7.4	TURB (NTU)	28.07	NO_3-N (mg/L)	5.38	Ortho-PO_4-P (mg/L)	0.647
COND (mS/cm)	0.68	MBAS (mg/L)	0.75	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: G4 **DATE:** 05/29/2009

LOCATION: Northwest corner of Warmlands Ave & Vista Grande Dr **TIME:** 14:20

OBSERVER: MD / AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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☐ Field Screening ☒ Confirmation For Ammonia ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	G-4		**Latitude**	33.23335	**Watershed**	**Hydrologic Unit**	903
Location	Northwest corner of the Warmlands Avenue and Vista Grande Drive Intersection		**Longitude**	-117.22420		**Hydrologic Area**	903.1
			TB Page	1088, A2		**Hydrologic Subarea** (Optional)	903.11
Date	06/03/2009	**Time** 12:40	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/~~Gravel~~	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☒ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** ~~29-34 11977~~

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.7	NH_3-N (mg/L)	0.167	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	8.2	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	1.01	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	G-5		**Latitude**	33.23251	**Watershed**	**Hydrologic Unit**	903
Location	North Santa Fe Avenue, South of Camino Largo, in bike lane on east side of the street (just North of Storm drain on sidewalk)		**Longitude**	-117.24966		**Hydrologic Area**	903.1
			TB Page	1087, G2		**Hydrologic Subarea** (Optional)	903.11
Date	05/29/2009	**Time** 1400	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/~~Gravel~~	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other spiders

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 18, 19

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.7	NH_3-N (mg/L)	0.128	NO_3 (mg/L)	6.726	Ortho-PO_4 (mg/L)	0.434
pH (pH units)	7.7	TURB (NTU)	2.41	NO_3-N (mg/L)	1.520	Ortho-PO_4-P (mg/L)	0.141
COND (mS/cm)	2.76	MBAS (mg/L)	0.5	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Leaf litter, no trash

2009 Trash Assessment Form

SITE ID: G-5 **DATE:** 05/29/2009

LOCATION: North Santa Fe Avenue, South of Camino Largo, in bikelane on east side of street just North of storm drain on sidewalk **TIME:** 1400

OBSERVER: MDIAK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 5x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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City of Vista
Dry Weather Monitoring Field Datasheet

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	G-6		Latitude	33.23052	Watershed	Hydrologic Unit	903
Location	Museum Way, west of North Santa Fe Ave, in front of Guajome Park Academy, by the fence		Longitude	-117.250166		Hydrologic Area	903.1
			TB Page	1087, G2		Hydrologic Subarea (Optional)	903.11
Date	06/09/09	Time 13:30	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☒ Other crayfish

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 98-100

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.7	NH_3-N (mg/L)	0.114	NO_3 (mg/L)	0.830	Ortho-PO_4 (mg/L)	0.099
pH (pH units)	7.9	TURB (NTU)	0.01	NO_3-N (mg/L)	0.188	Ortho-PO_4-P (mg/L)	0.032
COND (mS/cm)	1.89	MBAS (mg/L)	0.25	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	2	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006, 3/13/2008

2009 Trash Assessment Form

SITE ID: G-6 DATE: 06/09/09

LOCATION: Museum Way, west of North Santa Fe Ave, in front of Guajome Academy, by the fence TIME: 1330

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	MV-3		Latitude	33.19369	Watershed	Hydrologic Unit	904
Location	Southeast corner of the Escondido Avenue and South Santa Fe Avenue intersection, on sidewalk		Longitude	-117.23452		Hydrologic Area	904.2
			TB Page	1087, J7		Hydrologic Subarea (Optional)	904.22
Date	06/10/09	Time 11:05	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☒ Other N/A	
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other N/A	
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☒ Other N/A	
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other N/A	
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other	
Biology	☒ None	☐ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 110, 111

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3 (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4-P (mg/L)	NS
COND (mS/cm)	NS	MBAS (mg/L)	NS	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert			Filling a Bottle or Known Volume			Flowing Pipe		
Width		in	Volume		mL	Diameter		ft
Depth		in	Time to Fill		sec	Depth		ft
Velocity		ft/sec	Flow		gpm	Velocity		ft/sec
Flow	Dry	gpm				Flow		gpm

COMMENTS: Large amount of sediment, food wrappers, cigarette butts, plastic, styrofoam

2009 Trash Assessment Form

SITE ID: MV-3 **DATE:** 06/10/09

LOCATION: Southeast corner of the Escondido Ave. and South Santa Fe Aver intersection, on sidewalk **TIME:** 11:05

OBSERVER: MD/AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Marginal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☒ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
City of Vista
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a7

☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Ammonia

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	SS-1-1		**Latitude**	33.18267	**Watershed**	**Hydrologic Unit**	904
Location	Outfall on north side of channel in Carriage Hill Community Park First outfall walking from Melrose Dr. to the east		**Longitude**	-117.25132		**Hydrologic Area**	904.3
			TB Page	1107, G2		**Hydrologic Subarea** (Optional)	904.31
Date	06/09/09	**Time** 10:30	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 78-88

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	NA	NH_3-N (mg/L)	0.44	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)			

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	<1	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
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☐ Field Screening ☐ Confirmation For _____ ☒ IC/ID Follow-Up For Ammonia

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	SS-1-2		**Latitude**	33.18247	**Watershed**	**Hydrologic Unit**	904
Location	Carriage Hill Community Park channel on west side of S. Melrose Dr.		**Longitude**	-117.25224		**Hydrologic Area**	904.3
			TB Page	1107, G2		**Hydrologic Subarea** (Optional)	904.31
Date	06/09/09	**Time** 10:40	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/~~Gravel~~ ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 78 – 88

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	NA	NH_3-N (mg/L)	0.02	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	NA	TURB (NTU)	NA	NO_3-N (mg/L)	NA	Ortho-PO_4 -P (mg/L)	NA
COND (mS/cm)	NA	MBAS (mg/L)	NA	DO (mg/L)	NA		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	SS-1		Latitude	33.18235	Watershed	Hydrologic Unit	904
Location	Southside of Branding Iron Circle, west of Melrose Drive		Longitude	-117.25365		Hydrologic Area	904.3
			TB Page	1107-G2		Hydrologic Subarea (Optional)	904.31
Date	06/08/09	Time 12:50	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment ~~/Gravel~~	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 72, 73

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.4	NH_3-N (mg/L)	6.49	NO_3 (mg/L)	3.012	Ortho-PO_4 (mg/L)	1.866
pH (pH units)	7.5	TURB (NTU)	14.21	NO_3-N (mg/L)	0.681	Ortho-PO_4-P (mg/L)	0.608
COND (mS/cm)	2.12	MBAS (mg/L)	0.50	DO (mg/L)	na		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2009 Trash Assessment Form

SITE ID: SS-1 DATE: 06/08/09

LOCATION: South Side of Branding Iron Circle, west of Melrose Dr. TIME: 12:50

OBSERVER: MD / AK

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Optimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

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☐ Field Screening ☒ Confirmation For Ammonia ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	SS-1		**Latitude**	33.18235	**Watershed**	**Hydrologic Unit**	904
Location	Southside of Branding Iron Circle, west of South Melrose Drive		**Longitude**	-117.25365		**Hydrologic Area**	904.3
			TB Page	1107, G2		**Hydrologic Subarea** (Optional)	904.31
Date	06/09/09	**Time** 9:45	**Observer**	MD/AK		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/~~Gravel~~ ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☐ Yes ☒ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.3	NH_3-N (mg/L)	7.67	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	7.3	TURB (NTU)	na	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	2.63	MBAS (mg/L)	na	DO (mg/L)	na		

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		in
Depth		in
Velocity		ft/sec
Flow	ponded	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

APPENDIX F-5

2009 Trash Assessment Form

2009 Trash Assessment Form

SITE ID: _____ **DATE:** _____

OBSERVER: _____ **TIME:** _____

LOCATION: _____

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):_____

ESTIMATED AREA OF ASSESSMENT L X W (FT):_____

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☐ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

SITE ID: _____

*** Complete the following section for Submarginal, and Poor Evaluations ONLY ***

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent).
DO NOT rank types of trash that are not present in evaluated area.

Comments:_____

_____

_____

_____

_____

_____

APPENDIX F-6

Receiving Waters Monitoring Tables

TABLE 1
VISTA RECEIVING WATER MONITORING LOCATIONS

Site	Water Body	Location	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
AHC-10	Agua Hedionda Creek	Upstream of historical site AC-1, Juniper Lane on east side of bridge	Open	Residential	904.32	33.15865	-117.21756
AHC-20	Agua Hedionda Creek	Downstream of historical site AC-2, by Dawson Drive, in the canyon under a bridge	Open	Residential	904.31	33.15000	-117.24875
AHC-21	La Mirada Creek	Just upstream of dry weather Site AH-21, at 2687 South Melrose Drive, at the southern end of Melrose Drive	Open	Commercial	904.31	33.13539	-117.24472
BEC-36	Buena Creek	Just upstream of dry weather Site AH-36, east side of Cottontail Road., southwest of Mapleleaf Drive	Residential	Parks	904.32	33.15937	-117.22533
BVC-3	Buena Vista Creek	2150 Sunset Drive, near 1900 Via Centre, in creek to southeast	Open	Residential	904.21	33.18504	-117.28019

TABLE 2

FIELD OBSERVATION RESULTS

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
AHC-10	6/3/09	12:00	Overcast	None	None	Clear	None	Sediment/Gravel	Normal	Insect/Algae
AHC-20	6/3/09	11:15	Partly Cloudy	None	None	Clear	None	Sediment/Gravel	Normal	Insects, Crayfish
AHC-21	6/4/09	11:20	Partly Cloudy	None	None	Clear	Bubbles/Foam	Sediment/Gravel, Fine Particulates	Normal	Insects, Algae
BEC-36	6/4/09	12:00	Partly Cloudy	None	None	Clear	None	Sediment/Gravel	Normal	Insect/Algae
BVC-3	6/8/09	12:00	Partly Cloudy	None	None	Clear	Trash	Sediment/Gravel, Fine Particulates	Normal	Insects, Crayfish

TABLE 3

FIELD SCREENING RESULTS

Site	Date	Time	Flow (gpm)	Temp. (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
AHC-10	6/3/09	12:00	10	20.2	7.4	1.88	6.59	5.68
AHC-20	6/3/09	11:15	89	19.6	7.5	1.75	2.27	6.71
AHC-21	6/4/09	11:20	23	20.2	7.6	3.76	2.53	5.98
BEC-36	6/4/09	12:00	62	19.5	7.8	8.65	2.10	5.76
BVC-3	6/8/09	12:00	109	21.6	8.2	1.97	1.06	8.83
Ambient Water Quality Objectives				*(narrative)*	*6.5 - 9.0*	*20*	**	*>5.0*

Note: ** There is no clear WQO in the Basin Plan, but a comparison is not necessary since TDS has been measured directly. See the laboratory data tables for TDS results.

TABLE 4
LABORATORY ANALYTICAL RESULTS

Site	Date	Time	TSS (mg/L)	TDS (mg/L)	Ammonia-N (mg/L)	Total Phosphorus as P (mg/L) *	Orthophosphate as P (mg/L)	Total Nitrogen (mg/L)	Nitrate/Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Coliforms (CFU/100 mL)	Fecal Coliforms (CFU/100 mL)	Enterococci (CFU/100 mL)	Total Manganese (mg/L)	Total Selenium (mg/L)	Sulfates (mg/L)
AHC-10	6/3/09	12:00	28	**5,036**	0.35	<0.05	0.12	4.9	2.66	2.2	3,100	**845**	**590**	**0.092**	0.005	**696**
AHC-20	6/3/09	11:15	2.0	**1,639**	<0.1	0.11	0.40	1.5	0.68	0.84	1,180	180	**185**	**0.091**	<0.002	**334**
AHC-21	6/4/09	11:20	54	**1,792**	<0.1	0.05	0.26	1.2	0.06	1.1	1,005	225	150	**0.231**	<0.002	221
BEC-36	6/4/09	12:00	17	**1,450**	<0.1	0.17	0.23	9.8	7.85	2.0	4,200	**760**	**670**	na	na	na
BVC-3	6/8/09	12:00	11	**1,276**	<0.1	0.08	0.10	3.5	2.37	1.1	1,180	205	50	na	na	na
Ambient Water Quality Benchmarks			*58*	*500*	*EPA Freshwater CMC***	*****	*****	*****	****	****	****	*400*	*151*	*0.050*	*0.005*	*250*

Notes:
na = not analyzed
Bold = above WQO
* The reported total phosphorus value was less than the reported orthophosphate-P value.
** No established limit
*** Regional guidance suggests using the EPA's nutrient endpoint tool to determine the WQO. This tool requires more data than what has been collected within the scope of this study.
**** The criterion maximum concentration (salmonids absent), which varies based on pH, has been used because it applies to a one-hour maximum, and the ammonia level for this study was measured based on an instantaneous grab sample. See http://www.epa.gov/waterscience/criteria/ammonia.

APPENDIX F-7

2009 Receiving Waters Monitoring Program Report

CITY OF VISTA
2009 RECEIVING WATERS
MONITORING PROGRAM

Submitted to:

City of Vista
Engineering Department
600 Eucalyptus Avenue
Vista, CA 92084

Prepared by:

D-MAX Engineering, Inc.
7220 Trade Street, Suite 119
San Diego, CA 92121
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D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

December 9, 2009
Project No. 200910W-3

Paul Hartman
City of Vista
Engineering Department
600 Eucalyptus Avenue
Vista, CA 92084

Re: 2009 City of Vista Receiving Waters Monitoring Program

Dear Mr. Hartman:

Enclosed please find our final report for the City of Vista 2009 Receiving Waters Monitoring Program. This report presents the results of monitoring conducted at five locations in receiving water bodies in the City of Vista (City) under ambient conditions during the 2009 dry weather season. The contents include field screening data, analytical laboratory test results, and photographs of sampling locations.

Review comments from the draft report submitted to the City have been incorporated into this final report. It has been our pleasure working with the City of Vista on this project. If you have any questions regarding this report, please call me at (858) 586-6600.

Sincerely,
D-MAX Engineering Inc.

John Quenzer
Project Scientist

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

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1 INTRODUCTION

A study of receiving water quality was conducted at five sites within the City of Vista (City) concurrently with the 2009 Dry Weather Monitoring Program. Sample sites were located in major creeks within the City, including Agua Hedionda Creek, Buena Creek, La Mirada Creek, and Buena Vista Creek. Because the City completed a separate additional study of water quality in Buena Vista Creek earlier in 2009, the additional monitoring presented in this report focused more on Agua Hedionda Creek. Table 2 presents site names, locations, primary and secondary land uses, and GPS coordinates. Figure 1 is a map of the sampling locations.

2 FIELD AND LABORATORY ANALYTICAL METHODS

2.1 Field Screening Procedures and Methods

Field screening techniques include qualitative field observations, flow measurements, and field analyses of selected water quality parameters. Information about atmospheric conditions and time since last rainfall is noted. Specific observations and results of the field water quality analyses are documented on field data sheets, which are included in Appendix B.

Field screening and laboratory analyses were conducted according to the following procedures and methods. The receiving waters monitoring program utilized the same testing protocols and quality assurance/quality control measures as the Dry Weather Monitoring Program.

The methods that were used to perform the field analyses, along with the range and accuracy of each method, are presented in Table 1.

TABLE 1
FIELD ANALYTICAL METHODS

Parameter	Method	Reporting Limit	Range	Accuracy
Specific Conductance	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.01 mS/cm	0 – 20 mS/cm	± 2% of functional sensitivity[1]
Temperature	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.1℃	0.0℃ – 60.0℃	± 0.5℃
pH	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.01	0.00 – 14.00	± 0.01 pH
Turbidity	Hanna Instruments HI 93703 Portable Turbidity Meter*	0.01 NTU	0.01 – 50.00 NTU and 50 – 1000 NTU	± 0.5 NTU or 5% of reading (whichever is greater)
Dissolved Oxygen	Hanna Instruments HI 9145 Portable Dissolved Oxygen Meter	0.00 mg/L	0.00 to 45.00 mg/L	± 1.5% of range

Notes:
EC = electrical conductivity
TDS = total dissolved solids
NTU = nephelometric turbidity unit
mS/cm = millisiemens per centimeter
℃ = Degrees Celsius
[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.
*Test method information taken from Hanna Instruments and CHEMetrics manuals, available online at www.hannainst.com and www.chemetrics.com. CHEMetrics accuracy was obtained from the manufacturer via email.

TABLE 2
VISTA RECEIVING WATER MONITORING LOCATIONS

Site	Water Body	Location	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
AHC-10	Agua Hedionda Creek	Upstream of historical site AC-1, Juniper Lane on east side of bridge	Open	Residential	904.32	33.15685	-117.21756
AHC-20	Agua Hedionda Creek	Downstream of historical site AC-2, by Dawson Drive, in the canyon under a bridge	Open	Residential	904.31	33.15000	-117.24875
AHC-21	La Mirada Creek	Just upstream of dry weather Site AH-21, at 2687 South Melrose Drive, at the southern end of Melrose Drive	Open	Commercial	904.31	33.13539	-117.24472
BEC-36	Buena Creek	Just upstream of dry weather Site AH-36, east side of Cottontail Road., southwest of Mapleleaf Drive	Residential	Parks	904.32	33.15937	-117.22533
BVC-3	Buena Vista Creek	2150 Sunset Drive, near 1900 Via Centre, in creek to southeast	Open	Residential	904.21	33.18504	-117.28019

FIGURE 1
RECEIVING WATER SAMPLING SITES

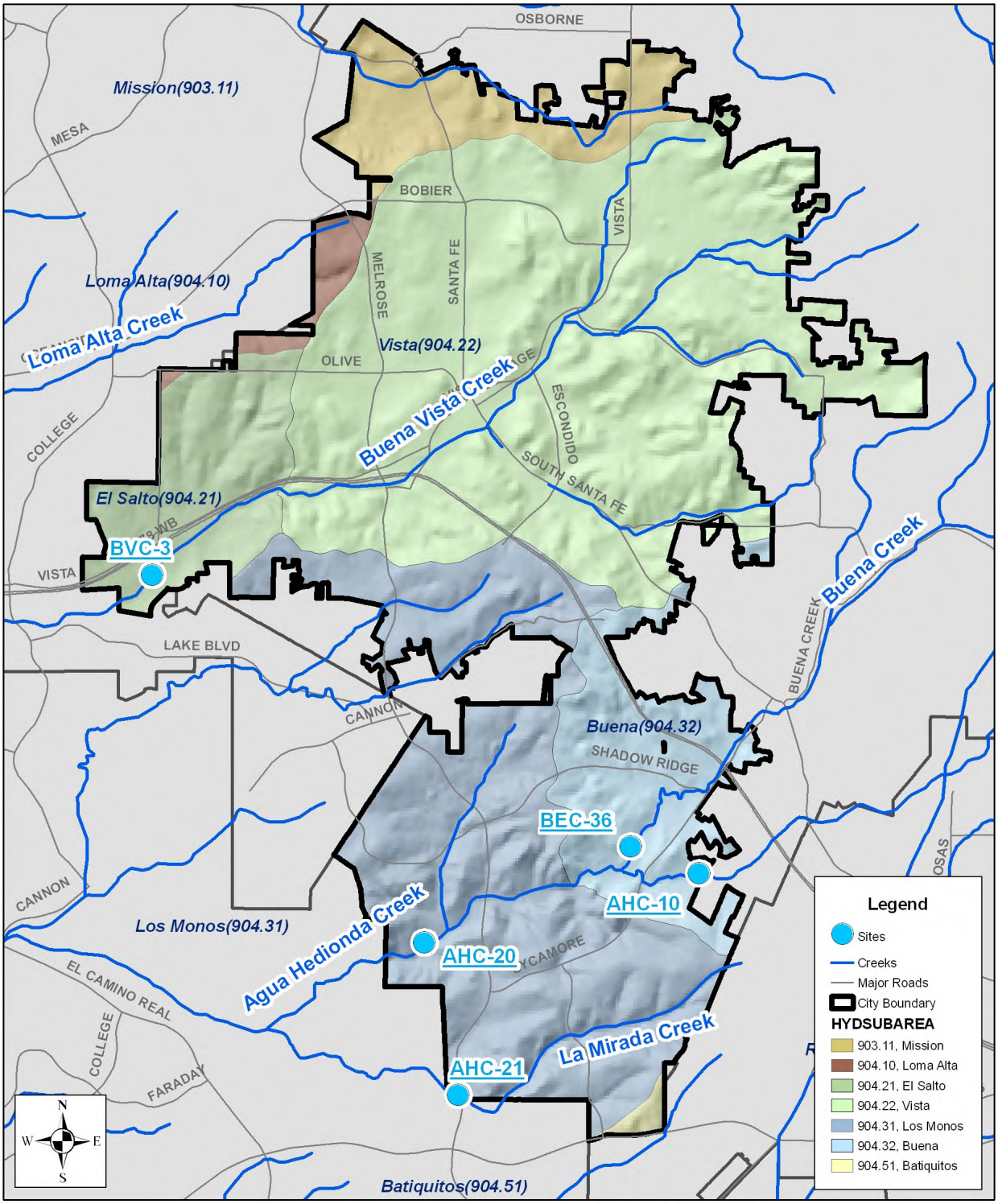

Base Data Sources: USGS, SANDAG, SanGIS

2.1.1 Qualitative Observations

Qualitative field observations are noted at each site visit. These observations are intended to provide a general assessment of the site and include variables such as odor, water clarity, floatables, visible deposits, vegetation, and biology. Each field screening location is photographed to provide additional information and documentation of site conditions. Photographs are included in Appendix A.

2.1.2 Field Screening Measurements

At each site, the flow rate was estimated by measuring the cross section and velocity of the flowing water and then multiplying these two values together. Typically several such measurements are taken in close proximity to the sampling site, with an overall average value being used. Water samples were also collected and analyzed in the field at each site for the following constituents:

- Specific Conductance
- Temperature
- pH
- Turbidity
- Dissolved Oxygen

2.2 Laboratory Analytical Methods

In addition to field testing, laboratory samples were collected and submitted to Encina Wastewater Authority Laboratory (EWA), a laboratory certified through the Environmental Laboratory Accreditation Program (ELAP), for analysis of the following constituents:

- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- Ammonia-Nitrogen
- Total Phosphorus
- Orthophosphate-Phosphorus
- Total Nitrogen (Including Nitrate/Nitrite as N and Total Kjeldahl Nitrogen)
- Total Coliform Bacteria
- Fecal Coliform Bacteria
- *Enterococcus* Bacteria

For sites within the Agua Hedionda Hydrologic Area (sites in Agua Hedionda Creek and La Mirada Creek), the following constituents were also tested:

- Total Manganese
- Total Selenium
- Sulfates

EWA sent some testing to EnviroMatrix Analytical, Inc., a laboratory also certified through ELAP, to be analyzed. The methods used to perform each of the above analyses, along with method detection limits and holding times, are listed in Table 3.

2.3 Quality Assurance and Quality Control (QA/QC)

The QA/QC plan utilized for this project followed the same procedures set forth in the dry weather monitoring program. This included regular calibration of field test equipment, pre- and post-rinsing of sample collection containers, and using sterilized laboratory bottles.

TABLE 3
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Reporting Limit	Maximum Holding Time [1]
Total Suspended Solids	SM2540D	1 mg/L	7 days
Total Dissolved Solids	SM2540C	10 mg/L	7 days
Ammonia-Nitrogen	SM4500 NH_3-D	0.1 mg/L	28 days
Total Phosphorus	Hach 8190	0.05 mg/L	48 hours
Orthophosphate-Phosphorus	SM4500 P E	0.05 mg/L	48 hours
Total Nitrogen	Calculation	0.5 mg/L	na [2]
Nitrate/Nitrite as N	SM4500 NO_3 E	0.05 mg/L	48 hours
Total Kjeldahl Nitrogen	SM4500-Norg C	0.50 mg/L	28 days
Total Coliforms	SM 9221 B	10 CFU/100 mL	6 hours
Fecal Coliforms	SM 9222 D	10 CFU/100 mL	6 hours
Enterococci	EPA 1600	10 CFU/100 mL	6 hours
Total Manganese	EPA 200.8	0.005 mg/L	6 months
Total Selenium	EPA 200.8	0.002 mg/L	6 months
Sulfates	EPA 375.4	5 mg/L	28 days

Notes:
[1] Maximum Holding Time values apply to samples collected and preserved in accordance with the quality assurance and quality control procedures listed in Section 1.3.2.
[2] Not applicable, calculation

2.3.1 Field Sampling and Analysis QA/QC

The pH meters are calibrated daily and adjusted as needed with sodium/potassium phosphate, monobasic buffer solutions with pH values equal to 4.00 ± 0.01, 7.00 ± 0.01, and 10.00 ± 0.01 units. The glass electrode tube is kept moist to preserve the meter's accuracy during fieldwork. The turbidity meter is calibrated for accuracy using standard solutions. The conductivity meter is calibrated with standard solutions and adjusted as necessary.

Field sample collection containers are first rinsed with distilled water and then with the sample water before sample collection. Upon completion of sampling at each site, sample collection containers, test vials, and meter probes are rinsed twice with distilled water and dried.

2.3.2 Laboratory Sampling and Analysis QA/QC

Samples for laboratory analysis are collected concurrently with field screening samples and utilize the same sampling procedures. Pre-sterilized sample bottles are obtained from the laboratory and thus do not require rinsing with sample water prior to sample collection. After sample collection, all laboratory samples are kept in a cooler on ice until picked up by the lab. Strict chain of custody procedures are followed and samples are delivered and analyzed within the appropriate holding times as listed in Table 3. Completed chain of custody forms are included with laboratory reports in Appendix B.

3 FIELD SCREENING & LABORATORY ANALYTICAL RESULTS

3.1 Qualitative Observations

Light conditions for most sites were slightly cloudy, with one site being sampled under overcast light conditions. Water samples from all sites were odorless, colorless, and clear. A minor amount of trash was noted in Site BVC-3; water at all other sites was free of floatables. Fine particulates, sediment, and gravel were observed at each of the creeks. Each of the sites displayed normal vegetation and a variety of biology, including insects, algae, and crayfish. Qualitative observations are shown in Table 4. Photographs of the sampling locations are presented in Appendix A.

3.2 Field Screening Results

The measured constituents are described below, and the field screening results are presented in Table 5. Field data sheets are included in Appendix C.

Flow rate quantifies the volume of fluid passing across a given surface per unit time. Flow rate measurements are needed to calculate the load or particular amount of a pollutant discharged. Flow measurements ranged from 10 gallons per minute (gpm) to 109 gpm at creek sites this year.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Extreme variations in temperature may also have direct effects on aquatic life. In 2009, temperatures measured this year ranged from 19.5°C to 21.6°C.

The **pH** is an expression of acidity of a water sample. The pH of an aquatic system will influence a variety of chemical reactions, including the availability of nutrients and the solubility of chemical substances, particularly heavy metals. All pH readings measured this year were within normal limits, ranging from 7.4 to 8.2.

Turbidity describes the clarity or cloudiness of a water sample, or the degree to which light is blocked by suspended material in the water. Turbid waters not only limit the amount of light that reaches submerged vegetation, thus reducing photosynthetic capacity, but excessive suspended particles can also absorb heat and increase water temperatures. The turbidity measurements in 2009 ranged from 1.75 NTU to 8.65 NTU.

Specific Conductance (Conductivity) values indicate the concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially help indicate the presence of dissolved pollutants. This year, conductivity readings ranged from 1.06 mS/cm to 6.59 mS/cm.

Dissolved Oxygen measurements indicate the amount of gaseous oxygen dissolved in water. Oxygen enters the water by photosynthesis of aquatic biota and by the diffusion of oxygen from the surrounding air. Oxygen is used up as organic material in the water decomposes. Too little oxygen in the water can be detrimental to aquatic life. Higher amounts of dissolved oxygen are also typically found when water temperatures are lower. In 2009, dissolved oxygen levels ranged from 5.68 mg/L to 8.83 mg/L.

3.3 Laboratory Analytical Results

The laboratory constituents measured are defined below, and results are presented in Table 6. Laboratory analytical reports are available in Appendix B. Note that total manganese, total selenium, and sulfates were measured for Agua Hedionda Creek sites only.

Total Suspended Solids (TSS) are undissolved particles that are suspended in water. Suspended particles can limit the amount of light that reaches submerged vegetation, thus reducing photosynthetic capacity, and can absorb heat, elevating water temperatures. Increased water temperature reduces the ability to hold oxygen, which can inhibit the sustainability of aquatic life. Suspended solids can also have other pollutants adhered to them, such as metals or pesticides. TSS levels in 2009 ranged from 2 to 54 mg/L.

Total Dissolved Solids (TDS) are dissolved minerals, cations, anions, and salts in the water. From a laboratory analytical standpoint, TDS is the portion of solids small enough to pass through a standard glass fiber filter, while TSS is the portion of solids captured when put through the filter. TDS is often correlated with conductivity and the water's hardness. It can originate from natural sources, sewage runoff, industrial wastewater, and other urban runoff. In drinking water, it can affect taste and aesthetic quality. In storm water, high TDS levels can negatively affect aquatic species. TDS levels for 2009 ranged from 1,276 to 5,036 mg/L.

Ammonia-Nitrogen (Ammonia-N) is an indicator of pollution from decomposing organic matter, fertilizer, or the presence of sewage. Ammonia occurs naturally in the environment; however, in higher quantities it can become toxic to fish and other organisms. The ammonia-N levels measured in 2009 ranged from less than 0.1 mg/L to 0.35 mg/L. Ammonia-N readings have historically been in the same approximate range.

Total Phosphorus and **Orthophosphate-Phosphorus (Orthophosphate-P)** are typically indicators of nutrient pollution from agricultural or household fertilizer runoff. Nutrient enrichment can stimulate algal growth, which decreases oxygen in the water as algae decomposes. Even low levels of phosphorus can cause significant algal proliferation, as it is commonly the limiting nutrient in plant growth. This year, total phosphorus and orthophosphate-P measurements ranged from 0.1 mg/L to 0.26 mg/L. See footnotes in table 6 for further information.

Total Nitrogen is calculated from **Nitrate/Nitrite as N** and **Total Kjeldahl Nitrogen (TKN)** measurements. Nitrogen is a common sign of nutrient pollution from agricultural or household fertilizer runoff, and groundwater in some cases can also be a significant source of nitrate-nitrogen in particular. Like phosphates, nitrate pollution can cause excessive algal growth, which can deplete oxygen from the water during decomposition and eventually suffocate other aquatic life. Total nitrogen values, which are calculated as the sum of measurements of nitrate/nitrate as N and TKN, ranged from 1.2 mg/L to 9.8 mg/L.

TABLE 4
FIELD OBSERVATION RESULTS

Site	Date	Time	Light Conditions	Odor	Color	Clarity	Floatables	Deposits	Vegetation	Biology
AHC-10	6/3/09	12:00	Overcast	None	None	Clear	None	Sediment/Gravel	Normal	Insect/Algae
AHC-20	6/3/09	11:15	Partly Cloudy	None	None	Clear	None	Sediment/Gravel	Normal	Insects, Crayfish
AHC-21	6/4/09	11:20	Partly Cloudy	None	None	Clear	Bubbles/Foam	Sediment/Gravel, Fine Particulates	Normal	Insects, Algae
BEC-36	6/4/09	12:00	Partly Cloudy	None	None	Clear	None	Sediment/Gravel	Normal	Insect/Algae
BVC-3	6/8/09	12:00	Partly Cloudy	None	None	Clear	Trash	Sediment/Gravel, Fine Particulates	Normal	Insects, Crayfish

TABLE 5
FIELD SCREENING RESULTS

Site	Date	Time	Flow (gpm)	Temp. (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
AHC-10	6/3/09	12:00	10	20.2	7.4	1.88	6.59	5.68
AHC-20	6/3/09	11:15	89	19.6	7.5	1.75	2.27	6.71
AHC-21	6/4/09	11:20	23	20.2	7.6	3.76	2.53	5.98
BEC-36	6/4/09	12:00	62	19.5	7.8	8.65	2.10	5.76
BVC-3	6/8/09	12:00	109	21.6	8.2	1.97	1.06	8.83
Ambient Water Quality Benchmarks				*(narrative)*	*6.5 - 9.0*	*20*	*	*>5.0*

Note: * No clear water quality standard has been established, but a comparison is not necessary since TDS has been measured directly. See the laboratory data tables for TDS results.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts. Coliform bacteria are naturally found in most surface waters and soils. Testing water samples for total coliform bacteria is a standard practice in public health since a high level of total coliform bacteria often may indicate the presence of other more harmful, pathogenic organisms. Total coliform is measured in lieu of these pathogens since the various pathogens are generally present in much smaller quantities and are difficult to detect. This year, total coliforms were counted between 1,005 CFU/100 mL and 4,200 CFU/100 mL.

Fecal coliform, a subset of coliform bacteria, and ***Enterococcus* bacteria** are found primarily in the gastrointestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain. Without the use of significantly more expensive methods, such as ribotyping, it is not possible to determine whether the source of fecal material was human or animal. Fecal coliform counts were between 180 CFU/100 mL and 845 CFU/100 mL, and *Enterococcus* counts were between 50 CFU/100 mL and 670 CFU/100 mL.

Manganese is an essential trace element found in most aquatic life but can be toxic in excessive amounts. Manganese is undesirable in domestic water supplies because of taste, leaving deposits on food and clothing, staining, and encouraging microorganism growth. Manganese and its compounds are frequently used in the manufacturing processes of steel and various alloys. In 2009, total manganese was measured at the Agua Hedionda Creek sites, ranging from 0.090 mg/L to 0.231 mg/L.

Selenium is an essential trace element that is present in most organisms with a relatively narrow margin between beneficial and toxic concentrations. Selenium may bioaccumulate to pose both acute and chronic health risks to higher order aquatic life and waterfowl. Selenium in storm water is associated with a variety of industrial processes and agricultural use. Total selenium was detected at only one Agua Hedionda sampling location, measuring 0.005 mg/L.

Sulfates are naturally present in waterways as a result of atmospheric deposition, decomposition of organic matter, and the presence of gypsum or other common minerals. Sulfate ions are involved in precipitation and complexing reactions, which affect the solubility of metals and other substances. Agua Hedionda Creek locations were tested for sulfates, with results ranging between 221 mg/L and 696 mg/L.

TABLE 6
LABORATORY ANALYTICAL RESULTS

Site	Date	Time	TSS (mg/L)	TDS (mg/L)	Ammonia-N (mg/L)	Total Phosphorus as P (mg/L) *	Orthophosphate as P (mg/L)	Total Nitrogen (mg/L)	Nitrate/Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Coliforms (CFU/100 mL)	Fecal Coliforms (CFU/100 mL)	Enterococci (CFU/100 mL)	Total Manganese (mg/L)	Total Selenium (mg/L)	Sulfates (mg/L)
AHC-10	6/3/09	12:00	28	**5,036**	0.35	<0.05	0.12	4.9	2.66	2.2	3,100	**845**	**590**	**0.092**	0.005	**696**
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Ambient Water Quality Benchmarks			*58*	*500*	*EPA Freshwater CMC***	*****	*****	*****	******	******	******	*400*	*151*	*0.050*	*0.005*	*250*

Notes:

na = not analyzed

Bold = above water quality benchmark

* The reported total phosphorus value was less than the reported orthophosphate-P value.

** The criterion maximum concentration (salmonids absent), which varies based on pH, has been used because it applies to a one-hour maximum, and the ammonia level for this study was measured based on an instantaneous grab sample. See http://www.epa.gov/waterscience/criteria/ammonia.

*** Regional guidance suggests using the EPA's nutrient endpoint tool to determine the benchmark. This tool requires more data than what has been collected within the scope of this study.

**** No established limit

4 SUMMARY

Water quality benchmarks presented in *Water Quality Benchmarks for the San Diego Regional Monitoring Program*, which is largely derived from water quality objectives (WQO) set forth in the *Water Quality Control Plan for the San Diego Basin 9*, have been included in tables 5 and 6 for reference. Some notable observations include the following:

- No field screening results (temperature, turbidity, pH, conductivity, and dissolved oxygen) exceeded established water quality benchmarks.
- Total dissolved solids were above the water quality benchmark at all sites.
- Significantly higher conductivity and TDS measurements were taken at Site AHC-10 than at other creek sites. According to dry weather reports from 2005 to 2007, historical site AC-1 (downstream of Site AHC-10) has also had consistently high conductivity and total hardness measurements. (Total hardness measures the presence of calcium carbonate dissolved in the water and is therefore related to TDS and conductivity.) A possible source of persistently elevated conductivity, TDS, and total hardness levels is from the contribution of groundwater; however, further research would need to be conducted to confirm or rule out sources.
- Site AHC-10 is located along the eastern edge of the City, where Agua Hedionda Creek enters the City of Vista. Site AHC-20 is located downstream, on the western side of the City. Levels of total coliforms, fecal coliforms, and Enterococci were all lower at downstream Site AHC-20 than at Site AHC-10.
- Total manganese measurements were higher than the benchmark at all sites at which the constituent was tested. The highest measurement was taken in La Mirada Creek at Site AHC-21 and was more than twice as high as the other two sites located within the Agua Hedionda Hydrologic Area, both of which are in Agua Hedionda Creek.
- At sites AHC-10 and AHC-20, sulfates measurements exceeded the water quality benchmark. Sulfates were approximately two times higher at Site AHC-10, where the creek enters the City, than at Site AHC-20 downstream.
- Nitrate/Nitrite as N and total nitrogen were significantly higher at Site BEC-36 than at other monitoring locations.
- Of the 19 parameters tested at the Buena Vista Creek site, only TDS exceeded the water quality benchmark.
- Research over the past few years has indicated that nitrogen and phosphorus levels alone are comparatively poor indicators of eutrophication and related impacts. The EPA's numeric nutrient endpoint (NNE) approach, which also includes evaluation of algae levels, dissolved oxygen, and similar parameters, is viewed as a more robust scientific approach. Various regional studies, including intensive lagoon monitoring in North County watersheds, are underway to help provide more data that will allow for more site-specific and scientifically sound nutrient standards. Evaluation of the nutrient levels recorded in this study is being reserved since NNE-based standards are not yet available.

Appendix A
Photographs of Sampling Locations

AHC-10	
AHC-20	

AHC-21	
BEC-36	

BVC-3	

Appendix B
Laboratory Analytical Reports

ENCINA WASTEWATER AUTHORITY
A Public Agency
6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

SAMPLE RESULTS REPORT

Report Date : 6/19/2009

REPORT TO

D-Max Engineering, Inc.
7220 Trade Street, Ste 119
San Diego, CA 92121
Attention: Ms. Sara Dadkhah

Sample Delivery Group (SDG): 090618090842

ELAP Certification No. 1441

Ref. No. EC: 09- 0130

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA20823	**Collected: 05/28/2009**	**Time: 11:15**			
SPECIAL	BV-8	Total Coliform, MF	6500	Colonies/100ml	SM9221B
SPECIAL	BV-8	Fecal Coliform, MF	1400	Colonies/100ml	SM9222D
SPECIAL	BV-8	Enterococcus	400	Colonies/100ml	EPA 1600
SPECIAL	BV-8	Hardness	400	mg/L CaCO3	SM2340C
AA20824	**Collected: 05/28/2009**	**Time: 12:40**			
SPECIAL	BV-18	Total Coliform, MF	2900	Colonies/100ml	SM9221B
SPECIAL	BV-18	Fecal Coliform, MF	1400	Colonies/100ml	SM9222D
SPECIAL	BV-18	Enterococcus	1900	Colonies/100ml	EPA 1600
SPECIAL	BV-18	Hardness	800	mg/L CaCO3	SM2340C
AA20825	**Collected: 05/28/2009**	**Time: 14:00**			
SPECIAL	BV-31	Total Coliform, MF	30	Colonies/100ml	SM9221B
SPECIAL	BV-31	Fecal Coliform, MF	<10	Colonies/100ml	SM9222D
SPECIAL	BV-31	Enterococcus	40	Colonies/100ml	EPA 1600
SPECIAL	BV-31	Hardness	300	mg/L CaCO3	SM2340C
AA20826	**Collected: 06/03/2009**	**Time: 11:15**			
SPECIAL	AHC-20	Total Coliform, MF	1180	Colonies/100ml	SM9221B
SPECIAL	AHC-20	Fecal Coliform, MF	180	Colonies/100ml	SM9222D
SPECIAL	AHC-20	Enterococcus	185	Colonies/100ml	EPA 1600
SPECIAL	AHC-20	Total Suspended Solids	2.0	mg/L	SM2540D
SPECIAL	AHC-20	Solids, Total Dissolved	1639	mg/L	SM2540C
SPECIAL	AHC-20	NH3 Electrode	<0.1	mg/L NH3-N	SM4500NH3-D
SPECIAL	AHC-20	Phosphorus Total	0.11	mg/L as PO4	Hach 8190
SPECIAL	AHC-20	Sulfate Wet	334	mg/L	EPA 375.4
AA20827	**Collected: 06/03/2009**	**Time: 12:00**			
SPECIAL	AHC-10	Total Coliform, MF	3100	Colonies/100ml	SM9221B
SPECIAL	AHC-10	Fecal Coliform, MF	845	Colonies/100ml	SM9222D
SPECIAL	AHC-10	Enterococcus	590	Colonies/100ml	EPA 1600
SPECIAL	AHC-10	Total Suspended Solids	28	mg/L	SM2540D
SPECIAL	AHC-10	Solids, Total Dissolved	5036	mg/L	SM2540C
SPECIAL	AHC-10	NH3 Electrode	0.35	mg/L NH3-N	SM4500NH3-D

SERVING THE CITY OF VISTA, CITY OF CARLSBAD, BUENA SANITATION DISTRICT, VALLECITOS WATER DISTRICT, LEUCADIA COUNTY WATER DISTRICT AND CITY OF ENCINITAS
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ENCINA WASTEWATER AUTHORITY
A Public Agency
6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

SAMPLE RESULTS REPORT

Report Date : 6/19/2009

REPORT TO

D-Max Engineering, Inc.
7220 Trade Street, Ste 119
San Diego, CA 92121
Attention: Ms. Sara Dadkhah

Sample Delivery Group (SDG): 090618090842

ELAP Certification No. 1441

Ref. No. EC: 09- 0130

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
SPECIAL	AHC-10	Phosphorus Total	<0.05	mg/L as PO4	Hach 8190
SPECIAL	AHC-10	Sulfate Wet	696	mg/L	EPA 375.4
AA20828	**Collected: 06/03/2009**	**Time: 14:30**			
SPECIAL	AH-21	Total Coliform, MF	7100	Colonies/100ml	SM9221B
SPECIAL	AH-21	Fecal Coliform, MF	3155	Colonies/100ml	SM9222D
SPECIAL	AH-21	Enterococcus	1925	Colonies/100ml	EPA 1600
SPECIAL	AH-21	Hardness	1150	mg/L CaCO3	SM2340C
SPECIAL	AH-21	Total Suspended Solids	15	mg/L	SM2540D
SPECIAL	AH-21	Solids, Total Dissolved	2263	mg/L	SM2540C
SPECIAL	AH-21	Phosphorus Total	0.65	mg/L as PO4	Hach 8190
SPECIAL	AH-21	Sulfate Wet	809	mg/L	EPA 375.4
AA20829	**Collected: 06/04/2009**	**Time: 09:55**			
SPECIAL	AH-17	Total Coliform, MF	13100	Colonies/100ml	SM9221B
SPECIAL	AH-17	Fecal Coliform, MF	4100	Colonies/100ml	SM9222D
SPECIAL	AH-17	Enterococcus	5800	Colonies/100ml	EPA 1600
SPECIAL	AH-17	Total Suspended Solids	16	mg/L	SM2540D
SPECIAL	AH-17	Solids, Total Dissolved	3668	mg/L	SM2540C
SPECIAL	AH-17	Phosphorus Total	0.39	mg/L as PO4	Hach 8190
SPECIAL	AH-17	Sulfate Wet	692	mg/L	EPA 375.4
AA20830	**Collected: 06/04/2009**	**Time: 11:20**			
SPECIAL	AHC-21	Total Coliform, MF	1005	Colonies/100ml	SM9221B
SPECIAL	AHC-21	Fecal Coliform, MF	225	Colonies/100ml	SM9222D
SPECIAL	AHC-21	Enterococcus	150	Colonies/100ml	EPA 1600
SPECIAL	AHC-21	Total Suspended Solids	54	mg/L	SM2540D
SPECIAL	AHC-21	Solids, Total Dissolved	1792	mg/L	SM2540C
SPECIAL	AHC-21	Phosphorus Total	0.05	mg/L as PO4	Hach 8190
SPECIAL	AHC-21	Sulfate Wet	221	mg/L	EPA 375.4
SPECIAL	AHC-21	NH3 Electrode	<0.1	mg/L NH3-N	SM4500NH3-D
AA20831	**Collected: 06/04/2009**	**Time: 12:00**			
SPECIAL	BEC-36	Total Coliform, MF	4200	Colonies/100ml	SM9221B
SPECIAL	BEC-36	Fecal Coliform, MF	760	Colonies/100ml	SM9222D
SPECIAL	BEC-36	Enterococcus	670	Colonies/100ml	EPA 1600

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SAMPLE RESULTS REPORT

Report Date : 6/19/2009

REPORT TO

D-Max Engineering, Inc.
7220 Trade Street, Ste 119
San Diego, CA 92121
Attention: Ms. Sara Dadkhah

Sample Delivery Group (SDG): 090618090842

ELAP Certification No. 1441

Ref. No. EC: 09- 0130

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
SPECIAL	BEC-36	Total Suspended Solids	17	mg/L	SM2540D
SPECIAL	BEC-36	Solids, Total Dissolved	1450	mg/L	SM2540C
SPECIAL	BEC-36	Phosphorus Total	0.17	mg/L as PO4	Hach 8190
SPECIAL	BEC-36	NH3 Electrode	<0.1	mg/L NH3-N	SM4500NH3-D
AA20832	**Collected: 06/04/2009**	**Time: 12:50**			
SPECIAL	BV-1	Total Coliform, MF	860	Colonies/100ml	SM9221B
SPECIAL	BV-1	Fecal Coliform, MF	440	Colonies/100ml	SM9222D
SPECIAL	BV-1	Enterococcus	420	Colonies/100ml	EPA 1600
SPECIAL	BV-1	Total Suspended Solids	43	mg/L	SM2540D
SPECIAL	BV-1	Solids, Total Dissolved	5975	mg/L	SM2540C
SPECIAL	BV-1	Phosphorus Total	0.19	mg/L as PO4	Hach 8190
AA20833	**Collected: 06/08/2009**	**Time: 10:45**			
SPECIAL	BV-4	Total Coliform, MF	16400	Colonies/100ml	SM9221B
SPECIAL	BV-4	Fecal Coliform, MF	1805	Colonies/100ml	SM9222D
SPECIAL	BV-4	Enterococcus	405	Colonies/100ml	EPA 1600
SPECIAL	BV-4	Hardness	500	mg/L CaCO3	SM2340C
SPECIAL	BV-4	Total Suspended Solids	12	mg/L	SM2540D
SPECIAL	BV-4	Solids, Total Dissolved	1278	mg/L	SM2540C
SPECIAL	BV-4	Phosphorus Total	0.13	mg/L as PO4	Hach 8190
AA20834	**Collected: 06/08/2009**	**Time: 12:00**			
SPECIAL	BVC-3	Total Coliform, MF	1180	Colonies/100ml	SM9221B
SPECIAL	BVC-3	Fecal Coliform, MF	205	Colonies/100ml	SM9222D
SPECIAL	BVC-3	Enterococcus	50	Colonies/100ml	EPA 1600
SPECIAL	BVC-3	Total Suspended Solids	11	mg/L	SM2540D
SPECIAL	BVC-3	Solids, Total Dissolved	1276	mg/L	SM2540C
SPECIAL	BVC-3	Phosphorus Total	0.08	mg/L as PO4	Hach 8190
SPECIAL	BVC-3	NH3 Electrode	<0.1	mg/L NH3-N	SM4500NH3-D
AA20835	**Collected: 06/08/2009**	**Time: 12:50**			
SPECIAL	SS-1	Total Coliform, MF	640	Colonies/100ml	SM9221B
SPECIAL	SS-1	Fecal Coliform, MF	185	Colonies/100ml	SM9222D
SPECIAL	SS-1	Enterococcus	140	Colonies/100ml	EPA 1600
SPECIAL	SS-1	Hardness	640	mg/L CaCO3	SM2340C

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SAMPLE RESULTS REPORT

Report Date : 6/19/2009

REPORT TO

D-Max Engineering, Inc.
7220 Trade Street, Ste 119
San Diego, CA 92121
Attention: Ms. Sara Dadkhah

Sample Delivery Group (SDG): 090618090842

ELAP Certification No. 1441

Ref. No. EC: 09- 0130

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA20836	**Collected: 06/09/2009**	**Time: 11:15**			
SPECIAL	AH-9	Total Coliform, MF	4600	Colonies/100ml	SM9221B
SPECIAL	AH-9	Fecal Coliform, MF	1130	Colonies/100ml	SM9222D
SPECIAL	AH-9	Enterococcus	560	Colonies/100ml	EPA 1600
SPECIAL	AH-9	Hardness	880	mg/L CaCO3	SM2340C
AA20837	**Collected: 06/09/2009**	**Time: 13:30**			
SPECIAL	G-6	Total Coliform, MF	2365	Colonies/100ml	SM9221B
SPECIAL	G-6	Fecal Coliform, MF	490	Colonies/100ml	SM9222D
SPECIAL	G-6	Enterococcus	115	Colonies/100ml	EPA 1600
SPECIAL	G-6	Hardness	600	mg/L CaCO3	SM2340C

Certified By: Doug Campbell Date: 6/25/2009

Doug Campbell, Laboratory Supervisor

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Manchester Dallfish Manchester Dallfish

DATE	TIME	SAMPLE LOCATION	GRAB	COMPOSITE	LIQUID	SOLID	COLLERT	GENERAL PHYSICAL	HETEROTROPHIC PLATE COUNT	OTHER	(TP) TOP PRIORITY OR (R) ROUTINE	NUMBER OF CONTAINERS	ANAL
			SAMPLE TYPE										
5/28/09	11:15	BV-8	X		X							6	Total Hardness, Dissolved, To
"	12:40	BV-18	X		X							6	" "
"	14:00	BV-31	X		X							6	" "

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
Manchester Dallfish	5/28/09 14:45	Barbara [illegible]	
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:

Manoncheffer Dechlorf Manoncheffer Dechlorf

DATE	TIME	SAMPLE LOCATION	GRAB	COMPOSITE	LIQUID	SOLID	COLILERT	GENERAL PHYSICAL	HETEROTROPHIC PLATE COUNT	OTHER	(TP) TOP PRIORITY OR (R) ROUTINE	NUMBER OF CONTAINERS	ANAL
			SAMPLE TYPE										
06/03/09	11:15	AHC-20	X		X							4	Total Total Fecal Coli
06/03/09	12:00	AHC-10	X		X							4	Total H, Calcium Total Al
06/03/09	14:50	AH-21	X		X							7	Total hardness, C Chloro, Total C

RELINQUISHED BY: Manoncheffer Dechlorf DATE/TIME: 6/3/09 15:20

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

Monomelalie Dulkhali Monomelalie Dulkhali

DATE	TIME	SAMPLE LOCATION	GRAB	COMPOSITE	LIQUID	SOLID	COLILERT	GENERAL PHYSICAL	HETEROTROPHIC PLATE COUNT	OTHER	(TP) TOP PRIORITY OR (R) ROUTINE	NUMBER OF CONTAINERS	ANAL
06/03/09	14:30	Ar-21	X		X							7	TO, TDS, [illegible]

SAMPLE TYPE

RELINQUISHED BY: Monomelalie Dulkhali DATE/TIME: 6/3/09 15:20

RECEIVED BY: [illegible] DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

Manouchehr Dadkhah Manouchehr Dadkhah

DATE	TIME	SAMPLE LOCATION	GRAB	COMPOSITE	LIQUID	SOLID	COLILERT	GENERAL PHYSICAL	HETEROTROPHIC PLATE COUNT	OTHER	(TP) TOP PRIORITY OR (R) ROUTINE	NUMBER OF CONTAINERS	ANAL
			SAMPLE TYPE										
6/4/09	9:55	AH-17	X		X							4	Total, Fecal, Ent Total P, Tota
"	11:20	AHC-21	X		X							4	Total, Fecal, Ent Ammon, Total P
"	12:00	BFC-36											Total, Fecal, Ent Ammon, Total P
"	12:50	BW1	X		X							3	Total, Fecal, Total P

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
Manouchehr Dadkhah	6/4/09 13:55	Michael	
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:

Manuchehr Dalkhali Manuchehr Dalkhali

DATE	TIME	SAMPLE LOCATION	GRAB	COMPOSITE	LIQUID	SOLID	COLILERT	GENERAL PHYSICAL	HETEROTROPHIC PLATE COUNT	OTHER	(TP) TOP PRIORITY OR (R) ROUTINE	NUMBER OF CONTAINERS	ANAL
			SAMPLE TYPE										
6/8/09	10:45	BV-4	X		X							6	T. Hardness, D Diuchlor, Tot
													Total N, Tota
6/8/09	12:00	BVC-3	X		X							3	Total, Total, Tot Total P, Alum
6/8/09	12:50	SS-1	X		X							6	Total Hardness, Diuchlor, Tot

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
Manuchehr Dalkhali	6/8/09	6/11/09	Arnold
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:

Anoika Kabisuhla

DATE	TIME	SAMPLE LOCATION	GRAB	COMPOSITE	LIQUID	SOLID	COLILERT	GENERAL PHYSICAL	HETEROTROPHIC PLATE COUNT	OTHER	(TP) TOP PRIORITY OR (R) ROUTINE	NUMBER OF CONTAINERS	ANAL
06/09/09	11:15	AH-9	X		X							6	T. Hardness, C Diaz, Chlor
06/09/09	13:30	G-6	X		X							6	

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
	06/09/09 1400		
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:

EnviroMatrix Analytical, Inc.

10 July 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906165

Project Name: Encina Wastewater Authority

Enclosed are the results of analyses for samples received by the laboratory on 06/04/09 16:57. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BEC-36	0906165-01	Liquid	06/04/09 12:00	06/04/09 16:57
BEC-36	0906165-02	Liquid	06/04/09 12:00	06/04/09 16:57
BV-1	0906165-03	Liquid	06/04/09 12:50	06/04/09 16:57
AHC-21	0906165-04	Liquid	06/04/09 11:20	06/04/09 16:57
AHC-21	0906165-05	Liquid	06/04/09 11:20	06/04/09 16:57
AHC-21	0906165-06	Liquid	06/04/09 11:20	06/04/09 16:57
AH-17	0906165-07	Liquid	06/04/09 09:55	06/04/09 16:57
AH-17	0906165-08	Liquid	06/04/09 09:55	06/04/09 16:57

NOTE: The TKN analysis was performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AHC-21 (0906165-06) Liquid Sampled: 06/04/09 11:20 Received: 06/04/09 16:57									
Manganese	**0.231**	0.005	mg/l	1	9060715	06/07/09	06/17/09	EPA 200.8	
Selenium	ND	0.002	"	"	"	"	06/18/09	"	
AH-17 (0906165-08) Liquid Sampled: 06/04/09 09:55 Received: 06/04/09 16:57									
Manganese	**0.058**	0.005	mg/l	1	9060715	06/07/09	06/17/09	EPA 200.8	
Selenium	**0.011**	0.002	"	"	"	"	06/18/09	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BEC-36 (0906165-01) Liquid Sampled: 06/04/09 12:00 Received: 06/04/09 16:57									
Nitrate/Nitrite as N	**7.85**	2.50	mg/l	50	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**9.8**	0.5	"	1	9061906	06/17/09	06/17/09	Calculation	
BEC-36 (0906165-02) Liquid Sampled: 06/04/09 12:00 Received: 06/04/09 16:57									
Orthophosphate as P	**0.23**	0.05	mg/l	1	9060535	06/05/09	06/05/09	SM4500 P E	
BV-1 (0906165-03) Liquid Sampled: 06/04/09 12:50 Received: 06/04/09 16:57									
Nitrate/Nitrite as N	**0.09**	0.05	mg/l	1	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**2.1**	0.5	"	"	9061906	06/17/09	06/17/09	Calculation	
AHC-21 (0906165-04) Liquid Sampled: 06/04/09 11:20 Received: 06/04/09 16:57									
Nitrate/Nitrite as N	**0.06**	0.05	mg/l	1	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**1.2**	0.5	"	"	9061906	06/17/09	06/17/09	Calculation	
AHC-21 (0906165-05) Liquid Sampled: 06/04/09 11:20 Received: 06/04/09 16:57									
Orthophosphate as P	**0.26**	0.05	mg/l	1	9060535	06/05/09	06/05/09	SM4500 P E	
AH-17 (0906165-07) Liquid Sampled: 06/04/09 09:55 Received: 06/04/09 16:57									
Nitrate/Nitrite as N	**3.40**	0.25	mg/l	5	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**5.1**	0.5	"	1	9061906	06/17/09	06/17/09	Calculation	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060715										
Blank (9060715-BLK1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	ND	0.002	mg/l							
Manganese	ND	0.005	"							
LCS (9060715-BS1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Manganese	0.101	0.005	mg/l	0.100		101	85-115			
Selenium	0.112	0.002	"	0.100		112	75-125			
LCS Dup (9060715-BSD1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.107	0.002	mg/l	0.100		107	75-125	4	20	
Manganese	0.103	0.005	"	0.100		103	85-115	1	20	
Duplicate (9060715-DUP1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.0004	0.002	mg/l		ND				20	
Manganese	0.012	0.005	"		0.012			0.7	20	
Matrix Spike (9060715-MS1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.103	0.002	mg/l	0.100	ND	103	75-125			
Manganese	0.113	0.005	"	0.100	0.012	101	70-130			
Matrix Spike Dup (9060715-MSD1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.104	0.002	mg/l	0.100	ND	104	75-125	0.7	20	
Manganese	0.113	0.005	"	0.100	0.012	100	70-130	0.2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060535										
Blank (9060535-BLK1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9060535-BS1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.54	0.05	mg/l	0.500		108	80-120			
LCS Dup (9060535-BSD1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.54	0.05	mg/l	0.500		108	80-120	0.7	20	
Duplicate (9060535-DUP1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.22	0.05	mg/l		0.23			2	20	
Matrix Spike (9060535-MS1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.75	0.05	mg/l	0.500	0.23	105	80-120			
Matrix Spike Dup (9060535-MSD1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.73	0.05	mg/l	0.500	0.23	100	80-120	3	20	
Batch 9060539										
Blank (9060539-BLK1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9060539-BS1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		102	80-120			
LCS Dup (9060539-BSD1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		98	80-120	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906165

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060539										
Duplicate (9060539-DUP1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	5.71	0.50	mg/l		5.87			3	20	
Matrix Spike (9060539-MS1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	17.7	1.25	mg/l	12.5	5.87	95	80-120			
Matrix Spike Dup (9060539-MSD1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	19.1	1.25	mg/l	12.5	5.87	106	80-120	8	20	
Reference (9060539-SRM1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.70	0.05	mg/l	0.688		102	8.81-109.0			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760-438-3941 Fax: 760 476 9852

Email:

Billing Address: same

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □	8015B (TPH) □ Gas □ Diesel □ E	624/8260 (VOC) Full BTXE MTB	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pestic	608 / 8082 (Polychlorinated Biph	8141 (Organophosphorus Pesticid	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Orga	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal
1	BEC-36	6/4/09	1200	L	2														
2	BEC-36	6/4/09	1200	L	1														
3	BV-1	6/4/09	1250	L	2														
4	AHC-21	6/4/09	1120	L	2														
5	AHC-21	6/4/09	1120	L	1														
6	AHC-21	6/4/09	1120	L	1														
7	AH-17	6/4/09	0955	L	2														
8	AH-17	6/4/09	0955	L	1														
9																			
10																			

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY		DATE/TIME
Signature	Rachael Morgan	6/4/09
Print	Rachael Morgan	1445
Company:	Encino wastewater	
Signature	[illegible]	6/4/09
Print	Gary Hunter	1657
Company:	EMA	
Signature		
Print		
Company:		

Project/Sample Comments:

T=10° on ic

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

19 June 2009

D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log#: 0906165

Project Name: Encina Wastewater Authority

Enclosed with this letter are the test results performed by subcontract laboratory for the following analyses:

- Nitrogen, TKN - Liquid

The samples were received by EnviroMatrix Analytical, Inc. intact and with chain-of-custody documentation. The test results and pertinent quality assurance/quality control data are listed on the attached tables.

I certify that this data report is in compliance both technically and for completeness. Release of the data contained in this hard copy data report has been authorized by the following signature.

Dan Verdon
Laboratory Director

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jennifer Beyer

Project: 0906165

Sampled: 06/04/09
Received: 06/10/09
Issued: 06/19/09 16:17

NELAP #01108CA California ELAP#2706 CSDLAC #10256 AZ #AZ0671 NV #CA01531

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
ISF1191-01	0906165-01	Water
ISF1191-02	0906165-03	Water
ISF1191-03	0906165-04	Water
ISF1191-04	0906165-07	Water

Reviewed By:

TestAmerica Irvine

D.J. Watson
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jennifer Beyer

Project ID: 0906165
Report Number: ISF1191

Sampled: 06/04/09
Received: 06/10/09

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: ISF1191-01 (0906165-01 - Water)					**Sampled: 06/04/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**2.0**	1	6/17/2009	6/17/2009	
Sample ID: ISF1191-02 (0906165-03 - Water)					**Sampled: 06/04/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**2.0**	1	6/17/2009	6/17/2009	
Sample ID: ISF1191-03 (0906165-04 - Water)					**Sampled: 06/04/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**1.1**	1	6/17/2009	6/17/2009	
Sample ID: ISF1191-04 (0906165-07 - Water)					**Sampled: 06/04/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**1.7**	1	6/17/2009	6/17/2009	

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jennifer Beyer

Project ID: 0906165
Report Number: ISF1191

Sampled: 06/04/09
Received: 06/10/09

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 9F17124 Extracted: 06/17/09										
Blank Analyzed: 06/17/2009 (9F17124-BLK1)										
Total Kjeldahl Nitrogen	ND	0.50	mg/l							
LCS Analyzed: 06/17/2009 (9F17124-BS1)										
Total Kjeldahl Nitrogen	19.9	0.50	mg/l	20.0		99	85-120			
Matrix Spike Analyzed: 06/17/2009 (9F17124-MS1)					**Source: ISF1760-04**					
Total Kjeldahl Nitrogen	10.9	0.50	mg/l	10.0	1.68	92	85-120			
Matrix Spike Dup Analyzed: 06/17/2009 (9F17124-MSD1)					**Source: ISF1760-04**					
Total Kjeldahl Nitrogen	10.9	0.50	mg/l	10.0	1.68	92	85-120	0	15	

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.	Project ID: 0906165	
4340 Viewridge Avenue, Suite A		Sampled: 06/04/09
San Diego, CA 92123	Report Number: ISF1191	Received: 06/10/09
Attention: Jennifer Beyer		

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.	Project ID: 0906165	
4340 Viewridge Avenue, Suite A		Sampled: 06/04/09
San Diego, CA 92123	Report Number: ISF1191	Received: 06/10/09
Attention: Jennifer Beyer		

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
SM4500-Norg C	Water		X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Irvine

D.J. Watson
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from TestAmerica.

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906165

ISF1191

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jennifer Beyer

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906165-01	**Water**	**Sampled:06/04/09 12:00**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 12:00		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906165-03	**Water**	**Sampled:06/04/09 12:50**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 12:50		
Containers Supplied:				
125 ml Poly - H2SO4 (B)				
Sample ID: 0906165-04	**Water**	**Sampled:06/04/09 11:20**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 11:20		
Containers Supplied:				
125 ml Poly - H2SO4 (B)				
Sample ID: 0906165-07	**Water**	**Sampled:06/04/09 09:55**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 09:55		
Containers Supplied:				
125 ml Poly - ~~Unpres~~ (B)				

Rec pres w/H2SO4

Send report to jbeyer@enviromatrixinc.com, lluick@enviromatrixinc.com, and reports@enviromatrixinc.com

0.0 6/11/09 5:20

Released By	Date	Received By	Date
Tom Luick	6/10/09 1438	Sylvia Figueroa TA	6-10-09 14:30
Sylvia Figueroa TA	6-10-09 17:55	[illegible]	6/10/09 17:55
Released By	Date	Received By	Date

#005 1.6 C°

CARLSBAD CA 92011

Phone: 760.438.3941 Fax: 760 476 9852

Email:

Billing Address: same

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 166	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticid	608 / 8082 (Polychlorinated Biphen	8141 (Organophosphorus Pesticides	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTL	TCLP (RCRA) □ Metals □ Organi	Cd Cr Cu Pb Ni Ag Zn □	Coliform, □ Total (MTF) □ Fecal (M	Colilert, T+E.Coli □ P/A □ Enumer
1	BEC-36	6/4/09	1200	L	2															
2	BEC-36	6/4/09	1200	L	1															
3	BV-1	6/4/09	1250	L	2															
4	AHC-21	6/4/09	1120	L	2															
5	AHC-21	6/4/09	1120	L	2															
6	AHC-21	6/4/09	1120	L	1															
7	AH-17	6/4/09	0955	L	2															
8	AH-17	6/4/09	0955	L	1															
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt: _____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY		DATE/TIME
Signature	Rachael Morgan	6/4/09
Print	Rachael Morgan	1445
Company:	Fricino wastewater	
Signature	[illegible]	6/4/09
Print	Barry Hunter	1657
Company:	EMA	
Signature		
Print		
Company:		

Project/Sample Comments:

T= 10° on i

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906165

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jennifer Beyer

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906165-01	**Water**	**Sampled:06/04/09 12:00**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 12:00		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906165-03	**Water**	**Sampled:06/04/09 12:50**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 12:50		
Containers Supplied:				
125 ml Poly - H2SO4 (B)				
Sample ID: 0906165-04	**Water**	**Sampled:06/04/09 11:20**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 11:20		
Containers Supplied:				
125 ml Poly - H2SO4 (B)				
Sample ID: 0906165-07	**Water**	**Sampled:06/04/09 09:55**		
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/02/09 09:55		
Containers Supplied:				
125 ml Poly - Unpres (B)				

Send report to jbeyer@enviromatrixinc.com, lluich@enviromatrixinc.com, and reports@enviromatrixinc.com

Released By	Date	Received By	Date
[illegible]	6/10/09 1438	Shawn Figueroa TA	6-10-09 14:30

EnviroMatrix Analytical, Inc.

10 July 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906166

Project Name: Encina Wastewater Authority

Enclosed are the results of analyses for samples received by the laboratory on 06/04/09 16:58. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AHC-10	0906166-01	Stormwater	06/03/09 12:00	06/04/09 16:58
AHC-20	0906166-02	Stormwater	06/03/09 11:15	06/04/09 16:58
AH-21	0906166-03	Stormwater	06/03/09 14:30	06/04/09 16:58

NOTE: The TKN analysis was performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AHC-10 (0906166-01) Stormwater Sampled: 06/03/09 12:00 Received: 06/04/09 16:58									
Manganese	**0.092**	0.005	mg/l	1	9060715	06/07/09	06/17/09	EPA 200.8	
Selenium	**0.005**	0.002	"	"	"	"	"	"	
AHC-20 (0906166-02) Stormwater Sampled: 06/03/09 11:15 Received: 06/04/09 16:58									
Manganese	**0.091**	0.005	mg/l	1	9060715	06/07/09	06/17/09	EPA 200.8	
Selenium	ND	0.002	"	"	"	"	"	"	
AH-21 (0906166-03) Stormwater Sampled: 06/03/09 14:30 Received: 06/04/09 16:58									
Manganese	**0.643**	0.005	mg/l	1	9061723	06/17/09	06/18/09	EPA 200.8	
Selenium	ND	0.002	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0906166-03) Stormwater Sampled: 06/03/09 14:30 Received: 06/04/09 16:58									
Cadmium	ND	0.001	mg/l	1	9060712	06/07/09	06/17/09	EPA 200.8	
Copper	**0.003**	0.001	"	"	"	"	06/18/09	"	
Lead	ND	0.001	"	"	"	"	06/17/09	"	
Zinc	**0.046**	0.020	"	"	"	"	06/18/09	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (0906166-03) Stormwater Sampled: 06/03/09 14:30 Received: 06/04/09 16:58									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061007	06/10/09	06/12/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*132 %*	*60-130*		"	"	"	"	*S-02, S-04*
Surrogate: Tribuytlphosphate		*116 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AHC-10 (0906166-01) Stormwater Sampled: 06/03/09 12:00 Received: 06/04/09 16:58									
Nitrate/Nitrite as N	**2.66**	0.50	mg/l	10	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**4.9**	0.5	"	1	9061906	06/17/09	06/17/09	Calculation	
Orthophosphate as P	**0.12**	0.05	"	"	9060535	06/05/09	06/05/09	SM4500 P E	
AHC-20 (0906166-02) Stormwater Sampled: 06/03/09 11:15 Received: 06/04/09 16:58									
Nitrate/Nitrite as N	**0.68**	0.05	mg/l	1	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**1.5**	0.5	"	"	9061906	06/17/09	06/17/09	Calculation	
Orthophosphate as P	**0.40**	0.05	"	"	9060535	06/05/09	06/05/09	SM4500 P E	
AH-21 (0906166-03) Stormwater Sampled: 06/03/09 14:30 Received: 06/04/09 16:58									
Nitrate/Nitrite as N	**0.50**	0.05	mg/l	1	9060539	06/05/09	06/05/09	SM4500 NO3 E	
Total Nitrogen	**1.9**	0.5	"	"	9061906	06/17/09	06/17/09	Calculation	
Oil & Grease	ND	5	"	"	9061132	06/11/09	06/11/09	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060715										
Blank (9060715-BLK1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	ND	0.002	mg/l							
Manganese	ND	0.005	"							
LCS (9060715-BS1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Manganese	0.101	0.005	mg/l	0.100		101	85-115			
Selenium	0.112	0.002	"	0.100		112	75-125			
LCS Dup (9060715-BSD1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.107	0.002	mg/l	0.100		107	75-125	4	20	
Manganese	0.103	0.005	"	0.100		103	85-115	1	20	
Duplicate (9060715-DUP1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Selenium	0.0004	0.002	mg/l		ND				20	
Manganese	0.012	0.005	"		0.012			0.7	20	
Matrix Spike (9060715-MS1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Manganese	0.113	0.005	mg/l	0.100	0.012	101	70-130			
Selenium	0.103	0.002	"	0.100	ND	103	75-125			
Matrix Spike Dup (9060715-MSD1)		**Source: 0906116-01**		Prepared: 06/07/09		Analyzed: 06/17/09				
Manganese	0.113	0.005	mg/l	0.100	0.012	100	70-130	0.2	20	
Selenium	0.104	0.002	"	0.100	ND	104	75-125	0.7	20	
Batch 9061723										
Blank (9061723-BLK1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Manganese	ND	0.005	mg/l							
Selenium	ND	0.002	"							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061723										
LCS (9061723-BS1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Manganese	0.093	0.005	mg/l	0.100		93	85-115			
Selenium	0.098	0.002	"	0.100		98	75-125			
LCS Dup (9061723-BSD1)				Prepared: 06/17/09		Analyzed: 06/18/09				
Selenium	0.099	0.002	mg/l	0.100		99	75-125	0.7	20	
Manganese	0.095	0.005	"	0.100		95	85-115	2	20	
Duplicate (9061723-DUP1)		**Source: 0906299-02**		Prepared: 06/17/09		Analyzed: 06/18/09				
Selenium	0.001	0.002	mg/l		ND				20	
Manganese	0.001	0.005	"		0.001			14	20	
Matrix Spike (9061723-MS1)		**Source: 0906299-02**		Prepared: 06/17/09		Analyzed: 06/18/09				
Manganese	0.087	0.005	mg/l	0.100	0.001	86	70-130			
Selenium	0.095	0.002	"	0.100	ND	95	75-125			
Matrix Spike Dup (9061723-MSD1)		**Source: 0906299-02**		Prepared: 06/17/09		Analyzed: 06/18/09				
Selenium	0.096	0.002	mg/l	0.100	ND	96	75-125	1	20	
Manganese	0.090	0.005	"	0.100	0.001	89	70-130	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060712										
Blank (9060712-BLK1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Zinc	ND	0.020	mg/l							
Cadmium	ND	0.001	"							
Copper	ND	0.001	"							
Lead	ND	0.001	"							
LCS (9060712-BS1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Zinc	0.050	0.020	mg/l	0.0500		99	85-115			
Cadmium	0.052	0.001	"	0.0500		104	85-115			
Copper	0.052	0.001	"	0.0500		104	85-115			
Lead	0.051	0.001	"	0.0500		102	75-125			
LCS Dup (9060712-BSD1)				Prepared: 06/07/09		Analyzed: 06/17/09				
Lead	0.050	0.001	mg/l	0.0500		101	75-125	1	20	
Copper	0.051	0.001	"	0.0500		102	85-115	2	20	
Cadmium	0.050	0.001	"	0.0500		101	85-115	3	20	
Zinc	0.048	0.020	"	0.0500		96	85-115	3	20	
Duplicate (9060712-DUP1)		**Source: 0906164-05**		Prepared: 06/07/09		Analyzed: 06/17/09				
Lead	ND	0.001	mg/l		ND				20	
Zinc	0.007	0.020	"		0.007			4	20	
Cadmium	ND	0.001	"		ND				20	
Copper	0.003	0.001	"		0.003			0.4	20	
Matrix Spike (9060712-MS1)		**Source: 0906164-05**		Prepared: 06/07/09		Analyzed: 06/18/09				
Zinc	0.053	0.020	mg/l	0.0500	0.007	91	70-130			
Lead	0.050	0.001	"	0.0500	ND	101	75-125			
Copper	0.048	0.001	"	0.0500	0.003	91	70-130			
Cadmium	0.045	0.001	"	0.0500	ND	90	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060712										
Matrix Spike Dup (9060712-MSD1)		**Source: 0906164-05**		Prepared: 06/07/09	Analyzed: 06/17/09					
Lead	0.050	0.001	mg/l	0.0500	ND	100	75-125	0.5	20	
Copper	0.048	0.001	"	0.0500	0.003	92	70-130	0.7	20	
Zinc	0.053	0.020	"	0.0500	0.007	91	70-130	0.3	20	
Cadmium	0.042	0.001	"	0.0500	ND	84	70-130	7	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061007										
Blank (9061007-BLK1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.270*		*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS (9061007-BS1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.39	0.10	ug/l	0.500		78	60-130			
Diazinon	0.46	0.05	"	0.500		92	60-130			
Ethoprop	0.50	0.05	"	0.500		100	60-130			
Mevinphos	0.39	0.25	"	0.500		78	60-130			
Methyl parathion	0.41	0.10	"	0.500		82	60-130			
Phorate	0.41	0.05	"	0.500		82	60-130			
Ronnel	0.47	0.25	"	0.500		94	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
LCS Dup (9061007-BSD1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.40	0.10	ug/l	0.500		80	60-130	3	30	
Diazinon	0.45	0.05	"	0.500		90	60-130	2	30	
Ethoprop	0.50	0.05	"	0.500		100	60-130	0	30	
Mevinphos	0.43	0.25	"	0.500		86	60-130	10	30	
Methyl parathion	0.40	0.10	"	0.500		80	60-130	2	30	
Phorate	0.43	0.05	"	0.500		86	60-130	5	30	
Ronnel	0.46	0.25	"	0.500		92	60-130	2	30	
Trichlorinate	0.46	0.05	"	0.500		92	60-130	2	30	
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060535										
Blank (9060535-BLK1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9060535-BS1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.54	0.05	mg/l	0.500		108	80-120			
LCS Dup (9060535-BSD1)				Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.54	0.05	mg/l	0.500		108	80-120	0.7	20	
Duplicate (9060535-DUP1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.22	0.05	mg/l		0.23			2	20	
Matrix Spike (9060535-MS1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.75	0.05	mg/l	0.500	0.23	105	80-120			
Matrix Spike Dup (9060535-MSD1)		**Source: 0906165-02**		Prepared & Analyzed: 06/05/09						
Orthophosphate as P	0.73	0.05	mg/l	0.500	0.23	100	80-120	3	20	
Batch 9060539										
Blank (9060539-BLK1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9060539-BS1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		102	80-120			
LCS Dup (9060539-BSD1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		98	80-120	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906166

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060539										
Duplicate (9060539-DUP1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	5.71	0.50	mg/l		5.87			3	20	
Matrix Spike (9060539-MS1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	17.7	1.25	mg/l	12.5	5.87	95	80-120			
Matrix Spike Dup (9060539-MSD1)		**Source: 0906116-01**		Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	19.1	1.25	mg/l	12.5	5.87	106	80-120	8	20	
Reference (9060539-SRM1)				Prepared & Analyzed: 06/05/09						
Nitrate/Nitrite as N	0.70	0.05	mg/l	0.688		102	8.81-109.0			
Batch 9061132										
Blank (9061132-BLK1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	ND	5	mg/l							
LCS (9061132-BS1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		84	78-114			
LCS Dup (9061132-BSD1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		82	78-114	2	20	
Matrix Spike (9061132-MS1)		**Source: 0906245-01**		Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0	ND	83	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760 - 438 - 3941 Fax: 760 ~~438~~ 476-9852

Email:

Billing Address: D-MAX

* Please Bill to D-MAX

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2	8015B (TPH) □ Gas □ Diesel □ E	624/8260 (VOC) Full BTXE MT	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticid	608 / 8082 (Polychlorinated Biphe	8141 (Organophosphorus Pesticid	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Orga	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal
1	AHC-10	6/3/09	12:00	SW	4														
2	AHC-20	6/3/09	11:15	SW	4														
3	AH-21	6/3/09	14:30	SW	2 (7)	X						X						X	
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY		DATE/TIME
Signature	Rachael Mora	6/4/09 1445
Print	Rachael Mora	
Company:	Encina Wastewater Authority	
Signature		6/4/09 1658
Print	Denny Fuller	
Company:	EMA	
Signature		
Print		
Company:		

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

* 8141 Diazinon, Chlorpyrifos, Malathion

Total Nitrogen - 1 preserved
1 unpreserved

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 d of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

19 June 2009

D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log#: 0906166

Project Name: Encina Wastewater Authority

Enclosed with this letter are the test results performed by subcontract laboratory for the following analyses:

- Nitrogen, TKN - Liquid

The samples were received by EnviroMatrix Analytical, Inc. intact and with chain-of-custody documentation. The test results and pertinent quality assurance/quality control data are listed on the attached tables.

I certify that this data report is in compliance both technically and for completeness. Release of the data contained in this hard copy data report has been authorized by the following signature.

Dan Verdon
Laboratory Director

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project: 0906166

Sampled: 06/03/09
Received: 06/10/09
Issued: 06/19/09 16:18

NELAP #01108CA California ELAP#2706 CSDLAC #10256 AZ #AZ0671 NV #CA01531

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
ISF1190-01	0906166-01	Water
ISF1190-02	0906166-02	Water
ISF1190-03	0906166-03	Water

Reviewed By:

TestAmerica Irvine

D.J. Watson
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906166
Report Number: ISF1190

Sampled: 06/03/09
Received: 06/10/09

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: ISF1190-01 (0906166-01 - Water)					**Sampled: 06/03/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**2.2**	1	6/17/2009	6/17/2009	
Sample ID: ISF1190-02 (0906166-02 - Water)					**Sampled: 06/03/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**0.84**	1	6/17/2009	6/17/2009	
Sample ID: ISF1190-03 (0906166-03 - Water)					**Sampled: 06/03/09**			
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F17124	0.50	**1.4**	1	6/17/2009	6/17/2009	

TestAmerica Irvine

D.J. Watson
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906166
Report Number: ISF1190

Sampled: 06/03/09
Received: 06/10/09

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 9F17124 Extracted: 06/17/09										
Blank Analyzed: 06/17/2009 (9F17124-BLK1)										
Total Kjeldahl Nitrogen	ND	0.50	mg/l							
LCS Analyzed: 06/17/2009 (9F17124-BS1)										
Total Kjeldahl Nitrogen	19.9	0.50	mg/l	20.0		99	85-120			
Matrix Spike Analyzed: 06/17/2009 (9F17124-MS1)					**Source: ISF1760-04**					
Total Kjeldahl Nitrogen	10.9	0.50	mg/l	10.0	1.68	92	85-120			
Matrix Spike Dup Analyzed: 06/17/2009 (9F17124-MSD1)					**Source: ISF1760-04**					
Total Kjeldahl Nitrogen	10.9	0.50	mg/l	10.0	1.68	92	85-120	0	15	

TestAmerica Irvine

D.J. Watson
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.	Project ID: 0906166	
4340 Viewridge Avenue, Suite A		Sampled: 06/03/09
San Diego, CA 92123	Report Number: ISF1190	Received: 06/10/09
Attention: Jamey A. Cote		

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica Irvine

D.J. Watson
Project Manager

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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906166
Report Number: ISF1190

Sampled: 06/03/09
Received: 06/10/09

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
SM4500-Norg C	Water		X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Irvine

D.J. Watson
Project Manager

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SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906166

IS F1190

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jamey A. Cote

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906166-01	**Water**	**Sampled:06/03/09 12:00**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 12:00		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906166-02	**Water**	**Sampled:06/03/09 11:15**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 11:15		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906166-03	**Water**	**Sampled:06/03/09 14:30**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 14:30		
Containers Supplied:				
125 ml Poly - Unpres (G)				

Send report to jbeyer@enviromatrixinc.com, llwick@enviromatrixinc.com, and reports@enviromatrixinc.com

0.0
6/11/09
5:25

Released By	Date	Received By	Date
[illegible]	6-10-09 1438	[illegible] TA.	6-10-09 14:38
[illegible] TA.	6-10-09 17:55	[illegible]	6/10/09 1755
[illegible]			1.6 C°

CA-93001 CA 93011

Phone: 760 - 438 - 3941 Fax: 760 ~~438~~ 476-9852

Email:

Billing Address: D-MAX

* Please Bill to D-MAX

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticide	608 / 8082 (Polychlorinated Biphen	8141 (Organophosphorus Pesticides	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTL	TCLP (RCRA) □ Metals □ Organ	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal (	Colilert, T+E.Coli □ P/A □ Enumer
1	AHC-10	6/3/09	12:00	SW	4															
2	AHC-20	6/3/09	11:15	SW	4															
3	AH-21	6/3/09	14:30	SW	4 (67)	X						X						X		
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: ☒ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY		DATE/TIME
Signature	Rachael Mora	6/4/09 1445
Print	Rachael Mora	
Company:	Encino Waste Water Authority	
Signature	Danny Fuller	6/4/09 1658
Print		
Company:	EMA	
Signature		
Print		
Company:		

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt: _____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

* 8141 Diazinon, Chlorpyrifos, Malathion

Total Nitrogen - 1 preserved
1 unpreserved

[1]Additional costs may apply, consult a project manager for details. White- EMA Canary - Accounting Pink - Client (v

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906166

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jamey A. Cote

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906166-01	**Water**	**Sampled:06/03/09 12:00**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 12:00		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906166-02	**Water**	**Sampled:06/03/09 11:15**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 11:15		
Containers Supplied:				
125 ml Poly - H2SO4 (C)				
Sample ID: 0906166-03	**Water**	**Sampled:06/03/09 14:30**		
Nitrogen, TKN - L	~~06/16/09 16:00~~	07/01/09 14:30		
Containers Supplied:				
125 ml Poly - Unpres (G)				

Send report to jbeyer@enviromatrixinc.com, llvick@enviromatrixinc.com, and reports@enviromatrixinc.com

Released By	Date	Received By	Date
[illegible]	6-10-09 1438	Edwin Figueroa TA.	6-10-09 14:38

EnviroMatrix Analytical, Inc.

26 June 2009

D-Max Engineering
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log #: 0906246

Project Name: Encina Wastewater Authority

Enclosed are the results of analyses for samples received by the laboratory on 06/08/09 16:04. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-4	0906246-01	Stormwater	06/08/09 10:45	06/08/09 16:04
SS-1	0906246-02	Stormwater	06/08/09 12:50	06/08/09 16:04
BVC-3	0906246-03	Stormwater	06/08/09 12:00	06/08/09 16:04

NOTE: The TKN analysis was performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									
Cadmium	ND	0.001	mg/l	1	9061707	06/17/09	06/18/09	EPA 200.8	
Chromium	ND	0.005	"	"	"	"	"	"	
Copper	**0.001**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									
Cadmium	ND	0.001	mg/l	1	9061707	06/17/09	06/18/09	EPA 200.8	
Chromium	ND	0.005	"	"	"	"	"	"	
Copper	**0.004**	0.001	"	"	"	"	"	"	
Lead	ND	0.001	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061007	06/10/09	06/12/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*132 %*	*60-130*		"	"	"	"	*S-02, S-04*
Surrogate: Tribuytlphosphate		*112 %*	*60-130*		"	"	"	"	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									**GC-05**
Chlorpyrifos	ND	0.05	ug/l	1	9061007	06/10/09	06/12/09	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*84 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*108 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (0906246-01) Stormwater Sampled: 06/08/09 10:45 Received: 06/08/09 16:04									
Nitrate/Nitrite as N	**0.07**	0.05	mg/l	1	9060902	06/09/09	06/09/09	SM4500 NO3 E	
Total Nitrogen	**1.8**	0.5	"	"	9062232	06/19/09	06/19/09	Calculation	
Oil & Grease	ND	5	"	"	9061132	06/11/09	06/11/09	EPA 1664A	
SS-1 (0906246-02) Stormwater Sampled: 06/08/09 12:50 Received: 06/08/09 16:04									
Oil & Grease	ND	5	mg/l	1	9061132	06/11/09	06/11/09	EPA 1664A	
BVC-3 (0906246-03) Stormwater Sampled: 06/08/09 12:00 Received: 06/08/09 16:04									
Nitrate/Nitrite as N	**2.37**	0.25	mg/l	5	9060902	06/09/09	06/09/09	SM4500 NO3 E	
Total Nitrogen	**3.5**	0.5	"	1	9062232	06/19/09	06/19/09	Calculation	
Orthophosphate as P	**0.10**	0.05	"	"	9061014	06/10/09	06/10/09	SM4500 P E	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061707										
Blank (9061707-BLK1)				Prepared: 06/17/09	Analyzed: 06/18/09					
Cadmium	ND	0.001	mg/l							
Chromium	ND	0.005	"							
Copper	ND	0.001	"							
Lead	ND	0.001	"							
Zinc	ND	0.020	"							
LCS (9061707-BS1)				Prepared: 06/17/09	Analyzed: 06/18/09					
Cadmium	0.051	0.001	mg/l	0.0500		103	85-115			
Chromium	0.051	0.005	"	0.0500		103	75-125			
Copper	0.052	0.001	"	0.0500		104	85-115			
Zinc	0.052	0.020	"	0.0500		105	85-115			
Lead	0.053	0.001	"	0.0500		106	75-125			
LCS Dup (9061707-BSD1)				Prepared: 06/17/09	Analyzed: 06/18/09					
Chromium	0.051	0.005	mg/l	0.0500		103	75-125	0.06	20	
Cadmium	0.052	0.001	"	0.0500		103	85-115	0.2	20	
Zinc	0.054	0.020	"	0.0500		108	85-115	3	20	
Copper	0.052	0.001	"	0.0500		104	85-115	0.2	20	
Lead	0.052	0.001	"	0.0500		105	75-125	0.8	20	
Duplicate (9061707-DUP1)		**Source: 0906342-03**		Prepared: 06/17/09	Analyzed: 06/18/09					
Zinc	0.002	0.020	mg/l		0.0005			106	20	QR-04
Cadmium	ND	0.001	"		ND				20	
Chromium	ND	0.005	"		ND				20	
Copper	ND	0.001	"		ND				20	
Lead	ND	0.001	"		ND				20	
Matrix Spike (9061707-MS1)		**Source: 0906342-03**		Prepared: 06/17/09	Analyzed: 06/18/09					
Copper	0.052	0.001	mg/l	0.0500	ND	104	70-130			
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130			
Lead	0.051	0.001	"	0.0500	ND	103	75-125			
Zinc	0.051	0.020	"	0.0500	0.0005	102	70-130			
Chromium	0.050	0.005	"	0.0500	ND	100	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061707										
Matrix Spike Dup (9061707-MSD1)		**Source: 0906342-03**		Prepared: 06/17/09	Analyzed: 06/18/09					
Chromium	0.050	0.005	mg/l	0.0500	ND	99	75-125	0.3	20	
Zinc	0.051	0.020	"	0.0500	0.0005	102	70-130	0.08	20	
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130	0.2	20	
Lead	0.053	0.001	"	0.0500	ND	106	75-125	3	20	
Copper	0.052	0.001	"	0.0500	ND	104	70-130	0.06	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061007										
Blank (9061007-BLK1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.270*		*"*	*0.250*		*108*	*60-130*			
Surrogate: Tribuytlphosphate	*0.240*		*"*	*0.250*		*96*	*60-130*			
LCS (9061007-BS1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.39	0.10	ug/l	0.500		78	60-130			
Diazinon	0.46	0.05	"	0.500		92	60-130			
Ethoprop	0.50	0.05	"	0.500		100	60-130			
Mevinphos	0.39	0.25	"	0.500		78	60-130			
Methyl parathion	0.41	0.10	"	0.500		82	60-130			
Phorate	0.41	0.05	"	0.500		82	60-130			
Ronnel	0.47	0.25	"	0.500		94	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
LCS Dup (9061007-BSD1)				Prepared: 06/10/09 Analyzed: 06/12/09						
Bolstar	0.40	0.10	ug/l	0.500		80	60-130	3	30	
Diazinon	0.45	0.05	"	0.500		90	60-130	2	30	
Ethoprop	0.50	0.05	"	0.500		100	60-130	0	30	
Mevinphos	0.43	0.25	"	0.500		86	60-130	10	30	
Methyl parathion	0.40	0.10	"	0.500		80	60-130	2	30	
Phorate	0.43	0.05	"	0.500		86	60-130	5	30	
Ronnel	0.46	0.25	"	0.500		92	60-130	2	30	
Trichlorinate	0.46	0.05	"	0.500		92	60-130	2	30	
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9060902										
Blank (9060902-BLK1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (9060902-BS1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		98	80-120			
LCS Dup (9060902-BSD1)				Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.50	0.05	mg/l	0.500		101	80-120	3	20	
Duplicate (9060902-DUP1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.01	0.05	mg/l		0.01			26	20	QR-04
Matrix Spike (9060902-MS1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.48	0.05	mg/l	0.500	0.01	93	80-120			
Matrix Spike Dup (9060902-MSD1)		**Source: 0906245-03**		Prepared & Analyzed: 06/09/09						
Nitrate/Nitrite as N	0.44	0.05	mg/l	0.500	0.01	86	80-120	8	20	
Batch 9061014										
Blank (9061014-BLK1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	ND	0.05	mg/l							
LCS (9061014-BS1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.55	0.05	mg/l	0.500		111	80-120			
LCS Dup (9061014-BSD1)				Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.56	0.05	mg/l	0.500		111	80-120	0.5	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering
Project Name: Encina Wastewater Authority

EMA Log #: 0906246

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9061014										
Duplicate (9061014-DUP1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.11	0.05	mg/l		0.10			11	20	
Matrix Spike (9061014-MS1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.62	0.05	mg/l	0.500	0.10	106	80-120			
Matrix Spike Dup (9061014-MSD1)		**Source: 0906246-03**		Prepared & Analyzed: 06/10/09						
Orthophosphate as P	0.63	0.05	mg/l	0.500	0.10	107	80-120	1	20	
Batch 9061132										
Blank (9061132-BLK1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	ND	5	mg/l							
LCS (9061132-BS1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		84	78-114			
LCS Dup (9061132-BSD1)				Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0		82	78-114	2	20	
Matrix Spike (9061132-MS1)		**Source: 0906245-01**		Prepared & Analyzed: 06/11/09						
Oil & Grease	33	5	mg/l	40.0	ND	83	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: D-Max Engineering Project Name: Encina Wastewater Authority	**EMA Log #: 0906246**

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
GC-05	Results confirmed by GCMS.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: Fax:

Email:

Billing Address:

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 X	8015B (TPH) □ Gas □ Diesel □ E	624/8260 (VOC) Full BTXE MT	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesti	608 / 8082 (Polychlorinated Biph	8141 (Organophosphorus Pesticic	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □N	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Org	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Feca
1	BV-4	6/8/09	1045	SW	6	X						X						X	
2	SS-1	6/8/09	12:50	SW	4	X						X						X	
3	BVC-3	6/8/09	12:00	SW	3														
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME
Signature	6/9/09 1520
Print JLAW	
Company: EMA	
Signature Kelly Lenden	6/9/09 16:04
Print Kelly Lenden	
Company: EMA	
Signature	
Print	
Company:	

Project/Sample Comments:

Bill TO DMAX

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T = 9°C Blue Ice

23 June 2009

D-Max Engineering, Inc.
Attn: Arsalan Dadkhah
7220 Trade Street, Suite 119
San Diego, California 92121

EMA Log#: 0906246

Project Name: Encina Wastewater Authority
Project Number: None

Enclosed with this letter are the test results performed by subcontract laboratory for the following analyses:

- Nitrogen, TKN - Liquid

The samples were received by EnviroMatrix Analytical, Inc. intact and with chain-of-custody documentation. The test results and pertinent quality assurance/quality control data are listed on the attached tables.

I certify that this data report is in compliance both technically and for completeness. Release of the data contained in this hard copy data report has been authorized by the following signature.

Dan Verdon
Laboratory Director

4340 Viewridge Avenue, Suite A • San Diego, California 92123 • (858) 560-7717 • Fax (858) 560-7763
Analytical Chemistry Laboratory

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Avenue. Suite 100, Irvine, CA 92614 (949) 261-1022 Fax:(949) 260-3297

LABORATORY REPORT

Prepared For: EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project: 0906246

Sampled: 06/08/09
Received: 06/12/09
Issued: 06/23/09 16:04

NELAP #01108CA California ELAP#2706 CSDLAC #10256 AZ #AZ0671 NV #CA01531

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

LABORATORY ID	CLIENT ID	MATRIX
ISF1415-01	0906246-01	Water
ISF1415-02	0906246-03	Water

Reviewed By:

TestAmerica Irvine

D.J. Watson
Project Manager

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EnviroMatrix Analytical, Inc.
4340 Viewridge Avenue, Suite A
San Diego, CA 92123
Attention: Jamey A. Cote

Project ID: 0906246
Report Number: ISF1415

Sampled: 06/08/09
Received: 06/12/09

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: ISF1415-01 (0906246-01 - Water)								
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F19121	0.50	**1.7**	1	6/19/2009	6/19/2009	
Sample ID: ISF1415-02 (0906246-03 - Water)								
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-Norg C	9F19121	0.50	**1.1**	1	6/19/2009	6/19/2009	

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 9F19121 Extracted: 06/19/09										
Blank Analyzed: 06/19/2009 (9F19121-BLK1)										
Total Kjeldahl Nitrogen	ND	0.50	mg/l							
LCS Analyzed: 06/19/2009 (9F19121-BS1)										
Total Kjeldahl Nitrogen	20.2	0.50	mg/l	20.0		101	85-120			
Matrix Spike Analyzed: 06/19/2009 (9F19121-MS1)					**Source: ISF1413-02**					
Total Kjeldahl Nitrogen	12.0	0.50	mg/l	10.0	3.08	90	85-120			
Matrix Spike Dup Analyzed: 06/19/2009 (9F19121-MSD1)					**Source: ISF1413-02**					
Total Kjeldahl Nitrogen	12.0	0.50	mg/l	10.0	3.08	90	85-120	0	15	

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Attention: Jamey A. Cote

Project ID: 0906246
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Sampled: 06/08/09
Received: 06/12/09

DATA QUALIFIERS AND DEFINITIONS

ND Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.

RPD Relative Percent Difference

TestAmerica Irvine

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Attention: Jamey A. Cote

Project ID: 0906246

Report Number: ISF1415

Sampled: 06/08/09
Received: 06/12/09

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
SM4500-Norg C	Water		X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Irvine

D.J. Watson
Project Manager

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IS F1415

SUBCONTRACT ORDER

EnviroMatrix Analytical, Inc.

0906246

SENDING LABORATORY:

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123
Phone: (858) 560-7717
Fax: (858) 560-7763
Project Manager: Jamey A. Cote

RECEIVING LABORATORY:

Test America-Irvine [S]
17461 Derian Avenue, Suite 100
Irvine, California 92614-5817
Phone :949-261-1022
Fax: 949-261-1228

STANDARD TAT

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 0906246-01	**Water**	**Sampled:06/08/09 10:45**	[redacted]	
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/06/09 10:45		
Containers Supplied:				
250 mL Poly H2SO4 (E)				
Sample ID: 0906246-03	**Water**	**Sampled:06/08/09 12:00**	[redacted]	
Nitrogen, TKN - L	~~06/15/09 16:00~~	07/06/09 12:00		
Containers Supplied:				
250 mL Poly H2SO4 (C)				

Send report to jbeyer@enviromatrixinc.com, llwick@enviromatrixinc.com and reports@enviromatrixinc.com

Aug 6/13/09 7:30

Released By	Date	Received By	Date
	6/12/09 1319	Silvia Figueroa TA.	6-12-09 13:19
Silvia Figueroa TA.	6-12-09 18:30		4/12/09 1820
Released By	Date	Received By	Date
FF031			3-1 50

Page 1 of 1

Phone: Fax:

Email:

Billing Address:

Project ID:

Project #: PO #:

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 X 1664	8015B (TPH) □ Gas □ Diesel □ Ext	624/8260 (VOC) Full BTXE MTBE	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticide	608 / 8082 (Polychlorinated Biphenyl	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC	TCLP (RCRA) □ Metals □ Organic	Cd Cr Cu Pb Ni Ag Zn X	Coliform, □ Total (MTF) □ Fecal (M	Colilert, T+E.Coli □ P/A □ Enumera
1	BV-4	6/8/09	1045	SW	6	X						X						X		
2	SS-1	6/8/09	12:50	SW	4	X						X						X		
3	BVC-3	6/8/09	12:00	SW	3															
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
Signature	6/8/09 1520	Signature	
Print JLAu		Print	
Company: EMA		Company:	
Signature Kelly Leander	6/8/09 16:04	Signature	
Print Kelly Leander		Print	
Company: EMA		Company:	
Signature		Signature	
Print		Print	
Company:		Company:	

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

Bill TO DMAX

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T = 9°C Blue Ice

Appendix C
Field Data Sheets

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	AHC-10		Latitude	33.15~~5~~ 68	Watershed	Hydrologic Unit	904
Location	Upstream of site AC-1, Juniper Lane on east side of bridge		Longitude	-117.21756		Hydrologic Area	904.3
			TB Page	1108, B5		Hydrologic Subarea (Optional)	904.32
Date	06/03/09	Time 12:00	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology ☐ None ~~☒ Insects~~ ~~☒ Algae~~ ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☒ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 25-28

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.2	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.4	TURB (NTU)	1.88	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	6.59	MBAS (mg/L)	NA	DO (mg/L)	5.68		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	~~10~~	in
Depth		in
Velocity		ft/sec
Flow	10	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	AHC-20		Latitude	33.15000	Watershed	Hydrologic Unit	904
Location	Downstream of site AC-2, by Dawson Dr. in the canyon under a bridge		Longitude	-117.24875		Hydrologic Area	904.3
			TB Page	1107, H6		Hydrologic Subarea (Optional)	904.31
Date	06/03/09	Time 11:15	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather: ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide: ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing Tide Height: _____ ft.

Last Rain: ☒ > 72 hours ☐ < 72 hours

Rainfall: ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other

Biology: ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other crayfish

Water Flow: ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No Photo # 22-24

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.6	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.5	TURB (NTU)	~~[illegible]~~ 1.75	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.27	MBAS (mg/L)	NA	DO (mg/L)	6.71		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	38	in
Depth	.75	in
Velocity	10/10	ft/sec
Flow	89	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	AHC-21		Latitude	33.13539	Watershed	Hydrologic Unit	904
Location	Just upstream of site AH-21, at 2687 South Melrose Dr. at the Southern end of Melrose Dr.		Longitude	-117.24472		Hydrologic Area	904.3
			TB Page	1127, H1		Hydrologic Subarea (Optional)	904.31
Date	06/04/09	Time 11:20	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☐ Trash ☒ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☒ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 39-43

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.22	NH_3-N (mg/L)	NA	NO_3 (mg/L)	NA	Ortho-PO_4 (mg/L)	NA
pH (pH units)	7.6	TURB (NTU)	3.76	NO_3-N (mg/L)	NA	Ortho-PO_4-P (mg/L)	NA
COND (mS/cm)	2.53	MBAS (mg/L)	NA	DO (mg/L)	5.98		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	25	in
Depth	0.25	in
Velocity	12/10	ft/sec
Flow	23	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

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☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☐ MS4 ☒ Receiving Water

Site ID	BEC-36		Latitude	33.15937	Watershed	Hydrologic Unit	904
Location	Just upstream of site AH-36, East side of Cottontail rd., South west of Maplelaf Dr.		Longitude	-117.22533		Hydrologic Area	904.3
			TB Page	1108, A5		Hydrologic Subarea (Optional)	904.32
Date	06/04/2009	Time 12:00	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☒ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☒ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 44 - 45

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	19.5	NH3-N (mg/L)	NA	NO3 (mg/L)	NA	Ortho-PO4 (mg/L)	NA
pH (pH units)	7.8	TURB (NTU)	8.65	NO3-N (mg/L)	NA	Ortho-PO4 -P (mg/L)	NA
COND (mS/cm)	2.10	MBAS (mg/L)	NA	DO (mg/L)	5.76		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	40	in
Depth	0.5	in
Velocity	10/10	ft/sec
Flow	62	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
City of Vista
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation For _____ ☐ IC/ID Follow-Up For _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place) ☒ MS4 ☐ Receiving Water

Site ID	BVC-3		Latitude	33.18504	Watershed	Hydrologic Unit	904
Location	2150 Sunset Drive, near 1900 Via Centre, in creek to Southeast		Longitude	-117.28019		Hydrologic Area	904.2
			TB Page	1107-C2		Hydrologic Subarea (Optional)	904.21
Date	04/08/09	Time 12:00	Observer	MD/AK		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☒ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☒ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☒ Sediment/Gravel ☒ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☒ Normal ☐ Excessive ☐ Other

Biology ☐ None ☒ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☒ Other Crayfish

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	21.6	NH_3-N (mg/L)	~~0.138~~ na	NO_3 (mg/L)	na	Ortho-PO_4 (mg/L)	na
pH (pH units)	8.2	TURB (NTU)	1.97	NO_3-N (mg/L)	na	Ortho-PO_4 -P (mg/L)	na
COND (mS/cm)	1.06	MBAS (mg/L)	na	DO (mg/L)	8.83		

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	70	in
Depth	0.5	in
Velocity	10.10	ft/sec
Flow	109	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Drink bottle groupings, plastics, styrofoam, paper, spray paint cans, misc. towels and fabrics, metal parts

CITY OF VISTA
CALIFORNIA

CERTIFICATION

I certify under penalty of law that the Jurisdictional Urban Runoff Management Plan Annual Report for the Fiscal Year 2009-10 and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita Geldert

Rita Geldert
City Manager
City of Vista

September 20, 2010
Date

Lawrence D. Pierce
Director of Engineering
City of Vista

9/20/10
Date

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CITY OF VISTA

Fiscal Year 2009-10

JURMP Annual Report

Submitted September 2010

Prepared by:
City of Vista Engineering Department
Water Quality Protection Program

EXECUTIVE SUMMARY

In March of 2008, the City of Vista (City) developed and submitted its Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2007-0001 (NPDES Permit CAS0108758). This JURMP includes several new programs and updates to existing programs describing how the City of Vista will comply with the requirements in the municipal stormwater permit. This Annual Report describes program activities for Fiscal Year 2009-10: July 1, 2009 to June 30, 2010, and is the third JURMP Annual Report submitted under Order 2007-0001. The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Order R9-2007-0001. A brief synopsis of each component of the program is provided below.

Development Planning Component

The City's Development Planning Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2009-10. All development projects were required to undergo the urban runoff approval process, ensuring that projects were designed with applicable best management practices (BMPs) to mitigate urban runoff and stormwater pollution during and after construction. With the slow economy continuing this year, there were relatively few projects initiated this fiscal year, with none qualifying as priority development projects. This component also includes a program designed to ensure that all required treatment control BMPs (TCBMPs) are constructed, operating, and maintained as designed. The TCBMP program continued to improve during this Fiscal Year, including increased education and outreach to the owners of the BMPs and an improved inspection and certification program. These program improvements ensure that TCBMPs are operating and maintained effectively and that the program operates effectively and efficiently. Further detail describing the Development Planning Component of the Program can be found in Section 2.

Construction Component

The Construction Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2009-10. All projects were required to undergo the urban runoff approval process, ensuring that projects are constructed with applicable best management practices (BMPs) in place to mitigate urban runoff and stormwater pollution during construction. During the fiscal year, there were 52 sites under active construction at various times, all of which were inspected for stormwater compliance at the frequencies prescribed in the JURMP. The state of the local economy continued to present challenges to the inspectors this year in regards to idle sites. Details regarding the Construction Component can be found in Section 3. The construction inventory, inspection data, and summaries are located in Appendix B.

Municipal Component

The Municipal Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2009-10. The municipal inventory, located in Appendix C, was updated and all inspections were performed as required. All MS4 facilities and open channels in the City were inspected and cleaned as required. The street sweeping program continued to be implemented according to

the JURMP. In total, over 3500 tons of debris was removed during MS4 maintenance activities this year. This component also includes the Special Events Program. Stormwater staff participates in the Special Events Committee, allowing advanced opportunities for staff to interact with and educate applicants. This leads to a better understanding of the requirements and increased BMP implementation. All special events were reviewed and prioritized, with staff contacting and educating all applicants regarding required BMPs, and performing necessary inspections to ensure that BMPs were implemented as required. Details describing the Municipal Component are included in Section 4.

Industrial and Commercial Component

The Industrial Commercial Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2009-10. The business inventory was updated as required, totaling over 900 stationary facilities, and approximately 200 mobile businesses. This year, stormwater inspections were performed at 234 stationary facilities (25% of the inventory). These inspections also included high priority inspections required under the City's Fats, Oils, and Grease (FOG) program, leveraging the stormwater inspections program and increasing efficiency. There were 37 follow-up inspections required and performed as a result of the initial stormwater inspections. These follow-ups are detailed in Appendix D. Additionally, stormwater staff addressed 57 complaints related to industrial and commercial facilities during this fiscal year. Details further describing this component can be found in Section 5 of this report.

Residential Component

The Residential Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2009-10. In the City's JURMP, the Residential Component focuses primarily on activities that have been deemed a high threat to water quality including: vehicle and boat repair/maintenance, automobile washing, automobile parking, home and garden care activities, home care and maintenance, manure and pet waste management, private sewer laterals and septic systems, and street sweeping of private roads/streets. Because these activities occur throughout all residential areas, all residential areas are deemed a high threat to water quality. Over 700,000 pounds of household hazardous waste (HHW) generated in Vista were disposed of at the City's HHW collection center this fiscal year. Stormwater staff investigated 96 residential complaints this year, stemming from sources such as residential construction, spills, washing, and over-irrigation. Additional details about the Residential Component can be found in Section 6.

Illicit Discharge Detection and Elimination Component

The Illicit Discharge Detection and Elimination (IDDE) Component was implemented according to the JURMP and was in compliance with all Permit requirements during this fiscal year. Because of the inclusion of the Dry Weather Monitoring Program in this component, spanning May through September, it is not feasible to report on all data at this time. As allowed under the Permit, the IDDE Component will be submitted under separate cover, due by December 15, 2010.

Education Component

The Education Component was implemented according to the JURMP and was in compliance with all Permit requirements during FY 2009-10. This component addresses

education for multiple target audiences including municipal departments and personnel, new development and construction communities, industrial and commercial business owners and operators, residents, general public, and school children. Municipal training focused on staff involved in planning and construction, as there were many new requirements implemented this year, including the City's revised Standardized Urban Stormwater Mitigation Plan (SUSMP) and the new State Construction General Permit. Outreach to the construction and development community was performed primarily through one on one interaction throughout the development process. A workshop was also held prior to the rainy season to provide information for staff and the development community on BMP requirements. The business community was educated extensively via one on one interaction during inspections and follow-up investigations, as well as through complaint response efforts. Additionally, site and activity specific BMP information was provided to all inventoried facilities this year. Residents and the general public were educated through many outreach events. The City continued to utilize a contractor to perform in classroom outreach to school children as well, educating over 1300 students using the Splash Mobile Science Laboratory and the Mobile Green Machine. In each outreach effort, the City strived to ensure that the underserved target audiences were reached and the allowable discharges were addressed. The City developed new outreach brochures this year and continued to implement the Water Quality Hotline and the email address for the Water Quality Protection Program. Further details regarding outreach and education are located in Section 8.

Public Participation Component

The Public Participation Component was implemented according to the JURMP and was in compliance with all Permit requirements during FY 2009-10. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Further details regarding the Public Participation Component of the program are located in Section 9 of this report.

Fiscal Analysis Component

The Fiscal Analysis for the program this year was performed using the Standardized Fiscal Analysis Method and is in compliance with all Permit requirements. The Standardized Method provides increased detail in the operating expenses, looking back at the estimated expenditures for the program over the past year. This method provides estimated costs for each component of the program. Using the this method, the FY 2009-10 costs for the program were approximately $ 2,750,000 with the majority of the costs in municipal and inspections components of the program. Details of the fiscal analyses performed can be found in Section 10 of this report.

Effectiveness Assessment Component

The Effectiveness Assessment Component was performed according to the JURMP and is in compliance with all Permit requirements. This year's assessment continued to focus on the individual components of the program and utilized levels 1-4 of the assessment matrix, looking at compliance, changes in knowledge and behavior, and load reductions. BMPs specific to each component were examined to determine whether they were effective or needed some modifications. They were also examined for programmatic efficiencies where possible. Where feasible, analysis of MS4 and receiving water quality was also provided. Significant findings of the effectiveness assessment include: positive impacts of inspections on the operation and maintenance of treatment control BMPs; the positive effect of preconstruction meetings related to BMP implementation on construction sites; load reductions associated with MS4 maintenance; the business inspection program, while in compliance with permit requirements, does not always result in full compliance at commercial sites from year to year; residential areas and activities appear to be well focused; and the education and outreach program appears to be effective and well focused. Water quality assessments are consistent with findings at the watershed level. High priority water quality problems identified include bacteria and nutrients during dry weather and bacteria and sediment during wet weather. The assessment then attempts to relate JURMP programs back to water quality findings, however this linkage is not always clear. Further details on the effectiveness assessments can be found in Section 11.

Special Investigations

During 2009-2010, two special investigations were undertaken to address water quality concerns. The first was related to a Total Maximum Daily Load for Agua Hedionda Lagoon for bacteria and sediment. Through a cooperative stakeholder process, the agencies in the watershed worked with staff from the Regional Water Quality Control Board to develop the TMDLs. Upon further investigation of past and current water quality data, it was determined that the lagoon was not impaired for bacteria or sediment and delisting was requested for both constituents. At this time, delisting has been approved for both by the Regional and State Water Boards and is awaiting approval from the Unites States Environmental Protection Agency. The second project is related to a more in depth look at water quality in the City's portion of the San Luis Rey Watershed. A bacteria TMDL is pending at the mouth of the San Luis Rey River, prompting the City to gain a better understanding of the details in land use and water quality in the area. Full details of the projects are included in Section 12.

Modifications to the JURMP

There were no modifications to the JURMP during this fiscal year.

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1.0 INTRODUCTION

1.1 BACKGROUND

In 2002, the City of Vista (City) developed a Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2001-01 (NPDES Permit CAS0108758). On January 24, 2007, an updated permit, Order No. R9-2007-0001 (Order) was adopted. This Order requires the City and each Copermittee (as defined in Section B of the Order) to update its JURMP to comply with the new requirements, and to annually submit reports on JURMP implementation. On March 24, 2008, the City submitted an updated JURMP to the RWQCB and began implementation.

This Annual Report provides information on JURMP implementation for FY 2009-10: July 1, 2009, to June 30, 2010.

1.2 PURPOSE AND OBJECTIVES

The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Order R9-2007-0001. This annual report describes the activities conducted by the City during the Fiscal Year and reporting period of July 1, 2009 through June 30, 2010. The City's program is described in its JURMP, dated March 2008, and in updates to the JURMP included in this Report. This annual report is presented in the standardized format developed collectively by the Copermittees, outlined below.

Section 1	Introduction
Section 2	Development Planning Component
Section 3	Construction Component
Section 4	Municipal Component
Section 5	Industrial and Commercial Component
Section 6	Residential Component
Section 7	Illicit Discharge Detection and Elimination Component
Section 8	Education Component
Section 9	Public Participation Component
Section 10	Fiscal Analysis Component
Section 11	Effectiveness Assessment Component
Section 12	Special Investigations
Section 13	Modifications to the JURMP
Section 14	Conclusions and Recommendations
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2.0 Development Planning Component

2.1 Introduction

The City continued to implement the Land-Use Planning and Development Components of the JURMP to reduce the impacts of new development and redevelopment on storm water quality. Table 2.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order R9-2007-0001.

Table 2.1 Annual Reporting Requirements, Development Planning Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	A description of any amendments to the General Plan, the environmental review process, development project approval processes, or development project requirements.	1	Confirmation	Confirmed	2.2.2, 2.3
2	Confirmation that all development projects were required to undergo the Copermittee's urban runoff approval process and meet the applicable project requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
3	A listing of the development projects to which SUSMP requirements were applied.	1	Confirmation	See Appendix A-1 for listing	
4	Confirmation that all applicable SUSMP BMP requirements were applied to all priority development projects, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
5	At least one example of a priority development project that was conditioned to meet SUSMP requirements and a description of the required BMPs.	1	Confirmation	Not Applicable for this Reporting Period	
6	A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.	1	Confirmation	2.4.3.1	
7	An updated treatment control BMP inventory.	1	Confirmation	See Appendix A-2	
8	The number of treatment control BMPs inspected, including a summary of inspection results and findings.	1	Confirmation	143 BMPs inspected	Appendix A- 3
9	A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.	1	Confirmation	See Section 2.4.3.2.2	
10	Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.	1	Confirmation	2.4.3.1	
11	A listing of any projects which received a SUSMP waiver.	1	Confirmation	No Waiver Program In Place - No waivers issued	
12	A description of implementation of any SUSMP waiver mitigation program.	1	Confirmation		
13	A description of Hydromodification Management Plan (HMP) development collaboration and participation.	1	Confirmation	See Section 2.4.3.3	

14	A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.	1	Confirmation	Since the interim HMP requirements took effect, there have been no development projects that trigger HMP requirements (all were less than 50 acres)	
15	A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.	1	Confirmation		
16	A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.	1	Confirmation		
17	The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	Six Notices of Violation	2.4.3.4

2.2 Land Use Planning

2.2.1 Source Characterization

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are typically associated with development as defined in the City's JURMP and Standards Manual. As a reflection of the economic conditions of the past several years, land development activities within the City have been dramatically reduced. This has a direct impact on this particular source, resulting in reduced project submittals, reviews and ultimately, projects being constructed.

2.2.2 Program Implementation

The City's General Plan update was initiated in 2007 and continues to make progress towards a Spring 2011 completion following a draft to be released in December 2010. Up-to-date information regarding the General Plan update, Vista 2030, can be found at the City's website at www.cityofvista.com under the Community Development web pages.

2.3 Environmental Review Process

The City's environmental review process incorporates a review of Low Impact Development design measures consistent with Order R9-2007-0001 permit requirements effective March 2008 as stated in the City's 2008 JURMP. During the reporting period the environmental review process has not changed and remains as stated below:

> The City's Environmental Review Process begins with the Initial Study Checklist (CEQA Guidelines, Appendix G). Based on the results of the checklist, the City will require the project applicant to provide additional studies to elaborate on the environmental impacts or recommend denial of the permit that the project applicant is seeking.

2.4 Development Project Approval and Verification Process

2.4.1 Source Characterization

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these

sources are typically associated with development as defined in the City's JURMP and Standards Manual.

2.4.2 Best Management Practice Requirements

Since the development and submittal of the City's 2008 JURMP, there have been no modifications to the BMP requirements for land development projects. However, during the reporting period the City was involved in the final revisions to the Regional Model SUSMP. Based on the approved Regional Model SUSMP, the City updated the Stormwater Standards Manual in order to implement the new requirements in March 2010.

2.4.3 Program Implementation

2.4.3.1 SUSMP

The City maintains listings of development projects that have been initiated and completed during the reporting period. A Storm Water Applicability Checklist is a required submittal during the project application process as a part of the urban runoff approval process. The results of the checklist determine the post-construction requirements for the project. Projects are required to submit a Water Quality Technical Report (WQTR) that describes how the project is meeting the storm water requirements.

City project reviewers do not approve construction drawings until the proposed BMPs included in the WQTR are incorporated onto the plans. This system is in place to ensure that the projects incorporate all requirements of the urban runoff approval process. The tracking system in place to ensure that this process is implemented is an Accela database which was initiated in January 2008.

During FY 2009-10, the City reviewed the seven private development project applications as a part of the urban runoff approval process. Of the projects, ***none*** were determined to be priority development projects. Because there were no priority development projects approved this fiscal year, an example project is not included in this report. For an example of a previous project that was a priority development project, please refer to the City's Annual Report for FY 2008-09. As stated above, the economic conditions of the past several years has resulted in a dramatic reduction of land development activities within the City. Although none were PDPs, all projects incorporated LID site design and source control BMPs as required.

The City also evaluated all of its Capital Improvement Program (CIP) Projects as part of the urban runoff approval process. During the reporting period, there were no projects that were determined to be priority development projects.

The City's process continues with project completion. After projects are complete but prior to occupancy, the City verifies the proper installation and construction of all required post-construction BMPs. BMPs are verified in the field by an Associate Engineer in the Land Development Division and are confirmed on the as-built plans. Once the as-built plans are received, the engineer notifies the Senior Environmental Specialist to convert the newly constructed BMP from the pending list to the active inventory for treatment control BMPs. This process is performed for all priority development projects prior to occupancy.

As a result of the urban runoff approval process, no projects received a SUSMP waiver during FY 2009-10. The City does not have a waiver program for SUSMP requirements. Additionally, no projects were allowed to implement low efficiency treatment control BMPs for their projects unless they were used in conjunction with a medium or high efficiency BMPs.

As a part of its SUSMP process, the City developed and utilizes a template BMP Plan Sheet to be used during the development phase of a project. This template is used by both private and public development projects and is available in both hard copy or electronic versions for the development community to use.

2.4.3.2 Treatment Control

During the reporting period, the City, through its inspections and annual verification program, verified that all approved and inventoried TCBMPs were maintained and operating effectively in removing pollutants from stormwater.

City staff schedules in the inspections and verifications during the spring and summer months to ensure compliance with the Permit to optimize TCBMP functionality prior to the rainy season. Inspections and notifications to responsible parties are conducted at the end of each fiscal year and follow-up inspections and review of annual certification forms are conducted at the beginning of the next fiscal year. Table 2.2 is the current schedule of the City's TCBMP program activities. Detailed information on these activities is provided Sections 2.4.3.2.2 (Annual Verification) and 2.4.3.2.3 (Annual Inspections).

Table 2.2 TCBMP Program Schedule of Activities (FY 09-10 and FY 10-11).

	FY 09-10	FY 10-11
Inspections	June	
Notification Letter	June	
Follow-up Inspections and Review of Annual Certification Forms		July - September

2.4.3.2.1 Inventory

The City uses a watershed-based inventory database to track the inventory of private and public treatment control BMPs (TCBMPs) and their maintenance and functionality. The City's current watershed-based TCBMP inventory for private development projects includes 65 development project sites, including 11 sites added during FY 2009-10. These projects contain 271 approved TCBMPs. Appendix A-2 contains the City's current TCBMP inventory for private development as well as a summary of the verification and inspection results.

Similarly, the City annually updates its inventory with public projects that include TCBMPs. During FY 2009-10, several priority projects were added to the inventory to begin tracking maintenance and functionality of the City owned TCBMPs. The project sites added to the inventory during the reporting period include: 1) Moonlight Amphitheatre Improvements; 2) Fire Station No. 5; 3) Fire Station No. 6; 4) Vons Shopping Center and; 5) Vista Civic Center. The municipal treatment control inventory is included in Appendix A-3. The inventory is comprised of eight project sites containing

29 approved TCBMPs. All municipal treatment control BMPs are annually inspected, cleaned, and certified as described in Table 4.2 of the 2008 JURMP.

As required under Order R9-2007-0001, the City is required to prioritize all projects with approved TCBMPs into high, medium, and low categories which then determine the frequencies of inspections. The City revised its process for prioritizing project sites in FY 2008-09 and included a copy of the process in the JURMP Revisions section of FY 2008-09 JURMP Annual Report. City staff followed this process in prioritizing all new projects during the reporting period.

2.4.3.2.2 Annual Verifications

The City continued its annual verification process of TCBMPs during the reporting period. The Order requires annual verification of effective operation and maintenance by the party responsible for maintenance. Responsible parties are required to submit an annual certification form verifying effective operation and maintenance of TCBMPs.

The certification form process includes providing annual information on the maintenance activities that were conducted for the TCBMPs and signing the certification. Signature means the responsible parties are certifying that the TCBMPs operated effectively throughout the specified one year certification period. Typically, the City mails out a letter and blank certification form in advance of the submittal deadline reminding responsible parties of the certification requirements. During the reporting period, the City had set the submittal deadline for August 30th 2009 which covered the one year time period between August 30th, 2008 and August 30th, 2009.

The returned forms and accompanying documentation (invoices, maintenance records, and photographs) are reviewed by City staff to evaluate the validity of the form and, to the extent possible, the effectiveness of the TCBMPs in treating runoff. At sites where certification forms are deemed inaccurate or invalid the City investigates the validity of the information provided and may require follow-up actions by the responsible parties. These investigative activities include communicating with the property owner to revise the certification form and/or a follow-up site inspection by City staff to evaluate the functionality and proper maintenance of the TCBMPs.

The City received 100 percent of the annual certification forms (including private and public sites) that were required to be submitted to the City during the reporting period. Staff conducted its review of all certification forms and documentation and found all project sites to be in compliance.

In order to ensure that responsible parties are informed of the verification requirements, the City has an information packet that is mailed to new private project sites. The packets provide educational information about the City's TCBMP maintenance and verification requirements. The City added 11 private project sites to the inventory during the reporting period and mailed out packets that included:

1) Letter w/ "Frequently Asked Questions"
2) Site TCBMP list
3) Blank Annual Certification Form
4) Site Map (if applicable)
5) Storm Drain BMP Maintenance Agreement (if applicable)
6) TCBMP Operation and Maintenance Guidelines

The City has changed its annual certification deadline from August 30th to July 30th. On June 24th, 2010, the City mailed out to responsible parties a letter and blank certification form informing them of the July 30th, 2010 annual certification deadline. This letter was also used to address any BMP deficiencies identified during the annual inspections conducted in June 2010. Results pertaining to the required annual inspections are included in section 2.4.3.2.3 below and in Appendix A-2.

2.4.3.2.3 Annual Inspections

During the reporting period the City conducted its required annual inspections of private and public project sites to ensure that the TCBMPs were operating effectively prior to the rainy season. Of the 66 inventoried private TCBMP project sites, City staff inspected 25 sites in June 2010, including 17 high threat to water quality, seven medium threat to water quality, and one low threat to water quality sites. City staff also inspected all of its public TCBMP project sites including four high threats to water quality, three medium threats to water quality, and one low threat to water quality sites. The number of projects inspected met the JURMP (and Order R9-2007-0001) inspection requirements. Table 2.3 below contains these minimum requirements and the numbers of inspections performed to meet these requirements.

Table 2.3 TCBMP Inspection Requirements

Project Priority	Inspections Required per Permit (Percentage)	Inspections Required per Permit (Number)	Inspections Performed (Number)
High	100%	21	21
High/Med/Low	20% of inventory	14	29
	50%with drain inserts*	22	24

*14 high priority sites inspected have drainage inserts and count toward the requirement to inspect 50% of the sites with these types of BMPs. Additionally, 7 medium priority sites inspected have drain inserts. The City inspected an additional 3 sites with drain inserts. Combining the 3 sites with the high and medium priority sites inspected, a total of 24 sites with drain inserts were inspected.

During inspections, City staff documented the conditions of each TCBMP through photographs and completion of the City's TCBMP Inspection (Appendix A-4). As a result of the inspections in June 2010, City staff identified TCBMP deficiencies at 18 private TCBMP project sites.

The majority of the BMP deficiencies were associated with drain inserts and included excessive debris buildup and structural issues. The City also identified BMP deficiencies at two public sites which included sediment buildup at a swale and malfunctioning drain inserts. The City implemented appropriate actions to correct all deficiencies during the reporting period.

On June 24th, 2010, a letter and blank certification form were mailed to responsible parties of all inventoried sites to inform them of the July 30th, 2010 submittal deadline to annually certify their TCBMPs. In the letter, the City also included the requirement to correct any BMP deficiency (if applicable) observed during the inspection. Follow-up on these corrective actions are taking place in the current reporting period and will be reported in the annual report for FY 2010-11. Inspection results are summarized in the TCBMP Inventory, Appendix A-2.

City Confirmation of Required Corrective Actions Identified in FY 08-09

As a result of the annual inspections conducted in FY 2008-09, the City identified BMP deficiencies at six private project sites. City staff conducted the follow-up activities at these sites during the FY 2009-10 reporting period and confirmed that effective corrective actions were implemented at all six sites.

2.4.3.3 Hydromodification Management Plan

The City has been involved in the development of the regional Hydromodification Management Plan (HMP). During the reporting period, City staff was involved in the two workgroups formed to develop the HMP. One workgroup is a Copermittee group whose responsibilities are to oversee the HMP development and guide the consultant team's work. The other workgroup is the Technical Advisory Committee whose responsibilities include providing technical guidance to the consultant team. The City is an active participant in both groups and in the review of all documents that are generated as a part of the HMP development.

During FY 2009-10, the City did not have any priority development projects greater than 50 acres triggering interim HMP requirements.

2.4.3.4 Enforcement

During the reporting period, City staff issued Notices of Violations to the responsible parties at six project sites for failing to submit the required annual certification form by the requested deadline of August 30, 2009. Further enforcement was not necessary as the City received the required documentation for all of these project sites prior to October 1, 2009.

Enforcement actions were conducted at six other project sites during the reporting period as a result of BMP maintenance deficiencies observed by City staff. At one site, drain inserts were absent of necessary filter fabric, while, at the other five sites, vegetated swales were not being properly maintained as evidence of insufficient vegetation and/or denuded areas. City initiated enforcement at all six sites resulting in two Notice of Violations and four warnings. Staff confirmed that effective corrective actions were implemented at four of these projects sites.

At the remaining two sites initial efforts to implement appropriate corrective actions at vegetated swales were unsuccessful so responsible parties have begun to implement other corrective actions to gain compliance. At one site, City staff has confirmed some growth in the swale after the responsible party re-vegetated the entire swale with a different plant species. At the other site, the responsible party is currently testing other plant species in the swale to determine if the plant will thrive under the conditions (i.e. amount of sunlight, canopy) present at the site. City staff believes this is an appropriate approach as multiple efforts have been made by the responsible party in re-establishing the swale. City staff is currently monitoring the progress at both swales. To ensure effective removal of pollutants in stormwater runoff, the City requires that swales have full vegetative cover.

2.4.3.5 Education and Training

All staff responsible for construction and grading review also received storm water training prior to the rainy season on September 17, 2009. The training included the following topics:

- Relationship between Land Development and Urban Runoff
- Relationship between Construction Activities and Urban Runoff
- Urban Runoff Pollutant Impacts
- City of Vista Stormwater Program – Construction Component
- Inspection Requirements
- Low Impact Development BMPs
- Treatment Control BMPs
- Watershed Concepts
- Pollution Prevention BMPs
- Dos and Don'ts

In addition, staff attended other trainings hosted by non-City entities including:

1) Regional SUSMP Training: October 13, 2009 – 7 City staff attended
2) Regional SUSMP Training: March 3, 2010 – 3 City staff attended
3) Certified Stormwater Inspector Course – 2 staff attended

2.5 Notable Activities

During the reporting period, the City conducted notable activities related to its Development Planning component. This included a complete overhaul of the Stormwater Standards Manual Section G – the City's SUSMP implementation document. The Standards Manual includes the requirements for development projects and tools for project proponents to assist in meeting the requirements. These tools include checklists, BMP selection guidance, BMP sizing guidance and a BMP Plan sheet.

The **BMP Plan sheet** was developed to be utilized for the development phase of a project. Project applicants must submit BMP plan sheet(s) which show the project's site design, source control and treatment control BMPs. The City developed the template to provide a consistent approach to strengthen the verification and certification processes and ensure each required BMP is installed prior to occupancy. At the "as-built" phase of a project, the City requires that the Engineer of Work certifies that all BMPs were constructed and installed per approved plans. The City has also implemented a requirement that no field changes may occur during construction that are related to the approved BMPs. This will ensure that if BMPs need to be revised during construction because of field conditions, the Land Development staff will review any modifications and ensure that adequate LID site design, source controls and treatment controls remain a part of the final project.

The City has posted the template BMP sheet on its website for download by applicants, developers and engineers. A copy of the template BMP sheet can be found online at http://www.cityofvista.com/departments/communitydev/forms.cfm.

Regional Board Review of TCBMP Program

On November 12, 2009 Regional Board staff visited the City to review the TCBMP process and visit some of the sites on which TCBMPs have been implemented. This visit served as the Regional Board's review of the City's Jurisdictional Urban Runoff Management Program (JURMP) Annual Report for FY 08-09. During the visit, City staff began with a review of the internal processes and then went into the field to visit four sites. Sites visited included public and private development sites. These were: Fire Station No. 5, Premier Crossings (referred to as Ocean Ranch Industrial Park), Target, and Famous Dave's.

The inspection report was received on January 11, 2010, see Appendix A-5. In the report, there were no violations noted during the visit. Each site and BMP was documented via photos and narratives to illustrate her findings. Although no violations were noted, there were two recommendations that are in Section III of the report. These addressed concerns noted at the Target and Famous Dave's sites with the vegetated swales. Conditions at each site are different, as the Target was recently constructed and the Famous Dave's site has been completed for some time. The swale at the Target site was lacking in vegetation while the swale at Famous Dave's was low on one side, allowing some water to "short circuit" the swale and go directly into the channel behind the site. These concerns were promptly addressed and have been corrected.

3.0 Construction Component

3.1 Introduction

The City continued to implement the Construction Component of its Urban Runoff Management Plan (URMP) in FY 2009-10 to prevent and reduce pollutants in runoff from construction activities within the City. Table 3.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 3.1 Annual Reporting Requirements, Construction Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Confirmation that all construction sites were required to undergo the Copermittee's construction urban runoff approval process and meet the applicable construction requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	3.5.1
2	Confirmation that a regularly updated construction site inventory was maintained, including a description of how the inventory was managed.	1	Confirmation	Confirmed	3.2
3	A description of modifications made to the construction and grading ordinances and approval processes.	1	Confirmation	Completed changes in FY 2008	3.3
4	Confirmation that the designated BMPs were implemented, or required to be implemented, for all construction sites.	1	Confirmation	Confirmed	3.5.2
5	Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.	1	Confirmation	Since the maximum disturbed area and advanced treatment requirements took effect, no projects have triggered these requirements	3.5.3
6	A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.	1	Confirmation		3.5.4
7	For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.	1 & 3	Confirmation / Tabulation / Inspection	See Section 3.5.5. and Appendix B-1	
8	A description of the general results of the inspections.	1	Confirmation	Confirmed	Appendix B-2
9	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	3.5.5 Appendix B-3
10	The number of violations and enforcement actions (including types) taken for construction sites, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	Correction Notices=2 NOV = 1	3.5.6

3.2 Source Characterization

During the entire reporting period, the City maintained a regularly updated construction site inventory. Through the reporting period, the City met the minimum JURMP requirement of making monthly updates, additions and deletions of sites, to the inventory.

The City's inventory is managed in Microsoft Access, an electronic database. Additions to the inventory are made when projects enter the construction phase of their development process. The project information is entered into the database along with the project's inspection frequency priority. The inspection forms that trigger inspections are initiated from the inventory based on the inspection frequency priority assigned to each project. Deletions are entered into the database when inspection forms are returned by the inspectors with notations that the project is complete.

3.3 Updates to Ordinances and Approval Processes

As a part of the City's 2008 JURMP, modifications to the municipal code and land development approval processes were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2010 reporting period, the City did not make updates to its municipal code or its land development approval process specific to construction.

3.4 Best Management Practice Requirements

As a part of the City's 2008 JURMP, modifications to the requirements for construction and grading requirement were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2010 reporting period the City did not make modifications to its best management requirements for construction and grading projects.

3.5 Program Implementation

3.5.1 Construction Urban Runoff Approval Process

All new projects are required to submit plans and apply for a Stormwater permit as part of the urban runoff approval process. All project plans are checked for compliance with municipal permit requirements. Tracking of the projects submittals is done through an Accela database.

3.5.2 BMP Implementation

Through the development approval and construction inspection processes, the City confirms that all designated BMPs were required to be implemented and also implemented throughout the reporting period for all construction sites. During the active construction phase of projects, if BMPs were not implemented or were improperly implemented, the inspection program identified such deficiencies and required implementation and/or modifications to be completed.

3.5.3 Maximum Disturbed Area for Grading

The City began implementing the maximum disturbed area for grading activities in March 2008. During the reporting period the City did not have any projects in the development process, planning phase through construction phase, which met the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.4 Advanced Treatment Sites

The City began implementing the advanced treatment requirements for grading activities in March 2008. During the reporting period, the City did not have any projects enter the development process that met the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.5 Inspections

Construction sites are required to be inspected based on the frequency schedule set forth in the City's JURMP. City inspectors from the Community Development Department inspect BMPs associated with grading permits (private projects) and public projects.

During FY 2010, the City inspectors conducted all the documented Stormwater specific BMP inspections per the frequencies described in the JURMP. Stormwater inspections were officially logged and documented, along with pertinent information regarding the specific construction site.

To ensure appropriate documentation of FY 2009-10 stormwater specific inspections, training was conducted on September 17, 2009, where emphasis on appropriately documenting and tracking inspections was stressed to the inspection staff.

Appendix B-2 is a summary of the construction project inspections of active projects during the reporting period and includes the following information on a project by project basis:

- Project Location
- Storm Water Priority and Inspection Frequency
- # of weeks active in the Rainy Season
- # of documented Stormwater inspections in Rainy Season
- # of documented Stormwater inspections in Dry Season
- Total # of documented Stormwater inspections for the site during the reporting period
- # of non-Stormwater inspections in Rainy Season
- # of non-Stormwater inspections in Dry Season
- Project specific summary of inspection findings

During FY 2009-10, 52 construction sites were in the active construction phase: 19 high priority; 10 medium priority; and 23 low priority. In total, the Community Development Department conducted 612 inspections throughout the reporting period.

In order to ensure that inspections addressed all required inspection steps, the inspectors used a standard computer generated form for inspections and addressed each step topic on the inspection forms. The inspection form is included as Appendix B-3.

3.5.6 Construction Enforcement

Inspectors generally coordinated with the contractor to immediately correct any storm water issues or potential violations. If issues are not resolved and violations occur, enforcement escalates. During the reporting period, two correction notices were issued through direct correspondence with the responsible contractors. These correction notices were followed up with at the following inspection (or in some cases earlier depending on the severity of the issue) to ensure that no further enforcement actions

were necessary. Both sites that were issued correction notices made corrections before follow-up inspections.

If verbal discussions and correction notices are not successful at achieving compliance at a project site, enforcement actions are escalated. The construction inspection staff escalates enforcement by requesting an investigation from the Water Quality Protection Program staff. As a result of one investigation conducted by the Water Quality Protection Program during the reporting period, one Notice of Violation was issued for not installing permanent landscaping prior to completion of the construction phase of the project. The issue was promptly resolved by the property owner.

3.6 Notable Activities

During the reporting period, the City conducted two notable activities with respect to its construction activities component, including:

1) Modifications to the inspection tracking process,
2) Additional preparations for the rainy season.

The tracking process changes include development of a new tracking database that includes the use of Accela. Currently, Accela is used by several City departments for tracking various City functions, including land development activities. Once the new Accela construction database is fully implemented, the City will no longer use the Access database for tracking its inventory and inspections. This change in tracking systems is expected to occur in FY 2010-11.

In addition, in preparation for the rainy season, special attention was paid to the construction sites with the most potential to contribute to stormwater violations. City land development staff worked with the site owners and/or superintendents to ensure that all required BMPs were implemented and that the sites were prepared for the rainy season. Stormwater code enforcement officers also identified and inspected all idle construction sites prior to the rainy season and ensured that all required BMPs were implemented.

4.0 Municipal Component

4.1 Introduction

This section describes the implementation of the Municipal Component of the JURMP during FY 2009-10. The program section was implemented to: (1) reduce municipal discharges of pollutants from the MS4 to the Maximum Extent Practicable (MEP), and; (2) prevent municipal discharges from the MS4 from causing or contributing to a violation of water quality standards.

This section addresses two types of municipal operations: fixed or stationary facilities; and field activities. A fixed facility is a specific building or physical location at which municipal operations occur. An example is a corporate yard. Conversely, field activities are actions or programs that staff or City contractors implement as a part of their work duties at various locations across the City. An example is street maintenance.

Table 4.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 4.1 Annual Reporting Requirements, Municipal Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Any updates to the municipal inventory and prioritization.	1	Confirmation	Section 4.3.1, Appendix C-2	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	1	Confirmation	Confirmed	4.2.2, 4.2.3.5, 4.3.2
3	A description of inspections and maintenance conducted for municipal treatment controls.	1	Confirmation	Section 4.2.3.1, Table 4.2, Appendix C-1	
4	Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	1 / 3	Tabulation / Inspection	Inventory = 806 Inspected = 806 (some inspected twice) Catch Basins/Inlets Cleaned = 1562 (some cleaned twice)	4.2.3.1, Table 4.2
5	Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	1	Tabulation	Total Distance of MS4 pipes = 37 miles 2.25 miles inspected 2.8 miles cleaned (some cleaned twice)	4.2.3.1, Table 4.2
6	Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.	1	Tabulation	Open Channels = 5.3 miles Inspected = 5.3 miles Cleaned = 4.5 miles	4.2.3.1, Table 4.2

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
7	Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.	4	Quantification	Catch Basins/Inlets = 547 tons MS4 Pipes = 23 tons Open Channels = 2,400 tons	4.2.3.1, Table 4.2
8	Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding.	1	Confirmation	None at this time	-
9	Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	1	Confirmation	Confirmed	4.2.3.3
10	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	100 miles	4.2.3.2, Table 4.3
11	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	300 miles	4.2.3.2, Table 4.3
12	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	200 miles	4.2.3.2, Table 4.3
13	Identification of the total distance of curb-miles swept.	1	Tabulation	8,000 miles	4.2.3.2
14	Identification of the number of municipal parking lots, the number of municipal parking lots swept, and the frequency of sweeping.	1	Confirmation	Lots = 18 Swept = 7 @ Once a month	4.2.3.2
15	Amount of material (tons) collected from street and parking lot sweeping.	4	Quantification	Street Sweeping = 687 tons Parking Lots = 5 tons	4.2.3.2
16	A description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4	1	Confirmation	See Section 4.2.3.4	

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
17	Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of the inspections.	3	Inspection	Sites requiring inspections =29 Sites inspected = 29 Frequency of inspections = 1X per year	4.3.2, Table 4.5
18	A description of the general results of the inspections.	1	Confirmation	See Section 4.3.2, Appendix C-3	
19	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	4.3.2
20	The number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	Verbal Warnings = 9	4.4, Appendix C-3

4.2 Municipal Activities

4.2.1 Source Characterization

During the reporting period, there were six municipal activities included in the inventory. These are: street maintenance, plaza and sidewalk cleaning, landscape maintenance, waste handling and disposal, MS4 maintenance, and wastewater utility maintenance. Of these six, road and street maintenance and sidewalk and plaza cleaning were high priority activities. These activities and priorities remained unchanged from the 2008 JURMP inventory. Both activities received inspections in FY 2009-10.

4.2.2 Best Management Practice Requirements

As a part of the City's 2008 JURMP, modifications to the municipal BMPs were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2009-10 reporting period the City did not make modifications to its best management requirements for municipal facilities and activities. All BMPs required in the JURMP were implemented during this reporting period.

4.2.3 Program Implementation

As a part of the City's 2008 JURMP, modifications to the municipal activities program were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the reporting FY 2009-10 reporting period the City did not make modifications to its municipal program implementation processes or procedures.

The following sub-sections discuss the program implementation for the municipal activities programs during the reporting period.

4.2.3.1 Municipal Separate Storm Sewer System (MS4) Program

Table 4.2 summarizes the MS4 inspection and cleaning program during FY2009-10.

Table 4.2 MS4 Inspection and Cleaning Program Data

Item	Quantity	Inspected	Cleaned**	Amount Removed
Catch Basins and Inlets	806	806	1,562 (some cleaned more than once)	547 tons
Total distance of MS4 Pipe	37 miles	2.25 miles	2.8 miles (some were cleaned more than once)	23 tons
Total distance of Open Channels	5.3 miles (improved)	5.3 miles	4.5 miles*	2,400 tons

*All lengths of open channels with anthropogenic litter.
**The number of facilities cleaned and miles of channels cleaned reflects the number of facilities and miles of channels that were found to exceed the City's cleaning criteria during inspections.

There are a total of eight sites with 29 treatment control BMPs in the City's inventory this fiscal year, many of which were added with new projects recently constructed. Types of BMPs include: drain inserts, infiltration trenches, vegetated swales, porous concrete, vortex separators, and bio-retention areas. All were inspected under the Treatment Control BMP program, as described in Section 2. Appendix C-1 contains all maintenance information, including inspection dates, maintenance frequency, and debris removed.

4.2.3.2 Street Sweeping Program

Since the development of the City's JURMP changes have been made to its street sweeping program implementation. Areas classified as moderate trash generation are swept twice per month and low trash generation are swept twice per month, up from once per month in moderate priority areas and once per year in low priority areas. Sweeping frequency of high priority areas remained at twice per month.

Table 4.3 summarizes the street sweeping program during FY 2009-10.

Table 4.3 Street Sweeping Program

Volume of Trash Generation	Street Types	Total Curb-Miles	Minimum Frequency	Minimum Frequency Achieved?
High	Commercial	100	2X per month	Yes
Moderate	Residential	300	2X per month	Yes
Low	Other Streets and Parking Facilities	200	1X per month	Yes

A total of approximately 8,000 curb-miles were swept during FY 2009-10. The total amount of material collected for the reporting period was 686.76 tons for the streets, 5 tons for the parking facilities, and 1 ton within the operations yards.

4.2.3.3 Pesticide, Herbicide and Fertilizer Management

The City confirms that appropriate BMPs were implemented by the City staff with respect to the Pesticide, Herbicide and Fertilizer Management requirements of the JURMP. No

modifications to the BMPs for pesticides and fertilizers were made during the reporting period.

4.2.3.4 Wastewater Element

In an effort to maintain the wastewater collection system and to identify potential problem areas in the system, the City conducted 35.4 miles of video inspection, CCTV, of the wastewater system. The video inspection program is in place to prevent and/or eliminate infiltration from the wastewater system to the MS4.

The City's sanitary sewer system is comprised of 311 miles of wastewater collection infrastructure. While not all of the system required cleaning, some portions of the collection system were cleaned twice due to priority and build up of materials. In total approximately 320 miles were cleaned as part of the regular schedule of inspection and maintenance.

Approximately 100 linear feet of the City's collection system was repaired during the reporting period. Spot repairs were conducted as necessary during the inspection process, and some minor installations were also required during the fiscal year.

The City has also established mechanisms for the public at large to provide notification of sewage spills to the City through the use of several hotlines. Additionally, the City posts its reporting phone numbers on sewage easement gates as well as other visible locations.

4.2.3.5 Special Events

Pre-event and post-event inspections were conducted based on the size and location of the event, planned activities, number of participants and spectators, and whether or not City staff would be present to monitor the event and BMPs. It was determined that pre/post-event inspections were necessary at four special events:

1) Soroptimist Walk
2) Burger Run Car Show
3) Hennessey's St. Patrick's Day Event
4) Strawberry Festival and Street Fair

Storm water staff was present at these events and conducted the required inspections. Additionally, City staff trained in storm water BMPs were present at the other special events, even though a formal inspection was not completed. In all cases, if BMP issues were noticed, the event organizers were notified and corrective actions taken. The most common BMPs required at the special events were providing trash receptacles, portable toilet secondary containment, providing spill kits, storm drain inlet protection, and trash/debris clean up and removal of BMPs after the event. All required BMPs for special events were implemented during the reporting period.

During the reporting period, City staff met with the event organizers prior to the issuance of their special event permits so that it was clearly understood what the City's storm water requirements were for the specific event type and venue.

Table 4.4 summarizes the special events program activities during FY 2009-10.

Table 4.4 Summary of Annual Storm Water Activities for Special Events

Event Name	Event Date(s)	Pre-Communication Meeting with Organizer	BMPs Required to be Implemented	Full Storm Water Inspection	City Staff Present at Event	Event Venue
4th of July Block Party	7/4/09	Yes	Yes	No	Yes	Brengle Terrace Park
4th of July Block Party	7/4/09	Yes	Yes	No	Yes	Lexington Dr
Pioneer Day Celebration	7/18/09	Yes	Yes	No	No	Foothill Dr to W. Bobier Dr
Rod Run 20	8/3/09	Yes	Yes	No	Yes	Downtown Main St
National Night Out/ Walk Against Crime	8/4/09	Yes	Yes	No	Yes	Indiana and Main St
Neighborhood Watch Block Party	8/29/09	Yes	Yes	No	Yes	252 Durian St
Outdoor Dinner	9/19/09	Yes	Yes	No	Yes	S. Citrus Ave from Main St to Eucalyptus
Annual Crop Walk 2009	11/8/09	Yes	Yes	No	No	
Vista Invitational Field Tournament	11/14/09	Yes	Yes	No	Yes	Vista High School
Downtown Tree Lighting	12/4/09	Yes	Yes	No	Yes	Gazebo Parking Lot
Soroptimist Walk	3/17/10	Yes	Yes	Yes	Yes	Downtown at Main St
Burger Run Car Show	1/9/10	Yes	Yes	Yes	Yes	Eucalyptus Ave & S. Santa Fe
Hennessey's St. Patrick's Day Event	3/17/10	Yes	Yes	Yes	Yes	224 Main St
Earth Day	4/24/10	Yes	Yes	No	Yes	1200 Vale Terrace
Strawberry Festival & Street Fair	5/30/10	Yes	Yes	Yes	Yes	Main St & Indiana St
Taste of Vista	6/23/10	Yes	Yes	No	Yes	Main St, from Hanes Pl to Michigan
Scottish Highland Games	6/26/10 to 6/27/10	Yes	Yes	No	Yes	Brengle Terrace Park
Library Summer Reading Program Kickoff	6/26/10	Yes	Yes	No	No	700 Eucalyptus
Summer Music Concert Series	6/28/10 to 7/31/10	Yes	Yes	No	Yes	Main St and Indiana

4.2.3.6 Non-Emergency Fire Fighting

BMPs are used to reduce the discharge of pollutants from non-emergency fire fighting activities. The City has developed and implemented a program to reduce pollutants from these activities in accordance with the Permit. During the reporting period, BMPs were implemented as described in the JURMP when performing the following activities:

- Maintenance of fire and emergency vehicles and equipment
- Training exercises
- Facilities maintenance
- Post-emergency rehabilitation of response equipment.

Additionally, two new fire stations were under construction during the previous reporting period. Each has included treatment control BMPs in their design including porous pavement, vegetated swales, diversion valves, and an underground detention basin. Construction was completed in the beginning of FY 2009-10.

4.3 Municipal Facilities

4.3.1 Source Characterization

During the previous reporting period, there were three changes to the City's Municipal Inventory: the addition of the South Buena Vista Park and Fire Stations #5 and #6. The most up-to-date inventory can be found in Appendix C-2. The inventory includes 29 high priority municipal facilities.

4.3.2 Inspections

The City conducted facility inspections for each of its high priority facilities and activities during FY 2009-10. The purpose of these inspections was to ensure that BMPs (including those for pollution prevention) were being implemented. The inspections followed all required inspections steps to determine full compliance with the City's JURMP.

Per the JURMP, the City formally inspects all high priority municipal sites. Municipal sites are considered to be fixed facilities where high priority municipal activities occur. Two high priority municipal activities were also inspected, a street/curb repair and sidewalk cleaning. The networks (streets & roads and wastewater collection system) are routinely inspected under various programs such as street sweeping, streets maintenance, MS4 inspections and cleaning, and the sanitary sewer system video inspection and cleaning program. Formal inspection forms are not generated for the general routine inspections performed on these municipal networks.

Table 4.5 provides a summary of the formal annual storm water inspections performed for the municipally operated sites/facilities.

A summary of inspection results can be found in Appendix C-3. For each facility, recommendations for follow-up corrective actions were listed. In general, the corrective actions included: asphalt repairs; removal of vegetation and trash accumulation; replacing of dumpster lids; and, good housekeeping practices. The corrective actions were implemented after the inspections were completed and verified by City staff. All BMPs required in the JURMP were implemented at all municipal facilities during the reporting period.

Table 4.5 Summary of Annual Storm Water Inspections for Municipal Facilities and Activities

	Name	Address		Inspection Date
Municipal Facilities				
1	Breeze Hill Park	645	S. Melrose Dr.	8/31/2009
2	Brengle Terrace Park	1200	Vale Terrace Dr.	8/31/2009
3	Bub Williamson Park	530	Grapevine Rd	8/31/2009
4	Buena Vista Park	1851	S. Melrose Dr.	8/31/2009
5	Townsite Park – Luz Duran	340	E. Townsite Dr	8/31/2009
6	Moonlight Amphitheater	1200	Vale Terrace Dr	2/10/2010
7	Parking Lot		E. Broadway @ Hanes Pl	2/2/2010
8	Parking Lot		Main St and Michigan Ave.	2/2/2010
9	Parking Lot		Main St @ S. Indiana s/e	2/2/2010
10	Parking Lot	523	S. Santa Fe Ave	2/2/2010
11	Parking Lot	300	Main St	2/2/2010
12	Park-N-Ride Lot		W. Vista Way @ Emerald	2/2/2010
13	PS Satellite Yard	2430	Lupine Hills Drive	2/2/2010
14	PS Satellite Yard	2525	Lupine Hills Drive	2/2/2010
15	Public Services Yard	1165	E. Taylor St	2/2/2010
16	Public Services HHW	1145	E. Taylor St	2/2/2010
17	Rain Tree Park	545	Townsite Dr	8/31/2009
18	Rancho Buena Vista Park	1851	S. Melrose Dr	8/31/2009
19	Shadowridge Park	2101	Lupine Hills Dr	8/31/2009
20	South Buena Vista Park	1602	Mountain Pass Circle	6/15/2010
21	Thibodo Park	1150	Lupine Hills Dr	8/31/2009
22	The Wave Waterpark	101	Wave Dr	2/2/2010
23	Wildwood Park	651	E. Vista Way	8/31/2009
24	Brengle Terrance Detention Basin	1100	Vale Terrace Dr	4/9/2010
25	Creek Walk/ Buena Vista Channel		Main St and Wave Dr	4/9/2010
26	Cypress Detention Basin		Monte Vista Dr and Cypress Dr	4/9/2010
27	Monte Vista Detention Basin		Monte Vista Dr and Valley Dr	4/9/2010
28	Buena Pump Station	2080	S. Melrose Dr	3/31/2010
29	Raceway Pump Station	2685	S. Melrose Dr	3/31/2010
Municipal Field Activities				
30	Road and Street Repair	Varies		6/8/2010
31	Plaza and Sidewalk Cleaning-Pressure Wash	Varies		6/2/2010

4.4 Enforcement

Nine enforcement actions were taken during the reporting period. These included verbal warnings for trash and debris removal at the S. Santa Fe Avenue Parking Lot, the W. Vista Way Park-N-Ride lot, the South Buena Vista Park, and the Creek Walk/Buena Vista Channel. Verbal warnings were also issued for dirt run-off removal at the Buena Vista Park, to repave eroded areas at the S. Santa Fe parking lot, and to request dumpster replacement with closeable lids at the E. Taylor St Public Services yard. The Wave Water Park received verbal warnings to remove congested pine needles from drains and outdoor storage of rusted racks and paint cans. The Monte Vista Detention Basin generated a verbal warning to remove grass and leaf clippings, and staff at

Rancho Buena Vista Park was verbally warned to remove vegetation accumulation. Subsequent follow-up inspections to all the sites ensured proper actions had been taken. No further actions were necessary.

4.5 Notable Activities

During the reporting period, the City conducted notable activities with respect to its municipal activities component, including:

In preparation for the rainy season, the City inspected all of its parks on the inventory in August to ensure that any deficiencies were corrected prior to the rainy season. These inspections resulted in two minor corrective actions that were addressed prior to October 1.

5.0 Industrial and Commercial Component

5.1 Introduction

During the reporting period, the City successfully implemented the industrial and commercial component of its JURMP. The program is instrumental in reducing and/or preventing pollutants from entering the City's MS4 and receiving waters. In achieving this goal, the City implemented several JURMP activities during the reporting period. These included conducting stormwater complaint investigations, providing education and outreach to business owners and operators, and conducting commercial and industrial inspections. Additionally, City stormwater staff completed its development of a Mobile Water Use Licensing program which will require mobile water use operators to obtain approval of their BMP water reclamation systems prior to receiving a City of Vista business license. This program was initiated in the current reporting period (FY 10-11).

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP. Annual reporting requirements for the industrial and commercial component are listed in Section J of the Permit. As indicated in Table 5.1, the City successfully met all reporting requirements for the industrial and commercial component of this JURMP Annual Report.

Table 5.1 JURMP Annual Report Compliance

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Any updates to the industrial and commercial inventory.	1	Confirmation	See Section 5.2.2 and Appendix D-1, D-2 and D-3	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	1	Confirmation	Confirmed	5.2.4.1 5.2.4.2
3	A description of efforts taken to notify owners/operators of industrial and commercial sites/sources of BMP requirements, including mobile businesses.	1	Confirmation	Confirmed	5.2.4.1 & 5.3.4.1
4	Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	1 / 3	Confirmation / Inspection / Tabulation	923 Total sites inventoried 234 Total Sites inspected (189 high TTWQ and 45 additional Sites)	5.2.4.2
5	Justification and rationale for why the industrial and commercial sites/sources inspected were chosen for inspection.	1	Confirmation	See Section 5.2.4.2	
6	Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	5.2.4.1 & 5.2.4.2
7	Identification of the number of third party inspections conducted.	1	Confirmation	None	-
8	Identification of efforts conducted to verify third party inspection effectiveness.	1	Confirmation	N/A	-
9	A description of efforts implemented to address mobile businesses.	1	Confirmation	See Section 5.3	
10	The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	NOV = 51 (Stationary facilities) Citation = 8 (Stationary facilities) Verbal/Written Warnings = 19/20 (includes MBs and Stationary facilities)	5.2.4.2, 5.3.4.1 & Appendix D-6
11	A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	1	Confirmation	See Section 5.2.4.2 & Table 5.3	

5.2 Stationary Industrial and Commercial Sites / Sources Element

5.2.1 Background
There is no background information to report.

5.2.2 Source Characterization
Prior to conducting the FY 2009-10 required annual inspections, the City's Beginning of the Year inventory for stationary commercial and industrial facilities consisted of 923 facilities. The City provided this inventory (includes primary and alternates sites for inspection) to its inspections contractor prior to commencing the required annual inspections. This inventory included all facilities listed on the previous years inventory (End of the Year inventory for FY 08-09) and additional facilities identified during review of periodic business license lists and stormwater cases. This review was done during the first half of the reporting period prior to commencing inspections.

At the conclusion of each annual inspection program, the contractor provides a final inventory, known as the End of the Year inventory to the City. The final inventory is compiled throughout the inspection program to take into account the changes in facility status that is encountered during site visits. During inspections it is common to encounter businesses that have closed or moved to another location. In cases where a business has closed it is also common to find another business that has taken its place. Throughout the inspection program continual updates are made to the inventory to account for these scenarios. These modifications are reflected in the City's End of the Year inventory which consists of 867 stationary facilities (638 commercial and 229 industrial facilities). The End of the Year commercial and industrial inventories are included in Appendix D-1and D-2, respectively.

5.2.3 Best Management Practices
The City did not make any modifications to its best management practice requirements (JURMP 2008).

5.2.4 Program Implementation

5.2.4.1 Best Management Practices

Stormwater Complaint Investigations
The City required owners and operators of stationary commercial and industrial facilities to implement the City's required best management practices (BMPs) to prevent pollutants from entering the City's MS4 and receiving waters. During the reporting period, City staff investigated 57 reported complaints regarding stationary commercial facilities (none from industrial sources). A summary of all FY 2009-10 commercial complaint cases is included in Appendix D-5. Of the 57 complaints, stormwater violations were confirmed in 50 of them. Stormwater complaint investigations were conducted by City Stormwater Code Enforcement staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the 57 reported complaints, 47 of them were generated from pro-active enforcement.

During the reporting period, the City verified BMP compliance in all confirmed complaints. At commercial sites where stormwater violations were observed, City staff required facility owners to implement appropriate BMPs. City staff also provided stormwater literature relative to the type of violation in each stormwater complaint case.

This further emphasized the importance of BMP compliance. In all commercial and industrial complaint cases, follow-up inspections were performed to verify BMP compliance.

Education

As required in the Permit (Order 2007-0001), copermittees are required to notify all inventoried sites and sources of its BMP requirements during the first three years of the Permit cycle. In February 2010, the City mailed a letter to the primary and alternate sites selected for inspection notifying the facility of the BMP requirements and upcoming inspection. In May 2010, the City mailed a similar letter to the remaining inventoried facilities notifying facility owners and operators of the City's BMP requirements. In total, 923 facilities (entire Beginning of the Year Inventory) were sent the BMP informational letter during the reporting period. This included notifications to all stationary and mobile businesses. In each mail out, the City also included a copy of the applicable activity specific City of Vista Stormwater Standards section specific to the different types of businesses in the inventory. A copy of this letter is included in Appendix D-9.

During stormwater complaint investigations, City staff provided pollution prevention brochures to facility owners to aid them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods consistent with the City's BMP requirements. These brochures included the following:

- What's Cooking Guide
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- Green Wrench Guide
- Motor Oil

During the reporting period, the City operated its website (www.cityofvista.com) providing owners and operators of commercial and industrial facilities with information regarding the City's BMP requirements. The website contains a section dedicated to informing facility owners of BMPs common to all types of businesses. These BMPs which are consistent with the City's BMP requirements include the following:

- Keep your trash and dumpster lids closed.
- Do not allow landscape waste, pet waste, dirt, chemicals or other pollutants to enter a storm drain or be thrown into a creek bed.
- All dirt slopes must have erosion control measures in place to prevent dirt from entering the street or storm drain.
- Wash water used to clean equipment, indoor and outdoor areas, parking lots and sidewalks is prohibited from entering storm drains. Sweep instead. If you must use water, either mop the area or make sure the waste water is fully reclaimed and disposed of properly.

- All chemicals must be properly labeled and stored in a contained, roofed area to avoid contact with rainwater.
- Do not over-irrigate your landscaping.
- Sewage releases into the street from blocked or cracked laterals are illegal. If a spill occurs, arrange for correction and contact the City immediately.

The website also contains links to stormwater educational literature that can be reviewed online and/or downloaded and printed. The restaurant poster, Green Wrench guide, and automotive poster, which are customarily provided to commercial and industrial establishments during inspections are made available for review or download for printing. A link to a BMP Check off-list is also provided which provides the user a comprehensive checklist of BMPs for five major BMP categories including grounds maintenance and good housekeeping, waste management, education, materials storage, landscape and irrigation, vehicle and equipment maintenance, and vehicle and equipment washing.

Stationary Commercial and Industrial Inspections

In implementing the City's inspection program during FY 2009-10, the City informed owners and operators of commercial and industrial facilities of its BMP requirements. The City contracted with D-Max Engineering Inc. to conduct several portions of the City's inspection program in the spring of FY 2009-10. These inspection activities are consistent with the inspection requirements listed in the Permit (Order 2007-0001).

At various points during the inspection process, facility owners and/or operators were informed of the City's BMP requirements specific to their business. In February 2010, the City mailed a letter to each site that was selected for inspection (included alternate sites) informing them of the upcoming inspection and City's BMP requirements. Each inspection started with a face to face discussion during which D-Max staff educated facility owners on the City's Stormwater Program and BMP requirements. D-Max staff then conducted a complete site inspection assessing BMP effectiveness and compliance and identifying any occurring or potential illicit discharges and connections. At the conclusion of the each inspection, D-Max staff summarized the inspection results identifying corrective actions (BMPs) for any observed stormwater violations that the owner would need to implement to gain compliance. BMP guides and posters were provided to facility representatives to aid them in selecting appropriate corrective actions and managing urban runoff at their site.

D-Max staff instructed facility owners to implement timely corrective actions as City staff would be conducting a follow-up inspection to verify compliance. As a reminder to facility owners to implement appropriate and timely corrective actions, each inspected facility was mailed a letter and copy of the inspection report. A copy of the Stormwater Compliance Inspection report is included in Appendix D-4. The inspection report identified the specific BMP violations and included D-Max's recommended corrective actions. Refer to section 5.2.4.3 for information describing follow-up and enforcement actions. The importance of implementing effective BMPs was further emphasized in the letter as the City stated that BMP compliance was important to ensure overall compliance with the City's Stormwater Permit and Municipal Code. To assist owners in selecting appropriate corrective actions, a link to the City's Stormwater Standards Manual was also provided.

5.2.4.2 Inventory and Inspections

Prior to conducting its required annual inspections, the City's stationary commercial and industrial inventory (Beginning of the Year) consisted of 923 commercial and industrial facilities. The City determined its required inspection numbers using this inventory. The City provided the inventory to its inspections contractor prior to commencing inspections in FY 09-10.

In selecting facilities for inspection, all inventoried facilities were prioritized into high, medium, and low threat to water quality (TTWQ) categories (Order 2007-001). As mentioned in section 5.2.2 (Source Characterization), the City carries over the inventory (End of the Year inventory) from the previous reporting period prior to finalizing it for inspection purposes in the current reporting period. The City's contractor provides the End of the Year inventory to the City which includes assigned TTWQ categories for each facility. In finalizing the inventory, City staff often adds new facilities to the inventory upon periodic review of business license lists and stormwater case files. These facilities are also assigned the appropriate TTWQ category using the criteria established in the JURMP, March 2008. It is from this revised inventory (Beginning of the Year) that the City selects the required number of inspections for the current reporting period.

The total number of facilities inspected was based on the City's Municipal Storm Water permit requirements (Order 2007-0001) which require that 100 percent of high TTWQ facilities and 25 percent of the City's total inventoried sites are inspected. In meeting both requirements, the City inspected a total of 234 stationary facilities during the reporting period (see Table 5.2). All high TTWQ facilities (189) and an additional 45 facilities were inspected.

City Water Quality Protection Program staff used the criteria listed below in selecting additional and alternate sites for inspection. Alternate sites were selected in case a primary site was not inspected, usually in the event that a facility closed its operations or had moved.

<u>Criteria Used For Selecting Additional and Alternate Sites for Inspection</u>

Facilities located in Loma Alta Creek Hydrologic area
Facilities located in San Luis Rey WMA
Facilities which required follow-up in FY 08-09 (most were inspected in FY 09-10)
Facilities listed as High priority in the City's FOG (Fats, Oils, and Grease Program)

Table 5.2 Summary of Stationary Commercial and Industrial Inspections

Facility Category	Inspections Conducted	Percentage of Total Inventory (total inventory = 923 Sites)
High TTWQ Sites	189	20% (100% of TTWQ sites)
Additional Sites	45	5%
Total	**234**	**25%**

The City confirms that all inspections addressed the inspection steps required in Order 2007-0001. These inspections steps are included in the City's 2008 JURMP and were followed by D-Max staff during all inspections. In section 5.2.4.1, the City describes the required inspection steps D-Max staff followed during FY 2009-10 inspections.

Additionally, D-Max staff reviewed BMP implementation plans, facility monitoring data, and checked all inspected industrial facilities for coverage under the Industrial Permit.

The City requested D-Max to perform fats, oils, and grease (FOG) inspections at food service establishments to assess compliance with the City's FOG ordinance. Most of these inspections were conducted in conjunction with the stormwater inspections. Contractor staff conducted stormwater and FOG assessments at 133 facilities during the reporting period.

Enforcement

Commercial and Industrial Complaints

City staff investigated a total of 57 complaints during the reporting period. Of the 57 reported complaints, 50 were confirmed to involve a stormwater violation (41 commercial and 9 industrial). Confirmed violations included illegal discharges, illicit connections, private lateral spills, and BMP violations. Of the 50 confirmed complaints, City staff issued enforcement actions in all of these cases rendering 16 verbal warnings, 20 written warnings, 37 notices of violation and 5 citations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. During the reporting period, the City confirmed that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected). A summary of enforcement actions implemented at stationary commercial and industrial sites is included in Appendix D-6.

Commercial and Industrial Inspections

At facilities where stormwater violations were observed during the initial inspection, City staff conducted follow-up inspections to verify stormwater compliance. As a result of the inspections, D-MAX recommended follow-up investigations at 37 commercial and industrial facilities. In this program, follow-up activities are conducted at sites where an illegal discharge or significant BMP violation was observed. A significant BMP violation would include situations where there is a potential for an illegal discharge to occur due to lack of appropriate BMP implementation. The majority of the follow-ups (32) involved BMP violations where as the remaining violations (5) involved illegal discharges. As mentioned in section 5.4.2.1 (BMP requirements), D-MAX staff instructed facility owners to implement timely corrective actions to correct BMP violations observed during the inspection. During inspections where D-Max staff observed an illegal discharge or illicit connection, City Water Quality Protection Program staff was contacted immediately to respond. D-MAX staff observed illegal discharges at five facilities; in all of these incidents City WQPP staff responded immediately and ensured that all illegal discharges were immediately ceased.

The City conducted follow-up investigations at all 37 commercial and industrial facilities. Upon investigation, City staff confirmed compliance at 22 sites, but found the other 15 facilities in violation of the City's Stormwater Ordinance. As with reported complaints, City staff opened up complaint cases for all 15 sites. City staff implemented enforcement actions at all sites, rendering one verbal warning, 14 notices of violation, and three citations. A summary of enforcement actions implemented during commercial and industrial follow-up investigations is included in Appendix D-6. Also, a summary of inspections results for facilities at which a follow-up inspection was conducted is included in Appendix D-7. During the reporting period, the City verified that responsible

parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected).

General Industrial Permit Compliance

In addition to assessing BMP compliance, General Industrial Permit compliance status was evaluated at each inspected industrial facility. During initial inspections, D-MAX staff identified five facilities that were found to require coverage under the State General Industrial Permit, but had not yet filed a Notice of Intent (NOI). Similarly, D-MAX staff identified 15 facilities, conditionally subject to the permit, that had not filed their notice of non-applicability (NONA) paper work certifying their No Exposure status (No Exposure Certification). City staff also conducted an inspection of Western CNC (1001 Park Center Drive) and information pertaining to facility Permit status is also included in Table 5.3. During inspections, D-MAX staff recommended to facility owners/managers to file appropriate NOI or NONA paperwork to ensure compliance with the State General Industrial Permit. A summary of the Permit Status evaluations based on the initial inspections is included in Table 5.3.

Table 5.3 General Industrial Permit Compliance Status

#	BUSINESS NAME	ADDRESS	Permit Subjectivity	Actions To Correct Violation				
				File NOI	Develop SWPPP	Develop and Implement Storm Water Monitoring Program	File NONA/NEC	Other Actions/Comments
1	78 SIGN COMPANY	830 E VISTA WAY	Conditional				✔	
2	APTERA MOTORS, INC.	3151 SCOTT ST	Conditional				✔	
3	BOBBY D'S PIZZA & BREWERY CO.	425 S MELROSE DR	Conditional				✔	Grain silo not in use
4	C N C PRECISION MACHINING	797 NORTH AVE C	Conditional				✔	
5	COASTLINE EMBROIDERY	1330 KEYSTONE WAY D	Conditional				✔	
6	CORNERSTONE SENSORS INC	1304 N MELROSE DR C	Conditional				✔	
7	D B S ASSOCIATES, INC.	2480 GRAND AVE	Conditional				✔	
8	E & J CUSTOM GRANITE & STONE INC	795 NORTH AVE E	Mandatory	✔	✔	✔		
9	EL CAMINO RENTAL DBA BILCAN INC.	1121 S SANTA FE AVE	Mandatory	✔	✔	✔		
10	FINELINE APPAREL PRINTING	1485 POINSETTIA AVE 105	Conditional				✔	
11	J & D LABORATORIES	2640 PROGRESS ST	Conditional	✔	✔	✔		

#	BUSINESS NAME	ADDRESS	Permit Subjectivity	Actions To Correct Violation				
				File NOI	Develop SWPPP	Develop and Implement Storm Water Monitoring Program	File NONA/NEC	Other Actions/Comments
12	MANZO'S METAL WORKS	797 NORTH AVE D	Conditional				✔	
13	MERIDIAN LABORATORY INC	1330 N MELROSE DR E	Conditional	✔	✔	✔		
14	MINOR FAB	1205 N MELROSE DR M	Conditional				✔	
15	MS MARBLE	1338 N MELROSE DR J	Mandatory	✔	✔	✔		
16	NUTRITIONAL ENGINEERING INC.	1208 AVENIDA CHELSEA	Conditional				✔	
17	O-NAVI, L L C	1260 ACTIVITY DR B	Conditional				✔	
18	RAYZIST PHOTOMASK INC	955 PARK CENTER DR	Mandatory					SWPPP not provided for review
19	SAFE-WAY MOVING INC.	1330 DISTRIBUTION WAY A	Conditional				✔	
20	TECH M3, INC	1281 ACTIVITY DRIVE	Conditional				✔	
21	TITEFLEX CORPORATION	2755 DOS ARRONS WAY C	Conditional				✔	
22	WESTERN CNC	1001 PARK CENTER DIRVE	Conditional	✔	✔	✔		

5.3 Mobile Sources Element

5.3.1 Background

The City continued to implement its Mobile Sources element of its JURMP. During the reporting period, the City implemented JURMP activities to prevent and/or reduce pollutant runoff from mobile business activities. These included requiring BMP implementation through complaint investigations and providing education and outreach to mobile businesses regarding the City's BMP requirements. Additionally, City Water Quality Protection Program staff completed its development of a Mobile Water Use Licensing program which will require particular mobile water use operators to obtain approval of their BMP water reclamation systems prior to license issuance. This program has been initiated in the current reporting period (FY 10-11).

Source Characterization

The City modified its Mobile Business inventory to include additional mobile businesses the City identified during the reporting period. The additional mobile businesses were identified through stormwater complaint investigations and from monthly reviews of new business licenses. The mobile businesses known to operate in the City of Vista (206 total) are included in Appendix D-3.

Best Management Practice Requirements

During the reporting period, the City did not modify its BMP requirements for mobile businesses (JURMP 2008).

Program Implementation

5.3.4.1 Best Management Practices

Stormwater Complaint Investigations

From investigations into stormwater complaint cases, the City required owners and operators of Mobile Businesses to implement the City's required best management practices (BMPs) to prevent pollutants from entering the City's MS4 and receiving waters. During the reporting period, City staff investigated two complaints regarding mobile businesses. A summary of all FY 2009-10 mobile business complaint cases is included in Appendix D-5. Of the two complaints, stormwater violations were confirmed in both of them. Stormwater complaint investigations were conducted by City Stormwater Code Enforcement staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the two confirmed complaints, one was generated from pro-active enforcement.

The City verified BMP compliance in all confirmed complaints involving mobile businesses. At mobile business operational sites where stormwater violations were observed, City staff required mobile business representatives to implement appropriate BMPs (corrective actions). City staff also provided stormwater literature relative to the type of violation in each stormwater complaint case. This further emphasized the importance of BMP compliance.

Education

During stormwater complaint investigations, City staff provided pollution prevention brochures to mobile business representatives to aid them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods consistent with the City's BMP requirements. These brochures included the following:

- What's Cooking Guide
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- Green Wrench Guide
- Motor Oil

During the reporting period, the City operated its website (www.cityofvista.com) providing owners and operators of mobile businesses with information regarding the City's BMP requirements. The website contains a section dedicated to informing business owners of BMPs common to all types of business activities. These BMPs which are consistent with the City's BMP requirements include the following:

- Keep your trash and dumpster lids closed.
- Do not allow landscape waste, pet waste, dirt, chemicals or other pollutants to enter a storm drain or be thrown into a creek bed.
- All dirt slopes must have erosion control measures in place to prevent dirt from entering the street or storm drain.
- Wash water used to clean equipment, indoor and outdoor areas, parking lots and sidewalks is prohibited from entering storm drains. Sweep instead. If you must use water, either mop the area or make sure the waste water is fully reclaimed and disposed of properly.
- All chemicals must be properly labeled and stored in a contained, roofed area to avoid contact with rainwater.
- Do not over-irrigate your landscaping.
- Sewage releases into the street from blocked or cracked laterals are illegal. If a spill occurs, arrange for correction and contact the City immediately.

The website also contains links to stormwater educational literature that can be reviewed online and/or downloaded and printed at a computer. The restaurant poster, Green Wrench guide, and automotive poster, which are customarily provided to commercial and industrial establishments during inspections are made available for review or download for printing. A link to a BMP Check off-list is also provided which provides the user a comprehensive checklist of BMPs for five major BMP categories including grounds maintenance and good housekeeping, waste management, education, materials storage, landscape and irrigation, vehicle and equipment maintenance, and vehicle and equipment washing

Enforcement
During the reporting period, City staff investigated two complaints involving mobile businesses. Of the two reported complaints, both were confirmed to involve a stormwater violation. City staff issued enforcement actions in both of them (all verbal warnings). When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. The City verified that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected). A summary of enforcement actions implemented in mobile business complaint cases is included in Appendix D-6.

5.4 Notable Activities Conducted to Manage Urban Runoff

FOG Program
Under the current FOG (Fats, Oils, and Grease) requirements (Order No. 2006-0003-DWQ) the City was required to develop and implement a FOG inspection program starting in FY 2008-09. FOG discharges to the sanitary sewer system are known to cause blockages resulting in sewer overflows. Up to this point, the program involves the inspection of food service establishments to assess the facility's effectiveness in meeting the City's FOG requirements and preventing FOG discharges to the sewer system. The City has developed an inventory of FOG producing facilities (primarily FSEs) located within the City of Vista. FSEs are required to implement FOG best management practices to prevent FOG discharges to the sewer system.

As most Food Service Establishments (FSEs) are included in both the City's FOG and Storm Water inventories FSEs typically receive combined inspections. During the reporting period, 133 FSEs received both a FOG and Stormwater Inspection. The FOG inspections addressed several BMPs to reduce Sanitary Sewer Overflows, which are in addition to the FOG related stormwater BMPs typically addressed during stormwater inspections. These included installing drain screens in prep sinks, dry wiping pans, and regularly inspecting and maintaining grease control devices. The City believes with its annual implementation of its FOG program that it will continue to be effective in regulating FSEs and preventing pollutant runoff at those types of facilities.

Participation in the Regional Industrial and Commercial Workgroup
The Regional Industrial and Commercial Workgroup (RICW) was formed in FY 08-09 to provide regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to industrial and commercial activities and sources. Furthermore, the formation of the RICW was necessary to address requirements in the 2007 Municipal Stormwater Permit. The City of Vista served as the secretary for the RICW during the reporting period attending and participating at six RICW meetings (August, October, November, and December of 2009 and February, April, and June of 2010). A summary of the meeting notes will be submitted by the workgroup leads in the Regional Urban Runoff Program Annual Report in January 2011. The City will continue to attend and participate at future Regional Industrial and Commercial Workgroup meetings.

Development of a Mobile Water Use Licensing Program
During the reporting period, the City developed a Mobile Water Use Licensing Program to increase its regulation and oversight of mobile water-use businesses. Carpet cleaners, mobile car detailers, and contractors that conduct surface cleaning of equipment, parking lots, and buildings typically use water and sometimes detergents in

its operations. It is these activities that often result in discharges of polluted runoff into the stormwater conveyance system. These businesses are required to contain, capture, and remove all water runoff during its operations. In this program, mobile water-use businesses are required to demonstrate that their mobile business is equipped to meet these requirements.

City staff from Engineering - Water Quality Protection Program (WQPP), Community Development, and Finance departments developed a licensing process that requires applicants to obtain City approval of their BMP water reclamation systems prior to license issuance. Training occurred to educate employees who would be involved in the program of the program and licensing requirements. The Finance Dept added a brief questionnaire to the business license application to help staff identify those businesses that would apply to the program.

City WQPP staff developed an inspection program as a mechanism for approving BMP water reclamation systems. This included the development of an inspection form (Appendix D-8) and selection of designated public sites where the demonstration and inspection will occur. City staff will document the results of the inspection on the inspection form and signify approval of the BMP reclamation system by signing the bottom of the form. The completed inspection form will be routed to the Finance Department and serve as confirmation that the applicant's reclamation system is appropriate. Finance Department will then issue a business license to the applicant. In the event that a business fails the inspection the business will be required to correct the deficiencies noted on the inspection form prior to receiving approval of its BMP reclamation system.

During the reporting period, the City developed an informational letter and Mobile Water-Use brochure to provide outreach to the public regarding the licensing and BMP requirements. The program will be initiated in the next reporting period beginning July 1, 2010.

Rainy Season Preparation Activities

In preparation for the rainy season (October 1, 2009 through April 30, 2010) the City conducted some significant outreach and inspection activities concerning commercial and industrial facilities. In implementing these activities the City focused on sites and sources that are typically identified as high priority in the City's Program. These included high priority industrial facilities, shopping centers, and industrial facilities that were inspected the previous year and were found to be in violation of the City's Municipal Code.

In September 2009, City staff mailed out a letter to all industrial facilities on the City's inventory (43) notifying the facilities of the City's BMP requirements and importance of implementing appropriate BMPs in preparation of the first rains. In each mailout, the City included a copy of the RWQCB's rainy season preparation letter that was sent to all jurisdictions in San Diego County, the general Stormwater Standards Manual section applicable to all types of industrial facilities, and the City's Commercial and Industrial BMP brochure. The letter from the RWQCB further emphasized the importance of implementing appropriate BMPs to ensure runoff is managed appropriately at commercial and industrial sites.

Also in September 2009, City staff mailed out a similar letter to property owners at 34 shopping centers located throughout the City reminding them of the City's BMP requirements. The City included similar enclosures that were provided in the mailouts to the high priority industrial facilities.

In its focus of high priority industrial facilities, the City decided to also inspect all industrial facilities that were found to be in violation of the City's Municipal code during FY 08-09 inspections. City staff conducted full inspections at seven facilities resulting in the issuance of one Notice of Violation at one of the facilities.

Selection of Primary and Alternate Sites for Inspection Purposes

During the reporting period, the City conducted its required commercial and industrial inspections. The City met both inspection requirements which included inspecting all high TTWQ facilities and ensuring 25% of the City's entire inventory be inspected. In meeting the latter requirement, the City inspected an additional 45 facilities. As mentioned in section 5.2.4.2 (Inventory and Inspections) the City used specific criteria for selecting the additional and alternate sites to be inspected. In particular, were the first two criterion from which the City selected facilities located in Loma Alta Creek Hydrologic area and San Luis Rey WMA. In anticipation of the pending Loma Alta Slough TMDL for eutrophication and bacteria for which the City would become a stakeholder, City WQPP staff wanted to begin to assess potential water quality impacts to the Slough from commercial and industrial facilities. Similarly, staff wanted to assess the potential implications of pollutant runoff in the watershed at facilities located in the San Luis Rey WMA. The City used GIS to determine what facilities on the City's inventory are located in Loma Alta Creek hydrologic area and San Luis Rey WMA and received inspections.

6.0 Residential Component

6.1 Introduction

The City continued to implement the residential component of the City's JURMP to prevent or reduce pollutants in runoff from residential land use areas and activities. In achieving this goal, the City implemented several JURMP activities during the reporting period. These included conducting residential stormwater complaint investigations, providing outreach to residents, and facilitating proper disposal and management of household hazardous waste and used oil.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP. Annual reporting requirements for the residential component are listed in section J of the Permit. As indicated in Table 6.1, the City successfully met all reporting requirements for the residential component of this JURMP Annual Report.

Table 6.1 JURMP Annual Reporting Compliance

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Identification of the high threat to water quality residential areas and activities that were focused on.	1	Confirmation	See Section 6.2	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for residential areas and activities.	1	Confirmation	Confirmed	6.4.1
3	A description of efforts implemented to facilitate proper management and disposal of used oil and other household hazardous materials.	1	Confirmation	See Section 6.4.1	
4	Types and amounts of household hazardous wastes collected, if applicable.	1	Confirmation	See Section 6.4.1 & Appendix E-1	
5	A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.	1	Confirmation	Confirmation	6.4.2
6	The number of violations and enforcement actions (including types) taken for residential areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation	NOV = 18 Citation = 2 Verbal/Written Warning = 55/9	6.4.2 & Appendix E-2
7	A description of collaboration efforts taken to develop and implement the Regional Residential Education Program.	1	Confirmation	See Section 6.5	

6.2 Source Characterization

During the reporting period, the City focused on all high threat to water quality (TTWQ) residential areas and activities. These areas and activities are listed in the City's 2008 JURMP.

In the City's JURMP, the Residential Component focuses primarily on activities that have been deemed a high threat to water quality including: vehicle and boat repair/maintenance, automobile washing, automobile parking, home and garden care activities, home care and maintenance, manure and pet waste management, private sewer laterals and septic systems, and street sweeping of private roads/streets. Because these activities occur throughout all residential areas, all residential areas are then by default deemed a high threat to water quality.

The JURMP further describes the mechanisms the City utilizes to implement the Residential Component and to ensure that all BMPs are implemented. Implementation includes the designation of activity specific BMPs and pollution prevention methods, outreach, complaint response, used oil and waste collection, and enforcement where necessary. Outreach and complaint response are the two methods used to disseminate educational and BMP information throughout the residential areas. Because outreach and complaint response efforts target all residential areas and specifically those high threat to water quality activities in those areas, the residential community is not broken down by areas related to the treat to water quality. Instead, all residential areas are considered a high treat to water quality.

Routine work activities conducted throughout the City provide opportunities for the City to focus attention on high TTWQ residential areas and activities. During complaint investigations, Stormwater Code Enforcement staff customarily observes areas and activities in route to and from and in the vicinity of the complaint case, being observant for any stormwater violations being committed. It is common for Code Enforcement staff to observe and respond to violations unrelated to the case that is being investigated. Similarly, field staff from other City departments (includes staff from Parks, Streets, Wastewater, Building, and Construction divisions) reports stormwater violations to the City's Stormwater division during routine work activities. Staff is knowledgeable about the City's Storm Water Program and are trained on how to detect a stormwater violation. These practices are termed pro-active enforcement and the City continues to rely on them in its maintenance and implementation of its Water Quality Protection Program. During the reporting period, 52 residential complaint cases (96 total residential cases reported) were generated by pro-active enforcement.

During the reporting period, Stormwater staff responded to 96 complaint cases in residential areas. In its review of residential complaint cases, the City identified five common source types (including spills-all types, illegal washing, sediment discharge, trash and debris, and over-irrigation) and calculated the number and percentages of each to show the prevalent source types (See Table 6.2 and Figure 6.1). Sediment sources were the most common at 46%, followed by spills (19%) and trash and debris (18%). Illegal washing was also identified as a significant pollutant source (9%).

Table 6.2 Residential Complaint Source Types (numbers)

Spills	Washing	Sediment	Trash and Debris	Over-irrigation	Other
16	7	39	15	2	5

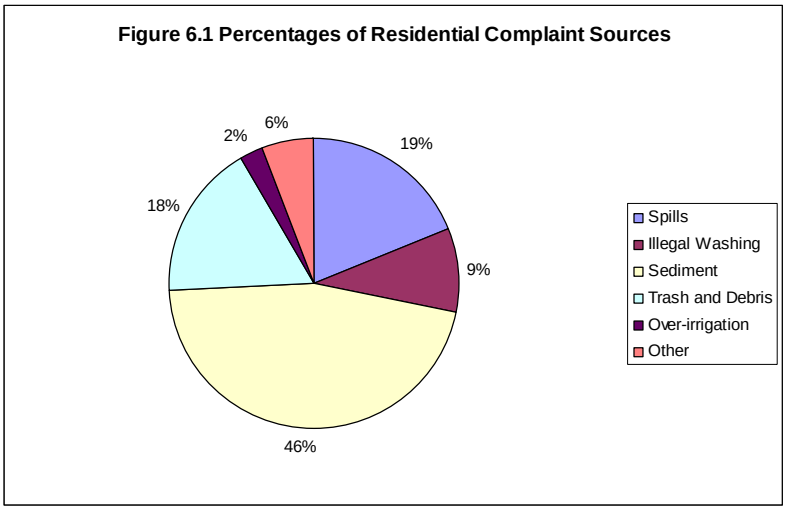

The City's website (www.cityofvista.com) was operated during the reporting period providing best management practices (BMPs) information to residents regarding several high TTWQ activities. These activities and BMPs include:

- Manure and Pet Waste Management
- Vehicle Maintenance
- Home Care Maintenance
- Home and Garden Care Activities and Product Use
- Automobile Washing

Community events held during the reporting period provided opportunities for the City to disseminate stormwater information regarding several high TTWQ activities. Stormwater and recycling presentations were conducted at several City events and BMP guides and givewaway items were provided to residents. Included in the BMP guides were pollution prevention tips for car washing, less toxic yard and garden care, pet waste cleanup, recycling, and proper care and disposal of motor oil.

These outreach efforts covered several high TTWQ activities including manure and pet waste management, vehicle maintenance, home care maintenance, home and garden care activities, and product use, and automobile washing. Details on the education and outreach provided at City events are included in Section 8 of this Annual JURMP report.

6.3 Best Management Practice Requirements.

During the reporting period, the City did not modify its Best Management Requirements (2008 JURMP).

6.4 Program Implementation

6.4.1 Best Management Practices

Stormwater Complaint Investigations
The City required residents to implement the City's required best management practices (BMPs) to prevent pollutants from entering the City's MS4 and receiving waters. Most often, these BMPs were required as a result of enforcement efforts conducted during stormwater complaint investigations. During the reporting period, City staff investigated 96 residential complaints. A summary of all FY 09-10 residential complaint cases is included in Appendix E-2. Storm water investigations were conducted by City Stormwater Code Enforcement staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the 96 reported complaints, 84 were confirmed by City staff and 52 were generated by pro-active enforcement.

During the reporting period, the City verified BMP compliance in all 84 confirmed complaints. A confirmed complaint is one that results in the identification of a stormwater violation during the complaint investigation. In these complaint investigations, City staff required residents to implement the City's required BMPs to correct the violation and gain compliance. City staff also provided stormwater literature relative to the type of violation in each stormwater complaint case. This further emphasized the importance of BMP compliance. In all residential complaint cases, follow-up inspections were conducted to verify compliance.

Education
During stormwater complaint investigations, City staff provided pollution prevention brochures to residents to guide them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods that are consistent with the City's BMP requirements. These brochures included the following:

- Motor Oil
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- General Help brochure

During the reporting period, the City held several community events informing residents of the City's BMP requirements. Stormwater and recycling presentations were conducted and various BMP brochures and giveaway items geared towards residential activities were made available to residents. Details on the community events are covered in Section 8 (Education) of this Annual JURMP report. The City also holds an annual Citizens Academy where members of the public can learn about the different City

departments; on the Engineering Department evening, the City's Water Quality Protection Program was discussed.
The City also operated its website during the reporting period (www.cityofvista.com) providing multiple pollution prevention tips for homeowners. These tips are consistent with the City's BMP requirements and include the following:

- Cleanup after your pets
- Care for your cars
- Sweep or rake yard waste and debris, do not hose them into the street.
- Reduce use of landscape chemicals
- Control erosion
- Plant natives
- Buy non-toxic products
- Integrated Pest Management tip cards for ants, aphids, cockroaches, earwigs, fleas, and good bugs.

Household Hazardous Waste Collection Center
The City of Vista continued to provide its residents with a household hazardous waste (HHW) collection facility at the Auxiliary Corporation Yard at 1165 East Taylor Street, as well as the option of HHW curbside pickup. The facility is open to Vista residents and operates every Saturday from 9:00 am to 3:00 pm. Residents may dispose of a variety of wastes including paints, chemicals, u-wastes, e-wastes, automotive wastes, home generated sharps, and pharmaceutical wastes. The City's curbside pickup program offers free door-to-door collection services to citizens 65 or older and to households possessing a registered handicap placard.

During the reporting period, education and outreach played a major role in promoting the HHW collection facility and facilitating the proper disposal of HHW. Educational brochures on HHW disposal were provided for distribution at several City facilities visited regularly by the public including the City Hall, City Public Works, and City Engineering lobbies. Community events also provided opportunities for the City to provide education and outreach on HHW disposal. At event booths, City staff conducted water quality presentations that included discussions on how to properly dispose of HHW. HHW literature and promotional items were also made available to the general public at events. The City's website (www.cityofvista.com) also contains information on HHW disposal.

As summarized in Table 6.4, a total of 742,776 lbs of HHW were disposed of by residents at the HHW collection facility during the reporting period. This amounted to an increase of 67,302 lbs (or 10%) of HHW disposed of from last year (675,474 lbs). In the past two fiscal years HHW disposal at the facility has increased by 21% (11% in FY 08-09 and 10% in FY 09-10). Similarly, 7,814 lbs of HHW was disposed of by residents using curbside pickup during FY 09-10, amounting to an increase of 790 (or 11%) lbs of HHW disposed of from last year (7,024 lbs). Information on the types and amounts of HHW that were disposed of is included in Appendix E-1.

Used Oil and Filter Collection Programs
The City also offers residents other options for disposing of used oil, filters, and other oil products. At certified used oil collection centers and used oil filter collection events, residents may dispose of used oil, filters, and other oil products. Table 6.3 includes a list

of certified used oil collection centers that operated during the reporting period. These services are often free to Vista residents from funding provided through the City's Used Oil Block Grant (UBG). During the reporting period, the City used funds from its Cycle 14 UBG to implement these services. The City typically uses contractor services to implement several UBG program activities.

To facilitate the Used Oil and Filter Collection Programs, the City continued its contract with the Solana Center for Environmental Innovation through the first three months of the reporting period (July 1, 2009 through September 30, 2009). In FY 09-10, Solana Center efforts consisted of actively reaching out to the Vista residents to educate and inform them about used motor oil and oil filter recycling and working with the collection centers to best manage the used oil and wastes. This included but was not limited to providing education and outreach at City community events and conducting quarterly surveys at Certified Collection Centers (CCCs) using the results to assist CCCs in managing their Used Oil Recycling Programs.

As detailed in Table 6.4, a total of 27,036 gallons of used oil were disposed of at the CCCs during the reporting period. This volume is estimated using results from quarterly CCC surveys and based on the volume of used oil disposed of by Do-It-Yourselfers through the Used Oil Program. Do-It-Yourselfers include residents who change oil in their own vehicles and subsequently bring the used oil to the CCCs for recycling. The volumes do not account for customers who bring in their vehicles to a CCC for oil changes and other maintenance.

During the Vista Rod Run event held in August 2009, Solana staff provided education and outreach to residents regarding household hazardous waste disposal, used oil recycling, less toxic yard and garden care, pet waste cleanup, and recycling. More Information on this event is included in the Education section of this Annual JURMP report (Section 8).

Table 6.3 City of Vista Certified Used Oil Collection Centers

Certified Collection Center	**Address**
Kragen Auto Parts	1250 South Santa Fe Avenue
Autozone	1410 North Santa Fe Avenue
Autozone	573 West Vista Way
Kragen Auto Parts	1220 East Vista Way
Jiffy Lube	1231 East Vista Way
Masterlube	243 Sycamore Avenue
EZLube	786 East Vista Way
North County Import Specialist	1215 North Melrose Drive
Santa Fe Auto Repair	1045 North Santa Fe Avenue

Table 6.4 Total Amount of Disposed Household Hazardous Wastes

Facility or Activity	Amount of Hazardous Waste Disposed of (excluding motor oil, and oil products)	Amount of Used Oil and filters Disposed of	Total
Household Hazardous Waste Collection Center	709,325 lbs	33,451 lbs	742,776 lbs
Curbside Pickup	7,814 lbs	-	7,814 lbs
Used Oil Collection Centers	N/A	27, 036 gals	27,036 gals

6.4.2 Oversight and Enforcement

Evaluation of Oversight Methods

During the reporting period, the City of Vista continued with its preliminary steps to evaluate the methods used for oversight of residential areas and activities. The City has decided that an important step in evaluating the City's oversight methods is to first identify what the prevalent sources of pollutants are in residential areas and where they are located throughout the City. This is typically done by reviewing and analyzing information from stormwater complaint cases. As in the last reporting period, City staff reviewed its FY 09-10 residential complaints to determine the prevalent source types (see Section 6.2 and Fig 6.1). As explained below the next steps in the evaluation process may follow once pollutant source data has been compiled.

It is the intent that information gathered from its preliminary pollutant source evaluations will help the City move forward in its assessment of current oversight methods and identify, if any, new oversight approaches. As mentioned, the evaluation process will first involve identifying pollutant sources that are found to be most predominant in residential areas. For example, if, by determining that trash and debris continues to be a significant pollutant type in residential areas, the City will want to then identify the areas and sources of trash and debris. This location information is also provided in stormwater complaint case files. Using GIS and other mapping capabilities, the predominant pollutant sources and locations can be mapped throughout the City. If it is determined to be beneficial, the City may want to provide additional oversight in those areas to assess BMP compliance and obtain more information as to the reasons behind continued non-compliance. Additional oversight could translate into more drive by inspections in those areas when City Code Enforcement staff is working in the area. This is one oversight approach that could surface from conducting these preliminary pollutant source evaluations. Nonetheless, these source evaluations may help the City determine the effectiveness of its current oversight methods and furthermore, what, if any, modifications can be made to the methods.

Enforcement at Residential Sites

A total of 96 complaint cases involving residential sites were investigated by the City's Stormwater division during the reporting period. This amounted to approximately 50% of all complaint cases investigated during FY 09-10 (192 total). Of the 96 reported complaints, 84 were confirmed. Confirmed complaints are those in which a stormwater violation is identified during the complaint investigation and include illegal discharges, illicit connections, private lateral spills, and BMP violations. Figure 6.2 indicates the percentages of each violation type (reported) with Illegal discharges being the most

prevalent (64% of all reported cases). Of the 84 confirmed complaint cases, City staff implemented enforcement actions in all of these cases rendering 55 verbal warnings, nine written warnings, 18 notices of violation, and two citations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. A summary of enforcement actions implemented in residential complaint cases is included in Appendix E-2. During the reporting period, the City verified that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected).

Figure 6.2 Residential Stormwater Violation Types FY 09-10

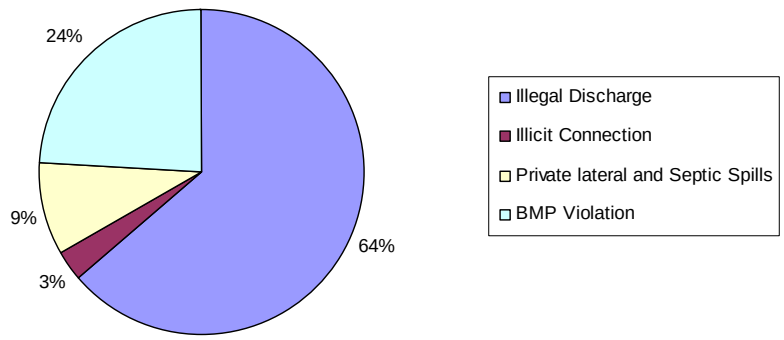

6.5 Regional Residential Education Program

The Education and Residential Sources Workgroup (ERSW) is tasked with implementing the Regional Residential Education Program. The program, which was developed to comply with the Municipal Stormwater Permit (Order 2007-0001), focuses on implementing a variety of educational activities that would target all residential audiences and be effective in reducing urban runoff pollution. During the reporting period, the City of Vista took part in developing and implementing FY 09-10 ERSW activities by attending and participating in ERSW meetings.

The ERSW made significant progress in implementing the Regional Residential Education Program. These efforts will be reported in the Regional Urban Runoff Management Program Annual report due for submittal in January 2011.

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

In accordance with Addendum No. 2 to Order No. R9-2007-0001, the City of Vista is submitting Section 7.0 as one report separate from the JURMP Annual Report, submitted in September 2009. Section 7.0, the Illicit Discharge Detection and Elimination Component will be submitted under separate cover no later than December 15, 2010.

8.0 Education Component

8.1 Introduction

Education is an important tool the City uses to improve water quality and it is a requirement in the City's Municipal Storm Water Permit (Order No. 2007-0001). The City developed an education program in its JURMP which addresses education for multiple target audiences. These audiences include municipal staff, new development and construction communities, industrial and commercial business owners and operators, residents, general public, and school children. The City provides education and outreach to these communities to increase their awareness of pollution prevention and to comply with the Permit. During the reporting period the City conducted several education and outreach efforts for these audiences.

Per the permit, the City is required to implement an education program using all appropriate media and targeting specific communities. Table 8.1 provides an overview of the target communities and the applicable section and table numbers specific to those communities.

Table 8.1 FY 2009-10 Outreach Efforts with Target Communities

No.	Compliance Item	Outcome Level	Assessment Method	Section/Appendix
1	A description of education efforts conducted for each target community.	1	Confirmation	Section 8.2 Section 8.3
2	A description of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.	1	Confirmation	Section 8.3.1
3	A description of education efforts conducted for municipal departments and personnel.	1	Confirmation	Section 8.2 Table 8.2
4	A description of education efforts conducted for the new development and construction communities.	1	Confirmation	Section 8.3.2
5	A description of jurisdictional education efforts conducted for residents, the general public, and school children.	1	Confirmation	Section 8.3.3 Tables 8.3 & 8.4

8.2 Staff Training Element

Personnel from various Municipal departments were trained on stormwater topics during the reporting period. These topics included general information from the City's JURMP and Municipal Storm Water Permit, program wide BMP requirements, BMPs specific to their activities, and instructions to detect, eliminate, and report illegal discharges. Municipal staff training for FY 2009-10 is summarized below in Table 8.2. Staff meetings are held every two weeks, during which time topics are reviewed and discussed including, industrial/commercial inspections, complaints, outreach & education, and watershed issues; these meetings serve as excellent training venues in that ideas are exchanged and discussed, often resulting is clarity around a given topic and refinement of internal procedures and policies. Water quality protection was also addressed in each staff newsletter during the year. These are included in Appendix G-3.

Table 8.2 FY 2009-10 Municipal Staff Training

Workshop/Training	Audience	#	Location	Host	Date
Peace Officer Orientation II	Stormwater Staff	1	San Diego	SD Reg Public Safety Trng Institute	07/13-17/09
StormCom Conference	Stormwater Staff	3	Anaheim	Forester Media	08/18-19/10
Stormwater Inspection	Construction Inspection and Engineering Staff	2	Kearny Mesa	The National Stormwater Center	09/16-17/09
Stormwater Inspection	Stormwater Staff	1	Kearny Mesa	The National Stormwater Center	09/15/09
Construction Rainy Day Season Workshop	Municipal Staff and Development Community	24	City Hall	City of Vista Water Quality Manager	09/17/09
BMPs	Stormwater Staff	3	City Hall	Doug Coppi	10/09/09
FEMA – NIMS IS-700	Stormwater Staff	1	Kearny Mesa	Homeland Security	10/13/09
Stormwater Training – SUSMP and BMPs	Engineering and Stormwater Staff	12	City Hall	MOE and Keri Martinez	10/29/09
CASQA Conference	Stormwater Staff	3	San Diego	CASQA Institute	11/02-04/10
Stormwater Code Enforcement Case File Training	Stormwater Staff	6	City Hall	Code Enforcement Officer	01/27/10
HAZwoper Training	Municipal Staff	1	San Diego	Pacific Safety Council	02/12/0
Stormwater Case File Training – Investigation Complaint Forms	Stormwater Staff	5	City Hall	Code Enforcement Officer	02/24/10
SUSMP Seminar	Construction Inspection Staff	3	City Hall	APWA	03/01/10
Back Safety-Lift for Life Training	Stormwater Staff	3	City Hall	City of Vista Water Quality Manager	03/04/10
Fundamental Inspector Course	Stormwater Staff	2	Online	CalEPA	03/18/10
One Day Enforcement Environment Training	Stormwater Staff	3	Carlsbad	CalEPA	03/23/10
Stormwater Case File Training – Using a Narrative Sheet	Stormwater Staff	6	City Hall	Code Enforcement Officer	04/08/10
Construction General Permit Overview	Engineering and Stormwater Staff	8	San Diego	RWQCB	05/04/10
Stormwater Training – Pollution Prevention Plan	Engineering and Construction Inspection Staff	5	City Hall	City of Vista Water Quality Manager	06/29/10
TOTAL NUMBER OF STAFF TRAINED – 92					

8.3 Educational Outreach Element

Staff attended meetings of the Regional Education and Residential Sources Workgroup. Workshop topics included partnership development, regional branding, regional website, and mass media campaign development and implementation.

8.3.1 Description of How Education Efforts Targeted Underserved Target Audiences, High Risk Behaviors, And "Allowable" Behaviors and Dischargers

During the reporting period the City conducted education and outreach efforts that targeted high risk behaviors and "undeserved" communities. The City held several community events which provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors areas. The events are summarized in Table 8.3. Brochures and items promoting the City's Household Hazardous Waste and Used Oil Collection Programs were distributed along with BMP guides for car washing, less toxic yard and garden care, pet waste cleanup, and recycling. The events were equally successful in providing outreach to Spanish communities as several brochures and promotional items were available in Spanish. Volunteers, City contractors, and personnel who were present at event booths conducted water quality presentations and were available to answer questions about the City's Water Quality Protection program.

During the reporting period, City staff provided education and outreach to the community regarding many "allowable" behaviors and discharges. Through City investigations, City staff educated responsible parties on the importance of best management practices to prevent and/or reduce pollutant runoff. City staff conducted several stormwater investigations involving allowable discharges, such as: over-irrigation, swimming pool discharges, residential carwashing, and groundwater. In each incident, City staff recommended appropriate BMPs and educated the responsible party on the importance of maintaining BMPs to prevent further discharges of pollutants. BMP guides were also provided to the responsible parties.

A storm water article was included in the City's Winter 2009 newsletter (Inside Vista) which discussed rainy season and potential pollution affects on local creeks, lagoons, and the ocean. The newsletter was sent to 36,000 residences. The article explained the pathway from yards to the ocean and provided yard tips, pet waste tips, erosion control tips, and native plant tips. This edition of the Inside Vista Newsletter is included in Appendix G-3.

The City's website is a valuable resource that provides pollution prevention tips in several categories of "allowable" behaviors and discharges. The section, Stormwater Pollution Prevention Tips for Homeowners, provides information on composting, buying organic or non-toxic products, native plants, and water conservation. Also available on the City's website are instructions and BMPs for how to control pests in and around your home. The City continues to advertise its website on various printed materials including the City's Newsletter.

8.3.2 Description Of Education Efforts Conducted For The New Development And Construction Communities

Education efforts for the new development and construction communities continued during FY 2009-10 reporting period. Education efforts consisted of individual interactions with contractors and/or developers and City staff through counter interaction,

attendance at all pre-construction meetings, and construction site inspections. The City's Engineering (includes stormwater and inspection divisions) and Planning department staffs were primarily responsible for communicating information to the new development and construction communities about the City's Water Quality Protection Program. At each pre-construction meeting, stormwater staff, provided a synopsis of the City's program and discussed the City's BMP requirements. City staff conducted 15 pre-construction meetings during the reporting period. Additionally, construction BMP brochures were distributed upon issuance of building permits. A Construction Rainy Day Workshop was held for municipal staff and developers on September 17, 2009.

Through municipal staff training conducted throughout FY 2009-10 (refer to the staff training element, section 8.2), City staff learned about the new BMP requirements in the City's JURMP and communicated this information to contractors and developers. City staff also had access to and referenced the City's Stormwater Ordinance (Municipal Code, Chapter 13.18 Stormwater Management and Discharge Control Program) and Stormwater Standards Manual in their dealings with contractors and developers.

Prior to the rainy season City inspectors hand delivered letters to contractors and developers at all construction sites reminding them of the City's BMP requirements. Approximately 32 letters were distributed.

8.3.3 Education Efforts Conducted For Residents, The General Public, And School Children

The City conducted substantial education and outreach efforts to residents, the general public, and school children during FY 2009-10 reporting period.

Residents and the General Public

Community events provided opportunities for the City to conduct education and outreach efforts regarding its Water Quality Protection Program. A summary of the events is provided in Table 8.3. The City holds an annual Citizens Academy where members of the public can learn about the different City departments; on the Engineering Department evening, the City's Water Quality Protection Program was discussed. At some event booths, City staff conducted watershed presentations using its EnviroScape Model. Using this 3 dimensional model, City staff can demonstrate the adverse affects of storm water runoff in a watershed; it continues to be a very effective visual tool in educating the community, especially children. These events also provided a classroom atmosphere in which residents and the general public could ask questions and receive answers about various aspects of the City's program.

Table 8.3 Educational Events

Date	Event	Estimated Attendance
08/01-02/09	Vista Rod Run	10,000
09/19/09	Coastal Creek Clean Up	118
01/25/10	Kids Conference on Watersheds	225
03/10/10	San Diego County High Tech Fair	1,971
04/24/10	Alta Vista Gardens Earth Day	600
04/25/10	Mission San Luis Rey Earth Day	500
05/22/10	Fit Fun Families Day	500
05/30/10	City of Vista Strawberry Festival	20,000

City staff provided considerable education and outreach to residents, businesses, and the general public during storm water enforcement efforts. Enforcement efforts were generated from drive by observations made in the field (proactive enforcement) and through reported incidents. Proactive enforcement continues to be a significant mechanism the City uses to regulate and educate residents and the general public. Through various enforcement mechanisms including verbal and written warnings (Letters and Notice of Violations) City staff consistently educated residents on BMP requirements and the importance of pollution prevention. City staff also provided various storm water BMP brochures and referred residents to the City's Municipal Code and Stormwater Standards Manual listed on the City's website. During the reporting period, City staff distributed approximately 194 brochures and booklets in response to complaint investigations and through proactive enforcement.

The City used other mechanisms to provide education and outreach to residents and the general public during the reporting period. The City included a storm water article in the City's winter 2009 Newsletter that contained information on the rainy season and pollution effects on local creeks, lagoons, and the ocean; rainy season articles were also included in several issues of the municipal *Spotlight* newsletter (Appendix G-3). The City continued to operate its Storm Water Hotline number (760) 726-1340, x1686; the City received six stormwater reports from residents and the general public. The City lists the hotline number on its website and includes it in other printed materials including City Newsletter articles. The City's website (www.cityofvista.com) is an important source that residents and the general public may use to learn more about the City's Pollution Prevention program. It contains comprehensive information of all aspects of the City's Program and includes links to the City' Municipal Code, Stormwater Standards Manual, and various BMP guides and booklets. Printed educational brochures were provided for distribution at several City facilities visited regularly by the public including City Hall, City Public Works and Engineering lobbies.

School Children

The City continued its education and outreach efforts to schools during the reporting period. For educational outreach to elementary and middle school students, the City contracted for the first time with San Diego County Office of Education (SDCOE) to provide two programs. The first, the Splash Lab program is available to grades 4-6. And the second, the Green Machine program is available for grades K-4. During the 2009-10 academic year, Splash Lab reached 1,362 students at 13 schools. The Green machine reached 108 students at one school. The Splash Lab is a completely self-contained mobile laboratory that brings simulated environmental conditions to school sites; this program enables schools with limited funding and schools within disadvantaged communities to have easy access to water science education. The presentations provide an interactive opportunity to children to learn about stormwater, water quality, bioassessment, watersheds, pollution, and best management practices. The Green Machine is a hands-on interactive learning program that includes a soils research station (complete with live earthworms), an integrated pest management station, a water cycle station, and comprehensive teacher packets complete with pre and post Green Machine activities. Splash Lab pre- and post surveys were administered to all of the schoolchildren. Pre-surveys were given prior to the students' participation and post tests were generally given the following week in the classroom. In total, 627 pre-surveys and 653 post-surveys were received back from ten schools. On average, scores on the pre-

test were 61%. The average scores on the post test were just over 80%, showing an increase in knowledge through the program.

The City staffed an education and outreach booth on Coastal Cleanup Day, September 19, 2009, at the City's creek cleanup site. Educational materials for elementary through high school were distributed including Environmental Protection Agency (EPA) and National Oceanic and Atmosphere Administration (NOAA) produced activity books. All together, over 100 of the following activity books were distributed: 1) NOAA's *Understanding Marine Debris*, 2) EPA's *What's Up with Our Nation's Waters?*, and 3) EPA's *Stormwater Runoff Challenge* crossword puzzle.

8.3.4 Education Efforts Conducted for Industrial/Commercial Businesses

The City conducted education and outreach efforts at certain stationary industrial and commercial facilities during this reporting period. Through the City's required annual inspections of stationary industrial and commercial facilities, facility representatives were educated on the City's storm water requirements. During each inspection, City staff introduced the storm water program and provided educational materials specific to the business. Table 8.4 summarizes the educational materials distributed to stationary facilities. Before beginning the inspection process, the City prepared and mailed a letter to all businesses selected for inspection. The letter provided general information about the program, informed each business owner of the upcoming inspection, and provided multiple pollution prevention methods consistent with the City's BMP requirements. In addition, the City provided site and activity specific BMP information to all businesses on its inventory during FY09-10 via mailers and/or inspections.

Table 8.4 Educational Materials Distributed to Stationary Facilities

Educational Material	Number Distributed
Copy of City Authorization Letter	3
Automotive Poster	1
What's Cookin' – English	92
What's Cookin' – Spanish	24
Green Wrench Guide – English	28
Green Wrench Guide – Spanish	9
Conditional Waiver No. 4 Information	6
Industrial/Commercial Brochure	165
NONA / NEC Paperwork	16
NOI Handout	7
Grease Bin Handout	6
FOG Brochure	130
FOG Poster	97
FOG Record Keeping Templates	115
Inspection Notification Letter	292
Total # of Educational Materials	**991**

The City also undertook outreach measures in preparation for the rainy season. For commercial sites, the focus was on shopping centers with the highest potential to impact water quality; 34 sites were identified and educational letters containing activity specific BMP information were sent. Additionally, pre –rainy season letters were sent to all 43 industrial sites containing required activities specific BMP information. The City also completed seven industrial inspections based on previous violation history.

8.4 Notable Activities

The City developed new educational materials, including: a Mobile Water Use brochure (Appendix G-1); and a municipal survey (Appendix G-2) for use in 2009-10 touching on a variety of water quality topics.

The Regional Co-Permittee group worked with Think Blue to develop a regional calendar, "Be the Solution to Stormwater Pollution 2010" calendar. The City distributed 750 copies of the calendars to a variety of target audiences including, schools, libraries, city facilities, and residents.

The City undertook outreach measures in preparation for the rainy season. Outreach efforts to residents included rainy season information in a local homeowners association newsletter, a repeating powerpoint slide at City Council meetings, media releases, and website updates. For commercial sites, the focus was on shopping centers with the highest potential to impact water quality; 34 sites were identified and educational letters containing activity specific BMP information were sent. Additionally, pre –rainy season letters were sent to all 43 industrial sites containing required activities specific BMP information. The City also completed seven industrial inspections based on previous violation history.

To measure changes in water quality knowledge over time, the City developed a municipal survey, included as Appendix G-2. This survey was administered in July of 2009 and again in June of 2010; 136 people responded to the 2009 survey and 127 responded to the 2010 survey. After comparing the surveys results, staff found that there was a 5 percent increase in knowledge regarding the definition of a watershed and a 22 percent increase in understanding of the consequences of leaving pet waste on the ground. All other responses were similar between the two surveys. The survey results assisted staff in determining which topical areas to focus on for municipal education during 2010-2011.

An email address created in 2008-2009 continues to facilitate communication between the public and the City's water quality protection program; the email address is waterquality@cityofvista.com.

9.0 Public Participation Component

9.1 Introduction

During the reporting period, the City continued with its implementation of the Public Participation Component of the City's JURMP. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms.

The public participation component is largely linked to the City's education component. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Also, as residents become aware of the City's program goals they are more apt to provide their perspectives, comments, and suggestions.

9.2 Mechanisms

9.2.1 Public Notifications

The City of Vista provides advanced notice to the public via the website for projects requiring City Council approval. The public has an opportunity to comment on any City project during the Council meetings. At the August 11, 2009 City of Vista Council meeting, one stormwater related project was brought before Council, which was the approval of the Agua Hedionda Watershed Cost Share Agreement between stakeholders. Prior to this meeting, the agreement was approved by all other participating municipal agencies. During the meeting, no members of the public chose to speak for or against approval of the agreement.

9.2.2 Programs, Community Events, and Educational Activities

Household Hazardous Waste and Used Oil Collection Programs

During the reporting period the City continued to operate its household hazardous waste and used oil collection programs. These programs enable the public to properly dispose of used oil and hazardous wastes. Several services offered in the Used Oil Collection Program were free to City of Vista Residents. By making these programs available and encouraging the public to properly dispose of these materials, it is expected that less illegally disposed materials end up in receiving waters.

Community Events

During the reporting period several community events were held in the City of Vista that encouraged participation from the public. These events are included in Table 8.3 of Section 8.0 – Education Component. At event booths water quality presentations were conducted and promotional items were distributed to the public. This setting can create a classroom atmosphere that facilitates discussions about aspects of the City's pollution prevention program including watershed management and pollution prevention. It also provides a mechanism for residents to provide comments and suggestions that may assist the City in its program implementation efforts.

Educating Residents and the General Public
City staff provided education and outreach on pollution prevention during stormwater investigations. Several investigations were conducted at residential and commercial sites during the reporting period (See Sections 5.0 and 6.0). One aspect of the City's enforcement procedure is to provide education and outreach so that responsible parties learn about the importance of pollution prevention in preserving water quality. City staff introduces the City's storm water program and explains the importance of implementing appropriate BMPs to preserve water quality in the City's receiving waters. Educational materials are distributed which serve as tools for managing urban runoff. Through these education and outreach efforts, it is expected that improvements will be made in managing urban runoff.

Educating School Children
Educating school children plays a significant role in the City's execution of its Public Participation component. During the reporting period, classroom presentations were conducted reaching 1,362 students via the "Splash Lab" and "Green Machine" programs as discussed in Section 8.3. The presentations provide interactive opportunities for children to learn about stormwater, water quality, water cycle, bioassessment, watersheds, pollution, a soils research station, an integrated pest management station, and best management practices.

9.2.3 Watershed
The City is an active participant in both the Carlsbad and San Luis Rey River Watershed groups. This includes participation in the Carlsbad Watershed Network (CWN), comprised of a variety of stakeholders including representatives from other municipalities in the watershed, environmental organizations, conservancies, the Regional Water Quality Control Board, and other members of the public. During the reporting period, City staff attended monthly meetings for both watersheds when available.

During FY 2006-07, the City of Vista was awarded a $500,000 Proposition 40 Grant from the State Water Board to develop a watershed management plan for Agua Hedionda Watershed. The Agua Hedionda Watershed Management Plan was finalized and adopted by City Council during FY 2008-09. During FY 2009-10, the City launched the preliminary design phase for one of the restoration projects (SR-02) identified in the Watershed Management Plan; completion is expected by October 2010. In the future this project is expected to promote public participation through the design and permitting process and ultimately through interactive educational opportunities in Buena Vista Park when the project is complete.

On January 26, 2010 a contract was awarded by City Council for construction of the Buena Vista Creek Walk project. The project will provide creek stabilization and watershed. The project was under construction during FY 2009-10 and completion is expected by October 2010.

9.2.4 Other Mechanisms

Stormwater Hotline/Other Contact Information
The City continued to operate its Stormwater Hotline for English (760-726-1340 x1686) and Spanish (760-726-1340 x1698) speaking residents during the reporting period. The City encourages residents to call the stormwater hotline to report any observed illicit

connections, illegal discharges, or other activity that may contribute pollutants to the City's storm drain system. The City advertises the Stormwater Hotline on various educational materials and the City's website. A total of six stormwater reports via the hotline number were received by City Staff during the reporting period; an additional 19 were received via direct calls to the main City number. These will be included with submittal of the Illicit Discharge Detection and Elimination Section under separate cover, due December 15, 2010.

The City also posts City departmental phone numbers on the City's website and on educational materials. These departments include Public Works, Community Development, and Engineering. Additionally, the City encourages residents to email stormwater concerns at: waterquality@cityofvista.com. A total of four stormwater reports were received via email during the reporting period.

Website
During the reporting period, the City continued to use its website to provide stormwater information to the public, including hotline information and access to printed materials.

9.3 Notable Activities

Adjustments were made to the stormwater hotline to provide better service to the public. Mechanisms were put in place to ensure that the hotline is continually answered during business hours, with staff support at all times.

The email address created in 2008-09, waterquality@cityofvista.com, which citizens can use to report stormwater concerns, was added to a number of the City's outreach materials.

10.0 Fiscal Analysis Component

10.1 Introduction

The Standardized Fiscal Analysis Method and Format (Fiscal Analysis Method) was collaboratively developed and adopted by the Copermittees in January 2009 in accordance with Sections G, J.1.a(3)(k), and J.1.c(1)(d) of NPDES Order No. R9-2007-0001. The Fiscal Analysis Method document was submitted to the San Diego RWQCB by January 31, 2009, as Attachment 1 of the Regional Urban Runoff Management Plan (RURMP) Annual Report for FY 2007-08. The Copermittees were required to utilize the standardized fiscal analysis method beginning in January 2010, to be submitted in this JURMP Annual Report. In this Annual Report, the Standardized Method for reporting budgets was utilized. The Standardized Method allows for categorization of expenditures by permit component and is much more detailed than previous fiscal analyses.

10.2 General Budget Information

The City's Jurisdictional Urban Runoff Management Program is funded through the City's Sewer Enterprise fund and is typically based on a two-year budgeting cycle. However, due to current economic conditions, the budgeting cycle has been revisited and is now performed annually. The City continues to pursue and utilize funding from grant sources. Some of the education activities are funded through the Used Oil Block Grant and Department of Conservation Recycling Grant. The City will also pursue other State Funds as part of watershed collaboration efforts as available. With recent economic hardships, the program budget was reduced from FY 2008-09 to FY 2009-10 by approximately 25%. The majority of the reductions were in the Public Works department, as they were directed to focus on meeting permit requirements.

10.3 Fiscal Analysis Methods

In past years, the City has presented budgetary information for the reporting period and for the upcoming fiscal year. This method allows for a breakdown of anticipated expenditures within the program, but has not necessarily followed the permit sections. The analysis was performed along the lines of the budget blocks, set up within the departments performing the related stormwater tasks. For consistency within the region, this method of analysis is no longer utilized.

The City participated in the regional efforts to develop standards for Fiscal Reporting with other Copermittees. In order to prepare for the standardized analysis, the City begun the tracking of implementation costs across all City functions related to the WQPP in 2008. The City began to develop ways to track staff time and expenditures according to permit components. The individual jurisdictional components are tracked, as well as watershed and regional expenditures. The City has performed the analysis according to the Standardized Fiscal Analysis Method for FY 2009-10. Table 10.1 below contains results of this analysis for FY 2009-10.

10.4 Fiscal Analysis Results – Standardized Fiscal Analysis Method

Table 10.1 Stormwater Budget Summary by Component FY 2009-10

JURISDICTIONAL COMPONENTS		
ADMINISTRATION	$	26,968
DEVELOPMENT PLANNING	$	77,586
CONSTRUCTION	$	117,189
MUNICIPAL	$	2,290,297
INDUSTRIAL AND COMMERCIAL	$	118,561
RESIDENTIAL	$	424
IDDE	$	185,026
EDUCATION	$	22,979
PUBLIC PARTICIPATION	$	52
SPECIAL INVESTIGATIONS*	$	-
NON-EMERGENCY FIREFIGHTING	$	-
Jurisdictional Total	$	2,839,082

WATERSHED		
Carlsbad	$	59,302
San Luis Rey	$	5,875
Watershed Total	$	65,177

REGIONAL		
Copermitttee Cost Share of Regional Budget	$	96,324
Regional Total	$	96,324

TOTAL COST	**$**	**3,000,583**

*Includes staff in Water Quality Protection Program, Planning, Development, Construction, Building, Parks, Public Works Maintenance, and Administrative staff implementing storm water requirements within their work units.

10.4.1 Funding Sources

The City's Water Quality Protection Program is funded nearly 100% by enterprise funds. These funds are generated from sewer utilities within the City of Vista and the Buena Sanitation District. Approximately 70% of the Program is funded by the City sewer enterprise fund and the remaining 30% is funded by the Buena Sanitation District sewer enterprise fund. The program is supported by a Used Oil Block Grant and a Department of Conservation Recycling Grant as well. With funding reductions at the State level, the City received approximately $28,000 during FY 2009-10, which was used to support the program's outreach and education activities, as well as the City's recycling program, and household hazardous waste collection programs. Additionally, the City completed construction on two new civic projects during the reporting period using funding from a voter approved sales tax increase (Proposition L). These included the Civic Center and the Sports Park. This is a one time funding source for these specific projects.

Table 10.2 illustrates a summary of the Funding Sources for the program.

Table 10.2 Summary of Funding Sources

FUNDING BY SOURCE		
GENERAL FUND	$	-
STORMWATER FEE	$	-
PERMIT FEES	$	-
DEVELOPER DEPOSITS AND FEES	$	-
REGISTRATION AND INSPECTION FEES	$	-
FLOOD CONTROL FEES	$	-
FRANCHISE FEES	$	-
GAS TAX	$	-
UTILITY TAX	$	-
ROAD FUND	$	-
ENTERPRISE FUNDS	$	2,714,727
TRUST FUNDS	$	-
SPECIAL ASSESSMENT DISTRICTS	$	-
STATE APPROPRIATED FUNDS	$	-
GRANT FUNDS	$	-
OTHER	$	-
TOTAL	$	2,714,727

ONE-TIME FUNDING		
GRANTS	$	28,048
Proposition L	$	257,808
TOTAL	$	285,856

TOTAL FUNDING	$	3,000,583

11.0 Effectiveness Assessment Component

The following section describes the City's annual assessment of the effectiveness of its Jurisdictional Urban Runoff Management Program (JURMP) (Permit sections I.1 and J.1.a.(1)(l)).

11.1 Introduction

The requirements of the Municipal Storm Water Permit (Permit) specify that the City shall annually assess the effectiveness of its JURMP implementation. At a minimum, the assessment shall assess the effectiveness of each Significant Activity or BMP implemented, implementation of each major permit component (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination, and Education), and the overall JURMP. This section outlines the assessment that the City uses to assess the effectiveness of its efforts at improving surface water quality.

Assessment of the JURMP is a joint activity between multiple departments of the City. Assessment measures and methods will be based on assessment tables that list the Permit required activities, targeted outcomes, assessment methods, and assessment measures. Assessment tables are included within each Permit component section of this Annual Report.

The City assesses its JURMP based on the framework set out in the San Diego Municipal Stormwater Copermittee document *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*. Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts to maximize resources. Like most management programs, the City uses assessment as part of an iterative feedback loop involving (1) Planning, (2) Implementation, and (3) Assessment.

The City also assesses the effectiveness of its JURMP in addressing the constituents of concern (COCs) determined from dry weather, MS4, and §303(d) listed constituents, other monitoring programs, and best professional judgment. Where feasible, areas of the Permit that apply to the COCs may be identified and additional data may be collected for these activities. Additionally, scientific literature may be used to help supplement information for the applicable activities.

The City may also determine if re-allocation of resources is necessary to optimize pollutant reduction. During the annual program review, the City attempt to evaluate whether measurable targeted outcomes, assessment measures, and assessment methods adequately target COCs or management questions. Where it is found that assessment data are difficult to obtain, or do not address the purpose of the activity; outcomes, measures, and methods may be adjusted as necessary.

11.2 Effectiveness Assessment Results

The City assessed implementation and effectiveness of individual Permit Components and of the JURMP as a whole. Where enough data exists, preliminary water quality assessments are also possible and explained below. Ideally, an integrated assessment is possible after examining program components, the overall program, and water quality. Where feasible, some conclusions were drawn and are further explained below.

11.2.1 Implementation Assessment

Compliance assessment for individual components was completed by comparing FY 2009-10 results to compliance tables developed following the Permit outline. The tables include targeted outcomes, assessment measures, and assessment methods. Results of individual component assessments can be found within each component section of the Annual Report. A brief summary of the compliance results is provided below.

Additionally, in an attempt to correlate permit components with water quality, a brief discussion of potential pollutant impacts is provided per component. This discussion is based on activities conducted that are related to the specific component.

Finally, the City strives to implement these programs effectively, but efficiently as well. Where it is possible, operational effectiveness pertaining to programmatic components is addressed.

11.2.1.1 Development Planning Component

The development planning component is focused on ensuring that all new development and redevelopment projects minimize impacts on water quality via implementation of all SUSMP, treatment control, and hydromodification requirements. During the reporting period, all projects underwent the urban runoff approval process, ensuring that SUSMP, treatment control, and HMP requirements were met. Additionally, systems are in place to track compliance related items for this component, ensuring that all inventories are kept up to date, all inspections are performed, and requirements are met for each site. Table 2.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1)

In remaining compliant with Permit requirements, all sites incorporate LID into site design and include treatment control BMPs where applicable. Via the inspection program required for these BMPs, the City has gained a better perspective on the functionality of the BMPs. As the TCBMP program is relatively new, three years of data have been collected. In evaluating the program, the effectiveness is examined two ways. First, the number of maintenance deficiencies following each round of inspections is tabulated and compared. Second, the number of maintenance deficiencies is then compared to the certifications submitted annually.

Figure 11.1 illustrates the number of maintenance issues by BMP type for the first three years of the inspection program. During the first year (FY 2007-08), all inventoried BMPs were inspected, while during years two and three, sites were prioritized according to the permit and approximately 50% of the BMPs received inspections. To account for this difference, calculations were performed by BMP, not by project, and the data was normalized by the total number of BMPs inspected.

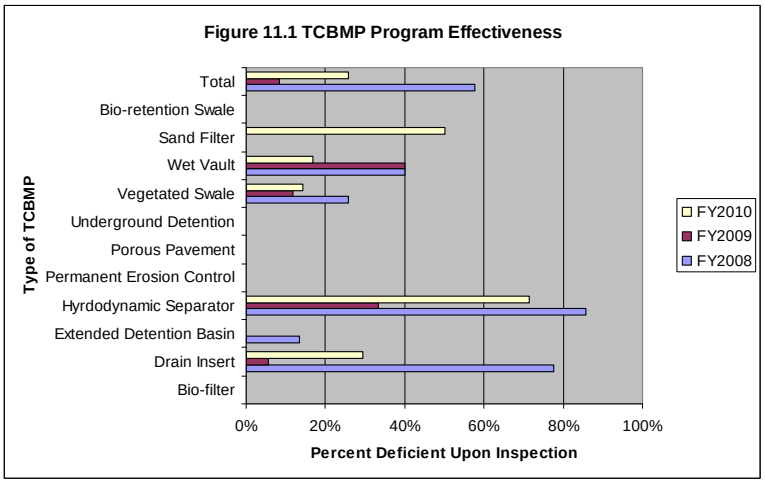

The figure illustrates that overall deficiencies were significantly reduced from FY 2007-08 to FY 2008-09 and increased again slightly in FY 2009-10. Based on percentage of BMPs with maintenance concerns noted during inspections, it appears that hydrodynamic separators are typically maintained less than required. BMPs with no bars on the graph are those that have had no maintenance concerns noted during annual inspections. These include bio-retention swales, underground detention systems, porous pavements, permanent erosion control, and bio-filters. A significant decline in BMP deficiencies was noted from year 1 to year 2, with a slight increase occurring in year 3. Based on this data, it appears that the initial outreach and inspections programs are working well, however the increase this year may be reflective of better educated inspections staff. Recent data collected during the first three years may be variable because the program is relatively new. As the program matures, the data will likely provide better assessment.

In years two and three, all annual certifications have been received, indicative of an effective outreach campaign to all owners and operators of the TCBMPs. In each year, minimal enforcement has been required to obtain all certifications.

At this time, preliminary assessments include:

- the inspection program has been effective in raising awareness (level 2) for those responsible for TCBMP maintenance,
- the inspection program has changed behavior positively (level 3) in that initially very few BMPs were maintained as designed and recently most BMPs were maintained effectively, and
- the inspection program is effective in reducing pollutant loading from these sites. (level 4)

However, without empirical data to support the efficiency of the BMPs at removing different types of pollutants, it is not feasible to calculate reductions in pollutant loading at this time.

11.2.1.2 Construction Component

The construction component is focused on ensuring that all construction projects minimize impacts on water quality via implementation of all required BMPs. During the

reporting period, all construction projects underwent the urban runoff approval process, ensuring that they were prioritized according to specific criteria and inspected accordingly. New systems were put in place during FY 2008-09 to track compliance related items for this component, ensuring that the construction inventory is updated continually, all inspections are performed at the required frequency, and BMP requirements are met for each site. Table 3.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1)

In order to evaluate which programmatic BMPs are effective in regulating construction sites, enforcement actions were compared to the total number of inspections and to the total number of preconstruction meetings attended by stormwater staff. Preliminary data suggests that lower enforcement numbers correlated best with stormwater staff's attendance at preconstruction meetings. As has been the practice since 2005, stormwater staff will continue to attend all preconstruction meetings, providing one on one outreach and education to the development community that is specific to their job. This comparison illustrates a change in knowledge (Level 2) and a change in behavior (Level 3) in the construction community.

Water quality impacts related to the construction component focus mostly on sediment. The majority of BMPs implemented on construction sites are designed to limit the amount of sediment mobilized in stormwater, thereby limiting the quantities of sediment leaving the site during storm events. Inherent to increased compliance and BMP implementation are load reductions related to sediment. While it is believed that this is the case, as the BMPs are designed to retain sediment on-site, there is little data to support the hypothesis. Without site specific data, including baseline data where no BMPs are in place, it is not feasible to quantify a load reduction at this time. However, anecdotally, there are fewer problems related to sediment discharges on construction sites in recent years. (level 4)

11.2.1.3 Municipal Component

The municipal component is focused on ensuring that all municipal facilities and operations minimize impacts on water quality via implementation of all required BMPs. This component is broad in scope, covering programs including municipal staff training, inspections, street sweeping, MS4 cleaning, IPM implementation, and special events review and compliance. Each of these programs requires tracking of specific data for compliance purposes and for effectiveness assessments. Table 4.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1)

Water quality impacts related to the municipal component are also diverse. City staff are involved in operations that may generate solids, nutrients, pesticides, oils and grease, and other pollutants. Additionally, through programs such as street sweeping and MS4 maintenance, large volumes of pollutants such as heavy metals and sediment are removed from the MS4, preventing the discharge of these loads during rain events. Education and outreach efforts are a key element to the municipal program. It is necessary to provide specific training to City staff involved in activities with the potential to release pollutants into the MS4.

In meeting the JURMP and Permit requirements to train municipal personnel, employees are provided specific information pertaining to their discipline. This training translates

into an increase in knowledge across the City's workforce. However, in the past, measures have not been in place to directly track a change in this knowledge base. During this reporting period, a survey was developed to assist in assessing this change. To measure changes in water quality knowledge over time, the City developed a municipal survey, included as Appendix G-2. This survey was administered in July of 2009 and again in June of 2010; 136 people responded to the 2009 survey and 127 responded to the 2010 survey. After comparing the surveys results, staff found that there was a 5 percent increase in knowledge regarding the definition of a watershed and a 22 percent increase in understanding of the consequences of leaving pet waste on the ground. All other responses were similar between the two surveys. The survey results assisted staff in determining which topical areas to focus on for municipal education during 2010-2011. (Level 2)

Changes in behavior are examined in further detail in relation to the inspection program and the IDDE complaints program. In relating the level of awareness of municipal employees and attempting to assess where this may be increasing or decreasing, the IDDE data may be useful. Although a limited data set exists, as these data were not tracked prior to FY 08-09, Table 11.1 contains the total numbers of complaints and those reported by municipal staff for the past two years.

Table 11.1 Complaints Reported by Municipal Staff

	FY 08-09	FY 09-10
Total Complaints	232	195
Proactive Complaints	144 (62%)	117 (60%)

The preliminary data collected over the past two years shows that more than half of the complaint cases are reported by City staff. The percentages over the two years are consistent. This indicates that field staff is well trained and active in reporting stormwater violations.

There are 29 high priority municipal facilities on the City's inventory. With the increased scope of inspections with Order 2007-0001, data collected can provide a baseline from which to assess changes in knowledge and behavior. This is accomplished by comparing corrective actions resulting from routine inspections. Table 11.2 includes data collected during the past three years of municipal inspections. This small set of data shows variability from year to year in BMP implementation at the municipal sites inspected.

Table 11.2 Municipal Inspections Corrective Actions Summary

	FY 2008	FY 2009	FY 2010
Percentage of Sites with Corrective Actions	33%	13%	31%
Average Number of Corrective Actions per Site*	1.7	1.0	1.2

*of the sites with Corrective Actions

The City's MS4 cleaning and street sweeping programs are continually removing pollutants from these systems that would otherwise end up in receiving waters. Each program provides load reductions (Level 4) which are reported annually in Section 4 of this report. Comparisons from year to year may provide relative estimates of the amounts of material being prevented from entering the MS4. Table 11.3 presents data compiled from MS4 cleaning activities since the beginning of Order 2007-0001, over the past three years.

Table 11.3 Street Sweeping and MS4 Cleaning Removal Rates (tons per year)

	FY 2007-08	FY 2008-09	FY 2009-10
Streets – Sweeping	850	280	687
Parking Lots – Sweeping	10	5	5
Catch Basins/Inlets	230	455	547
Open Channels	1010	2493	2400

Using these assessments, it appears that the municipal component of the program is operating effectively and efficiently. Volumes of material removed from the streets and MS4 have increased over the past three years, which may be indicative of more efficient methods of sweeping and cleaning.

11.2.1.4 Industrial Commercial Component

The industrial/commercial component is focused on ensuring that all industrial/commercial (IC) facilities and operations minimize impacts on water quality via implementation of all required BMPs. This component consists of outreach and education, inspections, complaint response, and enforcement of stationary and mobile businesses. The IC program requires tracking of specific data for compliance purposes and for effectiveness assessments. Table 5.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1)

Water quality impacts related to the IC component are also diverse. Local businesses operate facilities that may generate solids, nutrients, bacteria, oils and grease, and other pollutants. Inspections are the key element of the IC program. Inspections allow the City to assess compliance of the business with the Permit and local ordinances, assess the level of stormwater knowledge of the employees, assess the level of BMP implementation at the site, and to provide one on one education to the employees at the facility.

Figure 11.2 illustrates the changes in knowledge (Level 2) and changes in behavior/BMP implementation (Level 3) as detected over the past five years of the industrial/commercial inspection program. The trends show a general increase in knowledge over the years, while a slightly downward trend in BMP implementation is evident. These changes may be due to many factors, including changes in inspectors, facilities inspected, and permit requirements. However, with the large numbers of inspections per year, it is expected that the numbers are representative of conditions observed during inspections over time. This information will continue to be tracked.

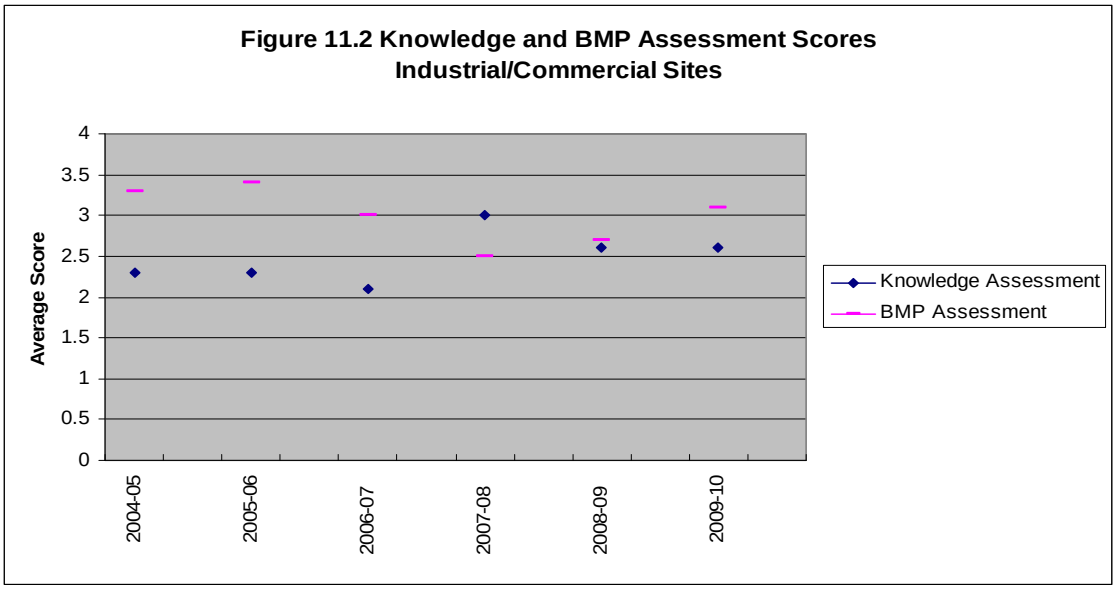

As high priority businesses are inspected consistently from year to year, this may provide a better measure of the effectiveness of the program in increasing knowledge (Level 2) and BMP implementation (Level 3). Figure 11.3 illustrates the follow-up actions for the high priority businesses during the past four years of inspections. Priority 1 (P1) follow-ups are generally for discharges occurring at the time of inspection, priority 2 (P2) follow-ups are for BMP violations, and priority 3 (P3) follow-ups are for minor BMP violations.

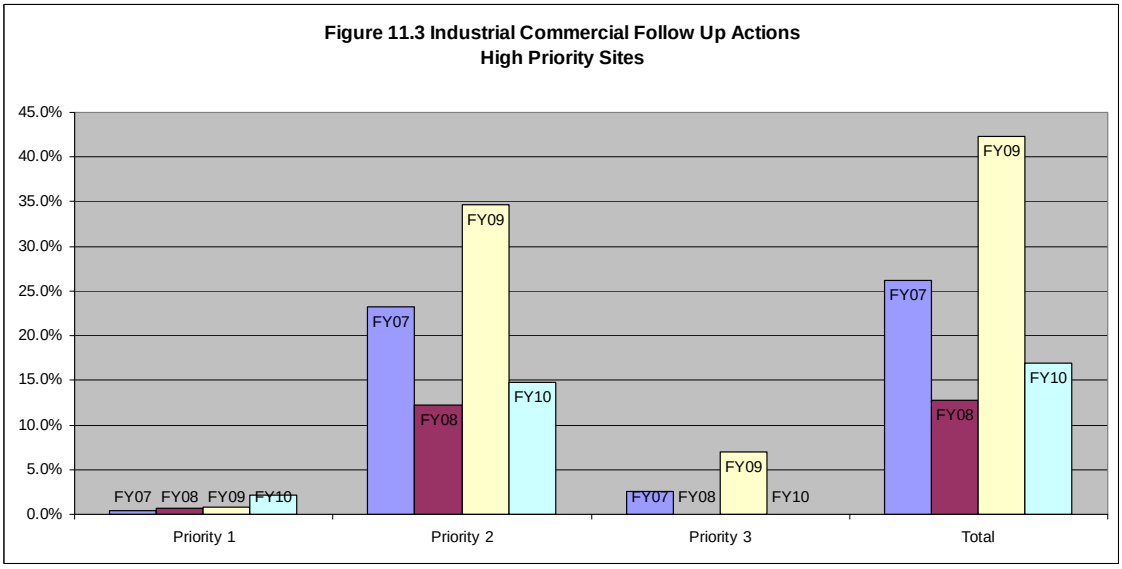

In examining the P2 follow-ups more closely, it appears that many of the same facilities continue to have corrective actions from year to year. (It is important to note that all facilities where corrective actions were required were followed up on and compliance was achieved following the inspections.) For these cases, where repeat offenders have

been indentified, more frequent inspections are warranted. During FY 09-10, the City developed an enhanced inspection program focusing on those businesses with repeat violations. Because the development of this enhanced program occurred during the first part of the year, these additional inspections were performed during the fourth quarter only. However, in the coming year, it is expected that the businesses identified as repeat offenders will be inspected more frequently and brought into continued compliance.

At this time, estimates of load reductions (Level 4) are not feasible as no data has been evaluated that is specific to industrial/commercial sources.

11.2.1.5 Residential Component

The residential component is focused on ensuring that residential areas and activities minimize impacts on water quality via implementation of all required BMPs. This component is focused on the high priority activities identified in the permit and JURMP.

Table 6.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1) The residential requirements of the Permit are generally implemented via outreach and education, site visits, and complaint response. An assessment of the outreach component is presented in Section 11.2.1.7 below, therefore the assessment of the residential section will focus primarily on complaint response efforts.

An analysis of the numbers of residential complaints over the past five years shows that the percentage of residential complaints appears to be increasing. Figure 11.4 illustrates the percentage of the total complaints that were related to residential activities over the past five years.

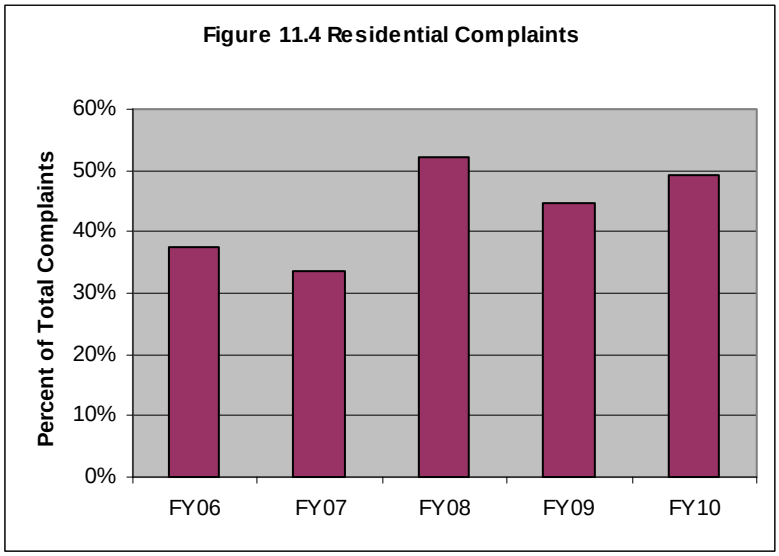

In Section 6 of this report, the types of residential complaints are presented. Generally, the types of residential complaints most often responded to involve sediment, spills, trash/debris, over irrigation, and washing. These are listed from most common to least. It appears that each of these is included in the high priority residential activities as

proposed in the JURMP, leading to the conclusion that the program is focused on the appropriate residential activities.

In the future, this type of analysis may help to refine the focus of the residential program. It is expected that by performing more detailed analysis of the residential complaints, the outreach programs may be modified to focus on the most prevalent types of problems encountered in the field.
Another method of evaluating the City's residential component as it relates to outreach is to track the amount of household hazardous waste collected each year at the City's collection facility. Table 11.4 contains HHW data over the past five years. A definite increasing trend is evident over the past four years, indicating a successful outreach program to residents related to the proper disposal of HHW. (Level 2 and Level 3)

Table 11.4 HHW Collection per Fiscal Year

Fiscal Year	HHW Collected (lbs.)
FY 2009-10	750,590
FY 2008-09	682,498
FY 2007-08	613,679
FY 2006-07	247,027
FY 2005-06	213,609

11.2.1.6 IDDE Component

The IDDE Section of the JURMP Annual Report is due on December 15, 2010 under separate cover. The effectiveness assessment of this component will also be included with this submittal.

11.2.1.7 Education Component

The education component is focused on ensuring that all target audiences are educated on stormwater principles so as to minimize impacts on water quality via implementation of all required BMPs specific to their disciplines. The goals of the program are to measurably increase the knowledge of these target communities and to measurably change the behavior of target communities, leading to reductions in pollutant releases to the MS4 and the environment. Table 8.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1)

<u>Municipal Departments and Personnel</u>

Municipal staff training is performed annually for multiple departments. During FY 2009-10, training focused on development staff, including plan review and inspections, engineering staff, including all capital improvement program engineers, and stormwater staff. Training was focused on staff involved in development because of the new regulations adopted this year, including the City's new SUSMP and the State Construction General Permit. Training for stormwater staff occurs continually throughout the year, covering relevant topics such as spill response, code enforcement, dispute resolution, industrial/commercial inspections, monitoring, etc. In examining the scope of the training provided during FY 2009-10, it appears that the appropriate staff was trained in stormwater principles.

However, it is always a challenge to detect changes in knowledge/awareness (Level 2) and changes in behavior (Level 3). One method that was initiated last fiscal year is to track complaints that are reported by City personnel as described above in Section 11.2.1.3. The baseline data shows that City staff is vigilant while in the field and actively involved in reporting complaints, with 60% of the total complaints reported by employees.

Another method to track changes in awareness (Level 2) is through surveys. This year, the City developed a survey targeting municipal staff to obtain a baseline for their knowledge related to stormwater and watershed concepts. The survey was developed late in FY 2008-09 and administered for the first time in early FY 2009-10. The survey, or variations of, will be administered to staff annually to gauge changes in knowledge and awareness. The initial data is discussed above in Section 11.2.1.3.

Changes in behavior (Level 3) are tracked via municipal inspections and corrective actions. Because the municipal inspections program changed with the implementation of Order 2007-0001, the first year of this permit is used as the baseline. Three years of data have been collected and assessed, as presented in Table 11.2. This data shows that the number of corrective actions identified at municipal sites varies from year to year. In general the necessary corrections are relatively minor. Because of the variability over the three years of data, it is not feasible to draw conclusions about changes in behavior at this time.

Construction Site Owners and Developers

Educational information is provided to construction site owners and developers in several ways. These include one on one interaction throughout the development review and construction process, annual distribution of information regarding rainy season requirements and preparation, pre-construction meetings, and information on the City's website. The City also hosted a workshop this year prior to the rainy season for City staff and private developers.

A comparison of the number of preconstruction meetings that stormwater staff attended related to enforcement activity was performed. Stormwater presence at pre-construction meetings began regularly in 2005. At each pre-construction meeting, stormwater staff provided a synopsis of the City's program and discussed the City's BMP requirements. This education correlates well with a significant decrease in enforcement activity at the sites. The decrease in enforcement activities indicates that contractors' and developers' knowledge of stormwater and the City's requirements increased as a result of the preconstruction meetings (Level 2) and that positive behavior changes, i.e. better BMP implementation (Level 3) followed. With these encouraging results, mechanisms are in place to ensure that stormwater staff continues to attend all preconstruction meetings.

Industrial and Commercial Owners and Operators

Information is provided to the commercial and industrial community primarily based on the inspections scheduled to be conducted for the fiscal year. In preparation for the inspections, a letter is sent to the business owners indicating that they have been selected for an inspection. During the inspections and follow-up actions, one on one education is performed that is specific to the site and activities performed. As presented in Table 8.4, educational information is distributed during and following these inspections as well. Additionally, site and activity specific outreach information was provided to all businesses on the City's stormwater inventory during FY 09-10.

As illustrated in Figure 11.4, it appears that a consistent increase in knowledge (Level 2) is occurring at the facilities inspected. However, the same figure shows that there has been a slight decline in BMP implementation (Level 3) over time at these facilities. It also appears that many of the violations are occurring at the same businesses from year to year. While the majority of businesses are in compliance each year, significant numbers of the high priority sites inspected each year have corrective actions. This analysis indicates that the education and outreach may be working (Level 2) but the resulting desired affect, an increase in BMP implementation, is not always observed. It appears that more focus and perhaps increased enforcement are required at the facilities that continue to be problematic in order to ensure that they are continually in compliance with all stormwater requirements. This may include increased outreach to and/or increased presence at and around these particular sites.

Residential Community, General Public, School Children

Outreach efforts to the residential community and general public are typically performed via public events such as fairs, clean-up events, used oil collection events; direct contact via complaint response efforts; the City's website and publications; and other City sponsored programs such as the Citizens Academy. It is generally difficult to directly measure changes in knowledge and/or behavior resulting from these efforts. One method considered is by comparing residential complaints from year to year. Figure 11.6 illustrates the numbers of residential complaints received over the last five years as a percentage of the total complaints. From this comparison, it appears that the number of residential complaints is increasing over the time period. Conclusions are difficult to draw from this comparison though, because complaints may vary as a result of a more informed general public or vary due to an increase in number of violations. These reasons for variability may be accounted for by comparing the numbers of proactive residential complaints filed each year, assuming City staff that is reporting complaints are knowledgeable and consistent. Proactive complaints were tracked this year, with 54% of the total residential complaints reported by City staff. This data will be tracked in future years to assist in these types of comparisons.

The City continued its education and outreach efforts to schools during the reporting period. For outreach to elementary and middle school students, the City contracted for the first time with San Diego County Office of Education (SDCOE) to provide two programs: the Splash Lab and the Green Machine. During the 2009-10 academic year, Splash Lab reached 1,362 students at 13 schools. The Green machine reached 108 students at one school. The presentations provide an interactive opportunity to children to learn about stormwater, water quality, bioassessment, watersheds, pollution, and best management practices. Splash Lab pre- and post surveys were administered to all of the schoolchildren. Pre-surveys were given prior to the students' participation and post tests were generally given the following week in the classroom. In total, 627 pre-surveys and 653 post-surveys were received back from ten schools. On average, scores on the pre-test were 61%. The average scores on the post test were just over 80%, showing a clear increase in knowledge through the program. (Level 2)

Underserved Target Audiences

During the reporting period the City conducted education and outreach efforts that targeted undeserved communities. The City held several community events which provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors. The events were equally successful in providing outreach

to Spanish communities as several brochures and promotional items were available in Spanish. At the present time, this is the primary outreach mechanism for the underserved audiences. During FY 09-10, the Water Quality Protection Program initiated coordination with the City's Community Outreach Program specialist, who works extensively with the Hispanic Community. It is expected that as this relationship develops, stormwater outreach opportunities directed towards the underserved target audiences in Vista will increase.

11.2.1.8 Public Participation Component

During FY 09-10, the City refined its website to make it more user friendly. These changes benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. With these enhancements, the stormwater hotline and email addresses will be better advertised. Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects. At this time, there are no formal measures in place to assess this component.

11.2.2 JURMP Assessment

Overall, the JURMP appears to be effective in reducing urban runoff related pollution in the City. The City remains in compliance with all requirements and through the iterative process, has made several improvements to new and existing programs over the past year. Each component of the program was implemented successfully and most were shown to be effective. In the coming year, improvements will continue, with a focus on increasing the effectiveness of the industrial commercial inspections program and improving efficiencies in other programs. With reduced staffing and budgets, the City will continue to look for ways to balance the effectiveness of the programs with efficiencies.

11.2.3 Water Quality Assessment

Overview

The City of Vista is a part of five distinct watersheds in the San Luis Rey and Carlsbad Hydrologic Units. These include (from north to south): San Luis Rey Hydrologic Unit - 903, Loma Alta Hydrologic Area (HA) – 904.1, Buena Vista HA – 904.2, Agua Hedionda HA – 904.3, and San Marcos HA – 904.5. The majority of the land area in Vista is in the Buena Vista HA and the Agua Hedionda HA. Most of the water quality data collected within the City has been collected in these two watersheds. The Buena Vista HA drains to Buena Vista Creek, Buena Vista Lagoon, and enters the Pacific Ocean between at the boarder of Carlsbad and Oceanside. The Agua Hedionda HA drains to Buena and Agua Hedionda Creeks, leading to Agua Hedionda Lagoon and entering the Pacific Ocean in Carlsbad near the power plant.

MS4 Water Quality

Ambient (Dry Weather)

The primary source of MS4 water quality data is through the City's Dry Weather (DW) Monitoring Program, with some recent data generated via the Targeted MS4 Outfall Monitoring Program. Data has been collected at approximately 30 sites since the inception of Order 2001-01, beginning in the summer of 2002. This provides only a snapshot of conditions in the MS4, as the data is collected only once per year. The DW program only collects analytical data at 25% of sites with flow, as required in the permit.

In some cases, these sites may change year to year, so a complete set of data is not always available by site or by year.

In evaluating bacteria concentrations, samples were collected at multiple sites over the monitoring period from 2002-2010. Figure 11.5 illustrates fecal coliform data collected across 17 sites within the City. In each year, between five and nine samples were collected, providing an overall sample size of 55.

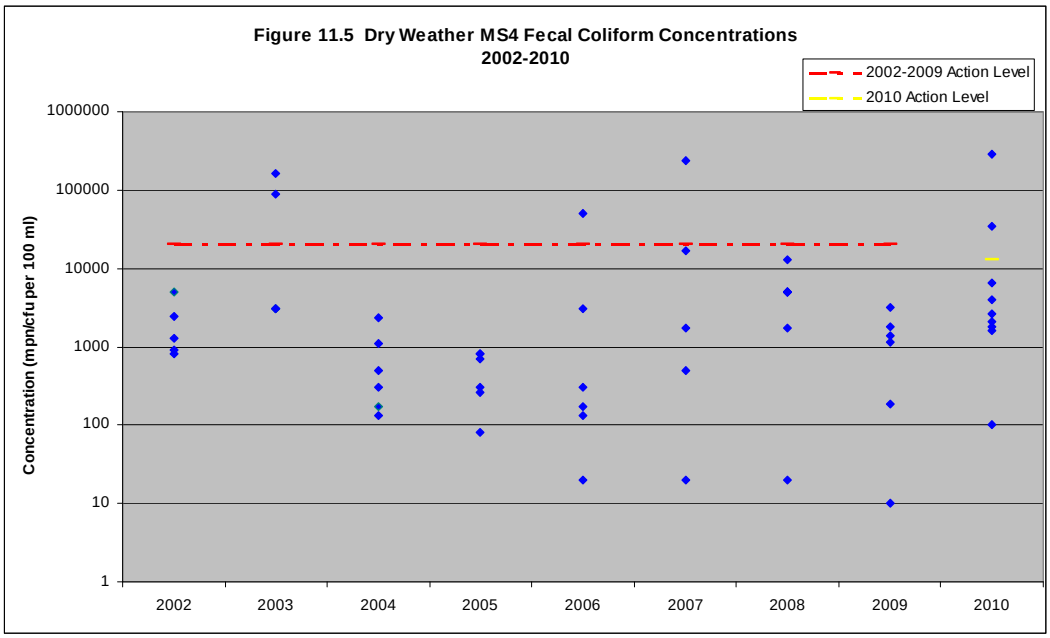

While no clear trend is evident, it is apparent that the majority of values are less than the dry weather action levels. Only six of the 55 samples exceeded the action level. Furthermore, 47 of 55 samples (85%) contained bacteria concentrations that were less than half of the dry weather action levels.

Dry weather nutrient data is collected at all sites using field sample kits based on colorimetric analyses. The sample kits do not produce data of analytical quality but are used to trigger upstream investigations and for source tracking. In examining historical data for nitrate-nitrogen from 1998-2009, it appears that in most years there were multiple exceedances of the dry weather action level (10 mg/l). In total, 13 sites exhibited elevated nitrate-nitrogen concentrations. Of the 13 sites, eight of them show elevated concentrations from year to year, indicating a consistent source of the nutrients. In these cases, nutrified groundwater is suspected to be the source of nitrate-nitrogen. The remainder of the sites had few exceedances over the years, more likely attributable to illicit discharges or other sources.

The data set for ortho-phosphate was examined for the past five years, from 2005-2009. In total, there were four sites that exceeded the dry weather action level (2.0 mg/l) for ortho-phosphate. Each had only one exceedance over the five years of monitoring. It appears that each was an isolated incident triggering an upstream source investigation. At this time, data regarding each source investigation has not been compiled.

The dry weather monitoring program does not collect data related directly to sediment. It is well accepted that sedimentation is generally a wet weather problem caused by erosion. Typically sources of erosion may include open space, construction sites, residential areas, and creek bed and bank erosion.

Based on the data collected in the dry weather program and using dry weather action levels for comparison, it appears that bacteria is not typically a dry weather problem. This may not be the case with nitrate-nitrogen, as exceedances are more frequently observed. Ortho-phosphate measurements appear to occur at random locations, likely the result of illicit discharges. In the future, the sources of nutrients in the dry weather program may be further evaluated based on the results of past upstream investigations. Although no data is collected during the dry weather program to monitor sedimentation, it does not appear to be a dry weather problem.

Wet Weather (Storm Event)
At this time, very little wet weather MS4 data has been collected. Under the newly developed regional MS4 outfall monitoring program, samples have been collected across the Carlsbad HU as part of four components of the program: random dry and wet weather sampling, and targeted dry and wet weather sampling. This program began during the previous reporting period and the initial data was reported in the FY 2008-09 Regional Monitoring Report. There were four random wet sites within the Carlsbad Watershed. MS4 sample results indicated that fecal coliform, total nitrogen, and total phosphorous exceeded Basin Plan water quality objectives. It should be noted however, that the samples were collected in the storm drain and exceedances of Basin Plan objectives are not indicative of a problem in receiving waters. As more data is collected, these comparisons may be helpful in assessing the relative contribution from the MS4 to pollutants identified in the receiving waters. At this time, the data set is small and therefore can not be used to draw conclusions related to this relationship.

Receiving Water Quality

Ambient (Dry Weather)
The main receiving waters within the City of Vista are Buena Vista and Agua Hedionda Creeks. In an effort to better understand dry weather conditions in its receiving waters, the City began to collect limited data in the creeks in conjunction with the dry weather program. The focus of the analysis remains on the high priority water quality problems in an effort to understand their dynamics in the receiving waters.

Dry weather bacteria samples have been collected in the two creeks each year from 2003 - 2009. While the sample set is relatively small, comparisons of concentrations over time show that water quality appears to improve from the upstream sample site to the downstream sites. Although the sample sets are small, a decrease in bacteria concentrations is evident from upstream to downstream sample locations in both creeks. A full order of magnitude decrease, over 90%, in bacteria concentration is observed in Agua Hedionda Creek. While the difference in Buena Vista Creek is not as pronounced, there is still a substantial decrease of over 60%. In Agua Hedionda and in Buena Vista Creeks, improvements in water quality are noted as the creeks flow from east to west through the City. If feasible in the coming years, data may continue to be collected to enlarge the data set and test this hypothesis. With the size of the current data set, these observations need to be validated further.

Nutrient concentrations during dry weather are based on field test kits only. With the limited set of data at each location (n<10) and the lack of analytical quality data, it is not feasible to perform an analysis with an acceptable level of confidence. However, a cursory look at the data that has been collected generally shows increasing nitrate-nitrogen concentrations from upstream to downstream in Agua Hedionda Creek and decreasing concentrations of nitrate-nitrogen in from upstream to downstream in Buena Vista Creek. The ortho-phosphate concentrations are relatively low, all less than or equal to 0.4 mg/l. Due to the sensitivity of the analysis and reporting limits, it is not feasible to analyze this data.

At this time, there has been no data collected related to sedimentation in the creeks during dry weather. Sediment is generally a constituent of concern during wet weather, most often triggered by erosion. There has been no observed evidence of sedimentation problems during dry weather.

Wet Weather (Storm Event)
No data has been collected to evaluate wet weather conditions in the Creeks within the City of Vista. Sample collection under wet weather conditions is performed by a contractor under the Regional Monitoring Program. Analyses discussed below were obtained from the San Diego County Municipal Copermittees 2007-2008 and 2008-2009 Urban Runoff Monitoring Report, January 2009, 2010, Weston Solutions.

Data has been collected at the Mass Loading Station on Agua Hedionda Creek since 1998. This monitoring station is downstream in the watershed, located near the mouth of Agua Hedionda Lagoon, above the tidal prism. In general, increasing trends for total and fecal coliform, total suspended solids and turbidity, and several metals are evident. Fecal coliform, TSS, and turbidity are typically above Basin Plan water quality objectives. Nitrogen and phosphorous concentrations are relatively low.

Storm event data was collected at a Temporary Watershed Assessment Station located on Buena Vista Creek for two storms in the rainy season 2007-08. No data was collected at this location during FY08-09. Data collected indicated that fecal coliform, TSS, and turbidity were above Basin Plan water quality objectives. With the small set of data, no trend assessments are possible at this time. Nutrient concentrations appear to be below water quality objectives during the two storms monitored.

High Priority Water Quality Problems
In determining the water quality problems in the City, several sources of information were used including current 303(d) listings (2006), recent watershed assessments, and current and historical water quality data from MS4 and receiving waters monitoring programs. The most recent 303(d) list has been approved by the Regional Water Quality Control Board and State Water Resources Control Board, but has not been approved by USEPA. Once the list has been approved by USEPA, the new listings will be incorporated into the analysis of high priority water quality problems within the watershed and the City.

Table 11.5 contains the 303(d) listings of impaired waters in the City of Vista and for the receiving waters downstream.

Table 11.5 Impaired Water Quality Limited Segments, City of Vista, 2006 303(d) List

Receiving Water	Hydrologic Unit/Area	Chloride	TDS	Bacteria	Nutrients	Sediment Toxicity	Sedimentation	DDE	DDT	Mn	Se	Sulfate
San Luis Rey River (SLR)	903	X	X									
Pacific Ocean at SLR outlet	903			X								
Loma Alta Slough (LAS)	904.1			X	X							
Pacific Ocean at LAS outlet	904.1			X								
Buena Vista Creek (BVC)*	904.2					X						
Buena Vista Lagoon (BVL)	904.2			X	X		X					
Pacific Ocean at BVL outlet	904.2			X								
Buena Creek (BC)	904.3				X				X			
Agua Hedionda Creek (AHC)	904.3		X							X	X	X
Agua Hedionda Lagoon (AHL)	904.3			X			X					
San Marcos Creek (SMC)	904.5				X	X		X				

*Shaded areas indicate primary watersheds in the City of Vista

Recent watershed assessments generally take into account the 303(d) listed constituents, as well as available water quality data. These assessments determine which of the identified water quality problems are high priorities for the watershed. These assessments are performed on a larger scale using available data collected in the regional monitoring programs and some dry weather data. Because of the complexity in the assessments, the conclusions may not always be accurate in representing high priority problems on a jurisdictional scale. The high priority water quality problems identified in the Watershed Urban Runoff Management Programs (WURMPs) are identified in Table 11.6.

Table 11.6 WURMP High Priority Water Quality Problems

Receiving Water	Hydrologic Unit/Area	Bacteria	Nutrients	Sedimentation
San Luis Rey River HU	903	X	X	
Loma Alta HA	904.1	X		
Buena Vista HA	904.2	X		
Agua Hedionda HA	904.3	X	X	X
San Marcos Creek (SMC)	904.5		X	

Comparing the two tables, the primary watersheds in the City of Vista (Buena Vista and Agua Hedionda) generally have identified bacteria, nutrients, and sedimentation as common high priority water quality problems.

The local water quality assessments presented above attempt to examine the data with respect to MS4 and Receiving Waters during ambient and wet weather (storm event) conditions. This closer look and better understanding of the data and data gaps may help guide programs in the future. The assessment this year focused on those problems identified in the Carlsbad WURMP. A summary of the results of this preliminary analysis are presented in Table 11.7. A yes means that there are data that may be indicative of a problem related to the pollutant, a no means that the data collected does not appear to indicate a problem, and no data means that there is insufficient data to guide a decision at this time.

Table 11.7 Local Water Quality Assessment Results

	Ambient			Storm Event		
	Bacteria	Nutrients	Sediment	Bacteria	Nutrients	Sediment
MS4	No	Yes	No	No Data	No Data	No Data
Receiving Water	Yes	Yes	No	Yes	No	Yes

All three pollutants are identified as a WURMP priority for the Agua Hedionda Hydrologic Area. Although, only indicator bacteria is identified as a high priority water quality problem in Buena Vista HA in the WURMP, it may be appropriate to address all three pollutants.

To further these findings, local assessments indicate that under ambient conditions, nutrients tend to be problematic in the MS4 and receiving waters and bacteria appears to be problematic in receiving waters. Sedimentation does not appear to be a problem under ambient conditions. There is very little wet weather data available in the MS4, therefore no assessments are feasible at this time. Under wet weather conditions, it appears that bacteria and sedimentation may be problematic in the receiving waters.

In summary, the City has identified indicator bacteria, nutrients, and sedimentation as high priority water quality problems, focusing on bacteria and nutrients during dry weather, and bacteria and sedimentation during wet weather. From the combined assessment, using impairment listings, watershed and regional assessments, and local water quality assessments, the City has selected bacteria, sediment, and nutrients as high priority water quality problems as presented in Table 11.8.

Table 11.8 City of Vista, High Priority Water Quality Problems

	Ambient			Storm Event		
	Bacteria	Nutrients	Sediment	Bacteria	Nutrients	Sediment
High Priority	Yes	Yes	No	Yes	No	Yes

11.2.4 Integrated Assessment

Integrating water quality assessments into programs is difficult as many BMPs and municipal programs have not been linked to specific water quality problems. However, certain focus can be gained with an understanding of the priority water quality problems in the City.

11.2.4.1 Bacteria

According to the assessment above, bacteria appears to be problematic during ambient and wet weather conditions. In order to focus efforts appropriately, each condition must be considered independently.

Under ambient conditions, experience shows that sources of bacteria are mostly related to illicit discharges. These range from sanitary sewer overflows to illegal washing. The City is presently beginning a sewer rehabilitation program to aggressively address infrastructure concerns related to the sanitary sewer. The City has also recently developed a FOG program, with inspections concurrent with stormwater inspections as food service establishments. Furthermore, the City responds to, contains, and cleans up all reported sewer overflows, with very few reaching storm drains or receiving waters. Other illegal discharges are addressed via the complaint response program, with stormwater code enforcement staff aggressively enforcing the City's stormwater ordinances. With these programs in place, it is expected that the sources of dry weather bacteria will be minimized.

Assessment of local data indicates that the majority of bacteria samples collected in the MS4 under ambient conditions are below action levels. Data collected in receiving waters are compared to Rec-1 water quality objectives. Local ambient data suggests that bacteria concentrations in the creek are reduced as the creeks flow from up to downstream. This may suggest that ambient flows from the MS4 are having limited impacts on the receiving waters. However, the data sets in the receiving waters are limited at this time and a clear relationship between MS4 and receiving water quality has not been established. In the future, data assessments may take into account Natural Loading Studies performed to quantify the amount of bacteria present in natural watersheds. In comparing this type of data to existing conditions in local watersheds, municipalities may gain a better understanding of their contributions to the bacteria loading.

Under wet weather conditions, i.e. storm events, the sources of bacteria are different. These sources may be more related to structural BMPs such as trash enclosures and overhead coverage of grease containers, good housekeeping practices, animal waste disposal, and homeless encampment issues. The maintenance of the MS4 may also play a role in wet weather bacteria concentrations. With standards regarding trash enclosures, waste areas, and grease storage areas in place, the City has taken steps to ensure that these sources of bacteria are limited in new development. Existing development is addressed through inspections programs, including municipal, TCBMP, industrial commercial, and FOG inspections. Extensive outreach is performed to the community to educate pet owners on proper disposal methods. MS4 maintenance is performed at most facilities twice per year, including once prior to the rainy season. Other sources, typically beyond the scope of the stormwater program, including encampments and natural sources are difficult to reduce. These may contribute significant loads of bacteria during wet weather.

11.2.4.2 Nutrients

According to the assessments performed above, nutrients appear to be predominantly a dry weather/ambient problem. It is suspected that the primary source of nutrients during dry weather is from nutrified groundwater. However, occasional nutrient contributions may come from fertilizer applications and from tailwater related to nurseries and agriculture. Programs in place to address nutrients during dry weather include outreach

related to fertilizer applications, inspections of nurseries and agriculture, and general complaint response.

The consistency of nitrate concentrations collected under ambient conditions suggests that groundwater plays a significant role in nutrient loading. Several sites in the dry weather program are influenced by groundwater, suspected to be contributing to nutrient concentrations. The City will continue to verify this as a source. Data also indicates occasional illicit discharges contributing nitrate-nitrogen and ortho-phosphates. These are typically one time incidents that are eliminated as they are detected. The compliant response efforts are also vigilant for these types of discharges. In the future, as more data is collected and nutrient studies are performed at the Regional level, nutrient contributions to receiving water problems will be better understood.

11.2.4.3 Sediment

Local, watershed, and regional assessments have concluded that sedimentation is primarily a problem during storm events. Sources of sedimentation may include erosion of open space, stream beds and banks, construction sites, and residential areas. Erosion of the stream bed and banks are addressed by hydromodification requirements and low impact development and design. Additionally, the City may be able to perform a Creek restoration project along Agua Hedionda Creek in the future, pending grant funding. This will also address erosion concerns in the Creek. Erosion and sediment controls on construction sites are strictly enforced via routine construction site inspections. At this point, construction sites typically have extensive BMPs in place, reducing the potential for sedimentation. With the adoption of the new State General Construction Permit, these requirements have been further enhanced, also continuing to reduce the potential for sediment discharges. Residential areas are typically addressed through the complaint response program, with stormwater code enforcement staff maintaining vigilance for sedimentation concerns.

11.3 Program Review and Modification

11.3.1 Development Planning Component

The effectiveness assessment for this program component focused on the TCBMP program, as it is a new and developing program. Results showed that after three years of inspections, the program has been successful in ensuring that TCBMPs throughout the City are maintained and operating properly. However, because the program is relatively new, significant amounts of staff time have been expended focusing on outreach, inspections, and follow-ups for these sites. In the future, the City may look for ways to develop a more efficient program while continuing to gain full compliance with its ordinances and the permit. Additionally, as inspection data is collected, it may continue to be evaluated against the current prioritization criteria. This comparison ensures that inspections are focused on BMPs that are the most problematic in regards to operation and maintenance. Ensuring adequate operation and maintenance of these BMPs is expected to reduce bacteria, sedimentation, and nutrient loading.

11.3.2 Construction Component

With the implementation of a new spreadsheet tracking tool, the program was able to better track inspections and compliance information. In the coming year, it is anticipated that the tracking of inspections will transition to an Accela database. Integrating the stormwater construction inspections into the rest of the land development software

should be beneficial, allowing for better tracking and management of the inspections program.

As shown in the effectiveness assessment of this component, it appears that site compliance may be related to pre-construction meetings. Beginning in 2005, stormwater staff began to attend pre-construction meetings, providing an opportunity for stormwater staff to give one on one site specific education related to the project. This practice will continue, with stormwater staff attending all pre-construction meetings in the future. With continued focus on construction inspections, impacts of sedimentation from construction sites should be minimized.

11.3.3 Municipal Component

Several new sets of data were tracked related to the municipal program this year. It is anticipated that as these data are compiled in future years, they will provide useful information related to effectiveness assessment of the component. Data is now collected to track complaints reported by City staff (proactive) and those from the public. With continued efforts dedicated to MS4 cleaning, bacteria and sediment contributions will be addressed.

11.3.4 Industrial/Commercial Component

The industrial commercial program will continue to operate in compliance with permit requirements. As indicated in the effectiveness assessment, several of the high priority facilities have stormwater violations from year to year. The program is evaluating methods to gain compliance at these facilities year round and improve the program to ensure that continued compliance is obtained. During the next fiscal year, the City will implement an enhanced inspection program targeting those high priority facilities that have shown compliance issues from year to year. Improved compliance at these locations is expected to reduce contributions of bacteria and other pollutants to the MS4.

11.3.5 Residential Component

The effectiveness assessment of this component is focused on the types of complaints related to residential activities. In comparing the types of residential complaints and sources of pollution identified, it appears that the high priority activities listed in the JURMP are properly focused. In the future, the City may use this data to enhance its education and outreach to the residential community. Continued focus on pet waste, fertilizer management, and sedimentation issues will help to reduce the impacts of these pollutants from residential sources.

11.3.6 Education Component

The education component strives to educate a broad range of people regarding urban runoff and other environmental concerns. In general, the program appears to be effective at conveying the message to the targeted audiences. In the coming year, it is expected that more measures will be implemented to assess changes in knowledge resulting from the outreach. The program will also evaluate ways to improve the outreach to specific target audiences. For example, with the verified effectiveness of the pre-construction meetings, stormwater staff will ensure that they are present at all pre-construction meetings and may continue to develop the methods of outreach provided. Other methods of outreach to the underserved target audiences may also be evaluated, including outreach to citizens via bulletins and through the outreach component of the FOG program. It is expected that more direct measurements may also be available in the coming years through the use of surveys.

11.3.7 Public Participation Component

The City currently has several options for public participation in the program. In the past year, the City reworked its website to make it more user friendly. These changes are expected to benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. With these enhancements, these stormwater hotline and email addresses will be better advertised. In the coming year, further enhancements will be made to the website, updating it with the most current information available. Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

11.3.8 Fiscal Analysis Component

The fiscal analysis component included an evaluation this year using the Standardized Method for Fiscal Analysis. This is the second year that the City has selected to utilize this method. With the collection of two years of data, a baseline has been established and in the coming years, it is expected that year to year comparisons between programs and potentially some level of cost/benefit analyses will be feasible.

11.3.9 Effectiveness Assessment Component

The effectiveness assessment of the program will continue to evolve. As new methods of evaluation are developed, additional supporting data will be tracked. It is expected that as more water quality data is collected, better evaluations of MS4 and receiving water quality will be feasible. Where possible, relationships between program components, BMPs, and water quality will be evaluated, however at this time, these links are difficult to establish.

12.0 SPECIAL INVESTIGATIONS

12.1 Introduction

During 2009-2010, two special investigations were undertaken to address water quality concerns.

The first was related to a Total Maximum Daily Load for Agua Hedionda Lagoon for bacteria and sediment. Through a cooperative stakeholder process, the agencies in the watershed worked with staff from the Regional Water Quality Control Board to develop the TMDLs. Upon further investigation of past and current water quality data, it was determined that the lagoon was not impaired for bacteria or sediment and delisting was requested for both constituents. At this time, delisting has been approved for both by the Regional and State Water Boards and is awaiting approval from the Unites States Environmental Protection Agency.

The second project is related to a more in depth look at water quality in the City's portion of the San Luis Rey Watershed. A bacteria TMDL is pending at the mouth of the San Luis Rey River, prompting the City to gain a better understanding of the details in land use and water quality in the area. (Revised Total Maximum Daily Load for Indicator Bacteria Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek), February 10, 2010)

12.2 Total Maximum Daily Loads – Agua Hedionda Lagoon

12.2.1 Indicator Bacteria

The Agua Hedionda Lagoon Dischargers provided the following information to support the reassessment and delisting of the Agua Hedionda Lagoon for indicator bacteria during the 2008 listing cycle. Monitoring data presented was collected according to Investigation Order No. R9-2006-076 issued by the San Diego Regional Water Quality Control Board. The available data was evaluated to determine whether the lagoon would qualify for delisting under the 2004 Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy). The following summary provides a review of that dataset.

Data Used in the Analysis

Data for total coliform, fecal coliform, and enterococcus were collected from four lagoons within the Carlsbad Hydrologic Unit for City of Carlsbad, City of Encinitas, City of Escondido, City of Oceanside, City of San Marcos, City of Solana Beach, City of Vista, County of San Diego, California Department of Transportation, and the Hale Avenue Resource Recovery Facility. The data submitted with this analysis are specifically for the Agua Hedionda Lagoon (AHL) over a collection period of January through October 2008. Table 12.1 lists the sites within AHL and the dates monitoring took place.

To prepare the data for comparison to water quality objectives in a manner consistent with the Listing Policy, a number of steps were required.

1. For each monitoring date, samples were collected at both high and low tide and tested for all three bacteriological indicators. Section 6.1.5.6 of the Listing Policy requires that samples collected from the same site on the same day be combined into a single value for comparison to the objectives. To account for multiple samples collected from one point in a single day, the geometric mean was calculated for each site per day.

2. Data from all six monitoring sites were considered in the analysis since they meet the criteria of being greater than 200 meters apart according to Section 6.1.5.2 of the Listing Policy to qualify as separate locations.
3. At Ocean Inlets 1 and 2, both surface and subsurface samples were collected. The depth range for the subsurface samples was 2.6 to 5.1 meters for Ocean Inlet 1 and 2.6 to 4.1 meters for Ocean Inlet 2. Bacteria water quality objectives for shellfish specify that the criteria are applicable throughout the water column; the bays and estuaries objective is limited to the upper 60 feet. Therefore, depth 1 and 2 samples were included in the daily geometric mean for these two sites when comparing the monitoring data to water quality objectives for shellfish harvesting and bays and estuaries. Only surface sample data was used for assessing compliance with recreation objectives (contact and non-contact) since that is the depth at which contact or exposure occurs.
4. Samples that were non-detect were set equal to the detection limit for the analysis (all detection limits were below all objectives).
5. Samples that were Detected but Not Quantified (DNQ) were set equal to the laboratory value provided for the analysis (all DNQ values were below all objectives).
6. Data was collected in accordance to the Carlsbad Hydrologic Unit SDRWQCB Investigative Order R9-2006-076 Lagoon TMDL Monitoring Quality Assurance Project Plan, revised September 30, 2007. This plan is SWAMP compatible.

Table 12.1 **Agua Hedionda Lagoon Monitoring Sites and Frequency for 2008**

Monitoring Site	January		February							April						July						October					
	5	**24**	**4**	**7**	**8**	**11**	**12**	**13**	**19**	**7**	**8**	**9**	**14**	**15**	**16**	**21**	**22**	**23**	**28**	**29**	**30**	**7**	**8**	**9**	**13**	**14**	**15**
Ocean Inlet 1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Ocean Inlet 2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Segment 1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Transect 1				x								x							x				x				
Transect 2				x								x							x				x				
Transect 3				x								x							x				x				

Comparison of Data to Water Quality Criteria and Listing Policy

For each of the constituents, the sample results were compared to the appropriate water quality objective criteria as shown in the following table. The number of exceedances was then compared to the requirements for delisting presented in Section 4 of the Listing Policy. For bacteriological constituents, the maximum number of exceedances allowed for delisting is shown in Table 4.2 (page 15)

Table 12.2 Bacteria Water Quality Objectives for Bays, Estuaries, and Coastal Lagoons in the San Diego Region Basin Plan

Beneficial Use	**Enterococcus (saltwater)**		**Fecal Coliform**		**Total Coliform**	
Water Contact Recreation (REC-1)	35/100mL 30-day geometric mean	≤276/100mL single sample maximum (moderately or lightly used area)	Log mean (geometric mean) of at least 5 samples in a 30-day period ≤200/100mL	≤10% of total samples in any 30-day period ≤400/100mL		
Water Non-Contact Recreation (REC-2)			Average concentrations for any 30-day period ≤2,000/100mL	≤10% of samples collected in any 30-day period ≤4,000/100mL		
Shellfish Harvesting (SHELL)					Median concentration throughout the water column for any 30-day period ≤70/100mL	≤10% of samples collected during any 30-day period cannot exceed 230/100mL for a five-tube decimal dilution test
Bays and Estuaries					MPN in the upper 60 ft. ≤1,000/100mL; provided ≤20% of the samples at any sampling station in a 30-day period, may exceed 1,000/100mL; also no single sample may exceed 10,000/100mL	

Calculation Procedures

As shown in Table 12.2, the objectives for indicator bacteria include geometric means, medians, averages, single sample, and exceedance frequencies for single sample maximums. Each of these objectives requires a different analysis procedure for the data. The analysis procedures for each type of calculation are discussed in this section. For all objectives except the Bays and Estuaries Total Coliform objective, all monitoring sites were considered together. The Bays and Estuaries objective specifically states that the objectives should be compared to the results from every sampling station.

Geometric Mean, Average and Median Objectives

Similar analysis procedures were used for analyzing the data to calculate geometric means, averages, and medians. These analysis procedures apply to the following objectives:

- Geometric Mean Objectives (REC-1 Enterococcus and Fecal Coliform)
- Average Objectives (REC-2 Fecal Coliform)
- Median Objectives (SHELL Total Coliform)

Geometric means were established in a rolling fashion for every possible 30-day period with a minimum of 5 samples over 2 separate days. Averages and medians were calculated in a rolling fashion for every possible 30-day period without regard to minimum number of samples during the period.

Other mechanisms for calculating the geometric mean, averages and medians are possible and were evaluated (such as calculating geometric means, averages, and medians for each monitoring location separately, or using distinct 30-day periods). However, few geometric means, averages and medians could be calculated using these other approaches and they generally resulted in fewer exceedances. As a result, the chosen method was considered to be the most conservative method of calculating geometric means, averages and medians for comparison to the water quality objectives.

Single Sample and Frequency of Exceedance Objectives

For single sample objectives (REC-1 Enterococcus, Bays and Estuaries Total Coliform) the analysis is straightforward. Each sample is compared to the water quality objective. However, for many of the objectives, a certain number of exceedances are allowed within any 30-day period. The following objectives fall into this category:

- 10% Exceedances (REC-1 and REC-2 Fecal Coliform, SHELL Total Coliform)
- 20% Exceedances (Bay and Estuaries Total Coliform)

For these analyses, the number of exceedances within defined 30-day periods was calculated for each objective. For all months, except February, the 30-day period was just the samples collected within that given month. In February the last sampling date was February 19th and therefore it was appropriate to include data from January 24th in that 30-day period. The result of the analysis was five 30-day periods for which the exceedance frequency could be determined. However, these exceedance periods are not easily compared to the Listing Policy requirements that also include an allowable exceedance frequency. Therefore, although this analysis was conducted, it was determined that for comparison to the Listing Policy, it would be more conservative and simpler to compare each sample to the objective and consider the total number of exceedances in the context of the Listing Policy. In the results tables, the number of 30-day periods that exceeded the allowable number of exceedances in the criteria is noted.

Analysis Results

Table 12.3 summarizes the results of the comparison of samples to the water quality objectives in Table 2 and the Listing Policy.

Table12. 3 Evaluation of Bays and Estuaries Water Quality Objective

Constituent	Objective	# of Samples	# of Exceedances of Objectives[3]	Allowable # Exceedances in Listing Policy	Delist?
Enterococcus[2]	REC-1 Geomean	23	2	4	Yes[1]
	REC-1 Single Sample	93	4	15	Yes
Fecal Coliform[2]	REC-1 Geomean	23	2	4	Yes[1]
	REC-1 10% Exceedance[4]	93	3	15	Yes
	REC-2 Average	23	0	4	Yes[1]
	REC-2 10% Exceedance[5]	93	0	15	Yes
Total Coliform[6]	SHELL Median	23	3	4	Yes[1]
	SHELL 10% Exceedance[7]	93	9	15	Yes
	Bays and Estuaries 20% Exceedance[8]	93	4	15	Yes
	Bays and Estuaries Single Sample	93	0	15	Yes

1. The minimum number of samples for delisting under the Listing Policy is 26 and the number of calculated geomeans, averages, and medians is only 23. However, the allowable number of exceedances for 26 samples is not exceeded and combined with the other objective comparisons, the lines of evidence demonstrate that delisting is appropriate.
2. Only surface depth samples were used for comparison to this objective.
3. In all cases, all of the exceedances occurred during wet weather sampling events. No dry weather exceedances were observed.
4. One out of five 30-day periods exceeded the allowable exceedance frequency.
5. None of the evaluated 30-day periods exceeded the allowable exceedance frequency.
6. Both sampled depths were used for the analysis.
7. Two out of five 30-day periods exceeded the allowable exceedance frequency.
8. Two out of six sites had exceedances during one 30-day period.

As shown in Table 12.3, all objectives for all constituents meet the criteria for delisting. No exceedances of water quality objectives occurred in dry weather samples, exceedances occurred only during wet weather events. Due to sampling frequency, the sample size for the geometric mean, average and median objectives is slightly below the minimum sample size required for delisting, though the number of allowable exceedances for that sample size is met. As mentioned above, the only water quality objective exceedances in the dataset were samples collected during wet weather. Therefore, it is reasonable to assume that if the sample size were increased, based on the normal weather patterns of the San Diego Region, additional exceedances would not be added to the dataset. Furthermore, during the 2006 listing cycle, San Diego Bay Shoreline, Tidelands Park was delisted for indicator bacteria though only 17 geometric means could be calculated using the available dataset. It was noted that there were sufficient single samples, in combination with the available geometric means, to recommend delisting.
Based on the analysis comparing the available data collected under the Investigation Order to applicable water quality objectives and the allowable number of exceedances calculated from the 2004 Listing Policy, it is recommended that Agua Hedionda Lagoon be delisted for indicator bacteria.

12.2.2 Sediment

Through the stakeholder process, it was also determined that Agua Hedionda was not impaired for sediment. There appeared to be insufficient data available to support the original listing and there was no clear linkage of the purported impairment to beneficial uses. In many discussions with Regional Board staff, we were unable to clearly define a problem statement, relating any detrimental effects of sedimentation to beneficial uses. Through the stakeholder meetings, several experts were invited to participate in meetings, including Merkel and Associates, the Agua Hedionda Lagoon Foundation, and Cabrillo Power, all experts with extensive experience related to management of the Lagoon. Through this process, it was determined that the original impairment listing for sedimentation was not supported. Regional Water Quality Control Board Staff submitted evidence for delisting for the 2008 303(d) listing cycle.

12.2.3 Summary

Following the collection of an extensive amount of water quality data in the lagoons under Investigative Order 2006-0076, the Regional Water Quality Control Board decided to pursue Total Maximum Daily Loads for sediment and bacteria in Agua Hedionda Lagoon. Regional Board staff initiated a stakeholder process with those parties named in the Investigative Order. Through an effective stakeholder process, it was determined that Agua Hedionda Lagoon was in fact not impaired for bacteria or sediment, and delisting was recommended. As these recommendations were developed through the stakeholder process, consensus was reached and delisting for both constituents was supported by stakeholders and Regional Board staff. Both recommendations for delisting have now been approved by the Regional and State Water Boards and are awaiting approval by the United States Environmental Protection Agency.

12.3 San Luis Rey Watershed Pollutant Source Analysis and Identification

12.3.1 Purpose

The purpose of this document is to present a characterization of the City of Vista's contributing area to the San Luis Rey (SLR) Watershed Management Area (WMA) – termed the Mission Vista Area. The characterization may also act as a tool, essentially combining and integrating existing data sets that may be used when considering additional monitoring, actual development, source investigations, and abatement.

The approach taken is to first characterize and analyze the hydrologic systems, e.g., WMA, hydrologic area (HA), and hydrologic subarea (HSA) that the Mission Vista area is a part of, and then focus on the characterization and contribution of the Mission Vista Area (MVA).

12.3.2 Hydrologic Systems Characterization

12.3.2.1 SLR River WMA General Characterization

San Luis Rey River Watershed Management Area

The SLR River WMA is located along the northern border of the County of San Diego, California, surrounded by the Santa Margarita River Watershed to the north and by the Carlsbad and San Dieguito River Watersheds to the south. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level, as well as several other mountain ranges along the western border of the Anza Borrego Desert Park. The River extends over 55 miles across northern San Diego County forming a watershed with an area of approximately 360,000 acres or 562 square miles, which ultimately discharges into the Pacific Ocean at the City of Oceanside. Of the nine

watersheds in the San Diego region, the SLR River Watershed is the third largest. [Source: San Luis Rey and Carlsbad WURMP Reports]

Local jurisdictions within the WMA include the Cities of Oceanside, Vista, and Escondido, and the Counties of San Diego and Riverside. The City of Vista comprises approximately 0.2% of the WMA, and portions of the City of Escondido, the City of Oceanside, and San Diego and Riverside Counties make up the remainder of the WMA. [Source: Weston SLR-WMA 08-09 Final]. See Table 1 and Figure 1 below for more details and an illustration of the WMA and the Mission Vista Area contribution.

Hydrologic Areas and Subareas

The WMA is comprised of three Hydrologic Areas (HAs) that have been delineated by the San Diego Regional Quality Control Board based on drainage patterns: Lower San Luis (HA 903.1), Monserate (HA 903.2), and Warner Valley (HA 903.3).

The Lower San Luis Hydrologic Area is further split into six Hydrologic Subareas (HSAs), with the entire WMA draining through the Mission HSA (903.11) to the Ocean. Within the Mission HSA the City of Vista's contribution is 745 acres, or 2.5% of the total 30,210 acres. Conversely, the City of Oceanside contributes over 52% of the HSA 903.11 with the County of San Diego making up the remaining 45%. [SANGIS 2007 data]

Table 12.4 Jurisdictional Responsibility within the San Luis Rey Watershed Management Area

Jurisdiction	Acres of Total WMA	Percentage of Total WMA	Acres of Mission HSA 903.11	Percentage of Mission HSA 903.11
Escondido	52	<0.0%	0	0.0
Oceanside	15,883	4.4%	15,796	52.3%
Vista	745	0.2%	743	2.5%
County of San Diego	341,300	95.2%	13,667	45.2%
County of Riverside	649	0.2%	0	0.0%
Totals	**358,629**		**30,206**	

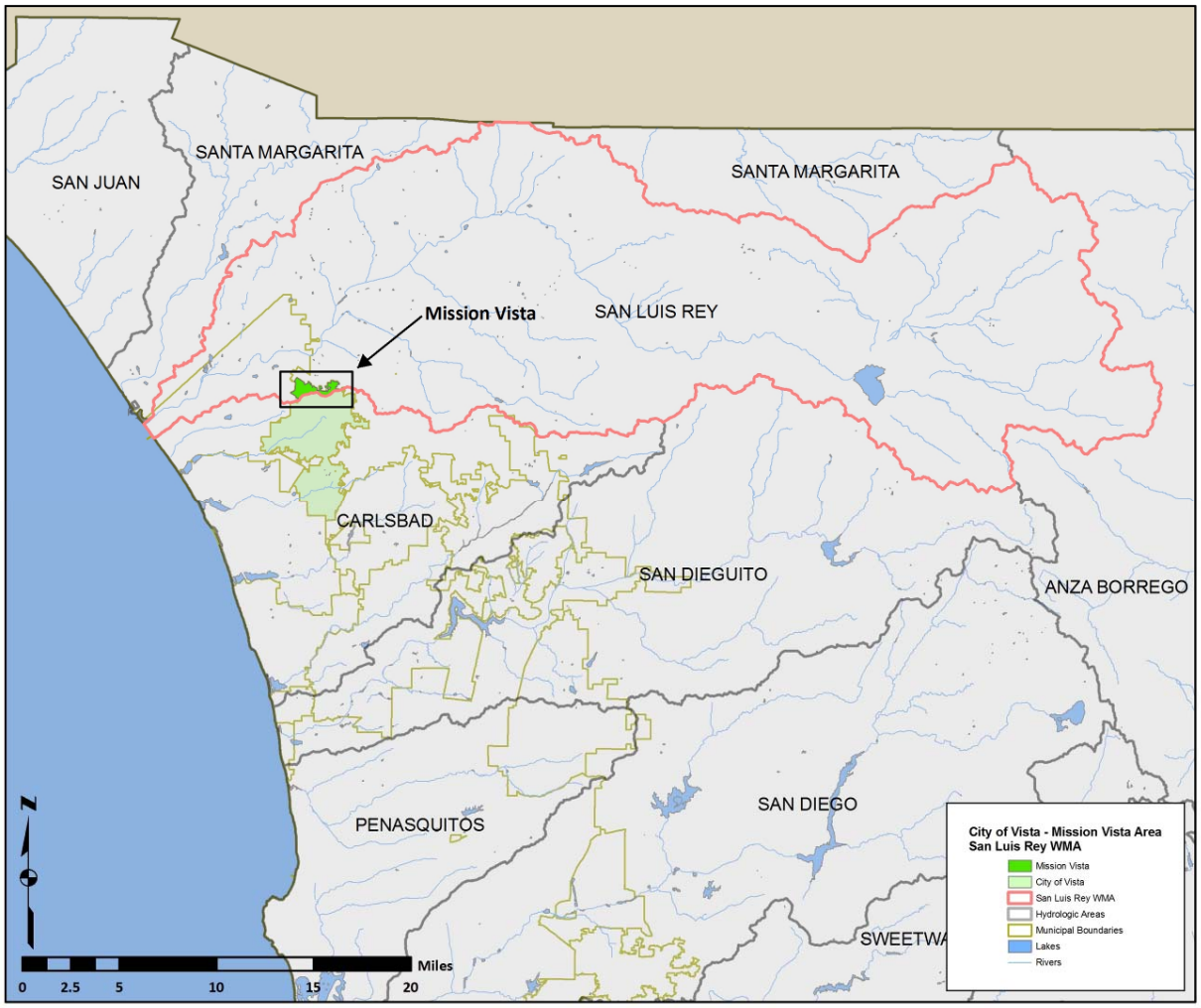

Figure 12.1 County of San Diego WMAs, Including the Mission Vista Area.
Source: SANGIS 2007 data

Mission Vista Area

The Mission Vista Area is located at the northern part of the City of Vista. The area generally drains towards the west through a series of pipes and surface flows. Once the drainage departs from the City of Vista's jurisdiction, it flows towards the southerly drainage system entering the County of San Diego's Guajome Park. The runoff drains into the Upper Pond as described by the County's Parks and Recreation Department.

12.3.2.2 Land Use

Land use within the Watershed Management Area (WMA) is classified primarily as undeveloped (55%). Other land use classifications include residential and spaced rural residential (16%), agriculture (15%), parks (9%), military (3%), transportation (2%), and commercial recreation (1%). Commercial, industrial, and public facility land uses each make up less than 1% of the land use acreage. [Source: Weston SLR-WMA 08-09 Final]

Among the three Hydrologic Areas composing the San Luis Rey River WMA, the Lower San Luis Hydrologic Area (HA 903.1) is the most developed, consisting of residential/spaced rural residential (35%) and agriculture (25%) land uses. The Monserate Hydrologic Area (HA 903.2) is primarily undeveloped (59%) with agriculture and commercial recreation land uses comprising 17% and 13% of the area respectively. The

Warner Valley Hydrologic Area (HA 903.3) consists primarily of undeveloped (82%) and open space (10%) land use. [Source: Weston SLR-WMA 08-09 Final]

The Mission HSA 903.11, land use is dominated by military use (32%) and residential/spaced rural residential (26%). Agricultural land use comprises approximately 13% of the drainage, while open space and undeveloped land cover 9% and 5%, respectively. Commercial land uses make up approximately 2% of the Mission HSA.

In the Mission Vista Area there are approximately 745 acres of existing land use. Of this area, predominant land uses include residential, vacant/undeveloped land, and parks/open space. Table 12.5 shows the land use in Mission Vista Area.

Table 12.5 City of Vista Land Use in Mission Vista Area.

Land Use	Acres	Percent
Single Family Residential	262.56	35.2%
Multiple Family Residential	20.67	2.8%
Roads	69.90	9.4%
Commercial	19.56	2.6%
Public Services	21.12	2.8%
Park/Rec/Open Space	159.91	21.5%
Orchard/Vineyard/Ag	17.16	2.3%
Vacant/Undeveloped Land	174.19	23.4%
Total	**745.07**	**100.0%**

Source: SANGIS 2007 data.

12.3.2.3 San Luis Rey River WMA Populations

The population in the WMA is estimated at 164,402 persons or 293 persons per square mile (SANDAG, 2005). The major population center in the watershed is focused in the Lower San Luis HA, which is reflective of the more urban land use categories in the lower watershed area. The population in the WMA is projected to increase by 25% in the next decade, reaching approximately 204,891 people by 2020 (SANDAG, 2006).

Within the Vista Mission study area, there are 710 single-family residential zoned properties and 26 multiple-family/group quarters properties (SANGIS, 2010). Assuming a population average of 3.5 persons per single family residence and 45 persons per multi-family property, there are approximately 3,655 persons residing in Mission Vista Area.

12.3.3 High Priority Water Quality Problems

12.3.3.1 San Luis Rey River WMA

The table below, taken from the FY 2008-2009 San Luis Rey Watershed Urban Runoff Management Program Annual Report, summarizes the High Priority Water Quality Problems in the WMA.

Table 12.6 Water Quality Problems in the San Luis Rey WMA. (San Luis Rey WURMP Group)

Water Quality Problem	WURMP High Priority?	HSA(s)	Explanation
Bacteria	Yes	HSA 903.11 HSA 903.12	- Pending TMDL for bacterial indicators at the mouth of the San Luis Rey River - 303(d) listing for bacterial indicators at the Pacific Ocean Shoreline - Persistent exceedances of fecal coliform and enterococcus benchmarks at the MLS and TWAS. Also see Attachment A, SLR-001. - Bacteria BLTEA rating of "A" for HA 903.1
Nutrients	Yes	HSA 903.11	- 303(d) listing for Eutrophication at Guajome Lake - Nutrients BLTEA rating of "A" for HA 903.1
Dissolved Minerals (TDS & Chloride)	No	HSA 903.11	- 303(d) listings for TDS and chloride for 19-mile downstream reach of San Luis Rey River - Dissolved Minerals BLTEA rating of "A" for HA 903.1 - Persistent exceedances of TDS and chloride benchmarks observed in SLR River and Tributaries (see Appendix A, SLR-001)
Benthic Alteration	No	HSA 903.11 HSA 903.12	- Consistent "Poor" or "Very Poor" IBI ratings at the MLS and TWAS - Benthic Alteration BLTEA rating of "A" for HA 903.1

12.3.3.2 Mission Hydrologic Subarea (HSA 903.11)

The Pacific Ocean Shoreline at the mouth of the San Luis Rey River is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL for indicator bacteria has been adopted by the RWQCB and is currently being adopted by the SWRCB and USEPA (Revised Total Maximum Daily Load for Indicator Bacteria Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek), February 10, 2010).

In the Mission HSA the San Luis Rey River and Guajome Lake are also impacted for chloride and TDS, and nutrients, respectively. Table 12.7 below lists the Section 303(d) listed waterbodies in the SLR WMA.

Table 12.7 Mission HSA Waterbodies on the 2006 SWRCB 303(d) List.

Waterbody Name	HSA	HSA No.	Pollutant/Stressor
Pacific Ocean Shoreline	Mission	903.11	Indicator bacteria
San Luis Rey River	Mission	903.11	Chloride and TDS
Guajome Lake	Mission	903.11	Eutrophic

Source: SWRCB, 2006.

Based on the Regional Monitoring Data, along with impairments and other considerations, the high priority water quality problems in the Mission HSA have been identified as nutrients and bacteria.

12.3.3.3 Mission Vista Area

Data from four Dry Weather Monitoring sites for the period of 2005 to 2009 have been evaluated as a part of this analysis. These sites include G-3, G-4, G-5, and G-6 (see Figure 2 below) and are all located within the storm drain system. Additionally, the 2005 through 2007 data from site GC-1, located in a natural creek, was also evaluated. Data was collected for field measurements and laboratory analysis at these sites; the results were then compared to the published action levels.

Table 12.8 below summarizes the results of the monitoring at these locations during the periods of time evaluated.

Table 12.8 Analytes Exceeding Action Levels Between 2005-2009

Analyte	Action Level	GC-1	G-3	G-4	G-5	G-6
Ammonia (NH3-N)	1.0 mg/L	No	Yes	Yes	No	No
Conductivity	BPJ (>5mS/cm)	No	Yes	No	No	No
Detergents (MBAS)	1.0 mg/L	No	No	Yes	No	No
Orthophosphate (PO4-P)	2.0 mg/L	No	No	Yes	No	No
pH	<6.5 or >9.0	No	No	Yes	No	No
Temperature	BPJ (<15 or >25)	No	Yes	Yes	No	No
Turbidity	BPJ (>20 NTU)	Yes	Yes	Yes	No	No
Total Coliform	50,000 MPN/100 mL	No	NA*	NA	NA	No
Fecal Coliform	20,000 MPN/100 mL	No	NA	NA	NA	No
Enterococcus	10,000 MPN/100 mL	No	NA	NA	NA	No
Cadmium Dissolved	California Toxics Rule	No	NA	NA	NA	No
Copper Dissolved	California Toxics Rule	No	NA	NA	NA	No
Lead Dissolved	California Toxics Rule	No	NA	NA	NA	No
Zinc Dissolved	California Toxics Rule	No	NA	NA	NA	No
Chlorpyrifos	0.5 ug/L	No	NA	NA	NA	No
Diazinon	0.5 ug/L	No	NA	NA	NA	No
Oil & Grease	15 mg/L	No	NA	NA	NA	No

*NA=not analyzed

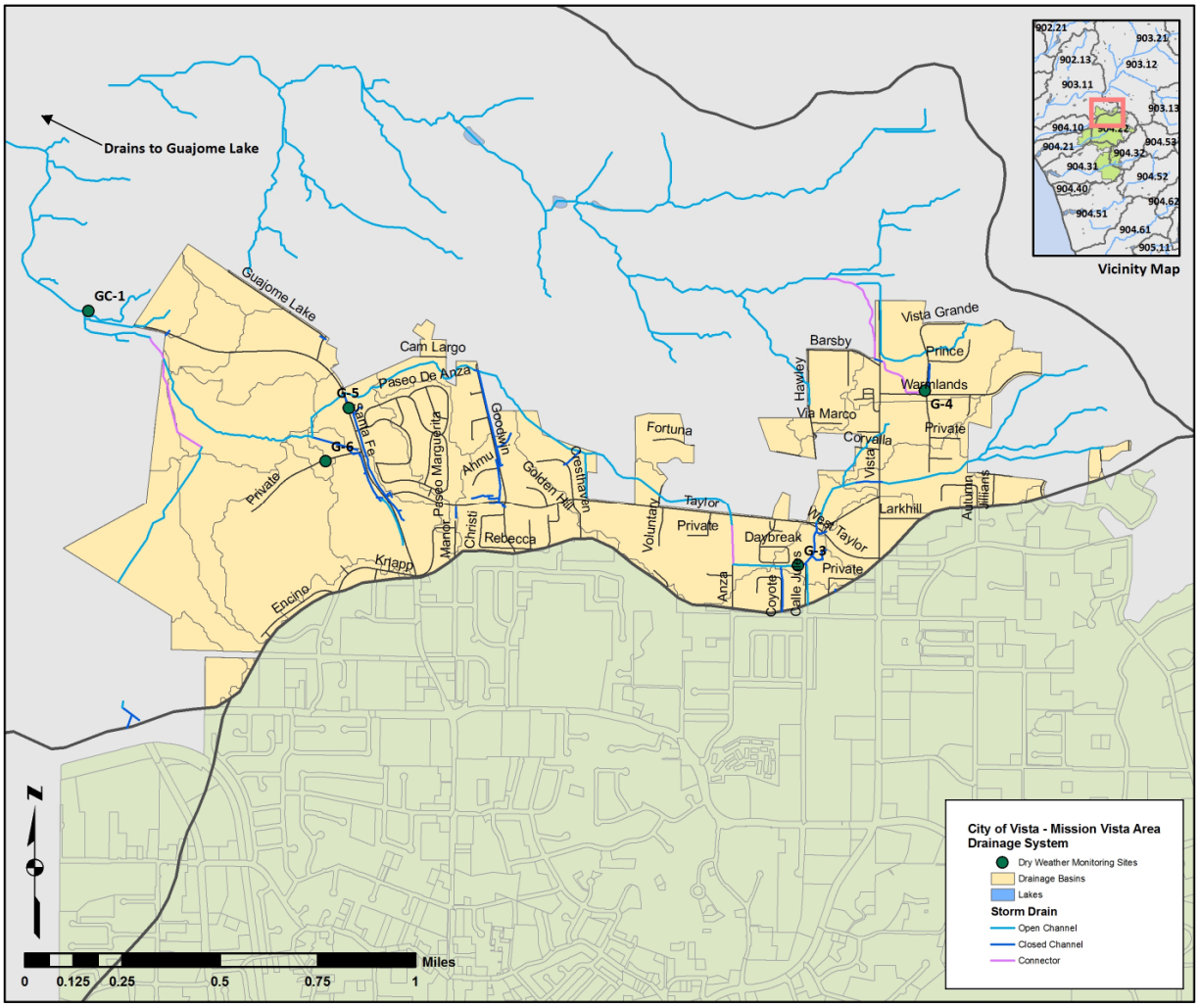

Figure 12.2 Mission Vista Area Drainage
Source: SANGIS, 2007; City of Vista Internal Data, 2010

12.3.4 Source Information and City of Vista Watershed Contribution

12.3.4.1 Pollutant Source Information for the SLR WMA

From previous studies, bacteria concentrations have generally been higher at sites observed with overland runoff when compared to sites influenced from continuous groundwater intrusion. This suggests sources are coming from surface-level activities, i.e. anthropogenic activities, animal/pet activities. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges. This may be a result of perched water tables. [Source Weston SLR WMA 08-09 Final]

The lower portion of the WMA had the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained the greatest amount of trash in the WMA. This result coincides with the urbanized population centers, which are also found in the lower portion of the WMA, and the Section 303(d) listings in HSA 903.11 for indicator bacteria. [Source Weston SLR WMA 08-09 Final]

12.3.4.2 Pollutant Source Information Pertaining to City of Vista

Land Use

There are approximately 745 acres within the Mission Vista Area. Of this area, predominant land uses include residential, vacant/undeveloped land, and parks/open space. Figure 3 below shows the land use within the Mission Vista Area, including the sanitary sewer system, roads, commercial inventory, and Dry Weather Monitoring Sites within Vista Mission.

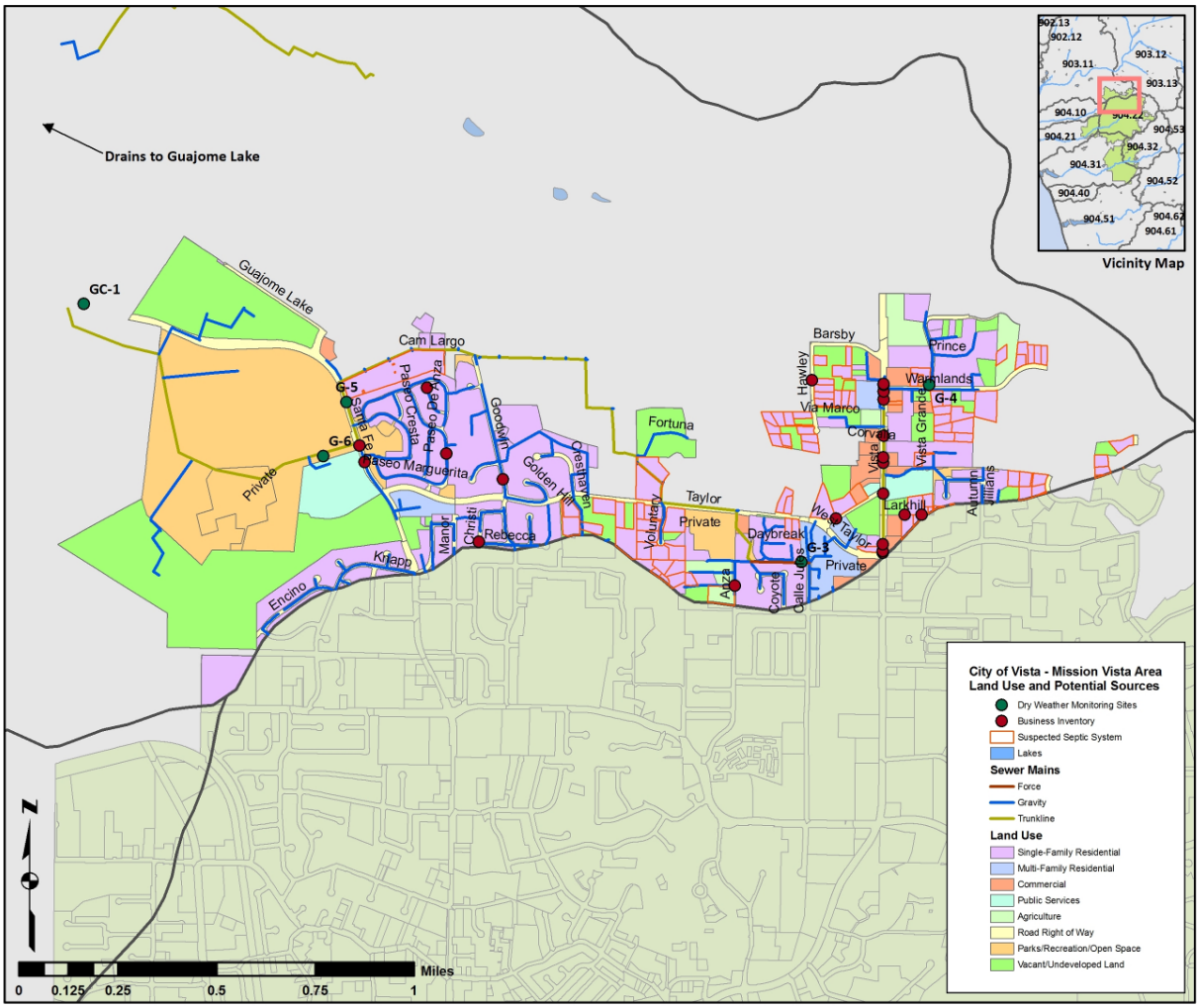

Figure 12.3 Mission Vista Area Potential Sources.
Source: SANGIS, 2007; City of Vista Internal Data, 2010

Table 12.9 identifies the land use within the study area as compared to the HSA and the SLR WMA.

Table 12.9 Land Use comparisons between study area, HSA, and WMA

	Vista Mission		HSA 903.11		SLR WMA	
Land Use	**Acres**	**Percent**	**Acres**	**Percent**	**Acres**	**Percent**
Agriculture	17.2	2.3%	3,921.0	13.0%	50,706.7	14.1%
Commercial	19.6	2.6%	458.6	1.5%	866.0	0.2%
Commercial Recreation	0.0	0.0%	574.6	1.9%	4,535.6	1.3%
Industrial	0.0	0.0%	220.3	0.7%	932.2	0.3%
Military	0.0	0.0%	9,634.1	31.9%	10,099.4	2.8%
Open Space / Parks & Recreation	159.9	21.5%	2,780.2	9.2%	31,036.1	8.7%
Public Facility	21.1	2.8%	384.4	1.3%	1,043.2	0.3%
Residential	243.1	32.6%	5,862.2	19.4%	9,304.0	2.6%
Spaced Rural Residential	40.2	5.4%	1,989.0	6.6%	46,939.0	13.1%
Transportation	69.9	9.4%	2,399.2	7.9%	8,197.5	2.3%
Under Construction	0.0	0.0%	40.6	0.1%	116.4	0.0%
Vacant and Undeveloped Land	174.2	23.4%	1,828.4	6.1%	193,245.8	53.9%
Water	0.0	0.0%	113.8	0.4%	1,607.5	0.4%
Total	**745.1**		**30,206.3**		**358,629.3**	

Source: Weston LTEA, 2005; SANGIS 2007 data.

As compared to HSA 903.11 and the WMA as a whole, the City's contribution to the watershed is small if not negligible.

Commercial and Municipal Inventories

Within the San Luis Rey River WMA, 25 businesses fall within the Mission Vista Area. Eighteen of these businesses (72%) are categorized into three source groups – Eating/Drinking Establishments, Landscaping, and Fueling. The remaining are miscellaneous source types.

Table 12.10 lists the inventoried sources at each watershed level within the WMA.

Table 12.10 Pollutant Sources for WMA, HSA, and Mission Vista Area

Source Name	WMA[1]	903.1[1]	Mission Vista Area[2]
Auto mechanical repair, maintenance, fueling, or cleaning	57	54	2
Boat mechanical repair, maintenance, fueling, or cleaning	1	1	0
Equipment mechanical repair, maintenance, fueling, or cleaning	3	2	0
Automobile and other vehicle body repair and painting	7	7	0
Retail or wholesale fueling	33	30	3
Pest control services	0	0	1
Eating or drinking establishments	277	261	9
Mobile carpet, drape, or furniture cleaning	0	0	2
General Contractors for Home/Commercial Improvements	0	0	1
Botanical or Zoological Gardens and Nurseries/Greenhouses	315	281	1
Landscaping - Parks, golf Courses, Cemeteries, etc.	15	14	6
Animal Facilities	47	45	0
New development and significant redevelopment projects	115	0	0
Construction projects	918	750	0
Corporate yards (incl. maintenance/storage yards)	4	3	0
Chemical Manufacturing	2	1	0
Fabricated Metal Product Manufacturing	4	4	0
Primary Metal Manufacturing	1	1	0
Active or closed municipal landfills	5	5	0
Recycling , Junk Yards, Scrap Metal	5	5	0
Airfields	2	2	0
Transportation & Warehousing	2	2	0
POTWs (water and wastewater)	17	17	0
Total Sources	**1830**	**1485**	**25**

[1] LTEA Assessment, Weston, 2005.
[2] City of Vista Business Inventory, 2010
Note: Mission Vista Area inventory has been updated since LTEA assessment in 2005;

Sanitary Sewer Sources

In addition to the 11.3 miles of sanitary sewer collection system located within the Mission Vista Area, there are a number of parcels that are not connected to the sewer collection system. These parcels of land have their own sewage treatment systems onsite which include septic tanks and leach fields. Known potential sources of bacteria are the sewage collection systems and privately owned and maintained septic systems. Figure 3 above shows the location of these sanitary sewer collection and septic systems.

12.3.5 Conclusions and Recommendations

In conclusion, the Mission Vista Area has little contribution to the overall San Luis Rey WMA. The portion of the City of Vista within the Mission Hydrologic Subarea (HSA 903.11) is 745 acres, or 2.5%, and does not contribute a significant amount of runoff or pollutants to the overall HSA or WMA.

The City may consider the following recommendations for further understanding of the Mission Vista Area and its contribution to the downstream impairments and impacts on water quality:

- Investigation of the hydrology and hydraulics in the Vista Mission Area in relation to Guajome Lake;
- Analysis of existing water quality data to better characterize the City's contributions to the overall WMA;
- Source identification and characterization to determine which, if any, of the sources in the drainage area are contributing pollutant loads;
- Tailored outreach and education to the residents and businesses within the drainage area, as appropriate.

12.4 References

Cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, County of San Diego; Carlsbad Watershed Urban Runoff Management Program (WURMP), March 2008.

Cities of Oceanside, Vista, County of San Diego; San Luis Rey Watershed Urban Runoff Management Program (WURMP), March 2008.

San Diego Association of Governments (SANDAG), www.sandag.org, 2005.

San Diego Association of Governments (SANDAG), www.sandag.org, 2006.

SANGIS Data Warehouse, www.sangis.org, 2007.

SANGIS Data Warehouse, www.sangis.org, 2010.

State Water Resources Control Board, Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List, September 2004.

Weston Solutions, San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring – Final Report, San Luis Rey Watershed Management Area, January 2010.

13.0 JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM REVISIONS

There were no revisions to the City's Jurisdictional Urban Runoff Management Program this fiscal year.

14.0 Conclusions and Recommendations

This JURMP annual report covers the third reporting period (July 1, 2009 to June 30, 2010) under Order 2007-0001. The JURMP was implemented as required during this reporting period and the City remained in compliance with all permit requirements. Some of the key areas of implementation of the JURMP during this period included continued focus on the TCBMP program, improvements to the Industrial Commercial Program, and improvements to the outreach programs in the City. The City also continued contributing to the development and implementation of the programs in two watersheds (Carlsbad and San Luis Rey Watersheds).

14.1 Iterative Process

The City's stormwater program continued to evolve. The City's JURMP states that the program will require periodic revision. The City of Vista is committed to working with its staff, other Copermittees and the RWQCB to improve and adapt the plan and efforts as necessary to comply with the permit requirements. The City's program continues to be dynamic requiring changes in the daily operations and implementation based on lessons learned and City staff input. Each year, the developed program is implemented and where feasible, programs are assessed for effectiveness and efficiencies. The assessment information directs program modifications for the coming cycles. Examples of the iterative process and changes to the program that were made this year include internal modifications to the Treatment Control BMP Program focusing on program efficiency, improvements to the Industrial Commercial Programs focusing on repeat violators and mobile businesses, and implementation of new assessment measures over various program components related to outreach and training.

14.2 Program Focus

Where possible, program focus during the coming year will be related to the identified pollutants of concern within the City and watershed. In particular, programs will focus on the elimination of sources of bacteria, sediment, and nutrients. Where it is feasible to associate specific activities within program components to specific nutrients, these programs will be further developed and improved upon.

The Land Use Planning Component of the program can affect all three identified pollutants through the implementation of site design and source controls on all sites. The City will continue to implement its SUSMP requirements and emphasize natural treatment control BMPs and LID Site Design BMPs. In addition, the hydromodification plan (HMP) will be incorporated into the SUSMP and implemented. With the incorporation of the HMP, the development process will be reviewed and modified where efficiencies and updates are needed.

The City's strong construction inspection process will continue in the coming year, with an emphasis on education at pre-con meetings and construction site BMP implementation. This program focuses primarily on sources of sediment. Other pollutants may also be addressed through construction site BMPs.

The municipal program is broad in scope and implements many BMPs to address all three priority pollutants. This year, the program will focus on the MS4 inspection and maintenance program specifically, as a new database will be implemented and the channel maintenance program will be initiated.

Inspections of the industrial and commercial businesses were focused during the reporting period on high priority industries and specific commercial facilities. Through the assessment process, several of these businesses have been identified as repeat offenders from year to year. The City's focus is on a program to increase presence and enforcement at these sites in an effort to ensure their compliance year round. It is expected that this program will address sources of bacteria, sediment, and nutrients.

The residential component will also be a focus area in the coming year, as recent assessments have indicated that many of the complaints are related to sediment. The program will investigate ways to better monitor residential areas, especially where sedimentation is a concern, and implement new ideas where feasible.

14.3 Funding Sources

The Water Quality Protection Program activities are funded through the sewer enterprise fund. Some storm water education programs were funded through the California Integrated Waste Management Board Used Oil Block Grant and the Department of Conservation Recycling Grant.

14.4 Water Quality Data Analysis

The City has been collecting dry weather water quality data in the MS4 for many years under the previous Municipal Permits. The City has collected several seasons of data and continues to evaluate these data to determine the City's main constituents of concern.

Additionally, the City has collected limited amounts of data in receiving waters under ambient conditions in conjunction with the dry weather monitoring programs. The receiving waters sampled include Guajome Creek, Buena Vista Creek, Agua Hedionda Creek, and Buena Creek. All samples collected were grab samples and represent only a snapshot of the conditions in the creeks at that time. Analysis includes the use of field test kits and laboratory measurements, similar to the dry weather program.

Water quality assessments are generally consistent with findings at the watershed level and programs will continue to be focused on the main constituents of concern. High priority water quality problems identified in the City include bacteria and nutrients during dry weather and bacteria and sediment during wet weather.

14.5 Citywide Participation

The City's Water Quality Protection Program is administered by the Engineering Department management and staff. However, the JURMP is a citywide program with its continuing success dependent upon all City staff participation. During this reporting period the program continued to work with all departments across the City, helping to ensure continued program compliance. Examples of improved Citywide participation this year included increased interaction with engineers in the Capital Improvements Program, coordination with recreation and economic development on outreach programs, and working with business license staff to develop a mobile water use permit program.

14.6 Watershed Collaboration

The City continued to collaborate and focus on implementing the activities developed in the Carlsbad and San Luis Rey Watershed Urban Runoff Management Plans with the appropriate Copermittees, organizations and stakeholders within these watersheds.

Specifically, the City coordinated on watershed outreach events and is currently planning activities in both watersheds for the coming years.

14.7 Program Accomplishments

The Water Quality Protection Program and various City staff continue to look for ways to improve the City's JURMP implementation. This includes several areas of focus to build on program success. An outline of the years' accomplishments is presented below:

Development Planning Component

Last year, the effectiveness assessment for this program component focused on the TCBMP program, as it was a new and developing program. Results showed that after two years of inspections, the program had been successful in ensuring that TCBMPs throughout the City are maintained and operating properly. This continues to be the case. However, because the program was relatively new, significant amounts of staff time have been expended focusing on outreach, inspections, and follow-ups for these sites.

Previous recommendations and related accomplishments include:

- Examining methods to develop a more efficient program while continuing to gain full compliance with its ordinances and the permit. This was accomplished this year by involving stormwater code enforcement staff in the follow-up inspections and compliance related issues. This required training and further development of staff, but improved the efficiency of the program and maintained a high level of compliance.
- Evaluation of inspection data against the current prioritization criteria. This comparison has been performed in assessments of the program and the prioritization criteria appears to be well suited to findings in the field.

Additionally, the Regional Board performed a review of the TCBMP program during the fall of 2009. In the final report from the Board, there were two concerns that needed to be addressed specific to findings in the field. Both concerns were addressed promptly and have been resolved.

Construction Component

- Pre-rainy season outreach and inspections focused on construction sites, including those actively grading and idle sites. Outreach efforts included pre-rainy season letters to all superintendents and site owners, a workshop for City staff and the development community, and inspections of active and idle sites prior to October 1. Stormwater Code Enforcement staff worked with the owners of the idle construction sites to ensure that proper BMPs were implemented.
- As shown in this and previous effectiveness assessments of this component, it appears that site compliance may be related to pre-construction meetings. Beginning in 2005, stormwater staff began to attend pre-construction meetings, providing an opportunity for stormwater staff to give one on one site specific education related to the project. This practice continued this year, with stormwater staff attending 15 pre-construction meetings.

Municipal Component

- An Access database was developed for use in the field in tracking MS4 facilities inspections and maintenance. It is expected that this database will improve the

efficiency of and accuracy of data tracking related to MS4 inspections and maintenance.

- A system was implemented to track proactive complaints, or those reported by City staff. This may be used in the future to assess changes in knowledge of City staff as related to stormwater outreach. However, limited data has been collected at this time.
- A municipal survey was developed and distributed early in the fiscal year to serve as a baseline of stormwater knowledge within the City. A second survey was distributed near the end of the fiscal year, allowing a comparison of scores and providing some basis for assessments.
- The stormwater program continued active involvement in the City's special events committee, interacting extensively with event organizers and staff to ensure that all required BMPs were implemented.
- Permits were received in 2009 from the US Army Corps of Engineers, US Fish and Wildlife Service, California Department of Fish and Game, and the Regional Water Quality Control Board allowing the City to perform channel maintenance activities within the MS4. Site prioritization and preliminary workplans were developed this fiscal year and actual maintenance is staged to begin early in FY10-11.

Industrial/Commercial Component

- Combination inspections continued for stormwater and FOG at the food service establishments selected for inspection allowing the City to leverage resources and gain efficiencies in both programs.
- The City continued to participate in the Regional Industrial and Commercial Workgroup (as the secretary) and in the Mobile Business Sub-workgroup.
- Notifications were provided to each of the facilities on the inventory of the site/source specific BMP requirements pertaining to their operations.
- Staff evaluated methods to gain compliance at facilities identified as repeat offenders in previous assessments. A modified inspection program was developed for these facilities.
- A Mobile Water Use program was developed to ensure that mobile businesses operating within the City that have the greatest potential to violate stormwater ordinances implement proper BMPs.

Residential Component

- Stormwater staff responded to and resolved nearly 100 residential complaints.
- A detailed analysis of residential complaints was performed. This information may help to shape the residential program in the future.
- The analysis provides insight into the relationship of types of complaints to pollutants of concern, indicating that a large number of residential complaints are related to sediment.

Education Component

- Site and activity specific outreach information was provided to all industrial and commercial businesses on the inventory.
- Multiple articles and media releases were distributed to the general public through media outlets and news letters and several articles were published in internal City newsletters addressing BMP information.
- The City contracted with the San Diego County Office of Education to provide a new outreach program to elementary and middle schools in Vista. The program utilized

the Splash Mobile Science Laboratory and the Green Machine to teach the students about various environmental topics.

- Assessment methods were developed this year in an effort to determine the effectiveness of various outreach components, attempting to quantify a change in knowledge in the target audiences. Surveys were developed and implemented for municipal staff, construction staff and developers, and for school children. The surveys for the municipal staff and school children were administered twice, allowing a comparison of the data, whereas the construction surveys were only administered once and may be used in the future.

Public Participation Component

- The City's website was updated to make it more user friendly. These changes are expected to benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. With these enhancements, these stormwater hotline and email addresses will be better advertised.
- Staff continued to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

Fiscal Analysis Component

The fiscal analysis component was performed using the Standardized Method for Fiscal Analysis. To do so, improvements to the tracking and budgeting system were made this year to allow for an easier fiscal analysis of each component.

Effectiveness Assessment Component

A comprehensive effectiveness assessment was performed this year. Additional effectiveness measures developed and included this year were surveys for municipal and construction staff and pre and post tests for students receiving environmental outreach through the SDCOE. Conclusions from the assessment are incorporated into the recommendations below.

14.8 Program Recommendations

Based on program review and effectiveness assessments for each component, program recommendations for the coming year are presented below.

Development Planning Component

- Continued coordination with Land Development Staff on process review and improvements;
- Integration of the recently adopted HMP into the City's SUSMP;
- Continued training related to new regulations for Capital Improvement Program and Land Development staff;
- Utilize stormwater code enforcement staff for follow-up inspections and enforcement related to treatment control BMP inspections.

Construction Component

- Continue to make improvements to the inspection tracking system;
- Increased focus on all sites in September to ensure compliance prior to the rainy season;
- Continue to participate in all pre-construction meetings.

Municipal Component

- Implementation of channel maintenance program, including clearing debris and sediment from natural drainage channels and creeks where permits have been obtained;
- Continue to implement and refine the new data tracking system for MS4 facilities inspections and maintenance;
- Coordinate with the parks department to ensure that there are adequate pet waste stations, kiosks with educational information, and that landscape and restroom maintenance are performed properly.

Industrial/Commercial Component

- Implementation of the Mobile Water Use program;
- Implementation of enhanced inspection program for repeat offenders and improve where needed.

Residential Component

- Provide further analysis of residential complaint types, the sources/causes, and methods to address these complaints.

Education Component

- Provide training and outreach to Fire Department staff;
- Enhance surveys used to measure changes in knowledge where necessary;
- Revise brochures as necessary;
- Translate most applicable brochures into Spanish where feasible.

Public Participation Component

- Continue to provide mechanisms for public participation including the Citizen's Academy and public meetings.

Fiscal Analysis Component

- Continue to focus on consistent methods of tracking and reporting of expenditures by program component to allow for easier and accurate fiscal reporting.

Effectiveness Assessment Component

The effectiveness assessment of the program will continue to evolve. As new methods of evaluation are developed, additional supporting data will be tracked. It is expected that as more water quality data is collected, better evaluations of MS4 and receiving water quality will be feasible. Where possible, relationships between program components, BMPs, and water quality may be evaluated.

APPENDIX A-1

SUSMP Listings

Project ID	Project Name	SUSMP Requirements Applied? (Y/N)	Site Design BMPs for Project Included? (Y/N)	Source Control BMPs for Project Included? (Y/N)	Priority Development Project? (Y/N)	Treatment Control BMPs Included? (Y/N)	Was project required to meet Interim or HMP requirements?	If HMP is NOT required - why was it exempt from HMP requirements?
LD 08-0017	Faith Lutheran Church	Y	Y	Y	N	N	N	Too small (<50 acres)
LD 09-0036	1401 N. Melrose	Y	Y	Y	N	N	N	Too small (<50 acres)
LD 09-0039	Walmart Expansion	Y	Y	Y	N	Y	N	Too small (<50 acres)
LD09-0041	721 Oceanview	Y	Y	Y	N	N	N	Too small (<50 acres)
LD10-0001	511 Fortuna	Y	Y	Y	N	N	N	Too small (<50 acres)
LD10-0003	BMW	Y	Y	Y	N	N	N	Too small (<50 acres)
LD10-0010	Vista Community Clinic	Y	Y	Y	N	N	N	Too small (<50 acres)
CIP	Bobolink Storm Drain	Y	Y	Y	N	Y	N	Too small (<50 acres)
CIP	E. Vista Way Street Improvements - resurfacing project	Y	N	N	N	N	N	Too small (<50 acres)
CIP	Inland Rail-Trail	Y	Y	N	N	N	N	Too small (<50 acres)
CIP	Grapevine Road Street Improvements	Y	N	N	N	N	N	Too small (<50 acres)
CIP	W. California Street Improvements	Y	N	N	N	Y	N	Too small (<50 acres)
CIP	Various Street Resurfacing	Y	N	N	N	N	N	Too small (<50 acres)
CIP	Hacienda Dr. Storm Drain	Y	N	N	N	N	N	Too small (<50 acres)
CIP	Broadway Lighting and Sidewalk	Y	N	N	N	N	N	Too small (<50 acres)
CIP	Melrose Median	Y	N	N	N	N	N	Too small (<50 acres)
CIP	Foothill Drive Improvements	Y	Y	N	N	Y	N	Too small (<50 acres)

APPENDIX A-2

Private TCBMP Inventory and Inspections Summary

Site	GP or Drawing #	BMP loc ID	Project Name	Project Address	Project Street	TTWQ Priority	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	FY 09-10 Annual Certification Form Received	Inspection Date	Corrective Actions Needed	Comments
1	01-059	1	Chevron	224	N. Emerald Drive	Medium	Buena Vista Creek	MP-52	Drain Insert	Catch Basin	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
	01-059	2	Chevron	224	N. Emerald Drive	Medium	Buena Vista Creek	MP-52	Drain Insert	Catch Basin	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
	01-059	3	Chevron	224	N. Emerald Drive	Medium	Buena Vista Creek	MP-52	Drain Insert	Trench Drain	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
2	02-015	1	Red Line towing	451	Olive Ave	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
3	02-036	1	Multi Tennant Industrial	1235	Activity Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/7/2010	Y	Clean out Drain Insert
	02-036	2	Multi Tennant Industrial	1235	Activity Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/7/2010	Y	Clean out Drain Insert
4	02-049	1	828 N Santa Fe Ave	828 N	Santa Fe Ave	Medium	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-049	2	828 N Santa Fe Ave	828 N	Santa Fe Ave	Medium	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	none	N/A	N/A
5	02-054	1	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-054	2	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-054	3	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
6	02-058	1	North Island Finacial Credit union	1960	University Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
7	02-061	1	Jury & Clark development	2435	Cades Way	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-061	2	Jury & Clark development	2435	Cades Way	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
8	02-071	1	Directed Electronics Inc	1	Viper Way	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	02-071	2	Directed Electronics Inc	1	Viper Way	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	02-071	3	Directed Electronics Inc	1	Viper Way	High	Agua Hedionda	--	Permanent Erosion Control	Plants-okay	Yes	6/10/2010	N	N/A
9	02-078	1	1230 Activity Drive	1230	Activity Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	02-078	2	1230 Activity Drive	1230	Activity Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-078	3	1230 Activity Drive	1230	Activity Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-078	4	1230 Activity Drive	1230	Activity Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-078	5	1230 Activity Drive	1230	Activity Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-078	6	1230 Activity Drive	1230	Activity Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-078	7	1230 Activity Drive	1230	Activity Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
10	02-080	1	Focus Industrial Center	2460	Grand Ave	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-080	2	Focus Industrial Center	2460	Grand Ave	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A

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11	02-081	1	Focus Industrial Center	2441	Cades Way	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-081	2	Focus Industrial Center	2441	Cades Way	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
12	02-082	1	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-082	2	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-082	4	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-082	3	Sycamore Vista Business Center	2300-2322	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-082	5	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-082	6	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-082	7	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	02-082	8	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
13	02-089	1	El Pollo Loca	495 S	Melrose Dr	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
14	03-005	1	Poinsettia Ridge	1201-1211	Activity Dr	High	Agua Hedionda	MP-50	Wet Vault	Sand/ Oil Seperator	Yes	6/16/2010	N	N/A
	03-005	2	Poinsettia Ridge	1201-1211	Activity Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	N	N/A
	03-005	3	Poinsettia Ridge	1201-1211	Activity Dr	High	Agua Hedionda	MP-50	Wet Vault	Stormwater Treatment	Yes	6/16/2010	Y	Verify sump has appropriate levels of sediment, not more than 75% full.
	03-005	4	Poinsettia Ridge	1201-1211	Activity Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	N	N/A
	03-005	5	Poinsettia Ridge	1201-1211	Activity Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	N	N/A
	03-005	6	Poinsettia Ridge	1201-1211	Activity Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	N	N/A
	03-005	7	Poinsettia Ridge	1201-1211	Activity Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	N	N/A
15	03-013	1	3225 Executive Ridge	3225	Executive Ridge	Low	San Marcos	--	Bio-Filter	Gravel Swale above sub drain	Yes	none	N/A	N/A
	03-013	2	3225 Executive Ridge	3225	Executive Ridge	Low	San Marcos	--	Bio-Filter	Gravel Swale above sub drain	Yes	none	N/A	N/A
16	03-016A/04-064	1	Vista village phase II	235	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	2	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	3	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A

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	03-016A/04-064	4	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	5	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	6	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	7	Vista village phase II	245	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Trench Drain	No -Site added to inventory after annual cert form submittal period	6/16/2010	Y	Clean out unit, replace hydro Boom
	03-016A/04-064	8	Vista village phase II	245	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	9	Vista village phase II	255	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	36"x36" Catch Basin	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	10	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	Y	Debris in unit
	03-016A/04-064	11	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	12	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	No -Site added to inventory after annual cert form submittal period	6/16/2010	Y	Replace hydrocarbon booms
	03-016A/04-064	13	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Trench Drain	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	14	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	Trench Drain	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	15	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	16	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	03-016A/04-064	17	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A

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	03-016A/04-064	18	Vista village phase II	225	Vista Village Dr	High	Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
17	03-019	1	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	03-019	2	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	03-019	3	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	03-019	4	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
18	03-021	1	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Yes	6/17/2010	Y	Sediment in Unit
	03-021	2	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Yes	6/17/2010	Y	Trash in Unit
	03-021	3	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Yes	6/17/2010	N	N/A
	03-021	4	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Yes	6/17/2010	Y	Sediment in Unit
	03-021	5	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	--	Underground Det. Sys.	180' of 5' Dia. Detetion Pipes	Yes	6/17/2010	N	N/A
	03-021	6	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	--	Underground Det. Sys.	75' of 5' Dia. Detetion Pipes	Yes	6/17/2010	N	N/A
	03-021	7	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	--	Underground Det. Sys.	240' of 5' Dia. Detetion Pipes	Yes	6/17/2010	N	N/A
	03-021	8	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	--	Underground Det. Sys.	290' of 5' Dia. Detetion Pipes	Yes	6/17/2010	N	N/A
	03-021	9	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	--	Underground Det. Sys.	180' of 5' Dia. Detetion Pipes	Yes	6/17/2010	N	N/A
	03-021	10	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	--	Underground Det. Sys.	270' of 5' Dia. Detetion Pipes	Yes	6/17/2010	N	N/A
	03-021	11	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	--	Underground Det. Sys.	420' of 5' Dia. Detetion Pipes	Yes	6/17/2010	N	N/A
	03-021	12	Monarch Apts	1850	Thibido Rd	High	Agua Hedionda	--	Underground Det. Sys.	360' of 5' Dia. Detetion Pipes	Yes	6/17/2010	N	N/A
19	03-044	1	800 Silver Dr Subdivision	800	Silver Dr	High	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	6/7/2010	Y	Verify Booms present. Replace if necessary

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	03-044	2	800 Silver Dr Subdivision	800	Silver Dr	High	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	6/7/2010	Y	Liner starting to pull away from unit. Verify if booms are present.
20	03-057	1	Moxie Industrial Building	3260	Corporate View	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	03-057	2	Moxie Industrial Building	3260	Corporate View	Medium	Agua Hedionda	--	Bio-Filter	Gravel Swale above sub drain	Yes	none	N/A	N/A
	03-057	3	Moxie Industrial Building	3260	Corporate View	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Grassy Detention Pond	Yes	none	N/A	N/A
	03-057	4	Moxie Industrial Building	3260	Corporate View	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	03-057	5	Moxie Industrial Building	3260	Corporate View	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Concrete/ Gunite Pond	Yes	none	N/A	N/A
21	03-078	1	Amron internation	1380	Aspen Way	Low	Agua Hedionda	TC-30	Vegetated Swale	vegetated swale	Yes	none	N/A	N/A
	03-078	2	Amron internation	1380	Aspen Way	Low	Agua Hedionda	TC-30	Vegetated Swale	grassy swale	Yes	none	N/A	N/A
22	03-079	1	Ruby/Ravine Subdivision		Steeple Chase Lane	High	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale	Yes	6/7/2010	N	N/A
	03-079	2	Ruby/Ravine Subdivision		Steeple Chase Lane	High	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	6/7/2010	N	N/A
	03-079	3	Ruby/Ravine Subdivision		Steeple Chase Lane	High	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	6/7/2010	Y	Repair unit. Liner has come apart from unit
	03-079	4	Ruby/Ravine Subdivision		Steeple Chase Lane	High	Buena Vista Creek	--	Underground Det. Sys	Dual 54' x 60" Dia. Detention Pipes	Yes	6/7/2010	N	N/A
23	03-085	1	Frame Residence	819	Eucalyptus Ave	High	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	6/16/2010	N	N/A
	03-085	2	Frame Residence	819	Eucalyptus Ave	High	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale	Yes	6/16/2010	N	N/A
24	04-001	1	Watkin Manufacturing Inc	1320	Hot Spring Way	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/7/2010	Y	Side filter unit is missing hydrocarbon boom.
	04-001	2	Watkin Manufacturing Inc	1320	Hot Spring Way	Medium	Agua Hedionda	TC-30	Vegetated Swale	landscaped swale surronding area drains to sub drain	Yes	6/7/2010	N	N/A
25	04-006	1	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	04-006	2	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	04-006	3	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	04-006	4	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	04-006	5	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	04-006	6	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A

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	04-006	7	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	04-006	8	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	04-006	9	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
	04-006	10	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	Y	Debris in unit
	04-006	11	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	Y	Debris in unit
	04-006	12	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	6/10/2010	N	N/A
26	04-007	1	1210 Distribution Way	1210	Distriution Way	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/7/2010	Y	Modify Drain Insert to fit entire box inlet. Gap in between structures
	04-007	2	1210 Distribution Way	1210	Distriution Way	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/7/2010	Y	Unit half full of debris. Replace hydrocarbon booms.
27	04-010	1	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	04-010	2	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	04-010	3	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	04-010	4	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	Y	Debris in unit
	04-010	5	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	04-010	6	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	Y	Debris in unit
	04-010	7	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	04-010	8	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	04-010	9	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	Treatment Unit	Yes	6/8/2010	N	N/A
	04-010	10	Home Depot	2430 S	Melrose Dr	High	Agua Hedionda	--	Underground Det. Sys	7400 cu ft VOL	Yes	6/8/2010	N	N/A
28	04-020	1	Walgreens	310	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	N	N/A
	04-020	2	Walgreens	310	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	N	N/A
	04-020	6	Walgreens	310	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	Y	Remove debris/replace hydrocarbon booms if necessary
	04-020	7	Walgreens	310	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	Y	Remove debris/replace hydrocarbon booms if necessary

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	04-020	8	Walgreens	310	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	Y	Remove debris/replace hydrocarbon booms if necessary
	04-020	11	Walgreens	310	Sycamore Ave	High	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Yes	6/17/2010	Y	Sump is full of sediment
	04-020	3	Panda Express	320	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	N	N/A
	04-020	4	Panda Express	320	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	N	N/A
	04-020	5	Panda Express	320	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	Y	Remove debris/replace hydrocarbon booms if necessary
	04-020	9	Panda Express	320	Sycamore Ave	High	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/17/2010	N	N/A
	04-020	10	Panda Express	320	Sycamore Ave	High	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Yes	6/17/2010	Y	Unit is full of sediment
29	04-024	1	Nettleton Self Storage	124	Nettleton Rd	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	N	N/A
	04-024	2	Nettleton Self Storage	124	Nettleton Rd	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	Y	Standing water in unit. Ensure unit is working properly
	04-024	3	Nettleton Self Storage	124	Nettleton Rd	Medium	Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	Yes	6/16/2010	N	N/A
	04-024	4	Nettleton Self Storage	124	Nettleton Rd	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	Y	Clean out unit, replace hydrocarbon booms
	04-024	5	Nettleton Self Storage	124	Nettleton Rd	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/16/2010	Y	Standing water in unit. Ensure unit is working properly
30	04-033	1	Poinsettia Industrial	921-925	Poinsettia ave	Medium	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Yes	none	N/A	N/A
	04-033	2	Poinsettia Industrial	921-925	Poinsettia ave	Medium	Agua Hedionda	MP-52	Drain Insert	Filter with hydrocarbon boom	Yes	none	N/A	N/A
	04-033	3	Poinsettia Industrial	921-925	Poinsettia ave	Medium	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Yes	none	N/A	N/A
	04-033	4	Poinsettia Industrial	921-925	Poinsettia ave	Medium	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Yes	none	N/A	N/A
31	04-044	1	338 Plymouth Dr. Condos	338	Plymouth Dr	High	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	6/7/2010	Y	Trash and debris buildup. Verify hydrocarbon boom exists. Replace if neccessary
	04-044	2	338 Plymouth Dr. Condos	338	Plymouth Dr	High	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale	Yes	6/7/2010	N	N/A
32	04-048	1	Sunset Heights Subdivision	787	Vale View Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	04-048	2	Sunset Heights Subdivision	787	Vale View Dr	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	04-048	3	Sunset Heights Subdivision	787	Vale View Dr	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A

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33	04-051	1	Breeze Hill	495	La Tortuga Dr	Medium	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	04-051	2	Breeze Hill	495	La Tortuga Dr	Medium	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	04-051	3	Breeze Hill	495	La Tortuga Dr	Medium	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	04-051	4	Breeze Hill	495	La Tortuga Dr	Medium	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	04-051	5	Breeze Hill	495	La Tortuga Dr	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
	04-051	6	Breeze Hill	495	La Tortuga Dr	Medium	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
34	04-062	1	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	Agua Hedionda	TC-30	Vegetated Swale	grassy swale above sub drain	Yes	none	N/A	N/A
	04-062	2	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	Agua Hedionda	TC-30	Vegetated Swale	grassy swale	Yes	none	N/A	N/A
	04-062	3	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	Agua Hedionda	TC-30	Vegetated Swale	grassy swale	Yes	none	N/A	N/A
35	04-067	1	Moxie Pacific Palomar Park	3270	Corporate View	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Concrete/ Gunite Pond w/ fossil filter	Yes	none	N/A	N/A
	04-067	2	Moxie Pacific Palomar Park	3270	Corporate View	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Yes	none	N/A	N/A
36	05-008	1	Fortuna Ave.		Fortuna Ave	Low	Lower San Luis	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
37	05-017	1	Vista Point Medical Plaza	326 S	Melrose Dr	Medium	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	05-017	2	Vista Point Medical Plaza	326 S	Melrose Dr	Medium	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Yes	none	N/A	N/A
38	05-019	1	DJ Orthopedics	1430	Decision St	Low	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	05-019	2	DJ Orthopedics	1430	Decision St	Low	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	05-019	3	DJ Orthopedics	1430	Decision St	Low	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	05-019	4	DJ Orthopedics	1430	Decision St	Low	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Yes	none	N/A	N/A
39	05-024	1	Bio-Forms	3215	Executive Ridge	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	05-024	2	Bio-Forms	3215	Executive Ridge	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	05-024	3	Bio-Forms	3215	Executive Ridge	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	05-024	4	Bio-Forms	3215	Executive Ridge	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	05-024	5	Bio-Forms	3215	Executive Ridge	Medium	Agua Hedionda	--	Bio-Filter	Gravel Swale above sub drain	Yes	none	N/A	N/A
40	05-025	1	Thomasville Furniture	1389	Park Center Drive	Low	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A

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	05-025	2	Thomasville Furniture	1389	Park Center Drive	Low	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
41	05-030	1	Hill Drive	331	Hill Dr	Medium	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	05-030	2	Hill Drive	339	Hill Dr	Medium	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	No-no contact with Property Owner	none	N/A	N/A
	05-030	3	Hill Drive	327	Hill Dr	Medium	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	05-030	4	Hill Drive	335	Hill Dr	Medium	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	No-no contact with Property Owner	none	N/A	N/A
42	05-041	1	Warmland Estates	1434	Grandview Rd	Low	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
43	05-049	1	Sycamore Point Business Park	1315	Hot Spring Way	Low	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Yes	none	N/A	N/A
	05-049	2	Sycamore Point Business Park	1315	Hot Spring Way	Low	Agua Hedionda	MP-51	Vortex Separator	CDS Inline Treatment	Yes	none	N/A	N/A
44	06-006	1	3181 Business Park Dr.	3181	Business Park Drive	Low	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
45	06-008	1	Palomar Unitarian Church	1600	Buena Vista Drive	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	No-Site added to inventory after annual certification period	none	N/A	N/A
	06-008	2	Palomar Unitarian Church	1600	Buena Vista Drive	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	No-Site added to inventory after annual certification period	none	N/A	N/A
	06-008	3	Palomar Unitarian Church	1600	Buena Vista Drive	Medium	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	No-Site added to inventory after annual certification period	none	N/A	N/A
	06-008	4	Palomar Unitarian Church	1600	Buena Vista Drive	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	No-Site added to inventory after annual certification period	none	N/A	N/A
46	06-009	1	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Yes	6/7/2010	N	N/A
	06-009	2	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	Buena Vista Creek	MP-50	Wet Vault	Baffel Box	Yes	6/7/2010	N	N/A
	06-009	3	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	Buena Vista Creek	MP-50	Wet Vault	Baffel Box	Yes	6/7/2010	N	N/A
47	06-010/29	1	Gordon Property		Straton Dr/Madison Ln	Low	Loma Alta	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N	N/A
48	06-012/13	1	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	Yes	6/8/2010	Y	Several areas of swale are bare.
	06-012/13	2	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	06-012/13	3	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	06-012/13	4	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	06-012/13	5	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
	06-012/13	6	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	MP-50	Wet Vault	Bio-Filter	Yes	6/8/2010	N	N/A
	06-012/13	7	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	Yes	6/8/2010	N	N/A

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	06-012/13	8	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	Yes	6/8/2010	N	N/A
	06-012/13	9	Breeze Hill Promenade	635 S	Melrose Dr	High	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Yes	6/8/2010	N	N/A
49	06-025	1	Vista Kidney Dialysis Center	950	Hacienda Dr	High	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Yes	6/7/2010	Y	Majority of swale doesn't have adequate Vegetation.
	06-025	2	Vista Kidney Dialysis Center	950	Hacienda Dr	High	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Yes	6/7/2010	N	N/A
50	06-038	1	Sycamore Medical Center	902	SycamoreAve	Medium	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Yes	none	N/A	N/A
51	06-072	1	Fortune Business Park	2545	Fortune Way	Low	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Yes	none	N/A	N/A
	06-072	2	Fortune Business Park	2545	Fortune Way	Low	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	06-072	3	Fortune Business Park	2545	Fortune Way	Low	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Yes	none	N/A	N/A
52	07-002-A	1	Shadowridge Business Ctr-2	2065	Thibido Rd	High	Agua Hedionda		Vegetated Swale	Grassy Swale	Yes	6/16/2010	N	N/A
	07-002-A	2	Shadowridge Business Ctr-2	2065	Thibido Rd	High	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	6/16/2010	N	N/A
	07-002-A	3	Shadowridge Business Ctr-2	2065	Thibido Rd	High	Agua Hedionda	MP-52	Drain Insert	Curb outlet	Yes	6/16/2010	Y	Sediment buildup in front of drain
	07-002-A	4	Shadowridge Business Ctr-2	2065	Thibido Rd	High	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	6/16/2010	N	N/A
	07-002-A	5	Shadowridge Business Ctr-2	2065	Thibido Rd	High	Agua Hedionda	MP-52	Drain Insert	Curb Inlet	Yes	6/16/2010	N	N/A
	07-002-A	6	Shadowridge Business Ctr-2	2065	Thibido Rd	High	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	6/16/2010	N	N/A
	07-002-A	11	Shadowridge Business Ctr-2	760	Shadowridge Dr	High	Agua Hedionda	--	Underground Det. Sys	180' x 60" Dia. Detention Pipe	Yes	7/1/2010	N	N/A
	07-002-B	7	Shadowridge Business Ctr-2	760	Shadowridge Dr	High	Agua Hedionda	MP-52	Drain Insert	Curb Inlet	Yes	6/16/2010	N	N/A
	07-002-B	8	Shadowridge Business Ctr-2	760	Shadowridge Dr	High	Agua Hedionda	MP-52	Drain Insert	Curb Inlet	Yes	6/16/2010	N	N/A
	07-002-B	9	Shadowridge Business Ctr-2	760	Shadowridge Dr	High	Agua Hedionda	MP-52	Drain Insert	Catch Basin	Yes	6/16/2010	Y	Replace hydrocarboon boom, clean out unit
53	07-003	1	Wilborn (Fast-n-Clean Carwash)	1661 W	Vista Way	Low	Buena Vista Creek	TC-30	Vegetated Swale	Gravel	Yes	none	N/A	N/A
	07-003	2	Wilborn (Fast-n-Clean Carwash)	1661 W	Vista Way	Low	Buena Vista Creek	TC-30	Vegetated Swale	Gravel	Yes	none	N/A	N/A
54	07-008	1	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-008	2	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-008	3	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	Yes	none	N/A	N/A
	07-008	4	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	07-008	5	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A

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	07-008	6	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	07-008	7	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	Yes	none	N/A	N/A
	07-008	8	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-008	9	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	07-008	10	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	Yes	none	N/A	N/A
	07-008	11	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-008	12	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	Yes	none	N/A	N/A
	07-008	13	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Yes	none	N/A	N/A
	07-008	14	Premier Crossing Condos	2301 S	Melrose Dr	Medium	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	Yes	none	N/A	N/A
55	07-020	1	24 hour fitness	324	Sycamore Ave	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-020	2	24 hour fitness	324	Sycamore Ave	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-020	3	24 hour fitness	324	Sycamore Ave	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-020	4	24 hour fitness	324	Sycamore Ave	Medium	Agua Hedionda	MP-52	Drain insert	Catch Basin	Yes	none	N/A	N/A
	07-020	5	24 hour fitness	324	Sycamore Ave	Medium	Agua Hedionda	MP-52	Drain insert	Curb Inlet	Yes	none	N/A	N/A
	07-020	6	24 hour fitness	324	Sycamore Ave	Medium	Agua Hedionda	MP-52	Drain insert	Curb Inlet	Yes	none	N/A	N/A
	07-020	7	24 hour fitness	324	Sycamore Ave	Medium	Agua Hedionda	--	Underground Det. Sys	48" Pipe	Yes	none	N/A	N/A
	07-020	8	24 hour fitness	324	Sycamore Ave	Medium	Agua Hedionda	--	Bio-filter	gravel swale	Yes	none	N/A	N/A
56	07-023	1	Hacienda Professional Center	465	La Tortuga Dr	Low	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-023	2	Hacienda Professional Center	465	La Tortuga Dr	Low	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Yes	none	N/A	N/A
	07-023	3	Hacienda Professional Center	465	La Tortuga Dr	Low	Buena Vista Creek	--	Underground Det. Sys		Yes	none	N/A	N/A
57	07-026	1	Target	3150	Business Park Drive	Medium	Agua Hedionda	--	Sand Filter		No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
	07-026	2	Target	3150	Business Park Drive	Medium	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
	07-026	3	Target	3150	Business Park Drive	Medium	Agua Hedionda	--	Underground Det. Sys		No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
58	07-041	1	Verizon	1330	Business Park Drive	Low	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A

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	07-041	2	Verizon	1330	Business Park Drive	Low	Agua Hedionda	TC-22	Extended Detention Basin		No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
59	08-007	1	Vista Community Clinic	134	Grapevine Road	Low	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
	08-007	2	Vista Community Clinic	134	Grapevine Road	Low	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
60	08-011	1		2633	Progress St.	Low	Agua Hedionda	TC-30	Bio-retention Swale		No -Site added to inventory after annual cert form submittal period	6/10/2010	N	N/A
	08-011	2		2633	Progress St.	Low	Agua Hedionda	TC-30	Bio-retention Swale		No -Site added to inventory after annual cert form submittal period	6/10/2010	N	N/A
	08-011	3		2633	Progress St.	Low	Agua Hedionda	TC-30	Bio-retention Swale		No -Site added to inventory after annual cert form submittal period	6/10/2010	N	N/A
61	08-017	1	Oakridge Business Park	2410	Birch Street	Low	Agua Hedionda	TC-30	Vegetated Swale	Bio-Filter	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
	08-017	2	Oakridge Business Park	2410	Birch Street	Low	Agua Hedionda	--	Porous Pavement	Pavers	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
62	09-003	1		2980	Scott Street	Medium	Agua Hedionda	TC-30	Biofiltration Swale		No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	09-003	2		2980	Scott Street	Medium	Agua Hedionda	MP-52	Drain Insert		No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	09-003	3		2980	Scott Street	Medium	Agua Hedionda	MP-52	Drain Insert		No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	09-003	4		2980	Scott Street	Medium	Agua Hedionda	MP-52	Drain Insert		No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
	09-003	5		2980	Scott Street	Medium	Agua Hedionda	MP-52	Drain Insert		No -Site added to inventory after annual cert form submittal period	6/16/2010	N	N/A
63	09-004	1	Sonic Drive-In	101	Main Street	High	Buena Vista Creek	--	Underground Detention System		No -Site added to inventory after annual cert form submittal period	6/18/2010	N	N/A

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	09-004	2	Sonic Drive-In	101	Main Street	High	Buena Vista Creek	--	Underground Detention System		No -Site added to inventory after annual cert form submittal period	6/18/2010	N	N/A
	09-004	3	Sonic Drive-In	101	Main Street	High	Buena Vista Creek		Pervious Pavement		No -Site added to inventory after annual cert form submittal period	6/18/2010	N	N/A
	09-004	4	Sonic Drive-In	101	Main Street	High	Buena Vista Creek		Pervious Pavement		No -Site added to inventory after annual cert form submittal period	6/18/2010	N	N/A
	09-004	5	Sonic Drive-In	101	Main Street	High	Buena Vista Creek	MP-52	Drain Inserts		No -Site added to inventory after annual cert form submittal period	6/18/2010	N	N/A
	09-004	6	Sonic Drive-In	101	Main Street	High	Buena Vista Creek	MP-52	Drain Inserts		No -Site added to inventory after annual cert form submittal period	6/18/2010	Y	Unit has debris, needs cleaning.
	09-004	7	Sonic Drive-In	101	Main Street	High	Buena Vista Creek	MP-52	Drain Inserts		No -Site added to inventory after annual cert form submittal period	6/18/2010	N	N/A
64	3727	1	Huntalas Middle School (Rancho Minerva)	2245	Foothill Drive	Low	Buena Vista Creek	MP-51	Vortex Separator	Stormceptor	No -Site added to inventory after annual cert form submittal period	none	N/A	N/A
65	96-055	1	Costco	1755	Hacienda Drive	High	Buena Vista Creek	MP-40	Sand Filter	Small sand filter cartridge inside storm water clean out	No -Site added to inventory after annual cert form submittal period	6/8/2010	N	N/A
	96-055	2	Costco	1755	Hacienda Drive	High	Buena Vista Creek	MP-40	Sand Filter	Small sand filter cartridge inside storm water clean out	No -Site added to inventory after annual cert form submittal period	6/8/2010	N	N/A
	96-055	3	Costco	1755	Hacienda Drive	High	Buena Vista Creek	MP-50	Wet Vault	Oil Water Seperator	No -Site added to inventory after annual cert form submittal period	6/8/2010	N	N/A
	96-055	4	Costco	1755	Hacienda Drive	High	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	No -Site added to inventory after annual cert form submittal period	6/8/2010	Y	Remove debris, replace hydrocarbon booms
	96-055	5	Costco	1755	Hacienda Drive	High	Buena Vista Creek	MP-40	Sand Filter	Small sand filter cartridge inside storm water clean out	No -Site added to inventory after annual cert form submittal period	6/8/2010	Y	Remove debris, repair unit if necessary?

Site	GP or Drawing #	BMP loc ID	Project Name	Project Address	Project Street	TTWQ Priority	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	FY 09-10 Annual Certification Form Received	Inspection Date	Corrective Actions Needed	Comments
	96-055	6	Costco	1755	Hacienda Drive	High	Buena Vista Creek	MP-40	Sand Filter	Small sand filter cartridge inside storm water clean out	No -Site added to inventory after annual cert form submittal period	6/8/2010	Y	Remove debris, repair unit if necessary?

APPENDIX A-3

Municipal TCBMP Inventory and Inspections Summary

Appendix A-3 Municipal Treatment Control BMP Inventory and Inspections Summary

Site	GP or DWG #	SHEET_NO	BMP No.	PROJECT AREA	BMP LOCATION	CASQA ID	BMP TYPE	MANUFACTURER	MODEL	WATERSHED	TTWQ	RESPONSIBLE PARTY	INSPECTION DATE	CORRECTIVE ACTIONS NEEDED	COMMENTS
1	N/A	N/A	1	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	Near Tennis Courts in Park	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista	High	City of Vista	6/23/2010	No	No
	GP 08-009	10	2	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	Most northern infiltration trench on hill	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista	6/23/2010	No	No
	GP 08-009	10	3	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #2	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista	6/23/2010	No	No
	GP 08-009	10	4	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #3	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista	6/23/2010	No	No
	GP 08-009	10	5	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #4	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista	6/23/2010	No	No
2	N/A	N/A	1	City of Vista Library (700 Eucalyptus Ave)	North Parking Lot Area	N/A	***Drain Insert	FloGard	FGP-12F	Buena Vista	Medium	City of Vista	N/A	No	BMP doesn't exist; taken out during construction
	N/A	N/A	2	City of Vista Library (700 Eucalyptus Ave)	Central Parking Lot Area	MP-52	Drain Insert	FloGard	FGP-12F	Buena Vista		City of Vista	6/24/2010	No	No
	N/A	N/A	3	City of Vista Library (700 Eucalyptus Ave)	Southern Parking Lot Area	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista		City of Vista	6/24/2010	No	No
3	GP 07-036	9/ C4	1	Fire Station 5 (2008 S. Melrose Dr.)	East of Building	TC-30	Vegetated Swale	N/A	N/A	Agua Hedionda	High	City of Vista	6/24/2010	No	No
	GP 07-036	8/ C3	2	Fire Station 5 (2008 S. Melrose Dr.)	Parking lot east of Building	N/A	Porous Concrete	N/A	N/A	Agua Hedionda		City of Vista	6/24/2010	No	No
	GP 07-036	10/ C5	3	Fire Station 5 (2008 S. Melrose Dr.)	West end of Parking Lot	N/A	*Detention Pipes	N/A	N/A	Agua Hedionda		City of Vista	6/24/2010	No	No
4	GP 07-035	9/ C3	1	Fire Station 6 (651 E. Vista Way)	Parking lot close to E. Vista Way	N/A	Porous Concrete	N/A	N/A	Buena Vista	High	City of Vista	6/24/2010	No	No
	GP 07-035	12/ C5	2	Fire Station 6 (651 E. Vista Way)	North end of wildwood park	N/A	Infiltration Basin	N/A	N/A	Buena Vista		City of Vista	6/24/2010	No	No
5	D 3584	CI-10	1	Vista Village (Multiple Locations)	Beginning of Creekwalk	MP-51	Vortex Separator	CDS Technologies	FSW 50-42	Buena Vista	High	City of Vista	6/24/2010	No	No
	N/A	N/A	2	Vista Village (Multiple Locations)	Wave Park Entrance	MP-52	Drain Insert	FloGard	FF-1836SD	Buena Vista		City of Vista	6/24/2010	No	No
	GP 99-019	SD-5	3	Vista Village (Multiple Locations)	Olive Ave/Vista Village Drive	MP-51	Vortex Separator	CDS Technologies	FSW 20-20	Buena Vista		City of Vista	6/24/2010	No	No
	GP 99-019	SD-4	4	Vista Village (Multiple Locations)	Access road behind Famous Daves	MP-51	Vortex Separator	CDS Technologies	FSW 50-50	Buena Vista		City of Vista	6/24/2010	No	No
	GP 99-019	SD-7	5	Vista Village (Multiple Locations)	Olive Ave/Goeting Way	MP-51	Vortex Separator	CDS Technologies	FSW 20-20	Buena Vista		City of Vista	6/23/2010	No	No
	N/A	N/A	6	Vista Village (Multiple Locations)	At Staples, north side of Lado De Loma	MP-52	Drain Insert	N/A	N/A	Buena Vista		City of Vista	6/23/2010	Yes	Bottom screen of unit missing
	N/A	N/A	7	Vista Village (Multiple Locations)	At Staples, south side of Lado De Loma	MP-52	Drain Insert	N/A	N/A	Buena Vista		City of Vista	6/24/2010	Yes	Bottom screen may not be the proper size
6	DWG-3908	9	1	Vons/Vista Shopping Center	Right side of entrance to parking lot from Escondido	TC-32	Bioretention	N/A	N/A	Buena Vista	Medium	City of Vista	6/24/2010	No	No
	DWG-3908	9	2	Vons/Vista Shopping Center	Left side of entrance to parking lot from Escondido	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	6/24/2010	No	No
	DWG-3908	9	3	Vons/Vista Shopping Center	Further left of entrance after 5 parking spots	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	6/24/2010	No	No
	DWG-3908	9	4	Vons/Vista Shopping Center	Middle of parking lot, closer to entrance by Escondido	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	6/24/2010	No	No
7	DWG-3795	9	1	North County Ford Storage Lot	South side of Lado de Loma on bottom of hill	TC-30	Vegetated Swale	N/A	N/A	Buena Vista	Low	City of Vista	6/24/2010	Yes	Remove sediment and trim vegetation at beginning of swale to allow for proper drainage and treatment
8	GP 08-028	BMP Exhibit	1	Vista Civic Center (200 Civic Center Drive)	North Visitor parking	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista	Medium	City of Vista	6/24/2010	No	No
	GP 08-028	BMP Exhibit	2	Vista Civic Center (200 Civic Center Drive)	Central Parking Lot Area (City vehicles)	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista		City of Vista	6/24/2010	No	No
	GP 08-028	BMP Exhibit	3	Vista Civic Center (200 Civic Center Drive)	Central Parking (City Vehicles)	SD-20	Porous Concrete	N/A	N/A	Buena Vista		City of Vista	6/24/2010	No	No
	GP 08-028	BMP Exhibit	4	Vista Civic Center (200 Civic Center Drive)	Southern Parking Lot Area (Employee Vehicles)	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista		City of Vista	6/24/2010	No	No
	GP 08-028	BMP Exhibit	5	Vista Civic Center (200 Civic Center Drive)	Southern Parking Lot Area (Employee Vehicles)	SD-20	Porous Concrete	N/A	N/A	Buena Vista		City of Vista	6/24/2010	No	No

*Underground detention system designed to attentuate peak flows from site; not designed as a treatment control BMP
*** BMP removed during renovations of library in May 2010.

APPENDIX A-4

TCBMP Inspection Form

Appendix A-4 Treatment BMP Inspection Form

Date:_____ Time:_____ GP Number:_____ Inspector:_____

I. REASON FOR INSPECTION

☐ Initial ☐ Follow-up ☐ Other
☐ Routine ☐ Response to Complaint Inspection Priority:_____

II. PROJECT INFORMATION

1. ID# or Assessor Parcel Number:_____ 2. Year of Installation:_____
3. Project Type: ☐ Residential SF ☐ Residential Multi-family ☐ Residential Subdivision ☐Industrial ☐Road
   ☐ Institutional ☐Commercial – retail ☐Com – restaurant ☐Com – auto ☐Com – gas station ☐Other _____
4. Facility Name:_____
   Site Address:_____
   Contact Name:_____Phone:_____
5. If the property owner is different than the contact name, fill out information below:
   Owner Name:_____ Title:_____
   Owner's Address:_____ Phone:_____
6. If the BMP Operator is different that the contact name, fill out information below:
   Name:_____ Title:_____
   Address:_____ Phone:_____
7. Maintenance Documentation: ☐Reviewed ☐Not Reviewed ☐Not Available ☐Other:_____
8. Party Responsible for O&M Documentation: ☐Property Owner ☐ BMP Operator ☐ Contractor
   ☐Other:_____
   Number of BMPs associated with this site: _____

III. BMP TYPE CODE TABLE (Use codes for "BMP Type Code #" field under the "BMP type and inspection results table")

#	Biofiltration	#	Structural
1	Vegetated Swale TC-30	11	Drain Insert MP-52
2	Vegetated Buffer Strip TC-31	12	Porous Pavement
3	Bioretention TC-32	13	Media Filter TC-40 or MP-40
4	Roof Gardens	14	Hydrodynamic Vortex Separator MP-51
5	Planter Boxes	15	Water Quality Inlet TC-50
	Detention		**Infiltration**
6	Extended Detention Basin TC-22	16	Infiltration Basin TC-11
7	Underground Det. Systems	17	Infiltration Trench TC-10
8	Wet Pond TC-20	18	Exfiltration Trench
9	Wet Vault MP-50	19	Retention/Irrigation TC-12
10	Wetland TC-21 or MP-20	20	Other (Biofiltration/Detention/Structural/Infiltration)

IV. BMP TYPE AND INSPECTION RESULTS (Use Codes from "Potential Inspection Results with Definitions" Sheet)

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Comments/ Corrective Actions Needed:_____
_____
_____
_____

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Comments/ Corrective Actions Needed:_____
_____
_____
_____

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private

Comments/ Corrective Actions Needed:_____ _____ _____ _____	Comments/ Corrective Actions Needed:_____ _____ _____ _____

IV. BMP TYPE AND INSPECTION RESULTS - Continued **(Use Codes from "Potential Inspection Results with Definitions" Sheet)**

BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____
BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____	BMP ID # ____Photo #_____Location:_____ BMP Type Code # _____Describe:_____ Inspection Code # _____Needs Maintenance? ☐Yes ☐No BMP Inspection Priority: ☐ High ☐ Med ☐ Low Maintenance Responsibility: ☐ Public ☐ Private Comments/ Corrective Actions Needed:_____ _____ _____ _____

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Comments/ Corrective Actions Needed:_____
_____
_____
_____
_____
_____

BMP ID # ____Photo #_____Location:_____
BMP Type Code # _____Describe:_____
Inspection Code # _____Needs Maintenance? ☐Yes ☐No
BMP Inspection Priority: ☐ High ☐ Med ☐ Low
Maintenance Responsibility: ☐ Public ☐ Private
Comments/ Corrective Actions Needed:_____
_____
_____
_____
_____
_____

V. INSPECTION RESULTS AND FOLLOW-UP ACTIONS (Use Codes from "Potential Inspection Results with Definitions" Sheet)

1. Describe corrective actions needed:_____
_____
_____
_____
_____
_____
_____

2. Describe materials distributed (brochures, BMP's, etc.): _____
_____

3. Describe Enforcement Action (Case Number if applicable: SW# _____)
   ☐ None ☐ Warning Notice ☐ NOV
   ☐ Administrative Citation ☐ Administrative Action with Penalty/Fine ☐ Civil Action
   ☐ Criminal Action ☐ Referral for Enforcement_____

4. Follow Up required? ☐ No ☐ Yes (describe below)
   ☐ Operator to Submit Records _____
   ☐ Return inspection needed _____
   ☐ Other _____

5. Priority for re-inspection: ☐ High ☐ Medium ☐Low

6. Required Compliance Date:_____ Date Corrected:_____

VI. FOLLOW-UP AND RE-INSPECTION INFORMATION

Re-inspection Date: _____ Time: _____ Inspector: _____

Results:
☐ No violations noted at this time (corrections verified)
☐ Violation of City's storm water ordinance Case Opened – SW#_____

Describe Enforcement Action
☐ None ☐ Warning Notice ☐ NOV
☐ Administrative Citation ☐ Administrative Action with Penalty/Fine ☐ Civil Action
☐ Criminal Action ☐ Referral for Enforcement_____

Corrective Actions Needed: _____

_____
_____
_____

Facility Representative:_____ Inspector:_____

Potential Inspection Results with Definitions

ID	Inspection Results	Definitions
	I. ALL BMP Types	
1	No Visible / Apparent Problems	No Visible or apparent problems with BMP function. BMP appears to be well-maintained.
2	Significant Engineering Design /Flaws	BMP observed to have significant engineering/design flaws which lessen its effectiveness as a stormwater treatment measure.
3	Unauthorized Modifications	Any modification that lessens the effectiveness of the BMP; any modification not authorized by the City, designated agency or other regulatory agency.
4	BMP Destroyed or Eliminated	BMP destroyed, removed or eliminated from property.
5	Trash/Debris Accumulation or Dumping	Trash & debris accumulates within and/or on the BMP; any modification not authorized by the City, designated agency or other regulatory agency
6	Evidence of Contaminants & Pollution	Evidence or presence of oil, gasoline, contaminants or other pollutants.
7	BMP Access Obstructed	Access to BMP obstructed or limited.
8	Obnoxious Odors	Unpleasant odors within/from BMP.
9	Fencing-Missing or Broken Bars	Any defect in or damage to the fence or gate that permits easy entry to a facility.
10	BMP cannot be located	BMP cannot be located for inspection.
	II. Biofiltration (Bioretention, Vegetated Buffer Strip, Vegetated Swale, Roof Gardens, Planter Boxes)	
A.	**General**	
11	Uneven or Clogged Flow Spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed across the BMP.
12	Leaking or Malfunctioning Irrigation System	Irrigation system leaking or malfunctioning
B.	Sediment and Erosion Problems	
13	Sediment Accumulation	Sediment depth exceed 2 inches on more than 10%of the vegetated treatment area; or sediment interferes with BMP performance.
14	Erosion/Scouring	Eroded or scoured areas due to flow channelization, higher flows, wind or water.
C.	Vegetation Maintenance Issues	
15	Poor Vegetation Coverage	Planted vegetation is sparse or bare or eroded patches occur in more than 10% of the BMP. Growth of planted vegetation is poor because sunlight does not reach swale.
16	Invasive/Nuisance Vegetation or Weeds	Planted vegetation is excessively tall; nuisance weeds, invasive or noxious vegetation are overgrown; vegetation reduces free movement of water through BMP.
17	Tree/Bush Growth	Growth does not allow maintenance access or interferes with maintenance activity.
D.	Drainage Problems	
18	Standing Water/Excessive Ponding/Soggy Soil	Water is observed within the BMP (between storms) and appears not to drain freely or silo s excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
19	Mosquito Habitat	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
20	Clogged or Obstructed Inlets/Outlets	Inlet/Outlet clogged or obstructed with sediment and /or debris
21	Constant Baseflow Damage	Small quantities of water flow through the vegetated swale, even when it has been dry for weeks, and an eroded, muddy channel has formed in the swale bottom; constant baseflow from irrigation runoff.
	III. Detention and Infiltration (Extended Detention Basin, Wet Pond, Wetland, Exfiltration Trench, Infiltration Basin or Trench, Retention/Irrigation)	
A.	**Vegetation Maintenance Issues**	
22	Invasive/Nuisance Vegetation or Weeds	Invasive, nuisance vegetation or weeds present.
23	Tree/Brush Growth & Hazard Trees	Growth does not allow maintenance access or interferes with maintenance activity; dead, diseased or dying trees; tree growth on berms or emergency spillway >4 feet in height or covering more than 10% of spillway.
B.	Sediment and Erosion Problems	
24	Sediment Accumulation	Detention BMPs – sediment on bottom preventing water flow in/out of the facility. Infiltration BMP's - Sediment in storage areas, rock filters, and pre-settling ponds and vaults preventing infiltration.
25	Erosion	Eroded damage over 2 inches deep; potential for continued erosion; any erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
C.	Animal Pests	
26	Rodent Holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping though dam or rodent holes.
27	Insects (wasps, hornets, bees)	Insects (wasps, hornets, bees) interfere with maintenance activities. Excessive or nuisance levels
D.	Drainage Problems	
28	Standing Water/Excessive Ponding/Soggy Soil	Water is observed within the BMP (between storms) and appears not to drain freely or silo s excessively soggy. Excessive ponding of water within vegetated swale or other BMP.
29	Mosquito Habitat*	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
30	Empty Cell	First cell of wet pond does not hold water.
31	Unlevel Berm Surface	Unlevel internal berm divding wet pond cells.
E.	Unique to Certain BMPs	
32	Uneven or Clogged Flow Spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed across the BMP.

33	Oil sheen on Water (Wet Ponds)	Prevalent and visible oil sheen.
34	Damaged/Missing Bars 9Debris Barriers)	Bars are missing, loose, bent out of shape, or detiorating due to excessive rust.
35	Leaking or malfunctioning irrigation system	Irrigation system leaking or malfunctioning.
36	Embankment Settlement Lower Than Design Elevation	Embankment settlement four inches lower than the design elevation.
	III. Structural, Non-landscaped Based (Drain Insert, Hydrodynamic Separator, Media Filter, Porous Pavement, Vortex Separator, Wet Vault, Water Quality Inlet, Underground Detention Systems)	
	A. General	
37	Mosquito Habitat*	Suitable habitat exists for mosquito production (e.g. standing water for more than 72 hours in areas accessible to mosquitoes).
38	Access Cover Damaged/Difficult to Remove/Not in Place	Cover cannot be opened, corrosion/deformation of cover; maintenance person cannot remove cover using the normal lifting pressure; cover is missing or only partially in place.
39	Deteriorating Paint or Protective Coating	Part or parts that have a rusting or scaling condition and have affected structural adequacy.
40	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than ½ inch of thread (may not apply to self-locking lids)
	B. Ineffective Filter Material, Liners and/or Membranes	
41	Sediment Accumulation	Sediment depth exceeds acceptable levels (varies between BMPs)
42	Ineffective Media Insert/Filter Media	Media insert/filter media ineffective in doing intended function and needs to be replaced; filter is beyond the typical average life of product.
43	Rock Lining Out of Place/Missing (Sand Filters)	Soil beneath the rock lining is visible.
44	Visible Liner with Holes or Damage	Liner is visible and has more than three ¼-inch holes in it or is damaged.
45	Compromised Membrane or Roof Structure	Membrane or roof structure is compromised by either roots and/or water discharge.
46	Short Circuiting	Flows do not properly enter filter cartridges (media filters); seepage/flows occur along the vault walls and corners (sand filters); Sand eroding near inflow area (sand filters); flows become concentrated over one section of the sand rather than disperse (sand filters)
	C. Pipe or Pipe Join Problems	
47	Damaged Pipes	Any part of the piping that is crushed, deformed, damaged, in need of repair or any other failure to the piping; protective coating is damaged.
48	Missing Debris Barrier/Not Attached to Pipe	Entire barrier is missing or is not attached to pipe.
49	Sediment in Drainage Pipes/Cleanouts	Drain pipes and/or cleanouts are full of sediment and/or debris.
50	Joints Between Tanks/Pipe Section	Any openings or voids allowing material to be transported into facility.
51	Tank Pipe bent Out of Shape	Any part of tank/pipe is bent out of shape more than 10% of its design shape.
	D. Underground Vaults/Containers, Chambers, Tank Issues	
52	Sediment Accumulation	Sediment depth exceeds acceptable levels (varies between BMPs), 20% of the diameter of the pipe/design depth or interferes with proper BMP function.
53	Vault Structure Damage	Vault structures which are observed to have cracks in walls, bottom damage to frame and/or top slab.
54	Damaged Baffles and/or Weir	Baffles which are corroded, cracked, warped and/or showing signs of failure as determined by maintenance person. Weir is observed to be damaged by maintenance person.
55	Access Ladder Damage	Ladder is corroded or deteriorated, not functioning properly, not securing attached to structural wall, missing rungs, has cracks and or/is misaligned.
56	Oil Accumulation (Water Quality Inlet, Vortex Separator)	Oil accumulations that exceed 1-inch at the surface of the water.
57	Blocked, Damaged, or Plugged Air Vents	One-half of a cross section of a vent is blocked at any point or the vent is damaged.
	E. Unique to Certain BMPs	
58	Damaged Coalescing Plates (Water Quality Inlet)	Plate media broken, deformed, cracked and/or showing signs of failure.
59	Clogged Porous Pavement	By visual inspection, little or no water flows through pavement during heavy rain storms, or usually causing ponding; clogging due to debris, organic matter or sediment.
60	Damaged Internal Walls (Sand Filter Media)	Internal walls are corroded, cracked, warped and/or showing signs of failure as determined by maintenance person.
61	Prolonged Flows (Sand Filter Media)	Sand is saturated for long periods of time (several weeks) and does not dry out between storms due to continuous base flow or prolonged flows from detention facilities.
	IV. Other	
62	Other	Inspection Results which are not defined

***If mosquitoes or mosquito larvae are observed within a BMP, report condition to:** San Diego County Vector Control District, xxx street, San Diego, CA 99999; phone: (858) 694-2888; vector@sdcounty.ca.gov; Website:www.sdfightthebite.com*

Standard Stormwater Treatment BMP Inspection Data Collection Form

Background Data for BMP Type

The *Standard Stormwater Treatment BMP Inspection Data Collection Form* (Inspection Form) lists twenty stormwater treatment BMP types (see Section III). Inspectors, data entry staff and others who use the Inspection Form can refer to the California

Stormwater Quality Association (CASQA). The CASQA Fact Sheets are numbered, and are located in the CASQA *Stormwater BMP Handbook for New Development and Redevelopment*. The CASQA handbook is available online at www.cabmphandbooks.org.

APPENDIX A-5

City of Vista JURMP Program Field Visit

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - SAN DIEGO REGION
WATERSHED MANAGEMENT PROGRAM

FACILITY INSPECTION REPORT

FACILITY: City of Vista **CIWQS#: 270704** **INSPECTION DATE/Time: 11/12/09 1 pm**
JURMP Program Field Visit

FACILITY: **City of Vista JURMP Program Field Visit November 12, 2009**

REPRESENTATIVE(S) PRESENT DURING INSPECTION: Laurie Walsh (SDRWQCB), Paul Hartman (Stormwater Program Manager), Larry Pierce (Director of Engineering), Sudi Shoja (Assistant Director of Engineering), Greg Mayer (Principal Engineer), Robin Putnam (Special Projects Director), Doug Coppi (Sr. Environmental Specialist)

City of Vista	**Paul Hartman Stormwater Program Manager (760) 726-1340 x1373**
NAME OF COPERMITTEE	CONTACT NAME AND PHONE #

APPLICABLE WATER QUALITY LICENSING REQUIREMENTS

- ☒ **MS4 URBAN RUNOFF REQUIREMENTS NPDES NOS. CAS0108758, CAS0108740 or CAS0108766**
- ☐ **GENERAL PERMIT ORDER NO. 99-08-DWQ, NPDES NO. CAS000002 – CONSTRUCTION**
- ☐ **GENERAL PERMIT ORDER NO. 99-06-DWQ, NPDES NO. CAS000003 - CALTRANS**
- ☐ **GENERAL OR INDIVIDUAL WASTE DISCHARGE REQUIREMENTS**
- ☐ **GENERAL OR INDIVIDUAL WAIVER OF WASTE DISCHARGE REQUIREMENTS**
- ☐ **SECTION 401 WATER QUALITY CERTIFICATION**
- ☐ **CWC SECTION 13264**

INSPECTION TYPE (Check One)

A1 ____ "A" type compliance--Comprehensive inspection in which samples are taken. (EPA Type S)

B1 __X__ "B" type compliance--A routine nonsampling inspection. (EPA Type C)

02 ____ Noncompliance follow-up--Inspection made to verify correction of a previously identified violation.

03 ____ Enforcement follow-up--Inspection made to verify that conditions of an enforcement action are being met.

04 ____ Complaint--Inspection made in response to a complaint.

05 ____ Pre-requirement--Inspection made to gather info. relative to preparing, modifying, or rescinding requirements.

06 ____ No Exposure Certification (NEC) - verification that there is no exposure of industrial activities to storm water.

07 ____ Notice of termination request for industrial facilities or construction sites - verification that the facility or construction site is not subject to permit requirements (**Type, NOT I or NOT C - circle one**).

08 ____ Compliance Assistance Inspection - Outreach inspection due to discharger's request for compliance assistance.

INSPECTION FINDINGS

__N__ Were violations noted during this inspection? (Yes/No/Pending Sample Results)

I. COMPLIANCE HISTORY:

- 3/3/2009 Regional Board wrote letter commenting on JURMP Annual Report 07/08.
- 4/1/2009 City of Vista response letter to Regional Boards 3/3/2009 Letter.
- 9/30/2009 City of Vista submitted the FY 08/09 JURMP Annual Report.

II. FINDINGS :

FY 08/09 JURMP Annual Report review included a field visit to a sample of the residential, commercial/industrial, private and public post construction treatment control BMPs within the City of Vista's treatment control BMP inventory. The following sites were visited.

Fire Station #5 – Permeable Pavement, Vegetated Swales, and Fire Truck Washing Diverter Valve

All flow that falls directly on to this site is collected in a detention basin located underground. Flows enter the detention basin after either passing through the vegetated landscape or peculated though the porous pavement. Treated stormwater ultimately discharges to Buena Vista Creek. Fire truck washing occurs onsite and is directed to the sewer via a diverter valve.

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Ocean Ranch Industrial Park – Grassy Swales

Stormwater runoff from the parking lot enters grassy swales via curb cuts and flows down the swale as indicated by the red arrows. (Left) Stormwater runoff from the parking lot is also treated via grassy swale between the buildings which is connected to a larger grass swale in the front of the development. (Right and Below)

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Target Shopping Center– Grassy Swales, Sand Filters, and Underground Detention Basin

Nuisance stormwater runoff from the Target parking lot is directed through grassy swales located at the south and west side of the property. These swales need to be maintained such that the grass and vegetation is alive and functioning properly. (Above) After treatment through the swale runoff flows into a detention basin. (Lower Left)

Drainage Basin

Storm drains were all stenciled.

Parking lot runoff is filtered by the underground sand filters (Right) located beneath these manholes for treatment prior to discharge to the Drainage Basin.

Sand Filters

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Famous Dave's Restaurant - Grassy Swales

Stormwater runoff from the parking lot of the Famous Dave's restaurant drains to grassy swales as shown below. A chance for short circuiting the swale is possible as seen in the lower photo indicated by the blue arrow. During heavy rain events stormwater from the parking lot could short circuit treatment via the grassy swale and discharge directly to Buena Vista Creek.

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III. RECOMMENDATIONS AND ADDITIONAL COMMENTS

- Grassy swales located at the Target property should be maintained such that grass height is high. The California Stormwater BMP Handbook for vegetated swales recommends a grass height of 6 inches. Improper maintenance of the grassy swale increases the chances for reduced grass height and bare areas reducing the effectiveness of the swale to remove pollutants. Failing grass or bare patches within the grassy swale should be maintained in order for the swale to perform as designed.
- As indicated in the photos above there is a potential for runoff to short circuit the grassy swale within the Famous Daves parking lot. This should be reviewed and corrected.

IV. SIGNATURE SECTION

Inspection Report
received by:

FACILITY REPRESENTATIVE	SIGNATURE	TITLE	DATE
Laurie Walsh	Laurie Walsh		11/12/2009
STAFF INSPECTOR	SIGNATURE		INSPECTION DATE

VI. (For internal use only)

Reviewed by Supervisor: _____ Date 1-6-10

cc:

Inter-office Referral: 1) _____ 2) _____ 3) _____ 4) _____ 5) _____

s: north watershed unit/forms/inspection form.doc (vrs. 11/22/00)

CIWQS:
Place ID: 270704

APPENDIX B-1

FY 2010 Construction Site Inventory and Inspections

Site ID	Project	Address	Priority	Start Date	End Date	Wet Season			Dry Season			Total Inspections for FY 2010
						Active Weeks	Required Inspections	Stormwater Inspections	Active Months	Required Inspections	Stormwater Inspections	
242	Rough Grading for PC 2-043-9 lot subdvsn	385 Taylor St (Hayden Ranch)	High	During 2002	Ongoing/ Idle	8	15	30	5	4	5	35
677	56 Townhomes	719 Copper Dr	High	04/20/06	10/22/08 On hold	1	15	30	5	4	5	35
689	14 homes- Willowen Ridge	2261 Edgehill Rd	High	07/09/07	10/27/08 On hold	0	15	30	3	4	5	35
696	Target Store	3150 Business Park Dr	High	07/01/08	08/26/09	0	0	0	2	1	2	2
702	North Coast Church	2405 N. Santa Fe	High	09/01/08	Ongoing	31	16	30	5	4	5	35
712	Medical Office Building	1950 Via Centre	High	12/05/05	10/05/09	0	2	3	3	2	3	6
713	Vista Civic Center	600 Eucalyptus Ave	High	08/19/08	Ongoing	31	16	30	5	4	5	35
716	Moonlight Amphitheater	1200 Vale Terrace	High	10/20/08	07/20/09	0	0	0	1	1	1	1
721	4 Commercial Buildings	2291 S. Melrose Dr	High	01/19/09	Ongoing	31	15	30	5	4	5	35
723	Vista Sports Park	555 W. Bobier Dr	High	02/09/09	Ongoing	31	15	30	5	4	5	35
724	Industrial Buildings	2710 Progress St	High	03/09/09	06/15/10	31	15	30	5	4	5	35
732	Grading for Industrial Building	2633 Progress St	High	05/18/09	05/13/10	31	15	30	5	4	5	35
741	Calvary Chapel	1401 N. Melrose Dr	High	11/03/09	Ongoing	25	13	25	0	2	2	27
742	RV and Boat Storage	1551 Sycamore Ave	High	11/18/09	Ongoing	23	12	24	2	2	2	26
743	Gordon Properties	1025 Cielita Linda	High	01/06/10	Ongoing	16	8	16	2	2	2	18
744	Buena Creek Trail Project (CIP 8015)	Vale Terrace	High	03/24/10	Ongoing	6	3	5	2	2	2	7
746	SFR (see site ID #66)	721 Oceanview	High	04/12/10	Ongoing	3	2	3	2	2	2	5
751	Foothill Street Improvement (CIP 8141)	Foothill St	High	06/16/10	Ongoing	0	0	0	1	1	1	1
753	California West Homes	1045 Sycamore Ave	High	06/22/10	Ongoing	0	0	0	1	1	1	1
644	Commercial Building - Vista Cafe	315 Broadway	Medium	09/22/08	01/15/10	13	4	4	3	2	3	7
690	Condos (42) Oak Drive Villas	1375 Oak Dr	Medium	09/08/08	Ongoing	0	7	7	4	4	5	12
718	Oak Ridge Business Park	2410 Birch St	Medium	01/26/09	10/28/09	4	1	1	3	2	3	4
734	Parking Deck	2980 Scott St	Medium	07/28/09	Ongoing	31	7	7	5	4	5	12
736	Redevelopment Dept - Sidewalk	525 Calle Chapultepec	Medium	08/01/09	04/15/10	29	7	7	1	1	2	9
737	Sonic Burger	101 Main Street	Medium	09/09/09	11/18/09	7	2	2	1	1	1	3
740	SFD	659 Rudd Rd	Medium	10/29/09	Ongoing	22	6	6	2	2	2	8
745	Commercial Bank	625 S Melrose Dr	Medium	03/24/10	06/25/10	5	2	4	2	2	2	6
747	Wal-Mart Expansion	1800 University Dr	Medium	06/10/10	Ongoing	0	0	0	1	1	1	1
752	BMW Dealership	1715 Hacienda Dr	Medium	06/17/10	Ongoing	0	0	0	1	1	1	1
699	SFR - Sutter Residence	216 Acropolis Way	Low	09/01/08	Ongoing	1	7	7	5	4	5	12
700	Retaining Walls	1045-A Alta Calle	Low	09/08/08	Ongoing/On hold	0	7	7	3	4	5	12
706	SFR - Heart Residence	495 Ocean View Dr	Low	09/22/08	06/21/10 Idle	0	7	7	5	4	5	12
707	SFR - Livingston Residence	491 Ocean View Dr	Low	09/22/08	9/17/09 Permit revoked	0	1	1	3	2	3	4
708	SFR - Thompson Residence	675 Vale View	Low	01/10/05	Ongoing	26	6	6	2	3	5	11
711	Vista Community Clinic	134 Grapevine Rd.	Low	09/22/08	07/27/09	0	0	0	1	1	1	1
719	Palomar Unitarian Fellowship	1600 Buena Vista Dr.	Low	01/19/09	07/27/09	0	0	0	1	1	1	1
720	Detached Garage	960 Quails Trail	Low	01/19/09	07/17/09	0	0	0	1	1	1	1
726	SFD	1000 Miramar Dr	Low	04/20/09	On hold	4	7	7	5	4	5	12
727	SFD - Addition/Remodel	561 Vale View Dr	Low	04/20/09	06/21/10	31	7	7	5	4	5	12
728	SFD	1306 Kelglen Ln	Low	04/20/09	Ongoing	31	7	7	5	4	5	12
729	Parking Lot	1232 Tower Dr	Low	04/20/09	Ongoing	31	7	7	5	4	5	12
730	Samoan Church	1175 Melrose Way	Low	04/20/09	10/15/09	3	1	1	3	2	3	4
731	Lutheran Church	700 Bobier Dr	Low	04/20/09	10/15/09	3	1	1	3	2	3	4
733	KSW Properties	460 Olive Ave	Low	06/15/09	09/17/09	0	0	0	3	2	3	3
735	Thibodo Road Curb & Landscape Improvement (	Thibodo Rd	Low	07/23/09	11/20/09	8	2	2	3	2	3	5
738	SFR	1248 Sunset Dr	Low	09/25/09	Ongoing	31	7	7	2	2	2	9
739	Industrial Building	2185 La Mirada Dr	Low	11/16/09	Ongoing	23	6	6	2	2	2	8
748	SFR - Hughes Residence	1208 Sunset Dr	Low	06/10/10	Ongoing	0	0	0	1	1	1	1
749	SFR - Noakes Residence	511 Fortuna Ave	Low	06/15/10	Ongoing	0	0	0	1	1	1	1
750	SFR - Vozza & Marsella Residence	240 Palm Dr	Low	06/21/10	Ongoing	0	0	0	1	1	1	1
754	Grapevine Rd Improvement (CIP 8018)	Grapevine Rd	Low	06/16/10	Ongoing	0	0	0	1	1	1	1
755	W. California Improvement (CIP 8029)	W. California	Low	06/20/10	Ongoing	0	0	0	1	1	1	1

APPENDIX B-2

FY 2010 Construction Inspections Summary

Project Name: Rough Grading for PC 2-043-9 lot **Address:** 385 Taylor St. (Hayden Ranch) **Site ID#:** 242 **Site Size (Acres):** 7.04 (0.5 Disturbed) **Grading Plan #:** 01-020 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** During 2002 **End Date:** Ongoing/Idle	**Summary of Inspection Findings:** No issues. The project was reported as idle.
Project Name: 56 Townhomes **Address:** 719 Copper Dr. **Site ID#:** 677 **Site Size (Acres):** 6.1 (6.0 Disturbed) **Grading Plan #:** 05-020 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 20 April 2006 **End Date:** Ongoing	**Summary of Inspection Findings:** The project was reported as on hold 22 October 2008 but began construction again during the reporting period. No issues.
Project Name:14 homes - Willowen Ridge **Address:** 2261 Edgehill Rd. **Site ID#:** 689 **Site Size (Acres):** 8.74 (8.0 Disturbed) **Grading Plan #:** 06-047 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 9 July 2007 **End Date:** Idle	**Summary of Inspection Findings:** The project was reported as on hold 27 October 2008. Project is idle with no issues.
Project Name: Target Store **Address:** 3150 Business Park Dr. **Site ID#:** 696 **Site Size (Acres):** N/A **Grading Plan #:** N/A **Inspector:** S. Rytell	**Priority:** High **Wet Inspections:** 0 **Dry Inspections:** 2 **Total Inspections:** 2 **Start Date:** 1 July 2008 **End Date:** 26 August 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: North Coast Church **Address:** 2405 N. Santa Fe **Site ID#:** 702 **Site Size (Acres):** 10+ (10+ Disturbed) **Grading Plan #:** 06-022 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 1 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Project was ongoing at the end of the reporting period.

Project Name: Medical Office Building **Address:** 1950 Via Centre **Site ID#:** 712 **Site Size (Acres):** 5 (5 Disturbed) **Grading Plan #:** 07-006 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 3 **Dry Inspections:** 3 **Total Inspections:** 6 **Start Date:** 5 December 2005 **End Date:** 5 October 2009	**Summary of Inspection Findings:** No issues. The site is reported as complete and released as of 5 October 2009. Awaiting As-Builts.
Project Name: Vista Civic Center **Address:** 600 Eucalyptus Ave. **Site ID#:** 713 **Site Size (Acres):** 13 (13 Disturbed) **Grading Plan #:** 08-006 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 19 August 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at end of the reporting period.
Project Name: Moonlight Amphitheater **Address:** 1200 Vale Terrace Dr. **Site ID#:** 716 **Site Size (Acres):** N/A **Grading Plan #:** N/A **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 20 October 2008 **End Date:** 20 July 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: 4 Commercial Buildings **Address:** 2291 S. Melrose Dr. **Site ID#:** 721 **Site Size (Acres):** 4 (4 Disturbed) **Grading Plan #:** 07-007 **Inspector:** S. Rytell	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 19 January 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received a verbal warning to repair the perimeter silt fence. Silt fence issue was resolved. The site has permanent landscape in place. The project was nearing completion at the end of the reporting period.
Project Name: Vista Sports Park **Address:** 555 W. Bobier Dr. **Site ID#:** 723 **Site Size (Acres):** 47 (47 Disturbed) **Grading Plan #:** 07-022 **Inspector:** S. Rytell	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 9 February 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** The site showed erosion in the detention basins but is not leaving the job site. The BMPs in place are containing it to the designated areas.

Project Name: Industrial Buildings **Address:** 2710 Progress St. **Site ID#:** 724 **Site Size (Acres):** 3 (3 Disturbed) **Grading Plan #:** 08-023 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 09 March 2009 **End Date:** 15 June 2010	**Summary of Inspection Findings:** BMPs are kept up continuously. Project was reported as complete as of 15 June 2010.
Project Name: Grading for Industrial Building **Address:** 2633 Progress St. **Site ID#:** 732 **Site Size (Acres):** 6.24 (6.24 Disturbed) **Grading Plan #:** 08-011 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 18 May 2009 **End Date:** 13 May 2010	**Summary of Inspection Findings:** No issues. Project was completed during the reporting period.
Project Name: Calvary Chapel **Address:** 1401 N. Melrose Dr. **Site ID#:** 741 **Site Size (Acres):** 21.72 (1 Disturbed) **Grading Plan #:** 09-015 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 25 **Dry Inspections:** 2 **Total Inspections:** 27 **Start Date:** 3 November 2009 **End Date:** Ongoing / Idle	**Summary of Inspection Findings:** The site received verbal warnings after a silt fence fell over due to sediment build up. Corrections were made. Extra BMPs were placed at site. Project was reported as idle by the end of the reporting period.
Project Name: RV & Boat Storage **Address:** 1551 Sycamore Ave. **Site ID#:** 742 **Site Size (Acres):** 11.6 (8.75) **Grading Plan #:** 09-007 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 24 **Dry Inspections:** 2 **Total Inspections:** 26 **Start Date:** 18 November 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received a correction notice after a BMP failure and fiber rolls and gravel bags were installed. The items were corrected within a day. The site also received a verbal warning that erosion was evident on slopes but was being contained. The project was ongoing at end of reporting period
Project Name: Gordon Properties **Address:** 1025 Cielita Linda **Site ID#:** 743 **Site Size (Acres):** 20 (15 Disturbed) **Grading Plan #:** 07-004, 06-010 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 16 **Dry Inspections:** 2 **Total Inspections:** 18 **Start Date:** 6 January 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. The project had been previously idle and concrete slabs were placed. The project was ongoing at the end of the reporting period.

Project Name: Buena Creek Trail Project **Address:** Vale Terrace **Site ID#:** 744 **Site Size (Acres):** 0.66 Disturbed **Grading Plan #:** CIP 8015 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 5 **Dry Inspections:** 2 **Total Inspections:** 7 **Start Date:** 24 March 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at end of the reporting period.
Project Name: SFR (see site ID #66) **Address:** 721 Oceanview **Site ID#:** 746 **Site Size (Acres):** 1.25 (0.5 Disturbed) **Grading Plan #:** 09-019 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 3 **Dry Inspections:** 2 **Total Inspections:** 5 **Start Date:** 12 April 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: Foothill Street Improvement **Address:** Foothill St **Site ID#:** 751 **Site Size (Acres):** 5.03 (5.03 Disturbed) **Grading Plan #:** CIP 8141 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 16 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: California West Homes **Address:** 1045 Sycamore Ave **Site ID#:** 753 **Site Size (Acres):** **Grading Plan #:** 06-011, 05-053 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 22 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at end of the reporting period.
Project Name: Commercial Building (Vista Café) **Address:** 315 Broadway **Site ID#:** 644 **Site Size (Acres):** N/A **Grading Plan #:** 04-061 **Inspector:** J. Fretwell	**Priority:** Medium **Wet Inspections:** 4 **Dry Inspections:** 3 **Total Inspections:** 7 **Start Date:** 22 September 2008 **End Date:** 15 January 2010	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period and the permit was closed.

Project Name: Condos (42) Oak Drive Villas **Address:** 1375 Oak Dr. **Site ID#:** 690 **Site Size (Acres):** 3.1 (3.1 Disturbed) **Grading Plan #:** 06-044 **Inspector:** K. Groscup	**Priority:** Medium **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 08 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. The project was reported as on hold but began construction again on 15 June 2010.
Project Name: Oak Ridge Business Park **Address:** 2410 Birch St. **Site ID#:** 718 **Site Size (Acres):** 1.2 (1.2 Disturbed) **Grading Plan #:** 08-017 **Inspector:** K. Groscup	**Priority:** Medium **Wet Inspections:** 1 **Dry Inspections:** 3 **Total Inspections:** 4 **Start Date:** 26 January 2009 **End Date:** 28 October 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Parking Deck **Address:** 2980 Scott St. **Site ID#:** 734 **Site Size (Acres):** 1.4 (1.4 Disturbed) **Grading Plan #:** 09-003 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 28 July 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. The project was ongoing at the end of the reporting period.
Project Name: Redevelopment Dept - Sidewalk **Address:** 525 Calle Chapultepec **Site ID#:** 736 **Site Size (Acres):** N/A **Grading Plan #:** N/A **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 7 **Dry Inspections:** 2 **Total Inspections:** 9 **Start Date:** 01 August 2009 **End Date:** 15 April 2010	**Summary of Inspection Findings:** No Issues. The project was completed during the reporting period.
Project Name: Sonic Burger **Address:** 101 Main Street **Site ID#:** 737 **Site Size (Acres):** N/A **Grading Plan #:** 09-005 **Inspector:** F. Durazo	**Priority:** Medium **Wet Inspections:** 2 **Dry Inspections:** 1 **Total Inspections:** 3 **Start Date:** 9 September 2009 **End Date:** 18 November 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.

Project Name: SFD **Address:** 659 Rudd Rd. **Site ID#:** 740 **Site Size (Acres):** 4.12 (0.81 Disturbed) **Grading Plan #:** 09-066, 07-032 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 6 **Dry Inspections:** 2 **Total Inspections:** 8 **Start Date:** 29 October 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Project has perimeter fence installed and slopes have new vegetation growing on them.
Project Name: Commercial Bank **Address:** 625 S. Melrose Dr. **Site ID#:** 745 **Site Size (Acres):** 1 (.72 Disturbed) **Grading Plan #:** DWG 3934 **Inspector:** J. Fretwell	**Priority:** Medium **Wet Inspections:** 4 **Dry Inspections:** 2 **Total Inspections:** 6 **Start Date:** 24 March 2010 **End Date:** 25 June 2010	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Wal-Mart Expansion **Address:** 1800 University Dr **Site ID#:** 747 **Site Size (Acres):** **Grading Plan #:** 09-017 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 10 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at end of the reporting period.
Project Name: BMW Dealership **Address:** 1715 Hacienda Dr **Site ID#:** 752 **Site Size (Acres):** **Grading Plan #:** 10-001 **Inspector:** F. Durazo	**Priority:** Medium **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 17 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at end of the reporting period.
Project Name: SFR - Sutter Residence **Address:** 216 Acropolis Way **Site ID#:** 699 **Site Size (Acres):** .83 (.80 Disturbed) **Grading Plan #:** 06-074 **Inspector:** S. Rytell	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 1 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. The project was reported as idle and is well vegetated and stable.

Project Name: Retaining Walls **Address:** 1045-A Alta Calle **Site ID#:** 700 **Site Size (Acres):** .5 (2.5 Disturbed) **Grading Plan #:** 06-050 **Inspector:** K. Groscup	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 8 September 2008 **End Date:** On hold	**Summary of Inspection Findings:** No issues. The project was reported as on hold during the reporting period.
Project Name: SFR (Heart Residence) **Address:** 495 Ocean View Dr. **Site ID#:** 706 **Site Size (Acres):** 0.35 (0.35 Disturbed) **Grading Plan #:** 06-045 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 22 September 2008 **End Date:** 21 June 2010	**Summary of Inspection Findings:** No issues. The project was reported as idle and complete until further notice. BMPs were installed.
Project Name: SFR (Livingston Residence) **Address:** 491 Ocean View Dr. **Site ID#:** 707 **Site Size (Acres):** 0.5 (0.5 Disturbed) **Grading Plan #:** 07-027 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 1 **Dry Inspections:** 3 **Total Inspections:** 4 **Start Date:** 22 September 2008 **End Date:** 17 September 2009	**Summary of Inspection Findings:** Permit revoked - no stormwater issues.
Project Name: SFR (Thompson Residence) **Address:** 675 Vale View **Site ID#:** 708 **Site Size (Acres):** 0.5 (0.5 Disturbed) **Grading Plan #:** 07-030 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 6 **Dry Inspections:** 5 **Total Inspections:** 11 **Start Date:** 10 January 2005 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. The project was ongoing at the end of the reporting period.
Project Name: Vista Community Clinic **Address:** 134 Grapevine Rd. **Site ID#:** 711 **Site Size (Acres):** 0.50 (0.50 Disturbed) **Grading Plan #:** 08-007 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 22 September 2008 **End Date:** 27 July 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.

Project Name: Palomar Unitarian Friendship **Address:** 1600 Buena Vista Dr. **Site ID#:** 719 **Site Size (Acres):** 1.89 (1.89 Disturbed) **Grading Plan #:** 06-008 **Inspector:** S. Rytell, J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 19 January 2009 **End Date:** 27 July 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: Detached Garage **Address:** 960 Quails Trail **Site ID#:** 720 **Site Size (Acres):** 0.6 (0.6 Disturbed) **Grading Plan #:** 08-001 **Inspector:** S. Rytell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 19 January 2009 **End Date:** 17 July 2009	**Summary of Inspection Findings:** No Issues. The project was completed during the reporting period.
Project Name: SFD **Address:** 1000 Miramar Dr. **Site ID#:** 726 **Site Size (Acres):** 1.5 (1.0 Disturbed) **Grading Plan #:** 08-016 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 20 April 2009 **End Date:** On hold	**Summary of Inspection Findings:** No issues. All permanent BMPs were installed per plan. The project was reported as on hold.
Project Name: SFD (Addition/Remodel) **Address:** 561 Vale View Dr. **Site ID#:** 727 **Site Size (Acres):** 0.5 (0.5 Disturbed) **Grading Plan #:** 07-029 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 20 April 2009 **End Date:** 21 June 2010	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.
Project Name: SFD **Address:** 1306 Kelglen Ln. **Site ID#:** 728 **Site Size (Acres):** 0.25 (0.25 Disturbed) **Grading Plan #:** 07-045 **Inspector:** J. Fretwell, F. Durazo	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 20 April 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** A few bales of straw were stacked up around the house and needed to be disposed of properly. Issue resolved. Construction was ongoing at the end of the reporting period.

Project Name: Parking Lot **Address:** 1232 Tower Dr. **Site ID#:** 729 **Site Size (Acres):** 0.25 (0.25 Disturbed) **Grading Plan #:** 07-011 **Inspector:** F. Durazo	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 20 April 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. All BMPs are in place. Construction was ongoing at the end of the reporting period.
Project Name: Samoan Church **Address:** 1175 Melrose Way **Site ID#:** 730 **Site Size (Acres):** N/A **Grading Plan #:** 08-018 **Inspector:** F. Durazo	**Priority:** Low **Wet Inspections:** 1 **Dry Inspections:** 3 **Total Inspections:** 4 **Start Date:** 20 April 2009 **End Date:** 15 October 2009	**Summary of Inspection Findings:** The project received a correction notice to remove all loose material from the edge of the brow ditch. Corrections made. Project was completed during the reporting period.
Project Name: Lutheran Church **Address:** 700 Bobier Dr. **Site ID#:** 731 **Site Size (Acres):** N/A **Grading Plan #:** 08-012 **Inspector:** F. Durazo	**Priority:** Low **Wet Inspections:** 1 **Dry Inspections:** 3 **Total Inspections:** 4 **Start Date:** 20 April 2009 **End Date:** 15 October 2009	**Summary of Inspection Findings:** No issues. Project was completed and released during the reporting period.
Project Name: KSW Properties **Address:** 460 Olive Ave. **Site ID#:** 733 **Site Size (Acres):** 1.8 (1.8 Disturbed) **Grading Plan #:** 08-024 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 3 **Total Inspections:** 3 **Start Date:** 15 June 2009 **End Date:** 17 September 2009	**Summary of Inspection Findings:** No issues. All permanent landscape was installed and no more grading was to occur. Project was completed by the end of the reporting period.
Project Name: Thibodo Road Curb & Landscape **Address:** Thibodo Rd. **Site ID#:** 735 **Site Size (Acres):** 0.83(0.83 Disturbed) **Grading Plan #:** CIP 8151 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 2 **Dry Inspections:** 3 **Total Inspections:** 5 **Start Date:** 23 July 2009 **End Date:** 20 November 2009	**Summary of Inspection Findings:** No issues. The project was completed during the reporting period.

Project Name: SFR **Address:** 1248 Sunset Dr. **Site ID#:** 738 **Site Size (Acres):** 2.89(0.59 Disturbed) **Grading Plan #:** 08-029 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 7 **Dry Inspections:** 2 **Total Inspections:** 9 **Start Date:** 25 September 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** The site received verbal warnings after some erosion occurred on the slope. The issue was resolved and extra BMPs were installed. Project was ongoing at the end of the reporting period.
Project Name: Industrial Building **Address:** 2185 La Mirada Dr. **Site ID#:** 739 **Site Size (Acres):** 0.85(0.85 Disturbed) **Grading Plan #:** 7-039 **Inspector:** K. Groscup	**Priority:** Low **Wet Inspections:** 6 **Dry Inspections:** 2 **Total Inspections:** 8 **Start Date:** 16 November 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: SFR - Hughes Residence **Address:** 1208 Sunset Dr **Site ID#:** 748 **Site Size (Acres):** N/A **Grading Plan #:** 07-014 **Inspector:** S. Rytell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 10 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Grading was reported as complete and gravel entrance will be installed.
Project Name: SFR - Noakes Residence **Address:** 511 Fortuna Ave **Site ID#:** 749 **Site Size (Acres):** N/A **Grading Plan #:** 09-020 **Inspector:** K. Groscup	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 15 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: SFR - Vozza & Marsella Residence **Address:** 240 Palm Dr **Site ID#:** 750 **Site Size (Acres):** 0.075 (0.051 Disturbed) **Grading Plan #:** 07-001 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 21 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.

Project Name: Grapevine Rd Improvement **Address:** Grapevine Rd **Site ID#:** 754 **Site Size (Acres):** N/A **Grading Plan #:** CIP 8018 **Inspector:** F. Durazo	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 16 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.
Project Name: W. California Improvement **Address:** W. California **Site ID#:** 755 **Site Size (Acres):** N/A **Grading Plan #:** CIP 8029 **Inspector:** J. Fretwell	**Priority:** Low **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 20 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues. Construction was ongoing at the end of the reporting period.

APPENDIX B-3

Construction Inspection Form

PRIORITY: ____

Site ID: _____

Municipal NPDES Stormwater Permit

CONSTRUCTION ACTIVITIES INSPECTION FORM

Project Name/Description: _____ APN: _____

Inspector: _____ Project Location: _____ Size of Site (acres): _____

Covered under Statewide General Construciton Permit? ☐ Check if YES If yes, is SWPPP on-site? ☐ Check if YES WDID: _____

Contact Person: _____ Contact Phone: _____ Emergency Phone: _____

Bldg. Permit No: _____ Grading Plan No: _____ Disturbed area (acres): _____

INSPECTION TYPE: ☐ Regular (Weekly/Monthly) ☐ Follow-Up ☐ Post-Rain Event

DATE OF INSPECTION _____ **% COMPLETE:** _____

Checking the boxes below means that the particular BMP is implemented-even if it is ineffective. If it is ineffective - note action and comments below.

PHASE: _____

Erosion Control BMPs: Is there evidence of erosion at the project site? YES ☐ No ☐

☐ Preserving Existing Vegetation ☐ Hydroseeding ☐ Soil Binders, Hydraulic Mulch ☐ Permanent Landscaping

☐ Geotextiles, Plastic Covers, Erosion Control Blankets/Mats ☐ Diversion Channel for Run-On ☐ Other Type: _____

Sediment Control BMPs: Is there evidence of offsite sediment or sediment discharge? YES ☐ No ☐

Perimeter Protection: ☐ N/A ☐ Gravel Bags ☐ Silt Fencing ☐ Fiber Rolls ☐ Other _____

Slope Protection: ☐ N/A ☐ Silt Fencing ☐ Fiber Rolls ☐ Slope Drains ☐ Other _____

Sediment Capture: ☐ N/A ☐ Detention Basin ☐ Desilting Basin ☐ Other _____

Velocity Reduction: ☐ N/A ☐ Check Dams ☐ Rip Rap ☐ Other _____

Off-Site Sediment Tracking: ☐ N/A ☐ Gravel Entrance ☐ Temporary Construction Road ☐ Other _____

Inlet Protection: ☐ N/A ☐ Gravel Bags ☐ Gravel Rolls ☐ Fiber Rolls ☐ Other _____

Other Type: _____

Materials Management BMPs: Are activities or storage of materials/wastes resulting in discharge offsite? [For example-paints, concrete, plastering] Yes ☐ No ☐

Spill Prevention and Control Program (employee education and training)

Fuel Chemicals Stored On-Site: ☐ N/A ☐ Secondary Containment ☐ Leak Detection ☐ Other _____

Equipment Related Wastes: ☐ N/A ☐ Covered ☐ Secondary Containment ☐ Other _____

Stockpile On-Site (Solids): ☐ N/A ☐ Covered ☐ Secondary Containment ☐ Other _____

Trash/Litter On-Site: ☐ N/A ☐ Receptacles Provided ☐ Covered ☐ Secondary Containment ☐ Other _____

Concrete Waste: ☐ N/A ☐ Designated Washout Area ☐ Secondary Containment ☐ Other _____

Sanitary Waste: ☐ N/A ☐ Secondary Containment ☐ Located away from inlets ☐ Other _____

Comments:

Enforcement Action: ☐ No Action ☐ Verbal Warning ☐ Correction Notice ☐ Stop Work ☐ Admin Cite ☐ NOV

Follow Up? ☐ Follow Up Date: _____

Signature _____ **Date:** _____

Version - June 2008

Supervisor Review: _____

APPENDIX C-1

Municipal Treatment Control BMP Maintenance and Inspections Summary

Appendix C-1 Municipal Treatment Control BMP Maintenance and Inspections Summary

Site	BMP No.	PROJECT AREA	BMP TYPE	MAINTENANCE FREQUENCY	DEBRIS REMOVED	INSPECTION DATE	CORRECTIVE ACTIONS NEEDED	COMMENTS
1	1	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	Drain Insert	Quarterly	278 lbs (debris and organics)	6/23/2010	No	No
	2		Infiltration Trench	As Needed	N/A	6/23/2010	No	No
	3		Infiltration Trench	As Needed	N/A	6/23/2010	No	No
	4		Infiltration Trench	As Needed	N/A	6/23/2010	No	No
	5		Infiltration Trench	As Needed	N/A	6/23/2010	No	No
2	1	City of Vista Library (700 Eucalyptus Ave)	*Drain Insert	Quarterly	3.25 lbs (debris and organics)	N/A	No	BMP doesn't exist; taken out during construction in May 2010
	2		Drain Insert	Quarterly	2.25 lbs (debris and organics)	6/24/2010	No	No
	3		Drain Insert	Quarterly	85 lbs (debris and organics)	6/24/2010	No	No
3	1	Fire Station 5 (2008 S. Melrose Dr.)	Vegetated Swale	Weekly	Weekly trimming and weeding and necessary trash pickup	6/24/2010	No	No
	2		Porous Concrete	As Needed	N/A	6/24/2010	No	No
	3		**Detention Pipes	Semi-annual	14 cubic yards of material removed	6/24/2010	No	No
4	1	Fire Station 6 (651 E. Vista Way)	Porous Concrete	As Needed	N/A	6/24/2010	No	No
	2		Infiltration Basin	As Needed	N/A	6/24/2010	No	No
5	1	Vista Village (Multiple Locations)	Vortex Separator	Quarterly	Debris and Organics	6/24/2010	No	No
	2		Drain Insert	Quarterly	93 lbs (debris and organics)	6/24/2010	No	No
	3		Vortex Separator	Quarterly	Debris and Organics	6/24/2010	No	No
	4		Vortex Separator	Quarterly	Debris and Organics	6/24/2010	No	No
	5		Vortex Separator	Quarterly	Debris and Organics	6/23/2010	No	No
	6		Drain Insert	Quarterly	Debris and Organics	6/23/2010	Yes	Bottom screen of unit missing
	7		Drain Insert	Quarterly	Debris and Organics	6/24/2010	Yes	Bottom screen may not be the proper size
6	1	Vons/Vista Shopping Center	Bioretention	As Needed	N/A	6/24/2010	No	No
	2		Bioretention	As Needed	N/A	6/24/2010	No	No
	3		Bioretention	As Needed	N/A	6/24/2010	No	No
	4		Bioretention	As Needed	N/A	6/24/2010	No	No
7	1	North County Ford Storage Lot	Vegetated Swale	As Needed	N/A	6/24/2010	Yes	Remove sediment and trim vegetation at beginning of swale to allow for proper drainage and treatment
8	1	Vista Civic Center (200 Civic Center Drive)	Vegetated Buffer Strip	As Needed	N/A	6/24/2010	No	No
	2		Vegetated Buffer Strip	As Needed	N/A	6/24/2010	No	No
	3		Porous Concrete	As Needed	N/A	6/24/2010	No	No
	4		Vegetated Buffer Strip	As Needed	N/A	6/24/2010	No	No
	5		Porous Concrete	As Needed	N/A	6/24/2010	No	No

* BMP removed during renovations of library in May 2010.
**Underground detention system designed to attentuate peak flows from site; not designed as a treatment control BMP

APPENDIX C-2

FY 2010 Municipal Inventory

Appendix C-2
FY 2010 Municipal Inventory

Name	Address	Description	Pollutant Generating Activities																	Potential Pollutants Generated											
			Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances	303(d)	High Priority	Watershed
Avo Playhouse	303 Main St	Theater	X	X				X				X	X	X		X		X		X	X	X				X	X				BV
Breeze Hill Park	645 S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X			X	BV
Brengle Terrace Park	1200 Vale Terrace Dr.	Maintenance Yard and Park	X	X				X			X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X		X	BV
Bub Williamson Park	530 Grapevine Rd	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	BV
Buena Vista Park	1851 S. Melrose Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X		X	AH
Chamber of Commerce	201 Indiana	Administrative Building	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Civic Center	200 Civic Center Dr.	City Hall	X	X								X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Community Center	1150 Lupine Hills	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Fire Station #1	175 Melrose Dr	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Fire Station #2	1050 Valley Drive	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Fire Station #3	1070 Old Taylor St.	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			SLR
Fire Station #4	2121 Thibodo	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Fire Station # 5	2009 South Melrose Drive	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Fire Station #6	651 East Vista Way	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Gloria McClellan Senior Center	1400 Vale Terrace Dr.	Senior Center and Parking lot	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
La Mirada Canyon	1219 Park Center	Open Space	X	X								X	X	X				X		X	X	X		X			X	X			AH
Library	700 Eucalyptus	Library	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Lifeline - North County	200 Michigan Ave.	Community Services	X											?											X						BV
Moonlight Amphitheater	1200 Vale Terrace	Amphitheater	X	X				X				X	X	X		X		X		X	X	X		X		X	X			X	BV
Parking Lot	E. Broadway - Hanes Pl.	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	Main St / S. Indiana Ave. S/E corner	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	Main St - Michigan Ave.	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Parking Lot	523 S. Santa Fe	Parking Lot	X											X						X	X	X	X	X	X	X				X	BV
Parking Lot	300 blk of Main St	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Park-N-Ride	W. Vista Way @ S. Emerald	Parking Lot	X											X				X		X	X	X	X	X	X	X				X	BV
Police Sub-Station	1477 Moon Rd	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Police Sub-Station	2082 Thibodo	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			AH
Police Sub-Station	340 E. Townsite	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Publc Works Yard	1165 E. Taylor Street	Corporate Yard	X	X	X	X	X	X	X		X	X	X	X				X		X	X	X	X		X	X	X	X		X	BV
PS Satellite Yard	2430 Lupine Hills Dr.	Storage and Corporate Yard	X	X				X	X		X	X	X	X						X	X	X	X	X	X	X	X	X		X	AH
PS Auxillary / HHW	1145 E. Taylor St	Household Haz Waste Collection Ctr	X	X				X	X	X		X		X				X		X	X	X	X		X	X	X	X		X	BV
PS Yard / Inactive WWTP	2525 Lupine Hills	Buena Station 52 & Corporate Yard																												X	AH
Rain Tree Park	545 Townsite Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	BV
Rancho Buena Vista Adobe	640 Alta Vista	Attraction	X									X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Rancho Buena Vista Park	1851 S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH
Senior Center	Vista Village @ Michigan	Senior Center and old Railroad Station bldg	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Sewer Pump Station	2685 S. Melrose Dr.	Wastewater - Raceway Pump Station	X	X								X		X														X		X	AH
Sewer Pump Station	2080 S. Melrose Dr.	Wastewater - Buena Pump Station	X	X								X		X														X		X	AH
Shadowridge Park	2101 Lupine Hills	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH

Appendix C-2
FY 2010 Municipal Inventory

Name	Address	Description	Pollutant Generating Activities																	Potential Pollutants Generated											
			Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances	303(d)	High Priority	Watershed
South Buena Vista Park	1602 Mountain Pass Circle	Park w/ Detention Basin	X	X								X	X	X		X		X	X	X	X	X		X	X	X	X	X		X	AH
Tennis Courts	1200 Vale Terrace	Tennis courts										X		X				X													BV
The Wave	101 Wave Dr.	Waterpark	X	X				X	X			X	X	X		X	X	X	X	X	X	X		X	X	X	X	X		X	BV
Thibodo Park	1150 Lupine Hills Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X		X	AH
Townsite Community Center	642 Vista Village Dr.	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X			BV
Townsite Park	340 E.Townsite Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X		X	BV
Vista Village Walk	Vista Village Dr / Michigan Ave.	Green Belt Walkway																													BV
Wildwood Park	651 E. Vista Way	Park	X	X								X	X	X		X		X		X	X	X		X			X	X		X	BV
Brengle Terrace Basin	1100 Vale Terrace Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Cypress Basin	Monte Vista Dr. & Cypress Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Monte Vista Basin	Monte Vista Dr. & Valley Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X		X	BV
Creekwalk / BV Channel	Main St. & Wave Dr.	Flood control channel																	X	x	X	X	X	X	X	X	X	X		X	BV
Field Activities																															
Road and Street Maintenance	Varies														X															X	
Plaza and Sidewalk Cleaning	Varies															X														X	
Landscape Maintenance	Varies																	X													
Waste Handling and Disposal	Varies											X								X	X	X	X	X	X	X	X	X			
MS4 Maintenance	Varies		See Section 6																	See Section 6											
Wastewater Utility Maintenance	Varies		See Section 6																	See Section 6											

APPENDIX C-3

FY 2010 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Area is cleaned and well maintained, no visible trash or debris.	Enforcement Action:	None
Inspection Date:	8/31/2009			
Facility Name:	Breeze Hill Park		Corrective Actions Requred:	No
Address:	645 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Area is clean and well aintained, no visible trash or debris.	Enforcement Action:	None
Inspection Date:	8/31/2009			
Facility Name:	Brengle Terrace Park		Corrective Actions Requred:	No
Address:	1200 Vale Terrace			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park clean and free of trash and debris.	Enforcement Action:	None
Inspection Date:	8/31/2009			
Facility Name:	Bub Williamson Park		Corrective Actions Requred:	No
Address:				
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Possible leak at irrigation box on east parking stall section, some dirt run-off. Park continues to be well maintained.Doggie bags are provided. Maintenance Yard is well maintained, storage lockers are labeled, portable toilets have secondary containment.	Enforcement Action:	Verbal
Inspection Date:	8/31/2009			
Facility Name:	Buena Vista Park and Maint Yard		Corrective Actions Requred:	Yes
Address:	1851 S. Melrose Dr			
			Corrective Action Description:	
			Investigate run-off issue.	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola		Follow Up Inspection Date:	9/8/2009
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Civic Center is under construction. Site Construction BMPs are monitored and maintained.	Enforcement Action:	None
Inspection Date:	Not Applicable in FY 2009-2010			
Facility Name:	Civic Center		Corrective Actions Requred:	No
Address:	600 Eucalyptus Ave			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Site removed from inspection list as this is an historical site, literally a rock that is surrounded by chain link fencing. It is a preserve and is not accessible to the general public.	Enforcement Action:	None
Inspection Date:	Removed from list			
Facility Name:	Indian Rock		Corrective Actions Requred:	No
Address:	343 Apollo Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Dog bags are available. Park is well maintained.No visible trash or debris.	Enforcement Action:	None
Inspection Date:	8/31/2009			
Facility Name:	Townsite Park-Luz Duran		Corrective Actions Requred:	No
Address:	340 E. Townsite Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Moonlight Amphitheater is well maintained.	Enforcement Action:	None
Inspection Date:	2/10/2010			
Facility Name:	Moonlight Amphitheater		Corrective Actions Requred:	No
Address:	1200 Vale Terrance			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	2/2/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	E. Broadway @ Hanes Pl			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	2/2/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	Main St & Michigan Ave			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This is a public parking lot.	Enforcement Action:	None
Inspection Date:	2/2/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	Main St @ S. Indiana s/e corner			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
	Municipal	This is a public parking lot that is in continual use. Some erosion of the asphalt has occurred. Some trash and debris	Enforcement Action:	Verbal
Inspection Date:	2/2/2010			
Facility Name:	parking lot		Corrective Actions Requred:	Yes
Address:	523 S. Santa Fe Ave			
			Corrective Action Description:	
			Repair, clean and repave eroded areas. Remove trash and debris.	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Welte		Follow Up Inspection Date:	2/11/2010
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	2/2/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	300 Blk Main St			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This is a public parking lot used for 'park and ride'. Some trash and debris.	Enforcement Action:	Verbal
Inspection Date:	2/2/2010			
Facility Name:	park and ride lot		Corrective Actions Requred:	Yes
Address:	W. Vista Way @ Emerald			
			Corrective Action Description:	
			Remove trash and debris.	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Welte		Follow Up Inspection Date:	2/11/2010
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Public Works was renamed Public Services. The Satelite Yard is unmanned and used primarily as a storage facility for large Public Works items; light poles, K-rails, concrete manhole elevation rings etc. The overall area is maintained.	Enforcement Action:	None
Inspection Date:	2/2/2010			
Facility Name:	Public Services Satelite Yard		Corrective Actions Requred:	No
Address:	2430 Lupine Hills Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Public Works was renamed Public Services. The Satelite Yard is unmanned and used primarily as a storage facility for large Public Works items; light poles, K-rails, concrete manhole elevation rings etc. The overall area is maintained.	Enforcement Action:	None
Inspection Date:	2/2/2010			
Facility Name:	Public Services Satelite Yard		Corrective Actions Requred:	No
Address:	2525 Lupine Hills Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	The Public Services Yard is well maintained. However, one dumpster had a lid missing.	Enforcement Action:	Verbal
Inspection Date:	2/2/2010			
Facility Name:	Public Services Yard		Corrective Actions Requred:	Yes
Address:	1165 E. Taylor St			
			Corrective Action Description:	
			Request a dumpster replacement with closeable lids.	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Welte		Follow Up Inspection Date:	2/11/2010
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	This facility is maintained by Clean Harbors Environmental Services and is under the supervision of Public Services. The area is well maintained, organized and efficient in the small space allocated for the reclamation process. Clean Harbors maintains a high level of cleanliness.	Enforcement Action:	None
Inspection Date:	2/2/2010			
Facility Name:	Public Services Household Haz Waste		Corrective Actions Requred:	No
Address:	1145 E. Taylor St			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park is clean and well maintained. Leaves are removed daily and dog bags are provided. No visible trash or debris.	Enforcement Action:	None
Inspection Date:	8/31/2009			
Facility Name:	Rain Tree Park		Corrective Actions Requred:	No
Address:	545 Townsite Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park is clean and well maintained. Some vegetation accumulation on southeast corner of parking lot.	Enforcement Action:	Verbal
Inspection Date:	8/31/2009			
Facility Name:	Rancho Buena Vista Park		Corrective Actions Requred:	Yes
Address:	1851 S. Melrose Dr			
			Corrective Action Description:	
			Remove vegetation accumulation.	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola		Follow Up Inspection Date:	9/8/2009
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Park is clean and well maintained. Leaves are removed daily and dog bags are provided. No visible trash or debris.	Enforcement Action:	None
Inspection Date:	8/31/2009			
Facility Name:	Shadowridge Park		Corrective Actions Requred:	No
Address:	2101 Lupine Hills			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Trash and debris in and around basin inlet.	Enforcement Action:	Verbal
Inspection Date:	6/15/2010			
Facility Name:	South Buena Vista Park		Corrective Actions Requred:	Yes
Address:	1602 Mountain Pass Circle			
			Corrective Action Description:	
			Remove debris and trash in basin around inlet (standpipe) so it functions as designed.	
Contact:	Chris Dzwigalski, PS Supervisor			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Coppi		Follow Up Inspection Date:	6/30/2010
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Park is clean and well maintained and dog bags are provided. No visible trash or debris.	Enforcement Action:	None
Inspection Date:	8/31/2009			
Facility Name:	Thibodo Park		Corrective Actions Requred:	No
Address:	1150 Lupine Hills Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	A whistle drain to the rear of the park is congetsted with pine needles. Used paint cans, rusted racks in side yard.	Enforcement Action:	Verbal
Inspection Date:	2/2/2010			
Facility Name:	The Wave Waterpark		Corrective Actions Requred:	Yes
Address:	101 Wave Dr			
			Corrective Action Description:	
			Remove rusted racks and paint cans. Clear out the congested pine needles.	
Contact:	Natalie Livingston			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Welte		Follow Up Inspection Date:	2/11/2010
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park is clean and well maintained. Dog bags provided. No visible trash or debris.	Enforcement Action:	None
Inspection Date:	8/31/2009			
Facility Name:	Wildwood Park		Corrective Actions Requred:	No
Address:	651 E. Vista Way			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Basin is maintained.	Enforcement Action:	None
Inspection Date:	4/9/2010			
Facility Name:	Brengle Terrace Detention Basin		Corrective Actions Requred:	No
Address:	1100 Vale Terrace			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Coppi/Hartman		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This channel area is utilized for flood control and recreational walking. Recent storms created trash deposits in the creek walk.	Enforcement Action:	Verbal
Inspection Date:	4/9/2010			
Facility Name:	Creek Walk/Buena Vista Channel		Corrective Actions Requred:	Yes
Address:	Main St and Wave Dr			
			Corrective Action Description:	
			Remove effluent in the area.	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Coppi		Follow Up Inspection Date:	4/21/2010
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Basin is maintained.	Enforcement Action:	None
Inspection Date:	4/9/2010			
Facility Name:	Cypress Detention Basin		Corrective Actions Requred:	No
Address:	Monte Vista Dr and Cypress Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Coppi		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Piles of grass and leaf clippings found in basin section.	Enforcement Action:	Verbal
Inspection Date:	4/9/2010			
Facility Name:	Monte Vista Detention Basin		Corrective Actions Requred:	Yes
Address:	Monte Vista Dr and Valley Dr			
			Corrective Action Description:	
			Remove piles of rass and leaf clipping from detention basion (within sewer easement).	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Coppi/Hartman		Follow Up Inspection Date:	5/4/2010
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Pump station is well maintained.	Enforcement Action:	None
Inspection Date:	3/31/2010			
Facility Name:	Buena Pump Station		Corrective Actions Requred:	No
Address:	2080 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Encina Waster Water Authority			
	Brian Benjamin (760)438-3941			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Pump station is well maintained.	Enforcement Action:	None
Inspection Date:	3/31/2010			
Facility Name:	Raceway Pump Station		Corrective Actions Requred:	No
Address:	2685 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Encina Waster Water Authority			
	Brian Benjamin (760)438-3941			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	City crew placed protective and collective bmps to capture all discharge from pressure water.	Enforcement Action:	None
Inspection Date:	6/2/2010			
Facility Name:	Pressure Wash		Corrective Actions Requred:	No
Address:	1601 Thibido Rd			
			Corrective Action Description:	
Contact:	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Sotola/Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	City crew placed protective and collective bmps to capture any and all discharge from road repair processes.	Enforcement Action:	None
Inspection Date:	6/8/2010			
Facility Name:	Road repair		Corrective Actions Requred:	No
Address:	200 Blk E. Indian Rock Rd			
			Corrective Action Description:	
Contact:	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	
Inspector:	Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	

APPENDIX D-1

2009-10 Stationary Commercial Inventory

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
3 Pacos Catering @ El Burrito Catering	365		Olive Ave	Vista	CA	92083	904.22		722320	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
7 Eleven #15923	1501		N Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Equipment Repair	No	No	No	No	Yes	No	No	No	No	No	Low	X
7 Eleven #24085	900		N Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
7 Eleven #32326 A 2111	3251		Business Park Dr	Vista	CA	92083	904.31	5541	44711	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
7-Eleven #2111-13625G	470		N Melrose Dr	Vista	CA	92083	904.21	5541	447110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
7-Eleven #21795B-2111	1595		E Vista Way	Vista	CA	92084	904.22	5411	445120	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	High	X
7-Eleven #23302A	895		E Vista Way	Vista	CA	92084	904.22	5411	445120	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	High	X
7-Eleven #33160T-2111	298		Sycamore Ave	Vista	CA	92083	904.32	5411	447110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	X
7-Eleven #33376B-2111	1610		S Melrose Dr	Vista	CA	92081	904.31				No	No	No	No	No	No	No	No	No	No	Medium	
99¢ Only Stores	705		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
A 1 Vista Repair	916		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
A Smog Test Only	414	A	N Santa Fe Ave	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
A+ Automotive	257	A	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
A-1 Radiator	1903	C	W Vista Way	Vista	CA	92083	904.21	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
AA Marine	901		W Vista Way	Vista	CA	92084	904.22	5551	441222	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Medium	
A-B-C Smog	1415		S Santa Fe Ave	Vista	CA	92084	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Ablahad Inc.	625		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
Abundant Air Systems	167		Vera Cir	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Acells Corp	3121		Scott St	Vista	CA	92081	904.31	5099	421990	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Adams Automotive	158	A	Olive Ave	Vista	CA	92083	904.22	7549	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Advance Micro Components Inc	2475	B	Coral St	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Agg Mat/WYROC	1385		Sycamore Ave	Vista	CA	92083	904.32	5211	44411	Building Materials	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
Ai Sushi	1910	106	Shadowridge Dr	Vista	CA	92083	904.31	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Low	
Aibertos Mexican Food	435		Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
AJ Smog	660		E Vista Way	Vista	CA	92084	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Albertacos Mex Food Inc	601		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	High	X
Albertson's #6201	1301		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	High	X
Albertson's #6797	1601		S Melrose Dr	Vista	CA	92081	904.31	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	Medium	X
All Tune & Lube	257	B	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Allen's Alley Cafe	124		Hanes Pl	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
Allen's Auto	718		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Medium	X
Allison Transmission Dr.	2525	3	Pioneer Ave	Vista	CA	92081	904.31	7538	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Alta Mechanic	446	F, G	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
American Concrete Cutting & Cor	1217		Distribution Way	Vista	CA	92083	904.31	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
American Legacy Products, Inc.	2575	G	Fortune Way	Vista	CA	92083	904.31	5099	424430	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
American Metal Packaging Company	1185	C	Park Center Dr	Vista	CA	92083	904.31	3674	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
AMERICAN SPORT BIKE	1341	22	Distribution Way	Vista	CA	92081	904.31	5571	441221	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
Amigo Market	995		Postal Way	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	High	X
Ammex Oil, Inc. Fillco	1244		N Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
Angelitos Fruteria Y Neveria	1234		N Santa Fe Ave	Vista	CA	92083	904.22				No	No	No	No	No	No	No	No	No	No	Medium	
Aniata Cheese Co	2332	1000	La Mirada Dr	Vista	CA	92081	904.31	5143	422430	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
Apex Windows & Doors, Inc	1315	108	Hot Spring Way	Vista	CA	92081	904.31	5031	421310	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Medium	
APRO # 37	535		N Santa Fe Ave	Vista	CA	92084	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	X
Apro #27	976		Escondido Ave	Vista	CA	92083	904.22	5541	447190	Fueling	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
Apro 47	911		E Vista Way	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	No	No	No	No	No	No	High	X
Apro Llc #30	485		N Melrose Dr	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Aquatic Fitness Concepts	1495	145	Ponsettia Avenue	Vista	CA	92081	904.51	5999	453998	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Medium	
Arashi Japanese Cuisine	962		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	X
ARBYS	40		Main St	Vista	CA	92083	904.21				No	No	No	No	No	No	No	No	No	No	Medium	
Arby's	40	E-110	Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Arco AM PM #6315	1403		S Santa Fe Ave	Vista	CA	92083	904.22	5541	44711	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Arellano Growers Whsl	2015		Foothill Dr	Vista	CA	92084	904.22	5193	42293	Wholesale/Storage/Warehousing	No	No	No	Yes	No	No	No	Yes	No	Yes	Medium	

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Argosy Industries Inc	2640		Business Park Dr	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Armandos Mexican Food	770	L	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
Armandos Taco Shop	625		N Santa Fe Ave	Vista	CA	92083	904.22	5812	71111	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Aschbrenner, Inc. dba Spectrum Floral Service	2505		Commerce Way	Vista	CA	92083-8441	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	High	X
Austin Doors (same office-Kaylimd Commercial Contr	1351	1	Distribution Way	Vista	CA	92085	904.31	1751	235510	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Auto Diagnostic Repair	1752		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Auto Diagnostic Repair	1752		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Auto Europa Cars	737	743	Townsite Dr	Vista	CA	92084	904.22	5521	44112	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
Auto Precision	1024	101	Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Auto Smog	2070	J	Hacienda Dr	Vista	CA	92081	904.21	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Auto Spa	851		W Vista Way	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	
Auto Time	808		N Santa Fe Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Autocare USA	414	B, C	N Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	Yes	No	Yes	Low	
Automotive Concepts	538	A102-103	Olive Ave	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Medium	
Autotyme Automotive, Inc.	1146	801	N Melrose Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	
B & C Auto Repair	918		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
B & D Auto Repair and Service	1350		N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	No	No	Yes	Yes	No	No	No	No	Low	X
B N J Ultraservices, Inc. (Ultra Max)	381		Olive Ave	Vista	CA	92083	904.22	5169	42269	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Banker Direct Auto Sales	536		N Santa Fe Ave	VISTA	CA	92083	904.22	5521	44112	Vehicle Dealers	No	No	No	No	No	No	No	Yes	No	Yes	Low	
Bara Bean Café & Donuts	771	102A	E Vista Way	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	X
Bare Back Skateboards, Inc.	2835	B	La Mirada Dr	Vista	CA	92083	904.31	5091	421910	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Medium	
Barnicles Express Gasoline	845		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
BC Cakes	707		Monterey Ln	Vista	CA	92084	904.22		311811	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
Betz Concrete, Inc.	1217		Distribution Way	Vista	CA	92084	904.31	1771	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Big Lots #267	760		Sycamore Ave	Vista	CA	92083	904.32	5411	452910	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	X
Big O Tires	636		S Santa Fe Ave	Vista	CA	92084	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Big Tiny's Smoke'n BBQ	918		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
Bill's Carpet Service	984		E Vista Way	Vista	CA	92084	904.22	5023	421220	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	Yes	No	Yes	High	X
Black Forest Bistro	485		S Melrose Dr	Vista	CA	92081	904.21	5812		Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Bob Workman's European Auto Service	1304	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	No	No	No	Yes	No	No	High	X
Bombay Cafe	1280	4	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Low	
Boomers Vista	1525		W Vista Way	Vista	CA	92083	904.21	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	X
Boudagh Auto Sales, Inc.	723	A	Olive Ave	Vista	CA	92084	904.22		44112	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
Briggs Tree Company Inc	1111		Poinsettia Ave	Vista	CA	92083	904.31	0181	111422	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Medium	
British Masters	715		Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Budget Rent A Car	1859		W Vista Way	Vista	CA	92083	904.21	7514	532111	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	
Budget Rent A Car Systems, Inc.	241		N Emerald Dr	Vista	CA	92083	904.21	7514	532	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	
Budget Smog	1205	G	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	Yes	No	No	Yes	No	No	Yes	No	No	Low	X
Budget Smog Test Only Center	538	300-C	Olive Ave	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Buena Creek Nursery	1280		Sunset Dr	Vista	CA	92083	904.31	5193	422293	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Low	
Bulmaro Campos @ Coffee Cart Biz	1150		Joshua Way	Vista	CA	92081	904.31		445299	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Burger King	377		Vista Village Dr	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes	Medium	
Burger King #10512	1650		S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	
C & M Motors Inc/ NationaLease	1902		VIA CENTRE	Vista	CA	92083	904.21	7538	811111	Vehicle Dealers	No	No	Yes	No	Yes	No	No	Yes	Yes	Yes	Medium	
C P C	1126		N Melrose Dr	Vista	CA	92083	904.22	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Cal-Americas	2834		La Mirada Dr	Vista	CA	92081	904.31	5193	422930	Wholesale/Storage/Warehousing	No	No	No	No	Yes	No	No	No	Yes	No	High	X
Caldwell Development Inc	1271		Activity Dr	Vista	CA	92083	904.31	3519	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
California Breakers, Inc.	2490		Grand Ave	Vista	CA	92083	904.32	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
California Pizza Kitchen	307		Vista Village Dr	Vista	CA	92085	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
California Specialty Produce	1330	A	Keystone Way	Vista	CA	92083	904.31	5148	42248	Wholesale Food	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Low	
Californias Mexican Restaurant	2147		E Vista Way	Vista	CA	92084	903.11	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	No	High	X
Calmex Wholesale Growers & Shippers Inc.	2680		La Mirada Dr	Vista	CA	92081	904.31	4212	484110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
Capitol Paving Inc	408		Olive Ave	Vista	CA	92083	904.22	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Carlos Auto Body	538	100	Olive Ave	Vista	CA	92083	904.21	7532	811121	Auto Repair	No	Yes	No	No	No	Yes	No	Yes	No	Yes	Medium	X
Carl's Jr. #1390	660		Hacienda Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
Carl's Jr. Restaurant and the Green Burrito	1790	648	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	X
Carl's Tavern	1565		W Vista Way	Vista	CA	92083	904.21	5812	722410	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	
Casa Blanca Products	1255	D	Activity Dr	Vista	CA	92081	904.31	5149	42249	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Medium	
Casa Linda	721		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
Cesar's Auto Mechanics	452	L	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Chaparro's Mexican Food, Inc.	2595		Commerce Way	Vista	CA	92081	904.31	5411	42385	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
Chevron Station #1497	2295		S Melrose Dr	Vista	CA	92081	904.31	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Chevron USA	224		N Emerald Dr	Vista	CA	92083	904.21	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Chevron USA (Foothill Chevron)	1211		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Chicos Panaderia	1110		N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
Chili Coast Burgers	1330		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Low	
Chili's Grill & Bar	255		Vista Village Dr	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Chinex Grill LLC	1580		S Melrose Dr	Vista	CA	92081	904.31				No	No	No	No	No	No	No	No	No	No	Medium	
Chin's Szechwan Vista, Inc.	600		E Vista Way	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Chipotle Mexican Grill	30	G-100	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	
Choo Choo Donuts	1597	B	E Vista Way	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	High	X
Christina Bakery	1110	D	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Christin's Café	2515	5	Pioneer Ave	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Chuck E. Cheese's	1861		University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Medium	X
Ciao Restaurant	2015		E Vista Way	Vista	CA	92084	903.11	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	No	High	X
Classic Datsun Motorsports	345		Olive Ave	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	No	No	No	No	No	No	No	No	Low	
Closet World Inc.	1335	A	Park Center Dr	Vista	CA	92083	904.31	2521	23551	Other Contractor	No	No	No	No	No	No	No	No	No	No	Medium	
Clutchworks	1205	D	N Melrose Dr	Vista	CA	92083	904.10	7537	811113	Auto Repair	No	Yes	No	No	Yes	No	No	Yes	Yes	No	Low	X
Cms Inc/Spring Parts Div Of Cms Inc.	1341	11	Distribution Way	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Coast Equipment Rental	1713		W Vista Way	Vista	CA	92083	904.21	7359	532490	Vehicle/Equipment Rental	No	No	No	No	Yes	No	No	Yes	No	Yes	High	X
Coastline Cuisine	2039		Freedom Way	Vista	CA	92081	904.31		72232	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
Coco's 882	605		W Vista Way	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	X
Cold Stone Creamery	30	120	Main St	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Colima's Mexican Food	1850	22	Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	High	X
Control Technology	2416		Cades Way	Vista	CA	92083	904.32	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Coopers Cactus	1097		Crest View Rd	Vista	CA	92083	904.31	0181	111421	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	High	X
Corona Used Tires/AJ Smog	658		E Vista Way	Vista	CA	92084	904.22	7534	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Costco Wholesale #124	1755		Hacienda Dr	Vista	CA	92081	904.21	5099	421990	Wholesale/Storage/Warehousing	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
Courter Family Plumbing & Electric	313	E	N Melrose Dr	Vista	CA	92083	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Courtesy Auto Repair	826		N Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Cox Auto Service	1018		Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Coyote Café	1450	Y	N Santa Fe Ave	Vista	CA	92083	904.10	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
C-SBI changed to: To West Coast Refrigerated Truck	1330	B	Distribution Way	Vista	CA	92083	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Curbside Cafe	307		Main St	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
D & D Tool & Supply	1445		Engineer St	Vista	CA	92083	904.31	5084	42384	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
D D H Enterprise, Inc	2220		Oak Ridge Way	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
D' Elegantes Restaurant	2004		E Vista Way	Vista	CA	92084	903.11	5813	722410	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	No	High	
Dairy Queen	1031	A	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Dairy Queen - Shadowridge	1580	116	S Melrose Dr	Vista	CA	92081	904.31	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Daisy's Floral Decorations	1318	Ste C	N Santa Fe Dr	Vista	CA	92083	904.22		42493	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
Danish & Donuts	1450	I	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Low	X
Danny's Donuts	102		Eucalyptus Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Del Taco 212	1037		E Bobier Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	X
Dell'z California Grill	1233		E Vista Way	Vista	CA	92084	904.22		72211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Denny's Restaurant #7892	540		W Vista Way	Vista	CA	92083	904.21	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	X
Desert Theater II	800		Sunset Dr	Vista	CA	92083	904.31	5193	422293	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	Low	
Diamond Donuts	730	F	Sycamore Ave	Vista	CA	92083	904.32	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
Diesel Pollution Solutions (D.P.S)	1448		Oakcreek Lane	Vista	CA	92081	904.31		81119	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Dils Roofing	2230		La Mirada Dr	Vista	CA	92081	904.31	1761	235610	Other Contractor	No	No	No	No	Yes	No	No	No	No	No	Medium	X
Dinner Studio	1850	12	Hacienda Dr	Vista	CA	92084	904.21	5812	722320	*Not Inventoried*	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
Dion's Automotive	1210	D	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	No	Yes	No	Medium	X
Discount Alignment	1024	100	Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Discount Tire Co., Inc.	1007		Service Place	Vista	CA	92083	904.22	5531	441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Dominos Pizza 7731	1021		E Bobier Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	
Dominos Pizza 8300	603		E Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
Donut Factory	1839	C	W Vista Way	Vista	CA	92083	904.21	5461	311811	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Low	
Dos Amigos Restaurant	1651	D	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
Dos Gringos	3260		Corporate View Dr	Vista	CA	92081	904.51	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Medium	X
Dr. Java @ Vista Medical Plaza	2067		W Vista Way	Vista	CA	92083	904.21	5812	4452	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
Drew's Automotive Repair	538	D	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Drift Tech / Discount Towing and Auto Repair	635	C	Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Driveline Vista	253	A, B	N Emerald Dr	Vista	CA	92083	904.21	7538	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Drucker Subway Sr, Inc	1651	B	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	
E & J Cactus	1111		Sunset Dr	Vista	CA	92081	904.31		11142	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
E G M Auto Sales & Leasing	835	A	N Santa Fe Ave	Vista	CA	92084	904.22	5511	44111	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
E Vista Way Exxon	911		E Vista Way	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	No	No	No	No	Yes	No	High	X
East Of Java	3231	1	Business Park Dr	Vista	CA	92081	904.31	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
Edco Distributing Inc	3150		Scott St	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Eddie's Market	415		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	
El Asadero Restaurant	1717	106	E Vista Way	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	High	X
El Burrito Catering (Mobile Food Service Hub)	365	A	Olive Ave	Vista	CA	92084	904.22	5963	722330	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
El Callejon Vista	20	H-100	S Main St	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	X
El Dorado Express Grill	3265	B	Business Park Dr	Vista	CA	92084	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
El Mago Paint and Body	427	C	Redlands St	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Medium	
El Pollo Loco #3492	495		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
El Puertesito Mexican Restaurant	1450	R	N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Low	X
El Pulpo Caliente	1234		S Santa Fe Ave	Vista	CA	92083	904.22	5812	72211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
El Ranchero	226		Main St	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	X
El Ranchero Restaurant	1565		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	
El Rinconcito Mexican Seafood Resturant	1033	E	S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
El Torito Market	249		N Emerald Dr	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Low	
Elaines Cake Boutique	1021		N Santa Fe Ave	Vista	CA	92084	904.22	5461	311811	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Electra City Motors	2755	A	Dos Aarons Way	Vista	CA	92081	904.31		811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Elk's Lodge Restaurant	1947		E Vista Way	Vista	CA	92085	903.11	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	No	High	X
Emerald Shell	145		N Emerald Dr	Vista	CA	92083	904.21	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
EMS Construction	3160		Scott St	Vista	CA	92081	904.31	1761	235610	Other Contractor	No	No	No	No	No	No	No	No	No	No	Medium	
Enterprise Car Sales	875		W Vista Way	Vista	CA	92084	904.22	5511	441110	Vehicle Dealers	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	High	X
Enterprise Glass & Motors	249	B	N Emerald Dr	Vista	CA	92083	904.21		811122	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Enterprise Rent-A-Car Lsg 3249	875		W Vista Way	Vista	CA	92083	904.22	7514	532111	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	
Eriberto's Mexican Food	1805		Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
Erika Restaurant	1851	C	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	
Esperanza Growers	1455		E Taylor St	Vista	CA	92084	904.22	0181	111422	Nurseries/Greenhouses	No	Yes	Yes	No	No	No	No	No	Yes	No	High	X
Euro Pacific Paint & Body Inc	1210	B	N Melrose Dr	Vista	CA	92083	904.10	7532	811121	Auto Paint/Body	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	High	X
European Autoworks	1211	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	No	No	No	No	No	No	Medium	X
European Deli & Restaurant	573	D	W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	X
European Motorsports	2588	11	Progress St	Vista	CA	92081	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Evans Tire & Service Centers	2070	A	Hacienda Dr	Vista	CA	92083	904.21	7534	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Exhibitart Displays, Inc.	1250		Distribution Way	Vista	CA	92083	904.31	5099	339999	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Express Tire & Certified Auto Service	2030	100	Hacienda Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
EZ Lube	786		E Vista Way	Vista	CA	92084	904.22	7549	811191	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
F Piersalls Vista Buggy Bath	1759		E Vista Way	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Medium	
Famous Dave's	303		Vista Village Dr	Vista	CA	92083	904.22		7221	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
FDO Auto Service	446	A	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Feliccias	1011	C	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	X
Fernando Sons Fer's Auto Repair	446	F, G	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Festival Fun Parks, L L C - Arcade	1525		W Vista Way	Vista	CA	92083	904.21	7999	713990	Entertainment	No	No	No	No	No	No	No	No	Yes	No	Medium	
Fiamengo Nursery	1715		Monte Mar Rd	Vista	CA	92083	904.22	0181	111421	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	High	X
Fiesta Giant Pizza	1120		N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Low	X
Filibertos Mexican Food	960		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	High	X
Fillco	1244		N Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	
Flamingo Holland Inc	1250		Avenida Chelsea	Vista	CA	92081	904.31	5193	422930	Wholesale/Storage/Warehousing	No	No	No	No	Yes	No	No	No	Yes	No	Medium	X
Flippin Pizza	2440		S Melrose Dr	Vista	CA	92081	904.31				No	No	No	No	No	No	No	No	No	No	Medium	
Food 4 Less 300	500		Hacienda Dr	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Food Value	1281		N Santa Fe Ave	Vista	CA	92084	904.22				No	No	No	No	No	No	No	No	No	No	Low	
Foothill Chevron	1211		E Vista Way	Vista	CA	92084	904.22	5541	44711	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Fountain Car Wash	1352		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	
Francis Biddle International, Inc.	2506		Pioneer Ave	Vista	CA	92083	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Franciscos Mexican Deli	821		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	X
Frank's Mexican Grill	122		W California Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	High	X
Frazier Farms	225		Vista Village Dr	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Fred's Automotive	1725		E Vista Way	Vista	CA	92084	904.22	5521	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	High	X
Freeberg Industrial Fabrication	985		Poinsettia Ave	Vista	CA	92083	904.31	5084	421830	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	High	X
French Bakery Cafe	1223	A	E Vista Way	Vista	CA	92083	904.21	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
Fresh & Cool @ D S Wireless	960		S Santa Fe Ave	Vista	CA	92084	904.22		722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Fresh & Easy Neighborhood Market	945		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Frogy's Donuts and Bakery	602	A	E Vista Way	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	High	X
Frutas El Guero	1001		E Vista Way	Vista	CA	92084	904.22				No	No	No	No	No	No	No	No	No	No	Medium	
Futuretronix, Inc.	1489	134	Poinsettia Ave	Vista	CA	92081	904.31	5065	421690	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
G W Grading, Inc	1298		Distribution Way	Vista	CA	92081	904.31		23899	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
G&M Oil #159	636		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
General Transmission	427	B	Redlands St	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Geogrid Retaining Wall Systems, Inc	1295		Distribution Way	Vista	CA	92083	904.31	1741	23	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	

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Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
George's Auto Repair and Smog	1740	B	E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
German Auto Clinic	912		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
Giant New York Pizza	1250	E	S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	High	X
Glitter Wash	1140		S Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
Global Plastics Sheeting	1331		Specialty Dr	Vista	CA	92081	904.31	5162	422610	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Medium	
GM Exclusive	1215	B	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	X
Godwins Café	325		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Golden Donut	1281	Z	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
Golden Dragon Restaurant	1350	10	E Vista Way	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	
Golden State Gasoline, Inc.	535	4	Santa Fe Ave	Vista	CA	92083	904.22	5541	44711	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Golden Wrench Automotive	241	B	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Good Looking Concrete	1280	36	N Citrus Ave	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Green Oak Ranch Ministries dba Holy Smoke Bar-B-Que	1237		Green Oak Rd	Vista	CA	92081	904.32	5812	722212	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Greentrees Hydroponics, Inc.	2581	D	Pioneer Ave	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
H2Odyssey & Ocean Divers USA	975		Park Center Dr	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Hanjo Auto Repair	452	M	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Happy Auto Sales	721		N Santa Fe Ave	Vista	CA	92084	904.22	5521	44112	Vehicle Dealers	No	No	No	No	No	No	No	Yes	No	Yes	Low	
Hello Deli	2820	A	La Mirada Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Hennessey's	224		Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	X
Henry's Auto Body	635	B	Mercantile	Vista	CA	92083	904.22	7532	811121	Auto Repair	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
Henry's Auto Body	635	B	Mercantile St	Vista	CA	92083	904.22		811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	
Hera's Auto Shop Mufflers & Brakes	808	A	N Santa Fe Ave	Vista	CA	92083	904.22	7533	811112	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Herman Tuning	1903		W Vista Way	Vista	CA	92083	904.21	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Hippo Golf Company, Inc. (Ca)	2755	A	Dos Aaron Way	Vista	CA	92083	904.31	5091	339920	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
HMS Co.	1400		Arcadia Ave	Vista	CA	92084	904.22	5193	42293	Wholesale/Storage/Warehousing	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Medium	
Homeland Petroleum	1740		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	No	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
Horticultural Sales, Inc.	1330	E	Distribution Way	Vista	CA	92081	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
House of Thanon Thai Cuisine	485	108, 109	S Melrose Dr	Vista	CA	92081	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Hugos Southwest Flavor	777		Shadowridge Dr	Vista	CA	92083	904.32				No	No	No	No	No	No	No	No	No	No	Medium	
Humberto's Auto Repair	444	B	S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	High	X
Icebox Jr	2260	D	Oak Ridge Way	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Import And Commercial Export	925	A8	Poinsettia Ave	Vista	CA	92081	904.32	4731	493110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
In N Out Burger #61	2010		Hacienda Dr	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	High	X
Intaglio Physicians & Surgeons	1260		Avenida Chelsea	Vista	CA	92081	904.31	5122	4222	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
International House Of Pancakes 814	632		Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
International Poly Bag, Inc	990	G	Park Center Dr	Vista	CA	92083	904.31	5162	42262	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Islands Fine Burgers & Drinks	240		S Melrose Dr	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
J & C Leasing Carolyn Culkin	1112		Nash Ln	Vista	CA	92083	904.22	7514	532111	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Low	
J & J Automotive	635	A	Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
J B Coating	219	137	S Santa Fe Ave	Vista	CA	92083	904.22	1521	235210	Painting/Coating	No	No	No	No	No	No	No	No	No	No	High	X
J F Japanese Cafe	35	150	Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
J P Schmitt Landscape Maintenance & Repair	1219		Capistrano Ln	Vista	CA	92081	904.21		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No	Yes	Low	
J.M.C. Painting	306		W Conneticut Ave	Vista	CA	92083	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Jack In The Box #3002	740		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	No	No	Medium	X
Jack in the Box #3019	1471		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	X
Jack In The Box #3029	260		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	X

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Jack In The Box #3032	3281		Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	
Jack in the Box dba Beshay Foods, Inc.	815		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	High	X
Jackpot Painting	391		Olive Ave	Vista	CA	92083	904.22	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Jack's Auto Repair	427	A	Redlands St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	
Jack's Counter Top & Flooring Repair	2828		Asterwood Ln	Vista	CA	92081	904.32		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Jamba Juice #1117	1661	A	S Melrose Dr	Vista	CA	92081	904.31		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Java Hut Drive-Thru	823		E Vista Way	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	No	No	High	X
Java Hut Drive-Thru	949		E Santa Fe Ave	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
JCM Auto Repair	452	J	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Jeannie Hyde Packaging, Inc.	2442		Cades Way	VISTA	CA	92083	904.32	5085	421840	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Jeld Wen Co. Warehouse	935		Poinsettia Ave	Vista	CA	92083	904.32	4225	493110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
Jiffy Lube #432	1213		E Vista Way	Vista	CA	92084	904.22	7549	811191	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Jims Vista Lounge	1587	A, B	E Vista Way	Vista	CA	92084	904.22	5813	722410	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	High	X
Jj's Deli Cafe #5	1495	152	Poinsettia Ave	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	X
John's Dba J.R.Randall Inc.	1280	3-Jan	E Vista Way	Vista	CA	92084	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Joseph Webb Foods Inc	1201		Park Center Dr	Vista	CA	92083	904.31	5142	422420	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
Jose's Taco	2440		S Melrose Dr	Vista	CA	92081	904.31				No	No	No	No	No	No	No	No	No	No	Medium	
Juanita's Taco Shop	248		E Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	X
Juan's Auto Electric	808	B	N Santa Fe Ave	Vista	CA	92083	904.22	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Juba Juba	680		Hacienda Dr	Vista	CA	92083	904.22	5812	722213	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Low	
Jugeria La Tropicana #2	1839		W Vista Way	Vista	CA	92083	904.21				No	No	No	No	No	No	No	No	No	No	Medium	
Juice N Tea	30	180	Main St	Vista	CA	92083	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
Jumping Bean Café	785		Shadowridge Dr	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	X
Juniors Taco Shop	1680	110	S Melrose Dr	Vista	CA	92083	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	High	X
K & H Steak, Inc. dba Steak Escape	35	110	Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	
Kabab Cuisine	1688	206	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Kand Medical Inc.	1341	D-17	Distribution Way	San Diego	CA	92081	904.31	5047	421450	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
Karinas Ricas Carnitas Mexican Food Taco Shop	1740		E Vista Way	Vista	CA	92084	903.11		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Kenny's Kar Klinic	420		Vista Village Dr	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
Kentucky Fried Chicken	840		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	No	Yes	High	X
KJ Carpet Wholesale, Inc.	1341	14	Distribution Way	Vista	CA	92081	904.31	5023	421220	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
Knockout Burgers	1651		S Melrose Dr	Vista	CA	92081	904.31				No	No	No	No	No	No	No	No	No	No	Medium	
Knockout Pizzeria Dba K04 Vista L L C	2440	104	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
Kragen Auto Parts	1250	A	S Santa Fe Ave	Vista	CA	92084	904.22	5531	441310	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	
Krikorian Premiere Theaters	25		Main St	Vista	CA	92084	904.22	7832	512131	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
La Bota Liquor and Deli	1370		E Vista Way	Vista	CA	92084	904.22				No	No	No	No	No	No	No	No	No	No	Medium	
La Cantina Doors, Inc.	1340	J	Specialty Dr	Vista	CA	92081	904.31	1751	235510	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
La Favorita Market	932		Vista Village Dr	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	Yes	Yes	No	Yes	Yes	Yes	High	X
La Favorita Market #3	1450	K-M	N Santa Fe Ave	Vista	CA	92084	904.10	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	X
La Gordita	1275	117, 118	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Low	
La Mansion Restaurant	1021	E	N Santa Fe Ave	Vista	CA	92083	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
La Mexicana Market	440		N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
La Paloma Restaurant & Cocktail	116	104, 105	Escondido Ave	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Lamppost Pizza	15		Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
Lee Steel & Supply	1305		Lee Dr	Vista	CA	92083	904.10	5051	421510	Wholesale/Storage/Warehousing	No	No	No	No	Yes	No	No	No	Yes	No	High	X
Less Time & More	1236	A	Activity Dr	Vista	CA	92081	904.31	5199	42299	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
Litas Fish Market	1078		E Vista Way	Vista	CA	92084	904.22	5421	445220	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
Little Caesars Pizza	1041		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	
Little Caesars Pizza	2020	R	Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	X

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Little Kids Nutrition	1021	B	N Santa Fe Ave	Vista	CA	92083	904.22		4451	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Little Lidia's Giant Pizza	800	F	Escondido Ave	Vista	CA	92084	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Los Amigos Market	1350	9	E Vista Way	Vista	CA	92084	904.22		44521	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Los Cabos Mexican & Seafood	760		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	High	X
Ludwick's Automotive, Inc.	460		Olive Ave	Vista	CA	92083	904.22	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Lunas Mexican Food	1250		S Santa Fe Ave	Vista	CA	92084	904.22				No	No	No	No	No	No	No	No	No	No	Medium	
M C C Enterprises, Inc	1201		Park Center Dr	Vista	CA	92083	904.31	5144	42244	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
M P Creations	1611	P	S Melrose Dr	Vista	CA	92081	904.31		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Mama & Papa's Pizza Grotto	988	A	Escondido Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	High	X
Marco Italian Restaurant	1825		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
Mario's Taco's	224		N Emerald Dr	Vista	CA	92083	904.21		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Marisco Carina	1234		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
Mariscos El Pacifico	702		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Mariscos Las Palmas Mexican Food	777	206	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	X
Martha's Bakery	995	110	Postal Way	Vista	CA	92083	904.22	5461	311811	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	High	X
Marvin's House Painting/Decorating	801	49	Hillside Ter	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Masterlube, Inc.	243		Sycamore Ave	Vista	CA	92084	904.32	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Matsu Japanese Restaurant	530	104-105	Hacienda Dr	Vista	CA	92081	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Matt's Mobil Auto Repair	253	D	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Mayra's Restaurant & Bakery	828	C	N Santa Fe Ave	Vista	CA	92083	904.22	5461	311811	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
Mc Donalds 12791	1470		N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
Mc Donalds 1959	827		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Medel Painting	934		N Santa Fe Ave	Vista	CA	92083	904.22	1799	2352	Painting/Coating	No	No	No	No	No	No	No	No	No	No	Low	
Mejor Servicio Auto	356		Olive Ave	Vista	CA	92084	904.22		8111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Melrose Shell	210		S Melrose Dr	Vista	CA	92081	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Mexican & Greek Fast Food	573		W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Mexicano Tires	428	A	N Santa Fe Ave	Vista	CA	92083	904.22	7534	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Mi Pueblito Mexican & Seafood Inc.	815		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	High	X
Mi Tiendita Market	700		Townsite Dr	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Michael's Electric	611		S Santa Fe Ave	Vista	CA	92083	904.22	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Midas Shop	1150		S Santa Fe Ave	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Mike and Pancho's Auto Repair	635	B	Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Mikes Landscape & Nursery Co	753		N Emerald Dr	Vista	CA	92083	904.21	0181	111336	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	Yes	Low	
Millenium Building Services, Inc.	1068		La Mirada Ct	Vista	CA	92081	904.31	1521	233210	Building Materials	No	No	No	No	No	No	No	No	No	No	Medium	
Mobil Mart #11433	710		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	No	No	No	No	No	No	No	No	High	X
Mr. A's Liquor Deli	254		Vista Village Dr	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Low	
N.Y. Giant Pizza	800	F	Escondido Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	
Naked Bean - Vista	530	101	Hacienda Dr	Vista	CA	92083	904.22	5812	722213	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	
Napa Auto Parts Vista	1334	G, H	N Melrose Dr	Vista	CA	92083	904.10	5531	441310	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	X
Nature's Frenzy	2021		Columbus Way	Vista	CA	92081	904.31		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
New Life Nutrition	1281	J	N Santa Fe Ave	Vista	CA	92083	904.22	5812	4451	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
New Panda Buffet	1040		E Vista Way	Vista	CA	92084	904.22	5812	722212	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	
Nongnit's Treasures	1340	G	Specialty Dr	Vista	CA	92081	904.31	5099	493	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
North County Auto Exchange dba Popeye's Auto, Inc.	1082		S Santa Fe Ave	Vista	CA	92084	904.22	5521	441120	Vehicle Dealers	No	No	Yes	No	No	No	No	No	No	No	High	X
North County Ford	450		W Vista Way	Vista	CA	92083	904.22	5511	441110	Vehicle Dealers	No	Yes	No	No	No	Yes	No	Yes	Yes	Yes	High	X
North County Import Specialist	1215	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	No	No	No	No	No	No	Low	X
North County Pool Center	777	A	W Vista Way	Vista	CA	92083	904.22	7699	811411	Other Contractor	No	No	No	No	No	No	No	Yes	Yes	Yes	High	X

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Northgate Market	1150		E Vista Way	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	X
Novak Auto Repair	723	B	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Nucci's Italian Cafe Pizza Pas	1580	108	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
Nurserymens Exchange, Inc.	1330	C	Distribution Way	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	Yes	No	No	No	Yes	No	Medium	
Nutrition Zone Dba Victory Nutrition	620	104	Hacienda Dr	Vista	CA	92083	904.22		446191	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Oak Tree Vans LTD	1386	E	Poinsettia Ave	Vista	CA	92081	904.31	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Oceanside Sales & Marketing Inc.	2560	C	Progress St	Vista	CA	92083	904.31	5099	424450	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Ohana Hawaiian BBQ	620	106	Hacienda Dr	Vista	CA	92081	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
Olive Tire Shop	365	B	Olive Ave	Vista	CA	92083	904.22	7534	811198	Auto Repair	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Low	
Olympic Auto Body and Paint	119		Terracina Way	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	
Oriental Market of Vista	1021	F	N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Low	
Ortiz Bakery Panaderia Oaxaquetia	1275	108	S Santa Fe Ave	Vista	CA	92083	904.22		31181	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Oscar's Mexican Food	822		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
Pacific Coast Smog Check	1310	D	N Melrose Dr	Vista	CA	92083	904.10	7549	811198	Auto Repair	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
Pacific Pride Carwash Co. Inc	980	C	Park Center Dr	Vista	CA	92081	904.31	5087	421850	Vehicle Washing	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
Padilla Construction	552		Olive Ave	Vista	CA	92083	904.22	1742	23542	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Paleteria La Mixteca	1110	F	N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	
Palomar Pizza & Pasta	3265	A1	Business Park Dr	Vista	CA	92081	904.31	5812	722111	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	No	Yes	Low	
Pam Soto's Pets @Simbah's Dog House	573	#E	W Vista Way	Vista	CA	92083	904.22		81291	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Medium	
Pam's Donuts & Ice Cream	510	109	Hacienda Dr	Vista	CA	92081	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Pam's Donuts And Deli	510	109	Hacienda Dr	Vista	CA	92083	904.22		722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Pan Don Felipe's Mexican Bakery	613		S Santa Fe Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Panda Express #1262	316		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Panda Express, Inc.	20	160	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	
Panera Bread	401	A	Vista Village Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
Papa John's Pizza	485	E	S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Passion Growers West	1352		Decision St	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	Medium	X
Patrick Flynn's Collision and Frame Repair	1013		Service Place	Vista	CA	92084	904.22	7532	811121	Auto Paint/Body	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Medium	
Pauley Equipment	348		N Santa Fe Ave	Vista	CA	92083	904.22	7359	53221	Equipment Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Pawsitively Purrfect Pet Sitting	1533		Harbor Dr	Vista	CA	92081	904.31		81291	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Low	
Pepper Tree Frosty	270		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	No	Yes	High	X
Perfect Timing Auto Service	1224		Keystone Way	Vista	CA	92083	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Pho - Ever	485	106	S Melrose Dr	Vista	CA	92083	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Pho & Chicken Express	1717	101-102	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	High	X
Pho Lucky	770	E, F	Sycamore Ave	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	X
Piancone Gourmet International	203		Main St	Vista	CA	92083	904.22		3118	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Pick Up Stix-Vista #7214	251	303	S Melrose Dr	Vista	CA	92081	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	X
Picket Fence	945		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	
Pineapple Joe's	35	C-140	Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
Pitawanakwat Auto Repair	538	304	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Pizza Factory	1910	101	Shadowridge Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	
Pizza Hut Inc	1591	B	E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	High	X
Plangea Cutting, L L C	1487	120	Poinsettia Ave	Vista	CA	92083	904.31	5137	313312	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	
Platinum Auto Detail Shop @ Buggy Bath	1759		E Vista Way	Vista	CA	92083	904.21	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	X
Playa Azul Seafood Restaurant	1281	X, Y	N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
Plaza Meat Market	1717		E Vista Way	Vista	CA	92084	904.22	5411	445120	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	High	X
PlusPharma	2460		Coral St	Vista	CA	92081	904.31	5122	422210	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Popeyes Auto, Inc.	1082		S Santa Fe Ave	Vista	CA	92084	904.22		44112	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Medium	
Popeyes Fried Chicken	1817	F	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	X
Primo Food Market	1535		W Vista Way	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	High	X
Prudential Overall Supply	2485		Ash St	Vista	CA	92083	904.31	7211	812321	*Not Inventoried*	No	No	No	No	No	No	No	No	No	No	Low	
Quality Discount Ice Cream Inc	2465		Coral St	Vista	CA	92081	904.31	4214	484220	Ground Transportation	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
Quick Check Smog	835		N Santa Fe Ave	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Quizno's Subs	485	112	S Melrose Dr	Vista	CA	92081	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
R & F Repair	538	301	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
R K Iron Works	1124		N Melrose Dr	Vista	CA	92083	904.22	5051	42151	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Rainbow Gardens	1444		E Taylor St	Vista	CA	92084	904.22	0181	111422	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	High	X
Ramirez Company	218		The Circle	Vista	CA	92084	904.22		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No	Yes	Low	
Rancho del Oro	1281	K	N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	X
Rancho Del Oro Towing	2260		La Mirada Dr	Vista	CA	92081	904.31	7549	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Rancho Garcia Nursery	1640		Bonair Rd	Vista	CA	92084	904.22	5193	422930	Wholesale/Storage/Warehousing	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	X
Rancho Vista Car Wash	600		Hacienda Dr	Vista	CA	92081	904.21	7542	811192	Fueling	No	Yes	No	No	Yes	No	No	No	Yes	No	High	X
Rancho Vista Market	988	H	Escondido Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	X
Raylen Tasker's Auto Center	1806		E Vista Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Rayne Water Of North County	2011		W Vista Way	Vista	CA	92083	904.21	5499	445299	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
RC Auto and Smog	1410	B	S Santa Fe Ave	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Red Line Towing & Fleet Maintenance, Inc.	451		Olive Ave	Vista	CA	92083	904.22	7549	48841	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Redline	2510		Commerce Way	Vista	CA	92083	904.31	5013	423120	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	
Reliable Transmission/Vista Towing	810		N Santa Fe Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Restaurant y Panderia Montealban	1275		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Restoronics of San Diego	1340	C	Specialty Dr	Vista	CA	92083	904.31	7629	811211	Equipment Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Rice King	3265	C	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Low	
Richard's Automotive	707		S Santa Fe Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Rin's Coffee Car @ Vista Medical Plaza	2067	160	W Vista Way	Vista	CA	92083	904.21	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Rising Sun Solar Dba Schumacher Electric	1268		Oak Knoll Dr	Vista	CA	92084	904.22		221119	Power Generation/Transmission	No	No	No	No	No	No	No	No	No	No	Low	
RITE AID STORE #5642	1363		E Vista Way	Vista	CA	92084	904.22				No	No	No	No	No	No	No	No	No	No	Medium	
Robert Jury & Associates	2435		Cades Way	Vista	CA	92081	904.32	5064	423620	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
Rob's Auto Repair	1124	202	N Melrose Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Rodeos Meat Market	356		Vista Village Dr	Vista	CA	92083	904.22	5421	445210	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	X
Rollin Renches Inc.	1212		Distribution Way	Vista	CA	92083	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Romeo's Car Wash	352		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	No	No	No	Low	
Rosa Gonzales Plants Inc	377		Olive Ave	Vista	CA	92083	904.22	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Round Table Pizza	923		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	High	X
Rubio's Baja Grill	1711	110	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
S & R Service Center	245	C	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
S N C I, Inc.	1680		S Melrose Dr	Vista	CA	92084	904.31	5812	445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Sabatini Electric	1426		Alta Vista Dr	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Salsa Market	1100		N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	High	X
San Giorgio Lucano Corp (EZ Pasta, Inc)	1280	106	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Santa Fe Auto Repair	1045		N Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	Yes	No	Yes	High	X
Santa Fe Car Wash	980		S Santa Fe Ave	Vista	CA	92084	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	No	Yes	No	High	X
Santa Fe Petroleum, Inc. Dba Arco Am/Pm	1403		S Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	No	No	No	No	No	No	Medium	X
Santorini Island Grill Vista, L L C	3295	D	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Sarika Thai Kitchen	1011	A	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
Screamin Products, L L C	630		Crest Dr	Vista	CA	92084	904.22		445299	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Sea Aloe Inc.	1253	A	Activity Dr	Vista	CA	92081	904.31	5122	422210	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Medium	
Sea Witch Marine, Inc	1085		S Santa Fe Ave	Vista	CA	92083	904.22	5551	441222	Vehicle Dealers	No	No	No	No	No	No	No	No	Yes	No	High	X
Security Chevrolet Inc	1100		E Vista Way	Vista	CA	92084	904.22	5511	441110	Vehicle Dealers	No	No	Yes	No	Yes	No	No	Yes	No	Yes	High	
Seltzer Companies, Inc.	1389		Park Center Dr	Vista	CA	92083	904.31	4214	484210	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	
Semco	1430		VANTAGE CT	Vista	CA	92083-8596	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Service Clinic	436		Vista Village Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	
Servpro Of North Vista/San Marcos	929	103	Poinsettia Ave	Vista	CA	92081	904.32		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Shadowridge Country Club	1980		Gateway Dr	Vista	CA	92083	904.32	7997	713910	Golf courses/Parks	No	No	No	No	No	No	No	No	Yes	No	High	X
Shell Oil Products U.S.	400		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
SKS, Inc. Petroleum Distributors	620		S Santa Fe Ave	Vista	CA	92083	904.22	5541	447190	Fueling	No	No	No	No	Yes	Yes	No	No	No	No	Medium	X
Slater's Donut Shop	625		N Santa Fe Av	Vista	CA	92083	904.22			Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Smitty's Downtown	119		E Broadway	Vista	CA	92083	904.22	5813	722410	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	
Smog Centers of California	485		N Melrose Dr	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Solano Bakery	203		Main St	Vista	CA	92084	904.22	5461	311811	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Souplantation	1860		University Dr	Vista	CA	92083	904.32	5812	722212	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
South Melrose Arco	1590		S Melrose Dr	Vista	CA	92081	904.31	5541	447110	Fueling	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
Specialized Paint & Body Works	553		Mercantile St	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Medium	
Spectra Gases Inc	1261		Activity Dr	Vista	CA	92083	904.31	5169	42269	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	
Sport Car Motion	2332	1100	La Mirada Dr	Vista	CA	92084	904.31	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Stagecoach Inn	1865		W Vista Way	Vista	CA	92083	904.21	5813	722410	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	
Standard Process of Southern California Inc.	981		Park Center Dr	Vista	CA	92081	904.31	5199	42299	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Starbucks Coffee	1385		E Vista Way	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	No	Yes	No	Yes	No	Yes	No	No	No	Yes	Low	
Starbucks Coffee #11339	790	A	Sycamore Ave	Vista	CA	92081	904.32		722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Starbucks Coffee #5838	251	301	S Melrose Dr	Vista	CA	92081	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	
Starbuck's Coffee #6676	30	190	W Main St	Vista	CA	92083	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Starbucks Coffee #6792	1631		S Melrose Dr	Vista	CA	92081	904.31	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
Stark Painting Inc	2525	1	Pioneer Ave	Vista	CA	92083	904.31	1721	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Starline Windows	1350	B	Specialty Dr	Vista	CA	92081	904.31	1793	235920	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Stater Bros Market #156	780		Sycamore Ave	Vista	CA	92083	904.32	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	X
Stater Bros. Market #157	1451		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	X
Structural Materials Co.	2770		La Mirada Dr	Vista	CA	92084	904.31	5039	42139	Building Materials	No	No	No	No	No	No	No	No	No	No	Low	
Sub Shop # 195	1289		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Submarina (Business Park)	3231	4	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
Submarina Sycamore Dba Travis Watts	320	40	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	High	X
Subway	510	101A	Hacienda Dr	Vista	CA	92081	904.21	5812	72211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
Subway 44268	790	B	Sycamore Ave	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
Subway #24598/Subway Life, Inc.	1711	120	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
Subway #32111	20	150	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Subway #36756	2440	101	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
Subway Sandwiches & Salads #22847	1031	B	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	High	X
Subway Sandwiches & Salads 2208	950		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
Sun Hing Buffet LLC	1960		Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
Sundance Machinery Sales, Inc.	1489	132	Poinsettia Ave	Vista	CA	92083	904.31	5084	42183	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Sunrise Cafe	1250	3	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
Sunrise Farms	3110		Scott St	Vista	CA	92083	904.31	5148	422480	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	Yes	Medium	X
Sunset Deli Provisions, Inc.	2820	A	La Mirada Dr	Vista	CA	92083	904.31	5147	422470	Wholesale Food	No	No	No	No	No	No	No	No	No	No	Low	
Sunshine's Veggies & Herbs	1280	B	Activity Dr	Vista	CA	92081	904.31		111219	Agriculture	No	No	No	No	No	No	No	No	No	No	Low	
Super Pescaderia El Puerto	403		N Santa Fe Ave	Vista	CA	92084	904.22		445220	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Super Taco	1072		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	
Super Taco Mexican Food, Inc.	530	102	Hacienda Dr	Vista	CA	92081	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Superior Plant Sales Inc	2581	B	Pioneer Ave	Vista	CA	92083	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	
Sushi Cafe	3245	2	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Swanson Studios	339		Olive Ave	Vista	CA	92083	904.22	1793	235920	Masonry	No	No	No	No	No	No	No	No	No	No	Medium	
T C'S Garage	1315		Hot Spring Way	Vista	CA	92081	904.31		44131	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	
T I M Services (Mazda Services)	245	A	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Taco Bell 17787	910		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Taco Bell 20413	3271		Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	High	X
Tamales Dolores	1275		S Santa Fe Ave	Vista	CA	92083	904.22				No	No	No	No	No	No	No	No	No	No	Medium	
Tammy's Nursery	2356		Catalina Ave	Vista	CA	92084	904.22		44422	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
Taqueria La Takiza	1234		N Santa Fe Ave	Vista	CA	92083	904.22				No	No	No	No	No	No	No	No	No	No	Medium	
Target Store #T1040	1751		University Dr	Vista	CA	92083	904.32	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
Target Store T-2165	3150		Business Park Dr	Vista	CA	92081	904.31		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Ted's Auto Service	436		Vista Village Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	High	X
Teo's Auto Electric	446	H	Olive Ave	Vista	CA	92083	904.22	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Texmate Inc	995		Park Center Dr	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Thai Pasta	1876		Hacienda Dr	Vista	CA	92081	904.21	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
The Daily Fix Cafe	2067		W Vista Way	Vista	CA	92084	903.11	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
The Donut Factory	1839	C	W Vista Way	Vista	CA	92083	904.21				No	No	No	No	No	No	No	No	No	No	Medium	
The Lawn Center	603		S Santa Fe Ave	Vista	CA	92083	904.22	7699	811411	Nurseries/Greenhouses	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	High	X
The Narrow Gate	771		Matagual Dr	Vista	CA	92081	904.31		7223	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
The Original Pancake House	435		S Melrose Dr	Vista	CA	92081	904.22	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
The Pep Boys Manny, Moe & Jack Of California	865		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	High	X
The Picket Fence	945		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
The Snack House	1580	117	S Melrose Dr	Vista	CA	92084	904.31	5461	722213	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	No	Yes	Medium	
The Top's Auto Upholstery	553		Mercantile St	Vista	CA	92083	904.22		81142	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
The Transmission Source	538	101-103	Olive Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
The Village Bagel Co. (Guerin Mngmt)	485	106	S Melrose Dr	Vista	CA	92081	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	
The Watch Dog	414		Village Ln	Vista	CA	92083	904.22		81291	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Low	
The Yellow Deli	315		E Broadway	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	No	No	High	X
Thor Mobile Welding And Repair	361		Apollo Dr	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Tierra Nueva Garden Design Center	901		W Vista Way	Vista	CA	92084	904.22		44422	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Low	
TJ Properties, Inc Chevron Olive	485		N Melrose Dr	Vista	CA	92083	904.22	5541	44711	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Tom Kennedy Auto Repair	1330	D	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	Yes	No	No	Yes	Yes	No	No	No	No	Medium	X
Tom's No. 24 Restaurant	1110		Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Medium	
Tony's Mobil	801		S Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Torres Asuncion Growers	1712		Anza Ave	Vista	CA	92084	903.11	0181	111422	Nurseries/Greenhouses	No	Yes	No	Yes	No	No	No	No	No	Yes	Medium	X
Tortas El Rey	508		S Santa Fe Ave	Vista	CA	92084	904.22		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Tortilleria Hermanos Reyes	402		Olive Ave	Vista	CA	92084	904.22		3118	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Tortilleria Los Reyes	218		Main St	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Medium	X
Tri City Tire & Automotive	241	A	N Emerald Dr	Vista	CA	92083	904.21	7534	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Tri City Transmission	1147		S Santa Fe Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Tri-city Smog	245	B	N Emerald Dr	Vista	CA	92083	904.21	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Tritton Technologies, Inc.	1340	B	Specialty Dr	Vista	CA	92081	904.31	5045	421430	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
Tropical Juice & Deli	1116	F	Sycamore Ave	Vista	CA	92081	904.32	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	
Tropicana Rancho Market	829		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
Turf Star, Inc.	2110		La Mirada Dr	Vista	CA	92083	904.31	0782	56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No	No	Low	
Two Brothers From Italy	986		E Vista Way	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	
Two Brothers From Italy	1651	C	S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Uncle Tony's Italian Cuisine	770	121	Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
United Plant Growers, Inc.	1054		Mar Vista Dr	Vista	CA	92081	904.31	4212	484110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	High	X
United Site Services of CA, Inc	157		Nettleton Rd	Vista	CA	92083	904.21	7359	562991	Portable Sanitation	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
Upper Crust Pizza	1330	2	E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
Urbn Coal Fired Llc	203		Main St	Vista	CA	92084	904.22		72211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
Used Car Depot	1036		S Santa Fe Ave	Vista	CA	92084	904.22	5521	441120	Vehicle Dealers	No	No	Yes	No	No	No	No	No	No	No	High	X

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Used Tires Los Parientes	1725		E Vista Way	Vista	CA	92083	904.22		44132	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
V I P Automotive	414	B	N Santa Fe Ave	Vista	CA	92083	904.22		8111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
V R Truck And Auto Service	538	401	Olive Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Vadnais Corporation	2130		La Mirada Dr	Vista	CA	92081	904.31		23	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Valentinas Mexican Grill	320	50	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	
Vanessa's Mexican Food #2	224		N Emerald Dr	Vista	CA	92083	904.21		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
Victor's Brake & Auto Specialists	1352	G	N Melrose Dr	Vista	CA	92083	904.10	7539	811118	Auto Repair	No	No	Yes	No	No	No	No	No	No	No	Low	X
Village Cafe	406		Main St	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
Village Floorcovering, Inc.	1185	R	Park Center Dr	Vista	CA	92081	904.31		23833	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Vista Auto Group Inc.	267		S Santa Fe Ave	Vista	CA	92083	904.22	5521	44112	Vehicle Dealers	No	No	No	No	No	No	No	Yes	No	Yes	High	
Vista Brake Service and Supply	790		E Vista Way	Vista	CA	92084	904.22	7539	811118	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
Vista Car Care	444	A	S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Medium	X
Vista Car Sales	1420		S Santa Fe Ave	Vista	CA	92084	904.22	5521	44112	Vehicle Dealers	No	No	No	No	No	No	No	No	No	No	Low	
Vista Entertainment Center	435		W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
Vista Firestone Brake and Smog	711		S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Vista Independent Volvo Service	538	C-303	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Vista Motorcycle	1155	G	S Santa Fe Ave	Vista	CA	92083	904.22	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Vista Muffler and Radiator	435		Redlands St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Vista Santa Fe Car Wash	521		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	
Vista Santa Fe Transmissions, Inc.	1144		S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Vista Tire Pro's	658		E Vista Way	Vista	CA	92083	904.22		44132	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Vista Transmission Service	427	B	Redlands Street	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	Yes	No	Yes	High	X
Vista Unocal	976		Escondido Ave	Vista	CA	92083	904.22	5541	44719	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Vista Valley Auto Center	1803		E Vista Way	Vista	CA	92084	904.22	5521	44112	Vehicle Dealers	No	No	No	No	No	No	No	No	No	No	Low	
Vista Village Motors	350		Vista Village Dr	Vista	CA	92083	904.22	5521	44112	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
Vista Way Cafe	868		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	X
Vista Way Smog	911		E Vista Way	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	No	No	No	No	No	No	Yes	No	High	X
Vista Way Valero	1740		E Vista Way		CA		904.22		4471	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Vista's Ice Box	777	204	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
Vons Grocery #2121	940		S Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	X
Walmart #2094	1800		University Dr	Vista	CA	92083	904.32	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	High	X
Warmland Nursery	1850		Warmlands Ave	Vista	CA	92084	904.22	0181	1114	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
Wasabi Japanese Cuisine	1688	212	S Melrose Dr	Vista	CA	92083	904.31	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	X
Wedding Day Catering, Inc.	1350	8	E Vista Way	Vista	CA	92084	904.22		72232	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
Wendy's Restaurant #16	567		W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Medium	X
West Coast Imports Sales & Conversions	1386	E	Poinsettia Ave	Vista	CA	92083	904.31	5521	44112	Vehicle Dealers	No	Yes	No	Yes	No	Yes	No	No	No	No	Low	
West Coast Refrigerated Trucking	1330	B	Distribution Way	Vista	CA	92081	904.31	4212	484220	Ground Transportation	No	No	No	No	Yes	No	No	No	Yes	No	Medium	X
Western Concrete Pumping, Inc	2181		La Mirada Dr	Vista	CA	92083	904.31	1623	23491	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
Western States Petroleum LLC dba Chevron	600		Hacienda Dr	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Wholesale Tube Bending #2	257	C	N Emerald Dr	Vista	CA	92083	904.21	7533	811112	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Wholesale Tube Bending #2	257	C	N Emerald Dr	Vista	CA	92083	904.21		811112	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
Wienerschnitzal 288	901		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
Wings N Things Restaurant	35	C140	Main St	Vista	CA	92083	904.21		7221	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Low	
Wizard Auto Repair	446	C	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Wrought Iron Concepts, Inc.	1124		N Melrose Dr	Vista	CA	92083	904.22	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
X R-Bob's Harley Davidson Repair	329		Olive Ave	Vista	CA	92083	904.22	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Yame Café	680		Hacienda Dr	Vista	CA	92081	904.21	5812	722213	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	High	X
Ye Olde Car Shoppe	555		Mercantile St	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	

											Potential Pollutants Generated											
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Inspected FY 09/10
Yogurt Giant	1817	E	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
Yum Yum Donut Franchise 5050d	924		S Santa Fe Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
Z S R Auto Repair	446	D	Olive Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
Ziphouse, LLC	1330	D	Specialty Dr	Vista	CA	92081	904.31	5162	422610	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
ZUITSPORTS, INC.	2880	101-102	Scott St	Vista	CA	92081	904.31	5136	42232	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	

APPENDIX D-2

2009-10 Stationary Industrial Inventory

											Potential Pollutants Generated												
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Industrial Permit	Inspected FY 09-10
2s2, Inc.	1330	C	Specialty Dr	Vista	CA	92081	904.31	3679	334419	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Medium	No	
78 Sign Company	830		E Vista Way	Vista	CA	92083	904.21	2752	323110	Printing	No	No	No	No	No	No	No	No	No	No	Low	No	X
A D G Industrial Supply	2055	M	Thibodo Rd	Vista	CA	92081	904.32	3999	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
A T Machine	2515	3	Pioneer Ave	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
A W R/Racing Cages	2865	106-107	Scott St	Vista	CA	92081	904.31	3711	336211	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Abramo Industrial Design & Mfg.	1341	21	Distribution Way	Vista	CA	92081	904.31	3999	Unassigned	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No	
Abramo Industrial Design and Manufacturing	1351	4	Distribution Way	Vista	CA	92081	904.31	2434	33711	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No	
Accutech, LLC	2641		La Mirada Dr	Vista	CA	92083	904.31	2835	325413	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Medium	No	
Advance Web Offset, Inc.	2260		Oak Ridge Way	Vista	CA	92081	904.31	2752	323110	Printing	No	No	No	No	No	No	No	No	No	No	Low	No	
Advanced Rework Solutions, L L C	2142	B	Industrial Ct	Vista	CA	92081	904.32	3482	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
Aea Wireless, Inc.	1489	134	Poinsettia Ave	Vista	CA	92083	904.31	3679	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
AID & M	1351	4	Distribution Way	Vista	CA	92081	904.31	2434	337110	Manufacturing, Wood/Furniture	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	No	
Air Tech Streamlining	2530		Fortune Way	Vista	CA	92083	904.31	3714	000000	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Alvarado Micro-Precision	2475	C	Coral St	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
American Faucet & Coatings Corp	3280		Corporate View Dr	Vista	CA	92083	904.51	3499	33251	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
American Peptide Company	1271		Avenida Chelsea	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Medium	Yes	
Aperio Technologies, Inc.	1430	106	VANTAGE CT	Vista	CA	92083	904.31	3826	334516	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
Apollo Sprayers Inc	1030		Joshua Way	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Applied Control Concepts / CNC Dynamics	1209		Activity Dr	Vista	CA	92081	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Applied Membranes, Inc.	2325		Cousteau Ct	Vista	CA	92083	904.31	3589	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Applied Technology Co.	1280		Liberty Way	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Aptera Motors, Inc.	3151		Scott St	Vista	CA	92081	904.31	3711	336111	Manufacturing, Misc	No	No	No	No	No	No	No	No	Yes	No	Low	No	X
Armorcraft Off-Road Corp	2312		La Mirada Dr	Vista	CA	92081	904.31	3711	336111	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No	
Armorfab Custom Cycles	538		Olive Ave	Vista	CA	92083	904.22	2599	336991	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No	
Arshia Custom Cabinet	2525	5	Pioneer Ave	Vista	CA	92081	904.31	2434	337110	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No	
Aurora West	1343	19	Distribution Way	Vista	CA	92081	904.31		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	No	
B B C Installations	925	A16	Poinsettia Ave	Vista	CA	92081	904.32		33711	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Medium	No	
B/E Aerospace	2555		Birch St	Vista	CA	92083	904.32	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
BAE Systems Advanced Ceramics Inc	2065		Thibodo Rd	Vista	CA	92083	904.31	3297	327125	Manufacturing, Stone/Glass	No	Yes	No	No	Yes	No	No	Yes	No	Yes	High	Yes	X
BAE Systems, Advanced Ceramics	1960		Watson Way	Vista	CA	92083	904.32	3297	327125	Manufacturing, Stone/Glass	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	High	Yes	X
Bekaert Progressive Composites	2455		Ash St	Vista	CA	92083	904.31	3089	326199	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Low	No	
Bendmac Manufacturing	440	P	Olive Ave	Vista	CA	92084	904.22	3498	332996	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Big Fish Motorsports	925	A-5	Poinsettia Ave	Vista	CA	92083	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Bilandzija Cabinets	2588	5	Progress St	Vista	CA	92083	904.31	2434	33711	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Medium	No	
BioFilm Inc	3225		Executive Ridge	Vista	CA	92081	904.51				No	No	No	No	No	No	No	No	No	No	Medium	No	
Bobby D's Pizza & Brewery Co.	425		S Melrose Dr	Vista	CA	92081	904.22	2082	312120	Manufacturing, Food/Drink	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	No	X
BOJ	611		Mercantile St	VISTA	CA	92083	904.22	2434	337110	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Medium	No	
Bravo Screen Print	1230	D	Activity Dr	Vista	CA	92081	904.31	2759	323113	Printing	No	No	No	No	No	No	No	No	No	No	Medium	No	
Brightco Machining	2336	200	La Mirada Dr	Vista	CA	92081	904.31	3999	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Bristol S.G., Inc.	2525	6	Pioneer Ave	Vista	CA	92083	904.31	3679	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Bruning Engineering Inc	2598	M	Fortune Way	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Bunny Brewery	1616	A	W Peanut St.	Vista	CA	92084	903.11	2082	312120	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	No	High	Yes	
C Enterprises, LP	2445		Cades Way	Vista	CA	92081	904.32	3357	33592	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	No	Yes	No	Low	No	
C N C Precision Machining	797	C	North Ave	Vista	CA	92083	904.10	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	Yes	No	Low	No	X
Cecilina's Designs	905		Westport Ln	Vista	CA	92084	904.22		339914	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
CH Products	970		Park Center Dr	Vista	CA	92083	904.31	3699	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No	
Clearly Golf, Llc	1950	105	Thibodo Rd	Vista	CA	92081	904.32		31599	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	No	
Coast Intelligen, Inc.	2460		Ash St	Vista	CA	92083	904.31	3621	335312	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Coastline Embroidery	1330	D	Keystone Way	Vista	CA	92081	904.31	2281	313111	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	No	X
Coffee Cart Biz	1150		Joshua Way	Vista	CA	92081	904.31	2541	337215	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	No	X
Concept Machining	1230	C	Activity Dr	Vista	CA	92081	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	Yes	No	Medium	No	
Controlled Motion Hydraulics	1917	B	Alta Vista Dr	Vista	CA	92084	904.22		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No	

											Potential Pollutants Generated												
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Industrial Permit	Inspected FY 09-10
Cookies Con Amore	2330	700	La Mirada Dr	Vista	CA	92081	904.31	2052	311821	Manufacturing, Food/Drink	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	No	
Cornerstone Sensors Inc	1304	C	N Melrose Dr	Vista	CA	92083	904.10	3822	334512	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	X
Creative Printing	1132		N Melrose Dr	Vista	CA	92083	904.22	2759	323112	Printing	No	No	No	No	No	No	No	No	No	No	Medium	No	
Crown Industrial Products, Inc.	2440		La Mirada Dr	Vista	CA	92081	904.31	3714	33634	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Csi Technologies, Inc.	2595		Commerce Way	Vista	CA	92083	904.31	3629	335999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
D B S Associates, Inc.	2480		Grand Ave	Vista	CA	92081	904.32	3585	333415	Manufacturing, Equipment	No	Yes	No	No	No	No	No	No	Yes	No	Low	No	X
D J Orthopedics, L L C	2985		Scott St	Vista	CA	92083	904.31	3482	334510	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
Dart Plastics & Engineering, Inc.	1240	A	Activity Dr	Vista	CA	92083	904.31	3808	326199	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Medium	No	
Denso International America Inc. Dba L A Labs	3250		Business Park Dr	Vista	CA	92081	904.51	2833	5417	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Low	No	
Digital On-Demand, Inc.	1390	B	Decision St	Vista	CA	92081	904.31	3482	334	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
Dime Water, Inc.	2575	J	Fortune Way	Vista	CA	92083	904.31	3589	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Distinctive Plastics, Inc.	1385		Decision St	Vista	CA	92085	904.31	3089	326199	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Medium	No	
Diversified Manufacturing Of Ca	2555		Progress St	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Diversified Tool & Die	2585		Birch St	Vista	CA	92083	904.31	3469	332116	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Medium	No	
Douglas Wheel, Inc.	1340		N Melrose Dr	Vista	CA	92083	904.10	3714	336399	Manufacturing, Equipment	No	Yes	No	No	Yes	No	No	No	Yes	No	High	No	X
Dutek Inc.	2248		Oak Ridge Way	Vista	CA	92083	904.31	3679	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
E & J Custom Granite & Stone Inc	795	E	North Ave	Vista	CA	92081	904.10	3281	327991	Manufacturing, Stone/Glass	No	Yes	No	No	No	No	No	Yes	Yes	No	Medium	No	X
Earthlite Massage Tables Inc dba	3210		Executive Ridge Dr	Vista	CA	92083	904.31	2599	3371	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Medium	No	
Eaton Leonard Robolix, Inc	1391	A	Specialty Dr	Vista	CA	92083	904.31	3542	333513	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
EGR Tech (USA) LLC	2051		Bravado St	Vista	CA	92081	904.31		333618	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No	
El Camino Rental Dba Bilcan Inc.	1121		S Santa Fe Ave	Vista	CA	92083	904.22	3273	327320	Manufacturing, Concrete	No	No	Yes	No	No	Yes	No	Yes	No	Yes	High	No	X
Elite Metal Finishing	1392	C	Poinsettia Ave	Vista	CA	92083	904.31	3471	332813	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Elixir Steel Framing Corp	2611	D	Commerce Way	Vista	CA	92081	904.31	3444	332322	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
E-World Recyclers	2480		Ash St	Vista	CA	92081	904.31	5093	421930	Recycling	No	No	Yes	No	No	No	No	No	No	No	Medium	Yes	
Exotic Wood Crafters	1582		Sunrise Dr	Vista	CA	92084	904.22		337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No	
F&T Precision Products	980	I	Park Center Dr	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Fax Foods	1392	A, B	Poinsettia Ave	Vista	CA	92083	904.31	3089	321699	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Medium	No	
Ferro Electronic Materials Systems	1395		Aspen Way	Vista	CA	92083	904.31	3675	334414	Manufacturing, Electronics	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes	
Fineline Apparel Printing	1485	105	Poinsettia Ave	Vista	CA	92083	904.51	2759	323113	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	Yes	No	Low	No	X
Finishing Touch Custom Drapery	2835	C	La Mirada Dr	Vista	CA	92081	904.31	2391	314121	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	Yes	No	High	No	X
Fish House Foods, Inc.	3285		Corporate View Dr	Vista	CA	92083	904.51	2038	311412	Manufacturing, Food/Drink	No	Yes	No	No	No	No	No	No	Yes	No	Medium	No	
Flotron	2485		Coral St	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
FMD	2308		La Mirada Dr	Vista	CA	92081	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Medium	No	
Frito Lay Inc	1390		Vantage Ct	Vista	CA	92081	904.31	4214	484220	Ground Transportation	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	Yes	
Fruttos Yogurt	347	104	Vista Village Dr	Vista	CA	92083	904.21	2013	31152	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No	
Funktion	1930	P	Watson Way	Vista	CA	92083	904.32	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Fwd Screenprinting	2336	1000	La Mirada Dr	Vista	CA	92081	904.31	2759	323113	Printing	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No	
Graphic Converting, Inc.	1370		Decision St	Vista	CA	92083	904.31	2657	322212	Manufacturing, Paper	No	No	No	No	No	No	No	No	No	No	Medium	No	
Green Flash Brewing Company	1430		Vantage Ct	Vista	CA	92081	904.51	2082	312120	Manufacturing, Food/Drink	No	No	No	No	No	No	No	Yes	Yes	No	Medium	No	
Grilla	1235	F	Activity Dr	Vista	CA	92081	904.31	3714	336399	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
H F Johnston Mfg. Co.	2475		Ash St	Vista	CA	92083	904.31	3599	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Hargett Precision Products	2865	108	Scott St	Vista	CA	92081	904.31	3592	336311	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Hi Rez Digital Solutions	1235	E	Activity Dr	Vista	CA	92081	904.31	2759	323115	Printing	No	No	No	No	No	No	No	No	No	No	Medium	No	
Hi Tech Swiss Machining Inc	2410		La Mirada Dr	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Medium	No	
Hocking Intl Labs	970	C	Park Center Dr	Vista	CA	92081	904.31	2841	325611	Manufacturing, Chemicals	No	No	Yes	No	No	No	No	No	No	No	Medium	Yes	
Horstman Manufacturing Co Inc	2510		Pioneer Ave	Vista	CA	92083	904.31	3799	336999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
HRE Performance Wheels	2611	D	Commerce Way	Vista	CA	92081	904.31	3714	336399	Manufacturing, Equipment	No	No	No	No	No	No	No	Yes	No	Yes	Low	No	
Hudson Printing, Inc.	1497	153	Poinsettia Ave	Vista	CA	92081	904.31	2759	323110	Printing	No	No	No	No	No	No	No	No	No	No	Low	No	
Hydrocomponents & Technologies, Inc.	1175	H	Park Center Dr	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	

											Potential Pollutants Generated												
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Industrial Permit	Inspected FY 09-10
I C P America, Inc.	1070		Joshua Way	Vista	CA	92083	904.31	3676	334415	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
I W Technologies, Inc.	2446		Cades Way	Vista	CA	92083	904.32	3999	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
IDL Tech Tools	2438		Cades Way	Vista	CA	92084	904.32	3423	332212	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Industry Supply	1432		Alta Vista Dr	Vista	CA	92084	904.22		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No	
Intellectual Technology, Inc.	1040		Joshua Way	Vista	CA	92083	904.31	3577	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Medium	No	
International Lottery & Totalizator Systems, Inc.	2310		Cousteau Ct	Vista	CA	92081	904.31	3482	334519	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
Intubrite	2322		La Mirada Dr	Vista	CA	92081	904.31		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Medium	No	
J & D Laboratories	2640		Progress St	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No	X
J Mark Manufacturing Inc	2480	C	Coral St	Vista	CA	92083	904.31	3499	332312	Manufacturing, Structural Steel	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Javo Beverage Co.	1311		Specialty Dr	Vista	CA	92081	904.31	2095	311920	Manufacturing, Food/Drink	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	High	Yes	X
Jeld-Wen Summit Windows And Patio Doors	2760		Progress St	Vista	CA	92083	904.31	3442	33231	Manufacturing, Structural Steel	No	No	No	No	Yes	No	No	No	Yes	No	Medium	Yes	
Jensen Meat Co Inc	2525		Birch St	Vista	CA	92083	904.32	2013	311613	Manufacturing, Food/Drink	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	Yes	
Jif-Pak Manufacturing, Inc.	1451		Engineer St	Vista	CA	92083	904.31	3999	31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Jugueria La Tropicana #2	1839	B	W Vista Way	Vista	CA	92083	904.21	2013	311411	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No	
Killion Industries Inc	1380		Poinsettia Ave	Vista	CA	92083	904.31	2541	337215	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Medium	No	
Killion Industries, Inc.	2811		La Mirada Dr	Vista	CA	92083	904.31	3585	333415	Manufacturing, Wood/Furniture	No	Yes	No	No	No	No	No	No	Yes	No	Medium	No	
Killion Industries, Inc.	2445		La Mirada Dr	Vista	CA	92081	904.31		335222	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
K'S Refrigerated Transport, L L C	2591	C	Pioneer Ave	Vista	CA	92081	904.31	4212	4841	Ground Transportation	No	No	Yes	No	Yes	No	No	No	No	No	Low	No	
Lancer Orthodontics, Inc	2330		Cousteau Ct	Vista	CA	92081	904.31		339114	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Lee's Iron Inc	1315		Lee Dr	Vista	CA	92083	904.10	5093	421930	Recycling	No	Yes	Yes	No	No	No	No	No	No	No	High	Yes	X
Lemken Kuhlwerk	2330	200	La Mirada Dr	Vista	CA	92081	904.31	2434	337110	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No	
Leucadia Surf Design, Llc	2755	B	Dos Aarons Way	Vista	CA	92081	904.31	2599	335999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No	
Lightwave Audio Systems, Inc.	1384	F	Poinsettia Ave	Vista	CA	92083	904.31	3679	3343	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Medium	No	
Lucky Charm Limo's	901		W Vista Way	Vista	CA	92084	904.22		48532	Ground Transportation	No	No	Yes	No	Yes	No	No	No	No	No	Medium	No	
M C R Auto Machine Shop	452	K	Olive Ave	Vista	CA	92083	904.22	3999	332710	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
M Klemme Technology, Corp	1386	A	Poinsettia Ave	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
M M Precision Machining	2525	4	Pioneer Ave	Vista	CA	92083	904.31	3345	333515	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Magna Coatings Corp	1440		Decision St	Vista	CA	92083	904.31	2851	32551	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Medium	No	
Magnacore Inc.	1386	B	Poinsettia Ave	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Magnum Offroad	1235	A	Activity Dr	Vista	CA	92081	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Medium	No	
Manzo's Metal Works	797	D	North Ave	Vista	CA	92081	904.10	3599	332710	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	Yes	Yes	No	Low	No	X
Martin Enterprises	3235		Executive Ridge Dr	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Merical Inc.	2550		Pioneer Ave	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	No	
Meridian Laboratory Inc	1330	E	N Melrose Dr	Vista	CA	92083	904.10	3824	334514	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	High	No	X
Michael A. Eddy Painting	1930	I	Watson Way	Vista	CA	92083	904.32	3479	332812	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Micronel U.S.	1280		Liberty Way	Vista	CA	92083	904.31	3999	31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No	
Mihal Enterprises dba JT-Designs	1250	E	Activity Dr	Vista	CA	92081	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Medium	No	
Minor Fab	1205	M	N Melrose Dr	Vista	CA	92084	904.10	3711	336111	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	Yes	Yes	No	Low	No	X
MODERN MEDICAL SUPPLY	1235	F	Activity Dr	Vista	CA	92083	904.31	2599	339111	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Monserate Biotech, L L C	1396		Poinsettia Ave	Vista	CA	92081	904.51	2833	5417	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Low	No	
MS Marble	1338	J	N Melrose Dr	Vista	CA	92083	904.10	3281	235430	Manufacturing, Stone/Glass	No	Yes	No	No	Yes	No	No	Yes	No	No	High	No	X
Natural Alternatives Int'l Inc	1215	D	Park Center Dr	Vista	CA	92081	904.31	2833	325411	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Medium	No	X
New World Recycler	661	21	Copper Dr	Vista	CA	92083	904.22		421930	Recycling	No	No	Yes	No	No	No	No	Yes	No	Yes	Low	No	
Newsail Marine & Energy	730	E	Sycamore Ave	Vista	CA	92083	904.32	3999	332710	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
NML, LLC	2575	105	Pioneer Ave	Vista	CA	92081	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Nutritional Engineering Inc.	1208		Avenida Chelsea	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Medium	No	X
Oceanside Marble Cromade, Inc.	921	B-10	Poinsettia Ave	Vista	CA	92081	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Oem Production LLC	2875	101-102	Scott St	Vista	CA	92081	904.31	3949	339922	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Medium	No	
O-Navi, L L C	1260	B	Activity Dr	Vista	CA	92081	904.31	3672	334412	Manufacturing, Electronics	No	No	No	No	Yes	No	No	No	Yes	No	Low	No	X
O'Ridge Ceramics	533		Rudd Rd	Vista	CA	92084	904.22		327112	Manufacturing, Stone/Glass	No	No	No	No	No	No	No	Yes	No	Yes	Low	No	
Orlimar Golf Company	1385		Park Center Dr	Vista	CA	92083	904.31	3999	31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No	
Orthodontic Design & Production, Inc.	1370	D	Decision St	Vista	CA	92081	904.31	3843	339114	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No	

											Potential Pollutants Generated												
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Industrial Permit	Inspected FY 09-10
Osmonics (GE)	760		Shadowridge Dr	Vista	CA	92083	904.32	3999	339999	Manufacturing, Misc	No	Yes	No	No	No	No	No	Yes	Yes	Yes	High	Yes	X
Outreach Inc	2230		Oak Ridge Way	Vista	CA	92081	904.31	2759	323119	Printing	No	No	No	No	No	No	No	Yes	No	Yes	Low	No	
Ozivert	921	3	Poinsettia Ave	Vista	CA	92081	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Pacific Ambulance, Inc.	1939		W Vista Way	Vista	CA	92083	904.21		621910	Ground Transportation	No	No	Yes	No	Yes	No	No	No	No	No	Medium	No	
Pacific Aquatic Furniture Design	2515	4	Pioneer Ave	Vista	CA	92081	904.31	2434	337	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No	
Pacific Ceet, Inc.	1220		Liberty Way	Vista	CA	92083	904.31	3999	31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Pacific Stair Products	2241		La Mirada Dr	Vista	CA	92081	904.31	2541	337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No	
Palmac Design & Manufacturing	2445		La Mirada Dr	Vista	CA	92083	904.31	3585	333415	Manufacturing, Fabricated Metal	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No	
Phoenix Energy	1046		Buena Vista Dr	Vista	CA	92081	904.31		562219	Waste Management	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Low	No	
Phoenix Wheel Company, Inc. (HRE Performance)	2453	A	Cades Way	Vista	CA	92083	904.32	3499	336999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Pixel Imaging Media	2595		Fortune Way	Vista	CA	92081	904.31	2759	323119	Printing	No	No	Yes	No	No	Yes	No	No	Yes	No	Medium	No	
Power Craft Autoparts	452	L	Olive Ave	Vista	CA	92084	904.22	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
Poweron	1185	S	Park Center Dr	Vista	CA	92083	904.31	3999	31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No	
Pozza Manufacturing Inc.	1185	Q	Park Center Dr	Vista	CA	92083	904.31	3599	333999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Precise Manufacturing	1495	148	Poinsettia Ave	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Predator Motorsports	1250		Distribution Way	Vista	CA	92081	904.31	2599	33639	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No	
Print House Inc	2630		Progress St	Vista	CA	92083	904.31	2759	323113	Printing	No	No	No	No	No	No	No	No	No	No	Medium	No	
Print Inc	1225	A	Park Center Dr	Vista	CA	92083	904.31	2759	323113	Printing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	Yes	
Pro Designer Plastics Inc Pdp	1260	D	Liberty Way	Vista	CA	92083	904.31	3089	326199	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Medium	No	
Professional Water Technologies	1048		La Mirada Ct	Vista	CA	92081	904.31	2899	325988	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Medium	Yes	
Promach	2438		Cades Way	Vista	CA	92081	904.32	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Proteus Dimensional Technologies, Inc	1260		Distribution Way	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No	
Quantum Focus Instruments	990	D	Park Center Dr	Vista	CA	92083	904.31	3826	3345	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Medium	No	
R Jesse & Company Inc	1226		Keystone Way	Vista	CA	92083	904.31	3645	335122	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Raveon Technologies	2780	C	La Mirada Dr	Vista	CA	92081	904.31	3663	334220	Manufacturing, Equipment	No	No	No	No	No	No	No	No	Yes	No	Medium	No	
Ray Allen Company, Inc.	2525	8	Pioneer Ave	Vista	CA	92081	904.31	3593	333995	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Rayzist Photomask Inc	955		Park Center Dr	Vista	CA	92083	904.31	3281	327991	Manufacturing, Stone/Glass	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	Yes	X
Renee Machine, Inc.	1185	E	Park Center Dr	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Reybro, Inc. dba Quality Recycling	149		Nettleton Rd	Vista	CA	92083	904.21	5093	421930	Recycling	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No	
Roadway Express Inc.	1392		Engineer St	Vista	CA	92083	904.31	4212	484110	Ground Transportation	No	Yes	No	No	Yes	No	No	Yes	No	Yes	Medium	Yes	
S B A J Trans Auto Sales	1225		N Santa Fe Ave	Vista	CA	92084	904.22		44131	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Medium	No	
S C T Emerald	1851	B	W Vista Way	Vista	CA	92083	904.21		33421	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Medium	No	
Safe-Way Moving Inc.	1330	A	Distribution Way	Vista	CA	92081	904.31	4225	484110	Ground Transportation	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Low	No	X
Sandel Avionics, Inc.	2401		Dogwood Way	Vista	CA	92081	904.32	3812	334511	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Medium	No	
Schmid Built Products	2520		Fortune Way	Vista	CA	92081	904.31		33299	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Seber Tech L L C	2438		Cades Way	Vista	CA	92083	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Security Systems, Inc	2585	B	Fortune Way	Vista	CA	92081	904.31	3629	335999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Seven Mfg	1420	C	Decision St	Vista	CA	92083	904.31	2834	325412	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	No	
Shadowridge Water Reclamation Facility	2525		Lupine Hills Rd	Vista	CA	92083	904.31	4952	221320	POTWs	No	No	No	No	No	No	No	Yes	No	Yes	Medium	Yes	
Sherline Products, Inc.	3235		Executive Ridge Dr	Vista	CA	92083-8257	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	Yes	Yes	Low	No	
Skylark Sport Marketing dba, Prana	3275		Corporate View Dr	Vista	CA	92081	904.51	2329	315228	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Medium	No	
Smart Engineering Systems	2308		La Mirada Dr	Vista	CA	92081	904.31	3625	335314	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Sound Away Corporation	1175	A	Park Center Dr	Vista	CA	92081	904.31	3482	3343	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No	
Speedy Cut Inc	2565		Progress St	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Stines Machine Inc	2481		Coral St	Vista	CA	92083	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	No	
STINKY FAB.	2588	15	Progress St	Vista	CA	92081	904.31	3499	3329999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
Sue Spray Woodworks	925	A-9	Poinsettia Ave	Vista	CA	92081	904.32	2434	337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No	
Tech 22	1160		Joshua Way	Vista	CA	92083	904.31	3679	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Medium	No	
Tech M3, Inc	1281		Activity Dr	Vista	CA	92081	904.31	3479	332812	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No	X
Technical Tooling & Gage	2598	F	Fortune Way	Vista	CA	92083	904.31	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
Tecxel/R Zamora Corp.	2826	D	La Mirada Dr	Vista	CA	92083	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No	

											Potential Pollutants Generated												
Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	Threat To Water Quality	Industrial Permit	Inspected FY 09-10
Tedco Tool	1175	C	Park Center Dr	Vista	CA	92084	904.31	3728	336413	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Tempo Research Corp	1390		Aspen Way	Vista	CA	92083	904.31	3679	334419	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No	X
The Art Of Coffee, Inc.	1311		Specialty Dr	Vista	CA	92083	904.31	2095	311920	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No	
The Brass Ring	1495	150	Poinsettia Ave	Vista	CA	92081	904.51	3999	33232	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No	
The Pressroom	843		Williamston St	Vista	CA	92084	904.22	2759	323112	Printing	No	No	No	No	No	No	No	No	No	No	Medium	No	
The Vista News (Coast News Group)	640	112	Escondido Ave	Vista	CA	92084	904.22	2731	51111	Printing	No	No	No	No	No	No	No	No	No	No	Low	No	
Titeflex Corporation	2755	C	Dos Arrons Way	Vista	CA	92081	904.31	3599	332999	Manufacturing, Plastic/Rubber	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Low	No	X
T-Rex Clothing & Graphics	1349		Bonair Rd	Vista	CA	92084	904.22	2731	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	No	
Tri Digital	1495	144	Poinsettia Ave	Vista	CA	92083	904.31	2759	32311	Printing	No	No	No	No	No	No	No	No	No	No	Medium	No	
Trinity Innovations	1250		Keystone Way	Vista	CA	92083	904.31	3993	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Medium	No	
U S I Inc.	1185	0	Park Center Dr	Vista	CA	92083	904.31	2833	325411	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Medium	No	
US Post Office	960		Postal Way	Vista	CA	92084	904.22	4311	491110	Ground Transportation	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No	
V Q S Enterprises, Inc.	1081		Poinsettia Ave	Vista	CA	92083	904.31	2752	32311	Printing	No	Yes	No	Yes	No	No	No	No	Yes	No	Medium	No	
Versaform Corp	1377		Specialty Dr	Vista	CA	92081	904.31	3728	336413	Manufacturing, Equipment	No	Yes	No	No	No	No	No	Yes	Yes	Yes	High	Yes	X
Vicki Loh, Dba US Gifts, US Ceramics	1487	122	Poinsettia Ave	Vista	CA	92083	904.32	3281	32711	Manufacturing, Stone/Glass	No	No	No	No	No	No	No	Yes	No	Yes	High	No	
Vision Manufacturing Inc	1198		Joshua Way	Vista	CA	92081	904.31	3672	334412	Manufacturing, Electronics	No	No	No	No	No	No	No	Yes	No	Yes	Low	No	
Vista Auto Sound	808		N Santa Fe Ave	Vista	CA	92083	904.22		441310	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Medium	No	
Vista Display Products	1260	C	Liberty Way	Vista	CA	92081	904.31		339943	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Medium	No	
Vista Industrial Products Inc	1395		Park Center Dr	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	
W5 Machining, Inc.	2365		Oak Ridge Way	Vista	CA	92083	904.31	3545	333515	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Medium	No	
Watkins Manufacturing Corp	1280		Park Center Dr	Vista	CA	92083	904.31	3088	326191	Manufacturing, Plastic/Rubber	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes	
West Prints	1185	F	Park Center Dr	Vista	CA	92081	904.31	2731	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	No	
Westbridge Agricultural Products	1260		Avenida Chelsea	Vista	CA	92081	904.31	2879	32531	Manufacturing, Chemicals	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes	
Western CNC, Inc	1001		Park Center Dr	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No	
Youngdale Manufacturing Corp	2449		Cades Way	Vista	CA	92083	904.32	3429	332510	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Medium	No	

APPENDIX D-3

2009-10 Mobile Business Inventory

							Potential Pollutants Genenerated								
Buisness Name	Address	Zip Code	City	TTWQ	SIC Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
(cho)2 Home Services	955 Postal Way 56	92083	Vista	Low	1799	Painting/Coating	No	No	No	No	No	No	No	No	No
A A Same Day Exterminators	807 N Santa Fe Ave	92084	Vista	Low	7342	Pest Control	No	No	No	No	No	No	Yes	No	No
A C Coating	512 W California Ave 116	92083	Vista	Low	1721	Painting/Coating	No	No	No	No	No	No	No	No	No
A.S.P. Home Repair	1008 Georgia Ln	92083	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Accurate Estimating Service	1727 Creekside Ln	92081	Vista	High		Power Washing	No	Yes	No	No	No	No	No	No	No
Advance Carpet Cleaning & Bldg.	278 Paseo Marguerita	92084	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Affordable Carpet Care And Jch Enterpris	1611 S Melrose Dr 170-A	92081	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Affordable Carpet Care&Jch Ent	418 Santa Clara Dr	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Alexis M. Palos	371 N Melrose Dr C	92083	Vista	Low		Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No
Alliance Disaster & Restoration Services	1487 Poinsettia Ave 126	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Alta Vista Lawn Care	534 W California Ave 4	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Altura Paint & Supply	1850 Hacienda Dr 15	92083	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Amador Landscape	1424 Bonair Rd 4	92084	Vista	Low	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Andres Gardening & Hndymn Svc	1984 Warmlands Ave	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Andy's Carpet Cleaner	352 N Santa Fe Ave	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Angel's Gardening Maintenance	523 N Citrus Ave	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Antonio Maola Concrete Pumping	603 Rancho Vista Rd	92083	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Araiza Paving & Grading	550 W Vista Way 110	92083	Vista	Low	1611	Other Contractor	No	No	No	No	No	No	No	No	No
Around Town Power Wash	2242 Valley Road	92056	Oceanside	High		Power Washing	No	Yes	No	No	No	No	No	No	No
Artistic View	405 Palmbark	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Attention to Detail			Vista	High		Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Azland Handyman Service	802 Lemon Ave	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
B And R Lanscaping	1360 Foothill Dr 64	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
B&M's Home And Carpet Care	1710 Timothy Pl	92083	Vista	Low	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Baldwin Yard And Maintenance	855 Francis Dr	92084	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Barlow's Pest Control	375 Windy Lane	92083	Vista	Low	7342	Pest Control	No	No	No	No	No	No	Yes	No	No
Bautista Maintenance	1721 Rush Ave	92084	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Berry's Bumper Repair	1517 Oasis Ln	92083	Vista	Low	7538	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Big Dog Sausage & Hot Dogs	1200 Vale Terrace	92084	Vista	Low	5812	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes
Bobby Watkins Family Pool & Spa Servic	943 Crescent Dr	92084	Vista	Medium	7389	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Bob's Pool Cleaning	2002 Redwood Crest	92081	Vista	Medium	7389	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Bradleys Pest Control	147 Valencia Dr	92083	Vista	Low		Pest Control	No	No	No	No	No	No	Yes	No	No
Brandi's Haneys Grooming	475 Gail Dr	92084	Vista	Low		Animal Facilities	Yes	No	No	Yes	No	No	No	No	No
Brent Mobile Wax	4660 N. River Road		Oceanside	High		Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Brians Landscape And Maintenance	452 W Los Angeles Dr	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Brother's In Law Landscaping	343 Gail Dr	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Brothers Maint	320 Acateno Ave	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Bugs Out Window & Door Screens	1235 Grandview Rd	92084	Vista	Low		Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No
C & J Discount Carpet Care	1004 Marlin Dr	92084	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Cables Landscaping	1521 Sunrise Dr	92084	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Cali Bunga Pool Cleaning	1260 Winchester Ct	92083	Vista	Medium		Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Calvert Painting	1161 Lark Hill Dr	92084	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Capital Painting Corporation	216 E Broadway	92084	Vista	High	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Capital Painting Corporation 1	512 W California Ave 204	92084	Vista	Low	1799	Painting/Coating	No	No	No	No	No	No	No	No	No
Capt N Kidd Services, Inc	1590 Tierra Del Cielo	92084	Vista	Low	1741	Masonry	No	No	No	No	No	No	No	Yes	No
Cardenas Painting	510 N Melrose Dr E-4	92083	Vista	Medium	unassigned	Painting/Coating	No	No	No	No	No	No	No	No	No
Carlos Ajanel	166 Camino Corto c	92083	Vista	Low	0783	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Casas Tree Service	755 Highland Dr	92083	Vista	Medium	0783	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Castillo Landscaping	1424 Bonair Rd 11	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Chlorophyll Kid	916 Judilyn Dr	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Classic Touch Landscape Maint	2185 Hawley Dr	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Clean As A Whistle Carpet Care	2220 Watson Way 193	92083	Vista	High	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Coastal Pro Painting	935 Alta Vista Dr 3	92084	Vista	Low		Painting/Coating	No	No	No	No	No	No	No	No	No
Cole Landscape	824 Earth Dr	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Condominium Services Company	402 Olive Ave B	92083	Vista	Medium	0781	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Coppock Pool & Spa	719 Sunset Dr	92083	Vista	Medium	1799	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Cornerstone Marble Gran & Tile	1205 Avenida Chelsea B	92083	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Cortez Tree Service	720 W California Ave	92083	Vista	Medium	0783	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Countryside Landscape	2049 E Vista Way	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Cox Landscape	947 Sheffield Dr	92081	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
D & S And Sons Landscaping	133 Bellevive Ct	92084	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Dan Boteler Landscaping	579 Mar Vista Dr	92083	Vista	Low	0782	Other Contractor	No	No	No	No	No	No	No	No	No
Darrel D Rose Landscaping	508 Moa Dr	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Dawg's Drain Service	1041 Meadowlake Dr	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Dc Concrete And Masonry	1710 Jonathon St	92083	Vista	Low	1741	Masonry	No	No	No	No	No	No	No	Yes	No
Dogs On The Run	2229 Baxter Canyon Rd	92081	Vista	Low		Animal Facilities	Yes	No	No	Yes	No	No	No	No	No
Double J Pool Service	1215 Allea Ln	92083	Vista	Medium	7389	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No

							Potential Pollutants Genenerated								
Buisness Name	Address	Zip Code	City	TTWQ	SIC Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
El Carpi Jr. Construction	610 Cocapah St	92083	Vista	Low	1799	Painting/Coating	No	No	No	No	No	No	No	No	No
Enrique Chavez	209 Hawthorne Cir	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Enrique Silva Landscaping Maintenance	1064 Camino Ciego Ct	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Euro Tile	383 N Melrose Dr B	92083	Vista	Low	1741	Masonry	No	No	No	No	No	No	No	Yes	No
F J R Earthworks Dba Ayro Enterprises	2531 Walinca Way	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Felipe Ramirez Perez	2112 E Vista Way 21	92084	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Fernando's Tree Service	280 Alestar St 4	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
First Class Maintenance			Vista	High		Power Washing	No	Yes	No	No	No	No	No	No	No
Fred A. Jones Painting	1407 Bonair Rd	92084	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
G M Landscape Service	158 Mar Vista Dr	92083	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
G&F Landscape	1593 E Vista Way A	92084	Vista	High	0781	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Garza Grading & Paving	755 North Ave	92083	Vista	Low	1611	Other Contractor	No	No	No	No	No	No	No	No	No
Gemini Pest Control Inc	1058 Taylor St	92083	Vista	Low	7342	Pest Control	No	No	No	No	No	No	Yes	No	No
Gonzalez Tree Svc & Lndscpng	314 Acateno Ave	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Got Pool Cleaning And Repair	1569 Green Oak Rd	92081	Vista	High	7389	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Green Meadows Lawn Service	1243 Arcadia Ave C	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Green Weaver Landscaping Services	527 Huff St	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Greenness Design	1146 Sunset Dr	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
H H Landscaping	164 Hill Dr	92083	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Heaven's Best Carpet & Upholstery	104 Hill Dr	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Hector Rodriguez	510 Pina Ln	92083	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Hernandez Gardening	401 W California Ave 17	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Hernandez Lndscpg & Grdng Svc	952 Wellpott Pl	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Hernandez Maintenance	2263 Warmlands Ave	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
High Low Drywall	1639 Calle Jules	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Hydra Vac	1037 Glenmere Rd	92084	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Idle Properties Maintenance	550 W California Ave	92083	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Innovations In Marble And Tile	1128 Portola St	92084	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Insect And Rodent Solutions	941 Poinsettia Ave B4	92081	Vista	Low		Pest Control	No	No	No	No	No	No	Yes	No	No
Integrity Pool Services	915 Marlin Drive	92084	Vista	Medium	7389	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Integrity Pressure Wash	1508 Glacier Road	92056	Oceanside	High		Power Washing	No	Yes	No	No	No	No	No	No	No
Invision Landscape Inc.	1366 Brewley Ln	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
J S Custom Painting	1722 Foothill Dr	92084	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
J&A Landscape	951 Taylor St 23	92084	Vista	High		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
J. R. Landscaping & Maintenance	950 Arcadia Ave 40	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
J.B. Handyman	326 San Del Dr	92083	Vista	Low	1799	Painting/Coating	No	No	No	No	No	No	No	No	No
Jackson Landscape Construction	2202 Baxter Canyon Rd	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Jeff's Mobile Detailing			Vista	High		Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Jerry's Carpet Cleaning	1331 Arcadia Ave	92084	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Jmb Landscaping & Tree Service	310 Bandini Pl	92083	Vista	Medium	0783	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Joe Lane Custom Painting	1105 Collinswood Ln	92083	Vista	Low	1721	Painting/Coating	No	No	No	No	No	No	No	No	No
Joel Hernandez R	1804 Christi Dr	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
K G Painting	746 Sunset Dr	92081	Vista	Medium		Painting/Coating	No	No	No	No	No	No	No	No	No
K.O. Enterprises	512 W California Ave	92083	Vista	Low	1751	Other Contractor	No	No	No	No	No	No	No	No	No
Kaufman Masonry & Landscape Supply	845 W Vista Way	92083	Vista	Medium	5211	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Kennedy Pest Control, Inc.	114 Natal Way	92083	Vista	Low	7342	Pest Control	No	No	No	No	No	No	Yes	No	No
Kessel Window Services	1716 Country Side Pl	92081	Vista	Low		Power Washing	No	Yes	No	No	No	No	No	No	No
L D G Mobile	1205 N Melrose Dr I	92083	Vista	Low	7538	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
L.T. Backflow	869 Highland Dr	92083	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Landscape Da Vinci	752 Marsopa Dr	92081	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Landscaping Baltazar	1052 Anza Ave	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Las Palmas Landscape Mtc	309 Lado De Loma Dr	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Leahi Pool & Spa	510 N Melrose Dr P-7	92083	Vista	Medium	7389	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Leituala Tree Work And General Mainten	156 Pond Place 23	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Leopoldo Resendiz Mata	1904 Yettford Rd	92083	Vista	Medium		Painting/Coating	No	No	No	No	No	No	No	No	No
Life Gardening Svcs	1803 Manzanita Ct	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Living Waters Carpet & Upholstery	18045 SATICOY ST	91335	Reseda	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Local Lumber	1138 Beverly Dr	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Lopez Demolition	318 Arnel Ave	92083	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Los Altos Landscaping	312 Palm Dr	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Lot Management	7200 Ponto Drive	92011	Carlsbad	High		Power Washing	No	Yes	No	No	No	No	No	No	No
Main Painting Co	121 Hanes Pl	92084	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Martin Zurita	1150 Meadowlake Dr 6	92084	Vista	High		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
McCabe Construction	1027 Marbo Ter	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Mckenna's Carpet	1275 Tower Dr	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Middleton Skid, Steer And Hauling Svcs	480 Valerie Dr	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Miller Carpet Care	512 W California Ave	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No

							Potential Pollutants Genenerated								
Buisness Name	Address	Zip Code	City	TTWQ	SIC Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Mobile Handyman And Landscape	848 Smith Dr	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Mobile Wash Works	1125 Cabrillo Cir	92084	Vista	Medium	5087	Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Montecitos Landscape	2232 Primrose Ave 1	92083	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
N J Landscaping	2330 Azure Ln	92081	Vista	Medium	0781	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Nanco Landscape	420 Pollyanna Terr	92083	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
On The Move Mobile Auto & Truck	538 Olive Ave B	92083	Vista	Low	7538	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Orkin Pest Control D Glassmaker	2420 Grand Ave J	92083	Vista	High	7342	Pest Control	No	No	No	No	No	No	Yes	No	No
Orozco Construction	1174 Sunset Dr	92081	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Pacific Detailing Co	43795 Corte Amaya	92592	Oceanside	High		Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Paul's Pressure Washing	751 E Vista Way 81	92084	Vista	Medium	7349	Power Washing	No	Yes	No	No	No	No	No	No	No
Payo's Painting Company	717 Earth Dr	92083	Vista	Low	1721	Other Contractor	No	No	No	No	No	No	No	No	No
Pedro Rodriguez	858 Anns Way	92083	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Perfect Paving Grading & Seal	1641 Monte Mar Rd	92083	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Pestgon Inc	519 S Santa Fe Ave	92083	Vista	Low	7342	Pest Control	No	No	No	No	No	No	Yes	No	No
Pool And Poop Patrol	831 Lantana Way 143	92081	Vista	Medium		Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Pool Genie	1453 Sunrise Dr B	92084	Vista	Medium	1799	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Pool Perfection	801 Hillside Ter 8	92084	Vista	Medium	7389	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Precision Aquatics	633 Ascot Dr 1	92083	Vista	Medium		Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Premium Landscape	424 Garey Dr	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Prestige Tile And Marble Installation Co	2168 Opal Ridge	92084	Vista	Low	1741	Masonry	No	No	No	No	No	No	No	Yes	No
Prestige Tile And Marble Installation Co	2168 Opal Ridge	92084	Vista	Low		Masonry	No	No	No	No	No	No	No	Yes	No
Progressive Gardening Landscape	1117 Mullen Way	92083	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Prototypworks	1798 Club Heights Ln	92083	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Rac General Contractor	1432 Alta Vista Dr	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Rafael Sanchez Maint	206 W California Ave	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Rainbow Painting	561 N Emerald Dr	92083	Vista	Low	1799	Painting/Coating	No	No	No	No	No	No	No	No	No
Ramirez Landscaping/Gardening Service	223 Nevada Ave 19	92084	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Rancho Carpet Cleaning Inc.	1157 S Santa Fe Ave	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Rancho Tree Service	425 Redlands St	92085	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Rancho Vista Landscaping Inc.	1335 Warmlands Ave	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Randy's Pressure Washing	1205 N Santa Fe Ave 62	92083	Vista	Medium	7349	Power Washing	No	Yes	No	No	No	No	No	No	No
RB Mobile Wash	166 North Barnwell Street	92054	Oceanside	High		Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Rey & Sons Landscaping	1653 Rush Ave	92084	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
River Carpet Cleaning	1610 Calle Jules	92084	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Rivera's Painting	239 Pala Vista Dr 11	92083	Vista	Low	1721	Painting/Coating	No	No	No	No	No	No	No	No	No
Robles Handyman Work	1369 Bonair Rd	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Robles Landscaping	247 E Bobier Dr	92084	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Ronald W. Card	758 Lazy Cir	92083	Vista	Low	1721	Painting/Coating	No	No	No	No	No	No	No	No	No
Rooney's Lawn And Maintenance Service	1181 Madera Ln	92084	Vista	High		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Root	930 Brooktree Ln 70	92081	Vista	High		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Ryan's Painting	666 Townsite Dr	92084	Vista	Low	1721	Painting/Coating	No	No	No	No	No	No	No	No	No
S & A Pool Service	528 Collyn St	92083	Vista	Medium	7389	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Sanchez Landscaping	221 Plymouth Dr	92083	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Santa Fe Paving	602 Lemon Ave	92084	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Severo Ramos	1575 Kiva Ln	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Showcase Textile Care	904 Judilyn Dr	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Sierra's Landscaping	1640 Calle Colorado	92084	Vista	Medium		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Silac Landscape And Design	1112 Louie Pl	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Sketch & Paint By C D B	1120 Meadowlake Dr 1	92083	Vista	Low		Painting/Coating	No	No	No	No	No	No	No	No	No
Slobo Landscaping	1735 Stormy Ln	92084	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Solutions For Utilities, Inc.	1192 Sunset Dr	92081	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Stands By Me	942 Sierra Ct	92081	Vista	Low		Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No
Star Auto	261 Pala Vista Dr 5	92083	Vista	Medium	7538	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Stasik Specialized Carpentry	365 Pomelo Dr A15	92081	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Steam Magic Carpet Cleaning	1625 Jonathon St	92083	Vista	Low	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Steve Batsch Painting	419 Eucalyptus Ave	92084	Vista	High		Painting/Coating	No	No	No	No	No	No	No	No	No
Sunterra Tile & Stone	1072 Chelsea Ct	92084	Vista	Medium		Masonry	No	No	No	No	No	No	No	Yes	No
Superior Carpet Cleaning	926 Westport Ln	92084	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
T J Crossman's Mobile Auto Repair	1330 N Melrose Dr	92083	Vista	Low	7538	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Tanis Landscaping	1104 Warmlands Ave	92084	Vista	High		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Terry's Painting	533 Sunset Dr	92083	Vista	Low	1799	Other Contractor	No	No	No	No	No	No	No	No	No
Tesoro Landscape / So Cal Landscape S	1045 Highland Dr	92083	Vista	Medium	0782	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
The Torrey Pines Co., Inc.	2560 Fortune Way	92083	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
The Vintage Rose	2057 Paseo Ladera	92084	Vista	Medium	5992	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Thompson's Xtreme Cleaning Co.	200 Plymouth Dr	92084	Vista	Medium	7217	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Three Sisters Catering, Inc.	1589 E Vista Way A	92084	Vista	High	5812	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes
Travis Goin Concrete Services	1109 Tower Dr	92083	Vista	Medium		Manufacturing, Concrete	No	No	No	No	No	No	No	Yes	No

							Potential Pollutants Genenerated								
Buisness Name	Address	Zip Code	City	TTWQ	SIC Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Tree Barber Enterprises, Inc.	1923 Goodwin Dr	92084	Vista	Medium	0783	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Trotta Landscape	460 Oceanview Dr	92084	Vista	Medium	0781	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Velasquez Tree Service Landscaping	1424 Bonair Rd 4	92084	Vista	Low		Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Vision Painting	810 Citrus	92084	Vista	Low	1799	Painting/Coating	No	No	No	No	No	No	No	No	No
Wag N Wheels Mobile Pet Grooming	1613 Ravine Rd	92083	Vista	Low		Animal Facilities	Yes	No	No	Yes	No	No	No	No	No
Waterfall And Fountain Emporium	2223 Alta Vista Dr	92084	Vista	Low		Other Contractor	No	No	No	No	No	No	No	No	No
Watters Clean! Pool Service	1974 Wellington Lane 57	92081	Vista	Medium		Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Willis Exterminators	2475 Coral St B	92084	Vista	Low	7342	Pest Control	No	No	No	No	No	No	Yes	No	No

APPENDIX D-4

Stormwater Compliance Inspection Report Form

CITY OF VISTA

STORM WATER COMPLIANCE INSPECTION FOR INDUSTRIAL AND COMMERCIAL FACILITIES

Inspected by D-MAX Engineering, Inc.

Inspector Name _____ Date_____/_____/_____Time_____AM / PM

Type of Inspection: ☐ Routine ☐ Follow-up ☐ Complaint

Result: ☐ Full Insp. ☐ Could not Contact ☐ Not Inventoried ☐ Moved, Vacant ☐ Moved, Replaced by_____ ☐ Refused ☐ Mobile ☐ Duplicate of_____

A. CONTACT INFORMATION

Original	Changes
Business Name_____	Business Name_____
_____	_____
Street Address _____	Street Address_____
_____	☐ change _____
Responsible Person(s)_____	Responsible Person(s)_____
Title:_____	Title:_____
Business Telephone # (____) _____ -_____ext._____	Business Telephone # (____) _____ -_____ext._____
Business Fax # (_____) _____ - _____	Business Fax # (_____) _____ - _____

Home Based? ☐ Yes ☐ No Mobile Business? ☐ Yes ☐ No **APN**:_____

Is this facility located in a multi-suite complex? ☐ Yes ☐ No

Facility personnel present:_____

Property management company:_____ Business Telephone # (____)____ -_____ext.____

Mailing address:_____

B. FACILITY/SITE INFORMATION

Principal activity:_____ Number of Employees_____

Assigned NAICS code(s) _____ _____ _____ _____ and/*or* SIC Code(s) _____ _____ _____ _____

Does NAICS Code best represent principal activity: ☐ Yes ☐ No SIC? ☐ Yes ☐ No

Recommended change of NAICS Code(s)?_____ _____ _____ _____ Of SIC? _____ _____ _____ _____

Existing NAICS code(s) _____ _____ _____ _____ *and* **SIC Code(s)** _____ _____ _____ _____

Status Update (if no longer active in City or does not need an inspection): ☐ Moved/Out of Business ☐ Duplicate ☐ Not Inventoried ☐ Out of Jurisdiction

Does facility have a current business certificate? ☐ Yes ☐ No #_____ Exp._____

Is facility subject to CA Statewide General Industrial Permit? ☐ Mandatory ☐ Conditional ☐ No

Does facility have a Notice of Non-Applicability (NONA/NEC)? ☐ Yes ☐ No

Has facility filed a Notice of Intent (NOI) to obtain coverage? ☐ Yes ☐ No WDID: 9 37I0_____

Has facility filed a Notice Of Termination (NOT) for the WDID# listed above? ☐ Yes ☐ No Approval date:_____ month/yr

Does facility maintain SWPPP or BMP Plan? ☐ Yes ☐ No

Does facility have a storm water monitoring program? ☐ Yes ☐ No

C. INITIAL OBSERVATIONS

Discharge points: _____

_____

Approximate area covered by industrial or commercial activities:_____square feet

Approximate % impervious surface of this area_____%

Exposed areas of significant outdoor activity or storage? ☐ Permanent ☐ Occasional ☐ No

D. BMP ASSESSMENT

BMPs	No Corrections Required		Corrections Required		Comments	Shared Resp
	N/A	Fully Implemented	Partially Implemented	Not Implemented		
D.1 General						
Keep site free of litter, debris, and sediment using dry methods						
Keep storm drains on site free of litter and debris						
Keep outdoor areas free of spills and leaks						
Collect water from pressure washing or hosing and dispose of appropriately					☐ Unknown	
Direct roof downspouts away from areas of potential pollutants						
Mark drains/inlets on site with “no dumping, drains to ocean” or similar signage						
D.2 Landscaping						
Properly manage pesticides/fertilizer; use IPM when feasible					☐ Unknown	
Employ adequate erosion prevention measures (vegetation or physical stabilization)						
Reduce over watering/over-irrigation						
Properly store stockpiles to prevent material transport						
Properly store and dispose of green waste					☐ Unknown	
D.3 Materials and Wastes						
Protect trash area from contact with storm water						
Keep trash area free of litter and debris, liquids, powders, sediment						
Adequately cover materials stored outside						
Prevent run-on from contacting materials stored outdoors						
Properly label outdoor storage containers						
Provide an accessible, functional spill response kit						
Equip liquid storage containers with spill containment						
Keep spill containment free of spills and rainwater						
Properly store and dispose of hazardous materials						
Keep loading and unloading areas, including drains, free of debris						
Dispose of water generated by processing activities appropriately						
Dispose of pool, spa, fountain, and filter backwash water properly					☐ Unknown	

BMPs	No Corrections Required		Corrections Required		Comments
	N/A	Fully Implemented	Partially Implemented	Not Implemented	
Clean floor mats in locations that do not drain to street or storm drain system					
D.4 Equipment, Vehicles, and Outdoor Activities					
Conduct outdoor activities within contained areas (garage, under canopy, work shop)					
Use drip pans to collect leaks/spills					
Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks					
Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4					
D.5 Other					
Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff					
Identify and eliminate illicit connections and illegal discharges					
Provide storm water training for appropriate employees					
Develop a written procedure for spill prevention and response					
D.6 Additional Required Actions					

D.7 Additional Questions	Comments/Results
Are there any potential air sources that could contribute to atmospheric deposition of pollutants?	☐ Painting ☐ Sandblasting ☐ Fuel Distribution ☐ Dust dispersion or mineral processing ☐ Metal smelting ☐ Metal plating or anodizing ☐ Chemical production or mixing ☐ Large fuel burning device ☐ Incinerator
Are there any treatment control BMPs on site?	☐ Filter insert ☐ Hydrodynamic separator ☐ Debris screen ☐ Sewer diversion ☐ Vegetated swale ☐ Vegetated filter strip ☐ Biofiltration ☐ Detention/sedimentation basin ☐ Containment and evaporation or reuse ☐ Filtration
Are treatment control BMPs regularly maintained?	☐ Yes ☐ No ☐ Unknown ☐ N/A
What is the approximate percentage of the site that drains to the treatment control BMPs?	☐ N/A
Do major potential pollutant sources drain to treatment BMP(s)?	☐ All ☐ Some ☐ None ☐ N/A
If any illicit connections and/or illegal discharges were identified have the appropriate authorities been notified?	☐ Yes ☐ No ☐ N/A
If any illicit connections and/or illegal discharges were identified, were they eliminated during the site visit?	☐ Yes ☐ No ☐ N/A
Were any non IC/ID related corrective actions implemented during the site visit?	☐ Yes ☐ No ☐ N/A
Were any educational materials distributed?	NOI NONA/NEC Automotive Poster BMP Brochure Letter Grease Bin Handout Template WC WCS GW GWS FOG Poster FOG Brochure Conditional Waiver

E. STATE GENERAL INDUSTRIAL PERMIT COMPLIANCE*

☐ Non-compliance with the State Industrial Storm Water General Permit noted.

SPECIFIC ACTION(S) REQUIRED TO CORRECT THE VIOLATION DESCRIBED ABOVE*:

☐ File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit—see Attachment 3 of the Industrial Permit (www.waterboards.ca.gov/stormwtr/industrial.html).

- ☐ For "Conditional" facilities only: this site presently has outdoor exposure that requires filing for coverage under the Industrial Permit. If you implement all the recommended BMPs and eliminate outdoor exposure, you may be able to qualify for exemption from obtaining Industrial Permit coverage. Please contact the RWQCB for details.

☐ Develop and implement a Storm Water Pollution Prevention Plan (SWPPP)—see Section A of the Industrial Permit.

☐ Develop and implement a storm water monitoring program--see section B of the Industrial Permit for guidelines.

☐ Complete the provided Notice of Non-Applicability (NONA) and accompanying No Exposure Certification (NEC).

Additional notes and/or actions required:

_____

_____

_____

F. CITY OF VISTA MUNICIPAL CODE COMPLIANCE

☐ Significant non-compliance: Illegal discharge(s) of pollutants to the storm drain system or to receiving waters
☐ Significant non-compliance: Illegal connection(s) to the storm drain system
☐ Significant non-compliance: Littering
☐ Significant non-compliance: Failure to properly implement required BMPs

G. CORRECTIVE ACTION SUMMARY

☐ **Corrective Actions Required.** Please refer to sections D.1-D.6, E, and F of this form and, if applicable, the Food Establishment Storm Water BMP Assessment form (if applicable, it is attached).

☐ No Corrective Actions Required at this time.

H. RECOMMENDED CITY ACTIONS**

_____

_____

_____

Follow Up Inspection Priority: ☐ **Priority 1** ☐ **Priority 2** ☐ **Priority 3**

ASSESSMENT

Level of knowledge regarding stormwater issues:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Level of cleanliness, BMP implementation, orderliness of site:	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Please note that the Regional Water Quality Control Board (RWQCB) is the final arbiter of Industrial Permit compliance; please contact the RWQCB at (858) 467-2952 for details of what is necessary to comply with the Industrial Permit.

**Recommended City actions listed at the time of inspection are subject to change based on later review by office staff.

POLLUTANT DISCHARGE POTENTIAL ASSESSMENT

Site Name:_____

Pollutant	PDP	Sources Needing More BMPs							Recommended BMPs (check if applicable)			
		Trash Area	Material Storage	Prkng Lot	Load/ Unload	Land-scape	Veh/Eqp Maint	Exposed Work Area	Emp. Training	House-keeping	Minor Struct.	Major Struct.
Sediments												
Nutrients												
Aluminum												
Iron												
Heavy Metals												
Check if evidence indicates specific metals may have significant PDPs: ☐ Copper ☐ Cadmium ☐ Lead ☐ Zinc ☐ Mercury												
Organic Compounds												
Check if evidence indicates there may be historical soil contamination associated with any of the following: ☐ PCBs ☐ PAHs ☐ Chlordane ☐ DDT												
Trash & Debris												
Oxygen Demanding												
Oil & Grease												
Bacteria & Viruses												
Pesticides												
Check if evidence indicates the following are used on site: ☐ Diazinon ☐ Chlorpyrifos												
Acid/Base (pH effects)												
Others (list):												

"RW 303(d)" = Receiving water impairments, as listed in the most recent 303(d) list
"WS COC" = High priority watershed constituents of concern (COC), as listed in the most recent WURMP Annual Report
"PDP" = pollutant discharge potential.
"Emp. Training" = employee training activities focused on storm water pollution prevention
"Housekeeping" = standard good housekeeping BMPs, such as sweeping, regular trash pickup, etc.
"Minor Struct." = minor structural BMPs that do not require building permits, such as covering with tarps or building berms
"Major Struct." = major structural BMPs that require a building permit or are especially expensive, such as detention basins, oil/water separators, grease interceptors, overhead coverage for storage areas, etc.

Criteria

0 - no appreciable quantity observed on site
1 - very small potential for pollutant discharge; monitoring results* are well below the EPA benchmark
2 - Small potential for pollutant discharge; monitoring results* are close to the EPA benchmark but still below it
3 - Moderate potential for pollutant discharge; monitoring results* are at or slightly above the EPA benchmark
4 - Large potential for pollutant discharge; monitoring results* above the EPA benchmark but are within an order of magnitude
5 - Severe potential for pollutant discharge; monitoring results* exceed the EPA benchmark by an order of magnitude or more

DMAX

APPENDIX D-5

2009-10 Complaints Summaries

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-109 Type: Private Lateral Location Address: 1817 W. Vista Way - Ste F Watershed: Buena Vista Creek Call Date: 7/2/2009 Case closed date: 7/8/2009	Sewage spill; then the employees, with degreaser and hot water, flushed all into the alley. No clean-out cap.	I spoke with store manager. She explained grease clogged private lateral causing a spill. A plumber was called and cleared the line. Once cleared, the employees at Popeye's washed effluent/grease down with degreaser and buckets of hot water. Nothing was reclaimed and the clean-out cap was missing. Received a call from the district manager. Professional power washer to clean on Tuesday. 7/6/09, received an e-mail from the property manager. (printed e-mail is in file)	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Professionally wash down and reclaim effluent and replace clean-out cap. Follow-up Action: Photo verify Actions completed: Area clean and clean-out cap is in place.
SW No.: SW09-145 Type: Private Lateral Location Address: 988 Escondido Ave. Watershed: Buena Vista Creek Call Date: 8/3/2009 Case closed date: 1/28/2010	Sewer Spill - Grease effluent prevalent. Asphalt had a slippery feel to it near discharge site. (Sewer cleanout on north side of driveway).	Observed as described in Complaint Description. 8/10/09, plumber brought schematic for grease trap. I contacted Property Manager. Issued NOV requiring camera inspection and warning to correct pollutant potential in common areas. 8/13/09, Met with plumber on site. Area was surveyed and no cleanout visible to rear of buildings. One was located under metal shelving and signage to south rear wall of Deli Mart. Plumber jetted line then camera'd. Plumber stated line at north end is displaced. Area on pavement shows cracks and depressions. 8/19/09, received DVD's by Floyd & Howerton Plumbing, Inc. 8/28/09, Spoke with plumber from Floyd and Howerton Plumbing regarding findings; line is displaced at driveway apron. 11/5/09, property manager had been out of town and upon return requested extended grace period to locate and hire contractor. Job would start in a few weeks. 1/11/10, No corrective Action; no permits pulled to date. Contacted property manager. 1/14/10, received a call from property manager; work was done in December (no permits on file). Owner stated they replaced 30' of private lateral. He would send copy of camera inspection next week. 1/29/10, received DVD of private lateral. City employee viewed DVD - GOOD. 2/9/10, permit was issued to Rescue Rooter for replacement of private lateral. Requested city inspectors to submit status update to close case.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair/replace displaced private lateral. Follow-up Action: Received DVD copy of repaired camera inspection. Actions completed: DVD inspection indicated line is flowing. DVD was viewed by City Sanitation Technician and involved City Inspectors.
SW No.: SW09-169 Type: Private Lateral Location Address: 1267 Citrus Ave Watershed: Buena Vista Creek Call Date: 9/28/2009 Case closed date: 10/15/2009	Sewer spill onto N. Citrus Ave. coming from private lateral at 1267 N.Citrus Ave.	Private lateral spill from 1267 N. Citrus Ave. was confirmed. Discharged material did enter N. Citrus Ave. and storm drain at Cananea St. City crews were on site abating the sewer discharge. Upon arrival, City crews had tenants stop using water and toilets/showers.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Abate sewer discharge (City crews performed this). Call plumber to remove blockage/repair private lateral. Follow-up Action: Need copy of plumbers invoice showing cleaning/repair of private lateral. Actions completed: Property owner had ASAP Drain Guys Plumbing, Inc. clear line with snake. This was confirmed at 12:30 p.m. Several baby wipes were removed from lateral. They appeared to be the cause of this blockage (according to property owner and plumbing company).

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-204 Type: Private Lateral Location Address: 509 Dove Cir Watershed: Buena Vista Creek Call Date: 12/21/2009 Case closed date: 12/21/2009	City employee contacted Officer Sotola regarding private lateral backing up and discharging into adjacent culdesac/ right-of-way from driveway.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: NOV issued. Cease discharge, clear and repair lateral. Plumbing invoice to be provided upon work completion. Follow-up Action: Received plumber's invoice. Actions completed: Plumber's invoice received via FAX, private line cleared.
SW No.: SW10-049 Type: Private Lateral Location Address: 1240 Amador Ave Watershed: Buena Vista Creek Call Date: 3/2/2010 Case closed date: 3/2/2010	Sewage discharge from private lateral.	Observed as described in Complaint Description. 1240 Amador is below street level on Amador Ave. The sewage private lateral, by gravity, required line to extend to street below. The clean out, located on a private easement, exists on the side yard of 236 Colusa. Property owner of 1240 Amador Ave was contacted and plumber was on scene. Line was impacted with rocks (no clean out cap existed - no thread on pipe). Plumbr excavated private lateral, cleared the rocks and installed a threaded clean out cap. Area secured.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, repair line, install threaded clean out cap. Follow-up Action: Receive copy of plumber's invoice; photo verify threaded cap. Actions completed: A second spill occurred and plumber found impacted rocks. Area cleared and cap installed. Received plumber's invoice.
SW No.: SW10-067 Type: Private Lateral Location Address: 437 Santa Clara Watershed: Buena Vista Creek Call Date: 3/11/2010 Case closed date: 3/11/2010	Tenant removed clean out cap on downhill sewer lateral. He hosed site off with water and bleach.	Tenant had plumber (friend) enroute. Plumber arrived and cleared line.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, repair private lateral. Follow-up Action: Verify that line is clear. Actions completed: Sewer line was running and clear.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-070 Type: Private Lateral Location Address: 2620 Commerce Way Watershed: Agua Hedionda Creek Call Date: 3/24/2010 Case closed date: 3/26/2010	Upwelling of possibly sewage material from manhole at Commerce Way and Progress Streets.	Upon arrival, Public Services staff were operating their vactor equipment in gutter on Progress St. to capture sewer overflow from private lateral. Lateral (from Zodiac Pool Systems) was blocked by roots. Bottom of cleanout contained lots of roots and solids.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately remove blockage from private lateral to restore flow. Follow-up Action: City staff confirmed cabling and hydrojetting. Confirmed via photographs and invoice from plumber. Actions completed: Zodial staff contacted ASAP Drain & Plumbing to repair private lateral. ASAP cabled with blades then hydrojetted. ASAP staff then removed roots and solids from bottom of clean-out, totaling three 3 gallon bags. ASAP also camera'd lateral.
SW No.: SW10-073 Type: Private Lateral Location Address: 800 Aveina de Benito Juarez Watershed: Buena Vista Creek Call Date: 3/29/2010 Case closed date: 4/20/2010	Sewage discharging into right-of-way	Tenant not obtaining corrective action by property owner and conditions are excalating with sewer failure. Tenant stated he has rented there for six months and owner has owned property for six months. Some windows are cracked and some have no glass; floor is cracking; 6 inches of sewage under house continually seeps out into yard. Driveway is alligatored and sewage is seeping through broken asphalt. Sewage is seeping at street and into right-of-way. Previously, tenant stated owner was notified that there was no heat and requested repair. No response from property owner. Tenant crawled under house and found valve to turn on heat. The property owner they sued tenant. Court favored tenant. 4/5/10, Land Dev. Inspector stated new tenants have moved back into house and lateral in not repaired. Draves Plumbing was contracted by property owner and some excavation has occurred. 4/6/10, I e-mailed County Health Dept. for status update. 4/7/10, No response from County. Inspector spoke with employee at County and requirement has been met. Tenants have moved back in. Owner did not pay Draves Pipeline for repair. Issued citation for failure to camera line. 4/8/10, Issued citation. It was sent by certified mail with return receipt requested.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Replace/repair lateral, camera line and provide DVD copy of camera inspection. Follow-up Action: 3/30/10, No corrective action. Actions completed: TV DVD's received and private lateral is clear with the exception of pre-existing root intrusion in old private lateral.
SW No.: SW10-086 Type: Private Lateral Location Address: 956 Vale Terrace Watershed: Buena Vista Creek Call Date: 4/9/2010 Case closed date: 4/26/2010	Vista Irrigation District (VID) employee reported backed-up sewer lateral discharging into right-of-way.	Observed as described in Complaint Description. Private plumber attempted to clear line; discovered lateral collapsed under street. Further investigation by staff and Vista Land Development Inspector determined that lateral damage was created by work done at location by City CIP (Capital Improvement Project) contractor. City contarctor will bear cost of repair and reimburse plumbing costs of Property Maintenance Supervisor. 4/15/10, camera of lateral and invoices not received; video pending per inspector. 4/26/10, PDF of plumbing invoice e-mailed.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clear lateral, video line, fax plumber invoice. Follow-up Action: Receive invoice/ video, DVD or CD (CCTV) Actions completed: Received invoice. Land Development will send DVD/CCTV.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-121 Type: Private Lateral Location Address: 573 W. Vista Way Watershed: Buena Vista Creek Call Date: 6/10/2010 Case closed date: 6/11/2010	6/9/10 - Public Works crew responded to sewer system overflow (SSO) at location, clean outs in front of auto part store and mexican food restaurant discharging, clean out caps not in place.	Observed as described in Complaint Description. Property owner (PO) was contacted to call plumber on scene. Lateral clear, caps not in place. 6/10/10 - Caps not in place, plumber and PO advised that NOV requirements are not met until caps is in place. 6/14/10 - Caps in place, spoke with PO to obtain invoice, PO asked that an email be sent to plumber for invoice. 7/12/10 - No invoice, PO emailed and faxed.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clear lateral, replace/repair cleanout caps, send plumbers invoice Follow-up Action: Photo verify Actions completed: Lateral clear, caps in place, invoice received
SW No.: SW10-122 Type: Private Lateral Location Address: 267 Alestar St. Watershed: Buena Vista Creek Call Date: 6/15/2010 Case closed date: 7/14/2010	Plumber at location repairing lateral as corrective action for SW10-110, Saw cutting of concrete conducted at location, grey residue runs into city gutter, down to inlet in front of 834 Eucalyptus Ave.	Observed as described in Complaint Description. NOV faxed with notice letter (6/16/10). 7/7/10 - spoke to plumbing company, training scheduled for 7/10/10, given new due date of 7/14/10.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove stain/residue from ROW and from asphalt area of work site. Employee training by 7/14/10. Follow-up Action: Photo verify, receive proof of employee training. Actions completed: Residue removed (6/17/10), employee training complete.
SW No.: SW09-112 Type: Commercial Location Address: 302 N. Emerald Dr Watershed: Buena Vista Creek Call Date: 7/6/2009 Case closed date: 7/8/2009	Water from church into curb/gutter seems to be chronic.	Water discharging from curb core drain at driveway of church. Previous case in March indicated leak in water line creating an erosion concern on city streets. I spoke with manager. New landscape plants still in pots required watering. They didn't think to monitor where water was going (out of area drain and into curb/gutter/street). He stopped watering. I suggested he prevent water from leaving the site (particularly with new landscaping).	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease run-off Follow-up Action: Photo verify Actions completed: Area dry

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-125 Type: Commercial Location Address: 2010 Hacienda Dr. Watershed: Buena Vista Creek Call Date: 7/14/2009 Case closed date: 7/15/2009	Plumber washing mud into roadway	Observed as described in Complaint Description. I spoke with employee of Complete Plumbing. He asked worker to cease hosing and use shop vac to retrieve water.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge with hose and reclaim water and mud in the area Follow-up Action: Photo verify Actions completed: Area clean and dry
SW No.: SW09-126 Type: Commercial Location Address: 1410 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 7/13/2009 Case closed date: 7/27/2009	Motor oil accumulation throughout parking lot.	Observed as described in Complaint Description. I spoke with manager. Power washing is scheduled for 7/26/09. 7/27/09, C & D Maintenance providing cleaning service.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove grease/oil accumulation and reclaim all discharge. Follow-up Action: Photo verify Actions completed: Area clean. Grease accumulation has been removed.
SW No.: SW09-132 Type: Commercial Location Address: 427 Redlands St., Ste C Watershed: Buena Vista Creek Call Date: 7/16/2009 Case closed date: 7/30/2009	Grey powder (sanded paint from car body) mixed with water and oils are discharging throughout site. Old car parts, oil drums, trash, etc.. As well as cars blocking exit.	Observed as described in Complaint Description. 7/27/09, I spoke with tenant and with city Code Enforcement Officer. Tenant understood the necessity to cease water discharge and remove muck from property. He said he received the warning letter and wants to comply. NOV issued.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge, clear junk from location. Lock gate or realign cars to allow ingress and egress. Follow-up Action: Visual on improvement of site. Actions completed: Area cleared and no visible wash-off of site.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-138 Type: Commercial Location Address: 1525 W. Vista Way Watershed: Buena Vista Creek Call Date: 7/20/2009 Case closed date: 7/27/2009	Oil/gresase stains and spills at back door of kitchen near grease recycle drums. No secondary containment or overhead coverage for grease recycle drums. Dumpster area has trash and liquid spills. Dumpster lids left open. Problems with irrigation - water discharge through retaining wall. No documented storm water training for employees. No accessible spill response materials.	7/20/09, Several BMPs implmented. Spill kit materials accessible at back door of kitchen. Decreased watering schedule and repaired leaky irrigation valve; no further discharge observed. Dumpster lids were closed and dumpster area was clean of liquids, trash and debris. Secondary containment/overhead coverage provided for grease recycle drums. Grease accumulated on concrete area where grease recycle drums had been stored. No documented storm water training for employees.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean grease accumulated on concrete where grease recycle drums had been stored using a dry sweep method. If water is used, it all must be reclaimed and disposed of properly. Train all employees. Follow-up Action: Photo verify Actions completed: BMPs implemented. Grease/oil cleaned from grease recycle area. Employees are trained on stormwater BMPs.
SW No.: SW09-143 Type: Commercial Location Address: 546 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 7/29/2009 Case closed date: 7/29/2009	Overwatering	Area flooded from overwatering. Business owner provided phone number for landlord. Landlord will contact landscapers to correct flooding.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge run-off. Follow-up Action: Visually verify Actions completed: Area dry.
SW No.: SW09-150 Type: Commercial Location Address: 988 Escondido Ave, Ste G & H Watershed: Buena Vista Creek Call Date: 8/10/2009 Case closed date: 9/22/2009	Trash, debris, stored metal shelving and signage, stains, trash can with no cover, stored recycle bottles/cans; wooden structure at south of building - no permit or plan on file for structure; grease trap. Took photos of wood structure to Building Director. He state it was illegal and an inspector was assigned to the case. (I previously contacted Development Services to confirm no plans/no permit).	Observed as described in Complaint Description. I spoke with tenant regarding exterior conditions of structure. He had received faxed copy I had previously sent to Property Management Co. I issued a NOV on 8/13/09 to tenant and he began to clean up the area. 8/14/09, I contacted Health Dept. as food preparation area and display cases were questionable for cleanliness and hygiene. Trays were under display cases to catch drips that contained fluids. A terrible stench emanated from the Deli area and I could not see any Health Rating Card at business entrance. 9/21/09, spoke with management, area issues complete. 9/22/09, corrective action taken on all items. Grease trap is cleaned by tenant and disposed into dumpster. I contacted EDCO Waste & Recycle - they are okay with canned or bagged solid grease going into their bins.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Provide grease trap documentation regarding maintenance - upgrade BMP maintenance through business site. Follow-up Action: Photo verify Actions completed: Corrective acton taken on NOV.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-151 Type: Commercial Location Address: 444 S. Santa Fe, Ste B Watershed: Buena Vista Creek Call Date: 8/17/2009 Case closed date: 8/18/2009	Witness stated business was hosing off pavement and allowing to enter storm drain.	Pavement on lot was recently asphalt sealed. This process requires a clean surface. Dirt was visible on a low spot of sidewalk and stains visible leading to storm inlet. Stains stop before inlet which leads me to believe the inlet was protected. I spoke with tenant and requested removal of dirt and stains.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove dirt and stains from sidewalk and gutter. Follow-up Action: Photo verify Actions completed: Area cleaned
SW No.: SW09-153 Type: Commercial Location Address: 545 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 8/5/2009 Case closed date: 11/3/2009	Sediment discharge - no perimeter BMPs	Working with Public Services asphalt crew. Perimeter protection for 547 S. Santa Fe Ave (a vacant lot owned by City of Vista) was completed. This left 545 S. Santa Fe Ave. subject to sediment discharge as slope and unsurfaced area are unprotected. 8/24/09, Met w/property management to discuss her questions regarding BMPs. 9/23/09, no further corrective action taken - reminder to property management to have completed by end of Sept.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Protect perimeter of site to prevent sediment discharge to storm drain inlet. Follow-up Action: Photo verify Actions completed: 10/6/09, some fibermat has been placed on slope. I spoke with property manager to complete BMPs. 11/3/09, Remaining fiber mat has been placed on slope. Area will require monitoring for growth of slope vegetation.
SW No.: SW09-154 Type: Commercial Location Address: 310 Escondido Ave Watershed: Buena Vista Creek Call Date: 8/19/2009 Case closed date: 8/19/2009	Overwatering and discharging off property to right-of-way	I spoke with Pres./CEO of The Dimirak Companies. He stated his landscapers monitor water distribution and he is adhering to the Vista Irrigation District (VID) Stage 2 restrictions. Driveway was wet and curb/gutter had been wet but irrigation system was off. E-mail sent to Asst. City Manager providing disposition of his request to follow up with this business.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Monitor and adjust irrigation Follow-up Action: None - overwatering is presently not a violation. Actions completed: None

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-156 Type: Commercial Location Address: 217 Escondido Ave Watershed: Buena Vista Creek Call Date: 8/20/2009 Case closed date: 8/20/2009	Car fluid discharging off Plaza Marco into curb/gutter	Observed as described in Complaint Description. Public Services was dispatched to apply absorbant as spill had migrated into gutter. Publis Services also applied absorbant on private property parking lot. I contacted property owner and informed him the area would need additional grease removal as concrete sidewalk and driveway apron looked as though some grease remained. Property owner stated he would assess the area tomorrow and remove as needed.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Assess and remove any remaining area vehicle fluids on sidewalk. Follow-up Action: Photo verify. Actions completed: Area appears to have been cleaned by property owner as grease stain is lighter and absorbant is gone.
SW No.: SW09-157 Type: Commercial Location Address: 224 N. Emerald Dr. Watershed: Buena Vista Creek Call Date: 9/1/2009 Case closed date: 9/1/2009	Excessive water.	Gas station was siphoning an excavation hole - water clear. I spoke with employee of FR Construction. Their siphon device had some leaks.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Direct run-off to landscaping - keep area gutters clear of trash and debris. Follow-up Action: Photo verify Actions completed: Siphon device was direct to car wash clarifier.
SW No.: SW09-164 Type: Commercial Location Address: 302 N. Emerald Dr. Watershed: Buena Vista Creek Call Date: 9/1/2009 Case closed date: 9/8/2009	Water discharging from school property	I spoke with maintenance superintendent. They just planted new sod. I sent letter to school superintendent to cease or greatly curtail any watering of site.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease or greatly curtail further discharge. Follow-up Action: Visually verify. Actions completed: Area dry

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-166 Type: Commercial Location Address: 444 S. Santa Fe Ave, Ste C Watershed: Buena Vista Creek Call Date: 9/21/2009 Case closed date: 9/22/2009	No spill pan and no cover while working on cars.	Vehicles were observed as described in Complaint Description. Requested all activities involving car repair be done under cover and apply other BMP practices.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove vehicles to enclosed bay area - use spill pans Follow-up Action: Photo verify Actions completed: All BMPs corrected.
SW No.: SW09-170 Type: Commercial Location Address: 1600 blk S. Melrose Dr. Watershed: Agua Hedionda Creek Call Date: 9/29/2009 Case closed date: 10/6/2009	Excessive irrigation runoff coming from shopping center (Melrose Village Plaza) entering gutter on Longhorn Dr.	Investigation revealed no evidence of discharge or water runoff.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: N/A Follow-up Action: City staff will monitor the area in the future. Actions completed: N/A
SW No.: SW09-172 Type: Commercial Location Address: 224 N. Emerald Dr. Watershed: Buena Vista Creek Call Date: 10/7/2009 Case closed date: 11/17/2009	Overwatering, failure to maintain BMPs, oil drum has no secondary containment and no overhead coverage, trash and debris in storm drain area inlets and stains throughout site.	Observed as described in Complaint Description. 10/19/09, I spoke with stormwater maintenance person. She has been called to clean storm drain inlets and asked for an extension.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs throughout site. Follow-up Action: Photo verify. Actions completed: Area has been dry for many weeks. Area drains have been cleaned. Appropriate BMPs have been implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-176 Type: Commercial Location Address: 1070 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 10/8/2009 Case closed date: 10/26/2009	Perimeter ditches congested with debris		Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clear ditches and inlet Follow-up Action: Photo verify Actions completed: Ditches cleaned. Requested regular cleaning with particular emphasis prior to official rainy season.
SW No.: SW09-179 Type: Commercial Location Address: 298 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 10/20/2009 Case closed date: 11/17/2009	Sediment discharge and accumulation.	Sediment accumulation was occuring in a right-of-way triangle land locked by an asphalt curb to the north east of the 7-11 Store. City crews cleared the dirt from the right-of-way triangle. Once removed we were able to make a determination of sediment origin. A rear bank behind the 7-11 Store had extensive erosion. I contacted store owner and issued a NOV to repair erosion and remove vegetation and mud accumulating in drainage ditch that runs behind 7-11 Store. 10/27/09, area nearest street has been cleaned. Perimeter ditch still has vegetation and drain catch basin at toe and ditch is filled with dirt. 11/3/09, checked site with Sr. Environmental Specialist and spoke with responsible person. Areas outstanding will be cleaned.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair erosion; remove vegetation and accumulation from perimeter ditch. Follow-up Action: Photo verify Actions completed: Area has been cleared of overgrowth and mud accumulation. Store Mgr stated 55 gal. drum, once emptied, will be relocated inside the dumpster.
SW No.: SW09-180 Type: Commercial Location Address: 1755 Hacienda Dr Watershed: Buena Vista Creek Call Date: 10/20/2009 Case closed date: 10/20/2009	Pressure wash and no reclamation.	Spoke with Assistant Manager about required reclamation.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge and reclaim Follow-up Action: Visual verification Actions completed: Discharge was stopped and water reclaimed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-184 Type: Commercial Location Address: 600 E. Vista Way Watershed: Buena Vista Creek Call Date: 11/16/2009 Case closed date: 11/16/2009	Pressure washing and no reclamation.	I spoke with with the person that was pressure washing and requested no further discharge until water can be reclaimed. I spoke with the supervisor of Royal Roof Company and he was unaware that pressure washing required reclamation. Also, sent warning letter to Business Manager of Royal Roof Co.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, reclaim further discharge Follow-up Action: Verify compliance Actions completed: Discharge and pressure washing was stopped. Workers left location
SW No.: SW09-189 Type: Commercial Location Address: 700 Eucalyptus Ave Watershed: Buena Vista Creek Call Date: 11/23/2009 Case closed date: 11/23/2009	Irrigation leaking onto roadway	I contacted Public Services regarding the reported leak. Was informed by Parks Maintenance that Aztec Landscape Maintenance had been notified and problem was a backflow.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair backflow and immediately cease water flow. Follow-up Action: Visual verify Actions completed: Area is dry.
SW No.: SW09-197 Type: Commercial Location Address: 330 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 10/26/2009 Case closed date: 12/30/2009	Landscape irrigation problem causing sediment to discharge onto sidewalk and into right-of-way.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, repair irrigation. Follow-up Action: Photo verify and monitor Actions completed: Area has been corrected and no run-off/sediment discharge has occurred.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-198 Type: Commercial Location Address: 728 Escondido Ave Watershed: Buena Vista Creek Call Date: 11/30/2009 Case closed date: 12/3/2009	Flooding potential	I researched the location with our Right-of-Way Agent and discussed concern with Asst. City Atty. The storm drain behind Fat Quarters is City responsibility.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to Public Services for maintenance Follow-up Action: None - Not a storm pollution issue at this time. Actions completed: Public Services has requested an SRO on the ditch per Public Services Street Supervisor.
SW No.: SW09-202 Type: Commercial Location Address: 1112 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 11/19/2009 Case closed date: 1/20/2010	No BMP Protection on stock piles behind Sunrise Materials.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs Follow-up Action: Photo verify Actions completed: Silt Fencing surrounding stock piles
SW No.: SW10-001 Type: Commercial Location Address: 4444-B S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 1/6/2010 Case closed date: 1/6/2010	Officer Welte observed "employee" cleaning a spill with broom and liquid dispersed from container, spill was swept into right-of-way/gutter.	Employee responsible advised that he spilled coolant and he used water to clean it. Green liquid was observed in gutter, large stain on right-of-way and property. No noticable entry of spill into inlet.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Responsible party used spill kit to absorb/sweep up spill residue in right-of-way. Follow-up Action: Site to be monitored continually until satisfactory. Actions completed: Spill was cleaned with spilll kit via dry method (broom & absorbant).

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-002 Type: Commercial Location Address: 895 E. Vista Way Watershed: Buena Vista Creek Call Date: 1/8/2010 Case closed date: 6/8/2010	Reporting party left a voice mail for Stormwater manager regarding "tar" spill observed as directly discharging into stormdrain, which contributes to creek. Source identified as a roofing contractor.	1/8/10 - Observed as described in Complaint Description. Stormwater manager arrived on scene, observed discharge in storm drain inlet and residue in creek; thick, blackish/brown, "tar-like" liquid (later identified as asphalt emulsion. Fire, OEM,Vista Wastewater, County hazmat notified and responded. Roofing Co. owner notified and responded to location. Approximately 20-30 gallons of asphalt emulsion was spilt into the storm drain, west of property, approximately 5 gallons entered adjacent creek. 1/11/10 - Stormwater manager contact by Downstream regarding pump hose burst/leak at location, roofing contractors contained emulsion spill, residue visible on building and pavement. Contractor will clean spill without use of water; stormdrain covers dry and intact. 1/18/10 - Officer spoke to Downstream representative - EPA requires a temporary haul number not asscessible on the internet. Office staff at Downstream has been "on hold" with EPA for hours waiting for EPS to answer phone and assign a number. Officer asked Downstream to call with temporary haul number and removal date.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, hire contrator to clean/contain spill; Downstream hired for clean up. County hazmat issued written "official notice". Contractor requested to cover storm drains. Follow-up Action: 2/12/10 - Roofing contractor covered stormdrain inlets (on Calvary Chapel side downstream) from pumper location. Submit Downstream invoice, SWPP submissions, employee training. Actions completed: All documents and proof submitted.
SW No.: SW10-017 Type: Commercial Location Address: 845 E. Vista Way Watershed: Buena Vista Creek Call Date: 1/25/2010 Case closed date: 1/12/2010	Report of powerwashing without water reclamation.	Observed as described in Complaint Description. Contract painter cleaning paint spills.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge or implement BMP/reclamation before continuing. Follow-up Action: Verify compliance Actions completed: Discharged stopped, work discontinued.
SW No.: SW10-038 Type: Commercial Location Address: 253 N. Emerald Dr., Ste A & B Watershed: Buena Vista Creek Call Date: 2/9/2010 Case closed date: 2/26/2010	No second containment or overhead coverage for oil drums. One hundred plus tires have no coverage.	Oil Drums - No secondary containment, no overhead coverage. Oil is leaking, absorbant on ground but not swept up. Tire storage is excessive, inoperable vehicle(s).	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove oil and remaining absorbant; remove tires and inoperable vehicle. Follow-up Action: Photo Verify Actions completed: 2/24/10, secondary containment/overhead coverage for oil drums implemented. Tires being moved out. Follow-up by Friday 2/26/10 2/26/10, Tires removed and inoperaable vehicle gone.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-042 Type: Commercial Location Address: 521 S. Santa Fe Ave. Watershed: Buena Vista Creek Call Date: 2/2/2010 Case closed date: 2/23/2010	Accumulation of trach and debris; an eroding rear lot.	Observed as described in Complaint Description. I contacted property owner and requested BMP implementation.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove trash and debris. Implement permanent surface material in eroded areas. Follow-up Action: Photo verify Actions completed: Debris and trash removed, some vegetation noted.
SW No.: SW10-044 Type: Commercial Location Address: 1800 University Dr. Watershed: Buena Vista Creek Call Date: 2/18/2010 Case closed date: 4/19/2010	Observed brown rust stain leading to storm drain. Manager explained it was created when fire sprinklers were flushed. 4/19/10, Spoke with Environmental Compliance personnel. Advised him of fire sprinkler discharge that needed a solution.	Observed as described in Complaint Description.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, clean/remove stains. Follow-up Action: Photo verify. Actions completed: Cleaning attempted, some of stain lifted; area drain are stenciled. Wal-mart was advised about discharge issues (Environmental Compliance Divistion).
SW No.: SW10-045 Type: Commercial Location Address: 707 Escondido Ave Watershed: Buena Vista Creek Call Date: 2/1/2010 Case closed date: 3/1/2010	Public Services Wastewater Worker reported power washing with out BMPs, water entering right-of-way.	Observed as described in Complaint Description. Power washing had stopped. Educated responsible party on power washing BMPs. 2/16/10, Area checked. Accumulation of saw dust in parking lot, no evidence of sweeping into right-of-way or discharge at nearest stormwater inlet.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Prevent any discharge; sweep area Follow-up Action: Photo verify Actions completed: Visual checks of location reveal no evidence of recent discharges.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-053 Type: Commercial Location Address: 25 Main St. Watershed: Buena Vista Creek Call Date: 2/26/2010 Case closed date: 4/6/2010	Fluid discharge in trash compactor enclosure directed to area drains.	Observed as described in Complaint Description. Hose bibb leaks. Employees are hosing out trash cans and discharging to two area storm drain inlets which are then directed to creek.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge. Implement appropriate BMPs. Follow-up Action: Photo verify. 3/29/10, much cleaner, small 'socks' boarder the compactor - leaks still occur and enter area drains. Actions completed: Yellow triangle sponge type booms are placed prior to inlets and capturing irrigation sprinkler/compactor water. This fluid is vacuumed by company on a regurlar basis.
SW No.: SW10-075 Type: Commercial Location Address: 436 Vista Village Dr. Watershed: Buena Vista Creek Call Date: 3/30/2010 Case closed date: 4/14/2010	Miscellaneous automobile violations of poor housekeeping.	Grease and tire storage next to building; working on cars outside of bay area without spill pan and no cover. Open trash cans, etc.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Provide written documentation of employee training; remove engine from outside, maintain and remove grease spills. Label 'oil filter' drum. Follow-up Action: Photo verify Actions completed: BMPs implemented.
SW No.: SW10-077 Type: Commercial Location Address: 660 Hacienda Dr Watershed: Buena Vista Creek Call Date: 3/24/2010 Case closed date: 4/5/2010	Overwatering complaint, landscape irrigation running for over 12 hours.	Call was placed to property management, they will look into it. 3/25/10, follow-up call to reporting person, water was not running. 4/1/10, over irrigation observed. 4/5/10, no over irrigation observed.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Verbal warning. Discountinue over watering. Follow-up Action: Photo verify Actions completed: Area dry.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-078 Type: Commercial Location Address: 500 block Hacienda Dr. Watershed: Buena Vista Creek Call Date: 4/1/2010 Case closed date: 4/1/2010	Reporting person observed dumping of concrete into inlet.	Checked all area inlets, nothing found.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: N/A Unfounded Follow-up Action: N/A Unfounded Actions completed: N/A Unfounded
SW No.: SW10-080 Type: Commercial Location Address: 120 W. Connecticut Ave Watershed: Buena Vista Creek Call Date: 4/6/2010 Case closed date: 4/9/2010	Reporting party complained of mud sewage being dumped on property - Smells like sewage.	Observed as described in Complaint Description. Several piles of thick mud; smells like sewage. Pieces of broken concrete and red pipe or tile is mixed with the mud. 4/7/10, Advised to remove mud by Friday (within 2 days). 4/12/10, Party responsible for dumping was identified, refer to case file no. SW10-091 involving 440 N. Santa Fe Ave (La Mexicana Market).	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unable to locate responible party for dumping. Property owner is required to remove mud by this week. Follow-up Action: Photo verify. Actions completed: Mud piles have been removed.
SW No.: SW10-085 Type: Commercial Location Address: 1210 N. Melrose Dr., Suite B Watershed: Buena Vista Creek Call Date: 4/8/2010 Case closed date: 4/19/2010	D-Max report of illicit discharge into inlet/swale. Washing or rinsing of vehicles with BMPs.	Observed as described in Complaint Description. Water with grey residue into concrete swale to inlet. 4/14/10, Stock piles of auto parts and tires. Met at location with business owner and our Sr. Environmental Specialist. Vehicle rinsing moved inside; mopping of water from rinsing is done indoors; fiber roll is in place at building doorways. Vehichles vehicles are washed off-site at car wash. Back lot swept/powerwashed. Business owner is looking intoclarifier installation. Business owner was advised to cover stock piles.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, implement BMPs for auto washing. Follow-up Action: Photo verify Actions completed: Corrective actions completed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-088 Type: Commercial Location Address: 1011 So. Santa Fe Ave Watershed: Call Date: 4/12/2010 Case closed date: 5/10/2010	DMAX inspection: Food grinder/garbage disposal in use	Observed as described in Complaint Description. NOV issued on 4/12/10. 4/12/10 spoke to Business owner on phone, faxed VMC 14.12 to business owner	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove food grinder Follow-up Action: Photo verify Actions completed: Food grinder removed
SW No.: SW10-089 Type: Commercial Location Address: 1121 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 4/12/2010 Case closed date: 4/15/2010	Mud track, lack of BMPs, tire storage, no secondary containment for fuel locker.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs. Follow-up Action: Photo verify. Actions completed: BMPs implemented.
SW No.: SW10-094 Type: Commercial Location Address: 777 E. Vista Way Watershed: Buena Vista Creek Call Date: 4/13/2010 Case closed date: 4/21/2010	Observed outdoor stock piles, grease bins without secondary containment and no overhead coverage, litter, waste, and evidence of outside washing	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove stock piles, litter, grease bins and cease any further discharge. Follow-up Action: Photo verify Actions completed: All materials removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-095 Type: Commercial Location Address: 822 E. Vista Way Watershed: Call Date: 4/13/2010 Case closed date: 5/10/2010	Grease trap without baffle, floor drain without screen	Observed as described in Complaint Description. 5/5/10 Plumber left voicemail, baffle in place	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Install baffle and drain screen Follow-up Action: Photo verify Actions completed: Drain screen and baffle in place
SW No.: SW10-096 Type: Commercial Location Address: 923 E. Vista Way Watershed: Call Date: 4/13/2010 Case closed date: 6/14/2010	GCD/Grease trap missing baffle.	Observed as described in Complaint Description. 5/13/10 - Spoke w/Business owner, baffle and lid for trap are not in place, awaiting plumber.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair/replace baffle. Follow-up Action: Photo verify. Actions completed: Baffle in place.
SW No.: SW10-097 Type: Commercial Location Address: 840 E. Vista Way Watershed: Call Date: 4/13/2010 Case closed date: 6/4/2010	Grease bin requires secondary containment, spills/stains observed.	Observed as described in Complaint Description. Email sent to business manager with pictures of violation. 4/19/10 - Message received from Liquid Environmental Services, re: violation email sent to business owner. 4/23/10 - Per email exchange with Liquid Environmental, a new grease bin with secondary coverage may take one month. NOV extended to 5/25/10. 5/25/10 - Liquid Environmental emailed 2C/OC in place in one week. 6/4/10 - Bin in place (BMP's).	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate container with secondary containment. Follow-up Action: Photo verify Actions completed: 2C/OC in place, will monitor for effectiveness.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-098 Type: Commercial Location Address: 705 E. Vista Way Watershed: Buena Vista Creek Call Date: 4/13/2010 Case closed date: 5/11/2010	Excessive litter, stock piles on load dock, dumpsters open, lack of sweeping, evidence of discharge into creek.	Observed as described in Complaint Description. NOV issued	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Protect water course: sweep regularly, remove trash/debris, remove stockpiles, close dumpster lids Follow-up Action: Photo verify Actions completed: Materials removed, litter/debris removed
SW No.: SW10-100 Type: Commercial Location Address: 122 W. California Ave Watershed: Buena Vista Creek Call Date: 4/12/2010 Case closed date: 4/19/2010	D-Max inspector/officer observed that GCD/trap does not have baffle, Officer noted missing sewer cap.	Observed as described in Complaint Description. 4/26/10, NOV due date.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Install baffle, cleanout cap Follow-up Action: Photo verify. Actions completed: Cap & baffle in place.
SW No.: SW10-102 Type: Commercial Location Address: 770 Sycamore Ave #124 Watershed: Call Date: 4/22/2010 Case closed date: 6/4/2010	D-Max inspection noted GCD/Trap measured above 25% (30%) on 3/1/10.	Observed as described in Complaint Description. Receipts show cast pump on 3/3/10. Trap was 9 inches deep, with 2 inches grease and 1 inch solids. NOV recommended more frequent pumping of GCD. 4/29/10 - Spoke with the manager. Trap will be pumped on 5/4/10 or later that week. Trap will be pumped every 3 weeks after next scheduled pumping. 6/4/10 - Trap will be pumped every 20 days, FOG measured at 23.61%.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Maintain GCD below 25%, solids and grease. Follow-up Action: Photo verify and measure trap Actions completed: Trap measurements below 25%.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-104 Type: Commercial Location Address: 2147 E. Vista Way Watershed: San Luis Rey Call Date: 4/27/2010 Case closed date: 5/13/2010	Grease bin outside (in back) without secondary containment and cover.	Observed as described in Complaint Description. Excessive litter observed, spills observed	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement cover/containment, sweep area and remove trash Follow-up Action: Photo verify Actions completed: Grease storage moved inside, trash removed
SW No.: SW10-107 Type: Commercial Location Address: 603 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 4/29/2010 Case closed date: 7/19/2010	Observed excessive oil stains, material stockpiles, evidence of contaminated run off and lacking/failing BMPs	Observed as described in Complaint Description. NOV sent 5/3/10. 5/11/10 - Inspected location, took pictures, Officer left location when asked to do so by business owner (BO). 5/12/10 - Spoke with property owner (PO), NOV requirements explained, working on solution with BO. 5/13/10 - Spoke with PO, in contact with Redevelopment Director, may consider moving business as an option, run on/off issues will be addressed. May install a berm. 5/20/10 - Met with PO at location, majority of material has been removed, given time extension. 6/4/10 - Per Code Enf Officer, south lot is clear, north lot reduced below fence line. 6/9/10 - Contacted PO, will meet at location on 6/14/10. 6/14/10 - Met with PO at location, majority of materials had been removed, BO renting a buiding for material storage offsite, Officer suggested sand bags for north lot. Given 4 weeks to implement. 7/12/10 - Left a message with PO - reminding him of due date. 7/13/10 - PO left a message asked for an extension to 7/16/10. 7/19/10 - Berm in place.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean up stains, remove stock piles, implement BMPs Follow-up Action: Photo verify Actions completed: BMPs implemented, material reduced/removed
SW No.: SW10-112 Type: Commercial Location Address: 1340 N. Melrose Dr Watershed: Loma Alta Creek Call Date: 5/11/2010 Case closed date: 6/4/2010	Uncovered materials exposed (metal racks, wooden pallets). Organic debris in area drains (load docks), evidence of illegal discharge into inlet.	Observed as described in Complaint Description. Grey/whitish powder stain noted in inlet and catch box. Metal shards/cottings observed outside, but not in inlet.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove or cover outdoor materials, protect them from water contact, clean debris from loading dock area, drains. Start employee training, remove powder discharge from inlet. Follow-up Action: Photo verify. Actions completed: Wooden pallets reduced/covered, metal storage reduced, inlet protected, regular sweeping and training implimented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-113 Type: Commercial Location Address: 1805 Hacienda Dr Watershed: Buena Vista Creek Call Date: 5/12/2010 Case closed date: 6/17/2010	Grease on pavement near dumpster; Sediment, trash and debris accumulation in the inlet/outlet; Stains on the ground.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Remove and clear accumulation at inlet/outlet. Remove grease residue, cease further hosing of site. Follow-up Action: Photo verify. Actions completed: BMPs implemented. Business is now on a quarterly inspection list and will be checked by Stormwater staff.
SW No.: SW10-114 Type: Commercial Location Address: 307 Vista Village Dr Watershed: Call Date: 5/11/2010 Case closed date: 6/10/2010	Grease interceptor (GI) man hole entry non-functional, unable to open.	Observed as described in Complaint Description. Recommend contacting grease hauler to open GI for Officer. 6/3/10 - Man hole open, FOG measured 5.5 feet solids/6 feet total = 91.6%. Must pump by 6/10/10.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Restore GI man hole access to functional. 6/3/10 - GI accessed, over 25%, needs pumping by 6/10/10 Follow-up Action: Photo verify Actions completed: GI pumped, less than 1%
SW No.: SW10-117 Type: Commercial Location Address: 632 Sycamore Ave Watershed: Call Date: 5/12/2010 Case closed date: 6/22/2010	Man hole access to GI manfunctioned - unable to open	Observed as described in Complaint Description. 6/3/10 - Deadline of 6/10/10 to repair manhole via phone message. 6/10/10 - Manhold not restored, fax sent, final deadline extended 6/14/10. 6/15/10 - Man hole not restored, no Manager available. 6/16/10 - Called location, no Managers available. Contacted Regional Manager he said General Manager would follow up by 6/18/10 by contacting the City. 6/18/10 - Scheduled time to open manhole for 6/21/10. 6/21/10 - Manhole opened, GI pumped.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Restore manhole access to GI Follow-up Action: Photo verify, measure contents in GI Actions completed: Manhole open, GI pumped and empty. NOV signed in person.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-123 Type: Commercial Location Address: 101 Main St Watershed: Buena Vista Creek Call Date: 6/14/2010 Case closed date: 6/30/2010	Pressure washing, no reclaimation	Spoke to business owner, he was pressure washing the site and was not relaiming the water. Sent an email to the Presiden to the business requesting BMP compliance.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge and reclaimation of water. Acceptable to allow discharge into landscaping area. Follow-up Action: Monitor Actions completed: No further occurrence has been witnessed
SW No.: SW10-125 Type: Commercial Location Address: 1033 E. So. Santa Fe Ave Watershed: Call Date: 6/18/2010 Case closed date: 7/5/2010	No cover on great recycler; Lids open on dumpster	Observed as described in Complaint Description. 6/29/10 - New black lidded 55 gal drum was outside. Officer spoke to Assistant manager to either move back into closet or obtain a 2C/OHC for the unit	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Relocate uncovered grease recycle unit to a "covered" area or obtain a cover for existing unit Follow-up Action: Photo verify Actions completed: Black 55 gal drum removed from outside area
SW No.: SW10-128 Type: Commercial Location Address: 101 Main St Watershed: Buena Vista Creek Call Date: 6/18/2010 Case closed date: 7/8/2010	Observed employees washing trashcan into stormdrain; Detention basin onsite had odor similar to grease.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharging, implement employee training Follow-up Action: Verify training documents Actions completed: Training held

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-134 Type: Commercial Location Address: 2055 Thibodo Rd, Ste H Watershed: Agua Hedionda Creek Call Date: 6/15/2010 Case closed date: 6/15/2010	Business owner rinsing container into concrete swale, water amount was small, verbally advised to not rinse outside, pour wastewater into sink or sewer drain		Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Discontinue rinsing container outside Follow-up Action: N/A Actions completed: N/A
SW No.: SW10-136 Type: Commercial Location Address: 249 N.Emerald Dr Watershed: Call Date: 6/1/2010 Case closed date: 6/15/2010	Car repair ship pressure washing material into stormdrain inlet	Unfounded, made two visits to location	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: N/A Follow-up Action: N/A Actions completed: N/A
SW No.: SW09-139 Type: Industrial Location Address: 2640 Progress St. Watershed: Agua Hedionda Creek Call Date: 7/20/2009 Case closed date: 8/10/2009	Mineral oil leaks/spills around and under trash dumpsters. No lids for dumpsters. Rusty metal racks and parts stored outside without cover. Some buckets/drums not over secondary containment. No documented storm water training for employees. No written spill prevention and response procedure. Storm drain inlet not marked.	7/20/09, Rusty metal racks disposed and storm drain inlet marked "No Dumping". Otherwise, described as in Complaint Description. Only one 55 gal. drum was outside of secondary containment/overhead coverage area. 7/27/09, received spill prevention and response plan. 7/30/09, received copy of storm water training log. 8/4/09, site inspection - BMPs implemented. See Corrective Actions taken by responsible party. Minor permanent staining of concrete; however, dry without accumulation of liquids or grease.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dumpsters must be covered or have lids (responsible party wants to replace 40 yrd dumpster with som 5 yrd dumpsters). Clean fluid spills/leaks from under and around dumpster area and maintain after using dry absorbent/sweep method. Put all liquid drums in secondary containment and overhead coverage area. Provide storm water training to employees and develope written spill prevention and response procedures. Follow-up Action: Photo verify Actions completed: 7/27/09, spill revention and response plan/document completed. 7/30/09, storm water training for employees completed. 8/4/09, both dumpsters covered. Fluids, sediment and debris cleaned from under and around dumpsters using dry absorbent sweep method. Absorbent pads being used under dumpsters for any leaks. Liquid drums are within secondary containment and overhead coverage area.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-168 Type: Industrial Location Address: 2640 Progress St Watershed: Buena Vista Creek Call Date: 9/24/2009 Case closed date: 10/5/2009	Routine annual inspection requiring corrective action - pollutant discharge	Drums not covered and discharging from dumpster area. An underground water source is surfacing to the south of 40 yard dumpster location requiring regular maintenance.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge; cover open containers or remove to interior of building. Clean excessive stains from pavement throughout site. Follow-up Action: Photo verify Actions completed: BMPs implemented.
SW No.: SW10-056 Type: Industrial Location Address: 1451 Engineer St Watershed: Buena Vista Creek Call Date: 3/3/2010 Case closed date: 3/4/2010	Observed a brown liquid discharge from liquid storage tanks into parking lot (tanks were being pressure washed).	Observed as described in Complaint Description. Also, observed a discharge from trash pile.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: immediately contain spill, reclaim spill and protect inlets. Follow-up Action: Photo verify Actions completed: Follow-up confirmed area cleaned.
SW No.: SW10-071 Type: Industrial Location Address: 955 Park Center Dr. Watershed: Agua Hedionda Creek Call Date: 3/24/2010 Case closed date: 4/22/2010	D-Max inspection revealed evidence of illicit discharge into storm drains - water with sediment from stone cutting/polish machines.	Observed as described in Complaint Description; also stockpiles (wooden pallets) and animal waste (dog on site) observed. 3/25/10, NOV issued: pet waste, stockpiles, BMPs requirements, pollutant discharge, SWPPP/spill plan missing. Site manager intends to implement concrete berm to contain water on/in cutting area. Manager advised to cover stockpiles during rain events, develop plan to protect inlets and remove discharge stains. 3/29/10 Site visit with Storm Water Environmental Specialist, new SWPPP is being drafted, berm to be in place in approximately one week.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs, remove dog waste, cease discharge, cover stockpiles, reclaim discharge residue. Follow-up Action: Photo verify. Actions completed: Added to quarterly inspection list. Berm in place, outdoor materials covered.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-072 Type: Industrial Location Address: 1001 Park Center Dr. Watershed: Agua Hedionda Creek Call Date: 3/24/2010 Case closed date: 4/15/2010	Observed employees washing metal object, "soapy" discharge into inlet. Follow-up visit revealed additional violations.	3/24/10, managers were informed to discontinue washing of any kind. 3/15/10, returned to issue NOV for 3/24/10, second discharge observed, as well as stock piles (wooden pallets, tires, metal racks, fabricated steel/metals); oil/lubricant stains; open waste containers; disabled vehicle without spill pan and poor dirty housekeeping (dirt, trash, metal shavings). Code Enforcement to be advised regarding cargo containers with hook-ups/water, electricity. 3/29/10, Sr. Environmenal Specialist and myself met with one of the managers to conduct a walk through and discuss NOV/compliance due to presence of metal shards on property, inlet filter will be considered. General cleaning and removal of stock piles was noted - manager admitted that repairing of recreational vehicles does occur at location. 4/15/10, Sr. Environmental Specialist and myself conducted a full site inspection, corrective actions verified. Sr. Environmental Specialist will continue with SWPPP employee training and general industrial permit assessment.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement general housekeeping, cease any discharge hereafter, remove any racks/stored metal. Follow-up Action: Full industrial inspection, photo verify. Actions completed: Compliance with NOV - Sr. Environmental Specialist to continue with General Industrial Permit assessment and SWPPP training implementation.
SW No.: SW10-091 Type: Industrial Location Address: 440 N. Sante Fe Ave Watershed: Buena Vista Creek Call Date: 4/12/2010 Case closed date: 4/27/2010	Follow up on D-Max inspection, observed evidence of grease control device (GCD)/trap extraction and replacement, drain screens missing.	Observed as described in Complaint Description. Observed dirt and noticed smell of extracted grease trap, gave indication of possible sewage dumping - ladden mud next to location (see case no. SW10-080) on 4/6/10 at 120 W. Connecticut Ave (part of business addressed as 427 Redlands). 4/12/10, Business/Property owner arrived and he admitted that a plumber or private contractor replaced the grease trap, the mud from which was dumped next door. Once made aware of the dumping, business owner had mud removed. 4/16/10, dumping complaint was logged and investigated, dumping had occurred between 9:00pm on 4/5/10 and 7:00am on 4/6/10. Business owner explained that GCD was replaced during the evening (likely night of 4/5/10). Mud piles next door had similar odor to replaced GCD, and pieces of red plates as well as concrete that looked similar to tile floor in market.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Install drain screens, remove extracted GCD with dirt. Follow-up Action: Photo verify Actions completed: Drain screens in place
SW No.: SW10-119 Type: Industrial Location Address: 2465 Coral St. Watershed: Agua Hedionda Creek Call Date: 5/26/2010 Case closed date: 6/12/2010	Vehicle repair onsite, oil/grease discharge (blackish sludge) into drain system	Observed as described in Complaint Description. Black sludge in outfall cleanout area drains. Litter in loading dock area drain; Grease spills and oil throughout property, delivery trucks leaking; vehicle reapirs conducted in open/outdoors; Load dock has 40 yd dumpster without cover, litter source, bil full beyond brim; various motor vehicle parts, equipment and repair materials stored in the open. Manager admitted to placing ice in area drains to melt. 6/1/10 - Citations issued to Business owner for illegal discharge, material storage, BMP failure and litter in area drains. 6/14/10 - Spoke with the Attorney for business, she asked that the City schedule a meeting to discuss BMP implements and corrections. The business attorney was advised of chronic violation history, she advised the business that no pollutants are to leave location, urged cooperation with the City. 6/17/10 - Inspected location to document outfall; outfall clean, but minor water discharge with hydrocarbon like hue. Suggested to Business owner that a plumber clean area drain pipes to remove any remaining sludge. The Vista Code Enforcement Officer arrived at business and issued business a NOV foraAuto/vehicle repair violation. Met with business owner and other personnel, BMP's have been implemented	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Remove sludge, litter, oil/grease stains, repair autos from leaks, cover dumpster, upgrade BMP system (current is inefficient), cease all discharges. Follow-up Action: Inspection/Photo verify Actions completed: Inlet screens and booms in place, dumpster removed, lot to be resurfaced, new spill pans in place, sweeping twice daily. Business added to quarterly inspection list.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-120 Type: Industrial Location Address: 1320 Decision St. Ste D Watershed: Agua Hedionda Creek Call Date: 6/1/2010 Case closed date: 6/28/2010	Indoor area drain impacted - white discharge offsite from drain. Various white stains on concrete, dumpster enclosure contains white residue - white stain toward new drain.	Observed as described in Complaint Description. Received call from Encina Waste Water regarding the area drain. 6/9/10 - visit site, issue NOV, take additional pictures.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove white residue and stains from dumpster area amd paved areas - prevent spills and discharges hereafter. Follow-up Action: Implement sweeping BMPs; keep area drain clean/functional, reclaim any wash water Actions completed: BMPs in place, maintenance log created for sweeping and cleaning
SW No.: SW10-124 Type: Industrial Location Address: 955 Park Center Dr Watershed: Agua Hedionda Creek Call Date: 6/18/2010 Case closed date: 6/28/2010	During quarterly inspection, Officer observed illegal discharge of water/sediment entering inlet	Observed as described in Complaint Description. Cited for illegal discharge, warned to remove wood and pallets. NOV for illegal discharge on 3/24/10. Did not observe guard god onsite. See SW10-071. Spoke with business manager, leaking drain pip was discovered, it will be repaired. 6/28/10 - Discharge ceased, area dry.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Cease illegal discharge, remove wood and pallets, cover dumpster Follow-up Action: Photo verify Actions completed: Material removed, discharge ceased
SW No.: SW09-116 Type: Residential Location Address: 811 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 7/8/2009 Case closed date: 7/14/2009	Pressure washing old paint from houses and carports	Two workers were hosing and scraping off old paint at Santa Fe Villas complex. Paint chips were noted in driveway at 815 N. Santa Fe. I spoke with worker and requested appropriate BMPs. Worker stated he has been trained through OSHA and is aware of the BMPs. I told him that I would check on their progress as the week passes.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement protective BMPs. Remove paint chips and utilize a shop vacuum to capture any errant water run-off. Follow-up Action: Photo / visual verify Actions completed: Area cleaned - no visible stains.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-117 Type: Residential Location Address: 1633 Goodwin Dr. Watershed: Buena Vista Creek Call Date: 7/6/2009 Case closed date: 8/3/2009	Dirt stock piles in front yard.	Observed as described in Complaint Description. I spoke with property owner who stated he has been trying to level his backyard and put the dirt in the front yard. 7/27/09, no BMPs implemented. I left a business card taped over door lock. 7/27/09, requesting proprty owner to call me. Citation pending. Recheck by 7/29/09 and issue citation. 7/28/09, Property owner contacted me stating he would take care of the BMPs today. I gave him suggestions on how to get rid of the dirt. 7/30/09, no plastic - called property owner - gave him the weekend to cover with plastic. Recheck 8/3/09.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs to prevent migration. Follow-up Action: Visually verify. 7/14/09, more dirt has been added and no BMPs installed. I left request at door to cover stockpiles with plastic. 7/20/09, issued NOV - still no BMPs on stockpile. Actions completed: Stockpiles coverd with plastic and dirt removed intermittently as owner can afford to haul dirt away.
SW No.: SW09-122 Type: Residential Location Address: 414 Escondido Ave Watershed: Buena Vista Creek Call Date: 7/13/2009 Case closed date: 7/15/2009	Muddy water running down Escondido Ave. on the east side of the road and just south of Eucalyptus Ave.	Observed as described in Complaint Description. Tracked discharge up hill, south of Eucalyptus to 414 Escondido Ave. Contacted tenant in reference to discharge. She stated they had a water line break on Saturday night causing flooding and sediment discharge to the curb and gutter. The water was shut off and the line repaired. Today they washed 2 cars and their child was playing with the hose, causing additional water flow to curb and gutter pushing sediemnt that was previously there down the street.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Sweep sidewalk of sediment. Do not allow hose water and sediment to leave the property in the future. Also, discouraged from washing vehicles in driveway and encouraged to use a car wash facility. Follow-up Action: Photo verify. Actions completed: Sediment removed from sidewalk. No further discharge observed.
SW No.: SW09-135 Type: Residential Location Address: 617 Cortez Ave Watershed: Buena Vista Creek Call Date: 7/20/2009 Case closed date: 7/20/2009	Contractor pouring something into storm drain inlet	I spoke with someone from Central Contracting Co. Employee had disposed of some washout into the gravel bag inlet area near the house. I requested the residue be removed and they proceeded to do so.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge, remove residue at storm drain inlet. Follow-up Action: Photo verify Actions completed: Area residue was removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-140 Type: Residential Location Address: 2335 Bautista Ave Watershed: San Luis Rey Call Date: 7/21/2009 Case closed date: 7/21/2009	Red paint discharge running over to neighbors driveway.	Observed as described in Complaint Description. Paint was dry. I spoke with property owner, requested no further discharge. Referred to County	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge Follow-up Action: Referred to County Actions completed: Referred to County
SW No.: SW09-142 Type: Residential Location Address: 1475 Oak Dr. Watershed: Buena Vista Creek Call Date: 7/27/2009 Case closed date: 7/28/2009	Mud tracking into right-of-way	VID (Vista Irrigation District) A-frame barracades are blocking a packing curb side area. Work on line is apparent. A faint "mud" tracking line is visible. Area storm drain inlet clean and no mud in gutter. Some sediment is visible in the roadway. I contacted VID for details. I contacted complainant to inform her that concern was referred to VID.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: None - Referred to VID Follow-up Action: None - Referred to VID Actions completed: None - Referred to VID
SW No.: SW09-144 Type: Residential Location Address: 811 N. Santa Fe Watershed: Buena Vista Creek Call Date: 7/29/2009 Case closed date: 9/1/2009	Washer / dryer outside - no cover and washer is discharging off property.	Observed as described in Complaint Description. 7/31/09, Property manager has requested tenants cease use of washer/dryer and remove from location by 9/1/09. I also spoke with our Building Official; he felt plumbing/electrical was not legal. Case also referred to Building for corrective enforcement.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge of water/fluids off site. Remove washer/dryer from exterior location. Follow-up Action: Photo verify Actions completed: Washer/dryr removed from location.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-147 Type: Residential Location Address: 1802 Alessandro Tr. Watershed: Buena Vista Creek Call Date: 8/10/2009 Case closed date: 8/10/2009	Private lateral spill into right-of-way.	Clean-out was apparently hit by residence's vehicle causing the spill. Some sewage entered right-of-way. A vehicle was being washed to the east of the spill giving a visual of additional water than what was accurately spilt. Property owner repaired clean-out and area was dry.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and repair Follow-up Action: Photo verify Actions completed: Area dry.
SW No.: SW09-149 Type: Residential Location Address: 1163 La Tortuga Watershed: Buena Vista Creek Call Date: 8/13/2009 Case closed date: 8/17/2009	Paint washed down in gutter.	Sr. Environmental Specialist performed the initial inspection and referred follow-up to me. 8/13/09, met with property owners. Yard re-landscaping, tree removal and wash down was done by owners. They stated the area will be cleaned over the weekend.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge. Protect drain inlets and remove sediment from curb/gutter area. Follow-up Action: Photo verify. Actions completed: Area clean.
SW No.: SW09-155 Type: Residential Location Address: 664 Rolling Hills Rd Watershed: Buena Vista Creek Call Date: 8/19/2009 Case closed date: 8/19/2009	Unusually large chronic flow of water from 6 inch pipe within a street whistle drain.	I spoke with complainant and together we located the large street drain. Within drain was a 6 inch pipe. This, complainant stated, had heavy chronic flow of water. It was not discharging any water presently. VID arrived and we concluded that it was an area drain pipe for 664 Rolling Hills. We spoke with person at that location. She stated they irrigate in the evening and she sees the complainants walk their dogs. We concurred tha water into city drain came from their landscape irrigation. I told complainant to call when it occurred again and the flow can be tested for chlorine.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded at this time Follow-up Action: None Actions completed: None

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-158 Type: Residential Location Address: 474 Rudd Rd Watershed: Buena Vista Creek Call Date: 9/9/2009 Case closed date: 9/9/2009	Water running out of curb core for 4 hours.	Water (no odor) was running out of curb core and area of landscape directed to this drainage system is dry. I investigated land behind (dry) and to south of property. This area is higher and well landscaped. Area recently watered. I contacted VID - they looked at the water meter and uphill from 474 has a slow leak on some line. Vista Irrigation District (VID) would contact property owner to inform them. Because the water is potable it is not a storm water violation.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair private water line once identified. Follow-up Action: None required Actions completed: VID to verify
SW No.: SW09-159 Type: Residential Location Address: 1212 Gatlin Watershed: Buena Vista Creek Call Date: 9/8/2009 Case closed date: 9/9/2009	Discharge of carpet effluent to storm drain	Grey powder cake like stains visible along gutter to storm drain inlet. I spoke with property owner who stated they would rinse out the filter into curb/gutter. I explained violaton, gave them other alternative suggenstions to cleaning equipment. They stated they would comply.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further discharge Follow-up Action: Monitor area Actions completed: Monitor area
SW No.: SW09-162 Type: Residential Location Address: 1831 Foothill Dr. Watershed: Buena Vista Creek Call Date: 9/2/2009 Case closed date: 9/2/2009	Water crossing driveway from neighbor at 1835 Foothill - possibly septic issue	Private property - Private issue. No discharge to right-of-way. I spoke with property owner of the property receiving the discharge. This same incident occurred in 2003. 1835 Foothill is on septic and more tenants overflood the system. I contacted S. D. Dept. of Environmental Health and referred the case to them.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to San Diego Couty Septic Follow-up Action: Referred to San Diego Couty Septic Actions completed: Referred to San Diego Couty Septic

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-163 Type: Residential Location Address: 510 N. Melrose Watershed: Buena Vista Creek Call Date: 9/1/2009 Case closed date: 11/17/2009	Mud accumulation spilling onto sidewalk. Street crew requested investigation.	Observed as described in Complaint Description. I spoke with Manager of the Trailer Park. They would implement appropriate BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove existing mud/dirt accumulation and implement appropriate BMPs. Follow-up Action: Photo verify. 9/14/09, area at drainage inlet clean/cleared and BMPs installed. Mud accumulation removal; given an additional two weeks. 10/5/09, I spoke with Street Supervisor at Public Services - by 10/8/09 mud will be removed from sidewalk. I spoke with Manager and he is prepared to install fiber rolls to prevent further discharge. 10/6/09, street crew out this morning to clear dirt off sidewalk. Looks great. I spoke with Manager and requested fiber rolls in by next week. 10/19/09, Manager has placed fiber rolls. Fiber mats for the slope at the sidewalk side was prepared, however, soil is so hard that the metal stakes were bending and they were unable to sure the fiber mat. They are looking for another alternative. I requested they maintain sweeping and Actions completed: Remaining fiber mat was installed along slope to back of sidewalk.
SW No.: SW09-165 Type: Residential Location Address: 1058 Tiger Tail Rd Watershed: Buena Vista Creek Call Date: 9/16/2009 Case closed date: 9/21/2009	Water coming from residence.	The area was dry. Possibly a pool discharge. 5 days had passed since initial report (Code Enforcement Officer at a 2 day training- message on voice mail). No indication of errant discharge.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded Follow-up Action: Unfounded Actions completed: Unfounded
SW No.: SW09-167 Type: Residential Location Address: 405 N. Melrose Watershed: Buena Vista Creek Call Date: 9/17/2009 Case closed date: 10/5/2009	Perimeter channel requires maintenance.	Observed as described in Complaint Description. Past property manager was fired. Located new property manager and placed phone call. 9/212/09, left message to property manager and received call stating the channel is cleaned quarterly.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean ditch prior to 10/l/09 (beginning of official rainy season) Follow-up Action: Pjoto verify Actions completed: Channel has been cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-171 Type: Residential Location Address: 1346 Clear Crest Cr Watershed: Buena Vista Creek Call Date: 10/6/2009 Case closed date: 10/6/2009	EDCO Waste & Recycle Co. dumps trash can upside down to knock out loose/stuck debris/dirt and does not clean it up.	There was a small 18"x18" pile of dried vegetation adjacent to 7 trash cans. I suggested the complainant contact EDCO as this was a chronic condition. I provided a contact person at EDCO.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove debris from roadway. Follow-up Action: Visually verify. Actions completed: Property owner swept up debris in my presence and stated she would contact EDCO.
SW No.: SW09-178 Type: Residential Location Address: 1252-A Palomar Pl Watershed: Buena Vista Creek Call Date: 10/13/2009 Case closed date: 10/13/2009	White van painting vehicles in front of house.	Vehicle owner was removing plastic car decals. All was swept up while I was at scene. No vehicles were being painted.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded Follow-up Action: Unfounded Actions completed: Unfounded
SW No.: SW09-185 Type: Residential Location Address: 2615 Campnero Watershed: Agua Hedionda Creek Call Date: 10/26/2009 Case closed date: 11/17/2009	County area. Property owner created a fire break driveway from his upper home to lower street - no BMPs.	I contacted County to express concern and relayed citizen's comments. San Diego County Environmental Specialist III investigated. She stated drainage culvert is above the dirt driveways and is not impacted.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Monitor for BMPs implementation. Follow-up Action: Monitor Actions completed: Monitor

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-187 Type: Residential Location Address: 1276 Browning Ct Watershed: Buena Vista Creek Call Date: 11/17/2009 Case closed date: 12/16/2009	Car leaking fluids on roadway	Spill pan under vehicle but fluids are running off pan onto curb/gutter in front of residence. The vehicles sits at an angle due to street graded for runoff of storm water.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Relocate vehicle under cover or repair leak. Remove car fluids from road and remove with dry sweep method. Follow-up Action: Photo verify Actions completed: Vehicle moved to driveway with spill pans - area appears dry under vehicle. Case will be re-opened if, through monitoring, vehicle leaks fluids onto spill pan and surrounding area. 12/16/09, contacted complainant for status and update.
SW No.: SW09-188 Type: Residential Location Address: 524 Rancho Vista Rd Watershed: Buena Vista Creek Call Date: 11/2/2009 Case closed date: 11/17/2009	Drainage ditch congested with vegetation.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove accumulation and maintain. Follow-up Action: Photo verify Actions completed: Ditch cleared.
SW No.: SW09-191 Type: Residential Location Address: 427 Oceanview Dr. Watershed: Buena Vista Creek Call Date: 11/30/2009 Case closed date: 4/1/2010	Dirt from construction spilling onto 219 Oceanview and into roadway.	Observed as described in Complaint Description. 1/21/10, address correction noted on warning letter and resent with corrective action date by 2/4/10.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs. Follow-up Action: Photo verify Actions completed: Rain event indicates no run-off.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-192 Type: Residential Location Address: 535 Valley Dr. Watershed: Buena Vista Creek Call Date: 11/30/2009 Case closed date: 12/1/2009	Rain water directed from 1701 Sunrise Drive through a manmade drainage ditch - pours through property	Pictures taken by Mr Shea indicate a ditch construction accepting water from numerous locations culminating to Mr. Shea's property. This deluge creates erosion and mud accumulation.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to County via e-mail including photos. Follow-up Action: None - County area Actions completed: None - County area.
SW No.: SW09-193 Type: Residential Location Address: 421 Oceanview Dr Watershed: Buena Vista Creek Call Date: 11/30/2009 Case closed date: 2/8/2009	Disrt discharge	Observed as described in Complaint Description. There are no BMPs on de-nuded driveway.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs. Follow-up Action: Photo verify Actions completed: After monitoring location, BMPs across driveway are functioning and sediment run-off is greatly reduced.
SW No.: SW09-194 Type: Residential Location Address: 375 Skyline Dr. Watershed: Buena Vista Creek Call Date: 10/28/2009 Case closed date: 12/1/2009	Landfill and no BMPs.	I spoke with the son of the owner. He is fencing property and installing perimeter BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter BMPs Follow-up Action: Photo verify Actions completed: Perimeter BMPs in place. I spoke with the son who is continuing refinement of BMPs.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-195 Type: Residential Location Address: 1592 Fireside Ln Watershed: Agua Hedionda Creek Call Date: 11/30/2009 Case closed date: 4/1/2010	Sediment discharge - no BMPs	Observed as described in Complaint Description. 1/20/10, Rain event carried dirt down driveway to cul-de-sac. No BMPs in driveway. I left message with owner to implement approopriate BMPs. No dirt discharge from west side of property. Owner called and stated BMPs will be implemented promptly. 2/1/10, photo status indicated dirt has been removed but BMPS have not been implemented. I contacted owner. She stated at last rain event all BMPs at local home stores had been sold out. I recommended she obtain BMPS prior to next rain event as enforcement will escalate. She would relay this to her spouse. 2/8/10, BMPs in place and slowing sediment run-off; not stopping the discharge and some is still entering the right-of-way to cul-de-sac. I contacted owner (voice mail) requesting upgrade of BMPs at check dam in a "J" pattern up driveway and some at denuded area near address sign. To recheck at next rain event.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify Actions completed: Rain event indicates no run-off.
SW No.: SW09-196 Type: Residential Location Address: 915 Valley Dr. Watershed: Buena Vista Creek Call Date: 11/30/2009 Case closed date: 1/13/2010	Sediment discharge - no BMPs	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs. Follow-up Action: Photo verify Actions completed: Area continues to vegetate. No erosion or run-off are visible after recent rains.
SW No.: SW09-199 Type: Residential Location Address: 945 Valley Dr. Watershed: Buena Vista Creek Call Date: 12/8/2009 Case closed date: 1/13/2010	Sediment discharge	Sediment discharge from drainage pipe proturding from hill side slope creating erosion.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs, remove mud from sidewalk and right-of-way. Follow-up Action: Photo verify Actions completed: Recent rains show no discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-200 Type: Residential Location Address: 727 Hideaway Terr Watershed: Buena Vista Creek Call Date: 12/10/2009 Case closed date: 1/7/2010	Washing fecal matter down driveway	12/15/09, pet waste is visible on concrete platform on side yard of house. Hose was nearby. 12/16/09, additional pet waste on concrete. 12/18/09, additional pet waste on concrete and previous waste removed - area appears wet unable to tell if it is urine or water. I left borchure on Pet Waste, HELP brochure and pet bags. Requested no water be used on impervious surface. Put pets on pervious surface and pick up waste and dispose of in trash. Left my business card.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further hosing of impervious concrete. Locate pets on pervious lawn/dirt; pick up fecal waste and dispose into trash. Follow-up Action: Photo verify. Actions completed: Monitoring location. No indication of any "hosing" water leaving the site. A blonde female waved to me from the balconly at 727 Hideaway during site visit on 1/6/10.
SW No.: SW09-201 Type: Residential Location Address: 1144 Maryland Dr Watershed: Buena Vista Creek Call Date: 12/15/2009 Case closed date: 12/17/2009	Odor of bleach - numerous families at address.	I could not detect any bleach odor. There is tracking of dirt from front yard onto driveway then into the road by vehicles. Left brochure at the door.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease dirt tracking off property Follow-up Action: Monitor Actions completed: Monitor
SW No.: SW09-203 Type: Residential Location Address: 1125 Vale Terrace Watershed: Buena Vista Creek Call Date: 11/3/2009 Case closed date: 1/6/2010	Vista Public Services Worker contacted Officer Sotola regarding excess erosion from property hillside/frontage onto right-of-way.	Officer Sotola observed hillside frontage barren of vegetation resulting in excessive erosion onto right-of-way.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Advisedof future "follow-up check" for BMP implementation. Follow-up Action: Hillside frontage has been seeded; grass is sprouting, presence of vegetation is deemed sufficient for compliance. Actions completed: Grass has been planted on frontage.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-206 Type: Residential Location Address: 1041 Alta Vista Watershed: Buena Vista Creek Call Date: 12/9/2009 Case closed date: 1/4/2010	Sediment discharge from street flow to the north of residence causes accumulation of mud to collect and flood 1041 Alta Vista.	Observed as described in Complaint Description. Contacted Stormwater Program Manager; he and Principal Engineer visited site and referred situation to Public Services for corrective action.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease sediment discharge and retrofit water flow. Follow-up Action: Photo verify Actions completed: Public Service crews have graded and asphalted the water flow and the area will be monitored at future rain events for functionality.
SW No.: SW09-208 Type: Residential Location Address: 1765 Pinnacle Watershed: Agua Hedionda Creek Call Date: 12/10/2009 Case closed date: 1/14/2010	Sediment discharging from denuded lot.	Observed as described in Complaint Description. Neighbor at 1761 Pinnacle also has minor sediment dishcarge. Both were given HELP brochures with the request to implement BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify Actions completed: BMPs implemented.
SW No.: SW10-003 Type: Residential Location Address: 1260 Alt Vista Dr. Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/16/2010	Investigating complaint regarding an accumulation of sediment/dirt at bottom of hill from sources uphill.	Loose soil from exposed areas of garden at frontage is eroding/discharging into right-of-way. 2/13/10, owner called. We advised her of erosion prevention, and remove earth from right-of-way.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, implement BMPs and remove soil in right-of-way. Follow-up Action: Photo verify Actions completed: Rock barrier improved/extended, soil removed

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-004 Type: Residential Location Address: 1250 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/11/2010	Investigating complaint regarding sediment/dirt at bottom of the hill, coming from homes uphill.	Garden adjacent to driveway shows signs of erosion onto dirt frontage abutting street; BMP is failing	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: None, area to be monitored Follow-up Action: N/A - no problems observed Actions completed: N/A - no problems observed
SW No.: SW10-006 Type: Residential Location Address: 1244 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/16/2010	Investigating complaint of sediment/dirt accumulation downhill from homes uphill.	Garden at frontage is eroding/BMP failing, dirt areas parallel to driveway are under vegetated and eroded from irrigation runoff.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implemented BMP/ perimeter protection Follow-up Action: Photo verify Actions completed: BMP implemented - advised to remove excess dirt, case will be closed
SW No.: SW10-007 Type: Residential Location Address: 1236 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/16/2010	Sediment/dirt accumulating in roadway, traffic hazard	Investigating complaint regarding accumulation of dirt and sediment eroding downhill from homes and collecting in street.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Dirt frontage abutting roadway needs vegetation, areas parallel to driveway are exposed dirt, anti-erosion measures are needed. Follow-up Action: Photo verify Actions completed: Case closed, gravel installed, advised to improve BMP.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-008 Type: Residential Location Address: 1224 Alta Vista Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/16/2010	Investingating complaint regarding erosion and sedimet build-up at bottom of hill into roadway.	Alta Vista frontage has dirt/gravel with erosion indicators. Colina Terr. frontage shows soil erosion and foliage from side garden and backyard into right-of-way, location is a likely contributor to accumulation downhill.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs/perimeter protection. Follow-up Action: Photo verify Actions completed: Implemented/ extended rock barrier
SW No.: SW10-009 Type: Residential Location Address: 1212 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/11/2010	Investigating for point sources of erosion/sediment often found in right-of-way, down hill from location.	Pockets of eriosion/deterioration on asphalt driveway, minor erosion from garden. Entry into right-of-way is minor.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Location to be monitored. Follow-up Action: N/A - no problems observed. Actions completed: N/A - no problems observed.
SW No.: SW10-010 Type: Residential Location Address: 1188 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/16/2010	Accumulation of erosion/sediment on driveway .	Observed as described in Complaint Description. Needs clean-up, frontage not likely a source of erosion downhill.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Sweep up silt accumulation Follow-up Action: Photo verify Actions completed: Silt removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-011 Type: Residential Location Address: 1180 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/16/2010	Investigating complaint regarding sediment accumulation in street / right-of-way due to erosion discharge from uphill.	Frontage of property abutting roadway lacks BMP/vegetation, dirt, erosion indicators present.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection on denuded slope/ frontage. Follow-up Action: Photo verify Actions completed: BMPs in place.
SW No.: SW10-012 Type: Residential Location Address: 1170 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 1/7/2010 Case closed date: 2/16/2010	Investigating complaint of dirt / sediment accumualtion at bottom of hill due to erosion from uphill.	Driveway leading to residence from Alta Vista shows erosion and pothole onto right-of-way. 2/3/10, spoke with property owner and advised of erosion concerns.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection on denuded area parallel to driveway. Follow-up Action: Photo verify Actions completed: Fiber rolls in place.
SW No.: SW10-013 Type: Residential Location Address: 1056 Heather Dr. Watershed: Buena Vista Creek Call Date: 3/1/2010 Case closed date: 3/1/2010	Investigating complaint regarding erosion and sediment. Accumulation in street from uphill resident.	Dirt/sediment build up on/at driveway. Frontage to south of driveway lacks vegetation/erosion barrier. 1/29/10, no corrective action, sent warning letter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement erosion control Follow-up Action: Photo verify Actions completed: Swept area and put down mulch.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-015 Type: Residential Location Address: 230 Plymouth Dr. Watershed: Buena Vista Creek Call Date: 1/14/2010 Case closed date: 1/20/2010	Public Services advised of possible lateral backup, leaking.	Lateral cleanout cap has hole, shows discharge into right-of-way. Property owner/ resident called Public Services re: lateral discharged while running washer in home, CCTV shows main line clear.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge; clear line; provide plumber invoice, replace clean-out caps with new ones (no holes). Follow-up Action: Receipt of plumber invoice. Actions completed: Invoice received on 1/20/10, dated 1/14/10.
SW No.: SW10-018 Type: Residential Location Address: 217 Gannet Dr Watershed: Buena Vista Creek Call Date: 1/19/2010 Case closed date: 3/1/2010	Property owner complained that stormwater runoff from rear neighbor is discharging mud into their pool (water from ditch).	1/19/10, visited site; no answer at location. Left business card with a note. 1/21/10, Property owner called advising that the problem is caused by blockage in ditch at rear of property; ditch accessible from the 1300 block of Lagan Ave. 12/5/10, pictures gathered, drainage swale north of location is greatly impacted with debris and vegetation. Also, areas of the concrete swale were observed with cracking. Eroding could potentially undermine proper function/flow. 223 Gannet Dr. (westerly neighbor) complained about impacted swale directing water unto property. No evidence of mud in pool at 217 Gannet. 1/26/10, City Right-Of-Way Agent confirms, per plans, swale accepted as a city maintained 10' drainage easement. Referred to Public Serviced for clearing.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: 1/25/10, None, pending research of swale easement rights; complainant to be notified. 1/26/10, Public Services to be advised. 1/28/10, Public Services researching the easement documentation for location. Follow-up Action: Photo verify Actions completed: Swale is clear
SW No.: SW10-019 Type: Residential Location Address: 2455 Catalina Ave Watershed: Buena Vista Creek Call Date: 1/20/2010 Case closed date: 4/5/2010	Advised by Deputy Director of Community Development that reporting person at 2180 Ipanema Ln. complains of silt run-off into his yard from adjacent open lot.	1/20/10, contacted complainant, run-off not not described as entering right-of-way, civil matter between neighbors. 1/21/10, Deputy Dirtector of Community Development e-mailed images of silt run-off into inlet at location. 1/25/10, owner was found at lot grading and clearing mud; the dirt catch basin had filled and water crested, eroded berm and entered adjacent property. Owner explained that he cleaned up the mud on Ipanema Ln. He is repairing berm/catch basin. 2/8/10, storm event on Feb 4 and Feb 5, 2010. A follow-up inspection at Ipanema indicates some sediment discharge. Owner was cleaning up sediment accumulation in roadway/curb/gutter. 2/12/10, e-mailed warning to owner requesting upgrade of dysfunctional BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean street, repair site BMPs, self monitor hereafter. Follow-up Action: Photo verify Actions completed: Recent rain events indicated no discharge from 2455 Catalina to street below (Ipanema).

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-020 Type: Residential Location Address: 1741 Anza Ave Watershed: San Luis Rey Call Date: 1/21/2010 Case closed date: 2/9/2010	Public Services call re: resident at 1741 Anza Ave is rearranging city sand bags and directing water across the street to 1769 Anza Ave.	Observed as described in Complaint Description. The redirected run-off is eroding 1769 Anza Ave. property with silt into an adjacent creek, sand bags directed water away from inlet just north of 1741 driveway apron. Sand bags removed, run-off properly discharging into drain.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Note left at 1741 Anza Ave, advised not to block inlet with sand bags. Follow-up Action: Monitor during rain events, photo verify Actions completed: MS4 is clear at this location.
SW No.: SW10-021 Type: Residential Location Address: 1210 Tower Dr. Watershed: Buena Vista Creek Call Date: 1/19/2010 Case closed date: 1/19/2020	Public Servises Street Maintenance Worker notified us of a lot discharging silt into right-of-way. No BMPs.	Observed as described in Complaint Description. Gathered pictures. Contacted Building Dept. There is a permit for a new garaage on file, did not include grading - inspector did not require BMP. 1/21/10, BMPs - fiber rolls in place.	Enforcement Action ☑ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: 1/19/10, None, referring to Building Dept. 1/21/10, Building Dept. advised no BMP required for work. Follow-up Action: Return to location to check status; BMPs are in place. Will monitor during rain. Actions completed: BMPs implemented. Fiber roll and gravel bags are in place.
SW No.: SW10-023 Type: Residential Location Address: 1225 Vale Terrace #21C Watershed: Buena Vista Creek Call Date: 12/21/2009 Case closed date: 6/8/2010	Sediment discharge off slope and asphalt driveway	2/3/10 - Owner contacted Officer. Owner was in agreement to place gravel bags at driveway. Officer explained the City is trying to eliminate 1225 Vale Terrace from a sediment discharge condition. 2/17/10 - No corrective action, NOV issued. 2/24/10 - Owner came into Development Services to discuss conditions of slope and driveway. Owner states that traffic speed creates a major problem and she requested to meet with the Traffic Division Manager. 3/18/10 - Traffic Div Manager, Owner and Officer met at the residence to disucss the traffic and run-off concerns. It was concluded that the owner would repair the driveway erosion and implement BMPs to prevent further sediment discharge. Traffic Div Manager would address traffic issues.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection Follow-up Action: Photo verify Actions completed: BMPs implemented at driveway apron.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-024 Type: Residential Location Address: 950 S. Melrose Ave Watershed: Buena Vista Creek Call Date: 1/25/2010 Case closed date: 1/27/2010	Slope failure with sediment discharge (actual address is 1249 Sunset Dr. - Vacant Lot).	Observed as described in Complaint Description. I spoke with property owner. He was aware of the concern and was implementing BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from curb/gutter Follow-up Action: Photo verify. Actions completed: BMPs implemented.
SW No.: SW10-025 Type: Residential Location Address: 529 Pina Ln Watershed: Buena Vista Creek Call Date: 1/29/2010 Case closed date: 3/1/2010	Received a call from Sr. Building Inspector to monitor location due to denuded area and pollutant potential.	Observed as described in Complaint Description. 2/1/10, Observed contractor on site rinsing concrete pump, water was clear - no evidence of dishcarge. Contractor was cooperative. 2/4/10, Site check is okay. Driveway; rebar is in place. 2/9/10, Concrete pour; half of driveway completed. No discharge seen.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: 2/1/10, Cease rinsing pump on site. Advised contractor to put driveway BMPs in place at end of each day. Follow-up Action: Site checks, Photo records Actions completed: Denuded area paved with concrete. No discharges evident since last storm.
SW No.: SW10-026 Type: Residential Location Address: 1536 Sunrise Dr. Watershed: Buena Vista Creek Call Date: 1/21/2010 Case closed date: 2/3/2010	Water intrusion to property from uphill property.	I spoke with property owner and she stated that for twenty plus years she has had water pouring continually on her site and is sick of it and wants City to correct the problem. After further research through historic records, the porperty is in a flood plain. When the house was built the run-off was not directed to carry away the natrual run-off. The City is not responsible to correct property owners re-landscape configurations. Case is considered unfounded as no storm water violations exist at this time.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Promote property owner to correct landscape configuration to prevent further water intrusion. Follow-up Action: Not a storm water violation. Actions completed: None required. Private property, private issue.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-027 Type: Residential Location Address: 236 Plymouth Dr. Watershed: Buena Vista Creek Call Date: 1/14/2010 Case closed date: 2/9/2010	Observed lateral cleanout cap that had a hole through it - dried paper/sewer material was on and around the cleanout.	Observed as described in Complaint Description. 2/1/10, Warning letter, replace by 2/9/10	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Replace old cap with new functional cap Follow-up Action: Photo verify Actions completed: Cap replaced.
SW No.: SW10-028 Type: Residential Location Address: 1066 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 2/1/2010 Case closed date: 3/1/2010	BMP failure, denuted slope/ frontage eroding into right-of-way.	Observed as described in Complaint Description. 2/22/10, No BMPs in place on eroding hillside, property owner advised that BMP will be installed by 2/28/10. Gave them a final date of 3/1/10.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs, cease discharge Follow-up Action: Photo verify Actions completed: BMPs in palce, swale completed.
SW No.: SW10-029 Type: Residential Location Address: 1050 Alta Vista Dr Watershed: Buena Vista Creek Call Date: 2/1/2010 Case closed date: 7/8/2010	Erosion from denuded driveway,/frontage eroding into ROW	Observed as described in Complaint Description. 2/23/10 - Issued a NOV, no BMPs. 3/9/10 - Business card left at 1030 Heather Dr. 3/10/10 - Property owner left a message. 3/11/10 - Returned call, additional pictures taken at 1040 Alta Vista Dr. 3/16/10- Directive letter and picture of erosion hand delivered to 1030 Heather Dr., taped to gate code terminal. 3/29/10- No BMPs in place 4/14/10 - Property owner advised that regular sweeping has been implemented, water directing channels have been dug. 6/22/10 - 2nd cite letter issued, 2 cites. 7/1/10 - Received a call from property owner, advised of BMP issues, he will attempt a new solution. Owner had received faxed copies of cite letter,resent on 6/28/10.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs, cease discharge Follow-up Action: Photo verify Actions completed: Landscaping regrated and replanted;water flow channels were implemented

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-030 Type: Residential Location Address: 935 Heather Dr Watershed: Buena Vista Creek Call Date: 2/2/2010 Case closed date: 4/1/2010	Denuded frontage and street erosion.	Observed as described in Complaint Description. 2/10/10, met with owner at location to discuss alternatives. Road edge requires repair (SRO - service request order - turned into Public Services) and planting and allowing existing ice plant to grow on denuded frontage.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection. Follow-up Action: Photo Verify. 2/23/10, asphalt work done. I spoke with owner to implement BMPs. Actions completed: Rain event indicates no run-off.
SW No.: SW10-039 Type: Residential Location Address: 1300 blk of Lupine Hills Watershed: Agua Hedionda Creek Call Date: 1/26/2010 Case closed date: 2/10/2010	Brow ditch congested with vegetation.	Observed as described in Complaint Description. I contacted neighbors from 1187 Miramar Dr. to 1342 Lupine Hills requesting maintenance. All responded favorably in one week and rear area ditch was cleared.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clear and maintain ditch. Follow-up Action: Photo verify Actions completed: Area cleaned.
SW No.: SW10-040 Type: Residential Location Address: 342 Selmalita Terr Watershed: Buena Vista Creek Call Date: 2/10/2010 Case closed date: 2/10/2010	Mud from one property to another	Private Property / Private Issue	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded - no mud from private properties entered City roadway ro system Follow-up Action: Unfounded Actions completed: Unfounded

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-041 Type: Residential Location Address: 156 Kelleen Dr. Watershed: Buena Vista Creek Call Date: 2/16/2010 Case closed date: 2/16/2010	Black pipe 6' in yard from fence with running water purportedly from clothes washer discharge.	Spoke with tenant's daughter. No clothes washer on exterior was found. Shed in rear yard is emply except for shelving and storage. A PVC white pipe from front fence to rear yard snaked about 20'. Tenant stated it was for watering trees with hose. She stated the kitchen sink clean out leaks and they have contacted the landlord. A foul stench eminated from the soil below the cleanout. I referred this to Code Enforcement as I felt the odor was indicative of gray water discharge from a clothes washer. This is a private property issue and no discharge entered city storm systems.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to Code Enforcement. Unfounded as no discharge was noted nor entered city system. Follow-up Action: None Actions completed: None
SW No.: SW10-043 Type: Residential Location Address: 913 Chablis Ln Watershed: Buena Vista Creek Call Date: 2/16/2010 Case closed date: 2/16/2010	Caster bean tree has fallen onto roof of 913 Chablis, tree may be in swale. Possibly a City issue. (Impacted City swale)	Unfounded, swale is private.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: N/A Follow-up Action: N/A Actions completed: N/A
SW No.: SW10-047 Type: Residential Location Address: 1726 Coyote Watershed: Buena Vista Creek Call Date: 2/18/2010 Case closed date: 3/11/2010	Sediment discharge into right-of-way.	Observed as described in Complaint Description. Gutter congested with dirt and debris. Planter curb area denuded and sediment is entering right-of-way. 2/25/10, Property owner called and will correct as soon as possible.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter BMPs and clean gutter. Follow-up Action: Photo verify. Actions completed: 2/23/10, gutter cleaned. Curb planting area not corrected. 3/11/10, brick installed in frontage denuded area.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-048 Type: Residential Location Address: 1731 Coyote Watershed: Buena Vista Creek Call Date: 2/18/2010 Case closed date: 3/9/2010	Sediment discharge into right-of-way	Observed as described in Complaint Description. Gutter congested with dirt and debris. Planter curb area denuded and sediment is entering right-of-way.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter BMPs and clean gutter. Follow-up Action: Photo verify Actions completed: 2/23/10, Gutter cleaned. Curb planting area not corrected.
SW No.: SW10-050 Type: Residential Location Address: 1773 Coyote Ct Watershed: San Luis Rey Call Date: 12/29/2009 Case closed date: 4/27/2010	Observed accumulation of landscaping waste piled on bank and in channel.	Observed as described in Complaint Description. 3/26/10 - Returned call of Property Owner, given until 4/11/10 for compliance.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove debris piles completely. Follow-up Action: Photo verify. Actions completed: Debris removed.
SW No.: SW10-051 Type: Residential Location Address: 1761 Coyote Ct Watershed: San Luis Rey Call Date: 12/29/2009 Case closed date: 3/12/2010	Observed stockpiles of trash and debris (drywall and other garbage) on banks within drainage channel.	Observed as described in Complaint Description. 2/23/20, Warning 3/15/10, follow-up letter sent	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove litter stock pile. Follow-up Action: Photo verify Actions completed: Debris pile has been removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-052 Type: Residential Location Address: 1760 Calle Jules Watershed: San Luis Rey Call Date: 12/29/2009 Case closed date: 3/26/2010	While documenting condition of drainage course, found an accumulation of construction waste on bank of channel.	Observed as described in Complaint Description. 2/26/10, warning letter sentto remove debris.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove debris. Follow-up Action: Photo verify Actions completed: Debris removed.
SW No.: SW10-057 Type: Residential Location Address: 399 Escondido Ave Watershed: Buena Vista Creek Call Date: 3/3/2010 Case closed date: 3/3/2010	Mobile detailing (car wash) discharging into the right of way, water passing through BMPs	Observed as described in Complaint Description. Mobil business operation, info: Rey Hernandez, 619-254-5387	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Wet dry vacuum suds/water, block area drain Follow-up Action: Photo verify Actions completed: Drain protected, area vacuumed
SW No.: SW10-058 Type: Residential Location Address: 1291 Amador Ave Watershed: Buena Vista Creek Call Date: 3/4/2010 Case closed date: 3/31/2010	Denuded driveway and sediment tracking and discharge	Observed as described in Complaint Description. 3/30/10, property is foreclosed and bank owned. Monitor location for new occupant to address this discharge. Tenant vacating by 4/1/10. Discussed this situation with Stormwater Program Manager - close case.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, implement BMPs Follow-up Action: Photo verify. Actions completed: Property foreclosed. Monitor location for new occupant and readdress situation.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-059 Type: Residential Location Address: 1759 Anza Watershed: San Luis Rey Call Date: 2/9/2010 Case closed date: 2/11/2010	Observed pipe directed from property to channel.	Observed as described in Complaint Description. Possible illegal discharge.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: N/A - Pipe is stormwater, illiciate discharge unfounded. Follow-up Action: N/A Actions completed: N/A
SW No.: SW10-062 Type: Residential Location Address: 944 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 2/18/2010 Case closed date: 3/26/2010	Sediment discharge observed near 1066 Alta Vista Dr., uphill discharge sources are being addressed.	Observed as described in Complaint Description. Denuded frontage and garden areas eroding into right-of-way. 3/8/10, warning letter sent.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment in right-of-way, implement perimeter protection. Follow-up Action: Photo verify Actions completed: Straw wattles in place.
SW No.: SW10-063 Type: Residential Location Address: 958 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 2/16/2010 Case closed date: 3/26/2010	Dirt accumulation in right-of-way near 1066 Alta Vista, uphill sources checked for discharge.	Observed as described in Complaint Description. Denuded slopes along right-of-way and driveway are eroding into right-of-way. 3/8/10, warning letter sent.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from right-of-way, implement perimeter protection. Follow-up Action: Photo verify Actions completed: Straw wattles in place.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-064 Type: Residential Location Address: 1010 Alta Vista Dr Watershed: Buena Vista Creek Call Date: 2/16/2010 Case closed date: 3/26/2010	Sediment accumulation in right-of-way downhill of location/near 1066 Alta Vista. Frontage erosion to be addressed.	Observed erosion/discharge along driveway and portion of frontage area. 3/8/10, warnin letter sent.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from right-of-way, driveway and implement perimeter protection. Follow-up Action: Photo verify Actions completed: Straw wattles in place.
SW No.: SW10-082 Type: Residential Location Address: 274 Alestar St Watershed: Buena Vista Creek Call Date: 4/5/2010 Case closed date: 4/6/2010	Mass accumulation of styrofoam pellets covering frontage, entering into right-of-way and in gutter.	Observed as described in Complaint Description. 4/6/10, called property manager. Gardner will remove styrofoam pellets.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean up styrofoam. Follow-up Action: Photo verify. Actions completed: Styrofoam removed.
SW No.: SW10-083 Type: Residential Location Address: 820 Normark Terr Watershed: Call Date: 4/1/2010 Case closed date: 4/14/2010	Reporting party complained of strong sewer odor outside building.	Observed as described in Complaint Description. 4/5/10, Residents complained of odor of sewage in apartment, outside, and standing sewer water in sinks. Pictures taken of standing water in sink and shower. Sink water looked similar to "grey Water". Apartment had odor of sewage inside. Case reported to San Diego County Dept. of Environmental Health for handling. 4/8/10, Case turned over to San Diego County Dept. of Environmental Health.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: N/A Follow-up Action: N/A Actions completed: N/A

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-084 Type: Residential Location Address: 1565 Green Oak Rd Watershed: Agua Hedionda Creek Call Date: 4/8/2010 Case closed date: 4/9/2010	Vista Fire Dept. responded to vehicle fluid spill at this location; approximately 4 to 5 qts. of fluid total with 1 qt. of fluid into inlet.	4/7/10, Fire Fighter on scene called County Hazmat. County Hazmat inspector notified OES, Control # 10-2237. According to Vista Fire Fighter, reporting party admitted to "pulling the plug" under the engine of a vehicle, resulting in a spill. He then used water in an attempt to clear/clean the spill. 4/18/10, Storm Water crew on scene to clean the spill. Storm Water Code Enforcement Officer Welte contacted several occupants at 1556 Green Oad Rd; reporting person was not present. 4/9/10, BMP brochures mailed.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Public Services responded to clean/remove spill. Follow-up Action: N/A Actions completed: N/A
SW No.: SW10-087 Type: Residential Location Address: 920 Alta Vista Dr. Watershed: Buena Vista Creek Call Date: 3/24/2010 Case closed date: 5/10/2010	Denuded frontage discharging dirt into right of way	Observed as described in Complaint Description. 3/24/10 left door hanger. 4/12/10 warning letter mailed.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection for frontage Follow-up Action: Photo verify Actions completed: Straw wattle in place
SW No.: SW10-090 Type: Residential Location Address: 675 Ascot Dr Watershed: Buena Vista Creek Call Date: 4/14/2010 Case closed date: 4/15/2010	Washing pet poop from inside garage to driveway/street.	I stopped at location at 9:00 a.m. and 4:00 p.m. - No violations; no discharge. 4/15/10, 9:00 a.m. - water in garage and dog outside on lawn. No water was discharging from garage to outside. I spoke with pet owner; presented dog waste brochure and baggy. They were receptive. I contacted complainant, provided status and requested that they contact me if violation continues.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease any discharge to storm system. Follow-up Action: Speak with property owner regarding regulations. Actions completed: Agreed to not be a future polluter.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-099 Type: Residential Location Address: 319 W. Connecticut Ave Watershed: Buena Vista Creek Call Date: 4/13/2010 Case closed date: 4/15/2010	Ditch filled in with dirt. Water discharing to east side neighbor.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove dirt and clear ditch to allow water flow. Follow-up Action: Photo verify Actions completed: Dirt removed from ditch.
SW No.: SW10-101 Type: Residential Location Address: 129 Pala Vista Watershed: Buena Vista Creek Call Date: 4/20/2010 Case closed date: 4/20/2010	Between Trailers #6 & #7. Sewer spill - smells very bad.	Soil absorbed the sewage, but the smell is obnoxious. I suggested to complainant to spread cat litter, gypsum or lime powder on soil to cut the odor. I contacted the Manager. She sent a plumber to the location to assess the concern. Also contacted on-site manager. Private issue.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Private property - Private issue Follow-up Action: Private property - Private issue Actions completed: Private property - Private issue
SW No.: SW10-105 Type: Residential Location Address: 1366 Via Christina Watershed: Buena Vista Creek Call Date: 4/27/2010 Case closed date: 4/28/2010	Roof tile washing with red discharge into right of way.	Observed as described in Complaint Description. Discharge into inlet. Pressure washer info: Teelin Ave, Vista.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Utilize wetvac to reclaim discharge while cleaning area. This was done while Officer was present. Follow-up Action: Witness/Photo verify Actions completed: BMPs implemented

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-108 Type: Residential Location Address: 1415 Vale Terrace Watershed: Buena Vista Creek Call Date: 4/5/2010 Case closed date: 4/9/2010	Silica sand on newly paved driveway (asphalt), discharging into right of way.	Observed as described in Complaint Description. Property owner was contacted, he will sweep up the sand.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Sweep area Follow-up Action: Photo verify Actions completed: Area swept, sand removed
SW No.: SW10-116 Type: Residential Location Address: 1571 Madrid Dr Watershed: Agua Hedionda Creek Call Date: 5/5/2010 Case closed date: 5/5/2010	Advised that resident was dumping white substance into gutter, generated by pool filter.	Observed as described in Complaint Description. Officer used shovel to remove substance. Contacted resident, unaware of discharge, no pool at location - source of discharge un-identified.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded. Follow-up Action: Officer removed discharge from right of way. Actions completed: Provided educational info.
SW No.: SW10-118 Type: Residential Location Address: 1791 Knapp Dr Watershed: Buena Vista Creek Call Date: 5/11/2010 Case closed date: 6/4/2010	Auto fluid spills in ROW and driveway	Observed as described in Complaint Description. Running into curb/gutter	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Use dry method to remove/reduce stains Follow-up Action: Photo verify Actions completed: Stains reduced

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-126 Type: Residential Location Address: 1015 Rose Dr Watershed: Call Date: 6/18/2010 Case closed date: 6/23/2010	Gravel on sidewalk & curb/gutter	Observed as described in Complaint Description. Officer spoke to resident, she will have graved removed.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove gravel Follow-up Action: Photo verify Actions completed: Gravel removed
SW No.: SW10-127 Type: Residential Location Address: 1073 Olive Ave Watershed: Buena Vista Creek Call Date: 6/7/2010 Case closed date: 7/26/2010	Sediment tracking into ROW from driveway	Observed as described in Complaint Description. 7/8/10 - Spoke to Property Owner (PO) and she inquired about permit requirement. Officer spoke to Development Services and no permit is required to do flat work. A contractor is providing estimates this weekend.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from ROW and implement perimeter protection Follow-up Action: Photo verify Actions completed: Concrete drive poured, sediment in roadway removed
SW No.: SW10-129 Type: Residential Location Address: 1229 Vale Terrace Watershed: Buena Vista Creek Call Date: 6/14/2010 Case closed date: 7/12/2010	Sediment discharge into ROW	Observed as described in Complaint Description. 7/2/10- Spoke to property owner and clarified requirements and suggestions. 7/12/10- Property owner was contacted via email to monitor and refine BMPs as season progresses.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter BMPs Follow-up Action: Photo verify Actions completed: Fiber rolls implemented and vegetation planted

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-130 Type: Residential Location Address: 1233 Vale Terrace Watershed: Buena Vista Creek Call Date: 6/14/2010 Case closed date: 7/12/2010	Sediment discharge to ROW	Property appears to be in the process of re-landscaping. Some BMPs are on site but not implemented.6/29/10 - Property owner came to counter to discuss the issue. Officer gave him a fiber roll brochure, he requested an extension. 7/12/10 - Officer contacted property owner and requested monitoring of BMPs as season progresses.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter BMPs Follow-up Action: Photo verify Actions completed: Fiber rolls implemented and vegetation planted
SW No.: SW10-131 Type: Residential Location Address: 1000 Stiles Ct Watershed: Buena Vista Creek Call Date: 6/23/2010 Case closed date: 6/30/2010	Exessive amount of water draining to curb	Hose from side yard discharging water. Pool being drained. High amount of chlorine indicated by test strip. Owner was contacted and educated.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge until chlorine has dissapated. Check curb/gutter for trash/debris before discharge of dechlorinated pool water. Follow-up Action: None Actions completed: None, discharge ceased.
SW No.: SW10-132 Type: Residential Location Address: 1263 Springfield Ct Watershed: Call Date: 6/23/2010 Case closed date: 7/5/2010	Oil on pavement and street	Observed as described in Complaint Description. Stains on driveway and ROW. Spoke with tenant who explained previous attempts to remove residue. Much has been removed. 7/1/10 - Left a voice message with tenant requesting clean up of oil throughout the property and ROW. Officer received a return call from the tenant,he will continue to clean; a follow up will be performed on 7/5/10.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove any "wet" accumulation of oil Follow-up Action: Photo verify Actions completed: Stains removed

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-135 Type: Residential Location Address: 568 Jobe Hill Dr Watershed: Call Date: 5/11/2010 Case closed date: 6/23/2010	Received complaint of landscaper depositing clippings into the ROW	Unfounded after two visits, received call on 6/23/10 at 10:24, arrived at 10:54, no activity. Alleged landscaper Trugreen.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: N/A Follow-up Action: N/A Actions completed: N/A
SW No.: SW09-160 Type: Construction Location Address: 1444 Pluto Dr. Watershed: Buena Vista Creek Call Date: 9/8/2009 Case closed date: 9/14/2009	Construction activities inspection prior to 10/1/09	Construction was finallized prior to installation of permanent landscaping. I contacted owner who promptly installed appropriate BMPs.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs Follow-up Action: Photo verify Actions completed: BMPs implemented.
SW No.: SW08-171 Type: Other Location Address: 1175 Melrose Way Watershed: Buena Vista Creek Call Date: 10/22/2009 Case closed date: 11/18/2008	No BMPs in place. Spoils of asphalt, de-nuded slope and grade areas, trash and debris.	Observed as described in Complaint Description. I contacted Land Development for status and was provided with contractor's name. Contractor stated BMPs are presently being implemented and will be in at end of week.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify Actions completed: BMPs implemented according to erosion control plan sheet.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-115 Type: Other Location Address: 1279 E. Vista Way Watershed: Buena Vista Creek Call Date: 7/8/2009 Case closed date: 7/8/2009	Grease/fluid spill from tree service truck. Tow driver did not clean up spill.	I spoke with A to Z tow driver. He was dispatched to return after my call with a request to clean-up spill.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove as much vehicle fluid as MEP (Maximum Extent Practicable) Follow-up Action: Photo/visual verification Actions completed: Area cleaned with absorbant. Tow driver brushed numerous times over fluid with broom and absorbant.
SW No.: SW09-141 Type: Other Location Address: 165 Eucalyptus Ave Watershed: Buena Vista Creek Call Date: 7/22/2009 Case closed date: 7/23/2009	Excessive water from church landscaping to storm drain inlet	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease over watering - repair/replace as needed. Follow-up Action: Visual verify Actions completed: Area dry.
SW No.: SW09-148 Type: Other Location Address: 549-553 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 7/28/2009 Case closed date: 8/11/2009	No BMPs on vacant lot.	I contacted Public Services to determine who is to install BMPs. Public Service's crew through Redevelopment. I spoke with Redevelopment and area will be maintained.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify. 8/15/09, fiber roll requires imbedment for correct application. Actions completed: 8/11/09, imbedded fiber rolls and requested regular maintenance with Redevelopment.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-161 Type: Other Location Address: Foothill and Oak Watershed: Buena Vista Creek Call Date: 9/8/2009 Case closed date: 9/9/2009	Place pipe within area drain	Observed as described in Complaint Description. No apparent water is coming from pipe. I forwarded this complaint to Public Services for further investigation.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Not a Storm Water issue - Referred to Public Services Dept. Follow-up Action: None Actions completed: None
SW No.: SW09-173 Type: Other Location Address: Buena Creek Watershed: Buena Vista Creek Call Date: 10/5/2009 Case closed date: 10/8/2009	Kids building dams across Buena Creek just west of Stater Brothers Market on Sycamore Ave.	I spoke with complainant. He had received this information 3rd hand. I requested specifics and he would contact other people for this information. I told him this would be referred to Fish & Game as it was within a stream or creek. He stated "residents" removed the dams.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Refer to Fish & Game with greater details - Did not receive any further information from complainant. I referred to Fish & Game on 10/8/09 via e-mail. Follow-up Action: None - unconfirmed Actions completed: None - unconfirmed
SW No.: SW09-174 Type: Other Location Address: 298 Sycamore Dr. Watershed: Agua Hedionda Creek Call Date: 10/7/2009 Case closed date: 10/20/2009	Dirt accumulation at road triangle requires maintenance.	Observed as described in Complaint Description. Referred to Public Services for maintenance.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment accumulation. Follow-up Action: Visually verify Actions completed: Area cleared.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-175 Type: Other Location Address: 1800 blk of West Dr. Watershed: Buena Vista Creek Call Date: 10/7/2009 Case closed date: 11/18/2009	Overwatering, trash and debris.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease overwatering. Remove trash and debris Follow-up Action: Monitor and visual verification Actions completed: Area has been dry for many weeks.
SW No.: SW09-177 Type: Other Location Address: Meadowlake & Williamston Watershed: Buena Vista Creek Call Date: 10/12/2009 Case closed date: 10/19/2009	Line break and sediment discharge into storm drain system	Observed as described in Complaint Description. I contacted Vista Irrigation District (VID) dispatch, operations, construction and after hours emergency lines - no answers- honoring Columbus Day, offices closed. I spoke with Public Services employee; city crew to clean area. (Referred to Public Services)	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment, implement appropriate BMPs. Contact VID for future pro-active response. Follow-up Action: Photo verify Actions completed: Area Clean
SW No.: SW09-181 Type: Other Location Address: Taylor @ N. Santa Fe Ave Watershed: San Luis Rey Call Date: 10/28/2009 Case closed date: 11/2/2009	Oil deposits from drippy cars	Area is a high traffic intersection surrounded by residential area; numerous cars park on public roadway. I could not locate any excessive wet oil areas on either side of the road.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Unfounded Follow-up Action: None Actions completed: None

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-182 Type: Other Location Address: 1947 E. Vista Way Watershed: Buena Vista Creek Call Date: 10/21/2009 Case closed date: 11/20/2009	Trash, debris and dead vegetation accumulating in drainage channel.	Observed as described in Complaint Description. 11/10/09, I spoke with the secretary at the Elk's Lodge. They received a NOV and are clearing the area.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove pollutants Follow-up Action: Photo verify Actions completed: Elk's Lodge area of ditch has been cleared.
SW No.: SW09-183 Type: Other Location Address: 1957 E. Vista Way Watershed: Buena Vista Creek Call Date: 10/21/2009 Case closed date: 12/9/2009	Trash, debris and dead vegetation accumulationg in drainage channel.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Remove pollutants Follow-up Action: Photo Verify Actions completed: Ditch cleared of trash and debris, also vegetation.
SW No.: SW09-190 Type: Other Location Address: 501 N. Emerald Dr Watershed: Buena Vista Creek Call Date: 11/10/2009 Case closed date: 12/9/2009	Stock piles - no BMPs	Research located informantion for property owner. Contacted property owner; he stated he would protect property perimeter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs and maintain Follow-up Action: Photo verify Actions completed: BMPs implemented

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW09-207 Type: Other Location Address: Sycamore @ Lobelia (near 7-11 store) Watershed: Buena Vista Creek Call Date: 10/7/2009 Case closed date: 1/7/2010	Dirt discharge and heavy accumulation of sediment in asphalt triangel @ Sycamore & Lobelia.	Observed as described in Complaint Description. After research it was determined the location is City easement and forwarded to Public Services Dept. for corrective action.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove congested ditch. Implement appropriate BMPs. Follow-up Action: Photo verify. Actions completed: BMPs implemented by Public Services Dept.
SW No.: SW10-016 Type: Other Location Address: 1732 Anza Ave Watershed: San Luis Rey Call Date: 1/21/2010 Case closed date: 2/18/2010	While responding to complaint at 1741 Anza Ave observed sediment and run-off into right-of-way from dirt road access on vacant lot across from 1741.	Observed as described in Complaint Description. Property owned by "Anza 5 Development, LLC", under "A & S Development Group LLC".	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement necessary BMPs / perimeter control. Follow-up Action: Photo verify. Actions completed: Gravel bags and traffic cones in place, Vista Irrigation District (VID) agreed not to use dirt access.
SW No.: SW10-046 Type: Other Location Address: 1100 blk of E. Taylor St. Watershed: Buena Vista Creek Call Date: 2/23/2010 Case closed date: 2/23/2010	Public Services Supervisor complained of forklift operator tracking mud onto E. Taylor at this location.	Observed as described in Complaint Description.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean mud in right-of-way. Forklift operator advised that he will clean area. Follow-up Action: Public Services Supervisor advised us that area was clean. Actions completed: Public Services Supervisor advised us that area was clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-054 Type: Other Location Address: 320 Sycamore Ave. Watershed: Agua Hedionda Creek Call Date: 3/2/2010 Case closed date: 3/10/2010	D-max inspector advised that grease interceptor is too full of grease, grease observed discharging into outlet.	Observed as described in Complaint Description. Grease interceptor is full but not entering outlet. Baffle missing.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Replace baffle. Follow-up Action: Verify baffle is inside grease interceptor. Actions completed: Baffle is in place.
SW No.: SW10-055 Type: Other Location Address: 2051 Riviera Dr. Watershed: San Luis Rey Call Date: 1/27/2010 Case closed date: 4/14/2010	Water with strong sewer-like odor flowing through complainants property into Vista storm drains.	Both City and County staff confirmed report from complainants. Flow entered brow ditch on Fortuna Ave (2056 Riviera Dr), but only traveled 50 feet down brow ditch and seeped into ground at cracks in concrete. Flow was coming through a storm drain pipe under Riviera Dr. 2/16/10, dye test performed on plumbing at 2051 Riviera. On 2/18/10 dye resurfaced in storm drains which confirmed illegal connection of septic system at 2051 Riviera Dr. Referred to County Department of Health.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair storm drain system on property to disconnect flow of sewage into City of Vista's storm drain system. Follow-up Action: 3/29/10, County conducted dye test of plumbing at 2051 Riviera to determine if connection has been eliminated. 4/1/10, staff visit to site did not confirme any presence of dye. (photo documented) Actions completed: Owner excavated underground storm drain pipe and found it to be damaged; presence of dye. Owner subsequently plugged end of damaged pipe with a bucket and secured it with concrete.
SW No.: SW10-066 Type: Other Location Address: 300 block Pomelo Dr. Watershed: Buena Vista Creek Call Date: 3/10/2010 Case closed date: 4/1/2010	Eroding sidewalk and slope on east side of Pomelo.	Observed as described in Complaint Description. Heavy accumulation of sediment and obstructions in area brow ditch. One half width on sidewalk has been undermined/eroded by water.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from brow ditch. Engineering has requested utility company (AT&T) to repair sidewalk. Follow-up Action: Photo verify that ditch has been cleared. Actions completed: Ditch cleared.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-068 Type: Other Location Address: 1470 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 3/8/2010 Case closed date: 4/13/2010	Public Services crew notified Storm Water of sediment discharge to sidewalk and right-of-way from vacant lot. No BMPs.	Observed as described in Complaint Description. NOV issued. 4/6/10, received a call from owner. He is on jury duty but will begin clean-up on 4/10/10.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs. Remove sediment from sidewalk and right-of-way. Follow-up Action: Photo verify Actions completed: BMPs implemented.
SW No.: SW10-074 Type: Other Location Address: 450 W. California Ave Watershed: Buena Vista Creek Call Date: 3/31/2010 Case closed date: 3/31/2010	Observed water flowing down gutter on W. California Ave.	Verified by photos and from talking with the responsible party that construction crew washed out wheel barrels which had concrete sand residue. This occurred behind the building which is being renovated. Wash water was entering a square catch basin which connects to the curb/gutter on W. California Ave.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Immediately terminate the illegal washing activity. Follow-up Action: N/A Actions completed: R. E. Pierro Construction Company discontinued washing activity.
SW No.: SW10-081 Type: Other Location Address: 535 N. Santa Fe Watershed: Buena Vista Creek Call Date: 4/6/2010 Case closed date: 4/6/2010	Ruptured bag of white powder in street, westbound N. Santa Fe Ave.	Observed as described in Complaint Description. Referred to Public Services.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove powder from roadway. Follow-up Action: Photo verify Actions completed: Powder removed

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-093 Type: Other Location Address: 1085 Santa Fe Ave Watershed: Buena Vista Creek Call Date: 4/12/2010 Case closed date: 4/12/2010	Observed powder spill in lanes of street.	Observed as described in Complaint Description. Public Services was contacted to clean street.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: City to remove/sweep powder. Follow-up Action: Photo verify Actions completed: Street has been swept by City crew.
SW No.: SW10-103 Type: Other Location Address: 3270 Corporate View Dr. Watershed: Agua Hedionda Creek Call Date: 4/27/2010 Case closed date: 4/27/2010	Oil spill from large truck, TCH Trucking #1717. Info on truck: MCA Logistics 800-826-2604.	Observed as described in Complaint Description. I spoke with the truck driver, who mentioned that clean up began immediately and that a professional company cleaned all oil that was spilled.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean and remove oil accumulation. Follow-up Action: Photo verify. Actions completed: Area cleaned.
SW No.: SW10-133 Type: Other Location Address: 1900 blk Riviera Ct Watershed: San Luis Rey Call Date: 3/24/2010 Case closed date: 4/5/2010	Received complaint of mud into ROW at location, passer by advised that people are filing in the creek bed. Major land disturbance of drainage course confirmed, trailer observed onsite missing sewer cap.	Observed as described in Complaint Description. County watershed protection and DEH notified. See digital file. County Code Enforcement has multiple complaints on parcel.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to San Diego County to handle Follow-up Action: N/A Actions completed: N/A

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-034 Type: TCBMP Location Address: 225 Vista Village Dr. Watershed: Buena Vista Creek Call Date: 1/4/2010 Case closed date: 3/22/2010	TCBMPs numbers 13 and 14 (drain insert locations) need filter drain insert units installed as required in 11/5/09 letter sent to property owner/management.	Drain insert units have not been installed yet.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Install required drain inserts Follow-up Action: 2/18/10, screens installed at both loading dock catch basins. Did not see hydrocarbon booms or filter fabric. 3/22/10, screens, filter fabric and booms installed at both TCBMPs numbers 13 and 14. Verified by visit and photographs. Actions completed: 3/22/10 screens, filter fabric and booms installed at both TCBMPs numbers 13 and 14.
SW No.: SW10-035 Type: TCBMP Location Address: 224 N. Emerald Dr Watershed: Buena Vista Creek Call Date: 2/5/2010 Case closed date: 2/24/2010	By 2/5/10 a filter unit was required to be installed at BMP #2. Unit has not been installed.	City contacted the contractor who will be installing the unit. Unit will be installed week of 2/8/10, according to stormwater maintence company.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Install drain insert unit to comply with City's TCBMP program and requirements. Follow-up Action: 2/24/10, confirmed filter unit installed (Filter fabric with hydrocarbon booms) Actions completed: Chevron had contractor installl filter unit.
SW No.: SW10-037 Type: TCBMP Location Address: 1315 Hot Springs Way Watershed: Agua Hedionda Creek Call Date: 1/11/2010 Case closed date: 3/24/2010	Vegetated swale has poor vegetative coverage.	Found swale to have poor vegetative coverage as reported. Half the swale looks fine, the other half does not.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Conduct replanting of swale in areas of poor vegetative cover by 3/1/10. Follow-up Action: 3/3/10, City verified with photos that seed was placed in most of the swale. Note: further follow-up (in one month) is necessary to evaluate growth of grass to determine if it will be effective in treating runoff. 3/22/10, significant growth of swale observed by city staff (photos taken)- At least 80% vegetative coverage. Actions completed: 2/23/10, Property Manager hired contractor to reseed slope with Fine Leaf Seep Fiscue grass. 3/3/10, Property Manager seeded several areas of swale.

APPENDIX D-6

Enforcement Actions Taken at Commercial and Industrial Sites/Sources

Appendix D-6 Enforcement Actions taken at Commercial and Industrial Sites/Sources

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION					REFERRAL
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal Warning	Written Warning	Notice of Violation	Citation	**Totals**	Proactive
Commercial (complaints)	30		4	13		47	41	41	15	19	30	3	67	40
Commercial (inspections)	4			7		11	11	11	1		10	2	13	
Industrial (complaints)	9			1		10	9	9	1	1	7	2	11	7
Industrial (inspections)	1			3		4	4	4			4	1	5	
Mobile Business	2					2	2	2	2				2	1
TOTALS	46	0	4	24	0	74	67	67	19	20	51	8	98	48

APPENDIX D-7

Industrial/Commercial Inspection Follow-up Summaries

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: 99˘ Only Stores	**Inspection Date:** 3/12/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation; Citation **Follow-up Inspection Required:** Yes
Address: 705 E Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: leaf litter in rear of store)		
Inspection Type: Commercial	Protect trash area from contact with storm water (Inspector comment: lids open)		**Follow-up Inspection Date(s):** 4/12/10
Contact: Joaquin Oseguera, Manager	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: food, debris, sediment) Keep loading and unloading areas, including drains, free of debris (Inspector comment: sediment, wood chips, food debris)		**Inspector:** Daniel Welte
Receiving Water Body: Buena Vista Creek	Develop a written procedure for spill prevention and response Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Corrective Actions Verified:** Yes
Facility Name: Albertson's #6201	**Inspection Date:** 3/10/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning **Follow-up Inspection Required:** Yes
Address: 1301 E Vista Way	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: sediment)		
Inspection Type: Commercial	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Date(s):** 4/13/10
Contact: Rick Ritter, Manager	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: leaks, debris, sediment).		**Inspector:** Sandra Sotola
Receiving Water Body: Buena Vista Creek	Keep loading and unloading areas, including drains, free of debris		**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: BAE Systems, Advanced Ceramics	**Inspection Date:** 4/7/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation; Citation
			Follow-up Inspection Required: Yes
Address: 1960 Watson Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: organic debris in parking lots)		
Inspection Type: Industrial	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Date(s):** 5/6/10
Contact: Tony Tomanowski - Facility Manager	Protect trash area from contact with storm water (Inspector comment: many dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: major debrs in dumpster enclosures)		**Inspector:** Daniel Welte
Receiving Water Body: Buena Creek	Adequately cover materials stored outside, where feasible (Inspector comment: rusty and galvanized metal, carbon fabrics) Keep loading and unloading areas, including drains, free of debris (Inspector comment: loading/storage areas contain sediment and debris) Provide storm water training for appropriate employees (Inspector comment: missing log, should be included in SWPPP)		**Corrective Actions Verified:** Yes

Facility Name: Big Tiny's Smoke'n BBQ	**Inspection Date:** 3/22/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
			Follow-up Inspection Required: Yes
Address: 918 S Santa Fe Ave	**Needed Corrective Actions:** Keep outdoor areas free of spills and leaks (Inspector comment: oil stains in parking lot)		
Inspection Type: Commercial	Protect trash area from contact with storm water Keep trash area free of litter and debris, liquids, powders, and sediment		**Follow-up Inspection Date(s):** 4/21/10
Contact: Steve Satterlee, Manager	Keep loading and unloading areas, including drains, free of debris Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response		**Inspector:** Doug Coppi
Receiving Water Body: Buena Vista Creek	Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills		**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Bobby D's Pizza & Brewery Co.	**Inspection Date:** 3/3/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 425 S Melrose Dr	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: major litter, sediment, debris)		**Follow-up Inspection Required:** Yes
Inspection Type: Industrial	Keep outdoor areas free of spills and leaks (Inspector comment: minor oil stains)		**Follow-up Inspection Date(s):** 7/9/10
Contact: Matt Wetter, Manager	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola
Receiving Water Body: Buena Vista Creek	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: stains) Provide an accessible, functional spill response kit Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills Maintain accessible grease spill response materials Complete NONA/NEC paperwork and follow instructions on coversheet provided. grain silo not in use		**Corrective Actions Verified:** Yes

Facility Name: Californias Mexican Restaurant	**Inspection Date:** 3/22/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation
Address: 2147 E Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: organic debris and litter in parking lot)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: grease surrounding trap in storage area) Provide storm water training for appropriate employees		**Follow-up Inspection Date(s):** 4/27/10
Contact: Arturo Avila, Owner	Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Daniel Welte
Receiving Water Body: Guajome Creek	Store waste cooking grease in designated container (Inspector comment: grease buckets outdoors) Store grease bins with overhead coverage Store grease bins with secondary containment Keep grease bin and surrounding area free of grease stains/spills		**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Coast Equipment Rental	**Inspection Date:** 3/16/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 1713 W Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment on paved areas)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Date(s):** 4/12/10
Contact: Sony Clonts - Manager	Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: front planters)		**Inspector:** Sotola/Welte
Receiving Water Body: Buena Vista Creek	Protect trash area from contact with storm water (Inspector comment: no Adequately cover materials stored outside, where feasible (Inspector comment: tarp partially open, oil on tarp) Keep spill containment free of spills and rainwater (Inspector comment: rainwater) Properly store and dispose of hazardous materials (Inspector comment: partially uncovered) Provide storm water training for appropriate employees		**Corrective Actions Verified:** Yes
Facility Name: Colima's Mexican Food	**Inspection Date:** 4/1/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 1850 Hacienda Dr 22	**Needed Corrective Actions:** Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Provide storm water training for appropriate employees		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 5/12/10
Contact: Rafael Verduzco - Owner	Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola
Receiving Water Body: Buena Vista Creek	Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Grease on container door)		**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Costco Wholesale #124	**Inspection Date:** 4/1/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 1755 Hacienda Dr	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris Protect trash area from contact with storm water (Inspector comment: roll off dumpster uncovered) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: significant leaks from compactor) Keep loading and unloading areas, including drains, free of debris (Inspector comment: minor sediment and debris)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 5/12/10
Contact: Adam Shomer - Manager			**Inspector:** Sandra Sotola
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Facility Name: Douglas Wheel, Inc.	**Inspection Date:** 4/6/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation
Address: 1340 N Melrose Dr	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: minor leaf litter) Keep storm drains on site free of litter and debris (Inspector comment: clogged) Keep outdoor areas free of spills and leaks (Inspector comment: minor oil stains) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Adequately cover materials stored outside, where feasible (Inspector comment: rusty materials) Keep loading and unloading areas, including drains, free of debris (Inspector comment: leaf litter, debris) Provide storm water training for appropriate employees File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP). Develop and implement a storm water monitoring program. If all recommended BMPs are implemented and outdoor exposure is eliminated, contact the City to request a re-inspection. If no exposure status is confirmed, an NOI and its associated requirements will not be necessary and facility may file NONA/NEC		**Follow-up Inspection Required:** Yes
Inspection Type: Industrial			**Follow-up Inspection Date(s):** 5/11/10
Contact: Ty Zimmerman,Manager			**Inspector:** Daniel Welte
Receiving Water Body Loma Alta Creek			**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: El Burrito Catering (Mobile Food Service Hub)	**Inspection Date:** 3/15/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 365 Olive Ave A	**Needed Corrective Actions:** Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage (Inspector comment: Canopy) Keep grease bin and surrounding area free of grease stains/spills		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 3/22/10
Contact: Lydia Hernandez, Owner			**Inspector:** Daniel Welte
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Facility Name: El Camino Rental Dba Bilcan	**Inspection Date:** 3/8/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation
Address: 1121 S Santa Fe Ave	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment) Keep storm drains on site free of litter and debris (Inspector comment: sediment) Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: pervious area erodes into storm drain) Properly store stockpiles to prevent material transport, where feasible (Inspector comment: contain stockpiles) Keep trash area free of litter and debris, liquids, powders, and sediment Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: sediment) Adequately cover materials stored outside, where feasible (Inspector comment: tires) Equip liquid storage containers with secondary containment (Inspector comment: fuel containers) Properly store and dispose of hazardous materials (Inspector comment: fuel containers lack sufficent secondary containment) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP). Develop and implement a storm water monitoring program.		**Follow-up Inspection Required:** Yes
Inspection Type: Industrial			**Follow-up Inspection Date(s):** 4/12/10
Contact: Josh Parker, Assistant Manager			**Inspector:** Sotola/Welte
Receiving Water Body: Buena Vista Creek, Unnamed Tributary			**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: El Rinconcito Mexican Seafood Resturant	**Inspection Date:** 2/23/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 1033 S Santa Fe Ave E	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: leaf litter) Keep outdoor areas free of spills and leaks (Inspector comment: oil and grease stains) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: lids open) Identify and eliminate illicit connections and illegal discharges (Inspector comment: grease entering storm drain) Provide storm water training for appropriate employees Store grease bins with overhead coverage Keep grease bin and surrounding area free of grease stains/spills Keep storm drains free of grease and food debris		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s): 2/23/10**
Contact: Francisco Sanchez			**Inspector: Sandra Sotola**
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified: Yes**

Facility Name: Enterprise Car Sales	**Inspection Date:** 3/11/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 875 W Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: leaf litter, sediment) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) Protect trash area from contact with storm water (Inspector comment: one lid open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: leaf litter) Adequately cover materials stored outside, where feasible (Inspector comment: battery) Equip liquid storage containers with secondary containment Properly store and dispose of hazardous materials (Inspector comment: oil pan) Provide storm water training for appropriate employees		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 4/12/10
Contact: Porscha Evans, Manager			**Inspector:** Sotola/Welte
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Eriberto's Mexican Food	**Inspection Date:** 4/1/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation; Citation **Follow-up Inspection Required:** Yes
Address: 1805 Hacienda Dr	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: curb outlet clogged) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: curb outlet) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with secondary containment (Inspector comment: Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Stains on ground)		
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 5/12/10
Contact: Andres Rodriguez, Manager			**Inspector:** Sandra Sotola
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Facility Name:	Inspection Date:	Inspector:	Enforcement Action: Notice of Violation
Euro Pacific Paint & Body Inc	4/8/2010	Annika Kubischta	**Follow-up Inspection Required:** Yes
Address: 1210 N Melrose Dr B	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: leaves, debris, fine particulates) Collect water from pressure washing or hosing and dispose of appropriately (Inspector comment: service bay wash water discharges to storm drain) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: litter beneath and behind dumpsters) Adequately cover materials stored outside, where feasible Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4 (Inspector comment: wash water discharges to storm drain system) Identify and eliminate illicit connections and illegal discharges (Inspector comment: vehicle washing, discharge from service bay)		
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 4/8/10
Contact: Ari Soltani, Owner			**Inspector:** Daniel Welte
Receiving Water Body: Loma Alta Creek			**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Filibertos Mexican Food	**Inspection Date:** 3/15/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 960 E Vista Way	**Needed Corrective Actions:** Keep outdoor areas free of spills and leaks (Inspector comment: oil leak in drive-thru)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Date(s):** 4/13/10
Contact: Alberto Deleon, Owner	Protect trash area from contact with storm water (Inspector comment: lids open)		**Inspector:** Sandra Sotola
Receiving Water Body: Buena Vista Creek	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: grease, food debris) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills		**Corrective Actions Verified:** Yes
Facility Name: Giant New York Pizza	**Inspection Date:** 2/24/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 1250 S Santa Fe Ave E	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Keep storm drains on site free of litter and debris (Inspector comment: leaf litter) Keep outdoor areas free of spills and leaks (Inspector comment: oil stains, coolant leak)		**Follow-up Inspection Date(s):** 3/30/10
Contact: Azad Hana, Manager	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar		**Inspector:** Welte/Sotola
Receiving Water Body: Buena Vista Creek	Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: dirt drive erosion onto driveway) Protect trash area from contact with storm water (Inspector comment: lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: litter, sediment) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Homeland Petroleum	**Inspection Date:** 3/11/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 1740 E Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: minor leaf litter and debris)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Protect trash area from contact with storm water (Inspector comment: lid Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash and debris, ensure proper disposal of fuel hose)		**Follow-up Inspection Date(s):** 4/13/10
Contact: Sanita Arya, Manager	Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response		**Inspector:** Sandra Sotola
Receiving Water Body: Buena Vista Creek	Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Corrective Actions Verified:** Yes

Facility Name: In N Out Burger #61	**Inspection Date:** 3/29/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 2010 Hacienda Dr	**Needed Corrective Actions:** Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Provide storm water training for appropriate employees		**Follow-up Inspection Date(s): 4/24/10**
Contact: Joel Gallarado, Manager	Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector: Sandra Sotola**
Receiving Water Body: Buena Vista Creek	Store grease bins with secondary containment (Inspector comment: Tray (insufficient size)) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: oil stains/spills)		**Corrective Actions Verified: Yes**

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Kentucky Fried Chicken	**Inspection Date:** 3/12/2010	**Inspector:** Annika Kubischta	**Enforcement Action: Notice of Violation**
Address: 840 E Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment along rear curb)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: minor oil stains)		**Follow-up Inspection Date(s):** 4/13/10
Contact: Eva Rodriguez, Manager	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Inspector:** Daniel Welte
Receiving Water Body: Buena Vista Creek	Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: minor erosion of rear bank) Provide storm water training for appropriate employees Store grease bins with overhead coverage (Inspector comment: Dbl walls) Store grease bins with secondary containment (Inspector comment: Stains) Keep grease bin and surrounding area free of grease stains/spills		**Corrective Actions Verified:** Yes

Facility Name: Krikorian Premiere Theaters	**Inspection Date:** 2/26/2010	**Inspector:** Annika Kubischta	**Enforcement Action: Notice of Violation**
Address: 25 Main St	**Needed Corrective Actions:** Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Required: Yes**
Inspection Type: Commercial	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: oil and liquids)		**Follow-up Inspection Date(s): 2/26/10**
Contact: Herman Mendoza, Manager	Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4 (Inspector comment: reported wheelbarrow washing into storm drain inlet)		**Inspector: Sandra Sotola**
Receiving Water Body: Buena Vista Creek	Identify and eliminate illicit connections and illegal discharges (Inspector Identify and eliminate illicit connections and illegal discharges (Inspector comment: oil & liquids from trash entering storm drain) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep storm drains free of grease and food debris (Inspector comment: oil entering drain)		**Corrective Actions Verified: Yes**

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: La Mexicana Market	**Inspection Date:** 3/10/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation
Address: 440 N Santa Fe Ave	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: food waste, debris in back area)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Collect water from pressure washing or hosing and dispose of appropriately (Inspector comment: reported uncontained washing)		**Follow-up Inspection Date(s):** 4/12/10
Contact: Noury Gaggo-owner	Protect trash area from contact with storm water (Inspector comment: lids open)		**Inspector:** Daniel Welte
Receiving Water Body: Buena Vista Creek	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: debris, food waste)		**Corrective Actions Verified:** Yes
	Identify and eliminate illicit connections and illegal discharges (Inspector		
	Identify and eliminate illicit connections and illegal discharges (Inspector comment: reported uncontained washing)		
	Provide storm water training for appropriate employees		
	Develop a written procedure for spill prevention and response		
	Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		
	Store grease bins with secondary containment (Inspector comment: Dbl		

Facility Name: Los Cabos Mexican & Seafood	**Inspection Date:** 3/9/2010	**Inspector:** Annika Kubischta	**Enforcement Action: Written Warning**
Address: 760 E Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: minor leaf litter)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: leaf litter, trash)		**Follow-up Inspection Date(s):**
Contact: Alfonso Segura-owner	Provide storm water training for appropriate employees		**Inspector:**
	Develop a written procedure for spill prevention and response		
	Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		
Receiving Water Body: Buena Vista Creek	Keep grease bin and surrounding area free of grease stains/spills		**Corrective Actions Verified:**

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Oscar's Mexican Food	**Inspection Date:** 3/12/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of violation
Address: 822 E Vista Way	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: sediment, food debris) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: lid Identify and eliminate illicit connections and illegal discharges (Inspector comment: ice with food debris in curb outlet) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Residue on lid) Keep storm drains free of grease and food debris (Inspector comment: Food debris with ice)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 4/13/10
Contact: Patricia Pinalos - owner			**Inspector:** Daniel Welte
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Facility Name: Pepper Tree Frosty	**Inspection Date:** 3/17/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 270 S Santa Fe Ave	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: sediment) Keep outdoor areas free of spills and leaks (Inspector comment: minor Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Spills)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 4/12/10
Contact: Daniel Villasenor, owner			**Inspector:** Sotola/Welte
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Rayzist Photomask Inc	**Inspection Date:** 3/24/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation
			Follow-up Inspection Required: Yes
Address: 955 Park Center Dr	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment)		
Inspection Type: Industrial	Keep storm drains on site free of litter and debris (Inspector comment: organic debris)		**Follow-up Inspection Date(s):** 4/22/10
Contact: Josh Willis - Plant Manager	Keep outdoor areas free of spills and leaks (Inspector comment: stains in parking, loading and storage areas) Protect trash area from contact with storm water (Inspector comment: lids open)		**Inspector:** Daniel Welte
Receiving Water Body: Agua Hedionda Creek	Keep trash area free of litter and debris, liquids, powders, and sediment Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash and debris outside of bins) Adequately cover materials stored outside, where feasible (Inspector comment: cut stone dust no contained in storage area) Keep loading and unloading areas, including drains, free of debris (Inspector comment: dust from polishing machine) Dispose of water generated by processing activities appropriately (Inspector comment: setup malfunctioning) Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff (Inspector comment: guard dog waste in storage yard) Identify and eliminate illicit connections and illegal discharges (Inspector comment: clogged drain causing over flow through storage yard into storm drain inlet) Provide storm water training for appropriate employees SWPPP not able to be provided for review		**Corrective Actions Verified:** Yes

Facility Name: Rubio's Baja Grill	**Inspection Date:** 2/25/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
			Follow-up Inspection Required: Yes
Address: 1711 University Dr 110	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: Filter insert overflowing with sediment, litter)		
Inspection Type: Commercial	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Date(s):** 3/30/10
Contact: Krista Seimandi, Manager	Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response		**Inspector:** Welte/Sotola
Receiving Water Body: Buena Creek	Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills		**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Salsa Market	**Inspection Date:** 3/16/2010	**Inspector:** Jacques Beriau	**Enforcement Action:** Written Warning
Address: 1100 N Santa Fe Ave	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: trash and debris collected on storm drain)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: minor oil stains)		**Follow-up Inspection Date(s):** 4/12/10
Contact: Stewart Weinstock - Owner	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sotola/Welte
Receiving Water Body: Buena Vista Creek	Protect trash area from contact with storm water (Inspector comment: lids open)		**Corrective Actions Verified:** Yes
	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash and debris) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		

Facility Name: Subway Sandwiches & Salads 2208	**Inspection Date:** 3/15/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
Address: 950 E Vista Way	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: litter in parking lot)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: oil stains) Protect trash area from contact with storm water (Inspector comment: lids open)		**Follow-up Inspection Date(s):** 4/13/10
Contact: Lyn Goldwasser-Owner	Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: food debris, garbage)		**Inspector:** Sandra Sotola
Receiving Water Body: Buena Vista Creek	Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Sunrise Cafe	**Inspection Date:** 3/8/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning **Follow-up Inspection Required:** Yes
Address: 1250 S Santa Fe Ave 3	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment) Keep storm drains on site free of litter and debris (Inspector comment: minor sediment and leaf litter) Keep outdoor areas free of spills and leaks (Inspector comment: oil stains) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: erosion from dirt lot) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: debris) Provide storm water training for appropriate employees Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Stains, spills)		**Follow-up Inspection Date(s):** 4/12/10 **Inspector:** Sotola/Welte **Corrective Actions Verified:** Yes
Inspection Type: Commercial			
Contact: Bobby Jones, Owner			
Receiving Water Body: Buena Vista Creek			

Facility Name: Taco Bell 20413	**Inspection Date:** 2/25/2010	**Inspector:** Jacques Beriau	**Enforcement Action:** Written Warning **Follow-up Inspection Required:** Yes
Address: 3271 Business Park Dr	**Needed Corrective Actions:** Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: some grease spills on container and ground)		**Follow-up Inspection Date(s):** 3/30/10 **Inspector:** Welte/Sotola **Corrective Actions Verified:** Yes
Inspection Type: Commercial			
Contact: Steve Carlton, Manager			
Receiving Water Body: Agua Hedionda Creek			

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Ted's Auto Service	**Inspection Date:** 3/2/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation
Address: 436 Vista Village Dr	**Needed Corrective Actions:** Keep outdoor areas free of spills and leaks (Inspector comment: oil stains, spills) Adequately cover materials stored outside, where feasible (Inspector comment: Engine parts, used tires) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: used tires) Properly label outdoor storage containers (Inspector comment: white drum and smooth black drum not labeled) Provide an accessible, functional spill response kit Provide an accessible, functional spill response kit Keep spill containment free of spills and rainwater (Inspector comment: Properly store and dispose of hazardous materials (Inspector comment: label all drums, keep secondary containment clean) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 3/30/10
Contact: Ted Tien			**Inspector:** Welte/Sotola
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Facility Name: The Lawn Center	**Inspection Date:** 3/24/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Notice of Violation
Address: 603 S Santa Fe Ave	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: organic debris in rear storage area) Keep outdoor areas free of spills and leaks (Inspector comment: significant oil staining) Direct roof downspouts away from areas of potential pollutants, where feasible (Inspector comment: directed behind tires, engine parts) Properly manage pesticides/fertilizers; use IPM when feasible (Inspector comment: fertilizer granules on pavement surrounding landscaping) Protect trash area from contact with storm water (Inspector comment: lid Protect trash area from contact with storm water (Inspector comment: lid Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: minor staining) Adequately cover materials stored outside, where feasible (Inspector comment: engines exposed, holes in trap over storage) Prevent run-on from contacting materials stored outdoors, where feasible Manage animals and animal waste in a manner that prevents animal waste from being transported in runoff (Inspector comment: owners dog)		**Follow-up Inspection Required:** Yes
Inspection Type: Commercial			**Follow-up Inspection Date(s):** 4/29/10
Contact: Manny Mendoza, owner			**Inspector:** Daniel Welte
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Uncle Tony's Italian Cuisine	**Inspection Date:** 3/1/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
			Follow-up Inspection Required: Yes
Address: 770 Sycamore Ave 121	**Needed Corrective Actions:** Keep storm drains on site free of litter and debris (Inspector comment: minor sediment)		
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: grease spill outside rear door)		**Follow-up Inspection Date(s):** 3/30/10
Contact: Tony Vono - Owner	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City.		**Inspector:** Welte/Sotola
Receiving Water Body: Buena Creek	Protect trash area from contact with storm water Keep trash area free of litter and debris, liquids, powders, and sediment Provide storm water training for appropriate employees		**Corrective Actions Verified:** Yes
Facility Name: Vista Transmission Service	**Inspection Date:** 3/17/2010	**Inspector:** Annika Kubischta	**Enforcement Action:** Written Warning
			Follow-up Inspection Required: Yes
Address: 427 Redlands Street B	**Needed Corrective Actions:** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment in driveway and parking lot)		
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: oily mop water spills)		**Follow-up Inspection Date(s):** 4/12/10
Contact: Robert Lee - Owner	Adequately cover materials stored outside, where feasible (Inspector comment: used tires, contaminated mop water) Properly store and dispose of hazardous materials (Inspector comment: contaiminated mop water stored outdoors)		**Inspector:** Welte/Sotola
Receiving Water Body: Buena Vista Creek			**Corrective Actions Verified:** Yes

Site Information

Facility Name:
Wienerschnitzal 288

Address:
901 S Santa Fe Ave

Inspection Type:
Commercial

Contact:
Khalid Sayed, Owner

Receiving Water Body:
Buena Vista Creek

Initial Inspection Information

Inspection Date: 3/15/2010

Inspector: Annika Kubischta

Needed Corrective Actions:
Provide storm water training for appropriate employees
Develop a written procedure for spill prevention and response

Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City
Store grease bins with overhead coverage
Store grease bins with secondary containment (Inspector comment: Dbl
Keep grease bin and surrounding area free of grease stains/spills

Follow-up Inspection

Enforcement Action: Written Warning

Follow-up Inspection Required: Yes

Follow-up Inspection Date(s): 4/5/10

Inspector: Doug Coppi

Corrective Actions Verified: Yes

APPENDIX D-8

Mobile Water-Use Inspection Form

Business Name & Contact:
Phone #:

Mobile Water Use Inspection Form

	Area Inspected	Yes	No	If No, Corrective Action Needed	Corrections Verified Date
1	Are you aware of the City's requirement to prevent the runoff of pollutants into the city's storm water conveyance system and receiving waters?				
2	Do you have a spill prevention plan?				
3	Do you immediately report significant spills that have entered the storm drain system to the Storm Water Division and/or appropriate spill response agency?				
4	Do you have appropriate containment devices (i.e. berms, etc.) to protect storm drain inlets, area drains and contain discharge water runoff prior to collection?				
5	Do gasoline and other stored liquids have leak-proof containers that are labeled and secured during transport and operations?				
6	Are absorbent or other materials or devices available to remove gasoline, chemical and other liquid spills that could occur?				
7	Do you remove all waste water before removing controls or barriers?				
8	Is non-hazardous waste water disposed of to landscape areas or sanitary sewer?				
9	Are your water reclamation and pressure washing systems working properly (no leaks, etc.)? Demonstrate.				
10	Other:				

The City of Vista Storm Water Staff listed below has reviewed, inspected and approved the use of your water reclamation system within Vista city limits. Return this form to the Planning Department or other Department as directed.

Signature _____ Date _____

Print _____

APPENDIX D-9

BMP Notification Letter

CITY OF VISTA
CALIFORNIA

May 20, 2010

Commercial/Industrial Business in City of Vista
2210 La Mirada Dr
Vista, CA 92084

Re: Commercial, Industrial, and Mobile Businesses Stormwater Best Management Practices Requirements

Dear Business Owner/Operator:

The San Diego Regional Water Quality Control Board re-issued a Municipal Stormwater Permit, Order R9-2007-0001 to the City of Vista on January 24, 2007. The City of Vista is required to comply with the Permit in order to prevent polluted urban runoff from entering our local waterways. Urban runoff pollution is known to cause water quality degradation and affect the health and habitats of wildlife, fish, and humans. Hence, pollution prevention is of utmost importance.

To comply with the Stormwater Permit, the City adopted a Stormwater Management and Discharge Control Program Ordinance to regulate commercial, industrial, and mobile businesses. Under this Ordinance (VMC Chapter 13.18) the City requires all businesses to implement effective best management practices (BMPs) in preventing off-site movement of pollutants into the stormwater conveyance system (drainage system). BMPs or pollution prevention practices include but are not limited to good housekeeping practices, training of employees, covering and containing outside materials and stockpiles, and installing devices to capture, retain, and treat pollutants in runoff. Businesses are required to implement, at a minimum, the City's BMP requirements (where applicable) listed in the City's Stormwater Standards Manual. The BMP requirements for your type of business are enclosed and can also be found on the City's website (www.cityofvista.com).

Please review and evaluate your business's BMPs and revise your practices as necessary to ensure compliance.

We sincerely appreciate your cooperation during the implementation of this program. If you have any questions, please contact me at (760) 726-1340 ext.1333.

Respectfully,

Doug Coppi
Senior Environmental Specialist

APPENDIX E-1

FY 09-10 HHW Disposal Types and Amounts

Appendix E-1
2009-10 HHW Disposal Types and Amounts

		Poway	Vista	Total PHHWCF	Carlsbad	Del Mar	Encinitas	Escondido	National City	Poway	San Marcos
		(in pounds)	(in pounds)	(in pounds)	**15.8%**	**0.2%**	**7.9%**	**1.1%**	**0.0%**	**40.4%**	**9.2%**
1. Flammable & Poison	Flammable solid/liquid	35,640	103,945	**139,585**	22,091	301	11,010	1,489	0	56,327	12,889
	Bulked flammable liquids	0	7,205	**7,205**	1,140	16	568	77	0	2,907	665
	Oil-base paint	27,200	89,000	**116,200**	18,390	251	9,166	1,240	0	46,890	10,730
	Poison (excl.aerosols)	5,600	8,220	**13,820**	2,187	30	1,090	147	0	5,577	1,276
	Reactive and explosive	10	295	**305**	48	1	24	3	0	123	28
	Subtotal	**68,450**	**208,665**	**277,115**							
2. Acid	Inorganic and organic acid	**1,840**	**5,955**	**7,795**	1,234	17	615	83	0	3,146	720
3. Base	Inorganic and organic base	**1,240**	**6,800**	**8,040**	1,272	17	634	86	0	3,244	742
4. Oxidizer	Neutral oxidizers, organic peroxides, Oxidizing acid, oxidizing base	**1,275**	**3,464**	**4,739**	750	10	374	51	0	1,912	438
5. PCB-containing	PCB-containing paint	0	0	**0**	0	0	0	0	0	0	0
	Other PCB waste	82	91	**173**	27	0	14	2	0	70	16
	Subtotal	**82**	**91**	**173**							
6. Reclaimable	Antifreeze	4,293	8,204	**12,497**	1,978	27	986	133	0	5,043	1,154
	Car batteries	8,570	16,501	**25,071**	3,968	54	1,978	267	0	10,117	2,315
	Latex paint	62,400	162,040	**224,440**	35,520	485	17,703	2,395	0	90,569	20,725
	Motor oil/oil products	22,101	32,131	**54,232**	8,583	117	4,278	579	0	21,884	5,008
	Oil filters	950	1,320	**2,270**	359	5	179	24	0	916	210
	Subtotal	**98,314**	**220,196**	**318,510**							
7. Asbestos		**600**	**7,400**	**8,000**	1,266	17	631	85	0	3,228	739
8. Universal Waste (UW)	Mercury containing waste	4	0	**4**	1	0	0	0	0	2	0
	Thermostats/switches/thermometers	80	92	**172**	27	0	14	2	0	69	16
	Fluorescent Lamps	4,730	8,375	**13,105**	2,074	28	1,034	140	0	5,288	1,210
	Rechargeable batteries	1,850	2,510	**4,360**	690	9	344	47	0	1,759	403
	Household batteries	10,577	17,280	**27,857**	4,409	60	2,197	297	0	11,241	2,572
	Subtotal	**17,241**	**28,257**	**45,498**							
Electronic Waste (UW)	SB20/50 video display devices	73,098	97,851	**170,949**	27,055	369	13,484	1,824	0	68,983	15,786
	Non SB20/50 video display devices	0	0	**0**	0	0	0	0	0	0	0
	Consumer electronic devices	57,447	104,941	**162,388**	25,700	351	12,809	1,733	0	65,529	14,995
	Subtotal	**130,545**	**202,792**	**333,337**							
Aerosol Containers (UW)	Non-empty aerosol containers	0	0	**0**	0	0	0	0	0	0	0
	Other	0	900	**900**	142	2	71	10	0	363	83
	All UW subtotal	**147,786**	**231,949**	**379,735**							
9. Other HHW	Home-generated sharps	1,290	1,610	**2,900**	459	6	229	31	0	1,170	268
	Pharmaceutical Waste	0	0	**0**	0	0	0	0	0	0	0
	Compressed gas cylinder	2,632	4,086	**6,718**	1,063	15	530	72	0	2,711	620
	Non-UW aerosol containers (corrosive, flammable, poison)	5,850	13,600	**19,450**	3,078	42	1,534	208	0	7,849	1,796
	Treated Wood	0	1,800	**1,800**	285	4	142	19	0	726	166
	Other	13,931	37,160	**51,091**	8,086	110	4,030	545	0	20,617	4,718
	Subtotal	**23,703**	**58,256**	**81,959**							
10. Grand Total		**343,290**	**742,776**	**1,086,066**			83,233				

APPENDIX E-2

FY 09-10 Summary of Enforcement Actions at Residential Sites

Appendix E-2 FY 09-10 Summary of Enforcement Actions at Residential Sites

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION					Proactive
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal	Written Warning	Notice of Violation	Citation	**Totals**	
Residential	63		9	24		96	84	84	55	9	18	2	84	52
TOTALS	63	0	9	24		96	84	84	55	9	18	2	84	52

APPENDIX F

IDDE Appendices
Submitted by
December 15, 2010

APPENDIX G-1

Mobile Water-Use Brochure

City of Vista
Water Quality Protection Program

The City is regulated by a Municipal Storm-water Permit (Regional Water Quality Control Board, Order No. 2007-0001) to protect water quality in its receiving waters.

In the City of Vista, these receiving waters include Buena Vista Creek, Agua Hedionda Creek, Buena Creek, La Mirada Creek, Guajome Creek, and Loma Alta Creek.

The City developed the Water Quality Protection Program to ensure compliance with the Permit and to protect our creeks. The program includes, but is not limited to, educating businesses and residents about the importance of pollution prevention, conducting inspections at commercial facilities to evaluate BMP implementation, and using enforcement when necessary to ensure compliance.

The Mobile Water Use licensing program is one important aspect of the Water Quality Protection Program as it relates to the regulation of all types of businesses.

The City can use your help in maintaining clean water in our creeks and ensuring continual compliance with the Stormwater Permit. The City appreciates your efforts!

A Word About "Biodegradable" Soaps

"Biodegradable" is a popular marketing term that can be misleading. Because a product is labeled as biodegradable doesn't mean that it is non-toxic. Some products are more toxic than others so please be conscious of this when purchasing bio-degradable products. Regardless, soaps and de-tergents of any kind are not allowed to enter the storm drain system.

Storm Water HOTline: (760) 726-1340 ext. 1686
waterquality@cityofvista.com

City of Vista
Water Quality Protection Program
200 Civic Center Drive, Vista, CA 92084
(760) 639-6111

www.cityofvista.com
June, 2010

Best Management Practices
for
Mobile Water Use Operations

Water Quality Protection Program
www.cityofvista.com

What are Mobile Water Use Operations?

Mobile Water Use (MWU) Operations are mobile business activities that involve the use of water, particularly in the cleaning of surfaces. Examples of these activities include carpet cleaning, vehicle detailing , and surface cleaning of sidewalks, buildings, dumpsters, parking lots, and other impervious surfaces. In addition to water, detergents, degreasers and other products are typically used.

How can MWU Operations Affect Water Quality?

Did you know storm drains are NOT connected to sanitary sewer systems or treatment plants? The primary purpose of storm drains is to carry rainwater away from developed areas and into receiving waters to prevent flooding. Wash water from Mobile Water Use activities can enter City storm drains if it is not contained, removed, and disposed of properly. This runoff can contain pollutants including oil and grease, chemicals, sediment, and detergents and is known to cause pollution in receiving waters. Urban run-off pollution can affect water quality and the health and habitats of fish, wildlife, plants, and even humans. Hence, pollution prevention is of utmost importance.

Best Management Practices

Under the City of Vista's Municipal Code *(Chapter 13.18, Urban Runoff Management and Discharge Control Program),* Mobile Water Use operators are required to use best management practices (BMPs) to prevent the discharge of pollutants into storm drains. BMPs are methods and/or practices used to prevent or reduce urban runoff pollution. The following BMPs must be considered when conducting mobile water use operations:

Use Dry Clean-up Methods

- Instead of pressure washing, determine what alternative dry methods are available.
- Use mops, brooms, rags or wire brushes to clean pavement, buildings and equipment as much as possible.

- Dry sweep areas prior to pressure washing or steam cleaning to remove debris, trash, and other pollutants.

Contain, Capture and Remove all Water Runoff

- Use sandbags, berms, or other devices to dam up and contain washwater.
- Remove all wash water using an effective water removal and reclamation system.
- Check entire area for any spills of chemicals and hazardous materials.
- Properly dispose of all wash water (not in street or storm drain) in accordance with Encina Wastewater Authorities (EWA) guidelines. Go to EWA's website at (www.encinajpa.com/index.php?page_id=8) under BMP permits and requirements.

Other BMP Recommendations

- Use a minimal amount and least toxic detergents and degreasers that you will need to complete the job. Try phosphate free detergents.
- Consider diverting runoff to landscaped areas when applicable.
- Regularly inspect water reclamation equipment and other BMPs and repair as necessary.

The City's MWU Licensing Requirements

All mobile water use operators must possess a valid City of Vista business license to conduct mobile water use operations within the City.

Prior to receiving your business license you will be required to demonstrate the effectiveness of your water reclamation system and other BMPs in preventing wash water discharges.

City staff will be available to conduct a scheduled inspection of your BMP system. Upon approval of your reclamation system, staff will notify the City's Business License department of their approval. Please review and evaluate your business's BMPs as necessary to ensure compliance.

STORM WATER HOTLINE
760-726-1340 ext 1686

APPENDIX G-2

Watershed Surveys

Watershed Survey City of Vista

For each of the questions below, please doubleclick inside the box next to the answer you feel is correct, to check that box. Your answers won't be shared with anyone else and will help us develop a watershed curriculum for our community! Thank you for participating in our survey process!

1. A watershed is…?

- ☐ An area that retains water, like a swamp
- ☐ Area of land that drains into a specific waterbody
- ☐ A small building used to store water
- ☐ Don't know/Not sure

2. Where does stormwater (rain water) go after it enters a storm drain or roadside ditch?

- ☐ Directly to lakes and streams with out treatment
- ☐ To lakes and streams after some treatment
- ☐ To a sewage treatment plant
- ☐ Don't know/Not sure

3. Where does the excess sediment (dirt) in our waterbodies come from?

- ☐ Construction sites
- ☐ Eroding hillsides
- ☐ Home improvement projects
- ☐ Agricultural activities
- ☐ Yards and gardens
- ☐ All of the above
- ☐ Don't know/Not sure

4. How do you wash your car?

- ☐ Take it to a car wash
- ☐ On the yard/lawn
- ☐ In the driveway
- ☐ Other:_____
- ☐ Don't have a car

5. Where do you drain the water from your pool, spa, or fountain?

- ☐ To landscaped areas (yards, lawn, etc)
- ☐ To the street
- ☐ To the sewer (via cleanout)
- ☐ Other:_____
- ☐ Don't have a pool/spa/fountain

6. Which of the following can pollute our creeks, lagoons, etc.?

- ☐ Fertilizers, pesticides, and insecticides
- ☐ Automobile fluids (oils, anti-freeze, etc.)
- ☐ Home repair materials (paint, cement, etc.)
- ☐ Pet and human waste
- ☐ Soap from car washing
- ☐ Hazardous chemicals (like pool chlorine, etc.)
- ☐ Soil erosion from construction
- ☐ Leaves and grass clippings from yards
- ☐ Don't know/Not sure
- ☐ All of the above

7. How does dog waste left on the ground impact our health and environment? *(check all that apply)*

- ☐ Disease causing organisms found in dog waste are washed into the streets and storm drains and out into our waterbodies where we swim and fish
- ☐ Excess nutrients found in dog waste are washed into creeks and lagoons can cause algae blooms, cloudy water, and kill fish
- ☐ Dog waste on the ground has no impact on us or the environment
- ☐ Don't know/Not sure

8. What do you do with your grass clippings, leaves, and other yard waste?

- ☐ Leave them on the lawn/Mulch the lawn
- ☐ Compost them in our yard
- ☐ Put them in the yard waste recycle bin
- ☐ Sweep out into the street
- ☐ Don't have a yard

9. Watersheds within the City of Vista include?

- ☐ Agua Hedionda
- ☐ San Luis Rey
- ☐ Buena Vista
- ☐ Loma Alta
- ☐ All of the above
- ☐ None of the above

10. Where do you dispose of household hazardous wastes (like paint, motor oil, batteries, pesticides)?

- ☐ With the regular trash
- ☐ At a collection facility
- ☐ Down a storm drain or roadside ditch
- ☐ Other: _____

Do you know the City of Vista – Stormwater Hotline number? It is **760-726-1340 x1686**

2010 Watershed Survey City of Vista

For each of the questions below, please doubleclick inside the box next to the answer you feel is correct, to check that box. Your answers won't be shared with anyone else and will help us develop a watershed curriculum for our community! Thank you for participating in our survey process!

1. A watershed is…?

- ☐ An area that retains water, like a swamp
- ☐ Area of land that drains into a specific waterbody
- ☐ A small building used to store water
- ☐ Don't know/Not sure

2. Where does stormwater (rain water) go after it enters a storm drain or roadside ditch?

- ☐ Directly to lakes and streams with out treatment
- ☐ To lakes and streams after some treatment
- ☐ To a sewage treatment plant
- ☐ Don't know/Not sure

3. Where does the excess sediment (dirt) in our waterbodies come from?

- ☐ Construction sites
- ☐ Eroding hillsides
- ☐ Home improvement projects
- ☐ Agricultural activities
- ☐ Yards and gardens
- ☐ Don't know/Not sure

4. How do you wash your car?

- ☐ Take it to a car wash
- ☐ On the yard/lawn
- ☐ In the driveway
- ☐ Other:_____
- ☐ Don't have a car

5. Where do you drain the water from your pool, spa, or fountain?

- ☐ To landscaped areas (yards, lawn, etc)
- ☐ To the street
- ☐ To the sewer (via cleanout)
- ☐ Other:_____
- ☐ Don't have a pool/spa/fountain

6. Which of the following can pollute our creeks, lagoons, etc.?

- ☐ Fertilizers, pesticides, and insecticides
- ☐ Automobile fluids (oils, anti-freeze, etc.)
- ☐ Home repair materials (paint, cement, etc.)
- ☐ Pet and human waste
- ☐ Soap from car washing
- ☐ Hazardous chemicals (like pool chlorine, etc.)
- ☐ Soil erosion from construction
- ☐ Leaves and grass clippings from yards
- ☐ Don't know/Not sure

7. How does dog waste left on the ground impact our health and environment? *(check all that apply)*

- ☐ Disease causing organisms found in dog waste are washed into the streets and storm drains and out into our waterbodies where we swim and fish
- ☐ Excess nutrients found in dog waste are washed into creeks and lagoons can cause algae blooms, cloudy water, and kill fish
- ☐ Dog waste on the ground has no impact on us or the environment
- ☐ Don't know/Not sure

8. What do you do with your grass clippings, leaves, and other yard waste?

- ☐ Leave them on the lawn/Mulch the lawn
- ☐ Compost them in our yard
- ☐ Put them in the yard waste recycle bin
- ☐ Sweep out into the street
- ☐ Don't have a yard

9. Watersheds within the City of Vista include?

- ☐ Agua Hedionda
- ☐ San Luis Rey
- ☐ Buena Vista
- ☐ Loma Alta
- ☐ All of the above
- ☐ None of the above

10. Where do you dispose of household hazardous wastes (like paint, motor oil, batteries, pesticides)?

- ☐ With the regular trash
- ☐ At a collection facility
- ☐ Down a storm drain or roadside ditch
- ☐ Other: _____

Do you know the City of Vista – Stormwater Hotline number? It is **760-726-1340 x1686**

APPENDIX G-3

Spotlight Newsletter Articles

CITY OF VISTA CALIFORNIA

November / December 2009

SPOTLIGHT on VISTA

Employee newsletter

Inside This Issue

1 City Manager's Message

2 2009 Employee Recognition Event

3 Limelight

4 New Hires
Kiwanis Employee of the Quarter
Kudos

5 Department News

8 Birthdays
Years of Service

9 Caught in the Act!
F.Y.I.

11 'Thank You!' Gram sheet

"Let us move forward into 2010 with enthusiasm and purpose".

Message from the City Manager

Unbelievably, another year is almost behind us and 2010 is just ahead. This is the time of the year to look back on our accomplishments and make our resolutions for the next year. I want to thank all of you for the work you have done for this city. This last year has not been an easy one, but you have risen to the challenge. Your level of creativity, hard work, and commitment has been truly remarkable.

We are getting through these tough times together. We are about half-way through the budget year, and unfortunately, our national and local economies are still struggling and will continue to do so into the New Year. How this continues to affect Vista is another need to reduce our revenue projections by $800K for this current year.

With revenues down, please continue to shop in Vista for your holiday needs, as our community benefits with every dollar you spend locally. One of the great things about our city is that there is no shortage of merchants who can provide everything from the newest toy on your child's wish list to that unique, one-of-a-kind gift or service for someone special. When we purchase our goods and services in town, we are also making an investment in our community!

Some members in our area struggle this time of year and may require a little help this holiday season. Vista has several agencies that can facilitate a holiday donation through their many worthy programs. If you are able to offer assistance, contact a favorite service agency of your own, or call the United Way for information on other local service organizations.

Vista has wonderful employees as witnessed in October when employees donated over $800 with our I-Pod Nano fund raiser for our adopted HMLA-369 Marine squadron. In May, 2010 the squadron will be deployed to Afghanistan. If you still want to help out, you can drop off a care package at the Senior Center, the City Manager's lobby or in Lyn Dedmon's office in Building K.

Let us move forward into 2010 with enthusiasm and purpose. I wish you and your family happy holidays and a warm and wonderful new year!

Rita Geldert

2009 Employee Recognition Event

Emcee Dan Kays a.k.a. "Indiana Jones" and Rita Geldert, City Manager

Screen on the Green at the Moonlight!

Movie Screening - Indiana Jones: Raiders of the Lost Ark

This event recognized outstanding contributions by all City of Vista employees and honored those employees nominated for Employee of the Year, Manager of the Year and the Mayor's Excellence-In-Service Award.

Employees and their families had fun with a caricature artist, balloon twister, trivia contest, and face painter before the program began. Emcee Dan Kays kept all entertained as the Employee of the Year, Manager of the Year, and Mayor's Excellence in Service Awards were announced during the event.

Door prizes were also available to those lucky few and winners of the "Lunch with a Department Director" were announced.

The 2009 Nominees for Mayor's Excellence-In-Service, Manager of the Year and Employee of the Year were:

Mayor's Excellence-in-Service

Martha Cleavenger, Finance
Gail Jarrard, Finance
Roger Brenzel, Engineering
Sandra Sotola, Engineering
Cindy Sanchez, Public Services
Greg Hanson, Public Services
Cirilo Mariscal, Public Services
Chris Mitchell, Redevelopment & Housing
Sandra Wolfe, Redevelopment & Housing
Jeff Stevens, Code Enforcement/City Manager
Kurt Groscup, Community Development
Jesus Orea, Public Services
Santos Callejas, Public Services

Manager of the Year

Craig Trammell, Public Services
Donna Meester, Public Services
Patsy Chow, Community Development
Greg Mayer, Community Development
Husam Hasenin, Engineering
Cindy Choquette, Finance
Mary Dreibelbis, Public Services
Chuck Crist, Public Services
Jonathan Stone, City Attorney
Rick Minnick, Fire
Dolores Gascon, Administrative Services

Congratulations to all of this year's nominees!!!

The winners of these awards are on page 3.

Employee of the Year

Juan Paz, Public Services
Santos Callejas, Public Services
Walter Hartman, Public Services
Craig Usher, Fire
Joe Napier, Fire
Dora York, Administrative Services
Ray Phelps, Public Services
Gilbert Obregon, Public Services
Sam Craig, Fire
Sandra Sotola, Engineering
Leslie Webb Blanco, Finance

Limelight…

Submitted by Employee Recognition Committee

Employee Awards Event

Thank you to all who attended the Annual Employee Awards Event with dinner and a movie at the Moonlight and congratulations to the winners!

- Employee of the Year: **Walter Hartman**
- Manager of the Year Award: **Chuck Crist**
- Mayor's Excellence-In-Service Award: **Roger Brenzel**

After the awards, the city held the first movie screening at the new stage house. Employees and their families watched Indiana Jones: Raiders of the Lost Ark complete with popcorn and candy — in surround sound!

Walter Hartman, Employee of the Year

Chuck Crist, Manager of the Year

Roger Brenzel, Mayor's Excellence-In-Service

HMLA iPod Raffle

A special iPod raffle was held to help us support the City's "adopted" Marine Corps Unit, HMLA 369. The Marine Unit is home for the holidays and getting ready to deploy to Afghanistan in May. Over $800 was raised to benefit the Unit! Thank you to everyone who donated.

The City will continue accepting donations and care packages on behalf of HMLA 369 for the coming weeks and months leading up to the deployment, so keep these military families in mind as we enter the holiday season. The Unit is very appreciative of all the support the City has provided.

The winner of the iPod Raffle was announced during the Employee Awards Event. Congratulations Bill Crane!

Bill Crane, Management Analyst, was the winner of the HMLA iPod raffle.

"Thank You!' Grams on Sale Nov 9th!

November is a great time to give thanks, and now you can say "Thank You" to your coworker, while raising money for the City's Adopted Unit!

Each sheet (*on page 11*) contains 4 grams - for a total of $4 ($1 each gram). Choose from a healthy or candy treat to be delivered November 20th.

Beginning Monday, Nov 9th through Tuesday, Nov 17th, print and complete your 'Thank You!' Gram and bring with $1 payment each to any of the ERC members listed below:

Ashley Howard, x1149, Recreation & Community Services
Roxann O'Shaughnessy, x2105, Fire Department
Dora York, x1040, Human Resources
Joan Turley, x1203, Community Development
Claire Lopez, x1024, Finance

If you have a suggestion for recognition activities, please share them with a committee representative:

- Jocelyn South- **ERC Chair**, Finance
- Ashley Howard- Recreation & Community Services
- Dora York- Human Resources
- Joan Turley- Community Development
- Julie Chapin- City Manager/Code/City Attorney
- Rachel Beld- Economic Development
- Robert Borowski- Information Technology
- Roxann O'Shaughnessy- Fire Department
- Sandra Wolfe- Housing & Redevelopment
- Tom DuBose- Public Services

New Hires

Andrew Valenta
Firefighter/Paramedic
Fire Department

Kiwanis Employee of the Quarter

Submitted by Renee Bowman

Captain Jon Blumeyer was recently honored as the Employee of the Quarter by the Kiwanis Club of Vista. Battalion Chief Patrick Murphy nominated Jon for his contributions to the Vista Fire Department.

Jon put in hundreds of hours to complete the fire department's accreditation process. He worked for six months on the assignment, and then returned to shift work. Although his assignment was completed, he continued to work on the updates and modifications necessary for the accreditation process in addition to his regular duties as Captain.

Kudos to Jon in receiving this prestigious tribute.

Captain Jon Blumeyer,
Kiwanis Employee of the Quarter

Kudos…

Community Development

Submitted by Community Development

The Community Development Department received two emails regarding the wonderful customer service they received from the departmental staff.

The first email was from Lisa Morris, a consultant with the Massey Consulting Group, regarding the assistance she recently received from Adam Finestone, Associate Planner. Ms. Morris says "*it was my pleasure to work with Mr. Finestone. He was extremely responsive in assisting me, was professional in all respects, and very knowledgeable of municipal planning and zoning procedures. He is an excellent representative of the City of Vista*."

Eco-Fact: *Three billion batteries are sold each year in the U.S., averaging about 32 per family or 10 per person. About the same number are thrown away. Go to www.earth911.org to make every day earth day.*

Kudos…(continued)

Community Development

Submitted by Community Development

The second email was from Ray Blake, a Project Management Consultant that spent a bit of time at city hall consulting for a business that was looking for new space in the city. He said that both "*Robbie and Sharon have been wonderful to deal with, providing me with critical and timely information so that I can do my job much more effectively*."

The new Sonic Drive-in on S. Santa Fe and Main will open on Nov. 2.

Public Services

Submitted by Bill Fortmueller

The Recreation & Community Services Division of the Public Services Department had some emails from private citizens regarding the wonderful customer service provided by Brian Sallerson, Recreation Leader IV. Brian was described as "*constantly ready to assist in any way with a smile on his face*." Others were grateful when he offered to walk them to their cars after late classes.

Congratulations to both of these departments on their outstanding staff!!

Department News

City Clerk

Submitted by Kathy Hollywood

Congratulations to Marci Kilian on receiving the designation of Master Municipal Clerk (MMC). We are very proud of her! The MMC is an advanced continuing education program that prepares participants to perform more complex municipal duties. The program has an extensive and rigorous educational component, a professional and social contribution component, and a commitment to lifelong learning. The Academy members must demonstrate that they have actively pursued educational and professional activities and have remained informed of current socio-political, cultural, and economic issues that affect local governments and municipalities. Congratulations Marci!

Marci Kilian (front) with Mayor Vance, City Manager Rita Geldert and Assistant City Manager Patrick Johnson.

Economic Development

Submitted by Economic Development

Congratulations to Rachel Beld, Economic Development Specialist, and her husband Brian. On Thursday, October 8th at 3:06 a.m. they welcomed their first child. Lily Mae was 19.75 inches long and weighed 7 pounds, 15 ounces.

A recent quote from the new mom: "we are pretty sure she's a genius."

Everyone is thrilled, healthy, a little sleepy, and marveling at the joy of it all.

Lily Mae Beld ~ 19.75" long ~ 7 lbs, 15 oz

Department News (continued)

Engineering

Submitted by Dolores Gascon

Eileen Buyrom finished ahead of Matt Atteberry on the north side of the Oceanside landmark, one of the longest wooden piers on the West Coast.

Matt Atteberry, Associate Engineer, participated in the 80th Annual Oceanside Pier Swim on Monday, September 7th. Shortly after 8:30 a.m., the first of three heats of age-grouped participants began splashing through the surf, moving in a giant patch of flailing arms and frothy water toward and around fluorescent orange buoys set well away from the bait-flinging fishermen..

Fire

Statue at Wildwood Fire Station No. 6 Dedicated

(L to R) Mayor Vance, Councilmember Gronke, Mayor Pro Tem Campbell, Councilmembers Lopez and Ritter.

The Mayor, City Council, and members of the public were on hand to participate in the dedication of the statue at Wildwood Fire Station No. 6 on October 13th. The statue, "Ensuring the Safety and Trust of Our Community," features a firefighter kneeling with a child, symbolizing the dedication and involvement the Vista Fire Department has with the youth in the community, as well as looking toward the future generations in Vista. The bronze statue was completed in a local foundry and is the latest in Vista's effort to increase the presence of public art. The Vista Fire Fighters Association raised over $30,000 from the community to fund the statue and many of the donors were city employees. Those that donated over $100 received a recognition plaque on the wall behind the statue.

The child who posed for the statue is a local boy from the Townsite neighborhood. The life-sized bronze statue has VFD specific equipment down to the helmet and breathing apparatus equipment. The artist, Thomas King, of Vista, is renowned within the region for his work in Vista and donated his time for the project.

Human Resources

Submitted by Human Resources

Eydee Amato at the 2009 US Women's Triathlon Series

Congratulations to Eydee Amato, Office Specialist II, on her recent participation in the 2009 US Women's Triathlon Series that supports the Ovarian Cancer Research Fund. With the help of the participants the series has raised over $1,000,000 and still counting.

Next for Eydee is the 2009 Muddy Buddy Ride & Run series in Temecula, on December 6th. The Muddy Buddy funds raised through this program benefit the Challenged Athletes Foundation (CAF) and allow people with physical challenges to live an active lifestyle.

Department News (continued)

Public Services

Submitted by Kim Crawford

Kudos goes to the crew of the Blood Vessel. Sam Beukema, Rob Anderson and Ryan Snyder participated in the "Nail & Sail" competition in Oceanside on September 20th. Although they didn't win, their boat didn't sink…so that is an accomplishment all its own! Their sponsor, *So Scrubby Professional Uniforms,* supplied the scrubs they were wearing along with moral support on the day of the event.

L to R: Sam Beukema, Ryan Snyder and Rob Anderson

Submitted by Moonlight

David Beaver, Assistant Theater Technical Coordinator, and his wife welcomed a baby girl on Wednesday, October 14th. Danika Paige Beaver was 19.7 inches long and weighed 6 pounds, 8 ounces.

Danika Paige Beaver

~ 6 lbs, 8 oz. ~ 19.7" long

Submitted by Mary Dreibelbis

Amy Eustace, Transportation Coordinator, and her husband, Nick, welcomed a baby girl on Monday, August 24th. Nichole Mahealani Keenan Eustace weighed 6 pounds, 14 ounces and was 17.5 inches long.

Nichole Mahealani Keenan Eustace ~ 6 lbs, 14 oz. ~ 17.5" long

Submitted by Joan Turley

Tiffany Luther, Assistant Waterpark Manager, received hearty congratulations from her fellow pier swimmers on her first swim around the Pier. She accomplished this feat on Friday, October 2nd in the presence of John Conley, Gretchen Crowson and Joan Turley.

Congratulations to all the new parents and those who participated in the various competitions!!

Birthdays

November

1st	Dianne Costa	Finance
2nd	Robert Rhoades	Public Services
3rd	Alberto Delgado	Public Services
3rd	Gilbert Obregon	Public Services
3rd	Robin Putnam	Community Projects
3rd	Joel Stangeland	Fire
4th	Cindy Sanchez	Public Services
5th	Sam Hasenin	Engineering
5th	Becky Weiss	City Manager
8th	Michele Koller	Redevelopment
9th	Rob Anderson	Public Services
10th	Raymond Tellechea	Fire
12th	Robert Castaneda	Public Services
13th	Toni Kleider	Fire
13th	Don Shellhammer	Fire
15th	Jim Chumbley	Fire
15th	Diane Collier	Fire
16th	Ralph Coble	Public Services
16th	Michael Romeo	Fire
19th	Denise Collins	Finance
20th	Pete Grover	City Attorney
21st	Mike Parks	Public Services
21st	Angela Palasik	Public Services
21st	Christopher Place	Fire
22nd	Dolores Gascon	Human Resources
24th	Bob Gmur	Fire
25th	Bob Stacey	Fire
26th	Christian Sherrard	Public Services
27th	Mark Gray	Fire
28th	Matt Atteberry	Engineering
29th	Darren Kaplan	Fire
30th	Marilyn Anderson	Fire
30th	Rosanne McElhaney	Redevelopment
30th	Brian Mentzer	Fire

December

1st	Clarence Rich	Code Enforcement
3rd	Manny Robles	Code Enforcement
4th	Rick Minnick	Fire
4th	Tony Zepeda	Public Services
8th	Julie Chapin	City Manager
9th	Jocelyn South	Finance
9th	Dave Wilson	Code Enforcement
10th	Victor Lievanos	Public Services
11th	Kevin Ham	Econ Development
11th	Daniel Schultz	Public Services
12th	Gabriel Mendez	Public Services
13th	Jeff Bauer	Fire
13th	Richard Caldwell	Engineering
13th	Kim Crawford	Public Services
13th	Emily Downing	Fire
16th	Christian Haney	Fire
17th	Shawn Fejerang	Public Services
17th	Bill Rawlings	Redevelopment
18th	Kathy Brombacher	Public Services
18th	Heidi Dobson	Human Resources
19th	Patrick Sadowski	Public Services
20th	Johnny Medina	Public Services
21st	Ramy Kaufler	Public Services
21st	Jan Yelland	Finance
22nd	Juan Salazar	Public Services
23rd	Sandra Sotola	Engineering
23rd	Karisa Soto	Public Services
24th	Derek Fried	Fire
24th	Brien McDonald	Fire
25th	Jose Lopez	Public Services
25th	Paulette Renfro	Public Services
27th	Marty Parish	Fire
28th	Joshua Spann	Fire
28th	Imelda Valdivia	Building
30th	Darold Pieper	City Attorney

Years of Service

November

2	Eydee Amato	Human Resources
3	Derek Fried	Fire
3	Christian Haney	Fire
3	Matt Kennedy	Fire
3	Joshua Spann	Fire
4	Kathy Hollywood	City Clerk
4	Erika Shaw	Code Enforcement
5	Manny Robles	Code Enforcement
7	Victor Lievanos	Public Services
8	Julie Chapin	City Manager
10	Marilyn Anderson	Fire
10	Kurt Groscup	Planning
10	Susan Perciavalle-Brundu	Econ Development
12	Larry Greaves	Public Services
12	Jeff Schroeder	Fire
12	Dale White	Public Services
15	Denise Collins	Finance
17	Lisa Feeney	Public Services
20	Ralph Medina	Public Services
25	Rod Krueger	Public Services
28	Richard Minnick	Fire

December

1	Tracy Harrison	Finance
2	Joshua Fretwell	Engineering
2	Ligeia Heagy	Engineering
2	Chad Wodarczyk	Public Services
5	Heidi Dobson	Human Resources
5	Johnny Medina	Public Services
6	Dianne Costa	Finance
10	Rob Anderson	Public Services
10	Renee Bowman	Admin Services
10	Cindy Choquette	Finance
11	Lettie Gibbs	Public Services
12	Mike Parks	Public Services
13	Armando Sandoval	Public Services
18	Ken Shaw	Public Services

Caught in the Act!

Roger Brenzel was Caught in the Act!

Submitted by Dolores Gascon

L to R: Sudi Shoja, Roger Brenzel and Larry Pierce

The City of Vista ***Caught in the Act!*** program recognizes employees who are proactive about safety. Honored employees are selected by the City's Safety Committee. Any employee can nominate a colleague by submitting a ***Caught in the Act!*** nomination form through their Safety Committee Representative.

Roger Brenzel was nominated by a co-worker for recognition:

In February of 2009, the Engineering Department received a call that a remote control device had fallen into a storm drain inlet. The caller had tried to reach Public Services, but the offices were closed due to the flex Friday. Rain was imminent. Roger volunteered to assist the citizen. He quickly crafted some makeshift collection devices, traveled to the site and safely reclaimed the remote. Just as he completed the task and returned the remote to the citizen, it began to rain.

The Safety Committee presented Roger with a ***Caught in the Act!*** award due to his willingness to go the extra mile and make life safer and more secure for his co-workers and the public at large.

To nominate a colleague, fill out the form located in the Personnel Read Access folder under -> Risk Management -> Safety Program -> Caught in the Act Nomination form.pdf

F.Y.I. News

The Rainy Season is Upon Us

Submitted by Mary Haley

Did you know the rainy season began October 1 and runs through April 30? The Storm Water Division invites all employees to participate in pollution prevention during this rainy season. We are trying to reduce the amount of stormwater and urban runoff entering our creeks and ocean.

We invite you to be pro-active by reporting any stormwater violations you may see during your travels throughout the City. Violations include: sediment, trash and debris that may possibly enter our storm drain system; fluids and fresh significant oil stains in our shopping centers or places of business; accumulation of leaves and organic debris in the curb/gutters; and any other urban runoff you may observe flowing off private property.

With your help, we can make a concerted effort in assuring that only rain enters our storm drains. Please contact us at x 1686 or e-mail us at waterquality@cityofvista.com.

The Vista Water Quality Protection Program is committed to making our waterways as clean and safe as possible and we thank you for your participation in our efforts! Check our city web page out under the Engineering Water Quality Protection – Storm Water Pollution Prevention tips.

F.Y.I. News

Blazing a New Trail

Submitted by Rod Krueger

On October 15th, the Vista Conservancy "Trail Blazing" ceremony took place for the newly extended hiking trail. The event took place at the former Sycamore Creek mobile home park property located behind Fire Station No. 6 on E. Vista Way and the 99-cent store.

City dignitaries, Conservancy board members and community leaders joined hands for this event.

All Vista community clubs and service organizations, along with the general public, are invited to attend this notable event. This 2000-foot hiking trail extension will connect the historic Rancho Buena Vista Adobe and Wildwood Park to the Conservancy's existing trail system. Eventually the trails will connect downtown Vista to Brengle Terrace Park and the Moonlight Amphitheatre.

Coastal Cleanup Day Update

Submitted by Ligeia Heagy

On September 19th, the City of Vista participated in the 25th Annual Coastal Clean Up Day. Approximately 120 volunteers helped clean up Buena Creek! Volunteers came from all over North County with 54 percent of those volunteers under the age of 18. Four Girl Scout troops, three Cub Scout troops, and many students from the local middle and high schools were involved in the clean up.

Over 1,153 pounds of trash, 160 pounds of recyclables, and 60 pounds of e-waste was removed from our creek! Attendance was much higher than anticipated and one of the cub scouts was overheard remarking: "this rocks!" All of our volunteers "rock" and Buena Creek looks great!

Pictures of the event are posted on our city web site at: http://www.cityofvista.com/departments/engineering/documents/BuenaCreek2009.pdf . To boot, the City of Vista came in with top honors countywide for the Best Photo of a Volunteer in Action.

In San Diego County, this was the most successful cleanup day ever. Over 10,000 volunteers showed up at the 80 sites and more than 65,000 pounds of trash was removed from our creeks and beaches. Way to go!

Have Spare Time? Volunteer at Alta Vista Gardens

Submitted by John Menezes

Alta Vista Gardens is currently seeking volunteers. Anyone interested in helping build this beautiful garden is welcome. Alta Vista Gardens is a non-profit organization working to build Vista's very own Botanical Garden. The garden is located within Brengle Terrace Park. Memberships are available.

For more information call (760) 945-3954 or visit www.altavistagardens.org.

Upcoming Dates of Interest

Nov. 1	Daylight Savings Time Ends
Nov. 11	Veterans' Day
Nov. 26	Thanksgiving
Nov. 27	Day after Thanksgiving
Dec. 25	Christmas Holiday
Jan. 1	New Year's Day
Jan 18	Martin Luther King, Jr. Day

NOVEMBER 2009

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29	30					

DECEMBER 2009

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6	7	8	98	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JANUARY 2010

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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

City Hall Flex Day or Holiday

"Thank You!" Gram

Reward choice:
- ☐ Gobble Good Healthy Snack
- ☐ Sweet Turkey Treat

Proceeds benefit the City's adopted unit ~ HMLA 369

To:_____ Ext. _____
Dept:_____
From:_____ Ext. _____

Message:

_____
_____
_____
_____
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_____

THANK YOU!

CITY OF VISTA
CALIFORNIA

Paid ___FV ___

Brought to you by the Employee Recognition Committee

"Thank You!" Gram

Reward choice:
- ☐ Gobble Good Healthy Snack
- ☐ Sweet Turkey Treat

Proceeds benefit the City's adopted unit ~ HMLA 369

To:_____ Ext. _____
Dept:_____
From:_____ Ext. _____

Message:

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THANK YOU!

CITY OF VISTA
CALIFORNIA

Paid ___FV ___

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To:_____ Ext. _____
Dept:_____
From:_____ Ext. _____

Message:

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THANK YOU!

CITY OF VISTA
CALIFORNIA

Paid ___FV ___

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Proceeds benefit the City's adopted unit ~ HMLA 369

To:_____ Ext. _____
Dept:_____
From:_____ Ext. _____

Message:

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THANK YOU!

CITY OF VISTA
CALIFORNIA

Paid ___FV ___

Brought to you by the Employee Recognition Committee

CITY OF VISTA CALIFORNIA

January / February 2010

SPOTLIGHT on VISTA

Employee newsletter

Inside This Issue

1 City Manager's Message

2 Limelight

3 Employee Events

3 Caught in the Act!

4 Department news

5 Employee news

6 Birthdays / Years of Service

"Thank you all for your outstanding service in this past year."

Message from the City Manager

As we begin 2010, I look forward to the exciting challenges the year ahead will bring, but first, I want to mention a few of our successes from 2009. Some of the highlights from the past year include; the opening of Fire Stations No. 5 & 6; the renovation of the Moonlight Amphitheatre and its record summer attendance; the ongoing construction of the new Civic Center and the Vista Sports Park; the remodel and re-opening of the Moon Road Sheriff's sub-station; and, another year of providing quality service to Vista residents.

There have also been many notable departmental achievements over the past year, such as the expansion of the Redevelopment Project Area and the beginning of the Paseo Santa Fe project; the Finance Department accepting credit card payments and working with the City Attorney's Office to establish a viable collections process; the re-design of the city web site; Community Development's completion of the permitting and development guide; the Fire Department working towards accreditation; Information Technology's addition of online web submittal forms; and Public Services' reorganization, to name a few. These, and many more, were accomplished with limited staffing and funds – and each of you contributed to those achievements. Your support and tireless efforts have enabled the City to continue to move forward during these challenging times. I am very appreciative of all your hard work.

As we transition into this new year, our budgets will continue to reflect the current economic conditions. I ask for your assistance as Department Directors search for ways to reduce already strained departmental budgets. Despite the fact that we may face more economic uncertainty in 2010, the City remains committed to maintaining the quality of life in Vista for our residents, businesses, customers and visitors.

Rita L. Geldert

Web Site Update

The new main page of the City's web site is up and running. The page was designed to provide a clearer navigation for residents, visitors, staff and other users accessing our site. Kudos to Chris Mitchell and Ashley Howard for their extensive work on the project. Please send any suggestions or comments you receive from the public or ideas you may have to Andrea McCullough.

Recognition | Kudos | Appreciation

Jeff Shyu from Perkowitz & Ruth Architects out of Long Beach recently complimented the Community Development Department: *"I am writing to express my gratitude for the very professional and efficient service received at the development counter yesterday during the submittal process. Thank you."*

"I have never worked with staff so responsive and knowledgeable."

In addition to the above acknowledgment, Joe LaBreche (LaBreche & Stock, LLC) sent a letter to the Mayor applauding the Community Development Department's service: "*Recently I had the pleasure of working with your staff on a real estate development known as Via Centre Office Park. In my 30 years as a developer and development consultant, I have never worked in a city with a staff as responsive and knowledgeable as yours. The front office and counter personnel were friendly and helpful. Their guidance assisted the project in many large and small ways. I especially want to mention the professionalism of John Conley and Greg Mayer. Both were tough but fair. They offered constructive suggestions which helped our development team better understand and meet the city's requirement.*

All too often governmental employees, in their zeal to protect the public, only point out problems and never propose solutions. Your staff was refreshingly different. I suspect their positive, get-it-done attitude is a reflection of good management and cultivation of esprit de corps throughout the city. You are to be congratulated. Thank you for the opportunity to work in Vista."

Barbara Greenbush (left) and Mary Moore pick up holiday gifts for HMLA from Manny Robles (holding winning iPod) and Lyn Dedmon.

Limelight

Thanks to those who purchased *Thank You Grams* in November from the Recognition Committee. Over $520 was raised for the City's Adopted Marine Unit - with a total of 775 'Thank You' grams sold.

The money was greatly appreciated by the troops, especially with the donations being so close to the holiday season. Co-workers must be extra thankful this year - this round of Grams almost doubled the amount sold in February, 2009 for Co-Worker Appreciation Day.

The winning ticket for the iPod nano HMLA raffle drawing went to Code Enforcement's Manny Robles. Congratulations Manny!

About 50 individual gift cards were purchased with the fund collected from the drawing. On behalf of HMLA - thank you for your donations!

Obregon Named Employee of the Quarter

In December, Wave Waterpark Facility Maintenance Specialist Gilbert Obregon was honored as the Kiwanis Employee of the Quarter. Gilbert's proactive approach to facility maintenance has saved the City money and prevented unanticipated equipment and facility issues during the height of the summer season.

Gilbert has made a noticeable impact on the facility, his co-workers, the Wave patrons and the City! Congratulations Gilbert.

Gilbert Obregon (left) with Mauro Garcia, Public Services Director.

Caught in the Act!

The City's Caught in the Act! program recognizes employees who are proactive about safety. Co-workers nominated Gilbert Obregon for this recognition. As the Waterpark Facility Maintenance Specialist, Gilbert has sole responsibility of maintaining, repairing and fixing all of the Wave's systems and overseeing its improvement projects. In March he oversaw two major projects while paying close attention to detail and safety. Gilbert took a proactive approach to park safety on behalf of both his co-workers and the contractors conducting the improvements. Due to his hard work and focus on these details, the work was completed without any incident. Thank you Gilbert for your hard work, keeping employees and contractors safe!

Employee Recognition Events in 2010

Mark your calendars for 2010 Employee Recognition Events.
Dates are below. Event details will be announced later.

- **June 30** Summerfest
- **July 22** Softball Tourney
- **October 5** Employee Years of Service Breakfast
- **October 16** Employee Event

Comment, suggestions? Contact an ERC Committee Member:

Jocelyn South, ERC Chair
Ashley Howard, Recreation & Community Services
Roxann O'Shaughnessy, Fire Department
Robert Borowski, IT
Tom DuBose, Public Services
Dora York, Human Resources
Joan Turley, Community Development
Roger Brenzel, Engineering
Julie Chapin, City Managers/Code Enforcement/City Attorney/Clerk
Sandra Wolfe, Redevelopment & Housing

Department news

Recreation & Community Services has been selected as a 2009 California Park and Recreation Society (CPRS) Award of Excellence recipient in the category of Facility Design: Cultural Facilities for the Moonlight Amphitheatre Stage House Project (in the population category 50,001 to 100,000). The award will be presented at the CPRS Conference in March.

As an *Award of Excellence* recipient the City is also eligible to receive the highest award given by CPRS, the "Creating Community Award of Distinction". The recipient of this award will be announced at the awards ceremony.

Engineering Department's Water Quality Protection Program staff is working diligently to be prepared for any upcoming rain events. The rainy season has already begun! Please remember to report any violations you may see. As always, "Only Rain in the Storm Drain". A big "thank you" to all of you who have been alert and pro-active in contacting us with any questions or concerns regarding pollution prevention within the city. With your help, we can make a concerted effort in assuring that only rain enters our storm drains.

Please contact us at waterquality@cityofvista.com or call us at ext. 1686. From all of us … to all of you … Happy New Year!

Blake Robert Porter: 7 lbs, - 18" long.

Employee news

From Recreation & Community Services

- **Sam Beukema,** Community Services Program Manager welcomed his great grandson, Blake Robert Porter on June 26. Blake weighed 7 pounds and was 18 inches long.

From Toni Kleider (Fire)

- **Fire Chief Gary Fisher's** daughter Misty and her husband welcomed a baby boy on December 28. Baby Carson weighed 8 pounds, 10 ounces and was 21 3/4 inches long.

- **Jim Gelrud**, Fire Engineer welcomed his baby granddaughter on December 28 (2.5 hours before Chief Fisher's grandson arrived). Tatum Star Gelrud weighed 6 pounds, 15 ounces and was 18.5 inches long.

From Imelda Valdivia (Community Development)

- **Pedro Magadan,** Wastewater Worker, and wife Adriana welcomed their new daughter on November 5. Avelina Giselle weighed 5 pounds, eleven ounces and was 18 inches long. (Imelda is the proud aunt!)

Avelina Giselle Magadan: 5 lbs, 11 oz. - 18" long.

Creekside Trail Set to Run through Vista

From Rod Krueger (Public Services)
Work will begin soon on two trail projects connecting Brengle Terrace and Wildwood parks. When completed, the new quarter-mile segment of trail will run from Wildwood park to an existing trail maintained by the nonprofit Vista Conservancy. The existing trail begins at Capri Drive and ends at a gate at the north end of the former mobile home park.

The entire trail between parks, once complete, will be about a mile long. Hikers, bicyclists and dogs on leashes will be able to use the trail. Work is expected to begin around March 15 and take about 90 days to complete.

New trail extension will connect Brengle Terrace and Wildwood parks.

Fitting Exercise into our Daily Activities

From Human Resources … published by Spice of Life, Inc.
http://www.enewsbuilder.net/spiceoflife/

How do you keep exercise on your to-do list, and part of your daily routine without adding to your stress levels? Below are a few ideas:

Shorten your workouts: Short, brisk walks will allow you to maintain your fitness without taking away from your other responsibilities. Choose your favorite exercises and do them every morning and every night before bed.

Split your workouts: take a brisk walk at lunch and hit the gym for half the time before or after work.

Keep it simple: If you want to skip your regular class at the gym, go ahead, but go for a jog around the neighborhood instead.

Have some fun! Play tag with your kids or throw the ball around the backyard with them. To make it really fun, challenge them to Wii Fit games.

Tips for a Healthy Diet & Better Nutrition

From Helpguide.org

Tips for a healthy diet and better nutrition: Healthy eating is not about strict nutrition philosophies, staying unrealistically thin, or depriving yourself of the foods you love.

Rather, it's about feeling great, having more energy, and keeping yourself as healthy as possible – all which can be achieved by learning some nutrition basics and incorporating them in a way that works for you.
For more information check out tips on the Helpguide.org web site
http://helpguide.org/life/healthy_eating_diet.htm.

Birthdays

January

1	Brandon Montgomery	Fire
4	Jeff Berg	Fire
5	Maureen Cooper	Recreation & Comm Svs
6	Justin Golden	Fire
8	Wendy Romagnoli	Public Services
8	Javier Hernandez	Recreation & Comm Svs
11	George Solano	Public Services
12	Edgar Gomez	Public Services
15	Bryan DiBella	IT
17	Don Blaha	Code Enforcement
17	Hanns Botz	Fire
17	Cynthia Byler	Recreation & Comm Svs.
17	Brendan Hammes	Fire
18	Al Cuevas	Public Services
18	Rick Delaney	Fire
26	Robbie Bush	Community Dev
29	Mauro Garcia	Public Services

February

3	J.D. Rubidoux	Public Services
7	Jeff Dolan	Community Development
9	Sal Castañeda	Fire
9	Marie Sanfilippo	City Clerk
10	Sam Beukema	Recreation & Comm Svs
10	Kathy Valdez	Redevelopment & Housing
11	Kathy Hollywood	City Clerk
13	Chano Ramos	Fire
14	Joe Napier	Fire
16	Yasmin Royka	Engineering
16	Larry Greaves	Public Services
16	Kelcey Sass	Fire
18	Rod Krueger	Public Services
21	Robert Luna	Public Services
20	Tim Regello	Engineering
23	Michele Smith	Community Development
24	Robbie Ford	Fire
28	Kim Cruz	Redevelopment & Housing

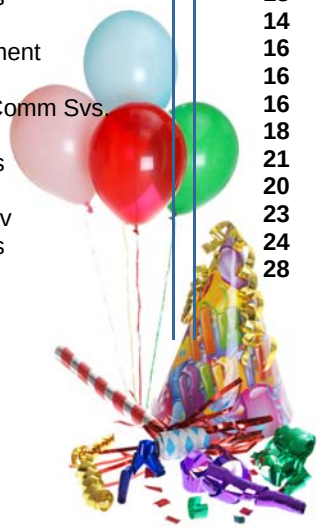

Years of Service

January

1	Abel Santana	Fire
2	Maureen Stroud	Recreation & Comm Svs
2	Gilbert Obregon	Recreation & Comm Svs.
3	Daniel Shultz	Recreation & Comm Svs
3	Justin Thomas	Recreation & Comm Svs
5	Brian Sallerson	Recreation & Comm Svs
6	Jesus Orea	Public Services
7	Rachel Beld	Economic Development
7	Aly Zimmermann	City Manager's Office
9	Kevin Ham	Economic Development
9	Eva Stuart	Finance
9	Walter Hartman	Recreation & Comm Svs
10	Imelda Valdivia	Community Development
13	Cindy Sanchez	Public Services
13	Karen Del Bene	City Attorney's Office
15	Rita Geldert	City Manager
16	Steve Nankervis	Public Services
21	Robbie Bush	Community Development
21	Kelcey Sass	Fire
21	Bob Stacey	Fire
21	J.D. Rubidoux	Public Services
23	Tony Tirado	Community Development
24	Rick Delaney	Fire
24	Jeff Hahn	Fire
24	Joe Napier	Fire

February

1	Robert Borowski	IT
1	Lyn Dedmon	City Manager's Office
2	Leslie Webb-Blanco	Finance
3	Natalie Livingston	Recreation & Comm Svs
4	Ryan Fellows	Public Services
5	Chris Mitchell	IT
6	Sal Castañeda	Fire
7	Jason Christman	Community Development
10	Rick Snider	Community Development
11	Santos Callejas	Recreation & Comm Svs
12	Sam Craig	Fire
12	George Meyer	Community Development
16	Sonya Cramer	Human Resources
23	Juan Salazar	Public Services
29	Rich Wilkinson	Fire
35	Shane Broadbent	Public Services

Retirement

Congratulations to **Jeff Stevens**, Code Enforcement on his retirement after 20 years!

Upcoming Dates

Jan 12 & 26	City Council Meetings
Jan 18	City Hall Closed (MLK, Jr. Day)
Jan 27	AVO Playhouse—*Swingtime Canteen*

Employee Night (production runs Jan 28-Feb 21)

Feb 9 & 23	City Council Meetings
Feb. 15	City Hall closed (Presidents' Day)

CITY OF VISTA CALIFORNIA

March / April 2010

SPOTLIGHT on VISTA

Employee newsletter

Inside This Issue

1 City Manager's Message

2 Recognition

3 Employee Events

4 Employee News

5 Promotions & Hires

6 Happenings

7 Birthdays / Service Years

"We will continue to manage with limited funds and staff"

Message from the City Manager

Several heavy storm events have hit North County in the past few weeks, yet Vista has experienced little damage or flooding. This is because our City has been prepared, thanks to our employees involved in our Water Quality Protection Division and Public Services Department. The preparation before-hand in clearing the storm drains and the readiness of crews during the rain storms enabled Vista to fair better then some of its neighboring cities. Great work staff!

In April, the renovations on Fire Station No. 1 will be completed. These improvements in our public safety are significant achievements. With the addition of the two new fire stations and the re-opening of Station No. 1, we expect this to greatly assist with the Fire Department's response times.

We are scheduled to move into the new Civic Center at the end of May and be open for business June 1. In late March information will be distributed to "Move Captains" who will then share moving instructions with their respective departments. To coincide with the opening of the new building, on May 1, Escondido Avenue will officially be changed to Civic Center Drive. In addition, the Moonlight's summer season has been announced and will include the Broadway productions: *Oklahoma!, Crazy for You*, and *Miss Saigon.*

As I mentioned in the recent All Hands meeting, we are still going through very challenging financial times. Next year's proposed budget will reflect the current economic conditions, and although we have exercised many creative ways to reduce the budget, we still have a $10 million deficit. To close this gap, I will be recommending to the City Council to use year end fund balances and one time monies. However, this still leaves us $4 million short. On April 6, the Council will hold a workshop to review service level options. Our city, as well as others across the nation, is in the process of redefining government and asking what services we can afford to provide to the community. At this time, we will have to continue to manage with limited funds and staff until the economy improves. I know it has and continues to be difficult, but I am very appreciative of all your efforts. Please continue sending Patrick Johnson or myself any cost saving ideas you may have.

I am reminded of a quote from Albert Einstein, "*In the middle of difficulty lies opportunity*"... we must remind ourselves of this as we move forward into an uncertain future. Even in difficult times, all employees have continued to work hard and do a great job serving the public.

Again, thank you for all you do for the City.

Rita L. Geldert

Recognition | Kudos | Appreciation

Terry Breen, Ticket Office Supervisor for VisTix Office says:

"I am very proud of my staff who decided they wanted to relay their appreciation to the young men and women of our armed services. Thanks group. "

"I am proud of my staff, who wrote letters to our troops."

Staff at the VisTix office decided this past December to do something good for the overseas troops. Everyone wanted to tell the troops how much they were appreciated and how proud they were of the troops. Staff worked on the project on their own time. Each person wrote a paragraph about themselves and their thoughts on those who volunteered to protect freedom. The letter began with general information about the City of Vista. The troops were invited to visit Vista and its theatres when they returned from their overseas duties.

Seventy letters were sent through anysoldier.com. Soldiers responded positively by saying they appreciated knowing they were being supported back home by the "folks". They were grateful and hoped people would continue to write to the soldiers. Started by a soldier's mother, anysoldier.com site is a clearinghouse of information on where to send letters and care packages to U.S. troops.

Employees can also support the troops by donating care packages for the City's adopted Marine Unit – HMLA 369. You can prepare care packages made up of non-perishable items such as sunflower seeds, life-savers, mints, gum, reading materials, phone cards, toothpaste, soap, and deodorant. You can also donate items for the Marine family members who live locally, to help support them while the unit is overseas. Prepaid phone cards are always appreciated to help the families keep in touch with their loved ones during deployment. For drop off locations, contact Lyn Dedmon in the City Manager's Office at ext. 1411. Big or small, your support makes a difference!

Escondido Avenue Name Change

On May 1, the name Escondido Avenue will officially be changed to Civic Center Drive to coincide with the opening of the new Civic Center. The name change will apply to the main stretch of Escondido Avenue, which runs from central Vista, near Wildwood Park, to Sunset Drive, just south of Highway 78. To phase in the new name, both street names will be on the highway exit signs until a Caltrans project to update the signs along Highway 78 has been completed.

New letterhead is being printed and will be available in May. In addition, letterhead and other templates in the O>Communications folder will be updated to reflect the address change. The Post Office has agreed to forward all mail for one year to help in the transition; therefore please use up your business cards before ordering new ones through the Communications office.

Kiwanis Employee of the Quarter

Based at the Gloria McClellan Senior Center, **Maureen Cooper** is a perfect fit. Her imprint on the Senior Center can be found everywhere. Maureen was recently named the Kiwanis Employee of the Quarter. As the Office Specialist II, Maureen is often the first person seniors meet when they walk through the doors.

Her sensitivity and empathy, as well as her ability to make others feel at ease are just a few of the strengths Maureen brings to the Senior Center. Her unique sense of understanding individual concerns enables Maureen to develop relationships that inspire the seniors to return again and again to the Center.

One of Maureen's responsibilities includes creating and distributing a monthly newsletter with senior news and events information. The seniors rave about the newsletter and appreciate being kept updated on current Senior Center events.

A couple recently wrote a thank-you letter to the center describing Maureen as a 'true angel on earth'. The seniors wrote that Maureen was the first person they met at the center as they walked in and they were in dire financial need. Maureen was able to link them to financial assistance, food resources, medical help and assistance with Social Security.

Congratulations to Maureen who continues to put customer service first and who truly cares about the people she serves!

Kudos to Maureen Cooper, Kiwanis Employee of the Quarter

Kickboxing: Sculpt Muscles & Blast Fat

Knock out boredom and blast fat with muscle-sculpting kickboxing moves. This fresh style of martial arts blends the grace of boxing with the powerful maneuvers of kicking styles. A regular kickboxing workout is a great way of staying in shape and toughening up for life.

Kickbox training strengthens the arms and legs and sculpts in the process. It is now widely popular as a strength workout routine among fitness enthusiasts. A kickboxing workout routine based on intense aerobic moves can burn as many as 500-800 calories per hour.

What Your Diet Can Do For Your Skin

- Shrink sugar to axe acne. Avoid insulin spiking sweets and processed white-flour foods. Eat more gluten free foods and improve psoriasis symptoms. Eat: fruits, vegetables, whole grains, low fat dairy and lean meats and fish.
- Cut down sugar and reduce wrinkles. Minimize wrinkles by eating veggies, legumes and olive oil.
- Skip spicy food to reduce rosacea. If you suffer from rosacea, say adios to hot peppers and horseradish.
- Try fish oil for eczema relief. Salmon, sardines and fish oil supplements may reduce the severity of eczema symptoms

Employee news

From Fire Chief Gary Fisher (Fire Department)

- Thanks to everyone for their generosity in bringing food in to help our seniors. Your assistance is appreciated!

F*rom Chuck Crist (Public Services)*

- **Luis Hernandez,** Public Services Street Maintenance Worker (Graffiti Abatement superstar!) and his wife welcomed their daughter, Amiel Berenice Hernandez on January 11. Baby Amiel weighed in at 7 pounds, 12 ounces.

From Pat Chapman (Recreation & Community Services)

- **Sam Beukema,** Community Services Program Manager is the Kiwanis Advisor to the Tri-City High School Key Club. Sam organized the Key Club's attendance at the Sunrise Kiwanis to talk about their 30-hour fast to raise funds for World Vision Feed the Hungry in Africa.

From Sam Beukema, (Recreation & Community Services)

- **Gretchen Crowson,** City Manager Management Analyst has been awarded the sportsmanship award for an 'outstanding job' coaching the girls youth basketball team (sponsored by the Soroptimist International.) Gretchen really stepped up and her coaching philosophy and values really set her apart from the other coaches. Let's wish her good luck as her team is in the playoffs. Go Coach Crowson!

From Michele Smith (Community Development)

- **Imelda Magadan (Valdivia),** Senior Office Specialist in the Building Division became engaged to Michael Huerta on January 28. Michael is a Staff Sergeant in the Air Force assigned to the Military Police. The wedding is set for September 25. We wish them a long and happy life.

Sam Beukema and Key Club members

"Outstanding Coach" Gretchen Crowson with her team.

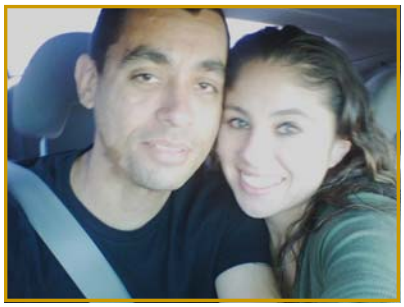

Imelda Magadan & Michael Huerta.

2010 Vista Employee Co-Ed Golf Tournament

From Gretchen Crowson (City Manager's Office)

The **2010 Employee Golf Tournament** will take place on Sunday, June 13 at an old favorite - Lake San Marcos Executive Golf Course in San Marcos. LSM Exec is a par 58 at 2,700 yards and packs a lot of great golfing in a short amount of time. The entry fee for the tournament is $36 which includes green fees, golf cart, hot dog and a beverage - what a deal! Limited to the first 120 paid players. Participants receive a goodie bag with a sleeve of City of Vista golf balls. Prizes will be awarded to:

- First, Second, Third place teams
- Longest drive (Men and Women)
- Closest to the Pin (Men and Women)
- Best Dressed Team

No city funds are used for the tournament, which is funded by donations and the fees paid by the players. For more information, see Gretchen Crowson (Building K) or Rod Salazar (Public Services). Hit 'em straight!

Golfers Dave Wilson and Rudy Luna at the 2009 tournament.

Promotions and Hires

Promotions

- **Chuck Crist** was promoted to Public Services Operations Manager.
- **Chris Dzwigalski** was promoted to Public Services Supervisor.

Chuck Crist, Public Services

Chris Dzwigalski, Public Services

Hires

- **Daniel Welte** was hired as a provisional Code Enforcement Officer I for Stormwater.
- **Jim Howell** was hired as the interim Public Services Director.
- **Nick Cunningham** was hired as a provisional GIS Technician.
- **Pat Shaw** was hired as provisional Street Maintenance Worker I.

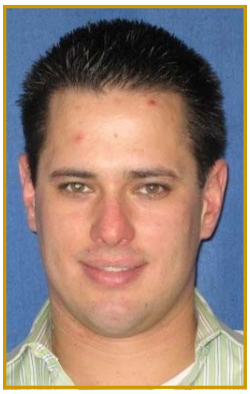

Daniel Welte, Engineering

Jim Howell, Public Services

Nick Cunningham, Engineering

Pat Shaw, Public Services

Earth Day Event at Alta Vista Gardens / Brengle Terrace Park April 24

Earth Day Festival - Alta Vista Gardens

From John Menezes (Public Services)

Alta Vista Gardens is holding an Earth Day festival on April 24 from 10 a.m. to 5 p.m. at Alta Vista Gardens in Brengle Terrace Park. Come and join everyone at this fun event. There will be guest speakers, a Public Services booth and other displays, fun children's activities and food and beverages.

Free admission and parking.

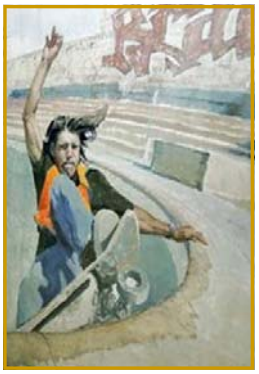

North County Walk of Fame

From Rod Krueger (Public Services)

The Vista Conservancy plans to turn the Buena Creek trail into an open-air gallery, called the North County Walk of Fame. The group is placing a series of murals along the creek to beautify the trail. The Conservancy envisions that the Walk of Fame will display about 150 murals depicting well-known people from North County such as: jockey Bill Harmatz, professional skateboarder Brad Edwards, Olympic snowboarder Shaun White and skateboarder Tony Hawk. The murals are expected to be displayed on the trail in the next few weeks.

Still in the Rainy Season …

From the Water Quality Protection Division

CITY OF VISTA
Water Quality Protection Program

We are still … in the midst of our rainy season. It does not officially end until April 30. The Water Quality Protection Program is continuing all necessary efforts to assure implementation of necessary Best Management Practices (BMPs) during this time.

We continue to ask for your support by being pro-active in contacting us with any questions or concerns regarding pollution prevention within the City of Vista. All of the support we have had to date is truly appreciated. As the saying goes, "Only Rain in the Storm Drain". Please feel free to contact us at ext. 1686 or e-mail us at waterquality@cityofvista.com.

From all of us … thank you.

Strawberry Festival Vista 2010
5K and Kids' Races

Strawberry Festival & 5K Race

The Chamber is sponsoring the Strawberry Festival (formerly the Chocolate Festival) on Sunday, May 30. The event will take place in downtown Vista and will include a 5K race and kids' race. For information, go to www.kinaneevents.com or call (760) 434-5255.

Birthdays

March

1	Frank Durazo	Community Development
1	Ken Shaw	Public Services
5	Leisa Bustanoby	Recreation & Comm Svs
11	Tom Gardner	Finance
12	Roxann O'Shaughnessy	Fire
13	Abel Santana	Fire
12	Jon Stone	City Attorney
12	Craig Trammell	Public Services
13	Sandie Hargis	City Attorney
14	Jeff Wyman	Redevelopment & Housing
16	Randy Solsma	Public Services
16	Nixy Flores	Engineering
17	Nancy Gallagher	Human Resources
20	Ryan Snyder	Recreation & Comm Svs
21	Elaine Blackburn	Community Development
22	Bill Crane	Redevelopment & Housing
22	Rachael Kloke	Recreation & Comm Svs
22	Lisa Feeney	Public Services
23	Rita Geldert	City Manager
25	Tony Tirado	Community Development
25	Rich Wilkinson	Fire
27	Amy Eustace	Recreation & Comm Svs
28	Tim Shell	Engineering
28	Claire Lopez	Finance
29	Bill Fortmueller	Recreation & Comm Svs
30	Jeanette Farris	Finance
31	Adam Finestone	Community Development

April

4	Mary Haley	Engineering
4	Mark Standifird	Fire
5	Louie Sanchez	Public Services
6	Kathy Monroe	Recreation & Comm Svs
8	Keith Gemmell	Recreation & Comm Svs
9	Ryan Byrne	Fire
13	Troy Hassey	Community Development
15	Jeffrey Gazdayka	Fire
15	Maureen Stroud	Recreation & Comm Svs
16	Keith Kaumeyer	Fire
17	Chad Wodarczyk	Public Services
18	Brian Gregson	Fire
18	Travis Acord	Public Services
19	Chris Bowden	Fire
20	Sue Crossman	Public Services
21	David Kennedy	Fire
24	Juan Castro	Public Services
25	Grant Valstad	Fire
26	Jaime Osorio	Engineering
27	Michael Madden	Fire
27	David Wilson	Recreation & Comm Svs
28	Mike Beissel	Fire
28	Mark Lian	Public Services
29	Hans Schmidt	Fire
29	Anthony Van Slyke	Fire
30	Natalie Jacobs	Human Resources

Years of Service

March

1	Stephen Belda	Code Enforcement
1	Gregory McClellan	Fire
2	Brien McDonald	Fire
2	Christopher Place	Fire
2	Raymond Tellechea	Fire
3	Bill Rawlings	Redevelopment & Housing
3	Tom Gardner	Finance
3	Jocelyn South	Finance
4	Kim Cruz	Redevelopment & Housing
5	Matt Atteberry	Engineering
5	Teresa Graham	Redevelopment & Housing
7	Sandra Wolfe	Redevelopment & Housing
8	Cat Cobian	Public Services
8	Brendan Halle	Fire
8	Chris Hammond	Fire
10	Dan Kays	Recreation & Comm Svs
11	Sandy Bobek	IT
12	Nancy Hoffman	Human Resources
13	Al Cuevas	Public Services
20	Mark Gray	Fire
20	Sue Crossman	Public Services
22	Mary Dreibelbis	Recreation & Comm Svs
23	Javier DeHaro	Public Services
29	Patrick Murphy	Fire

April

1	Michael Madden	Fire
2	Sam Hasenin	Engineering
2	Adam Robey	Public Services
3	Elaine Blackburn	Community Development
4	Ronald Gordin	Public Services
7	Kathy Monroe	Recreation & Comm Svs
9	Dolores Gascon	Human Resources
9	Jeff Wyman	Redevelopment & Housing
10	Rosanne McElhaney	Redevelopment & Housing
13	Leisa Bustanoby	Recreation & Comm Svs
14	Diane Collier	Fire
14	Robbie Ford	Fire
20	Scott Duncan	Fire
20	Mike Easterling	Fire
20	Jon Blumeyer	Fire
20	Jim Gelrud	Fire
20	Brian Mentzer	Fire
20	Marty Parish	Fire
20	Richard Tilch	Fire
36	Sharon Larimer	Community Development

The Rainy Season is officially over…..

We all want to extend a huge **"Thank You"** for your support during this past rainy season. Vista faired well, in part, because of your help.

During the months ahead we will persevere with our efforts to keep Vista as pollution free as possible. Many of our Industrial and Commercial sites are currently being inspected for any violations to the National Pollutant Discharge Elimination System (NPDES) regulations.

As always, you are invited to continue to be pro-active and contact us with any concerns or violations you may see within the City of Vista.

You may contact us at x 1686 or e-mail us at waterquality@cityofvista.com.

Happy Spring!
From all of us at the

CITY OF VISTA
Water Quality Protection Program

Paul, Doug, Sandi, Dan & Mary

CITY OF VISTA
CALIFORNIA

inside vista

WINTER 2010

City Marks Accomplishments... Sets Plans for the Future

- Bronze Sculpture Captures Firefighters' Spirit
- Investing in Roadway Improvements
- Get Connected with Your Community
- Vista Sports Park Begins to Take Shape

CITY OF VISTA
CALIFORNIA
A publication of the City of Vista

inside vista

Vista City Council

Mayor	Morris B. Vance
Mayor Pro Tem	Bob Campbell
Council Member	Judy Ritter
Council Member	Steve Gronke
Council Member	Frank Lopez, Jr.
City Manager	Rita L. Geldert
Assistant City Manager	Patrick Johnson

Vista City Council Meetings
Second and fourth Tuesday of every month, 5:30 p.m.
City Council Chambers, 600 Eucalyptus Avenue, Vista

Meetings are cablecast on the Friday after each meeting at 5 p.m. on Cox Communications (Channel 19) and Time Warner Cable (Channel 66) and webcast and archives are available online at www.cityofvista.com.

City Hall Address
600 Eucalyptus Avenue
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City Hall Hours
7:30 a.m. to 5:30 p.m.
Monday through Thursday and alternating Fridays

Inside Vista Editor
Andrea McCullough, Communications Officer
Design: Drop Dead Design

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Para recibir un resumen de este boletín en español, por favor llame al (760) 726-1340.

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Reduce chance of fire this holiday season

For some familiar with the *Inside Vista* newsletter this incorporation into the recGuide is a departure from previous years. The City has introduced the cost saving method of inserting the residential newsletter into the recreation guide to save on postage costs.

We hope you enjoy this issue of *Inside Vista!*

City Marks Accomplishments... Sets Plans for the Future

Despite the fact that 2009 has been a challenging year for Vista, the City has tracked impressive achievements in the past 12 months. Vista's high priority community improvement projects have moved forward with construction on three projects completed; three are still underway.

One of the most significant achievements is in the area of public safety. The City opened two new fire stations in April: Fire Station No. 5 on S. Melrose Drive and Fire Station No. 6 on East Vista Way. The two stations were awarded Leadership in Energy and Environmental Design (LEED) status by the U.S. Green Building Council. LEED certification is the nationally accepted benchmark of high-performance green buildings. In addition, the seismic retrofit and renovations on Fire Station No. 1 will be completed this upcoming spring. In law enforcement, a third motorcycle unit was added for traffic safety and flow, reducing accidents and increasing DUI enforcement. The newly renovated Moon Road Sheriff's substation in west Vista reopened a few weeks ago and is providing deputies with a neighborhood station to respond more rapidly to incidents, as well as a location for deputies to fill out reports before returning to the main station. The substation also offers community resources to the nearby neighborhoods. Overall, the City has experienced a 12 percent decrease in the crime rate when comparing last year's (Jan-June 08) figures to the 2009 statistics (*end of year figures are not available at this time). One of the biggest decreases was in burglaries, where the City saw a 35.6 percent decrease. In addition, there was a 25 percent reduction in traffic-related injury accidents.

Moonlight Stage Productions enjoyed record attendances during its summer performances in the newly renovated amphitheatre. Theatre goers appreciated the new, modern stage; improved seating; and the state-of-the-art sound and lighting. Construction on the new Civic Center is at the half-way mark with the core of the work now focusing on the interior of the structure. The building is slated to open in summer, 2010. In the northwest part of the city, progress on the new Vista Sports Park is taking shape. Underground utilities have been installed on the 16-acre site and sewer work has been completed (see page 5 for an update on the Sports Park). The continuing work, and in some instances the completion of projects, is a testament to the community's ongoing support for Vista's future. These impressive accomplishments have been made possible by the Vista voters who approved the half-cent sales tax in 2006 to fund the community projects.

In light of the economic recession, the City was pleased to receive over $4 million in federal stimulus funding for sewer replacement and improvement projects, street improvement and storm drain infrastructure projects, and energy efficient community development programs.

Although development has slowed in the community, there have still been noteworthy advances. For instance, the new Sonic Drive-in on S. Santa Fe Avenue between Broadway and Main Street opened its doors to customers in November. The Sonic project is seen as the catalyst in kicking off the City's revitalization of Paseo Santa Fe. The restaurant is expected to provide local employment and generate sales tax revenue to help provide services to the community.

While there is much to celebrate with so much taking place in Vista, city officials are aware that national and local economies are still struggling and will continue to do so into 2010. Economic factors significantly affect Vista's financial situation, and the City Manager's Office is preparing to further reduce next year's budget. All non-essential operating expenditures will be kept on hold, while most vacant position recruitments will be deferred indefinitely and the City Council is taking significant steps to maintain priority services during these lean times. However, in spite of this, one thing is certain as the New Year approaches – the City of Vista will continue to move forward in a positive direction into 2010.

New Public Art Installed at Fire Station No. 6

An image of a Vista firefighter kneeling with his hand on a child's shoulder has been captured in a life-sized bronze statue displayed in front of Fire Station No. 6 on East Vista Way. The statue, "Ensuring the Safety and Trust of our Community" was created by sculptor Thomas King and dedicated during a civic ceremony in October.

The idea for the statue was conceived by the Vista Firefighters Association as part of the construction of the new station. The statue captures the essence of the Vista firefighter's spirit and character, symbolizing the dedication and involvement the Fire Department has with youth in the community and in future generations in Vista.

The firefighter, portrayed in bronze, is dressed in Vista specific firefighting gear. The child who posed for the statue, Edgar Gallegos, is a local boy from the Townsite neighborhood and the sculptured child is sporting a Chargers cap.

The bronze statue was completed in a local foundry and is part of the City's effort to increase the presence of public art in the community. The Vista Firefighters Association collected over $30,000 in contributions to fund the statue. Contributors donating over $100 are recognized on a commemorative plaque on the wall behind the statue.

Sculptor Thomas King is renowned within the region for his work, including the flower sculpture in downtown Vista which is located on Main Street. Other works are on display at the San Diego Zoo and the Veterans' Memorial Building in the City of Clovis.

Big Crowds on the Menu as New Sonic Opens

Sonic Drive-In fans have been lining up outside the new 1950s-style hamburger restaurant since it opened last month. The new burger joint has drawn a lot of people from outside Vista to the downtown area and is attracting many repeat customers! The new business is part of the City's comprehensive renovation plan to revitalize the downtown Paseo Santa Fe corridor.

Rancho Buena Vista Adobe is the Birthplace of Vista

Twenty years ago, Vista leaders had the foresight to preserve history. A well-preserved adobe known as the "birthplace of Vista," became available on the real estate market. Leaders envisioned this would be an opportunity to create a living history museum to showcase for future generations.

A true jewel of Vista, the story of the historic home starts in 1845, when the last Mexican Governor Pio Pico granted 1,185 acres to Luiseno Indian Felipe Subria. Through the years the original outpost building has evolved into a beautiful "U" shaped adobe ranch house." When the City purchased the home in 1989, from Rudd and Sally Schiefel, an ad-hoc committee and curator were established to oversee daily operations and programming. Visit the la Tiendita Gift Shop for holiday gifts. The Rancho Buena Vista Adobe is located at 640 Alta Vista Drive, (760) 639-6164.

See the Winter RecGuide for information on the December 22nd Adobe Holiday Camp for children ages 7-to-11.

Roadway Improvements Around Town

The City of Vista will invest $5.7 million in replacing approximately eight miles of roadway pavement in spring, 2010. The roadway project will include installing an asphalt concrete overlay and adding a slurry seal or "top coat" to extend the life of the streets.

Asphalt overlays will take place on the following roadway segments:

- S. Melrose Drive (city limits with Carlsbad to Hacienda Drive)
- N. Melrose Drive (Copper Drive to city limits with Oceanside)
- Bobier Drive (west of N. Santa Fe Avenue to Lynette Circle)
- N. Santa Fe Avenue (Bobier Drive to Osborne Street)
- North Avenue (east of Maryland Drive - asphalt concrete repair)
- N. Melrose Drive (Hacienda Drive to Copper Drive - slurry seal only)

Several other projects will also improve Vista roadways and make them more efficient for vehicle traffic:

- Foothill Drive: from Beverly Drive to Vale Terrace Drive, the road will be upgraded to the City's standard for rural streets. This project will include drainage retrofits, curbs and driveway reconstructions.
- Grapevine Road: the missing sidewalks between Olive Avenue and W. Vista Way will be replaced. This will involve widening the pavement and providing for a bike route on both sides of the road.
- The pavement will be widened along W. California Street from W. Los Angeles Drive to N. Santa Fe Avenue. Sidewalks will be installed on the northeasterly side of the street with improvements to the pavement and storm drains. A bike route will be included.

For more information, please call the City's Engineering Department at (760) 639-6111.

Other happenings on Vista Streets

- Two sewer main repairs on N. Melrose Drive.
- Median additions on S. Melrose Drive at Sycamore Avenue.
- New median on Sycamore Avenue at Engineer Street.
- 59 curb ramps will be upgraded to provide more accessibility.

COMMUNITY PROJECTS | Vista Sports Park Begins to Take Shape

Construction is well underway on the new 16-acre sports park located in northwest Vista. The Vista Sports Park will be completed in late 2010 and will include two synthetic turf soccer/football fields, three baseball/softball fields, picnic areas, and a main building to house concessions, restrooms, league storage, and a tot lot. In addition an area has been set aside for the future construction of a community center.

Perimeter walls have been built and the installation of underground utilities and off-site sewer work has also been completed. The site walls (associated with stairs and ramps) have been installed and the concrete bleachers for the soccer/football fields are currently under construction.

During the upcoming winter months the fencing and preparation for the artificial turf fields will take place. Irrigation, planting, artificial turf installation, landscaping on the perimeter of the site and installation of the play equipment will take place in the spring.

Although Vista's population and recreational needs have continued to grow, Vista has not built a park since 1997. With the completion of this high priority community project, Vistans will obtain the much-needed additional fields and play areas.

For more information on the community projects or Proposition L, the half cent sales tax approved by Vista voters to fund these projects, go to www.cityofvista.com.

Vista Sports Park- Conceptual Plan
City of Vista

The Rainy Season is Upon Us

Did you know our rainy season began on October 1? Southern California's rainy season runs from October 1 through April 30 as defined by the State of California. In the old days, everyone just reached for an umbrella. Now, the entire rainy season requires cities and other jurisdictions to do much more in order to protect our waterways from pollution originating from urban runoff and storm water pollution.

Although urban runoff occurs throughout the entire year, the greatest risk of storm water pollution is during the rainy season. This is because runoff flows into storm drains and then directly into our creeks, lagoons and the ocean without treatment. The purpose of a storm drain is to carry rain water away from developed areas to prevent flooding; however our storm drains are not connected to the sewer systems and treatment facilities. Untreated storm water, and the pollutants it carries, flow directly into our waterways. Protecting neighborhood creeks, lagoons and other local water bodies begins at home. Together, we can protect our waterways.

The actions of every individual can add up to tremendous improvements in water quality. As you prepare for the rainy season, consider the following tips.

DISPOSE OF YARD WASTE MORE FREQUENTLY – During spring yard cleaning, dispose of organic matter more frequently – less will wash into storm drains.

REDUCE USE OF LANDSCAPE CHEMICALS

Reduce the use of pesticides, insecticides and other chemicals. Avoid over irrigation which washes chemicals into the gutter and storm drains.

SWEEP OR RAKE – Sweep up debris and put it in a trash can. Do not use a hose to wash off pavement.

CLEAN UP AFTER YOUR PETS – Flush the waste down the toilet or dispose of it in a sealed plastic bag in the trash.

PLANT NATIVE – Use native plants. They need less water.

CONTROL EROSION – Make sure the hillsides or other slopes around your property do not discharge dirt onto the sidewalk, gutter, street or storm drain.

Please call the Water Quality Protection Program at (760) 726-1340 x1686 or email us at waterquality@cityofvista.com. For more information go to www.cityofvista.com, keyword search "storm water".

FIRE PREVENTION | Tips for the Holidays

The Vista Fire Department is offering these safety tips for residents during this holiday season. Fire officials caution that Christmas trees, even those treated with flame-retardant, are capable of burning explosively and spreading fire through a home quickly.

Choosing a tree

- Choose a healthy tree and water it moderately while it is in the house.
- Look for freshness with cut trees. The needles should be difficult to pull from the branches and should not break when bent between your fingers.
- If purchasing an artificial tree, choose one that is labeled fire resistant.

Consider tree placement in home

- Position tree away from fireplaces, heat registers, direct sunlight and other sources of heat that can cause the tree to dry out prematurely or to ignite.
- If rearranging furniture to make room for the tree, maintain clearance from sources of heat and maintain safe exit ways and passage ways.

Keep trees watered

- Once home, spray tree with water to remove dead needles and dust. Cut two inches off the base and immerse the cut end into water immediately.
- Place tree in a sturdy stand capable of holding a large amount of water.
- Check the water in the tree stand often. An average tree can consume a quart to a gallon of water every day.
- Do not allow the water level to drop below the base of the tree or pores will seal again, preventing water absorption. If pouring water in the basin is difficult, add ice cubes.

Decorate tree safely

- Decorate the tree with safety-approved miniature lights rather than the larger lights to prevent heat build up and to lessen drying effects. Never use real candles on a tree. Limit electrical items to no more than three strands per outlet.
- Inspect used lights carefully for frayed wires, broken sockets or signs of wear and discard if damage is observed.
- Turn off or unplug tree and exterior lights before leaving the house or going to bed.

After Christmas

- Remove tree from house promptly.
- Never burn a Christmas tree in the fireplace or woodstove.
- Recycle Christmas trees.

Get Connected with Your Community

Vista Citizens' Leadership Academy

The City of Vista is looking for Vista residents to participate in a series of classes that educate residents and business owners on how the City operates and prepare future leaders to serve on committees and commissions in Vista.

The Vista Citizens' Leadership Academy will run from March 3 through April 14 and is composed of separate Wednesday evening classes discussing city governance, land use issues, financial planning, and Vista's vision for the future and other related topics. Through weekly presentations, tours and discussions with elected officials and city staff, participants can increase their knowledge of issues affecting the city, learn how decisions are made and discuss Vista's plans for the future.

Registration is being accepted on a first-come, first-serve basis through February 24. Participants must be Vista residents and/or business owners, aged 18 or older. Seven sessions are held from 5:00 to 7:30 p.m. each Wednesday evening (with the exception of one lunchtime meeting/tour).

For more information, go to www.cityofvista.com or call (760) 643-2708. Space is limited, please sign up early.

Christmas Tree Recycling Available

Curbside

EDCO customers may place Christmas trees curbside from 12/26-1/10 during regular collection days. Other organic decorations, such as garland and wreathes, as well as wood (no pressure-treated or lead-base painted wood), can also be placed in the residential designated yard waste container.

Drop-Off Locations - December 26 through January 10

- Parking lot on S. Santa Fe Avenue and Mercantile Street (523 South Santa Fe Avenue)
- Parking lot on the corner of S Melrose Drive & Shadowridge Drive

Please place trees inside collection containers.

Holiday Camps Provide Terrific Way for Kids to Have Fun

The City's Recreation and Community Services Department has a fantastic schedule of day camp activities lined up for the holiday season. The day camps are a terrific way for kids to have fun, exercise and meet new friends during the school break.

The Superstars Holiday Day Camp (ages 3-5 years) and the Winter Holiday Day Camp (ages K-8th grade) allow students to spend time outdoors and to enjoy a vast number of activities, such as arts, crafts, sports and games. This experience gives children the opportunity to play in a fun, safe and sociable environment while parents work, relax or catch up with friends. Recreation and Community Services is offering parents peace of mind while providing children a piece of the action!

Check the Winter Vista RecGuide for more information or register online, anytime at www.vistarecreation.com or call the Day Camp Program Office at (760) 726-1340 ext. 1501.

Did You Know?

Storm drains are for rain water only!

The wastewater that drains from inside homes is treated before it enters the ocean, but water from outside homes flows directly into storm drains and then right into our creeks, lagoons and the ocean without treatment. So, please do not wash waste or trash onto street surfaces or into storm drains. To report violations, call the City's Storm Water Hotline at (760) 726-1340 ext. 1686 or e-mail waterquality@cityofvista.com.

SHOP VISTA

Shoppers Can Begin Redeeming Sales Receipts for Gift Cards

During the holiday season, from November 26 through December 31, the City of Vista will give $30 cards to people who spend $300 or more at local retailers (applies to single purchase or cumulative purchases). Purchases can be for dining, gifts, movies, groceries and more. Receipts are redeemable for Vista cards at City Hall (while supplies last).

Keeping the local economy strong is a top priority for the City of Vista during these difficult economic times. Much of the City's budget comes from local sales tax – money that provides for public safety, parks, and other services that keep the city operating. When residents buy locally, they are keeping taxes within the city, supporting the services they use everyday.

For more information on the Shop Vista Gift Card program, log onto www.shopvista.biz.

City Telephone Directory

Phone numbers are 760 area code, unless otherwise noted.
Dial 911 for fire, sheriff and medical emergencies

Avo Playhouse Tickets	724-2110
Brengle Terrace Rec Center	639-6156
Building	639-6105
Building Inspections	639-6106
Business License	639-6174
Chamber of Commerce	726-1122
City Attorney	639-6119
City Clerk	639-6125
City Hall	726-1340
City Manager	639-6131
Code Enforcement	639-6141
Development Services	639-6108
Economic Development	639-6165
Engineering	639-6111
Engineering Inspections	639-6113
Finance	639-6170
Fire Administration	643-2801
Gloria E. McClellan Senior Center	639-6160
Graffiti Hotline	726-1340 x 1611
Household Hazardous Waste	(800) 444-4244
Housing	639-6191
Human Resources	639-6145
Humane Society (North County)	757-4357
Job Hotline	639-6147
Library (County's Vista branch)	643-5100
Mayor and City Council	639-6130
Moonlight Amphitheatre	639-6199
Moonlight Amphitheatre Tickets	724-2110
Parking Citations	639-6141
Planning	639-6100
Public Services	639-6176
Rancho Buena Vista Adobe	639-6164
Recreation & Community Services	639-6151
Redevelopment	639-6191
Senior Center	639-6160
Sheriff (Non Emergency)	940-4551
Stormwater Hotline	726-1340 X 1686
Traffic Engineering	639-6116
Traffic Information	511
Vistix Office	724-2110
Wave Waterpark	940-9283

Have You Heard? Escondido Avenue Will be Renamed 'Civic Center Drive'

Escondido Avenue will be renamed Civic Center Drive in spring 2010, to coincide with the opening of the new Civic Center. The name change will only apply to the main stretch of Escondido Avenue, which runs from central Vista, near Wildwood Park, to Sunset Drive, just south of Highway 78. To phase in the new name, both street names will be on the highway exit signs until a CalTrans project to upgrade all signs along Highway 78 has been completed.

1st Annual Drought Tolerant & Fire Wise landscape Contest

Tidy up your drought tolerant / fire wise landscape and enter the Greater Vista Fire Safe Council's landscape contest. The submission deadline is January 15, 2010. For more information, go to www.greatervistafiresafecouncil.com

Did You Know?

The Vista City Council recently enacted a smoking ban in city parks. The ban applies to all parks and facilities, as well as areas around the Vista library and Civic Center.

Help Starts Here

Dial 211 for easy access to community, health, and disaster services, including:

- Healthcare
- Financial assistance
- Legal assistance
- Parent and family services

Search the 211 database online at www.211SanDiego.org

Vista Historical Society Has a New Home

The Vista Historical Society Museum celebrated a grand opening at its new location in September. The museum is located at 2317 Old Foothill Drive, across the street from Rancho Minerva Middle School. Museum hours are from 10 a.m. to 3 p.m. Wednesday through Friday and the first two Saturdays of each month.

Challenge Yourself. Get Involved.

One way to become more involved in your community is to volunteer. Not sure if you have the time? Try volunteering for a short-term project or for a few hours. Challenge yourself to get involved. Sharing your skills, talents and experiences will strengthen our local community in countless ways!

For City volunteer opportunities, go to www.cityofvista.com and go to "job openings". Current positions are available under the volunteer program opportunities. To learn about regional volunteer opportunities, go to www.volunteersandiego.org.

CITY OF VISTA

2009-10 JURMP Annual Report

Illicit Discharge Detection and Elimination Component

December 2010

Prepared by:
City of Vista
Water Quality Protection Program

CITY OF VISTA
CALIFORNIA

CERTIFICATION

I certify under penalty of law that the Jurisdictional Urban Runoff Management Plan Annual Report, Section 7 (Illicit Discharge Detection and Elimination Component) for the Fiscal Year 2009-10 and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita Geldert

Rita Geldert
City Manager

John Conley

John Conley
Interim Director of Engineering

December 07, 2010
Date

December 7, 2010
Date

P: (760) 726-1340 | www.cityofvista.com | F: (760) 639-6132
200 Civic Center Drive, Vista, California 92084-6275

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7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

7.1 INTRODUCTION

In accordance with Addendum No. 2 to Order No. R9-2007-0001, the City of Vista is submitting Section 7.0 as one report separate from the JURMP Annual Report, submitted in September 2010.

This report includes sections covering:

- Public Reporting of Illicit Discharges and Connections for FY 09-10,
- Spill Reporting, Response, and Prevention for FY 09-10,
- Urban Runoff Monitoring including the Dry Weather Monitoring Program for 2010, the MS4 Outfall Monitoring Program for FY 09-10, and the Source ID Monitoring Program for FY 09-10,
- Follow-up and Enforcement Activities for FY 09-10, including complaint responses and dry weather follow-up actions,
- Effectiveness Assessment of the components of the IDDE Program,
- Review and Modifications to the IDDE Program,
- Notable activities conducted to manage illicit discharges and connections.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP document. Annual Reporting requirements for the Illicit Discharge Detection and Elimination Component are listed in section J of the Permit. As indicated in Table 7.1, the City of Vista successfully met all permit requirements for the Illicit Discharge Detection and Elimination component of this JURMP Annual Report.

Table 7.1 JURMP Annual Report Compliance

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.	1, 3	Confirmation Inspection	Updated map provided	Appendix F-4
2	Reporting of all dry weather field screening and analytical monitoring results. The data should be presented in tabular and graphical form. The reporting shall include station locations, all dry weather field screening and analytical monitoring results, identification of sites where results exceeded action levels, follow-up and elimination activities for potential illicit discharges and connections, the rationale for why follow-up investigations were not conducted at sites where action levels were exceeded, any Copermittee or consultant program recommendations/changes resulting from the monitoring, and documentation that these recommendations/changes have been implemented. Dry weather field screening and analytical monitoring reporting shall comply with all monitoring and standard reporting requirements in Attachment B of Order No. R9-2007-0001 and Receiving Waters Monitoring and Reporting Program No. R9-2007-0001.	1, 3, 4	Confirmation Inspection Monitoring Quantification	Confirmed in Text and Appendix	Section 7.4.1, 7.4.2, 7.5.2 and Appendix F-4
3	Any dry weather field screening and analytical monitoring consultant reports generated, to be provided as an attachment to the annual report.	1	Confirmation Reporting	N/A	N/A
4	A brief description of any other investigations and follow-up activities for illicit discharges and connections.	1	Confirmation	168 other confirmed complaints	Sections 7.2, 7.5.1 and Appendix F-3
5	The number and brief description of illicit discharges and connections identified.	1	Confirmation Tabulation	168	Section 7.5.1 and Appendix F-3
6	The number of illicit discharges and connections eliminated.	1, 4	Confirmation Tabulation	168	Section 7.5.1 and Appendix F-3
7	Identification and description of all spills to the MS4 and response to the spills.	1	Confirmation Tabulation	41	Section 7.3.1 and Appendix F-2
8	A description of activities implemented to prevent sewage and other spills from entering the MS4.	1	Confirmation	Confirmed	Section 7.3.2

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
9	A description of the mechanism whereby notification of sewage spills from private laterals and septic systems is received.	1	Confirmation	Confirmed	Section 7.3.3
10	Number of times the hotline was called, as compared to previous reporting periods, and a summary of the calls.	1	Tabulation	FY 07-08 – 14 FY 08-09 – 8 FY 09-10 - 5	Section 7.2, Table 7-2, and Appendix F-1
11	A description of efforts to publicize and facilitate public reporting of illicit discharges.	1, 2	Confirmation	Confirmed	Section 7.2
12	The number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation Tabulation	168 violations and 196 enforcement actions	Section 7.5.1 and Appendix F-3
13	A description of notable activities conducted to manage illicit discharges and connections.	1	Confirmation	Confirmed	Section 7.6

7.2 PUBLIC REPORTING OF ILLICIT DISCHARGES AND CONNECTIONS

This section describes the City's efforts to publicize and facilitate public reporting of illicit discharges (Permit section J.3.a.(3)(f)xi), including a public hotline. It also includes the number of times the hotline was called, as compared to previous reporting periods, and a summary of the calls (Permit section J.3.a.(3)(f)x).

The City's local stormwater hotline(s), (760) 726-1340 ext 1686 and 1698, accept(s) information from callers in English and Spanish, respectively. The hotline is operated by staff from the City's Water Quality Protection Program (WQPP). The City includes the stormwater hotline number on its website and printed materials including stormwater brochures and City newsletters.

During the reporting period, the City received five stormwater reports through the hotline. A summary of the hotline calls is included in Appendix F-1. Table 7.2 shows the number of hotline calls the City received during the past three fiscal years.

Table 7.2 Hotline Calls (2008-2010)

	FY 07-08	FY 08-09	FY 09-10
Number of Hotline Calls	14	8	5

In addition to the hotline reports, the City's WQPP staff received an additional 185 stormwater complaints involving illicit discharges, connections, private sewer lateral overflows, and BMP violations during the reporting period (total complaints reported = 190). BMP violations are included in illicit discharge and connection statistics as they have the potential to result in illicit

discharges. The complaints were reported by the general public and City field personnel. It is not uncommon for the general public to report stormwater complaints through City phone lines other than the hotline. City departmental phone numbers are listed on the City's Newsletter (Inside Vista) and website and included in various stormwater educational brochures. City staff often observes stormwater incidents in the field and report them to the WQPP. Complaint cases generated in this fashion are termed proactive. Of the 190 reported cases, 116 were proactive (61%), similar to the percent of proactive cases reported in FY 08-09 (63%). City WQPP staff encourages participation from other City staff and facilitates proactive reporting through its annual training program. In the trainings, City personnel are directed to report stormwater incidents observed in the field to WQPP staff.

The City continued to operate its WQPP email address, waterquality@cityofvista.com, during the reporting period. The email address was created in FY 08-09 to facilitate communication between the public and the City's Water Quality Protection Program. In addition to the stormwater hotline, the operation of the email address provides another mechanism for the general public to report stormwater incidents. During the reporting period, WQPP staff received two stormwater reports through its WQPP email.

The City held eight community events that provided opportunities for the City to educate the City's English and Hispanic communities regarding best management practices. Details on these events were included in section 8 (Education) the City's JURMP Annual Report submitted in September 2010. Stormwater brochures, which include instructions for reporting illegal discharges, were provided to the public at events. At some event booths, presentations using the Enviroscape watershed model were conducted that further emphasized the importance of reporting stormwater incidents to the City.

The City continued its education and outreach efforts to schools during the reporting period. The City contracted for the first time with San Diego County Office of Education (SDCOE) to provide two educational programs including a Splash Lab and Green Machine Program. Both programs provided a hands on and interactive atmosphere that enables children to learn about the importance of pollution prevention in the community; in total, 1470 students were reached in both programs. The City provided more detail about the programs in Section 8.0 (Education) of the JURMP Annual Report submitted in September 2010. Through these educational efforts at schools, it is the intent that parents will also become educated about pollution prevention and the steps to report stormwater incidents.

Additionally, through complaint investigations and annual commercial and industrial inspections, City staff encouraged residents and business owners to report illegal discharges and illicit connections to the City.

7.3 SPILL REPORTING, RESPONSE, AND PREVENTION

This section describes the City's efforts to prevent and respond to sewage and other spills into its MS4 from any source (including private laterals and failing septic systems). This section includes the following:

- Identification and description of all spills to the MS4 and response to the spills (Permit section J.3.a.(3)(f)vii).

- A description of activities implemented to prevent sewage and other spills from entering the MS4 (Permit section J.3.a.(3)(f)viii).
- A description of the mechanism whereby notification of sewage spills from private laterals and septic systems was received (Permit section J.3.a.(3)(f)ix).

7.3.1 Spill Response and Reporting

During the reporting period, the City responded to 11 private lateral sewer spill and three public sewer system overflows reports. Appendix F-2 includes a summary of sanitary sewer system overflow incidents that occurred during Fiscal Year 2009-10. In responding to spills, the City follows the procedures included in the City's Sanitary Sewer Overflow Prevention & Response Plan (SSORP). All spills are reported online through California Integrated Water Quality System Project (CIWQS).

During the reporting period, the City followed its SSORP in responding to all reported City sewer overflows and private lateral spills. This Plan details all the procedures that are implemented during any type of sanitary sewer overflow. The procedures include: (1) evaluating the situation and determining what resources are needed to remedy it, (2) taking digital pictures of sewer overflow emergencies to determine the spill amount for reporting and documentation, (3) taking steps to protect the health and safety of the public, and (4) commencing steps to mitigate the overflow. The City Public Services Department is responsible for responding to and abating public sewer discharges. Since most residents and businesses do not have the equipment to abate a private lateral spill, private lateral spills are also often abated by Public Services or a City contractor. Upon arrival at an overflow incident, containment is a priority. The City's Public Services Department operates three Vactor trucks which are essential in the containment and cleanup of spills.

In addition to the procedures stated above, the City conducts compliance efforts in private lateral and septic system spills. In the City's SSORP, Stormwater Code Enforcement staff is to be notified immediately upon a private lateral spill. Code Enforcement staff conducts an investigation to identify a responsible party and to require BMP implementation; this is important to ensure responsible parties take the necessary steps to prevent spills from reoccurring. The BMPs most often implemented include immediately contacting a plumber to remove roots, grease, or other debris that is causing blockage in the lateral and implementing an ongoing maintenance plan to ensure continued compliance. When necessary, City staff may utilize escalating enforcement measures to gain compliance, including verbal and written warnings, Notices of Violations, and/or Administrative Citations.

The City's Fire Department also responded to 27 hazardous materials incidents during the reporting period. These included gasoline, oil, bio hazard, chemical, and other flammable releases. For all incidents where the release may have entered the MS4, the fire department notified the San Diego County Department of Environmental Health and/or the City of San Diego Hazardous Materials Response Team. Where containment was necessary, the City's public works crews were mobilized to provide support and containment. Where required, appropriate agencies were contacted by the incident responders.

7.3.2 Spill Prevention

Preventive maintenance is the primary BMP implemented to prevent wastewater pollution from entering the storm drain system and receiving waters. The City's Wastewater Division annually

cleans and inspects the wastewater collection system (311 total miles). While not all of the system required cleaning, some portions of the collection system were cleaned twice due to priority and buildup of material. In total approximately 320 miles were cleaned as part of the regular schedule of inspection and maintenance.

Below are activities the Wastewater Division conducts as part of its annual waste water collection system cleaning and inspection program. They include:

1. Sanitary sewer inspections including the inspections of sewer manholes. Inspections are typically conducted during cleaning events.
2. Increased maintenance at enhanced maintenance areas which are prone to grease buildup and root intrusion,
3. Replacement and upgrade of sewer main and manholes, as needed.
4. Maintaining easements to ensure access to the collection system for inspection and maintenance activities.

Wastewater staff often conducts visual and video inspections collectively to ensure the wastewater collection system is effectively maintained. While conducting visual inspections, Wastewater staff patrol main sewer lines looking for any leaks in the system and from private laterals paying particular attention to known or potential problem areas (e.g., older lines, historical blockage areas, etc). Video inspections are also conducted to further assist Wastewater staff in their inspection efforts. Results from video inspections are often used to further assess the problems staff identified during the visual inspection.

Approximately 350 linear feet of the City's collection system was repaired during the reporting period. These repairs were conducted as spot repairs at specific locations where the collection system may have been failing or where infrastructure failure was imminent.

In compliance with State Water Resources Control Board Order No. 2006-003-DWQ, the City has prepared a Sewer System Management Plan (SSMP). The SSMP documents maintenance and engineering activities for the sewer collection system and sets annual goals with the intention of preventing sewer system overflows. The City's Sewer Master Plan utilizes a hydraulic model to evaluate adequate current, future and wet weather capacity of each individual pipe segment in the sewer collection system. Any current or future capacity deficiencies are identified and placed into prioritized sets of recommended projects that aim to minimize the potential for sewer system overflows by ensuring adequate pipeline capacity for peak wet weather flows plus a safety factor.

To meet the goals of the SSMP, the City completed video inspections of a portion of the wastewater collection system during the reporting period. Video inspections enable the City to effectively assess the condition of the City's wastewater collection system. As indicated in the SSMP the City plans to complete video inspections of the entire system every six years. To meet this objective the City will complete a portion of the inspections annually (approximately 15% of the system annually). The City accomplished its objective of inspecting 15% of the collection system in FY 09-10.

The City continued to implement its Fats, Oils, and Grease (FOG) program to comply with the State Water Resources Control Board Waste Discharge Requirements (WDR) for Sanitary

Sewer Systems, Oder No. 2006-0003-DWQ. The intent of this program is to prevent sanitary sewer overflow incidents. As required in Chapter 14.12 (Regulation of fats, oils, and grease) of the Vista Municipal Code, food service establishments (FSEs) are required to implement best management practices (BMPs) to prevent overflows. These include maintaining grease control devices (GCDs), training employees on FOG BMPs, dry wiping pots and pans, eliminating food grinders, and installing drain screens in food preparation and kitchen areas. During the reporting period, the City inspected 134 FSEs to assess each facility's compliance with the Ordinance and success in managing FOG. In selecting facilities for inspections, the City focused on enhanced maintenance areas located throughout the City.

During the reporting period, the City implemented other significant activities to prevent sewage and other spills from entering the City's MS4. These activities include conducting education and outreach efforts to all audiences, conducting annual inspections of commercial and industrial facilities, and conducting complaint investigations. The City reported on these activities in the City of Vista's FY 09-10 annual JURMP report (Sections 3.0, 4.0, 5.0, 6.0, and 8.0) that was submitted in September 2010.

7.3.3 Spill Notification

Generally, the City is notified of spills, including private lateral and septic system discharges, to the MS4 by the general public and City personnel. During the reporting period, the City operated its local stormwater hotline, (City Eng dept / stormater division) (760) 726-1340 ext 1686 and 1698 which provides reporting instructions to residents in english and spanish. Residents also reported spills to the City through other phone lines and departments including the Public Services Department. City departmental contact information is included on the City's website, in the City's Newsletter (Inside Vista), and in other printed materials. Through the City's stormwater training program, City staff is directed to report spills to the Engineering and Public Services Departments.

In the reporting of spills, the City follows the notification procedures in the City's Sanitary Sewer Overflow Response Plan (SSORP). During the reporting period, the City followed these procedures in response to all reported public and private sewer system overflows. In these procedures, the Public Services Supervisor is to be contacted immediately. The supervisor makes all appropriate agency and inter-agency notifications including notification to WQPP staff.

7.4 URBAN RUNOFF MONITORING

This section describes the results of the City's Urban Runoff Monitoring Programs (Dry Weather Field Screening and Analytical Monitoring, MS4 Outfall Monitoring, and Source Identification Monitoring) conducted during the reporting period. The section includes the following (Permit sections J.3.a.(3)(f)i-iii):

- Reporting of all dry weather field screening and analytical monitoring results.
- Dry weather field screening and analytical monitoring consultant reports generated.
- Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.

7.4.1 Dry Weather Field Screening and Analytical Monitoring Program (May 1, 2010 – September 30, 2010)

The City of Vista's 2010 Dry Weather Monitoring Program consisted of 29 designated primary monitoring stations, eight of which are designated sampling sites for laboratory analysis. Dry weather monitoring was conducted from July to September 2010 by City WQPP staff. Results from the Dry Weather Monitoring Program are presented in a separate report included as Appendix F-4. Included in the report is an updated map illustrating the 2010 dry weather monitoring stations (primary and alternate) and current MS4.

Monitoring efforts include field screening and analyses, laboratory analyses, trash assessments, and data assessment. Field screening activities consists of making qualitative observations and measuring screening parameters in the field. The qualitative observations (includes light conditions, odor, color, clarity, floatables, deposits, vegetation, and biology) are intended to provide a general assessment of the site and can be helpful in assessing a site for potential illicit discharges and connections. Field screening parameters include flow, temperature, pH, turbidity, conductivity, surfactants (MBAS), ammonia, nitrate, and orthophosphate. Field screening results are documented on Dry Weather Monitoring Field Datasheets. Completed datasheets for all sites are included in Appendix F-4. Samples that are collected for laboratory analysis are measured for oil and grease, diazinon, chlorpyrifos, dissolved metals (cadmium, copper, lead, and zinc), and bacteria (total coliform, fecal coliform, and enterococcus). As required in the Permit, laboratory analysis must be conducted for at least 25% of the monitored sites. At all field screening sites (not including confirmatory or ICID sampling) WQPP staff performed a trash assessment indicating the amount and extent of trash present at each monitoring site. Information on trash assessment is included in section 7.4.2 below.

If a primary station was dry, an alternate station with flowing or ponded water was selected. City staff added four alternate monitoring stations in 2010 including BV-6, BV-14, BV-19, and MV-2A. Of the 29 primary monitoring stations 22 had sufficient flow or ponded water to collect samples and seven sites were dry. Sites AH-31, AH-34, AH-37, BV-7A, BV-15, BV-32, MV-3 were dry, and alternate sites G-6, BV-34, BV-36, BV-14, BV-6 and BV-19 were sampled. A total of 39 sites (primary and alternate) were visited for purposes of collecting field screening and/or analytical samples. This is summarized in Table 7.3 below.

Table 7.3 Summary of Visits to Field Screening Sites

Total Sites Visited	39
Primary Sites Visited	29
Alternate Sites Visited	10
Primary Sites w/ Ponded or Flowing Water	22
Alternate Sites w/ Ponded or Flowing Water	6

Monitoring data is compared to action levels for indications of potential illegal discharges and connections to the City of Vista's MS4. During the initial sampling, eight sites had nitrate

exceedances, two had bacteria exceedances, one had a MBAS exceedance, and one site had a ammonia exceedance. A summary of the exceedances is included in Table 7.4.

Table 7.4 2010 DWM Action Level Exceedances

Station	Total Coliforms	Fecal Coliforms	Enterococcus Bacteria	MBAS	Ammonia-N	Nitrate-N
AH-8A*						✓
AH-9*		✓	✓			
AH-35*						✓
BV-6*						✓
BV-8*						✓
BV-10*						✓
BV-14*					✓	
BV-19*						✓
BV-24*						✓
BV-33**				✓		
G-3**						✓
SS-1*	✓	✓	✓			

*A confirmation sample was attempted. **An immediate upstream investigation was conducted.

As required in section D.4.d.(2) of the Illicit Discharge Detection and Elimination Component of the Permit, Copermittees shall, within two business days of receiving field screening and analytical laboratory results, conduct an investigation to identify the source of the discharge or provide rational for why the discharge does not pose a threat to water quality and does not need further investigation. In following this requirement, the City conducted all of its follow-up investigations according to the following procedure:

- Sites that had initial exceedances were re-sampled within one to two business days of receiving field screening results. Re-sampling is performed to confirm the initial action level exceedance. In the City's 2010 Dry Weather Field Screening and Analytical Monitoring Program, the City referred to this as the confirmation sample. During site visits, sampling staff also investigated the immediate vicinity of the site and used best professional judgment in assessing pollutant sources.
- When confirmation sampling confirmed the exceedance of action levels, an upstream investigation was conducted to identify pollutant sources. This included moving upstream in the drainage system to identify possible sources and when necessary collecting samples to measure the parameter(s) in exceedance. Where feasible, upstream investigations are conducted on the same day the confirmatory samples are collected.

- An immediate upstream investigation is initiated if visual and/or analytical evidence of gross contamination is present and an illegal discharge is suspected. In 2010 WQPP staff conducted immediate upstream investigations at sites G-3 and BV-33.
- Where the source of the exceedance was known and not the result of an illicit discharge or connection to the MS4, an upstream investigation was not necessary.

A confirmatory sample was attempted at 10 of the 12 sites that had exceedances. Site SS-1 was dry during the confirmation visit, but a confirmation sampling event was conducted at the other nine sites. Immediate upstream investigations were conducted at the other two sites (BV-33 and G-3) as a result of observations and analytical evidence determined at the sites. Of the ten sites where a confirmatory visit was conducted, seven sites continued to exceed action levels. WQPP staff conducted upstream investigations at all seven sites in the attempt to identify pollutant sources. Information on follow-up investigations is included in Section 7.5 of this report and the complete results and discussion of the monitoring efforts are included in the City of Vista's 2010 Dry Weather Field Screening and Analytical Monitoring Program Report (Appendix F-4).

7.4.2 Trash Assessment (May 1, 2010 - September 30, 2010)

As required in Section II.B.3.c.(7) of the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Permit, a trash assessment was conducted at each primary and alternate dry weather monitoring station. This assessment is designed to provide information on the spatial extent and relative amount of trash present, as well at the nature and origin of the trash at the site. A Trash Assessment Form was completed for each site.

A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form includes five categories to describe the amount and extent of trash. The five categories include optimal, sub-optimal, marginal, sub-marginal, and poor. Sites are also evaluated for the potential threat to human health and/or aquatic health. Definitions of the categories for trash assessments and for threat assessments are included below in Table 7.5.

Table 7.5 Definitions for Amount and Extent of Trash

Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).
Site Evaluation for Threat to Human Health and/or Aquatic Health	
Threat Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in ponded water due to trash. All subject to best professional judgement. Describe potential threat on back of form.
Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence of large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgement. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

In this program, a higher priority is given to sites that receive a rating of sub-marginal or lower. For sub-marginal and poor sites, an additional assessment is made as to the potential route and source of the trash. During the 2010 monitoring event, there were 32 optimal, six suboptimal, and one submarginal rated site. There were no poor rated sites and none were observed to have posed a threat to human or aquatic health. Site BV-15 received a submarginal rating due to the amount of trash and other debris present in the concrete channel. Some clothing was also present. City staff believes that the amount and types of trash present at the site may be indicative of a homeless encampment. A summary of the trash assessment results is included in Figure 7.1. Completed Trash Assessment Forms for all dry weather monitoring stations are included in the City's 2010 Dry Weather Field Screening and Analytical Monitoring Program Report (Appendix F-4).

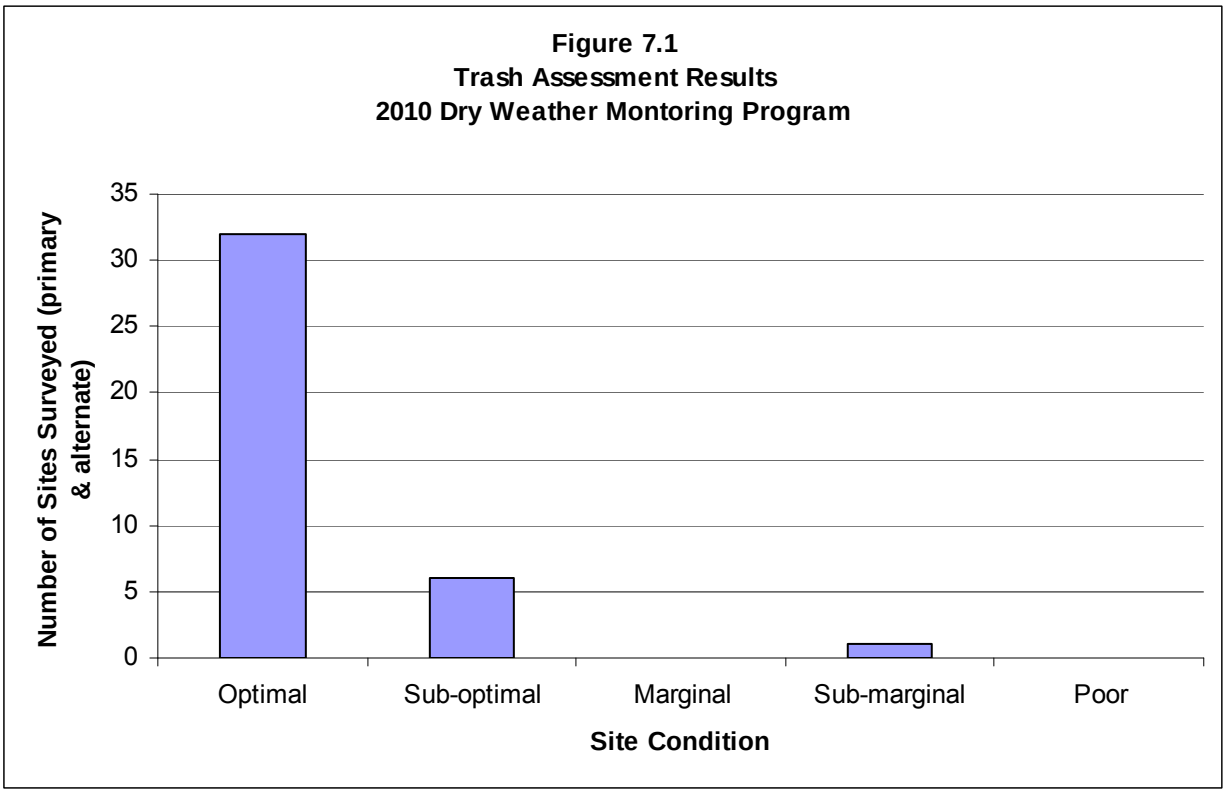

7.4.4 MS4 Outfall Monitoring Program

The goal of this monitoring program is to characterize pollutant discharges from MS4 outfalls and to assess whether these discharges contribute to the water quality problems in the receiving waters in San Diego County Watersheds. The MS4 Outfall Monitoring Program is divided into four sub-programs which include the Targeted Dry Weather, Targeted Wet Weather, Random Dry Weather, and Random Wet Weather programs. The monitoring design is based on a combination of random and targeted sampling of discharges from MS4 outfalls that drain into receiving waters.

All four sub-programs are conducted in accordance with the work plan, “Municipal Separate Storm Sewer System (MS4) Outfalls Monitoring Program in San Diego County Watershed Management Areas (WMA) “(June 2008). In the Targeted Wet Weather, Random Dry Weather, and Random Wet Weather programs, monitoring is conducted by the Copermittees regional contractor. The number of samples that will be collected region wide under each program is included in Table 7.6. Following Table 7.6 are summaries of the activities conducted under each monitoring sub-program during fiscal year 2009-10.

Table 7.6 Summary of the MS4 Outfall Monitoring Design

Season	Design Type	Outfall Diameter	Number of Samples
Dry	Random	≥36 inches	54 per year
	Targeted	Any	200 per year
Wet	Random	≥36 inches	54 per year
	Targeted	Any	9 per Permit cycle

Targeted Dry Weather Program

During the reporting period, the City conducted its Targeted Dry Weather program which included the monitoring of four outfalls, AH-17, AH-21, BV-1, and BV-4, located in the City of Vista. Table 7.7 includes general information on these sites and Figure 7.2 includes a map of the MS4 locations. In this program, each copermittee is responsible for conducting the monitoring of the outfalls located within the copermittee's jurisdiction. The monitoring was completed in July 2010 by City WQPP staff.

Monitoring activities consisted of making qualitative observations (i.e. color, odor, etc.), conducting field screening tests, and collecting samples for laboratory analysis. Sample collection for laboratory analysis was conducted in accordance with the MS4 Work plan. The analytes selected were based primarily on the high priority pollutants identified by the Carlsbad Watershed Group. Water samples from each site were also analyzed for field screening parameters including specific conductance, temperature, pH, turbidity, and dissolved oxygen. Laboratory samples were collected and analyzed for total coliform, fecal coliform, enterococcus, total suspended solids (TSS), total dissolved solids (TDS), total nitrogen (includes both nitrate-N and total kjeldahl nitrogen), and total phosphorous. Additionally, samples collected at sites located within Agua Hedionda HA (AH-17 and AH-21) were analyzed for manganese (total), selenium (total), and sulfates.

By dry weather monitoring standards (i.e. action levels), site BV-1 exhibited an exceedance for Enterococcus (9100 cfu/100ml). Although, not required under the MS4 Outfall work plan, City WQPP staff followed its dry weather procedure for upstream investigations to determine any sources contributing to the exceedance. Confirmatory (3600 cfu/100ml) and upstream sampling (2700 cfu/100ml) results indicated enterococcus concentrations below action levels. In its upstream investigation, staff did not identify any bacteria sources. MS4 monitoring results are presented in Table 7.8.

Each copermittee submitted its results in a data sharing format to the regional monitoring contractor for inclusion into the Regional Monitoring report that is due to be submitted in January 2011 by the County.

Summary of Random Dry and Wet Weather Monitoring

Random dry weather monitoring was conducted during the 2009-2010 Monitoring Season. Regionally, 35 random MS4 outfall dry weather sites were monitored in 2009–2010. During dry weather monitoring, several sites visited were determined to have insufficient flow for sampling. Up to 14 sites maximum were visited per WMA. Many of the locations had ponded conditions, which may have indicated previous intermittent discharges or perched groundwater. During the

2009–2010 monitoring season, two WMAs had sufficient dry weather flow for collecting samples at all six sites within each WMA.
Random wet weather monitoring was conducted during the 2009-2010 Monitoring Season. Regionally, 48 random MS4 outfall wet weather sites were monitored in 2009–2010. Details on on the FY 09-10 Random Dry and Wet Weather Monitoring programs will be included in the San Diego County Municipal Copermittees Urban Runoff Monitoring Annual Report to be submitted January 31, 2011 as required by the Permit.

Targeted Wet Weather Program
The Targeted Wet Weather Monitoring program was developed in 2008–2009 and was implemented during the 2009-2010 Monitoring Season. Wet weather targeted sampling was conducted during one wet weather event at one selected outfall within the Mission Bay WMA, the San Diego River WMA, and San Diego Bay WMA during the 2009-2010 Monitoring Season. Details on the FY 09-10 Targeted Wet Weather Monitoring program will be included in the San Diego County Municipal Copermittees Urban Runoff Monitoring Annual Report to be submitted January 31, 2011 as required by the Permit.

Table 7.7 2010 MS4 Outfall Monitoring Sampling Locations

Site	Location	HSA	Latitude	Longitude	TBPage	TBGrid	Primary Land Use	Secondary Land Use	Conveyance
Agua Hedionda Hydrologic Area									
AH-17	Southeast of the Faraday Street and Brookhaven Pass intersection, in the corner of the detention basin	904.31	33.14003	-117.24637	1127	H1	Residential	Commercial	Outlet
AH-21	2687 S. Melrose Drive (south end of Melrose Drive)	904.31	33.13534	-117.24466	1127	H1	Industrial	None	Outlet
Buena Vista Hydrologic Area									
BV-1	Behind 4241 Tiberon Drive	904.21	33.18271	-117.28387	1107	C2	Residential	None	Outlet
BV-4	Across the street from 1725 Hacienda Drive, south of the fence, in the canyon	904.21	33.18780	-117.27434	1087	E7	Commercial	Residential	Outlet

Table 7.8 2010 MS4 Outfall Monitoring Results

Site	Flow (gpm)	Total Coliform (CFU/100 mL)	Fecal Coliform (CFU/100 mL)	Enterococcus (CFU/100 mL)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Nitrogen-N (mg/L)	Total Phosphorus-P (mg/L)	Manganese (mg/L)	Selenium (mg/L)	Sulfates (mg/L)
AH-17	23.7	7600	2100	2000	1422	5.2	1.2	0.09	0.016	ND	365
AH-21	0.165	8800	4000	2700	2356	2	ND	ND	0.023	ND	1044
BV-1	Ponded	11600	1600	9100	4218	15.6	ND	0.15	NA	NA	NA
BV-4	46	8200	1800	1600	1172	17.6	ND	0.12	NA	NA	NA

Figure 7.2 City of Vista 2010 MS4 Monitoring Locations

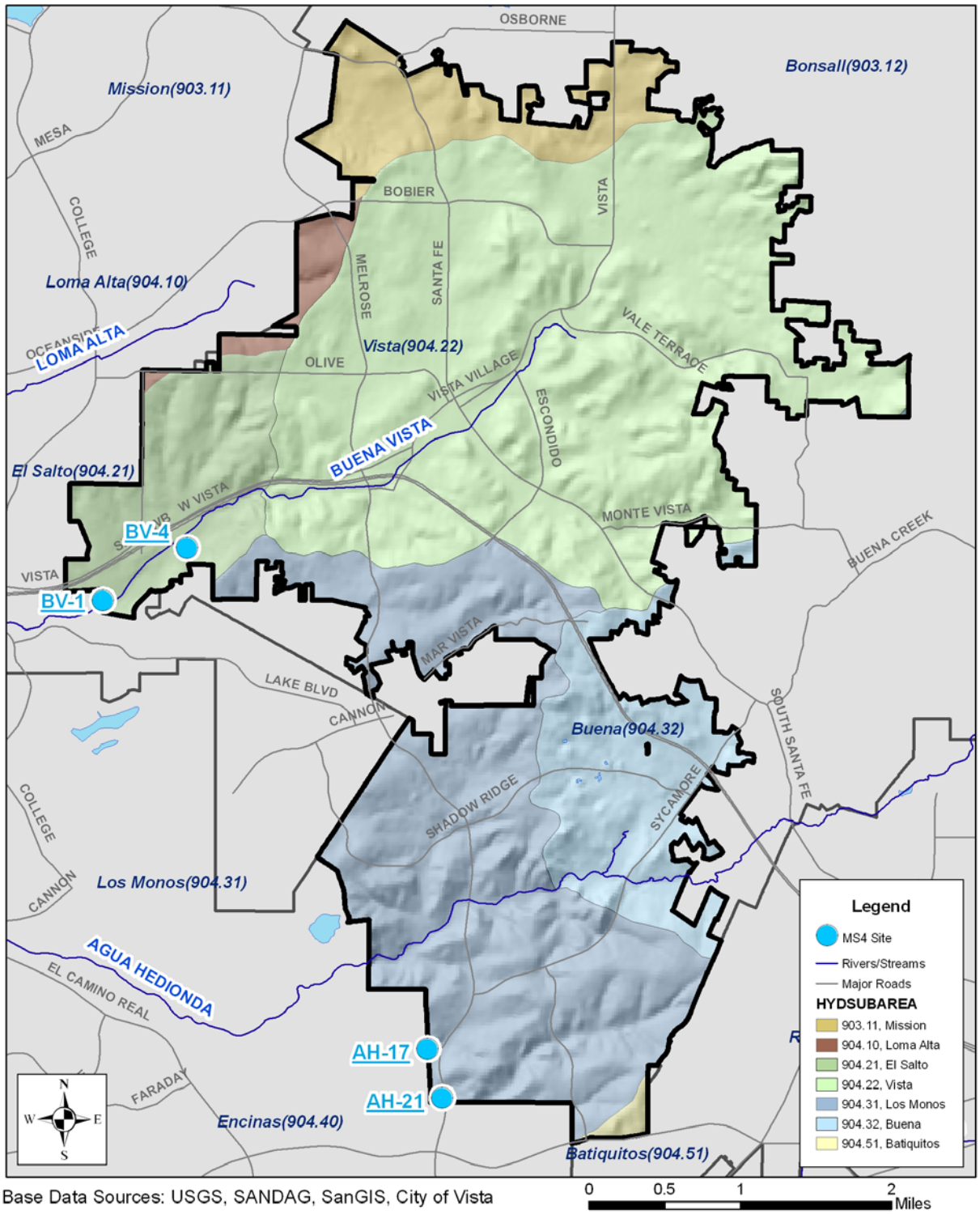

7.4.5 Source Identification Monitoring Program

The goal of this monitoring program is to identify and assess the sources of discharges of constituents related to urban runoff causing high priority water quality problems in the receiving water(s) within each watershed management area (WMA). The Copermittees provided a framework for source identification studies entitled "Urban Runoff Source Identification Program in San Diego County Watersheds" (2008). This framework described the conceptual monitoring to be conducted during the 2008-2009 Permit Year. One change occurred since the framework was submitted. The City of Carlsbad study area was changed to the City of Del Mar. For the 2009-2010 Monitoring Season, the workplan entitled *2009–2010 Source Identification Monitoring Wet Weather Residential Area Runoff Assessment* was designed to assess wet weather runoff from residential areas in the City of Del Mar and the City of Oceanside.

Three storm events were monitored at the Del Mar and Oceanside sites on December 7, 2009; January 18, 2010; and January 26, 2010. This included modified pollutograph sampling targeting the rise, peak, and fall of the hydrograph during each storm event. Results from the FY 09-10 study will be included in the San Diego County Municipal Copermittees FY 2009-10 Urban Runoff Monitoring Annual Report to be submitted January 31, 2011 as required by the Permit.

7.5 FOLLOW-UP AND ENFORCEMENT

This section describes the City's efforts to investigate and follow up on complaints and dry weather monitoring results which indicate potential for illicit discharges and illicit connections. This section includes:

- A brief description of any investigations and follow-up activities for illicit discharges and connections (Permit section J.3.a.(3)(f)iv).
- The number and brief description of illicit discharges and connections identified. (Permit section J.3.a.(3)(f)v).
- The number of illicit discharges and connections eliminated (Permit section J.3.a.(3)(f)vi).
- The number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion will exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance (Permit section J.3.a.(3)(f)xii).

7.5.1 Complaint Investigations

During the reporting period, the City responded to stormwater complaints in accordance with procedures detailed in the City's JURMP, updated in March 2008. All reported complaints were logged electronically in an Access database and responded to by the City's Stormwater Code Enforcement staff. Complaints were received from the general public and City field staff.

A total of 190 complaint cases involving illegal discharges, illicit connections, private lateral spills, and BMP violations were investigated by the City's WQPP during the reporting period. BMP violations are included in the enforcement statistics in this section as they have the potential to result in illicit discharges to the City's MS4. Examples of BMP violations may include improper grease storage, uncovered stockpiles, and ineffective housekeeping practices. Of the 190 investigated complaints, 168 were confirmed as violations. A summary of all FY 09-10 stormwater complaint cases was included in appendix D of the City's JURMP Annual Report that was submitted to the RWQCB in September 2010.

During the reporting period, all confirmed illegal discharges, illicit connections, private lateral spills, and BMP violations were eliminated. Of the 168 confirmed complaint cases, City staff issued enforcement actions in all of these cases. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. These efforts resulted in 196 enforcement actions taken by WQPP staff (86 verbal warnings, 29 written warnings, 71 notices of violation, and ten citations). Appendix F-3 includes a summary of the enforcement actions taken by City staff in all confirmed complaint cases.

7.5.2 Dry Weather Monitoring Investigations (May 1, 2010 – September 30, 2010)

During the initial sampling, 12 sites exceeded the action level of at least one constituent (Table 7.4). Confirmatory sampling was attempted at 10 of the 12 sites that had exceedances. Site SS-1 was dry during the confirmation visit, but a confirmation sample was collected at the other nine sites. Immediate upstream investigations were conducted at the other two sites (BV-33 and G-3). Of the 10 sites where confirmatory sampling was attempted, seven sites continued to exceed action levels. In following the City's procedure for follow-up investigation, City WQPP staff performed upstream investigations at all seven sites. WQPP staff also conducted an upstream investigation at site SS-1, (site was dry during confirmatory sampling) in an effort to identify potential sources of bacteria upstream that may have contributed to bacteria exceedances during the initial sampling event. Historically, site SS-1 has not exceeded action levels for bacteria. Procedures for follow-up investigations are included in Section 7.4.1 of this report. Summaries of the dry weather action level exceedances and follow-up actions are included in Table 7.9. Included in Appendix F-4 (2010 Dry Weather Field Screening and Analytical Monitoring Program report) are summaries and results of the follow-up investigations conducted at the 12 sites that had initial exceedances.

Table 7.9 Summaries of Dry Weather Action Level Exceedances and Follow-up Actions

Site	Constituent Exceedance	Confirmed	Upstream Investigation Conducted	Suspected Source
AH-8A	Nitrate-N	Yes	Yes	No illicit discharge identified, groundwater suspected to contribute to the exceedance.
AH-9	Fecal Coliform and Enterococcus	No	Yes	Decomposing organic matter at site
AH-35	Nitrate-N	Yes	Yes	No illicit discharge identified, groundwater suspected to contribute to the exceedance
BV-6	Nitrate-N	Yes	Yes	No sources identified, site within creek
BV-8	Nitrate-N	Yes	Yes	No illicit discharge identified, groundwater suspected to contribute to exceedance
BV-10	Nitrate-N	Yes	Yes	No illicit discharge identified, groundwater suspected to contribute to the exceedance
BV-14	Ammonia-N	No	No	Conditions at site (poor drainage and significant amounts of debris and organics)
BV-19	Nitrate-N	Yes	Yes	No sources identified
BV-24	Nitrate-N	Yes	Yes	Groundwater bubbling up in creek bed
BV-33*	MBAS	No	Yes	Transient flow
G-3*	Nitrate-N	No	Yes	Over-irrigation and fertilizer use at an apartment complex
SS-1	Total Coliform, Fecal Coliform, and Enterococcus	No	Yes	Transient flow and conditions at site including ponding conditions, leave deposits and floatables, and low light exposure.

*Staff conducted an upstream investigation immediately following the initial sampling.

7.6 NOTABLE ACTIVITIES CONDUCTED TO MANAGE ILLICIT DISCHARGES AND CONNECTIONS

This section describes notable activities the City conducted to manage illicit discharges and connections (Permit section J.3.a.(3)(f)xiii).

Under the current FOG (Fats, Oils, and Grease) requirements (Order No. 2006-0003-DWQ) the City was required to develop and implement a FOG inspection program starting in FY 2008-09. As most Food Service Establishments (FSEs) were included in both the City's FOG and Storm Water inventories those FSEs received combined inspections. During the reporting period, 133 FSEs received both a FOG and Stormwater Inspection; a total of 134 facilities received a FOG inspection. The FOG inspections addressed several BMPs to reduce sanitary sewer overflows, which were in addition to the FOG related stormwater BMPs typically addressed during

stormwater inspections. These included installing drain screens in prep sinks, dry wiping pans, and regularly inspecting and maintaining grease control devices. As the City is required to conduct a FOG program, the City believes it will continue to be effective in regulating FSEs and in preventing sanitary sewer overflows at those facilities.

7.7 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT EFFECTIVENESS ASSESSMENT

7.7.1 Introduction

The effectiveness assessment of the IDDE component of the JURMP consists of assessing effectiveness of program activities and BMPs required by the permit, the IDDE component as a whole, and will lead to an integrated assessment as sufficient water quality data is collected and integrated into the program planning process. The assessment process utilizes outcome levels 1-6 as described in Attachment C of Order 2007-0001. The assessment of the program activities and BMPs is presented in Section 7.7.2. The assessment of the IDDE component follows in Section 7.7.3. Section 7.7.4 describes potential water quality assessments with examples of how these may lead to an integrated assessment of water quality and program effectiveness in the future.

7.7.2 Activity/BMP Assessment

Each of the program activities and BMPs required under Section D.4 of the Permit (IDDE) is listed in an outcome based table provided in Table 7.1. In the table, each required element is confirmed as implemented during FY 09-10 and reported on in the preceding sections.

Pro-active enforcement continues to be an effective mechanism for reporting stormwater incidents to the WQPP. City staffs from other departments are aware of the WQPP program and importance of reporting stormwater violations to WQPP staff. Of the 190 complaint cases reported to WQPP staff, 116 (63%) were generated from pro-active enforcement. Pro-active enforcement was significant in FY 08-09 as well given 63% of the reported complaints were generated from pro-active enforcement. The public also continues to use both the stormwater hotline and email address (waterquality@cityofvista.com) to report stormwater incidents to the WQPP (five hotline calls and two emails were received by WQPP staff during the reporting period).

A potential area for improvement in the future is to increase the use of the stormwater hotline. Currently, City Staff report complaints via a number of phone lines, depending on personnel available. During annual municipal trainings conducted during the reporting period, WQPP staff reiterated the stormwater hotline as the central number for reporting stormwater incidents observed in the field. In the future, WQPP staff will continue to work with City departments in annual training sessions to promote the stormwater hotline as a centralized reporting phone number for stormwater related complaints.

7.7.3 Component Assessment

As a whole, the IDDE Program appears to be effective in its main objective: to actively seek and eliminate illicit connections and illicit discharges to the MS4, thus minimizing potentially negative impacts of human activities on receiving water bodies. (JURMP 2008)

From a basic compliance standpoint using level 1 outcomes, the City's program is satisfying permit requirements and implementing the program in accordance with the Order. This assessment is summarized in Table 7.10 below.

Table 7.10 Municipal Permit Component Targeted Outcome Assessment Results Annual Summary

Municipal Permit Component	Targeted Outcome Assessment Result	Compliance Assessment Highlights	Conclusions and Recommendations
Section 7- Illicit Discharge Detection and Elimination	Met all targeted outcomes	Responded to 190 stormwater related complaints leading to the identification and elimination of 168 violations involving illicit discharges, illicit connections, private lateral sewer overflows, and BMP violations; 196 enforcement actions were taken including 86 verbal warnings, 29 written warnings, 71 Notices of Violation and 5 Citations; Dry Weather Monitoring was completed and follow-up investigations were performed.	Illicit Discharge Detection and Elimination Permit Component met targeted outcomes, no changes to implementation of the Permit Component are recommended

Changes in knowledge and behavior, levels 2 and 3 are difficult to assess with data collected under this component. Changes in knowledge are assumed due to the amount of educational information distributed as a part of the program. In responding to 190 complaints during FY 09-10, educational information was conveyed in each case where violations or potential violations were evident. Changes in behavior were evident in that in all confirmed illicit discharge and connection reports, all illegal discharges and connections were eliminated. Through the response efforts, including education and enforcement, behaviors were changed. Follow-up investigations ensured continued compliance.

Load reductions are not explicitly calculated for this component. However, with the elimination of 168 violations involving illicit discharges, illicit connections, private laterals, and BMP violations pollutant loading to the MS4 has been reduced. Pollutants addressed often included sediment, bacteria, nutrients, and may have included others depending on the nature of the discharge. Downstream receiving waters are 303(d) listed for some or all of these pollutants. With the successful elimination of over 160 illicit discharges and connections, load reductions of these constituents have occurred as a result of this component of the program. Absent detailed data collection such as flow and constituent concentrations from the illicit discharges, true estimates of load reductions are not feasible.

Improvements to discharge and receiving water quality, leading to the restoration of beneficial uses for the water bodies, are one goal of the stormwater programs. Data collected under the IDDE Component may be helpful in determining where changes in water quality have occurred over time. While the primary goal of the Dry Weather Monitoring Program is to detect and eliminate illicit discharges and connections to the MS4, the program also gathers data that may be used to characterize water quality in the MS4 and in receiving waters. Using data collected

at key sampling locations over time, changes in water quality may be detected. It should be noted however, that the data is collected only once per dry season, representing a snapshot of the conditions at that particular location. Data from the monitoring programs described in this section have been integrated into the Water Quality Assessment presented in section 11.2.3 of the JURMP Annual Report.

7.7.4 Integrated Assessment

With the addition of monitoring programs such as the MS4 Outfall and Source Identification Programs and the addition of monitoring sites such as the temporary watershed assessment stations (TWAS), more data will be available in the future, allowing for more detailed and statistically valid assessments. In the mean time, Copermittees have collected many years of data through the Dry Weather Monitoring Programs and the Regional Programs. In general, the Dry Weather Programs focus on the MS4, while the Regional Programs focus on the receiving waters. Comparisons of the data collected in the two programs may allow for assessments to be made of the existing conditions in each system and may illustrate relationships between the two.

Examples of how the data may be used include:

- Comparisons over time at sites with sufficient data to detect improving or declining water quality.
- Comparisons between sites to determine areas where pollutant loading is more significant, thereby requiring more attention.
- Comparisons between sets of data in different sub-basins to determine where focused efforts may be necessary.
- Comparisons of receiving water data over time and spatially to determine trends
- Comparing dry weather and receiving water quality data to assess potential dry weather impacts to water quality in receiving waters.

These assessments have not been performed to this point, most often due to a lack of data. It may be feasible however, to combine data sets on a hydrologic area level or via other groupings for assessments, depending on the amount of data available. These combinations may make for more accurate water quality assessments.

Where assessments of MS4 and/or receiving water quality are feasible, these data may be used to drive management actions and to formulate study designs for activities in the future. As data is available, the program will be able to evaluate the accuracy of the constituents of concern, determined by the 303(d) listings to date at this time. Section 11.2.3 of the City's JURMP Annual Report (September 2010) provides a preliminary water quality assessment based on data collected to date. With a more accurate picture of the water quality problems, programs will be able to adapt and improve in the future.

Leading up to the next JURMP planning phase, the City will take steps to further assess existing water quality data in an attempt to focus programs where problems are identified.

APPENDIX F-1

Summary of FY 09-10 Stormwater Hotline Calls

Appendix F-1 Summary of FY 09-10 Hotline Calls

DATE	TIME OF CALL	HOTLINE CALL	WQPP e-mail	ADDRESS	COMPLAINT	ACTION TAKEN
8/15/2009	3:19 PM	X		444 S. Santa Fe Ave	Reported that employee at Humberto's Auto Repair shop (corner of S. Santa Fe and Guajome) was hosing down the driveway/parking area. They were sweeping the water with oils, etc. into the storm drain.	WQPP staff visited the site and found the repair shop to be in compliance with the City's stormwater requirements. WQPP staff determined that employees were implementing appropriate BMPs to clean outside areas. WQPP staff observed the inlet protected and confirmed that the employees are aware and knowledgeable regarding BMP requirements. No enforcement was necessary.
8/17/2009	12:41 PM	X		402 Olive Ave	Complaintant called to report a neighbor, at 402 Olive Ave, dumping from his motor home into the storm drain.	On 8/17/2009 WQPP staff investigated the report. The complaintant admitted the responsible party had not discharged anything yet but was anticipating it to happen. WQPP discussed the City's BMP requirements with the motor home office and mentioned that she would inform Code Enforcement Department of the motor home illegally parking on the street.
8/18/2009	1:13 PM	X		677 Rolling Hills Rd	Complaintant called to report a lot of water running in a storm drain when usually it is dry. He checked up the street (by 664 Rolling Hills) and water was coming from a 6 inch pipe that drained into the storm drain. He did not know if this was ok.	WQPP staff referred this complaint to Vista Irrigation District.
11/4/2009	12:58 PM		X	2379 La Mirada Drive	"I would like to file a report of probable waste water violation for the following address: San Diego Linen, 2379 La Mirada Drive, Vista, CA 92081...I witnessed the processing of towels with animal fats and other substances associated with waste water discharge. The business was previously known as Benebrand Company and my company Prudential Overall Supply purchased them last July. Since the purchase they have reopened (under a different name) and resumed processing without having a wastewater plant in operation. I am familiar with the processing as I work for an industrial laundry and my company is put through waste water testing on a regular basis. Could you please contact me regarding this business as I do not know if he is paying taxes or operating with proper workers compensation insurance either? I feel as though it is my civic duty to report Environmental violations of this kind."	As this complaint is associated with wastewater discharges to the sanitary system, WQPP staff forwarded this complaint to the Industrial Waste Inspection department at Encina Wastewater Authority.
1/30/2010	11:54 PM	X		535 Valley Dr.	The complaintant left a message on our Hotline reporting that someone is doing illegal dumping; also the building of a stormwater drainage system that changes the flow of water into someone else's back yard that then drains (floods) the complaintant's yard.	WQPP staff investigated the complaint and determined it to be a private matter between adjacent property owners (not stormwater related).

Appendix F-1 Summary of FY 09-10 Hotline Calls

DATE	TIME OF CALL	HOTLINE CALL	WQPP e-mail	ADDRESS	COMPLAINT	ACTION TAKEN
2/16/2010	3:10 PM	X		1170 Mayberry Ln	A hotline call came in on Saturday 2/13/10. Mr. Roach was reporting that there is wastewater from hose washer going onto ground and seeping through his block wall and onto his property.	2/16/10 Referred call to SW Code Enforcement Officer first thing in the morning. Her response: "msg from Cliff Roach at 1170 Mayberry Ln was referred to Code E after I investigated the concern. The tenants at 156 Kelleen Dr have a possible gray water discharge that Code E dealt with last year. Because the purported water discharge is not coming in contact with City of Vista storm systems I referred it to Code. It is a private matter between two neighbors whose backyards adjoin. I spoke with a young Hispanic female who translated for her father at the Kelleen residence. I could not establish nor locate any clothes washer or discharge. There was a prevalent foul odor with discolored gray/white residue on the soil. Photos were provided to Code E of the current condition. A misc case was logged for this incident." Officer Sandra Sotola
4/8/2010	1:50 PM		X	1210 N. Melrose Drive	A City of Vista contractor was conducting a commercial inspection at Euro Pacific Paint & Body Inc. and observed employees vehicle washing discharging washwater into a concrete channel.	On 4/8/2010 WQPP staff investigated the report and opened a stormwater case (SW 10-085). Results from the investigation indicated an illegal discharge as reported. Staff issued a Notice of Violation and the discharge was eliminated.

APPENDIX F-2

Summary of FY 09-10 SSO Events

Appendix F-2
Summary of FY 09-10 Sanitary Sewer System Overflow Incidents

Date	SSO Event ID	Location	Source (Public/Private)	Spill Volume (gal's)	Recovered (gal's)*	Volume Released (gal's)	Sewer Collection System	Cause/Comment
6/28/2010	753278	Private	Private	40	40	35	City Of Vista CS	PRIVATE LATERAL SPILL - CAUSE UNKNOWN
6/9/2010	753099	Private	Private	10	10	5	City Of Vista CS	EXCESS DEBRIS IN PRIVATE LATERAL SYSTEM
5/24/2010	752326	Private	Private	10	10	0	City Of Vista CS	PRIVATE LATERAL
4/13/2010	751462	Private	Private	2	2	0	City Of Vista CS	PRIVATE LATERAL SPILL
4/5/2010	750972	Private	Private	370	1500	370	City Of Vista CS	PRIVATE LATERAL
3/17/2010	750628	Private	Private	10	10	0	City Of Vista CS	SPILL FROM PRIVATE LATERAL
1/26/2010	748032	Private	Private	25	25	0	City Of Vista CS	PRIVATE LATERAL SPILL
12/28/2009	747883	825 RAINTREE Place	Public	125	125	0	City Of Vista CS	ROOT IN MANHOLE
11/9/2009	746638	1213 BOBOLINK Drive	Public	400	200	200	City Of Vista CS	ROOTS IN MAINLINE
10/1/2009	745127	Private	Private	27	27	0	City Of Vista CS	UNKNOWN CLEARED BY PRIVATE PLUMBER
8/18/2009	743184	Private	Private	200	150	50	City Of Vista CS	GREASE / POSSIBLY FAULTY GREASE INTERCEPTOR
8/12/2009	742703	Private	Private	25	25	0	City Of Vista CS	PRIVATE LATERAL CLEANOUT BROKEN. OWNER TO FIX BROKEN CLEANOUT
8/4/2009	742335	Private	Private	100	100	0	City Of Vista CS	PRIVATE LATERAL SPILL
7/15/2010	755016	2080 S MELROSE Drive	Public	530	0	530	Buena CS	PIPE WAS ERODED AWAY DUE TO AN UNKNOWN SUBSTANCE BEING DISCHARGED INTO MANHOLE 124 & SUSPECTED TO BE COMING FROM BUSINESS LOCATED AT 1451 ENGINEER STREET WHICH IS CURRENTLY UNDER INVESTIGATION

* Includes volume of water recovered during washdown/cleanup operations

APPENDIX F-3

Summary of Enforcement Actions

Appendix F-3 Summary of Enforcement Actions

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION					REFERRAL
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal Warning	Written Warning	Notice of Violation	Citation	**Totals**	Proactive
Commercial (complaints)	30		4	13		47	41	41	15	19	30	3	67	40
Commercial (inspections)	4			7		11	11	11	1		10	2	13	
Industrial (complaints)	9			1		10	9	9	1	1	7	2	11	7
Industrial (inspections)	1			3		4	4	4			4	1	5	
Mobile Business	2					2	2	2	2				2	1
Residential	63		9	24		96	84	84	55	9	18	2	84	52
Other	12			8		20	17	17	12		2		14	16
TOTALS	121	0	13	56	0	190	168	168	86	29	71	10	196	116

APPENDIX F-4

2010 Dry Weather Field Screening and Analytical Monitoring Program Report

CITY OF VISTA
DRY WEATHER FIELD SCREENING AND ANALYTICAL MONITORING PROGRAM
2010

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1 INTRODUCTION

1.1 Program Overview

The purpose of the Dry Weather Field Screening and Analytical Monitoring Program is to detect and eliminate illicit connections and illegal discharges (IC/ID) to the stormwater conveyance system, minimizing the negative impact of human activities on receiving water bodies. The Dry Weather Monitoring Program consists of the following components:

- Field screening observations
- Field screening analytical monitoring
- Trash assessments
- Laboratory analytical monitoring

The data gathered from dry weather monitoring is used to characterize discharges to the stormwater conveyance system and identify conveyances that are discharging elevated levels of pollutants. Follow-up studies and source investigations are conducted as required to detect and eliminate the sources of these pollutants. The results from the current year's Dry Weather Monitoring Program conducted by the City of Vista are presented herein.

1.2 Regulatory Requirements

In accordance with San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit), each of the Copermittees, including the City of Vista, is required to annually perform dry weather monitoring of discharges into its stormwater conveyance system. During the dry weather season, May 1 through September 30, selected locations along the stormwater conveyance system are evaluated. This procedure is comprised of recording field observations, estimating observed flow rates, and conducting field testing. The Municipal Permit also necessitates that Copermittees conduct laboratory analyses for at least 25 percent of the visited sites with flowing or ponded water. If a sampling location is dry, meaning there is no flowing or ponded water, an alternate sampling station should be selected. If the results of the field or laboratory analyses exceed specific action levels, follow-up investigations are required within two business days.

1.3 Hydrologic Setting

The City of Vista (City) consists of approximately 18.7 square miles, the majority of which is in the Carlsbad Hydrologic Unit (HU). A small portion to the north of the City is part of the San Luis Rey HU. Within the Carlsbad HU, Vista is comprised of three hydrologic areas (HA), namely Agua Hedionda, Buena Vista and Loma Alta. The Lower San Luis HA is part of the San Luis Rey HU. Table 1-1 presents the percent of land of each hydrologic area within the City.

The following drainage basins have been identified within the City's HAs:

- Agua Hedionda
- Buena
- Buena Vista
- Eucalyptus
- Foothill/ Vale Terrace
- Guajome Lake
- Monte Vista
- North Fork Buena Vista Creek
- North Santa Fe
- Sunset

TABLE 1-1
HYDROLOGIC AREAS

Hydrologic Area	Hydrologic Area No.	% Land Area of Vista	Receiving Water Body
Carlsbad Hydrologic Unit			
Agua Hedionda	904.3	38	Agua Hedionda Creek and Lagoon
Buena Vista	904.2	55	Buena Vista Creek and Lagoon
Loma Alta	904.1	1	Loma Alta Creek and Slough
San Luis Rey Hydrologic Unit			
Lower San Luis	903.1	6	San Luis Rey River

Land use within each drainage basin determines the potential for generating both runoff and pollutants into receiving water bodies. Based on available water quality data, the Watershed Copermittees have identified bacteria as the high priority water quality problem in the Buena Vista and Loma Alta HAs, and bacteria, sediments, and nutrients as the high priority water quality problem in the Agua Hedionda HA. The constituents of concern in the San Luis Rey HU are bacteria and nutrients.

1.4 Previous Work

The numbers of historical dry weather monitoring sites since 2002 are presented in Table 1-2. Historical dry weather monitoring data is included in Appendix A.

TABLE 1-2
SUMMARY OF HISTORICAL DRY WEATHER SITES

Year	Number of Field Screening Sites [1]	Number of Flowing Sites	Number of Ponded Sites	Number of Dry Sites	Number of Lab Analysis Sites
2002	21	21	0	0	6
2003	22	20	2	0	5
2004	22	data not available		4	6
2005	27	18	9	3	7
2006	28	21	7	5	6
2007	26	23	3	6	6
2008	29	25	4	4	8
2009	29	26	3	6	8

Notes:
[1] Number of Sites Screened = Number Flowing + Number Ponded. Field screening cannot be conducted at sites found to be dry. Dry sites are replaced by either a flowing or ponded site.

1.5 Report Outline

Section 1, Introduction, includes a program overview, regulatory background, a discussion of the City of Vista's hydrologic setting and constituents of concern, a summary of historical field screening data, and the report outline.

Section 2, Sampling Locations, describes the field screening sampling locations and site selection criteria.

Section 3, Field and Laboratory Analytical Methods, includes field screening and laboratory analytical procedures, quality assurance protocols, and follow-up action levels.

Section 4, Field Screening Results, presents qualitative observations of the sampling locations and results of the field screening analyses.

Section 5, Trash Assessment, discusses the procedure and results of the trash assessment.

Section 6, Laboratory Analytical Results, presents results of the laboratory analyses.

Section 7, Data Analysis, provides an analysis of field and laboratory data collected in 2009, as well as a comparison of past results.

Section 8, Follow-up Investigations, details the results of follow-up investigations undertaken to isolate the sources of water contamination detected during the field screening program.

Section 9, Summary and Recommendations, provides a summary of the program results and recommendations for follow-up actions.

Appendix A Historical Dry Weather Monitoring Table

Appendix B Photographs of Sampling Locations

Appendix C Laboratory Analytical Reports

Appendix D Field Data and Trash Assessment Sheets

Appendix E Site Investigation Maps

Appendix F 2010 Dry Weather Monitoring Locations and MS4 Map

Appendix G Field Observations Results

Appendix H Field Analytical Results

2 SAMPLING LOCATIONS

The City of Vista's 2010 Dry Weather Monitoring Program consisted of 29 designated primary monitoring stations, eight of which are designated sampling sites for laboratory analysis. If a primary station was dry, an alternate station with flowing or ponded water was selected. City staff added four alternate monitoring stations in 2010 including BV-6, BV-14, BV-19, and MV-2A. Of the 29 primary monitoring stations 22 had sufficient flow or ponded water to collect samples and seven sites were dry. Sites AH-31, AH-34, AH-37, BV-7A, BV-15, BV-32, MV-3 were dry, and alternate sites G-6, BV-34, BV-36, BV-14, BV-6 and BV-19 were sampled. A total of 39 sites (primary and alternate) were visited for purposes of collecting field screening and/or analytical samples. This is summarized in Table 2-1 below.

Table 2-1 Summary of Visits to Targeted Field Screening Sites

Total Sites Visited	39
Primary Sites Visited	29
Alternate Sites Visited	10
Primary Sites w/ Ponded or Flowing Water	22
Alternate Sites w/ Ponded or Flowing Water	6

Table 2-2 provides the site name, location, conveyance configuration, land uses, hydrological subarea (HSA), and GPS coordinates of the sampling locations organized by hydrologic area. Sites are labeled according to their respective drainage area using the following abbreviations:

AH = Agua Hedionda

SS = Sunset (Agua Hedionda)

BV = Buena Vista

MV = Monte Vista (Buena Vista)

G = Guajome Lake (San Luis Rey)

A complete map of the sampling locations and drainage basins is included as Appendix F. Photographs of sampling locations are included as Appendix B.

TABLE 2-2
2010 DRY WEATHER MONITORING STATIONS

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
Agua Hedionda HA							
AH-8A	Between 632 and 636 Sycamore Avenue, north of Thibodo Road/Plumesa Avenue	Outlet	Commercial	None	904.32	33.16641	-117.21544
AH-9	Shadowridge and Antigua Drive in Buena Vista Park, northeast side of pond	Outlet	Residential	Parks	904.31	33.15865	-117.24642
AH-17	Southeast of the Faraday Street and Brookhaven Pass intersection, in the corner of the detention basin	Outlet	Residential	Commercial	904.31	33.14003	-117.24637
AH-21	2687 South Melrose Drive (southern end of Melrose Drive)	Outlet	Industrial	None	904.31	33.13534	-117.24466
AH-30	Southwestern corner of Chaparral Drive and Thibodo Road intersection	Earthen Channel	Residential	None	904.32	33.17023	-117.22548
AH-31	Live Oak Road near southern intersection with Cordoba Way, west sidewalk by golf course fence	Manhole	Residential	None	904.31	33.16715	-117.23827
AH-32	Southwest corner of the La Mirada Drive and Sycamore Avenue intersection	Manhole	Industrial	None	904.31	33.15156	-117.22630
AH-33	East end of La Mirada Drive off of Business Park Drive, in canyon by 2260 La Mirada Drive	Outlet	Industrial	None	904.31	33.15225	-117.23074
AH-34*	West end of Keystone Way, near Scott Street	Manhole	Industrial	None	904.31	33.13576	-117.23425
AH-35	Across from 1210 Activity Drive	Manhole	Industrial	Agricultural	904.31	33.14406	-117.21800
AH-36	West side of Cottontail Road, southwest of Mapleleaf Drive	Outlet	Residential	Parks	904.32	33.15912	-117.22548
AH-37*	Southeast corner of the Green Oak Road and South Melrose Drive intersection	Manhole	Residential	None	904.31	33.15503	-117.24137

TABLE 2-2
2010 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
AH-38 *	South side of Shadowridge Drive, east of White Birch Drive	Manhole	Residential	None	904.31	33.15786	-117.24758
SS-1	South side of Branding Iron Circle, west of Melrose Drive	Outlet	Residential	None	904.31	33.18235	-117.25365
Buena Vista Creek HA							
BV-1	Behind 4241 Tiberon Drive	Outlet	Residential	None	904.21	33.18271	-117.28387
BV-4	Across the street from 1725 Hacienda Drive, south of the fence, in the canyon	Outlet	Commercial	Residential	904.21	33.18780	-117.27434
BV-7A*	West sidewalk of South Melrose Drive, south of Hacienda, next to gas station	Manhole	Commercial	None	904.22	33.19300	-117.25372
BV-6*	Hacienda Drive and Breeze Hill Drive	Natural Creek	Residential	Commercial	904.22	33.19384	-117.26051
BV-8	Olive Avenue and Goetting Way, southwest corner	Concrete Channel	Residential	Commercial	904.22	33.20350	-117.24564
BV-10	Northwest corner of Eucalyptus Avenue and Escondido Avenue intersection	Concrete Channel	Residential	Commercial	904.22	33.20242	-117.23605
BV-12 *	Brengle Terrace Park, across from 1425 Vale Terrace Drive, west side of bridge	Earthen Channel	Residential	Parks	904.22	33.20639	-117.21933
BV-14*	North Santa Fe Avenue and Weston Circle	Catch Basin	Residential	None	904.22	33.22313	-117.24597
BV-15 *	Northwest of the Canenea Avenue and Citrus Avenue intersection	Outlet	Residential	Commercial	904.22	33.21770	-117.24340
BV-18	Brengle Terrace Park, northwest side	Natural Creek	Residential	Parks	904.22	33.21044	-117.22496

TABLE 2-2
2010 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
BV-19*	Behind 1040 East Vista Way	Earthen Channel	Residential	None	904.22	33.21320	-117.22943
BV-24	1427 Foothill Drive	Outlet	Residential	None	904.22	33.21571	-117.21909
BV-30	Parking lot (business: Boomer's) east of Grapevine Road, south of Date Street	Manhole	Residential	None	904.21	33.19243	-117.27395
BV-31	Southwest corner of the North Melrose Drive and Copper Drive intersection	Manhole	Residential	Commercial	904.22	33.19910	-117.25601
BV-32	Olive Avenue and Maryland Drive, southwest corner of Washington Middle School's back parking lot, in fenced area (access from 821 Silver Drive)	Outlet	Residential	None	904.22	33.20272	-117.25966
BV-33	North side of West Los Angelos Drive, near North Santa Fe Avenue	Manhole	Residential	Commercial	904.22	33.21198	-117.24572
BV-34 *	Across from 220 Huff Street, next to sidewalk	Manhole	Residential	Industrial	904.21	33.19162	-117.27726
BV-35 *	Northeast corner of the Palomar Place and East Vista Way intersection, in sidewalk by bus stop	Manhole	Residential	None	904.22	33.22333	-117.22600
BV-36 *	In front of 128 Townsite Drive, east of North Santa Fe Avenue	Manhole	Residential	Parks	904.22	33.21144	-117.24394
MV-2A*	Monte Vista Drive and Cypress Drive-NW Corner	Outlet	Residential	None	904.22	33.19012	-117.22094
MV-3 *	Southeast corner of the Escondido Avenue and South Santa Fe Avenue intersection, on sidewalk	Manhole	Commercial	Residential	904.22	33.19369	-117.23432
Lower San Luis HA							
G-3	North end of Calle Jules	Outlet	Residential	None	903.11	33.22679	-117.22972

TABLE 2-2
2010 DRY WEATHER MONITORING STATIONS (CONTINUED)

Site Name	Location	Conveyance	Primary Land Use	Secondary Land Use	Hydrologic Subarea	Latitude	Longitude
G-4	Northwest corner of the Warmlands Avenue and Vista Grande Drive intersection	Outlet	Residential	None	903.11	33.23335	-117.22420
G-5	North Santa Fe Avenue, south of Camino Largo, in bike lane on east side of the street (just north of storm drain on sidewalk)	Manhole	Residential	Commercial	903.11	33.23251	-117.24966
G-6 *	Museum Way, west of North Santa Fe Avenue, in front of Guajome Park Academy, by the fence	Outlet	Residential	Commercial	903.11	33.23052	-117.25066

Note: * Alternate sites.

3 FIELD AND LABORATORY ANALYTICAL METHODS

3.1 Field Screening Procedures and Methods

Field screening techniques consist of qualitative field observations, flow measurement, and quantitative field analyses of selected water quality parameters. Weather conditions, time since last rainfall, and the type of stormwater conveyance are recorded as well. Specific observations and results of the field water quality analyses are documented on field datasheets, which also serve as a record of the field visit. Field datasheets are completed for every site visit regardless of whether or not samples were collected. The type of field visit is recorded by selecting the appropriate check boxes associated with each of the different types of visits including field screening, confirmation of an exceedance, or an IC/ID follow-up visit. A confirmation visit is a revisit of the original site, whereas an IC/ID follow-up is an upstream investigation. Datasheets from the 2010 Dry Weather Monitoring Program are included as Appendix D.

Field screening and analyses were conducted at each monitoring station according to the following procedures and methods:

Qualitative Observations

Qualitative observations are intended to provide a general assessment of the site and can be helpful in assessing a site for potential illicit discharges and connections. The following observations are conducted and documented on field datasheets and include light conditions, odor, color, clarity, the presence of floatable materials, visible deposits or stains, vegetation, and biological organisms. Evidence of present or past illicit connections and illegal discharges to the storm drain system can also be discovered through careful field observations. Each field screening location is photographed to document site conditions. Photographs are included in Appendix B.

Flow Measurement

Flow measurements can help estimate pollutant mass loading, prioritize storm drains for future investigation, and identify significant changes in a discharge that may be indicative of an illegal discharge. Various field methods are used in formulas to estimate the flow rate. These include measuring the velocity, depth, and width of the flowing water; recording the amount of time required to fill a bottle of known volume with sample water; or, if measuring flow within a cylindrical pipe, measuring the pipe diameter as well as the depth and velocity of the flow. Low levels of flow may also be assessed visually.

Field Water Quality Analyses

At each site with ponded or flowing water, water samples were collected and analyzed in the field for the following constituents:

- Specific Conductance
- Temperature
- pH
- Turbidity
- Surfactants, measured as methylene blue active substances (MBAS)*
- Nitrate-Nitrogen (Nitrate-N)
- Ammonia-Nitrogen (Ammonia-N)
- Orthophosphate-Phosphorus (Orthophosphate-P)

* Surfactants are also referred to as detergents.

The methods used to perform the above field analyses, along with the reporting limit, range, and accuracy of each method, are listed in Table 3-1.

TABLE 3-1
FIELD ANALYTICAL METHODS

Parameter	Method	Reporting Limit	Range	Accuracy
Specific Conductance	YSI Environmental Model 556 Multi Probe System***	0.01 mS/cm	0 – 200 mS/cm	± 0.5 % of reading or 0.0001 mS/cm whichever is greater
Temperature	YSI Environmental Model 556 Multi Probe System***	0.1°C	-5.0°C – 70.0°C	± 0.2°C
pH	YSI Environmental Model 556 Multi Probe System**	0.01	0.00 – 14.00	± 0.2 pH units
Turbidity	Hach 2100Q Portable Turbidimeter	0.01 NTU	0 to 1000 NTU	± 2% of the reading plus stray light reading
Surfactants	CHEMetrics SAM I-2017 Detergents Single Analyte Meter - Detergents (methylene blue active substances) Vacu-vials (K-9423)	.25	0.25 ppm – 2.50 ppm	± 30%of practical detection limit
Nitrate-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Nitrate 3 Vacu-vials® (K-6933) Cadmium reduction[3]***	1.13 mg/L**	1.13 mg/L – 113 mg/L**	± 30%of practical detection limit[4]
Ammonia-N	CHEMetrics V-2000 Multi-Analyte LED Photometer – Ammonia 3 Vacu-vials® (K-1403) Salicylate***	0.100 mg/L**	0.10 mg/L – 3.000 mg/L**	Varies with measured concetration[4,5]
Ortho-phosphate-P	CHEMetrics V-2000 Multi-Analyte LED Photometer – Phosphate 2 Vacu-vials® (K-8513) Stannous chloride chemistry[6]***	0.098 mg/L**	0.098 mg/L – 2.608 mg/L**	Varies with measured concetration[4,5]

Notes:

EC = electrical conductivity

mS/cm = millisiemens per centimeter

°C = Degrees Celsius

NTU = nephelometric turbidity unit

mg/L = milligrams per liter

LED = light-emitting diode

[1] Functional sensitivity (FS) represents the lowest limit at which quantitative information is reliable. FS is estimated as the mean concentration for a spiked sample whose coefficient of variance (CV) is 20%. CV is the standard deviation divided by the mean.

[2] ± 0.13 for the range of 0.0 to 1.0 mg/L, ± 0.25 mg/L for the range of 1.0 to 2.0 mg/L and 0.5 mg/L for the range of 2.0 to 3.0 mg/L.

[3] This method determines the concentration of nitrate in mg/L NO_3. To determine the amount of nitrate-nitrogen, the concentration of nitrogen must be adjusted for the presence of oxygen in the NO_3 molecule. Therefore, the result is multiplied by a conversion factor of 0.226, the ratio of the molecular weight of N (14g/mol) to NO_3 (62 g/mol). The practical detection limit for nitrate is 5.0 mg/L; however, the practical detection limit for nitrate-nitrogen is lowered due to the conversion.

[4] Practical Detection Limit (PDL) is defined as the lower limit of the stated test range.

[5] Percent error adjusts as follows: ±30% at PDL, ±20% for 25% of full range, ±10% for 75% of full range, ±10% for 120% of full range.

[6] This method determines the concentration of orthophosphate in mg/L PO_4. To determine the amount of orthophosphate-P, the concentration of phosphate must be adjusted for the presence of oxygen in the PO_4 molecule. Oxygen is 67.4% of phosphate by mass but is not a plant nutrient in this form. Therefore, the result is multiplied by a conversion factor of 0.326, the ratio of the molecular weight of P (31g/mol) to PO_4 (95 g/mol). The practical detection limit for orthophosphate is 0.3 mg/L; however, the detection limit for orthophosphate-phosphorus is lowered due to the conversion.

*Extended ranges in chemical analyses can be achieved through dilutions. Accuracies decrease proportionally with further dilutions.

** Readings below the PDL have increased percent error; measurements are reported, but are flagged as being below the PDL.

***Test method information taken from CHEMetrics manuals, available online at www.chemetrics.com.

3.2 Laboratory Analytical Methods

In accordance with Order R9-2007-0001, laboratory samples were collected at eight sites, representing 29 percent of the sites where ponded or flowing water was observed. Samples were submitted to Encina Wastewater Authority (EWA), a laboratory certified through the Environmental Laboratory Accreditation Program (ELAP), for analysis of the following constituents:

- Total hardness
- Oil and grease
- Diazinon
- Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Total Coliform bacteria
- Fecal Coliform bacteria
- *Enterococcus* bacteria

EWA sent some of the required testing to EnviroMatrix Analytical (EMA), and Clinical Laboratory of San Bernardino, Inc, both certified laboratories by the California Department of Health Services for analysis. This included Oil and Grease, Dissolved Metals, Diazinon and Chlorpyrifos.

The methods used to perform each of the above laboratory analyses along with method reporting limits and holding times are listed in Table 3-2.

TABLE 3-2
LABORATORY ANALYTICAL METHODS

Analyte	Analytical Method	Method Reporting Limit	Maximum Holding Time [1]
Oil and Grease	EPA 1664A	5 mg/L	28 days
Total Hardness	SM 2340C	10 mg/L	14 days
Dissolved Cadmium	EPA 200.8	0.001 mg/L	24 hours
Dissolved Copper	EPA 200.8	0.010 mg/L	24 hours
Dissolved Lead	EPA 200.8	0.005 mg/L	24 hours
Dissolved Zinc	EPA 200.8	0.020 mg/L	24 hours
Diazinon	EPA 8141A	0.05 µg/L	7 days
Chlorpyrifos	EPA 8141A	0.05 µg/L	7 days
Total Coliforms	SM 9221B	10 – 1,600,000 CFU/100 mL	6 hours
Fecal Coliforms	SM 9222D	10 – 160,000 CFU/100 mL	6 hours
Enterococci	EPA 1600	10 – 160,000 CFU/100 mL	6 hours

Notes:
µg/L = micrograms per liter
CFU/100 mL = colony-forming units per 100 milliliters
[1] Maximum Holding Time values listed here apply to samples collected and preserved in accordance with the quality assurance and quality control procedures listed in Section 3.3.2.

3.3 Quality Assurance and Quality Control (QA/QC)

The QA/QC Plan utilized for this project includes the United States Environmental Protection Agency (EPA) approved test methods for the field and laboratory analysis of water samples, calibration of test equipment, and pre- and post-rinsing of sample collection containers and test vials. Key components of the QA/QC Plan are described below.

3.3.1 Field Sampling and Analysis QA/QC

The pH meter is calibrated daily as with Potassium Acid Phthalate with water (pH-7) and Dibasic Sodium Phosphate and Monobasic Potassium Phosphate with water (pH-4) with pH values equal to 7.00 ± 0.01, 4.00 ± 0.01. The glass electrode tube is kept moist to preserve the meter's accuracy during fieldwork. The turbidity and conductivity meters are calibrated weekly using standard calibration solutions.

Field sample collection containers are rinsed first with distilled water and then with the sample water prior to sample collection. Upon completion of sampling and testing at each site, sample collection containers, test vials, and ion-sensitive electrodes were rinsed twice with distilled water and dried.

3.3.2 Laboratory Sampling and Analysis QA/QC

Samples for laboratory analysis were collected concurrently with field samples and used the same sampling procedures. Pre-sterilized sample bottles are obtained from the laboratory and thus do not require rinsing with sample water prior to sample collection. After sample collection, all laboratory samples are kept in a cooler on ice until picked up by the lab. Strict chain of custody procedures are followed, and samples are delivered and analyzed within the appropriate holding times, as listed in Table 3-2. Completed chain of custody forms are included in Appendix C along with laboratory analytical reports.

Duplicate samples are used to assess laboratory or field precision and are collected in the field along with the site sample. Following this procedure, City staff collected a duplicate laboratory sample at Dry Weather Monitoring site, G-5. Results from the analysis of the duplicate sample are included in Section 6. Samples for Total and Fecal Coliform and Enterococcus were analyzed in duplicate at different aliquots to assure coverage of a wide range of valid bacteria values. At EWA, quality control samples (blanks and duplicates) are collected and analyzed per every ten samples.

3. 4 Follow-up Action Levels

Based on dry weather field screening and laboratory analytical results, immediate follow-up investigations are sometimes necessary to identify and eliminate pollutant sources. In order to determine whether an immediate source investigation is necessary, numeric action levels and best professional judgment are used to interpret the field screening and laboratory results. During all site visits, sampling staff also investigates the immediate vicinity of the site to help in assessing pollutant sources if any. If visual and/or analytical evidence of gross contamination are present at a site (e.g., substantial petroleum sheen, extremely high ammonia concentration, evidence of a sewage release, or other significant action level exceedance), then an immediate source identification investigation is initiated. For sites that exceed numeric action levels but are not perceived as an immediate threat to water quality, a re-sampling is conducted within two business days of receiving field screening/or and laboratory analytical results; this is termed the confirmation sampling. When confirmation sampling confirms the exceedance of action levels,

a full follow-up investigation is conducted. This includes moving upstream in the drainage system to identify possible sources and when necessary collecting samples to measure the parameter(s) in exceedance. Where feasible, upstream investigations are conducted on the same day the confirmatory samples are collected.

The results of these investigations are included in Section 8 of this report. Recommendations based on these investigations are included in Section 9.

The following three methods are employed to determine whether immediate or comprehensive follow-up investigations are necessary: (1) Numeric Action Levels; (2) California Toxics Rule (CTR); and (3) Best Professional Judgment. All three approaches are described in detail below and presented in Table 3-4.

Numeric Action Levels

Numeric action levels are used as the primary approach for interpreting pH, orthophosphate-P, nitrate-N, ammonia-N, surfactants, oil and grease, diazinon, chlorpyrifos, total coliforms, fecal coliforms, and *Enterococcus* analytical results (see Table 3-4). Prior to the 2003 dry weather season, no standard action levels had been adopted for use throughout San Diego County. D-MAX calculated the current set of numeric action levels, which were based on county-wide sampling data and have been used by all Copermittees from 2003 through 2009. The bacteria action levels were modified prior to the 2010 season after a historical evaluation of bacteria data was conducted by the Dry Weather Monitoring workgroup in FY 08-09. The new levels are reflected in Table 3-4.

California Toxics Rule

The CTR criterion maximum concentration (CMC) is used to determine appropriate action levels for dissolved trace metals, including cadmium, copper, lead, and zinc. The CTR equations, as provided in USEPA Federal Register Doc. 40 Code of Federal Regulations (CFR) Part 131, are used to calculate benchmarks based on the total hardness of the sampled water, with the action levels increasing as hardness increases. More information on the CTR is available at http://www.epa.gov/region09/water/ctr.

Best Professional Judgment

Best professional judgment is utilized as the primary approach for interpreting turbidity, water temperature, and conductivity and as a secondary approach for interpreting the results of all other field and laboratory analyses. Under best professional judgment, the need for a follow-up investigation is left to the discretion of the field crew performing the monitoring. Best professional judgment may indicate that results which either exceed certain action levels or statistical outliers may be the result of natural or background factors.

TABLE 3-3
ACTION LEVELS FOR FIELD SCREENING AND LABORATORY PARAMETERS

Field Screening Analytes	Action Levels[1]	Source/ Notes
pH	<6.5 or >9.0	Basin Plan[2], with allowance for elevated pH due to excessive photosynthesis. Elevated pH is especially problematic in combination with high ammonia.
MBAS (mg/L)	1.0	Basin Plan, with allowance based on Workgroup field experience and possible field reagent interferences
Orthophosphate-P (mg/L)	2.0	USEPA Multi-sector General Permit
Nitrate-N (mg/L)	10.0	Basin Plan and drinking water standards
Ammonia-N (mg/L)	1.0	Based on Workgroup experience. May also consider unionized ammonia fraction.
Turbidity (NTU)	Best Professional Judgment	WQOs relevant to inland surface waters are not available. Base judgment on channel type and bottom, time since last rain, background levels, and most importantly visual observation (e.g. unusual colors and lack of clarity) and unusual odors.
Temperature (°C)	Best Professional Judgment	Base judgment on season, air temperature, channel type, shading, etc.
Conductivity (mS/cm)	Best Professional Judgment	Conductivity may be highly elevated in some regions due to high TDS, groundwater exfiltration to surface water, mineral dissolution, drought, and seawater intrusion. Normal source ID and discharge elimination work is not effective in these situations. Knowledge of area background conditions is important. Values <0.75 may indicate excessive potable water discharge or flushing.
Laboratory Analytes	**Action Levels**	**Source/ Notes**
Oil and Grease (mg/L)	15	USEPA Multi-sector General Permit. If petroleum sheen is observed, the sample should be collected from the water surface. Visual observations may justify immediate investigation.
Diazinon (µg/L)	0.5	Response to diazinon and chlorpyrifos levels above 0.5 µg/L should focus on education and outreach to potential dischargers in the target drainage basin. Highly elevated levels should be investigated aggressively as with other potential IC/IDs.
Chlorpyrifos (µg/L)	0.5	
Dissolved Cadmium (µg/L)	California Toxics Rule	Use California Toxics Rule, 1-hour criteria to determine appropriate action level for individual samples. Table provides benchmarks based on hardness and dissolved metals concentration. For example, at 300 mg/L hardness the following action levels would apply: Cd – 14 ppb; Cu – 38 ppb; Pb – 209 ppb; and Zn – 297 ppb.
Dissolved Copper (µg/L)	California Toxics Rule	
Dissolved Lead (µg/L)	California Toxics Rule	
Dissolved Zinc (µg/L)	California Toxics Rule	
Total Coliforms (MPN/100 mL)	130,000	Bacteria levels in many storm drains are likely to exceed public health guidance criteria. Use confidence interval test and best professional judgment to identify conveyances for source ID. These action levels were modified prior to the dry weather season in 2010 after a historical evaluation of bacteria data was conducted by the Dry Weather Monitoring Workgroup in FY 08-09. See City of Vista FY 08-09 JURMP Annual Report-section 7.0 IDDE for more information on the evaluation
Fecal Coliforms (MPN/100 mL)	13,000	
Enterococci (MPN/100 mL)	7,000	

Notes:

[1] The referenced action levels should not be the sole criteria for initiating a source identification investigation. Dry weather monitoring data should be interpreted using a variety of available information. Factors that should be considered include within-site and between-site sample variability.

[2] Basin Plan = Water Quality Control Plan for the San Diego Basin

WQO = Water Quality Objective

ppb = parts per billion

4 FIELD SCREENING RESULTS

The Dry Weather Monitoring Program was conducted by City staff from July through September 2010 during which a total of 39 sites (primary and alternate) were visited for purposes of collecting field screening and/or analytical samples. If a primary station was dry, an alternate station with flowing or ponded water was selected. Of the 29 primary monitoring stations 22 had sufficient flow or ponded water to collect samples and seven sites were dry. Sites AH-31, AH-34, AH-37, BV-7A, BV-15, BV-32, MV-3 were dry, and alternate sites G-6, BV-34, BV-36, BV-14, BV-6 and BV-19 were sampled. Confirmation visits and/or follow-up investigations were conducted at the 12 sites at which a field constituent was found to exceed its action level. Field data sheets for each site visit are included in Appendix D.

4.1 Qualitative Observations

Qualitative observations noted as part of routine dry weather monitoring visits are summarized below and presented in Appendix G.

Light Conditions
Light conditions were primarily overcast or cloudy, with four visits occurring during sunny weather.

Odor
Water samples from the majority of sites were odorless. One sample had a musty odor.

Color
Water samples taken from most of the sites were colorless, with the exception of one yellow and one brown water sample.

Clarity
Aside from negligible amounts of suspended particles, samples from most sites were clear. Five sites had slightly cloudy water.

Floatable Materials
Most sites were free of floatable material. Four sites had floating trash and three had bubbles or foam. One site had trash, bubbles, foam, an oily sheen, and leaves.

Deposits
Sediment, gravel, fine particulates, or a combination of these, were observed at almost all sites. There were no sites having stains or oily deposits. Only two sites were without any visible deposits.

Vegetation
Most sites had either normal or no vegetation. One site had excessive vegetation in the surrounding area. All earthen channels and natural creeks had normal vegetation, and sites lacking sunlight or soil typically did not contain vegetation.

Biology
The presence of aquatic flora and fauna can indicate healthy water conditions. Algal growth is an indicator of persistent water flow, and was present at 13 sites. Insects were seen at 17 sites, and many sites were home to other organisms including snails, fish, spiders, frogs, and crayfish.

4.2 Field Analytical Results

Field analyses are conducted at all sites with flowing or ponded water. The measured constituents are described below.

Flow rate quantifies the volume of fluid passing across a given surface per unit time. Flow rate measurements are needed to calculate the load or particular amount of a pollutant discharged.

Water temperature is needed to assess the significance of other parameters, such as pH and conductivity. Also, the aquatic habitat must remain within a certain temperature range in order to sustain sensitive aquatic life. In the field, water temperature is measured immediately upon sample collection at each site with ponded or flowing water.

The **pH** is an expression of acidity or alkalinity of a water sample. The pH of an aquatic system can affect a variety of chemical reactions, including the availability of nutrients and the solubility of chemical substances, particularly heavy metals.

Turbidity describes the clarity or cloudiness of a water sample, or the degree to which light is blocked by suspended material in the water. Turbid waters not only limit the amount of light that reaches submerged vegetation, thus reducing photosynthetic capacity, but excessive suspended particles can also absorb heat and increase water temperatures.

Specific Conductance (Conductivity) values indicate the total concentration of ions in an aquatic system and the ability of the water to conduct electricity. This parameter can be used to assess the mineral content of water and potentially help indicate the presence of dissolved pollutants.

Surfactant concentrations in water samples often reflect illegal discharge from industrial, commercial, or residential sources. Pollution resulting from surfactants alters the surface tension of water and disrupts the breathing mechanisms of fish gills and other aquatic organisms.

Ammonia-Nitrogen (ammonia-N) may indicate pollution from decomposing organic matter, agricultural or household fertilizer runoff, or the presence of sewage. Ammonia occurs naturally in the environment; however, in higher quantities it can become toxic to fish and other organisms.

Nitrate-Nitrogen (nitrate-N) is a common sign of nutrient pollution from agricultural or household fertilizer runoff. Nitrate pollution can cause excessive algal growth, resulting in oxygen depletion as the algae begin to decompose. This eventually suffocates other aquatic life. Nitrate is measured during field monitoring, and the amount of nitrate-N is derived using a conversion factor of 0.226. This process is explained in Note 3 of Table 3-1.

Orthophosphate-Phosphorus (orthophosphate-P) can be an indicator of nutrient pollution from agricultural or household fertilizer runoff, industrial chemicals, or detergents. Similar to nitrate-N, orthophosphate-P pollution can cause nutrient enrichment (eutrophication), stimulate algal growth, and thus deplete oxygen in the water to levels that are dangerous for aquatic life. Even low levels of orthophosphate-P can cause significant algal growth, as it is commonly the limiting nutrient in plant growth. During the field analysis, orthophosphate is measured and the amount of orthophosphate-P is calculated using a conversion factor of 0.326. This process is explained in Note 6 of Table 3-1.

A statistical summary of the routine field analytical results is presented in Table 4-2. Field screening results are presented in Appendix H. Graphs 4-1 through 4-9 are of the various parameters and appropriate action levels for follow-up investigations.

TABLE 4-1
FIELD ANALYSIS STATISTICAL SUMMARY [1]

Parameter (units)	Maximum	Minimum	Average	Median	Standard Deviation	Number of Exceed-ances	Graph Number
Flow Rate (gpm)	161.58	.03	24.2	2.15	49.4	0	4-1
Temperature (ºC)	26.35	17.9	22.13	22.46	2.37	0	4-2
pH	8.52	7.2	7.82	7.86	.4	0	4-3
Turbidity (NTU)	218	.16	24.5	2.55	47.94	0	4-4
Conductivity (mS/cm)	7.19	.81	2.40	1.75	1.63	0	4-5
Ammonia-N (mg/L)	1.52	.06*	.39	.24	.32	1	4-6
Surfactants (mg/L MBAS)	3.0	.12*	.46	.26	.54	1	4-7
Nitrate-N (mg/L)	54.02	1.77	10.78	5.6	14.0	8	4-8
Orthophosphate-P (mg/L)	1.36	.01*	.34	.16	.36	0	4-9

Notes:
gpm = gallons per minute
nd = not detected and below reporting limit
* Value was detected, but is below the reporting limit
[1] Calculations include complete routine visit data only. Confirmation visits, follow-up visits, and dry sites are not incorporated.

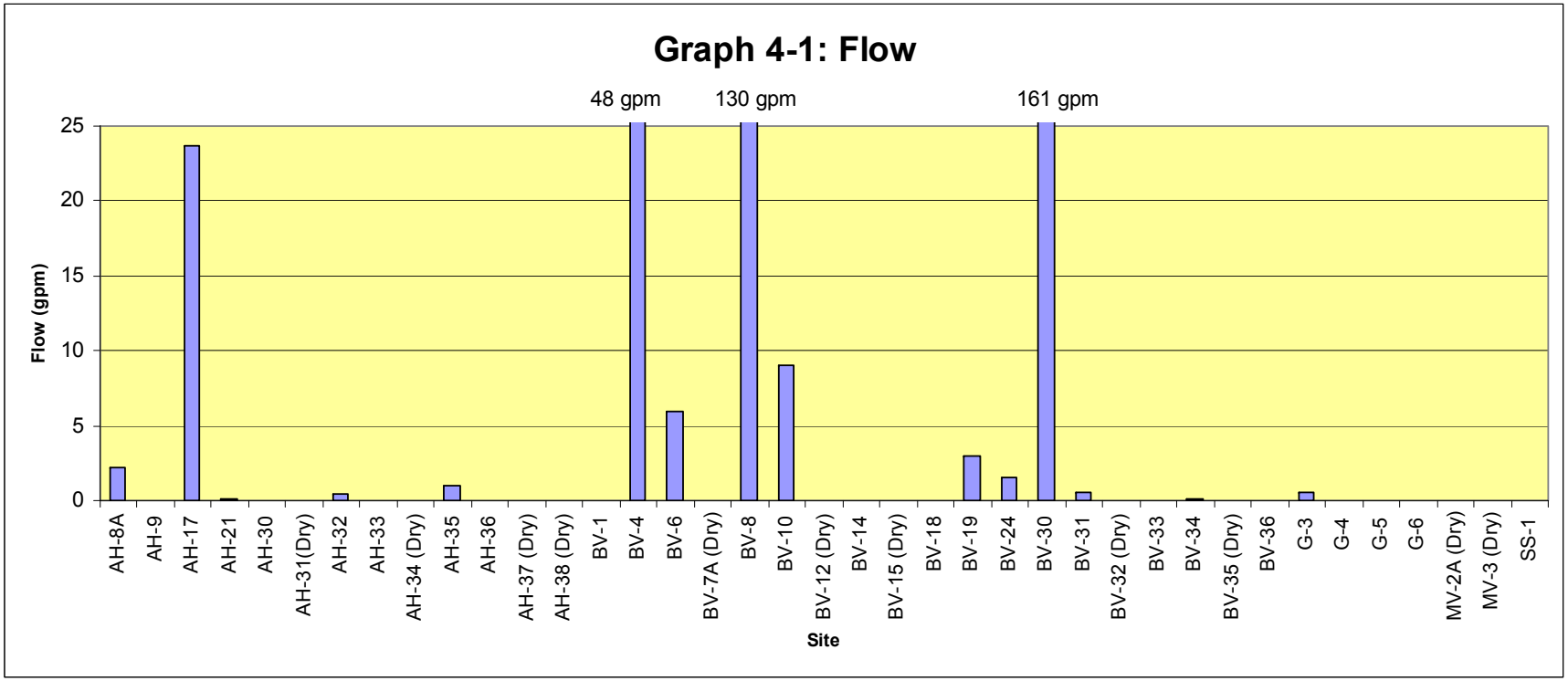
Graph 4-1: Flow
48 gpm
130 gpm
161 gpm
Flow (gpm)
25
20
15
10
5
0
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31(Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

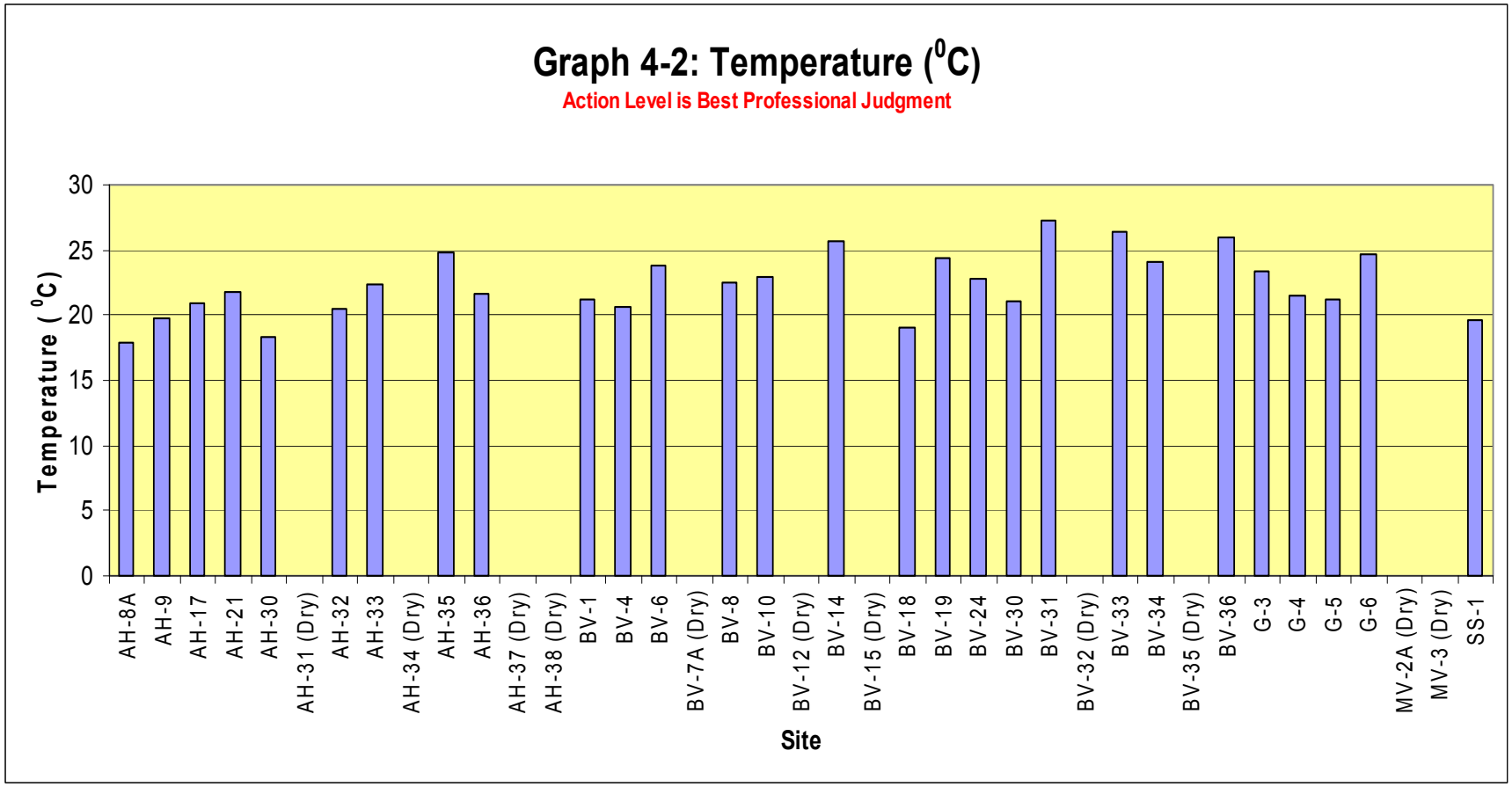
Graph 4-2: Temperature (^{0}C)
Action Level is Best Professional Judgment
Temperature (^{0}C)
30
25
20
15
10
5
0
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31 (Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

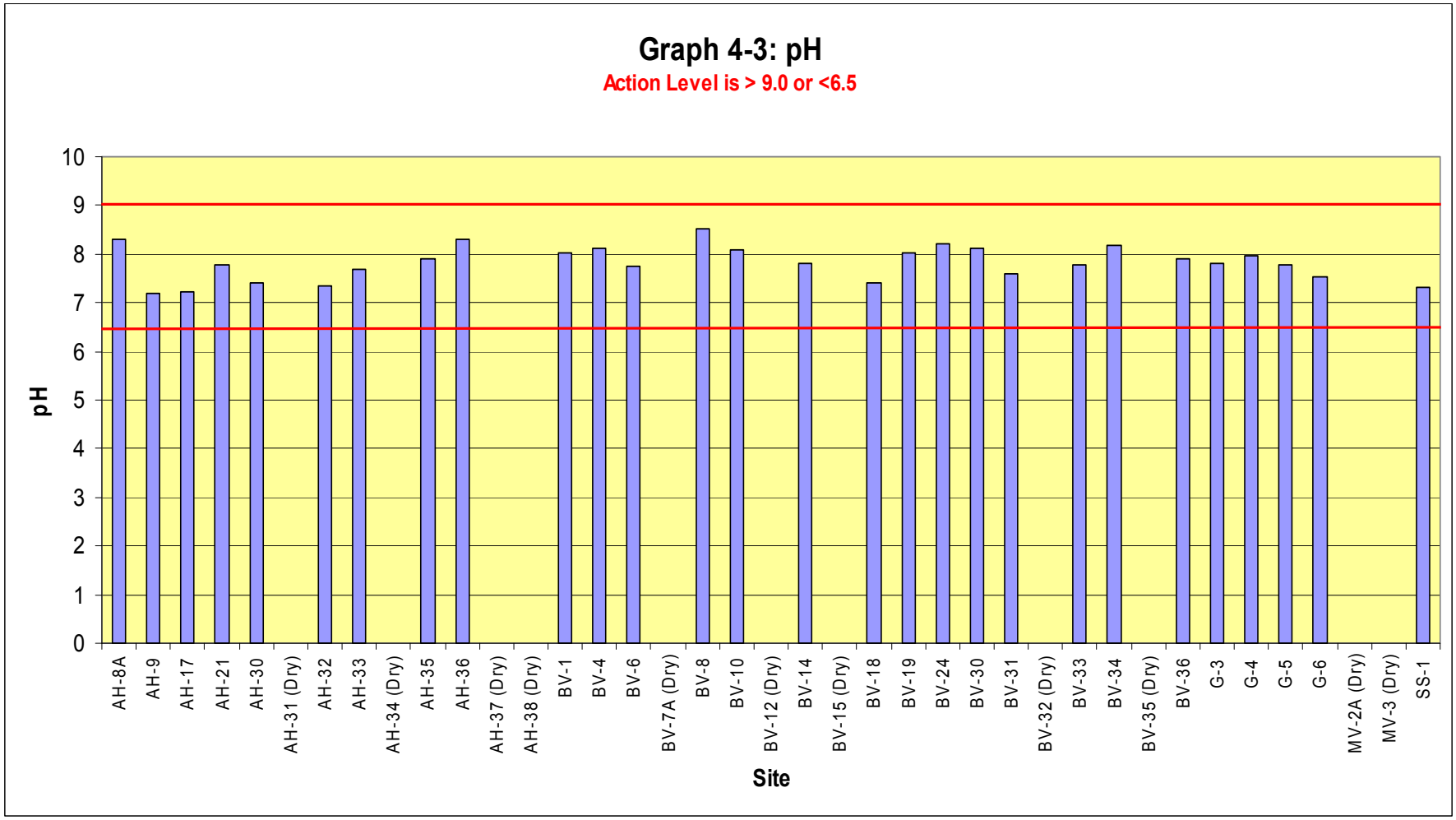
Graph 4-3: pH
Action Level is > 9.0 or <6.5
pH
10
9
8
7
6
5
4
3
2
1
0
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31 (Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

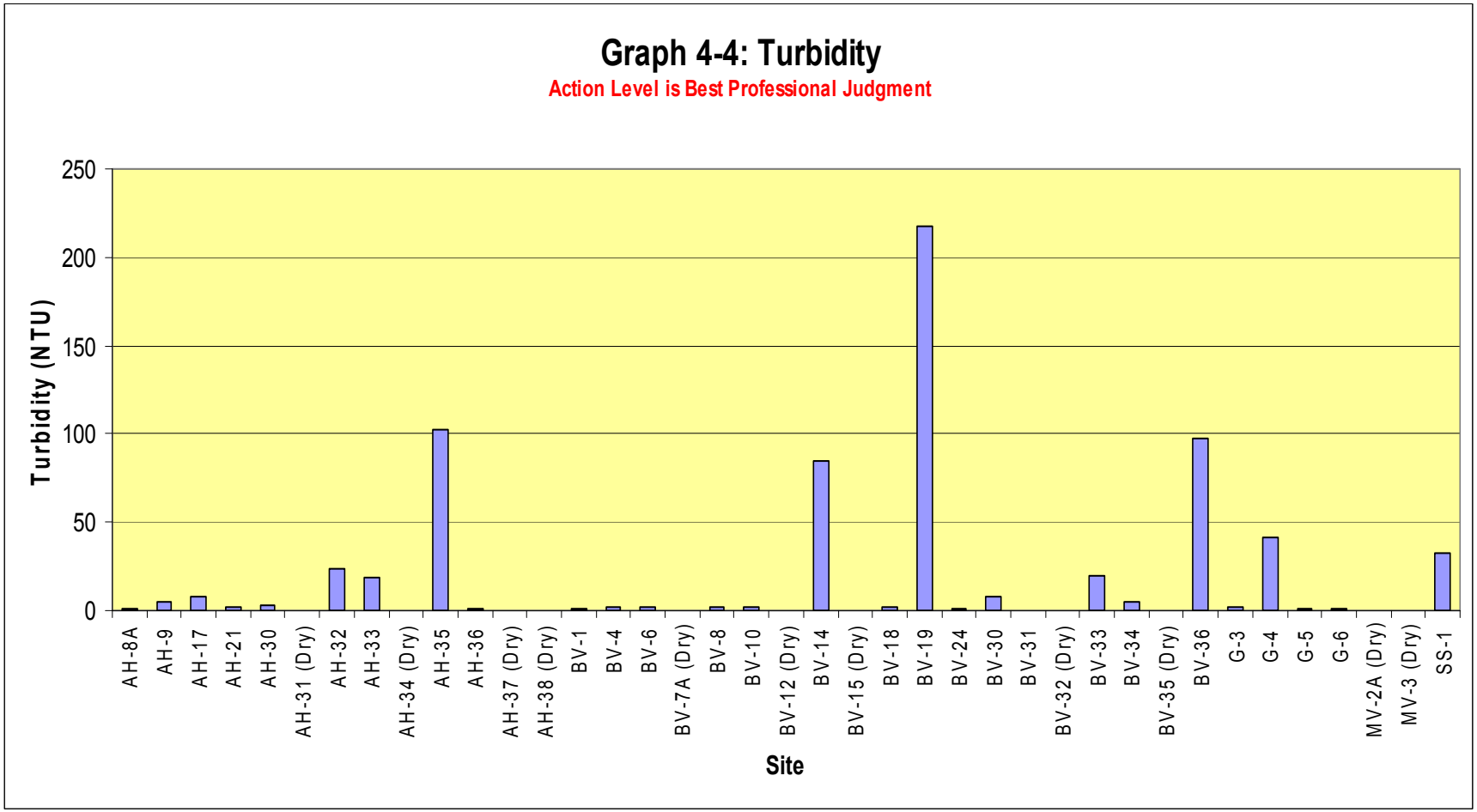
Graph 4-4: Turbidity
Action Level is Best Professional Judgment
Turbidity (NTU)
250
200
150
100
50
0
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31 (Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

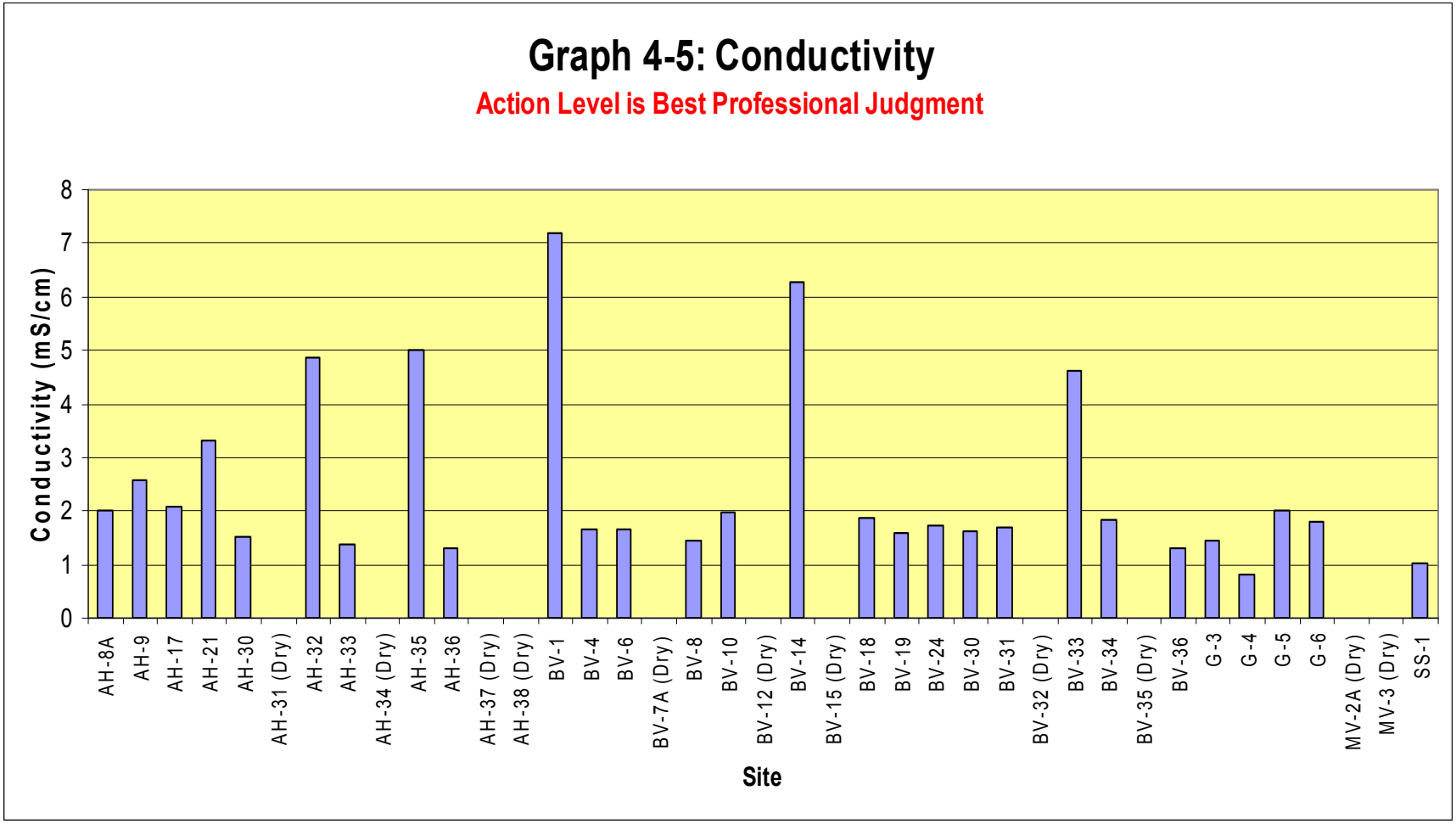
Graph 4-5: Conductivity
Action Level is Best Professional Judgment
Conductivity (mS/cm)
0
1
2
3
4
5
6
7
8
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31 (Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

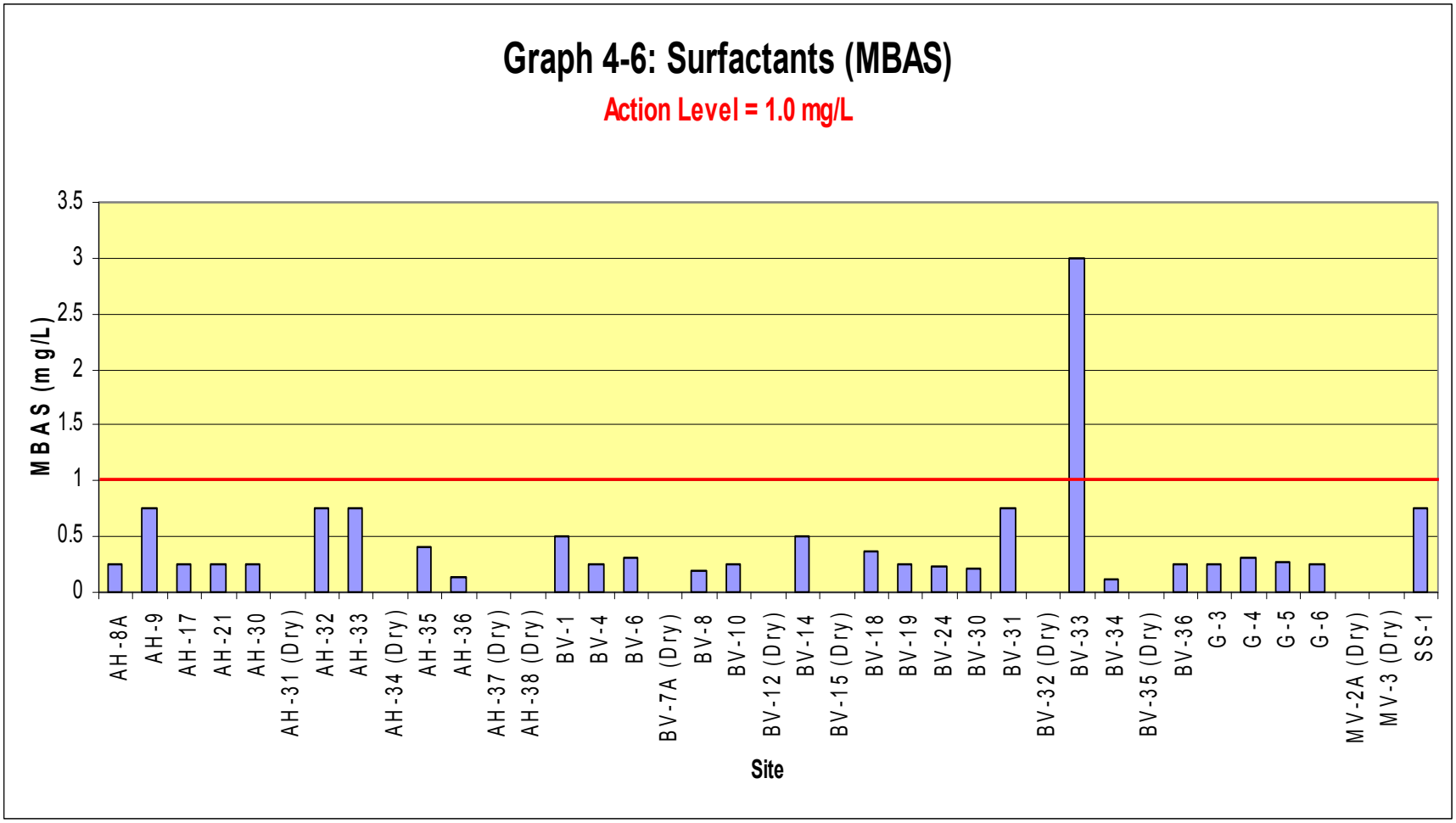
Graph 4-6: Surfactants (MBAS)
Action Level = 1.0 mg/L
MBAS (mg/L)
3.5
3
2.5
2
1.5
1
0.5
0
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31 (Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

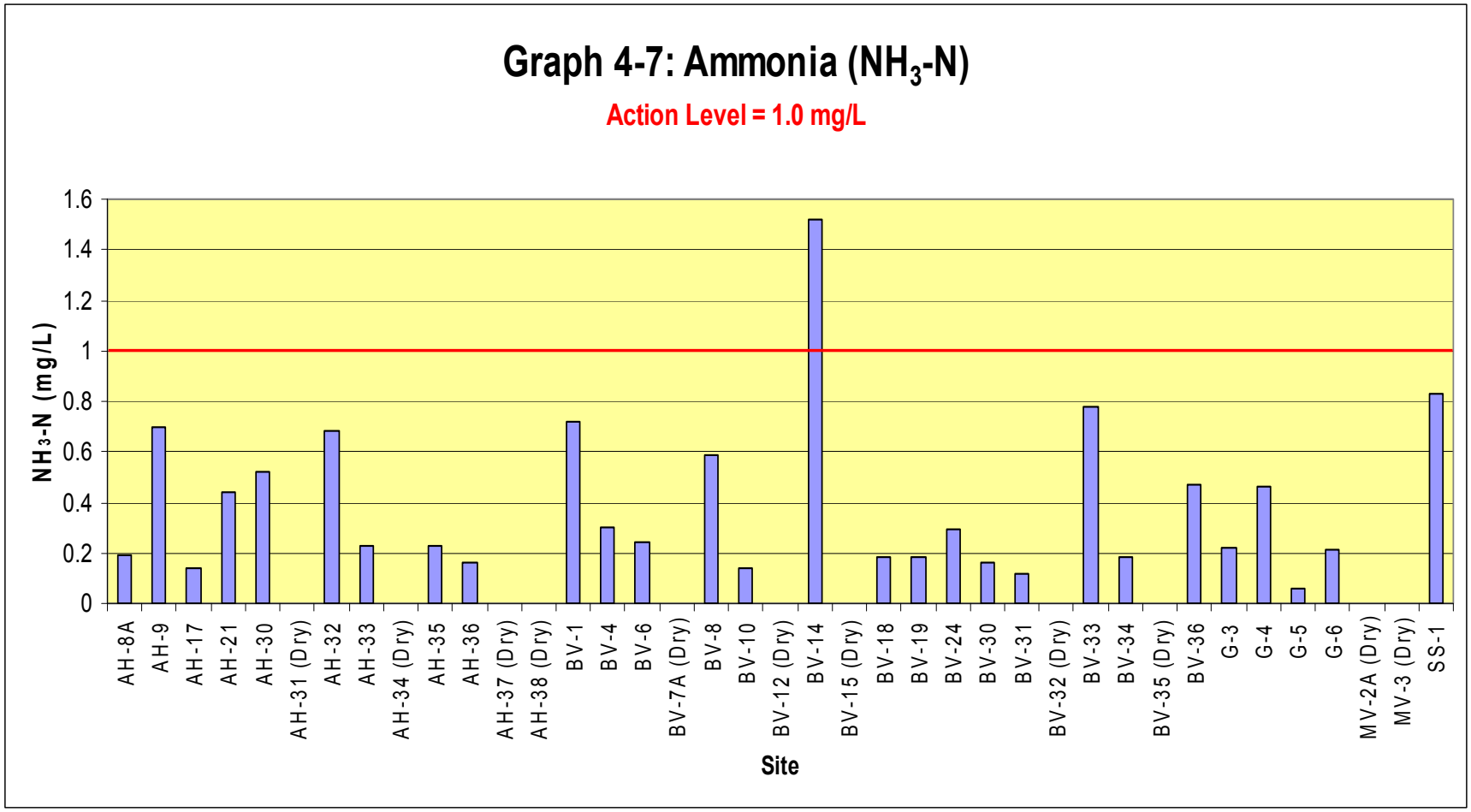
Graph 4-7: Ammonia (NH_3-N)
Action Level = 1.0 mg/L
NH_3-N (mg/L)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31 (Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

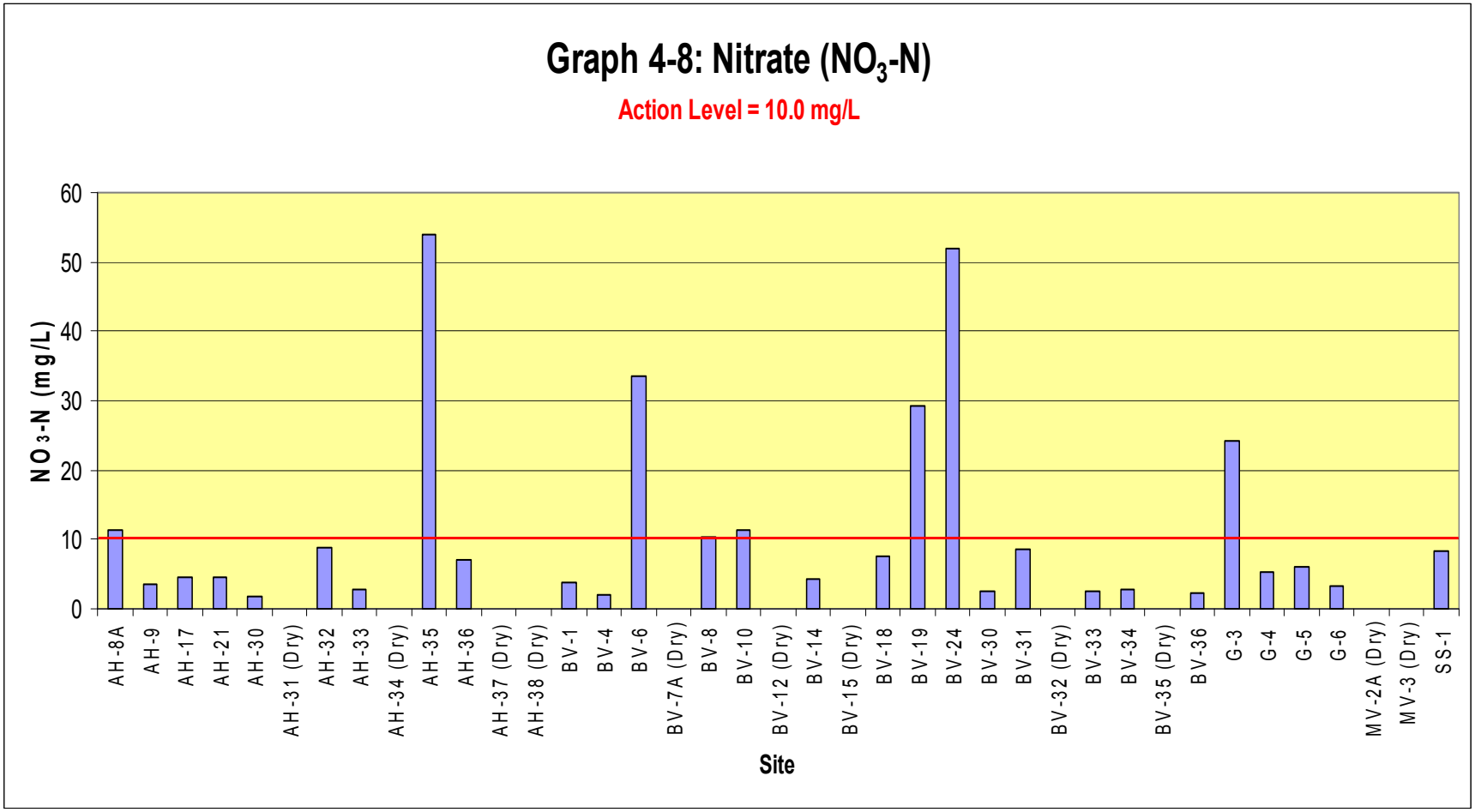
Graph 4-8: Nitrate (NO_3-N)
Action Level = 10.0 mg/L
NO3-N (mg/L)
60
50
40
30
20
10
0
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31 (Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

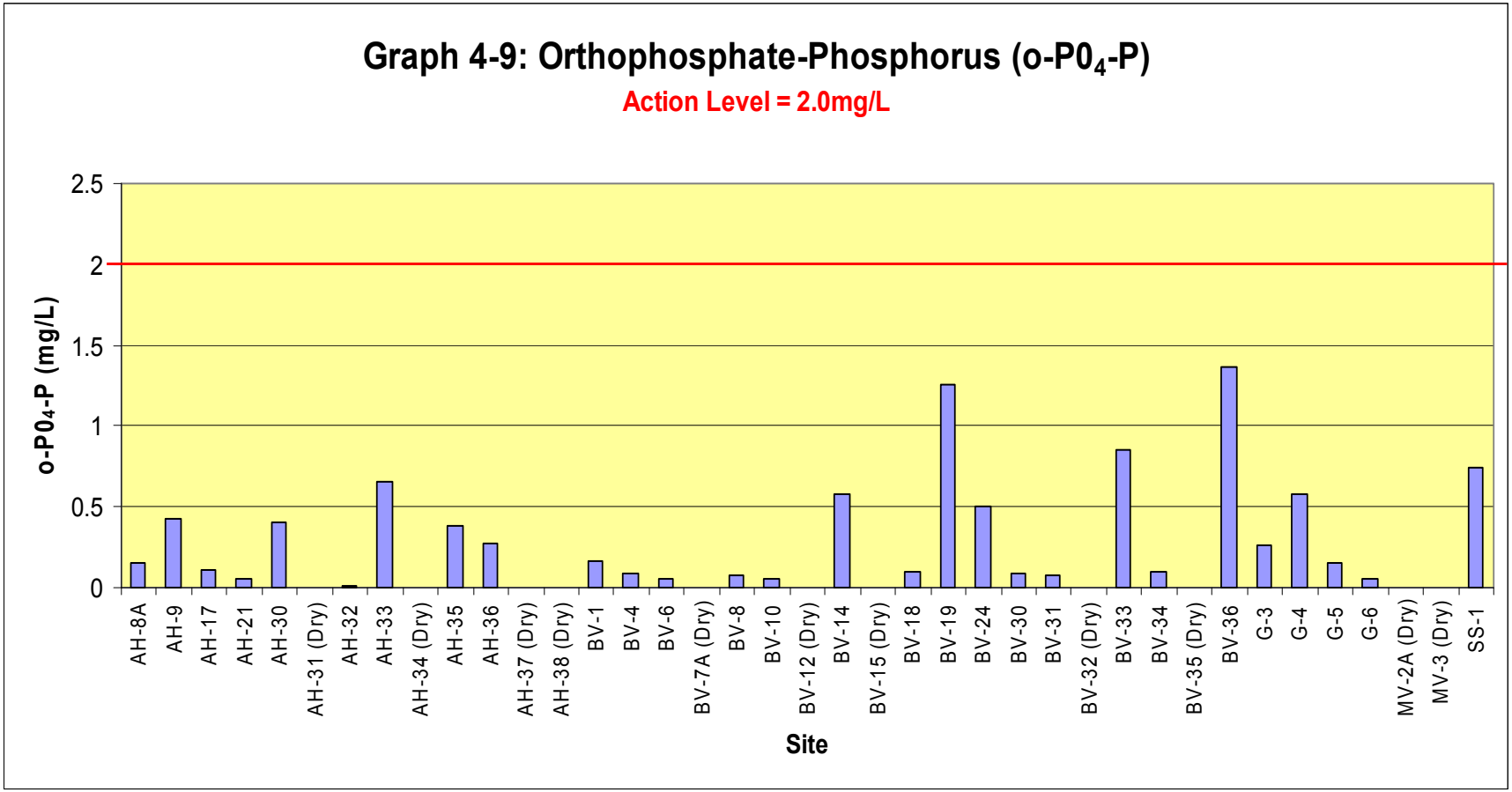
Graph 4-9: Orthophosphate-Phosphorus (o-P0$_4$-P)
Action Level = 2.0mg/L
o-P0$_4$-P (mg/L)
2.5
2
1.5
1
0.5
0
AH-8A
AH-9
AH-17
AH-21
AH-30
AH-31 (Dry)
AH-32
AH-33
AH-34 (Dry)
AH-35
AH-36
AH-37 (Dry)
AH-38 (Dry)
BV-1
BV-4
BV-6
BV-7A (Dry)
BV-8
BV-10
BV-12 (Dry)
BV-14
BV-15 (Dry)
BV-18
BV-19
BV-24
BV-30
BV-31
BV-32 (Dry)
BV-33
BV-34
BV-35 (Dry)
BV-36
G-3
G-4
G-5
G-6
MV-2A (Dry)
MV-3 (Dry)
SS-1
Site

5 TRASH ASSESSMENT

5.1 Regulatory Requirements

Section II.B.3.C.(7) of the Municipal Permit's Receiving Waters and Urban Runoff Monitoring and Reporting Program requires Copermittees to assess the presence of trash in receiving waters and urban runoff at each dry weather monitoring site. This trash assessment program is designed to provide information on the spatial extent and relative amount of trash present, as well at the nature and origin of the trash at the site.

5.2 Procedure and Definitions

The San Diego Copermittee Dry Weather Monitoring Workgroup developed a Trash Assessment Form to document the amount and extent of trash at each evaluated site. The form categorizes the site into one of five trash categories: optimal, suboptimal, marginal, submarginal, or poor. The form also addresses any potential threats that the trash may pose to human or aquatic health. For sites rating submarginal or poor, the form includes a section to record types, prevalence, potential routes, and sources of trash.

A qualitative estimate of the abundance of trash is made based upon a general impression of the site. The Trash Assessment Form's five categories are primarily qualitative descriptions of the amount and extent of trash although a number of trash pieces is also included in each category as a rough guideline. The five categories are defined as follows.

- Optimal: On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
- Suboptimal: On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
- Marginal: Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
- Submarginal: Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (~100-400 pieces). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
- Poor: Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

The threat to human health and threat to aquatic health is assessed at each site using the following definitions:

- *Threat to Human Health* – Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment.
- *Threat to Aquatic Health* – Large amount (50 pieces or more) of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large

amounts of settleable, degradable, and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence of large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment.

In the event that a site is noted as potentially posing a threat to human or aquatic health, additional descriptive comments are recorded in the "Comments" section of the Trash Assessment Form.

If a site is labeled as submarginal or poor, it is assessed for types of trash present (e.g., automotive, biohazard, food waste), which are ranked based on their prevalence and the potential threat to water quality. Lastly, the potential mechanism through which trash reached the site (e.g., dumping, littering, upstream sources) and the potential source of the trash (e.g., construction, commercial, transient) are noted.

5.3 Trash Assessment Results

The majority of sites visited in the City of Vista received an "optimal" trash rating, with 32 sites falling within this category. The second most frequent rating was "suboptimal" with six sites. One site was considered "Submarginal". None of the sites were considered to be "marginal" or "poor" in the trash assessment. Table 5-1 and Graph 5-1 summarize the trash assessment results. Figure 5-1 presents a map of sampling sites and corresponding trash assessments. Table 5-2 presents the breakdown of debris present at the "submarginal" site (BV-15).

TABLE 5-1
TRASH ASSESSMENT RESULTS

Optimal (32 sites)		**Suboptimal** (6 sites)	**Marginal** (0 sites)	**Submarginal** (1 site)	**Poor** (0 sites)
AH-8A	BV-12	AH-9	(None)	BV-15	(None)
AH-17	BV-14	AH-33			
AH-21	BV-18	BV-24			
AH-30	BV-19	BV-35			
AH-31	BV-30	G-3			
AH-32	BV-31	MV-3			
AH-34	BV-32				
AH-35	BV-33				
AH-36	BV-34				
AH-37	BV-36				
AH-38	G-4				
BV-1	G-5				
BV-4	G-6				
BV-6	MV-2A				
BV-7A	SS-1				
BV-8	BV-10				

GRAPH 5-1
2010 TRASH ASSESSMENT SUMMARY

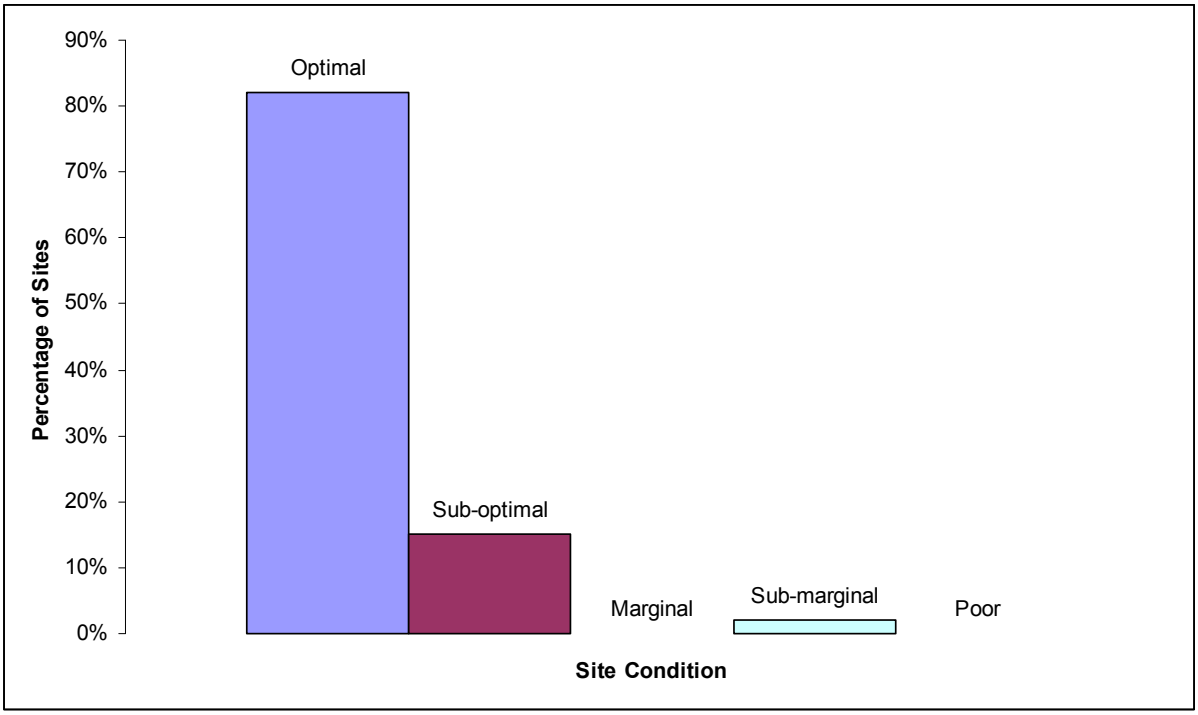

5.3.1 Submarginal Site

Site BV-15 is a concrete outlet located on the north side of Cananea Street. City staff observed significant amounts of trash including Food packaging and Food waste and some clothing. Due to types of trash present at the site, Staff believes it may be a homeless encampment site.

TABLE 5-2 BREAKDOWN OF SUBMARGINAL SITE TRASH

Site	Types of Trash	Ranking	Potential Route 1	Potential Source 1
BV-15	Food Waste	2	Littering	Transient
	Food Packaging	1	Littering	Transient
	Fabric/ Clothing	3	Littering	Transient

FIGURE 5-1
2010 TRASH ASSESSMENT RESULTS

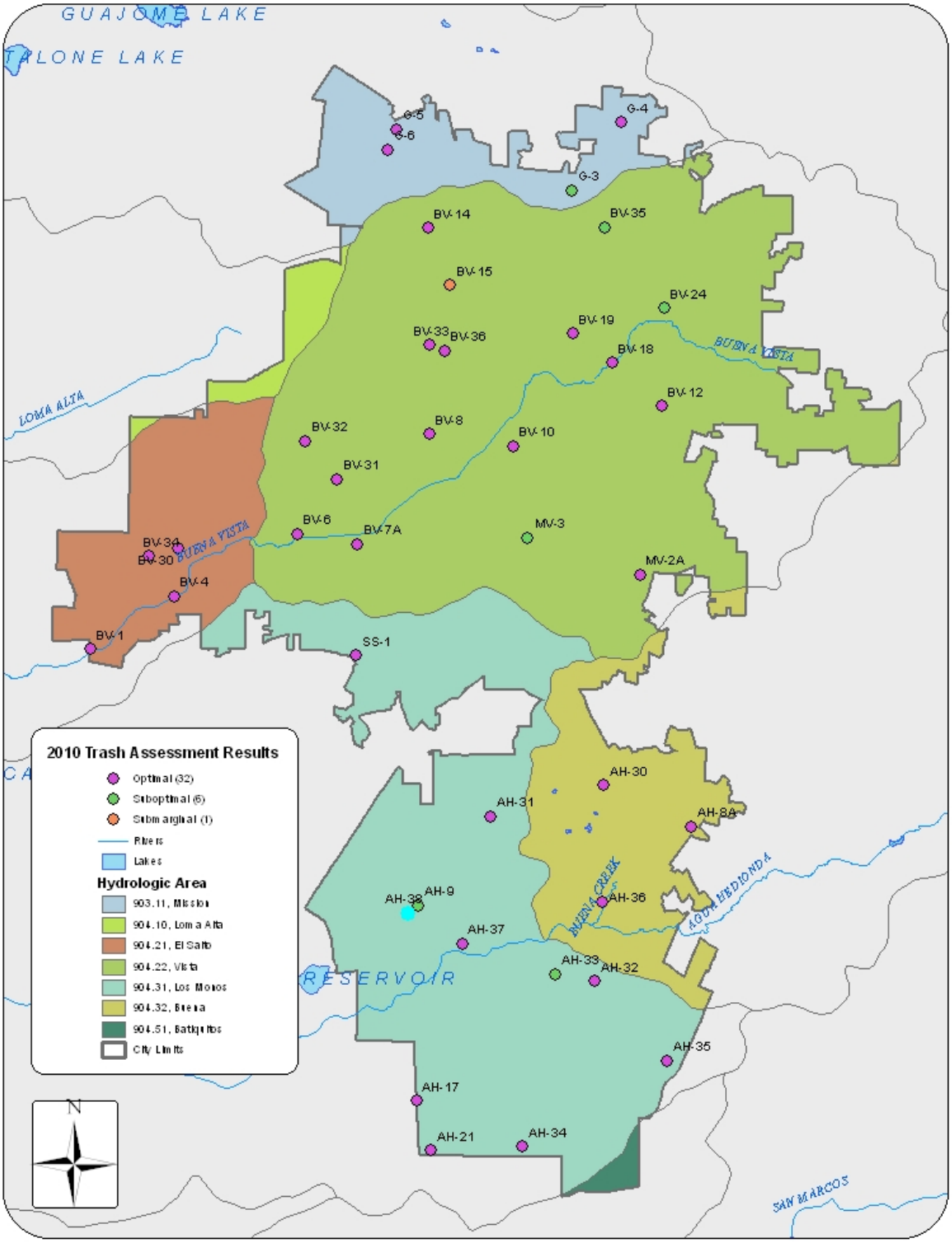

6 LABORATORY ANALYTICAL RESULTS

6.1 Summary

Laboratory analyses were conducted at eight sites, representing over 25 percent of all primary monitoring locations. The laboratory constituents measured are defined below.

Oil and grease analysis is used to detect hydrocarbon pollution from a variety of sources, including parking lots and streets, washing activities, illegal discharges, and automobile repair facilities.

Total hardness measures the amount of calcium and magnesium ions in a water sample, with the result expressed in mg/L of $CaCO_3$. Hardness itself is not considered a pollutant, but is measured to calculate CTR limits for dissolved metals. Hardness affects the solubility of dissolved metals as well as other minerals and ions.

Diazinon and **chlorpyrifos** are organophosphate pesticides that can be harmful to aquatic organisms if transported in urban runoff. Diazinon and chlorpyrifos are highly toxic to birds, mammals, and insects. They are also highly toxic to freshwater fish and invertebrates following acute exposure.

Coliform bacteria are relatively harmless to humans and are present in mammalian digestive tracts and are naturally found in most surface waters and soils. Testing water samples for total coliform bacteria is a standard practice in public health. Total coliform is measured as an indicator of pathogens. Pathogens are generally present in much smaller quantities and are difficult to detect. Total coliform concentrations may also be indicative of other bacteria present in the environment that may be naturally occurring and not associated with fecal contamination.

Fecal coliform, a subset of coliform bacteria, and ***Enterococcus*** are found primarily in the gastro-intestinal tracts of humans and animals and are commonly used as indicators of water contamination by fecal matter. Without the use of significantly more expensive methods, such as ribotyping, it is not possible to determine whether the source of fecal material is human or animal. Human fecal material is known to contain pathogens dangerous to humans, but the relationship between animal waste and threat to human health is less certain.

Metal contamination of water can arise from a variety of sources, including automobile operation, automobile repair, vehicle washing, galvanizing of metal, and electronics manufacturing. Certain dissolved metals are toxic pollutants that are hazardous to the survival and development of aquatic organisms.

The California Toxics Rule for Dissolved Metals in Fresh Waters defines metal toxicity as a function of water hardness, with toxicity decreasing as hardness increases. For a specific hardness, each dissolved metal has a Criterion Maximum Concentration (CMC), a short term concentration limit in which aquatic life can be sustained. The laboratory samples are analyzed for the presence of dissolved cadmium, copper, lead, and zinc. Table 6-1 shows the sites with detectable metal concentrations, the measured total hardness of the sample, and the associated CMC.

A summary of the laboratory analytical results for dissolved metals where metals were detected is presented in Table 6-1 along with a comparison of the results to the Criterion Maximum Concentration. The majority of metals results were non-detect (41 of 45 total tests). Table 6-2 presents a laboratory analysis statistical summary of all sampling sites. Laboratory reports are included in Appendix C.

TABLE 6-1
CTR – CMC FOR DISSOLVED METALS

Dissolved Copper			
Site	**Total Hardness (mg/L)**	**CMC (mg/L)**	**Concentration (mg/L)**
SS-1	295	0.370	0.016
Dissolved Zinc			
Site	**Total Hardness (mg/L)**	**CMC (mg/L)**	**Concentration (mg/L)**
AH-9	750	0.380	0.031
AH-21	1040	0.380	0.029
SS-1	295	0.290	0.108

Note: Sites listed are those at which a particular dissolved metal was detected. For equations and constants used in California Toxics Rule calculations, see http://www.epa.gov/ost/standards/ctr/toxic.pdf

TABLE 6-2
LABORATORY ANALYSIS STATISTICAL SUMMARY [1]

Parameter (units)	Maximum	Minimum	Number of Exceedances
Total Hardness (mg/L $CaCO_3$)	1040	295	N/A
Oil and Grease (mg/L)	ND	ND	None
Diazinon (µg/L)	ND	ND	None
Chlorpyrifos (µg/L)	ND	ND	None
Cadmium (dissolved, mg/L)	ND	ND	None
Copper (dissolved, mg/L)	0.016	ND	None
Lead (dissolved, mg/L)	ND	ND	None
Zinc (dissolved, mg/L)	0.108	ND	None
Total Coliform (MPN/100 mL)	388,000	200	1
Fecal Coliform (MPN/100 mL)	284,000	100	2
Enterococcus bacteria (MPN/100 mL)	94,000	200	2

Notes:
nd = not detected
[1] Calculations include complete routine visit data only. Confirmation visits, follow-up visits, and dry sites are not incorporated.
[2] Total hardness is not considered a pollutant (see section 3.4), and thus has no established action level for the purposes of dry weather monitoring.

TABLE 6-3
LABORATORY ANALYTICAL RESULTS

Site No.	Date	Time	Oil & Grease mg/L	Total Hardness mg/L $CaCO_3$	Cadmium mg/L	Copper mg/L	Lead mg/L	Zinc mg/L	Diazinon µg/L	Chlorpyrifos µg/L	Total Coliform MPN/ 100mL	Fecal Coliform MPN/ 100mL	*Enterococcus* MPN/ 100mL
AH-9	7/13/10	14:20	ND	750	ND	ND	ND	0.031	ND	ND	89,000	**34,000**	**19,000**
AH-9 (Confirmation)	7/14/10	9:50	NA	NA	NA	NA	NA	NA	NA	NA	19,000	5,000	4,000
AH-21	7/13/10	14:20	ND	1040	ND	ND	ND	0.029	ND	ND	8,800	4,000	2,700
SS-1*	7/13/10	14:20	ND	295	ND	0.016	ND	0.108	ND	ND	**388,000**	**284,000**	**94,000**
BV-4	7/21/10	11:50	ND	520	ND	ND	ND	ND	ND	ND	8,200	1,800	1,600
BV-8	7/22/10	10:36	ND	390	ND	ND	ND	ND	ND	ND	7,100	2,600	2,800
BV-18	7/22/10	10:36	ND	750	ND	ND	ND	ND	ND	ND	3,800	200	400
BV-31	7/15/10	13:27	ND	330	ND	ND	ND	ND	ND	ND	200	100	200
G-5	8/12/10	13:24	ND	650	ND	ND	ND	ND	ND	ND	17,450	6,400	2,050
G-5 (Duplicate)	8/12/10	13:24	ND	640	ND	ND	ND	ND	ND	ND	13,350	7,050	2,950
Reporting Limits			**5**	**10**	**0.001**	**0.010**	**0.005**	**0.02**	**0.05**	**0.05**	**10**	**10**	**10**
Action Levels			**15**	******	**CTR**	**CTR**	**CTR**	**CTR**	**0.5**	**0.5**	**130,000**	**13,000**	**7,000**

Notes:

nd = not detected

na = not analyzed

Red Bold values denotes action level exceeded

CTR = California Toxics Rule; CTR action levels for metals are calculated based upon on the total hardness value of the water sample.

*No confirmation sample was collected at Site SS-1 as the site was dry during the confirmation visit.

** Total hardness is not considered a pollutant (see section 3.4), and thus has no established action level for the purposes of dry weather monitoring.

7 DATA ANALYSIS

The section provides an overall evaluation of the results of the 2010 Dry Weather Monitoring Program. This includes data analysis, follow-up investigations, summaries, and recommendations.

7.1 2010 Overall Sampling Results

During the 2010 Dry Weather Monitoring program, City staff detected action level exceedances at 12 monitoring stations (see Table 7-1 below). Nitrate was the most common exceedance (8 of 28 sites or 29% of all sites) followed by two bacteria exceedances and one exceedance for MBAS and ammonia. Nitrate exceedances occurred in three hydrologic areas including the largest two, Buena Vista Creek and Agua Hedionda.

TABLE 7-1
2010 EXCEEDANCES AT A GLANCE

Site No.	Hydrologic Area	Total Coliform	Fecal Coliform	Enterococcus	MBAS	ammonia-N	nitrate-N
AH-8A	**904.3**						✓
AH-9	**904.3**		✓	✓			
AH-35	**904.3**						✓
BV-6	**904.2**						✓
BV-8	**904.2**						✓
BV-10	**904.2**						✓
BV-14	**904.2**					✓	
BV-19	**904.2**						✓
BV-24	**904.2**						✓
BV-33	**904.2**				✓		
G-3	**903.1**						✓
SS-1	**904.3**	✓	✓	✓			

Note: Table reflects exceedances occurring during routine visits only.

7.2 Evaluation of Field Constituent and Laboratory Results (2002-2010)

Historical results of exceedances are presented in Table 7-2, Graph 7-1, and Graph 7-2. Table 7-2 shows the percentage of sampled sites that have had exceedances each year of the Dry Weather Monitoring Program. Graph 7-1 illustrates the percentage of exceedances by year for field constituents, and Graph 7-2 presents the percentage exceedances by year for laboratory analyses.

Since 2002, no exceedances have been found for cadmium, copper, lead, zinc, diazinon, or chlorpyrifos. Thus, these constituents have not been included in the following table or graphs. Oil and grease was detected above the action level only in 2003. Although the

historical data shows varied exceedances over the years, it is apparent that nitrate-nitrogen has been the field constituent with the highest percentage of exceedances (averaging 25% exceedances per year). Ammonia-nitrogen exceedances have been observed in all years since 2002, but less frequently (typically at 1 or 2 sites per year). Orthophosphate exceedances occurred in every year from 2002 to 2006, but have been absent in the City's Dry Weather Program since 2007. These data evaluations provide valuable information regarding pollutant trends which can be beneficial to the City's Water Quality Protection Program. In particular, these data can be combined with results from other monitoring programs (i.e. regional, TMDL, etc.) to assist the City in its efforts to assess and improve water quality in its jurisdiction and watersheds.

TABLE 7-2
NUMBER OF SITES WITH EXCEEDANCES BY YEAR

Year	Field Screening									Laboratory Analyses				
	Number of Field Screening Sites	Temperature	pH	Turbidity	Conductivity	Surfactants	Ammonia-N	Nitrate-N	Orthophosphate-P	**Number of Laboratory Sampling Sites**	Oil & Grease	Total Coliforms	Fecal Coliforms	*Enterococci*
2002	21	0	1	0	0	0	1	6	0	6	0	0	0	0
2003	22	0	1	0	0	0	1	2	0	5	2	2	2	1
2004	22	0	2	0	0	1	2	9	1	6	0	0	0	0
2005	27	0	1	0	0	4	4	7	3	7	0	0	0	0
2006	28	2	3	0	0	3	3	3	2	6	0	2	0	0
2007	26	1	0	1	1	4	2	6	0	6	0	1	1	2
2008	29	0	1	0	0	0	1	5	0	8	0	3	0	0
2009	29	0	0	0	0	1	2	2	0	8	0	0	0	0
2010	28	0	0	0	0	1	1	8	0	8	0	1	2	2

Note: Results based on complete routine visits only. Confirmation visits, follow-up visits, and dry sites not included.

GRAPH 7-1
PERCENT OF SITES WITH FIELD CONSTITUENT EXCEEDANCES BY YEAR

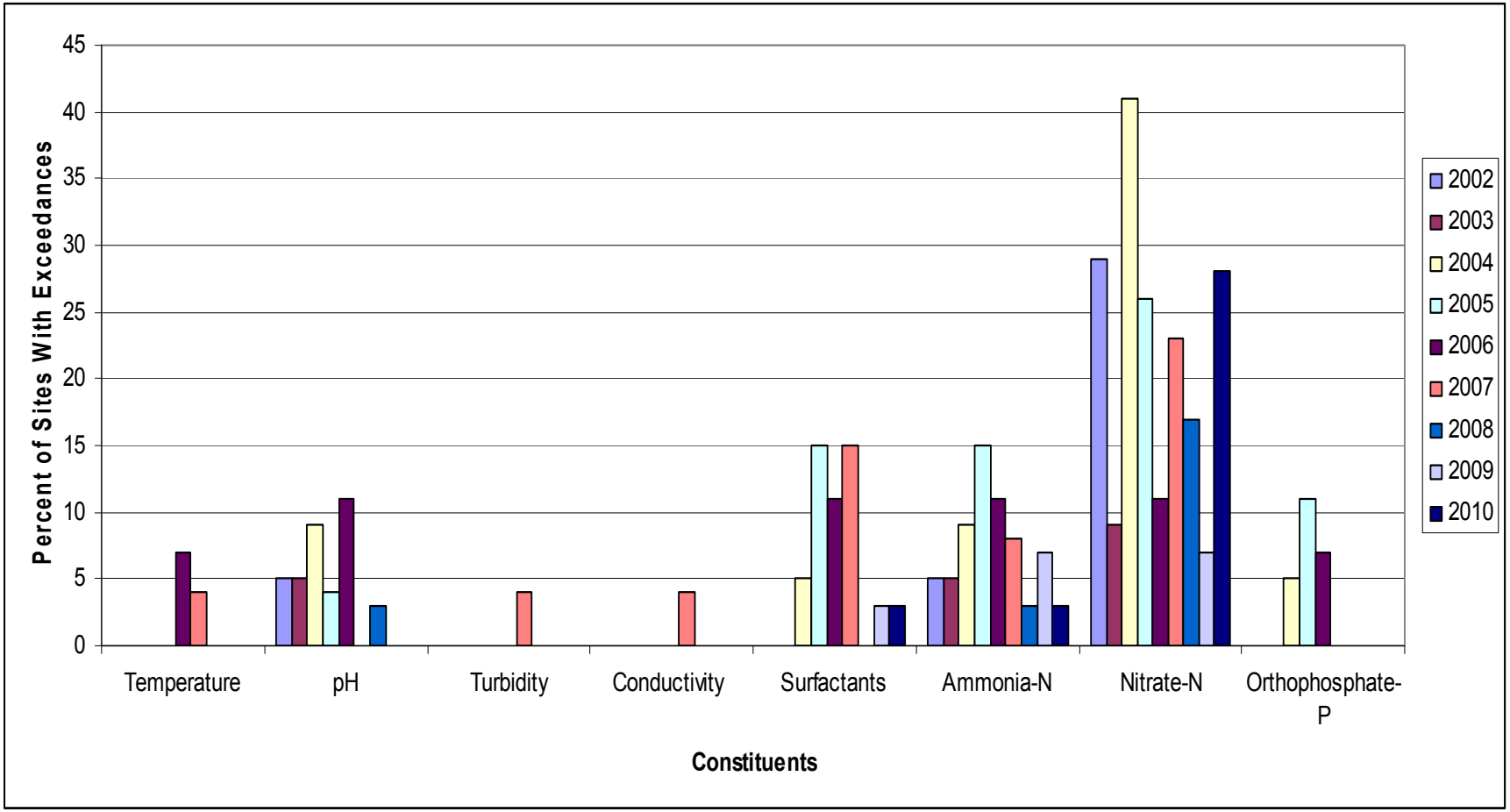

GRAPH 7-2
PERCENT OF SITES WITH LABORATORY ANALYSIS EXCEEDANCES BY YEAR

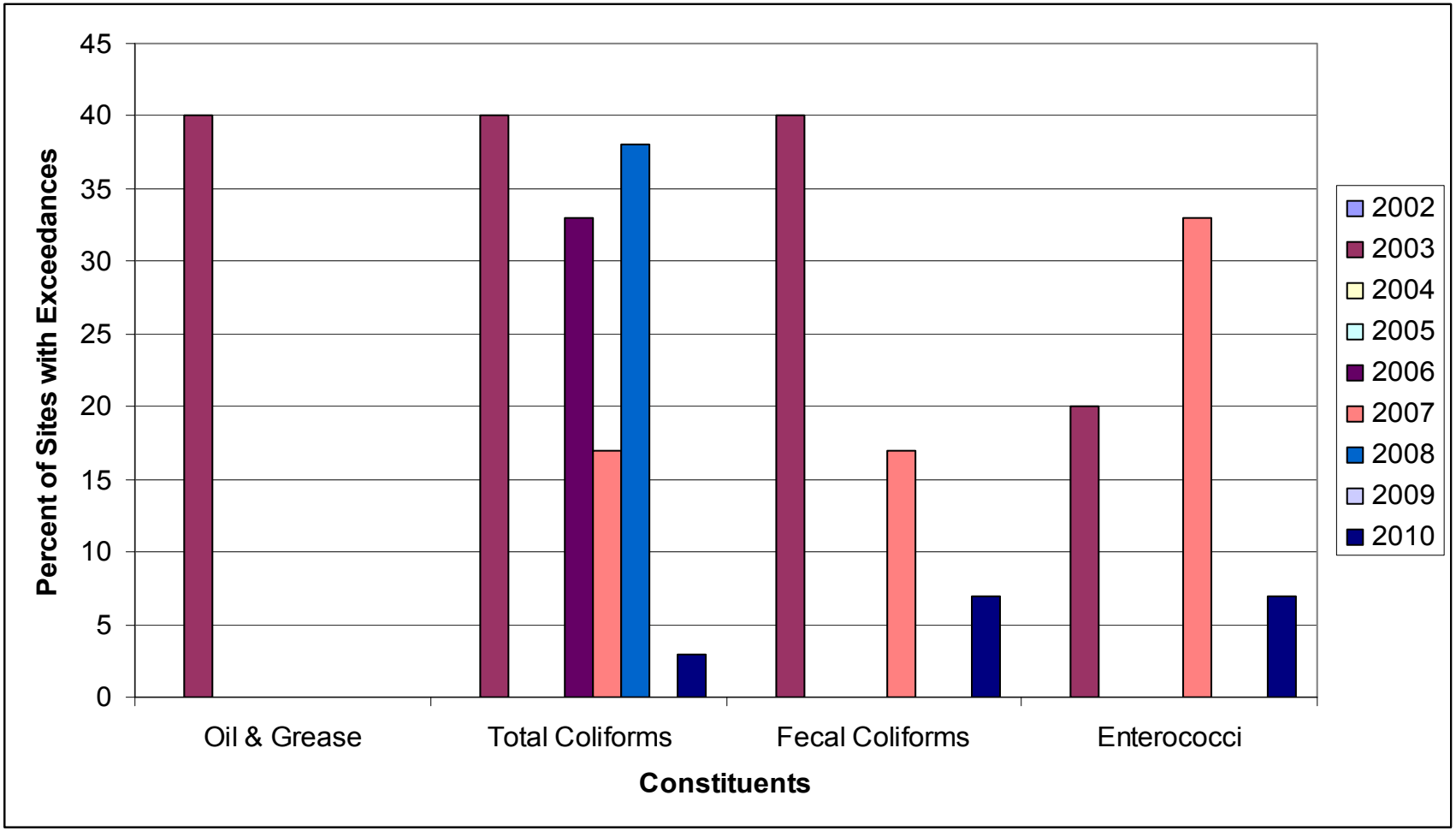

8 FOLLOW-UP INVESTIGATIONS

One of the main purposes of the Dry Weather Monitoring Program is to identify IC/IDs. Both field screening and laboratory analytical results are compared to regionally developed action levels (Table 3-4). When a parameter is measured at or above its action level, it is possible that an IC/ID is present. To further investigate potential IC/IDs, additional investigation is initiated when action levels are exceeded. Procedures for such investigations are described below.

8.1 Investigation Procedures

When Dry Weather Monitoring Program results exceed action levels, an investigation is conducted to identify the source of the discharge or provides rationale for why the discharge does not pose a threat to water quality and does not need further investigation. An immediate source identification investigation is initiated if visual and/or analytical evidence of gross contamination is present at a site during a routine investigation. Examples of gross contamination include substantial petroleum sheens, constituent concentrations well above action levels, abnormal colors or odors not attributable to natural site conditions, or evidence of a sewage release; such conditions may be considered a threat to human health or the environment. Additionally, past experience has shown that immediate investigations are much more likely to identify the source of surfactants exceedances, which are often related to washing activities and are typically intermittent in nature.

When an action level is exceeded at a site, re-sampling is typically conducted within two business days of being informed of the exceedance in order to confirm the exceedance (confirmation sampling). For field screening and analytical, confirmation samples are always collected within two business days of the initial test. The overall time frame for laboratory analytical results depends on the time that results are received from the lab, but confirmation visits are conducted within two business days of receiving the data.

When confirmation sampling confirms a continued action level exceedance, an upstream investigation is conducted to identify the source of the exceedance. An upstream investigation is not necessarily conducted when the source of the exceedance is identified and not the result of IC/IDs. For example, natural sources may be identified that would not warrant continual follow-up investigations. Prior to beginning an upstream source investigation, field staff review previous dry weather monitoring reports and consult MS4 maps to plan the investigation.

Dry weather flows are generally traced from the site in an upstream direction along the conveyance system. Photos, narrative descriptions of relevant visual observations, and GPS coordinates are recorded to aid in documentation and in potential enforcement procedures. Water samples are collected at upstream confluences for analyses of the constituent(s) being tracked. All samples are documented through the completion of field data sheets, which are provided in Appendix D.

If the results of the upstream investigation indicate that an IC/ID may be present, appropriate City personnel are notified. Where appropriate and feasible, field staff will also contact the party responsible for the discharge directly regarding the IC/IDs and potential BMPs.

8.2 Site Investigations

During the 2010 Dry Weather Monitoring Program, additional investigations for potential IC/IDs were performed at 12 sites for constituent exceedances. This included exceedances

in both field and lab analytical (bacteria only). A brief description of each site, the testing results, photographs of selected upstream locations, and the results of upstream investigations are included in this section. To obtain a better understanding of dry weather results and conditions in the various hydrologic areas that lie in the City of Vista, the information is organized accordingly.

8.2.1 Site Investigations in Agua Hedionda Hydrologic Area

Site AH-8A

Site AH-8A is an outlet located between 632 and 636 Sycamore Avenue which drains mostly commercial areas. Samples were collected just downstream of the concrete outlet. It is also downstream of Buena Creek. During the initial investigation flow was measured at approximately 2 gpm. Nitrate levels were measured above the action level of 10.0 mg/l. Results of the monitoring are summarized in Table 8-1 below.

At the confirmation visit the following day nitrate levels (>11.3) were measured above the action level. The flow measurement was similar to the measurement taken during the initial visit (2 gpm).

City staff conducted an upstream investigation immediately following the confirmation visit to identify a nitrate source, if any. The main conveyance system which drains urban runoff to site AH-8A runs north to south along Sycamore Avenue.

Photo 8-1 Sampling point at AH-8A

City staff identified a flowing stream at the northwest corner of University Drive and Sycamore Avenue (site AH-8A-1-See Appendix E). This stream, which is part of the main conveyance system that runs along Sycamore Avenue, flows underneath University Drive and Sycamore Avenue then into storm drain pipes underneath the road prior to discharging at site AH-8A. Nitrate levels were measured above 11.3 mg/l and the flow was very high (179 gpm). Also, Conductivity levels (mS/cm) measured during the initial, confirmation, and follow-up visits were very similar (2.01, 1.987, 1.971 respectively) suggesting that the water measured at the primary and follow-up site is likely from the same runoff source. The nitrate results from all the sampling events is included in Table 8-4 below.

The boundary between the City of Vista and County jurisdiction lies just north of site AH-8A-1 (several hundred feet away). City staff did not identify any accessible conveyance points in this area to continue with its upstream investigation. Since the City believed the source was likely within County jurisdiction, it referred this investigation to County Watershed Protection staff.

County Watershed Protection staff identified one of their dry weather monitoring stations (CAR05) which is located at Buena Creek and Robelini Drive, immediately upstream from site AH-8A-1. The County has monitored this site since 2002 and has observed nitrate exceedances in the past. The County has conducted upstream investigations concerning nitrate exceedances at site CAR05. In February of 2009, a groundwater sample was taken at a privately owned 170 foot deep groundwater well used to irrigate landscaping located on a property on Buena Creek Road near an upstream sampling locations (CAR05104). The nitrate concentration was 27.5 mg/l and groundwater was identified as a contributing source. Another private well that is used for irrigation was sampled for nitrate during an upstream investigation conducted in 2007. The nitrate concentration from the groundwater sample was 14.2 mg/L. The land use in this drainage area is a combination of agriculture and residential/rural residential.

TABLE 8-1
SITE AH-8A UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Conductivity (mS/cm)	Nitrate (mg/L)
AH-8A	7/6/2010	Between 632 & 636 Sycamore Ave	2.15	2.01	**>11.3**
AH-8A (Confirmation)	7/7/2010	"	2.15	1.987	**>11.3**
AH-8A-1	7/7/2010	Northwestern corner of Activity Drive and Pointsettia Ave	179.39	1.971	**>11.3**

Note: **Red Bold Type** = value exceeds action level

Site AH-9

Site AH-9 is located at the northeast area of a pond located at Buena Vista Park (near the intersection of Antigua Drive and Shadowridge Drive). Urban runoff at this site was ponded and trash was evident (plastic bottles and suboptimal trash rating). During the initial visit Fecal Coliform and Enterococcus concentrations were measured above their respected action levels. Results of the monitoring are summarized in Table 8-2 below.

At the confirmation visit Fecal Coliform and Enterococcus concentrations were measured below the action levels (5,000 and 4,000 respectively).

City staff conducted an upstream investigation simultaneously with the confirmation sampling (since lab results are not provided instantaneous like field screening results are). Urban runoff drains to the pond from two conveyance systems, one located to the northwest (Antigua Drive) and the other to the north (Shadowridge Drive).

8.2 Conditions at Site AH-9

Both conveyance systems were observed to be dry during the upstream investigation. City staff observed ducks wading in the southern part of the pond. The pond may serve as a habitat for the ducks and could be a source of bacteria. Also, the ponding conditions at the sampling site may promote bacteria growth. An investigative site map of AH-9 is included in Appendix E.

TABLE 8-2
SITE AH-9 UPSTREAM INVESTIGATION

Site	Date	Location	Fecal Coliform (Colonies/100ml)	Enterococcus (Colonies/100ml))
AH-9	7/12/2010	Northeast section of Pond, at Shadowridge Drive and Antigua Drive	**34,000**	**19,000**
AH-9 (Confirmation)	7/14/2010	"	5,000	4,000

Note: **Red Bold Type** = value exceeds action level

Site AH-35

Site AH-35 is a manhole more than 30 feet deep, across from 1210 Activity Drive. City Staff made several attempts (multiple days) to collect a water sample, but was unsuccessful in obtaining a sample at that depth. Instead, staff collected a sample at the nearest manhole location (between 1251 and 1235 Activity Drive). During the initial visit to the site, nitrate-nitrogen was measured at 54.02 mg/L, above the 10 mg/L action level. The return visit the

next day confirmed high levels of nitrate-nitrogen at > 11.3 mg/L. Nitrate exceedances have occurred historically at AH-35. Results of the monitoring are summarized in Table 8-3 below.

Flow was observed at both the initial and confirmation visits (1.0 and 1.5 gpm respectively). The conveyance system drains urban runoff to AH-35 from the north east and southeast (see site investigative map in Appendix E). This includes a natural creek originating in the City of San Marcos and storm drain pipes on Pointsettia Avenue (northeast and southeast).

Flow was observed at follow-up location AH-35-2, but a sample was not attainable due to difficulty in collecting a water sample (very deep manhole similar to AH-35).

Photo 8.3 AH-35 Sampling Site

All other conveyance systems that drain to AH-35 were dry. No overland flow was observed either. As with previous assessments at AH-35 including a comprehensive study conducted in 2009 (2009 Dry Weather Field Screening and Analytical Monitoring Program report), City staff believes that the source of flow measured during the initial and confirmation visits and at site AH-35-2 is likely from groundwater seeping into storm drain pipes underground. A map of the upstream investigation is included in Appendix E.

TABLE 8-3
SITE AH-35 UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Nitrate (mg/L)
AH-35	8/11/10	Between 1235 and 1251 Activity Drive	1	**54.02**
AH-35 (Confirmation)	8/12/10	Same as Above	1.5	**>11.3**
AH-35-2	8/12/10	Northwestern corner of Activity Drive and Pointsettia Ave	NM	NM

Note: **Red Bold Type** = value exceeds action level. NM = not measured

Site SS-1

Site SS-1 has two outlets on the south side of Branding Iron Circle, west of Melrose Drive, in a densely vegetated area. At the time of the initial visit, the water was ponded, with large amounts of decomposing leaves in and around the water (Photo 8-2). Total Coliform, Fecal Coliform, and Enterococcus concentrations were measured above their respected action levels. Results from the monitoring are summarized in Table 8-4 below.

During the initial sampling event, organics were observed floating on the water and as deposits. Low light existed at the site due to the tree canopy and the runoff was also ponded. At the confirmation visit staff observed the site was dry. City staff conducted a brief upstream investigation to determine any sources that may have contributed to the bacteria exceedance detected two days earlier.

Photo 8-4 Conditions at Site SS-1

As no sources were identified the exceedances detected at Site SS-1 were likely due to transient flow. Also, the conditions present at the site (ponded water, organics observed as floatables and deposits, low light at site due to tree canopy) may have created an environment that accelerated bacteria growth provided a bacteria source initially existed at the site. The City will continue to monitor Site SS-1 in future programs.

TABLE 8-4
SITE SS-1 UPSTREAM INVESTIGATION

Site	Date	Location	Total Coliform (Colonies/100ml)	Fecal Coliform (Colonies/100ml)	Enterococcus (Colonies/100ml))
SS-1	7/12/2010	South side of Branding Iron Circle, west of South Melrose Drive	**388,000**	**284,000**	**94,000**
SS-1 (Confirmation)	7/14/2010	"	Dry	Dry	Dry

Note: **Red Bold Type** = value exceeds action level

8.2.2 Site Investigations in Buena Vista Hydrologic Area

Site BV-6

Site BV-6 is located in Buena Vista Creek near the intersection of Hacienda Drive and Breeze Hill Road. Nitrate levels were measured above the action level during the initial and confirmation visits. Results from the monitoring are summarized in Table 8-5 below. This site was selected as an alternate monitoring station in 2010, but it has not been monitored since the 2007 dry weather monitoring season. Monitoring results are summarized in Table 8-5 below.

City Staff conducted an upstream investigation in the vicinity of the MS4 system that drains to the site to determine possible nitrate sources. A main conveyance system runs from Copper Avenue south to BV-6. The conveyance system was observed to be dry during the upstream investigation. Additional monitoring and investigations were conducted further upstream in and around the vicinity of the Creek.

Photo 8-5 natural creek conditions at BV-6

Buena Vista Creek flows west to site BV-6 along Hacienda Drive. Staff measured the nitrate levels within the creek at site BV-6-1 as the creek flows underneath the street. An upstream investigative map is included in Appendix E. Nitrate levels were measured above the action level. Staff investigated other drainage systems in the vicinity including systems that drain south to the BV-6-1 from areas north of Highway 78, but did not observe any runoff. Since the City did not determine any sources in the vicinity of the drainage system surrounding BV-6, further investigations to determine potential nitrate sources may be conducted in the creek as part of a receiving water study in the future. Receiving water monitoring is typically not included in the scope of dry weather monitoring programs.

TABLE 8-5
SITE BV-6 UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Conductivity (mS/cm)	Nitrate (mg/L)
BV-6	8/16/2010	In the creek at Hacienda Drive and Breeze Hill Road	6.0	1.674	**37.87**
BV-6 (Confirmation)	8/18/2010	"	NM	1.728	**>11.3**
BV-6-1	8/18/2010	Upstream in the creek near Hacienda Drive and La Tortuga Drive.`	NM	1.675	**>11.3**

Note: **Red Bold Type** = value exceeds action level (for MS4 runoff, not receiving waters). NM = not measured.

Site BV-8

Site BV-8 is a concrete channel (approximately 10 feet in width) that is located at the southwest corner of Olive Ave and Goeting Way. During the initial investigation nitrate concentrations were measured above the action level of 10.00 mg/L. During the confirmatory sampling nitrate levels were measured at 10.23 mg/L. The flow rates were high at both sampling events (130 and 89 gpm respectively). Results of the monitoring are summarized in Table 8-6 below.

City staff conducted an upstream investigation to identify possible nitrate source(s). The conveyance systems that drain runoff to the site consist of the open concrete channel to the north and two other systems that lie northeast and northwest of the site. The City tracked the main flow in the channel to the north as it runs northwest on Olive Ave then north on Redlands Street until it reaches the junction of West California Avenue (See site investigative map for BV-8 and BV-8-1 in Appendix E).

Photo 8-6 Urban Runoff at Site BV-8

Staff also observed water flowing out of several weep holes throughout the concrete channel between sites. After further investigation of the conveyance system on California and Redlands, the City determined that some of the flow contributing runoff to the concrete channel was coming from the underground storm drain pipe at site BV-8-1. Nitrate levels were measured above the action level >11.3 at BV-8-1. No other flow was observed to be contributing runoff to site BV-8-1, including any surface flow on West California. The flow rate was very low, but continual (not measurable in the field) and the conductivity level was very high (7.29 mS/cm). City staff attempted to track the flow upstream (coming from the north) from BV-8-1 but did not find any runoff in the conveyance system. The upstream investigation included visual inspections of the drainage area located in and around an elementary school which is just north of BV-8-1. City staff believes that due to the continual flow and nitrate exceedances at BV-8 and high nitrate and conductivity levels measured at Site BV-8-1 that a source of runoff may likely be groundwater. Since the source of runoff at BV-8-1 could not be visually identified, groundwater may likely be seeping into the underground conveyance at or near that site. However, as the flow rate was very low at BV-8-1 compared to the higher flow at BV-8, this suggests that urban runoff from other sources was entering the channel downstream from BV-8-1 and upstream of BV-8. One possible source could be the groundwater flowing out of the weep holes observed in the concrete channel, no other sources were identified by City staff.

TABLE 8-6
SITE BV-8 UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Conductivity (mS/cm)	Nitrate (mg/L)
BV-8	7/21/2010	Olive Ave and Goeting Way	130.16	1.44	**10.36**
BV-8 (Confirmation)	7/26/2010	"	89.77	1.43	**10.23**
BV-8-1	7/26/2010	North side of W. California Ave at intersection of Redlands Street.	NM	7.29	**>11.3**

Note: **Red Bold Type** = value exceeds action level. NM = not measured.

Site BV-10

Site BV-10 is a concrete channel at the northwest corner of Eucalyptus Ave and Escondido Ave which drains mainly residential areas. During the initial visit nitrate levels were above action levels. At the confirmation visit nitrate levels (22.48 mg/L) were again above the action level. Results of the monitoring are summarized in Table 8-7 below.

The flow rate was consistent during both the initial and confirmation visits (8.98 and 11.67 gpm) and conductivity levels were similar (1.97 mS/cm and 1.87 mS/cm). Nitrate levels have been consistently high at this site with an exceedance occurring in 2008. At the confirmation visit in 2008, nitrate levels were still high (9.58 mg/L) but under the action level. It was concluded that the nitrate exceedances were due to a transient flow and no sources were identified.

Photo 8-7 Flow at Site BV-10

City staff conducted an upstream investigation (July 20, 2010) to identify any nitrate sources contributing to the nitrate exceedances this monitoring year. Upstream of BV-10, the concrete channel runs to the east following the south side of Eucalyptus Ave. Staff observed continual flow throughout the entire channel during the upstream investigation. An underground conveyance system on Tiger Tail Road connects with the concrete channel near the residence at 887 Eucalyptus Avenue. Other areas that drain runoff to the concrete channel include surface flow from areas further east on Eucalyptus Ave. During the investigation no surface flow was observed. Staff identified a very low flow (trickle) in the underground storm drain system at a manhole on Tiger Tail Road (Site BV-10-1). Nitrate levels measured at site BV-10-1 were well above the action level (>50) and conductivity levels were 2.075 mS/cm. A upstream site investigation map is included in Appendix E. Areas that could potentially drain runoff to BV-10-1 include surface flow from areas east on Tiger Tail Road and a earthen channel upstream that connects directly to the site. These areas were observed to be dry. Since staff could not identify the source of runoff at site BV-

10-1, this may suggest that the groundwater is intruding into the storm drain system at BV-10-1. Additionally, the difference in the flow rates between BV-10 and BV-10-1 suggests that there may have been runoff from other sources (not identified) in the drainage system that may have contributed to the nitrate exceedance at BV-10, however, no other sources were identified during the upstream investigation.

TABLE 8-7
SITE BV-10 UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Conductivity (mS/cm)	Nitrate (mg/L)
BV-10	7/16/2010	Northwest corner of Eucalyptus Ave and Escondido Ave	8.98	1.97	**>11.3**
BV-10 (Confirmation)	7/20/2010	"	11.67	1.87	**22.48**
BV-10-1	7/20/2010	Across from 922 Tiger Tail Road	NM	2.05	**>50**

Note: **Red Bold Type** = value exceeds action level. NM = not measured.

Site BV-14

Site BV-14 is a concrete catch basin located on North Santa Fe Avenue near the intersection of Weston Circle. Ammonia levels measured during the initial visit were above the action level. During the confirmation visit, ammonia levels were measured below the action level. These results are presented in Table 8-8 below.

The runoff was ponded at both visits and characterized as having a significant odor, brown and black in color, and significant amounts of sediment, gravel, and organics. Due to the amount of debris in the catch basin, it appears that runoff does not drain properly at the site. Staff did not observe any evidence of overland flow at either the initial or confirmation visits.

Photo 8-8 Site BV-14 sampling point

Given these drainage and recurring runoff characteristics, the higher ammonia readings may be indicative of the type of environment and conditions at the site not of an upstream source. These conditions are likely to produce high concentrations of ammonia as a byproduct of the decomposition process.

TABLE 8-8
SITE BV-14 UPSTREAM INVESTIGATION

Site	Date	Location	Ammonia (mg/L)
BV-14	8/16/2010	N. Sante Fe Avenue and Weston Circle	**1.5**
BV-14 (Confirmation)	9/27/2010	"	.72

Note: **Red Bold Type** = value exceeds action level. NM = not measured

Site BV-19

Site BV-19 is a earthen channel located behind 1040 E. Vista Way. Nitrate levels were measured above the action level during the initial and confirmation visits. This site, which was added as an alternate site in 2010, has not been monitored since 2007 during which a nitrate exceedance occurred. During the follow-up investigation in 2007, no nitrate sources were identified. Results from the monitoring are summarized in Table 8-9 below.

The City conducted an upstream investigation to identify potential sources contributing to nitrate exceedances at BV-19. The earthen channel is the main conveyance system upstream and connected to two systems that run from east to west in the vicinity. Both systems were observed to be dry during the investigation. Flow was observed at BV-19 during the initial and confirmation visits.

Photo 8-9 Earthen Creek at Site BV-19

Staff observed ponded water further upstream in the earthen channel at Site BV-19-1 and north of one of the east-west running conveyances system (dry). Nitrate levels were measured above the action level at the BV-19-1. Conductivity levels appeared to be consistent at all three sampling events. An investigative site map is included in Appendix E. Staff observed some irrigation runoff occurring to the west of Site BV-19 near an apartment complex, but the runoff did not reach the site. Staff did not identify any other potential sources of urban runoff discharging to BV-19 and BV-19-1. Historically, groundwater has been suspected to contribute to nitrate exceedances at several dry weather monitoring stations located in Buena Vista Creek HA. Some of these sites (BV-18 and BV-24) are also located in the vicinity of BV-19. Given the results of these nitrate investigations throughout Buena Vista Creek HA, it is reasonable to conclude that groundwater may be contributing to the nitrate exceedance at BV-19.

TABLE 8-9
SITE BV-19 UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Conductivity (mS/cm)	Nitrate (mg/L)
BV-19	8/16/2010	Behind 1040 E. Vista Way, open creek.	3.0	1.586	**29.21**
BV-19 (Confirmation)	8/18/2010	"	NM	1.592	**>11.3**
BV-19-1	8/18/2010	North and upstream of BV-19 at confluence behind 1090 E. Vista Way.	Ponded	1.783	**>11.3**

Note: **Red Bold Type** = value exceeds action level. NM = not measured.

Site BV-24

Site BV-24 is an outlet from 1427 Foothill Drive and downstream of site BV-18 (Buena Vista Creek). Flow was observed during the initial and confirmation visits and nitrate levels were measured above the action level. Results from the monitoring are summarized in Table 8-10 below.

Historically, site BV-24 has exhibited nitrate exceedances which have been attributed to groundwater upwelling in the immediate vicinity. Similarly, City staff conducted its upstream investigation in 2010 and concluded that nitrate exceedances were due to groundwater upwelling in the vicinity of BV-24.

In its upstream investigation this monitoring year, Staff observed groundwater bubbling up in the drainage ditch located at the west side of 1450 Foothill Drive.

Photo 8-10 Runoff flow at Site BV-24

Staff collected a sample at the drainage ditch (BV-24-1) and nitrate levels were measured above the action level. Appendix E includes a Investigative Site map of Sites BV-24 and BV-24-1. No further investigations were necessary as groundwater was identified as the only source contributing to the nitrate exceedance.

TABLE 8-10
SITE BV-24 UPSTREAM INVESTIGATION

Site	Date	Location	Flow (gpm)	Conductivity (mS/cm)	Nitrate (mg/L)
BV-24	8/11/2010	Near 1427 Foothill Drive	1.5	1.735	**52.01**
BV-24 (Confirmation)	8/12/2010	"	NM	1.785	**>11.3**
BV-24-1	8/12/2010	West side of driveway to 1450 Foothill Drive in drainage ditch	1.0)	2.05	**>11.3**

Note: **Red Bold Type** = value exceeds action level. NM = not measured.

Site BV-33

Site BV-33 is a manhole located on the north side of West Los Angelos Drive near North Santa Fe Ave. During the initial visit , MBAS levels were measured above the action level of 1.0mg/L. The runoff was ponded, but staff decided to conduct an immediate upstream investigation to determine if an illegal discharge involving detergents had occurred. Past experiences have shown that immediate investigations are much more likely to identify a MBAS exceedances which are often related to illegal washing activities. Results from the monitoring are summarized in Table 8-11 below.

Staff conducted an immediate upstream investigation to identify any MBAS sources if any. A main conveyance system runs parallel to West Los Angeles Drive from the west which the City monitored for any evidence of a discharge. The City was able to access a manhole near 1003 North Drive at the intersection of W. Los Angeles Drive and observed very low flow (site BV-33-1). MBAS levels were measured at 1.5 mg/L, still above the action level. Similar to site BV-33, the predominant land use in the drainage area surrounding BV-33-1 is residential. Appendix E includes a site investigative map of BV-33 and BV-33-1.

Photo 8-11 Manhole at Site BV-33

City staff continued with its investigation by proceeding further upstream of site BV-33-1 to identify the source of the runoff and determine any connection, if any, to the MBAS exceedance at primary site BV-33. Staff observed a small amount of urban runoff flow on the surface on East Drive and then some wet areas in the gutter on Bobolink Drive. Surface flow on Bobolink Drive is designed to flow downstream towards East Drive prior to entering the underground conveyance system on W. Los Angeles Drive. Staff concluded that a discharge may have occurred, but they did not observe wet areas on any residential driveways or other evidence in the area suggesting that an illegal washing activity or other event involving detergents may have occurred.

TABLE 8-11
SITE BV-33 UPSTREAM INVESTIGATION

Site	Date	Location	MBAS (mg/L)
BV-33	7/14/2010	North side of W. Los Angeles Drive near the intersection of North Santa Fe Avenue	**3.0**
BV-33-1 (IC/ID)	7/14/2010	North side of North Drive (1003 North Drive) near confluence of W. Los Angeles Drive	**1.5**

Note: **Red Bold Type** = value exceeds action level

8.2.3 Site Investigations in Lower San Luis Rey Hydrologic Area

Site G-3

Site G-3 is an outlet at the north end (cul de sac) of Calle Jules. During the initial visit at G-3, flow was observed and nitrate levels were measured above the action level of 10.0 mg/L. During the initial monitoring, City staff observed water in the gutter in two different areas on Calle Jules. Staff decided to conduct an immediate upstream investigation to determine if either of these two sources of runoff was contributing to the nitrate exceedance at G-3. Results from the monitoring are summarized in Table 8-11 below.

Urban runoff was observed flowing north to the cul de sac from south on Calle Jules (site G-3-1). Nitrate levels were measured at .87 mg/L below the action level. Staff also observed water in the gutter at the northeast part of the cul de sac. The runoff was ponded, but it appeared to have flowed to the gutter through a small outlet pipe in the curb (drainage pipe), likely draining runoff from the apartment complex at the north end of the cul de sac (911 Taylor Street).

Photo 8-12 flow at site G-3

At this site (G-3-2), nitrate levels were measured at 20.06 mg/L above the action level. Some algae was observed in the gutter just downstream. Runoff entering the street gutters at both follow-up sites eventually enters a storm drain inlet before discharging at the outlet at G-3. The results from the monitoring suggest that the nitrate source is likely originating from the apartment complex (911 Taylor Street) and the result of over-irrigation and excessive fertilizer use. City staff discussed the results of the monitoring with the apartment manager and the importance of preventing discharges that have the potential to negatively affect water quality discharging at G-3. The discussion included the City's requirement to implement

appropriate Best Management Practices to reduce nitrate levels in irrigation runoff to ensure compliance is maintained. The apartment manager ensured that she will be addressing the City's runoff concerns with a new landscaper who will be contracting landscape services for the apartment complex.

TABLE 8-12
SITE G-3 UPSTREAM INVESTIGATION

Site	Date	Location	Nitrate (mg/L)
G-3	7/19/2010	Outlet at the north end of Calle Jules	**24.27**
G-3-1	7/19/2010	In gutter at 1737 Calle Jules	**.87**
G-3-2	7/19/2010	In gutter at northeast part of cul de sac (via drainage pipe).	**20.06**

Note: **Red Bold Type** = value exceeds action level

9.0 SUMMARY AND RECOMMENDATIONS

9.1 Summary of Field Screening, Laboratory Analysis Data

The Dry Weather Monitoring Program was conducted by City staff from July through September 2010 during which a total of 39 sites (primary and alternate) were visited for purposes of collecting field screening and/or analytical samples. If a primary station was dry, an alternate station with flowing or ponded water was selected for monitoring. City staff added four alternate locations in 2010 which included BV-6, BV-14, BV-19, and MV-2A. Of the 29 primary monitoring stations 22 had sufficient flow or ponded water to collect samples and seven sites were dry. Sites AH-31, AH-34, AH-37, BV-7A, BV-15, BV-32, MV-3 were dry, and alternate sites G-6, BV-34, BV-36, BV-14, BV-6 and BV-19 were sampled. Laboratory samples were collected at eight sites (29 % of sites that were flowing or ponded). Appendix D includes field monitoring data sheets and trash assessment forms for all sites.

Trash assessments were completed for all 39 (29 primary and 10 alternate stations) stations that were visited. Assessments resulted in 32 “optimal” sites, six “suboptimal” sites, and one “submarginal” site, and no sites rating “marginal” and “poor.” No sites were identified as having a “Potential Threat to Human Health” or “Potential Threat to Aquatic Health”.

Confirmation visits and/or follow-up investigations were conducted at 12 sites for which a field constituent was found to exceed its action level (see Table 7-1). Included in Appendix E are Site Investigative Maps for sites where follow-up investigations were conducted.

Nitrate exceedances were the most common occurring at 8 of the 12 (75 % of sites with exceedances) sites identified for follow-up. These exceedances were not limited to any hydrologic area as they occurred in Buena Vista, Agua Hedionda, and San Luis Rey hydrologic areas. The remaining parameter exceedances included those for bacteria (two sites), MBAS (one site), and ammonia (one site). Results from upstream investigations indicated that groundwater is a likely source at several of the sites that had nitrate exceedances, except for site G-3, which was attributed to over-irrigation. Nitrate sources were not identified at sites BV-6 and BV-19. The ammonia exceedance that occurred at BV-14 is likely the result of ponding and drainage issues at the site and not due to an upstream source. City Staff did not identify the sources associated with bacteria exceedances at Sites AH-9 and SS-1, but concluded that site (organics and ponding at SS-1) and habitat conditions (duck habitat and ponding conditions at AH-9) may have contributed to the exceedances at both sites. Further monitoring and investigations may be necessary at sites BV-8, BV-10, and BV-19 to further assess sources that may be contributing to the nitrate exceedances.

9.2 Hydrologic Area Summaries

Action level exceedances and follow-up investigation conclusions are discussed by hydrologic area in the following section.

9.2.1 AGUA HEDIONDA HYDROLOGIC AREA

Field screening was performed at 10 sites within the Agua Hedionda HA (4 sites were dry). Two sites had nitrate exceedances and two had bacteria exceedances. Summaries of these exceedances and investigations are presented in Table 9-1 and Table 9-2.

TABLE 9-1
AGUA HEDIONDA ACTION LEVEL EXCEEDANCES

Field Screening (11 Samples)		
Analyte	Number of Exceedances	Sites Exceeding Action Level
Nitrate-N	2	AH-8A and AH-35
Total Coliform	1	SS-1
Fecal Coliform	2	AH-9 and SS-1
Enterococcus	2	AH-9 and SS-1

TABLE 9-2
AGUA HEDIONDA SUMMARY OF UPSTREAM INVESTIGATIONS

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
AH-8A	Nitrate-N	--	No illicit discharge identified, groundwater suspected to contribute to the exceedance
AH-9	--	Fecal Coliform, Enterococcus	A combination of site conditions (ponding) and wildlife.
AH-35	Nitrate-N	--	No illicit discharge identified, groundwater suspected to contribute to the exceedance
SS-1	--	Total & Fecal Coliform, Enterococcus --	Transient flow and conditions at site including ponding conditons, leave deposits and floatables, and low light exposure.

9.2.2 BUENA VISTA HYDROLOGIC AREA

The 2010 Dry Weather Monitoring Program included 14 sites within the Buena Vista HA (seven sites were dry). Within the Buena Vista HA, five sites had nitrate-nitrogen exceedances (62 % of sites with nitrate exceedances occurred in BV HA), one site had a MBAS (surfactants) exceedance and one site had an ammonia exceedance. Table 9-3 and Table 9-4 summarize the exceedances and follow-up investigations within the Buena Vista HA.

TABLE 9-3
BUENA VISTA ACTION LEVEL EXCEEDANCES

Field Screening (14 Samples)		
Analyte	Number of Exceedances	Sites Exceeding Action Level
Nitrate-N	5	BV-6, BV-8, BV-10, BV-19, BV-24
MBAS	1	BV-33
Ammonia-N	1	BV-14

TABLE 9-4
BUENA VISTA FOLLOW-UP INVESTIGATIONS

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
BV-6	Nitrate-N	---	No sources identified, site within creek
BV-8	Nitrate-N	---	No illicit discharge identified, groundwater suspected to contribute to the exceedance
BV-10	Nitrate-N	---	No illicit discharge identified, groundwater suspected to contribute to the exceedance
BV-14	Ammonia-N	---	Conditions at site (poor drainage and significant amounts of debris and organics)
BV-19	Nitrate-N	---	No sources identified, groundwater suspected to contribute to the exceedance due to history of nitrate exceedances in the vicinity and in Buena Vista Creek HA.
BV-24	Nitrate-N	---	Groundwater bubbling up in creek bed
BV-33	MBAS	---	Transient flow

9.2.3 LOWER SAN LUIS HYDROLOGIC AREA

Four sites from the Lower San Luis HA were sampled during the 2010 Dry Weather Monitoring Program. One site had nitrate-nitrogen measurements above the action level. A summary of the exceedance and follow-up investigation is presented in Table 9-5 and Table 9-6.

TABLE 9-5
LOWER SAN LUIS ACTION LEVEL EXCEEDANCE

Field Screening (4 Samples)		
Analyte	Number of Exceedances	Site Exceeding Action Level
Nitrate-N	1	G-3

TABLE 9-6
LOWER SAN LUIS FOLLOW-UP INVESTIGATION

Site	Upstream Investigation Target Constituents		Results/Probable Source
	Field	Laboratory	
G-3	Nitrate-N	---	Over-irrigation and fertilizer use at an apartment complex

9.3 Hydrologic Area Recommendations

Based on the results of the 2010 Dry Weather Monitoring Program, the following actions are recommended in each Hydrologic Area.

9.3.1 Recommendations in Agua Hedionda Hydrologic Area

9.3.1.1 MS4 Updates

- At site AH-9 sample urban runoff flowing into the pond or replace with another MS4 site in the same drainage area.

- Consider adding Targeted Wet Weather site (CAR-MS4T) to the dry weather program as a primary monitoring station. The land-use for the drainage area is commercial and industrial and the City has conducted complaint investigations at some of the industrial sites located in the area.

9.3.1.2 Further Investigation

- Conduct CCTV investigation into groundwater seepage into the underground storm drain system at site AH-35.

9.3.2 Recommendations in Buena Vista Hydrologic Area

9.3.2.1 MS4 Updates

- Assess the applicability of current primary and alternate dry weather monitoring stations for permit compliance for dry weather. Some monitoring stations are located in receiving waters (BV-6, BV-18). The City may want to remove sites located in receiving waters and replace with MS4 sites that discharge to creeks.

- Consider removing site BV-24 from the Dry Weather Program. Successive monitoring has indicated that the source of the nitrate is groundwater which is bubbling up in the natural creek. No other sources have been identified.

9.3.2.2 Further Investigation

- Further assess other sources that may be contributing to nitrate exceedances at Sites BV-8, BV-10, and BV-19. This may include performing closed circuit television (CCTV) to assess groundwater intrusion.

9.3.2.3 Maintenance

- Remove trash and debris at site BV-15 which had a sub-marginal trash rating.
- Remove accumulated sediment and organics at site BV-14.

9.3.3 Recommendations in Lower San Luis Hydrologic Area

9.3.3.1 Further Investigation

- Follow-up with outreach to the apartment complex at 911 Taylor Street to ensure they are implementing effective BMPs in reducing nitrate levels in runoff.

10 REFERENCES

Demographics for Vista. City of Vista. http://www.cityofvista.com/business/Demographics.cfm

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D-Max Engineering, Inc., *City of Vista 2009 Dry Weather Field Screening and Analytical Monitoring Program*. October 2009

Weston Solutions, Inc., *City of Vista 2005 Dry Weather Field Screening Program*. January 2006.

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Weston Solutions, Inc., *City of Vista 2007 Dry Weather Field Screening and IC/ID Program*. September 2007

Figure A: City of Vista Drainage Basins & Hydrologic Subarea Map

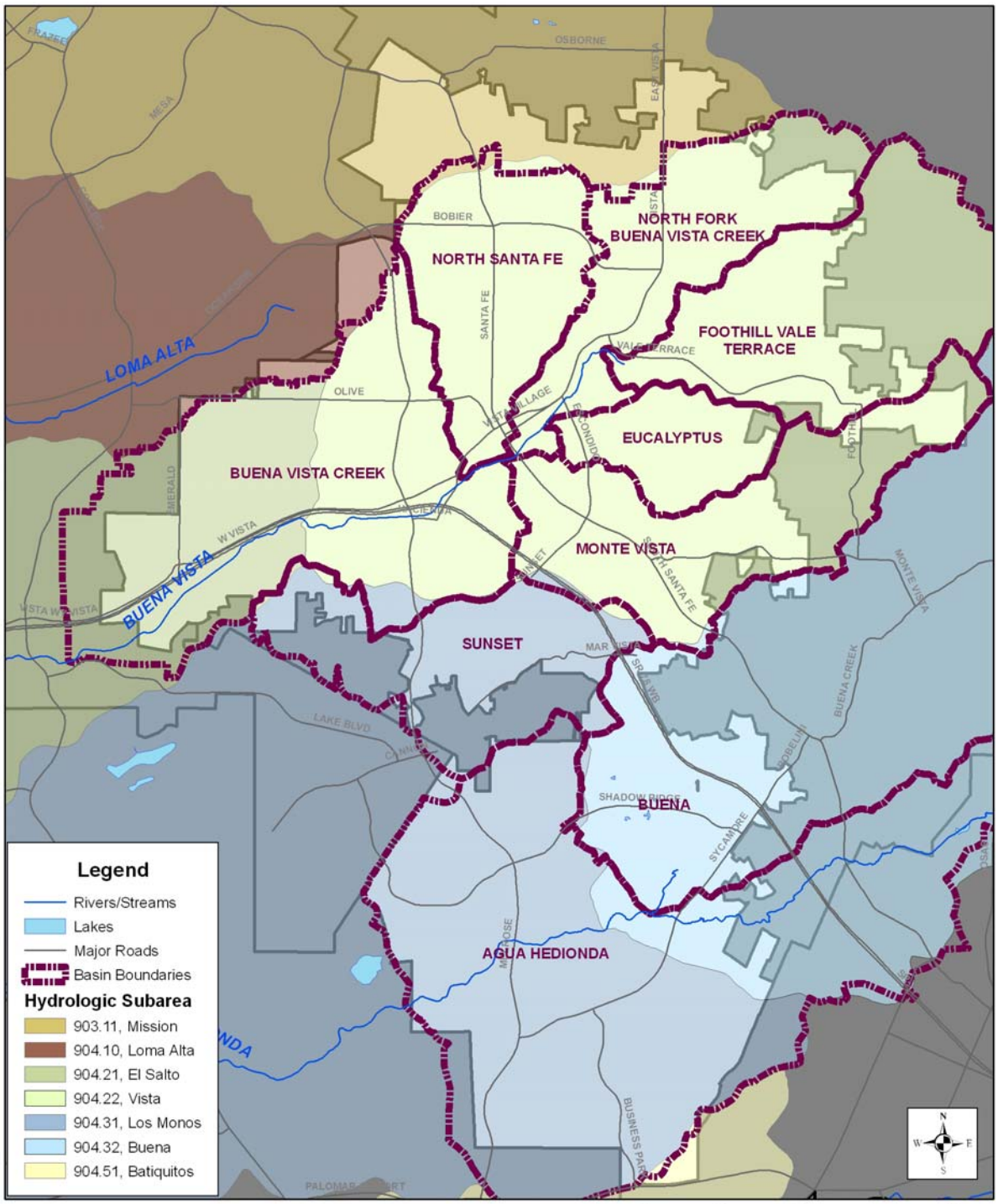

Base Data Sources: USGS, SANDAG, SanGIS, City of Vista

0 0.5 1 2 Miles

APPENDIX A

Historical Dry Weather Monitoring Data

City of Vista Dry Weather Historical Data

2002

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. °C	20	21	27	21	22	22	20	21	21	20	19.5			28	22.5	19			22	21
pH	8.0	7.6	8.2	8.0	7.8	8.4	8.2	8.2	8.2	8.5	7.0			**9.3**	7.3	8.1			7.5	8.0
Conductivity, µS/cm	1,839	2,480	2,920	1,898	1,808	3,100	3,220	8,510	2,937	1,662	2,010			1,109	2,150	2,090			2,450	2,260
Turbidity, NTU	8.92	44.82	6.48	0.37	2.82	3.59	2.3	11.1	1.61	4.35	10.22			2.36	4.4	0.62			3.22	1.15
Ammonia, mg/l NH3-N	0.3	0.8	0.4	0.3	0.2	**1.0**	0.1	**2.0**	0.2	0.2	0.2			0.2	0.1	0.2			0.6	0.2
Nitrate, mg/l NO3-N	**10.0**	**16.0**	nd	nd	5.0	1.75	0.2	0.2	1.0	0.2	5.0			0.4	8.0	8.0			0.2	**32.0**
Reactive Phosphorus, mg/l PO4-P	0.07	0.23	0.489	0.163	0.2	0.489	0.0815	0.489	0.489	0.26	0.2			0.2	0.07	0.0978			1.304	0.16
Detergents, mg/l MBAS	0.37	0.37	0.25	0.25	0.5	0.37	0.25	0.5	0.13	0.25	0.37			0.25	0.25	0.25			0.25	0.25
Surfactants, mg/l MBAS				nd			nd		nd					nd		nd				
Oil and Grease, mg/l				5.4			2.2		1.9					2.0		10				
Total Hardness, mg/l CaCO3				662			1,030		617					289		725				
Cadmium, mg/l				nd			nd		nd					nd		nd				
Copper, mg/l				nd			nd		nd					nd		nd				
Lead, mg/l				nd			nd		nd					nd		nd				
Zinc, mg/l				nd			nd		nd					nd		nd				
Diazinon, µg/L				nd			nd		nd					nd		nd				
Chlorpyrifos, µg/L				nd			nd		nd					nd		nd				
Total Coliform, MPN/100ml				1,600			2,400		5,000					2,400		24,000				
Fecal Coliform, MPN/100ml				900			1,300		2,400					800		5,000				
Enterococcus, MPN/100ml				130			1,300		70					230		3,000				

2003

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. °C	19	19	22	18.5	18	18	16	17	17	17	17			20	20	18	21		18	20
pH	8.5	8.1	8.5	8.4	8.4	8.3	8.4	8.4	8.2	8.7	8.3			**9.0**	8.3	8.4	7.6		7.8	8.2
Conductivity, µS/cm	2,480	2,770	3,090	2,630	2,560	4,470	2,720	4,130	2,520	2,410	2,230			1,280	1,846	2,410	3,660		3,800	2,560
Turbidity, NTU	2.46	1.42	7.85	2.3	0.72	1.31	5.03	5.91	2.51	1.87	6.07			2.57	1.49	1.94	7.18		5.62	2.8
Ammonia, mg/l NH3-N	0.2	0.2	0.3	0.2	0.3	0.6	0.2	0.8	0.2	0.1	0.1			0.1	0.2	0.2	0.5		0.3	0.1
Nitrate, mg/l NO3-N	8.0	2.0	0.1	3.0	8.0	2.0	0.5	0.6	2.0	0.2	4.5			1.0	8.0	8.0	nd		0.1	**20.0**
Reactive Phosphorus, mg/l PO4-P	0.13	0.13	0.26	0.07	0.07	0.13	0.07	0.13	0.07	0.07	0.07			0.03	nd	0.1	0.13		0.2	0.03
Detergents, mg/l MBAS	0.25	0.25	0.25	0.25	0.25	0.5	0.25	0.5	0.5	0.25	0.25			0.25	0.25	0.25	0.25		0.25	0.25
Surfactants, mg/l MBAS				nd			nd							nd		nd				
Oil and Grease, mg/l				nd			**147**							nd		nd				
Total Hardness, mg/l CaCO3				763			744							333		733				
Cadmium, mg/l				nd			nd							nd		nd				
Copper, mg/l				nd			0.007							nd		nd				
Lead, mg/l				nd			nd							nd		nd				
Zinc, mg/l				nd			0.024							nd		nd				
Diazinon, µg/L				nd			nd							nd		nd				
Chlorpyrifos, µg/L				nd			nd							nd		nd				
Total Coliform, MPN/100ml				8,000			**>160,000**							5,000		8000				
Fecal Coliform, MPN/100ml				3,000			**>160,000**							3,000		3000				
Enterococcus, MPN/100ml				800			**50,000**							800		1,300				

2004

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. °C	20.1	20.1	21	18.6	18.4	19.8	18.3	20.6	19.9	19.7	20.2			25.2	20	19.3	ns	26.8	21.4	18.4
pH	8.53	8.04	7.68	8.09	8.15	8.1	8.04	8.35	8.08	8.63	7.73			**9.5**	8.15	8.06	ns	**9.07**	7.6	7.93
Conductivity, µS/cm	1,619	1,947	1,738	1,790	1,872	3,250	1,989	983	1,682	1,657	1,637			1,206	1,791	1,817	ns	1,816	2,420	1,983
Turbidity, NTU	3.26	3.82	7.04	1.07	5.48	3.53	1.03	2.38	2.59	2.94	2.58			1.15	9.84	2.28	ns	37	4.13	1.36
Ammonia-N, mg/l NH3-N	0.4	0.3	0.3	0.3	0.2	0.8	0.6	0.8	0.2	0.2	0.3			0.1	0.2	0.2	ns	0.6	**2.0**	0.3
Nitrate-N, mg/l NO3-N	**12.0**	**22.5**	0.2	2.0	**12.0**	2.5	1.5	0.4	2.5	1.0	4.5			1.0	18	31.5	ns	2.0	0.1	**36.0**
Orthophosphate-P, mg/l PO4-P	0.6	0.3	1.0	0.2	0.2	0.6	0.2	0.8	0.1	0.3	0.2			0.1	0.1	0.2	ns	1.0	2.0	0.1
Surfactants, mg/l MBAS (Field test)	0.25	0.5	0.25	0.15	0.25	0.25	0.25	0.5	0.25	0.25	0			0	0.3	0.5	ns	0.5	**2.0**	0.25
Surfactants, mg/l MBAS (Lab test)				nd			nd		nd					nd		ND				
Oil and Grease, mg/l				3			nd		2					2		2				
Total Hardness, mg/l CaCO3				833			756		511					315		720				
Cadmium, mg/l				nd			nd		nd					nd		nd				
Copper, mg/l				nd			nd		nd					nd		nd				
Lead, mg/l				nd			nd		nd					nd		nd				
Zinc, mg/l				nd			nd		0.032					nd		nd				
Diazinon, µg/L																				
Chlorpyrifos, µg/L																				
Total Coliform, MPN/100ml				3,000			22,000		13,000					500		8,000				
Fecal Coliform, MPN/100ml				1,100			500		2,300					130		170				
Enterococcus, MPN/100ml				62			197		187					41		160				

City of Vista Dry Weather Historical Data

2002

Site No.	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. °C	22	22		18		21			28											
pH	7.8	7.8		8.2		8.3			8.6											
Conductivity, µmhos/cm	1,712	2,050		2,420		2,380			1,640											
Turbidity, NTU	1.91	4.02		28.71		2.55			0.99											
Ammonia, mg/l NH3-N	0.1	0.2		0.5		0.1			0.2											
Nitrate, mg/l NO3-N	**20.0**	**28.0**		4.5		**14.0**			**12.0**											
Reactive Phosphorus, mg/l PO4-P	0.08	0.26		0.0978		0.08			0.49											
Detergents, mg/l MBAS	0.25	0.37		0.25		0.37			0.13											
Surfactants, mg/l MBAS				nd																
Oil and Grease, mg/l				3																
Total Hardness, mg/l CaCO3				812																
Cadmium, mg/l				nd																
Copper, mg/l				nd																
Lead, mg/l				nd																
Zinc, mg/l				nd																
Diazinon, µg/L				nd																
Chlorpyrifos, µg/L				nd																
Total Coliform, MPN/100ml				24,000																
Fecal Coliform, MPN/100ml				3,000																
Enterococcus, MPN/100ml				1,300																

2003

Site No.	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AHC-1	AHC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. °C	21	23	28			28			20						16	17	21	19	21	18
pH	8.4	8.4	8.2			8.7			8.9						8.1	8.3	8.4	8.3	8.5	8.5
Conductivity, µmhos/cm	2,160	1,848	1,647			1,566			1,904						2,560	2,760	2,380	2,650	1,951	3,560
Turbidity, NTU	1.96	2.13	4.89			9.13			2.25						9.66	3.41	2.62	5.83	2.77	6.99
Ammonia, mg/l NH3-N	0.2	0.2	**1.0**			0.2			0.1						0.5	0.1	0.2	0.1	0.2	0.4
Nitrate, mg/l NO3-N	**20.0**	8.0	2.0			3.0			8.0						0.6	1.5	**32.0**	5.0	1.5	4.0
Reactive Phosphorus, mg/l PO4-P	0.07	0.07	1.55			0.26			0.03						0.07	0.2	0.065	0.07	0.07	0.1
Detergents, mg/l MBAS	0.25	0.25	0.5			0.5			0.25						0.25	0.25	0.25	0.25	0.25	0.25
Surfactants, mg/l MBAS									nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l									**368**						8.0	**149**	nd	nd	nd	nd
Total Hardness, mg/l CaCO3									703						613	761	840	825	608	920
Cadmium, mg/l									nd						nd	nd	nd	nd	nd	nd
Copper, mg/l									nd						0.028	nd	nd	nd	nd	nd
Lead, mg/l									nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l									nd						0.104	nd	0.068	nd	0.032	nd
Diazinon, µg/L									nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L									nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml									**160,000**						**90,000**	8,000	1,100	8,000	5,000	**50,000**
Fecal Coliform, MPN/100ml									**90,000**						**50,000**	5,000	800	3,000	2,300	**30,000**
Enterococcus, MPN/100ml									1,300						110	170	40	230	80	3,000

2004

Site No.	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. °C	19.4	17.9	ns			22.8			22.5			ns	18.8		21	19.6	21.2	20.2	20	17.9
pH	8.12	8.43	ns			7.98			8.88			ns	7.78		7.96	7.66	7.94	7.75	8.35	7.59
Conductivity, µS/cm	1,715	1,684	ns			2,440			1,694			ns	949		1,667	1,792	1,806	1,745	1,631	3
Turbidity, NTU	2.67	1.92	ns			38.5			1.76			ns	6.94		3.1	1.5	1.86	2.38	2.79	4.46
Ammonia-N, mg/l NH3-N	0.3	0.3	ns			**1.0**			0.2			ns	0.6		0.8	0.3	0.2	0.3	0.3	0.3
Nitrate-N, mg/l NO3-N		**31.5**	ns			0.2			**22.5**			ns	0.4		1.0	0.3	**27.0**	**22.5**	3.5	0.2
Orthophosphate-P, mg/l PO4-P	0.2	0.1	ns			2.0			0.1			ns	0.6		0.3	0.7	0.2	0.2	0.1	0.1
Surfactants, mg/l MBAS (Field test)	0.25	0.25	ns			0.5			0.25			ns	0.75		0.25	0.25	0.3	0.25	0	0
Surfactants, mg/l MBAS (Lab test)									nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l									nd						11	nd	2	nd	2	2
Total Hardness, mg/l CaCO3									684						624	762	828	722	484	735
Cadmium, mg/l									nd						ND	nd	nd	nd	nd	nd
Copper, mg/l									nd						0.005	nd	nd	0.011	nd	nd
Lead, mg/l									nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l									nd						0.032	nd	0.032	0.032	nd	nd
Diazinon, µg/L																				
Chlorpyrifos, µg/L																				
Total Coliform, MPN/100ml									700						**50,000**	1,700	13,000	700	800	5,000
Fecal Coliform, MPN/100ml									300						3,000	170	3,000	500	40	300
Enterococcus, MPN/100ml									386						1,679	110	275	428	31	417

City of Vista Dry Weather Historical Data

2005

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. °C	20	19.6	18.9	17.4	19.7	18.75	17.9	20	21.4	19.6	20.5	17.1	17.1	25.7	21.1	21.3	15.8	24.8	19.6	17.9
pH	8.71	8.05	7.56	8.14	8.33	7.65	8.02	8.5	7.48	8.64	8.12	8.41	8.04	8.41	8.35	8.01	7.99	8.09	7.74	7.87
Conductivity, µS/cm	1,770	2,090	2,380	1,880	1,770	3,190	1,510	6,510	1,886	1,410	1,940	1,190	904	1,604	1,610	1,939	2,560	5,260	2,430	2,260
Turbidity, NTU	10	10	8	10	10	15	98	2.0	2.28	6	22	78.4	195	1.3	9	1.4	2.67	220	1	2.44
Ammonia, mg/l NH3-N	0.2	0.6	0.4	0.2	0.4	0.1	**1.0**	0.4	0.3	0.2	0.2	**1.5**	**1.0**	0.2	0.2	0.3	0.4	0.6	0.3	0.2
Nitrate, mg/l NO3-N	**15.0**	**15.0**	0.8	7.5	**15.0**	1.0	1.0	0.2	4.5	0.2	7.5	0.2	0.2	1.5	6.0	12	0.2	1.0	1.5	**15.0**
Reactive Phosphorus, mg/l PO4-P	1.0	0.4	1.0	0.6	0.6	0.3	0.2	1.0	0.2	0.4	0.2	**6.0**	**2.0**	0.3	0.1	0.2	0.3	0.4	0.9	0.3
Detergents, mg/l MBAS	0.5	0.5	0.5	0.3	0.5	0.8	**1.0**	0.8	0.5	0.3	0.8	**15.0**	7.5	0.3	0.5	0.5	0.25	0.8	0.8	0.5
Surfactants, mg/l MBAS				nd			nd				nd								nd	nd
Oil and Grease, mg/l				nd			nd				nd								nd	nd
Total Hardness, mg/l CaCO3				1,100			865				637								699	1,040
Cadmium, mg/l				nd			nd				nd								nd	nd
Copper, mg/l				nd			0.02				nd								nd	nd
Lead, mg/l				nd			nd				nd								nd	nd
Zinc, mg/l				nd			0.089				nd								nd	nd
Diazinon, µg/L				nd			nd				nd								nd	nd
Chlorpyrifos, µg/L				nd			nd				nd								nd	nd
Total Coliform, MPN/100ml				3,000			11,000				23,000								3,500	195(E)
Fecal Coliform, MPN/100ml				300			800				800								700	80
Enterococcus, MPN/100ml				132			592				97								581	404

2006

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. °C	21.6	22.4	23.5	20.8	23.8	22.6	24.9	19.8	20.2	24	21.1	24.3	dry	24.7	25.8	20	dry	30.2	dry	20.3
pH	8.97	8.7	8.44	8.21	8.68	8.57	7.93	8.82	8.68	8.84	8.6	8.63	dry	**9.46**	8.73	8.75	dry	**9.11**	dry	8.44
Conductivity, mS/cm	1.91	2.14	2	2	1.18	3.17	0.664	5.75	2.03	1.72	1.67	1.72	dry	1.43	1.77	1.88	dry	3.58	dry	1.88
Turbidity, NTU	2	1	34	43	308	60	22	5	4	12	30	241	dry	3	33	nd	dry	2	dry	152
Ammonia, mg/l NH3-N	0.4	0.2	0.4	nd	0.1	0.9	0.4	0.4	0.2	0.3	0.2	0.3	dry	nd	0.1	0.2	dry	0.4	dry	0.1
Nitrate, mg/l NO3-N	**12.0**	**15.0**	0.2	6.0	3.5	1.5	0.1	nd	1.0	0.3	3.0	2.4	dry	0.8	7.5	5.5	dry	0.8	dry	9.0
Reactive Phosphorus, mg/l PO4-P	0.4	0.3	1.5	0.4	0.3	0.6	0.1	0.3	0.15	0.6	0.4	0.3	dry	0.2	0.2	0.2	dry	nd	dry	0.2
Detergents, mg/l MBAS	0.25	0.25	0.5	0.5	0.25	0.5	0.25	**3.0**	0.25	0.5	0.25	0.25	dry	0.25	0.25	0.25	dry	0.5	dry	0.2
Surfactants, mg/l MBAS				nd			nd				nd			nd					dry	nd
Oil and Grease, mg/l				nd			nd				nd			nd					dry	nd
Total Hardness, mg/l CaCO3				726			188				538			431					dry	818
Cadmium, mg/l				nd			nd				nd			nd					dry	nd
Copper, mg/l				nd			nd				nd			nd					dry	nd
Lead, mg/l				nd			nd				nd			nd					dry	nd
Zinc, mg/l				nd			0.056				nd			nd					dry	nd
Diazinon, µg/L				nd			nd				nd			nd					dry	nd
Chlorpyrifos, µg/L				nd			nd				nd			nd					dry	nd
Total Coliform, MPN/100ml				5,000			230				**60,000**			**60,000**					dry	5,000
Fecal Coliform, MPN/100ml				170			20				3,000			**50,000**					dry	700
Enterococcus, MPN/100ml				800			40				1,100			3,000					dry	1,300

City of Vista Dry Weather Historical Data

2005

Site No.	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. °C	21.7	17.8	26.5		dry	dry	23.3		24.5	18.5		dry	19.3		19.9	17.4	20.4	19.5	21.6	20.2
pH	8.06	8.12	7.82		dry	dry	**9.1**		8.75	7.77		dry	7.99		7.78	8.14	8.17	8.24	7.95	8.16
Conductivity, µmhos/cm	1,737	1,960	2,430		dry	dry	821		1,760	1,280		dry	13,000		5,310	1,760	1,842	1,610	1,874	2,250
Turbidity, NTU	2.2	1.28	1		dry	dry	323		0.5	22.9		dry	9		10	0	0.21	22	2.26	89
Ammonia, mg/l NH3-N	0.3	0.3	0.4		dry	dry	0.8		0.2	**1.5**		dry	0.6		0.4	0.2	0.3	0.4	0.3	0.6
Nitrate, mg/l NO3-N	**15.0**	**15.0**	0.2		dry	dry	0.2		7.5	0.2		dry	0.1		0.1	7.5	**15.0**	9.0	3.0	7.5
Reactive Phosphorus, mg/l PO4-P	0.2	0.5	**3.0**		dry	dry	0.6		0.2	**3.0**		dry	0.4		0.1	0.6	0.3	0.6	0.2	0.4
Detergents, mg/l MBAS	0.5	0.5	0.75		dry	dry	0.5		0.3	**1.5**		dry	0.5		0.5	0.5	0.5	0.5	0.5	0.3
Surfactants, mg/l MBAS	nd								nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Total Hardness, mg/l CaCO3	968								970						2,260	1,100	1,100	983	773	742
Cadmium, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Copper, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Lead, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Diazinon, µg/L	nd								nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L	nd								nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml	8,000								7,000						5,000	800	1,700	500	8,000	5,000
Fecal Coliform, MPN/100ml	80								260						40	500	300	300	80	230
Enterococcus, MPN/100ml	197								298						109	145	131	185	41	183

2006

	BV-19	BV-24	BV-25	G-1	G-2	G-3	G-4	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. °C	20.6	27.6	32.4		dry	24.3	22.8		22.6	27		dry	22.1	21.4	22.7	21.7	22	20.6	21.3	19.4
pH	8.67	8.92	**9.37**		dry	8.37	8.7		8.89	8.84		dry	8.35	8.33	8.41	8.47	8.45	8.56	8.31	8.5
Conductivity, mS/cm	1.68	1.8	1.89		dry	2.1	0.855		1.83	1.15		dry	1.18	4.03	4.07	1.99	1.85	1.84	1.82	2.26
Turbidity, NTU	3	3	196		dry	63	51		5	133		dry	8	22	26	2	nd	26	5	13
Ammonia, mg/l NH3-N	0.1	0.2	0.6		dry	**1.5**	**1.5**		0.1	**4.0**		dry	**2.0**	0.6	**8.0**	0.2	0.3	0.1	0.2	0.4
Nitrate, mg/l NO3-N	**37.5**	9.0	nd		dry	0.2	nd		**15.0**	0.4		dry	0.1	0.4	0.2	3.8	**12.0**	**13.5**	2.0	0.8
Reactive Phosphorus, mg/l PO4-P	0.1	0.6	nd		dry	1.0	**4.0**		0.1	**6.0**		dry	0.6	1.5	0.4	0.5	0.2	0.3	0.2	0.3
Detergents, mg/l MBAS	0.5	0.5	0.75		dry	0.75	**1.5**		0.3	**5.0**		dry	0.75	0.5	0.5	0.5	0.5	0.25	0.25	0.7
Surfactants, mg/l MBAS	nd								nd						nd	nd	nd	nd	nd	nd
Oil and Grease, mg/l	nd								nd						5	nd	nd	nd	nd	nd
Total Hardness, mg/l CaCO3	696								736						1410	709	739	650	602	757
Cadmium, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Copper, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Lead, mg/l	nd								nd						nd	nd	nd	nd	nd	nd
Zinc, mg/l	nd								nd						0.047	nd	nd	nd	nd	nd
Diazinon, µg/L	nd								nd						nd	nd	nd	nd	nd	nd
Chlorpyrifos, µg/L	nd								nd						nd	nd	nd	nd	nd	nd
Total Coliform, MPN/100ml	7,000								5,000						**3,000,000**	1,100	30,000	3,000	3,000	5,000
Fecal Coliform, MPN/100ml	130								300						**80,000**	40	800	170	500	300
Enterococcus, MPN/100ml	358								3,000						5,000	300	2,300	500	300	750E

City of Vista Dry Weather Historical Data

2007

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	AH-30	AH-31	AH-32	AH-33	AH-34	AH-35	AH-36	AH-37	AH-38	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. °C	18.5	19.4	20.1	18.1	19.2	20.4	18.3										19.7	19.4	21.1	20.8	dry	dry	22.5	23.1	18.3	dry	27.8	dry	18.9
pH	8.48	7.88	7.54	7.58	7.9	8.19	7.9										8.23	7.98	8.66	7.74	dry	dry	8.75	8.07	8.25	dry	8.57	dry	7.55
Conductivity, mS/cm	1.829	1.742	2.29	2.56	1.82	1.927	3.12										8.21	1.759	1.795	1.747	dry	dry	1.252	1.582	1.668	dry	4.66	dry	2.21
Turbidity, NTU	0.6	0.49	1.06	1.08	4.74	7.25	2.68										1.86	1.98	1.98	4.18	dry	dry	1.51	0.46	1.09	dry	0.51	dry	8.19
Ammonia, mg/l NH3-N	0.1	0.2	0.4	0.1	0.2	6	0.6										0.4	0.2	0.1	0.1	dry	dry	0.1	0.1	0.4	dry	0.2	dry	0.2
Nitrate, mg/l NO3-N	13.5	15	0.3	1	6	0.4	0.2										0.4	2.5	0.3	4.5	dry	dry	0.8	7.5	22.5	dry	1	dry	22.5
Reactive Phosphorus, mg/l PO4-P	0.0654	0.0654	0.1961	0.0654	0.0654	0.1307	0.0327										0.131	0.033	0.065	0.065	dry	dry	0.033	nd	0.049	dry	0.131	dry	0.065
Detergents, mg/l MBAS	0.25	0.25	0.25	0.25	0.25	1	0.25										2	0.25	0.25	0.25	dry	dry	0.25	0.5	0.25	dry	0.25	dry	0.25
Surfactants, mg/l MBAS				nd			nd													nd			nd					dry	nd
Oil and Grease, mg/l				nd			nd													nd			nd					dry	nd
Total Hardness, mg/l CaCO3				799			1040													566			388					dry	920
Cadmium, mg/l				nd			nd													nd			nd					dry	nd
Copper, mg/l				nd			0.005													nd			nd					dry	nd
Lead, mg/l				nd			nd													nd			nd					dry	nd
Zinc, mg/l				nd			0.03													nd			nd					dry	nd
Diazinon, µg/L				nd			nd													nd			nd					dry	nd
Chlorpyrifos, µg/L				nd			nd													nd			nd					dry	nd
Total Coliform, MPN/100ml				2,200			30,000													240,000			35,000					dry	7,000
Fecal Coliform, MPN/100ml				500			17,000													240,000			1,700					dry	700
Enterococcus, MPN/100ml				500			28,000													230			17,000					dry	1,300

2008

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	AH-30	AH-31	AH-32	AH-33	AH-34	AH-35	AH-36	AH-37	AH-38	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. °C		22	22.1			24.8	23	25.2	24.2	25.2	24.1	dry	24.1	24.5	28	25.4	23		23.2			dry	28.4	24.4		22.1		dry	19.6
pH		7.7	7.1			7.8	7.9	7.3	7.8	7.3	7.3	dry	7.9	8.0	8.4	7.8	7.8		8.1			dry	8.4	7.6		7.8		dry	7.3
Conductivity, mS/cm		2.36	2.88			3.64	3.7	2.77	1.47	7.15	1.23	dry	6.11	1.31	1.04	1.97	11.34		1.94			dry	1.7	2.03		2.55		dry	2.22
Turbidity, NTU		0.01	1.65			16.15	0.01	6.15	9.72	12.34	16.96	dry	0.27	8.07	0.81	3.55	1.5		1.76			dry	1.11	8.3		2.32		dry	1.66
Ammonia, mg/l NH3-N		0.223	0.227			0.547	0.113	0.525	0.176	0.381	0.338	dry	0.191	0.155	0.069	0.126	0.607		0.071			dry	0.171	0.252		0.193		dry	0.242
Nitrate, mg/l NO3-N		18.37	0.98			2.033	0.915	1.058	1.524	2.12	1.422	dry	46.872	2.191	1.026	1.479	0.629		0.856			dry	9.567	11.467		6.676		dry	18.923
Reactive Phosphorus, mg/l PO4-P		0.145	0.274			0.757	0.053	0.301	1.043	0.033	0.67	dry	0.063	0.296	0.245	0.481	0.154		0.137			dry	0.082	0.041		0.087		dry	0.111
Detergents, mg/l MBAS		0.25	0.25			0.25	0.38	0.5	0.5	0.68	0.75	dry	0.75	0.75	0.13	0.25	0.75		0.38			dry	0.13	0.25		0.13		dry	0.25
Oil and Grease, mg/l		nd	nd				nd												nd				nd						nd
Total Hardness, mg/l CaCO3		911	969				1,240												561				431						nd
Cadmium, mg/l		nd	nd				nd												nd				nd						nd
Copper, mg/l		nd	nd				0.005												nd				nd						nd
Lead, mg/l		nd	nd				nd												nd				nd						nd
Zinc, mg/l		nd	nd				0.03												nd				nd						nd
Diazinon, µg/L		nd	nd				nd												nd				nd						nd
Chlorpyrifos, µg/L		nd	nd				nd												nd				nd						nd
Total Coliform, MPN/100ml		8,000	23,000				130,000												8,000				186,000						5,000
Fecal Coliform, MPN/100ml		1,700	5,000				5,000												5,000				5,000						3,000
Enterococcus, MPN/100ml		230	3,000				1,700												2,300				1,700						1,700

2009

Site No.	AH-8	AH-8A	AH-9	AH-10	AH13	AH-17	AH-21	AH-30	AH-31	AH-32	AH-33	AH-34	AH-35	AH-36	AH-37	AH-38	BV-1	BV-2	BV-4	BV-6	BV-7	BV-7A	BV-8	BV-10	BV-11	BV-12	BV-14	BV-15	BV-18
Temp. °C		ns	20.1			21	20.6	18.8	22	21.7	18.5	ns	20.8	17.8	ns	21.1	22.2		20.4			ns	20.7	23		17.3			18.9
pH		ns	7.4			7.8	7.8	7.8	8	7.4	7.5	ns	8.1	8.2	ns	7.9	8.1		8.2			ns	8.3	8.7		8.1			7.7
Conductivity, mS/cm		ns	2.91			4.49	2.96	1.7	1.17	7.35	1.53	ns	6.21	1.44	ns	1.4	8.35		2.01			ns	1.56	1.82		2.17			2.08
Turbidity, NTU		ns	0.46			38.46	1.14	1.92	1.91	30.41	40.17	ns	1.63	1.09	ns	18.11	1.9		1.36			ns	0.78	3.95		2.06			0.1
Ammonia, mg/l NH3-N		ns	0.195			0.447	0.257	nd	0.03	0.5	0.148	ns	0.171	0.011	ns	0.104	0.194		0.026			ns	0.032	0.195		0.088			0.16
Nitrate, mg/l NO3-N		ns	0.179			2.209	0.432	0.229	0.261	0.185	0.361	ns	38.45	0.353	ns	1.059	0.05		0.147			ns	3.65	4.55		0.942			11.64
Reactive Phosphorus, mg/l PO4-P		ns	0.363			0.269	0.022	0.37	0.841	0.036	0.642	ns	0.073	0.249	ns	0.266	0.125		0.082			ns	0.022	0.024		0.052			0.051
Detergents, mg/l MBAS		ns	0.5			0.5	0.5	0.25	0.25	0.5	0.75	ns	0.63	0.25	ns	0.13	0.75		0.38			ns	0.25	0.25		0.25			0.5
Oil and Grease, mg/l			nd				nd												nd				nd						nd
Total Hardness, mg/l CaCO3			880				1,150												500				400						800
Cadmium, mg/l			nd				nd												nd				nd						nd
Copper, mg/l			0.003				0.003												0.001				0.004						0.003
Lead, mg/l			nd				nd												nd				nd						nd
Zinc, mg/l			nd				0.046												nd				nd						0.06
Diazinon, µg/L			nd				nd												nd				nd						nd
Chlorpyrifos, µg/L			nd				nd												nd				nd						nd
Total Coliform, MPN/100ml			4,600			13,100	7,100										860		16,400				6,500						2,900
Fecal Coliform, MPN/100ml			1,130			4,100	3,155										440		1,805				1,400						1,400
Enterococcus, MPN/100ml			560			5,800	1,925										420		405				400						1,900

City of Vista Dry Weather Historical Data

2007

Site No.	BV-19	BV-24	BV-25	BV-30	BV-31	BV-32	BV-33	BV-34	BV-35	BV-36	G-1	G-2	G-3	G-4	G-5	G-6	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. °C	20.8	21.2	dry									23.7	22.5	dry			21		dry	20.5	24.2	20.1		20.3	18.4		21	23.7	18.9
pH	7.77	8.25	dry									8.35	7.84	dry			7.96		dry	8.12	7.94	7.87		7.29	7.63		7.69	8.15	7.73
Conductivity, mS/cm	1.534	1.6	dry									0.849	1.484	dry			0.844		dry	0.928	1.16	1.076		4.91	2.3		1.63	2.1	2.71
Turbidity, NTU	0.64	22.4	dry									1.72	6.8	dry			14.9		dry	32.6	126	9.6		17.3	1.82		1.69	2.82	6.61
Ammonia, mg/l NH3-N	0.2	0.6	dry									0.3	10	dry			0.8		dry	0.8	0.8	0.3		1.5	0.2		0.1	0.1	0.3
Nitrate, mg/l NO3-N	15	18	dry									0.2	0.3	dry			0.6		dry	0.1	1	0.3		nd	0.6		15	1.5	0.8
Reactive Phosphorus, mg/l PO4-P	0.065	0.098	dry									0.261	0.98	dry			0.98		dry	0.98	0.261	0.098		0.196	0.065		0.033	0.033	0.065
Detergents, mg/l MBAS	0.5	0.25	dry									0.25	0.5	dry			0.5		dry	1.5	2	0.25		0.5	0.25		0.25	0.25	0.25
Surfactants, mg/l MBAS	nd																							nd	nd		nd	nd	nd
Oil and Grease, mg/l	nd																							nd	nd		nd	nd	nd
Total Hardness, mg/l CaCO3	799																							1,620	884		848	626	788
Cadmium, mg/l	nd																							nd	nd		nd	nd	nd
Copper, mg/l	nd																							nd	nd		nd	nd	nd
Lead, mg/l	nd																							nd	nd		nd	nd	nd
Zinc, mg/l	nd																							0.04	nd		nd	nd	nd
Diazinon, µg/L	nd																							nd	nd		nd	nd	nd
Chlorpyrifos, µg/L	nd																							nd	nd		nd	nd	nd
Total Coliform, MPN/100ml	5,000																							80,000	700		5,000	5,000	13,000
Fecal Coliform, MPN/100ml	20																							1,400	140		800	1,400	500
Enterococcus, MPN/100ml	230																							5,000	110		500	130	2,800

2008

Site No.	BV-19	BV-24	BV-25	BV-30	BV-31	BV-32	BV-33	BV-34	BV-35	BV-36	G-1	G-2	G-3	G-4	G-5	G-6	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. °C		25.5		22.3	26	25.6	26.7	24.5					23.7	28.2	24.6	25					dry	22.8							
pH		8.0		8.0	7.2	7.0	7.3	8.0					7.4	9.1	7.8	7.4					dry	7.4							
Conductivity, mS/cm		2.0		2.08	1.49	5.31	3.56	1.69					1.9	0.97	2.92	2.08					dry	1.31							
Turbidity, NTU		1.37		5.54	0.01	3.91	8.31	7.08					17.18	2.97	3.6	0.01					dry	5.37							
Ammonia, mg/l NH3-N		0.173		0.192	0.014	0.296	0.397	0.137					2.876	0.17	0.352	0.192					dry	0.128							
Nitrate, mg/l NO3-N		13.80		0.525	1.525	7.621	1.688	0.753					0.6	0.663	2.888	6.265					dry	0.643							
Reactive Phosphorus, mg/l PO4-P		0.095		0.103	0.067	0.456	1.129	0.079					1.943	0.31	0.22	0.054					dry	0.342							
Detergents, mg/l MBAS		0.25		0.13	0.13	0.88	0.75	0.25					0.5	0.25	0.25	0.5					dry	0.25							
Oil and Grease, mg/l					nd																	nd							
Total Hardness, mg/l CaCO3					354																	338							
Cadmium, mg/l					nd																	nd							
Copper, mg/l					nd																	0.005							
Lead, mg/l					nd																	nd							
Zinc, mg/l					nd																	nd							
Diazinon, µg/L					nd																	nd							
Chlorpyrifos, µg/L					nd																	nd							
Total Coliform, MPN/100ml					300																	80,000							
Fecal Coliform, MPN/100ml					20																	13,000							
Enterococcus, MPN/100ml					20																	1,700							

2009

Site No.	BV-19	BV-24	BV-25	BV-30	BV-31	BV-32	BV-33	BV-34	BV-35	BV-36	G-1	G-2	G-3	G-4	G-5	G-6	G-4A	MV-1	MV-2	MV-2A	MV-3	SS-1	SS-2	AC-1	AC-2	BVC-1	BVC-2	BVC-3	GC-1
Temp. °C		17.3		17.8	23.2	23.7	23.6	19.3	21.2	21			20.1	19	19.7	22.7						20.4							
pH		7.8		8.1	7.6	7.4	7.6	8.1	8.3	7.9			8.1	7.4	7.7	7.9						7.5							
Conductivity, mS/cm		1.9		1.82	1.36	1.44	5.35	1.54	0.98	1.68			1.78	0.68	2.76	1.89						2.12							
Turbidity, NTU		1.5		17.66	0.01	23.15	5.12	3.62	8.5	10.32			0.01	28.07	2.41	0.01						14.21							
Ammonia, mg/l NH3-N		0.125		0.091	0.005	0.747	0.317	0.014	0.274	0.108			0.113	1.199	0.128	0.114						6.49							
Nitrate, mg/l NO3-N		4.28		0.179	0.672	2.27	1.481	nd	0.032	4.6			9.76	5.38	1.52	0.188						0.681							
Reactive Phosphorus, mg/l PO4-P		0.123		0.109	0.035	0.404	0.418	0.053	0.291	0.231			0.061	0.647	0.141	0.032						0.608							
Detergents, mg/l MBAS		0.25		0.25	0.25	1.5	0.75	0.13	0.5	0.25			0.5	0.75	0.5	0.25						0.5							
Oil and Grease, mg/l					nd											5						nd							
Total Hardness, mg/l CaCO3					300											600						640							
Cadmium, mg/l					nd											nd						nd							
Copper, mg/l					0.003											nd						0.004							
Lead, mg/l					nd											nd						nd							
Zinc, mg/l					0.133											nd						nd							
Diazinon, µg/L					nd											nd						nd							
Chlorpyrifos, µg/L					nd											nd						nd							
Total Coliform, MPN/100ml					30											2,365						640							
Fecal Coliform, MPN/100ml					<10											490						185							
Enterococcus, MPN/100ml					40											115						140							

APPENDIX B

Photographs of Sampling Locations

Site AH-9	
Site AH-8A	
Site AH-17	

Site AH-21	
Site AH-30	
Site AH-31	

Site AH-32	
Site AH-33	
Site AH-34	

Site AH-35	
Site AH-36	
Site AH-37	

Site SS-1	
Site BV-1	
Site BV-4	

Site BV-7A	
Site BV-8	
Site BV-10	

Site BV-15	
Site BV-18	
Site BV-24	

Site BV-30	
Site BV-31	
Site BV-32	

Site BV-33	
Site MV-3	
Site G-3	

Site G-4	
Site G-5	
Site G-6	

Site BV-12	
Site BV-34	
Site BV-35	

Site BV-36	
Site AH-38	
Site BV-14	

Site BV-6	
Site MV-2A	
Site BV-19	

APPENDIX C

Laboratory Analytical Reports

EnviroMatrix Analytical, Inc.

11 August 2010

Encina WasteWater Authority
Attn: Doug Campell
6200 Avenida Encinas
Carlsbad, California 92011

EMA Log #: 10G0520

Project Name: Vista Dry Weather Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/21/10 11:50. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: Encina WasteWater Authority Project Name: Vista Dry Weather Monitoring	**EMA Log #: 10G0520**

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-4	10G0520-01	Stormwater	07/20/10 08:35	07/21/10 11:50

NOTE: The TKN-Nitrogen analyses were performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0520

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (10G0520-01) Stormwater Sampled: 07/20/10 08:35 Received: 07/21/10 11:50									
Cadmium	ND	0.001	mg/l	1	0072321	07/23/10	07/23/10	EPA 200.8	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0520

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (10G0520-01) Stormwater Sampled: 07/20/10 08:35 Received: 07/21/10 11:50									
Chlorpyrifos	ND	0.05	ug/l	1	0072728	07/22/10	07/30/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*72 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*88 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0520

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-4 (10G0520-01) Stormwater Sampled: 07/20/10 08:35 Received: 07/21/10 11:50									
Nitrate/Nitrite as N	**0.22**	0.05	mg/l	1	0080404	08/04/10	08/04/10	SM4500 NO3 E	
Total Nitrogen	ND	0.5	"	"	0081131	08/09/10	08/09/10	Calculation	
Oil & Grease	ND	5	"	"	0072325	07/23/10	07/23/10	EPA 1664A	
Phosphorus, Total	**0.12**	0.05	"	"	0080229	08/02/10	08/02/10	SM4500 P B, E	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0520

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072321										
Blank (0072321-BLK1)				Prepared & Analyzed: 07/23/10						
Copper	ND	0.010	mg/l							
Zinc	ND	0.020	"							
Lead	ND	0.005	"							
Cadmium	ND	0.001	"							
LCS (0072321-BS1)				Prepared & Analyzed: 07/23/10						
Zinc	0.046	0.020	mg/l	0.0500		93	85-115			
Lead	0.046	0.005	"	0.0500		93	75-125			
Copper	0.046	0.010	"	0.0500		92	85-115			
Cadmium	0.046	0.001	"	0.0500		93	85-115			
LCS Dup (0072321-BSD1)				Prepared & Analyzed: 07/23/10						
Lead	0.046	0.005	mg/l	0.0500		92	75-125	0.5	20	
Zinc	0.047	0.020	"	0.0500		94	85-115	0.9	20	
Cadmium	0.047	0.001	"	0.0500		94	85-115	1	20	
Copper	0.047	0.010	"	0.0500		94	85-115	2	20	
Duplicate (0072321-DUP1)		**Source: 10G0520-01**		Prepared & Analyzed: 07/23/10						
Cadmium	ND	0.001	mg/l		ND				20	
Copper	ND	0.010	"		ND				20	
Zinc	0.010	0.020	"		0.010			1	20	
Lead	ND	0.005	"		ND				20	
Matrix Spike (0072321-MS1)		**Source: 10G0520-01**		Prepared & Analyzed: 07/23/10						
Cadmium	0.045	0.001	mg/l	0.0500	ND	89	70-130			
Copper	0.043	0.010	"	0.0500	ND	86	70-130			
Zinc	0.053	0.020	"	0.0500	0.010	87	70-130			
Lead	0.053	0.005	"	0.0500	ND	107	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0520

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072321										
Matrix Spike Dup (0072321-MSD1)		**Source: 10G0520-01**		Prepared & Analyzed: 07/23/10						
Zinc	0.058	0.020	mg/l	0.0500	0.010	96	70-130	8	20	
Lead	0.050	0.005	"	0.0500	ND	101	75-125	6	20	
Copper	0.047	0.010	"	0.0500	ND	94	70-130	9	20	
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130	11	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0520

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072728										
Blank (0072728-BLK1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
Surrogate: Tribuytlphosphate	*0.230*		*"*	*0.250*		*92*	*60-130*			
LCS (0072728-BS1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Bolstar	0.51	0.10	ug/l	0.500		102	60-130			
Diazinon	0.40	0.05	"	0.500		80	60-130			
Ethoprop	0.48	0.05	"	0.500		96	60-130			
Mevinphos	0.43	0.25	"	0.500		86	60-130			
Methyl parathion	0.48	0.10	"	0.500		96	60-130			
Phorate	0.41	0.05	"	0.500		82	60-130			
Ronnel	0.40	0.25	"	0.500		80	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.180*		*"*	*0.250*		*72*	*60-130*			
Surrogate: Tribuytlphosphate	*0.160*		*"*	*0.250*		*64*	*60-130*			
LCS Dup (0072728-BSD1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Bolstar	0.45	0.10	ug/l	0.500		90	60-130	12	30	
Diazinon	0.41	0.05	"	0.500		82	60-130	2	30	
Ethoprop	0.45	0.05	"	0.500		90	60-130	6	30	
Mevinphos	0.41	0.25	"	0.500		82	60-130	5	30	
Methyl parathion	0.43	0.10	"	0.500		86	60-130	11	30	
Phorate	0.48	0.05	"	0.500		96	60-130	16	30	
Ronnel	0.41	0.25	"	0.500		82	60-130	2	30	
Trichlorinate	0.44	0.05	"	0.500		88	60-130	7	30	
Surrogate: Triphenyl phosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
Surrogate: Tribuytlphosphate	*0.200*		*"*	*0.250*		*80*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0520

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072325										
Blank (0072325-BLK1)				Prepared & Analyzed: 07/23/10						
Oil & Grease	ND	5	mg/l							
LCS (0072325-BS1)				Prepared & Analyzed: 07/23/10						
Oil & Grease	40	5	mg/l	40.0		100	78-114			
LCS Dup (0072325-BSD1)				Prepared & Analyzed: 07/23/10						
Oil & Grease	39	5	mg/l	40.0		98	78-114	1	20	
Batch 0080229										
Blank (0080229-BLK1)				Prepared & Analyzed: 08/02/10						
Phosphorus, Total	ND	0.05	mg/l							
LCS (0080229-BS1)				Prepared & Analyzed: 08/02/10						
Phosphorus, Total	0.47	0.05	mg/l	0.500		93	80-120			
LCS Dup (0080229-BSD1)				Prepared & Analyzed: 08/02/10						
Phosphorus, Total	0.47	0.05	mg/l	0.500		94	80-120	0.4	20	
Duplicate (0080229-DUP1)		**Source: 10G0495-01**		Prepared & Analyzed: 08/02/10						
Phosphorus, Total	0.15	0.05	mg/l		0.16			3	20	
Matrix Spike (0080229-MS1)		**Source: 10G0495-01**		Prepared & Analyzed: 08/02/10						
Phosphorus, Total	0.64	0.05	mg/l	0.500	0.16	95	80-120			
Matrix Spike Dup (0080229-MSD1)		**Source: 10G0495-01**		Prepared & Analyzed: 08/02/10						
Phosphorus, Total	0.61	0.05	mg/l	0.500	0.16	89	80-120	5	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0520

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0080404										
Blank (0080404-BLK1)				Prepared & Analyzed: 08/04/10						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (0080404-BS1)				Prepared & Analyzed: 08/04/10						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		97	80-120			
LCS Dup (0080404-BSD1)				Prepared & Analyzed: 08/04/10						
Nitrate/Nitrite as N	0.46	0.05	mg/l	0.500		91	80-120	7	20	
Duplicate (0080404-DUP1)		**Source: 10H0057-01**		Prepared & Analyzed: 08/04/10						
Nitrate/Nitrite as N	1.86	0.25	mg/l		1.94			4	20	
Matrix Spike (0080404-MS1)		**Source: 10H0057-01**		Prepared & Analyzed: 08/04/10						
Nitrate/Nitrite as N	4.04	0.25	mg/l	2.50	1.94	84	80-120			
Matrix Spike Dup (0080404-MSD1)		**Source: 10H0057-01**		Prepared & Analyzed: 08/04/10						
Nitrate/Nitrite as N	4.24	0.25	mg/l	2.50	1.94	92	80-120	5	20	
Reference (0080404-SRM1)				Prepared & Analyzed: 08/04/10						
Nitrate/Nitrite as N	0.44	0.05	mg/l	0.442		100	4.16-115.1			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760-438-3941 Fax: 760-476-9852

Email:

Billing Address:

Project ID: Vista Dry Weather Monitoring

Project #: PO #: Will call w/ PO #

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 X	8015B (TPH) □ Gas □ Diesel □ Ex	624/8260 (VOC) Full BTXE MTE	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pestic	608 / 8082 (Polychlorinated Biphe	8141 (Organophosphorus Pesticid	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Orga	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal	Colilert, T+E.Coli □ P/A □ Enum
1	BV-4	7/20/10	0835	SW	1	X						X						X		
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY		DATE/TIME
Signature	Rachael Morgan	7/21/10
Print	Rachael Morgan	0845
Company:	Encina Wastewater	
Signature	Tim Treffs	7/21/10
Print	Tim Treffs	1150
Company:	EMA	
Signature		
Print		
Company:		

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

Total Nitrogen 1 preserved, 1 unpreserved, Dissolved

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (w

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 day of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

13 August 2010

Encina WasteWater Authority
Attn: Doug Campell
6200 Avenida Encinas
Carlsbad, California 92011

EMA Log #: 10G0390

Project Name: City of Vista Dry Weather Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/15/10 13:27. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: Encina WasteWater Authority	**EMA Log #: 10G0390**
Project Name: City of Vista Dry Weather Monitoring	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-1	10G0390-01	Liquid	07/15/10 09:20	07/15/10 13:27
BV-31	10G0390-02	Liquid	07/15/10 11:10	07/15/10 13:27

NOTE: The TKN-Nitrogen analyses were performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10G0390

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-31 (10G0390-02) Liquid Sampled: 07/15/10 11:10 Received: 07/15/10 13:27									
Cadmium	ND	0.001	mg/l	1	0071920	07/19/10	07/19/10	EPA 200.8	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority	**EMA Log #: 10G0390**
Project Name: City of Vista Dry Weather Monitoring	

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-31 (10G0390-02) Liquid Sampled: 07/15/10 11:10 Received: 07/15/10 13:27									
Chlorpyrifos	ND	0.05	ug/l	1	0072728	07/22/10	07/29/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*80 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*84 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10G0390

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-1 (10G0390-01) Liquid Sampled: 07/15/10 09:20 Received: 07/15/10 13:27									
Nitrate/Nitrite as N	**0.39**	0.05	mg/l	1	0071905	07/19/10	07/19/10	SM4500 NO3 E	
Total Nitrogen	ND	0.5	"	"	0081327	08/09/10	08/09/10	Calculation	
Phosphorus, Total	**0.15**	0.05	"	"	0071933	07/21/10	07/21/10	SM4500 P B, E	
BV-31 (10G0390-02) Liquid Sampled: 07/15/10 11:10 Received: 07/15/10 13:27									
Oil & Grease	ND	5	mg/l	1	0072226	07/22/10	07/22/10	EPA 1664A	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10G0390

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071920										
Blank (0071920-BLK1)				Prepared & Analyzed: 07/19/10						
Cadmium	ND	0.005	mg/l							
Copper	ND	0.005	"							
Lead	ND	0.005	"							
Zinc	ND	0.020	"							
LCS (0071920-BS1)				Prepared & Analyzed: 07/19/10						
Cadmium	0.050	0.005	mg/l	0.0500		100	85-115			
Copper	0.050	0.005	"	0.0500		99	85-115			
Zinc	0.053	0.020	"	0.0500		106	85-115			
Lead	0.046	0.005	"	0.0500		93	75-125			
LCS Dup (0071920-BSD1)				Prepared & Analyzed: 07/19/10						
Lead	0.045	0.005	mg/l	0.0500		90	75-125	2	20	
Cadmium	0.049	0.005	"	0.0500		98	85-115	2	20	
Copper	0.048	0.005	"	0.0500		97	85-115	2	20	
Zinc	0.050	0.020	"	0.0500		101	85-115	5	20	
Duplicate (0071920-DUP1)		**Source: 10G0303-01**		Prepared & Analyzed: 07/19/10						
Zinc	0.031	0.020	mg/l		0.031			3	20	
Lead	ND	0.005	"		ND				20	
Copper	0.004	0.005	"		0.004			0.9	20	
Cadmium	ND	0.005	"		ND				20	
Matrix Spike (0071920-MS1)		**Source: 10G0303-01**		Prepared & Analyzed: 07/19/10						
Copper	0.048	0.005	mg/l	0.0500	0.004	87	70-130			
Zinc	0.075	0.020	"	0.0500	0.031	86	70-130			
Cadmium	0.046	0.005	"	0.0500	ND	92	70-130			
Lead	0.047	0.005	"	0.0500	ND	95	75-125			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10G0390

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071920										
Matrix Spike Dup (0071920-MSD1)		**Source: 10G0303-01**		Prepared & Analyzed: 07/19/10						
Lead	0.048	0.005	mg/l	0.0500	ND	97	75-125	2	20	
Copper	0.048	0.005	"	0.0500	0.004	86	70-130	0.8	20	
Zinc	0.074	0.020	"	0.0500	0.031	85	70-130	1	20	
Cadmium	0.047	0.005	"	0.0500	ND	93	70-130	1	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10G0390

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072728										
Blank (0072728-BLK1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
Surrogate: Tribuytlphosphate	*0.230*		*"*	*0.250*		*92*	*60-130*			
LCS (0072728-BS1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Bolstar	0.51	0.10	ug/l	0.500		102	60-130			
Diazinon	0.40	0.05	"	0.500		80	60-130			
Ethoprop	0.48	0.05	"	0.500		96	60-130			
Mevinphos	0.43	0.25	"	0.500		86	60-130			
Methyl parathion	0.48	0.10	"	0.500		96	60-130			
Phorate	0.41	0.05	"	0.500		82	60-130			
Ronnel	0.40	0.25	"	0.500		80	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.180*		*"*	*0.250*		*72*	*60-130*			
Surrogate: Tribuytlphosphate	*0.160*		*"*	*0.250*		*64*	*60-130*			
LCS Dup (0072728-BSD1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Bolstar	0.45	0.10	ug/l	0.500		90	60-130	12	30	
Diazinon	0.41	0.05	"	0.500		82	60-130	2	30	
Ethoprop	0.45	0.05	"	0.500		90	60-130	6	30	
Mevinphos	0.41	0.25	"	0.500		82	60-130	5	30	
Methyl parathion	0.43	0.10	"	0.500		86	60-130	11	30	
Phorate	0.48	0.05	"	0.500		96	60-130	16	30	
Ronnel	0.41	0.25	"	0.500		82	60-130	2	30	
Trichlorinate	0.44	0.05	"	0.500		88	60-130	7	30	
Surrogate: Triphenyl phosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
Surrogate: Tribuytlphosphate	*0.200*		*"*	*0.250*		*80*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10G0390

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071905										
Blank (0071905-BLK1)				Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (0071905-BS1)				Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		99	80-120			
LCS Dup (0071905-BSD1)				Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		102	80-120	4	20	
Duplicate (0071905-DUP1)		**Source: 10G0303-03**		Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.23	0.05	mg/l		0.22			6	20	
Matrix Spike (0071905-MS1)		**Source: 10G0303-03**		Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.70	0.05	mg/l	0.500	0.22	97	80-120			
Matrix Spike Dup (0071905-MSD1)		**Source: 10G0303-03**		Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.77	0.05	mg/l	0.500	0.22	110	80-120	9	20	
Batch 0071933										
Blank (0071933-BLK1)				Prepared & Analyzed: 07/21/10						
Phosphorus, Total	ND	0.05	mg/l							
LCS (0071933-BS1)				Prepared & Analyzed: 07/21/10						
Phosphorus, Total	0.50	0.05	mg/l	0.500		101	80-120			
LCS Dup (0071933-BSD1)				Prepared & Analyzed: 07/21/10						
Phosphorus, Total	0.50	0.05	mg/l	0.500		99	80-120	1	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10G0390

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071933										
Duplicate (0071933-DUP1)		**Source: 10G0335-01**		Prepared & Analyzed: 07/21/10						
Phosphorus, Total	0.31	0.05	mg/l		0.29			7	20	
Matrix Spike (0071933-MS1)		**Source: 10G0335-01**		Prepared & Analyzed: 07/21/10						
Phosphorus, Total	0.79	0.05	mg/l	0.500	0.29	99	80-120			
Matrix Spike Dup (0071933-MSD1)		**Source: 10G0335-01**		Prepared & Analyzed: 07/21/10						
Phosphorus, Total	0.76	0.05	mg/l	0.500	0.29	94	80-120	4	20	
Batch 0072226										
Blank (0072226-BLK1)				Prepared & Analyzed: 07/22/10						
Oil & Grease	ND	5	mg/l							
LCS (0072226-BS1)				Prepared & Analyzed: 07/22/10						
Oil & Grease	38	5	mg/l	40.0		94	78-114			
LCS Dup (0072226-BSD1)				Prepared & Analyzed: 07/22/10						
Oil & Grease	37	5	mg/l	40.0		92	78-114	2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760 438.3941 Fax: 760.476.9852

Email: Doug@EncinaJPA.com

Billing Address:

Project ID: City of Vista Dry Weather Monitoring

Project #: PO #: will coll with PO #

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1	8015B (TPH) □ Gas □ Diesel □ Ex	624/8260 (VOC) Full BTXE MTB	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pestic	608 / 8082 (Polychlorinated Biphe	8141 (Organophosphorus Pesticide	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TT	TCLP (RCRA) □ Metals □ Organ	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal (	Coliform T+F Coli □ P/A □ Enume
1	BV-1	7/15/10	0930	L																
2	BV-31	7/15/10	1110	L		X						X						X		
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax ☒ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt: _____
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY		DATE/TIME
Signature	Rachael Morgan	7/15/10 @ 1250
Print	Rachael Morgan	
Company:	Encina Wastewater	
Signature	Tim Trefts	7/15/10 1327
Print	Tim Trefts	
Company:	EMA	
Signature		
Print		
Company:		

Project/Sample Comments:

* total Nitrogen 1 preserved, 1 unpres

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (v

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

30 July 2010

Encina WasteWater Authority
Attn: Doug Campell
6200 Avenida Encinas
Carlsbad, California 92011

EMA Log #: 10G0546

Project Name: Vista Dry Weather Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/22/10 10:36. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0546

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BV-18	10G0546-01	Stormwater	07/21/10 09:00	07/22/10 10:36
BV-8	10G0546-02	Stormwater	07/21/10 10:45	07/22/10 10:36

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0546

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-18 (10G0546-01) Stormwater Sampled: 07/21/10 09:00 Received: 07/22/10 10:36									
Cadmium	ND	0.001	mg/l	1	0072321	07/23/10	07/23/10	EPA 200.8	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
BV-8 (10G0546-02) Stormwater Sampled: 07/21/10 10:45 Received: 07/22/10 10:36									
Cadmium	ND	0.001	mg/l	1	0072321	07/23/10	07/23/10	EPA 200.8	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0546

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-18 (10G0546-01) Stormwater Sampled: 07/21/10 09:00 Received: 07/22/10 10:36									
Chlorpyrifos	ND	0.05	ug/l	1	0072728	07/22/10	07/30/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*64 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*68 %*	*60-130*		"	"	"	"	
BV-8 (10G0546-02) Stormwater Sampled: 07/21/10 10:45 Received: 07/22/10 10:36									
Chlorpyrifos	ND	0.05	ug/l	1	0072728	07/22/10	07/30/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*72 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*68 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0546

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BV-18 (10G0546-01) Stormwater Sampled: 07/21/10 09:00 Received: 07/22/10 10:36									
Oil & Grease	ND	5	mg/l	1	0072325	07/23/10	07/23/10	EPA 1664A	
BV-8 (10G0546-02) Stormwater Sampled: 07/21/10 10:45 Received: 07/22/10 10:36									
Oil & Grease	ND	5	mg/l	1	0072325	07/23/10	07/23/10	EPA 1664A	

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Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0546

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072321										
Blank (0072321-BLK1)				Prepared & Analyzed: 07/23/10						
Cadmium	ND	0.001	mg/l							
Copper	ND	0.010	"							
Zinc	ND	0.020	"							
Lead	ND	0.005	"							
LCS (0072321-BS1)				Prepared & Analyzed: 07/23/10						
Lead	0.046	0.005	mg/l	0.0500		93	75-125			
Copper	0.046	0.010	"	0.0500		92	85-115			
Zinc	0.046	0.020	"	0.0500		93	85-115			
Cadmium	0.046	0.001	"	0.0500		93	85-115			
LCS Dup (0072321-BSD1)				Prepared & Analyzed: 07/23/10						
Cadmium	0.047	0.001	mg/l	0.0500		94	85-115	1	20	
Zinc	0.047	0.020	"	0.0500		94	85-115	0.9	20	
Lead	0.046	0.005	"	0.0500		92	75-125	0.5	20	
Copper	0.047	0.010	"	0.0500		94	85-115	2	20	
Duplicate (0072321-DUP1)		**Source: 10G0520-01**		Prepared & Analyzed: 07/23/10						
Copper	ND	0.010	mg/l		ND				20	
Zinc	0.010	0.020	"		0.010			1	20	
Cadmium	ND	0.001	"		ND				20	
Lead	ND	0.005	"		ND				20	
Matrix Spike (0072321-MS1)		**Source: 10G0520-01**		Prepared & Analyzed: 07/23/10						
Copper	0.043	0.010	mg/l	0.0500	ND	86	70-130			
Lead	0.053	0.005	"	0.0500	ND	107	75-125			
Zinc	0.053	0.020	"	0.0500	0.010	87	70-130			
Cadmium	0.045	0.001	"	0.0500	ND	89	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0546

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072321										
Matrix Spike Dup (0072321-MSD1)		**Source: 10G0520-01**		Prepared & Analyzed: 07/23/10						
Copper	0.047	0.010	mg/l	0.0500	ND	94	70-130	9	20	
Lead	0.050	0.005	"	0.0500	ND	101	75-125	6	20	
Cadmium	0.050	0.001	"	0.0500	ND	100	70-130	11	20	
Zinc	0.058	0.020	"	0.0500	0.010	96	70-130	8	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0546

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072728										
Blank (0072728-BLK1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
Surrogate: Tribuytlphosphate	*0.230*		*"*	*0.250*		*92*	*60-130*			
LCS (0072728-BS1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Bolstar	0.51	0.10	ug/l	0.500		102	60-130			
Diazinon	0.40	0.05	"	0.500		80	60-130			
Ethoprop	0.48	0.05	"	0.500		96	60-130			
Mevinphos	0.43	0.25	"	0.500		86	60-130			
Methyl parathion	0.48	0.10	"	0.500		96	60-130			
Phorate	0.41	0.05	"	0.500		82	60-130			
Ronnel	0.40	0.25	"	0.500		80	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.180*		*"*	*0.250*		*72*	*60-130*			
Surrogate: Tribuytlphosphate	*0.160*		*"*	*0.250*		*64*	*60-130*			
LCS Dup (0072728-BSD1)				Prepared: 07/22/10 Analyzed: 07/29/10						
Bolstar	0.45	0.10	ug/l	0.500		90	60-130	12	30	
Diazinon	0.41	0.05	"	0.500		82	60-130	2	30	
Ethoprop	0.45	0.05	"	0.500		90	60-130	6	30	
Mevinphos	0.41	0.25	"	0.500		82	60-130	5	30	
Methyl parathion	0.43	0.10	"	0.500		86	60-130	11	30	
Phorate	0.48	0.05	"	0.500		96	60-130	16	30	
Ronnel	0.41	0.25	"	0.500		82	60-130	2	30	
Trichlorinate	0.44	0.05	"	0.500		88	60-130	7	30	
Surrogate: Triphenyl phosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			
Surrogate: Tribuytlphosphate	*0.200*		*"*	*0.250*		*80*	*60-130*			

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Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0546

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072325										
Blank (0072325-BLK1)				Prepared & Analyzed: 07/23/10						
Oil & Grease	ND	5	mg/l							
LCS (0072325-BS1)				Prepared & Analyzed: 07/23/10						
Oil & Grease	40	5	mg/l	40.0		100	78-114			
LCS Dup (0072325-BSD1)				Prepared & Analyzed: 07/23/10						
Oil & Grease	39	5	mg/l	40.0		98	78-114	1	20	

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Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760-438-3941 Fax: 760-476-9852

Email:

Billing Address:

Project ID: Vista Dry Weather Monitoring

Project #: PO #: will call with PO#

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1	8015B (TPH) □ Gas □ Diesel □ Ex	624/8260 (VOC) Full BTXE MTB	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pestic	608 / 8082 (Polychlorinated Biphe	8141 (Organophosphorus Pesticide	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TT	TCLP (RCRA) □ Metals □ Organ	Co Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal	Colilert, T+E.Coli □ P/A □ Enume
1	BV-18	7/21/10	0900	SW		X						X						X		
2	BV-8	7/21/10	1047	SW		X						X						X		
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY		DATE/TIME
Signature	Rachael Mangan	7/22/10
Print	Rachael Mangan	@ 0915
Company:	EMA	
Signature	Tim Tate	7/22/10
Print	Tim Tate	1036
Company:	EMA	
Signature		
Print		
Company:		

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments: 200.8 dissolved metals filtered and preserved with HN
on 7/21/10.

[1]Additional costs may apply, consult a project manager for details. White- EMA Canary - Accounting Pink - Client (w

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 day of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

31 August 2010

Encina WasteWater Authority
Attn: Doug Campell
6200 Avenida Encinas
Carlsbad, California 92011

EMA Log #: 10H0334

Project Name: City of Vista Dry Weather Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/12/10 13:24. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10H0334

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
G-5 A	10H0334-01	Stormwater	08/11/10 09:00	08/12/10 13:24
G-5 B	10H0334-02	Stormwater	08/11/10 09:00	08/12/10 13:24
G-5 A	10H0334-03	Stormwater	08/11/10 09:00	08/12/10 13:24
G-5 B	10H0334-04	Stormwater	08/11/10 09:00	08/12/10 13:24
G-5 A	10H0334-05	Stormwater	08/11/10 09:00	08/12/10 13:24
G-5 B	10H0334-06	Stormwater	08/11/10 09:00	08/12/10 13:24

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Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10H0334

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
G-5 A (10H0334-05) Stormwater Sampled: 08/11/10 09:00 Received: 08/12/10 13:24									
Cadmium	ND	0.001	mg/l	1	0081725	08/17/10	08/17/10	EPA 200.8	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
G-5 B (10H0334-06) Stormwater Sampled: 08/11/10 09:00 Received: 08/12/10 13:24									
Cadmium	ND	0.001	mg/l	1	0081725	08/17/10	08/17/10	EPA 200.8	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

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Client Name: Encina WasteWater Authority	**EMA Log #: 10H0334**
Project Name: City of Vista Dry Weather Monitoring	

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
G-5 A (10H0334-03) Stormwater Sampled: 08/11/10 09:00 Received: 08/12/10 13:24									
Chlorpyrifos	ND	0.05	ug/l	1	0081236	08/12/10	08/13/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*124 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*124 %*	*60-130*		"	"	"	"	
G-5 B (10H0334-04) Stormwater Sampled: 08/11/10 09:00 Received: 08/12/10 13:24									
Chlorpyrifos	ND	0.05	ug/l	1	0081236	08/12/10	08/13/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*112 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*132 %*	*60-130*		"	"	"	"	*S-02, S-04*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10H0334

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
G-5 A (10H0334-01) Stormwater Sampled: 08/11/10 09:00 Received: 08/12/10 13:24									
Oil & Grease	ND	5	mg/l	1	0081132	08/12/10	08/12/10	EPA 1664A	
G-5 B (10H0334-02) Stormwater Sampled: 08/11/10 09:00 Received: 08/12/10 13:24									
Oil & Grease	ND	5	mg/l	1	0081132	08/12/10	08/12/10	EPA 1664A	

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Client Name: Encina WasteWater Authority	**EMA Log #: 10H0334**
Project Name: City of Vista Dry Weather Monitoring	

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0081725										
Blank (0081725-BLK1)				Prepared & Analyzed: 08/17/10						
Lead	ND	0.005	mg/l							
Zinc	ND	0.020	"							
Copper	ND	0.010	"							
Cadmium	ND	0.001	"							
LCS (0081725-BS1)				Prepared & Analyzed: 08/17/10						
Zinc	0.055	0.020	mg/l	0.0500		109	85-115			
Lead	0.047	0.005	"	0.0500		95	75-125			
Cadmium	0.049	0.001	"	0.0500		98	85-115			
Copper	0.048	0.010	"	0.0500		97	85-115			
LCS Dup (0081725-BSD1)				Prepared & Analyzed: 08/17/10						
Cadmium	0.049	0.001	mg/l	0.0500		97	85-115	0.3	20	
Copper	0.048	0.010	"	0.0500		97	85-115	0.1	20	
Lead	0.050	0.005	"	0.0500		100	75-125	6	20	
Zinc	0.049	0.020	"	0.0500		98	85-115	11	20	
Duplicate (0081725-DUP1)		**Source: 10H0404-01**		Prepared & Analyzed: 08/17/10						
Cadmium	0.0002	0.001	mg/l		0.0002			5	20	
Copper	0.002	0.010	"		0.002			0.6	20	
Lead	ND	0.005	"		ND				20	
Zinc	0.008	0.020	"		0.018			78	20	QR-04
Matrix Spike (0081725-MS1)		**Source: 10H0404-01**		Prepared & Analyzed: 08/17/10						
Lead	0.053	0.005	mg/l	0.0500	ND	106	75-125			
Cadmium	0.049	0.001	"	0.0500	0.0002	98	70-130			
Zinc	0.054	0.020	"	0.0500	0.018	72	70-130			
Copper	0.047	0.010	"	0.0500	0.002	89	70-130			

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Client Name: Encina WasteWater Authority	**EMA Log #: 10H0334**
Project Name: City of Vista Dry Weather Monitoring	

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0081725										
Matrix Spike Dup (0081725-MSD1)		**Source: 10H0404-01**		Prepared & Analyzed: 08/17/10						
Lead	0.052	0.005	mg/l	0.0500	ND	104	75-125	2	20	
Zinc	0.052	0.020	"	0.0500	0.018	69	70-130	3	20	QM-06
Copper	0.045	0.010	"	0.0500	0.002	86	70-130	3	20	
Cadmium	0.048	0.001	"	0.0500	0.0002	95	70-130	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10H0334

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0081236										
Blank (0081236-BLK1)				Prepared: 08/12/10	Analyzed: 08/13/10					
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.280*		*"*	*0.250*		*112*	*60-130*			
Surrogate: Tribuytlphosphate	*0.310*		*"*	*0.250*		*124*	*60-130*			
LCS (0081236-BS1)				Prepared: 08/12/10	Analyzed: 08/13/10					
Bolstar	0.45	0.10	ug/l	0.500		90	60-130			
Diazinon	0.44	0.05	"	0.500		88	60-130			
Ethoprop	0.45	0.05	"	0.500		90	60-130			
Mevinphos	0.49	0.25	"	0.500		98	60-130			
Methyl parathion	0.50	0.10	"	0.500		100	60-130			
Phorate	0.45	0.05	"	0.500		90	60-130			
Ronnel	0.44	0.25	"	0.500		88	60-130			
Trichlorinate	0.45	0.05	"	0.500		90	60-130			
Surrogate: Triphenyl phosphate	*0.260*		*"*	*0.250*		*104*	*60-130*			
Surrogate: Tribuytlphosphate	*0.320*		*"*	*0.250*		*128*	*60-130*			
LCS Dup (0081236-BSD1)				Prepared: 08/12/10	Analyzed: 08/13/10					
Bolstar	0.42	0.10	ug/l	0.500		84	60-130	7	30	
Diazinon	0.43	0.05	"	0.500		86	60-130	2	30	
Ethoprop	0.41	0.05	"	0.500		82	60-130	9	30	
Mevinphos	0.42	0.25	"	0.500		84	60-130	15	30	
Methyl parathion	0.46	0.10	"	0.500		92	60-130	8	30	
Phorate	0.44	0.05	"	0.500		88	60-130	2	30	
Ronnel	0.42	0.25	"	0.500		84	60-130	5	30	
Trichlorinate	0.43	0.05	"	0.500		86	60-130	5	30	
Surrogate: Triphenyl phosphate	*0.310*		*"*	*0.250*		*124*	*60-130*			
Surrogate: Tribuytlphosphate	*0.310*		*"*	*0.250*		*124*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority	**EMA Log #: 10H0334**
Project Name: City of Vista Dry Weather Monitoring	

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0081236										
Matrix Spike (0081236-MS1)		**Source: 10H0323-01**		Prepared: 08/12/10	Analyzed: 08/14/10					
Bolstar	0.51	0.10	ug/l	0.500	ND	102	60-130			
Diazinon	0.48	0.05	"	0.500	ND	96	60-130			
Ethoprop	0.45	0.05	"	0.500	ND	90	60-130			
Mevinphos	0.44	0.25	"	0.500	ND	88	60-130			
Methyl parathion	0.54	0.10	"	0.500	ND	108	60-130			
Phorate	0.49	0.05	"	0.500	ND	98	60-130			
Ronnel	0.47	0.25	"	0.500	ND	94	60-130			
Trichlorinate	0.48	0.05	"	0.500	ND	96	60-130			
Surrogate: Triphenyl phosphate	*0.290*		*"*	*0.250*		*116*	*60-130*			
Surrogate: Tribuytlphosphate	*0.320*		*"*	*0.250*		*128*	*60-130*			
Matrix Spike Dup (0081236-MSD1)		**Source: 10H0323-01**		Prepared: 08/12/10	Analyzed: 08/14/10					
Bolstar	0.49	0.10	ug/l	0.500	ND	98	60-130	4	30	
Diazinon	0.46	0.05	"	0.500	ND	92	60-130	4	30	
Ethoprop	0.44	0.05	"	0.500	ND	88	60-130	2	30	
Mevinphos	0.44	0.25	"	0.500	ND	88	60-130	0	30	
Methyl parathion	0.51	0.10	"	0.500	ND	102	60-130	6	30	
Phorate	0.48	0.05	"	0.500	ND	96	60-130	2	30	
Ronnel	0.46	0.25	"	0.500	ND	92	60-130	2	30	
Trichlorinate	0.48	0.05	"	0.500	ND	96	60-130	0	30	
Surrogate: Triphenyl phosphate	*0.360*		*"*	*0.250*		*144*	*60-130*			*S-02, S-04*
Surrogate: Tribuytlphosphate	*0.320*		*"*	*0.250*		*128*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: City of Vista Dry Weather Monitoring

EMA Log #: 10H0334

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0081132										
Blank (0081132-BLK1)				Prepared & Analyzed: 08/11/10						
Oil & Grease	ND	5	mg/l							
LCS (0081132-BS1)				Prepared & Analyzed: 08/11/10						
Oil & Grease	37	5	mg/l	40.0		93	78-114			
LCS Dup (0081132-BSD1)				Prepared & Analyzed: 08/11/10						
Oil & Grease	36	5	mg/l	40.0		90	78-114	3	20	
Matrix Spike (0081132-MS1)		**Source: 10H0287-02**		Prepared & Analyzed: 08/12/10						
Oil & Grease	82	5	mg/l	40.0	43	97	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
QM-06	Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760-438-3941 Fax: 760-476-9852

Email:

Billing Address: same as above

Project ID: City of Vista - Dry Weather Monitoring

Project #: PO #: Will call with PO #

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 16	8015B (TPH) □ Gas □ Diesel □ Ex	624/8260 (VOC) Full BTXE MTB	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pestic	608 / 8082 (Polychlorinated Biphe	8141 (Organophosphorus Pesticide	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TT	TCLP (RCRA) □ Metals □ Organ	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal	Coliform T+F Coli □ P/A □ Enum
1	G-5 A	8/11/10	0900	SW	1/L	X														
2	G-5 B	8/11/10	0900	SW	1/L	X														
3	G-5 A	8/11/10	0900	SW	2/AL							X								
4	G-5 B	8/11/10	0900	SW	2/AL							X								
5	G-5 A	8/11/10	0900	SW	1/HDPE													X		
6	G-5 B	8/11/10	0900	SW	1/HDPE													X		
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day ☒ STD (7 day)

[1]**Reporting Requirements:** □ Fax □ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	
Signature	8.12.10 @1242	Sig
Print J Law		Pri
Company: EMA		Co
Signature	8/12/10 1324	Sig
Print Tim Tretts		Pri
Company: EMA		Co
Signature		Sig
Print		Pri
Company:		Co

Project/Sample Comments:

- Dissolved metals filtered and preserved w. HNO3 by EMA lab staff on 8/11/10

~~G-5 samples include a duplicate~~ -
~~8141 samples each include a backup~~

[1]Additional costs may apply, consult a project manager for details.

White- EMA Canary - Accounting Pink - Client (v

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 da of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

EnviroMatrix Analytical, Inc.

11 August 2010

Encina WasteWater Authority
Attn: Doug Campell
6200 Avenida Encinas
Carlsbad, California 92011

EMA Log #: 10G0303

Project Name: Vista Dry Weather Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/13/10 14:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AH-9	10G0303-01	Liquid	07/12/10 09:25	07/13/10 14:20
SS-1	10G0303-02	Liquid	07/12/10 11:10	07/13/10 14:20
AH-21	10G0303-03	Liquid	07/13/10 11:30	07/13/10 14:20
AH-17	10G0303-04	Liquid	07/13/10 09:30	07/13/10 14:20

NOTE: The TKN-Nitrogen analyses were performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-21 (10G0303-03) Liquid Sampled: 07/13/10 11:30 Received: 07/13/10 14:20									
Manganese	**0.023**	0.005	mg/l	1	0071506	07/14/10	07/15/10	EPA 200.8	
Selenium	ND	0.005	"	"	"	"	"	"	
AH-17 (10G0303-04) Liquid Sampled: 07/13/10 09:30 Received: 07/13/10 14:20									
Manganese	**0.016**	0.005	mg/l	1	0071506	07/14/10	07/15/10	EPA 200.8	
Selenium	ND	0.005	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-9 (10G0303-01) Liquid Sampled: 07/12/10 09:25 Received: 07/13/10 14:20									
Cadmium	ND	0.001	mg/l	1	0071920	07/19/10	07/19/10	EPA 200.8	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.031**	0.020	"	"	"	"	"	"	
SS-1 (10G0303-02) Liquid Sampled: 07/12/10 11:10 Received: 07/13/10 14:20									
Cadmium	ND	0.001	mg/l	1	0071920	07/19/10	07/19/10	EPA 200.8	
Copper	**0.016**	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.108**	0.020	"	"	"	"	"	"	
AH-21 (10G0303-03) Liquid Sampled: 07/13/10 11:30 Received: 07/13/10 14:20									
Cadmium	ND	0.001	mg/l	1	0071920	07/19/10	07/19/10	EPA 200.8	
Copper	ND	0.010	"	"	"	"	"	"	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.029**	0.020	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Organophosphorus Pesticides by EPA Method 8141A

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-9 (10G0303-01) Liquid Sampled: 07/12/10 09:25 Received: 07/13/10 14:20									
Chlorpyrifos	ND	0.05	ug/l	1	0072121	07/19/10	07/27/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*76 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*56 %*	*60-130*		"	"	"	"	*S-04*
SS-1 (10G0303-02) Liquid Sampled: 07/12/10 11:10 Received: 07/13/10 14:20									
Chlorpyrifos	ND	0.05	ug/l	1	0072121	07/19/10	07/27/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*76 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*60 %*	*60-130*		"	"	"	"	
AH-21 (10G0303-03) Liquid Sampled: 07/13/10 11:30 Received: 07/13/10 14:20									
Chlorpyrifos	ND	0.05	ug/l	1	0072121	07/19/10	07/27/10	EPA 8141A	
Diazinon	ND	0.05	"	"	"	"	"	"	
Malathion	ND	0.05	"	"	"	"	"	"	
Surrogate: Triphenyl phosphate		*68 %*	*60-130*		"	"	"	"	
Surrogate: Tribuytlphosphate		*64 %*	*60-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
AH-9 (10G0303-01) Liquid Sampled: 07/12/10 09:25 Received: 07/13/10 14:20									
Oil & Grease	ND	5	mg/l	1	0072115	07/21/10	07/21/10	EPA 1664A	
SS-1 (10G0303-02) Liquid Sampled: 07/12/10 11:10 Received: 07/13/10 14:20									
Nitrate/Nitrite as N	**1.64**	0.25	mg/l	5	0071905	07/19/10	07/19/10	SM4500 NO3 E	
Total Nitrogen	**5.1**	0.5	"	1	0081125	08/09/10	08/09/10	Calculation	
Oil & Grease	ND	5	"	"	0072226	07/22/10	07/22/10	EPA 1664A	
AH-21 (10G0303-03) Liquid Sampled: 07/13/10 11:30 Received: 07/13/10 14:20									
Nitrate/Nitrite as N	**0.22**	0.05	mg/l	1	0071905	07/19/10	07/19/10	SM4500 NO3 E	
Total Nitrogen	ND	0.5	"	"	0081125	08/09/10	08/09/10	Calculation	
Oil & Grease	ND	5	"	"	0072226	07/22/10	07/22/10	EPA 1664A	
Phosphorus, Total	ND	0.05	"	"	0071427	07/15/10	07/15/10	SM4500 P B, E	
AH-17 (10G0303-04) Liquid Sampled: 07/13/10 09:30 Received: 07/13/10 14:20									
Nitrate/Nitrite as N	**1.18**	0.25	mg/l	5	0071905	07/19/10	07/19/10	SM4500 NO3 E	
Total Nitrogen	**1.2**	0.5	"	1	0081125	08/09/10	08/09/10	Calculation	
Phosphorus, Total	**0.09**	0.05	"	"	0071427	07/15/10	07/15/10	SM4500 P B, E	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071506										
Blank (0071506-BLK1)				Prepared: 07/14/10		Analyzed: 07/15/10				
Selenium	ND	0.005	mg/l							
Manganese	ND	0.005	"							
LCS (0071506-BS1)				Prepared: 07/14/10		Analyzed: 07/15/10				
Selenium	0.094	0.005	mg/l	0.100		94	75-125			
Manganese	0.096	0.005	"	0.100		96	85-115			
LCS Dup (0071506-BSD1)				Prepared: 07/14/10		Analyzed: 07/15/10				
Manganese	0.092	0.005	mg/l	0.100		92	85-115	4	20	
Selenium	0.092	0.005	"	0.100		92	75-125	2	20	
Duplicate (0071506-DUP1)		**Source: 10G0207-01**		Prepared: 07/14/10		Analyzed: 07/15/10				
Selenium	ND	0.005	mg/l		ND				20	
Manganese	0.010	0.005	"		0.009			5	20	
Matrix Spike (0071506-MS1)		**Source: 10G0207-01**		Prepared: 07/14/10		Analyzed: 07/15/10				
Selenium	0.089	0.005	mg/l	0.100	ND	89	75-125			
Manganese	0.103	0.005	"	0.100	0.009	93	70-130			
Matrix Spike (0071506-MS2)		**Source: 10G0303-03**		Prepared: 07/14/10		Analyzed: 07/15/10				
Manganese	0.110	0.005	mg/l	0.100	0.023	87	70-130			
Selenium	0.090	0.005	"	0.100	ND	90	75-125			
Matrix Spike Dup (0071506-MSD1)		**Source: 10G0207-01**		Prepared: 07/14/10		Analyzed: 07/15/10				
Manganese	0.097	0.005	mg/l	0.100	0.009	87	70-130	6	20	
Selenium	0.083	0.005	"	0.100	ND	83	75-125	7	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071920										
Blank (0071920-BLK1)				Prepared & Analyzed: 07/19/10						
Zinc	ND	0.020	mg/l							
Copper	ND	0.005	"							
Cadmium	ND	0.005	"							
Lead	ND	0.005	"							
LCS (0071920-BS1)				Prepared & Analyzed: 07/19/10						
Cadmium	0.050	0.005	mg/l	0.0500		100	85-115			
Zinc	0.053	0.020	"	0.0500		106	85-115			
Lead	0.046	0.005	"	0.0500		93	75-125			
Copper	0.050	0.005	"	0.0500		99	85-115			
LCS Dup (0071920-BSD1)				Prepared & Analyzed: 07/19/10						
Lead	0.045	0.005	mg/l	0.0500		90	75-125	2	20	
Zinc	0.050	0.020	"	0.0500		101	85-115	5	20	
Copper	0.048	0.005	"	0.0500		97	85-115	2	20	
Cadmium	0.049	0.005	"	0.0500		98	85-115	2	20	
Duplicate (0071920-DUP1)		**Source: 10G0303-01**		Prepared & Analyzed: 07/19/10						
Zinc	0.031	0.020	mg/l		0.031			3	20	
Cadmium	ND	0.005	"		ND				20	
Copper	0.004	0.005	"		0.004			0.9	20	
Lead	ND	0.005	"		ND				20	
Matrix Spike (0071920-MS1)		**Source: 10G0303-01**		Prepared & Analyzed: 07/19/10						
Zinc	0.075	0.020	mg/l	0.0500	0.031	86	70-130			
Lead	0.047	0.005	"	0.0500	ND	95	75-125			
Copper	0.048	0.005	"	0.0500	0.004	87	70-130			
Cadmium	0.046	0.005	"	0.0500	ND	92	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071920										
Matrix Spike Dup (0071920-MSD1)		**Source: 10G0303-01**		Prepared & Analyzed: 07/19/10						
Lead	0.048	0.005	mg/l	0.0500	ND	97	75-125	2	20	
Copper	0.048	0.005	"	0.0500	0.004	86	70-130	0.8	20	
Cadmium	0.047	0.005	"	0.0500	ND	93	70-130	1	20	
Zinc	0.074	0.020	"	0.0500	0.031	85	70-130	1	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Organophosphorus Pesticides by EPA Method 8141A - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072121										
Blank (0072121-BLK1)				Prepared: 07/19/10 Analyzed: 07/27/10						
Chlorpyrifos	ND	0.05	ug/l							
Diazinon	ND	0.05	"							
Malathion	ND	0.05	"							
Surrogate: Triphenyl phosphate	*0.150*		*"*	*0.250*		*60*	*60-130*			
Surrogate: Tribuytlphosphate	*0.210*		*"*	*0.250*		*84*	*60-130*			
LCS (0072121-BS1)				Prepared: 07/19/10 Analyzed: 07/27/10						
Bolstar	0.44	0.10	ug/l	0.500		88	60-130			
Diazinon	0.49	0.05	"	0.500		98	60-130			
Ethoprop	0.44	0.05	"	0.500		88	60-130			
Mevinphos	0.51	0.25	"	0.500		102	60-130			
Methyl parathion	0.42	0.10	"	0.500		84	60-130			
Phorate	0.44	0.05	"	0.500		88	60-130			
Ronnel	0.40	0.25	"	0.500		80	60-130			
Trichlorinate	0.47	0.05	"	0.500		94	60-130			
Surrogate: Triphenyl phosphate	*0.170*		*"*	*0.250*		*68*	*60-130*			
Surrogate: Tribuytlphosphate	*0.170*		*"*	*0.250*		*68*	*60-130*			
LCS Dup (0072121-BSD1)				Prepared: 07/19/10 Analyzed: 07/27/10						
Bolstar	0.42	0.10	ug/l	0.500		84	60-130	5	30	
Diazinon	0.41	0.05	"	0.500		82	60-130	18	30	
Ethoprop	0.46	0.05	"	0.500		92	60-130	4	30	
Mevinphos	0.44	0.25	"	0.500		88	60-130	15	30	
Methyl parathion	0.43	0.10	"	0.500		86	60-130	2	30	
Phorate	0.50	0.05	"	0.500		100	60-130	13	30	
Ronnel	0.40	0.25	"	0.500		80	60-130	0	30	
Trichlorinate	0.45	0.05	"	0.500		90	60-130	4	30	
Surrogate: Triphenyl phosphate	*0.170*		*"*	*0.250*		*68*	*60-130*			
Surrogate: Tribuytlphosphate	*0.190*		*"*	*0.250*		*76*	*60-130*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071427										
Blank (0071427-BLK1)				Prepared & Analyzed: 07/14/10						
Phosphorus, Total	ND	0.05	mg/l							
LCS (0071427-BS1)				Prepared & Analyzed: 07/14/10						
Phosphorus, Total	0.51	0.05	mg/l	0.500		101	80-120			
LCS Dup (0071427-BSD1)				Prepared & Analyzed: 07/14/10						
Phosphorus, Total	0.47	0.05	mg/l	0.500		94	80-120	7	20	
Duplicate (0071427-DUP1)		**Source: 10G0149-01**		Prepared & Analyzed: 07/14/10						
Phosphorus, Total	0.22	0.05	mg/l		0.18			20	20	
Matrix Spike (0071427-MS1)		**Source: 10G0149-01**		Prepared & Analyzed: 07/14/10						
Phosphorus, Total	0.61	0.05	mg/l	0.500	0.18	85	80-120			
Matrix Spike Dup (0071427-MSD1)		**Source: 10G0149-01**		Prepared & Analyzed: 07/14/10						
Phosphorus, Total	0.61	0.05	mg/l	0.500	0.18	86	80-120	0.3	20	
Batch 0071905										
Blank (0071905-BLK1)				Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	ND	0.05	mg/l							
LCS (0071905-BS1)				Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.49	0.05	mg/l	0.500		99	80-120			
LCS Dup (0071905-BSD1)				Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.51	0.05	mg/l	0.500		102	80-120	4	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071905										
Duplicate (0071905-DUP1)		**Source: 10G0303-03**		Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.23	0.05	mg/l		0.22			6	20	
Matrix Spike (0071905-MS1)		**Source: 10G0303-03**		Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.70	0.05	mg/l	0.500	0.22	97	80-120			
Matrix Spike Dup (0071905-MSD1)		**Source: 10G0303-03**		Prepared & Analyzed: 07/19/10						
Nitrate/Nitrite as N	0.77	0.05	mg/l	0.500	0.22	110	80-120	9	20	
Batch 0072115										
Blank (0072115-BLK1)				Prepared & Analyzed: 07/21/10						
Oil & Grease	ND	5	mg/l							
LCS (0072115-BS1)				Prepared & Analyzed: 07/21/10						
Oil & Grease	33	5	mg/l	40.0		82	78-114			
LCS Dup (0072115-BSD1)				Prepared & Analyzed: 07/21/10						
Oil & Grease	32	5	mg/l	40.0		79	78-114	5	20	
Batch 0072226										
Blank (0072226-BLK1)				Prepared & Analyzed: 07/22/10						
Oil & Grease	ND	5	mg/l							
LCS (0072226-BS1)				Prepared & Analyzed: 07/22/10						
Oil & Grease	38	5	mg/l	40.0		94	78-114			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Encina WasteWater Authority
Project Name: Vista Dry Weather Monitoring

EMA Log #: 10G0303

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0072226										
LCS Dup (0072226-BSD1)				Prepared & Analyzed: 07/22/10						
Oil & Grease	37	5	mg/l	40.0		92	78-114	2	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Phone: 760-438-3941 Fax: 760-476-9852

Email:

Billing Address: Same as above

Project ID: Vista Dry Weather Monitoring

Project #: PO #: will call with PO #

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □	8015B (TPH) □ Gas □ Diesel □	624/8260 (VOC) Full BTXE MTBE	625 / 8270 (SVOC) □ PAH only	608 / 8081 (Organochlorine Pesticides)	608 / 8082 (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □ TDS	□ Nitrate □ Nitrite □ TKN □ NH	CAC Title 22/CAM17 Metals □ T	TCLP (RCRA) □ Metals □ Orga	Cd Cr Cu Pb Ni Ag Zn	Coliform, □ Total (MTF) □ Fecal	Coliform T+F Coli □ P/A □ Enum
1	AH-9	7/12/10	0925	L		X												X		
2	SS-1	7/12/10	1110	L		X												X		
3	AH-21	7/13/10	1130	L		X												X		
4	AH-17	7/13/10	0930	L																
5																				
6																				
7																				
8																				
9																				
10																				

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS □ Client Drop Off □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax X PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** □ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

RELINQUISHED BY	DATE/TIME
Signature: [signature]	7/13/10 1349
Print: JLAW	
Company: EMA	
Signature: [signature]	7/13/10 14:20
Print: Kelly Dryden	
Company: EMA	
Signature	
Print	
Company:	

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

Project/Sample Comments:

- Total Nitrogen 1 preserved, 1 unpreserved
- Do not Run 8141 For Duplicate

[1]Additional costs may apply, consult a project manager for details. White- EMA Canary - Accounting Pink - Client (w

[2]EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 day of after 30 days unless otherwise noted. All work is subject to EMA's terms and conditions.

T= 14° on ice

SAMPLE RESULTS REPORT

Report Date : 8/30/2010

REPORT TO
City of Vista 200 Civic Center Drive Vista, CA 92084 Attention: Paul Hartman

100811005

ELAP Certification No. 1441

Ref. No. EC: 10- 0164

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA31555	**Collected: 08/11/2010**	**Time: 09:10**			
VISTA_SPEC	G-5-DUPLICATE	Total Coliform, MF	13350	Colonies/100ml	SM9221B
VISTA_SPEC	G-5-DUPLICATE	Hardness	640	mg/L CaCO3	SM2340C
VISTA_SPEC	G-5-DUPLICATE	Fecal Coliform, MF	7050	Colonies/100ml	SM9222D
VISTA_SPEC	G-5-DUPLICATE	Enterococcus	2950	Colonies/100ml	EPA 1600
AA31556	**Collected: 08/11/2010**	**Time: 09:00**			
VISTA_SPEC	G-5	Total Coliform, MF	17450	Colonies/100ml	SM9221B
VISTA_SPEC	G-5	Hardness	650	mg/L CaCO3	SM2340C
VISTA_SPEC	G-5	Fecal Coliform, MF	6400	Colonies/100ml	SM9222D
VISTA_SPEC	G-5	Enterococcus	2050	Colonies/100ml	EPA 1600

Certified By: _____ **Date:** 08/30/2010

Doug Campbell, Laboratory Supervisor

ENCINA WASTEWATER AUTHORITY
A Public Agency
6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

SAMPLE RESULTS REPORT

Report Date : 7/19/2010

REPORT TO	
City of Vista 200 Civic Center Drive Vista, CA 92084 Attention: Paul Hartman	100712010 ELAP Certification No. 1441 Ref. No. EC: 10- 0112 E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA30644	Collected: 07/12/2010	Time: 09:25			
VISTA_SPEC	AH-9	Total Coliform, MF	89000	Colonies/100ml	SM9221B
VISTA_SPEC	AH-9	Hardness	750	mg/L CaCO3	SM2340C
VISTA_SPEC	AH-9	Fecal Coliform, MF	34000	Colonies/100ml	SM9222D
VISTA_SPEC	AH-9	Enterococcus	19000	Colonies/100ml	EPA 1600
AA30645	Collected: 07/12/2010	Time: 11:10			
VISTA_SPEC	SS-1	Total Coliform, MF	388000	Colonies/100ml	SM9221B
VISTA_SPEC	SS-1	Hardness	295	mg/L CaCO3	SM2340C
VISTA_SPEC	SS-1	Fecal Coliform, MF	284000	Colonies/100ml	SM9222D
VISTA_SPEC	SS-1	Enterococcus	94000	Colonies/100ml	EPA 1600

Certified By: _____ Date: 07/19/2010

Doug Campbell, Laboratory Supervisor

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SAMPLE RESULTS REPORT

Report Date : 7/19/2010

REPORT TO	
City of Vista 200 Civic Center Drive Vista, CA 92084 Attention: Paul Hartman	100714006 ELAP Certification No. 1441 Ref. No. EC: 10- 0111 E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA30702	Collected: 07/14/2010	Time: 09:50			
VISTA_SPEC	AH-9 (confirmation)	Total Coliform, MF	19000	Colonies/100ml	SM9221B
VISTA_SPEC	AH-9 (confirmation)	Fecal Coliform, MF	5000	Colonies/100ml	SM9222D
VISTA_SPEC	AH-9 (confirmation)	Enterococcus	4000	Colonies/100ml	EPA 1600

Certified By: _____ Date: 07/19/2010

Doug Campbell, Laboratory Supervisor

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SAMPLE RESULTS REPORT

Report Date : 7/21/2010

REPORT TO	
City of Vista 200 Civic Center Drive Vista, CA 92084 Attention: Paul Hartman	100713008 ELAP Certification No. 1441 Ref. No. EC: 10- 0118 E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA30677	Collected: 07/13/2010	Time: 09:30			
VISTA_SPEC	AH-17	Total Suspended Solids	5.20	mg/L	SM2540D
VISTA_SPEC	AH-17	Solids, Total Dissolved	1422	mg/L	SM2540C
VISTA_SPEC	AH-17	Total Coliform, MF	7600	Colonies/100ml	SM9221B
VISTA_SPEC	AH-17	Sulfate Wet	365	mg/L	EPA 375.4
VISTA_SPEC	AH-17	Fecal Coliform, MF	2100	Colonies/100ml	SM9222D
VISTA_SPEC	AH-17	Enterococcus	2000	Colonies/100ml	EPA 1600
AA30678	Collected: 07/13/2010	Time: 11:30			
VISTA_SPEC	AH-21	Total Suspended Solids	2.00	mg/L	SM2540D
VISTA_SPEC	AH-21	Solids, Total Dissolved	2356	mg/L	SM2540C
VISTA_SPEC	AH-21	Total Coliform, MF	8800	Colonies/100ml	SM9221B
VISTA_SPEC	AH-21	Sulfate Wet	1044	mg/L	EPA 375.4
VISTA_SPEC	AH-21	Hardness	1040	mg/L CaCO3	SM2340C
VISTA_SPEC	AH-21	Fecal Coliform, MF	4000	Colonies/100ml	SM9222D
VISTA_SPEC	AH-21	Enterococcus	2700	Colonies/100ml	EPA 1600

Certified By: _____ Date: 07/21/2010

Doug Campbell, Laboratory Supervisor

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SAMPLE RESULTS REPORT

Report Date : 7/21/2010

REPORT TO	
City of Vista 200 Civic Center Drive Vista, CA 92084 Attention: Paul Hartman	100715005 ELAP Certification No. 1441 Ref. No. EC: 10- 0119 E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA30769	Collected: 07/15/2010	Time: 09:20			
VISTA_SPEC	BV-1	Total Suspended Solids	15.6	mg/L	SM2540D
VISTA_SPEC	BV-1	Solids, Total Dissolved	4218	mg/L	SM2540C
VISTA_SPEC	BV-1	Total Coliform, MF	11600	Colonies/100ml	SM9221B
VISTA_SPEC	BV-1	Fecal Coliform, MF	1600	Colonies/100ml	SM9222D
VISTA_SPEC	BV-1	Enterococcus	9100	Colonies/100ml	EPA 1600
AA30770	Collected: 07/15/2010	Time: 11:10			
VISTA_SPEC	BV-31	Total Coliform, MF	200	Colonies/100ml	SM9221B
VISTA_SPEC	BV-31	Hardness	330	mg/L CaCO3	SM2340C
VISTA_SPEC	BV-31	Fecal Coliform, MF	100	Colonies/100ml	SM9222D
VISTA_SPEC	BV-31	Enterococcus	200	Colonies/100ml	EPA 1600

Certified By: Doug Campbell Date: 07/21/2010

Doug Campbell, Laboratory Supervisor

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SAMPLE RESULTS REPORT

Report Date : 7/28/2010

REPORT TO
City of Vista 200 Civic Center Drive Vista, CA 92084 Attention: Paul Hartman

100720007

ELAP Certification No. 1441

Ref. No. EC: 10- 0129

E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA30852	**Collected: 07/20/2010**	**Time: 08:35**			
VISTA_SPEC	BV-4	Total Suspended Solids	17.6	mg/L	SM2540D
VISTA_SPEC	BV-4	Solids, Total Dissolved	1172	mg/L	SM2540C
VISTA_SPEC	BV-4	Total Coliform, MF	8200	Colonies/100ml	SM9221B
VISTA_SPEC	BV-4	Hardness	520	mg/L CaCO3	SM2340C
VISTA_SPEC	BV-4	Fecal Coliform, MF	1800	Colonies/100ml	SM9222D
VISTA_SPEC	BV-4	Enterococcus	1600	Colonies/100ml	EPA 1600

Certified By: _____ **Date:** 07/28/2010

Doug Campbell, Laboratory Supervisor

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SAMPLE RESULTS REPORT

Report Date : 7/22/2010

REPORT TO	
City of Vista 200 Civic Center Drive Vista, CA 92084 Attention: Paul Hartman	100720007 ELAP Certification No. 1441 Ref. No. EC: 10- 0124 E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA30853 Collected: 07/20/2010 Time: 10:15					
VISTA_SPEC	BV-1	Enterococcus	3600	Colonies/100ml	EPA 1600
AA30854 Collected: 07/20/2010 Time: 11:20					
VISTA_SPEC	BV-1-1	Enterococcus	2700	Colonies/100ml	EPA 1600

Certified By: _____ Date: 07/22/2010

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SAMPLE RESULTS REPORT

Report Date : 7/28/2010

REPORT TO	
City of Vista 200 Civic Center Drive Vista, CA 92084 Attention: Paul Hartman	100721007 ELAP Certification No. 1441 Ref. No. EC: 10- 0129 E = Estimated Coliform Value

Sample ID	Sample Point	Analyte Name	Result	Units	Method Reference
AA30942 Collected: 07/21/2010 Time: 09:00					
VISTA_SPEC	BV-18	Total Coliform, MF	3800	Colonies/100ml	SM9221B
VISTA_SPEC	BV-18	Hardness	750	mg/L CaCO3	SM2340C
VISTA_SPEC	BV-18	Fecal Coliform, MF	200	Colonies/100ml	SM9222D
VISTA_SPEC	BV-18	Enterococcus	400	Colonies/100ml	EPA 1600
AA30943 Collected: 07/21/2010 Time: 10:45					
VISTA_SPEC	BV-8	Total Coliform, MF	7100	Colonies/100ml	SM9221B
VISTA_SPEC	BV-8	Hardness	390	mg/L CaCO3	SM2340C
VISTA_SPEC	BV-8	Fecal Coliform, MF	2600	Colonies/100ml	SM9222D
VISTA_SPEC	BV-8	Enterococcus	2800	Colonies/100ml	EPA 1600

Certified By: _____ Date: 07/28/2010

Doug Campbell, Laboratory Supervisor

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APPENDIX D

Field Data and Trash Assessment Sheets

ta

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-BA	Latitude	33.16641	Watershed	Hydrologic Unit	904
Location	B/N 632 & 636 Sycamore Ave, North of Thibodo Rd/Plumosa Ave	Longitude	-117.21544		Hydrologic Area	904.3
		TB Page	1108 B4		Hydrologic Subarea (Optional)	904.32
Date/ Time	7/6/10 12:45	Observer	D. Coppi / D. Welte		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☑ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 17

as P

.46 x .326 = .15

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	17.90	NH_3-N (mg/L)	~~NM~~ .19 p.c	NO_3-N (mg/L)	~~>50~~ 11.3 wrong	Ortho-PO_4 (mg/L)	~~.46~~ .46 / .15
pH (pH units)	8.30	TURB (NTU)	.60	COND (mS/cm)	2.01	MBAS (mg/L)	.25

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	4" (.33)	ft
Depth	1.5" (.13)	ft
Velocity	.5 / 1.01	ft/sec (.50 x .5)
Flow	.33 x .13 x .50 = (2.15)	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: A 3 to 1 DILUTION WAS DONE FOR NITRATE. INITIAL MEAS WAS ~~>50~~ 11.3 as N
& STILL SAME RESULT >50 mg/L
11.3 = 11.3 x 3 = 33.9

2010 Trash Assessment Form

SITE ID: AH-8A DATE: 7/6/10

LOCATION: 632/636 Sycamore Ave TIME: 13:00

OBSERVER: D. Coppi / D. Weiste

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): PH ~~40 x 20~~ 10 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

Updated April 29, 2009

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation for NITRATE EXCEEDANCE ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-8A	Latitude	33.1644	Watershed	Hydrologic Unit	904
Location	BETWEEN 632 + 636 SYCAMORE AVE. North of THIBODO RD / PALMOSA RD	Longitude	-117.21544		Hydrologic Area	904.3
		TB Page	1108 B4		Hydrologic Subarea (Optional)	904.32
Date/ Time	7/7/10 11:00 AM	Observer	D. Coppi / N. Morgan		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 71-73

Field Screening Samples Collected? ☐ Yes ☐ No

733.9 ~~22.5~~ 33.4

Water Temp (°C)	18.0	NH_3-N (mg/L)	~~NA~~ NM	NO_3-N (mg/L)	>50.0	Ortho PO_4 (mg/L)	~~NA~~ NM
pH (pH units)	7.86	TURB (NTU)	~~NA~~ NM	COND (mS/cm)	1.987	MBAS (mg/L)	~~NA~~ NM

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	2.15	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: ONE TO 3 DILUTION TEST DONE FOR NITRATE

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation for _____ ☒ IC/ID Follow-Up for NITRATE EXCEEDANCE

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	A4-8A-1	Latitude	33.170278	Watershed	Hydrologic Unit	
Location	NW CORNER OF INTERSECTION UNIVERSITY DR. / SYCAMORE AVE	Longitude	-117.212787		Hydrologic Area	
		TB Page			Hydrologic Subarea (Optional)	
Date/ Time	13:30 PM 7/7/10	Observer	D. LOPPI / V. MONTEZA		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☒ Natural Creek ☒ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☐ Partly Cloudy	☒ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 77-79

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	18.16	NH_3-N (mg/L)	~~NA~~ NM	NO_3-N (mg/L)	~~>56~~ 11.3	Ortho-PO_4 (mg/L)	NM
pH (pH units)	8.07	TURB (NTU)	NM	COND (mS/cm)	1.971	MBAS (mg/L)	NM

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6'	ft
Depth	24 = .04'	ft
Velocity	2	ft/sec
Flow	~~48.215~~ 1.9.39	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: ___

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	A4-9	Latitude	33.15865	Watershed	Hydrologic Unit	
Location	SHADOW RIDGE + ANTIGUA DR. IN BV PARK, NE OF POND	Longitude	-117.24642		Hydrologic Area	
		TB Page	1107 H5		Hydrologic Subarea (Optional)	
Date/ Time	7/12/10 9:10 A.M.	Observer	D. Coppi		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☑ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☑ Other small leaves
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☑ Other larvae?

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 90 & 91

Field Screening Samples Collected? ☒ Yes ☐ No

(NO_3) 15.66 × .226 = 3.54 As P = 1.33 × .326 = .43

Water Temp (°C)	19.69	NH_3-N (mg/L)	.70	NO_3-N (mg/L)	3.54	Ortho-PO_4 (mg/L)	1.33
pH (pH units)	7.2	TURB (NTU)	5.12	COND (mS/cm)	2.56	MBAS (mg/L)	.75

Analytical Lab Samples Collected? ☒ Yes ☐ No 925 AM Sample TIME

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-9 **DATE:** 7/12/10

LOCATION: STADIUM RIDGE DRIVE / ANTIGUA **TIME:** 10:00 AM

OBSERVER: D. COPPI

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): SUBOPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10 x 25

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

Updated April 29, 2009

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: lots of plastic bottles, some styrofoam

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation for FECAL COLIFORM + ENTEROCOCCUS ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-9	Latitude	33 15865	Watershed	Hydrologic Unit	
Location	SHADOWRIDGE + ANTIQUE DR. IN B.J. PARK, NE OF POND	Longitude	-117. 24647		Hydrologic Area	
		TB Page	1107 H5		Hydrologic Subarea (Optional)	
Date/ Time	7/14/10 ~~0915~~ 0915	Observer	Coppi / Manzezi		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☑ Other SMALL LEAVES
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☒ N/A as 7/14/10

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 116 - 118

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.63	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	7.02	TURB (NTU)	NS	COND (mS/cm)	1.24	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☒ Yes ☐ No ONLY FECAL + ENTEROCOCCUS SAMPLE TIME 0950

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: VERY STAGNANT WATER, SAME TRASH EXISTS ~~FROM~~ WHEN INITIAL SAMPLE WAS TAKEN.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-17	Latitude	33.14003	Watershed	Hydrologic Unit	904
Location	SE side of Faraday + Brookhaven intersection, in the corner of the detention basin	Longitude	-117.24637		Hydrologic Area	904.3
		TB Page	1127 H1		Hydrologic Subarea (Optional)	904.31
Date/ Time	7/13/10 0900	Observer	D. Leppi / D. Weise		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 99, 100

20.22 .34

A. N = NO_3( ) × .226 = 4.57 A. P = PO_4( ) × .326 = .11

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.89	NH_3-N (mg/L)	.14	NO_3-N (mg/L)	4.57	Ortho-PO_4 (mg/L)	.34
pH (pH units)	7.22	TURB (NTU)	8.03	COND (mS/cm)	2.09	MBAS (mg/L)	.25

Analytical Lab Samples Collected? ☒ Yes ☐ No 0930 sample time

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter	~~4"~~ 4"	ft (.33)
Depth	1"	ft (.08)
Velocity	2	ft/sec
Flow	23.7	gpm

COMMENTS: ACCESS AT SEWER EASEMENT ROAD, GATE

2010 Trash Assessment Form

SITE ID: AH-17 DATE: 7/13/10

LOCATION: Faraday / Brookhaven TIME: 1000

OBSERVER: D. Coppi / D. weiss

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-21	Latitude	33.13534	Watershed	Hydrologic Unit	904
Location	2687 S. Melrose Dr (south end of Melrose Drive)	Longitude	-117.24466		Hydrologic Area	904.3
		TB Page	1127 H1		Hydrologic Subarea (Optional)	904.31
Date/ Time	7/13/10 1100	Observer	Coppi /		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 105

Field Screening Samples Collected? ☒ Yes ☐ No

NO_3(19.69) x .226 = 4.45 As N As P = PO_4(.16) x .326 = .05

Water Temp (°C)	21.83	NH_3-N (mg/L)	.44	NO_3-N (mg/L)	4.45	Ortho-PO_4 (mg/L)	~~.05~~ .16
pH (pH units)	7.79	TURB (NTU)	1.83	COND (mS/cm)	3.31	MBAS (mg/L)	.25

Analytical Lab Samples Collected? ☒ Yes ☐ No 11:30 sample time

FLOW ESTIMATION WORKSHEETS 0.132086 g / 0.8 min = 0.165 g/m

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	500	mL
Time to Fill	48	sec
Flow	0.165	gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-21 **DATE:** 7/13/10

LOCATION: 2687 Melrose Dr. **TIME:** 1130

OBSERVER: D. Coppi / D. [illegible]

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 3 x 3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

City of Vista

3:06

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-30	**Latitude**	33.17023	**Watershed**	**Hydrologic Unit**	904
Location	SW corner of Chaparral Drive & Thibodo Rd. intersection	**Longitude**	-117.22548		**Hydrologic Area**	904.3
		TB Page	1108 A3		**Hydrologic Subarea** (Optional)	904.32
Date/ Time	7/6/10 1345	**Observer**	Cappi / WRUTE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☑ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☑ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☑ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☑ Other LEAVES
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☑ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 68 - 70

Field Screening Samples Collected? ☑ Yes ☐ No

1.77 x .226 = .40 As N 1.24 x .326 = .40 as P

Water Temp (°C)	18.35	NH_3-N (mg/L)	~~.44~~ .52	NO_3-N (mg/L)	1.77 / .40	Ortho-PO_4 (mg/L)	1.24 ~~.40~~
pH (pH units)	7.40	TURB (NTU)	2.86	COND (mS/cm)	1.50	MBAS (mg/L)	.25

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-30 DATE: 7/6/10

LOCATION: CHAPARRAL/THIBODO TIME: 14:05

OBSERVER: D. Coppi / D. WELTE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): SUBOPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 20 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-31	**Latitude**	33.16715	**Watershed**	**Hydrologic Unit**	904
Location	Live Oak Rd near Southern intersection w/ Cordoba Way, west sidewalk by golf course fence	**Longitude**	-117.23827		**Hydrologic Area**	904.3
		TB Page	1107 J4		**Hydrologic Subarea** (Optional)	904.31
Date/ Time	7/13/10 1615	**Observer**	D. Coppi / D. Welte		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 113, 114, 115

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-31 DATE: 7/13/10

LOCATION: LIVE OAK RD / CORDOBA WAY TIME: 1615

OBSERVER: D. Coppi / D. Wirta

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

Updated April 29, 2009

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH - 32	Latitude	33.15156	Watershed	Hydrologic Unit	904
Location	Southwest corner of the La Mirada Drive and Sycamore Avenue intersection	Longitude	-117.22630		Hydrologic Area	904.3
		TB Page	1108 A6		Hydrologic Subarea (Optional)	904.31
Date/ Time	7/7/10 1451	Observer	D. Coppi / V. Montezza		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 8283

Field Screening Samples Collected? ☑ Yes ☐ No

AsN 38.49 x .226 = 8.70 As P = .04 x .326 = .01

Water Temp (°C)	20.47	NH_3-N (mg/L)	.68	NO_3-N (mg/L)	8.70	Ortho-PO_4 (mg/L)	.04
pH (pH units)	7.34	TURB (NTU)	23.7	COND (mS/cm)	4.85	MBAS (mg/L)	.75

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	225	mL
Time to Fill	9	sec
Flow	.39	gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-32 **DATE:** 7/7/10

LOCATION: LaMirada / Sycamore **TIME:** 1500

OBSERVER: D. Cuppi / V. Montezi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 8 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-33	**Latitude**	33.15225	**Watershed**	**Hydrologic Unit**	904
Location	East end of La Mirada Drive off of Business Park Drive, in canyon by 2260 La Mirada Drive	**Longitude**	-117.23074		**Hydrologic Area**	904.3
		TB Page	1107 J6		**Hydrologic Subarea** (Optional)	904.31
Date/ Time	7/13/10 1445	**Observer**	D. Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects ☐ Algae ☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 109-111

Field Screening Samples Collected? ☒ Yes ☐ No

$A_sN = (NO_3) \times .226 = 12.54$ $A_sP = PO_4 (1.99) \times .326 = .65$

Water Temp (°C)	22.36	NH_3-N (mg/L)	.23	NO_3-N (mg/L)	2.83	Ortho-PO_4 (mg/L)	1.99
pH (pH units)	7.68	TURB (NTU)	18.3	COND (mS/cm)	1.36	MBAS (mg/L)	.75

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-33 **DATE:** 7/13/10

LOCATION: 2260 La Mirada (canyon) **TIME:** 1500

OBSERVER: D. Coppi / D. Walter

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): SUBOPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 25 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
7/13/10 PL ☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-34	**Latitude**	33.13576	**Watershed**	**Hydrologic Unit**	904
Location	Keystone Way near Scott St	**Longitude**	-117.23425		**Hydrologic Area**	904.3
		TB Page	1127 J1		**Hydrologic Subarea** (Optional)	904.31
Date/ Time	7/7/10 14:40	**Observer**	D. Coppi / V. Marsh		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

D.C 7/7/10

Weather ☐ Sunny ☐ Partly Cloudy ☑ Overcast ☐ Fog ~~Drizzle~~

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☐ > 72 hours ☐ < 72 hours

Rainfall ☐ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 7/7/10 ~~76~~ 80,81

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-34 DATE: 7/7/10

LOCATION: KEYSTONE WAY NEAR SCOTT ST. TIME: 14:40

OBSERVER: D. LOPPI / V. MONTUZI

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-35	**Latitude**	33.14406	**Watershed**	**Hydrologic Unit**	904
Location	Across from 1210 Activity Road upstream → 3:30 PM	**Longitude**	-117.21800		**Hydrologic Area**	904.3
		TB Page	1108 B7		**Hydrologic Subarea** (Optional)	904.31
Date/ Time	8/11/10 3:00PM ~~7/21/10 10:00 D.V~~ ~~0900 AM D.V~~	**Observer**	MONIZZI / LAMBLE	**Discharge Area** (Optional)		

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☑ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☑ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 50,51 / 13,14 / 15,16

Field Screening Samples Collected? ☑ Yes ☐ No

3:1 Dilution 54.02 x.886 ASP = .38

Water Temp (°C)	24.8	NH_3-N (mg/L)	0.23	NO_3-N (mg/L)	overrange	Ortho-PO_4 (mg/L)	1.17
pH (pH units)	7.9	TURB (NTU)	102	COND (mS/cm)	4.993	MBAS (mg/L)	0.40

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	1.0	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-35 DATE: 8/11/10

LOCATION: 1210 ACTIVITY TIME: 15:36

OBSERVER: BRETT GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 6 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation for NO_3-N ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-35	**Latitude**	33.14406	**Watershed**	**Hydrologic Unit**	904
Location	JUST EAST OF 1235 ACTIVITY ROAD	**Longitude**	-117.21800		**Hydrologic Area**	904.3
		TB Page			**Hydrologic Subarea** (Optional)	904.31
Date/ Time	8/12/10 12:50	**Observer**	B. GAMBLE		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☑ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 17-19

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	26.47	NH_3-N (mg/L)	N&A	NO_3-N (mg/L)	>11.3	Ortho-PO_4 (mg/L)	N&A
pH (pH units)	7.68	TURB (NTU)	N&A	COND (mS/cm)	4.283	MBAS (mg/L)	N&A

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	1.5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: NO_3-N OVERRANGE

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation for ~~AH-35 NO_3-N~~ ☒ IC/ID Follow-Up for AH-35 NO_3-N

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-35-2	Latitude	33.144091	Watershed	Hydrologic Unit	904
Location	NORTHWESTERN CORNER OF ACTIVITY ROAD AND POINSETTIA	Longitude	-117.216783		Hydrologic Area	904.3
		TB Page	1108 B7		Hydrologic Subarea (Optional)	904.31
Date/ Time	8/12/10 13:25	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☑ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height:_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 20-21

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		MBAS (mg/L)	

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: SAMPLE NOT OBTAINABLE

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	AH-36	Latitude	33.15912	Watershed	Hydrologic Unit	904
Location	West side of Cottontail Road, Southwest of Mapleleaf Drive	Longitude	-117.22548		Hydrologic Area	904.3
		TB Page	1108 A5		Hydrologic Subarea (Optional)	904.32
Date/ Time	7/19/10 1400	Observer	Coppi		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☒ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☒ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☒ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☒ None ☒ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☒ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☒ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☒ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 24, 25

Field Screening Samples Collected? ☒ Yes ☐ No

31.09 x .226 = 7.03 As P = .82 x .326 = .27

Water Temp (°C)	21.62	NH_3-N (mg/L)	.16	NO_3-N (mg/L)	7.03	Ortho-PO_4 (mg/L)	.82
pH (pH units)	8.31	TURB (NTU)	.53	COND (mS/cm)	1.29	MBAS (mg/L)	.13

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	225	mL
Time to Fill	120	sec
Flow	.03	gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: AH-36 DATE: 7/19/10

LOCATION: COTTONTAIL / MAPLELEAF TIME: 1430

OBSERVER: Coppi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x3

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive												
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: SOME STYRO FOAM CUPS

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH - 37	**Latitude**	33.15503	**Watershed**	**Hydrologic Unit**	904
Location	Green Oak / S. Melrose Southeast corner of Green Oak Rd and S. Melrose Drive intersection	**Longitude**	-117.24137		**Hydrologic Area**	904.3
		TB Page	1107 H6		**Hydrologic Subarea** (Optional)	904.31
Date/ Time	7/19/10	**Observer**	Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 22, 23

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: A4-37 DATE: 7/19/10

LOCATION: Green Oak /S. Melrose TIME: 1345

OBSERVER: Coppi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	AH-38	**Latitude**	33.15786	**Watershed**	**Hydrologic Unit**	904
Location	Shadowridge / White Birch South side of Shadowridge Drive, east of White Birch Drive	**Longitude**	-117.24758		**Hydrologic Area**	904.3
		TB Page	1107 G5		**Hydrologic Subarea** (Optional)	904.31
Date/ Time	7/8/10 1420 ~~1:20~~ pm	**Observer**	D. Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☐ Partly Cloudy	☑ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☑ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 84-87

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: ALTERNATE SITE FOR AH-34. NEGLIBLE AMT OF WATER, NOT ENOUGH FOR SAMPLE + COULDN'T RETRIEVE ANY

2010 Trash Assessment Form

SITE ID: AH-38 **DATE:** 7/8/10

LOCATION: Shadowridge / White Birch **TIME:** 1440

OBSERVER: D. Capp

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

City of Vista

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-1	**Latitude**	33.18271	**Watershed**	**Hydrologic Unit**	904
Location	4241 Tiberon Drive	**Longitude**	-117.28387		**Hydrologic Area**	904.2
		TB Page	1107 C2		**Hydrologic Subarea** (Optional)	904.21
Date/ Time	7/15/10 900	**Observer**	Coppi, Heagy		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 1-4

Field Screening Samples Collected? ☒ Yes ☐ No (NO_3) 17.22 × .226 = 3.89 AS N AS P = (PO_4) .48 × .326 = .16

Water Temp (°C)	21.19	NH_3-N (mg/L)	.72	NO_3-N (mg/L)	3.89	Ortho-PO_4 (mg/L)	~~.5~~ .48
pH (pH units)	8.04	TURB (NTU)	1.17	COND (mS/cm)	7.19	MBAS (mg/L)	.5

Analytical Lab Samples Collected? ☒ Yes ☐ No 0920 sample time (For ns-4 prog only)

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BV-1 **DATE:** 7/15/10

LOCATION: 4241 Tiberon Drive **TIME:** 0930

OBSERVER: Coppi / Heagy

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 20 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation for high Enterococcus ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-1	**Latitude**	33.18271	**Watershed**	**Hydrologic Unit**	904
Location	4241 Tiberon Drive	**Longitude**	-117.28387		**Hydrologic Area**	904.2
		TB Page	1107 C2		**Hydrologic Subarea** (Optional)	904.21
Date/ Time	7/20/10 1005	**Observer**	Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 29

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	20.88	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	N/A	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	7.94	TURB (NTU)	N/A	COND (mS/cm)	7.17	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☒ Yes ☐ No Sample Time 1015

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	500	mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation for _____ ☒ IC/ID Follow-Up for HIGH ENTEROCOCCUS

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-1-1	**Latitude**	33.183881	**Watershed**	**Hydrologic Unit**	904
Location	~~220~~ 2070 HACIENDA DRIVE	**Longitude**	-117.285986		**Hydrologic Area**	904.2
		TB Page	1107 C2		**Hydrologic Subarea** (Optional)	904.21
Date/ Time	7/20/10 1100	**Observer**	Coppi / Hagy		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 34

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.71	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	N/A	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	8.07	TURB (NTU)	N/A	COND (mS/cm)	9.000	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☒ Yes ☐ No 1120

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	200	mL
Time to Fill	2 min 44 sec	sec = 164 sec
Flow	.07	gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-4	**Latitude**	33.18780	**Watershed**	**Hydrologic Unit**	904
Location	Across the street from 1725 Hacienda Drive, south of the fence, in the Canyon	**Longitude**	-117.27434		**Hydrologic Area**	904.2
		TB Page	1087 E7		**Hydrologic Subarea** (Optional)	904.21
Date/ Time	7/20/10 0820	**Observer**	D. Cappi / Hungay		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☒ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage		☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray		☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter		☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits		☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive			☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 26-28

Field Screening Samples Collected? ☒ Yes ☐ No

$A_sN = .913 \times .226 =$ $A_sP = .28 \times .326 = .09$

Water Temp (°C)	20.69	NH_3-N (mg/L)	.30	NO_3-N (mg/L)	2.06	Ortho-PO_4 (mg/L)	.28
pH (pH units)	8.13	TURB (NTU)	2.03	COND (mS/cm)	1.66	MBAS (mg/L)	.25

Analytical Lab Samples Collected? ☒ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

3'/2.34 = 1.282 ft/sec

Flowing Creek or Box Culvert

Width	2	ft
Depth	1/2"	ft
Velocity	3'/2.34 sec	ft/sec
Flow	47.95	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BV-4 DATE: 7/20/10

LOCATION: 1725 Hacienda TIME: 0845

OBSERVER: Coppi / Henry

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 30 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-6	Latitude	33.19384	Watershed	Hydrologic Unit	904
Location	HACIENDA DRIVE + BREEZE HILL DRIVE ROAD	Longitude	-117.26051		Hydrologic Area	904.2
		TB Page			Hydrologic Subarea (Optional)	904.22
Date/ Time	8/16/10 12:30	Observer	B. GAMBLE V. MONJEZI		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☑ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 46-48

Field Screening Samples Collected? ☑ Yes ☐ No

33.49 ppm @ 5:1 DILUTION 33.49 × .226 × 5 = 37.84

Water Temp (°C)	23.73	NH_3-N (mg/L)	0.29	NO_3-N (mg/L)	overrange	Ortho-PO_4 (mg/L)	0.21 × .326 = .068
pH (pH units)	7.74	TURB (NTU)	2.24	COND (mS/cm)	1.674	MBAS (mg/L)	0.30

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	6.6	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BV-6 **DATE:** 8/16/10

LOCATION: HACIENDA DR & HILL ROAD **TIME:** 12:30

OBSERVER: B. GAMAGE & V. MONJEZI

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L X W (FT): 25' x 15'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☒ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation for NO_3-N ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-6	Latitude	33.19384	Watershed	Hydrologic Unit	904
Location	Hacienda Drive & Breeze Hill Rd.	Longitude	-117.26051		Hydrologic Area	904.2
		TB Page	1087 F7		Hydrologic Subarea (Optional)	904.22
Date/ Time	8/18/10 9:30	Observer	Vida M. Brett		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☒ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: _____ ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other		
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other		
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other		
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other		
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other		
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other		
Biology	☐ None	☐ Insects	☐ Algae	☑ Fish	☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 55

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	24.93	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	>11.3 overrange	Ortho-PO_4 (mg/L)	NS
pH (pH units)	7.79	TURB (NTU)	NS	COND (mS/cm)	1.728	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation for ~~NH_2-N~~ ☐ IC/ID Follow-Up for NO_3N

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-6/1	**Latitude**	33.193706	**Watershed**	**Hydrologic Unit**	904
Location	Hacienda Dr & La Tortuga	**Longitude**	-117.259057		**Hydrologic Area**	904.2
		TB Page			**Hydrologic Subarea** (Optional)	904.22
Date/ Time	8/18/10 9:50	**Observer**	Lida M. Brett		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☑ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 56

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)	23.92	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	711.3	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	7.86	TURB (NTU)	N/A	COND (mS/cm)	1.675	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: UPSTREAM SAMPLING SITE AT CONFLUENCE

City of Vista

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-7A	**Latitude**	33.19300	**Watershed**	**Hydrologic Unit**	904
Location	West sidewalk of South Melrose Drive, south of Hacienda, next to gas station	**Longitude**	-117.25372		**Hydrologic Area**	904.2
		TB Page	1087 G7		**Hydrologic Subarea** (Optional)	904.22
Date/ Time	8/11/10 3:00PM	**Observer**	Vida Monjezi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 11 & 12

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BU-7A DATE: 8-11-10

LOCATION: S. Melrose, South of Hacienda TIME: 3:00PM

OBSERVER: Vida Monjezi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-8	Latitude	33.20350	Watershed	Hydrologic Unit	904
Location	Olive Avenue and Goetting Way, Southwest corner	Longitude	-117.24564		Hydrologic Area	904.2
		TB Page	1087 G6		Hydrologic Subarea (Optional)	904.22
Date/ Time	7/21/16 1030	Observer	Coppi		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☑ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☑ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 43, 44

Field Screening Samples Collected? ☒ Yes ☐ No

45.82 x .226 = 10.36 A_3P = .26 x .326 = .08

Water Temp (°C)	22.46	NH3-N (mg/L)	.59	NO3-N (mg/L)	10.36	Ortho-PO4 (mg/L)	.26
pH (pH units)	8.52	TURB (NTU)	2.11	COND (mS/cm)	1.44	MBAS (mg/L)	.19

Analytical Lab Samples Collected? ☒ Yes ☐ No 1045 SAMPLE TIME

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6'	ft
Depth	1/2" (.04')	ft
Velocity	1.2 6'-5 secs	ft/sec
Flow	130.16	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BU-8 **DATE:** 7/21/10

LOCATION: Olive / Goetting **TIME:** 1050

OBSERVER: Coppi / Montuzi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 40 x 20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation for HIGH NITRATE ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-8	**Latitude**	33.20350	**Watershed**	**Hydrologic Unit**	904
Location	OLIVE AVE / GOSTING WAY SOUTHWEST CORNER	**Longitude**	-117.24564		**Hydrologic Area**	904.2
		TB Page	1087 06		**Hydrologic Subarea** (Optional)	904.22
Date/ Time	7/26/10 1025	**Observer**	COPPI / MONTEZI		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☒ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other TRASH
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 56, 57

Field Screening Samples Collected? ☒ Yes ☐ No

45.27 × .226 = 10.23

Water Temp (°C)	21.73	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	10.23	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	8.52	TURB (NTU)	N/A	COND (mS/cm)	1.43	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	5'	ft
Depth	72" (.04)	ft
Velocity (1")	6' / 6 sec	ft/sec
Flow	89.77	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation for _____ ☒ IC/ID Follow-Up for HIGH NITRATE - OUT BV-8

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-8-1	**Latitude**	33.207528	**Watershed**	**Hydrologic Unit**	904.
Location	North side of West California Ave at intersection of Redlands St. and West California	**Longitude**	-117.246295		**Hydrologic Area**	904.2
		TB Page			**Hydrologic Subarea** (Optional)	904.22
Date/ Time	7/26/10 12:30	**Observer**	Coppi / Montezi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 66

Field Screening Samples Collected? ☒ Yes ☐ No

(>11.3) 50. x .221 = 11.3

Water Temp (°C)	25.53	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	~~>50 AND~~	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	7.93	TURB (NTU)	N/A	COND (mS/cm)	7.24	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Very low flow, ~~negligible~~ D.V

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-10	Latitude	33.202.42	Watershed	Hydrologic Unit	904
Location	NORTHWEST CORNER of EUCALYPTUS AVENUE & ESCONDIDO AVE INTERSECTION	Longitude	-117.23605		Hydrologic Area	904.22
		TB Page	1087 J6		Hydrologic Subarea (Optional)	904.22
Date/ Time	7/16/10 0800	Observer	D Loppi		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☒ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other ALGAE, TRASH
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 8

Field Screening Samples Collected? ☒ Yes ☐ No

50 x .226 = 11.3 As P = PO_4 x .326 = .06 x .326 = .02

Water Temp (°C)	22.96	NH_3-N (mg/L)	.14	NO_3-N (mg/L)	0.0	Ortho-PO_4 (mg/L)	.06
pH (pH units)	8.10	TURB (NTU)	1.51	COND (mS/cm)	1.97	MBAS (mg/L)	.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	33" 2.75	ft
Depth	1/8" .01	ft
Velocity	.75 3' / 4 sec	ft/sec
Flow	8.98	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: EXCESSIVE ALGAE THROUGHOUT CHANNEL

2010 Trash Assessment Form

SITE ID: BV-10 **DATE:** 7/16/10

LOCATION: EUCALYPTUS / ESCONDIDO **TIME:** 0830

OBSERVER: D. Coppi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): SUBOPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 20 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☒ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☒ Confirmation for High Nitrate ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-10	Latitude	33.20242	Watershed	Hydrologic Unit	904
Location	NORTHWEST CORNER OF EUCALYPTUS AVE + ESCONDIDO AVE	Longitude	-117.23605		Hydrologic Area	904.2
		TB Page	1087 J6		Hydrologic Subarea (Optional)	904.22
Date/ Time	7/20/10 1430	Observer	Zeppi		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☒ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 35, 36

Field Screening Samples Collected? ☒ Yes ☐ No

33.16 x 3 = 99.48 x .226 = 22.48

Water Temp (°C)	23.65	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	22.48	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	8.29	TURB (NTU)	~~5.0~~ N/A	COND (mS/cm)	1.87	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☐ Yes ☐ No D.L 7/20/10

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	32" (2.6)	ft
Depth	1/8" (.01)	ft
Velocity (1)	3' 3 secs	ft/sec
Flow	11.67 ~~152~~	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: 3 to 1 DILUTION FOR NITRATE

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation for _____ ☒ IC/ID Follow-Up for high nitrate AT BV-10

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-10-1	Latitude	33.199972	Watershed	Hydrologic Unit	904
Location	Across from 922 Tiger Tail Road	Longitude	-117.227682		Hydrologic Area	904.2
		TB Page			Hydrologic Subarea (Optional)	904.22
Date/ Time	7/20/10	Observer	Coppi		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal very low flow - v

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 39-41

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.99	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	>50	Ortho-PO_4 (mg/L)	NS
pH (pH units)	7.03	TURB (NTU)	NS	COND (mS/cm)	2.075	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: 3 to 1 dilution, photometer still reads over range. Groundwater, likely source as no flow was identified as a tributary to BV-10-1

Revised 4/20/2004. 4/15/2005. 4/19/2006. 07/01/2010

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-12	Latitude	33.20639	Watershed	Hydrologic Unit	904
Location	Brengle Terrace Park, across from 1425 Vale Terrace Drive, west side of bridge	Longitude	-117.21933		Hydrologic Area	904.2
		TB Page	1088 A5		Hydrologic Subarea (Optional)	904.22
Date/ Time	8/16/10 9:45 AM	Observer	Vida Manjezi Brett		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☑ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other	
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other	
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☑ Other	Dry
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other	
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other	
Vegetation	☑ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other	
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 38, 39

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BU-12 DATE: 8/16/10

LOCATION: Brengle Terrace Park (1425 Vale Terr) TIME: 9:45

OBSERVER: Vida Manjesi, Brett

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 20 x 12

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-14 (TOP PIPE)	**Latitude**	33.22313	**Watershed**	**Hydrologic Unit**	904
Location	N. SANTA FE AND WESTON CIRCLE	**Longitude**	-117.24597		**Hydrologic Area**	904.2
		TB Page	1087 G3		**Hydrologic Subarea** (Optional)	904.22
Date/ Time	8/16/10 10:33	**Observer**	Vida M. Brett		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☒ Catch Basin CONCRETE ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☒ Rotten Eggs	☐ Chemical	☐ Sewage		☐ Other
Color	☐ None	☐ Yellow	☒ Brown	☐ White	☐ Gray		☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter		☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits		☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive			☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish	☒ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 42,43

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	25.7	NH_3-N (mg/L)	1.52	NO_3-N (mg/L)	18.57 x.226 = 4.20	Ortho-PO_4 (mg/L)	1.78 x.326 = 0.58
pH (pH units)	7.8	TURB (NTU)	84.7	COND (mS/cm)	6.266	MBAS (mg/L)	0.5

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

Revised 4/20/2004. 4/15/2005. 4/19/2006. 07/01/2010

2010 Trash Assessment Form

SITE ID: BV-14 **DATE:** 8/16/10

LOCATION: N. SANTA FE & WESTON CIRCLE **TIME:** 10:33

OBSERVER: VIDA M. & BRETT G.

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE):

ESTIMATED AREA OF ASSESSMENT L X W (FT): 6' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☑ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☒ Confirmation for HIGH AMMONIA ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-14	**Latitude**	33.22313	**Watershed**	**Hydrologic Unit**	904
Location	NEAR N. SANTA FE AVE / WESTON CREEK	**Longitude**	-117.24597		**Hydrologic Area**	904.2
		TB Page			**Hydrologic Subarea** (Optional)	904.22
Date/ Time	9/27/10 0900	**Observer**	Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☒ Other BLACK
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other cloudy
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other ORGANICS (LEAVES, WOOD)
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** _____

Field Screening Samples Collected? ☒ Yes ☐ No

7.57 × .226 = 1.71 2.74 × .326 = .89 AS P

Water Temp (°C)	26.37	NH_3-N (mg/L)	.72	NO_3-N (mg/L)	1.71	Ortho-PO_4 (mg/L)	2.74
pH (pH units)	7.31	TURB (NTU)	64.7	COND (mS/cm)	2.15	MBAS (mg/L)	.79

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-15	**Latitude**	33.21770	**Watershed**	**Hydrologic Unit**	904
Location	Northwest of the Cameron Ave. & Citrus ave intersection	**Longitude**	-117.24340		**Hydrologic Area**	904.2
		TB Page	1087 H4		**Hydrologic Subarea (Optional)**	904.22
Date/ Time	7/21/10 1545	**Observer**	Coppi / Monjezi		**Discharge Area (Optional)**	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☒ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 47, 48, 49

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BV-15 **DATE:** 7/21/10

LOCATION: Canenea / Citrus **TIME:** 1545

OBSERVER: Coppi / Menjura

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 40x10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ **MS4** ☐ **RECEIVING WATER** ☐ **BOTH**	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☑ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

- **Complete the following section for Submarginal, and Poor Evaluations ONLY**

TYPE	Ranking or Count by Type *	POTENTIAL ROUTE (CHECK UP TO 2)				POTENTIAL SOURCE (CHECK UP TO 2)						
		Dumping	Littering	Upstream	Unable to determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to determine
Automotive											X	
Biohazard Waste												
Business Related												
Cigarette Butts												
Construction												
Fabric/Clothing	3		X								X	
Food Packaging	1		X								X	
Food Waste	2		X								X	
Household												
Shopping Carts												
Toxic												
Yard Waste												

* Only rank the types of trash PRESENT in evaluated area from 1 through 12 (1 is most prevalent – 12 is least prevalent). DO NOT rank types of trash that are not present in evaluated area.

Comments: possibly a homeless encampment area. plastic and paper bags branded, also some clothing items.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-18	**Latitude**	33.21044	**Watershed**	**Hydrologic Unit**	904
Location	Brengle Terrace Park, northwest side	**Longitude**	-117.22496		**Hydrologic Area**	904.2
		TB Page	1088 A5		**Hydrologic Subarea** (Optional)	904.22
Date/ Time	7/21/10 0845	**Observer**	Coppi / Montezi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☑ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☒ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☒ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 42

Field Screening Samples Collected? ☒ Yes ☐ No 33.16 x .226 = 7.49 A_3N .32 x .326 = .10 As P

Water Temp (°C)	19.07	NH_3-N (mg/L)	.18	NO_3-N (mg/L)	7.49	Ortho-PO_4 (mg/L)	.32
pH (pH units)	7.41	TURB (NTU)	2.20	COND (mS/cm)	1.875	MBAS (mg/L)	.36

Analytical Lab Samples Collected? ☒ Yes ☐ No 0900 AM Sample Time

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BV-18 DATE: 7/21/10

LOCATION: Brength Terrace Park, NW side TIME: 0900

OBSERVER: Coppi / Montizi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): SUBMARGINAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 30 x 20

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*? PH ☑ MS4 ☑ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-19	**Latitude**	33.21320	**Watershed**	**Hydrologic Unit**	
Location	LOCATED BEHIND 1040 EAST VISTA WAY	**Longitude**	-117.22443		**Hydrologic Area**	
		TB Page			**Hydrologic Subarea** (Optional)	
Date/ Time	8/16/10 11:20	**Observer**	V. Monjezi B. Gamble		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☑ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☑ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☑ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☑ Other LEAVES
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☑ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** ~~[illegible]~~ 44-45

Field Screening Samples Collected? ☑ Yes ☐ No

3:1 DILUTION → >11.3
6:1 DILUTION = 21.51 x .226 x 6 = 29.21

Water Temp (°C)	24.4	NH3-N (mg/L)	0.18	NO3-N (mg/L)	OVERRANG	Ortho-PO4 (mg/L)	3.87 x .326 = 1.26
pH (pH units)	8.03	TURB (NTU)	218	COND (mS/cm)	1.586	MBAS (mg/L)	0.26

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	3.0	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BV-19 DATE: 8/16/10

LOCATION: BEHIND 1040 E. VISTA WAY TIME: 11:20

OBSERVER: B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20' x 5'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☑ Confirmation for NO_3-N ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-19	Latitude	33.21320	Watershed	Hydrologic Unit	904
Location	BEHIND 1040 EAST VISTA WAY, OPEN CREEK	Longitude	-117.22943		Hydrologic Area	904.2
		TB Page	1087 J4		Hydrologic Subarea (Optional)	904.22
Date/ Time	8/18/10 08:20	Observer	B. LAMBLE V. MONJEZI		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☑ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☑ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☐ Algae ☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 51

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.84	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	>11.3	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	7.78	TURB (NTU)	pc N/A	COND (mS/cm)	1.592	MBAS (mg/L)	pc N/A

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation for NO_3-N ☒ IC/ID Follow-Up for NO_3-N

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-19-1	**Latitude**	33.214854	**Watershed**	**Hydrologic Unit**	904
Location	NORTH OF BV-19 LOCATION, AT CONFLUENCE BEHIND 1090 EAST VISTA WAY	**Longitude**	-117.229400		**Hydrologic Area**	904.2
		TB Page			**Hydrologic Subarea** (Optional)	904.22
Date/ Time	8/18/10 8:50	**Observer**	Vida M. Brett		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☑ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☑ Other TRASH
Vegetation	☐ None	☐ Limited	☐ Normal	☑ Excessive		☐ Other
Biology	☐ None	☑ Insects	☐ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 52-54

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	23.95	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	>11.3	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	7.87	TURB (NTU)	N/A	COND (mS/cm)	1.738	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-24	**Latitude**	33.21571	**Watershed**	**Hydrologic Unit**	904
Location	1427 Foothill Drive	**Longitude**	-117.21909		**Hydrologic Area**	904.2
		TB Page	1088 B4		**Hydrologic Subarea** (Optional)	904.22
Date/ Time	8/11/10 1:00 PM	**Observer**	Vida Majeci		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☑ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☑ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 6-10

52.01

2:1 DILUTION x 0.226 = x 0.926 = 0.50204 As P

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	22.85	NH3-N (mg/L)	0.29	NO3-N (mg/L)	overrange	Ortho-PO4 (mg/L)	1.54
pH (pH units)	8.22	TURB (NTU)	1.40	COND (mS/cm)	1.735	MBAS (mg/L)	0.24

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	1.5	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BU-24 DATE: 8-11-10

LOCATION: 1427 FOOTHILL DRIVE TIME: 1:45

OBSERVER: Uida Manjeti / BRETT GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 10x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation for NO_3-N ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BN-24	Latitude	33.21571	Watershed	Hydrologic Unit	904
Location	1427 FOOTHILL DRIVE	Longitude	-117.21909		Hydrologic Area	904.2
		TB Page	1088 B4		Hydrologic Subarea (Optional)	904.22
Date/ Time	8/12/10 14:30	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height:_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects	☑ Algae	☐ Fish	☐ Snails	☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other
Water Flow	☑ Flowing	☐ Ponded	☐ Dry	☐ Tidal		

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 24-26

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.19	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	>11.3	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	8.12	TURB (NTU)	N/A	COND (mS/cm)	1.785	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

DW 11/17/10

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☒ Confirmation for NO_3-N ☒ IC/ID Follow-Up for NO3-N

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-24-1	Latitude	33.215934	Watershed	Hydrologic Unit	904
Location	WEST SIDE OF DRIVEWAY TO 1450 FOOTHILL ~~ROAD~~ DRIVE, IN DRAINAGE DITCH D.L. 11/19/10	Longitude	-117.21817		Hydrologic Area	904.2
		TB Page	1088 B4		Hydrologic Subarea (Optional)	904.22
Date/ Time	8/12/10 15:25	Observer	B. GAMBLE		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: ____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: ____

Photo Taken ☒ Yes ☐ No **Photo #** 29-35

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	22.37	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	>11.3	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	7.40	TURB (NTU)	N/A	COND (mS/cm)	1.671	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	1.0	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: WATER BUBBLING UP FROM GROUND IN CREEK BED.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-30	**Latitude**	33.19243	**Watershed**	**Hydrologic Unit**	904
Location	Parking lot (business: Boomer's) east of Grapevine Road, south of Date street	**Longitude**	-117.27395		**Hydrologic Area**	904.3
		TB Page	1087 D7		**Hydrologic Subarea** (Optional)	904.31
Date/ Time	7/21/10 1400	**Observer**	Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

UNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 45, 46

Field Screening Samples Collected? ☒ Yes ☐ No

$A_3N = 10.76 \times .226 = 2.43$ $ASP = .28 \times .326 = .09$

Water Temp (°C)	21.01	NH_3-N (mg/L)	.16	NO_3-N (mg/L)	2.43	Ortho-PO_4 (mg/L)	.28
pH (pH units)	8.11	TURB (NTU)	8.30	COND (mS/cm)	1.62	MBAS (mg/L)	.22

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width	6'	ft
Depth	1/2" (.04)	ft
Velocity	(1.5) 6' / 4 sec	ft/sec
Flow	161.58	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BV-30 DATE: 7/21/10

LOCATION: Boomers Pkg Lot - Grapevine / Dale TIME: 1430

OBSERVER: Coppi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5x5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-31	Latitude	33.19910	Watershed	Hydrologic Unit	904
Location	Southwest corner of North Melrose Drive and Copper Drive intersection	Longitude	-117.25601		Hydrologic Area	904.2
		TB Page	1087 F7		Hydrologic Subarea (Optional)	904.22
Date/ Time	7/15/10 1050	Observer	Coppi / Heady		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other TRASH
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 4,5

Field Screening Samples Collected? ☒ Yes ☐ No (NO_3) 32.28 × .226 = As N = 8.65 As P = (PO_4) .26 × .326 = .08

Water Temp (°C)	27.33	NH3-N (mg/L)	.12	NO3-N (mg/L)	8.65	Ortho-PO4 (mg/L)	.26
pH (pH units)	7.58	TURB (NTU)	.16	COND (mS/cm)	1.703	MBAS (mg/L)	~~1.0~~ .75

Analytical Lab Samples Collected? ☒ Yes ☐ No 1110 DL 7/15/10

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	525	mL
Time to Fill	16	sec
Flow	.52	gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BU-31 **DATE:** 7/15/10

LOCATION: N Melrose / Copper Drive **TIME:** 1100

OBSERVER: Coppi / Henry

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 5×5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-32	**Latitude**	33.20272	**Watershed**	**Hydrologic Unit**	904
Location	Olive Avenue and Maryland Dr, Southwest corner of Washington Middle School's back parking lot, in fenced area	**Longitude**	-117.25966		**Hydrologic Area**	904.2
		TB Page	1087 F6		**Hydrologic Subarea** (Optional)	904.22
Date/ Time	7/12/10 1450	**Observer**	D. Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 95

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BU-32 **DATE:** 7/12/10

LOCATION: Olive / Maryland **TIME:** 1450

OBSERVER: D. Cappi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L X W (FT): 25 x 15

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV - 33	**Latitude**	33.21198	**Watershed**	**Hydrologic Unit**	904
Location	North side of West Los Angelos Drive, near North Santa Fe Avenue	**Longitude**	-117.24572		**Hydrologic Area**	904.2
		TB Page	1087 G5		**Hydrologic Subarea** (Optional)	904.22
Date/ Time	7/4/10 1350	**Observer**	Rippi / Montezi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☐ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☐ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☐ > 72 hours	☐ < 72 hours				
Rainfall	☐ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 128, 129

Field Screening Samples Collected? ☐ Yes ☐ No

As N = NO_3 (10.95) x .226 = 2.47 As P = PO_4 (2.60) x .326 = .85

Water Temp (°C)	26.35	NH_3-N (mg/L)	.78	NO_3-N (mg/L)	2.47	Ortho-PO_4 (mg/L)	2.60
pH (pH units)	7.78	TURB (NTU)	19.3	COND (mS/cm)	4.61	MBAS (mg/L)	3.0

Four → 2.4

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Follow-up conducted to determine possible source of high MBAS

2010 Trash Assessment Form

SITE ID: BU-33 **DATE:** 7/14/10

LOCATION: W Los Angeles near Santa Fe **TIME:** 1400

OBSERVER: Coppi / Montijo

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation for _____ ☒ IC/ID Follow-Up for MBAS

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-33-1	**Latitude**	33.213314	**Watershed**	**Hydrologic Unit**	904
Location	North side of W. Los Angeles Dr. Before confluence of California and North	**Longitude**	-117.251299 ~~251299~~		**Hydrologic Area**	904.2
		TB Page			**Hydrologic Subarea** (Optional)	904.22
Date/ Time	7/14/10 1540	**Observer**	D. Coppi / V. Montezi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☒ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 130, 131

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	~~N/A~~		NH_3-N (mg/L)	~~N/A~~		NO_3-N (mg/L)	~~N/A~~		Ortho-PO_4 (mg/L)	~~N/A~~ D.V
pH (pH units)	~~N/A~~	D.V	TURB (NTU)	~~N/A~~	D.V	COND (mS/cm)	~~N/A~~	D.V	MBAS (mg/L)	1.5

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Very low flow - Flow meas not taken.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV-34	**Latitude**	33.19162	**Watershed**	**Hydrologic Unit**	904
Location	Across from 220 Huff Street, next to sidewalk	**Longitude**	-117.27126		**Hydrologic Area**	904.2
		TB Page	1107 D1		**Hydrologic Subarea** (Optional)	904.21
Date/ Time	7/12/10 1530 pm	**Observer**	D. Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☑ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:** _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 96, 97, 98

Field Screening Samples Collected? ☒ Yes ☐ No 12.13 × .226 = 2.74 as N As P: .32 × .326 = .10

Water Temp (°C)	24.14	NH_3-N (mg/L)	.18	NO_3-N (mg/L)	2.74	Ortho-PO_4 (mg/L)	.32
pH (pH units)	8.19	TURB (NTU)	4.85	COND (mS/cm)	1.846	MBAS (mg/L)	~~0~~ 0.12 D.L

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume	50	mL
Time to Fill	10	sec
Flow	.08	gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: This site is alternate for BV-32, which was dry

2010 Trash Assessment Form

SITE ID: BV-34 **DATE:** 7/12/10

LOCATION: 220 Huff Street **TIME:** 1545

OBSERVER: D. Coppi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4 x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	BV-35	Latitude	33.22333	Watershed	Hydrologic Unit	904
Location	Northeast corner of the Palomar Place & East Vista Way intersection, in sidewalk by bus stop	Longitude	-117.22100		Hydrologic Area	904.2
		TB Page	1088 A3		Hydrologic Subarea (Optional)	904.22
Date/ Time	8/16/10 10:05	Observer	Vida M. Brett		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ >72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☑ Other	Dry
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☑ Other	
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☑ Other	
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☑ Other	
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☑ Other	
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☑ Other	
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail	☑ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 40, 41

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: BU-35 DATE: 8/16/10

LOCATION: Palomar Place / E Vista Way TIME: 10:05

OBSERVER: V. MONTAÑI / B. GAMBLE

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L X W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	BV - 36	**Latitude**	33.21144	**Watershed**	**Hydrologic Unit**	904
Location	In front of 128 Townsite Drive, east of North Santa Fe Avenue	**Longitude**	-117.24394		**Hydrologic Area**	904.2
		TB Page	1087 H5		**Hydrologic Subarea** (Optional)	904.22
Date/ Time	7/15/10 1440	**Observer**	D. Coppi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☑ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

UNOFF CHARACTERISTICS

Odor	☐ None	☒ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 6, 7

~~10.52~~

Field Screening Samples Collected? ☒ Yes ☐ No

As N = (NO_3) ~~10.52 x .226~~ 10.52 x .226 =

As P = (PO_4) 4.20 x .326 = 1.37

Water Temp (°C)	25.93	NH_3-N (mg/L)	.47	NO_3-N (mg/L)	2.38	Ortho-PO_4 (mg/L)	4.20
pH (pH units)	7.89	TURB (NTU)	97.8	COND (mS/cm)	1.30	MBAS (mg/L)	.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: High Turbidity likely from mixing of sediment/gravel w/ water during sampling

2010 Trash Assessment Form

SITE ID: BV-36 **DATE:** 7/15/10

LOCATION: 128 Townsite **TIME:** 1450

OBSERVER: Coppi / Montezi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☒ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	6-3	Latitude	33.22679	Watershed	Hydrologic Unit	903
Location	North end of Calle Jules	Longitude	-117.22972		Hydrologic Area	903.1
		TB Page	1087 J3		Hydrologic Subarea (Optional)	903.11
Date/ Time	7/19/10 0930	Observer	Coppi / Heagy		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☒ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☒ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	Tide Height: _____ ft.
Last Rain	☒ > 72 hours	☐ < 72 hours				
Rainfall	☒ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 13, 14, 15

8.09 x 3 = 24.27 P.V

24.27 35.78 x .226 = 8.09 As P = .79 x .346 = .26

Field Screening Samples Collected? ☒ Yes ☐ No

Water Temp (°C)	23.33	NH3-N (mg/L)	.22	NO3-N (mg/L)	>50	Ortho-PO4 (mg/L)	.79
pH (pH units)	7.82	TURB (NTU)	2.04	COND (mS/cm)	1.43	MBAS (mg/L)	.25

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow	.50	gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: NO ACCESS TO FLOW SO COULD'NT MEASURE. FLOW WAS CLEARLY LOW, ESTIMATED AT ~.5 gpm. DIVERT SAMPLE AND BLT ~~[illegible]~~ FOR NITRATE 24.27

2010 Trash Assessment Form

SITE ID: G-3 **DATE:** 7/19/10

LOCATION: Calle Jules **TIME:** 1000

OBSERVER: D. Coppi / L. Heavy

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): Suboptimal

ESTIMATED AREA OF ASSESSMENT L x W (FT): 15 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☑ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation for _____ ☒ IC/ID Follow-Up for HIGH NITRATE

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	G-3-1	**Latitude**	33.226183	**Watershed**	**Hydrologic Unit**	903
Location	1737 CALLE JULES	**Longitude**	-117.229347		**Hydrologic Area**	903.1
		TB Page			**Hydrologic Subarea** (Optional)	903.11
Date/ Time	~~7/19/10~~ 7/19/10 10:45 AM	**Observer**	Coppi/Heagy	**Discharge Area** (Optional)		

Land Use (Primary) (Check one only) ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☒ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☒ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☒ Flowing ☐ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No **Photo #** 17

Field Screening Samples Collected? ☒ Yes ☐ No 3.84 x .226 = .87

Water Temp (°C)	N/A DC	NH_3-N (mg/L)	N/A DC	NO_3-N (mg/L)	.87	Ortho-PO_4 (mg/L)	N/A DC
pH (pH units)	N/A	TURB (NTU)	N/A	COND (mS/cm)	N/A DC	MBAS (mg/L)	N/A DC

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow	.25	gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: MEASURED WATER QUALITY OF FLOW IN GUTTER ~~COMING~~ DC 7/19/10 COMING FROM SOUTHERN PART OF CALLE JULES

Revised 4/20/2004. 4/15/2005. 4/19/2006. 07/01/2010

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☐ Field Screening ☐ Confirmation for _____ ☒ IC/ID Follow-Up for High Nitrate

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	G-3-2	Latitude	33.226937	Watershed	Hydrologic Unit	903
Location	North East part of Cul de Sac, 911 Taylor Street	Longitude	-117.229284		Hydrologic Area	903.1
		TB Page			Hydrologic Subarea (Optional)	903.11
Date/ Time	7/19/10 11:20 AM	Observer	Coppi Hegay		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☒ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☒ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☒ Other Algae
Vegetation	☒ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other:

Photo Taken ☒ Yes ☐ No **Photo #** 19,20,21

Field Screening Samples Collected? ☒ Yes ☐ No

88.74 x .226 = 20.06

Water Temp (°C)	N/A	NH_3-N (mg/L)	N/A	NO_3-N (mg/L)	20.06	Ortho-PO_4 (mg/L)	N/A
pH (pH units)	N/A	TURB (NTU)	N/A	COND (mS/cm)	N/A	MBAS (mg/L)	N/A

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: 3 TO ONE DILUTION FOR NITRATE

Revised 4/20/2004. 4/15/2005. 4/19/2006. 07/01/2010

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	G-4	Latitude	33.23335	Watershed	Hydrologic Unit	903
Location	Northwest corner of the Warmlands Avenue and Vista Grande Drive Intersection	Longitude	-117.22420		Hydrologic Area	903.1
		TB Page	1088 A2		Hydrologic Subarea (Optional)	903.11
Date/ Time	8-11-10 10:30	Observer	Vida Mazieri		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☑ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☑ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☑ Excessive		☐ Other
Biology	☐ None	☑ Insects	☐ Algae ☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☐ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 3-5

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	21.99	NH_3-N (mg/L)	0.46	NO_3-N (mg/L)	~~23.22~~ x.226 = 5.24772	Ortho-PO_4 (mg/L)	1.78 x.326 = 0.58028
pH (pH units)	7.97	TURB (NTU)	40.9	COND (mS/cm)	0.806	MBAS (mg/L)	0.31

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: G-4 DATE: 8-11-10

LOCATION: Warmlands / Vista Grande TIME: 10:49

OBSERVER: Vida Manjezi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	6-5	Latitude	33.23251	Watershed	Hydrologic Unit	903
Location	North Santa Fe Avenue, south of Camino Largo, in bike lane on east side of the street, (just north of storm drain on sidewalk)	Longitude	-117.24966		Hydrologic Area	903.1
		TB Page	1087 G2		Hydrologic Subarea (Optional)	903.11
Date/ Time	8-18-10 9:00AM	Observer	Vida Monjeiro		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☑ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☑ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 1 & 2

Field Screening Samples Collected? ☑ Yes ☐ No

x.226 = 5.9664 x.326 = 0.14996

Water Temp (°C)	21.27	NH_3-N (mg/L)	0.06	NO_3-N (mg/L)	26.4	Ortho-PO_4 (mg/L)	0.46
pH (pH units)	7.78	TURB (NTU)	1.03	COND (mS/cm)	2.01	MBAS (mg/L)	0.28

Analytical Lab Samples Collected? ☑ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: G-5 DATE: 8-11-10

LOCATION: N Santa Fe / Camino Largo TIME: 10:00AM

OBSERVER: Uda Mayeri

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 5 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

Updated April 29, 2009

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	G-6	Latitude	33.23052	Watershed	Hydrologic Unit	903
Location	Museum Way, West of North Santa Fe Avenue, in front of Guajome Park Academy, by fence	Longitude	-117.25066		Hydrologic Area	903.1
		TB Page	1087 G2		Hydrologic Subarea (Optional)	903.11
Date/ Time	8/16/10 9:00AM	Observer	Vida Mangeti		Discharge Area (Optional)	

Land Use (Primary) (Check one only): ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☑ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☑ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☑ > 72 hours ☐ < 72 hours

Rainfall ☑ None ☐ < 0.1" ☐ > 0.1"

UNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☑ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☑ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☑ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☑ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 36, 37

Field Screening Samples Collected? ☑ Yes ☐ No

Water Temp (°C)	24.69	NH_3-N (mg/L)	0.21	NO_3-N (mg/L)	14.66 x.226 = 3.31	Ortho-PO_4 (mg/L)	0.17 x.326 = .06
pH (pH units)	7.54	TURB (NTU)	1.24	COND (mS/cm)	1.793	MBAS (mg/L)	<0.25

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: G-6 DATE: 8/16/10

LOCATION: Museum Way TIME: 9:00 AM

OBSERVER: Uda Monjezi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10 x 10

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	MV-2A	Latitude	33.19045	Watershed	Hydrologic Unit	904
Location	MONTE VISTA DRIVE + CYPRESS NW CORNER	Longitude	-117.22162		Hydrologic Area	904.2
		TB Page	1108 A1		Hydrologic Subarea (Optional)	904.22
Date/ Time	8/16/10 13:10	Observer	B. GAMBLE V. MONJEZI		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather	☑ Sunny	☐ Partly Cloudy	☐ Overcast	☐ Fog		
Tide	☑ N/A	☐ Low	☐ Incoming	☐ High	☐ Outgoing	**Tide Height:**_____ft.
Last Rain	☑ > 72 hours	☐ < 72 hours				
Rainfall	☑ None	☐ < 0.1"	☐ > 0.1"			

RUNOFF CHARACTERISTICS

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☑ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☑ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☑ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☑ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☑ N/A

Evidence of Overland Flow? ☐ Yes ☑ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☑ Yes ☐ No **Photo #** 49-50

Field Screening Samples Collected? ☐ Yes ☑ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☑ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow	0	gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

2010 Trash Assessment Form

SITE ID: MV-2A DATE: 8/16/10

LOCATION: MONTE VISTA DR & CYPRESS TIME: 13:10

OBSERVER: B. GAMBLE & V. MONJEZI

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): N/A

ESTIMATED AREA OF ASSESSMENT L x W (FT): 10' x 6'

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	MV -3	Latitude	33.19369	Watershed	Hydrologic Unit	904
Location	Southeast corner of the Escondido Avenue & South Santa Fe Avenue intersection on sidewalk.	Longitude	-117.23432		Hydrologic Area	904.2
		TB Page	1087 J7		Hydrologic Subarea (Optional)	904.22
Date/ Time	7/26/10 1500	Observer	Coppi		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☐ Residential ☑ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☑ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

UNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 67, 68

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH3-N (mg/L)	NS	NO3-N (mg/L)	NS	Ortho-PO4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☒ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: SIGNIFICANT BENTHIC / SEDIMENT DEPOSITS

2010 Trash Assessment Form

SITE ID: MV-3 **DATE:** 7/26/10

LOCATION: Escondido / S. Santa Fe **TIME:** 1510

OBSERVER: Coppi

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): MARGINAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 4x4

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☐ **Optimal**	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☒ **Suboptimal**	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ **Marginal**	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ **Submarginal**	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ **Poor**	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ **Potential Threat to Human Health**	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ **Potential Threat to Aquatic Health**	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☑ Field Screening ☐ Confirmation for _____ ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION

(NAD 83 decimal degrees to 5th place)

Site ID	SS-1	Latitude	33.18235	Watershed	Hydrologic Unit	904
Location	South side of Branding Iron Circle, west of Melrose Drive	Longitude	-117.25365		Hydrologic Area	904.3
		TB Page	1107 G2		Hydrologic Subarea (Optional)	904.31
Date/ Time	7/12/10 1050	Observer	L. Hvagi D. Loppi		Discharge Area (Optional)	

Land Use (Primary) (Check one only) ☑ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☑ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☑ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:**_____ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☒ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other leaves
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☑ Other leaves
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae	☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☒ Ponded ☐ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☒ No ☐ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 92-94

Field Screening Samples Collected? ☒ Yes ☐ No

NO3 37.17 × .226 = 8.40 As N

As P = 2.27 × .326 = .74

Water Temp (°C)	19.56	NH_3-N (mg/L)	.83	NO_3-N (mg/L)	8.40	Ortho-PO_4 (mg/L)	2.27
pH (pH units)	7.32	TURB (NTU)	32.9	COND (mS/cm)	1.031	MBAS (mg/L)	.75

Analytical Lab Samples Collected? ☒ Yes ☐ No 1110 sample time

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: Lots of organics (leaves) as deposits.

2010 Trash Assessment Form

SITE ID: SS-1 DATE: 7/12/10

LOCATION: Branding Iron TIME: 1050 AM

OBSERVER: D. Coppi / L. Heagy

PREVIOUS TRASH ASSESSMENT RATING (IF APPLICABLE): OPTIMAL

ESTIMATED AREA OF ASSESSMENT L x W (FT): 20 x 5

Amount and Extent of Trash	
EVALUATION OF TRASH INCLUDES*: ☑ MS4 ☐ RECEIVING WATER ☐ BOTH	
☑ Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
☐ Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10-50 pieces) evident in evaluated area.
☐ Marginal	Trash is evident in low to medium levels (~51-100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
☐ Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100- 400) . Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
☐ Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

* In areas where receiving water is accessible and adjacent to dry weather site, trash evaluation must include receiving water.

Site Evaluation for Potential Threat to Human Health and/or Aquatic Health (applies to area of assessment)	
☐ Potential Threat to Human Health	Presence of more than one of, or a combination of the following items: hypodermic needles or other medical waste; used diapers, animal waste, or human feces; any toxic substance such as chemical containers, vehicle batteries, or fluorescent light bulbs. Alternatively high prevalence of any one item (e.g. Greater than 50 items that present a puncture or laceration hazard); or observations of mosquito larvae directly observed in water ponded due to trash. All subject to best professional judgment. Describe potential threat on back of form.
☐ Potential Threat to Aquatic Health	Large amount* of persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam (equivalent to a cup), or large amount of settleable, degradable and nontoxic debris; cigarette butts. Presence of more than one of, or a combination of the following items: toxic items such as vehicle batteries, or spray cans; any evidence large clumps of yard waste from landscape maintenance such as yard waste or dumped leaf litter (not naturally occurring). All subject to best professional judgment. Describe potential threat on back of form. *Large amount is defined as 50 pieces or more.

San Diego Stormwater Copermittees
Dry Weather Monitoring Field Datasheet

☒ Field Screening ☒ Confirmation for TOTAL, FECAL, ENTER ☐ IC/ID Follow-Up for _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID	SS-1	**Latitude**		**Watershed**	**Hydrologic Unit**	904
Location	South side of Bonanza Iron Circle, West of Melrose Dr.	**Longitude**			**Hydrologic Area**	904.3
		TB Page			**Hydrologic Subarea** (Optional)	904.31
Date/ Time	7/14/10 11:00 AM	**Observer**	Coppi/Montezi		**Discharge Area** (Optional)	

Land Use (Primary) (Check one only): ☒ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%): ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☒ None

Conveyance (Check one only): ☐ Manhole ☐ Catch Basin ☒ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Tide ☒ N/A ☐ Low ☐ Incoming ☐ High ☐ Outgoing **Tide Height:** _____ ft.

Last Rain ☒ > 72 hours ☐ < 72 hours

Rainfall ☒ None ☐ < 0.1" ☐ > 0.1"

UNOFF CHARACTERISTICS

Odor	☐ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☐ Brown	☐ White	☐ Gray	☐ Other
Clarity	☐ Clear		☐ Slightly Cloudy	☐ Opaque		☐ Other
Floatables	☐ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Deposits	☐ None	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☐ Insects ☐ Algae	☐ Fish ☐ Snails	☐ Mussels/ Barnacles	☐ Insect/ Algae ☐ Insect/ Snail	☐ Other

Water Flow ☐ Flowing ☐ Ponded ☒ Dry ☐ Tidal

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☒ N/A

Evidence of Overland Flow? ☐ Yes ☒ No ☐ Irrigation Runoff ☐ Other: _____

Photo Taken ☒ Yes ☐ No **Photo #** 126, 127

Field Screening Samples Collected? ☐ Yes ☒ No

Water Temp (°C)	NS	NH_3-N (mg/L)	NS	NO_3-N (mg/L)	NS	Ortho-PO_4 (mg/L)	NS
pH (pH units)	NS	TURB (NTU)	NS	COND (mS/cm)	NS	MBAS (mg/L)	NS

Analytical Lab Samples Collected? ☐ Yes ☐ No

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

APPENDIX E

Site Investigation Maps

Sites AH-35 & AH-35-2

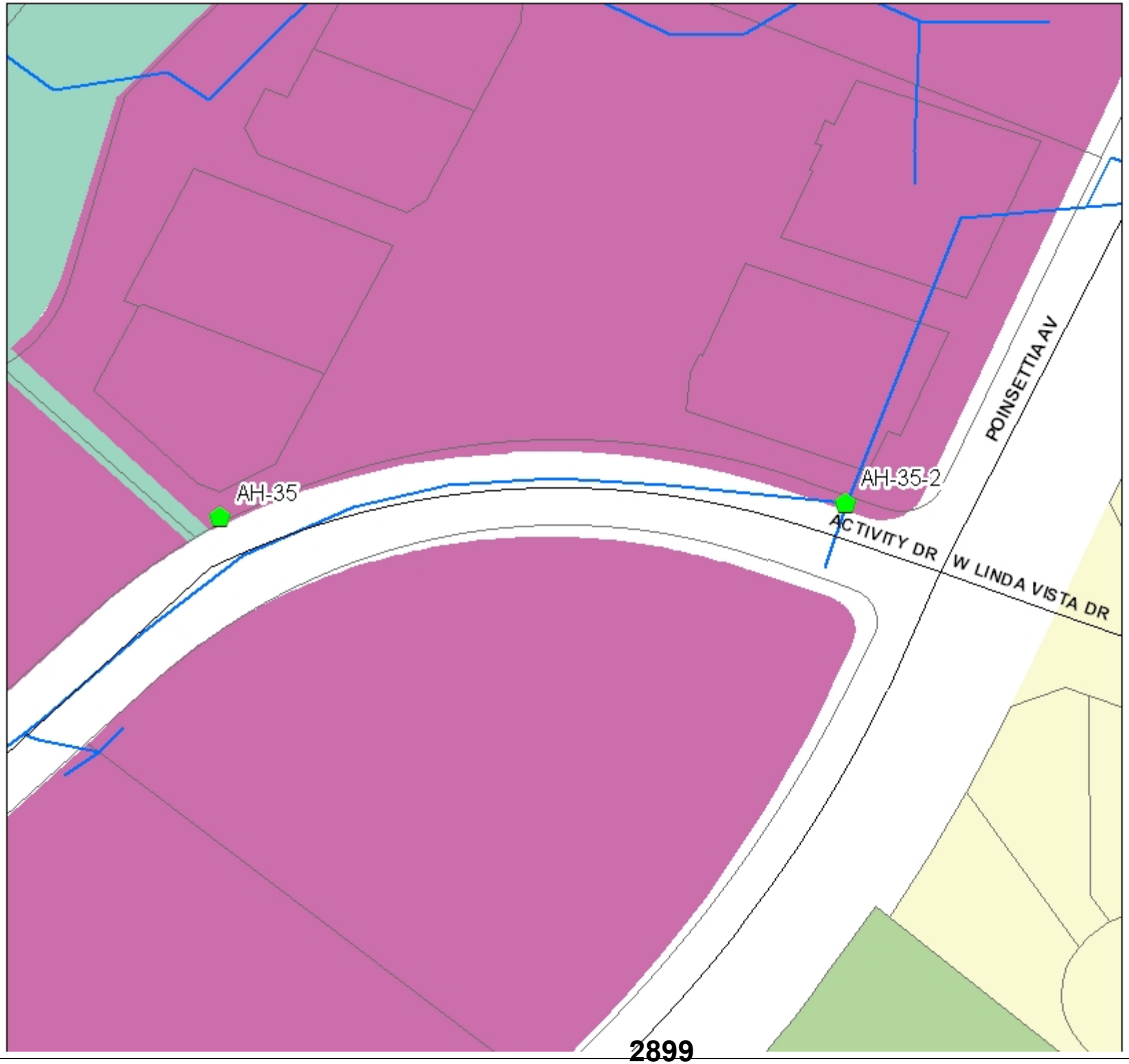

Legend

Dry Weather Monitoring Sites

MS4

VistaGIS.GIS.ParcelsNEW

lu

RESIDENTIAL

Spaced Rural Residential

Single Family Detached

Single Family Attached

Mobile Homes

Multiple Family

Mixed Use

COMMERCIAL AND OFFICE

Shopping Centers

Commercial and Office

INDUSTRIAL

Heavy Industry

Light Industry

Extractive Industry

PUBLIC FACILITIES AND UTILITIES

Transportation, Communications, Utilities

Education

Institutions

Military

PARKS AND RECREATION

Recreation

Open Space Parks

AGRICULTURE

Intensive Agriculture

Extensive Agriculture

UNDEVELOPED

Undeveloped

Water

Road Rights of Way

Railroad Rights of Way

Site SS-1

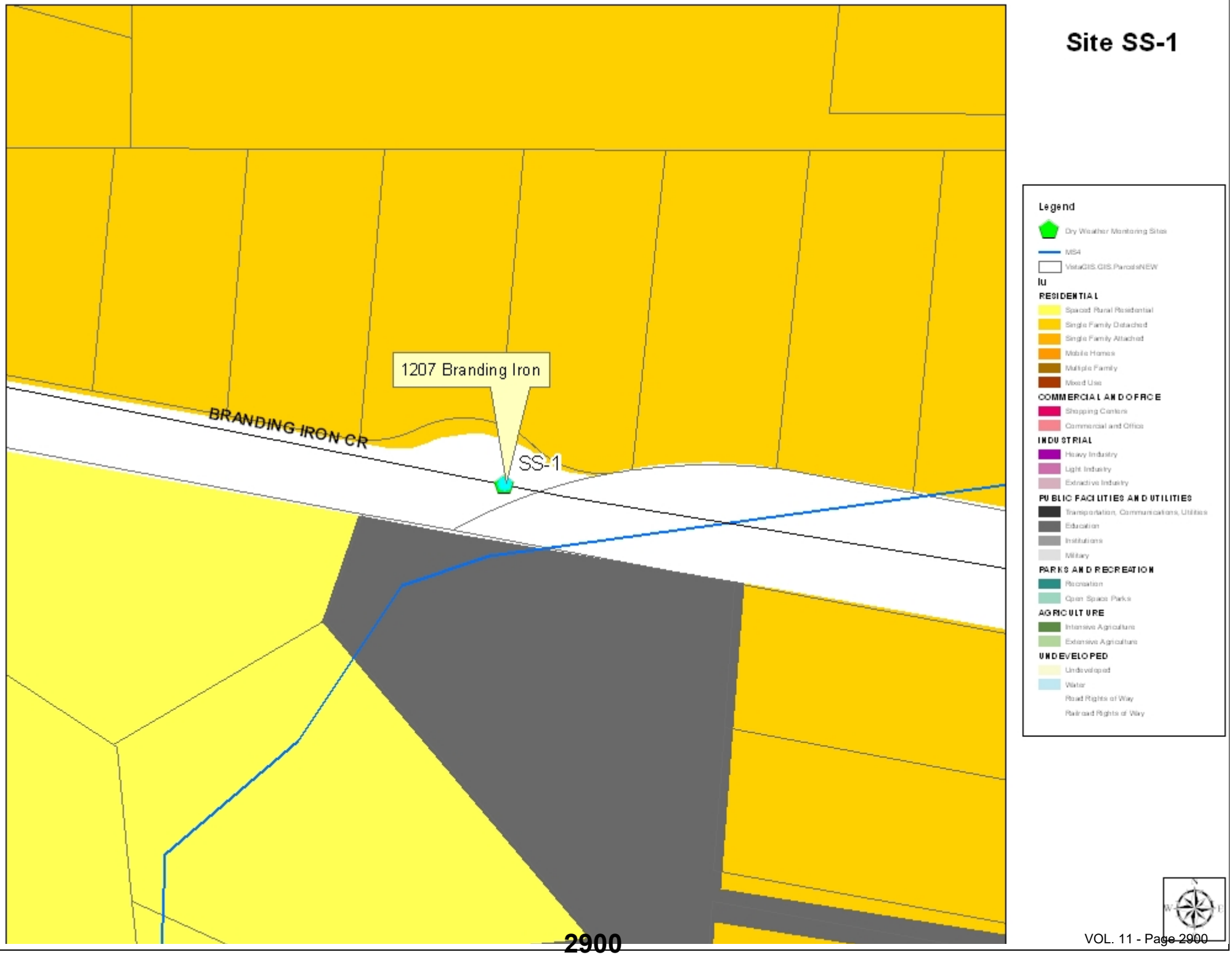
1207 Branding Iron
BRANDING IRON CR
SS-1
Legend
Dry Weather Monitoring Sites
MS4
VistaGIS GIS Parcels/NEW
lu
RESIDENTIAL
Spaced Rural Residential
Single Family Detached
Single Family Attached
Mobile Homes
Multiple Family
Mixed Use
COMMERCIAL AND OFFICE
Shopping Centers
Commercial and Office
INDUSTRIAL
Heavy Industry
Light Industry
Extractive Industry
PUBLIC FACILITIES AND UTILITIES
Transportation, Communications, Utilities
Education
Institutions
Military
PARKS AND RECREATION
Recreation
Open Space Parks
AGRICULTURE
Intensive Agriculture
Extensive Agriculture
UNDEVELOPED
Undeveloped
Water
Road Rights of Way
Railroad Rights of Way

Site AH-9

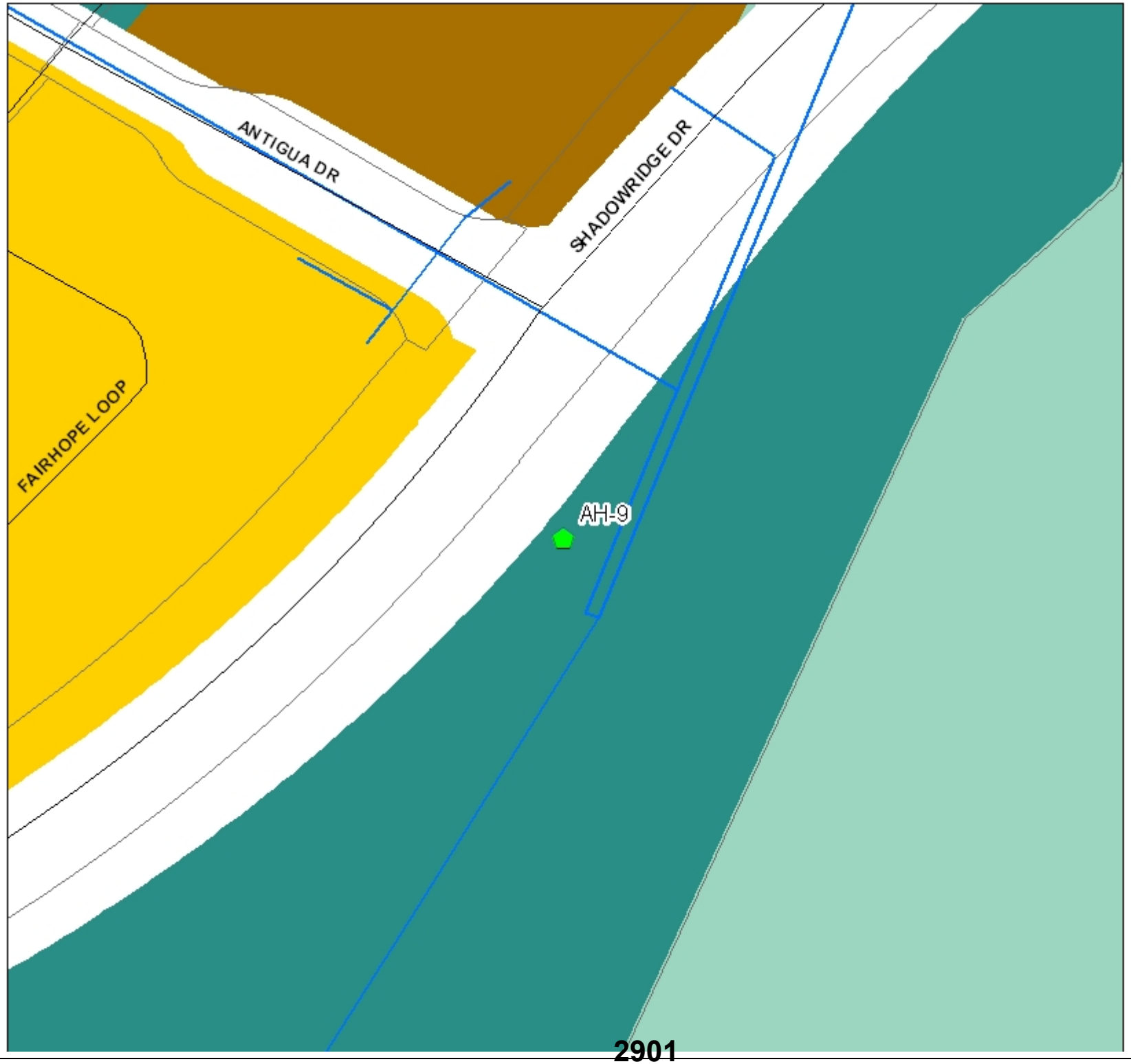

Legend

- Dry Weather Monitoring Sites
- MS4
- VistaGIS.GIS.ParcelsNEW

lu

RESIDENTIAL
- Spaced Rural Residential
- Single Family Detached
- Single Family Attached
- Mobile Homes
- Multiple Family
- Mixed Use

COMMERCIAL AND OFFICE
- Shopping Centers
- Commercial and Office

INDUSTRIAL
- Heavy Industry
- Light Industry
- Extractive Industry

PUBLIC FACILITIES AND UTILITIES
- Transportation, Communications, Utilities
- Education
- Institutions
- Military

PARKS AND RECREATION
- Recreation
- Open Space Parks

AGRICULTURE
- Intensive Agriculture
- Extensive Agriculture

UNDEVELOPED
- Undeveloped
- Water
- Road Rights of Way
- Railroad Rights of Way

Sites AH-8A & AH-8A-1

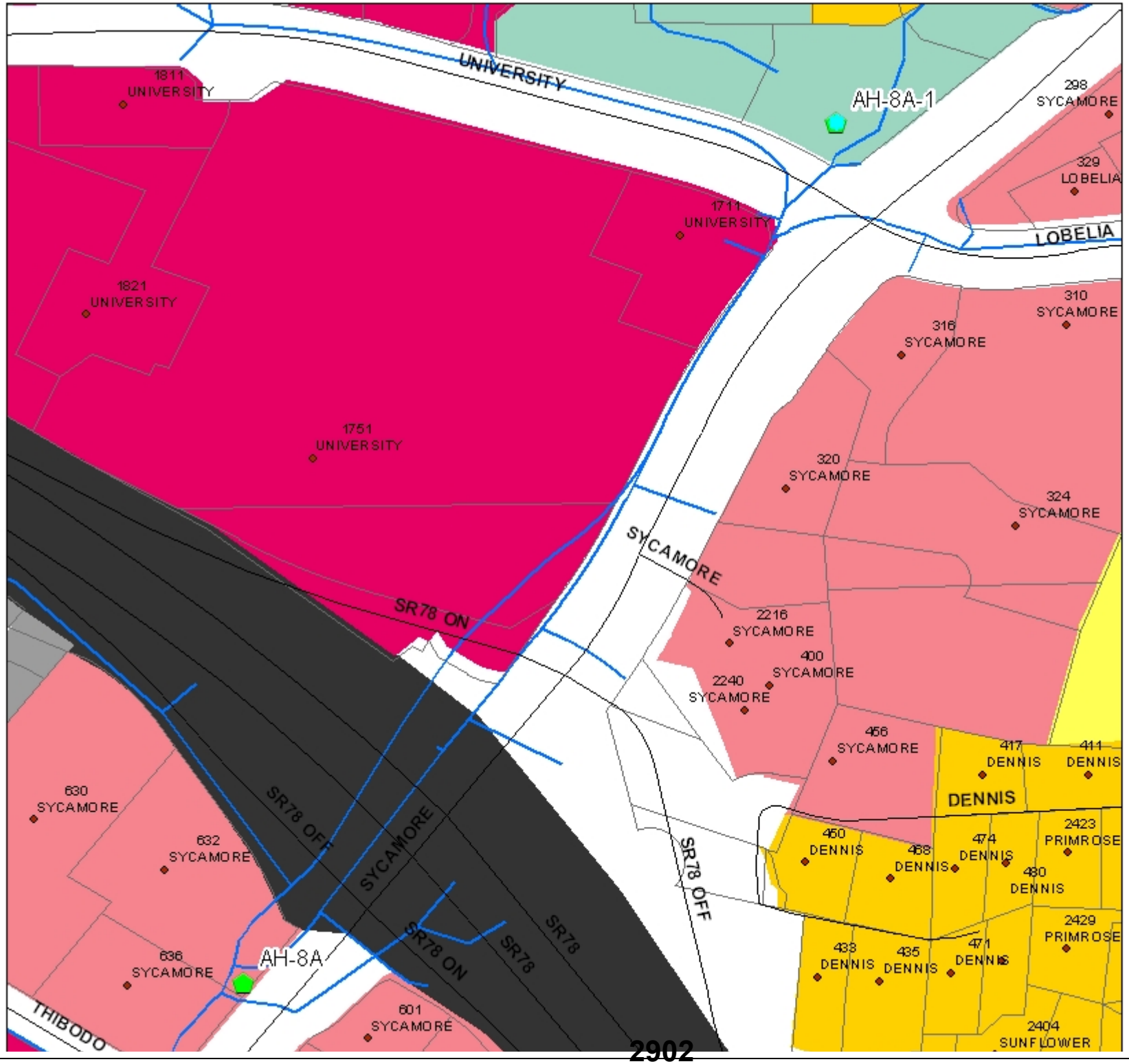

Legend

- Addresses
- Dry Weather Monitoring Sites
- MS4
- VistaGIS GIS ParcelsNEW

lu

RESIDENTIAL
- Spaced Rural Residential
- Single Family Detached
- Single Family Attached
- Mobile Homes
- Multiple Family
- Mixed Use

COMMERCIAL AND OFFICE
- Shopping Centers
- Commercial and Office

INDUSTRIAL
- Heavy Industry
- Light Industry
- Extractive Industry

PUBLIC FACILITIES AND UTILITIES
- Transportation, Communications, Utilities
- Education
- Institutions
- Military

PARKS AND RECREATION
- Recreation
- Open Space Parks

AGRICULTURE
- Intensive Agriculture
- Extensive Agriculture

UNDEVELOPED
- Undeveloped
- Water
- Road Rights of Way
- Railroad Rights of Way

Sites BV-8 & BV-8-1

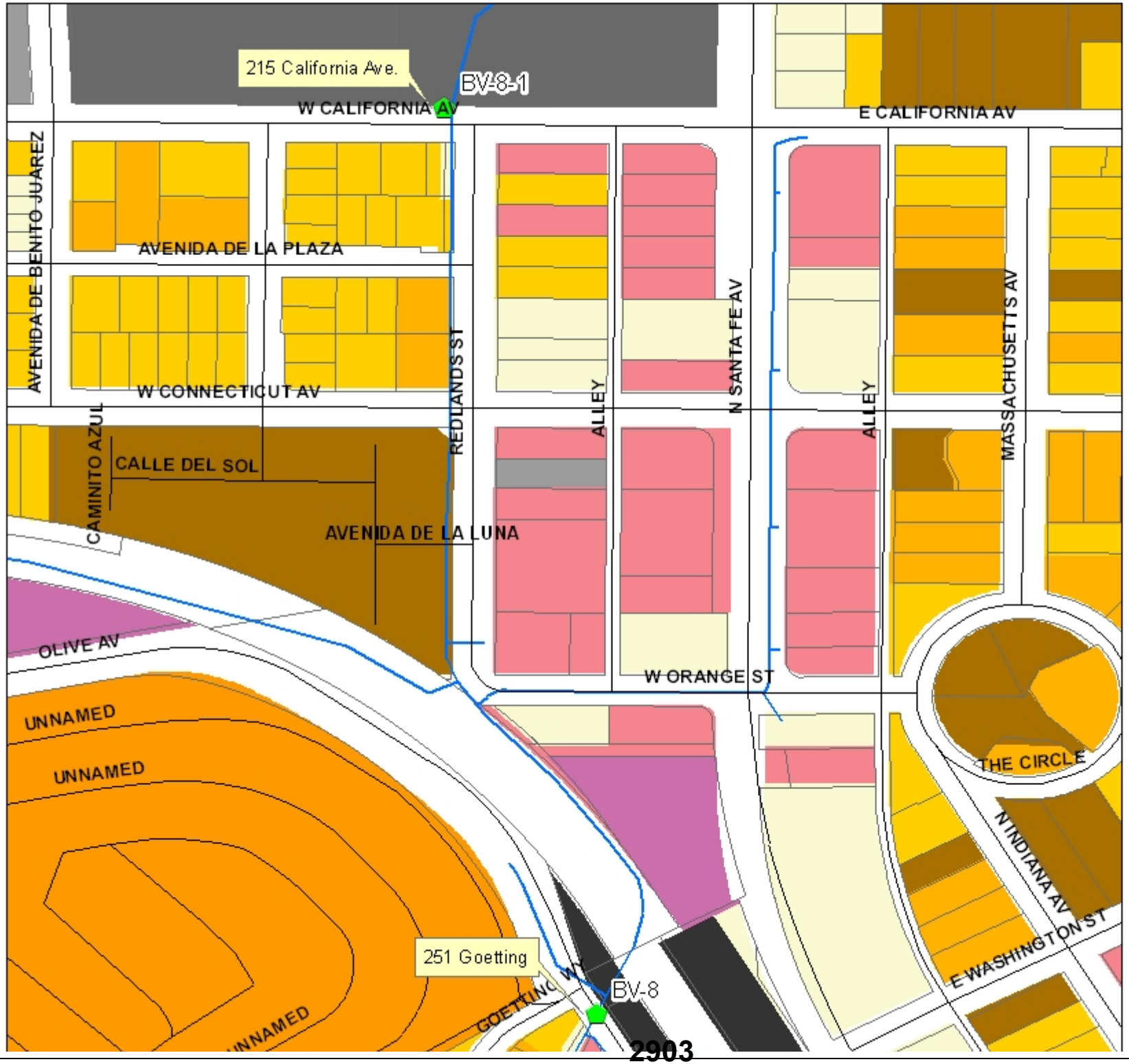

Legend

Dry Weather Monitoring Sites

MS4

VistaGIS GIS Parcels/NEW

lu

RESIDENTIAL

Spaced Rural Residential

Single Family Detached

Single Family Attached

Mobile Homes

Multiple Family

Mixed Use

COMMERCIAL AND OFFICE

Shopping Centers

Commercial and Office

INDUSTRIAL

Heavy Industry

Light Industry

Extractive Industry

PUBLIC FACILITIES AND UTILITIES

Transportation, Communications, Utilities

Education

Institutions

Military

PARKS AND RECREATION

Recreation

Open Space Parks

AGRICULTURE

Intensive Agriculture

Extensive Agriculture

UNDEVELOPED

Undeveloped

Water

Road Rights of Way

Railroad Rights of Way

Sites BV-10 & BV-10-1

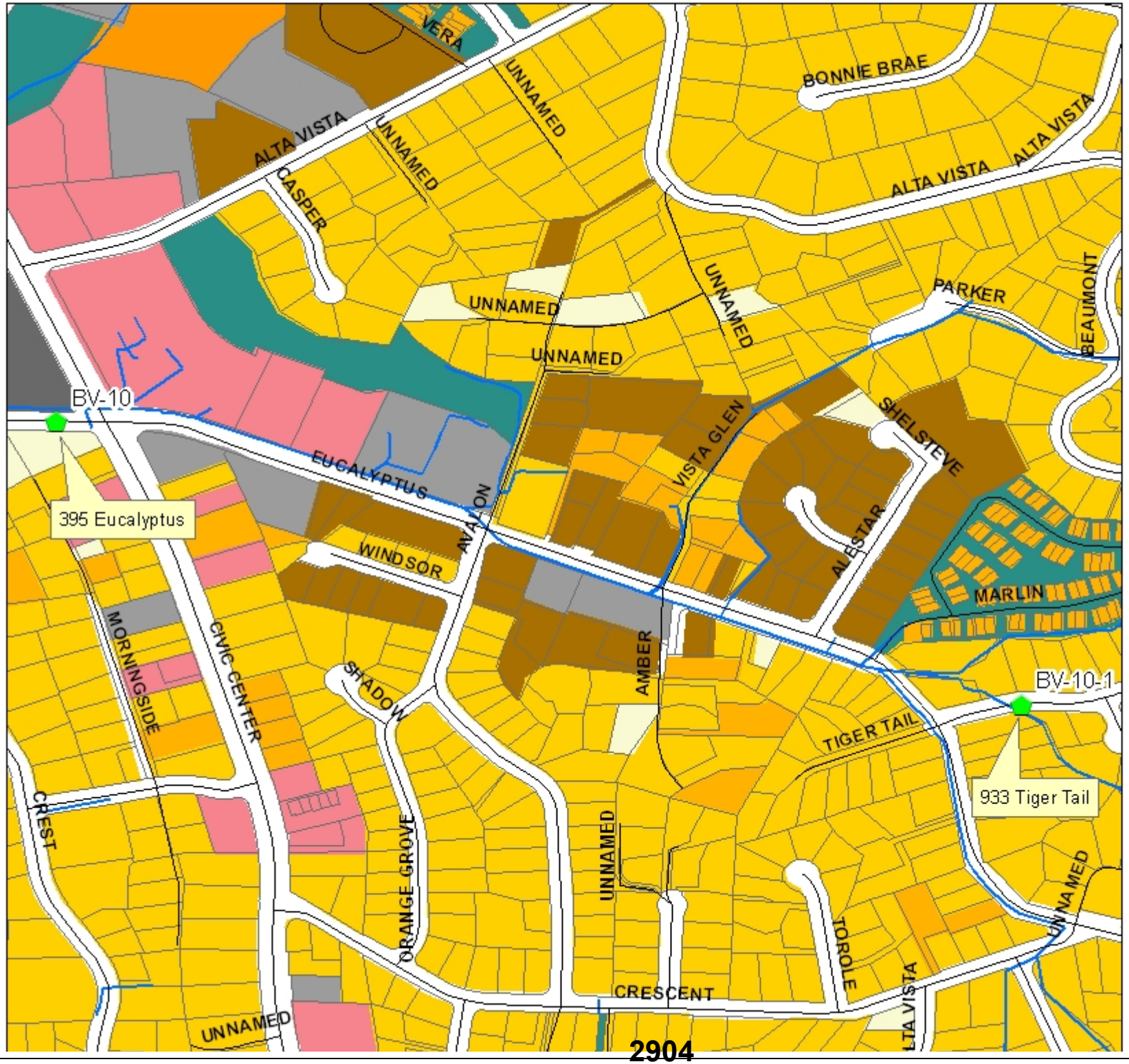

Legend

Dry Weather Monitoring Sites

MS4

VistaGIS GIS Parcels/NEW

lu

RESIDENTIAL

Spaced Rural Residential

Single Family Detached

Single Family Attached

Mobile Homes

Multiple Family

Mixed Use

COMMERCIAL AND OFFICE

Shopping Centers

Commercial and Office

INDUSTRIAL

Heavy Industry

Light Industry

Extractive Industry

PUBLIC FACILITIES AND UTILITIES

Transportation, Communications, Utilities

Education

Institutions

Military

PARKS AND RECREATION

Recreation

Open Space Parks

AGRICULTURE

Intensive Agriculture

Extensive Agriculture

UNDEVELOPED

Undeveloped

Water

Road Rights of Way

Railroad Rights of Way

Sites BV-24 & BV-24-1

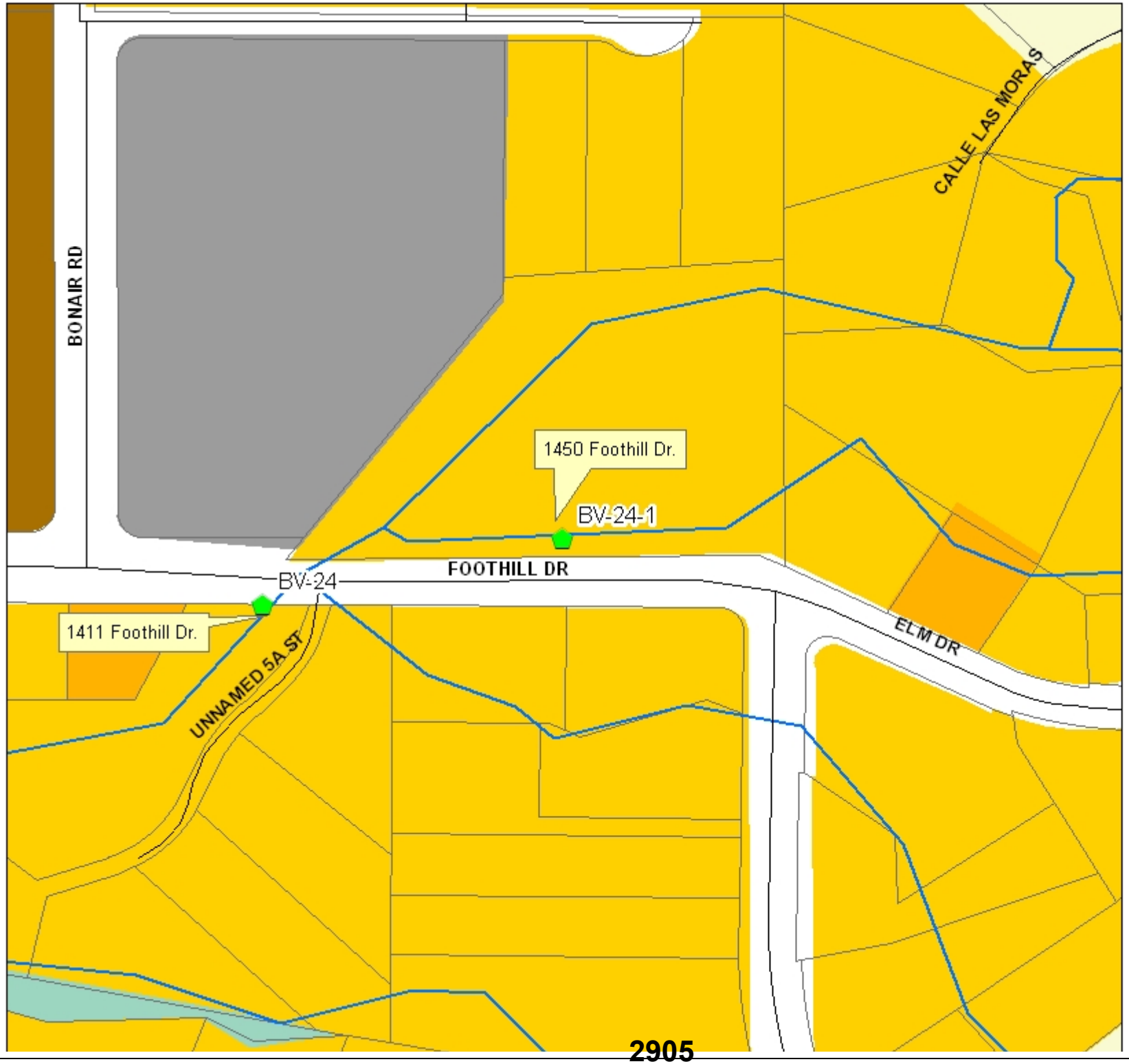

Legend

Dry Weather Monitoring Sites
MS4
VistaGIS GIS ParcelsNEW
lu

RESIDENTIAL
Spaced Rural Residential
Single Family Detached
Single Family Attached
Mobile Homes
Multiple Family
Mixed Use

COMMERCIAL AND OFFICE
Shopping Centers
Commercial and Office

INDUSTRIAL
Heavy Industry
Light Industry
Extractive Industry

PUBLIC FACILITIES AND UTILITIES
Transportation, Communications, Utilities
Education
Institutions
Military

PARKS AND RECREATION
Recreation
Open Space Parks

AGRICULTURE
Intensive Agriculture
Extensive Agriculture

UNDEVELOPED
Undeveloped
Water
Road Rights of Way
Railroad Rights of Way

Sites BV-33 & BV-33-1

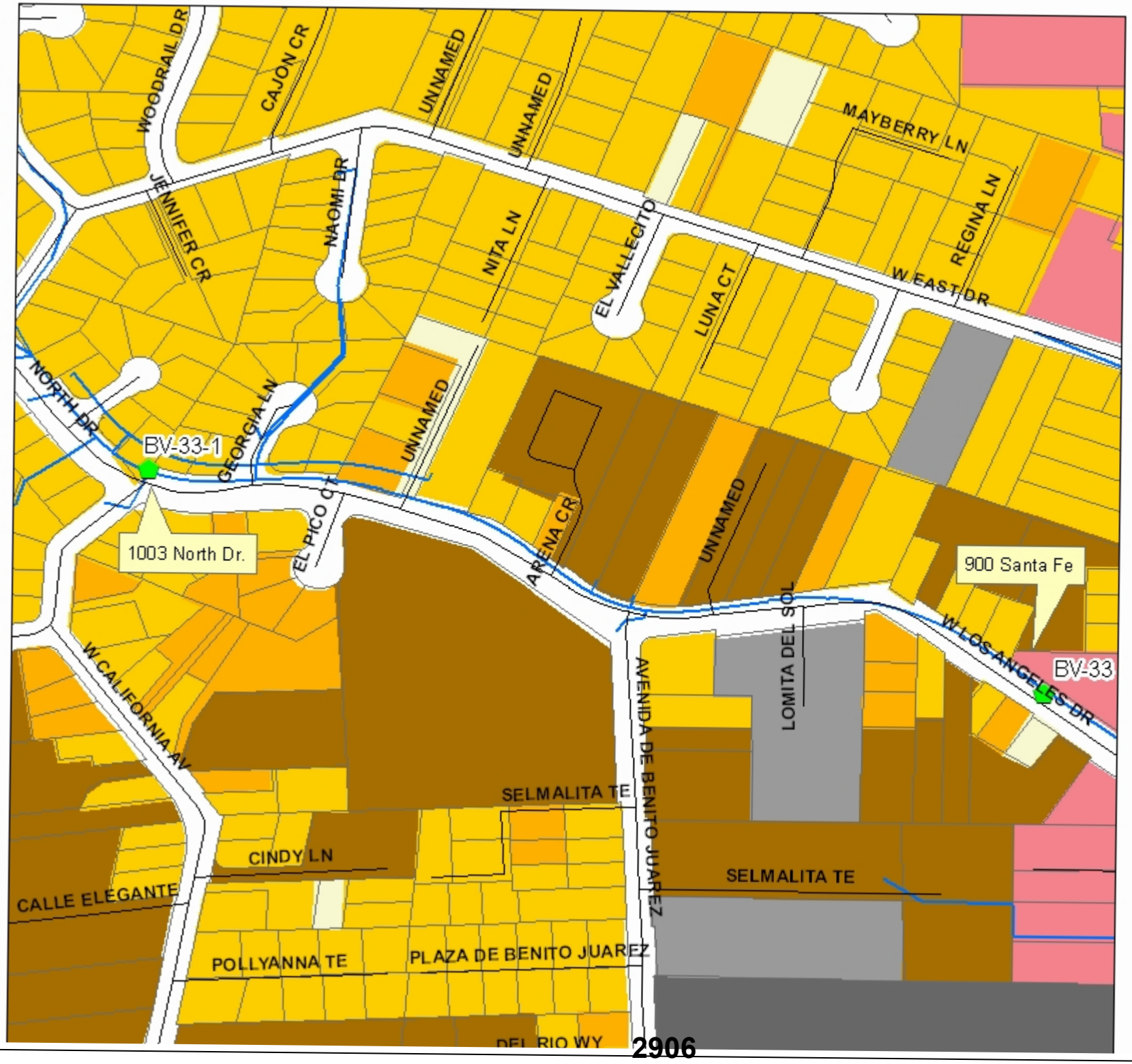

Legend

- Dry Weather Monitoring Sites
- MS4
- VistaGIS GIS Parcels/NEW

lu

RESIDENTIAL
- Special Rural Residential
- Single Family Detached
- Single Family Attached
- Mobile Homes
- Multiple Family
- Mixed Use

COMMERCIAL AND OFFICE
- Shopping Centers
- Commercial and Office

INDUSTRIAL
- Heavy Industry
- Light Industry
- Extractive Industry

PUBLIC FACILITIES AND UTILITIES
- Transportation, Communications, Utilities
- Education
- Institutions
- Military

PARKS AND RECREATION
- Recreation
- Open Space Parks

AGRICULTURE
- Intensive Agriculture
- Extensive Agriculture

UNDEVELOPED
- Undeveloped
- Water
- Road Rights of Way
- Railroad Rights of Way

Sites BV-19 & BV-19-1

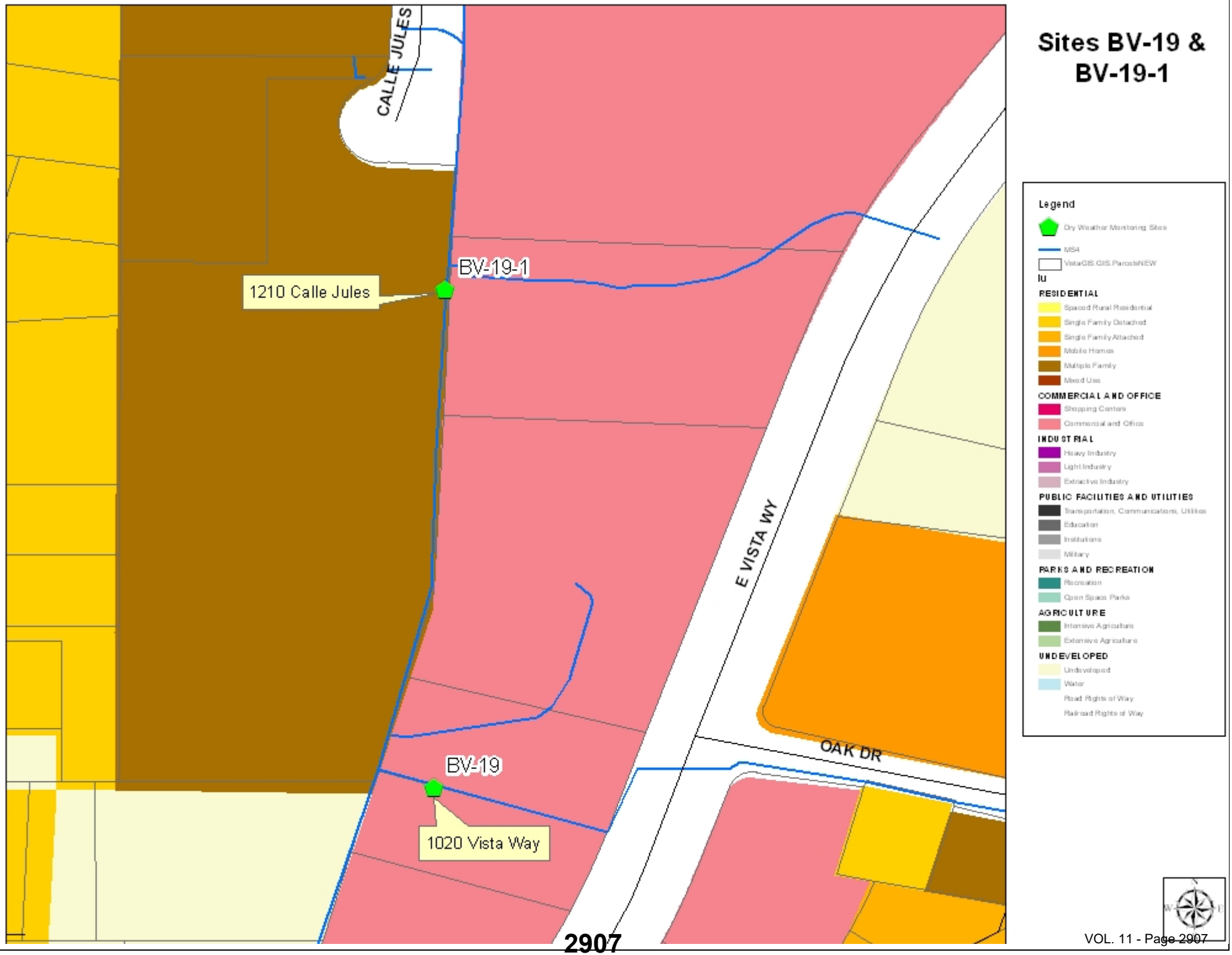

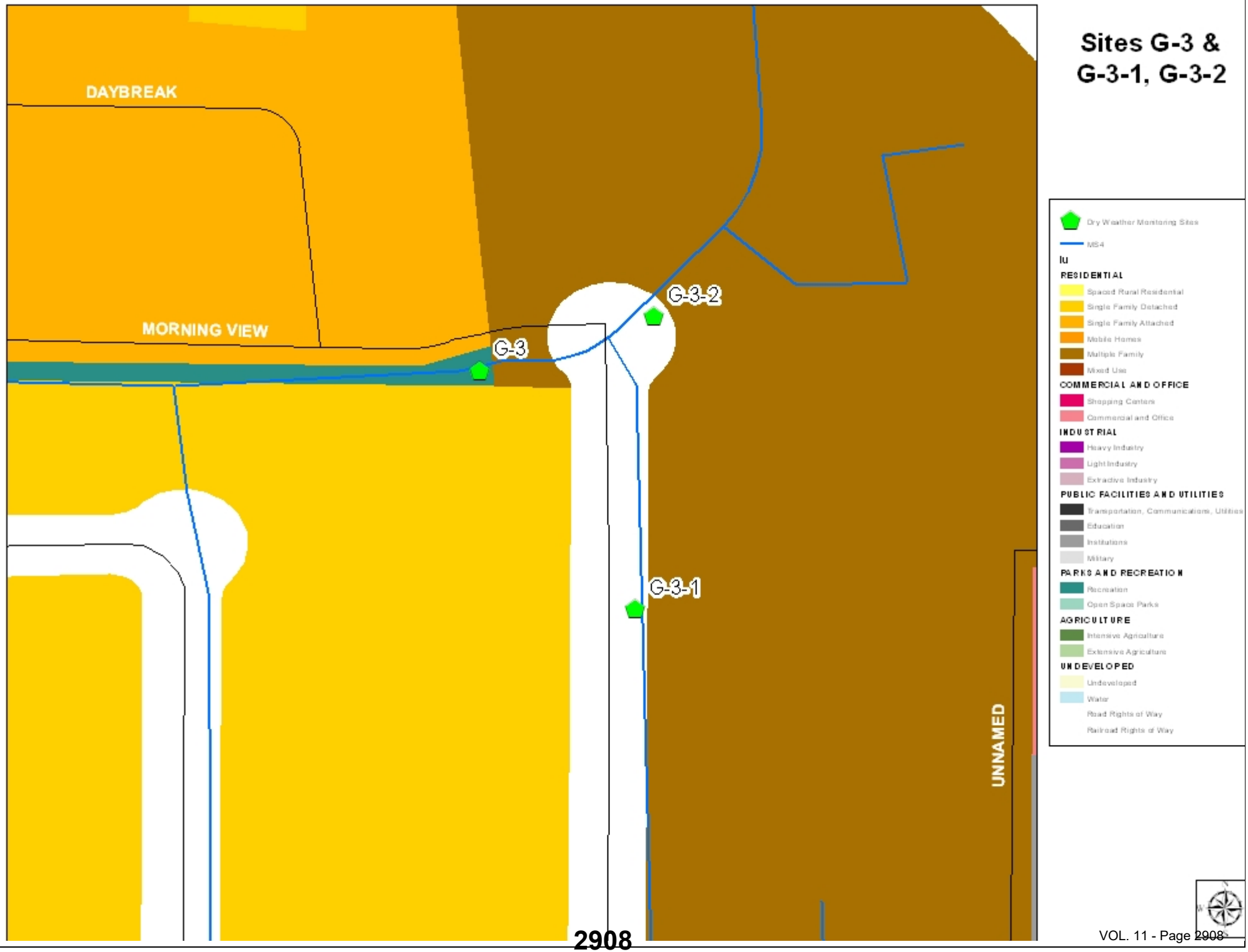
Sites G-3 &
G-3-1, G-3-2
DAYBREAK
MORNING VIEW
G-3
G-3-2
G-3-1
UNNAMED
Dry Weather Monitoring Sites
MS4
lu
RESIDENTIAL
Spaced Rural Residential
Single Family Detached
Single Family Attached
Mobile Homes
Multiple Family
Mixed Use
COMMERCIAL AND OFFICE
Shopping Centers
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PARKS AND RECREATION
Recreation
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AGRICULTURE
Intensive Agriculture
Extensive Agriculture
UNDEVELOPED
Undeveloped
Water
Road Rights of Way
Railroad Rights of Way

Sites BV-6 & BV-6-1

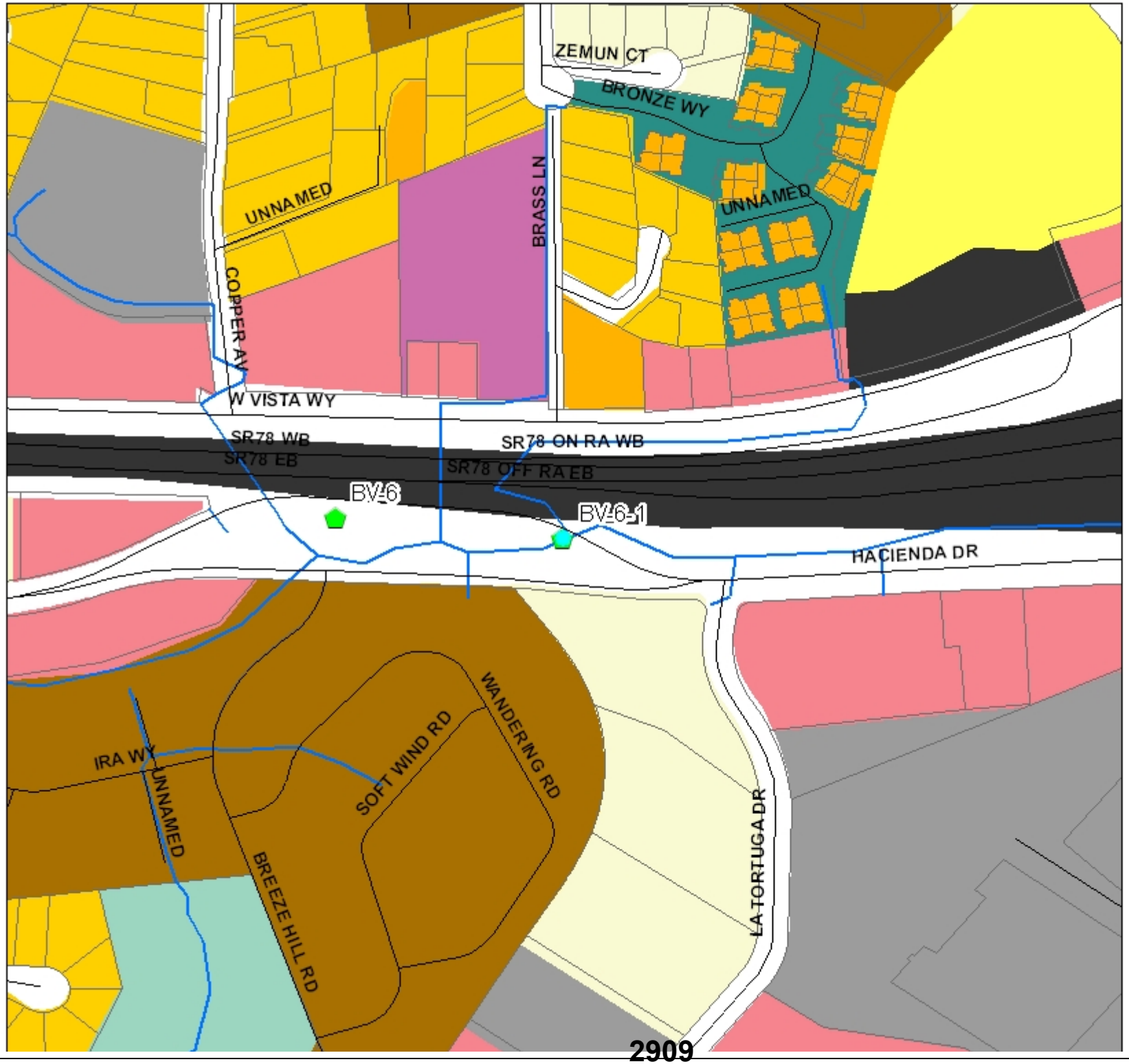

Legend

- Dry Weather Monitoring Sites
- MS4
- VistaGIS GIS ParcelsNEW

lu

RESIDENTIAL
- Spaced Rural Residential
- Single Family Detached
- Single Family Attached
- Mobile Homes
- Multiple Family
- Mixed Use

COMMERCIAL AND OFFICE
- Shopping Centers
- Commercial and Office

INDUSTRIAL
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PARKS AND RECREATION
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- Open Space Parks

AGRICULTURE
- Intensive Agriculture
- Extensive Agriculture

UNDEVELOPED
- Undeveloped
- Water
- Road Rights of Way
- Railroad Rights of Way

APPENDIX F

2010 Dry Weather Monitoring Locations and MS4 Map

City of Vista

2010 Dry Weather Monitoring Sites and MS4 Map

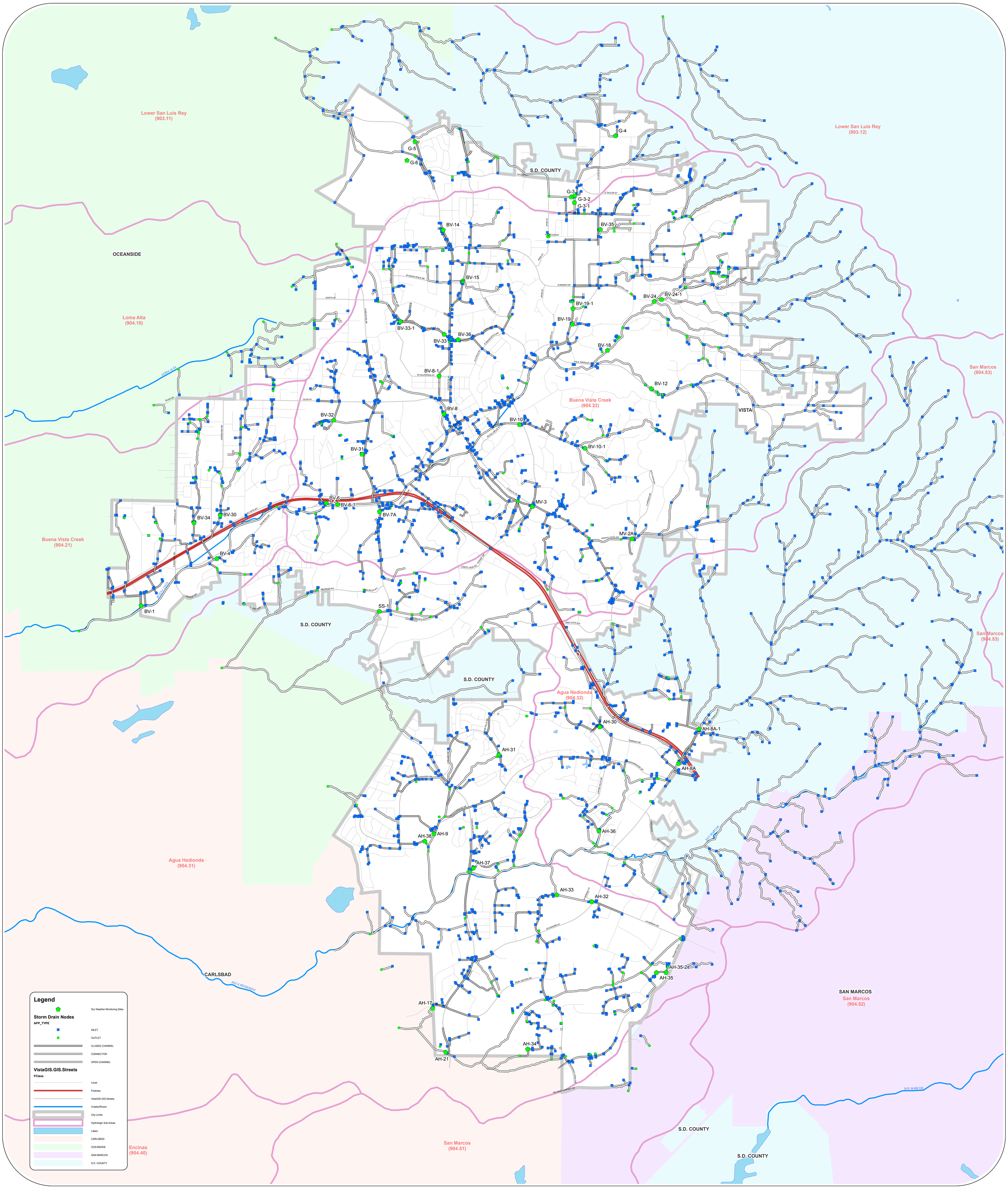

APPENDIX G

Field Observation Results

Copermittee	StationID	StationType	SampleEventType	Date	Time	Weather	Rainfall	Odor	Color	Clarity	Floatables	Deposit	Vegetation	Biology
VI	AH-8A	DWM	Field Screening	7/6/2010	12:45	Overcast	None	None	None	Clear	Trash	None	Normal	None
VI	AH-8A	DWM	Confirmation	7/7/2010	11:00	Overcast	None	None	None	Clear	None	None	Normal	None
VI	AH-8A 1	DWM	ICID	7/7/2010	13:30	Overcast	None	None	None	Clear	None	None	Normal	None
VI	AH-9	DWM	Field Screening	7/12/2010	9:10	Sunny	None	None	None	Clear	Trash	None	Normal	Other
VI	AH-9	DWM	Confirmation	7/14/2010	9:15	Sunny	None	None	None	Clear	Trash	None	Normal	Other
VI	AH-17	DWM	Field Screening	7/13/2010	9:00	Sunny	None	None	None	Clear	None	None	None	None
VI	AH-21	DWM	Field Screening	7/13/2010	10:00	Sunny	None	Musty	None	Clear	None	None	None	None
VI	AH-30	DWM	Field Screening	7/6/2010	13:45	Overcast	None	Musty	None	Clear	Sheen	Other	Normal	None
VI	AH-31 (Dry)	DWM	Field Screening	7/13/2010	16:15	Sunny	None	None	NS	NS	None	None	None	None
VI	AH-32	DWM	Field Screening	7/7/2010	14:51	Overcast	None	None	None	Clear	None	None	None	None
VI	AH-33	DWM	Field Screening	7/13/2010	14:45	Sunny	None	Musty	Yellow	Slightly Cloudy	Trash	None	Normal	Insects
VI	AH-34 (Dry)	DWM	Field Screening	7/7/2010	14:40	Overcast	None	NS	NS	NS	NS	NS	NS	NS
VI	AH-35	DWM	Field Screening	8/11/2010	15:00	Sunny	None	None	Yellow	Slightly Cloudy	None	Coarse particulate	None	None
VI	AH-35	DWM	Confirmation	8/12/2010	12:50	Sunny	None	None	Yellow	Clear	None	Coarse particulate	None	None
VI	AH-35-2	DWM	ICID	8/12/2010	13:25	Sunny	None	None	None	Clear	None	None	None	None
VI	AH-36	DWM	Field Screening	7/19/2010	14:00	Sunny	None	None	None	Clear	Trash	None	None	None
VI	AH-37 (Dry)	DWM	Field Screening	7/19/2010	13:45	Sunny	None	NS	NS	NS	NS	NS	NS	None
VI	AH-38 (Dry)	DWM	Field Screening	7/8/2010	14:20	Overcast	None	NS	NS	NS	NS	NS	NS	None
VI	BV-1	DWM	Field Screening	7/15/2010	9:00	Sunny	None	None	None	Clear	None	None	None	None
VI	BV-1	DWM	Confirmation	7/20/2010	10:05	Sunny	None	None	None	Clear	None	None	None	None
VI	BV-1-1	DWM	ICID	7/20/2010	11:00	Partly cloudy	None	None	Yellow	Clear	None	None	None	None
VI	BV-4	DWM	Field Screening	7/20/2010	8:20	Partly cloudy	None	None	None	Clear	None	None	None	None
VI	BV-6	DWM	Field Screening	8/16/2010	12:30	Sunny	None	None	None	Clear	None	None	Normal	Fish
VI	BV-6	DWM	Confirmation	8/18/2010	9:30	Sunny	None	None	Yellow	Clear	None	None	Normal	Fish
VI	BV-6-1	DWM	ICID	8/18/2010	9:50	Sunny	None	None	Yellow	Clear	None	None	Normal	Fish
VI	BV-7A (Dry)	DWM	Field Screening	8/11/2010	15:00	Sunny	None	None	None	Clear	None	None	None	None
VI	BV-8	DWM	Field Screening	7/21/2010	10:30	Partly cloudy	None	None	None	Clear	None	None	None	None
VI	BV-8	DWM	Confirmation	7/26/2010	10:25	Sunny	None	None	None	Clear	None	Other	None	None
VI	BV-8-1	DWM	ICID	7/26/2010	12:30	Sunny	None	None	None	Clear	None	None	None	None
VI	BV-10	DWM	Field Screening	7/16/2010	8:00	Sunny	None	None	None	Clear	None	Other	None	None
VI	BV-10	DWM	Confirmation	7/20/2010	14:30	Sunny	None	None	None	Clear	None	None	Excessive	None
VI	BV-10-1	DWM	ICID	7/20/2010	14:30	Sunny	None	None	None	Clear	None	None	None	None
VI	BV-12 (Dry)	DWM	Field Screening	8/16/2010	9:45	Sunny	None	None	None	Clear	None	None	Normal	None
VI	BV-14	DWM	Field Screening	8/16/2010	10:33	Sunny	None	Rotten eggs	Brown	Slightly Cloudy	None	Fine particulate	None	Snails
VI	BV-14	DWM	Confirmation	9/27/2010	9:00	Sunny	None	Musty	Other	Slightly Cloudy	None	Coarse particulate	None	None
VI	BV-15 (Dry)	DWM	Field Screening	7/21/2010	15:45	Partly cloudy	None	NS	NS	NS	NS	NS	NS	NS
VI	BV-18	DWM	Field Screening	7/21/2010	8:45	Partly cloudy	None	None	None	Clear	None	None	Normal	Fish
VI	BV-19	DWM	Field Screening	8/16/2010	11:20	Sunny	None	None	Brown	Slightly Cloudy	Other	Coarse particulate	Normal	Insects
VI	BV-19	DWM	Confirmation	8/18/2010	8:20	Partly cloudy	None	None	None	Clear	None	Coarse particulate	Normal	Insects
VI	BV-19-1	DWM	ICID	8/18/2010	8:50	Sunny	None	None	None	Clear	None	Other	Excessive	Insects
VI	BV-24	DWM	Field Screening	8/11/2010	13:00	Sunny	None	None	None	Clear	None	None	None	Algae
VI	BV-24	DWM	Confirmation	8/12/2010	14:30	Sunny	None	None	None	Clear	None	None	None	Algae
VI	BV-24-1	DWM	ICID	8/12/2010	15:35	Sunny	None	None	None	Clear	None	Fine particulate	Limited	Insects
VI	BV-30	DWM	Field Screening	7/21/2010	14:00	Partly cloudy	None	None	None	Clear	None	None	None	None
VI	BV-31	DWM	Field Screening	7/15/2010	10:50	Sunny	None	None	None	Clear	None	Other	None	None
VI	BV-32 (Dry)	DWM	Field Screening	7/12/2010	14:50	Sunny	None	NS	NS	NS	NS	NS	NS	NS
VI	BV-33	DWM	Field Screening	7/14/2010	13:50	Sunny	None	Musty	None	Slightly Cloudy	Bubbles	None	None	None
VI	BV-33-1	DWM	ICID	7/14/2010	15:40	Sunny	None	Musty	None	Clear	Bubbles	None	None	None
VI	BV-34	DWM	Field Screening	7/12/2010	15:30	Sunny	None	Musty	None	Clear	None	None	None	None
VI	BV-35 (Dry)	DWM	Field Screening	8/16/2010	10:05	Sunny	None	NS	NS	NS	NS	Coarse particulate	None	None
VI	BV-36	DWM	Field Screening	7/15/2010	14:40	Sunny	None	Musty	Yellow	Slightly Cloudy	None	Coarse particulate	None	None
VI	G-3	DWM	Field Screening	7/19/2010	9:30	Sunny	None	None	None	Clear	Trash	None	Normal	None
VI	G-3-1	DWM	ICID	7/19/2010	10:45	Sunny	None	None	None	Clear	None	None	None	None
VI	G-3-2	DWM	ICID	7/19/2010	11:20	Sunny	None	None	None	Clear	None	Other	None	None

NA - Not Analyzed
NM - Not Measured
NS - Not Sampled

VI	G-4	DWM	Field Screening	8/11/2010	10:30	Sunny	None	None	Yellow	Slightly Cloudy	None	Coarse particulate	Excessive	Insects
VI	G-5	DWM	Field Screening	8/11/2010	9:00	Partly cloudy	None	None	None	Clear	None	Fine particulate	None	None
VI	G-6	DWM	Field Screening	8/16/2010	9:00	Sunny	None	None	None	Clear	None	None	None	Algae
VI	MV-2A (Dry)	DWM	Field Screening	8/16/2010	13:10	Sunny	None	None	None	Clear	None	Coarse particulate	Normal	None
VI	MV-3 (Dry)	DWM	Field Screening	7/26/2010	15:00	Sunny	None	NS	NS	NS	NS	NS	NS	NS
VI	SS-1	DWM	Field Screening	7/12/2010	10:50	Sunny	None	None	Yellow	Slightly Cloudy	Other	Other	Normal	None
VI	SS-1 (Dry)	DWM	Confirmation	7/14/2010	11:00	Sunny	None	NS	NS	NS	NS	NS	NS	NS

NA - Not Analyzed
NM - Not Measured
NS - Not Sampled

APPENDIX H

Field Screening Results

Copermittee	StationID	StationType	SampleEventType	Date	Time	FlowRate (GPM)	Temperature	pH	Ammonia (NH_3.N mg/L)	Turbidity (NTU)	Nitrate (NO_3.N (mg/L)	Conductivity (mS/cm)	Orthophosphate-P (mg/L)	Detergents (mg/L MBAS)
VI	AH-8A	DWM	Field Screening	7/6/10	12:45	2.15	17.9	8.3	0.19	0.6	11.3	2.01	0.15	0.25
VI	AH-8A	DWM	Confirmation	7/7/2010	11:00	2.15	18.01	7.86	NA	NA	33.9	1.98	NA	NA
VI	AH-8A -1	DWM	ICID	7/7/2010	13:30	179.39	18.16	8.07	NA	NA	>11.3	1.97	NA	NA
VI	AH-9	DWM	Field Screening	7/12/2010	9:10	Ponded	19.69	7.2	0.7	5.12	3.54	2.56	0.43	0.75
VI	AH-9	DWM	Confirmation	7/14/10	9:15	Ponded	20.63	7.02	NA	NA	NA	1.24	NS	NA
VI	AH-17	DWM	Field Screening	7/13/10	9:00	23.7	20.89	7.22	0.14	8.03	4.57	2.09	0.11	0.25
VI	AH-21	DWM	Field Screening	7/13/10	10:00	0.165	21.83	7.79	0.44	1.83	4.45	3.31	0.05	0.25
VI	AH-30	DWM	Field Screening	7/6/10	13:45	Ponded	18.35	7.4	0.52	2.86	1.77	1.5	0.4	0.25
VI	AH-31 (Dry)	DWM	Field Screening	7/13/10	16:15	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	AH-32	DWM	Field Screening	7/7/10	14:51	0.39	20.47	7.34	0.68	23.7	8.7	4.85	0.01	0.75
VI	AH-33	DWM	Field Screening	7/13/10	14:45	Ponded	22.36	7.68	0.23	18.3	2.83	1.36	0.65	0.75
VI	AH-34 (Dry)	DWM	Field Screening	7/7/10	14:40	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	AH-35	DWM	Field Screening	8/11/10	15:30	1	24.8	7.9	0.23	102	54.02	4.99	0.38	0.4
VI	AH-35	DWM	Confirmation	8/12/10	12:50	1.5	26.47	7.68	NS	NS	>11.3	4.28	NS	NS
VI	AH-35-2	DWM	ICID	8/12/10	13:25	NS	NS	NS	NS	NS	NS	NS	NS	NS
VI	AH-36	DWM	Field Screening	7/19/10	14:00	0.03	21.62	8.31	0.16	0.53	7.03	1.29	0.27	0.13
VI	AH-37	DWM	Field Screening	7/19/10	13:45	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	AH-38 (Dry)	DWM	Field Screening	7/8/10	14:20	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	BV-1	DWM	Field Screening	7/15/10	9:00	Ponded	21.19	8.04	0.72	1.17	3.89	7.19	0.16	0.5
VI	BV-1-1	DWM	ICID	7/20/10	11:00	0.02	22.71	8.07	NA	NA	NA	9	NA	NA
VI	BV-4	DWM	Field Screening	7/20/10	8:20	47.95	20.69	8.13	0.3	2.13	2.06	1.66	0.09	0.25
VI	BV-6	DWM	Field Screening	8/16/10	12:30	6	23.73	7.74	0.24	2.24	33.49	1.67	0.06	0.3
VI	BV-6	DWM	Confirmation	8/18/10	9:30	Ponded	24.93	7.79	NA	NA	>11.3	1.72	NA	NA
VI	BV-6-1	DWM	ICID	8/18/10	9:50	NM	23.92	7.86	NA	NA	>11.3	1.67	NA	NA
VI	BV-7A (Dry)	DWM	Field Screening	8/11/10	15:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	BV-8	DWM	Field Screening	7/21/10	10:30	130.16	22.46	8.52	0.59	2.11	10.36	1.44	0.08	0.19
VI	BV-8	DWM	Confirmation	7/26/10	10:25	89.77	21.73	8.52	NA	NA	10.23	1.43	NA	NA
VI	BV-8-1	DWM	ICID	7/26/10	12:30	NM	25.53	7.93	NA	NA	>50	7.29	NA	NA
VI	BV-10	DWM	Field Screening	7/16/10	8:00	8.98	22.96	8.1	0.14	1.51	>11.3	1.97	0.06	0.25
VI	BV-10	DWM	Confirmation	7/20/10	14:30	11.67	23.65	8.29	NA	NA	22.48	1.87	NA	NA
VI	BV-10-1	DWM	ICID	7/20/10	14:45	NM	23.99	7.03	NA	NA	>50	2.07	NA	NA
VI	BV-12 (Dry)	DWM	Field Screening	8/16/2010	9:45	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	BV-14	DWM	Field Screening	8/16/2010	9:45	Ponded	25.7	7.8	1.52	84.7	4.2	6.26	0.58	0.5
VI	BV-14	DWM	Confirmation	9/27/2010	9:30	Ponded	26.37	7.31	0.72	64.7	1.71	2.15	0.89	0.79
VI	BV-15 (Dry)	DWM	Field Screening	7/21/2010	15:45	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	BV-18	DWM	Field Screening	7/21/2010	8:45	Ponded	19.07	7.41	0.18	2.2	7.49	1.87	0.1	0.36
VI	BV-19	DWM	Field Screening	8/16/2010	11:20	3.00	24.4	8.03	0.18	218	29.21	1.58	1.26	0.26
VI	BV-19	DWM	Confirmation	8/18/2010	8:20	NM	23.84	7.78	NA	NA	>11.3	1.59	NA	NA
VI	BV-19-1	DWM	ICID	8/18/2010	8:50	Ponded	23.95	7.87	NA	NA	>11.3	1.73	NA	NA
VI	BV-24	DWM	Field Screening	8/11/2010	13:00	1.50	22.85	8.22	0.29	1.4	52.01	1.73	0.5	0.24
VI	BV-24	DWM	Confirmation	8/12/2010	14:30	NM	24.19	8.12	NA	NA	>11.3	1.78	NA	NA
VI	BV-24-1	DWM	ICID	8/12/2010	15:35	1	22.37	7.4	NA	NA	>11.3	1.67	NA	NA
VI	BV-30	DWM	Field Screening	7/21/10	14:00	161.58	21.01	8.11	0.16	8.3	2.43	1.62	0.09	0.22
VI	BV-31	DWM	Field Screening	7/15/10	10:50	0.52	27.33	7.58	0.12	0.16	8.65	1.7	0.08	0.75
VI	BV-32 (Dry)	DWM	Field Screening	7/12/10	14:50	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	BV-33	DWM	Field Screening	7/14/10	13:50	Ponded	26.35	7.78	0.78	19.3	2.47	4.61	0.85	3
VI	BV-33-1	DWM	ICID	7/14/10	15:40	NM	NA	NA	NA	NA	NA	NA	NA	1.5

NA - Not Analyzed
NM - Not Measured
NS - Not Sampled (Dry Sites)

Copermittee	StationID	StationType	SampleEventType	Date	Time	FlowRate (GPM)	Temperature	pH	Ammonia (NH_3-N mg/L)	Turbidity (NTU)	Nitrate (NO_3-N (mg/L)	Conductivity (mS/cm)	Orthophosphate-P (mg/L)	Detergents (mg/L MBAS)
VI	BV-34	DWM	Field Screening	7/12/10	15:30	0.08	24.14	8.19	0.18	4.85	2.74	1.84	0.1	0.12
VI	BV-35 (Dry)	DWM	Field Screening	8/16/10	10:05	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	BV-36	DWM	Field Screening	7/15/10	14:40	Ponded	25.93	7.89	0.47	97.8	2.38	1.3	1.36	0.25
VI	G-3	DWM	Field Screening	7/19/10	9:30	0.5	23.33	7.82	0.22	2.04	8.09	1.43	0.26	0.25
VI	G-3-1	DWM	ICID	7/19/10	10:45	0.25	NA	NA	NA	NA	0.87	NA	NA	NA
VI	G-3-2	DWM	ICID	7/19/10	11:20	Ponded	NA	NA	NA	NA	20.06	NA	NA	NA
VI	G-4	DWM	Field Screening	8/11/10	10:30	Ponded	21.49	7.97	0.46	40.9	5.24	0.81	0.58	0.31
VI	G-5	DWM	Field Screening	8/11/10	9:00	Ponded	21.27	7.78	0.06	1.03	5.96	2.01	0.15	0.28
VI	G-6	DWM	Field Screening	8/16/10	9:00	Ponded	24.69	7.54	0.21	1.44	3.31	1.79	0.06	0.25
VI	MV-2A (Dry)	DWM	Field Screening	8/16/10	13:10	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	MV-3 (Dry)	DWM	Field Screening	7/26/10	15:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS
VI	SS-1	DWM	Field Screening	7/12/10	10:50	Ponded	19.56	7.32	0.83	32.9	8.4	1.031	0.74	0.75
VI	SS-1 (Dry)	DWM	Confirmation	7/14/10	11:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS

NA - Not Analyzed
NM - Not Measured
NS - Not Sampled (Dry Sites)

CITY OF VISTA

Fiscal Year 2010-11

JURMP Annual Report

Submitted September 2011

Prepared by:
City of Vista Engineering Department
Water Quality Protection Program

CITY OF VISTA
CALIFORNIA

CERTIFICATION

I certify under penalty of law that the Jurisdictional Urban Runoff Management Plan Annual Report for the Fiscal Year 2010-11 and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita L. Geldert

Rita L. Geldert
City Manager
City of Vista

September 21, 2011
Date

John Conley

John Conley
Interim Director of Engineering
City of Vista

Sept. 21, 2011
Date

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EXECUTIVE SUMMARY

In March of 2008, the City of Vista (City) developed and submitted its Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2007-0001 (NPDES Permit CAS0108758). This JURMP includes several new programs and updates to existing programs describing how the City of Vista will comply with the requirements in the municipal stormwater permit. This Annual Report describes program activities for Fiscal Year 2010-11: July 1, 2010 to June 30, 2011, and is the fourth JURMP Annual Report submitted under Order 2007-0001. The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Order R9-2007-0001. A brief synopsis of each component of the program is provided below.

Development Planning Component

The City's Development Planning Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2010-11. All development projects were required to undergo the urban runoff approval process, ensuring that projects were designed with applicable best management practices (BMPs) to mitigate urban runoff and stormwater pollution during and after construction. With the slow economy continuing this year, there were relatively few projects initiated this fiscal year, with six qualifying as priority development projects. This component also includes a program designed to ensure that all required treatment control BMPs (TCBMPs) are constructed, operating, and maintained as designed. The TCBMP program continued to improve during this Fiscal Year, including increased education and outreach to the owners of the BMPs and an improved inspection and certification program. These program improvements ensure that TCBMPs are operating and maintained effectively and that the program operates effectively and efficiently. Further detail describing the Development Planning Component of the Program can be found in Section 2.

Construction Component

The Construction Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2010-11. All projects were required to undergo the urban runoff approval process, ensuring that projects are constructed with applicable best management practices (BMPs) in place to mitigate urban runoff and stormwater pollution during construction. During the fiscal year, there were 46 sites under active construction at various times, all of which were inspected for stormwater compliance at the frequencies prescribed in the JURMP. Details regarding the Construction Component can be found in Section 3. The construction inventory, inspection data, and summaries are located in Appendix B.

Municipal Component

The Municipal Component was implemented according to the JURMP during Fiscal Year 2010-11. The municipal inventory, located in Appendix C, was updated and all inspections were performed as required. MS4 facilities and open channels in the City were inspected and cleaned. The street sweeping program continued to be implemented according to the JURMP. In total, nearly 3,000 tons of debris was removed during MS4 maintenance activities this year. This component also includes the Special Events Program. Stormwater staff participates in the Special Events Committee, allowing advanced opportunities for staff to interact with and educate applicants. This leads to a better understanding of the requirements and increased BMP implementation. All special events were reviewed and prioritized, with staff contacting and

educating all applicants regarding required BMPs, and performing necessary inspections to ensure that BMPs were implemented as required. Details describing the Municipal Component are included in Section 4.

Industrial and Commercial Component

The Industrial Commercial Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2010-11. The business inventory was updated as required, totaling over 800 stationary facilities, and approximately 200 mobile businesses. This year, stormwater inspections were performed at 214 stationary facilities (25% of the inventory). These inspections also included high priority inspections required under the City's Fats, Oils, and Grease (FOG) program, leveraging the stormwater inspections program and increasing efficiency. There were 47 follow-up inspections required and performed as a result of the initial stormwater inspections on high priority facilities. These follow-ups are detailed in Appendix D. Additionally, stormwater staff addressed 41 complaints related to industrial and commercial facilities during this fiscal year. Details further describing this component can be found in Section 5 of this report.

Residential Component

The Residential Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2010-11. In the City's JURMP, the Residential Component focuses primarily on activities that have been deemed a high threat to water quality including: vehicle and boat repair/maintenance, automobile washing, automobile parking, home and garden care activities, home care and maintenance, manure and pet waste management, private sewer laterals and septic systems, and street sweeping of private roads/streets. Because these activities occur throughout all residential areas, all residential areas are deemed a high threat to water quality. Over 500,000 pounds of household hazardous waste (HHW) generated in Vista were disposed of at the City's HHW collection center this fiscal year. Stormwater staff investigated 36 residential complaints this year, stemming from sources such as residential construction, spills, washing, and over-irrigation. Additional details about the Residential Component can be found in Section 6.

Illicit Discharge Detection and Elimination Component

The Illicit Discharge Detection and Elimination (IDDE) Component was implemented according to the JURMP and was in compliance with all Permit requirements during this fiscal year. Because of the inclusion of the Dry Weather Monitoring Program in this component, spanning May through September, it is not feasible to report on all data at this time. As allowed under the Permit, the IDDE Component will be submitted under separate cover, due by December 15, 2010.

Education Component

The Education Component was implemented according to the JURMP and was in compliance with all Permit requirements during FY 2010-11. This component addresses education for multiple target audiences including municipal departments and personnel, new development and construction communities, industrial and commercial business owners and operators, residents, general public, and school children. Municipal training focused on staff involved in planning and construction, as there were many new requirements implemented this year, including the City's revised Standardized Urban Stormwater Mitigation Plan (SUSMP) and the new State Construction General Permit. All fire fighting staff was also provided stormwater training this year. Outreach to the construction and development community was performed primarily through one on one interaction throughout the development process. The business

community was educated extensively via one on one interaction during inspections and follow-up investigations, as well as through complaint response efforts. Additionally, site and activity specific BMP information was provided to all new inventoried facilities this year. Residents and the general public were educated through many outreach events. The City continued to utilize a contractor to perform in classroom outreach to school children as well, educating over 1200 students using the Splash Mobile Science Laboratory and the Mobile Green Machine. In each outreach effort, the City strived to ensure that the underserved target audiences were reached and the allowable discharges were addressed. The City developed new outreach brochures this year and continued to implement the Water Quality Hotline and the email address for the Water Quality Protection Program. Further details regarding outreach and education are located in Section 8.

Public Participation Component

The Public Participation Component was implemented according to the JURMP and was in compliance with all Permit requirements during FY 2010-11. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Further details regarding the Public Participation Component of the program are located in Section 9 of this report.

Fiscal Analysis Component

The Fiscal Analysis for the program this year was performed using the Standardized Fiscal Analysis Method and is in compliance with all Permit requirements. The Standardized Method provides increased detail in the operating expenses, looking back at the estimated expenditures for the program over the past year. This method provides estimated costs for each component of the program. Using this method, the FY 2010-11 costs for the program were approximately $2,665,000 with the majority of the costs in municipal, illicit discharge, and inspections components of the program. Details of the fiscal analyses performed can be found in Section 10 of this report.

Effectiveness Assessment Component

The Effectiveness Assessment Component was performed according to the JURMP and is in compliance with all Permit requirements. This year's assessment continued to focus on the individual components of the program and utilized levels 1-4 of the assessment matrix, looking at compliance, changes in knowledge and behavior, and load reductions. BMPs specific to each component were examined to determine whether they were effective or needed some modifications. They were also examined for programmatic efficiencies where possible. Where feasible, analysis of MS4 and receiving water quality was also provided. Significant findings of the effectiveness assessment include: positive impacts of inspections on the operation and maintenance of treatment control BMPs; the positive effect of preconstruction meetings related to BMP implementation on construction sites; load reductions associated with MS4 maintenance; the business inspection program, while in compliance with permit requirements, does not always result in full compliance at commercial sites from year to year; residential areas and activities should focus on sources of sediment; and the education and outreach program

appears to be effective and well focused. Water quality assessments are consistent with findings at the watershed level. High priority water quality problems identified include bacteria and nutrients during dry weather and bacteria and sediment during wet weather. The assessment then attempts to relate JURMP programs back to water quality findings, however this linkage is not always clear. Further details on the effectiveness assessments can be found in Section 11.

Special Investigations

During FY 2010-11, two special investigations were undertaken to address water quality concerns. The first was related to a Total Maximum Daily Load for Loma Alta Slough for eutrophication and bacteria. The City conducted a Source Characterization Study for its portion of the watershed, examining and quantifying land uses and potential sources of nutrients and bacteria within the Loma Alta Hydrologic Area (904.1). The second project furthers an opportunity identified in the Agua Hedionda Watershed Management Plan. The Preliminary Design Report for a Creek Restoration Project on Agua Hedionda Creek was completed during FY 09-10. The project this year provided preliminary design for a storm drain diversion project within the area identified for restoration. Full details of the projects are included in Section 12 and Appendix H.

Modifications to the JURMP

There were no modifications to the JURMP during this fiscal year.

1.0 INTRODUCTION

1.1 BACKGROUND

In 2002, the City of Vista (City) developed a Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2001-01 (NPDES Permit CAS0108758). On January 24, 2007, an updated permit, Order No. R9-2007-0001 (Order) was adopted. This Order requires the City and each Copermittee (as defined in Section B of the Order) to update its JURMP to comply with the new requirements, and to annually submit reports on JURMP implementation. On March 24, 2008, the City submitted an updated JURMP to the RWQCB and began implementation.

This Annual Report provides information on JURMP implementation for FY 2010-11: July 1, 2010, to June 30, 2011.

1.2 PURPOSE AND OBJECTIVES

The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Order R9-2007-0001. This annual report describes the activities conducted by the City during the Fiscal Year and reporting period of July 1, 2010 through June 30, 2011. The City's program is described in its JURMP, dated March 2008, and in updates to the JURMP included in this Report. This annual report is presented in the standardized format developed collectively by the Copermittees, outlined below.

Section 1	Introduction
Section 2	Development Planning Component
Section 3	Construction Component
Section 4	Municipal Component
Section 5	Industrial and Commercial Component
Section 6	Residential Component
Section 7	Illicit Discharge Detection and Elimination Component
Section 8	Education Component
Section 9	Public Participation Component
Section 10	Fiscal Analysis Component
Section 11	Effectiveness Assessment Component
Section 12	Special Investigations
Section 13	Modifications to the JURMP
Section 14	Conclusions and Recommendations
Appendices	

2.0 Development Planning Component

2.1 Introduction

The City continued to implement the Land-Use Planning and Development Components of the JURMP to reduce the impacts of new development and redevelopment on storm water quality. Table 2.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order R9-2007-0001.

Table 2.1 Annual Reporting Requirements, Development Planning Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	A description of any amendments to the General Plan, the environmental review process, development project approval processes, or development project requirements.	1	Confirmation	Confirmed	2.2.2, 2.3
2	Confirmation that all development projects were required to undergo the Copermittee's urban runoff approval process and meet the applicable project requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
3	A listing of the development projects to which SUSMP requirements were applied.	1	Confirmation	See Appendix A-1 for listing	
4	Confirmation that all applicable SUSMP BMP requirements were applied to all priority development projects, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
5	At least one example of a priority development project that was conditioned to meet SUSMP requirements and a description of the required BMPs.	1	Confirmation	See Appendix A-2 for Project Synopsis	
6	A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.	1	Confirmation	2.4.3.1	
7	An updated treatment control BMP inventory.	1	Confirmation	See Appendices A-3, A-4	
8	The number of treatment control BMPs inspected, including a summary of inspection results and findings.	1	Confirmation	182 BMPs inspected	Section 2.4.3.2; Appendices A-3, A-4
9	A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.	1	Confirmation	See Section 2.4.3.2.2	
10	Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.	1	Confirmation	2.4.3.1	
11	A listing of any projects which received a SUSMP waiver.	1	Confirmation	No Waiver Program In Place - No waivers issued	
12	A description of implementation of any SUSMP waiver mitigation program.	1	Confirmation		
13	A description of Hydromodification Management Plan (HMP) development collaboration and participation.	1	Confirmation	See Section 2.4.3.3	

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
14	A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.	1	Confirmation	Since the interim HMP requirements took effect, there have been no development projects that trigger HMP requirements (all were less than 50 acres)	
15	A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.	1	Confirmation		
16	A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.	1	Confirmation		
17	The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	18 Correction Notices	2.4.3.4

2.2 Land Use Planning

2.2.1 Source Characterization

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are typically associated with development as defined in the City's JURMP and Standards Manual. As a reflection of the economic conditions of the past several years, land development activities within the City have been dramatically reduced. This has a direct impact on this particular source, resulting in reduced project submittals, reviews and ultimately, projects being constructed.

2.2.2 Program Implementation

The City's General Plan update was initiated in 2007 and continues to make progress towards completion in 2011 following a draft released in December 2010. The Plan is currently in the final revisions stage based upon responses to the Environmental Impact Report and public comment period. Up-to-date information regarding the General Plan update, Vista 2030, can be found at the City's website at www.cityofvista.com under the Community Development web pages.

2.3 Environmental Review Process

The City's environmental review process incorporates a review of Low Impact Development design measures consistent with Order R9-2007-0001 permit requirements effective March 2008 as stated in the City's 2008 JURMP. During the reporting period the environmental review process has not changed and remains as stated below:

> The City's Environmental Review Process begins with the Initial Study Checklist (CEQA Guidelines, Appendix G). Based on the results of the checklist, the City will require the project applicant to provide additional studies to elaborate on the environmental impacts or recommend denial of the permit that the project applicant is seeking.

2.4 Development Project Approval and Verification Process

2.4.1 Source Characterization

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are typically associated with development as defined in the City's JURMP and Standards Manual.

2.4.2 Best Management Practice Requirements

Since the development and submittal of the City's 2008 JURMP, the City has increased its BMP requirements for land development projects, specifically those subject to Hydromodification Management Plan (HMP) requirements. The requirements associated with the HMP were updated in the City's local SUSMP, the Stormwater Standards Manual Section G in January 2011. A copy of the revised local SUSMP can be found in Appendix A-1.

2.4.3 Program Implementation

2.4.3.1 SUSMP

The City maintains listings of development projects that have been initiated and completed during the reporting period. A Storm Water Applicability Checklist is a required submittal during the project application process as a part of the urban runoff approval process. The updated checklist is included in the updated Stormwater Standards Manual, Section G, located in Appendix A-1 of this report. The results of the checklist determine the post-construction requirements for the project. Standard and priority projects are required to submit a Water Quality Technical Report (WQTR) that describes how the project is meeting the storm water requirements.

City project reviewers do not approve construction drawings until the proposed BMPs included in the WQTR are incorporated onto the plans. This system is in place to ensure that the projects incorporate all requirements of the urban runoff approval process. The tracking system in place to ensure that this process is implemented is an Accela database which was initiated in January 2008.

During FY 2010-11, the City reviewed the nine private development project applications as a part of the urban runoff approval process. Of the projects, five were determined to be priority development projects. Appendix A-2 contains a listing of the projects for which SUSMP priority development project requirements were applied during FY 2010-11. The City confirms that all applicable SUSMP BMP requirements were applied to all priority development projects during the reporting period. The applicability and confirmation of these requirements is tracked in an Accela database.

The City also evaluated all of its Capital Improvement Program (CIP) Projects as part of the urban runoff approval process. During the reporting period, there were was one project that was determined to be a priority development projects.

The City's process continues with project completion. After projects are complete but prior to occupancy, the City verifies the proper installation and construction of all required post-construction BMPs. BMPs are verified in the field by an Associate Engineer in the Land Development Division and by the Senior Environmental Specialist in the Stormwater Division and are confirmed on the as-built plans. Once the as-built plans are received, the engineer notifies the Senior Environmental Specialist to convert the newly constructed BMP from the

pending list to the active inventory for treatment control BMPs. This process is performed for all priority development projects prior to occupancy.

As a result of the urban runoff approval process, no projects received a SUSMP waiver during FY 2010-11. The City does not have a waiver program for SUSMP requirements. Additionally, no projects were allowed to implement low efficiency treatment control BMPs for their projects unless they were used in conjunction with a medium or high efficiency BMPs.

Located in Appendix A-3 is a synopsis of a development project that was conditioned to meet SUSMP requirements. Included in the synopsis are the base project information and a description of the required BMPs. This particular project is a new hotel in the City and is a priority development project.

2.4.3.2 Treatment Control

During the reporting period, the City, through its inspections and annual verification program, verified that all approved and inventoried TCBMPs were maintained and operating effectively in removing pollutants from stormwater.

City staff schedules the inspections and verifications during the spring and summer months to ensure compliance with the Permit to optimize TCBMP functionality prior to the rainy season. Inspections and notifications to responsible parties are conducted at the end of each fiscal year and follow-up inspections and review of annual certification forms are conducted at the beginning of the next fiscal year. Table 2.2 is the current schedule of the City's TCBMP program activities. Detailed information on these activities is provided in Sections 2.4.3.2.2 (Annual Verification) and 2.4.3.2.3 (Annual Inspections).

Table 2.2 TCBMP Program Schedule of Activities (FY 2010-11 and FY 2011-12).

	FY 10-11	FY 11-12
Inspections	May/June	
Notification Letter	June	
Follow-up Inspections and Review of Annual Certification Forms		July - September

2.4.3.2.1 Inventory

The City uses a watershed-based inventory database to track the inventory of private and public treatment control BMPs (TCBMPs) and their maintenance and functionality. The City's current watershed-based TCBMP inventory for private development projects includes 70 development project sites, including 5 sites added during FY 2010-11. These projects contain 283 approved TCBMPs. Appendix A-4 contains the City's current TCBMP inventory for private development as well as a summary of the verification and inspection results.

Similarly, the City annually updates its inventory with public projects that include TCBMPs. During FY 2010-11, the City added one site to its inventory (Sports Park) and additional TCBMPs at the Civic Center site after its construction was completed earlier in the fiscal year. With these additions the municipal inventory consists of nine project sites containing 40 approved TCBMPs. The municipal treatment control inventory is included in Appendix A-5. All municipal treatment control BMPs are annually inspected, cleaned, and certified as described in Table 4.2 of the City's 2008 JURMP.

As required under Order R9-2007-0001, the City prioritizes all projects with approved TCBMPs into high, medium, and low Threat to Water Quality (TTWQ) categories which then determine the appropriate frequencies of inspections. The City revised its process for prioritizing project sites in FY 2008-09 and included a copy of the process in the JURMP Revisions section of FY 2008-09 JURMP Annual Report. City staff followed this process in prioritizing all new projects during the reporting period.

2.4.3.2.2 Annual Verifications

The City continued its annual verification process of TCBMPs during the reporting period. The Order requires annual verification of effective operation and maintenance by the party responsible for maintenance. Responsible parties are required to submit an annual certification form verifying effective operation and maintenance of TCBMPs.

The certification form process includes providing annual information on the maintenance activities that were conducted for the TCBMPs and signing the certification. Signature implies the responsible parties are certifying that the TCBMPs operated effectively throughout the specified one year certification period. For private projects, the City typically mails out a letter and blank certification form in advance of the submittal deadline notifying responsible parties of the certification requirements and submittal deadlines. For this reporting period, the submittal deadline was set at July 30th, 2010, covering the annual certification period from July 30th, 2009 to July 30th, 2010. In June 2010, City staff mailed a letter to responsible parties of all inventoried sites notifying them of the submittal deadline. For public projects, the City follows the same annual certification program process as with private sites.

The returned forms and accompanying documentation (invoices, maintenance records, and photographs) are reviewed by City staff to evaluate the validity of the form and, to the extent possible, the effectiveness of the TCBMPs in treating runoff. At sites where certification forms are deemed inaccurate or invalid, the City investigates the validity of the information provided and may require follow-up actions by the responsible parties. These investigative activities include communicating with the property owner to revise the certification form and/or a follow-up site inspection by City staff to evaluate the functionality and proper maintenance of the TCBMPs.

The City received 100 percent of the annual certification forms (including private and public sites) that were required to be submitted to the City during the reporting period. Staff conducted its review of all certification forms and documentation and found all project sites to be in compliance.

As new project sites are added to the City's TCBMP inventory, responsible parties are informed of the annual certification program requirements. The City mails an information packet to responsible parties of new project sites providing them with educational information about the City's TCBMP program and, maintenance and verification requirements. The City added 5 private project sites to the inventory during the reporting period and mailed out packets that included:

1) Letter with "Frequently Asked Questions"
2) Site TCBMP Corrective Action List (if applicable)
3) Blank Annual Certification Form
4) Site Map
5) Storm Drain BMP Maintenance Agreement (if applicable)
6) TCBMP Operation and Maintenance Guidelines

2.4.3.2.3 Annual Inspections

During the reporting period the City conducted its required annual inspections of private and public project sites to ensure that the TCBMPs were operating effectively prior to the rainy season. These inspections were conducted in May and June of 2011. Of the 70 inventoried private TCBMP project sites, City staff inspected 26 sites including 18 high TTWQ and eight medium TTWQ project sites. City staff also inspected all of its public TCBMP project sites including four high TTWQ, four medium TTWQ, and one low TTWQ. In total, the City conducted 35 TCBMP inspections exceeding the JURMP (and Order R9-2007-0001) inspection requirements. Table 2.3 below contains these minimum requirements and the numbers of inspections performed to meet these requirements.

Table 2.3 TCBMP Inspection Requirements

Project Priority TTWQ	Inspections Required per Permit (Percentage)	Inspections Required per Permit (Number)	Inspections Performed (Number)
High	100%	22	22
High/Med/Low	20% of inventory	16	35 (50% of inventory)
	50% of project sites w/ drain inserts*	23	26 (52% of project sites w/ drain inserts)

*16 high TTWQ sites inspected have drainage inserts and count toward the requirement to inspect 50% of the sites with these types of BMPs. Additionally, 7 medium TTWQ sites inspected have drain inserts. The City inspected an additional 3 sites with drain inserts (all medium TTWQ). In total, 26 sites with drain inserts were inspected.

As a result of inspections, City staff identified TCBMP deficiencies at 11 private TCBMP project sites. The majority of these deficiencies were associated with drain inserts and included excessive debris buildup and structural issues. Other BMP issues observed included sediment buildup in front of a vegetated swale and malfunctioning media filters. Staff did not observe TCBMP deficiencies at any of the public TCBMP sites. During inspections, City staff documented the conditions of each TCBMP through photographs and completion of the City's TCBMP Inspection Form. A copy of the TCBMP Inspection Form was included in the City's FY 2009-10 JURMP Annual Report.

Where deficiencies were identified, the City has notified the responsible parties and required that appropriate corrective actions be implemented at these sites. Follow-up visits and enforcement actions will occur in the FY 2011-12 reporting period. As indicated in Table 2.2, annual inspections and follow-up visits are conducted simultaneously, but span two different reporting periods. Results from follow-up visits and enforcement actions will be reported in next year's annual report (FY 2011-12 JURMP Annual Report). Follow-up inspections and enforcement actions for FY 2010-11 are described in Section 2.4.3.4 below.

2.4.3.3 Hydromodification Management Plan

The City has been involved in the development of the regional Hydromodification Management Plan (HMP). During the reporting period, City staff was involved in the two workgroups formed to develop the HMP. One workgroup is a Copermittee group whose responsibilities are to oversee the HMP development and guide the consultant team's work. The other workgroup is the Technical Advisory Committee whose responsibilities include providing technical guidance to the consultant team. The City is an active participant in both groups and in the review of documents that are generated as a part of the HMP development.

The HMP was submitted to the RWQCB in December 2009 and was approved by the Board on July 14, 2010. The City of Vista incorporated the HMP into its local SUSMP, the Stormwater

Standards Manual, by the required effective date of January 14, 2011. The City's revised local SUSMP is included as Section 13 of this report.

During FY 2010-11, the City did not have any priority development projects that triggered HMP requirements.

2.4.3.4 Enforcement

During the reporting period, City staff initiated enforcement actions at 18 private project sites that were required to implement corrective actions to correct BMP deficiencies. During the required annual inspections in June 2010, City staff identified BMP deficiencies at 18 private project sites. The City mailed out letters at the end of FY 2009-10 to all inventoried project sites requiring responsible parties to submit their annual certification forms by the required deadline. In the letter the City also required that appropriate corrective actions be implemented for any BMP deficiency staff observed during the inspections conducted in June 2010. The City included additional information on inspection results and corrective actions in the letters to those 18 sites requiring follow-up. This enforcement was necessary to ensure proper functioning of all TCBMPs prior to the start of the rainy season. As a result of follow-up visits and enforcement, the City verified compliance at 17 of the 18 sites. A summary of the on-going compliance efforts is provided below.

At a development site (GP 06-025, 950 Hacienda Drive), the responsible party made significant improvements to a swale after previous efforts to restore the swale were unsuccessful. The initial vegetation that was planted during the development of the site had failed and multiple efforts to re-vegetate the swale were also unsuccessful. During the reporting period, the owner of the site consulted with a landscape professional to determine a solution for re-vegetating the swale. The landscape consultant decided to test a few different plant species in the swale to determine which species would most likely survive in the environment and conditions present at the site. The site is known to maintain moisture in the soil and sunlight is limited due to the overhead canopy surrounding the swale. As a result of the tests and consultation with the landscaper, the owner decided to install salt grass throughout the swale (March 2011). Following the plantings, City staff conducted multiple field visits to the site to assess the growth of the salt grass. Results from the field visits indicated continual growth of the salt grass, but short of meeting the City's 80% coverage requirement for swales. According to the landscape consultant, the salt grass will continue to grow into the spring and summer months (FY 2011-12) and establish full growth, meeting the City's coverage requirements. The City plans on conducting further field visits in FY 2011-12 to continue its assessment of the swale and compliance at the site.

2.4.3.5 Education and Training

All staff responsible for construction and grading review received storm water training prior to the rainy season on September 30, 2010. The training included the following topics:

- Relationship between Land Development and Urban Runoff
- Relationship between Construction Activities and Urban Runoff
- Urban Runoff Pollutant Impacts
- City of Vista Stormwater Program – Construction Component
- Inspection Requirements
- Low Impact Development BMPs
- Treatment Control BMPs
- Watershed Concepts

- Pollution Prevention BMPs
- Dos and Don'ts

In addition, staff attended other trainings including:

1) Construction BMPs: March 16, 2011 – 13 City staff attended
2) Region wide Construction General Permit Training: May 09-11, 2011 – 4 City staff attended.

2.5 Notable Activities

The City participated in a hydromodification study to validate the use of the SWMM model as approved in the San Diego HMP. This study is designed to complement the study commissioned by the Copermittees to validate the use of the HSPF models. This study was undertaken as a joint effort between several Copermittees in North San Diego County and is expected to be completed during FY 2011-12.

3.0 Construction Component

3.1 Introduction

The City continued to implement the Construction Component of its Urban Runoff Management Plan (URMP) in FY 2011 to prevent and reduce pollutants in runoff from construction activities within the City. Table 3.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 3.1 Annual Reporting Requirements, Construction Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Confirmation that all construction sites were required to undergo the Copermittee's construction urban runoff approval process and meet the applicable construction requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	3.5.1
2	Confirmation that a regularly updated construction site inventory was maintained, including a description of how the inventory was managed.	1	Confirmation	Confirmed	3.2
3	A description of modifications made to the construction and grading ordinances and approval processes.	1	Confirmation	Completed changes in FY 2008	3.3
4	Confirmation that the designated BMPs were implemented, or required to be implemented, for all construction sites.	1	Confirmation	Confirmed	3.4
5	Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.	1	Confirmation	Since the maximum disturbed area and advanced treatment requirements took effect, no projects have triggered these requirements	3.5.3
6	A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.	1	Confirmation		3.5.4
7	For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.	1 & 3	Confirmation / Tabulation / Inspection	See Section 3.5.5. and Appendix B-1	
8	A description of the general results of the inspections.	1	Confirmation	Confirmed	Appendix B-2
9	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	3.5.5
10	The number of violations and enforcement actions (including types) taken for construction sites, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	11 Verbal Warnings 1 Corrective Notice	3.5.6

3.2 Source Characterization

During the entire reporting period, the City maintained a regularly updated construction site inventory. Through the reporting period, the City met the minimum JURMP requirement of making monthly updates, additions and deletions of sites, to the inventory.

The City's inventory is managed in Microsoft Access, an electronic database. Additions to the inventory are made when projects enter the construction phase of their development process. The project information is entered into the database along with the project's inspection frequency priority. The inspection forms that trigger inspections are initiated from the inventory based on the inspection frequency priority assigned to each project. Deletions are entered into the database when inspection forms are returned by the inspectors with notations that the project is complete.

3.3 Updates to Ordinances and Approval Processes

As a part of the City's 2008 JURMP, modifications to the municipal code and land development approval processes were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2011 reporting period, the City did not make updates to its municipal code or its land development approval process.

3.4 Best Management Practice Requirements

As a part of the City's 2008 JURMP, modifications to the requirements for construction and grading requirement were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2011 reporting period the City did not make modifications to its best management requirements for construction and grading projects.

3.5 Program Implementation

3.5.1 Construction Urban Runoff Approval Process

All new projects are required to submit plans and apply for a Stormwater permit as part of the urban runoff approval process. All project plans are checked for compliance with municipal permit requirements. Tracking of the projects submittals is done through an Accela database.

3.5.2 BMP Implementation

Through the development approval and construction inspection processes, the City confirms that all designated BMPs were required to be implemented and also implemented throughout the reporting period for all construction sites. During the active construction phase of projects, if BMPs were not implemented or were improperly implemented, the inspection program identified such deficiencies and required implementation and/or modifications to be completed.

3.5.3 Maximum Disturbed Area for Grading

The City began implementing the maximum disturbed area for grading activities in March 2008. During the reporting period the City did not have any projects in the development process, planning phase through construction phase, which met the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.4 Advanced Treatment Sites

The City began implementing the advanced treatment requirements for grading activities in March 2008. During the reporting period, the City did not have any projects enter the

development process that met the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.5 Inspections

Construction sites are required to be inspected based on the frequency schedule set forth in the City's JURMP. City inspectors from the Community Development Department inspect BMPs associated with grading permits (private projects) and public projects.

During FY 2011, the City inspectors conducted all the documented Stormwater specific BMP inspections per the frequencies described in the JURMP. Stormwater inspections were officially logged and documented, along with pertinent information regarding the specific construction site.

To ensure appropriate documentation of FY 2011 storm water specific inspections, training was conducted on September 30, 2010, where emphasis on appropriately documenting and tracking inspections was stressed to the inspection staff.

Appendix B-1 is a summary of the construction project inspections of active projects during the reporting period and includes the following information on a project by project basis:

- Project Location
- Storm Water Priority (Inspection Frequency)
- # of weeks active in the Rainy Season
- # of documented Stormwater inspections in Rainy Season
- # of documented Stormwater inspections in Dry Season
- Total # of documented Stormwater inspections for the site during the reporting period
- # of non-Stormwater inspections in Rainy Season
- # of non-Stormwater inspections in Dry Season
- Project specific summary of inspection findings

During FY 2011, 46 construction sites were in the active construction phase: 17 were high priority; 12 were medium priority; and, 17 were low priority. In total, the Community Development Department conducted 625 inspections throughout the reporting period. Additionally, Appendix B-2 contains a summary of each inspected project.

In order to ensure that inspections addressed all required inspection steps, the inspectors used a standard computer generated form for inspections containing all required inspection steps.

3.5.6 Construction Enforcement

Inspectors generally coordinated with the contractor to immediately correct any storm water issues or potential violations. If issues are not resolved and violations occur, enforcement escalates. During the reporting period, eleven documented verbal warnings and one correction notice were issued through direct correspondence with the responsible contractors. The correction notice was followed up with at the following inspection to ensure that no further enforcement actions were necessary. The site made corrections before the follow-up inspection.

If verbal discussions and corrective notices are not successful at achieving compliance at a project site, enforcement actions are escalated. The construction inspection staff may escalate enforcement by requesting an investigation from the Water Quality Protection Program staff.

3.6 Notable Activities

During the reporting period, the City hosted a regional training to prepare staff for the new requirements of the State General Construction Permit. The training was held for three days and served to allow participants to sit for the Qualified SWPPP Practitioner and Developer Certifications as required under the CGP. The training was attended by approximately 75 people from agencies throughout Southern California.

4.0 MUNICIPAL COMPONENT

4.1 Introduction

This section describes the implementation of the Municipal Component of the JURMP during FY 2010-11. The program section was implemented to: (1) reduce municipal discharges of pollutants from the MS4 to the Maximum Extent Practicable (MEP), and; (2) prevent municipal discharges from the MS4 from causing or contributing to a violation of water quality standards.

This section addresses two types of municipal operations: fixed or stationary facilities; and field activities. A fixed facility is a specific building or physical location at which municipal operations occur. An example is a corporate yard. Conversely, field activities are actions or programs that staff or City contractors implement as a part of their work duties at various locations across the City. An example is street maintenance.

Table 4.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 4.1 Annual Reporting Requirements, Municipal Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Any updates to the municipal inventory and prioritization.	1	Confirmation	Appendix C-2	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	1	Confirmation	Confirmed	4.2.2, 4.2.3.5, 4.3.2
3	A description of inspections and maintenance conducted for municipal treatment controls.	1	Confirmation	Section 4.2.3.1	
4	Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	1 / 3	Tabulation / Inspection	Inventory = 806	4.2.3.1, Table 4.2
				Inspected = 778	
				Catch Basins/Inlets Cleaned = 530	
5	Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	1	Tabulation	Total Distance of MS4 pipes = 37 miles	4.2.3.1, Table 4.2
				5.92 miles inspected	
				0.76 miles cleaned	
6	Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.	1	Tabulation	Open Channels = 5.3 miles	4.2.3.1, Table 4.2
				Inspected = 5.3 miles	
				Cleaned = 1.3 miles	
7	Amount of waste and litter (tons) removed from catch basins, inlets, the	4	Quantification	Catch Basins/Inlets = 220.5 tons	4.2.3.1, Table 4.2

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
	MS4, and open channels, by category.			MS4 Pipes = 21.6 tons Open Channels = 2,270 tons	
8	Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding.	1	Confirmation	None at this time	-
9	Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	1	Confirmation	Confirmed	4.2.3.3
10	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	75 miles	4.2.3.2, Table 4.3
11	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	225 miles	4.2.3.2, Table 4.3
12	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	75 miles	4.2.3.2, Table 4.3
13	Identification of the total distance of curb-miles swept.	1	Tabulation	8,100 miles	4.2.3.2
14	Identification of the number of municipal parking lots, the number of municipal parking lots swept, and the frequency of sweeping.	1	Confirmation	Lots = 18 Swept = 7 @ Once a month	4.2.3.2
15	Amount of material (tons) collected from street and parking lot sweeping.	1.5	Quantification	Street Sweeping = 455 tons Parking Lots = 0.5 tons	4.2.3.2
16	A description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4	1	Confirmation	See Section 4.2.3.4	
17	Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of the inspections.	3	Inspection	Sites requiring inspections =30 Sites inspected = 31 Frequency of inspections = 1X per year	4.3.2, Table 4.5

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
18	A description of the general results of the inspections.	1	Confirmation	See Section 4.3.2, Appendix C-3	
19	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	4.3.2
20	The number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	Verbal Warnings = 7	4.4, Appendix C-3

4.2 Municipal Activities

4.2.1 Source Characterization

During the reporting period, there were six municipal activities included in the inventory. These are: street maintenance, plaza and sidewalk cleaning, landscape maintenance, waste handling and disposal, MS4 maintenance, and wastewater utility maintenance. Of these six, road and street maintenance and sidewalk and plaza cleaning were high priority activities. These activities and priorities remained unchanged from the 2008 JURMP inventory. Both activities received inspections in FY 2010-11.

4.2.2 Best Management Practice Requirements

As a part of the City's 2008 JURMP, modifications to the municipal BMPs were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2010-11 reporting period the City did not make modifications to its best management requirements for municipal facilities and activities. All BMPs required in the JURMP were implemented during this reporting period.

4.2.3 Program Implementation

As a part of the City's 2008 JURMP, modifications to the municipal activities program were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the reporting FY 2010-11 reporting period the City did not make modifications to its municipal program implementation processes or procedures.

The following sub-sections discuss the program implementation for the municipal activities programs during the reporting period.

4.2.3.1 Municipal Separate Storm Sewer System (MS4) Program

Table 4.2 summarizes the MS4 inspection and cleaning program during FY 2010-11.

Table 4.2 MS4 Inspection and Cleaning Program Data

Item	Quantity	Inspected	Cleaned	Amount Removed
Catch Basins and Inlets	806	738	530	220.5 tons
Total distance of MS4 Pipe	37 miles	5.92 miles	0.76 miles	21.6 tons
Total distance of Open Channels	5.3 miles (improved)	5.3 miles	1.3 miles*	2,270 tons

*All lengths of open channels with anthropogenic litter.

There are a total of nine sites with 40 treatment control BMPs in the City's inventory this fiscal year. Types of TCBMPs include: drain inserts, infiltration trenches, vegetated swales, porous concrete, vortex separators, and bio-retention areas. All were inspected under the Treatment Control BMP program, as described above. Appendix A-1 contains all maintenance information, including inspection dates, maintenance frequency, and debris removed.

4.2.3.2 Street Sweeping Program

Areas classified as high and moderate priority for trash generation were swept twice per month.

Table 4.3 summarizes the street sweeping program during FY 2010-11.

Table 4.3 Street Sweeping Program

Volume of Trash Generation	Street Types	Total Curb-Miles	Minimum Frequency	Minimum Frequency Achieved?
High	Commercial	75	2X per month	Yes
Moderate	Residential	225	2X per month	Yes
Low	Other Streets and Parking Facilities	75	1X per month	Yes

A total of approximately 8,100 curb-miles were swept during FY 2010-11. The total amount of material collected by the street sweeping program for the reporting period was 455 tons for the streets, 0.5 ton for the parking facilities, and 0.5 ton within the operations yards.

4.2.3.3 Pesticide, Herbicide and Fertilizer Management

The City confirms that appropriate BMPs were implemented by the City staff with respect to the Pesticide, Herbicide and Fertilizer Management requirements of the JURMP. No modifications to the BMPs for pesticides and fertilizers were made during the reporting period.

4.2.3.4 Wastewater Element

In an effort to maintain the wastewater collection system and to identify potential problem areas in the system, the City conducted 43.6 miles of video inspection, CCTV, of the wastewater system, an increase from FY 2009-2010. The video inspection program is in place to prevent and/or eliminate infiltration from the wastewater system to the MS4. The video inspection results are used to identify problem areas within the wastewater system that require maintenance and/or repair.

Within the 311 miles of the wastewater collection system, approximately 278.4 miles were cleaned as part of the regular schedule of inspection and cleaning. Some portions of the collection system were cleaned twice due to priority and build up of materials.

A total of 6 public and 4 private spills occurred during the reporting period. Spills were mitigated by constructing berms and dykes using sand bags and rubber blocks (when available) to prevent the effluent from entering curb inlets. A copy of the sewer spill report log is located in Appendix C-1.

The City has also established mechanisms for the public at large to provide notification of sewage spills to the City through the use of several hotlines. Additionally, the City posts its reporting phone numbers on sewage easement gates as well as other visible locations.

4.2.3.5 Special Events

Pre-event and post-event inspections were conducted based on the size and location of the event, planned activities, number of participants and spectators, and whether or not City staff would be present to monitor the event and BMPs. It was determined that pre/post-event inspections were necessary at five special events:

1) Rod Run
2) Vista Christmas Parade & Carnival
3) Burger Run Car Show
4) Strawberry Festival and Street Fair
5) Taste of Vista

Storm water staff was present at these events and conducted the required inspections. Additionally, City staff trained in storm water BMPs were present at some of the other special events, even though a formal inspection was not completed. If BMP issues were noticed, the event organizers were notified and corrective actions taken. The most common BMPs required at the special events were providing trash receptacles, portable toilet secondary containment, providing spill kits, storm drain inlet protection, and trash/debris clean up and removal of BMPs after the event. Through the special event application process, City staff was able to make determinations as to whether BMPs would be required for each specific event. In the case where the event did not warrant the implementation of BMPs, they were not required. All events that required BMPs were required by the City to be implemented during the reporting period.

During the reporting period, City staff met with the event organizers prior to the issuance of their special event permits so that it was clearly understood what the City's storm water requirements were for the specific event type and venue.

Table 4.4 Summary of Annual Storm Water Activities for Special Events

Event Name	Event Date(s)	Pre-Communication Meeting with Organizer	BMPs Required to be Implemented	Full Storm Water Inspection	City Staff Present at Event	Event Venue
4th of July Block Party	7/4/10	Yes	Yes	No	Yes	Brengle Terrace Park
Yellow Deli Farmer's Market	Every week on Wed	Yes	Yes	No	Not Regularly	Sidewalk in Front of Yellow Deli
Teen Summer reading program final party	7/29/10	No	Yes	No	No	New Park North of Library
Rod Run 21 Annual Car Show & Smokin Q Classic BBQ	7/30/10, 7/31/10, 8/1/10	Yes	Yes	Yes	Yes	Historic Downtown Vista: Main, Indiana, Citrus, Gazebo Parking lot
National Night Out/ Walk Against Crime	8/3/10	Yes	Yes	No	No	Indiana and Main St
Vistans ROC Neighborhood BBQ	8/24/10	Yes	Yes	No	No	Spires and Ocotillo
Community Garage Sale	9/25/10	Yes	Yes	No	No	Gazebo Parking Lot – Only, Historic Downtown Vista
Red Shoe Day	9/21/10	Yes	No	No	No	Various McDonalds Restaurants
Binational Health Week, Health & Resource Fair	10/2/10	Yes	No	No	No	Vista Townsite Community Center Parking Lot
Vistans ROC!	10/9/10	Yes	Yes	No	No	Spires St., Tatum St, Cocopah St, Ocotillo Dr.
Vista Library Halloween Costume Contest	10/30/10	Yes	No	No	No	Vista Library Parking Lot
Inspired Images	10/21/10-11/4/10	Yes	No	No	No	Hennessy's, Gallery
Sixth Annual Crop Walk	11/7/10	Yes	No	No	No	Vista Village
Vista Invitational Field Tournament	11/13/10	Yes	No	No	No	Vista High School
Downtown Tree Lighting	12/3/10	Yes	Yes	No	No	Gazebo Parking Lot
Vista Christmas Parade & Carnival	12/3/10-12/4/10	Yes	Yes	Yes	Yes	Vista Village
Craft Market in Vista	12/12/10	Yes	No	No	No	Parking lot on Broadway Between Hares/Santa Fe
VTCP Holiday Event	12/18/10	Yes	Yes	No	No	642 Vista Village Drive, Vista
Soroptimist Walk	1/8/11	Yes	No	No	No	Gazebo area next to Avo

Event Name	Event Date(s)	Pre-Communication Meeting with Organizer	BMPs Required to be Implemented	Full Storm Water Inspection	City Staff Present at Event	Event Venue
Burger Run Car Show	1/8/11	Yes	Yes	Yes	Yes	Eucalyptus Ave & S. Santa Fe
Cleaning & Repainting of Downtown Planter VRNS	2/19/11	Yes	Yes	No	No	Main St @ Avo Theatre, Fountain, Hennessey's
Photo shoot for San Diego Fair Banners	3/18/11	Yes	No	No	Yes	Vistacado Parking Lot
Boot Drive to benefit Burn Institute	4/16/11	Yes	No	No	No	Santa Fe/Vista Dr
South Santa Fe Indian Market	5/1/11	Yes	No	No	No	Sonic/Allens Alley Parking Lot
Community Prayer Service A National Day of Prayer	5/5/11	Yes	No	No	No	Memorial Flag Pole
5K; Kids 1 Mile; Kid's ¼ Mile & Bike Ride	5/29/11	Yes	Yes	No	No	Vista Village Shopping Center
Strawberry Festival & Street Fair	5/29/11	Yes	Yes	Yes	Yes	Main St & Indiana St
Taste of Vista	6/22/11	Yes	Yes	Yes	Yes	Main St, from Hanes Pl to Michigan
Scottish Highland Games	6/24/11 to 6/26/11	Yes	Yes	No	Yes	Brengle Terrace Park

4.2.3.6 Non-Emergency Fire Fighting

BMPs are used to reduce the discharge of pollutants from non-emergency fire fighting activities. The City has developed and implemented a program to reduce pollutants from these activities in accordance with the Permit. During the reporting period, BMPs were implemented as described in the JURMP when performing the following activities:

- Maintenance of fire and emergency vehicles and equipment
- Training exercises
- Facilities maintenance
- Post-emergency rehabilitation of response equipment.

4.3 Municipal Facilities

4.3.1 Source Characterization

During the reporting period, one municipal facility was added to the City's inventory – the Sports Park. The most up-to-date inventory can be found in Appendix C-2. The inventory includes 30 high priority municipal facilities.

4.3.2 Inspections

The City conducted facility inspections for each of its high priority facilities and activities during FY 2010-11. The purpose of these inspections was to ensure that BMPs (including those for pollution prevention) were being implemented. The inspections followed all required inspections steps to determine full compliance with the City's JURMP.

Per the JURMP, the City formally inspects all high priority municipal sites. Municipal sites are considered to be fixed facilities where high priority municipal activities occur. The two high priority municipal activities were also inspected, a street repair maintenance activity and sidewalk cleaning. The networks (streets & roads and wastewater collection system) are routinely inspected under various programs such as street sweeping, streets maintenance, MS4 inspections and cleaning, and the sanitary sewer system video inspection and cleaning program. Formal inspection forms are not generated for the general routine inspections performed on these municipal networks.

Table 4.5 provides a summary of the formal annual storm water inspections performed for the high priority municipally operated sites/facilities.

A summary of inspection results can be found in Appendix C-3. For each facility, recommendations for follow-up corrective actions were listed. In general, the corrective actions included: asphalt repairs; removal of vegetation and trash accumulation; replacing of dumpster lids; and, good housekeeping practices. The corrective actions recommended during the inspections were implemented and verified by City staff. All BMPs required in the JURMP were implemented at all municipal facilities during the reporting period.

Table 4.5 Summary of Annual Storm Water Inspections for High Priority Municipal Facilities and Activities

Municipal Facilities				
	Name	**Address**		**Inspection Date**
1	Breeze Hill Park	645	S. Melrose Dr.	12/6/10
2	Brengle Terrace Park	1200	Vale Terrace Dr.	12/6/10
3	Bub Williamson Park	530	Grapevine Rd	12/6/10
4	Buena Vista Park and Maint Yard	1851	S. Melrose Dr.	12/6/10
5	Luz Duran-Townsite Park	340	E. Townsite Dr	12/6/10
6	Moonlight Amphitheater	1200	Vale Terrace Dr	12/6/10
7	Parking Lot		E. Broadway @ Hanes Pl	12/7/10
8	Parking Lot	300	Blk Main St	12/7/10
9	Parking Lot		Main St and Michigan Ave.	12/7/10
10	Parking Lot		Main St @ S. Indiana s/e	12/7/10
11	Parking Lot	523	S. Santa Fe Ave	12/7/10
12	Park-N-Ride Lot		Emerald @ W. Vista Way	12/6/10
13	PW Satellite Yard	2430	Lupine Hills Drive	12/8/10
14	PW Satellite Yard – Buena Yard	2525	Lupine Hills Drive	12/8/10
15	Public Works Yard	1165	E. Taylor St	12/7/10

	Name	Address		Inspection Date
16	Public Works HHW	1145	E. Taylor St	12/7/10
17	Rain Tree Park	545	Townsite Dr	12/6/10
18	Rancho Buena Vista Park	1851	S. Melrose Dr	12/8/10
19	Shadowridge Park	2101	Lupine Hills Dr	12/8/10
20	South Buena Vista Park	1602	Mountain Pass Circle	12/28/10
21	Sports Park	555	W. Bobier Dr	12/7/10
22	Thibodo Park	1150	Lupine Hills Dr	12/8/10
23	The Wave Waterpark	101	Wave Dr	12/7/10
24	Wildwood Park	651	E. Vista Way	12/7/10
25	Brengle Terrance Detention Basin	1100	Vale Terrace Dr	12/28/10
26	Creek Walk/ Buena Vista Channel		Main St and Wave Dr	12/28/10
27	Cypress Detention Basin		Monte Vista Dr and Cypress Dr	12/28/10
28	Monte Vista Detention Basin		Monte Vista Dr and Valley Dr	12/28/10
29	Buena Pump Station	2080	S. Melrose Dr	12/21/10
30	Raceway Pump Station	2685	S. Melrose Dr	12/21/10
Municipal Field Activities				
31	Road and Street Repair	Townsite Dr @ Luz Duran Park		1/14/11
32	Plaza and Sidewalk Cleaning-Pressure Wash	Indian @ drainage channel		1/14/11

4.4 Enforcement

Seven enforcement actions were taken during the reporting period. These included verbal warnings for:

- South Buena Park Detention Basin: Sediment and debris in catch basin
- Monte Vista Detention Basin: Sediment and debris in catch basin
- Thibodo Park: Sediment discharge and overgrown shrubbery
- Vista Sports Park: Perimeter drainage ditches in need of cleaning
- Park and Ride Lot: Trash and debris
- Moonlight Amphitheater: Trash receptacle areas need cleaning
- Brengle Terrace Park: Broken gravel bags and some erosion occurring

Subsequent follow-up inspections to all the sites ensured proper actions had been taken. No further actions were necessary.

4.5 Notable Activities

During the reporting period, the City initiated its Storm Water Conveyance System Maintenance activities. The City obtained a Regional General Permit to conduct maintenance activities including the removal of debris, sediment and vegetation that blocks channels and structures. The first year's efforts are summarized in the report entitled "First Annual Report for the City of Vista Storm Water Conveyance System Maintenance Project" (Merkel & Associates, 2011), which was submitted to the San Diego Regional Water Quality Control Board, California Department of Fish and Game, and the Army Corps of Engineers on June 1, 2011.

5.0 Industrial and Commercial Component

5.1 Introduction

During the reporting period, the City successfully implemented the industrial and commercial component of its JURMP. The program is instrumental in reducing and/or preventing pollutants from entering the City's MS4 and receiving waters. In achieving this goal, the City implemented several JURMP activities during the reporting period, including conducting stormwater complaint investigations, providing education and outreach to business owners and operators, and conducting commercial and industrial inspections. Additionally, the City implemented its Mobile Water Use Licensing Program which requires particular mobile water use operators to obtain approval of their BMP water reclamation systems prior to license issuance.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP. Annual reporting requirements for the industrial and commercial component are listed in Section J of the Permit. As indicated in Table 5.1, the City successfully met all requirements for the industrial and commercial component of the Permit.

Table 5.1 JURMP Annual Report Compliance

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Any updates to the industrial and commercial inventory.	1	Confirmation	See Section 5.2.2 and Appendix D-1, D-2 and D-3	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	1	Confirmation	Confirmed	5.2.4.1 5.2.4.2
3	A description of efforts taken to notify owners/operators of industrial and commercial sites/sources of BMP requirements, including mobile businesses.	1	Confirmation	Confirmed	5.2.4.1 & 5.3.4.1
4	Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	1 / 3	Confirmation / Inspection / Tabulation	844 Total sites inventoried 214 Total Sites inspected (134 high TTWQ and 80 additional Sites)	5.2.4.2
5	Justification and rationale for why the industrial and commercial sites/sources inspected were chosen for inspection.	1	Confirmation	See Section 5.2.4.2	
6	Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	5.2.4.1 & 5.2.4.2
7	Identification of the number of third party inspections conducted.	1	Confirmation	None	-
8	Identification of efforts conducted to verify third party inspection effectiveness.	1	Confirmation	N/A	-

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
9	A description of efforts implemented to address mobile businesses.	1	Confirmation	See Section 5.3	
10	The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	NOV = 62 Citation = 10 Verbal Warnings = 10	5.2.4.2, 5.3.4.1 & Appendix D-5
11	A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	1	Confirmation	See Section 5.2.4.2 & Table 5.3	

5.2 Stationary Industrial and Commercial Sites / Sources Element

5.2.1 Background

There is no background information to report.

5.2.2 Source Characterization

Prior to conducting the FY 2010-11 required annual inspections, the City's Beginning of the Year inventory for stationary commercial and industrial facilities consisted of 844 facilities. The City provided this inventory (includes primary and alternates sites for inspection) to its inspections contractor prior to commencing the required annual inspections. This inventory included all facilities listed on the previous years inventory (End of the Year inventory for FY 09-10) and additional facilities identified during review of periodic business license lists and stormwater cases. This review was done during the first half of the reporting period prior to commencing inspections.

At the conclusion of each annual inspection program, the City compiles its final inventory, known as the End of the Year inventory. The final inventory is compiled throughout the inspection program to take into account the changes in facility status that are encountered during site visits. During inspections it is common to encounter businesses that have closed or moved to another location. In cases where a business has closed it is also common to find another business that has taken its place. Throughout the inspection program continual updates are made to the inventory to account for these scenarios. These modifications are reflected in the City's End of the Year inventory which consists of 829 Stationary Facilities. The End of the Year commercial and industrial inventories are included in Appendix D-1and D-2, respectively.

5.2.3 Best Management Practices

The City did not make any modifications to its best management practice requirements (JURMP 2008).

5.2.4 Program Implementation

5.2.4.1 Best Management Practices

Stormwater Complaint Investigations
Complaint response is one method the City uses to disseminate educational and BMP information to owners and operators of industrial and commercial facilities. In the event a BMP or other stormwater violation is identified by City staff during a complaint investigation, the City requires the responsible party to implement appropriate BMPs to correct the violation. During the reporting period, City staff investigated 41 reported complaints at commercial and industrial facilities (29 commercial and 12 industrial). A summary of all FY 10-11 commercial complaint cases is included in Appendix D-4. Of the 41 reported complaints, all were confirmed in the field by staff. Stormwater complaint investigations were conducted by City Stormwater Code Enforcement staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the 41 reported complaints, 33 were generated from pro-active enforcement.

Education
As required in the Permit (Order 2007-0001), Copermittees are required to notify all inventoried sites and sources of its BMP requirements during the first three years of the Permit cycle. In March 2011, the City mailed a letter to stationary facilities that were added to the City's FY 10-11 Beginning of the Year Inventory (75 facilities) notifying them of the City's BMP requirements. In each mail out, the City included a copy of the applicable City of Vista Stormwater Standards Manual Section, which includes BMPs specific to the business activity. A copy of this letter is included in Appendix D-6. All other businesses on the inventory had been notified of their BMP requirements in previous years.

During stormwater complaint investigations, City staff provided pollution prevention brochures to facility owners to aid them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods consistent with the City's BMP requirements. These brochures included the following:

- What's Cooking Guide
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- Green Wrench Guide
- Motor Oil

During the reporting period, the City operated its website (www.cityofvista.com) providing owners and operators of commercial and industrial facilities with information regarding the City's BMP requirements. The website contains a section dedicated to informing facility owners of BMPs common to all types of businesses. These BMPs which are consistent with the City's BMP requirements include the following:

- Keep your trash and dumpster lids closed.
- Do not allow landscape waste, pet waste, dirt, chemicals or other pollutants to enter a storm drain or be thrown into a creek bed.

- All dirt slopes must have erosion control measures in place to prevent dirt from entering the street or storm drain.
- Wash water used to clean equipment, indoor and outdoor areas, parking lots and sidewalks is prohibited from entering storm drains. Sweep instead. If you must use water, either mop the area or make sure the waste water is fully reclaimed and disposed of properly.
- All chemicals must be properly labeled and stored in a contained, roofed area to avoid contact with rainwater.
- Do not over-irrigate your landscaping.
- Sewage releases into the street from blocked or cracked laterals are illegal. If a spill occurs, arrange for correction and contact the City immediately.

The website also contains links to stormwater educational literature that can be reviewed online and/or downloaded and printed. The restaurant poster, Green Wrench guide, and automotive poster, which are customarily provided to commercial and industrial establishments during inspections are made available for review or download for printing. A link to a BMP Check off-list is also provided which provides the user a comprehensive checklist of BMPs for five major BMP categories including grounds maintenance and good housekeeping, waste management, education, materials storage, landscape and irrigation, vehicle and equipment maintenance, and vehicle and equipment washing.

Stationary Commercial and Industrial Inspections

In implementing the City's inspection program during FY 2010-11, the City informed owners and operators of commercial and industrial facilities of its BMP requirements. These inspection activities are consistent with the inspection requirements listed in the Permit (Order 2007-0001). Inspections were conducted in the spring of 2011 by staff from D-Max Engineering (City's contractor) and the City's Water Quality Protection Program (WQPP). Of the 214 total inspections, D-Max staff conducted 100 inspections, while City staff conducted the remaining 114 inspections.

At various points during the inspection process, facility owners and/or operators were informed of the City's BMP requirements specific to their business. In February 2011, the City mailed a letter to each site that was selected for inspection (included alternate sites) informing them of the potential for an upcoming inspection and City's BMP requirements.

Each inspection started with a face to face discussion during which inspectors educated facility owners on the City's Stormwater Program and BMP requirements. Following the discussion, inspection and appropriate facility staff performed a complete inspection of the facility including all outside areas assessing BMP effectiveness and compliance. In their assessments, inspectors made notes of any BMP violations, occurring illegal discharges, and illegal connections and communicated them to facility staff. In the event that a violation is observed, inspectors would typically engage facility staff in a discussion to identify BMP options for correcting the violation. For illegal discharges, facility representatives were instructed to immediately cease discharge. At the conclusion of each inspection, inspectors summarized the results of the inspection reviewing any stormwater violations and accompanying courses of actions that were discussed during the inspection. BMP guides and posters were provided to facility representatives to aid them in selecting appropriate corrective actions and managing urban runoff at their site.

Inspectors instructed facility representatives to implement timely corrective actions especially when dealing with violations that could result in discharges to the City's MS4. Additionally, as a reminder to facility owners to implement appropriate and timely corrective actions, each inspected facility was mailed a letter and copy of the inspection report (D-Max inspected sites only). A copy of the City's Stormwater Compliance Inspection report was included as Appendix D-4 in last year's JURMP Annual Report (FY 09-10). The inspection report identified the specific BMP violations and included D-Max's recommended corrective actions. The importance of implementing effective BMPs was further emphasized in the letter as the City stated that BMP compliance was important to ensure overall compliance with the City's Stormwater Permit and Municipal Code. To assist owners in selecting appropriate corrective actions, a link to the City's Stormwater Standards Manual was also provided.

5.2.4.2 Inventory and Inspections

Prior to conducting its required annual inspections, the City's FY 10-11 Beginning of the Year Inventory consisted of 844 commercial and industrial facilities. The City determined its required inspection numbers using this inventory. The inventory was also provided to its Inspections contractor, D-Max Engineering as they were tasked with conducting a portion of the required annual inspections.

In selecting facilities for inspection, all inventoried facilities were prioritized into high, medium, and low threat to water quality (TTWQ) categories (Order 2007-001). As mentioned in section 5.2.2 (Source Characterization), the City carries over the inventory (End of the Year inventory) from the previous reporting period prior to finalizing it for inspection purposes in the current reporting period. The City's contractor provides the End of the Year inventory to the City which includes assigned TTWQ categories for each facility. In finalizing the inventory, City staff often adds new facilities to the inventory upon periodic review of business license lists and stormwater case files. These facilities are also assigned the appropriate TTWQ category using the criteria established in the JURMP, March 2008. It is from this revised inventory (Beginning of the Year) that the City selects the required number of inspections for the current reporting period.

The total number of facilities inspected was based on the City's Municipal Storm Water permit requirements (Order 2007-0001) which require that 100 percent of high TTWQ facilities and 25 percent of the City's total inventoried sites are inspected. In meeting both requirements, the City inspected a total of 214 stationary facilities during the reporting period (see Table 5.2). All high TTWQ facilities (134) and an additional 80 facilities were inspected.

City WQPP staff used the criteria listed below in selecting additional and alternate sites for inspection. Alternate sites were selected in case a primary site was not inspected, usually in the event that a facility closed its operations or had moved.

<u>Criteria Used For Selecting Additional and Alternate Sites for Inspection</u>

- Facilities located in Loma Alta Creek Hydrologic area (TMDL in development)
- Facilities located in San Luis Rey WMA (TMDL approved)
- Facilities included in the City's FOG (Fat's, Oils, and Grease) Inventory that have not received a FOG assessment.

Table 5.2 Summary of Stationary Commercial and Industrial Inspections

Facility Category	Inspections Conducted	Percentage of Total Inventory (total inventory = 844 Sites)
High TTWQ Sites	134	16% (100% of High TTWQ sites)
Additional Sites	80	9%
Total	**214**	**25%**

The City confirmed that all inspections addressed the inspection steps required in Order 2007-0001. These inspections steps are included in the City's 2008 JURMP and were followed by D-Max staff during all inspections. In section 5.2.4.1, the City describes the required inspection steps inspectors followed during FY 2010-11 inspections. Additionally, inspectors reviewed BMP implementation plans, facility monitoring data, and checked all inspected industrial facilities for coverage under the Industrial Permit.

The City requested D-Max to perform a portion of the City's fats, oils, and grease (FOG) inspections at food service establishments to assess compliance with the City's FOG ordinance. Most of these inspections were conducted in conjunction with the stormwater inspections. D-Max staff conducted stormwater and FOG assessments at 53 facilities while City WQPP staff conducted the same assessments at 36 facilities (89 total FOG assessments conducted).

Enforcement

Commercial and Industrial Complaints

During the reporting period, City staff investigated a total of 41 complaints involving stationary facilities. Of the 41 reported complaints, all were confirmed in the field by staff. Enforcement efforts were conducted at these sites to ensure all violations were corrected and compliance was achieved. Of the 41 confirmed complaints, City staff conducted enforcement actions in all of these cases rendering ten verbal warnings, 28 notices of violation and six citations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. During the reporting period, staff confirmed that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected). A summary of enforcement actions implemented at stationary commercial and industrial sites is included in Appendix D-5. Summaries of all complaint cases including information on follow-up actions is presented in Appendix D-4.

Commercial and Industrial Inspections

At facilities where stormwater violations were observed during the initial inspection, City staff conducted follow-up visits and used enforcement to ensure compliance was achieved. In this program, follow-up activities are conducted at sites where an illegal discharge or significant BMP violation is observed. City WQPP staff conducted all follow-up activities during the inspection program. A significant BMP violation would include situations where there is a potential for an illegal discharge to occur due to lack of appropriate BMP implementation. As mentioned in section 5.4.2.1 (BMP requirements), inspectors instructed facility owners to implement timely corrective actions to correct BMP violations observed during the inspection. During inspections where D-Max staff observed an illegal discharge or illicit connection, City Water Quality Protection Program staff was contacted immediately to respond. D-MAX staff

observed illegal discharges at two facilities; in these instances City WQPP staff responded immediately and ensured the discharges ceased.

As a result of inspections performed by D-MAX (100 inspections total), 38 commercial and industrial facilities were recommended for follow-up. Similarly, City WQPP conducted 114 annual inspections at commercial and industrial facilities requiring follow-up at 11 sites. In total, City WQPP staff conducted follow-up inspections at 49 facilities.

At sites recommended for follow-up from D-Max inspections (38 facilities), City staff confirmed compliance at 30 sites, but found the other eight facilities still in violation of the City's Stormwater Ordinance. WQPP staff conducted enforcement actions at five of the facilities requiring follow-up issuing one verbal warning and four notices of violations. Similarly, for annual inspections conducted by City WQPP staff, three verbal warnings, five notices of violations, and one citation were issued at eight of the facilities requiring follow-up. A summary of enforcement actions implemented during commercial and industrial follow-up investigations is included in Appendix D-5. Also, a summary of inspections results for facilities at which a follow-up inspection was conducted is presented in Appendix D-8. The City verified compliance at all sites where corrective actions were required (all violations were corrected).

General Industrial Permit Compliance

In addition to assessing BMP compliance, General Industrial Permit compliance status was evaluated at each inspected industrial facility. During initial inspections, the City identified four facilities that were found to require coverage under the State General Industrial Permit, but had not yet filed a Notice of Intent (NOI). This included two mandatory facilities and two conditional facilities at which outdoor exposure was observed. Similarly, D-MAX staff identified two facilities, conditionally subject to the Permit, that had not filed their notice of non-applicability (NONA) paper work certifying their No Exposure status (No Exposure Certification). During inspections, inspectors recommended to facility owners/managers to file appropriate NOI or NONA paperwork to ensure compliance with the State General Industrial Permit. A summary of the Permit Status evaluations based on the initial inspections is included in Table 5.3.

Table 5.3 General Industrial Permit Compliance Status

#	BUSINESS NAME	ADDRESS	Permit Subjectivity	Actions To Correct Violation				
				File NOI	Develop SWPPP	Develop and Implement Storm Water Monitoring Program	File NONA/NEC	Other Actions/Comments
1	AMERICAN MARBLE	1280 N MELROSE DR	Mandatory	✔				WDID 9 37I012758 was reported by site to be active but it appears to be a terminated WDID for a location in another city, per online SMARTS records. Site does have SWPPP and Monitoring Program.
2	EL CAMINO RENTAL DBA BILCAN INC.	1121 S SANTA FE AVE	Mandatory	✔	✔	✔		
3	GREEN FLASH BREWING COMPANY	1430 VANTAGE CT	Conditional	✔	✔	✔		Outdoor exposure was observed.
4	LAMPPOST PIZZA	15 MAIN ST B100	Conditional				✔	No exposure was observed.
5	MARY'S CUSTOM WORKROOM	2835 LA MIRADA DR C	Conditional				✔	No exposure was observed. Formerly called "Finishing Touch Custom Drapery"
6	MERIDIAN LABORATORY INC	1330 N MELROSE DR E	Conditional	✔	✔	✔		Outdoor exposure was observed.

5.3 Mobile Sources Element

5.3.1 Background

The City continued to implement its Mobile Sources element of its JURMP. During the reporting period, the City implemented JURMP activities to prevent and/or reduce pollutant runoff from mobile business activities. These included requiring BMP implementation through complaint investigations and providing education and outreach to mobile businesses notifying them of the City's BMP requirements. Additionally, City Water Quality Protection Program staff implemented its Mobile Water Use Licensing program which requires particular mobile water use operators to obtain approval of their BMP water reclamation systems prior to license issuance. This program was developed during FY 09-10 and implemented in FY 10-11.

Source Characterization

Throughout the reporting period, the City modified its mobile business inventory to account for changes in business status. As with the stationary facility inventory, the City conducts periodic reviews of new monthly business licenses to determine additional businesses to add to its Mobile Business inventory. The City added 59 mobile businesses to its inventory as a result of license reviews. In some instances, the City may remove a mobile business after determining it no longer conducts business in the City or has closed. These modifications are reflected in the City's current mobile business inventory consisting of 228 mobile businesses (Appendix D-3).

Best Management Practice Requirements

During the reporting period, the City did not modify its BMP requirements for mobile businesses (JURMP 2008).

Program Implementation

5.3.4.1 Best Management Practices

Stormwater Complaint Investigations

As with stationary facilities, responding to complaints involving mobile businesses is one method the City uses to disseminate educational information regarding the City's BMP requirements. In the event a BMP or other stormwater violation is identified by City staff, the City requires the responsible party to implement appropriate BMPs to correct the violation. During the reporting period, City staff investigated two complaints concerning mobile businesses. A summary of all FY 2010-11 mobile business complaint cases is included in Appendix D-4. Both complaints were confirmed by staff. Stormwater complaint investigations were conducted by City Stormwater Code Enforcement staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the two confirmed complaints, one was generated from pro-active enforcement.

Education

As required in the Permit (Order 2007-0001), Copermittees are required to notify all inventoried sites and sources of its BMP requirements during the first three years of the Permit cycle. In March 2011, the City mailed a letter to all mobile businesses that were added to the City's FY 10-11 Mobile Business Inventory (59 mobile businesses) notifying them of the City's BMP requirements. In each mail out, the City included a copy of the applicable City of Vista Stormwater Standards section specific to the business activity. A copy of the letter is included in Appendix D-7.

During stormwater complaint investigations, City staff provided pollution prevention brochures to mobile business representatives to assist them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods consistent with the City's BMP requirements. These brochures included the following:

- What's Cooking Guide
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- Green Wrench Guide
- Motor Oil
- Mobile Water Use

During the reporting period, the City operated its website (www.cityofvista.com) providing owners and operators of mobile businesses with information regarding the City's BMP requirements. The website contains a section dedicated to informing business owners of BMPs common to all types of business activities including those for mobile businesses. These BMPs which are consistent with the City's BMP requirements include the following:

- Keep your trash and dumpster lids closed.
- Do not allow landscape waste, pet waste, dirt, chemicals or other pollutants to enter a storm drain or be thrown into a creek bed.
- All dirt slopes must have erosion control measures in place to prevent dirt from entering the street or storm drain.
- Wash water used to clean equipment, indoor and outdoor areas, parking lots and sidewalks is prohibited from entering storm drains. Sweep instead. If you must use water, either mop the area or make sure the waste water is fully reclaimed and disposed of properly.
- All chemicals must be properly labeled and stored in a contained, roofed area to avoid contact with rainwater.
- Do not over-irrigate your landscaping.
- Sewage releases into the street from blocked or cracked laterals are illegal. If a spill occurs, arrange for correction and contact the City immediately.

The website also contains links to stormwater educational literature that can be reviewed online and/or downloaded and printed at a computer. The restaurant poster, Green Wrench guide, and automotive poster, which are customarily provided to commercial and industrial establishments during inspections are made available for review or download for printing. A link to a BMP Check off-list is also provided which provides the user a comprehensive checklist of BMPs for five major BMP categories including grounds maintenance and good housekeeping, waste management, education, materials storage, landscape and irrigation, vehicle and equipment maintenance, and vehicle and equipment washing.

Inspections

The City implemented its Mobile Water Use Licensing program during the reporting period. The City described the Mobile Water Use Licensing program in detail in last years JURMP Annual Report (FY 09-10) under Notable Activities. In this program the City requires particular mobile water use operators to obtain approval of their BMP water reclamation systems prior to license issuance. Mobile businesses regulated under the program include carpet cleaners, power

washing, mobile detailing, and other mobile businesses that use water in its daily operations. BMP approval is achieved through a City inspection during which businesses demonstrate the effectiveness of BMPs used in containing and capturing water runoff during operations. Results of the inspection are documented on the City's Mobile Water Use Inspection Form. A copy of the City's Mobile Water Use inspection form was included in last year's JURMP Annual Report (Appendix D-8). During the reporting period, City WQPP staff conducted eight mobile water use inspections resulting in the approval of BMP water reclamation systems for all eight mobile businesses.

Enforcement

During the reporting period, City staff investigated two complaints involving mobile businesses. Both were confirmed by staff. Enforcement efforts were conducted at these mobile businesses to ensure the violations were corrected and compliance was achieved. These efforts resulted in the issuance of two notices of violations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. The City verified that responsible parties implemented appropriate BMPs in both complaints (all violations were corrected). A summary of enforcement actions implemented in mobile business complaint cases is included in Appendix D-5.

5.4 Notable Activities Conducted to Manage Urban Runoff

FOG Program

Under the current FOG (Fats, Oils, and Grease) requirements (Order No. 2006-0003-DWQ) the City was required to develop and implement a FOG inspection program beginning in FY 2008-09. FOG discharges to the sanitary sewer system are known to cause blockages resulting in sewer overflows. Up to this point, the program involves the inspection of food service establishments (FSEs) to assess the facility's effectiveness in meeting the City's FOG requirements and preventing FOG discharges to the sewer system. The City has developed an inventory of FOG producing facilities (primarily FSEs) located within the City of Vista. FSEs are required to implement FOG best management practices to prevent FOG discharges to the sewer system.

As most Food Service Establishments (FSEs) are included in both the City's FOG and Storm Water inventories, FSEs typically receive combined inspections. During the reporting period, 89 FSEs received both a FOG and Stormwater Inspection. The FOG inspections addressed several BMPs that aim to reduce sanitary sewer overflows, including installing drain screens in prep sinks, dry wiping pans, and regularly inspecting and maintaining grease control devices. Although, the FOG program is separate from the City's Stormwater Program, both programs address BMPs that are vital in preventing pollutant discharges at FSEs.

Participation in the Regional Industrial and Commercial Workgroup

The Regional Industrial and Commercial Workgroup (RICW) was formed in FY 08-09 to provide regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to industrial and commercial activities and sources. Furthermore, the formation of the RICW was necessary to address requirements in the 2007 Municipal Stormwater Permit. The City of Vista served as the secretary for the RICW during the reporting period attending and participating at six RICW meetings (August, October, November, and December of 2010 and February, April, and June of 2011). A summary of the meeting notes will be submitted by the workgroup leads in the Regional Urban Runoff Program Annual Report due for submittal in January 2012. The City will continue to attend and participate at future Regional Industrial and Commercial Workgroup meetings.

Rainy Season Preparation Activities
In preparation for the rainy season (October 1, 2010 through April 30, 2011) the City conducted outreach activities targeting commercial and industrial facilities and shopping centers.

In September 2010, City WQPP staff mailed out a letter to 48 industrial facilities on the City's inventory notifying them of the City's BMP requirements and importance of implementing appropriate BMPs in preparation of the first rains. In each mailout, the City included BMP measures from the City's Stormwater Standards Manual applicable to all types of industrial facilities including activity specific BMPs, pollution prevention practices, non-structural BMPs, and structural controls.

Similarly, City staff mailed out letters to the property owners at 28 shopping centers located throughout the City reminding them of the City's BMP requirements applicable to shopping centers. The letter was prefaced with reference to the start of the first rains and importance of taking appropriate measures to prepare the sites for the upcoming rainy season. Enclosed in the mailout were BMP measures specific to the management of stormwater at shopping plazas including storm drain tile and signing, materials and waste management, solid waste storage, unloading and loading of significant materials, parking areas, and landscaping and grounds keeping.

Selection of Primary and Alternate Sites for Inspection Purposes
During the reporting period, the City conducted its required commercial and industrial inspections. The City met both inspection requirements which included inspecting all high TTWQ facilities and ensuring 25% of the City's entire inventory be inspected. In meeting the latter requirement, the City inspected an additional 80 facilities. As mentioned in section 5.2.4.2 (Inventory and Inspections) the City used specific criteria for selecting the additional and alternate sites to be inspected. With the Loma Alta Slough TMDL (eutrophication and bacteria) in development, the City continued with its assessment of potential water quality impacts to the Slough from commercial and industrial facilities. The City used the same criteria as it did last year in selecting sites for inspection. Similarly, staff wanted to assess the potential implications of pollutant runoff at facilities located in the San Luis Rey WMA. The City used GIS to determine what facilities on the City's inventory are located in Loma Alta Creek Hydrologic Area and San Luis Rey WMA and received inspections. Thirdly, the City selected FSE's located in these watersheds which have not received a FOG assessment. These efforts enabled the City to inform FSEs of the City's FOG requirements that may have not been aware of such requirements prior to being inspected.

Industrial/Commercial Inspections – Increased Inspection Frequency
The City developed a new facet of the industrial and commercial inspection program to assess BMP effectiveness and compliance at facilities with a history of non-compliance. In selecting sites for inspection the City reviewed compliance history for sites on the inventory that have been inspected. Depending on their compliance history, sites were selected for an increased inspection frequency, up to quarterly inspections. The compliance history also dictated the extent of the inspections performed, with some receiving cursory exterior only inspections and others receiving full stormwater inspections. During the reporting period, City WQPP staff performed an increased number of inspections at 46 facilities, totaling 90 additional inspections. City staff documented inspection results on its inspection report form and used enforcement when necessary to gain compliance. The City intends to annually review facilities in the Enhanced Inspection program and based on results from the Programs may modify the program accordingly. This could translate into removing a facility based on continual compliance or adding a new facility due to consistent non-compliance.

6.0 Residential Component

6.1 Introduction

The City continued to implement the residential component of the City's JURMP to prevent or reduce pollutants in runoff from residential land use areas and activities. In achieving this goal, the City implemented several JURMP activities during the reporting period. These included conducting residential stormwater complaint investigations, providing outreach to residents, and facilitating proper disposal and management of household hazardous waste and used oil.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP. Annual reporting requirements for the residential component are listed in section J of the Permit. As indicated in Table 6.1, the City successfully met all reporting requirements for the residential component of this JURMP Annual Report.

Table 6.1 JURMP Annual Reporting Compliance

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Identification of the high threat to water quality residential areas and activities that were focused on.	1	Confirmation	See Section 6.2	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for residential areas and activities.	1	Confirmation	Confirmed	6.4.1
3	A description of efforts implemented to facilitate proper management and disposal of used oil and other household hazardous materials.	1	Confirmation	See Section 6.4.1	
4	Types and amounts of household hazardous wastes collected, if applicable.	1	Confirmation	See Section 6.4.1 & Appendix E-1	
5	A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.	1	Confirmation	Confirmation	6.4.2
6	The number of violations and enforcement actions (including types) taken for residential areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation	NOV = 10 Verbal Warning = 26	6.4.2 & Appendix E-2
7	A description of collaboration efforts taken to develop and implement the Regional Residential Education Program.	1	Confirmation	See Section 6.5	

6.2 Source Characterization

During the reporting period, the City focused on all high threat to water quality (TTWQ) residential areas and activities. These areas and activities are listed in the City's 2008 JURMP.

In the City's JURMP, the Residential Component focuses primarily on activities that have been deemed a high threat to water quality including: vehicle and boat repair/maintenance, automobile washing, automobile parking, home and garden care activities, home care and maintenance, manure and pet waste management, private sewer laterals and septic systems, and street sweeping of private roads/streets. Because these activities occur throughout all residential areas, all residential areas are then by default deemed a high threat to water quality.

The JURMP further describes the mechanisms the City utilizes to implement the Residential Component and to ensure that appropriate BMPs are implemented. Implementation includes the designation of activity specific BMPs and pollution prevention methods, outreach, complaint response, used oil and waste collection, and enforcement where necessary. Outreach and complaint response are the two methods used to disseminate educational and Best Management Practices (BMPs) information throughout the residential areas. Because outreach and complaint response efforts target all residential areas and specifically those high threat to water quality activities in those areas, the residential community is not broken down by areas related to the threat to water quality. Instead, all residential areas are considered a high threat to water quality.

Routine work activities conducted throughout the City provide opportunities for the City to focus attention on high TTWQ residential areas and activities. During complaint investigations, Stormwater Code Enforcement staff customarily observes areas and activities in route to and from and in the vicinity of the complaint case, being observant for any stormwater violations being committed. It is common for Code Enforcement staff to observe and respond to violations unrelated to the case that is being investigated. Similarly, field staff from other City departments (includes staff from Parks, Streets, Wastewater, Building, and Construction divisions) are trained and instructed to report stormwater incidents they observe in the field to Water Quality Protection Program (WQPP) staff. These practices are termed pro-active enforcement and the City continues to rely on them in its maintenance and implementation of its Water Quality Protection Program. During the reporting period, 42% (15 cases) of residential complaint cases (36 total residential cases reported) were generated by pro-active enforcement.

During the reporting period, Stormwater staff responded to 36 stormwater complaints in residential areas. In an analysis of these cases, the City characterized pollutant sources using the five common source types that have been used in previous analyses (JURMP Annual Report FY 08 and 09). These pollutants sources include spills-all types, illegal washing, sediment discharge, trash and debris, and over-irrigation (See Table 6.2 and Figure 6.1). Sediment sources (42%) were determined to be the most prevalent, followed by spills (14%) and Trash and Debris (11%).

Table 6.2 Residential Complaint Source Types (numbers)

Spills	Washing	Sediment	Trash and Debris	Over-irrigation	Other
5 (14%)	2 (6%)	15 (42%)	4 (11%)	3 (8%)	7 (19%)

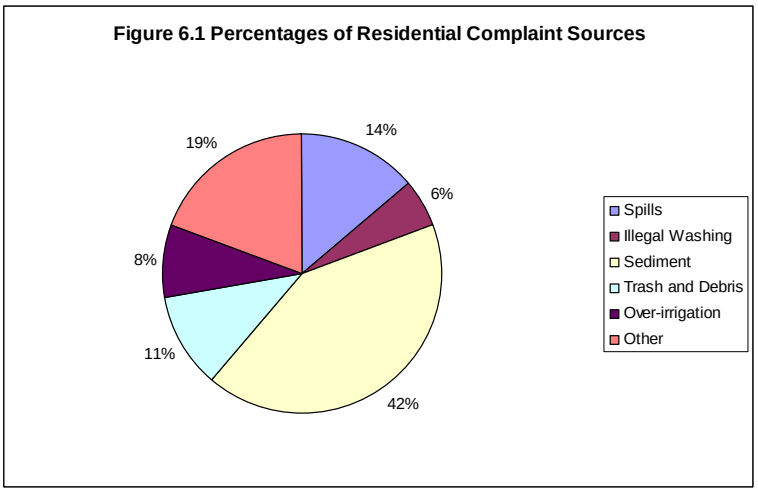

The City's website (www.cityofvista.com) was operated during the reporting period providing BMP information to residents regarding several high TTWQ activities. These activities and BMPs include:

- Manure and Pet Waste Management
- Vehicle Maintenance
- Home Care Maintenance
- Home and Garden Care Activities and Product Use
- Automobile Washing

Community events held during the reporting period provided opportunities for the City to disseminate stormwater information regarding several high TTWQ activities. Stormwater and recycling presentations were conducted at several City events and BMP guides and givewaway items were provided to residents. Included in the BMP guides were pollution prevention tips for car washing, less toxic yard and garden care, pet waste cleanup, recycling, and proper care and disposal of motor oil.

These outreach efforts covered several high TTWQ activities including manure and pet waste management, vehicle maintenance, home care maintenance, home and garden care activities, and product use, and automobile washing. Details on the education and outreach provided at City events are included in Section 8 of this Annual JURMP report.

6.3 Best Management Practice Requirements.

During the reporting period, the City did not modify its Best Management Requirements (2008 JURMP).

6.4 Program Implementation

6.4.1 Best Management Practices

Stormwater Complaint Investigations

Stormwater complaint response is one method used to disseminate educational and BMP information throughout residential areas. Most often, BMPs are required as a result of enforcement efforts conducted during complaint investigations. In the event a BMP or other stormwater violation is observed, City staff typically discusses BMP options with the responsible

party in selecting an appropriate corrective action. BMP implementation is verified in the field prior to closing any complaint case. During the reporting period, City staff investigated 36 residential complaints. A summary of all FY 10-11 residential complaint cases is included in Appendix D-4. Storm water investigations were conducted by City Water Quality Protection Program staff mainly through public complaints or notifications from City field staff (pro-active enforcement).

Education

During stormwater complaint investigations, City staff provided pollution prevention brochures to residents to guide them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods that are consistent with the City's BMP requirements. These brochures included the following:

- Motor Oil
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- General Help brochure
- Do More Don't Ignore (A Citizen's Guide for reporting sewer and storm drain incidents)

During the reporting period, the City held several community events informing residents of the City's BMP requirements. Stormwater and recycling presentations were conducted and various BMP brochures and giveaway items geared towards residential activities were made available to residents. Details on the community events are covered in Section 8 (Education) of this JURMP Annual Report. The City also holds an annual Citizens Academy where members of the public can learn about the different City departments; on the Engineering Department evening, the City's Water Quality Protection Program was discussed.

The City also operated its website during the reporting period (www.cityofvista.com) providing various pollution prevention tips for homeowners. These tips are consistent with the City's BMP requirements and include the following:

- Cleanup after your pets
- Care for your cars
- Sweep or rake yard waste and debris, do not hose them into the street.
- Reduce use of landscape chemicals
- Control erosion
- Plant natives
- Buy non-toxic products
- Integrated Pest Management tip cards for ants, aphids, cockroaches, earwigs, fleas, and good bugs.

Household Hazardous Waste Collection Center

The City of Vista continued to provide its residents with a household hazardous waste (HHW) collection facility at the Auxiliary Corporation Yard at 1145 East Taylor Street, as well as the option of HHW curbside pickup. The facility is open to Vista residents and operates every Saturday from 9:00 am to 3:00 pm. Residents may dispose of a variety of wastes including paints, chemicals, u-wastes, e-wastes, automotive wastes, home generated sharps, and pharmaceutical wastes. The City's curbside pickup program offers free door-to-door collection services to citizens 65 or older and to households possessing a registered handicap placard.

During the reporting period, education and outreach played a major role in promoting the HHW collection facility and facilitating the proper disposal of HHW. Educational brochures on HHW disposal were provided for distribution at several City facilities visited regularly by the public including the City Hall, City Public Works, and City Engineering lobbies. Community events also provided opportunities for the City to provide education and outreach on HHW disposal. At event booths, City staff conducted water quality presentations that included discussions on how to properly dispose of HHW. HHW literature and promotional items were also made available to the general public at events. The City's website (www.cityofvista.com) also contains information on HHW disposal.

As summarized in Table 6.4, the HHW facility reported collecting a total of 510,363 lbs of HHW disposed of by Vista residents including volumes from curbside pickup. Information on the types and amounts of HHW that were disposed of is included in Appendix E-1.

Used Oil and Filter Collection Programs

The City also offers residents other options for disposing of used oil, filters, and other oil products. At certified used oil collection centers (CCC) and used oil filter collection events, residents may dispose of used oil, filters, and other oil products. Table 6.3 includes a list of certified used oil collection centers that operated during the reporting period. These services are often free to Vista residents from funding provided through the City's Used Oil Block Grant (UBG). During the reporting period, the City used funds from its Cycle 15 UBG to implement these services. The City typically uses contractor services to implement several UBG program activities.

To facilitate the Used Oil and Filter Collection Programs, the City continued its contract with the Solana Center for Environmental Innovation. Solana Center efforts consisted of actively reaching out to Vista residents to educate and inform them about used motor oil and oil filter recycling and working with collection centers to best manage the used oil and wastes. This included but was not limited to providing education and outreach at City community events and conducting quarterly surveys at CCC using the results to assist CCC in managing their Used Oil Recycling Programs.

As detailed in Table 6.4, a total of 23,550 gallons of used oil were disposed of at the CCC during the reporting period. This volume is estimated using results from quarterly CCC surveys and based on the volume of used oil disposed of by Do-It-Yourselfers through the Used Oil Program. Do-It-Yourselfers include residents who change oil in their own vehicles and subsequently bring the used oil to the CCC for recycling. The volumes do not account for customers who bring in their vehicles to a CCC for oil changes and other maintenance.

During the Vista Rod Run event held in August 2010, Solana Center staff provided education and outreach to residents regarding household hazardous waste disposal, used oil recycling, less toxic yard and garden care, pet waste cleanup, and recycling. More Information on this event is included in the Education section of this Annual JURMP report (Section 8).

Table 6.3 City of Vista Certified Used Oil Collection Centers

Certified Collection Center	Address
Kragen Auto Parts	1250 S. Santa Fe Avenue
Autozone #2819	1410 N. Santa Fe Avenue
Autozone #5679	573 W. Vista Way
O'Reilly Auto Parts	1220 E. Vista Way
Jiffy Lube	1231 E. Vista Way
Masterlube #105	243 Sycamore Avenue
EZLube	786 E. Vista Way
Pep Boys #1410	865 E. Vista Way
Firestone Complete Auto Cares	1762 University Drive
North County Ford	450 W. Vista Way
North County Import Specialist	1215 N. Melrose Drive
Express Tires	2030 Hacienda Drive
Santa Fe Auto Repair	1045 N. Santa Fe Avenue

Table 6.4 Total Amount of Disposed Household Hazardous Wastes

Facility or Activity	Amount of Hazardous Waste Disposed of (excluding motor oil, and oil products)	Amount of Used Oil and filters Disposed of	Total
Household Hazardous Waste Collection Center	493,058 lbs	17,305 lbs	510,363 lbs
Used Oil Collection Centers	N/A	23,550 gals	23,550 gals

6.4.2 Oversight and Enforcement

Evaluation of Oversight Methods

During the reporting period, the City of Vista continued with its preliminary steps to evaluate the methods used for oversight of residential areas and activities. The City determined that one important approach in evaluating the City's oversight methods is to first identify what the prevalent sources of pollutants are in residential areas and where they are located throughout the City.

Using complaint information compiled from the last three fiscal years (FY 07-08, 08-09, and 09-10) the City conducted a preliminary assessment of complaint data by analyzing pollutant, hydrologic area, and location information. In section 6.2 (Source Characterization) the City compiled statistics on five major pollutant source types including spills, washing, sediment, trash and debris, and over-irrigation. Those results indicated the percentages of each pollutant source revealing the most prevalent, but information on location and hydrologic area had not been compiled to date. Also, in this preliminary assessment, additional pollutants were included in the analysis. These pollutants included the following:

- Automotive fluids, construction waste, paint, pet waste, pool water, potable water, sediment, sediment/trash, sewage, trash, vegetation, vegetation/sediment, vegetation/trash, water and categories for none and other.

This assessment revealed useful information pertaining to the geographical location of complaint investigations and pollutants identified. The results indicated that the majority of the cases investigated were located in Buena Vista Creek Watershed (>75%). A smaller portion of the cases were situated in the southern half of the City lying in Agua Hedionda Watershed (10%), while Loma Alta and San Luis Rey watersheds contained the remaining cases (5 %

total). The most prevalent pollutants were found to be sediment, automotive fluids, trash, and sewage - with the majority of cases involving sediment.

The City may use results from this study to determine new approaches to maintain and potentially increase its effectiveness in oversight of residential areas. This may include providing additional oversight in the Buena Vista Creek watershed provided the necessary resources are available. This could translate into more drive by inspections in the Watershed during ongoing investigations that may be occurring in the area at the time. Within the watershed, particular attention could be directed to areas where there may be potential for sediment runoff including denuded hill sides, to give one example. Other approaches may be developed as additional assessments and analyses are conducted on complaint data.

Enforcement at Residential Sites

A total of 36 complaint cases involving residential sites were investigated by WQPP staff during the reporting period. This amounted to approximately 30% of all complaint cases investigated during FY 10-11 (118 Total). Of the 36 reported complaints, all were confirmed by staff in the field. Figure 6.2 indicates the percentages of each violation type (reported) with Illegal discharges being the most prevalent (67% of all reported cases). City staff also responded to reports involving BMP violations (11%) and private lateral and septic spills (11%). No illicit connections were reported or discovered during the reporting period. Of the 36 confirmed complaint cases, City staff conducted enforcement actions in all of these cases rendering 26 verbal warnings and ten notices of violations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. A summary of enforcement actions implemented in residential complaint cases is included in Appendix E-2. The City verified that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected).

Figure 6.2 Residential Stormwater Violation Types FY 10-11

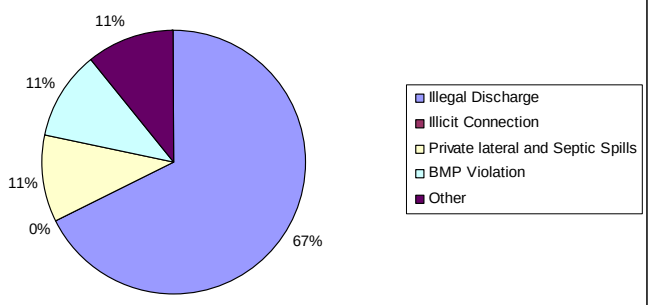

6.5 Regional Residential Education Program

The Education and Residential Sources Workgroup (ERSW) is tasked with implementing the Regional Residential Education Program. The program, which was developed to comply with the Municipal Stormwater Permit (Order 2007-0001), focuses on implementing a variety of educational activities that would target all residential audiences and be effective in reducing urban runoff pollution. During the reporting period, the City of Vista took part in developing and implementing FY 10-11 ERSW activities by attending and participating in ERSW meetings. These efforts will be reported in the Regional Urban Runoff Management Program Annual Report due for submittal in January 2012.

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

In accordance with Addendum No. 2 to Order No. R9-2007-0001, the City of Vista is submitting Section 7.0 as one report separate from the JURMP Annual Report, submitted in September 2011. Section 7.0, the Illicit Discharge Detection and Elimination Component will be submitted under separate cover no later than December 15, 2011.

8.0 Education Component

8.1 Introduction

Education is an important tool the City uses to improve water quality and it is a requirement in the City's Municipal Storm Water Permit (Order No. 2007-0001). The City developed an education program in its JURMP which addresses education for multiple target audiences. These audiences include municipal staff, new development and construction communities, industrial and commercial business owners and operators, residents, general public, and school children. The City provides education and outreach to these communities to increase their awareness of pollution prevention and to comply with the Permit. During the reporting period the City conducted several education and outreach efforts for these audiences.

Per the permit, the City is required to implement an education program using all appropriate media and targeting specific communities. Table 8.1 provides an overview of the target communities and the applicable section and table numbers specific to those communities.

Table 8.1 FY 2010-11 Outreach Efforts with Target Communities

No.	Compliance Item	Outcome Level	Assessment Method	Section/Appendix
1	A description of education efforts conducted for each target community.	1	Confirmation	Section 8.2 Section 8.3
2	A description of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.	1	Confirmation	Section 8.3.1
3	A description of education efforts conducted for municipal departments and personnel.	1	Confirmation	Section 8.2 Table 8.2
4	A description of education efforts conducted for the new development and construction communities.	1	Confirmation	Section 8.3.2
5	A description of jurisdictional education efforts conducted for residents, the general public, and school children.	1	Confirmation	Section 8.3.3 Tables 8.3 & 8.4

8.2 Staff Training Element

Personnel from various Municipal departments were trained on stormwater topics during the reporting period. These topics included general information from the City's JURMP and Municipal Storm Water Permit, program wide BMP requirements, BMPs specific to their activities, and instructions to detect, eliminate, and report illegal discharges. Municipal staff training for FY 2010-11 is summarized below in Table 8.2. Staff meetings are held every two weeks, during which time topics are reviewed and discussed including, industrial/commercial inspections, complaints, outreach & education, and watershed issues; these meetings serve as excellent training venues in that ideas are exchanged and discussed, often resulting is clarity around a given topic and refinement of internal procedures and policies. Water quality protection was also addressed quarterly in each edition of the Spotlight on Vista newsletter during the year. The Water Quality Protection Program also developed a Water Quality newsletter in the spring of 2010 which was distributed to all City employees. These are included in Appendix G-1

Table 8.2 FY 2010-11 Municipal Staff Training

Workshop/Training	Audience	#	Location	Host	Date
Water Quality Training	Fire Department Staff	29	Fire Station #5	City of Vista Water Quality Manager	07/20/10
Water Quality Training	Fire Department Staff	20	Fire Station #5	City of Vista Water Quality Manager	07/26/10
Water Quality Training	Fire Department Staff	19	Fire Station #5	City of Vista Water Quality Manager	07/27/10
Cal/EPA Basic Inspector Academy	Stormwater Staff	2	Vista City Hall	BIA	09/13 –16 2010
Construction Rainy Day Season Workshop	Engineering, Stormwater, and Construction Inspection Staff	10	Vista City Hall	City of Vista Water Quality Manager	09/30/10
Stormwater Inspector Training	Stormwater Staff	1	Kearney Mesa	NPDES	01/11 –12/ 2011
Hazwoper 8 hour Refresher Course	Stormwater Staff	1	San Diego	Pacific Safety Council	02/17/11
Stormwater Training – FOG Training	Stormwater Staff	4	Vista City Hall	Orange County DVD	02/28/11
Stormwater Training – Construction BMPs	Engineering, Planning, & Stormwater Staff	13	Vista City Hall	Doug Coppi	03/16/11
Occupational Dog Bite Prevention	Stormwater Staff	2	Vista Irrigation District	Mitzi Robinson	04/18 –19 2011
CA Construction General Permit Training	Stormwater and Engineering Staff	4	Vista City Hall	URS	05/09 –11 2011
Stormwater Training – Manhole Dolly Operation	Stormwater Staff	3	City Hall	Doug Coppi	06/094/11
TOTAL NUMBER OF STAFF TRAINED –		**108**			

8.3 Educational Outreach Element

Staff attended meetings of the Regional Education and Residential Sources Workgroup. Workshop topics included partnership development, regional branding, regional website, and mass media campaign development and implementation.

8.3.1 Description of How Education Efforts Targeted Underserved Target Audiences, High Risk Behaviors, And "Allowable" Behaviors and Dischargers

During the reporting period the City conducted education and outreach efforts that targeted high risk behaviors and "undeserved" communities. The City held several community events which provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors areas. The events are summarized in Table 8.3. Brochures and items promoting the City's Household Hazardous Waste (HHW) and Used Oil Collection Programs were distributed along with BMP guides for car washing, less toxic yard and garden care, pet waste cleanup, and recycling. The North County HHW Facility is located in Vista. To better serve the region, the City developed a HHW informational card in Spanish and English, providing general HHW outreach to North County residents. The card is included in Appendix G-2. The events were equally successful in providing outreach to Spanish communities as

several brochures and promotional items were available in Spanish. The Regionally developed Think Blue Calendars were published in Spanish for 2011 and distributed throughout the City. Volunteers, City contractors, and personnel who were present at event booths conducted water quality presentations and were available to answer questions about the City's Water Quality Protection program.

During the reporting period, City staff provided education and outreach to the community regarding many "allowable" behaviors and discharges. Through City investigations, City staff educated responsible parties on the importance of best management practices to prevent and/or reduce pollutant runoff. City staff conducted several stormwater investigations involving allowable discharges, such as: over-irrigation, swimming pool discharges, residential car washing, and groundwater. In each incident, City staff recommended appropriate BMPs and educated the responsible party on the importance of maintaining BMPs to prevent further discharges of pollutants. BMP guides were also provided to the responsible parties.

The Stormwater Department developed a two page June 2011 newsletter which covered the following topics: definition of a watershed, water conservation tips, water pollution tips, and information regarding the City's Household hazardous Waste facility.

A storm water article was included in the City's Fall 2010 newsletter (Inside Vista) which discussed water quality and conservation, including potential pollution effects on local creeks, lagoons, and the ocean. The newsletter was sent to 36,000 residences. The article explained the pathway from storm drains to the ocean and provided pollution tips, irrigation tips, pet waste tips, and used oil recycling tips. This edition of the Inside Vista Newsletter is included in Appendix G-3.

The City's website is a valuable resource that provides pollution prevention tips in several categories of "allowable" behaviors and discharges. During the year, the City added a new webpage dedicated to Used Oil pollution and recycling information, which include operations information for the City's Household Hazardous Waste Facility. The section, Stormwater Pollution Prevention Tips for Homeowners, provides information on composting, buying organic or non-toxic products, native plants, and water conservation. Also available on the City's website are instructions and BMPs for how to control pests in and around your home. The City continues to advertise its website on various printed materials including the City's Newsletter. The website is available in both English and Spanish.

8.3.2 Description Of Education Efforts Conducted For The New Development And Construction Communities

Education efforts for the new development and construction communities continued during FY 2010-11 reporting period. Education efforts consisted of individual interactions with contractors and/or developers and City staff through counter interaction, attendance at all pre-construction meetings, and construction site inspections. The City's Engineering (includes stormwater and inspection divisions) and Planning department staffs were primarily responsible for communicating information to the new development and construction communities about the City's Water Quality Protection Program. At each pre-construction meeting, stormwater staff, provided a synopsis of the City's program and discussed the City's BMP requirements. City staff conducted 22 pre-construction meetings during the reporting period. Additionally, construction BMP brochures were distributed upon issuance of building permits. A Construction Rainy Day Workshop was held for municipal staff and developers on September 30, 2010.

Through municipal staff training conducted throughout FY 2010-11 (refer to the staff training element, section 8.2), City staff learned about the new BMP requirements in the City's JURMP and communicated this information to contractors and developers. City staff also had access to and referenced the City's Stormwater Ordinance (Municipal Code, Chapter 13.18 Stormwater Management and Discharge Control Program) and Stormwater Standards Manual in their dealings with contractors and developers.

Prior to the rainy season City inspectors hand delivered letters to contractors and developers at all construction sites reminding them of the City's BMP requirements. Approximately 42 letters were distributed.

8.3.3 Education Efforts Conducted For Residents, The General Public, And School Children

The City conducted substantial education and outreach efforts to residents, the general public, and school children during FY 2010-11 reporting period.

Residents and the General Public

Community events provided opportunities for the City to conduct education and outreach efforts regarding its Water Quality Protection Program. A summary of the events is provided in Table 8.3. The City holds an annual Citizens Academy where members of the public can learn about the different City departments; on the Engineering Department evening, the City's Water Quality Protection Program was discussed. At some event booths, staff conducted watershed presentations using its EnviroScape Model. Using this three dimensional model, City staff can demonstrate the adverse affects of storm water runoff in a watershed; it continues to be a very effective visual tool in educating the community, especially children. These events also provided a classroom atmosphere in which residents and the general public could ask questions and receive answers about various aspects of the City's program.

Table 8.3 Educational Events

Date	Event	Estimated Attendance
07/31-08/01	Vista Rod Run	~15,500
09/25/10	Coastal Creek Clean Up	166
10/09/2010	Alta Vista Gardens Fall Festival	250
12/15/10	City of Vista Day without a Bag Conference	800
01/25/10	Kids Conference on Watersheds	250
02/90/11	San Diego County High Tech Fair	2,400
04/23/11	Alta Vista Gardens Earth Day	750
05/29/11	City of Vista Strawberry Festival	~40,000
06/17/11	Passport to Vista	500

City staff provided considerable education and outreach to residents, businesses, and the general public during storm water enforcement efforts. Enforcement efforts were generated from drive by observations made in the field (proactive enforcement) and through reported incidents. Proactive enforcement continues to be a significant mechanism the City uses to regulate and educate residents and the general public. Through various enforcement mechanisms including verbal and written warnings (Letters and Notice of Violations) City staff consistently educated residents on BMP requirements and the importance of pollution prevention. City staff also provided various storm water BMP brochures and referred residents to the City's Municipal Code and Stormwater Standards Manual listed on the City's website.

The City used other mechanisms to provide education and outreach to residents and the general public during the reporting period. The City included a storm water article in the City's Fall 2010 Newsletter that contained information on water quality and pollution effects on local creeks, lagoons, and the ocean; water quality articles were also included in several issues of the municipal *Spotlight* newsletter (Appendix G-1). The City continued to operate its Storm Water Hotline number (760) 726-1340, x1686; the City received 12 stormwater reports from residents and the general public. The City lists the hotline number on its website and includes it in other printed materials including City Newsletter articles. The City's website (www.cityofvista.com) is an important source that residents and the general public may use to learn more about the City's Pollution Prevention program. It contains comprehensive information of all aspects of the City's Program and includes links to the City' Municipal Code, Stormwater Standards Manual, and various BMP guides and booklets. Printed educational brochures were provided for distribution at several City facilities visited regularly by the public including City Hall, City Public Works and Engineering lobbies.

School Children

The City continued its education and outreach efforts to schools during the reporting period. For educational outreach to elementary and middle school students, the City contracted with San Diego County Office of Education (SDCOE) to provide two programs. The first, the Splash Lab program is available to grades 4-6. And the second, the Green Machine program is available for grades K-4. During the 2010-11 academic year, Splash Lab reached 955 students at 9 schools, plus one summer camp group. A press release was published in local media providing information on the Splash Lab, see Appendix G-4. The Green machine reached 261 students at three schools. The Splash Lab is a completely self-contained mobile laboratory that brings simulated environmental conditions to school sites; this program enables schools with limited funding and schools within disadvantaged communities to have easy access to water science education. The presentations provide an interactive opportunity to children to learn about stormwater, water quality, bioassessment, watersheds, pollution, and best management practices. The Green Machine is a hands-on interactive learning program that includes a soils research station (complete with live earthworms), an integrated pest management station, a water cycle station, and comprehensive teacher packets complete with pre and post Green Machine activities. Splash Lab pre- and post surveys were administered to all of the schoolchildren. Pre-surveys were given prior to the students' participation and post tests were generally given the following week in the classroom. In total, 570 pre-surveys and 552 post-surveys were received back from eight schools. On average, scores on the pre-test were 58%. The average scores on the post test were 78%, showing an increase in knowledge through the program. Additionally, classroom presentations were conducted at a local high school, which reached 120 students. The presentations provided education about oil development processes, refined oil uses, the affects of oil on the environment, oil recycling options, local household hazard waste facility, and oil pollution and the water cycle.

The City staffed an education and outreach booth on Coastal Cleanup Day, September 25, 2010, at the City's Buena Creek cleanup site. Educational materials for over 100 elementary through high school were distributed including Environmental Protection Agency (EPA) and National Oceanic and Atmosphere Administration (NOAA) produced activity books. All together, over 200 of the following activity books were distributed: 1) NOAA's *Understanding Marine Debris*, 2) EPA's *What's Up with Our Nation's Waters?*, 3) EPA's *Trash and Climate Change*, 4) California Department of Conservation's *Recycle Rex*, 5) California State Water Resources Control Board's *Pest or Pal? All about bugs*, and 6) EPA's *Stormwater Runoff Challenge* crossword puzzle. The City also distributed over 250 brochures and informational sheets

regarding a variety of topics (water quality and conservation, recycling, pollution, etc.), including Integrated Pest Management information cards in English and Spanish.

8.3.4 Education Efforts Conducted for Industrial/Commercial Businesses

The City conducted education and outreach efforts at certain stationary industrial and commercial facilities during this reporting period. Through the City's required annual inspections of stationary industrial and commercial facilities, facility representatives were educated on the City's storm water requirements. During each inspection, City staff introduced the storm water program and provided educational materials specific to the business. Table 8.4 summarizes the educational materials distributed to stationary facilities. Before beginning the inspection process, the City prepared and mailed a letter to all businesses selected for inspection. The letter provided general information about the program, informed each business owner of the upcoming inspection, and provided multiple pollution prevention methods consistent with the City's BMP requirements. In addition, the City provided site and activity specific BMP information to all businesses on its inventory during FY10-11 via mailers and/or inspections.

Table 8.4 Educational Materials Distributed to Stationary Facilities

Educational Material	Number Distributed
Copy of City Authorization Letter	16
Automotive Poster	11
What's Cookin' – English	39
What's Cookin' – Spanish	18
Green Wrench Guide – English	23
Green Wrench Guide – Spanish	9
Conditional Waiver No. 4 Information	1
Industrial/Commercial Brochure	78
NONA / NEC Paperwork	3
NOI Handout	4
Grease Bin Handout	9
FOG Brochure	62
FOG Poster	63
FOG Record Keeping Templates	68
Inspection Notification Letter	289
Total # of Educational Materials	**693**

The City also undertook outreach measures to educate new business owners re BMP requirements. For new stationary facilities, 75 letters were sent out that included BMP requirements. For new mobile businesses, 59 letters were sent out. For commercial sites, the focus was on shopping centers with the highest potential to impact water quality; 28 sites were identified and educational letters containing activity specific BMP information were sent. Additionally, pre –rainy season letters were sent to 48 industrial sites containing required activities specific BMP information.

8.4 Notable Activities

The City administered a municipal survey (Appendix G-5) for use in 2010-11 touching on a variety of water quality topics. The City also distributed Household Hazardous Waste Information Cards (English/Spanish) to increase awareness of the City's Household Hazardous Waste Facility.

The City purchased 12 storm drain stencils during the reporting period to lend out to residents and businesses for their use. The stencils read “No Dumping Drains to Creek” with a picture of a fish. The City bought three of each of four different sizes (12 stencils all together) to accommodate the variety of curb sizes and box inlet types typically found at businesses. The City advises residents and businesses regarding appropriate paint colors. Several businesses borrowed the stencils during the reporting period.

The Regional Co-Permittee group worked with Think Blue to develop a regional calendar in Spanish for 2011. The City distributed copies of the calendars to a variety of target audiences including, schools, libraries, city facilities, and residents.

The City undertook outreach measures in preparation for the rainy season. Outreach efforts to residents included rainy season information in a local homeowners association newsletter, a repeating powerpoint slide at City Council meetings, media releases, and website updates. For commercial sites, the focus was on shopping centers with the highest potential to impact water quality; 28 sites were identified and educational letters containing activity specific BMP information were sent. Additionally, pre –rainy season letters were sent to 48 industrial sites containing required activities specific BMP information.

To measure changes in water quality knowledge over time, the City developed a municipal survey in 2009, included as Appendix G-5. This survey was administered in June of 2010 and again in June of 2011; 83 people responded to the 2011 survey and 136 responded to the 2010 survey. After comparing the surveys results, staff found that there was a 10 percent increase in knowledge regarding the definition of a watershed, a 24 percent increase in understanding of the consequences of leaving pet waste on the ground, and a 15 percent increase in knowledge of types and origins of pollution into our creeks and water bodies. The survey results assisted staff in determining which topical areas to focus on for municipal education during 2011-2012.

An email address created in 2008-2009 continues to facilitate communication between the public and the City’s water quality protection program; the email address is waterquality@cityofvista.com.

9.0 Public Participation Component

9.1 Introduction

During the reporting period, the City continued with its implementation of the Public Participation Component of the City's JURMP. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms.

The public participation component is largely linked to the City's education component. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Also, as residents become aware of the City's program goals they are more apt to provide their perspectives, comments, and suggestions.

9.2 Mechanisms

9.2.1 Public Notifications

The City of Vista provides advanced notice to the public via the website for projects requiring City Council approval. The public has an opportunity to comment on any City project during the Council meetings.

9.2.2 Programs, Community Events, and Educational Activities

Household Hazardous Waste and Used Oil Collection Programs

During the reporting period the City continued to operate its household hazardous waste and used oil collection programs. These programs enable the public to properly dispose of used oil and hazardous wastes. Several services offered in the Used Oil Collection Program were free to City of Vista Residents. The City also sponsored two used oil filter exchange events during the reporting period. These events allowed citizens the opportunity to exchange used oil filters for new ones and drop off any used oil at the collection center. Oil pans and rags were provided to residents at these events. By making these programs available and encouraging the public to properly dispose of these materials, it is expected that less illegally disposed materials end up in receiving waters.

Community Events

During the reporting period several community events were held in the City of Vista that encouraged participation from the public. These events are included in Table 8.3 of Section 8.0 – Education Component. At event booths water quality presentations were conducted and promotional items were distributed to the public. This setting can create a classroom atmosphere that facilitates discussions about aspects of the City's pollution prevention program including watershed management and pollution prevention. It also provides a mechanism for residents to provide comments and suggestions that may assist the City in its program implementation efforts.

Educating Residents and the General Public

City staff provided education and outreach on pollution prevention during stormwater investigations. Several investigations were conducted at residential and commercial sites during the reporting period (See Sections 5.0 and 6.0). One aspect of the City's enforcement

procedure is to provide education and outreach so that responsible parties learn about the importance of pollution prevention in preserving water quality. City staff introduces the City's storm water program and explains the importance of implementing appropriate BMPs to preserve water quality in the City's receiving waters. Educational materials are distributed which serve as tools for managing urban runoff. Through these education and outreach efforts, it is expected that improvements will be made in managing urban runoff.

Educating School Children

Educating school children plays a significant role in the City's execution of its Public Participation component. During the reporting period, classroom presentations were conducted reaching 1,216 students via the "Splash Lab" and "Green Machine" programs as discussed in Section 8.3. The presentations provide interactive opportunities for children to learn about stormwater, water quality, water cycle, bioassessment, watersheds, pollution, a soils research station, an integrated pest management station, and best management practices. Additionally, classroom presentations were conducted at a local high school, which reached 120 students. The presentations provided education about oil development processes, refined oil uses, the affects of oil on the environment, oil recycling options, local household hazard waste facility, and oil pollution and the water cycle.

9.2.3 Watershed

The City is an active participant in both the Carlsbad and San Luis Rey River Watershed groups. This includes participation in the Carlsbad Watershed Network (CWN), comprised of a variety of stakeholders including representatives from other municipalities in the watershed, environmental organizations, conservancies, the Regional Water Quality Control Board, and other members of the public. During the reporting period, City staff attended monthly meetings for both watersheds.

During FY 2006-07, the City of Vista was awarded a $500,000 Proposition 40 Grant from the State Water Board to develop a watershed management plan for Agua Hedionda Watershed. The Agua Hedionda Watershed Management Plan was finalized and adopted by City Council during FY 2008-09. During FY 2009-10, the City launched the preliminary design phase for one of the restoration projects (SR-02) identified in the Watershed Management Plan; a preliminary design report was completed during FY 201/11. The City is actively pursuing grant funding to finalize design and construct the project. In the future this project is expected to promote public participation through the design and permitting process and ultimately through interactive educational opportunities in Buena Vista Park when the project is complete.

On January 26, 2010 a contract was awarded by City Council for construction of the Buena Vista Creek Walk project. The project provides creek stabilization, recreational opportunities, rest areas, and trash/recycling receptacles in the Buena Vista Watershed. The project construction was completed during FY 2010-11.

9.2.4 Other Mechanisms

Stormwater Hotline/Other Contact Information

The City continued to operate its Stormwater Hotline (760-726-1340 x1686) for English and Spanish speaking residents during the reporting period. The City encourages residents to call the stormwater hotline to report any observed illicit connections, illegal discharges, or other activity that may contribute pollutants to the City's storm drain system. The City advertises the Stormwater Hotline on various educational materials and the City's website. A total of 12 stormwater reports via the hotline number were received by City Staff during the reporting

period; an additional 16 were received via direct calls to the main City number. These will be included with submittal of the Illicit Discharge Detection and Elimination Section under separate cover, due December 15, 2011.

The City also posts City departmental phone numbers on the City's website and on educational materials. These departments include Public Works, Community Development, and Engineering. Additionally, the City encourages residents to email stormwater concerns at: waterquality@cityofvista.com. A total of four stormwater reports were received via email during the reporting period.

Website
During the reporting period, the City continued to use its website to provide stormwater information to the public, including hotline information and access to printed materials. The website is available in English and Spanish.

9.3 Notable Activities

The email address created in 2008-09, waterquality@cityofvista.com, which citizens can use to report stormwater concerns, was added to a number of the City's outreach materials. The City's website was also improved to include a translation to Spanish to facilitate communication with the Hispanic Community in Vista.

10.0 Fiscal Analysis Component

10.1 Introduction

The Standardized Fiscal Analysis Method and Format (Fiscal Analysis Method) was collaboratively developed and adopted by the Copermittees in January 2009 in accordance with Sections G, J.1.a(3)(k), and J.1.c(1)(d) of NPDES Order No. R9-2007-0001. The Fiscal Analysis Method document was submitted to the San Diego RWQCB by January 31, 2009, as Attachment 1 of the Regional Urban Runoff Management Plan (RURMP) Annual Report for FY 2007-08. In this Annual Report, the Standardized Method for reporting budgets was utilized. The Standardized Method allows for categorization of expenditures by permit component.

10.2 General Budget Information

The City's Jurisdictional Urban Runoff Management Program is funded through the City's Sewer Enterprise fund and is typically based on a two-year budgeting cycle. However, due to current economic conditions, the budgeting cycle has been revisited and is now performed annually. The City continues to pursue and utilize funding from grant sources. Some of the education activities are funded through the Used Oil Block Grant and Department of Conservation Recycling Grant. The City will also pursue other State Funds as part of watershed collaboration efforts as available.

10.3 Fiscal Analysis Methods

The City participated in the regional efforts to develop standards for Fiscal Reporting with other Copermittees. Currently, in conformance with the Regional Standards, the individual jurisdictional components are tracked, as well as watershed and regional expenditures. The City has performed the analysis according to the Standardized Fiscal Analysis Method for FY 2010-11. Table 10.1 below contains results of this analysis for FY 2010-11.

10.4 Fiscal Analysis Results – Standardized Fiscal Analysis Method

Table 10.1 Stormwater Budget Summary by Component FY 2010-11

EXPENDITURE SUMMARY

JURISDICTIONAL COMPONENTS		
ADMINISTRATION	$	60,849
DEVELOPMENT PLANNING	$	76,650
CONSTRUCTION	$	69,515
MUNICIPAL	$	2,015,384
INDUSTRIAL AND COMMERCIAL	$	97,185
RESIDENTIAL	$	8,011
IDDE	$	111,871
EDUCATION	$	30,482
PUBLIC PARTICIPATION	$	-
SPECIAL INVESTIGATIONS	$	55,463
NON-EMERGENCY FIREFIGHTING	$	-
Jurisdictional Total	$	2,525,410

WATERSHED		
Carlsbad	$	30,053
San Luis Rey	$	26,290
Watershed Total	$	56,343

REGIONAL		
Copermitttee Cost Share of Regional Budget	$	84,060
Regional Total	$	84,060

TOTAL COST	***$***	***2,665,813***

*Includes staff in Water Quality Protection Program, Planning, Development, Construction, Building, Parks, Public Works Maintenance, and Administrative staff implementing storm water requirements within their work units.

10.4.1 Funding Sources

The City's Water Quality Protection Program is funded nearly 100% by enterprise funds. These funds are generated from sewer utilities within the City of Vista and the Buena Sanitation District. Approximately 80% of the Program is funded by the City sewer enterprise fund and the remaining 20% is funded by the Buena Sanitation District sewer enterprise fund. The program is supported by a Used Oil Block Grant and a Department of Conservation Recycling Grant as well. The City received approximately $35,000 during FY 2010-11, which was used to support the program's outreach and education activities, as well as the City's recycling program, and household hazardous waste collection programs.

Table 10.2 illustrates a summary of the Funding Sources for the program.

Table 10.2 Summary of Funding Sources

FUNDING BY SOURCE		
GENERAL FUND	$	-
STORMWATER FEE	$	-
PERMIT FEES	$	-
DEVELOPER DEPOSITS AND FEES	$	-
REGISTRATION AND INSPECTION FEES	$	-
FLOOD CONTROL FEES	$	-
FRANCHISE FEES	$	-
GAS TAX	$	-
UTILITY TAX	$	-
ROAD FUND	$	-
ENTERPRISE FUNDS	$	2,630,916
TRUST FUNDS	$	-
SPECIAL ASSESSMENT DISTRICTS	$	-
STATE APPROPRIATED FUNDS	$	-
GRANT FUNDS	$	-
OTHER	$	-
TOTAL	$	2,630,916

ONE-TIME FUNDING		
GRANTS	$	34,897
TOTAL	$	34,897

TOTAL FUNDING	$	2,665,813

11.0 Effectiveness Assessment Component

The following section describes the City's annual assessment of the effectiveness of its Jurisdictional Urban Runoff Management Program (JURMP) (Permit sections I.1 and J.1.a.(1)(l)).

11.1 Introduction

The requirements of the Municipal Storm Water Permit (Permit) specify that the City shall annually assess the effectiveness of its JURMP implementation. At a minimum, the assessment shall assess the effectiveness of each Significant Activity or BMP implemented, implementation of each major permit component (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination, and Education), and the overall JURMP. This section outlines the assessment that the City uses to assess the effectiveness of its efforts at improving surface water quality.

Assessment of the JURMP is a joint activity between multiple departments of the City. Assessment measures and methods will be based on assessment tables that list the Permit required activities, targeted outcomes, assessment methods, and assessment measures. Assessment tables are included within each Permit component section of this Annual Report.

The City assesses its JURMP based on the framework set out in the San Diego Municipal Stormwater Copermittee document *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*. Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts to maximize resources. Like most management programs, the City uses assessment as part of an iterative feedback loop involving (1) Planning, (2) Implementation, and (3) Assessment.

The City also assesses the effectiveness of its JURMP in addressing the constituents of concern (COCs) determined from dry weather, MS4, and §303(d) listed constituents, other monitoring programs, and best professional judgment. Where feasible, areas of the Permit that apply to the COCs may be identified and additional data may be collected for these activities. Additionally, scientific literature may be used to help supplement information for the applicable activities.

The City may also determine if re-allocation of resources is necessary to optimize pollutant reduction. During the annual program review, the City attempts to evaluate whether measurable targeted outcomes, assessment measures, and assessment methods adequately target COCs or management questions. Where it is found that assessment data are difficult to obtain, or do not address the purpose of the activity; outcomes, measures, and methods may be adjusted as necessary.

11.2 Effectiveness Assessment Results

The City assessed implementation and effectiveness of individual Permit Components and of the JURMP as a whole and in doing so assessed individual activities and BMPs associated with each component. Where enough data exists, preliminary water quality assessments are also possible and explained below. Ideally, an integrated assessment is possible after examining program components, the overall program, and water quality. Where feasible, some conclusions were drawn and are further explained below.

11.2.1 Implementation Assessment

Compliance assessment for individual components was completed by comparing FY 2010-11 results to compliance tables developed following the Permit outline. The tables include targeted outcomes, assessment measures, and assessment methods. Results of individual component assessments can be found within each component section of the Annual Report. A brief summary of the compliance results is provided below.

Additionally, in an attempt to correlate permit components with water quality, a brief discussion of potential pollutant impacts is provided per component. This discussion is based on activities conducted that are related to the specific component.

Finally, the City strives to implement these programs effectively, but efficiently as well. Where it is possible, operational effectiveness pertaining to programmatic components is addressed.

11.2.1.1 Development Planning Component

The development planning component is focused on ensuring that all new development and redevelopment projects minimize impacts on water quality via implementation of all SUSMP, treatment control, and hydromodification requirements. During the reporting period, all projects underwent the urban runoff approval process, ensuring that SUSMP, treatment control, and HMP requirements were met. Additionally, systems are in place to track compliance related items for this component, ensuring that all inventories are kept up to date, all inspections are performed, and requirements are met for each site. Table 2.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2010-11. (Level 1)

In remaining compliant with Permit requirements, all sites incorporate LID into site design and include treatment control BMPs when applicable. Via the inspection program required for these BMPs, the City has gained a better perspective on the functionality of the BMPs. Four years of data have been collected pertaining to this component. In evaluating the program, the effectiveness is examined two ways. First, the number of maintenance deficiencies following each round of inspections is tabulated and compared. Second, the number of maintenance deficiencies is then compared to the certifications submitted annually.

Figure 11.1 illustrates the number of maintenance issues by BMP type for the first four years of the inspection program. During the first year (FY 2007-08), all inventoried BMPs were inspected. In subsequent years, sites were prioritized and inspected according to permit requirements and approximately 50% of the BMPs received inspections. To account for this difference, calculations were performed by BMP, not by project, and the data was normalized by the total number of BMPs inspected.

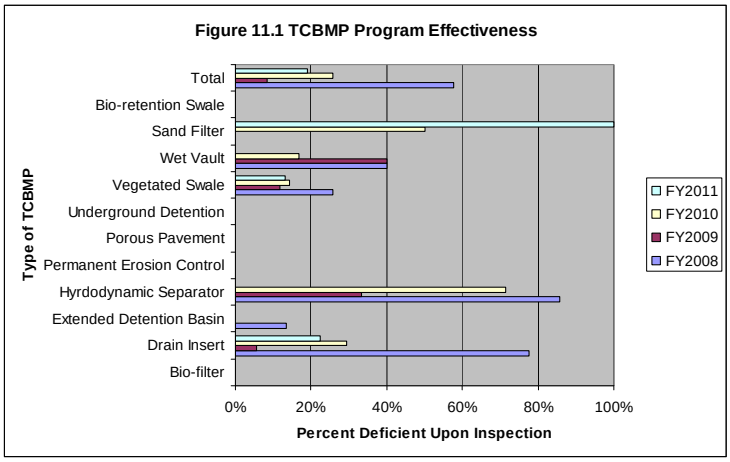

The figure illustrates that overall deficiencies have declined since the inception of the program. Based on percentage of BMPs with maintenance concerns noted during inspections, it appears that hydrodynamic separators have typically been maintained less than required in the past, although there were no deficiencies this year. BMPs with no bars on the graph are those that have had no maintenance concerns noted during annual inspections. These include bio-retention swales, underground detention systems, porous pavements, permanent erosion control, and bio-filters. Based on this data, it appears that the TCBMP program is working well using a combination of outreach, inspections, and enforcement.

At this time, preliminary assessments include:

- the inspection program has been effective in raising awareness (level 2) for those responsible for TCBMP maintenance,
- the inspection program has changed behavior positively (level 3) in that initially very few BMPs were maintained as designed and recently most BMPs were maintained effectively, and
- the program is effective in reducing pollutant loading from these sites. (level 4)

However, without empirical data to support the efficiency of the BMPs at removing different types of pollutants, it is not feasible to calculate reductions in pollutant loading at this time.

11.2.1.2 Construction Component

The construction component is focused on ensuring that all construction projects minimize impacts on water quality via implementation of all required BMPs. During the reporting period, all construction projects underwent the urban runoff approval process, ensuring that they were prioritized according to specific criteria and inspected accordingly. New systems were put in place during FY 2008-09 to track compliance related items for this component, ensuring that the construction inventory is updated continually, all inspections are performed at the required frequency, and BMP requirements are met for each site. Table 3.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1)

In order to evaluate which programmatic BMPs are effective in regulating construction sites, enforcement actions were compared to the total number of inspections and to the total number of preconstruction meetings attended by stormwater staff. Data suggests that lower enforcement numbers correlated best with stormwater staff's attendance at preconstruction

meetings. As has been the practice since 2005, stormwater staff will continue to attend all preconstruction meetings, providing one on one outreach and education to the development community that is specific to their job. This comparison illustrates a change in knowledge (Level 2) and a change in behavior (Level 3) in the construction community.

Water quality impacts related to the construction component focus mostly on sediment. The majority of BMPs implemented on construction sites are designed to limit the amount of sediment mobilized in stormwater, thereby limiting the quantities of sediment leaving the site during storm events. Inherent to increased compliance and BMP implementation are load reductions related to sediment. While it is believed that this is the case, as the BMPs are designed to retain sediment on-site, there is little data to support the hypothesis. Without site specific data, including baseline data where no BMPs are in place, it is not feasible to quantify a load reduction. However, anecdotally, and as indicated by compliance statistics, there are fewer problems related to sediment discharges on construction sites in recent years. (level 4)

11.2.1.3 Municipal Component

The municipal component is focused on ensuring that all municipal facilities and operations minimize impacts on water quality via implementation of all required BMPs. This component is broad in scope, covering programs including municipal staff training, inspections, street sweeping, MS4 cleaning, IPM implementation, and special events review and compliance. Each of these programs requires tracking of specific data for compliance purposes and for effectiveness assessments. Table 4.1 contains all of the compliance related information for this component.

Water quality impacts related to the municipal component are also diverse. City staff is involved in operations that may generate solids, nutrients, pesticides, oils and grease, and other pollutants. Additionally, through programs such as street sweeping and MS4 maintenance, large volumes of pollutants such as heavy metals and sediment are removed from the MS4, preventing the discharge of these loads during rain events. Education and outreach efforts are a key element to the municipal program. It is necessary to provide specific training to City staff involved in activities with the potential to release pollutants into the MS4.

In meeting the JURMP and Permit requirements to train municipal personnel, employees are provided specific information pertaining to their discipline. This training translates into an increase in knowledge across the City's workforce. However, in the past, measures have not been in place to directly track a change in this knowledge base. To measure changes in water quality knowledge over time, the City developed a municipal survey, included as Appendix G-5. This survey has been administered once per year for the past three fiscal years; numbers of responses varied from 136 people in 2009 to 83 people in 2011. After comparing the surveys results, indications are:

- There was a 10 percent increase in knowledge regarding the definition of a watershed,
- A 24 percent increase in understanding of the consequences of leaving pet waste on the ground
- A 15 percent increase in knowledge of types and origins of pollution into our creeks and waterbodies.

Other responses were similar between the surveys. The survey results assisted staff in determining which topical areas to focus on for municipal education during 2010-2011. (Level 2)

Changes in behavior are examined in further detail in relation to the inspection program and the IDDE complaints program. In relating the level of awareness of municipal employees and attempting to assess where this may be increasing or decreasing, the IDDE data may be useful. Although a limited data set exists, as these data were not tracked prior to FY 08-09, Table 11.1 contains the total numbers of complaints and those reported by municipal staff for the past three years.

Table 11.1 Complaints Reported by Municipal Staff

	FY 08-09	FY 09-10	FY 10-11
Total Complaints	232	195	118
Proactive Complaints	144 (62%)	117 (60%)	50 (42%)

The preliminary data collected over the past three years shows that more than half of the complaint cases are reported by City staff. This indicates that field staff is well trained and active in reporting stormwater violations. The decline this fiscal year is likely indicative of a shift in programmatic focus, more towards the inspections component of the program.

There are 30 high priority municipal facilities on the City's inventory. With the increased scope of inspections with Order 2007-0001, data collected can provide a baseline from which to assess changes in knowledge and behavior. This is accomplished by comparing corrective actions resulting from routine inspections. Table 11.2 includes data collected during the past four years of municipal inspections. This small set of data shows variability from year to year in BMP implementation at the municipal sites inspected, although the majority of sites have no violations.

Table 11.2 Municipal Inspections Corrective Actions Summary

	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Percentage of Sites with Corrective Actions	33%	13%	31%	23%
Average Number of Corrective Actions per Site*	1.7	1.0	1.2	1.6

*of the sites with Corrective Actions

The City's MS4 cleaning and street sweeping programs are continually removing pollutants from these systems that would otherwise end up in receiving waters. During FY 10-11, the City was able to inspect 778 of its 806 MS4 facilities. This is less than the required amount of 100%, with only 96.5% of the facilities receiving inspections. This is largely due to the addition of the Channel Maintenance Program to the workload, wherein the City maintained an additional nine open channel sites during FY 10-11. These sites were covered under recently obtained permits from the Resource Agencies. In the coming year, improvements will be made to the program to better track the number of storm drain facilities inspected. This includes the implementation of a new GIS based data tracking system. Through this and other modifications to the program, all required facilities will be inspected during FY 11-12.

The MS4 cleaning, street sweeping, and channel maintenance programs provide load reductions (Level 4) which are reported annually in Section 4 of this report. Comparisons from year to year may provide relative estimates of the amounts of material being prevented from entering the MS4. Table 11.3 presents data compiled from these activities since the beginning of Order 2007-0001, over the past four years.

Table 11.3 Street Sweeping and MS4 Cleaning Removal Rates (tons per year)

	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Streets – Sweeping	850	280	687	455
Parking Lots – Sweeping	10	5	5	0.5
Catch Basins/Inlets	230	455	547	242
Open Channels	1010	2493	2400	2270

11.2.1.4 Industrial Commercial Component

The industrial/commercial component is focused on ensuring that all industrial/commercial (IC) facilities and operations minimize impacts on water quality via implementation of all required BMPs. This component consists of outreach and education, inspections, complaint response, and enforcement of stationary and mobile businesses. The IC program requires tracking of specific data for compliance purposes and for effectiveness assessments. Table 5.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1)

Water quality impacts related to the IC component are also diverse. Local businesses operate facilities that may generate solids, nutrients, bacteria, oils and grease, and other pollutants. Inspections are the key element of the IC program. Inspections allow the City to assess compliance of the business with the Permit and local ordinances, assess the level of stormwater knowledge of the employees, assess the level of BMP implementation at the site, and to provide one on one education to the employees at the facility.

Figure 11.2 illustrates the changes in knowledge (Level 2) and changes in behavior/BMP implementation (Level 3) as detected over the past six years of the industrial/commercial inspection program. The trends show a general increase in knowledge over the years, while BMP implementation remains relatively constant. Changes in knowledge and BMP assessment scores may be due to many factors, including changes in inspectors, facilities inspected, and permit requirements. However, with the large numbers of inspections per year, it is expected that the numbers are representative of conditions observed during inspections over time. This information will continue to be tracked.

Figure 11.2 Knowledge and BMP Assessment Scores Industrial/Commercial Sites

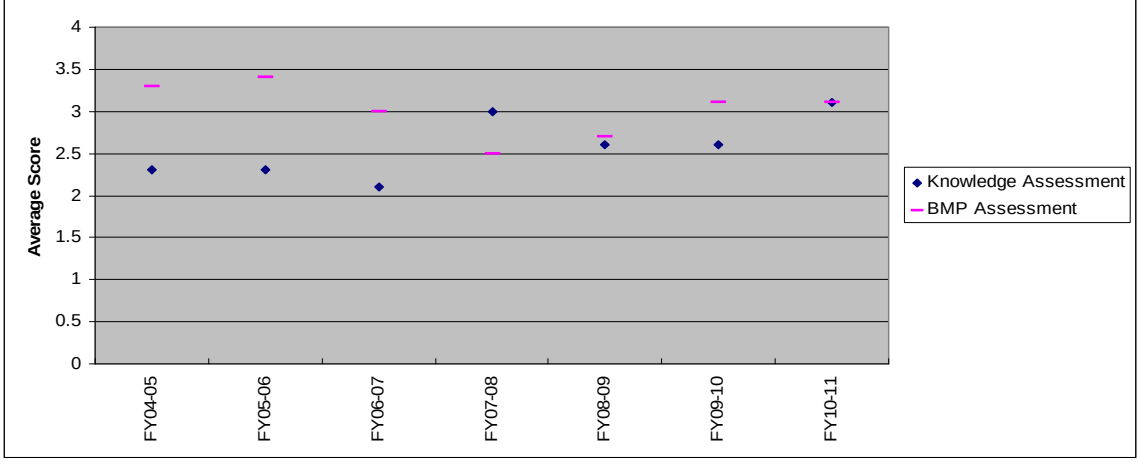

As high priority businesses are inspected consistently from year to year, comparisons of follow up data with respect to these businesses only may provide a better measure of the effectiveness of the program in increasing knowledge (Level 2) and BMP implementation (Level

3). Figure 11.3 illustrates the follow-up actions for the high priority businesses during the past five years of inspections. Priority 1 (P1) follow-ups are generally for discharges occurring at the time of inspection, priority 2 (P2) follow-ups are for BMP violations, and priority 3 (P3) follow-ups are for minor BMP violations.

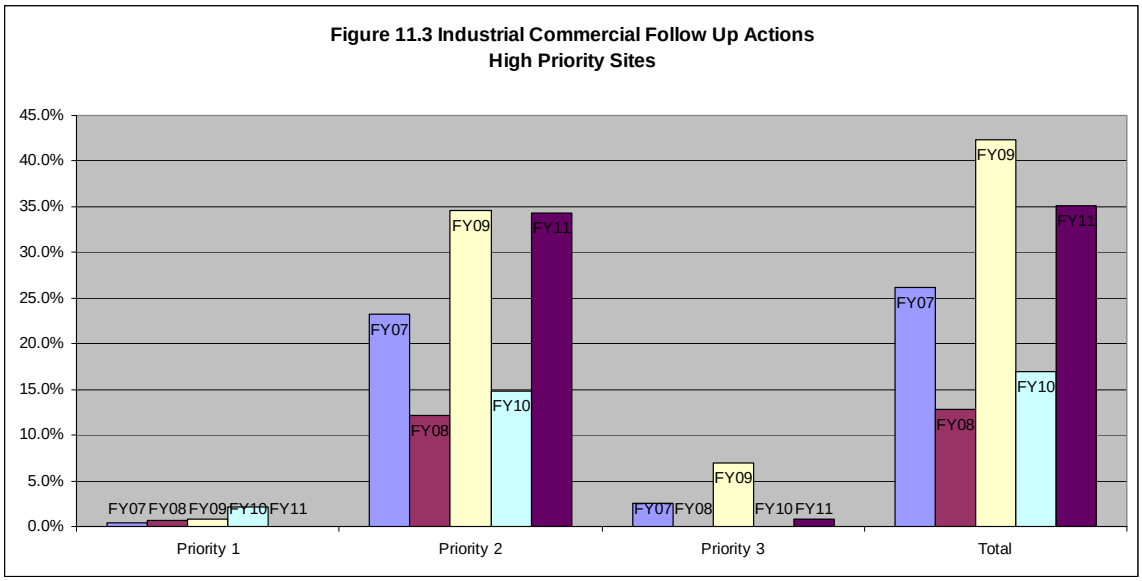

The figure demonstrates that approximately 35% of the high priority facilities required follow up actions during FY 10-11. There were no P1 follow-ups at the high priority facilities during routine inspections, with most follow-ups due to P2 violations. Due to the variability of the data from year to year, it is difficult to draw conclusions. However, in examining the P2 follow-ups more closely, it appears that many of the same facilities continue to have corrective actions from year to year. (It is important to note that all facilities where corrective actions were required were followed up on and compliance was achieved following the inspections.) For these cases, where repeat offenders have been indentified, more frequent inspections may be effective in bringing them into compliance. During FY 09-10, the City developed an enhanced inspection program focusing on those businesses with repeat violations. The enhanced inspection program was implemented during FY 10-11, using various types of inspections based on the history of violations at the sites. Repeat offenders that had more egregious violations received full inspections on a quarterly basis. Those businesses that had previously shown continuing violations that were relatively minor received a combination of full inspections and windshield inspections, on varied frequencies. This program included 46 businesses in FY 10-11. With the varied inspections frequencies and limited data collected after the first year, assessment of the program is not feasible at this time. However, an increased presence at the sites that have had continued violations in the past has helped to correct the ongoing problems. As more data is collected, it may be more feasible to assess the effectiveness of this new program in the future.

At this time, estimates of load reductions (Level 4) are not feasible as no data has been evaluated that is specific to industrial/commercial sources.

11.2.1.5 Residential Component

The residential component is focused on ensuring that residential areas and activities minimize impacts on water quality via implementation of all required BMPs. This component is focused on the high priority activities identified in the permit and JURMP.

Table 6.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1) The residential requirements of the Permit are generally implemented via outreach and education, site visits, and complaint response. An assessment of the outreach component is presented in Section 11.2.1.7 below, therefore the assessment of the residential section will focus primarily on complaint response efforts.

An analysis of the numbers of residential complaints over the past five years shows that the percentage of residential complaints (of the total number of complaints) has varied from approximately 30 to 50%. Figure 11.4 illustrates the percentage of the total complaints that were related to residential activities over the past five years.

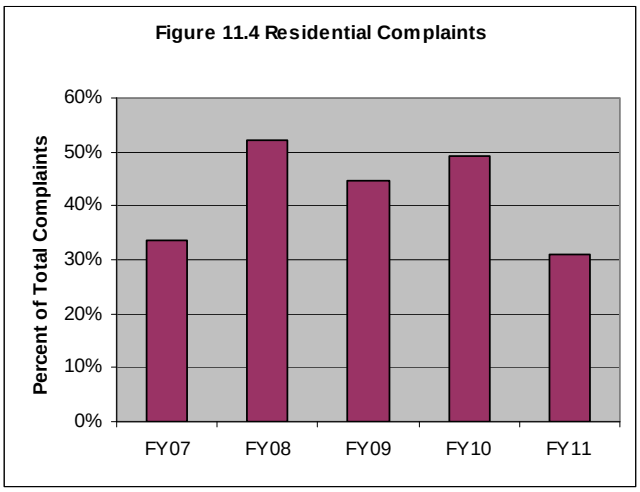

In Section 6 of this report, the types of residential complaints are presented. Generally, the types of residential complaints most often responded to involve sediment, spills, trash/debris, over irrigation, and washing. These are listed from most common to least. It appears that each of these is included in the high priority residential activities as proposed in the JURMP, leading to the conclusion that the program is focused on the appropriate residential activities.

During FY 10-11, the City performed a GIS exercise to show the distribution of residential complaints and the pollutants associated with those complaints over the previous three fiscal years. Based on approximately 300 residential complaints, the majority of these complaints were reported in the Buena Vista HA (904.2) and are related to sediment.

The City will use results from this study to determine new approaches to maintain and potentially increase its effectiveness in oversight of residential areas. While this information is helpful in focusing our program, the results related to sediment may be evaluated further to determine the best approach to modifying the program to address these issues. Modifications may include providing additional oversight in the Buena Vista Creek watershed, provided the necessary resources are available. This could translate into more drive by inspections in the Watershed during ongoing investigations that may be occurring in the area at the time. Within the watershed, particular attention could be directed to areas where there may be potential for

sediment runoff including denuded hill sides, to give one example. Other approaches may be developed as additional assessments and analyses are conducted on complaint data. Results of this spatial and pollutant analysis in residential areas are presented in Table 11.4.

Table 11.4 Residential Complaint Assessment

Hydrologic Unit/Area	Percentage of Complaints	Primary Pollutant Identified
San Luis Rey (903.1)	6%	Sediment
Loma Alta (904.1)	1%	Automotive Fluid
Buena Vista (904.2)	76%	Sediment
Agua Hedionda (904.3)	17%	Sediment
San Marcos (904.5)	0%	N/A

Another method of evaluating the City's residential component as it relates to outreach is to track the amount of household hazardous waste collected each year at the City's collection facility. Table 11.5 contains HHW data over the past six years. A definite increasing trend has been evident over the previous five years, indicating a successful outreach program to residents related to the proper disposal of HHW. This years total was down slightly from FY 09-10. The decrease may be due to a reduction in the waste stream affected by the slow economy. (Level 2 and Level 3)

Table 11.5 HHW Collection per Fiscal Year

Fiscal Year	HHW Collected (lbs.)
FY 2010-11	510,363
FY 2009-10	750,590
FY 2008-09	682,498
FY 2007-08	613,679
FY 2006-07	247,027
FY 2005-06	213,609

11.2.1.6 IDDE Component

The IDDE Section of the JURMP Annual Report is due on December 15, 2010 under separate cover. The effectiveness assessment of this component will also be included with this submittal.

11.2.1.7 Education Component

The education component is focused on ensuring that all target audiences are educated on stormwater principles so as to minimize impacts on water quality via implementation of all required BMPs specific to their disciplines. The goals of the program are to measurably increase the knowledge of these target communities and to measurably change the behavior of target communities, leading to reductions in pollutant releases to the MS4 and the environment. Table 8.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2009-10. (Level 1)

<u>Municipal Departments and Personnel</u>

Municipal staff training is performed annually for multiple departments. During FY 2010-11, training continued to focus on development staff, including plan review and inspections, engineering staff, including all capital improvement program engineers, and stormwater staff. Training was focused on staff involved in development because of the new regulations adopted this year, including the City's new SUSMP and the State Construction General Permit. Training

was also provided for all Fire Department Personnel during the reporting period. Training for stormwater staff occurs continually throughout the year, covering relevant topics such as spill response, code enforcement, dispute resolution, industrial/commercial inspections, monitoring, etc. In examining the scope of the training provided during FY 2010-11, it appears that the appropriate staff was trained in stormwater principles.

However, it is always a challenge to detect changes in knowledge/awareness (Level 2) and changes in behavior (Level 3). One method used over the last three years is to track complaints that are reported by City personnel as described above in Section 11.2.1.3. The data shows that City staff is vigilant while in the field and actively involved in reporting complaints, with 60%, 62%, and 42% of the total complaints reported by employees respectively during the past three fiscal years. The decrease in reports this year is likely due to a shift in focus to the enhanced inspections program.

Another method to track changes in awareness (Level 2) is through surveys. The City developed a survey targeting municipal staff to obtain a baseline for their knowledge related to stormwater and watershed concepts. The survey was developed late in FY 2008-09 and administered for the first time in early FY 2009-10. The survey, or variations of, will be administered to staff annually to gauge changes in knowledge and awareness. Data for years one through three are discussed above in Section 11.2.1.3.

Changes in behavior (Level 3) are tracked via municipal inspections and corrective actions. Because the municipal inspections program changed with the implementation of Order 2007-0001, the first year of this permit is used as the baseline. Four years of data have been collected and assessed, as presented in Table 11.2. This data shows that the number of corrective actions identified at municipal sites varies from year to year. In general the necessary corrections are relatively minor. Because of the variability and the relatively small set of data, it is not feasible to draw conclusions about changes in behavior at this time.

Construction Site Owners and Developers

Educational information is provided to construction site owners and developers in several ways. These include one on one interaction throughout the development review and construction process, annual distribution of information regarding rainy season requirements and preparation, pre-construction meetings, and information on the City's website.

A comparison of the number of preconstruction meetings that stormwater staff attended related to enforcement activity was performed. Stormwater presence at pre-construction meetings began regularly in 2005. At each pre-construction meeting, stormwater staff provided a synopsis of the City's program and discussed the City's BMP requirements. This education correlates well with a significant decrease in enforcement activity at the sites. The decrease in enforcement activities indicates that contractors' and developers' knowledge of stormwater and the City's requirements increased as a result of the preconstruction meetings (Level 2) and that positive behavior changes, i.e. better BMP implementation (Level 3) followed. With these encouraging results, mechanisms are in place to ensure that stormwater staff continues to attend all preconstruction meetings.

Industrial and Commercial Owners and Operators

Information is provided to the commercial and industrial community primarily based on the inspections scheduled to be conducted for the fiscal year. In preparation for the inspections, a letter is sent to the business owners indicating that they have been selected for an inspection. During the inspections and follow-up actions, one on one education is performed that is specific

to the site and activities performed. As presented in Table 8.4, educational information is distributed during and following these inspections as well. Additionally, site and activity specific outreach information was provided to all new businesses on the City's stormwater inventory during FY 10-11.

As illustrated in Figure 11.4, it appears that a consistent increase in knowledge (Level 2) is occurring at the facilities inspected. However, the same figure shows that there has been a relatively steady implementation of BMPs (Level 3) over time at these facilities. In previous assessments, it was evident that many of the violations are occurring at the same businesses from year to year. While the majority of businesses are in compliance each year, significant numbers of the high priority sites inspected each year have corrective actions. The analysis indicates that the education and outreach may be working (Level 2) but the resulting desired affect, an increase in BMP implementation, is not always observed. It appears that more focus and perhaps increased enforcement are required at the facilities that continue to be problematic in order to ensure that they are continually in compliance with all stormwater requirements. During FY10-11, the City implemented an enhanced inspection program, increasing presence and enforcement at these sites. See Section 11.2.1.4 for a discussion on the enhanced inspection program.

Residential Community, General Public, School Children

Outreach efforts to the residential community and general public are typically performed via public events such as fairs, clean-up events, used oil collection events; direct contact via complaint response efforts; the City's website and publications; and other City sponsored programs such as the Citizens Academy. It is generally difficult to directly measure changes in knowledge and/or behavior resulting from these efforts. One method considered is by comparing residential complaints from year to year. From this comparison, it appears that the number of residential complaints increased over the time period, until FY10-11 where a decrease was noted. Conclusions are difficult to draw from this comparison, because complaints may vary as a result of a more informed general public or vary due to an increase in number of violations. These reasons for variability may be accounted for by comparing the numbers of proactive residential complaints filed each year, assuming City staff that is reporting complaints are knowledgeable and consistent. Proactive complaints have been tracked for the past two years, with 54% and 42% of the total residential complaints reported by City staff, respectively. With the limited amount of data, assessments based on proactive residential complaints are not feasible at this time.

The City continued its education and outreach efforts to schools during the reporting period. For outreach to elementary and middle school students, the City contracted for the first time with San Diego County Office of Education (SDCOE) to provide two programs: the Splash Lab and the Green Machine. During the 2010-11 academic year, Splash Lab reached 955 students at nine schools. The Green machine reached 261 students at three schools. There were more Green Machine presentations included this year to reach the younger target audience, as the Splash Lab is typically focused on Grades 4-6. The presentations provide an interactive opportunity to children to learn about stormwater, water quality, bioassessment, watersheds, pollution, and best management practices. Splash Lab pre- and post surveys were administered to all of the schoolchildren. Pre-surveys were given prior to the students' participation and post tests were generally given the following week in the classroom. In total, 570 pre-surveys and 552 post-surveys were received back from eight schools. On average, scores on the pre-test were 58%. The average scores on the post test were 78%, showing a clear increase in knowledge through the program. (Level 2) This increase of approximately 34% was similar to the increase demonstrated last year.

Underserved Target Audiences

During the reporting period the City conducted education and outreach efforts that targeted undeserved communities. The City held several community events which provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors. The events were equally successful in providing outreach to Spanish communities as several brochures and promotional items were available in Spanish. At the present time, this is the primary outreach mechanism for the underserved audiences. During FY 10-11, the Water Quality Protection Program initiated coordination with the City's Community Outreach Program specialist, who works extensively with the Hispanic Community. It is expected that as this relationship continues, stormwater outreach opportunities directed towards the underserved target audiences in Vista will increase.

11.2.1.8 Public Participation Component

During FY 10-11, the City continued to refine its website to make it more user friendly. These changes benefit the Water Quality Protection Program, making its webpage more accessible to the public. With these enhancements, the stormwater hotline and email addresses will be better advertised. Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects. At this time, there are no formal measures in place to assess this component.

11.2.2 JURMP Assessment

Overall, the JURMP appears to be effective in reducing urban runoff related pollution in the City. The City continues to implement iterative processes throughout its programs, and has improved several programs over the past year. Each component of the program was implemented successfully and most were shown to be effective. In the coming year, improvements will continue, with a focus on increasing the effectiveness of the municipal program and improving efficiencies in other programs. With reduced staffing and budgets, the City will continue to look for ways to balance the effectiveness of the programs with efficiencies.

11.2.3 Water Quality Assessment

Overview

The City of Vista is a part of five distinct watersheds in the San Luis Rey and Carlsbad Hydrologic Units. These include (from north to south): San Luis Rey Hydrologic Unit - 903, Loma Alta Hydrologic Area (HA) – 904.1, Buena Vista HA – 904.2, Agua Hedionda HA – 904.3, and San Marcos HA – 904.5. The majority of the land area in Vista is in the Buena Vista HA and the Agua Hedionda HA. Most of the water quality data collected within the City has been collected in these two watersheds. The Buena Vista HA drains to Buena Vista Creek, Buena Vista Lagoon, and enters the Pacific Ocean between at the boarder of Carlsbad and Oceanside. The Agua Hedionda HA drains to Buena and Agua Hedionda Creeks, leading to Agua Hedionda Lagoon and entering the Pacific Ocean in Carlsbad near the power plant.

MS4 Water Quality

Ambient (Dry Weather)

The primary source of MS4 water quality data is through the City's Dry Weather (DW) Monitoring Program, with some recent data generated via the Targeted MS4 Outfall Monitoring Program. Data has been collected at approximately 30 sites since the inception of Order 2001-01, beginning in the summer of 2002. This provides only a snapshot of conditions in the MS4,

as the data is collected only once per year. The DW program only collects analytical data at 25% of sites with flow, as required in the permit. In some cases, these sites may change year to year, so a complete set of data is not always available by site or by year.

In evaluating bacteria concentrations, samples were collected at multiple sites over the monitoring period from 2002-2011. Figure 11.5 illustrates fecal coliform data collected across 20 sites within the City. In each year, between five and eleven samples were collected, providing an overall sample size of 66.

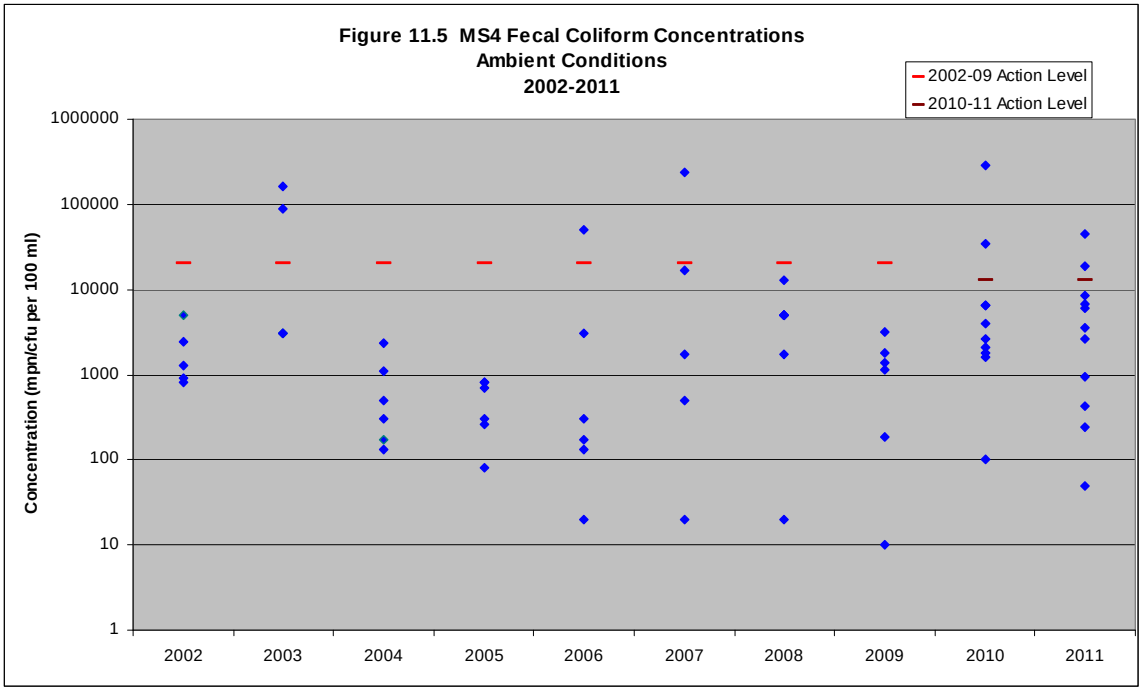

While no clear trend is evident, it is apparent that the majority of values are less than the dry weather action levels. Only eight of the 66 samples exceeded the action level. Furthermore, 54 of 66 samples (82%) contained bacteria concentrations that were less than half of the dry weather action levels.

Dry weather nutrient data is collected at all sites using field sample kits based on colorimetric analyses. The sample kits do not produce data of analytical quality but are used to trigger upstream investigations and for source tracking. In examining historical data for nitrate-nitrogen from 1998-2010, it appears that in most years there were multiple exceedances of the dry weather action level (10 mg/l). In total, 15 sites exhibited elevated nitrate-nitrogen concentrations. Of the 15 sites, eight of them show elevated concentrations from year to year, indicating a consistent source of the nutrients. In these cases, nutrified groundwater is suspected to be the source of nitrate-nitrogen. The remainder of the sites had few exceedances over the years, more likely attributable to illicit discharges or other sources.

The data set for ortho-phosphate was examined for the past six years, from 2005-2010. In total, there were four sites that exceeded the dry weather action level (2.0 mg/l) for ortho-phosphate. Each had only one exceedance over the six years of monitoring. It appears that each was an isolated incident triggering an upstream source investigation.

The dry weather monitoring program does not collect data related directly to sediment. It is well accepted that sedimentation is generally a wet weather problem caused by erosion. Typically sources of erosion may include open space, construction sites, residential areas, and creek bed and bank erosion.

Based on the data collected in the dry weather program and using dry weather action levels for comparison, it appears that bacteria is not typically a dry weather problem. This may not be the case with nitrate-nitrogen, as exceedances are more frequently observed. Ortho-phosphate measurements appear to occur at random locations, likely the result of illicit discharges. In the future, the sources of nutrients in the dry weather program may be further evaluated based on the results of past upstream investigations. Although no data is collected during the dry weather program to monitor sedimentation, it does not appear to be a dry weather problem.

Wet Weather (Storm Event)
At this time, very little wet weather MS4 data has been collected. Under the newly developed regional MS4 outfall monitoring program, samples have been collected across the Carlsbad HU as part of four components of the program: random dry and wet weather sampling, and targeted dry and wet weather sampling. There have been ten random wet sites within the Carlsbad Watershed spanning two wet weather monitoring seasons (2008-09 and 2009-10). Samples collected from the wet weather period for 2010-11 will be reported in upcoming monitoring reports. MS4 sample results within the City's watersheds (only 2 sites, one sample each) showed that nutrients and sediment concentrations were relatively low and that bacteria concentrations were elevated. As more data is collected, comparisons between MS4 and receiving water results may be helpful in assessing the relative contribution from the MS4 to pollutants identified in the receiving waters. At this time, the MS4 wet weather data set is small and therefore can not be used to draw conclusions related to this relationship.

<u>Receiving Water Quality</u>

Ambient (Dry Weather)
The main receiving waters within the City of Vista are Buena Vista and Agua Hedionda Creeks. In an effort to better understand dry weather conditions in its receiving waters, the City collect limited data in the creeks between 2003 and 2009 in conjunction with the dry weather program. The focus of the analysis remains on the high priority water quality problems in an effort to understand their dynamics in the receiving waters.

Dry weather bacteria samples have been collected in the two creeks each year from 2003 - 2009. While the sample set is relatively small, comparisons of concentrations over time show that water quality appears to improve from the upstream sample site to the downstream sites. Although the sample sets are small, a decrease in bacteria concentrations is evident from upstream to downstream sample locations in both creeks. A full order of magnitude decrease, over 90%, in bacteria concentration is observed in Agua Hedionda Creek. While the difference in Buena Vista Creek is not as pronounced, there is still a substantial decrease of over 60%. In Agua Hedionda and in Buena Vista Creeks, improvements in water quality are noted as the creeks flow from east to west through the City. If feasible in the coming years, data may continue to be collected to enlarge the data set and test this hypothesis. With the size of the current data set, these observations need to be validated further.

Nutrient concentrations during dry weather are based on field test kits only. With the limited set of data at each location (n<10) and the lack of analytical quality data, it is not feasible to perform an analysis with an acceptable level of confidence. However, a cursory look at the data that has

been collected generally shows increasing nitrate-nitrogen concentrations from upstream to downstream in Agua Hedionda Creek and decreasing concentrations of nitrate-nitrogen in from upstream to downstream in Buena Vista Creek. The ortho-phosphate concentrations are relatively low, all less than or equal to 0.4 mg/l. Due to the sensitivity of the analysis and reporting limits, it is not feasible to analyze this data.

At this time, there has been no data collected related to sedimentation in the creeks during dry weather. Sediment is generally a constituent of concern during wet weather, most often triggered by erosion. There has been no observed evidence of sedimentation problems during dry weather.

Wet Weather (Storm Event)
No data has been collected to evaluate wet weather conditions in the Creeks within the City of Vista. Sample collection under wet weather conditions is performed by a contractor under the Regional Monitoring Program. Analyses discussed below were obtained from the San Diego County Municipal Copermittees 2007-2008, 2008-2009, 2009-10 Urban Runoff Monitoring Reports, January 2009, 2010, 2011, Weston Solutions.

Data has been collected at the Mass Loading Station on Agua Hedionda Creek since 1998. This monitoring station is downstream in the watershed, located near the mouth of Agua Hedionda Lagoon, above the tidal prism. In general, increasing trends for total and fecal coliform, total suspended solids and turbidity, and several metals are evident. Fecal coliform, TSS, and turbidity are typically above Basin Plan water quality objectives. Nitrogen and phosphorous concentrations are relatively low.

Storm event data was collected at a Temporary Watershed Assessment Station (TWAS) located on Buena Vista Creek for two storms in the rainy season 2007-08. No data was collected at this location during FY08-09 due to the Copermittees participation in the Bight studies coordinated via the Southern California Coastal Water Research Project. Data was not required to be collected in Buena Vista Creek during 2009-10 either due to the rotational design of the program. The TWAS was monitored during the winter of 2010-11 and this most recent set of data will be presented in the next Annual Monitoring Report due in January 2012. Therefore, the following brief assessment is based on one year of data only capturing a total of two storms. Data collected indicated that fecal coliform, TSS, and turbidity were above Basin Plan water quality objectives. With the small set of data, no trend assessments are possible at this time. Nutrient concentrations appear to be below water quality objectives during the two storms monitored.

High Priority Water Quality Problems
In determining the water quality problems in the City, several sources of information were used including current 303(d) listings (2010), recent watershed assessments, and current and historical water quality data from MS4 and receiving waters monitoring programs.
Table 11.6 contains the 303(d) listings of impaired waters in the City of Vista and for the receiving waters downstream.

Table 11.6 Impaired Water Quality Limited Segments, City of Vista, 2010 303(d) List
*Shaded areas indicate primary watersheds in the City of Vista

Receiving Water	HU/HA	Chloride	TDS	Total Coliform	Fecal Coliform	Enterococcus	Indicator Bacteria	Phosphorus	Total Nitrogen as N	Nitrate/Nitrite	Eutrophication	Nutrients	Toxicity	Sediment Toxicity	Sedimentation	DDE	DDT	Mn	Se	Sulfate
San Luis Rey River (SLR)	903	X	X		X	X		X	X				X							
Pacific Ocean at SLR outlet	903			X		X														
Loma Alta Creek	904.1												X						X	
Loma Alta Slough (LAS)	904.1						X				X									
Pacific Ocean at LAS outlet	904.1						X													
Buena Vista Creek (BVC)*	904.2													X					X	
Buena Vista Lagoon (BVL)	904.2						X					X			X					
Buena Creek (BC)	904.3									X							X			
Agua Hedionda Creek (AHC)	904.3		X		X	X		X	X				X					X	X	X
San Marcos Creek (SMC)	904.5							X						X		X			X	

Recent watershed assessments generally take into account the 303(d) listed constituents, as well as available water quality data. These assessments determine which of the identified water quality problems are high priorities for the watershed. These assessments are performed on a larger scale using available data collected in the regional monitoring programs and some dry weather data. The high priority water quality problems identified in the Watershed Urban Runoff Management Programs (WURMPs) are identified in Table 11.7.

Table 11.7 WURMP High Priority Water Quality Problems

Receiving Water	Hydrologic Unit/Area	Bacteria	Nutrients	Sedimentation
San Luis Rey River HU	903	X	X	
Loma Alta HA	904.1	X		
Buena Vista HA	904.2	X		
Agua Hedionda HA	904.3	X	X	X
San Marcos Creek (SMC)	904.5		X	

Comparing the two tables, the primary watersheds in the City of Vista (Buena Vista and Agua Hedionda) generally have identified bacteria, nutrients, and sedimentation as common high priority water quality problems.

The local water quality assessments presented above attempt to examine the data with respect to MS4 and Receiving Waters during ambient and wet weather (storm event) conditions. This closer look and better understanding of the data and data gaps may help guide programs in the future. The assessment this year focused on those problems identified in the Carlsbad WURMP. A summary of the results of this preliminary analysis are presented in Table 11.8. A yes means that there are data that may be indicative of a problem related to the pollutant, a no means that the data collected does not appear to indicate a problem, and no data means that there is insufficient data to guide a decision at this time.

Table 11.8 Local Water Quality Assessment Results

	Ambient			Storm Event		
	Bacteria	Nutrients	Sediment	Bacteria	Nutrients	Sediment
MS4	No	Yes	No	No Data	No Data	No Data
Receiving Water	Yes	Yes	No	Yes	No	Yes

All three pollutants are identified as a WURMP priority for the Agua Hedionda Hydrologic Area. Although, only indicator bacteria are identified as a high priority water quality problem in Buena Vista HA in the WURMP, it may be appropriate to address all three pollutants.

To further these findings, local assessments indicate that under ambient conditions, nutrients tend to be problematic in the MS4 and receiving waters and bacteria appears to be problematic in receiving waters. Sedimentation does not appear to be a problem under ambient conditions. There is very little wet weather data available in the MS4, therefore assessments are not feasible at this time. Under wet weather conditions, it appears that bacteria and sedimentation may be problematic in the receiving waters.

In summary, the City has identified indicator bacteria, nutrients, and sedimentation as high priority water quality problems, focusing on bacteria and nutrients during dry weather, and bacteria and sedimentation during wet weather. From the combined assessment, using impairment listings, watershed and regional assessments, and local water quality assessments, the City has selected bacteria, sediment, and nutrients as high priority water quality problems as presented in Table 11.9.

Table 11.9 City of Vista, High Priority Water Quality Problems

	Ambient			Storm Event		
	Bacteria	Nutrients	Sediment	Bacteria	Nutrients	Sediment
High Priority	Yes	Yes	No	Yes	No	Yes

11.2.4 Integrated Assessment

Integrating water quality assessments into programs is difficult as many BMPs and municipal programs have not been linked to specific water quality problems. However, certain focus can be gained with an understanding of the priority water quality problems in the City.

11.2.4.1 Bacteria

According to the assessment above, bacteria appears to be problematic during ambient and wet weather conditions. In order to focus efforts appropriately, each condition must be considered independently.

Under ambient conditions, experience shows that sources of bacteria are mostly related to illicit discharges. These range from sanitary sewer overflows to illegal washing. The City is

implementing a sewer rehabilitation program to aggressively address infrastructure concerns related to the sanitary sewer. The City has also implemented a Fats, Oils, and Grease (FOG) program, with inspections concurrent with stormwater inspections as food service establishments. Furthermore, the City responds to, contains, and cleans up all reported sewer overflows, with very few reaching storm drains or receiving waters. Other illegal discharges are addressed via the complaint response program, with stormwater code enforcement staff aggressively enforcing the City's stormwater ordinances. With these programs in place, it is expected that the sources of dry weather bacteria will be minimized.

Assessment of local data indicates that the majority of bacteria samples collected in the MS4 under ambient conditions are below action levels. Data collected in receiving waters are compared to Rec-1 water quality objectives. Local ambient data suggests that bacteria concentrations in the creek are reduced as the creeks flow from up to downstream. This may suggest that ambient flows from the MS4 are having limited impacts on the receiving waters. However, the data sets in the receiving waters are limited at this time and a clear relationship between MS4 and receiving water quality has not been established. In the future, data assessments may take into account Natural Loading Studies performed to quantify the amount of bacteria present in natural watersheds. In comparing this type of data to existing conditions in local watersheds, municipalities may gain a better understanding of their contributions to the bacteria loading.

Under wet weather conditions, i.e. storm events, the sources of bacteria are different. These sources may be more related to structural BMPs such as trash enclosures and overhead coverage of grease containers, good housekeeping practices, animal waste disposal, failing septic systems, and homeless encampment issues. The maintenance of the MS4 may also play a role in wet weather bacteria concentrations. With standards regarding trash enclosures, waste areas, and grease storage areas in place, the City has taken steps to ensure that these sources of bacteria are limited in new development. Existing development is addressed through inspections programs, including municipal, TCBMP, industrial commercial, and FOG inspections. Extensive outreach is performed to the community to educate pet owners on proper disposal methods. MS4 maintenance is performed routinely at facilities throughout the City. Other sources, typically beyond the scope of the stormwater program, including encampments and natural sources are difficult to reduce. These may contribute significant loads of bacteria during wet weather.

11.2.4.2 Nutrients

According to the assessments performed above, nutrients appear to be predominantly a dry weather/ambient problem. It is suspected that the primary source of nutrients during dry weather is from nutrified groundwater. However, occasional nutrient contributions may come from fertilizer applications and from tailwater related to nurseries and agriculture. Programs in place to address nutrients during dry weather include outreach related to fertilizer applications, inspections of nurseries and agriculture, and general complaint response.

The consistency of nitrate concentrations collected under ambient conditions suggests that groundwater plays a significant role in nutrient loading. Several sites in the dry weather program are influenced by groundwater, suspected to be contributing to nutrient concentrations. The City will continue to verify this as a source. Data also indicates occasional illicit discharges contributing nitrate-nitrogen and ortho-phosphates. These are typically one time incidents that are eliminated as they are detected. The compliant response efforts are also vigilant for these types of discharges. In the future, as more data is collected and nutrient studies are performed

at the Regional level, nutrient contributions to receiving water problems will be better understood.

11.2.4.3 Sediment

Local, watershed, and regional assessments have concluded that sedimentation is primarily a problem during storm events. Sources of sedimentation may include erosion of open space, stream beds and banks, construction sites, and residential areas. Erosion of the stream bed and banks are addressed by hydromodification requirements and low impact development and design. Additionally, the City may be able to perform a Creek restoration project along Agua Hedionda Creek in the future, pending grant funding. This will also address erosion concerns in the Creek. Erosion and sediment controls on construction sites are strictly enforced via routine construction site inspections. At this point, construction sites typically have extensive BMPs in place, reducing the potential for sedimentation. With the adoption of the new State General Construction Permit, these requirements have been further enhanced, also continuing to reduce the potential for sediment discharges. Residential areas are typically addressed through the complaint response program, with stormwater code enforcement staff maintaining vigilance for sedimentation concerns.

11.3 Program Review and Modification

11.3.1 Development Planning Component

The effectiveness assessment for this program component focused on the TCBMP program, as it is a relatively new program. Results showed that after four years of inspections, the program has been successful in ensuring that TCBMPs throughout the City are maintained and operating properly. However, because the program is relatively new, significant amounts of staff time have been expended focusing on outreach, inspections, and follow-ups for these sites. In the future, the City may look for ways to develop a more efficient program while continuing to gain full compliance with its ordinances and the permit. This year, the City focused on training Stormwater Code Enforcement Staff and transitioning follow-up related duties to them. Additionally, as inspection data is collected, it may continue to be evaluated against the current prioritization criteria. This comparison ensures that inspections are focused on BMPs that are the most problematic in regards to operation and maintenance. Ensuring adequate operation and maintenance of these BMPs is expected to reduce bacteria, sedimentation, and nutrient loading.

11.3.2 Construction Component

With the implementation of a spreadsheet tracking tool, the program was able to better track inspections and compliance information. As shown in the effectiveness assessment of this component, it appears that site compliance may be related to pre-construction meetings. Beginning in 2005, stormwater staff began to attend pre-construction meetings, providing an opportunity for stormwater staff to give one on one site specific education related to the project. This practice will continue, with stormwater staff attending pre-construction meetings in the future. With continued focus on construction inspections, impacts of sedimentation from construction sites should be minimized.

11.3.3 Municipal Component

Several new sets of data were tracked related to the municipal program this year. It is anticipated that as these data are compiled in future years, they will provide useful information related to effectiveness assessment of the component. Data is now collected to track complaints reported by City staff (proactive) and those from the public. A new database has also been implemented to better track storm drain maintenance activities. With continued

efforts dedicated to MS4 cleaning and channel maintenance, bacteria and sediment contributions will be addressed.

11.3.4 Industrial/Commercial Component

The industrial commercial program will continue to operate in compliance with permit requirements. As indicated in the effectiveness assessment, several of the high priority facilities have stormwater violations from year to year. The program is evaluating methods to gain compliance at these facilities year round and improve the program to ensure that continued compliance is obtained. During the next fiscal year, the City will the enhanced inspection program implemented during FY 10-11 determining the most effective methods to target those high priority facilities that have shown compliance issues from year to year. Improved compliance at these locations is expected to reduce contributions of bacteria and other pollutants to the MS4.

11.3.5 Residential Component

The effectiveness assessment of this component is focused on the types of complaints related to residential activities. In comparing the types of residential complaints and sources of pollution identified, it appears that the high priority activities listed in the JURMP are properly focused. In the future, the City may use this data to enhance its education and outreach to the residential community. Continued focus on pet waste, fertilizer management, and sedimentation issues will help to reduce the impacts of these pollutants from residential sources. Additionally, based on the spatial assessments of residential complaints, the program will focus residential program more on the Buena Vista HA and on the sedimentation issues within.

11.3.6 Education Component

The education component strives to educate a broad range of people regarding urban runoff and other environmental concerns. In general, the program appears to be effective at conveying the message to the targeted audiences. The program will evaluate ways to improve the outreach to specific target audiences. For example, with the verified effectiveness of the pre-construction meetings, stormwater staff will ensure that they are present at all pre-construction meetings and may continue to develop the methods of outreach provided. Other methods of outreach to the underserved target audiences may also be evaluated, including outreach to citizens via bulletins and through the outreach component of the FOG program.

11.3.7 Public Participation Component

The City currently has several options for public participation in the program. In the past year, the City reworked its website to make it more user friendly. These changes benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. With these enhancements, these stormwater hotline and email addresses will be better advertised. In the coming year, enhancements will continue to be made to the website, updating it with the most current information available. Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

11.3.8 Fiscal Analysis Component

The fiscal analysis component included an evaluation this year using the Standardized Method for Fiscal Analysis. This is the third year that the City has selected to utilize this method. With the collection of three years of data, a baseline has been established and in the coming years, it

is expected that year to year comparisons between programs and potentially some level of cost/benefit analyses may be feasible.

11.3.9 Effectiveness Assessment Component

The effectiveness assessment of the program will continue to evolve. As new methods of evaluation are developed, additional supporting data will be tracked. It is expected that as more water quality data is collected, better evaluations of MS4 and receiving water quality will be feasible. Where possible, relationships between program components, BMPs, and water quality will be evaluated, however at this time, these links are difficult to establish.

12.0 SPECIAL INVESTIGATIONS

12.1 Loma Alta Creek Source Investigation Report

During 2010-2011, a special investigation was undertaken to better prepare the City for upcoming Total Maximum Daily Loads in its jurisdiction. This special investigation is related to a more in depth look at water quality and sources of pollution in the City's portion of the Loma Alta Watershed, Hydrologic Area 904.1. The City's contribution to the watershed is approximately 3% of the overall land area. A TMDL for bacteria and nutrients is currently under development for the Loma Alta Slough, prompting the City to gain a better understanding of the details in land use, water quality, and potential sources of pollution in the area. The report concludes that residential land uses are the most likely to contribute to bacteria and nutrient loading in Vista's portion of the Loma Alta Watershed, although the total contribution to the watershed is relatively small. See Appendix H-1 for the report entitled Loma Alta Creek Source Investigation Final Report.

12.2 Buena Creek Pump Station and Storm Drain Enhancements

The City led the development of the Agua Hedionda Watershed Management Plan in 2008. In the plan, opportunities were identified for creek and water quality enhancement projects throughout the watershed. The Water Quality Protection Program, in conjunction with the City's Sewer Program, has identified the number two creek restoration opportunity in the plan as a valuable project for the City that would provide multiple benefits to the City and the community, as well as the watershed as a whole. The project will restore approximately 3800 linear feet of Agua Hedionda Creek, portions of which are severely incised and are home to a dying oak woodland habitat. During FY 2009-10, the City completed the Preliminary Design Report for the project. With the completion of the PDR, the City recognized the need to provide for enhancements to the existing pump station to prevent flooding and also identified an opportunity to provide a low flow diversion of an existing storm drain that currently flows directly to the Creek. A special investigation was performed this fiscal year to determine the feasibility of such a project and to provide cost estimates for the work. This study was added to the PDR as Appendix I and is located in Appendix H-2 of this report. While both projects are currently unfunded, the City continues to incrementally move the projects forward and is actively pursuing grant funding to construct the projects.

13.0 JURISDICTIONAL URBAN RUNOFF MANAGEMENT PROGRAM REVISIONS

There were no revisions to the City's Jurisdictional Urban Runoff Management Program this fiscal year.

14.0 Conclusions and Recommendations

This JURMP annual report covers the fourth reporting period (July 1, 2010 to June 30, 2011) under Order 2007-0001. The JURMP was implemented as required during this reporting period. Some of the key areas of implementation of the JURMP during this period included continued focus on the TCBMP program, improvements to the Industrial Commercial Program, and improvements to the outreach programs in the City. The City also continued contributing to the development and implementation of the programs in two watersheds (Carlsbad and San Luis Rey Watersheds).

14.1 Iterative Process

The City's stormwater program continued to evolve. The City's JURMP states that the program will require periodic revision. The City of Vista is committed to working with its staff, other Copermittees and the RWQCB to improve and adapt the plan and efforts as necessary to comply with the permit requirements. The City's program continues to be dynamic requiring changes in the daily operations and implementation based on lessons learned and City staff input. Each year, the developed program is implemented and where feasible, programs are assessed for effectiveness and efficiencies. The assessment information directs program modifications for the coming cycles. Examples of the iterative process and changes to the program that were made this year include improvements to the Industrial Commercial Programs focusing on repeat violators and mobile businesses, and assessment of three years of residential complaint data resulting in increased focus on specific areas and pollutant types within the City.

14.2 Program Focus

Where possible, program focus during the coming year will be related to the identified pollutants of concern within the City and watershed. In particular, programs will focus on the elimination of sources of bacteria, sediment, and nutrients.

The Land Use Planning Component of the program can affect all three identified pollutants through the implementation of site design and source controls on all sites. The City will continue to implement its SUSMP requirements and emphasize natural treatment control BMPs and LID Site Design BMPs. During this Fiscal Year, the hydromodification plan (HMP) was be incorporated into the SUSMP and implemented. The coming year will focus on implementation of the SUSMP and the new requirements of the HMP.

The City's strong construction inspection process will continue in the coming year, with an emphasis on education at pre-con meetings and construction site BMP implementation. This program focuses primarily on sources of sediment. Other pollutants may also be addressed through construction site BMPs. This program will continue to focus on BMP implementation and reporting as well as compliance with the recently implemented State Construction General Permit.

The municipal program is broad in scope and implements many BMPs to address all three priority pollutants. This year, the program focused on the MS4 inspection and maintenance program specifically, as a new database was developed and tested and the channel maintenance program was initiated. Full implementation of the database and improvements in maintenance tracking will be the focus in the coming year. The program will also examine ways to effectively incorporate the Channel Maintenance Program into the MS4 cleaning program

with the goal of achieving a balanced maintenance program that meets all regulatory requirements.

Inspections of the industrial and commercial businesses were focused during the reporting period on high priority industries and specific commercial facilities. Pre-rainy season activities also included inspections of several shopping centers in the City. Through the past two years of assessments, several of these businesses were identified as repeat offenders from year to year. The City's focus is on a program to increase presence and enforcement at these sites in an effort to ensure their compliance year round. Although data collected after one year of implementation is insufficient to evaluate the enhanced inspection program effectiveness, the City will continue with the enhanced inspection program in the coming year to ensure full compliance at the problematic industrial and commercial sites.

The residential component will continue to be a focus area in the coming year, as recent assessments have indicated that many of the complaints are related to sediment and are located in the Buena Vista Watershed. The program will investigate ways to better monitor residential areas, especially where sedimentation is a concern, and implement new ideas where feasible.

14.3 Funding Sources

The Water Quality Protection Program activities are funded through the sewer enterprise fund. Some education programs were funded through the California Integrated Waste Management Board Used Oil Block Grant and the Department of Conservation Recycling Grant.

14.4 Water Quality Data Analysis

The City has been collecting dry weather water quality data in the MS4 for many years under the previous Municipal Permits. The City has collected several seasons of data and continues to evaluate these data to determine the City's main constituents of concern.

Additionally, the City has collected limited amounts of data in receiving waters under ambient conditions in conjunction with the dry weather monitoring programs. The receiving waters sampled include Guajome Creek, Buena Vista Creek, Agua Hedionda Creek, and Buena Creek. All samples collected were grab samples and represent only a snapshot of the conditions in the creeks at that time. Analysis includes the use of field test kits and laboratory measurements, similar to the dry weather program.

Water quality assessments are generally consistent with findings at the watershed level and programs will continue to be focused on the main constituents of concern. High priority water quality problems identified in the City include bacteria and nutrients during dry weather and bacteria and sediment during wet weather.

14.5 Citywide Participation

The City's Water Quality Protection Program is administered by the Engineering Department management and staff. However, the JURMP is a citywide program with its continuing success dependent upon all City staff participation. During this reporting period the program continued to work with all departments across the City, helping to ensure continued program compliance. Examples of improved Citywide participation this year included increased interaction with engineers in the Capital Improvements Program, coordination with economic development on

outreach programs, and working extensively with Land Development Staff to implement the revisions to the SUSMP, specifically related to hydromodification.

14.6 Watershed Collaboration

The City continued to collaborate and focus on implementing the activities developed in the Carlsbad and San Luis Rey Watershed Urban Runoff Management Plans with the appropriate Copermittees, organizations and stakeholders within these watersheds. Specifically, the City coordinated on watershed outreach events and is currently planning activities in both watersheds for the coming years. There was also a focus on development of a TMDL in the Loma Alta Hydrologic Area for bacteria and nutrients and on development of a Comprehensive Load Reduction Plan for the Bacteria TMDL in the San Luis Rey Watershed.

14.7 Program Accomplishments

The Water Quality Protection Program and various City staff continue to look for ways to improve the City's JURMP implementation. This includes several areas of focus to build on program success. An outline of the years' accomplishments is presented below:

Development Planning Component

The effectiveness assessment for this program component continues to focus on the TCBMP program. Results show that the program has been successful in ensuring that TCBMPs throughout the City are maintained and operating properly. However, because the program was relatively new, significant amounts of staff time have been expended focusing on outreach, inspections, and follow-ups for these sites. Previous recommendations from the assessments and related accomplishments include:

- Examining methods to develop a more efficient program while continuing to gain full compliance with its ordinances and the permit. This was furthered this year by fully engaging stormwater code enforcement staff in the follow-up inspections and compliance related issues. This required continued training and further development of staff, but improved the efficiency of the program and maintained a high level of compliance.

During the past fiscal year, the City also implemented the updated SUSMP and Hydromodification Plans as required. In order to evaluate all options for projects meeting HMP criteria, the City is evaluating the SWMM model for use in meeting the HMP requirements. This model was approved under the HMP and is expected to a viable option for meeting these new requirements.

Construction Component

- Pre-rainy season outreach and inspections focused on construction sites, including those actively grading and idle sites. Outreach efforts included pre-rainy season letters to all superintendents and site owners, training for City staff, and inspections of active and idle sites prior to October 1. Stormwater Code Enforcement staff worked with the owners of the idle construction sites to ensure that proper BMPs were implemented.
- As shown in this and previous effectiveness assessments of this component, it appears that site compliance may be related to pre-construction meetings. Beginning in 2005, stormwater staff began to attend pre-construction meetings, providing an opportunity for stormwater staff to give one on one site specific education related to the project. This practice continued this year, with stormwater staff attending 11 pre-construction meetings.

Municipal Component

- An Access database was developed for use in the field in tracking MS4 facilities inspections and maintenance. This database was implemented during FY10-11.
- A system was implemented to track proactive complaints (i.e. those reported by City staff). This measure was evaluated in the effectiveness assessment component and may be used in the future to assess changes in knowledge of City staff as related to stormwater outreach.
- A municipal survey was modified and distributed for the third time during this fiscal year to gain an understanding of the change in stormwater knowledge within the City. An increase in several stormwater concepts was noted in the survey results, indicating a positive effect on employees from the municipal outreach and training programs.
- The stormwater program continued active involvement in the City's special events committee, interacting extensively with event organizers and staff to ensure that all required BMPs were implemented.
- Permits were received in 2009 from the US Army Corps of Engineers, US Fish and Wildlife Service, California Department of Fish and Game, and the Regional Water Quality Control Board allowing the City to perform channel maintenance activities within the MS4. Site prioritization and preliminary work plans were developed during FY 09-10 and maintenance began early in FY10-11.

Industrial/Commercial Component

- Combination inspections continued for stormwater and FOG at the food service establishments selected for inspection allowing the City to leverage resources and gain efficiencies in both programs. A total of 89 restaurants/food service establishments received combined inspections during FY10-11.
- The City continued to participate in the Regional Industrial and Commercial Workgroup (as the secretary) and in the Mobile Business Sub-workgroup.
- Notifications were provided to each of the new facilities on the inventory of the site/source specific BMP requirements pertaining to their operations.
- Staff evaluated methods to gain compliance at facilities identified as repeat offenders in previous assessments. An enhanced inspection program was implemented for these facilities.
- A Mobile Water Use Program was implemented to ensure that mobile businesses operating within the City that have the greatest potential to violate stormwater ordinances implement proper BMPs.

Residential Component

- Stormwater staff responded to and resolved 36 residential complaints.
- A detailed analysis and assessment of residential complaints was performed. This information may help to shape the residential program in the future. Results showed that the majority of residential complaints over the past three years are sediment related and occur in the Buena Vista Hydrologic Area.

Education Component

- Site and activity specific outreach information was provided to all new industrial and commercial businesses on the inventory.
- Multiple articles and media releases were distributed to the general public through media outlets and news letters and several articles were published in internal City newsletters addressing BMP information.

- The City contracted with the San Diego County Office of Education to provide an outreach program to elementary and middle schools in Vista. The program utilized the Splash Mobile Science Laboratory and the Green Machine to teach the students about various environmental topics.
- Assessment methods were implemented this year in an effort to determine the effectiveness of various outreach components, attempting to quantify a change in knowledge in the target audiences. Surveys were implemented for municipal staff and for school children.

Public Participation Component

- The City's website was updated to make it more user friendly. These changes are expected to benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. The website is also equipped with a translation tool so that the Water Quality page is available in Spanish and English. With these enhancements, these stormwater hotline and email addresses will be better advertised and outreach to the Hispanic community is improved.
- Staff continued to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

Fiscal Analysis Component

The fiscal analysis component was performed using the Standardized Method for Fiscal Analysis. To do so, improvements to the tracking and budgeting system were made this year to allow for an accurate fiscal analysis of each component.

Effectiveness Assessment Component

A comprehensive effectiveness assessment was performed this year. Additional effectiveness measures developed and included this year were surveys for municipal staff and pre and post tests for students receiving environmental outreach through the SDCOE. Conclusions from the assessment are incorporated into the recommendations below.

14.8 Program Recommendations

Based on program review and effectiveness assessments for each component, program recommendations for the coming year are presented below.

Development Planning Component

- Coordination with Land Development Staff on SUSMP and HMP implementation and State Construction General Permit compliance;
- Continued training related to new regulations for Capital Improvement Program and Land Development staff;
- Utilize stormwater code enforcement staff for follow-up inspections and enforcement related to treatment control BMP inspections.

Construction Component

- Continue to make improvements to the inspection tracking system;
- Increased focus on all sites in September to ensure compliance prior to the rainy season;
- Continue to participate in all pre-construction meetings.
- Continue training related to the Construction General Permit.

Municipal Component

- Continue implementation of channel maintenance program, including clearing debris and sediment from natural drainage channels and creeks where permits have been obtained;
- Continue to implement and refine the new data tracking system for MS4 facilities to ensure all inspections and maintenance are performed annually;
- Coordinate with the parks department to ensure that there are adequate pet waste stations, kiosks with educational information, and that landscape and restroom maintenance are performed properly.

Industrial/Commercial Component

- Continued implementation of the Mobile Water Use Program;
- Continued implementation and assessment of the enhanced inspection program for repeat offenders and improve where needed.

Residential Component

- Utilize the results of the effectiveness assessment to enhance the residential component of the program, likely focusing on sources of sediment in residential areas within the Buena Vista Hydrologic Area.

Education Component

- Enhance surveys used to measure changes in knowledge where necessary;
- Revise brochures as necessary;
- Translate brochures into Spanish where feasible.

Public Participation Component

- Continue to provide mechanisms for public participation including the Citizen's Academy and public meetings.

Fiscal Analysis Component

- Continue to focus on consistent methods of tracking and reporting of expenditures by program component to allow for easier and accurate fiscal reporting.

Effectiveness Assessment Component

The effectiveness assessment of the program will continue to evolve. As new methods of evaluation are developed, additional supporting data will be tracked. It is expected that as more water quality data is collected, better evaluations of MS4 and receiving water quality will be feasible. Where possible, relationships between program components, BMPs, and water quality may be evaluated.

APPENDIX A-1
STORMWATER STANDARDS MANUAL
SECTION G
STANDARD URBAN STORMWATER MITIGATION PLAN
JANUARY 2011

City of Vista
STORMWATER STANDARDS MANUAL

Section G Land Development and Redevelopment Activities

City of Vista
Standard Urban Stormwater Mitigation Plan (SUSMP)

January 2011

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The San Diego Region has varied topography consisting of coastal plain, central mountain-valley, and eastern mountain valley areas. Elevations range from sea level at the Pacific Ocean to approximately 6,000 feet at the summit of Palomar Mountain. Temperature averages about 65 degrees Fahrenheit and average annual precipitation is between 10 and 13 inches.

San Diego County comprises 10 major stream systems: San Onofre Creek, Santa Margarita River, San Luis Rey River, San Marcos Creek, Escondido Creek, San Dieguito River, San Diego River, Sweetwater River, Otay River, and the Tijuana River. Almost all stream systems in the San Diego region have both perennial and ephemeral reaches. In addition, most of these streams have been impacted by impoundments and/or channelization. There are few undisturbed stream reaches left in San Diego County.

San Diego County is approximately 2.7 million acres and roughly 1.8 million acres (66 percent) is developed or in use. Much of the remaining land is preserved from future development.

Impervious surfaces now cover much of the land, and storm drains pipe runoff from urban areas directly into streams. As in many of California's urban areas, growth and development have caused changes in the timing and intensity of stream flows. These changes can then lead to more frequent flooding, destabilized stream banks, armoring of streambanks with riprap and concrete, loss of streamside trees and vegetation, and the destruction of stream habitat.

The remaining habitat in the region is composed of sensitive coastal sage scrub, chaparral, woodlands, and grasslands. Human encroachment and habitat loss threaten close to 300 species of plants and animals in California. Many of those reside in southern California and range from native grasslands to the Fairy Shrimp.

Once altered, natural streams and their ecosystems cannot be fully restored. However, it is possible to stop, and partially reverse the trend of declining habitat and preserve some ecosystem values for the benefit of future generations.

This is an enormous, long-term effort. Managing runoff from a single development site may seem inconsequential, but by rehabilitating and stabilizing streams, and by changing the way most sites are developed (and redeveloped), we may be able to preserve and enhance existing stream ecosystems in urban and urbanizing areas.

In January 2007, the California Regional Water Quality Control Board for the San Diego Region (Regional Board) reissued a municipal stormwater NPDES permit to San Diego area municipal Copermittees, including the City of Vista. The reissued permit updates and expands stormwater requirements for new developments and redevelopments. Stormwater treatment requirements have been made more widely applicable and more stringent; minimum standards for Low Impact Development (LID) have been added, and the Copermittees are required to develop and implement criteria for the control of runoff peaks and durations from development sites.

Low Impact Development is an integrated site design methodology that uses small-scale detention and retention to minimize pollutants conveyed by runoff and to mimic pre-project site hydrological conditions.

As required by the reissued permit, the Copermittees prepared an updated Countywide Model SUSMP to replace the current countywide model SUSMP, which has been in effect since 2002. Each municipality, including the City of Vista, is required to update its local SUSMP to implement the requirements. To assist the land development community, to streamline project reviews, and to maximize cost-effective environmental benefits, the updated Countywide Model SUSMP incorporates a unified LID design procedure. This design procedure integrates site planning and design measures with engineered, small-scale Integrated Management Practices (IMPs) such as bioretention. By following the procedure, applicants can develop a single integrated design which complies with the complex and overlapping NPDES permit LID requirements, stormwater treatment requirements, and runoff peak-and-duration-control (hydromodification management) requirements.

Along with the detailed design procedure, the updated SUSMP includes design information and criteria for dispersal of runoff to landscaped areas and for pervious pavements, bioretention facilities, flow-through planters, dry wells, infiltration basins, and cisterns. Where feasible and where allowed, water in cisterns may be directed to non-potable uses, augmenting water supplies. Bioretention facilities and planter boxes can be designed with an impermeable barrier so that runoff does not saturate native soils; instead, runoff is filtered through an engineered soil mix before being captured in an underdrain and conveyed to off-site storm drains. This configuration may be needed where groundwater is high, is contaminated, or where increasing soil moisture may present a hazard to foundations or slope stability.

Applicants for development project approvals may choose not to use the unified LID design procedure; however, they will still need to demonstrate compliance with the applicable LID criteria, stormwater treatment criteria, and hydromodification management criteria. The City requires that runoff be infiltrated or else treated by bioretention facilities, planter boxes, filters, settling ponds, or constructed wetlands. In some special circumstances—retrofit of existing drainage systems, some pedestrian-oriented developments, and roadway widening projects—where it can also be demonstrated it is not feasible to construct any of these facilities, higher-rate surface biofilters or higher-rate vault based filtration units may be used.

Applicants for approval of Priority Development Projects must demonstrate compliance with the hydromodification management criteria in the NPDES permit. This document includes guidance for demonstrating compliance. Submittals for projects smaller than 50 acres may demonstrate compliance by using the integrated LID design procedure. For larger projects, the applicant may use a continuous simulation hydrologic computer model to simulate pre-project and post-project runoff, including the effect of LID facilities, detention basins, or other stormwater management facilities, or may identify an exemption applicable to the site.

Applicants must also incorporate into their project design features to control pollutants from specified on-site sources, such as refuse areas, outdoor storage areas, and vehicle washing and

repair facilities. The Copermittees have developed a table listing the types of sources to be controlled and for each, the corresponding source control measures required.

The updated SUSMP provides the applicant with step-by-step instructions for preparing a Project Submittal for review by City Land Development and Water Quality Protection Program staff. The recommended steps are:

1. Assemble needed information.
2. Identify site opportunities and constraints.
3. Follow the LID Design Guidance to analyze the project for LID and to develop and document the drainage design.
4. Specify source controls using the sources/source control checklist in the appendix.
5. Plan for ongoing maintenance of treatment and flow-control facilities.
6. Complete the Project Submittal.

The step-by-step instructions are augmented by the City's process for reviewing the Project Submittal. These instructions are detailed in Chapter 3 of this document and are further supplemented by the documents in Appendix B. As required by the City's NPDES permit, each Copermittee implements a program to verify that approved stormwater treatment facilities are operating effectively. To facilitate implementation of these programs, Chapter 5 includes instructions for applicants to prepare detailed maintenance plans.

For development projects in the City of Vista, project proponents should utilize this SUSMP document for reference in preparing project designs and submittals. For reference or comparison, the updated Countywide Model SUSMP is available for download in .PDF format at www.projectcleanwater.org. The model document is formatted for 2-sided printing, and may also be navigated online. Hyperlinks throughout the document provide ready access to references and additional information resources.

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Glossary

Best Management Practice (BMP)	Any procedure or device designed to minimize the quantity of pollutants that enter the storm drain system.
California Association of Stormwater Quality Agencies (CASQA)	Publisher of the California Stormwater Best Management Practices Handbooks, available at www.cabmphandbooks.com. Successor to the Storm Water Quality Task Force (SWQTF).
California BMP Method	A method for determining the required volume of stormwater treatment facilities. Described in Section 5.5.1 of the California Stormwater Best Management Practice Manual (New Development) (CASQA, 2003).
City	City of Vista
Conditions of Approval (COAs)	Requirements a municipality may adopt for a project in connection with a discretionary action (e.g., adoption of an EIR or negative declaration or issuance of a use permit). COAs may include features to be incorporated into the final plans for the project and may also specify uses, activities, and operational measures that must be observed over the life of the project.
Continuous Simulation Modeling	A method of hydrological analysis in which a set of rainfall data (typically hourly for 30 years or more) is used as input, and runoff rates are calculated on the same time step. The output is then analyzed statistically for the purposes of comparing runoff patterns under different conditions (for example, pre- and post-development-project).
Copermittees	See Dischargers.
Detention	The practice of holding stormwater runoff in ponds, vaults, within berms, or in depressed areas and letting it discharge slowly to the storm drain system. See definitions of infiltration and retention.
Development Projects	New development or redevelopment with land disturbing activities; structural development, including construction or installation of a building or structure, the creation of impervious surfaces, public agency projects, and land subdivision.
Directly Connected Impervious Area	Any impervious surface which drains into a catch basin, area drain, or other conveyance structure without first allowing flow across pervious areas (e.g. lawns).
Direct Infiltration	Infiltration via methods or devices, such as dry wells or infiltration trenches, designed to bypass unsaturated surface soils and transmit runoff directly to groundwater.
Dischargers	The agencies named in the stormwater NPDES permit (see definition): the County of San Diego; the Cities of Carlsbad, El Cajon, La Mesa, Poway, Solana Beach, Chula Vista, Encinitas, Lemon Grove, San Diego, Vista, Coronado, Escondido, National City, San Marcos, Del Mar, Imperial Beach, Oceanside, and Santee; the San Diego Unified Port District, and the San Diego County Regional Airport Authority.

Drainage Management Areas	Areas delineated on a map of the development site showing how drainage is detained, dispersed, or directed to Integrated Management Practices. There are four types of Drainage Management Areas, and specific criteria apply to each type of area. See Chapter 4.
Drawdown time	The time required for a stormwater detention or infiltration facility to drain and return to the dry-weather condition. For detention facilities, drawdown time is a function of basin volume and outlet orifice size. For infiltration facilities, drawdown time is a function of basin volume and infiltration rate.
Environmentally Sensitive Areas	Areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); water bodies designated with the RARE beneficial use by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); areas designated as preserves or their equivalent under the Multi Species Conservation Program within the Cities and County of San Diego; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees.
Flow Control	Control of runoff rates and durations as required by the Hydromodification Management Plan.
Head	In hydraulics, energy represented as a difference in elevation. In slow-flowing open systems, the difference in water surface elevation, e.g., between an inlet and outlet.
Higher-Rate Biofilter	A biofilter with a design surface loading rate higher than the 5 inches per hour rate specified in this document for bioretention facilities and planter boxes.
Hydrograph	Runoff flow rate plotted as a function of time.
Hydromodification Management Plan (HMP)	A Plan implemented by the dischargers so that post-project runoff shall not exceed estimated pre-project rates and/or durations, where increased runoff would result in increased potential for erosion or other adverse impacts to beneficial uses. Also see definition for flow control.
Hydrologic Soil Group	Classification of soils by the Natural Resources Conservation Service (NRCS) into A, B, C, and D groups according to infiltration capacity.
Impervious surface	Any material that prevents or substantially reduces infiltration of water into the soil. See discussion of imperviousness in Chapter Two.
Infeasible	As applied to best management practices, impossible to implement because of technical constraints specific to the site.
Infiltration	Seepage of runoff into soils underlying the site. See definition of retention.
Infiltration Device	Any structure, such as a dry well, that is designed to infiltrate stormwater into the subsurface and, as designed, bypasses the natural groundwater protection afforded by surface or near-surface soil. See definition for direct infiltration.

Integrated Management Practice (IMP)	A facility (BMP) that provides small-scale treatment, retention, and/or detention and is integrated into site layout, landscaping and drainage design. See Low Impact Development.
Integrated Pest Management (IPM)	An approach to pest management that relies on information about the life cycles of pests and their interaction with the environment. Pest control methods are applied with the most economical means and with the least possible hazard to people, property, and the environment.
Interim Hydromodification Criteria	Pursuant to NPDES permit Provision D.1.d.g.(6), the Copermittees prepared Interim Hydromodification Management criteria, which apply to projects disturbing 50 acres or more. The criteria are described in Chapter 2 and in memoranda on the Project Clean Water website.
Jurisdictional Urban Runoff Management Plan (JURMP)	A written description of the specific jurisdictional urban runoff management measures and programs that each Copermittee implements to comply with the stormwater NPDES permit and ensure pollutant discharges are reduced to the MEP and do not cause or contribute to a violation of water quality standards. See Stormwater Pollution Prevention Program.
Lead Agency	The public agency that has the principal responsibility for carrying out or approving a project. (CEQA Guidelines §15367).
Low Impact Development	An integrated site design methodology that uses small-scale detention and retention (Integrated Management Practices, or IMPs) to mimic pre-existing site hydrological conditions.
Maintenance Projects	Maintenance projects are those projects where impervious surfaces may be removed, however the underlying soils are not exposed and/or routine replacement of damaged pavement, such as pothole repair or street overlay projects.
Maximum Extent Practicable (MEP)	Standard, established by the 1987 amendments to the Clean Water Act, for the implementation of municipal stormwater pollution prevention programs (see definition). According to the Act, municipal stormwater NPDES permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants."
National Pollutant Discharge Elimination System (NPDES)	As part of the 1972 Clean Water Act, Congress established the NPDES permitting system to regulate the discharge of pollutants from municipal sanitary sewers and industries. The NPDES was expanded in 1987 to incorporate permits for stormwater discharges as well.
Numeric Criteria	Sizing requirements for stormwater treatment facilities established in Provision D.1.d.(6)(c) of the San Diego RWQCB's stormwater NPDES permit.
Operation and Maintenance (O&M)	Refers to requirements in the Stormwater NPDES Permit to inspect treatment BMPs and implement preventative and corrective maintenance in perpetuity. See Chapter Five.

Parking Lot A land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce.

Permeable Pavements Pavements for roadways, sidewalks, or plazas that are designed to infiltrate a portion of rainfall, including pervious concrete, pervious asphalt, unit-pavers-on-sand, and crushed gravel.

Priority Development Project A project subject to SUSMP requirements. Defined in Stormwater NPDES Permit Provision D.1.d.(1). See Chapter One.

Project Area The entire project area comprises all areas to be altered or developed by the project, plus any additional areas that drain on to areas to be altered or developed.

Project Submittal Documents submitted to a municipality in connection with an application for development approval and demonstrating compliance with Stormwater NPDES Permit requirements for the project. Specific requirements vary from municipality to municipality.

Proprietary A proprietary device is one marketed under legal right of the manufacturer.

Reconfiguration Activities Those activities that affect the surfaces of roads and parking lots that do not impact or expose the underlying soils. Examples of this could include changing the number or configuration of parking spaces, number of traffic lanes, lane widths, bicycle lanes, intersection configuration, or turning lanes.

Redevelopment The creation, addition, and or replacement of impervious surface on an already developed site. Examples include the expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces.

Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include trenching and resurfacing associated with utility work; resurfacing and reconfiguring surface parking lots and existing roadways; new sidewalk construction, pedestrian ramps, or bike lanes on existing roads; and routine replacement of damaged pavement, such as pothole repair.

Rational Method A method of calculating runoff flows based on rainfall intensity, tributary area, and a factor representing the proportion of rainfall that runs off.

Regional (or Watershed) Stormwater Treatment Facility A facility that treats runoff from more than one project or parcel.

Regional Water Quality Control Board (Regional Water Board or RWQCB) California RWQCBs are responsible for implementing pollution control provisions of the Clean Water Act and California Water Code within their jurisdiction. There are nine California RWQCBs. In this document, RWQCB refers to the San Diego Regional Water Quality Control Board, Region 9.

Retention	The practice of holding stormwater in ponds or basins, or within berms or depressed areas, and allowing it to slowly infiltrate into underlying soils. Some portion will evaporate. See definitions for infiltration and detention.
Self-retaining area	An area designed to retain runoff. Self-retaining areas may include graded depressions with landscaping or pervious pavements and may also include tributary impervious areas up to a 2:1 impervious-to-pervious ratio.
Self-treating area	A natural, landscaped, or turf area drains directly off site or to the public storm drain system.
Source Control	Land use or site planning practices, or structural or nonstructural measures that aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between pollutants and urban runoff.
Southern California Coastal Water Research Project (SCCWRP)	A research institute focusing on the coastal ecosystems of Southern California from watersheds to the ocean. SCCWRP developed a channel susceptibility [to erosion] assessment tool for use in determining hydromodification impacts.
Standard Industrial Classification (SIC)	A Federal government system for classifying industries by 4-digit code. It is being supplanted by the North American Industrial Classification System but SIC codes are still referenced by the Regional Water Board in identifying development sites subject to regulation under the NPDES permit. Information and an SIC search function are available at http://www.bls.gov/bls/NAICS.htm
Stormwater NPDES Permit	A permit issued by a Regional Water Quality Control Board (see definition) to local government agencies (Dischargers) placing provisions on allowable discharges of municipal stormwater to waters of the state.
Storm Water Pollution Prevention Plan (SWPPP)	A plan providing for temporary measures to control sediment and other pollutants during construction as required by the statewide stormwater NPDES permit for construction activities.
Stormwater Pollution Prevention Program	A comprehensive program of activities designed to minimize the quantity of pollutants entering storm drains. See Jurisdictional Urban Runoff Management Plan.
Standard Urban Stormwater Mitigation Plan (SUSMP)	Refers to various documents prepared in connection with implementation of the stormwater NPDES permit mandate to control pollutants from new development and redevelopment. Each discharger will adapt this model countywide SUSMP to create a local SUSMP for their respective jurisdiction. Applicants for development project approvals will use the local SUSMP to prepare a submittal for each Priority Development Project they propose.
Treatment	Removal of pollutants from runoff, typically by filtration or settling.
Water Board	See Regional Water Quality Control Board.

Water Quality Technical Report (WQTR) A document required for all Development and Redevelopment Projects, pursuant to the City of Vista Stormwater Management and Discharge Control Ordinance (Municipal Code Section 13.18) to address the water quality impacts from the project, inclusive of all project information, calculations, analyses, assumptions, and design parameters.

Water Quality Volume (WQV) For stormwater treatment facilities that depend on detention to work, the volume of water that must be detained to achieve maximum extent practicable pollutant removal. This volume of water must be detained for a specified drawdown time.

Start

How to Use the City of Vista's SUSMP

Review Chapters 1 and 2 to get a general understanding of the requirements. Then follow step-by-step instructions in Chapter 3 to prepare your Project Submittal.

THIS *Standard Urban Stormwater Mitigation Plan (SUSMP)* will help you ensure your project complies with the City of Vista's and San Diego Regional Water Quality Control Boards' requirements. Most applicants will require the assistance of a qualified civil engineer, architect, and/or landscape architect. Because every project is different, you should begin by checking specific requirements for your project with City of Vista Land Development staff.

To use the *SUSMP,* start by reviewing Chapter One to find out whether and how stormwater quality requirements apply to your project. Chapter One also provides an overview of the process of planning, design, construction, operation, and maintenance leading to compliance.

If there are terms and issues you find puzzling, try finding answers in the glossary or in Chapter Two. Chapter Two provides background on key stormwater concepts and water quality regulations, including design criteria.

Then proceed to Chapter Three and follow the step-by-step guidance to prepare a Project Submittal for your site.

Chapter Four, the Low Impact Development Design Guide, includes design procedures, calculation procedures, and instructions for presenting your design and calculations in your Project Submittal.

In Chapter Five you'll find a detailed description of the process for ensuring operation and maintenance of your stormwater facilities over the life of the project. The chapter includes step-by-step instructions for preparing a maintenance agreement for the stormwater facilities including an operation and maintenance plan, as well as an access easement/agreement.

Construction-Phase Controls

Your Project Submittal for SUSMP compliance is a separate document from the construction Storm Water Pollution Prevention Plan (SWPPP). A SWPPP provides for temporary measures to control sediment and other pollutants during construction at sites that disturb one acre or more. See Section F of the City's Stormwater Standards manual and the Construction Handbook at www.cabmphandbooks.org for more information on SWPPPs.

Throughout each Chapter, you'll find references and resources to help you understand the regulations, complete your Project Submittal, and design stormwater control measures for your project.

► PLAN AHEAD TO AVOID THE THREE MOST COMMON MISTAKES

The most common (and costly) errors made by applicants for development approvals with respect to stormwater quality compliance are:

1. Not planning for compliance early enough. You should think about your strategy for stormwater quality compliance before completing a conceptual site design or sketching a layout of subdivision lots (Chapter 3).

2. Assuming proprietary stormwater treatment facilities will be adequate for compliance. Most aren't (Chapter 2).

3. Not including LID BMPs (Chapter 4) in the project site design early enough.

4. Not planning for periodic inspections and maintenance of treatment and flow-control facilities. Consider who will own and who will maintain the facilities in perpetuity and how they will obtain access, and identify which arrangements are acceptable to the City of Vista (Chapter 5).

Chapter

1

Policies and Procedures

Determine if your development project must comply with stormwater quality requirements, and review the steps to compliance.

A Low Impact Development Design Procedure

The San Diego Regional Water Board reissued a municipal stormwater NPDES permit to the municipal Copermittees, including the City of Vista (City), in January 2007. In the City of Vista, the City Engineer is ultimately responsible for ensuring that the City maintains full compliance with all permit requirements. The permit updates and expands stormwater requirements for new developments and redevelopments. Stormwater treatment requirements have been made more stringent, minimum standards for Low Impact Development (LID) have been added, and the City is required to develop and implement criteria for the control of runoff peaks and durations from development sites.

To assist the land development community, streamline project reviews, and maximize cost-effective environmental benefits, the LID design procedure is a unified Countywide procedure. This design procedure integrates site planning and design measures with engineered, small-scale Integrated Management Practices (IMPs) such as bioretention. By following the procedure, applicants can develop a single integrated design which complies with the complex and overlapping NPDES permit LID requirements, stormwater treatment requirements, and flow-control (hydromodification management) requirements.

The design approach is detailed in Chapter 4. General instructions for preparing a complete Project Submittal are in Chapter 3 and supplemented with the City's documents in Appendix B.

Applicants may choose not to use this design procedure, in which case they will need to demonstrate, in their submittal, compliance with applicable LID criteria, stormwater treatment criteria, and flow-control criteria. These criteria are described in Chapter 2 and in the NPDES permit.

Requirements for All Development Projects

All development projects must include site design and source control measures to reduce the discharge of stormwater pollutants to the maximum extent practicable.

In general, for projects that are not "Priority Development Projects," this will include:

- Implementation of source control BMPs as listed in the Appendix A.
- Inclusion of some LID features that conserve natural features, set back development from natural water bodies, minimize imperviousness, maximize infiltration, and retain and slow runoff.
- Compliance with requirements for construction-phase controls on sediment and other pollutants.
- City Land Development or Water Quality Protection Program staff may also require additional controls appropriate to the project, which may include stormwater treatment controls. LID treatment controls such as infiltration or bioretention are preferred. See "Selection of Treatment Facilities" on page 33. If treatment facilities are included, provisions must be made to ensure their long-term maintenance.

Priority Development Projects

The NPDES permit requires that more runoff treatment controls be incorporated into Priority Development Projects.

► NEW DEVELOPMENT

Projects on previously undeveloped land are Priority Development Projects if they are in one or more of the categories listed in Table 1-1. If a project feature such as a parking lot falls into a Priority Development Project category, then the entire project footprint is subject to Priority Project requirements.

TABLE 1-1. Priority Development Projects.

Is the project in any of these categories?			
Yes ❑	No ❑	A	**Housing subdivisions of 10 or more dwelling units.** Examples: single-family homes, multi-family homes, condominiums, and apartments.
Yes ❑	No ❑	B	**Commercial—greater than one acre.** Any development other than heavy industry or residential. Examples: hospitals; laboratories and other medical facilities; educational institutions; recreational facilities; municipal facilities; commercial nurseries; multi-apartment buildings; car wash facilities; mini-malls and other business complexes; shopping malls; hotels; office buildings; public warehouses; automotive dealerships; airfields; and other light industrial facilities.
Yes ❑	No ❑	C	**Heavy industry—greater than one acre.** Examples: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, etc.).
Yes ❑	No ❑	D	**Automotive repair shops.** A facility categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539.
Yes ❑	No ❑	E	**Restaurants.** Any facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP and numeric sizing criteria requirements and hydromodification requirements.
Yes ❑	No ❑	F	**Hillside development greater than 5,000 square feet.** Any development that creates 5,000 square feet of impervious surface and is located in an area with known erosive soil conditions, where the development will grade on any natural slope that is twenty-five percent or greater.
Yes ❑	No ❑	G	**Environmentally Sensitive Areas (ESAs).** All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. "Directly adjacent" means situated within 200 feet of the ESA. "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.
Yes ❑	No ❑	H	**Parking lots 5,000 square feet or more** or with 15 or more parking spaces and potentially exposed to urban runoff.
Yes ❑	No ❑	I	**Street, roads, highways, and freeways.** Any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes ❑	No ❑	J	**Retail Gasoline Outlets (RGOs)** that are: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.
Yes ❑	No ❑	K	**Development Projects—greater than one acre.** Any development projects that result in the disturbance of one acre or more of land.

► PREVIOUSLY DEVELOPED SITES

Projects on previously developed sites ("redevelopment projects") are Priority Development Projects if they create, add, or replace 5,000 square feet or more of impervious surface and also are in one of the categories listed in Table 1-1.

► THE "50% RULE" FOR PREVIOUSLY DEVELOPED PROJECTS

Projects on previously developed sites may also need to retrofit drainage of all impervious areas of the entire project site. For projects creating or replacing more than 5,000 square feet of impervious area:

- If the new project results in an increase of, or replacement of, 50% or more of the previously existing impervious surface, and the existing development was not subject to SUSMP requirements, then the entire project must be included in the treatment measure design.
- Where redevelopment results in an increase of less than 50% of the impervious surfaces of a pre-existing development, and the existing development was not subject to SUSMP requirements, the numeric sizing criteria applies only to the addition. In other words, only the additional impervious surface is subject to treatment control BMP requirements.

If a Redevelopment Project feature such as a parking lot falls into a Priority Development Project category, then the entire project footprint is subject to Priority Project requirements.

Redevelopment projects limited to interior remodels, routine maintenance or repair, roof or exterior surface replacement, resurfacing and reconfiguring surface parking lots and existing roadways, new sidewalk construction, pedestrian ramps, or bike lanes on existing roads, and routine replacement of damaged pavement such as pothole repair are not subject to treatment requirements. However, other requirements, including incorporation of appropriate source controls, still apply.

► POLLUTANT GENERATING PROJECTS WHICH DISTURB ONE ACRE OR MORE OF LAND (ITEM K IN TABLE 1-1)

Section D.1.d(1)(b) of the Municipal Storm Water Permit contains the following provisions:

> "In addition to the Priority Development Project Categories identified in [these Storm Water Standards], within three years of adoption of this Order Priority Development Projects shall also include all other pollutant generating Development Projects that result in the disturbance of one acre or more of land."

The Municipal Storm Water Permit further defines "pollutant generating Development Projects" as "those projects that generate pollutants at levels greater than background levels."

Projects that generate pollutants at levels greater than background levels and disturb one acre or more of land are considered Priority Development Projects. Excluded from this rule are those

projects that are not considered Development or Redevelopment according to the definitions in this SUSMP. Generally, all projects which include impervious surfaces and/or introduce landscaping that requires routine use of fertilizers and pesticides are considered pollutant generating above background levels. In most cases linear pathway projects that are for infrequent vehicle use, such as emergency or maintenance access, or for pedestrian or bicycle use, are not considered pollutant generating above background levels if they are built with pervious surfaces or if they sheet flow to surrounding pervious surfaces.

Compliance Process at a Glance

For the applicant for development project approval, stormwater compliance follows these general steps:

1. Discuss requirements during a pre-application meeting with City Land Development staff.
2. Review the instructions in this SUSMP before you prepare your tentative map, preliminary site plan, drainage plan, and landscaping plan.
3. Prepare your Project Submittal, which is typically made with your application for development approvals (entitlements).
4. Create your detailed project design, incorporating the features described in your Project Submittal.
5. Each stormwater compliance feature and facility must be tabulated and its location shown on the City's BMP plan sheet.
6. Prepare a Stormwater Facility Operation and Maintenance Plan and Access Agreement and submit it as required by the City.
7. Maintain both permanent and temporary construction stormwater facilities during construction and following construction in accordance with required warranties.
8. Following construction, formally transfer responsibility for maintenance to the owner.
9. The owner must regularly verify stormwater facilities are properly maintained.

Preparation of a complete and detailed Project Submittal is the key to cost-effective stormwater compliance and expeditious review of your project. Instructions for preparing your Project Submittal are in Chapter 3.

Phased Projects

CEQA
Preparers of CEQA documents may wish to visit the Project Clean Water website for guidance..

When determining whether SUSMP requirements apply, a "project" should be defined consistent with California Environmental Quality Act (CEQA) definitions of "project." That is, the "project" is the

whole of an action which has the potential for adding or replacing or resulting in the addition or replacement of roofs, pavement, or other impervious surfaces and thereby resulting in increased flows and stormwater pollutants. "Whole of an action" means the project may not be segmented or piecemealed into small parts if the effect is to reduce the quantity of impervious area for any part to below the SUSMP thresholds.

Depending on the project, City Land Development or Water Quality Protection Program staff may require, as part of an application for approval of a phased development project, a conceptual or master Project Submittal which describes and illustrates, in broad outline, how the drainage for the project will comply with the SUSMP requirements. The level of detail in the conceptual or master Project Submittal should be consistent with the scope and level of detail of the development approval being considered. The conceptual or master Project Submittal should specify that a more detailed Project Submittal for each later phase or portion of the project will be submitted with subsequent applications for discretionary approvals.

Note these minimum standards for SUSMP applicability are for the purpose of ensuring a consistent minimum level or "floor" for countywide implementation consistent with the requirements of the NPDES permit.

New Subdivisions

If a tentative map approval would potentially entitle future owners to construct new or replaced impervious area which, in aggregate, could exceed one of the SUSMP thresholds (Table 1-1), then the applicant must take steps to ensure SUSMP requirements can and will be implemented as the subdivision is built out.

If the tentative map application does not include plans for site improvements, the applicant should nevertheless identify the type, size, location, and final ownership of stormwater treatment and flow-control facilities adequate to serve common private roadways and any other common areas, and to also manage runoff from an expected reasonable estimate of the square footage of future roofs, driveways, and other impervious surfaces on each individual lot. The City may condition approval of the map on implementation of stormwater treatment and other SUSMP measures when construction occurs on the individual lots. At the City's discretion, this condition may be enforced by a grant deed of development rights or by a development agreement.

If the City deems it necessary, the future impervious area of one or more lots may be limited by a deed restriction. This might be necessary when a project is exempted from one or all SUSMP provisions because the total impervious area is below a threshold, or to ensure runoff from impervious areas added after the project is approved does not overload a stormwater treatment and flow-control facility.

The City may require subdivision maps to dedicate an "open space easement, as defined by Government Code Section 51075," to suitably restrict the future building of structures at each stormwater facility location if necessary.

In general, in new subdivisions stormwater treatment, infiltration, or flow-control facilities should not be located on individual single-family residential lots, particularly when those

facilities manage runoff from other lots, from streets, or from common areas. A better alternative is to locate stormwater facilities on one or more separate, jointly owned parcels.

After consulting with City Land Development staff, applicants for subdivision approvals will propose one of the following four options, depending on project characteristics and local policies:

1. Show the number of parcels and the total impervious area to be created on all parcels could not, in the future, exceed any of the thresholds in Table 1-1.
2. Show that, for each and every lot, the intended use can be achieved with a design which disperses runoff from roofs, driveways, streets, and other impervious areas to self-retaining pervious areas, using the criteria in Chapter 4.
3. Prepare improvement plans showing drainage to treatment and/or flow-control facilities designed in accordance with this SUSMP, and commit to constructing the facilities prior to transferring the lots.
4. Prepare improvement plans showing drainage to treatment and/or flow-control facilities designed in accordance with this SUSMP, and provide appropriate legal instruments to ensure the proposed facilities will be constructed and maintained by subsequent owners.

For the option selected, City Land Development staff will determine the appropriate conditions of approval, easements, deed restrictions, or other legal instruments necessary to assure future compliance.

Compliance with Flow-Control Requirements

Priority Development Projects (Table 1-1) must be designed so that runoff rates and durations are controlled to maintain or reduce pre-project downstream erosion conditions and protect stream habitat.

► HMP APPLICABILITY REQUIREMENTS

To determine if a proposed project must implement hydromodification controls, refer to the HMP Decision Matrix in Figure 1-1 below. The HMP Decision Matrix may be used for all types of development projects. For redevelopment projects, flow controls are required if the redevelopment project increases impervious area or peak flow rates as compared to pre-project conditions.

As described at the beginning of Chapter 1, all Priority Development Projects are subject to minimum LID and water quality treatment requirements even if hydromodification flow controls are not required.

As shown in Figure 1-1, projects, within the City of Vista may be exempt from HMP criteria under the following conditions.

- If the project is not a Priority Development Project

- If the proposed project does not increase the impervious area or peak flows to any discharge location.
- If the proposed project discharges to a stabilized conveyance system that extends to the Pacific Ocean, a tidally-influenced area, or an exempt river reach.
- If an urban infill project discharges to an existing hardened or rehabilitated conveyance system that extends beyond the "domain of analysis," the potential for cumulative impacts in the watershed are low, and the ultimate receiving channel has a "Low" susceptibility to erosion as defined in the Southern California Coastal Water Research Project (SCCWRP) channel susceptibility assessment tool.

If the proposed project decreases the pre-project impervious area and peak flows to each discharge location, then a flow-duration analysis is implicitly not required. If continuous simulation flow-frequency and flow duration curves were developed for such a scenario, the unmitigated post-project flows and durations would be less as compared to pre-project curves.

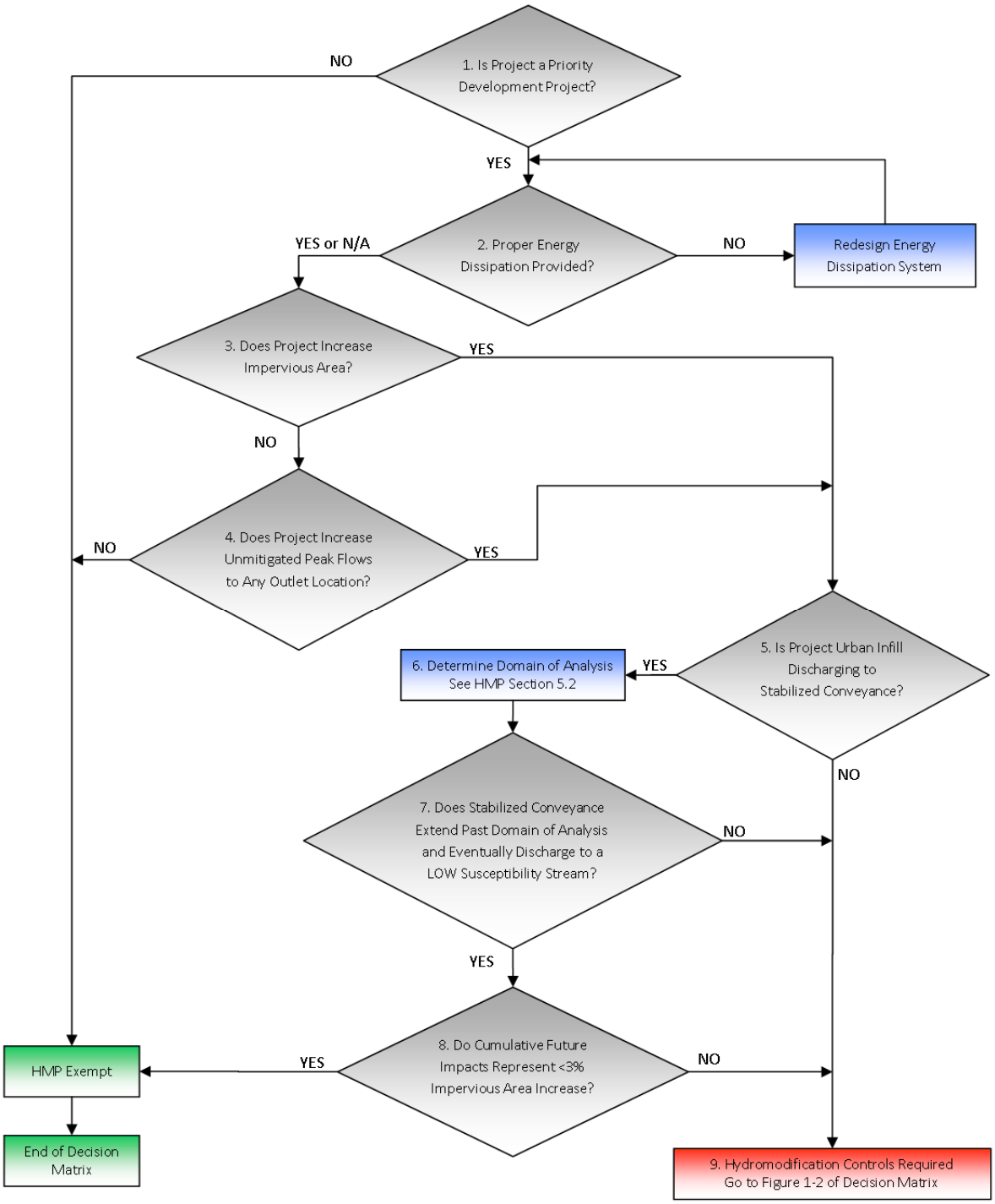

FIGURE 1-1. HMP Applicability Determination

The following provides a description of each of the nodes identified in the HMP Applicability Determination flow diagram, Figure 1-1 above:

- Figure 1-1, Node 1 – Hydromodification mitigation measures are only required if the proposed project is a Priority Development Project.

- Figure 1-1, Node 2 – Properly designed energy dissipation systems are required for all project outfalls to unlined channels. Such systems should be designed in accordance with the County of San Diego's Drainage Design Manual to ensure downstream channel protection from concentrated outfalls. Alternative designs may be acceptable, subject to approval by the City of Vista Land Development staff.

- Figure 1-1, Nodes 3 and 4 – Projects may be exempt from hydromodification criteria if the proposed project reduces the pre-project impervious area and if unmitigated post-project outflows (outflows without detention routing) to each outlet location are less as compared to the pre-project condition. The pre and post-project hydrologic analysis should be conducted for the 2 and 10-year design storms and follow single-event methodology set forth in the San Diego County Hydrology Manual, or approved alternative methodology. This scenario may apply to redevelopment projects in particular.

- Figure 1-1, Nodes 5 through 8 – For urban infill projects discharging runoff to an existing hardened or rehabilitated conveyance system, potential limited exemptions from hydromodification criteria may apply where the existing impervious area percentage in the watershed exceeds 40 percent. For the potential exemption application, the domain of analysis must be determined and the existing hardened or rehabilitated conveyance system must extend beyond the downstream terminus of the domain of analysis. The hardened or rehabilitated conveyance system must discharge to a receiving channel with a Low potential for channel susceptibility for this exemption to be granted. The channel susceptibility shall be determined using the SCCWRP channel susceptibility assessment tool. For urban infill projects, an exemption can only be granted if the potential future development impacts in the watershed would increase the watershed's impervious area percentage by less than 3 percent (as compared to the existing condition in the year 2010). If the potential future cumulative impacts in the watershed could increase the impervious area percentage by more than 3 percent (as compared to existing condition), then no exemption can be granted. Watershed impervious area calculations for this potential exemption, in which a project discharges to a watershed with an existing impervious areas greater than 40 percent, will be measured upstream from the outfall of the urban conveyance system (to a non-concrete, non-riprap-lined or non-engineered channel) to the contributing watershed boundary (the entire watershed contributing to the discharge outfall).

  Percent imperviousness will be calculated based on an area-weighted average of impervious areas associated with commercial, industrial, single-family residential, multi-family residential, open space, and other miscellaneous areas (schools, churches, etc.) representative for the watershed. Representative percent imperviousness values for each land use type may correspond to values recommended in Table 3-1 of the County of

San Diego's Hydrology Manual and detailed below or by more specific representative percent impervious calculations (using GIS, etc.), which are often required to represent impervious area percentages for park, school and church sites.

► FLOW CONTROL PERFORMANCE CRITERIA

Figures 1-2 and 1-3, which are part of the HMP Decision Matrix and are presented on the following pages, detail how lower flow thresholds would be determined for a project site. Figures 1-4 and 1-5, which detail the SCCWRP lateral and vertical channel susceptibility requirements, complete the HMP Decision Matrix.

The project applicant must first determine whether field investigations will be conducted pursuant to the SCCWRP channel screening tools. If the screening tools are not completed for a proposed project, then the site must mitigate peak flows and durations based on a pre-project condition lower flow threshold of $0.1Q_2$. While a project applicant would be held to the $0.1Q_2$ standard if channel screening tools and assessments are not conducted, less restrictive standards are possible for more erosion-resistant receiving channel sections if the screening tools are completed and the SCCWRP method indicates either a Medium or Low susceptibility to channel erosion .

In such a scenario, the project applicant would also use the critical shear stress calculator to assist in determination of the predicted lower flow threshold. The SCCWRP screening tools and critical shear stress calculator work in concert to determine the lower flow threshold for a given site. Lower flow limits determined by the calculator have been grouped into one of three thresholds – $0.1Q_2$, $0.3Q_2$ or $0.5Q_2$. "Low" susceptibilities from the SCCWRP tool generally correspond to the $0.5Q_2$ threshold, "Medium" susceptibilities generally correspond to the $0.3Q_2$ threshold, and "High" susceptibilities generally correspond to the $0.1Q_2$ threshold. The SCCWRP channel screening tools are required to identify channel conditions not considered by the critical shear stress calculator, which focuses on channel material and cross section. Conversely, the SCCWRP channel screening tools considers other channel conditions including channel braiding, mass wasting, and proximity to the erosion threshold. In cases where the critical shear stress calculator and the SCCWRP screening tools return divergent values, then the most conservative value shall be used as the lower flow threshold for the analysis.

Low-Impact Development (LID) and extended detention facilities are required to meet peak flow and duration controls as follows:

1. For flow rates ranging from 10 percent, 30 percent or 50 percent of the pre-project 2-year runoff event ($0.1Q_2$, $0.3Q_2$, or $0.5Q_2$) to the pre-project 10-year runoff event (Q10), the post-project discharge rates and durations shall not deviate above the pre-project rates and durations by more than 10 percent over and more than 10 percent of the length of the flow duration curve. The specific lower flow threshold will depend on results from the SCCWRP channel screening study and the critical flow calculator.

2. For flow rates ranging from the lower flow threshold to Q_5, the post-project peak flows shall not exceed pre-project peak flows. For flow rates from Q_5 to Q_{10}, post-project peak flows may exceed pre-project flows by up to 10 percent for a 1-year frequency interval. For example, post-project flows could exceed pre-project flows by

up to 10 percent for the interval from Q_9 to Q_{10} or from $Q_{5.5}$ to $Q_{6.5}$, but not from Q_8 to Q_{10}.

The City recommends the use of LID facilities to satisfy both 85th percentile water quality treatment as well as HMP flow control criteria. This document provides standards for utilizing LID to satisfy both requirements.

The following methods may be used to meet mitigation requirements.

- Install BMPs that meet design requirements to control runoff from new impervious areas. BMPs including bioretention basins, vegetated swales, planter boxes, extended detention basins, etc. shall be designed pursuant to standard sizing and specification criteria detailed in the SUSMP and the HMP/LID Sizing Calculator to ensure compliance with hydromodification criteria.

- Use of the automated sizing calculator (San Diego Sizing Calculator) will allows project applicants to select and size LID treatment devices or flow control basins. The tool uses pre-calculated sizing factors to determine required footprint sizes for flow control BMPs. The Sizing Calculator includes an automated pond sizing tool to assist in the design of extended detention facilities for mitigation of hydromodification effects. Because of the Sizing Calculator's ease of implementation, and since hydromodification BMPs can also serve as treatment BMPs, it is encouraged that project applicants select this option.

- Prepare continuous simulation hydrologic models and compare the pre-project and mitigated post-project runoff peaks and durations (with hydromodification flow controls) until compliance to flow control standards can be demonstrated. The project applicant will be required to quantify the long-term pre- and post-project runoff response from the site and establish runoff routing and stage-storage-discharge relationships for the planned flow control devices. Public domain software such as HSPF, HEC-HMS and SWMM can be used for preparation of a continuous simulation hydrologic analysis. The use of proprietary software must be approved by the City Land Development staff prior to its use.

- Points of compliance must be selected to conduct the comparisons of pre-project and post-project flows and durations. Generally, points of compliance are selected at locations along the project boundary where concentrated flows discharge from the project site. If a point of compliance is selected downstream of the project boundary, then City of Vista Land Development staff should be consulted in advance of the hydromodification analysis. For projects which convey offsite runoff through the site, it is assumed that the offsite runoff would be separated from site runoff. If this is not the case, then the City of Vista Land Development staff should be consulted to further refine the points of compliance for the site (an interior project site point of compliance could be required in such a scenario).

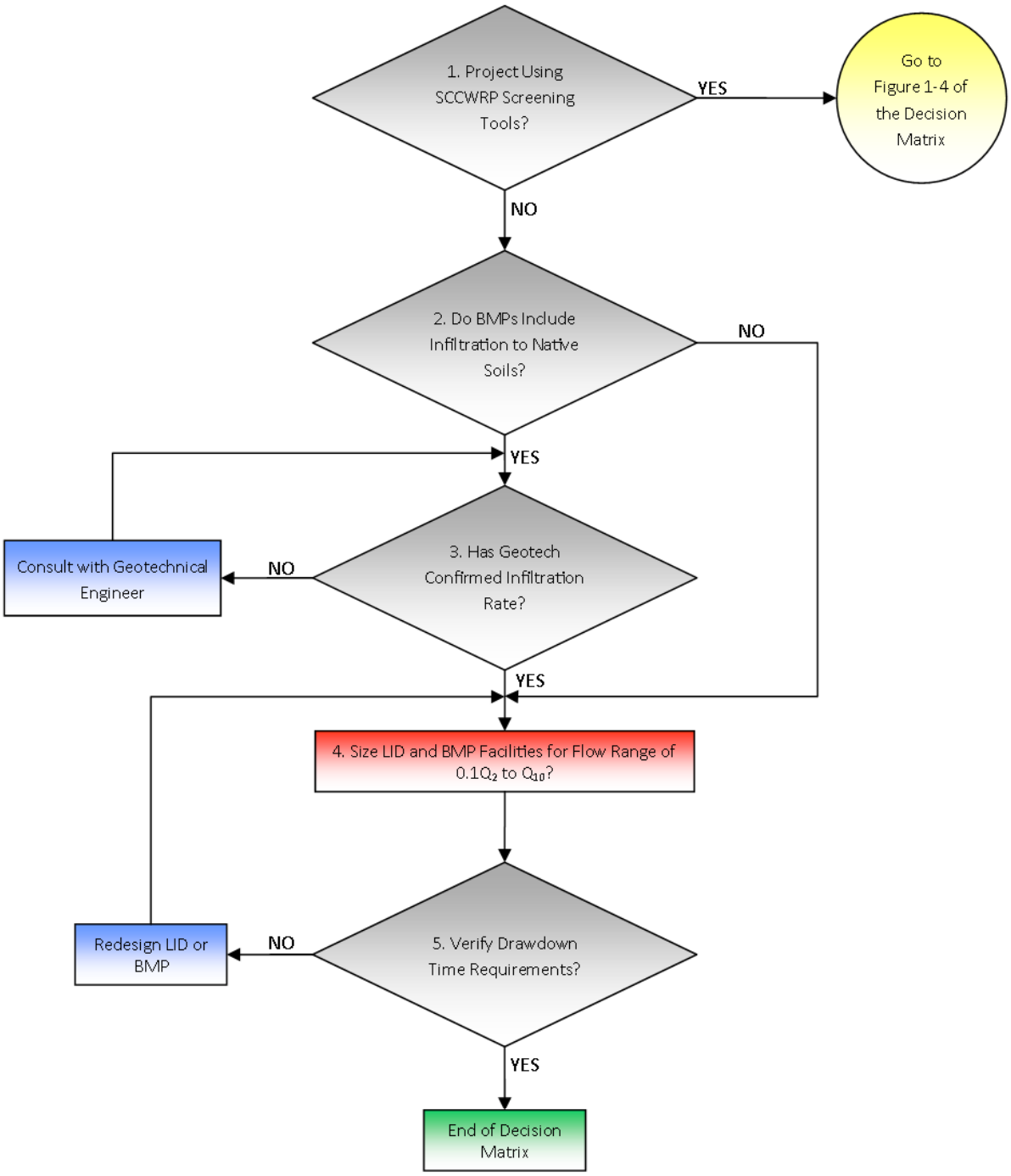
1. Project Using SCCWRP Screening Tools?
YES
Go to Figure 1-4 of the Decision Matrix
NO
2. Do BMPs Include Infiltration to Native Soils?
NO
YES
Consult with Geotechnical Engineer
NO
3. Has Geotech Confirmed Infiltration Rate?
YES
4. Size LID and BMP Facilities for Flow Range of $0.1Q_2$ to Q_{10}?
Redesign LID or BMP
NO
5. Verify Drawdown Time Requirements?
YES
End of Decision Matrix

- Figure 1-2, Node 1 – If the project applicant chooses to complete SCCWRP channel screening tools, then the applicant moves to Figures 1-4 and 1-5 to assess the vertical and lateral susceptibility of the receiving channel systems. Depending on the results of the SCCWRP screening tools and critical flow calculator, it is possible that lower flow thresholds in excess of $0.1Q_2$ may be used. If the project applicant chooses not to complete the SCCWRP channel assessment, then the applicant proceeds with Figure 1-2 of the Decision Matrix.

- Figure 1-2, Node 2 – If the project's LID or BMP approach accounts for the infiltration of runoff to native surrounding soils (below amended soil layers), then consultation with a geotechnical engineer or engineering geologist is required (Node 3). If the project mitigation approach does not account for infiltration of runoff, then the applicant would proceed to Node 4.

- Figure 1-2, Node 3 – A geotechnical engineer or engineering geologist should determine the allowable infiltration rates to be used for the design of each LID or BMP facility. The geotechnical assessment should also identify potential portions of the project which are feasible for infiltration of runoff.

- Figure 1-2, Node 4 – In this scenario, the SCCWRP channel assessment was not conducted. Therefore, the project applicant would be held to the $0.1Q_2$ lower flow threshold. LID and extended detention facilities must be sized so that the mitigated post project flows and durations do not exceed pre-project flows and durations for the geomorphically-significant flow range of $0.1Q_2$ to Q_{10}.

- Figure 1-2, Node 5 - The Decision Matrix includes language regarding drawdown time requirements so that standards set forth by the City of Vista Land Development staff are met. The drawdown requirement would be applied to underground vaults in addition to extended detention basins and the surface ponding areas of LID facilities. Proper maintenance of hydromodification mitigation facilities is essential to guard against potential vector issues as well as potential safety issues resulting from long-term standing water. If mitigation facility outlets clog, then runoff will bypass the system and potentially result in additional erosion problems downstream of a site. The City of Vista has a drawdown time requirement of 72 hours.

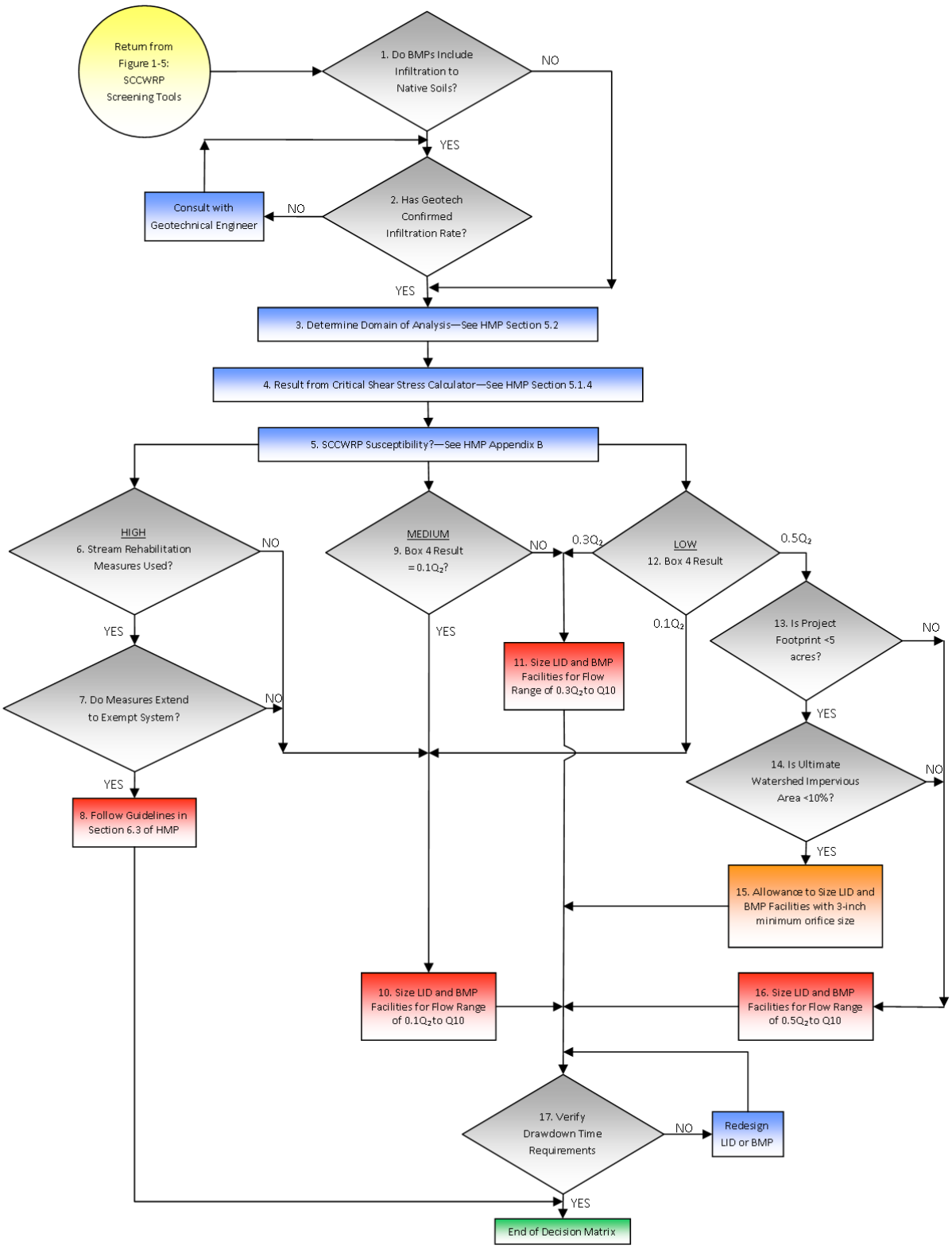

FIGURE 1-3. Mitigation Criteria and Implementation

- Figure 1-3, Node 1 – Use of Figure 1-3 assumes that the project applicant conducted the SCCWRP channel assessment. Node 1 would begin following completion of both the lateral and vertical susceptibility flow charts depicted in Figures 1-4 and 1-5. Node 1 is a decision node asking if the project's LID or BMP approach accounts for the infiltration of runoff to native surrounding soils (below amended soil layers). If the answer is Yes, then consultation with a geotechnical engineer is required (Node 2). If the project mitigation approach does not account for infiltration of runoff, then the applicant would proceed to Node 3.

- Figure 1-3, Node 2 – A geotechnical engineer or engineering geologist should determine the allowable infiltration rates to be used for the design of each LID or BMP facility. The geotechnical assessment should also identify potential portions of the project which are feasible for infiltration of runoff.

- Figure 1-3, Node 3 – Pursuant to criteria detailed in HMP Section 5.2, the Domain of Analysis is determined downstream and upstream of the project site. This determination is used to ascertain the required reach length for data collection (channel bed and bank material, channel cross section data, etc.) required for the critical flow calculator (see Node 4),

- Figure 1-3, Node 4 – Pursuant to criteria detailed in HMP Section 5.1.4, the project applicant would run the critical shear stress calculator to determine if the recommended critical flow threshold should be $0.1Q_2$, $0.3Q_2$, or $0.5Q_2$. This result will be compared to the result from the SCCWRP screening analysis (Node 5) to determine the final lower flow threshold for the project.

- Figure 1-3, Node 5 – Pursuant to criteria detailed in HMP Appendix B, the project applicant would determine both the lateral and vertical channel susceptibility rating per guidelines set forth by SCCWRP. If the lateral and vertical tools returned divergent results, then the more conservative result would be used. SCCWRP susceptibility ratings include "High," "Medium" and "Low."

- Figure 1-3, Node 6 – A project applicant would arrive at Node 6 if the SCCWRP channel susceptibility rating was determined to be "High." This decision node inquires as to whether stream rehabilitation measures such as grade control and channel widening will be used as a mitigation measure instead of flow control. It should be noted that stream rehabilitation options are only allowed if the existing receiving channel susceptibility is considered to be "High."

- Figure 1-3, Node 7 – Stream rehabilitation measures are only allowed if the proposed mitigation project extends to a downstream exempt system (such as an exempt river system). If the mitigation measure did not extend to an exempt system, then the potential for cumulative watershed impacts would be more pronounced.

- Figure 1-3, Node 8 – If stream rehabilitation measures are allowed, then guidelines outlined in Section 6.3 of the HMP should be followed to design the in-stream mitigation approach.

- Figure 1-3, Node 9 - A project applicant would arrive at Node 9 if the SCCWRP channel susceptibility rating was determined to be "Medium." If the result from the critical shear stress calculator is also "Medium" (or $0.3Q_2$), then the lower flow threshold would be $0.3Q_2$ (Node 11). If the result from the critical shear stress calculator is "High" (or $0.1Q_2$), then the more conservative value would be used and the lower flow threshold would be $0.1Q_2$ (Node 10).

- Figure 1-3, Node 10 – For stream reaches determined by either the critical flow calculator or the SCCWRP screening tools to have a "High" susceptibility to erosion, LID and extended detention flow control facilities should be sized so that the mitigated post project flows and durations do not exceed pre-project flows and durations for the geomorphically-significant flow range of $0.1Q_2$ to Q_{10}.

- Figure 1-3, Node 11 - For stream reaches determined by either the critical flow calculator or the SCCWRP screening tools to have a "Medium" susceptibility to erosion, LID and extended detention flow control facilities should be sized so that the mitigated post project flows and durations do not exceed pre-project flows and durations for the geomorphically-significant flow range of $0.3Q_2$ to Q_{10}.

- Figure 1-3, Node 12 - A project applicant would arrive at Node 12 if the SCCWRP channel susceptibility rating was determined to be "Low." If the result from the critical shear stress calculator is also "Low" (or $0.5Q_2$), then the lower flow threshold would be $0.5Q_2$ (Node 16 – note potential waiver in Node 13). If the result from the critical shear stress calculator is "High" (or $0.1Q_2$), then the more conservative value would be used and the lower flow threshold would be $0.1Q_2$ (Node 10). If the result from the critical flow calculator is "Medium" (or $0.3Q_2$), then the more conservative value would be used and the lower flow threshold would be $0.3Q_2$ (Node 11).

- Figure 1-3, Node 13 – In some limited situations, namely small developments in rural or lightly developed areas, an allowance for a minimum outlet orifice size may be granted when the receiving channel susceptibility is "Low." This criteria may potentially be used for project footprints less than 5 acres. If the project footprint is greater than 5 acres, then the allowance may not be granted and the applicant would proceed to Node 16.

- Figure 1-3, Node 14 – The potential allowance discussed in Node 13 could only be granted if the ultimate potential impervious area in the sub-watershed is less than 10 percent. If there is potential for the sub-watershed impervious area to exceed 10 percent, then the minimum orifice size criteria may not be granted.

- Figure 1-3, Node 15 – If Nodes 12, 13, and 14 are satisfied, then mitigation facilities may be designed using a 3-inch minimum outlet orifice size.

- Figure 1-3, Node 16 - For stream reaches determined by either the critical flow calculator or the SCCWRP screening tools to have a "Low" susceptibility to erosion – and for projects where the minimum outlet orifice criteria does not apply - LID and extended detention flow control facilities should be sized so that the mitigated post project flows and durations do not exceed pre-project flows and durations for the geomorphically-significant flow range of $0.5Q_2$ to Q_{10}.

- Figure 1-3, Node 17 – For all hydromodification mitigation designs, the Decision Matrix includes language regarding drawdown time requirements so that standards set forth by the City of Vista Land Development staff are met. The drawdown requirement would be applied to underground vaults in addition to extended detention basins and the surface ponding areas of LID facilities. Proper maintenance of hydromodification mitigation facilities is essential to guard against potential vector issues as well as potential safety issues resulting from long-term standing water. If mitigation facility outlets clog, then runoff will bypass the system and potentially result in additional erosion problems downstream of a site. The City of Vista has a drawdown time requirement of 72 hours.

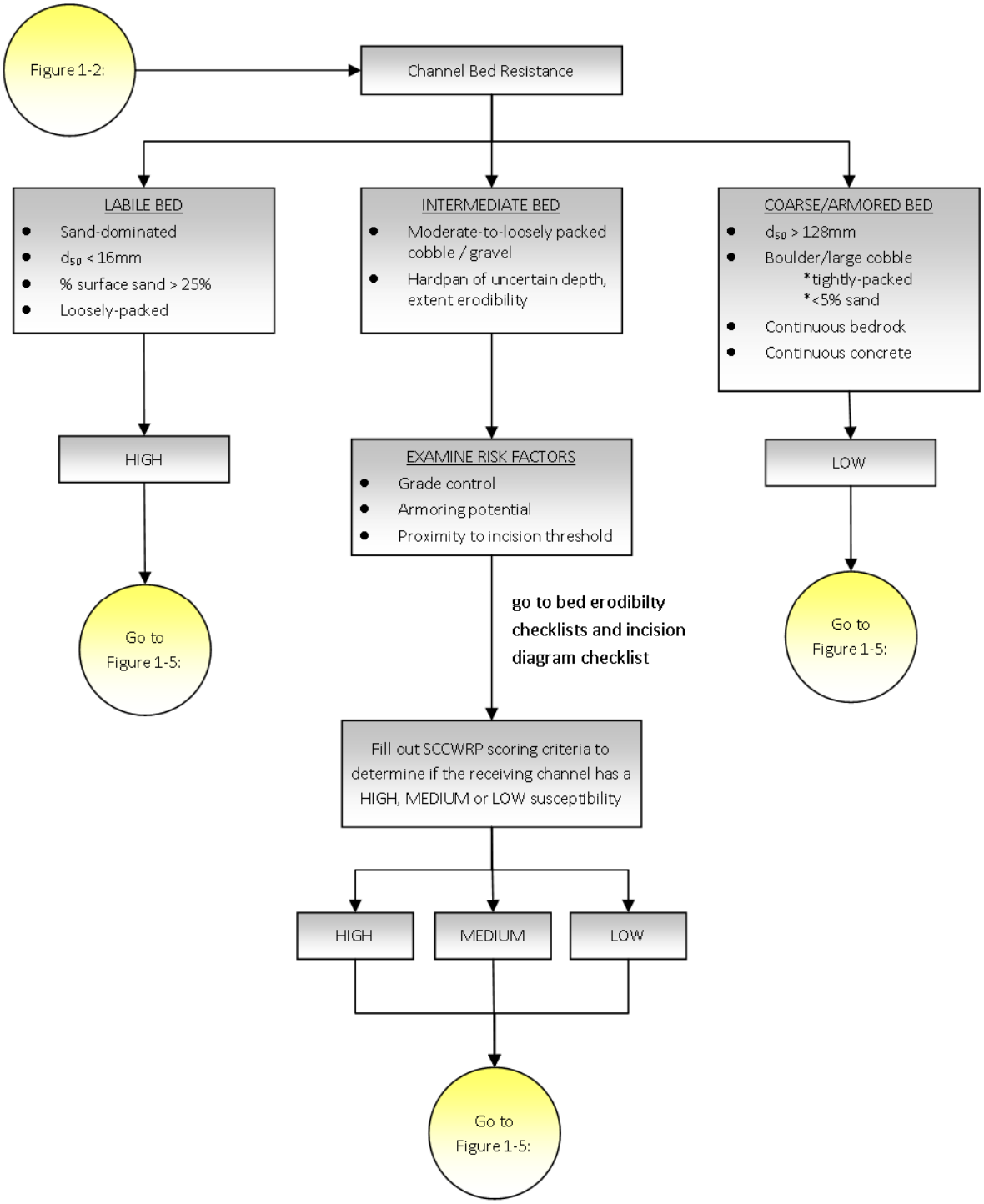

FIGURE 1-4. SCCWRP Vertical Susceptibility

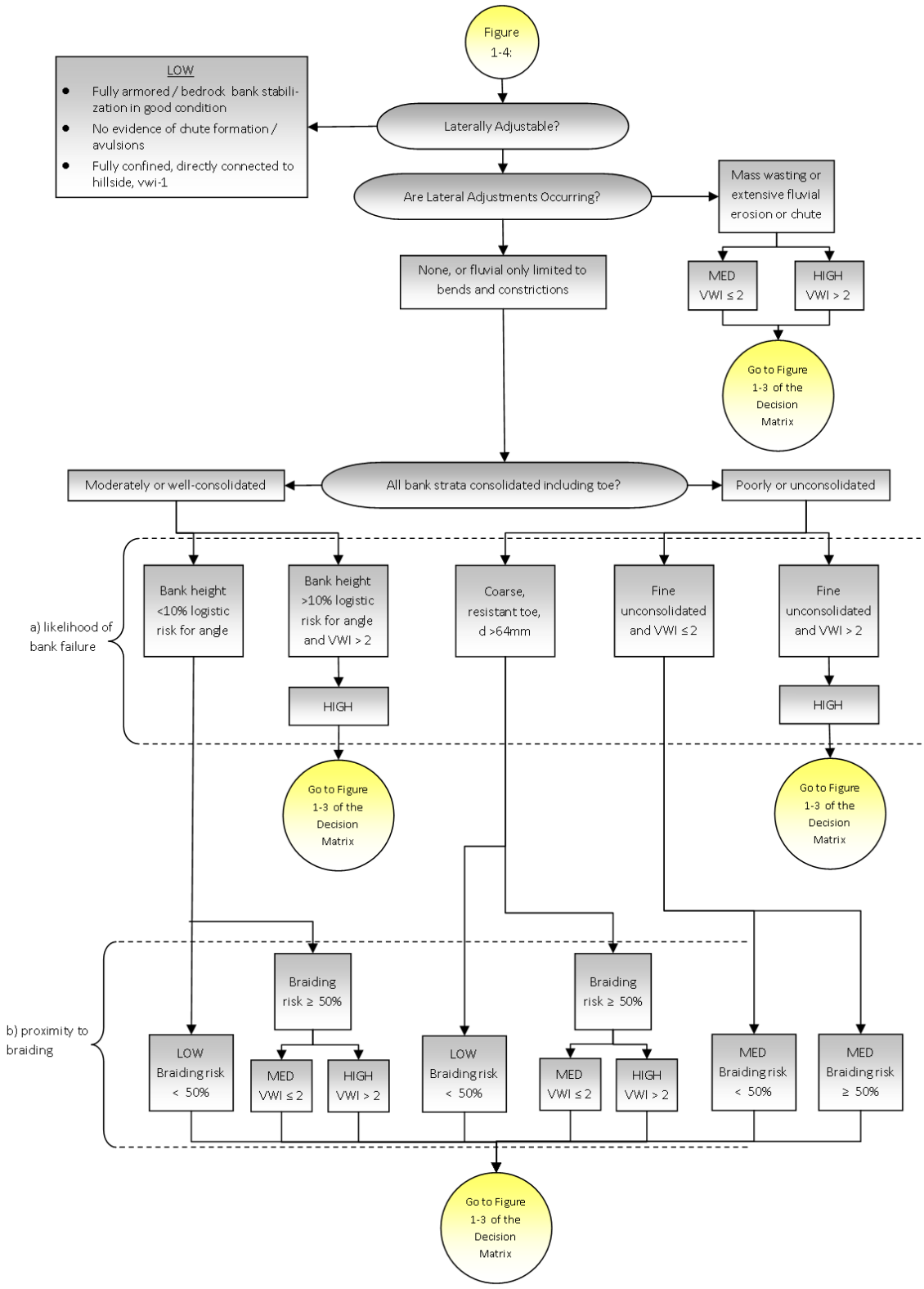

FIGURE 1-5. Lateral Channel Susceptibility

Grandfathering. Verify with City Land Development staff that projects with prior lawful approval (such as a development agreement, vested tentative map, or a building or grading permit) may not have to meet the hydromodification management requirements.

Waivers from Numeric Sizing Criteria

The NPDES permit allows for a project to be waived from numeric sizing criteria for stormwater treatment only if all available treatment facilities have been considered and found infeasible. Experience has shown implementation of LID facilities, as described in Chapter 4, is feasible on nearly all development sites. However, the use of LID to retrofit existing drainage systems, to manage runoff from sites smaller than one acre in pedestrian-oriented developments, or to manage runoff from widened portions of roadways, sometimes presents special challenges. In these special situations, applicants should see the discussion of "Selection of Stormwater Treatment Facilities" in Chapter 2 and evaluate the options described in order (depending on the specific characteristics of the project and as determined by local development review staff). All the options listed meet the numeric sizing criteria in the NPDES permit.

The City of Vista currently does not have a waiver program in place.

References and Resources:

- RWQCB Order R9-2007-0001 (Stormwater NPDES Permit)
- Project Clean Water website

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Chapter

2

Concepts and Criteria

Technical background and explanations of policies and design requirements

The Regional Water Board reissued a municipal stormwater NPDES permit to San Diego County, its 18 cities (including the City of Vista), the San Diego Unified Port District, and the San Diego Regional Airport Authority in January 2007. The permit mandates a comprehensive program to prevent stormwater pollution.

Permit Provision D.1.d. requires Copermittees to regulate projects in specific categories (Table 1-1) to:

1. Reduce discharges of pollutants to the maximum extent practicable.
2. Prevent runoff discharges from causing or contributing to a violation of water quality standards.

The Copermittees have created a Low Impact Development (LID) design procedure (Chapter 4) that ensures consistent and thorough implementation of the Regional Water Board's requirements. **This chapter explains the technical background of the LID approach and how it was derived.**

The previous permit, issued in 2001, included a requirement to control the post-development peak storm water runoff rates and velocities to maintain or reduce pre-development downstream erosion and protect stream habitat. The 2007 permit includes, in addition to this ongoing requirement, a new requirement to develop a hydromodification management plan (HMP) to identify and define a methodology and performance criteria to ensure flow rates and durations do not exceed pre-project runoff where increased runoff could cause erosion or other significant adverse impacts to beneficial uses.

As required by the NPDES permit, the Copermittees have adopted final hydromodification criteria. See Chapter 1.

Water-Quality Regulations

Provision D.1 requires the Copermittees to condition development approvals on incorporation of specified stormwater controls.

Provision D.1 requires applicable new developments and redevelopments to:

- Design the site to conserve natural areas, existing trees and vegetation and soils, to maintain natural drainage patterns, to minimize imperviousness, to detain runoff, and to infiltrate runoff where feasible
- Cover or control sources of stormwater pollutants
- Treat runoff prior to discharge. Provision E.10 states: "Urban runoff treatment and/or mitigation must occur prior to the discharge of urban runoff to receiving waters. Federal regulations at 40 CFR 131.10(a) state that in no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the U.S."
- Ensure runoff does not exceed pre-project peaks and durations where increases could affect downstream habitat or other beneficial uses
- Maintain treatment and flow-control facilities

The City of Vista maintains a database to track approved installations of treatment facilities and to verify facilities are maintained. The City's annual report to the Regional Water Board includes a list of development projects subject to SUSMP conditions and descriptions of those projects that:

- Received a waiver from SUSMP criteria;
- Used hydrologic controls used to meet HMP requirements, including a description of the controls;

The Copermittees must also report the number of violations and enforcement actions taken upon development projects. The Copermittees' programs are subject to audit by the Regional Water Board.

The municipalities—not the Regional Water Board or its staff—are charged with ensuring development projects comply with the D.1 requirements. Regional Water Board staff sometimes review stormwater controls and hydromodification impacts in connection with applications for Clean Water Act Section 401 water-quality certification, which is required

for projects that involve work, such as dredging or placement of fill, within streams, creeks, or other waters of the US.

► MAXIMUM EXTENT PRACTICABLE

Clean Water Act Section 402(p)(3)(iii) sets the standard for stormwater controls as "maximum extent practicable," but doesn't define that term. As implemented, "maximum extent practicable" is ever-changing and varies with conditions.

Many stormwater controls, including LID facilities, have proven to be practicable in most site development projects. To achieve fair and effective implementation, criteria and guidance, requirements for controls must be detailed and specific—while also offering the right amount of flexibility or exceptions for special cases. The NPDES permit includes various standards, including hydrologic criteria, which have been found to comprise "maximum extent practicable." This SUSMP is to be continuously improved and refined based on the experience of municipal planners and engineers, with input from land developers and development professionals. By following this SUSMP, applicants can ensure their project design meets "maximum extent practicable."

► BEST MANAGEMENT PRACTICES

Clean Water Act Section 402(p) and USEPA regulations (40 CFR 122.26) specify a municipal program of "management practices" to control stormwater pollutants. Best Management Practice (BMP) refers to any kind of procedure, activity or device designed to minimize the quantity of pollutants that enter the storm drain system. BMPs are typically used in place of assigning numeric effluent limits. The criteria for source control BMPs and treatment and flow-control facilities are crafted to fulfill "maximum extent practicable."

To minimize confusion, this guidebook refers to "facilities," "features," or "controls" to be incorporated into development projects. All of these are BMPs.

Pollutants of Concern

NPDES Permit Provision D.1.d.(3) requires each Copermittee to develop and implement a procedure for pollutants of concern to be identified for each Priority Development Project. The Copermittees have considered this requirement jointly and have determined the LID design procedures in Chapters 3 and 4 of this model SUSMP fully address the need to identify pollutants of concern insofar as that identification may affect the selection of source control BMPs and treatment facilities.

Documentation of the approach to identifying pollutants of concern and selecting BMPs and facilities follows.

► GROUPING OF POTENTIAL POLLUTANTS OF CONCERN

Urban runoff from a developed site has the potential to contribute pollutants, including oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the storm water

conveyance system and receiving waters. For the purposes of identifying pollutants of concern and associated storm water BMPs, pollutants are grouped in nine general categories as follows:

- Sediments are soils or other surficial materials eroded and then transported or deposited by the action of wind, water, ice, or gravity. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

- Nutrients are inorganic substances, such as nitrogen and phosphorus. They commonly exist in the form of mineral salts that are either dissolved or suspended in water. Primary sources of nutrients in urban runoff are fertilizers and eroded soils. Excessive discharge of nutrients to water bodies and streams can cause excessive aquatic algae and plant growth. Such excessive production, referred to as cultural eutrophication, may lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms.

- Metals are raw material components in non-metal products such as fuels, adhesives, paints, and other coatings. Primary sources of metal pollution in storm water are typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors in primer coatings and cooling tower systems. At low concentrations naturally occurring in soil, metals are not toxic. However, at higher concentrations, certain metals can be toxic to aquatic life. Humans can be impacted from contaminated groundwater resources, and bioaccumulation of metals in fish and shellfish. Environmental concerns, regarding the potential for release of metals to the environment, have already led to restricted metal usage in certain applications.

- Organic compounds are carbon-based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds can, at certain concentrations, indirectly or directly constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to storm drains. Dirt, grease, and grime retained in the cleaning fluid or rinse water may also adsorb levels of organic compounds that are harmful or hazardous to aquatic life.

- Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products on the landscape. The presence of trash & debris may have a significant impact on the recreational value of a water body and aquatic habitat. Excess organic matter can create a high biochemical oxygen demand in a stream and thereby lower its water quality. Also, in areas where stagnant water exists, the presence of excess organic matter can promote septic conditions resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds such as hydrogen sulfide.

- Oxygen-Demanding Substances includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen sulfide are examples of oxygen-demanding compounds. The oxygen demand of a substance can lead to depletion of dissolved oxygen in a water body and possibly the development of septic conditions.

- Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids. Introduction of these pollutants to the water bodies are very possible due to the wide uses and applications of some of these products in municipal, residential, commercial, industrial, and construction areas. Elevated oil and grease content can decrease the aesthetic value of the water body, as well as the water quality.

- Bacteria and Viruses are ubiquitous microorganisms that thrive under certain environmental conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed. Water, containing excessive bacteria and viruses can alter the aquatic habitat and create a harmful environment for humans and aquatic life. Also, the decomposition of excess organic waste causes increased growth of undesirable organisms in the water.

- Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Excessive application of a pesticide may result in runoff containing toxic levels of its active component.

► IDENTIFYING POLLUTANTS OF CONCERN BASED ON LAND USES

Table 2-1 associates pollutants with the categories of Priority Development Projects. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

► WATERSHEDS WITH SPECIAL POLLUTANT CONCERNS

Local receiving water conditions may require specialized attention. The two local conditions to consider include:

- 303(d) listed waters; and

- Waters with established TMDLs.

TABLE 2-1. Anticipated and Potential Pollutants Generated by Land Use Type.

General Pollutant Categories

Priority Project Categories	Sediment	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P	X
Commercial Development >one acre	P(1)	P(1)	X	P(2)	X	P(5)	X	P(3)	P(5)
Heavy Industry	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	P(1)
Hillside Development >5,000 ft2	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X	X	P(1)

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

The NPDES Permit identifies several receiving waters as impaired for constituents or water quality effects pursuant to Section 303(d) of the Clean Water Act. Placement of a water onto the list requires the Regional Board to make further analysis of the impairment and development of total maximum daily loads (TMDLs) for addressing the impairment. The 303(d) listing in itself does not demand that a project proponent select BMPs on the basis of the impairment; however, the project proponent should be cognizant of the impairment and the future implications a TMDL might have upon the proposed land use.

Once a TMDL is established it may impose conditions on development either through an implementation plan and schedule for the listed water, or through special conditions required of the municipality affected by the numeric criteria of the TMDL. At this time, several 303(d) listings in San Diego County are at various stages of TMDL development. The most current

303(d) listings can be found at http://www.swrcb.ca.gov/. The applicant should use the most recently adopted version of the 303(d) list. At this time, the 2006 listing is the most recently adopted list. Table 2-2 below lists the impairments located within the City of Vista and its watersheds per the 2006 303(d) listing.

TABLE 2-2 Impaired Water Quality Limited Segments, City of Vista, 2006 303(d) List.

Receiving Water	Hydrologic Unit/Area	Chloride	TDS	Bacteria	Nutrients	Sediment Toxicity	Sedimentation	DDE	DDT	Mn	Se	Sulfate
San Luis Rey (SLR)	903	X	X									
Pacific Ocean at SLR outlet	903			X								
Loma Alta Slough (LAS)	904.1			X	X							
Pacific Ocean at LAS outlet	904.1			X								
Buena Vista Creek*	904.2					X						
Buena Vista Lagoon (BVL)	904.2			X	X		X					
Pacific Ocean at BVL	904.2			X								
Buena Creek	904.3				X				X			
Agua Hedionda Creek	904.3		X							X	X	X
Agua Hedionda Lagoon	904.3			X			X					
San Marcos Creek	904.5				X	X		X				

The adopted TMDLs in the San Diego area can be found at http://www.swrcb.ca.gov/rwqcb9/

Under most circumstances, the use of the LID Design Guide (Chapter 4) and the Stormwater Pollutant Sources/Source Control Checklist (Appendix A) will ensure your project complies with all stormwater requirements. However, the project applicant should meet with City Land Development staff to determine if any project characteristics or watershed characteristics affect selection and design of BMPs. Where further input is necessary, applicants may contact the Water Quality Protection Program. Specifically for projects proposed within the Agua Hedionda Watershed, bacteria, nutrients, and sediments loads are pollutants of concern. As such, *Enhanced LID,* shall be considered during preliminary design and implemented where feasible. These Enhanced LIDs are as defined in the Agua Hedionda Watershed Management Plan (AWHMP, 2008) Section 6.1 NEW DEVELOPMENT SITE MANAGEMENT.

The following is an excerpt from that document,

> "The *Enhanced LID* scenario begins with the *Basic LID* scenario assumptions, but assumes a higher level of treatment, balancing feasibility and cost considerations. For instance, bioretention is not used due to the uncertainty regarding proper vegetation and potential increased cost if an underdrain system is required. Porous pavement was included but not used extensively, again due to uncertainty about infiltration. Large cisterns for irrigation water were included for the Multi-family and Commercial classes, where the combination of large roof surface area and centralized irrigation systems are assumed to make the practice more cost effective. Some of the scenarios assume impervious area reductions as well. The following specific changes implemented in the *Enhanced LID* scenario include:

• Medium Density Residential – a cluster design is used, grouping the housing units closer together on smaller lots, and leaving one-third of the site as undeveloped open space. Impervious area is reduced by decreasing driveway length, sidewalk use, and overall road footprint.

• Multifamily Residential – Impervious area is reduced somewhat by more efficient layout. Porous pavement is used for all sidewalks. The swales treat a greater proportion of the site. Large cisterns capture roof runoff, and reuse the water for irrigation.

• Commercial – Porous pavement is used for large fraction of the parking area. Large cisterns capture roof runoff, and reuse the water for irrigation.

• Industrial – The most challenging site, with layout constraints and little economic incentive for cisterns for irrigation. Porous pavement parking spaces is assumed (a small fraction of the total paved surface), and the swales treat a greater proportion of the site."

Based on modeling analyses conducted as part of this plan development, additional reductions in Total Nitrogen and Total Phosphorous loads resulting from multi-family, commercial and industrial development were predicted. Also identified in these analyses, reductions in sediment loads and erosive conditions were predicted. The following discusses this Enhanced LID scenario:

"The previous tables demonstrate the potential benefits of using stormwater management and LID techniques to reduce pollutant load washoff from stable, developed sites. However, an additional impact from development is the increase in peak flow and runoff volume resulting of conversion of natural land cover to developed pervious and impervious surfaces. What results is an increased risk of channel erosion, from both higher peaks and longer durations of flow. Extended dry detention basins designed under the 2007 order requirements reduce the peak flow to values lower than existing conditions (assumed to be undeveloped land) for all three design storms. However, for the 5- and 10-year events there is a period of time when the post-with-BMPs flow exceeds existing conditions, resulting in a longer duration of potentially erosive conditions in the receiving stream. The *Enhanced LID* scenario incorporates large cisterns (with assumed water reuse) that provide additional runoff storage, and greatly reduce flow during the most potentially erosive portion of the post-with-BMPs hydrograph, nearly matching the existing hydrograph. LID techniques can not only improve pollutant removal, but also reduce total runoff volume and change storm event hydrologic response to more closely mimic natural conditions."

Applicants proposing projects located within the Agua Hedionda watershed, shall therefore evaluate and implement the recommended Enhanced LID scenarios where feasible, as described above.

Selection of Permanent Source Control BMPs

Based on identification of potential pollutants of concern associated with various types of facilities, the Copermittees have developed a Stormwater Pollutant Sources/Source Control Checklist (Appendix A) of "maximum extent practicable" source controls associated with each facility type. This approach ensures appropriate BMPs are applied to potential sources of each pollutant of concern.

Selection of Stormwater Treatment Facilities

This SUSMP groups pollutants of concern by how easily they are removed by various treatment processes (Table 2-3). Table 2-4 provides a general comparison of how various types of treatment facilities tend to perform for each group of pollutants.

TABLE 2-3. Grouping of Pollutants of Concern by Fate During Stormwater Treatment

Pollutant	**Coarse Sediment and Trash**	**Pollutants that tend to associate with fine particles during treatment**	**Pollutants that tend to be dissolved following treatment**
Sediment	X	X	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	
Bacteria		X	
Oil & Grease		X	
Pesticides		X	

TABLE 2-4. Groups of Pollutants and Relative Effectiveness of Treatment Facilities

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Constructed Wetlands	Infiltration Facilities or Practices (LID)	Media Filters	Higher-rate biofilters*	Higher-rate media filters*	Trash Racks & Hydro -dynamic Devices	Vegetated Swales
Coarse Sediment and Trash	High	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low	Medium
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low	Low

*See Chapter 2 for a discussion of selection of treatment facilities in special situations.

Based on this analysis, the Copermittees have determined that the following types of facilities are appropriate for treatment of runoff potentially containing most pollutants of concern. These types of facilities or a combination thereof, can be used for stormwater treatment and hydromodification flow control for all land uses in all watersheds, except where site-specific constraints make them infeasible.

- Infiltration facilities or practices, including dry wells, infiltration trenches, infiltration basins, and other facilities that infiltrate runoff to native soils (sized to detain and infiltrate a volume equivalent to the 85th percentile 24-hour water quality runoff event – greater capacity is required to provide hydromodification flow control).

- Bioretention facilities and media filters that detain stormwater and filter it slowly through soil or sand (sized with a surface area at least 0.04 times the effectively impervious tributary area for water quality treatment– a larger sizing factor may be required to provide hydromodification flow control).

- Extended detention basins, wet ponds, and wetlands or other facilities using settling (sized to detain a volume equivalent to runoff from the tributary area generated by the 85th percentile 24-hour event water quality runoff event – greater capacity is required to provide hydromodification flow control).

The recommended design procedure in Chapter 4 integrates LID practices—optimizing the site design, using pervious surfaces, and dispersing of runoff to adjacent pervious areas—with the use of infiltration facilities, detention basins and bioretention facilities to meet NPDES permit LID requirements, treatment requirements, and flow-control requirements in a cost-effective, unified design.

Oil/water separators, storm drain inlet filters, and hydrodynamic separators, including vortex separators and continuous deflection separators ("CDS units"), are less effective means of stormwater treatment, although they may be used in series with more effective facilities.

Underground vaults typically lack the detention time required for settling of fine particles associated with stormwater pollutants. They also require frequent maintenance and may retain stagnant water, potentially providing harborage for mosquitoes. Because vaults may be "out of sight, out of mind," experience shows that the required maintenance may not occur.

Lack of space, in itself, is not a suitable justification for using a less-effective treatment on a development site, because the uses of the site and the site design can most often be altered as needed to accommodate bioretention facilities or planter boxes if analyzed early in the project design process. In most cases, these effective facilities can be fit into required landscaping setbacks, easements, or other unbuildable areas.

Where possible, drainage to inlets, and drainage away from overflows and underdrains, should be by gravity. Where site topography makes it infeasible to accommodate gravity-fed facilities in the project design, the design flow may be captured in a vault or sump and pumped via force main to an effective facility.

The following situations sometimes present special challenges:

- Portions of sites which are not being developed or redeveloped, but which must be retrofit to meet treatment requirements in accordance with Provision D.1.d.(1)(a) which states in part: "Where redevelopment results in an increase of, or replacement of, more than fifty percent of the impervious surface of a previously existing development, the numeric sizing criteria applies to the *entire* development."

- Sites smaller than one acre approved for development or redevelopment as part of the City's objective to preserve or enhance a pedestrian-oriented "smart-growth" type of urban design. The City of Vista has identified these areas as mixed land use zoning and are to be included in the City's 2011 General Plan update. These areas are primarily located in the City's downtown business areas along Vista Village Drive, Main Street and Santa Fe Avenue (approximately between Monte vista and Bobier). Project applicants should review the City's General Plan proposed update and maps for detailed locations of these areas. Design considerations for projects can then be discussed with City Land Development staff, as needed.

- Roadway widening projects.

In these special situations, the following types of facilities should each be evaluated in priority order (depending on the specific characteristics of the site and as determined by the City's Land Development staff and/or Water Quality Protection Program staff) until a feasible design is found.

1. Bioretention areas or planter boxes fed by gravity.
2. Capture of the design flow in a vault or sump and pumping to bioretention areas or planter boxes.
3. A subsurface sand or media filter with a maximum design surface loading rate of 5 inches per hour and a minimum media depth of 18 inches. The sand surface must be made accessible for periodic inspection and maintenance (for example, via a removable grating).
4. A higher-rate surface biofilter, such as a tree-pit-style unit. The grading and drainage design should minimize the area draining to each unit and maximize the number of discrete drainage areas and units.
5. A higher-rate vault-based filtration unit (for example, vaults with replaceable cartridge filters filled with inorganic media).

Proprietary Devices
Many currently available proprietary devices do not meet municipalities' requirements when used alone for stormwater treatment. Consult with City staff before proposing these devices.

Many proprietary stormwater treatment devices are currently marketed, and new brands will be introduced. Applicants and applicants' engineers and design professionals should review with the City's Land Development and Water Quality Protection Program staff any proposals for using proprietary devices for stormwater treatment before they commence work on preliminary site layout, drainage plans, grading plans, or landscape plans.

Hydrology for NPDES Compliance

► IMPERVIOUSNESS

Schueler (1995) proposed imperviousness as a "unifying theme" for the efforts of planners, engineers, landscape architects, scientists, and local officials concerned with urban watershed protection. Schueler argued (1) that imperviousness is a useful indicator linking urban land

development to the degradation of aquatic ecosystems, and (2) imperviousness can be quantified, managed, and controlled during land development.

Imperviousness has long been understood as the key variable in urban hydrology. Peak runoff flow and total runoff volume from small urban catchments is usually calculated as a function of the ratio of impervious area to total area (rational method). The ratio correlates to the runoff factor, usually designated "C". Increased flows resulting from urban development tend to increase the frequency of small-scale flooding downstream.

Imperviousness links urban land development to degradation of aquatic ecosystems in two ways.

First, the combination of paved surfaces and piped runoff efficiently collects urban pollutants and transports them, in suspended or dissolved form, to surface waters. These pollutants may originate as airborne dust, be washed from the atmosphere during rains, or may be generated by automobiles and outdoor work activities.

Second, increased peak flows and runoff durations typically cause erosion of stream banks and beds, transport of fine sediments, and disruption of aquatic habitat. Measures taken to control stream erosion, such as hardening banks with riprap or concrete, may permanently eliminate habitat. By reducing infiltration to groundwater, imperviousness may also reduce dry-weather stream flows.

Imperviousness has two major components: rooftops and transportation (including streets, highways, and parking areas). The transportation component is usually larger and is more likely to be directly connected to the storm drain system.

The effects of imperviousness can be mitigated by disconnecting impervious areas from the drainage system and by encouraging detention and retention of runoff near the point where it is generated. Detention and retention reduce peak flows and volumes and allow pollutants to settle out or adhere to soils before they can be transported downstream.

► LOW IMPACT DEVELOPMENT REQUIREMENTS

The NPDES permit requires LID be used on all projects to minimize directly connected impervious area and promote infiltration. For Priority Development Projects, the minimum standards are:

- Drain a portion of impervious areas into pervious areas, if any.
- Design and construct pervious areas, if any, to effectively receive and infiltrate runoff from impervious areas, taking into account soil conditions, slope, and other pertinent factors.
- Construct a portion of paved areas with low traffic and appropriate soil conditions with permeable surfaces.

The LID design procedure in Chapter 4 incorporates these requirements into an integrated design which meets sizing requirements for stormwater treatment facilities and flow-control (hydromodification management) requirements.

► SIZING REQUIREMENTS FOR STORMWATER TREATMENT FACILITIES

The guidance in Chapter 4 was crafted to ensure LID facilities comply with the NPDES permit's hydraulic sizing requirements for stormwater treatment facilities and flow-control facilities. The technical background follows.

Most runoff is produced by frequent storms of small or moderate intensity and duration. Treatment facilities are designed to treat smaller storms and the first flush of larger storms—approximately 80% of average annual runoff.

The NPDES permit identifies two types of treatment facilities—volume-based and flow-based.

Volume-based facilities must be designed to infiltrate, filter, or treat the volume of runoff produced from a 24-hour 85th percentile storm event as determined from the County of San Diego's 85th Percentile Precipitation Isopluvial Map. As shown on the map, rainfall depths vary from about 0.55" to 1.55".

For flow-based facilities, the NPDES permit specifies the rational method be used to determine flow. The rational method uses the equation

Q = CiA, where

Q = flow

C = weighted runoff factor between 0 and 1

i = rainfall intensity

A = area

The permit identifies two alternatives for calculating rainfall intensity:

1. the 85th percentile rainfall intensity times two, or
2. 0.2 inches per hour.

It is typically found that both methods yield similar results. The 0.2 inches per hour rainfall intensity should be used for sizing flow-based treatment facilities.

The 0.2 inches per hour criterion is the basis for a consistent countywide sizing factor for bioretention facilities when used for stormwater treatment only (i.e., not for flow control). The factor is based on maintaining a minimum percolation rate of 5 inches per hour through the engineered soil mix. The sizing factor is the ratio of the design intensity of rainfall on tributary impervious surfaces (0.2 inches/hour) to the design percolation rate in the facility (5 inches/hour), or 0.04 (dimensionless).

► FLOW-CONTROL (HYDROMODIFICATION MANAGEMENT)

The NPDES permit specifies for applicable projects:

> *… post-project runoff flow rates and durations shall not exceed pre-project runoff flow rates and durations where the increased discharge flow rates and durations will result in increased potential for erosion or other significant adverse impacts to beneficial uses, attributable to changes in flow rates and durations.*

Refer to Appendix B to review the Hydromodification Management Plan, for which a summary is provided in Chapter 1 of this document.

Criteria for Infiltration Devices

The NPDES permit restricts the design and location of "infiltration devices" that, as designed, may bypass filtration through surface soils before reaching groundwater. These devices include:

- Infiltration basins.
- Infiltration trenches (includes French drains).
- Unlined retention basins (i.e., basins with no outlets).
- Unlined or open-bottomed vaults or boxes installed below grade (dry wells).

Infiltration devices may not be used in:

- Areas of industrial or light industrial activity; areas subject to high vehicular traffic (25,000 or greater average daily traffic on main roadway or 15,000 or more average daily traffic on any intersecting roadway);
- Automotive repair shops;
- Car washes;
- Fleet storage areas (bus, truck, etc.);
- Nurseries;
- Other areas, as determined by the City of Vista, with pollutant sources that could pose a threat to groundwater.

The vertical distance from the base of any infiltration device to the seasonal high groundwater mark shall be at least 10 feet. Infiltration devices shall be located a minimum of 100 feet horizontally from any known water supply wells.

In addition, infiltration devices are not recommended where:

- The infiltration device would receive drainage from areas where chemicals are used or stored, where vehicles or equipment are washed, or where refuse or wastes are handled.
- Surface soils or groundwater are polluted.

- The facility could receive sediment-laden runoff from disturbed areas or unstable slopes.
- Increased soil moisture could affect the stability of slopes of foundations.
- Soils are insufficiently permeable to allow the device to drain within 72 hours.

► MOST LID FEATURES AND FACILITIES ARE NOT INFILTRATION DEVICES

Self-treating and self-retaining areas, pervious pavements, bioretention facilities, and planter boxes are not considered to be infiltration devices.

Bioretention facilities work by percolating runoff through 18 inches or more of engineered soil. This removes most pollutants before the runoff is allowed to seep into native soils below. Further pollutant removal typically occurs in the unsaturated (vadose) zone before moisture reaches groundwater.

Where there is concern about the effects of increased soil moisture on slopes or foundations, an impermeable barrier may be added so the facility is "flow through" and all treated runoff is underdrained away from the facility. See the design sheets for Bioretention Facilities and Flow-Through Planters in Chapter 4.

References and Resources:

- RWQCB Order R9-2007-0001 (Stormwater NPDES Permit)
- *County of San Diego Low Impact Development Handbook*
- Clean Water Act Section 402(p)
- 40 CFR 122.26
- San Diego Regional Water Quality Control Board—TMDLs
- State Water Resources Control Board—Ocean Standards
- *Site Planning for Urban Stream Protection* (Scheuler, 1995).
- "Application of Water-Quality Engineering Fundamentals to the Assessment of Stormwater Treatment Devices" (Salvia, 2000).

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Chapter

3

Preparing Your Project Submittal

Step-by-step assistance to demonstrate compliance.

Your Project Submittal will demonstrate your project complies with all applicable requirements in the stormwater NPDES permit—to minimize imperviousness, retain or detain stormwater, slow runoff rates, incorporate required source controls, treat stormwater prior to discharge, control runoff rates and durations, and provide for operation and maintenance of treatment and flow-control facilities.

A complete and thorough Project Submittal will facilitate quicker review and fewer cycles of review. Every municipality in San Diego County requires a submittal for every applicable project. Your Project Submittal must be coordinated with your application for both ministerial and discretionary approvals and must have sufficient detail to ensure the stormwater design, site plan, and landscaping plan are congruent.

Given the unique elements and site characteristics of every project, often the first challenge you may face when preparing your submittal is determining the "type" of your project, as defined by the municipal stormwater NPDES permit and the corresponding design requirements. Determining whether or not your project falls into a Priority Development or Redevelopment Project Category, as discussed in Chapter 1, or whether it is a Standard Project, this determination is an essential first step in designing and preparing your project submittal. Chapter 1 should be referenced in making this determination. As further discussed in this Chapter, applicants are required to complete a New Development and/or Redevelopment Checklist during the early stages of the submittal process. This questionnaire as well as Figure 3-1 below may also provide guidance in determining your project type.

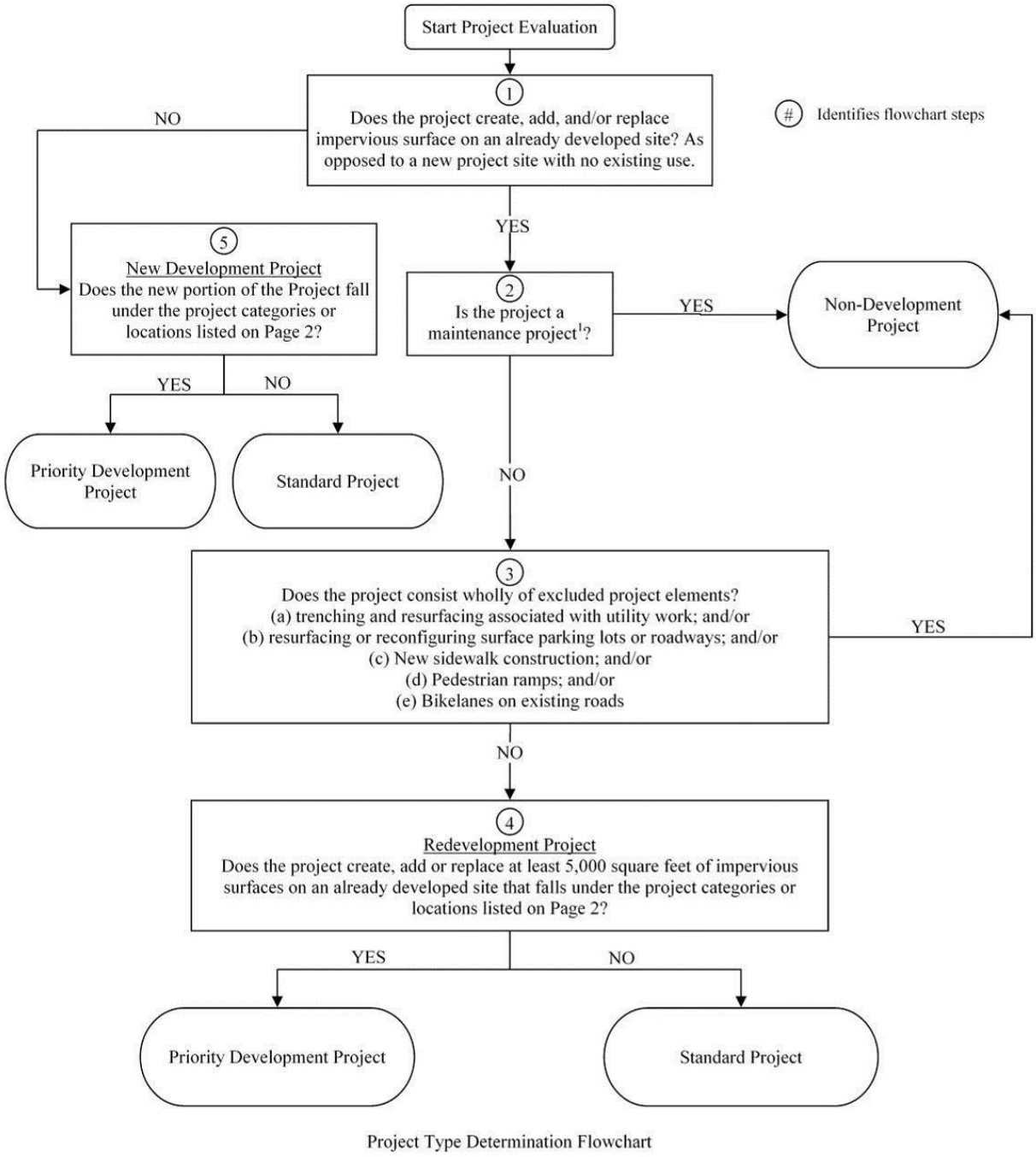

Project Type Determination Flowchart

[1]Maintenance projects are defined as those where impervious surfaces may be removed, however the underlying soils are not exposed and/or routine replacement of damaged pavement, such as pothole repair

FIGURE 3-1. Project Type Determination Flowchart

The flowchart in Figure 3-2 (on the following page) shows the City's requirements for stormwater compliance within the development project submittal and approval process. For other projects not requiring ministerial or discretionary approvals, the required temporary construction best management practices (BMPs) are discussed in Section F of this City's Stormwater Standards Manual.

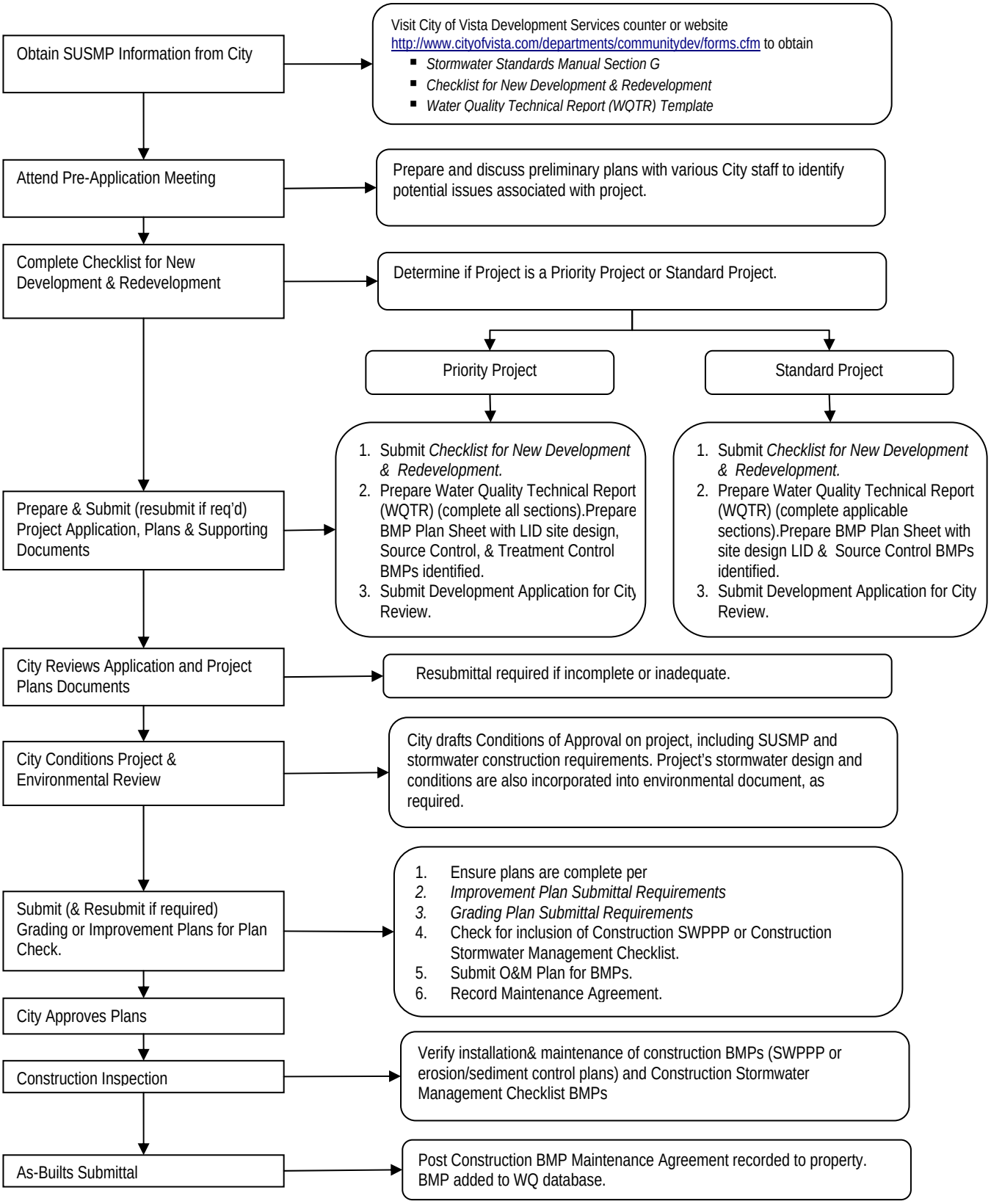

Figure 3-2 City of Vista Project Submittal/Review Process

All projects requiring discretionary approval, whether Standard or Priority, are required to submit a complete Water Quality Technical Report (WQTR) which contains sufficient information and analysis to allow the City to determine whether the applicable regional and local stormwater standards have been met. Given that Standard projects are not required to include treatment control BMPs, these sections in the WQTR are not required for Standard projects. Appendix B includes a template that may be used in developing your WQTR. The following list under the WQTR Organization and Content provides details for WQTR submittal requirements which are also included in the template. The following sections describe a methodology and steps to assemble the required information, to analyze your project and document your design of the required controls for your project. Provided all information and analysis are complete, correct and included in the WQTR, project applicants may use alternate methodologies to assemble this information.

► WATER QUALITY TECHNICAL REPORT

The Water Quality Technical Report and Drainage Study must be prepared by Civil Engineer registered in the State of California and in a comprehensive format and at a minimum include the following information which is also provided in a template form in Appendix B:

WQTR ORGANIZATION & CONTENT

1. Table of Contents

2. Vicinity Map

3. Project Description
    - Narrative of project activities

4. Site Map
    - Entire property included on one map (use key map if multi-sheets)
    - Drainage areas and direction of flow
    - Private storm drain system(s)
    - Nearby water bodies and municipal storm drain inlets
    - Location of storm water conveyance systems (ditches, inlets, storm drains, etc.)
    - Location of existing and proposed storm water controls
    - Location of "impervious" areas- paved areas, buildings, covered areas
    - Locations where materials would be directly exposed to storm water
    - Location of building and activity areas (e.g. fueling islands, garages, waste container area, wash racks, hazardous material storage areas, etc.)
    - Areas of potential soil erosion (including areas downstream of project)

5. Identify Pollutants of Concern in Receiving Waters
    - Identify anticipated pollutants from project area in accordance with Section 3.1.1.
    - Identify receiving waters, watershed and hydrologic unit basin number
    - Identify impaired water bodies downstream of the project and impairment
    - Identify primary pollutants of concern

- Provide Drainage Study Report

6. Identify Conditions of Concern
    - Provide Drainage Study Report (or calculations acceptable to the City of Vista Land Development staff)
    - Identify conditions of concern
    - Provide runoff calculations

7. Identify LID Site Design BMPs
    - Maintain pre-development rainfall runoff characteristics
    - Protect slopes and channels

8. Identify Source Control BMPs
    - Outdoor Materials Storage
    - Trash storage
    - IPM
    - Efficient irrigation and landscape design
    - Inlet stenciling and signage
    - Other controls (as applicable)

9. BMPs for individual Priority Project Categories (as applicable)
    - Private road
    - Residential driveways and guest parking
    - Dock areas
    - Maintenance bays
    - Vehicle wash areas
    - Outdoor processing areas
    - Surface parking areas
    - Non-retail fueling areas
    - Steep hillside landscaping

10. Identify Structural Treatment Control BMPs (as applicable)
    - Design criteria (include calculations)
    - Basis for selection (include targeted pollutants, justification, and alternative analysis)
    - Pollutant removal information (other than vendor specifications)
    - Restrictions, if appropriate
    - Location of BMPs
    - Literature References

11. BMP Maintenance conditions and requirements

► BMP PLAN SHEET

The City has adopted an approach for ensuring verification that all permanent post construction BMPs are constructed per the requirements of the approved plans. To ensure that all permanent post construction BMPs for a particular project are installed/constructed at the conclusion of the project, the City requires developer preparation of a BMP plan sheet(s) as part of the plan submittals. For ministerial permits such as building permits, encroachment permits, hazardous material storage permits, right-of-way permits and underground/above ground storage tank permits, SUSMP requirements must be incorporated into the project design and shown on plans prior to issuance of ministerial permits. Applicants may use the City's BMP plan sheet template for locating BMPs (see Figure 3-3 or http://www.cityofvista.com/departments/communitydev/documents/BMPSheet.pdf)

The BMP plan sheet will include a site plan of the project calling out the location of each required LID site design, source control and treatment control BMP. In addition, the plan will contain a matrix listing of the required BMPs cross referenced with a list of the specific construction drawing sheet where the specified BMP construction is detailed. A copy of the single plan BMP sheet will be attached to each construction drawing set (building, mass grading, finished grading, improvements, and grading) highlighting the BMPs.

At a minimum, the plan sheet will have the following information included:

- Entire property on one map
- Drainage areas/direction of flows
- Private storm drain systems
- Nearby waterbodies
- Location of storm drain conveyance systems
- Location of proposed stormwater controls and BMPs, including detention basins
- Locations of impervious and pervious areas (hatched)
- Location where materials would be exposed to stormwater (hatched)
- Areas of potential erosion (hatched)
- All site design and source control BMPs shown, detailed and/or listed in the General Notes on BMP Plan Sheet
- All treatment control BMPs shown, detailed and called out on the plan sheet
- Call out the 85th percentile discharge rates that are tributary to each entry point of the treatment control BMPs
- Call out the pollutant types that are expected at each treatment control BMP
- Signature Block for City Engineer
- Add As-Builts on first sheet of plans.
- Delineated areas draining to each treatment control BMP

Figure 3-3 Sample BMP Plan Sheet (required)

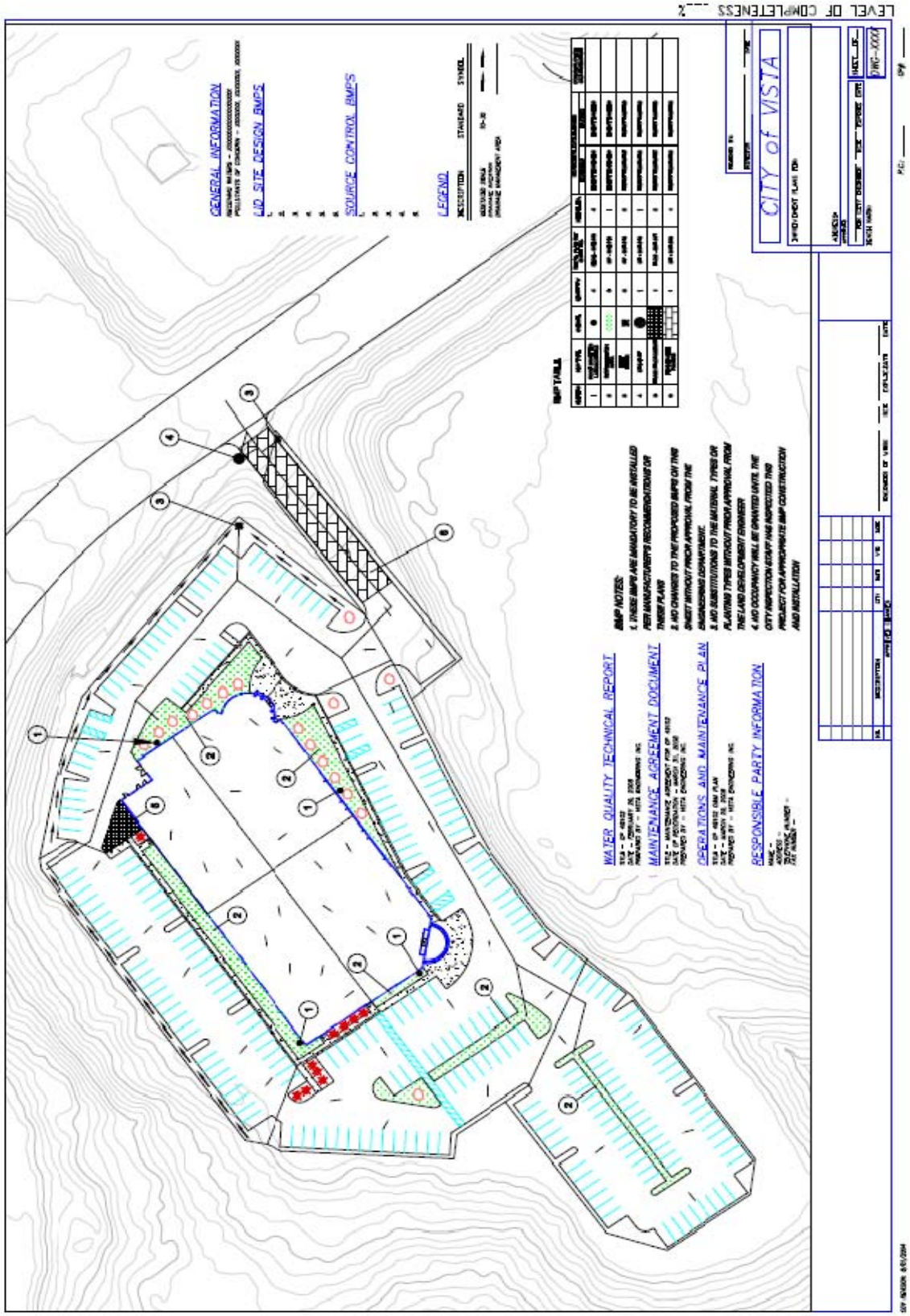

Step by Step

Suggested coordination with site and landscape design

Plan and design your stormwater controls integrally with the site planning and landscaping for your project. It's best to start with general project requirements and preliminary site design concepts, then prepare the detailed site design, landscape design, and stormwater control design simultaneously. This will help ensure that your site plan, landscape plan, and Project Submittal are congruent.

Begin with general project requirements and program.

The following step-by-step procedure should optimize your design by identifying the best opportunities for stormwater controls early in the design process.

The recommended steps are:

1. Assemble needed information.
2. Identify site opportunities and constraints.
3. Follow the LID design guidance in Chapter 4 to analyze your project for LID and to develop and document your drainage design.
4. Specify source controls using the sources/source control checklist in the Appendix A.
5. Plan for ongoing maintenance of treatment and flow-control facilities.
6. Complete the Project Submittal.

Sketch conceptual site layout, building locations, and circulation.

Revise site layout, building locations, and circulation to accommodate LID design. Develop land-scaping plan.

Submit Site Plan, Landscape Plan, and SUSMP Submittal

The City of Vista staff requires that you prepare and submit a preliminary site design prior to formally applying for planning and zoning approvals, typically reviewed during the pre-application meeting. Your preliminary site design should incorporate a conceptual plan for site drainage, including self-treating and self-retaining areas and the location and approximate sizes of any treatment facilities. This additional up-front design effort will save time and avoid potential delays later in the review process.

Step 1: Assemble Needed Information

To select types and locations of treatment facilities, the designer needs to know the following site characteristics:

- Existing natural hydrologic features and natural resources, including any contiguous natural areas, wetlands, watercourses, seeps, or springs.
- Existing site topography, including contours of any slopes of 4% or steeper, general direction of surface drainage, local high or low points or depressions, any outcrops or other significant geologic features.
- Zoning, including requirements for setbacks and open space.

- City and County Public Works Standards or other local codes governing minimum street widths, sidewalk construction, allowable pavement types, and drainage. .
- Soil types (including hydrologic soil groups) and depth to groundwater, which may determine whether infiltration is a feasible option for managing site runoff. Depending on site location and characteristics, and on the selection of treatment and flow-control facilities, site-specific information (e.g. from boring logs or geotechnical studies) may be required.
- Existing site drainage. For undeveloped sites, this should be obtained by inspecting the site and examining topographic maps and survey data. For previously developed sites, site drainage and connection to the municipal storm drain system can be located from site inspection, municipal storm drain maps, and plans for previous development.
- Existing vegetative cover and impervious areas, if any.

References and Resources

- *Site Planning for Urban Stream Protection* (Scheuler 1995).
- *Start at the Source* (BASMAA 1999), p. 36

Step 2: Identify Constraints & Opportunities

Review the information collected in Step 1. Identify the principal constraints on site design and selection of treatment and flow-control facilities as well as opportunities to reduce imperviousness and incorporate facilities into the site and landscape design. For example, constraints might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, restricted right-of-way, or safety concerns. Opportunities might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention facilities), and differences in elevation (which can provide hydraulic head). Note stormwater treatment facilities should not be located within protected riparian areas.

As required for your project submittal, your project description should also include a description of the site opportunities and constraints. This description will help you as you proceed with LID design and explain your design decisions to others.

Step 3: Prepare and Document Your LID Design

Use the Low Impact Development Design Guide (Chapter 4) to analyze your project for LID, design and document drainage, and specify preliminary design details for integrated management practices. Follow the detailed instructions in Chapter 4 to ensure your project complies with NPDES permit LID requirements (Provision D.1.d.(4)) and stormwater treatment requirements in Provision D.1.d.(6)). The LID Design Guide has been developed so that hydromodification management requirements are met via this unified design procedure. Chapter 4 includes calculation procedures and formats for presenting your calculations.

Your Project Submittal should include a drawing showing:

- The entire site divided into separate drainage management areas (DMAs), with each area identified as one of the following: self-treating, self-retaining, draining to a self-retaining area, or draining to an Integrated Management Practice (IMP). Each area should be clearly marked with a unique identifier.
- For each drainage area, the types of impervious area proposed, and the area of each.
- Proposed locations and sizes of treatment facilities. Each facility should be clearly marked with a unique identifier.

Compliance
The design criteria for DMAs in Chapter 4 ensure the required volume of flow from all developed portions of the project, including landscaped areas, is infiltrated, filtered, or treated (Provision D.1.d.(6)(a).

Your Project Submittal should include:

- Tabulation of proposed self-treating areas, self-retaining areas, areas draining to self-retaining areas, and areas draining to IMPs, and the corresponding IMPs identified.
- Calculations, in the format shown in Chapter 4, showing the minimum square footage required and proposed square footage for each IMP.
- Preliminary designs for each IMP. The design sheets and accompanying drawings in Chapter 4 may be used or adapted for this purpose.

The following should also be submitted to assist the reviewer in understanding your design:

- A narrative overview of your design and how your design decisions optimize the site layout, use pervious surfaces, disperse runoff from impervious surfaces, and drain impervious surfaces to engineered IMPs. See Chapter 4.
- A narrative briefly describing each drainage management area (DMA), its drainage, and where drainage will be directed.
- A narrative briefly describing each IMP. Include any special characteristics or features distinct from the design sheets in Chapter 4.

References and Resources

- Chapter 4
- *County of San Diego Low Impact Development Handbook*
- City of Vista's *General Plan*
- City of Vista's Zoning Ordinance and Development Codes
- *Low Impact Development Manual* (Prince George's County, Maryland, 1999).
- *Bioretention Manual* (Prince George's County, Maryland, rev. 2002)
- *Site Planning for Urban Stream Protection* (Schueler, 1995b).
  Low Impact Development Technical Guidance Manual for Puget Sound (Puget Sound Action Team, 2005)
- *LID for Big Box Retailers* (Low Impact Development Center, 2006)

Step 4. Specify Source Control BMPs

Some everyday activities – such as trash recycling/disposal and washing vehicles and equipment – generate pollutants that tend to find their way into storm drains. These pollutants can be minimized by applying source control BMPs.

Source control BMPs include permanent, structural features that must be incorporated into your project plans and operational BMPs, such as regular sweeping and "housekeeping," that must be implemented by the site's occupant or user. The maximum extent practicable standard typically requires both types of BMPs. In general, operational BMPs cannot be substituted for a feasible and effective permanent BMP.

Use the following procedure to specify source control BMPs for your site:

► IDENTIFY POLLUTANT SOURCES

Review the first column in the Pollutant Sources/Source Control Checklist (Appendix A). Check off the potential sources of pollutants that apply to your site.

► NOTE LOCATIONS ON SUBMITTAL DRAWING

Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist (Appendix A). Show the location of each pollutant source and each permanent source control BMP in your submittal drawing.

► PREPARE A TABLE AND NARRATIVE

Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist (Appendix A). Now, create a table using the format in Table 3-1. In the left column, list each potential source on your site (from Appendix, Column 1). In the middle column, list the corresponding permanent, structural BMPs (from Columns 2 and 3, Appendix A) used to prevent pollutants from entering runoff. Accompany this table with a narrative that explains any special features, materials, or methods of construction that will be used to implement these permanent, structural BMPs.

► IDENTIFY OPERATIONAL SOURCE CONTROL BMPS

TABLE 3-1. Format for Table of Permanent and Operational Source Control Measures.

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*

To complete your table, refer once again to the Pollutant Sources/Source Control Checklist (Appendix A, Column 4). List in the right column of your table the operational BMPs that

should be implemented as long as the anticipated activities continue at the site. The same BMPs may also be required as a condition of a use permit or other revocable discretionary approval for use of the site.

References and Resources

- Appendix A: Stormwater Pollutant Sources/Source Control Checklist
- RWQCB Order R9-2007-0001, Provision D.1.d.(5)
- *Start at the Source*, Section 6.7: Details, Outdoor Work Areas
- *California Stormwater Industrial/Commercial Best Management Practice Handbook*
- *Urban Runoff Quality Management* (WEF/ASCE, 1998) Chapter 4: Source Controls

Step 5: Stormwater Facility Maintenance

As required by NPDES Permit Provision D.1.c.(5), the City requires submittal of proof of a mechanism under which ongoing long-term maintenance of stormwater treatment and flow-control facilities will be conducted. As described in Chapter 5 of this document, you must include the following items in your Project Submittal:

1. A means to finance and implement facility maintenance in perpetuity.
2. Acceptance of responsibility for maintenance from the time the facilities are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the treatment and flow-control facilities you have selected.
4. A detailed plan that sets forth a maintenance schedule for each of the treatment and flow-control facilities built on your site.

Details of these requirements, and instructions for preparing a detailed operation and maintenance plan, are in Chapter 5.

References and Resources

- *Chapter 5*
- Operation, Maintenance, and Management of Stormwater Management Systems (Watershed Management Institute, 1997)

Step 6: Complete Your Project Submittal

Your Project Submittal should document the information gathered and decisions made in Steps 1-5. A clear, complete, well-organized Project Submittal will make it possible to confirm your design meets the minimum requirements of the NPDES permit, the municipal stormwater pollution prevention ordinance, and this *SUSMP*.

► COORDINATION WITH SITE, ARCHITECTURAL, AND LANDSCAPING PLANS

Before completing your Project Submittal, ensure your stormwater control design is fully coordinated with the site plan, grading plan, and landscaping plan being proposed for the site.

Information submitted and presentations to design review committees, planning commissions, and other decision-making bodies must incorporate relevant aspects of the stormwater design. In particular, ensure:

- Curb elevations, elevations, grade breaks, and other features of the drainage design are consistent with the delineation of DMAs.
- The top edge (overflow) of each bioretention facility is level all around its perimeter—this is particularly important in parking lot medians.
- The resulting grading and drainage design is consistent with the design for parking and circulation.
- Bioretention facilities and other IMPs do not create conflicts with pedestrian access between parking and building entrances.
- Vaults and utility boxes can be accommodated outside bioretention facilities and will not be placed within bioretention facilities.
- The visual impact of stormwater facilities, including planter boxes at building foundations and any terracing or retaining walls required for the stormwater control design, is shown in renderings and other architectural drawings.
- Landscaping plans, including planting plans, show locations of bioretention facilities, and the plant requirements are consistent with the engineered soils and conditions in the bioretention facilities.
- Renderings and representation of street views incorporate any stormwater facilities located in street-side buffers and setbacks.

► CONSTRUCTION PLAN SUSMP CHECKLIST

When you submit construction plans for City review and approval, the reviewer will compare that submittal with your earlier Project Submittal. By creating a Construction Plan SUSMP Checklist for your project, you can facilitate the reviewer's comparison and speed review of your project.

TABLE 3-2. Format for Construction Plan SUSMP Checklist.

BMP ID	*BMP Type*	*BMP Symbol*	*Quantity*	*Detail Sheet No.*	*Detail No.*	*Northing*	*Easting*	*Construction Confirmation*

Here's how:

1. Create a table similar to Table 3-2 and as shown on the City's Standard BMP Plan Sheet. Number and list each measure or BMP you have specified include as much information as possible. Incorporate the table into your Project Submittal.

2. When you submit construction plans, duplicate the table (by photocopy or electronically). Now fill the columns identifying the plan sheets where the BMPs are shown. List all plan sheets on which the BMP appears.

Note that the updated table—or Construction Plan SUSMP Checklist—is only a reference tool to facilitate comparison of the construction plans to your Project Submittal. Planning Department staff can advise you regarding the process required to propose changes to your approved Project Submittal.

► CERTIFICATION

Your Project Submittal must be certified by a registered civil engineer. A signed and stamped certification statement must be included in the Water Quality Technical Report

The certification should state: "This Water Quality Technical Report (WQTR) has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which the following design, recommendations, conclusions and decisions are based. The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R9-2007-0001 and subsequent amendments."

► EXAMPLE PROJECT SUBMITTALS

Example Project Submittals may be available from Land Development or Water Quality Protection Program staff. Your submittal will reflect the unique character of your own project and should meet the requirements identified in this *SUSMP*. City Land Development and/or Water Quality Protection Program staff can assist you to determine how specific requirements apply to your project.

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Chapter

4

Low Impact Development Design Guide

Guidance for designing and documenting your LID site drainage, stormwater treatment facilities, and flow-control facilities

Follow the Low Impact Development (LID) design in this SUSMP to achieve compliance with the stormwater treatment requirements as well as the LID requirements in the stormwater NPDES permit.

This will require careful documentation of:

- Pervious and impervious areas in the planned project.
- Drainage from each of these areas.
- Locations, sizes, and types of proposed treatment facilities.

Your Project Submittal must include calculations showing the site drainage and proposed LID treatment facilities meet the criteria in this *SUSMP*.

This Low Impact Development Design Guide will help you:

- Analyze your project and identify and select options for implementing LID techniques to meet runoff treatment requirements—and flow-control requirements, if they apply.
- Design and document drainage for the whole site and document how that design meets this *SUSMP's* stormwater treatment criteria.
- Specify preliminary design details and integrate your LID drainage design with your paving and landscaping design.

Alternatives to LID design are discussed in the final section of this chapter.

Analyze Your Project for LID

Conceptually, there are four LID strategies for managing runoff from buildings and paving:

1. Optimize the site layout by preserving natural drainage features and designing buildings and circulation to minimize the amount of roofs and paving.

2. Use pervious surfaces such as turf, gravel, or pervious pavement—or use surfaces that retain rainfall, such as vegetated roofs. All drainage from these surfaces is considered to be "self-retained" (a detailed definition corresponding to this concept is on page 647). No further management of runoff is necessary. An emergency overflow should be provided for extreme events.

3. Disperse runoff from impervious surfaces on to adjacent pervious surfaces (e.g., direct a roof downspout to disperse runoff onto a lawn).

4. Drain impervious surfaces to engineered Integrated Management Practices (IMPs), such as bioretention facilities, planter boxes, cisterns, or dry wells. IMPs infiltrate runoff to groundwater and/or percolate runoff through engineered soil and allow it to drain away slowly. Subject to site conditions and local County Department of Health Services' regulations, it may be possible to harvest and reuse rainwater in conjunction with IMPs.

A combination of two or more strategies may work best for your project. With forethought in design, the four strategies can provide multiple, complementary benefits to your development. Pervious surfaces reduce heat island effects and temperature extremes. Landscaping improves air quality, creates a better place to live or work, and upgrades value for rental or sale. Retaining natural hydrology helps preserve and enhance the natural character of the area. LID drainage design can also conserve water and reduce the need for drainage infrastructure.

Table 4-1 includes ideas for applying LID strategies to site conditions and types of development.

TABLE 4-1. Ideas for Runoff Management

Site Features and Design Objectives	*Vegetated Roof*	*Self-retaining Areas*	*Pervious Pavement*	*Bioretention Facility*	*Flow-through Planter*	*Dry Well*	*Cistern with bioretention*
Clayey native soils	✓			✓	✓		✓
Permeable native soils	✓		✓	✓	✓	✓	
Very steep slopes	✓				✓		
Shallow groundwater	✓				✓		
Avoid saturating subsurface soils	✓		✓		✓		
Connect to roof downspouts		✓		✓	✓	✓	✓
Parking lots/islands and medians			✓	✓		✓	
Sites with extensive landscaping		✓	✓	✓			
Densely developed sites with limited space/landscape	✓		✓		✓	✓	✓
Fit IMPs into landscape and setback areas				✓			✓
Make drainage a design feature		✓		✓			✓
Convey as well as treat stormwater				✓			

► OPTIMIZE THE SITE LAYOUT

To minimize stormwater-related impacts, apply the following design principles to the layout of newly developed and redeveloped sites.

Conserve natural areas, soils, and vegetation. Define the development envelope and protected areas, identifying areas that are most suitable for development and areas that should be left undisturbed. Use the following guideline to determine the least sensitive areas of the site, in order of increasing sensitivity:

1. Areas devoid of vegetation, including previously graded areas and agricultural fields.
2. Areas of non-native vegetation, disturbed habitats and eucalyptus woodlands where receiving waters are not present.
3. Areas of chamise or mixed chaparral, and non-native grasslands.
4. Areas containing coastal scrub communities.
5. All other upland communities.
6. Occupied habitat of sensitive species and all wetlands (as both are defined by the local jurisdiction).

Within each of the previous categories, hillside areas should be considered more sensitive than flatter areas.

Coordination
Chapter One includes a presentation of how review of your project's site design and landscape design is coordinated with review for compliance with stormwater NPDES requirements.

Where possible, conform the site layout along natural landforms, avoid excessive grading and disturbance of vegetation and soils, and replicate the site's natural drainage patterns. Set back development from creeks, wetlands, and riparian habitats. Preserve significant trees, especially native trees and shrubs, and identify locations for planting additional native or drought tolerant trees and large shrubs. Concentrate development on portions of the site with less permeable soils, and preserve areas that can promote infiltration.

For all types of development, **limit overall coverage** of paving and roofs. This can be accomplished by designing compact, taller structures, narrower and shorter streets and sidewalks, smaller parking lots (fewer stalls, smaller stalls, and more efficient lanes), and indoor or underground parking. *Verify zoning and design standards with City Land Development staff* and do not compromise public safety and a walkable environment.—Examine site layout and circulation patterns and identify areas where landscaping can be substituted for pavement.

Detain and retain runoff throughout the site. On flatter sites, it typically works best to intersperse landscaped areas and IMPs among the buildings and paving. On hillside sites, drainage from upper areas may be collected in conventional catch basins and piped to landscaped areas and IMPs in lower areas.

Use drainage as a design element. Use depressed landscape areas, vegetated buffers, and bioretention areas as amenities and focal points within the site and landscape design. Bioretention areas can be almost any shape and should be located at low points. Bioretention areas shaped as swales can detain and treat low runoff flows and also convey higher flows.

► USE PERVIOUS SURFACES

Consider permeable pavements and surface treatments. Inventory paved areas on your preliminary site plan. Identify where permeable pavements, such as crushed aggregate, turf block, unit pavers, pervious concrete, or pervious asphalt could be substituted for impervious concrete or asphalt paving.

Consider a vegetated roof. Although not yet widely used in California, vegetated or "green" roofs are growing in popularity. Potential benefits include longer roof life, lower heating and cooling costs, and better sound insulation, in addition to air quality and water quality benefits. For SUSMP compliance purposes, vegetated roofs are considered not to produce increased runoff or runoff pollutants (i.e., any runoff from a vegetated roof requires no further treatment or detention). For more information on vegetated roofs, see www.greenroofs.org.

► DISPERSE RUNOFF TO ADJACENT PERVIOUS AREAS

Look for opportunities to direct runoff from impervious areas to adjacent landscaping. The design, including slopes and soils, must reflect a reasonable expectation that an inch of rainfall will soak into the soil and produce no runoff. For example, a lawn or garden depressed 3-4" below surrounding walkways or driveways provides a simple but functional landscape design element.

For priority project sites subject to stormwater treatment requirements only, a 2:1 maximum ratio of impervious to pervious area is acceptable. Be sure soils will drain adequately.

Under some circumstances, it may be allowable to direct runoff from impervious areas to pervious pavement (for example, from roof downspouts to a parking lot paved with crushed aggregate or turf block). The pore volume of pavement and base course must be sufficient to retain an inch of rainfall, including runoff from the tributary area. The slopes and soils must be compatible with infiltrating that volume without producing runoff.

► DIRECT RUNOFF TO INTEGRATED MANAGEMENT PRACTICES

Project Clean Water has developed design criteria for the following IMPs:

- Bioretention facilities, which can be configured as swales, free-form areas, or planters to integrate with your landscape design.
- Flow-through planters, which can be used near building foundations and other locations where infiltration to native soils is not desired.
- Dry wells and other infiltration facilities, which can be used only where soils are permeable.
- Cisterns or vaults, in combination with a bioretention facility.

See the design sheets at the end of this chapter.

It may be possible to create a site-specific design that uses cisterns to achieve stormwater flow control, stormwater treatment, and rainwater reuse for irrigation or indoor uses (water harvesting). Such a design could expand the multiple benefits of LID to include water conservation. Keep in mind:

- Facilities must meet criteria for capturing and treating the volume specified by Equation 4-8 below. This volume must be allowed to empty within 24 hours so runoff from additional storms, which may follow, is also captured and treated. Additional volume may be required if the system also stores runoff for longer periods for reuse.

- Storage of water for longer than 48 hours creates the potential for mosquito harborage. Cisterns and vaults must be designed to prevent entry by mosquitoes.

- Indoor uses of non-potable water may be restricted or prohibited per County Department of Health Services.

Rationale

Pollutants in rainfall and windblown dust will tend to become entrained in the vegetation and soils of landscaped areas, so no additional treatment is needed. It is assumed the self-treating landscaped areas will produce runoff less than or equal to the pre-project site condition.

Some references and resources for water harvesting appear at the end of this chapter.

Finding the right location for treatment facilities on your site involves a careful and creative integration of several factors:

- To make the most efficient use of the site and to maximize aesthetic value, integrate IMPs with site landscaping. Verify City of Vista landscaping standards with Development staff, to ensure required setbacks or buffers are maintained. It may be possible to locate some or all of your site's treatment and flow-control facilities within this same area, or within utility easements or other non-buildable areas.

- Planter boxes and bioretention areas must be level or nearly level all the way around. Bioretention areas configured as swales may be gently sloped in the linear direction, but opposite sides must be at the same elevation.

- For effective, low-maintenance operation, locate facilities so drainage into and out of the device is by gravity flow. Pumped systems are feasible, but are expensive, require more maintenance, are prone to untimely failure, and can cause mosquito control problems. Most IMPs require 3 feet or more of head.

- If the property is being subdivided now or in the future, the facility should be in a common, accessible area. In particular, avoid locating facilities on private residential lots. Even if the facility will serve only one site owner or operator, make sure the facility is located for ready access by inspectors from the City of Vista and other regulatory agencies(RWQCB, County DHS, etc.).

- The facility must be accessible to equipment needed for its maintenance. Access requirements for maintenance will vary with the type of facility selected. Planter

boxes and bioretention areas will typically need access for the same types of equipment used for landscape maintenance.

To complete your analysis, include in your Project Submittal a brief narrative documenting the site layout and site design decisions you made. This will provide background and context for how your design meets the quantitative LID design criteria.

Develop and Document Your Drainage Design

The design documentation procedure begins with careful delineation of pervious areas and impervious areas (including roofs) throughout the site. The procedure accounts for how runoff from each delineated area is managed. For areas draining to IMPs, the procedure ensures each IMP is appropriately sized.

The procedure results in a space-efficient, cost-efficient LID design for meeting SUSMP requirements on most residential and commercial/industrial developments. The procedure arranges documentation of drainage design and IMP sizing in a consistent format for presentation and review.

This procedure is intended to facilitate, not substitute for, creative interplay among site design, landscape design, and drainage design. Several iterations may be needed to optimize your drainage design as well as aesthetics, circulation, and use of available area for your site.

You should be able to complete the needed calculations using only the project's site development plan.

► STEP 1: DELINEATE DRAINAGE MANAGEMENT AREAS

This is the key first step. You must divide the entire project area into individual, discrete Drainage Management Areas (DMAs). Typically, lines delineating DMAs follow grade breaks and roof ridge lines. The Exhibit, tables, text, and calculations in your Project Submittal will illustrate, describe, and account for runoff from each of these areas.

Use separate DMAs for each surface type (e.g., landscaping, pervious paving, or roofs). Each DMA must be assigned a single hydrologic soil group. Assign each DMA an identification number and determine its size in square feet.

► STEP 2: CLASSIFY DMAS AND DETERMINE RUNOFF FACTORS

Next, determine how drainage from each DMA will be handled. Each DMA will be one of the following four types:

1. Self-treating areas.
2. Self-retaining areas (also called "zero-discharge" areas).
3. Areas that drain to self-retaining areas.
4. Areas that drain to IMPs.

Self-treating areas are landscaped or turf areas that do not drain to IMPs, but rather drain directly off site or to the storm drain system. Examples include upslope undeveloped areas which are ditched and drained around a development and grassed slopes which drain off-site to a street or storm drain. In general, self-treating areas include no impervious areas, unless the impervious area is very small (5% or less) in relationship to the receiving pervious area and slopes are gentle enough to ensure runoff will be absorbed into the vegetation and soil. Criteria for self-treating areas are in the design sheet "Self Treating and Self-Retaining Areas" at the end of this chapter.

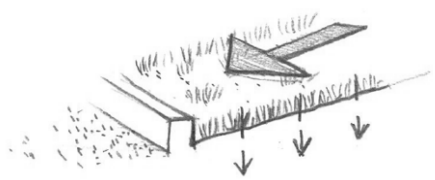

FIGURE 4-1. Self-treating areas are entirely pervious and drain directly off-site or to the storm drain system.

Self-retaining areas are designed to retain the first one inch of rainfall without producing any runoff. The technique works best on flat, heavily landscaped sites. It may be used on mild slopes if there is a reasonable expectation that a one-inch rainfall event would produce no runoff.

To create self-retaining turf and landscape areas in flat areas or on terraced slopes, berm the area or depress the grade into a concave cross-section so that these areas will retain the first inch of rainfall. Specify slopes, if any, toward the center of the pervious area. Inlets of area drains, if any, should be set 3 inches above the low point to allow ponding.

Criteria for self-retaining areas are in the design sheet "Self Treating and Self-Retaining Areas" following this chapter.

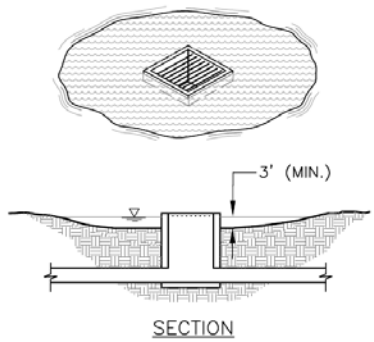

FIGURE 4-2. Self-retaining areas. Berm or depress the grade to retain at least an inch of rainfall and *set* inlets of any area drains at least 3 inches above low point to allow ponding.

Areas draining to self-retaining areas. Runoff from impervious or partially pervious areas can be managed by routing it to self-retaining pervious areas. For example, roof downspouts can be directed to lawns, and driveways can be sloped toward landscaped areas. The maximum ratio is 2 parts impervious area for every 1 part pervious area.

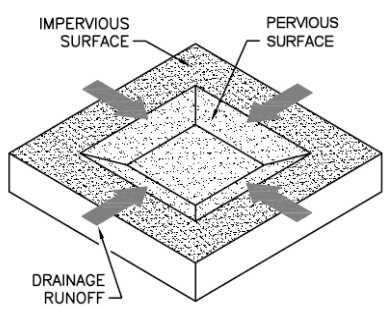

FIGURE 4-3. Relationship of impervious to pervious area for self-retaining areas. Ratio: ***pervious ≥ ½ impervious***

The drainage from the impervious area must be directed to and dispersed within the pervious area, and the entire area must be designed to retain an inch of rainfall without flowing off-site. For example, if the maximum ratio of 2 parts impervious area into 1 part pervious area is used, then the pervious area must absorb 3 inches of water over its surface before overflowing to an off-site drain.

A partially pervious area may be drained to a self-retaining area. For example, a driveway composed of unit pavers may drain to an adjacent lawn. In this case, the maximum ratios are:

(Runoff factor) x (tributary area) ≤ 2 x (self-retaining area) *Equation 4-1*

Use the runoff factors in Table 4-2.

Prolonged ponding is a potential problem at higher impervious/pervious ratios. In your design, ensure that the pervious area soils can handle the additional run-on and are sufficiently well-drained.

Under some circumstances, pervious pavement (e.g., crushed stone, pervious asphalt, or pervious concrete) can be self-retaining. Adjacent roofs or impervious pavement may drain on to the pervious pavement in the same maximum ratios as described above.

To design a pervious pavement to be a self-treating area, ensure:

- The gravel base course is a minimum of four or more inches deep.
- The base course is not to be underdrained.
- A qualified engineer has been consulted regarding infiltration rates, pavement stability, and suitability for the intended traffic.

Runoff from self-treating and self-retaining areas does not require any further treatment or flow control.

TABLE 4-2. Runoff factors for surfaces draining to IMPs.

Surface	Factor
Roofs	1.0
Concrete	1.0
Pervious Concrete	0.1
Porous Asphalt	0.1
Grouted Unit Pavers	1.0
Solid Unit Pavers on granular base, min. 3/16 inch joint space	0.2
Crushed Aggregate	0.1
Turfblock	0.1
Amended, mulched soil	0.1
Landscape	0.1

Areas draining to IMPs are multiplied by a sizing factor to calculate the required size of the IMP. On most densely developed sites—such as commercial and mixed-use developments and small-lot residential subdivisions—most DMAs will drain to IMPs.

More than one drainage area can drain to the same IMP. However, because the minimum IMP sizes are determined by ratio to drainage area size, a drainage area may not drain to more than one IMP. See Figures 4-4 and 4-5.

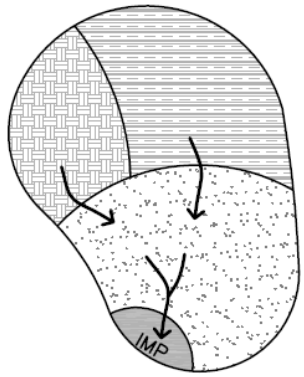

FIGURE 4-4. MORE THAN ONE
Drainage Management Area can drain to a single IMP.

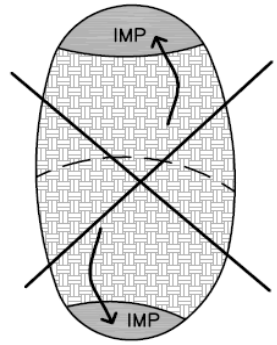

FIGURE 4-5. ONE DRAINAGE
Management Area cannot drain to more than one IMP. Use a grade break to divide the DMA.

Where possible, design site drainage so only impervious roofs and pavement drain to IMPs. This yields a simpler, more efficient design and also helps protect IMPs from becoming clogged by sediment.

If it is necessary to include turf, landscaping, or pervious pavements within the area draining to an IMP, list each surface as a separate DMA. A runoff factor (similar to a "C" factor used in the rational method) is applied to account for the reduction in the quantity of runoff. For example, when a turf or landscaped drainage management area drains to an IMP, the resulting increment in IMP size is:

$$\Delta \text{ (Area)} = \text{(pervious area)} \times \text{(runoff factor)} \times \text{(sizing factor)}.$$

Use the runoff factors in Table 4-2.

► STEP 3: TABULATE DRAINAGE MANAGEMENT AREAS

- Tabulate self-treating areas in the format shown in Table 4-3.
- Tabulate self-retaining areas in the format shown in Table 4-4.
- Tabulate areas draining to self-retaining areas in the format shown in Table 4-5. Check to be sure the total product of (square feet of tributary area × runoff factor) for all DMAs draining to a receiving self-retaining area is no greater than a 2:1 ratio to the square footage of the receiving self-retaining area itself.
- Compile a list of DMAs draining to IMPs. Proceed to Step 4 to check the sizing of the IMPs.

TABLE 4-3. Format for Tabulating Self-Treating Areas

DMA Name	*Area (square feet)*

TABLE 4-4. Format for Tabulating Self-Retaining Areas

DMA Name	*Area (square feet)*

TABLE 4-5. Format for Tabulating Areas Draining to Self-Retaining Areas

DMA Name	*Area (square feet)*	*Post-project surface type*	*Runoff factor*	*Receiving self-retaining DMA*	*Receiving self-retaining DMA Area (square feet)*

► STEP 4: SELECT AND LAY OUT IMPS ON SITE PLAN

Select from the list of IMPs in Table 4-6. Illustrations, designs, and design criteria for the IMPs are in the "IMP Design Details and Criteria" at the end of this chapter.

Once you have laid out the IMPs, calculate the square footage you have set aside on your site plan for each IMP.

► STEP 5: REVIEW SIZING FOR EACH IMP

For each of the IMPs, use the appropriate "water quality only" sizing factor from Table 4-6. *Sizing factors for integrated facilities that provide both water quality treatment and hydromodification flow control are currently under development and will be included in this document at a later time – please check the City's website at www.cityofvista.com for updates.*

TABLE 4-6. IMP Sizing Factors (for water quality only)

Bioretention Facilities	Sizing Factor for Area = 0.04
Flow-through Planters	Sizing Factor for Area = 0.04
Dry Well or Infiltration Basin	See Step 6 to Calculate Min. Volume
Cistern and Vaults with Bioretention	See Step 6 to Calculate Min. Volume of Cistern or Vault; then use 0.04 to calculate minimum size of bioretention area

► STEP 6: CALCULATE MINIMUM AREA AND VOLUME OF EACH IMP

The minimum area of bioretention facilities and flow-through planters is found by summing up the contributions of each tributary DMA and multiplying by the adjusted sizing factor for the IMP. *Note that if the IMP is designed to provide hydromodification flow control, then hydromodification sizing*

factors should be used in lieu of the "water quality only" sizing factors presented in Table 4-6. These sizing factors are currently under development and will be included at a later time – please check the City's website at www.cityofvista.com for updates.

Equation 4-7

$$Min.\,IMP\,Area = \sum \begin{pmatrix} DMA & DMA \\ Square & \times Runoff \\ Footage & Factor \end{pmatrix} \times \begin{pmatrix} IMP \\ Sizing \\ Factor \end{pmatrix}$$

Use the format of Table 4-7 to present the calculations of the required minimum area and volumes for bioretention areas and planter boxes:

TABLE 4-7. Format for Presenting Calculations of Minimum IMP Areas for Bioretention Areas and Planter Boxes.

DMA Name	*DMA Area (square feet)*	*Post-project surface type*	*DMA Runoff factor*	*DMA Area × runoff factor*	*Soil Type:*	*IMP Name*			
					IMP Sizing factor (WQ only)		*Minimum Area*	*Proposed Area*	
			Total		***0.04***				***IMP Area***

To size dry wells, infiltration basins, or infiltration trenches for the "water quality treatment only" option, use the following procedure:

1. Use the County of San Diego's 85th Percentile Isopluvial Map to determine the minimum unit volume.
2. Determine the weighted runoff factor ("C" factor) for the area tributary to the facility. The factors in Table 4-2 may be used.
3. Multiply the weighted runoff factor times the tributary area times the minimum unit volume.

Equation 4-8

$$Volume = [Tributary\ \ Area] \times [weighted\ runoff\ \ factor] \times [unit\ volume]$$

4. Select a facility depth.
5. Determine the required facility area. Dry wells may be designed as an open vault or with rock fill. If rock fill is used, assume a porosity of 40%.
6. Ensure the facility can infiltrate the entire volume within 72 hours.

To size a cistern or vault in series with a bioretention facility (criteria below for "water quality treatment only" option:

1. Use Equation 4-8 to calculate the required cistern or vault volume.
2. Design a discharge orifice for a drawdown time of 24 hours.
3. Determine the maximum discharge from the orifice.
4. The minimum area of the bioretention facility must treat this flow based on a percolation rate of 5" per hour through the engineered soil.

► STEP 7: DETERMINE IF AVAILABLE SPACE FOR IMP IS ADEQUATE

Sizing and configuring IMPs may be an iterative process. After computing the minimum IMP area using Steps 1 – 6, review the site plan to determine if the reserved IMP area is sufficient. If so, the planned IMPs will meet the SUSMP sizing requirements. If not, revise the plan accordingly. Revisions may include:

- Reducing the overall imperviousness of the project site.
- Changing the grading and drainage to redirect some runoff toward other IMPs which may have excess capacity.
- Making tributary landscaped DMAs self-treating or self-retaining.
- Expanding IMP surface area.

► STEP 8: COMPLETE YOUR SUMMARY REPORT

Present your IMP sizing calculations in tabular form. Adapt the following format as appropriate to your project. Coordinate your presentation of DMAs and calculation of minimum IMP sizes with the WQTR and Project Submittal drawings (labeled to show delineation of DMAs and locations of IMPs). It is also helpful to incorporate a brief description of each DMA and each IMP.

Sum the total area of all DMAs and IMPs listed and show it is equal to the total project area. This step may include adjusting the square footage of some DMAs to account for area used for IMPs.

Format:

Project Name:

Project Location:

APN or Subdivision Number:

Total Project Area (square feet):

Mean Annual Precipitation at Project Site:

I. Self-treating areas:

DMA Name	*Area (square feet)*

II. Self-retaining areas:

DMA Name	*Area (square feet)*

III. Areas draining to self-retaining areas:

DMA Name	*Post-project surface type*	*Runoff factor*	*Area (square feet)*	*Receiving self-retaining DMA*	*Receiving self-retaining DMA Area (square feet)*

IV. Areas draining to IMPs (repeat for each IMP):

DMA Name	*DMA Area (square feet)*	*Post-project surface type*	*DMA Runoff factor*	*DMA Area × runoff factor*	*Soil Type:*	*IMP Name*			
					IMP Sizing factor		*Minimum Area or Volume*	*Proposed Area or Volume*	
			Total						***IMP Area***

Specify Preliminary Design Details

In your Project Submittal and/or WQTR, describe your IMPs in sufficient detail to demonstrate the area, volume, and other criteria of each can be met within the constraints of the site.

Ensure these details are consistent with preliminary site plans, landscaping plans, and architectural plans submitted with your application for planning and zoning approvals.

Following are design sheets for:

- Self-treating and self-retaining areas
- Pervious pavements
- Bioretention facilities
- Flow-through planter
- Dry wells and infiltration basins
- Cistern with bioretention facility

These design sheets include recommended configurations and details, and example applications, for these IMPs. The information in these design sheets must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head. The City of Vista Land Development staff have final review and approval authority over the project design.

Keep in mind that proper and functional design of the IMP is the responsibility of the applicant. Effective operation of the IMP throughout the project's lifetime will be the responsibility of the property owner.

Alternatives to Integrated LID Design

If you believe design of features and facilities as described above is infeasible for your development site, consult with City Land Development and/or Water Quality Protection Program staff before preparing an alternative design for stormwater treatment, flow control, and LID compliance.

For all alternative designs, the applicant must prepare a complete Project Submittal, including a drawing showing the entire site divided into discrete Drainage Management Areas, text and tables showing how drainage is routed from each DMA to a treatment facility, and calculations demonstrating that the design achieves the applicable design criteria for each stormwater treatment facility. Alternative treatment facilities are limited to the circumstances and selection criteria identified in Chapter 2. The Project Submittal must also show how the project meets the minimum LID criteria and ensures runoff rates, durations, and velocities are controlled to maintain or reduce downstream erosion conditions and protect stream habitat (NPDES Permit Provision D.1.d.(10)).

► DESIGN OF ALTERNATIVE TREATMENT FACILITIES

Here are criteria and design considerations for some alternative treatment facilities:

Sand Filters. To ensure effectiveness is not compromised by compacting or clogging of the filter surface, sand filters must be maintained frequently.

The following criteria apply to sand filters:

- Calculate the design flow using the rational method with an intensity of 0.2"/hour and the "C" factors for "treatment only" from Table 4-2.
- To determine the required filter surface area, divide the design flow by an allowable design surface loading rate of 5"/hour.
- The minimum depth of filter media is 18". The media should be washed sand, with gradation similar to that specified for fine aggregate in ASTM C-33.
- The entire filter area must be accessible for easy maintenance without the need to enter a confined space.

A typical filter design includes a gravel drain layer and a perforated pipe underdrain. Filter fabric may be used to prevent the filter media from entering the gravel layer.

The design should not include any permanent pool or other standing water. Instead of including a pretreatment basin, consider the following features in the area tributary to the filter to reduce the potential for filter clogging:

- Limit the size of the Drainage Management Area.
- Include only impervious areas in the DMA.

- Stabilize slopes and eliminate sources of sediment in the DMA.
- Provide screens for trash and leaves at storm drain inlets.

For additional design considerations and details, see *Design of Stormwater Filtering Systems* by Richard A. Claytor and Thomas R. Schueler, The Center for Watershed Protection, 1996, and *California Stormwater BMP Handbooks* Fact Sheet TC-40, Media Filter.

Sand filters do not provide adequate hydromodification flow controls.

Extended ("Dry") Detention Basins. The required detention volume for water quality treatment is based on the 85th percentile 24-hour storm depth. The steps to calculate the required detention volume are:

1. Use the County of San Diego's 85th Percentile Isopluvial Map to determine the unit basin volume.
2. Determine the weighted runoff factor ("C" factor) for the area tributary to the basin. The factors in Table 4-2 may be used.
3. Multiply the weighted runoff factor times the tributary area times the unit basin volume.

For maximum effectiveness the basin should not be sized substantially larger than this volume. If the basin is to be used for hydromodification flow control, then the BMP Sizing Calculator pond sizer or a continuous simulation model must be used to prove the basin meets peak flow and flow duration criteria.

For design considerations and details, see the *California Stormwater Best Management Practice Handbooks*, Fact Sheet TC-22, "Extended Detention Basins." The basin outlet should be designed for a 24-hour drawdown time.

As noted in Fact Sheet TC-22, "dry" detention basins may not be practicable for drainage areas less than 5 acres. The potential for mosquito harborage is a concern. In the design, do not create any areas that will hold standing water for 72 hours or more.

"Wet" Detention Ponds and Constructed Wetlands. The required water quality detention volume is determined as with a "dry" detention basin. Before proceeding with design, contact the local mosquito control agency to coordinate the design and plan ongoing inspection and maintenance of the facility for mosquito control. For design considerations and details, see the *California Stormwater Best Management Practices Handbooks*, Fact Sheet TC-20, "Wet Ponds," and Fact Sheet TC-21, "Constructed Wetlands."

Vegetated Swales. Design recommendations for conventional vegetated swales are in the *California Stormwater Best Management Practices Handbooks*. The conventional swale design uses available on-site soils and does not include an underdrain system. Where soils are clayey, there is little infiltration. Treatment occurs as runoff flows through grass or other vegetation before exiting at the downstream end. Recommended detention times are on the order of 10 minutes.

It should be noted that such designs would not provide the required hydromodification flow control benefit.

Conventional vegetated swales may be used to meet NPDES permit treatment requirements and LID requirements. The following should be incorporated in the design:

- Determine the weighted runoff factor ("C" factor) for the area tributary to the swale. The factors in Table 4-2 may be used.
- Calculate the design flow by multiplying the weighted runoff factor times the tributary area times either (1) 0.2 inches of rainfall per hour, or (2) twice the 85th percentile hourly rainfall intensity.
- When sizing the swale, use a value of 0.25 for Manning's "n".
- Ensure that all flow enters the swale near its highest point and that no flow short-circuits treatment by entering the swale along its length.
- The swale should be a minimum 100 feet in length.
- Longitudinal slopes should not exceed 2.5%; on flatter slopes, incorporate measures to avoid prolonged surface ponding.

Consider using linear-shaped bioretention areas in place of conventional vegetated swales because:

- Conventional swale design has resulted in standing water and associated nuisances.
- Conventional swales often don't obtain even the design residence time because of the length required and because proper design requires runoff enter the swale at the upstream end rather than at various locations along its length, and
- Bioretention areas provide a more flexible drainage design, more effective practicable treatment, and more effective flow control within the same footprint.

► TREATMENT FACILITIES FOR SPECIAL CIRCUMSTANCES

Higher-rate surface filters and vault-based proprietary filters can only be used in the circumstances described in Chapter 2 and when sand filters, extended "dry" detention basins, and "wet" detention ponds or constructed wetlands have been found infeasible.

For surface filters, the grading and drainage design should minimize the area draining to each unit and maximize the number of discrete drainage areas and units. Proprietary facilities should be installed consistent with the manufacturer's instructions.

Such facilities typically do not provide hydromodification flow control benefit and need analysis to demonstrate to the satisfaction of the City of Vista Land Development staff that all HMP criteria are met through their use.

References and Resources:

- RWQCB Order R9-2007-0001 (Stormwater NPDES Permit)
- Low Impact Development Center
- *County of San Diego Low Impact Development Handbook*
- *California Best Management Practices Handbooks*
- *Design of Stormwater Filtering Systems* (Claytor and Scheuler, 1996)
- American Rainwater Catchment Systems Association
- Water Conservation Alliance of Southern Arizona
- *Rainwater Harvesting for Drylands and Beyond*
- *The Texas Manual on Rainwater Harvesting*
- *Managing Wet Weather With Green Infrastructure: Municipal Handbook, Rainwater Harvesting Policies* (Low Impact Development Center, 2008)

Self-Treating and Self-Retaining Areas

► CRITERIA

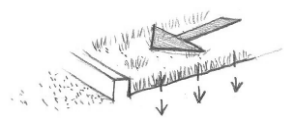

Rainfall on self-treating areas infiltrates or—during intense storms— drains directly off-site or to the storm drain system.

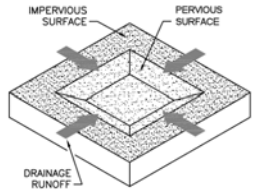

Self-retaining areas are designed to retain the first one inch of rainfall without producing any runoff. During intense storms, runoff may drain off-site, to the storm drain system, or to IMPs.

Best Uses

- Heavily landscaped sites

Advantages

- No maintenance verification requirement
- Complements site landscaping

Limitations

- Requires substantial square footage
- Grading requirements must be coordinated with landscape design

LID design seeks to manage runoff from roofs and paving so effects on water quality and hydrology are minimized. Runoff from landscaping, however, does not need to be managed the same way.

Runoff from landscaping can be managed by creating self-treating and self-retaining areas.

Self-treating areas are natural, landscaped, or turf areas that drain directly off site or to the storm drain system. Examples include upslope undeveloped areas that are ditched and drained around a development and grassed slopes that drain offsite to a street or storm drain. Self-treating areas may not drain on to adjacent paved areas.

Where a landscaped area is upslope from or surrounded by paved areas, a **self-retaining area** (also called a zero-discharge area) may be created. Self-retaining areas are designed to retain the first one inch of rainfall without producing any runoff. The technique works best on flat, heavily landscaped sites. It may be used on mild slopes if there is a reasonable expectation that the first inch of rainfall would produce no runoff.

To create self-retaining turf and landscape areas in flat areas or on terraced slopes, berm the area or depress the grade into a concave cross-section so that these areas will retain the first inch of rainfall. Inlets of area drains, if any, should be set 3 inches above the low point to allow ponding.

Areas draining to self-retaining areas. Drainage from roofs and paving can be directed to self-retaining areas and allowed to infiltrate into the soil. The maximum allowable ratio is 2 parts impervious: 1 part pervious.

The self-retaining area must be bermed or depressed to retain an inch of rainfall including the flow from the tributary impervious area.

► DETAILS

Drainage from self-treating areas must flow to off-site streets or storm drains without flowing on to paved areas.

Pavement within a self-treating area cannot exceed 5% of the total area.

In self-retaining areas, overflows and area drain inlets should be set high enough to ensure ponding over the entire surface of the self-retaining area.

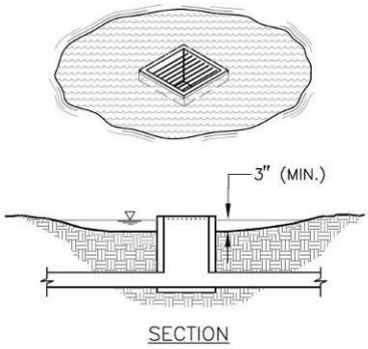

Set overflows and area drain inlets high enough to ensure ponding (3" deep) over the surface of the self-retaining area.

Self–retaining areas should be designed to promote even distribution of ponded runoff over the area.

Leave enough reveal (from pavement down to landscaped surface) to accommodate buildup of turf or mulch.

► APPLICATIONS

Lawn or landscaped areas adjacent to streets can be considered self-treating areas.

Self-retaining areas can be created by depressing lawn and landscape below surrounding sidewalks and plazas.

Runoff from walkways or driveways in parks and park-like areas can sheet-flow to self-retaining areas.

Roof leaders can be connected to self-retaining areas by piping beneath plazas and walkways. If necessary, a "bubble-up" can be used.

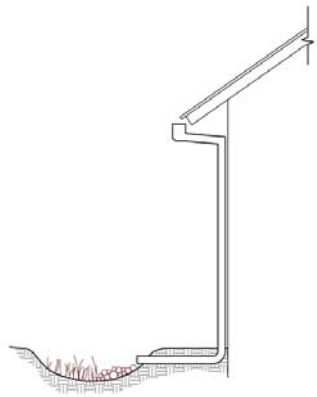

Connecting a roof leader to a self-retaining area. The head from the eave height makes it possible to route roof drainage some distance away from the building.

Self-retaining areas can be created by terracing mild slopes. The elevation difference promotes subsurface drainage.

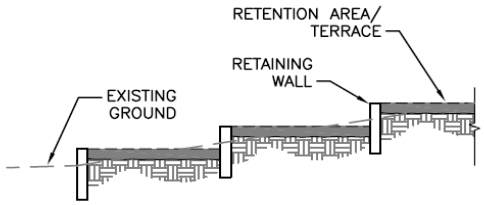

Mild slopes can be terraced to create self-retaining areas.

► DESIGN CHECKLIST FOR SELF-TREATING AREAS

- ❒ The self-treating area is at least 95% lawn or landscaping (not more than 5% impervious).
- ❒ Re-graded or re-landscaped areas have amended soils, vegetation, and irrigation as may be required to maintain soil stability and permeability.
- ❒ Runoff from the self-treating area does not enter an IMP or another drainage management area, but goes directly to the storm drain system.

► DESIGN CHECKLIST FOR SELF-RETAINING AREAS

- ❒ Area is bermed all the way around or graded concave.
- ❒ Slopes do not exceed 4%.
- ❒ Entire area is lawn, landscaping, or pervious pavement (see criteria in Chapter 4).
- ❒ Area has amended soils, vegetation, and irrigation as may be required to maintain soil stability and permeability.
- ❒ Any area drain inlets are at least 3 inches above surrounding grade.

► DESIGN CHECKLIST FOR AREAS DRAINING TO SELF-RETAINING AREAS

- ❒ Ratio of tributary impervious area to self-retaining area is not greater than 2:1.
- ❒ Roof leaders collect runoff and route it to the self-retaining area.
- ❒ Paved areas are sloped so drainage is routed to the self-retaining area.
- ❒ Inlets are designed to protect against erosion and distribute runoff across the area.

Bioretention Facilities

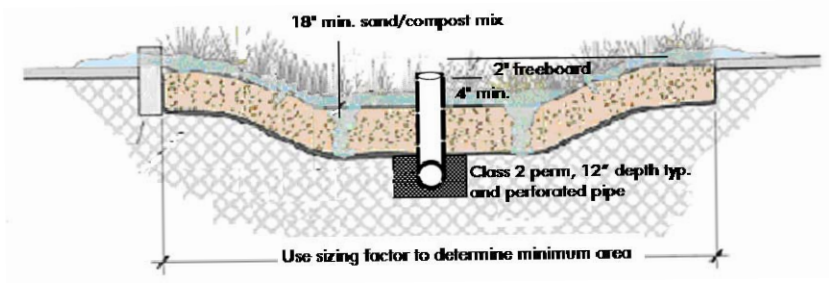

Bioretention facility configured for treatment-only requirements. Bioretention facilities can rectangular, linear, or nearly any shape.

Bioretention detains runoff in a surface reservoir, filters it through plant roots and a biologically active soil mix, and then infiltrates it into the ground. Where native soils are less permeable, an underdrain conveys treated runoff to storm drain or surface drainage.

Bioretention facilities can be configured in nearly any shape. When configured as linear swales, they can convey high flows while percolating and treating lower flows.

Bioretention facilities can be configured as in-ground or above-ground planter boxes, with the bottom open to allow infiltration to native soils underneath. If infiltration cannot be allowed, use the sizing factors and criteria for the Flow-Through Planter.

► CRITERIA

For development projects subject only to runoff treatment requirements, the following criteria apply:

Parameter	Criterion
Soil mix depth	18 inches minimum
Soil mix minimum percolation rate	5 inches per hour minimum sustained (10 inches per hour initial rate recommended)
Soil mix surface area	0.04 times tributary impervious area (or equivalent approved alternative)

Best Uses

- Commercial areas
- Residential subdivisions
- Industrial developments
- Roadways
- Parking lots
- Fit in setbacks, medians, and other landscaped areas

Advantages

- Can be any shape
- Low maintenance
- Can be landscaped

Limitations

- Require 4% of tributary impervious square footage
- Typically requires 3-4 feet of head
- Irrigation typically required

Parameter	Criterion
Surface reservoir depth	6 inches minimum; may be sloped to 4 inches where adjoining walkways.
Underdrain	Required in Group "C" and "D" soils. Perforated pipe embedded in gravel ("Class 2 permeable" recommended), connected to storm drain or other accepted discharge point.

► DETAILS

Plan. On the surface, a bioretention facility should be one level, shallow basin—or a series of basins. As runoff enters each basin, it should flood and fill throughout before runoff overflows to the outlet or to the next downstream basin. This will help prevent movement of surface mulch and soil mix.

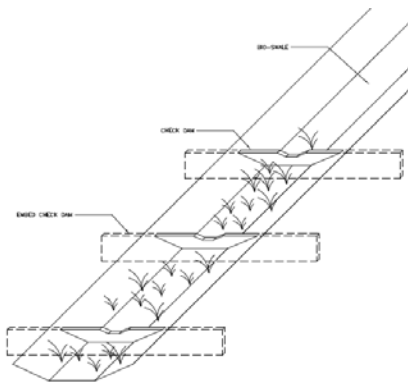

Use check dams for linear bioretention facilities (swales) on a slope.

In a linear swale, check dams should be placed so that the lip of each dam is at least as high as the toe of the next upstream dam. A similar principle applies to bioretention facilities built as terraced roadway shoulders.

Inlets. Paved areas draining to the facility should be graded, and inlets should be placed, so that runoff remains as sheet flow or as dispersed as possible. Curb cuts should be wide (12" is recommended) to avoid clogging with leaves or debris. Allow for a minimum reveal of 4"-6" between the inlet and soil mix elevations to ensure turf or mulch buildup does not block the inlet. In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet.

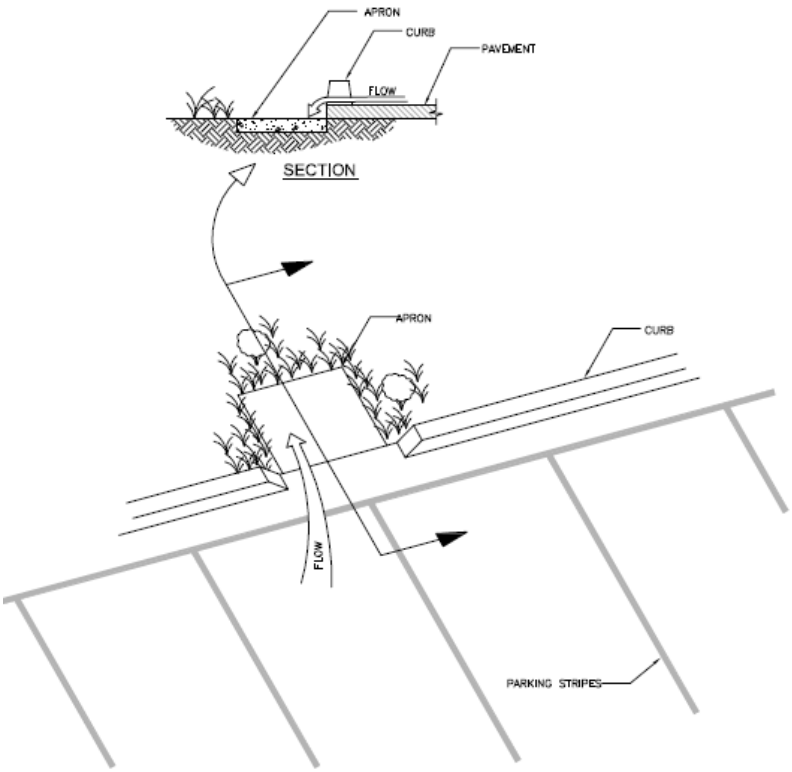

Recommended design details for bioretention facility inlets (see text).

Where runoff is collected in pipes or gutters and conveyed to the facility, protect the landscaping from high-velocity flows with energy-dissipating rocks. In larger installations, provide cobble-lined channels to better distribute flows throughout the facility.

Upturned pipe outlets can be used to dissipate energy when runoff is piped from roofs and upgradient paved areas.

Soil mix. The required soil mix is similar to a loamy sand. It must maintain a minimum percolation rate of 5" per hour throughout the life of the facility, and it must be suitable for maintaining plant life. Typically, on-site soils will not be suitable due to clay content.

Storage and drainage layer. "Class 2 permeable," Caltrans specification 68-1.025, is recommended. Open-graded crushed rock, washed, may be used, but requires 4"-6" washed pea gravel be substituted at the top of the crushed rock gravel layers. Do not use filter fabric to separate the soil mix from the gravel drainage layer or the gravel drainage layer from the native soil.

Underdrains. No underdrain is required where native soils beneath the facility are Hydrologic Soil Group A or B. For treatment-only facilities where native soils are Group C or D, a perforated pipe must be bedded in the gravel layer and must terminate at a storm drain or other approved discharge point.

Outlets. In treatment-only facilities, outlets must be set high enough to ensure the surface reservoir fills and the entire surface area of soil mix is flooded before the outlet elevation is reached. In swales, this can be achieved with appropriately placed check dams.

The outlet should be designed to exclude floating mulch and debris.

Vaults, utility boxes and light standards. It is best to locate utilities outside the bioretention facility—in adjacent walkways or in a separate area set aside for this purpose. If utility structures are to be placed within the facility, the locations should be anticipated and adjustments made to ensure the minimum bioretention surface area and volumes are achieved. Leaving the final locations to each individual utility can produce a haphazard, unaesthetic appearance and make the bioretention facility more difficult to maintain.

Emergency overflow. The site grading plan should anticipate extreme events and potential clogging of the overflow and route emergency overflows safely.

Trees. Bioretention areas can accommodate small or large trees. There is no need to subtract the area taken up by roots from the effective area of the facility. Extensive tree roots maintain soil permeability and help retain runoff. Normal maintenance of a bioretention facility should not affect tree lifespan.

The bioretention facility can be integrated with a tree pit of the required depth and filled with structural soil. If a root barrier is used, it can be located to allow tree roots to spread throughout the bioretention facility while protecting adjacent pavement. Locations and planting elevations should be selected to avoid blocking the facility's inlets and outlets.

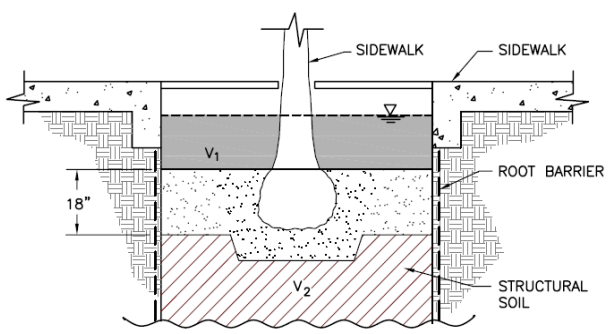

Bioretention facility configured as a tree well.
The root barrier is optional.

► APPLICATIONS

Multi-purpose landscaped areas. Bioretention facilities are easily adapted to serve multiple purposes. The loamy sand soil mix will support turf or a plant palette suitable to the location and a well-drained soil.

Example landscape treatments:

- Lawn with sloped transition to adjacent landscaping.
- Swale in setback area
- Swale in parking median
- Lawn with hardscaped edge treatment
- Decorative garden with formal or informal plantings
- Traffic island with low-maintenance landscaping
- Raised planter with seating
- Bioretention on a terraced slope

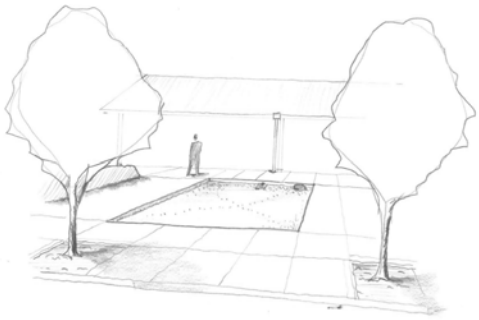

Bioretention facility configured as a recessed decorative lawn with hardscaped edge.

Bioretention facility configured and planted as a lawn/ play area.

Residential subdivisions. Some subdivisions are designed to drain roofs and driveways to the streets (in the conventional manner) and then drain the streets to bioretention areas, with one bioretention area for each 1 to 6 lots, depending on subdivision layout and topography.

If allowed by the local jurisdiction, bioretention areas can be placed on a separate, dedicated parcel with joint ownership.

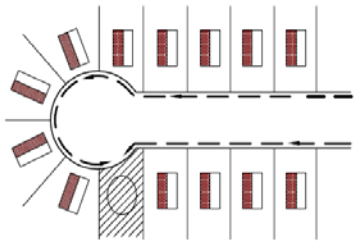

Bioretention facility receiving drainage from individual lots and the street in a residential subdivision.

Sloped sites. Bioretention facilities must be constructed as a basin, or series of basins, with the circumference of each basin set level. It may be necessary to add curbs or low retaining walls.

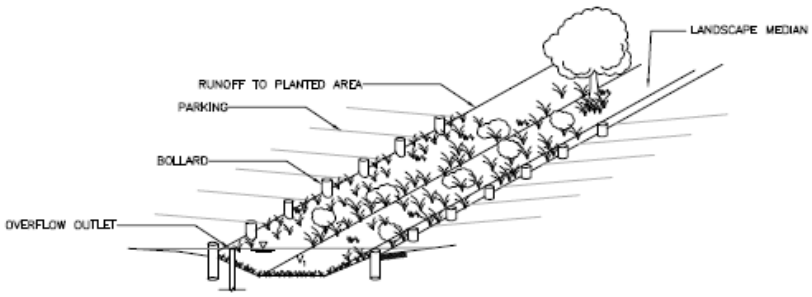

Bioretention facility configured as a parking median.
Note use of bollards in place of curbs, eliminating the need for curb cuts.

Design Checklist for Bioretention

- ❒ Volume or depth of surface reservoir meets or exceeds minimum.
- ❒ 18" depth "loamy sand" soil mix with minimum long-term percolation rate of 5"/hour.
- ❒ Area of soil mix meets or exceeds minimum.
- ❒ Perforated pipe underdrain bedded in "Class 2 perm" with connection and sufficient head to storm drain or discharge point (except in "A" or "B" soils).
- ❒ No filter fabric.
- ❒ Underdrain has a clean-out port consisting of a vertical, rigid, non-perforated PVC pipe, with a minimum diameter of 6 inches and a watertight cap.
- ❒ Location and footprint of facility are shown on site plan and landscaping plan.

- ❒ Bioretention area is designed as a basin (level edges) or a series of basins, and grading plan is consistent with these elevations. If facility is designed as a swale, check dams are set so the lip of each dam is at least as high as the toe of the next upstream dam.
- ❒ Inlets are 12" wide, have 4"-6" reveal and an apron or other provision to prevent blockage when vegetation grows in, and energy dissipation as needed.
- ❒ Overflow connected to a downstream storm drain or approved discharge point.
- ❒ Emergency spillage will be safely conveyed overland.
- ❒ Plantings are suitable to the climate and a well-drained soil.
- ❒ Irrigation system with connection to water supply.
- ❒ Vaults, utility boxes, and light standards are located outside the minimum soil mix surface area.
- ❒ When excavating, avoid smearing of the soils on bottom and side slopes. Minimize compaction of native soils and "rip" soils if clayey and/or compacted. Protect the area from construction site runoff.

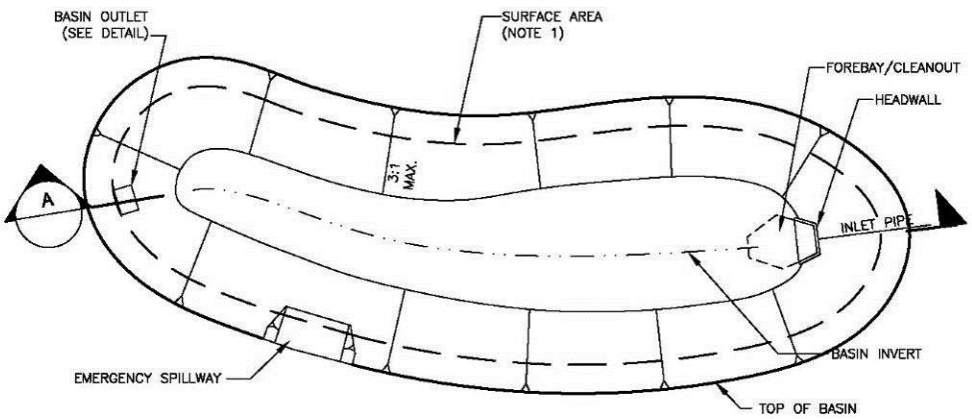

PLAN VIEW
NOT TO SCALE

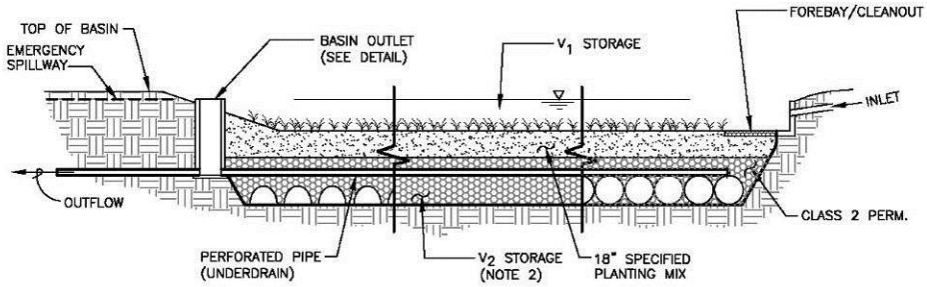

A SECTION
NOT TO SCALE

NOTE

1. SURFACE AREA LIMIT DETERMINED BY EXTENT OF SPECIFIED PLANTING MIX, WHICH IS GOVERNED BY THE OUTLET SPILL ELEVATION. FOR REQUIRED SURFACE AREA REFER TO THE FACTORS AND EQUATIONS IN THE STORMWATER C.3 GUIDEBOOK.
2. V_2 STORAGE ACCOMPLISHED WITH INFILTRATION ARCHES, PERFORATED PIPES, CLASS 2 PERM OR OTHER AT THE DESIGNERS DISCRETION.

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Bioretention Facility

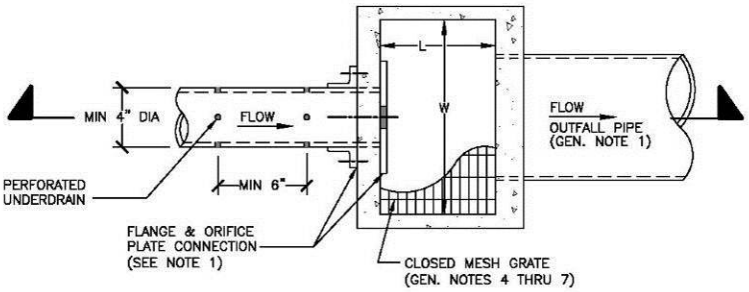

PLAN
N.T.S.

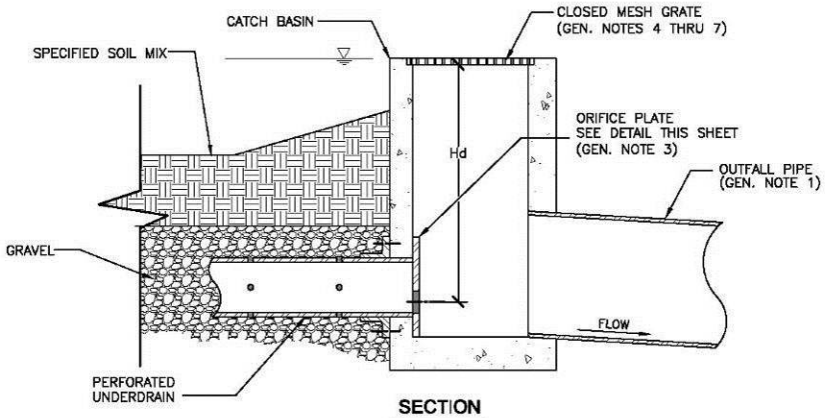

SECTION
N.T.S.

ORIFICE PLATE: MIN SQUARE DIMENSIONS 1.0 FT GREATER THAN PIPE DIA. HOT-DIP GALVANIZED PLATE AFTER HOLES HAVE BEEN DRILLED

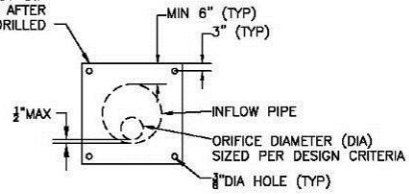

FLOW CONTROL ORIFICE PLATE

NOTE

1. ORIFICE PLATE & FLANGE CONNECTION TO CONCRETE SHALL BE FITTED WITH 30 DUROMETER NEOPRENE RING.

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Bioretention Facility Outlet Detail - A

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Flow-through Planter

Portland 2004 Stormwater Manual

Flow-through planters treat and detain runoff without allowing seepage into the underlying soil. They can be used next to buildings and on slopes where stability might be affected by adding soil moisture.

Flow-through planters typically receive runoff via downspouts leading from the roofs of adjacent buildings. However, they can also be set in-ground and receive sheet flow from adjacent paved areas.

Pollutants are removed as runoff passes through the soil layer and is collected in an underlying layer of gravel or drain rock. A perforated-pipe underdrain is typically connected to a storm drain or other discharge point. An overflow inlet conveys flows which exceed the capacity of the planter.

Best Uses

- Management of roof runoff
- Next to buildings
- Dense urban areas
- Where infiltration is not desired

Advantages

- Can be used next to structures
- Versatile
- Can be any shape
- Low maintenance

Limitations

- Can be used for flow-control only on sites with "C" and "D" soils
- Requires underdrain
- Requires 3-4 feet of head

► CRITERIA

Treatment only. For development projects subject only to runoff treatment requirements, the following criteria apply:

Parameter	Criterion
Soil mix depth	18 inches minimum
Soil mix minimum percolation rate	5 inches per hour minimum sustained (10 inches per hour initial rate recommended)
Soil mix surface area	0.04 times tributary impervious area (or equivalent approved alternative)

Parameter	Criterion
Surface reservoir depth	6" minimum; may be sloped to 4" where adjoining walkways.
Underdrain	Typically used. Perforated pipe embedded in gravel ("Class 2 permeable" recommended), connected to storm drain or other accepted discharge point.

► DETAILS

Configuration. The planter must be level. To avoid standing water in the subsurface layer, set the perforated pipe underdrain and orifice as nearly flush with the planter bottom as possible.

Inlets. Protect plantings from high-velocity flows by adding rocks or other energy-dissipating structures at downspouts and other inlets.

Soil mix. The required soil mix is similar to a loamy sand. It must maintain a minimum percolation rate of 5" per hour throughout the life of the facility, and it must be suitable for maintaining plant life. Typically, on-site soils will not be suitable due to clay content.

Gravel storage and drainage layer. "Class 2 permeable," Caltrans specification 68-1.025, is recommended. Open-graded crushed rock, washed, may be used, but requires 4"-6" of washed pea gravel be substituted at the top of the crushed rock layer. **Do not use filter fabric** to separate the soil mix from the gravel drainage layer.

Emergency overflow. The planter design and installation should anticipate extreme events and potential clogging of the overflow and route emergency overflows safely.

► APPLICATIONS

Adjacent to buildings. Flow-through planters may be located adjacent to buildings, where the planter vegetation can soften the visual effect of the building wall. A setback with a raised planter box may be appropriate even in some neo-traditional pedestrian-oriented urban streetscapes.

At plaza level. Flow-through planters have been successfully incorporated into podium-style developments, with the planters placed on the plaza level and receiving runoff from the tower roofs above. Runoff from the plaza level is typically managed separately by additional flow-through planters or bioretention facilities located at street level.

Steep slopes. Flow-through planters provide a means to detain and treat runoff on slopes that cannot accept infiltration from a bioretention facility. The planter can be built into the slope similar to a retaining wall. The design should consider the need to access the planter for periodic maintenance. Flows from the planter underdrain and overflow must be directed in accordance with local requirements. It is sometimes possible to disperse these flows to the downgradient hillside.

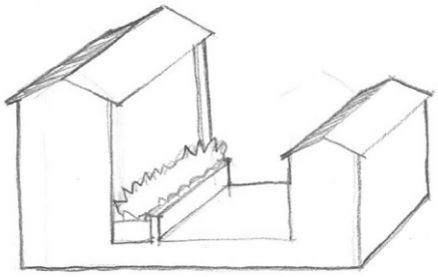

Flow-through planter on the plaza level of a podium-style development.

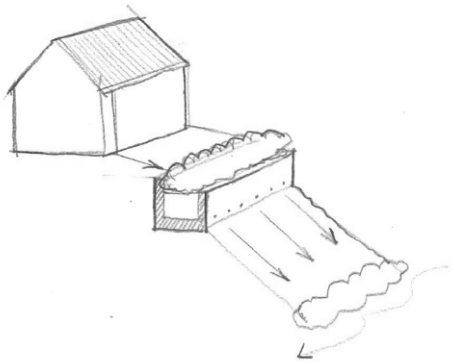

Flow-through planter built into a hillside. Flows from the underdrain and overflow must be directed in accordance with local requirements.

Design Checklist for Flow-through Planter

- ❒ Reservoir depth is 4-6" minimum.
- ❒ 18" depth "loamy sand" soil mix with minimum long-term infiltration rate of 5"/hour.
- ❒ Area of soil mix meets or exceeds minimum.
- ❒ "Class 2 perm" drainage layer.
- ❒ No filter fabric.
- ❒ Perforated pipe underdrain with outlet located flush or nearly flush with planter bottom. Connection with sufficient head to storm drain or discharge point.
- ❒ Underdrain has a clean-out port consisting of a vertical, rigid, non-perforated PVC pipe, with a minimum diameter of 6 inches and a watertight cap.
- ❒ Overflow connected to a downstream storm drain or approved discharge point.
- ❒ Location and footprint of facility are shown on site plan and landscaping plan.
- ❒ Planter is set level.
- ❒ Emergency spillage will be safely conveyed overland.
- ❒ Plantings are suitable to the climate and a well-drained soil.
- ❒ Irrigation system with connection to water supply.

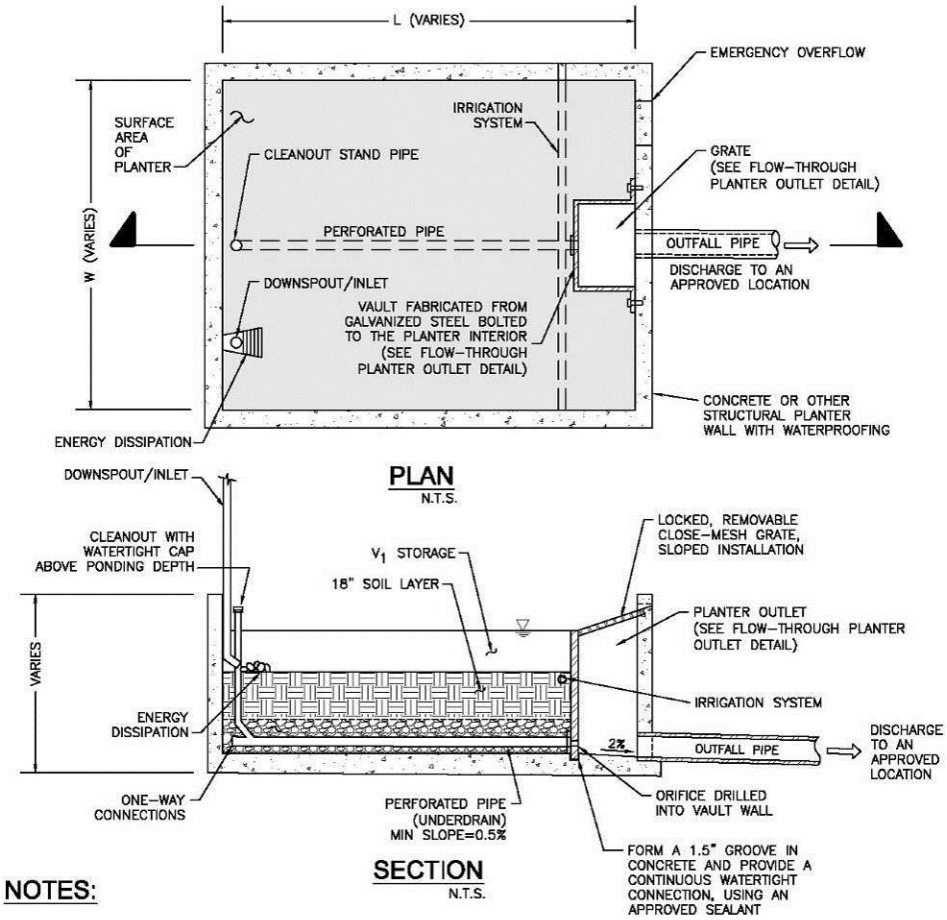

NOTES:

1. FLOW-THROUGH PLANTER SHALL BE SIZED TO MEET CCCWP CRITERIA FOR TREATMENT AND/OR FLOW CONTROL.
2. MINIMUM SURFACE AREA OF PLANTER IS 4% OF TRIBUTARY IMPERVIOUS AREA FOR TREATMENT ONLY DESIGN. FOR FLOW CONTROL AND TREATMENT, REFER TO CCCWP SIZING TOOL CRITERIA.
3. SHAPE OF PLANTER CAN VARY TO MEET PROJECT DESIGN REQUIREMENTS AND LOCATION.
4. CLASS 2 PERMEABLE MATERIAL
5. DOWNSPOUTS/INLET PIPES REQUIRE ENERGY DISSIPATION.
6. USE COUNTY APPROVED ADDITIVE MIXTURE FOR WATERPROOFING CONCRETE.
7. PLANTINGS: SEE CCCWP RECOMMENDED PLANT LIST AND GUIDELINES.
8. PLANTER DESIGN MAY REQUIRE STRUCTURAL ENGINEERING DESIGN.
9. AREA = W x L (ABOVE). EXCLUDES AREA OF VAULT

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Flow-Through Planter Detail

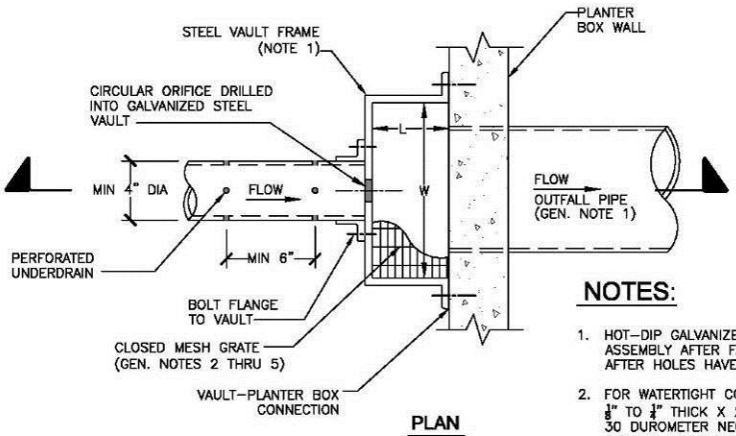

PLAN
N.T.S.

NOTES:

1. HOT–DIP GALVANIZE ENTIRE FRAME ASSEMBLY AFTER FABRICATION AND AFTER HOLES HAVE BEEN DRILLED.
2. FOR WATERTIGHT CONNECTION, INSTALL $\frac{1}{8}$" TO $\frac{1}{4}$" THICK X 2" WIDE CONTINUOUS 30 DUROMETER NEOPRENE GASKET, ALL AROUND VAULT FRAME.

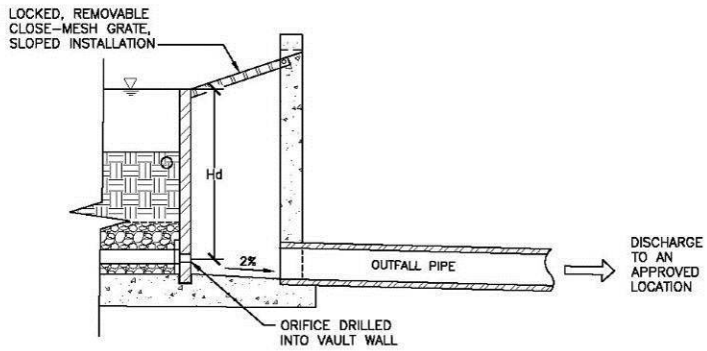

SECTION
N.T.S.

GENERAL OUTLET DETAIL NOTES:

1. OUTFALL PIPE SHALL BE SIZED TO CONVEY DESIGN STORM PER CCCWP DESIGN CRITERIA.
2. GRATE SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
3. GRATE SHALL BE STAINLESS STEEL, ALUMINUM OR STEEL. STEEL GRATES SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER PAINTED AFTER GALVANIZING.
4. GRATE SHALL BE DESIGNED SUCH THAT THE DIAGONAL DIMENSION OF EACH OPENING IS SMALLER THAN THE DIAMETER OF THE OUTLET PIPE.
5. STRUCTURAL DESIGN OF GRATE SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF GRATE.

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Flow-Through Planter Outlet Detail

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Dry Wells and Infiltration Basins

The typical dry well is a prefabricated structure, such as an open-bottomed vault or box, placed in an excavation or boring. The vault may be empty, which provides maximum space efficiency, or may be filled in rock.

An infiltration basin has the same functional components—a volume to store runoff and sufficient area to infiltrate that volume into the native soil—but is open rather than covered.

Best Uses

- Alternative to bioretention in areas with permeable soils

Advantages

- Compact footprint
- Can be installed in paved areas

Limitations

- Can be used only on sites with "A" and "B" soils
- Requires minimum of 10' from bottom of facility to seasonal high groundwater
- Not suitable for drainage from some industrial areas or arterial roads
- Must be maintained to prevent clogging.

► CRITERIA

Dry wells and infiltration basins must be designed with the minimum volume calculated by Equation 4-8 using a unit volume based on the County of San Diego's 85th Percentile Isopluvial Map.

Consult with the local jurisdiction engineer regarding the need to verify soil permeability and other site conditions are suitable for dry wells and infiltration basins. Some proposed criteria are on Page 5-12 of Caltrans' 2004 *BMP Retrofit Pilot Study Final Report* (CTSW-RT-01-050).

The infiltration rate and infiltrative area must be sufficient to drain a full facility within 72 hours.

► DETAILS

Dry wells should be sited to allow for the potential future need for removal and replacement.

In locations where native soils are coarser than a medium sand, the area directly beneath the facility should be over-excavated by two feet and backfilled with sand as a groundwater protection measure.

Design Checklist for Dry Well

- ❒ Volume and infiltrative area meet or exceed minimum.
- ❒ Overflow connected to a downstream storm drain or approved discharge point.
- ❒ Emergency spillage will be safely conveyed overland.
- ❒ Depth from bottom of the facility to seasonally high groundwater elevation is ≥10'.
- ❒ Areas tributary to the facility do not include automotive repair shops; car washes; fleet storage areas (Bus, truck, etc.); nurseries, or other uses that may present an exceptional threat to groundwater quality.

- ❒ Underlying soils are in Hydrologic Soil Group A or B. Infiltration rate is sufficient to ensure a full basin will drain completely within 72 hours. Soil infiltration rate has been confirmed.
- ❒ Set back from structures 10' or as recommended by structural or geotechnical engineer

Cistern with Bioretention Facility

A cistern in series with a bioretention facility can meet treatment requirements where space is limited. In this configuration, the cistern is equipped with a flow-control orifice and the bioretention facility is sized to treat a trickle outflow from the cistern.

Best Uses

- In series with a bioretention facility to meet treatment requirement in limited space.
- Management of roof runoff
- Dense urban areas

Advantages

- Storage volume can be in any configuration

Limitations

- Somewhat complex to design, build, and operate
- Requires head for both cistern and bioretention facility

► CRITERIA

Cistern. The cistern must detain the volume calculated by Equation 4-8 and must include an orifice or other device designed for a 24-hour drawdown time.

Bioretention facility. See the design sheet for bioretention facilities. The area of the bioretention facility must be sized to treat the maximum discharge flow, assuming a percolation rate of 5" per hour through the engineered soil.

Use with sand filter. A cistern in series with a sand filter can meet treatment requirements. See the discussion of treatment facility selection in Chapter 2 and the design guidance for sand filters in Chapter 4.

► DETAILS

Flow-control orifice. The cistern must be equipped with an orifice plate or other device to limit flow to the bioretention area.

Preventing mosquito harborage. Cisterns should be designed to drain completely, leaving no standing water. Drains should be located flush with the bottom of the cistern. Alternatively—or in addition—all entry and exit points, should be provided with traps or sealed or screened to prevent mosquito entry. Note mosquitoes can enter through openings 1/16" or larger and will fly for many feet through pipes as small as ¼".

Exclude debris. Provide leaf guards and/or screens to prevent debris from accumulating in the cistern.

Ensure access for maintenance. Design the cistern to allow for cleanout. Avoid creating the need for maintenance workers to enter a confined space. Ensure the outlet orifice can be easily accessed for cleaning and maintenance.

► APPLICATIONS

Shallow ponding on a flat roof. The "cistern" storage volume can be designed in any configuration, including simply storing rainfall on the roof where it falls and draining it away

slowly. See the County of San Diego's 85th percentile isopluvial diagrams for required average depths.

Cistern attached to a building and draining to a planter. This arrangement allows a planter box to be constructed with a smaller area.

Vault with pumped discharge to bioretention facility. In this arrangement, runoff from a parking lot and/or building roofs can be captured and detained underground and then pumped to a bioretention facility on the surface. Alternatively, treatment can be accomplished with a sand filter. See the discussion of selection of stormwater treatment facilities in Chapter 2.

Water harvesting or graywater reuse. It may be possible to create a site-specific design that uses cisterns to achieve stormwater flow control, stormwater treatment, and rainwater reuse for irrigation or indoor uses (water harvesting). Facilities must meet criteria for capturing and treating the volume specified by Equation 4-8. This volume must be allowed to empty within 24 hours so runoff from additional storms, which may follow, is also captured and treated. Additional volume may be required if the system also stores runoff for longer periods for reuse. Indoor uses of non-potable water may be restricted or prohibited. Check with municipal staff.

Design Checklist for Cistern

- ❒ Volume meets or exceeds minimum.
- ❒ Outlet with orifice or other flow-control device restricts flow and is designed to provide a 24-hour drawdown time.
- ❒ Outlet is piped to a bioretention facility designed to treat the maximum discharge from the cistern orifice.
- ❒ Cistern is designed to drain completely and/or sealed to prevent mosquito harborage.
- ❒ Design provides for exclusion of debris and accessibility for maintenance.
- ❒ Overflow connected to a downstream storm drain or approved discharge point.
- ❒ Emergency spillage will be safely conveyed overland.

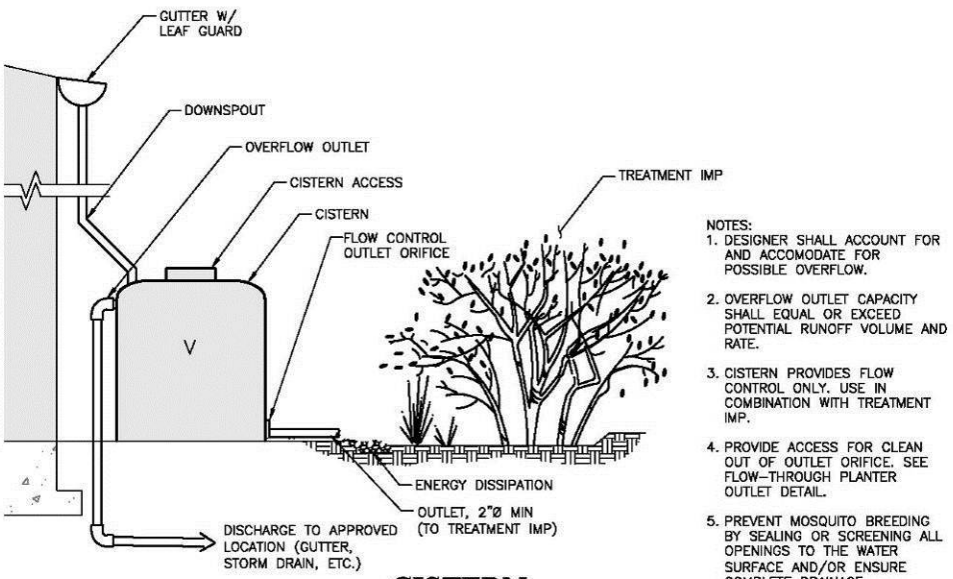

NOTES:
1. DESIGNER SHALL ACCOUNT FOR AND ACCOMODATE FOR POSSIBLE OVERFLOW.
2. OVERFLOW OUTLET CAPACITY SHALL EQUAL OR EXCEED POTENTIAL RUNOFF VOLUME AND RATE.
3. CISTERN PROVIDES FLOW CONTROL ONLY. USE IN COMBINATION WITH TREATMENT IMP.
4. PROVIDE ACCESS FOR CLEAN OUT OF OUTLET ORIFICE. SEE FLOW-THROUGH PLANTER OUTLET DETAIL.
5. PREVENT MOSQUITO BREEDING BY SEALING OR SCREENING ALL OPENINGS TO THE WATER SURFACE AND/OR ENSURE COMPLETE DRAINAGE.

CISTERN

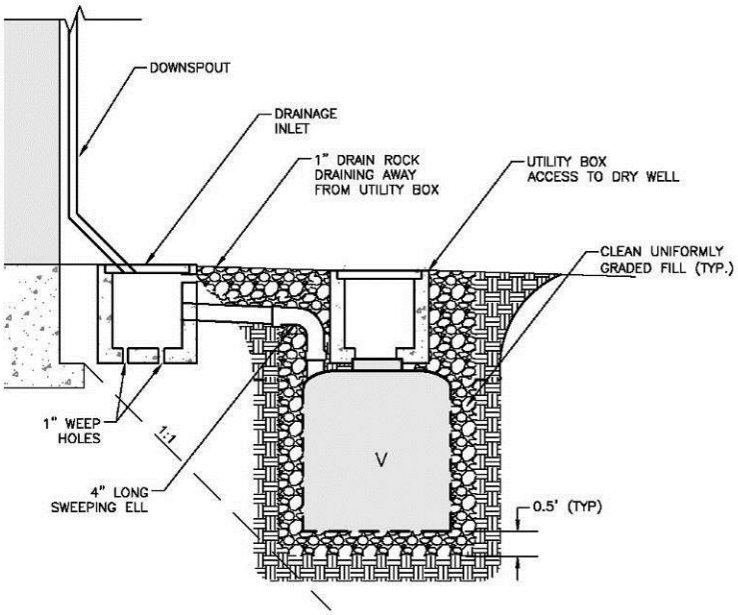

DRY WELL

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Chapter

5

Operation & Maintenance of Stormwater Facilities

How to prepare a customized Stormwater Maintenance Plan for the treatment BMPs on your site.

The stormwater NPDES Permit requires each Copermittee to verify all treatment and flow-control facilities are adequately maintained. Facilities you install as part of your project will be verified for effectiveness and proper performance. Some municipalities also verify the ongoing function of stormwater management features that are not treatment or flow control facilities, such as permeable pavements and limitations on impervious area.

Operation and maintenance of stormwater facilities is a six-stage process:

1. Determine who will own the facility and be responsible for the maintenance of treatment facilities. Identify the means by which ongoing maintenance will be assured (for example, a maintenance agreement that runs with the land).

2. Identify typical maintenance requirements, and allow for these requirements in your project planning and preliminary design.

3. Prepare a maintenance plan for the site incorporating detailed requirements for each treatment and flow-control facility.

4. Maintain the facilities from the time they are constructed until ownership and maintenance responsibility is formally transferred.

5. Formally transfer operation and maintenance responsibility to the site owner or occupant. A warranty, secured by a bond, or other financial instrument, may be required to secure against lack of performance due to flaws in design or construction.

6. Maintain the facilities in perpetuity and comply with the City's self-inspection, reporting, and verification requirements.

See the schedule for these stages in Table 5-1.

Stage 1: Ownership and Responsibility

You must specify a means to ensure maintenance of treatment and flow-control facilities in perpetuity.

Depending on the intended use of your site, this may require one or more of the following:

- Execution of a maintenance agreement that "runs with the land."
- Creation of a homeowners association (HOA) and execution of an agreement by the HOA to maintain the facilities as well as an annual inspection fee.
- Formation of a new community facilities district or other special district, or addition of the properties to an existing special district.
- Dedication of fee title or easement transferring ownership of the facility (and the land under it) to the City of Vista.

Ownership and maintenance responsibility for treatment and flow-control facilities should be discussed at the beginning of project planning, typically at the pre-application meeting for planning and zoning review. Experience has shown provisions to finance and implement maintenance of treatment and flow-control facilities can be a major stumbling block to project approval, particularly for small residential subdivisions. (See "New Subdivisions" in Chapter 1.)

► PRIVATE OWNERSHIP AND MAINTENANCE

The City requires, as a condition of project approval, that a maintenance agreement be executed.

TABLE 5-1. Schedule for Planning Operation and Maintenance of Stormwater Treatment BMPs

Stage	*Description*	*Schedule*
1	Determine facility ownership and maintenance responsibility	Discuss with planning staff at pre-application meeting
2	Identify typical maintenance requirements	In initial submittal, coordinate with planning & zoning application
3	Develop detailed operation and maintenance plan	As required by the City
4	Interim operation and maintenance of facilities	During and following construction including warranty period
5	Formal transfer of operation & maintenance responsibility	On sale and transfer of property or permanent occupancy
6	Ongoing maintenance and compliance with inspection & reporting requirements	In perpetuity

The City may collect a management and/or inspection fee established by a standard fee schedule. In addition, the agreement may provide that, if the property owner fails to maintain the stormwater facility, the City may enter the property, restore the stormwater facility to good working order and obtain reimbursement, including administrative costs, from the property owner. To augment and enforce these requirements, some municipalities have established Community Facilities Districts (Mello-Roos) to cover the costs of inspections and, if necessary, maintenance and repair of individual facilities.

► TRANSFER TO PUBLIC OWNERSHIP

Municipalities may sometimes choose to have a treatment and flow-control facility deeded to the public in fee or as an easement and maintain the facility as part of the municipal storm drain system. The City may recoup the costs of maintenance through a special tax, assessment district, or similar mechanism.

Locating an IMP in a public right-of-way or easement creates an additional design constraint—along with hydraulic grade, aesthetics, landscaping, and circulation. However, because sites typically drain to the street, it may be possible to locate a bioretention swale parallel with the edge of the parcel. The facility may complement, or substitute for, an underground storm drain system.

Even if the facility is to be conveyed to the City after construction is complete, it is still the responsibility of the builder to identify general operation and maintenance requirements, prepare a detailed operation and maintenance plan, and to maintain the facility until that responsibility is formally transferred.

Stage 2: General Maintenance Requirements

Include in your Project Submittal a general description of anticipated facility maintenance requirements. This will help ensure that:

- Ongoing costs of maintenance have been considered in your facility selection and design.
- Site and landscaping plans provide for access for inspections and by maintenance equipment.
- Landscaping plans incorporate irrigation requirements for facility plantings.
- Initial maintenance and replacement of facility plantings is incorporated into landscaping contracts and guarantees.

Fact sheets available on the Project Clean Water website describe general maintenance requirements for the types of stormwater facilities featured in the LID Design Guide (Chapter 4). You can use this information to specify general maintenance requirements in your Project Submittal.

Maintenance fact sheets for conventional stormwater facilities are available in the California Stormwater BMP Handbooks.

Stage 3: Detailed Maintenance Plan

Prepare a detailed maintenance plan and submit it as required by the City. The City requires a detailed maintenance plan be included with the Project Submittal and updates to incorporate solutions to any problems or changes that occurred during project construction.

Your detailed maintenance plan should be kept on-site for use by maintenance personnel and during site inspections. It is also recommended that a copy of your initial Project Submittal be kept onsite as a reference.

► YOUR DETAILED MAINTENANCE PLAN: STEP BY STEP

The following step-by-step guidance will help you prepare your detailed maintenance plan.

Preparation of the plan will require familiarity with your stormwater facilities as they have been or will be constructed and a fair amount of "thinking through" plans for their operation and maintenance.

► STEP 1: DESIGNATE RESPONSIBLE INDIVIDUALS

To begin creating your detailed maintenance plan, designate and identify:

- The individual who will have direct responsibility for the maintenance of stormwater controls. This individual should be the designated contact with municipal inspectors

and should sign self-inspection reports and any correspondence with the City regarding verification inspections.

- Employees or contractors who will report to the designated contact and are responsible for carrying out BMP operation and maintenance.
- The corporate officer authorized to negotiate and execute any contracts that might be necessary for future changes to operation and maintenance or to implement remedial measures if problems occur.
- Your designated respondent to problems, such as clogged drains or broken irrigation mains, that would require immediate response should they occur during off-hours.

Updated contact information must be provided to the City of Vista immediately whenever a property is sold and whenever designated individuals or contractors change.

Draw or sketch an organization chart to show the relationships of authority and responsibility between the individuals responsible for maintenance. This need not be elaborate, particularly for smaller organizations.

Describe how funding for BMP operation and maintenance will be assured, including sources of funds, budget category for expenditures, process for establishing the annual maintenance budget, and process for obtaining authority should unexpected expenditures for major corrective maintenance be required.

Describe how your organization will accommodate initial training of staff or contractors regarding the purpose, mode of operation, and maintenance requirements for the stormwater facilities on your site. Also, describe how your organization will ensure ongoing training as needed and in response to staff changes.

► STEP 2: SUMMARIZE DRAINAGE AND BMPS

Incorporate the following information from your Project Submittal into your maintenance plan:

- Figures delineating and designating pervious and impervious areas.
- Figures showing locations of stormwater facilities on the site.
- Tables of pervious and impervious areas served by each facility.

Review the Project Submittal narrative, if any, that describes each facility and its tributary drainage area and update the text to incorporate any changes that may have occurred during planning and zoning review, building permit review, or construction. Incorporate the updated text into your maintenance plan.

► STEP 3: DOCUMENT FACILITIES "AS BUILT"

Include the following information from final construction drawings:

- Plans, elevations, and details of all facilities. Annotate if necessary with designations used in the initial Project Submittal.
- Design information or calculations submitted in the detailed design phase (i.e., not included in the initial Project Submittal.)
- Specifications of construction for facilities, including sand or soil, compaction, pipe materials and bedding.

In the maintenance plan, note field changes to design drawings, including changes to any of the following:

- Location and layouts of inflow piping, flow splitter boxes, and piping to off-site discharge
- Depths and layering of soil, sand, or gravel
- Placement of filter fabric or geotextiles
- Changes or substitutions in soil or other materials.
- Natural soils encountered (e.g., sand or clay lenses)

► STEP 4: PREPARE MAINTENANCE PLANS FOR EACH FACILITY

Prepare a maintenance plan, schedule, and inspection checklists (routine, annual, and after major storms) for each facility. Plans and schedules for two or more similar facilities on the same site may be combined.

Use the following resources to prepare your customized maintenance plan, schedule, and checklists.

- Specific information noted in Steps 2 and 3, above.
- Other input from the facility designer, municipal staff, or other sources.
- Operation and Maintenance Fact Sheets (available on the Project Clean Water website).

Note any particular characteristics or circumstances that could require attention in the future, and include any troubleshooting advice.

Also include manufacturer's data, operating manuals, and maintenance requirements for any:

- Pumps or other mechanical equipment.
- Proprietary devices used as BMPs.

Manufacturers' publications should be referenced in the text (including models and serial numbers where available). Copies of the manufacturers' publications should be included as an attachment in the back of your maintenance plan or as a separate document.

► STEP 5: COMPILE MAINTENANCE PLAN

The following general outline is provided as an example. Check with City staff for specific requirements.

I. Inspection and Maintenance Log

II. Updates, Revisions and Errata

III. Introduction

A. Narrative overview describing the site; drainage areas, routing, and discharge points; and treatment facilities.

IV. Responsibility for Maintenance

A. General

(1) Name and contact information for responsible individual(s).

(2) Organization chart or charts showing organization of the maintenance function and location within the overall organization.

(3) Reference to Operation and Maintenance Agreement (if any). A copy of the agreement should be attached.

(4) Maintenance Funding

(1) Sources of funds for maintenance

(2) Budget category or line item

(3) Description of procedure and process for ensuring adequate funding for maintenance

B. Staff Training Program

C. Records

D. Safety

V. Summary of Drainage Areas and Stormwater Facilities

A. Drainage Areas

(1) Drawings showing pervious and impervious areas (copied or adapted from initial Project Submittal).

(2) Designation and description of each drainage area and how flow is routed to the corresponding facility.

B. Treatment and Flow-Control Facilities

(1) Drawings showing location and type of each facility

(2) General description of each facility (Consider a table if more than two facilities)

(1) Area drained and routing of discharge.

(2) Facility type and size

VI. Facility Documentation

A. "As-built" drawings of each facility (design drawings in the draft Plan)

B. Manufacturer's data, manuals, and maintenance requirements for pumps, mechanical or electrical equipment, and proprietary facilities (include a "placeholder" in the draft plan for information not yet available).

C. Specific operation and maintenance concerns and troubleshooting

VII. Maintenance Schedule or Matrix

A. Maintenance Schedule for each facility with specific requirements for:

(1) Routine inspection and maintenance

(2) Annual inspection and maintenance

(3) Inspection and maintenance after major storms

B. Service Agreement Information

Assemble and make copies of your maintenance plan. One copy must be submitted to the City, and at least one copy kept on-site. Here are some suggestions for formatting the maintenance plan:

- Format plans to 8½" x 11" to facilitate duplication, filing, and handling.
- Include the revision date in the footer on each page.
- Scan graphics and incorporate with text into a single electronic file. Keep the electronic file backed-up so that copies of the maintenance plan can be made if the hard copy is lost or damaged.

► STEP 6: UPDATES

Your maintenance plan will be a living document.

Operation and maintenance personnel may change; mechanical equipment may be replaced, and additional maintenance procedures may be needed. Throughout these changes, the maintenance plan must be kept up-to-date.

Updates may be transmitted to the City of Vista at any time. However, at a minimum, updates to the maintenance plan must accompany the annual inspection report.

Stage 4: Interim Maintenance

Applicants will typically be required to warranty stormwater facilities against lack of performance due to flaws in design or construction. The warranty may need to be secured by a bond or other financial instrument.

Stage 5: Transfer Responsibility

As part of the detailed maintenance plan, note the expected date when responsibility for operation and maintenance will be transferred. Notify the City of Vista when this transfer of responsibility takes place.

Stage 6: Operation & Maintenance Verification

Each municipality implements an operation and maintenance verification program, including periodic site inspections.

Contact the City of Vista staff to determine the frequency of inspections, whether self-inspections are allowed, and applicable fees, if any.

References and Resources

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Appendix

A

Stormwater Pollutant Sources/ Source Control Checklist

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APPENDIX—STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet:

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.

2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your Project-Specific SUSMP drawings.

3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in a table in your Project-Specific SUSMP. Use the format shown in Table 3-1 of the *SUSMP*. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternatives.

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ A. **On-site storm drain inlets**	❑ **Locations of inlets.**	❑ **Mark all inlets with the words "No Dumping! Flows to Bay" or similar.**	❑ **Maintain and periodically repaint or replace inlet markings.** ❑ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ❑ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ❑ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
❑ B. **Interior floor drains and elevator shaft sump pumps**	-------	❑ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	❑ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ C. **Interior parking garages**	-------	❑ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	❑ **Inspect and maintain drains to prevent blockages and overflow.**
❑ D1. **Need for future indoor & structural pest control**	-------	❑ **Note building design features that discourage entry of pests.**	❑ **Provide Integrated Pest Management information to owners, lessees, and operators.**
❑ D2. **Landscape/ Outdoor Pesticide Use**	❑ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ❑ **Show self-retaining landscape areas, if any.** ❑ **Show stormwater treatment facilities.**	**State that final landscape plans will accomplish all of the following.** ❑ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ❑ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ❑ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ❑ **Consider using pest-resistant plants, especially adjacent to hardscape.** ❑ **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	❑ **Maintain landscaping using minimum or no pesticides.** ❑ **See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ❑ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ E. **Pools, spas, ponds, decorative fountains, and other water features.**	❑ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.**	❑ **If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	❑ **See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
❑ F. **Food service**	❑ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ❑ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	❑ **Describe the location and features of the designated cleaning area.** ❑ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	**-------**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ G. **Refuse areas**	❑ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ❑ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ❑ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	❑ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ❑ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	❑ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
❑ H. **Industrial processes.**	❑ **Show process area.**	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ❑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	❑ **Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** ❑ **Car dealerships and similar may rinse cars with water only.** ❑ **See Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the SUSMP report, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas* shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**	-------	❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

* **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
❑ M. **Loading Docks**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**	-------	❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
❑ N. **Fire Sprinkler Test Water**	-------	❑ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	❑ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE	... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on SUSMP Drawings	3 Permanent Controls—List in SUSMP Table and Narrative	4 Operational BMPs—Include in SUSMP Table and Narrative
O. **Miscellaneous Drain or Wash Water** ❑ **Boiler drain lines** ❑ **Condensate drain lines** ❑ **Rooftop equipment** ❑ **Drainage sumps** ❑ **Roofing, gutters, and trim.**	-------	❑ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ❑ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ❑ **Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ❑ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ❑ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.**	-------
❑ P. **Plazas, sidewalks, and parking lots.**	-------	-------	❑ **Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.**

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Appendix

B

City of Vista

Project Submittal Documents

Project ID:

CHECKLIST FOR NEW DEVELOPMENT AND REDEVELOPMENT

Project Name: _____

Project Location: _____

INSTRUCTIONS

To address pollutants that may be generated from development, the City requires that new development and redevelopment projects incorporate permanent Stormwater Best Management Practices (BMPs) into the project design, which are described in the City's Standard Urban Storm Water Mitigation Plan (SUSMP).

This checklist must be completed by applicant in advance of submitting a development application (subdivision and land use planning approvals and construction permits). The results of the checklist determine the level of stormwater pollution prevention standards and permanent BMPs required for the proposed development or redevelopment project. Many aspects of project site design are dependent upon these standards and requirements for a project.

Applicant responses to the checklist represent an initial assessment of the proposed project conditions and impacts. City Land Development staff have the responsibility for making the final assessment after submission of the development application. City staff determination that the development application is subject to more stringent stormwater standards than initially assessed by the applicant, will result in the return of the development application as incomplete.

If applicants are unsure about the meaning of a question or need help in determining how to respond to one or more of the questions, they are advised to seek assistance from the City Land Development staff.

A separate completed and signed checklist must be submitted for each application submittal. Only one completed and signed checklist is required when multiple development applications for the same project are submitted concurrently. In addition to this checklist, applicants for construction permits must also complete, sign and submit an Urban Runoff Threat Assessment Questionnaire for Construction Activity.

This checklist should be used to categorize new development and redevelopment projects as priority, standard or non-development projects, to determine if a project is subject to SUSMP requirements. The following flowchart, Figure 1, may assist the project applicant in categorizing the proposed project.

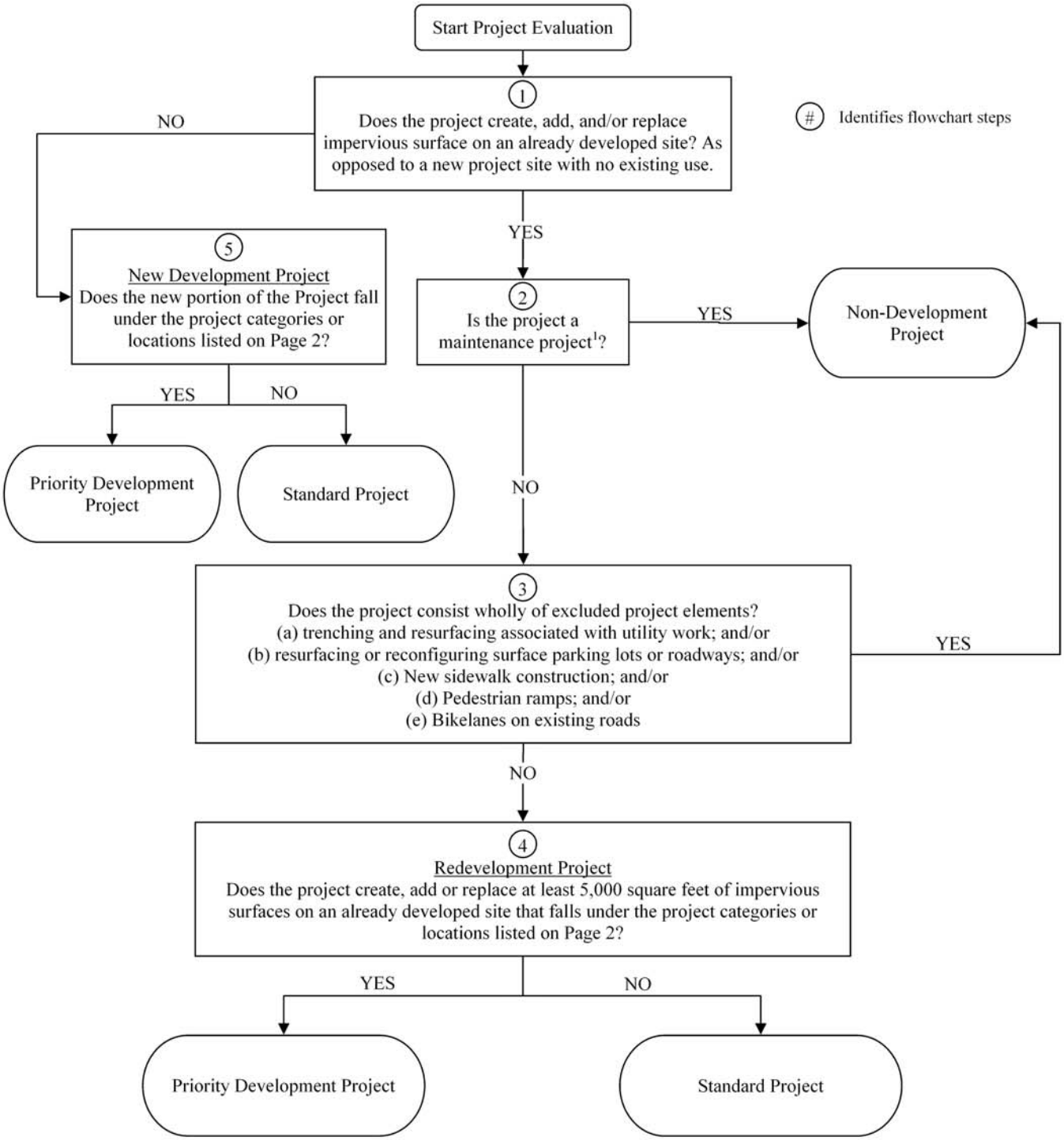

Project Type Determination Flowchart

[1]Maintenance projects are defined as those where impervious surfaces may be removed, however the underlying soils are not exposed and/or routine replacement of damaged pavement, such as pothole repair

SECTION 1 – Redevelopment Determination Part I

REDEVELOPMENT – PART I	YES	NO
1. Is your project a **Redevelopment Project**? ***Redevelopment*** *is defined as the creation, addition or replacement of at least 5,000 square feet of impervious surface on an* *<u>already developed site which falls under the project categories listed in Table 1 in Section 4 below</u>* ***Examples of Redevelopment*** *include, but are not limited to: the expansion of a building footprint; road widening; addition to or replacement of a structure and creation or addition of impervious surfaces; Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction.* *Redevelopment does not include trenching and resurfacing associated with utility work; resurfacing and reconfiguring surface parking lots and existing roadways; new sidewalk construction, pedestrian ramps, or bike lane on existing roads; and routine replacement of damaged pavement, such as pothole repair.* *If the Redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development,* ***and*** *the existing development was not subject to SUSMP requirements, the numeric sizing criteria discussed in the City's SUSMP and R-9 Order 2007-0001 NPDES CAS0108758 Section D.1.d.applies only to the addition, and not to the entire development. Conversely, if the redevelopment results in an increase of greater than or equal to 50% of the impervious surfaces of a previously existing development, the criteria apply to the entire project.*		

If you answered **YES**, your project is considered redevelopment. Please proceed to Section 2.

If you answer **NO**, then your project is not considered redevelopment. Please proceed to Section 4.

SECTION 2 – Maintenance Projects Determination

MAINTENANCE PROJECTS	YES	NO
1. Is your project a **Maintenance Project**? *Maintenance Projects are defined as those projects where impervious surfaces may be removed, however the underlying soils are not exposed and/or routine replacement of damaged pavement, such as pothole repair or street overlay projects.*		

If you answered **YES**, your project is considered a Maintenance Project, and it is considered a Non-Development Project, and post construction requirements do not apply. Please proceed to Section 5 and check the **Non-Development Project** box.

If you answered **NO,** please proceed to Section 3.

SECTION 3 – Redevelopment Determination Part II

REDEVELOPMENT – PART II	YES	NO
1. Is your project an addition to an existing priority project type? *Priority projects are defined in Table 1, Section 4.*		
If you answered **YES**, please proceed to Question 2 of this section. If you answered **NO,** then your project is not considered redevelopment and is not subject to priority project requirements, only standard requirements. Please proceed to Section 5 and check the **Standard Project** box.		
2. Does your project consist wholly of one or more of the following:		
a. Trenching and resurfacing associated with utility work?		
b. Resurfacing and reconfiguring surface parking lots?		
c. New sidewalk construction, pedestrian ramps, or bike lanes on public and/or private existing roads?		
d. Replacement of damaged pavement?		
If you answered **NO** to **ALL** of the questions, please proceed to Question 3. If you answered **YES** to **ONE OR MORE** of the questions then your project is not a redevelopment project and is not subject to priority or standard project requirements. Please proceed to Section 5 and check the **Non-Development Project** box.		
3. Will the development create, add or replace at least 5,000 ft^2 of impervious surfaces on an existing development?		
If you answered **YES**, your project is considered a Priority Redevelopment Project and you are subject to priority project requirements. Please proceed to Section 5 and check the **Priority Development or Redevelopment Project** box. If you answered **NO,** then your project is **NOT** considered a Priority Redevelopment Project and is **NOT** subject to priority project requirements, only standard requirements. Please proceed to Section 5 and check the **Standard Project** box.		

SECTION 4 – New Development Determination

NEW DEVELOPMENT	YES	NO
1. Is your project a **New Development Project**? *New Development projects are defined as those projects listed in categories A-K in Table 1 below per R-9 Order 2007-0001 NPDES CAS0108758 Section D.1.d that are not part of an already developed site.*		

Table 1 **Is the project in any of these categories?**

Yes ❑	No ❑	A	**Housing subdivisions of 10 or more dwelling units**. Examples: single-family homes, multi-family homes, condominiums, and apartments.
Yes ❑	No ❑	B	**Commercial—greater than one acre**. Any development other than heavy industry or residential. Examples: hospitals; laboratories and other medical facilities; educational institutions; recreational facilities; municipal facilities; commercial nurseries; multi-apartment buildings; car wash facilities; mini-malls and other business complexes; shopping malls; hotels; office buildings; public warehouses; automotive dealerships; airfields; and other light industrial facilities.
Yes ❑	No ❑	C	**Heavy industry—greater than one acre.** Examples: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, etc.).
Yes ❑	No ❑	D	**Automotive repair shops.** A facility categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539.
Yes ❑	No ❑	E	**Restaurants.** Any facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP and numeric sizing criteria requirements and hydromodification requirements.
Yes ❑	No ❑	F	**Hillside development greater than 5,000 square feet.** Any development that creates 5,000 square feet of impervious surface and is located in an area with known erosive soil conditions, where the development will grade on any natural slope that is twenty-five percent or greater.
Yes ❑	No ❑	G	**Environmentally Sensitive Areas (ESAs).**[1] All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. "Directly adjacent" means situated within 200 feet of the ESA. "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.
Yes ❑	No ❑	H	**Parking lots 5,000 square feet or more** or with 15 or more parking spaces and potentially exposed to urban runoff.
Yes ❑	No ❑	I	**Street, roads, highways, and freeways**. Any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes ❑	No ❑	J	**Retail Gasoline Outlets (RGOs)** that are: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.
Yes ❑	No ❑	K	**Development Projects—greater than one acre.** Any development projects that result in the disturbance of one acre or more of land.

[1]Environmentally Sensitive Areas include but are not limited to all Clean Water Act Section 303(d) impaired waterbodies; areas designated as Areas of Special Biological Significance by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); waterbodies designated with the RARE beneficial use by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); areas designated as preserves or their equivalent under the Multi Species Conservation Program within the Cities and County of San Diego; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees.

[2] "Directly adjacent" means situated within 200 feet of the environmentally sensitive area.

[3] "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flow from adjacent lands.

If you checked **YES** for **ANY** of the categories above, the proposed project is a priority project and priority project requirements apply. Please proceed with Section 5 and check the **Priority Development** box.

If you checked **NO** for **ALL** of the categories above, then the project is a non priority project and standard project requirements apply. Please proceed with Section 5 and check the **Standard Project** box.

If your project is **NOT** new development but may be considered redevelopment, then please return to Section 3 if you have not already done so

SECTION 5 – Final Determination

Based on the information provided in Sections 1-4, this project is determined to be a:

☐ **PRIORITY DEVELOPMENT OR REDEVELOPMENT PROJECT.** PRIORITY REQUIREMENTS APPLY AND A WATER QUALITY TECHNICAL REPORT (WQTR) MUST BE SUBMITTED AT THE TIME OF APPLICATION.

☐ **STANDARD PROJECT.** STANDARD REQUIREMENTS APPLY AND APPLICABLE SECTIONS OF A WATER QUALITY TECHNICAL REPORT (WQTR) MUST BE SUBMITTED AT THE TIME OF APPLICATION.

☐ **NON DEVELOPMENT PROJECT.**

Applicant Information and Signature Box

Address:	APN(s)
Applicant Name:	Applicant Title:
Applicant Signature:	Date:

City use only

Concur:	Yes	No
By:		
Date:		
Land Dev #:		

This information is available in alternate format by request to Joan Turley at (760) 639-6100

TEMPLATE

City of Vista Required
WATER QUALITY TECHNICAL REPORT

For

[Insert PROJECT NAME]

PROJECT NO. [Insert APNs, Tract Nos., City Project Nos., and/or Permit Nos., as available]

Prepared By:
[ENGINEERING/CONSULTING COMPANY NAME]
[ENGINEER/CONTACT PERSON'S NAME]
[COMPANY ADDRESS]
[COMPANY PHONE]
[CONTACT EMAIL ADDRESS]

Prepared For:
[OWNER'S NAME]
[OWNER'S ADDRESS]
[OWNER'S PHONE]
[OWNER'S EMAIL ADDRESS]

[Insert REPORT DATE and/or REVISION DATE(s)]

CERTIFICATION

This Water Quality Technical Report (WQTR) has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer (Engineer) attests to the technical information contained herein and the engineering data upon which the following design, recommendations, conclusions and decisions are based. The selection, sizing, and preliminary design of stormwater treatment and other control measures in this report meet the requirements of Regional Water Quality Control Board Order R9-2007-0001 and subsequent amendments.

_____ _____

[ENGINEER'S NAME]
REGISTERED CIVIL ENGINEER

[DATE]

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ATTACHMENTS

Attachment 1 – Final / Signed "City of Vista's Checklist for New Development and Redevelopment Projects" (pages 3-6 of Checklist)

[Include all supporting documents and attachments as needed, e.g. Drainage Studies, Soils Reports, etc.]

1.0 INTRODUCTION

This Water Quality Technical Report (WQTR) is required by the City of Vista (City) for all Development and Redevelopment Projects, pursuant to the City of Vista Stormwater Management and Discharge Control Ordinance (Municipal Code Section 13.18). The purpose of this WQTR is to address the water quality impacts from the proposed [Insert Project Name]. The site design, source control and treatment control Best Management Practices (BMPs) will be utilized to provide long term solution to protecting water quality. This WQTR is subject to revisions as needed to accommodate changes to the project design, or as required by the City and/or Engineer.

2.0 APPLICABILITY AND PROJECT TYPE

Based on the criteria established in Order R9-2007-0001 NPDES No. CAS0108758 Section D.1, and review of the City's Stormwater Standards Manual Section G (local SUSMP) Chapters 1 and 3, and after completion of the City of Vista's Checklist for New Development and Redevelopment Projects, the proposed project is identified as a [select Standard, Priority Development or Priority Redevelopment] Project.

[If Priority Project then, insert the following:] Since the proposed project has been identified as a Priority Project, this WQTR includes design and supporting calculations for site design Low Impact Development (LID) BMPs, Source Control BMPs, and Treatment Control BMPs.

[If Standard Project, then insert the following:] Since the proposed project has been identified as a Standard Project, this WQTR includes site design Low Impact Development (LID) BMPs and Source Control BMPs.

The final/signed "City of Vista's Checklist for New Development and Redevelopment Projects" is included as Attachment 1.

3.0 PROJECT OVERVIEW

3.1 Project Location

The project site is located in the City of Vista at [Describe project location including address, APN, etc.]. Figures 3.1 and 3.2 illustrate the project location. Figure 3.3 includes the project details, as further discussed in this section.

Figure 3.1 Vicinity Map

[Insert a local vicinity map with enough detail and surrounding references to for a clear identification of the location (e.g. aerial photo of the project location from Google Earth, or equivalent source.) Identify any nearby receiving waters and/or drainage channels.]

Figure 3.2 General Site Map

[Insert a detailed site map that includes the development site perimeter, closest cross-streets, important adjacent property features, and general drainage.]

3.2 Project Description

This project is a [Insert *type* of proposed development such as single family residential, multifamily residential, commercial, and industrial, etc.].

[Provide detailed narrative description of the proposed project including structures and facilities, structures or facilities to removed, external hardscape area, storage areas, property yard drains, private storm drain system, drainage lines, landscape areas, retaining walls, pools/spas, or other pertinent features of the project.]

[Describe property ownership (i.e. private development, planned community with a homeowners association, any infrastructure planned to be transferred to the City, etc.)].

Figure 3.3 Detailed Site Map

[Provide site map which shows the following information:

- Site boundaries
- North arrow and map scale
- Drainage areas and direction of flow
- Areas of potential soil erosion (including areas downstream of project)
- Private storm drain system(s)
- Nearby water bodies and municipal storm drain inlets
- Location of storm water conveyance systems (ditches, inlets, channels, storm drains, etc.)
- Location of existing and proposed storm water controls
- Location of "impervious" areas- paved areas, buildings, covered areas
- Locations where materials would be directly exposed to storm water
- Location of building and activity areas (e.g. fueling islands, garages, waste container area, wash racks, hazardous material storage areas, etc.)
- Areas of potential soil erosion (including areas downstream of project).]

3.3 Project Size

[Describe the project size including both the total site acreage/square feet, total disturbed acreage/square feet and developed acreage/square feet. Also include discussion of project phasing inclusive of size, etc.]

3.4 Impervious and Pervious Surface areas

[Describe the existing and final developed impervious and pervious surface areas in acres and square feet. Calculate and describe the increase or decrease in impervious area from existing to the final developed condition.].

3.5 Other

[Include any other relevant details of the project].

4.0 PROJECT SITE ASSESSMENT

This section includes information used to consider the potential water quality and hydrologic impacts from the proposed project. This information is important when considering the appropriate BMPs to reduce identified potential impacts as well as when designing low impact development (LID), source control and treatment control measures to reduce those impacts.

4.1 Land Use and Zoning

[Include the designated land use for the project site and adjacent areas].

4.2 Existing Topography

[Provide a description of the pre-development topography, slope steepness (%), site features and conditions].

4.3 Existing and Proposed Drainage

[Describe the existing and proposed drainage of site and surrounding property. Discuss modifications to the existing drainage system and connections/discharges to the City's facilities and/or receiving waters].

4.4 Watershed and Receiving Waters

The proposed project is located within the [select either San Luis Rey (HU 903) or Carlsbad (HU 904)], watershed or hydrologic unit and the subwatershed or hydrologic area of [select Lower San Luis Rey 903.1, Loma Alta 904.1, Buena Vista 904.2 or Agua Hedionda 904.3]. The surface and groundwater receiving waters located in the area and downstream of this project include [insert name, location and description of nearby waterbodies, creeks, etc.]. The designated beneficial uses of these waters include [insert designated beneficial uses per Water Quality Control Plan for the San Diego Basin, e.g. MUN, AGR, REC1. REC2, IND, WARM, WILD, etc.].

4.5 303(d) Listed Receiving Waters

[Identify receiving waterbodies such as Creeks and/or Lagoons (including ultimate receiving waterbodies, e.g. Pacific Ocean) that the project drains to that are listed on the Clean Water Act 303(d) and list pollutants for which the receiving waters are impaired. The 303(d) list can be found at the SWRCB website at http://www.swrcb.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/swrcb/r9_final303dlist.pdf].

4.6 Total Maximum Daily Loads (TMDLs)

[Identify applicable pollutant Total Maximum Daily Loads (TMDLs). The list of TMDLs can be found at the SWRCB website at http://www.swrcb.ca.gov/rwqcb9/water_issues/programs/tmdls/index.shtml].

4.7 Soil Type(s) and Conditions

[Describe the site's soil type(s) and condition and provide reference for this information (i.e. soils report, etc.) Refer to Soil Conservation Service maps to determine soil type if no soils report is available].

5.0 POLLUTANTS OF CONCERN

This section of the WQTR identifies pollutants of concern. [Pollutants of concern are those that are anticipated to be generated by the proposed project during the development process, as well as from the intended use of the site. Additionally, if the project will drain to a receiving waterbody that is impaired for a pollutant, that pollutant is also a pollutant of concern. Pollutants frequently identified on the 303(d) list of California impaired water bodies include sediment, bacteria, metals, nutrients, and pesticides (for the 303(d) list go to www.swrcb.ca.gov/tmdl/303d_lists.html)]. Be sure to reference the most recently adopted 303(d) list.

5.1 Project Categories and Features

[Identify the project categories and features from Table 5-1 below that apply to the project.]

5.2 Pollutants of Concern

[List the anticipated pollutants for the project identified using Table 5-1 and those that have also been identified in 303(d) as causing impairment of receiving waters (reference Chapter 2, Table 2-2 of the City's Stormwater Standards Manual Section G).]

5.3 Project Water Quality Analyses

[Provide information from any completed CEQA documents, site approvals, resource agency permits (i.e. Department of Fish and Game, Army Corps of Engineers, etc.) or analyses related to project's potential pollutants and environmental impacts.]

5.4 Project Watershed Information

[Provide information from any relevant watershed planning documents (i.e. biological assessments, City's general plan, San Luis Rey WURMP, Carlsbad WURMP, Agua Hedionda Watershed Management Plan, other applicable watershed management plans, etc.) regarding water quality problems on or downstream of the project site, and relevant plans, policies, or water quality improvement projects.]

Table 5-1 Potential Pollutants for Project Categories

	General Pollutant Categories								
Priority Project Categories	Sediment	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P	X
Commercial Development >one acre	P(1)	P(1)	X	P(2)	X	P(5)	X	P(3)	P(5)
Heavy Industry	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	P(1)
Hillside Development >5,000 ft2	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X	X	P(1)

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

6.0 HYDROLOGIC & GEOTECHNICAL CONDITIONS OF CONCERN/ DRAINAGE REPORT

This section of the WQTR identifies hydrologic and geotechnical conditions of concern related to the proposed project. Impacts to the hydrologic regime resulting from development typically include increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration, and peaks; faster time to reach peak flow; and water quality degradation. A change to a priority project site's hydrologic regime is considered a condition of concern if the change impacts downstream channels and habitat integrity. Conditions of concern can include problems such as flooding, erosion, scour, and other impacts that can adversely and permanently affect channel and habitat integrity.

[Hydrologic or geotechnical conditions of concern are identified through a review of onsite and downstream drainage paths. If the proposed project would cause or contribute flows to problems along onsite or downstream drainage paths, these problems or future problems are considered conditions of concern.

In order to identify conditions of concern, a comprehensive understanding of flow volume, rate, duration, energy, and peak flow is necessary. A formal drainage study which considers the project area's location in the larger watershed, topography, soil and vegetation conditions, percent impervious area, natural and infrastructure drainage features, and any other relevant hydrologic and environmental factors should be prepared. The study shall include:

- Field reconnaissance to observe downstream conditions
- Computed rainfall and runoff characteristics including a minimum of peak flow rate, flow velocity, runoff volume, time of concentration and retention volume; these characteristics shall be developed for the 2-year, 10-year, and 100 year frequency, Type I storm of 6- or 24-hour duration (whichever is the closer approximation of the site's time of concentration)

If the downstream channel(s) is fully natural or partially improved with a significant potential for erosive conditions or alteration of habitat integrity to occur as a result of upstream development, a drainage study report, prepared by a registered civil engineer in the State of California, with experience in fluvial geomorphology and water resources management is required to be included in the WQTR. The drainage report may be referenced and a detailed summary provided that addresses the items above.]

[If a drainage study is required, use the following paragraph]: A drainage report was prepared for the proposed project by [insert name of engineer], as required by the City, and is included as an Attachment. A summary of the drainage report is provided below.

[If a drainage report is not required, use the following paragraph]: A drainage report was not prepared for the proposed project; however, a State of California registered civil engineer (insert name of engineer and engineering firm) reviewed the project for potential conditions of concern. The following is a summary of that review.

- Project location: [Describe the project's location within the larger watershed perspective.]
- Topography, soil and vegetation: [Describe topography, soil, and vegetation conditions of the project site.]

- Infiltration rates of soil: [Discuss soil type(s) and infiltration rates.]
- Impervious area: [Provide percent impervious area on existing site and percent after development.]
- Drainage features: [Describe natural and infrastructure drainage features.]
- Relevant hydrologic and environmental factors: [Include other relevant hydrologic and environmental factors either on-site, in the project's vicinity, adjacent property, or downstream of the site such as sensitive biological areas, areas prone to flooding, areas with erosion problems, etc.]
- Proposed hydrologic conditions: [Summarize changes in the hydrologic system resulting from proposed development (i.e. increased runoff volume, reduced infiltration, and increased flow frequency)].
- Significant impact on downstream channels and habitat integrity: [Identify any changed resulting from the project that will have significant impact on downstream channels and habitat integrity. If off-site flows will be increased, this assessment requires a review of downstream areas. Areas with existing or future potential for flooding, erosion, and/or scour should be discussed.]
- Project hydrology analyses: [Provide information from any previous analyses related to project's potential hydrologic impacts such as reports prepared for previous CEQA documents, site approvals, or permits.]
- Project watershed information: [Provide information from any relevant watershed planning documents (i.e. drainage master plans, City's general plan) regarding hydrologic problems on or downstream of the project site, and relevant plans, policies, or water quality improvement projects.]
- Hydrology Report Summary: [If applicable, provide a detailed summary of the required elements of the drainage report including a table of pre-and post- development peak flow rate, flow velocity, runoff volume, time of concentration and retention volume. Specify which storm event intensity and duration was used for calculations (2 year, 10 year, or only 100 year, 6 hour event.)]

[If a geotechnical report is required by the City, also include the following sentence and add report as an attachment to this WQTR:]

A geotechnical report was also prepared for the proposed project by [insert name of civil engineer], as required by the City, and is included as Attachment [#].

7.0 BEST MANAGEMENT PRACTICES (BMPs)

Minimizing the proposed project's effects on water quality, as well as compliance with State and local requirements can be most effectively achieved by using a combination of BMPs which include Low Impact Design (LID) Site Design, Source Control, and for Priority projects shall include Treatment Control measures. These design and control measures employ a multi-level strategy. The strategy, which is detailed in the City's Stormwater Standards Manual Section G (local SUSMP), consists of: 1) reducing or eliminating post-project runoff; 2) controlling sources of pollutants; and 3) treating stormwater runoff before discharging it to the storm drain system or to receiving waters.

This WQTR and the proposed BMPs for the proposed project have been developed to minimize drainage impacts identified in Section 5 and the introduction of pollutants identified in Section 4 into the municipal storm drain system and/or ultimate drainage receiving waterbody.

[For more detailed information on the use and design of BMPs, please refer to Chapter 4 of the City's Stormwater Standards Manual Section G (local SUSMP), or the California Stormwater Quality Association New Development and Redevelopment Handbook, available at www.cabmphandbooks.com. Additional information is also available in the County of San Diego Low Impact Development Handbook at www.sdcounty.ca.gov/dplu/LID_PR.html.]

7.1 LID Site Design Strategies and BMPs

[Complete this section for all Standard and Priority Projects]

Conceptually, there are four LID strategies for managing runoff from buildings and paving:

1. Optimize the site layout;
2. Use pervious surfaces;
3. Disperse runoff; and
4. Design Integrated Management Practices (IMPs).

Where the project is located within the Agua Hedionda Hydrologic Area (see Section 5.4), the following design strategies shall be implemented where applicable and feasible.

- Medium Density Residential – a cluster design shall be used, grouping the housing units closer together on smaller lots, and leaving one-third of the site as undeveloped open space. Impervious area shall be reduced by decreasing driveway length, sidewalk use, and overall road footprint.

- Multifamily Residential – Impervious area shall be reduced somewhat by more efficient layout. Porous pavement should be used for all sidewalks. Swales treat a greater proportion of the site. Large cisterns capture roof runoff, and reuse the water for irrigation.

- Commercial – Porous pavement shall be used for large fraction of the parking area. Large cisterns shall capture roof runoff, and reuse the water for irrigation.

- Industrial – The most challenging site, with layout constraints and little economic incentive for cisterns for irrigation. Porous pavement parking spaces shall be utilized (a small fraction of the total paved surface), and the swales shall treat a greater proportion of the site.

This section describes how these LID Site Design strategies have been implemented in the proposed project design.

7.1.1 Optimize the Site Layout

In order to minimize grading and preserve existing site features and topography, the analyses conducted in Section 6 was utilized to optimize the site layout. [Provide a narrative discussion of the LID Site Design strategies used to optimize the site layout to limit the development envelope; preserve any natural drainage features; to provide setbacks from creeks, wetlands, and riparian habitats; to minimize imperviousness; maximize infiltration; use drainage as a design element; and retain and slow runoff].

7.1.2 Use Pervious Surfaces

[Describe the use of pervious surfaces such as turf, gravel, or pervious pavement, or surfaces that retain rainfall, such as vegetated roofs. All drainage from these surfaces is considered to be "self-retained" and no further management of runoff is necessary. An emergency overflow should be provided for extreme events.]

7.1.3 Disperse Runoff

[Describe how the drainage has been designed to disperse runoff from impervious surfaces onto adjacent pervious surfaces (e.g., direct a roof downspout to disperse runoff onto a lawn).]

7.1.4 Integrated Management Practices (IMPs)

[Provide narrative description of integrated management practices (IMPs) designed into the project, such as bioretention facilities, planter boxes, cisterns, or dry wells. IMPs infiltrate runoff to groundwater and/or percolate runoff through engineered soil and allow it to drain away slowly.]. Design calculations, assumptions and further details are provided in Section 7.2 and 7.3 below.

7.2 Documentation of Drainage Management Areas (DMAs)

[Complete this section for all Priority Projects and only as needed for Standard Projects. Chapter 4 of the City's Stormwater Standards Manual Section G (local SUSMP) should be used when completing this section of your WQTR.]

7.2.1 Defining Drainage Management Areas

Prior to designing LID and/or treatment control BMPs into the proposed project, Drainage Management Areas were defined, categorized and tabulated for the entire site. The following tables summarize this information: [Complete the following tables by delineated the Drainage Management Areas (DMAs), calculating the areas of each and classifying the area as self- treating, self-retaining, draining to self-treating or draining to and Integrated Management Practice for treatment. Use one row for each DMA. Provide narrative descriptions, as needed.]

TABLE 7-1. Self-Treating Areas

DMA Name	*Area (square feet)*

TABLE 7-2. Self-Retaining Areas

DMA Name	*Area (square feet)*

[Runoff factors can be found in Table 4-2 in Chapter 4 of the City's Stormwater Standards Manual Section G. Also reference this section when evaluating pervious to impervious ratios.]

TABLE 7-3. Areas Draining to Self-Retaining Areas

DMA Name	*Area (square feet)*	*Post-project surface type*	*Runoff factor*	*Receiving self-retaining DMA Name*	*Receiving self-retaining DMA Area (square feet)*

[Compile a list of DMAs draining to IMPs. Proceed to Section 7.3 to provide sizing calculations and tabulations.]

TABLE 7-4. Areas Draining to IMPs

DMA Name	*Area (square feet)*	*IMP Name*

7.3 Treatment Control BMPs/IMP Calculations

[Chapters 2 and 4 of the City's Stormwater Standards Manual Section G should be utilized to complete this design section. This section must include all design criteria, calculations, basis for selection (include targeted pollutants, justification, and alternative analysis), pollutant removal information (other than vendor specifications) and any restrictions, location of BMPs and literature references.]

7.3.1 Selection

[Provide a narrative of treatment control BMPs that are included in your project. This should include descriptions of infiltration, detention and settling, biofiltration, filtration, flow through separation, or other systems utilized for the project. Discuss your selection process which should be based on achieving the highest removal possible of the primary pollutants of concern association with the project. Use Table 7-5 below along with the pollutants of concern identified in Section 5 of this WQTR template to select treatment control BMPs with the highest pollutant removal efficiencies. Include discussion regarding all BMPs that were considered for the project, but were not selected with detailed explanation(s) on why they were infeasible for the project. Any

infeasibility must be based on engineering reasons or high cost-to-benefit rather than due to space limitations as a result of development plans.]

Table 7-5 provides a general comparison of how various types of treatment facilities perform for each group of pollutants. The pollutants for the proposed project are identified in Section 5 above.

TABLE 7-5 Groups of Pollutants and Relative Effectiveness of Treatment Facilities.

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Constructed Wetlands	Infiltration Facilities or Practices (LID)	Media Filters	Higher-rate biofilters	Higher-rate media filters	Trash Racks & Hydro-dynamic Devices	Vegetated Swales
Coarse Sediment and Trash	High	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low	Medium
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low	Low

Based on this, the following types of facilities have been selected for the proposed project:
[Select from the following and include descriptive text:

- Infiltration facilities or practices, including dry wells, infiltration trenches, infiltration basins, and other facilities that infiltrate runoff to native soils (sized to detain and infiltrate a volume equivalent to the 85th percentile 24-hour event).
- Bioretention facilities and media filters that detain stormwater and filter it slowly through soil or sand (sized with a surface area at least 0.04 times the effectively impervious tributary area).
- Extended detention basins, wet ponds, and wetlands or other facilities using settling (sized to detain a volume equivalent to runoff from the tributary area generated by the 85th percentile 24-hour event).]

7.3.2 Design and Sizing

[Show calculations and provide key design criteria to demonstrate that the selected BMPs will provide adequate treatment. Please refer to the City's Stormwater Standards Manual Section G, Chapter 4 for design sheets and criteria. Also available for design assistance is the California Stormwater Quality Association (CASQA) BMP Handbook for New Development/Redevelopment for reference www.cabmphandbooks.com. Provide cross sections and details, as appropriate. A cross section or schematic detail of each type of structural BMP should be included on the BMP exhibit to be included as part of this WQTR.]

The recommended design procedure in Chapter 4 of the City's Stormwater Standards Manual Section G integrates LID practices with the use of infiltration facilities and practices and

bioretention facilities to meet NPDES permit LID requirements, treatment requirements, and flow-control requirements in a cost-effective and unified design was utilized for this design.
The following design sheets included in Chapter 4 of the City's Stormwater Standards Manual Section G (local SUSMP) were utilized: [Select from the following list:

- Self-treating and self-retaining areas
- Pervious pavements
- Bioretention facilities
- Flow-through planter
- Dry wells and infiltration basins
- Cistern with bioretention facility

These design sheets include recommended configurations and details, and example applications, for these IMPs. The information in these design sheets must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head. The City's Land Development staff has final review and approval authority over the project design.]

[Table 7-6 may be used to summarize sizing for bioretention areas and planter boxes.]

TABLE 7-6. **C**alculations of minimum IMP Areas for bioretention areas and planter boxes.

DMA Name	*DMA Area (square feet)*	*Post-project surface type*	*DMA Runoff factor*	*DMA Area × runoff factor*	*Soil Type:*	*IMP Name*			
					IMP Sizing factor		*Minimum Area*	*Proposed Area*	
			Total		***0.04***				***IMP Area***

For each of the IMPs, use the appropriate sizing from Table 7-7.

TABLE 7-7. IMP Sizing

Bioretention Facilities	Sizing Factor for Area = 0.04
Flow-through Planters	Sizing Factor for Area = 0.04
Dry Well or Infiltration Basin	See Step 6 to Calculate Min. Volume
Cistern with Bioretention	See Step 6 to Calculate Min. Volume of Cistern; then use 0.04 to calculate minimum size of bioretention area

The minimum area of bioretention facilities and flow-through planters is found by summing up the contributions of each tributary DMA and multiplying by the adjusted sizing factor for the IMP.

$$Min.\,IMP\ Area = \sum \begin{pmatrix} DMA & DMA \\ Square & \times Runoff \\ Footage & Factor \end{pmatrix} \times \begin{pmatrix} IMP \\ Sizing \\ Factor \end{pmatrix}$$

Use the format above to present the calculations of the required minimum area and volumes for bioretention areas and planter boxes:

To size dry wells, infiltration basins, or infiltration trenches, use the following procedure:

1. Use the County of San Diego's 85th Percentile Isopluvial Map to determine the minimum unit volume.
2. Determine the weighted runoff factor ("C" factor) for the area tributary to the facility. The factors in Table 7-7 may be used.
3. Multiply the weighted runoff factor times the tributary area times the minimum unit volume.
4. $Volume = [Tributary\ Area] \times [weighted\ runoff\ \ factor] \times [unit\ volume]$
5. Select a facility depth.
6. Determine the required facility area. Dry wells may be designed as an open vault or with rock fill. If rock fill is used, assume a porosity of 40%.
7. Ensure the facility can infiltrate the entire volume within 72 hours.

To size a cistern in series with a bioretention facility:

1. Use the volume equation above to calculate the required cistern volume.
2. Design a discharge orifice for a drawdown time of 24 hours.
3. Determine the maximum discharge from the orifice.

The minimum area of the bioretention facility must treat this flow based on a percolation rate of 5" per hour through the engineered soil.

7.4 Alternatives to Integrated LID Design

[If you believe design of features and facilities as described above is infeasible for your development site, consult with City Land Development and Water Quality Protection Program staff before preparing an alternative design for stormwater treatment, flow control, and LID compliance.

For all alternative designs, the applicant must prepare and complete this section of the WQTR, including a drawing showing the entire site divided into discrete Drainage Management Areas, text and tables showing how drainage is routed from each DMA to a treatment facility, and calculations demonstrating the design achieves the applicable design criteria for each stormwater treatment facility. This WQTR must also show how the project meets the minimum LID criteria and ensures runoff rates, durations, and velocities are controlled to maintain or reduce downstream erosion conditions and protect stream habitat (NPDES Permit Provision D.1.d.(10)). Chapter 4 of the City of Vista's Standards Manual Section G beginning page 63 should be referenced for considering alternative treatment controls including Sand Filters, Extended ("Dry") Detention Basins, "Wet" Detention Ponds and Constructed Wetlands, and Vegetated Swales.]

7.5 Source Control BMPs

[This Section of the WQTR is required for all Standard and Priority Projects]

It is anticipated that the following pollutants will be generated at this site: [Provide a description of site activities and anticipated sources of pollutants.]

Based on these anticipated pollutants and operational activities at the site the following Table 7-8 summarizes the Source Control BMPs to be installed and/or implemented onsite:

[Utilize the City's Stormwater Standards Manual Section G *Appendix A Stormwater Pollutant Sources/Source Control Checklist* to address the minimum required Source Control BMPs including

- Outdoor Materials Storage
- Trash storage
- Integrated Pest Management
- Efficient irrigation and landscape design
- Inlet stenciling and signage
- Other controls (as applicable)

The checklist provides a complete list of potential pollutant sources and both permanent and operational controls. Table 7-8 below provides a sample of the information contained in the checklist.]

Table 7-8 Stormwater Pollutant Sources/Source Control Checklist

How to use this worksheet.

1. **Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check the box that applies.**
2. **2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your project-specific SUSMP drawings.**
3. **Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in a table in your Project-Specific SUSMP. Use the format shown in the City's Stormwater Standards Manual Section G. Describe your specific BMPs in an accompanying narrative and explain any special conditions or situations that required omitting BMPs or substituting alternatives.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE…	**…THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs**		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls-show on SUSMP drawings	3 Permanent Controls-List in SUSMP Table and Narrative	4 Operational BMPs-Include in SUSMP Table and Narrative
☐ A. On-site storm drain inlets	☐ Location of inlets.	☐ Mark all inlets with the words "No Dumping! Drains to Creek" or similar.	☐ Maintain and periodically repaint or replace inlet markings ☐ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☐ See applicable operational BMPs in Fact Sheet SC-44,"Drainage System Maintenance," in CASQA stormwater Quality Handbooks at www.cabmphandbooks.com ☐ Include the following in lease agreements:"Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create potential discharge to storm drains."
☐ B. Interior floor drains and elevator shaft sump pumps	--------	☐ State that interior floor drains and elevator shaft sump pumps will be plumbed to the sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

8.0 PROJECT PLAN(s) & BMP LOCATION MAP

[Required to be completed for all Standard and Priority Projects. Include a description of the location of BMP(s) and describe the relationship/flow scenario between BMPs if more than one BMP is proposed (i.e. treatment train concept).]

[Project applicants should utilize the City's BMP Sheet template or equal as approved by the City's Land Development staff. This template can be downloaded from the following location: http://www.cityofvista.com/departments/communitydev/documents/BMPSheet.pdf)]

BMP Sheet No. [insert sheet number(s)] illustrate[s] the proposed project and the BMPs that will be implemented as described in Section 7 of this WQTR. Table [insert reference number] on Sheet No. [insert sheet number(s)] summarizes these BMPs and reference location numbers.

Figure 8-1 Sample BMP Sheet Template

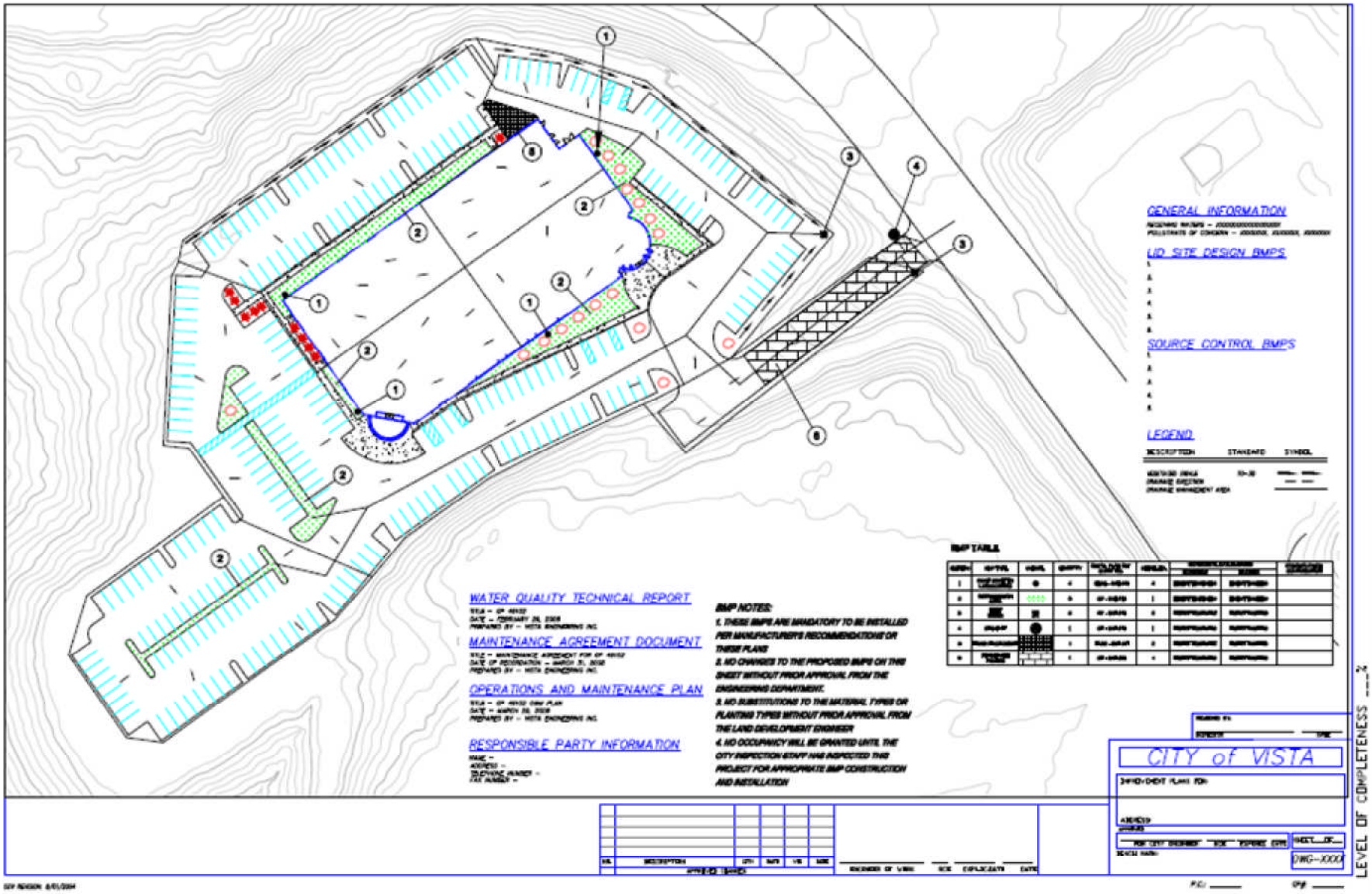

9.0 BMP MAINTENANCE

[Required to be completed for all Standard and Priority Projects.]

9.1 Facility Ownership & Maintenance Agreements

The following individual(s)/organization will own the facilities, including all structural and non-structural BMPs, and are responsible for maintenance in perpetuity:
[Insert the name and contact information for the property owner and/or the future property owner and contact information as the party(ies) responsible for the operation and maintenance of the site and its facilities.]

The [insert project name] project will implement the following maintenance mechanism to ensure ongoing long-term maintenance of all structural and non-structural BMPs[Select the appropriate Maintenance Mechanism for your project (delete all others)].

9.1.1 Potential Permanent BMP Maintenance Mechanisms

1. **Project proponent agreement to maintain storm water BMPs**: The City may enter into a contract with the project proponent obliging the project proponent to maintain, repair and replace the stormwater BMP as necessary into perpetuity. Security may be required. This agreement is subsequently recorded with the property. Sample agreements are included at the end of this Section 9.

2. **Assessment Districts**: The City may approve an Assessment District or other funding mechanism created by the project proponent to provide funds for stormwater BMP maintenance, repair and replacement on an ongoing basis. Any agreement with such a District shall be subject to Public Entity Maintenance Provisions.

3. **Lease Provisions**: In those cases where the City holds title to the land in question, and the land is being leased to another party for private or public use, the City may assure storm water BMP maintenance, repair and replacement through conditions in the lease.

4. **Public Entity Maintenance**: The City may approve a public or acceptable quasi-public entity (e.g., the County Flood Control District, or annex to an existing assessment district, an existing utility district, a state or federal resource agency, or a conservation conservancy) to assume responsibility for maintenance, repair and replacement of the permanent treatment BMP. Unless acceptable to the City, public entity maintenance agreements shall ensure estimated costs are front-funded or reliably guaranteed, (e.g., through a trust fund, assessment district fees, bond, letter of credit or similar means). In addition, the City may seek protection from liability by appropriate releases and indemnities. The City shall have the authority to approve storm water BMPs proposed for transfer to any other public entity within its jurisdiction before installation. The City shall be involved in the negotiation of maintenance requirements with any other public entities accepting maintenance responsibilities within their respective jurisdictions; and in negotiations with the resource agencies responsible for issuing permits for the construction and/or maintenance of the facilities. The City must be identified as a third party beneficiary empowered to enforce any such maintenance agreement within their respective jurisdictions.

The City may accept alternative maintenance mechanisms if such mechanisms are as protective as those listed above. Examples of agreements are located on the following pages at the end of this section. The type of agreement necessary will depend on the project type and size.

9.2 Operations, Maintenance and Inspection

9.2.1 Typical Maintenance Requirements

[Provide a narrative describing the typical maintenance requirements and frequencies for each of the BMPs and/or BMP types to be installed at the project site and include a reference for the maintenance type and frequency.]

9.2.2 Operation and Maintenance (O&M) Plan

[An O&M Plan must be submitted and approved by the City prior to issuing grading permits, construction approvals, permit close out, and issuance of certificates of use and occupancy.]

An O&M Plan will be prepared for the proposed project and submitted for approval by the City prior to entitlements. The O&M Plan describes the designated responsible party to manage the stormwater BMP(s), employee's training program and duties, operating schedule, maintenance frequency, routine service schedule, specific maintenance activities, copies of resource agency permits, and any other necessary activities. At a minimum, maintenance agreements shall require the inspection and servicing of all structural BMPs per manufacturer or engineering specifications. Parties responsible for the O&M Plan shall retain records for at least 5 years. These documents shall be made available to the City for inspection upon request at any time.

9.2.3 Project BMP Verification

The applicant's Engineer of Record and/or the City Engineer must verify through inspection of the site that the BMPs have been constructed and implemented as proposed in the approved WQTR. The inspection must be conducted and City approval must be obtained prior to granting a certificate of occupancy. This approval may be verified through signatures on the as-built plans, specifically on the BMP sheet.

9.2.4 Annual BMP Operation and Maintenance Verification

The BMP owner must verify annually that the O&M Plan is being implemented by submitting a self-certification statement to the City. The verification must include a record of inspection of the BMPs prior to the rainy season (October 1st of each year).

SAMPLE MAINTENANCE AGREEMENT

RECORDING REQUESTED BY:

THE CITY OF VISTA
AND WHEN RECORDED MAIL TO:

City of Vista
Land Development Division
600 Eucalyptus Avenue
Vista, California 92084

The recordation of this document is a benefit to the City.

(THIS SPACE FOR RECORDER'S USE ONLY)

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT

This agreement is made by and between the City of Vista, a municipal corporation [City] and _____ _____, [Property Owner] the owner of property more particularly described as _____[legal description] in the City of Vista, County of San Diego, State of California.

A. Property Owner is required pursuant to the City of Vista Municipal Code, Section 13.18, and the Storm Water Standards Manual to enter into a Storm Water Management and Discharge Control Maintenance Agreement [Maintenance Agreement] for the installation and maintenance of Permanent Stormwater Best Management Practices [Permanent Stormwater BMP's] prior to the issuance of construction permits. The Maintenance Agreement is intended to ensure the establishment and maintenance of Permanent Stormwater BMP's onsite, as described in the project's Storm Water Management Plan [SWMP] and Plan File/Drawing No(s). _____.

B. Property Owner wishes to obtain an engineering and/or building permit according to Plan File/Drawing No(s). _____.

NOW, THEREFORE, the parties agree as follows:

1. Property Owner shall have prepared, or if qualified, shall prepare an Operation and Maintenance Procedure [OMP] for Permanent Stormwater BMP's, satisfactory to the City, consistent with Plan File/Drawing No(s). _____.
2. Property Owner shall install, maintain and repair or replace all Permanent Stormwater BMPs within their property, according to the OMP guidelines as described in the project's SWMP and Plan File/Drawing No(s). _____.
3. Property Owner shall maintain operation and maintenance records into perpetuity. These records shall be made available to the City for inspection upon request at any time.
4. The Property Owner shall comply with all SWMP and OMP requirements with the most recently City approved version of the applicable SWMP or OMP available at the City of Vista for the property described above.
5. Property Owner shall grant the City an easement giving the City the right to enter onto the land (and any necessary adjacent land needed for access) to maintain the BMPs.
6. The City shall have the right to maintain all Permanent Stormwater BMPs if the BMPs are not properly maintained. The cost for such maintenance will be the responsibility of the Property Owner.
7. This Maintenance Agreement shall commence upon execution of this document by all parties named hereon, and shall run with the land.

Executed by the City of Vista and by Property Owner in Vista, California.
NOTE: NOTARY ACKNOWLEDGMENTS FOR ALL SIGNATURES MUST BE NOTARIZED

_____ (Signature)	APPROVED By: _____ (City Engineer)
_____ (Print Name & Title)	_____ (Date)
_____ (Date)	

SAMPLE MAINTENANCE AGREEMENT

RECORDING REQUESTED BY:

THE CITY OF VISTA
AND WHEN RECORDED MAIL TO:

City of Vista
Land Development Division
600 Eucalyptus Avenue
Vista, California 92084
The recordation of this document is a benefit to the City

(THIS SPACE FOR RECORDER'S USE ONLY)

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT

This agreement is made by and between the City of Vista, a municipal corporation [City] and _____ _____, [Property Owner] the owner of property more particularly described as _____[legal description] in the City of Vista, County of San Diego, State of California.

Property Owner is required pursuant to the City of Vista Municipal Code, Section 13.18, and the Storm Water Standards Manual to enter into a Storm Water Management and Discharge Control Maintenance Agreement [Maintenance Agreement] for the installation and maintenance of Permanent Stormwater Best Management Practices [Permanent Stormwater BMPs] prior to the issuance of construction permits by the City of Vista for work on the property [Improvements]. Property Owner covenants and agrees with the City of Vista as follows:

1. The Property Owner shall install, maintain, repair and replace all Permanent Storm Water Best Management Practices [Permanent Storm Water BMPs] for the Improvements as required by the City Manager, the City Engineer or their designated representative [City Manager], and as more particularly described in attached exhibit(s) and incorporated by reference. Maintenance shall include inspection and servicing of Permanent Storm Water BMPs on a minimum annual basis. The Property Owner shall maintain, repair and replace the Permanent Storm Water BMPs until all obligations under this Maintenance Agreement are assumed by a home owners association, or until the obligation is transferred to and assumed by another entity, satisfactory to the City Manager. The Property Owner shall grant the entity assuming any obligation under this Agreement all necessary access rights.

2. The Property Owner shall submit an Operation and Maintenance Procedure [OMP] for the Permanent Storm Water BMPs, satisfactory to the City Manager, at the time this Agreement is executed. The OMP shall describe employee training programs and duties, routine service and operating schedules, maintenance frequency, and specific maintenance activities, as more particularly described in attached exhibit(s) and incorporated by reference. Through the OMP, the Property Owner may also designate a Responsible Party, satisfactory to the City Manager, to maintain the Permanent Storm Water BMPs. The designation of a Responsible Party to maintain the Permanent Storm Water BMPs does not relieve the Property Owner of any of the obligations or duties under this Agreement. The Property Owner or designated Responsible Party shall retain records of the OMP for at least five years, and these records shall be made available to the City for inspection upon request.

3. The Property Owner agrees to defend, indemnify, protect, and hold harmless the City, its agents, officers and employees, from and against all claims, demands, causes of action, liability or loss asserted or established for damages or injuries to any person or property arising out of the installation, maintenance, repair or replacement of the Permanent Storm Water BMPs. Claims, demand, causes of action, liability or loss that arise from, are connected with, or are caused or claimed to be caused by the acts or omission of the Property Owner, the Property Owner's agents, officers and employees are covered.

Also covered are the claims, demands, causes of action, liability or loss arising from, connected with, caused by, or claimed to be caused by the active or passive negligence acts or omissions of the City, its agents, officers, or employees which may be in combination with the negligence of the Property Owner, its employees, agents or officers, or any third party. The Property Owner's duty to defend, indemnify, protect and hold harmless shall not include any claims or liabilities arising from the established sole negligence or sole willful misconduct of the City, its agents, officers or employees.

4. Property Owner further agrees that the indemnification agreement referred to above and the duty to defend City require Property Owner to pay any costs City incurs that are associated with enforcing the indemnification provision, and defending any claims arising from the installation, maintenance, repair or replacement of the Permanent Storm Water BMPs. If City chooses, at its own election, to conduct its own defense, participate in its own defense or obtain independent legal counsel in defense on any claim related to the installation, maintenance, repair or replacement of the permanent Storm Water BMPs, Property Owner agrees to pay the reasonable value of attorneys' fees and all of City's reasonable costs.

5. Property Owner shall grant the City an easement giving the City the right to enter onto the land (and any necessary adjacent land needed for access) to maintain the BMPs. The City shall have the right to maintain all Permanent Stormwater BMPs if the BMPs are not properly maintained. The cost for such maintenance will be the responsibility of the Property Owner.

6. The Property Owner shall maintain a policy of liability insurance, as required and in an amount approved by the City Manager. This policy, with the City also named, will protect the City from any potential claims which may arise from the installation, maintenance, repair or replacement of the Permanent Storm Water BMPs.

7. This Maintenance Agreement shall commence upon execution of this document by all parties named hereon, and shall run with the land.

Executed by the City of Vista and by Property Owner in Vista, California.

NOTE: NOTARY ACKNOWLEDGMENTS FOR ALL SIGNATURES MUST BE NOTARIZED

_____ (Duly Authorized Signature)	_____ SEE ATTACHED EXHIBITS
_____ (Company Name)	_____ SEE DRAWING NUMBERS
_____ (Print Name & Title)	APPROVED By: _____ (City Engineer)
_____ (Date)	_____ (Date)
_____ (Duly Authorized Signature)	
_____ (Company Name)	
_____ (Print Name & Title)	
_____ (Date)	

Appendix

C

Hydromodification Management Plan

FINAL

HYDROMODIFICATION MANAGEMENT PLAN

Prepared for

County of San Diego, California

January 13, 2011

Brown AND Caldwell

9665 Chesapeake Drive, Suite 201

San Diego, California 92123

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LIST OF ACRONYMS

ACCCMP	Alameda Countywide Clean Water Program
BAHM	Bay Area Hydrology Model
BEHI	Bank Erosion Hazard Index
BMP	Best Management Practice
CASQA	California Stormwater Quality Association
CCCWP	Contra Costa Clean Water Program
CEM	Channel Evolution Model
CEQA	California Environmental Quality Act
D50	Median grain size diameter
Ep	Erosion potential index
ET	Evapotranspiration
FSURMP	Fairfield-Suisun Urban Runoff Management Program
GIS	Geographical Information System
HEC-HMS	Hydrologic Modeling System; distributed by the US Army Corps of Engineers Hydrologic Engineering Center
HMP	Hydromodification Management Plan
HR	Hydraulic Radius
HSPF	Hydrologic Simulation Program FORTRAN, distributed by USEPA
IMP	Integrated Management Practices
LID	Low Impact Development
LSPC	Loading Simulation Program in C++
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
PLS	Pervious Land Surface
PWA	Philip Williams & Associates
Q	Flow
Qcrit	Critical flow
RWQCB	Regional Water Quality Control Board
SCCWRP	Southern California Coastal Water Research Project
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
STOPPP	San Mateo County Stormwater Pollution Prevention Program
SUSMP	Standard Urban Stormwater Mitigation Plan
SWM	Stanford Watershed Model
SWMM	Storm Water Management Model; distributed by USEPA
SWMP	Storm Water Management Plan
SWWM	Storm Water Management Model
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

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EXECUTIVE SUMMARY

Background

The need to address hydromodification and its influence on water quality is included in the San Diego Regional Water Board Order R9-2007-001, Provision D.1.g of California Regional Water Quality Control Board San Diego Region Order R9-2007-0001, which requires the San Diego Stormwater Copermittees to implement a Hydromodification Management Plan (HMP) "…to manage increases in runoff discharge rates and durations from all Priority Development Projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force."

To address this permit condition, the Copermittees, represented by the County of San Diego, hired a consultant team and proceeded with developing an HMP that meets the intent of the Permit Order. The permit requires the Copermittees to develop an HMP for all Priority Development Projects (PDP), with certain exemptions. The HMP must develop standards to control flows within the geomorphically-significant flow range. Supporting analyses must be based on continuous hydrologic simulation modeling.

As required by Permit Order No. R9-2007-0001, each Copermittee shall incorporate the approved HMP into its local Standard Urban Storm Water Mitigation Plan (SUSMP) and implement the HMP for all applicable PDPs by January 14, 2011.

HMP Development Process

All 21 Copermittees participated in the development of the HMP, both financially and through their participation in the Copermittees Hydromodification/SUSMP Workgroup. The Workgroup was convened 14 times over the course of the project at times that corresponded with key decision points in developing the HMP and the update to the SUSMP. The Workgroup reviewed and commented on all drafts of the HMP and SUSMP, as well as reviewed all of the public comments received on these documents and responses to comments.

A key element of the San Diego HMP was the creation and involvement of a Technical Advisory Committee (TAC). The TAC members consisted of respected individuals from academia, technical resource agencies, the development community, consulting engineers, and environmental organizations. The TAC was tasked with providing technical input to the scientific approach and interpretation of results integral to the establishment of numerical flow control standards for the HMP, and met 11 times since October 2007.

Literature Review

Pursuant to Permit Section D.1.g(1)(e), the consultant team conducted a literature review as a basis for the initial development of the HMP. The review focused on several key technical areas, including an analysis of the flow control approaches used in past hydromodification management efforts. Concepts of effective work, critical flow, and erosion potential were reviewed along with noted stream classification strategies. Finally, hydromodification management strategies were reviewed, including LID, flow duration control basins, and in-stream mitigation. The literature review also focused on continuous simulation modeling

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approaches, rainfall data management, determination of rainfall losses due to infiltration, and determination of rainfall losses due to evaporation.

To assess the effectiveness of storm water devices to meet hydromodification criteria, peak flow frequency, and duration statistics were required to be developed. A literature review examining these statistical methods indicated that the use of a partial-duration series is preferred for climates similar to San Diego County. The need for partial-duration statistics is more pronounced for control standards based on more frequent return intervals (such as the 2-year design storm), since the peak annual series statistics do not perform as well in the estimation of such events. This phenomenon is especially pronounced in the San Diego region's semi-arid climate. Partial-duration series frequency calculations consider multiple storm events in a given year while the peak annual series considers just the peak storm event. The Hydrologic Research Center (HRC), which is located in San Diego, recommended use of the partial duration series method to most accurately estimate flow frequency response in the San Diego climate.

Methodology and Technical Approach

Per the Permit Order, a range of runoff flow rates was required to be determined to identify the range for which Priority Development Project post-project runoff flows and durations shall not exceed pre-project runoff flows and durations. The Order further required a continuous hydrologic simulation of the entire rainfall record be generated. In January 2008, Interim HMP standards were developed in order to meet the Regional Board Order. These requirements pertained only to projects disturbing 50 acres or more.

Per final hydromodification management criteria developed for San Diego County, which will be applicable to all Priority Development Projects, results of a hydromodification management analysis must adhere to the following criteria:

- For flow rates between the pre-project lower flow threshold (see below) and the pre-project 10-year runoff event, the post-project discharge rates, and durations may not deviate above the pre-project discharge rates and durations by more than 10 percent over more than 10 percent of the length of the flow duration curve.
- Lower flow thresholds may be determined using the HMP Decision Matrix (located in Chapter 6) along with a critical flow calculator and channel screening tools developed by the Southern California Coastal Water Research Project (SCCWRP), detailed in Chapter 5. These methods identify lower flow thresholds for a range of channel conditions. The critical flow calculator recommends a lower flow value of $0.1Q_2$, $0.3Q_2$, or $0.5Q_2$ dependent on the receiving channel material and dimensions. This value will be compared to the channel susceptibility rating (High, Medium, or Low) as determined from the SCCWRP screening tools located in Appendix B to determine the final lower flow threshold.
- The lower flow threshold may alternately be determined as 10 percent of the pre-project 2-year runoff event, or $0.1Q_2$. This approach, which is outlined in the HMP Decision Matrix, is available if the project applicant chooses not to complete the channel screening analysis.

Information regarding the analysis and categorization of streams from a geomorphic context has been prepared in a concurrent grant-funded hydromodification study by the Southern California Coastal Water Research Project (SCCWRP) and the County of San Diego. Screening tools developed by SCCWRP identify channel susceptibility to hydromodification impacts. These include tools to classify receiving streams as having either a High, Medium, or Low susceptibility to channel erosion impacts. Where receiving stream channels are already unstable, the standard is to avoid acceleration of the existing erosion problems. Where receiving channels are in a state of dynamic equilibrium, hydromodification management may prevent the onset of erosion or other problems.

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Requirements/Standards for Projects

Priority Development Projects are required to implement hydromodification mitigation measures so that post-project runoff flow rates and durations do not exceed pre-project flow rates and durations where such increases would result in an increased potential for erosion or significant impacts to beneficial uses. Hydromodification mitigation can provide:

- Demonstration of no post-project increase in impervious area and resultant peak flow rates as compared to pre-project conditions;
- Installation of LID BMPs, such as bioretention facilities, to control runoff flows and durations from new impervious areas;
- Mitigation of flow and durations through implementation of extended detention flow duration control basins;
- Preparation of continuous simulation hydrologic models and comparison of the pre-project and mitigated post-project runoff peaks and durations (with hydromodification flow controls) until compliance is achieved; and
- Implementation of in-stream rehabilitation controls to demonstrate that projected increases in runoff peaks and/or durations would not accelerate erosion to the rehabilitated receiving stream reach.

The HMP Decision Matrix, which leads project applicants through the HMP compliance options, is located in Chapter 6.

Exemptions

The HMP Decision Matrix outlines potential exemptions from hydromodification management criteria. These potential exemptions include discharges to exempt receiving waters such as the Pacific Ocean, to hardened conveyance systems that extend to exempt systems, as well as discharges to highly urbanized watersheds (greater than 70 percent imperviousness).

Selection and Implementation of BMPs

The project proponent may use Low-Impact Development (LID) integrated management practices to mitigate hydromodification impacts, using design procedures, criteria and sizing factors developed by the consultant team with input from the TAC and Copermittees. The sizing factor development protocol, which includes the use of a continuous simulation of runoff from the long-term rainfall record, is detailed in Chapter 7.

LID facilities must be designed to be practically built and maintained within the urban environment. Since the HMP will be implemented through the municipal development review process, design criteria have been specified and will be incorporated into conditions of approval. This HMP advocates the use of LID design approaches to provide both treatment of the 85th percentile water quality event as well as flow control to meet hydromodification criteria. To assure compliance with hydromodification flow control requirements, design criteria, specifications, and long-term operations and maintenance requirements have been provided in the Model SUSMP for a variety of LID-based flow control methods including bioretention basins, flow-through planter boxes, and bioretention systems in combination with cisterns and vaults. Provisions will also be provided for the design of larger extended detention flow duration control scenarios subsequent to approval of the HMP by the Regional Board and subsequent approval of local SUSMPs.

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Details regarding rainwater harvesting, the collection of storm water for future reuse and a potentially effective storm water quality mitigation approach, are discussed in the San Diego Model SUSMP document. Because the release of the collected water is not standardized and since a full collection facility at the onset of rainfall would provide no flow control benefit, rainwater harvesting methods are not discussed in this HMP.

Proof of a long-term, ongoing maintenance responsibility and mechanism will be required for all post-construction BMP and flow control facilities. If not properly designed or maintained, hydromodification flow control devices may create a habitat for vectors such as mosquitoes or rodents. Maintenance activities for flow control and LID devices will be specified in the proposed Project Submittal.

Monitoring and BMP Evaluation

Chapter 8 of this HMP includes an outline for a monitoring program to assess the effectiveness of hydromodification management facilities. Monitoring activities will include inflow and outflow monitoring from BMPs, baseline cross section monitoring, and flow-based sediment monitoring. These monitoring efforts will coordinate with ongoing hydromodification monitoring work conducted by SCCWRP.

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1. INTRODUCTION

Hydromodification refers to changes in the magnitude and frequency of stream flows as a result of urbanization and the resulting impacts on receiving channels in terms of erosion, sedimentation, and degradation of in-stream habitat. The degree to which a channel will erode is a function of the increase in driving force (shear stress), the resistance of the channel (critical shear stress), the change in sediment delivery, and the geomorphic condition of the channel. Critical shear stress is the stress threshold above which erosion occurs. Not all flows cause erosion -- only those that generate shear stress in excess of the critical shear stress of the bank and bed materials. Urbanization increases the shear stress exerted on the channel by stream flows and can trigger erosion in the form of incision (channel downcutting), widening (bank erosion), or both. Increases in flow below critical shear stress levels have little or no effect on the channel.

Provision D.1.g of the San Diego Regional Water Quality Control Board (RWQCB) Permit Order R9-2007-0001 requires the Copermittees to implement a HMP "…to manage increases in runoff discharge rates and durations from all Priority Development Projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force." Where receiving stream channels are already unstable, hydromodification management can be thought of as a method to avoid accelerating or exacerbating existing problems. Where receiving stream channels are in a state of dynamic equilibrium, hydromodification management may prevent the onset of erosion or other problems.

To address the permit condition, the San Diego Storm Water Copermittees, represented by the County of San Diego, hired a consultant team and proceeded with developing an HMP that meets the intent of the Order. Permit Order R9-2007-0001 contains certain requirements that strongly influence the methodology chosen in development of the HMP. The Permit requires the Copermittees to develop an HMP for all Priority Development Projects (with certain exemptions) and develop standards to control flows within the geomorphically-significant flow range. Supporting analyses must be based on continuous hydrologic simulation modeling.

The Copermittees will incorporate HMP requirements into the local approval processes via incorporation of HMP criteria into local SUSMPs. The San Diego region's updated Model SUSMP will incorporate the Final HMP criteria. HMP criteria will be incorporated into the local SUSMP and municipal ordinances no later than 180 days following RWQCB adoption of the HMP.

It should be noted that the San Diego RWQCB jurisdiction area covers the majority of San Diego County. A portion of eastern San Diego County, all of which is part of the unincorporated County of San Diego, is under the jurisdiction of the Colorado River RWQCB and is not subject to the provisions of this HMP.

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2. COPERMITTEE HMP DEVELOPMENT PROCESS

Although the County of San Diego serves as the lead agency for development of the HMP, all 20 of the other Copermittees have participated in its development, both financially and through participation in the Copermittees' Hydromodification/SUSMP Workgroup, which is a subcommittee of the Copermittees' Land Development Workgroup. The Hydromodification/SUSMP Workgroup was convened periodically over the course of the project at times corresponding with key decision points in developing the HMP and the update to the Model SUSMP.

This workgroup was tasked with providing regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to hydromodification management. As required by Permit Section D.1.g, the Workgroup assisted in the development of the regional HMP.

It should be noted that Copermittees' Regional Land Development Workgroup will continue to meet to discuss and resolve any issues that may arise during the HMP implementation phase. The Workgroup will also assist in the refinement and reinforcement of methodologies, criteria, and standards established in the HMP. This Workgroup has provided training regionally to municipal staffs as well as the local engineering community on LID and hydromodification management concepts, as well as requirements in the updated Model SUSMP and HMP.

The Copermittee HMP Workgroup met 14 times since July 2007. The table below summarizes meeting dates, locations, and agenda items. In addition to the formal meetings, the Copermittee HMP Workgroup coordinated via email on countless occasions to review and discuss technical documents, deliberate regarding specific HMP-related topics and reach consensus to provide direction for the consultant team.

Table 2-1. Copermittee Workgroup Meetings Summary

Date	Location	Agenda
July 26, 2007	County of San Diego 9325 Hazard Way San Diego, CA	• Formation of a Technical Advisory Committee • Discussion of HMP requirements in other permits • Consultant contract for HMP
August 23, 2007	City of San Diego 2392 Kincaid Road San Diego, CA	• Formation of a Technical Advisory Committee • Consultant contract for HMP
October 18, 2007	County of San Diego 9325 Hazard Way San Diego, CA	• Development of interim hydromodification criteria • Technical Advisory Committee
November 5, 2007	County of San Diego 5201 Ruffin Road San Diego, CA	• Development of interim hydromodification criteria
December 13, 2007	County of San Diego 5201 Ruffin Road San Diego, CA	• Development of interim hydromodification criteria

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Table 2-1. Copermittee Workgroup Meetings Summary

Date	Location	Agenda
May 12, 2008	County of San Diego 5201 Ruffin Road San Diego, CA	• Development of interim hydromodification criteria
June 19, 2008	County of San Diego 5201 Ruffin Road San Diego, CA	• HMP progress report
October 21, 2008	County of San Diego 5201 Ruffin Road San Diego, CA	• HMP submittal to the Regional Board
December 16, 2008	County of San Diego 5201 Ruffin Road San Diego, CA	• HMP submittals to the Regional Board • Rain gauge data for HMP continuous simulation modeling
January 15, 2009	City of Chula Vista 1800 Maxwell Road Chula Vista, CA	• Approval of Draft HMP for submittal to RWQCB • Approval of Model SUSMP for submittal to RWQCB
July 20, 2009	County of San Diego 5201 Ruffin Road San Diego, CA	• HMP Decision Matrix • Discussion of potential exemptions
October 28, 2009	City of Chula Vista 1800 Maxwell Road Chula Vista, CA	• Discussion of Draft Final HMP document • Discussion of HMP implementation • HMP Design Standards
June 22, 2010	County of San Diego 5201 Ruffin Road San Diego, CA	• HMP Monitoring Plan
September 22, 2010	City of Santee 10601 Magnolia Avenue Santee, CA	• HMP Monitoring Plan • QAPP Development Process

The Copermittees will incorporate HMP requirements into the local approval processes via incorporation of HMP criteria into their local SUSMPs and municipal ordinances no later than 180 days following RWQCB adoption of the HMP. The San Diego region's updated Model SUSMP will also incorporate the Final HMP criteria.

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3. TECHNICAL ADVISORY COMMITTEE

A key element of the San Diego HMP was the creation and involvement of a TAC. The TAC members consist of respected individuals from academia, technical resource agencies, the development community, consulting engineers, and environmental organizations. Dennis Bowling of the San Diego American Public Works Association (APWA), Chair of the Water Resources Committee, chairs the TAC. A list of all TAC members and attendees to the meetings is included at the end of this section. The TAC, which has been convened on t11 occasions that correlated with key decision-making points in the development of the HMP, was tasked with providing technical input to the HMP's scientific approach and interpretation of results integral to the establishment of numerical flow control standards as well as to the Copermittees for their policy determinations. At each TAC meeting, the consultant team presented a PowerPoint presentation describing the technical approach, and solicited feedback and buy-in from TAC members. While the TAC did not always achieve consensus on recommendations to the Copermittee workgroup, its discussions and alternate views were presented to the Copermittees for their consideration. An example involves comments provided by the Natural Resources Defense Council (NRDC) and Coastkeeper. While some of their comments, such as their opinion that storm events up to the 100-year event should be considered for hydromodification mitigation, differed from the majority consensus of the TAC, their comments were considered and specifically addressed. A comment response document to Coastkeeper comments is included in Appendix C.

Some of the key input received from the TAC included agreement with the Consultant Team's approach to using a synthetic watershed modeling approach to develop flow control standards (due to time constraints and a lack of published information on local geomorphology); agreement with the selection of 20 representative rain gauges and methodology to address data gaps (to provide the historical rainfall record for the required continuous simulation hydrologic modeling); agreement on the use of scaled Lindbergh Field data to conduct the initial modeling efforts (since available local rain gauge data sets were not in a format suitable for use with continuous simulation software at the time they were required); input on development of the HMP decision matrix; lower flow threshold calculator; and SCCWRP channel screening tools/domain of analysis.

The table below summarizes meeting dates, locations, and agenda items for all TAC meetings.

Table 3-1. Technical Advisory Group Meeting Summary

Date	Location	Agenda
February 20, 2008	City of San Diego Metro Biosolids Conference Rm. San Diego, CA	• Formation of a Technical Advisory Committee • Introduction of Consultant Team • Proposed approach to developing HMP and Model SUSMP Update (presentations by Dan Cloak, Dan Cloak Environmental Consulting and Andy Collison, PWA) • Input on how much channel erosion is tolerable • Input on how aggrading channels should be addressed

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Table 3-1. Technical Advisory Group Meeting Summary

Date	Location	Agenda
May 29, 2008	City of San Diego Metro Biosolids Conference Rm. San Diego, CA	• Recap of Interim HMP Standard • Input on/agreement with approach on synthetic watershed modeling approach (presentation by Andy Collison, PWA) • Input on/agreement with approach to conducting geomorphic assessment • Discussion of approach to conducting continuous hydrologic simulation modeling
August 5, 2008	City of San Diego Metro Biosolids Conference Rm. San Diego, CA	• Input on/agreement with approach to selection of representative gauges and management of rainfall data (Presentation by Eric Mosolgo, Brown and Caldwell) • Overview of approach to conducting continuous hydrologic simulation modeling (Presentation by Eric Mosolgo, Brown and Caldwell) • Overview of BMP Sizing Tool Development (Presentation by Eric Mosolgo) • Initial results of synthetic watershed modeling based on 2 watersheds in San Diego County (Presentation by Andy Collison, PWA)
October 14, 2008	City of San Diego Stormwater Dept. Conference Rm. 9370 Chesapeake Drive San Diego, CA	• Recap of meeting with Regional Board to discuss HMP and Model SUSMP Update submittals • Input on/agreement with approach to supplementing rain gauge data sets and selection of proper rain gauge(s) for a project (Presentation by Eric Mosolgo, Brown and Caldwell) • Additional discussion of continuous hydrologic simulation modeling, including use of partial duration series data (Presentation by Eric Mosolgo and Tony Dubin, Brown and Caldwell) • Discussion of findings of synthetic watershed modeling (Presentation by Andy Collison and Christie Beeman, PWA)
February 12, 2009	City of San Diego Stormwater Dept. Conference Rm. 9370 Chesapeake Drive San Diego, CA	• Review of Draft HMP submittal to RWQCB, review of concurrent SCCWRP modeling, summary of flow threshold modeling efforts (Presentation by Eric Mosolgo, Brown and Caldwell) • Presentation of flow threshold analysis and lower threshold alternatives including watershed position and channel characteristics (Presentation by Andy Collison and Christie Beeman, PWA)
April 21, 2009	City of San Diego Stormwater Dept. Conference Rm. 9370 Chesapeake Drive San Diego, CA	• Review of comments prepared by Dr. Richard Horner, prepared on behalf of Coastkeeper, pertaining to the Draft HMP submitted to the RWQCB; review of SCCWRP work for San Diego HMP; requirements for partial duration rainfall series analysis; watershed position affects on lower flow threshold; and development of the HMP implementation decision matrix (Presentation by Eric Mosolgo, Brown and Caldwell) • Development of lower flow threshold nomograph and determination of alternate minimum flow rate (Presentation by Christie Beeman, PWA)
June 17, 2009	City of San Diego Stormwater Dept. Conference Rm. 9370 Chesapeake Drive San Diego, CA	• Summary and review of SCCWRP progress on developing the Channel Susceptibility Analysis and Domain of Analysis (Presentation by Eric Stein, SCCWRP, via telephone) • Review and discussion of lower flow threshold nomograph (Presentation by Andy Collison, PWA, via telephone) • Review of minimum flow rate and cumulative impacts (Eric Mosolgo, Brown and Caldwell) • Response to Coastkeeper comments on Draft HMP (Eric Mosolgo, Brown and Caldwell) • Discussion of BMP Sizing Calculator development (Presentation by Tony Dubin, Brown and Caldwell, via telephone, and Eric Mosolgo) • Discussion of Draft HMP Decision Matrix (Eric Mosolgo, Brown and Caldwell)

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Table 3-1. Technical Advisory Group Meeting Summary		
Date	**Location**	**Agenda**
July 29, 2009	City of San Diego Stormwater Dept. Conference Rm. 9370 Chesapeake Drive San Diego, CA	• Review of SCCWRP progress on developing the channel screening tools (Eric Mosolgo, Brown and Caldwell) • Discussion of Revised Draft HMP Decision Matrix (Eric Mosolgo, Brown and Caldwell) • Responses to RWQCB comments on Draft HMP submittal (Eric Mosolgo, Brown and Caldwell)
September 30, 2009	City of San Diego Stormwater Dept. Conference Rm. 9370 Chesapeake Drive San Diego, CA	• Summary and review of SCCWRP progress on developing the Channel Susceptibility Analysis and Domain of Analysis (Presentation by Eric Stein, SCCWRP) • Discussion of Track 1 and Track 2 flow threshold analysis development (Presentation by Andy Collison, PWA, via telephone and Webcast) • Discussion of Draft HMP Decision Matrix, HMP exemptions, design standards technical memo, and proposed monitoring plan (Eric Mosolgo, Brown and Caldwell)
October 16, 2009	City of San Diego Stormwater Dept. Conference Rm. 9370 Chesapeake Drive San Diego, CA	• Discussion of minimum orifice size (Eric Mosolgo, Brown and Caldwell) • Review of proposed monitoring plan (Eric Mosolgo, Brown and Caldwell) • Review of lower flow threshold analysis and modification to the PWA calculator (Eric Mosolgo, Brown and Caldwell) • Review and discussion of revised HMP Decision Matrix incorporating the SCCWRP Channel Susceptibility tools (Eric Mosolgo, Brown and Caldwell)
June 21, 2010	City of San Diego Stormwater Dept. Conference Rm. 9370 Chesapeake Drive San Diego, CA	• HMP Monitoring Plan

The tables below list TAC members, non-TAC member meeting attendees, and the HMP Consultant Team.

Table 3-2. Technical Advisory Committee (TAC)	
Name and Entity	**Sector Represented**
Sara Agahi, County of San Diego	San Diego Stormwater Copermittees
Edward Beighley, San Diego State University	BMP and Erosion Control Expert
Livia Borak, San Diego Coastkeeper, Natural Resources Defense Council (NRDC)	Environmental Community
Dennis Bowling, Rick Engineering	Chair of TAC
Dr. Howard Chang, San Diego State University	Geomorphology Expert
Rob Hawk, City of San Diego	Geotechnical Expert
Mikhail Ogawa, Mikhail Ogawa Engineering	TAC Coordinator
Eric Reichard, U.S. Geological Survey	Geology Expert
Eric Sattler, Spear & Associates	North County Engineers Council
Gabriel Solmer, San Diego Coastkeeper, Natural Resources Defense Council (NRDC)	Environmental Community
Eric Stein, Southern California Coastal Water Research Project (SCCRWP)	Technical Resource Agency
Garret Tam Sing, CA Department of Water Resources	Technical Resource Agency
Martin Teal, West Consultants	Consulting Engineers
Tory Walker, Tory Walker Engineering	Building Industry Association

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Table 3-3. TAC Meeting Attendees (Non-TAC Members)	
Name	**Entity/Affiliation**
David Hauser	City of Carlsbad
Glen Van Peski	City of Carlsbad
Khosro Aminpour	City of Chula Vista
Silvester Evetovich	City of Chula Vista
Tom Adler	City of Chula Vista
Jaime Campos	City of El Cajon
Masih Maher	City of Encinitas
Erik Steenblock	City of Encinitas
Cheryl Filar	City of Escondido
Homi Namdari	City of Escondido
Mo Lahsaie	City of Oceanside
Alison Witheridge	City of Oceanside
Billy Walker	City of Oceanside
Danis Bechter	City of Poway
Roger Morrison	City of Poway
Sumer Hasenin	City of San Diego
James Nabong	City of San Diego
Sassan Haghgoo	City of San Marcos
Julie Procopio	City of Santee
Greg Mayer	City of Vista
Karen Franz	Coastkeeper
Vaikko Allen	Contech Stormwater Solutions
Chris Crompton	County of Orange
George Edwards	County of Orange
Anthony Barry	County of San Diego
John Quenzer	D-MAX Engineering
Arsalan Dadkhah	D-MAX Engineering/City of National City
Dick Rol	Foothill Engineering
Jeff O'Connor	Home Fed
Dave Hammar	Hunsaker & Associates
Luis Parra	Hunsaker & Associates, Adams Engineering, URS
Eylon Shamir	Hydrologic Research Center
Rosanna Lacarra	PBS&J
Debby Reece	Project Design Consultants
Allison Gutierrez	Port of San Diego
Karen Holman	Port of San Diego
Rich Lucera	RBF
Braeden Macguire	RBF

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Table 3-3. TAC Meeting Attendees (Non-TAC Members)	
Name	**Entity/Affiliation**
Laura Henry	Rick Engineering
Bob Cullen	Riverside County Flood Control & Water Conservation District
Jason Uhley	Riverside County Flood Control & Water Conservation District
Tyler Schemper	Tory Walker Engineering
Matt Moore	URS Corporation/Port of San Diego

Table 3-4. HMP Consultant Team	
Name	**Company**
Christie Beeman	Philip Williams & Associates
Dr. Andrew Collison	Philip Williams & Associates
Dan Cloak	Dan Cloak Environmental Consulting
Tony Dubin	Brown and Caldwell
Nancy Gardiner	Brown and Caldwell
Eric Mosolgo	Brown and Caldwell

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4. LITERATURE REVIEW

Pursuant to Permit Section D.1.g(1)(e), this section provides the results of a literature review conducted as a basis for the initial development of the HMP.

4.1 Flow Control Approach

HMPs that have been developed in the San Francisco Bay Area of California (Contra Costa, Santa Clara, and Alameda Counties) vary with regard to the emphasis placed on lower flow control thresholds as compared to other approaches, such as distributed LID methods. However, there is consensus in that both the frequency and duration of flows must be controlled, requiring the use of continuous simulation hydrologic modeling (as opposed to the more standard design storm approach used for flood control design) for evaluation of potential development impacts. It is also generally accepted that events smaller than the 10-year design flow are the most critical for hydromodification management.

The Santa Clara HMP focused on the use of detention basins for hydromodification management and strongly emphasized the lower flow control limit for site runoff. Extended detention flow control basins can utilize multi-stage outlets to mitigate both the duration and magnitude of flows within a prescribed range. To avoid the erosive effects of extended low flows, the maximum rate at which runoff is discharged is set below the erosive threshold. Per the Santa Clara HMP, the lower flow control limit was defined as the flow rate that generates critical shear stress on the channel bed and banks. Both Santa Clara and Alameda Counties correlated the lower flow control limit to a value equal to 10 percent of the 2-year runoff event.

The Contra Costa HMP strongly emphasized the use of LID methods to meet hydromodification management criteria. LID approaches to hydromodification management rely on site design and distributed LID Best Management Practices (BMPs) to control the frequency and duration of flows and to mitigate hydrograph modification impacts. By minimizing directly connected impervious areas and promoting infiltration, LID approaches mimic natural hydrologic conditions to counteract the hydrologic impacts of development. Because more runoff is retained onsite and in distributed facilities the lower discharge limit is less critical for LID facilities since different facilities discharge to the stream system at different times.

The County of San Diego and Copermittees interviewed three consultant teams as part of the selection process to develop the HMP. The selection panel; which included representatives from the County of San Diego, City of San Diego, City of Chula Vista, and the City of Encinitas, selected the team led by Brown and Caldwell and included Phillip Williams Associates and Dan Cloak Engineering. This team had previously developed the HMP for Contra Costa County and thus, the Contra Costa approach was selected as the base approach for the San Diego HMP.

For the San Diego region's Interim Hydromodification Management Criteria, the range of flows to be managed under the hydrograph curve-matching approach (matching of peak flows and durations within the geomorphically significant range) was expressed as a percentage of the 5-year runoff event, based on the understanding that the 5-year runoff event is considered the dominant channel-forming discharge for Southern California streams. This assumption was based upon the paper titled, "Effect of Increases in Peak Flows and Imperviousness on the Morphology of Southern California Streams," by Coleman, MacRae, and Stein. The following list details the range of flows recommended in the San Diego region's Interim Hydromodification Criteria.

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- For flow rates between 20 percent of the pre-project 5-year runoff event and the pre-project 10-year runoff event, the post-project discharge rates and durations may not deviate above the pre-project discharge rates and durations by more than by more than 10 percent over more than 10 percent of the length of the flow duration curve.
- For flow rates between 20 percent of the pre-project 5-year runoff event and the pre-project 5-year runoff event, the post-project flows shall not exceed pre-project flows. For flow rates between the 5-year and 10-year runoff events, post-project flows may exceed pre-project flows by up to 10 percent for a 1-year frequency interval.
- The project proponent may also use LID integrated management practices to manage hydromodification impacts, using design procedures, criteria, and sizing factors (ratio of the required LID area to the tributary impervious area) specified by the Copermittees.

The Interim Hydromodification Management Criteria listed above were put in place beginning in January 2008 for development projects that disturb 50 acres or more.

Hydromodification in the context of this project refers to changes in the magnitude and frequency of stream flows as a result of urbanization and the resulting impacts on the receiving channels in terms of erosion, sedimentation, and degradation of instream habitat. The processes involved in this degradation are complex, but involve an alteration of the hydrologic regime of a watershed due to increases in impervious surfaces, more efficient and dense storm drain networks, and a change in historic sediment sources. The study of hydromodification is an evolving field, and regulations to manage the impacts of hydromodification must take into account the latest science available.

HMPs seek ways to mitigate erosion impacts by establishing requirements for controlling runoff from new development. In order to establish appropriate regulations, it is important to understand 1) how land use changes alter storm water runoff; and 2) how these changes can impact stream channels. This literature review focuses on how these issues have been addressed in HMPs adopted within the state of California as well as relevant journal articles, books, and other reports. This report builds upon previous literature reviews developed for other HMPs, and attempts to not repeat information that can be found in those reports. Instead this report is a synthesis of information that can be found in those studies and is augmented with either more recent studies or information relevant to Southern California.

4.1.1 Previous Studies

Previous hydromodification literature reviews were conducted by Geosyntec Consultants (Mangarella and Palhegyi, 2002) for the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) and by the Contra Costa Clean Water Program (CCCWP 2004). Mangarella and Palhegyi provide a detailed overview of the geomorphic and hydrologic processes involved in hydromodification and the reader is directed there for more detailed information on the mechanics of stream erosion. Channel Assessment methods described in Section 2 of this report rely heavily on those reviewed by Bledsoe et al. (2008) for SCCWRP.

As of the date of this report, five approved HMPs have been published. These include HMPs for SCVURPPP (2005), the CCCWP (2005), the Fairfield-Suisun Urban Runoff Management Program FSURMP (2005), the Alameda Countywide Clean Water Program (ACCCMP 2005), and the San Mateo County Stormwater Pollution Prevention Program (STOPPP 2005). In addition, a number of HMPs were implemented while agencies developed their final plans. Interim HMPs are not detailed in this report due to the fact that these plans have adopted findings from the above listed HMPs.

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4.1.2 Hydrograph Modification Processes

The effects of urbanization on channel response have been the focus of many studies (see Paul and Meyer, 2001 for a review), and the widely accepted consensus is that increases in impervious surfaces associated with urbanizing land uses can cause irreversible channel degradation. Urbanization generally leads to a change in the amount and timing of runoff in a watershed, which leads to increases in erosive forces on bank and bed material. This can cause large-scale channel enlargement, stream bank failure, loss of aquatic habitat and degradation of water quality.

Channel erosion, like most physical processes, is a complex system based on a variety of influences. Channel erosion is non-linear (Philips 2003) meaning the response of streams is not directly proportional to changes in land use and flow regimes. Small changes or temporary disturbances in a watershed may lead to unrecoverable channel instability (Kirkby 1995). These disturbances may give rise to feedback systems whereby small instabilities can be propagated into larger and larger instabilities (Thomas 2001).

A variety of factors have been documented to contribute to instability in streams. These include historic land use practices such as grazing (Trimble and Mendel 1995), logging (Jana et al. 1975), wildfire patterns, (Benda et al., 2003), geologic uplift (Colin and Burbank 2007), climatic changes (Leeder 1998), or removal of flora or fauna from the watershed (Ripple et al. 2001).

Although these parameters are varied, urban runoff control programs focus on managing the effect that new impervious surfaces have on stream channels. Stream channels show some form of temporal stability, whereby they resist change until a threshold of system parameters are exceeded (Thomas 2001). A number of studies have sought to correlate the amount of urbanization in a watershed and stream instability (Bledsoe 2001; Booth 1990, 1991; Both and Jackson 1997; MacRae 1992; 1993; 1996; Coleman et al. 2005). Evidence from these studies suggests that streams resist instability until a watershed urbanization threshold is crossed. This threshold appears to be around seven to ten percent watershed urbanization for perennial streams (Schueler 1998 and Booth 1997), but may be much lower for intermittent streams such as those found in Southern California. Studies done in Santa Fe, New Mexico (Leopold and Dunne 1978) suggest that dramatic changes occur at four percent impervious area of the watershed. Initial studies by Coleman et al. (2005) suggest that this urbanization threshold may be as low as two to three percent for intermittent streams in Southern California. It is important to understand that use of impermeable cover alone is a poor predictor of channel erosion due to regional differences and differences in storm water detention and infiltration within regions.

Though it is well established that watershed urbanization causes channel degradation, a detailed understanding of how development alters runoff and how this altered runoff in turn causes erosion is still being developed. This section briefly describes these processes and summarizes methods used to quantify hydromodification impacts.

4.1.2.1 Effective Work

The ability of a stream to transport sediment is proportional to the amount of flow in the stream: as flow increases, the amount of sediment moved within a channel also increases. The ability of a stream channel to transport sediment is termed stream power, which integrated over time is work. Leopold (1964) introduced the concept of effective work, whereby the flow-frequency relationship of a channel is multiplied by sediment transport rate. This gives a mass-frequency relationship for erosion rates in a channel. Flows on the lower end of the relationship (e.g., two-year flows) may transport less material, but occur more frequently than higher flows, thereby having a greater overall effect on the work within the channel. Conversely, higher magnitude events, while transporting more material, occur infrequently so as to have less effective work. Leopold found that the maximum point on the effective work curve occurred around the 1- to 2-year frequency range. This maximum point is commonly referred to as the dominant discharge and corresponds

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roughly to a bankfull event (a flow that fills the actively scoured portion of the channel up to a well defined break in the bank slope).

Urbanization tends to have the greatest relative impact on flows that are frequent and small, and which tend to generate less-than-bankfull flows. Change is greatest in these events because prior to urbanization infiltration would have absorbed much or all of the potential runoff, but following urbanization a high percent of the rainfall runs off. Thus, events that might have generated little or no flow in a non-urbanized watershed can contribute flow in urban settings. These smaller less-than-bankfull events have been found to do a significant proportion of the work in urban streams (MaCrae 1993) due to their high frequency, and can lead to channel instability. Less frequent, larger magnitude flows (e.g., flows greater than Q10) are less strongly affected by urbanization because during such large storm events the ground rapidly becomes saturated and acts in a similar manner as impervious surfaces.

4.1.2.2 Erosion Potential

As part of the SCVURPPP's HMP process, GeoSyntec Consultants (2004) studied the Lower-Silver-Thompson Creek subwatershed in Santa Clara County to characterize the pre-development effective work and compare it to modeled post-development effective work. Stability was assessed by comparing these effective work curves via an erosion potential index (Ep). This value is the ratio of the effective work of a pre-development stream to that of a post-development stream. A developed stream with an Ep of 1.0 has the same ability to transport sediment as an undeveloped stable stream. Managing the Ep of a stream can focus on managing the hydrologic regime of a watershed or on managing the stream itself. Both of these methods are discussed in Section 4.1.4.

Ep was adopted as a hydromodification metric for the SCVURPPP's hydromodification management program, and was later incorporated into four of the five approved HMPs. In addition, its use is being promoted by several research and regulatory bodies.

4.1.2.3 Estimating Critical Q_c

Due to the increase in impervious surfaces and fewer opportunities for infiltration of storm water, urbanization creates more runoff volume than an un-urbanized watershed. Opportunities for infiltration of excess storm water exist in some areas, but many times are infeasible due to cost or land use constraints. Therefore, some of the excess storm water must be discharged to a receiving stream. In order to achieve a comparable Ep to a pre-developed condition, this excess runoff volume must be discharged at a rate at which no additional stream work is done.

Bed load sediment moves through transmission of shear stress from the flow of water to the bed load material. An increase in velocity of water corresponds to an increase in shear stress. In order to initiate movement of bed material, however, a shear stress threshold must be exceeded. This is commonly referred to as critical shear stress, and is dependent on sediment and channel characteristics. For a given point on a channel where the cross-section is known, the critical shear can be related to a stream flow. The flow that corresponds to the critical shear is known as the critical flow, or Qc. For a given cross-section, flows that are below the value for Qc do not initiate bed movement, while flows above this value do.

The SCVURPPP expressed Qc as a percentage of the two-year flow in order to develop a common metric across watersheds of different size, and allow for easy application of HMP requirements For the two watersheds studied, a similar relationship was found where Qc corresponded to 10 percent of the two-year flow. This became the basis for the lower range of geomorphically significant flows under the SCVURPPP HMP and is referred to as Qcp to indicate that it is a percentage of flow. That program also adopted the 10-year flow as the upper end of the range of flows to control with the justification that increases in stream work above the 10-year flow were small for urbanized areas.

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A similar study was conducted for the FSURMP on two watersheds in Fairfield, California following a geomorphic assessment. That study found Qcp to be 20 percent of the pre-development two-year flow. The differences in the two values may be attributable to differences in watershed characteristics in Santa Clara County and Fairfield. Channels in Fairfield were found to have a more densely vegetated riparian corridor and may have a higher resistance to increases in shear stresses (FSURMP). Values for Qcp appear to be similar among neighboring watersheds, but there appears to be no evidence for a 'universal' Qcp, and the characteristics of individual biomes (climatically and geographically defined areas of ecologically similar climatic conditions such as communities of plants, animals, and soil organisms, and are often referred to as ecosystems) should be taken into account when developing a Qcp. For example, Western Washington State, which has more densely vegetated riparian zones than either Fairfield or Santa Clara County, has adopted a Qcp of 50 percent of the 2-year flow.

A summary of flow control standards adopted in each of these HMPs is given in Table 4-1.

Table 4-1. Flow Control Standards Adopted by Selected Agencies for Hydromodification Management.

Permitting Agency	Qcp	Largest Managed Flow
Santa Clara County	10 percent of the 2-year flow (0.1Q2)	10-year flow (Q10)
Alameda County	10 percent of the 2-year flow (0.1Q2)	10-year flow (Q10)
San Mateo County	10 percent of the 2-year flow (0.1Q2)	10-year flow (Q10)
Contra Costa County	10 percent of the 2-year flow (0.1Q2)	10-year flow (Q10)
Fairfield-Suisun Urban Runoff Management Program	20 percent of the 2-year flow (0.2Q2)	10-year flow (Q10)
Western Washington State	50 percent of the 2-year flow (0.5Q2)	50-year flow (Q50)

4.1.3 Stream Channel Stability

Numerous stream channel stability assessment methods have been proposed to help identify which channels are most at risk from hydrograph modification impacts and/or define where HMP requirements should apply. Assessment strategies range from purely empirical approaches to channel evolution models to energy-based models (see Simon et al., 2007 for a critical evaluation).

4.1.3.1 Stream Classification Systems

A recent study by Bledsoe et al. (2008) for SCCWRP describes nine types of classification and mapping systems with an emphasis on assessing stream channel susceptibility in Southern California. The summary below is taken from that study. Bledsoe also provides a summary of the implications of these classification and mapping systems to the development of hydromodification tools for Southern California. The article provides a detailed breakdown of guidelines for developing hydromodification tools given the advantages and disadvantages of each system previously assessed.

Planform Classifications and Predictors

Alluvial channels form a continuum of channel types whose lateral variability is primarily governed by three factors: flow strength, bank erodibility, and relative sediment supply. Though many natural channels conform to a gradual continuum between straight and intermediate, meandering, and braided patterns, abrupt transitions in lateral variability imply the existence of geomorphic thresholds where sudden change can occur. The conceptual framework for geomorphic thresholds has proven integral to the study of the effects of disturbance on river and stream patterns. Many empirical and theoretical thresholds have been proposed relating stream power, sediment supply and channel gradient to the transition between braiding and meandering channels. Accounting for the effects of bed material size has been shown to provide a vital

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modification to the traditional approach of defining a discharge-slope combination as the threshold between meandering and braided channel patterns. The many braided planforms in Southern California indicate the need to refine and calibrate established thresholds to river networks of interest. However, at this time there is not a well accepted model to predict how hydromodification affects channel planform.

Energy-Based Classifications

The link between channel degradation and urbanization has been exhaustively studied; however, impervious area is not the solitary factor influencing channel response. Studies have shown that the ratio between specific stream power and median bed material size D50b, where b is approximately 0.4 to 0.5 for both sand- and gravel-bed channels, can be used as a valuable predictor of channel form. Stream power, which is related to the square root of total discharge, is the most comprehensive descriptor of hydraulic conditions and sedimentation processes in stream channels. Several studies have been performed relating channel stability to a combination of parameters such as discharge, median bed-material size, and bed slope, as an analog for stream power.

General Stability Assessment Procedures

By assessing an array of qualitative and quantitative parameters of stream channels and floodplains, several investigators have developed qualitative assessment systems for stream and river networks. These assessment methods have been incorporated into models used to analyze channel evolution and stability. Many parameters used to establish methodologies such as the Rosgen approach are extendable to a qualitative assessment of channel response in Californian river networks. Field investigations in Southern California have shown that grade control can be the most important factor in assessing the severity of channel response to hydromodification. Qualitative methodologies have proven extendable to many regions and utilize many parameters that may provide valuable information for similar assessments in California.

Sand vs. Gravel Behavior / Threshold vs. Live-Bed Contrasts

It is well recognized that the fluvial-geomorphic behavior varies greatly between sand and gravel/cobble systems. Live bed channels (of which sand channels are good examples) are systems where sediment moves at low flows, and where sediment is frequently in motion. Threshold channels such as gravel streams, by contrast, require considerable flow to initiate bedload movement. Live bed channels are more sensitive both to increases in flow and decreases in sediment supply than threshold channels. Scientific consensus shows that sand bed streams lacking vertical control show greater sensitivity to changes in flow and sediment transport regimes than do their gravel/cobble counterparts. Factors such as slope which affect discharge and sedimentation regimes are known to have greater impact on sand-bed streams. This can be an important issue for storm water systems that receive runoff from watersheds composed primarily of streams with sandy substrate. The transition between sand and gravel bed behavior can be rapid which may make it possible to utilize geographic mapping methods to identify channel segments according to their susceptibility to the effects of hydromodification.

Channel Evolution Models of Incising Channels

The Channel Evolution Model (CEM) developed by Schumm et al. (1984) posits five stages of incised channel instability organized by increasing degrees of instability severity, followed by a final stage of quasi-equilibrium. Work has been done to quantify channel parameters such as sediment load and specific stream power through each phase of the CEM. A dimensionless stability diagram was developed by Watson et al. (2002) to represent thresholds in hydraulic and bank stability. This conceptual diagram can be useful for engineering planning and design purposes in stream restoration projects requiring an understanding of the potential for shifts in bank stability.

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Channel Evolution models Combining Vertical and Lateral Adjustment Trajectories

Originally, CEMs focused primarily on incised channels with geotechnically, rather than fluvially, driven bank failure. Several CEMs have been proposed that incorporate channel responses to erosion and sediment transport into the original framework for channel instability. In these new systems, an emphasis is placed on geomorphic adjustments and stability phases that consider both fluvial and geomorphic factors. The state of Vermont has developed a system of stability classification that suggests channel susceptibility is primarily a function of the existing Rosgen stream type and the current stream condition referenced to a range of variability. This system places more weight on entrenchment (vertical erosion of a channel that occurs faster than the channel can widen, so that the resulting channel is more confined than the original channel) and slope than differentiation between bed types.

Equilibrium Models of Supply vs. Transport-capacity / Qualitative Response

The qualitative response model builds on an understanding of the dynamic relationship between the erosive forces of flow and slope relative to the resistive forces of grain size and sediment supply to describe channel responses to adjustments in these parameters. In this system qualitative schematics provide predictions for channel response to positive or negative fluctuations in physical channel characteristics and bed material. Refinements to such frameworks have been made to account for channel susceptibility relative to existing capacity and riparian vegetation among other influential characteristics.

Bank Instability Classifications

Early investigations provided the groundwork for bank instability classifications by analyzing shear, beam, and tensile failure mechanisms. The dimensionless stability approach developed by Watson characterized bank stability as a function of hydraulic and geotechnical stability. Rosgen (1996) proposed the widely applied Bank Erosion Hazard Index (BEHI) as a qualitative approach based on the general stability assessment procedures outlined above. Other classification systems, like the CEM, identify bank instability according to channel characteristics that control hydrogeomorphic behavior.

Hierarchical Approaches to Mapping Using Aerial Photographs / GIS

It has become increasingly common practice to characterize stream networks as hierarchical systems. This practice has presented the value in collecting channel and floodplain attributes on a regional scale. Multiple studies have exploited geographical information systems (GIS) to assess hydrogeomorphic behavior at a basin scale. Important valley scale indices such as valley slope, confinement, entrenchment, riparian vegetation influences, and overbank deposits can provide indispensable information for river networks in California. Many agencies are developing protocol for geomorphic assessment using GIS and other database associated mapping methodologies.

4.1.4 Managing Hydromodification

Most HMPs provide guidance on how Copermittees can meet the goals of their program. There are many different approaches and most HMPs provide multiple options for achieving and documenting compliance. In general, hydrograph management approaches focus on managing runoff from a developed area so as to not increase instability in a channel, and in-stream solutions focus on managing the receiving channel to accept an altered flow regime without becoming unstable. This chapter briefly summarizes various approaches for HMP compliance.

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4.1.4.1 Hydrograph Management Solutions

Facilities that detain or infiltrate runoff to mitigate development impacts are the focus of most HMP implementation guidance. They work either by reducing the volume of runoff (infiltration facilities) or by holding water and releasing it below Qc (retention facilities). These facilities, sometimes referred to as BMPs, can range from regional detention basins designed solely for flow control, to bioretention facilities that serve a number of functions. A number of BMPs including swales, bioretention, flow-through planters, and extended detention basins have been developed to manage storm water quality, and there are several resources that describe the design of storm water quality BMPs (CASQA 2003; Richman et al. 2004). In many cases these facilities can be designed to also meet hydromodification management requirements.

Many HMPs also provide guidance for applying LID approaches to site design and land use planning to preserve the hydrologic cycle of a watershed and mitigate hydromodification impacts. These plans typically include decentralized storm water management systems and protection of natural drainage features, such as wetlands and stream corridors. Runoff is typically directed toward infiltration-based storm water BMPs that slow and treat runoff.

The following sections summarize implementation guidance for designing hydromodification management BMPs that have been developed for existing HMPs.

Sizing Hydromodification BMPS

Hydromodification BMPs differ slightly from those BMPs used to meet water quality objectives in that they focus more on matching undeveloped flow-regimes than on filtering storm runoff, although these two functions can be combined into one facility. Various methods exist for sizing Hydromodification BMPs.

Hydrograph Matching. This is an approach whereby the outflow hydrograph for a particular site matches closely with the pre-project hydrograph for a design storm. This method is most traditionally used to design flood-detention facilities to mitigate for a particular storm recurrence interval (e.g., the 100-year storm). Although hydrograph matching can be employed for multiple storms, this method generally does not take into account the smaller, more frequent storms where a majority of the erosive work in stream channel is done and is therefore not widely accepted for HMP compliance.

Volume Control. This is a method for matching the pre-project and post-construction runoff volume for a project site. Any increase in runoff volume is either infiltrated on site, or discharged to another location where streams will not be impacted. The magnitude of peak flows is not controlled, and therefore this method, while ensuring that there is no increase in total volume of runoff, can result in higher erosive forces during storms.

Flow Duration Control. Refers to matching both the duration and magnitude of a specified range of storms. The entire hydrologic record is taken into account and pre-project and post-construction runoff magnitudes and volumes are matched as closely as possible. Excess runoff is either infiltrated on site, or is discharged below Qcp.

The SCVUPPP HMP reviewed each of these design approaches and concluded that a Flow Duration Control design approach was the most effective in controlling erosive flows. Two examples were evaluated using this approach, one on the Thompson Creek subwatershed in Santa Clara Valley and one on the Gobernadora Creek watershed in Orange County. The evaluation approach used continuous simulation modeling to generate flow-duration curves, and then designed a test hydromodification management facility to match pre-project durations and flows.

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In addition to the SCVURPP, the flow duration control design approach has been applied by ACCWP, STOPPP, FSURMP, and CCCWP. Among these agencies, different approaches have emerged as to how to demonstrate that proposed BMPs meet flow-duration control guidelines. Both methods employ continuous simulation to match flow-durations, but differences exist in how continuous simulation is used (site-specific simulation vs. unit area simulation). Differences also exist in the focus of the two approaches (regional detention facilities vs. on-site LID facilities). Both approaches were evaluated by the RWQCB, and deemed to be valid approaches (Butcher 2007).

BAHM Approach

The Bay Area Hydrology Model (BAHM) is a continuous simulation rainfall-runoff hydrology model developed for ACCWP, STOPPP, and SCVURPP . It was developed from the Western Washington Hydrology Model, which focuses primarily on meeting hydromodification management requirements using storm water detention ponds alone or combined with LID facilities (Butcher 2007). The Western Washington Hydrology model is based on the Hydrologic Simulation Program FORTRAN (HSPF) modeling platform, developed by the USEPA, and uses HSPF parameters in modeling watersheds.

BAHM is a standalone modeling package that is available free of charge to the public. Project proponents who want to size a hydromodification BMP select the location of their project site from a map of the county and BAHM correlates the project location to the nearest rainfall gauge and applies an adjustment factor. The adjustment factor is applied to the hourly rainfall for the nearest gauge, to produce a weighted hourly rainfall at the project site. The user then enters parameters for the proposed project site that describe soil types, slope, and land uses. BAHM then runs the continuous rainfall-runoff simulation for both the pre-project and the post-construction conditions of the project site. Output is provided in the form of flow-duration curves that compare the magnitude and timing of storms between the pre-project and the post-construction modeling runs.

If an increase in flow durations is predicted, the user can select and size mitigation BMPs from a list of modeling elements. An automatic sizing subroutine is available for sizing detention basins and outlet orifices that matches the flow duration curves between the pre-project scenario and a post-construction mitigation scenario. Manual sizing is necessary for other BMPs included in the program, such as storage vaults, bioretention areas, and gravel trenches. The program is designed so that once a BMP is selected and sized, the modeling run can be transferred to the local agency for approval. The model reviewer at the local agency can open the program and verify modeling parameters and sizing techniques.

CCCWP Approach

The CCCWP developed their own protocol for selecting and sizing hydromodification BMPs, which are referred to as Integrated Management Practices (IMPs) in their guidebook. Instead of a project proponent running a site-specific continuous simulation to size hydromodification control facilities, the CCCWP provides sizing factors for designing IMPs. Sizing factors are based on the soil type of the project site and are adjusted for Mean Annual Precipitation. Sizing factors are provided for Bioretention Facilities, Flow-Through Planters, Dry Wells and a combination Cistern and bioretention facility.

Sizing factors were developed through continuous-simulation HSPF modeling runs for a variety of development scenarios. Flow-durations were developed for a range of soil types, vegetation and land use types, and rainfall patterns for development areas in Contra Costa County. Then, based on a unit area (one acre) of impervious surface, flow-durations were modeled using several IMP designs. These IMPs were then sized to achieve flow control for the range of storms required, (from 10 percent of the 2-year storm up to the 10-year storm). These sizing factors were then transferred to a spreadsheet form for use by project proponents.

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The primary difference between the CCCWP approach and the BAHM approach is the focus on type of BMP used. Whereas the CCCWP approach focuses on meeting hydromodification management goals using lot-scale LID facilities, the BAHM approach is geared toward employing detention basins. Although the CCCWP approach is based on utilizing sizing factors for specific BMPs, the program does allow for application of site-specific continuous simulation modeling, such as HSPF, if the relevant sizing factor has not been developed, such as storm water detention basins or constructed wetlands. This approach can be used for larger developments where regional hydromodification facilities will be used.

4.1.4.2 In-Stream Stabilization Solutions

In-stream solutions focus on managing the stream corridor to protect stability and, if necessary, modify stream channels to accept an altered flow regime. In cases where development is proposed in an already degraded watershed it may be beneficial to focus on rehabilitating the stream channel with an altered flow regime in mind rather than retrofitting the watershed or only controlling a percentage of the runoff. In addition, in some cases where a master-planned watershed development plan is being implemented it may be more feasible to design a new channel to be stable under the proposed watershed land use rather than to construct distributed on-site facilities.

Newhall Ranch Natural River Management Plan

An example where in-stream solutions are being designed at the Master Plan level can be found in the Newhall Ranch Natural River Management Plan. The proposed Newhall Ranch development near Valencia, California is employing a combination of distributed storm water quality facilities to manage storm water pollutants and in-stream management actions to manage an altered flow regime. The management plan began with an analysis of post-development flow conditions, then found slopes and channel cross-sections that would be stable under these altered conditions. Biotechnical bank stabilization and stable step-pools were included to allow the new channel to resist higher shear forces. The plan has been approved by Los Angeles County Department of Public Works.

The key objectives for the in-stream channel design employed for the Newhall Ranch development were:

- Accommodate runoff flows from existing and future development;
- Stabilize the channel bed and banks so that they do not degrade;
- Preserve the waterway and canyon characteristics and environment, where applicable;
- Minimize riparian and bank disturbance during construction, where applicable;
- Implement improvements that are the most compatible with the environment and character of the region, yet sustainable on a long-term basis and
- Minimize channel maintenance requirements.

Other Methods

A number of methods exist for managing channels to accept altered flow regimes and higher shear forces. These have been covered in detail in a number of sources available to watershed groups and public agencies. (A few helpful sources include Riley 1998, Watson and Annable 2003, and FISRWG 1998.)

4.2 Continuous Simulation Modeling

As part of the HMP development, Brown and Caldwell is preparing flow control sizing tools to assess the effectiveness of hydromodification controls. A beta version of the HMP Sizing Calculator will be available by early 2010 and will be reviewed by the HMP TAC. Since those sizing tools are not yet available, Brown and Caldwell has identified specific evaluation criteria for the design and analysis of hydromodification controls

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using continuous simulation hydrologic modeling. Evaluation criteria discussed herein focuses on the following items:

- Continuous Simulation Hydrologic Modeling
- Continuous Simulation Modeling Software
- Long-Term Hourly Precipitation Gauge Data
- Parameter Validation for Rainfall Losses
- Hydromodification Control Processes
- Peak Flow and Flow Duration Statistics

Pursuant to criteria set forth by the San Diego RWQCB and by the San Diego County Copermittees in the Hydromodification Criteria, the use of continuous simulation hydrologic modeling is required to size storm water facilities to mitigate hydromodification effects. Continuous simulation modeling uses an extended time series of recorded precipitation data as input and generates hydrologic output, such as surface runoff, groundwater recharge, and evapotranspiration, for each model time step.

Continuous hydrologic models are typically run using either 1-hour or 15-minute time steps. Based on a review of available rainfall records in San Diego County, we are recommending the use of a 1-hour time step (15-minute time series rainfall data are very limited). Continuous models generate model output for each time step. In this case, hydrologic output would be generated for each hour of the continuous model. A continuous simulation model with 35 years of hourly precipitation data will generate 35 years of hourly runoff estimates, which corresponds to runoff estimates for 306,600 time steps over the 35-year simulation period.

Use of the continuous modeling approach allows for the estimation of the frequency and duration by which flows will exceed a particular threshold. The limitations to increases of the frequency and duration of flows within that geomorphically significant flow range is the key component to San Diego County's approach to hydromodification management.

For a more detailed review of continuous simulation modeling, refer to a memo prepared by Brown and Caldwell titled *Using Continuous Simulation to Size Storm Water Control Facilities* (May 2008). This memo is attached as Appendix E.

4.2.1 Continuous Simulation Modeling Software

The following public domain software models may be used to assess hydromodification controls for storm water facilities to meet the Hydromodification Criteria:

- HSPF - Hydrologic Simulation Program-FORTRAN, distributed by United States Environmental Protection Agency (USEPA)
- HEC-HMS – Hydrologic Modeling System; distributed by the US Army Corps of Engineers Hydrologic Engineering Center
- SWMM – Storm Water Management Model; distributed by USEPA

Third-party and proprietary software can be used to meet the Hydromodification Criteria provided that the software incorporates minimum design parameters summarized below:

- Input and output data from the software can interface with public domain software such as HSPF HEC-HMS, or SWMM. In other words, input files from the third-party software should have sufficient functionality to allow export to public domain software for independent validation.
- Rainfall data are selected according to an existing rainfall gauge location that is geographically and meteorologically similar to the project site location.

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- Rainfall loss parameters used in the software can be substantiated and fully referenced.
- The software's hydromodification control processes, detailed later in this memo, are substantiated and fully referenced.

All third-party and proprietary software will be subject to more rigorous review upon the adoption of the Final HMP. This review would include further testing of various development and treatment scenarios as well as an in-depth analysis of software functionality and processes.

As stated previously, Brown and Caldwell is currently preparing flow control sizing tools to assess the effectiveness of hydromodification controls. These tools will be available in association with implementation of the final HMP.

4.2.2 Parameter Validation for Rainfall Losses

In preparing computer models to assess storm water controls and meet Hydromodification Criteria, rainfall loss parameters describing soil characteristics, land cover descriptions, and evapotranspiration data should be validated to prove consistency with the local environment and climatic conditions. The validation process should include documentation of the source of evapotranspiration data and commentary of the effects of varying evapotranspiration patterns between the subject site and parameter data source. A full review of local pan evaporation and potential evapotranspiration data will be included as part of development of the final hydromodification flow control sizing tool.

To meet Hydromodification Criteria, soil and land cover parameter validation can be based on the following:

- Calibration to local stream flow data, where applicable. Examples of local calibration studies include, but are not limited to, total maximum daily load (TMDL) modeling efforts prepared for the San Diego RWQCB (*TMDL for Indicator Bacteria Project I – Beaches and Creeks in the San Diego Region*, Tetra Tech, December 2007).
- Published parameter values consistent with previous studies for San Diego County and Southern California, such as HSPF-related regional calibration studies, research projects, regional soil surveys, etc.
- Specific data prepared as part of a site-specific geotechnical investigation
- If parameters are transposed or modified from calibration efforts outside of Southern California, the source should be identified and justification should be provided stating why such data are applicable for San Diego County. Details should be provided justifying how parameters from such studies were adjusted to be applicable to San Diego conditions.
- Recommended parameter value ranges from *BASINS Technical Notice 6, Estimating Hydrology, and Hydraulic Parameters for HSPF*, USEPA, July 2000.

Storm water flow control devices designed to meet Hydromodification Criteria should be analyzed pursuant to the following criteria:

- Infiltration processes should be modeled with sufficient complexity to properly quantify the flow control benefit to the receiving streams. These infiltration processes should be transparent and fully documented.
- Infiltration quantification should include provisions for water head and pore suction effects for multiple layers of varying materials (i.e., ponding areas, amended soil layer, gravel layer, etc.), or provide justification why such complex processes are not included.
- Storage processes associated with each layer of the storm water device should be fully explained and quantified.
- Device outflow curves should consider controls associated with device underdrains. The methodology by which such stage-discharge relationships are developed should be fully documented.

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4.2.3 Peak Flow and Flow Duration Statistics

To assess the effectiveness of storm water flow control devices in mitigating hydromodification effects to meet Hydromodification Criteria, peak flow frequency statistics should be developed. Peak flow frequency statistics estimate how often flow rates will exceed a given threshold. In this case, the key peak flow frequency values would be the lower and upper bounds of the geomorphically significant flow range. Peak flow frequency statistics should be developed using either a partial-duration or peak annual series. Partial-duration series frequency calculations consider multiple storm events in a given year while the peak annual series considers just the peak annual storm event.

Flow duration statistics must also be summarized to determine how often a particular flow rate is exceeded. To determine if a storm water facility meets hydromodification criteria, peak flow frequency and flow duration curves must be generated for pre-project and post-project conditions. Both pre-project and post-project simulation runs should extend for the entire length of the rainfall record.

For a more detailed review of peak flow frequency and flow duration curves, refer to the aforementioned Brown and Caldwell memo titled *Using Continuous Simulation to Size Storm Water Control Facilities* (May 2008).

The need for partial-duration statistics is more pronounced for control standards based on more frequent return intervals (such as the 2-year runoff event), since the peak annual series does not perform as well in the estimation of such events. This phenomenon is especially pronounced in the San Diego County region's semi-arid climate. Per the advice of the Hydrologic Research Center, with whom the project team has consulted throughout the project, and a review of supporting literature, the use of a partial-duration series is recommended for semi-arid climates similar to San Diego County, where prolonged dry periods can skew peak flow frequency results determined by a peak annual series for more frequent runoff events.

For the statistical analysis of the rainfall record, partial duration series events have been separated into discrete rainfall events assuming the following criteria.

- To determine a discrete rainfall event, a lower flow limit was set to a very small value, equal to 0.002 cfs per acres of contributing drainage area.
- A new discrete event is designated when the flow falls below 0.002 cfs per acre for a time period of 24 hours.

4.3 Rainfall Data

Standards developed as part of this HMP to control runoff peak flows and durations are based on a continuous simulation of runoff using local rainfall data. To provide for clear climatic designation between coastal, foothill and mountain areas of the County, and to distinguish between the major watershed units, historical records for a series of 20 rainfall data stations located throughout San Diego County were compiled, formatted and quality controlled for analysis.

Long-term hourly rainfall records have been prepared for the 20 rainfall stations. These rainfall record files are located on the *Project Clean Water* web site for public use (www.projectcleanwater.org). Sources of the rainfall data include ALERT data from the County of San Diego (which extend back to 1982), the California Climatic Data Archive, National Oceanic and Atmospheric Administration (NOAA), the National Climatic Data Center, and the Western Regional Climate Center. In all cases, the length of the overall rainfall station record is 35 years or the overall length of the rainfall record, whichever is longer.

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Gauge selection was further governed by minimum continuous simulation modeling requirements including the following:

- The selected precipitation gauge data set should be located near the project site to ensure that long-term rainfall records are similar to the anticipated rainfall patterns for the site. Thus, gauges were selected in proximity to areas planned for future development and redevelopment.
- Recording frequency for the gauge data set should be hourly (or more frequent).
- The gauge rainfall record should extend for the entire length of the record. Where the gauge record length is less than 35 years, then adjacent gauge records were used to extend the rainfall record to at least 35 years.
- Use of the most applicable long-term rainfall gauge data, as opposed to the scaling of rainfall patterns from Lindbergh Field, is required to account for the diverse rainfall patterns across San Diego County.

Precipitation gauges identified by Brown and Caldwell, summarized in Table 4-2 below, all have recording frequencies of one hour and recording data ranges of at least 35 years.

Table 4-2. Rainfall Station Summary

Station	Elevation	Watershed
Bonita	120	Sweetwater River
Encinitas	242	San Elijo Lagoon and Batiquitos Lagoon and ocean outlets
Escondido	645	Escondido Creek
Fallbrook	675	San Luis Rey River (near ridge with Santa Margarita River watershed)
Fashion Valley	20	Lower San Diego River
Flinn Springs	880	San Diego River
Kearny Mesa	425	San Diego River (near ridge with San Clemente Canyon watershed)
Lake Cuyamaca	4,590	Upper San Diego River
Lake Heneshaw	2,990	Upper San Luis Rey River
Lake Wohlford	1,490	Upper Escondido Creek
Lindbergh Field	Near Sea Level	Coastal – San Diego Bay
Lower Otay Reservoir	491	Otay River
Morena Dam	3,075	Upper Tijuana River
Oceanside	30	San Luis Rey River
Poway	440	Los Penasquitos Canyon
Ramona	1,450	Upper San Dieguito River
San Onofre	162	North County Coastal – Pacific Ocean
San Vicente Reservoir	663	San Diego River
Santee	300	San Diego River

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For a given project location, the following factors should be considered in the selection of the appropriate rainfall data set.

- In most cases, the rainfall data set in closest proximity to the project site will be the appropriate choice. A rainfall station map has been posted to the *Project Clean Water* web site for public use.
- In some cases, the rainfall data set in closest proximity to the project site may not be the most applicable data set. Such a scenario could involve a data set with an elevation significantly different from the project site. In addition to a simple elevation comparison, the project proponent may also consult with the San Diego County's average annual precipitation isopluvial map, which is provided in the San Diego County Hydrology Manual (2003). Review of this map could provide an initial estimate as to whether the project site is in a similar rainfall zone as compared to the rainfall stations. Generally, precipitation totals in San Diego County increase with increasing elevation.
- Where possible, rainfall data sets should be chosen so that the data set and the project location are both located in the same topographic zone (coastal, foothill, mountain) and major watershed unit (Upper San Luis Rey, Lower San Luis Rey, Upper San Diego River, Lower San Diego River, etc.).

Upon implementation of final hydromodification criteria, the hydromodification flow control sizing calculator being developed by Brown and Caldwell will automate the rainfall gauge selection process.

4.4 Rainfall Losses - Infiltration Parameters

Standards developed as part of this HMP to control runoff peak flows and durations are based on a continuous simulation of runoff using locally derived parameters for initial infiltration. A review was conducted of available continuous hydrologic simulation modeling reports in Southern California. These included TMDL models developed for the San Diego RWQCB (RWQCB), regional continuous models developed by the Southern California Coastal Water Research Project (SCCWRP), and watershed-level continuous models developed for river and large creek systems in Ventura County. In conducting this review, particular interest was focused on determining how local and regional continuous hydrologic models simulated the pervious land surface[1] for various combinations of soils and land use types, because this component of hydrologic modeling is typically the most variable and difficult to describe.

The HSPF software package is the industry standard for continuous simulation hydrologic modeling, though HEC-HMS and SWMM also provide public domain continuous modeling alternatives. The Final HMP provides the option to use HEC-HMS for a project submittal but only provides infiltration data review for HSPF modeling approaches. Therefore, if a project applicant chooses to use HEC-HMS, prior authorization should be provided by the governing municipality.

[1] Characterized by PERLND/PWATER parameters in the EPA's public domain Hydrologic Simulation Program – FORTRAN, HSPF.

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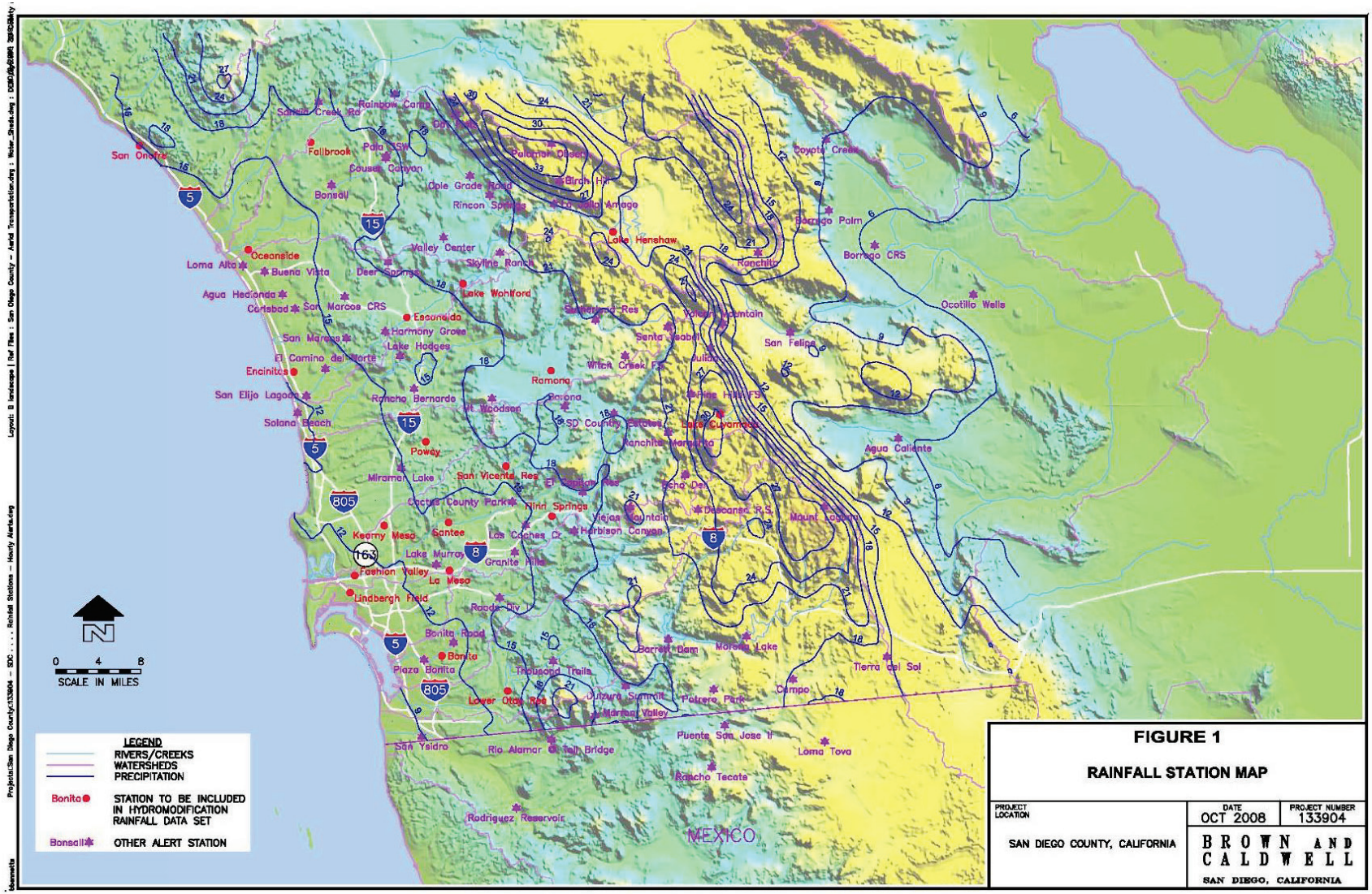

Figure 4-1. Rainfall Station Map

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In preparing computer models to assess storm water controls and meet Hydromodification Criteria, rainfall loss parameters describing soil characteristics, land cover descriptions, and slope should be validated to prove consistency with the local environment and climatic conditions. The goal, with regard to the San Diego HMP, is to develop a set of appropriate parameter ranges to account for variations of these key parameters. The final selection of rainfall loss parameters and evaporation data is part of the Sizing Calculator development process as part of HMP implementation in winter 2010.

In addition to the reports listed below, other TMDL reports from San Diego County and elsewhere in Southern California were reviewed in Table 4-3. However, only those reports with a substantial description of modeling activities were summarized in the table.

Table 4-3. Summary of HSPF Modeling Reports for Southern California

No.	Title	Authors	Date	Summary/Comments
1	TMDL to Reduce Bacterial Indicator Densities at Santa Monica Bay Beaches During Wet Weather (Preliminary Draft)	Los Angeles RWQCB / Tetra Tech	June 21, 2002	Combination of hydrologic and water quality modeling to estimate bacterial loadings to Santa Monica Bay HSPF/Loading Simulation Program in C++ (LSPC) model was calibrated and validated using stream flow data collected on Malibu Creek and Ballona Creek. (LSPC is a recoded C++ version of HSPF) No HSPF model parameters included in report
2	Technical Report – TMDLs for Indicator Bacteria in Baby Beach and Shelter Island Shoreline Park	San Diego RWQCB / Tetra Tech	June 11, 2008	Combination of hydrologic and water quality modeling HSPF/LSPC model was calibrated to flow data collected in Aliso Creek and Rose Creek. Calibrated infiltration rates were reported for Natural Resources Conservation Survey (NRCS) Group A, B, C, and D soils (in Appendix F). However, it is unclear if these rates correspond to specific HSPF model parameters. This issue of how to apply the calibrated infiltration rates should be addressed through correspondence with study authors.
3	Evaluating HSPF in an Arid, Urbanized Watershed (in Journal of the American Water Resources Association, 2005, p477-486	Drew Ackerman, Kenneth Schiff, Stephen Weisburg (SCCWRP)	February 2005	HSPF was used to simulate hydrologic processes in arid region, e.g., precipitation on dry soils, effect of irrigation. Model was calibrated to gauge data collected in lower reaches of Malibu Creek. The calibration set aggregated the soil and land cover variations in the watershed (i.e., spatially "lumped" parameters). Pervious land surface (PWATER) parameters were included in the paper.
4	TMDL for Indicator Bacteria Project I – Beaches and Creeks in the San Diego Region	San Diego RWQCB / Tetra Tech	December 12, 2007	HSPF/LSPC model parameters were selected from regional calibration. Calibration efforts used daily average stream flows as the baseline calibration condition. Appendices describe the regional calibration process. The modeling files have been provided by the San Diego RWQCB
5	Lake Elsinore and Canyon Lake Nutrient Source Assessment (Final Report) for Santa Ana Watershed Project Authority	Tetra Tech, Inc.	January 2003	HSPF/LSPC model was calibrated and validated using United States Geological Survey (USGS) gauging site data in the San Jacinto watershed Model simulated pollutant loading to Lake Elsinore and Canyon Lake Pervious land surface (PWATER) parameters were not published in the report.

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The technical reports listed in Table 4-3 demonstrate that a variety of detailed HSPF modeling studies have been conducted in the past 10 years in Southern California. However, adapting these modeling efforts for use on the San Diego HMP project would require additional work. This is because the reports listed above did not publish their HSPF parameter sets, with the exception of the Ackerman study (see No. 3 above), which published a set of generalized parameters that aggregate or "spatially lump" the contributions of different soil/land use combinations in the upper watershed.

The HSPF model described in the Ackerman paper simulates all soil and land use combinations using a single composite parameter set. In a follow-on conversation in May 2008, Drew Ackerman explained that the "Arid, Urbanized" HSPF model was calibrated only to gauge data in the lower Santa Monica Bay watershed, because the model's purpose was to estimate pollutant loadings to area beaches and water bodies. His study was understandably less focused on characterizing the variation in runoff rates and volumes among the different land uses in the upper portions of the watershed. Additionally, the effect of upstream surface water impoundments would have made the development of an accurate, detailed calibration at the sub-catchment scale very difficult to achieve. Unfortunately, this "spatially lumped" parameter set is of limited usefulness for the purpose of the HMP project, given the need to develop parameter sets that describe a variety of common soil and land use combinations.

Continuous simulation modeling files associated with the report titled *Bacteria Project I – Beaches and Creeks in the San Diego Region* (February 2009) include infiltration parameter calibrations based upon 15-20 years of average daily flows. Per discussions with Tetra Tech in November 2008 and January 2009, ongoing work related to TMDL development for San Diego County lagoons may also prove to be beneficial to the future San Diego HMP model parameter estimation effort.

The consultant team will continue to review additional HSPF studies in preparation for development of a hydromodification flow control sizing tool for San Diego County (to be completed in Winter 2010). The consultant team has had discussions with Tony Donigian of Aquaterra, who has prepared numerous HSPF models and serves as an EPA-sponsored trainer for HSPF modeling.

Aquaterra's HSPF modeling efforts in Southern California have focused on Ventura County. Aquaterra has requested permission from Ventura County to allow the San Diego HMP consultant team to review modeling results and input data sets for the Ventura County HSPF modeling efforts.

To better utilize the existing HPSF models for use in the San Diego HMP project and development of the San Diego HMP Sizing Calculator, the consultant team will be conducting the following activities:

- Contact the authors of the studies listed in Table 4-3 (and others provided by Tetra Tech, Aquaterra and SCCWRP) to obtain copies of the HSPF pervious land surface (PERLND/PWATER) parameter sets. .
- Relate the HSPF parameters to NRCS soil groups and common land use types. Develop a range of recommended HSPF input parameters that could be used to characterize the range of soil and land use types common to San Diego County.

The following model parameters were published in the Drew Ackerman et al. paper described in Figure 4-2. The specific values were selected by calibrating an HSPF model to flow monitoring data in the Santa Monica Bay watershed, specifically on Malibu Creek. The values represent a composite of the various upstream soils and land uses.

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Table 2. Model parameters utilized for modeling of Santa Monica Bay.

Pervious Parameters		Value	Units
Fraction of Remaining E-T from Active Groundwater Storage	AGEWTP	0.05	None
Basic Groundwater Recession Rate	AGWRC	0.92	1/d
Fraction of Remaining E-T from Baseflow	BASETP	0.05	None
Interception Storage Capacity	CEPSC	0.25	cm
Fraction of Groundwater to Deep Aquifer	DEEPFR	0.40	None
Forest Fraction	FOREST	0.0	%
Infiltration Equation Exponent	INFEXP	2.0	None
Ratio between the Maximum and Mean Infiltration Capacities	INFILD	2.0	None
Infiltration Capacity	INFILT	0.10	cm/hr
Interflow Inflow Parameter	INTFW	1.50	None
Interflow Recession Parameter	IRC	0.70	1/d
Groundwater Recession Flow Coefficient	KVARY	7.6	1/cm
Overland Flow Length	LSUR	61	m
Lower Zone E-T Parameter	LZETP	0.70	None
Lower Zone Nominal Storage	LZSN	25	cm
Manning's n for Overland Flow	NSUR	0.20	Complex
Temperature Maximum for Evapotranspiration (E-T)	PETMAX	1.7	°C
Temperature that E-T is Zero	PETMIN	-1.1	°C
Overland Flow Slope	SLSUR	0.03	None
Upper Zone Nominal Storage	UZSN	3.0	cm

Figure 4-2. Model Parameters Utilized by SCCWRP for Modeling of Santa Monica Bay

Additional reference material can be located in the document titled, *BASINS Technical Notice 6, Estimating Hydrology and Hydraulic Parameters for HSPF,* prepared by the U.S. EPA (July 2000). This document provides details regarding pervious and impervious land hydrology parameters along with flow routing parameters. Parameter and value range summary tables are included in the document.

4.4.1 Pervious Land Hydrology (PWATER) Parameters

The HSPF hydrology parameters of PWATER are divided into four sections, titled PARM1-4. PARM1 is a series of checks to outline any monthly variability versus constant parameter values within the simulated algorithm; whereas, PARM2 and 3 are a series of climate, geology, topography, and vegetation parameters that require numerical values to be inputted.

PARM2 involves the basic geometry of the overland flow, the impact of groundwater recession, potential snow impact due to forest cover and the expected infiltration and soil moisture storage. The main parameters of groundwater recession are KVARY and AGWRC. The infiltration and soil moisture storage parameters are INFILT and LZSN.

PARM3 involves the impact of climate temperature during active snow conditions, a wide range of evaporation parameters due to the variability of the onsite soil and existing vegetation and subsurface losses due to groundwater recharge or the existing geology. The main evaporation parameters are INFEXP, INFILD, BASETP, and AGWETP. The parameter for subsurface loss is DEEPFR which accounts for one of only three major losses from the PWATER water balance (i.e., in addition to evaporation, and lateral and stream outflows).

PARM4 involves the flow and hydrograph characteristics, the expectation of rain interception due to the inherent moisture storage capacity from existing vegetation, land use and/or near surface soil conditions and evaporation due to the root zone of the soil profile. The main interception parameters are CEPSC and UZSN. The parameter for evaporation as a primary function of vegetation is LZETP.

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PARM2

KVARY. Groundwater recession flow parameter used to describe non-linear groundwater recession rate *(/inches) (initialize with reported values, then calibrate as needed*).

KVARY is usually one of the last PWATER parameters to be adjusted; it is used when the observed groundwater recession demonstrates a seasonal variability with a faster recession (i.e., higher slope and lower AGWRC values) during wet periods, and the opposite during dry periods. Value ranges are shown in Figure 4-3. Users should start with a value of 0.0 for KVARY, and then adjust (i.e., increase) if seasonal variations are evident. Plotting daily flows with a logarithmic scale helps to elucidate the slope of the flow recession.

AGWRC. Groundwater recession rate, or ratio of current groundwater discharge to that from 24 hours earlier (when KVARY is zero) *(/day) (estimate, then calibrate).*

The overall watershed recession rate is a complex function of watershed conditions, including climate, topography, soils, and land use. Hydrograph separation techniques can be used to estimate the recession rate from observed daily flow data (such as plotting on a logarithmic scale). Value ranges are shown in Figure 4-3.

INFILT. Index to mean soil infiltration rate *(in/hr); (estimate, then calibrate).*

In HSPF, INFILT is the parameter that effectively controls the overall division of the available moisture from precipitation (after interception) into surface runoff. Since INFILT is not a maximum rate nor an infiltration capacity term, it's values are normally much less than published infiltration rates, percolation rates (from soil percolation tests), or permeability rates from the literature. In any case, initial values are adjusted in the calibration process.

INFILT is primarily a function of soil characteristics, and value ranges have been related to SCS hydrologic soil groups (Donigian and Davis, 1978, p.61, variable INFIL) as follows:

Table 4-4. INFILT Parameters

SCS Hydrologic Soil Group	INFILT Estimate		Runoff Potential
	(in/hr)	(mm/hr)	
A	0.4 - 1.0	10.0 - 25.0	Low
B	0.1 - 0.4	2.5 - 10.0	Moderate
C	0.05 - 0.1	1.25 - 2.5	Moderate to High
D	0.01 - 0.05	0.25 - 1.25	High

An alternate estimation method that has not been validated is derived from the premise that the combination of infiltration and interflow in HSPF represents the infiltration commonly modeled in the literature (e.g., Viessman et al., 1989, Chapter 4). With this assumption, the value of 2.0*INFILT*INTFW should approximate the average measured soil infiltration rate at saturation, or mean permeability.

LZSN. Lower zone nominal soil moisture storage *(inches), (estimate, then calibrate).*

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LZSN is related to both precipitation patterns and soil characteristics in the region. Viessman, et al, 1989, provide initial estimates for LZSN in the Stanford Watershed Model (SWM-IV, predecessor model to HSPF) as one-quarter of the mean annual rainfall plus four inches for arid and semiarid regions, or one-eighth annual mean rainfall plus 4 inches for coastal, humid, or subhumid climates. These formulae tend to give values somewhat higher than are typically seen as final calibrated values; since LZSN will be adjusted through calibration, initial estimates obtained through these formulae may be reasonable starting values.

PARM3

INFEXP. Exponent that determines how much a deviation from nominal lower zone storage affects the infiltration rate (HSPF Manual, p. 60) *(initialize with reported values, then calibrate).*

Variations of the Stanford approach have used a POWER variable for this parameter; various values of POWER are included in Donigian and Davis (1978, p. 58). However, the vast majority of HSPF applications have used the default value of 2.0 for this exponent. Use the default value of 2.0, and adjust only if supported by local data and conditions.

INFILD. Ratio of maximum and mean soil infiltration capacities *(initialize with reported value).*

In the Stanford approach, this parameter has always been set to 2.0, so that the maximum infiltration rate is twice the mean (i.e., input) value; when HSPF was developed, the INFILD parameter was included to allow investigation of this assumption. However, there has been very little research to support using a value other than 2.0. Use the default value of 2.0, and adjust only if supported by local data and conditions.

DEEPFR. The fraction of infiltrating water which is lost to deep aquifers (i.e., inactive groundwater), with the remaining fraction (i.e., 1-DEEPFR) assigned to active groundwater storage that contributes baseflow to the stream *(estimate, then calibrate).*

It is also used to represent any other losses that may not be measured at the flow gauge used for calibration, such as flow around or under the gauge site. Watershed areas at high elevations, or in the upland portion of the watershed, are likely to lose more water to deep groundwater (i.e., groundwater that does not discharge within the area of the watershed), than areas at lower elevations or closer to the gauge. DEEPFR should be set to 0.0 initially or estimated based on groundwater studies, and then calibrated, in conjunction with adjustments to evapotranspiration (ET) parameters.

BASETP. ET by riparian vegetation as active groundwater enters streambed; specified as a fraction of potential ET, which is fulfilled only as outflow exists *(estimate, then calibrate).*

Typical and possible value ranges are shown in Figure 4-3. If significant riparian vegetation is present in the watershed then non-zero values of BASETP should be used. If riparian vegetation is significant, start with a BASETP value of 0.03 and adjust to obtain a reasonable low-flow simulation in conjunction with a satisfactory annual water balance.

AGWETP. Fraction of model segment (i.e., pervious land segment) that is subject to direct evaporation from groundwater storage, e.g., wetlands or marsh areas, where the groundwater surface is at or near the land surface, or in areas with phreatophytic vegetation drawing directly from groundwater. This is represented in the model as the fraction of remaining potential ET (i.e., after base ET, interception ET, and upper zone ET are satisfied), that can be met from active groundwater storage *(estimate, then calibrate).*

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If wetlands are represented as a separate pervious land segment (PLS), then AGWETP should be 0.0 for all other land uses, and a high value (0.3 to 0.7) should be used for the wetlands PLS. If wetlands are not separated out as a PLS, identify the fraction of the model segment that meets the conditions of wetlands/marshes or phreatophytic vegetation and use that fraction for an initial value of AGWETP. Like BASETP, adjustments to AGWETP will be visible in changes in the low-flow simulation, and will affect the annual water balance. Follow above guidance for an initial value of AGWETP, and then adjust to obtain a reasonable low-flow simulation in conjunction with a satisfactory annual water balance.

PARM4

CEPSC. Amount of rainfall, in inches, which is retained by vegetation, that never reaches the land surface, and is eventually evaporated (*estimate, then calibrate*). Typical guidance for CEPSC for selected land surfaces is provided in Donigian and Davis (1978, p. 54, variable EPXM) as follows:

Table 4-5. Interception Parameters

Land Cover	Maximum Interception (in)
Grassland	0.10
Cropland	0.10 – 0.25
Forest Cover, light	0.15
Forest Cover, heavy	0.20

LZETP. Index to lower zone evapotranspiration (unitless) (*estimate, then calibrate*).

LZETP is a coefficient to define the ET opportunity; it affects evapotranspiration from the lower zone which represents the primary soil moisture storage and root zone of the soil profile. LZETP behaves much like a 'crop coefficient' with values mostly in the range of 0.2 to 0.7; as such it is primarily a function of vegetation. Typical and possible value ranges are shown in Figure 4-3, and the following ranges for different vegetation are expected for the 'maximum' value during the year:

Table 4-6. LZETP Coefficients

Land Cover	Input Coefficient
Forest	0.6 - 0.8
Grassland	0.4 - 0.6
Row Crops	0.5 - 0.7
Barren	0.1 - 0.4
Wetlands	0.6 - 0.9

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HSPF HYDROLOGY PARAMETERS AND VALUE RANGES

			RANGE OF VALUES					
NAME	DEFINITION	UNITS	TYPICAL		POSSIBLE		FUNCTION OF ...	COMMENT
			MIN	MAX	MIN	MAX		
PWAT - PARM2								
FOREST	Fraction forest cover	none	0.0	0.50	0.0	0.95	Forest cover	Only impact when SNOW is active
LZSN	Lower Zone Nominal Soil Moisture Storage	inches	3.0	8.0	2.0	15.0	Soils, climate	**Calibration**
INFILT	Index to Infiltration Capacity	in/hr	0.01	0.25	0.001	0.50	Soils, land use	**Calibration**, divides surface and subsurface flow
LSUR	Length of overland flow	feet	200	500	100	700	Topography	Estimate from high resolution topo maps or GIS
SLSUR	Slope of overland flow plane	ft/ft	0.01	0.15	0.001	0.30	Topography	Estimate from high resolution topo maps or GIS
KVARY	Variable groundwater recession	1/inches	0.0	3.0	0.0	5.0	Baseflow recession variation	Used when recession rate varies with GW levels
AGWRC	Base groundwater recession	none	0.92	0.99	0.85	0.999	Baseflow recession	**Calibration**
PWAT - PARM3								
PETMAX	Temp below which ET is reduced	deg. F	35.0	45.0	32.0	48.0	Climate, vegetation	Reduces ET near freezing, when SNOW is active
PETMIN	Temp below which ET is set to zero	deg. F	30.0	35.0	30.0	40.0	Climate, vegetation	Reduces ET near freezing, when SNOW is active
INFEXP	Exponent in infiltration equation	none	2.0	2.0	1.0	3.0	Soils variability	Usually default to 2.0
INFILD	Ratio of max/mean infiltration capacities	none	2.0	2.0	1.0	3.0	Soils variability	Usually default to 2.0
DEEPFR	Fraction of GW inflow to deep recharge	none	0.0	0.20	0.0	0.50	Geology, GW recharge	Accounts for subsurface losses
BASETP	Fraction of remaining ET from baseflow	none	0.0	0.05	0.0	0.20	Riparian vegetation	Direct ET from riparian vegetation
AGWETP	Fraction of remaining ET from active GW	none	0.0	0.05	0.0	0.20	Marsh/wetlands extent	Direct ET from shallow GW
PWAT - PARM4								
CEPSC	Interception storage capacity	inches	0.03	0.20	0.01	0.40	Vegetation type/density, land use	Monthly values usually used
UZSN	Upper zone nominal soil moisture storage	inches	0.10	1.0	0.05	2.0	Surface soil conditions, land use	Accounts for near surface retention
NSUR	Manning's n (roughness) for overland flow	none	0.15	0.35	0.05	0.50	Surface conditions, residue, etc.	Monthly values often used for croplands
INTFW	Interflow inflow parameter	none	1.0	3.0	1.0	10.0	Soils, topography, land use	**Calibration**, based on hydrograph separation
IRC	Interflow recession parameter	none	0.5	0.7	0.3	0.85	Soils, topography, land use	Often start with a value of 0.7, and then adjust
LZETP	Lower zone ET parameter	none	0.2	0.7	0.1	0.9	Vegetation type/density, root depth	**Calibration**

Figure 4-3. HSPF Hydrology Parameters and Value Ranges

Source: USEPA BASINS Technical Note 6

Model assumptions for stream reach infiltration rates were derived through calibration based on data collected within the reaches of Aliso Creek (11 stations) and Rose Creek (6 stations). In the model, infiltration rates vary by soil type. Stream infiltration was calibrated by adjusting a single infiltration value, which was varied for each soil type by factors established from literature ranges (USEPA 2000) of infiltration rates specific to each soil type. The final resulting infiltration rates were 1.368 in/hr (Soil Group A), 0.698 in/hr (Soil Group B), 0.209 in/hr (Soil Group C) and 0.084 in/hr (Soil Group D). The infiltration rates for Soil Groups B, C, and D are within the infiltration range given in literature (Wanielisata et al. 1997). The result for Soil Group A is below the range given in Wanielisata et al. (1997); however, this result only represented one watershed in this TMDL study.

The technical reports reviewed demonstrate that a variety of detailed HSPF modeling studies have been conducted in the past 10 years in Southern California. However, adapting these modeling efforts for use on the San Diego HMP project will require additional work, which will be completed in association with development of the implementation Sizing Calculator. That effort includes meetings with report authors, including representatives from the SCCWRP, as well as meetings with HSPF modeling experts from Aquaterra to ascertain appropriate values for initial infiltration parameters.

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4.5 Rainfall Losses - Evapotranspiration Parameters

Standards developed as part of this HMP to control runoff peak flows and durations are based on a continuous simulation of rainfall runoff using locally derived parameters for evaporation and evapotranspiration.

Known data sources for evaporation and evapotranspiration data in San Diego County are listed below.

- California Irrigation Management and Information System web site – evapotranspiration stations include San Diego, Oceanside, Escondido, Ramona, Otay Lakes, Miramar, Torrey Pines, and Borrego Springs.
- Historical Reservoir Level and Evaporation Data for Lake Heneshaw.
- Historical Evaporation Data from City of San Diego Reservoirs.
- Historical Evaporation Data from Helix Water District for Lake Cuyamaca.

The evaporation / evapotranspiration parameter validation process includes documentation of the source of data and analysis of the effects of varying patterns between the subject site and parameter data source. A full review of local pan evaporation and potential evapotranspiration data is being conducted as part of the development of the final hydromodification flow control sizing tool.

Table 4-6 below summarizes available evaporation and evapotranspiration data sources in San Diego County. Most of the available evaporation data are located close to reservoirs in the inland valley and mountain areas of the County. Monthly evaporation records are available for multiple reservoirs within the County. Evapotranspiration sensing data are generally collected in agricultural zones.

The California Irrigation Management Information Systems web site (wwwcimis.water.ca.gov/cimis/data.jsp) provides access to real-time and summarized evapotranspiration data (ETo) throughout California. For the San Diego region, average evapotranspiration values are summarized for the coastal and foothill zones of San Diego County.

Table 4-7. Summary of Evaporation and Evapotranspiration Data for San Diego County

Station Name ID	Data Type	Data Source	Recording Frequency	Start Date	End Date
Barratt Lake	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Borrego Springs	Evapotranspiration	CIMIS	Monthly	2008	2008
Chula Vista	Pan Evaporation	Western Regional Climate Center	Monthly Averages	1948	2005
El Capitain Reservoir	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Escondido / 74	Evapotranspiration	CIMIS	Monthly	1988	1998
Escondido / 153	Evapotranspiration	CIMIS	Monthly	1999	2008
Lake Cuyamaca	Pan Evaporation	Helix Water District	Monthly	1985	2006
Lake Heneshaw	Pan Evaporation	County of San Diego	Daily	1999	2005
Lake Heneshaw	Pan Evaporation	County of San Diego	Monthly	1957	2008
Lake Hodges	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Lake Jennings	Pan Evaporation	Helix Water District	Monthly	1985	2006
Lake Murray	Pan Evaporation	City of San Diego	Monthly	1950	2008

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Table 4-7. Summary of Evaporation and Evapotranspiration Data for San Diego County

Station Name ID	Data Type	Data Source	Recording Frequency	Start Date	End Date
		Water Department			
Lake Sutherland	Pan Evaporation	City of San Diego Water Department	Monthly	1954	2008
Lower Otay Reservoir	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Lower Otay / 147	Evapotranspiration	CIMIS	Monthly	1999	2008
Miramar Lake	Pan Evaporation	City of San Diego Water Department	Monthly	1960	2008
Miramar Lake / 150	Evapotranspiration	CIMIS	Monthly	1999	2008
Morena Lake	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Oceanside / 49	Evapotranspiration	CIMIS	Monthly	1986	2003
Ramona / 98	Evapotranspiration	CIMIS	Monthly	1991	1998
San Diego / 45	Evapotranspiration	CIMIS	Monthly	1985	1989
San Diego / 66	Evapotranspiration	CIMIS	Monthly	1989	2001
San Diego II / 184	Evapotranspiration	CIMIS	Monthly	2002	2008
San Vicente Reservoir	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Torrey Pines / 173	Evapotranspiration	CIMIS	Monthly	2000	2008

Long-term evaporation / evapotranspiration data sets are being generated to correspond with long-term rainfall records. The final selection of rainfall loss parameters and evaporation data is part of the Sizing Calculator development process.

In summary, the published literature reviewed as part of this study support the methods and approach taken in developing the San Diego Hydromodification Management Plan.

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5. METHODOLOGY AND TECHNICAL APPROACH TO REGIONAL HYDROMODIFICATION DEVELOPMENT

As outlined in Permit Section D.1, the San Diego Copermittees shall implement a program to manage increases in runoff discharge rates and durations from Priority Development Projects that are likely to cause increases to erosion of channel beds or banks, silt pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force. This section provides a detailed description of the methodology and approach used in the development of the HMP (Permit Section D.1.g(1)). Section 5.1 specifically focuses on the approach taken to identify the geomorphically significant flow range, Section 5.2 focuses on channel screening tools developed in association with this HMP, and Section 5.3 discusses cumulative watershed impacts.

5.1 Flow Control Limit Determination

5.1.1 Background

The purpose of the HMP is to identify guidelines for managing 'geomorphically-significant' flows that, if not controlled, would cause increased erosion in receiving water channels. Specifically, the HMP must identify low and high flow thresholds between which flows should be controlled so that the post-project flow rates and durations do not exceed pre-project levels between these two flow magnitudes. Specifically, the Board Order requires that the HMP shall:

> Utilize continuous simulation of the entire rainfall record to identify a range of runoff flow[1] for which Priority Development Project post-project runoff flow rates and durations shall not exceed pre-project runoff flow rates and durations, where the increased flow rates and durations will result in increased potential for erosion or other significant adverse impacts to beneficial uses, attributable to changes in the flow rates and durations. The lower boundary of the range of runoff flows identify shall correspond with the critical channel flow that produces the critical shear stress that initiates channel bed movement or that erodes the toe of channel banks. The identified range of runoff flows may be different for specific watersheds, channels or channel reaches.

For the purposes of this project, 'hydrograph modification' or 'hydromodification' is understood to mean changes to the frequency, duration and magnitude of surface runoff that, when unmitigated, cause an increase in erosion of the receiving water body. Hydromodification occurs when urbanization replaces areas of vegetated, uncompacted soil with impermeable surfaces such as buildings, roads, and compacted fill. The reduction in permeability results in increased volumes of runoff, and faster and more concentrated delivery of this water to receiving waters. These changes have the potential to cause creeks to erode faster than before development. Although the focus of hydromodification management plans has been on increased erosion, it should be noted that in rivers that are depositional, hydromodification can cause creeks to regain some

[1] The identified range of runoff flows to be controlled should be expressed in terms of peak flow rates of rainfall events, such as "10% of the pre-project 2-year peak flow up to the pre-project 10-year peak flow."

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transport equilibrium. This phenomenon is the basis for providing exemptions for river reaches which are aggrading (depositional).

Stream flows are often expressed in terms of the frequency with which a particular flow occurs. For example, Q_2 refers to the flow rate that occurs once every two years, on average over the long term runoff record. Flow frequencies are a function of rainfall and watershed characteristics, and are unique to each stream channel (and location along the channel). The effects of urbanization tend to increase the magnitude of the flow associated with a given frequency (e.g., post-development Q_2. is higher than pre-development Q_2.). Similarly, urbanization tends to increase the frequency with which any given flow rate occurs. The purpose of the HMP is to control runoff from new developments so that flow magnitudes and frequencies match pre-development conditions within a critical range of flows.

Not all runoff causes erosion. Runoff in receiving channels below a critical discharge (Qcrit) does not exert sufficient force to overcome the erosion resistance of the channel banks and bed materials. Flows greater than Qcrit cause erosion, with larger flows causing proportionally greater erosion. It has been determined through calculations and field measurements that most erosion in natural creeks is caused by flows between some fraction of Q_2 and Q_{10}. Flows in this range are referred to as 'geomorphically-significant' because they cause the majority of erosion and sediment transport in a channel system.

Flows greater than Q_{10}, though highly erosive *per event*, occur too infrequently to do as much work as smaller but more frequent flows. Hydromodification also has less impact on flows greater than Q_{10} since at such high rainfall intensities, the soil becomes saturated and the infiltration capacity of undeveloped landscapes is rapidly exceeded. When the soil is saturated, runoff rates become more similar to those from impervious surfaces. For these reasons, HMPs have focused on identifying a low flow threshold that is close to Qcrit for most receiving channels, and controlling flows between that value and Q_{10} (see Literature Review in Chapter 4 for review of HMPs completed in Santa Clara, Contra Costa, Alameda, and San Mateo Counties). By requiring mitigation (storage and either infiltration or detention) of excess runoff within the control range, and by limiting the release of excess water to Qcrit or less, HMPs seek to prevent additional erosion in receiving water channels.

5.1.2 Identifying a Low Flow Threshold

Erosion occurs when the shear stress exerted on the channel by flowing water (*boundary shear stress*) exceeds the resistance of the channel (*critical shear stress*). Critical shear stress varies by several orders of magnitude for different channel materials (Figure 5-1). *Critical flow* (Qcrit) is the channel flow which produces boundary shear stress equal to the critical shear stress for a given channel. In other words, critical flow is the flow rate that can initiate erosion in a channel. Qcrit is a function not only of the critical shear stress of the channel materials, but also channel size and channel geometry. A particular flow rate (expressed as a number of cubic feet per second) in a small, steep, confined channel will create more shear stress than the identical flow rate in a large, flat, wide open channel. Thus, Qcrit can be extremely variable depending on channel and watershed characteristics and will be different in each channel, and in each watershed.

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Boundary Category	Boundary Type	Permissible Shear Stress (lb/sq ft)
Soils	Fine colloidal sand	0.02 - 0.03
	Sandy loam (noncolloidal)	0.03 - 0.04
	Alluvial silt (noncolloidal)	0.045 - 0.05
	Silty loam (noncolloidal)	0.045 - 0.05
	Firm loam	0.075
	Fine gravels	0.075
	Stiff clay	0.26
	Alluvial silt (colloidal)	0.26
	Graded loam to cobbles	0.38
	Graded silts to cobbles	0.43
	Shales and hardpan	0.67
Gravel/Cobble	1-in.	0.33
	2-in.	0.67
	6-in.	2.0
	12-in.	4.0
Vegetation	Class A turf	3.7
	Class B turf	2.1
	Class C turf	1.0
	Long native grasses	1.2 – 1.7
	Short native and bunch grass	0.7 - 0.95
	Reed plantings	0.1-0.6
	Hardwood tree plantings	0.41-2.5
Temporary Degradable RECPs	Jute net	0.45
	Straw with net	1.5 – 1.65
	Coconut fiber with net	2.25
	Fiberglass roving	2.00
Non-Degradable RECPs	Unvegetated	3.00
	Partially established	4.0-6.0
	Fully vegetated	8.00
Riprap	6 – in. d_{50}	2.5
	9 – in. d_{50}	3.8
	12 – in. d_{50}	5.1
	18 – in. d_{50}	7.6
	24 – in. d_{50}	10.1
Soil Bioengineering	Wattles	0.2 – 1.0
	Reed fascine	0.6-1.25
	Coir roll	3 - 5
	Vegetated coir mat	4 - 8
	Live brush mattress (initial)	0.4 – 4.1
	Live brush mattress (grown)	3.90-8.2
	Brush layering (initial/grown)	0.4 – 6.25
	Live fascine	1.25-3.10
	Live willow stakes	2.10-3.10
Hard Surfacing	Gabions	10
	Concrete	12.5

[1] Ranges of values generally reflect multiple sources of data or different t

A. Chang, H.H. (1988).
B. Florineth. (1982)
C. Gerstgraser, C. (1998).
D. Goff, K. (1999).
E. Gray, D.H., and Sotir, R.B. (1996).
F. Julien, P.Y. (1995).
G. Kouwen, N.; Li, R. M.; and Simons, D.B., (1980).
H. Norman, J. N. (1975).
I. Schiechtl, H. M. and R. Stern. (1996).
J. Schoklitsch, A. (1937).

Figure 5-1. Range of Critical Shear Stresses (τ_{cr}) for Different Materials (from Fischenich)

It was the original intent of the HMP consulting team to identify a single low flow threshold for the entire County (per previous HMPs). However, an extensive assessment of channel and runoff conditions led the team to conclude that there was a very wide range in critical flows, based largely on channel material but also on channel dimensions, rainfall, and watershed area. Adopting a single standard that is conservative for the most vulnerable channels would result in controls that were excessively conservative for more resilient channels, while adopting an 'average' value would leave some channels unprotected.

Because of this natural variability, the team pursued an analytical approach for estimating Qcrit as a function of parameters such as channel materials, channel dimensions, and watershed area. Because the low flow standard is required to correspond to Qcrit (Order No. R9-2007-0001), this approach allows the low flow standard to be customized for local conditions. The following sections describe an analysis of Qcrit as a fraction of Q_2 for the range of channel conditions in San Diego County. This is followed by a description of a calculator tool that may be used to calculate Qcrit for a specific channel based on parameters that may be readily measured in the field. The analyses described in this report provide background for the selection of low flow thresholds identified in the HMP.

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5.1.3 Critical Flow Analysis

The low flow thresholds were calculated by conducting a sensitivity analysis in which a wide range of channel sizes and geometries, rainfalls, watershed areas and channel materials were modeled in a flow-erosion model to identify Qcrit as a function of Q_2. In all, 170 combinations of channel, rainfall, and watershed conditions were assessed. Based on the results of this sensitivity analysis, a series of low flow thresholds was identified.

The steps used to conduct the sensitivity analysis and determine the recommended flow thresholds were as follows:

1. Identify the typical range of rainfall conditions for the HMP area (western San Diego County).
2. Identify the range of typical watershed areas likely to be developed.
3. Identify a range of typical receiving channel dimensions for each watershed area.
4. Identify a range of typical channel materials for receiving channels.
5. Simulate a range of flows and develop rating curves (relationships between discharge and boundary shear stress).
6. Identify the flow rate at which boundary shear stress exceeds critical shear stress for the channel and material.
7. Express this flow rate as a function of Q_2.
8. Group critical flow rates by channel materials and identify appropriate low flow thresholds for each channel material type.

Steps 1 through 4 were used to define the range of parameters to use in the sensitivity testing. The intent was to identify a typical range of conditions likely to occur in the HMP area (western San Diego county), rather than provide an exhaustive description of possible watershed and channel conditions. Sensitivity testing on many combinations of parameters within this typical range allows identification of the range of channel responses and appropriate flow thresholds.

Each step in the critical flow analysis is explained in detail in the following sections.

Identify the Typical Range Of Rainfall Conditions for the HMP Area (West San Diego County)

Mean annual rainfall was used to estimate receiving channel size, Q_2, Q_5 and Q_{10} (methods described in subsequent sections). Figure 5-2 shows mean annual rainfall for San Diego County. Based on the map, three mean annual rainfalls were selected to represent the range of rainfall conditions for the simulations: 10-inch, 20-inch, and 30-inch.

Identify the Range of Typical Watershed Areas Likely to be Developed

Based on discussions with the TAC, a range of representative watershed areas for development projects was identified. These were: 0.1 sq mi, 0.5 sq mi, 1 sq mi, and 2 sq mi. The consultant team assumed that in project watersheds larger than 2 sq mi the development would either require site specific continuous simulation modeling, or would be broken into multiple smaller sub watersheds with individual points of compliance.

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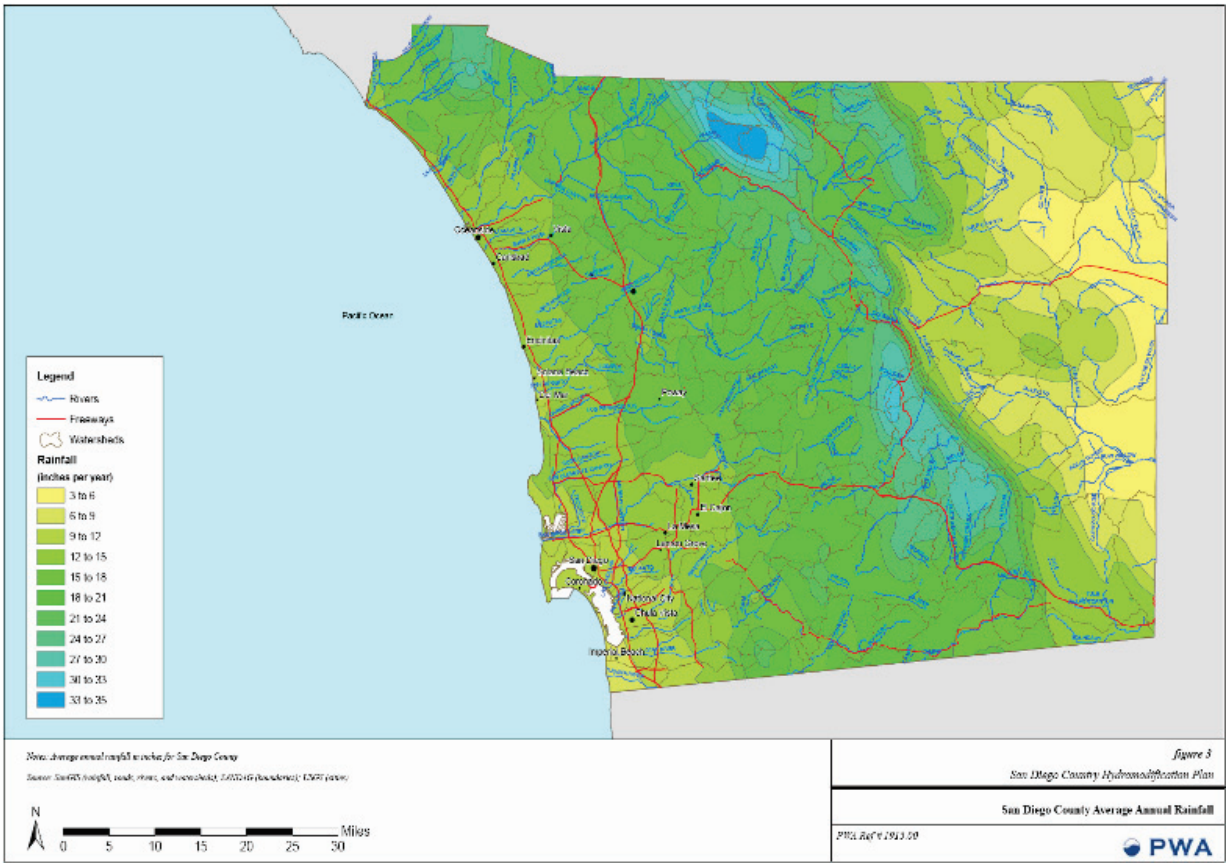

Figure 5-2. Rainfall Distribution in San Diego County

Identify a Range of Typical Receiving Channel Dimensions for Each Watershed Area

Empirical relationships have been developed to express channel dimensions (width, depth and, to a lesser extent, gradient) as a function of dominant discharge. Dominant discharge for a creek channel is the flow rate that transports the majority of sediment and creates/maintains the characteristic size and shape of the channel over time. Dominant discharge may also be referred to as bankfull flow. For undeveloped channels in semi arid parts of the US, dominant discharge is approximately equivalent to Q_5. For example, Coleman et al. (2005) found dominant discharge for streams in Southern California to average $Q_{3.5}$ (range = $Q_{2.1}$ – $Q_{6.7}$). Goodwin (1998) found dominant discharge to vary from Q_2 to Q_{10} for semi arid regions.

To capture natural variability in channel geometry, three different empirical channel geometry relationships were used to estimate receiving channel dimensions for the range of watershed areas and rainfall characteristics used in this study. The relationships were:

Coleman et al. 2005 (modified by Stein – personal communication) – derived from undeveloped channels in Southern California, tends to predict narrow, deep, steep dimensions.

$$\text{Width (ft)} = 0.6012 * Q_{bf}^{0.6875}$$
$$\text{Depth (ft)} = 0.3854 * Q_{bf}^{0.3652}$$

Where Q_{bf} is in cfs.

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Parker et al. 2007 – suitable for gravel channels, tends to predict wide, shallow, flat braided dimensions.

$$\text{Width (m)} = 4.63 * (Q_{bf}^{2/5}) / (9.81^{1/5}) * (Q_{bf} / \text{Sqrt}(9.81 * d_{50}) * d_{50}^{2}))^{0.0667}$$
$$\text{Depth (m)} = 0.382*((Q_{bf}^{2/5})/(9.81^{1/5})))$$

Where Q_{bf} is bankfull discharge in m^3/sec and d_{50} (diameter of median channel material) is in m.

The Parker equation was only used to assess gravel and cobble channel conditions.

Hey and Thorne 1986 tends to predict medium width, depth, and gradient channels.

$$\text{Width (m)} = 2.73*Q_{bf}^{0.5}$$

$$\text{Depth (m)} = 0.22 * \text{Width}^{0.37} * d_{50}^{-0.11}$$

Where Q_{bf} is in m^3/sec and d_{50} is in m.

(Note that original combinations of English and metric units described in the source papers were used rather than standardized these equations in one set of measurements.)

The three equations cover a wide range of likely field conditions, from deeply incised channels (Coleman et al. 2005) to wide, braided conditions (Parker 2007). Note that for the sensitivity analysis we set d50 in the Parker et al equation to the d_{50} of the channel material being tested, and did not use the equation for channels where the material was sand or silt.

The equations produce estimations of width and depth. To estimate a slope for each combination of channel dimensions, the velocity associated with each cross section was calculated (by dividing discharge by width multiplied by depth) and then the slope was calculated that corresponded with that velocity using Manning's equation.

$$\text{Velocity (ft/sec)} = 1.486 \frac{HR^{0.67} * s^{0.5}}{n}$$

Where HR is channel hydraulic radius, s is slope, and n is Manning's roughness coefficient (see definitions).

For the purposes of the sensitivity analysis, a value of n of 0.035 was assumed, corresponding to a non vegetated, straight channel with no riffles and pools. This is a reflection of the small, ephemeral receiving channels which are most prevalent in Southern California developments. A relatively low value was used at the request of the San Diego RWQCB so that the values erred on the conservative side. Some members of the TAC considered the value of n to be too conservative.

These equations all require a value for bankfull discharge. Bankfull discharge (assumed to be approximately Q_5) was estimated using the USGS regional regression for undeveloped watersheds in the South Coast region (Waananen and Crippen 1977). This equation calculates Q_5 as a function of watershed area and mean annual precipitation, based on empirical observations of USGS gauges. The relationship is:

$$Q5 \text{ (cfs)} = 0.4 * \text{Watershed Area}^{0.77} * \text{Mean Annual Precipitation}^{1.69}$$

Where watershed area is in square miles and precipitation is in inches.

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For each combination of typical watershed area and mean annual rainfall, Q_5 was calculated using the USGS regression equation, then three sets of channel dimensions were calculated based on the three channel equations. This provided the range of channel conditions to simulate for the critical flow analysis. The total number of channel conditions was as follows:

3 rainfalls (10, 20, 30 inches per year)
4 watershed areas (0.1, 0.5, 1, 2 square miles)
3 channel width, depth, and slope combinations (narrow/deep, medium, wide/shallow)
= 36 combinations of receiving channel geometry

Identify a Range of Typical Channel Materials for Receiving Channels

The consultant team identified a range of typical channel materials based on feedback from the TAC and experience gained working in San Diego County. The identified materials are not intended as a comprehensive list of possible channel materials, but to cover the range of critical shear stresses likely to be encountered in typical western San Diego County channels. The identified range is as follows:

Table 5-1. Critical Shear Stress Range in San Diego County Channels

Material	Critical Shear Stress (lb/sq ft)
Coarse Unconsolidated Sand	0.01
Alluvial Silt (Non Colloidal)	0.045
Medium gravel	0.12
Alluvial silt/clay	0.26
2.5 inch cobble	1.1

Combining the five channel material types (coarse unconsolidated sand, alluvial silt, medium gravel, alluvial silt/clay, and 2.5 inch cobble) with the 36 combinations of channel geometry produces 180 potential combinations of receiving channel characteristics. Ten sets of combinations were omitted from the analysis because they produced physically unrealistic conditions, such as slopes that were too steep to be developed. Exclusion of these results did not significantly affect the overall results.

Develop Shear Stress Rating Curves

Rating curves for the 36 different combinations of receiving channel characteristics were developed using the same Excel worksheet that forms the basis for the Qcrit calculator developed for Track 2 (described in later sections). Using channel cross section, roughness, and gradient input by the user, the tool calculates the average boundary shear stress associated with a range of different flow depths to construct a rating curve (discharge on the x axis versus shear stress on the y axis). It then identifies the flow rate where average boundary shear stress equals critical shear stress for the channel materials. This is the critical flow (Qcrit). By dividing this number by Q_2, we identify the low flow threshold for each simulation as a function of Q_2. (e.g., $0.1Q_2$ where the critical flow is one tenth of the Q_2 flow).

The tool calculates a shear stress rating curve for a range of flows between 1 and 100 percent of the bankfull flow depth. Bankfull flow depth is defined as the flow depth that corresponds to the dominant discharge for a given channel. The range 1 to 100 percent of bankfull is used because critical flow rarely falls outside these values. The tool then calculates a power function between the points to allow for interpolation. For each of the depths, the tool calculates discharge and average boundary shear stress exerted on the bed, as described below.

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Calculating Average Boundary Shear Stress

Average boundary shear stress is the force that flowing water exerts on channel materials. For a given channel cross-section, it is calculated as follows:

$$\tau_b = \gamma * HR * s$$

where τ_b = average boundary shear stress (lb/ft^2)

γ = unit weight water (62.4 lb/ft^3)

HR = Hydraulic radius (cross section area / wetted perimeter)

s = channel slope (ft/ft)

For each depth increment between 1 and 100 percent of bankfull, cross section area, wetted perimeter, HR and τ_b are calculated. Slope is a constant for the cross section. These calculations produce a rating curve for boundary shear as a function of flow depth.

Calculating Discharge

This step converts flow depth to flow rate (Q) so that the rating curve may be expressed as a function of Q. For each depth increment between 1 and 100 percent of bankfull, the flow rate is calculated using Manning's equation:

$$\text{Velocity (ft/sec)} = 1.486 \frac{HR^{0.67} * s^{0.5}}{n}$$

where V = velocity (ft/sec)

n = Manning's roughness coefficient

HR = hydraulic radius (ft)

For the sensitivity analysis, Manning's n was assumed to be 0.035, which is typical for a non-vegetated ephemeral channel. This assumption was made because most developments covered by the HMP would discharge to receiving channels relatively high in the watershed and with little summer flow. Interim sensitivity analysis found that relative to other factors such as critical shear stress, the range of roughness factors found in receiving channels had little effect on the estimated critical shear flow rate.

Discharge is calculated as velocity multiplied by cross section area (calculated for each cross section). The result of these calculations is a rating curve showing boundary shear stress for the receiving channel as a function of discharge, with the highest point representing bankfull depth (see Figure 5-3 below). Rating curves were created for each of the 36 combinations of channel characteristics.

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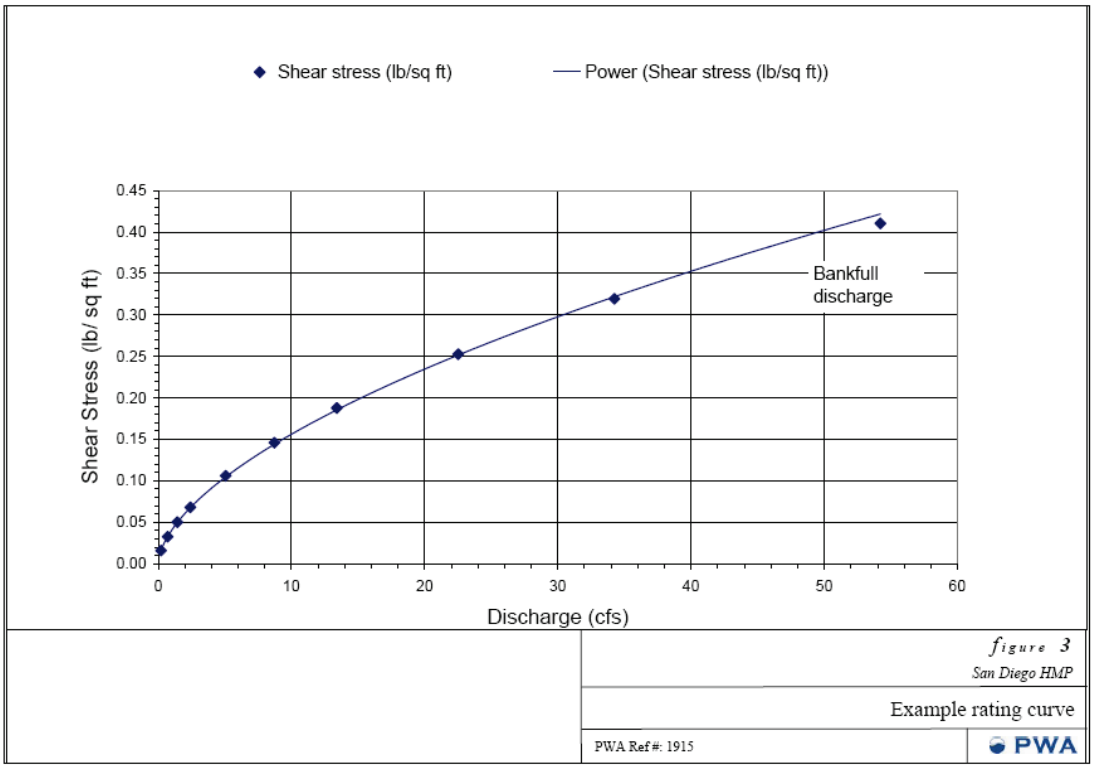

Figure 5-3. Shear Stress Rating Curve for an Example Channel (0.6%, 14 Feet Wide, 1.3 Feet Deep).

These curves were created for 36 different combinations of channel characteristics.

Identify Critical Flow for the Channel and Material

Qcrit is the flow rate at which boundary shear stress equals critical shear stress. A power function interpolates the discharge versus boundary shear stress rating curve, to allow calculation of an intercept between the rating curve and critical shear stress. The critical shear stress for each channel material was plotted horizontally from the Y axis until it intercepted the rating curve. The intercept point was extended vertically to the X axis, showing the Qcrit (Figure 5-4). In this way, Qcrit was calculated for each of the five channel materials using each of the 36 rating curves representing different channel dimensions. As mentioned above, 10 combinations unlikely to occur in nature were eliminated, resulting in a total of 170 Qcrit calculations.

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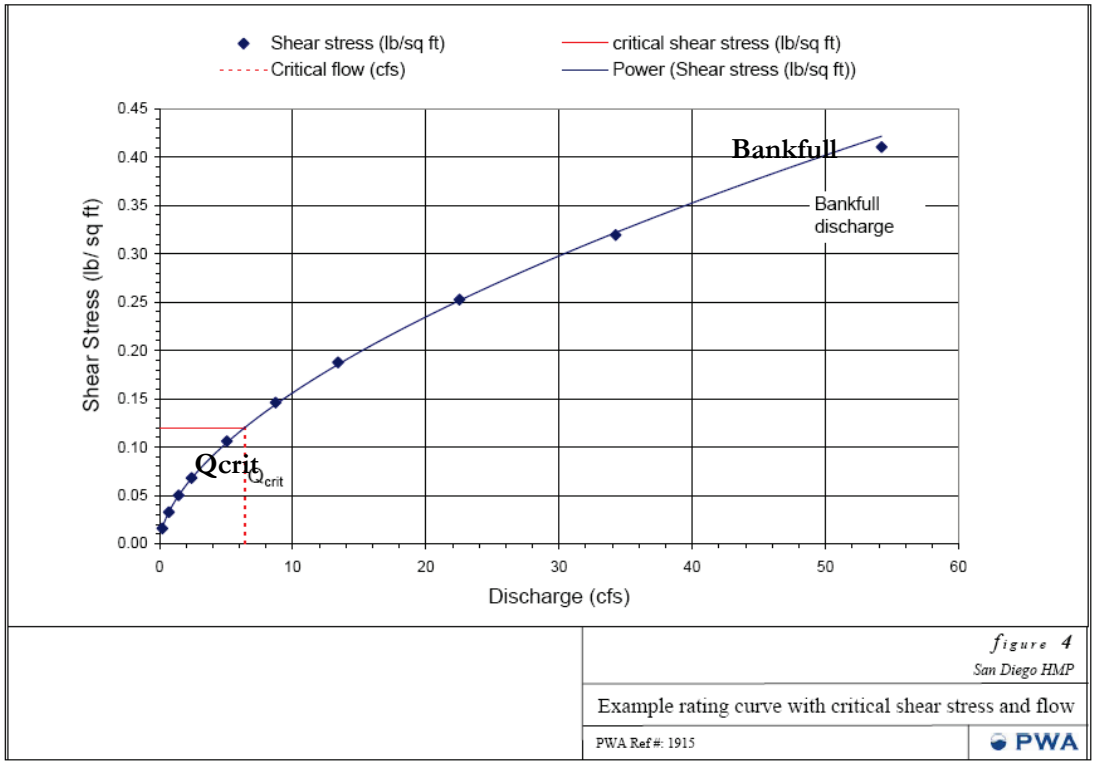

Figure 5-4. Example of a Rating Curve with Critical Shear Stress for Medium Sized Gravel.

In this example critical shear stress = 0.12 lb/sq ft and critical flow Qcrit = 6.4 cfs.

Express Critical Flow as a Function of Q_2

As described above, each rating curve represents a particular combination of watershed area and channel dimensions. Q_2 was calculated for each combination using the USGS regional regression for Q_2 as described above. By dividing the calculated Qcrit by the appropriate Q_2, Qcrit as a proportion of Q_2 was calculated for the 170 scenarios. These Qcrits were then plotted by material type, showing mean and one standard deviation either side of the mean. Note that although Q_5 is assumed as bankfull discharge, critical flow is expressed as a function of Q_2 as has become standard for HMPs.

The results show the high degree of variability in Qcrit based on different channel materials. It is important to note that in field conditions many of the most extreme cases (examples with very high or very low thresholds) would tend to evolve to conditions that yielded critical flows closer to the bankfull discharge because channels have a tendency to self equilibrate. For example, channels with materials that have very low critical flows such as unconsolidated sand tend to erode and either flatten (lowering shear stress, and so increasing critical flow rate) or armor (increasing flow resistance, and increasing critical flow rate). Likewise, channels with materials that have very high thresholds tend to either become steeper due to deposition (increasing shear stress and lowering critical flow rate) or fill in with finer material (reducing resistance and lowering critical flow rate).

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As the results of this analysis demonstrate, critical flow is extremely variable among channel materials and, for a given channel material, can vary significantly with channel configuration (slope, width/depth ratio etc.). Unconsolidated fine sediments can be mobilized by extremely low flows in the absence of clays or other consolidating elements with the structure of the channel. This result is based on literature values for critical shear stress for unconsolidated materials and may not be realistic for natural channels. Therefore in setting flow thresholds this result should be balanced with the recognition that natural channels are likely to include some consolidating fraction within their structure, as well as practical considerations associated with controlling trickle flows that represent the smaller fractions of Q_2 analyzed in this study.

5.1.4 Tool for Calculating Site-Specific Critical Flow

Background

The consultant team developed a tool for calculating a site-specific low flow threshold based on local conditions. The low flow threshold is based on Qcrit for the receiving channel, which is calculated based on channel geometry (width, depth, and gradient), channel materials, and watershed area.

The approach taken was to develop an Excel spreadsheet model to calculate the boundary shear stress associated with a range of flows up to Q_5 for a given channel width, depth and slope, then plot the critical shear stress for the channel material on this rating curve over to identify the flow where boundary shear stress equals critical shear stress.

The development steps were as follows:

1. Develop simplified channel cross section and gradient inputs
2. Calculate a shear stress rating curve
3. Characterize channel materials in terms of critical shear stress
4. Plot critical shear stress of the receiving channel on the rating curve to determine Qcrit
5. Divide the critical low flow by the project area as a proportion of the receiving water watershed area to determine the allowable flow at the point of compliance

Simplified Channel Cross Section and Gradient Inputs

The tool generates a flow rating curve based on user inputs describing the receiving channel dimensions (cross section) and gradient. The first step in developing the tool was to create a template for inputting the required channel parameters. The template assumes a simple trapezoidal cross section, with the following elements:

1. Channel width at a well defined break point corresponding to top of bank (a)
2. Channel width at the toe of the bank (b)
3. Channel depth (elevation difference between bank top and channel bed) (c)

Assumptions:

1. Receiving channels can be reasonably represented by a simple trapezoidal cross section
2. The top of bank corresponds reasonably to the level inundated by the dominant discharge (approximately equal to Q_5)

If top of bank is much higher than the dominant discharge flow depth (e.g. in an incised channel) the applicant should adjust the cross section to represent the lower part of the channel so that depth (c) corresponds approximately to the Q_5 depth.

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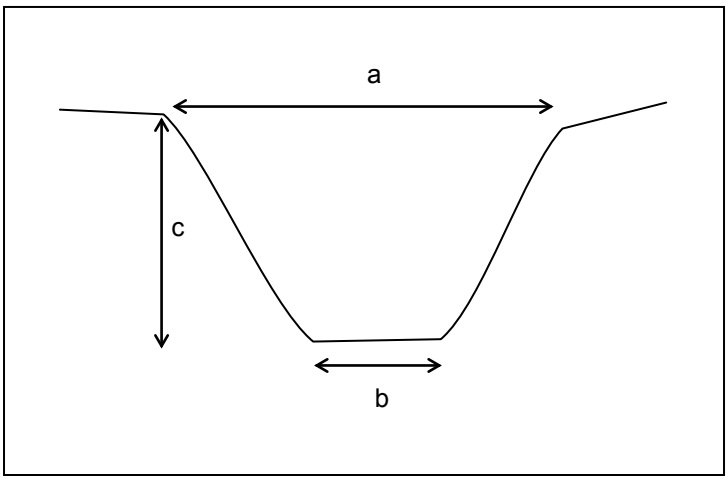

Figure 5-5. Bankfull Cross Section

Develop a Shear Stress Rating Curve

The tool creates a shear stress rating curve for a range of flows between 1 percent of the bankfull flow depth and bankfull depth [flow at depth (c)]. The range 1 to 100 percent of bankfull is used because critical flow rarely lies outside these values. The tool then calculates average boundary shear stress and discharge as previously described in section 5.1.3.

Characterize Receiving Channel Materials in Terms of Critical Shear Stress

The critical shear stress of the channel materials is estimated using a look-up table based on values published by the U.S. Army Corps of Engineers (Fischenich). The tool provides values of critical shear stress for a wide range of channel materials in a drop down box so the user can select from the list, or select a median particle size (d_{50}). The calculator also allows the user to input a vegetated channel material when this is appropriate (when the channel is completely lined in vegetation).

Calculating Critical Flow for the Receiving Water

Critical flow is the discharge at which boundary shear stress equals critical shear stress. The tool uses a power function to interpolate the discharge versus boundary shear stress rating curve. The critical shear stress for the weaker of the bed or banks is plotted horizontally from the Y axis until it intercepts the rating curve. The intercept point is extended vertically to the X axis, showing the critical flow (see Figure 5-4). This represents the low flow threshold for the receiving water. Note that the creation of a site-specific rating curve allows the low flow threshold to be expressed as a specific flow rate (Q) rather than a fraction of Q_2.

Calculating Critical Flow for the Point of Compliance

The tool calculates critical flow based on the characteristics of the receiving water. Where the project watershed does not make up the entire watershed area for the receiving water, it is necessary to divide the low flow threshold based on the percentage of the watershed that is occupied by the project site[2]. For example, if a project occupies one tenth of the receiving water's watershed at the point of compliance and the critical flow level is 50 cfs, the project's 'share' of the non-erosive flow is 5 cfs (50 x 1/10). This prevents the

[2]. It is not necessary to adjust the "off-the-shelf" thresholds developed for Track 1 for point of compliance, since they are expressed as a fraction of Q2 for the relevant project area.

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cumulative impact of future developments from exceeding critical flow in the receiving water, since the critical flow is apportioned according to watershed area.

$$\text{Critical flow at Point of Compliance} = \text{Critical Flow at Receiving Water} \times \frac{\text{Project Area}}{\text{Watershed Area}}$$

The critical flow at the point of compliance is the low flow threshold for the project draining to this point.

Conversion of Critical Flow to Flow Class

To avoid having an infinite range of flow control standards, the calculator assigns the discharge into one of three classes based on its value as a function of the estimated Q_2. These classes are: $0.1Q_2$, $0.3Q_2$, $0.5Q_2$. For example, a channel where the critical flow is $0.15Q_2$ would be assigned a flow threshold of $0.1Q_2$. Channels with critical flows less than $0.1Q_2$ are assigned to the $0.1Q_2$ class. The class flow rate is calculated (i.e. the critical flow corresponding to the assigned fraction of Q_2) and expressed as the final output of the tool.

5.1.5 Third Party Review

West Consultants conducted an in-depth, independent third-party review of the preliminary flow threshold analysis in December 2008. The following list presents a summary of the third-party review.

- Concern was noted regarding the lower flow control limit suggested by the modeling results (10 percent of the 2-year runoff event), especially with regard to implementation practicality and its derivation based solely on sediment movement.
- The review noted that literature suggests standard hydrologic design practices may be inadequate for characterizing cumulative effects of urbanization for flow events more frequent than the 2-year runoff event – specifically with regard to sediment transport and channel disturbance potential.
- The review questioned the use of a specific frequency discharge as an indicator of shear stress to move particles given the variability of other site-specific parameters such as grain size, slope, roughness, and channel shape.
- The review suggested that hydraulic and sediment transport results should be supplemented with actual field data (slope, sediment properties, roughness, and channel shape) to set thresholds (flows, shear stresses, or velocities).
- Concern was noted regarding the use of a single and conservative uniform size for sediment grain sizes. The use of a distribution of sediment grain sizes was recommended.

PWA agreed with the recommendation that additional field data (channel dimensions and slope, and sediment size distribution) is desirable both to verify receiving channel conditions and to make direct measurements of critical shear stress. Efforts were made to pursue the former data, but it was not possible to obtain field permission in time to meet the project deadlines. As the third-party review notes, any revised lower flow threshold calculated using field data is as likely to decrease as increase.

Subsequent to the preliminary flow threshold analysis, PWA ran sediment transport models using a distribution of grain sizes (rather than a single uniform size) for two channel configurations. The results of this limited sensitivity test (see discussion below titled "Summary of Sensitivity Analysis") did not show a consistent trend toward more or less erosion.

For more detailed information regarding West Consultants' independent third-party review, refer to the memo titled *Review of Hydromodification Work by Phillip Williams and Associates (PWA),* prepared by West Consultants and dated December 19, 2008 (Appendix D).

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5.1.6 Summary of Sensitivity Analysis

Subsequent to the preliminary flow threshold analysis, the Copermittees requested that a sensitivity analysis be conducted based on historical rainfall records in the vicinity of the test watershed sites. The purpose of the sensitivity analysis based on the revised rainfall input data is described below. There were two potential concerns associated with the use of the hydrologic analysis developed in the preliminary flow threshold analysis.

- First, the analysis used a single rainfall time series (Lindbergh Field) for all simulations. Rainfall records for other areas were synthesized by taking the difference in mean annual rainfall between a nearby rain gauge and developing a linear adjustment for the Lindbergh series (e.g., if the test site's mean annual rainfall is 15 percent greater than the mean annual rainfall at Lindbergh, then 15 percent is added to all hourly rainfalls). The preliminary flow threshold analysis used this scaled data approach since other data were not available at the time of the initial analysis. Long-term rainfall data for 20 gauges throughout San Diego County have subsequently been prepared and are thus more relevant to the test simulations performed for this study. A test hydrologic analysis showed significant hydrologic response differences between the historical rainfall record for Lower Otay Reservoir and the scaled data from Lindbergh Field.
- Second, the preliminary flow threshold analysis used an "annual peak" method to calculate the rainfall recurrence interval, rather than a partial duration series method. The two methods result in significantly different predictions of the two year runoff event (Q_2.). From discussions with rainfall statistical experts at the Hydrologic Research Center, it has been determined that the partial duration series is a more applicable rainfall series for the semi-arid climate in San Diego County. Partial duration flow statistics have been prepared and the test hydrologic analysis showed significant hydrologic response differences between the partial duration series and annual peak series methods.

There is significant variability in the HEC-RAS modeling results for the different channel and sediment scenarios, as reflected in the results of the preliminary flow threshold analyses. Therefore, it is important to focus on the general trends reflected in the sensitivity analysis results rather than the specific numerical results. As such, the sensitivity analysis modeling results confirm that the selection of rainfall data, flow frequency methodology, and sediment size distribution do affect the results of the flow control analysis. However, the cumulative effect of these changes did not affect the consultant's preliminary conclusion that a singular countywide lower flow threshold limit would converge on 10 percent of the 2-year runoff event.

For more detailed information regarding the PWA sensitivity analysis based on revised rainfall data, refer to the memo titled *Sensitivity of Changing Rainfall Series and Analysis on Erosion Threshold*, prepared by PWA and dated January 5, 2009 (Appendix A).

5.2 Categorization of Streams

Information for this section was prepared in association with a concurrent hydromodification study by the SCCWRP. As discussed with the San Diego RWQCB staff, results of the SCCWRP study have been included in the San Diego HMP to comply with the following Permit Order requirement.

- Identification of geomorphic standards for channel segments receiving storm water discharges from Priority Projects (Permit Section D.1.g.(1)(a) and (m)). The purpose of these standards is to maintain or improve channel stability.

The SCCWRP study, which is being conducted for the entire Southern California region between Ventura and San Diego Counties, was originally funded by a Prop 50 grant. Because of funding issues that required a work stoppage in late 2008, the County of San Diego has provided funding to SCCWRP to continue its work and meet deadlines required for the San Diego HMP submittal timeline. The overall SCCWRP study

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approach is summarized in the document titled, "*Stream Channel Mapping and Classification Systems: Implications for Assessing Susceptibility to Hydromodification Effects in Southern California," SCCWRP Technical Report 562, April 2008*.

Screening tools, prepared by SCCWRP to identify channel susceptibility to hydromodification impacts, are now available in 2009 on a testing basis. Such tools include the following:

- A tiered, hierarchical approach for channel erosion susceptibility evaluation of multiple channel types. This approach includes determination of a vertical channel stability analysis (including transportability of channel bed material) and a lateral channel stability analysis (including potential erodibility of channel banks and subsequent channel migration). These rapid assessment tools provide a preliminary rating of stream susceptibility to erosion (Very High, High, Medium, or Low) and are provided for a variety of geomorphic scenarios including alluvial fans, broad valley bottoms, incised headwater channels, etc.

Eventually, SCCWRP tools will be expanded to help quantify the effect of a proposed project on the receiving stream's susceptibility to erosion, based upon factors such as size of the project, impervious footprint, location of the project within the watershed, and stability of the receiving water body.

Development of HMPs in most Southern California counties is correlated to the ultimate findings of the SCCWRP study, which was originally scheduled for release in March 2010. Though individual regions and municipalities would not be tied to acceptance of the SCCWRP results, it is generally acknowledged that SCCWRP's formulation of regional standards for hydromodification management will serve as a solid baseline for development of HMPs for specific regions in Southern California.

For implementation with the San Diego HMP, the SCCWRP screening tools will be used in association with the decision matrix to determine the appropriate level of mitigation required for a particular project. Where receiving streams have a high susceptibility to erosion, then more restrictive mitigation solutions will be required as compared to receiving streams with a low susceptibility to erosion.

The full lateral and vertical susceptibility decision matrices are included on Pages 4 and 5 of the overall HMP Decision Matrix, located in Chapter 6 of this HMP. Page 3 of the HMP Decision Matrix includes recommendations regarding the appropriate lower flow threshold, based upon the SCCWRP susceptibility analysis as well as the critical flow calculator result.

Channel screening tools will assess the domain of analysis from a proposed project. The domain of analysis is defined as the reach lengths upstream and downstream from a project for which hydromodification assessment is required. The domain of analysis determination includes an assessment of the incremental flow accumulations downstream of the site, identification of hard points in the downstream conveyance system, and quantification of downstream tributary influences.

The effects of hydromodification may propagate for significant distances downstream (and sometimes upstream) from a point of impact such as a stormwater outfall. Accordingly, it may be necessary to conduct geomorphic screening reconnaissance across a domain spanning multiple channel types/settings and property owners.

For purposes of this HMP, the extents of the domain of analysis are defined as follows:

- Proceed downstream until reaching one of the following:
  - At least one reach downstream of the first grade-control point (preferably second downstream grade control location)
  - Tidal backwater/lentic (still water) waterbody
  - Equal order tributary (Strahler 1952)

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- Accumulation of 50 percent drainage area for stream systems (note that SCCWRP is still determining specific flow accumulation percentage)
- Accumulation of 100 percent drainage area for urban conveyance systems (storm drains, hardened channels, etc.)

OR demonstrate sufficient flow attenuation through existing hydrologic modeling.

- Proceed upstream for 20 channel top widths OR to the first grade control point, whichever comes first. Identify hard points that can check headward migration and evidence of active headcutting.

If the screening analysis is conducted on a project-specific basis, there may be instances in which a high susceptibility rating is obtained at the first point of field observation. In these cases, it may be sufficient to limit the analysis to the point/property of impact.

The SCCWRP screening tools, as well as details to determine the domain of analysis, are provided in Appendix B.

5.3 Cumulative Watershed Impacts

California Environmental Quality Act (CEQA) Guidelines §15065 mandate a finding that a project has a significant effect on the environment when it has:

> "…possible environmental effects that are individually limited but cumulatively considerable. 'Cumulatively considerable' means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probably future projects."

Such assessments are inherently difficult and rarely quantifiable. However, it is often possible to incorporate within a project measures that limit or offset potential impacts to such a degree that reasonable minds can agree the net incremental impact of the project is insignificant regardless of the connections to, or multiplying effects of, other projects. To this end, a river reach sensitivity analysis was performed for the San Diego River. The intent of this analysis was to determine the level of cumulative watershed impacts that would result in a significant alteration to the San Diego River's flow duration curve. Data from this analysis are being used to determine exemption criteria for similar-sized river systems in San Diego County, since detailed long-term hourly streamflow data is not available for most of those rivers. The results of the sensitivity analysis are discussed in detail in Section 6.1.

5.3.1 Hydromodification Management

The purpose of the HMP is to address the cumulative effect of many individual development projects on stream erosion. In the HMP, the watershed-scale effect is addressed through conditions placed on individual development projects.

Also, the HMP implements a regulatory standard. A project's compliance with regulatory standards may be used to help determine whether the project may have a significant impact on the environment, either individually or cumulatively.

Two questions have been raised with regard to how the HMP addresses cumulative impacts:

1. Are the low-flow thresholds (the maximum rate at which on-site detention facilities can be drained) low enough to prevent stream erosion, when viewed in connection with the effects of other projects?

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2. With regard to the specific exemption proposed for discharges where downstream sub-watershed imperviousness is at least 70 percent and the potential for cumulative impacts is "minimal," how will that potential be assessed?

Low Flow Thresholds

How does the low flow threshold for a receiving stream relate to the flow that must be controlled at a project site?

A low flow threshold for a receiving stream can be articulated as a particular runoff event (e.g., 0.1 Q_2., or one-tenth the 2-year peak runoff flow). Runoff to the stream is modeled based on the watershed area tributary to the stream, and the model is then calibrated to stream gauge data. In some cases, the low-flow runoff threshold developed from watershed-scale stream analysis has then been applied to each project area within the watershed. Implicitly, this standard is set so that if the entire watershed was made impervious, and runoff from the entire watershed was controlled through the facilities built to this standard, no increase in stream erosion would result.

This is an exceedingly conservative assumption, because:

- Not all areas of the watershed will be developed.
- Very low flows trickling from individual detention facilities will have losses before reaching streams.
- If bioretention facilities are used, the losses to infiltration and evapotranspiration are likely to be underestimated.

In addition to this general conservative bias, additional conservatism is built in when a project is located downstream from headwaters. To use an extreme example, a discharge from a development project near the mouth of a stream draining a large watershed would have an insignificant impact throughout the range of runoff flow rates encountered in the stream.

The degree to which these factors contribute to a conservative bias in the hydromodification standard can only be estimated; however, reasonable judgments can be made. These judgments should be subject to revision based on further insights gained in the first years of implementation.

Proposed Exemptions

How would the potential for cumulative impacts from many exempted projects be assessed? There are too many possible scenarios of development proposal and watershed condition to establish firm standards or guidelines. In this context, the concept of "minimal potential" for cumulative impacts means a judgment that—based on knowledge of the specific land use patterns and policies in the watershed—it is unlikely the total of all future newly developed projects discharging at the selected low-flow threshold would be significant when compared to the current (pre-project) total flow from the watershed. The requirements that Priority Development Projects on previously developed sites implement LID and use LID facilities such as bioretention for storm water treatment further ensure runoff rates and durations in highly developed watersheds will decrease rather than increase over time.

A similar approach applies to other proposed exemptions and in-lieu mitigation projects within the HMP. For example, the HMP states "the project proponent may consider implementation of planning measures such as buffers and restoration activities.… in lieu of implementation of storm water flow controls." In this case, cumulative impacts are addressed by the proviso that this option is available "in situations where the benefits of a proposed stream restoration project would *substantially outweigh the potential impacts* of additional runoff from a proposed project…" (emphasis added). The requirement that benefits "substantially outweigh" potential impacts for each individual project addresses the potential for cumulative impacts by

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ensuring that, even if many such scenarios were implemented in a watershed, the cumulative benefits would outweigh the cumulative impacts.

5.3.2 Summary

As with other cumulative impacts, the cumulative impacts on stream erosion of individual land development projects within a watershed can only be estimated. Judgments on the significance of potential cumulative impacts are based on a weight of evidence approach. Despite the lack of quantification and certainty, it is possible for stakeholders to agree that, in a given set of conditions, the potential for cumulative impacts is highly unlikely.

The HMP supports assessment of cumulative impacts through hydrologic modeling of entire watersheds. Translating the results of watershed modeling to standards applicable to individual development sites is a matter of estimation and judgment.

In the HMP, the potential for cumulative impacts is addressed through a built-in conservative bias in quantitative estimates of impacts and the effectiveness of flow-control measures needed to address those impacts, and through a conservative approach and individual review of proposed exemptions and in-lieu projects.

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6. REQUIREMENTS AND STANDARDS FOR PROJECTS

Priority Development Projects are required to implement hydrologic control measures so that post-project runoff flow rates and durations do not exceed pre-project flow rates and durations where they would result in an increased potential for erosion or significant impacts to beneficial uses or violate the channel standard (Permit Section D.1.g(1)(c)). The purpose of this chapter is to detail HMP applicability requirements, present hydromodification mitigation criteria and implementation options, and provide a framework for in-stream rehabilitation options.

6.1 HMP Applicability Requirements

To determine if a proposed project must implement hydromodification controls, refer to the HMP Decision Matrix in Figure 6-1 on the following page.

The HMP Decision Matrix can be used for all projects. For redevelopment projects, flow controls would only be required if the redevelopment project increases impervious area or peak flow rates as compared to pre-project conditions.

It should be noted that all Priority Development Projects will be subject to the Permit's LID and water quality treatment requirements even if hydromodification flow controls are not required.

As noted in Figure 6-1, projects may be exempt from HMP criteria under the following conditions.

- If the project is not a Priority Development Project
- If the proposed project does not increase the impervious area or peak flows to any discharge location.
- If the proposed project discharges runoff directly to an exempt receiving water such as the Pacific Ocean, San Diego Bay, an exempt river reach, an exempt reservoir, or a tidally-influenced area.
- If the proposed project discharges to a stabilized conveyance system that extends to the Pacific Ocean, San Diego Bay, a tidally-influenced area, an exempt river reach or reservoir.
- If the contributing watershed area to which the project discharges has an impervious area percentage greater than 70 percent
- If an urban infill project discharges to an existing hardened or rehabilitated conveyance system that extends beyond the "domain of analysis," the potential for cumulative impacts in the watershed are low, and the ultimate receiving channel has a Low susceptibility to erosion as defined in the SCCWRP channel assessment tool.

If the proposed project decreases the pre-project impervious area and peak flows to each discharge location, then a flow-duration analysis is implicitly not required. If continuous simulation flow-frequency and flow duration curves were developed for such a scenario, the unmitigated post-project flows and durations would be less as compared to pre-project curves.

Proposed exemptions for projects discharging runoff directly to the Pacific Ocean, San Diego Bay or to hardened conveyance systems which transport runoff directly to the Pacific Ocean or San Diego Bay are referred to the 2007 Municipal Permit. Per the Permit, hardened conveyance systems can include existing concrete channels, storm drain systems, etc.

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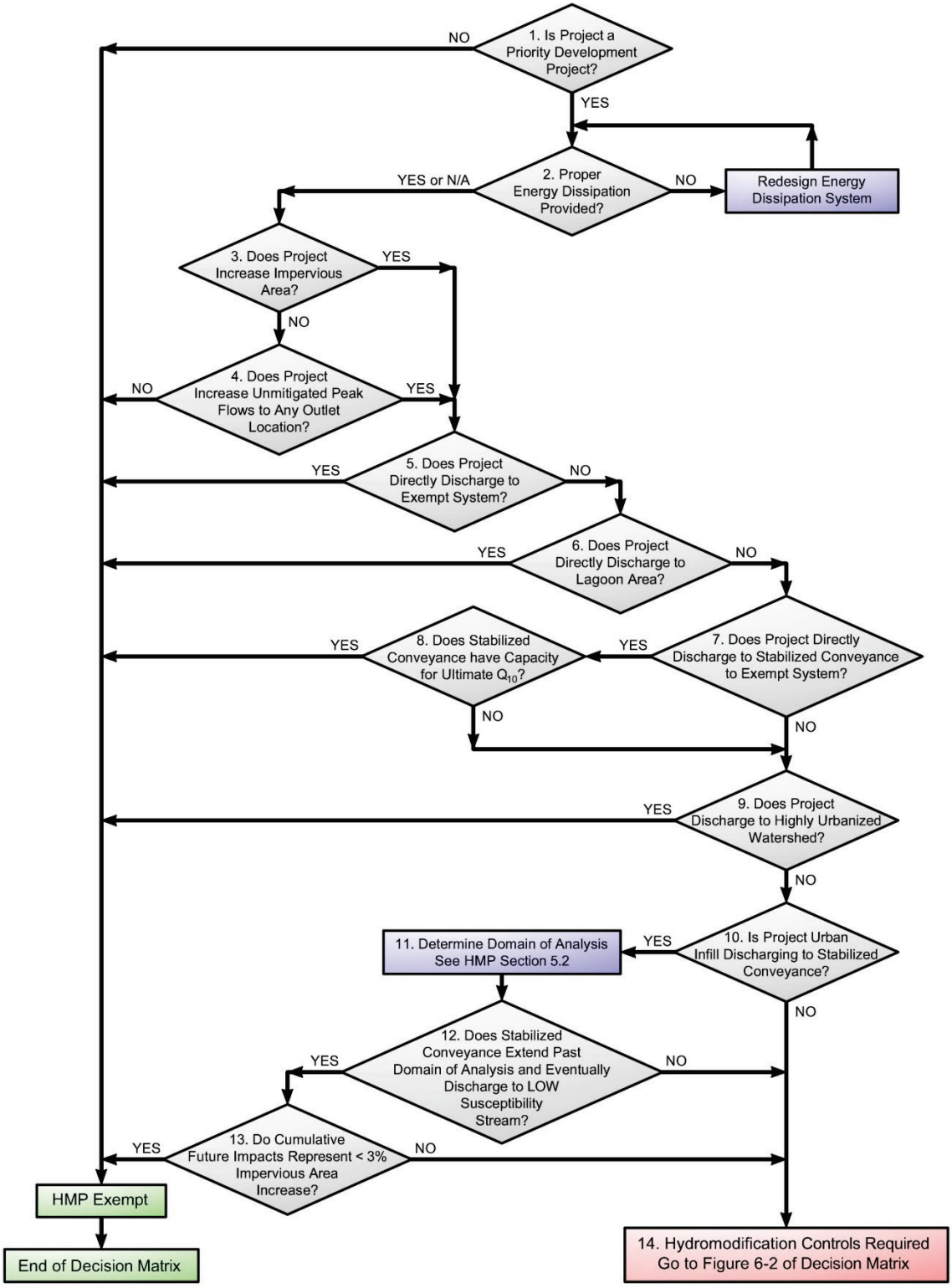

Figure 6-1. HMP Applicability Determination

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The Municipal Permit also contains language to support exemptions for projects located in highly urbanized areas where the impervious percentage exceeds 70 percent (as calculated for the sub-watershed between the project outfall downstream to the exempt receiving water).

- Figure 6-1, Node 1 – Hydromodification mitigation measures are only required if the proposed project is a Priority Development Project.
- Figure 6-1, Node 2 – Properly designed energy dissipation systems are required for all project outfalls to unlined channels. Such systems should be designed in accordance with the County of San Diego's Drainage Design Manual to ensure downstream channel protection from concentrated outfalls.
- Figure 6-1, Nodes 3 and 4 – Projects may be exempt from hydromodification criteria if the proposed project reduces the pre-project impervious area and if unmitigated post-project outflows (outflows without detention routing) to each outlet location are less as compared to the pre-project condition. The pre and post-project hydrologic analysis should be conducted for the 2 and 10-year design storms and follow single-event methodology set forth in the San Diego Hydrology Manual. This scenario may apply to redevelopment projects in particular.
- Figure 6-1, Node 5 – Potential exemptions may be granted for projects discharging runoff directly to an exempt receiving water, such as the Pacific Ocean, San Diego Bay, an exempt river system (detailed in Table 6-1), or an exempt reservoir system (detailed in Table 6-2).
- Figure 6-1, Node 6 – For projects discharging runoff directly to a tidally-influenced lagoon, potential exemptions may also be granted. Exemptions related to runoff discharging directly to tidally-influenced areas were drafted based upon precedent set in the Santa Clara HMP. Regarding the potential exemption, additional analysis would be required to assess the effects of the freshwater / saltwater balance and the resultant effects on lagoon-system biology. This assessment, which would be required by other permitting processes such as the Army Corps of Engineers, California Department of Fish and Game, etc., must be provided by a certified biologist or other specialist as approved by the governing municipality. Such discharges would include an energy dissipation system (riprap, etc.) designed to mitigate 100-year outlet velocities based upon a free outfall condition. Such a design would be protective of the channel bed and bank from an erosion standpoint.
- Figure 6-1, Nodes 7 and 8 – For projects discharging runoff directly to a hardened conveyance or rehabilitated stream system that extends to exempt receiving waters detailed in Node 5, potential exemptions from hydromodification criteria may be granted. Such hardened or rehabilitated systems could include existing storm drain systems, existing concrete channels, or stable engineered unlined channels. To qualify for this exemption, the existing hardened or rehabilitated conveyance system must continue uninterrupted to the exempt system. In other words, the hardened or rehabilitated conveyance system cannot discharge to an unlined, non-engineered channel segment prior to discharge to the exempt system. Additionally, the project proponent must demonstrate that the hardened or rehabilitated conveyance system has capacity to convey the 10-year ultimate condition flow through the conveyance system. The 10-year flow should be calculated based upon single-event hydrologic criteria as detailed in the San Diego County Hydrology Manual.
- Figure 6-1, Node 9 – As allowed per the Municipal Permit, projects discharging runoff to a highly urbanized watershed (defined as an existing, pre-project impervious percentage greater than 70 percent) may be eligible for an exemption from hydromodification criteria.

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Watershed impervious area calculations for this potential exemption will be measured between the project site discharge location and the connection to a downstream exempt receiving conveyance system, such as the Pacific Ocean, San Diego Bay, or an exempt river system. If a tributary area connects with the main line drainage path between the project site and the exempt system, then the entire watershed area contributing to the tributary shall be included in the calculation. Initial review of County land use indicates that this exemption will likely only apply in a limited number of urbanized coastal areas.

Percent imperviousness will be calculated based on an area-weighted average of impervious areas associated with commercial, industrial, single-family residential, multi-family residential, open space, and other miscellaneous areas (schools, churches, etc.) representative for the watershed. Representative percent imperviousness values for each land use type may correspond to values recommended in Table 3-1 of the County of San Diego's Hydrology Manual and detailed below or by more specific representative percent impervious calculations (using GIS, etc.), which are often required to represent impervious area percentages for park, school and church sites.

- Figure 6-1, Nodes 10 through 13 – For urban infill projects discharging runoff to an existing hardened or rehabilitated conveyance system, potential limited exemptions from hydromodification criteria may apply where the existing impervious area percentage in the watershed exceeds 40 percent. For the potential exemption application, the domain of analysis must be determined and the existing hardened or rehabilitated conveyance system must extend beyond the downstream terminus of the domain of analysis. The hardened or rehabilitated conveyance system must discharge to a receiving channel with a Low potential for channel susceptibility for this exemption to be granted (channel susceptibility determined using SCCWRP tool). Finally, continuous simulation sensitivity analysis shows that an exemption could only be granted if the potential future development impacts in the watershed would increase the watershed's impervious area percentage by less than 3 percent (as compared to the existing condition in the year 2010). If the potential future cumulative impacts in the watershed could increase the impervious area percentage by more than 3 percent (as compared to existing condition), then no exemption could be granted based on this item. Watershed impervious area calculations for this potential exemption, in which a project discharges to a watershed with an existing impervious areas greater than 40 percent, will be measured upstream from the outfall of the urban conveyance system (to a non-concrete, non-riprap-lined or non-engineered channel) to the contributing watershed boundary (the entire watershed contributing to the discharge outfall).

  Percent imperviousness will be calculated based on an area-weighted average of impervious areas associated with commercial, industrial, single-family residential, multi-family residential, open space, and other miscellaneous areas (schools, churches, etc.) representative for the watershed. Representative percent imperviousness values for each land use type may correspond to values recommended in Table 3-1 of the County of San Diego's Hydrology Manual and detailed below or by more specific representative percent impervious calculations (using GIS, etc.), which are often required to represent impervious area percentages for park, school and church sites.

Exemptions related to runoff discharging directly to certain river reaches were initially based upon the majority TAC opinion that such river reaches were depositional (aggrading) and that the effects of cumulative watershed impacts to these reaches is minimal. Subsequent justifications for the river reach exemptions were the result of a flow duration curve analysis for the San Diego River.

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Potential river reaches that would be exempt from hydromodification criteria include only those reaches for which the contributing drainage area exceeds 100 square miles and which have a 100-year design flow in excess of 20,000 cfs. For reference, proposed Caltrans HMP criteria allows for river/creek exemptions for drainage areas of only 10 square miles.

Per recommendations from members of the TAC, San Diego river systems meeting the drainage area and peak flow criteria are typically aggrading (depositional) and have very wide floodplain areas when in the natural condition. In all cases, river reaches meeting the drainage area and peak flow criteria are located downstream of large reservoir systems which effectively block outflows for most storm events. In addition, the river systems meeting these criteria typically have very low gradients. The combination of low gradients, significant peak flow attenuation, and wide floodplain areas translate to a low potential for channel erosion at the upper limit of the proposed geomorphic flow range (10-year flow event).

The intent of the San Diego River flow duration analysis was to determine the level of cumulative watershed impacts that would result in a significant alteration to the San Diego River's flow duration curve. Both the Fashion Valley and Mast Boulevard USGS stream gauge stations were used to develop long-term flow duration curves for the San Diego River. Data from this analysis will be used to determine exemption criteria for similar-sized river systems in San Diego County, since detailed long-term hourly streamflow data is not available for most of those rivers. Since the findings of the sensitivity analysis are planned to be extrapolated to other large river systems, implementation of additional gauging stations along other major river systems is recommended to analyze the differences in watershed response between the major watershed systems.

Assumptions related to the San Diego River sensitivity analysis are provided below:

- The flow duration charts show the San Diego River flow durations, plus simulated river flows durations for additional development scenarios.
- HSPF models were built to simulate converting existing undeveloped areas in the watershed into development with no stormwater flow controls.
- Increasing drainage area increments were modeled.
- To produce the 'simulated development' flow duration curves, the difference between developed and undeveloped flow duration curves was calculated for proposed hypothetical development .sites of varying sizes Then, the "difference hydrograph" was added to the San Diego River flow duration curve. This approach was used to avoid the potential problem of double-counting areas.

Tasks Related to Development of Flow Duration Analysis of San Diego River:

- Acquired 15-minute stream flow data from USGS (available from 1988 to present)
- Aggregated to 1-hour historical record
- Computed flow duration statistics for both records and determined if there is any substantial difference between the records (this is a QA step that allowed for removal any high flow 'outliers' in the record that could affect the results).
- Prepared a simple, characteristic HSPF model for the lower watershed for "existing conditions in an undeveloped area" – assumed Group D soils with sparse vegetation.
- Prepared a simple, parallel HSPF model for "developed conditions"

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- Ran both models and examined the difference between the resulting hydrographs (the hydromodification). A couple of different pre- and post-development models were generated to analyze the differences on a per unit area basis.
- Using the "difference hydrograph" created from the model simulations, progressively added development and recomputed the flow duration statistics.
- Examined the modified flow duration statistics and determined at what level of increased development the statistics became noticeably altered.

Results showed that increasing levels of development, in excess of 1,000 acres assumed to occur at the same location as the stream gauge station, would produce a very minor influence on the river's flow duration curve. These results demonstrated that certain portions of the San Diego River could be exempt from hydromodification requirements. Such HMP exemptions would only be granted for projects discharging runoff directly to the exempt river reach. Each municipality must define "direct discharge" based on the project site conditions. To qualify for the potential exemption, the outlet elevation must be between the river bottom elevation and the 100-year floodplain elevation and properly designed energy dissipation must be provided The supporting HSPF continuous modeling analysis results are summarized in a Technical Memo in Appendix F.

All exempt river reaches, which are presented in Table 6-1, have drainage areas in excess of 100 square miles and 100-year flow rates in excess of 20,000 cfs. In addition, all proposed river reaches are subject to significant upstream reservoir flow regulation, have wide floodplain or stabilized channel areas, and low gradients. This combination of factors, in association with field observations and years of historical perspective from the TAC members, justifies exemptions for direct discharges to the exempt river reaches provided that properly sized energy dissipation is provided at the outfall location.

Table 6-1. Summary of Exempt River Reaches in San Diego County

River	Downstream Limit	Upstream Limit
Otay River	Outfall to San Diego Bay	Lower Otay Reservoir Dam
San Diego River	Outfall to Pacific Ocean	Confluence with San Vicente Creek
San Dieguito River	Outfall to Pacific Ocean	Lake Hodges Dam
San Luis Rey River	Outfall to Pacific Ocean	Upstream river limit of Basin Plan subwatershed 903.1 upstream of Bonsall and near Interstate 15
Sweetwater River	Outfall to San Diego Bay	Sweetwater Reservoir Dam

Table 6-2 provides a summary of exempt reservoirs in San Diego County. Large reservoirs can be exempt systems from a hydromodification standpoint since reservoir storm water inflow velocities are naturally mitigated by the significant tailwater condition in the reservoir. HMP exemptions would only be granted for projects discharging runoff directly to the exempt reservoirs. Each municipality must define "direct discharge" based on the project site conditions. To qualify for the potential exemption, the outlet elevation must be at or below either the normal operating water surface elevation or the reservoir spillway elevation and properly designed energy dissipation must be provided.

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Table 6-2. Summary of Exempt Reservoirs in San Diego County

Reservoir	Watershed
Barrett Lake	Tijuana River
El Capitain Reservoir	San Diego River
Lake Dixon	Escondido Creek
Lake Heneshaw	San Luis Rey River
Lake Hodges	San Dieguito River
Lake Jennings	San Diego River
Lake Murray	San Diego River
Lake Poway	San Dieguito River
Lake San Marcos	San Marcos Creek
Lake Wohlford	Escondido Creek
Loveland Reservoir	Sweetwater River
Lower Otay Reservoir	Otay River
Miramar Lake	Los Penasquitos Creek
San Vicente Reservoir	San Diego River
Sweetwater Reservoir	Sweetwater River
Upper Otay Reservoir	Otay River

The final exemption category focuses on small urban infill projects where the potential for future cumulative watershed impacts is minimal. Continuous simulation models have been prepared for subwatershed areas containing between 40 and 70 percent existing imperviousness (as measured from the project site downstream to existing storm drain outfall) with the following assumptions.

Sensitivity Analysis for Urban Watersheds:

- Prepared HSPF models for 10-, 100-, and 500-acre watersheds with 40, 50, 60 percent imperviousness. Ran simulations and computed flow duration statistics for each of the urban watershed scenarios.
- Progressively increased the level of imperviousness to simulate infill development for the 10-, 100-, 500-acre watersheds.
- Ran infill scenario simulations and computed flow duration statistics
- Examined the infill flow duration statistics and determined at what level of increased development the statistics became noticeably altered.

Per results of the continuous simulation modeling and analysis of the resultant flow duration curves, urban infill projects have a relatively minor effect on the overall watershed's flow duration curve if the future cumulative additional impacts have the potential to increase the existing watershed impervious area by less than 3 percent. Potential urban infill project exemptions are only considered if the existing impervious area percentage of the sub-watershed is at least 40 percent. For sub-watersheds containing less than 40 percent existing impervious area, continuous simulation models indicated a more pronounced response to the flow duration curve with small urban infill developments.

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Urban infill projects may be exempt from HMP criteria if:

1. The potential future development impacts within the sub-watershed, as measured from the entire sub-watershed area draining to the existing conveyance system outfall, would not increase the composite impervious area percentage of the sub-watershed by more than 3 percent
2. The project discharges runoff to an existing hardened or rehabilitated conveyance system (storm drain, concrete channel, or engineered vegetated channel) that extends beyond the Domain of Analysis determined for the project site, and
3. The stabilized conveyance system eventually discharges to a channel with a Low susceptibility to erosion, as designed by the SCCWRP channel assessment tool.

The supporting HSPF continuous modeling analysis results, which analyzed existing sub-watershed scenarios of 40, 50, and 60 percent impervious area, are summarized in a Technical Memo in Appendix F.

As mentioned in Section 5.2, the Domain of Analysis is defined to extend downstream of a proposed project site to a location in a natural stream section to where a 50 percent flow accumulation is added to the stream system. For existing storm drain systems or hardened conveyance systems, the Domain of Analysis shall extend downstream to a location where a 100 percent flow accumulation is added to the storm drain or hardened conveyance system. These definitions may be revised in the future subsequent to ongoing work being conducted by the SCCWRP.

6.2 Flow Control Performance Criteria

Figures 6-2 and 6-3, which are part of the HMP Decision Matrix and are presented on the following pages, detail how lower flow thresholds would be determined for a project site. Figures 6-4 and 6-5, which detail the SCCWRP lateral and vertical channel susceptibility requirements, complete the HMP Decision Matrix.

The project applicant must first determine whether field investigations will be conducted pursuant to the SCCWRP channel screening tools. If the screening tools are not completed for a proposed project, then the site must mitigate peak flows and durations based on a pre-project condition lower flow threshold of $0.1Q_2$. While a project applicant would be held to the $0.1Q_2$ standard if channel screening tools and assessments are not conducted, less restrictive standards are possible for more erosion-resistant receiving channel sections if the screening tools are completed and the SCCWRP method indicates either a Medium or Low susceptibility to channel erosion.

In such a scenario, the project applicant would also use the critical shear stress calculator to assist in determination of the predicted lower flow threshold. The SCCWRP screening tools and critical shear stress calculator work in concert to determine the lower flow threshold for a given site. Lower flow limits determined by the calculator have been grouped into one of three thresholds – $0.1Q_2$, $0.3Q_2$ or $0.5Q_2$. "Low" susceptibilities from the SCCWRP tool generally correspond to the $0.5Q_2$ threshold, "Medium" susceptibilities generally correspond to the $0.3Q_2$ threshold, and "High" susceptibilities generally correspond to the $0.1Q_2$ threshold. The SCCWRP channel screening tools are required to identify channel conditions not considered by the critical shear stress calculator, which focuses on channel material and cross section. Conversely, the SCCWRP channel screening tools considers other channel conditions including channel braiding, mass wasting, and proximity to the erosion threshold. In cases where the critical shear stress calculator and the SCCWRP screening tools return divergent values, then the most conservative value shall be used as the lower flow threshold for the analysis.

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Low-Impact Development (LID) and extended detention facilities are required to meet peak flow and duration controls as follows:

1. For flow rates ranging from 10 percent, 30 percent or 50 percent of the pre-project 2-year runoff event ($0.1Q_2$, $0.3Q_2$, or $0.5Q_2$) to the pre-project 10-year runoff event (Q_{10}), the post-project discharge rates and durations shall not deviate above the pre-project rates and durations by more than 10 percent over and more than 10 percent of the length of the flow duration curve. The specific lower flow threshold will depend on results from the SCCWRP channel screening study and the critical flow calculator.
2. For flow rates ranging from the lower flow threshold to Q_5, the post-project peak flows shall not exceed pre-project peak flows. For flow rates from Q_5 to Q_{10}, post-project peak flows may exceed pre-project flows by up to 10 percent for a 1-year frequency interval. For example, post-project flows could exceed pre-project flows by up to 10 percent for the interval from Q9 to Q10 or from Q5.5 to Q6.5, but not from Q8 to Q10.

This HMP recommends the use of LID facilities to satisfy both 85th percentile water quality treatment as well as HMP flow control criteria. The Copermittees and the consultant team have developed detailed standards for LID implementation. These standards are provided in the San Diego County Model SUSMP.

The following methods may be used to meet mitigation requirements.

- Install BMPs that meet design requirements to control runoff from new impervious areas. BMPs including bioretention basins, vegetated swales, planter boxes, extended detention basins, etc. shall be designed pursuant to standard sizing and specification criteria detailed in the Model SUSMP and the HMP/LID Sizing Calculator to ensure compliance with hydromodification criteria.
- Use of the automated sizing calculator (San Diego Sizing Calculator) that will allow project applicants to select and size LID treatment devices or flow control basins. The tool, akin to the sizing calculator developed for compliance with the Contra Costa HMP, uses pre-calculated sizing factors to determine required footprint sizes for flow control BMPs. Continuous simulation hydrologic analyses are currently being developed to determine the sizing factors for various flow control options and development scenarios. The Sizing Calculator also includes an automated pond sizing tool to assist in the design of extended detention facilities for mitigation of hydromodification effects. Because of the Sizing Calculator's ease of implementation, and since hydromodification BMPs can also serve as treatment BMPs, it is anticipated that most project applicants will choose this option instead of seeking compliance through site-specific continuous simulation model preparation. The HMP/LID Sizing Calculator is an implementation tool, which is currently under development by the consultant team and will be completed by the time final HMP criteria go into effect.
- Prepare continuous simulation hydrologic models and compare the pre-project and mitigated post-project runoff peaks and durations (with hydromodification flow controls) until compliance to flow control standards can be demonstrated. The project applicant will be required to quantify the long-term pre- and post-project runoff response from the site and establish runoff routing and stage-storage-discharge relationships for the planned flow control devices. Public domain software such as HSPF, HEC-HMS and SWMM can be used for preparation of a continuous simulation hydrologic analysis.
- Points of compliance must be selected to conduct the comparisons of pre-project and post-project flows and durations. Generally, points of compliance are selected at locations along the project boundary where concentrated flows discharge from the project site. If a point of compliance is selected downstream of the project boundary, then the governing municipality should be consulted in advance of the hydromodification analysis. For projects which convey offsite runoff through the site, it is assumed that the offsite runoff would be separated from site runoff. If this is not the case, then the governing municipality should be consulted to further refine the points of compliance for the site (an interior project site point of compliance could be required in such a scenario).

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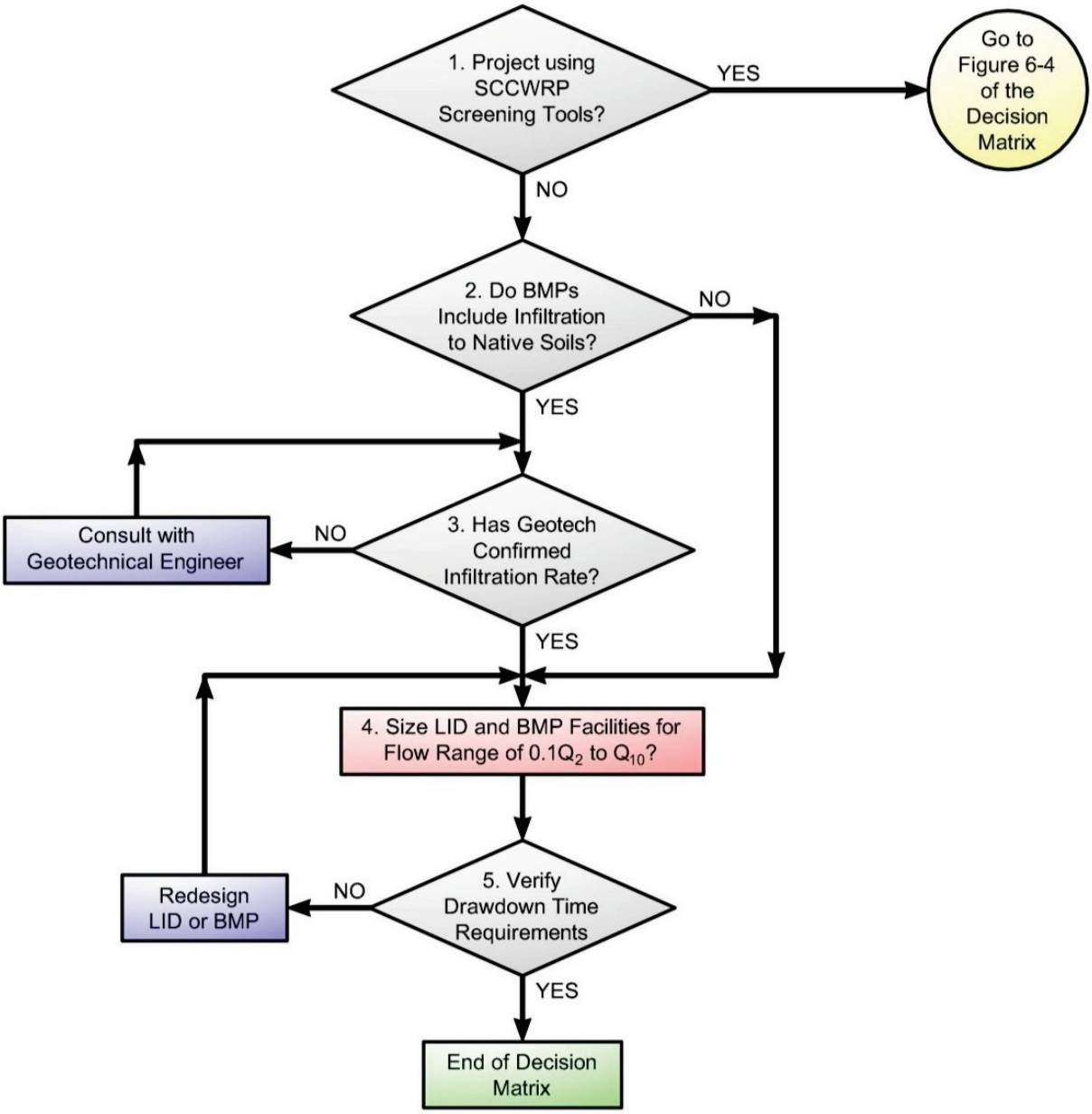

Figure 6-2. Mitigation Criteria and Implementation

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- Figure 6-2, Node 1 – If the project applicant chooses to complete SCCWRP channel screening tools, then the applicant moves to Figures 6-4 and 6-5 to assess the vertical and lateral susceptibility of the receiving channel systems. Depending on the results of the SCCWRP screening tools and critical flow calculator, it is possible that lower flow thresholds in excess of $0.1Q_2$ may be used. If the project applicant chooses not to complete the SCCWRP channel assessment, then the applicant proceeds with Figure 6-2 of the Decision Matrix.
- Figure 6-2, Node 2 – If the project's LID or BMP approach accounts for the infiltration of runoff to native surrounding soils (below amended soil layers), then consultation with a geotechnical engineer is required (Box 3). If the project mitigation approach does not account for infiltration of runoff, then the applicant would proceed to Box 4.
- Figure 6-2, Node 3 – A geotechnical engineer should determine the allowable infiltration rates to be used for the design of each LID or BMP facility. The geotechnical assessment should also identify potential portions of the project which are feasible for infiltration of runoff.
- Figure 6-2, Node 4 – In this scenario, the SCCWRP channel assessment was not conducted. Therefore, the project applicant would be held to the $0.1Q_2$ lower flow threshold. LID and extended detention facilities must be sized so that the mitigated post project flows and durations do not exceed pre-project flows and durations for the geomorphically-significant flow range of $0.1Q_2$ to Q_{10}.
- Figure 6-2, Node 5 - The Decision Matrix includes language regarding a drawdown time requirements so that standards set forth by the County's Department of Environmental Health are met. As a side note, the County's Department of Environmental Health has stated that the drawdown requirement would be applied to underground vaults in addition to extended detention basins and the surface ponding areas of LID facilities. Proper maintenance of hydromodification mitigation facilities is essential to guard against potential vector issues as well potential safety issues resulting from long-term standing water. If mitigation facility outlets clog, then runoff will bypass the system and potentially result in additional erosion problems downstream of a site.

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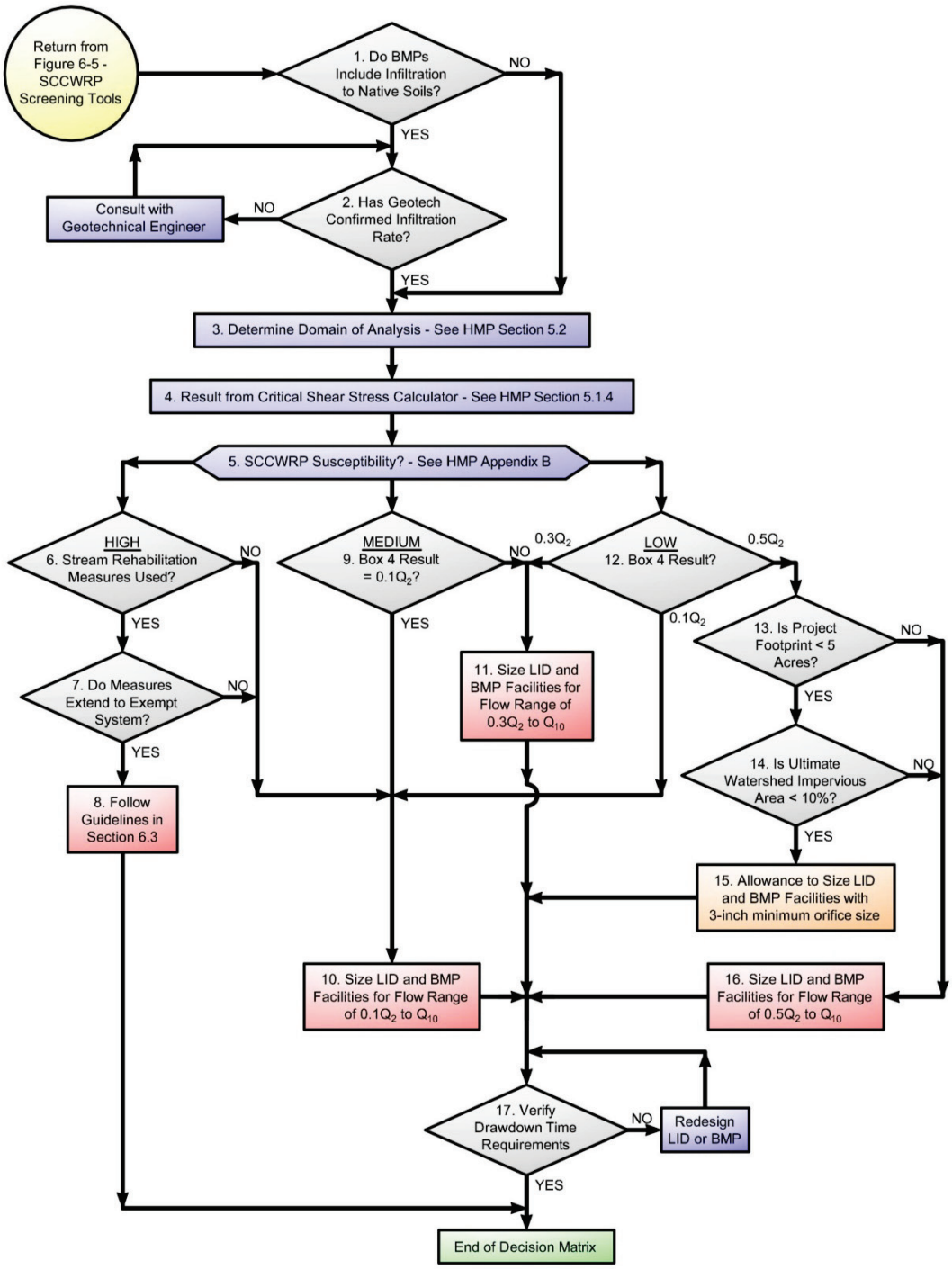

Figure 6-3. Mitigation Criteria and Implementation

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- Figure 6-3, Node 1 – Use of Figure 6-3 assumes that the project applicant conducted the SCCWRP channel assessment. Box 1 would begin following completion of both the lateral and vertical susceptibility flow charts depicted in Figures 6-4 and 6-5. Box 1 is a decision box asking if the project's LID or BMP approach accounts for the infiltration of runoff to native surrounding soils (below amended soil layers). If the answer is Yes, then consultation with a geotechnical engineer is required (Box 2). If the project mitigation approach does not account for infiltration of runoff, then the applicant would proceed to Box 3.
- Figure 6-3, Node 2 – A geotechnical engineer should determine the allowable infiltration rates to be used for the design of each LID or BMP facility. The geotechnical assessment should also identify potential portions of the project which are feasible for infiltration of runoff.
- Figure 6-3, Node 3 – Pursuant to criteria detailed in HMP Section 5.2, the Domain of Analysis is determined downstream and upstream of the project site. This determination is used to ascertain the required reach length for data collection (channel bed and bank material, channel cross section data, etc.) required for the critical flow calculator (see Box 4),
- Figure 6-3, Node 4 – Pursuant to criteria detailed in HMP Section 5.1.4, the project applicant would run the critical shear stress calculator to determine if the recommended critical flow threshold should be $0.1Q_2$, $0.3Q_2$, or $0.5Q_2$. This result will be compared to the result from the SCCWRP screening analysis (Box 5) to determine the final lower flow threshold for the project.
- Figure 6-3, Node 5 – Pursuant to criteria detailed in HMP Appendix B, the project applicant would determine both the lateral and vertical channel susceptibility rating per guidelines set forth by SCCWRP. If the lateral and vertical tools returned divergent results, then the more conservative result would be used. SCCWRP susceptibility ratings include "High", "Medium" and "Low."
- Figure 6-3, Node 6 – A project applicant would arrive at Box 6 if the SCCWRP channel susceptibility rating was determined to be "High." This decision box inquires as to whether stream rehabilitation measures such as grade control and channel widening will be used as a mitigation measure instead of flow control. It should be noted that stream rehabilitation options are only allowed if the existing receiving channel susceptibility is considered to be "High."
- Figure 6-3, Node 7 – Stream rehabilitation measures are only allowed if the proposed mitigation project extends to a downstream exempt system (such as an exempt river system). If the mitigation measure did not extend to an exempt system, then the potential for cumulative watershed impacts would be more pronounced.
- Figure 6-3, Node 8 – If stream rehabilitation measures are allowed, then guidelines outlined in Section 6.3 of the HMP should be followed to design the in-stream mitigation approach.
- Figure 6-3, Node 9 - A project applicant would arrive at Box 9 if the SCCWRP channel susceptibility rating was determined to be "Medium." If the result from the critical shear stress calculator is also "Medium" (or $0.3Q_2$), then the lower flow threshold would be $0.3Q_2$ (Box 11). If the result from the critical shear stress calculator is "High" (or $0.1Q_2$), then the more conservative value would be used and the lower flow threshold would be $0.1Q_2$ (Box 10).
- Figure 6-3, Node 10 – For stream reaches determined by either the critical flow calculator or the SCCWRP screening tools to have a "High" susceptibility to erosion, LID and extended detention flow control facilities should be sized so that the mitigated post project flows and durations do not exceed pre-project flows and durations for the geomorphically-significant flow range of $0.1Q_2$ to Q_{10}.

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- Figure 6-3, Node 11 - For stream reaches determined by either the critical flow calculator or the SCCWRP screening tools to have a "Medium" susceptibility to erosion, LID and extended detention flow control facilities should be sized so that the mitigated post project flows and durations do not exceed pre-project flows and durations for the geomorphically-significant flow range of $0.3Q_2$ to Q_{10}.
- Figure 6-3, Node 12 - A project applicant would arrive at Box 12 if the SCCWRP channel susceptibility rating was determined to be "Low." If the result from the critical shear stress calculator is also "Low" (or $0.5Q_2$), then the lower flow threshold would be $0.5Q_2$ (Box 16 – note potential waiver in Box 13). If the result from the critical shear stress calculator is "High" (or $0.1Q_2$), then the more conservative value would be used and the lower flow threshold would be $0.1Q_2$ (Box 10). If the result from the critical flow calculator is "Medium" (or $0.3Q_2$), then the more conservative value would be used and the lower flow threshold would be $0.3Q_2$ (Box 11).
- Figure 6-3, Node 13 – In some limited situations, namely small developments in rural or lightly developed areas, an allowance for a minimum outlet orifice size may be granted when the receiving channel susceptibility is "Low." This criteria may potentially be used for project footprints less than 5 acres. If the project footprint is greater than 5 acres, then the allowance may not be granted and the applicant would proceed to Box 16.
- Figure 6-3, Node 14 – The potential allowance discussed in Box 13 could only be granted if the ultimate potential impervious area in the sub-watershed is less than 10 percent. If there is potential for the sub-watershed impervious area to exceed 10 percent, then the minimum orifice size criteria may not be granted.
- Figure 6-3, Node 15 – If Boxes 12, 13, and 14 are satisfied, then mitigation facilities may be designed using a 3-inch minimum outlet orifice size.
- Figure 6-3, Node 16 - For stream reaches determined by either the critical flow calculator or the SCCWRP screening tools to have a "Low" susceptibility to erosion – and for projects where the minimum outlet orifice criteria does not apply - LID and extended detention flow control facilities should be sized so that the mitigated post project flows and durations do not exceed pre-project flows and durations for the geomorphically-significant flow range of $0.5Q_2$ to Q_{10}.
- Figure 6-3, Node 17 – For all hydromodification mitigation designs, the Decision Matrix includes language regarding drawdown time requirements so that standards set forth by the County's Department of Environmental Health are met. As a side note, the County's Department of Environmental Health has stated that the drawdown requirement would be applied to underground vaults in addition to extended detention basins and the surface ponding areas of LID facilities. Proper maintenance of hydromodification mitigation facilities is essential to guard against potential vector issues as well potential safety issues resulting from long-term standing water. If mitigation facility outlets clog, then runoff will bypass the system and potentially result in additional erosion problems downstream of a site.

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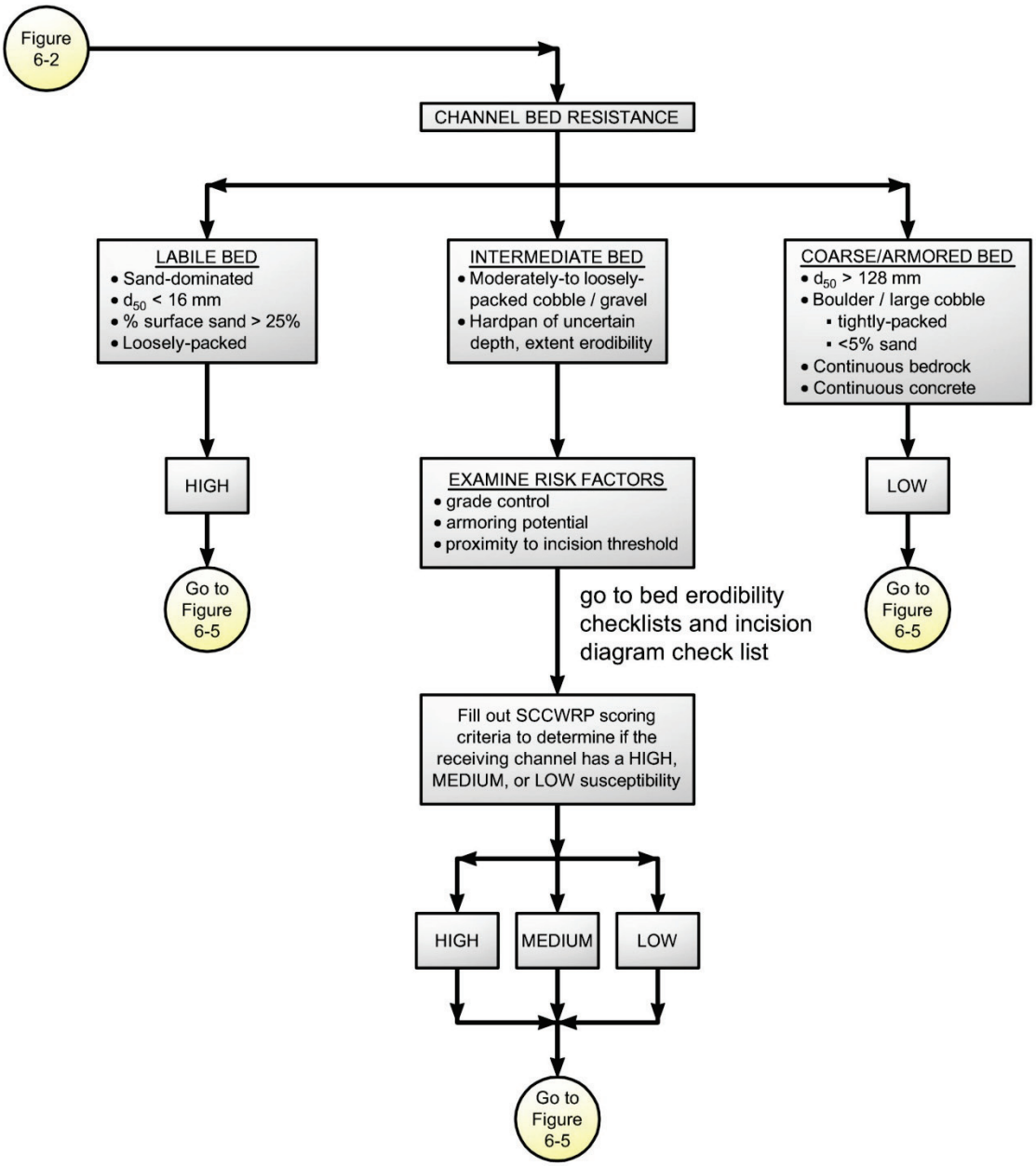

Figure 6-4. SCCWRP Vertical Susceptibility

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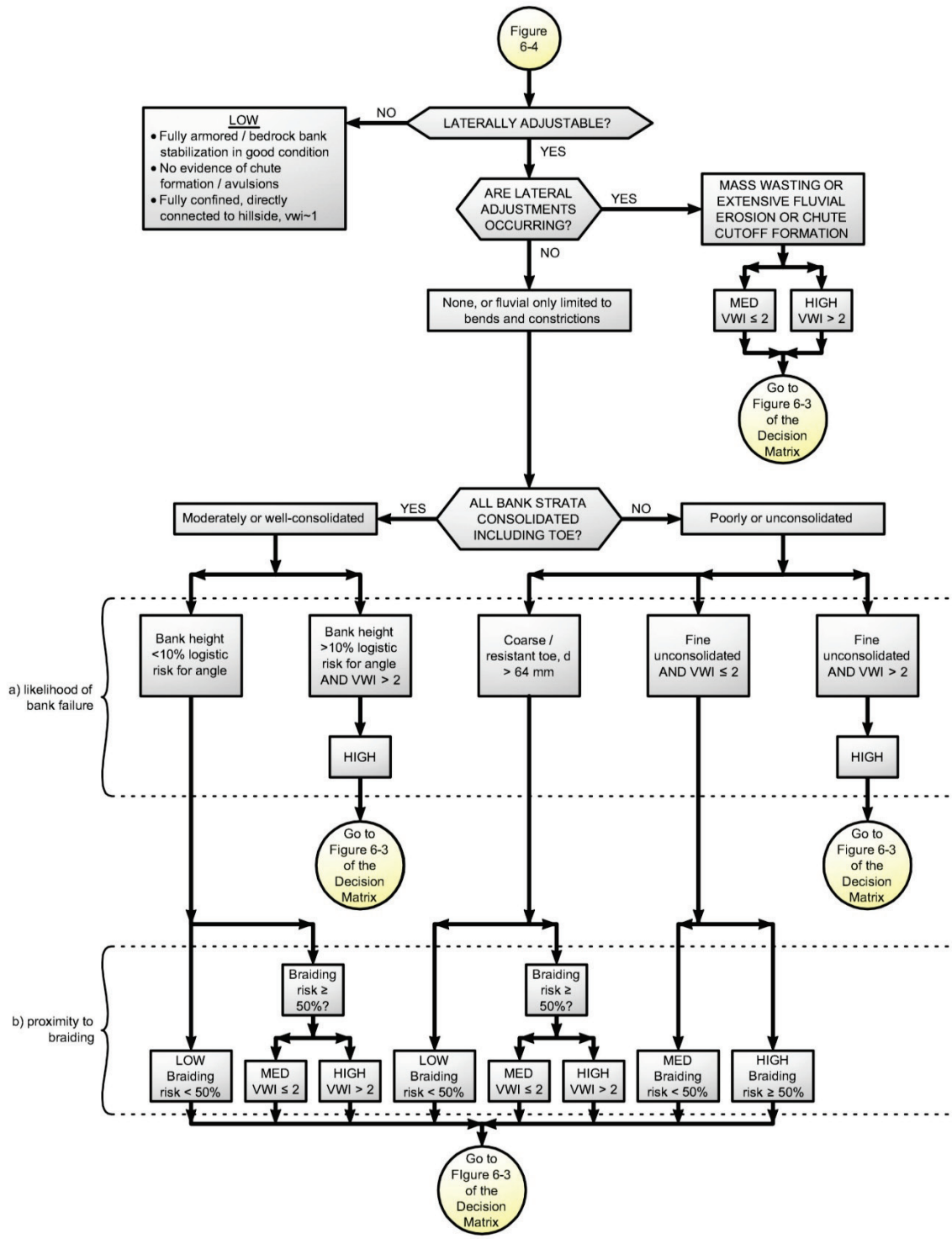

Figure 6-5. Lateral Channel Susceptibility

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A continuous simulation analysis was conducted to identify situations where a 3-inch minimum orifice size standard could be applied. For small sites where orifices less than 3-inches would be required to achieve HMP mitigation, LID implementation is recommended in lieu of extended detention facilities.

The continuous simulation analysis was based on the following assumptions:

Sensitivity Analysis for Minimum Orifice Diameter:

- Prepared HSPF models for 100 and 500 acre undeveloped watersheds – assumed Group D soils with sparse vegetation.
- Prepared simple, parallel HSPF models for 1 and 5 acre developments.
- Added detention ponds to the development models, matching the flow duration curve as much as possible using a 3-inch minimum diameter. For the pond configuration, assumed the ponds are 4 feet deep and contained two outflow control structures (low orifice = 3 inches; high weir to prevent overtopping).
- Ran the undeveloped scenario model simulations and computed the flow duration statistics
- Ran the development scenario model simulations (various levels of development) and computed flow duration statistics.
- Determined the increased level of development that would produce a noticeable difference in the flow duration statistics

The sensitivity analysis showed that cumulative basin outflows from multiple 3-inch outlet orifices from 1- and 5-acre developments would have less than significant cumulative impacts to the watershed's flow duration curve provided the impervious areas in the watershed is less than 10 percent. The supporting HSPF continuous modeling analysis results are summarized in a Technical Memo in Appendix F.

For project sites 1 acre or less in size:

1. HMP mitigation must be attained through the use of LID facilities (because a 3-inch outlet orifice would provide no significant mitigation). If LID facilities cannot fully mitigate flows to meet hydromodification criteria, then small detention facilities can be used in combination with the LID facilities.

For project sites greater than 1 acre and less than 5 acres in size:

1. HMP mitigation should be attained through the use of LID facilities to the maximum extent practicable.
2. A 3-inch minimum outlet orifice size may be used provided that the potential cumulative impacts in the subwatershed area, as measured for the entire sub-watershed (containing the project site) downstream to a natural creek confluence, would not increase the ultimate-condition composite impervious area in the subwatershed to more than 10 percent.

If the potential cumulative impacts in the subwatershed areas would result in an impervious area percentage greater than 10 percent, then the 3-inch minimum orifice size waiver would not be granted.

6.3 Stream Rehabilitation Performance Criteria

If the SCCWRP channel screening tools indicate the existing downstream channel condition has a High susceptibility to erosion, then stream rehabilitation options may be considered. Such mitigation measures must extend downstream to an exempt receiving conveyance system. If such options are chosen as hydromodification mitigation for the project site, then the following criteria must be analyzed.

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- Show that projected increases in runoff peaks and/or durations, along with sediment reductions associated with development, would not accelerate degradation or erosion of rehabilitated receiving stream reaches.
- A proposed stream rehabilitation mitigation measure can accommodate additional runoff from a proposed project, the project proponent may consider implementation of planning measures such as buffers and restoration activities, revegetation, and use of less-impacting facilities at the point of discharge in lieu of implementation of storm water flow controls.
- Such scenarios include the modification of the channel gradient, cross section, or boundary materials to achieve stable conditions in the altered flow regime. Implementation of such measures would require a geomorphic analysis to show that the proposed changes to the stream channel cross sections, vegetation, discharge rates, velocities, and durations would not have adverse impact to the receiving channel's beneficial uses.
- Such measures could not include concrete.
- Such measures must be designed considering the ultimate condition 100-year flows (as well as lower return frequency events) to the rehabilitated channel segment.

The San Diego HMP has a provision for in-channel mitigation as an alternative, or supplement, to flow volume and duration control. In-stream mitigation involves the modification of the receiving channel (primarily by altering its width, depth, slope and channel materials) to accommodate the increased flow following development. The purpose of this section is to outline for applicants and permitees what components should go into designing and implementing an in-channel mitigation program. It is not intended as an exhaustive 'cookery book' approach to designing an instream approach, but to present the principles that should be used to develop a plan. Most projects will require detailed site-specific analyses and approaches and due to differences in scale, channel type and historic condition there is not necessarily a single approach that will be applicable in all sites.

6.3.1 Goal of In-Channel Hydromod Mitigation

The goal of in-channel hydromod mitigation is to modify a receiving channel such that it supports the beneficial uses and physical and ecological functions of the channel to the same extent or greater than it did prior to the proposed development. More specifically it should:

- Be in geomorphic dynamic equilibrium (it is desirable that is should have small amounts of local scour and deposition to support biological processes, but it should not experience significant net erosion or deposition of sediment over the entire reach over a sustained period of several years).
- Provide the appropriate physical processes and forms to sustainably support the flora and fauna that existed prior to development.

A key step in any project will be to define these goals more clearly. In particular, applicants and permitees will need to agree upon whether the goal is to maintain the creek at pre-project conditions or to restore it to a previous, higher level of function. For example, if the existing condition is an incised channel with little ecological value due to historic impacts, there is little value in stabilizing the creek in this condition to accommodate higher future flows, and an alternate goal will be required such as restoring to a previous condition that is more stable.

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6.3.2 Design Principals

Understand Pre-Project Conditions and Potential Project Impacts

All proposed projects must display a clear understanding of the existing physical and ecological condition of the receiving water prior to project implementation. In particular, applicants must identify the ecological functions and values of the existing channel corridor, the physical processes that control or influence them, and the impact of the proposed project on those factors. Table 6-3 provides a hypothetical example but is not intended to be exhaustive.

Identifying the ecological conditions will require the services of a trained riparian and aquatic biologist, while identifying the physical conditions will require a trained geomorphologist or hydrologist. Methods may include field surveys and use of historical documents (maps, aerial photos).

It is important to draw a distinction between 'stability' and 'stasis', and to understand that many ecological functions require a degree of channel disturbance. For example, willow and mulefat assemblages (a common ecotype for many San Diego creeks) require somewhat depositional conditions to form, with alternating periods of sand deposition to create low terraces and subsequent scour and reformation. Many constructed and armored channels are static and do not support the geomorphic functions that underpin these ecological functions.

Table 6-3. Creek Assessment and Mitigation Approaches

Creek Function or Attribute	Current Controlling / Influencing Factors	Project Impacts on Controlling Factors	Potential Mitigation Approach
Vertical channel stability (bed erosion or deposition)	e.g. balance between coarse sediment and water supply, nature of bed materials.	e.g. runoff likely to increase, coarse sediment supply likely to decrease.	Reduce bed gradient using step-pool structures.
Lateral channel stability (e.g. widening, lateral migration)	e.g. vertical stability, riparian vegetation.	e.g. runoff likely to increase, coarse sediment supply likely to decrease.	Widen channel to appropriate geometry and stabilize with biotechnical approaches.
Mulefat assemblage	e.g. requires braided channel with low terraces subject to periodic scour and deposition.	e.g. excess sediment transport capacity over supply will erase terraces and prevent deposition.	Widen channel to lower sediment transport capacity, allow braiding and support terrace formation. Lower gradient to achieve same.
Willow assemblage	e.g. proximity of floodplain to water table.	e.g. incision will lower water table and prevent regeneration.	Prevent incision by grade control, gradient flattening, or channel widening.
Ephemeral vegetation assemblage	e.g. absence of summer nuisance flows.	e.g. presence of summer nuisance flows will allow perennial vegetation to colonize.	Elimination of nuisance flows.
Fish spawning	e.g. presence of gravel, relative absence of fine sediment, relatively low shear stresses during winter/spring flows.	e.g. fine sediment will bury spawning gravel.	Promote sediment sorting and reduce bank erosion or other fine sediment sources.
Fish rearing	e.g. channel complexity, riparian shade cover, relative rarity of high velocity flows.	e.g. excess shear stress will erode and simplify channel features, wash out fish.	Widen and flatten channel to reduce shear stresses.

Design Criteria

In-stream mitigation projects must meet the following design criteria:

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1. The proposed channel and riparian corridor must provide the same acreage of habitat as the pre-project channel and riparian corridor, and should support geomorphic processes that can reasonably be considered to sustain those acreages.
2. The cumulative sediment transport capacity of the proposed channel under the post project flow regime must not exceed that of the pre-project channel under the pre-project flow regime. Sediment transport capacity should be assessed at cross sections along the channel at least every 500 feet (minimum of three cross-sections for channels shorter than 500 feet), with the net proposed sediment transport capacity being equal or less than pre-project net sediment transport capacity, and no individual cross section having a sediment transport capacity more than 10 percent greater than under pre-project conditions.

Proposed plans for in-stream HMP mitigation must demonstrate that these criteria will be met by proving a biological report and maps showing the acreage of habitat in pre-and post project conditions, and by providing hydraulic and sediment transport analyses that show the following:

1. For projects larger than 50 acres the analysis should be based on continuous rainfall-runoff modeling, and continuous sediment transport capacity modeling. The analysis should demonstrate that the cumulative sediment transport capacity in the proposed channel based on the channel dimensions and watershed runoff under post-project conditions is the same or less than the cumulative sediment transport capacity for the existing channel based on the channel dimensions and watershed runoff under pre-project conditions. The period of analysis should be the approved rainfall record for the closest appropriate rain gauge as found on the www.projectcleanwater.org web site.
2. For projects smaller than 50 acres the analysis may be based on sediment transport capacity for a series of designated runoff events. The analysis should demonstrate that the sediment transport capacity in the proposed channel based on the channel dimensions and watershed runoff under post-project conditions is the same or less than the sediment transport capacity for the existing channel based on the channel dimensions and watershed runoff under pre-project conditions for the following events: 0.1Q2, Q2 and Q10.

Methods for performing this analysis are described below.

Matching Pre- and Post-Project Cumulative Sediment Transport Capacity

A key component of any in-channel project will be to quantify and balance the pre- and post-project sediment transport regime in channel that are stable under pre-development conditions, and to lower sediment transport capacity for channels that are unstable under existing conditions. This method is sometimes referred to as the Erosion Potential method. There are several potential tools to assess this and design the channel to meet these goals, but certain principals must be incorporated in whatever approach is used.

For developments larger than 50 acres the analysis must be based on continuous rainfall-runoff modeling, rather than event-based modeling. This is because research has shown that in most urbanized watersheds significant amounts of sediment transport occur during low magnitude, high frequency events (smaller than the two-year flow). Quantification of sediment transport capacity will not capture these processes unless continuous rainfall-runoff simulation is used. Potential models to achieve this include HEC-HMS in continuous mode, SWMM, HSPF, and the San Diego Hydrology Model. Modeling should include at least 40 years of rainfall data from a nearby rain gauge. Modeling should include pre- and post-project conditions. Output (a time series of flow) should be used to quantify pre- and post-project cumulative sediment transport capacity. This can be achieved in several ways, varying from a simple spreadsheet-based sediment transport model to a full one-dimensional hydraulic and sediment transport model such as HEC-RAS (sediment transport module), HEC-6, Fluvial-12, or MIKE-11. The model should simulate the existing and proposed channel morphology in sufficient detail to allow analysis of potential modifications to cross sections and gradient. A hypothetical example is described below.

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A hypothetical analysis might include modeling the existing watershed land use in HEC-HMS and generating a 40-year time series of flow at hourly intervals. This time series would be the input for a HEC-RAS hydraulic and sediment transport model of the existing receiving channel. The time series would be run using a sediment transport equation appropriate to the channel materials, and the cumulative sediment transport capacity over 40 years calculated. The proposed development would then be simulated in HEC-HMS and the 40-year flow output run through a HEC-RAS model of the proposed in-channel mitigation (for example with a lower gradient, in-channel step-pool structures and wider cross section). Cumulative sediment transport capacity would again be calculated. If the proposed channel-with-project cumulative sediment transport capacity was equal to or less than the existing pre-project channel cumulative sediment transport capacity then the channel would have met the sediment transport goals. If the cumulative sediment transport capacity was higher the channel design would have to be refined to lower transport rates or some flow control would be required in the watershed, until the transport capacities either matched or were lower than pre-project condition.

For developments smaller than 50 acres event based analysis may be used. The applicant must calculate the flows for $0.1Q_2$, Q_2 and Q_{10} using continuous rainfall-runoff modeling, and determine the sediment transport capacity using either a sediment transport model or spreadsheet model. If the proposed channel has an equal or lower sediment transport capacity at all three flows it would meet the sediment transport criteria. If it did not the applicant would need to iteratively vary the channel dimensions or manage runoff until the criteria were met.

Methods of Reducing Sediment Transport Capacity

It is highly likely that in a watershed experiencing hydromod without significant flow control the sediment transport capacity will be greatly increased (commonly by a factor of 5 or more for highly developed watersheds) while sediment supply will be reduced. This will likely require a significant modification in channel geometry to bring sediment transport capacity back to pre-project levels. This can be achieved in several ways:

Slope Reduction by Construction of Step-Pools or Roughened Channels

Step-pools are vertical or near vertical sections in a channel profile (step) with a flat section that dissipates the energy of the step (pool). A natural feature of upland creeks, step-pools are sometimes built into creek rehabilitation projects to concentrate bed elevation loss in a small number of hardened areas where erosion is unlikely to occur and allow the remainder of the bed to be designed at a lower gradient that reduces sediment transport capacity. Step-pools can be constructed from uncemented boulders of appropriate size (designed to be stable during design flood events such as the 100-year flow), or from soil cement or other hard materials. The gradient between steps can be designed to match the EP for the pre-project condition without the need for armor, with the difference between the channel's existing and post-project gradient being taken up in vertical steps. Steps should be designed to meet any relevant fish passage and animal migration requirements (e.g., for fish bearing streams steps should be no higher than 3 feet).

Roughened channels are a similar approach where the elevation loss occurs at armored rock reaches typically with a gradient of 10 percent over a few tens of feet (e.g., 3 feet of drop over 30 feet of roughened channel). As with step-pools these are employed between longer reaches of un-armored stable channel at a lower gradient.

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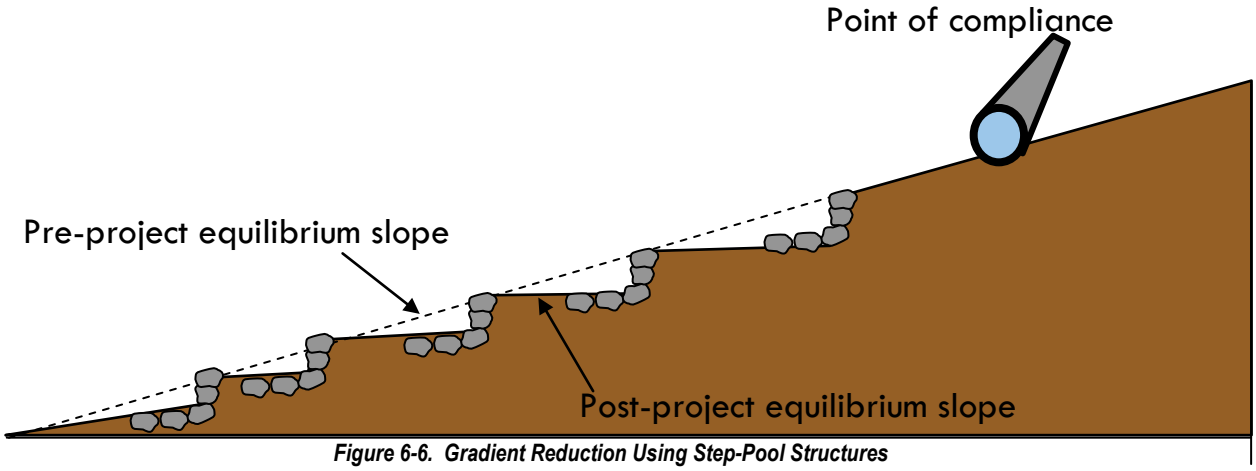

Figure 6-6. Gradient Reduction Using Step-Pool Structures

Slope Reduction by Sinuosity Increase

In some cases small reductions in slope can be achieved by increasing sinuosity (ratio of channel distance between two points to straight line distance). For example, a 30 percent reduction in slope can be achieved by converting a straight receiving channel into a channel with a sinuosity of 1.3 (typical for a meandering channel). However, it is important to understand that channel sinuosity is a dependent variable that is influenced by the valley gradient and the sediment and water regime of the watershed. As a general rule Forcing a channel to a sinuosity that is inappropriately high is likely to lead to subsequent channel avulsion to a straighter course. Channel sinuosity needs to be supported by a geomorphic basis of design that shows the proposed form and gradient to be appropriate for the valley slope and sediment and water regime. This may take the form of reference reaches in similar watersheds that have support the proposed morphology over a significant period of time, or comparison between the proposed form and typical literature values.

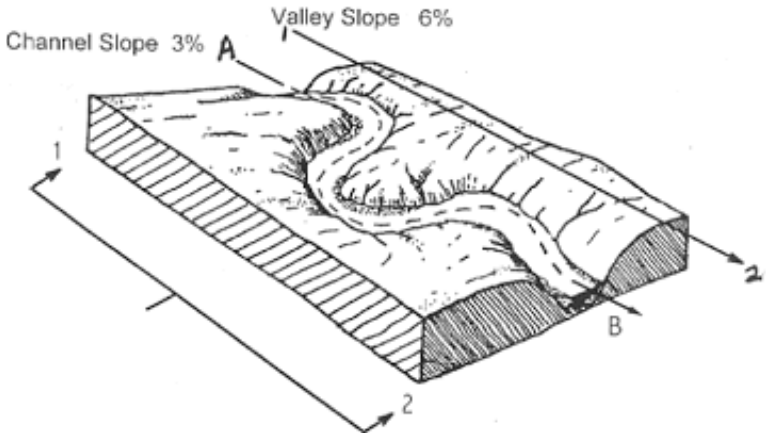

Figure 6-7. Gradient Reduction by Increasing Sinuosity

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Increased Width:Depth Ratio

Sediment transport capacity can be reduced by increasing width:depth ratio for the channel (both low flow channel and floodplain). By spreading flows out over a wider cross section with lower depths, shear stress is reduced for any given flow rate. This approach can be a useful mitigation strategy in incised creeks to bring them back to equilibrium conditions once vertical incision has ceased. However, as with sinuosity, it is important to develop a robust geomorphic basis of design that shows the increase in width:depth ratio to be sustainable. For example, for sand bed channels in watersheds where the coarse sediment supply is greatly reduced by urbanization, low flows may cut into the bed of an over-widened channel, leading to a positive feedback loop of incision and flow concentration. Proposed designs will need to show (using stable analogous reference reaches or analytical methods such as sediment transport analysis) that width:depth ratios are sustainable.

6.3.3 Size Channel for Changed Dominant Discharge

A mitigated channel is likely to consist of a low flow channel that provides the aquatic functions of the pre-project channel, and a floodplain corridor that supports the pre-project riparian functions. The low flow channel should be sized to meet the new dominant discharge of the post-project watershed. In most cases this will be a more frequent event than under pre-development conditions. For example, a low flow channel may accommodate the five year flow under pre-development conditions but be sized for the one-two year flow under developed conditions. For large developments, the EP analysis used to determine cumulative sediment transport capacity will provide the dominant discharge. If EP is plotted as a histogram of sediment transport capacity binned into flow ranges the flow range that produces the highest sediment transport capacity will be the dominant discharge. The floodplain area of the riparian corridor should be designed so as to match the inundation frequencies, areas, and elevations of the pre-project channel.

6.3.4 Upstream and Downstream Limits of In-Channel Mitigation Projects

It is likely that in-channel mitigation projects will have to be negotiated with permitting agencies on a case by case basis due to different site conditions. However, for guideline purposes we recommend the following approach to identifying the limits of in-channel mitigation projects.

The upstream limit of an in-channel mitigation project will typically be the point of compliance (PoC ; point at which stormwater is discharged into the receiving water). However, as a precaution against potential unplanned erosion following a project it is recommended that either the project extend upstream to the next grade control, or that grade control be added immediately upstream of the point of compliance.

The downstream limit of an in-channel project would be the connection to an exempt system (such as the confluence with an exempt river system).

6.3.5 Relationship Between In-Channel HMP Mitigation and Existing Permit Requirements

The HMP does not replace existing permit requirements for in-channel projects. In addition to meeting the HMP requirements, applicants proposing an in-channel mitigation project will likely require the following permits:

- A CEQA/NEPA review and document
- California Department of Fish and Game – 1602 Streambed Alteration Agreement
- US Fish and Wildlife Service – Authorization Under the Endangered Species Act

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- US Army Corps of Engineers – Nationwide 404 Permit
- Regional Water Quality Control Board – 401 Water Quality Certification
- County of San Diego – Grading Permit

These permits have their own requirements that may involve additional studies beyond those described above.

6.4 HMP Design Standards

6.4.1 Introduction

This Technical Memorandum details criteria for the analysis and methodology used to assess mitigation of hydromodification effects. As mandated by Regional Water Quality Control Board (RWQCB) Order R9-2007-0001, San Diego Copermittees must develop criteria for the mitigation of development-related increases to peak flows and flow durations within the geomorphically significant flow range. The purpose of the hydromodification management criteria is to prevent development-related changes in storm water runoff from causing, or further accelerating, stream channel erosion or other adverse impacts to beneficial stream uses.

Three specific areas are discussed in this memorandum.

- Partial Duration Series Calculations
- Drawdown Calculations
- Offsite Area Restrictions

Information contained in this memorandum will be incorporated into a Final Technical Reference Document in support of the final HMP document.

6.4.2 Partial Duration Series Calculations

Preliminary review of continuous simulation hydrologic analyses prepared for multiple project sites throughout the County of San Diego indicates the need for partial duration series calculations to determine estimated return flow frequencies. Because of San Diego's semi-arid climate, in which long periods of time can elapse between significant rainfall events, use of the peak annual series tends to unrealistically underestimate flow return event values (since only the peak event in any given year is considered in the analysis). This effect is particularly pronounced for more frequent return events such as the 2-year flow and the 5-year flow (note: the 2-year flow is the runoff rate which statistically has a 50 percent chance of occurrence in any given year). The partial duration series calculations consider all significant rainfall events in the long-term rainfall record (which for the San Diego area corresponds to a minimum historical record of hourly rainfall totals for 35 years).

This partial duration series data provided below were prepared based on a sample project in south San Diego County. Using the Lower Otay Reservoir rainfall gauge as the historical rainfall record, the subsequent commentary shows how a partial duration series analysis should be conducted to estimate peak runoff rates for frequencies of 2-, 5-, and 10-year recurrence given hydrologic modeling results for hypothetical Basins A, B, C and D.

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6.4.3 Data

Four modeling files, corresponding to Basins A, B, C and D from a proposed development project, were prepared using the HSPF hydrologic modeling software. Relevant time series were output to WDM files, which were named for the modeled basin (e.g., *Basin A.wdm*). Two land use conditions were generated:

- Pre-developed flow in cubic feet per second (cfs)
- Post-developed (unmitigated) flow in cfs

Given two flow scenarios (above) and four basins, a total of 8 sets of time series data were identified for flow frequency analysis. Plots of these flow data are included later in this document.

6.4.4 Analysis

Each of the 8 time series described in the previous section was exported from the WDM file using *WDM Util*. The exported files were then imported into MatLAB and a previously developed script was used to convert the complete duration-time series to a partial duration time series using the criteria shown in Table 6-4 below.

The previously developed partial duration script was developed in association with development of the Contra Costa HMP / LID Sizing Tool, which was approved by the San Francisco Regional Water Quality Control Board for review of project-specific hydromodification plans (*Contra Costa Hydromodification Management Plan* - May 15, 2005). Similar methodology is planned for inclusion in the San Diego HMP / LID Sizing Calculator, which is scheduled for beta release in Winter 2010.

Table 6-4. Partial Duration Series Criteria

Basin and Scenario		Separation Event (hours)	Flow Floor (cfs)	Number of Events
Basin A	Pre-developed	24	0.1	357
	Post-developed (unmitigated)	24	0.1	620
Basin B	Pre-developed	24	0.01	63
	Post-developed (unmitigated)	24	0.1	540
Basin C	Pre-developed	24	0.01	73
	Post-developed (unmitigated)	24	0.1	535
Basin D	Pre-developed	24	0.1	104
	Post-developed (unmitigated)	24	0.1	558

The columns listed in Table 6-4 describe criteria detailed below.

- A separation event, defined as time period in which runoff does not exceed a prescribed threshold, is required to parse the long-term flow records into discrete runoff events. The separation event corresponds to the required number of consecutive time intervals (hours in this case because the long-term rainfall records were prepared in hourly time steps) with a flow value less than Flow Floor 1 (which is calculated as an artificially low flow value based on a fraction of the contributing watershed areas – for instance, the flow floor could correspond to ratios in the range of 0.002 cfs/acre to 0.005 cfs/acre).
- Flow Floor 1 is the maximum value for the inter-event time period (allows for separation of events). In other words, if no flow value exceeds the Flow Floor 1 value for a time equal to or greater than the Separation Event, then the preceding runoff event is viewed as a discrete runoff event. Flow Floor 1 is typically set as an artificially low flow value based on a fraction of the contributing watershed area.

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- Flow Floor 1 is also the minimum value for the rainfall event. In other words, if no flow value in the event exceeds Flow Floor 1, then the minor runoff is not considered a discrete runoff event.
- Number of events corresponds to the total number of discrete runoff events generated for the long-term rainfall record. As noted in Table 6-4 and graphically depicted in the figures at the end of this section, impervious area addition associated with development dramatically increases the number of discrete runoff events for the sample basins.

The partial duration series data were ranked and the plotted using the Cunnane equation for plotting return frequency. The Cunnane equation documentation can be referenced in the "Handbook of Hydrology" by David R. Maidment, published in 1994 (Table 18.3.1).

6.4.5 Results

Flow frequency plots are included later in this document. Flow frequency estimates were obtained from these plots for the 2-, 5-, and 10-year recurrence intervals. The results are summarized in Table 6-5.

Table 6-5. Flow Frequency by Partial Duration Series Analysis

Basin and Scenario		Peak Runoff (cfs) by Recurrence Interval		
		2-year	5-year	10-year
Basin A	Pre-developed	1.2	3.1	6.3
	Post-developed (Unmitigated)	4.8	6.9	8.8
Basin B	Pre-developed	0.2	0.6	1.2
	Post-developed (Unmitigated)	1.2	2.0	2.4
Basin C	Pre-developed	0.2	0.9	1.8
	Post-developed (Unmitigated)	1.5	2.5	3.0
Basin D	Pre-developed	0.5	1.2	2.5
	Post-developed (Unmitigated)	1.4	2.0	2.5

As shown in Figures 6-8 and 6-9, impervious area increases associated with proposed development dramatically increases the frequency and intensity of flows throughout the rainfall record. While the scenario modeled above depicts a worst-case scenario where undeveloped land is converted to highly impervious industrial land, similar but less pronounced increases to flow frequency and peak flows would be expected for other development types. The degree of change is dependent on the degree of impervious areas and landform modification.

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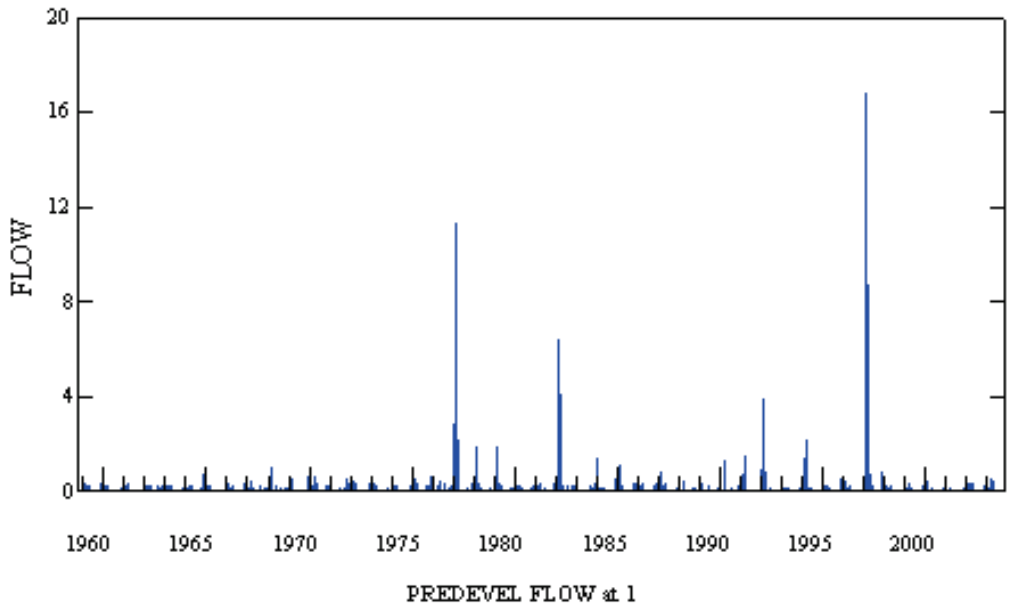

Figure 6-8. Pre-Developed Flow Time Series for Basin A

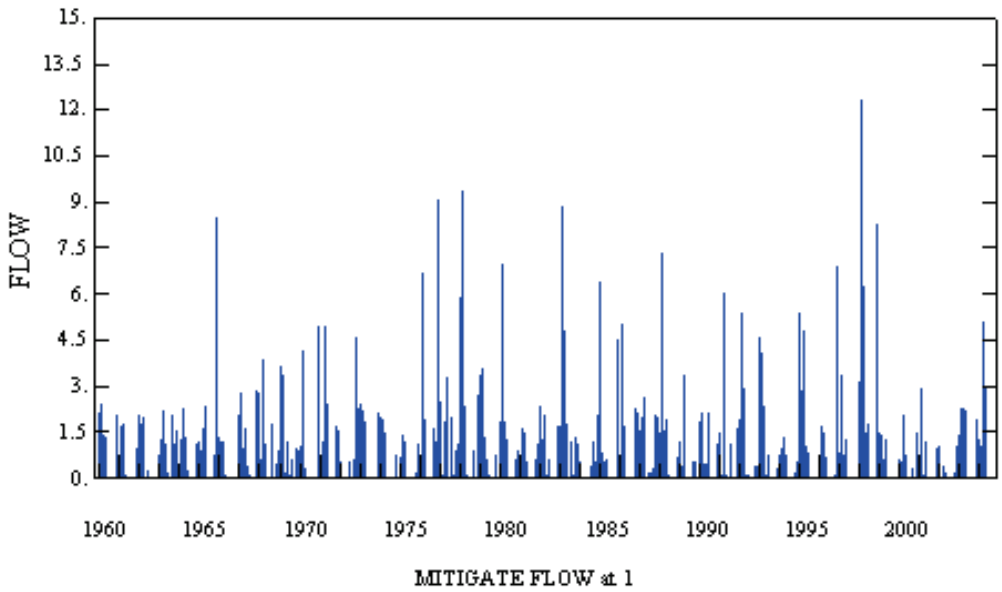

Figure 6-9. Post-Developed (unmitigated) Flow Time Series for Basin A

As shown in Figures 6-10 and 6-11, increases in impervious areas associated with development create a significant flow regime change for the full range of flows. These changes are most pronounced for frequent flow events. As detailed on the figures, development would increase the 1-year pre-project flow of 0.5 cfs to a 1-year post-project flow of 3.0 cfs. At the 5-year event, the pre-project flow is 3 cfs while the post-project flow increases to 7 cfs. At the 10-year event, the pre-project is 6.5 cfs while the post-project flow is 9 cfs.

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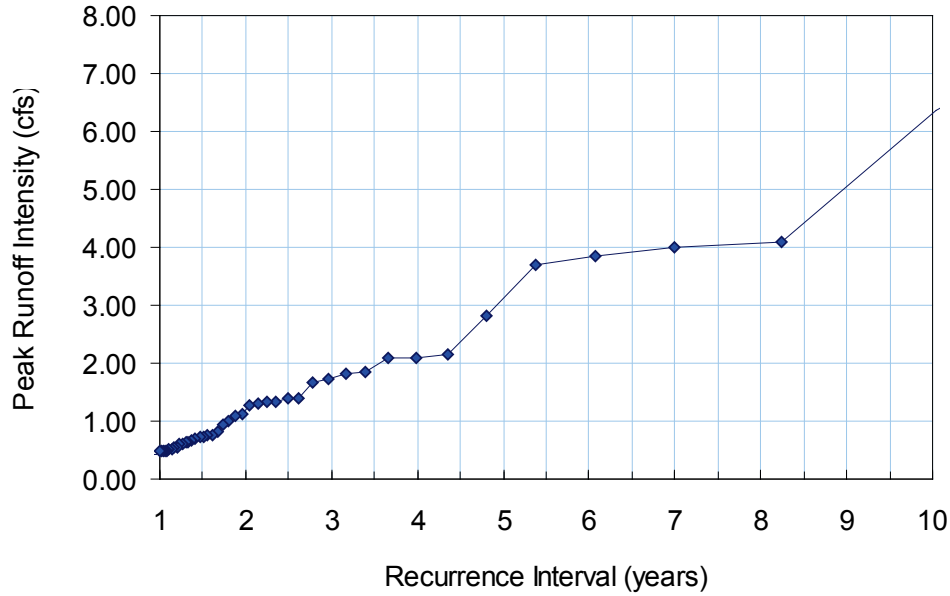

Figure 6-10. Pre-Developed Flow Frequency Basin A

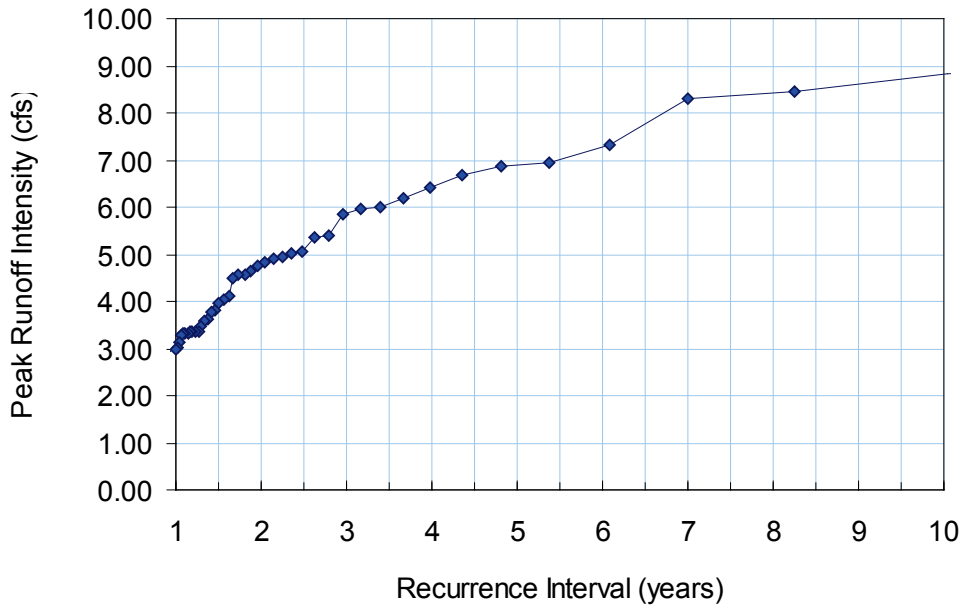

Figure 6-11. Post-Developed (Unmitigated) Flow Frequency Basin A

6.4.6 Drawdown Calculations

Per instruction from the County of San Diego's Department of Environmental Health (DEH), the drawdown time in hydromodification flow control facilities, as well as other flow control facilities such as peak flow attenuation detention basins and water quality extended detention basins, shall be limited to 96 hours. This restriction was implemented as mitigation to potential vector breeding issues and the subsequent risk to human health. The standard applies to, but is not limited to, the following flow control facilities.

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- Detention basins
- Underground storage vaults
- Above-ground storage area in LID facilities

As is the case for peak flow attenuation detention basins and water quality extended detention basins, the drawdown time for hydromodification flow control facilities can be calculated by assuming a starting water surface elevation coincident with the peak operating level in the facility (such as the elevation at the riser or emergency spillway overflow).

Using a hydrologic computer program such HEC-HMS or other public domain software, the basin's dewatering time can be determined given the basin's stage-storage and stage-discharge information. Provided that the residual outflow from the basin is less than the flow thresholds defined in Table 6-4 after 72 hours, the basin is considered to meet the drawdown criteria.

For hydromodification flow control facilities, the peak operating level is assumed to be coincident with a maximum ponding depth of 4 feet. The maximum ponding depth requirement is necessary because of safety concerns. Additionally, protective fencing may be required for installation around all hydromodification flow control facilities where the ponding depth exceeds a minimum flow depth to be determined by each individual Copermittee.

If a riser is installed in the basin, it is assumed that flows would exit the basin via a small orifice or a series of orifices cut into the side of the riser. To prevent clogging, debris capture devices should be designed to protect the principal outflow orifice. Failure to prevent clogging could actually make downstream erosion problems worse, since basin inflows would simply overtop the riser and flow unattenuated downstream.

6.4.7 Offsite Area Restrictions

Runoff from offsite areas should be routed around hydromodification flow control facilities. This is required because of the following:

- Offsite areas containing sediment should be allowed to pass to the receiving channel to maintain the natural sediment balance in the receiving conveyance system. This is especially true when the offsite area contains significant loads of coarse sediment. Capture and removal of natural sediment from the downstream watercourse can create "hungry water" conditions and the increased potential for downstream erosion. The "hungry water" phenomenon occurs when the natural sediment load decreases and the erosive force of the runoff increases as a natural counterbalance, as described by Lane's Equation.
- The addition of runoff from offsite areas to a hydromodification flow control facility increases the total runoff volume to the basin, which increases the required water quality treatment volume as well as the hydromodification and peak flow attenuation design peak inflows to the basin.

If geometric constraints prohibit the rerouting of flows around a hydromodification flow control facility, then a detailed description of the constraints should be submitted to the governing municipality. Methods to route flows around flow control facilities include the addition of parallel storm drain systems and by simply designing the site to avoid natural drainage courses. It is assumed that off-site runoff would be separated from site runoff. If this is not the case, then the governing municipality should be consulted to further refine the points of compliance for the site (an interior project site point of compliance could be required in such a scenario).

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7. SELECTION AND IMPLEMENTATION OF BMPS

7.1 BMP Selection Criteria

As detailed in Permit Section D.1.d(4), LID BMPs should be implemented where feasible. Selection of the appropriate flow control treatment device will depend on the susceptibility of the receiving channel, geologic conditions in the area surrounding the proposed mitigation facility, impacts of the proposed development, and water quality sensitivity of the receiving streams.

Use of LID BMPs minimizes the impacts of urban runoff discharges to receiving waters by collectively minimizing directly connected impervious areas. By directing urban runoff to landscaped areas, LID BMPs help restore the pre-development condition hydrologic cycle of the site, allowing for filtration and infiltration of urban runoff which can significantly reduce post-development peak runoff rates, velocities, volumes, and pollutant loadings in urban runoff.

The San Diego HMP encourages the use of LID facilities for the dual treatment of the 85th percentile water quality event as well as hydromodification mitigation flow control. When LID facilities are used for both functions, they are known as Integrated Management Practices.

Unless specifically deemed infeasible, LID practices are encouraged to be implemented on the vast majority of proposed development sites to meet hydromodification criteria. Defining the infiltration potential of a site is recommended to provide for sound engineering design. In some cases, infiltration to native soils may not be feasible. These situations include the following:

- Underlying native soils with very low infiltration rates (clay soils, etc.)
- Lenses beneath soil layers that cause lateral migration of flows
- Potential for structural foundation or roadway damage from infiltrated runoff
- High groundwater table

Even if infiltration is shown to be infeasible, LID facilities can be designed as filtration-type or evaporation-type facilities instead of infiltration-based facilities. Filtration type facilities, such as bioretention basins, can be implemented through the use of amended soils. In some cases, LID approaches may need to be implemented in series or in combination with an extended detention type approach to satisfy vector control and hydromodification criteria.

To assure compliance with hydromodification flow control requirements, design criteria and specifications have been provided in the San Diego Model SUSMP for a variety of LID-based flow control methods including the following:

- Bioretention basins
- Flow-through planter boxes
- Infiltration facilities
- Bioretention in series with a cistern
- Bioretention in series with an underground vault
- Self-retaining areas.

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Sizing factors have been developed by the consultant team through the use of continuous simulation hydrologic modeling and these factors will be built into the San Diego LID/HMP Sizing Calculator to assist with HMP implementation. Sizing factors are ratios of the required mitigation size (in area or volume) as compared to the contributing developed area. The same concepts used to develop sizing factors in Contra Costa County are being used to develop sizing factors based on conditions in the San Diego area. Tables 7-1 through 7-5 detail sizing factors which have been determined to ensure compliance with peak flow and flow duration criteria as outlined in this HMP.

Table 7-1. Sizing Factors for Bioretention Facilities

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.5Q_2$	A	Flat	Lindbergh	0.060	0.0500	N/A
$0.5Q_2$	A	Moderate	Lindbergh	0.055	0.0458	N/A
$0.5Q_2$	A	Steep	Lindbergh	0.045	0.0375	N/A
$0.5Q_2$	B	Flat	Lindbergh	0.093	0.0771	N/A
$0.5Q_2$	B	Moderate	Lindbergh	0.085	0.0708	N/A
$0.5Q_2$	B	Steep	Lindbergh	0.065	0.0542	N/A
$0.5Q_2$	C	Flat	Lindbergh	0.100	0.0833	0.0600
$0.5Q_2$	C	Moderate	Lindbergh	0.100	0.0833	0.0600
$0.5Q_2$	C	Steep	Lindbergh	0.075	0.0625	0.0450
$0.5Q_2$	D	Flat	Lindbergh	0.080	0.0667	0.0480
$0.5Q_2$	D	Moderate	Lindbergh	0.080	0.0667	0.0480
$0.5Q_2$	D	Steep	Lindbergh	0.060	0.0500	0.0360
$0.5Q_2$	A	Flat	Oceanside	0.070	0.0583	N/A
$0.5Q_2$	A	Moderate	Oceanside	0.065	0.0542	N/A
$0.5Q_2$	A	Steep	Oceanside	0.060	0.0500	N/A
$0.5Q_2$	B	Flat	Oceanside	0.098	0.0813	N/A
$0.5Q_2$	B	Moderate	Oceanside	0.090	0.0750	N/A
$0.5Q_2$	B	Steep	Oceanside	0.075	0.0625	N/A
$0.5Q_2$	C	Flat	Oceanside	0.075	0.0625	0.0450
$0.5Q_2$	C	Moderate	Oceanside	0.075	0.0625	0.0450
$0.5Q_2$	C	Steep	Oceanside	0.060	0.0500	0.0360
$0.5Q_2$	D	Flat	Oceanside	0.065	0.0542	0.0390
$0.5Q_2$	D	Moderate	Oceanside	0.065	0.0542	0.0390
$0.5Q_2$	D	Steep	Oceanside	0.050	0.0417	0.0300
$0.5Q_2$	A	Flat	L Wohlford	0.050	0.0417	N/A
$0.5Q_2$	A	Moderate	L Wohlford	0.045	0.0375	N/A
$0.5Q_2$	A	Steep	L Wohlford	0.040	0.0333	N/A
$0.5Q_2$	B	Flat	L Wohlford	0.048	0.0396	N/A
$0.5Q_2$	B	Moderate	L Wohlford	0.045	0.0375	N/A
$0.5Q_2$	B	Steep	L Wohlford	0.040	0.0333	N/A

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Table 7-1. Sizing Factors for Bioretention Facilities

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.5Q_2$	C	Flat	L Wohlford	0.065	0.0542	0.0390
$0.5Q_2$	C	Moderate	L Wohlford	0.065	0.0542	0.0390
$0.5Q_2$	C	Steep	L Wohlford	0.050	0.0417	0.0300
$0.5Q_2$	D	Flat	L Wohlford	0.055	0.0458	0.0330
$0.5Q_2$	D	Moderate	L Wohlford	0.055	0.0458	0.0330
$0.5Q_2$	D	Steep	L Wohlford	0.045	0.0375	0.0270
$0.3Q_2$	A	Flat	Lindbergh	0.060	0.0500	N/A
$0.3Q_2$	A	Moderate	Lindbergh	0.055	0.0458	N/A
$0.3Q_2$	A	Steep	Lindbergh	0.045	0.0375	N/A
$0.3Q_2$	B	Flat	Lindbergh	0.098	0.0813	N/A
$0.3Q_2$	B	Moderate	Lindbergh	0.090	0.0750	N/A
$0.3Q_2$	B	Steep	Lindbergh	0.070	0.0583	N/A
$0.3Q_2$	C	Flat	Lindbergh	0.110	0.0917	0.0660
$0.3Q_2$	C	Moderate	Lindbergh	0.110	0.0917	0.0660
$0.3Q_2$	C	Steep	Lindbergh	0.085	0.0708	0.0510
$0.3Q_2$	D	Flat	Lindbergh	0.100	0.0833	0.0600
$0.3Q_2$	D	Moderate	Lindbergh	0.100	0.0833	0.0600
$0.3Q_2$	D	Steep	Lindbergh	0.070	0.0583	0.0420
$0.3Q_2$	A	Flat	Oceanside	0.070	0.0583	N/A
$0.3Q_2$	A	Moderate	Oceanside	0.065	0.0542	N/A
$0.3Q_2$	A	Steep	Oceanside	0.060	0.0500	N/A
$0.3Q_2$	B	Flat	Oceanside	0.098	0.0813	N/A
$0.3Q_2$	B	Moderate	Oceanside	0.090	0.0750	N/A
$0.3Q_2$	B	Steep	Oceanside	0.075	0.0625	N/A
$0.3Q_2$	C	Flat	Oceanside	0.100	0.0833	0.0600
$0.3Q_2$	C	Moderate	Oceanside	0.100	0.0833	0.0600
$0.3Q_2$	C	Steep	Oceanside	0.080	0.0667	0.0480
$0.3Q_2$	D	Flat	Oceanside	0.085	0.0708	0.0510
$0.3Q_2$	D	Moderate	Oceanside	0.085	0.0708	0.0510
$0.3Q_2$	D	Steep	Oceanside	0.065	0.0542	0.0390
$0.3Q_2$	A	Flat	L Wohlford	0.050	0.0417	N/A
$0.3Q_2$	A	Moderate	L Wohlford	0.045	0.0375	N/A
$0.3Q_2$	A	Steep	L Wohlford	0.040	0.0333	N/A
$0.3Q_2$	B	Flat	L Wohlford	0.060	0.0500	N/A
$0.3Q_2$	B	Moderate	L Wohlford	0.055	0.0458	N/A
$0.3Q_2$	B	Steep	L Wohlford	0.045	0.0375	N/A
$0.3Q_2$	C	Flat	L Wohlford	0.075	0.0625	0.0450

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Table 7-1. Sizing Factors for Bioretention Facilities

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.3Q_2$	C	Moderate	L Wohlford	0.075	0.0625	0.0450
$0.3Q_2$	C	Steep	L Wohlford	0.060	0.0500	0.0360
$0.3Q_2$	D	Flat	L Wohlford	0.065	0.0542	0.0390
$0.3Q_2$	D	Moderate	L Wohlford	0.065	0.0542	0.0390
$0.3Q_2$	D	Steep	L Wohlford	0.050	0.0417	0.0300
$0.1Q_2$	A	Flat	Lindbergh	0.060	0.0500	N/A
$0.1Q_2$	A	Moderate	Lindbergh	0.055	0.0458	N/A
$0.1Q_2$	A	Steep	Lindbergh	0.045	0.0375	N/A
$0.1Q_2$	B	Flat	Lindbergh	0.100	0.0833	N/A
$0.1Q_2$	B	Moderate	Lindbergh	0.095	0.0792	N/A
$0.1Q_2$	B	Steep	Lindbergh	0.080	0.0667	N/A
$0.1Q_2$	C	Flat	Lindbergh	0.145	0.1208	0.0870
$0.1Q_2$	C	Moderate	Lindbergh	0.145	0.1208	0.0870
$0.1Q_2$	C	Steep	Lindbergh	0.120	0.1000	0.0720
$0.1Q_2$	D	Flat	Lindbergh	0.160	0.1333	0.0960
$0.1Q_2$	D	Moderate	Lindbergh	0.160	0.1333	0.0960
$0.1Q_2$	D	Steep	Lindbergh	0.115	0.0958	0.0690
$0.1Q_2$	A	Flat	Oceanside	0.070	0.0583	N/A
$0.1Q_2$	A	Moderate	Oceanside	0.065	0.0542	N/A
$0.1Q_2$	A	Steep	Oceanside	0.060	0.0500	N/A
$0.1Q_2$	B	Flat	Oceanside	0.103	0.0854	N/A
$0.1Q_2$	B	Moderate	Oceanside	0.090	0.0750	N/A
$0.1Q_2$	B	Steep	Oceanside	0.075	0.0625	N/A
$0.1Q_2$	C	Flat	Oceanside	0.130	0.1083	0.0780
$0.1Q_2$	C	Moderate	Oceanside	0.130	0.1083	0.0780
$0.1Q_2$	C	Steep	Oceanside	0.110	0.0917	0.0660
$0.1Q_2$	D	Flat	Oceanside	0.130	0.1083	0.0780
$0.1Q_2$	D	Moderate	Oceanside	0.130	0.1083	0.0780
$0.1Q_2$	D	Steep	Oceanside	0.065	0.0542	0.0390
$0.1Q_2$	A	Flat	L Wohlford	0.050	0.0417	N/A
$0.1Q_2$	A	Moderate	L Wohlford	0.045	0.0375	N/A
$0.1Q_2$	A	Steep	L Wohlford	0.040	0.0333	N/A
$0.1Q_2$	B	Flat	L Wohlford	0.090	0.0750	N/A
$0.1Q_2$	B	Moderate	L Wohlford	0.085	0.0708	N/A
$0.1Q_2$	B	Steep	L Wohlford	0.065	0.0542	N/A
$0.1Q_2$	C	Flat	L Wohlford	0.110	0.0917	0.0660
$0.1Q_2$	C	Moderate	L Wohlford	0.110	0.0917	0.0660

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Table 7-1. Sizing Factors for Bioretention Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.1Q_2$	C	Steep	L Wohlford	0.090	0.0750	0.0540
$0.1Q_2$	D	Flat	L Wohlford	0.100	0.0833	0.0600
$0.1Q_2$	D	Moderate	L Wohlford	0.100	0.0833	0.0600
$0.1Q_2$	D	Steep	L Wohlford	0.075	0.0625	0.0450

Q_2 = 2-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
Q_{10} = 10-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
A = Surface area sizing factor
V_1 = Surface volume sizing factor
V_2 = Subsurface volume sizing factor

Table 7-2. Sizing Factors for Bioretention Plus Cistern Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.5Q_2$	A	Flat	Lindbergh	0.020	0.1200	N/A
$0.5Q_2$	A	Moderate	Lindbergh	0.020	0.1000	N/A
$0.5Q_2$	A	Steep	Lindbergh	0.020	0.1000	N/A
$0.5Q_2$	B	Flat	Lindbergh	0.020	0.3900	N/A
$0.5Q_2$	B	Moderate	Lindbergh	0.020	0.2000	N/A
$0.5Q_2$	B	Steep	Lindbergh	0.020	0.1200	N/A
$0.5Q_2$	C	Flat	Lindbergh	0.020	0.1200	N/A
$0.5Q_2$	C	Moderate	Lindbergh	0.020	0.1200	N/A
$0.5Q_2$	C	Steep	Lindbergh	0.020	0.1000	N/A
$0.5Q_2$	D	Flat	Lindbergh	0.020	0.1000	N/A
$0.5Q_2$	D	Moderate	Lindbergh	0.020	0.1000	N/A
$0.5Q_2$	D	Steep	Lindbergh	0.030	0.0800	N/A
$0.5Q_2$	A	Flat	Oceanside	0.020	0.1600	N/A
$0.5Q_2$	A	Moderate	Oceanside	0.020	0.1400	N/A
$0.5Q_2$	A	Steep	Oceanside	0.030	0.1200	N/A
$0.5Q_2$	B	Flat	Oceanside	0.020	0.1900	N/A
$0.5Q_2$	B	Moderate	Oceanside	0.025	0.1600	N/A
$0.5Q_2$	B	Steep	Oceanside	0.035	0.1400	N/A
$0.5Q_2$	C	Flat	Oceanside	0.030	0.1400	N/A
$0.5Q_2$	C	Moderate	Oceanside	0.035	0.1400	N/A
$0.5Q_2$	C	Steep	Oceanside	0.040	0.1200	N/A
$0.5Q_2$	D	Flat	Oceanside	0.035	0.1200	N/A
$0.5Q_2$	D	Moderate	Oceanside	0.040	0.1200	N/A
$0.5Q_2$	D	Steep	Oceanside	0.040	0.1000	N/A
$0.5Q_2$	A	Flat	L Wohlford	0.025	0.1800	N/A
$0.5Q_2$	A	Moderate	L Wohlford	0.040	0.1400	N/A

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Table 7-2. Sizing Factors for Bioretention Plus Cistern Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.5Q_2$	A	Steep	L Wohlford	0.040	0.0800	N/A
$0.5Q_2$	B	Flat	L Wohlford	0.040	0.2100	N/A
$0.5Q_2$	B	Moderate	L Wohlford	0.040	0.2000	N/A
$0.5Q_2$	B	Steep	L Wohlford	0.040	0.1400	N/A
$0.5Q_2$	C	Flat	L Wohlford	0.040	0.1400	N/A
$0.5Q_2$	C	Moderate	L Wohlford	0.040	0.1400	N/A
$0.5Q_2$	C	Steep	L Wohlford	0.040	0.1000	N/A
$0.5Q_2$	D	Flat	L Wohlford	0.040	0.1000	N/A
$0.5Q_2$	D	Moderate	L Wohlford	0.040	0.1000	N/A
$0.5Q_2$	D	Steep	L Wohlford	0.040	0.0800	N/A
$0.3Q_2$	A	Flat	Lindbergh	0.020	0.1200	N/A
$0.3Q_2$	A	Moderate	Lindbergh	0.020	0.1000	N/A
$0.3Q_2$	A	Steep	Lindbergh	0.020	0.1000	N/A
$0.3Q_2$	B	Flat	Lindbergh	0.020	0.5900	N/A
$0.3Q_2$	B	Moderate	Lindbergh	0.020	0.3600	N/A
$0.3Q_2$	B	Steep	Lindbergh	0.020	0.1800	N/A
$0.3Q_2$	C	Flat	Lindbergh	0.020	0.1800	N/A
$0.3Q_2$	C	Moderate	Lindbergh	0.020	0.1800	N/A
$0.3Q_2$	C	Steep	Lindbergh	0.020	0.1400	N/A
$0.3Q_2$	D	Flat	Lindbergh	0.020	0.1400	N/A
$0.3Q_2$	D	Moderate	Lindbergh	0.020	0.1400	N/A
$0.3Q_2$	D	Steep	Lindbergh	0.020	0.0800	N/A
$0.3Q_2$	A	Flat	Oceanside	0.020	0.1600	N/A
$0.3Q_2$	A	Moderate	Oceanside	0.020	0.1400	N/A
$0.3Q_2$	A	Steep	Oceanside	0.020	0.1200	N/A
$0.3Q_2$	B	Flat	Oceanside	0.020	0.2200	N/A
$0.3Q_2$	B	Moderate	Oceanside	0.020	0.1800	N/A
$0.3Q_2$	B	Steep	Oceanside	0.020	0.1600	N/A
$0.3Q_2$	C	Flat	Oceanside	0.020	0.1600	N/A
$0.3Q_2$	C	Moderate	Oceanside	0.020	0.1600	N/A
$0.3Q_2$	C	Steep	Oceanside	0.025	0.1400	N/A
$0.3Q_2$	D	Flat	Oceanside	0.020	0.1400	N/A
$0.3Q_2$	D	Moderate	Oceanside	0.025	0.1400	N/A
$0.3Q_2$	D	Steep	Oceanside	0.030	0.1200	N/A
$0.3Q_2$	A	Flat	L Wohlford	0.020	0.1800	N/A
$0.3Q_2$	A	Moderate	L Wohlford	0.025	0.1400	N/A
$0.3Q_2$	A	Steep	L Wohlford	0.030	0.0800	N/A

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Table 7-2. Sizing Factors for Bioretention Plus Cistern Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.3Q_2$	B	Flat	L Wohlford	0.025	0.2600	N/A
$0.3Q_2$	B	Moderate	L Wohlford	0.025	0.2400	N/A
$0.3Q_2$	B	Steep	L Wohlford	0.030	0.1800	N/A
$0.3Q_2$	C	Flat	L Wohlford	0.030	0.1800	N/A
$0.3Q_2$	C	Moderate	L Wohlford	0.030	0.1800	N/A
$0.3Q_2$	C	Steep	L Wohlford	0.035	0.1400	N/A
$0.3Q_2$	D	Flat	L Wohlford	0.030	0.1400	N/A
$0.3Q_2$	D	Moderate	L Wohlford	0.035	0.1400	N/A
$0.3Q_2$	D	Steep	L Wohlford	0.040	0.1000	N/A
$0.1Q_2$	A	Flat	Lindbergh	0.020	0.1200	N/A
$0.1Q_2$	A	Moderate	Lindbergh	0.020	0.1000	N/A
$0.1Q_2$	A	Steep	Lindbergh	0.020	0.1000	N/A
$0.1Q_2$	B	Flat	Lindbergh	0.020	0.5400	N/A
$0.1Q_2$	B	Moderate	Lindbergh	0.020	0.7800	N/A
$0.1Q_2$	B	Steep	Lindbergh	0.020	0.3400	N/A
$0.1Q_2$	C	Flat	Lindbergh	0.020	0.3600	N/A
$0.1Q_2$	C	Moderate	Lindbergh	0.020	0.3600	N/A
$0.1Q_2$	C	Steep	Lindbergh	0.020	0.2400	N/A
$0.1Q_2$	D	Flat	Lindbergh	0.020	0.2600	N/A
$0.1Q_2$	D	Moderate	Lindbergh	0.020	0.2600	N/A
$0.1Q_2$	D	Steep	Lindbergh	0.020	0.1600	N/A
$0.1Q_2$	A	Flat	Oceanside	0.020	0.1600	N/A
$0.1Q_2$	A	Moderate	Oceanside	0.020	0.1400	N/A
$0.1Q_2$	A	Steep	Oceanside	0.020	0.1200	N/A
$0.1Q_2$	B	Flat	Oceanside	0.020	0.5100	N/A
$0.1Q_2$	B	Moderate	Oceanside	0.020	0.3400	N/A
$0.1Q_2$	B	Steep	Oceanside	0.020	0.2400	N/A
$0.1Q_2$	C	Flat	Oceanside	0.020	0.2600	N/A
$0.1Q_2$	C	Moderate	Oceanside	0.020	0.2600	N/A
$0.1Q_2$	C	Steep	Oceanside	0.020	0.2000	N/A
$0.1Q_2$	D	Flat	Oceanside	0.020	0.2000	N/A
$0.1Q_2$	D	Moderate	Oceanside	0.020	0.2000	N/A
$0.1Q_2$	D	Steep	Oceanside	0.020	0.1800	N/A
$0.1Q_2$	A	Flat	L Wohlford	0.020	0.1800	N/A
$0.1Q_2$	A	Moderate	L Wohlford	0.020	0.1400	N/A
$0.1Q_2$	A	Steep	L Wohlford	0.020	0.0800	N/A
$0.1Q_2$	B	Flat	L Wohlford	0.020	0.4400	N/A

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Table 7-2. Sizing Factors for Bioretention Plus Cistern Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.1Q_2$	B	Moderate	L Wohlford	0.020	0.4000	N/A
$0.1Q_2$	B	Steep	L Wohlford	0.020	0.3200	N/A
$0.1Q_2$	C	Flat	L Wohlford	0.020	0.3200	N/A
$0.1Q_2$	C	Moderate	L Wohlford	0.020	0.3200	N/A
$0.1Q_2$	C	Steep	L Wohlford	0.020	0.2200	N/A
$0.1Q_2$	D	Flat	L Wohlford	0.020	0.2400	N/A
$0.1Q_2$	D	Moderate	L Wohlford	0.020	0.2400	N/A
$0.1Q_2$	D	Steep	L Wohlford	0.020	0.1800	N/A

Q_2 = 2-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
Q_{10} = 10-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
A = Bioretention surface area sizing factor
V_1 = Cistern volume sizing factor

Table 7-3. Sizing Factors for Bioretention Plus Vault Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.5Q_2$	A	Flat	Lindbergh	N/A	N/A	N/A
$0.5Q_2$	A	Moderate	Lindbergh	N/A	N/A	N/A
$0.5Q_2$	A	Steep	Lindbergh	N/A	N/A	N/A
$0.5Q_2$	B	Flat	Lindbergh	0.040	0.3600	N/A
$0.5Q_2$	B	Moderate	Lindbergh	0.040	0.2400	N/A
$0.5Q_2$	B	Steep	Lindbergh	0.040	0.1400	N/A
$0.5Q_2$	C	Flat	Lindbergh	0.040	0.1600	N/A
$0.5Q_2$	C	Moderate	Lindbergh	0.040	0.1600	N/A
$0.5Q_2$	C	Steep	Lindbergh	0.040	0.1200	N/A
$0.5Q_2$	D	Flat	Lindbergh	0.040	0.1400	N/A
$0.5Q_2$	D	Moderate	Lindbergh	0.040	0.1400	N/A
$0.5Q_2$	D	Steep	Lindbergh	0.040	0.1000	N/A
$0.5Q_2$	A	Flat	Oceanside	N/A	N/A	N/A
$0.5Q_2$	A	Moderate	Oceanside	N/A	N/A	N/A
$0.5Q_2$	A	Steep	Oceanside	N/A	N/A	N/A
$0.5Q_2$	B	Flat	Oceanside	0.040	0.2100	N/A
$0.5Q_2$	B	Moderate	Oceanside	0.040	0.1800	N/A
$0.5Q_2$	B	Steep	Oceanside	0.040	0.1400	N/A
$0.5Q_2$	C	Flat	Oceanside	0.040	0.1400	N/A
$0.5Q_2$	C	Moderate	Oceanside	0.040	0.1400	N/A
$0.5Q_2$	C	Steep	Oceanside	0.040	0.1200	N/A
$0.5Q_2$	D	Flat	Oceanside	0.040	0.1400	N/A

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Table 7-3. Sizing Factors for Bioretention Plus Vault Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.5Q_2$	D	Moderate	Oceanside	0.040	0.1400	N/A
$0.5Q_2$	D	Steep	Oceanside	0.040	0.1200	N/A
$0.5Q_2$	A	Flat	L Wohlford	N/A	N/A	N/A
$0.5Q_2$	A	Moderate	L Wohlford	N/A	N/A	N/A
$0.5Q_2$	A	Steep	L Wohlford	N/A	N/A	N/A
$0.5Q_2$	B	Flat	L Wohlford	0.040	0.2600	N/A
$0.5Q_2$	B	Moderate	L Wohlford	0.040	0.2200	N/A
$0.5Q_2$	B	Steep	L Wohlford	0.040	0.1200	N/A
$0.5Q_2$	C	Flat	L Wohlford	0.040	0.1400	N/A
$0.5Q_2$	C	Moderate	L Wohlford	0.040	0.1400	N/A
$0.5Q_2$	C	Steep	L Wohlford	0.040	0.1000	N/A
$0.5Q_2$	D	Flat	L Wohlford	0.040	0.1200	N/A
$0.5Q_2$	D	Moderate	L Wohlford	0.040	0.1200	N/A
$0.5Q_2$	D	Steep	L Wohlford	0.040	0.0800	N/A
$0.3Q_2$	A	Flat	Lindbergh	N/A	N/A	N/A
$0.3Q_2$	A	Moderate	Lindbergh	N/A	N/A	N/A
$0.3Q_2$	A	Steep	Lindbergh	N/A	N/A	N/A
$0.3Q_2$	B	Flat	Lindbergh	0.040	0.4500	N/A
$0.3Q_2$	B	Moderate	Lindbergh	0.040	0.3200	N/A
$0.3Q_2$	B	Steep	Lindbergh	0.040	0.1800	N/A
$0.3Q_2$	C	Flat	Lindbergh	0.040	0.1800	N/A
$0.3Q_2$	C	Moderate	Lindbergh	0.040	0.1800	N/A
$0.3Q_2$	C	Steep	Lindbergh	0.040	0.1400	N/A
$0.3Q_2$	D	Flat	Lindbergh	0.040	0.1600	N/A
$0.3Q_2$	D	Moderate	Lindbergh	0.040	0.1600	N/A
$0.3Q_2$	D	Steep	Lindbergh	0.040	0.1200	N/A
$0.3Q_2$	A	Flat	Oceanside	N/A	N/A	N/A
$0.3Q_2$	A	Moderate	Oceanside	N/A	N/A	N/A
$0.3Q_2$	A	Steep	Oceanside	N/A	N/A	N/A
$0.3Q_2$	B	Flat	Oceanside	0.040	0.2500	N/A
$0.3Q_2$	B	Moderate	Oceanside	0.040	0.2000	N/A
$0.3Q_2$	B	Steep	Oceanside	0.040	0.1600	N/A
$0.3Q_2$	C	Flat	Oceanside	0.040	0.1600	N/A
$0.3Q_2$	C	Moderate	Oceanside	0.040	0.1600	N/A
$0.3Q_2$	C	Steep	Oceanside	0.040	0.1400	N/A
$0.3Q_2$	D	Flat	Oceanside	0.040	0.1400	N/A
$0.3Q_2$	D	Moderate	Oceanside	0.040	0.1400	N/A

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Table 7-3. Sizing Factors for Bioretention Plus Vault Facilities

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.3Q_2$	D	Steep	Oceanside	0.040	0.1200	N/A
$0.3Q_2$	A	Flat	L Wohlford	N/A	N/A	N/A
$0.3Q_2$	A	Moderate	L Wohlford	N/A	N/A	N/A
$0.3Q_2$	A	Steep	L Wohlford	N/A	N/A	N/A
$0.3Q_2$	B	Flat	L Wohlford	0.040	0.2900	N/A
$0.3Q_2$	B	Moderate	L Wohlford	0.040	0.2600	N/A
$0.3Q_2$	B	Steep	L Wohlford	0.040	0.1600	N/A
$0.3Q_2$	C	Flat	L Wohlford	0.040	0.1600	N/A
$0.3Q_2$	C	Moderate	L Wohlford	0.040	0.1600	N/A
$0.3Q_2$	C	Steep	L Wohlford	0.040	0.1200	N/A
$0.3Q_2$	D	Flat	L Wohlford	0.040	0.1200	N/A
$0.3Q_2$	D	Moderate	L Wohlford	0.040	0.1200	N/A
$0.3Q_2$	D	Steep	L Wohlford	0.040	0.0800	N/A
$0.1Q_2$	A	Flat	Lindbergh	N/A	N/A	N/A
$0.1Q_2$	A	Moderate	Lindbergh	N/A	N/A	N/A
$0.1Q_2$	A	Steep	Lindbergh	N/A	N/A	N/A
$0.1Q_2$	B	Flat	Lindbergh	0.040	0.5900	N/A
$0.1Q_2$	B	Moderate	Lindbergh	0.040	0.5000	N/A
$0.1Q_2$	B	Steep	Lindbergh	0.040	0.3200	N/A
$0.1Q_2$	C	Flat	Lindbergh	0.040	0.3400	N/A
$0.1Q_2$	C	Moderate	Lindbergh	0.040	0.3400	N/A
$0.1Q_2$	C	Steep	Lindbergh	0.040	0.2400	N/A
$0.1Q_2$	D	Flat	Lindbergh	0.040	0.2600	N/A
$0.1Q_2$	D	Moderate	Lindbergh	0.040	0.2600	N/A
$0.1Q_2$	D	Steep	Lindbergh	0.040	0.1800	N/A
$0.1Q_2$	A	Flat	Oceanside	N/A	N/A	N/A
$0.1Q_2$	A	Moderate	Oceanside	N/A	N/A	N/A
$0.1Q_2$	A	Steep	Oceanside	N/A	N/A	N/A
$0.1Q_2$	B	Flat	Oceanside	0.040	0.4300	N/A
$0.1Q_2$	B	Moderate	Oceanside	0.040	0.3400	N/A
$0.1Q_2$	B	Steep	Oceanside	0.040	0.2400	N/A
$0.1Q_2$	C	Flat	Oceanside	0.040	0.2600	N/A
$0.1Q_2$	C	Moderate	Oceanside	0.040	0.2600	N/A
$0.1Q_2$	C	Steep	Oceanside	0.040	0.2000	N/A
$0.1Q_2$	D	Flat	Oceanside	0.040	0.2200	N/A
$0.1Q_2$	D	Moderate	Oceanside	0.040	0.2200	N/A
$0.1Q_2$	D	Steep	Oceanside	0.040	0.1600	N/A

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Table 7-3. Sizing Factors for Bioretention Plus Vault Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
$0.1Q_2$	A	Flat	L Wohlford	N/A	N/A	N/A
$0.1Q_2$	A	Moderate	L Wohlford	N/A	N/A	N/A
$0.1Q_2$	A	Steep	L Wohlford	N/A	N/A	N/A
$0.1Q_2$	B	Flat	L Wohlford	0.040	0.4300	N/A
$0.1Q_2$	B	Moderate	L Wohlford	0.040	0.3800	N/A
$0.1Q_2$	B	Steep	L Wohlford	0.040	0.2800	N/A
$0.1Q_2$	C	Flat	L Wohlford	0.040	0.2800	N/A
$0.1Q_2$	C	Moderate	L Wohlford	0.040	0.2800	N/A
$0.1Q_2$	C	Steep	L Wohlford	0.040	0.2000	N/A
$0.1Q_2$	D	Flat	L Wohlford	0.040	0.2200	N/A
$0.1Q_2$	D	Moderate	L Wohlford	0.040	0.2200	N/A
$0.1Q_2$	D	Steep	L Wohlford	0.040	0.1400	N/A

Q_2 = 2-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
Q_{10} = 10-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
A = Bioretention surface area sizing factor
V_1 = Cistern volume sizing factor

Table 7-4. Sizing Factors for Flow-Through Planters						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
0.5Q2	A	Flat	Lindbergh	N/A	N/A	N/A
0.5Q2	A	Moderate	Lindbergh	N/A	N/A	N/A
0.5Q2	A	Steep	Lindbergh	N/A	N/A	N/A
0.5Q2	B	Flat	Lindbergh	N/A	N/A	N/A
0.5Q2	B	Moderate	Lindbergh	N/A	N/A	N/A
0.5Q2	B	Steep	Lindbergh	N/A	N/A	N/A
0.5Q2	C	Flat	Lindbergh	0.115	0.0958	0.0690
0.5Q2	C	Moderate	Lindbergh	0.115	0.0958	0.0690
0.5Q2	C	Steep	Lindbergh	0.080	0.0667	0.0480
0.5Q2	D	Flat	Lindbergh	0.085	0.0708	0.0510
0.5Q2	D	Moderate	Lindbergh	0.085	0.0708	0.0510
0.5Q2	D	Steep	Lindbergh	0.065	0.0542	0.0390
0.5Q2	A	Flat	Oceanside	N/A	N/A	N/A
0.5Q2	A	Moderate	Oceanside	N/A	N/A	N/A
0.5Q2	A	Steep	Oceanside	N/A	N/A	N/A
0.5Q2	B	Flat	Oceanside	N/A	N/A	N/A
0.5Q2	B	Moderate	Oceanside	N/A	N/A	N/A
0.5Q2	B	Steep	Oceanside	N/A	N/A	N/A
0.5Q2	C	Flat	Oceanside	0.075	0.0625	0.0450

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Table 7-4. Sizing Factors for Flow-Through Planters						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
0.5Q2	C	Moderate	Oceanside	0.075	0.0625	0.0450
0.5Q2	C	Steep	Oceanside	0.065	0.0542	0.0390
0.5Q2	D	Flat	Oceanside	0.070	0.0583	0.0420
0.5Q2	D	Moderate	Oceanside	0.070	0.0583	0.0420
0.5Q2	D	Steep	Oceanside	0.050	0.0417	0.0300
0.5Q2	A	Flat	L Wohlford	N/A	N/A	N/A
0.5Q2	A	Moderate	L Wohlford	N/A	N/A	N/A
0.5Q2	A	Steep	L Wohlford	N/A	N/A	N/A
0.5Q2	B	Flat	L Wohlford	N/A	N/A	N/A
0.5Q2	B	Moderate	L Wohlford	N/A	N/A	N/A
0.5Q2	B	Steep	L Wohlford	N/A	N/A	N/A
0.5Q2	C	Flat	L Wohlford	0.070	0.0583	0.0420
0.5Q2	C	Moderate	L Wohlford	0.070	0.0583	0.0420
0.5Q2	C	Steep	L Wohlford	0.050	0.0417	0.0300
0.5Q2	D	Flat	L Wohlford	0.055	0.0458	0.0330
0.5Q2	D	Moderate	L Wohlford	0.055	0.0458	0.0330
0.5Q2	D	Steep	L Wohlford	0.045	0.0375	0.0270
0.3Q2	A	Flat	Lindbergh	N/A	N/A	N/A
0.3Q2	A	Moderate	Lindbergh	N/A	N/A	N/A
0.3Q2	A	Steep	Lindbergh	N/A	N/A	N/A
0.3Q2	B	Flat	Lindbergh	N/A	N/A	N/A
0.3Q2	B	Moderate	Lindbergh	N/A	N/A	N/A
0.3Q2	B	Steep	Lindbergh	N/A	N/A	N/A
0.3Q2	C	Flat	Lindbergh	0.130	0.1083	0.0780
0.3Q2	C	Moderate	Lindbergh	0.130	0.1083	0.0780
0.3Q2	C	Steep	Lindbergh	0.100	0.0833	0.0600
0.3Q2	D	Flat	Lindbergh	0.105	0.0875	0.0630
0.3Q2	D	Moderate	Lindbergh	0.105	0.0875	0.0630
0.3Q2	D	Steep	Lindbergh	0.075	0.0625	0.0450
0.3Q2	A	Flat	Oceanside	N/A	N/A	N/A
0.3Q2	A	Moderate	Oceanside	N/A	N/A	N/A
0.3Q2	A	Steep	Oceanside	N/A	N/A	N/A
0.3Q2	B	Flat	Oceanside	N/A	N/A	N/A
0.3Q2	B	Moderate	Oceanside	N/A	N/A	N/A
0.3Q2	B	Steep	Oceanside	N/A	N/A	N/A
0.3Q2	C	Flat	Oceanside	0.105	0.0875	0.0630
0.3Q2	C	Moderate	Oceanside	0.105	0.0875	0.0630
0.3Q2	C	Steep	Oceanside	0.085	0.0708	0.0510
0.3Q2	D	Flat	Oceanside	0.090	0.0750	0.0540

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Table 7-4. Sizing Factors for Flow-Through Planters						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
0.3Q2	D	Moderate	Oceanside	0.090	0.0750	0.0540
0.3Q2	D	Steep	Oceanside	0.070	0.0583	0.0420
0.3Q2	A	Flat	L Wohlford	N/A	N/A	N/A
0.3Q2	A	Moderate	L Wohlford	N/A	N/A	N/A
0.3Q2	A	Steep	L Wohlford	N/A	N/A	N/A
0.3Q2	B	Flat	L Wohlford	N/A	N/A	N/A
0.3Q2	B	Moderate	L Wohlford	N/A	N/A	N/A
0.3Q2	B	Steep	L Wohlford	N/A	N/A	N/A
0.3Q2	C	Flat	L Wohlford	0.085	0.0708	0.0510
0.3Q2	C	Moderate	L Wohlford	0.085	0.0708	0.0510
0.3Q2	C	Steep	L Wohlford	0.060	0.0500	0.0360
0.3Q2	D	Flat	L Wohlford	0.065	0.0542	0.0390
0.3Q2	D	Moderate	L Wohlford	0.065	0.0542	0.0390
0.3Q2	D	Steep	L Wohlford	0.050	0.0417	0.0300
0.1Q2	A	Flat	Lindbergh	N/A	N/A	N/A
0.1Q2	A	Moderate	Lindbergh	N/A	N/A	N/A
0.1Q2	A	Steep	Lindbergh	N/A	N/A	N/A
0.1Q2	B	Flat	Lindbergh	N/A	N/A	N/A
0.1Q2	B	Moderate	Lindbergh	N/A	N/A	N/A
0.1Q2	B	Steep	Lindbergh	N/A	N/A	N/A
0.1Q2	C	Flat	Lindbergh	0.250	0.2083	0.1500
0.1Q2	C	Moderate	Lindbergh	0.250	0.2083	0.1500
0.1Q2	C	Steep	Lindbergh	0.185	0.1542	0.1110
0.1Q2	D	Flat	Lindbergh	0.200	0.1667	0.1200
0.1Q2	D	Moderate	Lindbergh	0.200	0.1667	0.1200
0.1Q2	D	Steep	Lindbergh	0.130	0.1083	0.0780
0.1Q2	A	Flat	Oceanside	N/A	N/A	N/A
0.1Q2	A	Moderate	Oceanside	N/A	N/A	N/A
0.1Q2	A	Steep	Oceanside	N/A	N/A	N/A
0.1Q2	B	Flat	Oceanside	N/A	N/A	N/A
0.1Q2	B	Moderate	Oceanside	N/A	N/A	N/A
0.1Q2	B	Steep	Oceanside	N/A	N/A	N/A
0.1Q2	C	Flat	Oceanside	0.190	0.1583	0.1140
0.1Q2	C	Moderate	Oceanside	0.190	0.1583	0.1140
0.1Q2	C	Steep	Oceanside	0.140	0.1167	0.0840
0.1Q2	D	Flat	Oceanside	0.160	0.1333	0.0960
0.1Q2	D	Moderate	Oceanside	0.160	0.1333	0.0960
0.1Q2	D	Steep	Oceanside	0.105	0.0875	0.0630
0.1Q2	A	Flat	L Wohlford	N/A	N/A	N/A

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Table 7-4. Sizing Factors for Flow-Through Planters						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
0.1Q2	A	Moderate	L Wohlford	N/A	N/A	N/A
0.1Q2	A	Steep	L Wohlford	N/A	N/A	N/A
0.1Q2	B	Flat	L Wohlford	N/A	N/A	N/A
0.1Q2	B	Moderate	L Wohlford	N/A	N/A	N/A
0.1Q2	B	Steep	L Wohlford	N/A	N/A	N/A
0.1Q2	C	Flat	L Wohlford	0.135	0.1125	0.0810
0.1Q2	C	Moderate	L Wohlford	0.135	0.1125	0.0810
0.1Q2	C	Steep	L Wohlford	0.105	0.0875	0.0630
0.1Q2	D	Flat	L Wohlford	0.110	0.0917	0.0660
0.1Q2	D	Moderate	L Wohlford	0.110	0.0917	0.0660
0.1Q2	D	Steep	L Wohlford	0.080	0.0667	0.0480

Q_2 = 2-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
Q_{10} = 10-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
A = Surface area sizing factor
V_1 = Surface volume sizing factor
V_2 = Subsurface volume sizing factor

Table 7-5. Sizing Factors for Infiltration Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
0.5Q2	A	Flat	Lindbergh	0.040	0.1040	N/A
0.5Q2	A	Moderate	Lindbergh	0.040	0.1040	N/A
0.5Q2	A	Steep	Lindbergh	0.035	0.0910	N/A
0.5Q2	B	Flat	Lindbergh	0.058	0.1495	N/A
0.5Q2	B	Moderate	Lindbergh	0.055	0.1430	N/A
0.5Q2	B	Steep	Lindbergh	0.050	0.1300	N/A
0.5Q2	C	Flat	Lindbergh	N/A	N/A	N/A
0.5Q2	C	Moderate	Lindbergh	N/A	N/A	N/A
0.5Q2	C	Steep	Lindbergh	N/A	N/A	N/A
0.5Q2	D	Flat	Lindbergh	N/A	N/A	N/A
0.5Q2	D	Moderate	Lindbergh	N/A	N/A	N/A
0.5Q2	D	Steep	Lindbergh	N/A	N/A	N/A
0.5Q2	A	Flat	Oceanside	0.045	0.1170	N/A
0.5Q2	A	Moderate	Oceanside	0.045	0.1170	N/A
0.5Q2	A	Steep	Oceanside	0.040	0.1040	N/A
0.5Q2	B	Flat	Oceanside	0.065	0.1690	N/A
0.5Q2	B	Moderate	Oceanside	0.065	0.1690	N/A
0.5Q2	B	Steep	Oceanside	0.060	0.1560	N/A
0.5Q2	C	Flat	Oceanside	N/A	N/A	N/A
0.5Q2	C	Moderate	Oceanside	N/A	N/A	N/A

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Table 7-5. Sizing Factors for Infiltration Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
0.5Q2	C	Steep	Oceanside	N/A	N/A	N/A
0.5Q2	D	Flat	Oceanside	N/A	N/A	N/A
0.5Q2	D	Moderate	Oceanside	N/A	N/A	N/A
0.5Q2	D	Steep	Oceanside	N/A	N/A	N/A
0.5Q2	A	Flat	L Wohlford	0.050	0.1300	N/A
0.5Q2	A	Moderate	L Wohlford	0.050	0.1300	N/A
0.5Q2	A	Steep	L Wohlford	0.040	0.1040	N/A
0.5Q2	B	Flat	L Wohlford	0.078	0.2015	N/A
0.5Q2	B	Moderate	L Wohlford	0.075	0.1950	N/A
0.5Q2	B	Steep	L Wohlford	0.065	0.1690	N/A
0.5Q2	C	Flat	L Wohlford	N/A	N/A	N/A
0.5Q2	C	Moderate	L Wohlford	N/A	N/A	N/A
0.5Q2	C	Steep	L Wohlford	N/A	N/A	N/A
0.5Q2	D	Flat	L Wohlford	N/A	N/A	N/A
0.5Q2	D	Moderate	L Wohlford	N/A	N/A	N/A
0.5Q2	D	Steep	L Wohlford	N/A	N/A	N/A
0.3Q2	A	Flat	Lindbergh	0.040	0.1040	N/A
0.3Q2	A	Moderate	Lindbergh	0.040	0.1040	N/A
0.3Q2	A	Steep	Lindbergh	0.035	0.0910	N/A
0.3Q2	B	Flat	Lindbergh	0.058	0.1495	N/A
0.3Q2	B	Moderate	Lindbergh	0.055	0.1430	N/A
0.3Q2	B	Steep	Lindbergh	0.050	0.1300	N/A
0.3Q2	C	Flat	Lindbergh	N/A	N/A	N/A
0.3Q2	C	Moderate	Lindbergh	N/A	N/A	N/A
0.3Q2	C	Steep	Lindbergh	N/A	N/A	N/A
0.3Q2	D	Flat	Lindbergh	N/A	N/A	N/A
0.3Q2	D	Moderate	Lindbergh	N/A	N/A	N/A
0.3Q2	D	Steep	Lindbergh	N/A	N/A	N/A
0.3Q2	A	Flat	Oceanside	0.045	0.1170	N/A
0.3Q2	A	Moderate	Oceanside	0.045	0.1170	N/A
0.3Q2	A	Steep	Oceanside	0.040	0.1040	N/A
0.3Q2	B	Flat	Oceanside	0.065	0.1690	N/A
0.3Q2	B	Moderate	Oceanside	0.065	0.1690	N/A
0.3Q2	B	Steep	Oceanside	0.060	0.1560	N/A
0.3Q2	C	Flat	Oceanside	N/A	N/A	N/A
0.3Q2	C	Moderate	Oceanside	N/A	N/A	N/A
0.3Q2	C	Steep	Oceanside	N/A	N/A	N/A
0.3Q2	D	Flat	Oceanside	N/A	N/A	N/A
0.3Q2	D	Moderate	Oceanside	N/A	N/A	N/A

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Table 7-5. Sizing Factors for Infiltration Facilities						
Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
0.3Q2	D	Steep	Oceanside	N/A	N/A	N/A
0.3Q2	A	Flat	L Wohlford	0.050	0.1300	N/A
0.3Q2	A	Moderate	L Wohlford	0.050	0.1300	N/A
0.3Q2	A	Steep	L Wohlford	0.040	0.1040	N/A
0.3Q2	B	Flat	L Wohlford	0.078	0.2015	N/A
0.3Q2	B	Moderate	L Wohlford	0.075	0.1950	N/A
0.3Q2	B	Steep	L Wohlford	0.065	0.1690	N/A
0.3Q2	C	Flat	L Wohlford	N/A	N/A	N/A
0.3Q2	C	Moderate	L Wohlford	N/A	N/A	N/A
0.3Q2	C	Steep	L Wohlford	N/A	N/A	N/A
0.3Q2	D	Flat	L Wohlford	N/A	N/A	N/A
0.3Q2	D	Moderate	L Wohlford	N/A	N/A	N/A
0.3Q2	D	Steep	L Wohlford	N/A	N/A	N/A
0.1Q2	A	Flat	Lindbergh	0.040	0.1040	N/A
0.1Q2	A	Moderate	Lindbergh	0.040	0.1040	N/A
0.1Q2	A	Steep	Lindbergh	0.035	0.0910	N/A
0.1Q2	B	Flat	Lindbergh	0.058	0.1495	N/A
0.1Q2	B	Moderate	Lindbergh	0.055	0.1430	N/A
0.1Q2	B	Steep	Lindbergh	0.050	0.1300	N/A
0.1Q2	C	Flat	Lindbergh	N/A	N/A	N/A
0.1Q2	C	Moderate	Lindbergh	N/A	N/A	N/A
0.1Q2	C	Steep	Lindbergh	N/A	N/A	N/A
0.1Q2	D	Flat	Lindbergh	N/A	N/A	N/A
0.1Q2	D	Moderate	Lindbergh	N/A	N/A	N/A
0.1Q2	D	Steep	Lindbergh	N/A	N/A	N/A
0.1Q2	A	Flat	Oceanside	0.045	0.1170	N/A
0.1Q2	A	Moderate	Oceanside	0.045	0.1170	N/A
0.1Q2	A	Steep	Oceanside	0.040	0.1040	N/A
0.1Q2	B	Flat	Oceanside	0.065	0.1690	N/A
0.1Q2	B	Moderate	Oceanside	0.065	0.1690	N/A
0.1Q2	B	Steep	Oceanside	0.060	0.1560	N/A
0.1Q2	C	Flat	Oceanside	N/A	N/A	N/A
0.1Q2	C	Moderate	Oceanside	N/A	N/A	N/A
0.1Q2	C	Steep	Oceanside	N/A	N/A	N/A
0.1Q2	D	Flat	Oceanside	N/A	N/A	N/A
0.1Q2	D	Moderate	Oceanside	N/A	N/A	N/A
0.1Q2	D	Steep	Oceanside	N/A	N/A	N/A
0.1Q2	A	Flat	L Wohlford	0.050	0.1300	N/A
0.1Q2	A	Moderate	L Wohlford	0.050	0.1300	N/A

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Table 7-5. Sizing Factors for Infiltration Facilities

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V_1	V_2
0.1Q2	A	Steep	L Wohlford	0.040	0.1040	N/A
0.1Q2	B	Flat	L Wohlford	0.078	0.2015	N/A
0.1Q2	B	Moderate	L Wohlford	0.075	0.1950	N/A
0.1Q2	B	Steep	L Wohlford	0.065	0.1690	N/A
0.1Q2	C	Flat	L Wohlford	N/A	N/A	N/A
0.1Q2	C	Moderate	L Wohlford	N/A	N/A	N/A
0.1Q2	C	Steep	L Wohlford	N/A	N/A	N/A
0.1Q2	D	Flat	L Wohlford	N/A	N/A	N/A
0.1Q2	D	Moderate	L Wohlford	N/A	N/A	N/A
0.1Q2	D	Steep	L Wohlford	N/A	N/A	N/A

Q_2 = 2-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
Q_{10} = 10-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
A = Surface area sizing factor
V_1 = Infiltration volume sizing factor

Rainfall basin boundaries were determined based upon mean annual precipitation values as determined by the County of San Diego and specific precipitation totals at the three base rainfall stations (Lindbergh Field, Oceanside and Lake Wohlford). The final rainfall basin map is provided in the San Diego BMP Sizing Calculator.

Per the County's chief hydrologist Rand Allan, the 3 base rainfall stations have the following mean annual precipitation values for the time period of 1971-2001 (period of time depicted on the mean annual precipitation map created by the County of San Diego).

Lindbergh Field = 10.2 inches
Oceanside = 13.3 inches
Lake Wohlford = 20.0 inches

To determine the east-west boundary between Oceanside and Lake Wohlford, the average of the mean annual precipitation values between Oceanside and Lake Wohlford was determined:

(13.3 inches + 20.0 inches) / 2 = 16.7 inches

The 17 inch isopluvial line was used as the boundary – anything east of the 17 inch isopluvial line would be part of the Lake Wohlford basin.

To determine the east-west boundary between Oceanside and Lindbergh, the average of the mean annual precipitation values between Oceanside and Lindbergh was determined:

(13.3 inches + 10.2 inches) = 11.8 inches

The 12 inch isopluvial line was used as the boundary – anything west of the 12 inch isopluvial line would be part of the Lindbergh basin.

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To determine the east-west boundary between Lindbergh and Lake Wohlford (used only for extreme south county areas), the average of the mean annual precipitation values between Lindbergh and Lake Wohlford was determined:

(10.2 inches + 20.0 inches) / 2 = 15.1 inches

The 15 inch isopluvial line was used as the boundary – anything east of the 15-inch isopluvial line would be part of the Lake Wohlford basin.

Areas located between the 12 inch and 17 inch isopluvial lines and also located north of Sweetwater Reservoir/San Miguel Mountain were designated as part of the Oceanside basin.

Additional notes:

1. The southern extent of the Oceanside basin was limited to the area near Sweetwater Reservoir and San Miguel Mountain. At that location, the previously discussed 15 inch and 17 inch isopluvial lines are in close proximity.
2. There is a short reach of 12 inch isopluvial line near the coastline between Encinitas and Los Penasquitos lagoon. Even though this area has a mean annual precipitation less than 12 inches, it is included in the Oceanside basin pursuant to Rand Allan's determination that a north-south divide between the Lindbergh and Oceanside basins occurs north of La Jolla.

For situations where LID implementation cannot fully achieve the required hydromodification flow mitigation, the project applicant will have the option to implement extended detention facilities in combination with LID facilities. The San Diego HMP / LID sizing calculator will have a basin sizing component to assist with the design of extended detention flow duration control facilities as well as LID facilities.

Facilities must be designed, built, and maintained to practically function within the urban environment. Soil compaction associated with grading activities affects infiltration rates and should be considered. Underdrains are typically required for urban projects where the anticipated infiltration rate is low or where infiltrated runoff could pose an adjacent stability risk.

Since the HMP will be implemented through the municipal development review process, design criteria must be specified and be incorporated into conditions of approval.

Development of sizing factors and the San Diego HMP / LID sizing calculator is currently being conducted and includes the following tasks.

- Develop and document the major assumptions and model parameters that will be used in subsequent HSPF simulations to size Low-Impact Design (LID) facilities, detention ponds, and non-structural stormwater controls. This task includes three steps.
  1. Document LID facility configurations included in the Sizing Calculator
  2. Select the range of input parameters to use in the HSPF model simulations
  3. Develop and document the approach to computing BMP sizing factors
- Develop configurations of each of the LID BMPs included in the Model SUSMP, including the dimensions of the ponding layers, growing medium, storage layer, and outlet piping. The following LID BMPs will be modeled for flow control and water quality treatment:
  1. Bioretention
  2. Cistern with bioretention
  3. Bioretention with flow control vault
  4. Flow-through planter

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5. Dry well
6. Vegetated bioswale (for water quality treatment only)

- Select a recommended set of HSPF input parameters for simulating hydrologic processes on pervious surfaces, known in HSPF as PERLNDs. Parameters will be selected that represent specific combinations of the following:
  - Soils
  - Land Cover
  - Slope
- Develop LID sizing factors for NRCS Group A, B, C, and D soils. LID facilities built in Group C and D soils will include an underdrain and a flow control orifice. LID facilities built in Group A and B soils will have no underdrain, requiring infiltration to surrounding soils.
- Develop sizing for traditional stormwater BMPs using an automated approach to size stormwater detention ponds. The automated pond sizing algorithm is incorporated into the BMP Sizing Calculator.
  - Select specific allowable range of pond configuration parameters, such as side slopes and the number of outlets
  - Develop an algorithm that will read in long-term model simulation results and iteratively vary pond volume and outlet dimensions until the flow control requirements are met
- Develop BMP Sizing Calculator. The BMP Sizing Calculator will help streamline the process of sizing the BMPs listed in the County's Model SUSMP. The software will have the following features:
  - Sizing of BMPs for "flow control + water quality treatment" and "water quality treatment-only" permit requirements
  - Include all LID BMPs listed in the County's SUSMP, including stormwater detention ponds
  - Include sizing criteria for self-retaining areas and self-treating areas, as described in the Model SUSMP

7.2 Inspection and Maintenance Schedule

If not properly designed or maintained, hydromodification flow control devices may create a habitat for vectors such as mosquitoes or rodents as well as potential safety hazards due to standing water. Vector habitat creation can be avoided through collaboration with municipalities and both local vector control agencies and the State Department of Health Services during the development and implementation of Project Submittals (Storm Water Management Plans or Water Quality Technical Reports).

Proof of long-term ongoing maintenance responsibility and mechanism are required for all post-construction BMPs, including hydromodification mitigation facilities. Maintenance activities for flow control and LID devices will be specified in the proposed Project Submittal (Storm Water Management Plan or Water Quality Technical Report).

A blockage in the storm drain system can cause water to back up into the treatment facilities and cause damage. For this reason, inspection and maintenance of the storm drain system is considered part of the inspection and maintenance of the treatment facilities. Normal functioning of the facilities may involve retention of water for up to 72 hours following significant storm events.

As required by Permit Provision D.1.c.(5), local municipalities require submittal of proof of a mechanism under which ongoing long-term maintenance of stormwater treatment and flow-control facilities will be conducted. Municipalities may require one of more of the following items be included in the Project Submittal:

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1. A means to finance and implement facility maintenance in perpetuity.
2. Acceptance of responsibility for maintenance from the time the facilities are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the selected treatment and flow-control facilities.

Local municipalities may also require preparation and submittal of a detailed plan that sets forth a maintenance schedule for each of the treatment and flow-control facilities built on the project site and names the responsible parties for this action.

Before completing the Project Submittal, the applicant should ensure the stormwater control design is fully coordinated with the site plan, grading plan, and landscaping plan being proposed for the site.

Information submitted and presentations to design review committees, planning commissions, and other decision-making bodies must incorporate relevant aspects of the stormwater design. In particular, ensure:

- Curb elevations, elevations, grade breaks, and other features of the drainage design are consistent with the delineation of Drainage Management Areas (DMAs).
- The top edge (overflow) of each bioretention facility is level all around its perimeter—this is particularly important in parking lot medians.
- The resulting grading and drainage design is consistent with the design for parking and circulation.
- Bioretention facilities and other IMPs do not create conflicts with pedestrian access between parking and building entrances.
- Vaults and utility boxes can be accommodated outside bioretention facilities and will not be placed within bioretention facilities.
- The visual impact of stormwater facilities, including planter boxes at building foundations and any terracing or retaining walls required for the stormwater control design, is shown in renderings and other architectural drawings.
- Landscaping plans, including planting plans, show locations of bioretention facilities, and the plant requirements are consistent with the engineered soils and conditions in the bioretention facilities.
- Renderings and representation of street views incorporate any stormwater facilities located in street-side buffers and setbacks

Other design considerations to assist with long-term maintenance include:

- For effective, low-maintenance operation, locate facilities so drainage into and out of the device is by gravity flow. Pumped systems are feasible, but are expensive, require more maintenance, are prone to untimely failure, and can cause mosquito control problems. Most IMPs require 3 feet or more of head.
- If the property is being subdivided now or in the future, the facility should be in a common, accessible area. In particular, avoid locating facilities on private residential lots. Even if the facility will serve only one site owner or operator, make sure the facility is located for ready access by inspectors from the local municipality and local mosquito control agency.
- The facility must be accessible to equipment needed for its maintenance. Access requirements for maintenance will vary with the type of facility selected. Planter boxes and bioretention areas will typically need access for the same types of equipment used for landscape maintenance.

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8. MONITORING AND BMP EVALUATION

8.1 Introduction

This section presents a summary of the San Diego HMP's revised Monitoring Plan. The summary explains technical concepts and proposes approaches to monitor the effectiveness of the HMP as required by provision D.1.g of Regional Board Order No. R9-2007-0001.

Part 1(k) of provision D.1.g requires that the HMP shall "include a description of pre- and post-project monitoring and other program evaluations to be conducted to assess the effectiveness of implementation of the HMP." For the purposes of developing an HMP monitoring approach, an effective HMP is defined as a program that ensures compliance with HMP design criteria and results in no significant stream degradation due to increased erosive force caused by new development.

The proposed monitoring approach provides for the optimum 5-year effectiveness assessment within currently available funding resources. Monitoring Plan activities were selected to achieve statistical data collection requirements while balancing regional financial constraints and highly variable scientific, regulatory, and physical elements. Monitoring plan activities presented herein have been developed to answer the following questions regarding HMP program effectiveness assessment:

- **Do field observations confirm that the HMP appropriately defines the flow rate (expressed as a function of the 2-year runoff event) that initiates movement of channel bed or bank materials?** Since most of the sediment transport modeling prepared as part of the HMP development relied on laboratory flume data, it is important to supplement the sediment transport data set with field observations. This data may be used in the next permit cycle to determine whether critical shear stress is the appropriate parameter for selecting the lower flow threshold of the geomorphically significant flow range.
- **Are mitigation facilities adequately meeting flow duration design criteria outlined in the HMP?** Observed HMP mitigation facility outflow data can be analyzed to determine if mitigation facilities are reducing the mitigated post-project peak flow frequency and flow duration curves to the pre-project curves (within tolerances set forth in the HMP). This data can also be used to analyze the precision of LID sizing factors, extended detention facility design criteria, and to potentially recommend changes to more closely match the mitigated post-project curves to pre-project condition peak flow frequency and flow duration curves.
- **What is the effect of development on downstream cross section incision and widening?** Since the mitigation of accelerated channel degradation as a result of development is the central purpose of the HMP, analysis of channel cross sections downstream of development projects is a component of the monitoring plan. However, uncertainties involved with this comparison tool (namely the determination of pre-project condition trends regarding channel incision and channel widening rates) make policy determinations less likely within the time frame of the 5-year monitoring plan (as compared to sediment transport modeling and flow duration modeling detailed in the previous two questions).

Such a question-driven plan is consistent with the draft hydromodification monitoring framework prepared by the Southern California Coastal Water Research Project (SCCWRP – report dated December 9, 2009).

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In an effort to effectively address the wide variability of potential monitoring scenarios and competing needs outlined above, the Copermittees and Brown and Caldwell have consulted with technical experts in a variety of critical disciplines including Dr. Eric Stein of SCCWRP (geomorphology expert), San Diego Regional Water Quality Control Board staff, Dr. Andy Collison of Phillip Williams Associates (geomorphology expert), Dr. Khalil Abusaba (formerly of the San Francisco Regional Water Quality Control Board and currently with Brown and Caldwell – expert in statistical analysis of water quality data), and members of the San Diego HMP Technical Advisory Committee.

8.2 Technical Concepts

8.2.1 Hydromodification Concepts

As required in the Permit, the evaluation of increased erosive force is limited to the geomorphically significant flow range, which is defined between the flow associated with critical shear stress and the ten-year return flow (Q10). The value of the lower flow threshold indicates the flow at which sediment erosion from the stream bed or banks begins to occur. The HMP uses two calculation tools (the low flow calculator and the SCCWRP channel assessment tool) to determine the low flow threshold based upon substrate type, channel slope, roughness, channel cross section, and other stream assessment conditions. The resulting lower flow threshold will be expressed as a multiple of the two-year return flow (Q2):

- $0.1Q_2$ for streams with HIGH susceptibility to channel erosion
- $0.3Q_2$ for streams with MEDIUM susceptibility to channel erosion
- $0.5Q_2$ for streams with LOW susceptibility to channel erosion

8.2.2 HMP Effectiveness Validation Measures

Sediment Transport Studies. This approach monitors sediment concentration (SSC) throughout a storm event and can be used to directly evaluate the validity of a lower flow threshold for a particular stream segment. Measuring the continuous SSC to flow relationship over a range of flows allows HMP effectiveness to be evaluated based on whether or not significant post-project increases in SSC (as compared to pre-project conditions) are observed at a given flow rate. This approach is the most costly, because it involves measuring flow and SSC. The SSC measurements will involve continuous turbidity monitoring, which would include calibration of turbidity meters using stream cross-sectional sediment sampling to correlate SSC to turbidity, or an approved equivalent metric. SSC values can also be determined through a laboratory analysis using United States Geological Survey (USGS) procedures. The final analysis method, along with data collection specifications, will be determined following future discussions with the Copermittees and members of the Technical Advisory Committee. These approaches are most likely to produce information on HMP effectiveness on a relatively short time frame, provided that a sufficient range of storm event sizes can be sampled in a given year.

Flow Duration Curves. Another measure of HMP effectiveness is determining if, within the geomorphically significant flow range, the post-project flow-duration curve is comparable to or below the pre-project flow duration curve. Flow-duration curves are monitored by installing continuous flow monitoring devices downstream of a planned project prior to development to establish pre-project conditions. If the flow monitoring facilities used for the sediment transport studies (detailed above) are located just downstream of a proposed development, then data from the sediment transport studies can be used for the pre-project flow duration data. This approach is consistent with the draft SCCWRP monitoring framework, which recommends stream flow monitoring to be provided just downstream of a hydromodification mitigation management device. Post-development mitigated flow duration monitoring data is analyzed to evaluate whether significant changes in the flow-duration curve have occurred. This monitoring approach can also be

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used to validate sizing factors for LID and extended detention BMPs. Depending on the range of rainfall events encountered in a particular year, monitoring of flow-duration curves can help develop pre-project conditions and evaluate post-project effectiveness on a relatively short time scale (i.e., 2 to 3 years each).

Channel Incision and Widening. The most obvious measure of stream degradation is to physically measure the pre-project and post-project cross sections, and determine if the channel is incising and / or widening. This is accomplished by conducting geomorphic assessments and channel surveys downstream of a planned development before and after construction. In addition to physical measurements, comparison of current and historical photos, aerial photography, and site inspection for signs of channel degradation can provide important supporting evidence. The labor for conducting such an assessment at a single location is lower compared to the effort needed to conduct sediment transport studies. Costs are driven by the number of sites assessed, as well as the need for establishing pre-project trends (e.g., rate of pre-project channel incision per year). Although this monitoring approach is the most direct measure of whether stream degradation is occurring, it is difficult to use the method to differentiate between existing geomorphic effects and post-project geomorphic effects. To do so would require a long-term baseline of pre-project channel incision and widening rates along with post-project monitoring. To capture the range of annual rainfall conditions encountered in Southern California, decades of information are generally recommended to quantify pre-project baseline trends. Therefore, while baseline data will be collected and be useful for future comparison analyses, this monitoring plan focuses on validation measures likely to provide meaningful data within 2 to 5 years. It is possible that tentative conclusions may be reached regarding channel incision and widening at the conclusion of the 5-year monitoring plan. Finally, it should be noted that the Copermittees will centralize stream assessment information collected as part of project development processes. This information may be used for future channel condition assessments and will be utilized by the Copermittees to the extent practicable. While such stream assessment information will not be required for all Priority Development Projects, it would be required for all projects proposing the use of stream rehabilitation mitigation measures (e.g., constructed channel widening, drop structures) and for projects using lower flow thresholds in excess of 0.1Q2. The Copermittees are currently considering other requirements for pre-project stream assessments, including project size, contributing impervious area cover, and receiving channel material.

8.2.3 Temporal and Spatial Variability of Monitoring Locations

Temporal Variability. As noted above, the single most important factor affecting the temporal variability inherent to measuring stream degradation is variable inter-annual rainfall frequency and intensity. Droughts in California can last years, with little to no rainfall occurring in Southern California. During El Nino years, anomalously high storm frequencies and intensities can result in sudden geomorphic changes. Rainfall intensity also varies intra-annually. However, if a sufficient range of storm intensities is encountered in a particular year, then short duration monitoring approaches, such as flow-duration curves and sediment transport studies can provide some information on HMP effectiveness on shorter timescales.

Spatial Variability. Sampling an adequate variety of channel susceptibility types, along with a reasonable number of replicates within for each susceptibility type, is important to capture the range of watershed conditions present in the permit coverage area. Other important factors that affect stream responses to hydromodification include channel grade, watershed area, vegetated cover, and stream sinuosity. In addition to channel and watershed features, location within the watershed is an important consideration. Monitoring stations should be located in the watershed headwaters just downstream of a development project of sufficient size, so that hydromodification effects from the proposed development can be isolated for comparison purposes to the maximum extent practicable. Upper watershed sites provide more definitive measures of HMP effectiveness because they can more directly correlate effects to specific development projects. Middle watershed and lower watershed sites would be influenced by confounding variables such as mass wasting and impacts from natural tributary confluences and other existing development projects, including phased developments over many years, in the watershed. Therefore, middle and lower watershed

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monitoring sites would require much more time to assess overall program effectiveness. However, the Copermittees will attempt to utilize data from concurrent water quality monitoring programs to develop a database of middle/lower watershed flow data. Specifically, monitoring station located in middle to lower watershed locations will be identified for the two proposed channel susceptibility types. While the San Diego HMP has been written to require onsite hydromodification flow controls at each applicable new development and redevelopment site, thus minimizing the potential for cumulative watershed impacts as a result of new development and redevelopment, monitoring station locations will be selected, where possible, to include the effects of multiple upstream developments. The concept of providing hydromodification effectiveness measurements in the watershed headwaters is supported by SCCWRP. Research by SCCWRP has shown that hydromodification effects of a development project become muted with increasing distance from the development site (defined by SCCWRP as the Domain of Effect). To the extent practicable, monitoring locations detailed in the Monitoring Plan will be distributed throughout the Permit coverage area Hydrologic Units to provide for geographic and climatic variability across San Diego County.

8.3 Recommended Approaches to Assess Effectiveness

Selection of HMP effectiveness assessment monitoring techniques is subject to two primary constraints. The schedule constraint involves the RWQCB's desire to have information on HMP effectiveness prior to re-issuance of the Municipal Separate Storm Sewer System (MS4) Permit for San Diego County, currently scheduled for 2012. This schedule constraint creates an added "practicality" issue, since it is unlikely that meaningful data can be acquired in such an abbreviated timeline. While the monitoring plan detailed in this memorandum extends for five years, interim data may be provided to the Regional Board to assist with development of the next Permit.

The budget constraint involves the San Diego County Copermittees' limited resources for monitoring. Given the fact that the Copermittees are currently committed to a $2,500,000 annual regional water quality monitoring plan effort, and given the current economic climate in which multiple local municipalities have been forced to reduce both budget and staff, expansion of existing monitoring mandates requires significant financial consideration and analysis. Thus, the Copermittees are compelled to evaluate how to develop the best possible monitoring approach to evaluate HMP effectiveness within the available budget.

Details of the monitoring plan are above and beyond details of the existing regional water quality monitoring effort. Wherever possible, the Copermittees will seek opportunities to utilize relevant data from the existing water quality monitoring efforts to achieve an economy of scale. The Copermittees will also ensure there is no duplication of effort between the two monitoring programs.

This monitoring plan focuses on using continuous monitoring data to obtain the maximum amount of data regarding sediment transport and flow duration monitoring. It is the opinion of the Copermittees that acquisition of continuous data at a statistically justified number of monitoring locations is more valuable (from a data analysis standpoint) as compared to obtaining a finite number of isolated runoff events from more monitoring locations.

Considering the constraints and technical approach detailed above, the following approaches are recommended for the revised HMP Monitoring Plan.

- **Monitor effectiveness using Sediment Transport and Flow Duration Studies.** As noted above, continuous sediment transport and flow duration studies can provide direct measures of HMP effectiveness on a relatively short timescale. These studies are important to verify HMP assumptions about the lower flow thresholds and to verify flow duration design criteria is being achieved. Development of the sediment transport studies would also provide stream cross section data, as well as photographic evidence, that could serve as a baseline for future stream morphology comparisons.

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- **Monitor the Upper Watershed.** Upper watershed monitoring is recommended to eliminate confounding lower watershed variables that would skew the analysis and minimize the potential for reaching meaningful conclusions.
- **Monitor Replicates of Two Channel Susceptibility Types.** In the development of the San Diego County HMP, receiving streams will be classified into one of three channel types, pursuant to a State Board-funded study conducted by SCCWRP. The stream classification system is consistent with the analysis, findings, and tools developed in the SCCWRP study and classifies streams into the following stream susceptibility categories:
  - HIGH susceptibility
  - MEDIUM susceptibility
  - LOW susceptibility

  Monitoring locations should be selected from HIGH and MEDIUM susceptibility channel segments.
- **Monitor three replicates and one reference station for each susceptibility type.** Providing three replicates of each channel susceptibility type would begin the characterization of the range of conditions present in San Diego County. The reference monitoring station associated with each channel susceptibility type would be located in a watershed for which no upstream development (existing or future) is anticipated. Data from the reference stations can be used to supplement pre-project condition data obtained at the replicate sites, since the amount of pre-project condition data that can be obtained at such sites is dependent on the land development process. Providing three replicate stations balances the need to characterize spatial variability against the cost of monitoring and provides the data needed to estimate the median and range of the lower flow threshold for a given susceptibility type, or to estimate the standard deviation of an average value.
- **Monitor the Middle Watershed.** Middle watershed monitoring will be provided at two monitoring locations, both of which will be located downstream of existing urbanized areas with watershed impervious areas greater than 40 percent.

8.4 Summary and Conclusions

The revised Monitoring Plan, scheduled for implementation over a 5-year period, will recommend the following specific activities:

Baseline Monitoring Plan Requirements:

- Development of QAPP
- Rainfall gauge analysis and installation
- Rainfall gauge, stream gauge, and HMP facility outflow station inspection and maintenance (Fiscal Year 2012 through 2016)
- Annual data analysis (2012 – 2016)
- Reevaluation of the Monitoring Plan after review of findings from Statewide HMP Monitoring Technical Advisory Group and review of final SCCWRP Hydromodification Monitoring Report (2013)
- Report preparation (final report to be prepared in 2016)

Channel Assessments:

- Initial geomorphic assessment at each monitoring location (to determine stream susceptibility type – 2011-2012)
- Baseline cross section surveys at each monitoring location (2011-2012)

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- Annual geomorphic assessments at each monitoring location (to assess channel condition and response - 2012 – 2016)
- Cross section surveys (after 5 years) at each monitoring location (2016)

Sediment Transport Analysis:

- Flow and sediment monitoring station installation
- Continuous pre-project, post-project and reference station flow, sediment and rainfall data collection (2012 – 2016)

Flow Duration Analysis:

- HMP facility outflow monitoring station installation
- Continuous post-project HMP facility outflow data collection (2013 – 2016)

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9. CONCLUSIONS

Implementation of this HMP satisfies Provision D.1.g of Board Order R9-2007-0001. Adherence to guidelines outlined in the HMP is required "to manage increases in runoff discharge rates and durations for all Priority Development Projects, where such increased rates and durations are likely to cause increased erosion of channel beds or banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force."

Order R9-2007-0001 contains requirements that strongly influence the methodology contained in this HMP. As recommended in the HMP, post-project flows must match pre-project flows within the prescribed geomorphically significant flow range.

Flow control options to meet the criteria include LID facilities, which promote infiltration and filtration to attain the required flow mitigation, and extended flow duration control detention basins. Continuous hydrologic modeling is required to prove conformance with the standards presented in this HMP.

Specific permit requirements, detailed below, have been addressed by this HMP.

- Provide performance criteria for Priority Development Projects (Chapter 6)
- Include a protocol to evaluate potential hydrograph change impacts to downstream watercourses from PDPs (Chapter 6).
- Provide a description of how the Copermittees will incorporate the HMP requirements into their local approval processes (Chapter 1).
- Include a description of pre- and post-project monitoring and other program evaluations to be conducted to assess the effectiveness of implementation of the HMP (Chapter 8).
- Include mechanisms for addressing cumulative impacts within a watershed on channel morphology (Chapter 5).
- Utilize a continuous rainfall record to identify the geomorphically significant flow range (Chapter 5).
- Include a pertinent literature review (Chapter 4)
- Include criteria on management practices designed to mitigate increases to peak flows and durations (Chapter 7)
- Include information on the evaluation of channel form and condition (Chapter 5)

The Copermittees will incorporate HMP requirements into the local approval processes via incorporation of HMP criteria into their local SUSMPs. The San Diego region's updated Model SUSMP will incorporate the Final HMP criteria. HMP criteria will be incorporated into the local SUSMP and municipal ordinances no later than 180 days following RWQCB adoption of the HMP.

Information presented in the HMP has been prepared in association with the County of San Diego, San Diego Storm Water Copermittees, the Technical Advisory Committee, and the consultant team.

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10. LIMITATIONS

Report Limitations

This document was prepared solely for the County of San Diego in accordance with professional standards at the time the services were performed and in accordance with the contract between the County of San Diego and Brown and Caldwell dated September 6, 2007. This document is governed by the specific scope of work authorized by the County of San Diego; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on rainfall data provided by the County of San Diego and other parties and have made no independent investigation as to the validity or accuracy of such data.

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APPENDIX A

Flow Threshold Report

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Flow Control Threshold Analysis
for the
San Diego Hydrograph Modification Management Plan

Prepared for

San Diego County and Copermittees

Prepared by

Philip Williams & Associates, Ltd.

December 23rd 2009

PWA REF. # 1915

Services provided pursuant to this Agreement are intended solely for the use and benefit of San Diego County and the Hydromodification Management Plan Copermitees. No other person or entity shall be entitled to rely on the services, opinions, recommendations, plans or specifications provided pursuant to this agreement without the express written consent of Philip Williams & Associates, Ltd., 550 Kearny Street, Suite 900, San Francisco, CA 94108.

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1. INTRODUCTION AND BACKGROUND

1.1 PURPOSE OF THE REPORT

San Diego County and its copermittees are required to develop a Hydromodification Management Plan (HMP) under their National Pollutant Discharge Elimination System (NPDES) MS4 permit. The purpose and requirements of the HMP are described in a 2007 Regional Water Quality Control Board (RWQCB) order renewing the NPDES permit (Order No. R9-2007-0001). The purpose of the HMP is to identify guidelines for managing 'geomorphically-significant' flows that, if not controlled, would cause increased erosion of receiving waters. Specifically, the HMP must identify a low and high flow threshold between which flows should be controlled so that the post-project flow rates and durations do not exceed pre-project levels between these two flow magnitudes. The lower flow threshold is required to correspond to critical flow producing critical shear stress in the channel. The flow control language in the Board Order is as follows:

> Utilize continuous simulation of the entire rainfall record to identify a range of runoff flows[8] for which Priority Development Project post-project runoff flow rates and durations shall not exceed pre-project runoff flow rates and durations, where the increased flow rates and durations will result in increased potential for erosion or other significant adverse impacts to beneficial uses, attributable to changes in the flow rates and durations. The lower boundary of the range of runoff flows identify shall correspond with the critical channel flow that produces the critical shear stress that initiates channel bed movement or that erodes the toe of channel banks. The identified range of runoff flows may be different for specific watersheds, channels or channel reaches.

[8] The identified range of runoff flows to be controlled should be expressed in terms of peak flow rates of rainfall events, such as "10% of the pre-project 2-year peak flow up to the pre-project 10-year peak flow."

1.2 CONCEPTS BEHIND 'GEOMORPHICALLY-SIGNIFICANT FLOWS', CRITICAL FLOWS AND FLOW CONTROL

For the purposes of this project 'hydrograph modification' or 'hydromodification' is understood to mean changes to the frequency, duration and magnitude of surface runoff that, when untreated, cause an increase in erosion of the receiving water body. Hydromodification occurs when urbanization replaces areas of vegetated, uncompacted soil with impermeable surfaces such as buildings, roads and compacted fill. The reduction in permeability results in increased volumes of runoff, and faster and more concentrated delivery of this water to receiving waters. These changes have the potential to cause creeks to erode faster than before development.[1]

[1] Although the focus of hydromodification management plans has been on increased erosion it should be noted that in rivers that are depositional hydromodification can cause creeks to regain some transport equilibrium.

Stream flows are often expressed in terms of the frequency with which a particular flow occurs. For example, Q_2 refers to the flow rate that occurs once every two years, on average over the long term. Flow frequencies are a function of rainfall and watershed characteristics, and are unique to each stream channel (and location along the channel). The effects of urbanization tend to increase the magnitude of the flow associated with a given frequency (e.g. post-development Q_2 higher than pre-development Q_2). Similarly, urbanization tends to increase the frequency with which any given flow rate occurs. The purpose of the HMP is to control runoff from new developments so that flow magnitudes and frequencies match pre-development conditions within a critical range of flows.

Not all runoff causes erosion: runoff in receiving channels below a critical discharge (Q_{crit}) does not exert sufficient force to overcome the erosion resistance of the channel banks and bed materials. Flows greater than Q_{crit} cause erosion, with larger flows causing proportionally greater erosion. It has been determined by calculations and field measurements that most erosion in most natural creeks is caused by flows between some fraction of Q_2 and Q_{10} (see for example Leopold, 1964). Flows in this range are referred to as 'geomorphically-significant' because they cause the majority of erosion and sediment transport in a channel system.

Flows greater than Q_{10}, though highly erosive *per event*, occur too infrequently to do as much work as smaller but more frequent flows (see Figure 1). Hydromodification also has less impact on flows greater than Q_{10} since at such high rainfall intensities the soil becomes saturated and the infiltration capacity of undeveloped landscapes is rapidly exceeded. When the soil is saturated, runoff rates become more similar to those from impervious surfaces. For these reasons, HMPs have focused on identifying a low flow threshold that is close to Q_{crit} for most receiving channels, and controlling flows between that value and Q_{10} (see for example the HMPs completed in Santa Clara, Contra Costa, Alameda and San Mateo Counties). By requiring treatment (storage and either infiltration or detention) of excess runoff within the control range, and by limiting the release of excess water to Q_{crit} or less, HMPs seek to prevent additional erosion in receiving channels.

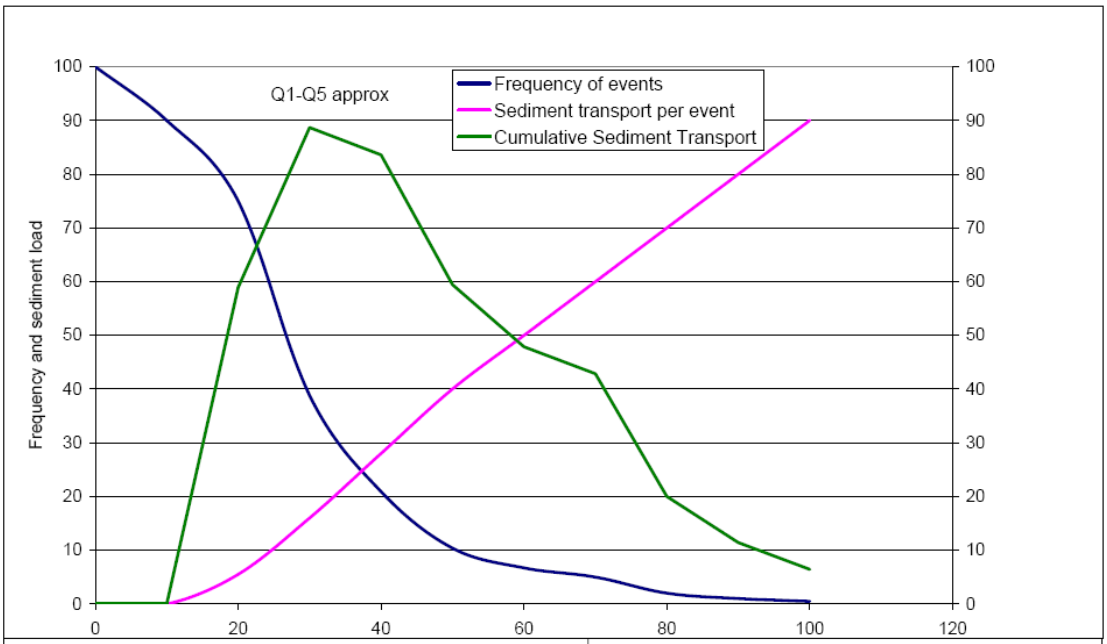

figure 1
San Diego HMP

Hypothetical cumulative work curve

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2. IDENTIFYING A HIGH FLOW THRESHOLD

Previous HMPs have focused considerable attention on the low flow threshold, but little on the high flow threshold. The use of an upper flow threshold is based on two assumptions:

1. Flows above this level cause relatively little cumulative erosion in receiving waters due to their low recurrence
2. Flows above this level are relatively unaffected by hydromodification because at such high rainfall intensities and durations the pre-development ground cover become saturated and most rain runs off, similar to in a post development condition.

The five HMPs developed to date in California have all adopted a value of Q_{10} as the upper threshold. We propose adopting the same value for the San Diego HMP.

3. IDENTIFYING A LOW FLOW THRESHOLD

Erosion occurs when the shear stress exerted on the channel by flowing water (*boundary shear stress*) exceeds the resistance of the channel (*critical shear stress*). Critical shear stress varies by several orders of magnitude for different channel materials (Table 1). *Critical flow* (Q_{crit}) is the channel flow which produces boundary shear stress equal to the critical shear stress for a given channel. That is, the flow rate that can initiate erosion in a channel. Q_{crit} is a function not only of the critical shear stress of the channel materials, but also channel size, and channel geometry. A particular flow rate (expressed as a number of cubic feet per second) in a small, steep, confined channel will create more shear stress than the identical flow rate in a large, flat, wide open channel. Thus Q_{crit} can be extremely variable depending on channel and watershed characteristics and will be different in each channel, and in each watershed.

Boundary Category	Boundary Type	Permissible Shear Stress (lb/sq ft)
Soils	Fine colloidal sand	0.02 - 0.03
	Sandy loam (noncolloidal)	0.03 - 0.04
	Alluvial silt (noncolloidal)	0.045 - 0.05
	Silty loam (noncolloidal)	0.045 - 0.05
	Firm loam	0.075
	Fine gravels	0.075
	Stiff clay	0.26
	Alluvial silt (colloidal)	0.26
	Graded loam to cobbles	0.38
	Graded silts to cobbles	0.43
	Shales and hardpan	0.67
Gravel/Cobble	1-in.	0.33
	2-in.	0.67
	6-in.	2.0
	12-in.	4.0
Vegetation	Class A turf	3.7
	Class B turf	2.1
	Class C turf	1.0
	Long native grasses	1.2 – 1.7
	Short native and bunch grass	0.7 - 0.95
	Reed plantings	0.1-0.6
	Hardwood tree plantings	0.41-2.5
Temporary Degradable RECPs	Jute net	0.45
	Straw with net	1.5 – 1.65
	Coconut fiber with net	2.25
	Fiberglass roving	2.00
Non-Degradable RECPs	Unvegetated	3.00
	Partially established	4.0-6.0
	Fully vegetated	8.00
Riprap	6 – in. d_{50}	2.5
	9 – in. d_{50}	3.8
	12 – in. d_{50}	5.1
	18 – in. d_{50}	7.6
	24 – in. d_{50}	10.1
Soil Bioengineering	Wattles	0.2 – 1.0
	Reed fascine	0.6-1.25
	Coir roll	3 - 5
	Vegetated coir mat	4 - 8
	Live brush mattress (initial)	0.4 – 4.1
	Live brush mattress (grown)	3.90-8.2
	Brush layering (initial/grown)	0.4 – 6.25
	Live fascine	1.25-3.10
	Live willow stakes	2.10-3.10
Hard Surfacing	Gabions	10
	Concrete	12.5

[1] Ranges of values generally reflect multiple sources of data or different t

A. Chang, H.H. (1988).
B. Florineth. (1982)
C. Gerstgraser, C. (1998).
D. Goff, K. (1999).
E. Gray, D.H., and Sotir, R.B. (1996).
F. Julien, P.Y. (1995).
G. Kouwen, N.; Li, R. M.; and Simons, D.B., (1980).
H. Norman, J. N. (1975).
I. Schiechtl, H. M. and R. Stern. (1996).
J. Schoklitsch, A. (1937).

Table 1. Range of critical shear stresses (τ_{cr}) for different materials. From Fischenich, 2001.

It was the original intent of the HMP project team to identify a single low flow threshold for the entire county (per previous HMPs). However, an extensive assessment of channel and runoff conditions led the team to conclude that there was a very wide range in critical flows, based largely on channel material but also on channel dimensions, rainfall, and watershed area[2]. Adopting a single standard that is conservative for the most vulnerable channels would result in controls that were excessively conservative for more resilient channels, while adopting an 'average' value would leave some channels unprotected. As the ongoing SCCWRP Hydromod project is showing, individual creeks have different risk categories and respond in different ways to the same level of hydromodification. Because of this natural variability, we pursued an analytical approach for estimating Q_{crit} as a function of parameters such as channel materials, channel dimensions and watershed area. The following sections of this report describe an analysis of Q_{crit} as a fraction of Q_2 for the range of channel conditions in San Diego County. This is followed by a description of a calculator tool developed by PWA that may be used to calculate Q_{crit} for a specific channel based on parameters that may be readily measured in the field. The analyses described in this report provide background for the selection of low flow thresholds identified in the HMP.

[2] These early analyses are summarized in Appendix D of the Final Hydromodification Management Plan.

4. CRITICAL FLOW ANALYSIS

4.1 BACKGROUND

PWA conducted a sensitivity analysis in which a wide range of channel sizes and geometries, rainfalls, watershed areas and channel materials were modeled in a flow-erosion model to identify Q_{crit} as a function of Q_2. In all, 170 combinations of channel, rainfall and watershed conditions were assessed (described below). Based on the results of this sensitivity analysis, a range of Q_{crits} were identified for several categories of channel materials.

The steps used to conduct the sensitivity analysis:

1. Identify the typical range of rainfall conditions for the HMP area (west San Diego County)
2. Identify the range of typical watershed areas likely to be developed
3. Identify a range of typical receiving channel dimensions for each watershed area
4. Identify a range of typical channel materials for receiving channels
5. Simulate a range of flows and develop rating curves (relationships between discharge and boundary shear stress)
6. Identify the flow rate at which boundary shear stress exceeds critical shear stress for the channel and material
7. Express this flow rate as a function of Q_2
8. Group critical flow rates by channel materials.

Steps 1 through 4 were used to define the range of parameters to use in the sensitivity testing. The intent was to identify a typical range of conditions likely to occur in the HMP area (west San Diego County), rather than provide an exhaustive description of possible watershed and channel conditions. Sensitivity testing on many combinations of parameters within this typical range allows identification of the range of channel responses and critical flows.

Each step in the critical flow analysis is explained in detail in the following sections.

4.2 IDENTIFY THE TYPICAL RANGE OF RAINFALL CONDITIONS FOR THE HMP AREA (WEST SAN DIEGO COUNTY)

Mean annual rainfall was used to estimate receiving channel size, Q_2, Q_5 and Q_{10} (methods described in subsequent sections). Figure 2 shows mean annual rainfall for San Diego County. Based on the map, three mean annual rainfalls were selected to represent the range of rainfall conditions for the simulations: 10”, 20” and 30”.

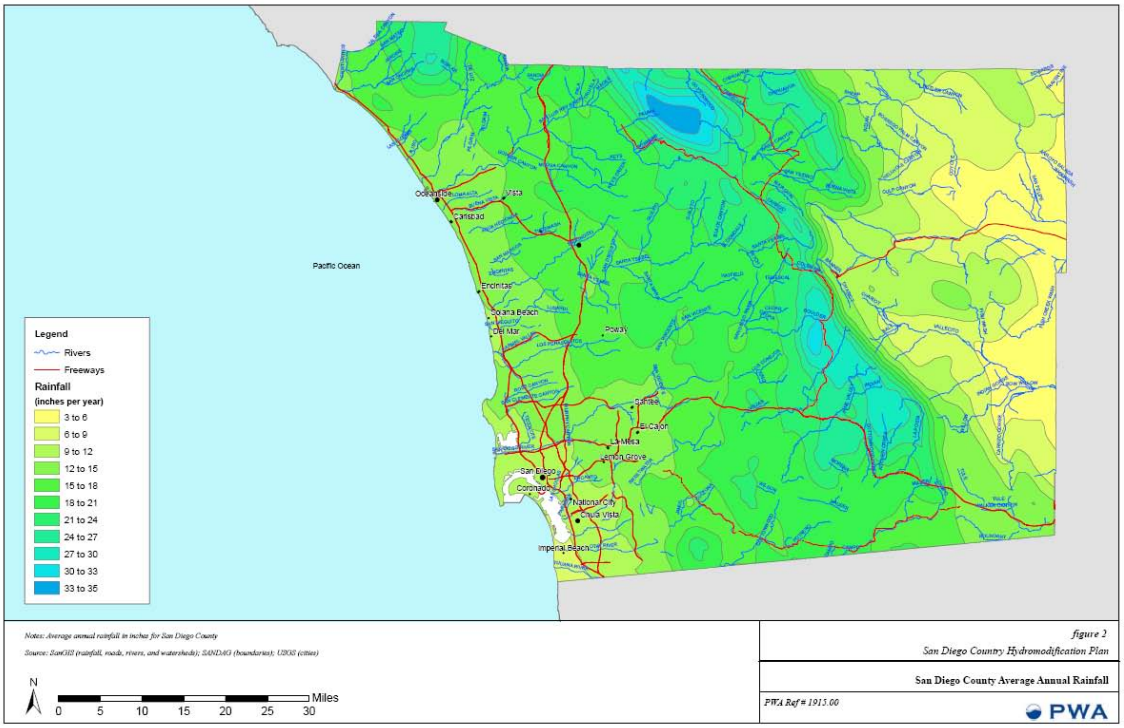

Figure 2. Rainfall distribution in San Diego County

4.3 IDENTIFY THE RANGE OF TYPICAL WATERSHED AREAS LIKELY TO BE DEVELOPED

Based on discussions with the Technical Advisory Committee, a range of representative watershed areas for development projects was identified. These were: 0.1 sq mi, 0.5 sq mi, 1 sq mi, 2 sq mi. We assumed that in project watersheds larger than 2 sq mi the development would either require site specific continuous simulation modeling, or be broken into multiple smaller sub watersheds with individual points of compliance.

4.4 IDENTIFY A RANGE OF TYPICAL RECEIVING CHANNEL DIMENSIONS FOR EACH WATERSHED AREA

Empirical relationships have been developed to express channel dimensions (width, depth and, to a lesser extent, gradient) as a function of dominant discharge. Dominant discharge for a creek channel is the flow rate that transports the majority of sediment and creates/maintains the characteristic size and shape of the channel over time. Dominant discharge may also be referred to as bankfull flow. For undeveloped channels in semi arid parts of the US, dominant discharge is approximately equivalent to Q_5. For example, Coleman et. al. (2005) found dominant discharge for streams in Southern California to average $Q_{3.5}$ (range = $Q_{2.1}$ – $Q_{6.7}$.) Goodwin (1998) found dominant discharge to vary from Q_2 to Q_{10} for semi arid regions.

To capture natural variability in channel geometry, we used three different empirical channel geometry relationships to estimate receiving channel dimensions for the range of watershed areas and rainfall characteristics used in this study. The relationships were:

Coleman et. al. 2005 (modified by Stein – personal communication) – derived from undeveloped channels in Southern California, tends to predict narrow, deep, steep dimensions.

$$\text{Width (ft)} = 0.6012 * Q_{bf}^{0.6875}$$

$$\text{Depth (ft)} = 0.3854 * Q_{bf}^{0.3652}$$

Where Q_{bf} is in cfs.

Parker et al. 2007 – suitable for gravel channels, tends to predict wide, shallow, flat braided dimensions.

$$\text{Width (m)} = 4.63 * (Q_{bf}^{2/5}) / (9.81^{1/5}) * (Q_{bf} / \texttt{Sqrt}\ (9.81 * d50) * d50^2))^{0.0667}$$

$$\text{Depth (m)} = 0.382*((Qbf^{2/5})/(9.81^{1/5})))$$

Where Q_{bf} is bankfull discharge in m^3/sec and d50 (diameter of median channel material) is in m.

The Parker equation was only used to assess gravel and cobble channel conditions.

Hey and Thorne 1986 tends to predict medium width, depth, and gradient channels.

$$\text{Width (m)} = 2.73*Q_{bf}^{0.5}$$

$$\text{Depth (m)} = 0.22 * \text{Width}^{0.37} * d50^{-0.11}$$

Where Q_{bf} is in m^3/sec and d50 is in m.

(Note that we have used the original combinations of English and metric units described in the source papers rather than standardized these equations in one set of measurements.)

The three equations cover a wide range of likely field conditions, from deeply incised channels (Coleman et al, 2005) to wide, braided conditions (Parker, 2007). Note that for the sensitivity analysis we set d50 in the Parker et al. equation to the d50 of the channel material being tested, and did not use the equation for channels where the material was sand or silt.

The equations produce estimations of width and depth. To estimate a slope for each combination of channel dimensions we calculated the velocity associated with each cross section (by dividing

discharge by width multiplied by depth) and calculated the slope that corresponded with that velocity using Manning's equation.

$$\text{Velocity (ft/sec)} = 1.486 \frac{HR^{0.66} * s^{0.5}}{n}$$

Where HR is channel hydraulic radius, s is slope, and n is Manning's roughness coefficient (see definitions). For the purposes of the sensitivity analysis a value of n 0.035 was assumed, corresponding to a non vegetated, straight channel with no riffles and pools. This is a reflection of the small, ephemeral receiving channels which are most prevalent in Southern California developments. A relatively low value was used at the request of the San Diego RWQCB so that the values erred on the conservative side.

These equations all require a value for bankfull discharge. Bankfull discharge (assumed to be approximately Q_5) was estimated using the USGS regional regression for undeveloped watersheds in the South Coast region (Waananen and Crippen, 1977). This equation calculates Q_5 as a function of watershed area and mean annual precipitation, based on empirical observations of USGS gages. The relationship is:

$$Q_5 \text{ (cfs)} = 0.4 * \text{Watershed Area}^{0.77} * \text{Mean Annual Precipitation}^{1.69}$$

Where watershed area is in square miles and precipitation is in inches.

For each combination of typical watershed area (Section 2.2) and mean annual rainfall (Section 2.3) we calculated Q_5 using the USGS regression, then calculated three sets of channel dimensions based on the three channel equations. This provided the range of channel conditions to simulate for the critical flow analysis. The total number of channel conditions was as follows:

3 rainfalls (10, 20, 30 inches per year)
4 watershed areas (0.1, 0.5, 1, 2 square miles)
3 channel width, depth and slope combinations (narrow/deep, medium, wide/shallow)
= 36 combinations of receiving channel geometry

4.5 IDENTIFY A RANGE OF TYPICAL CHANNEL MATERIALS FOR RECEIVING CHANNELS

We identified a range of typical channel materials based on feedback from the TAC and experience gained working in San Diego County. The identified materials are not intended as a comprehensive list of possible channel materials, but to cover the range of critical shear stresses likely to be encountered in typical western San Diego County channels. The identified range is as follows:

Material	Critical shear stress (lb/sq ft)
Coarse unconsolidated sand	0.025
alluvial silt (non coloidal)	0.045
medium gravel	0.12
alluvial silt/clay	0.26
2.5 inch cobble	1.1

Combining the 5 channel material types with the 36 combinations of channel geometry produces 180 potential combinations of receiving channel characteristics. Ten sets of combinations were omitted from the analysis because they produced physically unrealistic conditions, such as slopes that were too steep to be developed. Exclusion of these results did not significantly affect the overall results.

4.6 DEVELOP SHEAR STRESS RATING CURVES

Rating curves for the 36 different combinations of receiving channel characteristics were developed using the same Excel worksheet that forms the basis for the Qcrit calculator developed for Track 2 (described in later sections). Using channel cross section, roughness and gradient input by the user, the tool calculates the average boundary shear stress associated with a range of different flow depths to construct a rating curve (discharge on the x axis versus shear stress on the y axis). It then identifies the flow rate where average boundary shear stress equals critical shear stress for the channel materials. This is the critical flow (Q_{crit}). By dividing this number by Q_2 we identify the critical flow for each simulation as a function of Q_2 (e.g. $0.1Q_2$ where the critical flow is one tenth of the Q_2 flow).

The tool calculates a shear stress rating curve for a range of flows between 1% and 100% of the bankfull flow depth. Bankfull flow depth is defined as the flow depth that corresponds to the dominant discharge for a given channel. The range 1% to 100% of bankfull is used because critical flow rarely falls outside these values. The tool then calculates an equation that allows for interpolation between the points. For each of the depths, the tool calculates discharge and average boundary shear stress exerted on the bed, as described below.

4.6.1 Calculating Average Boundary Shear Stress

Average boundary shear stress is the force that flowing water exerts on channel materials. For a given channel cross-section, it is calculated as follows:

$$\tau_b = \gamma * HR * s$$

where τ_b = average boundary shear stress (lb/ft^2)
γ = unit weight water (62.4 lb/ft^3)
HR = Hydraulic radius (cross section area / wetted perimeter)
S = channel slope (ft/ft)

For each depth increment between 1% and 100% of bankfull, cross section area, wetted perimeter, HR and τ_b are calculated. Slope is a constant for the cross section. These calculations produce a rating curve for boundary shear as a function of flow depth.

4.6.2 Calculating Flow Rate

This step converts flow depth to flow rate (Q) so that the rating curve may be expressed as a function of Q. For each depth increment between 1% and 100% of bankfull, the flow rate is calculated using Manning's equation:

$$\text{Velocity (ft/sec)} = 1.486 \frac{HR^{0.66} * s^{0.5}}{n}$$

where V = velocity (ft/sec)
n = Manning's roughness coefficient

For the sensitivity analysis Manning's n was assumed to be 0.035, which is typical for a non-vegetated ephemeral channel. We assumed that for most developments covered by the HMP the receiving channels would be relatively high in the watershed and would have received little summer flow. In interim sensitivity analysis found that relative to other factors such as critical shear stress, the range of roughness factors found in receiving channels had little effect on the estimated critical shear flow rate.

Discharge is calculated as velocity multiplied by cross section area (calculated for each cross section, above). The result of these calculations is a rating curve showing boundary shear stress for the receiving channel as a function of discharge, with the highest point representing bankfull depth (see Figure 3 below). Rating curves were created for each of the 36 combinations of channel characteristics.

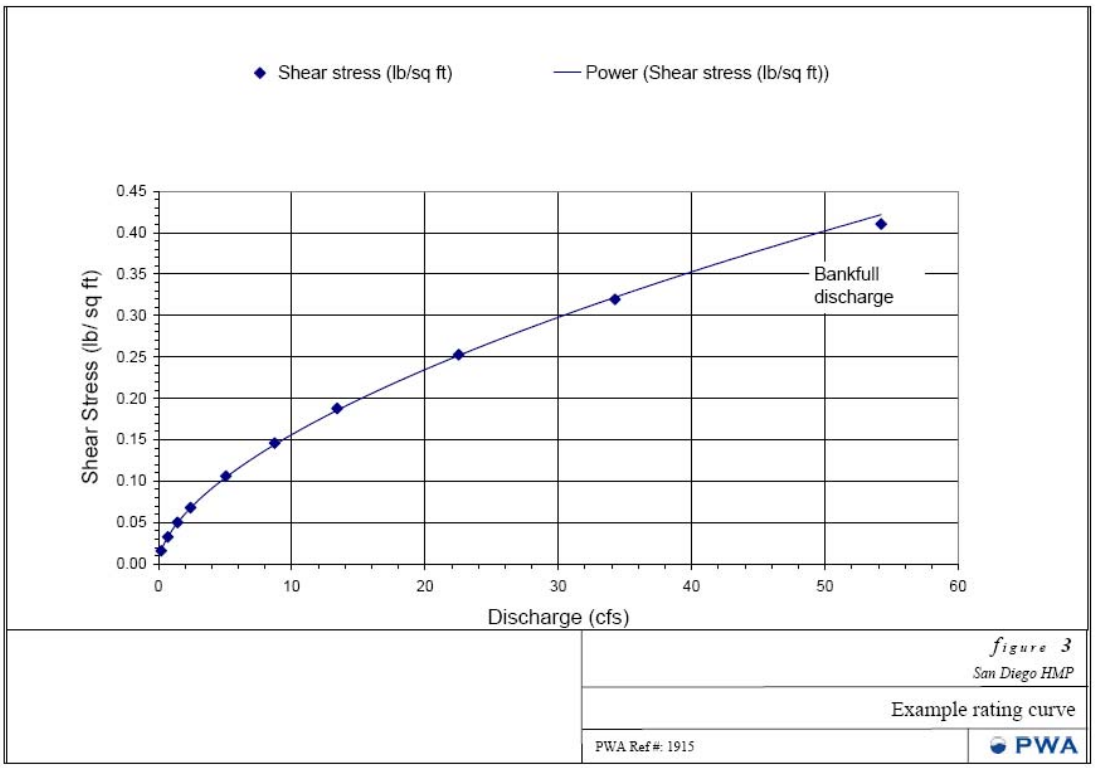

Figure 3. Shear stress rating curve for an example channel (0.5%, 10 feet wide, 2 feet deep). These curves were created for 36 different combinations of channel characteristics.

4.7 IDENTIFY CRITICAL FLOW FOR THE CHANNEL AND MATERIAL

Q_{crit} is the flow rate at which boundary shear stress equals critical shear stress. The tool uses a power function to interpolate the discharge versus boundary shear stress rating curve, to allow calculation of an intercept between the rating curve and critical shear stress. The critical shear stress for each channel material was plotted horizontally from the Y axis until it intercepted the rating curve. The intercept point was extended vertically to the X axis, showing the Q_{crit} (see Figure 4 below). In this way, Q_{crit} was calculated for each of the five channel materials using each of the 36 rating curves representing different channel dimensions. As mentioned above, 10 combinations unlikely to occur in nature were eliminated, resulting in a total of 170 Q_{crit} calculations.

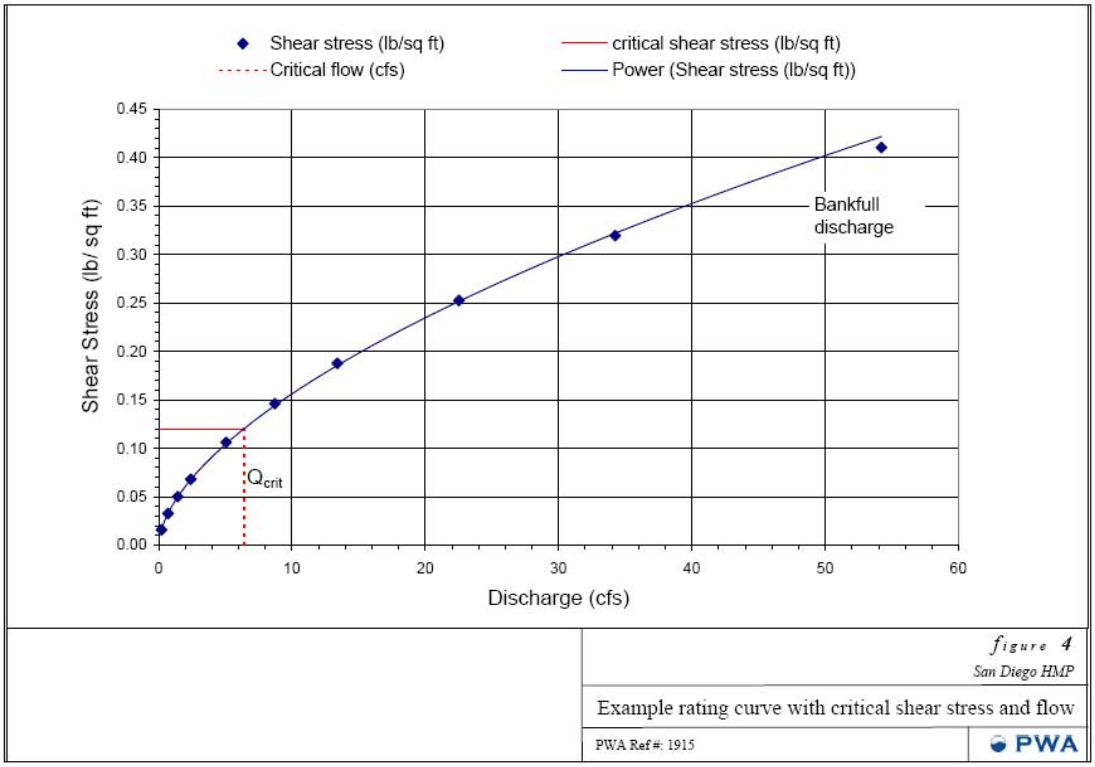

Figure 4. Example of a rating curve with critical shear stress for medium sized gravel. In this example critical shear stress = 0.12 lb/sq ft and critical flow Q_{crit} = 6.4 cfs.

4.8 EXPRESS CRITICAL FLOW AS A FUNCTION OF Q_2

As described above, each rating curve represents a particular combination of watershed area and channel dimensions. Q_2 was calculated for each combination using the USGS regional regression for Q_2 as described in section 4.4. By dividing the calculated Q_{crit} by the appropriate Q_2, Q_{crit} as a proportion of Q_2 was calculated for the 170 scenarios. These Q_{crits} were then plotted by material type, showing mean and one standard deviation either side of the mean. Note that although we assume that Q_5 is bankfull discharge, we express the critical flow as a function of Q_2 as has become standard for HMPs.

4.9 CRITICAL FLOW ANALYSIS RESULTS

The results show the high degree of variability in Q_{crit} based on different channel materials. It is important to note that in field conditions many of the most extreme cases shown in the figure (examples with very high or very low thresholds) would tend to evolve to conditions that yielded critical flows closer to the bankfull discharge because channels have a tendency to self equilibrate. For example, channels with materials that have very low critical flows such as

unconsolidated sand tend to erode and either flatten (lowering shear stress, and so increasing critical flow rate) or armor (increasing flow resistance, and increasing critical flow rate). Likewise, channels with materials that have very high thresholds tend to either become steeper due to deposition (increasing shear stress and lowering critical flow rate) or fill in with finer material (reducing resistance and lowering critical flow rate).

4.10 DISCUSSION

As the results of this analysis demonstrate, critical flow is extremely variable among channel materials and, for a given channel material, can vary significantly with channel configuration (slope, width/depth ratio etc.). Unconsolidated fine sediments can be mobilized by extremely low flows in the absence of clays or other consolidating elements with the structure of the channel. This result is based on literature values for critical shear stress for unconsolidated materials and may not be realistic for natural channels. Therefore in setting flow thresholds this result should be balanced with the recognition that natural channels are likely to include some consolidating fraction within their structure, as well as practical considerations associated with controlling trickle flows that represent the smaller fractions of Q_2 analyzed in this study.

5. TOOL FOR CALCULATING SITE-SPECIFIC CRITICAL FLOW

5.1 BACKGROUND

PWA developed a tool for calculating a site-specific critical flow (Q_{crit}) based on local conditions. Q_{crit} for the receiving channel is calculated based on channel geometry (width, depth and gradient), channel materials, and watershed area.

The approach taken was to develop an Excel spreadsheet model to calculate the boundary shear stress associated with a range of flows up to Q_5 for a given channel width, depth and slope, then plot the critical shear stress for the channel material on this rating curve over to identify the flow where boundary shear stress equals critical shear stress (see example graph below).

The development steps were as follows:

1. Develop simplified channel cross section and gradient inputs
2. Calculate a shear stress rating curve
3. Characterize channel materials in terms of critical shear stress
4. Plot critical shear stress of the receiving channel on the rating curve to determine Q_{crit}
5. Divide the critical low flow by the project areas as a proportion of the receiving water watershed area to determine the allowable flow at the point of compliance

5.2 SIMPLIFIED CHANNEL CROSS SECTION AND GRADIENT INPUTS

The tool generates a flow rating curve based on user inputs describing the receiving channel dimensions (cross section) and gradient. The first step in developing the tool was to create a template for inputting the required channel parameters. The template assumes a simple trapezoidal cross section, with the following elements:

1. Channel width at a well defined break point corresponding to top of bank (a)
2. Channel width at the toe of the bank (b)
3. Channel depth (elevation difference between bank top and channel bed) (c)

Assumptions:

1. Receiving channels can be reasonably represented by a simple trapezoidal cross section
2. The top of bank corresponds reasonably to the level inundated by the dominant discharge (approximately equal to Q_5)

If top of bank is much higher than the dominant discharge flow depth (e.g. in an incised channel) the applicant should adjust the cross section to represent the lower part of the channel so that depth (c) corresponds approximately to the Q_5 depth.

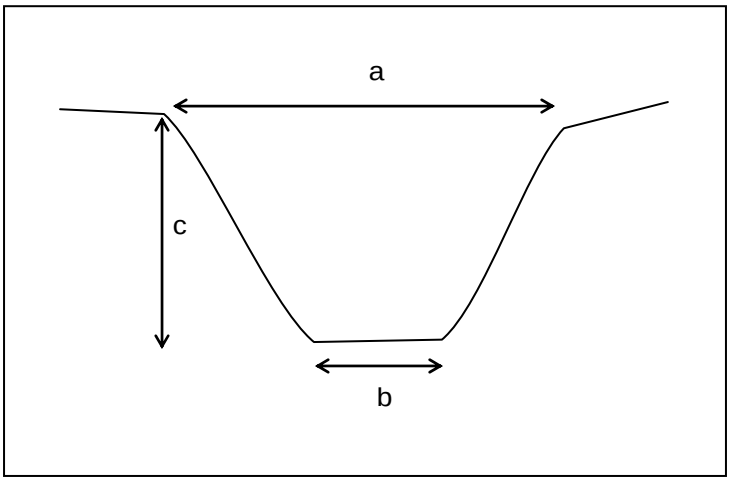

5.3 DEVELOP A SHEAR STRESS RATING CURVE

The tool creates a shear stress rating curve for a range of flows between 1% of the bankfull flow depth and bankfull depth (flow at depth (c).) The range 1% to 100% of bankfull is used because critical flow rarely lies outside these values. The tool then calculates a power function between the points to allow for interpolation. For each of the flows the tool calculates average boundary shear stress exerted on the bed, and discharge, as described below.

5.3.1 Calculating Average Boundary Shear Stress

Average boundary shear stress is the force that erodes channel materials. It is calculated as follows:

$$\tau_{crit} = \gamma * HR * s$$

where τ_{crit} = average boundary shear stress (lb/ft^2)
γ = unit weight water (62.4 lb/ft^3)
HR = Hydraulic radius (cross section area / wetted perimeter)
S = channel slope (ft/ft)

For each depth increment between 1% of bankfull and bankfull, cross section area, wetted perimeter, HR and τ_{crit} are calculated. Slope is assumed to be constant for the cross section; therefore multiple calculations may be required for variable slope conditions. These calculations produce a rating curve for boundary shear stress as a function of flow depth.

5.3.2 Calculating Discharge

For each depth increment between 1% of bankfull and bankfull discharge is calculated using Manning's equation:

$$V = 1.486 \frac{HR^{0.66} * S^{0.5}}{n}$$

where V = velocity (ft/sec)
n = Manning's roughness coefficient

Manning's n is entered by the user from a drop down dialogue box ranging from 0.03 (smooth, straight earth channel with no vegetation) to 0.12 (windy, rough bed channel with dense vegetation).

Discharge is calculated as velocity multiplied by cross section area. The product of these calculations is a rating curve showing boundary shear stress for the receiving channel as a function of discharge, with the highest point representing bankfull flow (see Figure 7 below).

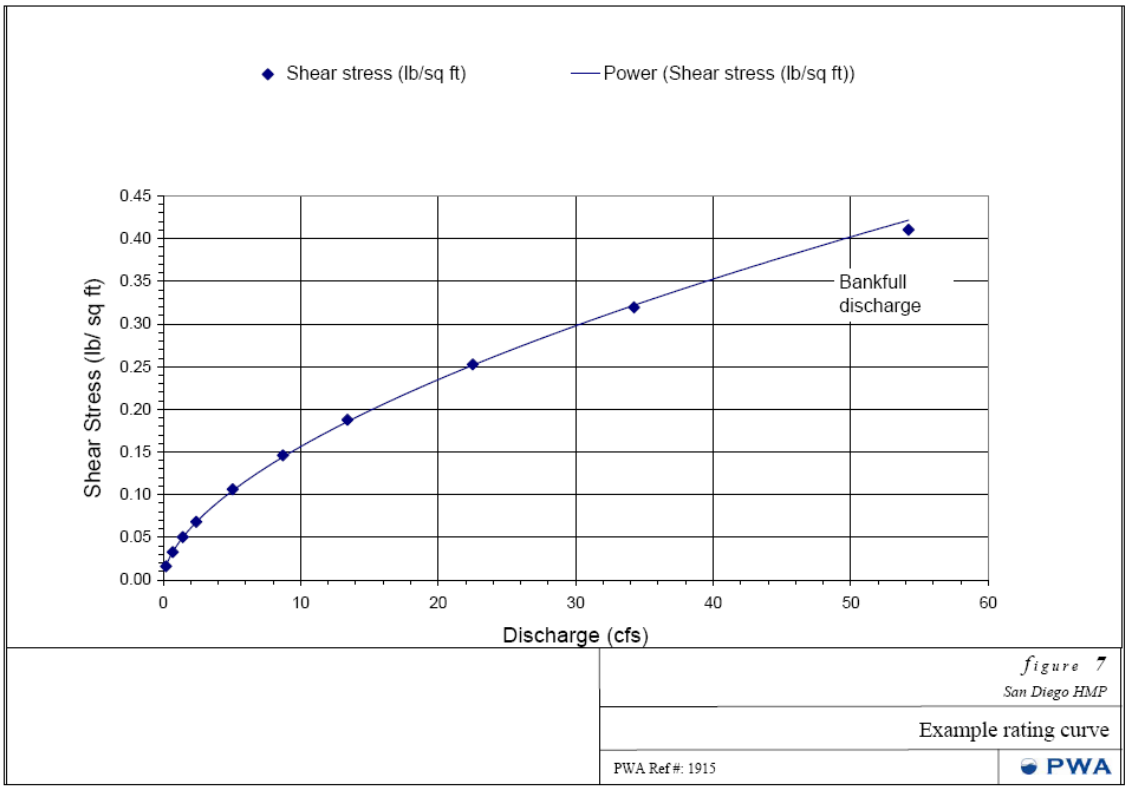

Figure 7. Shear stress rating curve for an example channel (0.5%, 10 feet wide, 2 feet deep)

5.4 CHARACTERIZE RECEIVING CHANNEL MATERIALS IN TERMS OF CRITICAL SHEAR STRESS

The critical shear stress of the channel materials is estimated using a look-up table based on values published by the USACE (Fischenich, 2001). The tool provides values of critical shear stress for a wide range of channel materials in a drop down box so the user can select from the list, or select a median particle size (d50). The values are shown in Table 1. The calculator also allows the user to input a vegetated channel material when this is appropriate (when the channel is completely lined in vegetation). The process for identifying representative materials is covered in the implementation chapter.

5.5 CALCULATING CRITICAL FLOW FOR THE RECEIVING WATER

Critical flow is the discharge at which boundary shear stress equals critical shear stress. The tool uses a power function to interpolate the discharge versus boundary shear stress rating curve. The critical shear stress for the weaker of the bed or banks is plotted horizontally from the Y axis until it intercepts the rating curve. The intercept point is extended vertically to the X axis, showing the critical flow (see Figure 8 below). This represents Q_{crit} for the receiving water. Note that the creation of a site-specific rating curve allows Q_{crit} to be expressed as a specific flow rate (Q) rather than a fraction of Q_2.

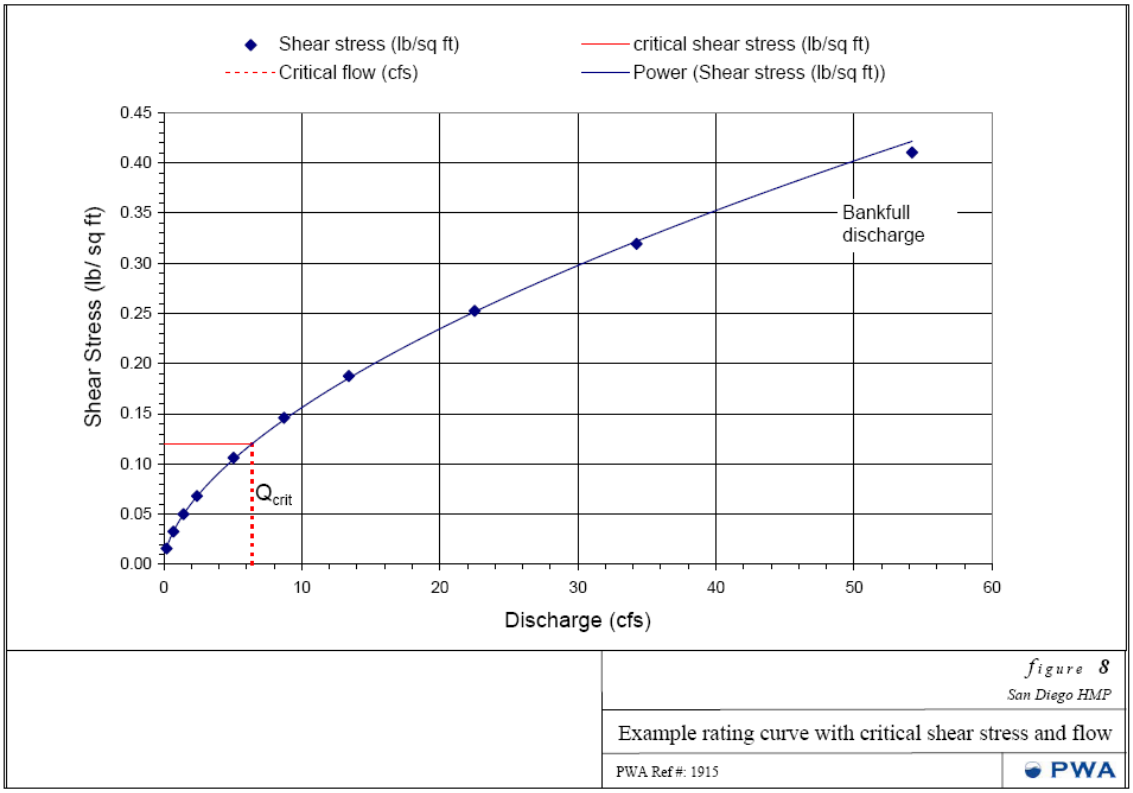

Figure 8. Example of a rating curve with critical shear stress for medium sized gravel. In this example critical shear stress = 0.12 lb/sq ft and critical flow Q_{crit} = 6.4 cfs.

5.6 CALCULATING CRITICAL FLOW AT THE POINT OF COMPLIANCE

The tool calculates critical flow based on the characteristics of the receiving water. Where the project watershed does not make up the entire watershed area for the receiving water, it is necessary to divide the estimated Qcrit based on the percentage of the watershed that is occupied by the project site[3]. For example, if a project occupies one tenth of the receiving water's watershed at the point of compliance and the critical flow level is 50 cfs, the project's 'share' of the non-erosive flow is 5 cfs (50 x 1/10). This prevents the cumulative impact of future developments from exceeding critical flow in the receiving water, since the critical flow is apportioned according to watershed area.

$$\text{Critical flow at Point of Compliance} = \text{Critical flow at receiving water} \times \frac{\text{project area}}{\text{watershed area}}$$

[3]. It is not necessary to adjust the "off-the-shelf" thresholds developed for Track 1 for point of compliance, since they are expressed as a fraction of Q2 for the relevant project area.

5.7 CONVERSION OF CRITICAL FLOW TO FLOW CLASS

To avoid having an infinite range of flow control standards the calculator assigns the discharge into one of three classes based on its value as a function of the estimated Q_2. These classes are: $0.1Q_2$, $0.3Q_2$, $0.5Q_2$. For example, a channel where the critical flow is $0.15Q_2$ would be assigned a flow threshold of $0.1Q_2$. Channels with critical flows less than $0.1Q_2$ are assigned to the $0.1Q_2$ class. The class flow rate is calculated (i.e. the critical flow corresponding to the assigned fraction of Q_2 and expressed as the final output of the tool.

6. GLOSSARY

Bankfull depth
The water depth between the deepest part of the channel and the water surface, during bankfull discharge. Also the vertical distance between the uppermost 'bankfull indicators' and the deepest part of the channel.

Bankfull discharge
The flow rate at which the actively scoured portion of the creek channel is filled with water. In southern California bankfull discharge has typically been found to be between Q2 and Q7, with an average of approximately Q5.

Bankfull indicators
Morphological evidence for the portion of a creek channel that is subject to active scour and sediment transport processes. Typical indicators include scour lines along a bank, the highest vertical level on point bars, base of undercut tree roots.

Bankfull width
The width of the channel at the water surface during bankfull discharge. Also the horizontal distance between 'bankfull indicators' across a channel.

Critical flow
The discharge corresponding to Critical Shear Stress. Varies with channel geometry and materials.

Critical shear stress
The shear stress at which a given channel material is eroded. In non cohesive sediments larger particles have higher critical shear stresses. In cohesive sediments (those smaller than 0.063 mm) sediment has higher critical shear stresses than fine, non cohesive materials

d50
The median sediment particle size in a sample of material taken from a creek bed (diameter of the 50th percentile)

Geomorphically-significant flows
The range of flows that, over a period of several decades, erode and transport the majority of the sediment in a creek system. The mid range of this flow range tends to be similar to "bankfull" discharge, leading people to infer that these flows shape the channel as well as moving most sediment. Calculated by integrating the flow frequency curve with the sediment rating curve.

Point of Compliance
The point at which collected stormwater from a development is delivered from a constructed or modified drainage system into the natural creek receiving water. Note that the HMP applies only to discharge into a natural creek of receiving water, and does not apply to sheet flow or overland flow from a developed site.

Q2
The discharge that recurs on average every 2 years, and that has a 50% probability of occurring in any single year.

Q10
The discharge that recurs on average every 10 years, and that has a 10% probability of occurring in any single year.

Shear stress (also known as boundary shear stress or average boundary shear stress)
The average force exerted by flowing water on the channel boundary. Shear stress is the force responsible for eroding sediment from the channel boundary. It is a function of water surface gradient (related to channel gradient), water depth, and water density.

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APPENDIX B

SCCWRP Channel Screening Report

Use of contents on this sheet is subject to the limitations specified at the end of this document.
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Hydromodification Screening Tool for Southern California

DRAFT

for

FIELD TESTING/TAC REVIEW

Brian Bledsoe

Robert Hawley

COLORADO STATE UNIVERSITY

Eric Stein

SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT

November, 2009

EXECUTIVE SUMMARY

Until recently, streamflow alteration associated with urban development in southern California has typically gone unmitigated and resulted in significant channel adjustments such as incision and/or widening with far-reaching effects on adjacent land and throughout drainage networks (both upstream and downstream). As a part of a broader project, a field-calibrated screening tool was developed to assess channel susceptibility to hydromodification – changes in the delivery of water and sediment via the conversion of land from undeveloped to urban. The tool, which represents a collaboration of several researchers, is structured as a decision tree with a transparent, process-based flow of logic that provides qualitative sensitivity ratings of Low, Medium, High, or Very High through a combination of relatively simple but quantitative input parameters that are derived from both field and Geographic Information System data. The screening rating foreshadows the level of data collection, modeling, and ultimate mitigation efforts that can be expected for a particular stream-segment type and geomorphic setting.

The screening-tool approach is novel in that it incorporates the following combination of features:

- Integrated field and office/desktop components
- Separate ratings for channel susceptibility in vertical and lateral dimensions
- Transparent flow of logic via decision trees
- Critical nodes in the decision trees are represented by a mix of probabilistic diagrams and checklists
- Process-based metrics selected after exhaustive literature review and analysis of large field dataset
- Metrics balance fidelity to process, simplicity of measurement, and interpretability
- Explicitly assesses proximity to geomorphic thresholds delineated using field data from small watersheds in southern California
- Avoids bankfull determination, channel cross-section survey, and sieve analysis, but requires pebble count in some instances
- Verified prediction accuracy of simplified logistic diagrams against more complex methods such as dimensionless shear-stress analyses, Osman and Thorne (1988) geotechnical stability procedure
- Assesses bank susceptibility to mass wasting – field-calibrated logistic diagram of geotechnical stability vetted by Colin Thorne
- Regionally-calibrated braiding/incision threshold based on surrogates for stream power and boundary resistance
- Incorporates updated alternatives to the U.S. Geological Survey (USGS) (Waananen and Crippen, 1977) regional equations for peak flow (Hawley and Bledsoe, In review)

- Does not rely on bank vegetation given uncertainty in future influence / difficulty of assessing root reinforcement, rooting depth/bank height
- Channel evolution model underpinning the tool is based on observed responses in southern California – modification of Schumm *et al*. (1984) five-stage model to represent alternative trajectories

Geomorphic thresholds are real and of particular concern in stream management, such that any susceptibility assessment scheme should account for the proximity to such threshold-based responses. The probabilistic models of braiding, incision, and bank instability risk that are embedded in the screening tool were calibrated with local data collected in an extensive field campaign. The models help users directly assess proximity to geomorphic thresholds, and offer a framework for gauging susceptibility that goes beyond expert judgment. The risk-based models were highly significant (i.e., $p \sim 0.001$ to $p < 0.0001$) and correctly classified unstable channel states in more than 90% of the cases using relatively simple but process-based variables that can be rapidly measured at the screening/reconnaissance level.

Key findings of the broader research that led to screening tool development are that 1) urbanization markedly affects the flow regimes of streams in southern California, 2) the corresponding imbalances in sediment-transport capacity result in substantial geomorphic instabilities across most stream settings, 3) channels in southern California may be more sensitive than streams in other regions of the U.S. for equivalent flows, bed-material sizes, valley slopes, and bank heights/angles, and 4) widely varying degrees of susceptibility to hydromodification are clearly reflected across the field study sites as an interaction between flow energy and the resistance of channel boundaries to lateral and vertical adjustments. Consequently, mitigation strategies should be tailored to specific stream types and incorporate process-based objectives such as maintaining sediment continuity via duration standards rather than traditional regulations focused exclusively on flow magnitude.

NOTE: As this draft is intended for TAC review, and we welcome all comments, specific locations where we would especially solicit TAC comments are highlighted in yellow.

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CHAPTER 1

INTRODUCTION

Hydromodification, the response of streams to changes in flow and sediment input, is an area of active investigation and emerging regulation. Many management schemes currently use a "one-size-fits-all" approach to managing hydromodification effects, whereby a single criterion is applied to all streams within a given area. However, factors such as dominant bed material, channel planform, grade control, vegetation, and existing infrastructure can influence the rate and manner in which streams respond to changes in flow and sediment. Consideration of these differences in management programs requires a tool to rate stream reaches in terms of their relative susceptibility to hydromodification effects.

This document provides the steps and process to apply a process-based hydromodification susceptibility screening tool. The tool builds on studies done in other regions (as summarized by Bledsoe *et al*. (2008)) to provide a means to rank stream reaches in terms of their relative likelihood of response to hydromodification. The screening tool consists of two elements: 1) Geographic Information System (GIS) based landscape-scale analyses of relative runoff and sediment yield to stream channels, and 2) field-based assessment of channel condition. Together these two elements can be used to assess susceptibility of a specific stream reach based on both landscape and local influences (Figure 1.1).

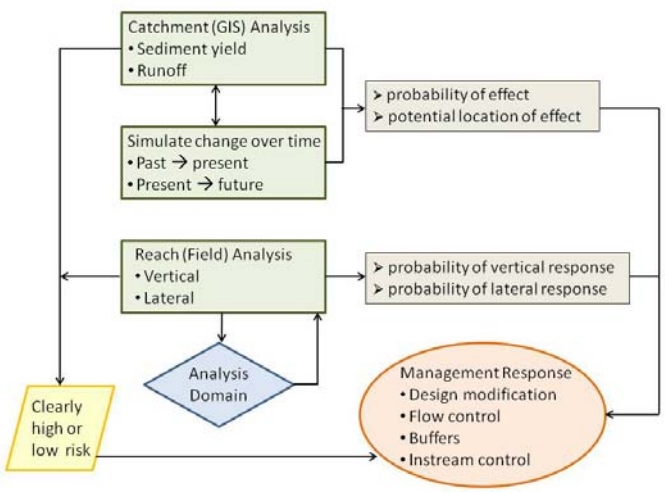

Figure 1.1: Conceptual application of GIS- and field-based screening tools

This document focuses on the second element of the screening analysis, the field-based assessment. The tool uses a combination of relatively simple, but quantitative field indicators as input parameters to a set of decision trees. The decision trees follow a logical progression and allow users to assign a classification of Low, Medium, High, or Very High susceptibility rating (Table 1.1) to the reach being assessed.

Table 1.1: Vertical and Lateral Susceptibility rating definitions

Susceptibility Rating	Definitions of Susceptibility
LOW	• Low ratio of disturbing forces to resisting forces
	• Far from geomorphic thresholds of concern (based on explicit quantification of probability if feasible – < 1% probability of exceedence)
	• Relatively rapid relaxation time
	• Low potential for positive feedbacks, nonlinear response, sensitivity to initial conditions
	• Very limited or no spatial propagation (*ca.* 10 m)
MEDIUM	• Moderate ratio of disturbing forces to resisting forces
	• Not proximate to geomorphic thresholds of concern (based on explicit quantification of probability if feasible – e.g., < 10% probability of exceedence)
	• Moderately rapid relaxation time
	• Low to moderate potential for positive feedbacks, nonlinear response, sensitivity to initial conditions
	• Local spatial propagation, contained within *ca.* 100 m
HIGH	• High ratio of disturbing forces to resisting forces
	• Proximate to geomorphic thresholds of concern (based on explicit quantification of probability if feasible – e.g., > 10 to 50% probability of exceedence)
	• Relaxation time may be relatively long given magnitude and spatial extent of change
	• Moderate to high potential for positive feedbacks, nonlinear response, sensitivity to initial conditions
	• Potential spatial propagation – headcutting/base-level change upstream and downstream but contained within *ca.* 100 to 1,000 m domain of control
VERY HIGH	• High ratio of disturbing forces to resisting forces
	• At geomorphic thresholds of concern (based on explicit quantification of probability if feasible – e.g., ≥ 50% probability of exceedence)
	• Relaxation time may be relatively long given magnitude and spatial extent of change
	• High potential for positive feedbacks, nonlinear response, sensitivity to initial conditions
	• Potential widespread spatial propagation – headcutting/base-level change upstream and downstream uncontained within *ca.* 1,000 m domain of control
	• Specifically, the VERY HIGH rating is reserved for the following geomorphic thresholds/states (clear and present danger): o **Vertical** ▪ Currently unstable (Channel Evolution Model (CEM) Type III or IV) with incision past critical bank height for mass wasting and active bank failure ▪ Currently stable (CEM Type I or II) with banks less than critical height, but p ≥ 50% for incision or braiding in labile bed (d_{50} <16 mm) with ineffective/absent grade control o **Lateral** ▪ Currently unstable with active braiding/extensive mass wasting/fluvial erosion (> 50% of banks) in a wide valley ▪ Currently stable consolidated bank in wide valley with High Vertical rating combined with p > 10% for mass wasting ▪ Currently stable unconsolidated banks with fine toe material in wide valley with High Vertical rating

Specific attributes and some limitations of the field-based screening tool are listed below:

General features of the field screening tool:

- Integrated field and office/desktop components
- Separate ratings for channel susceptibility in vertical and lateral dimensions
- Transparent flow of logic via decision trees
- Critical nodes in the decision trees are represented by a mix of probabilistic diagrams and checklists
- Process-based metrics selected after exhaustive literature review and analysis of a large field data set
- Metrics balance fidelity to process, simplicity of measurement, and interpretability
- Explicitly assesses proximity to geomorphic thresholds delineated using field data from small watersheds in southern California
- Avoids bankfull determination, channel cross-section survey, and sieve analysis, but requires pebble count in some instances
- Verified prediction accuracy of simplified logistic diagrams against more complex methods such as dimensionless shear-stress analyses (Osman and Thorne, 1988), geotechnical stability procedure
- Assesses bank susceptibility to mass wasting – field-calibrated logistic diagram of geotechnical stability vetted by Colin Thorne
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- Incorporates updated alternatives to the U.S. Geological Survey (USGS) (Waananen and Crippen, 1977) regional equations for peak flow (Hawley and Bledsoe, In review)
- Does not rely on bank vegetation given uncertainty in future influence / difficulty of assessing root reinforcement, rooting depth/bank height
- CEM underpinning the tool is based on observed responses in southern California – modification of Schumm *et al*. (1984) five-stage model to represent alternative trajectories

What the Screening Tool <u>DOES NOT DO</u>:

⊗ **Policy/management decisions**: although the screening tool is designed to have management implications via a decision framework, policy/management decisions must be made by local stakeholders

⊗ **Ecological/economic considerations**: the screening tool is exclusively focused on geomorphic stability and does not include ecological/economic aspects that stakeholders may consider

⊗ **Historical attribution**: the screening tool is designed to assess the current susceptibility of a channel, independent of attributing degraded conditions to historical land users, policies, etc.

CHAPTER 2

OFFICE AND FIELD COMPONENTS

2.1 Office Screening

The screening tool presented in this document is predominantly designed as a field-based assessment. The field tool requires some preparatory office work to provide context and familiarity with the site in advance of conducting the field evaluation.

1. Examine Overall Setting (using Google Earth or equivalent aerials) – see Section 2.1.1
2. Quantify Important Remotely-sensed Parameters (using GIS software) – see Section 2.1.2
3. Identify Tentative Analysis Domain (tentatively define upstream and downstream extents of field reconnaissance, locations of likely grade control, and valley transitions) – see Section 2.1.3

2.1.1 Overall Setting

Using Google Earth or other publicly-available satellite imagery/aerial photography, gather a baseline understanding of the watershed. Consider aspects such as development extent, fires and vegetation coverage, sediment sources and bottlenecks, ecologically-sensitive areas, etc. Examine the valley setting near the project in greater detail, identifying tributary confluences, potential grade control (e.g., road crossings), and infrastructure (e.g., stormwater outfalls, drainage 'improvements', etc.). Specifically consider:

- Geologic setting, basin type, valley context, and tributaries
- Recent watershed history – urbanization and fire
- Obvious grade-control locations, human influences, and existing infrastructure

Printed-out screen shots of aerials, specifically near the project site may be helpful when going into the field.

2.1.2 GIS Metrics

Using publicly-available GIS data, measure four readily-quantifiable watershed- and valley-scale variables that will be used to compute the simple (but statistically-significant) screening indices (i.e., flow, screening index, and valley width index). See Form 1 for measurement instructions:

- spatial: contributing drainage area
- topographic: valley slope at site(s)
- precipitation: mean annual area-averaged precipitation
- geomorphic confinement: valley bottom width at site(s)

These variables are explained in more detail in Table 2.1.

2.1.3 Analysis Domain

The effects of hydromodification may propagate for significant distances downstream (and sometimes upstream) from a point of impact such as a stormwater outfall. Accordingly, it may be necessary to conduct geomorphic screening reconnaissance across a domain spanning multiple channel types/settings and property owners.

The maximum spatial unit for assigning a susceptibility rating is tentatively defined as a *ca.* 20 channel width 'reach' not to exceed 200 m. Before conducting the field screening, the analyst should identify the following attributes as part of the office analysis to tentatively estimate the maximum extent of the analysis domain for field refinement.

Begin by defining the points or zones along the channel reach(es) where changes in discharge are likely to occur (e.g., potential locations of outfalls or tributary inputs). Define the upstream and downstream extents of analysis as follows:

- Downstream – until reaching the closest of the following:
  - at least one reach downstream of the first grade-control point (but preferably the second downstream grade-control location)
  - tidal backwater/lentic waterbody
  - equal order tributary (Strahler, 1952)
  - accumulation of X% drainage area – X to be determined by stakeholders

OR demonstrate sufficient flow attenuation through existing hydrologic modeling

- Upstream – extend the domain upstream for a distance equal to 20 channel widths OR to grade control in good condition – whichever comes first. Within that reach, identify hard points that could check headward migration, evidence that headcutting is active or could propagate unchecked upstream

Document any outfalls observed in the field for consideration in conjunction with the age of existing development in the final desktop synthesis stage.

FORM 1: INITIAL DESKTOP ANALYSIS

IF required at multiple locations, circle one (applicant site, upstream extent, downstream extent)

Location: Latitude:_____ Longitude:_____

Description (river name, crossing streets, etc.):_____

_____

GIS Parameters: US Customary units used for contributing drainage area (A) and mean annual precipitation (P) to apply regional flow equations after the USGS

Table 2.1: Initial desktop analysis in GIS

Symbol		Variable (units)	Value	Description and Source
Watershed properties (English units)	**A**	Area (mi^2)		contributing drainage area to location via published Hydrologic Unit Codes (HUCs) and/or ≤ 30 m National Elevation Data (NED), USGS seamless server
	P	Mean annual precipitation (in.)		area-averaged annual precipitation via USGS delineated polygons using records from 1900 to 1960 (Natural Resources Conservation Service (NRCS) shape file using records from 1961 to 1990 was less accurate in hydrologic models)
Site properties (SI units)	**S_v**	Valley slope (m/m)		geomorphically-defined valley slope at site via NED, dictated by watershed configuration, confluences, consistent valley widths, etc., over a distance of up to ~500 m or 10% of the main-channel length from site to drainage divide (whichever is smaller)
	W_v	Valley width (m)		valley bottom width at site from natural valley wall to valley wall, dictated by clear breaks in surface slope on NED raster, irrespective of potential armoring from floodplain encroachment, levees, etc.

Table 2.2: Simplified peak flow (Hawley and Bledsoe, In review), screening index, and valley width index

Symbol	Dependent Variable (units)	Value	Equation	Required units
Q_{10cfs}	10-yr peak flow (ft^3/s)		$Q_{10cfs} = 18.2 * A^{0.87} * P^{0.77}$	A (mi^2) P (in.)
Q_{10}	10-yr peak flow (m^3/s)		$Q_{10} = 0.0283 * Q_{10cfs}$	Q_{10cfs} (cfs)
INDEX	10-yr screening index ($m^{1.5}/s^{0.5}$)		$INDEX = S_v * Q_{10}^{0.5}$	Sv (m/m) Q_{10} (m^3/s)
W_{ref}	Reference width (m)		$W_{ref} = 6.99 * Q_{10}^{0.438}$	Q_{10} (m^3/s)
VWI	Valley width index (m/m)		$VWI = W_v/W_{ref}$	W_v (m) W_{ref} (m)

Note: Gray highlighting indicates values directly used in field assessments

(Sheet 1 of 1)

2.1.4 Conceptual Basis for 10-yr Flow Analysis

The geomorphic thresholds presented in the field-screening sections below correspond to the 10-yr peak flow calculated using the regional hydrologic model presented in Table 2.2 (Hawley and Bledsoe, In review). This model is substantially more accurate for small watersheds in southern California than previously published regional regression equations. The 10-yr flow was selected for several reasons. First, it better represents a channel-filling flow than alternative return intervals such as Q_2. Second, it typically requires a 10-yr peak flow to create any sort of meaningful duration at the 2-yr flow magnitude (i.e., the 10-yr instantaneous-peak flow most regularly attenuates to a daily-mean flow equal to that of a 2- to 3-yr event). Finally, the 10-yr hydrologic models had the best performance of all return intervals. Out of 5 peak-flow model forms (Hawley and Bledsoe, In review), the model based on drainage area and precipitation had the best cross-validation performance. With respect to modeling Q_{10}, the standard error as percentage of mean for validation samples was 41% (arithmetic space), with an R^2 during final calibration of 0.81 (geometric space). Because of the relatively-robust model performance and overall simplicity, we selected the model form of Q = f (A, P) for use in this screening tool.

2.2 Field Screening

After completing the initial desktop components, the user should now have a first-order estimate of an appropriate analysis domain, a baseline understanding of the watershed, and critical indices to use during the field assessment(s). Now it is important to view the stream (and setting) in greater detail with an actual field assessment. Although high-precision survey equipment is not required, at a minimum the following items should be taken to the field:

- Additional forms and/or field book for sketches/notes
- Digital camera for photographic documentation
- Pocket rod and/or tape for some basic measurements and reference/scale in photographs
- Protractor (e.g., gravity-driven) for measuring bank angle
- Gravelometer (i.e., US SAH-97 half-phi template) for standardized pebble count

(a) Craftsman magnetic universal protractor ~$10.00

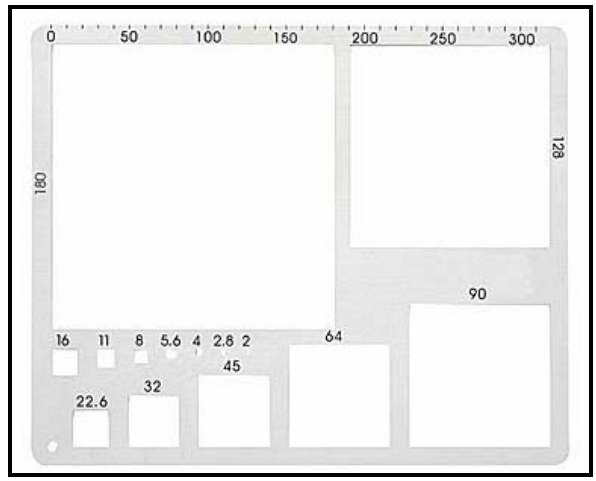

(b) US SAH-97 half-phi template (gravelometer) NOT to scale

Recall that it may be necessary to perform the field assessment at several locations based on an analysis domain that could span several stream reaches up and downstream (defined in Section 2.1.3). At each distinct reach type (or at the most susceptible reach), the user will follow the guidelines below to separately assess susceptibility in vertical and lateral dimensions. Although they are admittedly linked, vertical and lateral susceptibility are assessed separately for several reasons. First, vertical and lateral responses are primarily controlled by different types of resistance, which, when assessed separately, may improve ease of use and lead to increased repeatability among users compared to an integrated, cross-dimensional assessment. Second, the mechanistic differences between vertical and lateral responses point to different modeling tools and potentially-different management strategies. Having separate screening ratings may better direct users and managers to the most appropriate tools for subsequent analyses.

The field screening tool uses combinations of decision trees and checklists. We attempt to employ decision trees when a question can be answered fairly definitively and/or quantitatively (e.g., d_{50} < 16 mm). Alternatively, checklists are used in places where answers are relatively qualitative (e.g., the condition of grade control).

The tool is designed to first classify the current 'state'. Next, the user identifies the type and number of 'risk factors' that are present, which combine with the 'state' to affect the final rating. Users should take photographs to support their assessment. If uncertain about a given decision node, the user should use the more conservative pathway. The field-assessment process is itemized below:

- Two Decision Trees
  1. Vertical Susceptibility
  2. Lateral Susceptibility

- Design/Setup
  - Applied to analysis domain (defined above in Section 2.1.3) that may encompass multiple stream types and settings
  - Ratings of LOW, MEDIUM, HIGH, and VERY HIGH separately to the vertical and lateral dimensions of the channel reach
  - To clearly highlight rating endpoints within the decision trees, the diagrams below depict terminal nodes with a different color and font scheme than non-terminal nodes in which the user is to proceed to another step (see the key below):

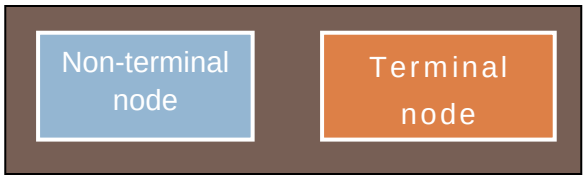

  - ***If the screening tool is applied on a site-specific basis (as opposed to proactive mapping over a jurisdictional region) and the initial observation point (usually outfall location) within the analysis domain receives a rating of LOW or MEDIUM, the analyst should look downstream and upstream to apply the screening tool at potentially more susceptible reaches that could be affected by hydromodification.***

- Overall logic of decision trees:

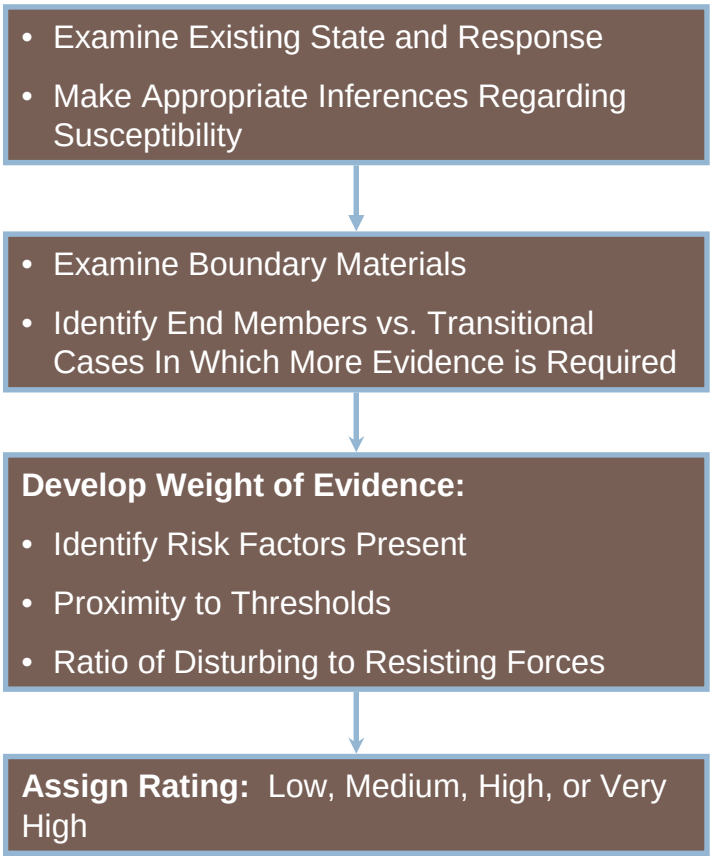

In the VERTICAL tree, there are three potential states of bed material based on broad classes of armoring potential. These states are listed below from most susceptible to least with photographic examples provided in Form 2:

1. Labile Bed – sand-dominated bed, little resistant substrate
2. Transitional/Intermediate Bed – bed typically characterized by gravel/small cobble, Intermediate level of resistance of the substrate and uncertain potential for armoring
3. Threshold Bed (Coarse/Armored Bed) – armored with large cobbles or larger bed material or highly-resistant bed substrate (i.e., bedrock)

Threshold beds composed of boulders and large cobbles and/or highly-resistant bedrock are the region's most resistant channel beds with geologic grade control and a natural capacity to armor. Consequently, threshold beds correspond to a vertical rating of low. Conversely, labile beds have little to no capacity to self-armor and have a high probability of vertical adjustments in response to hydromodification. Depending on two additional decision tree questions that consider the current state of incision and grade control, labile beds receive a rating of High or Very High. Finally, transitional/intermediate beds cover a wide susceptibility/potential response range and need to be assessed in greater detail to develop a weight of evidence for the appropriate screening rating. The three primary risk factors used to assess VERTICAL susceptibility for channels with transitional/intermediate bed materials are:

1. Armoring potential – three states (Checklist 1)
2. Grade control – three states (Checklist 2)
3. Proximity to regionally-calibrated incision/braiding threshold (probability diagram based on Screening Index – Figure 2.5)

These three risk factors are assessed using checklists and a diagram, and combined to provide a final vertical susceptibility rating for the intermediate/transitional bed-material group.

In the LATERAL tree, there are five primary states of bank characteristics. These states are listed below, roughly in order of most susceptible to least. Photographic examples are provided in Section 2.2.2:

1. Mass wasting or fluvial erosion/braiding existing and extensive
2. Poorly consolidated or unconsolidated with fine/nonresistant toe material
3. Poorly consolidated or unconsolidated with coarse/resistant toe material
4. Consolidated
5. Fully-armored bedrock/engineered reinforcement or fully confined by hillslope

In addition to the present channel state/response and bank materials, there are three primary risk factors used to develop a weight of evidence for LATERAL susceptibility:

1. Valley width index (VWI) – a measure of valley bottom width versus reference channel width (calculated in the office) used to assess the potential for lateral movement of the channel (Form 4 (Figure 2.10) and Form 5)
2. Proximity to a regionally-calibrated bank stability threshold (geotechnical probability diagram based on bank height and angle) (Form 6 (Figure 2.11))
3. The VERTICAL susceptibility rating

2.2.1 Vertical Stability Decision Tree

The purpose of the vertical stability decision tree is to assess the state of the channel bed with a particular focus on the risk of incision (i.e., down cutting). Vertical stability is a prerequisite for lateral stability because a stream that incises can increase bank heights to the point of collapse and channel widening. Accordingly, vertical susceptibility is assessed first because it affects the lateral rating in most instances.

2.2.1.1 Conceptual Basis

Channel bed material is one of the main elements that affects vertical stability. Bed material is assessed using the photographic supplement (Figure 2.2), with Figure 2.6 provided for reference of some particle sizes and to assist with estimating the percentage of surface sand. Some reaches may require a pebble count (Form 3) for a more definitive assessment of bed material.

For threshold (coarse/armored) beds, document the channel substrate with photographs, and a supporting pebble count if d_{50} is near 128 mm[1]. For labile beds, use supplemental photographs (Figure 2.2) and the diagram of the five-stage CEM presented in Appendix A (Figure A.3) to assess the current state of channel incision. For intermediate/transitional beds, assess armoring potential (Figure 2.3), grade-control condition and spacing (Figure 2.4) and the risk of incision based on the simplified screening index (Figure 2.5).

Armoring potential (Figure 2.3) is assessed because it is a primary mechanism in which a channel can self-check channel incision/headcutting. Coarser particles naturally provide greater resistance and, therefore, yield a lower susceptibility rating. Additionally, the tighter the particles are packed, the more resistant the armor layer, which can also influence the rating. Finally, the amount of sand-sized particles can adversely affect the resistance of an armor layer (Wilcock and Kenworthy, 2002; Wilcock and Crowe, 2003).

Grade control (Figure 2.4) is another way in which incision/headcutting can be arrested. When channels adjust their slope, the incision typically hinges around a hard point such as a natural or artificial grade control. Grade control has been clearly demonstrated to be a statistically-significant predictor of channel enlargement in southern California (Hawley, 2009). Adjustments may also revolve around the channel's base-level, which could be set by an estuary, large waterbody (such as a lake or reservoir), or confluence with a larger river.

Beyond armoring potential and grade control, channels with intermediate/transitional beds may also have a relatively-energetic valley setting that creates an inherently higher risk for incision than lower energy settings. Figure 2.5 depicts the risk of incising or braiding based on the potential specific stream power of the valley relative to the median particle diameter. The threshold is based on regional data from unconfined, unconstructed valley settings and modeled after similar analyses from various regions (e.g., Chang (1988), van den Berg (1995), and Bledsoe and Watson (2001)).

Hawley (2009) performed separate logistic regression analyses on incising and braiding systems relative to their stable, unconfined counterparts that returned similar thresholds. In developing the screening tool, we examined well over 100 total models of unstable (braided or incising) versus stable, single-thread, unconfined channels, using different measures of erosive energy (i.e., dimensionless shear stress, specific stream power, and screening index) and different hydrologic models to estimate the 2- and 10-yr instantaneous peak flow events. Based on model performance and given that d_{50} is primarily a measure of vertical resistance, we combined the models for this version of the screening tool for parsimony.

[1] If d_{50} is clearly greater or less than 128 mm, there is no need to conduct a pebble count, only visually document with photographs and general description of substrate type.

In addition, a large body of previous fluvial geomorphology research suggests that the behavior and response potential of coarse versus fine-grained systems is markedly different (e.g., Chang (1988), Montgomery and MacDonald (2002), and Simons and Simons (1987)). We ran both combined and separated models, based on different grain-size discriminators between sand-dominated gravels and gravel/cobble armored systems. Out of 108 total models, all but 6 were significant ($p < 0.05$) with the simplified specific stream power and grain-size surrogate (screening index) regularly performing similarly or superior to the more rigorous indices. Indeed, 5 of the 12 models of the screening index for coarse-size fractions offered complete segregation of unstable/stable sites (i.e., 100% correctly classified). Although that clearly delineates a threshold (Figure 2.5) it precludes using the logistic model to represent risk levels in terms of a range of probabilities. This explains why the 90% and 10% lines converge to the 50% level for $d > 16$ mm in the Figure 2.5.

FORM 2: VERTICAL SUSCEPTIBILITY FIELD SHEET

Circle appropriate nodes/pathway for proposed site

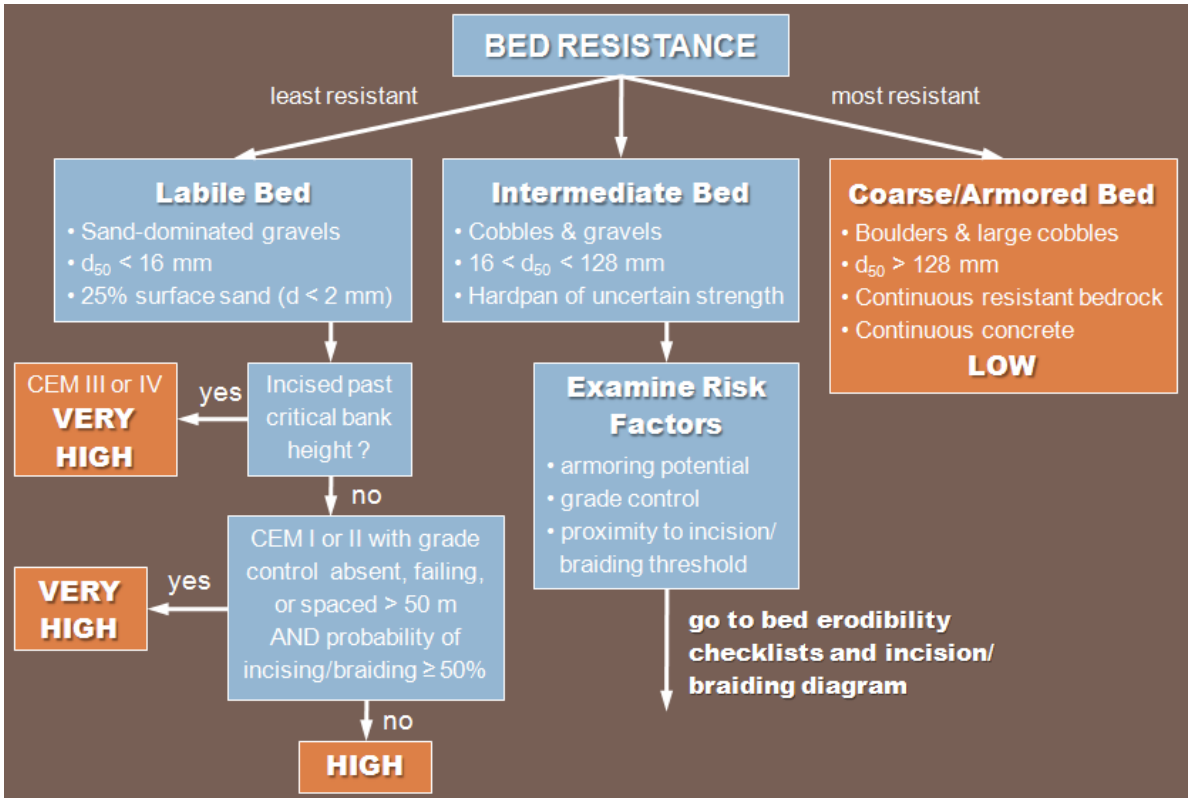

Figure 2.1: Vertical Susceptibility decision tree

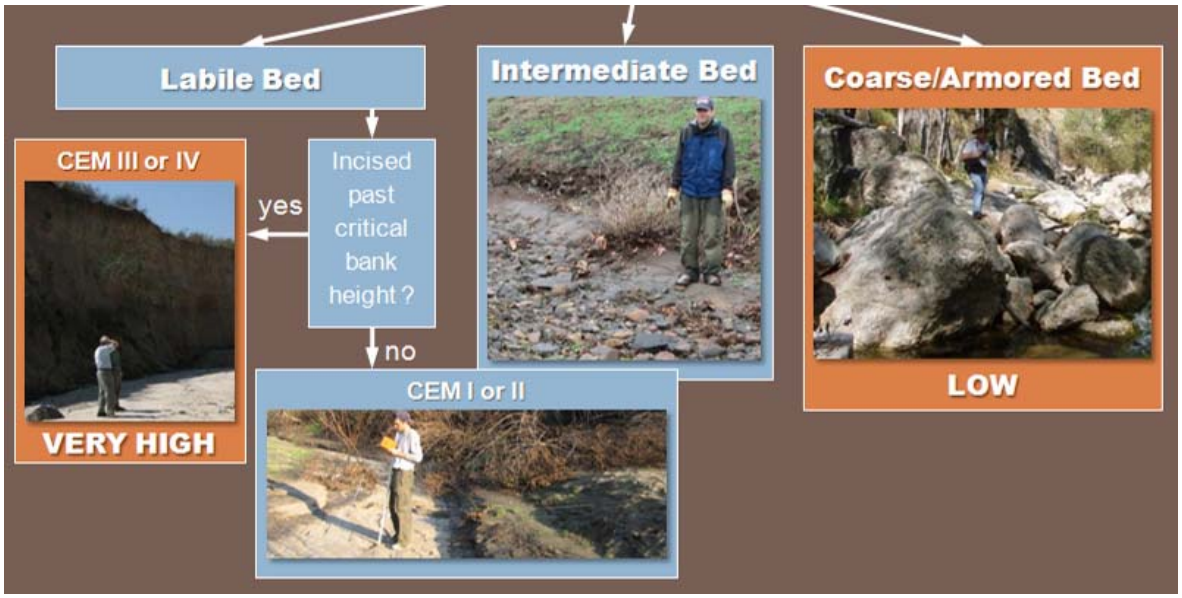

Figure 2.2: Vertical Susceptibility photographic supplement

(Sheet 1 of 5)

Checklists and diagram for assessing potential bed erodibility – transitional/ intermediate bed material:

Checklist 1: Armoring Potential

☐ A. A mix of coarse gravels and cobbles that are tightly packed with < 5% surface material of diameter < 2 mm

☐ B. Intermediate to A. and C. or hardpan of unknown resistance, spatial extent (longitudinal and depth), or unknown armoring potential due to surface veneer covering gravel or coarser layer encountered with probe

☐ C. Gravels/cobbles that are loosely packed and/or > 25% surface material of diameter < 2 mm

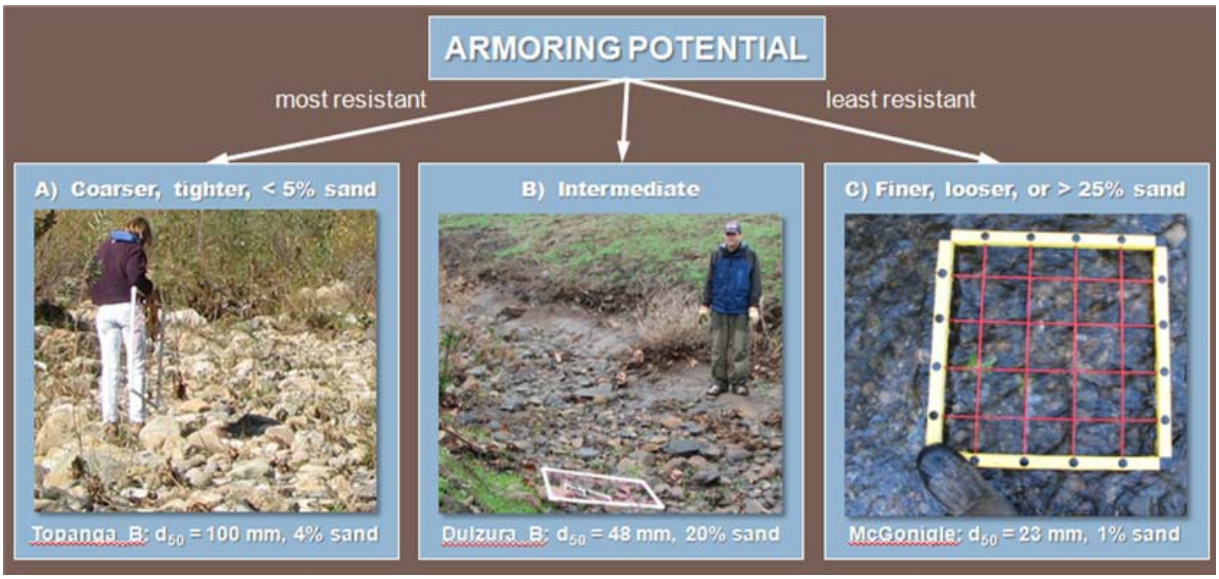

Figure 2.3: Armoring potential photographic supplement for assessing intermediate beds (16 < d_{50} < 128 mm) in conjunction with Checklist 1

(Sheet 2 of 5)

Checklist 2: Grade Control

☐ A. Grade control is present with spacing < 50 m or every $2/S_v$

- No evidence of failure/ineffectiveness, e.g., no headcutting (> 30 cm), no active mass wasting (analyst cannot say grade control sufficient if mass-wasting checklist indicates presence), no exposed bridge pilings, no culverts/structures undermined
- Hard points in serviceable condition at decadal time scale, e.g., no apparent undermining, flanking, failing grout
- If geologic grade control, rock should be resistant igneous and/or metamorphic or if sedimentary/hardpan should be subjected to hammer test/borings before placing in this category (criteria TBD)

☐ B. Intermediate to A. and C. – artificial or geologic grade control present but spaced 2/Sv to 4/Sv or potential evidence of failure or hardpan of uncertain resistance

☐ C. Grade control absent, spaced > 100 m or > $4/S_v$, or clear evidence of ineffectiveness

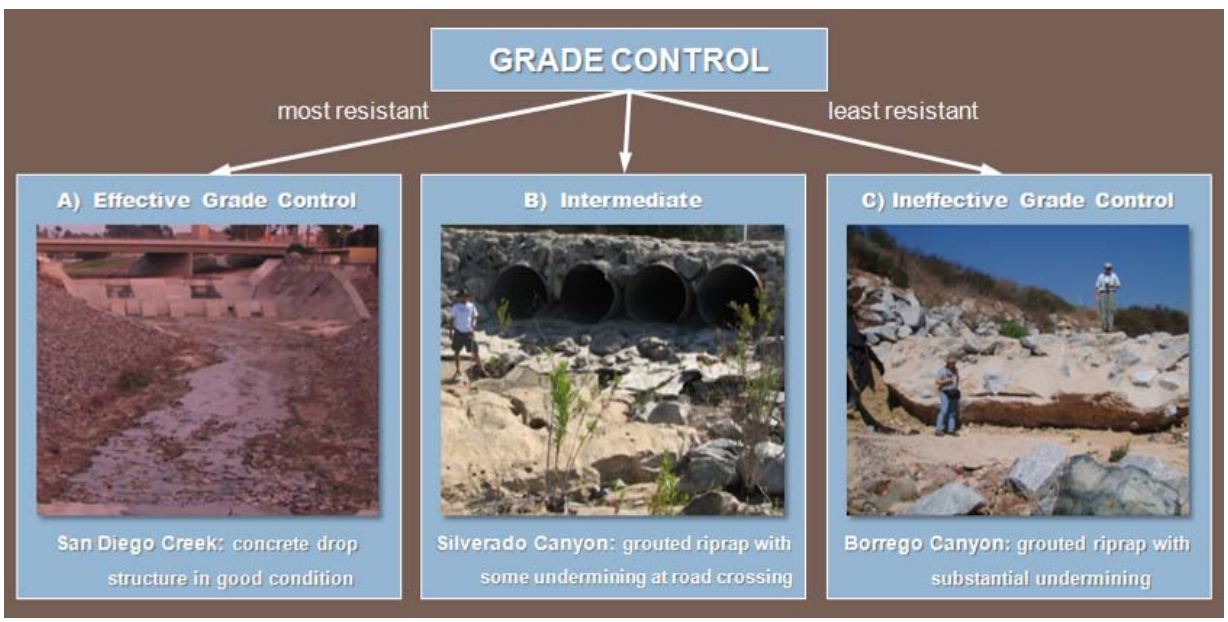

Figure 2.4: Grade-control (condition) photographic supplement for assessing intermediate beds (16 < d_{50} < 128 mm) in conjunction with Checklist 2

Diagram – Regionally-calibrated screening index threshold for incising/braiding

For transitional bed channels where the bed material d_{50} is between 16 and 128 mm, use the diagram and table (Figure 2.5 and Table 2.3, respectively) to determine if the risk of incision is ≥ 50%.

(Sheet 3 of 5)

Mobility Index Threshold – probability of incising or braiding

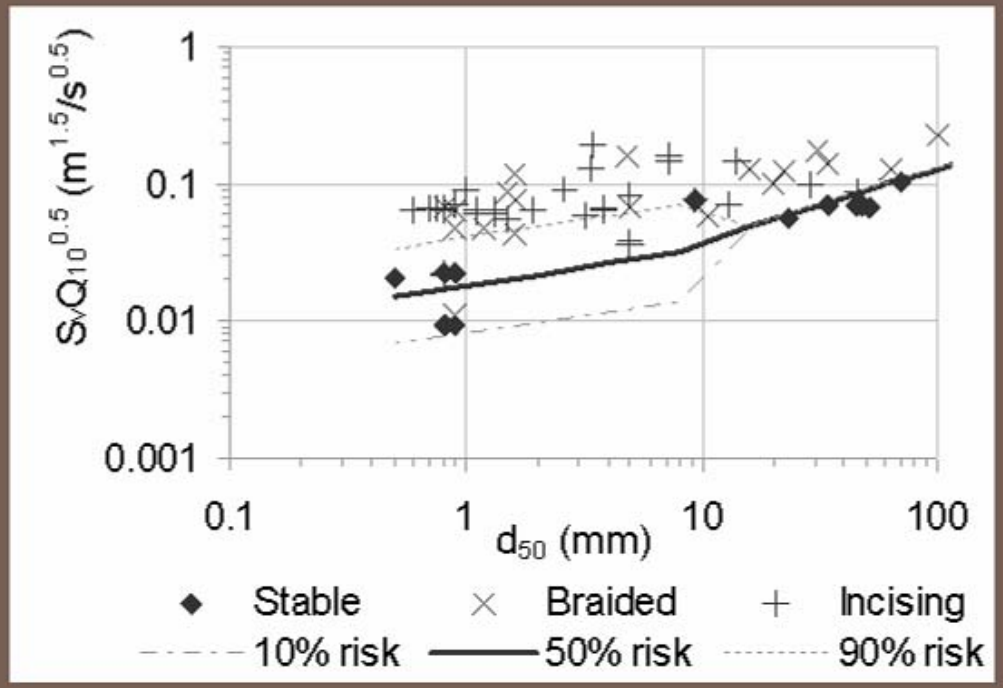

Model Type	d_{50} (mm)	50% Risk $S_vQ_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$)
Logistic Regression $d_{50} \geq 16$ mm	128	0.145
	96	0.125
	80	0.114
	64	0.101
	48	0.087
	32	0.070
	16	0.049
Logistic Reg. $d_{50} < 16$ mm	8	0.031
	4	0.026
	2	0.022
	1	0.018
	0.5	0.015

- GIS-derived: 10-yr flow & valley slope
- Field-derived: d_{50} (100-pebble count)

Figure 2.5: Probability of incising/braiding based on logistic regression of Screening Index and d_{50}

(Sheet 4 of 5)

Table 2.3: Values for Screening Index Threshold (probability of incising/braiding)

d_{50} (mm) *(from Field)*	**$S_v*Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$)** *(from Office)*	**$S_v*Q_{10}^{0.5}$ ($m^{1.5}/s^{0.5}$) Corresponding to 50% risk of incising** *(from Table)*	**Rating** *(LOW-HIGH depending on other decision tree components)*

Risk of Incision Rating from diagram (Figure 2.2)

A. < 50% probability of incision for current Q_{10}, valley slope, and d_{50}

B. Hardpan / d_{50} indeterminate

C. $\geq$ 50% probability of incising/braiding for current Q_{10}, valley slope, and d_{50}

Overall VERTICAL Rating for Intermediate / Transitional Bed:

Overall scoring for Vertical checklists (Checklists 1 and 2) and diagram (Figure 2.2) – ***Option 1***

A = -1, B = 0, C = 1

Vertical Rating Score = armoring potential score + grade-control score + screening index threshold rating

Vertical Susceptibility Ratings for intermediate bed material:

Score of -2 or -3 = LOW

Score -1 to 1 = MEDIUM

Score of 2 or 3 = HIGH

Overall scoring for Vertical checklists (Checklists 1 and 2) and diagram (Figure 2.2) – ***Option 2*** **(Recommended)**

A = 3, B = 6, C = 9

Vertical Rating Score = {(armoring potential score * grade-control score)$^{(1/2)}$ * screening index threshold rating}$^{(1/2)}$

Vertical Susceptibility Ratings for intermediate bed material:

Score < 4.5 = LOW

Score 4.5 to 7 = MEDIUM

Score > 7 = HIGH

(Sheet 5 of 5)

FORM 3: VERTICAL SUSCEPTIBILTY

If it is necessary to estimate d_{50}, perform a pebble count using a minimum of 100 particles with a standard phi template or by measuring along the intermediate axis of each pebble. Use a grid and tape for systematic/complete transects across riffle sections (i.e., if the 100th particle is in the middle of a transect, complete the full transect before stopping the count). If fines (sand/silt) are less than ½-in. thick (approximately one finger width) at point of sample, it is appropriate to sample the coarser buried substrate; otherwise record an observation of fines (< 2 mm). Take photographs to support the results.

Table 2.4: 100-pebble count tabulation for Vertical Susceptibility

#	Sta	d (mm)	#	Sta	d (mm)	#	Sta	d (mm)	#	Sta	d (mm)	#	Sta	d (mm)
1			31			61			91			121		
2			32			62			92			122		
3			33			63			93			123		
4			34			64			94			124		
5			35			65			95			125		
6			36			66			96			126		
7			37			67			97			127		
8			38			68			98			128		
9			39			69			99			129		
10			40			70			100			130		
11			41			71			101			131		
12			42			72			102			132		
13			43			73			103			133		
14			44			74			104			134		
15			45			75			105			135		
16			46			76			106			136		
17			47			77			107			137		
18			48			78			108			138		
19			49			79			109			139		
20			50			80			110			140		
21			51			81			111			141		
22			52			82			112			142		
23			53			83			113			143		
24			54			84			114			144		
25			55			85			115			145		
26			56			86			116			146		
27			57			87			117			147		
28			58			88			118			148		
29			59			89			119			149		
30			60			90			120			150		

Table 2.5: d_{50} for Screening Index Threshold

d_{50} (mm)	Median particle size from pebble count above (i.e., 50% smaller, 50% larger)

(Sheet 1 of 2)

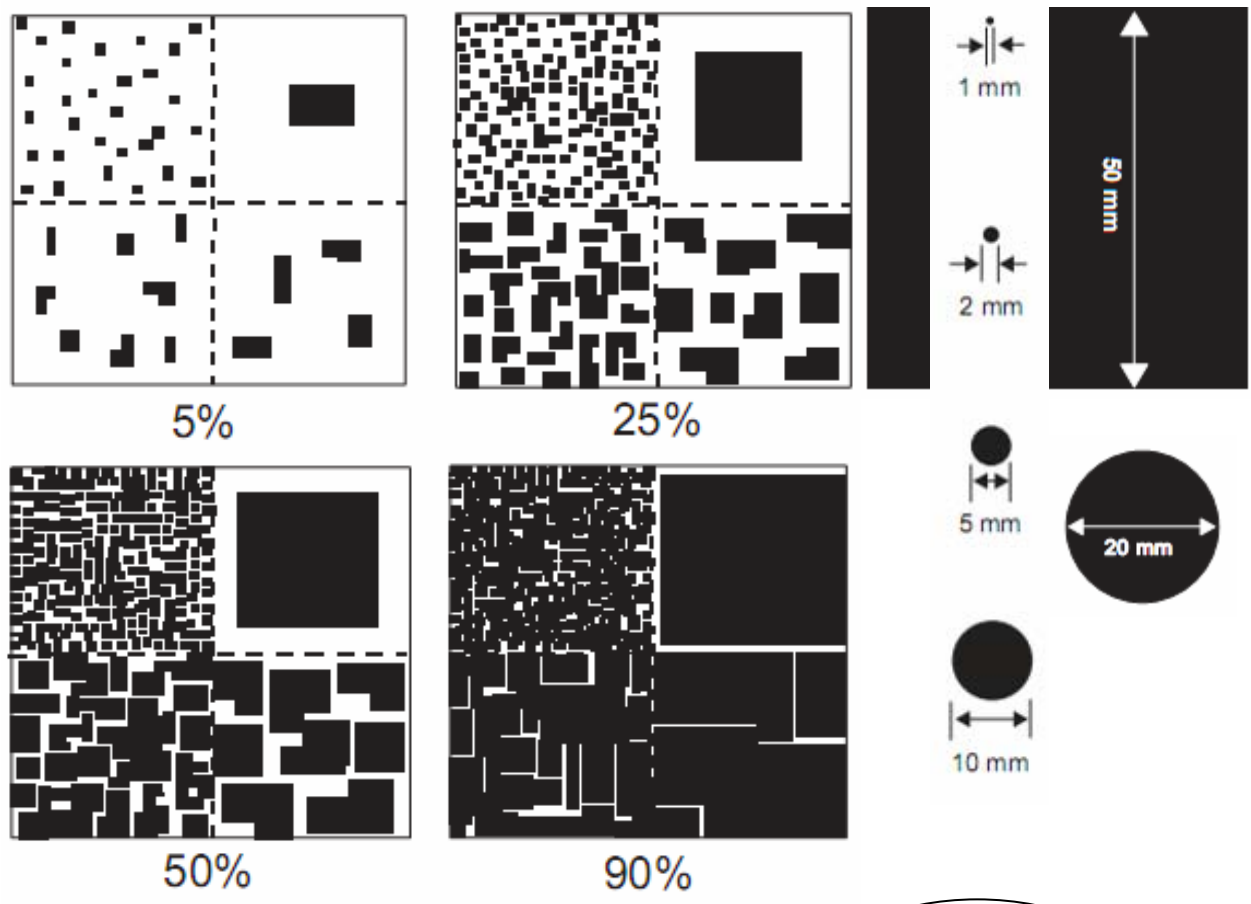

Note: each quadrant within each box contains the same total area covered using different sized objects

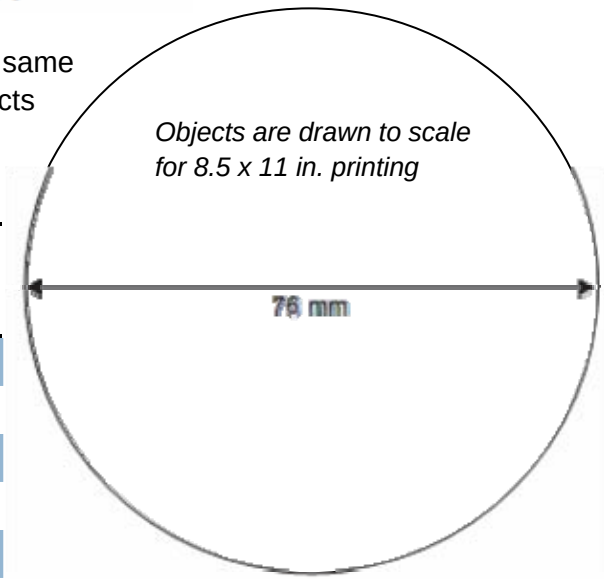

Class Name	Diameter (mm)	Helpful Descriptions for Field Identification
boulder	> 256	difficult to lift by hand
cobble	> 64	typically able to lift
gravel	> 2	fits in one hand
sand	> 0.0625	can feel between fingers
silt	> 0.004	can feel with tongue
clay	≤ 0.004	cannot feel individual particle

Figure 2.6: Examples of % coverage by volume and substrate sizing adapted from *NRCS Field Book for Describing and Sampling Soils* (Schoeneberger *et al.*, 2002) and Julien (1998)

(Sheet 2 of 2)

2.2.2 Lateral Stability Decision Tree

The purpose of the lateral decision tree is to assess the state of the channel banks with a particular focus on the risk of widening. Channels can widen from either bank failure or through fluvial avulsions such as chute cutoffs and braiding (see Figure A.2). Widening through fluvial avulsions/active braiding is a relatively straightforward observation. If braiding is not already occurring, the next logical question is to assess the condition of the banks. Banks fail through a variety of mechanisms (Figures A.4a and A.4b); however, one of the most important distinctions is whether they fail in mass (as many particles) or by fluvial detachment of individual particles. Although much research is dedicated to the combined effects of weakening, fluvial erosion, and mass failure (Beatty, 1984; Hooke, 1979; Lawler, 1992; Thorne, 1982), we found it valuable to segregate bank types based on the inference of the dominant failure mechanism (as the management approach may vary based on the dominant failure mechanism). Both a decision tree (Form 4) and a 'series of questions' table (Form 5) are provided for use in conducting the lateral susceptibility assessment. Either may be used depending on the user's preference. Definitions and photographic examples are also provided below for terms used in the lateral susceptibility assessment.

2.2.2.1 Definitions for Lateral Susceptibility Tree

- *Extensive mass wasting* – >50% of banks exhibiting planar, slab, or rotational failures, and/or scalloping, undermining, and/or tension cracks

(a) at San Timetao, San Bernardino County

(b) at Acton, LA County

Figure 2.7: Planar/slab failure (with tension cracks), exhibiting cohesive consolidated banks

- *Extensive fluvial erosion* – significant and frequent bank cuts (> 50% of banks) and not limited to bends and constrictions

Figure 2.8: Bank failure at Hicks Canyon (Orange County) exhibiting combinations of fluvial erosion, shallow slips, and mass failure in weakly-cohesive, poorly-consolidated banks

- *Moderately- to highly-consolidated* – hard when dry with little evidence of crumbling. Bank appears as a composite of tightly-packed particles that are difficult to delineate even with close inspection of the bank. Moderately-dry block/ped sample (1 in.^{2}) is not crushable between fingers and bank material stratification not prevalent or contributing to failure.

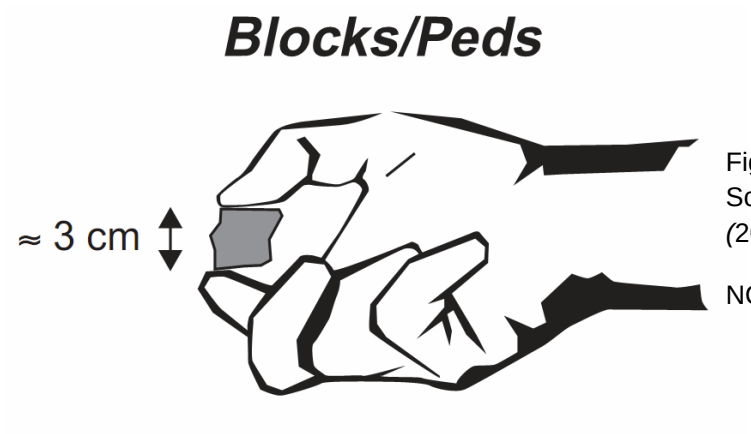

Figure adapted from Schoeneberger *et al.* (2002).

NOT TO SCALE

- *Poorly-consolidated to unconsolidated* – relatively weak with evidence of crumbling. Bank appears as a loose pile of recently deposited alluvia and block/ped samples (if attainable) can be crushed between fingers

(a) in Stewart Canyon (Ventura County) (b) in Hasley Canyon (LA County)

Figure 2.9: Bank failure in poorly-consolidated banks with some cohesivity, but bank stability largely controlled by resistance of the individual particles of the toe

2.2.2.2 Conceptual Basis

Cohesive banks have been documented in both flume and field experiments as being much more resistant to fluvial entrainment than non-cohesive banks (Thorne, 1982). Despite the fact that most of the banks that we observed in southern California had relatively low amounts of cohesion when compared to other regions of the US, it is generally acknowledged that truly non-cohesive banks are rare in nature given the effective cohesion introduced by pore-water suction even in banks formed in coarse materials (Lawler *et al*., 1997). Furthermore, there was clear evidence of mass wasting at a large number of sites, including the presence of tension cracks and discrete failure surfaces deep within the banks with corresponding planar, slab, and rotational failures.

Because cohesivity is difficult to assess in the field, Hawley (2009) segregated banks by relative degree of consolidation. Failure in banks composed of recently deposited alluvia with little time to consolidate (i.e., < ~10 yrs, unconsolidated) was generally dominated by the resistance of individual particles. Banks composed of much older fluvial deposits with more time to both acquire more cohesive particles and become more consolidated (i.e., well-consolidated) were controlled by mass failure. Intermediate poorly- and moderately-consolidated bank types were generally found to be controlled by mass wasting with the latter and fluvial entrainment with the former; however, the segregation is both subjective and somewhat difficult to determine, especially in stable banks.

Hawley (2009) performed logistic regression analysis of stable versus mass wasting in moderately- to well-consolidated banks using bank height and angle, consistent with geotechnical stability theory presented by Osman and Thorne (1988). The model was highly significant ($p < 0.0001$) and correctly classified unstable and stable states with ~95% accuracy (Form 6, Figure 2.11) in a shape that was analogous to the Culmann relationship. As an alternative, by including the poorly-consolidated sites, the model accuracy was ~90% with a lower 50% threshold and a much broader 10 to 90% risk range.

In addition to the current condition of the banks, we consider key risk factors including 1) the potential for lateral instability triggered by vertical instability, and 2) potential severity of the lateral response based on the available valley width (i.e., how large of a valley bottom is there for the channel to access?).

In assessing the potential for incision-induced bank failure we selected a vertical rating of high as a key discriminator. This decision was made primarily because such an approach inherently captures braiding risk because channels with high amounts of erosive energy relative to their bed material and > 50% risk of incision/braiding (Figure 2.5 in the vertical tree) would most likely result in a vertical rating of high unless exceptionally resistant and well-protected by armoring. We also identified a VWI of 2 as a key discriminator because doing so successfully distinguished between channels with valley bottoms 'confined by bedrock or hillslope' versus unconfined channels in the field data set. Unconfined valley settings were typically well above a VWI of 2.

FORM 4: LATERAL SUSCEPTIBILTY FIELD SHEET

Circle appropriate nodes/pathway for proposed site or use sequence of questions provided below (Form 5).

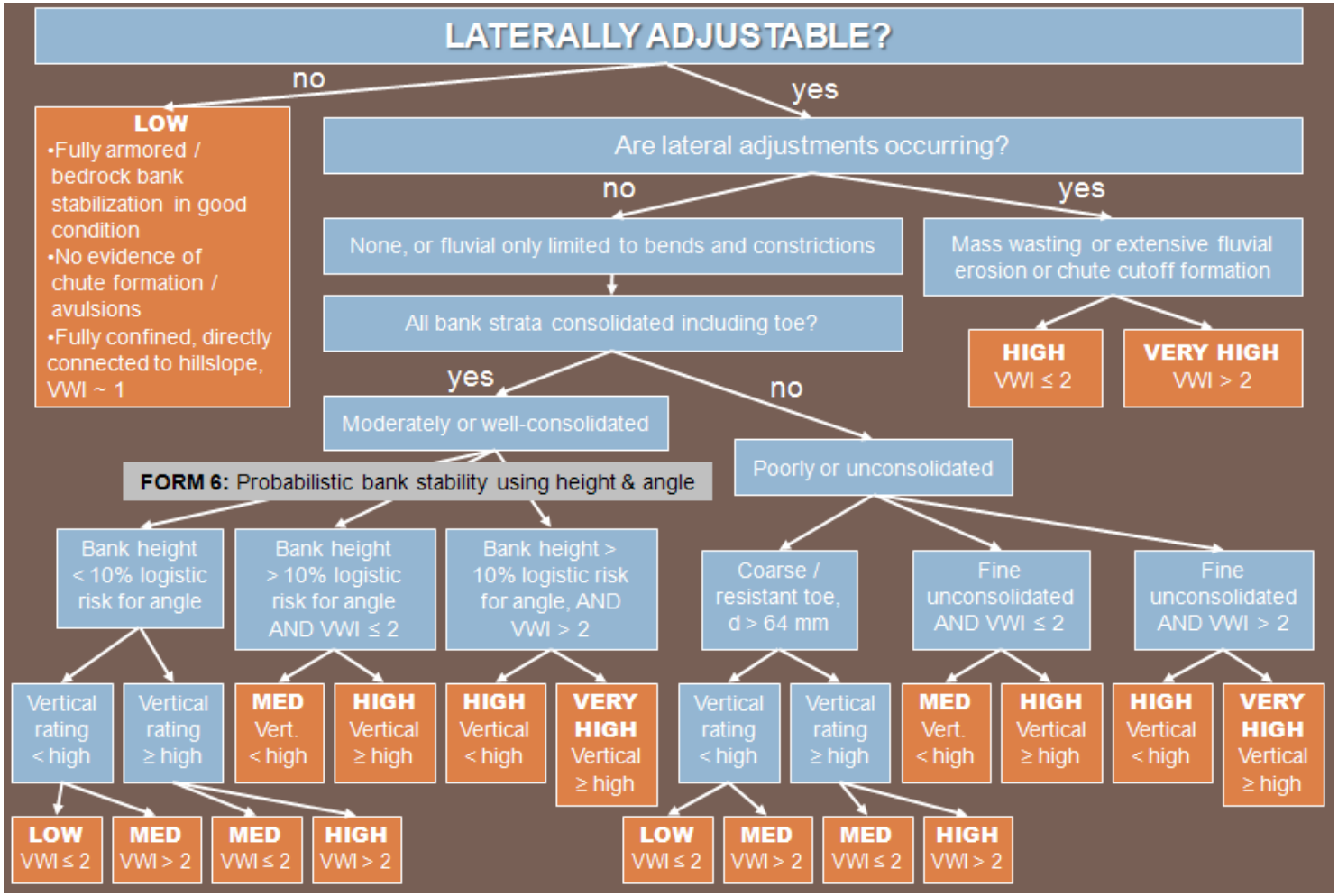

Figure 2.10: Lateral Susceptibility decision tree

(Sheet 1 of 1)

FORM 5: SEQUENCE OF LATERAL QUESTIONS OPTION

Channel fully confined with VWI ~1 – connected hillslopes OR fully-armored/engineered bed and banks in good condition?	if YES, then LOW	
if NO, is there active mass wasting or extensive fluvial erosion (> 50% of bank length)?	if YES, VWI ≤ 2 = HIGH, VWI > 2 = VERY HIGH	
if NO, are both banks consolidated?	if YES, how many risk factors present? All three = VERY HIGH two = HIGH one = MEDIUM none = LOW	Three risk factors: 1. Bank instability p > 10% 2. VWI > 2 3. Vertical rating ≥ High
if NO, are banks either consolidated or unconsolidated with coarse toe of d > 64 mm?	if YES, how many risk factors present? two = HIGH one = MEDIUM none = LOW	Two risk factors: 1. VWI > 2 2. Vertical rating ≥ High
if NO, at least one bank is unconsolidated with toe of d < 64 mm	how many risk factors present? two = VERY HIGH one = HIGH none = MEDIUM	Two risk factors: 1. VWI > 2 2. Vertical rating ≥ High

(Sheet 1 of 1)

FORM 6: LATERAL SUSCEPTIBILTY

If mass wasting is not currently extensive and the banks are moderately- to well-consolidated, measure bank height and angle at several locations (i.e., at least three locations that capture the range of conditions present in the study reach) to estimate representative values for the reach. Use diagram/table below to determine if risk of bank failure is > 10%. Support your results with photographs that include a protractor/rod/tape/person for scale reference.

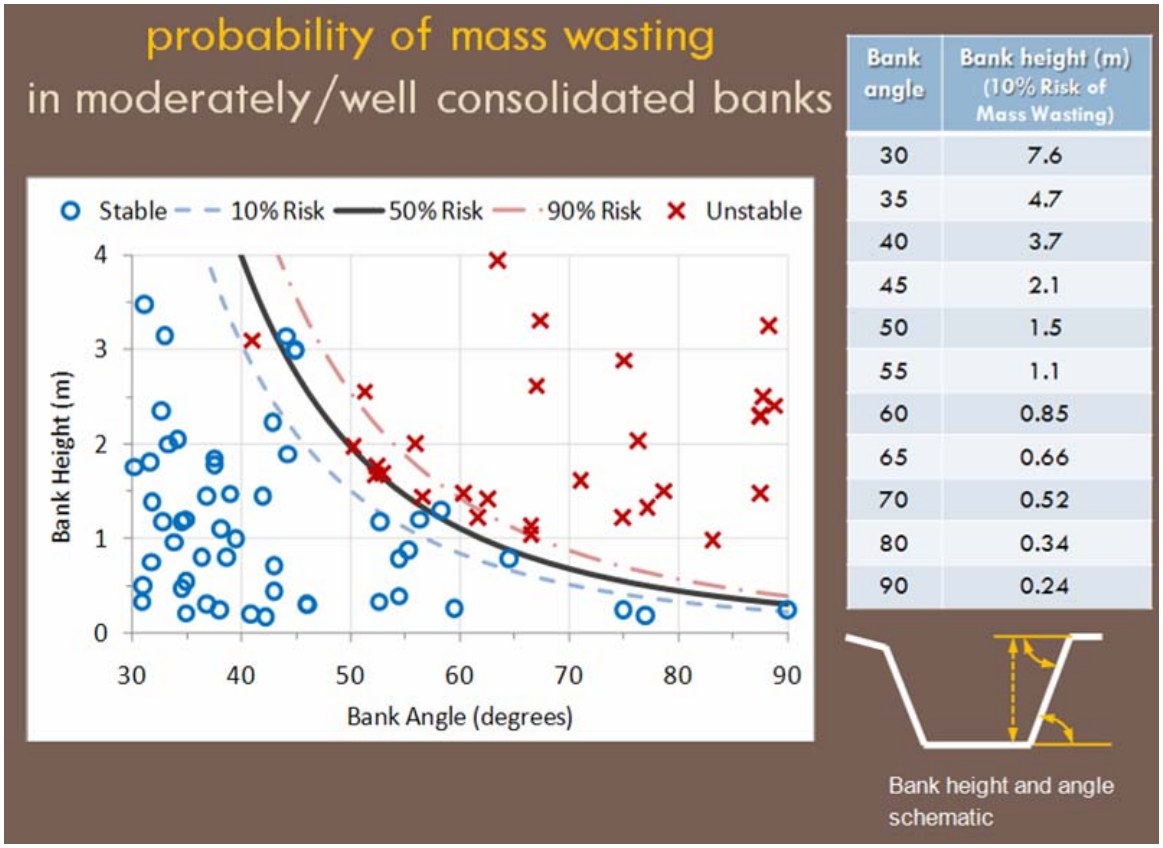

Figure 2.11: Lateral probability of bank-failure diagram

Table 2.6: Applicant-determined values for Lateral probability of bank failure

	Bank Angle (degrees) *(from Field)*	**Bank Height (m)** *(from Field)*	**Corresponding Bank Height for 10% Risk of Mass Wasting (m)** *(from Table)*	**Rating** *(LOW-VERY HIGH depending on other decision-tree components)*
Left Bank				
Right Bank				

(Sheet 1 of 1)

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APPENDIX A

GENERAL DEFINITIONS

A.1 SUSCEPTIBILITY/SENSITIVITY DEFINITIONS

What is susceptibility?

The *intrinsic* sensitivity of a channel system to hydromodification as determined by the ratio of disturbing to resisting forces, proximity to thresholds of concern, probable rates of response and recovery, and potential for spatial propagation of impacts.

What is sensitivity?

Schumm defined *sensitivity* as:

"One aspect of (landform) singularity that must be treated separately is the sensitivity of landscape components . . . The reason for such variable response, . . . is the existence of threshold conditions, which when exceeded produce a large change. In contrast, apparently similar landforms may show little or no response to a similar change. Thus, within a landscape composed of singular landforms there will be sensitive and insensitive landforms." Schumm (1985, page 13)

"Sensitivity refers to the propensity of a system to respond to a minor external change. The changes occur at a threshold, which when exceeded produces a significant adjustment. If the system is sensitive and near a threshold it will respond to an external influence; but if it is not sensitive it may not respond." Schumm (1991, page 78)

Downs and Gregory (1995) illustrated *sensitivity* as:

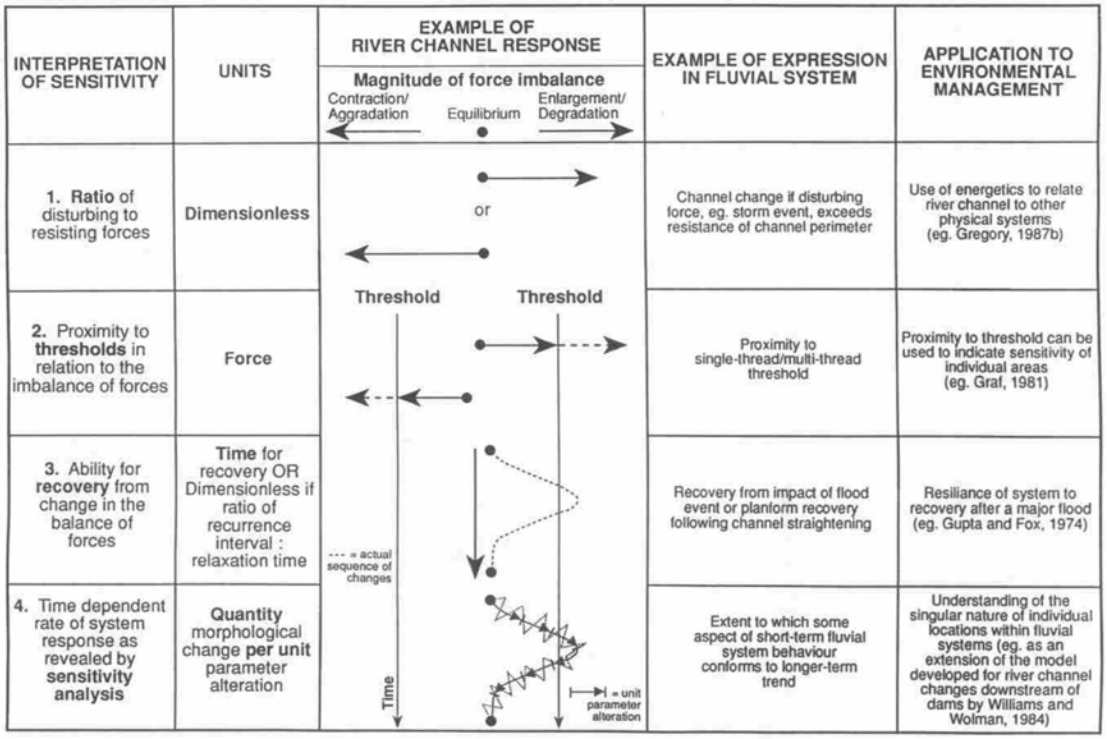

Figure A.1: Interpretation of sensitivity from Downs and Gregory (1995)

We add to this, the potential spatial extent of impacts over a common engineering time scale of *ca*. 50 yrs. That is, some effects may propagate throughout drainage networks relatively quickly and result in headcutting, base-level lowering of tributaries, complex response, etc.

A.2 Braiding Definitions

- Broadest definition: multi-channel patterns (Leopold and Wolman, 1957)
- Definition illustrations of sinuosity, braiding, and anabranching (Figure A.2), incision-driven CEM (Figure A.3), bank failure (Figures A.4a and A.4b)
- Flow separated by bars within a defined channel, where bars (Knighton, 1998):
  - may be inundated at higher flows, appearing as a single channel at/near 'bankfull'
  - tend to be unvegetated, temporary, with little cohesion

- Most characteristic is the repeated division and joining of channels (i.e., divergence and convergence of flow) resulting in high rates of fluvial activity relative to other rivers (Knighton, 1998)

- Non-cohesive floodplains with braid-channel accretion as the main sediment accretion mechanism (Nanson and Croke, 1992)

- Informed by the aforementioned definitions, we classify 'braided' channels for the purposes of this screening tool as:

  ➔ ***Multiple flow paths through over 50% of the reach length at low to moderate flows (see 35 – 65% 'degree of braiding', Figure A.2)***

  ➔ ***OR, if stakeholders are not concerned about 'anastomosing'/ 'anabranching' systems, augment above with: where paths are temporary and the result of dynamic, mostly unvegetated/non-cohesive bars***

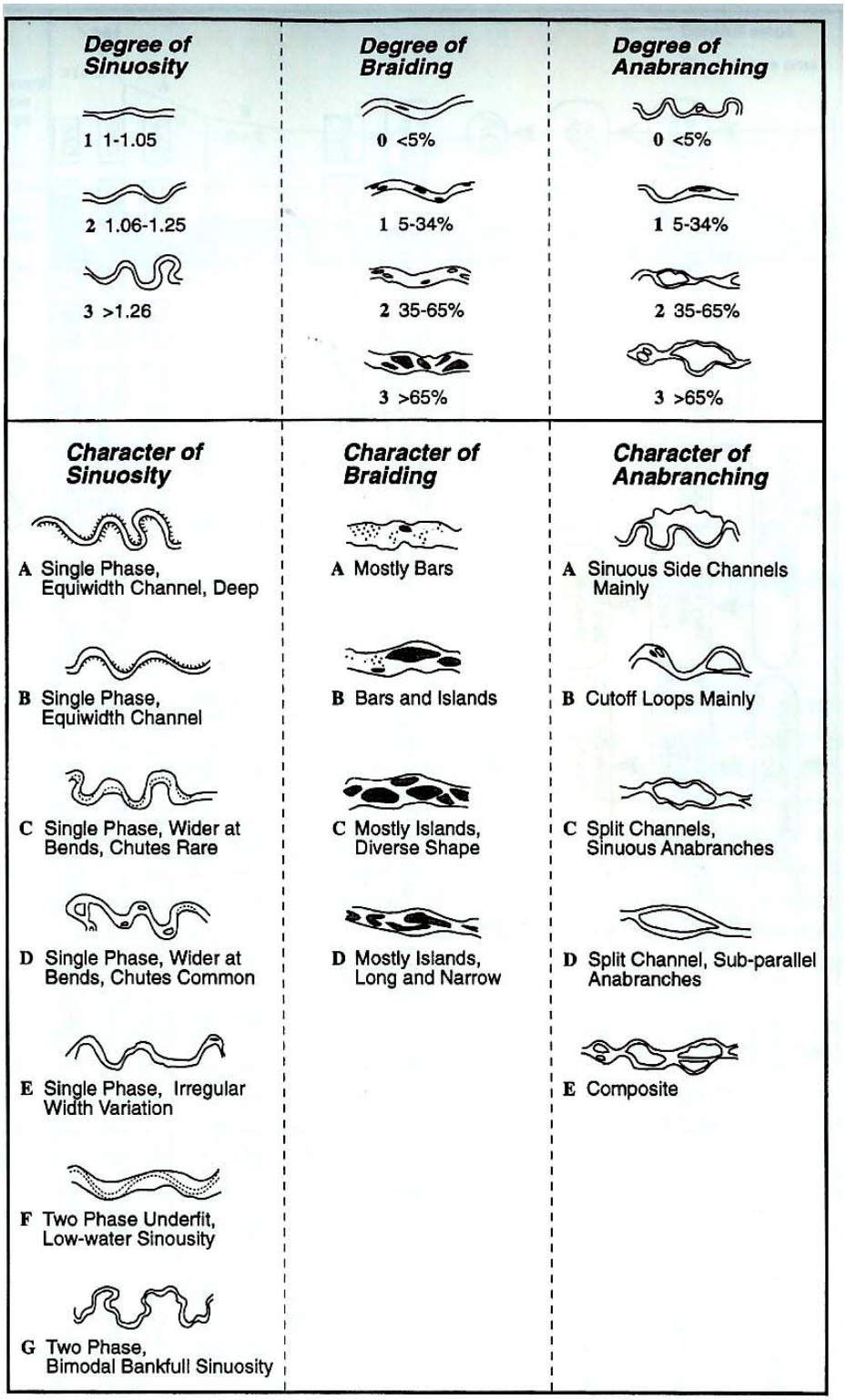

Figure A.2: Illustration of sinuosity, braiding, and anabranching (from Brice (1960, 1964))

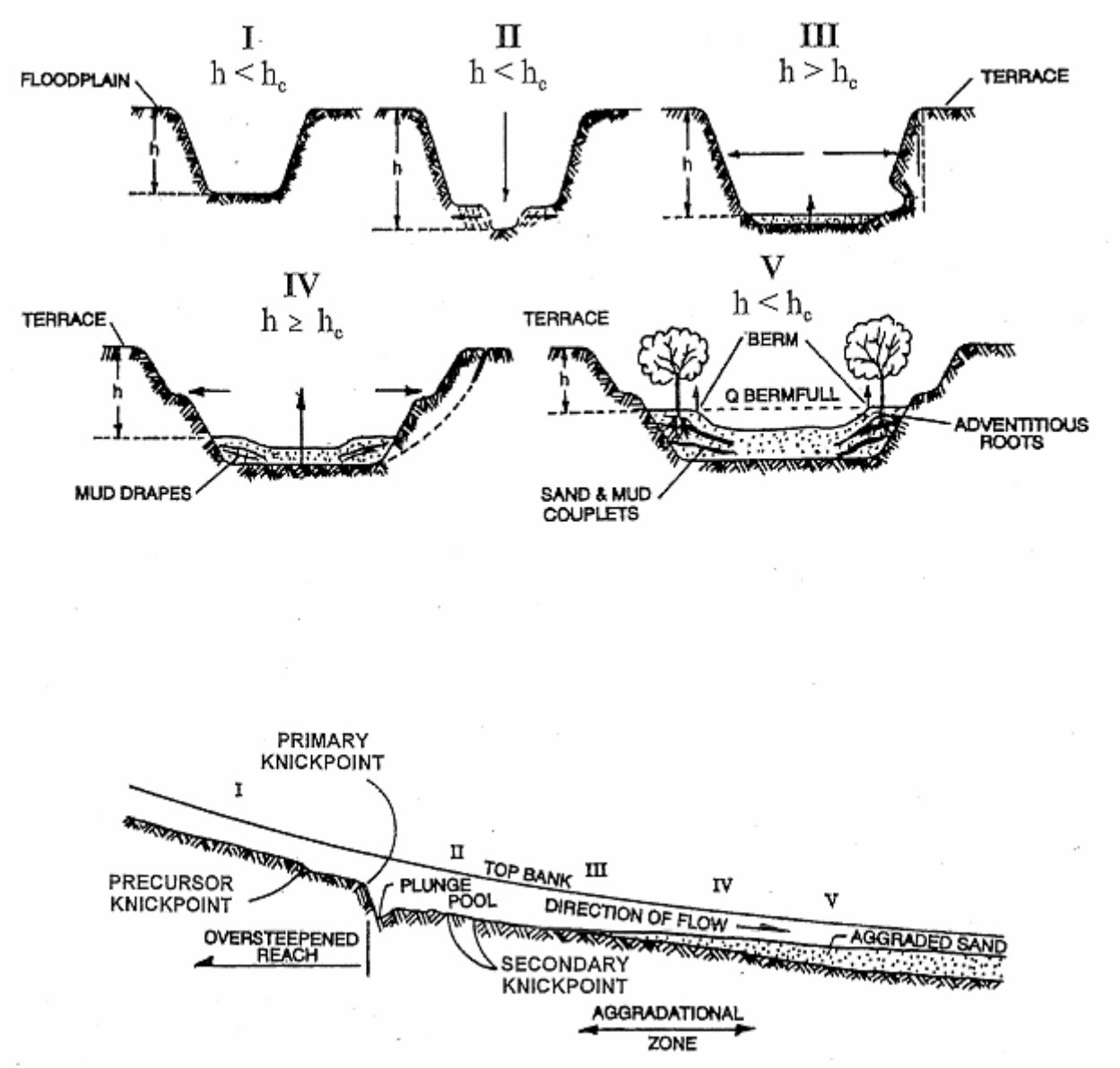

h_c = critical bank height for mass failure

Figure A.3: Incision-driven CEM after Schumm *et al.* (1984) (figure adapted from Watson *et al*. (2002))

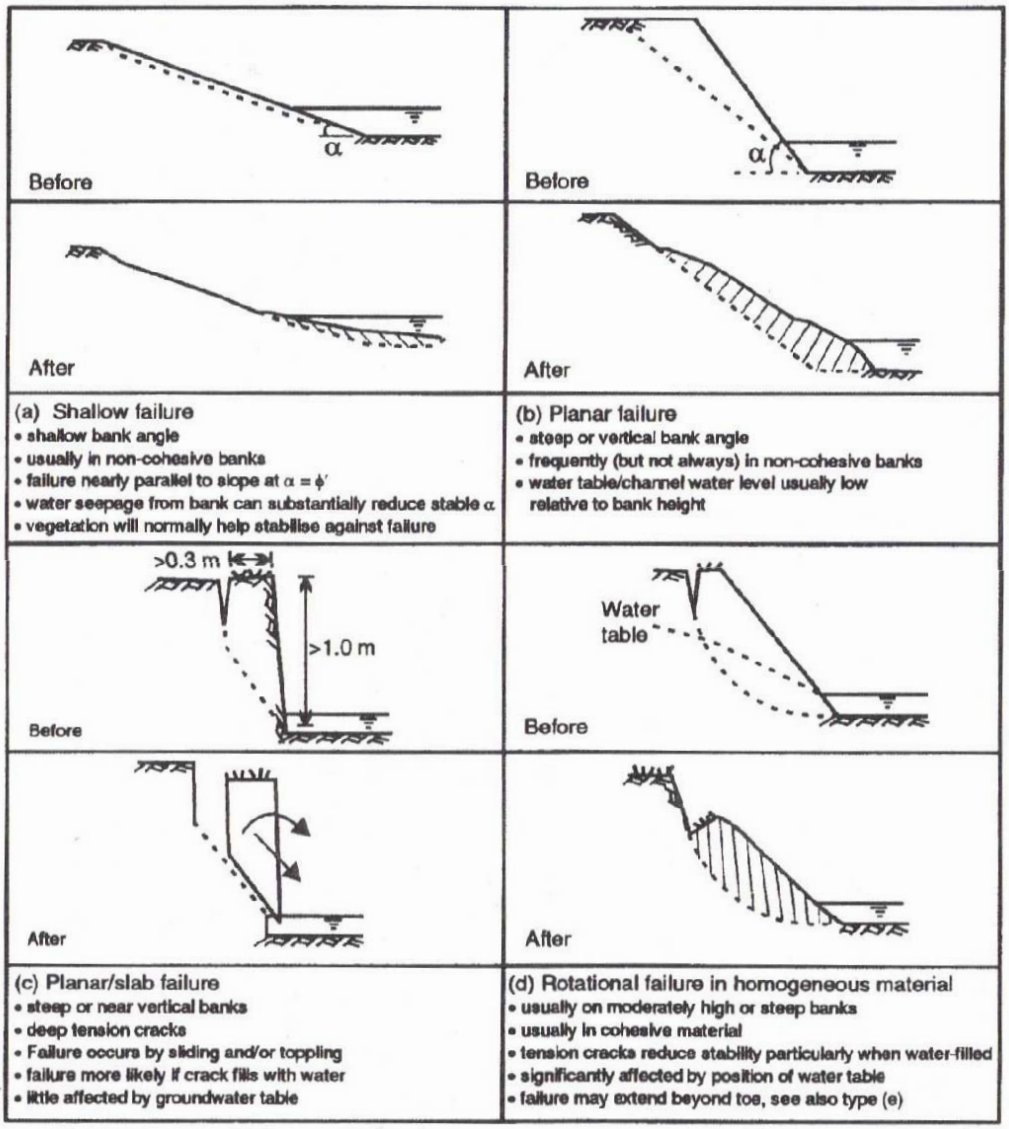

Figure A.4a: Bank-failure illustrations (a through d) after Hey *et al.* (1991) (figure adapted from Lawler *et al.* (1997))

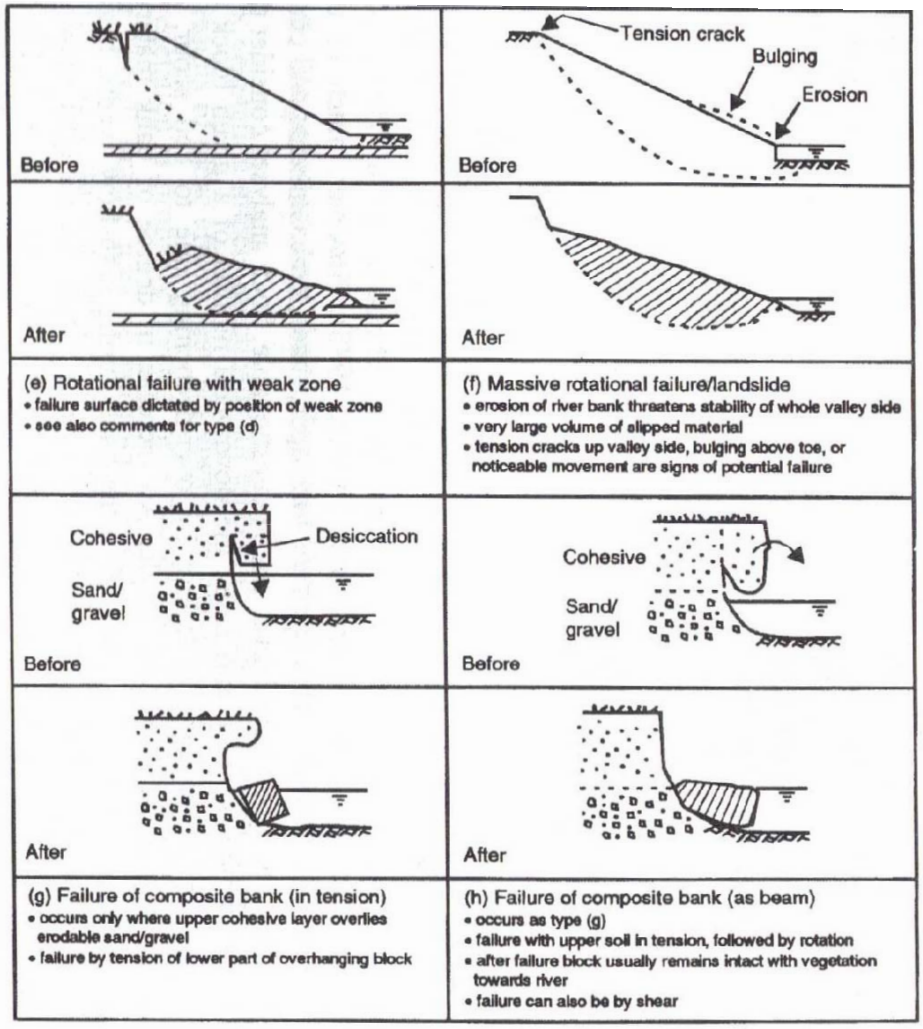

Figure A.4b: Bank-failure illustrations (e through h) after Hey *et al.* (1991) (figure adapted from Lawler *et al.* (1997))

APPENDIX C

Response to Coastkeeper Comments

Use of contents on this sheet is subject to the limitations specified at the end of this document.
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Project No: 133904

San Diego Hydromodification Management Plan

Subject: Responses to Comments Provided by San Diego Coastkeeper

Date: February 16, 2010

To: Sara Agahi, P.E. – County of San Diego

From: Eric Mosolgo, P.E. – Brown and Caldwell

This draft technical memorandum has been prepared per the request of the County of San Diego to summarize responses to comments made in reference to the San Diego Hydromodification Management Plan (HMP) by San Diego Coastkeeper. These comments were submitted to the County of San Diego in letters dated April 14th, September 29th, and November 30th, 2009.

As mandated by Regional Water Quality Control Board (RWQCB) Order R9-2007-0001 Provision D.1.g, the purpose of hydromodification criteria is to prevent development-related changes in storm water runoff from causing, or further accelerating, stream channel erosion or other adverse impacts to beneficial stream uses.

The responses detailed in this memo have been incorporated into the Final HMP submitted to the San Diego Regional Water Quality Control Board (RWQCB) on December 29, 2009.

Responses to Coastkeeper Comments Dated November 30, 2009

Coastkeeper Comment – The inadequacies in applying LID are the HMP's most serious faults. They start with regarding LID as almost entirely a matter of infiltrating runoff, diminishing or ignoring the mechanisms of evapotranspiration and water harvesting and the practices associated with those mechanisms. Furthermore, the plan recommends basing infiltration assessments on coarse U.S. Department of Agriculture concepts and data instead of site-specific analysis and almost totally ignores the great potential of organic soil amendments to improve infiltration and evapotranspiration and reduce surface runoff quantities. The HMP reveals a poor appreciation of the status, performance, and practice of LID techniques today.

Limitations:

This document was prepared solely for the County of San Diego in accordance with professional standards at the time the services were performed and in accordance with the contract between the County of San Diego and Brown and Caldwell. This document is governed by the specific scope of work authorized by the County of San Diego; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work.

Response

- LID options modeled in determination of sizing factors account for both infiltration and evapotranspiration. Continuous simulation models are currently in development to determine the sizing factors for a wide range of development types, rainfall gauges, soil types, and BMP mitigation options. The evapotranspiration (ET) data is a key component of the continuous simulation models, along with the infiltration capacity of the soil, and is more certainly not an ignored mechanism. That said, BMPs studied in this analysis have to meet the County of San Diego's vector control guidelines along with the 85th percentile water quality and hydromodification standards. Thus, storage of runoff in excess of 72 hours will not be allowed.
- While water harvesting and reuse have obvious benefits, these criteria are not addressed or mandated in the Permit. From a hydromodification standpoint, water reuse facilities have some benefit for isolated rainfall events. When back-to-back storms occur, however, the hydromodification benefit is often not sufficient since the storage facilities are filled and provide no attenuation for the multiple concurrent storms. The use of rain water storage as a hydromodification control measure has not been ruled out. Rather, Copermittees can consider developer proposed storage facilities on a case by case basis. Such design strategies must prove compliance with hydromodification design criteria considering the long-term historical rainfall record.
- The Decision Matrix, located in Chapter 6 of the Final HMP, specifically states that site-specific geotechnical investigations be conducted to determine site-specific infiltration rates. Copermittees already require major development projects and many smaller projects to submit geotechnical soils reports which typically include identification of soil types. The referenced USDA information is part of the required Literature Review, which is located in Chapter 4 of the Final HMP. Infiltration parameters for the San Diego Region will be reviewed in details as part of the Sizing Calculator development process and further refined as part of the HMP implementation process.
- The use of amended soils has always been part of the HMP mitigation approach and the text of the Final HMP explicitly encourages the use of amended soils in the design of bioretention facilities. This concept is chronicled in both the HMP and the Model SUSMP. Similar to the approach used in Contra Costa County, several of the proposed BMP facilities will use an amended soil layer with an approximate infiltration rate of 5 inches per hour. Criteria provided in the Model SUSMP and HMP will work in concert. It should be noted that the use of amended soils will not promote deep infiltration for Types C and D soils, which are the dominant soil types in San Diego County. Thus, the use of underdrains may be required in urban environments.
- The Copermittees and the consultant team have developed detailed standards for LID implementation. These standards are provided in the Model SUSMP and are referenced in the Final HMP. The Final HMP recommends the use of LID facilities to satisfy HMP and 85th percentile water quality criteria.
- The intent of the HMP, as well as the Model SUSMP, is to encourage the use of LID facilities to meet hydromodification criteria. The text of Chapters 6 and 7 of the Final HMP were reviewed in detail and revised accordingly to encourage implementation of LID facilities.

- Defining the infiltration potential of a site is recommended to provide for sound engineering design. Even if infiltration is shown to be infeasible, LID facilities can be designed as filtration-type or evaporation-type facilities instead of infiltration-based facilities.
- Chapter 7 of the Final HMP has been revised to allow for evaporation-type facilities. It should be noted that such facilities may require implementation in series with more traditional LID approaches, such as biofiltration basins, in order to satisfy vector control and hydromodification criteria.

Coastkeeper Comment- Concerning the critical flow rate, the HMP presents an alternative to using a single value, a practice adopted elsewhere. The concept of multiple values is theoretically sound, but the plan falls short in specifying how the method it develops should be applied to assure proper use. Unless and until that gap can be filled, the appropriate single value, 10 percent of the 2-year flow event, should be used for the critical flow rate.

Response

- The San Diego HMP's varying lower flow threshold is a major advancement in the field of hydromodification management. This concept has been endorsed by the State Water Resources Control Board and other experts in the field. It is intuitive that erosion-prone streams should be held to a more stringent lower flow threshold as compared to erosion-resistant streams.
- Decision Matrices located in Chapter 6 clearly specify the method for determining the appropriate lower flow threshold. The method uses data from both the Southern California Coastal Water Research Project's (SCCWRP) channel screening tools (discussed in Chapter 5.2 and Appendix B) and the consultant team's critical flow calculator (discussed in Chapter 5.1) to determine the appropriate lower flow threshold.

Coastkeeper Comment – Exemptions put forward by the HMP fall into two categories: those that have been poorly thought through and, as presented in the plan, will continue to allow substantial hydromodification; and those that will forever consign degraded streams to that status. Both must be seriously reconsidered.

Response

- Exemptions proposed in the San Diego HMP have been thoroughly reviewed, discussed and analyzed.
- The exemption regarding projects that decrease both the pre-project impervious area and outlet discharge rates is logical. If the unmitigated post-project condition results in no increase to either impervious surface or resultant outflows as compared to pre-project conditions, then the project has no negative impact on downstream erosion .
- Exemptions regarding direct discharges to existing concrete channels have been thoroughly discussed with both the TAC and the Copermittee Work Group. This potential exemption was referenced in the Permit. A direct discharge to a concrete channel which connects to a

downstream exempt system poses an insignificant hydromodification related issue provided that the concrete channel has capacity to convey the ultimate condition 10-year flow. Note that if the downstream conveyance system passes through a stream segment susceptible to erosion, if the concrete channel does not have capacity to convey the ultimate condition 10-year flow, or if the project does not discharge directly to the existing concrete channel, then the existing concrete channel exemption may not be granted.

- Exemptions regarding direct discharges to large river systems have been analyzed using continuous simulation modeling and review of the resultant flow duration curves. This item has also been discussed in detail with the Copermittee Work Group, the TAC, and the Regional Board. This potential exemption applies only to river reaches with 100-year flows in excess of 20,000 cfs and drainage areas in excess of 100 square miles. The upstream limits of the specific potential exempt reaches, which are detailed in Table 6-1, were set based upon reach-specific review of the floodplain width, degree of upstream reservoir attenuation, etc. A detailed flow duration analysis was conducted to test the variability in flow duration curves based upon hypothetical additions of master development areas. Historical flow duration curves were based upon streamflow data in the San Diego River, as provided by USGS.
- Exemptions regarding urban infill projects in highly urbanized watersheds have been analyzed using continuous simulation modeling and review of the resultant flow duration curves. This item has also been discussed in detail with the Copermittee Work Group, the TAC, and the Regional Board. This potential exemption applies only to projects that discharge runoff directly to a stabilized conveyance system that extends beyond the Domain of Analysis. The exemption is only valid for watersheds with an existing impervious area of 40 percent or greater and with the potential for no more than a 3 percent impervious area increase in ultimate developed conditions (as compared to existing impervious area for the watershed). A detailed flow duration analysis was conducted to test the variability in flow duration curves based upon hypothetical additions of watershed impervious areas. It should be noted that the Permit allows for an exemption when the project discharges to a watershed with an existing impervious area percentage greater than 70 percent. Thus, this particular exemption is focused on highly urbanized watersheds containing an existing impervious area percentage between 40 and 70 percent.

Coastkeeper Comment – The subject of monitoring is only partially developed. At this stage it appears to be missing an in-stream component to determine if indeed the program is meeting its charge to manage channel erosion and impacts to beneficial uses and stream habitat.

Response

- As detailed in Chapter 8 of the Final HMP, in-stream monitoring is required at locations downstream of the monitored project site. Baseline cross section monitoring would be required prior to construction of the project. Subsequent cross section monitoring would then be required at defined intervals following construction of the site to assess effects of hydromodification mitigation controls.
- Chapter 8 of the Final HMP includes requirements for flow-based sediment monitoring. Results of such sediment monitoring can be used to determine the low flows which initiate sediment movement. This data can be used to further refine the low flow thresholds.
- Chapter 8 of the Final HMP also includes requirements for the monitoring of BMP inflows and outflows to assess BMP effectiveness. These protocols are similar to the monitoring requirements for the Contra Costa HMP.

Responses to Coastkeeper Comments Dated September 29, 2009

Coastkeeper Comment – The HMP is disconnected from the purpose and requirements of the MS4 permit. Following the first few meetings, we submitted an email that asked the TAC to take the opportunity to think more holistically and to stem the growing disconnect between the direction of the development of the HMP and the intent of the NPDES permit. We received assurances that the TAC and the consulting team were looking to take this opportunity to create "the most holistic HMP carried out to date in California." Unfortunately, this promise has not been kept. We understand the HMP must address erosion, but it must also address water quality issues. The Copermittee Working Group and TAC's silo approach may have devastating consequences down the line. When one regulatory effort moves forward without consideration of other ongoing efforts, implementation becomes impossible. This is especially true in light of significant movements by various Regional Boards (including San Diego Regional Board) to move toward a more holistic approach to MS4 Permit implementation.

Response

- Throughout the HMP development process, the Copermittees and the consultant team have held regular meetings with the Regional Board to discuss the approach. Through this process, the HMP direction has focused on the purpose and requirements of the MS4 permit.
- The San Diego HMP, Model SUSMP and subsequent implementation sizing tools explicitly recommend integrated facilities that provide for both water quality treatment and hydromodification flow control. The recommended implementation of Integrated Management Practices, such as LID bioretention basins, will provide for both 85th percentile water quality treatment and hydromodification flow control. Water quality issues have been addressed extensively in the Model SUSMP.

Coastkeeper Comment - The HMP inappropriately includes policy and compliance provisions. It appears the Copermittees misunderstand the role of the TAC itself. Throughout the HMP development process,

decisions have been made based not on science, but on "policy" grounds. For example, at the June HMP TAC meeting, a discussion centered on minimum orifice size for BMPs to meet HMP and flow rate requirements. The TAC recognized the conflict between the model and minimum orifice requirements predicted for fine-grained systems. In the end, the decision was labeled a "policy" choice to be made by the Copermittees. However, such decisions must be based on sound science to meet the goals of the Permit. The HMP contains other policy choices made by the TAC and Copermittee working group that are inappropriate for the technical document, and circumvent the Permit. For example, with regard to implementation of the HMP, restoration activities are listed as an alternative to compliance with flow control criteria. The Permit allows for implementation of such activities without adverse impacts to channel beneficial uses. However, the HMP proposes a cost-benefit analysis for implementation of the HMP design requirement. The Permit does not contain such "in-lieu of" language, nor can it be inferred from the Permit. Moreover, injecting such cost-benefit analysis into the Permit creates a loophole in implementation of the HMP. Such subjective analysis should not be part of the HMP in light of the mandate to "manage increases in runoff discharge rates and durations." Additionally, implementation of buffers, revegetation, etc. does not meet the twin roles of the HMP: addressing the "changes in a watershed's runoff characteristics resulting from development, together with associated morphological changes to channels receiving runoff." The in-lieu of planning measures does not address the change in watershed runoff characteristics. The HMP exemption for the lower third of the watershed is also an unsubstantiated policy decision. Impacts to all areas of a watershed need to be addressed. No support has been given for such an exemption, nor is it considered in the Permit. Runoff from impervious surfaces not only causes erosion, but also carries pollutants to receiving waters. As the Permit requires HMP implementation to prevent "significant adverse impacts to beneficial uses, attributable to changes in the discharge rates and durations," wholesale exemptions for portions of a watershed are inappropriate.

Response

- As was the case in both the Santa Clara and Contra Costa HMPs, the San Diego HMP included some policy decisions. These policy decisions, which were ultimately made by the Copermittee Workgroup considering advice provided by the TAC, were based upon scientific investigations and analysis as well as practical considerations. The Hydromodification/SUSMP Workgroup was convened periodically over the course of the project at times corresponding with key decision points in developing the HMP and the update to the Model SUSMP. This workgroup was tasked with providing regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to hydromodification management. As required by Permit Section D.1.g, the Workgroup assisted in the development of the regional HMP. A key element of the San Diego HMP was the creation and involvement of a Technical Advisory Committee (TAC). The TAC members consist of respected individuals from academia, technical resource agencies, the development community, consulting engineers, and environmental organizations. The TAC, which has been convened on ten occasions that correlated with key decision-making points in the development of the HMP, was tasked with providing technical input to the HMP's scientific approach and interpretation of results integral to the establishment of numerical flow control standards as well as to the Copermittees for their policy determinations.

- Regarding the minimum orifice size issue, detailed analyses were prepared using continuous simulation hydrology to assess the effects of the minimum orifice size criteria. As a result, the minimum orifice size criteria may only be used in very limited scenarios to avoid problems

resulting from clogged orifices and uncontrolled overflows. These scenarios are detailed in Chapter 6.2 of the Final HMP. The policy decisions regarding the minimum orifice size criteria were based on a detailed continuous simulation hydrologic analysis. This detailed analysis was combined with practical considerations regarding facility maintenance (specifically, the clogging of small orifices which would cause riser overflows and the potential for increased erosion downstream) to maximize HMP facility effectiveness.

- Regarding the stream restoration / rehabilitation options, this issue was fully discussed with the Regional Board, the TAC, and the Copermittee Work Group. As worded in the Final HMP, such channel rehabilitation options may be constructed in limited situations. Specifically, such options may only be constructed if the existing channel susceptibility is determined to be "High" (as determined by SCCWRP assessment), if the stream rehabilitation project extends downstream to an HMP exempt system, and if the stream rehabilitation project is constructed assuming ultimate development conditions upstream of the project. Details of the stream rehabilitation protocols are detailed in Chapter 6.3 of the Final HMP. Additionally, permits from resource agencies are necessary in most cases, and improvement to habitat and the environment are expected.
- The Final HMP contains no mention of a cost-benefit analysis regarding stream rehabilitation measures. However, developers will ultimately use cost-benefit analyses when selecting alternative methods for meeting Permit requirements.
- The final HMP contains no mention of the "lower third of the watershed" exemption.

Coastkeeper Comment – TAC consensus has been misrepresented to the Regional Board. Recently, we have become aware of the Copermittees misrepresentation of TAC consensus regarding decisions made in developing the HMP. Our continuing disagreements with the current conclusions of the draft HMP are evident from: our emailed comments submitted by Karen Franz on February 2, 2008; our comment letter from our expert Dr. Horner; submitted on April 14, 2009; and our requests for underlying technical data to support the HMP. Following the receipt of the responses to comments from Dr. Horner, we requested the supporting references and technical papers that were the basis for the development of the design storm formulation for the Santa Clara and Contra Costa HMPs. The request was made at the June 17th meeting, and no communication of the references or technical papers followed the request. Further, the draft HMP was not give to TAC members until after it was first presented to the Regional Board. A TAC meeting was held in October 2008, and another meeting was not held until February 2009. In the interim, the consultants met with the Copermittee working group, obtained approval of the draft HMP, and submitted it to the Regional Board. It was not until February 4, 2009 that TAC members were sent an electronic copy of the HMP. We obtained a physical copy of the draft HMP at the Copermittee meeting in January shortly after it was submitted to the Regional Board and before it was sent to the TAC. TAC consensus and approval are also misrepresented on key issues, such as HMP compliance through "no increase to pre-project impervious area and no increase to pre-project flow." Contrary to the document assertion, this has not been "discussed and approved by the TAC." Coastkeeper has and will continue to insist upon natural, pre-project flows and reduction in overall impervious area.

Response

- In the Final HMP, the phrase "majority TAC approval" was used to indicate the majority opinion of the cumulative TAC members.
- Technical memos detailing the preparation of the Santa Clara and Contra Costa HMPs are public information and located at the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPP) web site and the Contra Costa Clean Water Program (CCCWP) web site.
- The majority of the members of the TAC agreed that HMP requirements should not be imposed on developments that decrease the pre-project impervious cover and decrease the design flows to each outlet location.

Coastkeeper Comment – Coastkeeper's effectiveness has been stymied by a lack of transparency and unavailability of key documents. Coastkeeper concurs in the Regional Board's comments made on June 29, 2009. The lack of detail and transparency highlighted in the letter has been a particular concern for Coastkeeper as well. For instance, the BMP sizing tools and their reporting should be a transparent process. Although the tools go beyond the scope of the HMP development, they are a necessary piece of the process, and as such, the HMP should provide more oversight on their use. Additionally, Coastkeeper's specific comments from our technical expert Dr. Horner remain largely ignored or dismissed out of hand. Even to get an electronic copy of the draft HMP for our expert to review proved challenging. Several attempts were made to request the document by email, without success. We were ultimately forced to scan a paper copy we obtained from a Stormwater Copermittee meeting where the draft HMP was distributed. At a TAC meeting following submission of the comment letter, several TAC meeting attendees and members opined about the radical nature of our comments and marginalized Coastkeeper. This type of discussion is indicative of the limited role Coastkeeper was able to play in participating on the TAC. This process of excluding the TAC from critical decision-making, and information exchange has also hindered the usefulness of the TAC.

Response

- All documents prepared in association with the Final HMP are available for public review. These documents were presented on multiple occasions for review by the TAC, Copermittee Workgroup and the Regional Board. These documents are posted on the Project Clean Water web site.
- The BMP sizing tool development is a transparent and ongoing process. These are implementation tools and were not required as part of the HMP document. Key technical memos and data reviews will be circulated to the TAC, Copermittee Working Group and Regional Board throughout the Sizing Calculator development process.
- Dr. Horner's comments have been addressed in previous comments response document and in this comment response document.

Coastkeeper Comment – A lack of data inhibits progress. In addition to the lack of transparency in information exchange by consultants and Copermittees to TAC members, the delay in production of key

aspects of the HMP prohibits meaningful input from the TAC. For example, the San Diego region has three distinct geomorphic and hence geologic regions. The geologic conditions of a watershed/catchment area are the factors affecting the low flow threshold values. Other critical components that may never be reviewed by the TAC include development of maintenance and long-term monitoring protocols and the required approval process for Priority Development Projects. The incorporation of these tools into the decision matrix and preparation of consultant technical memos are critical steps in the HMP which have yet to be conducted, and may largely take place outside of the TAC.

Response

- The HMP was submitted on time to the Regional Board on December 29, 2009.
- Prior to the final submittal, multiple iterations of the HMP document and supporting memos were distributed to the TAC, Copermittee Work Group and the Regional Board.

Coastkeeper Comment – Exemptions remain ill-conceived and overused. The Draft HMP makes exemptions for hardened channels as arguably allowed by the current Permit, but these exemptions are neither required nor prudent. First, the Permit language gives some discretion to the Copermittees, not requiring exemptions and qualifying such decisions with the requirement not to impact beneficial uses. Moreover, the proposed South Orange County stormwater permit specifically requires hydromodification considerations for restoration of such hardened channels. Also, the Copermittees attempt to create an exemption for projects with "no net increase" in impervious area is also not in line with the Regional Board's interpretation of "pre-project" as highlighted in the proposed South Orange County Permit. Therefore, pre-project conditions in the current Permit should not make exceptions for "no net increase" unless such projects mimic naturally occurring conditions. Further, the "adoption and implementation of this NPDES permit relieves the Copermittee from developing a non-point source plan, for the urban category, under CZARA." CZARA requires implementation of management measures to prevent non-point source pollution from impacting or threatening coastal water quality. Therefore, exemptions for the lower portions of watersheds or large receiving waters are not allowed.

Response

- The exemption regarding projects that decrease both the pre-project impervious area and outlet discharge rates is logical. If there no increase to either impervious surface or resultant outflows as compared to pre-project conditions, then the project has no negative impact on downstream erosion.
- Exemptions regarding direct discharges to existing concrete channels have been thoroughly discussed with both the TAC and the Copermittee Work Group. This potential exemption was referenced in the Permit. A direct discharge to a concrete channel which connects to a downstream exempt system poses an insignificant hydromodification related issue provided that the concrete channel has capacity to convey the ultimate condition 10-year flow. Note that if the downstream conveyance system passes through a stream segment susceptible to erosion, if the concrete channel does not have capacity to convey the ultimate condition 10-year flow, or if the project does not discharge directly to the existing concrete channel, then the existing concrete channel exemption may not be granted.

- Exemptions regarding direct discharges to large river systems have been analyzed using continuous simulation modeling and review of the resultant flow duration curves. This item has also been discussed in detail with the Copermittee Work Group, the TAC, and the Regional Board. This potential exemption applies only to river reaches with 100-year flows in excess of 20,000 cfs and drainage areas in excess of 100 square miles. The upstream limits of the specific potential exempt reaches, which are detailed in Table 6-1, were set based upon reach-specific review of the floodplain width, degree of upstream reservoir attenuation, etc. A detailed flow duration analysis was conducted to test the variability in flow duration curves based upon hypothetical additions of master development areas. Historical flow duration curves were based upon streamflow data in the San Diego River, as provided by USGS.
- Exemptions regarding urban infill projects in highly urbanized watersheds have been analyzed using continuous simulation modeling and review of the resultant flow duration curves. This item has also been discussed in detail with the Copermittee Work Group, the TAC, and the Regional Board. This potential exemption applies only to projects that discharge runoff directly to a stabilized conveyance system that extends beyond the Domain of Analysis. The exemption is only valid for watersheds with an existing impervious area of 40 percent or greater and with the potential for no more than a 3 percent impervious area increase in ultimate developed conditions (as compared to existing impervious area for the watershed). A detailed flow duration analysis was conducted to test the variability in flow duration curves based upon hypothetical additions of watershed impervious areas. It should be noted that the Permit allows for an exemption when the project discharges to a watershed with an existing impervious area percentage greater than 70 percent. Thus, this particular exemption is focused on highly urbanized watersheds containing an existing impervious area percentage between 40 and 70 percent.
- The San Diego HMP complied with permit provision for the San Diego region, not the South Orange County permit.

Coastkeeper Comment – Selection and implementation of BMPs are vague or missing. The Draft HMP does not provide a list possible preferred BMPs, and the explanation of BMPs thus far at TAC meetings have been equally vague. At the outset we find that the BMP specific design criteria will be much more useful and transparent. It is unclear why the TAC has not chosen this route. Additionally, although the age of a BMP system has a great influence on the efficacy of that BMP, no provisions or requirements exist to address this issue. We have also asked to include infiltration and rainwater harvesting in the list of BMPs, but apparently only dry wells have been added so far. San Diego's reliance on imported water and its precipitation patterns create a tremendous regional opportunity for the development of rainwater harvesting systems to not only capture and reuse this resource, but also to reduce flow (and sediment) from Priority Development Projects. The Ventura County permit requires all features constructed to render impervious surfaces "ineffective:" to "infiltrate, store for reuse, or evapotranspire, without any runoff at least the volume of water that results from" the 85th percentile, 24-hour runoff event, annual runoff based on unit basin storage to achieve 80 percent or more volume treatment, or a 0.75 inch storm event. The San Diego HMP should contain greater emphasis on infiltration, reuse and evapotranspiration as well.

Response

- Chapter 7 of the Final HMP and the Model SUSMP include a suite of BMPs that can be used for water quality treatment and hydromodification flow control. The suite of BMPs listed, including bioretention basins, biorentention in series with cisterns, bioretention in series with vaults, extended detention basins, and flow-through planter boxes, corresponds to the BMP selection list that will be provided in the Sizing Calculator.
- While water harvesting and reuse have obvious benefits, these criteria are not addressed or mandated in the Permit. From a hydromodification standpoint, water reuse facilities have some benefit for isolated rainfall events. When back-to-back storms occur, however, the hydromodification benefit is often not sufficient since the storage facilities are filled and provide no attenuation for the multiple storms. The San Diego permit does not require rainwater harvesting for hydromodification mitigation. The use of rain water storage as a hydromodification control measure has not been ruled out. Rather, Copermittees can consider developer proposed storage facilities on a case by case basis. Such design strategies must prove compliance with hydromodification design criteria considering the long-term historical rainfall record.
- The 5 percent EIA requirement from the Ventura permit is not included in the San Diego MS4 permit.

Coastkeeper Comment – The HMP does not consider climate and land use change. Effects of climate and land use changes on low flows and other hydrologic responses have been well documented as to the hydrological effects that will result in our region. When employed singly and in combination, climate and land use changes have significant and varying effects on flow conditions. The draft HMP contemplates only one rate of land-use change. The HMP needs to consider the potential impacts of climate change and the effects that it will have on regional hydrologic conditions through its modeling. Hydrologic data is being generated by the Hydrologic Research Center, a San Diego-based international research center.

Response

- While climate change effects were not considered in this version of the HMP, it is possible that the rainfall data sets prepared in association with the HMP could be updated once predictive rainfall models have been developed. These data sets could be used to refine recommendations of future HMP updates.

Coastkeeper Comment – Implementation of a standard of 3 percent maximum allowable Effective Impervious Area (EIA) in all regulated projects, with a narrowly crafted alternative compliance provision for developments where severe site constraints, such as non-infiltrative soils, render compliance with the 3 percent EIA limitation impossible.

Response

- The Effective Impervious Area (EIA) requirement was not part of the San Diego MS4 permit.

Coastkeeper Comment – As a hydromodification standard, post-development peak flow rates and volumes shall not exceed the modeled peak flow rates and volumes of pre-European-settlement native land cover for all storms from the channel-forming event to the 100-year frequency stream flow. This requirement shall be satisfied to the maximum possible extent by retention of runoff on the development site through infiltration, evapotranspiration, and/or rainwater harvesting. If the requirement cannot be fully met by onsite retention, there shall be a demonstration and convincing justification, according to specific criteria, of why it is not achievable at that site. If such a convincing demonstration and justification can be made, the differential between the required retention and the amount that can be provided onsite shall be offset by performing or contributing to an offsite project, within the same watershed, to retain an equal or greater volume of runoff from such other site.

Response

- The hydromodification standard, as interpreted from the San Diego MS4 permit, requires the control of peak flows and durations within the geomorphically significant flow range to pre-project conditions. No mention of pre-European settlement is included in the San Diego MS4 permit.

Coastkeeper Comment – Monitoring of HMP compliance must be conducted at more than 5 sites in the entire County. At least one site per watershed must be monitored. Additionally, monitoring should begin before development, not after completion. Monitoring site selection should also be made with Regional Board staff input, not solely by Copermittees.

Response

- No HMP monitoring plan in the State of California proposes more than 5 countywide monitoring sites. The recommendations detailed in Chapter 8 exceed the requirements for Contra Costa County as approved by the San Francisco Regional Board.
- As detailed in Chapter 8 of the Final HMP, monitoring will begin before development and extend into the future following development.

Coastkeeper Comment – Individual Priority Development Projects must be required to monitor effectiveness and maintain HMP BMPs and compliance measures. A real, tangible monitoring mechanism and compliance determination must be implemented into the HMP. Without such requirements in the HMP, no assurance of long-term effectiveness will be provided. Such tools would also help Copermittees monitor specific BMP effectiveness in different watersheds.

Response

Monitoring of the 5 sites will be a regional Copermittee effort. Individual Priority Development Projects are required to inspect and maintain their treatment control and HMP facilities through maintenance agreements. Additionally, Copermittees conduct annual inspections of treatment BMPs and HMP facilities as required by the Municipal Permit.

Coastkeeper Comment – Urge the Regional staff to ensure strict compliance with the current Permit and look toward future consistency with other MS4 Permits in southern California, as setting the MEP standard.

Response

- We will defer to the Regional Board for a response to this comment.

Coastkeeper Comment – Future development, implementation, and monitoring of the HMP should be more transparent, including more availability for public input.

Response

- We will continue to provide technical memos and materials available for public review through the TAC, Copermittee Work Group and the Regional Board. These documents can be accessed at the Project Clean Water web site.

Coastkeeper Comment – High, Medium and Low susceptibility ratings should be removed. All watersheds should be treated as susceptible to erosion. Moreover, the classification of streams does not correlate to an appropriate HMP objective. For instance, for already unstable channels the standard is to "avoid acceleration of the existing erosion problems." This is unacceptable, and does not meet the spirit of intent of the Permit.

Response

- Stream classification, as provided for in this HMP by the SCCWRP channel susceptibility analysis, is a requirement of the MS4 permit (Permit Section D.1.g.(1)(a) and (m)). Therefore, this information will not be removed from the HMP. It is a critical component of the HMP for San Diego County and all counties in southern California.

Responses to Coastkeeper Comments Dated April 14, 2009

Coastkeeper Comment - Comparing the stated San Diego County criteria to hydromodification standards elsewhere, the County's criteria are relatively highly protective of runoff receiving waters in the cases of flows of 5- and 10-year frequencies. On the other hand, these criteria do not extend to the larger storms of less frequency. Some hydromodification criteria cover a range of storms up to the 50- and even 100-

year events. In the central city area of San Diego, rainfalls of 24-hour duration for different frequencies are approximately (http://ponce.sdsu.edu/noaa_24hr_sd_2x.html): 5-year—2.4, 10-year—2.8, 50-year—3.5, and 100-year—4.1 inches. Thus, it may be seen that extending the assessment from the 10- to the 100-year frequency enlarges the time period over which resource protection is evaluated by an order of magnitude (1000 percent) with an increase of just 46 percent in the rainfall quantity. The criteria should be extended to these larger storms, or the County should show why doing so is not necessary to protect and recover stream ecosystems.

Response

- Similar to the two previously approved hydromodification management plans in the State of California (Santa Clara County and Contra Costa County), the San Diego Final HMP recommends flow and duration control for a range of flows between a fraction of the 2-year flow event to the 10-year flow event. Neither the approved Santa Clara HMP nor the approved Contra Costa HMP required controls for flow recurrence events in excess of the 10-year design flow.
- The referenced 24-hour rainfall totals in the comment above refer to a single-event design storm approach, which is not applicable with the continuous simulation hydrologic modeling approach mandated in Permit R9-2007-0001. The Permit goes on to say that determination of peak flow frequency values shall be developed from analysis of the full rainfall record. In other words, hourly data from the entire rainfall record (35 to 50+ years) is used in the analysis as opposed to use of a singular rainfall depth as noted in the comment above.
- Finally, it should be noted that various geomorphologists across California and the nation have concurred that controls above the 10-year flow event have a minimal impact on cumulative sediment movement across the historical record. Sediment transport studies based on a continuous flow record, such as the long-term analysis prepared in association with the Santa Clara Hydromodification Management Plan, have shown that roughly 90 percent of the cumulative work exerted on a channel occurs within the relative flow ranges detailed in the Santa Clara, Contra Costa, and San Diego HMPs. Thus, it can be demonstrated that the significant cost associated with controls above the 10-year event would not result in significant additional protection to the stream processes from a hydromodification standpoint.

Coastkeeper Comment - Criteria setting is, "... based on the understanding that the 5-year design flow is considered the dominant channel-forming discharge for Southern California streams." If the basis is merely an "understanding", it is not strong enough. The basis must be rooted in detailed analyses. Such analyses elsewhere in the nation have identified flows having frequencies around 1.5 to 2-year to be the channel-forming discharges.

Response

- Per the Final HMP, lower flow threshold criteria were based upon a fraction of the 2-year design flow. This determination was made using a synthetic modeling approach which used the continuous rainfall record to determine hydrologic response. Sediment transport models were then simulated for the entire historical record for a wide variety of channel conditions.

- The commentary regarding the 5-year design flow in the comment above was provided in reference to determination of interim flow control standards. As a reasonable first step for the setting of the interim standards, initial determinations were made based upon previous research conducted by the Southern California Coastal Water Research Project (SCCWRP) and others. The final flow control standards are based upon detailed hydrologic and sediment transport analyses.

Coastkeeper Comment - The plan contains exemptions from requirements that will foreclose future stream restoration options, or at least substantially increase their difficulty. One such instance is allowance of planning measures as alternatives in lieu of stormwater flow controls. Another is the allowance of a demonstration that projected increases in runoff peaks and/or durations will not accelerate stream channel erosion. The plan further provides a dispensation for controls if a project applicant conducts a sediment transport analysis and shows no adverse impact. Such demonstrations could be convincingly made when a channel is hardened or already cut to bedrock, but each permitted increment of flow further reduces the opportunity to recover a natural stream, and its ecological values. The plan goes on to state specifically that hydromodification management flow controls will not be required for discharges into hardened channels or the downstream sub-watershed imperviousness is at least 70 percent and the potential for cumulative impacts is "minimal". This policy essentially consigns these channels perpetually to their artificial, highly degraded status with almost no ecological function. These exemptions should be removed, at least until a broad assessment of restoration potential can be completed and the most opportune cases prioritized for implementation.

Response

- The exemptions listed in the HMP closely follow recommendations provided in Permit R9-2007-0001, especially with regard to discharges to existing hardened channels, storm drain systems, and into existing highly urbanized watersheds (with a percent imperviousness > 70%).
- Planning measures such as implementation of Low-Impact Development (LID) facilities would still be required to demonstrate that the mitigated condition would meet mandated flow and duration control criteria.
- Planning measures such as the implementation of riparian buffers or non-hardened stream restoration/rehabilitation projects would require mitigation proof in the form of an accompanying hydraulic and/or sediment transport analysis of sufficient technical rigor. The HMP does not allow for the implementation of concrete channel solutions as a method for stream restoration/rehabilitation.

Coastkeeper Comment - The plan is silent on how the potential for cumulative impacts can or should be assessed and what "minimal" is. It should be explicit on these subjects.

Response

- Chapter 5.3 provides a discussion of cumulative watershed impacts.

- Definition of cumulative watershed impacts was quantified in the detailed continuous simulation models prepared in association with the river system exemption, highly urbanized watershed scenario, and minimum orifice size. This discussion is detailed in Appendix F.

Questions related to this comment response document should be directed to Sara Agahi at (858) 694-2665.

APPENDIX D

Flow Threshold Analysis Third Party Review

Use of contents on this sheet is subject to the limitations specified at the end of this document.
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December 19, 2008

Mrs. Sara Agahi, P.E.
County of San Diego.
5201 Ruffin Road, Suite D
San Diego, CA 92123

Subject: Review of Hydromodification Work by Phillip Williams and Associates (PWA)

Dear Mrs. Agahi:

This letter summarizes our findings from review of the subject PWA work as subconsultant to Rick Engineering Company and as authorized under County of San Diego Agreement Number 525773, Task Order Number 5.

According to the County of San Diego (the County) Municipal Separate Storm Sewer System (MS4) permit, the Hydromodification Program (HMP) must use standards to manage increases in runoff discharge rates and durations where these are likely to cause increased erosion of channel bed and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force. Under the permit's definition of "flow duration" it is noted that flow duration within the range of geomorphically significant flows is important for managing erosion. The permit also requires that the HMP be based on continuous rainfall-runoff modeling. The purpose of the work by PWA is to help establish the flow thresholds for use with the County HMP.

The review consisted of examining the underlying assumptions of the analyses, the methodology followed in the analyses themselves (including the modeling techniques employed), development of results from the analyses, and conclusions reached based on those results. The data, analyses and models submitted for review were contained on a portable hard drive provided by Brown & Caldwell on 11/20/08. A memorandum from PWA to the County of San Diego dated 11/12/08 describing the watershed and channel modeling was also provided by Brown & Caldwell via e-mail on 11/25/08. Other background data was gathered from the periodic reports submitted by Brown & Caldwell and/or PWA to the Technical Advisory Group.

Method

The general methodology employed by PWA was to conduct a large simulation-based sensitivity analysis to cover the range of potential channel and watershed conditions found in western San Diego County. Three sample watersheds within the size to be regulated by the HMP were chosen in areas where development is expected to occur. Specifics of the analyses are commented upon below.

Hydrology

The hydrology for each site was developed using the San Diego Hydrology Model (SDHM) for pre-development, post-development, and post-development with flow mitigation (one, one, and six simulations, respectively). WEST verified the input data contained in the SDHM models for the Otay (Rolling Hills) and Peñasquitos basins. Tables 1 and 2 present a summary of pond sizes, outlet dimensions, and LID parameters (infiltration rate and reduction factors) for each of the scenarios for the two watersheds.

In the Otay input files, the same outlet dimensions (notch width, height, and orifice diameter) were maintained for each flow duration criteria simulation (10% Q_2, 10% Q_5, and 20% Q_5) for both the "non-LID" and "with-LID" cases (see Table 1). The pond size changes slightly, decreasing in the "with-LID" case because flow is lost through infiltration and the pond size can decrease while still meeting the duration criteria. However, WEST found that in the 10% Q_2 scenario, the riser diameter is set to 400 inches, while it is fixed at 48 inches for all other scenarios. The corresponding pond size changes from a square 750 feet on each side for the 10% Q_2 scenario to one 318 feet on each side for the 10% Q_2 with LID scenario. WEST suggests changing the diameter to 48 inches and re-running the simulation.

For the Peñasquitos watershed analyses we observed that while the riser dimensions were the same for all simulations, no consistent choice of notch height, width, and orifice diameter was maintained.

In addition, the SDHM uses only rainfall data from the Lindbergh Field gage in the simulations. Potential pitfalls with this assumption have already been pointed out by Brown & Caldwell elsewhere. All simulations used a 40-year period of record from this gage as input and runoff hydrographs were generated for the eight cases discussed above for each of the sample basins. Eight cases multiplied by three basins resulted in a total of 24 hydrologic simulations.

PWA assumptions for land use (land cover, vegetation, percent impervious) for the test watersheds were not confirmed by measurement in a geographic information system (GIS), but seemed reasonable by inspection.

The assumption that all runoff would be routed into a single runoff control facility is probably not realistic (especially given the resulting single basin sizes compared to the overall watershed area), but is justified for this type of comparative analysis.

Table 1. Otay SDHM Parameters

OTAY	Pond Length (ft)	Pond Width (ft)	Depth (ft)	Riser Height (ft)	Riser Diameter (in)	Notch Height (ft)	Notch Width (ft)	Orifice diameter (in)	Pond Volume at Riser Head (ac-ft)	Infiltration Rate (in/hr)	Reduction Factor	Percent Infiltrated
10% Q_2	750	750	5	4	400	0.0954	4	0.86	54.09	n/a	n/a	n/a
10% Q_5	232	232	5	4	48	0.0878	3.9584	5.543	5.55	n/a	n/a	n/a
20% Q_5	211	211	5	4	48	0.0954	3.94	7.9314	4.624	n/a	n/a	n/a
10% Q_2 with LID	318	318	5	4	48	0.0954	4	0.86	10.154	0.7	0.25	88.74
10% Q_5 with LID	225	225	5	4	48	0.0878	3.9584	5.543	5.241	0.7	0.25	41.65
20% Q_5 with LID	210	210	5	4	48	0.0954	3.94	7.9314	3.5	0.7	0.25	34.47

Table 2. Peñasquitos SDHM Parameters

PEÑASQUITOS	Pond Length (ft)	Pond Width (ft)	Depth (ft)	Riser Height (ft)	Riser Diameter (in)	Notch Height (ft)	Notch Width (ft)	Orifice diameter (in)	Pond Volume at Riser Head (ac-ft)	Infiltration Rate (in/hr)	Reduction Factor	Percent Infiltrated
10% Q_2	307	307	7	6	72	0.14	6.00	2.82	14.73	n/a	n/a	n/a
10% Q_5	172	172	7	6	72	0.2835	5.94	7.7877	5.041	n/a	n/a	n/a
20% Q_5	162	162	7	6	72	0.178	5.94	10.673	4.54	n/a	n/a	n/a
10% Q_2 with LID	251	251	7	6	72	0.178	5.94	2.9834	10.121	0.7	0.25	53.82
10% Q_5 with LID	179	179	7	6	72	0.3185	5.94	8.2677	5.445	0.7	0.25	24.13
20% Q_5 with LID	183	183	7	6	72	0.2626	6	7.5051	5.632	0.7	0.25	25.2

Hydraulics and Sediment Transport

As opposed to the site-specific characteristics employed in the hydrologic analysis, the hydraulic and sediment transport analyses appear to be completely hypothetical in nature. The eight hydrographs produced from the SDHM simulations previously discussed were used as input to the HEC-RAS hydraulic and sediment transport model. Other key input parameters such as cross section geometry, channel slope, roughness, and sediment characteristics were selected to cover a "representative" range corresponding to potential field conditions. Forty-two combinations of basin, grain size, slope and width-to-depth ratio were simulated in HEC-RAS for each of the eight hydrologic scenarios resulting in at least 336 models created and executed (additional models were created for sensitivity analyses). The volume of sediment leaving a "project reach" over the 40-year simulation for each of the post-development analyses were compared with pre-development yield and the results interpreted to select the minimum flow rated that should be regulated in the HMP.

Significant time and effort was obviously spent in preparing, executing and debugging the numerous models. Model instabilities led to using a sediment rating curve approach for computing sediment yield. There are significant issues regarding the modeling and computations which throw the validity of the results and the conclusions drawn from them into question. Specific comments are provided in the following sections.

Cross Section Geometry

The synthetic cross section geometry (width and depth) used for the analyses was generated using empirical relationships developed from various sources. These include equations for gravel-bed rivers in the UK and US, relations for sand-bed streams, and regression equations developed from measurements of Southern California streams (references in PWA memorandum of 11/12/08). Application of some of these equations to San Diego Country streams is problematic, while other similar equations developed from US data (e.g., Lee and Julien[1]) were not employed. In any case, cross sections were developed by imposing a small "bankfull" channel at the bottom of a v-shaped section with 10% side slopes (10 horizontal feet for each 1 vertical foot). Width to depth (W:D) values were computed using the various methods, and a set of width to depth values were chosen, apparently only loosely linked to the specific method results. A trapezoidal channel containing three bottom points was created at the bottom of each cross section. Based on spreadsheets and models provided W:D ratios of 3, 6, and 10 were run for both the Peñasquitos and Otay sites. A W:D ratio of 20 was also used for the Otay site for certain combinations of grain size and slope. Channel depths in HEC-RAS, based on the equation results, were set between 0.25 to 0.5 feet for Peñasquitos and 0.7 feet or less for Otay. Therefore, even though numerous combinations of W:D ratio were used, the absolute dimensions were still very small (for a depth of 0.5 feet the top width would vary from 1.5 feet to 5 feet for W:D ratios of 3 and 10, respectively).

Several of these cross section geometry relationships rely on bankfull or channel-forming discharge as an input parameter. This discharge was estimated by PWA using USGS regression

[1] "Downstream Hydraulic Geometry of Alluvial Channels," Lee and Julien, *Journal of Hydraulic Engineering* Vol. 132, No. 12, December 2006.

equations[2]. Although it is recognized that few methods exist outside of site-specific investigations to estimate this discharge, the USGS equations are known to be very approximate. The equations are based on gauging stations from Santa Barbara to San Diego, from the coast to elevations above 5,000 feet and using data available in 1975. The mean annual precipitation (MAP), also an input to the regression equation, was assumed to be 15 inches for this exercise although it does vary from about 9 inches at the coast to over 25 inches at higher elevations. The MAP at both the Peñasquitos and Otay sites is close to 12 inches. It could be argued that a 5-year return interval would be a more appropriate indicator of bank-full discharge than a 2-year flow, but this is a topic that is still being researched and is far from resolved for semi-arid regions such as San Diego.

Roughness was held constant apparently for all simulations with Manning's coefficients of 0.03 for the channel and 0.05 for the overbanks. This could have an impact on the overall results and conclusions as roughness will usually increase with both increasing grain size and increasing slope (two of the variables in the PWA analysis).

Boundary Conditions

The combination of a short (500 foot) channel length and uncertain boundary conditions casts doubt on the results. Modelers recognize that results near boundaries often reflect inaccuracies in assumptions at those boundaries and will therefore extend their models beyond the immediate area of concern to minimize these boundary effects. The current models incorporate boundary effects at both the upstream and downstream ends. An "equilibrium" inflowing sediment load was developed with the HEC-RAS model such that the upstream most cross section would neither aggrade nor degrade with time. This load was based on uniform sediment size, slope, cross section shape, etc. and is a necessary but fictitious assumption to perform the simulations. At the downstream end, the assumption of normal depth at a fixed energy slope can have similar results. In addition, using a depth rather than an elevation at the downstream end with a movable bed model can prevent the model from ever reaching an equilibrium state. For example, at an aggrading downstream boundary, instead of increased velocity (increased sediment transport potential at a shallower flow depth) the water surface elevation will simply increase to match the bed increase in order to maintain the computed normal depth.

Sediment Grain Sizes

The uniform grain sizes used in the simulations are not representative of field conditions and the model results cannot reflect preferential transport of various size classes nor armoring of the bed ("hiding" of smaller size particles by larger ones on the surface).

Hydrologic Record

Model run times and output were larger than necessary because **all** flows were simulated, even zero flows. Typically in arid regions modeling, zero flows and very low flows estimated not to be able to move particles are excluded from simulations. In the arid Southwest, it is not unusual to have a 50 year period of record with only 10-20 years of actual flow data modeled.

[2] "Magnitude and Frequency of Floods in California," Waananen and Crippen, USGS *Water Resources Investigations 77-21*, 1977.

Maximum Erosion Depth
The maximum depth of erosion (or "hard bottom") was set to 5 feet for all models. By itself, this is a reasonable value given the very small channel dimensions. However, the fact that the cross sections hit this hard bottom many times, prompting the switch to the analytical (rating curve) approach, *even for existing conditions* (no increased flows) should have been an indicator that other modeling problems were present. An example is given in Figure 1.

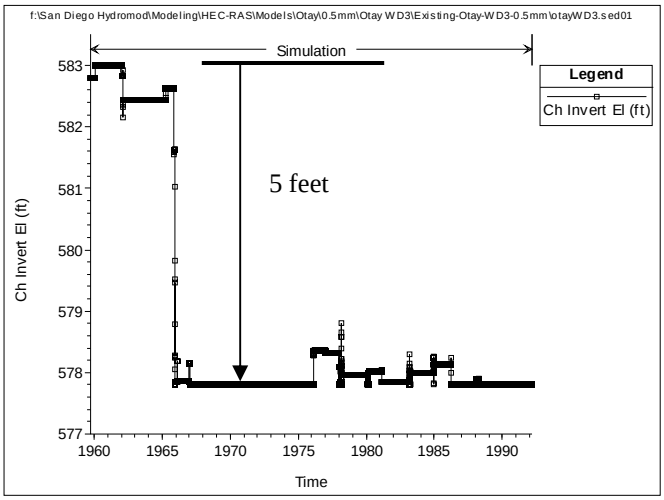

Figure 1. Otay site, existing conditions, bed hits hard bottom December, 1965

Overall, it appears that given all of the assumptions, uncertainty with inputs, and modeling problems, that a stable slope type analysis would have given similar results with much less effort involved.

Conclusions

Based on examination of the materials provided, this reviewer has serious concerns about the results obtained and their application to flow thresholds for hydromodification requirements. All results are related to baseline conditions – good practice in sedimentation modeling – but it is not clear that the baseline results are reasonable. Additionally, as noted by PWA in their memorandum, implementation of a threshold of 0.1Q2 will be a challenge in practical terms as this will encompass a very large range of flows. However, is 0.1Q2 a reasonable threshold based solely on sediment movement? Based on the EPA Nationwide Urban Runoff Program (NURP) results and continuous simulation modeling, Bledsoe and Watson[3] argue that standard hydrologic design practices are inadequate for characterizing the cumulative effects of urbanization on flow events that are *more frequent than Q2* (emphasis added) in terms of sediment transport and channel disturbance potential. That is to say, additional work leading from questions about the methodology and/or results of the PWA study may not result in an increase in a lower flow threshold for the HMP. Because of site-specific values of grain size, slope, roughness, and

[3] "Effects of Urbanization on Channel Instability," Bledsoe and Watson, *Journal of the American Water Resources Association*, Volume 37, No. 2, April 2001.

channel shape, it is not clear that using any specific frequency discharge as an indicator of shear stress that will move particles is a tenable approach.

Recommendations

Clearly the goal of the County must be to meet intent of MS4 permit with a reasonable effort to quantify flow thresholds. PWA's hydraulic and sediment transport results should be supplemented with real data from sites in order to set thresholds (flows, shear stresses, or velocities). With the help of the technical advisory group and others, existing information could be gathered to provide additional base data. Slope, sediment properties, roughness, and channel shape data from other studies could be used to compute shear stresses that would move significant amounts of sediment. If frequency discharges are available for a site, the critical shear could be related to a return period. If enough sites are available, the data could be analyzed to see if there is a consistent value of return period. If such a value is found, this could used for a regulatory threshold. If not, a site specific analysis may be required for each project.

Thank you for the opportunity to perform this review and contribute to stormwater management practice in San Diego County. Please call me at (858) 487-9378 if you have any questions.

Sincerely,

Martin J. Teal, P.E., P.H., D.WRE
Vice President

APPENDIX E

SDHMP Continuous Simulation Modeling Primer

Use of contents on this sheet is subject to the limitations specified at the end of this document.
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BROWN AND CALDWELL

Memorandum

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Project Title: San Diego County Hydrograph Modification Plan

Project No: 133904

San Diego County Hydrograph Modification Plan

Subject: Using Continuous Simulation to Size Storm water Control Facilities

Date: April 30, 2008

To: Sara Agahi, San Diego County

From: Tony Dubin, Brown and Caldwell
Nancy Gardner, Brown and Caldwell

Brown and Caldwell prepared this memo to help civil engineers through the process of sizing storm water control facilities to meet San Diego County's Interim Hydromodification Criteria (IHC). Since the publication of the IHC this past January, the County has been engaged in outreach activities to explain the new storm water modeling methods required by the IHC and storm water facilities that could meet the IHC performance standard. In response to the outreach efforts, the County has received several questions and comments along a common theme:

1. How do we perform continuous hydrologic modeling analyses to size storm water control facilities?
2. What is the precise meaning of the peak flow and flow duration curve matching standard described in the IHC memo?

This document is not a complete "how-to manual" for conducting continuous hydrologic modeling to meet the County's IHC, but we hope it addresses the major technical concerns of the local engineering community.

Using Continuous Simulation Models to Size Storm Water Facilities

The IHC requires continuous simulation hydrologic modeling to adequately size storm water control facilities. This is a significant break with the common local practice of using event-based modeling to determine whether a storm water pond, swale or other device was properly sized. Event-based modeling computes storm water runoff rates and volumes generated by a synthetic rainfall event with a total depth that matches local records (e.g., rainfall depths shown in County isopluvial maps). By contrast, continuous modeling uses a long time series of actual recorded precipitation data as input a hydrologic model. The model in turn simulates hydrologic fluxes (e.g., surface runoff, groundwater recharge, evapotranspiration) for each model time step.

Continuous hydrologic models are usually run using one-hour or 15-minute time steps, depending on the type of precipitation data available and computational complexity of the model. Continuous models generate outputs for each model time step and most software packages allow the user to output a variety of different hydrologic flux terms. For example, a continuous simulation model setup with 25 years of hourly precipitation data will generate 25 years of hourly runoff estimates, which corresponds to runoff estimates for

each of the 219,000 time steps (each date and hour) of the 25 year simulation period. While creating and running continuous simulation models involves more effort than running event-based models, the clear benefit of the continuous approach is that these models allow an engineer to estimate how often and for how long flows will exceed a particular threshold. Limiting how often and for how long geomorphically significant flows occur is at the heart of San Diego County's approach to hydrograph modification management.

Two common models were presented at a recent APWA workshop on HMP issues: HSPF and HEC-HMS. HSPF refers to the Hydrologic Simulation Program-FORTRAN and is distributed by the USEPA. HEC-HMS refers to the Hydrologic Modeling System (HMS) produced by the US Army Corps of Engineers Hydraulic Engineering Center (HEC). Engineers unfamiliar with these software packages should seek out training opportunities and online guidance. The USEPA conducts training workshops around the US to help teach engineers how to use HSPF. HEC-HMS training is provided through ASCE and third-party vendors.

The following list describes the major elements of developing a hydrologic model and using that model to size storm water facilities that meet the IHC.

1. Select an appropriate historical precipitation dataset for the analysis.
   a. The precipitation station should be located near the project site or at least receive similar rainfall intensities and volumes as the project site.
   b. The station should also have a minimum of 25-years of data recorded at hourly intervals or more frequently.
2. Develop a model to represent the pre-project conditions, including
   a. Land cover types
   b. Soil characteristics
   c. General drainage direction
3. Develop a model to represent the post-project conditions, including
   a. New land cover types – more impervious surfaces
   b. Soil characteristics
   c. Any modifications to the drainage layout
4. Examine the model results to determine how the proposed development affects storm water flows
   a. Compute peak flow recurrence statistics (described below)
   b. Compute flow duration series statistics (described below)
5. Iteratively size storm water control facilities until the post-project peak flows and durations meet the performance standard described below.

Understanding the Peak Flow and Flow Duration Performance Criteria

The IHC is based on a peak flow and flow duration performance standard. To compute the peak flow and flow duration statistics described in the standard, model users must have a method for evaluating long time series outputs (usually longer than the 65,000 rows available in MS Excel 2003 and earlier versions) and computing both peak flow frequency statistics and flow duration statistics.

We recommend computing **peak flow frequency statistics** by constructing a partial-duration series (rather than an "annual maximum" series). This involves examining the entire runoff time series generated by the model, dividing the runoff time series into a set of discrete unrelated events, determining the peak flow for each event, ranking the peak flows for all events and then computing the recurrence interval or plotting position for each storm event. To limit the number of discrete events to a manageable number, we usually only select events that are larger than a 3-month recurrence when generating the partial duration series. We consider flow events to be "separate" when flow rates drop below a threshold value for a period of at least 24 hours.

The exercise described above will generate a table of peak flows and corresponding recurrence intervals (i.e., frequency of occurrence for a particular flow). For continuous modeling and peak flow frequency statistics, it is important to remember that events refer to *flow events* and not precipitation events. Peak flow frequency statistics estimate how often flow rates will exceed a given threshold. For example, the 5-year flow event represents the flow rate that is equaled or exceeded an average of once per 5 years (and the storm generating this flow does not necessarily correspond to the 5-year precipitation event). Ranking the storm events generated by a continuous simulation and computing the recurrence interval of each storm will generate a table similar to Table 1 below.

Readers who are unfamiliar with how to compute the partial-duration series should consult reference books or online resources for additional information. For example, *Hydrology for Engineers*, by Linsley et all, 1982, discusses partial-duration series on pages 373-374 and computing recurrence intervals or plotting positions on page 359. *Handbook of Applied Hydrology*, by Chow, 1964, contains a detailed discussion of flow frequency analysis, including Annual Exceedance, Partial-Duration and Extreme Value series methods, in Chapter 8. The US Geological Survey (USGS) has several hydrologic study reports available online that use partial-duration series statistics (see http://water.usgs.gov/ and http://water.usgs.gov/osw/bulletin17b/AGU_Langbein_1949.pdf).

Table 1. Example Peak Flow Frequency Statistics

Recurrence Interval (years)	Peak Flow (cfs per acre)
58.5	0.73
21.9	0.69
13.5	0.53
9.8	0.53
7.6	0.51
6.3	0.51
5.3	0.50
4.6	0.50
4.1	0.49
3.7	0.48
3.3	0.48
3.0	0.46
2.8	0.45
2.6	0.45
2.4	0.45
2.3	0.45
2.1	0.44
2.0	0.42

Flow duration statistics are more straightforward to compute than peak flow frequency statistics. Flow duration statistics provide a simply summary of how often a particular flow rate is exceeded. To compute the flow duration series, rank the entire runoff time series output and divide the results into discrete bins. Then, compute how often the flow threshold dividing each bin is exceeded. For example, let's assume the results of a 35-year continuous simulation hydrologic model with hourly time steps show that flows leaving a project site exceeded 5 cfs an average of about once per year for 30 hours at a time. This corresponds to a total of

1050 hours of flows exceeding 5 cfs over 35 years. Another way to express this information is to say a flow rate of 5 cfs is exceeded 0.34 percent of the time. Computing the "exceedance percentage" for other flow rates will fill out the flow duration series. Table 2 lists an example flow duration series.

Table 2. Example Flow Duration Statistics

Flow (cfs per acre)	Percent of Time Flow Rate is Exceeded
0.02	0.67%
0.03	0.43%
0.04	0.34%
0.06	0.27%
0.07	0.21%
0.09	0.17%
0.10	0.15%
0.12	0.12%
0.13	0.11%
0.15	0.09%
0.16	0.08%
0.17	0.07%
0.19	0.06%
0.20	0.05%
0.22	0.05%
0.23	0.04%
0.25	0.04%
0.26	0.03%

The intention of the IHC performance standard is to limit the potential for new development to generate accelerated erosion of stream banks and stream bed material in the local watershed by matching the post-project hydrograph to the pre-project hydrograph for the range of flows that are likely to generate significant amounts of erosion within the creek. The IHC memo identified the geomorphically significant flow range as extending from two-tenths of the 5-year flow to the 10-year flow (0.2Q5 to Q10). The performance standard requires the following:

A. For flow rates from 20% of the pre-project 5-year runoff event (0.2Q5) to the pre-project 10-year runoff event (Q10), the post-project discharge rates and durations shall not deviate above the pre-project rates and durations by more than 10% over more than 10% of the length of the flow duration curve.

B. For flow rates from 0.2Q5 to Q5, the post-project peak flows shall not exceed pre-project peak flows. For flow rates from Q5 to Q10, post-project peak flows may exceed pre-project flows by up to 10% for a 1-year frequency interval. For example, post-project flows could exceed pre-project flows by up to 10% for the interval from Q9 to Q10 or from Q5.5 to Q6.5, but not from Q8 to Q10.

Determining When a Storm Water Control Facility Meets the IHC Performance Standard

The previous section discussed how to calculate peak flow frequency and flow duration statistics. By comparing the peak flow frequency and flow duration series for pre-project and post-project conditions, an engineer can determine whether a stormwater control facility would perform adequately or if its size should be increased or decreased. The easiest way to determine if a particular storm water facility meets the IHC performance standard is to plot peak flow frequency curves and flow duration curves for the pre-project and post-project conditions.

Figure 1 shows a **flow duration curve** for a hypothetical development. The three curves show what percentage of the time a range of flow rates are exceeded for three different conditions: pre-project, post-project and post-project with storm water mitigation. Under pre-project conditions the minimum geomorphically significant flow rate (assumed to be 0.2Q5) is 0.10 cfs and flows would equal or exceed this value about 0.14% of the time (about 12 hours per year). For post-project conditions, this flow rate would occur more often – about 0.38% of the time (about 33 hours per year). This increase in the duration of the geomorphically significant flow after development illustrates why duration control is closely linked to protecting creeks from accelerated erosion. Higher flows that last for longer durations provide the energy necessary to increase the amount of erosion in local creeks. The post-project mitigated condition would include stormwater controls designed to limit the duration of geomorphically significant flows. Figure 1 shows that flows exceed 0.10 cfs only 0.08% of the time, which is less than pre-project conditions. This means the stormwater control mitigations would counteract the effects of the increased pavement associated with development projects.

An engineer can easily interpret the flow duration plots to determine whether a stormwater control facility would meet the IHC. Looking at the flow range between 0.2Q5 and Q10, the post-project mitigated curve should plot on or to the left of the pre-project curve. If the post-project curve plots to the left of the pre-project curve, this means a particular flow would occur for shorter durations due to storm water controls. Minor deviations where the post-project durations exceed the pre-project durations are allowed over a short portion of the flow range as described in IHC item A above.

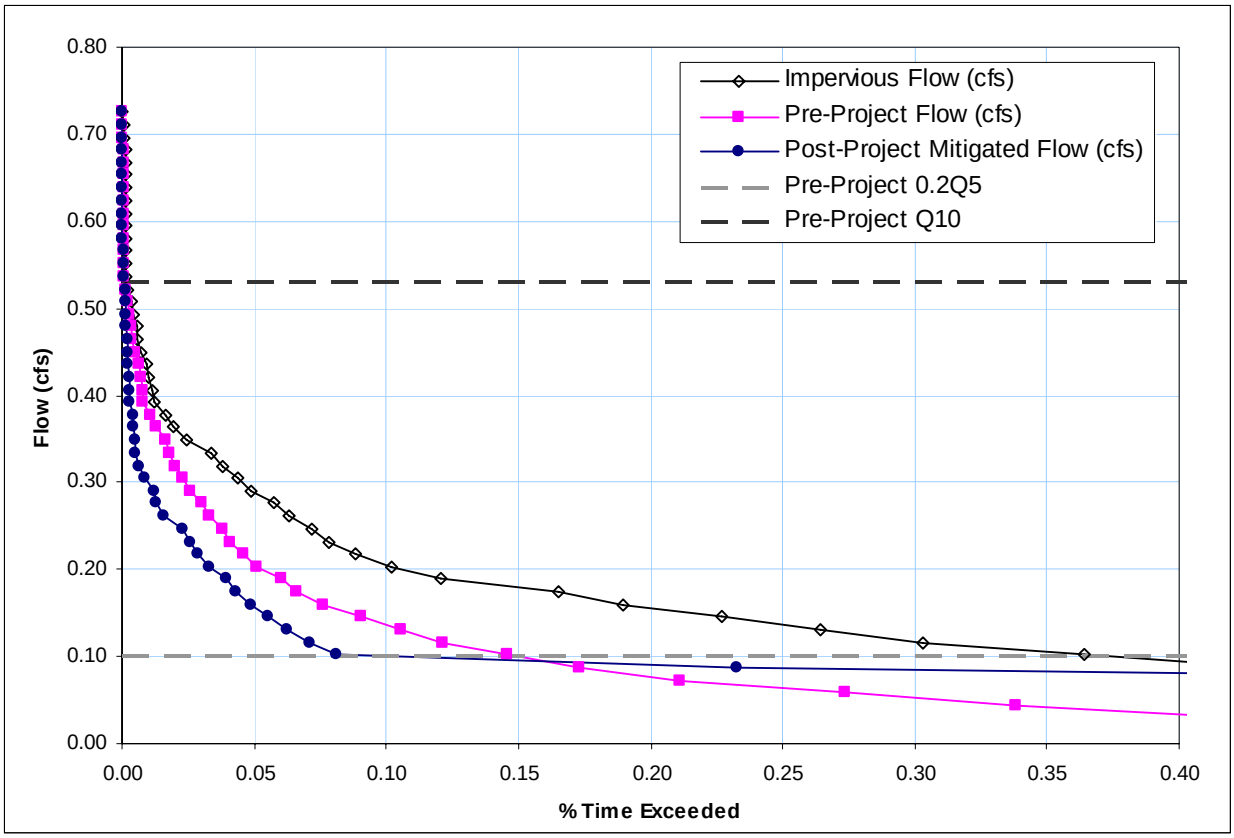

Figure 1. Flow Duration Series Statistics for a Hypothetical Development Scenario

Figure 2 shows a **peak flow frequency curve** for pre-project, post-project and post-project with storm water mitigation scenarios. The curves indicate how often a particular flow rate would be equaled or exceeded. For example, the pre-project 5 year flow rate would be 0.5 cfs per acre. This means under pre-project conditions, a flow rate of 0.5 cfs per acre would be equaled or exceeded an average of once per 5 years. For developed conditions, this 0.5 cfs per acre peak flow rate occur more often – about once per 1.5 years or, expressed another way, more than 3 times as often. The developed 5 year flow rate would increase by 30 percent over the pre-project condition, from 0.5 cfs per acre to about 0.65 cfs per acre.

Storm water control facilities should reduce peak flows from the site to levels less than or equivalent to the pre-project conditions. To determine whether a storm water facility provides sufficient protection, examine the peak flow frequency curves to see if the post-project mitigated peak flows are lower than pre-project peak flows of the same recurrence interval. The post-project mitigated scenario curve should plot below the pre-project curve for recurrence intervals between 0.2Q5 and Q10 to meet the IHC performance standard, with the possible exception of the small, allowable deviations described above in IHC item B.

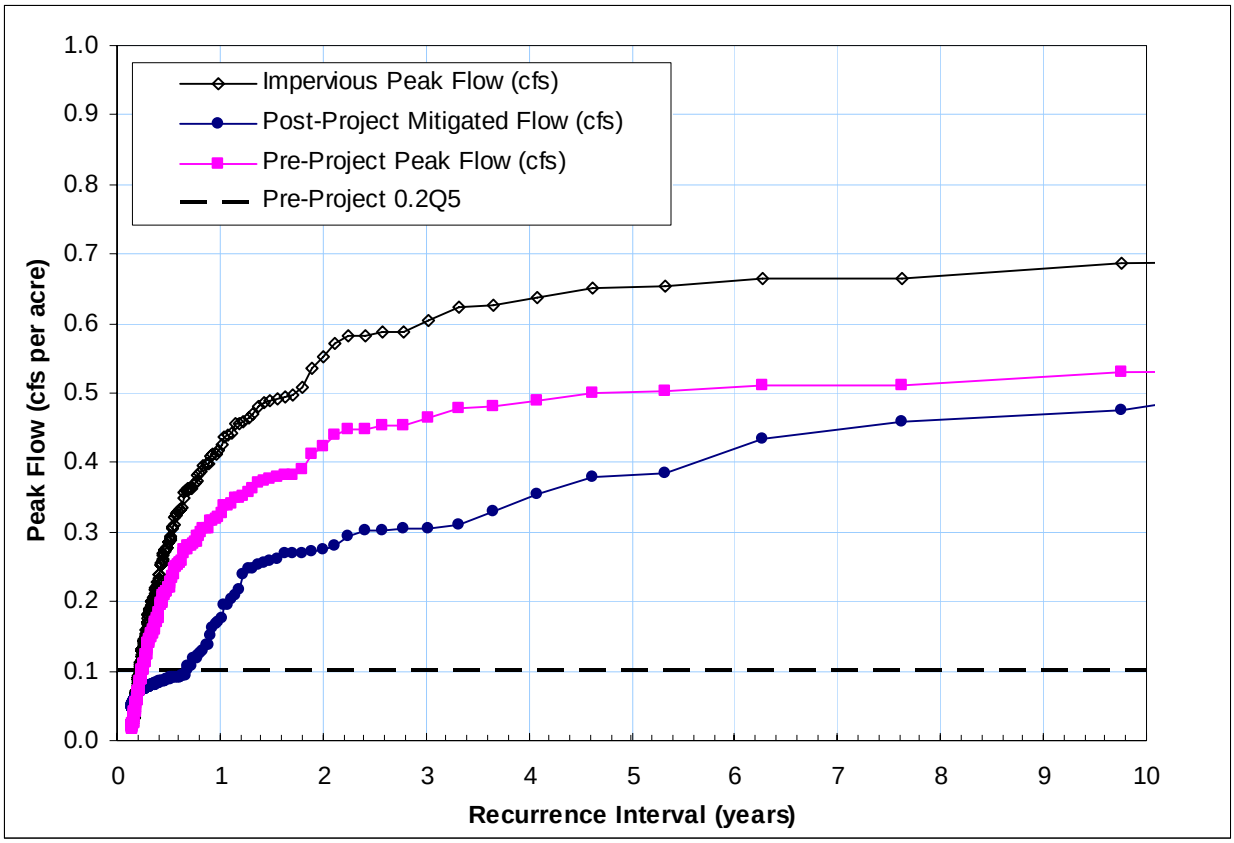

Figure 2. Peak Flow Frequency Statistics for a Hypothetical Development Scenario

References

Linsley, RK Jr.; Koher, MA; Paulhas, JLH; *Hydrology for Engineers,* 1982; McGraw-Hill Inc.

Chow, VT; *Handbook of Applied Hydrology,* 1964; McGraw-Hill Inc.

APPENDIX F

HSPF Modeling Analysis - Technical Memos

Use of contents on this sheet is subject to the limitations specified at the end of this document.
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BROWN AND CALDWELL

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Memorandum

Project Title: San Diego County Hydrograph Modification Plan

Project No: 133904

San Diego County Hydrograph Modification Plan

Subject: HMP Sensitivity Analysis

Date: December 16, 2009

To: Sara Agahi, San Diego County

From: Tony Dubin, Brown and Caldwell
Eric Mosolgo, Brown and Caldwell

This memorandum evaluates three conditions where the HMP requirements could be modified without appreciable impacts on the receiving water body:

1. Development that is directly tributary to a large river
2. Development in highly urbanized watershed
3. Limited small developments within a watershed

The following sections describe the technical analysis that was performed to test the sensitivity of river flow durations to specific modifications in the HMP requirements. The results of the technical analysis can be used to justify and/or discard any planned special conditions that allow the HMP requirements to be modified.

Issue #1: Could Developments Near Large Rivers Be Exempted from Flow Duration Requirements?

To test whether development that is directly tributary to large rivers could potentially be exempted from flow duration control requirements, we examined the historical flow record for the San Diego River and evaluated how much additional development could occur without an appreciable change in the range of flows within the San Diego River channel.

We acquired the historical, hourly stream flow records for the San Diego River at Fashion Valley (USGS 11023000) and San Diego River at Mast Road (USGS 11022480) directly from the US Geological Survey. The data was available from October 1988 through November 2009. Next, we computed flow duration statistics for the river and computed relevant statistics, such as the peak 2-year flow rate.

After summarizing the river flows, we built HSPF models to simulate the conversion of undeveloped land to suburban development, assuming a 10-acre hypothetical development. We then ran the HSPF models and computed flow duration curves for the pre- and post-development conditions. We ran one scenario that used the Fashion Valley rain gauge and another scenario that used the Santee rain gauge. Table 1 lists the NRCS soil groups, land uses, and rain gauges that were used to simulate the different development scenarios.

Table 1. HSPF Model Assumptions for Large River Exemption Simulations							
No.	Scenario Description	Rain Gauge	Basin Acres	Soil and Land Use Combinations (area in acres)			
				Impervious	C/D, Dirt	C/D, Grass	C/D, Shrub
1	Undeveloped conditions in lower watershed	Fashion Valley	10	0	5	0	5
2	Developed (unmitigated) conditions in lower watershed	Fashion Valley	10	4	0	4	2
3	Undeveloped conditions in lower watershed	Santee	10	0	5	0	5
4	Developed (unmitigated) conditions in lower watershed	Santee	10	4	0	4	2

To simulate the incremental effects of development on flow durations, the pre-development flow duration curve was subtracted from the post-development flow duration curve. To represent multiple developments, the flow portion of this *difference flow duration curve* was scaled linearly with area to represent 100, 500, 1000, and 2000-acres of additional development within the San Diego River watershed. The simple scaling of the flow duration curves ignores the curve smoothing that could result from the staggered timing of flows reaching the San Diego River, and as such, this simple scaling of the flow duration curves should provide a conservative approximation of the impacts of multiple developments.

Finally, to gauge the impact of multiple developments on the range of San Diego River flows, the *difference flow duration curves* for 10, 100, 500, 1000, and 2000-acres of additional development were superimposed on the observed San Diego River flow duration curve. Figure 1 and Figure 2 (on the following pages) show the combined effect of multiple developments in the vicinity of the Fashion Valley stream flow gauge. Figure 2 shows the same information, but with the scale that focuses in on the part of the curve where the differences are most noticeable. Figure 3 and Figure 4 show the same results for the Mast Road (near Santee) stream flow gauge.

Recommendations

The post-development flow duration curves show very little difference from existing condition flow duration curves until about 2,000 acres or more of additional development occurs. Even when there are differences in the flow duration curves, the flow rates are sufficiently high that the incremental difference would not appreciably increase the level of sediment movement and river bank erosion. As such, we recommend exemptions for these reaches of the San Diego River and other similar rivers from flow duration control requirements.

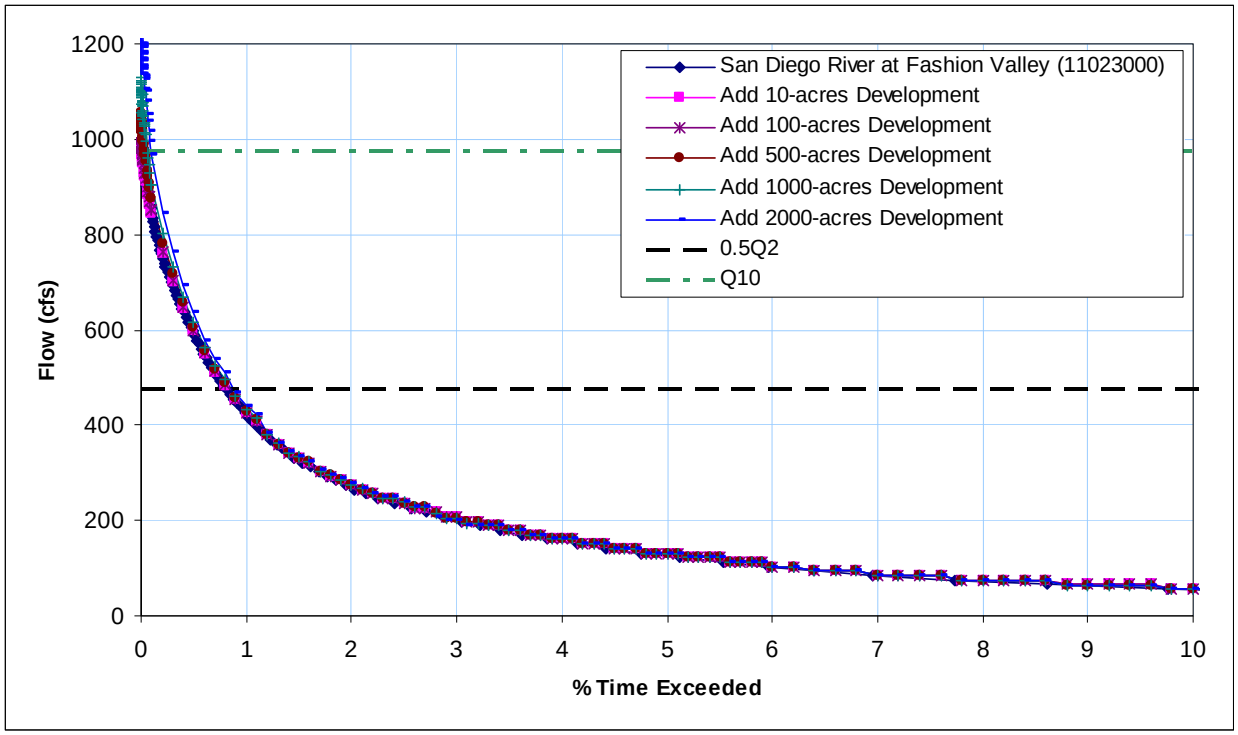

Figure 1. Effects of Additional Development near the San Diego River at Fashion Valley

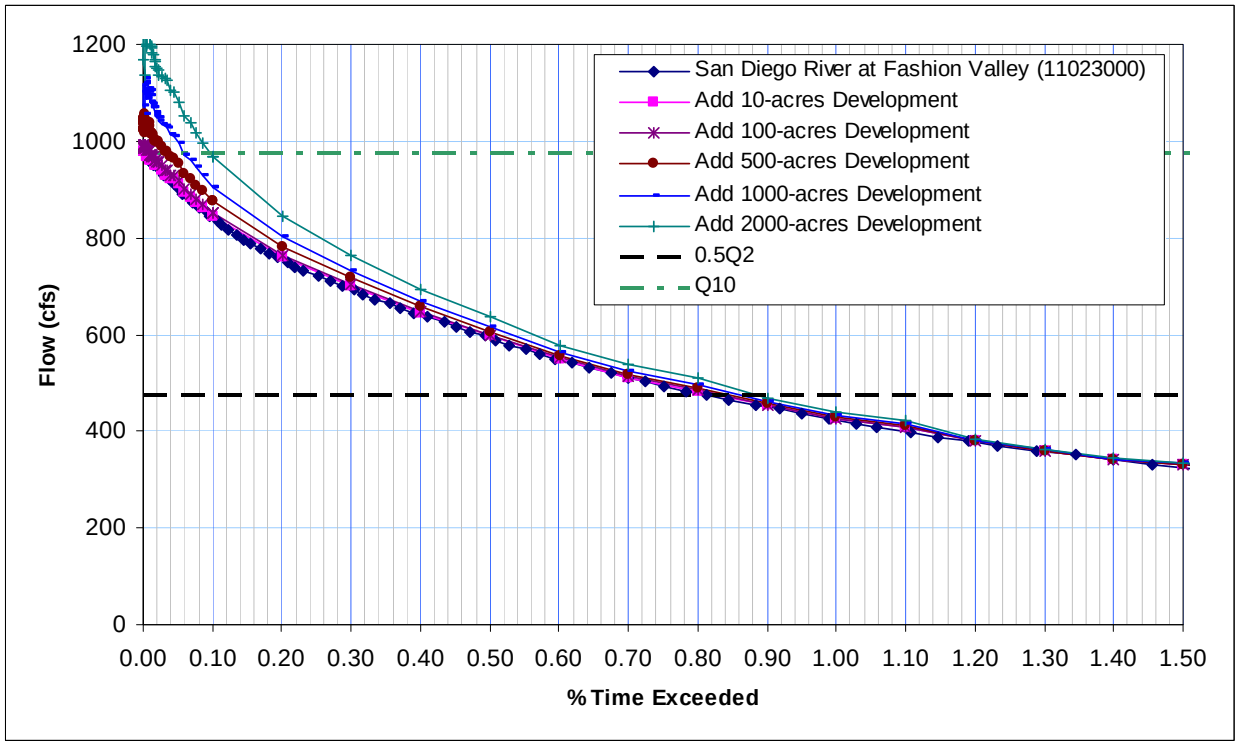

Figure 2. Effects of Additional Development near the San Diego River at Fashion Valley, Zoomed View

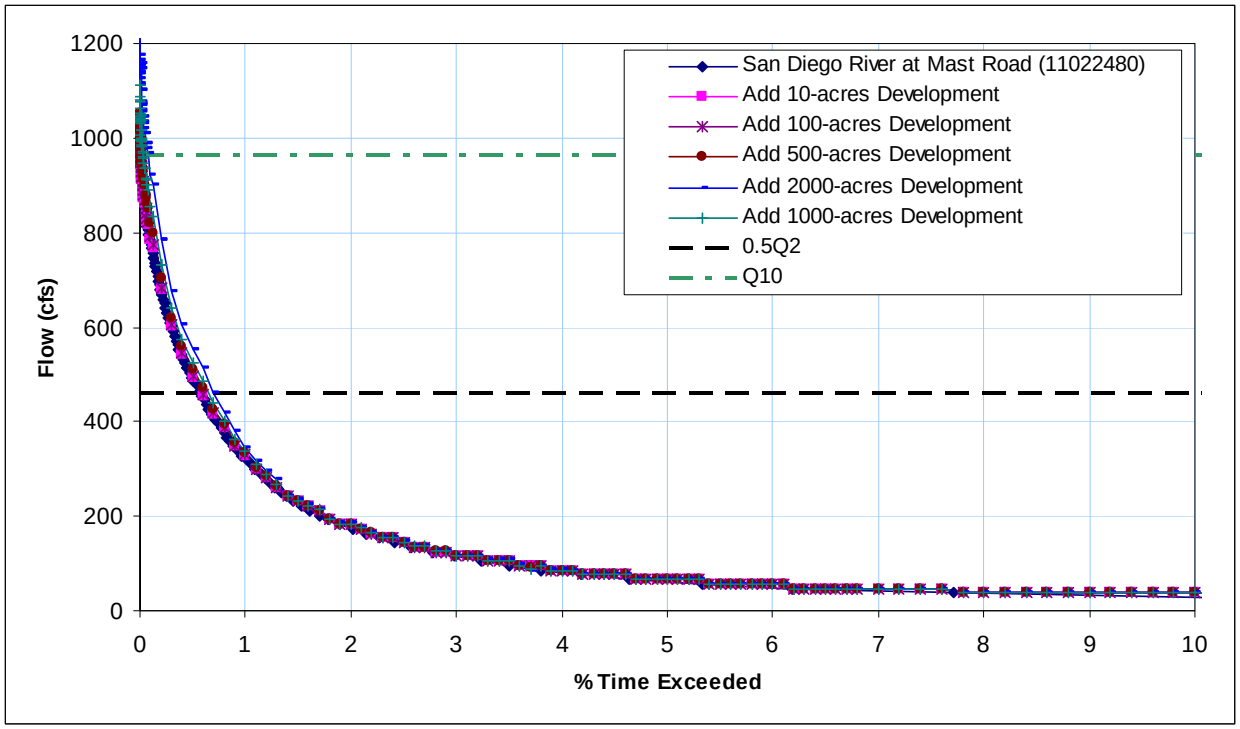

Figure 3. Effects of Additional Development near the San Diego River at Mast Road (near Santee)

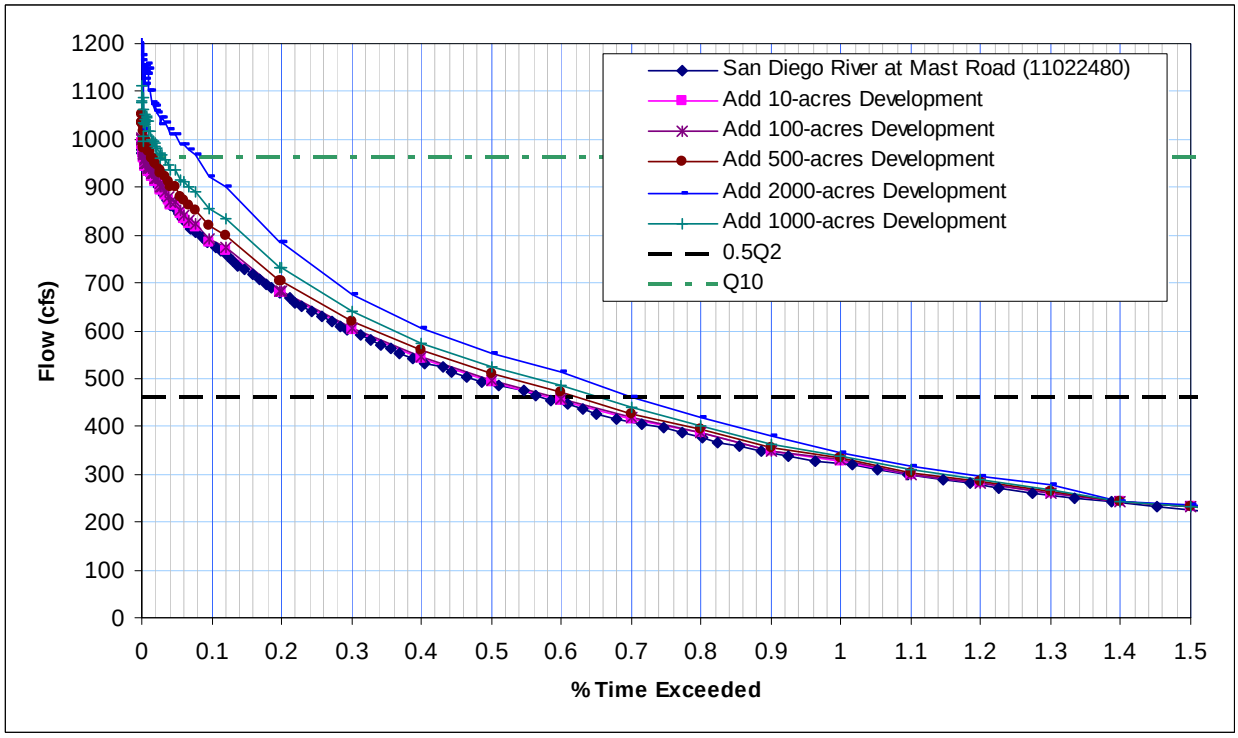

Figure 4. Effects of Additional Development near the San Diego River at Mast Road (near Santee), Zoomed View

Issue #2: Could Limited Infill Development within Highly Urban Watersheds Be Exempted from Flow Duration Control Requirements?

To test whether limited infill development within urbanized watersheds would appreciably impact flow durations in receiving water bodies, we built HSPF models to simulate the stormwater runoff that would occur in 10-acre, 100-acre, and 500-acre urbanized watersheds with 40, 50, and 60-percent total impervious areas. Table 2 lists the soil, land use, and rain gauges that were used to develop the models.

Table 2. HSPF Model Assumptions for Urban Infill Exemption Simulations

No.	Scenario Description	Rain Gauge	Basin Acres	Soil and Land Use Combinations (area in acres)			
				Impervious	C/D, Dirt	C/D, Grass	C/D, Shrub
1	10-acre urban watershed (40% impervious)	Fashion Valley	10	4	0	4	2
2	100-acre urban watershed (40% impervious)	Fashion Valley	100	40	0	40	20
3	500-acre urban watershed (40% impervious)	Fashion Valley	500	200	0	200	100
4	10-acre urban watershed (50% impervious)	Fashion Valley	10	5	0	4	1
5	100-acre urban watershed (50% impervious)	Fashion Valley	100	50	0	40	10
6	500-acre urban watershed (50% impervious)	Fashion Valley	500	250	0	200	50
7	10-acre urban watershed (60% impervious)	Fashion Valley	10	6	0	3	1
8	100-acre urban watershed (60% impervious)	Fashion Valley	100	60	0	30	10
9	500-acre urban watershed (60% impervious)	Fashion Valley	500	300	0	150	50

Figure 5 (on the following page) shows a peak flow frequency curve for the 100-acre, 40, 50, and 60-percent impervious scenarios. Figure 6 shows the flow duration curves for these 100-acre watershed scenarios. Figure 7 focuses on the portion of the flow duration curves where the differences in the simulations are most noticeable. The 10-acre and 500-acre scenarios produced similar results (on a unit area basis).

Recommendations

The extent of the spread among the 40, 50, and 60-percent model scenarios demonstrates that unchecked development within urbanized watershed would have a noticeable effect on the peak flows and flow durations observed within the receiving waters. However, some modest level of urbanized development would produce minor or negligible effects on the peak flows and flow durations. Based on our examination of the peak flow frequency and flow duration curves, we recommend the following allowances in highly urbanized watersheds:

> For subwatershed areas containing between 40 percent and 70 percent existing imperviousness (as measured from the project site downstream to a natural creek confluence), projects may be exempt from HMP criteria if:

1. The potential cumulative impacts within the subwatershed would not increase the composite impervious area percentage by more than 3 percent, and;

2. The project discharges runoff to an existing hardened system (storm drain or concrete channel) that extends beyond the Domain of Analysis determined for the project site.

For subwatershed areas containing existing impervious percentages greater than 70 percent (as measured downstream to the Pacific Ocean, San Diego Bay, a tidally influenced lagoon, or an exempt river system), projects are exempt from HMP criteria. Additionally, for subwatershed areas containing less than 40 percent existing imperviousness, projects are subject to HMP criteria unless they qualify for another exemption (per HMP Decision Matrix).

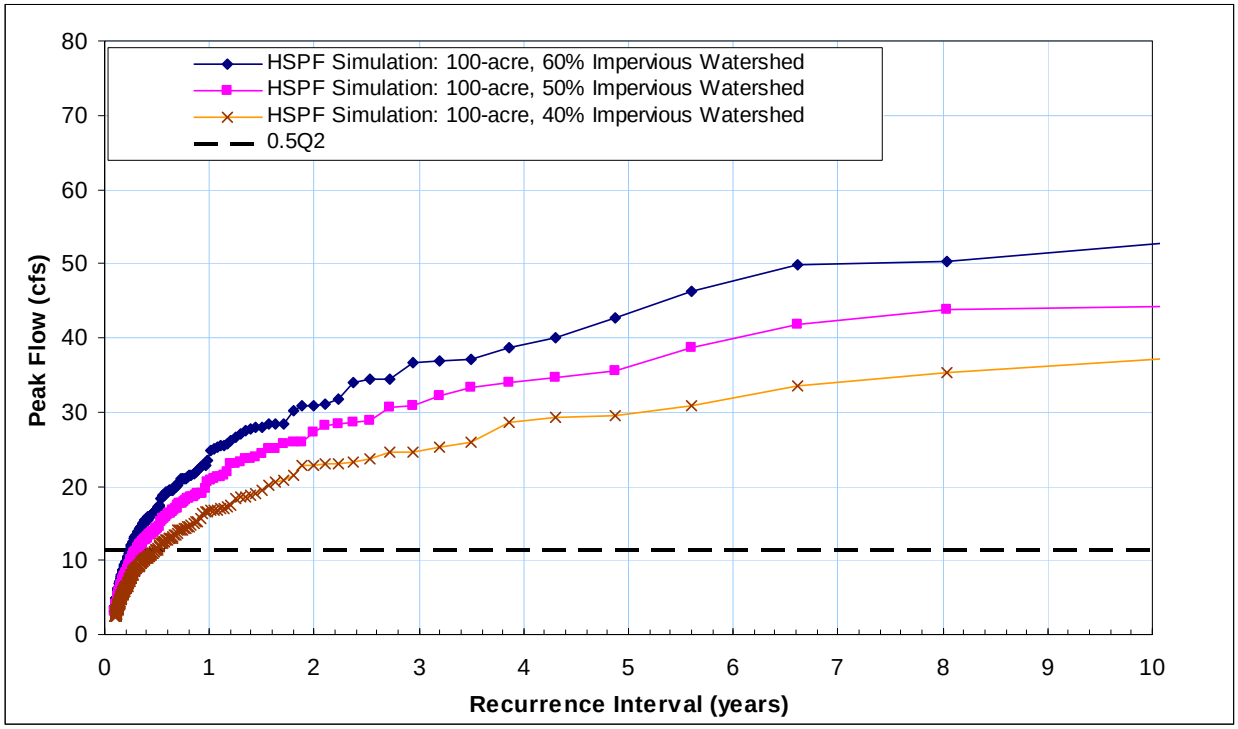

Figure 5. Simulated Peak Flow Frequencies for 100-acre Urbanized Watershed (Fashion Valley rainfall)

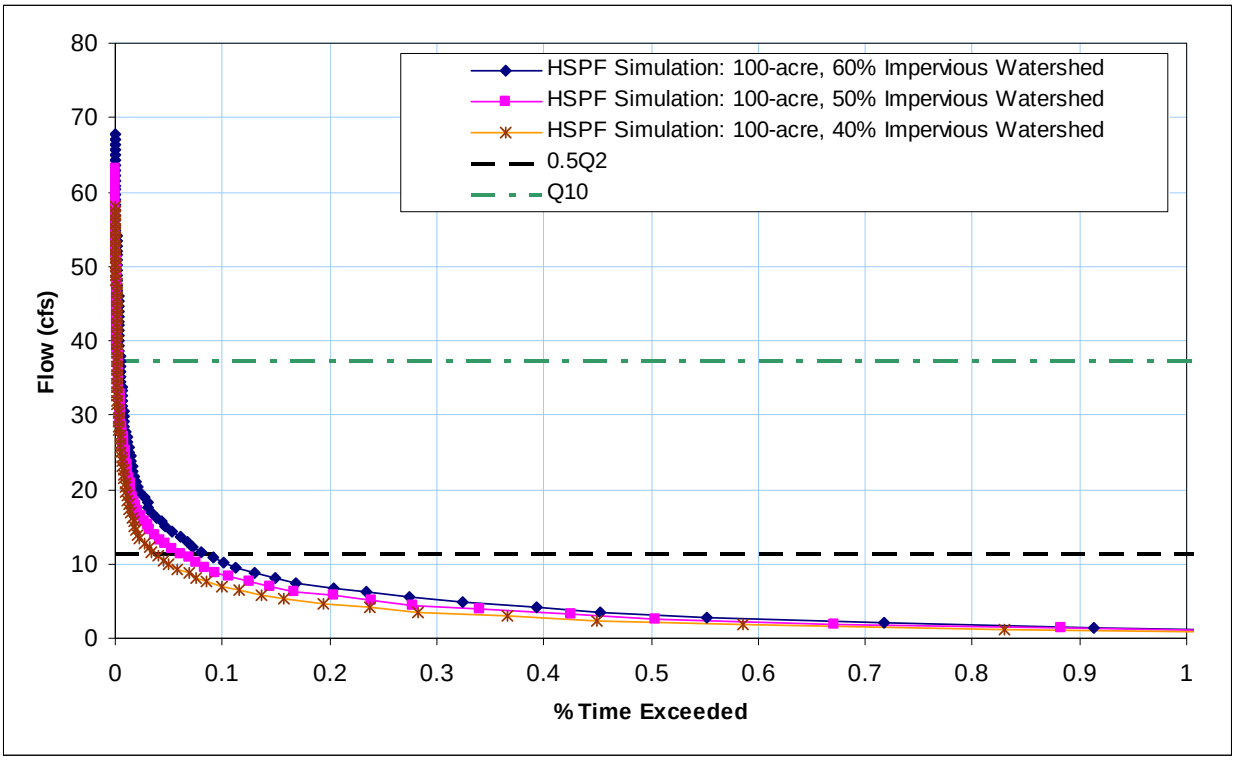

Figure 6. Simulated Flow Durations for 100-acre Urbanized Watershed (Fashion Valley rainfall)

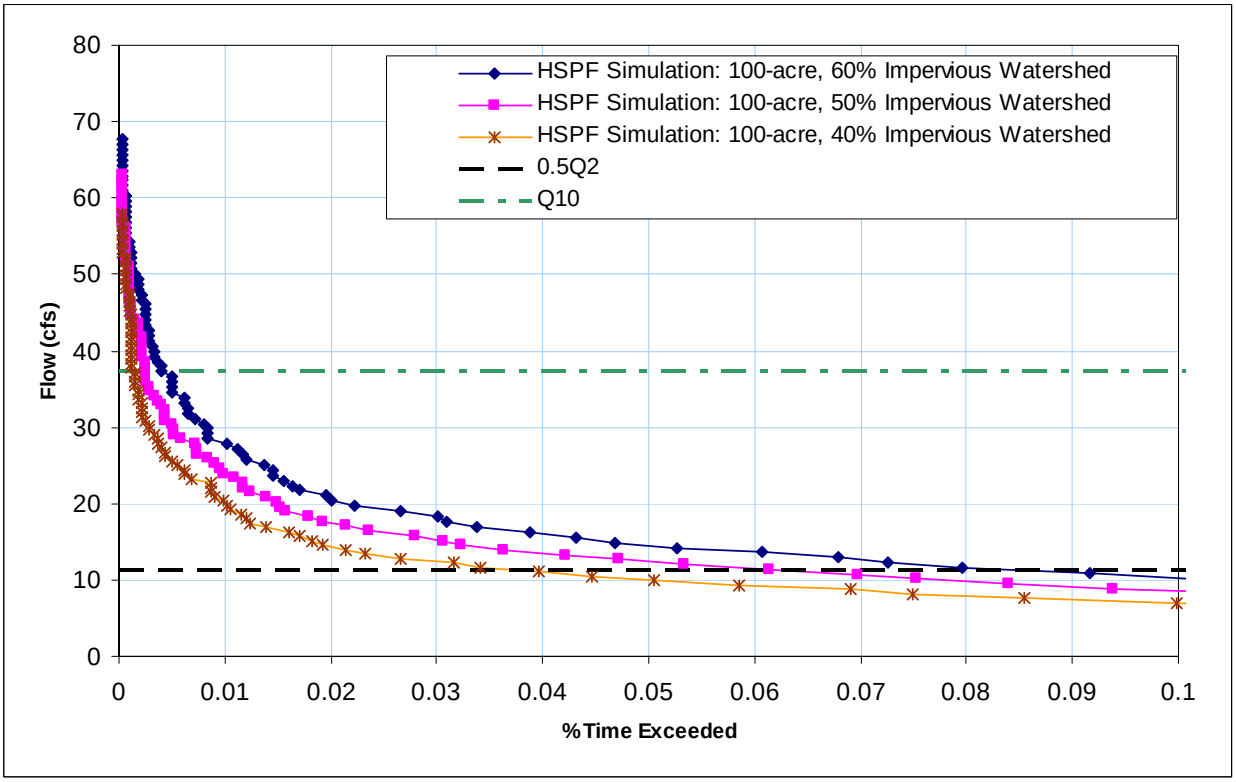

Figure 7. Simulated Flow Durations for 100-acre Urbanized Watershed (Fashion Valley rainfall), Zoomed View

Issue #3: Could Limited Small Developments Specify a Minimum 3-inch Diameter Orifice for Detention Pond Design without Affecting the Receiving Water's Flow Durations?

Due to concerns about clogging, a 3-inch diameter minimum diameter orifice has been proposed for stormwater detention pond design. This size orifice would not provide the required level of flow restriction for small developments, because the 3-inch diameter orifice capacity is greater than the lower flow control range (0.1Q2, 0.3Q2, 0.5Q2) in the Final HMP. As such, we tested whether a limited number of small developments could use a 3-inch minimum orifice diameter without generating appreciable cumulative effects on the receiving water's flow durations.

We built HSPF models to represent undeveloped 100-acre and 500-acre watersheds in the vicinity of the Lower Otay rain gauge. We then built HSPF models to represent undeveloped and developed-mitigated conditions for 5-acre and 10-acre development sites. The developed-mitigated scenarios included detention ponds with 3-inch diameter lower orifice and an upper high flow release.

Similar to the large watershed development scenarios evaluated for Issue #1 above, we computed flow duration curves for the undeveloped and developed-mitigated scenarios, and then subtracted the undeveloped flow duration curve from the developed-mitigated flow duration curve to estimate the difference in conditions. Then, we scaled the difference flow duration curve in increments of 5, 10, 25, and 50-acres and superimposed these curves on the 100-acre and 500-acre undeveloped scenarios to determine when the cumulative impacts would be noticeable. Table 3 lists the soil, land use, and rain gauges that were used for this analysis.

Table 3. HSPF Model Assumptions for 3-inch Minimum Orifice Diameter Simulations

No.	Scenario Description	Rain Gauge	Basin Acres	Soil and Land Use Combinations (area in acres)			
				Impervious	C/D, Dirt	C/D, Grass	C/D, Shrub
1	100 ac undeveloped conditions	Lower Otay	100	0	50	0	50
2	500 ac undeveloped conditions	Lower Otay	500	0	250	0	250
3	1 ac undeveloped conditions	Lower Otay	1	0	0.5	0	0.5
4	5 ac undeveloped conditions	Lower Otay	5	0	2.5	0	2.5
5	10 ac undeveloped conditions	Lower Otay	10	0	5	0	5
6	1 ac mitigated conditions with 3-in diameter outlet	Lower Otay	1	0.4	0	0.4	0.2
7	5 ac mitigated conditions with 3-in diameter outlet	Lower Otay	5	2	0	2	1
8	10 ac mitigated conditions with 3-in diameter outlet	Lower Otay	10	4	0	4	2

Figure 8 shows the flow durations curves for the 100-acre undeveloped scenario, plus developed-mitigated scenarios with increments of 5, 10, 25, and 50-acres of development. For the developments, we are assuming the ponds serve 10 acre increments of development (except for the 5-acre increment scenario) and include a 3-inch diameter lower control orifice.

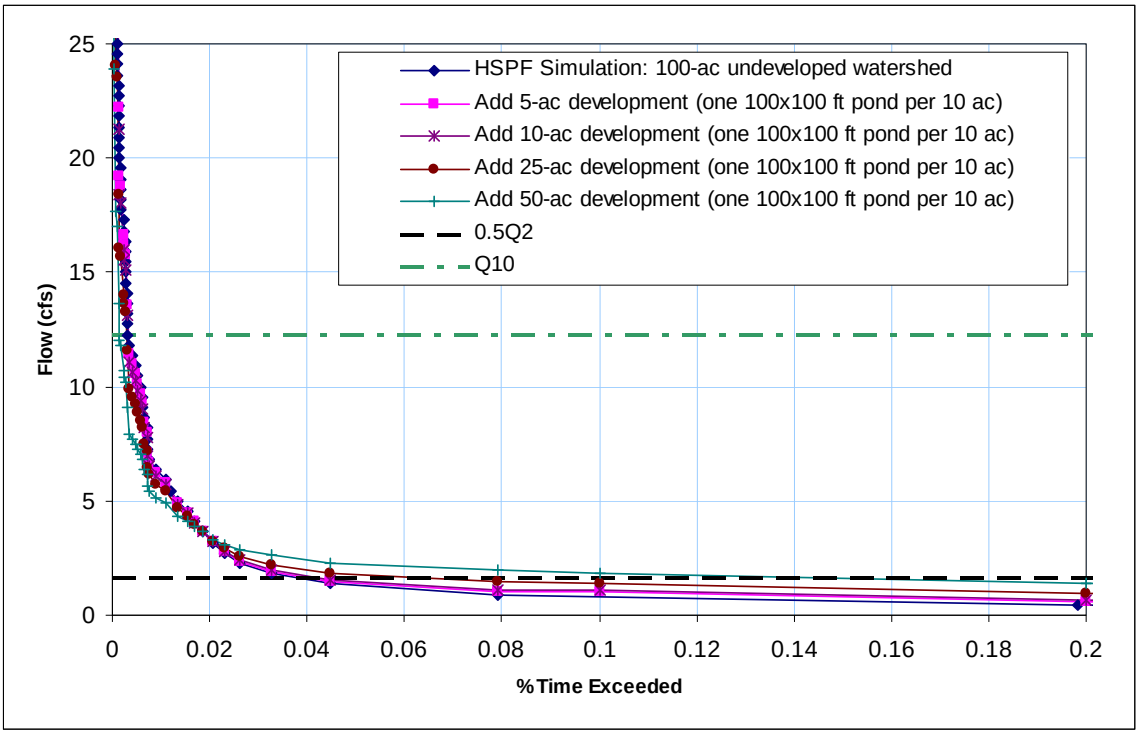

Figure 8. Simulated Flow Durations for Adding Development and Extended Duration Ponds with 3-inch Minimum Diameters to a 100-acre Undeveloped Watershed (Lower Otay rainfall)

The results show that the cumulative development flow duration curve approximately matches the undeveloped flow duration curves when development occurs in 10 percent or less of the watershed. For development levels in excess of 10 percent, the cumulative flow duration curve deviates noticeably from the undeveloped condition. The 500-acre undeveloped watershed simulations indicated a similar threshold sensitivity to development.

Recommendations

The HSPF analysis indicated limited situations where a 3-inch minimum orifice size standard could be applied. However, it should be noted that for small sites where orifices less than 3-inches would be required for HMP mitigation, we recommend an LID requirement in lieu of extended detention facilities.

For project sites 1 acre of less in size:

- HMP mitigation must be attained through the use of LID facilities (because a 3-inch outlet orifice would provide no tangible mitigation)

For project sites greater than 1 acre and less than 5 acres in size:

- HMP mitigation should be attained through the use of LID facilities

If LID implementation is not possible and extended detention basins are used:

- A 3-inch minimum outlet orifice size may be used provided that the potential cumulative impacts in the subwatershed area, as measured from the project site downstream to a natural creek confluence, would not increase the composite impervious area in the subwatershed to more than 10 percent.

If the potential cumulative impacts in the subwatershed areas would result in an impervious area percentage greater than 10 percent, then the 3-inch minimum orifice size waiver would not be granted.

Appendix A: Assumed Water Movement Hydraulics for Modeling BMPs

At minimum, each BMP consists of a reservoir for surface water storage, an overflow outlet and a soil medium. In general, runoff flows into the surface storage reservoir and either infiltrates into the soil or flows through the overflow outlet structure.

Water that does not overflow the surface-storage reservoir infiltrates into the top soil medium and is stored as soil water. Once in the soil, water percolates downward at a rate that is dependent on the soil moisture content, the hydraulic properties of the soil and the boundary conditions of the soil layer.

Many BMPs also include a gravel or aggregate layer below the upper soil layer. Similarly, the rate at which water percolates downward through the gravel/aggregate layer is dependent on the soil moisture content, the hydraulic properties of the soil and the boundary conditions. The lower boundary is often controlled using an underdrain with an orifice outlet.

The following sections describe the theoretical relationships used to develop the FTABLEs for HSPF modeling of the BMPs. The first four sections of this appendix describe the discharge equations used for each of three overflow outlet types and the underdrain orifice:

- Circular Overflow Outlet,
- Straight, Sharp-crested Weir,
- V-notch Weir,
- Underdrain Orifice.

The last three sections describe infiltration, soil water storage and soil water movement.

<u>Circular Overflow Outlet</u>

A circular overflow outlet is basically a vertical pipe with a horizontal opening set to a specific height. This type of outlet is used for bioretention and the flow-through planter BMPs. Hydraulically, this is sufficiently similar to the overflow gate and weir designs shown in the Countywide SUSMP.

Outflow control conditions vary as head over the pipe opening increases. As the water level begins to rise above the opening the pipe acts as a circular weir and flow is crest-controlled. As the head over the opening increases the flow condition transitions to become orifice-controlled and eventually pipe-controlled (the pipe flows full).

Under crest-controlled conditions outflow is calculated using a modified weir equation:

$$Q = C_d \left(\pi R\right) H^{3/2} \qquad \textbf{Equation 1}$$

Where Q = outflow in cfs, C_d = discharge coefficient, R = pipe radius in ft, and H = the head over the crest in ft.

The discharge coefficient for crest-controlled flow is highly variable depending on the head over the crest, the radius of the circular weir, and the ratio of the inlet height to radius. USBR (1987) published a series of curves that are used to determine the appropriate discharge coefficient for each water surface level.

Straight Sharp-crested Weir

A second type of overflow outlet is a straight sharp-crested weir. A sharp-crested weir is used to control overflow in a vegetated/grassy swale. The following weir equation is used to calculate overflow discharge:

$$Q = C_d L H^{3/2} \qquad \textbf{Equation 2}$$

Where Q = outflow in cfs, C_d = discharge coefficient, L = weir length in ft and H = head over the weir crest in ft. The weir coefficient is assumed to be 3.10 for straight sharp-crested weirs.

V-notch Weir

In some cases a v-notch is added to the overflow weir. A v-notch weir is incorporated into the overflow weir of the vegetated bioswale with check dams. The flow through the v-notch is calculated using the following equation.

$$Q = C_d \tan\left(\frac{\phi}{2}\right) H^{5/2} \qquad \textbf{Equation 3}$$

Where Q = outflow in cfs, C_d = discharge coefficient, ϕ = angle of the v-notch, and H = head over the weir crest in ft. The v-notch is assumed to be 90 degrees and the weir coefficient was assumed to be 2.55.

Underdrain Outlet

The perforated pipe of lateral underdrains is assumed to be sufficiently large as to not limit the flow into the drain. Drain outflow is limited by single orifice at the end of the drain pipe. Outflow through this orifice was calculated using the orifice equation:

$$Q = C_d A \sqrt{2gH} \qquad \textbf{Equation 4}$$

Where Q = outflow, C_d = discharge coefficient, A = area of the orifice, g = gravitational constant, H = head over the centerline of the orifice. The discharge coefficient is assumed to be 0.6 in all cases.

Infiltration

Infiltration is the process of water penetrating from the ground surface into the soil (Chow et al. 1988). Many factors influence the rate of infiltration including ground cover, soil hydraulic properties and soil moisture. As water infiltrates into the soil the

soil moisture and hydraulic gradient change. As a result the infiltration rate itself changes over time. This non-linear relation is given by Richard's equation, which is the governing equation for unsteady unsaturated flow in a porous medium. Eagleson (1970) presents Richard's equation in its one-dimensional form:

$$\frac{\partial \theta}{\partial t} = \frac{\partial}{\partial z}\left[D\frac{\partial \theta}{\partial z} + K \right]. \qquad \textbf{Equation 5}$$

Where D = diffusivity, K = hydraulic conductivity, q = soil moisture content, z = elevation and t = time.

Numerous equations have been developed as approximate solutions to Richard's equation. Eagleson (1970) shows that Horton's equation is derived from Richard's equation by assuming D and K are constants independent of soil moisture:

$$f(t) = f_c + (f_0 - f_c)e^{-kt}. \qquad \textbf{Equation 6}$$

Where, f_0 = initial infiltration rate, k = decay constant and f_c = final constant infiltration rate. Using Horton's approximate solution we can see how infiltration rate changes over time.

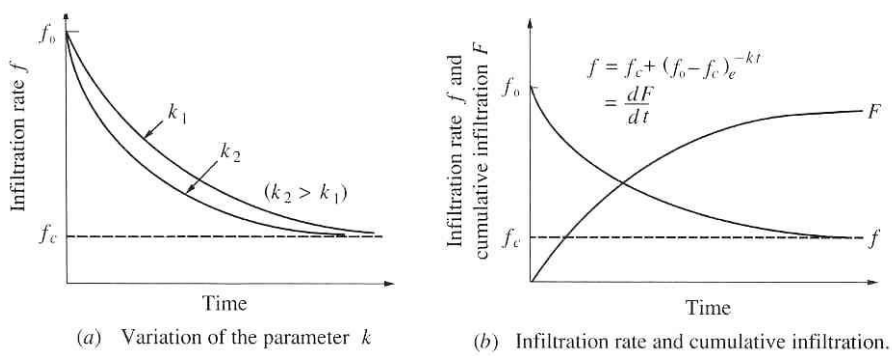

Figure B1– Horton's Equation for Infiltration (graphs from Chow et al. 1988)

We can see from Figure B1 that infiltration begins at a very high rate due to the high matric potential in a dry soil and decreases exponentially as the soil becomes saturated, matric potential becomes insignificant and gravity governs the hydraulic gradient. Thus the infiltration rate approaches a steady-state final rate that approximately corresponds to the saturated hydraulic conductivity of the soil.

After water has been infiltrated into the soil the movement of water through the soil is termed percolation. The rate of percolation can be calculated using Darcy's Law (see Soil Water Movement Section).

Horton's equation showed that the potential infiltration rate of water into the soil always exceeds the saturated hydraulic conductivity of the soil. Conversely, the percolation rate of soil water is limited by the saturated hydraulic conductivity of the soil. Therefore, it is reasonable to assume that the potential infiltration rate is always

greater than the percolation rate, and that the percolation rate will limit the flow rate through the soil layer.

Water Storage

The amount of water stored in soils (soil moisture) is expressed as a dimensionless ratio called the volumetric water content, θ. For any given water content the total volume of water stored in the soil, V_{water}, is equal to the volumetric water content (θ) times the total volume of soil, V_{total}.

$$\theta = \frac{V_{water}}{V_{total}} \qquad \textbf{Equation 7}$$

The total void space within a soil is the porosity, η. Soil is saturated when the volumetric water content is equal to the porosity.

Some voids do not actively store and convey water. The void space within the soil that is hydrodynamically effective is called the effective porosity, θ_e. The difference between the total porosity and the effective porosity is known as the residual water content, θ_r. Maidment (1993) provides typical porosity, effective porosity and residual water content values by soil texture (see Table B1).

Table B1– Soil Porosity, Effective Porosity and Residual Water Content by Soil Texture (Maidment, 1993)

Soil Type	Porosity η	Effective Porosity θ_e	Residual Water Content θ_r
GRAVEL[1]	0.420	0.415	0.005
SAND	0.437	0.417	0.020
LOAMY SAND	0.437	0.401	0.035
SANDY LOAM	0.453	0.412	0.041
LOAM	0.463	0.434	0.027
SILT LOAM	0.501	0.486	0.015
SANDY CLAY LOAM	0.398	0.330	0.068
CLAY LOAM	0.464	0.390	0.075
SILTY CLAY LOAM	0.471	0.432	0.040
SANDY CLAY	0.430	0.321	0.109
SILTY CLAY	0.479	0.423	0.056
CLAY	0.475	0.385	0.090

1 – Values for gravel were obtained from Fayer (1992) as presented in INEEL (2002).

Porosity, effective porosity and residual water content values by hydrologic soil group were obtained for this project by assuming each group corresponds with a specific soil texture.

- Group A → Sand
- Group B → Loam
- Group C → Sandy Clay Loam

- Group D → Clay

These assumptions were based on the hydrologic soil group descriptions provided by NRCS (2001). Table B2 provides the assumed porosity, effective porosity and residual water content values by hydrologic soil group.

Table B2 – Soil Porosity, Effective Porosity and Residual Water Content by Hydrologic Soil Group

Soil Type	Porosity η	Effective Porosity θ_e	Residual Water Content θ_r
HYDROLOGIC SOIL GROUP: A	0.437	0.417	0.020
HYDROLOGIC SOIL GROUP: B	0.463	0.434	0.027
HYDROLOGIC SOIL GROUP: C	0.398	0.330	0.068
HYDROLOGIC SOIL GROUP: D	0.475	0.385	0.090

Soil Water Movement

Darcy's Law is used to calculate the rate of water movement through a porous medium:

$$q = -K \frac{\partial h}{\partial z} \qquad \textbf{Equation 8}$$

Where q = Darcy flux, K = hydraulic conductivity of the porous medium, h = total hydraulic head, and z = elevation. The total head, h, is the sum of the matric head, ψ, and the gravity head, z (velocity head is negligible):

$$h = \psi + z \ . \qquad \textbf{Equation 9}$$

Assuming flow only in the vertical direction and substituting for h, Equation 1 becomes:

$$q = -K \frac{d(\psi + z)}{dz} \ . \qquad \textbf{Equation 10}$$

The matric potential within a soil varies greatly with soil moisture. The relation between matric potential and soil moisture for a specific soil is known as the water-retention characteristic of that soil. Figure B2 shows some examples of typical water-retention curves for soils of various textures.

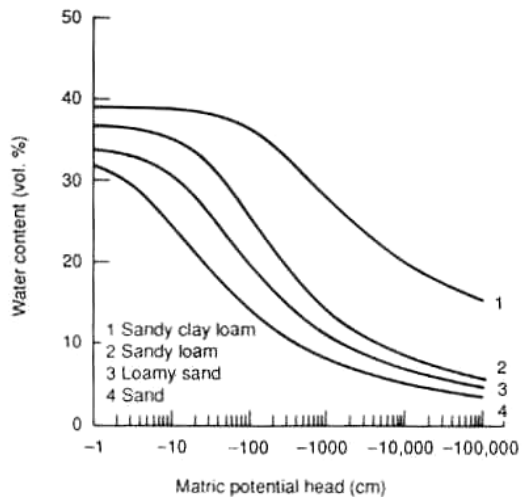

Figure B2 – Typical water retention curves (graph from Maidment, 1993)

Several equations have been developed to approximate water-retention relationships based on the physical characteristics of the soil. One such equation was developed by van Genuchten (1980):

$$\frac{\theta-\theta_r}{\eta-\theta_r}=\left[\frac{1}{1+(\alpha\psi)^n}\right]^m \qquad \textbf{Equation 11}$$

Where the constants α, n and m are given by:

$$\alpha=(h_b)^{-1} \qquad \textbf{Equation 12}$$

$$n=\lambda+1 \qquad \textbf{Equation 13}$$

$$m=\frac{\lambda}{\lambda+1}\ . \qquad \textbf{Equation 14}$$

The bubbling pressure head, h_b, and pore-size index, λ, are soil-specific parameters. Maidment (1993) provides typical bubbling pressures and pore-size index values by soil texture (see

Table B3).

Table B3 – Bubbling Pressure and Pore-size Index by Soil Texture (Maidment, 1993)

Soil Type	Bubbling Pressure (cm) h_b	Pore-size Distribution λ
GRAVEL[1]	0.20	1.190
SAND	7.26	0.694
LOAMY SAND	8.69	0.553
SANDY LOAM	14.66	0.378
LOAM	11.15	0.252
SILT LOAM	20.76	0.234
SANDY CLAY LOAM	28.08	0.319
CLAY LOAM	25.89	0.242
SILTY CLAY LOAM	32.56	0.177
SANDY CLAY	29.17	0.223
SILTY CLAY	34.19	0.150
CLAY	37.30	0.165

1 – Values for gravel were obtained from Fayer (1992) as presented in INEEL (2002).

As discussed previously, soil properties were assigned to hydrologic soil groups based on soil textures. Table B4 provides the bubbling pressure and pore-size index values by hydrologic soil group.

Table B4 – Bubbling Pressure and Pore-size Index by Hydrologic Soil Group

Soil Type	Bubbling Pressure (cm) h_b	Pore-size Distribution λ
HYDROLOGIC SOIL GROUP: A	7.26	0.694
HYDROLOGIC SOIL GROUP: B	11.15	0.252
HYDROLOGIC SOIL GROUP: C	25.89	0.242
HYDROLOGIC SOIL GROUP: D	37.30	0.165

Hydraulic Conductivity, *K*, is also dependent on soil moisture. Van Genuchten (1980) also developed a relationship to approximate the hydraulic conductivity of soils based on soil properties:

$$\frac{K(\theta)}{K_s} = \left(\frac{\theta-\theta_r}{\eta-\theta_r}\right)^{1/2}\left\{1-\left[1-\left(\frac{\theta-\theta_r}{\eta-\theta_r}\right)^{1/m}\right]^m\right\}^2 . \qquad \textbf{Equation 15}$$

Saturated hydraulic conductivity, K_s, is a measure of a saturated soil's ability to transmit water along a hydraulic gradient. This value is highly variable in field conditions; however, Maidment (1993) does provide estimates of saturated hydraulic conductivity by soil texture (see

Table B5).

Table B5 – Saturated Hydraulic Conductivity by Soil Texture (Maidment, 1993)

Soil Type	Saturated Hydraulic Conductivity (cm/hr) K_s
GRAVEL[1]	1260
SAND	23.56
LOAMY SAND	5.98
SANDY LOAM	2.18
LOAM	1.32
SILT LOAM	0.68
SANDY CLAY LOAM	0.3
CLAY LOAM	0.2
SILTY CLAY LOAM	0.2
SANDY CLAY	0.12
SILTY CLAY	0.1
CLAY	0.06

1 – Values for gravel were obtained from Fayer (1992) as presented in INEEL (2002).

As discussed previously, soil properties were assigned to hydrologic soil groups based on soil textures. Table B6 provides the saturated hydraulic conductivity by hydrologic soil group.

Table B6 – Saturated Hydraulic Conductivity by Hydrologic Soil Group

Soil Type	Saturated Hydraulic Conductivity (cm/hr) K_s
HYDROLOGIC SOIL GROUP: A	23.56
HYDROLOGIC SOIL GROUP: B	1.32
HYDROLOGIC SOIL GROUP: C	0.20
HYDROLOGIC SOIL GROUP: D	0.06

Figure B3(a) shows a plot of the van Genuchten relationships using the soil properties assumed for a loamy sand soil. Figure B3(b) is a graph from Chow et al. (1988) that shows the typical variation of matric head and hydraulic conductivity based on experimental data for an example soil.

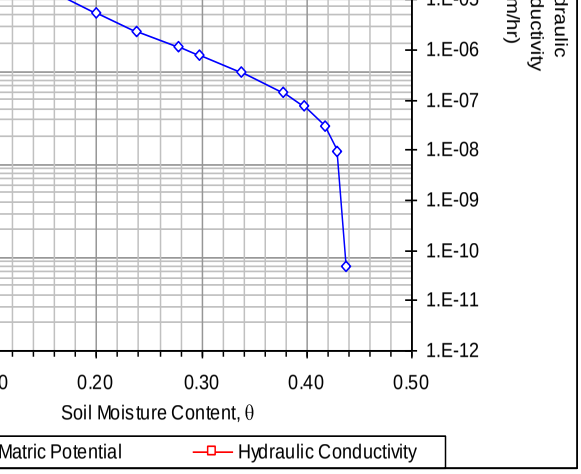

(a)

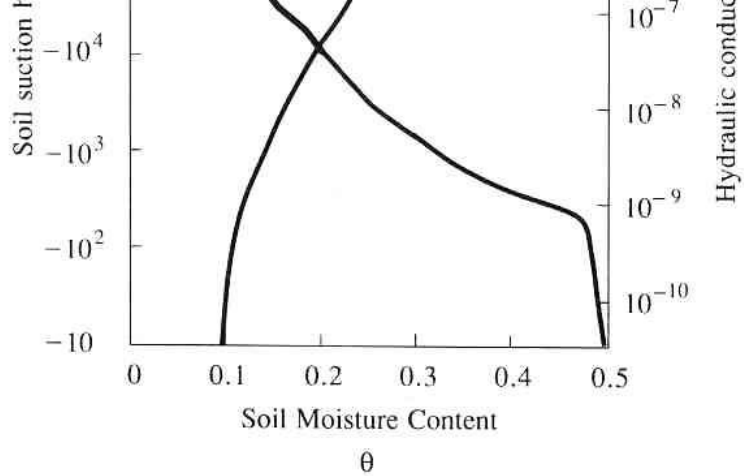

(b)

) variation of matric head and hydraulic conductivity for a loamy sand using van Genuchten relations, (b) example provided in Chow et al. (1988)

uchten relations were used to calculate the matric head and hydraulic for a given soil moisture content. These results were then used in the on to compute the flow through the soil. Calculated over a range of soil tents, a table can be created relating soil water storage and flow through .

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Draft Technical Memorandum

Project Title: San Diego County Hydromodification Management Plan

Project No: 133904

San Diego County Hydromodification Management Plan

Subject: HMP Modeling Approach and BMP Configurations

Date: March 2, 2010

To: Sara Agahi, San Diego County

From: Tony Dubin, Brown and Caldwell
Eric Mosolgo, Brown and Caldwell

This memorandum describes the modeling approach that is being used to size low-impact development dbest management practices (LID BMPs) for the San Diego Hydromodification Management Plan (HMP), including the range of scenarios performed and key assumptions for describing pre-project and post-project conditions, and BMP hydraulics. The memo also describes the type, configurations and dimensions of the LID BMPs that will be modeled in support of the BMP Sizing Tool software. The memo is organized into the following sections:

- **Section 1** provides a brief overview of the HSPF model setup and BMP sizing process.
- **Section 2** describes in greater detail how the HSPF models are setup for the San Diego HMP, including key input data.
- **Section 3** summarizes the general process for computing LID BMP sizing factors.
- **Section 4** describes the physical configurations of the BMPs.

1. Overview of HSPF Modeling and BMP Sizing Approach

The purpose of the runoff simulation for existing and post-development site conditions is to evaluate the effectiveness of BMPs which mitigate the increase in stormwater runoff resulting from the conversion of pervious land surfaces to impervious surfaces. The pre-project runoff regime must be characterized for a variety of baseline soil groups, land cover, slope and rainfall scenarios. Increases in runoff peaks and durations from each of these baseline scenarios establish the impacts to be fully mitigated by a BMP in a particular site development project. This section summarizes the overall steps used in this study to size BMPs.

1.1 Develop Pre-Project and Post-Project Runoff Time Series

San Diego County and its Copermittees' approach to compliance with the stormwater runoff control provision of its NDPES permit is to ensure that post-project runoff at any given development does not exceed pre-project runoff peaks or durations for the range of flows that could potentially have significant

impacts on receiving streams. This approach aims to address the potential impacts of an individual development and the cumulative effects of many developments in the same watershed.

Brown and Caldwell has developed sets of HSPF model parameters to represent a range of pre-project site conditions that may be encountered in San Diego County. The parameter selection process and parameter values are described in a separate technical memorandum entitled, *San Diego HMP HSPF Model Parameter Selections*, dated March 2010. The various possible combinations of these parameters determined the number of "scenarios" that might be required to adequately characterize the pre-project condition for any given development project in the County. Runoff from each scenario was simulated using locally collected rainfall time series data.

Once a continuous runoff time series was generated for the rainfall period of record for each scenario, partial duration frequency and duration analyses were performed on each time series to identify recurrence frequencies and durations for different size runoff events. (This step is needed to characterize the peak flows for various recurrence intervals).

Consistent with the general design guidance in the *Countywide Model SUSMP*, designers are expected to minimize the amount of pervious surface that drains to BMPs. Post-project site runoff was therefore evaluated by simulating runoff from a unit area converted to 100% impervious surface. Comparing the pervious surface model output with the impervious surface model output shows the effects of development prior to adding a BMP.

1.2 Model the Hydraulic Response of BMPs

The project team has constructed representations of each BMP in HSPF. For example, a bioretention basin is represented with separate surface ponding, growing medium, storage layers, an overflow relief outlet, a restricted underdrain outlet (as appropriate), and transmissivity of underlying soils. The configuration of these BMP elements and associated hydraulic characteristics can be varied to determine the configuration that provides the best performance in the least amount of space. The HSPF method for representing storage facilities is called an F-TABLE, and is described further in Section 3.1.1.

1.3 Establish BMP Sizing Factors

To compute sizing factors for each BMP, the impervious runoff time series was routed through the BMP to develop a post-project "mitigated" runoff time series. Each BMP mitigates post-project runoff by providing infiltration and/or reduction of discharge rates to the drainage system. The post-project mitigated time series is then compared to the pre-project runoff time series to assess BMP performance. The BMP size (typically surface area) was varied over the course of multiple model iterations until a size was identified that adequately matched post-project to pre-project runoff. The runoff comparison was performed both for peak rates and durations. The following standard applied to assess BMP performance:

- Flow duration control - For flow rates ranging from 10%, 30% or 50% of the pre-project 2-year runoff event ($0.1Q_2$, $0.3Q_2$, or $0.5Q_2$) to the pre-project 10-year runoff event (Q_{10}), the post-project discharge rates and durations shall not deviate above the pre-project rates and durations by more than 10% over and more than 10% of the length of the flow duration curve. The specific lower flow threshold will depend on results from the SCCWRP channel screening study and the critical flow calculator.
- Peak flow control - For flow rates ranging from the lower flow threshold to Q_5, the post-project peak flows shall not exceed pre-project peak flows. For flow rates from Q_5 to Q_{10}, post-project peak flows may exceed pre-project flows by up to 10% for a 1-year frequency interval. For example, post-project flows could exceed pre-project flows by up to 10% for the interval from Q_9 to Q_{10} or from $Q_{5.5}$ to $Q_{6.5}$, but not from Q_8 to Q_{10}.

1.4 Incorporate Sizing Factors into BMP Sizing Calculator

The sizing factors computed using the above process will be incorporated into a BMP Sizing Calculator that development engineers and municipal plan review staff will use to describe site hydrology, compute pre- and post-project runoff rates, and size BMPs.

During the site design process, the project applicant's engineer will divide a project site into separate drainage management areas that will drain to individual BMPs. Based on the type of BMP selected, the amount of impervious and pervious tributary land, local soil type and site slope, the BMP Sizing Calculator will look up the appropriate value derived from the HSPF modeling analysis. An adjustment will be applied to the BMP sizing factor based on the location of the project in the County to account for the different rainfall characteristics.

The BMP Sizing Calculator will also provide prescriptive guidance on using self-retaining landscaping, soil amendments, and other techniques to limit site runoff, and contains a conservative approach to scale BMPs based on tributary pervious areas (i.e., in addition to the tributary impervious areas). The approaches to be used for scaling the sizing factors according to local rainfall variations will be described in a separate technical memorandum.

2. HSPF Model Development

This section describes in detail how HSPF models are developed to simulate pre-project and post-project runoff for San Diego County.

2.1 HSPF Modeling Overview

An HSPF modeling study of a single watershed typically begins with gathering hydrologic information about the area, such as precipitation data, soil groups, growing medium layer depths, vegetation types, vegetation canopy thickness, etc. This information is used to develop appropriate input parameters to the HSPF model. HSPF parameters fall into three general categories:

1. Prescriptive parameters that set flags and specify algorithms to use.
2. Measured or estimated parameters, such as basin area, that are set by GIS analysis or physical measurement.
3. Calibration parameters that may be estimated by measurement, but must be adjusted during the model calibration process. Examples of calibration parameters are infiltration rates, upper soil depth, and groundwater conductivity.

Together these parameters describe the vertical movement (e.g. interception, depression storage, infiltration, evapotranspiration) and lateral movement (e.g. surface runoff, interflow, groundwater flow) of water in HSPF. For studies of individual watersheds, the values of calibration parameters are adjusted, or tuned, until the model simulations reproduce an observed stream flow record.

The purpose of hydrologic modeling within the HMP is to produce a County-wide assessment tool for sizing BMPs. This requires several modifications to the approach used in evaluating a single watershed. Sets of regional, representative parameters were applied to a theoretical unit area, instead of developing and calibrating a specific watershed model. The representative model parameters were initially selected based on other HSPF studies in the area, such as the Santa Monica Bay HSPF watershed-scale model developed by staff at the Southern California Coastal Water Research Project (SCCWRP). In addition, the range of parameter variations across different soil types and slope values were estimated using other references, including EPA Technical Note 6 and various Brown and Caldwell studies. The HSPF model parameters that are used to characterize the hydrologic response of pervious land surfaces to rainfall area (e.g., PERLND parameters) are described in detail in a separate memo entitled, *San Diego HMP HSPF Model Parameter Selections*, dated March, 2010.

Adapting the compiled HSPF parameters for use in San Diego County required an assessment of the local characteristics that affect surface runoff, such as precipitation data, basic soil groups and vegetation cover. The following subsections briefly summarize the range and variability in rainfall volumes and soil types within the County.

2.1.1 Rainfall Data Evaluation

Evaluating the distribution of rainfall across the County helped determine (1) which precipitation gauges to use as input to HSPF for modeling simulations and (2) the extent of rainfall variation throughout the County. The San Diego Alert Network operates a series of precipitation stations across the County, and the National Oceanographic and Atmospheric Administration (NOAA) operates a station at Lindberg Field in San Diego. Eighteen stations with datasets containing at least 30 years of hourly data were evaluated in detail by Brown and Caldwell. Brown and Caldwell prepared and submitted summary technical memoranda that assessed the data records, identified data gaps, and provided recommendations for filling the data gaps.

Table 1 lists reference information about the gauges and Figure 1 shows the variation in mean annual rainfall depth. Mean annual precipitation values vary from 8.7 inches at Bonita to 30.4 inches at Lake Cuyamaca, with the majority of stations recording annual rainfall amounts between 10 and 15 inches.

Bonita	Sweetwater River	11/25/1970	5/25/2008	37 years	32.3922	-117.0203	120
Encinitas	North County Coastal	9/4/1963	6/30/2008	45 years	33.0237	-117.1639	242
Escondido	Escondido Creek	9/24/1964	5/23/2008	44 years	33.0711	-117.0542	645
Fallbrook	San Luis Rey River	7/25/1951	6/30/2008	57 years	33.213	-117.1513	675
Fashion Valley	San Diego River	1/2/1968	6/30/2008	40 years	32.4555	-117.1033	20
Flinn Springs	San Diego River	8/8/1963	6/30/2008	45 years	325055	-1165129	880
Kearny Mesa	San Diego River	9/8/1964	6/30/2008	44 years	32.5003	-117.0744	425
Lake Cuyamaca	Upper San Diego River	9/1/1967	6/30/2008	41 years	32.5921	-116.3513	4590
Lake Henshaw	Upper San Luis Rey River	1/2/1950	6/30/2008	58 years	331419	-1164542	2990
Lake Wohlford	Upper Escondido Creek	10/8/1949	7/7/2008	59 years	33.0959	-117.0016	1490
Lindbergh Field	Coastal – San Diego Bay	10/17/1948	6/30/2008	60 years	32.7333	-117.1833	15
Lower Otay	Otay River	8/28/1951	6/30/2008	57 years	32.3632	-116.554	491
Oceanside	San Luis Rey River	7/1/1951	6/30/2008	57 years	33.1238	-117.2112	30
Poway	Los Penasquitos River	10/4/1962	6/30/2008	46 years	32.5658	-117.0346	440
Ramona	Upper San Dieguito River	8/8/1963	6/30/2008	45 years	33.0253	-116.5139	1450
San Onofre	North County Coastal	11/25/1970	6/30/2008	38 years	33.2105	-117.3155	162
San Vicente	San Diego River	1/1/1973	6/10/2008	35 years	32.55	-116.5558	663
Santee	San Diego River	1/1/1973	9/26/2008	36 years	32.502	-117.013	300

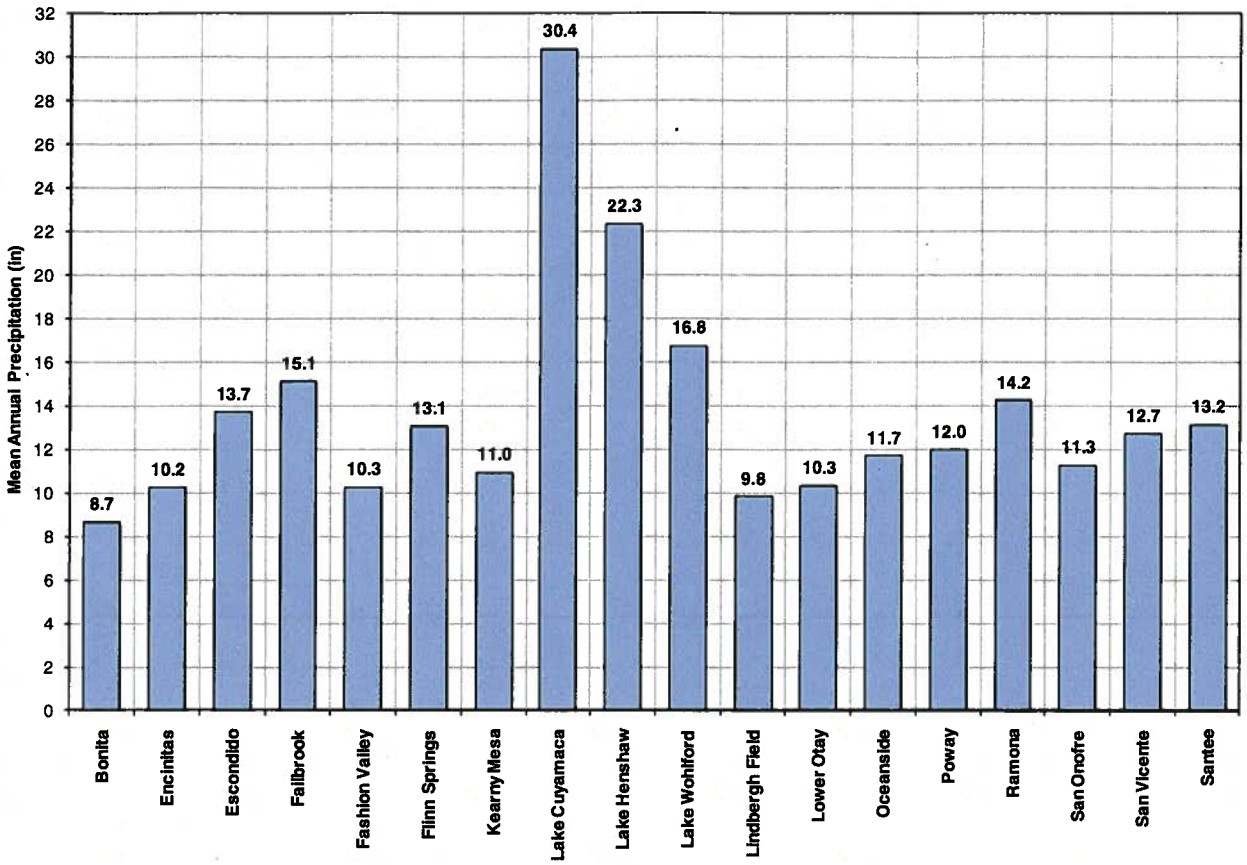

Figure 1. Rainfall Variation in San Diego County

2.1.2 San Diego Soils Map Evaluation

The HSPF model development was based on the commonly occurring and easy-to-identify soil hydrologic groupings used by the National Soils Conservation Service (NRCS). The NRCS uses four groupings called (in decreasing order of hydraulic conductivity) Group A, B, C and D. Group A soils are sandy and exceedingly well drained, while Group D soils are typically poorly drained clays. Group B and Group C soils exhibit hydraulic characteristics between those of Group A and Group D soils.

Figure 2 shows NRCS soil mapping for San Diego County. According NRCS data, about 43 percent of San Diego County is classified as NRCS Group D soils. Approximately one-quarter of the County consists of Group C soils and one-quarter Group B soils. The remaining 7 percent is classified as Group A soils. The well drained Group A and Group B soils occur more commonly in the eastern portions of the County that are not covered under this HMP. The central and western portions of the county consist mainly of the less hydraulically conductive Group C and Group D soils.

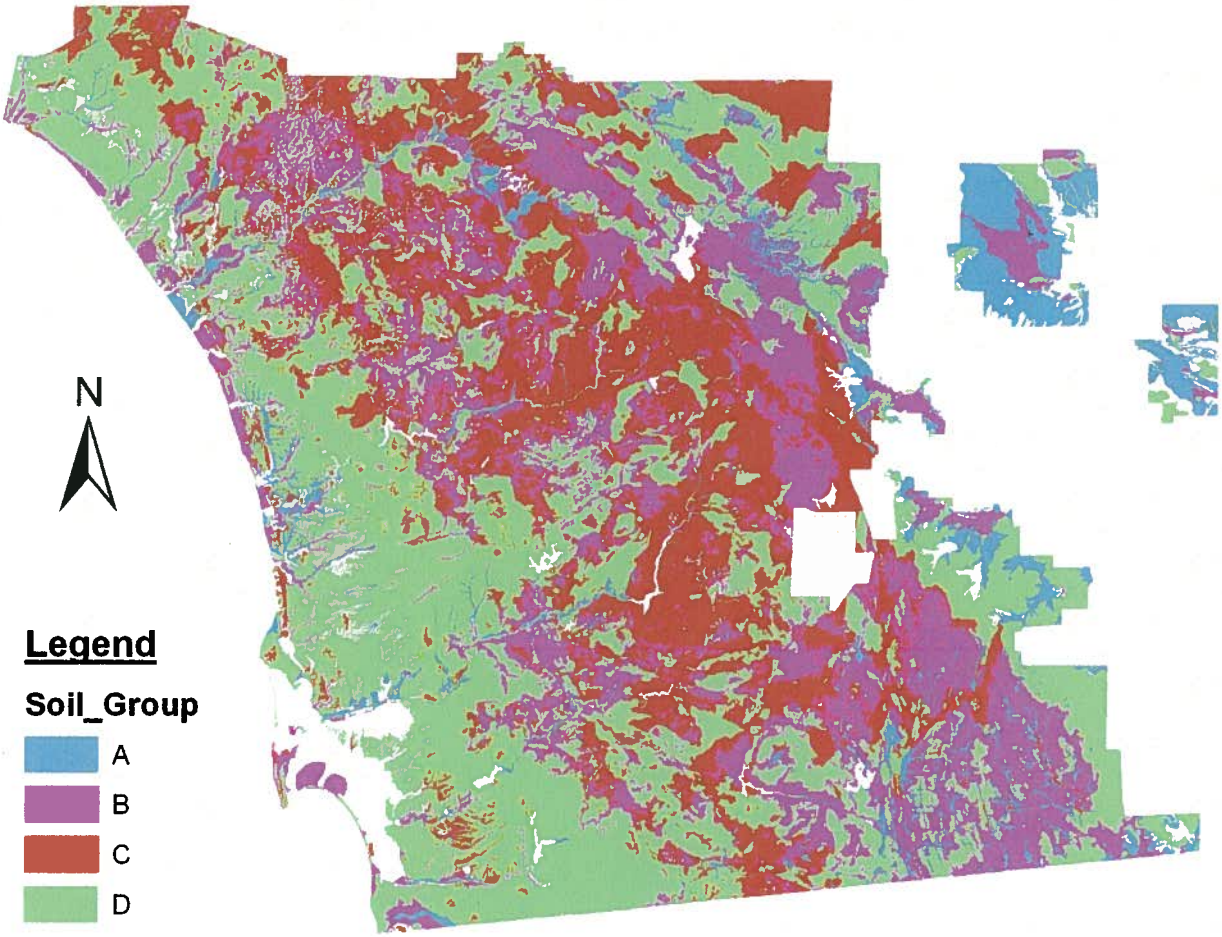

Figure 2. NRCS Soils Mapping of San Diego County

2.2 Scenarios Modeled

HSPF was used to characterize 12 different pre-project runoff scenarios corresponding to 4 soil types and 3 ranges of slopes. The range of land cover and vegetation types is not sufficiently variable among developable lands to require separate scenarios for different pre-project pervious land cover types. Table 2 below summarizes the scenario components. The specific HSPF pervious land surface parameters for these scenarios are described separately in the *San Diego HMP HSPF Model Parameter Selections* technical memo.

Table 2. HSPF Scenarios for Characterizing Pre-Project Conditions

Scenario No.	NRCS Soil Group	Land Cover	Slope
1	A	Scrub, Shrub	Low (<5%)
2	A	Scrub, Shrub	Moderate (10%)
3	A	Scrub, Shrub	Steep (>15%)
4	B	Scrub, Shrub	Low (<5%)
5	B	Scrub, Shrub	Moderate (10%)
6	B	Scrub, Shrub	Steep (>15%)

Table 2. HSPF Scenarios for Characterizing Pre-Project Conditions			
Scenario No.	**NRCS Soil Group**	**Land Cover**	**Slope**
7	C	Scrub, Shrub	Low (<5%)
8	C	Scrub, Shrub	Moderate (10%)
9	C	Scrub, Shrub	Steep (>15%)
10	D	Scrub, Shrub	Low (<5%)
11	D	Scrub, Shrub	Moderate (10%)
12	D	Scrub, Shrub	Steep (>15%)

3. Hydrologic Modeling Approach to Sizing BMPs

This section describes the technical approach used to represent BMPs in the HSPF model. The discussion focuses on the key physical aspects of BMP performance (i.e., how a BMP routes water through its different layers) and how these physical processes are represented in HSPF. This section also describes key hydraulic and modeling assumptions and how these assumptions impact both the modeling process and the accuracy of the results across the full range of flow conditions.

3.1 General BMP Characteristics

The flow control BMP designs selected by San Diego County and its Copermittees all include some combination of detention storage and water quality treatment media. For example, the bioretention BMP includes (in order of vertical routing) a surface ponding layer, a growing medium layer, and a storage layer. Each layer has its configuration, porosity, volume, and hydraulic conditions that influence the rate of flow to the next layer (see Figure 3).

HSPF uses stage-storage-discharge tables to represent the hydraulic behavior of devices that detain and discharge water (e.g., all of the LID BMPs included in the HMP). The *stage* represents depth of water in the facility, the *storage* represents the volume of water stored in the facility for that stage, and the *discharge* is the calculated outflow for that stage. Outflow may be via an orifice, infiltration, evaporation, or any other mechanism for which a relationship to stage or storage can be defined.

The following general hydraulic assumptions were applied to all of the BMPs modeled:

- Inflow is uniformly distributed over the area of the BMP (i.e. level-pool ponding).
- Infiltration and soil water movement is a 1-dimensional flux in the vertical direction (neglecting lateral flows is a conservative assumption).
- Soil moisture within a homogeneous growing medium layer is assumed to be evenly distributed throughout the growing medium layer both vertically and horizontally. This assumes an engineered BMP would be free of macropores.
- Percolation from the growing medium layer to the storage layer is computed based on unsaturated or saturated hydraulic equations, based on the amount of moisture contained in the growing medium during each model time step.
- Water flows out the bottom of the BMP into the surrounding soil at the rate of saturated hydraulic conductivity.
- The sandy loam soil used for the growing medium has an effective porosity of 0.412, based on Table 5.3.2 in the *Handbook of Hydrology* (Maidment, 1994). A sensitivity analyses conducted to determine the

effect of porosity on BMP performance determined that porosity has little influence on the required sizing factor.

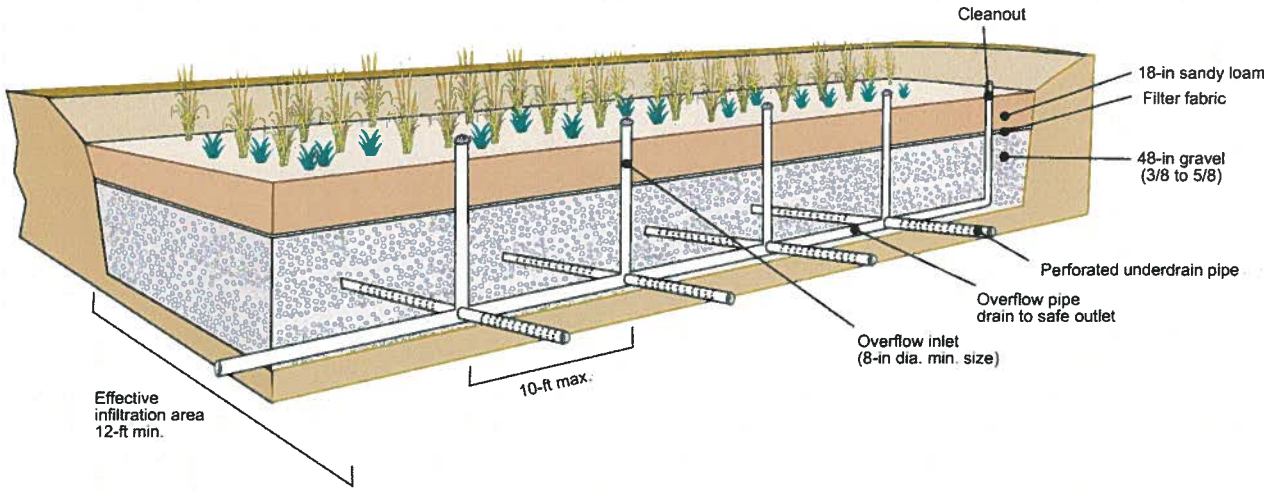

Figure 3. Cross-Section View of Bioretention BMP, Group C/D Soil Configuration

3.1.1 Bioretention BMP HSPF Representation

The bioretention BMP is modeled using two FTABLEs. The first FTABLE represents the surface ponding layer, growing medium layer, and overflow outlet. The second FTABLE represents the storage layer, exfiltration to surrounding soils, and underdrain outflow, if applicable. Percolation from the growing medium to the storage layer is modeled as an outflow from the first FTABLE and inflow to the second FTABLE.

FTABLE 1: Upper Growing medium layer, Ponding Storage and Overflow Outlet

Stormwater routed from impervious surfaces first enters the upper layer of an In-Ground Planter, represented by FTABLE 1 (Figure 4). The HSPF model assumes that all inflow will infiltrate if the layer is not saturated. This is a reasonable assumption based on the anticipated range of inflows (see Appendix A for a complete discussion of soils physics). The growing medium layer is represented by depths from 0 to 1.5 feet. The volume of storage at 1.5 ft is equal to the storage within the growing medium layer at saturation. Above this depth water is stored in the ponding reservoir.

Water contained in the upper growing medium layer is stored as soil moisture. Although there are depths indicated in the first column of the FTABLE, the soil water is considered to be evenly distributed throughout the growing medium layer (e.g. a soil depth of 0.5 feet in FTABLE 1 corresponds to one-third saturated, not water filling the bottom 0.5 feet of the upper growing medium layer). Above 1.5 ft, water ponds on the planter surface, and the FTABLE 1 depth column corresponds to the actual water surface.

The fourth column in FTABLE 1 lists the rate of soil water percolation out the bottom of the upper growing medium layer and into the lower gravel layer. This column is calculated using Darcy's Law and the van Genuchten relations (see Appendix A). Percolation does not occur unless the soil water content exceeds the holding capacity of the soil (i.e. the gravitational head is greater than the suction or *matric head* within the soil pores). The percolation rate calculations assume a free surface at the interface with the lower layer. However, the percolation rate is limited if the lower layer reaches capacity and becomes saturated. In this case the percolation rate through the upper layer is limited to the percolation rate though the lower layer,

which in itself is limited by the total outflow from the lower layer through the underdrain orifice and percolation to the surrounding soil. Thus, the percolation rate through the upper layer is limited to underdrain outflow rate plus a small amount of percolation to the surrounding soil when the planter reaches capacity.

The fifth column in the FTABLE is the outflow through the overflow pipe, which is calculated using a weir equation (see Appendix A). Outflow through the overflow pipe does not occur until the depth of storage in the ponding reservoir is above the pipe inlet.

```
 FTABLE      1
rows cols                                          ***
  31    5
    Depth      Area     Volume     Q Perc     Q Over  ***
     (ft)    (acres)  (acre-ft)     (cfs)      (cfs)  ***
     0.00      0.03     0.0000     0.0000      0.000
     0.10      0.03     0.0012     0.0000      0.000
     0.20      0.03     0.0024     0.0000      0.000

     1.40      0.03     0.0168     0.0132      0.000
     1.50      0.03     0.0180     0.0707      0.000
     1.60      0.03     0.0210     0.0760      0.000

     2.40      0.03     0.0495     0.1957      0.100
     2.50      0.03     0.0525     0.1957      0.312
END FTABLE1
```

Figure 4. Example FTABLE Describing Upper Layer of In-Ground Planter

FTABLE 2: Lower Gravel Layer, Percolation to Surrounding Soils, Underdrain Outlet

The second FTABLE represents the lower gravel layer and the underdrain. Percolation outflow from the first FTABLE is routed as inflow to the second FTABLE (Figure 5). This FTABLE represents the lower gravel layer, which has a depth of 1.5 ft. Water is stored as volumetric water content with a maximum storage limited to saturation of the gravel medium. The percolation rate out the bottom of the lower layer is limited by the hydraulic conductivity of the surrounding soil, which is a conservative assumption (percolation will actually be faster when native soils are unsaturated).

When an underdrain is included in the configuration, the 'Q Outlet' column is included in the FTABLE for the outflow rate. This rate is calculated using the orifice equation (see Appendix A) so that the underdrain flow will match lower flow control rate when the lower gravel layer is fully saturated.

```
 FTABLE       2
rows cols                                                    ***
  16    5
    Depth       Area     Volume     Q Perc   Q Outlet        ***
     (ft)     (acres)  (acre-ft)     (cfs)      (cfs)        ***
     0.00       0.03     0.0000     0.0000      0.000
     0.10       0.03     0.0012     0.0001      0.000
     0.20       0.03     0.0025     0.0007      0.001
     0.30       0.03     0.0037     0.0007      0.005
     0.40       0.03     0.0050     0.0007      0.018
     0.50       0.03     0.0062     0.0007      0.047
     0.60       0.03     0.0075     0.0007      0.104
     0.70       0.03     0.0087     0.0007      0.133
     0.80       0.03     0.0100     0.0007      0.142
     0.90       0.03     0.0112     0.0007      0.151
     1.00       0.03     0.0125     0.0007      0.159
     1.10       0.03     0.0137     0.0007      0.167
     1.20       0.03     0.0149     0.0007      0.174
     1.30       0.03     0.0162     0.0007      0.181
     1.40       0.03     0.0174     0.0007      0.190
     1.50       0.03     0.0187     0.0007      0.195
END FTABLE2
```

Figure 5. Example FTABLE Describing Lower Gravel Layer of In-Ground Planter

3.1.2 Iterative BMP Sizing Steps

Once the geometric characteristics of the BMP were represented in FTABLEs, as described above, the sizing factors were computed using an iterative process involving multiple HSPF simulations and statistical analyses. The process involved varying the surface area until peak flow and flow duration control were achieved.

The ability of the BMP to achieve peak flow and flow duration control was evaluated by generating and comparing partial duration series statistics and flow duration statistics for (a) the pre-project runoff from a pervious land surface and (b) the post-project outflow from the BMP serving an equivalent area that has been converted to an impervious surface. A 24-hour inter-event period (as defined by 24 hours with BMP outflow less than 0.05 cfs/ac) was used to separate storm events in the partial duration series. The footprint of the BMP was included in the calculations to preserve equivalence between the pre-project and post-project analysis (i.e. Pre-project Area = Impervious Area + BMP Area). The HSPF model allowed rainfall directly on the BMP.

BMP surface area was increased incrementally with each iteration until flow and duration control were achieved. Flow and duration control were considered to be achieved when the mitigated post-project peak flows and flow durations were less than or equal to the pre-project flows, as defined by the performance criteria in the Final HMP.

4. Low-Impact Development (LID) BMP Descriptions

This section describes the LID BMPs that are included in the Countywide Model SUSMP, focusing on the elements that are explicitly represented within HSPF. The following LID BMPs will be evaluated for flow control and/or water quality treatment:

1. Bioretention
2. Cistern with bioretention
3. Bioretention with flow control vault
4. Flow-through planter
5. Dry well
6. Vegetated bioswale (for water quality treatment only)

Non-structural strategies for stormwater management, such as pervious pavement, self-retaining areas, and self-treating areas will be described in separate memoranda.

4.1 Bioretention

The bioretention facility consists of a surface ponding layer, a growing medium layer, and a below ground storage layer (Figure 6). The bioretention BMP captures water in the ponding layer, filters it through a growing medium that consists of soil and plant roots, percolates water from the growing medium into a storage layer, and then slowly discharges treated stormwater via exfiltration to surrounding native soils and regulated discharge through an underdrain pipe to the local stormwater drainage system. For applications with well-draining native soils (e.g., NRCS hydrologic group A or B soils), an underdrain pipe would not be included.

For the HMP, we will simulate the bioretention BMP using separate a) ponding layer, b) growing medium, and c) storage layer components. We will assume the following depths for each layer:

- **Ponding layer:** 10-inches active storage, 2-inches of freeboard above overflow relief
- **Growing medium:** 18-inches of soil at 40 percent porosity
- **Storage layer:** 30-inches of gravel at 40 percent porosity

As described above in Section 3.1.2,the plan area of the BMP will be iteratively sized until the BMP controls limit outflows to levels that are less than or equal to pre-project conditions across flow rates ranging from the lower flow control limit ($0.1Q_2$, $0.3Q_2$ or $0.5Q_2$) to the upper flow control limit (Q_{10}). The sizes of the ponding layer and storage layer will be converted into volumes, so that the project designer can flexibly configure the ponding layer and storage layer to meet site constraints. For example, the design engineer could configure the ponding layer with half the depth but twice the plan area called for by the sizing factor if this fits the project site. Additionally, the designer could use commercially-available storage vessels to meet the volume requirements instead of using gravel.

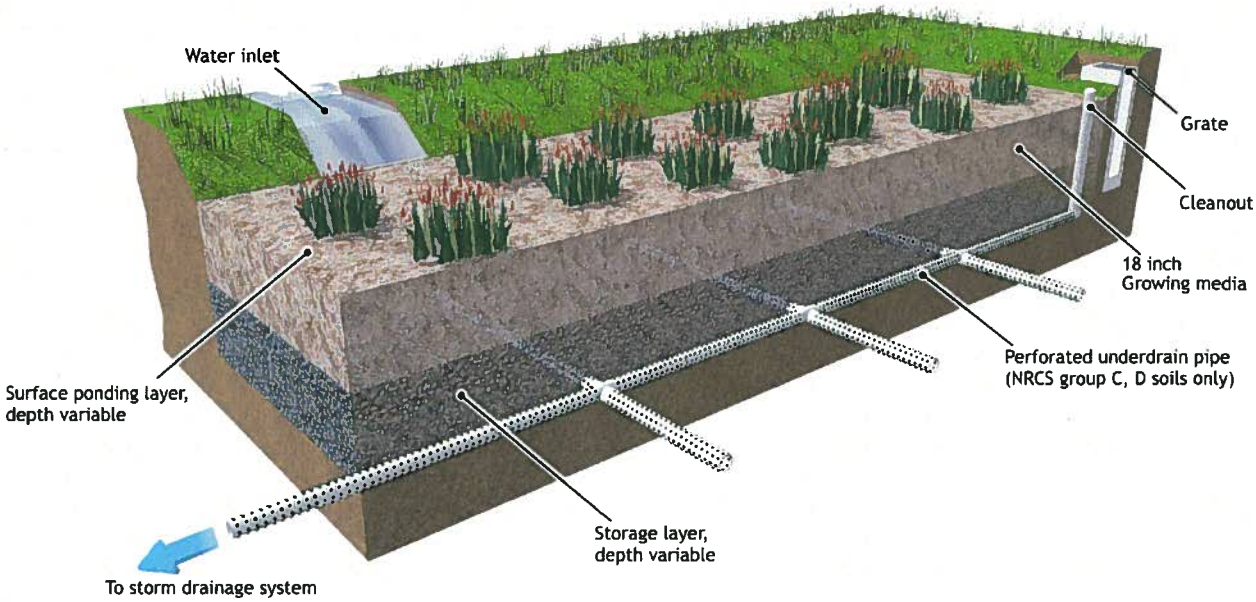

Figure 6. Bioretention BMP Example Illustration

4.2 Cistern with Bioretention

The cistern with bioretention BMP is a flow-control and treatment train BMP. There is no water quality treatment-only option. The cistern component captures and detains site runoff, and then slowly releases the water to a nearby bioretention device that provides water quality treatment by filtering the stormwater through its soil matrix.

The cistern will contain two outlets. A lower orifice will be located at the bottom of the cistern and will be designed to release water at the lower flow control limit ($0.1Q_2$, $0.3Q_2$ or $0.5Q_2$) where it will be routed through the bioretention device. Because the cistern accomplishes the flow control requirement, the bioretention only provides water quality treatment and an underdrain is permissible for all soil groups. However, due to the high infiltration capacity of NRCS hydrologic group A soils, the underdrain should only be used in Group B, C, and D soils. For Group A soils, the bioretention element is not necessary and cistern discharges should be routed into native soils for infiltration and treatment. A small depression should be included in the landscaping to provide sufficient time for infiltration to occur.

For the HMP, we will simulate the performance of the cistern with bioretention BMP using the following key assumptions:

- **Cistern configuration:** The cistern is modeled as a 4-foot tall vessel. However, designers could use other configurations, so long as the lower outlet orifice is sized to properly restrict outflows.
- **Cistern upper outlet:** The upper outlet from the cistern would consist of a weir or other flow control structure set at an elevation of 7/8th of the way to the top of the cistern (see Figure 7). The overflow weir would be sized to pass approximately 1 cfs per acre of tributary impervious area.
- **Bioretention configuration:** The bioretention needs only a small depression/ponding area to settle inflows prior to infiltration. For water quality treatment, the bioretention should be 1.5 feet deep and

contain the soil mixture specified in the *Countywide Model SUSMP* that allows a continuous infiltration rate of 5 inches per hour. The bioretention basin should be sized to pass the cistern outlet flows.

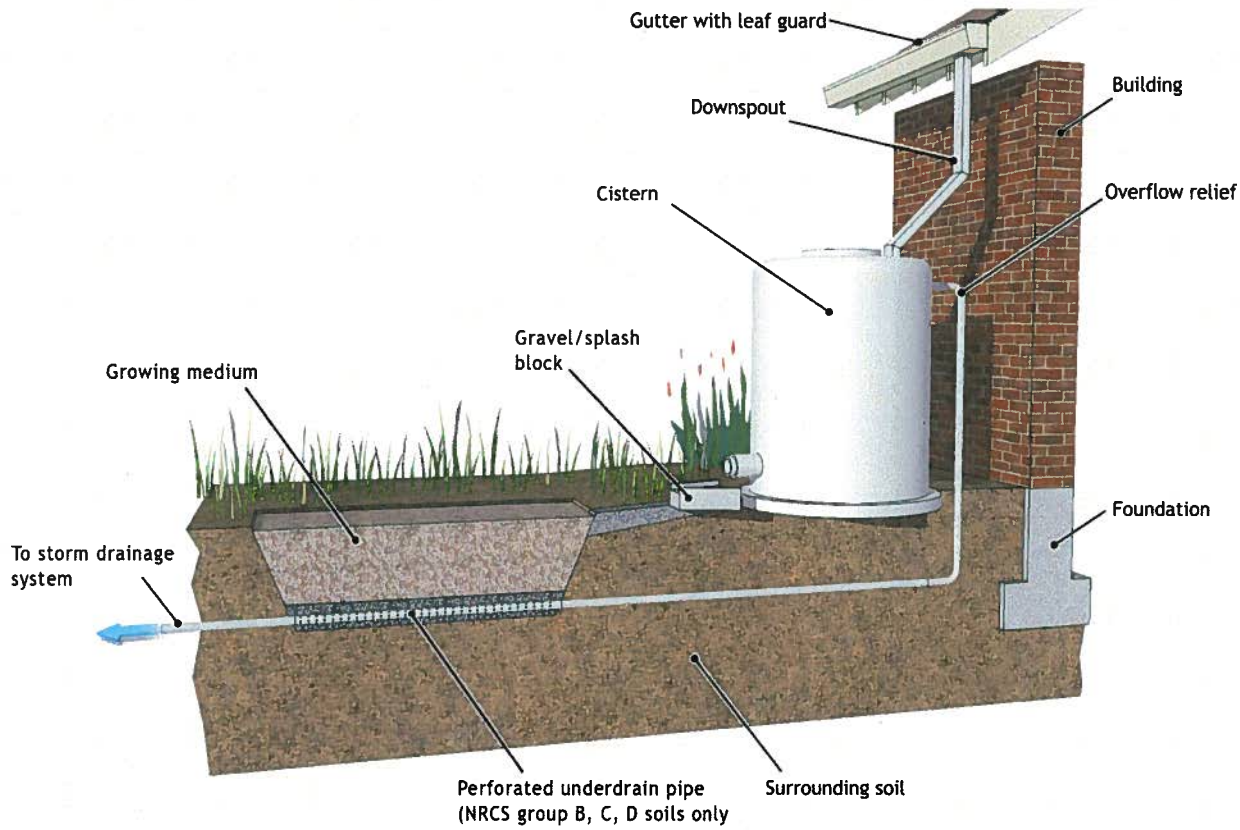

Figure 7. Cistern with Bioretention BMP Example Illustration

4.3 Bioretention with Vault

This BMP configuration would route stormwater through a bioretention basin for water quality treatment, and then discharge water to a nearby vault for detention and release (Figure 8). The vault would contain a lower orifice to restrict outflows to meet the HMP's flow control requirements. The vault portion of the BMP could be located below, adjacent or farther away from the bioretention portion of the BMP. This BMP is particularly effective in commercial applications where distributed water quality treatment outflows could be collected into a single vault for flow control underneath a parking lot. There is not water quality treatment-only option.

For the HMP, we will simulate the performance of the bioretention with vault BMP using the following key assumptions:

- **Bioretention configuration:** The bioretention portion of this BMP would be designed similarly to the bioretention BMP, except that the storage layer would be only deep enough to contain a perforated underdrain pipe that would convey treated runoff to the vault portion of the BMP.
- **Vault configuration:** The vault would contain concrete side wall and top, as well as an access hatch for inspection and maintenance. The bottom of the vault would be open to allow infiltration to the

surrounding soils. The vault was simulated as a 4-foot deep chamber, but the designer could select other configurations that were similar or lesser depths.

- **Vault outlets:** The vault would contain two outlets. The lower outlet would be a flow control orifice that would release water at a maximum rate equal to the lower flow control limit ($0.1Q_2$, $0.3Q_2$, $0.5Q_2$). The upper outlet from the vault would be located at 80 percent of the vault's height and would have a capacity of approximately 1 cfs per acre of tributary impervious area. The overflow relief should be located no lower than the elevation of the vault's inlet pipe.

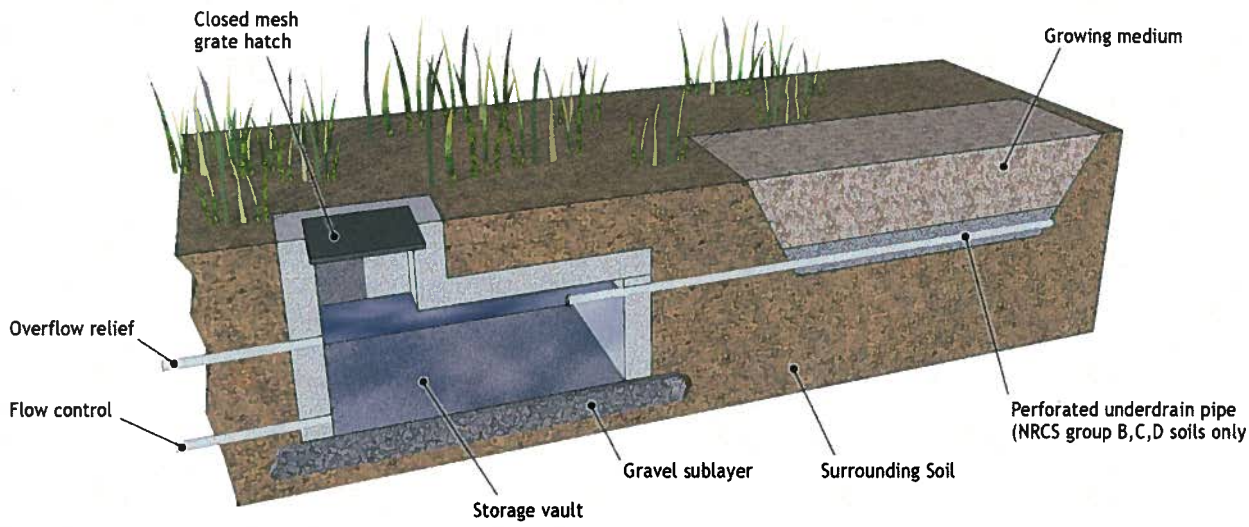

Figure 8. Bioretention with Vault BMP Example Illustration

4.4 Flow Through Planter

Flow-through planters treat and detain runoff without allowing seepage into the underlying soil. Typical applications would be next to buildings or on steep slopes, where the infiltration associated with bioretention facilities could cause problems. Flow-through planters typically receive runoff via downspouts leading from the roofs of adjacent buildings. However, they can also be set in-ground and receive sheet flow from adjacent paved areas.

Pollutants are removed as runoff passes through the growing medium layer and is collected in an underlying storage layer (Figure 9). A perforated-pipe underdrain is typically connected to a storm drain or other discharge point. An overflow inlet conveys flows which exceed the capacity of the planter. The flow through planter BMP should only be used in Group C or D soil applications.

For the HMP, we will simulate the flow through planter BMP using separate a) ponding layers, b) growing medium, and c) storage layer components. We will assume the following depths for each layer:

- **Ponding layer:** 10-inches active storage, 2-inches of freeboard above overflow relief
- **Growing medium:** 18-inches of soil at 40 percent porosity
- **Storage layer:** 30-inches of gravel at 40 percent porosity

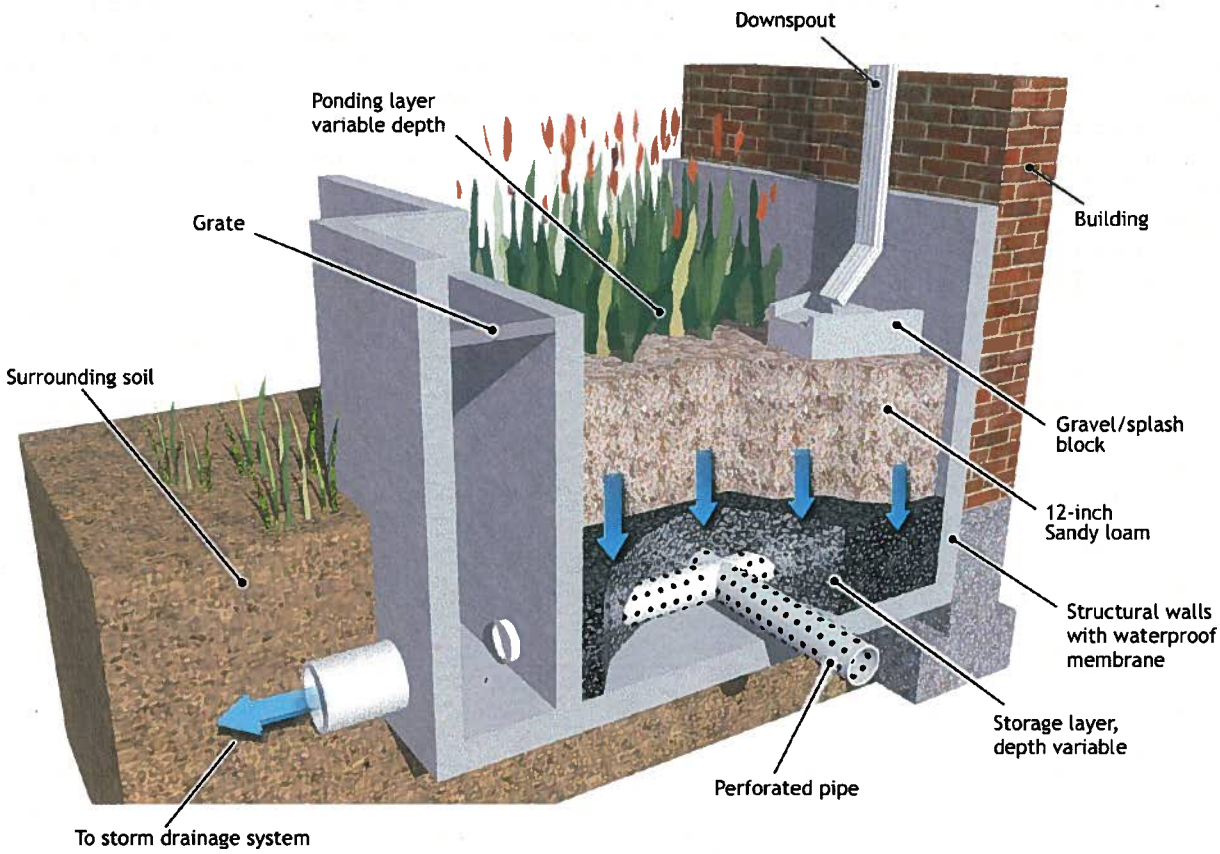

Figure 9. Flow Through BMP Example Illustration

4.5 Drywell

The drywell BMP is a below ground structure that can be used in areas with well-drained soils, such as NRCS Group A or B soils. The drywell consists of an initial soil layer to trap pollutants underlain with gravel, drain rock or some other free draining material (Figure 10). The dry well should have an access hatch to limit access.

For the HMP, we will simulate the drywell BMP using the following key assumptions:

- **Ponding layer:** a nominal 6-inch ponding layer should be included below the access hatch to allow for water spreading and infiltration during intense storms.
- **Soil layer:** 12 inches of soil should be included to remove pollutants
- **Free draining layer:** The drywell is sized assuming a 6-foot deep free draining layer. However, designers could use shallower drywells.

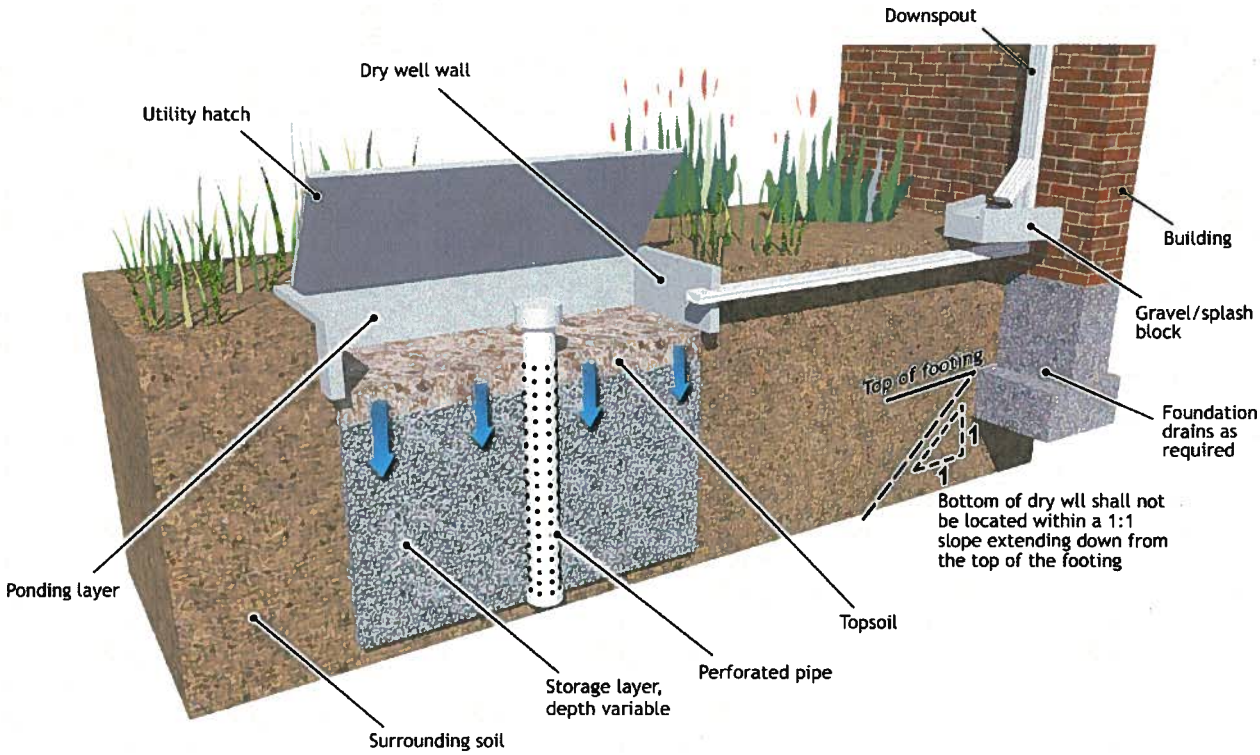

Figure 10. Dry Well BMP Example Illustration

4.6 Vegetated Bioswale

The vegetated bioswale BMP could be used to provide water quality treatment but not to provide stormwater flow control (Figure 11). The conventional swale design uses available on-site soils and does not include an underdrain system. Where soils are clayey, there is little infiltration. Treatment occurs as runoff flows through grass or other vegetation before exiting at the downstream end.

For the simulations, the vegetated bioswale will be sized to meet the minimum detention time specified in the Model SUSMP. If the bioswale is designed to pass stormwater through at a steady rate, its length will be computed based on flow velocities (i.e., slope and dimensions). If the vegetated bioswale is designed with a check dam structure to hold water, its size will be computed based on the volume provided by the swale.

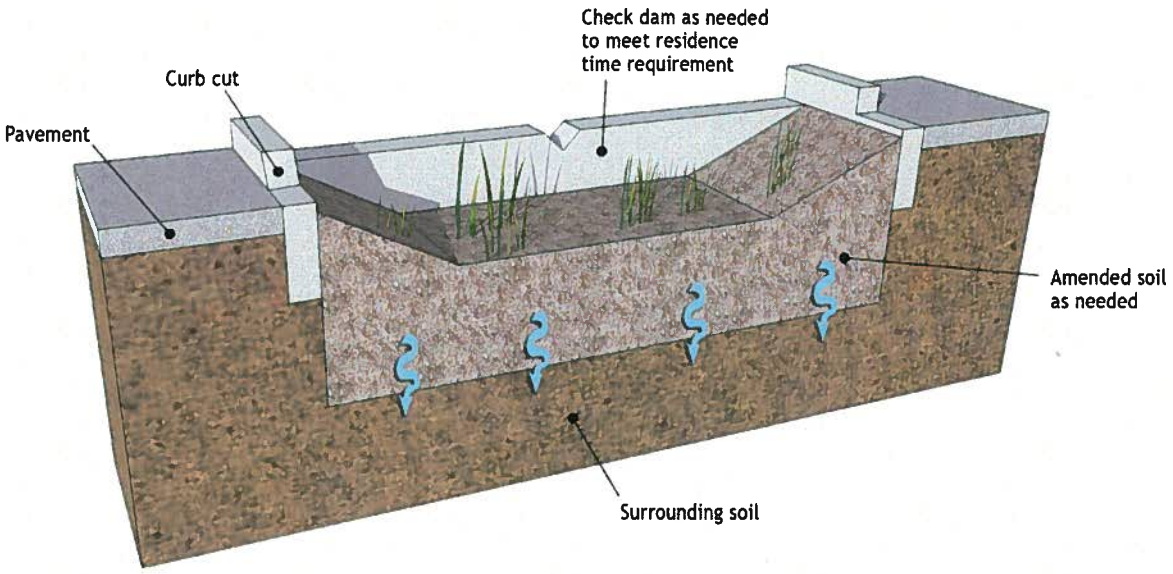

Figure 11. Vegetated Bioswale BMP Example Illustration

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Draft Technical Memorandum

Project Title: San Diego County Hydromodification Management Plan

Project No: 133904

San Diego County Hydromodification Management Plan (HMP)

Subject: Selection of PERLND Parameters for HSPF Modeling

Date: April 23, 2010

To: Sara Agahi, San Diego County

From: Tony Dubin, Brown and Caldwell
Eric Mosolgo, Brown and Caldwell

This memorandum presents the HSPF PERLND parameters recommended for the San Diego HMP's Best Management Practice (BMP) sizing analysis. These parameter values will be used in HSPF to simulate runoff rates and other hydrologic processes across a range of pervious surface conditions. The resulting long-term runoff time series (and key statistical series computed from these time series) will form the pre-project condition baseline that new and redevelopment projects must match by mitigating site runoff rates and durations through the use of BMPs.

This memo is organized as follows:

Section 1 defines a PERLND and describes how HSPF simulates water movement on and through pervious surfaces.

Section 2 describes the published studies using HSPF that were reviewed for this project.

Section 3 summarizes the available PERLND parameter sets that were reviewed.

Section 4 describes how Brown and Caldwell (BC) tested various parameter values to identify sensitive parameters and examined how the selection of specific parameter values would affect the runoff time series.

Section 5 presents conclusions and recommendations.

1. PERLND Description and Schematic

The PERLND block within the HSPF input file contains parameters that affect the vertical and lateral movement of water moisture through a pervious land segment. Figure 1 is a schematic view of the PERLND water budget terms and key HSPF parameters. The schematic illustrates the movement of water among interception storage, upper zone storage, lower zone storage, groundwater storage, and deep/inactive groundwater storage. The schematic also illustrates flux terms, such as overland flow and interflow.

The algorithms that control the movement among these storage layers are described thoroughly in the HSPF User's Manual, which is available from the US EPA as part of the BASINS documentation (http://www.epa.gov/waterscience/basins/bsnsdocs.html). The parameters listed in Figure 1 are described in greater detail in Section 1.1.

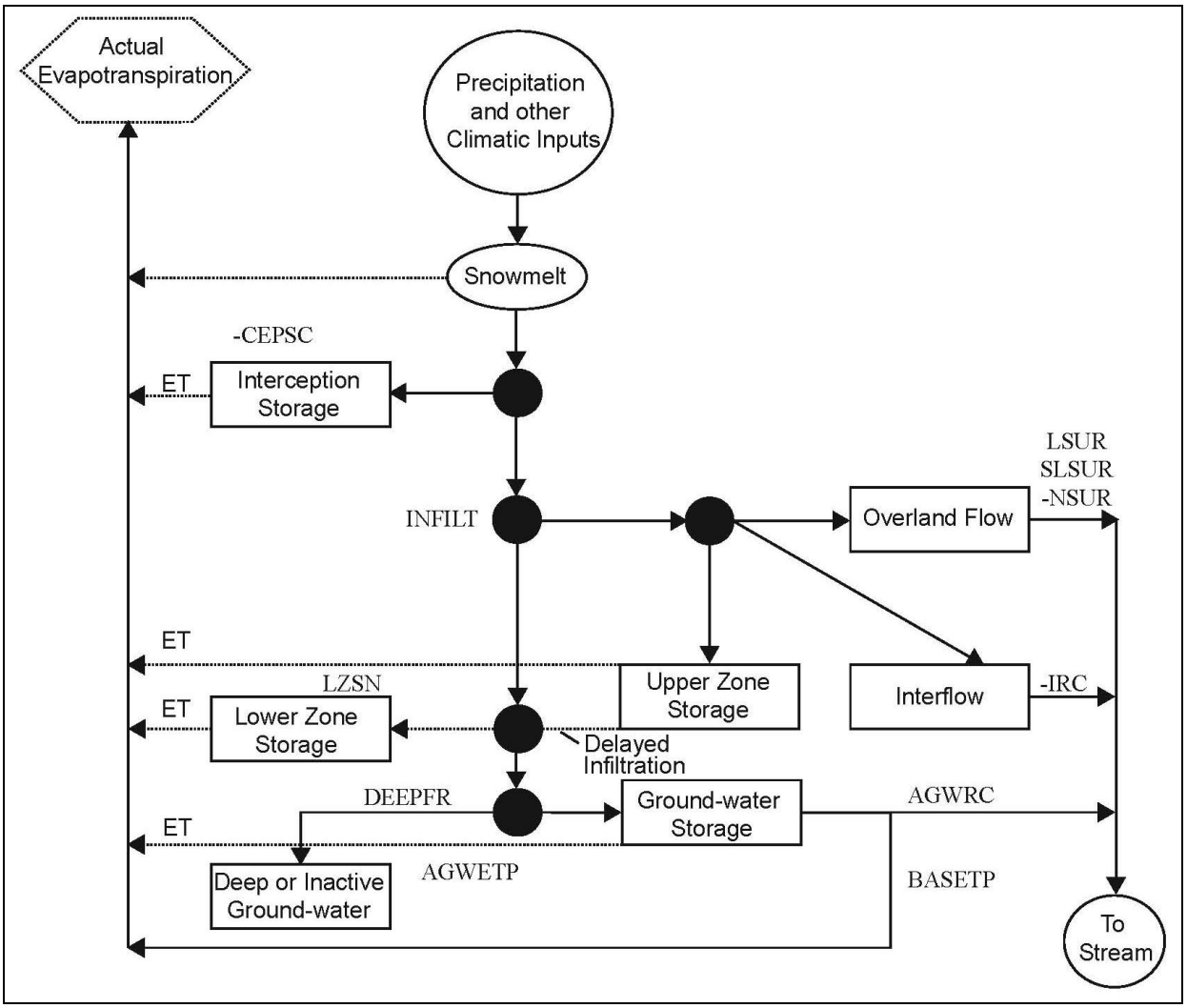

FIGURE 1

HSPF PERLND Water Moisture Schematic (Adapted from HSPF User's Manual)

1.1 PERLND Characteristics

The PERLND parameters shown in Figure 1 are located in the PWATER section of the PERLND block. PWATER, in turn, is divided into four sections, titled PWAT-PARM1, PWAT-PARM2, PWAT-PARM3, and PWAT-PARM4.

- PWAT-PARM1 is a series of flags that specify how various algorithms are to be used to compute hydrologic functions.
- PWAT-PARM2, PWAT-PARM3 and PWAT-PARM4 contain a series of climate, geology,

topography, and vegetation parameters and initial conditions.

Table 1 contains brief descriptions of the HSPF parameters used to characterize pervious land surfaces, along with commonly used ranges of values for these parameters. The parameters that often affect stormwater runoff most (INFILT, LZSN, LZETP) are highlighted in the table below. These highlighted parameters were the focus of our investigation of the range and variation among local HSPF studies and our testing of prospective parameters. The descriptions and parameter ranges in the table were adapted from *EPA BASINS Technical Note 6 – Estimating Hydrologic and Hydraulic Parameters for HSPF (Technical Note 6)*, which is available from the EPA web site, http://www.epa.gov/waterscience/basins/bsnsdocs.html.

TABLE 1
List of PERLND PWATER Parameters, Definitions and Common Range of Values[A]

PWAT-PARM1 – Flags			
Parameter	*Units*	*Description*	*Range of Values*
CSNOFG	None	Flag to use snow simulation data; must be set to if the SNOW simulation algorithms are to be used.	0 or 1
RTOPFG	None	Flag to select overland flow routing method. Set TOPFG=1; This method has been subjected to more widespread application.	1
UZFG	None	Flag to select upper zone inflow computation method Set UZFG=1; This method has been subjected to more widespread application.	1
VCSFG	None	Flag to select constant or monthly-variable interception storage capacity, CEPSC. Monthly value can be varied to represent seasonal changes in foliage cover	0 or 1
VUZFG	None	Flag to select constant or monthly-variable upper zone nominal soil moisture storage, UZSN.	0 or 1
VMNFG	None	Flag to select constant or monthly-variable Manning=s n for overland flow plane, NSUR. .	0 or 1
VIFWFG	None	Flag to select constant or monthly-variable interflow inflow parameter, INTFW. Monthly values are not often used.	0 or 1
VIRCFG	None	Flag to select constant or monthly varied interflow recession parameter, IRC. Monthly values are not often used.	0 or 1
VLEFG	None	Flag to select constant or monthly varied lower zone evapotranspiration (ET) parameter, LZETP.	0 or 1
PWAT-PARM2			
Parameter	*Units*	*Description*	*Range of Values*
FOREST	None	Fraction of land covered by forest that will continue to transpire in winter (i.e. coniferous). This is only relevant if snow is being considered (i.e., CSNOFG=1 in PWATER-PARM1).	0 to 0.95
LZSN	**Inches**	**Lower zone nominal soil moisture storage. This parameter affects the proportion of water going to surface runoff, interflow and active groundwater**	**2 to 15**
INFILT	**in/hr**	**INFILT is the parameter that controls the overall division of the available moisture from precipitation (after interception) into surface runoff. This is NOT equivalent to a field-measured infiltration rate.**	**0.001 to 0.50**
LSUR	Feet	Length of assumed overland flow plane. LSUR approximates the average length of travel for water to reach any drainage path such as streams, swales, ditches, etc.	Estimate from mapping or GIS
SLSUR	ft/ft	Average slope of assumed overland flow path. Average SLSUR values for each land use being simulated can often be estimated directly with GIS capabilities.	Estimate from mapping or GIS
KVARY	1/inches	Groundwater recession flow parameter used to describe non-linear groundwater recession rate	0.0 to 5.0
AGWRC	None	Groundwater recession rate, or ratio of current groundwater discharge to that from 24 hours earlier	0.85 to 0.999
PWAT-PARM3			
Parameter	*Units*	*Description*	*Range of Values*

TABLE 1 List of PERLND PWATER Parameters, Definitions and Common Range of Values[A]			
PETMAX	Deg F	Temperature below which ET will be reduced to 50% of that in the input time series	32 to 48
PETMIN	Deg F	Temperature at and below which ET will be zero. PETMIN represents the temperature threshold where plant transpiration is effectively suspended	30 to 40
INFEXP	None	Exponent that determines how much a deviation from nominal lower zone storage affects the infiltration rate. This parameter is commonly set to a value of 2.	1 to 3
INFILD	None	Ratio of maximum and mean soil infiltration capacities. This parameter is commonly set to a value of 2.	1 to 3
DEEPFR	None	The fraction of infiltrating water that is lost to deep/inactive aquifers with the remaining fraction assigned to active groundwater storage that contributes base flow to the stream.	0.0 to 0.5
BASETP	None	ET by riparian vegetation as active groundwater enters streambed; specified as a fraction of potential ET, which is fulfilled only as outflow exists.	0.0 to 0.2
AGEWTP	None	Fraction of PERLND that is subject to direct evaporation from groundwater storage, e.g. wetlands or marsh areas.	0.0 to 0.2
PWAT-PARM4			
Parameter	*Units*	*Description*	*Range of Values*
CEPSC	inches	Amount of rainfall, in inches, which is retained by vegetation, never reaches the land surface, and is eventually evaporated.	0.01 to 0.40
UZSN	inches	Nominal upper zone soil moisture storage. UZSN is related to land surface characteristics, topography, and LZSN.	0.05 to 2.0
NSUR	None	Manning's friction coefficient, n, for overland flow plane.	0.02 to 0.50
INTFW	None	Coefficient that determines the amount of water that enters the ground from surface detention storage and becomes interflow	1.0 to 10.0
IRC	None	Interflow recession coefficient IRC is the ratio of the current daily interflow discharge to the interflow discharge on the previous day.	0.3 to 0.85
LZETP	**None**	**Index to lower zone evapotranspiration LZETP affects ET from the lower zone, which represents the primary soil moisture storage and root zone of the soil profile.**	**0.1 to 0.9**

A. The parameter descriptions and ranges were obtained from the EPA BASINS Technical Note 6.

2. Available Studies and HSPF Parameter Sources

Brown and Caldwell collected and examined published Southern California studies that used HSPF to perform hydrologic modeling. We previously summarized this effort in the technical memorandum entitled *Summary of HSPF Modeling Reports in Southern California*, dated May 2009. Whenever possible, we also collected the HSPF input files that were used in these studies. We examined studies of the following models and study areas:

- **Santa Monica Bay Watershed** - The Southern California Coastal Water Research Project (SCCWRP) and Tetra Tech created HSPF models to simulate hydrologic processes and pollutant loadings to Santa Monica Bay. The specific parameter values were selected by calibrating an HSPF model to flow monitoring data in the Santa Monica Bay watershed, specifically on Malibu Creek. The values represent a composite of the various upstream soils and land uses.

- **Calleguas Creek** - This project was a pilot study to evaluate the use of HSPF as a management tool for comprehensive watershed assessment within the climatic, physiographic, and topographic conditions of Ventura County. The Calleguas Creek model, developed by Aqua Terra Consultants, simulates watershed hydrology using a combination of six different land use categories, topographic data and soils data.

- **San Diego Hydrology Model (SDHM)** - The San Diego Hydrology Model (SDHM) uses a graphical user interface and pre-selected HSPF parameters to simulate stormwater runoff from development sites and size stormwater control facilities to mitigate the impacts of land use changes. SDHM includes HSPF parameters for common soil and land use combinations. The SDHM user's manual is available in the download section of Clear Creek Solutions' web site, http://www.clearcreeksolutions.com/SearchResults.asp?Cat=17.

We also examined other HSPF input sources for relevant information:

- **EPA BASINS Technical Note 6** - The EPA publication (July 2000) is a very useful guide that describes key HSPF parameters and suggests initial values. This technical note provides BASINS users with guidance in how to estimate the input parameters in the ATEMP, SNOW, PWATER, IWATER, HYDR, and ADCALC portions of the HSPF model.

- **Western Washington Hydrology Model (WWHM)** was developed by Clear Creek Solutions for the Washington Department of Ecology to size stormwater control facilities in western Washington. The model runs HSPF to generate over 40 years of hourly runoff data. The interface and range of input types are generally similar to the SDHM.

- **Calabazas Creek** - In 1997, Aqua Terra Consultants used HSPF to study multipurpose design of detention facilities in Calabazas Creek watershed for the Santa Clara Valley Water District.

3. Range of Available Southern California HSPF Parameters

Brown and Caldwell has compiled and assessed the similarities and variations among the PERLND parameters used for the Santa Monica Bay, Calleguas Creek and SDHM work efforts. For reference, BC also compiled the parameters contained in EPA BASINS Technical Note 6, WWHM version 3, and the Contra Costa HMP. Table 2 lists the minimum, maximum and average values of the PERLND PWATER parameters for each study.

It is difficult to make a direct comparison among the parameters used in previous studies, because these modeling efforts examined entire watersheds with varying levels of development, reservoirs and regulation, and water demands and usages. However, focusing on the general range of specific parameter can be informative. For example, the Santa Monica Bay and Calleguas Creek model files use generally similar values for the key parameters, such as INFILT and LZSN (lower zone storage nominal), while the Santa Monica study used a substantially higher value of LZETP (lower zone evapotranspiration potential). The SDHM, which specifies parameters for ranges of soils, land uses and slopes, has INFILT, LZSN and LZETP parameters that are in the same range as the Santa Monica Bay and Calleguas Creek models.

TABLE 2

Compilation of PERLND Parameters

		Southern California HSPF Research							General HSPF Research										Contra Costa HSPF Research						
		Santa Monica Bay	Calleguas			SDHM			Tech Note 6				WWHM v.3 (moderate slopes)						Calabazas Creek				Contra Costa HMP		
									Typical		Full Range		NRCS Group C			NRCS Group A/B			Developed		Open Space				
		Value	Min	Max	Avg	Min	Max	Avg	Min	Max	Min	Max	Forest	Grass	Pasture	Forest	Grass	Pasture	Min	Max	Min	Max	Min	Max	Avg
PWAT_PARM2	**Units**																								
FOREST	none	0	0	0	0	N/A	N/A	N/A	0	0.5	0	0.95	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0	0
LZSN	inches	9.8	3	12.5	8.7	3.5	5.2	4.5	3	8	2	15	5	5	5	4.5	4.5	4.5	7	7	7	7	7	7	7
INFILT	in/hr	0.04	0.02	0.2	0.11	0.02	0.10	0.05	0.01	0.25	0.001	0.5	2	1.5	0.8	0.08	0.06	0.03	0.03	0.03	0.03	0.03	0.3	0.03	0.1595
LSUR	feet	201	150	400	319	200.0	400.0	312.5	200	500	100	700	400	400	400	400	400	400	200	250	150	200	660	660	660
SLSUR	ft/ft	0.03	0.00	0.30	0.11	0.1	0.3	0.1	0.01	0.15	0.001	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0065	0.0533	0.068	0.28	0.1	0.1	0.1
KVARY	1/inches	3.0	0.5	1	0.61	0.8	3.0	1.5	0	3	0	5	0.3	0.3	0.3	0.5	0.5	0.5	0	0	0	0	0	0	0
AGWRC	none	0.92	0.80	1.00	0.91	1.0	1.0	1.0	0.92	0.99	0.85	0.999	0.996	0.996	0.996	0.996	0.996	0.996	0.8	0.95	0.8	0.95	0.95	0.95	0.95
PWAT_PARM3																									
PETMAX (F)	F	35	40	40	40	NA	NA	NA	35	45	32	48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40	40	40
PETMIN (F)	F	30	35	35	35.0	NA	NA	NA	30	35	30	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35	35	35
INFEXP	none	2	2	2	2	2.0	3.0	2.3	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2
INFILD	none	2	2	2	2	2.0	2.0	2.0	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2
DEEPFR	none	0.4	0	0.8	0.67	0.0	0.0	0.0	0	0.2	0	0.5	0	0	0	0	0	0	0.1	0.45	0.1	0.45	0.45	0.1	0.275
BASETP	none	0.05	0	0.26	0.05	0.0	0.0	0.0	0	0.05	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0
AGWETP	none	0.05	0	0	0	0.0	0.0	0.0	0	0.05	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0
PWAT_PARM4																									
CEPSC	inches	0.10	0.06	0.12	0.08	0.10	0.19	0.13	0.03	0.20	0.01	0.40	0.2	0.15	0.1	0.2	0.15	0.1	0.0	0.0	0.0	0.0	0.1	0.02	0.07
UZSN	inches	1.18	0.50	0.80	0.59	0.20	0.50	0.31	0.1	1	0.05	2	0.5	0.5	0.5	0.43	0.35	0.22	0.4	0.4	0.6	0.6	0.5	0.5	0.5
NSUR	none	0.20	0.15	0.25	0.18	0.20	0.35	0.27	0.15	0.35	0.02	0.5	0.35	0.3	0.25	0.35	0.3	0.25	0.1	0.2	0.4	0.4	0.3	0.3	0.3
INTFW	none	1.50	1.00	1.80	1.35	0.35	1.00	0.81	1	3	1	10	0	0	0	6	6	6	0.4	0.4	0.5	0.5	0.4	0.4	0.4
IRC	none	0.70	0.20	0.60	0.35	0.30	0.80	0.46	0.50	0.70	0.30	0.85	0.70	0.70	0.70	0.43	0.43	0.43	0.30	0.30	0.40	0.40	0.30	0.30	0.30
LZETP	none	0.70	0.40	0.50	0.43	0.20	0.69	0.51	0.20	0.70	0.10	0.90	0.70	0.40	0.25	0.70	0.40	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Evaluating HSPF Parameter Values

To determine the mix of pre-project conditions to include in the BMP Sizing Calculator, Brown and Caldwell examined the extent of variation among the PERLND parameters among the Santa Monica Bay, Calleguas Creek, and SDHM models.

Figures 2, 3 and 4 show the variation in the INFILT parameter used in the SDHM as function of slope and land cover. The INFILT parameter values clearly vary with slope. However, the INFILT parameter value is the same for the most common pre-project land cover types for new developments in San Diego County – shrub, grass, and dirt. The INFILT parameter value is higher for forest and lower for urban (i.e., compacted soils and irrigated landscapes), but these do not represent pre-project conditions that will be commonly managed by the BMP Sizing Calculator.

- Since the INFILT parameters are identical across the three most common pre-project land cover types, the modeling effort will focus on a single composite land cover type.
- The INFILT values vary significantly for different slopes. As such, parameter sets will be prepared for low, moderate, and steep slope classifications (5, 10 and 15 percent, respectively). In many cases, LID BMPs will not be feasible in areas with slopes that are steeper than this range. Further, because the pre-sizing analysis would potentially under-estimate pre-project runoff rates from very steep sites, any LID facilities designed in such areas using the BMP Sizing Calculator would be conservatively sized.
- An urban parameter set is not needed for the BMP Sizing Calculator. The *Countywide Model SUSMP* encourages developers to manage runoff from landscaped surfaces using grading and soil amendments that emphasize infiltration to reduce site runoff from landscaped areas without implementing LID BMPs. An urban parameter set can be developed for the automated pond sizing tool, because ponds are expected to capture flows from a combination of impervious and urban landscaped surfaces.

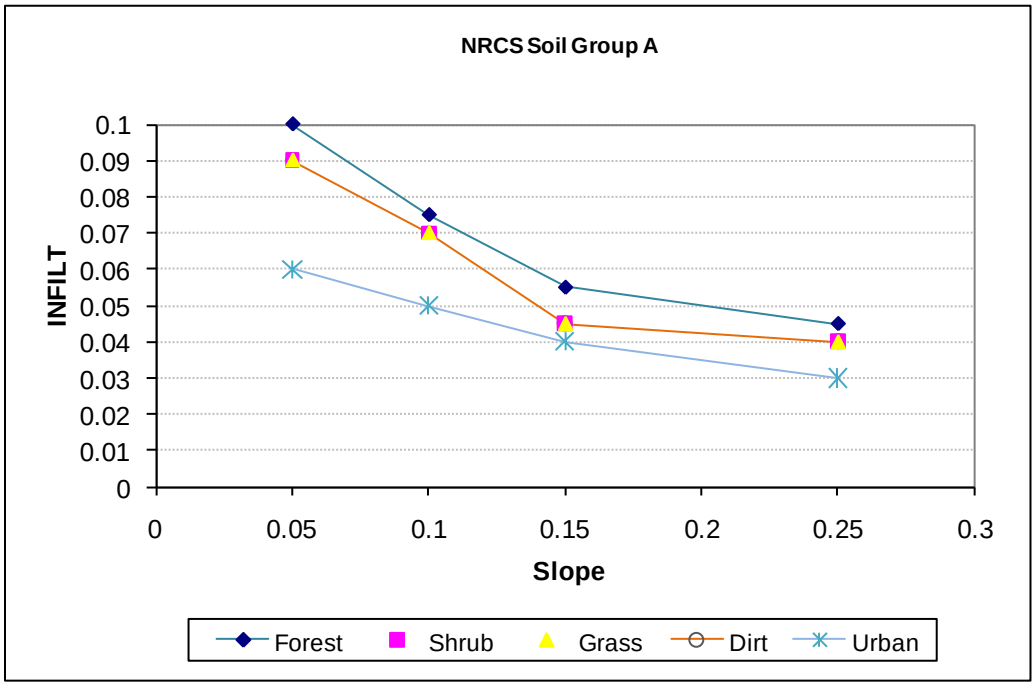

FIGURE 2
SDHM Variation in INFILT Parameter, NRCS Group A Soils

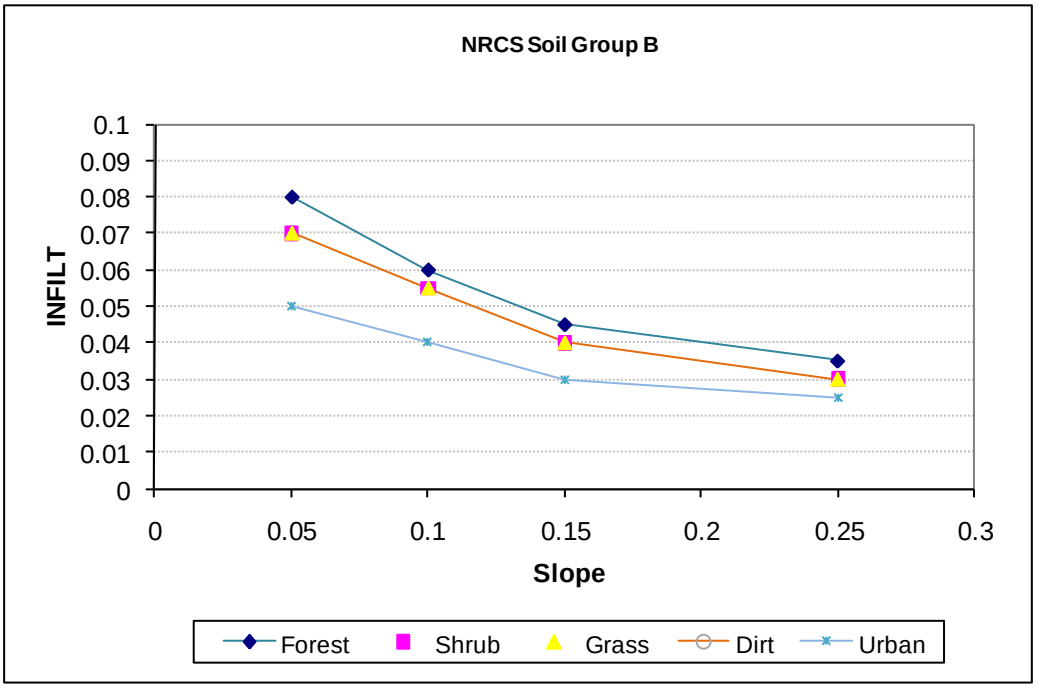

FIGURE 3

SDHM Variation in INFILT Parameter, NRCS Group B Soils

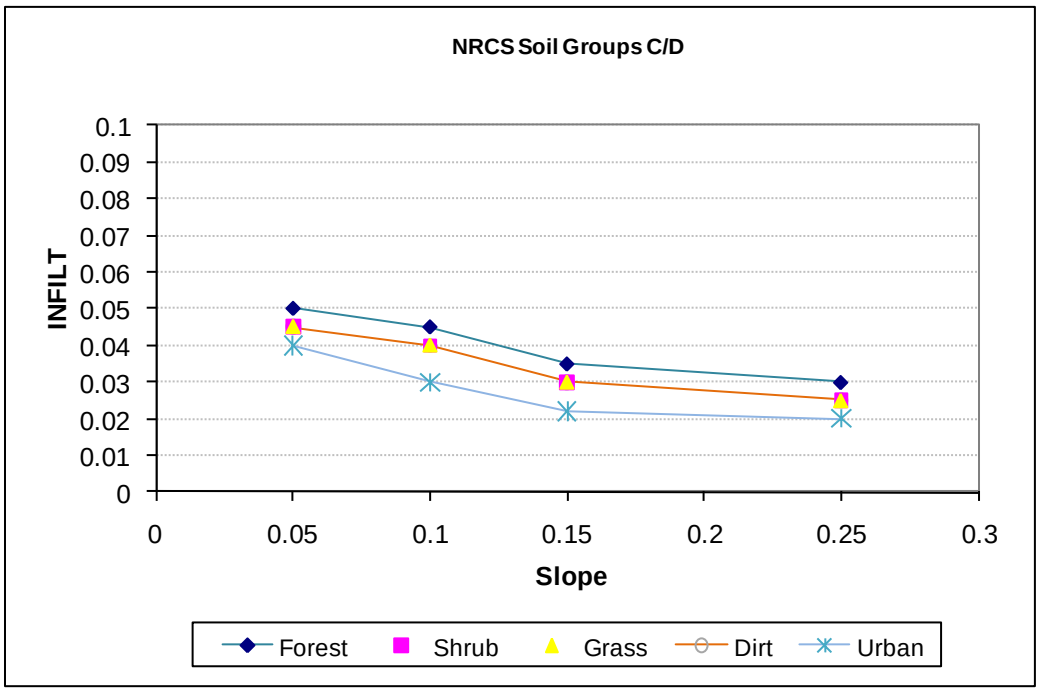

FIGURE 4

SDHM Variation in INFILT Parameter, NRCS Group C/D Soils

Figure 5, 6 and 7 show the SDHM model's assumed variations in the LZSN parameter as a function of slope and land cover type. Similar to the INFILT evaluation above, LZSN values are identical for the most common land cover types that will be incorporated in the BMP Sizing Calculator. These figures further reinforce the intention to focus on a single composite land cover type, while focusing on the differences in runoff generation potential associated with different soils and slopes.

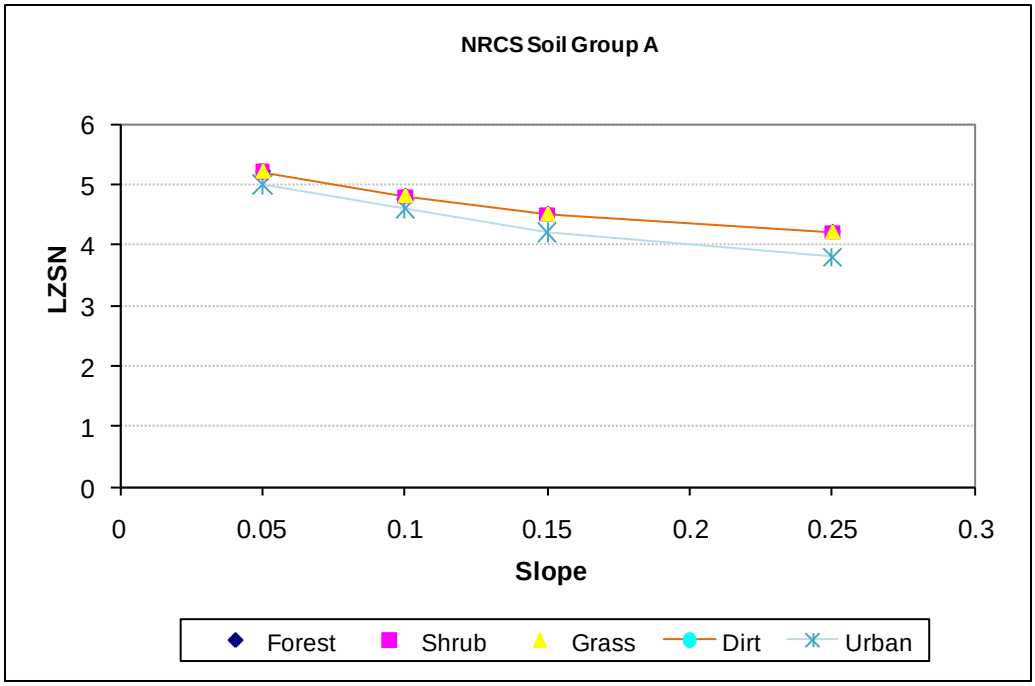

FIGURE 5

SDHM Variation in LZSN Parameter, NRCS Group A Soils

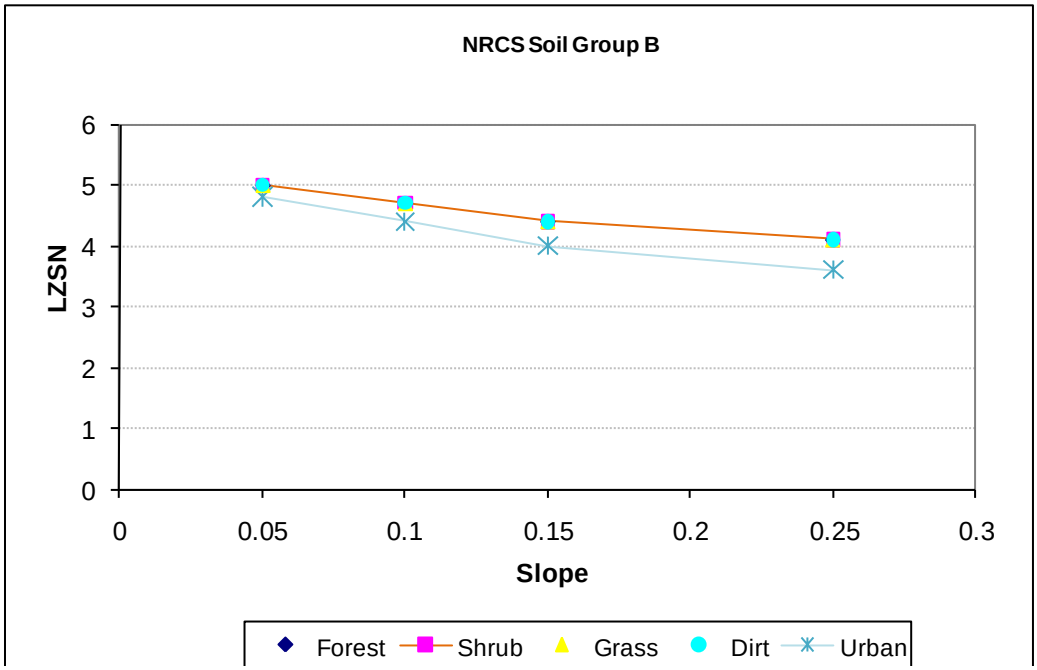

FIGURE 6

SDHM Variation in LZSN Parameter, NRCS Group B Soils

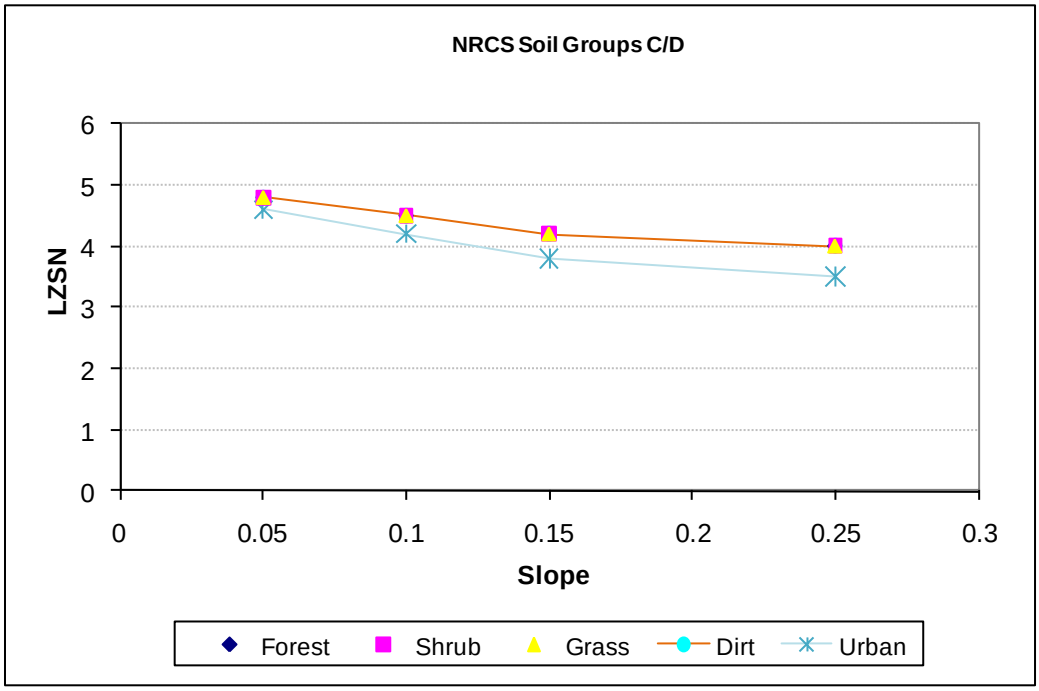

FIGURE 7

SDHM Variation in LZSN Parameter, NRCS Group C/D Soils

5. Recommended HSPF PERLND Parameters

The following recommended HSPF PERLND parameter values have been developed to use for LID pre-sizing factor analysis that will be included in the BMP Sizing Calculator. The 12 parameter sets cover the four NRCS soil groups and three separate slopes. The precise values were obtained by combining the Santa Monica Bay, Calleguas Creek, and SDHM parameter sets.

TABLE 3

Recommended HSPF PERLND Parameters for BMP Modeling

		Group A			Group B			Group C			Group D		
		5%	10%	15%	5%	10%	15%	5%	10%	15%	5%	10%	15%
PWAT_PARM2	**Units**												
FOREST	None	0	0	0	0	0	0	0	0	0	0	0	0
LZSN	inches	5.2	4.8	4.5	5.0	4.7	4.4	4.8	4.5	4.2	4.8	4.5	4.2
INFILT	in/hr	0.090	0.070	0.045	0.070	0.055	0.040	0.050	0.040	0.032	0.040	0.030	0.040
LSUR	Feet	200	200	200	200	200	200	200	200	200	200	200	200
SLSUR	ft/ft	0.05	0.1	0.15	0.05	0.1	0.15	0.05	0.1	0.15	0.05	0.1	0.15
KVARY	1/inches	3	3	3	3	3	3	3	3	3	3	3	3
AGWRC	None	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PWAT_PARM3													
PETMAX (F)	F	35	35	35	35	35	35	35	35	35	35	35	35
PETMIN (F)	F	30	30	30	30	30	30	30	30	30	30	30	30
INFEXP	None	2	2	2	2	2	2	2	2	2	2	2	2
INFILD	None	2	2	2	2	2	2	2	2	2	2	2	2
DEEPFR	None	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
BASETP	None	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
AGEWTP	None	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
PWAT_PARM4													
CEPSC	inches	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UZSN	inches	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
NSUR	None	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
INTFW	None	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
IRC	None	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
LZETP	None	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

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Project No: 133904

San Diego Hydromodification Management Plan

Subject: Responses to Comments on HMP Modeling Approach and BMP Configurations

Date: April 23, 2010

To: Sara Agahi, P.E. – County of San Diego

From: Eric Mosolgo, P.E. – Brown and Caldwell
Tony Dubin, P.E. – Brown and Caldwell

This draft technical memorandum summarizes the review comments received regarding the HMP Modeling Approach and BMP Configurations Draft Technical Memorandum (dated March 2, 2010) and Brown and Caldwell's (BC's) responses to these comments.

Review comments were received from the following groups:

- San Diego County Flood Control - Anthony Barry
- Clear Creek Solutions - Doug Beyerlein and Joe Brascher
- West Consultants - Marty Teal
- Hunsaker & Associates - Luis Parra

Table 1 below provides a summary of each comment, the corresponding page location from the originial Draft Technical Memorandum, and Brown and Caldwell's response.

Limitations:

This document was prepared solely for the County of San Diego in accordance with professional standards at the time the services were performed and in accordance with the contract between the County of San Diego and Brown and Caldwell. This document is governed by the specific scope of work authorized by the County of San Diego; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work.

No.	Reviewer	Page	Comment	Response
1	Anthony Barry, San Diego County	7	It is mentioned on page 7 that the vegetation types are not "sufficiently variable among developable lands to require separate scenarios". This statement should be further justified in a manner similar to the effects of porosity in the last bullet on page 8.	We made the decision to focus on one land cover type for the following reason: 1) We assume the vast majority of projects regulated by the HMP flow control standard will be in previously undeveloped areas with scrub vegetation. Conversely, many of the areas with "landscape/grass" as a pre-project land cover may not be covered by the flow control requirements, because these projects would be small or located in urban areas that qualify for some type of exemption. 2) We examined the range HSPF PERLND parameter values used in previous Southern CA studies and values included in the SDHM software – in particular the INFILT parameter. The parameter values were less variable for different land cover types than we expected, and this makes it likely that the variation in land cover type would have little impact on the computed LID BMP sizes. 3) The modeling "pre-sizing" analysis used to compute the sizing factors for the Sizing Calculator requires us to constrain or limit the variability of input parameters as much as possible. Because scrub/shrub vegetation will be encountered in most of the development projects, we think this is a good place to start with HSPF simulations and the Sizing Calculator. The County and its Copermittees could add more land cover types, BMPs or other features in V2.0 of the Sizing Calculator.

No.	Reviewer	Page	Comment	Response
2	Anthony Barry, San Diego County	11	Is the BMP area discussed in the second paragraph of Section 3.1.2 considered to be pervious area in the modeling? If so, and alterations to the standard (modeled) design are allowed (as suggested in the last paragraph on page 12), the depth of a BMP could be increased and the plan area decreased. This could allow an increase in the actual impervious area above what was considered in the modeling, without requiring the appropriate increase in required BMP volume. FOLLOW-UP COMMENT: After reviewing the response to my second comment (#2 on Page 3 of the response document) and looking back at the Modeling Approach, I discovered that the BMP area is modeled as being pervious as outlined in the 5th bullet on page 8 (of the document dated March 2, 2010), which states that there is flow out of the bottom of the basin (percolation) equal to the rate of hydraulic conductivity. It seems logical that significant reductions in the BMP area would also significantly reduce the area available for this outflow, and thereby increase the necessary volume. If this were not the case you would have to wonder if the percolation has any effect at all, and if it doesn't, why is it included in the modeling?	The BMPs are modeled using "FTABLEs" in HSPF, which detail stage-area-volume-discharge relationships. The model allows rainfall to occur directly on the BMP (as would happen in real life). The Sizing Calculator contains a "check" to ensure that the total contributing watershed area to the mitigation facility plus the mitigation facility area equates to the total project area. If a development engineer incorporates a narrow/deep ponding layer, the computed drainage management area (DMA) tributary to the BMP must accurately reflect the entire paved area draining to the BMP. We suggest allowing development engineers to vary the configuration of the surface ponding layer to better fit site constraints (e.g., wider/shallower to limit trip hazards; narrower/deeper to limit at-grade footprint). However, the sizing factor is based on the plan area of the growing medium underneath. For the Contra Costa HMP, we tested the sensitivity of BMP sizes to different ponding layer configurations and found that as long as the recommended volume is provided, wide/shallow, deep/narrow surface ponding layer configurations performed similarly enough not to impact BMP sizing factors. RESPONSE TO FOLLOW-UP COMMENT: As discussed by phone, all of the infiltration that occurs beneath the BMP is managed in the FTABLE (see Q Perc column in Figure 5), and not through the hydrologic elements of the HSPF model.
3	Anthony Barry, San Diego County	17	If vegetated bioswales are for water quality only, and do not provide flow control (as mentioned on page 17), why are they being included? Details on how to design a vegetated swale are covered in the CASQA BMP handbook.	This "treatment only" option has been proposed in response to a request from the Copermittees. The Sizing Calculator will allow users to size BMPs to meet either the "water quality treatment only" OR "flow control + treatment" requirement. The vegetated bioswale option will only be available as a selection in the Sizing Calculator if the user chooses "water quality treatment only" as the project design goal.

No.	Reviewer	Page	Comment	Response
4	Doug Beyerlein, Joe Brascher; Clear Creek Solutions	7	Only one land cover vegetation type is offered: scrub, shrub. Different vegetation types change the pre-development runoff. The user should be given more vegetation type options.	See response to comment #1.
5	Doug Beyerlein, Joe Brascher; Clear Creek Solutions	7	The sizing calculator assumes no increase in pervious runoff with development. Runoff from pervious surfaces can and does increase with development due to soil compaction from construction activities, the replacement of native vegetation with urban vegetation, and the addition of irrigation. These effects should be included in the sizing of BMP facilities.	The Countywide Model SUSMP adequately addresses this issue with its requirements for managing runoff from developed/pervious areas. For example, the SUSMP directs project proponents to control pervious runoff as much as possible using grading patterns, soil amendments, etc., so that these areas do not contribute runoff to paved areas and do not increase overall site runoff (relative to pre-project conditions). If a pervious area does drain to a paved area, and then into a BMP, this area must be accounted for within the Sizing Calculator to ensure the BMP is appropriately sized.
6	Doug Beyerlein, Joe Brascher; Clear Creek Solutions	N/A	The HSPF parameter values selected for the BMP sizing calculator are critical in the computation of the existing and development runoff and the sizing of BMP facilities. However, we have had no opportunity to review and comment on these parameter values.	We will issue a separate technical memorandum detailing the selection of HSPF model parameters.
7	Doug Beyerlein, Joe Brascher; Clear Creek Solutions	N/A	We have had no opportunity to review and comment on the HSPF FTABLEs used to represent different BMP facilities nor their associated HSPF UCI files. Nor have we had the opportunity to review and comment on the assumptions used in the construction of the HSPF FTABLEs and UCI files that produce the facility sizing results reported by the BMP sizing calculator.	The soil physics and key assumptions used to route water through the BMPs are described in Appendix A. This will be distributed to the TAC.
8	Marty Teal, West Consultants	2	Will it be obvious which of the various lower control threshold values someone is supposed to use/analyze?	Yes. The critical flow calculator allows a project proponent to determine which lower control threshold will apply to a specific project site. The critical flow calculator will be included in the overall BMP Sizing Calculator.
9	Marty Teal, West Consultants	2	Will the Sizing Calculator automatically determine/report whether a proposed BMP will meet the peak flow and flow duration performance requirement?	Yes. The Sizing Calculator will compute and report a BMP's minimize required size to meet the HMP stormwater control performance requirements.

No.	Reviewer	Page	Comment	Response
10	Marty Teal, West Consultants	8	Page 8 states, "Infiltration and soil water movement is a 1-dimensional flux in the vertical direction (neglecting lateral flows is a conservative assumption)." Why is neglecting lateral flows a conservative assumption?	If we assumed water would move laterally out of the BMP, the BMP would have a higher capacity to capture and mitigate stormwater flows.
11	Luis Parra, Hunsaker	7	The model does not include enough variability of vegetation cover to characterize the expected variation on infiltration. Among the most important vegetation type excluded, grass in fair to good condition comes to mind, as many of the developed areas will occur in this type of existing vegetation.	See response to comment #1.
12	Luis Parra, Hunsaker	9	Figure 3 is wrong and does not correspond with the one presented in page 78 of the Countywide Model SUSMP. The French drain should be placed on top, with only few inches on gravel above the top of the pipe, and the gravel below. This way, water retained below the French drain will be incorporated into the underground media.	Figure 3 was included simply to describe the function of LID BMPs. It could be replaced with Figure 6, which is consistent with the Countywide Model SUSMP.
13	Luis Parra, Hunsaker	9-11	As the hydraulic conductivity of the amended soil is the flow constraining factor (and less than the conductivity of the gravel) the only way that gravel on top makes sense is if an orifice constraining the flow in the French drain is used. This aspect, however, does not exclude the possibility of having some retention below the French drain. For instance, in a soil Type D with a hydraulic saturated conductivity of 0.1 in/hr, the equivalent of 7.2 in of ponding can be placed below the invert elevation of the French drain. With an assumed porosity of 0.4, this corresponds to an additional retention depth of 18" below the French drain. The model should allow retention as a function of the hydraulic conductivity of the bottom soil.	The gravel layer is proposed below the amended soil layer. We will follow up with reviewer to clarify this comment.

No.	Reviewer	Page	Comment	Response
14	Luis Parra, Hunsaker	N/A	Water table constraints should be included in the model. For example, it should be recommended that the water table must be at a given depth below the bottom of the gravel to be sure that the vertical assumption is valid.	The Countywide Model SUSMP describes specific site conditions that affect the feasibility of LID BMPs (e.g., steep slopes, high groundwater). Furthermore, the HMP Decision Matrix requires applicants to complete a geotechnical investigation which would identify such design constraints. A project applicant would first need to determine whether these constraints apply. If not, the project proponent could use the Sizing Calculator to plan BMPs. The Sizing Calculator will not apply in high groundwater conditions.
15	Luis Parra, Hunsaker	9	It is not clear to me if growing medium as a maximum limit of 1.5 ft. The user should be able to increase this depth. As a matter of fact, the Maryland Manual (the one that initiated the bio-retention revolution) suggests using at least 2 ft of amended soil. The user should have the option to increase this depth up to 3-4 ft.	A project proponent could specify a deeper growing medium. However, to pre-size BMPs for the Sizing Calculator we need to limit the number of potential BMP configurations. Other design scenarios can be modeled through the preparation of continuous simulation hydrologic models such as HSPF.
16	Luis Parra, Hunsaker	9	Van Genuchen relations are mentioned in page 9 but never shown.	The Van Genuchten relations are included in Appendix A. This document will be distributed to the reviewers and the TAC.
17	Luis Parra, Hunsaker	9-10	Neglecting lateral percolation and limiting infiltration to the saturated hydraulic conductivity of the existing soil is a reflection of simplicity and building upon conservative assumptions rather than a reality. Also neglecting the influence of the water pressure of the gravel in the infiltration occurring at the bottom soil is another conservative assumption not discussed. I would suggest to allow for adding an increase infiltration dimensionless factor if measurements demonstrate that the discharge is actually much less than what the model predicts.	The conservative assumptions detailed in the HMP Modeling Approach memo serve as a hedge against real-world installation problems, occasional BMP failures, etc., so that the integrated effectiveness of distributed BMP performance is consistent with the requirements of the NPDES permit. The accuracy of the sizing factors will be measured by the Copermittees' monitoring program, which will be conducted over the ensuing 5 years and beyond. If the monitoring results indicate deviations from the sizing factor predictions, then adjustments to the sizing factors will be proposed.

No.	Reviewer	Page	Comment	Response
18	Luis Parra, Hunsaker	12	The user should have flexibility to determine design parameters of the bio-retention: ponding depth (it can be more than 10 inches, no reason why this has to be the limit); growing medium (it can be more than 18" and as a matter of fact many references recommend at least 2 to 3 ft); storage layer: it can be more than 30" and it is associated with the possibility of the Bio-retention to be able to drain in 72 hrs. Also remember the possibility to add gravel below the invert of the French drain for retention purposes and groundwater recharge purposes.	Regarding ponding depth comment: The selection of a maximum ponding depth is a policy decision. Because bioretention is often installed in pedestrian-friendly areas, these systems often have limited ponding depth to eliminate trip hazards. Regarding growing medium and gravel comment: see response to comment #15.
19	Luis Parra, Hunsaker	12	Drawdown considerations for the bio-retention should be included to determine the maximum depth of the combination of ponding, amended soil, and gravel than can drain in 72 hrs.	Vector control is a major benefit of stormwater LID. Conventionally, drawdown considerations only apply to the surface ponding layer of bioretention devices and not the below ground layers. The surface ponding layer will fully drain within a few hours of the end of a storm event. The sizing calculator will include drawdown calculations.
20	Luis Parra, Hunsaker	12	It is not clear in page 12 if the other option of conversion is valid: the example describes a situation where the design engineer can convert the ponding layer with half the depth but twice the area, and actually design engineers are more interested in doing exactly the opposite: half the area and twice the depth. I am assuming that this is also a valid option.	The Countywide Model SUSMP specifies the allowable configurations for bioretention BMPs.
21	Luis Parra, Hunsaker	13	Comments 2 and 3 (#12 and #13 in this table) are also applicable to figure 6 of page 13.	The figures on pages 77 and 78 of the Countywide Model SUSMP should be modified to show the underdrain pipe at or near the bottom of the storage layer (i.e., the gravel layer).
22	Luis Parra, Hunsaker	N/A	There is no opportunity to make comments in hidden parameters or assumptions made by the program, but to trust blindly on the results. Unfortunately the engineer will become more of a technician running a black-box program than an engineer using criteria an experience to come up with a good design.	The Sizing Calculator is a simple-to-use tool that allows engineers to quickly size stormwater BMPs based on detailed "pre-sizing" modeling exercise (performed by Brown and Caldwell). Project proponents could perform their own hydrologic and hydraulic modeling analyses to size modified BMP designs, if desired.

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Draft Technical Memorandum

Project Title: San Diego County Hydromodification Management Plan

Project No: 133904

San Diego County Hydromodification Management Plan (HMP)

Subject: Description of Automated Pond Sizing Procedure

Date: May 6, 2010

To: Sara Agahi, San Diego County

From: Tony Dubin, Brown and Caldwell
Eric Mosolgo, Brown and Caldwell

This memorandum describes the automated pond sizing procedure that Brown and Caldwell (BC) is currently developing to support the implementation of the San Diego HMP. The purpose of the automated pond sizing procedure is to provide both project proponents and municipal review staff with a technically sound yet streamlined method for sizing stormwater ponds that meet the performance requirements of the HMP.

Pond Sizing Procedure

The automated pond sizing procedure will be built into the BMP Sizing Calculator software to allow project proponents to select detention ponds as the method of stormwater runoff control. The general process will work as follows:

1. The project proponent will enter information about the area tributary to the proposed detention pond for the pre-project and post-project conditions. The information will include drainage area, soil types, slopes, and land cover information (e.g., scrub land, landscaping, impervious).

2. The BMP Sizing Calculator software will construct pre-project and post-project (unmitigated) long-term runoff time series data that correspond to the site conditions (i.e., the information described in the item #1 above). The time series will be created through a pre-modeling exercise that involves running HSPF with real, historical rainfall data and developing long-term, unit area hydrographs for each combination of soils, slopes, and land covers.

3. The project proponent will next enter an initial configuration for the detention pond, including area, depth and side slopes. Alternatively, the user could supply a stage-storage-discharge table. The user will also enter preferences for how the automated pond sizing procedure should iteratively adjust the pond configuration if the initial configuration does not meet the HMP's performance requirement for flow duration and peak flow control. The user will not need to supply any information about the outlet control structure, because the automated pond sizing algorithm will use a pre-defined configuration that includes 2 flow control orifices and an overflow weir (sizes of the outflow facilities will be determined by the pond sizing algorithm).

4. The software will route the post-project unmitigated, long-term runoff time series through the detention pond. The reservoir routing routine will compute the following quantities for each hourly time step:
    - stormwater inflow
    - water depth
    - pond exfiltration
    - pond outflow through the outlet control structure

    The pond outflows will form the "post-project mitigated" time series that will be compared to the pre-project conditions.
5. The software will compare the pond outflow **flow durations** and **peak flows** with the pre-project flow durations and peak flows to determine if the pond configuration meets the performance requirements of the HMP.
6. If the current configuration does not meet the HMP performance requirements, the automated pond sizing procedure will apply the user's stated preference for modifying the pond configuration (see item #3 above) and perform the reservoir routing and statistical post-processing calculations again (and again) until the pond is properly sized and meets HMP requirements.

Time Series Data

As described above, the automated pond sizing procedure will prepare pre-project and post-project time series for the area tributary to the proposed pond, and then determine how large the pond must be to mitigate the impacts of development or redevelopment activities. The site-specific time series will be developed by adding together the component time series data that describe the different parts of the project area (e.g., 10-acres impervious *time series* + 5 acres Group D soils and scrub vegetation with moderate slopes *time series* + 12 acres Group D soils with urban/landscaped cover *time series*).

The component runoff time series will be developed by running HSPF simulations for each of the 12 scenario conditions described in the *HMP Modeling Approach and BMP Configurations* technical memo dated March 2, 2010 (see Section 2.2 of the technical memo). Runoff time series will also be developed corresponding to four (4) "urban" landscaped conditions describing landscaped areas with compacted soils that would be typical of urban and suburban-style development.

These landscaped cover types are necessary for the automated pond sizing procedure, because it is not feasible for site developments that include large ponds for stormwater control to segregate runoff from pervious and impervious surfaces (in the way that LID-focused developments typically separate contributions from pervious and impervious sources).

Table 1 below lists the pervious site conditions that will be available for the automated pond sizing procedure.

TABLE 1
HSPF Scenarios for Characterizing Pervious Site Conditions

Scenario No.	NRCS Soil Group	Land Cover	Slope
1	A	Scrub, Shrub	Low (<5%)
2	A	Scrub, Shrub	Moderate (10%)
3	A	Scrub, Shrub	Steep (>15%)
4	B	Scrub, Shrub	Low (<5%)
5	B	Scrub, Shrub	Moderate (10%)
6	B	Scrub, Shrub	Steep (>15%)
7	C	Scrub, Shrub	Low (<5%)
8	C	Scrub, Shrub	Moderate (10%)
9	C	Scrub, Shrub	Steep (>15%)
10	D	Scrub, Shrub	Low (<5%)
11	D	Scrub, Shrub	Moderate (10%)
12	D	Scrub, Shrub	Steep (>15%)
13	A	Urban/Landscaped	Moderate (10%)
14	B	Urban/Landscaped	Moderate (10%)
15	C	Urban/Landscaped	Moderate (10%)
16	D	Urban/Landscaped	Moderate (10%)

Pond Configuration Preferences

After describing the pre-project and post-project conditions based on local soils, slopes and land covers, the project proponent will describe an initial pond configuration and preferences for modifying the configuration during the automated sizing process.

Since each project site has its unique constraints on pond configurations, the user should be allowed to express preferences with regard to configuration modification. To minimize the pond footprint area, engineers commonly provide the required storage volume by constructing a deeper pond. However, site specific constraints, community concerns, and municipal regulations could require an engineer to set a maximum depth for a pond. Potential concerns associated with pond depths include public safety, drawdown times, vector control, or aesthetics, among others.

Figure 1 below shows how preferences will be incorporated into the iterative pond sizing process. Specifically, the figure illustrates how the automated pond sizing procedure could test an initial configuration, iteratively test increasing pond depths, and finally test increasing pond areas until a solution is found that meets the flow duration and peak flow performance requirements of the HMP.

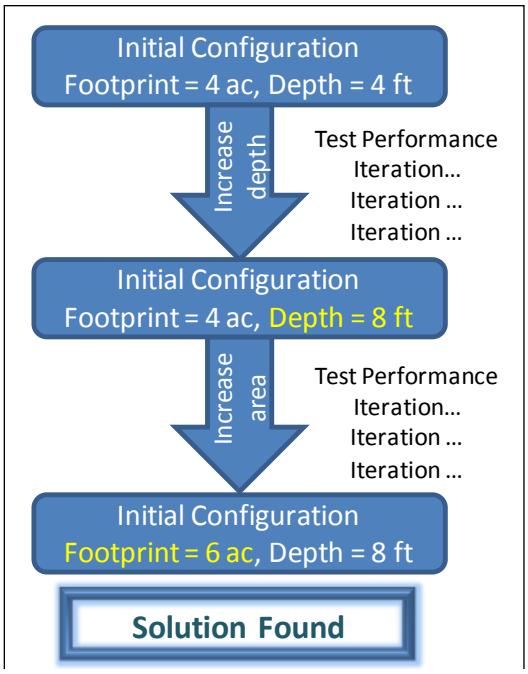

FIGURE 1

Illustration of Pond Configuration Preferences for Automated Iterative Sizing

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Draft Technical Memorandum

Project Title: San Diego County Hydromodification Management Plan

Project No: 133904

San Diego County Hydromodification Management Plan (HMP)

Subject: Rainfall and Evapotranspiration Data for BMP Sizing Calculator

Date: May 20, 2010

To: Sara Agahi, San Diego County

From: Eric Mosolgo, Brown and Caldwell
Tony Dubin, Brown and Caldwell

This memorandum describes the rainfall and evapotranspiration data that Brown and Caldwell (BC) is using to develop BMP sizing factors and pond sizing time series data for incorporation in the San Diego BMP Sizing Calculator. The purpose of the BMP Sizing Calculator is to provide both project proponents and municipal review staff with a technically sound yet streamlined method for sizing stormwater facilities that meet the performance requirements of the HMP.

Rainfall Data

Standards developed as part of this HMP to control runoff peak flows and durations are based on a continuous simulation of runoff using local rainfall data. To provide for clear climatic designation between coastal, foothill and mountain areas of the County, and to distinguish between the major watershed units, historical records for a series of 18 rainfall data stations located throughout San Diego County were compiled and quality controlled for analysis.

Long-term hourly rainfall records have been prepared for the 18 rainfall stations. These rainfall record files are located on the *Project Clean Water* web site for public use (www.projectcleanwater.org). Sources of the rainfall data include ALERT data from the County of San Diego (which extend back to 1982), the California Climatic Data Archive, National Oceanic and Atmospheric Administration (NOAA), the National Climatic Data Center, and the Western Regional Climate Center.

Gauges were selected based on minimum continuous simulation modeling requirements including the following:

1. Since the selected precipitation gauge data set should be located near the project site to ensure that long-term rainfall records are similar to the anticipated rainfall patterns for the site, gauges were selected in proximty to areas planned for future development and redevelopment.
2. Recording frequency for the gauge data set should be hourly (or more frequent).
3. The gauge rainfall record should extend for the entire length of the record. Where the gauge record length is less than 35 years, then adjacent gauge records were used to extend the rainfall record to at least 35 years.

4. Use of the most applicable long-term rainfall gauge data, as opposed to the scaling of rainfall patterns solely from Lindbergh Field, is required to account for the diverse rainfall patterns across San Diego County.

Precipitation gauges summarized in Table 1 below all have recording frequencies of one hour and recording data ranges of at least 35 years.

TABLE 1
Rainfall Station Summary

Station	Elevation	Watershed
Bonita	120	Sweetwater River
Encinitas	242	San Elijo Lagoon and Batiquitos Lagoon and ocean outlets
Escondido	645	Escondido Creek
Fallbrook	675	San Luis Rey River (near ridge with Santa Margarita River watershed)
Fashion Valley	20	Lower San Diego River
Flinn Springs	880	San Diego River
Kearny Mesa	425	San Diego River (near ridge with San Clemente Canyon watershed)
Lake Cuyamaca	4,590	Upper San Diego River
Lake Heneshaw	2,990	Upper San Luis Rey River
Lake Wohlford	1,490	Upper Escondido Creek
Lindbergh Field	Near Sea Level	Coastal – San Diego Bay
Lower Otay Reservoir	491	Otay River
Oceanside	30	San Luis Rey River
Poway	440	Los Penasquitos Canyon
Ramona	1,450	Upper San Dieguito River
San Onofre	162	North County Coastal – Pacific Ocean
San Vicente Reservoir	663	San Diego River
Santee	300	San Diego River

For a given project location, the following factors should be considered in the selection of the appropriate rainfall data set when developing continuous simulation hydrologic models.

1. In most cases, the rainfall data set in closest proximity to the project site will be the appropriate choice. A rainfall station map is included in Figure 1 of this technical memo and has been posted to the *Project Clean Water* web site for public use.
2. In some cases, the rainfall data set in closest proximity to the project site may not be the most applicable data set. Such a scenario could involve a data set with an elevation significantly different from the project site. In addition to a simple elevation comparison, the project proponent may also consult with the San Diego County's average annual precipitation isopluvial map, which is provided in the San Diego County Hydrology Manual (2003). Review of this map could provide an initial estimate as to whether the project site is in a similar rainfall zone as compared to the rainfall station. Generally, average annual precipitation totals in San Diego County increase with increasing elevation.
3. Where possible, rainfall data sets should be chosen so that the data set and the project location are both located in the same topographic zone (coastal, foothill, mountain) and/or major watershed unit (Upper San Luis Rey, Lower San Luis Rey, Upper San Diego River, Lower San Diego River, etc.).

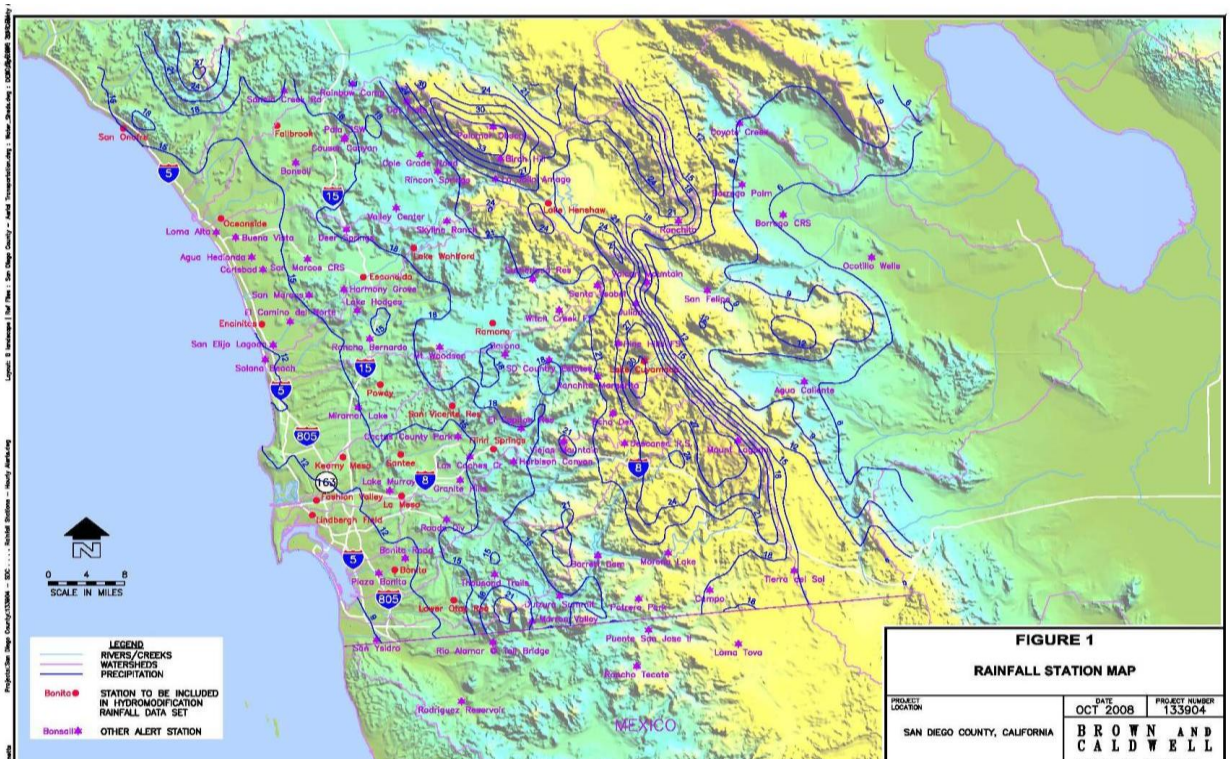

FIGURE 1

Rainfall Station Map

The BMP Sizing Calculator will automate the rainfall gauge selection process considering the factors detailed in this technical memo. For the purposes of the sizing factor modeling development effort, four (4) of the rainfall data sets were considered for analysis. The selected rainfall data sets include:

1. Lindbergh Field (coastal area, San Diego Bay watershed, central San Diego County, elevation near sea level)
2. Oceanside (coastal area, San Luis Rey River watershed, northern San Diego County, elevation = 30 feet)
3. Lower Otay Reservoir (inland valley area, Otay River watershed, southern San Diego County, elevation = 491 feet)
4. Ramona (mountain area, San Dieguito River watershed, eastern San Diego County, elevation = 1,450 feet)

To account for topographic, geographic and climatic variability across San Diego County, scaling factors will be developed for each of the (4) rainfall stations listed above. Projects will be assigned to a "rainfall basin" corresponding to one of the (4) rainfall stations. Then, rainfall data will be scaled based upon either mean annual precipitation of single-event isopluvial data (such as the 2-year, 24-hour or 85th percentile, 24-hour rainfall totals) differences as compared to the selected rainfall station.

Evapotranspiration Data

Known data sources for evaporation and evapotranspiration data in San Diego County are listed below.

1. California Irrigation Management and Information System web site – evapotranspiration stations include San Diego, Oceanside, Escondido, Ramona, Otay Lakes, Miramar, Torrey Pines, and Borrego Springs.
2. Historical Reservoir Level and Evaporation Data for Lake Heneshaw.
3. Historical Evaporation Data from City of San Diego Reservoirs.
4. Historical Evaporation Data from Helix Water District for Lake Cuyamaca.

Table 2 below summarizes available evaporation and evapotranspiration data sources in San Diego County. Most of the available data are located close to reservoirs in the inland valley and mountain areas of the County. Monthly evaporation records are available for multiple reservoirs within the County. Evapotranspiration sensing data are generally collected in agricultural zones.

The California Irrigation Management Information Systems web site (www.cimis.water.ca.gov/cimis/data.jsp) provides access to real-time and summarized evapotranspiration data (ETo) throughout California. For the San Diego region, average evapotranspiration values are summarized for the coastal and foothill zones of San Diego County.

TABLE 2
Summary of Evaporation and Evapotranspiration Data for San Diego County

Station Name ID	Data Type	Data Source	Recording Frequency	Start Date	End Date
Barratt Lake	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Chula Vista	Pan Evaporation	Western Regional Climate Center	Monthly Averages	1948	2005
El Capitain Reservoir	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Escondido / 74	Evapotranspiration	CIMIS	Monthly	1988	1998
Escondido / 153	Evapotranspiration	CIMIS	Monthly	1999	2008
Lake Cuyamaca	Pan Evaporation	Helix Water District	Monthly	1985	2006
Lake Heneshaw	Pan Evaporation	County of San Diego	Daily	1999	2005
Lake Heneshaw	Pan Evaporation	County of San Diego	Monthly	1957	2008
Lake Hodges	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Lake Jennings	Pan Evaporation	Helix Water District	Monthly	1985	2006
Lake Murray	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Lake Sutherland	Pan Evaporation	City of San Diego Water Department	Monthly	1954	2008
Lower Otay Reservoir	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Lower Otay / 147	Evapotranspiration	CIMIS	Monthly	1999	2008
Miramar Lake	Pan Evaporation	City of San Diego Water Department	Monthly	1960	2008
Miramar Lake / 150	Evapotranspiration	CIMIS	Monthly	1999	2008

TABLE 2
Summary of Evaporation and Evapotranspiration Data for San Diego County

Station Name ID	Data Type	Data Source	Recording Frequency	Start Date	End Date
Morena Lake	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Oceanside / 49	Evapotranspiration	CIMIS	Monthly	1986	2003
Ramona / 98	Evapotranspiration	CIMIS	Monthly	1991	1998
San Diego / 45	Evapotranspiration	CIMIS	Monthly	1985	1989
San Diego / 66	Evapotranspiration	CIMIS	Monthly	1989	2001
San Diego II / 184	Evapotranspiration	CIMIS	Monthly	2002	2008
San Vicente Reservoir	Pan Evaporation	City of San Diego Water Department	Monthly	1950	2008
Torrey Pines / 173	Evapotranspiration	CIMIS	Monthly	2000	2008

For the purposes of the sizing factor modeling development effort, the four (4) rainfall data sets were associated with evapotranspiration/evaporation data as detailed below.

1. Lindbergh Field (San Diego/45, San Diego/66, San Diego II/184, Chula Vista, Lake Murray and Torrey Pines/173)
2. Oceanside (Oceanside/49, Lake Hodges, Lake Heneshaw)
3. Lower Otay Reservoir (Lower Otay Reservoir, Lower Otay/147)
4. Ramona (Ramona / 98, Lake Hodges, San Vicente Reservoir)

APPENDIX A-2
SUSMP PROJECTS

Project ID	Project Name	SUSMP Requirements Applied? (Y/N)	Site Design BMPs for Project Included? (Y/N)	Source Control BMPs for Project Included? (Y/N)	Priority Development Project? (Y/N)	Treatment Control BMPs Included? (Y/N)	Was project required to meet Interim or HMP requirements?	If HMP is NOT required - why was it exempt from HMP requirements?
GP07-021	1270 Vale Terrace-Pond @ Brengle Park	Y	Y	Y	N	N	N	Not a Priority Development Project
LD08-036	2645 S Melrose Drive - Hyatt Hotel	Y	Y	Y	Y	Y	N	Project Too Small - did not meet interim requirements
LD10-008	409 W Bobier - Church Expansion	Y	Y	Y	Y	Y	N	Project Too Small - did not meet interim requirements
LD10-011	1244 N. Santa Fe - Gas Station retrofit	Y	Y	Y	N	N	N	Not a Priority Development Project
LD10-015	1375 Oak Drive - Oak Drive Villas	Y	Y	Y	Y	Y	N	Project Too Small - did not meet interim requirements
LD10-022	1000 Vale Terrace - Vista Community Clinic	Y	Y	Y	Y	Y	N	Project Too Small - did not meet interim requirements
LD10-027	1630 S Melrose - Minor storm drain ext.	N	N	N	N	N	N	Not a Priority Development Project
LD10-028	995 Audrey Place - 15 lot subdivision	Y	Y	Y	Y	Y	N	Project Too Small - did not meet interim requirements
LD10-033	1671 Dawson Drive- Single Family Lot	Y	Y	Y	N	Y	N	Project Too Small - did not meet interim requirements
CIP	Bobolink Storm Drain	Y	Y	Y	N	Y	N	Project Too Small - did not meet interim requirements
CIP	E. Vista Way Street Improvements - resurfacing project	Y	N	Y	N	N	N	Not a Priority Development Project
CIP	Inland Rail-Trail	Y	Y	Y	N	Y	N	Not a Priority Development Project
CIP	Street Rehab and Maintenance #8155	Y	Y	Y	Y	Y	N	Project Too Small - did not meet interim requirements
CIP	Traffic Signal @ E. Vista Way and Oak Dr. Intersection	Y	N	Y	N	N	N	Not a Priority Development Project
CIP	Traffic Signal @ N. Santa Fe and East Dr. Intersection	Y	N	Y	N	N	N	Not a Priority Development Project

Project ID	Project Name	SUSMP Requirements Applied? (Y/N)	Site Design BMPs for Project Included? (Y/N)	Source Control BMPs for Project Included? (Y/N)	Priority Development Project? (Y/N)	Treatment Control BMPs Included? (Y/N)	Was project required to meet Interim or HMP requirements?	If HMP is NOT required - why was it exempt from HMP requirements?
CIP	Foothill Dr. Reconstruction: Beverly Dr. to Vale Terrace Dr.	Y	Y	Y	N	Y	N	Not a Priority Development Project
CIP	Townsite Dr. Sidewalk	Y	Y	Y	N	Y	N	Not a Priority Development Project
CIP	W. California Ave St Imp Project	Y	Y	Y	N	N	N	Not a Priority Development Project
CIP	Grapevine Rd St Imp Project	Y	Y	Y	N	N	N	Not a Priority Development Project
CIP	Street Rehab and Maintenance #8154	Y	N	Y	N	N	N	Not a Priority Development Project
CIP	Boys and Girls Club Sidewalk Project	Y	Y	Y	N	N	N	Not a Priority Development Project
CIP	Longhorn and Promontory Ridge Project	Y	Y	Y	N	N	N	Not a Priority Development Project

APPENDIX A-3
PRIORITY PROJECT SYNOPSIS
AND MAP

Hyatt Hotel

Project name: Hyatt

Development Type: Commercial Hotel

Project Size: The project site is 3.4 acres

Project Description: A new hotel and parking lot on vacant parcel that is adjacent to open space area

Conditioned for Site Design? Yes

Conditioned for Source Control? Yes

Conditioned for Treatment Control? Yes

Site Design Control:
Minimization of impervious surfaces; maximization of landscape areas; minimization of Directly Connected Impervious Areas; maximization of canopy with additional trees; proper slope/channel design; energy dissipation; minimization of disturbance to natural areas.

Source Control:
Trash storage areas, employ integrated pest management principles, efficient irrigation systems, stormwater stencils and signage, street sweeping.

Treatment Control BMPs:
Vegetated swales, bio-retention planter systems, in-line detention system

SOUTH MELROSE DRIVE

FARADAY AVENUE

PROPOSED FOUR-STORY HOTEL

EXISTING/PROPOSED 2:1 SLOPE (AREA OF POTENTIAL SOIL EROSION – TO BE LANDSCAPED/VEGETATED)

PROPOSED DETENTION BASIN

EXISTING 2:1 SLOPE (AREA OF POTENTIAL SOIL EROSION – TO REMAIN VEGETATED BY NATURAL GROWTH IN ADDITION TO ENHANCED LANDSCAPING)

EXISTING CITY OF VISTA STORMWATER CONVEYANCE CHANNEL

EXISTING & RE-ENGINEERED, REINSTALLED RIP-RAP ENERGY DISSIPATER

TO AGUA HEDIONDA CREEK

EXISTING CITY OF VISTA HEADWALL (CITY DRAINAGE SYSTEM OUTLET)

O'Day

0' 5' 10' 20' 40'

SCALE: 1" = 20'

LEGEND

- SITE BOUNDARY
- ASPHALTIC CONCRETE PAVEMENT
- CONCRETE HARDSCAPE
- COVERED TRASH ENCLOSURE
- DIRECTION OF FLOW
- VEGETATED SWALE
- CATCH BASIN INSERT
- MODULAR WETLANDS® SYSTEMS BY BIOCLEAN ENVIRONMENTAL SERVICES, INC. BIORETENTION SYSTEM

HYATT PLACE
BMP FACILITIES MAP

PREPARED: AUGUST 22, 2008

O'Day CONSULTANTS
2710 Loker Avenue West
Suite 100
Carlsbad, California 92010
760-931-7700
Fax: 760-931-8680
www.odayconsultants.com
Civil Engineering
Planning
Processing
Surveying

DESIGNED BY: A.V.L. DATE: AUGUST 2008
DRAWN BY: T.G., G.M. SCALE: 1"=20'
PROJECT MGR.: T.C. JOB NO.: 07-1209

ENGINEER OF WORK:

ANDREW J. VAN LOY RCE: 64573

APPENDIX A-4
PRIVATE DEVELOPMENT TCBMP
INVENTORY AND INSPECTIONS SUMMARY

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
1	01-059	1	Chevron	224	N. Emerald Drive	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Catch Basin	Y	Not Inspected		
	01-059	2	Chevron	224	N. Emerald Drive	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Catch Basin	Y	Not Inspected		
	01-059	3	Chevron	224	N. Emerald Drive	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Trench Drain	Y	Not Inspected		
2	02-015	1	Yucaipa Towing, Inc	451	Olive Ave	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	Not Inspected		
3	02-036	1	Multi Tennant Industrial	1235	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/1/2011	Y	Debris in Unit
	02-036	2	Multi Tennant Industrial	1235	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/1/2011	N	
4	02-049	1	828 N Santa Fe Ave	828 N	Santa Fe Ave	Medium	N/A	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	Not Inspected		
	02-049	2	828 N Santa Fe Ave	828 N	Santa Fe Ave	Medium	N/A	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	Not Inspected		
5	02-054	1	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	Not Inspected		
	02-054	2	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	Not Inspected		
	02-054	3	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	Not Inspected		
6	02-058	1	North Island Finacial Credit union	1960	University Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
7	02-061	1	Jury & Clark development	2435	Cades Way	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-061	2	Jury & Clark development	2435	Cades Way	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
8	02-071	1	Directed Electronics Inc	1	Viper Way	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	6/1/2011	N	

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
	02-071	2	Directed Electronics Inc	1	Viper Way	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	6/1/2011	N	
9	02-078	1	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	02-078	2	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-078	3	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-078	4	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-078	5	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-078	6	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-078	7	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
10	02-080	1	Focus Industrial Center	2460	Grand Ave	Medium	2003-1185309	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-080	2	Focus Industrial Center	2460	Grand Ave	Medium	2003-1185309	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
11	02-081	1	Focus Industrial Center	2441	Cades Way	Medium	2003-1185310	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	Not Inspected		
	02-081	2	Focus Industrial Center	2441	Cades Way	Medium	2003-1185310	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	Not Inspected		
12	02-082A	1	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-082A	2	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-082A	4	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
	02-082B	3	Sycamore Vista Business Center	2300-2322	La Mirada Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-082B	5	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-082B	6	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-082B	7	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	02-082B	8	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
13	02-089	1	El Pollo Loca	495 S	Melrose Dr	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/16/2011	N	
14	03-005	1	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-50	Wet Vault	Sand/ Oil Seperator	y	6/1/2011	N	
	03-005	2	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/1/2011	N	
	03-005	3	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-50	Wet Vault	Stormwater Treatment	y	6/1/2011	N	
	03-005	4	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/1/2011	N	
	03-005	5	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/1/2011	N	
	03-005	6	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/1/2011	N	
	03-005	7	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/1/2011	N	
15	03-013	1	3225 Executive Ridge	3225	Executive Ridge	Low	N/A	San Marcos	--	Bio-Filter	Gravel Swale above sub drain	y	Not Inspected		
	03-013	2	3225 Executive Ridge	3225	Executive Ridge	Low	N/A	San Marcos	--	Bio-Filter	Gravel Swale above sub drain	y	Not Inspected		
16	03-016A/04-064	1	Vista village phase II	235	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	N	
	03-016A/04-064	2	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	Y	Debris in Unit

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
	03-016A/04-064	3	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	N	
	03-016A/04-064	4	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	N	
	03-016A/04-064	5	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	N	
	03-016A/04-064	6	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	Y	Hydrocarbon booms degraded
	03-016A/04-064	7	Vista village phase II	245	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Trench Drain	y	6/8/2011	Y	Hydrocarbon booms degraded
	03-016A/04-064	8	Vista village phase II	245	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	N	
	03-016A/04-064	9	Vista village phase II	255	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	36"x36" Catch Basin	y	6/8/2011	N	
	03-016A/04-064	10	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	Y	One unit is not attached
	03-016A/04-064	11	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	y	6/8/2011	N	
	03-016A/04-064	12	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	y	6/8/2011	Y	Hydrocarbon booms degraded
	03-016A/04-064	13	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Trench Drain	y	6/8/2011	N	
	03-016A/04-064	14	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Trench Drain	y	6/8/2011	N	
	03-016A/04-064	15	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	y	6/8/2011	Y	Debris in Unit
	03-016A/04-064	16	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	y	6/8/2011	N	
	03-016A/04-064	17	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	y	6/8/2011	N	

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
	03-016A/04-064	18	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin	y	6/8/2011	N	
17	03-019	1	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	2003-1524062	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/8/2011	N	
	03-019	2	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	2003-1524062	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/8/2011	N	
	03-019	3	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	2003-1524062	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/8/2011	N	
	03-019	4	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	2003-1524062	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/8/2011	N	
18	03-021	1	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	y	6/13/2011	N	
	03-021	2	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	y	6/13/2011	N	
	03-021	3	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	y	6/13/2011	N	
	03-021	4	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	y	6/13/2011	N	
	03-021	5	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	180' of 5' Dia. Detetion Pipes	y	6/13/2011	N	
	03-021	6	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	75' of 5' Dia. Detetion Pipes	y	6/13/2011	N	
	03-021	7	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	240' of 5' Dia. Detetion Pipes	y	6/13/2011	N	
	03-021	8	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	290' of 5' Dia. Detetion Pipes	y	6/13/2011	N	
	03-021	9	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	180' of 5' Dia. Detetion Pipes	y	6/13/2011	N	
	03-021	10	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	270' of 5' Dia. Detetion Pipes	y	6/13/2011	N	
	03-021	11	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	420' of 5' Dia. Detetion Pipes	y	6/13/2011	N	

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	03-021	12	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	360' of 5' Dia. Detetion Pipes	y	6/13/2011	N	
19	03-044	1	800 Silver Dr Subdivision	800	Silver Dr	High	2004-0613597	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	y	6/8/2011	N	
	03-044	2	800 Silver Dr Subdivision	800	Silver Dr	High	2004-0613597	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	y	6/8/2011	N	
20	03-057	1	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	03-057	2	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	--	Bio-Filter	Gravel Swale above sub drain	y	Not Inspected		
	03-057	3	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	TC-22	Extended Detention Basin	Grassy Detention Pond	y	Not Inspected		
	03-057	4	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	03-057	5	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	TC-22	Extended Detention Basin	Concrete/ Gunite Pond	y	Not Inspected		
21	03-078	1	Amron internation	1380	Aspen Way	Low	2004-0308771	Agua Hedionda	TC-30	Vegetated Swale	vegetated swale	Y	Not Inspected		
	03-078	2	Amron internation	1380	Aspen Way	Low	2004-0308771	Agua Hedionda	TC-30	Vegetated Swale	grassy swale	Y	Not Inspected		
22	03-079	1	Ruby/Ravine Subdivision		Steeple Chase Lane	High	2005-0476684	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale	Y	6/8/2011	N	
	03-079	2	Ruby/Ravine Subdivision		Steeple Chase Lane	High	2005-0476684	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	6/8/2011	N	
	03-079	3	Ruby/Ravine Subdivision		Steeple Chase Lane	High	2005-0476684	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	6/8/2011	Y	Filter Insert is missing
	03-079	4	Ruby/Ravine Subdivision		Steeple Chase Lane	High	2005-0476684	Buena Vista Creek	--	Underground Det. Sys	Dual 54' x 60" Dia. Detention Pipes	Y	6/8/2011	N	

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23	03-085	1	Frame Residence	819	Eucalyptus Ave	High	2005-0013451	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	6/9/2011	N	
	03-085	2	Frame Residence	819	Eucalyptus Ave	High	2005-0013451	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale	Y	6/9/2011	N	
24	04-001	1	Watkin Manufacturing Inc	1320	Hot Spring Way	Medium	2004-0153347	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	Y	Hydrocarbon Booms missing
	04-001	2	Watkin Manufacturing Inc	1320	Hot Spring Way	Medium	2004-0153347	Agua Hedionda	TC-30	Vegetated Swale	landscaped swale surronding area drains to sub drain	y	6/2/2011	N	
25	04-006	1	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	N	
	04-006	2	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	N	
	04-006	3	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	N	
	04-006	4	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	Y	Filter unit is damaged, not attached to curb inlet
	04-006	5	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	N	
	04-006	6	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	Y	Side unit is full of debris
	04-006	7	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	N	
	04-006	8	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	N	

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	04-006	9	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	Y	Hydrocarbon booms degraded
	04-006	10	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	Y	Debris in Unit
	04-006	11	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	Y	Debris in Unit
	04-006	12	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	6/2/2011	N	
26	04-007	1	1210 Distribution Way	1210	Distriution Way	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	Y	Hydrocarbon booms degraded
	04-007	2	1210 Distribution Way	1210	Distriution Way	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	Y	Hydrocarbon booms degraded
27	04-010	1	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	N	
	04-010	2	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	Y	Hydrocarbon booms degraded
	04-010	3	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	N	
	04-010	4	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	N	
	04-010	5	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	N	
	04-010	6	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	N	
	04-010	7	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	N	
	04-010	8	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/2/2011	N	
	04-010	9	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	Treatment Unit	y	6/2/2011	N	
	04-010	10	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	--	Underground Det. Sys	7400 cu ft VOL	y	6/2/2011	N	

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28	04-020A	1	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/13/2011	N	
	04-020A	2	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/13/2011	N	
	04-020A	6	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/13/2011	N	
	04-020A	7	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/13/2011	N	
	04-020A	8	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/13/2011	N	
	04-020A	11	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	y	6/13/2011	N	
	04-020B	3	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/13/2011	N	
	04-020B	4	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	6/13/2011	N	
	04-020B	5	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	6/13/2011	N	
	04-020B	9	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	6/13/2011	N	
	04-020B	10	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Y	6/13/2011	N	
29	04-024	1	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	6/22/2011	N	
	04-024	2	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	6/22/2011	N	
	04-024	3	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	Y	6/22/2011	N	
	04-024	4	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	6/22/2011	N	
	04-024	5	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	6/22/2011	N	
30	04-033	1	Poinsettia Industrial	921-925	Poinsettia ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Y	Not Inspected		
	04-033	2	Poinsettia Industrial	921-925	Poinsettia ave	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Filter with hydrocarbon boom	Y	Not Inspected		
	04-033	3	Poinsettia Industrial	921-925	Poinsettia ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Y	Not Inspected		

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	04-033	4	Poinsettia Industrial	921-925	Poinsettia ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Y	Not Inspected		
31	04-044	1	338 Plymouth Dr. Condos	338	Plymouth Dr	High	2008-0346020	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	6/8/2011	N	
	04-044	2	338 Plymouth Dr. Condos	338	Plymouth Dr	High	2008-0346020	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale	Y	6/8/2011	N	
32	04-048	1	Sunset Heights Subdivision	787	Vale View Dr	Medium	2005-0572212	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	04-048	2	Sunset Heights Subdivision	787	Vale View Dr	Medium	2005-0572212	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	04-048	3	Sunset Heights Subdivision	787	Vale View Dr	Medium	2005-0572212	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
33	04-051	1	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	04-051	2	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	04-051	3	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	04-051	4	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	04-051	5	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
	04-051	6	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
34	04-062	1	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	2005-0796684	Agua Hedionda	TC-30	Vegetated Swale	grassy swale above sub drain	y	Not Inspected		
	04-062	2	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	2005-0796684	Agua Hedionda	TC-30	Vegetated Swale	grassy swale	y	Not Inspected		
	04-062	3	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	2005-0796684	Agua Hedionda	TC-30	Vegetated Swale	grassy swale	y	Not Inspected		
35	04-067	1	Moxie Pacific Palomar Park	3270	Corporate View	Medium	2005-0240554	Agua Hedionda	TC-22	Extended Detention Basin	Concrete/ Gunite Pond w/ fossil filter	y	Not Inspected		
	04-067	2	Moxie Pacific Palomar Park	3270	Corporate View	Medium	2005-0240554	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	y	Not Inspected		
36	05-008	1	Fortuna Ave.		Fortuna Ave	Low	2006-0163407	Lower San Luis	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		

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37	05-017	1	Vista Point Medical Plaza	326 S	Melrose Dr	Medium	2005-0922935	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	05-017	2	Vista Point Medical Plaza	326 S	Melrose Dr	Medium	2005-0922935	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	y	Not Inspected		
38	05-019	1	DJ Orthopedics	1430	Decision St	Low	2005-0792907	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	05-019	2	DJ Orthopedics	1430	Decision St	Low	2005-0792907	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	05-019	3	DJ Orthopedics	1430	Decision St	Low	2005-0792907	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	05-019	4	DJ Orthopedics	1430	Decision St	Low	2005-0792907	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	y	Not Inspected		
39	05-024	1	Bio-Forms	3215	Executive Ridge	Medium	2005-0853821	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	05-024	2	Bio-Forms	3215	Executive Ridge	Medium	2005-0853821	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	05-024	3	Bio-Forms	3215	Executive Ridge	Medium	2005-0853821	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	05-024	4	Bio-Forms	3215	Executive Ridge	Medium	2005-0853821	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	05-024	5	Bio-Forms	3215	Executive Ridge	Medium	N/A	Agua Hedionda	--	Bio-Filter	Gravel Swale above sub drain	y	Not Inspected		
40	05-025	1	Thomasville Furniture	1389	Park Center Drive	Low	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	05-025	2	Thomasville Furniture	1389	Park Center Drive	Low	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
41	05-030	1	Hill Drive	331	Hill Dr	Medium	2006-0085713	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	05-030	2	Hill Drive	339	Hill Dr	Medium	2006-0085713	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	05-030	3	Hill Drive	327	Hill Dr	Medium	2006-0085713	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	05-030	4	Hill Drive	335	Hill Dr	Medium	2006-0085713	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Y	Not Inspected		

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42	05-031	1	Santa Fe Walk	202	W. Connecticut Ave.	Medium	2006-0519582	Buena Vista Creek	TC-32	Bioretention	Bioretention Area	N/A, site added to inventory in FY 11-12	Not Inspected		
43	05-041	1	Warmland Estates	1434	Grandview Rd	Low	2006-0702727	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
44	05-049	1	Sycamore Point Business Park	1315	Hot Spring Way	Low	2006-0560910	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	y	Not Inspected		
	05-049	2	Sycamore Point Business Park	1315	Hot Spring Way	Low	2006-0560910	Agua Hedionda	MP-51	Vortex Separator	CDS Inline Treatment	y	Not Inspected		
45	06-006	1	3181 Business Park Dr.	3181	Business Park Drive	Low	2006-0729182	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
46	06-008	1	Palomar Unitarian Church	1600	Buena Vista Drive	Medium	2008-0643794	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y	Not Inspected		
47	06-009	1	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	2006-0375316	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Y	6/8/2011	N	
	06-009	2	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	2006-0375316	Buena Vista Creek	MP-50	Wet Vault	Baffel Box	Y	6/8/2011	N	
	06-009	3	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	2006-0375316	Buena Vista Creek	MP-50	Wet Vault	Baffel Box	Y	6/8/2011	N	
48	06-010/29	1	Gordon Property		Straton Dr/Madison Ln	Low	2007-0264962	Loma Alta	TC-30	Vegetated Swale	Grassy Swale	Y	Not Inspected		
49	06-012/13	1	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	y	6/16/2011	N	
	06-012/13	2	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/16/2011	N	
	06-012/13	3	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/16/2011	N	

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	06-012/13	4	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/16/2011	N	
	06-012/13	5	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/16/2011	N	
	06-012/13	6	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-50	Wet Vault	Bio-Filter	y	6/16/2011	N	
	06-012/13	7	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	y	6/16/2011	N	
	06-012/13	8	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	y	6/16/2011	N	
	06-012/13	9	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	y	6/16/2011	N	
50	06-025	1	Vista Kidney Dialysis Center	950	Hacienda Dr	High	2007-0023196	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	y	6/9/2011	Y	Areas of sparse vegetation exist
	06-025	2	Vista Kidney Dialysis Center	950	Hacienda Dr	High	2007-0023196	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	y	6/9/2011	N	
51	06-038	1	Sycamore Medical Center	902	SycamoreAve	Medium	2006-0669762	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	y	Not Inspected		
52	06-072	1	Fortune Business Park	2545	Fortune Way	Low	N/A	Agua Hedionda	TC-30	Vegetated	Vegetated Swale	y	Not Inspected		
	06-072	2	Fortune Business Park	2545	Fortune Way	Low	N/A	Agua Hedionda	TC-30	Vegetated	Grassy Swale	y	Not Inspected		
	06-072	3	Fortune Business Park	2545	Fortune Way	Low	N/A	Agua Hedionda	TC-30	Vegetated	Vegetated Swale	y	Not Inspected		
53	07-002-A	1	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	TC-30	Vegetated	Grassy Swale	y	6/3/2011	Y	Sediment buildup in gutter leading to swale inlet
	07-002-A	2	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	TC-30	Vegetated	Grassy Swale	y	6/3/2011	N	
	07-002-A	3	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Inser	Curb outlet	y	6/3/2011	Y	Debris buildup infront of filter
	07-002-A	4	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	TC-30	Vegetated	Grassy Swale	y	6/3/2011	N	

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
	07-002-A	5	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Inser	Curb Inlet	y	6/3/2011	N	
	07-002-A	6	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	TC-30	Vegetated	Grassy Swale	y	6/3/2011	N	
	07-002-A	11	Shadowridge Business Ctr-2	2065	Shadowridge Dr	HIgh	2008-0343836	Agua Hedionda	--	Undergrou nd Det. Sys	180' x 60" Dia. Detention Pipe	y	6/3/2011	N	
	07-002-B	7	Shadowridge Business Ctr-2	760	Shadowridge Dr	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Inser	Curb Inlet	y	6/3/2011	Y	Hydrocarbon boom missing
	07-002-B	8	Shadowridge Business Ctr-2	760	Shadowridge Dr	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Inser	Curb Inlet	y	6/3/2011	N	
	07-002-B	9	Shadowridge Business Ctr-2	760	Shadowridge Dr	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Inser	Catch Basin	y	6/3/2011	N	
54	07-003	1	Wilborn (Fast-n-Clean Carwash)	1661 W	Vista Way	Low	N/A	Buena Vista Creek	TC-30	Vegetated Swale	Gravel	Y	Not Inspected		
	07-003	2	Wilborn (Fast-n-Clean Carwash)	1661 W	Vista Way	Low	N/A	Buena Vista Creek	TC-30	Vegetated Swale	Gravel	Y	Not Inspected		
55	07-007	1	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda		Undergrou nd Det. Sys	Detention Pipes	N/A -Site added late FY 10-11	Not Inspected		
	07-007	2	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda	MP-51	Vortex Separator	CDS Inline Treatment		Not Inspected		
	07-007	3	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda		Undegrou nd Det. Sys	Detention Pipes		Not Inspected		
	07-007	4	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda	SD-20	Pervious Concrete			Not Inspected		
	07-007	5	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda	SD-20	Pervious Concrete			Not Inspected		
	07-007	6	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda		Undegrou nd Det. Sys	Detention Pipes		Not Inspected		
56	07-008	1	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	07-008	2	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	07-008	3	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	y	Not Inspected		
	07-008	4	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
	07-008	5	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	07-008	6	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	07-008	7	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	y	Not Inspected		
	07-008	8	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	07-008	9	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	07-008	10	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	y	Not Inspected		
	07-008	11	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	07-008	12	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	y	Not Inspected		
	07-008	13	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	y	Not Inspected		
	07-008	14	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain	y	Not Inspected		
57	07-020	1	24 hour fitness	324	Sycamore Ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y	Not Inspected		
	07-020	2	24 hour fitness	324	Sycamore Ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y	Not Inspected		
	07-020	3	24 hour fitness	324	Sycamore Ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y	Not Inspected		
	07-020	4	24 hour fitness	324	Sycamore Ave	Medium	N/A	Agua Hedionda	MP-52	Drain insert	Catch Basin	Y	Not Inspected		
	07-020	5	24 hour fitness	324	Sycamore Ave	Medium	N/A	Agua Hedionda	MP-52	Drain inser	Curb Inlet	Y	Not Inspected		
	07-020	6	24 hour fitness	324	Sycamore Ave	Medium	N/A	Agua Hedionda	MP-52	Drain inser	Curb Inlet	Y	Not Inspected		
	07-020	7	24 hour fitness	324	Sycamore Ave	Medium	N/A	Agua Hedionda	--	Undergrou	48" Pipe	Y	Not Inspected		
	07-020	8	24 hour fitness	324	Sycamore Ave	Medium	N/A	Agua Hedionda	--	Bio-filter	gravel swale	Y	Not Inspected		
58	07-023	1	Hacienda Professional Center	465	La Tortuga Dr	Low	2007-0706380	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
	07-023	2	Hacienda Professional Center	465	La Tortuga Dr	Low	2007-0706380	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	07-023	3	Hacienda Professional Center	465	La Tortuga Dr	Low	2007-0706380	Buena Vista Creek	--	Underground Det. Sys		y	Not Inspected		
59	07-026	1	Target	3150	Business Park Drive	Medium	2009--253344	Agua Hedionda		Sand Filter		y	Not Inspected		
	07-026	2	Target	3150	Business Park Drive	Medium	2009--253344	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	07-026	3	Target	3150	Business Park Drive	Medium	2009--253344	Agua Hedionda	--	Underground Det. Sys		y	Not Inspected		
60	07-039	1	Dowsing Building	2185	La Mirada Dr	High	2009-0188564	Agua Hedionda	MP-52	Drain Insert		N/A-Site added to inventory in FY 10-11	Not Inspected		
	07-039	2	Dowsing Building	2185	La Mirada Dr	High	2009-0188564	Agua Hedionda	MP-52	Drain Insert			Not Inspected		
	07-039	3	Dowsing Building	2185	La Mirada Dr	High	2009-0188564	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale		Not Inspected		
	07-039	4	Dowsing Building	2185	La Mirada Dr	High	2009-0188564	Agua Hedionda	MP-52	Drain Insert	Insert with		Not Inspected		
	07-039	5	Dowsing Building	2185	La Mirada Dr	High	2009-0188564	Agua Hedionda	--	Undegroun d Det. Sys	48 Inch pipe		Not Inspected		
61	07-041	1	Verizon	1330	Business Park Drive	Low	2008-0305305	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	y	Not Inspected		
	07-041	2	Verizon	1330	Business Park Drive	Low	2008-0305305	Agua Hedionda	TC-22	Extended Detention Basin		y	Not Inspected		
62	08-007	1	Vista Community Clinic	134	Grapevine Road	Low	2008-0423454	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Y	Not Inspected		
	08-007	2	Vista Community Clinic	134	Grapevine Road	Low	2008-0423454	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Y	Not Inspected		
63	08-011	1	Parcel G of PM 16222	2633	Progress St.	Low	2009-0258250	Agua Hedionda	TC-30	Bio-retention Swale		N/A-Site added to inventory in FY 10-11	Not Inspected		
	08-011	2	Parcel G of PM 16222	2633	Progress St.	Low	2009-0258250	Agua Hedionda	TC-30	Bio-retention Swale		N/A-Site added to inventory in FY 10-11	Not Inspected		

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
	08-011	3	Parcel G of PM 16222	2633	Progress St.	Low	2009-0258250	Agua Hedionda	TC-30	Bio-retention Swale		N/A-Site added to inventory in FY 10-11	Not Inspected		
64	08-017	1	Oakridge Business Park	2410	Birch Street	Low	2008-0643795	Agua Hedionda	TC-30	Vegetated Swale	Bio-Filter	y	Not Inspected		
	08-017	2	Oakridge Business Park	2410	Birch Street	Low	2008-0643795	Agua Hedionda	--	Porous Pavement	Pavers	y	Not Inspected		
65	09-003	1	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	TC-30	Vegetated Swale	Bio-Filtration Swale	N/A-Site added to inventory in FY 10-11	6/1/2011	N	
	09-003	2	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	MP-52	Drain Insert	Square Catch Basin Insert	N/A-Site added to inventory in FY 10-11	6/1/2011	N	
	09-003	3	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	MP-52	Drain Insert	Square Catch Basin Insert	N/A-Site added to inventory in FY 10-11	6/1/2011	N	
	09-003	4	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	MP-52	Drain Insert	Square Catch Basin Insert	N/A-Site added to inventory in FY 10-11	6/1/2011	N	
	09-003	5	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	MP-52	Drain Insert	Square Catch Basin Insert	N/A-Site added to inventory in FY 10-11	6/1/2011	N	
66	09-004	1	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek		Underground Detention System		Y	6/17/2011	N	
	09-004	2	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek		Underground Detention System		Y	6/17/2011	N	
	09-004	3	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek		Pervious Pavement		Y	6/17/2011	N	
	09-004	4	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek		Pervious Pavement		Y	6/17/2011	N	
	09-004	5	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek	MP-52	Drain Inserts	Catch Basin Inserts	Y	6/17/2011	N	
	09-004	6	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek	MP-52	Drain Inserts	Catch Basin Inserts	Y	6/17/2011	Y	Debris in Unit
	09-004	7	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek	MP-52	Drain Inserts	Catch Basin Inserts	Y	6/17/2011	N	

Site #	GP or Drawing # and Date	BMP loc ID	Project Name / Responsible Party	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due July 30, 2010) Annual Certification Form Received (Y/N)	(June 2011) Inspection Date	Needs Corrective Action (Y/N)	Describe
67	09-007	1	North County RV & Boat Storage Yard	1551	Sycamore Ave	Medium	2009-0409608	Agua Hedionda	TC-10	Infiltration Trench	Strip Sand Filter	N/A -Site added to inventory in 10-11	Not Inspected		
	09-007	2	North County RV & Boat Storage Yard	1551	Sycamore Ave	Medium	2009-0409609	Agua Hedionda	MP-52	Drain Inserts	Catch Basin Inserts		Not Inspected		
	09-007	3	North County RV & Boat Storage Yard	1551	Sycamore Ave	Medium	2009-0409610	Agua Hedionda	MP-52	Drain Inserts	Catch Basin Inserts		Not Inspected		
68	09-010	10	Comerica Bank	625	S. Melrose Dr.	Medium	None	Buena Vista Creek	MP-52	Drain Inserts	Curb Inlet	N/A - Site added to inventory in FY 10-11	6/16/2011	N	
	09-010	11	Comerica Bank	625	S. Melrose Dr.	Medium	None	Buena Vista Creek	MP-52	Drain Inserts	Curb Inlet		6/16/2011	N	
69	3727	1	Huntalas Middle School (Rancho Minerva)	2245	Foothill Drive	Low	None	Buena Vista Creek	MP-51	Vortex Separator	Stormceptor	Y	Not Inspected		
70	96-055	1	Costco	1755	Hacienda Drive	High		Buena Vista Creek	MP-40	Sand Filter	Small sand filter cartridge inside storm water clean out	Y	6/9/2011	Y	Sand Filter doesn't exist
	96-055	2	Costco	1755	Hacienda Drive	High		Buena Vista Creek	MP-40	Sand Filter	Small sand filter cartridge inside storm water clean out	Y	6/9/2011	Y	Sand Filter doesn't exist
	96-055	3	Costco	1755	Hacienda Drive	High		Buena Vista Creek	MP-50	Wet Vault	Oil Water Seperator	Y	6/9/2011	N	
	96-055	4	Costco	1755	Hacienda Drive	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	Y	6/9/2011	Y	
	96-055	5	Costco	1755	Hacienda Drive	High		Buena Vista Creek	MP-40	Sand Filter	Small sand filter cartridge inside storm water clean out	Y	6/9/2011	Y	Sand Filter doesn't exist
	96-055	6	Costco	1755	Hacienda Drive	High		Buena Vista Creek	MP-40	Sand Filter	Small sand filter cartridge inside storm water clean out	Y	6/9/2011	Y	Sand Filter doesn't exist

APPENDIX A-5
MUNICIPAL TCBMP INVENTORY
AND
INSPECTIONS SUMMARY

Appendix A-5 Municipal TCBMP Inventory and Inspections Summary

# of Sites	GP or DWG #	SHEET_NO	BMP No.	PROJECT AREA	BMP LOCATION	LAT_DEG	LONG_DEG	CASQA ID	BMP TYPE	MANUFACTURER	MODEL	WATERSHED	TTWQ	RESPONSIBLE PARTY	INSPECTION DATE	CORRECTIVE ACTIONS NEDDED
1	N/A	N/A	1	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	Near Tennis Courts in Park	33.2025667912	-117.2354000000	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista	High	City of Vista/Downstream Serv's	6/20/2011	No
	GP 08-009	10	2	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	Most northern infiltration trench on hill	33.2110499382	-117.2221000000	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista/PW's	6/20/2011	No
	GP 08-009	10	3	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #2	33.2109179955	-117.2222000000	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista/PW's	6/20/2011	No
	GP 08-009	10	4	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #3	33.2104926961	-117.2222000000	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista/PW's	6/20/2011	No
	GP 08-009	10	5	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #4	33.2100090154	-117.2216000000	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista/PW's	6/20/2011	No
2	N/A	N/A	1	City of Vista Library (700 Eucalyptus Ave)	North Parking Lot Area	33.2023295426	-117.2332000000	N/A	***Drain Insert	FloGard	FGP-12F	Buena Vista	Medium	City of Vista/Downstream Serv's	6/22/2011	No
	N/A	N/A	2	City of Vista Library (700 Eucalyptus Ave)	Central Parking Lot Area	33.2021285207	-117.2332000000	MP-52	Drain Insert	FloGard	FGP-12F	Buena Vista		City of Vista/Downstream Serv's	6/22/2011	No
	N/A	N/A	3	City of Vista Library (700 Eucalyptus Ave)	Southern Parking Lot Area	33.2019864318	-117.2333000000	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista		City of Vista/Downstream Serv's	6/22/2011	No
3	GP 07-036	9/ C4	1	Fire Station 5 (2008 S. Melrose Dr.)	East of Building	33.1555132107	-117.2421000000	TC-30	Vegetated Swale	N/A	N/A	Agua Hedionda	High	City of Vista/Fire Dept	6/20/2011	No
	GP 07-036	8/ C3	2	Fire Station 5 (2008 S. Melrose Dr.)	Parking lot east of Building	33.1556497588	-117.2420000000	N/A	Porous Concrete	N/A	N/A	Agua Hedionda		City of Vista/PW's	6/20/2011	No
	GP 07-036	10/ C5	3	Fire Station 5 (2008 S. Melrose Dr.)	West end of Parking Lot	33.1557366447	-117.2420000000	N/A	*Detention Pipes	N/A	N/A	Agua Hedionda		City of Vista/PW's	6/20/2011	No
4	GP 07-035	9/ C3	1	Fire Station 6 (651 E. Vista Way)	Parking lot close to E. Vista Way	33.2062691177	-117.2361000000	N/A	Porous Concrete	N/A	N/A	Buena Vista	High	City of Vista/PW's	6/20/2011	No
	GP 07-035	12/ C5	2	Fire Station 6 (651 E. Vista Way)	North end of wildwood park	33.2060363147	-117.2361000000	N/A	Infiltration Basin	N/A	N/A	Buena Vista		City of Vista/Fire Dept	6/20/2011	No
5	D 3584	CI-10	1	Vista Village (Multiple Locations)	Beginning of Creekwalk	33.1986504797	-117.2450000000	MP-51	Vortex Separator	CDS Technologies	FSW 50-42	Buena Vista	High	City of Vista/PW's	6/20/2011	No
	N/A	N/A	2	Vista Village (Multiple Locations)	Wave Park Entrance	33.1997241602	-117.2460000000	MP-52	Drain Insert	FloGard	FF-1836SD	Buena Vista		City of Vista/Downstream Serv's	6/20/2011	No
	GP 99-019	SD-5	3	Vista Village (Multiple Locations)	Olive Ave/Vista Village Drive	33.2017044635	-117.2454000000	MP-51	Vortex Separator	CDS Technologies	FSW 20-20	Buena Vista		City of Vista/PW's	6/20/2011	No
	GP 99-019	SD-4	4	Vista Village (Multiple Locations)	Access road behind Famous Daves	33.1992016544	-117.2471000000	MP-51	Vortex Separator	CDS Technologies	FSW 50-50	Buena Vista		City of Vista/PW's	6/20/2011	No
	GP 99-019	SD-7	5	Vista Village (Multiple Locations)	Olive Ave/Goeting Way	33.2033770000	-117.2456000000	MP-51	Vortex Separator	CDS Technologies	FSW 20-20	Buena Vista		City of Vista/PW's	6/20/2011	No
	N/A	N/A	6	Vista Village (Multiple Locations)	At Staples, north side of Lado De Loma	33.1966450000	-117.2477000000	MP-52	Drain Insert	N/A	N/A	Buena Vista		City of Vista/Downstream Serv's	6/20/2011	No
	N/A	N/A	7	Vista Village (Multiple Locations)	At Staples, south side of Lado De Loma	33.1965160000	-117.2476000000	MP-52	Drain Insert	N/A	N/A	Buena Vista		City of Vista/Downstream Serv's	6/20/2011	No
6	DWG-3908	9	1	Vons/Vista Shopping Center	Right side of entrance to parking lot from Escondido	33.1951000000	-117.2337000000	TC-32	Bioretention	N/A	N/A	Buena Vista	Medium	City of Vista	6/22/2011	No
	DWG-3908	9	2	Vons/Vista Shopping Center	Left side of entrance to parking lot from Escondido	33.1952000000	-117.2337000000	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	6/22/2011	No
	DWG-3908	9	3	Vons/Vista Shopping Center	Further left of entrance after 5 parking spots	33.1953000000	-117.2337000000	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	6/22/2011	No
	DWG-3908	9	4	Vons/Vista Shopping Center	Middle of parking lot, closer to entrance by Escondido	33.1953000000	-117.2335000000	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	6/22/2011	No
7	DWG-3795	9	1	North County Ford Storage Lot	South side of Lado de Loma on bottom of hill	33.1966000000	-117.2469000000	TC-30	Vegetated Swale	N/A	N/A	Buena Vista	Low	City of Vista/PW's	6/20/2011	No
8	GP 08-028	BMP Exhibit	1	Vista Civic Center (200 Civic Center Drive)	North Visitor parking	33.2026080000	-117.2334670000	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista	Medium	City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	2	Vista Civic Center (200 Civic Center Drive)	Central Parking Lot Area (City vehicles)	33.2025580000	-117.2337720000	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	3	Vista Civic Center (200 Civic Center Drive)	Central Parking (City Vehicles)	33.2024690000	-117.2337920000	SD-20	Porous Concrete	N/A	N/A	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	4	Vista Civic Center (200 Civic Center Drive)	Southern Parking Lot Area (Employee Vehicles)	33.2022420000	-117.2335810000	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	5	Vista Civic Center (200 Civic Center Drive)	Southern Parking Lot Area (Employee Vehicles)	33.2021920000	-117.2336860000	SD-20	Porous Concrete	N/A	N/A	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	6	Vista Civic Center (200 Civic Center Drive)	Community Park	33.2034330000	-117.2349940000	TC-22	Detention Basin	NA	NA	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	7	Vista Civic Center (200 Civic Center Drive)	Upper West Lot	33.2037610000	-117.2349940000	SD-20	Porous Concrete	NA	NA	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	8	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido	33.2033360000	-117.2351560000	MP-51	Stormfilter	NA	NA	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	9	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido (eastern most)	33.2034060000	-117.2353670000	SD-20	Porous Concrete	NA	NA	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	10	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido (western most)	33.2031280000	117.2356970000	SD-20	Porous Concrete	NA	NA	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	11	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido (eastern most)	33.2034690000	-117.2352940000	TC-31	Vegetated Buffer Strip	NA	NA	Buena Vista		City of Vista/PW's	6/22/2011	No
	GP 08-028	BMP Exhibit	12	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido (western most)	33.2032420000	-117.2356140000	TC-31	Vegetated Buffer Strip	NA	NA	Buena Vista		City of Vista/PW's	6/22/2011	No
9	GP 09-0001	BMP Exhibit	1	Vista Sports Park, 555 W. Bobier Dr.	South west of artificial turf/ North west of parking lot	33.2253280000	-117.258286	MP-52	Curb Inlet Filter	Bio Clean	N/A	Lower San Luis Rey	Medium	City of Vista/Downstream Serv's	6/22/2011	No
	GP 09-0001	BMP Exhibit	2	Vista Sports Park, 555 W. Bobier Dr.	West end of Parking Lot	33.2257920000	-117.258356	MP-52	Curb Inlet Filter	Bio Clean	N/A	Lower San Luis Rey		City of Vista/Downstream Serv's	6/22/2011	No
	GP 09-0001	BMP Exhibit	3	Vista Sports Park, 555 W. Bobier Dr.	South West of Parking Lot	33.2259720000	-117.257894	MP-52	Curb Inlet Filter	Bio Clean	N/A	Lower San Luis Rey		City of Vista/Downstream Serv's	6/22/2011	No

*Underground detention system designed to attentuate peak flows from site; not designed as a treatment control BMP

*** BMP removed during renovations of library in May 2010.

APPENDIX B-1
FY 2010-11 CONSTRUCTION INVENTORY AND INSPECTIONS SUMMARY

Site ID	Project	Address	Priority	Start Date	End Date	Wet Season			Dry Season			Total Inspections for FY 2011
						Active Weeks	Required Inspections	Stormwater Inspections	Active Months	Required Inspections	Stormwater Inspections	
689	14 homes - Willowen Ridge	2261 Edgehill Rd., Vista, CA, 92084	High	7/19/2010	6/8/2011	30	15	30	5	5	5	35
721	4 Commercial Buildings	2291 S. Melrose Dr., Vista, CA 92081	High	7/15/2010	7/15/2010	0	0	0	1	1	1	1
677	56 Townhomes	719 Copper Dr., vista, CA 92083	High	7/20/2010	6/7/2011	30	15	30	5	5	5	35
757	Alta Vista Gardens	1270 Vale Terrace Dr.	High	9/10/2010	3/22/2011	25	12	18	1	1	1	19
758	Arco Gas	1244 N. Santa Fe Ave	Medium	11/4/2010	1/31/2011	10	3	3	0	0	0	3
758	Arco Gas	1244 N. Santa Fe Ave	Low	11/4/2010	11/4/2010	1	1	1	0	0	0	1
752	BMW dealership	1715 Hacienda Dr., Vista CA 92084	Medium	7/14/2010	1/31/2011	18	4	5	3	3	3	8
744	Buena Creek Trail Project (CIP 8015)	Vale Terrace Dr.	High	7/21/2010	12/30/2010	13	6	13	3	3	3	16
741	Calvary Chapel	1401 N. Melrose Dr. Vista, CA 92083	High	7/21/2010	1/25/2011	17	8	17	3	3	3	20
764	Cananea & Calera/Vale Terr & E. Vista Way sewer replacement	Cananea, Calera/Vale Terr & E. Vista Way sewer replacement	Medium	1/31/2011	5/9/2011	13	3	3	1	1	1	4
763	Church of Christ	1630 S. Melrose Dr	Medium	1/4/2011	1/4/2011	1	1	1	0	0	0	1
690	Condos (42) Oak Drive Villas	1375 Oak Dr., Vista, CA, 92084	Medium	7/20/2010	6/8/2011	30	7	7	5	5	5	12
766	E. Vista Way overlay	E. Vista Way	Medium	4/12/2011	6/15/2011	3	1	1	2	2	2	3
751	Foothill Street Improvement - CIP 8141	Foothill Dr	High	7/7/2010	2/10/2011	20	10	20	3	3	13	33
743	Gordon Properties	1025 Cielita Linda, Vista, CA 92083	High	7/15/2010	6/8/2011	30	15	29	5	5	5	34
754	Grapevine Rd Improvement - CIP 8018	Grapevine Rd	Low	7/15/2010	6/15/2011	30	7	7	6	5	6	13
768	HUD House - Anza	1656 Anza	Low	2/3/2011	6/20/2011	13	3	3	2	2	2	5
761	Hyatt Place Hotel	2645 S. Melrose Dr	High	4/28/2011	6/7/2011	1	1	1	2	2	2	3
761	Hyatt Place Hotel	2645 S. Melrose Dr	Low	1/13/2011	4/28/2011	15	3	4	0	0	0	4
739	Industrial Building	2185 La Mirada Dr., Vista CA 92081	Low	7/19/2010	5/10/2011	30	7	7	4	4	4	11
765	Lopez residence	1671 Dawson Dr	Medium	1/14/2011	6/21/2011	16	4	4	2	2	2	6
702	North Coast Church	2405 N. Santa Fe., Vista, CA, 92084	High	7/14/2010	10/26/2010	4	2	4	3	3	3	7
734	Parking Deck	2980 Scott St, Vista, CA 92081	Medium	7/15/2010	8/11/2010	0	0	0	2	2	2	2
729	Parking Lot/McAndrews Residence	1232 Tower D., Vista, CA 92083	Low	7/15/2010	11/4/2010	5	2	2	3	3	3	5
670	Pocina Properties (24 lot subdivision)	877 Sycamore Ave., Vista, CA 92081	High	1/5/2011	1/12/2011	2	1	2	0	0	0	2
700	Retaining Walls	1045-A Alta Calle, Vista, CA 92084	Low	7/20/2010	7/20/2010	0	0	0	1	1	1	1
242	Rough Grading for PC 2-043-9 lot subdvsn	385 Taylor St (Hayden Ranch)	High	7/20/2010	6/8/2011	30	15	30	5	5	5	35
742	RV & Boat Storage	1551 Sycamore Ave, Vista, CA 92081	High	7/21/2010	2/10/2011	19	9	19	3	3	3	22
728	SFD	1306 Kelglen Ln., Vista, CA 92084	Low	7/15/2010	7/15/2010	0	0	0	1	1	1	1
740	SFD- Hammond Residence	659 Rudd Rd., Vista, CA 92084	Medium	7/15/2010	6/15/2011	30	7	30	5	5	5	35
726	SFD- Snodgrass	1000 Miramar Dr., Vista, CA 92081	Low	7/20/2010	2/2/2011	18	5	5	3	3	3	8
738	SFR	1248 Sunset Dr, Vista, CA 92081	Low	7/21/2010	12/8/2010	11	3	3	3	3	3	6
748	SFR - Hughes residence	1208 Sunset Dr, Vista CA 92084	Low	7/15/2010	2/1/2011	18	4	5	3	3	3	8
749	SFR - Noakes residence	511 Fortuna Ave., Vista CA 92084	Low	7/20/2010	8/12/2010	0	0	0	2	2	2	2
708	SFR - Thompson Residence	675 Vale View, Vista, CA, 92081	Low	7/21/2010	9/14/2010	0	0	0	3	3	3	3
750	SFR - Vozza & Marsella residence	240 Palm Dr., Vista CA 92084	Low	7/21/2010	10/14/2010	2	1	1	3	3	3	4
746	SFR (see site ID #66)	721 Oceanview, Vista, CA 92084	High	7/21/2010	6/21/2011	30	15	30	5	5	5	35
706	SFR- Heart Residence	495 Ocean View Dr., Vista, CA 92084	Low	7/21/2010	7/21/2010	0	0	0	1	1	1	1
699	SFR-Sutter Residence	216 Acropolis Way, Vista, CA 92084	Low	7/15/2010	8/11/2010	0	0	0	2	2	2	2
767	Townsite Drive Improvements	Townsite Dr	Low	2/2/2011	6/8/2011	13	3	3	2	2	2	5
713	Vista Civic Center	200 Civic Center Dr, Vista, CA 92084	High	7/20/2010	2/8/2011	19	9	18	3	3	3	21
756	Vista Community Clinic	1020 Vale Terrace Dr.	Medium	8/11/2010	5/10/2011	30	7	23	3	3	3	26
760	Vista Kingdom Hall Church	409/427 Bobier Dr	Medium	11/2/2010	6/17/2011	26	6	6	2	2	2	8
723	Vista Sports Park	555 W. Bobier Dr., Vista, CA 92083	High	7/15/2010	6/29/2011	30	15	31	5	5	9	40
755	W. California Improvement - CIP 8029	W. California	Low	7/7/2010	2/9/2011	20	5	20	3	3	13	33
747	Wal-Mart Expansion	1800 University Dr, Vista CA 92084	Medium	7/15/2010	5/28/2011	30	7	7	4	4	4	11
753	Watt Communities	1045 Sycamore Ave., Vista CA 92091	High	7/15/2010	6/7/2011	30	15	30	5	5	5	35

APPENDIX B-2
FY 2010-11 CONSTRUCTION INSPECTIONS SUMMARY

Project Name: Rough Grading for PC 2-043-9 lot **Address:** 385 Taylor St. (Hayden Ranch) **Site ID#:** 242 **Site Size (Acres):** 7.04 (0.5 Disturbed) **Grading Plan #:** 01-020 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** During 2002 **End Date:** Ongoing	**Summary of Inspection Findings:** Site may have gone back to bank; Waiting bid results for new BMPs; Aquiring bids to replace BMPs for job site went back to bank
Project Name: Pocina Properties (24 lot subdivision) **Address:** 877 Sycamore Ave., Vista, CA 92081 **Site ID#:** 670 **Site Size (Acres):** 5.03 **Grading Plan #:** 06-054, 06-070, 06-020 **Inspector: F. Durazo**	**Priority:** High **Wet Inspections:** 2 **Dry Inspections:** 0 **Total Inspections:** 2 **Start Date:** 20 April 2006 **End Date:** 1/12/11	**Summary of Inspection Findings:** No issues.
Project Name:14 homes - Willowen Ridge **Address:** 2261 Edgehill Rd. **Site ID#:** 689 **Site Size (Acres):** 8.74 (8.0 Disturbed) **Grading Plan #:** 06-047 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 26 April 2007 **End Date:** Idle	**Summary of Inspection Findings:** BMPs repaired and replaced slope drains; slope failure by detention basin; Crews corrected issues
Project Name: 56 Townhomes **Address:** 719 Copper Dr., Vista, CA 92083 **Site ID#:** 677 **Site Size (Acres):** 6.1 **Grading Plan #:** 05-020 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 7/20/10 **End Date:** 6/7/11	**Summary of Inspection Findings:** No issues.
Project Name: North Coast Church **Address:** 2405 N. Santa Fe **Site ID#:** 702 **Site Size (Acres):** 10+ (10+ Disturbed) **Grading Plan #:** 06-022 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 4 **Dry Inspections:** 3 **Total Inspections:** 7 **Start Date:** 1 September 2008 **End Date:** 10/26/10	**Summary of Inspection Findings:** No issues.

Project Name: Vista Civic Center **Address:** 200 Civic Center Dr, Vista, CA 92084 **Site ID#:** 713 **Site Size (Acres):** 13 (13 Disturbed) **Grading Plan #:** 08-006 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 18 **Dry Inspections:** 3 **Total Inspections:** 21 **Start Date:** 19 August 2008 **End Date:** 2/8/11	**Summary of Inspection Findings:** No issues.
Project Name: 4 Commercial Buildings **Address:** 2291 S. Melrose Dr. **Site ID#:** 721 **Site Size (Acres):** 4 (4 Disturbed) **Grading Plan #:** 07-007 **Inspector:** S. Rytell	**Priority:** High **Wet Inspections:** 0 **Dry Inspections:** 1 **Total Inspections:** 1 **Start Date:** 19 January 2009 **End Date:** 7/15/10	**Summary of Inspection Findings:** Project is complete, awaiting prints package to release bonds
Project Name: Vista Sports Park **Address:** 555 W. Bobier Dr. **Site ID#:** 723 **Site Size (Acres):** 47 (47 Disturbed) **Grading Plan #:** 07-022 **Inspector:** S. Rytell	**Priority:** High **Wet Inspections:** 31 **Dry Inspections:** 9 **Total Inspections:** 40 **Start Date:** 9 February 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** Erosion was occuring in the borrow site area the 2 detention basins are discharging and handling the flow slightly discolored water is being discharged; borrow site repairs are underway; Permanent landscaping is being placed, new straw mats on slopes; Issues resolved
Project Name: Calvary Chapel **Address:** 1401 N. Melrose Dr. **Site ID#:** 741 **Site Size (Acres):** 21.72 (1 Disturbed) **Grading Plan #:** 09-015 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 17 **Dry Inspections:** 3 **Total Inspections:** 20 **Start Date:** 3 November 2009 **End Date:** 1/25/11	**Summary of Inspection Findings:** contractor was waiting for ground to dry to install BMPs, stockpile erosion. Called owner, asked to hydroseed or install straw mat on slopes. Issues resolved
Project Name: RV & Boat Storage **Address:** 1551 Sycamore Ave. **Site ID#:** 742 **Site Size (Acres):** 11.6 (8.75) **Grading Plan #:** 09-007 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 19 **Dry Inspections:** 3 **Total Inspections:** 22 **Start Date:** 18 November 2009 **End Date:** 2/10/11	**Summary of Inspection Findings:** slight sediment run off, asked the foreman to install more straw waddles. He did so and the problem was solved; tracking at entrance; permanent landscape installed around perimeter on site treatment BMPs installed; Issues resolved

Project Name: Gordon Properties **Address:** 1025 Cielita Linda **Site ID#:** 743 **Site Size (Acres):** 20 (15 Disturbed) **Grading Plan #:** 07-004, 06-010 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 29 **Dry Inspections:** 5 **Total Inspections:** 34 **Start Date:** 6 January 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues.
Project Name: Buena Creek Trail Project **Address:** Vale Terrace **Site ID#:** 744 **Site Size (Acres):** 0.66 Disturbed **Grading Plan #:** CIP 8015 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 13 **Dry Inspections:** 3 **Total Inspections:** 16 **Start Date:** 04 March 2010 **End Date:** 12/30/10	**Summary of Inspection Findings:** Slope issues throughout the project site, mostly from private property, this is a code enforcement issue as the NOC is complete; slight erosion near trail. Some sediment coming from private property, sediment was contained.
Project Name: SFR (see site ID #66) **Address:** 721 Oceanview **Site ID#:** 746 **Site Size (Acres):** 1.25 (0.5 Disturbed) **Grading Plan #:** 09-019 **Inspector:** J. Fretwell	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 12 April 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** Slope failure, sediment stayed on site, owner asked to place plastic on the slope and additional gravel bags; plastic installed to prevent erosion
Project Name: Foothill Street Improvement **Address:** Foothill St **Site ID#:** 751 **Site Size (Acres):** 5.03 (5.03 Disturbed) **Grading Plan #:** CIP 8141 **Inspector:** K. Groscup	**Priority:** High **Wet Inspections:** 20 **Dry Inspections:** 13 **Total Inspections:** 33 **Start Date:** 16 June 2010 **End Date:** 2/10/11	**Summary of Inspection Findings:** Engineer notified of structural failure at box culvert headwall, soil behind head wall eroded due to rising water levels and structural failure, engineer notified; issues resolved

Project Name: California West Homes **Address:** 1045 Sycamore Ave **Site ID#:** 753 **Site Size (Acres):** > 1 acre **Grading Plan #:** 06-011, 05-053 **Inspector:** F. Durazo	**Priority:** High **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 22 June 2010 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues.
Project Name: Condos (42) Oak Drive Villas **Address:** 1375 Oak Dr. **Site ID#:** 690 **Site Size (Acres):** 3.1 (3.1 Disturbed) **Grading Plan #:** 06-044 **Inspector:** K. Groscup	**Priority:** Medium **Wet Inspections:** 7 **Dry Inspections:** 5 **Total Inspections:** 12 **Start Date:** 08 September 2008 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues.
Project Name: Parking Deck **Address:** 2980 Scott St. **Site ID#:** 734 **Site Size (Acres):** 1.4 (1.4 Disturbed) **Grading Plan #:** 09-003 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 0 **Dry Inspections:** 2 **Total Inspections:** 2 **Start Date:** 28 July 2009 **End Date:** 8/11/10	**Summary of Inspection Findings:** Project improvements are complete, site is completed landscaping and inlet filters are in place
Project Name: SFD **Address:** 659 Rudd Rd. **Site ID#:** 740 **Site Size (Acres):** 4.12 (0.81 Disturbed) **Grading Plan #:** 09-066, 07-032 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 30 **Dry Inspections:** 5 **Total Inspections:** 35 **Start Date:** 29 October 2009 **End Date:** Ongoing	**Summary of Inspection Findings:** Perimeter silt fence is in place; contractor has slopes vegetated and silt fence in place; site is stable; site has the slopes vegetated and the detention system is in place
Project Name: Wal-Mart Expansion **Address:** 1800 University Dr **Site ID#:** 747 **Site Size (Acres):** <1 acre **Grading Plan #:** 09-017 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 7 **Dry Inspections:** 4 **Total Inspections:** 11 **Start Date:** 10 June 2010 **End Date:** 5/28/11	**Summary of Inspection Findings:** Site BMPs are in place, fabric is placed on existing inlet boxes, inlets are protected and gravel entrances are in place in work areas.

Project Name: BMW Dealership	**Priority:** Medium	**Summary of Inspection Findings:**
Address: 1715 Hacienda Dr	**Wet Inspections:** 5	
Site ID#: 752	**Dry Inspections:** 3	
Site Size (Acres): <1 acre	**Total Inspections:** 8	No issues.
Grading Plan #: 10-001	**Start Date:** 17 June 2010	
Inspector: F. Durazo	**End Date:** 1/31/11	
Project Name: SFR - Sutter Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 216 Acropolis Way	**Wet Inspections:** 0	
Site ID#: 699	**Dry Inspections:** 2	
Site Size (Acres): .83 (.80 Disturbed)	**Total Inspections:** 2	Project is idle and well vegetated; site is stable and idle
Grading Plan #: 06-074	**Start Date:** 1 September 2008	
Inspector: S. Rytell	**End Date:** 8/11/10	
Project Name: Retaining Walls	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1045-A Alta Calle	**Wet Inspections:** 0	
Site ID#: 700	**Dry Inspections:** 1	
Site Size (Acres): .5 (2.5 Disturbed)	**Total Inspections:** 1	Project is idle and well vegetated
Grading Plan #: 06-050	**Start Date:** 8 September 2008	
Inspector: K. Groscup	**End Date:** On hold	
Project Name: SFR (Thompson Residence)	**Priority:** Low	**Summary of Inspection Findings:**
Address: 675 Vale View	**Wet Inspections:** 0	
Site ID#: 708	**Dry Inspections:** 3	
Site Size (Acres): 0.5 (0.5 Disturbed)	**Total Inspections: 3**	close permit, all final permanent BMPs installed per plan
Grading Plan #: 07-030	**Start Date:** 10 January 2005	
Inspector: J. Fretwell	**End Date**: 9/14/10	
Project Name: SFD	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1000 Miramar Dr.	**Wet Inspections:** 5	
Site ID#: 726	**Dry Inspections:** 3	
Site Size (Acres): 1.5 (1.0 Disturbed)	**Total Inspections:** 8	No issues.
Grading Plan #: 08-016	**Start Date:** 20 April 2009	
Inspector: J. Fretwell	**End Date:** 2/2/11	

Project Name: SFD	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1306 Kelglen Ln.	**Wet Inspections:** 0	
Site ID#: 728	**Dry Inspections:** 1	
Site Size (Acres): 0.25 (0.25 Disturbed)	**Total Inspections:** 1	No issues.
Grading Plan #: 07-045	**Start Date:** 20 April 2009	
Inspector: J. Fretwell, F. Durazo	**End Date:** 7/15/10	
Project Name: Parking Lot	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1232 Tower Dr.	**Wet Inspections:** 2	
Site ID#: 729	**Dry Inspections:** 3	
Site Size (Acres): 0.25 (0.25 Disturbed)	**Total Inspections:** 5	Project is idle
Grading Plan #: 07-011	**Start Date:** 20 April 2009	
Inspector: F. Durazo	**End Date:** 11/4/10	
Project Name: SFR	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1248 Sunset Dr.	**Wet Inspections:** 3	
Site ID#: 738	**Dry Inspections:** 3	
Site Size (Acres): 2.89(0.59 Disturbed)	**Total Inspections:** 6	No issues.
Grading Plan #: 08-029	**Start Date:** 25 September 2009	
Inspector: J. Fretwell	**End Date:** 12/8/10	
Project Name: Industrial Building	**Priority:** Low	**Summary of Inspection Findings:**
Address: 2185 La Mirada Dr.	**Wet Inspections:** 7	
Site ID#: 739	**Dry Inspections:** 4	
Site Size (Acres): 0.85(0.85 Disturbed)	**Total Inspections:** 11	No issues.
Grading Plan #: 7-039	**Start Date:** 16 November 2009	
Inspector: K. Groscup	**End Date:** 5/10/11	
Project Name: SFR - Hughes Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1208 Sunset Dr	**Wet Inspections:** 5	
Site ID#: 748	**Dry Inspections:** 3	
Site Size (Acres): <1 acre	**Total Inspections:** 8	Site has straw mats on slopes and preimeter silt fence is in place
Grading Plan #: 07-014	**Start Date:** 10 June 2010	
Inspector: S. Rytell	**End Date:** 2/1/11	

Project Name: SFR - Noakes Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 511 Fortuna Ave	**Wet Inspections:** 0	
Site ID#: 749	**Dry Inspections:** 2	
Site Size (Acres): 0.5 acres	**Total Inspections:** 2	No issues.
Grading Plan #: 09-020	**Start Date:** 15 June 2010	
Inspector: K. Groscup	**End Date:** 8/12/10	
Project Name: SFR - Vozza & Marsella Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 240 Palm Dr	**Wet Inspections:** 1	
Site ID#: 750	**Dry Inspections:** 3	
Site Size (Acres): 0.075 (0.051 Disturbed)	**Total Inspections:** 4	No issues.
Grading Plan #: 07-001	**Start Date:** 21 June 2010	
Inspector: J. Fretwell	**End Date:** 10/14/10	
Project Name: Grapevine Rd Improvement	**Priority:** Low	**Summary of Inspection Findings:**
Address: Grapevine Rd	**Wet Inspections:** 7	
Site ID#: 754	**Dry Inspections:** 6	
Site Size (Acres): <1 acre	**Total Inspections:** 12	No issues.
Grading Plan #: CIP 8018	**Start Date:** 16 June 2010	
Inspector: F. Durazo	**End Date:** Ongoing	
Project Name: W. California Improvement	**Priority:** Low	**Summary of Inspection Findings:**
Address: W. California	**Wet Inspections:** 20	
Site ID#: 755	**Dry Inspections:** 13	
Site Size (Acres): <1 acre	**Total Inspections:** 33	No issues.
Grading Plan #: CIP 8029	**Start Date:** 20 June 2010	
Inspector: J. Fretwell	**End Date:** 2/9/11	
Project Name: SFR - Heart Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 495 Ocean View Dr., Vista, CA 92084	**Wet Inspections:** 0	
Site ID#: 706	**Dry Inspections:** 1	
Site Size (Acres): .35	**Total Inspections:** 1	No issues.
Grading Plan #: 06-045	**Start Date:** 7/21/10	
Inspector: J. Fretwell	**End Date:** 7/21/10	

Project Name: Vista Community Clinic **Address:** 1020 Vale Terrace Dr. **Site ID#:** 756 **Site Size (Acres):** <1 acre **Grading Plan #:** 06-045 **Inspector**: K. Groscup	**Priority:** Medium **Wet Inspections:** 23 **Dry Inspections:** 3 **Total Inspections:** 26 **Start Date:** 8/11/10 **End Date:** 1/6/11	**Summary of Inspection Findings:** Silt Fence, Straw waddles onsite, waiting to start more demo before implementing BMPs
Project Name: Alta Vista Gardens **Address:** 1270 Vale Terrace Dr. **Site ID#:** 757 **Site Size (Acres):** > 1 acre **Grading Plan #:** 07-021 **Inspector**: S. Rytell	**Priority:** High **Wet Inspections:** 18 **Dry Inspections:** 1 **Total Inspections:** 19 **Start Date:** 9/10/10 **End Date:** 3/22/11	**Summary of Inspection Findings:** Projects slopes are seeded; site BMPs are in place and slopes have been seeded and are growing; site has been seeded and BMPS are in place, Project BMPs are on slopes and mulch has been placed on slope corners, rock entrance is in place, Jute netting is placed on slopes and a de-silt area with visqween and gravel bags is in place; site is being stabilized
Project Name: Arco Gas **Address:** 1244 N. Santa Fe Ave **Site ID#:** 758 **Site Size (Acres):** <1 acre **Grading Plan #:** 10-005 **Inspector:** F. Durazo	**Priority:** Medium **Wet Inspections:** 4 **Dry Inspections:** 0 **Total Inspections:** 4 **Start Date:** 11/4/10 **End Date:** 1/31/11	**Summary of Inspection Findings:** No issues.
Project Name: Vista Kingdom Hall Church **Address:** 409/427 Bobier Dr **Site ID#:** 760 **Site Size (Acres):** 3 **Grading Plan #:** 10-003 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 6 **Dry Inspections:** 2 **Total Inspections:** 8 **Start Date:** 11/2/10 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues.
Project Name: Hyatt Place Hotel **Address:** 2645 S. Melrose Dr **Site ID#:** 761 **Site Size (Acres):** 3.4 acres **Grading Plan #:** 08-026 **Inspector:** K. Groscup	**Priority:** Low then High **Wet Inspections:** 5 **Dry Inspections:** 2 **Total Inspections:** 7 **Start Date:** 1/13/11 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues.

Project Name: Church of Christ **Address:** 1630 S. Melrose Dr **Site ID#:** 763 **Site Size (Acres):** <1 acre **Grading Plan #:** 10-010 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 0 **Dry Inspections:** 0 **Total Inspections:** 1 **Start Date:** 1/4/11 **End Date:** 1/4/11	**Summary of Inspection Findings:** No issues.
Project Name: Cananea & Calera/Vale Terr & E.Vista Way sewer replacement **Address:** Cananea, Calera/Vale Terr & E. Vista Way sewer replacement **Site ID#:** 764 **Site Size (Acres):** <1 acre **Grading Plan #:** N/A **Inspector:** F. Durazo	**Priority:** Medium **Wet Inspections:** 3 **Dry Inspections:** 1 **Total Inspections:** 4 **Start Date:** 1/31/11 **End Date:** 5/9/11	**Summary of Inspection Findings:** No issues.
Project Name: Lopez residence **Address:** 1671 Dawson Dr□□ **Site ID#:** 765 **Site Size (Acres):** <1 acre **Grading Plan #:** 10-013 **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 4 **Dry Inspections:** 2 **Total Inspections:** 6 **Start Date:** 1/14/11 **End Date:** Ongoing	**Summary of Inspection Findings:** Straw mat being placed on slopes; perimeter silt fence in place and being completed
Project Name: E.Vista Way overlay **Address:** E. Vista Way□□ **Site ID#:** 766 **Site Size (Acres):** <1 acre **Grading Plan #:** CIP **Inspector:** S. Rytell	**Priority:** Medium **Wet Inspections:** 1 **Dry Inspections:** 2 **Total Inspections:** 3 **Start Date:** 4/12/11 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues.
Project Name: Townsite Drive Improvements **Address:** Townsite Dr□□ **Site ID#:** 767 **Site Size (Acres):** <1 acre **Grading Plan #:** 3983 **Inspector:** K. Groscup	**Priority:** Low **Wet Inspections:** 2 **Dry Inspections:** 3 **Total Inspections:** 5 **Start Date:** 2/2/11 **End Date:** Ongoing	**Summary of Inspection Findings:** No issues.

Project Name: HUD House - Anza	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1656 Anza□□	**Wet Inspections:** 2	
Site ID#: 768	**Dry Inspections:** 3	
Site Size (Acres): <1 acre	**Total Inspections:** 5	No issues.
Grading Plan #: 07-017	**Start Date:** 2/3/11	
Inspector: S. Rytell	**End Date:** Ongoing	

APPENDIX C-1
FY 2010-11 SEWER SPILL REPORT LOG

AGENCY	SSO EVENT ID	SPILL ADDRESS	REACH SURFACE	REACH STORM DRAINPIPE	NOT FULLY CAPTURE	PRIVT LATRL SPILL	SPILL VOL (GAL)	SPILL VOL RECOVER	SPILL VOL REACH SURF	SPILL RATE (GAL/MIN)	SPILL CAUSE	SPILL CAUSE EXPLAIN	RESPONSE ACTIVITIES EXPL	SURFACE WATER IMPACT
Vista City	765534	267 ALESTAR Street	No	Yes	No	Yes	15	0	15	0	Vandalism	ROCKS WERE PLACED IN PRIVATE LATERAL ACCORDING TO THE PLUMBER WHICH CAUSED THE BLOCKAGE IN THE LATERAL		BUENA VISTA WATERSHED
Vista City	763880	WEST VISTA Way	No	No	Not Applicable - Spill did not reach a separate storm drainpipe	No	39	39	0	1	Other (specify below)	CCTV OF LINE IS INCONCLUSIVE AS TO THE CAUSE OF THE OVERFLOW. POSSIBLY SOME TEMPORARY OBSTRUCTION WAS IN THE LINE CAUSING OVERFLOW & THEN WAS WASHED DOWN STREAM IN THE LINE.	CREWS RESPONDED TO OVERFLOW & CONTAINED ALL OF THE SPILL WHICH DID NOT REACH ANY SURFACE WATER, STORM DRAIN OR DRAINAGE CHANNEL.	NONE
Vista City	763782	168 WALKER Way	No	No	Not Applicable - Spill did not reach a separate storm drainpipe	Yes	15	15	0	0	Root intrusion	ROOTS FROM PRIVATE CLEANOUT CAUSED SPILL	CLEANED UP EFFECTS OF SPILL; CLEARED ROOT INTRUSION INTO THE CITY'S MAINLINE FROM PRIVATE CLEANOUT; THE CITY'S MAINLINE MAINTAINED FLOW; ROOTS WERE INTRUDING INTO THE MAINLINE FROM THE PRIVATE CLEANOUT; SCHEDULE A CCTV OF MAINLINE TO DETERMINE CONDITION OF PRIVATE LATERAL; PERFORMED DYE TEST	NONE
Vista City	758455	1300 SPECIALTY Drive	Yes	No	Not Applicable - Spill did not reach a separate storm drainpipe	Yes	5	5	5	1	Root intrusion	LARGE AMOUNT OF ROOTS IN THE PRIVATE MANHOLE	CITY CREWS VACUUMED THE SPILL FROM THE STORMDRAIN & VACUUMED OUT THE PRIVATE MANHOLE TO PREVENT FURTHER SPILL. ALSO OPENED THE MANHOLE & CLEARED THE ROOTS THAT WERE CAUSING THE SPILL	NONE
Vista City	758341	200 OLIVE Avenue	No	Yes	Yes	Yes	50	50	0	1	Other (specify below)	PRIVATE LATERAL SPILL	CLEANED UP EFFECTS OF SPILL	NA
Vista City	756236	1903 W VISTA WAY Way	Yes	Yes	No	No	13800	12300	1500	60	Other (specify below)	LARGE METAL ROD WAS FOUND IN THE DROP LINE & DEBRIS WAS HUNG UP ON THE BAR CAUSING A BLOCKAGE.	CREWS WERE ON SCENE & MITIGATED EFFECTS OF SPILL & WASHED DOWN AREA. JJ SEPTIC WAS CALLED TO ASSIST IN VACUUM EFFORTS. LINE WILL BE TELEVISED 08/24/2010	BUENA VISTA CREEK
BUENA SANITATION DISTRICT	758941	1959 YETTFORD Road	No	Yes	Yes	No	375	375	0	5	Root intrusion	ROOTS & A LOT OF PAPER	THE LINE WILL BE TELEVISED (11/30/2010)	NONE

APPENDIX C-2
FY 2010-11 MUNICIPAL INVENTORY

Appendix C-2
FY 2011 Municipal Inventory

Name	High Priority	Address		Description	Pollutant Generating Activities																	Potential Pollutants Generated									Tributary to 303(d) and Potential to Generate Impairing Pollutants	Watershed
					Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances		
Avo Playhouse		303	Main St	Theater	X	X				X				X	X	X		X		X		X	X	X				X	X		X	BV
Breeze Hill Park	X	645	S. Melrose Dr.	Park	X	X				X				X	X	X		X		X		X	X	X		X	X	X	X		X	BV
Brengle Terrace Park	X	1200	Vale Terrace Dr.	Maintenance Yard and Park	X	X				X			X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	BV
Bub Williamson Park	X	530	Grapevine Rd	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	BV
Buena Vista Park	X	1851	S. Melrose Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X	X	AH
Chamber of Commerce		201	Indiana	Administrative Building	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Civic Center		200	Civic Center Dr.	City Hall	X	X								X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Community Center		1150	Lupine Hills	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	AH
Fire Station #1		175	Melrose Dr	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Fire Station #2		1050	Valley Drive	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Fire Station #3		1070	Old Taylor St.	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X	X	SLR
Fire Station #4		2121	Thibodo	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X	X	AH
Gloria McClellan Senior Center		1400	Vale Terrace Dr.	Senior Center and Parking lot	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
La Mirada Canyon		1219	Park Center	Open Space	X	X								X	X	X				X		X	X	X		X			X	X	X	AH
Library		700	Eucalyptus	Library	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Lifeline - North County		200	Michigan Ave.	Community Services	X											?											X					BV
Moonlight Amphitheater	X	1200	Vale Terrace	Amphitheater	X	X				X				X	X	X		X		X		X	X	X		X		X	X		X	BV
Parking Lot	X		E. Broadway - Hanes Pl.	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV
Parking Lot	X		Main St / S. Indiana Ave. S/E corner	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV
Parking Lot	X		Main St - Michigan Ave.	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV
Parking Lot	X	523	S. Santa Fe	Parking Lot	X											X						X	X	X	X	X	X	X			X	BV
Parking Lot	X	300	blk of Main St	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV
Park-N-Ride	X		W. Vista Way @ S. Emerald	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV
Police Sub-Station		1477	Moon Rd	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Police Sub-Station		2082	Thibodo	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	AH
Police Sub-Station		340	E. Townsite	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Publc Works Yard	X	1165	E. Taylor Street	Corporate Yard	X	X	X	X	X	X	X		X	X	X	X				X		X	X	X	X		X	X	X	X	X	BV
PS Satellite Yard	X	2430	Lupine Hills Dr.	Storage and Corporate Yard	X	X				X	X		X	X	X	X						X	X	X	X	X	X	X	X	X	X	AH
PS Auxillary / HHW	X	1145	E. Taylor St	Household Haz Waste Collection Ctr	X	X				X	X	X		X		X				X		X	X	X	X		X	X	X	X	X	BV
PS Yard / Inactive WWTP	X	2525	Lupine Hills	Buena Station 52 & Corporate Yard																												AH
Rain Tree Park	X	545	Townsite Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	BV
Rancho Buena Vista Adobe		640	Alta Vista	Attraction	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Rancho Buena Vista Park	X	1851	S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	AH
Senior Center			Vista Village @ Michigan	Senior Center and old Railroad Station bldg	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Sewer Pump Station	X	2685	S. Melrose Dr.	Wastewater - Raceway Pump Station	X	X								X		X														X		AH
Sewer Pump Station	X	2080	S. Melrose Dr.	Wastewater - Buena Pump Station	X	X								X		X														X		AH
Shadowridge Park	X	2101	Lupine Hills	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	AH
Sports Park	X	555	W. Bobier Dr	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	SLR
South Buena Vista Park	X	1602	Mountain Pass Circle	Park w/ Detention Basin	X	X								X	X	X		X		X	X	X	X	X		X	X	X	X	X	X	AH
Tennis Courts		1200	Vale Terrace	Tennis courts										X		X				X												BV
The Wave	X	101	Wave Dr.	Waterpark	X	X				X	X			X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	BV
Thibodo Park	X	1150	Lupine Hills Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	AH
Townsite Community Center		642	Vista Village Dr.	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV
Townsite Park	X	340	E.Townsite Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X	X	BV
Vista Village Walk			Vista Village Dr / Michigan Ave.	Green Belt Walkway																												BV
Wildwood Park	X	651	E. Vista Way	Park	X	X								X	X	X		X		X		X	X	X		X			X	X	X	BV

Appendix C-2
FY 2011 Municipal Inventory

Name	High Priority	Address		Description	Pollutant Generating Activities																	Potential Pollutants Generated									Tributary to 303(d) and Potential to Generate Impaining Pollutants	Watershed
					Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances		
Brengle Terrace Basin	X	1100	Vale Terrace Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X	X	BV
Cypress Basin	X		Monte Vista Dr. & Cypress Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X	X	BV
Monte Vista Basin	X		Monte Vista Dr. & Valley Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X	X	BV
Creekwalk / BV Channel	X		Main St. & Wave Dr.	Flood control channel																	X	x	X	X	X	X	X	X	X	X	X	BV
Field Activities																																
Road and Street Maintenance	X	Varies															X															
Plaza and Sidewalk Cleaning	X	Varies																X														
Landscape Maintenance		Varies																		X												
Waste Handling and Disposal		Varies												X								X	X	X	X	X	X	X	X	X		
MS4 Maintenance		Varies		See JURMP Section 6																See JURMP Section 6												
Wastewater Utility Maintenance		Varies		See JURMP Section 6																See JURMP Section 6												

APPENDIX C-3
FY 2010-11 MUNICIPAL INSPECTIONS SUMMARY

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park is clean and well maintained.	Enforcement Action:	None
Inspection Date:	12/6/2010			
Facility Name:	Breeze Hill Park		Corrective Actions Required:	No
Address:	645 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	Some areas had broken gravel bags, slope erosion and dumpster lids open. Majority of the large expanse is clean and well maintained.	Enforcement Action:	Verbal
Inspection Date:	12/6/2010			
Facility Name:	Brengle Terrace Park		Corrective Actions Requred:	Yes
Address:	1200 Vale Terrace			
			Corrective Action Description:	
			remove/replace broken gravel bags, implement bmps for slope erosion, leep lids closed.	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sandra Sotola		Follow Up Inspection Date:	1/24/2011
			Corrective Actions Verified:	Yes

Inspection Type:	Municipal	Park clean and well maintained.	Enforcement Action:	None
Inspection Date:	12/6/2010			
Facility Name:	Bub Williamson Park		Corrective Actions Requred:	No
Address:				
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park has a 'duck' pond. Area is continually serviced and is well maintained. Doggie bags are provided. Maintenance Yard is organized; storage lockers are labeled, portable toilets have secondary containment.	Enforcement Action:	None
Inspection Date:	12/6/2010			
Facility Name:	Buena Vista Park and Maint Yard		Corrective Actions Requred:	No
Address:	1851 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Areas are clean and well maintained.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	Civic Center		Corrective Actions Requred:	No
Address:	200 Civic Center Dr			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park is well maintained.	Enforcement Action:	None
Inspection Date:	12/6/2010			
Facility Name:	Luz Duran-Townsite Park		Corrective Actions Requred:	No
Address:	340 E. Townsite Dr			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Moonlight Amphitheater is well maintained. Trash recetacle areas had some staining and debris. Some erosion.	Enforcement Action:	Verbal
Inspection Date:	12/6/2010			
Facility Name:	Moonlight Amphitheater		Corrective Actions Requred:	Yes
Address:	1200 Vale Terrance			
			Corrective Action Description:	
			implement bmps, remove trash and staining.	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sandra Sotola		Follow Up Inspection Date:	1/24/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Lot is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	E. Broadway @ Hanes Pl			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This is a public parking lot used for 'park and ride'. Trash, debris, shopping cart and gopher activity are prevelant.	Enforcement Action:	Verbal
Inspection Date:	12/6/2010			
Facility Name:	Park and Ride Lot		Corrective Actions Requred:	Yes
Address:	Emerald @ W. Vista Way			
			Corrective Action Description:	
			remove and maintain.	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sandra Sotola		Follow Up Inspection Date:	1/24/2011
			Corrective Actions Verified:	Yes

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	Main St & Michigan Ave			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	Lot is maintained. No visible trash or debris.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	Maint St @ S. Indiana s/e corner			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	300 Blk Main St			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	This public parking lot is frequented by a hotel to the south. It has no landscaping. The area is maintained and no visible trash and debris.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	523 S. Santa Fe Ave			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information	General Description of Findings	Enforcement and Follow Up

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This yard is utilized by Storm Drain Maintenance and Waste Water Crews. Area is clean and maintained.	Enforcement Action:	None
Inspection Date:	12/8/2010			
Facility Name:	Public Works Satellite Yard-Buena Yard		Corrective Actions Requred:	No
Address:	2525 Lupine Hills Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, PWs Operations Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	The Satelite Yard is unmanned and used primarily as a storage facility for large Public Services items; light poles, K-rails, concrete manhole elevation rings etc. Area (upper and lower yards) is organized and dynamic. Large tank is empty and stored for future use.	Enforcement Action:	None
Inspection Date:	12/8/2010			
Facility Name:	Public Works Satelite Yard		Corrective Actions Requred:	No
Address:	2430 Lupine Hills Dr			
			Corrective Action Description:	
Contact:	Craig Trammell, PWs Operations Mgr			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	This facility is under the supervision of Public Works Dept. There is a high level of cleanliness. The area is well maintained, organized and efficient in the small space allocated for the reclamation process. They follow an efficient plan to accept, catorgorize, then dispose of household hazardous waste..	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	Public Works Household Haz Waste		Corrective Actions Requred:	No
Address:	1145 E. Taylor St			
			Corrective Action Description:	
Contact:	Craig Trammell, PWs Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	The Public Works Yard is overall organized and clean. Haz Mat properly labeled and spill kits readily available throughout the site. Materials are covered and secure.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	Public Works Yard		Corrective Actions Requred:	No
Address:	1165 E. Taylor St			
			Corrective Action Description:	
Contact:	Craig Trammell, PWs Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	Park is clean and well maintained. Leaves are removed daily and dog bags are provided.	Enforcement Action:	None
Inspection Date:	12/6/2010			
Facility Name:	Rain Tree Park		Corrective Actions Requred:	No
Address:	545 Townsite Dr			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	Park is well used with continual activity. It is well maintained, clean and no visible trash, debris etc.	Enforcement Action:	None
Inspection Date:	12/8/2010			
Facility Name:	Rancho Buena Vista Park		Corrective Actions Requred:	No
Address:	1851 S. Melrose Dr			
			Corrective Action Description:	
			Water times were reduced.	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park is clean and well maintained. Leaves are removed daily and dog bags are provided.	Enforcement Action:	None
Inspection Date:	12/8/2010			
Facility Name:	Shadowridge Park		Corrective Actions Requred:	No
Address:	2101 Lupine Hills			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Perimeter drainage dtiches require cleaning. Park area is utilized regularly and is clean and well maintained.	Enforcement Action:	Verbal
Inspection Date:	12/7/2010			
Facility Name:	Sports Park		Corrective Actions Requred:	Yes
Address:	555 W. Bobier Dr			
			Corrective Action Description:	
			clean drainage ditches.	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	San Luis Rey (903)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Sediment discharge and overgrown shrubbery.	Enforcement Action:	Verbal
Inspection Date:	12/8/2010			
Facility Name:	Thibodo Park		Corrective Actions Requred:	Yes
Address:	1150 Lupine Hills Dr			
			Corrective Action Description:	
			implement bmps and reduce overgrown shrubbery.	
Contact:	Chuck Crist, Parks Supervisor			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Sandra Sotola		Follow Up Inspection Date:	2/1/2011
			Corrective Actions Verified:	Yes

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	. The overall park is well maintained, no visible trash and debris.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	The Wave Waterpark		Corrective Actions Requred:	No
Address:	101 Wave Dr			
			Corrective Action Description:	
Contact:	Natalie Livingston			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	Park is clean and well maintained. Dog bags provided. There is adequate waste containers.	Enforcement Action:	None
Inspection Date:	12/7/2010			
Facility Name:	Wildwood Park		Corrective Actions Requred:	No
Address:	651 E. Vista Way			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
	Chris Dzwigalski, WW/SW Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Inspection Type:	Municipal	Basin clean, no actions necessary.	Enforcement Action:	None
Inspection Date:	12/28/2010			
Facility Name:	Brengle Terrace Detention Basin		Corrective Actions Requred:	No
Address:	1100 Vale Terrace			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
	Chris Dzwigalski, WW/SW Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Daniel Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This channel area is utilized for flood control and recreational walking.	Enforcement Action:	None
Inspection Date:	12/28/2010			
Facility Name:	Creek Walk/Buena Vista Channel		Corrective Actions Requred:	No
Address:	Main St and Wave Dr			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
	Chris Dzwigalski, WW/SW Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Doug Coppi		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal		Enforcement Action:	None
Inspection Date:	12/28/2010			
Facility Name:	Cypress Detention Basin		Corrective Actions Requred:	No
Address:	Monte Vista Dr and Cypress Dr			
			Corrective Action Description:	
Contact:	Chuck Crist, Parks Supervisor			
	Chris Dzwigalski, WW/SW Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Daniel Welte		Follow Up Inspection Date:	7/20/2009
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Sediment and debris in catch basin box, whistle drain and concrete swale	Enforcement Action:	Verbal
Inspection Date:	12/28/2010			
Facility Name:	Monte Vista Detention Basin		Corrective Actions Requred:	Yes
Address:	Monte Vista Dr and Valley Dr			
			Corrective Action Description:	
			Remove sediment and debris in catch basin box, whistle drain and replace fiber roll..	
Contact:	Chuck Crist, Parks Supervisor			
	Chris Dzwigalski, WW/SW Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Daniel Welte		Follow Up Inspection Date:	1/21/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Sediment and debris in catch basin box, whistle drain and ineffective fiber roll around whistle drain.	Enforcement Action:	Verbal
Inspection Date:	12/28/2010			
Facility Name:	S. Buena Park Detention Basin		Corrective Actions Requred:	Yes
Address:	1602 Mountain Pass Circle			
			Corrective Action Description:	
			Remove sediment and debris in catch basin box, whistle drain and concrete swale.	
Contact:	Chuck Crist, Parks Supervisor			
	Chris Dzwigalski, WW/SW Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Daniel Welte		Follow Up Inspection Date:	2/1/2011
			Corrective Actions Verified:	Yes

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Pump station is unmanned. The area within and without is very clean and well maintained.	Enforcement Action:	None
Inspection Date:	12/21/2010			
Facility Name:	Buena Pump Station		Corrective Actions Requred:	No
Address:	2080 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Eugene Casada - EWA rep			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Daniel Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Pump station is unmanned. The area within and without is very clean and well maintained.	Enforcement Action:	None
Inspection Date:	12/21/2010			
Facility Name:	Raceway Pump Station		Corrective Actions Requred:	No
Address:	2685 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Eugene Casada - EWA rep			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Daniel Welte		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Sidewalk/curb area required cleaning and removing graffiti. City crews implemted perimeter protection to avoid run-off of discharge at location. All discharge was collected and disposed of appropriately.	Enforcement Action:	None
Inspection Date:	1/14/2011			
Facility Name:	Plaza and sidewalk cleaning		Corrective Actions Requred:	No
Address:	Indian @ drainage channel			
			Corrective Action Description:	
Contact:	Rudy Luna, PWs Supervisor			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Street repair and replacement. City crews implemted perimeter protection to avoid run-off of asphalt at location inlets. No residual was visible after repair/replacement. Gravel bags remained in place until completion of road resurfacing and repair.	Enforcement Action:	None
Inspection Date:	1/14/2011			
Facility Name:	Road repair		Corrective Actions Requred:	No
Address:	Townsite Dr @ Luz Duran Park			
			Corrective Action Description:	
Contact:	Craig Trammell, PWs Operations Mgr			
	Kurt Groscup, Engineer Inspector			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sandra Sotola		Follow Up Inspection Date:	

Appendix C-3
FY 2011 Municipal Inspections Summary

General Information		General Description of Findings	Enforcement and Follow Up	
			Corrective Actions Verified:	

APPENDIX D-1
FY 2010-11 STATIONARY COMMERCIAL INVENTORY

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	1320 Motor Sports	249		N Emerald Dr	Vista	CA	92083	904.21	7538	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	X
VI	3 Pacos Catering @ El Burrito Catering	365		Olive Ave	Vista	CA	92083	904.22		722320	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	7 Eleven #15923	1501		N Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Equipment Repair	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	7 Eleven #24085	900		N Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	7 Eleven #32326 A 2111	3251		Business Park Dr	Vista	CA	92083	904.31	5541	447110	Fueling	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	7-Eleven #2111-13625G	470		N Melrose Dr	Vista	CA	92083	904.21	5541	447110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	7-Eleven #21795B-2111	1595		E Vista Way	Vista	CA	92084	904.22	5411	445120	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
VI	7-Eleven #23302A	895		E Vista Way	Vista	CA	92084	904.22	5411	445120	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	High	X
VI	7-Eleven #33160T-2111	298		Sycamore Ave	Vista	CA	92083	904.32	5411	447110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	
VI	7-Eleven #33376B-2111	1610		S Melrose Dr	Vista	CA	92081	904.31	5541	447110	Fueling	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	99	705		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	A 1 Vista Repair	916		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	A+ Automotive	257	A	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	A-1 Radiator	1903	C	W Vista Way	Vista	CA	92083	904.21	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Aatco Of Vista	1144		S Santa Fe Ave	Vista	CA	92083	904.22		8111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	A-B-C Smog	1415		S Santa Fe Ave	Vista	CA	92084	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Ablahad Inc.	625		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Abundant Air Systems	167		Vera Cir	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Acells Corp	3121		Scott St	Vista	CA	92081	904.31	5099	421990	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Acropolis Greek Grill	3295	D	Business Park Dr	Vista	CA	92083	904.31		7222	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Adams Automotive	158	A	Olive Ave	Vista	CA	92083	904.22	7549	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Advance Micro Components Inc	2475	B	Coral St	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Ai Sushi	1910	106	Shadowridge Dr	Vista	CA	92083	904.31	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Aibertos Mexican Food	435		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	X
VI	AJ Smog	660		E Vista Way	Vista	CA	92084	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Albertacos Mex Food Inc	601		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	High	X
VI	Albertson's #6201	1301		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Albertson's #6797	1601		S Melrose Dr	Vista	CA	92081	904.31	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	
VI	All Star Subs	1289		E Vista Way	Vista	CA	92084	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Allen's Alley Cafe	124		Hanes Pl	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Allen's Auto	718		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Altman Speciality Plants	1516		Monte Vista Dr	Vista	CA	92084	904.22	5148	422480	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	X
VI	American Concrete Cutting & Cor	1217		Distribution Way	Vista	CA	92083	904.31	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	American Legacy Products, Inc.	2575	G	Fortune Way	Vista	CA	92083	904.31	5099	424430	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	American Metal Packaging Company	1185	C	Park Center Dr	Vista	CA	92083	904.31	3674	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	AMERICAN SPORT BIKE	1341	22	Distribution Way	Vista	CA	92081	904.31	5571	441221	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Americana Farms	2834	D	La Mirada Dr	Vista	CA	92081	904.31		42493	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Amigo Market	995	116	Postal Way	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	Angelitos Fruteria Y Neveria	1234		N Santa Fe Ave	Vista	CA	92083	904.22		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Aniata Cheese Co	2332	1000	La Mirada Dr	Vista	CA	92081	904.31	5143	422430	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Apex Windows & Doors, Inc	1315	108	Hot Spring Way	Vista	CA	92081	904.31	5031	421310	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	
VI	APRO # 37	535		N Santa Fe Ave	Vista	CA	92084	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	Apro #27	976		Escondido Ave	Vista	CA	92083	904.22	5541	447190	Fueling	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Apro 47	911		E Vista Way	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	No	Yes	High	X
VI	Aquatic Fitness Concepts	1495	145	Ponsettia Avenue	Vista	CA	92081	904.51	5999	453998	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Arashi Japanese Cuisine	962		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	Arco AM PM #6315	1403		S Santa Fe Ave	Vista	CA	92083	904.22	5541	44711	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Arellano Growers Whsl	2015		Foothill Dr	Vista	CA	92084	904.22	5193	42293	Wholesale/Storage/Warehousing	No	No	No	Yes	No	No	No	Yes	No	Yes	Medium	
VI	Armandos Mexican Food	770	L	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	Armandos Taco Shop	625		N Santa Fe Ave	Vista	CA	92083	904.22	5812	71111	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Aschbrenner, Inc. dba Spectrum Floral Servic	2505		Commerce Way	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	Yes	No	No	Yes	No	No	No	No	Yes	Yes	High	X
VI	Auto Europa Cars	737	743	Townsite Dr	Vista	CA	92084	904.22	5521	44112	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Auto Precision	1024	101	Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Auto Smog	2070	J	Hacienda Dr	Vista	CA	92081	904.21	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Auto Spa	851		W Vista Way	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	
VI	Automotive Concepts	538	A102-103	Olive Ave	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Autotyme Automotive, Inc.	1146	801	N Melrose Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	
VI	B & C Auto Repair	918		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	B & D Auto Repair and Service	1350		N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	Yes	No	No	Low	X
VI	B N B Sales	2169		Opal Ridge	Vista	CA	92081	904.31		423110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	B N J Ultraservices, Inc. (Ultra Max)	381		Olive Ave	Vista	CA	92083	904.22	5169	42269	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Banker Direct Auto Sales	536		N Santa Fe Ave	VISTA	CA	92083	904.22	5521	44112	Vehicle Dealers	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Bara Bean Caf	771	102A	E Vista Way	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	
VI	Bare Back Skateboards, Inc.	2835	B	La Mirada Dr	Vista	CA	92083	904.31	5091	421910	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Barnicles Express Gasoline	845		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	BC Cakes	707		Monterey Ln	Vista	CA	92084	904.22		311811	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Betz Concrete, Inc.	1217		Distribution Way	Vista	CA	92084	904.31	1771	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Big Lots #267	760		Sycamore Ave	Vista	CA	92083	904.32	5411	452910	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Big O Tires	636		S Santa Fe Ave	Vista	CA	92084	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Billy's Window Tinting	808		N Santa Fe Ave	Vista	CA	92083	904.22		811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	BMW of Vista	1715		Hacienda Dr	Vista	CA	92081	904.21	5511003	441110	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Bob Workman's European Auto Service	1304	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	Yes	Yes	No	High	X
VI	Bombay Cafe	1280	4	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	
VI	Boomers Vista	1525		W Vista Way	Vista	CA	92083	904.21	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	
VI	Boudagh Auto Sales, Inc.	723	A	Olive Ave	Vista	CA	92084	904.22		44112	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Briggs Tree Company Inc	1111		Poinsettia Ave	Vista	CA	92083	904.31	181	111422	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Low	
VI	British Masters	715		Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Brown's Tire	636		S Santa Fe Ave	Vista	CA	92083	904.22		441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Budget Rent A Car	1859		W Vista Way	Vista	CA	92083	904.21	7514	532111	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Budget Rent A Car Systems, Inc.	241		N Emerald Dr	Vista	CA	92083	904.21	7514	532	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Budget Smog	1205	G	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Medium	X
VI	Budget Smog Test Only Center	538	300-C	Olive Ave	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Buena Creek Nursery	1280		Sunset Dr	Vista	CA	92083	904.31	5193	422293	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Low	
VI	Buffalo Bill's BBQ	918		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Bulmaro Campos @ Coffee Cart Biz	1150		Joshua Way	Vista	CA	92081	904.31		445299	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Burger King	377		Vista Village Dr	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
VI	Burger King #10512	1650		S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
VI	C & M Motors Inc/ NationaLease	1902		VIA CENTRE	Vista	CA	92083	904.21	7538	811111	Vehicle Dealers	No	No	Yes	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	C P C	1126		N Melrose Dr	Vista	CA	92083	904.22	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Cal-Americas dba United Floral Exchange	2834	B	La Mirada Dr	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	High	X
VI	Caldwell Development Inc	1271		Activity Dr	Vista	CA	92083	904.31	3519	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	California Breakers, Inc.	2490		Grand Ave	Vista	CA	92083	904.32	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	California Pizza Kitchen	307		Vista Village Dr	Vista	CA	92085	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
VI	California Specialty Produce	1330	A	Keystone Way	Vista	CA	92083	904.31	5148	42248	Wholesale Food	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Californias Mexican Restaurant	2147		E Vista Way	Vista	CA	92084	903.11	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	Calmex Wholesale Growers & Shippers Inc.	2680		La Mirada Dr	Vista	CA	92081	904.31	4212	484110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Carlos Auto Body	538	100	Olive Ave	Vista	CA	92083	904.21	7532	811121	Auto Repair	No	Yes	No	No	No	Yes	No	Yes	No	Yes	Medium	
VI	Carl's Jr. #1390	660		Hacienda Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Carl's Jr. Restaurant and the Green Burrito	1790	648	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Casa Blanca Products	1255	D	Activity Dr	Vista	CA	92081	904.31	5149	42249	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
VI	Cesar's Auto Mechanics	452	L	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Chaparro's Mexican Food, Inc.	2595		Commerce Way	Vista	CA	92081	904.31	5411	42385	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
VI	Chevron Station #1497	2295		S Melrose Dr	Vista	CA	92081	904.31	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Chevron USA (Foothill Chevron)	1211		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Chicos Panaderia	1110	D	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	High	X
VI	Chili Coast Burgers	1330		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	High	X
VI	Chili's Grill & Bar	255		Vista Village Dr	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Chinex Grill LLC	1580	106	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	X

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Chin's Szechwan Vista, Inc.	600		E Vista Way	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Chipotle Mexican Grill	30	G-100	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	X
VI	Chito's Taco Shop	320	50	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Chow Now LLC Dba Park Deli	777	204	E Vista Way	Vista	CA	92084	904.22		722310	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Chuck E. Cheese's	1861		University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	
VI	Ciao Restaurant	2015		E Vista Way	Vista	CA	92084	903.11	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	No	Low	X
VI	Classic Datsun Motorsports	345		Olive Ave	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	No	No	No	No	No	No	No	No	Low	
VI	Closet World Inc.	1335	A	Park Center Dr	Vista	CA	92083	904.31	2521	23551	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Clutchworks	1205	D	N Melrose Dr	Vista	CA	92083	904.10	7537	811113	Auto Repair	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Medium	X
VI	Coast Equipment Rental	1713		W Vista Way	Vista	CA	92083	904.21	7359	532490	Vehicle/Equipment Rental	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	X
VI	Coastline Cuisine	2039		Freedom Way	Vista	CA	92081	904.31		72232	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Coco's 882	605		W Vista Way	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Cold Stone Creamery	30	120	Main St	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	X
VI	Colima's Mexican Food	1850	22	Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
VI	Control Technology	2416		Cades Way	Vista	CA	92083	904.32	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Coopers Cactus	1097		Crest View Rd	Vista	CA	92083	904.31	0181	111421	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	Yes	High	X
VI	Corona Used Tires/AJ Smog	658		E Vista Way	Vista	CA	92084	904.22	7534	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Coronado Cactus	723	20	Eucalyptus Ave	Vista	CA	92084	904.22		42493	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Costco Wholesale #124	1755		Hacienda Dr	Vista	CA	92081	904.21	5099	421990	Wholesale/Storage/Warehousing	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
VI	Couple Berry Farms	629		Mar Vista Dr	Vista	CA	92081	904.31		445230	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Courter Family Plumbing & Electric	313	E	N Melrose Dr	Vista	CA	92083	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Courtesy Auto Repair	826		N Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Cox Auto Service	1018		Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Coyote Caf	1450	Y	N Santa Fe Ave	Vista	CA	92083	904.10	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	C-SBI changed to: To West Coast Refrigerated	1330	B	Distribution Way	Vista	CA	92083	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Curbside Cafe	307		Main St	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	D & D Tool & Supply	1445		Engineer St	Vista	CA	92083	904.31	5084	42384	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	D D H Enterprise, Inc	2220		Oak Ridge Way	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	D G F Motorsports	1253	A	Activity Dr	Vista	CA	92081	904.31		811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	
VI	Dairy Queen	1031	A	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Daisy's Floral Decorations	1318	Ste C	N Santa Fe Dr	Vista	CA	92083	904.22		42493	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Danish & Donuts	1450	I	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Danny's Donuts	102		Eucalyptus Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	No	Yes	High	X
VI	De La Torre Produce	311	6	N Emerald Dr	Vista	CA	92083	904.21		424490	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
VI	Del Taco 213	1037		E Bobier Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	X
VI	Dell'z California Grill	1233		E Vista Way	Vista	CA	92084	904.22		72211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Denny's Restaurant #7892	540		W Vista Way	Vista	CA	92083	904.21	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Desert Theater II	800		Sunset Dr	Vista	CA	92083	904.31	5193	422293	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Diamond Donuts	730	F	Sycamore Ave	Vista	CA	92083	904.32	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Diesel Pollution Solutions (D.P.S)	1448		Oakcreek Lane	Vista	CA	92081	904.31		81119	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Dils Roofing	2230		La Mirada Dr	Vista	CA	92081	904.31	1761	235610	Other Contractor	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Dinner Studio	1850	12	Hacienda Dr	Vista	CA	92084	904.21	5812	722320	*Not Inventoried*	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Dion's Automotive	1210	D	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	No	Low	X
VI	Discount Alignment	1024	100	Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Discount Indoor Garden Supply, LLC (D I G S)	1850	21	Hacienda Dr	Vista	CA	92083	904.21		444220	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Discount Tire Co., Inc.	1007		Service Place	Vista	CA	92083	904.22	5531	441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Dominos Pizza 7731	1021		E Bobier Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	Dominos Pizza 8300	603		E Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Donut Factory	1839	C	W Vista Way	Vista	CA	92083	904.21	5461	311811	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	
VI	Dos Gringos	3260		Corporate View Dr	Vista	CA	92081	904.51	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Low	
VI	Dr. Java @ Vista Medical Plaza	2067		W Vista Way	Vista	CA	92083	904.21	5812	4452	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Drew's Automotive Repair	538	D	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Drift Tech / Discount Towing and Auto Repair	635	C	Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Driveline Vista	253	A, B	N Emerald Dr	Vista	CA	92083	904.21	7538	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Drucker Subway Sr, Inc	1651	B	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	E & J Cactus	1111		Sunset Dr	Vista	CA	92081	904.31		11142	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	E G M Auto Sales & Leasing	835	A	N Santa Fe Ave	Vista	CA	92084	904.22	5511	44111	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Edco Distributing Inc	3150		Scott St	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Eddie's Market	415		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	El Asadero Restaurant	1717	106	E Vista Way	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	High	X
VI	El Burrito Catering (Mobile Food Service Hub)	365	A	Olive Ave	Vista	CA	92084	904.22	5963	722330	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
VI	El Burrito Mexican Food	1250	K	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	El Callejon Vista	20	H-100	S Main St	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	El Dorado Express Grill	3265	B	Business Park Dr	Vista	CA	92084	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	El Mago Paint and Body	427	C	Redlands St	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	High	X
VI	El Pollo Loco #3492	495		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	El Puertesito Mexican Restaurant	1450	R	N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	El Ranchero	226		Main St	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
VI	El Ranchero Restaurant	1565		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	El Rinconcito Mexican Seafood Resturant	1033	E	S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	El Torito Market	249		N Emerald Dr	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	X
VI	Elaines Cake Boutique	1021		N Santa Fe Ave	Vista	CA	92084	904.22	5461	311811	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Electra City Motors	2755	A	Dos Aarons Way	Vista	CA	92081	904.31		811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Elk's Lodge Restaurant	1947		E Vista Way	Vista	CA	92085	903.11	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	No	Low	X
VI	Emerald Auto Service Center, Inc.	257	B	N Emerald Dr	Vista	CA	92083	904.21		33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Emerald Shell	145		N Emerald Dr	Vista	CA	92083	904.21	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Enterprise Car Sales	875		W Vista Way	Vista	CA	92084	904.22	5511	441110	Vehicle Dealers	No	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
VI	Enterprise Glass & Motors	249	B	N Emerald Dr	Vista	CA	92083	904.21		811122	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Enterprise Rent-A-Car Lsg 3249	875		W Vista Way	Vista	CA	92083	904.22	7514	532111	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Eriberto's Mexican Food	1805		Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
VI	Erika Restaurant	1851	C	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Esperanza Growers	1455		E Taylor St	Vista	CA	92084	904.22	181	111422	Nurseries/Greenhouses	No	Yes	Yes	No	No	No	No	No	Yes	No	Low	
VI	Euro Pacific Paint & Body Inc	1210	B	N Melrose Dr	Vista	CA	92083	904.10	7532	811121	Auto Paint/Body	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Medium	X
VI	European Autoworks & Uhaul Truck Rental	1211	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	No	No	No	High	X
VI	European Deli & Restaurant	573	D	W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	
VI	European Motorsports	2588	11	Progress St	Vista	CA	92081	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Evans Tire & Service Centers	2070	A	Hacienda Dr	Vista	CA	92083	904.21	7534	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Expo Plant Service, Inc	1455		E Taylor St	Vista	CA	92084	904.22	0181	111422	Nurseries/Greenhouses	No	No	No	Yes	No	No	No	No	No	Yes	High	X
VI	Express Tire & Certified Auto Service	2030	100	Hacienda Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Ez Auto Care Center	1205	B	N Melrose Dr	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	EZ Lube	786		E Vista Way	Vista	CA	92084	904.22	7549	811191	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	F H C Auto Shop, Tires, Mufflers, Brakes	836		N Santa Fe Ave	Vista	CA	92083	904.22		4413	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	F Piersalls Vista Buggy Bath	1759		E Vista Way	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	
VI	Famous Dave's	303		Vista Village Dr	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Feliccias	1011	C	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Fernando Sons Fer's Auto Repair	446	F, G	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Festival Fun Parks, L L C - Arcade	1525		W Vista Way	Vista	CA	92083	904.21	7999	713990	Entertainment	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Fiamengo Nursery	1715		Monte Mar Rd	Vista	CA	92083	904.22	181	111421	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Fiesta Giant Pizza	1120		N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Filibertos Mexican Food	960		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Flamingo Holland Inc	1250		Avenida Chelsea	Vista	CA	92081	904.31	5193	422930	Wholesale/Storage/Warehousing	No	No	No	No	Yes	No	No	No	Yes	No	Low	
VI	Flippin Pizza	2440	104	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	X
VI	Food 4 Less 300	500		Hacienda Dr	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Foothill Chevron	1211		E Vista Way	Vista	CA	92084	904.22	5541	44711	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Fountain Car Wash	1352		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	
VI	Francis Biddle International, Inc.	2506		Pioneer Ave	Vista	CA	92083	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Franciscos Mexican Deli	821		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Frank's Mexican Grill	122		W California Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	X

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VI	Frazier Farms	225		Vista Village Dr	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Fred's Automotive	1725		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	French Bakery Cafe	1223	A	E Vista Way	Vista	CA	92083	904.21	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Fresh & Cool @ D S Wireless	960		S Santa Fe Ave	Vista	CA	92084	904.22		722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Fresh & Easy Neighborhood Market	945		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Fresh Mxn Food	1004		S Santa Fe Ave	Vista	CA	92084	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Frogy's Donuts and Bakery	602	A	E Vista Way	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
VI	Fruttos Yogurt	347	104	Vista Village Dr	Vista	CA	92083	904.21	5812	722213	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	G W Grading, Inc	1298		Distribution Way	Vista	CA	92081	904.31		23899	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	G&M Oil #159	636		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	Yes	No	No	No	No	Yes	No	Yes	High	X
VI	G&M Oil #168	224		N Emerald Dr	Vista	CA	92083	904.21	5541	447110	Fueling	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	General Transmission	427	B	Redlands St	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Geogrid Retaining Wall Systems, Inc	1295		Distribution Way	Vista	CA	92083	904.31	1741	23	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	George's Auto Repair and Smog	1740	B	E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	German Auto Clinic	912		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Giant New York Pizza	1250	E	S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	Medium	X
VI	Glitter Wash	1140		S Santa Fe Ave	Vista	CA	92084	904.22	7542	811192	Vehicle Washing	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Global Plastics Sheeting	1331		Specialty Dr	Vista	CA	92081	904.31	5162	422610	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	GM Exclusive	1215	B	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	X
VI	Godwins Café	325		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Golden Bagel Cafe & Deli	3231	A	Business Park Dr	Vista	CA	92081	904.31		445291	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Golden Donut	1281	Z	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Golden Dragon Restaurant	1350	10	E Vista Way	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
VI	Golden State Gasoline, Inc.	535	4	Santa Fe Ave	Vista	CA	92083	904.22	5541	44711	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Golden Wrench Automotive	241	B	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Good Looking Concrete	1280	36	N Citrus Ave	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Green Oak Ranch Ministries dba Holy Smoke	1237		Green Oak Rd	Vista	CA	92081	904.32	5812	722212	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	High	X
VI	Greentrees Hydroponics, Inc.	2581	D	Pioneer Ave	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	H2Odyssey & Ocean Divers USA	975		Park Center Dr	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Hanjo Auto Repair	452	M	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Happy Auto Sales	721		N Santa Fe Ave	Vista	CA	92084	904.22	5521	44112	Vehicle Dealers	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Hello Deli	2820	A	La Mirada Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Hennessey's	224		Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Henry's Auto Body	635	B	Mercantile St	Vista	CA	92083	904.22		811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	
VI	Henry's Auto Body	635	B	Mercantile	Vista	CA	92083	904.22	7532	811121	Auto Repair	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	Hera's Auto Shop Mufflers & Brakes	808	A	N Santa Fe Ave	Vista	CA	92083	904.22	7533	811112	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Herman Tuning	1903		W Vista Way	Vista	CA	92083	904.21	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	HMS Co.	1400		Arcadia Ave	Vista	CA	92084	904.22	5193	42293	Wholesale/Storage/Warehousing	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Medium	
VI	Holiday Liquor	1717	104	E Vista Way	Vista	CA	92084	904.22	5411	55512	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Homeland Petroleum	1740		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	Yes	No	Yes	No	Yes	No	No	No	Yes	Yes	High	X
VI	Hoops For You - Tires & Service	636		S Santa Fe Ave	Vista	CA	92084	904.22		441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Horticultural Sales, Inc.	1330	E	Distribution Way	Vista	CA	92081	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Hugos Southwest Flavor	777		Shadowridge Dr	Vista	CA	92083	904.32		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Humberto's Auto Repair	444	B	S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	Yes	No	Yes	High	X
VI	Icebox Jr	2260	D	Oak Ridge Way	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Import And Commercial Export	925	A8	Poinsettia Ave	Vista	CA	92081	904.32	4731	493110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	In N Out Burger #61	2010		Hacienda Dr	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
VI	International House Of Pancakes 814	632		Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
VI	International Poly Bag, Inc	990	G	Park Center Dr	Vista	CA	92083	904.31	5162	42262	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Islands Fine Burgers & Drinks	240		S Melrose Dr	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	High	X
VI	J & C Leasing Carolyn Culkin	1112		Nash Ln	Vista	CA	92083	904.22	7514	532111	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Medium	
VI	J & J Automotive	635	A	Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	J B Coating	219	137	S Santa Fe Ave	Vista	CA	92083	904.22	1721	235210	Painting/Coating	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	J F Japanese Cafe	35	150	Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	X

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	J P Schmitt Landscape Maintenance & Repair	1219		Capistrano Ln	Vista	CA	92081	904.21		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No	Yes	Medium	
VI	J.M.C. Painting	306		W Conneticut Ave	Vista	CA	92083	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Jack In The Box #3002	740		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	No	No	Low	
VI	Jack in the Box #3019	1471		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Jack In The Box #3029	260		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Jack In The Box #3032	3281		Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Jack in the Box dba Beshay Foods, Inc.	815		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Jackpot Painting	391		Olive Ave	Vista	CA	92083	904.22	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Jack's Auto Repair	427	A	Redlands St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Jack's Counter Top & Flooring Repair	2828		Asterwood Ln	Vista	CA	92081	904.32		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Jamba Juice #1117	1661	A	S Melrose Dr	Vista	CA	92081	904.31		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Java Hut Drive-Thru	949		E Santa Fe Ave	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	JCM Auto Repair	452	J	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Jeannie Hyde Packaging, Inc.	2442		Cades Way	VISTA	CA	92083	904.32	5085	421840	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Jeld Wen Co. Warehouse	935		Poinsettia Ave	Vista	CA	92083	904.32	4225	493110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Jiffy Lube #432	1213		E Vista Way	Vista	CA	92084	904.22	7549	811191	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Jims Vista Lounge	1587	A, B	E Vista Way	Vista	CA	92084	904.22	5813	722410	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Jj's Deli Cafe #5	1495	152	Poinsettia Ave	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	John's Dba J.R.Randall Inc.	1280	40181	E Vista Way	Vista	CA	92084	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Joseph Webb Foods Inc	1201		Park Center Dr	Vista	CA	92083	904.31	5142	422420	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
VI	Jose's Taco	2440	103	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	X
VI	Juanita's Taco Shop	248		E Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Juan's Auto Electric	808	B	N Santa Fe Ave	Vista	CA	92083	904.22	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Jugeria La Tropicana #2	1839		W Vista Way	Vista	CA	92083	904.21		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Jugueria La Tropicana #2	1839	B	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	Jumping Bean Caf	785		Shadowridge Dr	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Juniors Taco Shop	1680	110	S Melrose Dr	Vista	CA	92083	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Kabab Cuisine	1688	206	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Kand Medical Inc.	1341	D-17	Distribution Way	San Diego	CA	92081	904.31	5047	421450	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Karinas Ricas Carnitas Mexican Food Taco Sho	1740		E Vista Way	Vista	CA	92084	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Karma Restaurants Indian Cuisine	721		S Santa Fe Ave	Vista	CA	92083	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Kenny's Kar Klinic	420		Vista Village Dr	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Kentucky Fried Chicken	840		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	No	Yes	Medium	X
VI	KJ Carpet Wholesale, Inc.	1341	14	Distribution Way	Vista	CA	92081	904.31	5023	421220	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Knockout Pizzeria Dba K04 Vista L L C	2440	104	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Kragen Auto Parts	1250	A	S Santa Fe Ave	Vista	CA	92084	904.22	5531	441310	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Krikorian Premiere Theaters	25		Main St	Vista	CA	92084	904.22	7832	512131	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	X
VI	La Bota Liquor and Deli	1370		E Vista Way	Vista	CA	92084	904.22		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	La Cantina Doors, Inc.	1340	J	Specialty Dr	Vista	CA	92081	904.31	1751	235510	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	La Favorita Market	932		Vista Village Dr	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	Yes	Yes	No	Yes	Yes	Yes	High	X
VI	La Favorita Market #3	1450	K-M	N Santa Fe Ave	Vista	CA	92084	904.10	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	La Gordita	1275	117, 118	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	La Mansion Restaurant	1021	E	N Santa Fe Ave	Vista	CA	92083	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	La Mexicana Market	440		N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	La Paloma Restaurant & Cocktail	116	104, 105	Escondido Ave	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Lamppost Pizza	15	B100	Main St	Vista	CA	92083	904.22	2082	312120	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Las Pupusa Mama Lita	1450	E	N Santa Fe Ave	Vista	CA	92083	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	LDG Mobile	1338	C	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	X
VI	Lee Steel & Supply	1305		Lee Dr	Vista	CA	92083	904.10	5051	421510	Wholesale/Storage/Warehousing	No	No	Yes	No	No	No	No	No	Yes	No	High	X
VI	Less Time & More	1236	A	Activity Dr	Vista	CA	92081	904.31	5199	42299	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Lil Mama's Smog	538	300 C	Olive Ave	Vista	CA	92083	904.22		811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Litas Fish Market	1078		E Vista Way	Vista	CA	92084	904.22	5421	445220	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Little Caesars Pizza	2020	R	Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	
VI	Little Caesars Pizza	1041		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	X

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VI	Little Cakes Cupcake Kitchen	30	180	Main St	Vista	CA	92083	904.22		311812	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	
VI	Little Kids Market	1330		N Santa Fe Ave	Vista	CA	92083	904.22		424410	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
VI	Little Kids Nutrition	1021	B	N Santa Fe Ave	Vista	CA	92083	904.22		4451	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Little Lidia's Giant Pizza	800	F	Escondido Ave	Vista	CA	92084	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Llantera El Compadre	1338		N Santa Fe Ave	Vista	CA	92083	904.22		441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Los Cabos Mexican & Seafood	760		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	High	X
VI	Lush Coffe and Tea	823		E Vista Way	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	M C C Enterprises, Inc	1201		Park Center Dr	Vista	CA	92083	904.31	5144	42244	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	
VI	M P Creations	1611	P	S Melrose Dr	Vista	CA	92081	904.31		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Mama & Papa's Pizza Grotto	988	A	Escondido Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Marco Italian Restaurant	1825		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	X
VI	Maria Flowers	2435		Pruett Dr	Vista	CA	92083	903.11		111421	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Mariscos El Pacifico	702		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Mariscos Las Palmas Mexican Food	777	206	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	
VI	Mariscos Rancho Grande	825		Williamston St	Vista	CA	92083	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Martha's Bakery	995	110	Postal Way	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Martha's Coffee Cart@Vima's Imports	901		W Vista Way	Vista	CA	92083	904.22		445299	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Marvin's House Painting/Decorating	801	49	Hillside Ter	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Masterlube, Inc.	243		Sycamore Ave	Vista	CA	92084	904.32	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Matt's Mobil Auto Repair	253	D	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Mayra's Restaurant & Bakery	828	C	N Santa Fe Ave	Vista	CA	92083	904.22	5461	311811	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Mc Donalds 12791	1470		N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Mc Donalds 1959	827		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Medel Painting	934		N Santa Fe Ave	Vista	CA	92083	904.22	1799	2352	Painting/Coating	No	No	No	No	No	No	No	No	No	No	Low	
VI	Mejor Servicio Auto	356		Olive Ave	Vista	CA	92084	904.22		8111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Melrose Shell	210		S Melrose Dr	Vista	CA	92081	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Mexicano Tires	428	A	N Santa Fe Ave	Vista	CA	92083	904.22	7534	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Mi Pueblito Mexican & Seafood Inc.	815		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
VI	Mi Tiendita Market	700		Townsite Dr	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Michael's Electric	611		S Santa Fe Ave	Vista	CA	92083	904.22	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Midas Shop	1150		S Santa Fe Ave	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Mike and Pancho's Auto Repair	635	B	Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Mikes Landscape & Nursery Co	753		N Emerald Dr	Vista	CA	92083	904.21	181	111336	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Millenium Building Services, Inc.	1068		La Mirada Ct	Vista	CA	92081	904.31	1521	233210	Building Materials	No	No	No	No	No	No	No	No	No	No	Low	
VI	Mobil Mart #11433	710		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	High	X
VI	Mr. A's Liquor Deli	254		Vista Village Dr	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Nallely @El Ranchero Restaurante	1565		N Santa Fe Ave	Vista	CA	92083	904.22		424930	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Napa Auto Parts Vista	1334	G, H	N Melrose Dr	Vista	CA	92083	904.10	5531	441310	Auto Supplies	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
VI	Nature's Frenzy	2021		Columbus Way	Vista	CA	92081	904.31		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	New Life Nutrition	1281	J	N Santa Fe Ave	Vista	CA	92083	904.22	5812	4451	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	New Panda Buffet	1040		E Vista Way	Vista	CA	92084	904.22	5812	722212	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	
VI	Nongnit's Treasures	1340	G	Specialty Dr	Vista	CA	92081	904.31	5099	493	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	North County Ford	450		W Vista Way	Vista	CA	92083	904.22	5511	441110	Vehicle Dealers	No	No	Yes	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	North County Import Specialist	1215	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	X
VI	North County Pool Center	777	A	W Vista Way	Vista	CA	92083	904.22	5999	453998	Other Contractor	No	No	No	Yes	No	No	No	Yes	No	Yes	High	X
VI	Northgate Market	1150		E Vista Way	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Novak Auto Repair	723	B	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Nucci's Italian Cafe Pizza Pas	1580	108	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Nurserymens Exchange, Inc.	1330	C	Distribution Way	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	Yes	No	No	No	Yes	No	Low	
VI	Nutrition Zone Dba Victory Nutrition	620	104	Hacienda Dr	Vista	CA	92083	904.22		446191	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Oak Tree Vans LTD	1386	E	Poinsettia Ave	Vista	CA	92081	904.31	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Oceanside Sales & Marketing Inc.	2560	C	Progress St	Vista	CA	92083	904.31	5099	424450	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Ohana Hawaiian BBQ	620	106	Hacienda Dr	Vista	CA	92081	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Olive Tire Shop	365	B	Olive Ave	Vista	CA	92083	904.22	7534	811198	Auto Repair	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Olympic Auto Body and Paint	119		Terracina Way	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	
VI	Ortiz Bakery Panaderia Oaxaquetia	1275	108	S Santa Fe Ave	Vista	CA	92083	904.22		31181	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Oscar's Mexican Food	822		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	Pacific Coast Smog Check	1310	D	N Melrose Dr	Vista	CA	92083	904.10	7549	811198	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	No	Low	X
VI	Pacific Pets	664		Matagual Dr	Vista	CA	92081	904.22		812910	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Medium	
VI	Pacific Pride Carwash Co. Inc	980	C	Park Center Dr	Vista	CA	92081	904.31	5087	421850	Vehicle Washing	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Paleteria La Mixteca	1110	F	N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	
VI	Palomar Animal Hospital, Inc.	2331-		S Melrose Dr	Vista	CA	92081	904.31		54194	*Not Inventoried*	No	No	No	No	No	No	No	No	No	No	Low	
VI	Palomar Pizza & Pasta	3265	A1	Business Park Dr	Vista	CA	92081	904.31	5812	722111	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	No	Yes	Medium	
VI	Pam Soto's Pets @Simbah's Dog House	573	#E	W Vista Way	Vista	CA	92083	904.22		81291	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Medium	
VI	Pam's Donuts & Ice Cream	510	109	Hacienda Dr	Vista	CA	92081	904.22	5461	722213	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Pan Don Felipe's Mexican Bakery	613		S Santa Fe Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Panda Express #1262	316		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
VI	Panda Express, Inc.	20	160	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Panera Bread	401	A	Vista Village Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	X
VI	Papa Bambino's	1116	H	Sycamore Ave	Vista	CA	92081	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Papa John's Pizza	485	E	S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Passion Growers West	1352		Decision St	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Pat & Oscar's @Rancho Buena Vista Adobe	640		Alta Vista Dr	Vista	CA	92084	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Patrick Flynn's Collision and Frame Repair	1013		Service Place	Vista	CA	92084	904.22	7532	811121	Auto Paint/Body	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Pauley Equipment	348		N Santa Fe Ave	Vista	CA	92083	904.22	7359	53221	Equipment Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Pawsitively Purrfect Pet Sitting	1533		Harbor Dr	Vista	CA	92081	904.31		81291	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Medium	
VI	Pepper Tree Frosty	270		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	No	Yes	High	X
VI	Perfect Timing Auto Service	1224		Keystone Way	Vista	CA	92083	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Pho - Ever	485	106	S Melrose Dr	Vista	CA	92083	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Pho & Chicken Express	1717	101-102	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	X
VI	Pho Huynh De	1717	101, 102	E Vista Way	Vista	Ca	92084	904.32	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Pick Up Stix-Vista #7214	251	303	S Melrose Dr	Vista	CA	92081	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Picket Fence	945		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Piston Auto Service	446	H	Olive Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Pizza Hut Inc	1591	B	E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	High	X
VI	Platinum Auto Detail Shop @ Buggy Bath	1759		E Vista Way	Vista	CA	92083	904.21	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Playa Azul Mexican Restaurant	1281	X-Y	N Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Playa Azul Seafood Restaurant	1281	X, Y	N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	PlusPharma	2460		Coral St	Vista	CA	92081	904.31	5122	422210	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Popeye's Auto, Inc.	1082		S Santa Fe Ave	Vista	CA	92084	904.22	5521	441120	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	High	X
VI	Popeyes Fried Chicken	1817	F	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Preserved Treescapes International, Inc.	1390		Engineer St	Vista	CA	92081	904.31		111421	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Primo Food Market	1535		W Vista Way	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Primo's Tire Shop	446	F-G	Olive Ave	Vista	CA	92083	904.22		44132	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Prudential Overall Supply	2485		Ash St	Vista	CA	92083	904.31	7211	812321	*Not Inventoried*	No	No	No	No	No	No	No	No	No	No	Low	
VI	Quality Discount Ice Cream Inc	2465		Coral St	Vista	CA	92081	904.31	4214	484220	Ground Transportation	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
VI	Quick Check Smog	835		N Santa Fe Ave	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	R & F Repair	538	301	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	R K Iron Works	1124		N Melrose Dr	Vista	CA	92083	904.22	5051	42151	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Rainbow Gardens	1444		E Taylor St	Vista	CA	92084	904.22	0181	111422	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	Yes	High	X
VI	Ramirez Company	218		The Circle	Vista	CA	92084	904.22		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No	Yes	Medium	
VI	Rancho del Oro	1281	K	N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	High	X
VI	Rancho Del Oro Towing	2260		La Mirada Dr	Vista	CA	92081	904.31	7549	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Rancho Garcia Nursery	1640		Bonair Rd	Vista	CA	92084	904.22	5193	422930	Wholesale/Storage/Warehousing	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Rancho Vista Car Wash	600		Hacienda Dr	Vista	CA	92081	904.21	7542	811192	Fueling	No	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	High	X
VI	Rancho Vista Grande	2375		Vista Grande Dr	Vista	CA	92084	903.11		44523	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Rancho Vista Market	988	H	Escondido Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Raylen Tasker's Auto Center	1806		E Vista Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	

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VI	Rayne Water Of North County	2011		W Vista Way	Vista	CA	92083	904.21	5499	445299	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	RC Auto and Smog	1410	B	S Santa Fe Ave	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Really Clean Pool And Spa	734		Matagual Dr	Vista	CA	92081	904.22		811411	*Not Inventoried*	No	No	No	No	No	No	No	No	No	No	Low	
VI	Red Line Towing & Fleet Maintenance, Inc.	451		Olive Ave	Vista	CA	92083	904.22	7549	48841	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Reliable Transmission/Vista Towing	810		N Santa Fe Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Rent-A-Rim, Inc.	800	A	Escondido Ave	Vista	CA	92083	904.22		44132	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Restaurant y Panderia Montealban	1275		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Rice King	3265	C	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Richard's Automotive	707		S Santa Fe Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Rin's Coffee Car @ Vista Medical Plaza	2067	160	W Vista Way	Vista	CA	92083	904.21	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Rising Sun Solar Dba Schumacher Electric	1268		Oak Knoll Dr	Vista	CA	92084	904.22		221119	Power Generation/Transmission	No	No	No	No	No	No	No	No	No	No	Low	
VI	RITE AID STORE #5642	1363		E Vista Way	Vista	CA	92084	904.22		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Robert Jury & Associates	2435		Cades Way	Vista	CA	92081	904.32	5064	423620	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Rob's Auto Repair	1124	202	N Melrose Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Medium	
VI	Rodeos Meat Market	356		Vista Village Dr	Vista	CA	92083	904.22	5421	445210	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	Rollin Renches Inc.	1212		Distribution Way	Vista	CA	92083	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Romeo's Car Wash	352		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Rosa Gonzales Plants Inc	377		Olive Ave	Vista	CA	92083	904.22	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Round Table Pizza	923		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Rubio's Baja Grill	1711	110	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Rubio's Fresh Mexican Grill	620	101	Hacienda Dr	Vista	CA	92081	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	S & R Service Center	245	C	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	S D Mission Auto Sales Inc	964-9	Dr	Vista Village Dr	Vista	CA	92084	904.22		441120	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	S N C I, Inc.	1680		S Melrose Dr	Vista	CA	92084	904.31	5812	445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	S.R. Cactus	529		Mar Vista Dr	Vista	CA	92083	904.32		115112	Agriculture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Sabatini Electric	1426		Alta Vista Dr	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Sal and Cici's Pantry and Pie Shoppe	945		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Salsa Market	1100		N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	San Giorgio Lucano Corp (EZ Pasta, Inc)	1280	106	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Santa Fe Auto Repair	1045		N Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	Yes	No	Yes	High	X
VI	Santa Fe Car Wash	980		S Santa Fe Ave	Vista	CA	92084	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Santa Fe Petroleum, Inc. Dba Arco Am/Pm	1403		S Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	No	No	No	No	No	No	Low	
VI	Santorini Island Grill Vista, L L C	3295	D	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Sarika Thai Kitchen	1011	A	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Screamin Products, L L C	630		Crest Dr	Vista	CA	92084	904.22		445299	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Sea Aloe Inc.	1253	A	Activity Dr	Vista	CA	92081	904.31	5122	422210	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Sea Witch Marine, Inc	1085		S Santa Fe Ave	Vista	CA	92083	904.22	5551	441222	Vehicle Dealers	No	No	No	No	Yes	No	No	No	No	No	High	X
VI	Security Chevrolet Inc	1100		E Vista Way	Vista	CA	92084	904.22	5521	441120	Vehicle Dealers	No	No	No	Yes	No	No	No	Yes	No	Yes	High	X
VI	Seltzer Companies, Inc.	1389		Park Center Dr	Vista	CA	92083	904.31	4214	484210	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Semco	1430		VANTAGE CT	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Service Clinic	436		Vista Village Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	
VI	Servpro Of North Vista/San Marcos	929	103	Poinsettia Ave	Vista	CA	92081	904.32		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Shadowridge Country Club	1980		Gateway Dr	Vista	CA	92083	904.32	7997	713910	Golf courses/Parks	No	No	No	No	No	No	No	No	Yes	No	Medium	X
VI	Shell Oil Products U.S.	400		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	SKS, Inc. Petroleum Distributors	620		S Santa Fe Ave	Vista	CA	92083	904.22	5541	447190	Fueling	No	No	No	No	Yes	Yes	No	No	No	No	Low	X
VI	Slater's Donut Shop	625		N Santa Fe Av	Vista	CA	92083	904.22		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Smitty's Downtown	119		E Broadway	Vista	CA	92083	904.22	5813	722410	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Sonic Drive-In	101		Main St	Vista	CA	92084	904.22		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Souplantation	1860		University Dr	Vista	CA	92083	904.32	5812	722212	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	South Melrose Arco	1590		S Melrose Dr	Vista	CA	92081	904.31	5541	447110	Fueling	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Specialized Paint & Body Works	553		Mercantile St	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	
VI	Spectra Gases Inc	1261		Activity Dr	Vista	CA	92083	904.31	5169	42269	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Stagecoach Inn	1865		W Vista Way	Vista	CA	92083	904.21	5813	722410	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Standard Process of Southern California Inc.	981		Park Center Dr	Vista	CA	92081	904.31	5199	42299	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Starbucks Coffee	1385		E Vista Way	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	No	Yes	No	Yes	No	Yes	No	No	No	Yes	Medium	
VI	Starbucks Coffee #11339	790	A	Sycamore Ave	Vista	CA	92081	904.32	5812	722213	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Starbucks Coffee #5838	251	301	S Melrose Dr	Vista	CA	92081	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
VI	Starbuck's Coffee #6676	30	190	W Main St	Vista	CA	92083	904.22	5812	722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Starbucks Coffee #6792	1631	A	S Melrose Dr	Vista	CA	92081	904.31	5812	722213	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	X
VI	Stark Painting Inc	2525	1	Pioneer Ave	Vista	CA	92083	904.31	1721	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Starline Windows	1350	B	Specialty Dr	Vista	CA	92081	904.31	1793	235920	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Stater Bros Market #156	780		Sycamore Ave	Vista	CA	92083	904.32	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Stater Bros. Market #157	1451		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	
VI	Stony Reefs And Tropical Fish	2124		Cottage Way	Vista	CA	92081	904.32		453910	*Not Inventoried*	No	No	No	No	No	No	No	No	No	No	Low	
VI	Structural Materials Co.	2770		La Mirada Dr	Vista	CA	92084	904.31	5039	42139	Building Materials	No	No	No	No	No	No	No	No	No	No	Low	
VI	Sub Shop # 195	1289		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Submarina (Business Park)	3231	4	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Submarina Dba Travis Watts	942		S Santa Fe Ave	Vista	CA	92083	904.22		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Submarina Sycamore Dba Travis Watts	320	40	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Subway	1461	101	N Santa Fe Ave	Vista	CA	92084	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Subway	510	101A	Hacienda Dr	Vista	CA	92081	904.21	5812	72211	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Subway 44268	790	B	Sycamore Ave	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Subway #24598/Subway Life, Inc.	1711	120	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Subway #32111	20	150	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Subway #36756	2440	101	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Subway Sandwiches & Salads #22847	1031	B	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
VI	Subway Sandwiches & Salads 2208	950		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Sun Hing Buffet LLC	1960		Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Sundance Machinery Sales, Inc.	1489	132	Poinsettia Ave	Vista	CA	92083	904.31	5084	42183	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Sunrise Cafe	1250	3	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	Sunrise Farms	3110		Scott St	Vista	CA	92083	904.31	5148	422480	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Sunset Deli Provisions, Inc.	2820	A	La Mirada Dr	Vista	CA	92083	904.31	5147	422470	Wholesale Food	No	No	No	No	No	No	No	No	No	No	Low	
VI	Sunshine's Veggies & Herbs	1280	B	Activity Dr	Vista	CA	92081	904.31		111219	Agriculture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Super Pescaderia El Puerto	403		N Santa Fe Ave	Vista	CA	92084	904.22		445220	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Super Taco	1072		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Super Taco Mexican Food	1651	D	S Melrose Dr	Vista	CA	92081	904.31		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Super Taco Mexican Food, Inc.	530	102	Hacienda Dr	Vista	CA	92081	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Superior Plant Sales Inc	2581	B	Pioneer Ave	Vista	CA	92083	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Susan Lanci Designs, Inc	1487	122	Poinsettia Ave	Vista	CA	92083	904.31	5199	422990	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Sushi Cafe	3245	2	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Swanson Studios	339		Olive Ave	Vista	CA	92083	904.22	1793	235920	Masonry	No	No	No	No	No	No	No	No	No	No	Low	
VI	T C'S Garage	1315		Hot Spring Way	Vista	CA	92081	904.31		44131	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	T I M Services (Mazda Services)	245	A	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Taco Bell 17787	910		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	High	X
VI	Taco Bell 20413	3271		Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	High	X
VI	Tamales Dolores	1275		S Santa Fe Ave	Vista	CA	92083	904.22		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Tammy's Nursery	2356		Catalina Ave	Vista	CA	92084	904.22		44422	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Taqueria La Takiza	1234		N Santa Fe Ave	Vista	CA	92083	904.22		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Target Store #T1040	1751		University Dr	Vista	CA	92083	904.32	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Target Store T-2165	3150		Business Park Dr	Vista	CA	92081	904.31		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Ted's Auto Service	436		Vista Village Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	X
VI	Texmate Inc	995		Park Center Dr	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Thai One On	485	108, 109	S Melrose Dr	Vista	CA	92081	904.22	5812	722210	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Thai Pasta	1876		Hacienda Dr	Vista	CA	92081	904.21	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	The Daily Fix Cafe	2067		W Vista Way	Vista	CA	92084	903.11	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	The Donut Factory	1839	C	W Vista Way	Vista	CA	92083	904.21		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	The Lawn Center	603		S Santa Fe Ave	Vista	CA	92083	904.22	7699	811411	Nurseries/Greenhouses	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	High	X
VI	The Narrow Gate	771		Matagual Dr	Vista	CA	92081	904.31		7223	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	

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Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	The Original Pancake House	435		S Melrose Dr	Vista	CA	92081	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes	High	X
VI	The Pep Boys Manny, Moe & Jack Of Californ	865		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	X
VI	The Snack House	1580	117	S Melrose Dr	Vista	CA	92084	904.31	5461	722213	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	The Top's Auto Upholstery	553		Mercantile St	Vista	CA	92083	904.22		81142	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	The Transmission Source	538	101-103	Olive Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	The Watch Dog	414		Village Ln	Vista	CA	92083	904.22		81291	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Medium	
VI	The Yellow Deli	315		E Broadway	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Thor Mobile Welding And Repair	361		Apollo Dr	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Tierra Nueva Garden Design Center	901		W Vista Way	Vista	CA	92084	904.22		44422	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Tolin's Taco's @Mr. A'S Liquor & Deli	254		Vista Village	Vista		92094	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	X
VI	Tom Kennedy Auto Repair	1330	D	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	Yes	No	No	Yes	Yes	No	No	No	No	Low	X
VI	Tom's No. 24 Restaurant	1110		Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	
VI	Torres Asuncion Growers	1712		Anza Ave	Vista	CA	92084	903.11	181	111422	Nurseries/Greenhouses	No	Yes	No	Yes	No	No	No	No	No	Yes	Medium	
VI	Tortas El Rey	508		S Santa Fe Ave	Vista	CA	92084	904.22		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Tortilleria Hermanos Reyes	402		Olive Ave	Vista	CA	92084	904.22		3118	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Tortilleria Los Reyes	218		Main St	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Treats By Teresa	1580	116	S Melrose Dr	Vista	CA	92083	904.31		31181	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Tri City Tire & Automotive	241	A	N Emerald Dr	Vista	CA	92083	904.21	7534	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Tri City Transmission	1147		S Santa Fe Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Tri-city Smog	245	B	N Emerald Dr	Vista	CA	92083	904.21	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Tritton Technologies, Inc.	1340	B	Specialty Dr	Vista	CA	92081	904.31	5045	421430	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Tropical Juice & Deli	1116	F	Sycamore Ave	Vista	CA	92081	904.32	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Tropicana Rancho Market	829		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Turf Star, Inc.	2110		La Mirada Dr	Vista	CA	92083	904.31	782	56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No	Yes	Medium	
VI	Two Brothers From Italy	986		E Vista Way	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Two Brothers From Italy	1651	C	S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	X
VI	U S A Filter Cleaning	1448		Oakcreek Ln	Vista	CA	92081	904.31		81111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Uncle Tony's Italian Cuisine	770	121	Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	X
VI	United Plant Growers, Inc.	1054		Mar Vista Dr	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	Yes	Yes	High	X
VI	United Site Services of CA, Inc	157		Nettleton Rd	Vista	CA	92083	904.21	7359	562991	Portable Sanitation	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Upper Crust Pizza	1330	2	E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Urbn Coal Fired Llc	203		Main St	Vista	CA	92084	904.22		72211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	X
VI	Used Car Depot	1036		S Santa Fe Ave	Vista	CA	92084	904.22	5521	441120	Vehicle Dealers	No	No	Yes	No	No	No	No	No	No	No	Low	X
VI	Used Car Depot, Inc.	1420		S Santa Fe Ave	Vista	CA	92084	904.22		4411	Vehicle Dealers	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Used Tires Los Parientes	1725		E Vista Way	Vista	CA	92083	904.22		44132	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	V I P Automotive	414	B	N Santa Fe Ave	Vista	CA	92083	904.22		8111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Vadnais Corporation	2130		La Mirada Dr	Vista	CA	92081	904.31		23	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Vale View Farm	499		Vale View Dr	Vista	CA	92081	904.22		111219	Agriculture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Vamos A Texcoco	950	H	E Vista Way	Vista	CA	92084	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Vanessa's Mexican Food #2	224		N Emerald Dr	Vista	CA	92083	904.21		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Victor's Brake & Auto Specialists	1352	G	N Melrose Dr	Vista	CA	92083	904.10	7539	811118	Auto Repair	No	No	Yes	No	No	No	No	No	No	No	Low	X
VI	Village Cafe	406		Main St	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	High	X
VI	Village Floorcovering, Inc.	1185	R	Park Center Dr	Vista	CA	92081	904.31		23833	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Vista Auto Wholesale	714		Vale View Dr	Vista	CA	92081	904.22		423110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Vista Brake Service and Supply	790		E Vista Way	Vista	CA	92084	904.22	7539	811118	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Vista Car Care	444	A	S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Vista Entertainment Center	435		W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Vista Firestone Brake and Smog	711		S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Vista Motorcycle	1155	G	S Santa Fe Ave	Vista	CA	92083	904.22	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Vista Muffler and Radiator	435		Redlands St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Vista Santa Fe Car Wash	521		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	
VI	Vista Santa Fe Transmissions, Inc.	1144		S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Vista Tire Pro's	658		E Vista Way	Vista	CA	92083	904.22		44132	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Vista Transmission Service	427	B	Redlands Street	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	Yes	No	Yes	High	X

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Vista Unocal	976		Escondido Ave	Vista	CA	92083	904.22	5541	44719	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Vista Valley Auto Center	1803		E Vista Way	Vista	CA	92084	904.22	5521	44112	Vehicle Dealers	No	No	No	No	No	No	No	No	No	No	Low	
VI	Vista Way Cafe	868		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Vista Way Smog	911		E Vista Way	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Vista Way Valero	1740		E Vista Way		CA		904.22		4471	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Vons Grocery #2121	940		S Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Walmart #2094	1800		University Dr	Vista	CA	92083	904.32	5411	452910	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	X
VI	Warmland Nursery	1850		Warmlands Ave	Vista	CA	92084	904.22	181	1114	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	
VI	Wasabi Japanese Cuisine	1688	212	S Melrose Dr	Vista	CA	92083	904.31	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	
VI	Wedding Day Catering, Inc.	1350	8	E Vista Way	Vista	CA	92084	904.22		72232	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Wendy's Restaurant #16	567		W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	West Coast Imports Sales & Conversions	1386	E	Poinsettia Ave	Vista	CA	92083	904.31	5521	44112	Vehicle Dealers	No	Yes	No	Yes	No	Yes	No	No	No	Yes	Medium	
VI	West Coast Refrigerated Trucking	1330	B	Distribution Way	Vista	CA	92081	904.31	4212	484220	Ground Transportation	No	No	No	No	Yes	No	No	No	Yes	No	Low	
VI	Western Concrete Pumping, Inc	2181		La Mirada Dr	Vista	CA	92083	904.31	1623	23491	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	Western States Petroleum LLC dba Chevron	600		Hacienda Dr	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Wholesale Tube Bending #2	257	C	N Emerald Dr	Vista	CA	92083	904.21		811112	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Wholesale Tube Bending #2	257	C	N Emerald Dr	Vista	CA	92083	904.21	7533	811112	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Wienerschnitzal 288	901		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	X
VI	Wings N Things Restaurant	35	C140	Main St	Vista	CA	92083	904.21		7221	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	
VI	Wizard Auto Repair	446	C	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Wrought Iron Concepts, Inc.	1124		N Melrose Dr	Vista	CA	92083	904.22	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	
VI	X R-Bob's Harley Davidson Repair	329		Olive Ave	Vista	CA	92083	904.22	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Yame Cafe	680		Hacienda Dr	Vista	CA	92081	904.21	5812	722213	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
VI	Ye Olde Car Shoppe	555		Mercantile St	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Yogurt Giant	1817	E	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	
VI	Yum Yum Donut Franchise 5050d	924		S Santa Fe Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	Z S R Auto Repair	446	D	Olive Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	
VI	Ziphouse, LLC	1330	D	Specialty Dr	Vista	CA	92081	904.31	5162	422610	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	ZUITSPORTS, INC.	2880	101-102	Scott St	Vista	CA	92081	904.31	5136	42232	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	

APPENDIX D-2
FY 2010-11 STATIONARY INDUSTRIAL INVENTORY

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
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VI	2s2, Inc.	1330	C	Specialty Dr	Vista	CA	92081	904.31	3679	334419	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	78 Sign Company	830		E Vista Way	Vista	CA	92083	904.21	2752	323110	Printing	No	No	No	No	No	No	No	No	No	No	Low	
VI	A R C Fab LLC	2591	F	Pioneer Ave	Vista	CA	92081	904.31	2542	337215	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	A W R/Racing Cages	2865	106-107	Scott St	Vista	CA	92081	904.31	3711	336211	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Abramo Industrial Design and Manufacturing	1351	4	Distribution Way	Vista	CA	92081	904.31	2434	33711	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Accutech, LLC	2641		La Mirada Dr	Vista	CA	92083	904.31	2835	325413	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Advance Web Offset, Inc.	2260		Oak Ridge Way	Vista	CA	92081	904.31	2752	323110	Printing	No	No	No	No	No	No	No	No	No	No	Low	
VI	AID & M	1351	4	Distribution Way	Vista	CA	92081	904.31	2434	337110	Manufacturing, Wood/Furniture	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Air Tech Streamlining	2530		Fortune Way	Vista	CA	92083	904.31	3714	0	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	American Faucet & Coatings Corp	3280		Corporate View Dr	Vista	CA	92083	904.51	3499	33251	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	American Marble	1280		N Melrose Dr	Vista	CA	92083	904.22	3281	327991	Manufacturing, Stone/Glass	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	High	X
VI	American Peptide Company	1271		Avenida Chelsea	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Low	
VI	Apollo Sprayers Inc	1030		Joshua Way	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Applied Control Concepts / CNC Dynamics	1209		Activity Dr	Vista	CA	92081	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Applied Membranes, Inc.	2325		Cousteau Ct	Vista	CA	92083	904.31	3589	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Aptera Motors, Inc.	3151		Scott St	Vista	CA	92081	904.31	3711	336111	Manufacturing, Misc	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Armorcraft Off-Road Corp	2312		La Mirada Dr	Vista	CA	92081	904.31	3711	336111	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Arshia Custom Cabinet	2525	5	Pioneer Ave	Vista	CA	92081	904.31	2434	337110	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Aurora West	1343	19	Distribution Way	Vista	CA	92081	904.31		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	B B C Installations	925	A16	Poinsettia Ave	Vista	CA	92081	904.32		33711	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	B/E Aerospace	2555		Birch St	Vista	CA	92083	904.32	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	BAE Systems Advanced Ceramics Inc	2065		Thibodo Rd	Vista	CA	92083	904.31	3297	327125	Manufacturing, Stone/Glass	No	No	No	No	No	No	No	Yes	Yes	Yes	High	X
VI	BAE Systems, Advanced Ceramics	1960		Watson Way	Vista	CA	92083	904.32	3297	327125	Manufacturing, Stone/Glass	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Medium	X
VI	Bekaert Progressive Composites	2455		Ash St	Vista	CA	92083	904.31	3089	326199	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Low	
VI	Bendmac Manufacturing	440	P	Olive Ave	Vista	CA	92084	904.22	3498	332996	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Big Fish Motorsports	925	A-5	Poinsettia Ave	Vista	CA	92083	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	BioFilm Inc	3225		Executive Ridge	Vista	CA	92081	904.51	3999		Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Blue Shift Apparel Dba Blue Shift LLC	2336	600	La Mirada Dr	Vista	CA	92081	904.31	2759	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Bobby D's Pizza & Brewery Co.	425		S Melrose Dr	Vista	CA	92081	904.22	2082	312120	Manufacturing, Food/Drink	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	X
VI	BOJ	611		Mercantile St	VISTA	CA	92083	904.22	2434	337110	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Bravo Screen Print	1230	D	Activity Dr	Vista	CA	92081	904.31	2759	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Brightco Machining	2336	200	La Mirada Dr	Vista	CA	92081	904.31	3999	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Bristol S.G., Inc.	2525	6	Pioneer Ave	Vista	CA	92083	904.31	3679	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Bruning Engineering Inc	2598	M	Fortune Way	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	C Enterprises, LP	2445		Cades Way	Vista	CA	92081	904.32	3357	33592	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	No	Yes	No	Low	
VI	C N C Precision Machining	797	C	North Ave	Vista	CA	92083	904.10	3599	332710	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	Yes	Yes	No	High	X
VI	Cecilina's Designs	905		Westport Ln	Vista	CA	92084	904.22		339914	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	CH Products	970		Park Center Dr	Vista	CA	92083	904.31	3699	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Clearly Golf, Llc	1950	105	Thibodo Rd	Vista	CA	92081	904.32		31599	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	
VI	Clocktivity	530		Hatherly St	Vista	CA	92083	904.21		334518	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	Coastline Embroidery	1330	D	Keystone Way	Vista	CA	92081	904.31	2281	313111	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	
VI	Coffee Cart Biz	1150		Joshua Way	Vista	CA	92081	904.31	2541	337215	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	
VI	Concept Machining	1230	C	Activity Dr	Vista	CA	92081	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Controlled Motion Hydraulics	1917	B	Alta Vista Dr	Vista	CA	92084	904.22		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Cookies Con Amore	2330	700	La Mirada Dr	Vista	CA	92081	904.31	2052	311821	Manufacturing, Food/Drink	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Cornerstone Sensors Inc	1304	C	N Melrose Dr	Vista	CA	92083	904.10	3822	334512	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	X
VI	Creative Printing	1132		N Melrose Dr	Vista	CA	92083	904.22	2759	323112	Printing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Crown Industrial Products, Inc.	2440		La Mirada Dr	Vista	CA	92081	904.31	3714	33634	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Csi Technologies, Inc.	2595		Commerce Way	Vista	CA	92083	904.31	3629	335999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	D B S Associates, Inc.	2480		Grand Ave	Vista	CA	92081	904.32	3585	333415	Manufacturing, Equipment	No	Yes	No	No	No	No	No	No	Yes	No	Low	
VI	D J Orthopedics, L L C	2985		Scott St	Vista	CA	92083	904.31	3482	334510	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	Denso International America Inc. Dba L A Labs	3250		Business Park Dr	Vista	CA	92081	904.51	2833	5417	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Medium	
VI	Digital On-Demand, Inc.	1390	B	Decision St	Vista	CA	92081	904.31	3482	334	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
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VI	Dime Water, Inc.	2575	J	Fortune Way	Vista	CA	92083	904.31	3589	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Distinctive Plastics, Inc.	1385		Decision St	Vista	CA	92085	904.31	3089	326199	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Low	
VI	Diversified Manufacturing Of Ca	2555		Progress St	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Diversified Tool & Die	2585		Birch St	Vista	CA	92083	904.31	3469	332116	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	
VI	Douglas Wheel, Inc.	1340		N Melrose Dr	Vista	CA	92083	904.10	3714	336399	Manufacturing, Equipment	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	X
VI	Dutek Inc.	2248		Oak Ridge Way	Vista	CA	92083	904.31	3679	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	E & J Custom Granite & Stone Inc	795	E	North Ave	Vista	CA	92081	904.10	1741	235410	Manufacturing, Stone/Glass	No	Yes	No	No	No	No	No	Yes	Yes	No	High	X
VI	Earthlite Massage Tables Inc dba	3210		Executive Ridge Dr	Vista	CA	92083	904.31	2599	3371	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Eaton Leonard Robolix, Inc	1391	A	Specialty Dr	Vista	CA	92083	904.31	3542	333513	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	EGR Tech (USA) LLC	2051		Bravado St	Vista	CA	92081	904.31		333618	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	El Camino Rental Dba Bilcan Inc.	1121		S Santa Fe Ave	Vista	CA	92083	904.22	3273	327320	Manufacturing, Concrete	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Medium	X
VI	E-World Recyclers	2480		Ash St	Vista	CA	92081	904.31	5093	421930	Recycling	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Exotic Wood Crafters	1582		Sunrise Dr	Vista	CA	92084	904.22		337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	F&T Precision Products	980	I	Park Center Dr	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Fax Foods	1392	A, B	Poinsettia Ave	Vista	CA	92083	904.31	3089	321699	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Low	
VI	Ferro Electronic Materials Systems	1395		Aspen Way	Vista	CA	92083	904.31	3675	334414	Manufacturing, Electronics	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Fineline Apparel Printing	1485	105	Poinsettia Ave	Vista	CA	92083	904.51	2759	323113	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Finishing Touch Millwork, Inc.	1260	C	Activity Dr	Vista	CA	92081	904.31		337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Fish House Foods, Inc.	3285		Corporate View Dr	Vista	CA	92083	904.51	2038	311412	Manufacturing, Food/Drink	No	Yes	No	No	No	No	No	No	Yes	No	Low	
VI	Flotron	2485		Coral St	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	FMD	2308		La Mirada Dr	Vista	CA	92081	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	
VI	Frito Lay Inc	1390		Vantage Ct	Vista	CA	92081	904.31	4214	484220	Ground Transportation	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	Fwd Screenprinting	2336	1000	La Mirada Dr	Vista	CA	92081	904.31	2759	323113	Printing	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Green Flash Brewing Company	1430		Vantage Ct	Vista	CA	92081	904.51	2082	312120	Manufacturing, Food/Drink	Yes	Yes	No	No	No	No	No	No	Yes	No	Low	X
VI	Grilla	1235	F	Activity Dr	Vista	CA	92081	904.31	3714	336399	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	H F Johnston Mfg. Co.	2475		Ash St	Vista	CA	92083	904.31	3599	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Hargett Precision Products	2865	108	Scott St	Vista	CA	92081	904.31	3592	336311	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Hi Rez Digital Solutions	1235	E	Activity Dr	Vista	CA	92081	904.31	2759	323115	Printing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Hi Tech Swiss Machining Inc	2410		La Mirada Dr	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	
VI	Hocking Intl Labs	970	C	Park Center Dr	Vista	CA	92081	904.31	2841	325611	Manufacturing, Chemicals	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Horstman Manufacturing Co Inc	2510		Pioneer Ave	Vista	CA	92083	904.31	3799	336999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	HRE Performance Wheels	2611	D	Commerce Way	Vista	CA	92081	904.31	3714	336399	Manufacturing, Equipment	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Hydrocomponents & Technologies, Inc.	1175	H	Park Center Dr	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	I C P America, Inc.	1070		Joshua Way	Vista	CA	92083	904.31	3676	334415	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	I W Technologies, Inc.	2446		Cades Way	Vista	CA	92083	904.32	3999	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Industry Supply	1432		Alta Vista Dr	Vista	CA	92084	904.22		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Innovative Metal Products, Inc.	2443	B	Cades Way	Vista	CA	92081	904.32	3444	332322	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Intellectual Technology, Inc.	1040		Joshua Way	Vista	CA	92083	904.31	3577	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	International Lottery & Totalizator Systems, Inc.	2310		Cousteau Ct	Vista	CA	92081	904.31	3482	334519	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	Intubrite	2322		La Mirada Dr	Vista	CA	92081	904.31		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Iron Fist Brewing Company, Inc.	1305	101	Hot Spring Way	Vista	CA	92081	904.31		445310	*Not Inventoried*	No	No	No	No	No	No	No	No	No	No	Low	
VI	J & D Laboratories	2640		Progress St	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	J Mark Manufacturing Inc	2480	C	Coral St	Vista	CA	92083	904.31	3499	332312	Manufacturing, Structural Steel	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Javo Beverage Co.	1311		Specialty Dr	Vista	CA	92081	904.31	2095	311920	Manufacturing, Food/Drink	Yes	Yes	No	No	No	No	No	No	No	Yes	High	X
VI	Jeld-Wen Summit Windows And Patio Doors	2760		Progress St	Vista	CA	92083	904.31	3442	33231	Manufacturing, Structural Steel	No	No	No	No	Yes	No	No	No	Yes	No	Low	
VI	Jensen Meat Co Inc	2525		Birch St.	Vista	CA	92081	904.32	2013	311612	Manufacturing, Food/Drink	No	No	No	No	Yes	No	No	No	Yes	No	Low	X
VI	Jif-Pak Manufacturing, Inc.	1451		Engineer St	Vista	CA	92083	904.31	3999	31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Killion Industries Inc	1380		Poinsettia Ave	Vista	CA	92083	904.31	2541	337215	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Killion Industries, Inc.	2445		La Mirada Dr	Vista	CA	92081	904.31		335222	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Killion Industries, Inc.	2811		La Mirada Dr	Vista	CA	92083	904.31	3585	333415	Manufacturing, Wood/Furniture	No	Yes	No	No	No	No	No	No	Yes	No	Low	
VI	K'S Refrigerated Transport, L L C	2591	C	Pioneer Ave	Vista	CA	92081	904.31	4212	4841	Ground Transportation	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	L M I Aerospace/Versaform	1351		Specialty Dr	Vista	CA	92081	904.31	3721	3364	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Lancer Orthodontics, Inc	2330		Cousteau Ct	Vista	CA	92081	904.31		339114	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Lee's Iron Inc	1315		Lee Dr	Vista	CA	92083	904.10	5093	421930	Recycling	No	No	Yes	No	No	No	No	Yes	No	No	Low	X
VI	Lemken Kuhlwerk	2330	200	La Mirada Dr	Vista	CA	92081	904.31	2434	337110	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Leucadia Surf Design, Llc	2755	B	Dos Aarons Way	Vista	CA	92081	904.31	2599	335999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Lightwave Audio Systems, Inc.	1384	F	Poinsettia Ave	Vista	CA	92083	904.31	3679	3343	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	Lucky Charm Limo's	901		W Vista Way	Vista	CA	92084	904.22		48532	Ground Transportation	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	M C R Auto Machine Shop	452	K	Olive Ave	Vista	CA	92083	904.22	3999	332710	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	M J L Engineering & Manufacturing Dba Nila L L C	2312		La Mirada Dr	Vista	CA	92081	904.31	3446	332323	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	M Klemme Technology, Corp	1386	A	Poinsettia Ave	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	M M Precision Machining	2525	4	Pioneer Ave	Vista	CA	92083	904.31	3345	333515	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Magna Coatings Corp	1440		Decision St	Vista	CA	92083	904.31	2851	32551	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Low	
VI	Magnum Offroad	1235	A	Activity Dr	Vista	CA	92081	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	
VI	Manzo's Metal Works	797	D	North Ave	Vista	CA	92081	904.10	3599	332710	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	Yes	Yes	No	High	X
VI	Martin Enterprises	3235		Executive Ridge Dr	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Mary's Custom Workroom	2835	C	La Mirada Dr	Vista	CA	92081	904.31	2391	314121	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	Yes	No	Low	X
VI	Merical Inc.	2550		Pioneer Ave	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	Meridian Laboratory Inc	1330	E	N Melrose Dr	Vista	CA	92083	904.10	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	No	No	Low	X
VI	Michael A. Eddy Painting	1930	I	Watson Way	Vista	CA	92083	904.32	3479	332812	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Mihal Enterprises dba JT- Designs	1250	E	Activity Dr	Vista	CA	92081	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	
VI	Minor Fab	1205	M	N Melrose Dr	Vista	CA	92084	904.10	3711	336111	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	Yes	Yes	No	Low	
VI	MODERN MEDICAL SUPPLY	1235	F	Activity Dr	Vista	CA	92083	904.31	2599	339111	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Monserate Biotech, L L C	1396		Poinsettia Ave	Vista	CA	92081	904.51	2833	5417	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Low	
VI	MS Marble	1338	J	N Melrose Dr	Vista	CA	92083	904.10	1743	235430	Manufacturing, Stone/Glass	No	Yes	No	No	No	No	No	Yes	No	No	Low	X
VI	Natural Alternatives Int'l Inc	1215	D	Park Center Dr	Vista	CA	92081	904.31	2833	325411	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	New World Recycler	661	21	Copper Dr	Vista	CA	92083	904.22		421930	Recycling	No	No	Yes	No	No	No	No	Yes	No	Yes	Medium	
VI	Newsail Marine & Energy	730	E	Sycamore Ave	Vista	CA	92083	904.32	3999	332710	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	NML, LLC	2575	105	Pioneer Ave	Vista	CA	92081	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	North Berwick Bay L L C	389		Olive Ave	Vista	CA	92084	904.22		31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Nutritional Engineering Inc.	1208		Avenida Chelsea	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Low	
VI	O-Navi, L L C	1260	B	Activity Dr	Vista	CA	92081	904.31	3672	334412	Manufacturing, Electronics	No	No	No	No	Yes	No	No	No	Yes	No	Low	
VI	O'Ridge Ceramics	533		Rudd Rd	Vista	CA	92084	904.22		327112	Manufacturing, Stone/Glass	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Orlimar Golf Company	1385		Park Center Dr	Vista	CA	92083	904.31	3999	31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Orthodontic Design & Production, Inc.	1370	D	Decision St	Vista	CA	92081	904.31	3843	339114	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Osmonics (GE)	760		Shadowridge Dr	Vista	CA	92083	904.32	3999	339999	Manufacturing, Misc	No	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
VI	Outreach Inc	2230		Oak Ridge Way	Vista	CA	92081	904.31	2759	323119	Printing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Ozivert	921	3	Poinsettia Ave	Vista	CA	92081	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Pacific Ambulance, Inc.	1939		W Vista Way	Vista	CA	92083	904.21		621910	Ground Transportation	No	No	Yes	No	Yes	No	No	No	No	No	Low	
VI	Palmac Design & Manufacturing	2445		La Mirada Dr	Vista	CA	92083	904.31	3585	333415	Manufacturing, Fabricated Metal	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	Phoenix Energy	1046		Buena Vista Dr	Vista	CA	92081	904.31		562219	Waste Management	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Phoenix Wheel Company, Inc. (HRE Performance)	2453	A	Cades Way	Vista	CA	92083	904.32	3499	336999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Pixel Imaging Media	2595		Fortune Way	Vista	CA	92081	904.31	2759	323119	Printing	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	
VI	Power Craft Autoparts	452	L	Olive Ave	Vista	CA	92084	904.22	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Precise Manufacturing	1495	148	Poinsettia Ave	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Predator Motorsports	1250		Distribution Way	Vista	CA	92081	904.31	2599	33639	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Print House Inc	2630		Progress St	Vista	CA	92083	904.31	2759	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Print Inc	1225	A	Park Center Dr	Vista	CA	92083	904.31	2759	323113	Printing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Pro Designer Plastics Inc Pdp	1260	D	Liberty Way	Vista	CA	92083	904.31	3089	326199	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Low	
VI	Professional Water Technologies	1048		La Mirada Ct	Vista	CA	92081	904.31	2899	325988	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Low	
VI	Promach	2438		Cades Way	Vista	CA	92081	904.32	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Proteus Dimensional Technologies, Inc	1260		Distribution Way	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Quantum Focus Instruments	990	D	Park Center Dr	Vista	CA	92083	904.31	3826	3345	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	R Jesse & Company Inc	1226		Keystone Way	Vista	CA	92083	904.31	3645	335122	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Ramski Machinery	1725		Eldred Ln	Vista	CA	92083	904.21		332	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Raveon Technologies	2780	C	La Mirada Dr	Vista	CA	92081	904.31	3663	334220	Manufacturing, Equipment	No	No	No	No	No	No	No	No	Yes	No	Low	

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 10-11
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Ray Allen Company, Inc.	2525	8	Pioneer Ave	Vista	CA	92081	904.31	3593	333995	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Rayzist Photomask Inc	955		Park Center Dr	Vista	CA	92083	904.31	3281	327991	Manufacturing, Stone/Glass	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	X
VI	Reybro, Inc. dba Quality Recycling	149		Nettleton Rd	Vista	CA	92083	904.21	5093	421930	Recycling	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	
VI	Roadway Express Inc.	1392		Engineer St	Vista	CA	92083	904.31	4212	484110	Ground Transportation	No	Yes	No	No	Yes	No	No	Yes	No	Yes	Medium	
VI	S B A J Trans Auto Sales	1225		N Santa Fe Ave	Vista	CA	92084	904.22		44131	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	S C T Emerald	1851	B	W Vista Way	Vista	CA	92083	904.21		33421	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	Safe-Way Moving Inc.	1330	A	Distribution Way	Vista	CA	92081	904.31	4225	484110	Ground Transportation	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Sandel Avionics, Inc.	2401		Dogwood Way	Vista	CA	92081	904.32	3812	334511	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	Schmid Built Products	2520		Fortune Way	Vista	CA	92081	904.31		33299	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Seber Tech L L C	2438		Cades Way	Vista	CA	92083	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Seven Mfg	1420	C	Decision St	Vista	CA	92083	904.31	2834	325412	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	Shadowridge Water Reclamation Facility	2525		Lupine Hills Rd	Vista	CA	92083	904.31	4952	221320	POTWs	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Sherline Products, Inc.	3235		Executive Ridge Dr	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Skylark Sport Marketing dba, Prana	3275		Corporate View Dr	Vista	CA	92081	904.51	2329	315228	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	
VI	Smart Engineering Systems	2308		La Mirada Dr	Vista	CA	92081	904.31	3625	335314	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Sound Away Corporation	1175	A	Park Center Dr	Vista	CA	92081	904.31	3482	3343	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	Speedy Cut Inc	2565		Progress St	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Stines Machine Inc	2481		Coral St	Vista	CA	92083	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	
VI	Sue Spray Woodworks	925	A-9	Poinsettia Ave	Vista	CA	92081	904.32	2434	337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	
VI	Tech 22	1160		Joshua Way	Vista	CA	92083	904.31	3679	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	
VI	Tech M3, Inc	1281		Activity Dr	Vista	CA	92081	904.31	3479	332812	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	Technical Tooling & Gage	2598	F	Fortune Way	Vista	CA	92083	904.31	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Tecxel/R Zamora Corp.	2826	D	La Mirada Dr	Vista	CA	92083	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Tedco Tool	1175	C	Park Center Dr	Vista	CA	92084	904.31	3728	336413	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Tempo Research Corp	1390		Aspen Way	Vista	CA	92083	904.31	3679	334419	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	The Art Of Coffee, Inc.	1311		Specialty Dr	Vista	CA	92083	904.31	2095	311920	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	
VI	The Brass Ring	1495	150	Poinsettia Ave	Vista	CA	92081	904.51	3999	33232	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	The Wineing Wife	1065		Woodcrest Ln	Vista	CA	92081	904.32	3231	327215	Manufacturing, Stone/Glass	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Titeflex Corporation	2755	C	Dos Arrons Way	Vista	CA	92081	904.31	3599	332999	Manufacturing, Plastic/Rubber	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	
VI	T-Rex Clothing & Graphics	1349		Bonair Rd	Vista	CA	92084	904.22	2731	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	
VI	Trinity Innovations	1250		Keystone Way	Vista	CA	92083	904.31	3993	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	
VI	U S I Inc.	1185	0	Park Center Dr	Vista	CA	92083	904.31	2833	325411	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Low	
VI	US Post Office	960		Postal Way	Vista	CA	92084	904.22	4311	491110	Ground Transportation	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	V Q S Enterprises, Inc.	1081		Poinsettia Ave	Vista	CA	92083	904.31	2752	32311	Printing	No	Yes	No	Yes	No	No	No	No	Yes	Yes	Medium	
VI	Versaform Corp	1377		Specialty Dr	Vista	CA	92081	904.31	3728	336413	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	High	X
VI	Vision Manufacturing Inc	1198		Joshua Way	Vista	CA	92081	904.31	3672	334412	Manufacturing, Electronics	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Vista Auto Sound	808		N Santa Fe Ave	Vista	CA	92083	904.22		441310	Auto Supplies	No	No	No	No	Yes	No	No	No	No	No	Low	
VI	Vista Display Products	1260	C	Liberty Way	Vista	CA	92081	904.31		339943	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Low	
VI	Vista Fluid Technologies	1791		Vale Terrace	Vista	CA	92084	904.22		333415	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Vista Industrial Products Inc	1395		Park Center Dr	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	
VI	Walker Contract Machining @ F M D Automation	2308		La Mirada Dr	Vista	CA	92081	904.31	3541	333512	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	
VI	Watkins Manufacturing Corp	1280		Park Center Dr	Vista	CA	92083	904.31	3088	326191	Manufacturing, Plastic/Rubber	No	No	No	No	Yes	No	No	Yes	Yes	Yes	High*	
VI	Westbridge Agricultural Products	1260		Avenida Chelsea	Vista	CA	92081	904.31	2879	32531	Manufacturing, Chemicals	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	
VI	Western CNC, Inc	1001		Park Center Dr	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	No	Yes	Medium	
VI	Youngdale Manufacturing Corp	2449		Cades Way	Vista	CA	92083	904.32	3429	332510	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	

*medium priority on beginning of the year inventory therefore not inspected; revised at the end of the year and will be inspected in FY11-12 program

APPENDIX D-3
FY 2010-11 MOBILE BUSINESS INVENTORY

								Potential Pollutants Genenerated								
Buisness Name	Address	Zip Code	City	TTWQ	SIC Code	NAICS Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
(cho)2 Home Services	955 Postal Way 56	92083	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
A.S.P. Home Repair	1008 Georgia Ln	92083	Vista	Low	0782	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Accurate Estimating Service	1727 Creekside Ln	92081	Vista	High	7349	561790	Power Washing	No	Yes	No	No	No	No	No	No	No
Advance Carpet Cleaning & Bldg.	278 Paseo Marguerita	92084	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Affordable Carpet Care&Jch Ent	418 Santa Clara Dr	92083	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Alexis M. Palos	371 N Melrose Dr C	92083	Vista	Low	42493		Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No
Alta Vista Lawn Care	534 W California Ave 4	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Amador Landscape	1424 Bonair Rd 4	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Andres Gardening & Hndymn Svc	1984 Warmlands Ave	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Andy's Carpet Cleaner	352 N Santa Fe Ave	92083	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Angel's Gardening Maintenance	523 N Citrus Ave	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Antonio Maola Concrete Pumping	603 Rancho Vista Rd	92083	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Araiza Paving & Grading	550 W Vista Way 110	92083	Vista	Low	1611	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Around Town Power Wash	2242 Valley Road	92056	Oceanside	High	7349	561790	Power Washing	No	Yes	No	No	No	No	No	No	No
Artistic View	405 Palmbark	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Attention to Detail			Vista	High	7542	811192	Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Azland Handyman Service	802 Lemon Ave	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
B And R Lanscaping	1360 Foothill Dr 64	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
B&M's Home And Carpet Care	1710 Timothy Pl	92083	Vista	Low	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Baldwin Yard And Maintenance	855 Francis Dr	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Barlow's Pest Control	375 Windy Lane	92083	Vista	Low	7342	561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Bautista Maintenance	1721 Rush Ave	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Berry's Bumper Repair	1517 Oasis Ln	92083	Vista	Low	7538	811111	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Bobby Watkins Family Pool & Spa Servic	943 Crescent Dr	92084	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Bob's Pool Cleaning	2002 Redwood Crest	92081	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Bradleys Pest Control	147 Valencia Dr	92083	Vista	Low	7342	561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Brandi's Haneys Grooming	475 Gail Dr	92084	Vista	Low		812910	Animal Facilities	Yes	No	No	Yes	No	No	No	No	No
Brent Mobile Wax	4660 N. River Road	92057	Oceanside	High	7542	811192	Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Brians Landscape And Maintenance	452 W Los Angeles Dr	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Brother's In Law Landscaping	343 Gail Dr	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Brothers Maint	320 Acateno Ave	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Bugs Out Window & Door Screens	1235 Grandview Rd	92084	Vista	Low		332618	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No
C & J Discount Carpet Care	1004 Marlin Dr	92084	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Cables Landscaping	1521 Sunrise Dr	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Cali Bunga Pool Cleaning	1260 Winchester Ct	92083	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Capital Painting Corporation	216 E Broadway	92084	Vista	High	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Capital Painting Corporation 1	512 W California Ave 204	92084	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Cardenas Painting	510 N Melrose Dr E-4	92083	Vista	Medium	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Carlos Ajanel	166 Camino Corto c	92083	Vista	Low	0783	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Casas Tree Service	755 Highland Dr	92083	Vista	Medium	0783	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Castillo Landscaping	1424 Bonair Rd 11	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Chlorophyll Kid	916 Judilyn Dr	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Classic Touch Landscape Maint	2185 Hawley Dr	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Condominium Services Company	402 Olive Ave B	92083	Vista	Medium	0781	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Coppock Pool & Spa	719 Sunset Dr	92083	Vista	Medium	1799	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Cornerstone Marble Gran & Tile	1205 Avenida Chelsea B	92083	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Cortez Tree Service	720 W California Ave	92083	Vista	Medium	0783	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Cox Landscape	947 Sheffield Dr	92081	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
D & S And Sons Landscaping	133 Bellevive Ct	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Dan Boteler Landscaping	579 Mar Vista Dr	92083	Vista	Low	0782	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Darrel D Rose Landscaping	508 Moa Dr	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Dawg's Drain Service	1041 Meadowlake Dr	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Dc Concrete And Masonry	1710 Jonathon St	92083	Vista	Low	1741	235410	Masonry	No	No	No	No	No	No	No	Yes	No
Dogs On The Run	2229 Baxter Canyon Rd	92081	Vista	Low	0782	812910	Animal Facilities	Yes	No	No	Yes	No	No	No	No	No
Double J Pool Service	1215 Allea Ln	92083	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
El Carpi Jr. Construction	610 Cocapah St	92083	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Enrique Chavez	209 Hawthorne Cir	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Enrique Silva Landscaping Maintenance	1064 Camino Ciego Ct	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Euro Tile	383 N Melrose Dr B	92083	Vista	Low	1741	235410	Masonry	No	No	No	No	No	No	No	Yes	No
F J R Earthworks Dba Ayro Enterprises	2531 Walinca Way	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Felipe Ramirez Perez	2112 E Vista Way 21	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
First Class Maintenance			Vista	High	7349	561790	Power Washing	No	Yes	No	No	No	No	No	No	No
Fred A. Jones Painting	1407 Bonair Rd	92084	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
G M Landscape Service	158 Mar Vista Dr	92083	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Garza Grading & Paving	755 North Ave	92083	Vista	Low	1611	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Gemini Pest Control Inc	1058 Taylor St	92083	Vista	Low	7342	561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Gonzalez Tree Svc & Lndscpng	314 Acateno Ave	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No

								Potential Pollutants Genenerated								
Buisness Name	Address	Zip Code	City	TTWQ	SIC Code	NAICS Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Got Pool Cleaning And Repair	1569 Green Oak Rd	92081	Vista	High	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Green Meadows Lawn Service	1243 Arcadia Ave C	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Green Weaver Landscaping Services	527 Huff St	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Greenness Design	1146 Sunset Dr	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
H H Landscaping	164 Hill Dr	92083	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Heaven's Best Carpet & Upholstery	104 Hill Dr	92083	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Hector Rodriguez	510 Pina Ln	92083	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Hernandez Gardening	401 W California Ave 17	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Hernandez Lndscpg & Grdng Svc	952 Wellpott Pl	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Hernandez Maintenance	2263 Warmlands Ave	92084	Vista	Low	0782	811411	Other Contractor	No	No	No	No	No	No	No	No	No
High Low Drywall	1639 Calle Jules	92084	Vista	Low	0782	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Hydra Vac	1037 Glenmere Rd	92084	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Idle Properties Maintenance	550 W California Ave	92083	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Innovations In Marble And Tile	1128 Portola St	92084	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Insect And Rodent Solutions	941 Poinsettia Ave B4	92081	Vista	Low	7342	561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Integrity Pool Services	915 Marlin Drive	92084	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Integrity Pressure Wash	1508 Glacier Road	92056	Oceanside	High	7349	561790	Power Washing	No	Yes	No	No	No	No	No	No	No
Invision Landscape Inc.	1366 Brewley Ln	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
J S Custom Painting	1722 Foothill Dr	92084	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
J&A Landscape	951 Taylor St 23	92084	Vista	High	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
J. R. Landscaping & Maintenance	950 Arcadia Ave 40	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
J.B. Handyman	326 San Del Dr	92083	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Jeff's Mobile Detailing			Vista	High	7542	811192	Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Jerry's Carpet Cleaning	1331 Arcadia Ave	92084	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Jmb Landscaping & Tree Service	310 Bandini Pl	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Joe Lane Custom Painting	1105 Collinswood Ln	92083	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Joel Hernandez R	1804 Christi Dr	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
K G Painting	746 Sunset Dr	92081	Vista	Medium	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
K.O. Enterprises	512 W California Ave	92083	Vista	Low	1751	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Kaufman Masonry & Landscape Supply	845 W Vista Way	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Kennedy Pest Control, Inc.	114 Natal Way	92083	Vista	Low	7342	561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Kessel Window Services	1716 Country Side Pl	92081	Vista	Low	7349	561790	Power Washing	No	Yes	No	No	No	No	No	No	No
L D G Mobile	1205 N Melrose Dr I	92083	Vista	Low	7538	811111	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
L.T. Backflow	869 Highland Dr	92083	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Landscaping Baltazar	1052 Anza Ave	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Las Palmas Landscape Mtc	309 Lado De Loma Dr	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Leahi Pool & Spa	510 N Melrose Dr P-7	92083	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Leituala Tree Work And General Mainten	156 Pond Place 23	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Leopoldo Resendiz Mata	1904 Yettford Rd	92083	Vista	Medium	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Life Gardening Svcs	1803 Manzanita Ct	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Living Waters Carpet & Upholstery	18045 SATICOY ST	91335	Reseda	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Local Lumber	1138 Beverly Dr	92084	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Lopez Demolition	318 Arnel Ave	92083	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Los Altos Landscaping	312 Palm Dr	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Lot Management	7200 Ponto Drive	92011	Carlsbad	High	7349	561790	Power Washing	No	Yes	No	No	No	No	No	No	No
Main Painting Co	121 Hanes Pl	92084	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
McCabe Construction	1027 Marbo Ter	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Mckenna's Carpet	1275 Tower Dr	92083	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Middleton Skid, Steer And Hauling Svcs	480 Valerie Dr	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Miller Carpet Care	512 W California Ave	92083	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Mobile Handyman And Landscape	848 Smith Dr	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Mobile Wash Works	1125 Cabrillo Cir	92084	Vista	Medium	7542	811192	Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Montecitos Landscape	2232 Primrose Ave 1	92083	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
N J Landscaping	2330 Azure Ln	92081	Vista	Medium	0781	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
On The Move Mobile Auto & Truck	538 Olive Ave B	92083	Vista	Low	7538	811111	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Orkin Pest Control D Glassmaker	2420 Grand Ave J	92083	Vista	High	7342	561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Orozco Construction	1174 Sunset Dr	92081	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Pacific Detailing Co	43795 Corte Amaya	92592	Oceanside	High	7542	811192	Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Paul's Pressure Washing	751 E Vista Way 81	92084	Vista	Medium	7349	561790	Power Washing	No	Yes	No	No	No	No	No	No	No
Payo's Painting Company	717 Earth Dr	92083	Vista	Low	1721	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Pedro Rodriguez	858 Anns Way	92083	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Perfect Paving Grading & Seal	1641 Monte Mar Rd	92083	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Pestgon Inc	519 S Santa Fe Ave	92083	Vista	Low	7342	561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Pool And Poop Patrol	831 Lantana Way 143	92081	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Precision Aquatics	633 Ascot Dr 1	92083	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Premium Landscape	424 Garey Dr	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Prestige Tile And Marble Installation Co	2168 Opal Ridge	92084	Vista	Low	1741	235410	Masonry	No	No	No	No	No	No	No	Yes	No

								Potential Pollutants Genenerated								
Buisness Name	Address	Zip Code	City	TTWQ	SIC Code	NAICS Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Prestige Tile And Marble Installation Co	2168 Opal Ridge	92084	Vista	Low	1741	235410	Masonry	No	No	No	No	No	No	No	Yes	No
Progressive Gardening Landscape	1117 Mullen Way	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Prototypworks	1798 Club Heights Ln	92083	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Rac General Contractor	1432 Alta Vista Dr	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Rafael Sanchez Maint	206 W California Ave	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Rancho Carpet Cleaning Inc.	1157 S Santa Fe Ave	92083	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Rancho Tree Service	425 Redlands St	92085	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Rancho Vista Landscaping Inc.	1335 Warmlands Ave	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Randy's Pressure Washing	1205 N Santa Fe Ave 62	92083	Vista	Medium	7349	561790	Power Washing	No	Yes	No	No	No	No	No	No	No
RB Mobile Wash	166 North Barnwell Street	92054	Oceanside	High	7542	811192	Vehicle Washing	No	Yes	No	No	No	Yes	No	No	No
Rey & Sons Landscaping	1653 Rush Ave	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
River Carpet Cleaning	1610 Calle Jules	92084	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Robles Handyman Work	1369 Bonair Rd	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Robles Landscaping	247 E Bobier Dr	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Ronald W. Card	758 Lazy Cir	92083	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Rooney's Lawn And Maintenance Service	1181 Madera Ln	92084	Vista	High	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Root	930 Brooktree Ln 70	92081	Vista	High	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Ryan's Painting	666 Townsite Dr	92084	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
S & A Pool Service	528 Collyn St	92083	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Sanchez Landscaping	221 Plymouth Dr	92083	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Santa Fe Paving	602 Lemon Ave	92084	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Severo Ramos	1575 Kiva Ln	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Showcase Textile Care	904 Judilyn Dr	92083	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Sierra's Landscaping	1640 Calle Colorado	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Silac Landscape And Design	1112 Louie Pl	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Sketch & Paint By C D B	1120 Meadowlake Dr 1	92083	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Slobo Landscaping	1735 Stormy Ln	92084	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Solutions For Utilities, Inc.	1192 Sunset Dr	92081	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Stands By Me	942 Sierra Ct	92081	Vista	Low			Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No
Star Auto	261 Pala Vista Dr 5	92083	Vista	Medium	7538	811111	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Stasik Specialized Carpentry	365 Pomelo Dr A15	92081	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Steam Magic Carpet Cleaning	1625 Jonathon St	92083	Vista	Low	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
Steve Batsch Painting	419 Eucalyptus Ave	92084	Vista	High	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Sunterra Tile & Stone	1072 Chelsea Ct	92084	Vista	Medium	1741	235410	Masonry	No	No	No	No	No	No	No	Yes	No
Superior Carpet Cleaning	926 Westport Ln	92084	Vista	Medium	7217	561740	Carpet/Furniture Cleaning	No	Yes	No	No	No	No	No	No	No
T J Crossman's Mobile Auto Repair	1330 N Melrose Dr	92083	Vista	Low	7538	811111	Auto Repair	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Tanis Landscaping	1104 Warmlands Ave	92084	Vista	High	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Terry's Painting	533 Sunset Dr	92083	Vista	Low	1799	811411	Other Contractor	No	No	No	No	No	No	No	No	No
Tesoro Landscape / So Cal Landscape S	1045 Highland Dr	92083	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
The Vintage Rose	2057 Paseo Ladera	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Three Sisters Catering, Inc.	1589 E Vista Way A	92084	Vista	High	5812		Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes
Travis Goin Concrete Services	1109 Tower Dr	92083	Vista	Medium			Manufacturing, Concrete	No	No	No	No	No	No	No	Yes	No
Tree Barber Enterprises, Inc.	1923 Goodwin Dr	92084	Vista	Medium	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Velasquez Tree Service Landscaping	1424 Bonair Rd 4	92084	Vista	Low	0782	561730	Landscaping	No	Yes	No	Yes	No	No	Yes	No	No
Vision Painting	810 Citrus	92084	Vista	Low	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
Wag N Wheels Mobile Pet Grooming	1613 Ravine Rd	92083	Vista	Low	752	812910	Animal Facilities	Yes	No	No	Yes	No	No	No	No	No
Waterfall And Fountain Emporium	2223 Alta Vista Dr	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Watters Clean Pool Service	1974 Wellington Lane 57	92081	Vista	Medium	7389	561790	Pool/Fountain Cleaning	No	Yes	No	No	No	No	No	No	No
Willis Exterminators	2475 Coral St B	92084	Vista	Low	7342	561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Pacific Towing And Recovery	1330 N. Melrose Dr A	92083	Vista	Medium	7549	488410	Motor Vehicle Towing	No	No	Yes	No	Yes	No	No	No	No
Yucaipa Towing Inc	451 Olive Ave	92083	Vista	Medium	7549	488410	Motor Vehicle Towing	No	No	Yes	No	Yes	No	No	No	No
Captain's Port/J F C Contracting, Inc.	825 Williamston St	92084	Vista	Medium		722110	Full-Service Restaurants	Yes	Yes	No	No	Yes	No	No	No	Yes
Philip Rios & Son's Painting	717 Lemon Ave	92084	Vista	Low	1721	238320	Painting and Wall Covering Contractors	No	No	No	No	No	No	No	No	No
Pedro's Painting	204 Goetting Way	92083	Vista	Low	1721	238320	Painting and Wall Covering Contractors	No	No	No	No	No	No	No	No	No
Horizon Painting	408 Durian St	92083	Vista	Low	1721	238320	Painting and Wall Covering Contractors	No	No	No	No	No	No	No	No	No
Huitzi's Painting	955 Postal Way 22	92083	Vista	Low	1721	238320	Painting and Wall Covering Contractors	No	No	No	No	No	No	No	No	No
Marcelo Leon Painting	1374 Palomar Pl	92084	Vista	Low	1721	238320	Painting and Wall Covering Contractors	No	No	No	No	No	No	No	No	No
Jose Luna Painting	1135 Olive Ave	92083	Vista	Low	1721	238320	Painting and Wall Covering Contractors	No	No	No	No	No	No	No	No	No
Adrian Casarrubiaos Landscaping	1043 Clearbrook Ln	92084	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Natolio Zamora	806 Highland Dr	92083	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Azteca's Landscape	955 Postal Way 34	92083	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Santos H. Landscaping	772 N. Citrus Ave	92084	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Abe Landscape Professional	243 Pala Vista Dr 10	92083	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Napa Tree Service	837 Shelsteve Ter 4	92084	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Juan's Landscaping	191 Lada De Loma	92083	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Mario Espinoza	129 Pala Vista Dr 3	92083	Vista	Low	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
All Pro Cleaning & Maintenance	328 Cananea St	92084	Vista	Low	0782	541320	Landscape Architectural Services	No	No	No	Yes	No	No	Yes	No	No

								Potential Pollutants Genenerated								
Buisness Name	Address	Zip Code	City	TTWQ	SIC Code	NAICS Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
J R S Landscape	318 Del Rio Way	92083	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Merc Scapes	177 Santa Maria Ct	92083	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Muzquiz Self Contractors	809 Raintree Pl	92084	Vista	Low	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Sunshine Landscaping	2420 Grand Ave E1	92081	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Francisco Colores	1205 N. Santa Fe Ave Sp1	92083	Vista	Low	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Avant Scape	2168 University Dr B5	92083	Vista	High	0782	561730	Landscaping Services	No	No	No	Yes	No	No	Yes	No	No
Green Earth Pest Control	323 Paseo Marguerita	92084	Vista	Low	7342	561710	Exterminating and Pest Control Services	No	No	No	No	No	No	Yes	No	No
Plateau Landscape Pest Solutions	317 Forest Pl	92083	Vista	Low	7342	561710	Exterminating and Pest Control Services	No	No	No	No	No	No	Yes	No	No
Hurst Exterminators	1026 Bartlett Dr	92084	Vista	Low	7342	561710	Exterminating and Pest Control Services	No	No	No	No	No	No	Yes	No	No
Sonshine Pool & Spa	910 Brooktree Ln 107	92081	Vista	Low	7389	561790	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Forever Clear Pool Service	328 Huff St	92083	Vista	Low	7389	561790	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Rancho Vista Pool Services	1222 Tower Dr	92083	Vista	Low	7389	561790	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
R D Pool Service And Repair	910 Brooktree Ln 102	92081	Vista	Low	7389	561790	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
California Sunrise Pool Service	1210 Isabella Way	92084	Vista	Low		812990	All Other Personal Services	No	No	No	No	No	No	No	No	No
California Masonry	277 Yacon Cir	92083	Vista	Low		238140	Masonry Contractors	No	No	No	No	No	No	No	Yes	No
A C L Carpet & Upholstery Cleaning	2130 Sunset Dr 108	92081	Vista	High	7217	561740	Carpet and Upholstery Cleaning Services	No	Yes	No	No	No	No	No	No	No
Bill Middleton @Miller's Carpet	512 W. California Ave 109	92084	Vista	High	7217	561740	Carpet and Upholstery Cleaning Services	No	Yes	No	No	No	No	No	No	No
The Dean Of Clean Carpet Clean & More	334 Arnel Ave	92083	Vista	Low	7217	561740	Carpet and Upholstery Cleaning Services	No	Yes	No	No	No	No	No	No	No
Ohana Mobile Window Tinting	1515 S. Melrose Dr 134	92081	Vista	Low		81119	Other Automotive Repair and Maintenance	No	No	Yes	No	Yes	No	No	No	No
Krason Construction	1236 Coventry Rd	92084	Vista	Medium		236118	Residential Remodelers	No	No	No	No	No	No	No	Yes	No
Gilholm Construction	1453 Sunrise Dr	92084	Vista	Medium		23	Construction	No	No	No	No	No	No	No	Yes	No
Vazquez Carpet Cleaning	1036 N. Citrus Ave A	92084	Vista	High	7217	561740	Carpet and Upholstery Cleaning Services	No	Yes	No	No	No	No	No	No	No
A M H Grading	1004 Vale View Dr	92081	Vista	Medium		238990	All Other Specialty Trade Contractors	No	No	No	No	No	No	No	No	No
Solano's Construction Co.	541 Spires St	92083	Vista	Medium		236118	Residential Remodelers	No	No	No	No	No	No	No	Yes	No
North Star Homes Of California, Inc.	1723 Wildflower Ct	92083	Vista	Medium		23	Construction	No	No	No	No	No	No	No	Yes	No
Easterling Brothers	1124 Mullen Way	92083	Vista	Low		236	Construction of Buildings	No	No	No	No	No	No	No	Yes	No
Re-Nu Renovations	380 S. Melrose Dr 343	92083	Vista	Low		236118	Residential Remodelers	No	No	No	No	No	No	No	Yes	No

APPENDIX D-4
FY 2010-11 COMPLAINTS SUMMARIES

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-137 Type: Commercial Location Address: 524 Civic Ctr Watershed: Buena Vista Creek Call Date: 7/8/2010 Case closed date: 7/15/2010	Sewer spill over sidewalk and into ROW	Observed as described in Complaint Description. Residue observed starting at cleanout and entering ROW, no raw sewage. Property Owner (PO) advised that line had been cleared by plumber earlier in the week. Contacted plumber, they were unable to locate an invoice. 7/14/10 - No invoice received. Message left with PO. Contacted plumber, employee took message to have supervisor call Officer. 7/15/10 - Plumbing invoice received.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Submit plumbers invoice to the City by 7/12/10 Follow-up Action: Receipt of invoice Actions completed: No new discharge observed, plumbers invoice received dated 7/2/10
SW No.: SW10-141 Type: Commercial Location Address: 427 Redlands Watershed: Buena Vista Creek Call Date: 7/15/2010 Case closed date: 8/19/2010	PROACTIVE. Rinsing vehicles causing discharge into ally and on lot, materials and wastes not covered/protected from water contact	Business owner warned by Officer Sotola on 4/15/10 for similar BMP discharge problems, Officer Welte verified that violations are not abated as of 7/15/10. 8/2/10 Some material covered, discharges continuing, no BMPs in place.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Remove or properly store waste in bins w/lids, cover/protect stored materials from water contact, implement BMPs for discharging prevention Follow-up Action: Photo verify Actions completed: Waste stored properly, grey wash residue swept, rinse water contained via BMP, sewer drain clear in carport next to alley
SW No.: SW10-145 Type: Commercial Location Address: 270 Vista Village Dr Watershed: Call Date: 7/20/2010 Case closed date: 11/4/2010	PROACTIVE. Complaint of washing chains with soap and water on asphalt into right of way.	Officer observed stain on asphalt in front of business consistent with washwater. 7/22 Spoke with business owner, suggested usage of buckets with soapy water and rags, dump buckets into toilet or landscape.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Discontinue washing that generates runoff, no hosing over asphalt Follow-up Action: Business owner contacted and educated Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-150 Type: Commercial Location Address: 1516 Monte Vista Watershed: Buena Vista Creek Call Date: 7/20/2010 Case closed date: 9/29/2010	Requires annual inspection	Entire site requires better housekeeping. I met with property occupant and he stated that the site is upgraded the weeks just before rainy season (Oct 1st).	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate BMPs throughout site Follow-up Action: Photo verify Actions completed: Site fence requires corrective placement and portable toilets require 2C. 9/21/10 Silt fence corrected and portable toilets have 2C.
SW No.: SW10-159 Type: Commercial Location Address: 427-B Redlands Watershed: Buena Vista Creek Call Date: 7/15/2010 Case closed date: 9/10/2010	PROACTIVE. Trailers onsite full of waste/debris uncovered, auto parts on ground, barrels of auto party and material uncovered, motor oil containers empty/spilled on frontage, waste scattered onsite, shelving storing parts exposed to elements, tires stored outside	Observed as described in complaint. Verbal warning for violations on 7/15/10. NOV issued on 8/19/10. 9/2/10 most materials/parts/barrels covered or removed, some items remain until removal by recycler next week.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cover or remove waste; cover shelves and barrels, remove auto parts from ground, cover/remove trailers, remove/cover tires Follow-up Action: Photo verify Actions completed: Completed
SW No.: SW10-161 Type: Commercial Location Address: 280 Alestar Watershed: Buena Vista Creek Call Date: 8/2/2010 Case closed date: 8/25/2010	PROACTIVE. Sewer lateral spill at location, plumber left scene with standing sewer water uncontained/reclaimed.	Plumber explained that he attempted to hydrojet the line and water spilled from the line. 8/25/10 Contact property mgmt for location. When Officer arrived, a tenant was running hose into open cleanout - no plumber was on scene. Plumber from Pacific Drain advised that they had snaked lateral on 8/2/10 and jetted on 8/3/10. Standing sewer water maybe the fault of the tenant.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Draft spill plan and train employees Follow-up Action: Receipt of training roster and spill plan Actions completed: Spill policy received via fax. Subsequent investigation and phone conversation with Pacific Drain, new evidence contradicts that Pacific Drain was at fault.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-163 Type: Commercial Location Address: 705 E Vista Way Watershed: Buena Vista Creek Call Date: 8/20/2010 Case closed date: 9/29/2010	PROACTIVE. Evidence on washing/rinsing on loading dock, wet trail leading to brow ditch. Flow into creek bank. Other than wet trail, no hose or employee was observed.	Observed as described in complaint. Manager admitted employee was cleaning earlier on dock, did not admit to using water. 9/9/10 New Mgmt, extension given.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Draft written policy for outdoor cleaning, train all employees Follow-up Action: Submit signed posters for training and written policy to City Actions completed: Area clean, written policy and training complete
SW No.: SW10-165 Type: Commercial Location Address: 718 E. Vista Way Watershed: Buena Vista Creek Call Date: 9/1/2010 Case closed date: 9/29/2010	PROACTIVE. Auto parts on pavement, oil spills, vehicles worked on w/o cover, trash/liter on lot, oil stains on concrete, working on cars outside stalls, hoods up w/o spill pans, stains leading to drains.	Observed as described in complaint. 9/16/10 conducted site visit, some corrections noted. Liter removed, most part off ground, most vehicles w/open hoods under cover, no evidence of power washing, radiator pile to be removed by recycler today. No hydro carbon booms in place given time extension to buy booms. Suggestions were emailed to business owner.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Keep all parts off ground/under cover, repair vehicles under cover w/containment, clean all stains/spills, eliminate spill potential via power washing or equipment, keep spill pans under vehicles, suggest hydro carbon booms for drains. Follow-up Action: Photo verify Actions completed: BMPs in place
SW No.: SW10-167 Type: Commercial Location Address: 2241 La Mirada Dr Watershed: San Luis Rey Call Date: 9/29/2010 Case closed date: 9/29/2010	PROACTIVE. Responded to location to advise on stormwater concerns during post fire incident cleanup, due to dumpster fire previous evening	Rubber dust strewn on property, tracked out by fire fighters. Emergency water flows pushed dust into inlet. Inlet partially protected by hydrocarbon boom and dirt berm.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove dust/grinding, prevent further discharge Follow-up Action: Photo verify Actions completed: Area swept, powder removed

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-168 Type: Commercial Location Address: 219 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 10/4/2010 Case closed date: 10/18/2010	PROACTIVE. Accumulation of trash, debris. No dumpster onsite. Spills and residue on property. Trash was unprotected from rain.	Spoke to employee, directed to remove waste pile and get dumpster. Employee claimed that the trash is due to illegal dumping from public. Officer recommended a dumpster with a locking lid. Employee advised that people will just leave trash outside dumpster. Prior case history shows that business has been cited for same violation. Issued citations 10/5/10. Upon reinspection on 10/5/10 dumpster onsite and full yet trash pile remained. Follow up inspection on 10/6/10 half of the trash had been removed, advised employee to clean by 10/7/10. Inspection on 10/13/10 trash removed, but dumpster does not lock, required locking dumpster by 10/18/10.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Remove all trash, sweep up debris, clean any residue, cease paint spills, keep a locking dumpster onsite and locked when not in use Follow-up Action: Photo verify Actions completed: Locking dumpter in place
SW No.: SW10-169 Type: Commercial Location Address: 334 Main St Watershed: Buena Vista Creek Call Date: 7/22/2010 Case closed date: 9/29/2010	PROACTIVE. Red stain observed in curb and gutter from area drain outlet, pipe rear of business has an area with standing water w/paint poured in it	Observed as described in complaint. Investigation showed that business was vandalized; suspects poured paint into drain in rear of property and set a storage shed on fire. 7/26/10 Contacted business owner, area drain to be cleaned. 9/29/10 Advised staff to dump mop buckets into landscaping.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean paint from area drain and pavement Follow-up Action: Photo verify Actions completed: Area cleaned
SW No.: SW10-170 Type: Commercial Location Address: 815 E. Vista Way Watershed: Buena Vista Creek Call Date: 10/8/2010 Case closed date: 11/1/2010	PROACTIVE. Storm Water Staff observed employee hosing off drive-thru, rinse water entered dumpster enclosure, had grey milky appearance. Entry into gutter and stormdrain.	Observed as described in complaint. 11/1/10 - Spoke with Regional Manager about training, she mentioned that general policy was not to hose outdoor area. Violation was confirmed by employee.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Stop washing with hose, mop up water, train employees in dry techniques and pollution prevention. Show proof of training via signatures Follow-up Action: Photo verify or copy signatures Actions completed: Employees trained

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-171 Type: Commercial Location Address: 2465 Coral St Watershed: Agua Hedionda Creek Call Date: 10/6/2010 Case closed date: 10/14/2010	Spill pans in poor condition, vehicles leaking, hydro carbon sheens and rain water flowing toward ROW and drains, hydrocarbon socks strewn, not in place, drain screens not in place, trash and debris in drain/loading dock.	Observed as described in complaint.10/11/10 follow up - most BMPs in place, one are drain in parking lot was missing hydrobooms, need replacement. Business advised that booms have been ordered. 10/14/10 Additional pictures taken.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Implement effective/appropriate vehicle leak containment, restore drain protection BMPs (hydrocarbon filer, debris screen) Remove trash/debris, dry sweep area with oil absorbants. Follow-up Action: Photo verify Actions completed: All BMPs in place
SW No.: SW10-173 Type: Commercial Location Address: 1350 E. Vista Way Watershed: Buena Vista Creek Call Date: 10/11/2010 Case closed date: 10/11/2010	PROACTIVE. Officer noted evidence of G.I. overflow from manhole.	Observed as described in complaint. G.I. was pumped (chambers were completely full) Note: G.I./G.C.D. maintenance is under property mgmt responsibility, not tenants.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Pump G.I. Follow-up Action: Photo verify Actions completed: G.I. pumped while Officer on scene.
SW No.: SW10-178 Type: Commercial Location Address: 2220 Oak Ridge Wy Watershed: Agua Hedionda Creek Call Date: 10/22/2010 Case closed date: 11/4/2010	sewage spilling from clean out near driveway exit	Waste Water crew and plumber on scene. Line was cleared.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: provide spill containment plan and replace existing clean out cap with approved threaded cap. Provide copies of plumber invoices. Follow-up Action: obtain copies and photo verify cap replacement Actions completed: clean out cap was replaced and secure; spill containment plan and plumber invoice recv'd.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-179 Type: Commercial Location Address: 1755 Hacienda Dr Watershed: Call Date: 10/14/2010 Case closed date: 10/25/2010	TCBMP cert had not been submitted as of 10/14/10, past due since 7/10/10	TCBMP cert had not been submitted as of 10/14/10, past due since 7/10/10	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Complete and submit TCBMP annual cert form Follow-up Action: Receipt of form Actions completed: Form faxed on 10/22/10
SW No.: SW10-181 Type: Commercial Location Address: 225 Vista Village Dr Watershed: Buena Vista Creek Call Date: 10/26/2010 Case closed date: 11/20/2010	PROACTIVE. Frazier Farm employee was hosing off loading dock and trash compactor area and not reclaiming	observed as described. Manager was contacted to cease illegal discharge and train employee regarding bmps req's	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease illegal discharge, train employees on proper cleaning and pollution prevention, remove dock pavement stains-reclaim all discharge water. Follow-up Action: receipt of training records, photo verify Actions completed: area cleaned, records recv'd.
SW No.: SW10-183 Type: Commercial Location Address: 770-H Sycamore Av Watershed: Agua Hedionda Creek Call Date: 11/10/2010 Case closed date: 11/24/2010	FOG inspection indicates trap exceeds >25%, no pump records since 5/7/10.	observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: pump grease trap, provide pump receipt, maintain records. Follow-up Action: photo verify Actions completed: trap pumped, records available

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-184 Type: Commercial Location Address: 1300 Specialty Dr Watershed: Agua Hedionda Creek Call Date: 11/9/2010 Case closed date: 11/15/2010	Sewer overflow from private manhole into right of way. Public Works crew vactored the manhole box, removed sewage, roots and mud from manhole. Box completely cleaned	Observed as described in complaint. 11/12/10 Received voicemail from plumber, he advised that the line was camera inspected, blockage appeared to be limited to manhole box only, lateral was in good shape. 11/15/10 Email w/initial invoice received.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Contact plumber, clear line, submit plumbers invoice to city Follow-up Action: Receipt of invoice, photo verify Actions completed: 11/10/10 Area dry; 11/15/10 Invoice emailed to City
SW No.: SW10-185 Type: Commercial Location Address: 815 E. Vista Wy Watershed: Buena Vista Creek Call Date: 11/8/2010 Case closed date: 11/15/2010	PROACTIVE. Food fryers and refrigerator stored in dumpster enclosure w/o cover. White milky fluid discharging from dumpster.	observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: remove misc fryer appliance Follow-up Action: photo verify Actions completed: materials removed
SW No.: SW10-186 Type: Commercial Location Address: 420 Vista Village Dr Watershed: Buena Vista Creek Call Date: 11/16/2010 Case closed date: 12/8/2010	PROACTIVE. Grey residue discharged to ROW	observed as described	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease discharge; implement bmps; patch asphalt Follow-up Action: photo verify Actions completed: lot was resurface, berms inplace, area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-187 Type: Commercial Location Address: 932 Vista Village Dr. Watershed: Buena Vista Creek Call Date: 11/18/2010 Case closed date: 1/4/2011	Evidence of hosing in back, water mixing w/ trash pile, litter in parking lot, area drain, trash cans w/o lids, food waste on asphalt near dumpster, and potholes causing sediment discharge.	Observed as described. 12/19- Property owner.manager called, he is gathering bids to re-pave potholes. 12/20 - repaving to commence after rain. 12/21 - Rain event, dumpster lids were closed, cardbaord waste pile was evelevate on wooden pallet and under cover. 1/4 - potholes repaved.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease hosing, remove trash and litter, fill potholes and keep trash area free of organic food wastes/litter. Follow-up Action: Photo verify. Actions completed: 11/19 -E vidence of litter/trash removal. 12/8 - Area behind business notably cleaner.
SW No.: SW10-188 Type: Commercial Location Address: 901 S Santa Fe Watershed: Buena Vista Creek Call Date: 11/22/2010 Case closed date: 1/2/2011	Grease bin w/o 2c/oc, NOV issued.	Observed as described. 12/20 - Non-complaince, rain contacting grease spills, cite issued. 12/23 - Tarp in place to protect from rain. 1/19/11 - Improper oc, citation hand delivered. Business owner requested meeting w/ manager. Manager explained reasons for citations. 1/20 - Met with new owner of business, bin is no longer outdoors.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Implement 2c/oc. Follow-up Action: Photo verify. Actions completed: Bin placed inside full enclosure/containment.
SW No.: SW10-189 Type: Commercial Location Address: 1281-X,Y N Santa Fe Av Watershed: Call Date: 11/29/2010 Case closed date: 3/15/2011	Grease bin outside w/o 2c/oc.	Oberved as described. 2/11/11: New bin in place, no proper 2c/oc. 3/15/11: New bin placed inside kitchen.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement appropriate bin. Follow-up Action: Photo Verify. Actions completed: Bin placed inside building.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-195 Type: Commercial Location Address: 1000 Vale Terrace Watershed: Buena Vista Creek Call Date: 12/6/2010 Case closed date: 12/6/2010	PROACTIVE. Hydrant flush with dirt	Spoke to Consolidated Contracting Services, the construction at the Community Clinic required a hydrant flush by Fire Dept. Sand/Gravel bags were placed at inlet to collect sediment. Presently, hydrant flushes are allowed under Muni Code.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove at much sediment prior to hydrant flushing Follow-up Action: None required Actions completed: None required
SW No.: SW10-199 Type: Commercial Location Address: 2210 Oakridge Way Watershed: Agua Hedionda Creek Call Date: 12/9/2010 Case closed date: 12/15/2010	Sewer spill from private lateral (commercial)	Arrived after Public Works had remediated spill, but was told by staff that sewer overflow occurred at manhole cleanout on hill between Solatube and Oakridge Way. This resulted in a discharge to street and storm drain. Root intrusion caused sewer blockage and overflow.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Public Works removed roots and recovered as much of the spill as possible. This restored the lateral to normal and functioning status. Solatube must maintain lateral as necessary to prevent future sewer spills. Solatube started to remove some brush in vacinity. Follow-up Action: None Actions completed: None
SW No.: SW10-200 Type: Commercial Location Address: 1830 Hacienda Dr Watershed: Buena Vista Creek Call Date: 12/9/2010 Case closed date: 12/9/2010	PROACTIVE. Two vehicle car accident, gas discharging to storm drain under vehicles.	observed as described. Fire Dept, County Hazardous Materials, Waste Water, Storm Water and property management was dispatched to location. Storm drain protected. Gas did not reach adjacent creek.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: prevent any deliterious fluids entering inlets and mitigate site of any harmful material from accident Follow-up Action: photo and verbal verify Actions completed: discharge was prevented, reclaimed fluids that entered storm box and area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-202 Type: Commercial Location Address: 701 Mercantile St Watershed: Buena Vista Creek Call Date: 12/13/2010 Case closed date: 1/10/2011	PROACTIVE. Employees hosing off landscape equipment/lawn mower blades to remove grass clippings/debris, runoff into RoW.	Observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, imp. BMPs. Follow-up Action: Photo verify. Actions completed: Mobile berms and wattles inpalce to hold back organic debris and water from RoW.
SW No.: SW10-208 Type: Commercial Location Address: 911 Taylor St Watershed: San Luis Rey Call Date: 7/9/2010 Case closed date: 12/20/2010	PROACTIVE. Dry weather monitoring indicates nitrate discharge from apt complex	a 4" pipe drains area within complex to north end of cul-de-sac.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: implement bmps to reduce or eliminate nitrate run-off. Follow-up Action: verbal verification Actions completed: landscaper hired by complex has implemented a fertilizer management program to reduce nitrate run-off.
SW No.: SW11-011 Type: Commercial Location Address: 1535 W Vista Wy Watershed: Buena Vista Creek Call Date: 1/27/2011 Case closed date: 2/14/2011	Dirty mopwater in gutter, GCD-Trap over 25%, insuf pumping recods.	Observed as described. Pump invoice dated 1/17/11 noted trap at 80%. 2/10 - Site visit, out door area clean, manager not avail.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, pump GCD every 2 weeks, provide records. Follow-up Action: Photo verify. Actions completed: Pumping log started, trap is on a 2 week pump schedule.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-012 Type: Commercial Location Address: 770 E,F Sycamore Av Watershed: Buena Vista Creek Call Date: 1/28/2011 Case closed date: 2/16/2011	Dishwasher connection to grease trap.	Observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: disconnect washer from GCD. Follow-up Action: Photo verify. Actions completed: Compliance verified.
SW No.: SW11-013 Type: Commercial Location Address: 770-L Sycamore Av Watershed: Buena Vista Creek Call Date: 1/28/2011 Case closed date: 2/28/2011	Grease bin w/o 2c/oc.	Observed as des. 2/16: non-complaince, oil mixing with rain water. Cite issued. 2/22: recvd vmail from mngr, complaint bin ordered.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: obtain bin w/ 2c/oc Follow-up Action: photo verify Actions completed: Proper bin in place
SW No.: SW11-014 Type: Commercial Location Address: 727 E. Vista Wy Watershed: Buena Vista Creek Call Date: 1/31/2011 Case closed date: 2/3/2011	PROACTIVE.. 20-50 gallons (or more) of paint dumped on creek bank. Due to tree cover and recent rain event, paint was still wet despite some drying. Downstream from spill, an isolated paint can was recovered. Paint in can was different from spill. Labels on paint can are not tracable to any specific purchanse or receipt. Officer check near by properties with exterior colors matching dumped paint, insuffieicent evidence was available to dtermine source of dumping.	2/1- Contacted paint company on labels, they cannot track the purchase. Visited home of an registered owner of a contruction vehicle parked near spill. Paint on exterior fance of home matched color of recovered paint can however, paint condition of fence indicated that paint job was aged (no new painiting work was noted). All leads failed to reveal responsible party. 2/3 - prop managerhired contractor and reposed paint from banks.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: remove paint spill. Follow-up Action: photo verify. Actions completed: paint removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-017 Type: Commercial Location Address: 1018 Brewley Ln Watershed: Agua Hedionda Creek Call Date: 2/2/2011 Case closed date: 2/17/2011	Air duct service technician dumped duct washwater into gutter.	Observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Technician to clean spill, manager to provide proof of waste disposal policy. Follow-up Action: photo verify, receive policy. Actions completed: 2/3 - Area cleaned. policy received. 2/17 - policy received
SW No.: SW11-018 Type: Commercial Location Address: 20-H 100 S. Main St Watershed: Buena Vista Creek Call Date: 2/1/2011 Case closed date: 2/17/2011	Annual storm water inspection by staff	grease recycler not maintained. PM contacted for clarification of grease recycler responsibility. Contacted business owner requesting upgrade of recycle bin to conform with storm water regs.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: upgrade grease recycler unit to conform to storm water regs. Keep lids down on dumpster. Clean dumpster area pafement. Follow-up Action: photo verify Actions completed: dumpster enclosure pavement cleaned, new recycle unit replaced and moved indoors training records up to date.
SW No.: SW11-019 Type: Commercial Location Address: 1301 E. Vista Way Watershed: Buena Vista Creek Call Date: 2/11/2011 Case closed date: 2/23/2011	PROACTIVE. Pressure washing site and not reclaiming efficiently	Observed as described in complaint. I spoke with two employees who work for Pacifica PM. 2/17/11 Email from Pacifica - Professionals hired. I requested company name.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Reclaim all discharge water, or hire professional Follow-up Action: Receipt of training records or professional company name and contact Actions completed: Professional pressure wash company hired by Pacifica

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-020 Type: Commercial Location Address: 20 W. Main St Watershed: Buena Vista Creek Call Date: 2/11/2011 Case closed date: 2/17/2011	PROACTIVE. Grease recycler not maintained.	Contacted business owner requesting upgrade of recycle bin to conform with storm water regs.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease grease discharge; upgrage recycle unit, clean pavement. Follow-up Action: photo verify Actions completed: area clean, new upgrade inplace indoors
SW No.: SW11-021 Type: Commercial Location Address: 601 Sycamore Av Watershed: Buena Vista Creek Call Date: 2/9/2011 Case closed date: 2/28/2011	GI over 25% (50+% full), trash and foating debris noted, no pumping log/records.	Obseeved as described. 2/22/11- placed call to hauler/pumper (Darling Intl'), GI pumed 12/2010/quaertetly. 2/24/11- GCD at 55%+. 2/28 - GCD pumped, log started.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: pump GI, start keeping records. Follow-up Action: photo verify Actions completed: pumped, log created.
SW No.: SW11-022 Type: Commercial Location Address: 1250-E S Santa Fe Av Watershed: Buena Vista Creek Call Date: 2/11/2011 Case closed date: 3/7/2011	Grease trap over 25% (at 80%), no pumping records.	Observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Pump trap, provide records. Follow-up Action: Photo verify. Actions completed: Trap pumped, maint log created.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-023 Type: Commercial Location Address: 822 E. Vista Wy Watershed: Buena Vista Creek Call Date: 2/10/2011 Case closed date: 2/11/2011	Drain screen missing during inspection, w/in 1yr of prior NOV. Citation issued.	2/11 - Cite hand delivered, violation corrected onsite.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: imp. Drain scrn. Follow-up Action: photo verify Actions completed: Proper screen in place.
SW No.: SW11-025 Type: Commercial Location Address: 840 E Vista wy Watershed: Buena Vista Creek Call Date: 2/11/2011 Case closed date: 3/7/2011	Grease spills on walls of grease bin, no pumping/grease hauling records available/onsite.	Observed as described. 2/11 - Left vmail w/ business owner. 2/22 - Spoke w/ business owner, he will compile records and ensure bin is free of spills. 2/25- No hauling records avail.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean grease bin, keep pump logs onsite. Follow-up Action: Photos verify, examine logs. Actions completed: 2/25 - Bin walls clean. 3/7 - Pumping records available.
SW No.: SW11-036 Type: Commercial Location Address: 1281-K N. Santa Fe Av Watershed: Buena Vista Creek Call Date: 4/4/2011 Case closed date: 4/14/2011	During Qtrly inspection, dumspters were outside trash enclosure, dumpster lids were open, materials were stored inside enclosure, and latter/trash was on asphalt.	as described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Place dumpster back in enclosure, remove all litter and cease storage of items in enclosure. Follow-up Action: Photo verify Actions completed: Dumpster in enclosure, trash removed area clean. ,

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-039 Type: Commercial Location Address: 406 Main St Watershed: Buena Vista Creek Call Date: 4/13/2011 Case closed date: 5/20/2011	pollutant discharge from spilling grease recycler in dumpster.	observed as described	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: implement a secondary spill pan and remove grease from pavement. Follow-up Action: photo verify Actions completed: secondary pan implemented and area clean.
SW No.: SW11-040 Type: Commercial Location Address: 918 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 5/4/2011 Case closed date: 6/3/2011	trap at 85%, floor drain backed up, grease kitchen bmps' needed	observed as described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: clean tramp show maint records, train employees on kitchen grease bmps Follow-up Action: photo verify Actions completed: 5/15/11 trap pumped, 6/3/11 training & records complete.
SW No.: SW11-042 Type: Commercial Location Address: 440 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 4/7/2011 Case closed date: 6/13/2011	no 2c/ohc for grease recycler.	observed as described above	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: obtain approved grease recycling unit or move indoors. Follow-up Action: photo verify Actions completed: new recycler on wheels and twist lid is housed indoors.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-047 Type: Commercial Location Address: 1717-106 E. Vista Way Watershed: Buena Vista Creek Call Date: 5/20/2011 Case closed date: 6/16/2011	grease trap over 25% (31%+), no pumping records/log	observed as described above	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: pump trap, start log/pump records Follow-up Action: photo verify Actions completed: trap pumped, log started.
SW No.: SW11-048 Type: Commercial Location Address: 1591-D E. Vista Way Watershed: Buena Vista Creek Call Date: 5/19/2011 Case closed date: 6/2/2011	Commercial dishwasher discharges hot rinse water/detergent to grease trap.	observed as described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: route outflow pipe to appropriate floor sink or connect to lateral-disconnect from trap. Follow-up Action: photo verify Actions completed: pip re-routed to proper floor sink.
SW No.: SW11-049 Type: Commercial Location Address: 910 E. Vista Way Watershed: Buena Vista Creek Call Date: 5/19/2011 Case closed date: 6/2/2011	grease bin outsie w/o 2c/ohc, next to area drain. minor litter accumulated.	observed as described	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: implement 2c/ohc, keep are litter free. Follow-up Action: photo verify Actions completed: new bin in place, area clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-050 Type: Commercial Location Address: 400 Sycamore Ave Watershed: Buena Vista Creek Call Date: 6/2/2011 Case closed date: 6/13/2011	haz waste drum w/o 2c/ohc.	observed as describe	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: implement 2c/ohc Follow-up Action: photo verify Actions completed: bmps in place.
SW No.: SW11-051 Type: Commercial Location Address: 316 Sycamore Av Watershed: Agua Hedionda Creek Call Date: 6/2/2011 Case closed date: 7/5/2011	Manhole failure of grease interceptor - replacement manhole lid needed; floor sink screens missing, and old foof fryer stored outdoors.	As described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Remove fryer, install screens, repair lid. Follow-up Action: Photo verify. Actions completed: 6/16/11: Fryer removed, screens in place, lid not repaired. Citation issued. 7/5/11: manhole repaired.
SW No.: SW11-052 Type: Commercial Location Address: 1338-C N. Melrose Dr Watershed: Buena Vista Creek Call Date: 6/6/2011 Case closed date: 6/21/2011	PROACTIVE. Dirty wash water from hosing off motor, flow toward storm drain.	observed as described above	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease all hosing/washing, train employees. Follow-up Action: photo verify Actions completed: training complete.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-053 Type: Commercial Location Address: 203 Main St Watershed: Buena Vista Creek Call Date: 6/8/2011 Case closed date: 7/12/2011	Grease trap at 40%, no evidence of recent exhaust hood cleaning.	As desribed above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean trap and hood, provide service receipts. Follow-up Action: Verify cleaning and receipts. Actions completed: GCD and hood clean.
SW No.: SW11-054 Type: Commercial Location Address: 485 S. Melrose Dr Watershed: Buena Vista Creek Call Date: 6/9/2011 Case closed date: 6/22/2011	PROACTIVE: Contract power washer discharging into storm drain w/o BMPs.	As described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, implement BMP plan, obtain MWU storm water inspection and City business license. Follow-up Action: File for business license and pass MWU BMP inspection. Actions completed: Passed BMP inspection.
SW No.: SW11-055 Type: Commercial Location Address: 1751 University Dr Watershed: Buena Vista Creek Call Date: 6/9/2011 Case closed date: 6/16/2011	PROACTIVE. Liquid and green/blue stain dripping from hose bib toward area drain in loading dock.	observed as described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease discharge, repair drip and remove stains Follow-up Action: photo verify Actions completed: area dry and clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-056 Type: Commercial Location Address: 20-H 100 S. Main St Watershed: Buena Vista Creek Call Date: 6/17/2011 Case closed date: 7/7/2011	PROACTIVE. GI was 80% full of FOG.	observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: clean GI, provide invoice w/% of FOG removed, maintain regularly. Follow-up Action: provide grease hauler/pumpers invoice. Actions completed: GI cleaned w/0% FOG. 80% was rEmoved. Invoice recv'd. unit will be checked in 6mons.
SW No.: SW11-057 Type: Commercial Location Address: 35-C100 Main St Watershed: Buena Vista Creek Call Date: 6/17/2011 Case closed date: 7/6/2011	GCD/interceptor at 100%	As described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Pump GCD. Follow-up Action: Verify GCD pumped, provide pumping receipt. Actions completed: GCD pumped, recipt provided to officer.
SW No.: SW11-058 Type: Commercial Location Address: 1100 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/14/2011 Case closed date: 6/21/2011	grease on pavement from recycler, grease trap req'd cleaning	observed as described above. 6/20/11 @ 2:30pm and employee dumped 2-5 gal buckest of soapy water onto pavement. I requested it be mopped up immediately. The owner was notified of bmp failure. employee training necessary.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: remove grease, clean GCD, train employees Follow-up Action: photo verify Actions completed: grease removed on pavment and GCD was cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-060 Type: Commercial Location Address: 1330-#1 E Vista Wy Watershed: Buena Vista Creek Call Date: 6/20/2011 Case closed date: 7/6/2011	Grease trap out side, door of trap is exposed to rainwater. Trap over 25%.	As described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair GCD lid to keep out rain, pump trap. Follow-up Action: Photo verify. Actions completed: Lid repaired, trap pumped.
SW No.: SW11-061 Type: Commercial Location Address: 1042 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/22/2011 Case closed date: 8/1/2011	PROACTIVE. Sewage spill reported by Code Enforcement Officer.	Waste Water crew was called and on scene. Failing septic system. Asphalt covers the leach line. Tenant is a florist and utilizes water. No discharge left the site. Owner contacted, called JJSeptic to clear holding tank. Water was turned off. Tenants were to vacate building by 7/30/11 as owner does not want to repair system as building is slated for Redevelopment tear down in the next year.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: repair/replace septic system and/or ceease further discharge potential. Follow-up Action: verify w/county health and owner that system is no longer used. Actions completed: County Health verified water was turned off and buidling vacated and feels it is a non-issue at this time. Owner verified water shut off and tenant has vacated site.
SW No.: SW11-063 Type: Commercial Location Address: 1740 E. Vista Way Watershed: Buena Vista Creek Call Date: 6/9/2011 Case closed date: 6/27/2011	no 2c/ohc for haz waste drum and grease recycler, grease oil stains throughout site. Dumpster lids open; no label for haz waste drum. GI req's cleaning.	observed as described above	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: implement bmp cleaning throught site. Clean GI and provide invoice. Obtain 2c/ohc for haz waste and grease recycler or move indoors. Follow-up Action: photo verify and receipt of GI invoice. Actions completed: recv'd GI invoice. Area clean. 2c/ohc for haz waste and drum is labeled. Grease recycler is new tank style. Restaurant owner was warned no grease on unit or ground or a compliant alternative would be chosen.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-064 Type: Commercial Location Address: 1250-K S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/9/2011 Case closed date: 7/7/2011	grease recycler no 2c/ohc, grease trap requires cleaning, no records of trap cleaning.	observed as described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: obtain compliant grease recycler unit. Provide invoice for grease trap cleaning and clean trap. Follow-up Action: photo verify, obtain invoice copy of trap cleaning. Actions completed: indoor grease recycler container obtained. Photo taken. Grease trap cleaned and invoice obtainted.
SW No.: SW11-065 Type: Commercial Location Address: 1565 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/9/2011 Case closed date: 7/5/2011	no 2c/ohc for grease recycler, no records for grease trap cleaning. Storage exposed outside	observed as described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: obrain compliant grease recycler; provide grease trap cleaning records. remove or cover outside storage. Follow-up Action: photo verify, obtain copy of trap cleaning. Actions completed: grease recycler relocated under cover w/ a 2c; trap cleaning invoice recvd.
SW No.: SW10-147 Type: Industrial Location Address: 2055 Thibodo Dr, #H Watershed: Agua Hedionda Creek Call Date: 7/28/2010 Case closed date: 8/5/2010	PROACTIVE. Officer observed residue indicative of illegal discharge from business at location on 7/6/10 and 7/27/10. While hand delivering NOV on 7/28/10, Officer witnessed discharge in progress.	Observed as described in complaint. On 7/6/10 and 7/27/10 Officer notes a brown residue on asphalt. On 7/28/10 Officer witnessed employees were rinsing out a container. Discharge contained a minor amount of brown solids (grains) and significant sudsy water; runoff smelled like beer. 8/12/10 Business owner installed improved area drains for rinsing indoors.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Referred to Encina Wastewater. Cease discharge and washing. Rinse containers into sewer drain or other method. Remove residue from asphalt. Follow-up Action: Photo verify Actions completed: Area dry, residue swept

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-160 Type: Industrial Location Address: 1235 Activity Dr Watershed: Agua Hedionda Creek Call Date: 8/23/2010 Case closed date: 9/20/2010	Drain inserts impacted w/debris and trash, filter fabric tearing from frame on BMP #2	Observed as described in complaint. 8/24/10 Fax sent w/TCBMP service companies. 8/25/10 Insert specs faxed. 9/7/10 Inlets corrected. 9/15/10 Form received.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment and debris, repair lining Follow-up Action: Photo verify Actions completed: Inserts cleaned/repaired. Form received on 9/15/10.
SW No.: SW10-172 Type: Industrial Location Address: 1340 N. Melrose Dr. Watershed: Buena Vista Creek Call Date: 10/6/2010 Case closed date: 10/18/2010	PROACTIVE. Uncovered metals, wood and other material outdoors - rain event earlier that day	Observed as described in complaint. 10/14/10 Follow up, not all materials covered. Fax sent directing that materials be covered by 10/18/10. 10/15/10 Clean up of materials may be delayed due to bee hives found in stockpiles per email and voicemail from Production Manager.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: Cover all wooden pallets, metal frames and materials outdoors Follow-up Action: Photo verify Actions completed: Materials no in active use are covered and metal items were moved indoors
SW No.: SW10-190 Type: Industrial Location Address: 1960 Watson Wy Watershed: Agua Hedionda Creek Call Date: 12/1/2010 Case closed date: 12/2/2010	PROACTIVE. Sewer discharge, 40 yard dumpster leaking, dumpsters w/o covers.	observed as described. Sewage was contained on site and did not enter ROW	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease discharge, clear lateral, submit plumber invoice, cover dumpsters. Follow-up Action: photo verify and receipt of invoice Actions completed: area dry, recv'd invoice.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-203 Type: Industrial Location Address: 2241 La Mirada Dr Watershed: Agua Hedionda Creek Call Date: 12/14/2010 Case closed date: 12/16/2010	Recvd complaint forwarded from SD County SW regardng tire storage w/o cover and illicit discharge of "blackish-grey water" to storm drain from truck weigh stattion.	12/14 - Site visit, no evidence of discharge or business activity, eviction notice on front door. Property owner advised that business will resume under new ownership, property is in process of being cleaned of excess tires and recent fire damage. Location has excessive accumulations of tires, rubber powders and 40yd dumspters w/o cover. 12/15 - Met with new CEO, over 6,000 tires onsite. Some tires will be eliminated, others will be stored in 40yd dumpsters and covered w/ tarps, inlet protection will be in place due to rubber powders/grindings. 12/16 - BMPs inplace, additional site visit when facility is operational. UPDATE: 1/13 - Per fire inspector, facility will not be online due to various violations with state and other regs. Also, truck weigh station was built w/o permit, and lacked a proper system to remove storm water accumulation - may have been pumped to storm drain in the past.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Reduce tire accumulations, cover remaining stockpiles. Follow-up Action: photo verify. Actions completed: BMP's in place, facility will not be in business until further notice.
SW No.: SW10-205 Type: Industrial Location Address: 760 Shadowridge Dr Watershed: Agua Hedionda Creek Call Date: 12/16/2010 Case closed date: 12/17/2010	PROACTIVE. 40 yard dumpster w/o cover.	observed as described.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: cover dumpster Follow-up Action: photo verify Actions completed: cover in place
SW No.: SW10-206 Type: Industrial Location Address: 1960 Watson Wy Watershed: Agua Hedionda Creek Call Date: 12/16/2010 Case closed date: 12/16/2010	PROACTIVE. Dumpster w/o cover during rain event.	observed as described.	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: cover dumpster Follow-up Action: photo verify Actions completed: dumpster covered.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-001 Type: Industrial Location Address: 2710 Progress St Watershed: Agua Hedionda Creek Call Date: 1/4/2011 Case closed date: 1/19/2011	Recvd call fm Think Blue San Diego, complaint of pinkinsh fluid entering SD. Officer arrived, noted evidence of spill on private property (not in street), release of a purple, corrosive chemical. Storage bins of trash and used oil rags lacking cover, company advised to cover all outdoor storage bins hereafter, prevent leaks.	1/5 - site visit, purple chemical detected in SD catch box. Fire Dept notified, SD DEH/Hazmat respoonded. Chemical contained w/in catchbox and SD pipe, no discharge to creek. Responsible party hired Ocean Blue Env Svcs to clean up spill.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Hire contractor to remove spill. Follow-up Action: Photo verify, monitor clean-up. Actions completed: spill removed
SW No.: SW11-002 Type: Industrial Location Address: 2710 Progress St. Watershed: Agua Hedionda Creek Call Date: 1/4/2011 Case closed date: 2/23/2011	Recvd call fm Think Blue San Diego, complaint of pinkinsh fluid entering SD. Officer arrived, noted evidence of spill on private property (not in street), release of a purple, corrosive chemical.	1/5 - site visit, purple chemical detected in SD catch box. Fire Dept notified, SD DEH/Hazmat responded. Chemical contained w/in catchbox and SD pipe, no discharge to creek. Responsible party hired Ocean Blue Env Svcs to clean up spill, required to create spill response plan and train employees.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean spill, create spill plan, train employees. Follow-up Action: Receive plan,photo verify. Actions completed: Plan/rosters received, spill cleaned.
SW No.: SW11-027 Type: Industrial Location Address: 2710 & 2640 Progress St Watershed: Agua Hedionda Creek Call Date: 2/15/2011 Case closed date: 2/22/2011	Recvd tip from EWA inspector, evidence of leaking 40yd dumpster at 2640 w/ stain leading to SD, and 40yd bin w/o cover at 2710.	observed as described. 2/16 - rust colored stain noted on concrete at 2640, no cover over bin during rain event. Company made effort to lift stain at 2640. Cite issued for uncovered bin at 2710 (per recent NOV terms). Company advised to cover all containers and drain fluids from pipes or other containers before placing in trash (to prevent leaks).	Enforcement Action ☐ None ☐ Verbal ☐ NOV ☑ Citation/Fine Corrective Action Required: cover 40yd dumpster or eliminate. Follow-up Action: Photo verify. Actions completed: Bin eliminated, covered compactor now in palce.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-031 Type: Industrial Location Address: 1430-140 Vantage Ct Watershed: Agua Hedionda Creek Call Date: 3/2/2011 Case closed date: 3/21/2011	PROACTIVE. Outside storage of spent grain from brewing, leachinngs from bins leaking into gutter and storm drain. Storm drain manhole had foul odor, yellow colored standing water.	Observed as described. Bins of used grain were outside w/o cover and leaking directly into gutter. 3/3: Made contact with company, BMPs to be in place. 3/7: Polluted gutter cleaned and revamped, grain containers were welded free of leaks. 3/11: Outdoor containers have been decreased, sand bag berm in place containing water, grain and fluids. 3/15: Berm effective, water accumulating behind berm. 3/16: Met with management, staff are vacuuming water behind berm and disposing it, all grain bins were covered. Location will be monitored by staff daily. 3/21: BMPs effective, no evidence of contamination in storm drain system after re-inspection.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Contain leachwater/cease discharge, implement BMPs. Follow-up Action: Monitor site, photo verify. Actions completed: BMPs in place and working.
SW No.: SW11-035 Type: Industrial Location Address: 955 Park Center Dr Watershed: Agua Hedionda Creek Call Date: 3/25/2011 Case closed date: 3/28/2011	PROACTIVE. 40 yd dumpster w/o cover during rain event, trash, litter and debris in gutter, on asphalt in parking lot, mud tracking fork lift.	Observed as described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cover dumpster hereafter, remove trash, litter and debris from out door parking area. Follow-up Action: photo verify Actions completed: area clean, dumpster covered and staff is actively cleaning area regularly.
SW No.: SW11-038 Type: Industrial Location Address: 1330-H N. Melrose Dr Watershed: Buena Vista Creek Call Date: 4/19/2011 Case closed date: 6/8/2011	Recvd' complaint of clarifier in closed water circulation system leaking at stone polishing business - water flowing to storm inlet.	As described above.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☑ Citation/Fine Corrective Action Required: Cease discharge, instruct employees to monitor pump properly. Follow-up Action: Photo Verify. Actions completed: Discharge ceased, sign in place instructing staff how to properly operate and monitor pump. 6/8/11: Revisit site, business owner was washing material via hose, discharge to storm drain. Citation issued for repeat violation.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-138 Type: Residential Location Address: 415 Plymouth Dr Watershed: Buena Vista Creek Call Date: 7/6/2010 Case closed date: 7/8/2010	Apartment manager is repairing motor vehicle without spill pan, using water to wash away anti-freeze	Observed as described in Complaint Description. Fluid did not enter ROW, educated on how to use dry methods to clean. Advised not to use water. Responsible party will use sawdust and sweep to clean up spill.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove fluid w/absorbent Follow-up Action: Photo verify Actions completed: Area cleaned. Contractor at location observed hosing off paved area, warned and told to discontinue washing water or water entering ROW. ROW was clear.
SW No.: SW10-142 Type: Residential Location Address: 515 Fortuna Ave Watershed: San Luis Rey Call Date: 7/15/2010 Case closed date: 7/15/2010	Pool building contractor washing white material into street and storm drain	Contacted Property Owner (PO) and he explained that the crew for the pool company had a clogged hose and when they used a hammer to unclog the hose, the contents flushed out into the street. Curb and gutter have white stain with powder and white granules entering into inlet. Contacted owner of contractor and sub-contractor, advised to hav crew sweep up white granules in gutter. PO swept curt and gutter in front of home.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Sweep up granules from gutter Follow-up Action: Photo verify Actions completed: Swept
SW No.: SW10-146 Type: Residential Location Address: 1650 W.Knapp Dr Watershed: Buena Vista Creek Call Date: 7/20/2010 Case closed date: 7/22/2010	Oil spill in driveway being washed into City ROW	Observed evidence as described in Complaint Description	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Utilize dry sweep or degreaser and wet vacuum to remove stain Follow-up Action: Photo verify Actions completed: Dry sweeping removal in progress, stains are removed

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-148 Type: Residential Location Address: 280 Alestar St. Watershed: Buena Vista Creek Call Date: 8/2/2010 Case closed date: 9/22/2010	PROACTIVE. Sewer spill from laundry cleanout, discharge on back lot of location and onto 286 Alestar St	Observed as described in complaint. Standing sewage water observed at location and at 286 Alestar St. SD County Dept. of Env. Health contacted regarding sewage in close proximity to reseidents.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Referred to County Health. Cease discharge, contact plumber to clean line, submit invoice to City, have sewage reclaimed Follow-up Action: Photo verify Actions completed: Cleanout upgraded, repair complete
SW No.: SW10-149 Type: Residential Location Address: 717 W. California Ave Watershed: Buena Vista Creek Call Date: 8/5/2010 Case closed date: 8/27/2010	Evidence of sewer spill - dry solids from cleanouts	Observed as described in complaint. Cleanouts were observed missing caps or have caps that are not securely in place. Driveway shows shifting/sinking, water observed emitting out of cracks in asphalt.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Photo verify, recipt of DVD & invoice Follow-up Action: Actions completed: CCTV DVD & diagram received, line shows clear
SW No.: SW10-151 Type: Residential Location Address: 1039 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 8/9/2010 Case closed date: 9/22/2010	PROACTIVE. Sediment discharge migrating to Watt homes below on Woodcrest Ln.	Potential to discharge is apparent. Some dirt in the roadway, curb & gutter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection Follow-up Action: Photo verify Actions completed: BMPs implemented

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-153 Type: Residential Location Address: 1057 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 8/9/2010 Case closed date: 9/22/2010	PROACTIVE. Sediment discharge migrating to Watt homes below on Woodcrest Ln.	Potential to discharge is apparent. Some dirt in the roadway, curb & gutter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection Follow-up Action: Photo verify Actions completed: BMPs implemented
SW No.: SW10-154 Type: Residential Location Address: 1105 Sycamore Ave Watershed: Call Date: 8/9/2010 Case closed date: 9/22/2010	PROACTIVE. Sediment discharge migrating to Watt homes below on Woodcrest Ln.	Potential to discharge is apparent. Some dirt in the roadway, curb & gutter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection Follow-up Action: Photo verify Actions completed: BMPs implemented
SW No.: SW10-155 Type: Residential Location Address: 1107 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 8/9/2010 Case closed date: 10/13/2010	PROACTIVE. Sediment discharge migrating to Watt Homes below on Woodcrest Ln	Potential to discharge is apparent. Some dirt in the roadway, curb and gutter	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection Follow-up Action: Photo verify Actions completed: 9/22/10 No corrective action; issued NOV; 10/12/10 BMPs implemented

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-156 Type: Residential Location Address: 1109 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 8/9/2010 Case closed date: 10/12/2010	PROACTIVE. Sediment discharge migrating to Watt Homes below on Woodcrest Ln	Potential to discharge is apparent. Some dirt in the roadway, curb and gutter	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify Actions completed: 9/22/10 No corrective action - issue NOV; 10/12/10 BMPs implemented
SW No.: SW10-157 Type: Residential Location Address: 1029 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 8/9/2010 Case closed date: 9/22/2010	PROACTIVE. Sediment discharge migrating to Watt homes below on Woodcrest Ln.	Potential to discharge is apparent. Some dirt in the roadway, curb & gutter. 8/30/10 Officer received a call from owner. She lowered the dirt and will monitor the frontage.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection Follow-up Action: Photo verify Actions completed: Dirt lowered behind curb area
SW No.: SW10-158 Type: Residential Location Address: 1017 Sycamore Ave Watershed: Call Date: 8/9/2010 Case closed date: 9/22/2010	PROACTIVE. Sediment discharge migrating to Watt homes below on Woodcrest Ln.	Potential to discharge is apparent. Some dirt in the roadway, curb & gutter.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection Follow-up Action: Photo verify Actions completed: Fiber rolls implemented

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-166 Type: Residential Location Address: 1425 Foothill Dr Watershed: Buena Vista Creek Call Date: 9/1/2010 Case closed date: 11/22/2010	PROACTIVE. water pump observed in water course	observed as described	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: remove pump Follow-up Action: photo verify Actions completed: pump removed
SW No.: SW10-176 Type: Residential Location Address: 1186 La Tortuga Watershed: Buena Vista Creek Call Date: 10/20/2010 Case closed date: 10/25/2010	PROACTIVE. Sediment discharge	Area clean in brow ditch on north side of fence. Backyard is a dirt bike track w/BMPs in place except for a 10 ft section which has the potential to discharge to yard brow ditch to street below. 10/25/10 Owner replaced BMPs; rain caught him by surprise	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs Follow-up Action: Photo verify Actions completed: BMPs implemented & brow ditch cleaned. Slope on northside outside fence is vegetation and no discharge visible
SW No.: SW10-177 Type: Residential Location Address: 1146 Range View Rd Watershed: Buena Vista Creek Call Date: 9/30/2010 Case closed date: 10/19/2010	Sediment discharged to properties to south	Officer spoke to Realtor and was referred to Bank. Explained BMP requirements to Bank representative.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter protection Follow-up Action: Photo verify Actions completed: BMPs implemented

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-180 Type: Residential Location Address: 339 Hill Dr Watershed: Buena Vista Creek Call Date: 10/8/2010 Case closed date: 10/28/2010	Annual TCBMP cert not submitted	observed as described. 8/16/10-cert ltr affixed to door; 10/18/10 NOV affixed to door.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: complete and submit form Follow-up Action: verify receipt of form Actions completed: form recv'd
SW No.: SW10-192 Type: Residential Location Address: 1016 Swallow Dr Watershed: Buena Vista Creek Call Date: 11/5/2010 Case closed date: 11/23/2010	PROACTIVE. Ruptured gas line in attempt to dig a trench connecting rear yard area drain to curb/gutter.	observed as described.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: unfounded for any storm water violation. Referred to Code Enforcement. Follow-up Action: unfounded for any storm water violation. Referred to Code Enforcement. Actions completed: unfounded for any storm water violation. Referred to Code Enforcement.
SW No.: SW10-196 Type: Residential Location Address: 1545 Madrid Watershed: Call Date: 12/6/2010 Case closed date: 12/9/2010	White fluid in gutter	Investigation indicates a paint wash out in a rear area drain. After rain event the discharge was carried to outlet at curb. A latex paint can was in proximity to yard. Officer spoke to residents brother and requested the remaining discharge be cleaned and removed. 12/9/10 Property owner called to apologize for the discharge and let Officer know that it has been cleaned.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove and reclaim paint discharge from area drain Follow-up Action: Photo verify Actions completed: Area cleaned

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-197 Type: Residential Location Address: 510 S. Melrose Dr Watershed: Buena Vista Creek Call Date: 12/8/2010 Case closed date: 12/15/2010	PROACTIVE. Sewer discharge	observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease discharge, contact plumber, clear line, submit copy of invoice Follow-up Action: photo verify, receipt ofi nvoice Actions completed: line cleared, invoice recv'd
SW No.: SW10-198 Type: Residential Location Address: 1823 Paseo Del Lago Dr Watershed: Agua Hedionda Creek Call Date: 9/29/2010 Case closed date: 11/3/2010	Water leaking into street, source of water unknown on several areas of Paseo Del Lago	Observed water runoff coming from underneath from yards at two homes on Paseo Del Lago Dr (1823 & 1817). Runoff is entering curb and gutter.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Water discharge may likely be the result of groundwater upwelling in front of 1823 & 1817 Paseo Del Lago Dr. City recommended property owner investigate the issue further with her HOA to definitely identify the source/cause of upwelling. No enforcement was taken. Follow-up Action: N/A Actions completed: N/A
SW No.: SW10-207 Type: Residential Location Address: 1246 Browning Ct Watershed: Buena Vista Creek Call Date: 12/16/2010 Case closed date: 12/16/2010	Changing car fluids in roadway and creating a spill	Officer observed oil stains were most obvious on Cielita Linda Dr adjacent to the violators residence. Resident confirmed the recent, smaller oil spill was from his truck. Resident stated the older, larger oil present was was not his doing.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove oil accumulation Follow-up Action: Verify corrective action Actions completed: Violator placed absorbant on oil and removed accumulation

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-211 Type: Residential Location Address: 550 Mar Vista Drive Watershed: Buena Vista Creek Call Date: 12/14/2010 Case closed date: 2/24/2011	Significant amount of dirt dumped at property w/ no BMPs in place	BMPs in place, water running clear at this time. Small rill at frontage requires upgrade of BMPS.	Enforcement Action ☐ None ☑ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Upgrade BMPs @ frontage and throughout permiter prevent sediment discharge Follow-up Action: Photo verify Actions completed: 1. Installed addt'l sediment control at base of slope (silt fence and fiber roll) 2. Installed erosion control (bonded fiber matrix w/ seed mix containing fawn rescue and bermuda grass) 3. Installed sediment control towards top of slope (fiber roll)
SW No.: SW11-003 Type: Residential Location Address: 1218 Countrywood Ln Watershed: Agua Hedionda Creek Call Date: 1/6/2011 Case closed date: 1/20/2011	smelly discharge to ROW from curb core pipe.	observed as described. Property owner was washing clothes, there was an outdoor sink plumbed with a water line and outgoing pipe was plumbed to area storm drain .	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease discharge, remove sink, implement bmps Follow-up Action: photo verify Actions completed: sink removed, no further washing detected.
SW No.: SW11-004 Type: Residential Location Address: 1506 Oak Dr Watershed: Buena Vista Creek Call Date: 1/7/2011 Case closed date: 1/12/2011	pool water release @ a 137 unit individually owned mobile home park.	area was dry upon arrival. I spoke w/office mgr @ Vista Village MHP. She stated that no pool water was released but VID pumped their vault box next to the pool. I spoke facilities mgr who corroborated statement by office mgr.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: unfounded- VID controlled vault release of tested water. Follow-up Action: none req'd Actions completed: none req'd

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-008 Type: Residential Location Address: 748 Ocean View Dr Watershed: Buena Vista Creek Call Date: 1/6/2011 Case closed date: 12/6/2011	VID reported SSO from cleanout on driveway, entry into street.	Observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge, clear lateral and submit plumer's invoive. Follow-up Action: Photo Verify. Actions completed: Line cleared, invoice received.
SW No.: SW11-009 Type: Residential Location Address: 435 E. Indian Rock Rd Watershed: Buena Vista Creek Call Date: 1/19/2011 Case closed date: 1/20/2011	garbage and Ewaste dumped curbside. Tenant moved out and left refuse.	observed as described. PW's is req'd to pick up refuse if EDCO won't take it. PW's was emailed w/photo of refuse with a request for service.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: public right of way-referred to PW's Follow-up Action: none- unfounded Actions completed: none-unfounded
SW No.: SW11-010 Type: Residential Location Address: 837 Tiger Tail Rd Watershed: Buena Vista Creek Call Date: 1/3/2011 Case closed date: 2/3/2011	clothes washer discharge from hose coming out from under garage door to ROW.	observed hose protruding from garage. Hose was directed to down slope of driveway. requested PO to remove hose, repair private lateral if necessary and obtain appropriate permits.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: cease further discharge, remove hose, repair private lateral if necessary. Follow-up Action: photo verify Actions completed: hose removed, no indication of further discharge.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-026 Type: Residential Location Address: 1852 Manzanita Ct Watershed: Buena Vista Creek Call Date: 2/15/2011 Case closed date: 2/23/2011	tenant washed out gas tank into curb/gutter	tenant verified empty tank was washed out with hose water to curb/gutter after which time he washed his car that was also in the curb/gutter. 15 gal tank had been emptied and left for approx one week prior to washout. Prominent gasoline odor was noted in the storm drain inlet and box approx 300' to the south of 1852 Manzanita Ct. Fire and Waste Water was dispatched. Storm drain manhole box lid was pulled. A slight sheen existed in the bottom of the box and none had entered down stream line. Fire tested box and noted a zero reading for gasoline. Fire contacted County Hazardous Materials. Box was cleaned by Waste Water and County Haz Mat gave okay to water flush box to dissapate remaining fumes. A NOV was issued to tenant to clear property frontage of rubbish.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: cease further pollutant discharge, remove grease accumulation on driveway, removed side yard storage. Follow-up Action: photo verify Actions completed: grease accumulation rmoved and area yard cleared of trash and debris.
SW No.: SW11-028 Type: Residential Location Address: 430 W. Los Angeles Dr Watershed: Buena Vista Creek Call Date: 2/14/2011 Case closed date: 3/15/2011	PROACTIVE. Slope failure w/o BMPs, threatening City street.	Observed as described.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Protect slope w/ BMPs. Follow-up Action: Photo verify. Actions completed: Slope protected with plastic sheeting and silt fance since 2/16. BMPs have held thru several weeks and rain events.
SW No.: SW11-030 Type: Residential Location Address: 536 Rudd Rd Watershed: Buena Vista Creek Call Date: 2/28/2011 Case closed date: 3/21/2011	clearing and grubbing on north east slope of idle lot and no bmps on denuded area.	observed as described. I contacted owner and requested placement of bmps on denuded slope.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: implement bmps. Follow-up Action: photo verify Actions completed: bmps implemented.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-032 Type: Residential Location Address: 633 Aliento Ct Watershed: Buena Vista Creek Call Date: 3/2/2011 Case closed date: 5/11/2011	PROACTIVE. Congested brow ditch.	observed as described	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: remove and clear blockage. Follow-up Action: photo verify Actions completed: cleared ditch.
SW No.: SW11-033 Type: Residential Location Address: 515 Fortuna Ave Watershed: San Luis Rey Call Date: 3/15/2011 Case closed date: 4/11/2011	De-nuded slope @ 515 Fortuna discharging into brow ditch, depositing mud onto 505 Fortuna Av, mud threatens bio detention basin.	As described above.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement perimeter contraol via straw wattle, install check dams, monitor brow ditch to remove sediment, and plant slope. Follow-up Action: Photo verify. Actions completed: BMPs in place.
SW No.: SW11-034 Type: Residential Location Address: 845-125 Brooktree Ln Watershed: Buena Vista Creek Call Date: 3/22/2011 Case closed date: 3/23/2011	chronic spillcondtion and cap left off. No sewage spilling now.	clean out cap off, white powder like stain on soil around cleanout; no sewage visible, no odor. I conctacted PM. plumbing had been slow, the line snaked and found female hygiene products in lateral. The suspected family with numerous teenage girls will be moving mid-April.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: replace cap and monitor location. Follow-up Action: photo verify cap replacement. Actions completed: cap replaced.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-037 Type: Residential Location Address: 267 Alestar St Watershed: Buena Vista Creek Call Date: 4/11/2011 Case closed date: 4/14/2011	PROACTIVE. Suds and water discharge from standpipe in laundry room	As described above, rocks were depositied into line thru cleanout, resulted in blockage.	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Contact plumber to clear line, cease discharge and submit plumber invoice. Follow-up Action: Photo verify. Actions completed: 4/12: Line clear, area dry. 4/14: Invoice recvd'.
SW No.: SW11-041 Type: Residential Location Address: 622 Sun Circle Watershed: Agua Hedionda Creek Call Date: 4/27/2011 Case closed date: 5/25/2011	Runoff going through property at 980 Miramar Drive (county) is polluted with sediment and debris from upstream Gateway Development.	City staff found brow ditch at 622 Sun Circle to be impacted by sediment. Parts of hill/slope were denuded and showed evidence of erosion.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove sediment from brow ditch and install BMP on slope to prevent future discharge of sediment into ditch. Follow-up Action: Verify corrective actions Actions completed: Brow ditch was cleaned and fiber roll placed on slope
SW No.: SW10-139 Type: Other Location Address: 1020 Meadowlake Watershed: Buena Vista Creek Call Date: 7/6/2010 Case closed date: 7/7/2010	City of Vista Code Enforcment Officer reported water main rupture on Williamston, spill found to originate from 1000 block of Meadowlake	VID crew on scene, water turned off. Mud was observed in ROW on Williamston and Meadowlake. VID supervisor stated that mud will be shoveled, street sweeping implemented the next day. Inlets protected with gravel bags on Meadowlake. 7/7/10 - Crews still working, street sweeping implemented.	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implemented BMPs, remove mud. Follow-up Action: Photo verify Actions completed: Street sweeping, BMPs in place

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-140 Type: Other Location Address: 114 Hillside Ter Watershed: Buena Vista Creek Call Date: 7/7/2010 Case closed date: 7/12/2010	Irrigation malfunction creating a stream of water into roadway	Observed as described in Complaint Description. Officer left a brochure at the front entrance door requesting corrective action	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease irrigation discharge and repair fixture Follow-up Action: Photo verify Actions completed: Area dry
SW No.: SW10-164 Type: Other Location Address: 725 Avenida de Benito Juarez Watershed: Buena Vista Creek Call Date: 8/9/2010 Case closed date: 8/9/2010	PROACTIVE. Report of power washing w/o BMPs on asphalt basketball courts	Oberved as described	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs/protect inlets Follow-up Action: Photo verify Actions completed: Sandbags in place
SW No.: SW10-191 Type: Other Location Address: 820 Williamson St Watershed: Buena Vista Creek Call Date: 11/18/2010 Case closed date: 11/18/2010	PROACTIVE. Maintenance crew hosing paved area and not reclaiming it.	observed as described. Spoke w/Pastor, provided educational brochures.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: cease discharge, reclaim water. Follow-up Action: visual verification Actions completed: area cleared.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW10-194 Type: Other Location Address: 165 Eucalyptus Av Watershed: Buena Vista Creek Call Date: 12/2/2010 Case closed date: 12/2/2010	PROACTIVE. Pressure washing dumpster and not reclaiming	observed as described. Contacted Debbie Jobe and requested pressure washing cease and clean up.	Enforcement Action ☐ None ☑ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: cease discharge and implement bmps Follow-up Action: photo verify Actions completed: bmps in place.
SW No.: SW10-201 Type: Other Location Address: 1270 Vale Terrace Watershed: Buena Vista Creek Call Date: 12/9/2010 Case closed date: 12/13/2010	Stockpiling beyond grading permit scope	City Attorney DarolD Pieper requested hand delivery of 4 letters to the Alta Vista Garden Club	Enforcement Action ☑ None ☐ Verbal ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease further import of dirt and notify the City Attorney Follow-up Action: Receipts of letter from Alta Vista Garden Club president Actions completed: Receipt of letter by City Attorney
SW No.: SW11-059 Type: Other Location Address: 651 Eucalyptus Av Watershed: Call Date: 6/21/2011 Case closed date: 7/12/2011	PROACTIVE. Runoff from surface hosing into city gutter.	As described above	Enforcement Action ☐ None ☐ Verbal ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and implement BMPs to prevent future discharge. Follow-up Action: Photo verify BMPs. Actions completed: Sandbags cover area drains to allow wash water to evaporate and prevent entry into gutter.

APPENDIX D-5
FY 2010-11 SUMMARY OF INDUSTRIAL COMMERCIAL ENFORCEMENT ACTIONS

Appendix D-5 Enforcement Actions taken at Commercial and Industrial Sites/Sources

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION					REFERRAL
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal Warning	Written Warning	Notice of Violation	Citation	**Totals**	Proactive
Commercial (complaints)	13		6	9	1	29	29	29	8		22	2	32	26
Commercial (inspections)	3	1		24	2	30	30	30			30	3	33	
Industrial (complaints)	7		1	4		12	12	12	2		6	4	12	7
Industrial (inspections)	1			1		2	2	2			2	1	3	
Mobile Business	2					2	2	2			2		2	1
TOTALS	26	1	7	38	3	75	75	75	10	0	62	10	82	34

APPENDIX D-6
BMP LETTER TO STATIONARY FACILITIES

CITY OF VISTA
CALIFORNIA

March 24, 2011

Re: **Stormwater and FOG Inspections and Best Management Practices Requirements**

Dear Business Owner/Operator:

The San Diego Regional Water Quality Control Board re-issued a Municipal Stormwater Permit, Order R9-2007-0001 to the City of Vista on January 24, 2007. Additionally, the State Water Resources Control Board issued General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems, Order 2006.0003-DWQ on May 2, 2006. The City of Vista is required to comply with both Permits in order to prevent polluted urban runoff from entering our local waterways. The first Permit regulates discharges to the municipal stormwater conveyance system and the second regulates the discharges of fats, oils, and grease (FOG) to the sanitary sewer system.

The City has adopted Ordinances for stormwater (VMC Chapter 13.18, Stormwater Management and Discharge Control Program) and FOG (VMC Chapter 14.12, Control and Regulation of Fats, Oils, and Grease) which require businesses to implement best management practices (BMPs) to prevent the discharge of pollutants into the City's stormwater conveyance system and FOG into the sanitary sewer system. FOG requirements (FOG brochure enclosed) are applicable to facilities that generate fats, oils, and grease (e.g. food service establishments). In managing FOG, BMPs must include the installation of drain screens, proper disposal of food waste, proper handling of waste cooking oil, and employee training. Similarly, good housekeeping practices, covering and containing materials stored outside, and employee training are examples of BMPs used in managing urban runoff at all facilities. The stormwater BMP requirements for your business are enclosed and can be found in the City's Stormwater Standards Manual (www.cityofvista.com). The City conducts inspections to assess the effectiveness of BMP implementation and compliance with City Ordinances and Permits.

The City will be using its own staff and personnel from an experienced consulting firm, D-MAX Engineering, Inc., to perform the required inspections over the next few months. Their representative is conducting the inspections on behalf of the City of Vista and is authorized to carry out the responsibilities for the City as an extension of staff. Please allow the inspector access to your facility and records as necessary to determine compliance with applicable regulations.

The City appreciates your cooperation during the implementation of these programs. If you have any questions, please contact Water Quality Protection Program staff: Doug Coppi at (760) 726-1340 ext 1333.

Respectfully,

Doug Coppi
Senior Environmental Specialist

Enclosures (2)

P: (760) 726-1340 | www.cityofvista.com | F: (760) 639-6132
200 Civic Center Drive, Vista, California 92084-6275

APPENDIX D-7
BMP LETTER TO MOBILE BUSINESSES

CITY OF VISTA
CALIFORNIA

March 24, 2011

Re: **Stormwater Best Management Practices Requirements For All Businesses**

Dear Business Owner/Operator:

The San Diego Regional Water Quality Control Board re-issued a Municipal Stormwater Permit, Order R9-2007-0001 to the City of Vista on January 24, 2007. The City of Vista is required to comply with the Permit in order to protect water quality in its receiving waters. To ensure compliance, the City requires all businesses to implement best management practices (BMPs) at their facilities and job sites to prevent polluted runoff from entering the stormwater conveyance system.

The City of Vista's Municipal Code (VMC Chapter 13.18, Stormwater Management and Discharge Control Program) contains the BMP requirements for all types of businesses including stationary and mobile businesses. Businesses must implement effective best management practices (BMPs) as part of their stormwater management plan to prevent the offsite movement of pollutants into the conveyance system. BMPs or pollution prevention practices include but are not limited to good housekeeping practices, training of employees, covering and containing outside materials and stockpiles, and installing devices to capture, retain, and treat pollutants in runoff. The City's Stormwater Standards Manual (www.cityofvista.com) provides further details on the BMP requirements for each type of business. Facilities are required to implement, at a minimum, the City's BMP requirements (where applicable) listed in the manual. Enclosed are the BMP requirements specific to your business.

Pollutants that enter the stormwater conveyance system through improper or insufficient BMPs can flow directly into receiving waters. Pollutants include but are not limited to sediment, metals, trash, oil and grease, green waste, construction waste, chemicals, hazardous waste, and potable water. Runoff at businesses and job sites drains to the City's stormwater conveyance system consisting of gutters, streets, storm drains, and channels before entering receiving waters. In the City of Vista, these receiving waters include include Buena Vista Creek, Agua Hedionda Creek, Buena Creek, La Mirada Creek, Guajome Creek, and Loma Alta Creek. Polluted runoff is known to contribute to water quality impairments and affect the health and habitats of fish, wildlife and humans; hence pollution prevention is of utmost importance. Your continual efforts in preventing pollution will help the City maintain compliance and protect its Creeks.

The City appreciates your support and cooperation during the implementation of these programs. If you have any questions, please contact Water Quality Protection Program staff: Doug Coppi at (760) 726-1340 ext 1333.

Respectfully,

Doug Coppi
Senior Environmental Specialist

Enclosure

P: (760) 726-1340 | www.cityofvista.com | F: (760) 639-6132
200 Civic Center Drive, Vista, California 92084-6275

APPENDIX D-8
INDUSTRIAL/COMMERCIAL INSPECTION FOLLOW-UP SUMMARIES

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: 7 Eleven #32326 A 2111 **Address:** 3251 Business Park Dr **Inspection Type:** Commercial **Contact:** Moji Sharif **Receiving Water Body** Agua Hedionda Creek	**Inspection Date:** 4/13/2011 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: liquid spills & oil stains) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: storm drain near trash area) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Adequately cover materials stored outside, where feasible (Inspector comment: hazardous waste drum & buckets) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: hazardous waste drum & buckets) Properly store and dispose of hazardous materials (Inspector comment: hazardous waste drum & buckets) Provide storm water training for appropriate employees (Inspector comment: keep written training logs)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/2/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved
Facility Name: 7-Eleven #23302A **Address:** 895 E Vista Way **Inspection Type:** Commercial **Contact:** Kasi Ring, Shift Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 5/17/2011 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: oil in parking stalls) Protect trash area from contact with storm water (Inspector comment: lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash and litter on asphalt) Identify and eliminate illicit connections and illegal discharges Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 5/25/2011 **Inspector:** Daniel Welte **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information

Facility Name:

7-Eleven #33376B-2111

Address:

1610 S Melrose Dr

Inspection Type:

Commercial

Contact:

Hamed Akarbi - Manager

Receiving Water Body

Agua Hedionda Creek

Initial Inspection Information

Inspection Date: 4/11/2011

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some debris)

Keep outdoor areas free of spills and leaks (Inspector comment: oil stains on pavement)

Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage

Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City

Protect trash area from contact with storm water (Inspector comment: dumpster lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash & liquid spills)

Adequately cover materials stored outside, where feasible (Inspector comment: hazardous waste drum)

Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: hazardous waste drum)

Properly store and dispose of hazardous materials (Inspector comment: haz waste drum lacks adequate cover)

Provide storm water training for appropriate employees (Inspector comment: keep written training log)

Develop a written procedure for spill prevention and response

Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

5/3/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

Resolution Status:

Resolved

Site Information

Facility Name:

Ablahad Inc.

Address:

625 Sycamore Ave

Inspection Type:

Commercial

Contact:

Stephen Ablahad, Owner

Receiving Water Body

Buena Creek

Initial Inspection Information

Inspection Date: 4/19/2011

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment, debris & leaf litter)

Keep storm drains on site free of litter and debris (Inspector comment: some debris around inlet)

Keep outdoor areas free of spills and leaks (Inspector comment: oil stains/drips)

Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage (Inspector comment: drain inlet at corner of lot)

Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: some trash & liquid staining)

Adequately cover materials stored outside, where feasible (Inspector comment: hazardous waste drums)

Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: hazardous waste drums)

Equip liquid storage containers with secondary containment (Inspector comment: hazardous waste liquid drums)

Properly store and dispose of hazardous materials (Inspector comment: hazardous waste drums lack cover & containment)

Provide storm water training for appropriate employees (Inspector comment: keep written training logs)

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

5/23/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

Resolution Status:

Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: American Marble	**Inspection Date:** 4/19/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 1280 N Melrose Dr	**Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment & powder, debris) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: trash bins lack lids) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: sediment & debris) Adequately cover materials stored outside, where feasible (Inspector comment: rusty metal, used tires) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: used tires) File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit. Please check status with RWQCB and refile NOI if necessary. WDID 9 37I012758 is terminated per SMARTS online records.		**Follow-up Inspection Date:** 6/15/2011
Inspection Type: Industrial			**Inspector:** Sandra Sotola
Contact: Joe Marquez 760-594-1682 cell			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Facility Name: Aschbrenner, Inc. dba Spectrum Floral Service	**Inspection Date:** 4/21/2011	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 2505 Commerce Way	**Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Leaf & flower debris) Keep outdoor areas free of spills and leaks (Inspector comment: Water from flowers) Protect trash area from contact with storm water (Inspector comment: Dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Leaf/flower debris) Conduct outdoor activities within contained areas (under canopy, bermed) (Inspector comment: Provide containment for loading/unloading) Identify and eliminate illicit connections and illegal discharges (Inspector comment: Flower water) Develop a written procedure for spill prevention and response (Inspector comment: Keep written spill plan) Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Follow-up Inspection Date:** 5/23/2011
Inspection Type: Commercial			**Inspector:** Sandra Sotola
Contact: Gene Aschbrenner - Owner			**Enforcement Action(s):**
Receiving Water Body Agua Hedionda Creek			**Resolution Status:** Resolved

Site Information

Facility Name:

Bob Workman's European Auto Service

Address:

1304 N Melrose Dr A

Inspection Type:

Commercial

Contact:

Cindy Workman, Manager

Receiving Water Body

Loma Alta Creek

Initial Inspection Information

Inspection Date: 4/18/2011

Inspector: Brian Nemerow

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some sediment & debris)

Keep storm drains on site free of litter and debris (Inspector comment: some sediment)

Keep outdoor areas free of spills and leaks (Inspector comment: some oil stains)

Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage

Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City

Protect trash area from contact with storm water (Inspector comment: dumpster lids open)

Adequately cover materials stored outside, where feasible (Inspector comment: engine parts, car parts, rusty drums)

Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: engine parts, car parts, rusty drums)

Provide storm water training for appropriate employees (Inspector comment: keep written log)

Develop a written procedure for spill prevention and response

Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

6/20/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

Resolution Status:

Resolved

Site Information

Facility Name:

C N C Precision Machining

Address:

797 North Ave C

Inspection Type:

Industrial

Contact:

Sal Ortiz, Owner

Receiving Water Body

Loma Alta Creek

Initial Inspection Information

Inspection Date: 4/20/2011

Inspector: Brian Nemerow

Needed Corrective Actions

Protect trash area from contact with storm water (Inspector comment: dumpster lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: sawdust & debris)

Adequately cover materials stored outside, where feasible (Inspector comment: 55 gal drum)

Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: 55 gal drum on ground)

Properly label outdoor storage containers (Inspector comment: 55 gal drum)

Equip liquid storage containers with secondary containment (Inspector comment: 55 gal drum)

Properly store and dispose of hazardous materials (Inspector comment: illegally dumped 55 gal drum)

Provide storm water training for appropriate employees (Inspector comment: keep written log)

Develop a written procedure for spill prevention and response

Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

6/2/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

Resolution Status:

Resolved

Site Information

Facility Name:

Cal-Americas dba United Floral Exchange

Address:

2834 La Mirada Dr B

Inspection Type:

Commercial

Contact:

Steve Dionne, Sales Director

Receiving Water Body

Agua Hedionda Creek

Initial Inspection Information

Inspection Date: 4/21/2011

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep outdoor areas free of spills and leaks (Inspector comment: flower water)

Protect trash area from contact with storm water (Inspector comment: rollaway lacks cover)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: flower debris)

Adequately cover materials stored outside, where feasible (Inspector comment: rusty racks, oil container in shared trash enclosure)

Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: oil container in shared trash enclosure)

Equip liquid storage containers with secondary containment (Inspector comment: oil container in shared trash enclosure)

Properly store and dispose of hazardous materials (Inspector comment: oil container in shared trash enclosure)

Keep loading and unloading areas, including drains, free of debris (Inspector comment: lea litter)

Provide storm water training for appropriate employees (Inspector comment: keep written training log)

Develop a written procedure for spill prevention and response (Inspector comment: needs written spill plan)

Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

5/23/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

Resolution Status:

Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Chicos Panaderia	**Inspection Date:** 4/22/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 1110 N Santa Fe Ave D	**Needed Corrective Actions**		**Follow-up Inspection Date:** 4/27/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Sediment & leaf debris) Keep storm drains on site free of litter and debris (Inspector comment: Some debris) Keep outdoor areas free of spills and leaks (Inspector comment: Oil stains) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: Sediment erosion, north end of property) Protect trash area from contact with storm water Keep trash area free of litter and debris, liquids, powders, and sediment Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Daniel Welte
Contact: Miguel Carmona, Owner			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved
Facility Name: Chili Coast Burgers	**Inspection Date:** 6/20/2011	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes
Address: 1330 E Vista Way	**Needed Corrective Actions**		**Follow-up Inspection Date:** 7/5/2011
Inspection Type: Commercial	Protect trash area from contact with storm water (Inspector comment: lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: minor litter) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Daniel Welte
Contact: Jeck Yang			**Enforcement Action(s):** NOV
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Site Information

Facility Name:

E & J Custom Granite & Stone Inc

Address:

795 North Ave E

Inspection Type:

Industrial

Contact:

Joe Bieniek, Manager

Receiving Water Body

Loma Alta Creek

Initial Inspection Information

Inspection Date: 4/20/2011

Inspector: Brian Nemerow

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some debris)

Protect trash area from contact with storm water (Inspector comment: dumpster lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: sawdust & debris)

Adequately cover materials stored outside, where feasible (Inspector comment: 55 gal drum, rusty metal)

Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: rusty metal & drum)

Properly label outdoor storage containers (Inspector comment: 55 gal drum)

Properly store and dispose of hazardous materials (Inspector comment: illegally dumped 55 gal drum)

Provide storm water training for appropriate employees (Inspector comment: keep written log)

Develop a written procedure for spill prevention and response

Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

6/2/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

Resolution Status:

Resolved

Site Information

Facility Name:

El Burrito Mexican Food

Address:

1250 S Santa Fe Ave K

Inspection Type:

Commercial

Contact:

Anastacio Rios - Owner

Receiving Water Body

Buena Vista Creek

Initial Inspection Information

Inspection Date: 4/15/2011

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some debris)

Keep outdoor areas free of spills and leaks (Inspector comment: oil stains in parking lot)

Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage (Inspector comment: drain in parking lot)

Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City

Protect trash area from contact with storm water (Inspector comment: dumpster lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash & liquid spills)

Provide storm water training for appropriate employees (Inspector comment: keep written training log)

Develop a written procedure for spill prevention and response

- Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Store grease bins with overhead coverage

Store grease bins with secondary containment

Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: grease stains/spills in shared trash enclosure)

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

7/7/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

NOV

Resolution Status:

Resolved

Site Information

Facility Name:

El Ranchero Restaurant

Address:

1565 N Santa Fe Ave

Inspection Type:

Commercial

Contact:

Narcizo Arreula - Owner

Receiving Water Body

Buena Vista Creek

Initial Inspection Information

Inspection Date: 4/14/2011

Inspector: Brian Nemerow

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some sediment)

Keep outdoor areas free of spills and leaks (Inspector comment: minor oil stains in parking lot)

Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: some sediment erosion)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: some trash, grease stains)

Adequately cover materials stored outside, where feasible (Inspector comment: greasy cart, rusty metal)

Clean floor mats in locations that do not drain to the storm drain system (Inspector comment: reported uncontained washing)

Identify and eliminate illicit connections and illegal discharges (Inspector comment: reported uncontained floor mat washing)

Provide storm water training for appropriate employees

Develop a written procedure for spill prevention and response

- Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Store grease bins with overhead coverage

Store grease bins with secondary containment (Inspector comment: double wall)

Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: grease stains)

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

7/5/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

NOV

Resolution Status:

Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Erika Restaurant	**Inspection Date:** 4/12/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 1851 W Vista Way C	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/15/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment & litter in back lot) Keep storm drains on site free of litter and debris (Inspector comment: some debris) Keep outdoor areas free of spills and leaks (Inspector comment: food spill outside back door) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: sediment erosion, SW corner) Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: liquid stain, some debris) Provide storm water training for appropriate employees (Inspector comment: keep written log) Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage Store grease bins with secondary containment (Inspector comment: double wall) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: grease stains & food debris around bin)		**Inspector:** Sandra Sotola **Enforcement Action(s):** NOV
Contact: Salvador Carranza, Owner			**Resolution Status:** Resolved
Receiving Water Body Buena Vista Creek			
Facility Name: European Autoworks & Uhaul Truck Rental	**Inspection Date:** 4/21/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 1211 N Melrose Dr A	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/2/2011
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: oil stain) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: dumpster lid open) Adequately cover materials stored outside, where feasible (Inspector comment: used tires) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: used tires) Provide storm water training for appropriate employees		**Inspector:** Sandra Sotola **Enforcement Action(s):**
Contact: George Woollet, Owner Revised 6/2/11 by SSotola			**Resolution Status:** Resolved
Receiving Water Body Loma Alta Creek			

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Expo Plant Service, Inc	**Inspection Date:** 5/2/2011	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 1455 E Taylor St	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/2/2011
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: fertilizer spills/leaks around fertilizer drum) Adequately cover materials stored outside, where feasible (Inspector comment: metal scrap area) Properly label outdoor storage containers (Inspector comment: liquid fertilizer) Equip liquid storage containers with secondary containment (Inspector comment: liquid fertilizer) Properly store and dispose of hazardous materials (Inspector comment: liquid fertilizer lacks containment) Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola
Contact: Steve Jerromes, President			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved
Facility Name: Food 4 Less 300	**Inspection Date:** 4/11/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 500 Hacienda Dr	**Needed Corrective Actions**		**Follow-up Inspection Date:** 5/3/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some sediment & debris) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Eliminate over watering/over-irrigation (Inspector comment: leaking sprinkler, NE corner) Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash compactor leak, pooled water) Keep loading and unloading areas, including drains, free of debris (Inspector comment: some debris)		**Inspector:** Sandra Sotola
Contact: Mark Elliott - Store Director			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Fred's Automotive **Address:** 1725 E Vista Way **Inspection Type:** Commercial **Contact:** Fred Spears-Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 4/18/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods Keep outdoor areas free of spills and leaks (Inspector comment: Oil stains on pavement) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Sediment & leaf debris) Keep spill containment free of spills and rainwater (Inspector comment: Liquid in containment trays) Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4 (Inspector comment: Reported that uncontained wash water entered storm drain) Identify and eliminate illicit connections and illegal discharges (Inspector comment: Reported that uncontained wash water enters storm drain) Provide storm water training for appropriate employees (Inspector comment: Keep written training log)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/2/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved
Facility Name: G&M Oil #159 **Address:** 636 Sycamore Ave **Inspection Type:** Commercial **Contact:** Minerva Feliciano, Manager **Receiving Water Body** Buena Creek	**Inspection Date:** 4/19/2011 **Needed Corrective Actions** Keep storm drains on site free of litter and debris (Inspector comment: Drains impacted with sediment) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage (Inspector comment: 2 storm drains at driveway entrances) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Adequately cover materials stored outside, where feasible (Inspector comment: Hazardous waste drums) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Hazardous waste drum (solid)) Properly label outdoor storage containers (Inspector comment: Blue drum w/ blank label) Equip liquid storage containers with secondary containment (Inspector comment: Blue hazardous waste drum) Properly store and dispose of hazardous materials (Inspector comment: Haz waste drums lack cover & containment) Provide storm water training for appropriate employees (Inspector comment: Keep written training log)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/2/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved

Site Information

Facility Name:

Homeland Petroleum

Address:

1740 E Vista Way

Inspection Type:

Commercial

Contact:

Jinder Dhillon, Mgr; Santosh Arya owner

Receiving Water Body

Buena Vista Creek

Initial Inspection Information

Inspection Date: 4/18/2011

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Trash & leaf litter)

Keep outdoor areas free of spills and leaks (Inspector comment: Drips of oil & coolant)

Protect trash area from contact with storm water (Inspector comment: Dumpster lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Trash)

Adequately cover materials stored outside, where feasible (Inspector comment: Hazardous waste drum)

Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Hazardous waste drum)

Properly label outdoor storage containers (Inspector comment: Hazardous waste drum w/ blank label)

Equip liquid storage containers with secondary containment (Inspector comment: Hazardous waste drum)

Properly store and dispose of hazardous materials

Provide storm water training for appropriate employees (Inspector comment: Keep written training log)

Store grease bins with overhead coverage

Store grease bins with secondary containment

Keep grease bin and surrounding area free of grease stains/spills

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

6/27/2011

Inspector:

Sandra Sotola

Enforcement Action(s):

Resolution Status:

Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Humberto's Auto Repair	**Inspection Date:** 4/15/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 444 S Santa Fe Ave B	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/13/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some sediment & used absorbant) Keep storm drains on site free of litter and debris Keep outdoor areas free of spills and leaks (Inspector comment: automotive fluid leaks) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: some sediment) Adequately cover materials stored outside, where feasible (Inspector comment: engines) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: engines) Properly label outdoor storage containers (Inspector comment: some hazmat drums lack labels) Keep spill containment free of spills and rainwater (Inspector comment: used oil) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved
Contact: Humberto, Owner			
Receiving Water Body Buena Vista Creek			

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Islands Fine Burgers & Drinks	**Inspection Date:** 5/25/2011	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes
Address: 240 S Melrose Dr	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/8/2011
Inspection Type: Commercial	Keep storm drains on site free of litter and debris (Inspector comment: Minor organics) Equip liquid storage containers with secondary containment (Inspector comment: no 2c) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with secondary containment (Inspector comment: Under cover/indoors)		**Inspector:** Daniel Welte **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Contact: Scott Gladden-manager			
Receiving Water Body Buena Vista Creek			

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: J B Coating	**Inspection Date:** 4/22/2011	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 219 S Santa Fe Ave 137	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/6/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: cement powder & sediment) Keep outdoor areas free of spills and leaks (Inspector comment: oil spill under nonfunctional van) Protect trash area from contact with storm water (Inspector comment: exposed pile of construction material & debris) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash, debris & powder) Provide storm water training for appropriate employees (Inspector comment: keep written training log) Develop a written procedure for spill prevention and response (Inspector comment: needs written spill plan) Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola
Contact: Hamid Beikzadeh, Owner			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved
Facility Name: Kentucky Fried Chicken	**Inspection Date:** 2/11/2011	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes
Address: 840 E Vista Way	**Needed Corrective Actions**		**Follow-up Inspection Date:** 2/25/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: minor debris) Keep storm drains on site free of litter and debris Keep outdoor areas free of spills and leaks (Inspector comment: some spills in parking lot) Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: sediment erosion into gutter) Eliminate over watering/over-irrigation Keep spill containment free of spills and rainwater (Inspector comment: stains/grease on bin wall) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage (Inspector comment: container) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: spills on walls and concrete)		**Inspector:** Daniel Welte
Contact: Eva Rodriguez, Manager			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: La Favorita Market #3 **Address:** 1450 N Santa Fe Ave K-M **Inspection Type:** Commercial **Contact:** Al Shalabi, Owner **Receiving Water Body** Loma Alta Creek	**Inspection Date:** 4/18/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods Keep outdoor areas free of spills and leaks Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/9/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved
Facility Name: La Mexicana Market **Address:** 440 N Santa Fe Ave **Inspection Type:** Commercial **Contact:** Noury Gaggo-owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 4/7/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: trash & food debris) Keep outdoor areas free of spills and leaks (Inspector comment: detergent leak, liquid stain) Collect water from pressure washing or hosing and dispose of appropriately (Inspector comment: reported uncontained washing) Protect trash area from contact with storm water Equip liquid storage containers with secondary containment (Inspector comment: detergent bottles) Conduct outdoor activities within contained areas (under canopy, bermed) (Inspector comment: reported uncontained washing) Identify and eliminate illicit connections and illegal discharges (Inspector comment: reported uncontained washing) Provide storm water training for appropriate employees (Inspector comment: keep written log) Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage Store grease bins with secondary containment (Inspector comment: dbl wall) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: minor grease stains)	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/8/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Lee Steel & Supply	**Inspection Date:** 5/2/2011	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 1305 Lee Dr	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/14/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: leaf litter) Protect trash area from contact with storm water (Inspector comment: dumpster lids missing) Adequately cover materials stored outside, where feasible (Inspector comment: scrap metal bin; used tires, rusting metal) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: used tires & rusting metal)		**Inspector:** Sandra Sotola
Contact: Rick Cruz, Environmental Compliance			**Enforcement Action(s):**
Receiving Water Body Loma Alta Creek			**Resolution Status:** Resolved
Facility Name: Manzo's Metal Works	**Inspection Date:** 4/20/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 797 North Ave D	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/2/2011
Inspection Type: Industrial	Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: sawdust & debris) Adequately cover materials stored outside, where feasible (Inspector comment: 55 gal drum) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: 55 gal drum on ground) Properly label outdoor storage containers (Inspector comment: 55 gal drum) Equip liquid storage containers with secondary containment (Inspector comment: 55 gal drum) Properly store and dispose of hazardous materials (Inspector comment: illegally dumped 55 gal drum) Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola
Contact: Francisco Manzo, Owner			**Enforcement Action(s):**
Receiving Water Body Loma Alta Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Mobil Mart #11433	**Inspection Date:** 4/19/2011	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 710 Sycamore Ave	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/3/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: leaf litter) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: leaf litter & debris) Adequately cover materials stored outside, where feasible (Inspector comment: hazardous waste drums) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: hazardous waste drums) Properly label outdoor storage containers (Inspector comment: empty labels on drums) Equip liquid storage containers with secondary containment (Inspector comment: hazardous waste liquid drum) Properly store and dispose of hazardous materials (Inspector comment: hazardous waste drums lack cover & containment) Provide storm water training for appropriate employees (Inspector comment: keep written training log)		**Inspector:** Sandra Sotola
Contact: Brian Lowell, Manager			**Enforcement Action(s):**
Receiving Water Body Buena Creek			**Resolution Status:** Resolved
Facility Name: North County Ford	**Inspection Date:** 4/18/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 450 W Vista Way	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/28/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Sediment & litter, rusty sediment) Keep outdoor areas free of spills and leaks (Inspector comment: Some oil stains) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: Sediment erosion, west end) Protect trash area from contact with storm water (Inspector comment: Dumpster lid open) Adequately cover materials stored outside, where feasible (Inspector comment: Rusty drums, metal part storage) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Rusty drums) Keep spill containment free of spills and rainwater Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks (Inspector comment: For drain near detail center) Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4 (Inspector comment: Some wash water outside of wash buy)		**Inspector:** Sandra Sotola
Contact: Paul Cole, Service Director			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Panda Express #1262 **Address:** 316 Sycamore Ave **Inspection Type:** Commercial **Contact:** Maggie Cai - Manager **Receiving Water Body** Buena Creek	**Inspection Date:** 6/2/2011 **Needed Corrective Actions** Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: litter present) Adequately cover materials stored outside, where feasible (Inspector comment: fryer outside next to dumpster) Identify and eliminate illicit connections and illegal discharges (Inspector comment: fryer placed outdoors) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/16/2011 **Inspector:** Daniel Welte **Enforcement Action(s):** NOV **Resolution Status:** Resolved
Facility Name: Papa Bambino's **Address:** 1116 Sycamore Ave H **Inspection Type:** Commercial **Contact:** Virginia Valderas, Manager **Receiving Water Body** Agua Hedionda Creek	**Inspection Date:** 4/19/2011 **Needed Corrective Actions** Keep storm drains on site free of litter and debris (Inspector comment: sediment & leaf debris) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage (Inspector comment: multiple storm drains on site) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash & liquid stains) Provide storm water training for appropriate employees (Inspector comment: keep written training logs) Develop a written procedure for spill prevention and response (Inspector comment: needs written spill plan) Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: grease spills & stains)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 5/23/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Playa Azul Mexican Restaurant	**Inspection Date:** 4/14/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 1281 N Santa Fe Ave X-Y	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/8/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some sediment) Keep outdoor areas free of spills and leaks (Inspector comment: oil stains in parking lot) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: trash & debris filling enclosure area) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola
Contact: Alicia Romero - Owner			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved
Facility Name: Popeye's Auto, Inc.	**Inspection Date:** 4/18/2011	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 1082 S Santa Fe Ave	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/7/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Leaf litter & sediment & kitty litter) Adequately cover materials stored outside, where feasible (Inspector comment: Used tires) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Used tires) Equip liquid storage containers with secondary containment (Inspector comment: Hazardous waste drum) Properly store and dispose of hazardous materials (Inspector comment: Hazardous waste drum lacks tray) Provide storm water training for appropriate employees (Inspector comment: Keep written training logs) Develop a written procedure for spill prevention and response (Inspector comment: Needs written spill plan) Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola
Contact: James Sanati, Ownder			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Quality Discount Ice Cream Inc **Address:** 2465 Coral St **Inspection Type:** Commercial **Contact:** Bill Wheeler, Manager **Receiving Water Body** Agua Hedionda Creek	**Inspection Date:** 1/25/2011 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: oil stains, caked oil accumulated throughout site) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Conduct outdoor activities within contained areas (under canopy, bermed) Use drip pans to collect leaks/spills (Inspector comment: in place, yet fluid spills are common) Identify and eliminate illicit connections and illegal discharges (Inspector comment: evidence of bmp maintenance, leaky vehicles a problem)	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 2/9/2011 **Inspector:** Daniel Welte **Enforcement Action(s):** Administrative Citation **Resolution Status:** In Progress
Facility Name: Rancho Vista Car Wash **Address:** 600 Hacienda Dr **Inspection Type:** Commercial **Contact:** John Suckling, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 4/12/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some sediment) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: dumpster lid open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: leaf debris) Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks (Inspector comment: for car wash exit) Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4 (Inspector comment: car wash water discharge to storm drain) Identify and eliminate illicit connections and illegal discharges (Inspector comment: car wash water discharge to storm drain) Provide storm water training for appropriate employees (Inspector comment: keep written log)	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 4/12/2011 **Inspector:** Daniel Welte **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information

Facility Name:

Sal and Cici's Pantry and Pie Shoppe

Address:

945 S Santa Fe Ave

Inspection Type:

Commercial

Contact:

Salvador Jimenez

Receiving Water Body

Buena Vista Creek

Initial Inspection Information

Inspection Date: 5/4/2011

Inspector: Daniel Welte

Needed Corrective Actions

Protect trash area from contact with storm water (Inspector comment: Dumpster lid open.)

Adequately cover materials stored outside, where feasible

Provide an accessible, functional spill response kit

Equip liquid storage containers with secondary containment (Inspector comment: 50gal drum w/o 2c/oc, outside)

Provide storm water training for appropriate employees

Develop a written procedure for spill prevention and response

- Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Store grease bins with overhead coverage

Store grease bins with secondary containment (Inspector comment: 50yd drum outside)

Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: some oil stains)

Maintain accessible grease spill response materials (Inspector comment: kit will be purchased)

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

5/23/2011

Inspector:

Daniel Welte

Enforcement Action(s):

Resolution Status:

Resolved

Site Information	Initial Inspection Information	Follow-up Inspection
Facility Name: Salsa Market **Address:** 1100 N Santa Fe Ave **Inspection Type:** Commercial **Contact:** Stewart Weinstock - Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 4/14/2011 **Inspector:** Brian Nemerow **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some sediment & litter) Keep storm drains on site free of litter and debris (Inspector comment: some trash, debris & greasy sediment) Keep outdoor areas free of spills and leaks (Inspector comment: liquid stains) Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: minor sediment erosion) Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: some liquid stains & sediment) Provide storm water training for appropriate employees (Inspector comment: keep written log) Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with secondary containment (Inspector comment: double wall) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: minor grease stains)	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/21/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved
Facility Name: Sea Witch Marine, Inc **Address:** 1085 S Santa Fe Ave **Inspection Type:** Commercial **Contact:** John Haddon, Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 4/15/2011 **Inspector:** Kimberly Corbilla **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: oil drips around haz waste storage area) Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Keep spill containment free of spills and rainwater (Inspector comment: oil in containment tray) Provide storm water training for appropriate employees (Inspector comment: keep written log)	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/7/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Security Chevrolet Inc	**Inspection Date:** 4/15/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 1100 E Vista Way	**Needed Corrective Actions**		**Follow-up Inspection Date:** 5/31/2011
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: sediment) Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: sediment from planter) Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: sediment) Provide storm water training for appropriate employees		**Inspector:** Sandra Sotola
Contact: Eric Sering - Manager			**Enforcement Action(s):**
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved
Facility Name: Shell Oil Products U.S.	**Inspection Date:** 6/2/2011	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes
Address: 400 Sycamore Ave	**Needed Corrective Actions**		**Follow-up Inspection Date:** 6/13/2011
Inspection Type: Commercial	Protect trash area from contact with storm water (Inspector comment: Lids open) Adequately cover materials stored outside, where feasible (Inspector comment: Lids open) Keep spill containment free of spills and rainwater Properly store and dispose of hazardous materials (Inspector comment: drums w/o 2c/oc) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Daniel Welte
Contact: Deanna Stone, Manager			**Enforcement Action(s):**
Receiving Water Body Buena Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Subway **Address:** 510 Hacienda Dr 101A **Inspection Type:** Commercial **Contact:** Cecilia Gucman, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 5/5/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: some sediment & litter in parking lot) Keep outdoor areas free of spills and leaks (Inspector comment: oil stains in parking lot) Protect trash area from contact with storm water (Inspector comment: dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: food debris & liquid stains) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/6/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved
Facility Name: Taco Bell 17787 **Address:** 910 E Vista Way **Inspection Type:** Commercial **Contact:** Adriana Vasquez, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 5/12/2011 **Needed Corrective Actions** Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: litter) Adequately cover materials stored outside, where feasible (Inspector comment: bin w/o 2c/ohc lid open in rain) Equip liquid storage containers with secondary containment Keep spill containment free of spills and rainwater Store grease bins with overhead coverage Store grease bins with secondary containment Keep grease bin and surrounding area free of grease stains/spills	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/1/2011 **Inspector:** Daniel Welte **Enforcement Action(s):** NOV **Resolution Status:** Resolved
Facility Name: Target Store #T1040 **Address:** 1751 University Dr **Inspection Type:** Commercial **Contact:** Vanessa Gong, Supervisor **Receiving Water Body** Buena Creek	**Inspection Date:** 6/3/2011 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: two hose bibs leaking/dripping fluid into load dock.) Keep loading and unloading areas, including drains, free of debris (Inspector comment: minor litter accum) Identify and eliminate illicit connections and illegal discharges (Inspector comment: See D.1)	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/9/2011 **Inspector:** Daniel Welte **Enforcement Action(s):** NOV **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: The Lawn Center **Address:** 603 S Santa Fe Ave **Inspection Type:** Commercial **Contact:** Manny Mendoza, owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 6/15/2011 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: oil and grease stains in storage areas, prevalent.) Direct roof downspouts away from areas of potential pollutants, where feasible (Inspector comment: Contributor to pollution potential) Adequately cover materials stored outside, where feasible (Inspector comment: Areas not fully protected) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Areas not fully protected) Use drip pans to collect leaks/spills Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks (Inspector comment: sand bag berm failing to contain runoff) Identify and eliminate illicit connections and illegal discharges	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 8/22/2011 **Inspector:** Daniel Welte **Enforcement Action(s):** Verbal Warning, NOV **Resolution Status:** In Progress
Facility Name: The Original Pancake House **Address:** 435 S Melrose Dr **Inspection Type:** Commercial **Contact:** Lisa Daffern, Regional Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 5/5/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: white powder in parking lot) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: liquid stains) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: grease stains on ground & container)	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/3/2011 **Inspector:** Sandra Sotola **Enforcement Action(s):** **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Versaform Corp	**Inspection Date:** 4/26/2011	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 1377 Specialty Dr	**Needed Corrective Actions**		**Follow-up Inspection Date:** 5/23/2011
Inspection Type: Industrial	Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: drain in loading dock) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola
Contact: Ed Campbell - General Manager	Adequately cover materials stored outside, where feasible (Inspector comment: oil drums & diesel drums) Keep spill containment free of spills and rainwater (Inspector comment: rain water in containment)		**Enforcement Action(s):**
Receiving Water Body Agua Hedionda Creek	Properly store and dispose of hazardous materials (Inspector comment: hazardous material drums lack cover) Keep loading and unloading areas, including drains, free of debris (Inspector comment: sediment & debris in loading dock)		**Resolution Status:** Resolved
Facility Name: Village Cafe	**Inspection Date:** 4/13/2011	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 406 Main St	**Needed Corrective Actions**		**Follow-up Inspection Date:** 5/3/2011
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: grease stains from ventilation fan) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: some grease stains)		**Inspector:** Sandra Sotola
Contact: Albert Mazarian - Owner	Provide storm water training for appropriate employees (Inspector comment: keep written log) Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Enforcement Action(s):** NOV
Receiving Water Body Buena Vista Creek	Store grease bins with secondary containment (Inspector comment: double wall) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: some grease stains)		**Resolution Status:** Resolved

APPENDIX E-1
FY 2010-11 HHW DISPOSAL TYPES AND AMOUNTS

Appendix E-1 FY 2010-11 HHW Disposal Information

		Poway	Vista*	Total PHHWCF	Carlsbad	Del Mar	Encinitas	Escondido	National City	Poway	San Marcos	Santee	Solana Beach	Vista
		(in pounds)	(in pounds)	(in pounds)	**18.8%**	**1.1%**	**12.2%**	**0.2%**	**0.0%**	**31.0%**	**8.7%**	**0.4%**	**2.7%**	**24.8%**
1. Flammable & Poison	Flammable solid/liquid	8,224	14,265	**22,489**	4,238	251	2,740	40	0	6,964	1,964	96	614	5,581
	Bulked flammable liquids	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Oil-base paint	26,171	106,135	**132,306**	24,931	1,477	16,119	237	0	40,971	11,555	567	3,614	32,832
	Poison (excl.aerosols)	10,100	33,550	**43,650**	8,225	487	5,318	78	0	13,517	3,812	187	1,192	10,832
	Reactive and explosive	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Subtotal	**44,495**	**153,950**	**198,445**										
2. Acid	Inorganic and organic acid	**2,500**	**5,600**	**8,100**	1,526	90	987	15	0	2,508	707	35	221	2,010
3. Base	Inorganic and organic base	**2,950**	**11,600**	**14,550**	2,742	162	1,773	26	0	4,506	1,271	62	397	3,611
4. Oxidizer	Neutral oxidizers, organic peroxides, Oxidizing acid, oxidizing base	**650**	**650**	**1,300**	245	15	158	2	0	403	114	6	36	323
5. PCB-containing	PCB-containing paint	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Other PCB waste	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Subtotal	**0**	**0**	**0**										
6. Reclaimable	Antifreeze	3,533	4,820	**8,353**	1,574	93	1,018	15	0	2,587	730	36	228	2,073
	Car batteries	2,450	6,485	**8,935**	1,684	100	1,089	16	0	2,767	780	38	244	2,217
	Latex paint	38,500	121,200	**159,700**	30,093	1,783	19,457	287	0	49,454	13,948	685	4,363	39,630
	Motor oil/oil products	17,145	16,330	**33,475**	6,308	374	4,078	60	0	10,366	2,924	144	914	8,307
	Oil filters	700	975	**1,675**	316	19	204	3	0	519	146	7	46	416
	Subtotal	**62,328**	**149,810**	**212,138**										
7. Asbestos		**0**	**300**	**300**	57	3	37	1	0	93	26	1	8	74
8. Universal Waste (UW)	Mercury containing waste	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Thermostats/switches/thermometers	45	0	**45**	8	1	5	0	0	14	4	0	1	11
	Fluorescent Lamps	2,335	2,350	**4,685**	883	52	571	8	0	1,451	409	20	128	1,163
	Rechargeable batteries	1,000	400	**1,400**	264	16	171	3	0	434	122	6	38	347
	Household batteries	8,800	9,400	**18,200**	3,430	203	2,217	33	0	5,636	1,590	78	497	4,516
	Subtotal	**12,180**	**12,150**	**24,330**										
Electronic Waste (UW)	SB20/50 Covered Electronic Devices	45,638	57,725	**103,363**	19,477	1,154	12,593	185	0	32,009	9,028	443	2,824	25,650
	Universal Waste Electronic Devices	82,597	96,813	**179,410**	33,807	2,003	21,858	322	0	55,558	15,669	769	4,901	44,522
	Subtotal	**128,235**	**154,538**	**282,773**										
Aerosol Containers (UW)	Non-empty aerosol containers	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Other	400	0	**400**	75	4	49	1	0	124	35	2	11	99
	All UW subtotal	**140,815**	**166,688**	**307,503**										
9. Other HHW	Home-generated sharps	1,925	1,715	**3,640**	686	41	443	7	0	1,127	318	16	99	903
	Pharmaceutical Waste	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Compressed gas cylinder	2,140	2,400	**4,540**	855	51	553	8	0	1,406	397	19	124	1,127
	Non-UW aerosol containers (corrosive, flammable, poison)	4,050	11,900	**15,950**	3,006	178	1,943	29	0	4,939	1,393	68	436	3,958
	Treated Wood	450	0	**450**	85	5	55	1	0	139	39	2	12	112
	Other	3,600	5,750	**9,350**	1,762	104	1,139	17	0	2,895	817	40	255	2,320
	Subtotal	**12,165**	**21,765**	**33,930**										
10. Grand Total		**265,903**	**510,363**	**776,266**	**143,737**	**8,518**	**92,935**	**1,369**	**0**	**236,216**	**66,621**	**3,270**	**20,838**	**189,292**

APPENDIX E-2
FY 2010-11 SUMMARY OF ENFORCEMENT ACTIONS AT RESIDENTIAL SITES

Appendix E-2 FY 10-11 Summary of Enforcement Actions at Residential Sites

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION					REFERRAL
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal	Written Warning	Notice of Violation	Citation	**Totals**	Proactive
Residential	25		4	4	3	36	36	36	24		10		34	15
TOTALS	25	0	4	4	3	36	36	84	24	0	10	0	34	15

APPENDIX F
ILLICIT DISCHARGE
DETECTION AND ELIMINATION
(to be submitted in Dec 2011)

APPENDIX G-1
SPOTLIGHT AND WATER QUALITY NEWSLETTERS

CITY OF VISTA CALIFORNIA

July / August 2010

SPOTLIGHT on VISTA

Employee newsletter

Message from the City Manager

Inside This Issue

1 City Manager's Message

2 Civic Center Opening

3 Vista Sports Park

4 Department News

5 City News

6 Employee News

7 Promotions & Retirements

8 Birthdays / Service Years

"We succeeded in demonstrating the new Civic Center is a community building."

Dear Employees:

What an exciting few weeks we have experienced in Vista! This past weekend, Recreation and Community Services organized another exceptional "Red, White and Boom" Fourth of July celebration at Brengle Terrace Park. The fireworks were beautiful. My sincere appreciation goes out to the dedicated employees who organize this special Independence Day celebration each year.

In June, the Mayor presented his State of the Community address during the Chamber's annual meeting to approximately 200 attendees – the first event in the new Morris B. Vance Community Room. Admiration, surprise and wonder filled the air on June 29 as residents and visitors attended the grand opening of the Civic Center. It was a day to remember! I received a lot of positive feedback from the community and the City Council. I appreciate everyone's efforts in making this historic day special for the community. I think we succeeded in demonstrating that the new Civic Center is a community building where Vista residents and visitors will feel welcome once they step through the doors.

In June, the City Council also adopted the FY 2010/11 operating budget. The General Fund budget is $66,099,699 and the total operating budget is $118,594,534. As we move forward through this next fiscal year, I will continue to keep you informed about the City's financial situation and on the City Council's strategy to help move the City forward.

A few weeks ago marked the official first day of summer with the summer solstice, the longest day of the year. These extended evenings of sunlight are one part of summertime I truly enjoy. This is the time to take advantage of the extra sunlight and to do something different. Our Recreational & Community Services Department has something for everyone, from the Wave Waterpark to sports activities and summer camps, to the season's productions at the Moonlight Amphitheatre beginning on July 14 and running through September 25. Productions include *Oklahoma!, Crazy for You,* and *Miss Saigon* www.vistixonline.com.

Whether you help your children make memories or you make memories of your own this summer, I hope you and your family have a safe and enjoyable one.

Rita L. Geldert

Vista Cuts the Ribbon on the Civic Center

Over 500 people attended the grand opening of the Civic Center on June 29. Thanks to all of the employees who helped organize the event. The tour guides, staff who answered questions during the open house, traffic and crowd control and to the Fire and Sheriff's departments who stood ready in case of an emergency.

Mayor Vance summed up the event: "Today we celebrate our city's new Civic Center, which will provide a critical link to Vista's growth and success. Our goal was to create a civic center that would be more than just office space. We envisioned a place that would truly become the heart of the community – known as a gathering place for residents, as well as a Vista icon for decades to come. Today, I think we have accomplished that goal."

It was a day to remember!

Vista Civic Center Grand Opening … June 29, 2010

Vista Sports Park as of June, 2010

Vista Sports Park Nearing Completion

The last of the community projects will be completed in August with the opening of the Vista Sports Park. The 16-acre park is located in northwest Vista.

The park provides beautiful panoramic views and includes two synthetic turf soccer/football fields, three baseball/softball fields, picnic areas, a tot lot, restrooms, league storages, concrete bleachers for the soccer/football field, a main building to house concessions and a trail connecting Oceanside Boulevard to Guajome Regional Park. Vista is gaining much-needed additional fields and play areas for the community.

Vista Sports Park Grand Opening | August 21 | 9-10 a.m.

(Off of Oceanside Blvd. and at the end of Sports Park Way)

Community Room Named After Mayor

The City Council voted to name the new Civic Center Community Room after Mayor Morris Vance. The official title of the community rooms is: the **Morris B. Vance Community Room.**

The employee driven petition signed by many city employees was led by Joan Turley in Community Development.

The new lettering will be placed inside the community room in the next few weeks.

Donna Meester, Recreation & Community Services is served by Christina DeMaria at Café 200. Stop by for a cup of coffee, snack or a bite to eat !

Hours: 7:30 a.m. to 1:30 p.m.

Tim Shell Named Employee of the Quarter

Kiwanis Employee of the Quarter

Kudos to Tim Shell, Kiwanis Employee of the Quarter.

Tim Shell, Principal Engineer for the Engineering Department has been busy over the past several months. His efforts working on two Caltrans projects have earned him the Kiwanis Employee of the Quarter.

Tim, who has been with the City for almost ten years, was instrumental in bringing the Highway 78 (SR-78) landscape maintenance project to final approval by Caltrans. This process was lengthy and challenging due to the organizational structure of Caltrans - Tim had to communicate separately with both the design and maintenance divisions. He coordinated the communications between City staff and the Caltrans staff of the two divisions to finalize the a process. His efforts paid off when the project was finalized and turned over to Caltrans.

Additionally, during the Escondido Avenue name change to Civic Center Drive, Tim worked with Caltrans staff to obtain the permits and signage approval. Although usually a drawn-out process taking a few months to complete, Tim was able to gain the respect and cooperation from Caltrans. The permits for the name change were finalized in record time! Civic Center Driver was officially renamed in time for the May 1 deadline.

Tim's attention to detail and respect for his co-workers and other individuals he comes in contact with has provided the City of Vista with many benefits. Congratulations to Tim who continues to exemplify the "team spirit" attitude for employees.

Summer Tips for Keeping our Waters Clean ...

From the Water Quality Protection Division

Adjust your irrigation system to prevent overwatering: When irrigation runoff leaves your property and enters the storm drain system, it carries along with it fertilizers, pesticides, trash, and other waste. These pollutants go directly to our waterways without treatment and can cause environmental problems such as excessive algae growth, fish kills, and even warning postings at beaches. Additionally, we are in a drought and must continue to conserve water at every opportunity.

Pick up after your pets: When pet waste is left in the environment, it will eventually make its way to our waterways through transport mechanisms such as over-irrigation. Pet waste carries bacteria and pathogens that can cause warning postings at beaches and people to get sick.

Take your dirty car to a carwash: Water from car washing carries pollutants such as soaps, sediment, copper, zinc and others that are harmful to the environment. These pollutants are often toxic to the critters in our creeks! An alternative to the carwash is to wash your vehicle over the lawn or gravel, allowing the water (and pollutants) to percolate into the ground.

Please do your part to keep our creeks and beaches clean this summer. For more information, contact any of us in Water Quality Protection Program at x1686 or at waterquality@cityofvista.com.

Thank you for your efforts.

CITY OF VISTA
Water Quality Protection Program

One Day. One Night. One Community. One Fight.

The Relay For Life is a community event that brings together more than 3.5 million people across the nation - to celebrate the lives of those who have battled cancer; remember loved ones lost to the disease; and fight back against a disease that takes too much.

Vista Magnet Middle School will be hosting the Relay For Life on Saturday and Sunday, August 7-8. There are three ways to sign up for the relay: You can (1) create your own team; (2) join a team; or (3) participate as a survivor. For more information on the relay, go to relayforlife.org/vistaca.

Event Date
August 7 & 8: Saturday: 9 a.m.- Sunday 9 a.m.
Event Location: Vista Magnet Middle School

Relay for Life
Vista Magnet School
August 7-8

Volunteers Still Needed to House Actors

From Moonlight Stage Productions

The Moonlight staff is still looking for residents to house some of its actors. Each summer, the Moonlight hires a number of performers who live outside the San Diego area. They try to provide accommodations for them in private homes and within travel distance to the theatre. If you would like to house an actor call (760) 639-6199.

Benefits: MedEx Travel Assistance

From Sonya Cramer, Human Resources

Did you know that City of Vista provides a travel assistance program for all benefit eligible employees? The City currently sponsors MedEx Travel Assistance to provide employees with information before they travel and assistance while traveling. To utilize the MedEx services while traveling, you must be 100 miles or more away from home or in a foreign country. This coverage is available to you and your entire family – including your college-age children.

Before you travel, it is a good idea to contact MedEx for pre-trip assistance. They can help identify any special inoculations you might need and inform you of any travel advisories for the area. While traveling, you may find a need to use MedEx for an emergency evacuation, to transport minor children back home if a caretaker becomes ill, or to help with a vehicle return or provide assistance with a lost wallet, passport, laptop or luggage.

Utilizing MedEx is easy and no enrollment is necessary. Keep the MedEx card in your wallet. It contains the phone number for assistance and the City's group number. MedEx provides 24-hour customer service and support.

For information or a wallet card, visit Human Resources or to print the wallet card or flyer: O:\Human Resources and Risk Management\City Read Access\Benefits\MEDEX Travel Assist\MedEx Travel Assist Flyer.pdf.

Employee news

SummerFest 2010!

Thanks for attending SummerFest '10 on June 30! Special thanks to Tom DuBose and crew for setting up extra canopies to shield everyone from the sun. Great job Employee Recognition Committee!

Tom DuBose, Public Works enjoys a hamburger at SummerFest '10.

Kudos to Facilities Maintenance

From Patrick Johnson, Assistant City Manager

Thank you to Ken Shaw and his crew: Ray Phelps, Greg Hanson, Mike Parks, and Pat Sadowski for their work on transitioning the City out of the Lincoln Annex and for managing the relocation of furnishings at the old City Hall site. The school district reported the Annex facilities were in better condition then when the City moved in and applauded Ken and his team for their meticulous care of their facilities. Thank you!

June 3, 2010 Employee Photo

Photo: Becky Gemmell

Taylor Madison Downing (and Mom Emily): 7 lbs, 6 oz.

Christian James Collis: 7 lbs, 9 oz.

Newest Members in the Family

Brendan Hammes, Firefighter/Paramedic and his wife Christina welcomed their baby boy Liam on May 7.

Emily Downing, Firefighter/Paramedic and her husband welcomed their daughter Taylor Madison on May 14. Taylor weighed 7 pounds, 6 ounces.

Jasen Collis, Firefighter/Paramedic and his wife Kristen, welcomed their second child, Christian James on May 29. Christian weighed in at 7 pounds, 9 ounces and joins his six year-old sister Ally.

Aly Zimmermann, Assistant to the City Manger and her husband Brian welcomed their first child, Elisabeth Frances (Betsy) on June 29. Betsy weighed in at 7 pounds, 12 ounces.

Elisabeth Frances (Betsy) Zimmermann: 7 lbs, 12 oz.

Employee news continued ...

Caleb Crist Wins Awards at Fair

From Chuck Crist, Operations Manager, Public Works

Our son, Caleb showed his pig "Ham" at the San Diego County Fair and won the Junior Champion Showmanship for the swine group. Although it is his first year with 4-H, he did amazingly well! Caleb went on to compete in the Master Showmanship competition and was awarded third place - a great way to end his first year in 4H.

We are proud of our son and glad all of his hard work and great efforts throughout the year have paid off.

Caleb Crist and "Ham" at the San Diego County Fair.

Promotions and Transfers...

Juan Paz, promoted to Wastewater Worker I Public Works

Bill Crane, Management Analyst transferred to City Manager's Office

… And Hires

Juan Castro, Street Maintenance Worker II Public Works

Pedro Magadan, Wastewater Worker I Public Works

Gabriel Mendez, Wastewater Worker I Public Works

July Birthdays

1	Chris Hammond	Fire
2	Cathy Garrison	Finance
2	Tom DuBose	Public Works
2	Eric Kilpatrick	Fire
3	Jay Ackerman	Fire
4	Stephen Rytell	Community Development
5	Ramon Benitez	Public Works
5	Paul Hartman	Engineering
6	Patsy Chow	Community Development
6	Les Fandel	Fire
7	Steve Nankervis	Public Works
9	Brian Sallerson	Recreation & Comm Svs
10	Nancy Hoffman	Human Resources
11	Sandra Wolfe	Redevelopment & Housing
12	Mary Colonello	Recreation & Comm Svs
12	Jimmy Rodriguez	Public Works
14	George Meyer	Community Development
15	Rick Snider	Community Development
17	Doris Calvo	City Council
18	Barb Cooley	Recreation & Comm Svs
19	Donna Meester	Recreation & Comm Svs
22	Rod Salazar	Public Works
24	Kurt Groscup	Community Development
29	Marci Kilian	City Clerk
29	Mark Vierow	Fire
31	Ray Phelps	Public Works
31	Armando Sandoval	Public Works

August Birthdays

1	James Salsbury	IT
2	Stephen Belda	Code Enforcement
3	Larry Pierce	Engineering
5	David Carrender	Public Works
6	Luis Hernandez	Public Works
8	Javier DeHaro	Public Works
8	Juan Paz	Public Works
8	Adam Robey	Public Works
11	Richard Tilch	Fire
12	Mike Easterling	Fire
13	Gail Jarrard	Finance
13	Rudy Luna	Public Works
14	Cirilo Mariscal	Public Works
16	Leslie Webb-Blanco	Finance
17	Scott Duncan	Fire
20	Chris Dzwigalski	Public Works
21	Ashley Howard Goltz	Recreation & Comm Svs
23	Ned Vander Pol	Fire
24	Mike Lemire	Fire
26	Cindy Choquette	Finance
26	Jeff Zinner	Redevelopment & Housing
27	Eva Stuart	Finance
30	Margie White	Recreation & Comm Svs
31	Jason Collis	Fire

July Years of Service

2	Hanns Botz	Fire
2	Jasen Collis	Fire
2	Alberto Delgado	Public Works
2	Emily Downing	Fire
2	Jeffrey Gazdayka	Fire
2	Christopher Jones	Fire
2	Darren Kaplan	Fire
2	David Kennedy	Fire
2	Gabriel Kessler	Fire
2	Enrique Montes	Fire
2	Brandon Montgomery	Fire
2	Michael Rigali	Fire
2	Michael Romeo	Fire
2	Jared Tucker	Fire
2	Ross Vagelatos	Fire
2	Anthony Van Slyke	Fire
3	Martha Cleavenger	Finance
3	Michele Koller	Redevelopment & Housing
5	Greg Mayer	Community Development
5	Ramon Benitez	Public Works
5	Andrew Simons	Public Works
6	Cynthia Byler	Recreation & Comm Svs
6	Brian Gregson	Fire
6	Mary Haley	Public Works
6	Larry Pierce	Engineering
6	Sudi Shoja	Engineering
8	Kathy Valdez	Redevelopment & Housing
9	Peter Marshall	Public Works
10	Juan Paz	Public Works
11	Jeff Berg	Fire
11	Doris Calvo	City Council
11	John Conley	Community Development
11	Marci Kilian	City Clerk
13	Ray Phelps	Public Works
13	Robert Castaneda	Public Works

July *Years of Service continued ...*

13	Greg Hanson	Public Works
13	Sandie Hargis	City Attorney
13	Becky Weiss	City Manager
14	Sam Beukema	Recreation & Comm Svs
20	Marie Sanfilippo	City Clerk
20	Jan Broyles	Community Development
20	Chuck Crist	Public Works
30	Jamie Osorio	Engineering

August Years of Service

3	John Hamilton	Community Development
3	Patrick Sadowski	Public Works
5	Adam Finestone	Community Development
5	Jeff Zinner	Redevelopment & Housing
6	Terry Breen	Recreation & Comm Svs
6	Bill Crane	City Manager's Office
9	Jose Lopez	Public Works
9	Rod Salazar	Public Works
10	Pat Chapman	Recreation & Comm Svs
11	David Carrender	Public Works
11	Jeff Bauer	Fire
11	Eddie Jimenez	Fire
11	Temujin Matsubara	Public Works
11	Ned Vander Pol	Fire
12	Frank Durazo	Engineering
13	Robin Putnam	Community Projects
19	Cathy Garrison	Finance
20	Estella Muro	Code Enforcement
21	Mark Standifird	Fire
21	Kathy Brombacher	Recreation & Comm Svs
22	Brian MacFadyen	Public Works

CITY OF VISTA CALIFORNIA

Sept /Oct 2010

SPOTLIGHT on VISTA

Employee newsletter

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9 Birthdays / Service Years

"We must strive to keep the trust of the residents we serve on a daily basis."

Message from the City Manager

Dear Employees:

To those of you who were involved in the August 3rd National Night Out, thank you! Over 200 people participated in the two-mile *Walk Against Crime*. Another community event celebrated in August was the grand opening of the City's final community project – the Vista Sports Park. I believe our first-rate sports park will not only provide recreational and athletic activities for our leagues and neighborhoods, but will also create a sense of community for Vista's youth and families.

The Annual Employee Recognition Event is scheduled for Saturday, October 2nd in the Civic Center Community Room. This will be an adult evening, dinner event. Childcare will be available for the event. Additional details regarding this event will be announced soon. Saturday, October 9, is the date set for our Vistans ROC revitalization event. If you are interested in volunteering to work on the City house, check with Rachel Beld in Economic Development.

Many of you have read about the unfortunate incident with the city of Bell. It seems that while the city of Bell has been facing budget difficulties similar to other municipalities throughout the state, their city manager and other employees have received outrageous compensations. The Bell situation has made it difficult for both residents across the state and municipal employees to understand. I was shocked and angered by this recent story. While most of us understand that this is not the norm for any city, it is important to convey that Bell is the exception and not the rule. Our work is not about profiting at the public's expense, but rather about providing public service. The media is localizing this story and as you may have read, publicizing municipal salaries and benefits in North County. Please be aware that it is our responsibility to convey that message of good public service while we are at work – now more than ever. We have always been transparent about our compensation and benefits – and we will continue to do so, as well as exemplify to our community that we are dedicated to improving the quality of life in our City. We must strive to keep the trust of the residents we serve on a daily basis.

In closing, fall is fast approaching; and before we head out of the summer months, I want to express my appreciation for your tireless work this past summer. Thank you for your part in maintaining the high quality of life in Vista for our residents and visitors.

Rita L. Geldert

Vista Sports Park - Final Community Project Completed

Several hundred people attended the grand opening of the Vista Sports Park on Saturday, August 21. A depth of gratitude goes out to all of the employees who helped organize the event and to those who made sure the park was ready for the grand opening.

Leagues began playing on the sports field after the grand opening. The 16-acre park includes two synthetic turf soccer/ football fields; three baseball/softball fields; a large picnic area and a tot lot. The trail connecting Oceanside Boulevard with Guajome Regional Park is now open to the public.

Vista Sports Park - 1600 Sports Park Way

Sam Beukema (left) and Rob Anderson, Recreation & Community Services, forgot the sunscreen at the Sports Park's grand opening.

Chris Mitchell Named Employee of the Quarter

Kiwanis Employee of the Quarter

Chris Mitchell, Kiwanis Employee of the Quarter

Congratulations to Chris Mitchell who received the Kiwanis Employee of the Third Quarter recognition. Chris is a deserving recipient of this award as demonstrated by his dedication and daily work ethic for the City. His quality of work is exceptional. As a leader within the Information Technology division and someone who can be consistently relied upon, Chris not only gets the job done, but also goes the extra mile. He possesses a good attitude, is creative, and solves problems that enables departments to accomplish tasks and work around problems to achieve their goals.

Instrumental in designing, developing, purchasing, and implementing the City's new information system throughout the construction of the new Civic Center, Chris put in countless hours after work in addition to his normal schedule.

Along with his co-workers, Chris implemented a high performing, near flawless system that provided connectivity to the entire Vista workforce - prior to the building opening - and without downtime to major operations. Employees may not have been aware of the work involved in the relocation of servers, desktops, phones and the implementation of a wireless guest network, due to the smooth transition. This seamless transition is rarely achieved in public or private ventures when relocating a large workforce.

A dedicated employee, Chris works long hours and sacrifices many hours of his free time to ensure the City's network is working properly. Chris takes pride in his work, is professional while interacting with customers, and continually strives to improve the City operations.

The Rainy Season is Approaching

A Message from the Water Quality Protection Division

CITY OF VISTA
Water Quality Protection Program

What a great opportunity for City employees to participate in Pollution Prevention Week (the third week in September) in preparation for the coming rainy season (October 1 through April 30). Did you know that stormwater and urban runoff entering the storm drains flow untreated to our local creeks, lagoons and eventually to the ocean?

We invite you to be pro-active by reporting any stormwater violations you may see during your travels throughout the city. Violations include: sediment, trash, and debris that could possibly enter our storm drain system; fluids and fresh significant oil stains in our shopping centers or places of business; accumulation of leaves and organic debris in the curb/gutters and any urban runoff that you may see flowing off private property.

With your help, we can make a concerted effort in assuring that only rain enters our storm drains. Please contact us at x 1686 or e-mail us at waterquality@cityofvista.com.

The Vista Water Quality Protection Program is committed to making our waterways as clean and safe as possible and we thank you for your participation in our efforts. For more information, check the city web site under Engineering > Water Quality Protection Program.

BENEFITS CORNER

Employees Enrolled in Anthem Blue Cross

A Notice from Human Resources

We have recently been made aware of concerns that employees who are enrolled in the Anthem Blue Cross Point-of-Service (POS) medical plan have brought forward in regards to the level of coverage provided for treatments and/or procedures.

One of the primary benefits of this plan is that it provides its members the freedom of choice when visiting a provider by allowing either an HMO or PPO level of benefit. The HMO tier typically has lower out of pocket costs. Keep in mind, however, that some providers are contracted in both the HMO and PPO networks. When using a provider that is contracted in both HMO and PPO, it is extremely important to ask the provider to bill Anthem Blue Cross as an HMO provider, utilizing the HMO portion of your coverage.

Even your assigned primary care physician in your HMO group may utilize specialists or outpatient surgical centers that are contracted only within the PPO network. If your primary care physician refers you to another doctor/specialist for treatment or to a different facility for outpatient surgery, it is extremely important to ask – ***prior to receiving services*** - if that specialist and/or surgical center services will be covered under your HMO benefits. If not, go back to your primary care physician and request to be referred to one that will be covered under your HMO level of benefit. This will help to eliminate unnecessary out of pocket expenses that can occur for you when you receive services at the PPO tier of your plan. Unfortunately, this very scenario has happened to a few of our employees recently, where they followed their primary care physician's referrals without asking questions and ended up responsible for some major expenses after surgical procedures, and we would like to prevent that from happening again.

If you are unsure as to whether services will be covered at the HMO or PPO level, you can always ask your doctor to request a Pre-Authorization from Anthem Blue Cross which will inform you of how much Anthem will pay toward the anticipated services (including the facility where the services will be delivered), or call Anthem Blue Cross Customer Service at 1-800-288-6921 and a representative will walk you through the process to request a Pre-Authorization yourself. As always, we are here to assist you with any questions you may have regarding your group insurance coverage. Just call or drop by Human Resources/ Risk Management if you need assistance.

Planning Retirement?

For those in the retirement planning stages, please be reminded that the Standard Life Insurance Policy includes a 65% reduction of benefit at age 70 whether or not the employee is currently employed or retired.

Register Cell Phones for Emergency Notifications

A Notice from San Diego County

The County of San Diego has set up a regional notification system that will be able to send telephone notifications to residents within San Diego County impacted by, or in danger of being impacted by, an emergency or disaster. This system, called AlertSanDiego, will be used by emergency response personnel to notify those homes at risk with information on the event and/or actions (such as evacuation). Because the system uses the 9-1-1 database, only land-line numbers are in the system. If you would like to be notified over your cell phone, or by email notification, you must register the cell numbers and/or email address for use by the system. For more information, go to readysandiego.gov.

Horizon Health is your partner in resolving day-to-day personal and work challenges. Our confidential support is only one phone call or click away.

Employee Assistance Program (EAP)

Your company provides up to 6 face-to-face counseling sessions per employee and household member per issue per year. This short-term counseling is provided at no charge to members and covers all aspects of life, including:

- Difficulties in relationships
- Emotional/Psychological issues
- Stress & Anxiety issues with work or family
- Alcohol & drug abuse
- Personal & life improvement
- Depression
- Grief

EAP Provider Search

Horizon Health has developed a self-search tool that enables members to locate counselors near work or home. To search for network providers, log onto the website and click on My Benefits > EAP Benefits > Provider Search. To use this search feature, enter an address or just a zip code. You can narrow your search by entering a provider specialty (i.e. divorce, bipolar, depression, parenting education, etc.). Please note that PRE-AUTHORIZATION is required.

Legal/Financial Services

Every member is eligible for a free initial 30-minute telephonic consultation for each separate legal or financial matter and a 25% discount for services beyond the consultation. Horizon Health's services cover:

- Virtually all legal matters, except workplace and employer-related issues
- Simple will preparation
- Credit counseling, debt management, and budgeting assistance
- Retirement and college planning
- Telephonic tax consultation
- Estate planning
- Identity theft consultation
- Mediation services
- Website forms and information

WorkLife Services

Members can seek unlimited comprehensive telephonic assistance from a Horizon Health WorkLife expert on a variety of family concerns and day-to-day responsibilities, including:

- Child care and elder care
- Daily living
- School and college planning
- Community wellness resources
- Care for people with disabilities
- Adoption
- Daily living
- Relocation
- Pet care

Horizon Health

Fire Department Awarded International Status

The Vista Fire Department received its Accredited Agency status with the Commission on Fire Accreditation International for meeting criteria established through a voluntary self-assessment and accreditation program. The accreditation makes Vista part of a select few departments with this status. The Vista Fire Department is one of only 148 agencies worldwide to have received this designation and is one of only six municipal internationally accredited fire agencies in the state of California, which include the cities of Roseville; Culver City; Santa Clara; and Clovis; and the Novato and San Ramon Valley fire protection districts. The accreditation is recognized as a worldwide measure of excellence in the fire service. Congratulations to Chief Fisher and his department staff.

Congratulations to Chief Fisher and the Fire Department staff!

Civic Center … Miscellaneous Information

Several items have come up since we moved into the new Civic Center:

Vacuums were purchased for employee use in the event of a three-hole punch explosion or something else that should be cleaned up immediately because it cannot wait for the evening custodial service that vacuums twice a week. The Hoover Platinum light weight models are upright and also include a portable canister for ledges and furniture. Both are lightweight and easy to use. Please return the vacuums to their storage areas after use. The vacuums are stored in these locations:

Floor One: Community Development File Storage Room
Floor Two: Recreation & Community Services Work Room
Floor Three: City Manager's Office Work Room
Community Room: Storage Room (chair storage room)

New Wellness Room

Wellness Room

The facility is ready for use. Please make sure you have completed a waiver and understand the guidelines on facility use prior to using the Wellness Room. The equipment has been delivered and installed in the Wellness Room and it is open for use on Monday, September 13.

Information Kiosks

We have two new kiosks which will be programmed with agendas, and other city information in the upcoming weeks. One kiosk is located on the first floor to the side of the Community Development and Engineering Customer Service Counter and the other kiosk is located outside on the ground level by the Community Center.

Pat Chapman from Recreation & Community Services stands by the new kiosk on the first floor.

Lights … carpets

The new building uses sensors to turn off lights in vacant offices and restrooms. While most employees instinctively turn off the light as they leave an office, there is no need to do this with the automatic light sensors in place.

However, remember to turn off the light switches in the conference rooms and to push the chairs back in place after you are finished with the conference room.

Darker carpet is being installed in high traffic areas. If you notice a stain on a carpet tile that cannot be removed, please report this to Facilities Maintenance - Keith Gardner immediately.

Employee news

NC Firefighters Charity Golf Tournament

The North County Firefighters Charity Golf Tournament is scheduled for Monday, September 27 at Shadowridge Country Club. The event benefits the Vista Firefighters Local 4107 charities, and the Carlsbad and Oceanside Firefighters' charities. $100 per player includes green fees, car, range balls and buffet dinner. For more information, contact 760.458.0209.
10:30 a.m. registration. Check in at Noon, shotgun start.

30th Wedding Anniversary and First Triathlon

From Joan Turley, Community Development

Monday, August 23rd marked the 30th wedding anniversary for **Michele Smith,** Development Services Tech, Community Development, and her husband Jim. Congratulations to the happy couple of many years!

Congratulations are also in order for **Tiffany Luther,** Assistant Wave Waterpark Manager, who participated in her first triathlon on August 22nd.

Newest Members in the Family

Lisa Feeney, Public Works Senior Office Specialist welcomed her granddaughter Ryleigh Lisa Marie on July 31. Ryleigh weighed in at 7 pounds, 13 ounces and was 20 ½ inches long.

Marie Sanfilippo, City Clerk Records Technician welcomed two granddaughters this summer! Both of her sons welcomed baby girls: Gracelyn Michelle was born on July 15 and weighed in at 6 pounds, 1 ounce at 19 inches long. Sophia Jade was born on August 27 weighing in at 7 pounds with a length of 19.5 inches.

Natalie Livingston, Recreation & Community Services Wave Waterpark Manager and her husband Jeff welcomed their first child, Sailor Grace on July 10. Sailor Grace weighed in at 7 pounds, 11 ounces and was 21 inches long.

Vistans ROC City House

From Rachel Beld, Economic Development

Hundreds of volunteers are joining efforts to paint, landscape, and spruce up homes in need of repair in designated neighborhoods on Saturday October 9, as part of the City of Vista and the Vista Townsite Community Partnership 's annual revitalization project., Vistans ROC. The program teams up volunteers with homeowners to clean up and beautify homes in specific focus neighborhoods. If you would like to volunteer for the City's house, call Rachel Beld at ext. 1303.

Lisa Feeney's granddaughter, Ryleigh Lisa Marie: 7 lbs, 13 oz.

Marie Sanfilippo's granddaughters, (above) Gracelyn Michelle: 6 lbs, 1 oz. and (below) Sophia Jade: 7 lbs.

Sailor Grace Livingston: 7 lbs, 11 oz.

PROMOTION ...

Promotion: Rick Minnick, Deputy Fire Chief Fire Department

… and HIRES

Steve Rytell, Construction Inspector II

Claire Lopez, Account Clerk Finance

Amy Eustace, Transportation Coordinator, Senior Center Recreation & Comm. Svs

Tiffany Luther, Asst. Waterpark Manager, Recreation & Comm. Svs

Don Blaha, Code Enforcement Officer II

Angela Palasik, Asst. Waterpark Manager Recreation & Comm. Svs

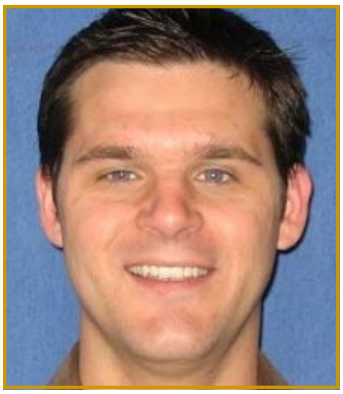

Keith Gemmell, Theater Facility Manager Recreation & Comm. Svs

September Birthdays

2	Steve Wecklich	Fire
6	Joshua Fretwell	Community Development
8	Enrique Montes	Fire
9	Jason Christman	Community Development
9	Peter Marshall	Public Works
11	Natalie Livingston	Recreation & Comm Svs
11	Estella Muro	Code Enforcement
11	Gerardo Oliveros	Public Works
12	Chris Mitchell	Information Technology
13	Sam Craig	Fire
14	Phill Carreon	Fire
15	Cat Cobian	Public Works
16	Jeff Hahn	Fire
16	Jeff Schroeder	Fire
17	Dora York	Human Resources
18	Laura Johnson	Finance
19	Mary Dreibelbis	Recreation & Comm Svs
20	Greg Hanson	Public Works
23	Ligeia Heagy	Engineering
25	David Brookbank	Public Works
25	Jim Gelrud	Fire
26	Rita Turnbull	City Clerk
27	John Conley	Community Development
27	Roger Brenzel	Engineering
28	Aly Zimmermann	City Manager's Office

October Birthdays

5	Jim Sawyer	Fire
5	Craig Usher	Fire
7	Sonya Cramer	Human Resources
8	Sudi Shoja	Engineering
10	Martha Cleavenger	Finance
11	Rachel Beld	Economic Development
13	Chuck Crist	Public Works
15	Matt Kennedy	Fire
16	Tiffany Luther	Recreation & Comm Svs
17	Cynthia Graciano	Fire
17	Ryan Deason	Fire
19	Terry Breen	Recreation & Comm Svs
21	Pat Chapman	Recreation & Comm Svs
21	Gary Fisher	Fire
21	Ross Vagelatos	Fire
22	John Greenstone	Fire
22	Patrick Johnson	City Manager's Office
22	Dale White	Public Works
26	Nick Cunningham	Information Technology
26	Walter Hartman	Recreation & Comm Svs
27	Andrew Simons	Public Works
30	Dan Kays	Recreation & Comm Svs
31	Ralph Medina	Public Works

September Years of Service

1	Andrew Valenta	Fire
3	Ashley Howard Goltz	Recreation & Comm Svs
5	Justin Golden	Fire
5	Brendan Hammes	Fire
5	Darold Pieper	City Attorney
5	Jake Shumate	Fire
5	Steve Wecklich	Fire
7	Maureen Cooper	Recreation & Comm Svs
7	Gary Fisher	Fire
7	Sandra Sotola	Engineering
9	Laura Johnson	Finance
9	Susan Haynes	Public Works
9	Yasmin Royka	Fire
10	Tim Shell	Engineering
10	Jon Stone	City Attorney
13	Cecilia Barandiaran	Redevelopment & Housing
14	Keith Kaumeyer	Fire
14	Craig Usher	Fire
17	Gail Jarrard	Finance
20	Mike Lemire	Fire
21	Chris Dzwigalski	Public Works
21	Craig Trammell	Public Works
23	Jay Ackerman	Fire
23	Phill Carreon	Fire
23	Jim Chumbley	Fire
25	Mark Lian	Public Works
25	Rudy Luna	Public Works
29	Les Fandel	Fire

October Years of Service

2	Paul Hartman	Engineering
3	Bryan DiBella	Information Technology
3	Ramy Kaufler	Recreation & Comm Svs
4	Mary Colonello	Recreation & Comm Svs
4	Cynthia Graciano	Fire
4	Ryan Deason	Fire
5	Justin Hall	Recreation & Comm Svs
5	Mark Vierow	Fire
7	Rachael Kloke	Recreation & Comm Svs
8	Mike Beissel	Fire
8	Matt McComas	Fire
8	Jan Yelland	Finance
9	Chano Ramos	Fire
10	Eric Kilpatrick	Fire
10	Mike Kratz	Community Development
10	Jim Sawyer	Fire
11	Bob Gmur	Fire
11	Jimmy Rodriguez	Public Works
12	Patrick Johnson	City Manager's Office
14	Peter Grover	City Attorney
17	Joel Strangeland	Fire
21	Tom DuBose	Public Works
22	Roger Brenzel	Engineering
22	Richard Caldwell	Engineering
22	Cirilo Mariscal	Public Works
25	Louie Sanchez	Public Works
27	David Brookbank	Public Works
31	George Solano	Public Works

CITY OF VISTA CALIFORNIA

Nov /Dec 2010

SPOTLIGHT on VISTA

Employee newsletter

Message from the City Manager

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8 Birthdays / Service Years

"Thank you for your daily efforts in making this City function well."

Dear Employees:

Unbelievably, another year is almost behind us and 2011 is just ahead. This is the time of the year to look back on our accomplishments and identify our direction for the next year. I want to thank all of you for the work you have done for this City. All of our employees are to be commended for their daily efforts in making this City function well.

While this last year has not been an easy one, you have risen to the challenge. It has and continues to be a very stressful time; our national and local economies are still struggling and will continue to do so into the upcoming year. This will affect Vista as we anticipate having to reduce our budget revenue projections by $5 million for the 2011/12 fiscal year.

With revenues down, please continue to shop in Vista for your holiday needs, as our community benefits with every dollar you spend locally. One unique feature our city provides is that there is no shortage of merchants who can offer everything from the newest electronic gadgets to that unique, one-of-a-kind gift.

As you are out and about in Vista, remember that you are the eyes and ears for the City and we need your help. As you drive or walk around the city, please report any graffiti, trash, code enforcement violations, or storm water problems you observe. Often times, we think residents or other employees may have called in the problem … yet no one has. With your help, we will continue to stay on top of eradicating these harmful detriments that impact our City's quality of life.

This is a great time of year to experience the small town charm of Vista. Many fun, family-oriented events are taking place in the next few weeks. I hope you are able to take a break from the hustle and bustle that can become so prevalent during the holidays and enjoy one or more of Vista's downtown community events, such as the annual tree lighting ceremony on December 3; the Holiday Parade and Village Fest on December 4; and the Holiday Home Tour on December 5.

Let us move forward into 2011 with renewed hope for a financially improved and prosperous year. I wish you and your family a happy holiday season and a peaceful and wonderful New Year.

Rita L. Geldert

Vistans ROC 2010

On October 9, more than 650 volunteers improved 28 homes on the eastern portions of Spires, Tatum, and Cocapah streets and Ocotillo Drive. I would like to offer a special thanks to our City employees who volunteered their time and skills to assist with this effort. In particular, I would like to thank the Public Works and Recreation staff for their work in preparation for the project and for their event day coordination. The residents of the neighborhood are especially thankful, too. Kudos to everyone for a job well done! *Sincerely, Rachel Beld Vistans ROC 2010 Project Director*

Win a new iPod Nano… purchase raffle tickets through November 19.

Helping the Troops … HMLA 369

From Cheryl Mast, City Manager's Office

This past May, Vista's adopted Marine Unit (Helicopter Light Attack Squadron 369), was deployed to Afghanistan to provide support for ground troops. The unit will be returning home prior to Thanksgiving. The City would like to welcome the troops home from their tour of duty and extend our Vista "Thanksgiving wishes" by providing a few needed items, such as water, food, towels, and other non-perishables to the unit and their families.

To fund the purchase of the items, we are selling raffle tickets for a brand new 16gb iPod Nano! This new generation offers a multi-touch screen, comes with a built-in clip for ease in attaching to pockets, and is just over one square inch in size. Check out the details at http://www.apple.com/ipodnano. It would make a wonderful holiday gift for you or someone else. For more information, contact Cheryl Mast at extension 1419.

Tickets can be purchased through November 19th for $2 each, or 7 for $10, and may be obtained at a few locations:

Cheryl Mast x1419: City Manager's Office -Civic Center 3rd Floor
Renee Bowman x1406: Reception Desk - Civic Center 1st Floor
Lyn Dedmon x1617: Public Works Building A

Southern California's rainy season began October 1 … and runs through April.

The Rainy Season is Upon Us

A Message from the Water Quality Protection Division

Did you know during the month of October, we were already several inches over our normal rain amount for the month? San Diego's rainy season began October 1 and runs through April 30. The Water Quality Protection Program Division invites all employees to participate in pollution prevention during this rainy season. We are trying to reduce the amount of stormwater and urban runoff pollution from entering our creeks and ocean.

We invite you to be proactive by reporting any stormwater violations you may observe while travelling around the City. Violations include: sediment, trash and debris that could enter our storm drain system; fluids and/or fresh significant oil stains in our shopping centers or places of business; accumulation of leaves and organic debris in the curb/gutters; and any other urban runoff you may observe flowing off of public and private property.

With your help, we can make a concerted effort in assuring that only rain enters our storm drains.

Report violations at extension 1686 or e-mail waterquality@cityofvista.com. Check our City's web page under "Engineering Water Quality Protection" for storm water pollution prevention tips. Thank you for your participation in our efforts.

CITY OF VISTA
Water Quality Protection Program

New! Café 200's Mug Club and Gift Cards

Fast I Fresh I Delicious!

Everyone knows Café 200 is fast, fresh and very delicious. However, did you know you can purchase gift cards in quantities of $10, $25 and $30 amounts? Beginning November 17 purchase your gift card at the 1st floor Cashier's Office in the Civic Center. The new gift card is a convenient way to pay for your purchases at Café 200 and it also makes a great gift during the holiday season.

Drinks I Rewards I Free!

We want to make sure every experience at Café 200 is a great one. Join the Café 200 Mug Club rewards program and receive a free beverage after 10 drink purchases. The more you use your Café 200 Mug Club card the more rewards you can rack up – resulting in the 11th coffee or tea being on the house! Ask for your rewards card at Café 200 beginning November 17.

New Art Pieces in the Civic Center

A number of new pieces of wall art have been installed in the Civic Center's interior areas. Historical photos have been installed near the City Council conference room; old and new photos of the four city hall buildings are in the Civic conference room; pictures of the Adobe are on the first floor; and photos of the new Civic Center are in the City Council's closed session conference room. In addition, historical photos have been installed outside of the Vista Room, and a new collage is inside the Vista Room. Photos of the creekwalk are located in the Business License area, and photos of the City's theaters are in Community Development area; a nature collage is visible as you enter Community Development from the lobby. A collage has been placed in the Vistix Office. A few more pieces will be added in the next few months - stay tuned!

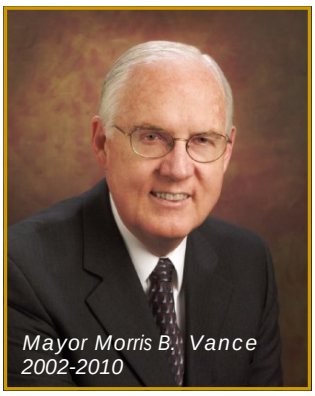
Mayor Morris B. Vance
2002-2010

Farewell to Employees

As many of you are aware, I am retiring as Vista's Mayor. I knew from the outset that serving as the Mayor would be an exceptional experience, but nothing prepared me for the immeasurable pleasure I have experienced in meeting and working with so many City of Vista employees, some of whom I've known from my days as City Manager of Vista. Combined, all of you represent a tremendous amount of institutional knowledge and care for this City.

I appreciate your help in moving forward the community and the City Council's vision for Vista over the years, especially those who assisted with Prop L. My deepest gratitude goes out to those who have worked with me and stood by me through this journey. Thank you for your valuable input, and most importantly, for all you have done and are doing for our City.

Although I will no longer be working day to day with the City, I am confident our elected officials and City employees will continue the efforts to enhance the City of Vista. We all know Vista is a special place; but it is really a special place because of people like you.

Thank you. I wish you happiness and success as you continue your journey in Vista and beyond.

Morris B. Vance
Mayor

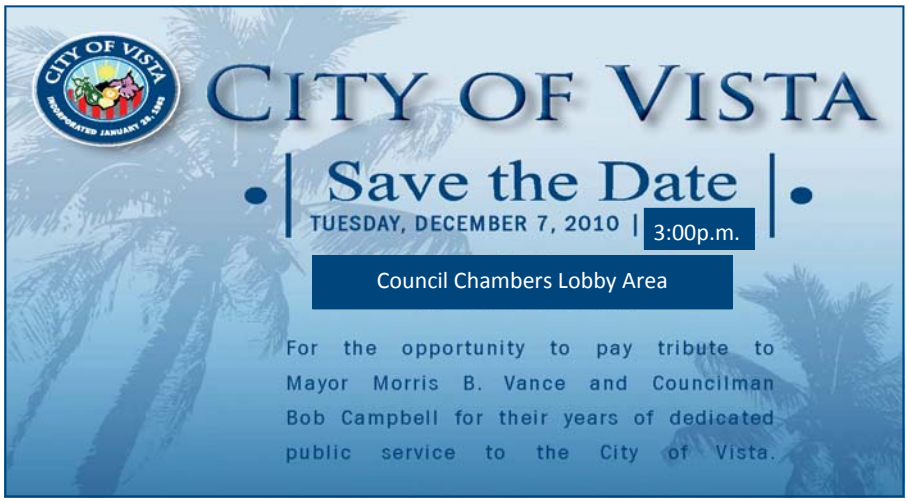

Retirement Reception - December 7

A reception will be held on Tuesday, December 7 at 3 p.m. for City employees to bid farewell to retiring Mayor Morris Vance and Councilman Bob Campbell. The reception will be held in the lobby area on the second floor outside of the City Council Chambers. Please stop by to say your goodbyes to the Mayor and Councilman.

I appreciate your help in moving forward the community's vision ....

Election Results 2010

**Results are unofficial until confirmed by the Registrar's Office on Nov. 30.*

Newly elected officials will be sworn in to office on Dec. 7 at 5:30 p.m. Each will serve a 4 year term.

Mayor
Judy Ritter

Council Member
John Aguilera

Council Member
Dave Cowles

Employee news

Employee Recognition Awards 2010

On October 2, three employees received recognition for their outstanding service to the City of Vista. Congratulations to **Becky Weiss**, City Manager's Office: Mayor's Excellence in Service award; **Ken Shaw**, Public Works: Manager of the Year; and **Chris Mitchell,** IT: Employee of the Year. Mayor Vance presented individual awards to the recipients on October 12 during the City Council meeting. Kudos to all!

Becky Weiss, Mayor's Excellence in Service

Ken Shaw, Manager of the Year

Chris Mitchell, Employee of the Year

Notable Recognition

Joshua Fretwell, Community Development - Construction Inspector II

I recently worked with **Rudy Luna** (Public Works Supervisor) on some street sign issues at the Foothill project. Every time I deal with Rudy it a refreshing experience because he is very easy to work with. I think Rudy is a team player and is always willing to assist in any way he can…. so often the people that make a real difference get overlooked. As a guy who is on the street every day, I see the difference Rudy is making in the City of Vista. I am sure that if you ask around our department that most people who work with Rudy would agree that he is a fine example of what a City employee should strive to emulate.

Congratulations … Newly Married

On September 4, **Imelda Valdivia**, Community Development married Michael Huerta (staff sergeant for the Air Force). Her beautiful flower arrangements were designed by Monica Wyman, wife of Jeff Wyman, Redevelopment & Housing.

Newest Members in the Family

Keith Gemmell, Recreation & Community Services and his wife Shannon, welcomed their first child Camden Keith on October 13. Camden weighed in at 7 pounds, 9 ounces and was 19 inches long.

Chad Wodarczyk, Public Works and his wife Teresa welcomed Tayler Rose on October 14. Tayler weighed 6 pounds, 4 ounces and was 19 inches long. Tayler joins twin sisters Ava & Dannica.

Camden Keith Gemmell
7 lbs, 9 oz.

Tayler Rose Wodarczyk
6 lbs, 4 oz.

Imelda and Michael Huerta

NEW HIRES …. WELCOME

Maia Hodge
Kitchen Aide II
Recreation & Comm. Svs

Cheryl Mast
Management Analyst
City Manager's Office

Vernon Sanders
Senior Building Inspector
Community Development

RETIREMENTS … Good-Bye Larry Pierce

After five years with the City, **Larry Pierce** retired as Engineering Director on October 28. A lunch reception was held in the Morris B. Vance Community Room in his honor.

Larry, we wish you the best in your new endeavors!

Sudi Shoja, Assistant Engineering Director emcees the event.

Sandy Sotola (middle) and Tim Shell present Larry with gifts from the Engineering Department.

Larry Pierce enjoying his retirement lunch.

November Birthdays

1	Dianne Costa	Finance
2	Robert Rhoades	Recreation & Comm Svs
3	Alberto Delgado	Public Works
3	Gilbert Obregon	Recreation & Comm Svs
3	Robin Putnam	Community Projects
3	Joel Stangeland	Fire
4	Cindy Sanchez	Public Works
5	Becky Weiss	City Manager's Office
5	Sam Hasenin	Engineering
8	Michele Koller	Redevelopment & Housing
9	Rob Anderson	Recreation & Comm Svs
10	Raymond Tellechea	Fire
12	Robert Castaneda	Public Works
13	Don Shellhammer	Fire
15	Jim Chumbley	Fire
15	Diane Collier	Fire
16	Michael Romeo	Fire
19	Denise Collins	Finance
20	Pete Grover	City Attorney's Office
21	Angela Palasik	Recreation & Comm Svs
21	Mike Parks	Public Works
21	Christopher Place	Fire
22	Dolores Gascon	Human Resources
24	Bob Gmur	Fire
25	Bob Stacey	Fire
26	Christian Sherrard	Public Works
27	Mark Gray	Fire
28	Matt Atteberry	Engineering
29	Darren Kaplan	Fire
30	Marilyn Anderson	Fire
30	Rosanne McElhaney	Redevelopment & Housing
30	Brian Mentzer	Fire

December Birthdays

1	Clarence Rich	Code Enforcement
3	Manny Robles	Code Enforcement
4	Rick Minnick	Fire
8	Julie Chapin	City Manager's Office
9	Jocelyn South	Finance
9	Dave Wilson	Code Enforcement
11	Daniel Schultz	Recreation & Comm Svs
10	Victor Lievanos	Public Works
11	Kevin Ham	Economic Development
12	Gabriel Mendez	Public Works
13	Jeff Bauer	Fire
13	Richard Caldwell	Engineering
13	Kim Crawford	Recreation & Comm Svs
13	Emily Downing	Fire
16	Christian Haney	Fire
17	Bill Rawlings	Redevelopment & Housing
18	Kathy Brombacher	Recreation & Comm Svs
19	Patrick Sadowski	Public Works
20	Johnny Medina	Public Works
21	Ramy Kaufler	Recreation & Comm Svs
21	Jan Yelland	Finance
23	Sandra Sotola	Engineering
24	Derek Fried	Fire
24	Brien McDonald	Fire
25	Jose Lopez	Public Works
25	Paulette Renfro	Public Works
27	Marty Parish	Fire
28	Imelda Huerta	Community Development
28	Joshua Spann	Fire
30	Darold Pieper	City Attorney's Office

November Years of Service

3	Eydee Amato	Human Resources
4	Derek Fried	Fire
4	Christian Haney	Fire
4	Matt Kennedy	Fire
4	Joshua Spann	Fire
5	Kathy Hollywood	City Clerk
5	Erika Shaw	Code Enforcement
6	Manny Robles	Code Enforcement
8	Victor Lievanos	Public Works
9	Julie Chapin	City Manager's Office
11	Marilyn Anderson	Fire
11	Kurt Groscup	Community Development
11	Susan Perciavalle-Brundu	Economic Development
13	Larry Greaves	Public Works
13	Jeff Schroeder	Fire
13	Dale White	Public Works
16	Denise Collins	Finance
18	Lisa Feeney	Public Works
21	Ralph Medina	Public Works
26	Rod Krueger	Public Works
29	Rick Minnick	Fire

December Years of Service

2	Tracy Harrison	Finance
3	Ligeia Heagy	Engineering
3	Joshua Fretwell	Community Development
3	Angela Palasik	Recreation & Comm Svs
3	Chad Wodarczyk	Public Works
6	Johnny Medina	Public Works
7	Dianne Costa	Finance
11	Rob Anderson	Recreation & Comm Svs
11	Renee Bowman	City Manager's Office
11	Cindy Choquette	Finance
13	Mike Parks	Public Works
14	Armando Sandoval	Public Works
19	Ken Shaw	Public Works

CITY OF VISTA CALIFORNIA

Mar /Apr 2011

SPOTLIGHT on VISTA

Employee newsletter

Message from the City Manager

Inside This Issue

1 City Manager's Message
2 Employee of the Quarter
3 Health Tips
4 City Information
5 Benefits Information
6 Employee News
7 Promotions & New Hires
8 Birthdays / Service Years

"I am deeply grateful to all City employees for the continuing sacrifices made over the past several years."

Dear Employees:

The lingering effects of the national recession are once again impacting our budget in the fiscal year ahead. While the economic recovery appears to be gaining strength in parts of the state, our challenge today is the same as it was in the first three years of the recession: We must find ways to reduce our budget without abandoning essential services for our residents.

This upcoming Fiscal Year 2011/12 proposed budget marks the third consecutive year this city has reduced spending. The decline in tax revenues and fees for service have been coupled with years of cost increases in areas such as employee health care and retirement costs, utilities and fuel. It will cost us more to deliver the same services next year then what we delivered this year, and we will have less money available next year to provide those services.

This City continues to cope with budget shortfalls that are unprecedented in our 48 year-old history. With current reductions being made for the 2011/12 fiscal year, it is estimated there will be another $4-5 million shortfall in the 2012/13 fiscal year. We have dealt with the previous combined shortfalls with one time monies, elimination of services, contracting out of services and staff reductions. While not filling vacancies and staff reductions have saved the city money, it has put pressure on all of our departments. I am deeply grateful to all City employees for the continuing sacrifices made over the past several years. I recognize that this three-year period of declining budgets has been difficult for our city workers, requiring that everyone make do with limited resources.

We are still receiving cost savings suggestions from employees, and I encourage you to send in any ideas you may have. Do not assume we have already heard the idea - it is possible that whatever you are thinking has not yet been submitted. I have also received several e-mails and questions from employees asking if Café 200 will remain open. Café 200 must sustain itself, so I encourage you to continue using the services to enable it to be 100% self-sufficient.

In conclusion, while we are seeing signs of an economic recovery, and we know our long-term economic outlook is improving; we still must navigate through these next few difficult budget years. I welcome the opportunity to discuss this budget in further detail with all employees and to answer any concerns or questions. In this recession more than any other, our city workforce has shared the sacrifice, and I thank you for your efforts.

Rita L. Geldert

Ligeia Heagy, Employee of the Quarter

Kiwanis Employee of the 1st Quarter 2011

Ligeia Heagy, Kiwanis Employee of the Quarter

Engineering Management Analyst, Ligeia Heagy has been awarded the Kiwanis Employee of the Quarter. Congratulations to Ligeia! A very conscientious and hard working employee, Ligeia manages over 50 contracts, each with multiple project involvement. In addition, she processes all of the documents for the Engineering Department and prepares operational and Capital Improvement Program budgets.

Ligeia has gone above and beyond her job requirements. This past year, she prepared, submitted and received funding for 15 grant applications submitted on behalf of the Engineering Department. This resulted in over $26 million in low interest loans to install sewer and storm drain lines throughout the City. Ligeia spent much of her personal time completing the complex grant application packages and also submitted several other applications that have resulted in successful funding of city projects.

Over the past two years, Ligeia has been following her personal interest by obtaining her certificate in Environmental Science. As a result, Ligeia has volunteered with several projects requiring an environmental permitting process. She has developed an in-depth understanding of the City's assets and challenges. Ligeia has developed a keen interest in clean up and fostering health of the creeks running through the City and has been instrumental in facilitating multiple projects that have vastly improved the conditions of the creeks, their flow and the life around them.

Ligeia always has the best interests of the City and its projects at heart, and goes above and beyond to ensure the successful completion of all projects. Kudos Ligeia!

Two HMLA members choose gifts, donated by the City, for their children.

HMLA Sends Heartfelt Appreciation to Staff

Cheryl Mast, City Manager's Office

Vista employee contributions during the December holiday season resulted in some very happy HMLA 369 members and their families! The HMLA members are extremely grateful for everyone's generosity, and appreciate the continued support Vista employees demonstrate all year long.

Mayor Judy Ritter, Assistant City Manager Patrick Johnson, and Management Analysts Bill Crane and Cheryl Mast recently attended the HMLA 369 *Change of Command* ceremonies at Camp Pendleton. The ceremony was prestigious and patriotic, and we were thrilled to support our unit in one of their time-honored traditions.

Scout Kyle Gemmell stands in front of the new fence he constructed with other volunteers.

Boy Scouts, Volunteers Spruce Up Moonlight

Dan Kays, Recreation & Community Services

Kyle Gemmell, from Boy Scout Troop 715, completed his Eagle Project at the Moonlight Amphitheatre on January 29. Kyle, along with other scouts from Troops 715 and 702, and volunteer parents and friends, spent two Saturdays replacing the Moonlight's old and decaying split rail fence. They also installed an accompanying sign to inform patrons the Moonlight is a "No Smoking Venue". The Moonlight wishes to thank Kyle for his leadership and all the volunteers for their efforts to help keep the Moonlight beautiful for years to come!

Civic Center Reminders

The new parking lot off Alta Vista Drive is open. Please continue to direct the public to this visitor parking lot. All print materials with public parking information should reflect the Alta Vista parking lot as the primary public parking area.

Remember to turn off the lights in the conference rooms. All other offices/open areas have automatic sensors that will shut off the lights… with the exception of the conference rooms. Your help is appreciated in conserving energy.

If you observe someone walking in the new landscaping, politely refer him/her to the walking trails or public walkways.

Health Tips From Human Resources

How to heal chapped lips: Dry lips can be caused by many different factors, but in the winter, dehydration is usually a big cause. This is because of the cold, dry weather outdoors and the heated air indoors. To hydrate your skin from the inside, drink plenty of water. Coconut water is also a good fluid to help keep hydrated.

Supplement your diet with foods rich in vitamins A, B, and C; such as broccoli, spinach, or other green leafy vegetables. In addition, omega-3 fatty acids help maintain the integrity of the skin cells, so they will stay hydrated.

Grow You Own Cold Remedies: Grow these green cold remedies and save yourself some cash this cold and flu season. All of these herbs should be grown in full afternoon sun. A deep bright windowsill works best. Use a separate pot for each herb.

- **Rosemary** - a rosemary bath will help relax achy muscles. Crush three to four rosemary sprigs, then place in a muslin bag. Thrown into a warm bath and soak for about 20 minutes.
- **Sage** - Help soothe a sore throat with an anti-inflammatory sage gargle. Create a strong tea by adding two teaspoons of crushed fresh sage leaves in 8 ounces of hot water. After steeping for 10 to 15 minutes, strain the tea, and stir in one-half teaspoon of sea salt. Gargle for 30 seconds (do not swallow). Repeat throughout the day.
- **Thyme** - Soothe clogged sinuses with a thyme steam inhalation. Pour three cups of boiling water over 2 tablespoons of crushed fresh leaves in a medium bowl. Place your face about 12 inches above the fragrant water, close your eyes and take deep breaths. Cover your head with a towel, to hold in the healing vapors.

Fight Winter Weight Gain: Tips to keep you moving

- Take the stairs instead of the elevator; better yet, take every other step. You will burn more calories if you climb the stairs one by one. You use larger muscle groups when you skip a step. Turn the stairs into a mini workout!
- Don't settle on the couch until you have completed your work-out for the day. Change straight into your gym clothes from your work clothes - skip the warm, comfy couch clothes. If you still can't pull yourself off the couch - then practice push-ups, or use resistance bands during commercial breaks. OR … use the Wellness Room during lunch breaks.

Have a Suggestion?

Brainstorm? Idea? Comment?

Don't forget to put down your thoughts and drop them in the suggestion box in the Employee lounge. The contents will be collected and reviewed each working Friday, then commented on at All-Hands meetings, or, if action is needed immediately, be taken care of. Remaining All-Hands meetings for 2011 are scheduled for **May 26, August 11** and **November 10**.

Make A Wish Come True | Vista's Big Give

Vista's BIG Give scheduled in February was a great success. The "Big Give" campaign raised over $43,000 for the Make-a-Wish Foundation. The funds will help pay to make wishes come true for five year-old Justin and ten year-old Molly. Justin wants to meet every character at Disney World, and Molly has ambitions to appear on a television show filmed at Disney World. The remaining funds will go to the Make-A-Wish Foundation. Many thanks to those who contributed to this worthy cause!

Justin sits with a giant teddy bear during the Big Give presentation.

City's Facebook/Twitter

The City of Vista has been using Facebook and Twitter for distributing information on activities, announcements, events and news bulletins. Like us on Facebook - follow us on Twitter - to get more information about what is gong on in the city. If you have news relevant for distribution, send it to Andrea McCullough.

Got Oil? Recycle

A message from the Storm Water Division

Engine maintenance is one aspect of car ownership. Cars should have their engine oil replaced when the oil becomes dirty. What happens to the dirty oil? RECYCLING it is the best solution. Used oil and oil filters can be recycled. One gallon of used oil can be re-refined to produce 2.5 gallons of lubricating oil. Re-refining oil requires less energy than producing motor oil from crude oil stock. Recycling used oil is good for the environment! If people who change their oil at home nationwide recycled their used oil - there would be enough motor oil for more than 50 million cars each year!

Oil and Water

Don't mix! Oil is insoluble in water. Oil from a single oil change (1 gallon) can pollute a million gallons of freshwater – a year's supply for 50 people. It is also a major source of contamination in waterways, sticking to sand, plants, and animals. Furthermore, when oil creates a film on the surface of water (for instance over a creek, pond, or lagoon), it disrupts the oxygenation process that aquatic plants and animals depend upon to survive. Never pour used oil down a household drain, toilet, or sink disposal. Used oil can damage the infrastructure at our wastewater treatment facilities. Recycle used oil, and other household hazardous waste at the North County Household Hazardous Waste Facility across from the Public Works center. The facility is located at 1145 E. Taylor Street and is free to residents from the cities of Vista, Carlsbad, San Marcos, Escondido, Encinitas, Del Mar, Poway, Solana Beach and National City. (Proof of residency is required). Hours of operation: Saturdays, 9 a.m.-3 p.m. For more information, call 760.714.1195 or go to reginonalsolidwasteassociation.com.

IT Help Desk

If you experience IT technical problems, please remember to send in a service request through the intercity system: www.cityofvista.com/intracity/it or send an e-mail to (helpdesk@cityofvista.com) for questions and sending screen shots relating to issues.

Full Time Student Notification Required for Delta & VSP

Please make note that if you have a dependent who is approaching his/her 19th birthday, he/she will automatically be dropped from both Delta Dental and VSP vision coverage once that milestone is reached, unless you provide Human Resources with proof that the dependent is a full time student (dental and vision insurances are not included in the recent Health Reform Act changes). It is the member's responsibility to provide proof of full time student status, which is considered to be 12 units or more at an accredited college, or equivalent at a vocational school. You will need to provide a print-out of the classes the dependent is enrolled in with the corresponding units, the name of the college/vocational school, and the semester on the same print-out. The name of the student should appear on the print-out as well. This can usually be obtained from the college website. For vocational schools, you can obtain a letter from an administrator on the school letterhead, stating the dependent is a full-time student and the dates involved. Once this information is provided to the Human Resources Office, the dependent will be reinstated until their next birthday, when the process will need to be repeated until the dependent reaches his/her 25th birthday, when they are no longer eligible to be covered. If you have any questions, please contact Sonya Cramer, at extension 1048, in Human Resources.

2010 CalPERS Member Statements Mailed in Oct/Nov

Annual Member Statements (AMS) were mailed to members' home addresses beginning October 25, 2010. Members who have opted to "go green" or who have an invalid address will not receive a printed statement. All members may view and print their AMS online at **my.calpers.ca.gov**. The AMS includes the member's total amount of CalPERS service credit, the breakdown of contributions and interest, their employer(s), and retirement formula(s). Information is derived from payroll reports received by CalPERS through July 31, 2010. Fiscal Year 2009/2010 member contributions and service credit data received after July 31, 2010 will be reflected on the 2011 AMS.

CalPERS Member Home Loan Program Suspension

On December 15, 2010, the CalPERS Board of Administration approved the suspension of new loans in the Member Home Loan Program (MHLP) and the Secured Personal Loan Program. As a result, CalPERS will no longer be accepting mortgage applications. Members with existing CalPERS loans are not affected. CalPERS Member Home Loan Lenders and Loan Officers have been provided with additional direction and guidelines for processing loans that are in progress. Loans currently in the pipeline are expected to be completed over the next three months. Members inquiring about the status of their in-process CalPERS member Home Loan should refer to their loan officer. For more information, go to **calpers.ca.gov.**

News for Anthem Blue Cross Members

From Anthem Blue Cross

Members in fully-insured and ASO, individual, small and large group plans will no longer be receiving a paper Explanation of Benefits (EOBs) in the mail if they have zero liability. Implementation of this initiative began in June 2010, and was completed in November.

An Explanation Of Benefit (EOB) is a document sent by the insurance company that summarizes the healthcare service(s) you received and the amount that was submitted for payment. The EOB will explain how much of the cost of services was paid to the medical provider, how much may have been applied to a deductible, if applicable, and how much is left for the patient to pay, if any. It is not an invoice. It could be useful information that may help you track your healthcare expenditures and serve as a reminder of the medical services you received during the past several years.

Members can now access their EOBs by logging into the **anthem.com/ca** website and selecting Plans & Benefits. If members experience any issues accessing their EOB's via the web site, they can contact Customer Service using the phone number listed on their ID card (1.800.288.6921). This initiative was implemented in an effort to improve member communications, reduce member confusion, and streamline the administration of health benefit plans. "We are confident that suppression of mailing $0 EOBs will (1) positively impact and improve our members' communication experience; (2) eliminate some member confusion as to why they receive what looks like a bill, if they don't owe anything; (3) help us be more environmentally responsible."

Employee news

Bill Crane to Move to Recreation & Community Services

From Patrick Johnson, Assistant City Manager

As most are aware, **Mary Dreibelbis** will be retiring at the end of June. City Manager's Office Management Analyst **Bill Crane** will be returning to the Recreation & Community Services Department to assume the role of Community Services Program Manager upon Mary's departure. Bill will be working with Mary over the next few months to ensure a smooth transition.

Bill Crane, City Manager's Office

Recognition | Kudos | Appreciation

Mr. Ben Bolen, Vista resident, thanks the Senior Center Staff

I just wanted to thank you (**Leisa Bustanoby**) and the entire staff (at the Senior Center) for the delicious meals you delivered to my wife, Linda. She enjoyed each and every one of them, while she was with us. Linda passed on January 26, and when I informed your driver (**Danny Shultz**), he showed great concern towards me, etc. and said he would finish out the week's delivery. When he learned that Linda was beginning to go down hill more rapidly, he would spend a few minutes with Linda and I, almost every day. Again, my thanks and "Hats Off" to your organization and the services it provides.

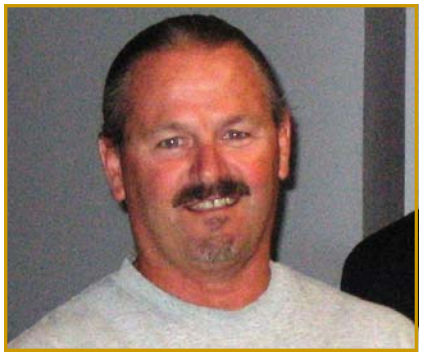

Danny Shultz, Senior Center

Kaye Van Ned, Soroptimist International of Vista, to Public Works Crews

Dear Paulette, Cat, JD and staff,
On behalf of the members of Soroptimist International of Vista and the N. San Diego Human Trafficking Task Force, thank you for your help and support preparing for our Awareness Day event. The banner proudly flew over Vista Village Drive, and the 11th hour placement of the No Parking signs and barricades was a godsend. Public Works gets an A+!

Cynthia DeFelice Lasher, Posting on Facebook to Public Works

Public Works - I originally thought the road median in front of Rancho Buena Vista High was a dumb idea but you have converted me. The three way stop is great. Having lived across the street for 15 years I have noticed a difference - it is still chaos when the kids get out, but at least it's more organized chaos. Good job!

Adieh Ameen, Posting on Facebook

I am so happy the City of Vista has dedicated itself in planting some trees! ♥ thank you!

Charlotte Cruz Pierce (left), 7 lbs; and Juliet Cruz Pierce, 6 lbs, 6 oz.

Newest Members in the Family

Kim Cruz, Redevelopment & Housing, and her husband Bill welcomed twin girls, Charlotte and Juliet on December 11. Charlotte weighed 7 pounds, and little sister Juliet weighed 6 pounds, 6 ounces.

Ross Vagelatos, Fire, and his wife welcomed their first child, Brayden Ross on January 16. Baby Brayden weighed in at 8 pounds, and 20 inches long.

Brayden Ross Vagelatos, 8 lbs.

Yosemite Sam's F-18

By Rod Salazar, Public Works

Mark Lian, Public Works, (call sign YOSEMITE SAM) is considering flying F-18s on the weekends. He said the only thing holding him back is that he would have to cut off his beard…but his commute time would be considerably shorter!

Public Works, Mark Lian

NEW HIRES

Mary Colonello, Bus Driver, Recreation & Community Service

Nixy Flores, Senior Office Specialist, Community Development

Deb Lopez, Management Analyst, Redevelopment & Housing

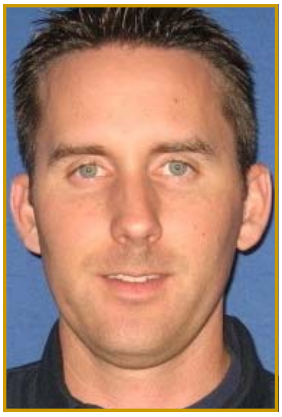

James Williams, Fire-fighter/Paramedic, Fire

PROMOTIONS

Robbie Bush, Senior Development Services Technician

Julie Chapin, Senior Office Specialist

Nick Cunningham, Information Technology Technician

Roxann O'Shaughnessy, Senior Office Specialist

James Salsbury Information Technology Analyst

CITY OF VISTA
CALIFORNIA

March Birthdays

1	Frank Durazo	Community Development
1	Ken Shaw	Public Works
2	Vernon Sanders	Community Development
5	Leisa Bustanoby	Recreation & Comm Svs
12	Craig Trammell	Public Works
12	Roxann O'Shaughnessy	Engineering
12	Jon Stone	City Attorney
13	Sandie Hargis	City Attorney
13	Abel Santana	Fire
14	Jeff Wyman	Redevelopment & Housing
16	Nixy Flores	Community Development
17	Nancy Gallagher	Human Resources
20	Ryan Snyder	Recreation & Comm Svs
21	Elaine Blackburn	Community Development
22	Rachael Kloke	Recreation & Comm Svs
22	Bill Crane	City Manager's Office
22	Lisa Feeney	Public Works
23	Rita Geldert	City Manager
25	Tony Tirado	Engineering
27	Amy Eustace	Recreation & Comm Svs
28	Claire Lopez	Finance
28	Tim Shell	Engineering
29	Bill Fortmueller	Recreation & Comm Svs
30	Jeanette Farris	Finance
31	Adam Finestone	Community Development

April Birthdays

1	Keith Gardner	Public Works
4	Mark Standifird	Fire
5	Louie Sanchez	Public Works
6	Kathy Monroe	Fire
8	Keith Gemmell	Recreation & Comm Svs
13	Troy Hassey	Community Development
13	Deb Lopez	Redevelopment & Housing
15	Jeffrey Gazdayka	Fire
15	Maureen Stroud	Recreation & Comm Svs
16	Keith Kaumeyer	Fire
17	Chad Wodarczyk	Public Works
18	Brian Gregson	Fire
20	Sue Crossman	Public Works
21	David Kennedy	Fire
24	Juan Castro	Public Works
24	Mary Haley	Public Works
25	Grant Valstad	Fire
26	Jamie Osorio	Engineering
27	Michael Madden	Fire
28	Mike Beissel	Fire
28	Mark Lian	Public Works
29	Hans Schmidt	Fire
29	Anthony Van Slyke	Fire
30	Natalie Jacobs	Human Resources

March Years of Service

2	Steve Belda	Code Enforcement
2	Gregory McClellan	Fire
3	Brien McDonald	Fire
3	Christopher Place	Fire
3	Stephen Rytell	Community Development
3	Raymond Tellechea	Fire
4	Jocelyn South	Finance
5	Kim Cruz	Redevelopment & Housing
6	Matt Atteberry	Engineering
6	Teresa Graham	Redevelopment & Housing
8	Sandra Wolfe	Redevelopment & Housing
9	Cat Cobian	Public Works
9	Brendan Halle	Fire
9	Chris Hammond	Fire
11	Dan Kays	Recreation & Comm Svs
12	Sandy Bobek	IT
13	Nancy Hoffman	Human Resources
14	Al Cuevas	Public Works
21	Mark Gray	Fire
21	Sue Crossman	Public Works
23	Mary Dreibelbis	Recreation & Comm Svs
24	Javier DeHaro	Public Works

April Years of Service

1	Keith Gardner	Public Works
2	Michael Madden	Fire
3	Sam Hasenin	Engineering
3	Adam Robey	Public Works
4	Elaine Blackburn	Community Development
4	Tiffany Luther	Recreation & Comm Svs
8	Kathy Monroe	Fire
10	Dolores Gascon	Human Resources
10	Jeff Wyman	Redevelopment & Housing
11	Rosanne McElhaney	Redevelopment & Housing
14	Leisa Bustanoby	Recreation & Comm Svs
15	Diane Collier	Fire
15	Robbie Ford	Fire
21	Jon Blumeyer	Fire
21	Scott Duncan	Fire
21	Mike Easterling	Fire
21	Jim Gelrud	Fire
21	Brian Mentzer	Fire
21	Marty Parish	Fire
21	Richard Tilch	Fire

CITY OF VISTA CALIFORNIA
June 2011

CITY OF VISTA
Water Quality Protection Program

Buena Vista Lagoon

What is a Watershed?

A Watershed is an area of land that drains to a common water body. All rain water and urban runoff drains to creeks, lakes, lagoons, and ultimately to the Pacific Ocean. Vista is located in the San Luis Rey and Carlsbad Watersheds. These watersheds include the waterways we know as the San Luis Rey River, Guajome Lake, Loma Alta Creek, Buena Vista Creek and Lagoon, Agua Hedionda Creek and Lagoon, San Marcos Creek and Batiquitos Lagoon, and Escondido Creek and San Elijo Lagoon. The majority of Vista is within the Carlsbad Watershed. In general, the northern half of the City drains to Buena Vista Creek and the southern half drains to Agua Hedionda Creek.

We all want clean water so we can enjoy our waterways throughout the year and especially in the summer months. We can achieve this through the vigilance and awareness of our every day activities. Doing our part will make a difference, one step at a time. Urban runoff pollution comes from things we do every day. Everything that enters our storm drains flows to our rivers, creeks, lagoons, and the ocean without any type of treatment.

Studies show that urban runoff is a significant source of water pollution. Urban runoff may contain pollutants such as leaking oil and other fluids from automobiles, fertilizers and pesticides from lawns and gardens, failing septic tanks, residential car washing, and pet waste. Below are some tips you can follow to do your part in reducing water pollution.

Summertime Tips:

Avoid over-watering: Adjust sprinklers so only your lawn and plants get watered - not the driveways, sidewalks and streets. Use efficient irrigation methods such as drip systems, soaker hoses and micro-sprinklers. Remember to check for leaks regularly. Runoff from your residence carries pollutants as it travels to the storm drains!

Washing vehicles: The best method is to use your neighborhood carwash which recycles the water; however, when washing your vehicles at home use biodegradable soap sparingly. Wash your vehicle on the lawn and use a bucket and a hose with a shut-off nozzle. Whenever possible, avoid letting the water run into the street; instead, water plants, flowers, trees and grassy areas.

Patios, Sidewalks & Driveways: Sweep, do not hose down these areas. The most environmentally efficient way to clean your sidewalks, patios and driveways is to sweep up debris and rake up leaves and other plant matter. Dispose of trash and yard waste in the appropriate containers.

Pet Waste: Be sure to pick-up after your pets. Pet waste can easily be disposed of by placing it in a plastic bag and putting it in your trash container.

Yard Waste: Most yard waste is recyclable! You can use your yard waste container or start a compost pile.

Free Household Hazardous Waste Collection Facility

Location: 1145 E. Taylor Street

(across the street from the Public Works Yard)

Hours: 9 a.m. to 3 p.m.

SATURDAYS ONLY

No appointment is necessary.

Proof of residency is required.

Here are some common household wastes that require special attention:

Home Improvement Repairs: Materials such as paints, brushes, paint thinners, paint strippers, adhesives, stains, varnishes, sealants and wood preservatives as well as concretes and tiling products, etc. pollute the waterways when they are allowed to enter the storm drain. Please be responsible when disposing of these materials.

Hazardous Materials: Household toxic products such as drain openers, oven cleaners, wood and metal polish, cleaners for grout, fluorescent light bulbs, toilet bowls and disinfectants should be disposed of properly.

Automotive Products: Oil and fuel additives, grease/rust solvents, carburetor/fuel injector cleaners, air conditioning refrigerants, starter fluids, etc. are all considered to be hazardous waste.

Lawn and Garden Products: Pesticides, Herbicides, and Fungicides are poisons.

Medications: Unwanted, unused, or expired prescription drugs can damage our environment through improper disposal. Secure collection containers are located at several Sheriff's facilities to drop off unused medications at any time.

Home Sharps Disposal: Home-generated ***sharps*** are defined as disposable hypodermic needles, needles with attached tubing, syringes, blades, lancets, acupuncture needles, and other medical devices that are used to penetrate the skin for self-injection, to deliver medication, or to conduct a blood test.

For more information regarding disposal of these types of wastes, please contact the HHW facility.

Household Hazardous Waste Disposal

Vista Residents 1-800-714-1195 (Mon-Fri)

Non-Vista Residents 1-877-713-2784 (Mon-Fri)

www.cityofvista.com/departments/pubworks

Water Quality Protection Program

Stormwater Hotline (760) 726-1340 x 1686

E-mail waterquality@cityofvista.com

www.cityofvista.com/departments/engineering/WaterQuality.cfm

We Wish You All A Safe Happy Summer !

APPENDIX G-2
HOUSEHOLD HAZARDOUS WASTE OUTREACH CARD

Household Hazardous Waste

does not belong in the trash or down drains.

Hazardous materials need to be kept separate from your recycling and garbage. Products that have words: *Caution, Warning*, or *Danger* require special care and cannot be discarded with regular household garbage.

Please bring these items in their original labeled containers to the North County Household Hazardous Waste Facility in Vista from 9 a.m. to 3 p.m. on Saturdays.

accepted items

- Household cleaners: wood/metal polish cleaners, disinfectants
- Oil/fuel additives, solvents, other automotive cleaners, fluids, air conditioning refrigerants, waxes, polishes
- Paint thinners & strippers, adhesives, paints, stains, varnishes, sealants, wood preservatives
- Pesticides, herbicides, fungicides.
- Miscellaneous: batteries, pool & photo chemicals
- Home-generated sharps
- Fluorescent light bulbs
- E-waste: computers, televisions, toaster ovens, etc.

location | contact | hours

- 1145 E. Taylor Street, Vista CA 92084
- (800) 714-1195
- 9 a.m. - 3 p.m. Saturdays *except holidays
- No appointment necessary

facility | use

- Drive through the facility.
- Staff will unload your vehicle.
- Free to residents of Vista and member cities of Carlsbad, Encinitas, Escondido, Solana Beach & San Marcos.
- Proof of residency required.

CITY OF VISTA
CALIFORNIA

Vista is a member of the North County Household Hazardous Waste Facility serving member cities in San Diego County

Los Deshechos Domesticos Peligrosos

Su lugar no es en el basurero ni en el sumidero

Los materiales peligrosos necesitan mantenerse separados de la basura y de los productos reciclables. Los productos que tiene indicaciones tales como: Precaución, advertencia o peligro requieren cuidado especial y no pueden ser desechados con la basura regular de la vivienda.

Por favor traiga estos productos en su envase original rotulado a las instalaciones de desechos peligrosos (North County Household Hazardous Waste Facility) en Vista los sábados de 9 a.m. a 3 p.m.

productos aceptados

- Productos de limpieza: Productos de limpieza/pulir de madera y metales, desinfectantes
- Aditivos para combustibles y aceites, solventes, otros limpiadores de automóviles, líquidos, refrigerantes de aire acondicionado, ceras, lustradores
- Tíner y decapante, adhesivos, pinturas, tintes, barnices, selladores, conservante de madera.
- Pesticidas, herbicidas, fungicidas.
- Misceláneos: Baterías/pilas, químicos para piscinas y cámaras fotográficas.
- Objetos punzantes/cortantes (posiblemente contaminados) de uso en el hogar
- Bombillas de luz fluorescente
- Basura electrónica : televisiones, tostadores, hornos, etc.

ubicación | contacto | horario

- 1145 E. Taylor Street, Vista CA 92084
- (800) 714-1195
- Sábado (con excepción de los días festivos) de 9 a.m.-3 p.m.
- No appointment necessary

instalaciones | uso

- Entre su vehículo a las instalaciones.
- Miembros del personal descargarán el vehículo.
- El servicio es gratuito para los residentes de Vista y de las ciudades asociadas de Carlsbad, Encinitas, Escondido, Solano Beach y San Marcos.
- Se requiere un comprobante de domicilio

CITY OF VISTA
CALIFORNIA

APPENDIX G-3
INSIDE VISTA NEWSLETTER

CITY OF VISTA
CALIFORNIA

inside vista

FALL 2010

Celebrating an Historic Event ...
New Civic Center Opens

• Vista Sports Park Opens • Magical Moonlight Amphitheatre • Citizens Leadership Academy

CITY OF VISTA
CALIFORNIA

A publication of the City of Vista

inside vista

(Left to right): *Council members Steve Gronke, Bob Campbell , and Frank Lopez with Mayor Morris Vance and Mayor Pro Tem Judy Ritter in front of the Civic Center's dedication plaque.*

Vista City Council

Mayor	Morris B. Vance
Mayor Pro Tem	Judy Ritter
Council Member	Steve Gronke
Council Member	Bob Campbell
Council Member	Frank Lopez, Jr.
City Manager	Rita L. Geldert
Asst. City Manager	Patrick Johnson

Vista City Council Meetings
Second and fourth Tuesday
of every month, 5:30 p.m.
City Council Chambers,
200 Civic Center Drive, Vista

Meetings are cablecast on the Friday after each meeting at 5 p.m. on Cox Communications (Channel 19) and Time Warner Cable (Channel 66) and webcast and archives are available online at www.cityofvista.com.

Civic Center Address
200 Civic Center Drive
Vista, CA 92084
(760) 726-1340

Civic Center Hours
7:30 a.m. to 5:30 p.m.
Monday through Thursday and alternating Fridays

Inside Vista Editor
Andrea McCullough, Communications Officer
Design: Drop Dead Design

Inside VISTA is published by the City of Vista three times a year as a public information service to the community.
Para recibir un resumen de este boletín en español, por favor llame al (760) 726-1340.

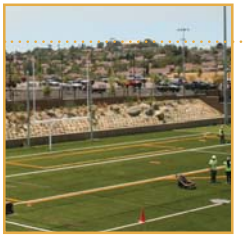

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General Municipal election: Nov. 2

For some familiar with the *Inside Vista* newsletter this incorporation into the RecGuide is a departure from previous years. The City has introduced the cost saving method of inserting the residential newsletter into the recreation guide to save on postage costs.

We hope you enjoy this issue of *Inside Vista!*

Vista Cuts Ribbon on New Civic Center

On June 29, the City celebrated a historic event with the grand opening of its new Civic Center. Over 500 residents, elected officials and area business owners attended the ceremonies. Mayor Morris Vance dedicated the new building to the residents of Vista and thanked the community for their support of Proposition L, the half-cent sales tax used to fund the construction of the project. The grand opening included an open house, guided tours of the new facility, and a ceremonial ribbon cutting on the front steps of the Civic Center.

The three-story Civic Center, including the single-story Community Room is approximately 100,000 square feet and has a building life span of 50 years. The municipal complex consolidates city offices, the community room which doubles as an emergency operations center during major disasters, and the City Council's chambers into a remarkable and environmentally friendly facility. The design of the project was led by the architecture firm, Carrier Johnson + Culture and the construction was managed by builder, Highland Partnership.

"We celebrate our city's new Civic Center, which will provide a critical link to Vista's growth and success," said Mayor Vance during the opening ceremonies. "Our goal was to create a civic center that would be more than just office space. We envisioned a place that would truly become the heart of the community – known as a gathering place for residents, as well as a Vista icon for decades to come. Today, I think we have accomplished that goal."

The new civic center utilizes considerable energy-saving techniques throughout the building, including the use of natural lighting from numerable large windows installed throughout the building for energy efficiencies. Once the final construction is completed at the end of the year, the building will earn the Leadership in Energy and Environmental Design Green Building Rating System (LEED) certification from the U.S. Green Building Council, the nationally accepted benchmark for the design, construction and operation of high performance green buildings.

Continued on page 4

City of Vista | Financial Update

This past June, the City Council adopted a general fund budget for the fiscal year 2010/11. The City's fiscal year runs July 1, 2010 through June 30, 2011. The budget was balanced through a combination of expenditure reductions, contracting out of some services, and the use of reserve funds. The 2010/11 general fund budget is $66 million, which is significantly lower than past budgets.

The continuing state of the nation's economic situation, and how it affects the city at the local level, continues to be challenging. Like many other cities, Vista has been affected by the national slowdown in the housing market, the drops in property and sales tax revenues, and the decline in fees for service. The impacts of the recession on Vista have been and will continue to be significant. While financial reports of local and national economic indicators suggest that the recession seems to be "bottoming out", it is anticipated that Vista will not see total recovery at the local level for several years.

To adjust to declining revenues, the City has significantly reduced its operating budget. All non-essential operating expenditures and certain capital outlays have been considered, and reductions have been made accordingly.

In the last three years, the City's principal revenues, sales tax and property tax, have declined by approximately $7 million. Sales tax is highly dependent on continuing employment and consumer confidence. Since 2007/08, sales tax revenues in Vista have decreased by 18.5% and property taxes have decreased about 8%. Prior to this, the figures had been steadily increasing.

Although the City has traditionally operated with fewer employees than cities of comparable size, the workforce has been reduced by 84 positions, or 20% of its staff, over the past two years - either through layoffs or attrition. Several vacant positions have also been deferred indefinitely.

With Vista's size and diversity, there will be more challenges ahead; public safety, road maintenance, infrastructure improvements, affordable housing, and other related services. City officials will focus on indentifying methods to maximize the skills of city employees in administering services with the resources provided. The City Council will continue to strive to maintain a high level of fiscal responsibility in Vista and will implement steps to diversify and increase the city's tax base with the goal of providing for a more stable and sustainable business and community environment.

Unmatched. Entertaining. Magical.

The setting is unmatched ... the shows are entertaining ... and the experience is magical at the Moonlight Amphitheatre. For 30 years, the Moonlight Amphitheatre has been entertaining the community and uniting the worlds of theatre and natural beauty for unforgettable summer experiences. The remaining summer season's productions run through September 25 at the Moonlight Amphitheatre in Brengle Terrace Park.

Delight in the adventures of a stage-struck playboy in a Nevada mining town where romance, mistaken identities, and show stopping musical numbers fill the comic roof-raiser production of ***Crazy for You***. View the modern re-telling of Madame Butterfly, the stunning, theatrical experience of ***Miss Saigon***. The epic pop opera centers on a classic love story – an American GI and a Vietnamese girl – united in love but separated by war during the fall of Saigon.

Tickets are on sale for the remaining two Broadway blockbusters: ***Crazy for You*** and ***Miss Saigon***. For information on ticket sales contact the VisTix Office at (760) 724-2110 or online at www. VisTixonline.com

Moonlight's Remaining Summer Performances

- **Crazy For You - August 11 - 28**
- **Miss Saigon - September 8 - 25**

Vista Cuts Ribbon | *continued from page 1*

A time capsule has been built into an interior southwest corner wall of the Civic Center. The capsule will be opened in June 2057 on the 50th anniversary of Vista becoming a charter city. Enclosed in the time capsule are historical and current materials and artifacts about Vista, including the city's charter, local high school yearbooks, recent newspapers, copies of the city's newsletters, a copy of the 2010 summer's Moonlight Amphitheatre program, and other information about the City and popular culture in 2010.

The old City Hall site, built in the 1950's, was intended to serve as the City Hall temporarily, while a new facility was designed and constructed. Thirty years later, the vision of a new civic center for the community has come to fruition. The final phase of construction, including the demolition of the old building and the landscaping and construction of a visitor parking lot will be completed at the end of the year.

The Civic Center is the fifth of Vista's community projects to be completed. All of these projects are a critical link to the city's growth and success. The new Civic Center, as well as the other community projects: the renovation of the Moonlight Amphitheatre at Brengle Terrace Park; the building of Fire Stations No. 5 & 6 and the renovation of Station No. 1; and the completion of the Vista Sports Park later this month; are all statements reflecting Vista's powerful vision to define and transform the community - now and for decades to come.

Volunteers Spruce Up Neighborhoods at Vistans ROC

Hundreds of volunteers are joining efforts to paint, landscape, and spruce up homes in need of repair in designated neighborhoods on Saturday October 9, as part of the City's annual revitalization project. During this year's one-day event more than 800 people are expected to participate in the Vistans Revitalizing Our Community project, better known as Vistans ROC The program teams up volunteers with homeowners to clean up and beautify homes in specific focus neighborhoods. The goal is to strengthen community pride and to provide community support for those in need.

Throughout the day, Vistans ROC crews will beautify a neighborhood by planting drought-tolerant flora in yards; removing debris around the properties; and by applying paint to the exterior of the homes. The City's Redevelopment & Housing Department funds the project through local partnerships and sponsors, and with federal grant allocations. The City initiated the event over a decade ago as part of the national Raise the Roof Day, which was organized by the U.S. Department of Housing and Urban Development. Although the national project ended years ago, the City adopted the project and continues to organize the "neighbors helping neighbors" community event.

For more information on the Vistans ROC project or to volunteer, call (760) 639-6191 or go to www.cityofvista.com.

New Sports Park Opens in Northwest Vista

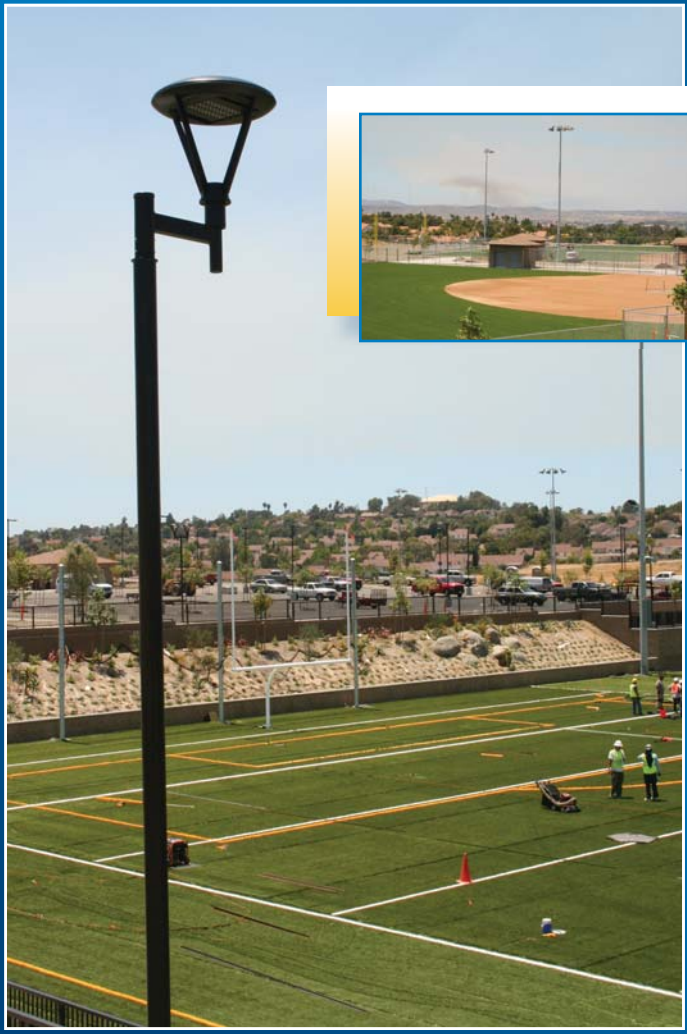

Vista Sports Park Grand Opening

Saturday, August 21, 2010
9 a.m. to 10 a.m.
1600 Sports Park Way

Good news for residents and recreational enthusiasts: The Vista Sports Park located off of Oceanside Boulevard and Sports Park Way (near the Antique Gas and Steam Engine Museum) opens August 21.

The 16-acre park is the 13th park to open in Vista and is surrounded by another 16 acres of open space. The last of the community projects to be completed; the Vista Sports Park boasts panoramic views and provides the community with much-needed additional fields and play areas.

Park amenities include: two synthetic turf soccer/football fields; three baseball/softball fields; picnic areas; a tot lot; restrooms; league storage; concrete bleachers for the soccer/football fields; a main building to house concessions; and a trail connecting Oceanside Boulevard with Guajome Regional Park.

The Vista Sports Park, as well as the other community projects has been made possible by the Vista voters who approved the half-cent sales tax in 2006 to fund the construction projects.

The public is invited to join in the Grand Opening event on August 21 at the Vista Sports Park.

Fire Safety Tips for Wildfire Season

Residents should be aware of fire risks during the upcoming wildfire season. The Vista Fire Department is offering these safety precaution tips to help reduce the risk of fire losses.

Family Evacuation Plan

- Be ready. Family members should know where to go and what to bring with them. Several escape routes should be plotted out in advance in case roads are blocked by a wildfire.
- The Sheriff's Department issues evacuation notices in an emergency. Listen to local news repowhen disaster threatens. If local officials instruct you to leave, do so immediately.
- Think ahead. Grab important items if an evacuation is ordered:
  - medical supplies: prescription medications, etc.
  - disaster supplies: flashlight, batteries, radio, first aid kit, bottled water
  - clothing / bedding: change of clothes / sleeping bag/pillow for household members
  - car keys and keys to the place you may be going (friend's or relative's home)

It is a good idea to prepare a "GO" kit before a disaster strikes. For more information about putting together a family emergency kit, go to www.redcross.org.

Safety Zone Around Home

All vegetation is fuel for a wildfire. To reduce the risk, residents should modify or eliminate brush, trees and other vegetation near their home. The Vista Fire Department is available to consult with homeowners about the safety of their property. For more information, please call the Fire Department at (760) 643-2801.

Keeping Our Water Healthy

Storm drains are intended to take rainwater straight to the ocean to avoid area flooding. Rainwater or even runoff from sprinklers or hoses carries contaminates like trash, pet waste, automobile fluids, and fertilizers and pesticides into the storm drains. This pollutes our local waters and creates a health risk for children, kills marine life and contributes to localized flooding and beach closures.

Dropping trash on the ground, allowing litter to blow into the street, and hosing grass clipping or leaves into the street are just a few examples of things people do to contribute to storm water pollution. Since runoff is not treated before it reaches our creeks, lagoons and ultimately the ocean, it is everyone's responsibility to make sure storm drains and water ways are free of pollutants. Below are tips to keep our water healthy.

- **Properly dispose of all trash**
- **Do not overwater. Adjust irrigation systems.**
- **Use environmentally friendly pesticide products or natural fertilizers. If you use commercial pesticides, always follow the directions for proper use.**
- **Pick up after pets**
- **Take cars to the carwash or wash on the lawn or on gravel**
- **Recycle motor oil - find locations at www.earth911.org**

For more information, contact the Water Quality Protection Division at (760) 726-1340 x1686 or e-mail at waterquality@cityofvista.com.

26th Annual California Coastal Cleanup Day

September 25
9 a.m. to noon

Join the country's largest volunteer event in support of the marine environment. Go to cityofvista.com for more information.

Volunteers Needed for Sheriff's Senior Patrol

Volunteers in the Sheriff's Senior Patrol program provide valuable services in our community that enhance the safety in the neighborhoods and the quality of life for home-bound seniors. Designed to draw upon the experience of senior citizens, the program is currently recruiting citizens 50 years or older. Participants attend a formal two-week academy and are asked to volunteer a minimum of six hours a week. Responsibilities range from assisting with administrative work, to patrolling neighborhoods and checking on the welfare of elderly or disabled persons.

Among the free Senior Volunteer Patrol's services available to the community are:

- **Vacation home security checks**
- **YANA (You Are Not Alone) program**
- **Enforcing and writing citations for handicap and fire lane violations**
- **Providing security at crime scenes, traffic control at accidents/emergencies**
- **Marking abandoned vehicles**
- **Assisting at vehicle safety and DUI check points**

For more information on volunteering in the program or to learn about the available services, please call (760) 940-5441.

Back to School | Safety Tips

As the summer season winds down, and back to school preparations begin, remember to keep an eye out for pedestrian traffic. According to the National Highway Traffic Safety Administration, on average a pedestrian is killed in a traffic accident every 2 hours and injured every eight minutes.

- Whether students are walking, biking, or skateboarding to school, take steps to ensure their safety.
- Walking: Walk on the sidewalk. If there is no sidewalk, walk facing the traffic.
- Skateboarding: Do not ride in the street. Do not hitch a ride on a car, truck, or bike.
- Biking: Ride with the flow of traffic. Obey traffic laws. Do not ride through stop signs or traffic signals.
- Wear a helmet when using a skateboard or bike. Studies indicate that helmets can reduce the risk of a head injury and brain injury by approximately 85 percent.
- Cross only at marked crosswalks or at corners. Stop and look both directions before stepping into the street and keep looking for cars while crossing.
- Wear bright colored clothing or safety gear to make yourself or your children more visible to drivers.
- Evening hours: wear clothing / safety gear that reflects light when headlights shine on it.
- Safety in numbers. Try to walk or ride with other people; however do not move into a lane of traffic or block individuals walking in the opposite direction. If someone that you do not know asks you to come closer to the car, keep your distance and move away. If someone tries to grab you or put you in a car, scream for help as loud as you can and do everything in your power to get away.
- Motorists: Pay extra attention to pedestrians, cyclists, and skateboarders.

A message from the City's Crime and Substance Abuse Prevention Commission

Register for Citizens Leadership Academy Now

Get an insider's look at how your local government works. The Vista Citizens Leadership Academy is a seven-week program that orients residents on how the city operates. Tour city facilities, learn how decisions are made, and discuss important issues such as development, traffic, public safety, and more. The program is held on consecutive Wednesday evenings from 5 p.m. to 7:30 p.m., with the exception of one lunchtime meeting.

The next Citizens Academy begins on September 1. Registration is limited to 20 participants, and is being accepted on a first-come, first-serve basis through August 27. Participants must be Vista residents and / or business owners and aged 18 or older.

For more information, go to www.cityofvista.com or call the Communications Office at (760) 643-2708. Space is limited, please sign up now.

General Municipal Election

The General Municipal Election to be held on Tuesday, November 2, 2010, will include the Mayor and two City Council seats. The terms of Mayor Morris B. Vance, Mayor Pro Tempore Judy Ritter, and City Councilmember Bob Campbell expire this year.

In order to cast your vote, you must be registered in the City of Vista by October 18, 2010, and be at least 18 years of age.

You can check to see if you are registered at the San Diego County Registrar of Voters website: http://www.sdcounty.ca.gov. You must re-register to vote if you have changed your name or your address since the last election.

Voter registration cards are available at the City Clerk's Office at 200 Civic Center Drive in Vista or call (760) 639-6125 for cards or more information.

City Telephone Directory

Phone numbers are 760 area code, unless otherwise noted.
Dial 911 for fire, sheriff and medical emergencies

Avo Playhouse Tickets	724-2110
Brengle Terrace Rec Center	639-6156
Building	639-6105
Building Inspections	639-6106
Business License	639-6174
Chamber of Commerce	726-1122
City Attorney	639-6119
City Clerk	639-6125
City Hall	726-1340
City Manager	639-6131
Code Enforcement	639-6141
Development Services	639-6108
Economic Development	639-6165
Engineering	639-6111
Engineering Inspections	639-6113
Finance	639-6170
Fire Administration	643-2801
Gloria E. McClellan Senior Center	639-6160
Graffiti Hotline	726-1340 x 1611
Household Hazardous Waste	(800) 714-1195
Housing	639-6191
Human Resources	639-6145
Humane Society (North County)	757-4357
Job Hotline	639-6147
Library (County's Vista branch)	643-5100
Mayor and City Council	639-6130
Moonlight Amphitheatre	639-6199
Moonlight Amphitheatre Tickets	724-2110
Parking Citations	639-6141
Planning	639-6100
Public Services	639-6176
Rancho Buena Vista Adobe	639-6164
Recreation & Community Services	639-6151
Redevelopment	639-6191
Senior Center	639-6160
Sheriff (Non Emergency)	940-4551
Stormwater Hotline	726-1340 X 1686
Traffic Engineering	639-6116
Traffic Information	511
Vistix Office	724-2110
Wave Waterpark	940-9283

Out & About Volunteers Needed

Two hours a month is all that's needed! If you go shopping or run errands, please consider being a volunteer driver for the Senior Center by taking a home-bound senior with you. The program provides mileage reimbursement and supplemental auto insurance. Call the Out & About Vista program at (760) 639-6161 for more information.

Buy Local. Buy Fresh.

The Vista Farmer's Market has been a source of community pride in Vista for over 20 years. The market features fruit, vegetables, food items, and plants with a wide variety of locally-grown products. There are also booths specializing in flowers, arts and crafts and more. **Vista Farmer's Market:** 325 Melrose Drive (County Courthouse parking lot). Every Saturday: 8 a.m. to Noon www.vistafarmersmarket.com (760) 945-7425.

Stay Informed

Stay up on all the latest City news and events. Sign up today for the free e-Newsletters featured on the City's Web site at www.cityofvista.com. Once signed up, you will automatically receive the e-News directly to your e-mail inbox.

Catch the Wave

Wave hello to fun ... North County's coolest hot spot this summer, the Wave Waterpark. Owned and operated by the City of Vista and located in Vista Village, the Waterpark offers first-class aquatic fun for the whole family. The water park is open through Labor Day and after that on weekends throughout the month of September. www.thewavewaterpark.com(760) 940-WAVE (9283).

Annual Tree Lighting and Christmas Parade

The annual tree lighting sponsored by the Vista Village Business Association is scheduled for December 3 at the gazebo on the corner of S. Indiana and Main streets (www.vvba.org) from 5 p.m. to 8 p.m. On December 4 the Chamber sponsored parade begins at 1 p.m. (www.vistachamber.org).

Volunteers Needed: Tree Planting – Oct. 23

Join us as we plant 100 trees in the Brengle Terrace Park area on ***Make a Difference Day***. The City of Vista and Healthy CommuniTrees are partnering on the statewide planting project being held on Saturday, October 23 from 8:30 a.m. to Noon. Volunteers are needed to help plant the trees. Bring the family and help improve our community one tree at a time! Funding for the project comes from the California ReLeaf America Recovery & Reinvestment grant program, through the USDA Forest Service. For volunteer information go to www.cityofvista.com or call (760) 726-1340 x 1631.

APPENDIX G-4
SPLASH LAB & GREEN MACHINE
OUTREACH PROGRAMS

From: Andrea McCullough
Sent: Monday, July 26, 2010 8:01 AM
To: Andrea McCullough
Subject: City Media Rel - Science on the Move at Vista Summer Camp

Attachments: image002.jpg; image003.jpg; image003.jpg; image002.jpg; image002.jpg; image001.jpg

FOR IMMEDIATE RELEASE
July 26, 2010

From: Andrea McCullough
City of Vista Communications Officer
Phone: 760.726.1340 x 1438
amccullough@cityofvista.com

Contact: Paul Hartman
Storm Water Program Manager
Phone: 760.726.1340 ext. 1373
phartman@cityofvista.com

SCIENCE ON THE MOVE AT VISTA'S SUMMER DAY CAMPS

Vista, CA – It excites children about science and the wonderment of the world around them and is mobile, colorful and full of self-contained laboratory stations. It is the San Diego County Office of Education's Splash Science Mobile Lab which will be visiting the City of Vista's Summer Day Camp participants on **Wednesday, August 4** at Brengle Terrace Park.

The Splash Lab is a completely self-contained mobile lab that provides children with hands-on water quality and watershed experiences. The program is hosted by the San Diego County Office of Education and funded through various grants awarded to the City's Water Quality Protection Division. The City of Vista is required under State law to provide environmental education and outreach to the community. The grants allowed the City to fund the mobile Splash Lab program in Vista schools this past school year.

During the "Splash" visit, children learn about local water issues and the effects of trash, pesticides, and other pollutants on the region's water resources. Participants become "investigative scientists" conducting investigations in how water pollution affects the environment and wildlife.

"When science is hands-on and visual, it makes for better learning," said Paul Harman, Storm Water Program Manager for the City of Vista. "Children learn how to take care of their water environment in a fun and interactive way."

The Mobile Splash Lab has visited over 64 classrooms in Vista since April, 2010. The last stop in Vista for the mobile lab is at the Brengle Terrace Park summer camp program. To learn more about the City's summer day camp program or the Mobile Splash Lab visit, contact Vista Recreation & Community Services at (760) 726-1340 ext. 1501.

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Andrea McCullough
Communications Officer
City of Vista
p: 760.643.2708

APPENDIX G-5
MUNICIPAL SURVEY

2011 Watershed Survey City of Vista

For each questions below, please check the box next to the correct answer(s). The surveys are confidential and won't be shared with others, and will help staff develop a watershed curriculum for the community! Thank you!

1. A watershed is…? ***(choose one)***

☐ An area that retains water, like a swamp.
☐ Area of land that drains into a common waterbody.
☐ A small building used to store water.
☐ Don't know/Not sure.

2. Watersheds within the City of Vista include? ***(check all that apply)***

☐ Agua Hedionda
☐ San Luis Rey
☐ Buena Vista
☐ Loma Alta
☐ All of the above
☐ None of the above

4. What are the benefits of a functioning wetlands system? ***(check all that apply)***

☐ Flood protection via storage of water.
☐ Increased habitat quality for local and migratory wildlife.
☐ Improved water quality through filtration of pollutants via floodplains and plants.
☐ There are no benefits, fill in the wetlands with soil and develop the land.
☐ May moderate surrounding air temperatures. Some types of wetlands may also reduce CO_2 emmissions.

4. Rain at Vista City Hall enters the storm drain and flows to _____ *Creek* without treatment.

☐ Buena
☐ Agua Hedionda
☐ Buena Vista
☐ Cottonwood
☐ Loma Alta

5. Which of the following can pollute our creeks, lagoons, etc.? ***(check all that apply)***

☐ Fertilizers, pesticides, and insecticides.
☐ Automobile fluids (oils, anti-freeze, etc.).
☐ Home repair materials (paint, cement, etc.).
☐ Pet and human waste.
☐ Soap from car washing.
☐ Soil erosion from construction
☐ Leaves and grass clippings
☐ Irrigation runoff
☐ Swimming pool water

6. Where does the excess sediment (dirt) in our waterbodies come from? ***(check all that apply)***

☐ Construction sites.
☐ Eroding hillsides.
☐ Home improvement projects.
☐ Agricultural activities.
☐ Yards and gardens.
☐ Don't know/Not sure.

7. What are the best ways to wash a car? ***(check all that apply)***

☐ Wash it in the driveway. The soapy water and dirt will go into the street and then into the storm drain.
☐ Wash it over the lawn/yard. The soapy water and dirt will get filtered through the ground.
☐ Take it to a car wash where the soapy water and dirt will go to the sewer treatment facility.
☐ Don't wash it. Let the dirt wash onto the road when it rains, and then it will go down the storm drain.

8. How does dog waste left on the ground impact our health and environment? ***(check all that apply)***

☐ Disease causing organisms found in dog waste are washed into the streets and storm drains and out into waterbodies where people swim and fish.
☐ Excess nutrients found in dog waste are washed into creeks and lagoons and can cause algal blooms, cloudy water, and fish kills.
☐ Dog waste on the ground has no impact on people or the environment.
☐ Don't know/Not sure.

9. Grass clippings, leaves, and other yard waste should be disposed of properly because they… ***(check all that apply)***

☐ clog the storm drain system and impede flows.
☐ contribute to excess nutrients causing algal blooms, low oxygen levels, and fish kills.
☐ have no affect on the storm drain system, go ahead and sweep out into the street and storm drains.
☐ Don't know/not sure.

10. Which of the following items may be disposed of in the regular trash? ***(check all that apply)***

☐ Motor oils, lube oils, etc.
☐ Regular light bulbs.
☐ Pesticides, household cleaning products, etc.
☐ Paint, paint thinners, stains, varnishes, etc.
☐ Don't know/not sure.

APPENDIX H-1
LOMA ALTA CREEK SOURCE INVESTIGATION REPORT

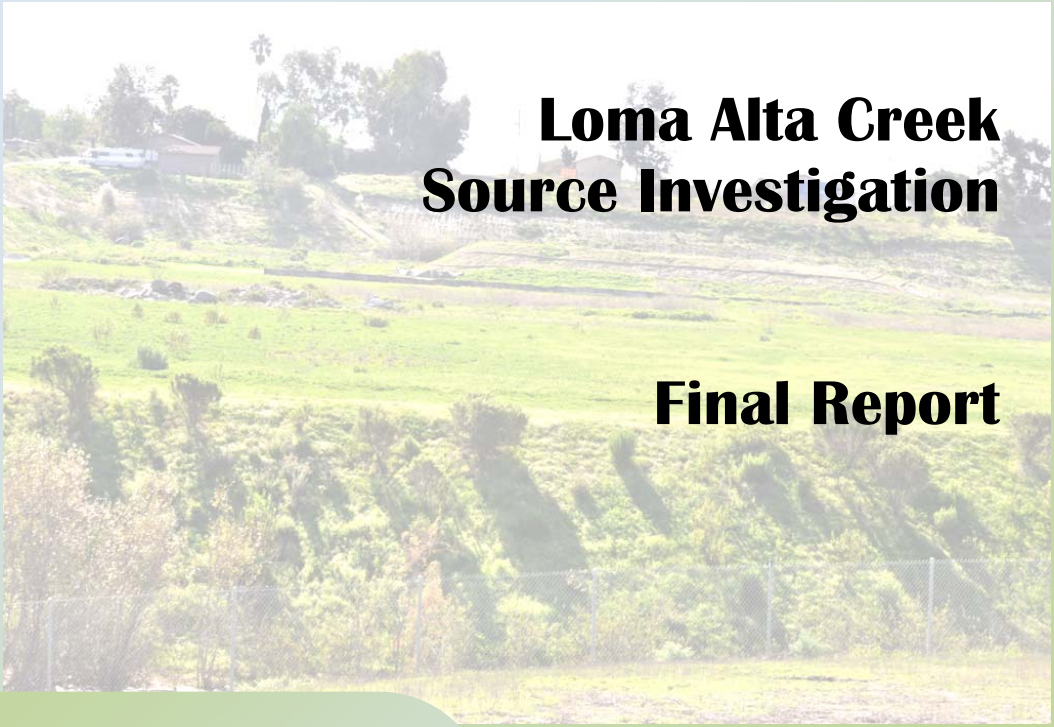

Loma Alta Creek Source Investigation

Final Report

Prepared For:

City of Vista
Water Quality Protection Program
200 Civic Center Dr
Vista, CA 92084

March 2011

WESTON SOLUTIONS

Loma Alta Creek
Source Investigation

Final Report

Prepared For:

City of Vista
Water Quality Protection Program
200 Civic Center Drive
Vista, Ca 92084

Prepared By:

Weston Solutions, Inc.
2433 Impala Drive
Carlsbad, California 92010

March 2011

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1.0 INTRODUCTION & OBJECTIVES

The Loma Alta Creek (LAC) watershed, an urbanized area in North San Diego County, has been included on California's Clean Water Act Section (§) 303(d) list for bacteria and nutrients in Loma Alta Slough, and selenium and toxicity in Loma Alta Creek. Approximately 2.8 percent of the total land area of the LAC watershed is contained within the City of Vista (City) jurisdictional area. The purpose of this report is to identify potential sources of bacteria and nutrients within the City's jurisdictional boundary that may be contributing to water quality issues in the Loma Alta Slough.

The LAC Watershed comprises 6,277 acres (9.8 square miles) in North San Diego County and forms the northern border of the larger Carlsbad Hydrologic Unit (MEC 2003). The LAC watershed is almost wholly contained within the City of Oceanside with the exception of a small section of the upper, northeastern portion of the watershed which crosses into the city limits of Vista, accounting for approximately 2.8 percent of the total watershed land area (Figure 1 and Figure 2)

The watershed is over 70 percent urbanized.[1] As of the writing of the Loma Alta Creek Watershed Management Plan in 2003 (MEC, 2003) only seven percent of the land in the watershed remained native habitat. This watershed is also home to important transportation corridors, including a section of the I-5 freeway, Oceanside Boulevard and the North County Transit District's Sprinter light rail line. The climate is marked by warm summers and mild winters with average annual rainfall of 11 inches for the City of Oceanside.

Loma Alta Creek is approximately 7 miles in length and is almost completely contained within

Objectives

- Identify likely sources of bacteria and nutrients to Loma Alta Creek.
- Assess the potential contribution from the City of Vista to Loma Alta Creek contaminant loads, particularly with respect to bacteria and nutrients for which TMDLs are being implemented in the Loma Alta Slough.
- Establish recommendations for monitoring and verifying City of Vista load contributions

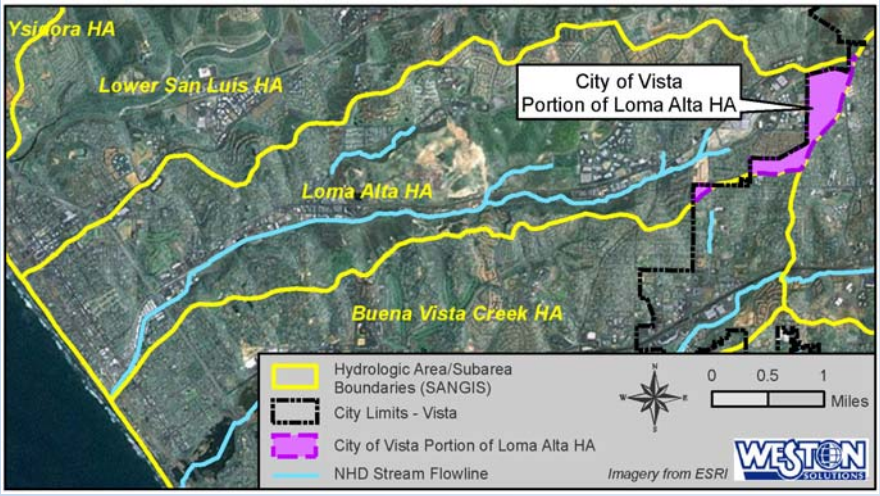

Figure 1. Overview of Loma Alta Creek Watershed Area

Introduction Continued

the City of Oceanside. The creek originates near the border between the City and Oceanside, just to the west of North Melrose Drive. It then runs parallel to and just south of Oceanside Boulevard until flowing into the Loma Alta Slough at Buccaneer Beach. Several tributaries feed into the creek but only one is named, Garrison Creek which enters the creek west of El Camino Real. The creek has been substantially altered with the majority of its course consisting of fully to partially lined concrete channels or constructed earthen channels (MEC 2003).

Bio-swale best management practice draining to Loma Alta Creek sited in new Madison Lane development in City of Vista

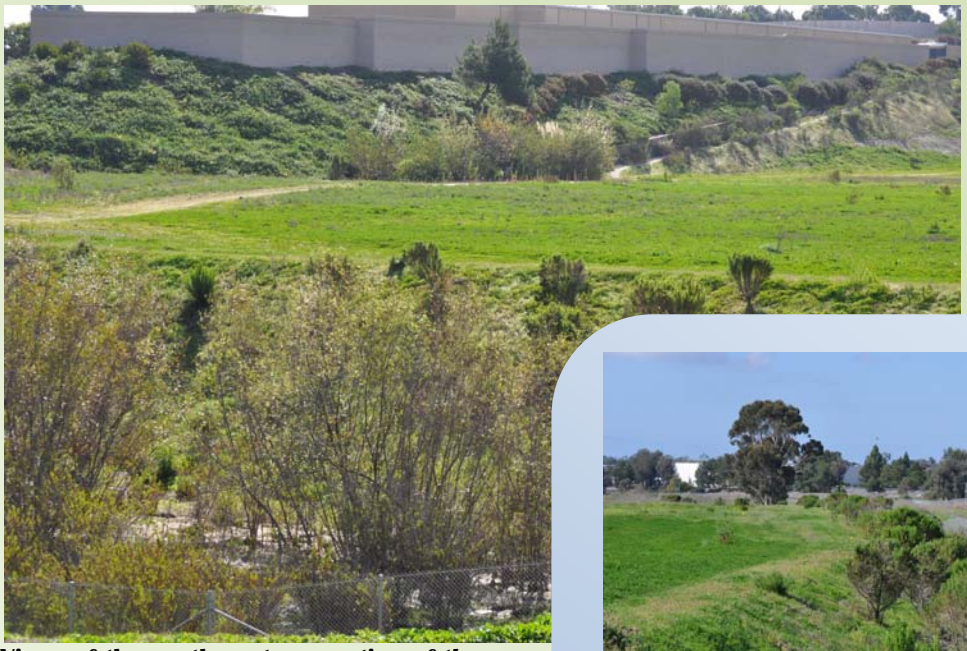

Views of the north eastern portion of the Loma Alta Creek watershed in City of Vista

View looking west from the upper portion of the Loma Alta Creek watershed in City of Vista

2.0 TMDL BACKGROUND

The San Diego Regional Water Quality Control Board (Regional Board) listed Loma Alta Slough and the adjacent Pacific Ocean shoreline on the 1998 §303(d) list for indicator bacteria and eutrophication. TMDLs are currently under development for Loma Alta Slough for indicator bacteria and nutrients. The Regional board listed Loma Alta Creek as impaired on the 2008/2010 §303(d) list for selenium and toxicity. Total Maximum Daily Loads (TMDLs) will be developed for these constituents by 2019.

In order to characterize the City's potential contribution to contaminant loads in Loma Alta Creek, WESTON conducted a likely source analysis based on land use within the City's segment of the watershed, identified in Figure 1.

3.0 LAND USE

3.1 City of Vista Land Use within Loma Alta Creek

Land use data were evaluated (SANDAG, 2009) and a visual inspection of the City's jurisdiction within LAC watershed was completed to identify areas that may contribute nutrients, bacteria, or total suspended solids (TSS) to the LAC.

The findings of the land use evaluation are presented in Figure 2, Figure 3, and Table 1. The majority of the land use in this area is either residential (35.61%), transportation (18.50%) or undeveloped land (12.79%). Pockets of industrial land use (shown in purple) are located along Lee Drive. Figure 4 illustrates land use within the City's jurisdiction of the watershed.

Table 1. Land use in Vista Section of Loma Alta Creek Watershed

SANDAG (2009) Land Use	Acres	Percent
Residential	62.051	35.49%
Transportation	32.350	18.50%
Vacant and Undeveloped Land	22.360	12.79%
Under Construction	18.276	10.45%
Industrial	17.525	10.02%
Public Facility	14.998	8.58%
Open Space / Parks & Recreation	7.056	4.04%
Spaced Rural Residential	0.205	0.12%
Grand Total	174.819	100.00%

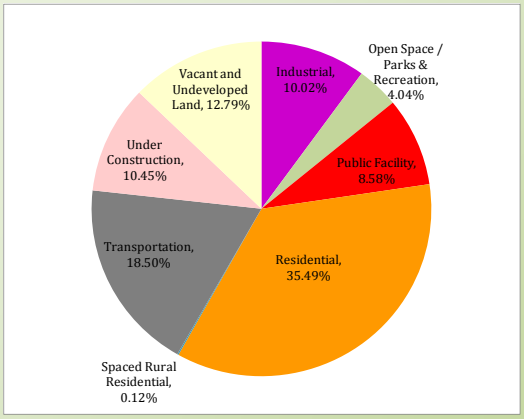

Figure 2. City of Vista Land Use within Loma Alta Creek Watershed

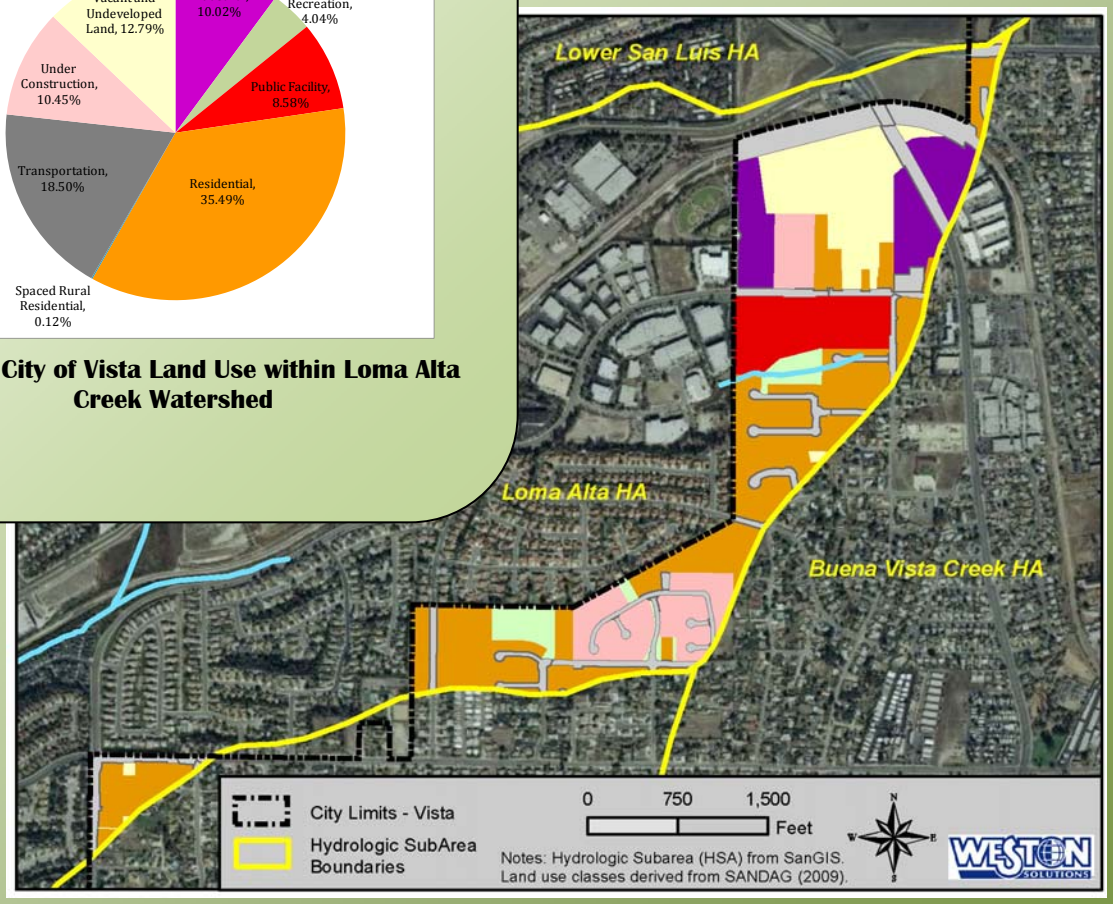

Figure 3. Map of City of Vista Land Use within Loma Alta Creek Watershed

3.2 Loma Alta Creek Land Use

Table 2 illustrates the land use summary for the entire LAC watershed as well as for the portion of the watershed within the City. The majority of land use within the entire watershed is residential (32.5%), transportation (18.90%), vacant and undeveloped land (14.08%) and open space/parks & recreation (12.63%). These uses are consistent with the land use distribution found in the City's section of the watershed. The section of the City within the watershed contains 3.11% of the total residential area in the watershed, 2.73% of the total transportation land area, and 2.53% of the vacant and undeveloped land area. The City's portion of the watershed does contain 25.84% of the total watershed construction land area which accounts for only 1.13% of the total land area. The majority of this construction area is a new residential home project under construction along Madison Lane.

Table 2. Loma Alta Creek Watershed Land Use Statistics

SANDAG Landuse	Acres in LAC Watershed	Percent of Landuse for Watershed	Acres in Vista Portion of LAC Watershed	Percent within Vista
Agriculture	51.55	0.82%	0.00	0.00%
Commercial	210.56	3.36%	0.00	0.00%
Commercial Recreation	115.29	1.84%	0.00	0.00%
Industrial	594.45	9.47%	17.52	2.95%
Open Space / Parks & Recreation	792.75	12.63%	7.06	0.89%
Public Facility	331.67	5.29%	15.00	4.52%
Residential	1,994.72	31.79%	62.05	3.11%
Spaced Rural Residential	44.30	0.71%	0.20	0.46%
Transportation	1,186.00	18.90%	32.35	2.73%
Under Construction	70.72	1.13%	18.28	25.84%
Vacant and Undeveloped Land	883.50	14.08%	22.36	2.53%
Grand Total	6,275.51	100.00%	174.82	2.79%

3.3 Visual Inspections

Visual inspections of the City's jurisdiction within LAC watershed were conducted on February 1, 2011. Figure 5 details the findings of the visual inspection.

(1) The industrial land use along the eastern side of North Melrose Drive consists of newer commercial buildings housing mostly automotive repair and specialty automotive shops. (2) Best management practices (BMPs) were in place with outside storage cover and storm drain berms in place. A large, newer self storage facility is located on the east side of North Melrose Drive.

(3) Along the north side of North Avenue are located pockets of older residential homes with outside storage of appliances and furniture, as well as a parking lot that appears to have been constructed as part of a new construction project that was abandoned.

(4 & 5) A metals recycling plant is located along Lee Drive along the border of Oceanside. (6) Across Lee Drive in Oceanside, is French Field which is currently being capped with soil to prevent surfacing of contaminants from the landfill underneath.

(7) To the north and east of the recycling plant is an open, undeveloped field that leads to the dry creek bank. Erosion control methods were in place on the hillside in the field.

(8) A newer public elementary school is located along the south side of North Drive.

(9) To the south and downhill from the school is a drainage area with standing water. Surrounding this area is mostly newer single family residences. (10) Farther south is a new home development that is partially complete, Madison Lane. It appears that construction has ceased for the time being. Storm water best management practices were in place and appeared in overall excellent condition. (11) A large grassy infiltration swale was also located in the middle of the development to capture runoff.

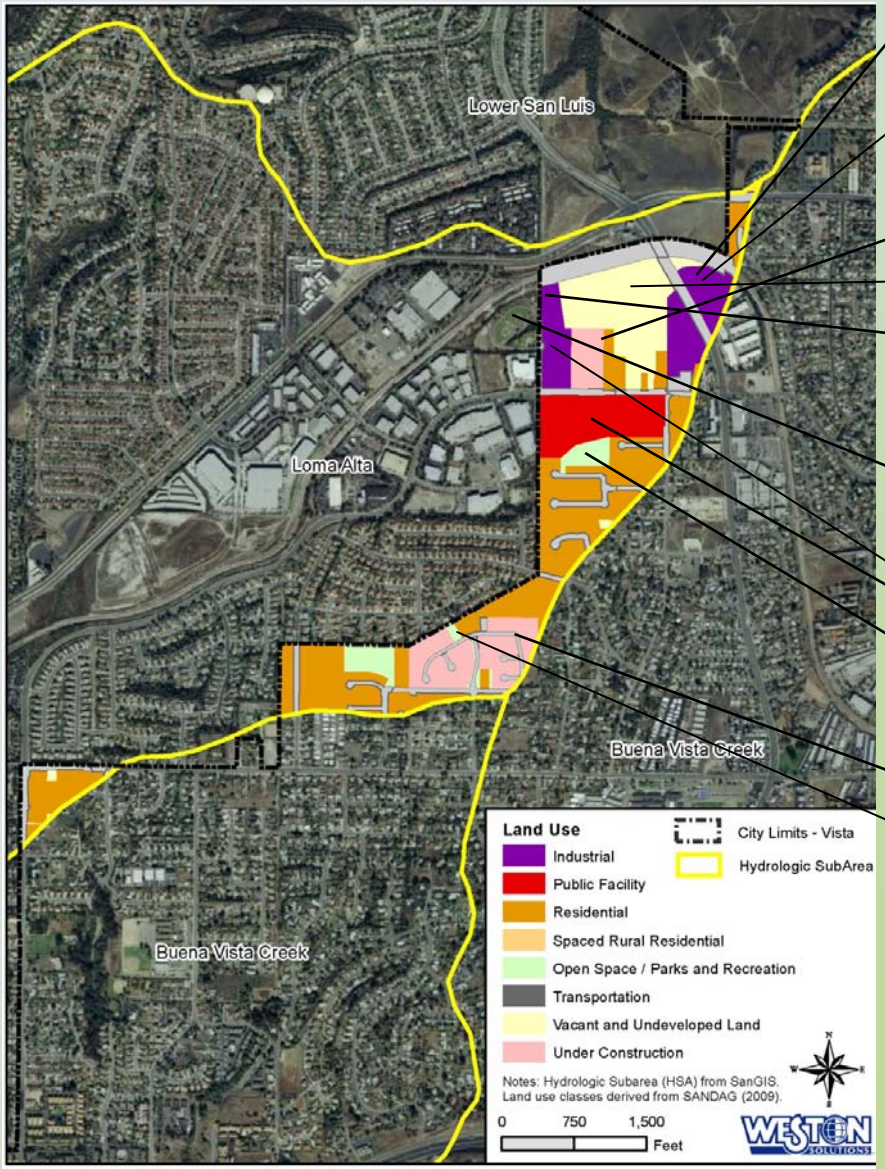

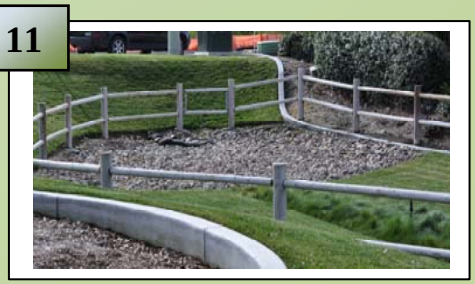

Figure 4. City of Vista Land Use and Visual Inspection Photos

4.0 POLLUTANT TRANSPORT MECHANISMS & SOURCES

During dry weather the primary mechanisms for pollutant transport are through irrigation run-off, wash-off from commercial or residential operations (i.e. washing down outdoor areas) or through illicit discharges to the municipal separate storm sewer system (MS4). Table 3 summarizes potential pollutant sources from the San Diego River source identification study conducted by WESTON (WESTON 2009a).

Bacteria –WESTON (2009a) found that low density residential land use and transportation corridors contributed the highest concentrations of enterococci in dry weather while commercial land use was associated with the lowest average concentrations. The highest median concentrations of fecal coliforms were also associated with low density residential land uses. Dumpsters with seepage, grease traps associated with restaurants and wash down activities were the commercial activities with the highest average concentrations of these bacteria. Commercial irrigation was found to have significantly lower concentrations.

TSS –WESTON (2009a) found that run-off from transportation corridors contained the highest total suspended solids (TSS) concentrations.

Nutrients – WESTON (2009a) found that total phosphorus concentrations were higher in commercial site(s) then other land uses. Irrigation runoff from nurseries, residential lawns and traffic corridors would be expected to have increased levels of nitrogen.

During visual inspection of the area of Vista contained within the Loma Alta Creek watershed there were no likely point sources detected. This is consistent with the quarterly monitoring program established in partnership with the City of Oceanside which has not detected any flow during dry weather at the monitoring location in Vista.

During wet weather the primary mechanism for pollutant transport is through storm water runoff.

Bacteria – WESTON (2009a) found that low density residential and transportation land uses had the highest average concentrations for enterococci while commercial and low density residential land uses had the highest for fecal coliforms.

TSS – Transportation, residential and open space land uses were found to have the highest loads for TSS. (WESTON 2009a).

Nutrients – The majority of the total phosphorus load was associated with low density residential and transportation land uses (WESTON 2009a).

Table 3. Summary of Pollutant Sources from San Diego River Source Identification Study

SANDAG (2009) Land Use	Percent of Land use in City of Vista Portion of LAC	Potential Pollutants in Dry Weather	Potential Pollutants in Wet Weather
Residential	35.49%	Enterococci, Fecal Coliforms,	Enterococci, Fecal Coliforms, Phosphorus, TSS
Transportation	18.50%	TSS, Enterococci,	Enterococci, Phosphorus
Vacant and Undeveloped Land	12.79%	not monitored	not monitored
Under Construction	10.45%	not monitored	not monitored
Industrial*	10.02%	Total Phosphorus	Fecal Coliforms
Public Facility	8.58%	not monitored	not monitored
Open Space / Parks & Recreation	4.04%	Enterococci, Fecal Coliforms	TSS
Spaced Rural Residential	0.12%	Enterococci, Fecal Coliforms	Enterococci, Fecal Coliforms, Phosphorus

*Some industrial areas in City of Vista's jurisdiction of Loma Alta Creek watershed may be categorized as commercial, e.g., Self Storage Facility at 1317 N. Melrose Drive.

5.0 CONCLUSIONS/RECOMMENDATIONS

5.1 Sources

Residential and transportation contribute the largest proportion of land use in this area. No likely dry weather or wet weather point sources of nutrients, indicator bacteria, or TSS were observed during the site visit.

The only potential source of indicator bacteria may be the wetland area north of Pohl Place (Figure 4, item 9). It has been found that indicator bacteria tend to thrive and grow in the MS4 system if it is continuously wet (Weston, 2009b). Because this area may often be wet or contain standing water, any source of fecal indicator bacteria including, but not limited to, birds, dogs, cats or wildlife may multiply and become mobilized during wet events. This may cause a contribution to indicator bacteria levels downstream.

The only potential non-point source of nutrient or indicator bacteria loading identified during this study may be residential landuse, which may contribute to nutrient and indicator bacteria loading. Activities associated with residential land use which may contribute to nutrient loading include the application of fertilizers. Activities which may contribute to bacteria loading include lack of proper disposal of pet waste.

Although the land use designation of an area is useful for anticipating runoff concentrations during wet events, the actual land use occurring is important for understanding sources and BMPs that may help reduce pollution concentrations. For example, of interest in the City's jurisdiction of LAC is the designation of "industrial" and "under construction" land uses. Some of the industrial landuse designated in the eastern portion of the City's jurisdiction within LAC is actually a self-storage facility and may be better classified as commercial. In addition, the area designated as new construction (light pink in Figure 4, item 11) will eventually become a residential area when construction finishes. However, at this time construction has ceased and grass has grown over the dirt. Therefore, the runoff characteristics of this area are not typical construction landuse.

5.2 Recommendations

The following recommendations present multiple options for the City to better understand water quality and sources within their portion of the LAC watershed. These recommendations must be prioritized and evaluated for cost effectiveness prior to implementation.

1. Monitoring: In order to develop accurate land use runoff concentrations from the City's jurisdiction into LAC the following recommendations are made:
    a. Determine exact drainage to LA-VIS2 and LA-VIS. It appears that LA-VIS2 may drain a mix of land uses including residential, under construction, and industrial. LA-VIS appears to drain a residential area and the school (public facility).
    b. Evaluate the slope of the new school (public facility) and determine whether it drains into the wetland north of Pohl Place, or directly across the City's jurisdictional line into Oceanside and is captured by LA-VIS2.
    c. Determine whether the wetland area north of Pohl Place is wet year-round or only after storm events.
    d. Consider expanding current dry weather monitoring program (Figure 5, LA-VIS2 and LA-VIS) to include sampling at the following locations:
        i. The open channel that flows north of the new housing development at Madison Lane. This channel includes flow from the grassy infiltration swale at the new home development (Figure 5, Item 1). At this time, it appears this location only drains residential landuse, or future residential landuse, and may be used to accurately estimate residential runoff concentrations.
        ii. Northwest of the Lee's Recycling plant (Figure 5, Item 2). This location is recommended to quantify the concentrations from industrial landuse, which are not currently monitored.
    e. Consider implementation of a wet weather monitoring program that includes sampling at the current dry weather monitoring sites and recommended dry weather monitoring sites (Figure 5, Item 1 and 2). Site may be prioritized to sample monitoring locations that isolate landuse as much as possible.
2. Outreach: To help reduce nutrient runoff from residential areas and the elementary school, a potential BMP may include education targeted toward home owners and school staff about the proper application of fertilizers and pesticides/insecticides. To help reduce bacteria runoff a potential BMP may include education on proper pet waste disposal. Industry outreach would focus on proper implementation of stormwater BMPs.
3. New Development Opportunities for BMPs: During new residential construction, incorporate planter boxes to infiltrate runoff from roofs, bio-swales (such as the one located in the Madison Lane new home development), or other measures to capture and treat runoff from impervious surfaces before it reaches the MS4.

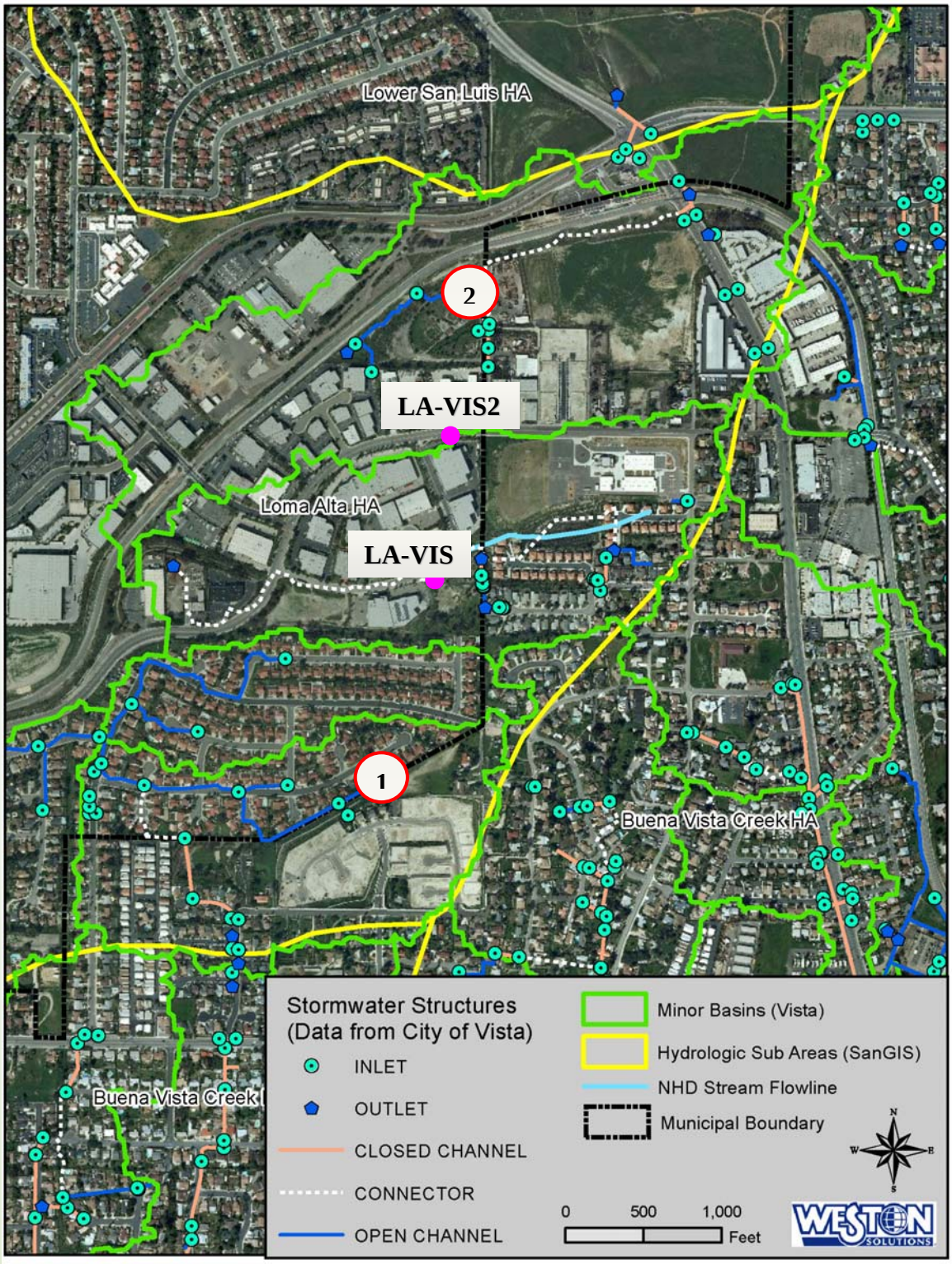

Figure 5. City of Vista Municipal Separate Storm Sewer System

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APPENDIX H-2
AGUA HEDIONDA CREEK PRELIMINARY DESIGN REPORT FOR STORM DRAIN DIVERSION

APPENDIX I

Buena Creek Sewer Pump Station Site Enhancements

Enhancement of Agua Hedionda Creek Reach SR2+ would result in a slight increase in the 100-year flood elevation (0.3 feet) at the Buena Creek Pump Station. While the pump station is within the present 100-year floodplain, the increase in storm elevation, post-enhancement would exacerbate the risk of station flooding above station entryway elevations. To address this concern, and to take advantage of enhancement opportunities at the site, proposed improvements to the pump station area include providing facility flood protection, provision of low flow and first flush storm water treatment, and emergency sewage overflow containment, as described below:

Flood Protection:
The adjacent Agua Hedionda Creek 100-year flood inundation elevations and limits have been mapped and illustrated on Figure 3-3, with the pump station anticipated to be partially within the inundation limits and the proposed creek enhancement within Reach SR2+ would exacerbate flood conditions. Full 100-year flood protection for the pump station can be provided by slightly raising the adjacent sewer access road and construction of a berm. The exhibit provided in this appendix illustrates this conceptual design, with a raise of less than 2 feet needed for the majority of the road and berm. With the proposed grading, the pump station would be completely protected under a 100-year flood condition.

Dry Weather and Storm Water Treatment:
Storm water diversion, treatment, and infiltration of dry weather and 85th percentile storm runoff from the adjacent industrial park can be provided by modifying an existing 60-inch storm drain near the pump station. The proposed design includes modification of an existing cleanout structure, installation of a low-flow diversion pipe, and construction of a treatment wetland for treatment of low flow and first flush storm discharge. The low-lying area west of the pump station has sufficient area to allow construction of a treatment wetland for storm water treatment.

The 60-inch storm drain east of the pump station, which drains a large industrial business park to the south, can be modified just upstream of the pump station. The existing cleanout would be modified to allow for diversion of low-flows at the invert, and the diverted runoff would drain through a low-flow pipe to an outlet just west of the pump station. At that point, runoff would be treated with a vegetated swale/treatment wetland, extending approximately 190 feet northwest, as illustrated on the attached exhibit. The existing topography and soil-type appears to be ideal for this swale to be constructed with minimal grading and maximum effectiveness. This wetland would be constructed purely as a municipal separate storm sewer system (MS4) BMP rather than being developed to serve as a functional wetland. It is important that this MS4

purpose be maintained as the wetlands may require maintenance to remove accumulated sediments, and the treatment wetlands may also be subject to emergency sewage overflow retention in the event of a pump station failure.

Emergency Sewage Overflow:
The benefits of enhanced sewer overflow handling capacity has been made clear in recent years with various pipeline failures. The existing low-lying area west of the pump station, enhanced by the proposed raise in elevation of the access road, would provide an area for emergency sewage overflow containment. The overflow would be expected to occur in the rare event that the existing overflow vault adjacent to the pump station overfills. By closing the basin off to the creek, the topography and raised access road configuration would provide approximately 2.5 acre-feet of emergency storage (815,000 gallons). This storage volume is adequate to substantially minimize risk of a discharge from the pump station to Agua Hedionda Creek.

Costs:
A cost estimate breakdown for the sewer pump station enhancements is included in this appendix. The total cost of the enhancements, $35,635, is also included as a line-item in each project alternative in Appendix A.

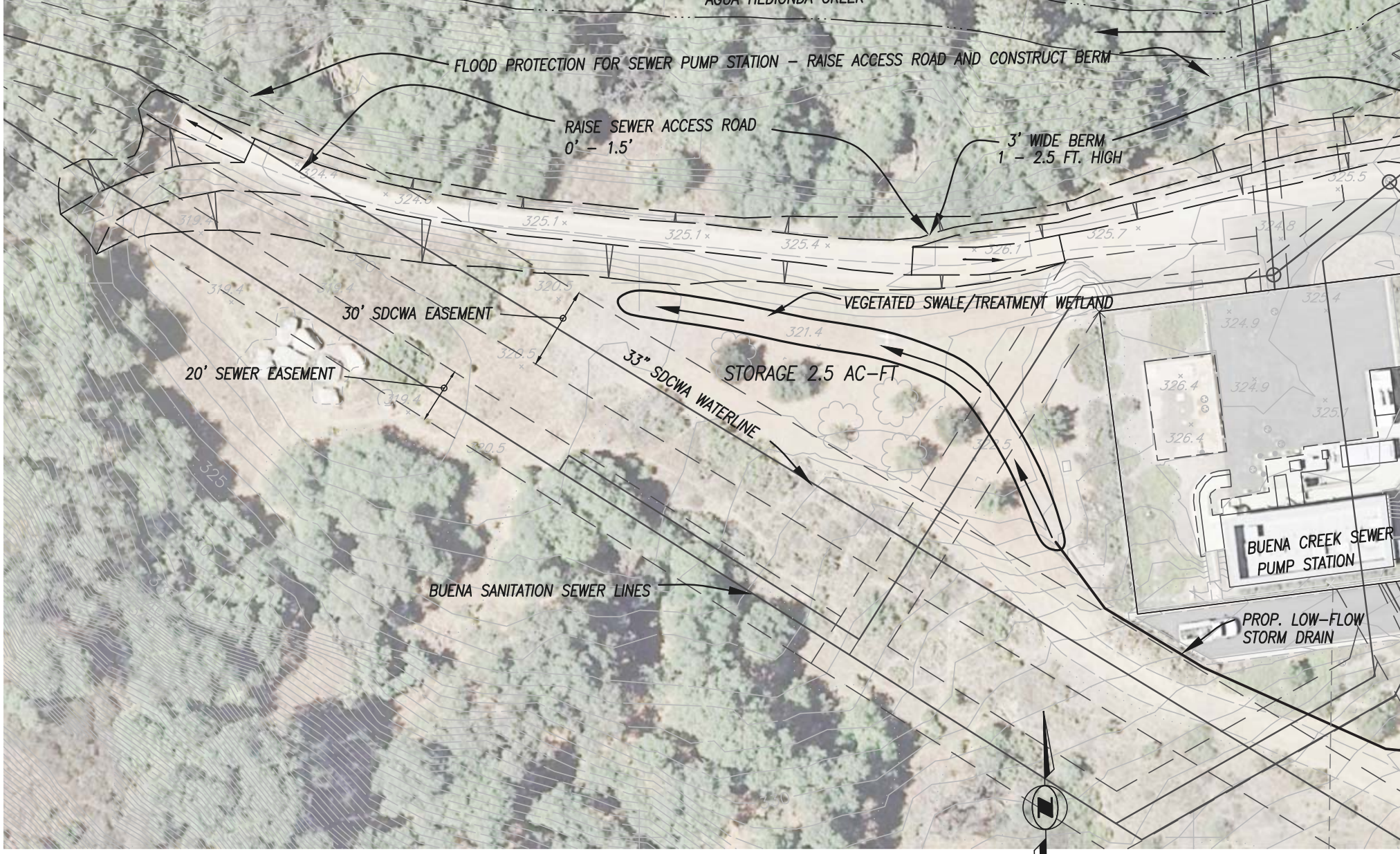

TORY R. WALKER ENGINEERING, INC.
WATER RESOURCES PLANNING & ENGINEERING

SCALE 1" = 40'

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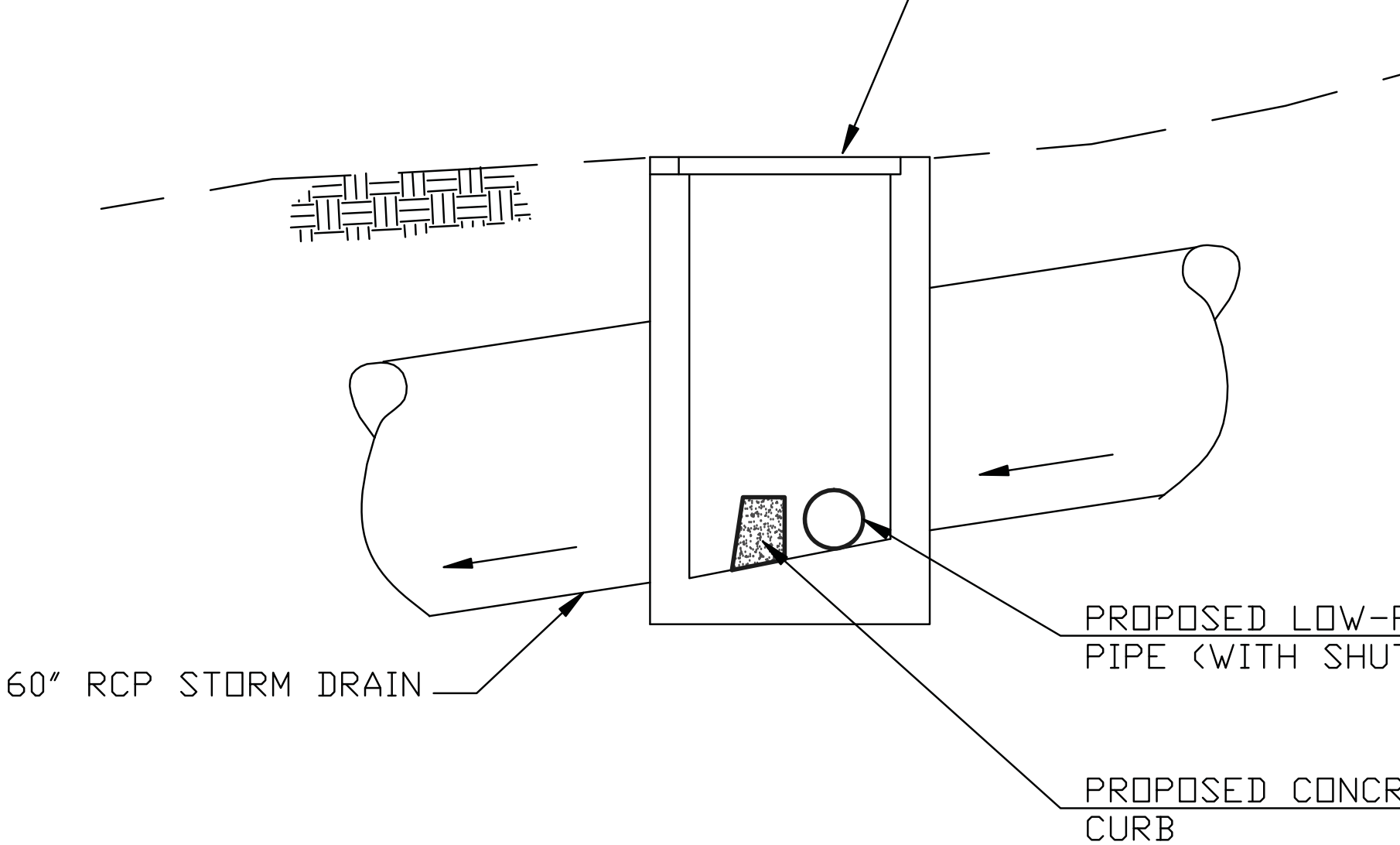

DETAIL: LOW-FLOW DIVERSION AT EXISTING CLEANOUT

AGUA HEDIONDA CREEK
RESTORATION PROJECT
PRELIMINARY COST ESTIMATE

PREPARED FOR: THE CITY OF VISTA
PREPARED BY: TORY R. WALKER ENGINEERING, INC.
DATE: February 22, 2011

Sewer Pump Station Enhancements

Construction Costs	Qty.	Unit	Price	Cost
Mobilization	1	LS	$2,000	$2,000
Construction and Sediment Control BMP's	1	LS	$2,500	$2,500
Import Fill From Roman Creek	950	CY	$7	$6,650
Finish Grading, road, berm, treatment wetland	20,000	SF	$0.15	$3,000
Modify Cleanout Structure for Diversion	1	LS	$3,200	$3,200
Low-flow Storm Drain & 2 valves	180	LF	$22	$3,960
Slope Planting	3,500	SF	$0.75	$2,625
Treatment Wetland/vegetated swale (including planting)	3,900	SF	$3	$11,700
Subtotal Construction				$35,635
Total Construction Costs				**$35,635**

CITY OF VISTA
CALIFORNIA

CERTIFICATION

I certify under penalty of law that the Jurisdictional Urban Runoff Management Plan Annual Report for the Fiscal Year 2011-12 and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Patrick Johnson

Patrick Johnson
City Manager
City of Vista

September 20, 2012
Date

John Conley

John Conley
Director of Engineering
City of Vista

9.19.12
Date

P: (760) 726-1340 | www.cityofvista.com | F: (760) 639-6132
200 Civic Center Drive, Vista, California 92084-6275

EXECUTIVE SUMMARY

In March of 2008, the City of Vista (City) developed and submitted its Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2007-0001 (NPDES Permit CAS0108758). This JURMP includes several new programs and updates to existing programs describing how the City of Vista will comply with the requirements in the municipal stormwater permit. This Annual Report describes program activities for Fiscal Year 2011-12: July 1, 2011 to June 30, 2012, and is the fifth JURMP Annual Report submitted under Order 2007-0001. The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Order R9-2007-0001. A brief synopsis of each component of the program is provided below.

Development Planning Component

The City's Development Planning Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2011-12. All development projects were required to undergo the urban runoff approval process, ensuring that projects were designed with applicable best management practices (BMPs) to mitigate urban runoff and stormwater pollution during and after construction. With the slow economy continuing this year, there were relatively few projects initiated this fiscal year, with four qualifying as priority development projects. The City had one Capital Improvement Project (CIP) that triggered hydromodification requirements. This component also includes a program designed to ensure that all required treatment control BMPs (TCBMPs) are constructed, operating, and maintained as designed. The TCBMP program continued to improve during this Fiscal Year. With four years of experience implementing the program, City staff has become more knowledgeable in the various aspects of the program including certification reviews, inspections, and enforcement. Staff has applied this knowledge accordingly increasing the overall effectiveness and efficiency of the program. Further detail describing the Development Planning Component of the Program can be found in Section 2.

Construction Component

The Construction Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2011-12. All projects were required to undergo the urban runoff approval process, ensuring that projects are constructed with applicable best management practices (BMPs) in place to mitigate urban runoff and stormwater pollution during construction. During the fiscal year, there were 31 sites under active construction at various times, all of which were inspected for stormwater compliance at the frequencies prescribed in the JURMP. The combination of pre-construction meetings and inspections continue to play a vital role in maintaining compliance at construction sites. Details regarding the Construction Component can be found in Section 3.

Municipal Component

The Municipal Component was implemented according to the JURMP during Fiscal Year 2011-12. All high priority municipal facilities were inspected and all other MS4 facilities including open channels and streets were inspected and cleaned as required in the JURMP. In total, nearly 700 tons of accumulated trash, debris, organics, and sediment were removed during MS4 maintenance activities this year preventing these pollutants from entering receiving waters. This component also includes the Special Events Program which continues to operate effectively and efficiently. Stormwater staff participates in the Special Events Committee, allowing advanced

opportunities for staff to interact with and educate applicants. This leads to a better understanding of the requirements and increased BMP implementation. All special events were reviewed and prioritized, with staff contacting and educating all applicants regarding required BMPs, and performing necessary inspections to ensure that BMPs were implemented as required. Internal improvements are underway to ensure the accuracy of the MS4 data currently recorded in GIS. Details describing the Municipal Component are included in Section 4.

Industrial and Commercial Component

The Industrial Commercial Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2011-12. The business inventory was updated as required, totaling 727 stationary facilities, and 294 mobile businesses. This year, stormwater inspections were performed at 184 stationary facilities (25% of the inventory). Inspections of FSEs also included high priority inspections required under the City's Fats, Oils, and Grease (FOG) program, leveraging the stormwater inspections program and increasing efficiency; 108 facilities received combined FOG and Stormwater inspections. Follow-up inspections were conducted at all sites requiring follow-up to verify corrective actions were appropriately implemented. The City continued implementing its Enhanced Inspection Program which has proven to be effective in obtaining compliance at facilities with a known history of non-compliance; seven facilities were removed from the program after demonstrating full compliance throughout the year. Inspections were also conducted under the Mobile Water Use (MWU) Licensing Program. Under this program, specific mobile water use businesses are required to obtain approval of their water reclamation systems prior to license issuance. Eight inspections were performed and the City approved the BMP systems for all the businesses. Details further describing this component can be found in Section 5 of this report.

Residential Component

The Residential Component was implemented according to the JURMP and was in compliance with permit requirements during Fiscal Year 2011-12. In the City's JURMP, the Residential Component focuses primarily on activities that have been deemed a high threat to water quality including: vehicle and boat repair/maintenance, automobile washing, automobile parking, home and garden care activities, home care and maintenance, manure and pet waste management, private sewer laterals and septic systems, and street sweeping of private roads/streets. Because these activities occur throughout all residential areas, all residential areas are deemed a high threat to water quality. Through the City's outreach programs, the City annually provides BMP guidance to residents and the general public concerning these high priority activities. Complaint investigations are a mechanism the City uses to assess stormwater compliance throughout the City's business and residential sectors. In an evaluation of past complaint data, the City identified sediment in Buena Vista HA as a water quality issue. To further evaluate this issue, the City implemented a Storm Patrol program in FY 11-12 to assess sediment in stormwater runoff. Additionally, stormwater staff investigated 40 residential complaints this year, stemming from sources such as sediment, spills, washing, over-irrigation, pool water, and pet waste. The City continued implementing its Used Oil and HHW Collection Programs which provides an environmentally friendly way to dispose of used oil and other household hazardous wastes. Over 240,000 pounds of household hazardous waste (HHW) generated in Vista were disposed of at the City's HHW collection center this fiscal year. Additional details about the Residential Component can be found in Section 6.

Illicit Discharge Detection and Elimination Component

The Illicit Discharge Detection and Elimination (IDDE) Component was implemented according to the JURMP and was in compliance with all Permit requirements during this fiscal year. Because of the inclusion of the Dry Weather Monitoring Program in this component, spanning May through September, it is not feasible to report on all data at this time. As allowed under the Permit, the IDDE Component will be submitted under separate cover by December 15, 2012.

Education Component

The Education Component was implemented according to the JURMP and was in compliance with all Permit requirements during FY 2011-12. This component addresses education for multiple target audiences including municipal departments and personnel, new development and construction communities, industrial and commercial business owners and operators, residents, general public, and school children. Municipal training focused on a variety of stormwater topics targeting all municipal staff including such topics as the new HMP requirements and TCBMPs. Outreach to the construction and development community was performed primarily through one on one interaction throughout the development process and pre-construction meetings. The business community was educated extensively via one on one interaction during inspections and follow-up investigations, as well as through complaint response efforts. Additionally, site and activity specific BMP information was provided to all new inventoried stationary and mobile businesses this year. Residents and the general public were educated through many outreach events, newsletters, public notifications, and other media. The City continued to utilize a contractor to perform in classroom outreach to school children as well, educating over 1600 students using the Splash Mobile Science Laboratory and the Mobile Green Machine. In each outreach effort, the City strived to ensure that the underserved target audiences were reached and the allowable discharges were addressed. The City developed new outreach brochures and expanded several to include Spanish versions. The City continued to implement the Water Quality Hotline and the email address for the Water Quality Protection Program. Further details regarding outreach and education are located in Section 8.

Public Participation Component

The Public Participation Component was implemented according to the JURMP and was in compliance with all Permit requirements during FY 2011-12. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational programs, watershed group participation, and other mechanisms. As the Participation Component is largely linked to the Education Component, it is expected that people will more likely participate in JURMP activities if they are adequately educated and informed of the City's programs. Two creek cleanups held in FY 11-12 were made possible due to participation of over 250 volunteers who removed over 1,800 pounds of trash and recyclables from the creeks. To encourage participation from the public, the City advertised the events using a variety of outreach tools including the City's website and Facebook page, community newsletter, Spotlight Newsletter, Creek to Bay Cleanup website, and flyers. Further details regarding the Public Participation Component of the program are located in Section 9 of this report.

Fiscal Analysis Component

The Fiscal Analysis for the program this year was performed using the Standardized Fiscal Analysis Method and is in compliance with all Permit requirements. The Standardized Method provides increased detail in the operating expenses, looking back at the estimated expenditures

for the program over the past year. This method provides estimated costs for each component of the program. Using this method, the FY 2011-12 costs for the program were approximately $2,728,000 with the majority of the costs in municipal, illicit discharge, and inspections components of the program. Details of the fiscal analyses performed can be found in Section 10 of this report.

Effectiveness Assessment Component

The Effectiveness Assessment Component was performed according to the JURMP and is in compliance with all Permit requirements. This year's assessment continued to focus on the individual components of the program and utilized levels 1-4 of the assessment matrix, looking at compliance, changes in knowledge and behavior, and load reductions. BMPs specific to each component were examined to determine whether they were effective or needed some modifications. They were also examined for programmatic efficiencies where possible. Where feasible, analysis of MS4 and receiving water quality was also provided. Significant findings of the effectiveness assessment include: positive impacts of inspections on the operation and maintenance of treatment control BMPs; the positive effect of preconstruction meetings and inspections related to BMP implementation on construction sites; load reductions associated with MS4 maintenance; the business compliance inspection and enhanced inspection programs, in combination meet permit compliance and work towards addressing problematic facilities; residential areas should focus on sources of sediment; and the education and outreach program appears to be effective and well focused. Water quality assessments are consistent with findings at the watershed level. High priority water quality problems identified include bacteria and nutrients during dry weather and bacteria and sediment during wet weather. The assessment then attempts to relate JURMP programs back to water quality findings, however this linkage is not always clear. As JURMP programs continue, it is expected that the City will better understand the relationship between constituents of concern, MS4 discharges, and receiving water quality. This knowledge will enable the City to further define the water quality issues in its Jurisdiction and make corresponding programmatic changes that are the most effective. Further details on the effectiveness assessments can be found in Section 11.

Special Investigations

Two special investigations were conducted during the reporting period. The Cities of Vista, San Marcos, and Oceanside partnered to conduct a study to review and analyze the recently adopted San Diego County Hydromodification Management Plan (HMP). Results of the study indicated that additional efforts should be conducted to provide Copermittees with updated sizing criteria tables that are most appropriate for the development community to use in the design of the required control facilities. A second investigation involved a Buena Creek Flow Monitoring Study which analyzed flow data at the City's flow monitoring and rain gauging station on Buena Vista Creek. In July 2011, the City installed a flow monitoring and rain gauging station on Buena Vista Creek to provide accurate flow data in the creek at the downstream boundary of the City during ambient and wet weather conditions. The complete report summarizing the flow data collected as part of this study is included in Appendix H-1.

Modifications to the JURMP

During the reporting period, the City made several modifications to the JURMP to increase its effectiveness in meeting Permit compliance and minimize the impacts of MS4 discharges in receiving waters. This includes: the development and implementation of an Enhanced Inspection Program designed to obtain compliance at problematic commercial and industrial facilities with a history of non-compliance; implementation of a new Restaurant Outreach

Program designed to educate and inform new FSEs about stormwater and FOG regulations; implementation of a Mobile Water Use Licensing Program to increase regulation and oversight of mobile water-use businesses by requiring inspections of BMP water reclamation systems prior to license issuance; and development and implementation of a Storm Patrol Program to assess sediment in stormwater runoff throughout Buena Vista Watershed. These program modifications are described in further detail in Section 13.

CITY OF VISTA

Fiscal Year 2011-12

JURMP Annual Report

Submitted September 2012

Prepared by:
City of Vista Engineering Department
Water Quality Protection Program

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1.0 INTRODUCTION

1.1 BACKGROUND

In 2002, the City of Vista (City) developed a Jurisdictional Urban Runoff Management Plan (JURMP) as required by the San Diego Regional Water Quality Control Board (RWQCB) Order No. 2001-01 (NPDES Permit CAS0108758). On January 24, 2007, an updated permit, Order No. R9-2007-0001 (Order) was adopted. This Order requires the City and each Copermittee (as defined in Section B of the Order) to update its JURMP to comply with the new requirements, and to annually submit reports on JURMP implementation. On March 24, 2008, the City submitted an updated JURMP to the RWQCB and began implementation.

This Annual Report provides information on JURMP implementation for FY 2011-12: July 1, 2011, to June 30, 2012.

1.2 PURPOSE AND OBJECTIVES

The purpose of this document is to provide a comprehensive report on the City of Vista's implementation of the JURMP in accordance with the requirements of the San Diego Regional Water Quality Control Board Order R9-2007-0001. This annual report describes the activities conducted by the City during the Fiscal Year and reporting period of July 1, 2011 through June 30, 2012. The City's program is described in its JURMP, dated March 2008, and in updates to the JURMP included in this Report. This annual report is presented in the standardized format developed collectively by the Copermittees, outlined below.

Section 1	Introduction
Section 2	Development Planning Component
Section 3	Construction Component
Section 4	Municipal Component
Section 5	Industrial and Commercial Component
Section 6	Residential Component
Section 7	Illicit Discharge Detection and Elimination Component
Section 8	Education Component
Section 9	Public Participation Component
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Section 11	Effectiveness Assessment Component
Section 12	Special Investigations
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2.0 Development Planning Component

2.1 Introduction

The City continued to implement the Land-Use Planning and Development Components of the JURMP to reduce the impacts of new development and redevelopment on storm water quality. Table 2.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order R9-2007-0001.

Table 2.1 Annual Reporting Requirements, Development Planning Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	A description of any amendments to the General Plan, the environmental review process, development project approval processes, or development project requirements.	1	Confirmation	Confirmed	2.2.2, 2.3
2	Confirmation that all development projects were required to undergo the Copermittee's urban runoff approval process and meet the applicable project requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
3	A listing of the development projects to which SUSMP requirements were applied.	1	Confirmation	See Appendix A-2 for listing	
4	Confirmation that all applicable SUSMP BMP requirements were applied to all priority development projects, including a description of how this information was tracked.	1	Confirmation	Confirmed	2.4.3.1
5	At least one example of a priority development project that was conditioned to meet SUSMP requirements and a description of the required BMPs.	1	Confirmation	See Appendix A-3 for Project Synopsis	
6	A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.	1	Confirmation	2.4.3.1	
7	An updated treatment control BMP inventory.	1	Confirmation	See Appendices A-4, A-5	
8	The number of treatment control BMPs inspected, including a summary of inspection results and findings.	1	Confirmation	150 BMPs inspected	Section 2.4.3.2.3; Appendices A-4, A-5
9	A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.	1	Confirmation	See Section 2.4.3.2.2	
10	Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.	1	Confirmation	2.4.3.1	
11	A listing of any projects which received a SUSMP waiver.	1	Confirmation	No Waiver Program In Place - No waivers issued	
12	A description of implementation of any SUSMP waiver mitigation program.	1	Confirmation		
13	A description of Hydromodification Management Plan (HMP) development collaboration and participation.	1	Confirmation	See Section 2.4.3.3	

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
14	A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.	1	Confirmation	See Section 2.4.3.3	
15	A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.	1	Confirmation	See Appendix A-2	
16	A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.	1	Confirmation	N/A	
17	The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	14 Warning Letters	2.4.3.4

2.2 Land Use Planning

2.2.1 Source Characterization

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are typically associated with development as defined in the City's JURMP and Standards Manual. As a reflection of the economic conditions of the past several years, land development activities within the City have been dramatically reduced. This has a direct impact on this particular source, resulting in reduced project submittals, reviews and ultimately, projects being constructed.

2.2.2 Program Implementation

The City's General Plan update was initiated in 2007 and was adopted by City Council on February 28, 2012. Information regarding the General Plan update, Vista 2030, can be found at the City's website at www.cityofvista.com under the Community Development web pages. The General Plan update includes a "Resource Conservation and Sustainability Element" that contains detailed goals and policies aimed at preserving, protecting and enhancing water quality. Specific policies can be found in Appendix A-1, which is an excerpt of the General Plan.

2.3 Environmental Review Process

The City's environmental review process incorporates a review of Low Impact Development design measures consistent with Order R9-2007-0001 permit requirements effective March 2008 as stated in the City's 2008 JURMP. During the reporting period the environmental review process has not changed and remains as stated below:

> The City's Environmental Review Process begins with the Initial Study Checklist (CEQA Guidelines, Appendix G). Based on the results of the checklist, the City will require the project applicant to provide additional studies to elaborate on the environmental impacts or recommend denial of the permit that the project applicant is seeking.

2.4 Development Project Approval and Verification Process

2.4.1 Source Characterization

The City's primary sources for Land-Use Planning continue to be new developments and significant redevelopments within the community. The pollutants of concern from these sources are typically associated with development as defined in the City's JURMP and Standards Manual.

2.4.2 Best Management Practice Requirements

Since the development and submittal of the City's 2008 JURMP, the City has increased its BMP requirements for land development projects, specifically those subject to Hydromodification Management Plan (HMP) requirements. The requirements associated with the HMP were updated in the City's local SUSMP, the Stormwater Standards Manual Section G during the previous reporting period in January 2011.

2.4.3 Program Implementation

2.4.3.1 SUSMP

The City maintains listings of development projects that have been initiated and completed during the reporting period. A Storm Water Applicability Checklist is a required submittal during the project application process as a part of the urban runoff approval process. The results of the checklist determine the post-construction requirements for the project. Standard and priority projects are required to submit a Water Quality Technical Report (WQTR) that describes how the project is meeting the storm water requirements.

City project reviewers do not approve construction drawings until the proposed BMPs included in the WQTR are incorporated onto the plans. This system is in place to ensure that the projects incorporate all requirements of the urban runoff approval process. The tracking system in place to ensure that this process is implemented is an Accela database which was initiated in January 2008.

During FY 2011-12, the City reviewed twelve (12) private development project applications as a part of the urban runoff approval process. Of the projects, two were determined to be priority development projects. Appendix A-2 contains a listing of the projects for which SUSMP priority development project requirements were applied during FY 2011-12. The City confirms that all applicable SUSMP BMP requirements were applied to all priority development projects during the reporting period. The applicability and confirmation of these requirements is tracked in an Accela database.

The City also evaluated all of its Capital Improvement Program (CIP) Projects as part of the urban runoff approval process. During the reporting period, there were two projects determined to be priority development projects.

The City's process continues with project completion. After projects are complete but prior to occupancy, the City verifies the proper installation and construction of all required post-construction BMPs. BMPs are verified in the field by Land Development staff and the Senior Environmental Specialist in the Stormwater Division and are confirmed on the as-built plans. Once the as-built plans are received, the engineer notifies the Senior Environmental Specialist to convert the newly constructed BMP from the pending list to the active inventory for treatment control BMPs. This process is performed for all priority development projects prior to occupancy.

As a result of the urban runoff approval process, no projects received a SUSMP waiver during FY 2011-12. The City does not have a waiver program for SUSMP requirements. Additionally, no projects were allowed to implement low efficiency treatment control BMPs for their projects unless they were used in conjunction with a medium or high efficiency BMPs.

Located in Appendix A-3 is a synopsis of a development project that was conditioned to meet SUSMP requirements. Included in the synopsis are the base project information and a description of the required BMPs. This particular project is a Recreational Vehicle (RV) vacation resort in the City and is a priority development project.

2.4.3.2 Treatment Control

During the reporting period, the City, through its inspections and annual verification program, verified that all approved and inventoried TCBMPs were maintained and operating effectively in removing pollutants from stormwater.

City staff schedules the inspections and verifications during the spring and summer months to ensure compliance with the Permit to optimize TCBMP functionality prior to the rainy season. Inspections and notifications to responsible parties are conducted at the end of each fiscal year and follow-up inspections and review of annual certification forms are conducted at the beginning of the next fiscal year. Table 2.2 is the current schedule of the City's TCBMP program activities. Detailed information on these activities is provided in Sections 2.4.3.2.2 (Annual Verification) and 2.4.3.2.3 (Annual Inspections).

Table 2.2 TCBMP Program Schedule of Activities (FY 2011-12 and FY 2012-13).

	FY 11-12	FY 12-13
Inspections	May/June	
Notification Letter	June	
Follow-up Inspections and Review of Annual Certification Forms		July - September

2.4.3.2.1 Inventory

The City uses a watershed-based inventory database to track the inventory of private and public treatment control BMPs (TCBMPs) and their maintenance and functionality. The City's current watershed-based TCBMP inventory for private development projects includes 74 development project sites, including four sites added during FY 2011-12. These projects contain 320 approved TCBMPs. Appendix A-4 contains the City's current TCBMP inventory for private development as well as a summary of the verification and inspection results.

Similarly, the City annually updates its inventory with public projects that include TCBMPs. No additional public sites were added to the inventory during the reporting period. The municipal inventory consists of nine project sites containing 40 approved TCBMPs. The municipal treatment control inventory is included in Appendix A-5. All municipal treatment control BMPs are annually inspected, cleaned, and certified as described in Table 4.2 of the City's 2008 JURMP.

As required under Order R9-2007-0001, the City prioritizes all projects with approved TCBMPs into high, medium, and low Threat to Water Quality (TTWQ) categories which then determine the appropriate frequencies of inspections. The City revised its process for prioritizing project sites in FY 2008-09 and included a copy of the process in the JURMP Revisions section of FY

2008-09 JURMP Annual Report. City staff followed this process in prioritizing all new projects during the reporting period.

2.4.3.2.2 Annual Verifications

The City continued its annual verification process of TCBMPs during the reporting period. The Order requires annual verification of effective operation and maintenance by the party responsible for maintenance. Responsible parties are required to submit an annual certification form verifying effective operation and maintenance of TCBMPs.

The certification form process includes providing annual information on the maintenance activities that were conducted for the TCBMPs and signing the certification. Signature implies the responsible parties are certifying that the TCBMPs operated effectively throughout the specified one year certification period. For private projects, the City typically mails out a letter and blank certification form in advance of the submittal deadline notifying responsible parties of the certification requirements and submittal deadlines. For this reporting period, the submittal deadline was set at August 8, 2011 covering the annual certification period from July 30th, 2010 to July 30th, 2011. In June 2011, City staff mailed a letter to responsible parties of all inventoried sites notifying them of the submittal deadline. For public projects, the City follows the same annual certification program process as with private sites.

The returned forms and accompanying documentation (invoices, maintenance records, and photographs) are reviewed by City staff to evaluate the validity of the form and, to the extent possible, the effectiveness of the TCBMPs in treating runoff. At sites where certification forms are deemed inaccurate or invalid, the City investigates the validity of the information provided and may require follow-up actions by the responsible parties. These investigative activities include communicating with the property owner to revise the certification form and/or a follow-up site inspection by City staff to evaluate the functionality and proper maintenance of the TCBMPs.

The City received 100 percent of the annual certification forms (including private and public sites) that were required to be submitted to the City during the reporting period. Staff conducted its review of all certification forms and documentation and found all project sites to be in compliance.

As new project sites are added to the City's TCBMP inventory, responsible parties are informed of the annual certification program requirements. The City mails an information packet to responsible parties of new project sites providing them with educational information about the City's TCBMP program and, maintenance and verification requirements. The City added four private project sites to the inventory during the reporting period and mailed out packets that included:

1) Letter with "Frequently Asked Questions"
2) Site TCBMP Corrective Action List (if applicable)
3) Blank Annual Certification Form
4) Site Map
5) Storm Drain BMP Maintenance Agreement (if applicable)
6) TCBMP Operation and Maintenance Guidelines

2.4.3.2.3 Annual Inspections

During the reporting period the City conducted its required annual inspections of private and public project sites to ensure that the TCBMPs were operating effectively prior to the rainy season. These inspections were conducted in May and June of 2012. Of the 74 inventoried

private TCBMP project sites, City staff inspected 25 sites including 17 high TTWQ and eight medium TTWQ project sites. City staff also inspected all of its public TCBMP project sites (nine total) including four high TTWQ, four medium TTWQ, and one low TTWQ. In total, the City conducted 34 TCBMP inspections exceeding the JURMP (and Order R9-2007-0001) inspection requirements. Table 2.3 below contains these minimum requirements and the numbers of inspections performed to meet these requirements.

Table 2.3 TCBMP Inspection Requirements and Results

Project Priority TTWQ	Inspections Required per Permit (Percentage)	Inspections Required per Permit (Number)	Inspections Performed (Number)
High	100%	21	21
High/Med/Low	20% of inventory	17	34 (41% of inventory)
	50% of project sites w/ drain inserts*	24	26 (54% of project sites w/ drain inserts)

*16 high TTWQ sites inspected have drainage inserts and count toward the requirement to inspect 50% of the sites with these types of BMPs. Additionally, 8 medium TTWQ sites inspected have drain inserts. The City inspected an additional 2 sites with drain inserts (all medium TTWQ). In total, 26 sites with drain inserts were inspected.

As a result of inspections, City staff identified TCBMP deficiencies at five private TCBMP project sites. Most of these deficiencies (four sites) were associated with excessive debris buildup in drain inserts. At the other site, City staff determined a swale had inadequate vegetative cover and showed signs of erosion. Staff observed TCBMP deficiencies at one public TCBMP site during inspection which included sediment buildup in an underground Vortex Separator. During inspections, City staff documented the conditions of each TCBMP through photographs and completion of the City's TCBMP Inspection Form. A copy of the TCBMP Inspection Form was included in the City's FY 2009-10 JURMP Annual Report.

Where deficiencies were identified, the City notified the responsible parties and required that appropriate corrective actions be implemented at these sites. Follow-up visits and enforcement actions will occur in the FY 2012-13 reporting period. As indicated in Table 2.2, annual inspections and follow-up visits are conducted simultaneously, but span two different reporting periods. Results from follow-up visits and enforcement actions will be reported in next year's annual report (FY 2012-13 JURMP Annual Report). Follow-up inspections and enforcement actions for FY 2011-12 are described in Section 2.4.3.4 below.

2.4.3.3 Hydromodification Management Plan

The HMP was submitted to the RWQCB in December 2009 and was approved by the Board on July 14, 2010. The City of Vista incorporated the HMP into its local SUSMP, the Stormwater Standards Manual, by the required effective date of January 14, 2011.

During FY 2011-12, the City had one project that triggered HMP requirements. The project was a City Capital Improvement Project (CIP) – "Emerald Drive & Date Street Traffic Signal and Intersection Improvements Project." The hydrological controls implemented to meet HMP requirements include the use of "Silva Cell" underground bioretention facilities and trees.

2.4.3.4 Enforcement

During the reporting period, City staff initiated enforcement actions at 11 private project sites that were required to implement corrective actions to correct BMP deficiencies. During the required annual inspections in June 2011, City staff identified BMP deficiencies at 11 private project sites. The City mailed out letters at the end of FY 2010-11 to all inventoried project sites requiring responsible parties to submit their annual certification forms by the required deadline. In the letter the City also required that appropriate corrective actions be implemented for any

BMP deficiency staff observed during inspections. The City included additional information on inspection results and corrective actions in the letters to those 11 sites requiring follow-up. This enforcement was necessary to ensure proper functioning of all TCBMPs prior to the start of the rainy season. As a result of follow-up visits and enforcement, the City verified compliance at all 11 sites.

Three other enforcement cases involving vegetated swales were completed during the reporting period. Warning letters were submitted to responsible parties at all three sites to initiate corrective actions and gain compliance. At a development site (GP 06-025, 950 Hacienda Drive), the responsible party successfully installed salt grass in a swale after previous efforts to restore the swale were unsuccessful. The initial vegetation that was planted during the development of the site had failed and multiple efforts to re-vegetate the swale were also unsuccessful. During FY 2010-11, the owner of the site consulted with a landscape professional to determine a solution for re-vegetating the swale. The landscape consultant decided to test a few different plant species in the swale to determine which species would most likely survive in the environment and conditions present at the site. The site is known to maintain moisture in the soil and sunlight is limited due to the overhead canopy surrounding the swale. As a result of the tests and consultation with the landscaper, the owner decided to install salt grass throughout the swale (March 2011).

Following the plantings, City staff conducted multiple field visits to the site to assess the growth of the salt grass. Results from the field visits indicated continual growth of the salt grass, but short of meeting the City's 80% coverage requirement for swales. According to the landscape consultant, the salt grass will continue to grow into the spring and summer months (FY 2011-12) and establish full growth, meeting the City's coverage requirements. During the reporting period (September 2011), City staff confirmed that the vegetative swale achieved the appropriate vegetative cover as required by the City.

At a site (GP 05-030) on Hill Drive, City staff determined the detention basin was denuded of vegetation and likely not effective in providing the necessary stormwater treatment as designed. Staff consulted with the property owner and requested that the vegetation be restored. The property owner subsequently installed sod which satisfied the City's request.

At a site (GP 96-055 – Costco) Staff determined that the existing Sand Filters were not functioning as designed and effective in treating stormwater runoff. During an inspection of the facility's TCBMPs, City staff determined that all four Sand Filters located at Costco have deteriorated and are not functioning as designed. The City requested that Costco replace the sand filters exactly as indicated on Plans or replace with an equally effective BMP ensuring that all stormwater runoff at the property is treated appropriately. Costco researched various options and decided to install high efficiency drain inserts at all drain inlets throughout the property. Manufactured by Fabco Industries, the StormBasin treats a wide array of pollutants and those generated at Costco including sediment, trash, oil and grease, hydrocarbons, metals, nutrients, and bacteria. City staff verified installation of the Fabco units in early 2012.

2.4.3.5 Education and Training

All staff responsible for construction and grading review received storm water training prior to the rainy season on September 29, 2011. The training included the following topics:

- Relationship between Land Development and Urban Runoff
- Relationship between Construction Activities and Urban Runoff
- Urban Runoff Pollutant Impacts

- City of Vista Stormwater Program – Construction Component
- Inspection Requirements
- Low Impact Development BMPs
- Treatment Control BMPs
- Watershed Concepts
- Pollution Prevention BMPs
- Dos and Don'ts

In addition, staff attended other trainings including:

1) Hydromodification Screening Tool (SCCWRP & CSU):9/6/11 – 3 City staff attended
2) Construction BMPs(APWA): 9/22/11 – 9 City staff attended
3) Treatment Control BMP Inspections (Dudek): 3/12/12 – 4 City staff attended.

2.5 Notable Activities

The City participated in a hydromodification study to validate the use of the SWMM model as approved in the San Diego HMP. This study is designed to complement the study commissioned by the Copermittees to validate the use of the HSPF models. This study was undertaken as a joint effort between several Copermittees in North San Diego County and was completed during FY 2011-12.

New Cityworks Data Management System

In FY 2011-12, the City developed and launched a new GIS-based computer data management system using Cityworks software. The Cityworks system will be used by several departments to manage many aspects of the City's stormwater program including complaint tracking and response; industrial/commercial inspections; municipal inspections; treatment control BMP inspections; public inquiries and hotline calls; storm drain and channel maintenance; inventory management; and special events. The system links the tasks associated with these program components (i.e. inspection results, complaint cases, etc.) to a map containing relevant stormwater information which allows progress, upcoming tasks, and site history to be easily visualized, tracked, and managed. The single Cityworks system will replace a multitude of spreadsheets and databases currently used to capture the same data, which will allow for simplified tracking, managing, and reporting.

The City also acquired mobile computer equipment to track Cityworks tasks in the field. The equipment provides the capability to input data which can then be used to immediately generate inspection reports and enforcement documents, potentially creating faster compliance timeframes. The mobile input aspect of Cityworks will also allow smooth coordination between staff members and departments working on the same issue, as the status is available without lag time and everyone has access to the same centralized system.

The creation of the custom Cityworks system occurred throughout 2011-12, with system live activation in June 2012. The WQPP will rely heavily on Cityworks as the primary data management tool during the upcoming reporting period (2012-13).

3.0 Construction Component

3.1 Introduction

The City continued to implement the Construction Component of its Urban Runoff Management Plan (URMP) in FY 2011-12 to prevent and reduce pollutants in runoff from construction activities within the City. Table 3.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 3.1 Annual Reporting Requirements, Construction Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Confirmation that all construction sites were required to undergo the Copermittee's construction urban runoff approval process and meet the applicable construction requirements, including a description of how this information was tracked.	1	Confirmation	Confirmed	3.5.1
2	Confirmation that a regularly updated construction site inventory was maintained, including a description of how the inventory was managed.	1	Confirmation	Confirmed	3.2
3	A description of modifications made to the construction and grading ordinances and approval processes.	1	Confirmation	Completed changes in FY 2008	3.3
4	Confirmation that the designated BMPs were implemented, or required to be implemented, for all construction sites.	1	Confirmation	Confirmed	3.4
5	Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.	1	Confirmation	Since the maximum disturbed area and advanced treatment requirements took effect, no projects have triggered these requirements	3.5.3
6	A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.	1	Confirmation		3.5.4
7	For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.	1 & 3	Confirmation / Tabulation / Inspection	See Section 3.5.5. and Appendix B-1	
8	A description of the general results of the inspections.	1	Confirmation	Confirmed	Appendix B-2
9	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	3.5.5
10	The number of violations and enforcement actions (including types) taken for construction sites, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	5 Verbal Warnings	3.5.6

3.2 Source Characterization

During the entire reporting period, the City maintained a regularly updated construction site inventory. Through the reporting period, the City met the minimum JURMP requirement of making monthly updates, additions and deletions of sites, to the inventory.

The City's inventory is managed in Microsoft Access, an electronic database. Additions to the inventory are made when projects enter the construction phase of their development process. The project information is entered into the database along with the project's inspection frequency priority. The inspection forms that trigger inspections are initiated from the inventory based on the inspection frequency priority assigned to each project. Projects are removed from the current database inventory when inspection forms are returned by the inspectors with notations that the project is complete.

3.3 Updates to Ordinances and Approval Processes

As a part of the City's 2008 JURMP, modifications to the municipal code and land development approval processes were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2011-12 reporting period, the City did not make updates to its municipal code or its land development approval process.

3.4 Best Management Practice Requirements

As a part of the City's 2008 JURMP, modifications to the requirements for construction and grading requirements were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2011-12 reporting period the City did not make modifications to its best management requirements for construction and grading projects.

3.5 Program Implementation

3.5.1 Construction Urban Runoff Approval Process

All new projects are required to submit plans and apply for a Stormwater permit as part of the urban runoff approval process. All project plans are checked for compliance with municipal permit requirements and the tracking of the projects submittals is done through an Accela database.

3.5.2 BMP Implementation

Through the development approval and construction inspection processes, the City confirms that all designated BMPs were required to be implemented and also implemented throughout the reporting period for all construction sites. During the active construction phase of projects, if BMPs were not implemented or were improperly implemented, the inspection program identified such deficiencies and required implementation and/or modifications to be completed.

3.5.3 Maximum Disturbed Area for Grading

The City began implementing the maximum disturbed area for grading activities in March 2008. During the reporting period, the City did not have any projects in the development process, the planning phase through construction phase, which met the criteria established in the City of Vista 2008 JURMP. Therefore, there are no project sites to report for this reporting period.

3.5.4 Advanced Treatment Sites

The City began implementing the advanced treatment requirements for grading activities in March 2008. During the reporting period, the City did not have any projects enter the development process meeting the criteria established in the City of Vista 2008 JURMP. Therefore there are no project sites to report for this reporting period.

3.5.5 Inspections

Construction sites are required to be inspected based on the frequency schedule set forth in the City's JURMP. City inspectors from the Engineering Department inspect BMPs associated with grading permits (private projects) and public projects.

During FY 2011-12, the City inspectors conducted all the documented Stormwater specific BMP inspections per the frequencies described in the JURMP. Stormwater inspections were officially logged and documented, along with pertinent information regarding the specific construction site.

To ensure appropriate documentation of FY 2011-12 storm water specific inspections, training was conducted on September 29, 2011, where emphasis on appropriately documenting and tracking inspections was stressed to the inspection staff.

Appendix B-1 is a summary of the construction project inspections of active projects, during the reporting period, and includes the following information on a project basis:

- Project Location
- Storm Water Priority (Inspection Frequency)
- # of weeks active in the Rainy Season
- # of documented Stormwater inspections in Rainy Season
- # of documented Stormwater inspections in Dry Season
- Total # of documented Stormwater inspections for the site during the reporting period
- # of non-Stormwater inspections in Rainy Season
- # of non-Stormwater inspections in Dry Season
- Project specific summary of inspection findings

During FY 2011-12, 31 construction sites were in the active construction phase: 11 were high priority; 10 were medium priority; and, 10 were low priority. In total, the Community Development Department conducted 374 inspections throughout the reporting period. Additionally, Appendix B-2 contains a summary of each inspected project.

In order to ensure that inspections addressed all required inspection steps, the inspectors used a standard computer generated form for inspections containing all required inspection steps.

3.5.6 Construction Enforcement

Inspectors generally coordinated with the contractor to immediately correct any storm water issues or potential violations. If issues are not resolved and violations occur, enforcement escalates. During the reporting period, five documented verbal warnings were issued through direct correspondence with the responsible contractors. The correction notice was followed up

with at the following inspection to ensure that no further enforcement actions were necessary. Site Construction staff made corrections before the follow-up inspection.

If verbal discussions and corrective notices are not successful at achieving compliance at a project site, enforcement actions are escalated. The construction inspection staff may escalate enforcement by requesting an investigation from the Water Quality Protection Program staff.

3.6 Notable Activities

Rainy Season Letters to Construction Sites

During the reporting year, the City prepared and provided to all active construction sites a rainy season letter prior to the beginning of the rainy season (October 1st, 2011). The purpose of the letter was to notify active construction sites that during the rainy season, additional BMPs are required. A copy of the letter that was provided is included as Appendix B-3.

New Cityworks Data Management System

In FY 2011-12, the City developed and launched a new GIS-based computer data management system using Cityworks software. The Cityworks system will be used by several departments to manage many aspects of the City's stormwater program including complaint tracking and response; industrial/commercial inspections; municipal inspections; treatment control BMP inspections; public inquiries and hotline calls; storm drain and channel maintenance; inventory management; and special events. The system links the tasks associated with these program components (i.e. inspection results, complaint cases, etc.) to a map containing relevant stormwater information which allows progress, upcoming tasks, and site history to be easily visualized, tracked, and managed. The single Cityworks system will replace a multitude of spreadsheets and databases currently used to capture the same data, which will allow for simplified tracking, managing, and reporting.

The City also acquired mobile computer equipment to track Cityworks tasks in the field. The equipment provides the capability to input data which can then be used to immediately generate inspection reports and enforcement documents, potentially creating faster compliance timeframes. The mobile input aspect of Cityworks will also allow smooth coordination between staff members and departments working on the same issue, as the status is available without lag time and everyone has access to the same centralized system.

The creation of the custom Cityworks system occurred throughout FY 2011-12, with system live activation in June 2012. The WQPP will rely heavily on Cityworks as the primary data management tool during the upcoming reporting period (2012-13)

4.0 MUNICIPAL COMPONENT

4.1 Introduction

This section describes the implementation of the Municipal Component of the JURMP during FY 2012. The program section was implemented to: (1) reduce municipal discharges of pollutants from the MS4 to the Maximum Extent Practicable (MEP), and; (2) prevent municipal discharges from the MS4 from causing or contributing to a violation of water quality standards.

This section addresses two types of municipal operations: fixed or stationary facilities; and field activities. A fixed facility is a specific building or physical location at which municipal operations occur. An example is a corporate yard. Conversely, field activities are actions or programs that staff or City contractors implement as a part of their work duties at various locations across the City. An example is street maintenance.

Table 4.1 contains compliance related information, as described in the Annual Reporting Requirements, Section J.3 of Order 2007-0001.

Table 4.1 Annual Reporting Requirements, Municipal Section

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Any updates to the municipal inventory and prioritization.	1	Confirmation	Appendix C-2	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	1	Confirmation	Confirmed	4.2.2, 4.2.3.5, 4.3.2
3	A description of inspections and maintenance conducted for municipal treatment controls.	1	Confirmation	Section 4.2.3.1	
4	Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	1 / 3	Tabulation / Inspection	FY 2012 Inventory = 806 1073 inspections @ 899 facilities Catch Basins/Inlets Cleaned = 266 (11 were duplicate location cleanings)	4.2.3.1, Table 4.2
5	Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	1	Tabulation	Total Distance of MS4 pipes = 37 miles 2.82 miles inspected 0.1 miles cleaned	4.2.3.1, Table 4.2
6	Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.	1	Tabulation	Open Channels = 5.3 miles Inspected = 1.4 miles Cleaned = 1.4 miles	4.2.3.1, Table 4.2

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
7	Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.	4	Quantification	Catch Basins/Inlets = 76.8 tons MS4 Pipes = 0.5 tons Open Channels = 154 tons	4.2.3.1, Table 4.2
8	Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding.	1	Confirmation	None at this time	-
9	Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	1	Confirmation	Confirmed	4.2.3.3
10	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	75 miles	4.2.3.2, Table 4.3
11	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	225 miles	4.2.3.2, Table 4.3
12	Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	75 miles	4.2.3.2, Table 4.3
13	Identification of the total distance of curb-miles swept.	1	Tabulation	8,000 miles	4.2.3.2
14	Identification of the number of municipal parking lots, the number of municipal parking lots swept, and the frequency of sweeping.	1	Confirmation	Lots = 18 Swept = 7 @ Once a month	4.2.3.2
15	Amount of material (tons) collected from street and parking lot sweeping.	1.5	Quantification	Street Sweeping = 450 tons Parking Lots = 0.5 tons	4.2.3.2
16	A description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4	1	Confirmation	See Section 4.2.3.4	
17	Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of the inspections.	3	Inspection	Sites requiring inspections =31 Sites inspected = 31	4.3.2, Table 4.5

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
				Frequency of inspections = 1X per year	
18	A description of the general results of the inspections.	1	Confirmation	See Section 4.3.2, Appendix C-3	
19	Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	4.3.2
20	The number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	Verbal Warnings = 20	4.4, Appendix C-3

4.2 Municipal Activities

4.2.1 Source Characterization

During the reporting period, there were six municipal activities included in the inventory: street maintenance, plaza and sidewalk cleaning, landscape maintenance, waste handling and disposal, MS4 maintenance, and wastewater utility maintenance. Of these six, street maintenance, and plaza and sidewalk cleaning were high priority activities. These activities and priorities remained unchanged from the 2008 JURMP inventory. Both high priority activities received inspections in FY 2011-12.

4.2.2 Best Management Practice Requirements

As a part of the City's 2008 JURMP, modifications to the municipal BMPs were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the FY 2011-12 reporting period, the City did not make modifications to its best management requirements for municipal facilities and activities. All BMPs required in the JURMP were implemented during this reporting period.

4.2.3 Program Implementation

As a part of the City's 2008 JURMP, modifications to the municipal activities program were made. These changes were completed in order to ensure that the City of Vista's 2008 JURMP met the requirements of Order R9-2007-0001.

During the reporting period, the City did not make modifications to its municipal program implementation processes or procedures.

The following sub-sections discuss the program implementation for the municipal activities programs during the reporting period.

4.2.3.1 Municipal Separate Storm Sewer System (MS4) Program

Table 4.2 summarizes the MS4 inspection and cleaning program during FY 2011-12.

Table 4.2 MS4 Inspection and Cleaning Program Data

Item	Quantity	Inspected	Cleaned	Amount Removed
Catch Basins and Inlets	806*	1073**	266***	76.8 tons
Total distance of MS4 Pipe	37 miles	2.82 miles	0.1 miles	0.5 tons
Total distance of Open Channels	5.3 miles (improved)	1.4 miles	1.4 miles	154 tons

* Represents the inventory number at the beginning of FY 2011-12, updates to the inventory were conducted during the reporting period and are discussed in Section 4.4 below
** Some locations were inspected more than once during the reporting period
*** Some locations were cleaned more than once during the reporting period

There are a total of nine sites with 40 treatment control BMPs in the City's inventory this fiscal year. Types of TCBMPs include: drain inserts, infiltration trenches, vegetated swales, porous concrete, vortex separators, and bio-retention areas. All were inspected under the Treatment Control BMP program, as described in the City's 2008 JURMP. Appendix A-5 contains all maintenance information, including inspection dates, maintenance frequency, and debris removed.

4.2.3.2 Street Sweeping Program

Areas classified as high and moderate priority for trash generation were swept twice per month.

Table 4.3 summarizes the street sweeping program during FY 2011-12.

Table 4.3 Street Sweeping Program

Volume of Trash Generation	Street Types	Total Curb-Miles	Minimum Frequency	Minimum Frequency Achieved?
High	Commercial	75	2X per month	Yes
Moderate	Residential	225	2X per month	Yes
Low	Other Streets and Parking Facilities	75	1X per month	Yes

A total of approximately 8,000 curb-miles were swept during FY 2011-12. The total amount of material collected by the street sweeping program for the reporting period was 450 tons for the streets, 0.5 ton for the parking facilities, and 0.5 ton within the operations yards.

4.2.3.3 Pesticide, Herbicide and Fertilizer Management

The City confirms that appropriate BMPs were implemented by the City staff with respect to the Pesticide, Herbicide and Fertilizer Management requirements of the JURMP. No modifications to the BMPs for pesticides and fertilizers were made during the reporting period.

4.2.3.4 Wastewater Element

In an effort to maintain the wastewater collection system and to identify potential problem areas in the system, the City conducted 29.6 miles of video inspection, CCTV, of the wastewater system. The video inspection program is in place to prevent and/or eliminate infiltration from the wastewater system to the MS4. The video inspection results are used to identify problem areas within the wastewater system that require maintenance and/or repair.

Within the 311 miles of the wastewater collection system, approximately 198.6 miles were cleaned as part of the regular schedule of inspection and cleaning. Some portions of the collection system were cleaned twice due to priority and buildup of materials.

During the reporting period, a total of nine sewer spills (all private) were investigated, and where appropriate, responded to by the City. The City determined one private report to be unfounded, but the remaining eight spills were confirmed. Information on the spills is presented in the complaint summaries (Appendix D-4). The City Public Works Department is responsible for responding to and abating public sewer discharges, since most residents and businesses do not have the equipment to effectively contain and capture spills. Upon arrival at an overflow incident, containment is a priority. The City's Public Works Department operates three Vactor trucks which are essential in the containment and cleanup of spills.

The City has also established mechanisms for the public at large to provide notification of sewage spills to the City through the use of several hotlines. Additionally, the City posts its reporting phone numbers on sewage easement gates as well as other visible locations.

4.2.3.5 Special Events

Pre-event and post-event inspections were conducted based on the size and location of the event, planned activities, number of participants and spectators, and whether or not City staff would be present to monitor the event and BMPs. Pre/post-event inspections were necessary at six special events:

1) Rod Run
2) Vista Christmas Parade & Carnival
3) Burger Run Car Show
4) Saint Pat's Event
5) Strawberry Festival and Street Fair
6) Taste of Vista

Storm water staff was present at these events and conducted the required inspections. Additionally, City staff trained in storm water BMPs was present at some of the other special events, even though a formal inspection was not completed. If BMP issues were noticed, the event organizers were notified and corrective actions taken. The most common BMPs required at the special events were providing trash receptacles, portable toilet secondary containment, spill kits, storm drain inlet protection, and trash/debris clean up and removal of BMPs after the event. Through the special event application process, City staff was able to make determinations as to whether BMPs would be required for each specific event. In the case where the event did not warrant the implementation of BMPs, they were not required. For those events that warranted BMPs, the City notified the applicant of the BMP requirements and ensured appropriate BMPs were implemented.

During the reporting period, City staff met with the event organizers, prior to the issuance of their special event permits, so that it was clearly understood what the City's storm water requirements were for the specific event type and venue.

Table 4.4 Summary of Annual Storm Water Activities for Special Events

Event Name	Event Date(s)	Pre-Communication Meeting with Organizer	BMPs Required to be Implemented	Full Storm Water Inspection	City Staff Present at Event	Event Venue
4th of July Block Party	7/4/11	Yes	Yes	No	Yes	Brengle Terrace Park
Mural in a Day	7/11/11, 7/16/11	No	No	No	No	203 Main St
National Night Out/Walk Against Crime	8/2/11	Yes	Yes	No	No	Indiana and Main St
Rod Run 21 Annual Car Show & Smokin Q Classic BBQ	8/5/11, 8/6/11, 8/7/11	Yes	Yes	Yes	Yes	Historic Downtown Vista: Main, Indiana, Citrus, Gazebo Parking lot
Firefighter MDA Boot Drive	8/31/11	No	No	No	No	Vista Village Dr & S. Santa Fe Ave
Red Shoe Day	9/28/11	Yes	No	No	No	Various McDonalds Restaurants
Vista Invitational Band Tournament	11/12/11	Yes	No	No	No	Vista High School
Downtown Tree Lighting	12/2/11	Yes	No	No	No	Gazebo Parking Lot
Vista Christmas Parade & Carnival	12/2/11-12/3/11	Yes	Yes	Yes	Yes	Vista Village
Photo Shoot for Tri-City Medical	1/13/12, 1/17/12	No	No	No	No	Front of Avo Playhouse
Burger Run Car Show	1/14/12	Yes	Yes	Yes	Yes	Eucalyptus Ave & S. Santa Fe
Soroptimist Walk	1/21/12	Yes	No	No	No	Gazebo area next to Avo
Bookmobile for Overdrive Digital	2/14/12	No	No	No	No	Library Parking Lot
St. Pat's event	3/17/12	Yes	Yes	Yes	Yes	Main St & Indiana St
Vista Community Clinic Fundraiser	3/24/12	Yes	Yes	No	Yes	1000 Vale Terrace
Fire Fighter Boot Drive Burn Institute	4/3/12	Yes	No	No	No	Santa Fe/Vista Dr
Community Prayer Service A National Day of Prayer	4/3/12	Yes	No	No	No	Memorial Flag Pole
Library Re-dedication	4/28/12	No	No	No	No	Library Parking Lot
VVBA BID ROC Clean Up Event	5/19/12	No	No	No	No	Flag Pavilion at E. Broadway & S. Citrus
5K; Kids 1 Mile; Kid's ¼ Mile & Bike Ride	5/27/12	Yes	Yes	No	No	Vista Village Shopping Center
Strawberry Festival & Street Fair	5/27/12	Yes	Yes	Yes	Yes	Main St & Indiana St
VVBA Flag Day	6/14/12	No	No	No	No	Flag Pavilion at E. Broadway & S Citrus
Scottish Highland Games	6/23/12	Yes	Yes	No	Yes	Brengle Terrace Park
Taste of Vista	6/27/12	Yes	Yes	Yes	Yes	Main St, from Hanes Pl to Michigan
Kids Town Montessori	6/28/12	No	No	No	No	Avo Playhouse sidewalk
Red Shoe Day	6/28/12	Yes	No	No	No	Various McDonalds Restaurants

4.2.3.6 Non-Emergency Fire Fighting

BMPs are used to reduce the discharge of pollutants from non-emergency firefighting activities. The City has developed and implemented a program to reduce pollutants from these activities in

accordance with the Permit. During the reporting period, BMPs were implemented as described in the JURMP when performing the following activities:

- Maintenance of fire and emergency vehicles and equipment
- Training exercises
- Facilities maintenance
- Post-emergency rehabilitation of response equipment.

4.3 Municipal Facilities

4.3.1 Source Characterization

No updates were made to the City's municipal inventory during the reporting period. The most up-to-date inventory can be found in Appendix C-1. The inventory includes 31 high priority municipal facilities.

4.3.2 Inspections

The City conducted facility inspections for each of its high priority facilities and activities during FY 2011-12. The purpose of these inspections was to ensure that BMPs (including those for pollution prevention) were being implemented. The inspections followed all required inspections steps to determine full compliance with the City's JURMP.

Per the JURMP, the City formally inspects all high priority municipal sites. Municipal sites are considered to be fixed facilities, where high priority municipal activities occur. The two high priority municipal activities, a street repair maintenance activity and sidewalk cleaning, were also inspected. The networks (streets & roads and wastewater collection system) are routinely inspected under various programs such as street sweeping, streets maintenance, MS4 inspections and cleaning, and the sanitary sewer system video inspection and cleaning program. Formal inspection forms are not generated for the general routine inspections performed on these municipal networks.

Table 4.5 provides a summary of the formal annual storm water inspections performed for the high priority municipally operated sites/facilities.

A summary of inspection results can be found in Appendix C-2. For each facility, recommendations for follow-up corrective actions were listed. In general, the corrective actions included: asphalt repairs; removal of vegetation and trash accumulation; replacing of dumpster lids; and, good housekeeping practices. The corrective actions recommended during the inspections were implemented and verified by City staff. All BMPs required in the JURMP were implemented at all municipal facilities during the reporting period.

Table 4.5 Summary of Annual Storm Water Inspections for High Priority Municipal Facilities and Activities

Municipal Facilities				
No.	**Name**	**Address**		**Inspection Date**
1	Breeze Hill Park	645	S. Melrose Dr.	10/18/11
2	Brengle Terrace Park	1200	Vale Terrace Dr.	10/20/11
3	Bub Williamson Park	530	Grapevine Rd	10/18/11
4	Buena Vista Park and Maint Yard	1851	S. Melrose Dr.	10/18/11
5	Luz Duran- Townsite Park	340	E. Townsite Dr	10/20/11
6	Moonlight Amphitheater	1200	Vale Terrace Dr	10/20/11
7	Parking Lot		E. Broadway @ Hanes Pl	10/19/11
8	Parking Lot	300	Blk Main St	10/19/11
9	Parking Lot		Main St and Michigan Ave.	10/19/11
10	Parking Lot		Main St @ S. Indiana s/e	10/18/11
11	Parking Lot	523	S. Santa Fe Ave	10/18/11
12	Park-N-Ride Lot		Emerald @ W. Vista Way	10/18/11
13	PW Satellite Yard	2430	Lupine Hills Drive	10/18/11
14	PW Satellite Yard – Buena Yard	2525	Lupine Hills Drive	10/18/11
15	Public Works Yard	1165	E. Taylor St	10/18/11
16	Public Works HHW	1145	E. Taylor St	10/18/11
17	Rain Tree Park	545	Townsite Dr	10/20/11
18	Rancho Buena Vista Park	1851	S. Melrose Dr	10/18/11
19	Shadowridge Park	2101	Lupine Hills Dr	10/18/11
20	South Buena Vista Park	1602	Mountain Pass Circle	10/27/11
21	SBV Park Detention Basin	1602	Mountain Pass Circle	10/27/11
22	Sports Park	555	W. Bobier Dr	11/19/11
23	Thibodo Park	1150	Lupine Hills Dr	10/18/11
24	The Wave Waterpark	101	Wave Dr	10/19/11
25	Wildwood Park	651	E. Vista Way	10/20/11
26	Brengle Terrance Detention Basin	1100	Vale Terrace Dr	10/27/11
27	Creek Walk/ Buena Vista Channel		Main St and Wave Dr	10/27/11
28	Cypress Detention Basin		Monte Vista Dr and Cypress Dr	10/27/11
29	Monte Vista Detention Basin		Monte Vista Dr and Valley Dr	10/27/11
30	Buena Pump Station	2080	S. Melrose Dr	10/27/11
31	Raceway Pump Station	2685	S. Melrose Dr	10/27/11
Municipal Field Activities				
32	Road and Street Repair	Townsite Dr @ Luz Duran Park		10/27/11
33	Plaza and Sidewalk Cleaning-Pressure Wash	200 Civic Center Dr		10/26/11

4.4 Enforcement

Twenty enforcement actions were taken during the reporting period. These included verbal warnings for:

- South Buena Park Detention Basin: Sediment accumulation surrounding area drain
- Monte Vista Detention Basin: Basin had vegetation and sediment accumulation
- Cypress Detention Basin: Basin had vegetation and sediment accumulation

- Vista Sports Park: Trash and debris in area drain and perimeter ditches.
- South Buena Vista Park: Sediment on concrete paths
- Shadowridge Park: Leaves were accumulating in area drains and curbs.
- Rancho Buena Vista Park: Vegetation accumulation in area drains. Dumpster enclosure required cleaning and pallet removal.
- Rain Tree Park: Sediment migrating from slopes
- Public Works Satellite Yard: Scrap equipment and vegetation in open areas that required cleaning. Sediment was migrating from slopes.
- Public Works Yard: Oil accumulation under machinery, vegetation accumulation and sediment migrating from landscaped areas
- Public Works Household Hazardous Waste Yard: Trash and debris and gravel bag berms that needed maintenance.
- Park and Ride Lot: Trash and debris
- Parking Lot (Broadway & Hanes): Trash
- Parking Lot (S. Santa Fe): Erosion of asphalt
- Parking Lot (Main Street): Oil residue in parking stall
- Moonlight Amphitheater: BMPs needed maintenance and sediment had accumulated in drainage ditches
- Luz Duran Park: Sediment
- Buena Vista Park: Sediment and vegetation in curb area
- Bub Williamson Park: Dumpster enclosure needed maintenance
- Brengle Terrace Park: Slope BMPs needed maintenance

Subsequent follow-up inspections to all the sites ensured proper actions had been taken. No further actions were necessary.

4.5 Notable Activities

Evaluation and Update of MS4 Inventory

During the reporting period, the City embarked on performing a complete evaluation and update of its MS4 inventory. During the last storm system master planning effort, the City developed a GIS inventory of its MS4 system. As it was developed, the GIS database used a variety of sources to populate its data sets. However, the City has since determined that the electronic GIS data system did not always match the City field crews' inventory. The City has been working towards reviewing the system for accuracy and making updates to best reflect the actual inventory. During the reporting period, the City made its most significant effort towards reviewing and field verifying the MS4 inventory.

The efforts have included desktop exercises and field verification of facility types, location and confirmation that the facilities exist[1]. Through this review and update process, the City has identified 93 locations that were previously not identified in the field crews' inventory. This brings the known inventory of facilities from 806 to 899.

The City will continue to improve upon its inventory and expects to have completely verified each entry in the GIS database and field crews' inventory. This improves the program by

[1] In some cases, it was determined that the master planning effort inserted facilities into the GIS layer for modeling purposes, but were classified incorrectly and were shown to be physical features in maps and system atlas books.

ensuring that each facility is inspected and that inspections and cleanings are properly tracked and reported.

New Cityworks Data Management System

In FY 2011-12, the City developed and launched a new GIS-based computer data management system using Cityworks software. The Cityworks system will be used by several departments to manage many aspects of the City's stormwater program including complaint tracking and response; industrial/commercial inspections; municipal inspections; treatment control BMP inspections; public inquiries and hotline calls; storm drain and channel maintenance; inventory management; and special events. The system links the tasks associated with these program components (i.e. inspection results, complaint cases, etc.) to a map containing relevant stormwater information which allows progress, upcoming tasks, and site history to be easily visualized, tracked, and managed. The single Cityworks system will replace a multitude of spreadsheets and databases currently used to capture the same data, which will allow for simplified tracking, managing, and reporting.

The City also acquired mobile computer equipment to track Cityworks tasks in the field. The equipment provides the capability to input data which can then be used to immediately generate inspection reports and enforcement documents, potentially creating faster compliance timeframes. The mobile input aspect of Cityworks will also allow smooth coordination between staff members and departments working on the same issue, as the status is available without lag time and everyone has access to the same centralized system.

The creation of the custom Cityworks system occurred throughout FY 2011-12, with system live activation in June 2012. The WQPP will rely heavily on Cityworks as the primary data management tool during the upcoming reporting period (FY 2012-13).

5.0 Industrial and Commercial Component

5.1 Introduction

During the reporting period, the City successfully implemented the industrial and commercial component of its JURMP. The program is instrumental in reducing and/or preventing pollutants from entering the City's MS4 and receiving waters. In achieving this goal, the City implemented several JURMP activities during the reporting period, including conducting stormwater complaint investigations, providing education and outreach to business owners and operators, and conducting commercial and industrial inspections. Additionally, the City continued to implement its Mobile Water Use Licensing Program which requires particular mobile water use operators to obtain approval of their BMP water reclamation systems prior to license issuance.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City reports annually on all activities it conducts in implementing its JURMP. Annual reporting requirements for the industrial and commercial component are listed in Section J of the Permit. As indicated in Table 5.1, the City successfully met all requirements for the industrial and commercial component of the Permit.

Table 5.1 JURMP Annual Report Compliance

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Any updates to the industrial and commercial inventory.	1	Confirmation	See Section 5.2.2 and Appendix D-1, D-2 and D-3	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	1	Confirmation	Confirmed	5.2.4.1 5.2.4.2
3	A description of efforts taken to notify owners/operators of industrial and commercial sites/sources of BMP requirements, including mobile businesses.	1	Confirmation	Confirmed	5.2.4.1 & 5.3.4.1
4	Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	1 / 3	Confirmation / Inspection / Tabulation	727 Total sites inventoried 184 Total Sites inspected (95 high TTWQ and 89 additional Sites)	5.2.4.2
5	Justification and rationale for why the industrial and commercial sites/sources inspected were chosen for inspection.	1	Confirmation	See Section 5.2.4.2	
6	Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Confirmed	5.2.4.1 & 5.2.4.2
7	Identification of the number of third party inspections conducted.	1	Confirmation	None	-
8	Identification of efforts conducted to verify third party inspection effectiveness.	1	Confirmation	N/A	-

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
9	A description of efforts implemented to address mobile businesses.	1	Confirmation	See Section 5.3	
10	The number of violations and enforcement actions (including types) taken for industrial and commercial sites/sources, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation / Tabulation	NOV = 32 Written Warnings = 9 Verbal Warnings = 19	5.2.4.2, 5.3.4.1 & Appendix D-5
11	A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	1	Confirmation	See Section 5.2.4.2 & Table 5.3	

5.2 Stationary Industrial and Commercial Sites / Sources Element

5.2.1 Background

There is no background information to report.

5.2.2 Source Characterization

Prior to conducting the FY 2011-12 required annual inspections, the City's Beginning of the Year inventory for stationary commercial and industrial facilities consisted of 727 facilities. The City provided this inventory (includes primary and alternate sites for inspection) to its inspections contractor prior to commencing the required annual inspections. This inventory included all facilities listed on the previous year's inventory (End of the Year inventory for FY 10-11) and additional facilities identified during review of periodic business license lists and stormwater cases. Duplicate records and closed businesses were removed from the inventory. Inventory review was done during the first half of the reporting period prior to commencing inspections.

At the conclusion of each annual inspection program, the City compiles its final inventory, known as the End of the Year inventory. The final inventory is compiled throughout the inspection program to take into account the changes in facility status that are encountered during site visits. During inspections it is common to encounter businesses that have closed or moved to another location. In cases where a business has closed it is also common to find another business that has taken its place. Throughout the inspection program continual updates are made to the inventory to account for these scenarios. These modifications are reflected in the City's End of the Year inventory which consists of 718 stationary facilities. The End of the Year commercial and industrial inventories are included in Appendix D-1 and D-2, respectively.

5.2.3 Best Management Practices

The City did not make any modifications to its best management practice requirements (JURMP 2008).

5.2.4 Program Implementation

5.2.4.1 Best Management Practices

Stormwater Complaint Investigations
Complaint response is one method the City uses to disseminate educational and BMP information to owners and operators of industrial and commercial facilities. In the event a BMP or other stormwater violation is identified by City staff during a complaint investigation, the City requires the responsible party to implement appropriate BMPs to correct the violation. During the reporting period, City staff investigated 53 reported complaints at commercial and industrial facilities (46 commercial and seven industrial). A summary of all FY 11-12 complaint cases for commercial and industrial sites is included in Appendix D-4. Of the 53 reported complaints, all were investigated and 49 were confirmed in the field by staff. Stormwater complaint investigations were conducted by City stormwater staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the 53 reported complaints, 20 were generated from pro-active enforcement.

Education
As required in the Permit (Order 2007-0001), Copermittees are required to notify all inventoried sites and sources of its BMP requirements during the first three years of the Permit cycle. In December 2011, the City mailed a letter to stationary facilities that were added to the City's FY 11-12 Beginning of the Year Inventory (52 facilities) notifying them of the City's BMP requirements. Seventeen of these new facilities were issued a combined education and inspection notification letter. In each mail out, the City included a copy of the applicable City of Vista Stormwater Standards Manual Section, which includes BMPs specific to the business activity. Copies of these letters are included in Appendix D-6. All other businesses on the inventory had been notified of their BMP requirements in previous years.

During stormwater complaint investigations, City staff provided pollution prevention brochures to facility owners to aid them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods consistent with the City's BMP requirements. These brochures included the following:

- What's Cooking Guide
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Industrial/Commercial
- Fats, Oils, & Grease
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- Green Wrench Guide
- Motor Oil
- Industrial/Commercial

In October 2011, the City developed a New Restaurant Outreach Program to educate and inform new food service establishments about stormwater and FOG regulations. In this program, monthly business license reviews identified newly opened restaurants that were opened after the beginning of year inventory was finalized, and therefore not yet included as potential inspection locations. Outreach to these newly established businesses was performed including educating business owners and managers; distributing educational brochures and posters; and often times performing a regular inspection of the facility. The goal of the New Restaurant Outreach Program is to educate businesses with the proper practices upon opening

to ensure they are incorporated into their daily operations. This proactive approach will likely reduce the potential for negative behaviors to develop and continue until the next year's annual inspection or a complaint is received. During FY 2011-12, 10 new restaurants and markets were visited as part of this new program. More information on this program is provided in Section 8.0.

During the reporting period, the City operated its website (www.cityofvista.com) providing owners and operators of commercial and industrial facilities with information regarding the City's BMP requirements. The website contains a section dedicated to informing facility owners of BMPs common to all types of businesses. These BMPs which are consistent with the City's BMP requirements include the following:

- Keep your trash and dumpster lids closed.
- Do not allow landscape waste, pet waste, dirt, chemicals or other pollutants to enter a storm drain or be thrown into a creek bed.
- All dirt slopes must have erosion control measures in place to prevent dirt from entering the street or storm drain.
- Wash water used to clean equipment, indoor and outdoor areas, parking lots and sidewalks is prohibited from entering storm drains. Sweep instead. If you must use water, either mop the area or make sure the waste water is fully reclaimed and disposed of properly.
- All chemicals must be properly labeled and stored in a contained, roofed area to avoid contact with rainwater.
- Do not over-irrigate your landscaping.
- Sewage releases into the street from blocked or cracked laterals are illegal. If a spill occurs, arrange for correction and contact the City immediately.

The website also contains links to stormwater educational literature that can be reviewed online and/or downloaded and printed. The restaurant poster, Green Wrench guide, and automotive poster, which are customarily provided to commercial and industrial establishments during inspections are made available for review or download for printing. A link to a BMP check-off list is also provided which provides the user a comprehensive list of BMPs for five major BMP categories including grounds maintenance and good housekeeping, waste management, education, materials storage, landscape and irrigation, vehicle and equipment maintenance, and vehicle and equipment washing.

Stationary Commercial and Industrial Inspections

In implementing the City's inspection program during FY 2011-12, the City informed owners and operators of commercial and industrial facilities of its BMP requirements. These inspection activities are consistent with the inspection requirements listed in the Permit (Order 2007-0001). Full compliance inspections were conducted in the winter and spring of 2012 by staff from D-Max Engineering (City's contractor) and the City's Water Quality Protection Program (WQPP). Of the 184 total inspections, D-Max staff conducted 81 inspections, while City staff conducted the remaining 103 inspections.

At various points during the inspection process, facility owners and/or operators were informed of the City's BMP requirements specific to their business. In December 2011, the City mailed a letter to each site that was selected for inspection (included alternate sites) informing them of the potential for an upcoming inspection and City's BMP requirements.

Each inspection started with a face to face discussion during which inspectors educated facility owners on the City's Stormwater Program and BMP requirements. Following the discussion, inspection and appropriate facility staff performed a complete inspection of the facility including all outside areas assessing BMP effectiveness and compliance. In their assessments, inspectors made notes of any BMP violations, occurring illegal discharges, and illegal connections and communicated them to facility staff. In the event that a violation is observed, inspectors would typically engage facility staff in a discussion to identify BMP options for correcting the violation. For illegal discharges, facility representatives were instructed to immediately cease discharge. At the conclusion of each inspection, inspectors summarized the results of the inspection reviewing any stormwater violations and accompanying courses of actions that were discussed during the inspection. BMP guides and posters were provided to facility representatives to aid them in selecting appropriate corrective actions and managing urban runoff at their site. Inspectors instructed facility representatives to implement timely corrective actions especially when dealing with violations that could result in discharges to the City's MS4.

5.2.4.2 Inventory and Inspections

Prior to conducting its required annual inspections, the City's FY 11-12 Beginning of the Year Inventory consisted of 727 commercial and industrial facilities. The City determined its required inspection numbers using this inventory. The inventory was also provided to its inspections contractor, D-Max Engineering, as they were tasked with conducting a portion of the required annual inspections.

In selecting facilities for inspection, all inventoried facilities were prioritized into high, medium, and low threat to water quality (TTWQ) categories (Order 2007-001). As mentioned in section 5.2.2 (Source Characterization), the City carries over the inventory (End of the Year inventory) from the previous reporting period prior to finalizing it for inspection purposes in the current reporting period. The City's contractor provides the End of the Year inventory to the City which includes assigned TTWQ categories for each facility. In finalizing the inventory, City staff adds new facilities to the inventory upon periodic review of business license lists and stormwater case files. These facilities are also assigned the appropriate TTWQ category using the criteria established in the JURMP, March 2008. It is from this revised inventory (Beginning of the Year) that the City selects the required number of inspections for the current reporting period. In this reporting period, all high TTWQ sites included on the beginning of year inventory were inspected. The revised TTWQ results for sites on the end of year inventory included five additional sites classified as high TTWQ, which will be inspected in FY 2012-13.

The total number of facilities inspected was based on the City's Municipal Storm Water permit requirements (Order 2007-0001) which require that 100 percent of high TTWQ facilities and 25 percent of the City's total inventoried sites are inspected. In meeting both requirements, the City inspected a total of 184 stationary facilities during the reporting period (see Table 5.2). All high TTWQ facilities (95) and an additional 89 facilities were inspected.

City WQPP staff used the criteria listed below in selecting additional and alternate sites for inspection. Alternate sites were selected in case a primary site was not inspected, usually in the event that a facility closed its operations or had moved.

Table 5.2 Summary of Stationary Commercial and Industrial Inspections

Facility Category	Inspections Conducted	Percentage of Total Inventory (total inventory = 727 Sites)
High TTWQ Sites	95	13% (100% of High TTWQ sites)
Additional Sites	89	12%
Total	**184**	**25%**

Criteria Used For Selecting Additional and Alternate Sites for Inspection

- Facilities in the Enhanced Inspection Program (See Section 5.4)
- New businesses that are Food Service Establishments
- Food Service Establishments that have not been inspected previously
- Facilities located in Loma Alta and San Luis Rey hydrologic subareas

The City confirmed that all inspections addressed the inspection steps required in Order 2007-0001. These inspections steps are included in the City's 2008 JURMP and were followed by D-Max staff during all inspections. Section 5.2.4.1 describes the required inspection steps inspectors followed during FY 2011-12 inspections. Additionally, inspectors reviewed BMP implementation plans, facility monitoring data, and checked all inspected industrial facilities for coverage under the Industrial Permit.

The City requested D-Max to perform a portion of the City's fats, oils, and grease (FOG) inspections at food service establishments to assess compliance with the City's FOG ordinance. Most of these inspections were conducted in conjunction with the stormwater inspections. D-Max staff conducted stormwater and FOG assessments at 39 facilities while City WQPP staff conducted the same assessments at 70 facilities (109 total FOG assessments conducted).

Enforcement

Commercial and Industrial Complaints

During the reporting period, City staff investigated a total of 53 complaints involving stationary facilities. Of the 53 reported complaints, all were investigated in the field by staff. Enforcement efforts were conducted at these sites to ensure all violations were corrected and compliance was achieved. Of the 53 complaints, City staff conducted enforcement actions in 44 of these cases rendering 13 verbal warnings, seven written warnings and 28 notices of violations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. Nine of the complaints did not require enforcement actions, as the investigation revealed no violation, an unfounded complaint, or the violation had already been corrected. During the reporting period, staff confirmed that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected). A summary of enforcement actions implemented at stationary commercial and industrial sites is included in Appendix D-5. Summaries of all complaint cases including information on follow-up actions is presented in Appendix D-4.

Commercial and Industrial Inspections

At facilities where stormwater violations were observed during the initial inspection, City staff conducted follow-up visits and used enforcement to ensure compliance was achieved. In this

program, follow-up activities are conducted at sites where an illegal discharge or significant BMP violation is observed. City WQPP staff conducted all follow-up activities during the inspection program. A significant BMP violation includes situations where there is a potential for an illegal discharge to occur due to lack of appropriate BMP implementation. As mentioned in Section 5.4.2.1 (BMP requirements), inspectors instructed facility owners to implement timely corrective actions to correct BMP violations observed during the inspection. During inspections where D-Max staff observed an illegal discharge or illicit connection, City Water Quality Protection Program staff was contacted immediately to respond. D-Max staff observed an illegal discharge at one facility; in this instance City WQPP staff responded immediately and ensured the discharge had ceased.

As a result of inspections performed by D-Max (81 inspections total), 23 commercial and industrial facilities were recommended for follow-up. Similarly, City WQPP conducted 103 annual inspections at commercial and industrial facilities requiring follow-up at 20 sites. In total, City WQPP staff conducted follow-up inspections at 43 facilities.

At sites recommended for follow-up from D-Max inspections (23 facilities), City staff confirmed compliance at 12 sites, but found the other 11 facilities still in violation of the City's Stormwater Ordinance. WQPP staff conducted enforcement actions (beyond the written warning letter to D-Max–inspected facilities) at all 11 of the facilities requiring follow-up issuing six verbal warnings and five notices of violations. Similarly, at sites requiring follow-up from City staff inspections (20 facilities), compliance was confirmed at 10 sites, while the remaining 10 had violations requiring enforcement actions including seven verbal warnings, four written warnings, and four notices of violations. At sites requiring multiple follow up visits, escalated enforcement actions were issued at the same facility. A summary of enforcement actions implemented during commercial and industrial follow-up investigations is included in Appendix D-5. Also, a summary of inspections results for facilities at which a follow-up inspection was conducted is presented in Appendix D-8. The City verified compliance at all sites where corrective actions were required (all violations were corrected).

General Industrial Permit Compliance

In addition to assessing BMP compliance, General Industrial Permit compliance status was evaluated at each inspected industrial facility. During initial inspections, four facilities were identified that were found to require coverage under the State General Industrial Permit, but had not yet filed a Notice of Intent (NOI). This included four conditional facilities at which outdoor exposure was observed. Similarly, two facilities conditionally subject to the Permit were identified that had not filed their notice of non-applicability (NONA) paperwork certifying their No Exposure status (No Exposure Certification). D-Max staff also identified one facility that did not have SWPPP documents available for review. During inspections, inspectors recommended to facility owners/managers to file appropriate NOI or NONA paperwork to ensure compliance with the State General Industrial Permit. A summary of the Permit Status evaluations based on the initial inspections is included in Table 5.3.

Table 5.3 General Industrial Permit Compliance Status

#	BUSINESS NAME	ADDRESS	Inspector	Permit Subjectivity	Actions To Correct Violation				
					File NOI	Develop SWPPP	Develop and Implement Storm Water Monitoring Program	File NONA/ NEC	Other Actions/Comments
1	AMERICAN MARBLE	1280 N MELROSE DR	D-Max	Mandatory		✔	✔		SWPPP and Monitoring Plan were not available when inspected.
2	BioFilm Inc	3225 Executive Ridge	D-Max	Conditional				✔	No outdoor exposure was noted.
3	C N C Precision Machining	797 North Ave C	D-Max	Conditional				✔	No outdoor exposure was observed.
4	Seven Mfg	1420 Decision St C	D-Max	Conditional	✔	✔	✔		If rusty metal stored behind building is removed or unrelated to manufacturing business, NONA/NEC may be applicable.
5	Tortilleria Hermanos Reyes	402 Olive Ave	D-Max	Conditional	✔	✔	✔		If outdoor exposure (tracked flour, materials & equipment storage, waste grease bin) is eliminated, NONA/NEC may be applicable.
6	DOUGLAS TECHNOLOGIES	1340 N MELROSE DR	City of Vista	Conditional	✔	✔	✔		Outdoor exposure was observed.
7	JIF-PAK MANUFACTURING	1451 ENGINEER ST	City of Vista	Conditional	✔				SWPPP available for review.

5.3 Mobile Sources Element

5.3.1 Background

The City continued to implement its Mobile Sources element of its JURMP. During the reporting period, the City implemented JURMP activities to prevent and/or reduce pollutant runoff from mobile business activities. These included requiring BMP implementation through complaint investigations and providing education and outreach to mobile businesses notifying them of the City's BMP requirements. Additionally, City WQPP staff continued to implement its Mobile Water Use Licensing program which requires particular mobile water use operators to obtain approval of their BMP water reclamation systems prior to license issuance. This program has been implemented since FY 09-10.

Source Characterization

Throughout the reporting period, the City modified its mobile business inventory to account for changes in business status and mobile water use permits. As with the stationary facility inventory, the City conducts periodic reviews of new monthly business licenses to determine additional businesses to add to its Mobile Business inventory. The City added 73 mobile businesses to its inventory as a result of business license reviews and the mobile water use licensing program. In some instances, the City may remove a mobile business after determining it no longer conducts business in the City or has closed. These modifications are reflected in the City's current mobile business inventory consisting of 294 mobile businesses (Appendix D-3).

Best Management Practice Requirements

During the reporting period, the City did not modify its BMP requirements for mobile businesses (JURMP 2008).

Program Implementation

5.3.4.1 Best Management Practices

Stormwater Complaint Investigations

As with stationary facilities, responding to complaints involving mobile businesses is one method the City uses to disseminate educational information regarding the City's BMP requirements. In the event a BMP or other stormwater violation is identified by City staff, the City requires the responsible party to implement appropriate BMPs to correct the violation. During the reporting period, City staff investigated three complaints concerning mobile businesses. A summary of all FY 2011-12 mobile business complaint cases is included in Appendix D-4. All complaints were investigated by staff. Stormwater complaint investigations were conducted by City staff mainly through public complaints or notifications from City field staff (pro-active enforcement). Of the three confirmed complaints, two were generated from pro-active enforcement.

Education

As required in the Permit (Order 2007-0001), Copermittees are required to notify all inventoried sites and sources of its BMP requirements during the first three years of the Permit cycle. In December 2011, the City mailed a letter to all mobile businesses that were added to the City's FY 11-12 Mobile Business Inventory (56 mobile businesses) notifying them of the City's BMP requirements. In each mail out, the City included a copy of the applicable City of Vista

Stormwater Standards section specific to the business activity. A copy of the letter is included in Appendix D-7.

During stormwater complaint investigations, City staff provided pollution prevention brochures to mobile business representatives to assist them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods consistent with the City's BMP requirements. These brochures included the following:

- What's Cooking Guide
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- Green Wrench Guide
- Motor Oil
- Mobile Water Use

During the reporting period, the City operated its website (www.cityofvista.com) providing owners and operators of mobile businesses with information regarding the City's BMP requirements. The website contains a section dedicated to informing business owners of BMPs common to all types of business activities including those for mobile businesses. These BMPs which are consistent with the City's BMP requirements include the following:

- Keep your trash and dumpster lids closed.
- Do not allow landscape waste, pet waste, dirt, chemicals or other pollutants to enter a storm drain or be thrown into a creek bed.
- All dirt slopes must have erosion control measures in place to prevent dirt from entering the street or storm drain.
- Wash water used to clean equipment, indoor and outdoor areas, parking lots and sidewalks is prohibited from entering storm drains. Sweep instead. If you must use water, either mop the area or make sure the waste water is fully reclaimed and disposed of properly.
- All chemicals must be properly labeled and stored in a contained, roofed area to avoid contact with rainwater.
- Do not over-irrigate your landscaping.
- Sewage releases into the street from blocked or cracked laterals are illegal. If a spill occurs, arrange for correction and contact the City immediately.

The website also contains links to stormwater educational literature that can be reviewed online and/or downloaded and printed at a computer. The restaurant poster, Green Wrench guide, and automotive poster, which are customarily provided to commercial and industrial establishments during inspections are made available for review or download for printing. A link to a BMP Check off-list is also provided which provides the user a comprehensive checklist of BMPs for five major BMP categories including grounds maintenance and good housekeeping, waste management, education, materials storage, landscape and irrigation, vehicle and equipment maintenance, and vehicle and equipment washing.

Inspections

The City continued to implement its Mobile Water Use Licensing program during the reporting period. The City described the Mobile Water Use Licensing program in detail in the FY 09-10 JURMP Annual Report under Notable Activities. In this program the City requires particular

mobile water use operators to obtain approval of their BMP water reclamation systems prior to license issuance. Mobile businesses regulated under the program include carpet cleaners, power washing, mobile detailing, and other mobile businesses that use water in their daily operations. BMP approval is achieved through a City inspection during which businesses demonstrate the effectiveness of BMPs used in containing and capturing water runoff during operations. Results of the inspection are documented on the City's Mobile Water Use Inspection Form. A copy of the City's Mobile Water Use inspection form was included in FY 09-10 JURMP Annual Report (Appendix D-8). During the reporting period, City WQPP staff conducted eight mobile water use inspections resulting in the approval of BMP water reclamation systems for all eight mobile businesses.

Enforcement

During the reporting period, City staff investigated three complaints involving mobile businesses. All were investigated by staff. Enforcement efforts were conducted at these mobile businesses to ensure the violations were corrected and compliance was achieved. These efforts resulted in the issuance of two written warnings and two verbal warnings (one complaint had two warnings). When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. The City verified that responsible parties implemented appropriate BMPs in all three complaints (all violations were corrected). A summary of enforcement actions implemented in mobile business complaint cases is included in Appendix D-5.

5.4 Notable Activities Conducted to Manage Urban Runoff

FOG Program

Under the current FOG (Fats, Oils, and Grease) requirements (Order No. 2006-0003-DWQ) the City was required to develop and implement a FOG inspection program beginning in FY 2008-09. FOG discharges to the sanitary sewer system are known to cause blockages resulting in sewer overflows. Up to this point, the program involves the inspection of food service establishments (FSEs) to assess the facility's effectiveness in meeting the City's FOG requirements and preventing FOG discharges to the sewer system. The City has developed an inventory of FOG producing facilities (primarily FSEs) located within the City of Vista. FSEs are required to implement FOG best management practices to prevent FOG discharges to the sewer system.

As most Food Service Establishments (FSEs) are included in both the City's FOG and Stormwater inventories, FSEs typically receive combined inspections. During the reporting period, 108 FSEs received both a FOG and Stormwater Inspection. One additional FOG inspection was completed for a facility that did not receive a stormwater inspection. The FOG inspections addressed several BMPs that aim to reduce sanitary sewer overflows, including installing drain screens in prep sinks; dry wiping pans; and regularly inspecting and maintaining grease control devices. Although the FOG program is separate from the City's stormwater program, both programs address BMPs that are vital in preventing pollutant discharges at FSEs.

Participation in the Regional Industrial and Commercial Workgroup

The Regional Industrial and Commercial Workgroup (RICW) was formed in FY 08-09 to provide regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to industrial and commercial activities and sources. Furthermore, the formation of the RICW was necessary to address requirements in the 2007 Municipal Stormwater Permit. City of Vista staff attended and participated at seven RICW meetings during the reporting period. A summary of the meetings will be submitted by

the workgroup leads in the Regional Urban Runoff Program Annual Report due for submittal in January 2013. The City will continue to attend and participate at future Regional Industrial and Commercial Workgroup meetings.

Rainy Season Preparation Activities

In preparation for the rainy season (October 1, 2011 through April 30, 2012) the City conducted outreach activities targeting commercial and industrial facilities and shopping centers.

In September 2011, City WQPP staff mailed out a letter to 20 industrial facilities on the City's inventory notifying them of the City's BMP requirements and importance of implementing appropriate BMPs in preparation of the first rains. In each mail out, the City included BMP measures from the City's Stormwater Standards Manual applicable to all types of industrial facilities including activity specific BMPs, pollution prevention practices, non-structural BMPs, and structural controls.

Similarly, City staff mailed out letters to the property owners at 45 shopping centers located throughout the City reminding them of the City's BMP requirements applicable to shopping centers. The letter was prefaced with reference to the start of the first rains and importance of taking appropriate measures to prepare the sites for the upcoming rainy season. Enclosed in the mail out were BMP measures specific to the management of stormwater at shopping plazas including storm drain tile and signing, materials and waste management, solid waste storage, unloading and loading of significant materials, parking areas, and landscaping and grounds keeping. Copies of rainy season letters are included in Appendix D-9.

Industrial/Commercial Inspections – Enhanced Inspection Program

The City further developed its Enhanced Inspection Program, which began in FY 10-11. The Enhanced Inspection Program consists of more frequent inspections to assess BMP effectiveness and compliance at industrial and commercial facilities with a history of non-compliance. In selecting sites for inspection, the City reviewed compliance history for sites on the inventory that have been inspected. Depending on their compliance history, sites were selected for an increased inspection frequency, up to quarterly inspections. The compliance history also dictated the extent of the inspections performed, with some receiving cursory exterior only inspections and others receiving full stormwater inspections. During the reporting period, City WQPP staff performed an increased number of inspections at 46 facilities, totaling 105 additional inspections (46 inspections included in Section 5.2.4.2). City staff documented inspection results on its inspection report form and used enforcement when necessary to gain compliance. An annual review of facilities included in the program is performed to assess individual site compliance. Depending on performance, sites can be re-categorized to increase or decrease frequency and degree of inspections for the upcoming reporting period. Facilities displaying continual compliance may be removed or new facilities may be added due to historical non-compliance. Businesses that closed down were also removed. The annual review for this reporting period was performed in October 2011, resulting in seven sites added and six sites removed from the enhanced program.

New Restaurant Outreach Program

In October 2011, the City developed a New Restaurant Outreach Program to educate and inform new food service establishments about stormwater and FOG regulations. In this program, periodical business license reviews identify newly opened restaurants that opened after the beginning of year inventory was finalized, and therefore not yet included as potential inspection locations. Outreach to these newly established businesses is performed including educating business owners and managers; distributing educational brochures and posters; and

often times performing a regular inspection of the facility. The goal of the New Restaurant Outreach Program is to educate businesses with the proper practices upon opening to ensure they are incorporated into their daily operations. This proactive approach will likely reduce the potential for negative behaviors to develop and continue until the next year's annual inspection or a complaint is received. New Restaurant Outreach inspections are subject to regular industrial and commercial inspection procedures and when necessary, follow up inspections and enforcement actions are conducted to attain compliance.

New Cityworks Data Management System

In FY 2011-12, the City developed and launched a new GIS-based computer data management system using Cityworks software. The Cityworks system will be used by several departments to manage many aspects of the City's stormwater program including complaint tracking and response; industrial/commercial inspections; municipal inspections; treatment control BMP inspections; public inquiries and hotline calls; storm drain and channel maintenance; inventory management; and special events. The system links the tasks associated with these program components (i.e. inspection results, complaint cases, etc.) to a map containing relevant stormwater information which allows progress, upcoming tasks, and site history to be easily visualized, tracked, and managed. The single Cityworks system will replace a multitude of spreadsheets and databases currently used to capture the same data, which will allow for simplified tracking, managing, and reporting.

The City also acquired mobile computer equipment to track Cityworks tasks in the field. The equipment provides the capability to input data which can then be used to immediately generate inspection reports and enforcement documents, potentially creating faster compliance timeframes. The mobile input aspect of Cityworks will also allow smooth coordination between staff members and departments working on the same issue, as the status is available without lag time and everyone has access to the same centralized system.

The creation of the custom Cityworks system occurred throughout FY 2011-12, with several modules of the system in live activation in June 2012. The WQPP will rely heavily on Cityworks as the primary data management tool during the upcoming reporting period (2012-13).

6.0 Residential Component

6.1 Introduction

The City continued to implement the residential component of the City's JURMP to prevent or reduce pollutants in runoff from residential land use areas and activities. In achieving this goal, the City implemented several JURMP activities during the reporting period. These included conducting residential stormwater complaint investigations, providing outreach to residents, and facilitating proper disposal and management of household hazardous waste and used oil. Additionally, the City implemented a Storm Patrol program to assess pollutants in wet weather in the Buena Vista Creek HA.

As required in the City's Municipal Stormwater Permit (Order 2007-0001), the City is to report annually on all activities it conducts in implementing its JURMP. Annual reporting requirements for the residential component are listed in section J of the Permit. As indicated in Table 6.1, the City successfully met all reporting requirements for the residential component of this JURMP Annual Report.

Table 6.1 JURMP Annual Reporting Compliance

No.	Compliance Item	Outcome Level	Assessment Method	Confirmation and/or result	Section / Appendix
1	Identification of the high threat to water quality residential areas and activities that were focused on.	1	Confirmation	See Section 6.2	
2	Confirmation that the designated BMPs were implemented, or required to be implemented, for residential areas and activities.	1	Confirmation	Confirmed	6.4.1
3	A description of efforts implemented to facilitate proper management and disposal of used oil and other household hazardous materials.	1	Confirmation	See Section 6.4.1	
4	Types and amounts of household hazardous wastes collected, if applicable.	1	Confirmation	See Section 6.4.1 & Appendix E-1	
5	A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.	1	Confirmation	Implemented new Storm Patrol Program	6.4.2 & 6.6
6	The number of violations and enforcement actions (including types) taken for residential areas and activities, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation	NOV = 10 Verbal Warning = 17 Written Warning = 7	6.4.2 & Appendix E-2
7	A description of collaboration efforts taken to develop and implement the Regional Residential Education Program.	1	Confirmation	See Section 6.5	

6.2 Source Characterization

During the reporting period, the City focused on all high threat to water quality (TTWQ) residential areas and activities. These areas and activities are listed in the City's 2008 JURMP.

In the City's JURMP, the Residential Component focuses primarily on activities that have been deemed a high threat to water quality including: vehicle and boat repair/maintenance, automobile washing, automobile parking, home and garden care activities, home care and maintenance, manure and pet waste management, private sewer laterals and septic systems, and street sweeping of private roads/streets. Because these activities occur throughout all residential areas, all residential areas are then by default deemed a high threat to water quality.

The JURMP further describes the mechanisms the City utilizes to implement the Residential Component and to ensure that appropriate BMPs are implemented. Implementation includes the designation of activity specific BMPs and pollution prevention methods, outreach, complaint response, used oil and waste collection, and enforcement where necessary. Outreach and complaint response are the two methods used to disseminate educational and Best Management Practices (BMPs) information throughout the residential areas. Because outreach and complaint response efforts target all residential areas and specifically those high threat to water quality activities in those areas, the residential community is not broken down by areas related to the threat to water quality. Instead, all residential areas are considered a high threat to water quality.

Routine work activities conducted throughout the City provide opportunities for the City to focus attention on high TTWQ residential areas and activities. During complaint investigations, Water Quality Protection Program (WQPP) staff customarily observes areas and activities in route to and from and in the vicinity of the complaint case, being observant for any stormwater violations being committed. It is not uncommon for staff to observe and respond to violations unrelated to the case that is being investigated. Similarly, field staff from other City departments (including staff from Parks, Streets, Wastewater, Building, and Construction divisions) are trained and instructed to report stormwater incidents they observe in the field to Water Quality Protection Program (WQPP) staff. These practices are termed pro-active enforcement and the City continues to rely on them in its maintenance and implementation of its Water Quality Protection Program. During the reporting period, 25% (10 cases) of residential complaint cases (40 total residential cases reported) were generated by pro-active enforcement.

During the reporting period, Stormwater staff responded to 40 stormwater complaints in residential areas (34 were confirmed). In an analysis of the confirmed cases the City characterized pollutant sources using the five common source types that have been used in previous analyses (JURMP Annual Report FY 09, 10, 11). These include spills-all types, illegal washing, sediment discharge, trash and debris, over-irrigation, and oil (See Table 6.2 and Figure 6.1). Sediment sources continue to be the most prevalent (46%) followed by spills (21%) and other sources (11%). Other pollutant sources identified in FY 2011-12 complaint cases included discharges of pool water, pet waste, and gray water.

Table 6.2 Residential Complaint Source Types (numbers)

Spills	Washing	Sediment	Trash and Debris	Over-irrigation	Oil	Other
7 (21%)	3 (9%)	15 (46%)	2 (6%)	1 (3%)	1 (3%)	4 (12%)

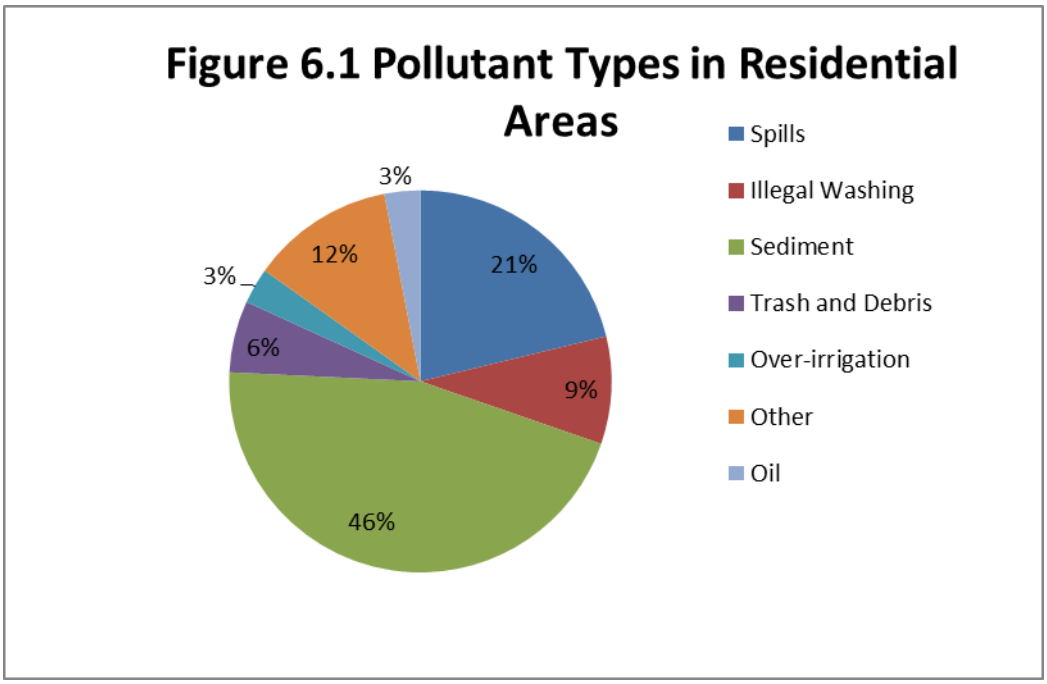

The City's website (www.cityofvista.com) was in operation during the reporting period providing BMP information to residents regarding high TTWQ activities. These activities and BMPs include:

- Manure and Pet Waste Management
- Vehicle Maintenance
- Home Care Maintenance
- Home and Garden Care Activities and Product Use
- Automobile Washing

Community events held during the reporting period provided opportunities for the City to disseminate stormwater information regarding high TTWQ activities. Stormwater and recycling presentations were conducted at several City events and BMP guides and givewaway items were provided to residents. Included in the BMP guides were pollution prevention tips for car washing, less toxic yard and garden care, pet waste cleanup, recycling, and proper care and disposal of motor oil.

These outreach efforts covered high TTWQ activities including manure and pet waste management, vehicle maintenance, home care maintenance, home and garden care activities, and product use, and automobile washing. The City is currently in process of developing a brochure to address residential sources of sediment. Details on the education and outreach provided at City events are included in Section 8 of this Annual JURMP report.

6.3 Best Management Practice Requirements.

During the reporting period, the City did not modify its Best Management Requirements (2008 JURMP).

6.4 Program Implementation

6.4.1 Best Management Practices

Stormwater Complaint Investigations
Stormwater complaint response is one method used to disseminate educational and BMP information throughout residential areas. Most often, BMPs are required as a result of enforcement efforts conducted during complaint investigations. In the event a BMP or other stormwater violation is observed, City WQPP staff typically discusses BMP options with the responsible party and provides related outreach materials to assist them in selecting appropriate corrective actions. BMP implementation is verified in the field prior to closing any complaint case. During the reporting period, City staff investigated 40 residential complaints (34 confirmed). A summary of all FY 2011-12 residential complaint cases is included in Appendix D-4.

Education
During stormwater complaint investigations, City staff provided pollution prevention brochures to residents to guide them in selecting appropriate BMPs. The brochures contain multiple pollution prevention methods that are consistent with the City's BMP requirements. These brochures included the following:

- Motor Oil
- Car Washing
- Pet Waste
- Swimming Pools
- Yard Maintenance
- Cigarettes
- Painting
- Power Washing
- Concrete and Mortar
- Livestock Care
- General Help brochure
- Do More Don't Ignore (A Citizen's Guide for reporting sewer and storm drain incidents)

During the reporting period, the City held several community events informing residents of the City's BMP requirements. Stormwater and recycling presentations were conducted and various BMP brochures and giveaway items geared towards residential activities were made available to residents. Details on the community events are covered in Section 8 (Education) of this JURMP Annual Report. .

The City also operated its website during the reporting period (www.cityofvista.com) providing various pollution prevention tips for homeowners. These tips are consistent with the City's BMP requirements and include the following:

- Cleanup after your pets
- Care for your cars
- Sweep or rake yard waste and debris, do not hose them into the street.
- Reduce use of landscape chemicals
- Control erosion
- Plant natives
- Buy non-toxic products
- Integrated Pest Management tip cards for ants, aphids, cockroaches, earwigs, fleas, and good bugs.

Household Hazardous Waste Collection Center

The City of Vista continued to provide its residents with a household hazardous waste (HHW) collection facility at the Auxiliary Corporation Yard at 1145 East Taylor Street, as well as the option of HHW curbside pickup. The facility is open to Vista residents and operates every Saturday from 9:00 am to 3:00 pm. Residents may dispose of a variety of wastes including paints, chemicals, u-wastes, e-wastes, automotive wastes, home generated sharps, and pharmaceutical wastes. The City's curbside pickup program offers free door-to-door collection services to citizens 65 or older and to households possessing a registered handicap placard.

Education and outreach continue to play a vital role in promoting the HHW collection facility and facilitating the proper disposal of HHW. Educational brochures on HHW disposal were provided for distribution at several City facilities visited regularly by the public including the City Hall, City Public Works, and City Engineering lobbies. Community events also provided opportunities for the City to provide education and outreach on HHW disposal. At event booths, City staff conducted water quality presentations that included discussions on how to properly dispose of HHW. HHW literature and promotional items were also made available to the general public at events. The City's website (www.cityofvista.com) also contains information on HHW disposal.

As summarized in Table 6.3, the HHW facility reported collecting a total of 248,542 lbs of HHW disposed of by Vista residents including volumes from curbside pickup. Information on the types and amounts of HHW that were disposed of at the collection facility is included in Appendix E-1.

Table 6.3 Total Amount of Disposed Household Hazardous Wastes

Facility or Activity	Hazardous Waste(excluding oil products)	Used Oil/Oil Products	Total
Household Hazardous Waste Collection Center	239,675 lbs	8,867 lbs	248,542 lbs
Used Oil Collection Centers	N/A	30,365 gals	30,365 gals

Used Oil and Filter Collection Programs

The City also offers residents other options for disposing of used oil, filters, and other oil products. At certified used oil collection centers (CCC) and used oil filter collection events, residents may dispose of used oil, filters, and other oil products. Table 6.4 includes a list of certified used oil collection centers that operated during the reporting period. These services are often free to Vista residents, subsidized by funding provided through the City's Used Oil Payment Program (OPP). During the reporting period, the City used grant funds from its OPP1 and OPP1A to implement these services. The City typically uses contractor services to implement many of the used oil program activities.

Table 6.4 City of Vista Certified Used Oil Collection Centers

Certified Collection Center	Address
O'Reilly Auto Parts	1250 S. Santa Fe Avenue
Autozone #2819	1410 N. Santa Fe Avenue
Autozone #5679	573 W. Vista Way
O'Reilly Auto Parts	1220 E. Vista Way
Jiffy Lube	1213 E. Vista Way
Valvoline Instant Oil Change	243 Sycamore Avenue
Valvoline Instant Oil Change	786 E. Vista Way
Pep Boys #1410	865 E. Vista Way
Firestone Complete Auto Cares	1762 University Drive
North County Ford	450 W. Vista Way
North County Import Specialist	1215 N. Melrose Drive
Express Tires	2030 Hacienda Drive
BMW of Vista	1715 Hacienda Drive
Santa Fe Auto Repair	1045 N. Santa Fe Avenue

To facilitate the Used Oil and Filter Collection Programs, the City continued its contract with the Solana Center for Environmental Innovation. Solana Center efforts consisted of actively reaching out to Vista residents to educate and inform them about used motor oil and oil filter recycling and working with collection centers to best manage the used oil and wastes. This included but was not limited to providing education and outreach at City community events and conducting semiannual surveys at CCC using the results to assist CCC in managing their Used Oil Recycling Programs. Two oil filter exchange events were held during the reporting period to allow for free recycling of oil and filters at participating CCC in the City. In total 110 people participated in the events recycling 179 oil filters. Information on these events is presented in Table 6.5 below.

As presented in Table 6.3, a total of 30,365 gallons of Do-It-Yourselfer used oil were disposed of at the CCC during calendar year 2011 (2012 data is not currently available from CalRecycle).. This volume is estimated using claims data from used oil recycled at CCC. Do-It-Yourselfers include residents who change oil in their own vehicles and subsequently bring the used oil to the CCC for recycling. The volumes do not account for customers who bring in their vehicles to a CCC for oil changes and other maintenance.

During the Vista Rod Run event held in August 2011, Solana Center staff provided education and outreach to residents regarding household hazardous waste disposal, used oil recycling, less toxic yard and garden care, pet waste cleanup, and recycling. More Information on this event is presented in the Education component of this Annual JURMP report.

Table 6.5 Filter Exchange Events.

Date	Location	Filters Collected	Oil Collected	Estimated Attendance
10/21/2011	O'Reilly Auto Parts, 1220 E. Vista Way	83	unknown	50
6/9/2012	O'Reilly Auto Parts, 1250 S. Santa Fe	96	26.5 gallons	60

6.4.2 Oversight and Enforcement

Evaluation of Oversight Methods

The City did not conduct any evaluations of oversight methods during the reporting period. In FY 2010-11 (refer to FY 2010-11 Annual JURMP Report) the City conducted an assessment of complaint data over the previous three fiscal years to begin to evaluate its oversight methods. The intent of this exercise was to use the results to better inform the stormwater program of the most common water quality issues and extent of them throughout the City. Assessment results indicated that the majority of complaints have occurred in Buena Vista HA with sediment being the most prevalent pollutant associated with those complaints. Using these results, the City developed a program during the reporting period to assess sediment runoff in wet weather throughout the Buena Vista HA.

Enforcement at Residential Sites

A total of 40 complaint cases involving residential sites were investigated by WQPP staff during the reporting period. This amounted to approximately 38% of all complaint cases investigated during FY 2011-12 (105 Total). Of the 40 reported residential complaints, all were investigated and 34 were confirmed by staff in the field. Figure 6.2 indicates the percentages of each violation type (reported) with Illegal discharges being the most prevalent (52% of all reported cases). City staff also responded to reports involving BMP violations (36%) and private lateral and septic spills (11%). Two illicit connections were reported during the reporting period. During the investigations, staff determined one was unfounded and the other case involved an illegal connection of a washing machine. In the latter, the illegal connection was eliminated and the responsible party made the proper repairs to re-connect the washing machine to the sanitary sewer system.

Staff issued enforcement actions in all 34 complaints rendering 17 verbal warnings, seven written warnings, and 10 notices of violations. When necessary to achieve compliance, multiple actions including follow-up visits and escalated enforcement actions were taken. A summary of enforcement actions implemented in residential complaint cases is included in Appendix E-2. The City verified that responsible parties implemented effective BMPs in all confirmed complaint cases (all violations were corrected).

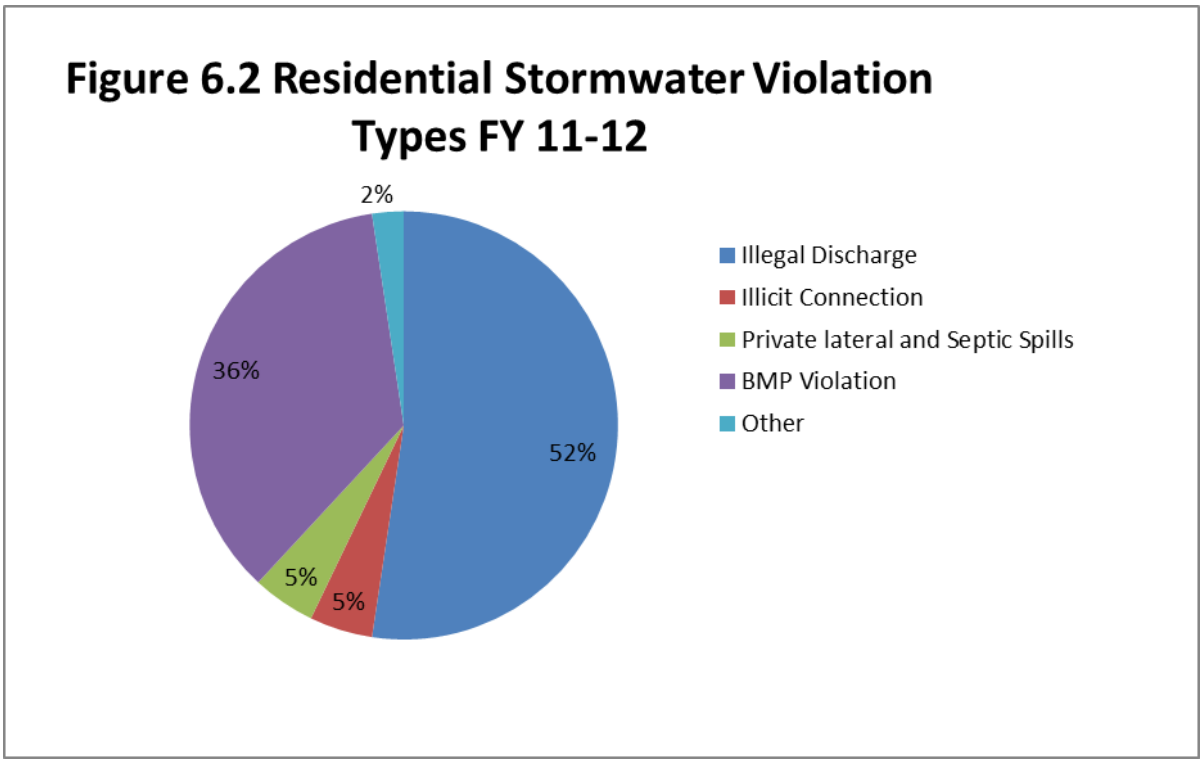

6.5 Regional Residential Education Program

The Education and Residential Sources Workgroup (ERSW) is tasked with implementing the Regional Residential Education Program. The program, which was developed to comply with the Municipal Stormwater Permit (Order 2007-0001), focuses on implementing a variety of educational activities that would target all residential audiences and be effective in reducing urban runoff pollution. During the reporting period, the City of Vista took part in developing and implementing FY 2011-12 ERSW activities by attending and participating in ERSW meetings. These efforts will be reported in the Regional Urban Runoff Management Program Annual Report due for submittal in January 2013.

6.6 Notable Activities

Storm Patrol Program

During the reporting period, the City implemented a program to assess sediment in stormwater runoff throughout Buena Vista HA. This program was developed as a result of an assessment of complaint data conducted by the City in FY 2010-11 (refer FY 2010-11 Annual JURMP Report – Section 6.4.2) to begin to evaluate its oversight methods of residential areas. In the assessment, the City analyzed complaint data from three consecutive fiscal years (FY 2007-08, 08-09, and 09-10) to determine location of complaints and pollutants associated with those complaints. The intent of this exercise was to use the results to better inform the stormwater program of the most common water quality issues and extent of them throughout the City.

This assessment revealed useful information pertaining to the geographical location of complaint investigations and pollutants associated with those complaints. The results indicated that the majority of the cases investigated were located in Buena Vista Creek Watershed (>75%). A smaller portion of the cases were situated in the southern half of the City lying in Agua Hedionda Watershed (10%), while Loma Alta and San Luis Rey watersheds contained the

remaining cases (5 % total). The most prevalent pollutants were found to be sediment, automotive fluids, trash, and sewage - with the majority of cases involving sediment.

Based on these results the City implemented a program in FY 2011-12 to assess sediment runoff in the Buena Vista Watershed during wet weather. During significant rain events (defined as a rain event resulting in flow entering curb/gutter) City WQPP staff conducted drive by inspections of areas within the watershed to assess sediment in stormwater runoff. Staff developed a "Storm Patrol" inspection form to record observations during inspections (See Appendix E-3). If significant levels of sediment were observed, staff conducted upstream investigations to identify sediment sources.

The City conducted four storm patrol events (12/12/11, 2/27/12, 3/19/12, and 4/11/12) during the reporting period. During some events staff visited segments of Buena Vista Creek and residential sites with a history of non-compliance. During other visits, staff randomly chose areas within the watershed. Where sediment levels were significant and as a result of BMP deficiencies, staff opened up a complaint case and conducted necessary follow-up actions. Results from the storm patrol events are summarized below in table 6.6.

Table 6.6 Summary of Storm Patrol Events

Date	Location(s)	Observation	Corrective Actions
12/12/11	Buena Vista Creek, MS4, and Residential site	At Buena Vista Creek, water was clear. BMPs at one site were not working effectively to control sediment	BMPs were modified to control sediment
2/27/12	Buena Vista Creek, MS4, and Multiple Residential sites	Stormwater runoff was clear and BMPs were effective at several sites with open cases	None
3/19/12	MS4 and Multiple Residential Site	Water runoff was relatively clear throughout areas assessed. At some sites, BMPs to control sediment needed improvement	BMPs to control sediment were installed, Stockpiles were covered to prevent rain contact
4/11/12	MS4 and Residential Site	Water runoff was clear throughout drainage areas assessed.	None

New Cityworks Data Management System

In FY 2011-12, the City developed and launched a new GIS-based computer data management system using Cityworks software. The Cityworks system will be used by several departments to manage many aspects of the City's stormwater program including complaint tracking and response; industrial/commercial inspections; municipal inspections; treatment control BMP inspections; public inquiries and hotline calls; storm drain and channel maintenance; inventory management; and special events. The system links the tasks associated with these program components (i.e. inspection results, complaint cases, etc.) to a map containing relevant stormwater information which allows progress, upcoming tasks, and site history to be easily visualized, tracked, and managed. The single Cityworks system will replace a multitude of

spreadsheets and databases currently used to capture the same data, which will allow for simplified tracking, managing, and reporting.

The City also acquired mobile computer equipment to track Cityworks tasks in the field. The equipment provides the capability to input data which can then be used to immediately generate inspection reports and enforcement documents, potentially creating faster compliance timeframes. The mobile input aspect of Cityworks will also allow smooth coordination between staff members and departments working on the same issue, as the status is available without lag time and everyone has access to the same centralized system.

The creation of the custom Cityworks system occurred throughout 2011-12, with portions of the system in live activation in June 2012. The WQPP will rely heavily on Cityworks as the primary data management tool during the upcoming reporting period (2012-13).

7.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION COMPONENT

In accordance with Addendum No. 2 to Order No. R9-2007-0001, the City of Vista is submitting Section 7.0 as one report separate from the JURMP Annual Report, submitted in September 2012. Section 7.0, the Illicit Discharge Detection and Elimination Component will be submitted under separate cover no later than December 15, 2012.

8.0 Education Component

8.1 Introduction

Education is an important tool the City uses to improve water quality and it is a requirement in the City's Municipal Storm Water Permit (Order No. 2007-0001). The City developed an education program in its JURMP which addresses education for multiple target audiences. These audiences include municipal staff, new development and construction communities, industrial and commercial business owners and operators, residents, general public, and school children. The City provides education and outreach to these communities to increase their awareness of pollution prevention and to comply with the Permit. During the reporting period the City conducted several education and outreach efforts for these audiences.

Per the permit, the City is required to implement an education program using all appropriate media and targeting specific communities. Table 8.1 provides an overview of the target communities and the applicable section and table numbers specific to those communities.

Table 8.1 FY 2011-12 Outreach Efforts with Target Communities

No.	Compliance Item	Outcome Level	Assessment Method	Section/Appendix
1	A description of education efforts conducted for each target community.	1	Confirmation	Section 8.2 Section 8.3
2	A description of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.	1	Confirmation	Section 8.3.1
3	A description of education efforts conducted for municipal departments and personnel.	1	Confirmation	Section 8.2 Table 8.2
4	A description of education efforts conducted for the new development and construction communities.	1	Confirmation	Section 8.3.2
5	A description of jurisdictional education efforts conducted for residents, the general public, and school children.	1	Confirmation	Section 8.3.3 Tables 8.3 & 8.4

8.2 Staff Training Element

Personnel from various Municipal departments were trained on stormwater topics during the reporting period. These topics included general information from the City's JURMP and Municipal Storm Water Permit, program wide BMP requirements, BMPs specific to their activities, and instructions to detect, eliminate, and report illegal discharges. Municipal staff training for FY 2011-12 is summarized below in Table 8.2. WQPP Staff meetings are held every two weeks, during which time topics are reviewed and discussed including industrial/commercial inspections, complaints, outreach & education, and watershed issues. These meetings serve as excellent training venues in that ideas are exchanged and discussed, often resulting in clarity around a given topic and refinement of internal procedures and policies. Water quality protection was also addressed in five editions of the Spotlight on Vista newsletter during the year. The Water Quality Protection Program also developed a Water Quality newsletter in June 2012 which was distributed to all City employees. These are included in Appendix G-1.

Table 8.2 FY 2011-12 Municipal Staff Training

Workshop/Training	Audience	#	Location	Host	Date
CASQA Stormwater Conference	Stormwater Staff	1	Monterey, CA	CASQA	09/26-28/11
Construction BMP Training	Engineering, Stormwater, and Construction Inspection Staff	9	San Diego, CA	City of San Diego	09/22/11
Hydromodification Workshop	Engineering Staff	3	San Diego, CA	Floodplain Management Association	09/06/11
Pre-Rainy Season Training	Stormwater and Community Development Staff	7	Vista City Hall	City of Vista Stormwater Staff	09/29/11
Conducting Effective Stormwater Outreach Workshop	Stormwater Staff	1	Vista City Hall	U.S. EPA Watershed Academy	10/27/11
Grease Recovery for FSEs/Restaurants	Stormwater Staff	2	Carlsbad, CA	Doherty Tech	10/06/11
Manhole Safety Training	Stormwater Staff	1	Vista City Hall	City of Vista Stormwater Staff	10/18/11
Environmental Summit: (various stormwater topics)	Stormwater Staff	1	San Diego, CA	Industrial Environmental Association	11/09-10/11
Stormwater Outreach and Education Workshop	Stormwater Staff	1	Vista City Hall	Water Environment Federation	12/14/11
Code Enforcement Training	Stormwater Staff	1	San Diego, CA	Miramar College	01/09-13/12
Annual Stormwater and FOG Inspections Training	Stormwater Staff	3	Vista, CA	City of Vista Stormwater Staff	01/04/12
Treatment Control BMP Maintenance Training	Public Works Staff	5	Vista, CA	City of Vista Stormwater Staff	01/11/12
Supervisor Academy Workshop	Stormwater Staff	1	San Diego, CA	The Regional Training Center	01/25/12
Flogard Filter System Maintenance and Inspection Training	Public Works and Stormwater Staff	18	Vista City Hall	DPS Staff	02/01/12
Annual Stormwater Inspections of Industrial Facilities	Stormwater Staff	1	Vista, CA	D-Max Engineering	02/08/12
Treatment Control BMPs Training	Stormwater and Engineering Staff	4	Carlsbad, CA	Dudek	03/12/12
Wastewater Treatment Tour and Presentation	Stormwater and Engineering Staff	4	Carlsbad, CA	Encina Wastewater Authority	03/20/12
Grease Trap Installation	Stormwater Staff	3	Vista, CA	Rick's Plumbing	03/28/12
Field Training – Poison Oak	Stormwater Staff	5	Vista, CA	City of Vista Stormwater Staff	04/25/12
Treatment Control BMPs Field Inspections Training	Stormwater Staff	1	Vista, CA	City of Vista Stormwater Staff	05/31/12
Stormwater Regulations, BMPs, Watershed Training	Public Works Staff	35	Vista, CA	City of Vista Stormwater Staff	06/06/12
TOTAL NUMBER OF STAFF TRAINED – 107					

8.3 Educational Outreach Element

The City's education and outreach program consists of implementing a variety of methods and disseminating materials to reach many target audiences throughout the City of Vista. Educational materials have been designed to target specific pollutants, activities, and audiences through different media (website, brochures, newsletters, advertisements, events, etc.). Staff participation in the Regional Education and Residential Sources Workgroup has expanded the education and outreach aspect of the City program. Workgroup meeting topics included partnership development, regional branding, regional events, regional website, and mass media campaign development and implementation.

8.3.1 Description of How Education Efforts Targeted Underserved Target Audiences, High Risk Behaviors, And "Allowable" Behaviors and Dischargers

During the reporting period the City conducted education and outreach efforts that targeted high risk behaviors and "underserved" communities. The City held several community events which provided opportunities for the City to distribute materials and educate the community regarding high risk behaviors. The events are summarized in Table 8.3. Brochures and items promoting the City's Household Hazardous Waste (HHW) and Used Oil Collection Programs were distributed along with BMP guides for car washing, less toxic yard and garden care, pet waste cleanup, and recycling. The North County HHW Facility is located in Vista. To better serve the region, the City developed a HHW informational card in Spanish and English, providing general HHW outreach to North County residents. A motor oil brochure was also developed in both English and Spanish. A promotional tablecloth for events was also developed and used at recent educational events. A large banner to span Vista Village Drive, a prominent thoroughfare in Vista, was developed to promote used oil recycling and proper HHW disposal. Brochures and designs of the other HHW and used oil promotional materials are provided in Appendix G-2. Volunteers, City contractors, and personnel who were present at event booths conducted water quality presentations and were available to answer questions about the City's Water Quality Protection Program.

Outreach events were equally successful in providing outreach to Spanish communities as several brochures and promotional items were available in Spanish. In addition to special events, WQPP educational materials were distributed at a community education center to target Spanish-speaking communities. Spanish brochures including used motor oil, HHW, garden pest management, general stormwater pollution prevention, and FOG reduction were available at the Vista Townsite Community Partnership center, whose programs and projects involve predominantly Spanish speakers. Approximately 400 educational materials in Spanish were distributed at the community center.

Stormwater complaint investigations are one method the City uses to educate the community concerning its pollution prevention program. Through City investigations, City staff educated responsible parties on the importance of best management practices to prevent and/or reduce potential pollutants in runoff. Staff conducted several stormwater investigations involving allowable discharges, such as: over-irrigation, swimming pool discharges, residential car washing, and groundwater. Information on residential complaint investigations is presented in the residential component (Section 6.0) of this report. In each incident, City staff recommended appropriate BMPs and educated the responsible party on the importance of maintaining BMPs to prevent discharges of pollutants. BMP guides were also provided to the responsible parties.

The Water Quality Protection Program developed a two-page June 2012 newsletter which covered the following topics: definition of a watershed, waste disposal and recycling, the

community creek clean up, and information regarding the City's Household Hazardous Waste Facility. The newsletter was distributed to all City staff and posted on the Water Quality Protection Program website for the public.

Stormwater ads and articles were included in the three City newsletters (City News and Rec Guide) during the reporting period. Topics included water quality, water conservation; recycling; household hazardous waste; and reporting stormwater pollution. The newsletters are sent to 36,000 residences (with an additional 1,000 copies distributed throughout the City). These editions of the Vista Newsletters are included in Appendix G-3.

The City's website is a valuable resource that provides pollution prevention tips in several categories of "allowable" behaviors and discharges. The webpage contains sections dedicated to used oil pollution prevention and used oil recycling information, which includes operations information for the City's Household Hazardous Waste Facility. The section, Stormwater Pollution Prevention Tips for Homeowners, provides information on composting, buying organic or non-toxic products, native plants, and water conservation. Also available on the City's website are instructions and BMPs for how to control pests in and around your home. The City continues to advertise its website on various printed materials including the City's Newsletter. The website is available in both English and Spanish.

8.3.2 Description Of Education Efforts Conducted For The New Development And Construction Communities

Education efforts for the new development and construction communities continued during FY 2011-12 reporting period. Education efforts consisted of individual interactions with contractors and/or developers and City staff through counter interaction, attendance at all pre-construction meetings, and construction site inspections. The City's Engineering (includes stormwater and inspection divisions) and Planning department staffs were primarily responsible for communicating information to the new development and construction communities about the City's Water Quality Protection Program. At each pre-construction meeting, stormwater staff provided a synopsis of the City's program and discussed the City's BMP requirements. City staff attended eight pre-construction meetings during the reporting period. Additionally, construction BMP brochures were distributed upon issuance of building permits. A Construction Rainy Day Workshop was held for municipal staff and developers on September 29, 2011.

Municipal staff is continually made aware of various aspects of the City's pollution prevention program through annual staff training. Staff applies this knowledge in its interactions and communications with contractors and developers. City staff also had access to and referenced the City's Stormwater Ordinance (Municipal Code, Chapter 13.18 Stormwater Management and Discharge Control Program) and Stormwater Standards Manual in their dealings with contractors and developers.

Prior to the rainy season, City inspectors hand delivered letters to contractors and developers at all construction sites reminding them of the City's BMP requirements. Sixteen letters were distributed.

8.3.3 Education Efforts Conducted For Residents, The General Public, And School Children

The City conducted substantial education and outreach efforts to residents, the general public, and school children during FY 2011-12 reporting period.

Residents and the General Public

Community events provided opportunities for the City to conduct education and outreach efforts regarding its Water Quality Protection Program. A summary of the events is provided in Table 8.3. At some event booths, staff conducted watershed presentations using its EnviroScape Model. Using this three dimensional model, booth staff can demonstrate the adverse effects of stormwater runoff in a watershed; it continues to be a very effective visual tool in educating the community, especially children. These events also provided a classroom atmosphere in which residents and the general public could discuss various aspects of the City's program.

Table 8.3 Educational Events

Date	Event	Estimated Attendance
08/07/11	Vista Rod Run	~200
09/17/11	Coastal Clean Up Day	171
10/21/11	Used Oil Filter Exchange Event	50
12/15/11	Day Without a Bag	150
01/19/12	Kids Conference on Watersheds	135
April 2012	Earth Month	~1,000
04/28/12	Alta Vista Gardens Earth Day	~750
04/28/12	Creek to Bay Clean Up	86
05/27/12	City of Vista Strawberry Festival	~1,000
06/09/12	Used Oil Filter Exchange Event	60
06/23/12	Envirofair - SD County Fair	~200

As mentioned earlier, City WQPP staff conducts significant outreach to residents and the general public through complaint investigations. Enforcement is often necessary to obtain compliance during complaint investigations. Through various enforcement mechanisms including verbal warnings, written warnings, notices of violations, and citations, City staff consistently educated residents on BMP requirements and the importance of pollution prevention. Through these efforts, City staff provided various stormwater BMP brochures and referred residents to the City's Municipal Code and Stormwater Standards Manual listed on the City's website. These materials and resources provide useful information on BMPs which residents can use to select appropriate corrective actions.

The City used other mechanisms to provide education and outreach to residents and the general public during the reporting period. The City included a stormwater article in the City's Summer 2011, Winter 2011-12, and Spring 2012 newsletters that contained information on tips for proper water use, recycling information, and information on the household hazardous waste facility. Water quality articles were also included in several issues of the municipal *Spotlight* newsletter (Appendix G-1).

The City continued to operate its Stormwater Hotline number (760- 726-1340 x1686), receiving 18 stormwater reports from residents and the general public. An additional nine reports were obtained through the hotline email (waterquality@cityofvista.com). The City lists the hotline number and email address on its website and includes it in other printed materials including City Newsletter articles.

The City also developed an ad to promote the stormwater hotline which was included in the City newsletters, recreation guides, and Vista magazine throughout the reporting period. The ad was also converted into a rotating PowerPoint slide displayed on monitors throughout the Civic Center.

The City's website (www.cityofvista.com) is an important source that residents and the general public may use to learn more about the City's Pollution Prevention program. It contains comprehensive information of all aspects of the City's Program and includes links to the City' Municipal Code, Stormwater Standards Manual, and various BMP guides and booklets. Printed educational brochures were provided for distribution at several City facilities visited regularly by the public including the Civic Center and Public Works lobbies.

In response to hotline complaints received during the reporting period, the City performed pet waste outreach and education to residents and the general public through special event booths, an article in a community newsletter, and door-to-door outreach. Education efforts at special event booths included distribution of over 100 personal pet waste bag dispensers and educational postcards to pet owners. The newsletter article and door-to-door outreach targeted pet owners in the complaint neighborhoods. The door-to-door outreach element distributed 30 bags with bi-lingual educational information including pet waste bag dispensers, pet waste postcards, letters, and general stormwater pollution prevention materials to pet-friendly apartments.

School Children

The City continued its education and outreach efforts to schools during the reporting period. For educational outreach to elementary and middle school students, the City contracted with San Diego County Office of Education (SDCOE) to provide two programs. The first, the Splash Lab program, is available to grades 4-6. And the second, the Green Machine program, is available for grades K-4. During the 2011-12 academic year, Splash Lab reached 918 students at 12 schools, plus one summer camp group. A press release was published in local media providing information on the Splash Lab visit to summer camp at Brengle Terrace Park, see Appendix G-4. The Green Machine reached 705 students at seven schools.

The Splash Lab is a completely self-contained mobile laboratory that brings simulated environmental conditions to school sites. The Green Machine is a hands-on interactive learning program that includes a soils research station (complete with live earthworms), an integrated pest management station, a water cycle station, and comprehensive teacher packets complete with pre and post Green Machine activities. These programs enable schools with limited funding and within disadvantaged communities to have easy access to water science education. The presentations provide an interactive opportunity for children to learn about stormwater, water quality, bioassessment, watersheds, pollution, and best management practices. Splash Lab pre- and post-surveys were administered to many of the schoolchildren. Pre-surveys were given prior to the students' participation and post tests were generally given the following week in the classroom. In total, 467 pre-surveys and 351 post-surveys were received back from seven schools. On average, scores on the pre-test were 58%. The average scores on the post test were 83%, showing an increase in knowledge through the program.

Additionally, a classroom presentation for high school students was developed and conducted at one local high school, which reached 200 students. The presentations provided education about stormwater pollution prevention, used oil recycling options, watersheds, and ocean science. A lunch table with stormwater education information was provided after the presentation with attendance of 50 interested students.

The City staffed an education and outreach booth on Coastal Cleanup Day, September 17, 2011, at the City's Buena Creek cleanup site. Educational materials for over 100 students from elementary through high school were distributed including Environmental Protection Agency

(EPA) and National Oceanic and Atmosphere Administration (NOAA) produced activity books. All together, over 550 of the following activity books were distributed: 1) NOAA's *Understanding Marine Debris*, 2) EPA's *What's Up with Our Nation's Waters?*, 3) EPA's *Trash and Climate Change*, 4) California Department of Conservation's *Recycle Rex*, 5) California State Water Resources Control Board's *Pest or Pal? All about bugs*, 6) EPA's *Stormwater Runoff Challenge* crossword puzzle, and 7) Clean H20 Campaign's *Be a Solution to Stormwater Pollution* activity book. The City also distributed over 800 brochures and informational sheets regarding a variety of topics (water quality and conservation, recycling, pollution, etc.), including Integrated Pest Management information cards and Household Hazardous Waste brochures in English and Spanish.

8.3.4 Education Efforts Conducted for Industrial/Commercial Businesses

The City conducted education and outreach efforts at certain stationary industrial and commercial facilities during this reporting period. Through the City's required annual inspections of stationary industrial and commercial facilities, facility representatives were educated on the City's stormwater requirements. During each inspection, City staff introduced the stormwater program and provided educational materials specific to the business activities. Table 8.4 summarizes the educational materials distributed to stationary facilities, including new restaurant outreach. Prior to inspections, the City prepared and mailed a letter to all businesses selected for inspection. The letter provided general information about the program, informed each business owner of the upcoming inspection, and provided multiple pollution prevention methods consistent with the City's BMP requirements. In addition, the City provided site and activity specific BMP information to businesses on its industrial-commercial inventory during FY11-12 via mailers and/or inspections.

Table 8.4 Educational Materials Distributed to Stationary Facilities

Educational Material	Number Distributed
Copy of City Authorization Letter	16
Industrial/Commercial Brochure	138
NOI	2
NONA/NEC	6
Conditional Waiver Industrial Permit Information	3
Green Wrench Guide – English	2
Green Wrench Guide – Spanish	1
Automotive Poster	8
What's Cookin' – English	18
What's Cookin' – Spanish	2
FOG Brochure	72
FOG Poster	76
FOG Record Keeping Templates	10
Grease Bin Handout	10
Restaurant Poster	25
Total # of Educational Materials	**390**

The City also undertook outreach measures to educate new business owners regarding BMP requirements. Letters were mailed out to all new stationary and mobile business facilities on the City's inventory which provided information on the City's BMP requirements specific to the business activity. This included 52 letters mailed to stationary facilities and 56 letters to mobile businesses. For commercial sites, the focus was on shopping centers with the highest potential

to impact water quality; 45 sites were identified and educational letters containing activity specific BMP information were sent prior to the rainy season. Additionally, pre-rainy season letters were sent to 20 industrial sites containing required activities specific BMP information (See Appendix D-9).

In October 2011, the City developed a New Restaurant Outreach Program to educate and inform new food service establishments about stormwater and FOG regulations. The goal of the New Restaurant Outreach Program is to educate businesses about proper BMPs upon opening. During FY 2011-12, 10 new restaurants and markets were visited as part of this new program. These visits resulted in educational contact with seven managers/owners and distribution of 29 brochures and posters to encourage proper behaviors. More information on this program is provided in Section 5.0.

Outreach to commercial businesses was also performed through notification letters regarding new recycling requirements from the passage of CA Assembly Bill 341. Approximately 400 letters were sent out in May 2012 to applicable Vista businesses and multi-family residential complexes.

8.4 Notable Activities

The City promoted proper waste handling and used oil recycling through use of the Household Hazardous Waste Facility (HHWF). Promotion efforts included distribution of Household Hazardous Waste Information Cards (English/Spanish) to increase awareness; articles on the HHWF in city newsletters (Inside Vista, Spotlight, and WQPP newsletters); a promotional banner for display across a prominent Vista roadway; and education at event booths, especially on Earth Day when proper waste disposal and recycling was the booth theme. Facility improvements including fence replacement and installation of identifying signs are also expected to increase HHWF use.

The City storm drain stencils purchased in FY 2010-11 continued to be loaned out during the reporting period to residents and businesses for their use. The stencils read “No Dumping Drains to Creek” with a picture of a fish. The City has three of each of four different sizes (12 stencils all together) to accommodate the variety of curb sizes and box inlet types typically found at businesses. The City advises residents and businesses regarding appropriate paint colors. Several businesses borrowed the stencils during the reporting period.

The calendars previously developed by the Regional Copermittees group were converted into bilingual coloring books in FY 2011-12. Both the calendars and the coloring books were distributed throughout the reporting period to a variety of target audiences including school children, Spanish speakers, and residents. Spanish calendars are currently under development by the Regional group.

Throughout the month of April 2011, the City celebrated Earth Month. Earth Month featured a stormwater exhibit displayed in the Vista Civic Center including a large stormwater sign and rotating slides on monitors throughout the building with tips on stormwater pollution prevention and other environmental topics. Events during Earth Month included educational booths with stormwater and recycling themes at a local Earth Day celebration, as well as the Creek to Bay Creek Cleanup at Buena Vista Park. Earth Month outreach targeted a variety of audiences including the general public, school children, and municipal employees.

The City undertook outreach measures in preparation for the rainy season. Outreach efforts to residents included rainy season information in a local homeowner's association newsletter, a repeating PowerPoint slide at City Council meetings, media releases, and website updates. For commercial sites, the focus was on shopping centers with the highest potential to impact water quality; 45 sites were identified and educational letters containing activity specific BMP information were sent. Additionally, pre-rainy season letters were sent to 20 industrial sites containing required activities specific BMP information.

The City administered a municipal survey (Appendix G-5) for use in FY 2011-12 touching on a variety of water quality topics. The survey was developed in 2009 and given to municipal employees annually to measure changes in water quality knowledge over time. This year, 66 people completed the survey. Overall results were similar to last year's survey. This year, there was a 10 percent increase in local watershed knowledge from last year. There were some slight decreases in knowledge focusing on certain types of pollutants, including pet waste and green waste. The survey results will assist staff in determining municipal education topics for FY 2012-2013.

The email address (waterquality@cityofvista.com) created in FY 2008-2009 continues to facilitate communication between the public and the City's Water Quality Protection Program. The email address is used primarily as a Stormwater Hotline method for the public to report stormwater concerns. It also receives general enquiries and requests.

New Cityworks Data Management System

In FY 2011-12, the City developed and launched a new GIS-based computer data management system using Cityworks software. The Cityworks system will be used by several departments to manage many aspects of the City's stormwater program including complaint tracking and response; industrial/commercial inspections; municipal inspections; treatment control BMP inspections; public inquiries and hotline calls; storm drain and channel maintenance; inventory management; and special events. The system links the tasks associated with these program components (i.e. inspection results, complaint cases, etc.) to a map containing relevant stormwater information which allows progress, upcoming tasks, and site history to be easily visualized, tracked, and managed. The single Cityworks system will replace a multitude of spreadsheets and databases currently used to capture the same data, which will allow for simplified tracking, managing, and reporting.

The City also acquired mobile computer equipment to track Cityworks tasks in the field. The equipment provides the capability to input data which can then be used to immediately generate inspection reports and enforcement documents, potentially creating faster compliance timeframes. The mobile input aspect of Cityworks will also allow smooth coordination between staff members and departments working on the same issue, as the status is available without lag time and everyone has access to the same centralized system.

The creation of the custom Cityworks system occurred throughout 2011-12, with portions of the system in live activation in June 2012. The WQPP will rely heavily on Cityworks as the primary data management tool during the upcoming reporting period (2012-13).

9.0 Public Participation Component

9.1 Introduction

During the reporting period, the City continued with its implementation of the Public Participation Component of the City's JURMP. The City provides various mechanisms to the public to encourage their participation in the development and implementation of the JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms.

The public participation component is largely linked to the City's education component. The City's focus has been to educate the community on stormwater regulations; on the degradation of water quality and the practices that are causing polluted runoff; and on the best management practices that can be implemented to minimize pollution of runoff and receiving waters. Through these efforts the City encourages the public to assist with its program implementation efforts. Also, as residents become aware of the City's program goals they are more apt to provide their perspectives, comments, and suggestions.

9.2 Mechanisms

9.2.1 Public Notifications

The City of Vista provides advanced notice to the public via the website for projects requiring City Council approval. The public has an opportunity to comment on any City project during the Council meetings. During FY 2011-12, there were seven stormwater-specific items taken to Council for approval for projects involving grant programs, drainage improvements, and educational awareness.

9.2.2 Programs, Community Events, and Educational Activities

Household Hazardous Waste and Used Oil Collection Programs

During the reporting period the City continued to operate its Household Hazardous Waste and Used Oil Collection Programs. These programs enable the public to properly dispose of used oil and hazardous wastes. Several services offered in the Used Oil Collection Program were free to City of Vista Residents. The City also sponsored two used oil filter exchange events during the reporting period. These events allowed citizens the opportunity to exchange used oil filters for new ones and drop off any used oil at the collection center. Oil pans, used oil filter containers, oil funnels, and rags were provided to residents at these events. By making these programs available and encouraging the public to properly dispose of these materials, it is expected that less illegally disposed materials will end up in receiving waters.

Community Events

During the reporting period several community events were held in the City of Vista that encouraged participation from the public. These events are included in Table 8.3 of Section 8.0 – Education Component. At event booths, water quality presentations were conducted and promotional items and print materials were distributed to the public. This setting naturally creates a classroom atmosphere that facilitates discussions about aspects of the City's pollution prevention program including watershed management and pollution prevention. It also provides a mechanism for residents to provide comments and suggestions that may assist the City in its program implementation efforts.

The two Creek Cleanups held during the reporting period were made possible due to the participation of over 250 volunteers. Coastal Cleanup Day in September 2011 had 171

volunteers and removed 190 lbs. of recyclables and 1,175 lbs. of trash from Buena Creek. The Creek to Bay Cleanup had 86 volunteers remove 136 lbs. of recyclables and 382 lbs. of trash from Roman Creek and Buena Vista Park in April 2012.

Educating Residents and the General Public

Complaint investigations are one mechanism the City uses to provide education and outreach to the public concerning its pollution prevention program. Many investigations were conducted at residential and commercial sites during the reporting period (See Sections 5.0 and 6.0). One aspect of the City's enforcement procedure is to provide education and outreach so that responsible parties learn about the importance of pollution prevention in preserving water quality. City staff introduces the City's stormwater program and explains the importance of implementing appropriate BMPs to preserve water quality in the City's receiving waters. Educational materials are distributed which serve as tools for preventing stormwater pollution. Through these education and outreach efforts, it is expected that improvements will be made in managing urban runoff.

Educating School Children

Educating school children plays a significant role in the City's execution of its Public Participation component. During the reporting period, classroom presentations were conducted reaching 918 students via the "Splash Lab" and "Green Machine" programs as discussed in Section 8.3. The presentations provide interactive opportunities for children to learn about stormwater, water quality, the water cycle, bioassessment, watersheds, pollution, a soils research station, an integrated pest management station, and best management practices. Additionally, classroom presentations were conducted at a local high school, which reached 200 students (See Section 8.3). The presentations provided education about stormwater pollution prevention and used oil recycling. An education table during lunch period following the high school presentations allowed interested students to obtain more information on protecting water quality. These outreach efforts serve to inform students of the importance of pollution prevention while encouraging their involvement and participation in JURMP implementation.

9.2.3 Watershed

The City is an active participant in both the Carlsbad and San Luis Rey River Watershed groups. This includes participation in the Carlsbad Watershed Network (CWN), comprised of a variety of stakeholders including representatives from other municipalities in the watershed, environmental organizations, conservancies, the Regional Water Quality Control Board, and other members of the public. During the reporting period, City staff attended meetings for both watersheds (monthly for Carlsbad and bimonthly for San Luis Rey).

During FY 2011-12, a watershed educational sign was developed for the San Luis Rey Watershed and installed at the popular new Vista Sports Park. The sign educates park visitors about the watershed and contains stormwater pollution prevention tips. The sign location along a busy sidewalk overlooking the San Luis Rey Watershed engages park visitors and encourages a connection between the sign's educational content and the view of the watershed in the background.

During FY 2006-07, the City of Vista was awarded a $500,000 Proposition 40 Grant from the State Water Board to develop a watershed management plan for Agua Hedionda Watershed. The Agua Hedionda Watershed Management Plan was finalized and adopted by City Council during FY 2008-09. During FY 2009-10, the City launched the preliminary design phase for one of the restoration projects (SR-02) identified in the Watershed Management Plan; a preliminary design report was completed during FY 2010-11. The City is actively pursuing grant funding to

finalize design and construct the project. During FY 2011-12, a competitive grant application was submitted under Proposition 84 River Parkways, but unfortunately was not selected for funding. The City will be submitting the project for funding under the Proposition 84 IRWM process in FY 2012-13.

On January 26, 2010 a contract was awarded by City Council for construction of the Buena Vista Creek Walk project. The project provides creek stabilization, recreational opportunities, rest areas, and trash/recycling receptacles in the Buena Vista Watershed. The project construction was completed during FY 2010-11. During FY 2011-12, the City applied for grant funding under Proposition 84 to continue the trail project and restore a portion of a tributary to Buena Vista Creek within Brengle Terrace Park. The City was awarded approximately $1 million in grant funding for the project. As the project progresses and enters the design phase, the community will be engaged. To further promote public participation, there will also be outreach opportunities highlighting the restoration work, native plant species, and stormwater BMPs incorporated into the project.

9.2.4 Other Mechanisms

Stormwater Hotline/Other Contact Information
The City continued to operate its Stormwater Hotline (760-726-1340 x1686) and email (waterquality@cityofvista.com) for English and Spanish speaking residents during the reporting period. The City encourages residents to call the hotline to report any observed illicit connections, illegal discharges, or other activity that may contribute pollutants to the City's storm drain system. The City advertises the Stormwater Hotline on various educational materials and the City's website. A total of 18 stormwater reports via the hotline number were received by City Staff during the reporting period; an additional 9 were received on the Hotline email. Additional reports were also received directly by stormwater staff (8 emails and 57 calls). These will be included with submittal of the Illicit Discharge Detection and Elimination Section under separate cover, due December 15, 2012.

The City also posts City departmental phone numbers on the City's website and on educational materials. These departments include Public Works, Community Development, and Engineering. The inclusion of this contact information provides an additional mechanism for citizens to report stormwater concerns for incidents such as illicit discharges, where these other departments can play a vital role.

Website
During the reporting period, the City continued to use its website to provide stormwater information to the public, including hotline information and access to printed materials. The website is available in English and Spanish.

9.3 Notable Activities

The email address created in 2008-09, waterquality@cityofvista.com, which citizens can use to report stormwater concerns, was added to a number of the City's outreach materials. The City's website was also improved to include a translation to Spanish to facilitate communication with the Hispanic Community in Vista.

10.0 Fiscal Analysis Component

10.1 Introduction

The Standardized Fiscal Analysis Method and Format (Fiscal Analysis Method) was collaboratively developed and adopted by the Copermittees in January 2009 in accordance with Sections G, J.1.a(3)(k), and J.1.c(1)(d) of NPDES Order No. R9-2007-0001. The Fiscal Analysis Method document was submitted to the San Diego RWQCB by January 31, 2009, as Attachment 1 of the Regional Urban Runoff Management Plan (RURMP) Annual Report for FY 2007-08. In this Annual Report, the Standardized Method for reporting budgets is utilized. The Standardized Method allows for categorization of expenditures by permit component.

10.2 General Budget Information

The City's Jurisdictional Urban Runoff Management Program is funded through the City's Sewer Enterprise fund and is typically based on a two-year budgeting cycle. However, due to current economic conditions, the budgeting cycle has been revisited and is now performed annually. The City continues to pursue and utilize funding from grant sources. Some of the education activities are funded through Cal Recycle Grants such as the Beverage Recycling Grant and the Oil Payment Program. The City will also pursue other State Funds as part of watershed collaboration efforts as available.

10.3 Fiscal Analysis Methods

The City participated in the regional efforts to develop standards for Fiscal Reporting with other Copermittees. Currently, in conformance with the Regional Standards, the individual jurisdictional components are tracked, as well as watershed and regional expenditures. The City has performed the analysis according to the Standardized Fiscal Analysis Method for FY 2011-12. Table 10.1 below contains results of this analysis for FY 2011-12.

10.4 Fiscal Analysis Results – Standardized Fiscal Analysis Method

Table 10.1 Stormwater Budget Summary by Component FY 2011-12

EXPENDITURE SUMMARY

JURISDICTIONAL COMPONENTS		
ADMINISTRATION	$	68,675
DEVELOPMENT PLANNING	$	65,885
CONSTRUCTION	$	40,027
MUNICIPAL	$	2,033,161
INDUSTRIAL AND COMMERCIAL	$	94,844
RESIDENTIAL	$	10,832
IDDE	$	113,038
EDUCATION	$	61,113
PUBLIC PARTICIPATION	$	53
SPECIAL INVESTIGATIONS	$	53,281
NON-EMERGENCY FIREFIGHTING	$	-
Jurisdictional Total	$	2,540,909

WATERSHED		
Carlsbad	$	50,375
San Luis Rey	$	58,058
Watershed Total	$	108,433

REGIONAL		
Copermitttee Cost Share of Regional Budget	$	78,801
Regional Total	$	78,801

TOTAL COST	***$***	***2,728,143***

*Includes staff in Water Quality Protection Program, Planning, Development, Construction, Building, Parks, Public Works Maintenance, and Administrative staff implementing storm water requirements within their work units.

10.4.1 Funding Sources

The City's Water Quality Protection Program is funded primarily by enterprise funds. These funds are generated from sewer utilities within the City of Vista and the Buena Sanitation District. Approximately 80% of the Program is funded by the City of Vista sewer enterprise fund and the remaining 20% is funded by the Buena Sanitation District sewer enterprise fund. The program is supported by a Used Oil Block Grant and a Department of Conservation Recycling Grant as well. The City received approximately $53,233 during FY 2011-12, which was used to support the program's outreach and education activities, as well as the City's recycling program, and household hazardous waste collection programs.

Table 10.2 illustrates a summary of the Funding Sources for the program.

Table 10.2 Summary of Funding Sources

FUNDING BY SOURCE		
GENERAL FUND	$	82,846
STORMWATER FEE	$	-
PERMIT FEES	$	-
DEVELOPER DEPOSITS AND FEES	$	29,710
REGISTRATION AND INSPECTION FEES	$	-
FLOOD CONTROL FEES	$	-
FRANCHISE FEES	$	-
GAS TAX	$	2,009
UTILITY TAX	$	-
ROAD FUND	$	-
ENTERPRISE FUNDS	$	2,392,322
TRUST FUNDS	$	-
SPECIAL ASSESSMENT DISTRICTS	$	168,023
STATE APPROPRIATED FUNDS	$	-
GRANT FUNDS	$	53,233
OTHER	$	-
TOTAL	$	2,728,143

ONE-TIME FUNDING		
None	$	-
TOTAL	$	-

TOTAL FUNDING	$	2,728,143

11.0 Effectiveness Assessment Component

The following section describes the City's annual assessment of the effectiveness of its Jurisdictional Urban Runoff Management Program (JURMP) (Permit sections I.1 and J.1.a.(1)(l)).

11.1 Introduction

The requirements of the Municipal Storm Water Permit (Permit) specify that the City shall annually assess the effectiveness of its JURMP implementation. At a minimum, the assessment shall assess the effectiveness of each Significant Activity or BMP implemented, implementation of each major permit component (Development Planning, Construction, Municipal, Industrial/Commercial, Residential, Illicit Discharge Detection and Elimination, and Education), and the overall JURMP. This section outlines the assessment that the City uses to assess the effectiveness of its efforts at improving surface water quality.

Assessment of the JURMP is a joint activity between multiple departments of the City. Assessment measures and methods will be based on assessment tables that list the Permit required activities, targeted outcomes, assessment methods, and assessment measures. Assessment tables are included within each Permit component section of this Annual Report.

The City assesses its JURMP based on the framework set out in the San Diego Municipal Stormwater Copermittee document *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*. Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts to maximize resources. Like most management programs, the City uses assessment as part of an iterative feedback loop involving (1) Planning, (2) Implementation, and (3) Assessment.

The City also assesses the effectiveness of its JURMP in addressing the constituents of concern (COCs) determined from dry weather, MS4, and §303(d) listed constituents, other monitoring programs, and best professional judgment. Where feasible, areas of the Permit that apply to the COCs may be identified and additional data may be collected for these activities. Additionally, scientific literature may be used to help supplement information for the applicable activities.

The City may also determine if re-allocation of resources is necessary to optimize pollutant reduction. During the annual program review, the City attempts to evaluate whether measurable targeted outcomes, assessment measures, and assessment methods adequately target COCs or management questions. Where it is found that assessment data are difficult to obtain, or do not address the purpose of the activity; outcomes, measures, and methods may be adjusted as necessary.

11.2 Effectiveness Assessment Results

The City assessed implementation and effectiveness of individual Permit Components and of the JURMP as a whole and in doing so assessed individual activities and BMPs associated with each component. Where enough data exists, preliminary water quality assessments are also possible and explained below. Ideally, an integrated assessment is possible after examining program components, the overall program, and water quality. Where feasible, some conclusions were drawn and are further explained below.

11.2.1 Implementation Assessment

Compliance assessment for individual components was completed by comparing FY 2011-12 results to compliance tables developed following the Permit outline. The tables include targeted outcomes, assessment measures, and assessment methods. Results of individual component assessments can be found within each component section of the Annual Report. A brief summary of the compliance results is provided below.

Additionally, in an attempt to correlate permit components with water quality, a brief discussion of potential pollutant impacts is provided per component. This discussion is based on activities conducted that are related to the specific component.

Finally, the City strives to implement these programs effectively, but efficiently as well. Where it is possible, operational effectiveness pertaining to programmatic components is addressed.

11.2.1.1 Development Planning Component

The development planning component is focused on ensuring that all new development and redevelopment projects minimize impacts on water quality via implementation of all SUSMP, treatment control, and hydromodification requirements. During the reporting period, all projects underwent the urban runoff approval process, ensuring that SUSMP, treatment control, and HMP requirements were met. Additionally, systems are in place to track compliance related items for this component, ensuring that all inventories are kept up to date, all inspections are performed, and requirements are met for each site. Table 2.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2011-12. (Level 1)

In remaining compliant with Permit requirements, all sites incorporate LID into site design and include treatment control BMPs when applicable. Via the inspection program required for these BMPs, the City has gained a better perspective on the functionality of the BMPs. Five years of data have been collected pertaining to this component. In evaluating the program, the effectiveness is examined two ways. First, the number of maintenance deficiencies following each round of inspections is tabulated and compared. Second, the number of maintenance deficiencies is then compared to the certifications submitted annually.

Figure 11.1 illustrates the number of maintenance issues by BMP type for the first five years of the inspection program. During the first year (FY 2007-08), all inventoried BMPs were inspected. In subsequent years, sites were prioritized and inspected according to permit requirements and approximately 50% of the BMPs received inspections. To account for this difference, calculations were performed by BMP, not by project, and the data was normalized by the total number of BMPs inspected.

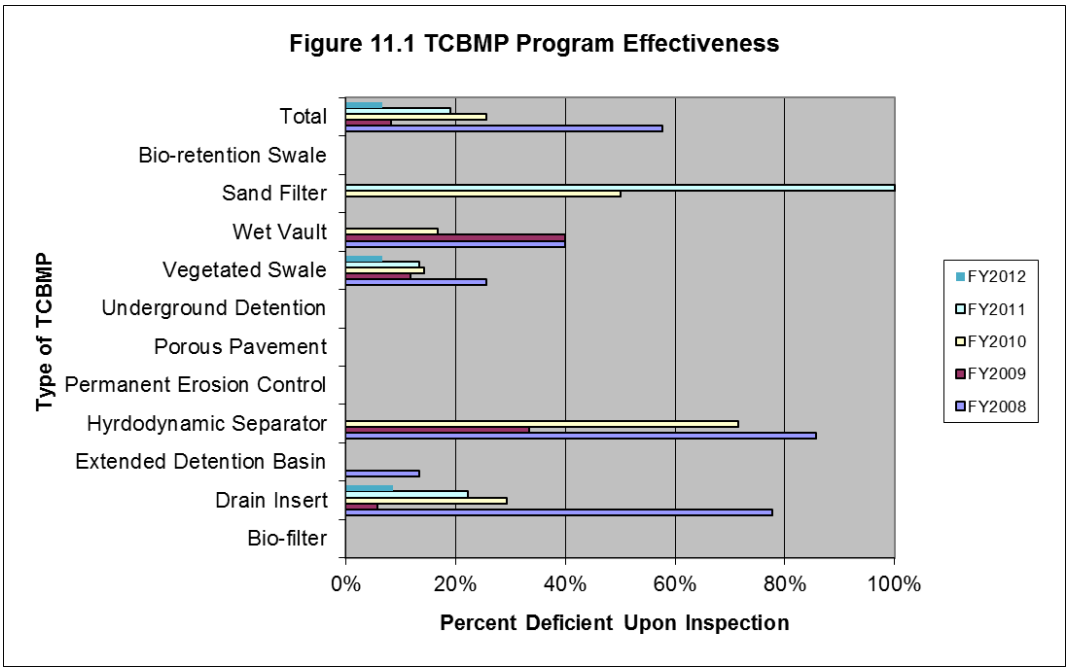

The figure illustrates that overall deficiencies have declined since the inception of the program with the lowest deficiencies occurring in FY 2011-12. Based on percentage of BMPs with maintenance concerns noted during inspections, it appears that drain inserts continue to have some associated maintenance issues. Generally, drain inserts require more frequent maintenance as the units are small and accumulate debris much quicker than the larger BMPs such as hydro dynamic Separators and Detention Basins. BMPs with no bars on the graph are those that have had no maintenance concerns noted during annual inspections. These include wet vaults, underground detention systems, porous pavements, and hydrodynamic separators. Based on this data, it appears that the TCBMP program is working well using a combination of outreach, inspections, and enforcement.

At this time, preliminary assessments include:

- the inspection and annual certification program has and continues to be effective in raising awareness (level 2) for those responsible for TCBMP maintenance,
- the inspection program has changed behavior positively (level 3) in that initially very few BMPs were maintained as designed and recently most BMPs were maintained effectively, and
- the program is effective in reducing pollutant loading from these sites. (level 4)

However, without empirical data to support the efficiency of the BMPs at removing different types of pollutants, it is not feasible to calculate reductions in pollutant loading at this time.

11.2.1.2 Construction Component

The construction component is focused on ensuring that all construction projects minimize impacts on water quality through implementation of all required BMPs. During the reporting period, all construction projects underwent the urban runoff approval process, ensuring that they were prioritized according to specific criteria and inspected accordingly. New systems were put in place during FY 2008-09 to track compliance related items for this component, ensuring that the construction inventory is updated continually, all inspections are performed at the required

frequency, and BMP requirements are met for each site. Table 3.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2011-12. (Level 1)

Through inspections and pre-construction meetings the City is providing effective oversight and outreach to the construction community to ensure stormwater is managed appropriately at construction sites. During pre-construction meetings WQPP staff provides the necessary outreach to ensure BMPs are integrated into all construction activities prior to commencing construction. Inspector's presence onsite ensures that appropriate BMPs are appropriately maintained throughout the construction project. With weekly presence and oversight at construction sites, site personnel are more likely to follow BMP protocols resulting in less compliance issues.

In the event an inspector identifies a BMP deficiency the inspector typically consults with site personnel to correct the issue. Only after efforts by the inspector to encourage BMP modifications fail, do stormwater enforcement personnel get involved. Over the past three fiscal years (FY 10, 11, and 12) only one construction issue was referred to stormwater enforcement where in contrast 15 stormwater issues were referred to stormwater enforcement during the previous three fiscal years (FY 07, 08, and 09). This data is presented in Table 11.1 below. This comparison suggests that the City's consistency in the implementation of programmatic activities, particularly, inspections and outreach, has translated into positive changes in both knowledge (Level 2) and behavior (Level 3) in the construction community.

Table 11.1 Stormwater Issues Referred to WQPP Staff

	FY 07	FY 08	FY 09	FY 10	FY 11	FY112
Stormwater Issues Referred to WQPP staff	3	5	7	1	0	0

Water quality impacts related to the construction component focus mostly on sediment. The majority of BMPs implemented on construction sites are designed to limit the amount of sediment mobilized in stormwater, thereby limiting the quantities of sediment leaving the site during storm events. Inherent to increased compliance and BMP implementation are load reductions related to sediment. While it is believed that this is the case, as the BMPs are designed to retain sediment on-site, there is little data to support the hypothesis. Without site specific data, including baseline data where no BMPs are in place, it is not feasible to quantify a load reduction. However, anecdotally, and as indicated by compliance statistics, there are fewer problems related to sediment discharges on construction sites in recent years. (level 4)

11.2.1.3 Municipal Component

The municipal component is focused on ensuring that all municipal facilities and operations minimize impacts on water quality via implementation of all required BMPs. This component is broad in scope, covering programs including municipal staff training, inspections, street sweeping, MS4 cleaning, IPM implementation, and special events review and compliance. Each of these programs requires tracking of specific data for compliance purposes and for effectiveness assessments. Table 4.1 contains all of the compliance related information for this component.

Water quality impacts related to the municipal component are also diverse. City staff is involved in operations that may generate solids, nutrients, pesticides, oils and grease, and other pollutants. Additionally, through programs such as street sweeping and MS4 maintenance, large volumes of pollutants such as heavy metals and sediment are removed from the MS4, preventing the discharge of these loads during rain events. Education and outreach efforts are a key element to the municipal program. It is necessary to provide specific training to City staff involved in activities with the potential to release pollutants into the MS4.

In meeting the JURMP and Permit requirements to train municipal personnel, employees are provided specific information pertaining to their discipline. This training translates into an increase in knowledge across the City's workforce. However, in the past, measures have not been in place to directly track a change in this knowledge base. To measure changes in water quality knowledge over time, the City developed a municipal survey, included as Appendix G-5. This survey has been administered once per year for the past four fiscal years; numbers of responses varied from 136 people in 2009 to 66 people in 2012. After comparing the survey results, indications are:

- Overall, results were relatively similar to last year's survey.
- A 10 percent increase in local watershed knowledge from last year

Other responses were similar between the surveys. The survey results assisted staff in determining which topical areas to focus on for municipal education during 2011-2012. (Level 2). City WQPP staff will look for ways to increase participation in the survey in the coming year.

Changes in behavior are examined in further detail in relation to the inspection program and the IDDE complaints program. In relating the level of awareness of municipal employees and attempting to assess where this may be increasing or decreasing, the IDDE data may be useful. Although a limited data set exists, as these data were not tracked prior to FY 08-09, Table 11.2 contains the total numbers of complaints and those reported by municipal staff for the past three years.

Table 11.2 Complaints Reported by Municipal Staff

	FY 2009-10	FY 2010-11	FY 2011-12
Total Complaints	195	118	105
Proactive Complaints	117(62%)	50 (42%)	30 (29%)

The preliminary data collected over the past three years shows that more than half of the complaint cases are reported by City staff. This indicates that field staff is well trained and active in reporting stormwater violations. The decline in City staff reports may be indicative of a shift more towards the inspections programs.

There are 30 high priority municipal facilities on the City's inventory. With the increased scope of inspections with Order 2007-0001, data collected can provide a baseline from which to assess changes in knowledge and behavior. This is accomplished by comparing corrective actions resulting from routine inspections. Table 11.3 includes data collected during the past four years of municipal inspections. The results indicate a substantial increase in corrective actions during FY 2011-12. This increase may have been due to changes in facility inspectors, personnel responsible for maintenance and the addition of contract personnel to the City services environment. This may have resulted in more BMP deficiencies that staff noted throughout inspections. The issue has been duly recorded and will be appropriately managed as additional information is collected. Also, contractors have been trained on the maintenance

needs for all facilities. Additionally, a stormwater training was conducted in June 2012 for all Public Works staff which focused on the BMP deficiencies and corresponding corrective actions associated with the facility inspections. All corrective actions were verified by City WQPP staff.

Table 11.3 Municipal Inspections Corrective Actions Summary

	FY 2008-09	FY 2009-10	FY 2010-11	FY 2011-12
Percentage of Sites with Corrective Actions	13%	31%	23%	67%

The City's MS4 cleaning and street sweeping programs are continually removing pollutants from these systems that would otherwise end up in receiving waters. The MS4 cleaning, street sweeping, and channel maintenance programs provide load reductions (Level 4) which are reported annually in Section 4 of this report. Comparisons from year to year may provide relative estimates of the amounts of material being prevented from entering the MS4. Table 11.4 presents data compiled from these activities since the beginning of Order 2007-0001, over the past four years.

Table 11.4 Street Sweeping and MS4 Cleaning Removal Rates (tons per year)

	FY 2008-09	FY 2009-10	FY 2010-11	FY 2011-12
Streets – Sweeping	280	687	455	450
Parking Lots – Sweeping	5	5	0.5	0.5
Catch Basins/Inlets	455	547	242	76.8
Open Channels	2493	2400	2270	154

11.2.1.4 Industrial Commercial Component

The industrial/commercial component is focused on ensuring that all industrial/commercial (IC) facilities and operations minimize impacts on water quality through implementation of all required BMPs. This component consists of outreach and education, inspections, complaint response, and enforcement of stationary and mobile businesses. The IC program requires tracking of specific data for compliance purposes and for effectiveness assessments. Table 5.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2011-12. (Level 1)

Water quality impacts related to the IC component are also diverse. Local businesses operate facilities that may generate solids, nutrients, bacteria, oils and grease, and other pollutants. Inspections are the key element of the IC program. Inspections allow the City to assess compliance of the business with the Permit and local ordinances, assess the level of stormwater knowledge of the employees, assess the level of BMP implementation at the site, and to provide one on one education to the employees at the facility.

Figure 11.2 illustrates the changes in knowledge (Level 2) and changes in behavior/BMP implementation (Level 3) as detected over the past eight years of the industrial/commercial inspection program. The trends show a general increase in knowledge and BMP implementation over the past four fiscal years with relatively constant results over the eight year period. Overall, it appears that with several years of inspections and outreach to facility personnel businesses are knowledgeable and consistently applying their knowledge in appropriately managing runoff at their facilities. Changes in knowledge and BMP assessment scores may be due to many factors, including changes in inspectors, facilities inspected, management, and permit requirements. However, with the large numbers of inspections per year, it is expected that the numbers are representative of conditions observed during

inspections over time. This information will continue to be tracked so continual assessments can be made.

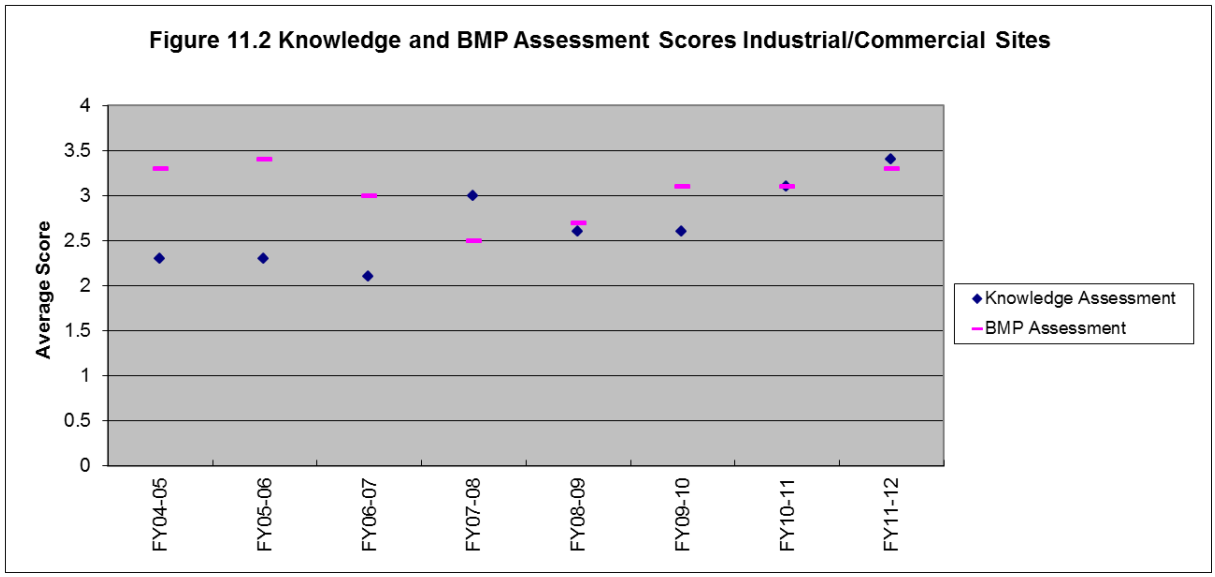

As high priority businesses are inspected consistently from year to year, comparisons of follow up data with respect to these businesses only may provide a better measure of the effectiveness of the program in increasing knowledge (Level 2) and BMP implementation (Level 3).

Figure 11.3 illustrates the follow-up actions for the high priority businesses during the past five years of inspections. Priority 1 (P1) follow-ups are generally for discharges occurring at the time of inspection, priority 2 (P2) follow-ups are for BMP violations, and priority 3 (P3) follow-ups are for minor BMP violations.

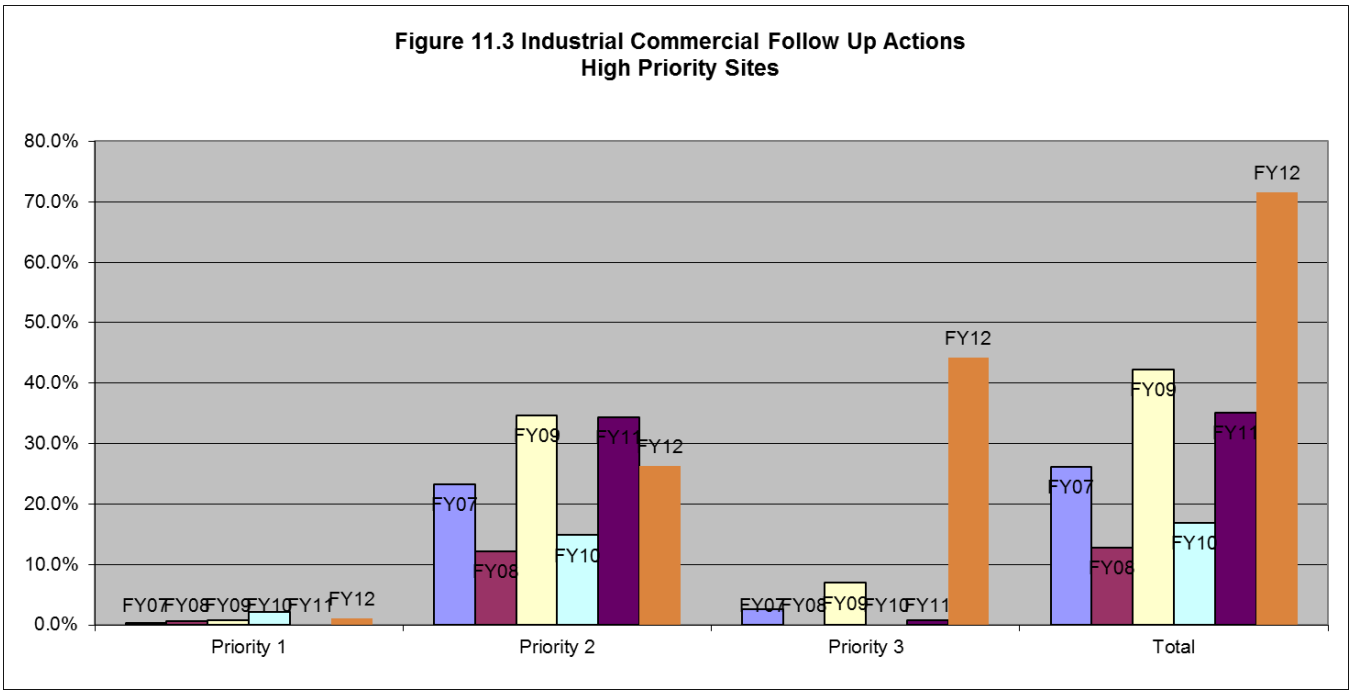

The figure demonstrates that approximately 72% of the high priority facilities required follow up actions during FY 11-12. There was one P1 follow-up at high priority facilities during routine inspections, with most follow-ups due to P3 violations (44% of follow-ups). This increase may be due to several factors such as changes in inspectors and facility management. There were 25 P2 follow-ups amounting to 26% of follow-ups at high priority facilities down from 34% the previous fiscal year. This reduction in more serious BMP issues is significant and it may suggest that the City's outreach and inspections program is remaining strong and effective in informing the business community of the City's BMP requirements and importance of pollution prevention.

Due to the variability of the data from year to year, it is difficult to draw conclusions. However, in examining the P2 follow-ups more closely, it appears that some of the same facilities continue to have corrective actions from year to year. (It is important to note that all facilities where corrective actions were required were followed up on and compliance was achieved following the inspections.) For these cases, where repeat offenders have been identified, more frequent inspections may be effective in bringing them into compliance. During FY 2009-10, the City developed an enhanced inspection program focusing on those businesses with repeat violations. Implementation of the program began in FY 2010-11.

In the enhanced inspection program, the City conducts various types of inspections based on the history of violations at the sites. Repeat offenders that had more egregious violations received full inspections on a quarterly basis. Those businesses that had previously shown continuing violations that were relatively minor received a combination of full inspections and windshield inspections, on varied frequencies. This program included 46 businesses in FY 11-12.

During FY 2011-12, 105 inspections were conducted in the enhanced inspection program. Depending on performance, sites can be re-categorized to increase or decrease frequency and degree of inspections for the upcoming reporting period. Facilities displaying continual compliance may be removed or new facilities may be added due to historical non-compliance. Businesses that closed down were also removed. The annual review for this reporting period was performed in October 2011, resulting in 7 sites added and 6 sites removed from the enhanced program. Based on these results, the program, as intended, appears to be effective in obtaining compliance at facilities with a history of non-compliance indicating a positive change in both knowledge (level 2) and behavior (level 3). Focusing on activities and programs that provide the most benefit to maintaining or improving water quality is one important guiding principle of the City's WQPP. With the high threat to water quality issues that businesses in the enhanced inspection program may pose, the inclusion of this program appears to be in line with that objective.

At this time, estimates of load reductions (Level 4) are not feasible as no data has been evaluated that is specific to industrial/commercial sources.

11.2.1.5 Residential Component

The residential component is focused on ensuring that residential areas and activities minimize impacts on water quality via implementation of all required BMPs. This component is focused on the high priority activities identified in the permit and JURMP.

Table 6.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2011-12. (Level 1) The residential

requirements of the Permit are generally implemented via outreach and education, site visits, and complaint response. An assessment of the outreach component is presented in Section 11.2.1.7 below, therefore the assessment of the residential section will focus primarily on complaint response efforts.

An analysis of the numbers of residential complaints over the past five years shows that the percentage of residential complaints (of the total number of complaints) has varied from approximately 30 to 50%. Figure 11.4 illustrates the percentage of the total complaints that were related to residential activities over the past five years.

Figure 11.4 Residential Complaints

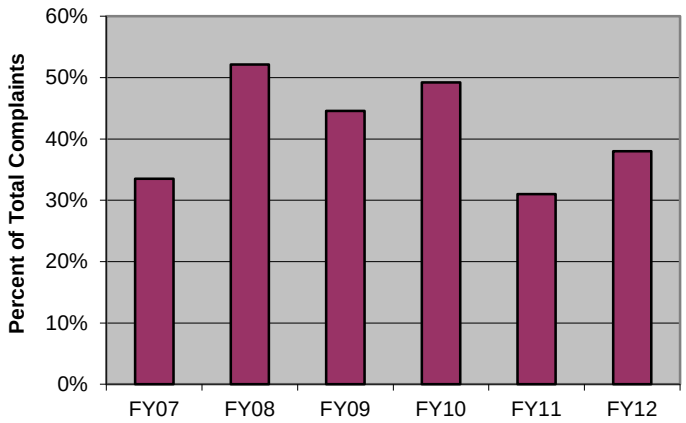

In Section 6 of this report, the types of residential complaints are presented. Generally, the types of residential complaints most often responded to involve sediment, spills, trash/debris, over irrigation, and washing. These are listed from most common to least. It appears that each of these is included in the high priority residential activities as proposed in the JURMP, leading to the conclusion that the program is focused on the appropriate residential activities.

In focusing on the most problematic runoff issues within the City, the City implemented a program in FY 2011-12 to assess sediment in runoff during wet weather. This program is described in more detail under Section 6.6 Notable Activities. This program was developed as a result of a preliminary assessment of complaint data conducted by the City in FY 2010-11 (refer FY 2010-11 Annual JURMP Report – Section 6.4.2) to begin to evaluate its oversight methods of residential areas. During FY 2010-11, the City performed a GIS exercise to show the distribution of residential complaints and the pollutants associated with those complaints over the previous three fiscal years. Based on approximately 300 residential complaints, the majority of these complaints were reported in the Buena Vista HA (904.2) and are related to sediment. The intent of this exercise was to use the results to better inform the stormwater program of the most problematic water quality issues and extent of them throughout the City.

Using these results the City implemented a Storm Patrol Program to assess sediment runoff in the Buena Vista Watershed during wet weather. City WQPP staff conducted several “Rain Patrol” inspections throughout the watershed to assess sediment in stormwater runoff. During some events staff visited segments of Buena Vista Creek and residential sites with a known history of non-compliance. During other visits, staff randomly chose areas within the watershed.

Where sediment levels were significant staff performed upstream investigations to identify sediment sources, if any. This program proved valuable as it enabled the City to better assess BMP compliance at sites that have exhibited sediment runoff issues in the past. One of the most effective ways to determine the effectiveness of BMPs is to monitor them during rain events. Another goal of this program is to use the results to better define sediment issues as a whole throughout the watershed. These issues may be more complex and broad throughout the watershed and therefore could demand larger scale efforts to resolve them (i.e. education programs). It is feasible that the City may better define the issues as more data is collected and assessed in the program.

In the event a responsible party is identified during upstream investigations staff will customarily provide the necessary outreach (level 2) and enforcement to ensure appropriate BMPs are implemented (level 3). These actions are intended to have a positive effect on reducing sediment loads (level 4) into receiving waters as appropriate BMPs will be in place to ensure sediment is contained on site. Even without any instrumental measurements of sediment, reduction in sediment loads may be detectable by observing stormwater runoff directly downstream from those sites that were required to install BMPs. In a practical sense load reductions can be assessed by observing the clarity of the water as more turbid waters typically indicate higher sediment levels in runoff.

Another method for evaluating the City's residential component as it relates to outreach is to track the amount of household hazardous waste collected each year at the City's collection facility. Table 11.5 contains HHW data over the past six years. A definite increasing trend has been evident over the first three years with the highest collection amounts coming in FY 2009-10 (259,618 lbs). The current reporting period indicates an increase of 59,250 lbs from FY 2010-11, but overall the amount collected has been consistent over the six years. This suggests that the City's outreach program continues to be effective in reaching out to the residential community to facilitate proper disposal of HHW at the collection facility (Levels 2 and 3).

Table 11.5 HHW Collection per Fiscal Year

Fiscal Year	HHW Collected (lbs.)
FY 2011-12	248,542
FY 2010-11	189, 292
FY 2009-10	259,618
FY 2008-09	266,781
FY 2007-08	245,630
FY 2006-07	244,936

11.2.1.6 IDDE Component

The IDDE Section of the JURMP Annual Report is due on December 15, 2012 under separate cover. The effectiveness assessment of this component will also be included with this submittal.

11.2.1.7 Education Component

The education component is focused on ensuring that all target audiences are educated on stormwater principles so as to minimize impacts on water quality via implementation of all required BMPs specific to their disciplines. The goals of the program are to measurably increase the knowledge of these target communities and change the behavior of target

communities, leading to reductions in pollutant releases to the MS4 and the environment. Table 8.1 contains all of the compliance related information for this component. The City was in full compliance with Permit requirements during FY 2011-12. (Level 1)

Municipal Departments and Personnel

Municipal staff training is performed annually for multiple departments. During FY 2011-12, training continued to focus on development staff, including plan review and inspections, engineering staff, including all capital improvement program engineers, and stormwater staff. Training was focused on staff involved in development because of the recently adopted regulations, including the City's SUSMP with hydromodification requirements and the State Construction General Permit. Training for stormwater staff occurs continually throughout the year, covering relevant topics such as spill response, code enforcement, dispute resolution, industrial/commercial inspections, Treatment Control BMP inspections, monitoring, etc. The City's new Environmental Specialist started in FY 2011-12 and was appropriately trained through the various training events that occurred throughout the reporting period. Training events conducted during the reporting period are presented in Table 8.2 in the Education Component. These trainings resulted in 107 staff being trained. In examining the scope of the training provided during FY 2011-12, it appears that the all appropriate staff was trained in stormwater principles and practices related to their discipline.

However, it is always a challenge to detect changes in knowledge/awareness (Level 2) and changes in behavior (Level 3). One method used over the last three years is to track complaints that are reported by City personnel as described above in Section 11.2.1.3. The data shows that City staff is vigilant while in the field and actively involved in reporting complaints, with 60%, 62%,42%, and 29% of the total complaints reported by employees respectively during the past three fiscal years. The decrease in reports the last couple years may be due to a shift in focus by stormwater staff to the enhanced inspections program. It may also be due to an increase in positive behaviors throughout the various residential areas as a result of the City's persistent education efforts throughout the years. Less stormwater violations are occurring as a result.

Another method to track changes in awareness (Level 2) is through surveys. The City developed a survey targeting municipal staff to obtain a baseline for their knowledge related to stormwater and watershed concepts. The survey was developed late in FY 2008-09 and administered for the first time in early FY 2009-10. The survey, or variations of, will be administered to staff annually to gauge changes in knowledge and awareness. Data for years one through four are discussed above in Section 11.2.1.3.

Changes in behavior (Level 3) are tracked via municipal inspections and corrective actions. Because the municipal inspections program changed with the implementation of Order 2007-0001, the first year of this permit is used as the baseline. Five years of data have been collected and assessed, as presented in Table 11.2. This data shows that the number of corrective actions identified at municipal sites varies from year to year. In general the necessary corrections are relatively minor. Increases in corrective actions required in FY 2011-12 may be due to changes in inspectors and personnel responsible for maintenance. Because of the variability and the relatively small set of data it is not feasible to draw conclusions about changes in behavior at this time.

Construction Site Owners and Developers

Educational information is provided to construction site owners and developers in several ways. These include one on one interaction throughout the development review and construction

process, annual distribution of information regarding rainy season requirements and preparation, pre-construction meetings, and information on the City's website.

A comparison of the number of preconstruction meetings that stormwater staff attended related to enforcement activity was performed. Stormwater presence at pre-construction meetings began regularly in 2005. At each pre-construction meeting, stormwater staff provided a synopsis of the City's program and discussed the City's BMP requirements. It is worthy to note that inspections are being conducted more frequently that what is required in the Permit. The City conducts weekly inspections of high TTWQ sites during the wet season, even though the Permit requires only bi-weekly inspections. This education and increased presence at construction sites correlates well with a significant decrease in enforcement activity at the sites as eluded to in Table 11.1. The decrease in enforcement activities indicates that contractors' and developers' knowledge of stormwater and the City's requirements increased as a result of the preconstruction meetings (Level 2) and that positive behavior changes, i.e. better BMP implementation (Level 3) followed. With these encouraging results, mechanisms are in place to ensure that stormwater staff continues to attend all preconstruction meetings.

Industrial and Commercial Owners and Operators

Information is provided to the commercial and industrial community primarily based on the inspections scheduled to be conducted for the fiscal year. In preparation for the inspections, a letter is sent to the business owners indicating that they have been selected for an inspection. During the inspections and follow-up actions, one on one education is performed that is specific to the site and activities performed. As presented in Table 8.4, educational information is distributed during and following these inspections as well. Additionally, site and activity specific outreach information was provided to all new businesses on the City's stormwater inventory during FY 11-12.

As illustrated in Figure 11.4, the trends show a general increase in knowledge and BMP implementation over the past four fiscal years with relatively constant results over the eight year period. Overall, it appears that with several years of inspections and outreach conducted under the current Permit, facility personnel at businesses are knowledgeable (level 2) and consistently applying their knowledge in appropriately managing (level 3) runoff at their facilities. In previous assessments, it was evident that some of the violations are occurring at the same businesses from year to year. For these reasons the City developed its enhanced inspection program in FY 09-10 to provide increased oversight to these types of businesses. During FY2011-12, the City continued to implement its enhanced inspection program conducting 105 inspections of 46 inventoried businesses. The City added seven more facilities to the list as a result of its annual review of facilities. See Section 11.2.1.4 for a discussion on the enhanced inspection program.

While the majority of businesses are in compliance each year, significant numbers of the high priority sites inspected each year have corrective actions. The analysis indicates that education and outreach may be working (Level 2) but the resulting desired effect, an increase in BMP implementation, is not always observed. But, other factors have been found to play a role in affecting a facility's level of compliance including changes in employees and management, which, in this economic climate, has occurred often. Inspectors have in several instances determined that facilities have faltered in compliance due to owners bringing in new managers and employees that are new to stormwater principles and practices and have not been appropriately trained. Training during inspections is necessary to ensure new facility personnel are made aware of the City's BMP requirements and provided with the tools to appropriately manage runoff at their facilities.

Residential Community, General Public, School Children

Outreach efforts to the residential community and general public are typically performed via public events such as fairs, clean-up events, used oil collection events; direct contact via complaint response efforts; the City's website and publications; and other City sponsored programs such as the Citizens Academy. It is generally difficult to directly measure changes in knowledge and/or behavior resulting from these efforts. One method considered is by comparing residential complaints from year to year. From this comparison, it appears that overall the number of residential complaints has been inconsistent, but with a general decreasing trend with lower number of complaints reported in the last two fiscal years (see figure 11.4). Conclusions are difficult to draw from this comparison, because complaints may vary as a result of a more informed general public or vary due to an increase in number of violations. But, the fact that the City continues to receive a substantial number of complaints annually suggests that the City's outreach programs are consistently and effectively providing the necessary outreach to inform residents on pollution prevention. Informed residents are knowledgeable on what stormwater violations are and instructions for reporting them to the WQPP staff and hotlines.

The City continued its education and outreach efforts to schools during the reporting period. For outreach to elementary and middle school students, the City contracted for the first time with San Diego County Office of Education (SDCOE) to provide two programs: the Splash Lab and the Green Machine. During the 2011-12 academic year, Splash Lab reached 918 students at 12 schools. The Green machine reached 705 students at seven schools. There were more Green Machine presentations included this year to reach the younger target audience, as the Splash Lab is typically focused on Grades 4-6. The presentations provide an interactive opportunity to children to learn about stormwater, water quality, bioassessment, watersheds, pollution, and best management practices. Splash Lab pre- and post surveys were administered to all of the schoolchildren. Pre-surveys were given prior to the students' participation and post tests were generally given the following week in the classroom. In total, 467 pre-surveys and 351 post-surveys were received back from eight schools. On average, scores on the pre-test were 58%. The average scores on the post test were 83%, showing a clear increase in knowledge through the program. (Level 2) This increase of approximately 25% was similar to the increase demonstrated last year.

Underserved Target Audiences, High Risk Behaviors, and "Allowable" Behaviors and Dischargers

During the reporting period the City conducted education and outreach efforts that targeted high high risk behaviors, "allowable" behaviors and dischargers. These included community events, complaint investigations, and other resources and materials. The events were equally successful in providing outreach to underserved audiences including Spanish communities. The City provides stormwater information to the public via verbal communications and by providing various outreach materials containing stormwater program information. These include used motor oil, HHW, garden pest management, general stormwater pollution prevention, and FOG reduction. During the reporting period, the HHW information card and motor oil brochure were developed in Spanish to expand its stormwater materials offered in Spanish. The City's website which is offered in English and Spanish provides another source for stormwater information concerning high risk behaviors and underserved audiences. As mentioned in sections 5.0 and 6.0 Stormwater complaint investigations provides another mechanism to disseminate stormwater materials to the general public that target all types of discharges

including ”allowable discharges”. During complaint investigations responsible parties are educated on various aspects of the City’s WQPP and BMP requirements applicable to the stormwater incident being investigated. During the reporting period, WQPP staff conducted some investigations concerning allowable discharges including over-irrigation, swimming pool, and residential car washing.

The City’s objective is to use a variety of resources and materials to reach out to all the different audiences and behaviors. The intent of this approach is to maximize participation from the community in implementing JURMP activities and programs thereby minimizing impacts to water quality. Currently, the City has no formal measurement tool to assess outreach to underserved audiences and high risk and allowable behaviors. The City’s outreach program is conducted annually using the various mechanisms it mentioned above. Since, it is evident that these mechanisms target all audiences and behaviors the City is by default providing significant and consistent outreach to the undeserved audiences and the populations conducting “allowable” discharges and high risk behaviors. The City’s outreach program is aimed at providing the necessary program information to promote positive behavioral changes concerning the environment. This message is instilled in all activities and programs that make up the City’s outreach program. It would be expected that considerable behavioral changes are occurring throughout the City every year as a result of the City’s educational and outreach efforts.

11.2.1.8 Public Participation Component

The City provides various mechanisms to the public to encourage their participation in the development and implementation of the City’s JURMP. These mechanisms include public notifications, programs, community events, educational activities, watershed group participation, and other mechanisms as appropriate. These mechanisms serve to inform the public of aspects of the City’s pollution prevention program in order to promote positive behaviors concerning the environment and encourage participation in JURMP activities.

The public participation component is largely linked to the City’s education component. It is expected that people will more likely participate in JURMP activities if they are adequately educated and informed about the City’s programs. It is also thought that a variety of educational tools are needed to reach out to all audiences to maximize participation from the community. During the reporting period the City used a variety of tools to educate the community including the City’s website, various newsletters, outreach at community events, and public notifications.

Although, there are no formal measures in place to assess the public participation component, clean up events appear to provide some indication on the effectiveness of the City’s public participation component. Two creek cleanups held during the reporting period were made possible due to participation of over 250 volunteers. These cleanup events included Coastal Cleanup on September 2011 and Buena Vista Park in April 2012. From a water quality standpoint these events proved to be very successful in that 326 lbs of recyclables and 1,557 lbs of trash were removed from the creeks. In its outreach efforts, the City used various outreach methods and materials to provide information on the events including instructions for volunteering. These included the City’s website and Facebook page, community newsletter, Spotlight Newsletter, Creek to Bay Cleanup website, and cleanup flyers. Schools were also contacted to encourage participation from students.

Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen’s Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

11.2.2 JURMP Assessment

Overall, the JURMP appears to be effective in reducing urban runoff related pollution in the City. The City continues to implement iterative processes throughout its programs, and has improved several programs over the past year. Each component of the program was implemented successfully and most were shown to be effective. In the coming year, improvements will continue, with a focus on increasing the effectiveness of the municipal program and improving efficiencies in other programs. With reduced staffing and budgets, the City will continue to look for ways to balance the effectiveness of the programs with efficiencies.

11.2.3 Water Quality Assessment

Overview

The City of Vista is a part of five distinct watersheds in the San Luis Rey and Carlsbad Hydrologic Units. These include (from north to south): San Luis Rey Hydrologic Unit - 903, Loma Alta Hydrologic Area (HA) – 904.1, Buena Vista HA – 904.2, Agua Hedionda HA – 904.3, and San Marcos HA – 904.5. The majority of the land area in Vista is in the Buena Vista HA and the Agua Hedionda HA. Most of the water quality data collected within the City has been collected in these two watersheds. The Buena Vista HA drains to Buena Vista Creek, Buena Vista Lagoon, and enters the Pacific Ocean between at the boarder of Carlsbad and Oceanside. The Agua Hedionda HA drains to Buena and Agua Hedionda Creeks, leading to Agua Hedionda Lagoon and entering the Pacific Ocean in Carlsbad near the power plant.

MS4 Water Quality

Ambient (Dry Weather)

The primary source of MS4 water quality data is through the City's Dry Weather (DW) Monitoring Program, with some recent data generated via the Targeted MS4 Outfall Monitoring Program. Data has been collected at approximately 30 sites since the inception of Order 2001-01, beginning in the summer of 2002. This provides only a snapshot of conditions in the MS4, as the data is collected only once per year. The DW program only collects analytical data at 25% of sites with flow or ponded water, as required in the permit. In some cases, these sites may change year to year, so a complete set of data is not always available by site or by year.

Since bacteria have been identified as a high priority pollutant in the City's Watershed Management Areas, the City has conducted some initial assessments of bacteria based on dry weather monitoring results. In evaluating bacteria concentrations, samples were collected at multiple sites over the monitoring periods from 2002-2012. Figure 11.5 illustrates fecal coliform data collected across 30 sites within the City. In each year, between five and eleven samples were collected, providing an overall sample size of 76.

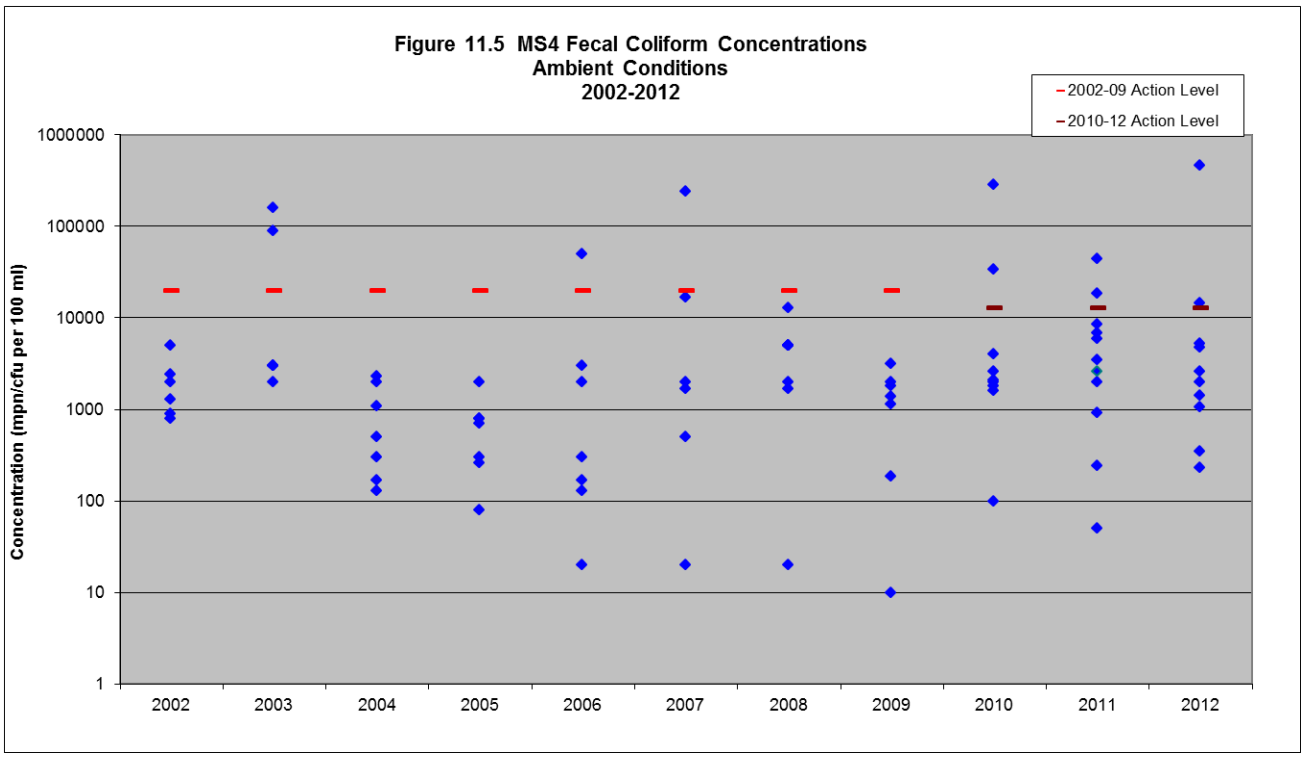

While no clear trend is evident, it is apparent that the majority of values are less than the dry weather action levels. Only ten of the 76 samples exceeded the action level. Furthermore, 62 of 76 samples (82%) contained bacteria concentrations that were less than half of the dry weather action levels.

Dry weather nutrient data is collected at all sites using field sample kits based on colorimetric analyses. The sample kits do not produce data of analytical quality but are used to trigger upstream investigations and for source tracking. In examining historical data for nitrate-nitrogen from 1998-2012, it appears that in most years there were multiple exceedances of the dry weather action level (10 mg/l). On average there were six sites per year that exhibited elevated nitrate-nitrogen with the average decreasing to two per year during the last two years of monitoring (2011-12). At most of these sites, nutrified groundwater is suspected to be the source of nitrate-nitrogen. The City has found only one illicit discharge associated with nitrate exceedances during dry weather monitoring (2011). In that case, staff determined that excessive fertilizer runoff from a nursery was entering the storm drain system upstream from the monitoring site. Appropriate education and enforcement was used to ensure the discharge was eliminated and BMPs were put in place to ensure continual compliance.

The data set for ortho-phosphate was examined for the past eight years, from 2005-2012. In total, there were four sites that exceeded the dry weather action level (2.0 mg/l) for ortho-phosphate. Each had only one exceedance over the eight years of monitoring. It appears that each was an isolated incident triggering an upstream source investigation. It is worthy to note that in the last two monitoring periods (2011, 2012), no ortho-phosphate exceedances were detected. This may indicate a positive behavioral change regarding the use of phosphate related products such as detergents and other cleaning agents as these are considered significant sources of phosphate. Successive monitoring and assessments will likely be necessary to determine if this particular trend continues.

The dry weather monitoring program does not collect data related directly to sediment. It is well accepted that sedimentation is generally a wet weather problem caused by erosion. Typically sources of erosion may include open space, construction sites, residential areas, and creek bed and bank erosion. However, some assessments of sediment and sources in runoff can be performed during dry weather.

Visual observations and turbidity measurements conducted with field monitoring equipment can provide some indication of sediment levels in runoff. The clarity and color of runoff can indicate the presence of sediment in runoff with cloudier or murkier water possibly indicating higher sediment levels. Furthermore, turbidity measurements can be performed to further verify the presence and amounts of sediment in runoff. The greater the amount of total suspended solids (TSS) in the water, the murkier it appears and the higher the measured turbidity. Upstream investigations would need to occur to confirm if a sediment discharge has or is taking place and identify any sediment sources upstream. During the last eight years of monitoring, staff did not detect or identify any sediment discharges during upstream investigations. These results verify that sediment is primarily a wet weather problem which can be addressed accordingly.

Based on the data collected in the dry weather program and using dry weather action levels for comparison, it appears that bacteria is not typically a dry weather problem. At sites exceeding action levels, the City performs upstream investigations to identify potential sources and eliminate them if feasible. In the several of these investigations, the City suspected that bacteria exceedances were due to bacteria sources associated with wildlife habitats and natural conditions existing at the site. In no investigation did staff determine sewer discharges or other anthropogenic activity to be the cause or source of the high bacteria concentrations. In the latter, the City has a program to identify and eliminate sewer discharges, controlling or eliminating natural sources poses more challenges as expected.

This may not be the case with nitrate-nitrogen, as exceedances are more frequently observed although most appear to be associated with nutrified groundwater and not from anthroprogenic sources and activities. Compared to nitrate, ortho-phosphate issues have been less problematic. Ortho-phosphate exceedances appear to occur at random locations, likely the result of illicit discharges, but only four sites have exhibited exceedances over eight years of monitoring with an average of 25 sites monitored annually. In the future, the sources of nutrients in the dry weather program may be further evaluated based on the results of past upstream investigations. Although, minimal data has been collected for sediment during the dry weather program sedimentation does not appear to be a dry weather problem.

In the regional MS4 targeted dry program the City has collected monitoring data at four outfall locations within Vista during the last four monitoring years (FY 2008-09, 2009-10, 2010-11, and 2011-12). In this program, the monitoring is conducted by City WQPP staff. The analytes that are measured include the high priority constituents listed in the MS4 regional work plans and are based on several factors including the high priority concerns identified in the watershed management plans.

Results indicated elevated bacteria levels (two sites, five sample events), but all field screening analytes were measured at low concentrations. Targeted results from all watersheds are incorporated into the regional monitoring program and report that is conducted by the County of San Diego's contractor, Weston Solutions. In the report, results from the targeted MS4 program are combined with data collected under other regional and jurisdictional programs to assess and characterize the overall health of watersheds and the relative contribution of pollutants from the MS4 to receiving waters. As more data is collected under the regional MS4 programs, it is

feasible that more accurate assessments concerning MS4 discharges and its relative contribution to receiving water quality can be ascertained.

Wet Weather (Storm Event)
At this time, very little wet weather MS4 data has been collected. Under the newly developed regional MS4 outfall monitoring program, samples have been collected across the Carlsbad HU as part of four components of the program: random dry and wet weather sampling, and targeted dry and wet weather sampling. There have been ten random wet sites within the Carlsbad Watershed spanning two wet weather monitoring seasons (2008-09 and 2009-10). Samples collected from the wet weather period for 2010-11 will be reported in upcoming monitoring reports. Sample results within the City's watersheds (only 2 sites, one sample each) showed that nutrients and sediment concentrations were relatively low and that bacteria concentrations were elevated. The targeted wet weather outfall for the Carlsbad watershed is located in Vista and its drainage area is characterized by commercial and industrial land use. This site was sampled during the 2010-11 monitoring season with results indicating elevated bacteria levels. Nutrients, TDS, and TSS results appeared to have low concentrations. As more data is collected, comparisons between MS4 and receiving water results may be helpful in assessing the relative contribution from the MS4 to pollutants identified in the receiving waters. At this time, the MS4 wet weather data set is small and therefore cannot be used to draw conclusions related to this relationship.

<u>Receiving Water Quality</u>

Ambient (Dry Weather)
The main receiving waters within the City of Vista are Buena Vista and Agua Hedionda Creeks. In an effort to better understand dry weather conditions in its receiving waters, the City collected limited data in the creeks between 2003 and 2009 in conjunction with the dry weather program. The focus of the analysis remains on the high priority water quality problems in an effort to understand their dynamics in the receiving waters.

Dry weather bacteria samples have been collected in the two creeks each year from 2003 - 2009. While the sample set is relatively small, comparisons of concentrations over time show that water quality appears to improve from the upstream sample site to the downstream sites. Although the sample sets are small, a decrease in bacteria concentrations is evident from upstream to downstream sample locations in both creeks. A full order of magnitude decrease, over 90%, in bacteria concentration is observed in Agua Hedionda Creek. While the difference in Buena Vista Creek is not as pronounced, there is still a substantial decrease of over 60%. In Agua Hedionda and in Buena Vista Creeks, improvements in water quality are noted as the creeks flow from east to west through the City. If feasible in the coming years, data may continue to be collected to enlarge the data set and test this hypothesis. With the size of the current data set, these observations are not statistically valid and would need to be validated further to draw defensible conclusions.

Nutrient concentrations during dry weather are based on field test kits only. With the limited set of data at each location ($n<10$) and the lack of analytical quality data, it is not feasible to perform an analysis with an acceptable level of confidence. However, a cursory look at the data that has been collected generally shows increasing nitrate-nitrogen concentrations from upstream to downstream in Agua Hedionda Creek and decreasing concentrations of nitrate-nitrogen in from upstream to downstream in Buena Vista Creek. The ortho-phosphate concentrations are relatively low, all less than or equal to 0.4 mg/l. Due to the sensitivity of the analysis and reporting limits, it is not feasible to analyze this data.

At this time, there has been no data collected related to sedimentation in the creeks during dry weather. Sediment is generally a constituent of concern during wet weather, most often triggered by erosion. As reported above, there has been no observed evidence of sedimentation problems during dry weather.

Wet Weather (Storm Event)
No data has been collected to evaluate wet weather conditions in the Creeks within the City of Vista. Sample collection under wet weather conditions is performed by a contractor under the Regional Monitoring Program. Analyses discussed below were obtained from the San Diego County Municipal Copermittees 2007-2008, 2008-2009, 2009-10 Urban Runoff Monitoring Reports, January 2009, 2010, 2011, 2012 Weston Solutions.

Data has been collected at the Mass Loading Station (AHC-MLS) on Agua Hedionda Creek since 1998. This monitoring station is downstream in the watershed, located near the mouth of Agua Hedionda Lagoon, above the tidal prism. In general, increasing trends for total and fecal coliform, total suspended solids and turbidity, and several metals are evident. Fecal coliform, TSS, and turbidity are typically above Basin Plan water quality objectives. Nitrogen and phosphorous concentrations are relatively low. Recent monitoring results at AHC-MLS indicated similar water quality problems. Wet weather monitoring was conducted in the fall and winter of 2010 and 2011 which identified fecal coliform and TDS as high priority concerns in the watershed. The IBI score, which provides an overall assessment of conditions within the watershed, was poor.

Storm event data was collected at a Temporary Watershed Assessment Station (BVC –TWAS-1) located on Buena Vista Creek for two storms in the rainy season 2007-08. Data collected indicated that fecal coliform, TSS, and turbidity were above Basin Plan water quality objectives. No data was collected at this location during FY08-09 due to the Copermittees participation in the Bight studies coordinated via the Southern California Coastal Water Research Project. Data was not required to be collected in Buena Vista Creek during 2009-10 due to the rotational design of the program. The TWAS was monitored during the winter of 2010-11 with results indicating that fecal coliform and TDS were above Basin Plan water quality objectives. The IBI score was also poor. Based on monitoring conducted at the TWAS during two monitoring years, it appears that fecal coliform and TDS continue to be high priority concerns in the watershed. Nutrient concentrations appear to be a low priority concern in analyzing the results from the two monitoring years.

High Priority Water Quality Problems
In determining the water quality problems in the City, several sources of information were used including current 303(d) listings (2010), recent watershed assessments, and current and historical water quality data from MS4 and receiving waters monitoring programs.

Table 11.6 contains the 303(d) listings of impaired waters in the City of Vista and for the receiving waters downstream.

Table 11.6 Impaired Water Quality Limited Segments, City of Vista, 2010 303(d) List

Receiving Water	HU/HA	Chloride	TDS	Total Coliform	Fecal Coliform	Enterococcus	Indicator Bacteria	Phosphorus	Total Nitrogen as N	Nitrate/Nitrite	Eutrophication	Nutrients	Toxicity	Sediment Toxicity	Sedimentation	DDE	DDT	Mn	Se	Sulfate
San Luis Rey River (SLR)	903	X	X		X	X		X	X				X							
Pacific Ocean at SLR outlet	903			X		X														
Loma Alta Creek	904.1												X						X	
Loma Alta Slough (LAS)	904.1						X				X									
Pacific Ocean at LAS outlet	904.1						X													
Buena Vista Creek (BVC)*	904.2													X					X	
Buena Vista Lagoon (BVL)	904.2						X					X			X					
Buena Creek (BC)	904.3									X							X			
Agua Hedionda Creek (AHC)	904.3		X		X	X		X	X				X					X	X	X
San Marcos Creek (SMC)	904.5							X						X		X			X	

*Shaded areas indicate primary watersheds in the City of Vista

Recent watershed assessments generally take into account the 303(d) listed constituents, as well as available water quality data. These assessments determine which of the identified water quality problems are high priorities for the watershed. These assessments are performed on a larger scale using available data collected in the regional monitoring programs and some dry weather data. The high priority water quality problems identified in the Watershed Urban Runoff Management Programs (WURMPs) are identified in Table 11.7.

Table 11.7 WURMP High Priority Water Quality Problems

Receiving Water	Hydrologic Unit/Area	Bacteria	Nutrients	Sedimentation
San Luis Rey River HU	903	X	X	
Loma Alta HA	904.1	X		
Buena Vista HA	904.2	X		
Agua Hedionda HA	904.3	X	X	X
San Marcos Creek (SMC)	904.5		X	

Comparing the two tables, the primary watersheds in the City of Vista (Buena Vista and Agua Hedionda) generally have identified bacteria, nutrients, and sedimentation as common high priority water quality problems.

The local water quality assessments presented above attempt to examine the data with respect to MS4 and Receiving Waters during ambient and wet weather (storm event) conditions. This closer look and better understanding of the data and data gaps may help guide programs in the future. The assessment this year focused on those problems identified in the Carlsbad WURMP. A summary of the results of this preliminary analysis are presented in Table 11.8. A yes means that there are data that may be indicative of a problem related to the pollutant, a no means that the data collected does not appear to indicate a problem, and no data means that there is insufficient data to guide a decision at this time.

Table 11.8 Local Water Quality Assessment Results

	Ambient			Storm Event		
	Bacteria	Nutrients	Sediment	Bacteria	Nutrients	Sediment
MS4	No	Yes	No	No Data	No Data	No Data
Receiving Water	Yes	Yes	No	Yes	No	Yes

All three pollutants are identified as a WURMP priority for the Agua Hedionda Hydrologic Area. Although, only indicator bacteria are identified as a high priority water quality problem in Buena Vista HA in the WURMP, it may be appropriate to address all three pollutants.

To further these findings, local assessments indicate that under ambient conditions, nutrients tend to be problematic in the MS4 and receiving waters and bacteria appears to be problematic in receiving waters. Sedimentation does not appear to be a problem under ambient conditions. There is very little wet weather data available in the MS4, therefore assessments are not feasible at this time. Under wet weather conditions, it appears that bacteria and sedimentation may be problematic in the receiving waters.

In summary, the City has identified indicator bacteria, nutrients, and sedimentation as high priority water quality problems, focusing on bacteria and nutrients during dry weather, and bacteria and sedimentation during wet weather. From the combined assessment, using impairment listings, watershed and regional assessments, and local water quality assessments, the City has selected bacteria, sediment, and nutrients as high priority water quality problems as presented in Table 11.9.

Table 11.9 City of Vista, High Priority Water Quality Problems

	Ambient			Storm Event		
	Bacteria	Nutrients	Sediment	Bacteria	Nutrients	Sediment
High Priority	Yes	Yes	No	Yes	No	Yes

11.2.4 Integrated Assessment

Integrating water quality assessments into programs is difficult as many BMPs and municipal programs have not been linked to specific water quality problems. However, certain focus can be gained with an understanding of the priority water quality problems in the City.

11.2.4.1 Bacteria

According to the assessment above, bacteria appears to be problematic during ambient and wet weather conditions. In order to focus efforts appropriately, each condition must be considered independently.

Under ambient conditions, experience shows that sources of bacteria are mostly related to illicit discharges. These range from sanitary sewer overflows to illegal washing. The City is implementing a sewer rehabilitation program to aggressively address infrastructure concerns related to the sanitary sewer. The City has also implemented a Fats, Oils, and Grease (FOG) program, with inspections concurrent with stormwater inspections as food service establishments. Furthermore, the City responds to, contains, and cleans up all reported sewer overflows, with very few reaching storm drains or receiving waters. Other illegal discharges are addressed via the complaint response program, with stormwater code enforcement staff aggressively enforcing the City's stormwater ordinances. With these programs in place, it is expected that the sources of dry weather bacteria will be minimized.

Assessment of local data indicates that the majority of bacteria samples collected in the MS4 under ambient conditions are below action levels. Data collected in receiving waters are compared to Rec-1 water quality objectives. Local ambient data suggests that bacteria concentrations in the creek are reduced as the creeks flow from up to downstream. This may suggest that ambient flows from the MS4 are having limited impacts on the receiving waters. However, the data sets in the receiving waters are limited at this time and a clear relationship between MS4 and receiving water quality has not been established. In the future, data assessments may take into account Natural Loading Studies performed to quantify the amount of bacteria present in natural watersheds. In comparing this type of data to existing conditions in local watersheds, municipalities may gain a better understanding of their contributions to the bacteria loading.

Under wet weather conditions, i.e. storm events, the sources of bacteria are different. These sources may be more related to structural BMPs such as trash enclosures and overhead coverage of grease containers, good housekeeping practices, animal waste disposal, failing septic systems, and homeless encampment issues. The maintenance of the MS4 may also play a role in wet weather bacteria concentrations. With standards regarding trash enclosures, waste areas, and grease storage areas in place, the City has taken steps to ensure that these sources of bacteria are limited in new development. Existing development is addressed through inspections programs, including municipal, TCBMP, industrial commercial, and FOG inspections. Extensive outreach is performed to the community to educate pet owners on proper disposal methods. MS4 maintenance is performed routinely at facilities throughout the City. Other sources, typically beyond the scope of the stormwater program, including encampments and natural sources are difficult to reduce. These may contribute significant loads of bacteria during wet weather.

11.2.4.2 Nutrients

According to the assessments performed above, nutrients appear to be predominantly a dry weather/ambient problem. It is suspected that the primary source of nutrients during dry weather is from nutrified groundwater. However, occasional nutrient contributions may come from fertilizer applications and from tailwater related to nurseries and agriculture. Programs in place to address nutrients during dry weather include outreach related to fertilizer applications, inspections of nurseries and agriculture, and general complaint response.

The consistency of nitrate concentrations collected under ambient conditions suggests that groundwater plays a significant role in nutrient loading. Several sites in the dry weather program are influenced by groundwater, suspected to be contributing to nutrient concentrations. The City will continue to verify this as a source. Data also indicates occasional illicit discharges contributing nitrate-nitrogen and ortho-phosphates. These are typically one time incidents that are eliminated as they are detected. The compliant response efforts are also vigilant for these types of discharges. In the future, as more data is collected and nutrient studies are performed at the Regional level, nutrient contributions to receiving water problems will be better understood.

11.2.4.3 Sediment

Local, watershed, and regional assessments have concluded that sedimentation is primarily a problem during storm events. Sources of sedimentation may include erosion of open space, stream beds and banks, construction sites, and residential areas. Erosion of the stream bed and banks are addressed by hydromodification requirements and low impact development and design. Additionally, the City has completed preliminary design for a Creek restoration project along Agua Hedionda Creek, however construction is dependent on grant funding. This project will address erosion concerns in the Creek. Erosion and sediment controls on construction sites are strictly enforced via routine construction site inspections. At this point, construction sites typically have extensive BMPs in place, reducing the potential for sedimentation. With the adoption of the new State General Construction Permit, these requirements have been further enhanced, also continuing to reduce the potential for sediment discharges. Residential areas are typically addressed through the complaint response and storm patrol programs, with stormwater code enforcement staff maintaining vigilance for sedimentation concerns.

11.3 Program Review and Modification

11.3.1 Development Planning Component

The effectiveness assessment for this program component focused on the TCBMP program. Results showed that after five years of inspections and annual certification reviews, the program has been successful in ensuring that TCBMPs throughout the City are maintained and operating properly. Initially, because the program was relatively new, significant amounts of staff time had been expended focusing on outreach, inspections, and follow-ups for these sites. With more experience dealing with the tracking and maintenance of TCBMPs, the City has become more efficient in all aspects of the program, particularly in assessing the maintenance needs of TCBMP during inspections. In the future, the City may look for ways to develop a more efficient program while continuing to gain full compliance with its ordinances and the permit. This year, the City focused on training the new Environmental Specialist on aspects of the program including procedures for inspections, annual certification reviews, and enforcement. Additionally, as inspection data is collected, it may continue to be evaluated against the current prioritization criteria. This comparison ensures that inspections are focused on BMPs that are the most problematic in regards to operation and maintenance. Ensuring adequate operation and maintenance of these BMPs is expected to reduce bacteria, sedimentation, nutrient, and other pollutant loading.

11.3.2 Construction Component

With the implementation of a spreadsheet tracking tool, the program was able to better track inspections and compliance information. As shown in the effectiveness assessment of this component, it appears that site compliance may be related to pre-construction meetings. Beginning in 2005, stormwater staff began to attend pre-construction meetings, providing an opportunity for stormwater staff to give one on one site specific education related to the project.

Equally important in meeting the requirements of this component are the required inspections of construction sites. These are vital in ensuring pollutants are managed appropriately on site. With more experience in implementing education and inspection activities, less enforcement has been necessary to ensure sites are implementing the appropriate BMPs. These practices will continue to play a major role in minimizing the impacts of sedimentation and other pollutants from construction.

11.3.3 Municipal Component

Several new sets of data were tracked in recent reporting periods related to the municipal. It is anticipated that as these data are compiled in future years, they will provide useful information related to effectiveness assessment of the component. Data is collected to track complaints reported by City staff (proactive) and those from the public. A new database has also been implemented to better track storm drain maintenance activities. With continued efforts dedicated to MS4 cleaning and channel maintenance, bacteria and sediment contributions will be addressed. Increases in corrective actions required during facility inspections may have been a result of adding contract staff to the maintenance operations who are now working in concert with inspectors and other City personnel who have been traditionally responsible for providing maintenance services in the past. It will be crucial to continue effective communication between WQPP, municipal staff and contract personnel to ensure the program continues to operate effectively. Annual trainings and surveys provide further outreach to educate all employees on the importance of pollution prevention and BMPs specific to their discipline. Overall, the Municipal Component continues to be effective in preventing pollutant discharges from municipal sites and activities.

11.3.4 Industrial/Commercial Component

The industrial commercial program will continue to operate in compliance with permit requirements. As indicated in the effectiveness assessment, several of the high priority facilities have stormwater violations from year to year. The program is evaluating methods to gain compliance at these facilities year round and improve the program to ensure that continued compliance is obtained. The City's enhanced inspection program was developed in FY 09-10 to focus additional efforts on these facilities and obtain compliance. This program appears to be effective as seven sites were removed from the program in FY 2011-12 as a result of continual compliance. The City plans to continue this program in FY 2012-13. Improved compliance at these locations is expected to reduce contributions of bacteria and other pollutants to the MS4.

11.3.5 Residential Component

The effectiveness assessment of this component is focused on the types of complaints related to residential activities. In comparing the types of residential complaints and sources of pollution identified, it appears that the high priority activities listed in the JURMP are being properly addressed. The City analyzed complaint data from previous fiscal years to better understand the most problematic water quality issues throughout the City. The City concluded that sediment is more commonly associated with these complaints and that most of these complaints originate in the Buena Vista HA. A Storm Patrol program was developed and implemented which involves inspecting areas in the watershed to assess sources of sediment in stormwater runoff. Where significant sediment issues were detected, staff conducted upstream investigations to identify sources. During the reporting period, four storm patrol events were conducted throughout the MS4, at Buena Vista creek, and residential sites to assess sediment in stormater runoff. At most of the visited areas and sites, water runoff was relatively clear and unimpacted by sediment. At some residential sites, City staff observed runoff to be impacted by sediment and identified some BMP deficiencies associated with those sites. None of the deficiencies noted were significant. In these instances, the City required responsible parties to

implement appropriate BMPs and conducted necessary follow-up actions to verify corrective actions were implemented. The City will also continue to focus on and address pet waste, fertilizer management, and sedimentation issues which will help to reduce the impacts of these pollutants from residential sources.

11.3.6 Education Component

The education component strives to educate a broad range of people regarding urban runoff and other environmental concerns. In general, through the use of various outreach methods and materials, the program appears to be effective at conveying the message to the targeted audiences. The program will continue to use those methods that are most effective and evaluate ways to improve the outreach to specific target audiences. For example, with the verified effectiveness of the pre-construction meetings, stormwater staff will ensure that they are present at all pre-construction meetings and may continue to develop the methods of outreach provided. Other methods of outreach to the underserved target audiences may also be evaluated, including outreach to citizens via bulletins and through the outreach component of the FOG program. Several brochures were developed in Spanish in FY 2011-12 to help the City in in these efforts.

11.3.7 Public Participation Component

The City currently has several options for public participation in the program. The public participation component is largely linked to the education component. It is known, that using a variety of outreach tools and methods will help to maximize participation from the community in assisting the City in developing and implementing its JURMP. Two clean up events that took place during the reporting period were made successful due to participation of 250 volunteers. The cleanup events were advertised using various newsletters and other resources which likely helped in obtaining that many volunteers for the events. In the past year, the City reworked its website to make it more user friendly. These changes benefit the Water Quality Protection Program, making its webpage more accessible to the public and more user friendly. With these enhancements, these stormwater hotline and email addresses will be better advertised. In the coming year, enhancements will continue to be made to the website, updating it with the most current information available. The City will continue using a variety of effective tools to educate and inform the public about the City's programs. These efforts will continue to play a significant role in encouraging participation from City residents and businesses. Additionally, staff will continue to include stormwater outreach and provide for public participation in the Citizen's Academy. The Academy provides a forum for the interested public to learn more about the City and to provide feedback on all aspects.

11.3.8 Fiscal Analysis Component

The fiscal analysis component included an evaluation this year using the Standardized Method for Fiscal Analysis. With the collection of multiple years of data, a baseline may be established and in the coming years, it is expected that year to year comparisons between programs and potentially some level of cost/benefit analyses may be feasible.

11.3.9 Effectiveness Assessment Component

The effectiveness assessment of the program will continue to evolve. As new methods of evaluation are developed, additional supporting data will be tracked. It is expected that as more water quality data is collected, better evaluations of MS4 and receiving water quality will be feasible. Where possible, relationships between program components, BMPs, and water quality will be evaluated, however at this time, these links are difficult to establish. When relationships are identified, the City will use the results to inform the program and modify it when appropriate and feasible.

12.0 SPECIAL INVESTIGATIONS

12.1 Copermittee Study to Review and Analyze the Hydromodification Management Plan

During the reporting period, the Cities of Vista, San Marcos and Oceanside partnered to conduct a study to review and analyze the recently adopted San Diego County Hydromodification Management Plan (HMP). Specifically the study focused on the assumptions used in the plan development and the criteria, methods and modeling tools used for implementation of the HMP.

In general, the conclusions of the report identified limitations of the San Diego County HMP and some of its requirements. The study concluded that some of the generalizations made in the HMP would likely lead to oversizing the integrated management practices used to control and regulate discharges from project sites. Furthermore, the study recommends that additional efforts be conducted to provide Copermittees with updated sizing criteria tables that could be used by the development community to design their required control facilities.

12.2 Buena Vista Creek Flow Monitoring Study

In July 2011, the City installed a flow monitoring and rain gauging station on Buena Vista Creek. The purpose of the monitoring was to provide accurate flow data in Buena Vista Creek at the western/downstream boundary of the City of Vista, during ambient and wet weather conditions. Continuous flow monitoring was conducted within Buena Vista Creek between the City of Vista and the City of Oceanside (near the end of Tiberon Drive) to determine the flows and volumes associated with wet and dry weather conditions throughout the year at this jurisdictional location.

Figure 12-1. Flow Monitoring Station at Buena Vista Creek

The upstream watershed is approximately 8,035 acres (12.6 square miles) in size and extends approximately 6 miles from the monitoring location to the east. The watershed is approximately 80% developed and the predominant land use is residential. The majority of the developed area contains a municipal separate storm sewer system (MS4) to carry storm water to the creek. The majority of the developed portions of the watershed are within the City of Vista jurisdiction with some developed areas within the County of San Diego unincorporated area.

The complete report summarizing the flow data collected as part of this study is included in Appendix H-1.

13.0 Jurisdictional Urban Runoff Management Program Revisions

JURMP Revisions

In order to comply with the City's Municipal Permit (Order No. 2007-0001) and to improve the efficiency and effectiveness of the City's efforts in protecting and improving water quality, the City has updated its Jurisdictional Urban Runoff Management Plan (JURMP). Updates to the 2008 JURMP sections during the current reporting period are shown below in red.

From 7.2 Industrial and Commercial Sites/Sources

7.2.3 Program Implementation

The City of Vista provides education and outreach so that regulated businesses are aware of the City's storm water requirements. The City also inspects its inventoried businesses to evaluate compliance with its BMP requirements. Enforcement actions are taken as necessary to bring violators into compliance.

7.2.3.1 Education and Outreach

The City of Vista provides information and training regarding storm water quality to industrial and commercial owners and operators. Businesses are given educational materials outlining pollution prevention methods and BMPs during inspections, where appropriate. Inspectors also give recommendations to businesses where necessary. Based on the City's experience, this site-specific, personal education is among the most effective methods of outreach. The educational program for industrial and commercial businesses is described in more detail in Section 10 of this document.

The City of Vista will provide each inventoried industrial or commercial business a notification of the City's updated BMP requirements that are applicable to the site/source within the first three (3) years of implementation of the updated JURMP. The City will conduct this notification during site inspections where feasible; businesses that cannot be inspected within the first three years of program implementation will be notified through other means, which may include direct mail or mailing with business license renewal packets.

In October 2011, the City developed a New Restaurant Outreach Program to educate and inform new food service establishments about stormwater and FOG regulations. In this program, periodical business license reviews identify newly opened restaurants that opened after the beginning of year inventory was finalized, and therefore not yet included as potential inspection locations. Outreach to these newly established businesses is performed including educating business owners and managers; distributing educational brochures and posters; and often times performing a regular inspection of the facility. The goal of the New Restaurant Outreach Program is to educate businesses with the proper practices upon opening to ensure they are incorporated into their daily operations. This proactive approach will likely reduce the potential for negative behaviors to develop and continue until the next year's annual inspection or a complaint is received. New Restaurant Outreach inspections are subject to regular industrial and commercial inspection procedures and when necessary, follow up inspections and enforcement actions are conducted to attain compliance.

7.2.3.2 Staff Training

Staff responsible for conducting storm water compliance inspections and enforcement of industrial and commercial facilities are trained annually on inspection and enforcement procedures, BMP implementation, and reviewing monitoring data, as described in Section 10 of this document.

7.2.3.3 Facility Inspections

Before beginning the inspection process, the City prepares a list of businesses selected for inspection. The following methods may be used to evaluate compliance of industrial and commercial sites/sources.

Site Inspection
The site inspection procedure involves a thorough examination of the facility and all outdoor activities with the potential to generate urban runoff pollution. An inspection form is completed at each site to document the visit (Appendix D-2). If the business is a duplicate or cannot be contacted, an inspection form is still completed to document the outcome of the inspection in order to update the database.

Pre-Inspection
Prior to beginning the site inspection, the inspector completes the first section containing contact information and facility/site information by using information from the prioritized inventory. This information includes business name, address and the assigned NAICS code and TTWQ prioritization, as appropriate. The inspectors also update the approximate distance to waterbodies if necessary. Upon arrival at the site, initial observations from a perimeter walk, as feasible, are documented in *"Initial Observations."*

Meeting With Manager/Responsible Party
Upon meeting the manager/responsible party, the inspector introduces the stormwater program and the purpose of the inspection, using this opportunity to assess stormwater knowledge of the manager/responsible party and to provide education regarding stormwater compliance. The introduction to the program includes a brief overview of the federal and state water quality laws, municipal permit requirements, impacts of urban runoff, and a description of the local waterbodies and pollutants of concern. The inspector also describes BMPs as a mechanism to eliminate pollutant discharges to the storm drain system and distributes educational material provided by the City.

After the introduction, the inspector verifies the existing information including the business address and phone number and notes any changes on the form as necessary. The inspector also evaluates the NAICS code to verify that the code accurately reflects the principal activity of the business. If the NAICS code does not reflect the principal activity of the business, an applicable NAICS code is recommended (this may be provided in a follow up communication).

BMP Assessment
After the introductory meeting, the inspector conducts a comprehensive walk-through of the facility, generally accompanied by the manager/responsible party, to inspect all areas exposed to stormwater and to evaluate existing BMPs and their effectiveness. The inspector also uses this time to identify possible IC/IDs to the City stormwater conveyance system. If specific BMPs are not implemented or are found to be ineffective, the areas of deficiency are noted. If the facility manager/responsible party accompanies the inspector, recommendations are made verbally as well as recorded on the inspection form. The BMP evaluation and associated notes

are recorded on the inspection form in *"BMP Summary".* Any improvements that must be made are summarized in *"Corrective Actions Required by the City".* While inspectors do not typically prescribe exact BMP solutions, the inspectors generally do attempt to work with site contacts to provide examples of BMPs solutions that could be implemented. Effective, low cost solutions are sought whenever possible, although in some cases more expensive BMPs are needed to reduce pollutant discharges to the MEP.

Based on observations during the inspection, the inspector may determine that the TTWQ rating of the business should be changed, either from a lower to higher priority or vice versa. Any such changes will be reflected in inventory updates submitted in future JURMP Annual Reports.

The business is also evaluated for its staff training. If the facility has a SWPPP and storm water monitoring program, both are assessed. The BMPs in the SWPPP are reviewed, and the results from the storm water monitoring program are also reviewed and compared with RWQCB benchmark values. Typically only sites that are covered under the General Industrial Permit have these documents. The inspector checks for coverage under the General Industrial Permit where applicable. If the inspector finds reason to believe that the business might need coverage under the General Industrial Permit but has not obtained such coverage, the RWQCB is notified.

Storm Water Quality Inspection Summary and Conclusion

At the completion of the walk-through, the inspector summarizes the recommended corrective actions and/or violations on the inspection form and discusses any corrective actions with the manager/responsible party. The manager/responsible party is provided a photocopy or fax of the inspection summary for their own records.

Inspection Frequency

During the first year of implementation, the City will inspect at least 50 percent of the stationary industrial and commercial facilities inventoried as high TTWQ. The City will inspect all the high TTWQ stationary industrial and commercial facilities the following year, and annually thereafter, in accordance with the Order requirements. Note that if the RWQCB inspects an industrial site in the City, the City will not need to inspect the site itself during that reporting period.

At least 20 percent of all stationary inventoried sites will be inspected in the first year of program implementation. In subsequent years at least 25 percent of the stationary inventoried businesses will be inspected. Generally, each year all high TTWQ sites will be selected for inspection, and then other, lower priority businesses will be selected based largely on their perceived potential to contribute pollutants of concern for local receiving waterbodies. If high TTWQ stationary sites comprise more than 25 percent of the inventory in a given year, the City will still inspect all high priority sites. Note that mobile businesses are not included when determining the inspection requirements based on percentages of the inventory. The City will track its inspections during each reporting period to ensure that it meets the minimum inspection frequencies required by the Order. More specific detail about the sites selected for inspection in 2007-2008 is provided later in this subsection.

The City will also continue to investigate all reported incidents of illegal discharges from industrial or commercial facilities, including those arising from the results of the Dry Weather Monitoring Program. Investigations are performed according to the procedures described in Section 9.5 of this document.

As required by the Order, the City has identified the businesses it plans to inspect within the first year of program implementation. The City's present industrial and commercial inventories

include a total of 785 stationary facilities, of which 143 are identified as high TTWQ, 337 are classified as medium TTWQ, and 305 are classified as low TTWQ. Twenty percent of the stationary facility inventory is 157 sites, and 50 percent of the high TTWQ inventory would be 72 sites. As of this writing, the City plans to inspect all its stationary high TTWQ facilities in 2007-2008 and an additional 21 sites that have General Industrial Permit coverage, but are not included on the City's high TTWQ inventory. A column indicating whether the City plans to inspect the business in 2007-2008 has been added to the inventories included in Appendix B-5 and B-6. The City reserves the right to amend the planned inspection list as it deems necessary; rationale for changes, if necessary, will be explained in the JURMP Annual Report.

Enhanced Inspection Program

The City developed a new facet of the industrial and commercial inspection program in FY 2010-11 to assess BMP effectiveness and compliance at facilities with a history of non-compliance. In selecting sites for this Enhanced Inspection Program, the City annually reviews compliance history for sites on the inventory that have previously been inspected. Depending on their compliance history, sites are selected for an increased inspection frequency, up to quarterly inspections. The compliance history also dictates the extent of the inspections performed, with some facilities receiving cursory exterior-only inspections and others receiving full stormwater inspections. City staff documents inspection results on its inspection report form and uses enforcement when necessary to gain compliance. Facilities included in the Enhanced Inspection Program are reviewed annually. Depending on performance, sites can be re-categorized to increase or decrease inspection frequency and degree of inspections for the upcoming reporting period. Facilities displaying continual compliance may be removed from the enhanced inspection program or new facilities may be added due to historical non-compliance.

From 7.3 Mobile Sources

7.3.4 Program Implementation

7.3.4.1 Education and Outreach

The City of Vista will continue to provide information and outreach regarding storm water quality to mobile business owners and operators. Businesses are given educational materials outlining pollution prevention methods and other BMPs related to their activities during inspections and complaint investigations. Inspectors also give recommendations to businesses, where appropriate. Because a specific element of the industrial and commercial program is being newly developed for this revised JURMP, it is anticipated that some mobile businesses are not aware of stormwater requirements and that education will need to be a significant portion of the program. The educational program is described in more detail in Section 10 of this document.

7.3.4.2 Owner/ Operator Notifications

The City of Vista will notify the owner/operator of each inventoried mobile business of applicable BMP requirements within the first three (3) years of implementation of the updated JURMP.

7.3.4.3 Inter-Jurisdictional Cooperation

As of the writing of this document, no inter-jurisdictional program for the regulation of mobile businesses has been finalized. It is likely that such a program will be in place in the future, and the City plans to participate in that program. The program may include creation of a watershed-

wide or regional inventory of mobile businesses, standardization of BMP requirements across jurisdictions, sharing of enforcement action information, and/or the development and distribution of standardized educational materials.

7.3.4.4 Staff Training

Staff responsible for conducting stormwater compliance inspections and enforcement of mobile sources are trained as needed on inspection and enforcement procedures and BMP implementation as they relate to mobile businesses. It is likely that this training will occur concurrently with the training for other facilities. City staff are also encouraged to be vigilant for illegal discharges from mobile businesses when working in the City and to report businesses that are not in compliance to the storm water hotline.

7.3.4.5 Inspections

Mobile sites/sources are inspected by the City on an as-needed basis. The most common triggers for these inspections are anticipated to be receipts of incident reports and direct visual observations by City staff. The inspections generally follow the same procedure described in 7.2.4.4 of this document, although the main focus of most mobile business inspections is on discharge control BMPs. Inspections are also performed as part of the Mobile Water Use Licensing Program (See Section 7.3.4.6).

7.3.4.6 Mobile Water Use Licensing Program

In fiscal year 2009-10, the City developed a Mobile Water Use Licensing Program to increase its regulation and oversight of mobile water-use businesses including carpet cleaners, mobile car detailers, pressure washers, and other contractors that typically use water and detergents in their operations. These activities often result in discharges of polluted runoff into the stormwater conveyance system and are therefore required to contain, capture, and remove all water runoff during operations. The Mobile Water Use Licensing Program was developed to ensure these types of mobile business have the proper equipment and knowledge to prevent illegal discharges into the storm drain system.

City staff from the Water Quality Protection Program, Community Development, and Finance departments developed a licensing process that requires applicants to obtain City approval of their BMP water reclamation systems prior to issuance of a business license. Training occurred to educate employees who would be involved in the program's licensing requirements on the licensing process.

City WQPP staff developed an inspection protocol as a mechanism for approving BMP water reclamation systems for Mobile Water Use businesses, which includes a demonstration and/or physical inspection of reclamation equipment. City staff documents the results of the Mobile Water Use inspection on the Mobile Water Use inspection form and signifies approval of the BMP reclamation system by signing the bottom of the form. The completed inspection form is routed to the Finance Department and serves as confirmation that the applicant's reclamation system is appropriate and a business license can be issued. In the event that a business fails the inspection, the business is required to correct the deficiencies noted on the inspection form prior to receiving approval of its BMP reclamation system.

From 8.4 Residential Component - Program Implementation

8.4.5 Inspections/Storm Patrol

Beginning in 2010-11, an assessment of residential complaint data was performed to evaluate the City's oversight methods of residential areas. The assessment analyzed complaint data from three consecutive fiscal years (FY 2007-08, 08-09, and 09-10) to determine the geographic distribution of complaints throughout the City and identify the most common pollutants associated with residential complaints. The initial assessment results indicated that the majority of residential investigations were located in the Buena Vista Creek Watershed (>75%). The most prevalent pollutants were found to be sediment, automotive fluids, trash, and sewage - with the majority of cases involving sediment.

Based on the initial results, the City implemented a wet-weather inspection program called Storm Patrol in FY 2011-12 to assess sediment runoff in the Buena Vista Watershed. During significant rain events (defined as a rain event resulting in stormwater runoff entering the MS4), City WQPP staff conducts drive by inspections of residential areas within the watershed to assess sediment in stormwater runoff. Staff tracks inspection observation and location information on a Storm Patrol inspection form (Appendix E-3). If significant levels of sediment are discovered in runoff, staff conducts an upstream investigation (similar to complaint response actions) to identify sediment sources. Where sediment levels are significant and as a result of BMP deficiencies, staff opens a complaint case and conducts necessary follow-up and enforcement actions.

14.0 Conclusions and Recommendations

This JURMP annual report covers the fifth reporting period (July 1, 2011 to June 30, 2012) under Order 2007-0001. The JURMP was implemented as required during this reporting period. Some of the key areas of implementation of the JURMP during this period included continued focus on the TCBMP program and Industrial Commercial Program, and improvements to the outreach, and residential programs in the City. The City also continued contributing to the development and implementation of the programs in two watersheds (Carlsbad and San Luis Rey Watersheds).

14.1 Iterative Process

The City's stormwater program continued to evolve. The City's JURMP states that the program will require periodic revision. The City of Vista is committed to working with its staff, other Copermittees and the RWQCB to improve and adapt the plan and efforts as necessary to comply with the permit requirements. The City's program continues to be dynamic requiring changes in the daily operations and implementation based on lessons learned and City staff input. Each year, the developed program is implemented and where feasible, programs are assessed for effectiveness and efficiencies. The assessment information directs program modifications for the coming cycles. Examples of the iterative process and changes to the program that were made this year include improvements to the Industrial and Commercial programs and Residential program which are detailed below.

14.2 Program Focus

Where possible, program focus during the coming year will be related to the identified pollutants of concern within the City and watershed. In particular, programs will focus on the elimination of sources of bacteria, sediment, and nutrients.

The Land Use Planning Component of the program can affect all three identified pollutants through the implementation of site design and source controls on all sites. In implementing its SUSMP requirements, the City continued to emphasize natural treatment control BMPs and LID Site Design BMPs. During this fiscal year, the hydromodification plan (HMP) was incorporated into the SUSMP and implemented with one site being subject to the new HMP requirements. The coming year will continue focus on implementation of the SUSMP and the new HMP requirements.

The City's strong construction program continued to be effective, particularly, due to its education and inspections components of the program. Consistent attendance at pre-construction meetings and oversight at construction sites during inspections proved valuable in meeting Permit compliance and ensuring appropriate BMPs were in place throughout the dry and wet seasons. The City will continue to emphasis these areas in the coming year. Other pollutants may also be addressed through inspections at construction sites where appropriate. This program will also continue to focus on reporting as well as compliance with the recently implemented State Construction General Permit.

The municipal program is broad in scope and implements many BMPs to address all three priority pollutants. This year, the program focused on the MS4 inspection and maintenance program specifically, as a new database that was developed in FY 2010-11 was used to capture inspection and maintenance data. The channel maintenance program was also implemented this fiscal year. An evaluation of the City's MS4 data was conducted which indicated

discrepancies in the inventory based on comparing GIS data to field crew inventory information. As a result, the City has modified its inventory to include additional MS4 locations and will continue to make additional modifications as necessary. This improves the program by ensuring that each facility is inspected and that inspections and cleanings are properly tracked and reported. The City implemented measures to effectively incorporate the Channel Maintenance Program into the MS4 cleaning program with the goal of achieving a balanced maintenance program that meets all regulatory requirements.

Inspections of the industrial and commercial businesses and outreach to new restaurants were focused on during the reporting period. The City continued to implement its enhanced inspection program focusing on facilities with a history of non-compliance. The goal of this program is to increase oversight at these facilities in an effort to ensure full compliance is achieved. After two years of implementing the program it appears to be effective in meeting this objective.

The City developed and implemented a new Restaurant Outreach Program to educate new food service establishments about stormwater and FOG regulations. The goal of this program is to educate and train businesses with the proper BMP practices upon opening as this proactive approach will likely reduce the potential for negative behaviors to develop and consequently, violations to occur and continue until the next annual inspection. The City will continue with both programs in the coming year to ensure full compliance at new restaurants and problematic industrial and commercial sites with results feeding back to assessments of the program.

The residential component will continue to focus on high priority areas and activities as indicated in the City's JURMP. In addition to complaint investigations, the City's Storm Patrol program also focuses on high priority areas and activities. During the reporting period, the City developed and implemented a Storm Patrol Program to assess sediment in stormwater runoff in Buena Vista HA. WQPP staff performed drive by inspections during storm events of areas throughout the watershed to assess sediment levels in runoff. If significant levels of sediment were discovered, upstream investigations were conducted to identify sources and appropriate enforcement was used to facilitate appropriate corrective actions. The City will continue to focus on high priority areas and activities in the coming year and assess the effectiveness of the Storm Patrol Program as more data is collected and analyzed.

In FY 2011-12, the City developed and launched a new GIS-based computer data management system using Cityworks software. The Cityworks system will be used by several departments to manage many aspects of the City's stormwater program including complaint tracking and response; industrial/commercial inspections; municipal inspections; treatment control BMP inspections; public inquiries and hotline calls; storm drain and channel maintenance; inventory management; and special events. The Cityworks system will replace a multitude of spreadsheets and databases currently used to capture the same data, which will allow for simplified tracking, managing, and reporting.

The creation of the custom Cityworks system occurred throughout FY 2011-12, with live activation of portions of the system in June 2012. The WQPP will rely heavily on Cityworks as the primary data management tool during the upcoming reporting period (FY 2012-13).

14.3 Funding Sources

The Water Quality Protection Program activities are funded mainly through the sewer enterprise fund. Some programs were funded through the California Integrated Waste Management Board Oil Payment Program Grant and the Department of Conservation Recycling Grant. This included the outreach and education, recycling, and household hazardous waste collection programs.

14.4 Water Quality Data Analysis

The City has been collecting dry weather water quality data in the MS4 for many years under the previous Municipal Permits. This includes data collected under the dry weather program and regional MS4 program. Visual observations and assessments, use of field test kits, and laboratory measurements are used collectively to conduct appropriate assessments of runoff entering receiving waters from the MS4. The City has collected several seasons of data and continues to evaluate these data to determine the City's main constituents of concern.

Additionally, the City has collected limited amounts of data in receiving waters under ambient conditions in conjunction with the dry weather monitoring programs. The receiving waters sampled include Guajome Creek, Buena Vista Creek, Agua Hedionda Creek, and Buena Creek. All samples collected were grab samples and represent only a snapshot of the conditions in the creeks at that time. Analysis includes the use of field test kits and laboratory measurements, similar to the dry weather program.

Water quality assessments are generally consistent with findings at the watershed level and programs will continue to be focused on the main constituents of concern. High priority water quality problems identified in the City include bacteria and nutrients during dry weather and bacteria and sediment during wet weather. Continuing the programs will enable the City to obtain a more robust data set that will further assist the City and region in their assessments of MS4 water quality, receiving water bodies, and high priority constituents of concerns. With this experience, the City and region can continue to conduct more sound assessments concerning water quality.

14.5 Citywide Participation

The City's Water Quality Protection Program is administered by the Engineering Department management and staff. However, the JURMP is a citywide program with its continuing success dependent upon all City staff participation. During this reporting period the program continued to work with all departments across the City, helping to ensure continued program compliance. Examples of improved Citywide participation this year included continual interaction with Code and Public Works during complaint investigations, increased interaction with engineers in the Capital Improvements Program, coordination with economic development and other departments on outreach programs, and working extensively with Land Development Staff to implement revisions to the SUSMP, specifically related to hydromodification, and transfer TCBMP maintenance and tracking information from Land Development to the WQPP.

14.6 Watershed Collaboration

The City continued to collaborate and focus on implementing the activities developed in the Carlsbad and San Luis Rey Watershed Urban Runoff Management Plans with the appropriate Copermittees, organizations and stakeholders within these watersheds. Specifically, the City coordinated on watershed outreach events and is currently planning activities in both watersheds for the coming years. There was also a focus on development of a TMDL in the

Loma Alta Hydrologic Area for bacteria and nutrients and on development of a Comprehensive Load Reduction Plan (CLRP) for the Bacteria TMDL in the San Luis Rey Watershed. The CLRP was completed during the reporting period.

During FY 2011-12, a watershed educational sign was developed for the San Luis Rey Watershed and installed at the popular new Vista Sports Park. The sign educates park visitors about the watershed and contains stormwater pollution prevention tips. The sign location along a busy sidewalk overlooking the San Luis Rey Watershed engages park visitors and encourages a connection between the sign's educational content and the view of the watershed in the background

14.7 Program Accomplishments

The Water Quality Protection Program and various City staff continue to look for ways to improve the City's JURMP implementation. This includes several areas of focus to build on program success. An outline of the years' accomplishments is presented below:

Development Planning Component

The effectiveness assessment for this program component continues to focus on the TCBMP program. Results show that the program has been successful in ensuring that TCBMPs throughout the City are maintained and operating properly. Through annual trainings WQPP staff has become more knowledgeable about all aspects of the program and have successfully applied the knowledge into program areas including inspections, certification reviews, and enforcement. This accomplished previous recommendations from the assessments which aimed to increase the efficiency of the program by improving the necessary skills of staff and engaging them in all aspects of the TCBMP program.

The HMP was submitted to the RWQCB in 2009 and approved by the board in FY 2010-11. During the reporting period, the City incorporated the HMP into its local SUSMP, the stormwater Standards Manual, by the required effective date of January 14, 2012. One development site was subject to the new HMP requirements during the fiscal year. In order to better understand all options for projects meeting HMP criteria, the City is evaluating the SWMM model for use in meeting the HMP requirements. This model was approved under the HMP and is expected to be a viable option for meeting these new requirements.

Construction Component

- Pre-rainy season outreach and inspections focused on construction sites, including those actively grading and idle sites. Outreach efforts included pre-rainy season letters to all superintendents and site owners, training for City staff, and inspections of active and idle sites prior to October 1. Stormwater Code Enforcement staff worked with the owners of the idle construction sites to ensure that proper BMPs were implemented.
- As shown in this and previous effectiveness assessments of this component, it appears that site compliance may be related to pre-construction meetings. Beginning in 2005, stormwater staff began to attend pre-construction meetings, providing an opportunity for stormwater staff to give one on one site specific education related to the project. This practice continued this year, with stormwater staff attending eight pre-construction meetings.

Municipal Component

- The City continued implementing its Access database for use in the field in tracking MS4 facilities. Evaluations were also conducted to verify MS4 data from field crew inventories and the GIS database which resulted in modifications to the inventory; evaluations will

continue to field verify all MS4 facilities identified in both data sources. These efforts improve the program by ensuring all MS4 facilities are accounted for and receive inspections.

- The City continued to track pro-active complaints (i.e. those reported by City staff). This measure was evaluated in the effectiveness assessment component and may be used in the future to assess changes in knowledge of City staff as related to stormwater outreach.
- A municipal survey was distributed for the fourth time during this fiscal year to gain an understanding of the change in stormwater knowledge within the City. An increase in several stormwater concepts was noted in the survey results, indicating a positive effect on employees from the municipal outreach and training programs.
- The stormwater program continued active involvement in the City's special events committee, interacting extensively with event organizers and staff to ensure that all required BMPs were implemented. The channel maintenance program was successfully implemented in FY 2011-12, with maintenance performed at 14 sites.

Industrial/Commercial Component

- Combination inspections continued for stormwater and FOG at the food service establishments selected for inspection allowing the City to leverage resources and gain efficiencies in both programs. A total of 108 restaurants/food service establishments received combined inspections during FY 2011-12.
- The City developed and implemented a new Restaurant Outreach Program to educate and inform new FSEs about stormwater and FOG regulations. The goal of the program is to educate and train newly opened businesses on proper BMP implementation so these practices are incorporated into their daily operations thereby reducing the potential for negative behavior to develop and violations to occur. City WQPP staff visited ten new restaurants and markets as part of this program.
- Notifications were provided to each of the new facilities (stationary and mobile) on the inventory of the site/source specific BMP requirements pertaining to their operations.
- Staff continued to implement its enhanced inspection program to address facilities with a history of non-compliance. The program appears to be effective in obtaining compliance at these facilities; seven sites were removed from the program in FY 2011-12 after demonstrating full compliance throughout the year.
- The City continued to implement the Mobile Water Use Program to ensure that mobile businesses operating within the City that have the greatest potential to violate stormwater ordinances implement proper BMPs. WQPP staff conducted eight mobile water-use inspections; all businesses received the necessary City approvals prior to license issuance.
- The City continued to participate in the Regional Industrial and Commercial Workgroup which is tasked with developing regional I/C standards and programs as required in the Municipal Permit.

Residential Component

- Stormwater staff responded to and resolved 34 residential complaints with several involving high priority sources and activities as defined in the City's 2008 JURMP. In all of these cases, appropriate corrective actions were implemented and necessary education and outreach was provided to ensure continual compliance.
- Using the results of last year's detailed analysis and assessment of residential complaints, the City developed and implemented a Storm Patrol program to assess sediment in stormwater runoff throughout Buena Vista watershed. During rain events,

staff conducted drive by inspections observing runoff and identifying any flows impacted by sediment. Upstream investigations to identify sources were performed if significant sediment levels were detected or an illegal discharge was occurring. During the reporting period, four storm patrol events were conducted throughout the MS4, at Buena Vista creek, and residential sites to assess sediment in stormater runoff. At most of the visited areas and sites, water runoff was relatively clear and unimpacted by sediment. At some residential sites, City staff observed runoff to be impacted by sediment and identified some BMP deficiencies associated with those sites. In those instances, the City required responsible parties to implement appropriate BMPs and conducted necessary follow-up actions to verify corrective actions were implemented.

Education Component

- Site and activity specific outreach information was provided to all inspected businesses and new stationary and mobile businesses on the respective inventories.
- Multiple outreach methods and materials were used to provide information to all target audiences including municipal staff, industrial/commercial businesses, development and construction communities, the general public, school children, the underserved, and those involving high risk behaviors, and "allowable" discharges. The methods and materials included newsletter articles, community events, complaint investigations, inspections, used oil collection events, educational programs, the City's website and hotline, media releases, and brochures. Using these methods and materials, specific BMP information pertaining to each audience and behavior was provided.
- The City developed and implemented a new Restaurant Outreach Program designed to educate and train newly opened businesses on proper BMP implementation so these practices are incorporated into their daily operations. Staff presented the City's program and provided applicable outreach materials to facility representatives. Staff visited ten restaurants and markets as part of the program.
- The City contracted with the San Diego County Office of Education to provide an outreach program to elementary and middle schools in Vista. The program utilized the Splash Mobile Science Laboratory and the Green Machine to teach the students about various environmental topics. In total, the programs reached 1,623 students.
- Assessment methods were implemented this year in an effort to determine the effectiveness of various outreach components, attempting to quantify a change in knowledge in the target audiences. Surveys were implemented for municipal staff and for school children.

Public Participation Component

- The City continued to use various mechanisms to inform, educate, and encourage participation from the community in the development and implementation of the City's JURMP. These included the City's website and hotline email/phone numbers, newsletters, community events, brochures and ads, and public notifications.
- Two creek cleanups were made possible due to participation of over 250 volunteers. These included Coastal Cleanup in September 2011 and Buena Vista Park in April 2012. From a water quality standpoint these events proved to be very successful in that 326 lbs of recyclables and 1,557 lbs of trash were removed from the creeks. It has been shown in this year's effective assessments that participation from the community is largely linked and dependent on education and outreach. Various outreach mechanisms were used to maximize participation from the community for the events.

Fiscal Analysis Component
The fiscal analysis component was performed using the Standardized Method for Fiscal Analysis.

Effectiveness Assessment Component
A comprehensive effectiveness assessment was performed this year. Effectiveness measures included this year were surveys for municipal staff and pre and post tests for students receiving environmental outreach through the SDCOE. Conclusions from the assessment are incorporated into the recommendations below.

14.8 Program Recommendations

Based on program review and effectiveness assessments for each component, program recommendations for the coming year are presented below.

Development Planning Component

- Coordination with Land Development Staff on SUSMP and HMP implementation and State Construction General Permit compliance;
- Continued training related to new regulations for Capital Improvement Program and Land Development staff;
- As the TCBMP program continues to evolve, increasing Staff's knowledge on all aspects of the program would be beneficial. This could be done through trainings or research on specific TCBMP items.

Construction Component

- Continue to conduct effective inspections of construction sites throughout the fiscal year;
- Continue to provide outreach to construction sites regarding rainy season BMP requirements prior to the start of the rainy season;
- Continue to participate in all pre-construction meetings.
- Continue training related to the Construction General Permit and other stormwater related topics as necessary.

Municipal Component

- Continue implementation of the channel maintenance program, including clearing debris and sediment from natural drainage channels and creeks where permits have been obtained;
- Continue to implement and refine the new data tracking system for MS4 facilities to ensure inventories are up to date and all inspections and maintenance are performed annually;
- Coordinate with the parks department to ensure that there are adequate pet waste stations, kiosks with educational information, and that landscape and restroom maintenance are performed properly.

Industrial/Commercial Component

- Continue implementation of the Mobile Water Use Program;
- Continue implementation and assessment of the enhanced inspection program for repeat offenders and improve where needed.
- Continue implementation of the new Restaurant Outreach Program for newly opened restaurants and markets.

Residential Component

- Continue implementing the Storm Patrol program in Buena Vista HA to collect more data concerning sediment in wet weather. Begin to evaluate the effectiveness of the program and where feasible, use data to make further assessments and conclusions regarding sediment sources.

Education Component

- Enhance surveys used to measure changes in knowledge where necessary;
- Revise brochures as necessary;
- Continue implementing the new Restaurant Outreach Program;
- Continue celebrating Earth Month in Vista.
- Continue using a variety of outreach tools to inform the various target audiences of the WQPP and modifications to the program where necessary.

Public Participation Component

- Continue to provide a variety of outreach mechanisms to facilitate and maximize participation from the community in JURMP implementation.
- Creek cleanups appear to provide some measure of effectiveness for the public participation component. Continue using creek cleanups as a measure of effectiveness for this component.

Fiscal Analysis Component

- Continue to focus on consistent methods of tracking and reporting of expenditures by program component to allow for easier and accurate fiscal reporting.

Effectiveness Assessment Component

The effectiveness assessment of the program will continue to evolve. As new methods of evaluation are developed, additional supporting data will be tracked. It is expected that as more water quality data is collected, better evaluations of MS4 and receiving water quality will be feasible. Where possible, relationships between program components, BMPs, and water quality may be evaluated.

APPENDIX A-1
EXCERPT FROM GENERAL PLAN 2030

RCS Policy 3.4: Work with Caltrans to expand the use of reclaimed water on the SR-78 right-of-way and install water-efficient landscaping and irrigation.

RCS Goal 4: Preserve, protect, and enhance water quality in watersheds to which the City contributes stormwater and urban runoff.

RCS Policy 4.1: Preserve, protect and enhance water quality within the San Luis Rey and Carlsbad Hydrologic Units, of which the City is a part, through pollution prevention, encouraging preservation of natural drainage courses, prevention of wildfires, low impact development including reduced water use and native plant landscaping, and prevention of other anthropogenic detrimental effects to the watersheds.

RCS Policy 4.2: Continue to improve water quality in the San Luis Rey, Loma Alta, Buena Vista, Agua Hedionda, and San Marcos watersheds, through the implementation of water quality improvement programs with the goal of achieving sustainable resource management that meets social, economic, and environmental needs.

RCS Policy 4.3: Implement the Agua Hedionda Watershed Management Plan and develop and implement a similar watershed management plan for Buena Vista Creek and its major tributaries. Seek funding as a priority.

RCS Policy 4.4: Promote practices and programs that integrate the various disciplines of water resources management, recognizing and fostering the interconnectedness of water quality (including surface, stormwater, and waste water management), water supply, and natural resources.

RCS Policy 4.5: Protect and restore appropriate beneficial uses for prioritized water bodies impacted by stormwater and urban runoff.

RCS Policy 4.6: Require the incorporation of Low Impact Development (LID) techniques in accordance with current stormwater regulations to manage stormwater and urban runoff, reduce runoff and pollution, reduce the footprint of development on each parcel, and assist in maintaining or restoring the natural hydrology of the site. Examples of LID techniques include, but are not limited to the following:

a. Use permeable paving or pavers for sidewalks and parking areas instead of impervious material, such as concrete and asphalt.
b. Incorporate bioretention facilities, such as cells (small-scale shallow vegetated depressions), bioswales, (linear bioretention features that may mimic natural stream channels), tree box filters (stand-alone or connected mini-bioretention areas that are

installed beneath trees), and other bioretention features in site design for development projects and subdivisions.

c. Incorporate retention of water on-site or to common area for single-family and multi-family residences, including encouraging retrofitting.

d. Utilize rain barrels and cisterns to manage rooftop runoff and/or utilize rooftop runoff to provide water for irrigating lawns and gardens.

e. Install street trees in stand-alone or connected tree box filters.

RCS Policy 4.7: Encourage the use of LID techniques through public outreach and education by installing demonstration projects at City facilities and by incorporating LID and other green technologies into public infrastructure projects.

RCS Policy 4.8: Buffers should be established or maintained along the periphery of wetlands and water bodies, including streams, ponds, and lagoons to provide improved water quality, erosion control, and protection of the other functions of wetlands, including (but not limited to) natural habitat, wildlife corridors, and stream cover. Buffers from the edge of the existing natural tree canopy or, in the absence of tree canopy, from the edge of riparian vegetation, or, in the absence of vegetation , from the edge of the stream bank shall be established. Consideration of existing intensive land uses adjacent to proposed development may require higher functioning buffers (i.e. additional mitigation through BMP's and/or greater width). Redevelopment along the stream/wetland corridor shall strive to incorporate a functional buffer. Buffer shall be established based on scientific analysis of the existing conditions and any development proposal by a qualified ecologist. New buildings, parking areas or non-essential structures shall not be permitted within any buffer area. Public trails may be included within the buffer provided there is sufficient width and appropriate measures for physical separation from sensitive resources.

RCS Policy 4.9: Continue to maintain, repair, and replace current drainage infrastructure where possible, including items such as installing trash collectors, grease separators, biofilters, and daylighting streams to maximize public safety and water quality benefits.

RCS Policy 4.10: Require that any property to be annexed into the City be required to hook up to the City's sewer system and bear the cost of improvements to the sewer system if needed to serve such areas.

RCS Policy 4.11: Restrict the installation of new concrete lining or channelization projects within open creeks and waterways and restore the creek system to its natural state where feasible in an effort to balance flood protection, water quality benefits, and habitat preservation. The daylighting and restoration of covered creek channels is encouraged.

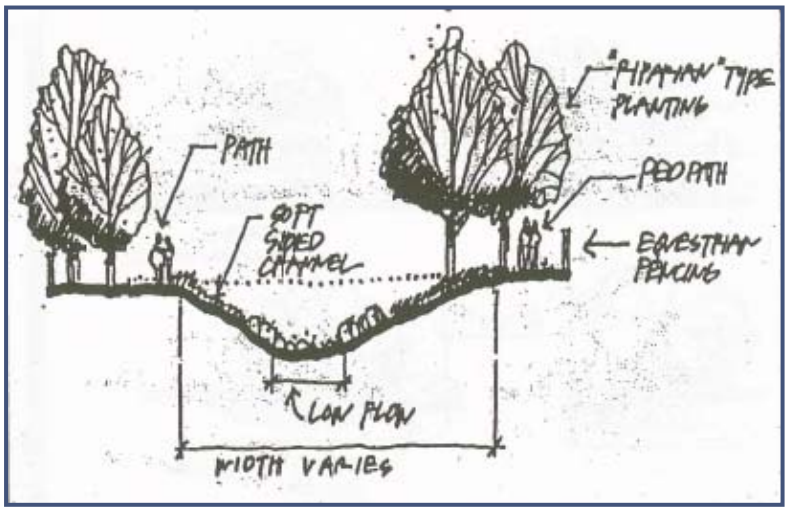

Natural creek bed with trail.

RCS Policy 4.12: Allow alteration, rechannelization, and/or modifications to existing channelized streams only if such modifications preserve or restore natural habitat values to the greatest extent feasible and necessary permits are obtained.

BIOLOGICAL RESOURCES

RCS Goal 5: Preserve and protect, to the extent practicable, the range of natural biological communities and species native to the City and region; and conserve viable populations of endangered, threatened, and key sensitive species and their habitats.

RCS Policy 5.1: Continue to require development that is proposed in areas identified or expected to contain sensitive vegetation and wildlife communities to consult with wildlife agencies (i.e., United States Fish and Wildlife Service [USFWS] and the California Department of Fish and Game [CDFG]) early in the development review process regarding special status plant and wildlife species; conduct biological assessments, as appropriate; and develop and implement project-specific mitigation measures that are completed and functional prior to impacts, to mitigate impacts on threatened and endangered species.

RCS Policy 5.2: In areas that are adjacent to sensitive vegetation and/or wildlife communities, continue to require development, uses, and activities to be designed and managed to ensure minimal impacts to those resources. Examples include, but are not limited to the following:

a. Provide buffers or barriers between the development and the biological resources. Buffers from the edge of the existing habitat should be established based on scientific analysis of

APPENDIX A-2
SUSMP LISTINGS

Project ID	Project Name	SUSMP Requirements Applied? (Y/N)	Site Design BMPs for Project Included? (Y/N)	Source Control BMPs for Project Included? (Y/N)	Priority Development Project? (Y/N)	Treatment Control BMPs Included? (Y/N)	Was project required to meet Interim or HMP requirements?	If HMP is NOT required - why was it exempt from HMP requirements?
GP09-016	RV Vacation Resort	Y	Y	Y	Y	Y	N	Approved before HMP was effective
GP10-015	St. Francis Church	Y	Y	Y	Y	Y	N	Approved before HMP was effective
GP11-003	Discount Tire	Y	Y	Y	N	N	N	Not a Priority Development Project
GP11-005	First Somoan Church	Y	Y	Y	N	N	N	Not a Priority Development Project
GP11-006	217 Lyon Circle	Y	Y	Y	N	N	N	Not a Priority Development Project
GP11-007	212 Acropolis Way	Y	Y	Y	N	N	N	Not a Priority Development Project
GP11-008	2507 Walinca Way	Y	Y	Y	N	N	N	Not a Priority Development Project
GP11-010	1764 Mesa Verde Drive	Y	Y	Y	N	N	N	Not a Priority Development Project
GP11-011	450 Pina Lane	Y	Y	Y	N	N	N	Not a Priority Development Project
GP12-001	204 Acropolis Way	Y	Y	Y	N	N	N	Not a Priority Development Project
GP12-001	2414 Catalina Avenue	Y	Y	Y	N	N	N	Not a Priority Development Project
GP12-001	208 Acropolis	Y	Y	Y	N	N	N	Not a Priority Development Project
8221	Shadowridge Right Turn Lane at Melrose Drive	N	N/A	N/A	N	N/A	N/A	Not a Priority Development Project
8184	Traffic Signals at Melrose & Highland/Los Angeles	N	N/A	N/A	N	N/A	N/A	Not a Priority Development Project
7456	Vista Village Overcrossing Median Landscaping	N	Y	N	N	N/A	N/A	Not a Priority Development Project
8203	Emerald Drive & Date Street Traffic Signal and Intersection improvements	Y	Y	Y	Y	Y	Y	N/A
8107	Sycamore Ave. Offramp on SR-78	Y	Y	Y	Y	Y	N	Located on Caltrans right of way, designed to meet Caltrans permit requirements
CIP	Senior Center Solar Photovoltaic (PV) Project	N	N/A	N/A	N	N/A	N/A	Not a Priority Development Project

Project ID	Project Name	SUSMP Requirements Applied? (Y/N)	Site Design BMPs for Project Included? (Y/N)	Source Control BMPs for Project Included? (Y/N)	Priority Development Project? (Y/N)	Treatment Control BMPs Included? (Y/N)	Was project required to meet Interim or HMP requirements?	If HMP is NOT required - why was it exempt from HMP requirements?
8153	Monument Entry Signs Project	N	N/A	N/A	N	N/A	N/A	Not a Priority Development Project
CIP	Wave Waterpark Solar Thermal Project	N	N/A	N/A	N	N/A	N/A	Not a Priority Development Project

APPENDIX A-3
DEVELOPMENT PROJECT SYNOPSIS

Olive Avenue RV Vacation Resort

Project name: Olive Avenue RV Vacation Resort

Development Type: New Development

Project Size: The project site is 1.93 acres

Project Description: A Recreational Vehicle vacation resort

Conditioned for Site Design? Yes

Conditioned for Source Control? Yes

Conditioned for Treatment Control? Yes

Site Design and Source Controls:
Optimizing site layout, use of pervious surfaces, disperse runoff, design integrated management practices.

Treatment Control BMPs:
Bioretention areas, sized for individual drainage management areas.

DETAILED SITE/BMP MAP

GENERAL INFORMATION

RECEIVING WATERS – BUENA VISTA CREEK AND BUENA VISTA LAGOON
POLLUTANTS OF CONCERN – BACTERIA & VIRUSES, SEDIMENT AND NUTRIENTS

LID SITE DESIGN BMPS

1. OPTIMIZE SITE LAYOUT
2. USE PERVIOUS SURFACES
3. DISPERSE RUNOFF
4. INTEGRATED MANAGEMENT PRACTICES (IMPs)

SOURCE CONTROL BMPS

1. DESIGN OUTDOOR MATERIAL STORAGE AREAS TO REDUCE POLLUTION INTRODUCTION
2. DESIGN TRASH STORAGE AREAS TO REDUCE POLLUTION INTRODUCTION
3. EMPLOY INTEGRATED PEST MANAGEMENT PRINCIPLES
4. USE EFFICIENT IRRIGATION SYSTEMS & LANDSCAPE DESIGN LIMITED EXCLUSION: DETACHED RESIDENTIAL HOMES
5. PROVIDE STORM WATER CONVEYANCE SYSTEM STAMPING AND SIGNAGE
6. DESIGN NEW BUILDING FIRE SPRINKLER SYSTEMS TO ENABLE DISCHARGE TO SANITARY SEWER

LEGEND

SDRSD – SAN DIEGO REGIONAL STD. DRAWING

DESCRIPTION	STANDARD	SYMBOL
DRAINAGE DIRECTION		
BROW DITCH	SDRSD D-75	
PRIVATE STORM DRAIN		
CONCRETE		
DETENTION BASIN		

WATER QUALITY TECHNICAL REPORT

TITLE – WATER QUALITY TECHNICAL REPORT FOR
713 OLIVE AVENUE VACATION & RV RESORT (GP09-016)
DATE – NOVEMBER 2, 2010
PREPARED BY – CONSTRUCTION, TESTING & ENGINEERING INC.

MAINTENANCE AGREEMENT DOCUMENT

TITLE – MAINTENANCE AGREEMENT FOR GP09-16
713 OLIVE AVENUE VACATION & RV RESORT (GP09-016)
DATE OF RECORDATION –
PREPARED BY – CONSTRUCTION, TESTING & ENGINEERING INC.

OPERATIONS AND MAINTENANCE PLAN

TITLE – STORM WATER OPERATION & MAINTENANCE PLAN FOR GP09-16
DATE – NOVEMBER 3, 2010
PREPARED BY – CONSTRUCTION, TESTING & ENGINEERING INC.

RESPONSIBLE PARTY INFORMATION

OWNER:

EDWARD GIBBS
P.O. BOX 5206
OXNARD, CA 93031
(805) 485-0551

DEVELOPER/CONTRACTOR:

GEORGE CONNER
101 HERITAGE CT.
OAKLEY, CA 94561
(949) 852-5575

BMP NOTES:

1. THESE BMPS ARE MANDATORY TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS OR THESE PLANS
2. NO CHANGES TO THE PROPOSED BMPS ON THIS SHEET WITHOUT PRIOR APPROVAL FROM THE ENGINEERING DEPARTMENT
3. NO SUBSTITUTIONS TO THE MATERIAL TYPES OR PLANTING TYPES WITHOUT PRIOR APPROVAL FROM THE LAND DEVELOPMENT ENGINEER
4. NO OCCUPANCY WILL BE GRANTED UNTIL THE CITY INSPECTION STAFF HAS INSPECTED THIS PROJECT FOR APPROPRIATE BMP CONSTRUCTION AND INSTALLATION

BMP TABLE

BMP ID #	BMP TYPE	SYMBOL	QUANTITY	DETAIL PLAN SET SHEET NO.	DETAIL NO.	HORIZONTAL DATUM: NAD83 NORTHING	EASTING	CONSTRUCTION CONFIRMATION
1	BIORETENTION AREA		7 EA	GP SHEET # 6 & 7	33			
2	PERVIOUS PAVEMENT		45,118 SF	GP SHEET # 6 & 7	28			
3	TRASH ENCLOSURE		2 EA	GP SHEET # 6 & 7	SHEET 6 & 7			
4	DETENTION BASIN		3 EA	GP SHEET # 5, 6, 7, 15 & 16	SHEET 5, 6 7, 15 & 16			

GENERAL SITE MANAGEMENT

MATERIAL & DELIVERY & STORAGE:	WM-1
SOLID WASTE MANAGEMENT:	WM-5
HAZARDOUS WASTE MANAGEMENT:	WM-6
CONCRETE WASTE MANAGEMENT:	WM-8
SANITARY WASTE MANAGEMENT:	WM-9

GRAPHIC SCALE

40 0 20 40 80 160

1 inch = 40 ft.

NO.	DESCRIPTION	CITY	DATE	VID	DATE
	APPROVED CHANGES				

CONSTRUCTION TESTING & ENGINEERING, INC.
PLANNING - CIVIL ENGINEERING - LAND SURVEYING - GEOTECHNICAL
1441 MONTIEL ROAD, SUITE 115 ESCONDIDO CA. 92026, PH:(760) 746-4955

MOYENUDDIN A. SIRAJEE 63867 RCE 9/30/12 EXP.LIC.DATE 9/06/11 DATE

REGISTERED PROFESSIONAL ENGINEER MOYENUDDIN A. SIRAJEE No.C 63867 EXP.09/30/12 CIVIL STATE OF CALIFORNIA

CITY of VISTA

OLIVE AVENUE RV VACATION RESORT

ADDRESS: 713 OLIVE AVENUE, VISTA, CALIFORNIA

APPROVED: FOR CITY ENGINEER 55075 RCE 6/30/12 EXPIRES DATE

SHEET ___ OF ___

BENCH MARK: FD PK NAIL IN LEAD PLUG ON TOP OF CURB IN MIDDLE OF CURB RETURN AT NW CORNER OF INTERSECTION HIGHLAND DR. AND ROSE DR. (CV 82-0005).
ELEV. 441.90' DATUM: NGVD '29

\\Engineering\e\LP-09\15-0151C\SWQMP\2-1-11\0151-DETAILED SITE MAP.dwg 7/7/2011 7:33:48 AM PDT

APPENDIX A-4
PRIVATE DEVELOPMENT TCBMP
INVENTORY AND INSPECTIONS SUMMARY

# of Sites	GP or Drawing #	BMP loc ID	Project Name	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due August 8, 2011) Annual Certification Form Received (Y/N)	Inspection Date	Needs Corrective Action (Y/N)	Describe
1	01-059	1	Chevron	224	N. Emerald Drive	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Catch Basin	Y			
	01-059	2	Chevron	224	N. Emerald Drive	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Catch Basin				
	01-059	3	Chevron	224	N. Emerald Drive	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Trench Drain				
2	02-015	1	Yucaipa Towing, Inc	451	Olive Ave	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y			
3	02-036	1	Multi Tennant Industrial	1235	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	05/17/2012	N	
	02-036	2	Multi Tennant Industrial	1235	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	05/07/2012	N	
4	02-049	1	828 N Santa Fe Ave	828 N	Santa Fe Ave	Medium	N/A	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y			
	02-049	2	828 N Santa Fe Ave	828 N	Santa Fe Ave	Medium	N/A	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y			
5	02-054	1	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y			
	02-054	2	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert				
	02-054	3	Aloha Motors (Classic Chariots)	1611 W	Vista Way	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert				
6	02-058	1	North Island Finacial Credit union	1960	University Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y			
7	02-061	1	Jury & Clark development	2435	Cades Way	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y			
	02-061	2	Jury & Clark development	2435	Cades Way	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
8	02-071	1	Directed Electronics Inc	1	Viper Way	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	05/17/2012	N	
	02-071	2	Directed Electronics Inc	1	Viper Way	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/17/2012	N	
9	02-078	1	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			
	02-078	2	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-078	3	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-078	4	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-078	5	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-078	6	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-078	7	1230 Activity Drive	1230	Activity Dr	Medium	2003-0951657	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
10	02-080	1	Focus Industrial Center	2460	Grand Ave	Medium	2003-1185309	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y			
	02-080	2	Focus Industrial Center	2460	Grand Ave	Medium	2003-1185309	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
11	02-081	1	Focus Industrial Center	2441	Cades Way	Medium	2003-1185310	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y			
	02-081	2	Focus Industrial Center	2441	Cades Way	Medium	2003-1185310	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
12	02-082A	1	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y			
	02-082A	2	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-082A	4	Sycamore Vista Business Center	2330-2336	La Mirada Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-082B	3	Sycamore Vista Business Center	2300-2322	La Mirada Dr	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y			
	02-082B	5	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-082B	6	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-082B	7	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	02-082B	8	Sycamore Vista Business Center	2300-2322	La Mirada Drive	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
13	02-089	1	El Pollo Loca	495 S	Melrose Dr	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	05/31/2012	N	

# of Sites	GP or Drawing #	BMP loc ID	Project Name	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due August 8, 2011) Annual Certification Form Received (Y/N)	Inspection Date	Needs Corrective Action (Y/N)	Describe
14	03-005	1	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-50	Wet Vault	Sand/ Oil Seperator	Y	05/17/2012	N	
	03-005	2	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/17/2012	N	
	03-005	3	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-50	Wet Vault	Stormwater Treatment		05/17/2012	N	
	03-005	4	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/17/2012	N	
	03-005	5	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/17/2012	N	
	03-005	6	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/17/2012	N	
	03-005	7	Poinsettia Ridge	1201-1211	Activity Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/17/2012	N	
15	03-013	1	3225 Executive Ridge	3225	Executive Ridge	Low	N/A	San Marcos	--	Bio-Filter	Gravel Swale above sub drain	Y			
	03-013	2	3225 Executive Ridge	3225	Executive Ridge	Low	N/A	San Marcos	--	Bio-Filter	Gravel Swale above sub drain				
16	03-016A/04-064	1	Vista village phase II	235	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	Y	05/22/2012	N	
	03-016A/04-064	2	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	03-016A/04-064	3	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	03-016A/04-064	4	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	03-016A/04-064	5	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	03-016A/04-064	6	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	03-016A/04-064	7	Vista village phase II	245	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Trench Drain		05/22/2012	N	
	03-016A/04-064	8	Vista village phase II	245	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	03-016A/04-064	9	Vista village phase II	255	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	36"x36" Catch Basin		05/22/2012	N	
	03-016A/04-064	10	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	03-016A/04-064	11	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	

# of Sites	GP or Drawing #	BMP loc ID	Project Name	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due August 8, 2011) Annual Certification Form Received (Y/N)	Inspection Date	Needs Corrective Action (Y/N)	Describe
	03-016A/04-064	12	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin		05/22/2012	Y	Missing hydrocarbon boom
	03-016A/04-064	13	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Trench Drain		05/22/2012	N	
	03-016A/04-064	14	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	Trench Drain		05/22/2012	N	
	03-016A/04-064	15	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin		05/22/2012	N	
	03-016A/04-064	16	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin		05/22/2012	N	
	03-016A/04-064	17	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin		05/22/2012	N	
	03-016A/04-064	18	Vista village phase II	225	Vista Village Dr	High		Buena Vista Creek	MP-52	Drain Insert	12"x12" Catch Basin		05/22/2012	N	
17	03-019	1	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	2003-1524062	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	05/24/2012	N	
	03-019	2	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	2003-1524062	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/24/2012	N	
	03-019	3	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	2003-1524062	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/24/2012	N	
	03-019	4	1206 S. Santa Fe Drive	1406	S Santa Fe Av	Medium	2003-1524062	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/24/2012	N	
18	03-021	1	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment	Y	05/30/2012	N	
	03-021	2	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment		05/30/2012	N	
	03-021	3	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment		05/30/2012	N	
	03-021	4	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment		05/30/2012	N	
	03-021	5	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	180' of 5' Dia. Detetion Pipes		05/30/2012	N	
	03-021	6	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	75' of 5' Dia. Detetion Pipes		05/30/2012	N	
	03-021	7	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	240' of 5' Dia. Detetion Pipes		05/30/2012	N	
	03-021	8	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	290' of 5' Dia. Detetion Pipes		05/30/2012	N	
	03-021	9	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	180' of 5' Dia. Detetion Pipes		05/30/2012	N	
	03-021	10	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	270' of 5' Dia. Detetion Pipes		05/30/2012	N	
	03-021	11	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	420' of 5' Dia. Detetion Pipes		05/30/2012	N	
	03-021	12	Monarch Apts	1850	Thibido Rd	High	N/A	Agua Hedionda	--	Underground Det. Sys.	360' of 5' Dia. Detetion Pipes		05/30/2012	N	
19	03-044	1	800 Silver Dr Subdivision	800	Silver Dr	High	2004-0613597	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	05/22/2012	N	
	03-044	2	800 Silver Dr Subdivision	800	Silver Dr	High	2004-0613597	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert		05/22/2012	N	
20	03-057	1	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			

# of Sites	GP or Drawing #	BMP loc ID	Project Name	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due August 8, 2011) Annual Certification Form Received (Y/N)	Inspection Date	Needs Corrective Action (Y/N)	Describe
	03-057	2	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	--	Bio-Filter	Gravel Swale above sub drain				
	03-057	3	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	TC-22	Extended Detention Basin	Grassy Detention Pond				
	03-057	4	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	03-057	5	Moxie Industrial Building	3260	Corporate View	Medium	2004-0823157	Agua Hedionda	TC-22	Extended Detention Basin	Concrete/ Gunite Pond				
21	03-078	1	Amron international	1380	Aspen Way	Low	2004-0308771	Agua Hedionda	TC-30	Vegetated Swale	vegetated swale	Y			
	03-078	2	Amron international	1380	Aspen Way	Low	2004-0308771	Agua Hedionda	TC-30	Vegetated Swale	grassy swale				
22	03-079	1	Ruby/Ravine Subdivision		Steeple Chase Lane	High	2005-0476684	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale	Y	05/02/2012	N	
	03-079	2	Ruby/Ravine Subdivision		Steeple Chase Lane	High	2005-0476684	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert		05/02/2012	N	
	03-079	3	Ruby/Ravine Subdivision		Steeple Chase Lane	High	2005-0476684	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert		05/02/2012	N	
	03-079	4	Ruby/Ravine Subdivision		Steeple Chase Lane	High	2005-0476684	Buena Vista Creek	--	Underground Det. Sys	Dual 54' x 60" Dia. Detention Pipes		05/02/2012	N	
23	03-085	1	Frame Residence	819	Eucalyptus Ave	High	2005-0013451	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	05/17/2012	N	
	03-085	2	Frame Residence	819	Eucalyptus Ave	High	2005-0013451	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale		05/17/2012	N	
24	04-001	1	Watkin Manufacturing Inc	1320	Hot Spring Way	Medium	2004-0153347	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	06/12/2012	N	
	04-001	2	Watkin Manufacturing Inc	1320	Hot Spring Way	Medium	2004-0153347	Agua Hedionda	TC-30	Vegetated Swale	landscaped swale surronding area drains to sub drain		06/12/2012	N	
25	04-006	1	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert	Y	06/12/2012	N	
	04-006	2	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	N	
	04-006	3	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	N	
	04-006	4	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	N	
	04-006	5	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	N	
	04-006	6	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	Y	Accumulation of veg and sediment
	04-006	7	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	N	
	04-006	8	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	N	
	04-006	9	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	Y	standing water
	04-006	10	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	Y	
	04-006	11	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	Y	both filter inserts clogged w/veg, sediment, trash
	04-006	12	Sycamore Vista Business Park	2200	La Mirada Dr	Medium	2005-0052504	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert		06/12/2012	N	
26	04-007	1	1210 Distribution Way	1210	Distriution Way	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	05/17/2012	N	
	04-007	2	1210 Distribution Way	1210	Distriution Way	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/17/2012	N	
27	04-010	1	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	05/22/2012	N	

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	04-010	2	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-010	3	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-010	4	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-010	5	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-010	6	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-010	7	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-010	8	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-010	9	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	Treatment Unit		05/22/2012	N	
	04-010	10	Home Depot	2430 S	Melrose Dr	High	N/A	Agua Hedionda	--	Underground Det. Sys	7400 cu ft VOL		05/22/2012	N	
28	04-020A	1	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	05/22/2012	N	
	04-020A	2	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-020A	6	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	Y	
	04-020A	7	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-020A	8	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	Y	Trash and debris
	04-020A	11	Walgreens	310	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment		05/22/2012	N	
	04-020B	3	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y	05/22/2012	N	
	04-020B	4	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-020B	5	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-020B	9	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert		05/22/2012	N	
	04-020B	10	Panda Express	320	Sycamore Ave	HIgh	N/A	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment		05/22/2012	N	
29	04-024	1	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert	Y	05/02/2012	N	
	04-024	2	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/02/2012	N	
	04-024	3	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	TC-30	Vegetated Swale	grassy swale		05/02/2012	N	
	04-024	4	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/02/2012	N	
	04-024	5	Nettleton Self Storage	124	Nettleton Rd	Medium	N/A	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/02/2012	N	
30	04-033	1	Poinsettia Industrial	921-925	Poinsettia ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Y			
	04-033	2	Poinsettia Industrial	921-925	Poinsettia ave	Medium	N/A	Agua Hedionda	MP-52	Drain Insert	Filter with hydrocarbon boom				
	04-033	3	Poinsettia Industrial	921-925	Poinsettia ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale				
	04-033	4	Poinsettia Industrial	921-925	Poinsettia ave	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale				
31	04-044	1	338 Plymouth Dr. Condos	338	Plymouth Dr	High	2008-0346020	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert	Y	05/24/2012	N	
	04-044	2	338 Plymouth Dr. Condos	338	Plymouth Dr	High	2008-0346020	Buena Vista Creek	TC-30	Vegetated Swale	Vegetated Swale		05/24/2012	N	
32	04-048	1	Sunset Heights Subdivision	787	Vale View Dr	Medium	2005-0572212	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y			
	04-048	2	Sunset Heights Subdivision	787	Vale View Dr	Medium	2005-0572212	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert				
	04-048	3	Sunset Heights Subdivision	787	Vale View Dr	Medium	2005-0572212	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond				
33	04-051	1	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Y			
	04-051	2	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale				
	04-051	3	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond				
	04-051	4	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond				
	04-051	5	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert				
	04-051	6	Breeze Hill	495	La Tortuga Dr	Medium	2005-0351111	Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert				
34	04-062	1	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	2005-0796684	Agua Hedionda	TC-30	Vegetated Swale	grassy swale above sub drain	Y			
	04-062	2	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	2005-0796684	Agua Hedionda	TC-30	Vegetated Swale	grassy swale				
	04-062	3	Sycamore Vista Bus Pk	2270	La Mirada Dr	Low	2005-0796684	Agua Hedionda	TC-30	Vegetated Swale	grassy swale				

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35	04-067	1	Moxie Pacific Palomar Park	3270	Corporate View	Medium	2005-0240554	Agua Hedionda	TC-22	Extended Detention Basin	Concrete/ Gunite Pond w/ fossil filter	Y			
	04-067	2	Moxie Pacific Palomar Park	3270	Corporate View	Medium	2005-0240554	Agua Hedionda	MP-52	Drain insert	Fossil Filter Insert				
36	05-008	1	Fortuna Ave.		Fortuna Ave	Low	2006-0163407	Lower San Luis	TC-22	Extended Detention Basin	Detention Pond	Y			
37	05-017	1	Vista Point Medical Plaza	326 S	Melrose Dr	Medium	2005-0922935	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Y			
	05-017	2	Vista Point Medical Plaza	326 S	Melrose Dr	Medium	2005-0922935	Buena Vista Creek	MP-52	Drain insert	Fossil Filter Insert				
38	05-019	1	DJ Orthopedics	1430	Decision St	Low	2005-0792907	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			
	05-019	2	DJ Orthopedics	1430	Decision St	Low	2005-0792907	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	05-019	3	DJ Orthopedics	1430	Decision St	Low	2005-0792907	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	05-019	4	DJ Orthopedics	1430	Decision St	Low	2005-0792907	Agua Hedionda	MP-51	Hydrodynamic Vortex Separator	CDS Inline Treatment				
39	05-024	1	Bio-Forms	3215	Executive Ridge	Medium	2005-0853821	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			
	05-024	2	Bio-Forms	3215	Executive Ridge	Medium	2005-0853821	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	05-024	3	Bio-Forms	3215	Executive Ridge	Medium	2005-0853821	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	05-024	4	Bio-Forms	3215	Executive Ridge	Medium	2005-0853821	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond				
	05-024	5	Bio-Forms	3215	Executive Ridge	Medium	N/A	Agua Hedionda	--	Bio-Filter	Gravel Swale above sub drain				
40	05-025	1	Thomasville Furniture	1389	Park Center Drive	Low	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			
	05-025	2	Thomasville Furniture	1389	Park Center Drive	Low	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
41	05-030	1	Hill Drive	331	Hill Dr	Medium	2006-0085713	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Y			
	05-030	2	Hill Drive	339	Hill Dr	Medium	2006-0085713	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Y			
	05-030	3	Hill Drive	327	Hill Dr	Medium	2006-0085713	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Y			
	05-030	4	Hill Drive	335	Hill Dr	Medium	2006-0085713	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Y			
42	05-031	1	Santa Fe Walk	202	W. Connecticut Ave.	Medium	2006-0519582	Buena Vista Creek	TC-32	Bioretention	Bioretention Area	Y			
43	05-041	1	Warmland Estates	1434	Grandview Rd	Low	2006-0702727	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond	Y			
44	05-049	1	Sycamore Point Business Park	1315	Hot Spring Way	Low	2006-0560910	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Y			
	05-049	2	Sycamore Point Business Park	1315	Hot Spring Way	Low	2006-0560910	Agua Hedionda	MP-51	Vortex Separator	CDS Inline Treatment				
45	06-006	1	3181 Business Park Dr.	3181	Business Park Drive	Low	2006-0729182	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond	Y			
46	06-008	1	Palomar Unitarian Church	1600	Buena Vista Drive	Medium	2008-0643794	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			
47	06-009	1	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	2006-0375316	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Y	05/31/2012	N	
	06-009	2	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	2006-0375316	Buena Vista Creek	MP-50	Wet Vault	Baffel Box		05/31/2012	N	

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	06-009	3	Vista Village Famous Daves BBQ	307	Vista Village Dr	High	2006-0375316	Buena Vista Creek	MP-50	Wet Vault	Baffel Box		05/31/2012	N	
48	06-010/29	1	Gordon Property		Straton Dr/Madison Ln	Low	2007-0264962	Loma Alta	TC-30	Vegetated Swale	Grassy Swale	Y			
49	06-012/13	1	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale	Y	05/31/2012	N	
	06-012/13	2	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/31/2012	N	
	06-012/13	3	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/31/2012	N	
	06-012/13	4	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/31/2012	N	
	06-012/13	5	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/31/2012	N	
	06-012/13	6	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-50	Wet Vault	Bio-Filter		05/31/2012	N	
	06-012/13	7	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale		05/31/2012	Y	Scouring/Erosion exists and inadequate vegetation
	06-012/13	8	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	TC-30	Vegetated Swale	grassy swale		05/31/2012	N	
	06-012/13	9	Breeze Hill Promenade	635 S	Melrose Dr	High	N/A	Agua Hedionda/ Buena Vista Creek	MP-52	Drain Insert	Fossil Filter Insert		05/31/2012	Y	Trash/Debris Accumulation
50	06-025	1	Vista Kidney Dialysis Center	950	Hacienda Dr	High	2007-0023196	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Y	05/02/2012	N	
	06-025	2	Vista Kidney Dialysis Center	950	Hacienda Dr	High	2007-0023196	Buena Vista Creek	TC-22	Extended Detention Basin	Detention Pond		05/02/2012	N	
51	06-038	1	Sycamore Medical Center	902	SycamoreAve	Medium	2006-0669762	Agua Hedionda	MP-52	Drain Insert	Fossil Filter Insert	Y			
52	06-048	1	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Box Inlet Filter	start FY 12-13			
	06-048	2	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	TC-22	Extended Detention Basin	Detention Basin				
	06-048	3	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	TC-30	Vegetated Swale	Vegetated Swale				
	06-048	4	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	5	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	6	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	SD-20	Porous Pavement	Porous Concrete				
	06-048	7	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	SD-20	Porous Pavement	Porous Concrete				
	06-048	8	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Box Inlet Filter				
	06-048	9	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	SD-20	Porous Pavement	Porous Concrete				
	06-048	10	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	11	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	SD-20	Porous Pavement	Porous Concrete				

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	06-048	12	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	13	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	SD-20	Porous Pavement	Porous Concrete				
	06-048	14	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	SD-20	Porous Pavement	Porous Concrete				
	06-048	15	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	16	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	TC-22	Extended Detention Basin/Wetlands Mitigation	Wetlands Mitigation				
	06-048	17	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	18	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	19	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	20	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	21	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Curb Inlet Filter				
	06-048	22	North Coast Church	2405	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Box Inlet Filter				
	06-048	23	North Coast Church	2411	N. Santa Fe Ave	Medium	2007-0793183	San Luis Rey	MP-52	Drain Insert	Box Inlet Filter				
53	06-072	1	Fortune Business Park	2545	Fortune Way	Low	N/A	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale	Y			
	06-072	2	Fortune Business Park	2545	Fortune Way	Low	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	06-072	3	Fortune Business Park	2545	Fortune Way	Low	N/A	Agua Hedionda	TC-30	Vegetated Swale	Vegetated Swale				
54	07-002-A	1	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y	05/22/2012	N	
	07-002-A	2	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale		05/22/2012	N	
	07-002-A	3	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Insert	Curb outlet		05/22/2012	Y	Debris
	07-002-A	4	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale		05/22/2012	N	
	07-002-A	5	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	07-002-A	6	Shadowridge Business Ctr-2	2065	Thibido Rd	HIgh	2008-0343836	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale		05/22/2012	N	
	07-002-A	11	Shadowridge Business Ctr-2	2065	Shadowridge Dr	HIgh	2008-0343836	Agua Hedionda	--	Underground Det. Sys	180' x 60" Dia. Detention Pipe		05/22/2012	N	
	07-002-B	7	Shadowridge Business Ctr-2	760	Shadowridge Dr	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Insert	Curb Inlet	Y	05/22/2012	N	
	07-002-B	8	Shadowridge Business Ctr-2	760	Shadowridge Dr	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Insert	Curb Inlet		05/22/2012	N	
	07-002-B	9	Shadowridge Business Ctr-2	760	Shadowridge Dr	HIgh	2008-0343836	Agua Hedionda	MP-52	Drain Insert	Catch Basin		05/22/2012	N	
55	07-003	1	D'Agostini- renamed Soapy Joes formerly Fast-N-Clean	1661 W	Vista Way	Low	N/A	Buena Vista Creek	TC-30	Vegetated Swale	Gravel	Y			
	07-003	2	Wilborn (Fast-n-Clean Carwash)	1661 W	Vista Way	Low	N/A	Buena Vista Creek	TC-30	Vegetated Swale	Gravel				
56	07-007	1	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda		Underground Det. Sys	Detention Pipes	Y			
	07-007	2	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda	MP-51	Vortex Separator	CDS Inline Treatment				
	07-007	3	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda		Undeground Det. Sys	Detention Pipes				
	07-007	4	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda	SD-20	Pervious Pavement	Porous Concrete				
	07-007	5	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda	SD-20	Pervious Pavement	Porous Concrete				
	07-007	6	Melrose Town Place	2291	S. Melrose Dr.	Medium	N/A	Agua Hedionda		Undeground Det. Sys	Detention Pipes				
57	07-008	1	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			
	07-008	2	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				

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	07-008	3	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain				
	07-008	4	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond				
	07-008	5	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond				
	07-008	6	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond				
	07-008	7	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain				
	07-008	8	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	07-008	9	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond				
	07-008	10	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain				
	07-008	11	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	07-008	12	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain				
	07-008	13	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-22	Extended Detention Basin	Detention Pond				
	07-008	14	Premier Crossing Condos	2301 S	Melrose Dr	Medium	N/A	Agua Hedionda	TC-30	Vegetated Swale	Sparse Veg w/ under drain				
58	07-020	1	24 hour fitness	324	Sycamore Ave	Medium		Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			
	07-020	2	24 hour fitness	324	Sycamore Ave	Medium		Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	07-020	3	24 hour fitness	324	Sycamore Ave	Medium		Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	07-020	4	24 hour fitness	324	Sycamore Ave	Medium		Agua Hedionda	MP-52	Drain insert	Catch Basin				
	07-020	5	24 hour fitness	324	Sycamore Ave	Medium		Agua Hedionda	MP-52	Drain insert	Curb Inlet				
	07-020	6	24 hour fitness	324	Sycamore Ave	Medium		Agua Hedionda	MP-52	Drain insert	Curb Inlet				
	07-020	7	24 hour fitness	324	Sycamore Ave	Medium		Agua Hedionda	--	Underground Det. Sys	48" Pipe				
	07-020	8	24 hour fitness	324	Sycamore Ave	Medium		Agua Hedionda	--	Bio-filter	gravel swale				
59	07-023	1	Hacienda Professional Center	465	La Tortuga Dr	Low	2007-0706380	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Y			
	07-023	2	Hacienda Professional Center	465	La Tortuga Dr	Low	2007-0706380	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale				
	07-023	3	Hacienda Professional Center	465	La Tortuga Dr	Low	2007-0706380	Buena Vista Creek	--	Underground Det. Sys					
60	07-026	1	Target	3150	Business Park Drive	Medium	2009--253344	Agua Hedionda	MP-40	Media Filter	Sand Filter	Y			
	07-026	2	Target	3150	Business Park Drive	Medium	2009--253344	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale				
	07-026	3	Target	3150	Business Park Drive	Medium	2009--253344	Agua Hedionda	--	Underground Det. Sys					
61	07-039	1	Dowsing Building	2185	La Mirada Dr	Medium	2009-0188564	Agua Hedionda	MP-52	Drain Insert	Grate Inlet	Y	05/17/2012	N	
	07-039	2	Dowsing Building	2185	La Mirada Dr	Medium	2009-0188564	Agua Hedionda	MP-52	Drain Insert	Grate Inlet		05/17/2012	N	
	07-039	3	Dowsing Building	2185	La Mirada Dr	Medium	2009-0188564	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale		05/17/2012	N	
	07-039	4	Dowsing Building	2185	La Mirada Dr	Medium	2009-0188564	Agua Hedionda	MP-52	Drain Insert	Grate Inlet		05/17/2012	N	
	07-039	5	Dowsing Building	2185	La Mirada Dr	Medium	2009-0188564	Agua Hedionda	--	Undeground Det. Sys	48 Inch pipe		05/17/2012	N	
62	07-041	1	Verizon	1330	Business Park Drive	Low	2008-0305305	Agua Hedionda	TC-30	Vegetated Swale	Grassy Swale	Y			
	07-041	2	Verizon	1330	Business Park Drive	Low	2008-0305305	Agua Hedionda	TC-22	Extended Detention Basin	Detention Basin				
63	08-007	1	Vista Community Clinic	134	Grapevine Road	Low	2008-0423454	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale	Y			

# of Sites	GP or Drawing #	BMP loc ID	Project Name	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due August 8, 2011) Annual Certification Form Received (Y/N)	Inspection Date	Needs Corrective Action (Y/N)	Describe
	08-007	2	Vista Community Clinic	134	Grapevine Road	Low	2008-0423454	Buena Vista Creek	TC-30	Vegetated Swale	Grassy Swale				
64	08-011	1	Parcel G of PM 16222	2633	Progress St.	Low	2009-0258250	Agua Hedionda	TC-30	Bio-Retention	Grassy Swale	Y			
	08-011	2	Parcel G of PM 16222	2633	Progress St.	Low	2009-0258250	Agua Hedionda	TC-30	Bio-Retention	Grassy Swale				
	08-011	3	Parcel G of PM 16222	2633	Progress St.	Low	2009-0258250	Agua Hedionda	TC-30	Bio-Retention	Grassy Swale				
65	08-017	1	Oakridge Business Park	2410	Birch Street	Low	2008-0643795	Agua Hedionda	TC-30	Vegetated Swale	Bio-Filter	Y			
	08-017	2	Oakridge Business Park	2410	Birch Street	Low	2008-0643795	Agua Hedionda	SD-20	Porous Pavement	Pavers				
66	09-003	1	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	TC-30	Vegetated Swale	Bio-Filtration Swale	Y			
	09-003	2	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	MP-52	Drain Insert	Square Catch Basin Insert				
	09-003	3	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	MP-52	Drain Insert	Square Catch Basin Insert				
	09-003	4	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	MP-52	Drain Insert	Square Catch Basin Insert				
	09-003	5	Scott Street Park	2980	Scott Street	Medium	2009-0235781	Agua Hedionda	MP-52	Drain Insert	Square Catch Basin Insert				
67	09-004	1	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek		Underground Detention System		Y	05/24/2012	N	
	09-004	2	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek		Underground Detention System			05/24/2012	N	
	09-004	3	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek	SD-20	Pervious Pavement	Pavers		05/24/2012	N	
	09-004	4	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek	SD-20	Pervious Pavement	Pavers		05/24/2012	N	
	09-004	5	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek	MP-52	Drain Inserts	Catch Basin Inserts		05/24/2012	N	
	09-004	6	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek	MP-52	Drain Inserts	Catch Basin Inserts		05/24/2012	N	
	09-004	7	Sonic Drive-In	101	Main Street	High	2009-0394935	Buena Vista Creek	MP-52	Drain Inserts	Catch Basin Inserts		05/24/2012	N	
68	09-007	1	North County RV & Boat Storage Yard	1551	Sycamore Ave	Medium	2009-0409608	Agua Hedionda	TC-10	Infiltration Trench	Strip Sand Filter	Y			
	09-007	2	North County RV & Boat Storage Yard	1551	Sycamore Ave	Medium	2009-0409609	Agua Hedionda	MP-52	Drain Inserts	Catch Basin Inserts				
	09-007	3	North County RV & Boat Storage Yard	1551	Sycamore Ave	Medium	2009-0409610	Agua Hedionda	MP-52	Drain Inserts	Catch Basin Inserts				
69	09-010	10	Comerica Bank	625	S. Melrose Dr.	Medium	None	Buena Vista Creek	MP-52	Drain Inserts	Curb Inlet	Y	05/31/2012	N	
	09-010	11	Comerica Bank	625	S. Melrose Dr.	Medium	None	Buena Vista Creek	MP-52	Drain Inserts	Curb Inlet		05/31/2012	N	
70	10-003	1	Vista Kingdom Hall	409	W. Bobier Dr.	Medium	2010-0503776	Buena Vista Creek	TC-22	Detention Basin	Detention Basin	start FY 12-13			
	10-003	2	Vista Kingdom Hall	409	W. Bobier Dr.	Medium	2010-0503776	Buena Vista Creek	TC-11	Infiltration Basin	Small Infiltration Basin				
	10-003	3	Vista Kingdom Hall	409	W. Bobier Dr.	Medium	2010-0503776	Buena Vista Creek	TC-11	Infiltration Basin	Small Infiltration Basin				
71	10-009	1	Vista Community Clinic	1000	Vale Terrace Dr.	Low	2010-0580054	Buena Vista Creek	TC-11	Infiltration Basin	Infiltration Basin w/ underground Detention				
	10-009	2	Vista Community Clinic	1000	Vale Terrace Dr.	Low	2010-0580054	Buena Vista Creek	TC-11	Infiltration Basin	Biofiltration Basin				
72	10-015	1	St. Francis of Assisi (Phase 1)	160	Rollins Way	Low	2011-0394623	Buena Vista Creek	TC-11	Infiltration Basin	Detention Basin/Infiltration Pond				
73	3727	1	Huntalas Middle School (Rancho Minerva)	2245	Foothill Drive	Low	None	Buena Vista Creek	MP-51	Vortex Separator	Stormceptor	Y			
74	96-055	1	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet	Y	05/12/2012	N	
	96-055	2	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/12/2012	N	
	96-055	3	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-50	Wet Vault	Oil Water Seperator		05/12/2012	N	
	96-055	4	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/12/2012	N	
	96-055	5	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Box Inlet		05/12/2012	N	
	96-055	6	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Box Inlet		05/12/2012	N	
	96-055	7	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Box Inlet		05/12/2012	N	
	96-055	8	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Trench Drain		05/12/2012	N	
	96-055	9	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Box Inlet		05/12/2012	N	

# of Sites	GP or Drawing #	BMP loc ID	Project Name	Project Address	Project Street	TTWQ Priority	Maint. Agreement, if provided	Watershed (HA)	CASQA BMP ID	BMP Type	BMP Detail	(Due August 8, 2011) Annual Certification Form Received (Y/N)	Inspection Date	Needs Corrective Action (Y/N)	Describe
	96-055	10	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/12/2012	N	
	96-055	11	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/12/2012	N	
	96-055	12	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/12/2012	N	
	96-055	13	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/12/2012	N	
	96-055	14	Costco	1755	Hacienda Drive	High	None	Buena Vista Creek	MP-52	Drain Insert	Curb Inlet		05/12/2012	N	

APPENDIX A-5
MUNICIPAL TCBMP INVENTORY
AND
INSPECTIONS SUMMARY

Appendix A-5 Municipal TCBMP Inventory and Inspections Summary

# of Sites	GP or DWG #	SHEET_NO	BMP No.	PROJECT AREA	BMP LOCATION	LAT_DEG	LONG_DEG	CASQA ID	BMP TYPE	MANUFACTURER	MODEL	WATERSHED	TTWQ	RESPONSIBLE PARTY	INSPECTION DATE	CORRECTIVE ACTIONS NEDDED
1	N/A	N/A	1	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	Near Tennis Courts in Park	33.2025667912	-117.2354000000	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista	High	City of Vista/Downstream Serv's	06/06/2012	No
	GP 08-009	10	2	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	Most northern infiltration trench on hill	33.2110499382	-117.2221000000	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista/PW's	06/06/2012	No
	GP 08-009	10	3	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #2	33.2109179955	-117.2222000000	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista/PW's	06/06/2012	No
	GP 08-009	10	4	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #3	33.2104926961	-117.2222000000	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista/PW's	06/06/2012	No
	GP 08-009	10	5	Brengle Terrace Park and Moonlight Amphitheatre (1200 & 1250 Vale Terrace Dr.)	On hill south of BMP #4	33.2100090154	-117.2216000000	TC-10	Infiltration Trench	N/A	N/A	Buena Vista		City of Vista/PW's	06/06/2012	No
2	N/A	N/A	1	City of Vista Library (700 Eucalyptus Ave)	North Parking Lot Area	33.2023295426	-117.2332000000	N/A	***Drain Insert	FloGard	FGP-12F	Buena Vista	Medium	City of Vista/Downstream Serv's	06/14/2012	No
	N/A	N/A	2	City of Vista Library (700 Eucalyptus Ave)	Central Parking Lot Area	33.2021285207	-117.2332000000	MP-52	Drain Insert	FloGard	FGP-12F	Buena Vista		City of Vista/Downstream Serv's	06/14/2012	No
	N/A	N/A	3	City of Vista Library (700 Eucalyptus Ave)	Southern Parking Lot Area	33.2019864318	-117.2333000000	MP-52	Drain Insert	FloGard	FGP-24CI/48CI	Buena Vista		City of Vista/Downstream Serv's	06/14/2012	No
3	GP 07-036	9/ C4	1	Fire Station 5 (2008 S. Melrose Dr.)	East of Building	33.1555132107	-117.2421000000	TC-30	Vegetated Swale	N/A	N/A	Agua Hedionda	High	City of Vista/Fire Dept	06/14/2012	No
	GP 07-036	8/ C3	2	Fire Station 5 (2008 S. Melrose Dr.)	Parking lot east of Building	33.1556497588	-117.2420000000	N/A	Porous Concrete	N/A	N/A	Agua Hedionda		City of Vista/PW's	06/14/2012	No
	GP 07-036	10/ C5	3	Fire Station 5 (2008 S. Melrose Dr.)	West end of Parking Lot	33.1557366447	-117.2420000000	N/A	*Detention Pipes	N/A	N/A	Agua Hedionda		City of Vista/PW's	06/14/2012	No
4	GP 07-035	9/ C3	1	Fire Station 6 (651 E. Vista Way)	Parking lot close to E. Vista Way	33.2062691177	-117.2361000000	N/A	Porous Concrete	N/A	N/A	Buena Vista	High	City of Vista/PW's	06/14/2012	No
	GP 07-035	12/ C5	2	Fire Station 6 (651 E. Vista Way)	North end of wildwood park	33.2060363147	-117.2361000000	N/A	Infiltration Basin	N/A	N/A	Buena Vista		City of Vista/Fire Dept	06/14/2012	No
5	D 3584	CI-10	1	Vista Village (Multiple Locations)	Beginning of Creekwalk	33.1986504797	-117.2450000000	MP-51	Vortex Separator	CDS Technologies	FSW 50-42	Buena Vista	High	City of Vista/PW's	06/14/2012	**Yes**
	N/A	N/A	2	Vista Village (Multiple Locations)	Wave Park Entrance	33.1997241602	-117.2460000000	MP-52	Drain Insert	FloGard	FF-1836SD	Buena Vista		City of Vista/Downstream Serv's	06/14/2012	No
	GP 99-019	SD-5	3	Vista Village (Multiple Locations)	Olive Ave/Vista Village Drive	33.2017044635	-117.2454000000	MP-51	Vortex Separator	CDS Technologies	FSW 20-20	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 99-019	SD-4	4	Vista Village (Multiple Locations)	Access road behind Famous Daves	33.1992016544	-117.2471000000	MP-51	Vortex Separator	CDS Technologies	FSW 50-50	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 99-019	SD-7	5	Vista Village (Multiple Locations)	Olive Ave/Goeting Way	33.2033770000	-117.2456000000	MP-51	Vortex Separator	CDS Technologies	FSW 20-20	Buena Vista		City of Vista/PW's	06/14/2012	No
	N/A	N/A	6	Vista Village (Multiple Locations)	At Staples, north side of Lado De Loma	33.1966450000	-117.2477000000	MP-52	Drain Insert	N/A	N/A	Buena Vista		City of Vista/Downstream Serv's	06/14/2012	No
	N/A	N/A	7	Vista Village (Multiple Locations)	At Staples, south side of Lado De Loma	33.1965160000	-117.2476000000	MP-52	Drain Insert	N/A	N/A	Buena Vista		City of Vista/Downstream Serv's	06/14/2012	No
6	DWG-3908	9	1	Vons/Vista Shopping Center	Right side of entrance to parking lot from Escondido	33.1951000000	-117.2337000000	TC-32	Bioretention	N/A	N/A	Buena Vista	Medium	City of Vista	06/06/2012	No
	DWG-3908	9	2	Vons/Vista Shopping Center	Left side of entrance to parking lot from Escondido	33.1952000000	-117.2337000000	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	06/06/2012	No
	DWG-3908	9	3	Vons/Vista Shopping Center	Further left of entrance after 5 parking spots	33.1953000000	-117.2337000000	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	06/06/2012	No
	DWG-3908	9	4	Vons/Vista Shopping Center	Middle of parking lot, closer to entrance by Escondido	33.1953000000	-117.2335000000	TC-32	Bioretention	N/A	N/A	Buena Vista		City of Vista	06/06/2012	No
7	DWG-3795	9	1	North County Ford Storage Lot	South side of Lado de Loma on bottom of hill	33.1966000000	-117.2469000000	TC-30	Vegetated Swale	N/A	N/A	Buena Vista	Low	City of Vista/PW's	06/06/2012	No
8	GP 08-028	BMP Exhibit	1	Vista Civic Center (200 Civic Center Drive)	North Visitor parking	33.2026080000	-117.2334670000	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista	Medium	City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	2	Vista Civic Center (200 Civic Center Drive)	Central Parking Lot Area (City vehicles)	33.2025580000	-117.2337720000	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	3	Vista Civic Center (200 Civic Center Drive)	Central Parking (City Vehicles)	33.2024690000	-117.2337920000	SD-20	Porous Concrete	N/A	N/A	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	4	Vista Civic Center (200 Civic Center Drive)	Southern Parking Lot Area (Employee Vehicles)	33.2022420000	-117.2335810000	TC-31	Vegetated Buffer Strip	N/A	N/A	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	5	Vista Civic Center (200 Civic Center Drive)	Southern Parking Lot Area (Employee Vehicles)	33.2021920000	-117.2336860000	SD-20	Porous Concrete	N/A	N/A	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	6	Vista Civic Center (200 Civic Center Drive)	Community Park	33.2034330000	-117.2349940000	TC-22	Detention Basin	NA	NA	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	7	Vista Civic Center (200 Civic Center Drive)	Upper West Lot	33.2037610000	-117.2349940000	SD-20	Porous Concrete	NA	NA	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	8	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido	33.2033360000	-117.2351560000	MP-51	Stormfilter	NA	NA	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	9	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido (eastern most)	33.2034060000	-117.2353670000	SD-20	Porous Concrete	NA	NA	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	10	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido (western most)	33.2031280000	117.2356970000	SD-20	Porous Concrete	NA	NA	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	11	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido (eastern most)	33.2034690000	-117.2352940000	TC-31	Vegetated Buffer Strip	NA	NA	Buena Vista		City of Vista/PW's	06/14/2012	No
	GP 08-028	BMP Exhibit	12	Vista Civic Center (200 Civic Center Drive)	Public Parking @ Alta Vista/Escondido (western most)	33.2032420000	-117.2356140000	TC-31	Vegetated Buffer Strip	NA	NA	Buena Vista		City of Vista/PW's	06/14/2012	No
9	GP 09-0001	BMP Exhibit	1	Vista Sports Park, 555 W. Bobier Dr.	South west of artificial turf/ North west of parking lot	33.2253280000	-117.258286	MP-52	Curb Inlet Filter	Bio Clean	N/A	Lower San Luis Rey	Medium	City of Vista/Downstream Serv's	06/06/2012	No
	GP 09-0001	BMP Exhibit	2	Vista Sports Park, 555 W. Bobier Dr.	West end of Parking Lot	33.2257920000	-117.258356	MP-52	Curb Inlet Filter	Bio Clean	N/A	Lower San Luis Rey		City of Vista/Downstream Serv's	06/06/2012	No
	GP 09-0001	BMP Exhibit	3	Vista Sports Park, 555 W. Bobier Dr.	South West of Parking Lot	33.2259720000	-117.257894	MP-52	Curb Inlet Filter	Bio Clean	N/A	Lower San Luis Rey		City of Vista/Downstream Serv's	06/06/2012	No

*Underground detention system designed to attentuate peak flows from site; not designed as a treatment control BMP

*** BMP removed during renovations of library in May 2010.

APPENDIX B-1
FY 2011-12 CONSTRUCTION INVENTORY AND INSPECTIONS SUMMARY

APPENDIX B-1 FY 2011-12 CONSTRUCTION INVENTORY AND INSPECTIONS SUMMARY

Site ID	Project	Address	Priority	Start Date	End Date or Last Date Inspected in FY 2012	Wet Season			Dry Season			Total Inspections for FY 2012
						Active Weeks	Required Inspections	Stormwater Inspections	Active Months	Required Inspections	Stormwater Inspections	
677	56 Townhomes	719 Copper Dr., vista, CA 92083	High	07/20/2010	06/07/2012	30	15	30	5	5	5	35
689	14 homes - Willowen Ridge	2261 Edgehill Rd., Vista, CA, 92084	High	07/19/2010	06/06/2012	30	15	28	5	5	5	33
690	Condos (42) Oak Drive Villas	1375 Oak Dr., Vista, CA, 92084	Medium	07/20/2010	06/05/2012	30	7	7	5	5	5	12
723	Vista Sports Park	555 W. Bobier Dr., Vista, CA 92083	High	07/15/2010	07/13/2011	0	0	0	1	1	2	2
729	Parking Lot/McAndrews Residence	1232 Tower D., Vista, CA 92083	Low	07/15/2010	06/28/2012	11	2	3	2	2	2	5
740	SFD- Hammond Residence	659 Rudd Rd., Vista, CA 92084	Medium	07/15/2010	07/19/2011	0	0	0	1	1	1	1
743	Gordon Properties	1025 Cielita Linda, Vista, CA 92083	High	07/15/2010	06/05/2012	30	15	30	5	5	5	35
746	SFR (see site ID #66)	721 Oceanview, Vista, CA 92084	High	07/21/2010	06/28/2012	30	15	30	5	5	5	35
753	Watt Communities	1045 Sycamore Ave., Vista CA 92091	High	07/15/2010	01/11/2012	15	7	15	3	3	3	18
754	Grapevine Rd Improvement - CIP 8018	Grapevine Rd	Low	07/15/2010	07/21/2011	0	0	0	1	1	1	1
759	Vista Community Clinic	1020 Vale Terrace Dr.	High	06/07/2011	01/11/2012	15	7	15	3	3	3	18
760	Vista Kingdom Hall Church	409/427 Bobier Dr	Medium	07/20/2011	07/20/2011	0	0	0	1	1	1	1
761	Hyatt Place Hotel	2645 S. Melrose Dr	High	04/28/2011	06/06/2012	30	15	30	5	5	5	35
765	Lopez residence	1671 Dawson Dr	Medium	01/14/2011	06/28/2012	30	7	7	5	5	5	12
766	E. Vista Way overlay	E. Vista Way	Medium	04/12/2011	08/18/2011	0	0	0	2	2	2	2
767	Townsite Drive Improvements	Townsite Dr	Low	02/02/2011	09/07/2011	0	0	0	3	3	3	3
768	HUD House - Anza	1656 Anza	Low	02/03/2011	06/28/2012	30	7	7	5	5	5	12
771	St Francis Church	160 Rollins Way	High	08/17/2011	04/05/2012	27	13	27	2	2	2	29
772	McClelland Residence	217 Lyon Cr.	Low	08/18/2011	12/19/2011	12	3	3	2	2	2	5
773	Mulvihill Residence	212 Acropolis Way	Low	09/08/2011	06/04/2012	30	7	7	3	3	3	10
774	Whiteman Residence	2507 Walinca Way	Medium	09/26/2011	03/16/2012	24	6	6	1	1	1	7
775	1st Samoan Congregation Christian Church	745 Avenito de Benito Juarez	Medium	09/26/2011	04/18/2012	31	7	6	1	1	1	7
776	Webb Residence	1764 Mesa Verde Dr., Vista, CA	Low	10/11/2011	04/23/2012	28	7	7	0	0	0	7
777	Olive RV Resort Park; Gibbs Project	713 Olive Ave	Medium	10/18/2011	06/06/2012	27	6	7	2	2	2	9
778	Pina Lane, "Polvera's Residence"	450 Pina Lane	Low	11/07/2011	04/18/2012	25	6	6	0	0	0	6
779	Maryland Drive & Olive Ave Curb, gutter, sidewalk	Maryland Dr & Olive Ave	Medium	12/20/2011	06/07/2012	19	4	5	2	2	2	7
780	Buena Creek Pump Station	Melrose Dr & Dawson Dr	Medium	03/06/2012	06/01/2012	9	2	2	2	2	3	5
781	2450 S Melrose Drive	2450 S. Melrose Dr	High	04/12/2012	06/28/2012	3	3	4	2	2	2	6
782	S. Santa Fe Detention Basin	Monte Vista & S. Santa Fe Ave.	High	04/05/2012	06/27/2012	4	4	4	2	2	9	13
786	204 & 208 Acropolis Way & 2424 Catalina Ave	2424 Catalina & 204/208 Acropolis	Low	06/05/2012	06/05/2012	0	0	0	1	1	1	1
787	Street Rehab & Resurface	Various Locations	Low	05/10/2012	06/28/2012	0	0	0	2	2	2	2
											Total	**374**

APPENDIX B-2
FY 2011-12 CONSTRUCTION INSPECTIONS SUMMARY

Project Name: 56 Townhomes	**Priority:** High	**Summary of Inspection Findings:**
Address: 719 Copper Dr., Vista, CA	**Wet Inspections:** 30	No issues.
Site ID#: 677	**Dry Inspections:** 5	
Site Size (Acres): 6.1	**Total Inspections:** 35	
Grading Plan #: 05-020	**Start Date:** 7/20/10	
Inspector: Kurt Groscup	**End Date:** 6/7/12	
Project Name: 14 Homes-Willowen Ridge	**Priority: High**	**Summary of Inspection Findings:**
Address: 2261 Edgehill Rd., Vista, CA 92084	**Wet Inspections:** 28	No issues.
Site ID#: 689	**Dry Inspections:** 5	
Site Size (Acres): 8.74	**Total Inspections:** 33	
Grading Plan #: 06-047	**Start Date: 7**/19/10	
Inspector: Kurt Groscup	**End Date:** 6/6/12	
Project Name: Condos (42) Oak Drive Villas	**Priority:** Medium	**Summary of Inspection Findings:**
Address: 1375 Oak Dr., Vista, CA, 92084	**Wet Inspections: 7**	No issues.
Site ID#: 690	**Dry Inspections:** 5	
Site Size (Acres): 8.74	**Total Inspections:** 12	
Grading Plan #: 10-007	**Start Date:** 7/20/10	
Inspector: Kurt Groscup	**End Date:** 6/5/12	
Project Name: Vista Sports Park	**Priority:** High	**Summary of Inspection Findings:**
Address: 555 W. Bobier Dr., Vista, CA 92083	**Wet Inspections:** 0	No issues.
Site ID#: 723	**Dry Inspections:** 2	
Site Size (Acres): 47	**Total Inspections:** 2	
Grading Plan #: 07-022	**Start Date:** 7/15/10	
Inspector: S. Rytell	**End Date:** 7/13/11	
Project Name: Parking Lot/McAndrews Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1232 Tower Dr., Vista, CA	**Wet Inspections:** 2	No issues.
Site ID#: 729	**Dry Inspections:** 3	
Site Size (Acres): 0.7	**Total Inspections:** 5	
Grading Plan #: 07-011	**Start Date:** 7/15/10	
Inspector: S. Rytell	**End Date:** 6/28/12	

Project Name: SFD- Hammond Residence	**Priority:** Medium	**Summary of Inspection Findings:**
Address: 659 Rudd Rd., Vista CA 92084	**Wet Inspections:** 0	No issues.
Site ID#: 740	**Dry Inspections:** 1	
Site Size (Acres): 4.12	**Total Inspections:** 1	
Grading Plan #: 09-006	**Start Date:** 7/15/10	
Inspector: S. Rytell	**End Date:** 7/19/11	
Project Name: Gordon Properties	**Priority: High**	**Summary of Inspection Findings:**
Address: 1025 Cielita Linda, Vista, CA 92083	**Wet Inspections:** 30	Requierd silt fence to be repaired. Resolved.
Site ID#: 743	**Dry Inspections:** 5	
Site Size (Acres): 20	**Total Inspections:** 35	
Grading Plan #: 07-004, 06-010	**Start Date:**7/15/10	
Inspector: Kurt Groscup	**End Date:** 6/5/12	
Project Name: SFR (see site ID #66)	**Priority:** High	**Summary of Inspection Findings:**
Address: 721 Oceanview, Vista, CA 92084	**Wet Inspections:** 30	Silt fence and visquine needed repairings multiple times, but were taken care of.
Site ID#: 746	**Dry Inspections:** 5	
Site Size (Acres): .37	**Total Inspections:** 35	
Grading Plan #: 09-019	**Start Date:** 7/21/10	
Inspector: S. Rytell	**End Date:** 6/28/12	
Project Name: Watt Communities	**Priority:** High	**Summary of Inspection Findings:**
Address: 1025 Sycamore Ave., Vista CA 92091	**Wet Inspections:** 15	No issues.
Site ID#: 753	**Dry Inspections:** 3	
Site Size (Acres): 4.0	**Total Inspections:** 18	
Grading Plan #: 06-011, 05-053	**Start Date: 7/15/10**	
Inspector: Kurt Groscup	**End Date:** 1/11/12	
Project Name: Grapevine Rd Improvement - CIP 8018	**Priority:** Low	**Summary of Inspection Findings:**
Address: Grapevine Rd	**Wet Inspections:** 0	No issues.
Site ID#: 754	**Dry Inspections:** 1	
Site Size (Acres): .40	**Total Inspections:** 1	
Grading Plan #: none - CIP 8018	**Start Date: 7/15/10**	
Inspector: S. Rytell	**End Date:** 1/11/12	

Project Name: Vista Community Clinic	**Priority:** High	**Summary of Inspection Findings:**
Address: 1020 Vale Terrace Dr.	**Wet Inspections:** 15	No issues.
Site ID#: 759	**Dry Inspections:** 3	
Site Size (Acres): 0.9	**Total Inspections:** 18	
Grading Plan #: 10-009	**Start Date: 6/7/11**	
Inspector: Kurt Groscup	**End Date:** 1/11/12	
Project Name: Vista Kingdom Hall Church	**Priority: Medium**	**Summary of Inspection Findings:**
Address: 409/427 Bobier Dr	**Wet Inspections:** 0	No issues.
Site ID#: 760	**Dry Inspections:** 1	
Site Size (Acres): 3	**Total Inspections:** 1	
Grading Plan #: 10-003	**Start Date:**6/17/11	
Inspector: S. Rytell	**End Date:** 7/20/11	
Project Name: Hyatt Place Hotel	**Priority:** High	**Summary of Inspection Findings:**
Address: 2645 S. Melrose Dr	**Wet Inspections:** 30	No issues.
Site ID#: 761	**Dry Inspections:** 5	
Site Size (Acres): 2.6	**Total Inspections:** 35	
Grading Plan #: 08-026	**Start Date:** 4/28/11	
Inspector: S. Rytell	**End Date:** 6/6/12	
Project Name: Lopez Residence	**Priority:** Medium	**Summary of Inspection Findings:**
Address: 1671 Dawson Dr	**Wet Inspections:** 7	Minor repairs needed for silt fence. Resolved.
Site ID#: 765	**Dry Inspections:** 5	
Site Size (Acres): 1.2	**Total Inspections:** 12	
Grading Plan #: 10-013	**Start Date:** 1/14/11	
Inspector: S. Rytell	**End Date:** 6/28/12	
Project Name: E. Vista Way Overlay	**Priority:** Medium	**Summary of Inspection Findings:**
Address: E. Vista Way	**Wet Inspections:** 0	No issues.
Site ID#: 766	**Dry Inspections:** 2	
Site Size (Acres): .29	**Total Inspections:** 2	
Grading Plan #: none - CIP 8155	**Start Date:** 4/12/11	
Inspector: S. Rytell	**End Date:** 8/18/11	

Project Name: Townsite Drive Improvements	**Priority:** Low	**Summary of Inspection Findings:**
Address: Townsite Dr	**Wet Inspections: 0**	No issues.
Site ID#: 767	**Dry Inspections:** 3	
Site Size (Acres): .24	**Total Inspections:** 3	
Grading Plan #: none - CIP 8126	**Start Date:** 4/12/11	
Inspector: Kurt Groscup	**End Date:** 8/18/11	
Project Name: HUD House Anza	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1656 Anza	**Wet Inspections:** 7	Minor repairs needed for silt fence. Resolved.
Site ID#: 768	**Dry Inspections:** 5	
Site Size (Acres): .82	**Total Inspections:** 12	
Grading Plan #: 07-017	**Start Date:** 2/3/11	
Inspector: S. Rytell	**End Date:** 6/28/12	
Project Name: St Francis Church	**Priority:** High	**Summary of Inspection Findings:**
Address: 160 Rollins Way	**Wet Inspections:** 27	No issues.
Site ID#: 771	**Dry Inspections:** 2	
Site Size (Acres): 4.27	**Total Inspections:** 29	
Grading Plan #: 10-015	**Start Date:** 8/17/11	
Inspector: S. Rytell	**End Date:** 4/5/12	
Project Name: McClelland Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 217 Lyon Cr.	**Wet Inspections:** 3	No issues.
Site ID#: 772	**Dry Inspections:** 2	
Site Size (Acres): .04	**Total Inspections:** 5	
Grading Plan #: 11-006	**Start Date:**8/18/11	
Inspector: S. Rytell	**End Date:** 12/19/11	
Project Name: Mulvihill Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 212 Acropolis	**Wet Inspections: 7**	No issues.
Site ID#: 773	**Dry Inspections:** 3	
Site Size (Acres): .43	**Total Inspections:** 10	
Grading Plan #: 11-007	**Start Date:** 9/8/11	
Inspector: Kurt Groscup	**End Date:** 6/4/12	

Project Name: Whiteman Residence	**Priority:** Medium	**Summary of Inspection Findings:**
Address: 2507 Walinca Way	**Wet Inspections:** 6	Job is Complete
Site ID#: 774	**Dry Inspections:** 1	
Site Size (Acres): .60	**Total Inspections:** 7	
Grading Plan #: 11-008	**Start Date:** 9/26/11	
Inspector: S. Rytell	**End Date:** 3/16/12	
Project Name: 1st Samoan Congregation Christian Church	**Priority:** Medium	**Summary of Inspection Findings:**
Address: 745 Avenida de Benito Juarez	**Wet Inspections:** 6	Job is Complete
Site ID#: 775	**Dry Inspections:** 1	
Site Size (Acres): 2	**Total Inspections:** 7	
Grading Plan #: 11-005	**Start Date:** 11/10/11	
Inspector: S. Rytell	**End Date:** 4/23/12	
Project Name: Webb Residence	**Priority:** Low	**Summary of Inspection Findings:**
Address: 1764 Mesa Verde Dr., Vista, CA	**Wet Inspections:** 7	Job is Complete
Site ID#: 776	**Dry Inspections:** 0	
Site Size (Acres): .20	**Total Inspections:** 7	
Grading Plan #: 11-010	**Start Date:** 10/18/11	
Inspector: S. Rytell	**End Date:** 4/23/12	
Project Name: Olive RV Resort Park; Gibbs Project	**Priority:** Medium	**Summary of Inspection Findings:**
Address: 713 Olive Ave	**Wet Inspections:** 7	Secondary containment needed for sanitary waste. Resolved.
Site ID#: 777	**Dry Inspections:** 2	
Site Size (Acres): 4.19	**Total Inspections:** 9	
Grading Plan #: 09-016	**Start Date:** 10/18/11	
Inspector: Kurt Groscup	**End Date:** 6/6/12	
Project Name: Pina Lane, "Polvera's Residence"	**Priority:** Low	**Summary of Inspection Findings:**
Address: 450 Pina Lane	**Wet Inspections:** 6	No issues.
Site ID#: 778	**Dry Inspections:** 0	
Site Size (Acres): 0.25	**Total Inspections:** 6	
Grading Plan #: 11-011	**Start Date:** 11/7/11	
Inspector: S. Rytell	**End Date:** 6/6/12	

Project Name: Maryland Drive & Olive Ave Curb, gutter, sidew	**Priority:** Medium	**Summary of Inspection Findings:**
Address: Maryland Drive & Olive Ave	**Wet Inspections:** 5	No issues.
Site ID#: 779	**Dry Inspections:** 2	
Site Size (Acres): .98	**Total Inspections:** 7	
Grading Plan #: none - CIP 8030	**Start Date:** 12/20/11	
Inspector: Frank Durazo	**End Date:** 6/7/12	
Project Name: Buena Creek Pump Station	**Priority:** Medium	**Summary of Inspection Findings:**
Address: Melrose Dr & Dawson Dr	**Wet Inspections:** 2	No issues.
Site ID#: 780	**Dry Inspections:** 3	
Site Size (Acres): .88	**Total Inspections:** 5	
Grading Plan #: none - CIP 8173	**Start Date:**3/6/12	
Inspector: S. Rytell	**End Date:** 6/1/12	
Project Name: 2450 S. Melrose Drive	**Priority:** High	**Summary of Inspection Findings:**
Address: Melrose Dr & Dawson Dr	**Wet Inspections: 4**	No issues.
Site ID#: 781	**Dry Inspections:** 2	
Site Size (Acres): 0.72	**Total Inspections:** 6	
Grading Plan #: 11-003	**Start Date:** 4/12/12	
Inspector: S. Rytell	**End Date:** 6/28/12	
Project Name: 2450 S. Melrose Drive	**Priority:** High	**Summary of Inspection Findings:**
Address: Melrose Dr & Dawson Dr	**Wet Inspections:** 4	No issues.
Site ID#: 782	**Dry Inspections:** 9	
Site Size (Acres): 2.5	**Total Inspections:** 13	
Grading Plan #: 11-003	**Start Date:** 4/5/12	
Inspector: Kurt Groscup	**End Date:** 6/27/12	
Project Name: 204 & 208 Acropolis Way & 2424 Catalina Ave	**Priority: Low**	**Summary of Inspection Findings:**
Address: 2424 Catalina & 204/208 Acropolis	**Wet Inspections:** 0	No issues.
Site ID#: 786	**Dry Inspections:** 1	
Site Size (Acres): 1.36	**Total Inspections:** 1	
Grading Plan #: 12-001	**Start Date:** 6/5/12	
Inspector: Kurt Groscup	**End Date:** 6/5/12	

Project Name: Street Rehab & Resurface	**Priority:** Low	**Summary of Inspection Findings:**
Address: Various Locations	**Wet Inspections:** 0	No issues.
Site ID#: 787	**Dry Inspections:** 2	
Site Size (Acres): .29	**Total Inspections:** 2	
Grading Plan #: none - CIP 8155	**Start Date:** 5/10/12	
Inspector: S. Rytell	**End Date:** 6/28/12	

APPENDIX B-3
PRE-RAINY SEASON LETTER

September 28, 2011

Subject: **Construction Site Stormwater Management Preparation for the Upcoming Rainy Season**

Dear Contractor/Developer/Owner:

The rainy season officially begins on October 1. The purpose of this letter is to assist you in preparing for the upcoming rainy season and to remind you of your responsibilities for construction site stormwater management and pollution prevention. It is imperative that you take appropriate measures now to prepare your sites for the upcoming rains.

In accordance with the State regulations (RWQCB Order No. R9-2007-0001) and City of Vista's Ordinances (Municipal Code 13.18 and 17.56) and Storm Water Standards Manual you are required to implement and maintain the following Best Management Practices on a **year-round basis**:

- Erosion Control (e.g. physical slope protection, vegetation, etc.);
- Sediment Control (e.g. site perimeter, inlet and stockpile protection, etc.);
- Offsite Sediment Control (e.g. stabilized construction entrances, street sweeping, etc.);
- Velocity Reduction for on-site runoff and runoff leaving the site;
- Materials management (e.g. designated storage areas, proper labeling, secondary containment, etc.); and
- Ongoing updates to Stormwater Pollution Prevention Plan (SWPPP), as appropriate.

Additionally, during the **rainy season (October 1st – April 30th)** you must **also** do the following:

- ✓ Have a "weather-triggered" action plan for deploying standby BMPs to completely protect exposed areas within 48 hours of a predicted storm event (where a predicted storm event is defined as a forecasted 30% chance of rain). Be able to provide proof of this requirement if requested by City or State inspector;

- ✓ Store a minimum of 125% of the materials needed to implement standby BMPs to prevent erosion and sediment discharges;

- ✓ The amount of exposed soil shall not exceed that which can be adequately protected by deploying standby erosion and sediment control prior to a predicted storm;

- ✓ Fully protect any disturbed areas that are not actively being worked on. The ability to deploy standby BMP material is not sufficient for these areas. BMPs must be installed.

- ✓ Update your SWPPP and have it onsite and easily accessible.

- ✓ Upgrade and maintain slope protection for all disturbed slopes.
- ✓ Remove accumulated sediments from slopes and sediment control devices.
- ✓ Upgrade, repair and maintain perimeter and inlet protections;
- ✓ Upgrade, repair and maintain entrance/exit stabilization to prevent offsite sediment tracking; and
- ✓ Protect or remove temporary soil stockpiles.

For reference, the Stormwater Standards Manual is available on the City's website at: http://www.cityofvista.com/departments/engineering/documents/StormwaterStandardsManual2008.pdf.

As another reminder - for those sites at which one (1) or more acres has been disturbed, you must obtain coverage under the State's General Construction Stormwater Permit. Information about the General Construction Stormwater Permit, including the NOI form, can be found on the State Water Resources Control Board website at http://www.swrcb.ca.gov/stormwtr/constfaq.html or by contacting the Regional Water Quality Control Board at (858) 467-2953.

It is the City's goal to work with you to ensure that all construction sites are in compliance and prepared for the upcoming rainy season. Please contact your City inspector if you have any questions.

Respectfully,

Greg Mayer
Principal Engineer

Attachments: A Pollution Prevention Guide for the Construction Industry

cc: John Conley, Director of Community Development
Paul Hartman, Stormwater Program Manager

APPENDIX C-1
FY 2011-12 MUNICIPAL INVENTORY

Appendix C-1
FY 2011-12 Municipal Inventory

Name	High Priority	Address		Description	Pollutant Generating Activities																	Potential Pollutants Generated									303(d)	High Priority	Watershed
					Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances			
Avo Playhouse		303	Main St	Theater	X	X				X				X	X	X		X		X		X	X	X				X	X		X	BV	BV
Breeze Hill Park	X	645	S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X		X	BV	BV
Brengle Terrace Park	X	1200	Vale Terrace Dr.	Maintenance Yard and Park	X	X				X			X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	BV	BV
Bub Williamson Park	X	530	Grapevine Rd	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	BV	BV
Buena Vista Park	X	1851	S. Melrose Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X	X	AH	AH
Chamber of Commerce		201	Indiana	Administrative Building	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	BV
Civic Center		200	Civic Center Dr.	City Hall	X	X								X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	BV
Community Center		1150	Lupine Hills	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	AH	AH
Fire Station #1		175	Melrose Dr	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	BV
Fire Station #2		1050	Valley Drive	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	BV
Fire Station #3		1070	Old Taylor St.	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X	X	SLR	SLR
Fire Station #4		2121	Thibodo	Fire Station	X	X		X	X					X	X	X				X		X	X	X	X	X	X	X	X	X	X	AH	AH
Gloria McClellan Senior Center		1400	Vale Terrace Dr.	Senior Center and Parking lot	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	BV
La Mirada Canyon		1219	Park Center	Open Space	X	X								X	X	X				X		X	X	X		X			X	X	X	AH	AH
Library		700	Eucalyptus	Library	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	BV
Lifeline - North County		200	Michigan Ave.	Community Services	X											?											X					BV	BV
Luz Duran Park	X	340	E.Townsite Dr.	Park	X	X					X			X	X	X		X		X		X	X	X		X		X	X	X	X	BV	BV
Moonlight Amphitheater	X	1200	Vale Terrace	Amphitheater	X	X				X				X	X	X		X		X		X	X	X		X		X	X		X	BV	BV
Parking Lot	X	300	blk of Main St	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV	BV
Parking Lot	X	523	S. Santa Fe	Parking Lot	X											X						X	X	X	X	X	X	X			X	BV	BV
Parking Lot	X		E. Broadway - Hanes Pl.	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV	BV
Parking Lot	X		Main St / S. Indiana Ave. S/E corner	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV	BV
Parking Lot	X		Main St - Michigan Ave.	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV	BV
Park-N-Ride	X		W. Vista Way @ S. Emerald	Parking Lot	X											X				X		X	X	X	X	X	X	X			X	BV	BV
Police Sub-Station		1477	Moon Rd	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	AH
Police Sub-Station		2082	Thibodo	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	AH	BV
Police Sub-Station		340	E. Townsite	Sheriff substation	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	BV
Publc Works Yard	X	1165	E. Taylor Street	Corporate Yard	X	X	X	X	X	X	X		X	X	X	X				X		X	X	X	X		X	X	X	X	X	BV	AH
PW Satellite Yard	X	2430	Lupine Hills Dr.	Storage and Corporate Yard	X	X				X	X		X	X	X	X						X	X	X	X	X	X	X	X	X	X	AH	BV
PW HHWCC	X	1145	E. Taylor St	Household Haz Waste Collection Ctr	X	X				X	X	X		X		X				X		X	X	X	X		X	X	X	X	X	BV	AH
PW Yard / Inactive WWTP	X	2525	Lupine Hills	Buena Station 52 & Corporate Yard																												AH	BV
Rain Tree Park	X	545	Townsite Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	BV	BV
Rancho Buena Vista Adobe		640	Alta Vista	Attraction	X									X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	AH
Rancho Buena Vista Park	X	1851	S. Melrose Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	AH	BV
Senior Center			Vista Village @ Michigan	Senior Center and old Railroad Station bldg	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	AH
Sewer Pump Station	X	2685	S. Melrose Dr.	Wastewater - Raceway Pump Station	X	X								X		X														X		AH	AH
Sewer Pump Station	X	2080	S. Melrose Dr.	Wastewater - Buena Pump Station	X	X								X		X														X		AH	AH
Shadowridge Park	X	2101	Lupine Hills	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	AH	SLR
Sports Park	X	555	W. Bobier Dr	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	SLR	AH
South Buena Vista Park	X	1602	Mountain Pass Circle	Park	X	X								X	X	X		X		X	X	X	X	X		X	X	X	X	X	X	AH	BV
Tennis Courts		1200	Vale Terrace	Tennis courts										X		X				X												BV	BV
The Wave	X	101	Wave Dr.	Waterpark	X	X				X	X			X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	BV	AH
Thibodo Park	X	1150	Lupine Hills Dr.	Park	X	X								X	X	X		X		X		X	X	X		X	X	X	X	X	X	AH	BV
Townsite Community Center		642	Vista Village Dr.	Community Center	X	X				X				X	X	X				X		X	X	X	X	X	X	X	X	X	X	BV	BV
Vista Village Walk			Vista Village Dr / Michigan Ave.	Green Belt Walkway																												BV	BV
Wildwood Park	X	651	E. Vista Way	Park	X	X								X	X	X		X		X		X	X	X		X			X	X	X	BV	BV
Brengle Terrace Basin	X	1100	Vale Terrace Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X	X	BV	BV
Cypress Basin	X		Monte Vista Dr. & Cypress Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X	X	BV	BV
Monte Vista Basin	X		Monte Vista Dr. & Valley Dr.	Detention Basin																X	X	X	X	X	X	X	X	X	X	X	X	BV	BV
South Buena Vista Basin	X	1602	Mountain Pass Circle	Detention Basin																X	X	X	X	X	X	X	X	X	X	X	X	AH	BV

Appendix C-1
FY 2011-12 Municipal Inventory

Name	High Priority	Address		Description	Pollutant Generating Activities																	Potential Pollutants Generated										High Priority	Watershed
					Non-Sormwater Discharges SC-10	Spill Prevention, Control and Cleanup SC-11	Vehicle and Equipment Fueling SC-20	Vehicle and Equipment Cleaning SC-21	Vehicle and Equipment Repair SC-22	Outdoor Loading/Unloading SC-30	Outdoor Container Storage SC-31	Outdoor Equipment Maintenance SC-32	Outdoor Storage of Raw Materials SC-33	Waste Handling and Disposal SC-34	Building and Grounds Maintenance SC-41	Parking/Storage Area Maintenance SC-43	Road and Street Maintenance SC-70	Plaza and Sidewalk Cleaning SC-71	Fountains and Pool Maintenance SC-72	Landscape Maintenance SC-73	Drainage System Maintenance SC-74	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances	303(d)		
Creekwalk / BV Channel	X		Main St. & Wave Dr.	Flood control channel																	X	x	X	X	X	X	X	X	X	X	X	BV	
Field Activities																																	
Road and Street Maintenance	X	Varies															X																
Plaza and Sidewalk Cleaning	X	Varies																X															
Landscape Maintenance		Varies																		X													
Waste Handling and Disposal		Varies												X								X	X	X	X	X	X	X	X	X			
MS4 Maintenance		Varies		See JURMP Section 6																See JURMP Section 6													
Wastewater Utility Maintenance		Varies		See JURMP Section 6																See JURMP Section 6													

APPENDIX C-2
FY 2011-12 MUNICIPAL INSPECTIONS SUMMARY

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Area is cleaned and well maintained, no visible trash or debris. Procuring trash can covers through grant.	Enforcement Action:	None
Inspection Date:	10/18/2011			
Facility Name:	Breeze Hill Park		Corrective Actions Requred:	No
Address:	645 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park areas are clean and well maintained; no visible trash or debris. Procuring trash can covers through grant. Well traveled slope requires bmps and maintenance yard requires some housekeeping.	Enforcement Action:	Verbal
Inspection Date:	10/20/2011			
Facility Name:	Brengle Terrace Park		Corrective Actions Requred:	Yes
Address:	1200 Vale Terrace			
			Corrective Action Description:	
			implement bmps.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/21/2011
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park clean and free of trash and debris. Dumpster enclosure requires maintenance. Bmp implementation on east parking area landscaping-sediment discharge.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Bub Williamson Park		Corrective Actions Requred:	Yes
Address:				
			Corrective Action Description:	
			implement bmps	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/20/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	drainage ditches require cleaning. General leaf, vegetation, some sediment in curb area. Area free of trash and debris.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Buena Vista Park		Corrective Actions Requred:	Yes
Address:	1851 S. Melrose Dr			
			Corrective Action Description:	
			remove sediment and debris from noted areas.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/21/2011
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	sediment migrating off site and into area drains/channel. Area free of trash and debris.	Enforcement Action:	Verbal
Inspection Date:	10/20/2011			
Facility Name:	Luz Duran Park		Corrective Actions Requred:	Yes
Address:	340 E. Townsite Dr			
			Corrective Action Description:	
			implement bmps; remove sediment from drainage areas.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/20/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Moonlight Amphitheater is well maintained. Some degraded bmps and minor maintenance in drainage dtiches required.	Enforcement Action:	Verbal
Inspection Date:	10/20/2011			
Facility Name:	Moonligh Amphitheater		Corrective Actions Requred:	Yes
Address:	1200 Vale Terrance			
			Corrective Action Description:	
			implement bmps; remove /vegetation sediment from drainage areas.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/19/2011
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This is a public parking lot. Some fresh oil residue in parking stall on east side of lot.	Enforcement Action:	Verbal
Inspection Date:	10/19/2011			
Facility Name:	parking lot		Corrective Actions Requred:	Yes
Address:	300 Blk Main St			
			Corrective Action Description:	
			remove fresh oil.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/19/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	This is a public parking lot that is in continual use. Some erosion of the asphalt has occurred.	Enforcement Action:	Verbal
Inspection Date:	10/19/2011			
Facility Name:	parking lot		Corrective Actions Requred:	Yes
Address:	523 S. Santa Fe Ave			
			Corrective Action Description:	
			Repair, clean and repave eroded areas.	
Contact:	Chuck Crist; Rod Krueger			
	Rudy Luna for asphalt repair			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/26/2011
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This is a public parking lot. Some trash and a car curb stop is offset.	Enforcement Action:	Verbal
Inspection Date:	10/19/2011			
Facility Name:	parking lot		Corrective Actions Requred:	Yes
Address:	E. Broadway @ Hanes Pl			
			Corrective Action Description:	
			reposition car curb stop and remove trash.	
Contact:	Chuck Crist; Rod Krueger			
	Rudy Luna for asphalt repair			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/26/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	This is a public parking lot. Area clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	10/18/2011			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	Maint St @ S. Indiana s/e corner			
			Corrective Action Description:	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This is a public parking lot. It is clean, no trash or debris.	Enforcement Action:	None
Inspection Date:	10/18/2011			
Facility Name:	parking lot		Corrective Actions Requred:	No
Address:	Main St & Michigan Ave			
			Corrective Action Description:	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This is a public parking lot used for 'park and ride'. Some trash and debris. Shopping carts prevelant.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Park and Ride lot		Corrective Actions Requred:	Yes
Address:	W. Vista Way @ S. Emerald Dr			
			Corrective Action Description:	
			Remove trash and debris.	
Contact:	Craig Trammell, Operations Mgr			
	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	01/11/2012
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	This facility is maintained by PSC Environmental Services and is under the supervision of Public Works. Much accumulation of trash and debris throughout site. Gravel bags surrounding area drain have degraded.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Public Works Household Haz Waste		Corrective Actions Requred:	Yes
Address:	1145 E. Taylor St			
			Corrective Action Description:	
			remove trash and debris, replace gravel bags.	
Contact:	Craig Trammell, Operations Mgr			
	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	01/10/2012
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	heavy oil acculmulation under large machinery, trash can contents exposed-no lid, sediment migrating, leaf/vegetation accumulation, trash dumpsters overflowing.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Public Works Yard		Corrective Actions Requred:	Yes
Address:	1165 E. Taylor St			
			Corrective Action Description:	
			Request closeable lids; oil removal, bmp implementation for sediment.	
Contact:	Craig Trammell, Operations Mgr			
	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/26/2012
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	The Satelite Yard is unmanned and used primarily as a storage facility for large Public Works items; light poles, K-rails, concrete manhole elevation rings etc. The overall area is maintained. Driveway leading to the yard requires bmps as some sediment migration is occuring from western slope.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Public Works Satelite Yard		Corrective Actions Requred:	Yes
Address:	2430 Lupine Hills Dr			
			Corrective Action Description:	
			implement bmps along driveway/slope.	
Contact:	Craig Trammell, Operations Mgr			
	Rudy Luna			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/27/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Waste Water Division utilizes this location for a city southend vactor truck. Other PW's equipment is stored at this location. A defunct treatment plant is also at this site. Site has leaf/vegetation that requires cleaning. Keep dumpster lids closed when not actively in use.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Public Works Satelite Yard		Corrective Actions Requred:	Yes
Address:	2525 Lupine Hills Dr			
			Corrective Action Description:	
			remove scrap equipement and leaf/vegatation. Close dumpster lids.	
Contact:	Craig Trammell, Operations Mgr			
	Rudy Luna			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	01/03/2012
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Graffiti on surfaces; sediment migrating off slopes;	Enforcement Action:	Verbal
Inspection Date:	10/20/2011			
Facility Name:	Rain Tree Park		Corrective Actions Requred:	Yes
Address:	545 Townsite Dr			
			Corrective Action Description:	
			remove graffiti, implement bmps.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/20/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Some vegetation accumulation in area drains. Dumpster enclosure requires cleaning and pallet removal.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Rancho Buena Vista Park		Corrective Actions Requred:	Yes
Address:	1851 S. Melrose Dr			
			Corrective Action Description:	
			Remove vegetation accumulation, clean dumpster area, keep lids closed unless actively in use.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/22/2011
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park is clean and well maintained. Leaves are accumulating in area drains and curbs.	Enforcement Action:	Verbal
Inspection Date:	10/18/2011			
Facility Name:	Shadowridge Park		Corrective Actions Requred:	Yes
Address:	2101 Lupine Hills			
			Corrective Action Description:	
			remove leaf material in area drains and curbs.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/20/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	sediment migration along concrete paths;	Enforcement Action:	Verbal
Inspection Date:	10/27/2011			
Facility Name:	South Buena Vista Park		Corrective Actions Requred:	Yes
Address:	1602 Mountain Pass Circle			
			Corrective Action Description:	
			implement bmps.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/21/2011
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	trash and debris in area drain; clean perimeter ditches.	Enforcement Action:	Verbal
Inspection Date:	11/19/2011			
Facility Name:	Sports Park		Corrective Actions Requred:	Yes
Address:	555 W. Bobier Dr			
			Corrective Action Description:	
			implement bmps.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	San Luis Rey (903.1)			
			Follow Up Inspection Required:	Yes
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	12/21/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	All areas wll maintained.	Enforcement Action:	None
Inspection Date:	10/19/2011			
Facility Name:	The Wave Waterpark		Corrective Actions Requred:	No
Address:	101 Wave Dr			
			Corrective Action Description:	
Contact:	Natalie Livingston			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Park is clean and well maintained and dog bags are provided. No visible trash or debris.	Enforcement Action:	None
Inspection Date:	10/18/2011			
Facility Name:	Thibodo Park		Corrective Actions Requred:	No
Address:	1150 Lupine Hills Dr			
			Corrective Action Description:	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	Park is clean and well maintained. Dog bags provided. No visible trash or debris.	Enforcement Action:	None
Inspection Date:	10/20/2011			
Facility Name:	Wildwood Park		Corrective Actions Requred:	No
Address:	651 E. Vista Way			
			Corrective Action Description:	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Sotola/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Basin is maintained.	Enforcement Action:	None
Inspection Date:	10/27/2011			
Facility Name:	Brengle Terrace Detention Basin		Corrective Actions Requred:	No
Address:	1100 Vale Terrace			
			Corrective Action Description:	
Contact:	Craig Trammell, Operations Mgr			
	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Coppi/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	This channel area is utilized for flood control and recreational walking. This area is deemed a park. Area clean and maintained.	Enforcement Action:	None
Inspection Date:	10/27/2011			
Facility Name:	Creek Walk/Buena Vista Channel		Corrective Actions Requred:	Yes
Address:	Main St and Wave Dr			
			Corrective Action Description:	
			Remove effluent in the area.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Coppi/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Basin has vegetation and sediment accumulation.	Enforcement Action:	Verbal
Inspection Date:	10/27/2011			
Facility Name:	Cypress Detention Basin		Corrective Actions Requred:	Yes
Address:	Monte Vista Dr and Cypress Dr			
			Corrective Action Description:	
			mitigate area.	
Contact:	Craig Trammell, Operations Mgr			
	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Coppi/Mathews		Follow Up Inspection Date:	01/17/2012
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Basin has vegetation and sediment accumulation	Enforcement Action:	Verbal
Inspection Date:	10/27/2011			
Facility Name:	Monte Vista Detention Basin		Corrective Actions Requred:	Yes
Address:	Monte Vista Dr and Valley Dr			
			Corrective Action Description:	
			mitigate area.	
Contact:	Craig Trammell, Operations Mgr			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	Yes
Inspector:	Coppi/Mathews		Follow Up Inspection Date:	01/03/2012
			Corrective Actions Verified:	Yes

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	bmps require degrading; sediment accumulation surrounding area drain.	Enforcement Action:	Verbal
Inspection Date:	10/27/2011			
Facility Name:	South Buena Vista Detention Basin		Corrective Actions Requred:	Yes
Address:	1602 Mountain Pass Circle			
			Corrective Action Description:	
			implement bmps.	
Contact:	Chuck Crist; Rod Krueger			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	Yes
Inspector:	Coppi/Mathews		Follow Up Inspection Date:	12/21/2011
			Corrective Actions Verified:	Yes
Inspection Type:	Municipal	Pump station is well maintained	Enforcement Action:	None
Inspection Date:	10/27/2011			
Facility Name:	Buena Pump Station		Corrective Actions Requred:	No
Address:	2080 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Encina Waster Water Authority			
	Brian Benjamin (760)438-3941			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Coppi/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	Pump station is well maintained.	Enforcement Action:	None
Inspection Date:	10/27/2011			
Facility Name:	Raceway Pump Station		Corrective Actions Requred:	No
Address:	2685 S. Melrose Dr			
			Corrective Action Description:	
Contact:	Encina Waster Water Authority			
	Brian Benjamin (760)438-3941			
Hydrologic Area:	Agua Hedionda (904.3)			
			Follow Up Inspection Required:	No
Inspector:	Coppi/Mathews		Follow Up Inspection Date:	
			Corrective Actions Verified:	
Inspection Type:	Municipal	City crew placed protective and collective bmps to capture all discharge from pressure water.	Enforcement Action:	None
Inspection Date:	10/26/2011			
Facility Name:	Pressure Wash		Corrective Actions Requred:	No
Address:	200 Civic Center Dr			
			Corrective Action Description:	
Contact:	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Coppi		Follow Up Inspection Date:	
			Corrective Actions Verified:	

General Information		General Description of Findings	Enforcement and Follow Up	
Inspection Type:	Municipal	City crew placed protective and collective bmps to capture any and all discharge from road repair processes.	Enforcement Action:	None
Inspection Date:	10/27/2011			
Facility Name:	Road repair		Corrective Actions Requred:	No
Address:	Carmel & Anza			
			Corrective Action Description:	
Contact:	Rudy Luna			
Hydrologic Area:	Buena Vista (904.2)			
			Follow Up Inspection Required:	No
Inspector:	Coppi		Follow Up Inspection Date:	
			Corrective Actions Verified:	

APPENDIX D-1
FY 2011-12 STATIONARY COMMERCIAL INVENTORY

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	13/20 Motor Sports	249		N Emerald Dr	Vista	CA	92083	904.21	7538	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	7 Eleven #15923	1501		N Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	7 Eleven #24085	900		N Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	7 Eleven #32326 A 2111	3251		Business Park Dr	Vista	CA	92083	904.31	5541	447110	Fueling	No	No	No	No	No	No	No	Yes	No	No	Low	Yes
VI	7-Eleven #2111-13625G	470		N Melrose Dr	Vista	CA	92083	904.21	5541	447110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	7-Eleven #21795B-2111	1595		E Vista Way	Vista	CA	92084	904.22	5411	445120	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	7-Eleven #23302A	895		E Vista Way	Vista	CA	92084	904.22	5411	445120	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	Yes
VI	7-Eleven #33160T-2111	298		Sycamore Ave	Vista	CA	92083	904.32	5411	447110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	7-Eleven #33376B-2111	1610		S Melrose Dr	Vista	CA	92081	904.31	5541	447110	Fueling	No	No	No	No	Yes	No	No	No	Yes	No	Low	Yes
VI	99 Cent Store	705		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	Yes*
VI	A 1 Vista Repair	916		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	A E S Of North County	611	B	S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	A+ Automotive	257	A	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	A-1 Radiator	1903	C	W Vista Way	Vista	CA	92083	904.21	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	A-B-C Smog	1415		S Santa Fe Ave	Vista	CA	92084	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Ablahad Inc.	625		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	Yes	No	Low	Yes
VI	Abundant Air Systems	167		Vera Cir	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Acells Corp	3121		Scott St	Vista	CA	92081	904.31	5099	421990	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Acropolis Greek Grill	3295	D	Business Park Dr	Vista	CA	92083	904.31		7222	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Action Auto Repair	253	D	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Adams Automotive	158	A	Olive Ave	Vista	CA	92083	904.22	7549	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Advance Micro Components Inc	2475	B	Coral St	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Ai Sushi	1910	106	Shadowridge Dr	Vista	CA	92083	904.31	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Aibertos Mexican Food	435		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	AJ Smog	660		E Vista Way	Vista	CA	92084	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Alapizco Flowers	1984		Casablanca Ct	Vista	CA	92081	904.31	5193	42293	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Albertacos Mex Food Inc	601		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	No	High	Yes*
VI	Albertson's #6201	1301		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes*
VI	Albertson's #6797	1601		S Melrose Dr	Vista	CA	92081	904.31	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	No
VI	ALFA European Auto	912		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Allen's Alley Cafe	124		Hanes Pl	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Allen's Auto	718		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Altman Speciality Plants	1516		Monte Vista Dr	Vista	CA	92084	904.22	5148	422480	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	American Concrete Cutting & Coring	1217		Distribution Way	Vista	CA	92083	904.31	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	No
VI	American Legacy Products, Inc.	2575	G	Fortune Way	Vista	CA	92083	904.31	5099	424430	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	American Metal Packaging Company	1185	C	Park Center Dr	Vista	CA	92083	904.31	3674	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	AMERICAN SPORT BIKE	1341	22	Distribution Way	Vista	CA	92081	904.31	5571	441221	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	No	Low	No

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VI	Americana Farms	2834	D	La Mirada Dr	Vista	CA	92081	904.31		42493	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Amigo Market	995	116	Postal Way	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	Angelitos Fruteria Y Neveria	1234		N Santa Fe Ave	Vista	CA	92083	904.22	5431		Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	APRO # 37 (76 Station)	535		N Santa Fe Ave	Vista	CA	92084	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	Apro #27 (76 Station)	976		Civic Center Dr	Vista	CA	92083	904.22	5541	447190	Fueling	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Apro 47	911		E Vista Way	Vista	CA	92083	904.22	5541	447110	Fueling	No	Yes	No	No	No	Yes	No	No	No	No	High	Yes
VI	Aquatic Fitness Concepts	1495	145	Poinsettia Ave	Vista	CA	92081	904.51	5999	453998	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Arashi Japanese Cuisine	962		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	Arco AM PM #6315	1403		S Santa Fe Ave	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	No	No	Yes	No	No	No	Yes	No	Low	Yes
VI	Arellano Growers Whsl	2015		Foothill Dr	Vista	CA	92084	904.22	5193	42293	Wholesale/Storage/Warehousing	No	No	No	Yes	No	No	No	Yes	No	Yes	Medium	No
VI	Armandos Mexican Food	770	L	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	Yes*
VI	Aschbrenner, Inc. dba Spectrum Floral	2505		Commerce Way	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	Yes	No	Low	Yes
VI	Associated Power, Inc.	1298		Distribution Way	Vista	CA	92081	904.31	7359	5324	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
VI	Auto Europa Cars	737	743	Townsite Dr	Vista	CA	92084	904.22	5521	44112	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	Auto Precision	1024	101	Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Auto Smog	2070	J	Hacienda Dr	Vista	CA	92081	904.21	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Auto Spa	851		W Vista Way	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	No
VI	Automotive Concepts	538	A102-103	Olive Ave	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Autotyme Automotive, Inc.	1146	801	N Melrose Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	No
VI	B & C Auto Repair	918		Postal Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	B & D Auto Repair and Service	1350		N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	Yes	No	No	Low	No
VI	B N B Sales	2169		Opal Ridge	Vista	CA	92081	904.31		423110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Baja Mexican Food	1740		E. Vista Way	Vista	CA	92084	904.22	5812	72221	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Bara Bean Cafe	771	102A	E Vista Way	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Barnicles Express (Petrol Management)	845		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	Yes	Yes	No	No	Yes	Yes	No	No	No	Yes	High	Yes
VI	Basically Cakes @S A E Kitchen	2515	5	Pioneer Ave	Vista	CA	92081	904.31	5461	445291	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	BC Cakes	707		Monterey Ln	Vista	CA	92084	904.22		311811	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Big Lots #4267	760		Sycamore Ave	Vista	CA	92083	904.32	5411	452910	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Blake's Custom	779		Lemon Ave	Vista	CA	92084	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	No
VI	BMW of Vista	1715		Hacienda Dr	Vista	CA	92081	904.21	5511	441110	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	High	No
VI	Boardwalk Sandwiches	1495	152	Poinsettia Ave	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Bob Workman's European Auto	1304	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	Yes	Yes	No	Low	Yes
VI	Bombay Cafe	1280	4	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	Yes
VI	Boomers Vista (Festival Fun Parks)	1525		W Vista Way	Vista	CA	92083	904.21	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Boudagh Auto Sales, Inc.	723	A	Olive Ave	Vista	CA	92084	904.22		44112	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	Briggs Tree Company Inc	1111		Poinsettia Ave	Vista	CA	92083	904.31	181	111422	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Low	No
VI	British Masters	715		Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No

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VI	Budget Rent A Car	1859		W Vista Way	Vista	CA	92083	904.21	7514	532111	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
VI	Budget Smog	1205	G	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Medium	No
VI	Buena Creek Nursery	1280		Sunset Dr	Vista	CA	92083	904.31	5193	422293	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Buffalo Bill's BBQ	918		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Burger King #10512	1650		S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Burger King #13580	377		Vista Village Dr	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	C & M Motors Inc/ NationaLease	1902		VIA CENTRE	Vista	CA	92083	904.21	7538	811111	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	C P C Packaging	1126		N Melrose Dr	Vista	CA	92083	904.22	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Cal Mex Wholesale Growers & Shippers	2680		La Mirada Dr	Vista	CA	92081	904.31	4212	484110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	California Breakers, Inc.	2490		Grand Ave	Vista	CA	92083	904.32	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	California Specialty Produce	1330	A	Keystone Way	Vista	CA	92083	904.31	5148	42248	Wholesale Food	No	No	No	No	Yes	No	No	Yes	Yes	No	Low	No
VI	Californias Mexican Restaurant	2147		E Vista Way	Vista	CA	92084	903.11	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	Yes
VI	Carlos and Ramon Auto Restoration	538	100	Olive Ave	Vista	CA	92083	904.21	7532	811121	Auto Repair	No	Yes	No	No	No	Yes	No	Yes	No	Yes	Medium	No
VI	Carl's Jr. #1390	660		Hacienda Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Carl's Jr. Restaurant and the Green Burrito	1790	648	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	No	Low	No
VI	Cesar's Auto Mechanics	452	L	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Chaparro's Mexican Food, Inc.	2595		Commerce Way	Vista	CA	92081	904.31	5411	42385	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	No
VI	Chevron Station #1497	2295		S Melrose Dr	Vista	CA	92081	904.31	5541	447110	Fueling	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Chevron USA (Foothill Chevron)	1211		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	High	Yes
VI	Chicos Panaderia	1110	D	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Medium	Yes
VI	Chili Coast Burgers	1330		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	Yes
VI	Chili's Grill & Bar	255		Vista Village Dr	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	Yes	No	No	No	Yes	Medium	Yes
VI	Chinex Grill LLC	1580	106	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Chin's Szechwan Vista, Inc.	600		E Vista Way	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Chipotle Mexican Grill	30	G-100	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	No
VI	Chito's Taco Shop	320	50	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Chow Now LLC Dba Park Deli	777	204	E Vista Way	Vista	CA	92084	904.22		722310	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Chuck E. Cheese's	1861		University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	No
VI	Ciao Restaurant	2015		E Vista Way	Vista	CA	92084	903.11	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	No	Low	Yes
VI	Classic Datsun Motorsports	345		Olive Ave	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Clutchworks Transmission	1205	D	N Melrose Dr	Vista	CA	92083	904.10	7537	811113	Auto Repair	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Medium	No
VI	Coast Equipment Rental	1713		W Vista Way	Vista	CA	92083	904.21	7359	532490	Vehicle/Equipment Rental	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	Yes*
VI	Coco's 882	605		W Vista Way	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Cold Stone Creamery	30	120	Main St	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	No
VI	Colima's Mexican Food	1850	22	Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	Yes*
VI	Conchita's Mexican Food	1250	K	S Santa Fe	Vista	CA	92084	904.22	5812		Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Control Technology	2416		Cades Way	Vista	CA	92083	904.32	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No

* indicates business in 2011-12 Enhanced Inspection Program

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Coopers Cactus	1097		Crest View Rd	Vista	CA	92083	904.31	0181	111421	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	No	Low	Yes
VI	Costco Wholesale #124	1755		Hacienda Dr	Vista	CA	92081	904.21	5099	421990	Wholesale/Storage/Warehousing	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	Yes*
VI	Couple Berry Farms	629		Mar Vista Dr	Vista	CA	92081	904.31		445230	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Cox Auto Service	1018		Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Coyote Cafe	1450	Y	N Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Curbside Cafe	307		Main St	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	D & D Tool & Supply	1445		Engineer St	Vista	CA	92083	904.31	5084	42384	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	D D H Enterprise, Inc	2220		Oak Ridge Way	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	D G F Motorsports	1253	A	Activity Dr	Vista	CA	92081	904.31		811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
VI	Dairy Queen	1031	A	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Danish & Donuts	1450	I	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Danny's Donuts	102		Eucalyptus Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Del Taco 213	1037		E Bobier Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	Yes*
VI	Denny's Restaurant #7892	540		W Vista Way	Vista	CA	92083	904.21	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Desert Theater II	800		Sunset Dr	Vista	CA	92083	904.31	5193	422293	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Diamond Donuts	730	F	Sycamore Ave	Vista	CA	92083	904.32	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Diesel Pollution Solutions (D.P.S)	1448		Oakcreek Lane	Vista	CA	92081	904.31		81119	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Dils Roofing	2230		La Mirada Dr	Vista	CA	92081	904.31	1761	235610	Other Contractor	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Dion's Automotive	1210	D	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Discount Alignment	1024	100	Service Place	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Discount Indoor Garden Supply, LLC (D	1850	21	Hacienda Dr	Vista	CA	92083	904.21		444220	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Discount Tire Co., Inc.	1007		Service Place	Vista	CA	92083	904.22	5531	441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Dominos Pizza 7731	1021		E Bobier Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	Dominos Pizza 8300	603		E Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	No	Low	Yes
VI	Donut Factory	1839	C	W Vista Way	Vista	CA	92083	904.21	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	Yes
VI	Dos Gringos	3260		Corporate View Dr	Vista	CA	92081	904.51	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Driveline Vista	253	A, B	N Emerald Dr	Vista	CA	92083	904.21	7538	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Dynotech Motorsports	1352	A	N Melrose Dr	Vista	CA	92083	904.10	7538	8111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	E & J Custom Granite & Stone Inc	795	E	North Ave	Vista	CA	92081	904.10	1741	235410	Manufacturing, Stone/Glass	No	Yes	No	No	No	No	No	Yes	Yes	No	Low	Yes
VI	E G M Auto Sales & Leasing	835	A	N Santa Fe Ave	Vista	CA	92084	904.22	5511	44111	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	Easy Auto Exchange	1324		Cypress Dr	Vista	CA	92084	904.22	5012	421110	Vehicle Parking Storage	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Edco Distributing Inc	3150		Scott St	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Eddie's Market	415		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes
VI	El Asadero Restaurant	1717	106	E Vista Way	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	Yes
VI	El Burrito Catering (Mobile Food Service	365	A	Olive Ave	Vista	CA	92084	904.22	5963	722330	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	Yes*
VI	El Callejon Vista	20	H-100	Main St	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	Yes*
VI	El Mago Paint and Body	427	C	Redlands St	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	High	Yes*

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Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	El Molcajete Restaurant	721		S Santa Fe Ave	Vista	CA	92083	904.22	5812	7221	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	El Pollo Loco #3492	495		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	El Puertesito Mexican Restaurant	1450	R	N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	El Ranchero Restaurant (Main St)	226		Main St	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	Yes*
VI	El Ranchero Restaurant (N Santa	1565		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	No	Yes	Medium	Yes
VI	El Rinconcito Mexican Seafood Resturant	1033	E	S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes*
VI	El Super Toro Market	1021	8	N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes
VI	El Torito Market	249		N Emerald Dr	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Electra City Motors	2755	A	Dos Aarons Way	Vista	CA	92081	904.31		811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Elk's Lodge Restaurant	1947		E Vista Way	Vista	CA	92085	903.11	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	No	Low	Yes*
VI	Emerald Auto Service Center, Inc.	257	B	N Emerald Dr	Vista	CA	92083	904.21		33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Emerald Shell	145		N Emerald Dr	Vista	CA	92083	904.21	5541	447110	Fueling	No	No	No	No	Yes	Yes	No	No	No	No	High	Yes
VI	Enterprise Car Sales	875		W Vista Way	Vista	CA	92084	904.22	5511	441110	Vehicle Parking/Storage	No	No	Yes	No	No	No	No	No	Yes	No	Low	Yes
VI	Enterprise Glass & Motors	249	B	N Emerald Dr	Vista	CA	92083	904.21		811122	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Enterprise Rent-A-Car Lsg 3249	875		W Vista Way	Vista	CA	92083	904.22	7514	532111	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
VI	Eriberto's Mexican Food	1805		Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	Yes
VI	Eriberto's Mexican Food	901		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Erika Restaurant	1851	C	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	Yes
VI	Euro Pacific Paint & Body Inc	1210	B	N Melrose Dr	Vista	CA	92083	904.10	7532	811121	Auto Paint/Body	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Medium	Yes*
VI	European Autoworks & Uhaul Truck Rental	1211	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	Yes
VI	European Deli & Restaurant	573	D	W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	European Motorsports	2588	11	Progress St	Vista	CA	92081	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Evans Tire & Service Centers	2070	A	Hacienda Dr	Vista	CA	92083	904.21	7534	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Expo Plant Service, Inc	1455		E Taylor St	Vista	CA	92084	904.22	0181	111422	Nurseries/Greenhouses	No	No	Yes	No	No	No	No	No	No	No	Low	Yes
VI	Express Tire & Certified Auto Service	2030	100	Hacienda Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Ez Auto Care Center	1205	B	N Melrose Dr	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	EZ Lube	786		E Vista Way	Vista	CA	92084	904.22	7549	811191	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	F H C Auto Shop, Tires, Mufflers,	836		N Santa Fe Ave	Vista	CA	92083	904.22		4413	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	F Piersalls Vista Buggy Bath	1759		E Vista Way	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	No
VI	Famous Dave's	303		Vista Village Dr	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Feliccias	1011	C	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Fiamengo Nursery	1715		Monte Mar Rd	Vista	CA	92083	904.22	181	111421	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Filibertos Mexican Food	960		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	High	Yes*
VI	Flamingo Holland Inc	1250		Avenida Chelsea	Vista	CA	92081	904.31	5193	422930	Wholesale/Storage/Warehousing	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Food 4 Less 300	500		Hacienda Dr	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Fountain Car Wash	1352		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	No
VI	Francis Biddle International, Inc.	2506		Pioneer Ave	Vista	CA	92083	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No

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VI	Franciscos Mexican Deli	821		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Frank's Mexican Grill	122		W California Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	High	Yes*
VI	Frazier Farms	225		Vista Village Dr	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Fred's Automotive	1725		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	French Bakery Cafe	1223	A	E Vista Way	Vista	CA	92083	904.21	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Fresh & Easy Neighborhood	945		E Vista Way	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Fresh Mxn Food	1004		S Santa Fe Ave	Vista	CA	92084	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Frogy's Donuts and Bakery	602	A	E Vista Way	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Fruttos Yogurt	347	104	Vista Village Dr	Vista	CA	92083	904.21	5812	722213	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	G T Auto Body Shop	1330	B	N Melrose Dr	Vista	CA	92081	904.10	7532	811121	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	G&M Oil #159	636		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	G&M Oil #168	224		N Emerald Dr	Vista	CA	92083	904.21	5541	447110	Fueling	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	Yes
VI	Geogrid Retaining Wall Systems, Inc	1295		Distribution Way	Vista	CA	92083	904.31	1741	23	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	No
VI	George's Auto Repair and Smog	1740	B	E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Giant New York Pizza	1250	E	S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	Medium	Yes*
VI	Glitter Wash	1140		S Santa Fe Ave	Vista	CA	92084	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Global Plastics Sheeting	1331		Specialty Dr	Vista	CA	92081	904.31	5162	422610	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	GM Exclusive	1215	B	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	Yes
VI	Godwins Cafe	325		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Golden Bagel Cafe & Deli	3231	A	Business Park Dr	Vista	CA	92081	904.31		445291	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Golden Donut	1281	Z	N Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Golden Dragon Restaurant	1350	10	E Vista Way	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Golden Wrench Automotive	241	B	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Greentrees Hydroponics, Inc.	2581	D	Pioneer Ave	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	H2Odyssey & Ocean Divers USA	975		Park Center Dr	Vista	CA	92083	904.31	5099	42199	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Hanjo Auto Repair	452	M	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Happy Auto Sales	721		N Santa Fe Ave	Vista	CA	92084	904.22	5521	44112	Vehicle Parking/Storage	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Hello Deli	2820	A	La Mirada Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Hennessey's	224		Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Herman Tuning	1903		W Vista Way	Vista	CA	92083	904.21	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	HMS Co.	1400		Palomar Pl	Vista	CA	92084	904.22	0811	111421	Nurseries/Greenhouses	No	No	No	Yes	No	No	No	Yes	Yes	Yes	High	Yes
VI	Holiday Liquor	1717	104	E Vista Way	Vista	CA	92084	904.22	5411	55512	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Holy Smoke Bar-B-Que	1237		Green Oak Rd	Vista	CA	92081	904.32	5812	722212	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	No	Low	Yes
VI	Homeland Petroleum	1740		E Vista Way	Vista	CA	92084	904.22	5541	447110	Fueling	Yes	No	Yes	No	Yes	No	No	No	Yes	Yes	Medium	Yes*
VI	Hoops For You - Tires & Service	636		S Santa Fe Ave	Vista	CA	92084	904.22		441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Horticultural Sales, Inc.	1330	E	Distribution Way	Vista	CA	92081	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Humberto's Auto Repair	444	B	S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	High	Yes

* indicates business in 2011-12 Enhanced Inspection Program

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Icebox Jr	2260	D	Oak Ridge Way	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	In N Out Burger #61	2010		Hacienda Dr	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	Yes*
VI	International House Of Pancakes 814	632		Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	International Poly Bag, Inc	990	G	Park Center Dr	Vista	CA	92083	904.31	5162	42262	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Islands Fine Burgers & Drinks	240		S Melrose Dr	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
VI	It's Greek To Me	1651	A	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	J F Japanese Cafe	35	150	Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Jack In The Box #3002	740		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	No	No	Low	No
VI	Jack in the Box #3019	1471		N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Jack In The Box #3029	260		S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Jack In The Box #3032	3281		Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Jack in the Box dba Beshay Foods, Inc.	815		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Jamba Juice #1117	1661	A	S Melrose Dr	Vista	CA	92081	904.31		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Java Hut Drive-Thru	949		E Santa Fe Ave	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes
VI	JB Home Improvement	219	137	S Santa Fe Ave	Vista	CA	92083	904.22	1521	233210	Painting/Coating	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	Yes
VI	JCM Auto Repair	452	J	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Jeannie Hyde Packaging, Inc.	2442		Cades Way	VISTA	CA	92083	904.32	5085	421840	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Jeld Wen Co. Warehouse	935		Poinsettia Ave	Vista	CA	92083	904.32	4225	493110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Jiffy Lube #432	1213		E Vista Way	Vista	CA	92084	904.22	7549	811191	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Jim's Vista Lounge	1587	A, B	E Vista Way	Vista	CA	92084	904.22	5813	722410	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes
VI	John's Restaurant Dba J.R.Randall Inc.	1280	1-3	E Vista Way	Vista	CA	92084	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Jose's Taco	2440	103	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	No
VI	Juanita's Taco Shop	248		E Main St	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Juan's Auto Electric	1205		N Melrose Dr	Vista	CA	92083	904.22	7539	811118	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Jugueria La Tropicana #2	1839	B	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Jumping Bean Cafe	785		Shadowridge Dr	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Juniors Taco Shop	1680	110	S Melrose Dr	Vista	CA	92083	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes
VI	Kand Medical Inc.	1341	D-17	Distribution Way	San Diego	CA	92081	904.31	5047	421450	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	Kenny's Kar Klinic	420		Vista Village Dr	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Kentucky Fried Chicken	840		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	No	Yes	Medium	Yes*
VI	King's Automotive	414	B	N Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	KJ Carpet Wholesale, Inc.	1341	14	Distribution Way	Vista	CA	92081	904.31	5023	421220	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Knockout Pizzeria Dba Flippin Pizza	2440	104	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	No
VI	Krikorian Premiere Theaters	25		Main St	Vista	CA	92084	904.22	7832	512131	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	High	Yes*
VI	La Bota Liquor and Deli	1370		E Vista Way	Vista	CA	92084	904.22	5812		Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	La Cantina Doors, Inc.	1340	J	Specialty Dr	Vista	CA	92081	904.31	1751	235510	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	No
VI	La Casa De Los Alambres	777		Shadowridge Dr	Vista	CA	92081	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes

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Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	La Favorita Market #3	1450	K-M	N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	Yes
VI	La Favorita Meat Market	932		Vista Village Dr	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	Yes	Yes	No	Yes	Yes	Yes	High	Yes*
VI	La Gordita	1275	117, 118	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	La Mexicana Market	440		N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes*
VI	La Paloma Restaurant & Cocktail	116	104, 105	Civic Center Dr	Vista	CA	92084	904.22	5812	722210	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Lamppost Pizza	15	B100	Main St	Vista	CA	92083	904.22	2082	312120	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Las Pupusa Mama Lita	1450	E	N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	LDG Mobile	1338	C	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	No
VI	Lee Steel & Supply	1305		Lee Dr	Vista	CA	92083	904.10	5051	421510	Wholesale/Storage/Warehousing	No	No	Yes	No	Yes	No	No	Yes	Yes	No	High	Yes
VI	Lil Mama's Smog	538	300 C	Olive Ave	Vista	CA	92083	904.22		811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Linde Electronics and Specialty Gases	1261		Activity Dr	Vista	CA	92083	904.31	5169	42269	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Litas Fish Market	1078		E Vista Way	Vista	CA	92084	904.22	5421	445220	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Little Caesars Pizza	2020	R	Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Little Caesars Pizza	1041		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Little Caesars Pizza	1680	101A	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Little Cakes Cupcake Kitchen	30	180	Main St	Vista	CA	92083	904.22		311812	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No
VI	Little Kids Market	1330		N Santa Fe Ave	Vista	CA	92083	904.22		424410	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	No
VI	Little Kids Nutrition	1021	B	N Santa Fe Ave	Vista	CA	92083	904.22		4451	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Little Lidia's Giant Pizza	800	F	Civic Center Dr	Vista	CA	92084	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Llantera El Compadre	1338		N Santa Fe Ave	Vista	CA	92083	904.22		441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Los Altos Mexican Food	1120	I	N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Los Cabos Mexican & Seafood	760		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	High	Yes*
VI	Lush Coffe and Tea	823		E Vista Way	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	M P Creations	1611	P	S Melrose Dr	Vista	CA	92081	904.31		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Mama & Papa's Pizza Grotto	988	A	Civic Center Dr	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Marco Italian Restaurant	1825		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Maria Flowers	2435		Pruett Dr	Vista	CA	92083	903.11		111421	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Mariscos El Pacifico	702		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Mariscos Las Palmas Mexican Food	777	206	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Mariscos Rancho Grande	825		Williamston St	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes	High	Yes
VI	Mayra's Restaurant & Bakery	828	C	N Santa Fe Ave	Vista	CA	92083	904.22	5461	311811	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes
VI	Mazdas and More	245	A	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Mc Donalds 12791	1470		N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes*
VI	Mc Donalds 1959	827		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Mejor Servicio Auto	356		Olive Ave	Vista	CA	92084	904.22		8111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Melrose Valero	210		S Melrose Dr	Vista	CA	92081	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Mexicano Tires	428	A	N Santa Fe Ave	Vista	CA	92083	904.22	7534	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No

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VI	Mexico Viejo	3265	B	Business Park Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Mi Tiendita Market	700		Townsite Dr	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Midas Shop	1150		S Santa Fe Ave	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Mike and Pancho's Auto Repair	635	B	Mercantile St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Mikes Landscape & Nursery Co	753		N Emerald Dr	Vista	CA	92083	904.21	181	111336	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Mobil Mart #11433	710		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	No	No	No	No	No	No	Yes	Yes	No	Low	Yes
VI	Mr. A's Liquor Deli	254		Vista Village Dr	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes
VI	Mrs. Taco Fresh Mexican Food	2215	106-107	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Nallely @El Ranchero Restaurante	1565		N Santa Fe Ave	Vista	CA	92083	904.22		424930	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Napa Auto Parts Vista	1334	G, H	N Melrose Dr	Vista	CA	92083	904.10	5531	441310	Auto Repair	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Nature's Frenzy	2021		Columbus Way	Vista	CA	92081	904.31		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	New Panda Buffet	1040		E Vista Way	Vista	CA	92084	904.22	5812	722212	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	High	Yes
VI	North County Ford	450		W Vista Way	Vista	CA	92083	904.22	5511	441110	Vehicle Parking/Storage	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	High	Yes
VI	North County Import Specialist	1215	A	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	No	Yes	No	Yes	No	No	No	Yes	No	Low	Yes
VI	North County Pool Center	777	A	W Vista Way	Vista	CA	92083	904.22	5999	453998	Other Contractor	No	No	No	No	No	No	No	Yes	No	Yes	High	Yes
VI	Northgate Market	1150		E Vista Way	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Nucci's Italian Cafe Pizza Pas	1580	108	S Melrose Dr	Vista	CA	92081	904.31	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Nurserymens Exchange, Inc.	1330	C	Distribution Way	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Nutrition Zone Dba Victory Nutrition	620	104	Hacienda Dr	Vista	CA	92083	904.22		446191	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Oceanside Sales & Marketing Inc.	2560	C	Progress St	Vista	CA	92083	904.31	5099	424450	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Ohana Hawaiian BBQ	620	106	Hacienda Dr	Vista	CA	92081	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Olive Tire Shop	365	B	Olive Ave	Vista	CA	92083	904.22	7534	811198	Auto Repair	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Olympic Auto Body and Paint	119		Terracina Way	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
VI	O'Reilly Auto Parts	1250	A	S Santa Fe Ave	Vista	CA	92084	904.22	5531	441310	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Ortiz Bakery Panaderia Oaxaquetia	1275	108	S Santa Fe Ave	Vista	CA	92083	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes
VI	Oscar's Mexican Food	822		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	Yes	Yes	High	Yes*
VI	Pacific Coast Smog Check	1310	D	N Melrose Dr	Vista	CA	92083	904.10	7549	811198	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Pacific Pets	664		Matagual Dr	Vista	CA	92081	904.22		812910	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Medium	No
VI	Pacific Pride Carwash Co. Inc	980	C	Park Center Dr	Vista	CA	92081	904.31	5087	421850	Vehicle Washing	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Paleteria La Mixteca	1110	F	N Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Palomar Animal Hospital, Inc.	2331-		S Melrose Dr	Vista	CA	92081	904.31		54194	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Medium	No
VI	Palomar Car Rental, L L C	1224		Keystone Way	Vista	CA	92081	904.31	7514	532111	Vehicle/Equipment Rental	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
VI	Palomar Pizza & Pasta	3265	A1	Business Park Dr	Vista	CA	92081	904.31	5812	722111	Eating/Drinking Establishments	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No
VI	Pam's Donuts & Ice Cream	510	109	Hacienda Dr	Vista	CA	92081	904.22	5461	722213	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Pam's Pets @Simbah's Dog	573	E	W Vista Way	Vista	CA	92083	904.22		81291	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No	Yes	Medium	No
VI	Pan Don Felipe's Mexican Bakery	613		S Santa Fe Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Panda Express #1262	316		Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	Yes

* indicates business in 2011-12 Enhanced Inspection Program

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Panda Express, Inc.	20	160	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Panera Bread	401	A	Vista Village Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Papa Bambino's	1116	H	Sycamore Ave	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Papa John's Pizza	485	E	S Melrose Dr	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Passion Growers West	1352		Decision St	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Patrick Flynn's Collision and Frame	1013		Service Place	Vista	CA	92084	904.22	7532	811121	Auto Paint/Body	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Pauley Equipment	348		N Santa Fe Ave	Vista	CA	92083	904.22	7359	53221	Equipment Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Pepper Tree Frosty	270		S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	Yes	No	Yes	High	Yes*
VI	Perfect Timing Auto Service	1224		Keystone Way	Vista	CA	92083	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Pho - Ever	485	106	S Melrose Dr	Vista	CA	92083	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Pho Lucky	770	118-119	Sycamore Ave	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes*
VI	Pho Tau Bay	1717	101-102	E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	No
VI	Pick Up Stix-Vista #7214	251	303	S Melrose Dr	Vista	CA	92081	904.22	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Piston Auto Service	446	H	Olive Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Pizza Hut Inc	1591	B	E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	High	Yes
VI	Playa Azul Seafood Restaurant	1281	X, Y	N Santa Fe Ave	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	No
VI	PlusPharma	2460		Coral St	Vista	CA	92081	904.31	5122	422210	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Popeye's Auto, Inc.	1082		S Santa Fe Ave	Vista	CA	92084	904.22	5521	441120	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	High	Yes
VI	Popeyes Fried Chicken	1817	F	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Preserved Treescapes International, Inc.	1390		Engineer St	Vista	CA	92081	904.31		111421	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Primo Food Market	1535		W Vista Way	Vista	CA	92083	904.21	5411	445110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	High	Yes*
VI	Primo's Towing	446	D	Olive Ave	Vista	CA	92083	904.22	7549	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Prohibition Brewing Company	2004		E Vista Way	Vista	CA	92084	903.11	5812	312120	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Quality Discount Ice Cream Inc	2465		Coral St	Vista	CA	92081	904.31	4214	484220	Ground Transportation	No	No	No	No	Yes	No	No	No	Yes	No	Low	Yes*
VI	Quick Check Smog	835		N Santa Fe Ave	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	R & F Repair	538	301	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	R & R New & Used Tire Shop	1205	J	Melrose Dr	Vista	CA	92083	904.22	5014	441320	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Rainbow Gardens	1444		E Taylor St	Vista	CA	92084	904.22	0181	111422	Nurseries/Greenhouses	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	High	Yes
VI	Rancho del Oro Market	1281	K	N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	Yes*
VI	Rancho Del Oro Towing	2260		La Mirada Dr	Vista	CA	92081	904.31	7549	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Rancho Garcia Nursery	1640		Bonair Rd	Vista	CA	92084	904.22	5193	422930	Wholesale/Storage/Warehousing	No	Yes	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Rancho Vista Car Wash	600		Hacienda Dr	Vista	CA	92081	904.22	7542	811192	Fueling	No	No	No	No	No	No	No	Yes	Yes	Yes	High	Yes
VI	Rancho Vista Grande	2375		Vista Grande Dr	Vista	CA	92084	903.11		44523	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Rancho Vista Market	988	H	Civic Center Dr	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Rayne Water Of North County	2011		W Vista Way	Vista	CA	92083	904.21	5499	445299	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	RC Auto and Smog	1410	B	S Santa Fe Ave	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Reliable Transmission/Vista	810		N Santa Fe Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No

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Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Rice King	3265	C	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Richard's Automotive	707		S Santa Fe Ave	Vista	CA	92083	904.22		811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Rising Sun Solar Dba Schumacher Electric	1268		Oak Knoll Dr	Vista	CA	92084	904.22		221119	Power Generation/Trans	No	No	No	No	No	No	No	No	No	No	Low	No
VI	RITE AID STORE #5642	1363		E Vista Way	Vista	CA	92084	904.22	5411	445120	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Robert Jury & Associates	2435		Cades Way	Vista	CA	92081	904.32	5064	423620	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Rob's Auto Repair	1124	202	N Melrose Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	High	No
VI	Rodeos Meat Market	356		Vista Village Dr	Vista	CA	92083	904.22	5421	445210	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	Rollin Renches Inc.	1212		Distribution Way	Vista	CA	92083	904.31	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Romeo's Car Wash	352		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Rose Gonzales Plants Inc	1280		Melrose Dr	Vista	CA	92083	904.22	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Round Table Pizza	923		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Rubio's Baja Grill	1711	110	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	No	No	Low	No
VI	Rubio's Fresh Mexican Grill	620	101	Hacienda Dr	Vista	CA	92081	904.22		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	S & R Service Center	245	C	N Emerald Dr	Vista	CA	92083	904.21	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	S D Mission Auto Sales Inc	964-9		Vista Village Dr	Vista	CA	92084	904.22		441120	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	S.R. Cactus	529		Mar Vista Dr	Vista	CA	92083	904.32		115112	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Sal and Cici's Pantry and Pie Shoppe	945		S Santa Fe Ave	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Salsa Market	1100		N Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes*
VI	Santa Fe Auto Repair	1045		N Santa Fe Ave	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	Yes	No	Yes	High	Yes
VI	Santa Fe Car Wash	980		S Santa Fe Ave	Vista	CA	92084	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Santana Burrito	815		N Santa Fe	Vista	CA	92084	904.22	5812		Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Santony Footwear	2880	101-102	Scott St	Vista	CA	92081	904.31	5139	422340	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Sea Aloe Inc.	1253	A	Activity Dr	Vista	CA	92081	904.31	5122	422210	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Sea Witch Marine, Inc	1085		S Santa Fe Ave	Vista	CA	92083	904.22	5551	441222	Vehicle Parking/Storage	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
VI	Security Chevrolet Inc	1100		E Vista Way	Vista	CA	92084	904.22	5521	441120	Vehicle Parking/Storage	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Semco	1430		VANTAGE CT	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Servpro Of North Vista/San Marcos	929	103	Poinsettia Ave	Vista	CA	92081	904.32		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Shadowridge Country Club	1980		Gateway Dr	Vista	CA	92083	904.32	7997	713910	Golf courses/Parks	No	No	No	No	No	No	No	No	Yes	No	Medium	No
VI	Shell Oil Products U.S.	400		Sycamore Ave	Vista	CA	92083	904.32	5541	447110	Fueling	No	Yes	No	No	No	No	No	No	Yes	No	Low	Yes
VI	SKS, Inc. Petroleum Distributors	620		S Santa Fe Ave	Vista	CA	92083	904.22	5541	447190	Fueling	No	No	No	No	Yes	Yes	No	No	No	No	Low	Yes*
VI	Smitty's Downtown	119		E Broadway	Vista	CA	92083	904.22	5813	722410	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Sonic Drive-In	101		Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	Medium	Yes
VI	Souplantation	1860		University Dr	Vista	CA	92083	904.32	5812	722212	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	South Melrose Arco	1590		S Melrose Dr	Vista	CA	92081	904.31	5541	447110	Fueling	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	Specialized Paint & Body Works	553		Mercantile St	Vista	CA	92083	904.22	7532	811121	Auto Paint/Body	No	No	Yes	No	No	Yes	No	No	No	No	Low	No
VI	Stagecoach Inn	1865		W Vista Way	Vista	CA	92083	904.21	5813	722410	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Standard Flywheel-J D M Concepts	2620	B	Progress St	Vista	CA	92081	904.31	5013	31-33	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No

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Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
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VI	Starbucks Coffee #10008	1385		E Vista Way	Vista	CA	92084	904.22	5812	722213	Eating/Drinking Establishments	No	Yes	No	Yes	No	Yes	No	No	No	Yes	Medium	Yes
VI	Starbucks Coffee #11339	790	A	Sycamore Ave	Vista	CA	92081	904.32	5812	722213	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Starbucks Coffee #5838	251	301	S Melrose Dr	Vista	CA	92081	904.22	5812	722213	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Starbuck's Coffee #6676	30	190	W Main St	Vista	CA	92083	904.22	5812	722213	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Starbucks Coffee #6792	1631	A	S Melrose Dr	Vista	CA	92081	904.31	5812	722213	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	No
VI	Stater Bros Market #156	780		Sycamore Ave	Vista	CA	92083	904.32	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	Yes	No	No	Low	No
VI	Stater Bros. Market #157	1451		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	No	No	No	No	Yes	No	Low	No
VI	Structural Materials Co.	2770		La Mirada Dr	Vista	CA	92084	904.31	5039	42139	Building Materials	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Submarina (Business Park)	3231	4	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Submarina Dba Travis Watts	945		S Santa Fe Ave	Vista	CA	92083	904.22		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Submarina Sycamore Dba Travis Watts	320	40	Sycamore Ave	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Subway	510	101A	Hacienda Dr	Vista	CA	92081	904.21	5812	72211	Eating/Drinking Establishments	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes
VI	Subway	1461	101	N Santa Fe Ave	Vista	CA	92084	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Subway 44268	790	B	Sycamore Ave	Vista	CA	92081	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Subway #24598/Subway Life,	1711	120	University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	No	Low	Yes
VI	Subway #32111	20	150	Main St	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Subway #36756	2440	101	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Subway #44035	1906		Hacienda Dr	Vista	CA	92081	904.21	5812	722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Subway 7976	1651	B	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Subway Sandwiches & Salads #22847	1031	B	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Subway Sandwiches & Salads 2208	950		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Sun Hing Buffet LLC	1960		Hacienda Dr	Vista	CA	92081	904.21	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	High	Yes
VI	Sunrise Cafe	1250	3	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes*
VI	Sunrise Farms	3110		Scott St	Vista	CA	92083	904.31	5148	422480	Nurseries/Greenhouses	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	Sunshine's Veggies & Herbs	1280	B	Activity Dr	Vista	CA	92081	904.31		111219	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Super Pescaderia El Puerto	403		N Santa Fe Ave	Vista	CA	92084	904.22		445220	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Super Taco	1072		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
VI	Super Taco Mexican Food	1651	D	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Super Taco Mexican Food, Inc.	530	102	Hacienda Dr	Vista	CA	92081	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Superior Plant Sales Inc	2581	B	Pioneer Ave	Vista	CA	92083	904.31	5193	42293	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Susan Lanci Designs, Inc	1487	122	Poinsettia Ave	Vista	CA	92083	904.31	5199	422990	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Sushi Cafe	3245	2	Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Swanson Studios	339		Olive Ave	Vista	CA	92083	904.22	1793	235920	Masonry	No	No	No	No	No	No	No	No	No	No	Low	No
VI	T C'S Garage	1315		Hot Spring Way	Vista	CA	92081	904.31		44131	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Taco Bell 17788	910		E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Taco Bell 20413	3271		Business Park Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	Yes*
VI	Tamales Dolores	1275		S Santa Fe Ave	Vista	CA	92083	904.22	5812		Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No

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Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Taqueria La Takiza	1234		N Santa Fe Ave	Vista	CA	92083	904.22	5812		Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Target Store #T1040	1751		University Dr	Vista	CA	92083	904.32	5411	452910	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	Yes
VI	Target Store T-2165	3150		Business Park Dr	Vista	CA	92081	904.31		722	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Tasker's Automotive	1806		E Vista Way	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Ted's Auto Service	436		Vista Village Dr	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	Yes*
VI	Texmate Inc	995		Park Center Dr	Vista	CA	92083	904.31	5063	42161	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Thai One On	485	108, 109	S Melrose Dr	Vista	CA	92081	904.22	5812	722210	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Thai Pasta	1876		Hacienda Dr	Vista	CA	92081	904.21	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	Yes
VI	Thai Pasta	1711		University Dr	Vista	CA	92083	904.32	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Thai Style Restaurant	1011	A-B	S Santa Fe Ave	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	The Aniata Cheese Co	2332	1000	La Mirada Dr	Vista	CA	92081	904.31	5143	422430	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	The Daily Fix Cafe	2067		W Vista Way	Vista	CA	92084	903.11	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	The Lawn Center	603		S Santa Fe Ave	Vista	CA	92083	904.22	7699	811411	Nurseries/Greenhouses	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	Medium	Yes*
VI	The Narrow Gate	771		Matagual Dr	Vista	CA	92081	904.31		7223	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	The Original Pancake House	435		S Melrose Dr	Vista	CA	92081	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes	Medium	Yes
VI	The Pep Boys Manny, Moe & Jack Of	865		E Vista Way	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	No	No	No	No	No	No	No	No	Low	No
VI	The Snack House	1580	117	S Melrose Dr	Vista	CA	92084	904.31	5461	722213	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	No	No	Low	Yes
VI	The Top's Auto Upholstery	553		Mercantile St	Vista	CA	92083	904.22		81142	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	The Transmission Source	538	101-103	Olive Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	The Yellow Deli	315		E Broadway	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Thor Mobile Welding And Repair	446	F	Olive Ave	Vista	CA	92084	904.22		235	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Tolin's Taco's @Mr. A'S Liquor & Deli	254		Vista Village	Vista		92094	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	High	Yes
VI	Tom Kennedy Auto Repair	1330	D	N Melrose Dr	Vista	CA	92083	904.10	7538	811111	Auto Repair	No	Yes	No	No	Yes	Yes	No	No	No	No	Low	No
VI	Tom's No. 24 Restaurant	1110		Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	Yes	No	Low	Yes
VI	Top Of The Bagel	921	B5	Poinsettia Ave	Vista	CA	92083	904.32	5461	31181	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No
VI	Torres Asuncion Growers	1712		Anza Ave	Vista	CA	92084	903.11	181	111422	Nurseries/Greenhouses	No	Yes	No	Yes	No	No	No	No	No	Yes	Medium	No
VI	Tortas El Rey	508		S Santa Fe Ave	Vista	CA	92084	904.22		445	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Tortilleria Los Reyes	218		Main St	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Tri City Tire & Automotive	241	A	N Emerald Dr	Vista	CA	92083	904.21	7534	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Tri City Transmission	1147		S Santa Fe Ave	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Tri-city Smog	245	B	N Emerald Dr	Vista	CA	92083	904.21	7549	811198	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Tropical Juice & Deli	1116	F	Sycamore Ave	Vista	CA	92081	904.32	5812	722213	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Tropicana Rancho Market	829		N Santa Fe Ave	Vista	CA	92084	904.22	5411	445110	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	Turf Star, Inc.	2110		La Mirada Dr	Vista	CA	92083	904.31	782	56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No	Yes	Medium	No
VI	Two Brothers From Italy	1651	C	S Melrose Dr	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Two Brothers From Italy	986		E Vista Way	Vista	CA	92081	904.31	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Uncle Tony's Italian Cuisine	770	121	Sycamore Ave	Vista	CA	92083	904.32	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	Yes*

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Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	United Plant Growers, Inc.	1054		Mar Vista Dr	Vista	CA	92081	904.31	5193	422930	Nurseries/Greenhouses	No	No	Yes	No	No	No	No	No	Yes	No	Low	Yes
VI	United Site Services of CA, Inc	157		Nettleton Rd	Vista	CA	92083	904.21	7359	562991	Portable Sanitation	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Upper Crust Pizza	1330	2	E Vista Way	Vista	CA	92084	904.22	5812	722211	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Urbn Coal Fired Llc	203		Main St	Vista	CA	92084	904.22		72211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	US Foodservice Inc.	1201		Park Center Dr	Vista	CA	92083	904.31	5144	42244	Wholesale Food	No	Yes	No	No	No	No	No	No	No	No	Low	No
VI	Used Car Depot	1036		S Santa Fe Ave	Vista	CA	92084	904.22	5521	441120	Vehicle Parking/Storage	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Used Car Depot, Inc.	1420		S Santa Fe Ave	Vista	CA	92084	904.22		4411	Vehicle Parking/Storage	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	Used Tires Los Parientes	1725		E Vista Way	Vista	CA	92083	904.22		44132	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Vadnais Corporation	2130		La Mirada Dr	Vista	CA	92081	904.31		23	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Vale View Farm	499		Vale View Dr	Vista	CA	92081	904.22		111219	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Valvoline Instant Oil Change	243		Sycamore Ave	Vista	CA	92084	904.32	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Vamos A Texcoco	950	H	E Vista Way	Vista	CA	92084	904.22		722211	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Victor's Brake & Auto Specialists	1352	G	N Melrose Dr	Vista	CA	92083	904.10	7539	811118	Auto Repair	No	No	Yes	No	No	No	No	No	No	No	Low	Yes
VI	Village Cafe	406		Main St	Vista	CA	92083	904.22	5812	722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	No	Yes	High	Yes*
VI	Vista Auto Wholesale	714		Vale View Dr	Vista	CA	92081	904.22		423110	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Vista Brake Service and Supply	790		E Vista Way	Vista	CA	92084	904.22	7539	811118	Auto Repair	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Vista Car Care	444	A	S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	No	No	Yes	No	No	No	No	No	Low	No
VI	Vista Entertainment Center	435		W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	Yes	No	No	Yes	No	No	No	Yes	No	Low	Yes
VI	Vista Firestone Brake and Smog	711		S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Vista Motorcycle	1155	G	S Santa Fe Ave	Vista	CA	92083	904.22	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Vista Muffler and Radiator	435		Redlands St	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Vista Nutrition	839		Williamston St	Vista	CA	92084	904.22	5411	4451	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Vista Santa Fe Car Wash	521		N Santa Fe Ave	Vista	CA	92083	904.22	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No	No	Low	No
VI	Vista Santa Fe Transmissions, Inc.	1144		S Santa Fe Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Vista Tire Pro's	658		E Vista Way	Vista	CA	92083	904.22		44132	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Vista Transmission Service	427	B	Redlands Street	Vista	CA	92083	904.22	7537	811113	Auto Repair	No	No	Yes	No	Yes	Yes	No	Yes	No	Yes	High	Yes*
VI	Vista Valley Auto Center	1803		E Vista Way	Vista	CA	92084	904.22	5521	44112	Vehicle Parking/Storage	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Vista Way Cafe	868		E Vista Way	Vista	CA	92084	904.22	5812	722110	Eating/Drinking Establishments	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Vista Way Smog	911		E Vista Way	Vista	CA	92083	904.22	7549	811198	Auto Repair	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Vons Grocery #2121	940		S Santa Fe Ave	Vista	CA	92083	904.22	5411	445110	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Walmart #2094	1800		University Dr	Vista	CA	92083	904.32	5411	452910	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	Yes	No	Medium	No
VI	Warmland Nursery	1850		Warmlands Ave	Vista	CA	92084	904.22	181	1114	Nurseries/Greenhouses	No	No	No	Yes	No	No	Yes	Yes	No	Yes	Medium	No
VI	Wasabi Japanese Cuisine	1688	212	S Melrose Dr	Vista	CA	92083	904.31	5812	722110	Eating/Drinking Establishments	Yes	No	No	No	Yes	No	No	No	No	Yes	Medium	No
VI	Wedding Day Catering, Inc.	1350	8	E Vista Way	Vista	CA	92084	904.22		72232	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Wendy's Restaurant #16	567		W Vista Way	Vista	CA	92083	904.22	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	No
VI	West Coast Imports Sales & Conversions	1386	E	Poinsettia Ave	Vista	CA	92083	904.31	5521	44112	Vehicle Parking/Storage	No	Yes	No	Yes	No	Yes	No	No	No	Yes	Medium	No
VI	West Coast Refrigerated Trucking	1330	B	Distribution Way	Vista	CA	92081	904.31	4212	484220	Ground Transportation	No	No	No	No	Yes	No	No	No	Yes	No	Low	No

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VI	Western Concrete Pumping, Inc	2181		La Mirada Dr	Vista	CA	92083	904.31	1623	23491	Other Contractor	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Western States Petroleum LLC dba	600		Hacienda Dr	Vista	CA	92083	904.22	5541	447110	Fueling	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Wholesale Tube Bending #2	257	C	N Emerald Dr	Vista	CA	92083	904.21	7533	811112	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Wings N Things Restaurant	35	C140	Main St	Vista	CA	92083	904.21		7221	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	Yes
VI	Wizard Auto Repair	446	C	Olive Ave	Vista	CA	92083	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	X R-Bob's Harley Davidson Repair	329		Olive Ave	Vista	CA	92083	904.22	7699	811490	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Yame Cafe	680		Hacienda Dr	Vista	CA	92081	904.22	5812	722213	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	High	Yes
VI	Ye Olde Car Shoppe	555		Mercantile St	Vista	CA	92084	904.22	7538	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Yogurt Giant	1817	E	W Vista Way	Vista	CA	92083	904.21	5812	722211	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Yucaipa Towing	451		N Olive Ave	Vista	CA	92083	904.22	7549	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Yum Yum Donut Franchise 5050d	924		S Santa Fe Ave	Vista	CA	92084	904.22	5461	722213	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	No	Yes	Yes	High	Yes

* indicates business in 2011-12 Enhanced Inspection Program

APPENDIX D-2
FY 2011-12 STATIONARY INDUSTRIAL INVENTORY

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	2s2, Inc.	1330	C	Specialty Dr	Vista	CA	92081	904.31	3679	334419	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	78 Sign Company	830		E Vista Way	Vista	CA	92083	904.21	2752	323110	Printing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	A R C Fab LLC	2591	F	Pioneer Ave	Vista	CA	92081	904.31	2542	337215	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	A W R/Racing Cages	2865	106-107	Scott St	Vista	CA	92081	904.31	3711	336211	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Accutech, LLC	2641		La Mirada Dr	Vista	CA	92083	904.31	2835	325413	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Advance Web Offset, Inc.	2260		Oak Ridge Way	Vista	CA	92081	904.31	2752	323110	Printing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Advanced Grey Water Recycling Systems	1205		Activity Dr	Vista	CA	92081	904.31	3589	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Air Tech Streamlining	2530		Fortune Way	Vista	CA	92083	904.31	3714	0	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	American Faucet & Coatings Corp	3280		Corporate View Dr	Vista	CA	92083	904.51	3499	33251	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	American Marble	1280		N Melrose Dr	Vista	CA	92083	904.10	3281	327991	Manufacturing, Stone/Glass	No	No	Yes	No	No	No	No	Yes	Yes	No	Low	Yes
VI	American Peptide Company	1271		Avenida Chelsea	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Apollo Sprayers Inc	1030		Joshua Way	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Applied Membranes, Inc.	2325		Cousteau Ct	Vista	CA	92083	904.31	3589	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Architectural Woodcraft	2525	5	Pioneer Ave	Vista	CA	92081	904.31	2434	337110	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Aurora West	1343	19	Distribution Way	Vista	CA	92081	904.31		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Avila's Auto Repair	808	B	N Santa Fe Ave	Vista	CA	92083	904.22	7538		Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	B B C Installations	925	A16	Poinsettia Ave	Vista	CA	92081	904.32		33711	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Bendmac Manufacturing	440	P	Olive Ave	Vista	CA	92084	904.22	3498	332996	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	BioFilm Inc	3225		Executive Ridge	Vista	CA	92081	904.51	3841	339112	Manufacturing, Misc	No	No	No	No	No	No	No	Yes	No	No	Low	Yes
VI	Blue Shift Apparel Dba Blue Shift LLC	2336	600	La Mirada Dr	Vista	CA	92081	904.31	2759	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Bravo Screen Print	1230	D	Activity Dr	Vista	CA	92081	904.31	2759	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Brightco Machining	2336	200	La Mirada Dr	Vista	CA	92081	904.31	3999	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Bristol S.G., Inc.	2525	6	Pioneer Ave	Vista	CA	92083	904.31	3679	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Bruning Engineering Inc	2598	M	Fortune Way	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	C Enterprises, LP	2445		Cades Way	Vista	CA	92081	904.32	3357	33592	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	No	Yes	No	Low	No
VI	C N C Precision Machining	797	C	North Ave	Vista	CA	92083	904.10	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	Yes	No	Low	Yes
VI	CH Products (Joystick Technologies)	970		Park Center Dr	Vista	CA	92083	904.31	3699	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Clearly Golf, Llc	1950	105	Thibodo Rd	Vista	CA	92081	904.32		31599	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Clocktivity	530		Hatherly St	Vista	CA	92083	904.21		334518	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Coastline Embroidery	1330	D	Keystone Way	Vista	CA	92081	904.31	2281	313111	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Coffee Cart Biz	1150		Joshua Way	Vista	CA	92081	904.31	2541	337215	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Controlled Motion Hydraulics	1917	B	Alta Vista Dr	Vista	CA	92084	904.22		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Cookies Con Amore	2330	700	La Mirada Dr	Vista	CA	92081	904.31	2052	311821	Manufacturing, Food/Drink	No	Yes	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Coors Tek Vista (Previously BAE)	2065		Thibodo Rd	Vista	CA	92083	904.31	3297	327125	Manufacturing, Stone/Glass	No	No	No	No	No	No	No	Yes	No	No	Low	Yes*
VI	Coors Tek Vista (Previously BAE)	1960		Watson Way	Vista	CA	92083	904.32	3297	327125	Manufacturing, Stone/Glass	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Medium	Yes

*indicates business in 2011-12 Enhanced Inspection Program

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Cornerstone Sensors Inc	1304	C	N Melrose Dr	Vista	CA	92083	904.10	3822	334512	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Crown Industrial Products, Inc.	2440		La Mirada Dr	Vista	CA	92081	904.31	3714	33634	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	D B S Associates, Inc.	2480		Grand Ave	Vista	CA	92081	904.32	3585	333415	Manufacturing, Equipment	No	Yes	No	No	No	No	No	No	Yes	No	Low	No
VI	Denso International America Inc. Dba L A Labs	3250		Business Park Dr	Vista	CA	92081	904.51	2833	5417	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Medium	No
VI	Dessert Lounge And Cakery @S A E Kitchen	2515	5	Pioneer Ave	Vista	CA	92081	904.31	2051	31181	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No
VI	Digital On-Demand, Inc.	1390	B	Decision St	Vista	CA	92081	904.31	3482	334	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Dime Water (Virgin Pacific Water)	2575	J	Fortune Way	Vista	CA	92083	904.31	3589	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Distinctive Plastics, Inc.	1385		Decision St	Vista	CA	92085	904.31	3089	326199	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Diversified Manufacturing Of Ca	2555		Progress St	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Diversified Tool & Die	2585		Birch St	Vista	CA	92083	904.31	3469	332116	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Douglas Technologies	1340		N Melrose Dr	Vista	CA	92083	904.10	3714	336399	Manufacturing, Equipment	No	Yes	No	No	Yes	No	No	No	Yes	No	High	Yes*
VI	Dutek Inc.	2248		Oak Ridge Way	Vista	CA	92083	904.31	3679	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Earth Source Organics	1235	E	Activity Dr	Vista	CA	92081	904.31	3999	311	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	High	No
VI	Earthlite Massage Tables Inc dba	3210		Executive Ridge Dr	Vista	CA	92083	904.31	2599	3371	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Earthly Ways Co. Ltd Dba Axxe Wetsuits	515		Edna Way	Vista	CA	92081	904.32	2329	423	Manufacturing, Misc.	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Eaton Leonard Robolix, Inc	1391	A	Specialty Dr	Vista	CA	92083	904.31	3542	333513	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	EGR Tech (USA) LLC	2051		Bravado St	Vista	CA	92081	904.31		333618	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	El Camino Rental Dba Bilcan Inc.	1121		S Santa Fe Ave	Vista	CA	92083	904.22	3273	327320	Manufacturing, Concrete	No	No	Yes	No	Yes	No	No	Yes	No	Yes	Medium	No
VI	E-World Recyclers	2480		Ash St	Vista	CA	92081	904.31	5093	421930	Recycling	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Exotic Wood Crafters	1582		Sunrise Dr	Vista	CA	92084	904.22		337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	F&T Precision Products	980	I	Park Center Dr	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Fastmill Enterprises	1304	I	N Melrose Dr	Vista	CA	92083	904.22	3441	332312	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Fax Foods	1205		Activity Dr	Vista	CA	92081	904.31	3089	321699	Manufacturing, Plastic/Rubber	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Ferro Electronic Materials Systems	1395		Aspen Way	Vista	CA	92083	904.31	3675	334414	Manufacturing, Electronics	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Fineline Apparel Printing	1485	105	Poinsettia Ave	Vista	CA	92083	904.51	2759	323113	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Finishing Touch Millwork, Inc.	1260	C	Activity Dr	Vista	CA	92081	904.31		337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Flotron	2485		Coral St	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	FMD	2308		La Mirada Dr	Vista	CA	92081	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Forward Screenprinting	2336	1100	La Mirada Dr	Vista	CA	92081	904.31	2759	323113	Printing	No	No	No	No	Yes	No	No	Yes	Yes	No	Low	No
VI	Frito Lay Inc	1390		Vantage Ct	Vista	CA	92081	904.31	4214	484220	Ground Transportation	No	No	No	No	Yes	No	No	Yes	No	No	Low	No
VI	GE Osmonics	760		Shadowridge Dr	Vista	CA	92083	904.32	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	Yes	Yes	No	Low	Yes
VI	Green Flash Brewing Company	1430		Vantage Ct	Vista	CA	92081	904.32	2082	312120	Manufacturing, Food/Drink	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Greenleaf Textron	1390		Aspen Way	Vista	CA	92083	904.31	3679	334419	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	Hargett Precision Products	2865	108	Scott St	Vista	CA	92081	904.31	3592	336311	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Hi Tech Swiss Machining Inc	2410		La Mirada Dr	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	No

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Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
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VI	Hit The Road Cyclery	1185	I	Park Center Dr	Vista	CA	92081	904.31	3751	336991	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Horstman Manufacturing Co Inc	2510		Pioneer Ave	Vista	CA	92083	904.31	3799	336999	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	HRE Performance Wheels	2611	D	Commerce Way	Vista	CA	92081	904.31	3714	336399	Manufacturing, Equipment	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	Hydrocomponents & Technologies, Inc.	1175	H	Park Center Dr	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	I C P America, Inc.	1070		Joshua Way	Vista	CA	92083	904.31	3676	334415	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	I W Technologies, Inc.	2446		Cades Way	Vista	CA	92083	904.32	3999	333319	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Industry Supply	1432		Alta Vista Dr	Vista	CA	92084	904.22		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Innovative Metal Products, Inc.	2443	B	Cades Way	Vista	CA	92081	904.32	3444	332322	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	International Lottery & Totalizator Systems, Inc.	2310		Cousteau Ct	Vista	CA	92081	904.31	3482	334519	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Intubrite	2322		La Mirada Dr	Vista	CA	92081	904.31		42	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Iron Fist Brewing Company, Inc.	1305	101	Hot Spring Way	Vista	CA	92081	904.31		445310	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	J & D Laboratories	2710		Progress St	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	J Mark Manufacturing Inc	2480	C	Coral St	Vista	CA	92083	904.31	3499	332312	Manufacturing, Structural Steel	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Javo Beverage Co. (La Jolla Fresh Squeezed Coffee)	1311		Specialty Dr	Vista	CA	92081	904.31	2095	311920	Manufacturing, Food/Drink	Yes	Yes	No	No	No	No	No	No	No	Yes	High	Yes
VI	Jeld-Wen Summit Windows And Patio Doors	2760		Progress St	Vista	CA	92083	904.31	3442	33231	Manufacturing, Structural Steel	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Jensen Meat Co Inc	2525		Birch St.	Vista	CA	92081	904.32	2013	311612	Manufacturing, Food/Drink	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	Jif-Pak Manufacturing, Inc.	1451		Engineer St	Vista	CA	92083	904.31	3999	31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	Yes*
VI	Killion Industries Inc	1380		Poinsettia Ave	Vista	CA	92083	904.31	2541	337215	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Killion Industries, Inc.	2445		La Mirada Dr	Vista	CA	92081	904.31		335222	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Killion Industries, Inc.	2811		La Mirada Dr	Vista	CA	92083	904.31	3585	333415	Manufacturing, Wood/Furniture	No	Yes	No	No	No	No	No	No	Yes	No	Low	No
VI	KM Cakery @ SAE Kitchen	2515	5	Pioneer Ave	Vista	CA	92081	904.31	5999	311813	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No
VI	K'S Refrigerated Transport, L L C	2591	C	Pioneer Ave	Vista	CA	92081	904.31	4212	4841	Ground Transportation	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
VI	L M I Aerospace/Versaform	1351		Specialty Dr	Vista	CA	92081	904.31	3721	3364	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Lancer Orthodontics, Inc	2330		Cousteau Ct	Vista	CA	92081	904.31		339114	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Lee's Iron Inc	1315		Lee Dr	Vista	CA	92083	904.10	5093	421930	Recycling	No	No	Yes	No	No	No	No	Yes	No	No	Low	No
VI	Lemken Kuhlwerk	2330	200	La Mirada Dr	Vista	CA	92081	904.31	2434	337110	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Lightworks Optics	1198		Joshua Way	Vista	CA	92081	904.31	3672	334412	Manufacturing, Electronics	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	M C R Auto Machine Shop	452	K	Olive Ave	Vista	CA	92083	904.22	3999	332710	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	M J L Engineering & Manufacturing Dba Nila L L C	2312		La Mirada Dr	Vista	CA	92081	904.31	3446	332323	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	M Klemme Technology, Corp	1384	F	Poinsettia Ave	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	M M Precision Machining	2525	4	Pioneer Ave	Vista	CA	92083	904.31	3345	333515	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Magna Coatings Corp	1440		Decision St	Vista	CA	92083	904.31	2851	32551	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Manzo's Metal Works	797	D	North Ave	Vista	CA	92083	904.10	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	Yes	No	Low	Yes
VI	Marburg Industries, Inc.	1207		Activity Dr	Vista	CA	92081	904.31	3999	333	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Martinez Bakery	995	110	Postal Way	Vista	CA	92083	904.22	2051	31181	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No

*indicates business in 2011-12 Enhanced Inspection Program

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Mary's Custom Workroom	2835	C	La Mirada Dr	Vista	CA	92081	904.31	2391	314121	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Meg Lynn Knight-Warren Dba Mega A Cakes	1210		Cielita Linda Dr	Vista	CA	92083	904.10	2051	311813	Manufacturing, Food/Drink	Yes	No	No	No	No	No	No	No	No	Yes	Medium	No
VI	Merical Inc.	2550		Pioneer Ave	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	Yes	No	No	Yes	No	No	Low	No
VI	Meridian Laboratory Inc	1330	E	N Melrose Dr	Vista	CA	92083	904.10	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	Michael A. Eddy Painting	1930	I	Watson Way	Vista	CA	92083	904.32	3479	332812	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Minor Fab	1205	M	N Melrose Dr	Vista	CA	92084	904.10	3711	336111	Manufacturing, Fabricated Metal	No	Yes	No	No	No	No	No	Yes	Yes	No	Low	No
VI	MODERN MEDICAL SUPPLY	1235	F	Activity Dr	Vista	CA	92083	904.31	2599	339111	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	MS Marble	1338	J	N Melrose Dr	Vista	CA	92083	904.10	1743	235430	Manufacturing, Stone/Glass	No	Yes	No	No	No	No	No	Yes	No	No	Low	No
VI	Natural Alternatives Int'l Inc	1215	D	Park Center Dr	Vista	CA	92081	904.31	2833	325411	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	New World Recycler	661	21	Copper Dr	Vista	CA	92083	904.22		421930	Recycling	No	No	Yes	No	No	No	No	Yes	No	Yes	Medium	No
VI	Newsail Marine & Energy	730	E	Sycamore Ave	Vista	CA	92083	904.32	3999	332710	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	NML, LLC	2575	105	Pioneer Ave	Vista	CA	92081	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	North Berwick Bay L L C	389		Olive Ave	Vista	CA	92084	904.22		31-33	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	North County R V & Boat Storage	1551		Sycamore Ave	Vista	CA	92081	904.31	4225	49319	Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Nutritional Engineering Inc.	1208		Avenida Chelsea	Vista	CA	92083	904.31	2834	325412	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	No	No	Low	No
VI	O-Navi, L L C	1260	B	Activity Dr	Vista	CA	92081	904.31	3672	334412	Manufacturing, Electronics	No	No	No	No	Yes	No	No	No	Yes	No	Low	No
VI	O'Ridge Ceramics	533		Rudd Rd	Vista	CA	92084	904.22		327112	Manufacturing, Stone/Glass	No	No	No	No	No	No	No	Yes	No	Yes	Medium	No
VI	Orthodontic Design & Production, Inc.	1370	D	Decision St	Vista	CA	92081	904.31	3843	339114	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Orvel Kent Food Co.	3285		Corporate View Dr	Vista	CA	92083	904.51	2038	311412	Manufacturing, Food/Drink	No	Yes	No	No	No	No	No	No	Yes	No	Low	No
VI	Outreach Inc	2230		Oak Ridge Way	Vista	CA	92081	904.31	2759	323119	Printing	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	Ozivert	921	3	Poinsettia Ave	Vista	CA	92081	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Pacific Ambulance, Inc.	1939		W Vista Way	Vista	CA	92083	904.21		621910	Ground Transportation	No	No	Yes	No	Yes	No	No	No	No	No	Low	No
VI	Personal Dental Services	2517		Lynn Way	Vista	CA	92081	904.32	3843	339114	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Phoenix Energy	1046		Buena Vista Dr	Vista	CA	92081	904.31		562219	Waste Management	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	Pixel Imaging Media	2595		Fortune Way	Vista	CA	92081	904.31	2759	323119	Printing	No	No	Yes	No	No	Yes	No	No	Yes	No	Low	No
VI	Precise Manufacturing	1495	148	Poinsettia Ave	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Predator Motorsports	1250		Distribution Way	Vista	CA	92081	904.31	2599	33639	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Print House Inc	2630		Progress St	Vista	CA	92083	904.31	2759	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Professional Water Technologies	1048		La Mirada Ct	Vista	CA	92081	904.31	2899	325988	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Promach	2438		Cades Way	Vista	CA	92081	904.32	3599	33271	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Proteus Dimensional Technologies, Inc	1260		Distribution Way	Vista	CA	92083	904.31	3999	339999	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Quantum Focus Instruments	2385		La Mirada Dr	Vista	CA	92083	904.31	3826	3345	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	R Jesse & Company Inc	1226		Keystone Way	Vista	CA	92083	904.31	3645	335122	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Radial Brewing Company	1244		Amador Ave	Vista	CA	92083	904.21	2082	312120	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Medium	No
VI	Ramski Machinery	1725		Eldred Ln	Vista	CA	92083	904.21		332	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No

*indicates business in 2011-12 Enhanced Inspection Program

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	Raveon Technologies	2780	C	La Mirada Dr	Vista	CA	92081	904.31	3663	334220	Manufacturing, Equipment	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Ray Allen Company, Inc.	2525	8	Pioneer Ave	Vista	CA	92081	904.31	3593	333995	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Rayzist Photomask Inc	955		Park Center Dr	Vista	CA	92083	904.31	3281	327991	Manufacturing, Stone/Glass	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	High	Yes*
VI	Recycle Brokerage Services	154		Woodland Dr	Vista	CA	92083	904.32	3679	42393	Recycling	No	No	Yes	No	No	No	No	Yes	No	No	Low	No
VI	Reybro, Inc. dba Quality Recycling	149		Nettleton Rd	Vista	CA	92083	904.21	5093	421930	Recycling	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Medium	No
VI	Roadway Express Inc.	1392		Engineer St	Vista	CA	92083	904.31	4212	484110	Ground Transportation	No	Yes	No	No	Yes	No	No	Yes	No	No	Low	No
VI	S B A J Trans Auto Sales	1225		N Santa Fe Ave	Vista	CA	92084	904.22		44131	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No	No	Low	No
VI	Safe-Way Moving Inc.	1330	A	Distribution Way	Vista	CA	92081	904.31	4225	484110	Ground Transportation	No	Yes	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Salerno D'Italia	1780		Crystal Ridge Way	Vista	CA	92081	904.31	2262	313311	Manufacturing, Misc.	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Sandel Avionics, Inc.	2401		Dogwood Way	Vista	CA	92081	904.32	3812	334511	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Schmid Built Products	2520		Fortune Way	Vista	CA	92081	904.31		33299	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Seber Design Group	2438		Cades Way	Vista	CA	92083	904.32	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Seven Mfg	1420	C	Decision St	Vista	CA	92081	904.31	2834	325412	Eating/Drinking Establishments	No	No	No	No	No	No	No	No	No	No	Low	Yes
VI	Shadowridge Water Reclamation Facility	2525		Lupine Hills Rd	Vista	CA	92083	904.31	4952	221320	POTWs	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	Sherline Products, Inc.	3235		Executive Ridge Dr	Vista	CA	92083	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Skylark Sport Marketing dba, Prana	3275		Corporate View Dr	Vista	CA	92081	904.51	2329	315228	Manufacturing, Fabric/Clothes	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Smart Engineering Systems	2308		La Mirada Dr	Vista	CA	92081	904.31	3625	335314	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Sound Away Corporation	1175	A	Park Center Dr	Vista	CA	92081	904.31	3482	3343	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Speedy Cut Inc	2565		Progress St	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Stines Machine Inc	2481		Coral St	Vista	CA	92083	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Suarez Wood Finishing	545		W Los Angeles Dr	Vista	CA	92083	904.22	2431	321918	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Sue Spray Woodworks	925	A-9	Poinsettia Ave	Vista	CA	92081	904.32	2434	337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Tech 22	1160		Joshua Way	Vista	CA	92083	904.31	3679	334418	Manufacturing, Electronics	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Tech M3, Inc	1281		Activity Dr	Vista	CA	92081	904.31	3479	332812	Manufacturing, Misc	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Technical Tooling & Gage	2598	F	Fortune Way	Vista	CA	92083	904.31	3999	332999	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Techniche International	1040		Joshua Way	Vista	CA	92083	904.31	3577	334418	Manufacturing, misc.	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Tecxel/R Zamora Corp.	2826	D	La Mirada Dr	Vista	CA	92083	904.31	3599	332710	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Tedco Tool	1175	C	Park Center Dr	Vista	CA	92084	904.31	3728	336413	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	The Brass Ring	1495	150	Poinsettia Ave	Vista	CA	92081	904.51	3999	33232	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	The Final Cut	1112		Anza Ave	Vista	CA	92084	904.22	2431	337212	Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No	No	Low	No
VI	The Wineing Wife	1065		Woodcrest Ln	Vista	CA	92081	904.32	3231	327215	Manufacturing, Stone/Glass	No	No	No	No	No	No	No	Yes	No	No	Low	No
VI	Tierra Eternal	355		Windy Ln	Vista	CA	92083	904.22	2674	322224	Manufacturing, Misc.	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Titeflex Corporation	2755	C	Dos Arrons Way	Vista	CA	92081	904.31	3599	332999	Manufacturing, Plastic/Rubber	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Medium	No
VI	Tortilleria Hermanos Reyes	402		Olive Ave	Vista	CA	92084	904.22	2099	311830	Eating/Drinking Establishments	Yes	Yes	No	No	No	No	No	Yes	No	Yes	High	Yes
VI	T-Rex Clothing & Graphics	1349		Bonair Rd	Vista	CA	92084	904.22	2731	323113	Printing	No	No	No	No	No	No	No	No	No	No	Low	No

*indicates business in 2011-12 Enhanced Inspection Program

Agency	Business Name:	Address Number	Suite Number	Street Name	City:	State:	Zip	Hydrologic Area	SIC Code	NAICS Code	Category:	Bacteria	Gross Pollutants	Metals	Nutrients	Oil_Grease	Organics	Pesticides	Sediment	Trash	Tributary to 303d Listed	TTWQ	Inspected in FY 11-12
Jurisdiction responsible for inspection of facility	Name used to identify facility in database	Street number of facility, this is the numeric street address	Suite or unit number	Name of Street facility is located on.	City were facility is located	This is default to CA	Zip code where facility is located	This field requires both the Hydrologic unit and Hydrologic area where facility is located	Standard Industrial Classification code of facility determined by US Department of Labor-OSHA	North American Industry Classification System code of facility	Describes the products or services provided by each category source	Potential pollutants that may be generated by the facility. A facility can be identified as having more than one pollutant.									Is facility tributary to 303(d) listed receiving water and generating pollutants for which the water body is impaired	Threat to Water Quality rating	
VI	U S I Inc.	1185	0	Park Center Dr	Vista	CA	92083	904.31	2833	325411	Manufacturing, Biotech/Pharmaceutical	No	No	No	No	No	No	No	No	Yes	No	Low	No
VI	Uli Boards, Inc.	2120		Vista Grande Pl	Vista	CA	92084	903.11	3949	339920	Manufacturing, Misc.	No	No	No	No	No	No	No	No	No	No	Low	No
VI	US Post Office	960		Postal Way	Vista	CA	92084	904.22	4311	491110	Ground Transportation	No	No	No	No	No	No	No	Yes	Yes	Yes	Medium	No
VI	UTVunderground.com	1235	A	Activity Dr	Vista	CA	92081	904.31	3499	332999	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Versaform Corp	1377		Specialty Dr	Vista	CA	92081	904.31	3728	336413	Manufacturing, Equipment	No	No	Yes	No	No	No	No	Yes	Yes	No	High	Yes
VI	Vista Display Products	1260	C	Liberty Way	Vista	CA	92081	904.31		339943	Manufacturing, Chemicals	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Vista Fluid Technologies	1791		Vale Terrace	Vista	CA	92084	904.22		333415	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Vista Industrial Products Inc	1395		Park Center Dr	Vista	CA	92083	904.31	3499	332117	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No
VI	Walker Contract Machining @ F M D Automation	2308		La Mirada Dr	Vista	CA	92081	904.31	3541	333512	Manufacturing, Equipment	No	No	No	No	No	No	No	No	No	No	Low	No
VI	Watkins Manufacturing Corp	1280		Park Center Dr	Vista	CA	92083	904.31	3088	326191	Manufacturing, Plastic/Rubber	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	High	Yes
VI	Westbridge Agricultural Products	1260		Avenida Chelsea	Vista	CA	92081	904.31	2879	32531	Manufacturing, Chemicals	No	No	No	No	No	No	No	Yes	Yes	No	Low	No
VI	Western CNC, Inc	1001		Park Center Dr	Vista	CA	92083	904.31	3599	33271	Manufacturing, Fabricated Metal	No	No	No	No	No	No	No	Yes	No	No	High	No
VI	Youngdale Manufacturing Corp	2449		Cades Way	Vista	CA	92083	904.32	3429	332510	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No	No	Low	No

*indicates business in 2011-12 Enhanced Inspection Program

APPENDIX D-3
FY 2011-12 MOBILE BUSINESS INVENTORY

Business name	Address	Zip Code	City	TTWQ	SIC Code	NAICS Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
(cho)2 Home Services	955 Postal Way 56	92083	Vista	Low	1799		Painting/Coating	No	No	No	No	No	No	No	No	No
3 Pacos Catering @ Karinas Ricas Carnitas	1740 E Vista Way	92084	Vista	Medium		722110	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
A & S Painting	1709 Manor Dr	92084	Vista	Low	1721001	23832	Painting/Coating	No	No	No	No	No	No	No	No	No
A C L Carpet & Upholstery Cleaning	2130 Sunset Dr 108	92081	Vista	High		56174	Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
A M H Grading	1004 Vale View Dr	92081	Vista	Medium		238990	Other Contractor	No	No	No	No	No	No	No	No	No
A S Elite Swimming Pool & Spa Repair	1580 Shadowridge Rd #113	92083	Vista	Medium	7389114	812990	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
A.C. Solution Pros	1949 West Dr. #13	92083	Vista	Medium	7549	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No
A.S.P. Home Repair	1008 Georgia Ln	92083	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Abe Landscape Professional	243 Pala Vista Dr 10	92083	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Abundant Air Systems	167 Vera Cir	92084	Vista	Low		235	Other Contractor	No	No	No	No	No	No	No	No	No
Accurate Estimating Service	1727 Creekside Ln	92081	Vista	High		561790	Power Washing	No	No	No	No	No	No	No	No	No
Adam Serrato Landscaping	709 W California Ave	92083	Vista	Medium	0782006	561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Adrian Casarrubiaos Landscaping	1043 Clearbrook Ln	92084	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Advance Carpet Cleaning & Bldg.	278 Paseo Marguerita	92084	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Affordable Carpet Care&Jch Ent	418 Santa Clara Dr	92083	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Alexis M. Palos	371 N Melrose Dr C	92083	Vista	Low	42493		Wholesale/Storage/Warehousing	No	No	No	No	No	No	No	No	No
All Bout Culinary	1352 Longfellow Rd	92081	Vista	Low	5812009	72232	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
All Pro Cleaning & Maintenance	328 Cananea St	92084	Vista	Low		541320	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Alta Vista Lawn Care	534 W California Ave 4	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Amador Landscape	1424 Bonair Rd 4	92084	Vista	Low	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
American Concrete Cutting & Coring	1217 Distribution Way	92083	Vista	Low	1799	23599	Other Contractor	No	No	No	No	No	No	No	No	No
Andres Gardening & Hndymn Svc	1984 Warmlands Ave	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Andy's Carpet Cleaner	352 N Santa Fe Ave	92083	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Angel's Gardening Maintenance	523 N Citrus Ave	92084	Vista	Low		811490	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Antonio Maola Concrete Pumping	603 Rancho Vista Rd	92083	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Aqua Action 360 Carpet Care	409 Aurora St	92102	San Diego	Medium	7217	56174	Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Araiza Paving & Grading	550 W Vista Way 110	92083	Vista	Low	1611		Other Contractor	No	No	No	No	No	No	No	No	No
Around Town Power Wash	2242 Valley Road	92056	Oceanside	High			Power Washing	No	No	No	No	No	No	No	No	No
Artistic View	405 Palmbark	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Attention to Detail			Vista	High			Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Avant Scape	2168 University Dr B5	92083	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Azland Handyman Service	802 Lemon Ave	92084	Vista	Low		811411	Other Contractor	No	No	No	No	No	No	No	No	No
Aztec Landscaping, Inc.	7980 Lemon Grove Way	91945	Lemon Grove	Medium	1711	561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Azteca's Landscape	955 Postal Way 34	92083	Vista	High		56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No
B And R Lanscaping	1360 Foothill Dr 64	92084	Vista	Low		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
B&M's Home And Carpet Care	1710 Timothy Pl	92083	Vista	Low	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Baldwin Yard And Maintenance	855 Francis Dr	92084	Vista	Medium		56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Ballin' Auto Detailing	269 Lado de Loma #4	92083	Vista	Medium	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Barlow's Pest Control	375 Windy Lane	92083	Vista	Low	7342		Pest Control	No	No	No	No	No	No	Yes	No	No
Bautista Maintenance	1721 Rush Ave	92084	Vista	Medium			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Berry's Bumper Repair	1517 Oasis Ln	92083	Vista	Low	7538		Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Bill Middleton @Miller's Carpet	512 W. California Ave 109	92084	Vista	High		56174	Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Bismillah Kabob-N-Curry @Morris B. Vance Comm Rm	200 Civic Center Dr	92084	Vista	Low	5812009	72232	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
Blake's Customs	779 Lemon Ave	92084	Vista	Medium	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Bobby Watkins Family Pool & Spa Service	943 Crescent Dr	92084	Vista	Medium	7389		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Bob's Pool Cleaning	2002 Redwood Crest	92081	Vista	Medium	7389		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Bradleys Pest Control	147 Valencia Dr	92083	Vista	Low			Pest Control	No	No	No	No	No	No	Yes	No	No
Brandi's Haneys Grooming	475 Gail Dr	92084	Vista	Low			Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No
Brent Mobile Wax	4660 N. River Road	92057	Oceanside	High		811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Brians Landscape And Maintenance	452 W Los Angeles Dr	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Brother's In Law Landscaping	343 Gail Dr	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Brothers Maint	320 Acateno Ave	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Bugs Out Window & Door Screens	1235 Grandview Rd	92084	Vista	Low		332618	Manufacturing, Fabricated Metal	No	No	Yes	No	No	No	No	No	No
C & J Discount Carpet Care	1004 Marlin Dr	92084	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
C T Concrete	222 East Dr	92084	Vista	Medium	1771001	238110	Other Contractor	No	No	No	No	No	No	No	No	No
Cables Landscaping	1521 Sunrise Dr	92084	Vista	Medium	56173		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Cafe Brazil Catering	2512 Pioneer Ave #5	92081	Vista	Medium	5812009	722320	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
Cali Bunga Pool Cleaning	1260 Winchester Ct	92083	Vista	Medium	811		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
California Masonry	277 Yacon Cir	92083	Vista	Low		238140	Masonry	No	No	No	No	No	No	No	Yes	No
California Sunrise Pool Service	1210 Isabella Way	92084	Vista	Low		812990	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Capital Painting Corporation	216 E Broadway	92084	Vista	High	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Capital Painting Corporation 1	512 W California Ave 204	92084	Vista	Low	1799		Painting/Coating	No	No	No	No	No	No	No	No	No
Cardenas Painting	510 N Melrose Dr E-4	92083	Vista	Medium	unassigned		Painting/Coating	No	No	No	No	No	No	No	No	No
Carlos Ajanel	166 Camino Corto c	92083	Vista	Low	0783		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Casas Tree Service	755 Highland Dr	92083	Vista	Medium	0783		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Castillo Landscaping	1424 Bonair Rd 11	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Castle Pool & Spa Care	1075 Shadowridge Dr #63	92081	Vista	Medium	7389114	812990	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Cesar Auto Detailing	1051 S. Santa Fe, #29	92083	Vista	Medium	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Chlorophyll Kid	916 Judilyn Dr	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Classic Touch Landscape Maint	2185 Hawley Dr	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Clear Water Revival Pool Services	735 Vale View Dr	92081	Vista	Medium	7389114	812990	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Closet World Inc.	1335 Park Center Dr A	92083	Vista	Low	2521	23551	Other Contractor	No	No	No	No	No	No	No	No	No
Condominium Services Company	402 Olive Ave B	92083	Vista	Medium	0781		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Coppock Pool & Spa	719 Sunset Dr	92083	Vista	Medium	1799		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No

Business name	Address	Zip Code	City	TTWQ	SIC Code	NAICS Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Cornerstone Marble Gran & Tile	1205 Avenida Chelsea B	92083	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Cortez Tree Service	720 W California Ave	92083	Vista	Medium	0783		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Courter Family Plumbing & Electric	313 N Melrose Dr E	92083	Vista	Low		235	Other Contractor	No	No	No	No	No	No	No	No	No
Cousins Carpet Care	748 Silver	92083	Vista	Medium	7217001	561740	Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Cox Landscape	947 Sheffield Dr	92081	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Curbs For College	1642 Promontory Ridge Way	92081	Vista	Low	7331003	23832	Painting/Coating	No	No	No	No	No	No	No	No	No
Custom Roof Services	1575 Oak Drive #B-3	92084	Vista	Low	1761009	238160	Other Contractor	No	No	No	No	No	No	No	No	No
D & S And Sons Landscaping	133 Bellevive Ct	92084	Vista	Medium		56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No
D S Construction	1070 Vale Terrace Dr #29	92084	Vista	Low	1521003	23	Other Contractor	No	No	No	No	No	No	No	No	No
Dan Boteler Landscaping	579 Mar Vista Dr	92083	Vista	Low	0782		Other Contractor	No	No	No	No	No	No	No	No	No
Darrel D Rose Landscaping	508 Moa Dr	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Dawg's Drain Service	1041 Meadowlake Dr	92084	Vista	Low		23822	Other Contractor	No	No	No	No	No	No	No	No	No
Dc Concrete And Masonry	1710 Jonathon St	92083	Vista	Low	1741		Masonry	No	No	No	No	No	No	No	Yes	No
Dils Roofing	2230 La Mirada Dr	92081	Vista	Low	1761	235610	Other Contractor	No	No	No	No	No	No	No	No	No
Dogs On The Run	2229 Baxter Canyon Rd	92081	Vista	Low		81291	Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No
Don Harwick Landscape Maintenance	1172 Cabrillo Lane	92084	Vista	Medium	0781006	56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Double J Pool Service	1215 Allea Ln	92083	Vista	Medium	7389		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Dr Detail Mobile and Detail	1219 Bobolink Dr	92083	Vista	Medium	7542	811121	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Easterling Brothers	1124 Mullen Way	92083	Vista	Low		236	Other Contractor	No	No	No	No	No	No	No	No	No
El Carpi Jr. Construction	610 Cocapah St	92083	Vista	Low	1799		Painting/Coating	No	No	No	No	No	No	No	No	No
Enrique Chavez	209 Hawthorne Cir	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Enrique Silva Landscaping Maintenance	1064 Camino Ciego Ct	92084	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Enzo Auto Detailing	2852 Sunkist Dr	92084	Vista	Medium	7542	811192	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Epicure	365 Olive Ave	92083	Vista	Low	5963010	722330	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
Euro Tile	383 N Melrose Dr B	92083	Vista	Low	1741		Masonry	No	No	No	No	No	No	No	Yes	No
F J R Earthworks Dba Ayro Enterprises	2531 Walinca Way	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Felipe Ramirez Perez	2112 E Vista Way 21	92084	Vista	Medium			Landscaping	No	No	No	Yes	No	No	Yes	No	No
First Class Maintenance			Vista	High			Power Washing	No	No	No	No	No	No	No	No	No
Forever Clear Pool Service	328 Huff St	92083	Vista	Low		811	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Francisco Colores	1205 N. Santa Fe Ave Sp1	92083	Vista	Low		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Fred A. Jones Painting	1407 Bonair Rd	92084	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
G M Landscape Service	158 Mar Vista Dr	92083	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Gabriel Tree Services	1639 Anza Ave	92084	Vista	Medium	0782001	561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Garza Grading & Paving	755 North Ave	92083	Vista	Low	1611		Other Contractor	No	No	No	No	No	No	No	No	No
Gemini Pest Control Inc	1058 Taylor St	92083	Vista	Low	7342		Pest Control	No	No	No	No	No	No	Yes	No	No
Geogrid Retaining Wall Systems, Inc	1295 Distribution Way	92083	Vista	Low	1741	23	Other Contractor	No	No	No	No	No	No	No	No	No
Gilholm Construction	1453 Sunrise Dr	92084	Vista	Medium		23	Other Contractor	No	No	No	No	No	No	No	No	No
GMS Janitorial Services, Inc.	7567 Convoy Ct	92111	San Diego	Low	7349	561720	Other Contractor	No	No	No	No	No	No	No	No	No
Gonzales Tree & Landscaping	1220 Calle Jules #6	92083	Vista	Medium	0782001	561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Gonzalez Landscaping	1653 Monte Vista Dr	92084	Vista	Medium	0782001	561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Gonzalez Tree Svc & Lndscpng	314 Acateno Ave	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Good Looking Concrete	1280 N Citrus Ave 36	92084	Vista	Low		235	Other Contractor	No	No	No	No	No	No	No	No	No
Got Pool Cleaning And Repair	1569 Green Oak Rd	92081	Vista	High	7389		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Green Earth Pest Control	323 Paseo Marguerita	92084	Vista	Low		561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Green Meadows Lawn Service	1243 Arcadia Ave C	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Green Weaver Landscaping Services	527 Huff St	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Greenness Design	1146 Sunset Dr	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
H H Landscaping	164 Hill Dr	92083	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Heaven's Best Carpet & Upholstery	104 Hill Dr	92083	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Hector Rodriguez	510 Pina Ln	92083	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Hernandez Gardening	401 W California Ave 17	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Hernandez Lndscpg & Grdng Svc	952 Wellpott Pl	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Hernandez Maintenance	2263 Warmlands Ave	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
High Low Drywall	1639 Calle Jules	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Horizon Painting	408 Durian St	92083	Vista	Low		238320	Painting/Coating	No	No	No	No	No	No	No	No	No
Huitzi's Painting	955 Postal Way 22	92083	Vista	Low		238320	Painting/Coating	No	No	No	No	No	No	No	No	No
Hurst Exterminators	1026 Bartlett Dr	92084	Vista	Low		561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Hydra Vac	1037 Glenmere Rd	92084	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Idle Properties Maintenance	550 W California Ave	92083	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Innovations In Marble And Tile	1128 Portola St	92084	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Insect And Rodent Solutions	941 Poinsettia Ave B4	92081	Vista	Low			Pest Control	No	No	No	No	No	No	Yes	No	No
Integrity Pool Services	915 Marlin Drive	92084	Vista	Medium	7389		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Integrity Pressure Wash	1508 Glacier Road	92056	Oceanside	High			Power Washing	No	No	No	No	No	No	No	No	No
Invision Landscape Inc.	1366 Brewley Ln	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
J B Coating	219 S Santa Fe Ave 137	92083	Vista	High	1721	235210	Painting/Coating	No	No	No	No	No	No	No	No	No
J P Schmitt Landscape Maintenance & Repair	1219 Capistrano Ln	92081	Vista	Medium		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
J R S Landscape	318 Del Rio Way	92083	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
J S Custom Painting	1722 Foothill Dr	92084	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
J&A Landscape	951 Taylor St 23	92084	Vista	High			Landscaping	No	No	No	Yes	No	No	Yes	No	No
J. R. Landscaping & Maintenance	950 Arcadia Ave 40	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
J.B. Handyman	326 San Del Dr	92083	Vista	Low	1799		Painting/Coating	No	No	No	No	No	No	No	No	No
J.M.C. Painting	401 W California Ave 17	92083	Vista	Low		235	Other Contractor	No	No	No	No	No	No	No	No	No
Jack of All Trades	2828 Asterwood Ln	92081	Vista	Low		235	Other Contractor	No	No	No	No	No	No	No	No	No
Jeff's Mobile Detailing			Vista	High			Vehicle Washing	No	No	No	No	No	Yes	No	No	No

Business name	Address	Zip Code	City	TTWQ	SIC Code	NAICS Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Jerry's Carpet Cleaning	1331 Arcadia Ave	92084	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Jmb Landscaping & Tree Service	310 Bandini Pl	92083	Vista	Medium	0783		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Joe Lane Custom Painting	1105 Collinswood Ln	92083	Vista	Low	1721		Painting/Coating	No	No	No	No	No	No	No	No	No
Joel Hernandez R	1804 Christi Dr	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Jose Luna Painting	1135 Olive Ave	92083	Vista	Low		238320	Painting/Coating	No	No	No	No	No	No	No	No	No
Juan's Landscaping	191 Lada De Loma	92083	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
K G Painting	746 Sunset Dr	92081	Vista	Medium			Painting/Coating	No	No	No	No	No	No	No	No	No
K.O. Enterprises	512 W California Ave	92083	Vista	Low	1751		Other Contractor	No	No	No	No	No	No	No	No	No
Kaufman Masonry & Landscape Supply	845 W Vista Way	92083	Vista	Medium	5211		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Kennedy Pest Control, Inc.	114 Natal Way	92083	Vista	Low	7342		Pest Control	No	No	No	No	No	No	Yes	No	No
Kessel Window Services	1716 Country Side Pl	92081	Vista	Low			Power Washing	No	No	No	No	No	No	No	No	No
Kisner Landscape Maintenance	215 Guajome St	92083	Vista	Medium	0782001	561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Krason Construction	1236 Coventry Rd	92084	Vista	Medium		236118	Other Contractor	No	No	No	No	No	No	No	No	No
L D G Mobile	1205 N Melrose Dr I	92083	Vista	Low	7538		Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
L.T. Backflow	869 Highland Dr	92083	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Landmark Roofing, Inc.	926 Ruby Dr	92083	Vista	Low	1761009	23816	Other Contractor	No	No	No	No	No	No	No	No	No
Landscaping Baltazar	1052 Anza Ave	92084	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Las Palmas Landscape Mtc	309 Lado De Loma Dr	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Leahi Pool & Spa	510 N Melrose Dr P-7	92083	Vista	Medium	7389		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Leituala Tree Work And General Maintenance	156 Pond Place 23	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Leonardo Contreras	830 E Vista Way #219	92083	Vista	Low	1522004	238990	Other Contractor	No	No	No	No	No	No	No	No	No
Leopoldo Resendiz Mata	1904 Yettford Rd	92083	Vista	Medium			Painting/Coating	No	No	No	No	No	No	No	No	No
Life Gardening Svcs	1803 Manzanita Ct	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Lita Landscape	1440 Oak Dr #G4	92084	Vista	Medium	0782001	561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Living Waters Carpet & Upholstery	18045 SATICOY ST	91335	Reseda	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Local Lumber	1138 Beverly Dr	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Lopez Demolition	318 Arnel Ave	92083	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Lori's Concessions	535 Hilo Way	92081	Vista	Low	5963010	72233	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
Los Altos Landscaping	312 Palm Dr	92084	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Lot Management	7200 Ponto Drive	92011	Carlsbad	High			Power Washing	No	No	No	No	No	No	No	No	No
Main Painting Co	121 Hanes Pl	92084	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Marcelo Leon Painting	1374 Palomar Pl	92084	Vista	Low		238320	Painting/Coating	No	No	No	No	No	No	No	No	No
Mario Espinoza	129 Pala Vista Dr 3	92083	Vista	Low		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Marvin's House Painting/Decorating	801 Hillside Ter 49	92084	Vista	Low		235	Painting/Coating	No	No	No	No	No	No	No	No	No
Maximum Painting And Wall Coverings	2482 Links Way	92081	Vista	Low	1721001	238320	Painting/Coating	No	No	No	No	No	No	No	No	No
McCabe Construction	1027 Marbo Ter	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Mckenna's Carpet	1275 Tower Dr	92083	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Merc Scapes	177 Santa Maria Ct	92083	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Middleton Skid, Steer And Hauling Svcs	480 Valerie Dr	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Miller Carpet Care	512 W California Ave	92083	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Mobile Car Wash And Detail 23	318 Smilax Rd, #3	92069	San Marcos	Medium	7542	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Mobile Handyman And Landscape	848 Smith Dr	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Mobile Wash Works	1125 Cabrillo Cir	92084	Vista	Medium	5087		Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Montecitos Landscape	2232 Primrose Ave 1	92083	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Motor's Mobile Detailing Services	495 Huff St	92083	Vista	Medium	7542003	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Muzquiz Self Contractors	809 Raintree Pl	92084	Vista	Low		56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No
N J Landscaping	2330 Azure Ln	92081	Vista	Medium	0781		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Napa Tree Service	837 Shelsteve Ter 4	92084	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Natolio Zamora	806 Highland Dr	92083	Vista	High		56173	Landscaping	No	No	No	Yes	No	No	Yes	No	No
North Star Homes Of California, Inc.	1723 Wildflower Ct	92083	Vista	Medium		23	Other Contractor	No	No	No	No	No	No	No	No	No
Ohana Mobile Window Tinting	1515 S. Melrose Dr 134	92081	Vista	Low		81119	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
On The Move Mobile Auto & Truck	538 Olive Ave B	92083	Vista	Low	7538		Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Orkin Pest Control D Glassmaker	2420 Grand Ave J	92083	Vista	High	7342		Pest Control	No	No	No	No	No	No	Yes	No	No
Orozco Construction	1174 Sunset Dr	92081	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Pacific Detailing Co	43795 Corte Amaya	92592	Oceanside	High			Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Pacific Landscape Care	1806 Manzanita Ct	92083	Vista	Medium	0782001	561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Pacific Towing And Recovery	1330 N. Melrose Dr A	92083	Vista	Medium		488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Paul's Pressure Washing	751 E Vista Way 81	92084	Vista	Medium	7349		Power Washing	No	No	No	No	No	No	No	No	No
Payo's Painting Company	717 Earth Dr	92083	Vista	Low	1721		Other Contractor	No	No	No	No	No	No	No	No	No
Pedro Rodriguez	858 Anns Way	92083	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Pedro's Painting	204 Goetting Way	92083	Vista	Low		238320	Painting/Coating	No	No	No	No	No	No	No	No	No
Perfect Paving Grading & Seal	1641 Monte Mar Rd	92083	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Pestgon Inc	519 S Santa Fe Ave	92083	Vista	Low	7342		Pest Control	No	No	No	No	No	No	Yes	No	No
Philip Rios & Son's Painting	717 Lemon Ave	92084	Vista	Low		238320	Painting/Coating	No	No	No	No	No	No	No	No	No
Plateau Landscape Pest Solutions	317 Forest Pl	92083	Vista	Low		561710	Pest Control	No	No	No	No	No	No	Yes	No	No
Pool And Poop Patrol	831 Lantana Way 143	92081	Vista	Medium			Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Precision Aquatics	633 Ascot Dr 1	92083	Vista	Medium			Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Premium Landscape	424 Garey Dr	92084	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Prestige Tile And Marble Installation Co	2168 Opal Ridge	92084	Vista	Low	1741		Masonry	No	No	No	No	No	No	No	Yes	No
Progressive Gardening Landscape	1117 Mullen Way	92083	Vista	Medium			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Prototypworks	1798 Club Heights Ln	92083	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
R D Pool Service And Repair	910 Brooktree Ln 102	92081	Vista	Low		811	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Rac General Contractor	1432 Alta Vista Dr	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Rafael Sanchez Maint	206 W California Ave	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No

Business name	Address	Zip Code	City	TTWQ	SIC Code	NAICS Code	Category	Bacteria	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Ramirez Company	218 The Circle	92084	Vista	Medium		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Rancho Carpet Cleaning Inc.	1157 S Santa Fe Ave	92083	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Rancho Tree Service	425 Redlands St	92085	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Rancho Vista Landscaping Inc.	1335 Warmlands Ave	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Rancho Vista Pool Services	1222 Tower Dr	92083	Vista	Low		811	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Randy's Pressure Washing	1205 N Santa Fe Ave 62	92083	Vista	Medium	7349		Power Washing	No	No	No	No	No	No	No	No	No
RB Mobile Wash	166 North Barnwell Street	92054	Oceanside	High			Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Really Clean Pool And Spa	734 Matagual Dr	92081	Vista	Low	7389	811411	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Red White & Blue Mobile Detailing	136 S Beaumont Ln	92084	Vista	Medium	7542	811192	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Re-Nu Renovations	380 S. Melrose Dr 343	92083	Vista	Low		236118	Other Contractor	No	No	No	No	No	No	No	No	No
Rey & Sons Landscaping	1653 Rush Ave	92084	Vista	Medium			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Richie's Mobile Auto Repair @WTB Mufflers	257 N Emerald Dr #C	92083	Vista	Medium	7538001	811111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
River Carpet Cleaning	1610 Calle Jules	92084	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Roadway Auto Towing	723A Olive Ave	92083	Vista	Low	7549001	488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Robles Handyman Work	1369 Bonair Rd	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Robles Landscaping	247 E Bobier Dr	92084	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
Rock Painting	529 Starling Dr	92083	Vista	Low	1721001	238320	Painting/Coating	No	No	No	No	No	No	No	No	No
Ronald W. Card	758 Lazy Cir	92083	Vista	Low	1721		Painting/Coating	No	No	No	No	No	No	No	No	No
Rooney's Lawn And Maintenance Service	1181 Madera Ln	92084	Vista	High			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Root	930 Brooktree Ln 70	92081	Vista	High			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Ryan's Painting	666 Townsite Dr	92084	Vista	Low	1721		Painting/Coating	No	No	No	No	No	No	No	No	No
S & A Pool Service	528 Collyn St	92083	Vista	Medium	7389		Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Sabatini Electric	1426 Alta Vista Dr	92084	Vista	Low		235	Other Contractor	No	No	No	No	No	No	No	No	No
Sanchez Landscaping	221 Plymouth Dr	92083	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Santa Fe Paving	602 Lemon Ave	92084	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Santana Building Services	4771 Olive St	92105	San Diego	Medium	7349	561790	Power Washing	No	No	No	No	No	No	No	No	No
Santos H. Landscaping	772 N. Citrus Ave	92084	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Servpro Of North Vista/San Marcos	929 Poinsettia Ave 103	92081	Vista	Low		235	Other Contractor	No	No	No	No	No	No	No	No	No
Severo Ramos	1575 Kiva Ln	92084	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Showcase Textile Care	904 Judilyn Dr	92083	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Sierra's Landscaping	1640 Calle Colorado	92084	Vista	Medium			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Silac Landscape And Design	1112 Louie Pl	92084	Vista	Low			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Sketch & Paint By C D B	1120 Meadowlake Dr 1	92083	Vista	Low			Painting/Coating	No	No	No	No	No	No	No	No	No
Slobo Landscaping	1735 Stormy Ln	92084	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Solano's Construction Co.	541 Spires St	92083	Vista	Medium		236118	Other Contractor	No	No	No	No	No	No	No	No	No
Solutions For Utilities, Inc.	1192 Sunset Dr	92081	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Sonshine Pool & Spa	910 Brooktree Ln 107	92081	Vista	Low		811	Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Stands By Me	942 Sierra Ct	92081	Vista	Low			Manufacturing, Wood/Furniture	No	No	No	No	No	No	No	No	No
Star Auto	261 Pala Vista Dr 5	92083	Vista	Medium	7538		Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Stark Painting Inc	2525 Pioneer Ave 1	92083	Vista	Low	1721	23599	Other Contractor	No	No	No	No	No	No	No	No	No
Stasik Specialized Carpentry	365 Pomelo Dr A15	92081	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Steam Magic Carpet Cleaning	1625 Jonathon St	92083	Vista	Low	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Steve Batsch Painting	419 Eucalyptus Ave	92084	Vista	High			Painting/Coating	No	No	No	No	No	No	No	No	No
Sue Marie's Sweet & Savory @ Sae Kitchen	2515 Pioneer Way #5	92081	Vista	Low	5812009	722320	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
Sunshine Landscaping	2420 Grand Ave E1	92081	Vista	High		561730	Landscaping	No	No	No	Yes	No	No	Yes	No	No
Sunterra Tile & Stone	1072 Chelsea Ct	92084	Vista	Medium			Masonry	No	No	No	No	No	No	No	Yes	No
Superior Carpet Cleaning	926 Westport Ln	92084	Vista	Medium	7217		Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
T J Crossman's Mobile Auto Repair	1330 N Melrose Dr	92083	Vista	Low	7538		Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
T L C Auto Detailing	550 Galaxy Dr	92083	Vista	Medium	7542004	81119	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
Tanis Landscaping	1104 Warmlands Ave	92084	Vista	High			Landscaping	No	No	No	Yes	No	No	Yes	No	No
Terry's Painting	533 Sunset Dr	92083	Vista	Low	1799		Other Contractor	No	No	No	No	No	No	No	No	No
Tesoro Landscape / So Cal Landscape Svc	1045 Highland Dr	92083	Vista	Medium	0782		Landscaping	No	No	No	Yes	No	No	Yes	No	No
The Dean Of Clean Carpet Clean & More	334 Arnel Ave	92083	Vista	Low		56174	Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
The Peggs Company	PO Box 907	91752	Mira Loma	Low	3315	332618	Other contractor	Yes	No	No	No	No	No	No	NO	Yes
The Vintage Rose	2057 Paseo Ladera	92084	Vista	Medium	5992		Landscaping	No	No	No	Yes	No	No	Yes	No	No
The Works Detailing	1960 Cresthaven Dr	92084	Vista	Medium	7542003	811192	Vehicle Washing	No	No	No	No	No	Yes	No	No	No
Thor Mobile Welding And Repair	446 Olive Ave F	92084	Vista	Low		235	Other Contractor	No	No	No	No	No	No	No	No	No
Three Sisters Catering, Inc.	1589 E Vista Way A	92084	Vista	High	5812		Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
Torres Catering @Vista Civic Center	200 Civic Center Dr	92084	Vista	Low	5812009	72232	Eating/Drinking Establishments	Yes	Yes	No	No	Yes	No	No	No	Yes
Travis Goin Concrete Services	1109 Tower Dr	92083	Vista	Medium			Manufacturing, Concrete	No	No	No	No	No	No	No	Yes	No
Tree Barber Enterprises, Inc.	1923 Goodwin Dr	92084	Vista	Medium	0783		Landscaping	No	No	No	Yes	No	No	Yes	No	No
U S A Filter Cleaning	1448 Oakcreek Ln	92081	Vista	Low		81111	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No
V M Painting - Elite Cleaning	173 Durian #108	92083	Vista	Low	7349001	561720	Painting/Coating	No	No	No	No	No	No	No	No	No
Vadnais Corporation	2130 La Mirada Dr	92081	Vista	Low		23	Other Contractor	No	No	No	No	No	No	No	No	No
Vazquez Carpet Cleaning	1036 N. Citrus Ave A	92084	Vista	High		56174	Carpet/Furniture Cleaning	No	No	No	No	No	No	No	No	No
Vision Painting	810 Citrus	92084	Vista	Low	1799		Painting/Coating	No	No	No	No	No	No	No	No	No
Wag N Wheels Mobile Pet Grooming	1613 Ravine Rd	92083	Vista	Low			Animal Facilities	Yes	Yes	No	Yes	No	No	No	No	No
Waterfall And Fountain Emporium	2223 Alta Vista Dr	92084	Vista	Low			Other Contractor	No	No	No	No	No	No	No	No	No
Watters Clean Pool Service	1974 Wellington Lane 57	92081	Vista	Medium			Pool/Fountain Cleaning	No	No	No	No	No	No	No	No	No
Western Concrete Pumping, Inc	2181 La Mirada Dr	92083	Vista	Low	1623	23491	Other Contractor	No	No	No	No	No	No	No	No	No
Willis Exterminators	2475 Coral St B	92084	Vista	Low	7342		Pest Control	No	No	No	No	No	No	Yes	No	No
Yucaipa Towing Inc	451 Olive Ave	92083	Vista	Medium		488410	Auto Repair	No	No	Yes	No	Yes	Yes	No	No	No

APPENDIX D-4
FY 2011-12 COMPLAINTS SUMMARY

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW 10-210 Type: Commercial Pro Active Visit ☐ Location Address: 707-715 E Vista Wy Watershed: Buena Vista Creek Call Date: 12/22/2011 Case closed date: 2/28/2011	Pro. Large tree from watercourse fallen onto bldg, live wires down, bank integrity affected.	As described above.Fire Dept and SDGE contacted, Vista Fire Dept assisted with incident.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove fallen tree. Follow-up Action: Photo verifty, inspect bank. Actions completed: Tree trimmed and stumped. Stump threatens bank, to be removed by property owner/manager.
SW No.: SW11-066 Type: Commercial Pro Active Visit ☐ Location Address: 1755 Hacienda Drive Watershed: Buena Vista Creek Call Date: 7/11/2011 Case closed date: 1/30/2012	Four sand filters on site have deteriorated and are not functioning as designed to treat stormwater	See above	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Restore Sand Filters so that they will function properly or install another type of BMP(s) that is equally or more effective in treating stormwater runoff draining the entire site. Follow-up Action: Verify BMP installation (Fabco Units). Actions completed: Costco installed 11 Drain Inserts throughout property.
SW No.: SW11-067 Type: Residential Pro Active Visit ☐ Location Address: 683 Bauer Pl Watershed: Call Date: 7/13/2011 Case closed date: 7/13/2011	pollutant discharge of red colored concrete into the curb/gutter/road way.	observed as described above	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: remove red concrete throughout area street/curb/gutter. Follow-up Action: photo verify Actions completed: area clean.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-068 Type: Industrial Pro Active Visit ☐ Location Address: 1451 Engineer Street Watershed: Call Date: 7/25/2011 Case closed date: 12/15/2011	Spill from industrial facility into private storm drain.	Equipment washwater waste breached malfunctioning secondary containment and entered private storm drain on site.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Eliminate dumpster leaks, re-train employees in spill response, update response plan, repair containment wall, and complete a SWPPP Follow-up Action: Confirm BMP implementation above Actions completed: Dumpster leaks addressed, containment wall repaired, SWPPP completed, and training on SWPPP including an updated spill response plan was conducted
SW No.: SW11-074 Type: Commercial Pro Active Visit ☑ Location Address: 727 E. Vista Way Watershed: Buena Vista Creek Call Date: 8/29/2011 Case closed date: 2/9/2012	Failure to protect creek bank from erosion, storm drain connection improperly constructed, discharging water onto unprotected slope without energy dissipation; concrete and other material left on bank	8/29/11 NOV to property manager; 9/14/11 on-site meeting with PM and landscape contractor; 12/11 - energy dissipator and erosion control installed 2/12 - fence installed	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: 1. Remove all concrete waste and unconsolidated material from bank; 2. Remove non-engineered spillway; 3. Install appropriate energy dissipation structure; 4. Replace curb cut with solid curb; 5. Protect banks from erosion; 6. Install fence along top of existing curb along length of property; Follow-up Action: Mulitple follow up visits, correspondance, and meetings with Property Manager and Landscape contractor Actions completed: items #1-5 on NOV completed by 1/11/12; item #6 completed by 2/7/12; see NOV for more information
SW No.: SW11-075 Type: Residential Pro Active Visit ☐ Location Address: 141 W. Brass Ln Watershed: Call Date: 8/31/2011 Case closed date: 8/31/2011	Private lateral spill onto private property.	Observed as described above. PO had stopped using water, contacted a plumber. NO sewage was leaving site and all stayed w/in landscape vegetation.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: repair private lateral and recap clean out. Follow-up Action: photo verify and receive plumber invoice of corrective action. Actions completed: line cleared, cap on, invoice recv'd.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-076 Type: Industrial Pro Active Visit ☐ Location Address: 1235 Activity Drive Watershed: Call Date: 8/30/2011 Case closed date: 10/19/2011	BMP#1 missing grate inlet cover and impacted with debris and sediment	As described above	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean BMP and install appropriate grate inlet cover Follow-up Action: Verify corrective actions above Actions completed: BMP was cleaned and new grate inlet cover was installed
SW No.: SW11-077 Type: Commercial Pro Active Visit ☐ Location Address: 1275 N. Citrus Ave Watershed: Call Date: 8/19/2011 Case closed date: 8/19/2011	private sewer lateral spill	waste water staff contained spill, plumber cleared line. This occurred on staff furlough Friday. Follow up was done after the fact. Area was clear upon investigators arrival.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: clear line. Follow-up Action: receive copy of SRO from waste water dept Actions completed: SRO recv'd, area clear.
SW No.: SW11-078 Type: Residential Pro Active Visit ☐ Location Address: 700 Alta Vista Dr Watershed: Call Date: 9/12/2011 Case closed date: 12/20/2011	PROACTIVE: Trash, debris, sediment dishcarg, failure to maintain drainage channel, leaves in curb/gutter, excessive used cigarette butts in driveway/roadway, old fencing material accumulating in natural swale leading to creek. .	observed as described above.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: remove trash, debris, dead vegetation, old fencing and implement bmps on denuded slopes. Follow-up Action: photo verify. Actions completed: area cleared, bmps in place (recycled concrete slabes, rocks and slope planting). Old fencing was recycled to back of new fencing to prevent transient intrusion over new fence horizontal supports.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-079 Type: Residential Pro Active Visit ☐ Location Address: 720 Alta Vista Dr Watershed: Call Date: 9/12/2011 Case closed date: 11/10/2011	PROACTIVE. Failure to maintain site free of sediment dischage, overwatering, dead vegetation, overgrowth of vegetation and de-nuded slopes.	Observed as described above.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove dead vegetation, trash/debris, implement appropriate bmps, adjust irrigation. Follow-up Action: photo verify Actions completed: area cleaned/cleared and bmps implemented.
SW No.: SW11-081 Type: Other Pro Active Visit ☐ Location Address: 1947 E. Vista Way Watershed: Buena Vista Creek Call Date: 10/6/2011 Case closed date: 2/10/2012	Proactive. Psl spill into private landscaping.	Observed as described above. Sewage was pooling in a storm drain inlet that has a raised curb. No sewage entered the inlet. Waste Water crews were mitigating the spill. Plumber arrived an cleared line. This is a chronic spill location.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Camera line, repair, provide dvd's of inspect on line. Provide plumber invoice. Follow-up Action: Perify psl repair Actions completed: Work completed by Draves Plumbing and inspected by Kurt Groscup, Engineering Inspector.. Plumber invoice recvd for work completed.
SW No.: SW11-082 Type: Residential Pro Active Visit ☐ Location Address: 335 Hill Drive Watershed: Buena Vista Creek Call Date: 9/28/2011 Case closed date: 1/30/2012	Detention Basin Denued of Vegetation. This condition creates the potential for soil erosion and discharge into area outlet on site	Same as above	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Install temporary BMPs to contain and prevent sediment runoff into area drain inlet. Next, re-establish detention basin to ensure adequate vegetative cover. Follow-up Action: Verify BMP implementation Actions completed: BMPs were installed to prevent sediment discharge and detention basin was re-vegetated with sod.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-083 Type: Residential Pro Active Visit ☐ Location Address: 1200 Cinchona St Watershed: Buena Vista Creek Call Date: 10/6/2011 Case closed date: 1/9/2012	Drainage ditch was congested with sediment, tree overgrowth and tree stumps creating a back flow in the ditch.	Observed as described.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Clear ditch of vegetation and sediment to provide unimpeded flow. Follow-up Action: photo verify Actions completed: Area cleared of shrubbery, tree stumps and sediments accumulation.
SW No.: SW11-084 Type: Residential Pro Active Visit ☐ Location Address: 1206 Cinchona St Watershed: Call Date: 10/6/2011 Case closed date: 11/8/2011	drainage ditch to west of 332 Santa Clara is congested creating a back up of water and flooding.	observed as described w/regards to congestion of vegetation and sediment.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: removed vegetation and sediment in ditch. Follow-up Action: photos verify Actions completed: area ditch was cleaned to rear and side of 1206 Cinchona St.
SW No.: SW11-085 Type: Commercial Pro Active Visit ☐ Location Address: 235 Vista Village Dr Watershed: Call Date: 10/24/2011 Case closed date: 10/26/2011	PROACTIVE. Black stains migrating to driveway and sidewalk.	observed as described above. Unknown origin. Appears to be a fluid leak from trash collector truck. Fluid did not enter storm drain. PM was notified for clean up.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: remove stain/grease/fluid Follow-up Action: photo verify Actions completed: area cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-086 Type: Commercial Pro Active Visit ☐ Location Address: 3160 Scott Street Watershed: Call Date: 10/18/2011 Case closed date: 11/14/2011	Workers cleaning painting equipment with wash water discharging to the gutter and storm drain.	Observed as described above.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean gutter and area around paint wash station where spill occurred. Train staff and provide documentation. Follow-up Action: Photo verify. Obtain training documentation. Actions completed: Paint cleaning station clean, gutters clean, training document received.
SW No.: SW11-087 Type: Residential Pro Active Visit ☐ Location Address: 1039 Swallow Dr Watershed: Call Date: 11/15/2011 Case closed date: 12/12/2011	pollutant discharge from clothes washer to side yard.	observed as described above. I spoke with property owner who stated washer line was clogged.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: repair pipe and discharge to sanitaryy sewer. Remove pipe protruding through wall of house. Reattached dryer vent through wall to exterior. Follow-up Action: photo verify and rush washer through drainage cycle to verify drain is functional. Actions completed: pipe repaired, washer ran through cycle and dryer duct work is placed to exterior.
SW No.: SW11-088 Type: Residential Pro Active Visit ☐ Location Address: 1303 Corbie Cir Watershed: Call Date: 11/30/2011 Case closed date: 12/12/2011	Pollutant discharge and possible transient activity.	Wash rack and dirty laundry/washwater in back yard with evidence of discharge to drainage ditch. Pet waste in ditch area.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove illegal wash rack and clean up pet waste. Follow-up Action: Photo verify. Actions completed: Wash rack removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-089 Type: Residential Pro Active Visit ☐ Location Address: 1311 Corbie Cir Watershed: Call Date: 11/30/2011 Case closed date: 12/12/2011	Pollutant discharge and possible transient activity.	Wash rack with dirty laundry/washwater ini back yard with evidence of discharge to the drainage ditch.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove illegal wash rack and cease discharge. Follow-up Action: Photo verify. Actions completed: Wash rack removed.
SW No.: SW11-097 Type: Commercial Pro Active Visit ☐ Location Address: 801 Hillside Terrace Watershed: Call Date: 12/14/2011 Case closed date: 12/14/2011	sewer spill.	Waser Water contacted Storm Water Staff to repsond to a sewer spill at Villa Las Brisas Apts. WW was vac'ing the area below the drainage perimeterditch. Sediment and leave accumulation from recent rain blocked discharge from leaving the site and entering	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: cease illegal discharge, clear pirvate lateral. Follow-up Action: recv plumber invoice for cleared line. Actions completed: plumber invoice recv'd.
SW No.: SW11-100 Type: Residential Pro Active Visit ☐ Location Address: 2342 Carioca Pl Watershed: Buena Vista Creek Call Date: 11/7/2011 Case closed date: 5/16/2012	Sediment discharge into street caused by rains/erosion from neighbors property	Sediment laden water entered public storm drain system from 2 lots (2342 Carioca and undeveloped lot north- both owned by same property owner). Erosion is taking place in several areas due to lack of BMPs	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Implement sediment and erosion control BMPs to prevent future sediment discharges Follow-up Action: Confirm appropriate BMP implementation Actions completed: Fiber rolls, sand bags, and vegetation (both plants and grass) BMPs were used by responsible party to obtain compliance

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW11-102 Type: Residential Pro Active Visit ☐ Location Address: 844 Matagual Drive Watershed: Buena Vista Creek Call Date: 12/19/2011 Case closed date: 2/9/2012	Trucks tracking mud into roadway. Sediment runs off site during rain. Illegal dumping occurs although it's currently cleaned up.	As described above. Sediment leaving site, tire tracks in the street. No sign of illegal dumping.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Install erosion and sediment control BMPs to prevent future sediment tracking. Clean sediment from roadway using acceptable methods. Follow-up Action: Photo verify. Actions completed: Sediment swept from roadway. BMPs and fence installed.
SW No.: SW11-104 Type: Residential Pro Active Visit ☐ Location Address: 806 & 808 N. Citrus Ave Watershed: Buena Vista Creek Call Date: 12/22/2011 Case closed date: 1/23/2012	sewer overflow into private driveway.	observed as described by Doug Coppi on 12/22/11. Pumber dispatched to clear line. 12/26/ & 12/27/11-PW's & Storm Water Staff established conclusively the sewer laterals belonged to 806 & 808 N. Citrus Ave. Property owner was contacted, NOV issued to raise clean out risers to accessible level, place threaded caps on all risers and labeled 'sewer' on housing box lids.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Raise clean out risers to accessible level, place threaded caps on all risers and labeled 'sewer' on housing box lids, provde plumber invoice. Follow-up Action: Photos verify and obtain plumber invoice. Actions completed: Risers accessible, caps threaded, lids state sewer and plumber invoices recv'd.
SW No.: SW12-001 Type: Residential Pro Active Visit ☐ Location Address: 210 Washington St (aka 'The Circle') Watershed: Buena Vista Creek Call Date: 1/4/2012 Case closed date: 1/4/2012	PROACTIVE. Sewer overflow on garage side of complex.	Observed as described above. Waste Water on scene. I spoke w/tenant above garages. I obtained PM information. PM contacted, plumber dispatched, line cleared area cleaned.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge; clear line; provide plumber invoice for work done. Follow-up Action: Photo verify; obtain copy of plumber invoice. Actions completed: Area clean; line cleared; invoice recv'd.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-003 Type: Residential Pro Active Visit ☐ Location Address: 536 Matagual Dr Watershed: Buena Vista Creek Call Date: 1/18/2012 Case closed date: 2/6/2012	Uncovered stockpiles on vacant lot, dirt tracked into road.	Observed as described above.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove/cover stockpiles; clean/sweep dirt in roadway; install BMP's to prevent sediment from leaving property. Follow-up Action: Photo verify. Actions completed: Stockpiles removed, street swept, fiber rolls along perimeter of property and storm drain inlet.
SW No.: SW12-006 Type: Commercial Pro Active Visit ☑ Location Address: 25 Main St Watershed: Buena Vista Creek Call Date: 1/25/2012 Case closed date: 3/8/2012	compactor fluids migrating into adjacent area drains. Existing bmps failing.	observed as described.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: upgrade and refine area drain bmps Follow-up Action: photo verify Actions completed: bmps in place.
SW No.: SW12-007 Type: Residential Pro Active Visit ☐ Location Address: 1271 N. Citrus Ave Watershed: Buena Vista Creek Call Date: 2/6/2012 Case closed date: 2/13/2012	sewer overflow.	waste water crew responded after hours. Private plumber responded and cleared line. grease may have contributed to the spill.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: clear line. Follow-up Action: education of residents. Actions completed: line cleared. Written warning letter sent to residents w/educational material.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-008 Type: Commercial Pro Active Visit ☐ Location Address: 1211 E Vista Way Watershed: Buena Vista Creek Call Date: 2/3/2012 Case closed date: 2/8/2012	Car wash washwater entering storm drain.	Observed as described.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and install BMPs to prevent future discharges. Follow-up Action: Photo verify. Actions completed: Installed new sprayers to direct spray towards clarifier and away from trench drain. No discharge observed.
SW No.: SW12-009 Type: Residential Pro Active Visit ☐ Location Address: 190 Paseo Del Arquero Watershed: Buena Vista Creek Call Date: 2/7/2012 Case closed date: 2/9/2012	drainage ditch congested w/vegetation and dirt.	obeserved as described above.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: clear ditch and vegetation, implement bmps to prevent sediment discharge into ditch. Follow-up Action: photo verify Actions completed: ditch cleared and contacts informed.
SW No.: SW12-010 Type: Commercial Pro Active Visit ☐ Location Address: 125 East Dr aka 1100 N. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 2/21/2012 Case closed date: 5/17/2012	trash/debris, storage of materials and waste.	observed the entire plaza strewn w/misc trash and debris; dumpsters accumulated w/old foor and debris/boxes. Sidwalks heavy with dirt/gum/stains. Outside storage not protected.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: remove outside storage; clean pavement and dumpster area, clean drain basins. Follow-up Action: photo verify Actions completed: storage considerably reduce; pavement cleaned, trash/debris removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-012 Type: Industrial Pro Active Visit ☐ Location Address: 1311 Specialty Dr Watershed: Agua Hedionda Creek Call Date: 1/26/2012 Case closed date: 4/12/2012	Reported rain water comingling w/sewer to a sump system.	Observed as described above.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: redirect storm water to storm system and seage (grind fluid extract) to sewer. Follow-up Action: photo verify Actions completed: 2' high berm on 3 sides and low 2" berm at the entrance of bin area redirects run-off to appropriate areas.
SW No.: SW12-013 Type: Commercial Pro Active Visit ☐ Location Address: 2131 E Vista Way Watershed: Buena Vista Creek Call Date: 2/22/2012 Case closed date: 7/11/2012	Uncovered Stockpiles	Uncovered stockpiles at gas station that is removing underground storage tanks.	Enforcement Action ☐ None ☑ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Cover or remove stockpiles. Follow-up Action: Verify proper BMPs in place. Actions completed: Stockpiles adequately covered. More work being done at the site. Case remained open until stockpiles removed (after tank removal).
SW No.: SW12-014 Type: Industrial Pro Active Visit ☑ Location Address: 1451 Engineer St Watershed: Agua Hedionda Creek Call Date: 2/13/2012 Case closed date: 3/5/2012	Spill in back of building. Dumpster leaking fluids into back parking lot.	I/C inspection performed. Required dumpster area to be cleaned and BMPs installed. Follow up inspection showed corrective actions not implemented and a spill had occurred in back parking lot and tank area.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Install temporary BMPs to contain dumpster runoff immediately. Install permanent BMPs to contain/prevent dumpster runoff. Clean up spill residue from tank area and parking lot. Follow-up Action: Photo verify corrective actions. Actions completed: Berm in place at dumpster. Dumpster liner in place. Spill residue cleaned.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-015 Type: Residential Pro Active Visit ☑ Location Address: 645 Truly Tr Watershed: Buena Vista Creek Call Date: 2/23/2012 Case closed date: 2/27/2012	Proactive. Grey water discharge to private driveway and into right of way.	Observed as described. Waste Water was on scene and spoke w/Spanish speaking tenant. Tenant stated sink was clogged and the clean out cap was removed. this grey water was running down the driveway. I requested all discharge to cease and I contacted property owner. A plumber was contracted to clear the line.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Cease discharge and repair line. Follow-up Action: Plumber invoice. Actions completed: plumber cleared line. invoice recv'd via fax. In contacted tenant-line is clear. I signed the NOV in the field w/Rosa @ Auto Europa Car office.
SW No.: SW12-017 Type: Commercial Pro Active Visit ☐ Location Address: 440 N Santa Fe Ave Watershed: Buena Vista Creek Call Date: 2/29/2012 Case closed date: 3/1/2012	Failure to implement corrective actions from commercial inspection. Violations included uncovered equipment exposed to run-on and run-off; dirt, trash, and debris in back corner of storage area; wastes improperly stored outside.	As described above. Initial inspection on 2/2/12. Facility recently removed back storage shed, which created some stormwater issues.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean outdoor areas using dry methods, cover and raise or remove equipment/machinery, remove waste stored outdoors. Follow-up Action: Photo verify. Actions completed: Equipment on pallets and covered, waste removed, back area swept.
SW No.: SW12-019 Type: Commercial Pro Active Visit ☐ Location Address: 1851 W. Vista Way Watershed: Buena Vista Creek Call Date: 2/28/2012 Case closed date: 3/5/2012	No secondary containment or overhead coverage on grease recycle drum.	Observed as described above.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove grease drum or provide alternate. Follow-up Action: Photo verify. Actions completed: Indoor grease recycler obtained. Training posters displayed and discussed. Area free of spills.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-020 Type: Commercial Pro Active Visit ☐ Location Address: 845 E. Vista Way Watershed: Buena Vista Creek Call Date: 2/28/2012 Case closed date: 4/4/2012	No secondary spill containment or overhead coverage on gas station haz mat drums.	Observed as described above.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove drums to a covered area or provide alternate containment and cover. Follow-up Action: photo verify Actions completed: spill containment and cover in places.
SW No.: SW12-023 Type: Residential Pro Active Visit ☑ Location Address: 379 Girard Way Watershed: Buena Vista Creek Call Date: 3/14/2012 Case closed date: 5/23/2012	No BMPs on graded area or stockpiles.	Small stockpiles without cover. Small bare area. Piles of gravel.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Cover stockpiles. Cover bare areas (with onsite gravel?). Prevent sediment from leaving site. Follow-up Action: Verify BMPs in place. Actions completed: BMPs in place during construction. No sediment leaving site. Construction complete.
SW No.: SW12-025 Type: Commercial Pro Active Visit ☐ Location Address: 2015 E. Vista Way-Ciao's Restaurant Watershed: Buena Vista Creek Call Date: 3/13/2012 Case closed date: 4/4/2012	GI outlet appears damaged per Dmax inspector.	requires a professional grease company to determine problem.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: verify condition of GI Follow-up Action: provide receipt of contractor invoice verifying functional GI Actions completed: plumber invoice indicated GI standpipes were repaired. Grease haul record indicates GI FOG was 16% as of 3/22/12.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-026 Type: Residential Pro Active Visit ☑ Location Address: 846 Highland Dr Watershed: Buena Vista Creek Call Date: 3/22/2012 Case closed date: 3/26/2020	Proactive. Sewer spill on private property.	ibserved as described; nothing left site and was contained on private property	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: clear line. Follow-up Action: obtain plumber invoice verifying lateral is clear. Actions completed: invoice recvd and threaded clean out caps in place.
SW No.: SW12-027 Type: Commercial Pro Active Visit ☐ Location Address: 632 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 2/13/2012 Case closed date: 4/9/2012	no 2c/ohc on grease drum located in dumpster enclosure.	observed as described above	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: obtain 2o/ohc Follow-up Action: photo verfiy Actions completed: 2c/ohc in place.
SW No.: SW12-028 Type: Commercial Pro Active Visit ☐ Location Address: 1110 Sycamore Ave Watershed: Agua Hedionda Creek Call Date: 3/27/2012 Case closed date: 5/22/2012	pollution discharge at grease reyccler, no 2c/ohc on one blue container.	observed as described. GI invoice for annual inspection requested.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: provide 2c/ohc or move indoors. Provide GI invoice. Follow-up Action: photo verify and receipt of invoice. Actions completed: area clean, blue recycle unit removed and invoice recv'd.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-029 Type: Commercial Pro Active Visit ☐ Location Address: 1960 Hacienda Dr Watershed: Agua Hedionda Creek Call Date: 2/20/2012 Case closed date: 4/25/2012	grease recycle unit-no secondary containment, grease on pavement.	observed as described above	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: obtain 2C; clean pavement; or move recycle indoors. Follow-up Action: photo verify Actions completed: unit moved indoors and pavement cleaned.
SW No.: SW12-030 Type: Mobile Business Pro Active Visit ☑ Location Address: 705 E Vista Way Watershed: Buena Vista Creek Call Date: 4/2/2012 Case closed date: 5/22/2012	Pressure washing without proper reclamation.	Complaint was from the middle of the night, could not verify first hand.	Enforcement Action ☐ None ☑ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Verify proper reclamation equipment. Follow-up Action: Equipment inspection. Actions completed: Maintains proper reclamation equipment and knowledge of proper practices. Unfounded complaint.
SW No.: SW12-031 Type: Commercial Pro Active Visit ☑ Location Address: 1930 Watson Way, Suite H/I Watershed: Buena Vista Creek Call Date: 3/21/2012 Case closed date: 3/22/2012	During I/C inspection of neighboring business, noted unknown chalky substance tracked around outdoor areas.	Unknown substance tracked outdoors from business. Spoke with business owner and he said it was absorbents. Explained proper use and clean up of absorbents and required thorough sweeping.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Sweep up outdoor areas. Prevent future spills. Properly clean up materials tracked outdoors. Follow-up Action: Photo verify. Actions completed: Outdoor areas swept.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-032 Type: Commercial Pro Active Visit ☐ Location Address: 435 W. Vista Way Watershed: Buena Vista Creek Call Date: 2/10/2012 Case closed date: 5/2/2012	Industrial-commercial inspection non-compliance	Grease bin without secondary containment. Food grinder needs to be removed. Training for employees required.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove food grinder, train employees (SW and FOG), secondary containment for grease bin. Follow-up Action: Photo verify. Actions completed: Food grinder removed. Employee training complete. New grease bin with secondary containment.
SW No.: SW12-033 Type: Commercial Pro Active Visit ☑ Location Address: 910 E. Vista Way Watershed: Buena Vista Creek Call Date: 2/3/2012 Case closed date: 5/14/2012	I/C Inspection	Grease bin lacking proper BMPs.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Obtain proper cover and containment for outdoor grease bin. Follow-up Action: Re-inspect. Photo verify. Actions completed: BMPs for grease bin in place.
SW No.: SW12-034 Type: Commercial Pro Active Visit ☑ Location Address: 1960 Watson Way Complex Watershed: Buena Vista Creek Call Date: 3/21/2012 Case closed date: 4/24/2012	Trash dumped in enclosures, HHW dumped in trash enclosures, lids open and trash overflowing from dumpsters.	3-21-12 observed as described above. 4-19-12 HHW removed, signs posted for tenants. Dumpsters overflowing with trash, trash and debris in enclosures.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Properly dispose of trash and HHW, sweep dumpster areas, covers down on dumpsters, inform tenants of regulations. Follow-up Action: Photo verify. Actions completed: Signs posted, HHW removed, all trash in dumpsters with lids down, enclosures swept.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-036 Type: Commercial Pro Active Visit ☑ Location Address: 840 E. Vista Way Watershed: Buena Vista Creek Call Date: 3/27/2012 Case closed date: 5/29/2012	Outlet baffle missing from Gravity Grease Interceptor noted during annual Industrial/Commercial Inspection.	Outlet baffle missing from Gravity Grease Interceptor noted during annual Industrial/Commercial Inspection.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair GGI to full function. Follow-up Action: Verify repairs by obtaining invoice and inspecting GGI. Actions completed: GGI repaired, baffle replaced.
SW No.: SW12-037 Type: Commercial Pro Active Visit ☐ Location Address: 3295 Business Park Dr Watershed: Agua Hedionda Creek Call Date: 3/29/2012 Case closed date: 4/17/2012	no secondary containment or overhead coverage	observed as described	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: obtain compliant recycle unit Follow-up Action: photo verify Actions completed: indoor grease recycle unit in place. outdoor unit now removed.
SW No.: SW12-038 Type: Commercial Pro Active Visit ☐ Location Address: 3265-B Business Park Dr Watershed: Agua Hedionda Creek Call Date: 3/29/2012 Case closed date: 4/12/2012	No secondary containment/overhead coverage on outdoor grease recycle unit.	Obeserved as described above.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: obtain compliant recycle unit. Follow-up Action: photo verify Actions completed: compliant usint indoors.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-039 Type: Commercial Pro Active Visit ☐ Location Address: 770 Sycamore Ave, 118-119 Watershed: Buena Vista Creek Call Date: 3/29/2012 Case closed date: 4/17/2012	Food grinder in kitchen.	Food grinder in kitchen.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Remove food grinder. Follow-up Action: Photo verify. Actions completed: Food grinder removed.
SW No.: SW12-040 Type: Commercial Pro Active Visit ☐ Location Address: 770 Sycamore Ave Watershed: Buena Vista Creek Call Date: 3/29/2012 Case closed date: 4/17/2012	Grease spills, trash, and debris in trash enclosure. Dumpster lids open.	Grease spills, trash, and debris in trash enclosure. Dumpster lids open.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Properly dispose of grease and trash, clean trash enclosure, inform tenants of regulations. Follow-up Action: Photo verify. Actions completed: Trash area cleaned, one abandoned grease bin removed, lock on enclosure, dumpster lids closed.
SW No.: SW12-042 Type: Industrial Pro Active Visit ☐ Location Address: 402 Olive Ave Watershed: Buena Vista Creek Call Date: 2/16/2012 Case closed date: 4/10/2012	(From Dmax inspection) Flour deposits outside bldg and uncovered debris. Also, overtopped trash bin w/ flour bags	Complaint report confirmed. Flour deposits found on asphalt on side of bldg and along rod iron fence. A small bin with metal debris is uncovered, and empty flour bags are overtopping trash bin.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean up flour deposits, cover debris bin, and compact flour bags to allow for the bin to be closed Follow-up Action: Verify BMP implementation Actions completed: Flour deposits were cleaned up, debris bin was removed from site, and flour bags were compressed in dumpster to allow for the cover to close. Additionally, Business put small carpet out on ashpalt to contain tracking of flour.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-043 Type: Mobile Business Pro Active Visit ☑ Location Address: 885 E. Vista Way Watershed: Buena Vista Creek Call Date: 4/12/2012 Case closed date:	Hose going into parking lot and storm drain.	Fire sprinklers being drained to parking lot and storm drain. Spoke with business owner about options for proper disposal: landscaping, filter sock, sewer.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Discharge to landscape or sewer, or apply filter sock to end of discharge hose. Follow-up Action: Contact business owner for BMP options. Actions completed: Discharge moved to landscape. Will drain to sewer for maintenance tomorrow.
SW No.: SW12-044 Type: Commercial Pro Active Visit ☐ Location Address: 320 Sycamore Ave, #50 Watershed: Buena Vista Creek Call Date: 2/13/2012 Case closed date: 5/3/2012	Industrial Commercial Inspection non-compliance	2 grease bins without cover or secondary containment. Trash area ok.	Enforcement Action ☐ None ☑ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Cover grease bin and install secondary containment. Follow-up Action: Photo verify. Actions completed: Grease bin covered with secondary containment.
SW No.: SW12-045 Type: Commercial Pro Active Visit ☐ Location Address: 1280-4 E. Vista Way Watershed: Buena Vista Creek Call Date: 4/19/2012 Case closed date: 5/8/2012	Restaurant has a food grinder.	Observed as described above.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: remove food grinder Follow-up Action: photo verify Actions completed: food grinder removed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-046 Type: Commercial Pro Active Visit ☐ Location Address: 1040 E. Vista Way Watershed: Buena Vista Creek Call Date: 2/9/2012 Case closed date:	Grease above 25% in grease interceptor.	Inlet baffle missing from grease interceptor.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Repair GGI to full function. Follow-up Action: Verify repairs to grease interceptor. Actions completed:
SW No.: SW12-047 Type: Industrial Pro Active Visit ☐ Location Address: 1280 Park Center Drive Watershed: Agua Hedionda Creek Call Date: 2/8/2012 Case closed date: 5/16/2012	Implement corrective actions resulting from Industrial-commercial inspection.	Some items addressed. Lots of outdoor storage of metal and other items with potential for rust to get into stormwater.	Enforcement Action ☐ None ☑ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Correct all items noted during initial I/C inspection. Follow-up Action: Site inspection. Actions completed: Storage areas covered, all items addressed.
SW No.: SW12-049 Type: Residential Pro Active Visit ☐ Location Address: 723 Eucalyptus Ave Watershed: Buena Vista Creek Call Date: 4/17/2012 Case closed date: 6/13/2012	Pet waste left on the ground.	Could not field-verify responsible party. Performed outreach to suspected neighborhood's pet-friendly apartment complex.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Pick up after your pets. Follow-up Action: Distribute outreach materials to 30 apartments. Actions completed: N/A

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-050 Type: Residential Pro Active Visit ☐ Location Address: 1093 Beaumont Cir Watershed: Buena Vista Creek Call Date: 4/30/2012 Case closed date: 9/6/2012	Importing fill and concrete slabs into natural drainage channel. 12' high pile of dirt in front yard was used as fill.	observed as described above. Owner was required to contact a professional hydrologist engineer and take preventative measure to prevent sediment.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: remove fill and slabs. Return to original channel condition or provide engineer evaluation verification. Follow-up Action: photo verify Actions completed: engineer evaluation verification from Tory Walker w/approved plan for swale implementation using Exhibit # riprap design.
SW No.: SW12-052 Type: Industrial Pro Active Visit ☐ Location Address: 1280 Park Center Drive Watershed: Agua Hedionda Creek Call Date: 5/11/2012 Case closed date: 6/4/2012	Tank explosion of 8000 gallons of diphenyl methane diisocyanate polyurethane.	Absorbents in place at storm drain, spilled material in secondary containment of tank storage area and in driveway. Material mostly dried in place.	Enforcement Action ☐ None ☑ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Pressure wash outdoor areas impacted by explosion. Keep BMPs in place at inlets until areas are cleaned. Follow-up Action: Photo verify. Re-inspect. Actions completed: Received Residual Removal Report documenting cleanup actions.
SW No.: SW12-053 Type: Mobile Business Pro Active Visit ☐ Location Address: 1308 Palomar Place Watershed: Buena Vista Creek Call Date: 5/10/2012 Case closed date: 5/22/2012	Illegal washing of pesticides/chemicals from Pest Control truck.	Unable to confirm discharge.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Implement BMPs to prevent pollutants from entering the public streets and storm drain system. Follow applicable regulations governing pesticide application. Follow-up Action: Actions completed:

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SW No.: SW12-057 Type: Commercial Pro Active Visit ☐ Location Address: 2181 La Mirada Drive Watershed: Agua Hedionda Creek Call Date: 6/19/2012 Case closed date: 6/20/2012	Observed some water trickling into street from property at Western Concrete Pumping. This was a follow-up to high MBAS results obtained during monitoring at site AH-33	Wash water from cleaning pumping trucks is entering street. The responsible party stated that a Zep soap is used in the cleaning process.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Clean out grate inlet and install BMPs to prevent discharges to street Follow-up Action: Confirm corrective actions were implemented Actions completed: Grate inlet was cleaned out and containment berms were placed along gutter within business property. Drainage area to street was observed to be completely dry.
SW No.: SW12-058 Type: Commercial Pro Active Visit ☑ Location Address: 1004 S. Santa Fe Ave Watershed: Buena Vista Creek Call Date: 6/3/2012 Case closed date: 7/18/2012	Improper BMPs for grease bin noted during I/C inspection.	BMPs not in place for grease bin after multiple visits.	Enforcement Action ☐ None ☐ Verbal ☐ Written ☑ NOV ☐ Citation/Fine Corrective Action Required: Obtain proper secondary containment and cover for grease bin. Follow-up Action: Photo verify. Actions completed: Compliant indoor bin obtained.
SW No.: SW12-061 Type: Commercial Pro Active Visit ☑ Location Address: 1275 S Santa Fe Ave Watershed: Buena Vista Creek Call Date: 5/30/2012 Case closed date: 5/30/2012	Sprinker/irrigation box overflowing in front of uniform store.	Irrigation line broken and overflowing into street. Contacted VID who turned off valve and stopped release.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Stop discharge and repair water line. Follow-up Action: Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SW12-062 Type: Other Pro Active Visit ☑ Location Address: 1200 Vale Terrace Dr Watershed: Buena Vista Creek Call Date: 6/4/2012 Case closed date:	Food grinders noted during requested FOG inspection of Senior Center.	Two food grinders in the kitchen. Plumbing feeds into a GGI.	Enforcement Action ☐ None ☑ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove food grinders and make repairs according to VMC and other applicable plumbing regulations. Follow-up Action: Verify removal of grinders and plumbing repairs. Actions completed:
SW No.: SWM11-069 Type: Residential Pro Active Visit ☐ Location Address: 1534 Maxwell Ln Watershed: Call Date: 8/2/2011 Case closed date:	overgrown and dead vegetataion in gutter.	observed as described above. I spoke with Ken Adleman, PO and requested mitigation.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: remove/trim overgrowth and dead vegetation. Follow-up Action: photo verify Actions completed:
SW No.: SWM11-070 Type: Residential Pro Active Visit ☐ Location Address: 1957 E Vista Wy Watershed: Call Date: 8/2/2011 Case closed date: 8/3/2011	Caller (Tom Smith) reported a sewer connection to a open channel. Officers were found that complaint was unverified. Public Services responded to call as well.	As described above. Officers noted possible illegal construction and junk accumulation violations, but no evidence of discharge was noted. Code enforcement will be notified.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: None Follow-up Action: None Actions completed: None

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM11-072 Type: Commercial Pro Active Visit ☐ Location Address: 1110 N. Santa Fe Ave Watershed: Call Date: 7/21/2011 Case closed date: 8/8/2011	Observed soapy water running down parking lot on 7/20/11 at 9:30pm (photo documented by complaintaint) apparently originating from Paleteria La Mixteca	Investigations revealed possible remnants of soapy water discharge in parking lot as evident from water lines in pavement.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharges to parking lot immediately and document training of entire staff Follow-up Action: Verify training has been conducted Actions completed: All employees read and understood brochure contents and signed back log to verify training was completed.
SW No.: SWM11-073 Type: Commercial Pro Active Visit ☐ Location Address: 1110 N. Santa Fe Ave Watershed: Call Date: 7/26/2011 Case closed date: 8/9/2011	Observed soapy running water running down parking lot (photo documented by Complaintaint) coming from in front of Chicos Panaderia	Investigations revealed a discharged occurred as evidence of water line marks in parking lot.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Cease discharges immediately and train employees on pollution prevention and the use of appropriate BMPs Follow-up Action: Verify training was conducted with staff Actions completed: All employees read and signed the training log of the BMP guide confirming training was conducted
SW No.: SWM11-080 Type: Commercial Pro Active Visit ☐ Location Address: 450 W. Vista Way Watershed: Call Date: 9/15/2011 Case closed date: 9/30/2011	Complaintaint reported that during a cleanup of sewer back up at North County Ford, wastes were discharged into storm drain inlet on site.	Investigations revealed no discharge of sewer related material in storm drain.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:

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SW No.: SWM11-090 Type: Commercial Pro Active Visit ☑ Location Address: 2595 Commerce Way Watershed: Call Date: 11/28/2011 Case closed date: 11/28/2011	Water flowing down street to intersection of La Mirada and Sycamore.	Traced source to this location. Found hose connected to sump pump. Sump full of rainwater and had screen to block debris. Water was clear. No nearby vegetation to provide further filtration.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Spoke with manager and discussed the situation. The loading dock collects rainwater from uphill properties and needs to be drained. Since it is rain water with no signs of pollutants, it was considered an acceptable discharge. No corrective action is r Follow-up Action: Actions completed:
SW No.: SWM11-091 Type: Residential Pro Active Visit ☐ Location Address: 2013 Foothill Drive Watershed: Call Date: 12/5/2011 Case closed date: 12/8/2011	Gravel and dirt coming off site due to drivers using undeveloped lot for illegal shortcut.	Gravel and dirt coming off site into roadway at the above property.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Sweep up gravel and dirt from roadway. Perform frequent sweeping if condition continues. Suggested installation of barrier or gate to prevent illegal driving which is causing the issue. Follow-up Action: Verify removal of gravel and sediment in street. Actions completed: Gravel and dirt removed from roadway using dry methods.
SW No.: SWM11-092 Type: Other Pro Active Visit ☑ Location Address: 2525 Fortune Way Watershed: Call Date: 12/7/2011 Case closed date: 12/7/2011	Water pooling in street at curb gutter at La Mirada and Sycamore.	As described above. Tracked water to the source and found VID workers who said they are testing valves in the area, which results in a release of potable water. Gutter at La Mirada and Sycamore covered due to repairs to water pipe, causiing water to pool	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM11-093 Type: Commercial Pro Active Visit ☑ Location Address: 702 Civic Center Drive Watershed: Call Date: 12/8/2011 Case closed date: 12/8/2011	Water running down street at Civic Center Drive near Crescent.	As described above. Water coming from landscaped area. Concluded that source is broken sprinkler head (could not locate under thick layer of leaves). Referred to VID.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Forwarded information to VID 12-08-11. Follow-up Action: Actions completed:
SW No.: SWM11-094 Type: Other Pro Active Visit ☐ Location Address: 1303 Corbie Circle Watershed: Call Date: 11/30/2011 Case closed date: 11/30/2011	Homeless person using the storm drain as restroom.	Wastewater staff washed and vactored the ditch and drain at location of waste.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:
SW No.: SWM11-095 Type: Residential Pro Active Visit ☑ Location Address: 1315 Phillips St Watershed: Call Date: 12/12/2011 Case closed date: 12/14/2011	Evidence of recent grading of the lot, possibly for construction. No construction BMPs in place.	No sign of sediment discharging from the site. Discussed BMPs with property owner.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM11-096 Type: Residential Pro Active Visit ☑ Location Address: 125 Kilby Lane Watershed: Call Date: 12/12/2011 Case closed date: 12/21/2011	Sediment discharging from site during rain event.	Recent grading of areas created denuded slopes, causing sediment to run off. Discussed installation of BMPs with tenant.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Install BMPs to prevent sediment discharge, clean up street and driveway where discharge occurred. Follow-up Action: Photo verify. Actions completed: Sandbag berm installed 12/19/11. Sediment swept up on street 12/21/11.
SW No.: SWM11-098 Type: Commercial Pro Active Visit ☑ Location Address: Alta Vista Gardens Watershed: Buena Vista Creek Call Date: 11/2/2011 Case closed date: 11/8/2011	Grading of site resulting in exposed slopes with potential for sediment discharge.	Exposed dirt slopes and stockpiles lacking BMPs.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Install BMPs for erosion and sediment control. Follow-up Action: Photo verifiy. Actions completed: BMPs installed.
SW No.: SWM11-099 Type: Residential Pro Active Visit ☑ Location Address: 2013 Foothill Drive Watershed: Call Date: 10/20/2011 Case closed date: 11/7/2011	Dirt stockpiles with no BMPs in place at corner of Foothill and Edgehill.	Uncovered dirt stockpiles.	Enforcement Action ☐ None ☐ Verbal ☑ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Adequately cover stockpiles. Follow-up Action: Photo verify. Actions completed: BMPs installed.

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM11-101 Type: Other Pro Active Visit ☑ Location Address: 1210 Calle Jules Watershed: Buena Vista Creek Call Date: 12/6/2011 Case closed date: 5/17/2012	Buena Vista Creek muddy from sediment behind 727 E. Vista Way.	Learned of VID water main break in City sewer easement on Calle Jules. Water shut off by the time we arrived. High water flow caused erosion of the creek bank at the break location. Water line break is allowable discharge.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Immediately install BMPs to prevent sediment from entering creek. Install permanent BMPs upon completion of water line repairs. Follow-up Action: Verify BMPs in place. Actions completed: Tarp over site during wet weather. Erosion netting installed upon completion of repairs to water line.
SW No.: SWM11-105 Type: Commercial Pro Active Visit ☐ Location Address: 401 W. California Ave Watershed: Call Date: 12/27/2011 Case closed date: 12/27/2011	Property manager requesting educational information for tenants working on cars in the parking lot.	Delivered brochures in spanish and english versions. No violations in progress but evidence of automobile maintenance (oil spots, cars with blocks on tires).	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:
SW No.: SWM11-106 Type: Residential Pro Active Visit ☐ Location Address: 1895 Turnberry Drive Watershed: Call Date: 12/29/2011 Case closed date: 12/29/2011	Private lateral cleanout leaking onto driveway. PW reports city line is clear and saw toilet paper remnants at cleanout, but not currently spilling.	Found evidence of spill, but no active spill. Resident confused on City/private issue, informed him to call plumber.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Have plumber clear the line. Follow-up Action: Verify private lateral cleared. Actions completed: Resident had friend clear line so no invoice. Ran water and could hear it at the cleanout and didn't back up. Line cleared.

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SW No.: SWM11-107 Type: Residential Pro Active Visit ☐ Location Address: 460 Hacienda Dr Watershed: Buena Vista Creek Call Date: 12/19/2011 Case closed date: 2/27/2012	Sediment runs off dirt lot when it rains.	No evidence of sediment runoff (12/20/11).	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Follow up during rain event to verify no violation. On 2-27-12 rain event, no evidence of sediment leaving sit Actions completed:
SW No.: SWM11-108 Type: Residential Pro Active Visit ☐ Location Address: 746 Matagual Drive Watershed: Buena Vista Creek Call Date: 12/19/2011 Case closed date: 2/27/2012	Sediment runs off residence when it rains and resident parks cars on the lawn which tracks mud into the street.	No evidence of sediment entering street (12-20-11).	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Follow up during rain event to verify no violation. On 2-27-12 rain event, no evidence of sediment leaving sit Actions completed:
SW No.: SWM11-109 Type: Commercial Pro Active Visit ☑ Location Address: 2540 Fortune Way Watershed: Agua Hedionda Creek Call Date: 12/20/2011 Case closed date: 12/20/2011	High flow in storm drain manhole during investigation on La Mirada.	Traced water trail to 2540 Fortune Way and found over-irrigation. Spoke with manager who said he would talk to the landscaping crew.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM11-110 Type: Commercial Pro Active Visit ☑ Location Address: 2423 La Mirada Watershed: Agua Hedionda Creek Call Date: 12/20/2011 Case closed date: 12/20/2011	Investigating sediment in sediment at AH-32-1(SE corner of La Mirada and Sycamore). Found sheen, debris, and algae at NE corner of La Mirada and Sycamore.	No sources on nearby vacant lot (2423 La Mirada). Followed storm drains and looked in upstream inlets. No sign of sediment or other discharges.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:
SW No.: SWM11-111 Type: Commercial Pro Active Visit ☑ Location Address: 2408 La Mirada Dr Watershed: Agua Hedionda Creek Call Date: 12/20/2011 Case closed date: 12/20/2011	While sampling at AH-32-1, noticed sediment-laden water in storm drain at SE corner of La Mirada and Sycamore.	As described above. Followed La Mirada eastbound but no sources identified.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: No source/responsible party identified. Follow-up Action: Used storm drain map and investigated along Fortune Way drains and ditches and along eastbound side of La Mirada. Actions completed:
SW No.: SWM12-002 Type: Construction Pro Active Visit ☐ Location Address: 724 Copper Dr Watershed: Buena Vista Creek Call Date: 1/10/2012 Case closed date: 1/18/2012	Development project has no BMP's. Dirt, sawdust, trash and debris leaves site and washed into storm drains during rain.	BMPs installed at site. Construction inspector notified that more BMPs are ordered and will be installed prior to upcoming rains. Provided status report to complainant.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: BMPs installed prior to enforcment action. Follow-up Action: Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM12-004 Type: Other Pro Active Visit ☐ Location Address: Watershed: Agua Hedionda Creek Call Date: 12/28/2011 Case closed date: 1/19/2012	San Diego County Water Authority conducting hydrostatic test water operations from January 23 through Feb 2nd.	City staff visited test sites with SDCWA staff to understand operations and potential impacts on water quality. Staff sent letter to SDCWA to thank them for notice and point out City's concerns were addressed appropriately through training and implementation of their Waste Discharge Permit.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: None Follow-up Action: Actions completed:
SW No.: SWM12-005 Type: Residential Pro Active Visit ☐ Location Address: 575 Hildale Circle Watershed: Buena Vista Creek Call Date: 1/17/2012 Case closed date: 1/19/2012	Vehicle leaking a lot of oil on street	Found small oil leak on pavement, but no vehicle in area.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: No responsible party identified. Follow-up Action: Cleanup oil in pavement and provided information to resident at 575 Hildale to report future stormwater incidents to City WQPP. Actions completed: Oil spot was cleaned up
SW No.: SWM12-011 Type: Residential Pro Active Visit ☐ Location Address: 518 W. California Ave Watershed: Buena Vista Creek Call Date: 2/13/2012 Case closed date: 2/16/2012	Asphalt broken w/water seeping out. This is a private driveway with a utility easement. PO is Zenaida Ortiz and daugher, Dianna at 760-941-0501.	Water tested, undetermined, no odor, clear w/exception of localized dirt from vehicular traffic. Research indicates no water or sewer line in the immediate area. Possible ground water.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: None. Private driveway and no pollution discharge to city system. Follow-up Action: na Actions completed: Suggested to PO to contact surrounding neighbors who have responsibility for driveway maintenance to query them for further investigation. Oldest home on the driveway is 520 W. Calif, since 1953.

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SW No.: SWM12-016 Type: Residential Pro Active Visit ☐ Location Address: 375 Skyline Drive Watershed: Buena Vista Creek Call Date: 2/27/2012 Case closed date: 2/28/2012	Possible illegal grading. Code referred to SW due to possible runoff issues.	Grading not an issue (small parking area). Exisiting erosion control BMPs failing in some locations. Dirt and leaves in brow ditch. Unprotected small drains in bike track area.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Clean brow ditch, clean up and/or replace BMPs, and protect drain inlets. Follow-up Action: Photo verify. Actions completed: Ditch cleaned and new BMPs installed for erosion and sediment control.
SW No.: SWM12-018 Type: Residential Pro Active Visit ☑ Location Address: 1803 E. Vista Way Watershed: Buena Vista Creek Call Date: 2/21/2012 Case closed date: 2/21/2012	No BMPs are in place at a site that was recently demolished (proactive).	Same as above	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Install BMPs to prevent potential sediment discharge Follow-up Action: Verify BMP implementation Actions completed: Installed Fiber rolls around perimeter of site
SW No.: SWM12-021 Type: Other Pro Active Visit ☐ Location Address: 310 Hacienda Drive Watershed: Buena Vista Creek Call Date: 3/7/2012 Case closed date: 3/19/2012	Landscaping company dumped green waste at storm drain.	No violation. Grass clippings and wood chips dumped on landscaped area for use as mulch. Checked back on 3-19-12 after rain and confirmed no green waste leaving site.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:

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SW No.: SWM12-022 Type: Residential Pro Active Visit ☐ Location Address: 1520 Independence Way Watershed: Call Date: 2/23/2012 Case closed date: 3/5/2012	Illegal dumping of debris on adjacent property and small creek.	Various debris on property with some encroaching upon small creek.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Referred to Code for enforcement Follow-up Action: Actions completed:
SW No.: SWM12-024 Type: Residential Pro Active Visit ☐ Location Address: 2025 E. Vista Way Watershed: Buena Vista Creek Call Date: 3/19/2012 Case closed date: 3/19/2012	Lots of water flowing into the street at E Vista Way.	Spoke to property owner who said it was rainwater draining from the back property from weekend storm. Property owner swept up sediment.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:
SW No.: SWM12-035 Type: Commercial Pro Active Visit ☑ Location Address: 723 Olive Ave Watershed: Buena Vista Creek Call Date: 3/28/2012 Case closed date: 3/28/2012	Suspected oil and gas leaking out of a towing truck business building onto the ground and possibly the storm drain.	No signs of leaking fluids or oil stains (no sheens or residues). Unsure of how the fluids would make it out to the parking areas and/or storm drain system. There are currently no stormwater concerns.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM12-041 Type: Residential Pro Active Visit ☑ Location Address: 2133 N.Santa Fe Ave Watershed: San Luis Rey Call Date: 3/27/2012 Case closed date: 4/5/2012	Backwash water from private well was piped to creek.	See above	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Terminate connection to Creek. Implement an appropriate BMP to ensure backwash water does not enter Creek. Follow-up Action: Verify corrective actions Actions completed: Piped backwash lines up hill with water being used to irrigate ice plant.
SW No.: SWM12-048 Type: Residential Pro Active Visit ☑ Location Address: 391 Avalon Drive Watershed: Buena Vista Creek Call Date: 5/3/2012 Case closed date: 5/3/2012	Water running down Eucalyptus Drive and Avalon Drive	Water running out of drainage pipe at 391 Avalon Drive. Resident was draining dechlorinated pool.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:
SW No.: SWM12-051 Type: Other Pro Active Visit ☐ Location Address: 1450 E. Vista Way Watershed: Buena Vista Creek Call Date: 5/7/2012 Case closed date: 5/7/2012	Private engineer would like feedback on suggested options for draining low spots of the church parking lot.	Referred to City Engineering staff for professional input and response.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Follow-up Action: Actions completed:

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM12-054 Type: Commercial Pro Active Visit ☑ Location Address: 1590 S. Melrose Dr Watershed: Agua Hedionda Creek Call Date: 5/3/2012 Case closed date: 5/22/2012	Report from PW that dumpster at AM/PM market is overfilled and trash is everywhere.	Entire dumpster area (inside and outside dumpster) was filled with trash and debris.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Remove trash scattered and piled up within dumpster and properly contain inside dumpster. Owner needs to consider modifying trash pickup frequency to prevent unecessary trash build up. Follow-up Action: Confirm trash was appropriately removed and disposed of properly. Actions completed: Trash was picked up within dumpster area and properly contained in dumpster.
SW No.: SWM12-055 Type: Residential Pro Active Visit ☐ Location Address: 159 Ocean View Dr. Watershed: Buena Vista Creek Call Date: 5/29/2012 Case closed date: 5/29/2012	Neighbor's pool being emptied and running down the hill to business on N Santa Fe, flowing over retaining wall and leaking in storage shed.	Pool empty upon arrival. Not much flow draining on neighboring property bu evidence of flow in shed and parking lot. Some sediment in parking lot but not a lot in street. Property owner says pool was dechlorinated. They are allowed to drain to a storm drain but need to avoid impacts to neighboring property. Private property issue.	Enforcement Action ☐ None ☑ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Make sure proper BMPs are followed when draining pool. Follow-up Action: Actions completed:
SW No.: SWM12-056 Type: Residential Pro Active Visit ☑ Location Address: 910 Heather Drive Watershed: Buena Vista Creek Call Date: 5/29/2012 Case closed date: 6/11/2012	Overwatering is occurring at 910 Heather Drive	Irrigation system had stopped, but water was evident in street. Staff observed a bent irrigation sprinkler head that may contributed to excess water runoff.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required: Repair irrigation system to reduce water runoff. Follow-up Action: Confirm repair of irrigation system Actions completed: Repair irrigation system

GENERAL	COMPLAINT DESCRIPTION	SITE INVESTIGATION	ENFORCEMENT AND FOLLOW UP
SW No.: SWM12-060		Costco requested educational materials for FOG and Stormwater training.	Enforcement Action ☑ None ☐ Verbal ☐ Written ☐ NOV ☐ Citation/Fine Corrective Action Required:
Type: Commercial			
Pro Active Visit ☐			
Location Address: 1755 Hacienda Drive			Follow-up Action:
Watershed: Buena Vista Creek			Actions completed:
Call Date: 6/4/2012			
Case closed date: 6/5/2012			

APPENDIX D-5
FY 2011-12 SUMMARY OF INDUSTRIAL AND COMMERCIAL ENFORCEMENT ACTIONS

Appendix D-5 FY 2011-12 Summary of Industrial and Commercial Enforcement Actions

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION					REFERRAL
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal Warning	Written Warning	Notice of Violation	Citation	**Totals**	Proactive
Commercial (complaints)	19	0	1	21	12	53	37	37	11	5	23	0	39	19
Commercial (inspections)	1	0	0	29	0	30	30	30	27	12	6	0	45	22
Industrial (complaints)	4	0	0	4	1	9	7	7	2	2	5	0	9	1
Industrial (inspections)	0	0	0	8	0	8	8	8	7	4	2	0	13	5
Mobile Business	3	0	0	0	0	3	3	3	2	2	0	0	4	2
TOTALS	27	0	1	62	13	103	85	85	49	25	36	0	110	49

Note: Some complaints may have more than one reported complaint type and/or enforcement action.

APPENDIX D-6
BMP LETTERS TO STATIONARY FACILITIES

CITY OF VISTA
CALIFORNIA

December 28, 2011

Business Name
Mailing Address

RE: 2012 Stormwater and FOG BMP Requirements and Inspection Notification for Facility Located at: Business Site Address

Dear Business Owner/Operator:

The San Diego Regional Water Quality Control Board re-issued a Municipal Stormwater Permit, Order R9-2007-0001 to the City of Vista on January 24, 2007. Additionally, the State Water Resources Control Board issued General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems, Order 2006.0003-DWQ on May 2, 2006. The City of Vista is required to comply with both Permits in order to prevent polluted urban runoff from entering our local waterways. The first Permit regulates discharges to the municipal stormwater conveyance system and the second regulates the discharges of fats, oils, and grease (FOG) to the sanitary sewer system.

The City has adopted Ordinances for stormwater (VMC Chapter 13.18, Stormwater Management and Discharge Control Program) and FOG (VMC Chapter 14.12, Control and Regulation of Fats, Oils, and Grease) which require businesses to implement best management practices (BMPs) to prevent the discharge of pollutants into the City's stormwater conveyance system and FOG into the sanitary sewer system. FOG requirements (FOG brochure enclosed) are applicable to facilities that generate fats, oils, and grease (e.g. food service establishments). In managing FOG, BMPs include the installation of drain screens, proper disposal of food waste, proper handling of waste cooking oil, and employee training. BMPs for managing urban runoff at all facilities include good housekeeping practices, covering and containing materials stored outside, and employee training. The stormwater BMP requirements for your business are enclosed and can also be found in the City of Vista Stormwater Standards Manual (www.cityofvista.com).

Pollutants that enter the stormwater conveyance system through improper or insufficient BMPs can flow directly into receiving waters. Pollutants include but are not limited to sediment, metals, trash, oil and grease, green waste, construction waste, chemicals, hazardous waste, and potable water. Runoff at businesses and job sites drains to the City's stormwater conveyance system consisting of gutters, streets, storm drains, and channels before entering receiving waters. In the City of Vista, these receiving waters include Buena Vista Creek, Agua Hedionda Creek, Buena Creek, La Mirada Creek, Guajome Creek, and Loma Alta Creek. Polluted runoff is known to contribute to water quality impairments and affect the health and habitats of fish, wildlife, and humans. Your continual efforts in preventing pollution will help protect local creeks and keep your business in compliance with City regulations.

The City conducts inspections to assess the effectiveness of BMP implementation and compliance with City Ordinances and Permits. The City will be using its own staff and personnel from an experienced consulting firm, D-MAX Engineering, Inc., to perform the required inspections over the next few months. The D-MAX representative is conducting the inspections on behalf of the City of Vista and is authorized to carry out the responsibilities for the City as an extension of staff. Please allow the inspector access to your facility and records as necessary to determine compliance with applicable regulations.

The City appreciates your cooperation during the implementation of these programs. If you have any questions, please contact me at (760) 726-1340 ext 1331 or kmathews@cityofvista.com.

Respectfully,

Kara Mathews

Kara Mathews
Environmental Specialist

Enclosures (2)

P: (760) 726-1340 | www.cityofvista.com | F: (760) 639-6132
200 Civic Center Drive, Vista, California 92084-6275

CITY OF VISTA
CALIFORNIA

December 27, 2011

Business Name
Mailing Address

Facility Location: Business Site Address

RE: Stormwater and FOG Best Management Practices Requirements for All Businesses

Dear Business Owner/Operator:

The San Diego Regional Water Quality Control Board re-issued a Municipal Stormwater Permit, Order R9-2007-0001 to the City of Vista on January 24, 2007. Additionally, the State Water Resources Control Board issued General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems, Order 2006.0003-DWQ on May 2, 2006. The City of Vista is required to comply with both permits in order to prevent polluted urban runoff from entering our local waterways. The first permit regulates discharges to the municipal stormwater conveyance system and the second regulates the discharges of fats, oils, and grease (FOG) to the sanitary sewer system.

The City has adopted Ordinances for stormwater (VMC Chapter 13.18, Stormwater Management and Discharge Control Program) and FOG (VMC Chapter 14.12, Control and Regulation of Fats, Oils, and Grease) which require businesses to implement best management practices (BMPs) to prevent the discharge of pollutants into the City's stormwater conveyance system and FOG into the sanitary sewer system. FOG requirements (FOG brochure enclosed) are applicable to facilities that generate fats, oils, and grease (e.g. food service establishments). In managing FOG, BMPs include the installation of drain screens, proper disposal of food waste, proper handling of waste cooking oil, and employee training. BMPs for managing urban runoff at all facilities include good housekeeping practices, covering and containing materials stored outside, and employee training. The stormwater BMP requirements for your business are enclosed and can be found in the City's Stormwater Standards Manual (www.cityofvista.com).

Pollutants that enter the stormwater conveyance system through improper or insufficient BMPs can flow directly into receiving waters. Pollutants include but are not limited to sediment, metals, trash, oil and grease, green waste, construction waste, chemicals, hazardous waste, and potable water. Runoff at businesses and job sites drains to the City's stormwater conveyance system consisting of gutters, streets, storm drains, and channels before entering receiving waters. In the City of Vista, these receiving waters include Buena Vista Creek, Agua Hedionda Creek, Buena Creek, La Mirada Creek, Guajome Creek, and Loma Alta Creek. Polluted runoff is known to contribute to water quality impairments and affect the health and habitats of fish, wildlife, and humans. Your continual efforts in preventing pollution will help protect local creeks and keep your business in compliance with City regulations.

The City appreciates your cooperation during the implementation of these programs. If you have any questions, please contact me at (760) 726-1340 ext 1331 or kmathews@cityofvista.com.

Respectfully,

Kara Mathews

Kara Mathews
Environmental Specialist

Enclosures (2)

P: (760) 726-1340 | www.cityofvista.com | F: (760) 639-6132
200 Civic Center Drive, Vista, California 92084-6275

APPENDIX D-7
BMP LETTER TO MOBILE BUSINESSES

CITY OF VISTA
CALIFORNIA

December 27, 2011

Business Name
Mailing Address

RE: Stormwater Best Management Practices Requirements for All Businesses

Dear Business Owner/Operator:

The San Diego Regional Water Quality Control Board re-issued a Municipal Stormwater Permit, Order R9-2007-0001 to the City of Vista on January 24, 2007. The City of Vista is required to comply with the Permit in order to protect water quality in its receiving waters. To ensure compliance, the City requires all businesses to implement best management practices (BMPs) at their facilities and job sites to prevent polluted runoff from entering the stormwater conveyance system.

The City of Vista's Municipal Code (VMC Chapter 13.18, Stormwater Management and Discharge Control Program) contains the BMP requirements for all types of businesses including stationary and mobile businesses. Businesses must implement effective best management practices (BMPs) as part of their stormwater management plan to prevent the offsite movement of pollutants into the conveyance system. BMPs or pollution prevention practices include but are not limited to good housekeeping practices; covering and containing outside materials and stockpiles; installing devices to capture, retain, and treat pollutants in runoff; and training of employees. The City's Stormwater Standards Manual (www.cityofvista.com) provides further details on the BMP requirements for each type of business. Facilities are required to implement, at a minimum, the City's BMP requirements (where applicable) listed in the manual. Enclosed are the BMP requirements specific to your business.

Pollutants that enter the stormwater conveyance system through improper or insufficient BMPs can flow directly into receiving waters. Pollutants include but are not limited to sediment, metals, trash, oil and grease, green waste, construction waste, chemicals, hazardous waste, and potable water. Runoff at businesses and job sites drains to the City's stormwater conveyance system consisting of gutters, streets, storm drains, and channels before entering receiving waters. In the City of Vista, these receiving waters include Buena Vista Creek, Agua Hedionda Creek, Buena Creek, La Mirada Creek, Guajome Creek, and Loma Alta Creek. Polluted runoff is known to contribute to water quality impairments and affect the health and habitats of fish, wildlife, and humans. Your continual efforts in preventing pollution will help protect local creeks and keep your business in compliance with City regulations.

The City appreciates your support and cooperation during the implementation of this program. If you have any questions, please contact me at (760) 726-1340 ext 1331 or kmathews@cityofvista.com.

Respectfully,

Kara Mathews

Kara Mathews
Environmental Specialist

Enclosure

P: (760) 726-1340 | www.cityofvista.com | F: (760) 639-6132
200 Civic Center Drive, Vista, California 92084-6275

APPENDIX D-8
FY 2011-12 INDUSTRIAL AND COMMERCIAL INSPECTION FOLLOW-UP SUMMARIES

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: 99 Cent Store **Address:** 705 E Vista Way **Inspection Type:** Commercial **Contact:** Joaquin Oseguera, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 1/31/2012 **Needed Corrective Actions** Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: New locking dumpster ordered.) Provide storm water training for appropriate employees (Inspector comment: No documentation.) Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 2/7/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: Albertacos Mex Food Inc **Address:** 601 Sycamore Ave **Inspection Type:** Commercial **Contact:** Manuel Montejeno, Manager **Receiving Water Body** Buena Creek	**Inspection Date:** 3/29/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Litter present, next to freeway.) Keep outdoor areas free of spills and leaks (Inspector comment: Evidence of grease spills.) Protect trash area from contact with storm water (Inspector comment: Lids open, closed on site.) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: grease spill) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills Dispose of used grease properly	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 4/3/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Apro 47 **Address:** 911 E Vista Way **Inspection Type:** Commercial **Contact:** Jeff Appel, Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/3/2012 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: Some liquid spills) Adequately cover materials stored outside, where feasible (Inspector comment: Hazardous waste drums) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Hazardous waste drum) Properly store and dispose of hazardous materials (Inspector comment: haz waste drums lack cover and run-on prevention)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/19/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Facility Name: Armandos Mexican Food **Address:** 770 Sycamore Ave L **Inspection Type:** Commercial **Contact:** Ruben Gonzalez, Manager **Receiving Water Body** Buena Creek	**Inspection Date:** 3/29/2012 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: trash/grease bins) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: Lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Trash spilled in enclosure) Provide an accessible, functional spill response kit Equip liquid storage containers with secondary containment (Inspector comment: No secondary containment on grease bin) Keep spill containment free of spills and rainwater Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with secondary containment Keep grease bin and surrounding area free of grease stains/spills Maintain accessible grease spill response materials	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 5/3/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Barnicles Express (Petrol Management)	**Inspection Date:** 2/6/2012	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 845 E Vista Way **Inspection Type:** Commercial **Contact:** Jesus-Manager **Receiving Water Body** Buena Vista Creek	**Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: Oil/antifreeze/soda stains in parking area) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: Dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment Adequately cover materials stored outside, where feasible (Inspector comment: Hazardous waste drums) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Hazardous waste drums) Properly label outdoor storage containers (Inspector comment: Hazardous waste drums) Equip liquid storage containers with secondary containment (Inspector comment: Hazardous waste drums) Properly store and dispose of hazardous materials (Inspector comment: Hazardous waste drums lack cover, containment and run on protection) Provide storm water training for appropriate employees		**Follow-up Inspection Date:** 2/28/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** NOV **Resolution Status:** Resolved
Facility Name: Californias Mexican Restaurant	**Inspection Date:** 2/28/2012	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 2147 E Vista Way **Inspection Type:** Commercial **Contact:** Juan Avila -Manager **Receiving Water Body** Guajome Creek	**Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Food debris around grease trap, sediment in lot) Keep outdoor areas free of spills and leaks (Inspector comment: Grease stains in back area and outside back door) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Grease stains outside where containers used to be)		**Follow-up Inspection Date:** 3/28/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Chevron USA (Foothill Chevron)	**Inspection Date:** 2/3/2012	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 1211 E Vista Way	**Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: Oil spots/liquids) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: Drain in SW corner) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Trash in enclosure) Adequately cover materials stored outside, where feasible (Inspector comment: Haz drum/buckets in trash enclosure) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Haz waste drum/buckets) Equip liquid storage containers with secondary containment (Inspector comment: gas/water buckets) Properly store and dispose of hazardous materials (Inspector comment: Haz drums/buckets lack cover/ containment and run on prevention) Perform vehicle/equipment washing in a contained area where runoff does not enter the MS4 (Inspector comment: Car wash water from trench drain discharges to storm drain) Identify and eliminate illicit connections and illegal discharges (Inspector comment: Car wash water from trench drain discharged to storm drain) Provide storm water training for appropriate employees		**Follow-up Inspection Date:** 3/12/2012
Inspection Type: Commercial			**Inspector:** Kara Mathews
Contact: Dale Ginos-Supervisor			**Enforcement Action(s):** Verbal Warning, Written Warning
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved
Facility Name: Chito's Taco Shop	**Inspection Date:** 2/13/2012	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 320 Sycamore Ave 50	**Needed Corrective Actions** Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Grease spills on and around bin; food in enclosure) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage Store grease bins with secondary containment (Inspector comment: Dbl wall) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Grease spills on and around bin)		**Follow-up Inspection Date:** 5/3/2012
Inspection Type: Commercial			**Inspector:** Kara Mathews
Contact: Alvaro Lua- owner			**Enforcement Action(s):** Written Warning
Receiving Water Body Buena Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Coors Tek Vista (Previously BAE) **Address:** 1960 Watson Way **Inspection Type:** Industrial **Contact:** Tony Tomanowski - Facility Manager **Receiving Water Body** Buena Creek	**Inspection Date:** 3/21/2012 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: Rusty metal waste pile exposed.) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: Loaned stencils.) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: Dumpsters open, lots of litter, HHW) Keep loading and unloading areas, including drains, free of debris (Inspector comment: Debris in and around drain inlet filter.) Conduct outdoor activities within contained areas (under canopy, bermed) Street sweeper weekly (Sundays)	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/22/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: Douglas Technologies **Address:** 1340 N Melrose Dr **Inspection Type:** Industrial **Contact:** Ty Zimmerman,Manager **Receiving Water Body** Loma Alta Creek	**Inspection Date:** 3/27/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: tire shavings, metal pieces around dumpster) Protect trash area from contact with storm water (Inspector comment: Some bin lids back.) Adequately cover materials stored outside, where feasible (Inspector comment: Some items covered with tarps, some tarps with rips, some items to be scrapped waiting to be recycle) Provide an accessible, functional spill response kit Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Currently allow a car wash fundraiser, informed no longer allowed. Complete NONA/NEC paperwork and follow instructions on coversheet provided.	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 5/21/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning, Written Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: El Burrito Catering (Mobile Food Service Hub)	**Inspection Date:** 2/28/2012	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes
Address: 365 Olive Ave A	**Needed Corrective Actions**		**Follow-up Inspection Date:** 2/29/2012
Inspection Type: Commercial	Protect trash area from contact with storm water (Inspector comment: Trash overflowing and cardboard area not covered.) Keep trash area free of litter and debris, liquids, powders, and sediment Adequately cover materials stored outside, where feasible Prevent run-on from contacting materials stored outdoors, where feasible Provide an accessible, functional spill response kit		**Inspector:** Kara Mathews
Contact: Lydia Hernandez, Owner			**Enforcement Action(s):** Verbal Warning
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Facility Name: El Mago Paint and Body	**Inspection Date:** 3/7/2012	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes
Address: 427 Redlands St C	**Needed Corrective Actions**		**Follow-up Inspection Date:** 4/9/2012
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: litter, debris, car parts) Keep outdoor areas free of spills and leaks Adequately cover materials stored outside, where feasible (Inspector comment: car parts in corner of lot) Prevent run-on from contacting materials stored outdoors, where feasible Provide an accessible, functional spill response kit (Inspector comment: Requested more info.)		**Inspector:** Kara Mathews
Contact: Jesus Ayala			**Enforcement Action(s):** Written Warning
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Emerald Shell **Address:** 145 N Emerald Dr **Inspection Type:** Commercial **Contact:** Amir Mousevi- Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/2/2012 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: Oil spots/liquid spills) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: Two drains on site) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: Dumpster lids open) Adequately cover materials stored outside, where feasible (Inspector comment: Hazardous drum) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Hazardous waste drum) Properly label outdoor storage containers (Inspector comment: Label on haz drum is blank) Equip liquid storage containers with secondary containment (Inspector comment: Hazardous waste drum lacks cover and containment) Properly store and dispose of hazardous materials Provide storm water training for appropriate employees	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 2/28/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Facility Name: Eriberto's Mexican Food **Address:** 901 S Santa Fe Ave **Inspection Type:** Commercial **Contact:** **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 5/24/2012 **Needed Corrective Actions** Adequately cover materials stored outside, where feasible (Inspector comment: Cardboard needs bin.) Prevent run-on from contacting materials stored outdoors, where feasible Provide an accessible, functional spill response kit (Inspector comment: Unknown) Equip liquid storage containers with secondary containment (Inspector comment: Grease bin.) Store waste cooking grease in designated container Store grease bins with overhead coverage Store grease bins with secondary containment Maintain accessible grease spill response materials (Inspector comment: Unknown)	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/14/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning, Written Warning **Resolution Status:** Resolved

Site Information

Facility Name:

Erika Restaurant

Address:

1851 W Vista Way C

Inspection Type:

Commercial

Contact:

Erika Carranza, Owner

Receiving Water Body

Buena Vista Creek

Initial Inspection Information

Inspection Date: 2/6/2012

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Leaf litter)

Keep storm drains on site free of litter and debris (Inspector comment: Leaf litter)

Keep outdoor areas free of spills and leaks (Inspector comment: Staining behind building from back door)

Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: 2 drains along back alley)

Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City

Protect trash area from contact with storm water (Inspector comment: Dumpster lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Some grease spills on bin)

Provide storm water training for appropriate employees

Develop a written procedure for spill prevention and response

> Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Store grease bins with overhead coverage

Store grease bins with secondary containment

Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Some grease on lid and ground)

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

3/5/2012

Inspector:

Sandra Sotola

Enforcement Action(s):

NOV

Resolution Status:

Resolved

Site Information

Facility Name:

Filibertos Mexican Food

Address:

960 E Vista Way

Inspection Type:

Commercial

Contact:

Alberto Deleon, Owner

Receiving Water Body

Buena Vista Creek

Initial Inspection Information

Inspection Date: 3/27/2012

Inspector: Kara Mathews

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Stain/powder in parking lot)

Collect water from pressure washing or hosing and dispose of appropriately (Inspector comment: Mop up all water)

Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage

Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City

Protect trash area from contact with storm water (Inspector comment: trash in enclosure)

Keep trash area free of litter and debris, liquids, powders, and sediment

Adequately cover materials stored outside, where feasible

Prevent run-on from contacting materials stored outdoors, where feasible

Provide an accessible, functional spill response kit

Dispose of water generated by processing activities appropriately

Provide storm water training for appropriate employees

Develop a written procedure for spill prevention and response

- Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Maintain accessible grease spill response materials

Dispose of used grease properly

Dispose of food waste properly (Inspector comment: garbage area)

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

4/4/2012

Inspector:

Kara Mathews

Enforcement Action(s):

Verbal Warning

Resolution Status:

Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Food 4 Less 300 **Address:** 500 Hacienda Dr **Inspection Type:** Commercial **Contact:** Jon Heffron - Co-Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/6/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods Keep storm drains on site free of litter and debris (Inspector comment: Trash in drain near compactor) Keep outdoor areas free of spills and leaks (Inspector comment: Oil spots in parking lot) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: Landscaping in NE corner of lot) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Liquid leaks from compactor) Adequately cover materials stored outside, where feasible (Inspector comment: Used tires in fenced area) Keep loading and unloading areas, including drains, free of debris (Inspector comment: Some debris in loading area) Provide storm water training for appropriate employees	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/6/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Facility Name: Frank's Mexican Grill **Address:** 122 W California Ave **Inspection Type:** Commercial **Contact:** Frank Sarmiento, owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 3/28/2012 **Needed Corrective Actions** Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Grease from exhaust hood dripping off roof.	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 4/4/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: HMS Co.	**Inspection Date:** 2/28/2012	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 1400 Palomar Pl	**Needed Corrective Actions**		**Follow-up Inspection Date:** 4/26/2012
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Trash and sediment along west end) Properly manage pesticides/fertilizers; use IPM when feasible (Inspector comment: Liquid fertilizer lacks secondary containment) Properly store stockpiles to prevent material transport, where feasible (Inspector comment: Soil stock pile near entrance) Adequately cover materials stored outside, where feasible (Inspector comment: Rusty metal, 55 gallon rusty drum, used tire) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Rusty metal, used tire) Properly label outdoor storage containers (Inspector comment: 55 gallon drum) Equip liquid storage containers with secondary containment (Inspector comment: Fertilizer drum, paint cans, cleaning chemicals, 5 gallon bucket) Properly store and dispose of hazardous materials (Inspector comment: Paint cans, 5 gallon bucket, cleaning chemicals lack secondary containment) Keep loading and unloading areas, including drains, free of debris (Inspector comment: Sediment and debris) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Contact: Bruce Smith - Owner			
Receiving Water Body Buena Vista Creek			

Facility Name: Humberto's Auto Repair	**Inspection Date:** 2/7/2012	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 444 S Santa Fe Ave B	**Needed Corrective Actions**		**Follow-up Inspection Date:** 3/1/2012
Inspection Type: Commercial	Keep outdoor areas free of spills and leaks (Inspector comment: Spills on ground) Adequately cover materials stored outside, where feasible (Inspector comment: Car parts behind building) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Car parts behind building) Keep spill containment free of spills and rainwater (Inspector comment: Oil spills in tray) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City		**Inspector:** Kara Mathews **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Contact: Humberto Palos, Owner			
Receiving Water Body Buena Vista Creek			

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: International House Of Pancakes 814	**Inspection Date:** 2/13/2012	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes
Address: 632 Sycamore Ave **Inspection Type:** Commercial **Contact:** Kelly Baker - Manager **Receiving Water Body** Buena Creek	**Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Some leaf litter) Keep outdoor areas free of spills and leaks (Inspector comment: Oil/liquid spills in parking area) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Grease spills on and around bin) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage Store grease bins with secondary containment (Inspector comment: Dbl wall) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Grease spills on and around bin)		**Follow-up Inspection Date:** 3/27/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** NOV **Resolution Status:** Resolved
Facility Name: Jif-Pak Manufacturing, Inc.	**Inspection Date:** 2/14/2012	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes
Address: 1451 Engineer St **Inspection Type:** Industrial **Contact:** Perez, Ruben **Receiving Water Body** Agua Hedionda Creek	**Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: Dumpster discharge, evidence of drum spilling) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage (Inspector comment: Storm drain stencil loan.) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: Will contact outside company) Protect trash area from contact with storm water (Inspector comment: Dumpster cover, metal recycling cover) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Need to upgrade BMPs, install permanent berm) Adequately cover materials stored outside, where feasible Keep spill containment free of spills and rainwater (Inspector comment: Minimal water in secondary containment from recent rain) Complete NONA/NEC paperwork and follow instructions on coversheet provided.		**Follow-up Inspection Date:** 3/5/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning, NOV **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Krikorian Premiere Theaters **Address:** 25 Main St **Inspection Type:** Commercial **Contact:** Herman Mendoza, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 1/25/2012 **Needed Corrective Actions** Keep storm drains on site free of litter and debris Protect trash area from contact with storm water (Inspector comment: Refine existing BMPs surrounding area drains.)	**Inspector:** Sandra Sotola	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/8/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** NOV **Resolution Status:** Resolved
Facility Name: La Favorita Meat Market **Address:** 932 Vista Village Dr **Inspection Type:** Commercial **Contact:** Mike Shalabi - Co-Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/23/2012 **Needed Corrective Actions** Keep storm drains on site free of litter and debris (Inspector comment: trash and debris in inlet) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Clean floor mats in locations that do not drain to the storm drain system (Inspector comment: Wash steps from meat counter outside.) Provide storm water training for appropriate employees	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/12/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Facility Name: La Mexicana Market **Address:** 440 N Santa Fe Ave **Inspection Type:** Commercial **Contact:** Noury Gaggo-owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/2/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Trash in landscape area, removed on site.) Keep outdoor areas free of spills and leaks Keep trash area free of litter and debris, liquids, powders, and sediment Adequately cover materials stored outside, where feasible (Inspector comment: Recently tore down shed, materials exposed.) Prevent run-on from contacting materials stored outdoors, where feasible Provide an accessible, functional spill response kit Provide storm water training for appropriate employees Maintain accessible grease spill response materials	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/1/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** NOV **Resolution Status:** Resolved

Site Information

Facility Name:

Las Pupusa Mama Lita

Address:

1450 N Santa Fe Ave E

Inspection Type:

Commercial

Contact:

Argelia Lopez- owner

Receiving Water Body

Buena Vista Creek

Initial Inspection Information

Inspection Date: 2/7/2012

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Trash and leaf litter in parking lot)

Keep storm drains on site free of litter and debris (Inspector comment: Stains and trash in drains along back alley)

Keep outdoor areas free of spills and leaks

Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: Drains along back alley and curb inlet in parking lot)

Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City

Protect trash area from contact with storm water (Inspector comment: Dumpster lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Trash, food, urine, liquids)

Adequately cover materials stored outside, where feasible (Inspector comment: Rusty material behind building (neighbor))

Clean floor mats in locations that do not drain to the storm drain system (Inspector comment: Reported washing in back alley)

Identify and eliminate illicit connections and illegal discharges (Inspector comment: Reported uncontained floor mat washing in back alley)

Provide storm water training for appropriate employees

Develop a written procedure for spill prevention and response

> Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Store grease bins with overhead coverage

Store grease bins with secondary containment

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

5/31/2012

Inspector:

Kara Mathews

Enforcement Action(s):

Verbal Warning, Written Warning

Resolution Status:

Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Lee Steel & Supply	**Inspection Date:** 2/17/2012	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes
Address: 1305 Lee Dr	**Needed Corrective Actions**		**Follow-up Inspection Date:** 5/8/2012
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Some sediment and debris throughout site) Keep outdoor areas free of spills and leaks (Inspector comment: Oil stains near shop area) Adequately cover materials stored outside, where feasible (Inspector comment: Engine blocks, rusty metal, galvanized pipes, used tires) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Some metal material and tires on ground) Equip liquid storage containers with secondary containment (Inspector comment: Small grease container in shop area, hazmat drums in metal shed) Properly store and dispose of hazardous materials (Inspector comment: Small grease container and hazmat in metal shed lack secondary containment) Provide materials (berm, mat, etc.) to protect storm drain inlets from spills and leaks (Inspector comment: NW end at channel to curb inlet) Provide storm water training for appropriate employees		**Inspector:** Kara Mathews **Enforcement Action(s):** Written Warning
Contact: Rick Cruz, Manager			
Receiving Water Body Loma Alta Creek			**Resolution Status:** Resolved
Facility Name: Los Cabos Mexican & Seafood	**Inspection Date:** 2/28/2012	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes
Address: 760 E Vista Way	**Needed Corrective Actions**		**Follow-up Inspection Date:** 2/29/2012
Inspection Type: Commercial	Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Back area next to grease trap.) Protect trash area from contact with storm water (Inspector comment: Corrected on site.) Keep trash area free of litter and debris, liquids, powders, and sediment Provide an accessible, functional spill response kit Maintain accessible grease spill response materials		**Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning
Contact: Alfonso Segura-owner			
Receiving Water Body Buena Vista Creek			**Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Mariscos Rancho Grande **Address:** 825 Williamston St **Inspection Type:** Commercial **Contact:** Irma Kargas- owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/16/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Minor sediment in lot) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: Drain in rear parking) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Grease spills on bin trash and debris) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage Store grease bins with secondary containment (Inspector comment: Dbl wall) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Some spills on bin and ground)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 4/26/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Facility Name: New Panda Buffet **Address:** 1040 E Vista Way **Inspection Type:** Commercial **Contact:** Jin Ping Li- owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/9/2012 **Needed Corrective Actions** Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Some grease residue on bin) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage Store grease bins with secondary containment (Inspector comment: Dbl wall) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Some grease spills on bin)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 4/5/2012 **Inspector:** Doug Coppi **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Oscar's Mexican Food **Address:** 822 E Vista Way **Inspection Type:** Commercial **Contact:** Patricia Pinalos - owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/7/2012 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks Protect trash area from contact with storm water (Inspector comment: Lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: evidence of grease spills) Adequately cover materials stored outside, where feasible Prevent run-on from contacting materials stored outdoors, where feasible Provide an accessible, functional spill response kit Provide storm water training for appropriate employees Keep grease bin and surrounding area free of grease stains/spills	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/7/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: Papa Bambino's **Address:** 1116 Sycamore Ave H **Inspection Type:** Commercial **Contact:** Virginia Valderas, Manager **Receiving Water Body** Agua Hedionda Creek	**Inspection Date:** 2/15/2012 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: Oil spots, grease tracking from trash area to parking lot) Mark drains/inlets on site with ‘no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Grease spills, trash) Adequately cover materials stored outside, where feasible (Inspector comment: Paint buckets) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Paint buckets) Equip liquid storage containers with secondary containment (Inspector comment: Paint buckets) Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Grease spills outside grease storage)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/26/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Popeye's Auto, Inc. **Address:** 1082 S Santa Fe Ave **Inspection Type:** Commercial **Contact:** James Sanati, Co-Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/10/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Sediment throughout lot) Keep storm drains on site free of litter and debris (Inspector comment: Sediment around outlet at NW corner) Keep outdoor areas free of spills and leaks (Inspector comment: Oil spots on pavement) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: Curb outlet at NW corner) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: Erosion throughout perimeter of property) Properly store stockpiles to prevent material transport, where feasible (Inspector comment: Sediment pile near light pole) Adequately cover materials stored outside, where feasible (Inspector comment: Brake rotors in truck bed) Conduct outdoor activities within contained areas (under canopy, bermed) (Inspector comment: Car washing/detailing activities) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Ensure water from car washing does not discharge to outlet.	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 4/25/2012 **Inspector:** Doug Coppi **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: Primo Food Market **Address:** 1535 W Vista Way **Inspection Type:** Commercial **Contact:** Angel Cano, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 3/13/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Charcoal from BBQ's.) Properly store and dispose of hazardous materials (Inspector comment: Sealer and Quickcrete)	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/20/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information	Follow-up Inspection
Facility Name: Rainbow Gardens **Address:** 1444 E Taylor St **Inspection Type:** Commercial **Contact:** Jerry Williams - Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/28/2012 **Inspector:** Brian Nemerow **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Decomposing limes) Properly store stockpiles to prevent material transport, where feasible (Inspector comment: Soil pile at SE corner) Adequately cover materials stored outside, where feasible (Inspector comment: Pile of metal material, electronics and paint cans, 55 gallon diesel drum) Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Pile of metal, electronics, paint cans, 55 gallon diesel drum) Properly label outdoor storage containers (Inspector comment: 55 gallon diesel drum) Equip liquid storage containers with secondary containment (Inspector comment: Paint cans and 55 gallon diesel drum) Properly store and dispose of hazardous materials (Inspector comment: Paint cans and 55 gallon diesel drum lacks cover and secondary containment) Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 4/3/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Facility Name: Rayzist Photomask Inc **Address:** 955 Park Center Dr **Inspection Type:** Industrial **Contact:** Josh Willis - Plant Manager **Receiving Water Body** Agua Hedionda Creek	**Inspection Date:** 3/22/2012 **Inspector:** Kara Mathews **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods Keep storm drains on site free of litter and debris Properly store and dispose of green waste Keep trash area free of litter and debris, liquids, powders, and sediment	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 5/7/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Sun Hing Buffet LLC **Address:** 1960 Hacienda Dr **Inspection Type:** Commercial **Contact:** Mandy Chen - Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/20/2012 **Needed Corrective Actions** Keep storm drains on site free of litter and debris (Inspector comment: Grease stains on storm drain grate at NE end) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Protect trash area from contact with storm water (Inspector comment: Dumpster lids open) Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Grease stains and food debris, leaving trash enclosure) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with secondary containment Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: Grease stains on and around bin) Keep storm drains free of grease and food debris (Inspector comment: Grease stains on catch basin grate)	**Inspector:** Brian Nemerow	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 4/25/2012 **Inspector:** Sandra Sotola **Enforcement Action(s):** Written Warning **Resolution Status:** Resolved
Facility Name: Super Pescaderia El Puerto **Address:** 403 N Santa Fe Ave **Inspection Type:** Commercial **Contact:** Imeldo Suazo **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/2/2012 **Needed Corrective Actions** Collect water from pressure washing or hosing and dispose of appropriately (Inspector comment: Hose down side delivery area, explained acceptable methods.) Provide storm water training for appropriate employees (Inspector comment: Required due to improper washing)	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 2/6/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Taco Bell 17788 **Address:** 910 E Vista Way **Inspection Type:** Commercial **Contact:** Cecilia Rojas, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/3/2012 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks (Inspector comment: Oil spots/ liquids spill) Mark drains/inlets on site with 'no dumping, drains to ocean' or similar signage (Inspector comment: Drain at end of drive thru) Please note that storm drain stenciling is not a required BMP, but is strongly encouraged by the City Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Grease spills on bin, some debris on ground) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City Store grease bins with overhead coverage Store grease bins with secondary containment Keep grease bin and surrounding area free of grease stains/spills (Inspector comment: grease on bin lid)	**Inspector:** Kimberly Corbilla	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 5/14/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning, Written Warning, NOV **Resolution Status:** Resolved
Facility Name: The Lawn Center **Address:** 603 S Santa Fe Ave **Inspection Type:** Commercial **Contact:** Manny Mendoza, owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 2/28/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Saw dust and green waste) Properly store and dispose of green waste Keep loading and unloading areas, including drains, free of debris (Inspector comment: Saw dust) Provide storm water training for appropriate employees Develop a written procedure for spill prevention and response Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 3/1/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information

Facility Name:

Tortilleria Hermanos Reyes

Address:

402 Olive Ave

Inspection Type:

Industrial

Contact:

Daniel Reyes- Owner

Receiving Water Body

Buena Vista Creek

Initial Inspection Information

Inspection Date: 2/16/2012

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Flour and sediment)

Protect trash area from contact with storm water (Inspector comment: Dumpster lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Flour)

Equip liquid storage containers with secondary containment (Inspector comment: Paint cans)

Properly store and dispose of hazardous materials (Inspector comment: Paint cans)

Provide storm water training for appropriate employees

Develop a written procedure for spill prevention and response

> Please note that a written spill plan is not a required BMP, but is strongly encouraged by the City

Store grease bins with overhead coverage

Store grease bins with secondary containment (Inspector comment: dbl wall)

File a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to obtain coverage under the Industrial Permit.

Develop and implement a Storm Water Pollution Prevention Plan (SWPPP).

Develop and implement a storm water monitoring program.

If all recommended BMPs are implemented and outdoor exposure is eliminated, contact the City to request a re-inspection.

If no exposure status is confirmed, an NOI and its associated requirements will not be necessary and facility may file NONA/NEC paperwork.

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

4/10/2012

Inspector:

Doug Coppi

Enforcement Action(s):

NOV

Resolution Status:

Resolved

Site Information

Facility Name:

Versaform Corp

Address:

1377 Specialty Dr

Inspection Type:

Industrial

Contact:

Ed Campbell - General Manager

Receiving Water Body

Agua Hedionda Creek

Initial Inspection Information

Inspection Date: 2/14/2012

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Sediment, sawdust, metal scraps and dust)

Protect trash area from contact with storm water (Inspector comment: 40 yard roll offs, metal scrap lids open)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Metal scraps/debris)

Adequately cover materials stored outside, where feasible (Inspector comment: Waste oil lacks cover)

Keep spill containment free of spills and rainwater (Inspector comment: Rain water in waste oil tray)

Properly store and dispose of hazardous materials (Inspector comment: Waste oil lacks cover)

Ensure proper disposal of metal scrap dust when cleaning filters for storm drain. Ensure monitoring results are representative of all discharge points on site.

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

4/13/2012

Inspector:

Kara Mathews

Enforcement Action(s):

Verbal Warning

Resolution Status:

Resolved

Site Information

Facility Name:

Watkins Manufacturing Corp

Address:

1280 Park Center Dr

Inspection Type:

Industrial

Contact:

Jerome Stout - Environmental Analyst

Receiving Water Body

Agua Hedionda Creek

Initial Inspection Information

Inspection Date: 2/8/2012

Inspector: Kimberly Corbilla

Needed Corrective Actions

Keep site free of litter, debris, and sediment using dry methods (Inspector comment: White powder from circular drain, wood scraps, debris, sediment, foam, leaf litter, metal shavingas)

Keep storm drains on site free of litter and debris (Inspector comment: Styrofoam in and around drain)

Keep outdoor areas free of spills and leaks (Inspector comment: Oil spots in parking lot/repair area)

Collect water from pressure washing or hosing and dispose of appropriately (Inspector comment: Uncontained pressure washing of material, no discharge observed)

Direct roof downspouts away from areas of potential pollutants, where feasible (Inspector comment: Some outlets discharge into material storage)

Employ adequate erosion prevention measures (vegetation or physical stabilization) (Inspector comment: Erosion of NW corner parking lot)

Protect trash area from contact with storm water (Inspector comment: Metal scrap bins, electric waste, 40 yard roll aways)

Keep trash area free of litter and debris, liquids, powders, and sediment (Inspector comment: Debris, foam)

Adequately cover materials stored outside, where feasible (Inspector comment: Rusty material, galvanized fencing, alcohol drums, fluorescent bulbs)

Prevent run-on from contacting materials stored outdoors, where feasible (Inspector comment: Rusting material, dirty/used containment trays)

Equip liquid storage containers with secondary containment (Inspector comment: Drums in shop near roll up door, alcohol drum; parts washer)

Properly store and dispose of hazardous materials (Inspector comment: Alcohol drum lacks cover, drums in shop and parts washer lack containment)

Conduct outdoor activities within contained areas (under canopy, bermed) (Inspector comment: Metal cutting and fork lift repair)

Follow-up Inspection

Follow-up Inspection Required:

Yes

Follow-up Inspection Date:

5/16/2012

Inspector:

Kara Mathews

Enforcement Action(s):

Verbal Warning, Written Warning

Resolution Status:

Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: 99 Cent Store **Address:** 705 E Vista Way **Inspection Type:** Commercial **Contact:** Joaquin Oseguera, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 7/18/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods Protect trash area from contact with storm water Properly label outdoor storage containers	**Inspector:** Daniel Welte	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 7/19/2011 **Inspector:** Daniel Welte **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: Coors Tek Vista (Previously BAE) **Address:** 1960 Watson Way **Inspection Type:** Industrial **Contact:** Tony Tomanowski - Facility Manager **Receiving Water Body** Buena Creek	**Inspection Date:** 12/14/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Inlet protection required; minimal fines present) Protect trash area from contact with storm water Storm drain inlet protection required and not in place.	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 12/21/2011 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: El Burrito Catering (Mobile Food Service Hub) **Address:** 365 Olive Ave A **Inspection Type:** Commercial **Contact:** Lydia Hernandez, Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 12/1/2011 **Needed Corrective Actions** Adequately cover materials stored outside, where feasible Remove batteries; Cover cardboard storage	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 12/6/2011 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: La Favorita Meat Market **Address:** 932 Vista Village Dr **Inspection Type:** Commercial **Contact:** Mike Shalabi - Co-Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 12/1/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods Protect trash area from contact with storm water Adequately cover materials stored outside, where feasible Gravel bags on retaining wall failing but no evidence of sediment running off.	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 12/8/2011 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning, Written Warning **Resolution Status:** Resolved
Facility Name: La Favorita Meat Market **Address:** 932 Vista Village Dr **Inspection Type:** Commercial **Contact:** Mike Shalabi - Co-Owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 6/20/2012 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Inlet has some trash and debris) Protect trash area from contact with storm water (Inspector comment: lids open) Adequately cover materials stored outside, where feasible (Inspector comment: cardboard and crates not under cover)	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 6/26/2012 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: La Mexicana Market **Address:** 440 N Santa Fe Ave **Inspection Type:** Commercial **Contact:** Noury Gaggo-owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 11/15/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods (Inspector comment: Dumpsters open, lots of trash in dumpster area) Protect trash area from contact with storm water (Inspector comment: dumpsters open, lots of litter) Grease bin indoors. Clean dumpster area and keep lids closed.	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 11/22/2011 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name: Primo Food Market **Address:** 1535 W Vista Way **Inspection Type:** Commercial **Contact:** Angel Cano, Manager **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 12/1/2011 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks Adequately cover materials stored outside, where feasible Keep spill containment free of spills and rainwater Check grease records.	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 12/7/2011 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: Quality Discount Ice Cream Inc **Address:** 2465 Coral St **Inspection Type:** Commercial **Contact:** Bill Wheeler, Manager **Receiving Water Body** Agua Hedionda Creek	**Inspection Date:** 12/1/2011 **Needed Corrective Actions** Keep site free of litter, debris, and sediment using dry methods Keep outdoor areas free of spills and leaks Protect trash area from contact with storm water Adequately cover materials stored outside, where feasible Use drip pans to collect leaks/spills Cover auto parts with tarp, connect filter booms and clean debris from loading dock drain.	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 12/7/2011 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved
Facility Name: The Lawn Center **Address:** 603 S Santa Fe Ave **Inspection Type:** Commercial **Contact:** Manny Mendoza, owner **Receiving Water Body** Buena Vista Creek	**Inspection Date:** 11/8/2011 **Needed Corrective Actions** Keep outdoor areas free of spills and leaks Adequately cover materials stored outside, where feasible (Inspector comment: awning on one side of outdoor storage) Conduct outdoor activities within contained areas (under canopy, bermed) Use drip pans to collect leaks/spills Open case (SW-10-209), working with BO to install awning over other side of storage area. Discussed cleaning spills in outdoor areas.	**Inspector:** Kara Mathews	**Follow-up Inspection Required:** Yes **Follow-up Inspection Date:** 11/17/2011 **Inspector:** Kara Mathews **Enforcement Action(s):** Verbal Warning **Resolution Status:** Resolved

Site Information	Initial Inspection Information		Follow-up Inspection
Facility Name:	**Inspection Date:**	**Inspector:**	**Follow-up Inspection Required:**
Vista Transmission Service	11/15/2011	Kara Mathews	Yes
Address:	**Needed Corrective Actions**		**Follow-up Inspection Date:**
427 Redlands Street B	Keep outdoor areas free of spills and leaks (Inspector comment: fresh oil spill in lot, owner says cleanup tonight) Adequately cover materials stored outside, where feasible (Inspector comment: materials are stored under canopy but may be susceptible to rain contact) Keep spill containment free of spills and rainwater Use drip pans to collect leaks/spills (Inspector comment: Absorbents are used) Dirty mop bucket outside and claimed he just mopped.		11/22/2011
Inspection Type:			**Inspector:**
Commercial			Kara Mathews
Contact:			**Enforcement Action(s):**
Robert Lee - Owner			Verbal Warning
Receiving Water Body			**Resolution Status:**
Buena Vista Creek			Resolved

APPENDIX D-9
RAINY SEASON LETTERS

CITY OF VISTA
CALIFORNIA

September 27, 2011

Subject: **Industrial Site Stormwater Management**
Preparation for the Upcoming Rainy Season

Dear Operator/Owner:

The rainy season officially begins on October 1. The purpose of this letter is to assist you in preparing for the upcoming rainy season and to remind you of your responsibilities for industrial site stormwater management and pollution prevention. It is imperative that you take appropriate measures now to prepare your sites for the upcoming rains.

In accordance with the State regulations (RWQCB Order No. R9-2007-0001) and City of Vista's Ordinances (Municipal Code 13.18.100 and 17.56) and Storm Water Standards Manual you are required to implement and maintain the following Best Management Practices on a **year-round basis**:

Storm Water Standards Manual, Section D.2.5 Best Management Practice (BMP) Requirements

Best Management Practice (BMP) programs for Regulated Industrial Facilities must incorporate each of the following elements:

- Activity-specific BMPs,
- Pollution prevention practices,
- Non-structural BMPs, and
- Structural controls

D.2.5.1: Activity-Specific BMPs. Regulated Industrial Facilities shall incorporate into the SWPPP, if applicable, and install and maintain BMPs as specified in the Standards Manual for any commercial activities conducted at the facility, and for areas at the facility where industrial activities are conducted.

Dischargers are responsible to review their facilities and identify industrial activities that are conducted. Based on this review, BMPs that are appropriate to these activities must be identified and implemented. Where possible, practices that are recognized as being effective and economically feasible for the particular industry should be utilized.

D.2.5.2: Pollution Prevention Practices. Pursuant to Ordinance section 13.18.100(E)(3), Regulated Industrial Facilities shall consider and, where determined to be appropriate by the facility, implement pollution prevention practices. At a minimum, the following types of pollution prevention measures must be considered:

- The use of smaller quantities of toxic materials or substitution of less toxic materials,
- Changes to production processes to reduce waste,
- Decreases in waste water flows,
- Recycling of wastes as part of the production process,
- Segregation of wastes, and
- Treatment of wastes on site to decrease volume and/or toxicity.

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D.2.5.3: Non-structural BMPs. Pursuant to Ordinance section 13.18.100(E)(4), Regulated Industrial Facilities shall incorporate into their SWPPPs, if applicable, and install and maintain, the following non-structural BMPs in accordance with the specifications of the Manual:

- Best management practices for material handling and storage of significant materials,
- Best management practices for non-hazardous waste handling and recycling,
- Employee training programs,
- Good housekeeping practices,
- Preventive maintenance practices,
- Self inspection and quality assurance practices, and
- Spill responses planning.

D.2.5.4: Structural Controls. Pursuant to Ordinance section 13.18.100(E)(6), Regulated Industrial Facilities shall incorporate into their SWPPPs, if applicable, and install and maintain, one or more of the following structural BMPs where practicable, if the use of such BMPs would significantly reduce pollution in run-off from the facility:

- Overhead coverage of outdoor work areas or chemical storage,
- Retention ponds, basins, or surface impoundments that confine stormwater to the site,
- Berms and concrete swales or channels that divert run-on and runoff away from contact with pollutant sources,
- Secondary containment structures, and
- Treatment controls, e.g., infiltration devices and oil/water separators, to reduce pollutants in stormwater or authorized non-stormwater discharges.

For reference, the Stormwater Standards Manual is available on the City's website at: http://www.cityofvista.com/departments/engineering/documents/StormwaterStandardsManual2008.pdf.

The rainy season is just around the corner and this serves as a reminder that inspectors could be visiting your site in the near future.

Information about the General Industrial Stormwater Permit, including the NOI form, can be found on the State Water Resources Control Board website at http://www.swrcb.ca.gov/ or by contacting the Regional Water Quality Control Board at (858) 467-2953.

It is the City's goal to work with you to ensure that all industrial sites are in compliance and prepared for the upcoming rainy season. Please contact the Water Quality hotline at (760) 726-1340 x 1686 or e-mail us at waterquality@cityofvista.com if you have any questions.

Respectfully,

Doug Coppi
Senior Environmental Specialist

cc: Paul Hartman, Stormwater Program Manager
Kara Mathews, Environmental Specialist
Sandra Sotola, Stormwater Code Enforcement Officer

CITY OF VISTA
CALIFORNIA

September 27, 2011

Subject: **Shopping Center and Commercial Facilities Stormwater Management Preparation for the Upcoming Rainy Season**

Dear Operator/Owner:

The purpose of this letter is to assist you in preparing for the upcoming rainy season and to remind you of your responsibilities regarding stormwater management and pollution prevention in shopping centers and commercial areas. The rainy season officially begins on October 1. It is imperative that you take appropriate measures now to prepare your sites for the upcoming rains.

In accordance with the State regulations (RWQCB Order No. R9-2007-0001) and City of Vista's Ordinances (Municipal Code 13.18.090 and 17.56) and Storm Water Standards Manual you are required to implement and maintain Best Management Practices on a **year-round basis**.

BMP Requirements in accordance with the Stormwater Standard Manual are explained below.

C.2.3 Storm Drain Tile and Signing
C.2.3.1: The use of storm drain tiles or other labeling is encouraged, but not required, for Regulated Commercial Facilities and Activities. Where used, storm drain tiles and signs should contain a brief statement that prohibits the dumping of improper materials into the Stormwater Conveyance System, graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message. Naming the receiving water also has proven to increase the effectiveness of this signage by making it more personal (e.g. "NO DUMPING – DRAINS TO <insert applicable creek/waterbody>").

C.2.6 Materials and Waste Management
C.2.6.1: The following conditions apply to the storage, management, and disposal of hazardous materials and wastes at Regulated Commercial Facilities, where applicable:

(a) Hazardous materials and wastes shall be stored, managed, and disposed in accordance with applicable federal, state and local laws and regulations.

(b) Hazardous materials must be stored off the ground. Where practicable, overhead coverage shall be provided for all outside hazardous materials or waste storage areas. If overhead coverage is not available, stored materials shall be covered with an impervious material (e.g., a tarp, etc.).

(c) Drums and other containers shall be kept in good condition, and shall be kept securely closed when not in use.

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(d) Secondary containment shall be provided around storage areas from which a significant potential exists to discharge materials or wastes to the Stormwater Conveyance System or Receiving Waters.

(e) Storage areas shall be inspected periodically, including at least once prior to the rainy season (October 1 – April 30) and quarterly during the rainy season.

(f) Solid Waste storage and disposal areas shall be inspected at least weekly.

(g) Wet cleaning (e.g., hosing, pressure washing, etc.) of solid waste storage and disposal areas shall only be allowed if adequate precautions have been taken to prevent the discharge of wash water into the Stormwater Conveyance System or Receiving Waters.

(h) Materials and equipment necessary for spill response shall be maintained and kept readily accessible, and all employees involved in the storage, management, or disposal of hazardous materials or wastes trained in their proper use.

(i) Significant spills shall be reported promptly to the City's Stormwater Hotline (760) 726-1340 x1686. Significant spills are those which discharge, or have the potential to discharge, contaminants directly or indirectly to the Stormwater Conveyance System or Receiving Waters. Spills which have been completely contained and cleaned up on-site are not considered significant unless they pose a threat to human health or safety.

C.2.6.2: The following conditions apply to the storage of solid waste at Regulated Commercial Facilities, where applicable:

(a) Trash storage and disposal areas shall be kept clean and free of debris.

(b) Dumpsters and other containers shall be maintained in good condition, and shall be kept securely closed when not in use.

(c) Materials and equipment necessary for the clean-up of trash and debris shall be maintained and kept readily accessible.

C.2.6.3: The following conditions apply to the loading and unloading of significant materials at Regulated Commercial Facilities, where applicable:

(a) Where practicable, loading / unloading of materials shall only be allowed in designated areas.

(b) Designated loading/unloading areas shall be regularly cleaned using dry methods (e.g., sweeping, vacuuming, etc.).

(c) Wet cleaning (e.g., hosing, pressure washing, etc.) of loading/unloading areas shall only be allowed if adequate precautions have been taken to prevent the discharge of wash water into the Stormwater Conveyance System or Receiving Waters, or to filter pollutants from the water prior to discharge.

(d) Storm drain inlets located within or down gradient of loading/unloading areas shall be covered or otherwise protected during loading/unloading activities to prevent the entry of materials.

(e) Loading/unloading equipment (e.g., forklifts, pallet jacks, etc.) shall be maintained in good condition, and preventative maintenance conducted as necessary to prevent leaks.

(f) Equipment and supplies stored in loading/unloading areas shall be properly maintained to prevent leaks and spills to the Stormwater Conveyance System or receiving Waters, and to prevent their contact with rainfall and run-on.

(g) Spills and leaks shall be promptly cleaned up and the generated wastes disposed of properly.

(h) Loading / unloading areas shall be periodically inspected, and accumulations of debris, litter, waste, or other materials removed.

(i) Materials and equipment necessary for spill response shall be maintained and kept readily accessible and all employees conducting loading / unloading activities trained in their proper use.

(j) Significant spills shall be reported promptly to the City's Stormwater hotline or Engineering Department. Significant spills are those which discharge, or have the potential to discharge, contaminants directly or indirectly to the Stormwater Conveyance System or Receiving Waters. Spills of hazardous materials shall be reported to the City's Stormwater Hotline or Engineering Department. Spills that have been completely contained and cleaned up on-site are not considered significant unless they pose a threat to human health or safety.

C.2.8.2: The following conditions apply to parking areas at Regulated Commercial Facilities, where applicable:

(a) Parking areas shall be periodically cleaned using dry methods (manual sweeping, street sweepers, etc.). Wet methods shall only be used where adequate precautions have been taken to prevent the entry of wash water and other contaminants into the Stormwater Conveyance System or Receiving Waters.

(b) Prior to any improvement or expansion project, parking areas designed to accommodate 100 or more vehicles shall be evaluated to establish the level of post-construction BMPs that will meet the MEP standards. Treatment or infiltration BMPs shall be installed if necessary to meet the MEP standard. Installed controls shall be inspected and maintained as necessary to ensure their continued proper functioning.

C.2.8.3: The following conditions apply to landscaping and grounds keeping conducted at Regulated Commercial Facilities, where applicable:

(a) Precautions shall be taken to prevent spills, leaks, and over-application of chemical products during landscaping and grounds keeping activities.

(b) Precautions shall be taken to prevent over-irrigation of landscaped areas.

(c) Pesticides, herbicides, fertilizers, and other chemical products shall be used in accordance with label directions. These products shall not be disposed to streets or gutters, but shall be collected and properly disposed.

(d) Grounds and landscaped areas shall be periodically inspected. Litter, debris, organic matter (leaves, cut grass, etc.), and other materials with the potential to contaminate stormwater shall be collected and properly disposed.

(e) Materials and equipment necessary for spill response shall be maintained and kept readily accessible, and employees trained in their proper use.

(f) Significant spills shall be reported promptly to the City's Stormwater Hotline or Engineering Department. Significant spills are those which discharge, or have the potential to discharge, contaminants directly or indirectly to the Stormwater Conveyance System or Receiving Waters. Spills of hazardous materials shall be reported to the City's Stormwater hotline or Engineering Department. Spills which have been completely contained and cleaned up on-site are not considered significant unless they pose a threat to human health or safety.

For reference, the Stormwater Standards Manual is available on the City's website at: http://www.cityofvista.com/departments/engineering/documents/StormwaterStandardsManual2008.pdf.

The rainy season is just around the corner and this serves as a reminder that inspectors may be visiting your site in the near future.

It is the City's goal to work with you to ensure that all commercial sites and shopping centers are in compliance and prepared for the upcoming rainy season. Please contact the Water Quality hotline at (760) 726-1340 x 1686 or e-mail us at waterquality@cityofvista.com if you have any questions.

Please pass this information along to your property management companies so they can ensure that your property is in good condition and is fully prepared for upcoming rains.

Respectfully,

Doug Coppi
Senior Environmental Specialist

cc: Paul Hartman, Stormwater Program Manager
Kara Mathew, Environmental Specialist
Sandra Sotola, Stormwater Code Enforcement Officer

APPENDIX E-1
FY 2011-12 HHW DISPOSAL INFORMATION

Appendix E-1 FY2011-12 HHW Disposal Information

		Poway (in pounds)	Vista* (in pounds)	Total PHHWCF (in pounds)	Carlsbad 20.0%	Del Mar 0.8%	Encinitas 11.4%	Escondido 0.2%	National City 0.0%	Poway 29.4%	San Marcos 7.8%	Santee 0.6%	Solana Beach 2.6%	Vista 27.3%
1. Flammable & Poison	Flammable solid/liquid	6,210	20,850	**27,060**	5,410	217	3,091	46	0	7,943	2,102	152	708	7,392
	Bulked flammable liquids	0	1,800	**1,800**	360	14	206	3	0	528	140	10	47	492
	Oil-base paint	35,915	106,050	**141,965**	28,382	1,138	16,218	242	0	41,669	11,025	797	3,713	38,781
	Poison (excl.aerosols)	10,350	32,800	**43,150**	8,627	346	4,929	74	0	12,665	3,351	242	1,129	11,787
	Reactive and explosive	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Subtotal	**52,475**	**161,500**	**213,975**										
2. Acid	Inorganic and organic acid	**3,000**	**3,900**	**6,900**	1,379	55	788	12	0	2,025	536	39	180	1,885
3. Base	Inorganic and organic base	**4,800**	**8,650**	**13,450**	2,689	108	1,537	23	0	3,948	1,045	75	352	3,674
4. Oxidizer	Neutral oxidizers, organic peroxides, Oxidizing acid, oxidizing base	**500**	**820**	**1,320**	264	11	151	2	0	387	103	7	35	361
5. PCB-containing	PCB-containing paint	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Other PCB waste	550	0	**550**	110	4	63	1	0	161	43	3	14	150
	Subtotal	**550**	**0**	**550**										
6. Reclaimable	Antifreeze	2,887	5,390	**8,277**	1,655	66	946	14	0	2,429	643	46	216	2,261
	Auto type batteries (motor vehicles)	0	4,095	**4,095**	819	33	468	7	0	1,202	318	23	107	1,119
	Latex paint	75,200	279,600	**354,800**	70,932	2,844	40,532	604	0	104,140	27,555	1,991	9,280	96,922
	Motor oil/oil products	11,624	19,484	**31,108**	6,219	249	3,554	53	0	9,131	2,416	175	814	8,498
	Oil filters (recyclable)	450	900	**1,350**	270	11	154	2	0	396	105	8	35	369
	Subtotal	**90,161**	**309,469**	**399,630**										
7. Asbestos		**0**	**0**	**0**	0	0	0	0	0	0	0	0	0	0
8. Universal Waste (UW)	Mercury containing automatic switches / thermometers / novelties	100	0	**100**	20	1	11	0	0	29	8	1	3	27
	Mercury containing thermostats	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Mercury containing waste (other)	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Lamps	3,046	2,250	**5,296**	1,059	42	605	9	0	1,554	411	30	139	1,447
	Rechargeable batteries	660	0	**660**	132	5	75	1	0	194	51	4	17	180
	Other batteries	6,700	0	**6,700**	1,339	54	765	11	0	1,967	520	38	175	1,830
	Subtotal	**10,506**	**2,250**	**12,756**										
Electronic Waste (UW)	SB20/50 Covered Electronic Devices	57,246	68,482	**125,728**	25,136	1,008	14,363	214	0	36,903	9,764	706	3,288	34,346
	Universal Waste Electronic Devices	55,962	69,494	**125,456**	25,081	1,006	14,332	214	0	36,823	9,743	704	3,281	34,271
	Subtotal	**113,208**	**137,976**	**251,184**										
Aerosol Containers (UW)	Aerosol containers	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Other	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	All UW subtotal	**123,714**	**140,226**	**263,940**										
9. Other HHW	Home-generated sharps	1,500	1,200	**2,700**	540	22	308	5	0	792	210	15	71	738
	Pharmaceutical Waste	0	0	**0**	0	0	0	0	0	0	0	0	0	0
	Compressed gas cylinders	2,060	1,400	**3,460**	692	28	395	6	0	1,016	269	19	90	945
	Treated Wood	1,000	0	**1,000**	200	8	114	2	0	294	78	6	26	273
	Non-UW aerosol containers (corrosive, flammable, poison)	4,875	6,800	**11,675**	2,334	94	1,334	20	0	3,427	907	66	305	3,189
	Other	3,100	6,600	**9,700**	1,939	78	1,108	17	0	2,847	753	54	254	2,650
	Subtotal	**12,535**	**16,000**	**28,535**										
10. Grand Total		**287,735**	**640,565**	**928,300**	**181,893**	**7,294**	**103,939**	**1,550**	**0**	**267,050**	**70,660**	**5,106**	**23,797**	**248,542**

Jurisdiction	Users	%
Carlsbad	**1,995**	20.0%
Del Mar	**80**	0.8%
Encinitas	**1,140**	11.4%
Escondido	**17**	0.2%
National City	**0**	0.0%
Poway	**2,929**	29.4%
San Marcos	**775**	7.8%
Santee	**56**	0.6%
Solana Beach	**261**	2.6%
Vista	**2,726**	27.3%
Total	**9,979**	

*** Volumes collected at Vista include home pickup program**

Jurisdiction	PHHWCF	Home	Total
Carlsbad	1,609	386	**1,995**
Del Mar	24	56	**80**
Encinitas	730	410	**1,140**
Escondido	17	0	**17**
National City	0	0	**0**
Poway	2,928	1	**2,929**
San Marcos	756	19	**775**
Santee	56	0	**56**
Solana Beach	83	178	**261**
Vista	2,683	43	**2,726**
Total	**8,886**	**1,093**	**9,979**
	8.22%		

APPENDIX E-2
FY 2011-12 SUMMARY OF ENFORCEMENT ACTIONS AT RESIDENTIAL SITES

Appendix E-2 FY2011-12 Summary of Enforcement Actions at Residential Sites

	COMPLAINT TYPE (Reported)						CONFIRMATION		ENFORCEMENT ACTION					REFERRAL
SOURCE	Illegal discharge	Illicit Connection	Private Lateral and Septic Spills	BMP Violation	Other	**Totals**	Complaints Confirmed	Violations Eliminated	Verbal	Written Warning	Notice of Violation	Citation	**Totals**	Proactive
Residential	22	2	2	15	1	42	34	34	17	7	10	0	34	10
TOTALS	22	2	2	15	1	*42	34	34	17	7	10	0	34	10

* Of 40 Total Reports, two had multiple complaint types

APPENDIX E-3
STORM PATROL INSPECTION FORM

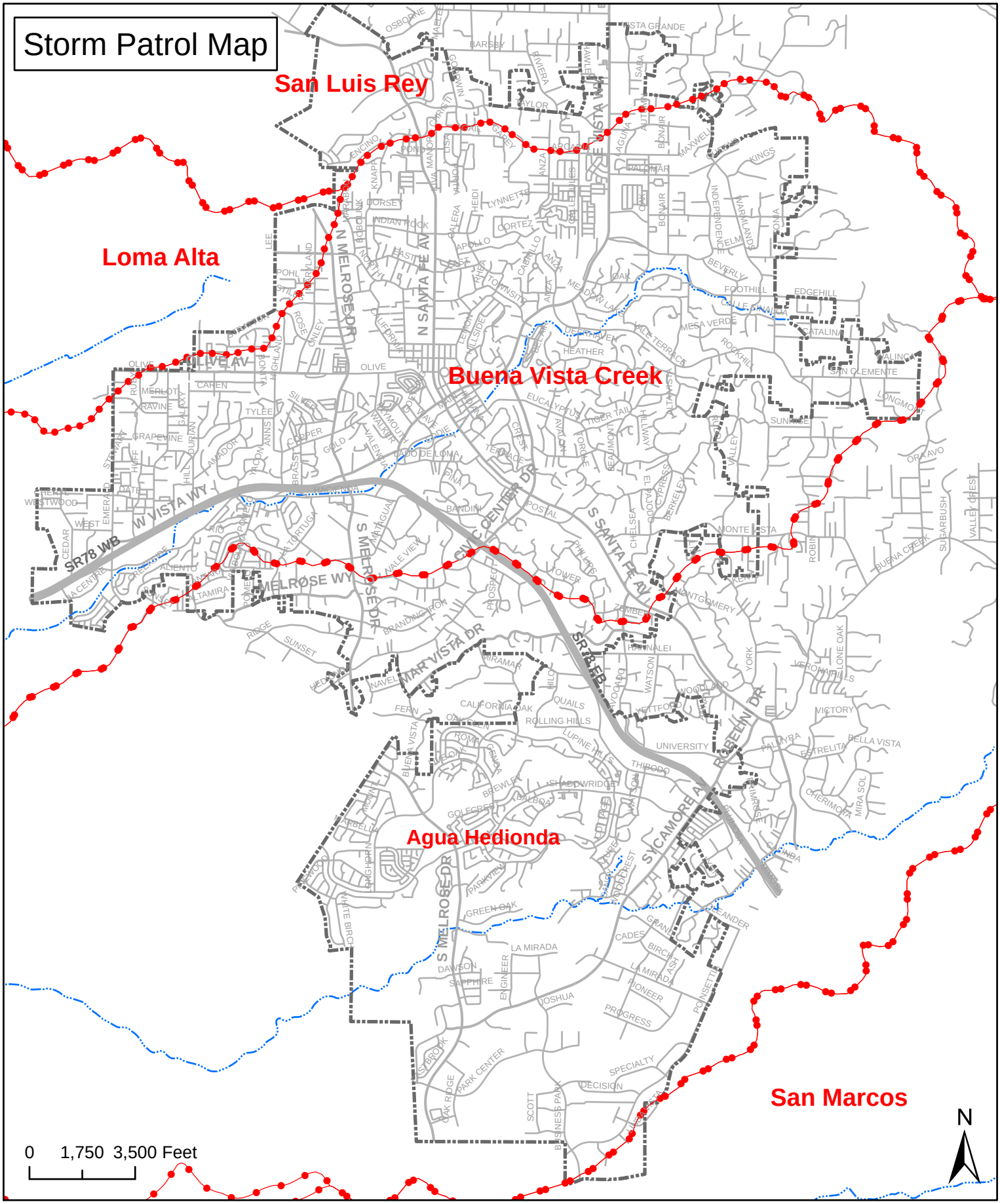

Mark or highlight the patrol area covered on the map.

Description of patrol area:_____

_____

_____

Name:_____

Date/Time:_____

Weather:_____

Storm Patrol Tracking Form

Name:_____

Page ___ of ____
Date:_____

Include all sites/areas visited, even if no issues are present.

Address:_____

Description: _____

_____

Weather:_____

Follow up needed: Yes No Case #: _____

Address:_____

Description: _____

_____

Weather:_____

Follow up needed: Yes No Case #: _____

Address:_____

Description: _____

_____

Weather:_____

Follow up needed: Yes No Case #: _____

Address:_____

Description: _____

_____

Weather:_____

Follow up needed: Yes No Case #: _____

Address:_____

Description: _____

_____

Weather:_____

Follow up needed: Yes No Case #: _____

APPENDIX G-1
SPOTLIGHT AND WATER QUALITY NEWSLETTERS

CITY OF VISTA CALIFORNIA
June-July 2012

Water Quality Protection Program Newsletter

Watersheds in Vista

A watershed is an area of land that drains to a common water body. All rain water and urban runoff drains to creeks, lakes, lagoons, and ultimately to the Pacific Ocean. Vista lies within two major watersheds— Carlsbad (green on map) and San Luis Rey (purple on map), with the majority of Vista lying within the Carlsbad Watershed. These large watersheds are made up of smaller watersheds called subwatersheds. In the Carlsbad Watershed the subwatersheds include Buena Vista Creek, Agua Hedionda, Loma Alta, and San Marcos watersheds that fall within the Vista city limits. In general, the northern half of the City drains to Buena Vista Creek and the southern half drains to Agua Hedionda Creek. The San Luis Rey Watershed is north of the Carlsbad Watershed, with only a small portion falling in the City limits along the northern border.

New Sign at Vista Sports Park

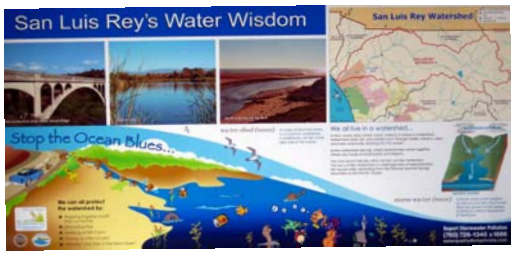

Check out the new educational sign at the Vista Sports Park! The sign contains information about the San Luis Rey watershed and overlooks a great view of the watershed. Thank you to Public Works for installing it!

Roman Creek Cleaned Up

The Buena Vista Park Creek Cleanup on April 28 was a big success! In total, 86 volunteers removed over 500 lbs of trash and recyclables from the duck pond, Roman Creek, and Buena Vista Park trails. Thanks to all volunteers and city staff for your help!

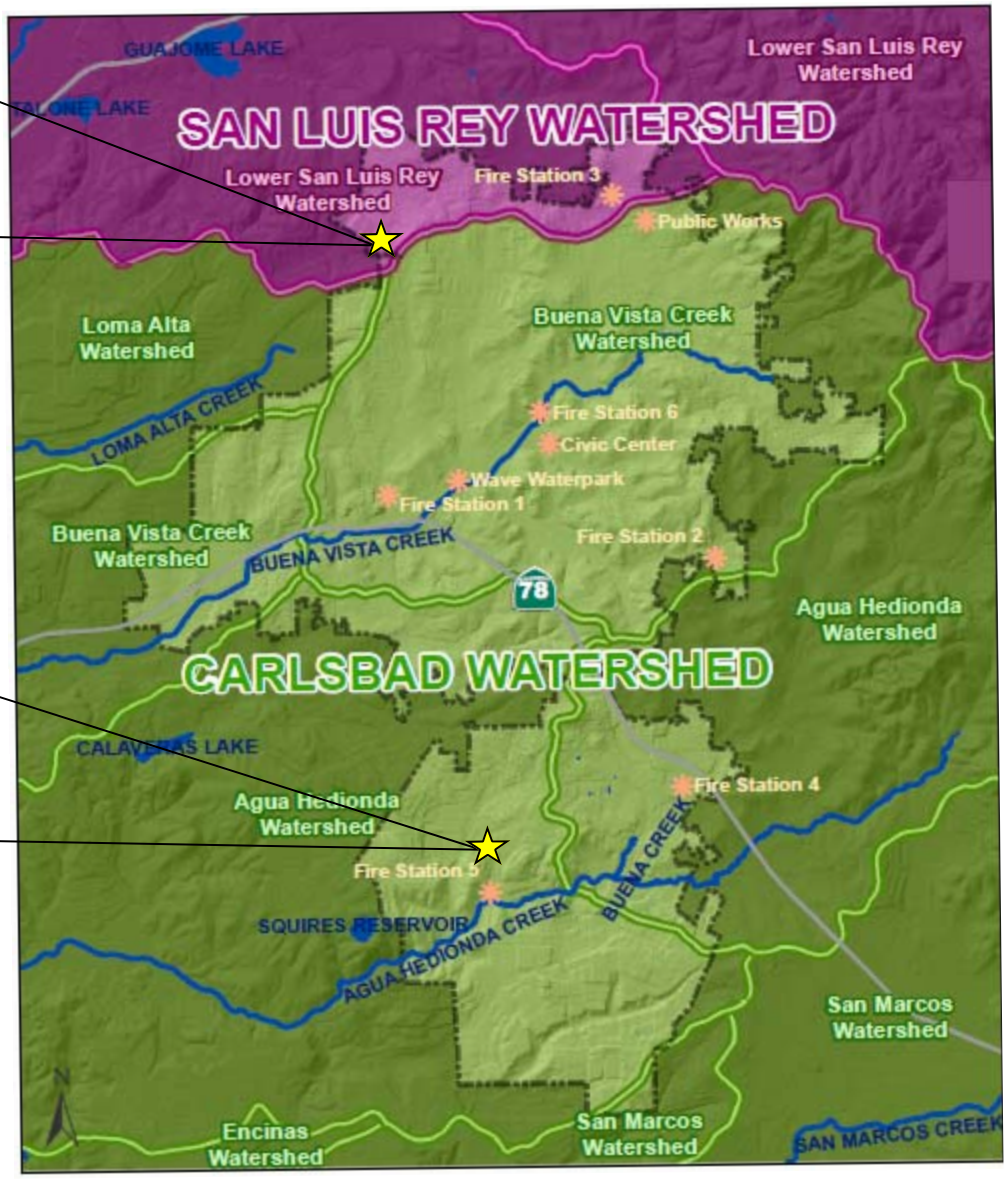

Sorting Through the Trash...

Trash is a common pollutant in San Diego's watersheds. Litter not only creates an eyesore, but can also create health and safety issues for humans and wildlife. Trash, recyclables, and chemicals pollute waterways when they enter the streets, storm drains, and creeks. Proper disposal of items, especially hazardous wastes, can help reduce impacts. Disposal guidelines and locations are provided. For more information on proper disposal of items and recycling center locations, visit WasteFreeSD.org.

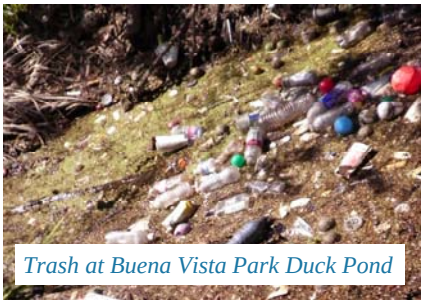

Trash at Buena Vista Park Duck Pond

Waste Disposal Guidelines:

Curbside Recycling Bin

- Newspaper
- Clean paper
- Magazines
- Clean cardboard boxes
- Cardboard milk cartons
- Aluminum cans
- Steel food cans
- Clean foil
- Containers marked CRV, CA Refund, or 1 to 7
- Glass bottles
- Glass jars
- Styrofoam labeled #6
- Empty aerosol cans
- Empty HHW containers
- Plastic food containers
- Plastic milk jugs
- Plastic Toys

Non-Recyclable in Curbside Bin
(Curbside Trash Bin or other disposal)

- Wet newspaper/paper
- Tissues
- Cigarettes
- Paper plates
- Paper towels
- Mirrors
- Styrofoam peanuts
- Food waste
- Drinking glasses, ceramics, crockery
- Plastic bags (can be recycled at many grocery stores)

Prescription Drop Off Facility

- Unused Medications

HHW Facility

Household Hazardous Waste(HHW)

- Lawn/garden care products
- Paint products
- Automotive fluids
- Auto batteries
- Beauty products
- Home-generated Sharps
- Household cleaning products
- Products labeled TOXIC, CAUTION, FLAMMABLE, etc.

Universal Waste (UW)

- Batteries
- Light bulbs, fluorescent tubes
- Non-empty aerosol cans
- Cell phones, VCRs, radios

Electronic Waste (EW)

- TVs, Computer monitors, small household appliances

Free Unused Prescription Drop Off!

Vista Rx Drop Off Site

Vista Detention Facility

Location: 325 S. Melrose Dr.

760-940-4551

sdsheriff.net

Free Household Hazardous Waste Drop Off!

Vista HHW Collection Facility

Location: 1145 E. Taylor St.

Hours: 9 AM to 3 PM

SATURDAYS ONLY

1-800-714-1195

No appointment necessary. Proof of residency is required.

SAVE THE DATE:

Coastal Clean-up Day!

SATURDAY, SEPTEMBER 15

9 AM—12 PM

Location to be determined

KEEP VISTA GREEN AND CLEAN!

Beverage Container Recycling

Ever wonder why you are charged a nickel every time you buy a soda or other drink? You are paying a deposit on the recyclable container. To encourage beverage container recycling, California implements a deposit-refund incentive program. To get your deposits back, return aluminum cans, plastic bottles, and glass bottles to a certified recycling center. All containers labeled CA Refund Value (CRV) are accepted.

CRV Recycling Buyback Centers in Vista			
Quality Recycling 149 Nettleton Rd Vista, CA 92083	Lee's Iron and Metal 1315 Lee Dr Vista, CA 92083		RePLANET 1301 E. Vista Way Vista, CA 92084

CITY OF VISTA CALIFORNIA

Sept./Oct. 2011

SPOTLIGHT on VISTA

Employee newsletter

Message from the City Manager

Inside This Issue

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2 Employee of the Quarter
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"Thank you for being a part of the Vista team."

Dear Employees:

As mentioned previously, we are still experiencing the economic downturn that is affecting cities across San Diego County and across our nation. Legislation enacted in July as part of California's budget plan will dissolve redevelopment agencies, unless they pay a large fee to the State. In order for Vista's Redevelopment Agency to remain in existence, we will need to make payments to the State of $6.2 million this fiscal year, with annual payments of $1.5 million or more in future years. On August 23 the City Council voted unanimously to maintain the redevelopment agency by making the payments. The California Redevelopment Association and the League of California Cities have filed lawsuits challenging the new law and the California Supreme Court said it will decide by mid-January whether the state can eliminate redevelopment agencies. In addition, the new Vehicle License Fee changes will cost the City approximately $361,000 annually.

Statewide sales were on the rise through June; however, they have since decreased in the last six weeks. We will continue to carefully monitor City revenues and I will keep you updated on the redevelopment issue, as it is continually in flux. A bright spot is that a restaurant will be going in the CPK building by the end of November called Mortony's and will offer Italian fare including design your own pizza and pasta dishes.

We have an exciting venture taking place on September 22. Economic Development is initiating a new business connection venture called the "Business Walk." It is a one-day retention effort, in which Department Directors along with volunteers will visit dozens of local companies in the Business Park to gain a better understanding of the individual needs of the companies. The event is a joint effort between the City and the Vista Chamber of Commerce and it is intended to give us information on key factors that businesses need in order to grow and expand in Vista.

I hope everyone enjoyed the summer months and you are settling into the school and fall routines that follow vacations and longer evenings.

Thank you for being part of the City of Vista team.

Rita L. Geldert

Roxann O'Shaughnessy Employee of the Quarter

Kiwanis Employee of the Quarter

The Kiwanis Employee of the Third Quarter has been awarded to Roxann O'Shaughnessy, Senior Office Specialist in Engineering. Roxann's focus on providing the City with excellent work has gained her respect and praise from among her peers and supervisors. Her performance under pressure has helped keep the Engineering Department ahead of deadlines and competing needs.

Roxann O'Shaughnessy, Kiwanis Employee of the Quarter

In May 2010, one of two administrative positions was eliminated due to budget reductions. Then, in December, one of the administration staff was promoted, leaving Roxann as the only staff responding to engineering and sewer work. During this time, she was instrumental in staying ahead and meeting the needs of the other staff until the vacant position was filled. Roxann also applied for and was promoted to Senior Office Specialist. While Roxann's daily work load is very challenging, as she supports the engineering, sewer, traffic and storm water needs of the Department, she always manages to meet the various deadlines and provides above standard work even when facing stringent deadlines - and always with a winning smile for her co-workers.

Roxann was also instrumental in working with the Principal Engineer in obtaining a $250,000 grant for a CIP project. Her knowledge of the City's financial system and willingness to go above and beyond has made Roxann a valuable asset to Engineering and to the City.

Kudos Roxann for a job well done!

Jim Porter Parkway Dedication

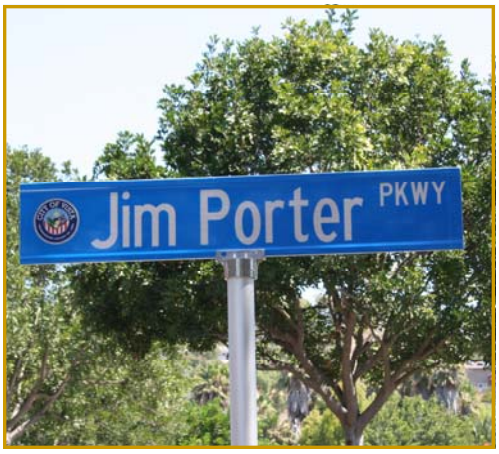

Mayor Judy Ritter dedicated the roadway running through Brengle Terrace Park the "Jim Porter Parkway" on August 25 in recognition of Jim Porter, who served as the City's Director of Parks and Community Services from 1977 to 2004. Jim and his family were in attendance, as well as numerous community members and current and former City employees.

Under Jim's tenure, the City constructed eight parks, nine community facilities, and acquired two historic buildings. He was instrumental in the formation of the Vista Summer Theatre Fest/Moonlight Stage Productions, Adobe Days, the Senior Out and About transportation and the Culture Caravan programs, and the July 4 celebration at Brengle Terrace Park. In addition, the Wave Waterpark was constructed under his direction.

At a later date, the City of Vista will be renaming the Brengle Terrace Recreation Center after Jim Porter.

VSP Vision Benefit - Primary Eye Care

From Human Resources

Did you know that your VSP vision insurance includes coverage for primary eye care? The Primary Eyecare Plan is designed for the detection, treatment and management of ocular conditions and/or systemic conditions which produce ocular or visual symptoms. Under the plan, member doctors provide treatment and management of urgent and follow-up services.

Examples of symptoms which could result in a patient seeking services on an urgent basis under the Primary Eyecare Plan include eye discomfort or pain, temporary loss of vision, flashes or floaters, trauma to the eye, ocular foreign body sensation, swollen lids, or red eyes. Examples of conditions which could require management under the Primary Eyecare Plan include ocular hypertension, glaucoma, cataract, pink-eye, corneal abrasion, macular degeneration and sty.

No referral is necessary. Call your VSP eye doctor and request an urgent appointment, stating you are using your "Primary Eyecare" benefit under your VSP plan. The co-pay is $5.00 for each office visit.

Surgical or pathological treatment is not covered under the Primary Eyecare Plan; medications are also not covered (but may be covered under your medical plan).

For a more complete listing of symptoms and conditions covered under the plan, as well as the exclusions and limitations of benefits, refer to the VSP Plan addendum document, located in the citywide access directory on the "O" drive under Human Resources.

O:\Human Resources and Risk Management\City Read Access\Benefits\VSP\VSP Primary Eyecare Benefit.

If you have questions, please contact Sonya Cramer in Human Resources at extension 1048.

CalPERS to Launch New Computer System

From Human Resources

CalPERS is implementing a new computer system that will provide improved access to information for CalPERS staff and business partners. The new system, which has the same name as the current personalized website, myICalPERS, will decrease the dependency on paper documents, streamline many CalPERS processes and position CalPERS to offer additional self-service capabilities in the spring of 2012. As CalPERS transitions to the new system September 2-18, some services may be unavailable or take longer to process, and telephone wait times may increase.

For the latest details and myICalPERS news, please check CalPERS On-Line at http://www.calpers.ca.gov. You can find everything relating to this technology improvement project by selecting myICalPERS Central.

Blood Drive - September 14

The American Red Cross is holding a blood drive on Wednesday, September 14 at the Vista Library from 8:30 a.m. until 2:30 p.m.

Adopt-A-Unit Outreach

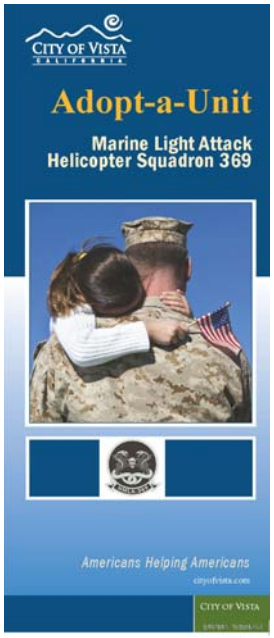

The City is initiating a community outreach campaign to encourage Vista churches, girl/boy scout troops, clubs and other organizations to become involved in supporting the City's adopted HMLA Marine unit. The Unit is being deployed to Afghanistan in the fall.

Participating organizations are also being asked to help on the home front, as well, by donating items such as gift certificates, calling cards, baby items, school supplies, grocery gift cards or toys for children at Christmas.

If you are aware of an organization that may be interested, drop by Cheryl Mast's office on the third floor to pick up a brochure that outlines the ways an organization can support the squadron and their family members. The brochure is also posted on the City web site:
http://cityofvista.com/departments/citymanager/Adopt-a-UnitProgram.cfm

HMLA 369 - Sad News

From Cheryl Mast, City Manager's Office

In July 2011, a member of the Marine Light Attack Helicopter Squadron 369, Sergeant Trevor T. Cook, was killed in a helicopter accident on Camp Pendleton. At 25 years old, Sergeant Cook had been a member of HMLA 369 since September 2009, and participated in Operation Enduring Freedom in Iraq during 2010. Sergeant Cook is survived by his wife, Amanda Cook. Because of City of Vista employees' donations and support of past fundraising events, the City was able to provide Sergeant Cook's widow with a donation of $1,000, as a scholarship for her use in obtaining an advanced education. Once again, thank you to all of our generous employees whose hard work and dedication lend invaluable support to our men and women serving in the armed forces.

City ID Badges

From Sandy Bobek, Information Technology

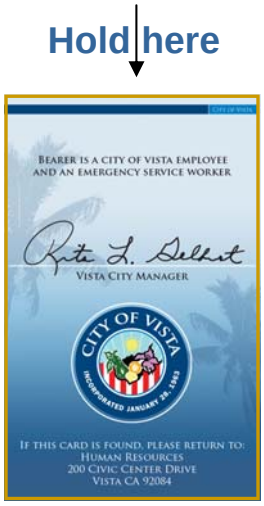

When using your City ID badge to access a door, it is meant to be held at the top (near the punch hole). Holding the ID near the bottom creates a strain on the card and may cause it to break in half. To help extend the life of your badge, keep it out of the sun and never leave it in your car for an extended period of time such as on weekends.

Please remember, if a badge is damaged or destroyed, the employee is responsible for paying $10 for a new badge.

2011 Watershed Survey City of Vista – Answer Key!!

Thank you all for your participation in the survey this year. The correct answers are below for you to see how well you did. We're crunching on the data now and hope to have some results for you soon!

1. A watershed is…? *(choose one)*

☐ An area that retains water, like a swamp
☒ Area of land that drains into a specific waterbody
☐ A small building used to store water
☐ Don't know/Not sure

2. Watersheds within the City of Vista include? *(check all that apply)*

☒ Agua Hedionda
☒ San Luis Rey
☒ Buena Vista
☐ Encinas
☒ Loma Alta
☐ None of the above

4. What are the benefits of a functioning wetlands system? *(check all that apply)*

☒ Flood protection via storage of water.
☒ Increased habitat quality for local and migratory wildlife.
☒ Improved water quality through filtration of pollutants via floodplains and plants.
☐ There are no benefits, fill in the wetlands with soil and develop the land.
☒ May moderate surrounding air temperatures. Some types of wetlands may also reduce CO_2 emmissions.

4. Rain at Vista City Hall enters the storm drain and flows into which creek? (choose one)

☐ Buena
☐ Agua Hedionda
☒ Buena Vista
☐ Cottonwood
☐ Loma Alta

5. Which of the following can pollute creeks, lagoons, etc.? *(check all that apply)*

☒ Fertilizers, pesticides, and insecticides
☒ Automobile fluids (oils, anti-freeze, etc.)
☒ Home repair materials (paint, cement, etc.)
☒ Pet waste
☒ Soap from car washing
☒ Soil erosion from construction
☒ Leaves and grass clippings
☒ Irrigation runoff
☒ Swimming pool water

6. Where does the excess sediment (dirt) in our waterbodies come from? *(check all that apply)*

☒ Construction sites
☒ Natural areas/open spaces
☒ Home improvement projects
☒ Agricultural activities
☒ Yards and gardens
☒ Creeks

7. What are the best ways to wash a car? *(check all that apply)*

☐ Wash it in the driveway. The soapy water and dirt will go into the street and then into the storm drain.
☒ Wash it over the lawn/yard. The soapy water and dirt will get filtered through the ground.
☒ Take it to a car wash where the soapy water and dirt will go to the sewer treatment facility.
☐ Don't wash it. Let the dirt wash onto the road when it rains, and then it will go down the storm drain.

8. How does dog waste left on the ground impact our health and environment? *(check all that apply)*

☒ Pathogens from pet waste are washed into storm drains and into waterbodies where people swim and fish
☒ Excess nutrients wash into creeks causing algal blooms, cloudy water, and fish kills
☐ Pet waste on the ground has no impact on people or the environment
☐ Don't know/Not sure

9. Grass clippings, leaves, and other yard waste should be disposed of properly because they… *(check all that apply)*

☒ Clog the storm drain system and impede flows
☒ Contribute to excess nutrients causing algal blooms, low oxygen levels, and fish kills
☐ Have no affect on the storm drain system, go ahead and sweep out into the street and storm drains
☐ Don't know/not sure

10. Which of the following items may be disposed of in the regular trash? *(check all that apply)*

☐ Motor oils, anti-freeze, etc
☒ Regular light bulbs
☐ Pesticides, household cleaning products, etc
☒ Plastic, Styrofoam, and paper
☐ Paint, paint thinners, stains, varnishes, etc
☐ Medications
☒ Food
☐ Don't know/not sure

Fire Department's "Red Shirt" Friday

In support of the U.S. troops serving overseas and the Vista Firefighter Association's (VFFA) designated charity "Wounded Warriors", firefighters are donning red shirts every Friday during the month of September. The Wounded Warriors organization assists returning military members from the Middle East. The red shirts are part of a national campaign called "Red Shirt Fridays" in which individuals wear a red shirt every Friday as a silent display of remembering the continual sacrifice's made by past and present service men and women.

In addition, to commemorate the tenth anniversary of 9/11, Vista Fire personnel will begin wearing a commemorative 9/11 badge on September 11 and through the 10th anniversary year. The badge is identical to the City of Vista badge except the center crest depicts the twin towers with the number 343 (represents the number of New York firefighters killed in 9/11). The Fire staff paid for the commemorative badges with their personal funds.

Civic Center's Fire Drill

From Dolores Gascon, Risk Management

Civic Center Evacuation photos below ...

On July 21, after months of preparation and information, City employees participated in the Civic Center's first emergency evacuation drill. At 2:00 p.m., the fire alarm was triggered alerting everyone an evacuation was underway. Staff and the City Hall visitors quickly **and safely** left the building, convening in the previously established Emergency Evacuation Assembly Area. After Fire personnel had certified that the building was empty (and safe) a short debriefing was conducted by Battalion Chief Jeff Berg prior to everyone returning to the building. Thank you everyone for being aware of the appropriate evacuation routes and for following the procedures outlined in the Civic Center Evacuation Plan (available in the Human Resources Read Access folder > Risk Management > Safety Program > Civic Center Emergency Evacuation Plan.)

Carbon Monoxide Safety

A message from the Fire Department

A new state law (Senate Bill 183) requires all single-family homes with an attached garage to install Carbon Monoxide (CO) detectors within the home as of July 1, 2011. Often called the silent killer, carbon monoxide is the leading cause of accidental poisoning in the United States. It is an invisible, odorless, colorless gas created when fuels (such as gasoline, wood, coal, natural gas, propane, oil, and methane) burn incompletely. In the home, heating and cooking equipment that burn fuel can be sources of carbon monoxide.

Carbon monoxide enters the body through breathing. CO poisoning can be confused with flu symptoms, food poisoning and other illnesses. Some symptoms include shortness of breath, nausea, dizziness, or headaches. High levels of CO can be fatal, causing death within minutes.

Potential Sources of Carbon Monoxide in the Home
Blocked chimney, fireplace, indoor grilling, furnace, attached garage, clothes dryer, portable heater, water heater.

For more information, contact the Fire Department.

Employee news

Facebook | Posts |

Melanie R. Panlilio to the Vista firefighters re: the Pancake Breakfast and to the troops.
A big heartfelt Thank You to all the brave men and women, who serve so selflessly to keep us all safe...!

From Rob Broder re: the Moonlight's Hairspray production
The show was amazing! You guys really outdid yourselves with this one. Thank you for a very entertaining evening!

From Jennifer Robbins re: Wave swim lessons
So bummed....Riley's swimming lessons have to come to an end. Thank you, to all of you wonderful swim teachers. Riley and I are going to miss you.

Recognition | Kudos | Appreciation

From Rocky Salehi, CEO, Salehi Engineering, Inc., to the City Manager.
I would like to take this opportunity to recognize the hard work and dedication of Mr. **Michael Kratz** (Plan Check Engineer, Community Development). Just this past week, Mr. Kratz called and informed me of his suspicion of forgery of my company's work. I was thoroughly taken aback that an individual would forge a fellow peer's work, but even more astonished that someone such as Mr. Kratz would be thorough enough in his work to detect it. After personally reviewing the suspicious work and confirming the atrocious act, I feel an overwhelming amount of gratitude towards Mr. Kratz and his readiness to act on his own free will of his suspicions during the plan check. In my opinion, Mr. Kratz is a true asset to the department. His ability to recognize the style of work and patterns of varying engineers is remarkable. Furthermore, it is clear that Mr. Kratz is organized, extremely competent, and has an excellent rapport with the people of the City of Vista. I would like to express my gratitude to the Community Development Department and to Mr. Kratz.

Kudos to Michael Kratz for catching forgery work.

From Lyn Dedmon, Public Works Management Analyst
The Parks and Recreation Commission complimented IT for creating online maps to illustrate irrigation frequencies in the City parks. The online maps have reduced phone inquires to Public Works. Thank you **Robert Borowski,** Sr. IT Analyst and **Nick Cunningham**, IT Technician for a job well done!

First Time Grandfather

From Rudy Luna, Public Works Supervisor
Alberto Cuevas, Street Maintenance Worker II, welcomed his first grandchild on August 4. Ezra Daniel was born to Alberto's son Daniel and his wife Patricia in Great Falls, Montana. Alberto's son is in the Air Force. Baby Ezra weighed in at 8 pounds, 3 ounces and was 20 ¾ inches long.

Ezra Daniel Cuevas, 8 lbs., 3 oz. with is parents Daniel and Patricia.

Congratulations

From Lisa Feeney, Sr. Office Specialist, Public Works
Congratulations to **Larry Greaves**, Wastewater Worker III, who received his AA Degree in Public Works Management from Palomar College. Great job Larry!

Just Married

From Recreation & Community Services
Congratulations to Recreation & Community Services (Culture Caravan), **Cynthia Byler,** whose daughter Brittany and her new husband Jason Estes were married in Cynthia's home in Valley Center on July 30. The newlyweds honeymooned in Costa Rica.

Cynthia Byler's daughter Brittany and her new husband Jason Estes.

NEW HIRES

Donna Meester, Management Analyst, Recreation & Community Svs

PROMOTIONS

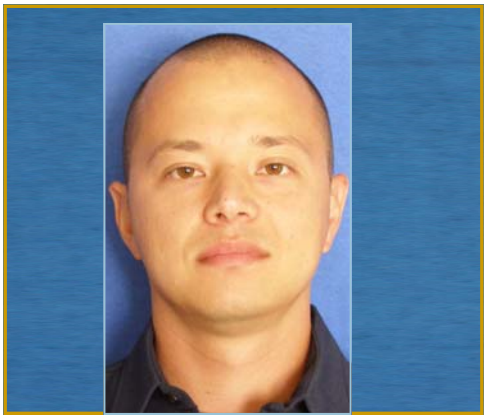

Hanns Botz, Fire Engineer, Fire

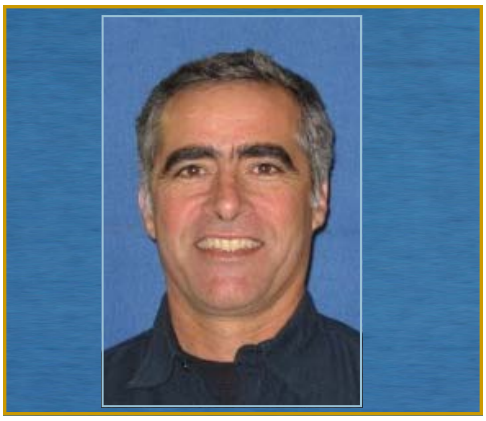

Les Fandel, Fire Captain, Fire

PROMOTIONS *continued*

Christopher Hammond, Fire Engineer, Fire

Matthew Kennedy,Fire Engineer, Fire

Steve Wecklich, Fire Engineer, Fire

RETIREMENTS

Jay Ackerman, Fire Captain, Fire

Sue Crossman, Admin Secretary, Public Works

Don Shellhammer, Deputy Fire Chief, Fire

September Birthdays

2	Steve Wecklich	Fire
6	Joshua Fretwell	Community Development
8	Enrique Montes	Fire
9	Jason Christman	Community Development
9	Peter Marshall	Public Works
11	Natalie Livingston	Recreation & Comm Svs
11	Estella Muro	Code Enforcement
11	Gerardo Oliveros	Public Works
12	Chris Mitchell	Information Technology
13	Sam Craig	Fire
14	Phill Carreon	Fire
15	Cat Cobian	Public Works
16	Jeff Hahn	Fire
16	Jeff Schroeder	Fire
17	Dora York	Human Resources
18	Laura Johnson	Finance
20	Greg Hanson	Public Works
23	Ligeia Heagy	Engineering
25	David Brookbank	Public Works
25	Jim Gelrud	Fire
26	Rita Turnbull	City Clerk
27	Roger Brenzel	Engineering
27	John Conley	Community Development
28	Aly Zimmermann	City Manager

October Birthdays

2	Cheryl Mast	City Manager
5	Jim Sawyer	Fire
5	Craig Usher	Fire
7	Sonya Cramer	Human Resources
8	Sudi Shoja	Engineering
10	Martha Cleavenger	Finance
11	Rachel Beld	Economic Development
13	Chuck Crist	Public Works
15	Matt Kennedy	Fire
16	Tiffany Luther	Recreation & Comm Svs
17	Ryan Deason	Fire
17	Cynthia Graciano	Fire
19	Terry Breen	Recreation & Comm Svs
21	Pat Chapman	Recreation & Comm Svs
21	Gary Fisher	Fire
21	Ross Vagelatos	Fire
22	Patrick Johnson	City Manager
22	Dale White	Public Works
26	Nick Cunningham	Information Technology
26	Walter Hartman	Recreation & Comm Svs
27	Andrew Simons	Public Works
30	Dan Kays	Recreation & Comm Svs
31	Ralph Medina	Public Works

September Years of Service

2	Andrew Valenta	Fire
6	Justin Golden	Fire
6	Brendan Hammes	Fire
6	Darold Pieper	City Attorney
6	Jake Shumate	Fire
6	Steve Wecklich	Fire
8	Maureen Cooper	Recreation & Comm Svs
8	Gary Fisher	Fire
8	Sandra Sotola	Engineering
10	Susan Haynes	Public Works
10	Laura Johnson	Finance
10	Yasmin Royka	Fire
11	Tim Shell	Engineering
11	Jon Stone	City Attorney
14	Cecilia Barandiaran	Redevelopment & Housing
15	Keith Kaumeyer	Fire
15	Craig Usher	Fire
18	Gail Jarrard	Finance
21	Mike Lemire	Fire
22	Chris Dzwigalski	Public Works
22	Craig Trammell	Public Works
24	Phill Carreon	Fire
24	Jim Chumbley	Fire
26	Mark Lian	Public Works
26	Rudy Luna	Public Works
30	Les Fandel	Fire

October Years of Service

1	Maia Hodge	Recreation & Comm Svs
1	Cheryl Mast	City Manager
3	Amy Eustace	Recreation & Comm Svs
3	Paul Hartman	Engineering
4	Bryan DiBella	Information Technology
5	Ryan Deason	Fire
5	Cynthia Graciano	Fire
6	Justin Hall	Recreation & Comm Svs
6	Mark Vierow	Fire
9	Mike Beissel	Fire
9	Matt McComas	Fire
9	Janet Yelland	Finance
10	Chano Ramos	Fire
11	Eric Kilpatrick	Fire
11	Mike Kratz	Community Development
11	Jim Sawyer	Fire
12	Jimmy Rodriguez	Public Works
13	Patrick Johnson	City Manager
15	Pete Grover	City Attorney
18	Joel Stangeland	Fire
22	Tom DuBose	Public Works
23	Roger Brenzel	Engineering
23	Richard Caldwell	Engineering
23	Cirilo Mariscal	Public Works
26	Louie Sanchez	Public Works
28	David Brookbank	Public Works
32	George Solano	Public Works

CITY OF VISTA
CALIFORNIA

Nov/Dec 2011

Spotlight on Vista
Employee Newsletter

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Message from the City Manager

Dear Employees:

For the past seventeen years, it has been my pleasure and my passion to come to work for the City of Vista. While many days had their own unique circumstances, I always knew the hard-working, dedicated, and professional employees who work here would be ready to meet any issue that arose. I appreciate the unique contributions that you have each made over the years in building a dynamic, thriving, and vibrant Vista community. You have provided me with support, strength, and talent to excel at successfully undertaking the City Council's vision of moving Vista forward into the future.

It has been a privilege to know all of you, and therefore, it is with mixed feelings that I say "farewell" to the City of Vista and to its remarkable employees. We have accomplished much over the years and we should all be proud of this. Significant challenges still lie ahead, especially with this difficult economic environment. However, I am confident that there will be a seamless transition with Patrick becoming City Manager, and you will be able to meet these challenges with innovation, excellence, and skill.

Looking back, I know that I have been truly blessed by being a part of the Vista team. It has been one of the most amazing jobs I have ever had. As I move on to this new phase in my life, I would like to take a moment to thank you all for being a great team. I will miss your enthusiasm, perseverance, and your camaraderie, and of course, the uniqueness that you brought to our city. Thank you for the opportunity to serve you and work alongside of you. Many of you have made a great impact on me and I've learned much from you.

I hope that over the next few weeks I will have the time to personally talk to each of you and to thank you for your contributions to the city. I will not say "goodbye", but rather fondly wish you the best in your own careers, lives and families.

Best wishes,

Rita L. Geldert

Photo by: Roger Brenzel, Engineering

Chris Dzwigalski is Caught in the Act!

from Dolores Gascon, Human Resources

Driving home from the grocery store last August, city employee Chris Dzwigalski, who lives in Vista, came upon the scene of an accident on Foothill Drive. Chris, who has been with the City of Vista for 22 years, is a Public Works Supervisor. After assessing the situation, Chris began administering CPR on an injured person. He continued to perform chest compressions on the individual until Vista Fire crews arrived. Chris' immediate action and quick thinking may well have saved the person's life – or at the very least – provided the individual with the best chance of survival. While the final status of the person is unknown, in 2010 the American Heart Association issued new guidelines regarding CPR that emphasizes chest compressions are a primary life saving measure.

Based on his heroic efforts and his role in quickly responding to someone in urgent need, staff from the Vista Fire Department submitted his name for the City's *Caught in the Act*! recognition program. *Caught in the Act*! recognizes employees who are proactive about safety. The employees are selected by the City of Vista Safety Committee.

The bravery and quick thinking displayed by Chris are exemplary. His actions inspire the rest of us. It takes a special kind of person to not panic and try to save the life of someone else. His actions truly exemplify those of a brave and heroic man. It is an honor to have Chris on our employee team.

To nominate an employee for the program, submit a *Caught in the Act*! nomination form through the your Safety Committee representative. Nomination forms are available in the Human Resources Read Only folder on the "O" drive.

O:\Human Resources and Risk Management\City Read Access\Risk Management\Safety Program\Safety and Risk Forms

New Web Site Profiles CA Cities

Danny Schultz, Senior Center delivers a warm greeting and hot meals to seniors.

Pat Sadowski, Public Works, adjusts the water pumps for the Civic Center's HVAC system.

Strong Cities | Strong State

After the city of Bell scandal shook public confidence in city governments last year, Californians have been more cautious about trusting their city leaders. To demonstrate that the core values of local cities and the city officials who manage and govern them, the California City Management Foundation and League of California Cities initiated a web site called "Strong Cities, Strong State".

The goal is to connect Californians to the great services that are provided in their cities; the elected leadership and management team that oversees those services; and the pride city residents feel in their cities' history, traditions, and record of excellence.

The City of Vista's "profile" will be posted in November. Many thanks to those involved in putting this web information together, especially Danny Schultz, Senior Center, and Pat Sadowski, Public Works, for helping with photo shots of services provided.

strongcitiesstrongstate.com

Employee Information ... *From Human Resources*

Flu Season is Around the Corner

From Kaiser Permanente

The flu is more serious than the common cold, so do everything you can to prevent it. A flu shot (or nasal spray) vaccination is your best protection. The vaccine is safe, won't make you sick, and generally has few side effects. The Centers for Disease Control and Prevention (CDC) recommends that everyone (6 months and older) get a flu vaccination every year. The flu shot helps prevent you from getting the flu and from spreading it to others.

Vaccination is especially important for:

- People 50 years and older and children 6 months through 4 years old.
- Women who are or will be pregnant during flu season.
- People with chronic medical conditions or weakened immune systems.
- People who live in nursing homes or other long-term care centers.
- Health care workers and people who live with or care for anyone at high risk for flu-related complications.

Colds and the flu are both caused by viruses. Although they share many of the same symptoms, there are some key differences:

- Colds can occur throughout the year. The flu generally infects people from late fall through early spring.
- The symptoms of a cold include a stuffy or runny nose, sneezing, sore throat, mild fatigue, headache and a cough.
- Flu symptoms are usually more severe than those of a cold and tend to come on suddenly. They can include fever (100.4 degrees F or higher), fatigue, muscle or body aches, headache, chills, sore throat, cough and a stuffy or runny nose. Some people may have vomiting and diarrhea; this is more common in children than adults.
- People who have the flu are able to infect others from one day before getting sick until five to seven days after. Young children and people with weakened immune systems can be infectious even longer.
- Flu viruses that are most likely to cause illness during flu season can be prevented with an annual flu shot; however, there are no vaccines for cold viruses.

The flu is more serious than a cold. According to the CDC, every year in the U.S. one in five get the seasonal flu and more than 200,000 people are hospitalized from seasonal flu complications, including 20,000 children. Up to 36,000 people die from the flu every year.

Flu Shots Available

Kaiser Permanente

Flu shots are available beginning in early fall 2011 at no charge to Kaiser members when given at a Kaiser medical facility.

Anthem Blue Cross

Members: flu shots are available by making an appointment with your primary care physician.

Fall City News Edition Available On Line Now

The City's fall edition of its community newsletter, *City News*, is available on line and is linked from the City's home page under "News".

We Need Your Voice!

Beginning November 7, you can decide the future. San Diego County residents have a unique opportunity to make their voices heard. With your input and action, the San Diego Foundation will collectively create a 50 to 100 year strategic vision and action plan that encompasses the region's shared values, priorities and voices. Information is available at ourgreatersandiegovision.org.

VFFA Donates Funds to Wounded Warriors

Firefighters at Station 6 (*photo left*) present a check for $2,500 to the Wounded Warrior Homes. The funds are from the Vista Firefighters Association's fund raising Pancake Breakfast in August. Thank you to to those who contributed to this worthwhile fund raising event.

Testing of the National Emergency Alert System Nov. 9

FEMA will conduct the first nationwide Emergency Alert System Test on November 9, at 11: 00 a.m. Pacific Time (2:00 p.m. Eastern). FEMA is stating the test will last from 30 seconds to three minutes. Information is on the City web site and posted through our social network channels to ensure everyone is are aware of the upcoming test and to avoid flooding the 9-1-1 Dispatch Center with calls. Similar to local emergency alert tests that are conducted frequently, the national test will involve radio, television stations, satellite radio and wire line providers across all states and territories. Details are at fema.gov/emergency/ipaws.

Holiday Collections for Adopt-a-Marine Unit

The City is collecting gift certificates and toys for our Adopted Marine Unit's families. The squadron was deployed to Afghanistan in the fall. If you are able to particiate, you can drop off the unwrapped toys/gift certificates at any Vista fire station or in the Civic Center first floor lobby after Thanksgiving and through December 21.

Helping the Less Fortunate During the Holidays

During this time of year, so many people come together to provide for those who are less fortunate. If you are looking for an organization to support during the holidays, one such organization is Operation H.O.P.E., the temporary winter shelter for homeless families. During the winter months, the organization is always in need of volunteers, basic hygiene items, and donations. You can learn more about their needs at operation-hope.org.

The Rainy Season is Upon Us

From Water Quality Protection Program

When it rains, pollutants can be washed into the city storm drain system and flow untreated to our local creeks, lagoons, and eventually to the ocean. Vista's Municipal Code prohibits the discharge of pollutants into the storm drain system. *Below are tips to help keep our waterways clean and healthy:*

- Take a bag to scoop up the waste when you walk your pet.
- Reduce urban runoff (water that enters the storm drains from activities that carry soap, dirt, heavy metals, and excess nutrients into our waterways).
- Check that sprinklers are functioning properly. Reduce irrigation when rain is expected.
- Wash cars at a car wash, where the water is recycled and diverted to the wastewater sewer system.
- Clean outdoor areas using dry methods, e.g. sweeping.

The Water Quality Protection Program is committed to making our waterways clean and safe. Contact the Stormwater Hotline (waterquality@cityofvista.com or call ext. 1686). Thank you for your participation!

Buena Creek Clean Up: A Great Success!

As part of Coastal Cleanup Day, the City hosted a cleanup of Buena Creek on September 17. Over 170 Girl Scouts, Cub Scouts, Vista Magnet Middle School students, high school students, and City employees participated in the cleanup. On a one mile stretch of Buena Creek, 1,175 pounds of trash and 190 pounds of recyclables were picked up! **A big thank you to Ligeia Heagy and to all Vista employees who helped make this event successful!**

Juan Castro and Pedro Magadan from Public Works weigh the trash removed from Buena Creek cleanup.

Stop. Think. Print.

From Sandy Bobek, IT Manager

Did you know it's 87% more expensive to print in color than in black and white? The cost of printing out black and white is $.009 versus printing color at $.065. Most of the city's copiers default to black and white because of the significant cost of printing in color. For instance, a 1000 page color print job costs $65 and the same job in black and white costs only $9. Please note, even if some of the pages in your print job are in black and white, once you select color, the black and white printed version is charged as a "color print" job. IT staff can help you configure your print project, so that it still prints out clear and crisp jobs. In addition, remember to print time sheets and leave slips in black and white.

Before you print, ask yourself the following questions.

1. Do I need to print this or can I review this document on my monitor, instead?
2. Does this have to be printed in color? Is there a legal or pressing reason it has to have a color city logo or seal?

Typically staff chooses to either print in black and white or in color, however, there are many advanced settings that can be utilized to perform mixed jobs. If you have a large print job, please contact IT for printing recommendations that can save the City money and help you to produce a higher quality document.

Employee News

The "Other" Boys of Summer

Jeff Hahn, Fire, relented after repeated requests from his son Andrew, to teach him to play the bagpipes. Jeff coached him and also secured private instruction for him. Jeff, who is the Pipe Major of the *San Diego County Firefighters Pipes and Drums,* invited Andrew to help in the band. From there, they joined a competition pipe band, *The House of Scotland Pipe Band* in San Diego. During this year's solo competitions, both played 'round the games', beginning on the Queen Mary in Long Beach. The duo then travelled from San Diego to several cities, including San Francisco, Las Vegas, and Calgary, Canada and won many medals. They became known as the 'gun slingers from out of town' after taking the top medals at one competition. The season ended with Andrew winning the Grade 2 Champion Title and Jeff winning the Grade 4 Champion Title. Andrew also received one of only fifteen invitations to compete in the Balmoral Classic, the age 17 and under national piping championship held at Carnegie-Mellon University in Pittsburg. "It has been a really great journey to take together, a real father and son experience. Most dads get to watch their son play ball from the bleachers; but I got to actually be on the team with him – and win!" The Hahn family is heading to the national championship next month.

Mt. Whitney Climb

Greg Mayer and **John Conley,** both from Community Development (in photo) and **Les Fandel,** Fire, stood on top of the tallest mountain in the contiguous United States during the Labor Day weekend. The trio hiked up to the summit of Mt. Whitney in the Sierra Nevada range. The peak is 14,496 feet.

RSVP Bike Race Seattle to Vancouver (BC)

On August 5-6, **Pete Grover,** City Attorney's Office and a fellow Navy JAGC officer participated in the 30th annual RSVP (Ride From Seattle to Vancouver, BC Party) along with 2000 other riders. The ride consists of 188 scenic miles of back roads (106 miles on Friday, 82 miles on Sat.) Cyclists were in the saddle for more than 6 hours each day averaging 15mph. The weather was perfect with overcast skies and in the low 70's. Says Pete, "A good cold beer never tastes better than after a day in the saddle." A few weeks later, Pete, his son Drew, and Greg Mayer and his family participated in the Encinitas Lions Club 16th annual Blind Surfing event at S. Ponto Beach in Carlsbad.

Just Married

Doug Coppi, Engineering, married his longtime girlfriend Heather on September 3 at a beautiful outdoor ceremony at The Inn at Mountain View Farm in Burke, Vermont. Luckily, the location was not impacted by Hurricane Irene and the sun came out for this special occasion. The newlyweds honeymooned in Maine and Canada. Congratulations Doug and Heather!

New Employee Classifications

New Hires

Kara Mathews, Environmental Specialist I, Engineering

Mike McFadden, Fire Inspector, Fire

Transfers

Mary Haley, Office Specialist II, Public Works

Transfers cont'd

Deb Lopez, Financial Analyst, Finance

Susan Perciavalle-Brundu, Office Specialist II, Engineering

Kathy Valdez, Asst. City Clerk

Promotions

Patrick Johnson, City Manager

Retirements

Rita Geldert, City Manager

Rosanne McElhaney, Redevelopment & Housing

CITY OF VISTA
CALIFORNIA

November Birthdays

1	Dianne Costa	Finance
2	Mike McFadden	Fire
3	Gilbert Obregon	Recreation & Community Services
3	Robin Putnam	Engineering
3	Joel Stangeland	Fire
4	Cindy Sanchez	Public Works
5	Sam Hasenin	Engineering
8	Michele Koller	Redevelopment & Housing
9	Rob Anderson	Recreation & Community Services
10	Raymond Tellechea	Fire
12	Robert Castaneda	Public Works
15	Jim Chumbley	Fire
15	Diane Collier	Fire
15	Denise Collins	Finance
16	Michael Romeo	Fire
20	Pete Grover	City Attorney
21	Angela Palasik	Recreation & Community Services
21	Mike Parks	Public Works
21	Christopher Place	Fire
22	Dolores Gascon	Human Resources
25	Bob Stacey	Fire
26	Christian Sherrard	Public Works
27	Mark Gray	Fire
28	Matt Atteberry	Engineering
29	Darren Kaplan	Fire
30	Marilyn Anderson	Fire
30	Brian Metzer	Fire

December Birthdays

1	Clarence Rich	Code Enforcement
3	Manny Robles	Code Enforcement
4	Rick Minnick	Fire
8	Julie Chapin	City Manager's Office
9	Jocelyn South	Finance
9	Dave Willson	Code Enforcement
10	Victor Lievanos	Public Works
11	Kevin Ham	Economic Development
11	Danny Schultz	Recreation & Community Services
13	Jeff Bauer	Fire
13	Richard Caldwell	Engineering
13	Kim Crawford	Recreation & Community Services
13	Emily Downing	Fire
16	Christian Haney	Fire
18	Kathy Brombacher	Recreation & Community Services
19	Pat Sadowski	Public Works
21	Jan Yelland	Finance
23	Sandra Sotola	Engineering
24	Derek Fried	Fire
24	Brien McDonald	Fire
25	Jose Lopez	Public Works
27	Marty Parish	Fire
28	Joshua Spann	Fire
30	Darold Pieper	City Attorney

November Years of Service

4	Eydee Amato	Human Resources
5	Derek Fried	Fire
5	Christian Haney	Fire
5	Matt Kennedy	Fire
5	Joshua Spann	Fire
6	Erika Shaw	Code Enforcement
7	Manny Robles	Code Enforcement
9	Victor Lievanos	Public Works
10	Julie Chapin	City Manager's Office
12	Marilyn Anderson	Fire
12	Kurt Groscup	Engineering
12	Susan Perciavalle-Brundu	Engineering
14	Larry Greaves	Public Works
14	Jeff Schroeder	Fire
14	Dale White	Public Works
17	Denise Collins	Finance
19	Lisa Feeney	Public Works
22	Ralph Medina	Public Works
27	Rod Krueger	Public Works
30	Rick Minnick	Fire

December Years of Service

3	Tracy Harrison	Finance
4	Joshua Fretwell	Community Development
4	Ligeia Heagy	Engineering
4	Angela Palasik	Recreation & Community Services
4	Chad Wodarczyk	Public Works
8	Dianne Costa	Finance
12	Rob Anderson	Recreation & Community Services
12	Renee Bowman	City Manager's Office
14	Mike Parks	Public Works
15	Armando Sandoval	Public Works
20	Ken Shaw	Public Works

Holiday Happenings Around Town

The **Chamber's Christmas Parade** will be held on Saturday, December 3, at 1:00 p.m. in downtown Vista. This year's activities include carnival rides, a WWII vintage airplane flyover, and a visit from Santa Claus.

The **Vista Community Clinic's 25th Holiday Home Tour** is set for Sunday, December 4. Tickets are $20 in advance and $25 at the door. **More information is available at vistacommunityclinic.org.**

CITY OF VISTA CALIFORNIA

Jan | Feb 2012

Spotlight on Vista
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Message from the City Manager

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Photo by: Fred Tracey, Communications Office

Dear Employees:

First of all, I would like to wish you and your families a very happy and healthy New Year. It is my pleasure and privilege to serve as City Manager of this exceptional city.

As we transition into the New Year, I believe 2012 will be a significant year for Vista. My main responsibility as the new City Manager will be to ensure the City continues to maintain programs, services, and city facilities required to meet the needs of the community, while having a balanced budget to support these efforts. Based on direction from the Mayor and City Council, the top priority in 2012 will be to continue to reduce our structural deficit and build a stronger economic base for Vista.

As team members, each of us, regardless of the roles we perform, make direct service contributions that impact the lives of those we serve, including each other. While Vista still has many challenges to overcome in this tough economy, we continue to have co-workers who watch out for and take care of one another. The team effort that all of us work towards is what it will take to continue to persevere. Please join me in the shared vision of building an even better Vista as we accomplish our goals. We have a strong and talented group of individuals and I am confident we will rise to meet the challenges.

I believe in mutual respect and open communication and I will keep you updated on our City's economic forecast and any other major issues affecting the City as they arise. If you have suggestions, questions, or concerns, please feel free to discuss them with me. While I know most of you, there are some of you that I may not have had the opportunity to meet or speak with - please don't hesitate to reach out - even if it is just to introduce yourself and come up to the third floor to say "hi".

Thank you for working tirelessly and creatively this past year in our goal to match our community needs with our limited city resources. Despite the fact we may face more economic uncertainty in 2012, I hope this New Year will bring prosperity to you and your loved ones.

Patrick Johnson

Kelcey Sass Employee of the Quarter

Kiwanis Employee of the Quarter

The Kiwanis Employee of the Fourth Quarter has been awarded to Kelcey Sass, Fire Engineer. Kelcey has been in the fire services for 29 years (23 with Vista Fire) and was recommended for this honor due to his selfless motivation to "go above and beyond" with little supervision or encouragement required.

In addition to his typical work as Fire Engineer, Kelcey also manages many key projects that enable the Fire Department to run properly and efficiently. He is responsible for the department's complete Self-Contained Breathing Apparatus program, including the training, maintenance, repairs, inventory, budget, testing, and safety checks. This past year, Kelcey played a key role in the City receiving a federal grant exceeding $350,000 to purchase replacement breathing apparatus. This resulted in a significant cost savings to the City and provided fire personnel with state of the art breathing apparatus.

Kelcey is currently providing classes to all fire shifts on a driver/operator program he developed. The program is very effective and instrumental, as it allows the department to correctly document vehicle inspections and driver certifications, which greatly reduces driver and city liabilities.

Kelcey has also been recognized with the Fire Department's 2011 Employee of the Year award. He leads by example and his attitude, ability, knowledge base, work ethic and integrity epitomize what the Vista Fire Department strives for in its employees.

Congratulations to Kelcey for this well deserved recognition!

Dawn Patrol Donates to HMLA 369

From Cheryl Mast, City Manager's Office

HMLA family member Alba Castaneda and City HMLA Liaison, Cheryl Mast.

A group of avid Saturday golfers at the Shadowridge Country Club, calling themselves 'the Dawn Patrol', collect money each week from their members and set aside a portion of it to give away to charitable organizations and individuals each year, such as scholarships to high school seniors or cancer support groups. They have been actively doing this every year for about 15 years.

This year the group contacted the City and asked if they could help support our adopted Marine Unit, HMLA 369. We happily accepted their offer, and the HMLA 369 Family Readiness Officer, Barbara Greenbush, selected one marine family that could use assistance this holiday season. The Castaneda family has three children under the age of three!

The Dawn Patrol held a luncheon and handed out scholarships to local high school seniors as well as a $1,000 donation to this family. Alba was thrilled to receive the assistance, and cried when it was presented to her.

I'm happy to share the wonderful news that the Dawn Patrol wants to continue this action and make this an annual tradition.

What a great community Vista serves!

Employee Information ... *From Human Resources*

Caring for your Children's Teeth

From Delta Dental **[Part I of II]**

Did you know that good dental health helps your child speak and eat properly and develop strong facial bones? In fact, good dental care is vital throughout the entire growing period – from before birth to the early 20's – so it is essential to teach good habits early.

Before your Baby is Born - Children's teeth begin to form during the fifth week of pregnancy; therefore dental care should begin as early as possible. An unborn baby's vitamins and minerals come from the mother's food, so expectant mothers can ensure healthy baby teeth by eating a balanced diet. Nutritional deficiencies of calcium, phosphorus and other vitamins and minerals can result in the abnormal growth of baby teeth, which may affect the development of permanent teeth in later years.

Caring for Infant Teeth - Cleaning a child's teeth should begin when the first tooth is visible - at about age six months, because teeth are susceptible to decay as soon as they appear in the mouth. Wipe the baby's teeth and gums with a soft, damp washcloth or gauze pad. A leading cause of tooth decay among young children is "baby bottle syndrome." When infants are allowed to drink from nursing bottles containing milk, formula or fruit juice, they often fall asleep with the bottle in their mouth, and the liquid may pool around the teeth.

Continued in next column ....

Acids formed by the juice or milk can attack the tooth enamel and may eventually cause irreparable damage to the baby teeth. If you give your child a bottle to take to bed, be sure it contains only water.

Fluoride is Key - Studies have shown that children who drink fluoridated water from birth have up to 65 percent fewer cavities, and by the time they become teenagers, many of them still have no tooth decay. Using fluoride toothpaste and a mouth rinse are also effective. Combined with regular, thorough brushing and flossing, fluoridated water can help keep your child's teeth strong and free of decay.

Part II will appear in the March/April Spotlight

Stop Viruses From Spreading | Eight Ways to Stay Well *From Kaiser Permanente*

There are over 200 or more cold and flu viruses. Get your flu shot. Take simple, effective steps to help protect yourself and others.

- Keep 'em clean. Wash your hands frequently! Using plain soap and water is as effective as antibacterial soap. Carry an alcohol-based hand gel to use when you can't wash.
- Stay healthy. Eat well, get plenty of rest, manage stress and exercise to help resist infection. Children and adults over 65 years or who have a chronic health condition or weakened immune system should get a pneumonia vaccination.
- Kick the habit. If you smoke, quit. Keep children away from secondhand smoke. It's bad for their health and can cause cold-like symptoms.
- Cover your cough. Cold and flu viruses are spread through the air. Cough or sneeze into a tissue or your sleeve to trap the virus. If you cough into your hands, wash them as soon as possible.
- Clean your home. Sick persons can spread germs by touching counter tops, telephones, toys, or bathroom sinks. Clean em!
- Viruses can live on cloth handkerchiefs. Use disposable tissues and throw them away immediately to reduce spreading illness to others. Avoid touching your face. Try not to rub your eyes, nose, or mouth. Germs spread this way.
- Try not to pass it on. Stay home and rest when you are sick. If you have a fever, wait at least 24 hours after your fever is gone without the use of a fever-reducing medicine before you go out.
- Give your kitchen a clean bill of health. Wipe down counters and appliances often. Use environmentally friendly household sanitizers to keep kitchen surfaces clean. Disinfect sponges frequently. Run them through dishwashers or washing machines, or soak them in a bleach and water solution. Wash your hands with soap and warm water before preparing foods.

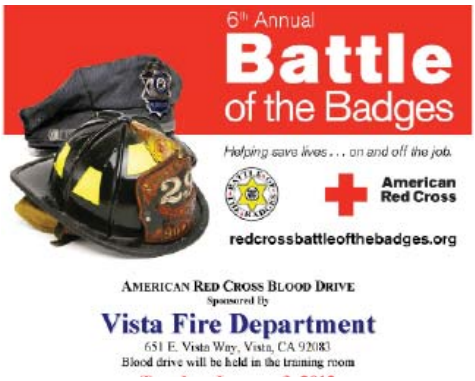

Battle of the Badges

On **January 3 and 4**, the Vista Fire Department will be joining with many fire and police agencies throughout California to participate in the American Red Cross Battle of the Badges Blood Drive. The event will be held in the Vista Library Community Room from 8 a.m. to 2 p.m. on Tuesday, January 3, and then from 10:30 a.m. to 4:30 p.m. on Wednesday, January 4. Register on line redcrossbattleofthebadges.org/ or call 1-800-RED-CROSS to sign yourself up, your friends and your family members for specific times on one of those days. Employees interested in participating should coordinate with their supervisors to schedule the use of leave time if they choose to donate during work hours. Remember, this blood drive is a contest against other California agencies for highest percentage or participation numbers, so show some Vista pride and save some lives! If that doesn't hook you, there is also some cool free stuff for participating.

Stormwater Hotline

A Message from the Water Quality Protection Program

The Stormwater Hotline receives complaints and questions regarding stormwater issues within the City. The Hotline serves as the dispatcher for the Water Quality Protection Program by distributing calls and e-mails to all program staff.

Please leave a message if you don't get a live person – messages are automatically forwarded to staff immediately. This ensures awareness and prompt response to all complaints. Stormwater staff encourages employees to be proactive by reporting stormwater pollution including:

- Accumulation of sediment, trash, leaves in curb gutters, streets, storm drain inlets.
- Fresh significant oil stains in parking lots or streets.
- Sewer spills.
- Uncovered construction materials and stockpiles.
- Significant water flowing down the street during dry weather.

Please direct all complaints to the Stormwater Hotline phone or e-mail, rather than individual staff. *Thank you for your help in keeping our water clean and healthy!*
Stormwater Hotline: Extension 1686 or waterquality@cityofvista.com.

HMLA Family Readiness Officer Barbara Greenbush with a Unit Member's wife Kelly Clark and City Manager Rita Geldert.

Toys | Donations for HMLA 369

From Cheryl Mast, City Manager's Office

The tree ornaments listing donation ideas was a huge success! I'm happy to report that we collected over eight boxes of toys and more than $850 in gift cards for our adopted Marine Unit and their family members this season. That's just from Vista employees and community members!

In addition, the Vista Magnet Middle School (across the street from the Civic Center) delivered 10 more boxes of non-perishable grocery and toiletry items, and toys. Isn't that incredible?

Thanks again for all of your generosity and support for these military service men and women and their family members. Happy New Year!

Vista Magnet School staff and students with Rita Geldert and Cheryl Mast.

Oceanside Turkey Trot | 2nd Place Winner

City employees and their families, including **Eva Stuart, Dora York, Eydee Amato, Matt Atteberry, Jaimie Osorio, Aly Zimmermann, Joan Turley, Julie Chapin, Jason Christman,** and **Mayor Ritter,** participated in the Oceanside Turkey Trot 5K held on Thanksgiving Day. Over 8,000 participated! A few days after the 5K, Eva Stuart was curious to see how she placed in her age/division. To her amazement, she discovered she had placed 2nd in her age division at 29:04. Eva was only 37 seconds away from placing first. Needless to say, Eva will definitely be 'picking up the pace' at next year's race. Congratulations to everyone who participated in the event. Honorable mention goes to Joan Turley who had a personal best of 14.23 per mile, compared to her normal 17.38 mile; Jason Christman ran the 5K in 23:43 with the additional push of a 40 pound stroller; Dora and Eydee met their personal goals - and Lu Lu, the Atteberry's dog participated in her first 5K!

2nd Place Winner Eva Stuart.

Dora York; Matt, Denise and Ethan Atteberry with dog Lu Lu; Jason, Karrie, Elise Christman with Grace in Jason's arms; and Eydee Amato.

Robert, Crystal and Jamie Osorio.

Eva Stuart's husband, Tom.

Eydee Amato's son, Matt.

Garden of Innocence

From Frank Durazo, Community Development

Did you know every year there are numerous babies that have been abandoned within San Diego County and around the world? As a member of the Knights of Columbus, each time that an abandoned child is given to Garden of Innocence for burial, we, as members of the Knights of Columbus, provide an Honor Guard to escort this child to its final resting place. I have been involved with this project for the last 10 years and thought I'd share this with you.

Garden of Innocence (GOI) in San Diego is a non-profit, non-denominational organization founded in 1998 by Elissa Davey. Elissa's sole purpose was to provide dignified burials for these precious, deceased, abandoned and unidentified children. Since its inception in 1998, 129 babies have been laid to rest. GOI is an organization that serves the San Diego County area through donations and volunteerism. (It is that time of the year, when we think about donating our time, funds and talents to organizations during the holiday season.) More information can be found at the GOI web site at gardenofinnocence.com. Should you have any questions, please feel free to contact me at 760.716.7967.

A Note from Rita L. Geldert

Dear Vista Employees,

I want to express my gratitude for several events held recently where I have had the opportunity to have individual conversations with many of you. The cake and proclamation prior to the December 13th Council meeting and again on December 14th was special and very much appreciated; the "flower presentation and moment of conversation" was such a touching time (thank you Sandra Wolfe for a unique idea); and the overall comments have made my heart be joyful.

I have been given several opportunities to speak and have usually stated a mere "thank you" as I am more emotional than I thought I would be at this time. Most of all, it has been a pleasure to be associated with a value-based organization that the employees continually contribute to the tenants of our Mission Statement:

> *Providing outstanding services to improve the quality of life of all Vista residents and to enhance the uniqueness of our community, reflecting our core values: respect, fairness, teamwork, integrity, compassion and stewardship.*

It has been a privilege serving the VISTA community as their City Manager; however it has also been an honor working with you all.

Most Sincerely and Affectionately,

Rita

Employee News

Annie Collis, 8 lbs. 8 oz.

New Family Member

Congratulations to **Jasen Collis**, Fire, and his wife Kristen on the birth of their third child, Annie on November 28.

Annie weighed 8 pounds, 8 ounces and joins siblings, Ally (8) and Christian (1).

Kudos Sandra Wolfe | Gail Jarrard

From Sandy Bobek, IT Manager

I would like to heartily thank **Sandra Wolfe**, Redevelopment & Housing, and **Gail Jarrard**, Finance, for the hard work and flexibility they provided during the installation of the new postage machine. The installation would not have run as smoothly without their help. Both employees went above and beyond and their efforts were deeply appreciated!

Leslie Webb-Blanco personifies exemplary "customer service".

Kudos Leslie Webb-Blanco

From Jeanette Farris, Revenue Billing Manager

Kudos to **Leslie Webb-Blanco**, Business License Account Clerk, who received a complimentary letter regarding her outstanding customer service. Mr. Antonio Miranda, President of CDD Stores of CA wrote to congratulate the City on our tremendous asset in Leslie. He wrote she personified what "customer service" really means. Thank you Leslie for your exemplary service to our customers!

Thank You Organizers!

Many thanks to employees: **Julie Chapin** and **Renee Bowman**, City Manager's Office, **Eydee Amato** and **Natalie Jacobs**, Human Resources, and **Keith Gardner**, Public Works, for their assistance in setting up the reception to introduce City Manager Patrick Johnson to community leaders on December 6. Your help was truly appreciated!

Bob Wojcik organizes the volunteer renovation of a low income apartment.

Giving Back to the Community

Bob Wojcik, Community Development, had a great opportunity to "give" this holiday season. In addition to beginning work in the Land Development Division, he planned, organized and worked on the renovation of a low income apartment in Escondido. Acting as the job leader, he directed a group of twelve other volunteers and finished the work in time to get the residents back into their new home for Christmas!

New Employee Classifications

New Hires

Frederic Huddleston
Building Inspector II
Community Development Department

J. Guillermo Landoni
Assistant Engineer
Engineering Department

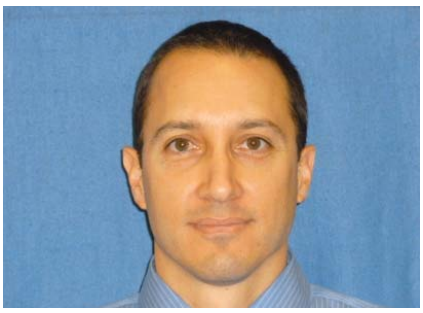

Christopher Winters
Assistant Planner
Community Development Department

New Hires cont'd...

Robert Wojcik
Assistant Engineer
Community Development Department

Promotions

Josh Sino Cruz
Staff Assistant
Public Works Department

Cindy Sanchez
Senior Account Clerk
Public Works Department

Promotions cont'd...

John Conley
Director
Community Development Department
& Engineering Department

Aly Zimmermann
Assistant City Manager
City Manager's Office

CITY OF VISTA
CALIFORNIA

January Birthdays

1	Brandon Montgomery	Fire
4	Jeff Berg	Fire
5	Maureen Cooper	Recreation & Community Svs
6	Justin Golden	Fire
8	Javier Hernandez	Recreation & Community Svs
11	George Solano	Public Works
15	Bryan DiBella	Information Technology
17	Don Blaha	Code Enforcement
17	Hanns Botz	Fire
17	Cynthia Byler	Recreation & Community Svs
17	Brendan Hammes	Fire
18	Al Cuevas	Public Works
18	Rick Delaney	Fire
20	Kyle Kennedy	Fire
26	Robbie Bush	Community Development

February Birthdays

3	J.D. Rubidoux	Public Works
9	Sal Castañeda	Fire
10	Kathy Valdez	City Clerk / Redevelopment
13	Chano Ramos	Fire
14	Joe Napier	Fire
16	Larry Greaves	Public Works
16	Yasmin Royka	Fire
16	Kelcey Sass	Fire
18	Rod Krueger	Public Works
20	Tim Regello	Engineering
21	Robert Luna	Public Works
24	Robbie Ford	Fire
28	Kim Cruz	Redevelopment & Housing

January Years of Service

1	Nixy Flores	Community Development
1	Deb Lopez	Finance
1	James Williams	Fire
3	Abel Santana	Fire
4	Gilbert Obregon	Recreation & Community Svs
4	Maureen Stroud	Recreation & Community Svs
5	Daniel Schultz	Recreation & Community Svs
9	Rachel Beld	Economic Development
9	Aly Zimmermann	City Manager's Office
11	Kevin Ham	Economic Development
11	Walter Hartman	Recreation & Community Svs
11	Eva Stuart	Finance
15	Karen Del Bene	City Attorney's Office
15	Cindy Sanchez	Public Works
18	Steve Nankervis	Public Works
23	Robbie Bush	Community Development
23	J.D. Rubidoux	Public Works
23	Kelcey Sass	Fire
23	Bob Stacey	Fire
25	Tony Tirado	Community Development
26	Ricky Delaney	Fire
26	Jeff Hahn	Fire
26	Joe Napier	Fire

February Years of Service

1	Mary Colonello	Recreation & Community Svs
1	Nick Cunningham	Information Technology
3	Robert Borowski	Information Technology
3	Lyn Dedmon	Public Works
4	Leslie Webb-Blanco	Finance
5	Natalie Livingston	Recreation & Community Svs
7	Chris Mitchell	Information Technology
8	Sal Castañeda	Fire
9	Jason Christman	Community Development
12	Rick Snider	Community Development
13	Santos Callejas	Recreation & Community Svs
14	Sam Craig	Fire
14	George Meyer	Community Development
18	Sonya Cramer	Human Resources

Upcoming Dates

Jan 16	Martin Luther King, Jr. Day City offices closed
Jan 19	"The Mousetrap" begins AVO Playhouse (through Feb. 5)
Feb 20	Presidents' Day City offices closed

CITY OF VISTA CALIFORNIA

Mar | Apr 2012

Spotlight on Vista
Employee Newsletter

Inside This Issue

1 City Manager's Message
2 Kiwanis of the Quarter
3 Benefits Information
4 Save the Dates
5 City News
6 Employee News
7 Promotions & New Hires
8 Birthdays | Service Years

Message from the City Manager

Dear Employees:

As I mentioned in the All Hands meeting in February, we have great employees working for the City. The vast majority of public employees are hard working, honest, and conscientious; yet mistrust of government and public employees is on the rise.

As public workers, our actions and words are often subject to intense public scrutiny. In your travels throughout town, or engaging with the public, assisting at the front counter, or answering a phone call, whatever the interaction may be, keep in mind that everything we do counts. I believe that most Vista residents are satisfied with how their local government is run. I continue to receive positive comments from our residents who have expressed their appreciation about city operations or praised individual employees (for example, a resident sent a thank you letter re: Roger Brenzel's assistance … see page 6).

While we know most public workers do their jobs to the best of their ability – it does affect us when we read the opinionated attacks on public employees or local governments. The following tips may help all of us deal with negative feedback and opinions on public employees:

1. *Don't internalize or personalize attacks. They are attacks on the position or the government institution and not on you personally – and are most likely borne out of broad frustration.*
2. *Maintain perspective. Many times we are only hearing the negative. Don't allow the negative words to poison our work place. Anger feeds anger, and negativity feeds negativity.*
3. *Don't carry a grudge. It's not worth it.*
4. *Learn lessons from negative behavior. Maybe there is a something to be learned. If so, let your supervisor or me know so we can communicate it to the public.*

As the public face of the city, we need to be cognizant of our actions and remain steadfast in representing the City in the highest ethical manner. Thank you for continuing to provide excellent service to each other and to the public, which is not always easy to accomplish during these very lean times.

If you have any questions or comments, please don't hesitate to let me know.

Patrick Johnson

Martha Cleavenger Employee of the Quarter

Kiwanis Employee of the Quarter

The Kiwanis recently honored Martha Cleavenger, Finance, as the City Employee of the First Quarter for 2012. Martha was recognized for her excellent customer service, positive attitude, and her success in training and leading staff in the city's business license and cashiering operations. Characteristics also noted in Martha's selection included her professionalism, availability to help others at all times, high quality of standards, and her awareness of what needs to be done and her "take action" attitude of ensuring it is done accurately and efficiently.

Martha joined the City in 2007 as an Account Clerk and was then promoted to Accounting Technician. The Business License Office handles 8,150 licensed businesses and Martha is the primary person overseeing how those transactions are handled. She is knowledgeable of each cashiering task and trains and leads staff in the process. Martha also pitches in to help wherever needed.

Known for her positive approach with coworkers, Martha's awareness of regulations and procedures necessary for business licensing, as well as for other permitting and licensing, is commendable. Her commitment to training and empowering staff with understanding of procedures enables the Business License Office to operate effectively and with a high level of customer services. Congratulations Martha!

SDG&E Warns Customers About Imposter

SDG&E is alerting customers that a person or persons have recently posed as a SDG&E employee and asked to enter a customer's home. It has been reported the imposter will distract unsuspecting customers while performing "routine inspections," as another imposter burglarizes the home. SDG&E reports all employees carry the proper identification at all times when called out to any customer service job and is warning customers to ensure they verify the employee's proper SDG&E uniform and identification before letting anyone into their home. More information is on line at SDG&E.com/newsroom.

Gardening Tips for the Fast Approaching Spring Season

A message from the Water Quality Protection Program

- Limit the use of pesticides and fertilizers around the home. Avoid using yard chemicals when rain is expected. Lawn chemicals can be hazardous if used improperly. Follow directions on packaging or choose non-toxic alternatives.
- Sweep up yard debris and grass clippings. Recycle yard waste by composting or placing it in a green waste bin for residential waste pickup. Hosing washes sediment and other pollutants into storm drains.
- Adjust sprinklers so that only the lawn and plants are watered. Irrigation water running off of properties carry pollutants into the storm drain and creeks.
- Plant native, drought-tolerant species in your lawn and garden. Native plants adapt to our local climate and need less water and chemicals to thrive.

These tips can help maintain a healthy lawn and garden, while protecting water quality and conserving water. More information is available on the city web site: key word search: Storm Water Tips.

Native plant garden located at Vista Fire Station No. 2.

Employee Information ... *From Human Resources*

Caring for Children's Teeth *From Delta Dental* *[Continuation from Part I Jan/Feb Spotlight]*

Did you know that good dental health helps your child speak and eat properly and develop strong facial bones? Good dental care is vital through the growing years from before birth to the early 20's - and it is essential to teach good habits early.

A healthy diet - Children need a balanced diet to help their bodies, including teeth, develop. Aside from fluoride, calcium is extremely important for strong teeth and to the structure of the face and jaws. Make sure your child drinks plenty of milk and eats other calcium-rich foods, such as yogurt and cheese, which have been shown to inhibit the effects of harmful acids. Discourage snacks that are high in sugar or starch and sticky foods, such as candy.

Preventive care - Pay special attention to your child's teeth during the teen years, when almost all permanent teeth are in. For children under age 14, dental benefits may include coverage for sealants, thin plastic coatings that protect the chewing surfaces of teeth from decay. Decay most often occurs during this time, due to dietary changes and inadequate dental hygiene. Children who play sports should wear mouth guards, available at sports stores or from a dentist.

At-home care - Regular at-home preventive care - brushing and flossing after every meal - can help keep dental problems to a minimum. From age 2, children should begin to brush their own teeth with a parent's help. Use a small, soft brush with a pea-sized amount of toothpaste. After age 8, children can brush and floss alone, with an occasional check by an adult. With a parent's guidance and proper personal and professional care, children have a good foundation for maintaining healthy teeth.

Visiting the dentist - The American Academy of Pediatric Dentistry recommends bringing a child to the dentist before his or her first birthday, followed by visits every six months. To help your child maintain good dental health, make caring for his or her teeth a pleasant experience from the start. Turn visits to the dentist into fun outings by combining them with trips to the park, zoo, movies, or a favorite lunch spot. Avoid using negative words such as "hurt" and "shot," and bring your child with you to the dentist's office, so that he or she becomes comfortable with the staff and atmosphere. Demonstrating a positive attitude toward dental hygiene is one of the best ways to give your child lifelong oral health.

Anthem Blue Cross: Prospective New Parents

Please take note that all newborn babies are covered under the mother's insurance for the first 30 days of life, whether you as the employee, or your spouse, is the mother. Should you choose a pediatrician for your new baby who is not in the same network as the mother's doctor and you take your baby to see that pediatrician in the first 30 days of life (for example, you take your baby to that pediatrician for the baby's one-week check-up), that pediatrician visit will be considered "out of network" and will be processed under the PPO tier of the Anthem Blue Cross Point of Service Plan. This might make you responsible for a $250 deductible if not already met for the calendar year, and 20% of the remaining bill.

This is not usually an issue if the mother's doctor is with a large group such as Scripps or Sharp Rees-Stealy, and you have chosen a pediatrician from the same medical group (Scripps or Sharp Rees-Stealy). It can be an issue if the mother's doctor is a small IPA (independent practice association) office, and you have chosen a pediatrician without getting a referral from/coordinating with that office to ensure the pediatrician is within the same network.

Please talk to the mother's doctor about the pediatrician you have chosen, and whether that pediatrician is in the same physician network. If the pediatrician you have chosen is not within the same physician network, ask how you can have your newborn cared for under your HMO tier of benefits by an in-network pediatrician for the first 30 days of life.

After your newborn is 30 days old, **and** you have properly enrolled him or her onto your Anthem Blue Cross insurance and named a pediatrician for the newborn, that pediatrician becomes the primary care physician for the newborn and care under that pediatrician would be covered under the HMO tier of benefits.

If you still have questions or concerns after consulting with your doctor, please contact Sonya Cramer, Human Resources, at 760.726.1340, ext. 1048.

NEW BABY or NEW SPOUSE? Reminder

If you have a baby, adopt a child, or get married - you have only 30 days to enroll the new family member onto your insurance coverage. Contact Human Resources as soon as possible after the date of the "qualifying event" to obtain the necessary paperwork.

Employee Recognition Event: March 8

What: Employee Recognition Lunch: regular, non-temporary City employees

Where: Morris B. Vance Community Room

When: **Thursday, March 8 (11:30 a.m. to 1:30 p.m.)**

Lunch: Lunch will be provided by Mama's & Papa's Pizza Grotto

Awards: Mayor's Excellence-in- Service Award, Employee of the Year, and City Manager's Award will be announced during the event.

Save the Date: Employee Golf Tournament

What: 2012 Vista Employee Golf Tournament: Foursome best ball scramble

Where: Lake San Marcos Executive Course (South)

When: **Sunday, May 20** (8:30 a.m. shotgun start)

Cost: $36 per person (includes golf cart, green fee, lunch)

Prizes: Raffle prizes, closest to pin (men/women) & longest drive (men/women)

Proceeds: All proceeds go towards Rady's Childrens' Hospital

Contact: Rod Salazar, ext. 1606 or rsalazar@cityofvista.com

Free Document Shredding for Vista Residents

What: Open to Vista residents, paper shredding event

When: **Saturday, March 17** (free)

Time: 9 a.m. to 1 p.m.

Where: Brengle Terrace Park overflow parking lot, 1200 Vale Terrace Drive

Documents are limited to two bankers boxes (10"x12"x15") per household. Electronics such as computer and television monitors, printers, scanners, laptops, fax machines, VCR's, radios, cell phones, and other computer components will also be accepted. The event is sponsored by EDCO and the City.

Creek Clean Up Set For April 28

The Water Quality Protection Program is inviting everyone to volunteer in the local cleanup event set for Saturday, April 28 from 9 a.m. to Noon at Buena Vista Park.

Volunteers are needed to remove trash around Roman Creek, which flows out of the duck pond and through the park and surrounding trails. Contact Kara Mathews, ext. 1331 or kmathews@cityofvista.com for more information. We'd love to see you there!

General Plan | Kudos

Congratulations to John Conley and his team who have spent the last five years updating the Elements of the General Plan, which has not been done in its entirety since 1965. This is an important accomplishment for moving Vista forward and John and his staff are to be commended for their dedicated efforts.

The City Council approved of the General Plan on February 28. Great job John and the Planning Team.

Photo: *Left to right: John Hamilton, Adam Finestone, John Conley, Joan Turley, Patsy Chow and Chris Winters.*

Employee of the Year nominees

Rob Anderson, Recreation

Keith Gemmell, Recreation
**also Mayor's Excellence nominee*

Employee Recognition Event | March 8

Congratulations to the 2011 nominees for the Mayor's Excellence-in-Service Award, Employee of the Year, and City Manager's Award categories. Winners will be announced at the Employee Recognition lunch.

Richard Caldwell, Engineeting

Claire Lopez, City Clerk

Kelsey Sass, Fire

Jan Yelland, Finance

Mayor's Excellence-in-Service Award nominees ...

Estella Muro, Code

Erika Shaw, Code

Sandra Sotola, Engineering

Rita Turnbull, City Clerk

City Manager's Award nominees ...

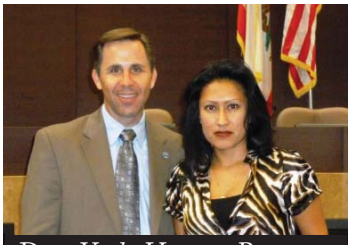

Dora York, Human Resources

Patsy Chow, Community Dev.

Sam Hasenin, Engineering

George Solano, Public Works

Employee News

CWEA Supervisor of the Year | Chris Dzwigalski

Chris Dzwigalski, Public Works Supervisor was honored with the San Diego Section "Supervisor of the Year" award during the California Water Environment Association's (CWEA) ceremony in January. CWEA is an organization dedicated to the professional enhancement and education of wastewater professionals.

Chris is currently in the running for "Supervisor of the Year" for the entire state. This is a highly competitive process and requires visits from the State judging panel. Congratulations to Chris for this notable achievement and best wishes in winning the entire state award.

Resident's Appreciation Letter | Roger Brenzel

Dear Roger,

I was really frustrated having a sewage backup at my residence when I came into the Civic Center. The fact that you took the time to help me work through my frustrations was greatly appreciated. The information you provided gave me the confidence to contact the plumbing company to assist me in locating my sewage line. Being a person in a government agency, I would assume at times you feel unappreciated and bogged down with the mundane. I want to assure you, in my particular situation, the relief obtained by your willingness to assist me was a great aid. Thank you for your help and information.

Jim Hawkins, Vale View Drive

Just Married

Congratulations to **Sam Hasenin**, Engineering, and his wife, Marjan, on their wedding. The wedding celebration took place in downtown San Diego on January 27. Congratulations Sam and Marjan.

Jagger Andrew, 7 lbs. 7 oz.

New Family Members

Jocelyn South and her husband Andy welcomed their first child Jagger Andrew on January 4. He weighed 7 pounds, 7 ounces and was 18.5 inches long.

Timothy Craig, 7 lbs. 1 oz with parents.

Craig Trammell, Public Works Operations Manager and his wife Rissa recently became first-time grandparents. Their daughter Katheryn and her husband Calvin Stockdale are the proud parents of Timothy Craig who is named after his two Grandpas. "TC", as he is affectionately called, was born on Valentine's Day and weighed 7 pounds, 1 ounce and was 19 inches long. Congratulations!

New Employees

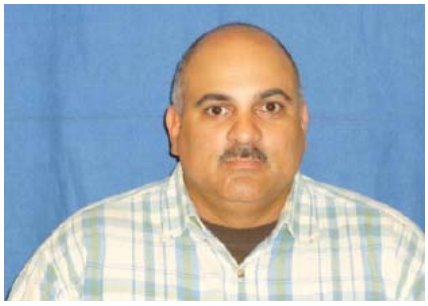

Victor Cruz
Wastewater Worker I
Public Works Department

Blake Dorsey
Wastewater Worker I
Public Works Department

Shawn Fejerang
Wastewater Worker I
Public Works Department

Gregory Gill
Assistant Engineer
Engineering Department

Daniel Guerra
Wastewater Worker I
Public Works Department

Jeffrey Vazzana
Wastewater Worker I
Public Works Department

Upcoming Events

Mar 8	Employee Recognition Lunch: Community Room, 11:30 a.m.
Mar 13	City Council Meeting: Cancelled
Mar 17	St. Patrick's Day Parade & Festival: Downtown Historic Vista, 10 a.m.
Mar 17	Document Shredding Event: Brengle Terrace Park, 9 a.m.
Mar 22	*Beau Jest* opens: AVO Playhouse (runs through Apr 8)
Mar 27	City Council Meeting
Apr 28	Creek Clean Up: Buena Vista Park, 9 a.m.

March Birthdays

1	Frank Durazo	Community Development
1	Ken Shaw	Public Works
5	Leisa Bustanoby	Recreation & Comm Svs
10	Fred Tracey	Recreation & Comm Svs
12	Craig Trammell	Public Works
12	Roxann O'Shaughnessy	Engineering
12	Jon Stone	City Attorney
13	Sandie Hargis	City Attorney
13	Abel Santana	Fire
16	Nixy Flores	Community Development
17	Nancy Gallagher	Human Resources
20	Ryan Snyder	Recreation & Comm Svs
22	Bill Crane	Recreation & Comm Svs
22	Lisa Feeney	Public Works
25	Tony Tirado	Community Development
27	Amy Eustace	Recreation & Comm Svs
28	Claire Lopez	City Clerk
28	Tim Shell	Engineering
29	Bill Fortmueller	Recreation & Comm Svs
30	Jeanette Farris	Finance
31	Adam Finestone	Community Development

April Birthdays

1	Keith Gardner	Public Works
4	Mark Standifird	Fire
5	Louie Sanchez	Public Works
6	Kathy Monroe	Fire
8	Keith Gemmell	Recreation & Comm Svs
13	Troy Hassey	Community Development
13	Deb Lopez	Finance
15	Jeffrey Gazdayka	Fire
15	Maureen Stroud	Recreation & Comm Svs
16	Keith Kaumeyer	Fire
17	Chad Wodarczyk	Public Works
18	Brian Gregson	Fire
19	Daniel Guerra	Public Works
21	David Kennedy	Fire
24	Juan Castro	Public Works
24	Mary Haley	Public Works
25	Grant Valstad	Fire
26	Jamie Osorio	Engineering
27	Michael Madden	Fire
28	Mike Beissel	Fire
28	Mark Lian	Public Works
29	Hans Schmidt	Fire
29	Anthony Van Slyke	Fire
30	Natalie Jacobs	Human Resources

March Years of Service

1	David Beaver	Recreation & Comm Svs
1	Cary Childress	Fire
1	Kyle Kennedy	Fire
3	Steve Belda	Code Enforcement
3	Gregory McClellan	Fire
4	Brien McDonald	Fire
4	Christopher Place	Fire
4	Stephen Rytell	Community Development
4	Raymond Tellechea	Fire
6	Kim Cruz	Redevelopment & Housing
9	Sandra Wolfe	Redevelopment & Housing
10	Cat Cobian	Public Works
10	Brendan Halle	Fire
10	Chris Hammond	Fire
12	Dan Kays	Recreation & Comm Svs
13	Sandy Bobek	IT
14	Nancy Hoffman	Human Resources
15	Al Cuevas	Public Works
22	Mark Gray	Fire
25	Javier DeHaro	Public Works

April Years of Service

1	Joshua Sino Cruz	Public Works
1	Margie White	Recreation & Comm Svs
2	Keith Gardner	Public Works
3	Michael Madden	Fire
4	Sam Hasenin	Engineering
5	Tiffany Luther	Recreation & Comm Svs
9	Kathy Monroe	Fire
11	Dolores Gascon	Human Resources
15	Leisa Bustanoby	Recreation & Comm Svs
16	Diane Collier	Fire
16	Robbie Ford	Fire
22	Jon Blumeyer	Fire
22	Scott Duncan	Fire
22	Mike Easterling	Fire
22	Jim Gelrud	Fire
22	Brian Mentzer	Fire
22	Marty Parish	Fire
22	Richard Tilch	Fire

CITY OF VISTA CALIFORNIA

May | June 2012

Spotlight on Vista
Employee Newsletter

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Message from the City Manager

Dear Employees:

Earning public respect is sometimes difficult, as well as being observed by the public as we go about our daily jobs. Some watch with a critical eye towards how we do business, others with a curiosity on what government employees do, and still others with a hope that on the local level, they will find that employees care and are able to assist them. Gaining the respect of the public is sometimes as simple as following through in our responsibilities and being polite and attentive. While most of our work is routine, to the public, it is not. It is an opportunity for them to shape their opinion about government employees or to confirm or alter their perception about their local government.

These days it is a continuing challenge to conduct our work in the public's eye; however, this defines our role as public workers, and provides us with many opportunities to be seen and acknowledged as the employees we are in Vista – caring, knowledgeable, helpful, and willing to go the extra mile to help others. While our standards are high, thank you for living up to them … I know we have limited resources and it is not always easy to accomplish.

While those outside of our workforce are probably not aware of this – many of our employees take the time to gain new skills, obtain advanced degrees, or go above and beyond. These are not easy tasks to do while working full time; however, a number of employees have done just that … take a look on page 6 to read about those who have taken steps to better themselves. With more than 250 employees working in the city, I know these accolades and achievements are just the tip of the iceberg. Many of you are committed to professional and / or personal development and I think this is a common thread in our workforce – and we are a better organization because of this enthusiasm, initiative, and passion to improve ourselves. This self improvement provides intrinsic benefits to our workplace and has a positive impact on many different aspects of our organization.

In addition to congratulating these individuals, I also want to acknowledge our front counter employees. I have received several comments from the public regarding the outstanding services received at the Planning counter and in the Business License Office. Thanks to all of you for what you're doing and for making a difference in the lives of our Vista residents.

I hope you and your family enjoy the summer and stay safe.

Patrick Johnson

Citywide News

Library Kite Sculpture: Climbing into Adventure

We have a new "Kite" sculpture at the front entrance to the Vista Branch Library. The Friends of the Vista Library matched an anonymous donation for commissioning the "kite" sculpture to welcome patrons at the entrance to the library.

Rick Randall and Jaydon Sterling-Randall were selected for the commission of the sculpture which celebrates children, books, and fun. The sculpture title is *Climbing into Adventure*. The artists' statement reads "As not only artists, but avid readers, the vision for our sculpture was to create a piece of art that would depict how reading brings your imagination to life and takes it on an adventure." The new sculpture is a gift from the Friends of the Vista Library and is a permanent placement. The Sterling-Randall's were also selected in 2010 to display their *Winds of Change* kite sculpture at the corner of Vista Village Drive and Main Street in Vista.

Logo, Graphic Design Standards

from Andrea McCullough, Communications Office

If you are working on a publication with a consultant or producing in-house, please remember to use the correct logo in the O>Communications>Full Access>City Logo>Print folder. If you are unsure which logo to use (jpg or eps file) or have any questions, feel free to e-mail or give me a call. Thanks for all of your help in branding our city, we've been very consistent over the past few years and it shows. I appreciate your efforts!

In addition, if you still have the notice of our Civic Center change of address in your e-mail signature, you can remove it now... thanks.

Civic Art Gallery

From Bill Fortmueller, Assistant Director of Recreation & Community Services

"Visions 2012", the Public Arts Commission's inaugural art exhibit in the Civic Gallery is open for viewing. The gallery is located on the second floor in the lobby outside of the City Council Chambers. The exhibit will run through June 14 and is open to the public during normal City Hall hours.

Housing an Actor This Summer

From Kathy Brombacher, Moonlight Stage Productions

Each summer season, Moonlight Stage Productions hires a number of performers who live outside the San Diego area. We try to provide accommodations in private homes within a reasonable travel distance to the theatre . . . and we need your help housing them. Housing an actor allows the Moonlight to hire the best talent possible, no matter where they live, thus helping to make the magic of theatre happen! A small stipend is provided.

If you are interested in housing an actor, please call the Moonlight Production Office Housing Coordinator Sally Smith at 760.639.6199.

Employee Information ... *From Human Resources*

Urgent Or Emergency Medical Care - Non-Plan or Non-Network Providers

Both the current medical providers for the City's employees, Anthem Blue Cross and Kaiser, require notification should a member receive emergency or urgent care services from a provider (hospital or urgent care facility) not in their network or plan, if the services are to be paid for by the employee's medical insurance (especially at the HMO level of benefits).

Anthem Blue Cross requires you to contact your primary care physician or medical group as soon as possible after the emergency: if you are treated within 20 miles of your medical group or medical group's hospital and/or if you are requesting authorization for medically necessary continued care (this should be done by the person providing the emergency care, but you should check). Your primary care physician may authorize the continued care, or may order an ambulance to transfer you to a specified, in-network hospital. If you are being treated for an emergency more than 20 miles from your primary care physician's office, you must contact Anthem Blue Cross within 48 hours of being admitted into a hospital so that your condition can be monitored and a transfer to an in-network hospital can be made once your condition is stable. The phone numbers for your primary care physician's office and for Anthem Blue Cross Member Services are on your Anthem Blue Cross I.D. card.

Kaiser requires notification if you receive emergency or urgent care services from a non-Kaiser facility as soon as possible. Care beyond actual emergency care must be pre-authorized by Kaiser in order to be paid by Kaiser, including transportation and/or inpatient care at a non-Kaiser hospital, if it is reasonably possible to do so (otherwise, call as soon as reasonably possible). The phone number to be used for authorization for this "Post-Stabilization Care" is on the Kaiser Permanente ID card.

Bottom Line: Contact your primary care physician's office as soon as possible when receiving urgent or emergency care out of network. If you can't do it because of injuries or your condition, a family member should be informed of this reporting criteria and do it for you. Contact should be made within 24 to 48 hours at the very latest, to ensure the charges you have incurred will be paid at the HMO level.

MEDEX® Travel Assist: Going on a Trip Soon?

Did you know that the City of Vista provides a travel assistance program for all benefit eligible employees? The City currently sponsors MEDEX Travel Assist to provide you with information before you travel and assistance during travel. This coverage is available to you and your entire family – including your college age children – and is also extended to retirees who choose to continue their life insurance through the City. Using MEDEX is easy. Simply keep the MEDEX card in your wallet. It contains the phone number for assistance and the City of Vista's group number. MEDEX provides 24 hour customer service and support. For additional information or a wallet card, check with Human Resources or print the flyer or wallet card from: O:\Human Resources and Risk Management\City Read Access\Benefits\MEDEX Travel Assist\MedEX Travel Assist Flyer.pdf.

Security that travels with you ... *Below is information on MEDEX services taken from their flyer:*

MEDEX® Travel Assist helps you cope with emergencies when you travel more than 100 miles from home or internationally for trips of up to 180 days. MEDEX Travel Assist can also help you with non-emergencies, such as planning your trip. You do not have to enroll. As a participant in your employer's Group Life insurance coverage from The Standard, you and your family members are automatically covered. All services are provided by MEDEX Assistance Corporation and are available 24 hours a day, every day.

MEDEX Travel Assist offers the following services:

- Pre-trip Assistance: passport, visa, weather and currency exchange information, health hazards advice & inoculation requirements.
- Medical Assistance Services including locating medical care providers and interpreter services.
- Travel Assistance: emergency ticket, credit card/passport replacement assistance, funds transfer assistance & missing baggage assistance.
- Legal Assistance Services: locating a local attorney, consular officer or bail bond services.
- Emergency Transportation Services including arranging and paying for emergency evacuation to the nearest adequate medical facility and medically-necessary repatriation to the employee's home, including repatriation of remains.
- Personal Security Services including evacuation and logistical arrangements in the event of political unrest, social instability, weather conditions, health or environmental hazards.

VSP Offers Hearing Aid Discount Program

Vision Service Plan (VSP) is currently offering its members deep discounts on some of the most popular digital hearing aids on the market from TruHearing®. TruHearing is a discount medical organization that contracts with a national network of audiologists and hearing instrument specialists for aggressive discounts on state-of-the-art digital hearing aids. If you or a family member (including parents, siblings, etc.) are in need of a hearing aid, go to the VSP website at vsp.com and click on the advertisement "Save Big on Hearing Aids" to find detailed information on the programs offered, and how to make an appointment.

Buena Vista Park Cleanup

From Kara Mathews, Environmental Specialist

The Buena Vista Park Creek Cleanup on April 28 was a big success! In total, 86 volunteers removed over 500 pounds of trash and recyclables from the duck pond, Roman Creek, and the Buena Vista Park trails. Over 100,000 pounds of trash and debris were removed from creeks, beaches, bays, and parks throughout San Diego County as part of the regional Creek to Bay Cleanup. Thanks to all volunteers and city staff for your help!

City Employees SAVE at the WAVE!

From Natalie Livingston, Wave Waterpark Manager

The Wave Waterpark opens Memorial Day weekend. Did you know City employees receive a special admission price and discounts on swim lessons, aqua camps, and other lessons? Check the Summer Recreation Guide (cityofvista.com) or search the classes and programs on the Wave's web site at thewavewaterpark.com. On Sunday, May 20, city employees and their immediate family receive free admission from 1-4 p.m. with a City of Vista ID. Bring the family and cool down at the Wave this summer!

Raffle Ticket Fundraiser: HMLA 369

From Cheryl Mast, City Manager's Office

Don't forget to buy your raffle ticket for the chance to win a brand new Vizio 47" HDTV! The raffle donations support our adopted Marine Unit HMLA 369. The Unit is returning in mid-May and the family members are very excited. Tickets are 1 for $5, or 5 for $20. Purchase tickets from: Renee Bowman (ext. 1406) Civic Center receptionist desk, Lyn Dedmon (ext. 1411) Public Works, or Cheryl Mast (ext. 1419) City Manager's Office. You can pay in cash or by check (payable to *City of Vista*). The raffle drawing will be held during the Vista Employees' Golf Tournament on May 20. (Winner does not need to be present to win.) Last day to purchase tickets citywide is May 17. Tickets can also be purchased on the day of the golf tournament. *Thank you for your support of our marines and their families! They appreciate our support very much.*

Annual Firefighters Golf Tournament: June 15

From Captain Rick Delaney

The Oceanside-Vista Annual Firefighters Golf Tournament committee is seeking assistance in sponsorship (Gold, Blue, White) or donations for their golf tournament's raffle/auction events. Proceeds from the tournament go mainly to the Wounded Warrior Project, as well as the two participating firefighters charity funds. Thank you in advance for your support. Contacts: Rick Delaney, Vista Firefighters Local #4107 (760.458.0209) Bryan Howell, Oceanside Firefighters Local #3736 (760.243.9630).

Got Used Motor Oil? Recycle It

A message from the Water Quality Protection Program

Are you a do-it-yourselfer when it comes to automotive maintenance? If so, you can recycle your used oil and oil filters at the upcoming *Used Oil Filter Exchange* event on **Saturday, June 9 (10 am to 2 pm) at O'Reilly Auto Parts, 1250 S. Santa Fe Drive.** Vista residents can bring their used oil filters and exchange them for a **free new oil filter** of their choice. Motor oil is a major source of contamination in waterways, sticking to sand, plants, and animals. Recycling motor oil helps keep our water clean. Used oil and used oil filters can be recycled for FREE at the following locations year-round:

Used Oil Collection Centers in Vista

Facility Name	Location	Phone	Accepts Used Oil?	Accepts Used Oil Filters?
AutoZone #2819	1410 N. Santa Fe Ave	(760) 806-9784	√	√
AutoZone #5679	573 W. Vista Way	(760) 941-8885	√	√
BMW of Vista	1715 Hacienda Drive	(760) 208-2350	√	√
Express Tire	2030 Hacienda Drive	(760) 941-7555	√	
EZ Lube #88	786 E. Vista Way	(714) 585-6419	√	
Firestone Complete Auto Care	1762 University Drive	(760) 941-4313	√	
Jiffy Lube #0432	1213 E. Vista Way	(760) 758-4400	√	
North County Ford	450 W. Vista Way	(760) 945-9900	√	
North County Import Specialist	1215 N. Melrose Drive, Suite A	(760) 945-0266	√	
O'Reilly Autoparts #1192	1220 E. Vista Way	(760) 639-0095	√	
O'Reilly Autoparts #4191	1250 S. Santa Fe Ave, Suite A-D	(760) 630-4342	√	
Pep Boys Store # 1410	865 E. Vista Way	(215) 430-9017	√	
Santa Fe Auto Repair	1045 N. Santa Fe Ave	(760) 945-4264	√	
Valvoline Instant Oil Change	243 Sycamore Ave	(858) 273-8539	√	
Valvoline Instant Oil Change	786 E. Vista Way	(760) 941-4004	√	√
Vista HHW Collection Facility	1145 E. Taylor St	1-800-714-1195	√	√
It is advisable to call before taking oil to any of the listed centers.				

Employee News

2011 State Supervisor of the Year, Chris Dzwigalski

Ashford University graduate, Clarence Rich

Certified Inspector, Temujin Matsubara

Abigail Rose, 8 lbs. 8 oz.

State Supervisor of the Year

Congratulations to **Chris Dzwigalski,** Public Works Supervisor who was honored in January with the California Water Environment Association's (CWEA) San Diego Section "Supervisor of the Year" award. In April, Chris was selected as CWEA's recipient of the top award - the **State Supervisor of the Year**. This was a highly competitive process and required visits from the State judging panel. Congratulations to Chris for this notable achievement!

Businesses' Appreciation | Zodiac Pools | Mother Earth

Dear Kevin Ham,

Zodiac Pools (Phase 1) plans for which we had a due diligence meeting with you and your team a few weeks ago have been approved for a permit. Your team of city officials which include: **Rick Snider** (Building), **Mike Kratz** (Building), and **Mark Vierow** (Fire), have been extremely helpful through the plan review process. On behalf of H. Hendy Associates, I would like to thank all of you for your efforts.

Sonaly Dudheker, HHA

Dear Patrick & Jeanette,

The owner of Mother Earth Brewing Company (Daniel Love) called to tell me that **Martha Cleavenger** (Finance) was **very** helpful with questions and helped him understand how to go about filling out the cabaret license form. Great job Martha!

Kevin Ham, Economic Development

Graduation Honors

Clarence Rich graduated on April 9 from Ashford University. He received a Bachelors Degree in Organizational Management. Congratulations Clarence on your degree!

Recreation Certification

by Rod Krueger, Public Works Supervisor

Temujin Matsubara (Public Works) has passed rigorous testing requirements and has received certification as a *Certified Playground Safety Inspector* by the National Recreation and Park Association. The certification required two full days of class instruction followed by an 8 hour national standards exam. This professional achievement provides a real benefit to the city and makes Tem a more valuable employee. Congratulations Temujin!

New Family Member

Bob Wojcik, Community Development, became a grandfather for the third time on March 6 when his granddaughter, Abigail Rose L'Heureux was born. Daughter, Allison, and husband Eric, who have both worked at the Avo Playhouse and Moonlight Amphitheatre, are doing well. Abigail Rose weighed 8 pounds, 8 ounces and was 19.5 inches long.

New Employees

David Hernandez
Wastewater Worker I
Public Works Department

John Meyer
Director
Redevelopment & Housing

Joe Riojas, Jr.
Wastewater Worker I
Public Works Department

Promotions

Kim Cruz
Right of Way Agent
Engineering Department

Chris Mitchell
IT Manager
City Manager / Information Technology

CITY OF VISTA
CALIFORNIA

Upcoming Events

May 8	City Council Meeting
May 20	Employee Day at the Wave
May 22	City Council Meeting
May 26	Wave Waterpark Opens
May 27	Strawberry Festival, downtown
May 28	City Offices Closed on Memorial Day
June 27	Moonlight Opens Summer Season with *Legally Blonde*
June 27	Taste of Vista, downtown

May Birthdays

2	Robert Borowski	City Manager / Info Technolgy
2	Gregory McClellan	Fire
3	Justin Hall	Recreation & Comm Svs
5	Frederic Huddleston	Community Development
5	Joe Lopez	Public Works
5	Joan Turley	Community Development
7	Christopher Jones	Fire
8	Doug Coppi	Engineering
9	Jared Tucker	Fire
11	Jon Blumeyer	Fire
12	Jake Shumate	Fire
13	Brian MacFadyen	Public Works
17	Renee Bowman	City Manager's Office
17	Dale Nielsen	Finance
20	Maia Hodge	Recreation & Comm Svs
20	Mike Kratz	Community Development
24	James Williams	Fire
25	Pedro Magadan	Public Works
26	Michael Slaughter	Recreation & Comm Svs
28	David Beaver	Recreation & Comm Svs
29	Cecilia Barandiaran	Redevelopment & Housing

June Birthdays

3	Lyn Dedmon	Public Works
3	Susan Perciavalle-Brundu	Engineering
3	Guillermo Landoni	Engineering
5	Eydee Amato	Human Resources
5	Eddie Jimenez	Fire
6	Gregory Gill	Engineering
7	Daniel Alvarado	Human Resources
8	John Reed	Public Works
10	Santos Callejas	Recreation & Comm Svs
11	Matt McComas	Fire
11	Andrew Valenta	Fire
12	Temujin Matsubara	Public Works
16	Joshua Sino Cruz	Public Works
16	Victor Cruz	Public Works
17	Brendan Halle	Fire
18	Susan Haynes	Public Works
19	Tracy Harrison	Finance
20	Karen Del Bene	City Attorney
23	Miles Sweeney	Fire
24	Michael Rigali	Fire
26	Greg Mayer	Community Development
29	Erika Shaw	City Manager / Code
30	John Hamilton	Community Development

May Years of Service

2	Juan Castro	Public Works
2	Natalie Jacobs	Human Resources
2	Pedro Magadan	Public Works
4	Doug Coppi	Engineering
5	Luis Hernandez	Public Works
5	Robert Luna	Public Works
5	Tim Regello	Engineering
5	Christian Sherrard	Public Works
6	Patsy Chow	Community Development
6	Troy Hassey	Community Development
6	James Salsbury	City Manager / Info Technology
7	Daniel Alvarado	Human Resources
9	Mike Sweeney	Fire
9	Grant Valstad	Fire
10	Kim Crawford	Recreation & Comm Svs
10	Ryan Snyder	Recreation & Comm Svs
11	Rita Turnbull	City Clerk
11	Joan Turley	Community Development
14	Barb Cooley	Recreation & Comm Svs
14	Javier Hernandez	Recreation & Comm Svs
24	Clarence Rich	City Manager / Code
34	Jeanette Farris	Finance

June Years of Service

1	Hans Schmidt	Fire
3	Michael Slaughter	Recreation & Comm Svs
5	Claire Lopez	City Clerk
6	John Reed	Public Works
7	Nancy Gallagher	Human Resources
9	Roxann O'Shaughnessy	Engineering
12	Gerardo Oliveros	Public Works
14	Joe Lopez	Public Works
15	Dora York	Human Resources
21	Bill Fortmueller	Recreation & Comm Svs
23	Dave Wilson	City Manager / Code
25	Dale Nielsen	Finance

APPENDIX G-2
HOUSEHOLD HAZARDOUS WASTE AND USED OIL PROGRAM OUTREACH MATERIALS

Household Hazardous Waste

does not belong in the trash or down drains.

Hazardous materials need to be kept separate from your recycling and garbage. Products that have words: *Caution, Warning*, or *Danger* require special care and cannot be discarded with regular household garbage.

Please bring these items in their original labeled containers to the North County Household Hazardous Waste Facility in Vista from 9 a.m. to 3 p.m. on Saturdays.

accepted items

- Household cleaners: wood/metal polish cleaners, disinfectants
- Oil/fuel additives, solvents, other automotive cleaners, fluids, air conditioning refrigerants, waxes, polishes
- Paint thinners & strippers, adhesives, paints, stains, varnishes, sealants, wood preservatives
- Pesticides, herbicides, fungicides.
- Miscellaneous: batteries, pool & photo chemicals
- Home-generated sharps
- Fluorescent light bulbs
- E-waste: computers, televisions, toaster ovens, etc.

location | contact | hours

- 1145 E. Taylor Street, Vista CA 92084
- (800) 714-1195
- 9 a.m. - 3 p.m. Saturdays *except holidays
- No appointment necessary

facility | use

- Drive through the facility.
- Staff will unload your vehicle.
- Free to residents of Vista and member cities of Carlsbad, Encinitas, Escondido, Solana Beach & San Marcos.
- Proof of residency required.

CITY OF VISTA
CALIFORNIA

Vista is a member of the North County Household Hazardous Waste Facility serving member cities in San Diego County

Los Deshechos Domesticos Peligrosos

Su lugar no es en el basurero ni en el sumidero

Los materiales peligrosos necesitan mantenerse separados de la basura y de los productos reciclables. Los productos que tiene indicaciones tales como: Precaución, advertencia o peligro requieren cuidado especial y no pueden ser desechados con la basura regular de la vivienda.

Por favor traiga estos productos en su envase original rotulado a las instalaciones de desechos peligrosos (North County Household Hazardous Waste Facility) en Vista los sábados de 9 a.m. a 3 p.m.

productos aceptados

- Productos de limpieza: Productos de limpieza/pulir de madera y metales, desinfectantes
- Aditivos para combustibles y aceites, solventes, otros limpiadores de automóviles, líquidos, refrigerantes de aire acondicionado, ceras, lustradores
- Tíner y decapante, adhesivos, pinturas, tintes, barnices, selladores, conservante de madera.
- Pesticidas, herbicidas, fungicidas.
- Misceláneos: Baterías/pilas, químicos para piscinas y cámaras fotográficas.
- Objetos punzantes/cortantes (posiblemente contaminados) de uso en el hogar
- Bombillas de luz fluorescente
- Basura electrónica : televisiones, tostadores, hornos, etc.

ubicación | contacto | horario

- 1145 E. Taylor Street, Vista CA 92084
- (800) 714-1195
- Sábado (con excepción de los días festivos) de 9 a.m.-3 p.m.
- No appointment necessary

instalaciones | uso

- Entre su vehículo a las instalaciones.
- Miembros del personal descargarán el vehículo.
- El servicio es gratuito para los residentes de Vista y de las ciudades asociadas de Carlsbad, Encinitas, Escondido, Solano Beach y San Marcos.
- Se requiere un comprobante de domicilio

CITY OF VISTA
CALIFORNIA

A Clean Environment is Important to all of us!

Did you know that storm drains are NOT connected to sanitary sewer systems and treatment plants? The primary purpose of storm drains is to carry rainwater away from developed areas to prevent flooding. Untreated stormwater and the pollutants it carries, flow directly into creeks, lagoons, and the ocean.

In recent years sources of water pollution, like industrial waters from factories, have been greatly reduced. However, many sources such as cars leaking oil; fertilizer from farms, lawns and gardens; failing septic tanks; pet waste; and residential car washing release pollutants into the storm drains and into the ocean and waterways.

All these sources add up to a pollution problem; however, each of us can take small steps to help clean up our water... and that adds up to pollution solutions!

Look on the Internet

- Recycling Centers: calrecycle.ca.gov/usedoil
- Project Clean Water: projectcleanwater.org
- Think Blue San Diego Region: thinkbluesdregion.org
- City of Vista: cityofvista.com

think BLUE SAN DIEGO REGION

project clean water

RECYCLE USED OIL

Used Oil Collection Centers

City of Vista Household Hazardous Waste Facility
**proof of residency required.* 800.714.1195
1145 East Taylor Street. Open Saturdays: 9 am to 3 pm.

- AutoZone #2819
  1410 N. Santa Fe Avenue 760.806-9784 *
- AutoZone #5679
  573 W. Vista Way 760.941.8885 *
- BMW of Vista
  1715 Hacienda Drive 760.208.2350 *
- Express Tire
  2030 Hacienda Drive 760.941.7555
- Firestone Complete Auto Care
  1762 University Drive 760.941.4313
- Jiffy Lube #0432
  1213 E. Vista Way 760.758.4400
- North County Ford
  450 W. Vista Way 760.945.9900
- North County Import Specialist
  1215 N. Melrose Drive 760.945.0266
- O'Reilly Auto Parts #1192
  1220 E. Vista Way 760.639.0095
- O'Reilly Auto Parts #4191
  1250 S. Santa Fe Avenue 760.630.4342
- Pep Boys Store # 1410
  865 E. Vista Way 215.430.9017
- Santa Fe Auto
  1045 N. Santa Fe Avenue 760. 945.4264
- Valvoline Instant Oil Change
  243 Sycamore Avenue 858. 273.8539
- Valvoline Instant Oil Change
  786 E. Vista Way 760.941.4004 *

* *Acccepts used oil filters as well as used oil*

CITY OF VISTA
CALIFORNIA
200 Civic Center Drive, Vista, CA 92084
Water Quality Protection Program
waterquality@cityofvista.com | 760.639.6111
Hotline: 760.726.1340 ext. 1686

This publication is available in an alternate format.
Please contact the ADA Coordinator at 760.639.6145.

CITY OF VISTA
CALIFORNIA

MOTOR OIL

Only Rain in the Storm Drain!

Water Quality Protection Program
cityofvista.com

What is the Problem with Motor Oil?

Oil does not dissolve in water. It lasts a long time and sticks to everything from beach sand to bird feathers. Oil and other petroleum products are toxic to people, wildlife, and plants.

One pint of oil can make an oil slick larger than a football field. Oil that leaks from our cars onto roads and driveways is washed into storm drains, and then usually flows directly to a creek or lagoon and finally into the ocean.

Used motor oil is the largest single source of oil pollution in our ocean, creeks and lagoons. Americans spill 180 million gallons of used oil each year into our waters. This is 16 times the amount spilled by the Exxon Valdez in Alaska.

How Can You Help Keep Our Environment Clean?

Having a clean environment is of primary importance for our health and economy. Clean waterways provide commercial opportunities, recreation, fish habitat and add beauty to our landscape.

You can help keep our ocean, creeks, and lagoons clean by applying the following tips:

- Stop drips. Check for oil leaks regularly and fix them promptly. Keep your car tuned to reduce oil use.
- Use ground cloths or drip pans beneath the vehicle if there are leaks or you are working on the engine.
- Clean up spills immediately. Collect all used oil in containers with tight fitting lids. Do not mix different engine fluids.
- When you change your oil, dispose of it properly. Never dispose of oil or other engine fluids down the storm drain, on the ground, or into a ditch.
- Recycle used motor oil. Check the list on the back of this flyer for locations in Vista that accept used motor oil.
- Buy recycled “refined” motor oil to use in cars.

CITY OF VISTA

Contact Information

Report Illegal Dumping

- City of Vista Stormwater Hotline
  760.726.1340 x1686
- City of Vista Public Works
  760.639.6176
- County Stormwater Hotline
  888.846.0800

Report Sewer Spills

City of Vista Public Works: 760.639.6176

City of Vista Household Hazardous Waste Facility

Waste Disposal
800.714.1195 | 1145 East Taylor Street, Vista
Open Saturdays 9 am to 3 pm
Proof of residency required.

EDCO Waste & Recycling

760.727.1600

¡Un medio ambiente limpio es importante para todos!

¿Sabía usted que el sistema de alcantarillado pluvial NO forma parte del sistema de tratamiento de aguas negras? El principal propósito del alcantarillado es llevar el agua de las lluvias fuera del área las zonas urbanizadas para prevenir posibles inundaciones. El agua pluvial no tratada y los contaminantes que corren por los alcantarillados van directamente a los riachuelos, las lagunas y los océanos.

En años recientes, las fuentes de contaminación de las aguas, como las aguas industriales de las fábricas, han sido reducidas considerablemente. No obstante, actualmente la mayor contaminación del agua resulta de cosas como la pérdida de aceite de los carros, los fertilizantes de las granjas, céspedes y jardines, fallas en los tanques sépticos, los excrementos de los animales domésticos y el lavado de los carros en los hogares que van a dar a los alcantarillados, a los océanos y a las vías fluviales.

¡Todas estas fuentes se suman al problema de la contaminación! Pero cada uno de nosotros puede hacer pequeñas cosas para limpiar nuestras aguas y contribuir a la solución de la contaminación.

Busque en el Internet

- Centros de reciclaje de aceite usado: calrecycle.ca.gov/usedoil/
- Administración integral de plagas: ipm.ucdavis.edu
- Junta de control de recursos estatales de agua: swrcb.ca.gov/water_issues/
- Proyecto agua limpia: projecleanwater.org
- San Diego Think Blue: thinkbluesd.com

¿A Quén Contactar?

Para denunciar vertederos ilegales

- Departamento municipal de ingeniería City of Vista: Engineering (760) 726-1340
- Oficina municipal de obras públicas City of Vista: Public Works (760) 639-6176
- Línea de acceso directo a la oficina de aguas pluviales del condado County Stormwater Hotline: (888) 846-0800

Para reportar derrames en el sistema cloacal municipal Oficina municipal de obras públicas City of Vista: Public Works (760) 639-6176

Para reportar el desborde de alguna cloaca privada Llame a un plomero! Después informe a Departamento municipal de ingeniería City Vista Engineering Department (760) 726-1340 o, después de horas de oficina al (858) 756-3006

Sitios municipales donde tirar desechos. Sitio municipal para desechos peligrosos City of Vista Household Hazardous Waste Facility
(800) 714-1195 | 1145 East Taylor Street, Vista
Abierto los sábados de 9:00 am a 3:00 pm

Reciclaje EDCO Waste & Recycling
(760) 727-1600

CITY OF VISTA
CALIFORNIA

200 Civic Center Drive, Vista, CA 92084
Programa de protección del agua *Water Quality Protection Program*
waterquality@cityofvista.com | 760.639.6111
Línea de acceso directo (*hotline*)
760.726.1360 ext. 1686

This publication is available in an alternate format.
Please contact the ADA Coordinator at 760.639.6145.

CITY OF VISTA
CALIFORNIA

ACEITE DE MOTOR

¡Sólo lluvia en los alcantarillados!

Programa de Protección del Agua

cityofvista.com

¿Cuál es el problema con aceite de motor?

El aceite no se disuelve en el agua. Dura por mucho tiempo y se pega a todo, desde la arena de la playa hasta las plumas de las aves. El aceite y otros productos derivados del petróleo son tóxicos para las personas, la vida silvestre y las plantas.

Una pinta de aceite puede producir una marea negra más grande que un campo de fútbol americano. Las pérdidas de aceite de los automóviles que caen en las calles o en las entradas de vehículos de las casas van a dar a los alcantarillados que generalmente corren directamente hacia los riachuelos o lagunas y finalmente al océano.

El aceite de motor usado es la mayor fuente de contaminación de nuestro océano, riachuelos y lagunas. Los norteamericanos derramamos en nuestras aguas 180 millones de galones de aceite usado cada año. Esto equivale a 16 veces la cantidad derramado por Exxon Valdez en Alaska.

CITY OF VISTA
Water Quality Protection Program

¿Cómo puedo ayudar para mantener limpio nuestro medio ambiente?

Contar con un medio ambiente limpio es de vital importancia para nuestra salud y nuestra economía.

Las vías fluviales limpias ofrecen oportunidades comerciales, de recreación, de hábitat para los peces y belleza a nuestro paisaje natural.

Usted puede ayudar a mantener limpio nuestro océano, riachuelos y lagunas poniendo en práctica los siguientes consejos:

- Detenga el goteo. Revise su vehículo regularmente por posibles derrames de aceite y repárelos de inmediato. Mantenga su carro afinado para reducir el uso de aceite.
- Utilice trapos gruesos o recolectores de aceite debajo de su vehículo si tiene fugas o está realizando un trabajo al motor.
- Limpie de inmediato los derrames y goteos. Recoja todo el aceite usado en envases con tapas apretadas y adecuadas. No mezcle diferentes fluidos del motor.
- Cuando cambie el aceite de su automóvil, disponga de él en forma correcta. Nunca deseche el aceite o cualquier otro fluido del motor dentro del alcantarillado, en la tierra o en las cunetas.

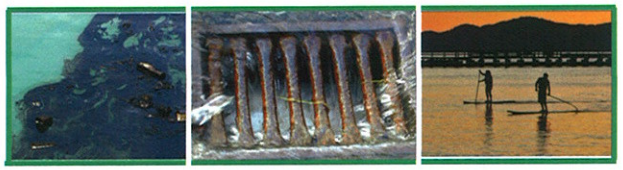

Reciclaje de aceite de motor usado.
City of Vista Household Hazardous Waste Facility
(800) 714-1195
Abierto los sábados de 9:00am a 3:00pm
1145 East Taylor Street, Vista

Compre aceite de motor reciclado (refinado) para utilizar en su carro.

¡Sólo lluvia en los lcantarillados!

96"
30"
28 1/2"
www.wastefreesd.org
CITY OF VISTA
CALIFORNIA
Recycle
Recicle
Used Motor Oil & Oil Filters
Aceite Usado De Motor y Filtros Usados
RECYCLE USED OIL

Banner for Vista Village Drive

APPENDIX G-3
CITY NEWS NEWSLETTERS
AND REC GUIDES

cityofvista.com

City of Vista Publication | Summer 2011

citynews

CITY OF VISTA
CALIFORNIA

Wave Waterpark
North County's Coolest Hot Spot 03

Mural Depicts Landmarks
New Artwork in Vista 04

Vista Street Lights
Light Assessment District 06

Cities Partner on Projects
Road Improvements 07

Emergency Preparedness
Preparing for Disaster 08

CITY DEPARTMENTS AND SERVICES

Abandoned Vehicles	760-639-6141
Affordable Housing	760-639-6191
Avo Playhouse Tickets	760-724-2110
Brengle Terrace Rec Center	760-639-6156
Building Permits	760-639-6105
Building Inspections	760-639-6106
Business License	760-639-6174
City Clerk	760-639-6125
City Council	760-639-6130
City Hall	760-726-1340
City Manager	760-639-6131
Code Enforcement	760-639-6141
Dead Animal Pickup	760-757-4357
Development Services	760-639-6108
Economic Development	760-639-6165
Engineering	760-639-6111
Finance	760-639-6170
Fire Department (Non-emergency)	760-643-2801
Graffiti Hotline	760-726-1340 x 1611
Housing	760-639-6191
Human Resources	760-639-6145
Job Hotline	760-639-6147
Library (County's Vista branch)	760-643-5100
Mayor	760-639-6130
Moonlight Amphitheatre Tickets	760-724-2110
Parking Tickets/Citations	760-639-6141
Planning	760-639-6100
Potholes	760-726-1340 x 1611
Public Works	760-639-6176
Rancho Buena Vista Adobe	760-639-6164
Recreation Classes & Programs	760-639-6151
Redevelopment	760-639-6191
Senior Center (Gloria E. McClellan)	760-639-6160
Sewer Billing	760-639-6170
Sheriff (Non-emergency)	760-940-4551
Stormwater Hotline	760-726-1340 x 1686
Street Lights	760-639-6176
Street Sweeping	760-726-1340 x 1606
Traffic Engineering	760-639-6116
Vistix Ticket Office	760-724-2110
Wave Waterpark	760-940-9283

OTHER SERVICES

Alta Vista Gardens	760-945-3954
Animal Control (Human Society)	760-757-4357
Boys & Girls Club	760-724-6606
Certificates (Birth, Death, Marriage)	760-940-6868
Chamber of Commerce	760-726-1122
Farmer's Market	760-945-7425
Household Hazardous Waste Disposal	800-714-1195
Lifeline Community Services	760-726-4900
North County Health Services	760-757-4566
Public Transportation (Sprinter, Breeze)	760-966-6500
Recycling Service	760-727-1600
Townsite Community Center	760-806-8980
Trash Service (EDCO)	760-727-1600
Vista Community Clinic	760-631-5000
Vista Unified School District	760-726-2170
Vista Village Business Association	760-414-9391
Vista Historical Society Museum	760-630-0444
Water Service (Vista Irrigation District)	760-597-3100

DIAL 911 For Fire, Sheriff & Medical Emergencies

City of Vista Publication | **Summer 2011**

citynews

highlights

citynews

Catch the Wave this summer 03
New Mural Along Sprinter Rail 04
Summer Safety Tips 05
Lighting Maintenance District 06
Cities Partner on Road Project 07
Preparing for Disaster 08

City news is published by the City of Vista three times a year.

Editor: Andrea McCullough
Design: Drop Dead Design

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200 Civic Center Drive, Vista CA 92084

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find us on facebook

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Second and fourth Tuesday of each month at 5:30 p.m. in the Council Chambers.

Meetings are cablecast on the Friday after each meeting at 5 p.m. on Cox Communications Channel 19, Time Warner Cable Channel 24 and AT&T U-verse Channel 99. Archived webcasts are available online at cityofvista.com.

Catch the Wave **this Summer**

Catch the wave at North County's coolest hot spot this summer: the Wave Waterpark, located in Vista Village. Owned and operated by the City of Vista, The Wave provides the perfect aquatic fun for the whole family during the sun-soaked days of summer.

Fun seekers will enjoy the four 35-foot water slides; the popular Flow Rider (surf on a continuous wave), and *El Rio Loco* or *The Crazy River*. Children (under 48 feet) can take advantage of the playground attraction - Rippity's Rainforest where young thrill-seekers can climb through a four story play structure and enjoy the water spray area.

The park also includes a competition swimming pool with a shallow and deep end - perfect for lap swimming or swim lessons. The Wave Waterpark will be open to the public daily beginning May 28 through Labor Day. Season passes are on sale now.

Swim Lessons: Lessons for ages 6 months to adults - April through October.

Summer Camps: Children ages 7-15 yrs old. The Wave combines exciting themes with important learning topics for a week of challenging fun.

- Aqua Camps (7-15 yrs) – Boot Camp / Superheroes / Pirates
- Water Sports Camp (7-15 yrs)
- Jr. Lifeguards (10-15 yrs)
- Counselor-in-training (12-15 yrs)

CPR, First Aid & AED Certification: Learn what to do in the event of an emergency. Classes offered monthly.

Birthday Parties: Host a memorable birthday party! The Wave provides party packages with a variety of options to make your birthday party the best.

Scout Badge Programs: The Wave offers a fun and exciting opportunity for scouts or a troop to earn a badge in Water Safety, First Aid, Swimming or Water Fun. Earn your badge through an educational program and then enjoy the rest of the day in the waterpark.

thewavewaterpark.com

The Wave Waterpark is open May 28, 2011 through Labor Day.
Learn more about season passes, classes, operating hours and the fee schedule.
760.940.WAVE (9283)
101 Wave Drive in Vista.

New Mural Along SPRINTER Tracks

Los Angeles based artist Daniel Martinez's 68-foot mural will soon be displayed along a stretch of wall near the Mar Vista Drive crossing by South Santa Fe Avenue. Martinez was one of eight artists who submitted designs to paint the mural, which will cover a block of wall along the SPRINTER tracks that has had problems with graffiti.

The mural depicts iconic landmarks in Vista, such as the Wave Waterpark, Moonlight Amphitheatre, Krikorian Multiplex Movie Theater, Avo Playhouse, Boomers, and the Rancho Guajome Adobe. Martinez, who has roots in North County, spent the past three months working on the project. Colorful purples, blues, yellows and orange shades of acrylic paint were used in the mural, Martinez said, to reflect Vista as an active and energetic city. In the next two months, ten aluminum panels - each 10 feet by 4 feet and coated with anti-graffiti coating - will be mounted along the walls near the SPRINTER tracks.

The City of Vista received a $10,000 grant from San Diego Gas & Electric Company to commission the artwork. The City's Public Arts Commission selected Martinez's design in October, 2010 because the mural incorporated Vista locations and created vibrant artwork that follows the height changes in the SPRINTER wall where it will be mounted.

An added anti-graffiti coating will allow the mural to be cleaned if it is painted with graffiti by vandals. The new art is the 25th in Vista's mural inventory and is part of the City's effort to eradicate graffiti across the city. ■

Report Potholes ... Graffiti

To report a pothole or graffiti, please call Public Works Department at 760.639.6176 (evenings & weekends: 760.726.1340 ext. 1611). Include your name, daytime phone number and location of the pothole or graffiti (either address or general description).

Safety Tips

For your home

The kids will be getting out of school soon and the days will be getting longer. Before you pack up the family and head out of town – check to ensure your house will remain safe while you are away enjoying summertime excursions.

1. Keep quiet. Be cautious of who you tell about your departure. Tell a trusted neighbor, but not the whole neighborhood. This includes not posting your plans on social networking sites like Facebook.
2. Just in Time. Fake potential burglars into thinking you are home. Hook a timer up to lights, televisions and radios. This will throw off the fact that there isn't anyone home.
3. Lock it Up. Make sure everything is locked securely. Double check windows, garage doors, and any niches someone might get into. Windows left open for ventilation, especially during warmer weather, offer an invitation to would-be burglars. All windows should be closed completely and locked to ensure maximum security.
4. Ask a trusted neighbor to collect mail (including packages) and newspapers. If you will be gone for more than a few days, request that he/she put your trash and recycle bins out on collection day.
5 Safe Keeping. Keep valuables and important documents in a safe deposit box. Consider keeping a video diary of your belongings.
6. Vacation Check Request. Contact the Sheriff's Station Senior Volunteer Patrol for a vacation home check at 760.940.4434. ■

Prescription Drug Drop-off

Vista Detention Center

Unwanted, unused or expired prescription drugs are a risk to our community by either falling into the wrong hands, or by damaging our environment through improper disposal. Residents can now drop off unwanted medications at any time at secure collection drop-off boxes set up by the San Diego County Sheriff's Department. The drop-boxes are located at several Sheriff's facilities.

Medications in standard containers may be dropped in the containers. Loose medication should be placed in plastic bags available at the collection box and then deposited. Liquid medication should be enclosed in a secure container before depositing. Once collected, the Sheriff's Department staff will ensure the medication is disposed of according to State and Federal laws. ■

Vista Prescription Drop-Off Site
Vista Detention Facility
325 S. Melrose Drive

sdsheriff.net or 760.940.4551

Volunteers Needed

Sheriff's Senior Patrol

The Vista Sheriff's Senior Patrol program provides a valuable service in the Vista community that not only enhances the safety in Vista's neighborhoods, but also improves the quality of life for home-bound seniors. Vista residents can contact the Senior Patrol program for vacation home security checks or to schedule a drop in to check on elderly or disabled persons.

The program is currently recruiting volunteers who are 50 years or older. Responsibilities range from administrative work, to patrolling neighborhoods, writing parking citations, and marking abandoned vehicles. ■

For more information on volunteering with the Sheriff's Department, or to learn about the available services provided to the community, please call 760. 940.4434.

Document Shredding Event

Sat. May 28
from 9 a.m. to Noon
Brengle Terrace Park
(parking lot)

The City of Vista, in partnership with EDCO Disposal, Vista's contracted waste hauler, is holding a document shredding event at Brengle Terrace Park. Residents and commercial businesses may bring a maximum of two banker's boxes of documents to the event for shredding.

cityofvista.com 760.727.1600

Fast Facts: Vista Street Lights

- The street light district generates $1 million per year.
- Costs to operate the District exceed $1.3 million per year.
- Increase in fee for residential property owners is estimated to be $4 to $20 per year.
- If property owners are unwilling to support a fee increase, two thirds of the street lights will be turned off beginning in June, 2011. Many street lights will be turned off on residential streets.
- Most street lights along the City's major roadways will remain on, i.e. Melrose Drive, Sycamore Avenue, Vista Village Drive, and Vista Way.

New Driver's Class Help Stop Teen Drinking & Driving

The Vista San Diego Sheriff's Department is holding Start Smart classes for new drivers and their parents. The Start Smart program provides participants the opportunity to understand their responsibilities when a teen begins driving. The two-hour class, taught by the Sheriff's Department staff creates awareness of possible consequences, both financial and physical, of distracted or impaired driving, and provides information about collision prevention.

Vista Sheriff's Station
760.940.4551 or
sdsheriff.net

Vista Street Lights

CHECK YOUR MAIL FOR MORE INFORMATION

The City of Vista's lighting assessment district funds the operation and maintenance of Vista's street lights. Property owners pay an annual assessment fee on their property tax bill for this benefit. Vista is facing severe budget shortfalls due to the economic recession, as are many cities throughout the State. If property owners are unwilling to support a fee increase in the lighting district, two thirds of the street lights will be turned off beginning in June, 2011.

- The District's light fees have not increased in over 16 years due to Proposition 218, passed in 1996, which states that cities cannot raise assessment district fees without a vote of the district's property owners.

- Over the past 16 years, the cost of electricity, maintenance, and equipment for the lighting district has increased. The City has financed the additional expenses of operating the District out of the City's General Fund because the current District does not collect enough money to fund the current benefit levels. The Lighting District currently generates approximately $1 million per year; however, costs to operate the district exceed $1.3 million (The City subsidy is $369,823).

- In order to balance the City budget, the City Council has approved turning off two thirds of the residential street lights throughout the city, if property owners are not willing to fund the increase in the lighting assessment fees. Many street lights will be turned off on residential streets, unless a new District is formed to fund the increased fees. Most street lights along the City's major roadways will remain on, i.e. Melrose Drive, Sycamore Avenue, Vista Village Drive, and Vista Way.

- The City Council is asking property owners if they are willing to support a mail ballot that would establish a new lighting district that would keep the street lights on and include an increased fee (estimated to be $4 to $20 per year for residential properties).

- Support will be gauged based on the results of returned postcards. Support for the increase from a majority of returned postcards is needed to move forward with the mail ballot election.

Property owners can provide their input by reading the information in a flyer being mailed to all property owners in early April and by returning the postcard to the City by May 20, 2011.

The results of this mailer will determine whether to proceed with a mail ballot election or to turn off the street lights. ■

760.639.6131 or info@cityofvista.com.

Tips for the Summer

- Avoid over-watering. Use efficient irrigation methods such as drip systems, soaker hoses and micro-sprinklers. Adjust sprinklers so only the lawn is watered. Check sprinkler systems for leaks and adjust regularly.
- Water early morning or late evening when temperatures are cooler, to minimize evaporation. Water plants deeply and less frequently to encourage deep root growth and drought tolerance.
- Plant drought tolerant species. Many native California plants are drought tolerant. Native varieties of sage, deerweed, buckwheat, poppies, daisies, and lupines are all attractive plants that need less water than many non-native plants. Group plants with the same watering needs together. Consider replacing a portion of your lawn with a hardscape or drought tolerant landscaping. The California Native Plant Society has an online inventory of native plants at cnps.org.
- Collect roof water to water the garden via a rain barrel. The County of San Diego has on line information at co.san-diego.ca.us/dpw/watersheds/residential/rain_barrel.
- Wash cars at the carwash where the water is recycled. At home, wash cars over the lawn using biodegradable soap. The lawn and soil will filter the water and irrigate the lawn. Use a bucket and a hose with a nozzle. Don't let water run down the street into the storm drain. Soap pollutes waterways.
- Don't hose down patios and driveways. Sweep instead.

Saving water is easy to do, and saves money too!

cityofvista.com and vid-h2o.org

Cities of Vista and San Marcos

Partner on road improvements

A joint road improvement project between the cities of Vista and San Marcos is scheduled to be completed in early summer. The project includes street improvements and the installation of a traffic signal at the intersection of La Mirada Drive and Poinsettia Avenue where the Vista and San Marcos city borders connect. As part of the project, a cul-de-sac will be installed on La Mirada Drive approximately 500 feet east of Poinsettia Drive in San Marcos. At that time, La Mirada Drive will be closed permanently to through traffic at the site of the new cul-de-sac. ■

For more information: contact Vista Engineering Department at 760.639.6111.

Recycle Want to know more about what to recycle at home? The recycling process?

View educational videos at edcodisposal.com

Earthquake Preparedness
Being Prepared

Recent events around the world serve as a reminder that everyone needs to be prepared when disaster strikes. Three key items to prepare for disaster are: obtain an emergency supply kit; devise a family emergency plan; and be informed about the different types of emergencies that can occur and the appropriate responses.

Everyone should have basic supplies on hand in order to survive for up to three days. It is important that you consider where you live and the unique needs of your family in order to create an emergency supply kit; below is a list to include in every emergency kit. Consider preparing at least two emergency kits: one full kit for home, and smaller portable kits, called "Go Bags" for the workplace, vehicle or other locations.

The County web site: readysandiego.org is a very good source of disaster preparedness information, including Family Emergency Plan templates, local resources, and details on how to prepare homes for disasters.

The County of San Diego manages a regional notification system that sends telephone notifications to residents/businesses within San Diego County impacted by, or in danger of being impacted by, an emergency or disaster. This system, called AlertSanDiego, is used by emergency response personnel to notify areas at risk with information on the event and/or actions (such as evacuation). All land-line telephones, whether listed or unlisted, are in the system. However, cell phones or Voice over IP systems must sign up for use by the system. To register, go to readysandiego.org. ■

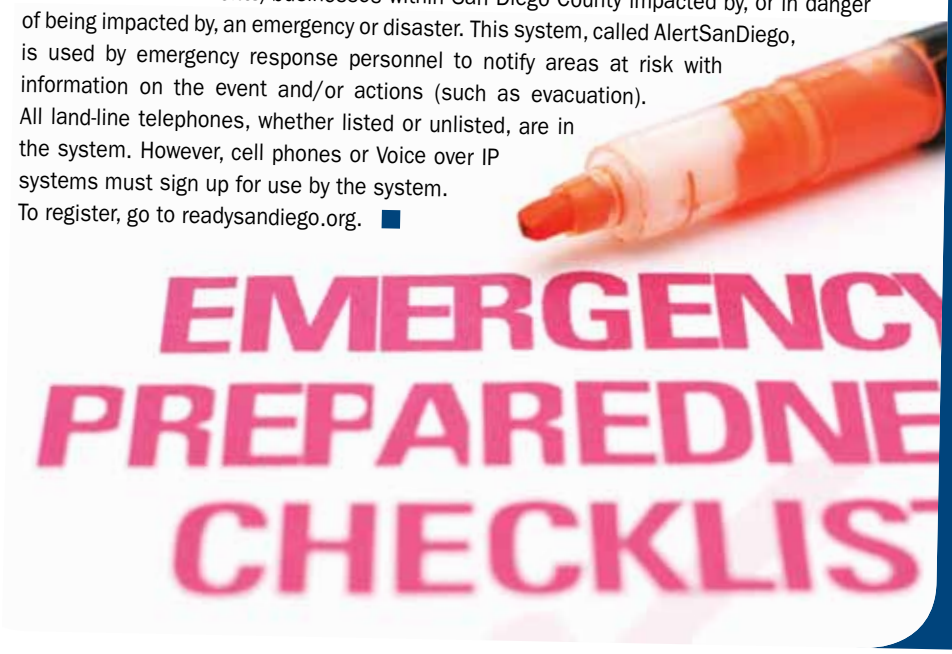

Recommended Basic Items to Include in a Basic Emergency Supply Kit

Water
(one gallon of water per person per day for three days)

Food
(at least a three day supply)

Battery powered radio
(with extra batteries)

First Aid Kit

Dust Mask

Plastic sheeting

Duct tape

Moist towelettes & garbage bags
for personal sanitation

Can Opener
(for canned foods)

Extra prescription meds

Glasses

sdcounty.ca.gov/oes/ready
and Vista Fire Department
760.643.2801

cityofvista.com

winter 2011–2012

vistarecguide

Play Ball!

Adult Softball
Registration
Starts Jan. 2

Recreation, Educational, Cultural Arts & other programs inside…

CITY OF VISTA
CALIFORNIA

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Moonlight Stage Productions 4

Rancho Buena Vista Adobe 5

Preschool Classes 6

Youth Sports 7

Adult Sports 9

Adults 55+ Activities and Services 10

4084

CITY OF VISTA
CALIFORNIA

A publication of the City of Vista

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Design: Drop Dead Design

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Find us on Facebook: facebook.com/CityofVistaCA

Follow us on Twitter @cityofvista

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Moonlight Stage Productions 4

Rancho Buena Vista Adobe 5

Preschool Classes 6

Youth Sports 7

Adult Sports 9

Adults 55+ Activities and Services 10

Kit
Kids Included Together

The City of Vista has partnered with Kids Included Together, a non-profit organization dedicated to helping children with disabilities participate in fun, safe activities. We are committed to providing reasonable accommodations to individuals with accessibility special needs, to help them participate in our programs and activities. Our commitment, in addition to state and federal law, prohibits discrimination. If you would like more information, please contact the Recreation Office at 800.735.2922 ext.1574. Citizens with limited hearing can utilize the services of California Relay Services (C.R.S.) personnel. Contact the C.R.S office at 800.735.0193 to coordinate services for Vista recreation activities.

Registration Information

3 easy ways to register now for classes and sports programs!

Online: Register anytime at vistarecreation.com

Phone: Call 760.726.1340 ext. 1571.

In Person: Stop by the Recreation Office at 200 Civic Center Drive Monday through Friday 9 am to 5 pm.

Refund Policy: Prior to the start of the final class/activity, participants may request a refund or credit. The amount of the refund/credit will be the class/activity fee paid less the prorated cost of the classes/activities elapsed, regardless of attendance, and the processing fee for refunds, 25% of the class/activity registration fee. All credits expire on July 1 immediately after the issue date of credit. All refunds are non-cash and will be processed within four weeks after request. If a request for refund/credit is for a one time event, the refund/credit request must be made prior to the start of the event. Credits issued cannot be exchanged for a refund. Call 760.726.1340 ext. 1571 to request a refund or credit. Special registration rules may apply, please see specific class descriptions for instructions.

2011-2012 Winter community calendar

december

Dec 3-18: Premiere Productions' **Camelot** at AVO Playhouse (premiereforkids.com).
Dec 7: East Broadway Farmer's Market (repeats every Wednesday – vistachamber.org).
Dec 9-18: Premiere Productions' **A Christmas Tale** at AVO Playhouse (premiereforkids.com).
Dec 10-11: Antique Gas & Steam Engine Museum's The Little Engine That Could BBQ Competition (agsem.com).
Dec 11-17: Premiere Productions' **Rudolph the Red-Nosed Reindeer** at AVO Playhouse (premiereforkids.com).
Dec 12-19: **Christmas in the Air** musical review at Broadway Theater (broadwayvista.com).
Dec 13: Vista Historical Society's Christmas Tea (vhsm.org).
Dec 17: Hope Church's A Night of Christmas Hope at Moonlight Amphitheatre (www.vistixonline.com).

january

Jan 2: Adult Softball registration begins (page 9)
Jan 4: Altura East Broadway Farmer's Market (repeats every Wednesday – vistachamber.org).
Jan 7: Biddy Ball begins (page 7)
Jan 10–11: Preschool programs begin (page 6)
Jan 14: Opening Reception for Landscape Group Show at Gallery 204 (vistaartfoundation.com).
Jan 16: Martin Luther King, Jr. Day (Civic Center closed)
Jan 19: Moonlight Stage Productions' **The Mousetrap** opens at AVO Playhouse (moonlightstage.com).

february

Feb 4: Artisan Faire at Gallery 204 (vistaartfoundation.com).
Feb 11: Opening Reception for Featured Artist Mariah Armstrong at Gallery 204 (vistaartfoundation.com).
Feb 16: Moonlight Stage Productions' **Little Women – The Musical** opens at AVO Playhouse (moonlightstage.com).
Feb 20: President's Day (Civic Center closed)

march

Mar 3: Artisan Faire at Gallery 204 (vistaartfoundation.com).
Mar 10: Opening Reception for Featured Artist Dorothy Kitley at Gallery 204 (vistaartfoundation.com).
Mar 16: Artist Reception and Walkabout at Alta Vista Gardens (altavistagardens.org).
Mar 22: Moonlight Stage Productions' **Beau Jest** opens at AVO Playhouse (moonlightstage.com).

For information on these events, visit the web site indicated above; and for all others visit cityofvista.com.

Facebook: facebook.com/cityofvistaca
Twitter: twitter.com/cityofvista

CITY OF VISTA
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Jim Porter Recreation Center
1200 Vale Terrace Drive
760.726.1340 ext. 1502

Gloria E. McClellan Senior Center
1400 Vale Terrace Drive
760.639.6160
Culture Caravan 760.643.2828

Rancho Buena Vista Adobe
640 Alta Vista Drive
760.639.6164
Reservations: 760.726.1340 ext. 1575

Thibodo Community Center
1150 Lupine Hills Drive
Reservations: 760.726.1340 ext. 1575

The Wave Waterpark
101 Wave Drive
760.940.WAVE (9283)
thewavewaterpark.com

Vista Sports Complex
1600 Sports Park Way

Moonlight Stage Productions
AVO Playhouse
303 Main Street
Tickets: 760.724.2110

Moonlight Amphitheatre
1200 Vale Terrace Drive
760.639.6164
Tickets: 760.724.2110
moonlightstage.com

Morris B. Vance Community Room
200 Civic Center Drive
760.726.1340

recreation & community services

Administrative Office
200 Civic Center Drive, Vista CA 92084
760.639.6151
vistarecreation.com

Park Directors: 760.277.8108

Recreation & Sports Office:
760.726.1340 ext. 1571

2012 WAVE Season Passes Now On Sale!

2012 Wave Season Passes make great holiday or birthday gifts! Purchase your pass online or visit The Wave Office in person!

LAP SWIM
Join us in our heated pool for a great low impact swimming workout that is perfect for all ages and skill levels from advanced to beginners. Shower and restroom facilities are available. Please visit thewavewaterpark.com for scheduled pool closure information.

Day of week: M, W, F **Time:** 6-8am

Fees: $3 per session or / 30 day punch pass for $60

CPR/ FIRST AID/ AED CLASSES (Ages 14 years and above)
Right now, stop and think! Would you know what to do in the event of an emergency? Learning CPR & First Aid is worth a few hours of your valuable time. Protect your family by making a commitment to be an educated first responder. This course includes certification in CPR (Adult, Child, Infant), First Aid, and AED (Automated External Defibrillator) for the lay rescuer. Please visit ecsinstitute.org for additional certification information. Participants should wear comfortable clothes and bring a towel (for kneeling on), water, sunscreen (class will be outside), and food or snacks (all day classes have a lunch break). Please visit or call The Wave Office for class times and dates.

What to Look for in the Spring:
2012 Wave Season Passes
Wave Jobs (hiring will begin in March 2012)
Swim Lessons (starting April 2012)
Summer Camps
Jr. Lifeguard Programs
And much more!

Connect with The Wave Waterpark
Call, click, or visit for information on classes, rentals, and season pass sales.

101 Wave Drive
760.940.WAVE

thewavewaterpark.com
facebook.com/thewavewaterpark
twitter.com/wavewaterpark

Moonlight STAGE PRODUCTIONS

2012 WINTER SEASON AT THE AVO PLAYHOUSE

INTIMATE LIVE THEATRE

760.724.2110 • moonlightstage.com

Produced by the City of Vista in Partnership with the Moonlight Cultural Foundation.

TICKETS ON SALE NOW!

THE MOUSETRAP AGATHA CHRISTIE's
The Greatest Whodunit of All Time.
January 19 - February 5

LITTLE WOMEN the musical
The Sounds of a Young America Finding its Voice Ring Out in this New Broadway Musical.
February 16 - March 11

Beau Jest
A Comedy About Falling in Love with a Little White Lie.
March 22 - April 8

RANCHO BUENA VISTA

WHERE HISTORY, ART, & LEGEND COME ALIVE!

The perfect venue for ...

CITY OF VISTA
CALIFORNIA

640 Alta Vista Drive
cityofvista.com
760.639.6164
760.941.7639

Tucked away near Wildwood Park, Vista's historic Adobe features tours, school field trips, scout programs and much more. Visit the Art Gallery and experience the creative works of regional artists. Adobe hours are 10 am-3 pm Thursdays through Saturdays.

Rentals

The Adobe is the perfect venue for weddings and special events. Make your own history and call 760.726.1340 ext. 1575 for rental information.

Tanya's Dance

Theatrical · Jazz · Tap · Ballet

Very affordable - because we furnish everything to dance and to perform for ages 3-13.

Come 1 to 3 times per week for 4 weeks - $50
Each session is 8 weeks

We love beginners!

Everyone Performs Every Month

760.630.4TAP
(760.630.4827)

149 Ocean View Dr., Vista
(Next to Bank of America)

www.tanyasdance.com

preschool

Quality pre-kindergarten education to give your youngster a head start.

READY SET LEARN | 4-5 years | 12 classes

Must be 5 years old by November 1, 2011

This kindergarten readiness program focuses on language, math, reading, writing, and science to establish a solid educational foundation before entering Kindergarten. This academic based program emphasizes core curriculum. The creative program will inspire learning and acquisition of required knowledge prior to entering Kindergarten.

Date	Day	Time
1/10-2/16	Tues/Thurs	8:30-11:30am
1/10-2/16	Tues/Thurs	12:15-3:15pm
2/21-4/5*	Tues/Thurs	8:30-11:30am
2/21-4/5*	Tues/Thurs	12:15-3:15pm

*No classes 3/27 & 3/29

Fees: $139 resident/$167 non-resident **Instructor:** Toby Brodman

SMART START | 3-4 years | 12 classes

Must be 3 years old by the start of class. This program will focus on readiness skills as an introduction to several concepts such as letter/name recognition, socialization/interaction, listening and following instructions and fine motor skills. This class provides the basic knowledge for the Ready, Set, Learn Program. *Children must be fully potty trained with no pull-ups.*

Date	Day	Time
1/11-2/17	Wed/Fri	8:30-11:30am
1/11-2/17	Wed/Fri	12:15-3:15pm
2/22-4/6*	Wed/Fri	8:30-11:30am
2/22-4/6*	Wed/Fri	12:15-3:15pm

*No classes 3/28 & 3/30

Fees: $139 residents/$167 non-residents **Instructor:** Raquel Renteria

Location:
Jim Porter Recreation Center
Brengle Terrace Park · 1200 Vale Terrace Dr

Register
Online: vistarecreation.com
Phone: (760) 726-1340 ext 1571
Walk-in: Recreation Office/M-Th 9am-5pm/
Fridays 9 am-3pm 200 Civic Center Drive

Trash, dirt & pet waste entering our storm drains flow directly to our creeks, lagoons & ocean.

LEARN how to keep our water clean at cityofvista.com.

CITY OF VISTA
CALIFORNIA

Water Quality Protection Program
760.726.1340 ext. 1686
waterquality@cityofvista.com

Unhealthy water harms our fish & wildlife!

youth sports

COED BIDDY BALL

The coed biddy ball program provides youngsters with an opportunity to learn the fundamentals of basketball while developing athletic and teamwork skills. This program is for boys and girls either in K-2nd grade or born between the years of 2004-2006.

Dates: Jan 7 - Feb. 27
Sessions: C – Mondays 4pm-5pm and Saturdays 8:30am-9:30am
Fees: $69 for Vista Residents / $83 for non-resident
Location: Jim Porter Recreation Center Gymnasium
Registration: Currently being accepted at the Recreation Office at City Hall, 200 Civic Center Dr., Mon-Thurs 9am-5pm & Fridays 9am-3pm
Instructor: Lucien "Coach" Hardy
Contact: Rob Anderson at 726-1340 ext. 1576

Register

Online: vistarecreation.com

Phone: 760.726.1340 ext 1571

Walk-in:
Recreation Office
M-Th 9am-5pm
Fridays 9 am-3pm
200 Civic Center Drive

North County Bobby Sox
760.752.4141

North San Diego Futbol Club
760.295.0888

Rancho Buena Vista Little League
760.599.4024

Vista American Little League
760.724.9801

Vista Girls Softball
760.599.6409

Vista National Little League
760.736.2544

Vista Pony Colt
760.510.0999

Vista Pop Warner
760.586.1148

Vista Soccer Club
760.940.8804

Register for Classes

Register anytime at vistarecreation.com or call 760.726.1340 ext. 1571.

Play Starts in February

Vista Girls SOFTBALL

Time to Register for the 2012 Recreation Season!

Register here:
VistaGS.org

Vista Girls Softball is open to all girls, ages 6-14.

Payment Plans AVAILABLE!

NEW! Challenger League: See VGS Website for Details"

Register NOW

Facebook: facebook.com/CityofVistaCA

Twitter: @cityofvista

Give your preschooler a head start!

Enroll now for Smart Start or Ready Set Learn. Creative, quality instruction in basic skills to prepare for kindergarten. Next classes start in January! More information on page 6.

Enroll Now!
vistarecreation.com
vistarecreation.com
760.726.1340 ext. 1571

tennis

PEE WEE & INTERMEDIATE TENNIS | 5-12 years | 8-10 classes

13+ years, see Adult Sports

Give your child the opportunity to learn a lifelong sport, develop hand-eye coordination and agility, and build self-confidence. Participants learn basic tennis strokes in a fun and supportive group environment. Come prepared with a racquet and a new (unopened) can of balls. Classes at Brengle Terrace Tennis Courts. Classes are age based and cost is based on the number of classes.

Date	Day	Times	Age	Class	Sessions
1/9-1/30*	Mon/Wed	3:30-4:30pm	5-7 yrs	Pee Wee	6 classes
1/9-1/30*	Mon/Wed	4:30-5:30pm	8-12 yrs	Intermediate	6 classes
2/1-2/29*	Mon/Wed	3:30-4:30pm	5-7 yrs	Pee Wee	8 classes
2/1-2/29*	Mon/Wed	4:30-5:30pm	8-12 yrs	Intermediate	8 classes
3/5-3/21	Mon/Wed	3:30-4:30pm	5-7 yrs	Pee Wee	6 classes
3/5-3/21	Mon/Wed	4:30-5:30pm	8-12 yrs	Intermediate	6 classes
4/2-4/30	Mon/Wed	3:30-4:30pm	5-7 yrs	Pee Wee	9 classes
4/2-4/30	Mon/Wed	4:30-5:30pm	8-12 yrs	Intermediate	9 classes

*No classes 1/16 & 2/20

Fees: $55 resident / $66 non-resident (6 classes); $73 resident / $88 non-resident (8 classes); $82 resident / $99 non-resident (9 classes)

Instructor: Heide Clay

Register online, anytime at vistarecreation.com

For more information, call 760.726.1340 ext. 1571 or visit cityofvista.com

GET OUT AND PLAY

Vista Adult Softball: a Great Way to Play

Come join the fun.
Form a team, or get on one.
We have spots for everyone,
so get out and play!

For more information, call 760.726.1340 ext. 1576 or visit vistarecreation.com

adult sports

ADULT SOFTBALL

Registration for all Adult Coed, Men's & Women's Softball leagues will begin January 2, 2012. Games will be played Sunday through Friday evenings at Brengle Terrace & Breeze Hill parks. Registration is limited to teams. Individual players may contact Rob Anderson at 760.726.1340 ext. 1576 to be added to the "Free Agent" list, which is made available to teams looking for players.

Who: Adult Men's, Women's & Coed Softball Teams
Date: Sunday – Friday evenings / Placement Games begin February 27, 2012.
Location: Brengle Terrace, Breeze Hill & Buena Vista ball fields.
Fee: $419 – Resident Team (Two or less non-residents on roster). $502 – Non-Resident Team (Three or more non-residents on the roster). $15 umpire fee per game payable to umpire at game.

Registration Procedures: Registration begins Monday, January 2, 2012 and runs through Friday, February 24, 2012. Registration is on a first-come first-serve basis and certain nights and/or the program will fill. Register your team early! Register at the Recreation Office at City Hall, 200 Civic Center Dr., Mon-Fri 9am - 5pm or the Brengle Terrace Recreation Center. For additional information or individual players interested in being added to the "Free Agent List," please contact Rob Anderson at 760.726.1340 ext. 1576.

OPEN PLAY AT LUZ DURAN PARK AND VISTA SPORTS PARK

Are you looking for a fun and safe place to practice? Luz Duran Park hosts soccer weekdays 8 am to 4 pm. The Vista Sports Park hosts soccer, baseball, and football weekdays 8 am to 4 pm. All open play activities are subject to change and/or cancellation due to field reservations or field renovations. Admission is free.

ADULT TENNIS | 13 years & Up | 8-9 classes

For teens and adults who already love the game, know some strokes and have some knowledge of tennis. Come and enjoy further instruction from Heide Clay who gives you pointers on your swing and increase your knowledge of the game. Bring your racquet and a new (unopened) can of tennis balls.

Date	Day	Times	Sessions
1/9-1/30*	Mon/Wed	5:30-6:30pm	6 classes
2/1-2/29*	Mon/Wed	5:30-6:30pm	8 classes
3/5-3/21	Mon/Wed	5:30-6:30pm	6 classes
4/2-4/30	Mon/Wed	5:30-6:30pm	9 classes

*No 1/16 & 2/20

Location: Brengle Terrace Park Tennis Courts
Fees: $55 resident / $66 non-resident (6 classes); $73 resident / $88 non-resident (8 classes); $82 resident / $99 non-resident (9 classes) **Instructor:** Heide Clay

TENNIS LESSONS: PRIVATE & SEMI-PRIVATE | All Ages

Tennis anyone? Learn from a pro and improve your game. Instructor Heide Clay is a Certified USTPA Pro and a USPTA Developmental Coach. She has been playing and teaching tennis for many years. You can get some one-on-one attention or bring a couple of friends. The semi-private lessons are for groups of 2-4. Tennis is a great form of exercise and is considered a life long sport because it can be enjoyed by all ages. You can schedule one lesson or set up a series. Lessons available Mon/Wed/Fri 11:30 am-3 pm; Tues/Thurs 2-5:30 pm; Sat Noon-2:30 pm.
Fees: $51 Vista resident & $61 non-resident per one hour session.
Location: Brengle Terrace Park, Court # 7. **To schedule a lesson:** Call 760.726.1340 ext. 1571

WOMENS' TENNIS CLUB | 18 + Years

The Women's Tennis Club invites new players to experience doubles play at Brengle Terrace Park weekday morning. Fees vary. To register call 760.726.1340 ext. 1571. **Information:** 760.716.9517.

DROP-IN ROTATION PLAY | 18 + Years

Are you looking for fun and casual tennis experience? Come out and join the drop-in rotation group Sundays-Fridays at 7:30 am at Brengle Terrace Park. No fee and no registration needed. **Information:** 760.716.9517.

Register for Classes

Register anytime at vistarecreation.com or call 760.726.1340 ext. 1571.

ZUMBA FITNESS | 15 years & Up

Getting fit has never been so much fun! ZUMBA is one of the fastest growing dance-based fitness crazes in the country. With its easy-to-follow dance moves and motivating Latin rhythms such as Merengue, Salsa, Cumbia, Reggaeton even Belly Dance and hip hop. Zumba is the most fun you've ever had working out. Classes are Wednesdays 6 pm-7 pm and Saturdays 9 am-10 am at the Jim Porter Recreation Center at Brengle Terrace Park. Punch cards are available in 5 and 10 class punches. The punch cards also work for the Zumba Toning classes.
**No classes on the following days: 1/16, 1/30, 2/20, 2/27, 3/26, 4/30.*
Fees: $71 resident / $84 non-resident (10 punches); $36 resident / $43 non-resident (5 punches).
Instructor: Jan Saddington

ZUMBA TONING | 15 years & Up

Ready to have fun while taking your workouts to a new level? ZUMBA TONING is the perfect way to do just that. It combines body-sculpting techniques along with exciting Zumba music & moves for one calorie-burning, strength-training hour of fun. Students learn how to use 2 1/2 lb lightweight, maraca-like Zumba Toning Sticks to enhance rhythm and tone all their target zones, including arms, abs, glutes and thighs while maintaining the party atmosphere that Zumba is famous for. Class meets Mondays 6 pm-7 pm at the Gloria E. McClellan Senior Center at Brengle Terrace Park. Punch cards are available in 5 and 10 class punches. The punch cards also work for the Zumba Fitness classes.
Days: Thursdays from 6-7pm at the Recreation Center
**No classes on the following days: 1/16, 1/30, 2/20, 2/27, 3/26, 4/30.*
Fees: $71 resident / $84 non-resident (10 punches); $36 resident / $43 non-resident (5 punches). One-Time Materials Fee $20 (Sticks)
Instructor: Jan Saddington

adults 55+ activities & services

exercise classes

♥ Heart Healthy Classes

Positively Fit Class ♥ (Adults 60+)
Focus on balance and flexibility; helps participants prevent falls.
Time: Tue/Thu Advanced 9:30 – 10:20am
Tue/Thu Beginning 10:30 – 11:20am
Location: Azalea Room
Fees: $24/8 classes
Instructor: Carol Hydrusko
Register first Tuesday of the month.

Stretch Exercise with Carl ♥ (Adults 60+)
An easy and fun way to stretch and build muscle strength.
Time: Wed 10:00am
Location: Park Terrace Café
Fees: Requested Donation
Instructor: Carl Grubbs

Line Dance ♥ (Adults 55+)
A great exercise for adults of all ages.
Beginning: Mon 11:30am-12:30pm
Intermediate: Wed (except 2nd Wed) 11:30am-12:30pm
Intermediate & Advanced: Mon 1:30pm-3:00pm
Intermediate Plus: Wed (except 2nd Wed) 1:00pm-2:30pm
Location: Azalea Room
Fees: Suggested Donation
Instructor: Helen Pietroforte

Yoga ♥ (Adults 60+)
Please bring a mat.
Time: Tue: 1:00-2:30pm
Fee: Requested Donation
Location: Azalea Room
Provider: Silver Age Community Outreach

classes

AARP Driver Safety Class (Adults 55+)
Refresher driving course qualifies adults for discounts on their auto insurance.
8-hour course: 1/24 & 1/26 12:30-5:00pm
4-hour course: 3/27 12:30-5:00pm
Fee: $12 AARP members, $14 non-AARP members (checks only-payable to AARP)
Location: Jasmine Room
Provider: AARP-sign up in the office.

Knitting Circle (Adults 55+)
Beginning to Advanced – all knitters and crotchetiers welcome!
Time: Wed/Fri 10:00am-12noon
Location: Lobby Area
Fee: No charge, free yarn and needles (if available) or bring your own projects.

Sunset Strummers
A group of adults having fun, singing, and strumming along with their ukuleles! Recorders too!
Beginning Recorders: Mon/Thu 8:00-8:30am
Beginning: Mon/Thu 8:30–10:00am
Intermediate: Mon/Thu 10:00-12:00pm
Location: Jasmine Room
Fee: Free
Contact: Eleanor Nedjar: 760.458.9322

All classes held at Gloria E. McClellan Senior Center

1400 Vale Terrace Drive
Vista, CA 92084

Drop-in Hours: Mon-Fri 8:00am – 4:00pm
Senior Center Phone Numbers:
Administration: 760.639.6160
Lunch Reservations: 760.724.3362
Lunch Transportation 760.639.6160
Home-Delivered Meals 760.639.6162
Out & About Transportation 760.639.6161
Culture Caravan 760.643.2828
Project CARE 760.941.0140

Visit the Community Section of cityofvista.com for more information.

Instructors and New Classes Wanted!

Do you have a special talent or a passion you would like to share with others? Class space is available for a fee on weekdays, evenings, and weekends. Give us a call to discuss your ideas! Contact Leisa Bustanoby, Program Coordinator, at 760.639.6162.

services

Out & About Transportation (Adults 60+)

Nationally recognized as 1 of 50 'Best of the Best' programs!
Vista residents receive daily bus shuttle service for errands and medical appointments; also provides mileage reimbursement for volunteer drivers when adults are transported in privately-owned vehicles.
Time: Mon-Fri; Sat for special events
Fee: $3/trip; $5/trip outside Vista area; mileage reimbursed to volunteer drivers.
Location: Door to door service
Contact: 760.639.6161; call 24 hours prior.

STRIDE

Adults, families, and caregivers, STRIDE San Diego is your web site source for comprehensive information about San Diego's public and private specialized transportation providers for the elderly and disabled. Free of charge, log onto stridesd.org.

Legal Services (Adults 60+)

For adults in need of legal advice.
Time: 2nd Tuesday 10:00am to 3 pm
Fee: Free **Location:** Conference Room
Provider: 760.439.2535 for appointment

Health Insurance Counseling Advocacy Program (HICAP) (Adults 60+)

Trained counselors help with medical bills, insurance questions and HMO assistance.
Days: 1st Wednesday
Time: 9:15am - 12:15pm
Fee: Free **Location:** Conference Room
Register: Call 1.800.434.0222 for next available appointment

Project CARE (Adults 60+)

Project CARE is the effort of an entire community to allow those who are vulnerable to live with dignity, security, and comfort knowing that there are many people out there who care. The program includes postal alerts, gatekeeper, "are you okay?" vial of life, minor home repair, care management, home safety checks, safe return, and you are not alone.
Location: Project CARE office
Contact: Nadine Kaina 760.941.0140

Audiologist (Hearing Screenings) (Adults 55+)

Licensed audiologist provides hearing screenings.
Dates & Times: 2nd Wednesday of month (subject to change) 2:00-4:00pm
Fee: Free
Location: Gloria E. McClellan Senior Center, Conference Room
Provider: Greg Hall-sign up in the office

Blood Pressure (Adults 55+)

Dates & Times: 2nd Wed, 11:00am-12noon,
3rd Wed, 11:00am-12noon
4th Tues, 11:00am-12noon
Fee: Free
Location: Lobby Area

Parkinson's Support Group

Support Group for those whose lives are impacted by Parkinson's disease including the Parkinsonian, family members, and friends.
Time: 2nd Wed 10:00am-12:00pm
Fee: For info call 760.940.2763
Location: Azalea Room
Instructor: North County Parkinson Group

Nutrition Education/Individual Dietary Planning

Adults 60+, individual nutrition planning, one hour appointments.
Day & Times: 3rd Thursday 9:30am-11:30am
Fee: Free
Location: Conference Room
Register: Call 760.639.6162.
Counselor: Linda Gastelum, Registered Dietician, Tri-City Medical Center

Tax Assistance

Sponsored by AARP (February 1st thru April 15th only)
Days: Mondays, Tuesdays, Thursdays
Times: 9:30am-2:00pm
Fee: Free
Location: Orchid Room
Information: 760.726.1340 ext 1538

activities

Bridge (Duplicate) (Adults 55+)

Duplicate bridge group.
Day & Times: Wed 12:30 – 4:00pm
Fee: $2 to play
Location: Jasmine Room
Provider: Vista Duplicate Bridge Club, Paul Landrum, Bridge Director 760.729.3313

Food for Thought – National Award Winning Program

Adults 60+, gentle yoga followed by gourmet lunch.
Days & Times: 1st and 3rd Thu 11:00am-1:00pm
Fee: suggested contribution $3.50/meal ($6 charge for less than 60 years old).
Location: Vista Library, 700 Eucalyptus Avenue
Contact: 760.726.1340 ext. 1531 or 1539

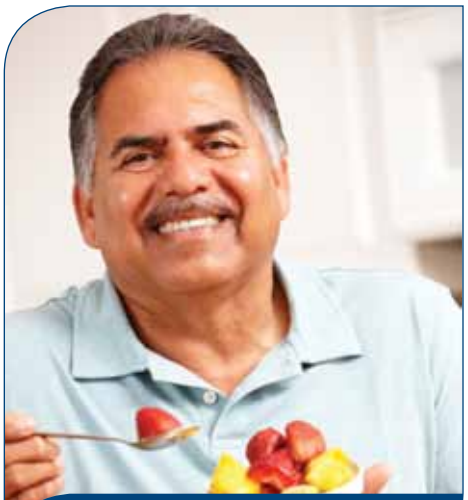

No eligible person shall be denied a meal or nutrition transportation because of failure or inability to contribute.

Senior Nutrition Program (Adults 60+)

Enjoy nutritious meals, entertainment and fellowship every week.
Mon-Fri 12noon
Suggested contribution $3.50/meal ($6 charge for less than 60 years old and accompanying a senior)
Park Terrace Café
Reservations: 760.724.3362, taken up to 1 day prior to lunch.

Home-Delivered Meals (Adults 60+)

Homebound Vista residents can receive nutritious meals delivered to their home.
Mon-Fri (weekend frozen)
Location: Delivered to home
Contact: 760.639.6162
Suggested contribution is $4/meal

Frozen Meals to Go

Nutritious to go meals; made fresh on site.
Days: Every Friday (call 760.639.6160 to verify if meals are available)
Location: Park Terrace Café
Time: 11:00am – 12noon
Cost: $2

Nutrition Program Transportation

Adults 60+ Vista residents, transportation to and from lunch program.
Mon-Fri
Location: Door-to-door service
Contact: 760.639.6160; call one day prior
Suggested contribution is $1.00 round-trip.

Angel's Depot Food Boxes (Adults 60+)

Vista residents with low income who are 60+ and adults 55+ with disabilities may receive a monthly twenty pound box of nonperishable food. Please pick up application in the administration office.
Contact: 760.599.7093

For the Neighborly Care You've Been Looking For

Douglas M. Osborne, O.D., F.A.A.O.

Resident Owned & Operated

Treatment of Eye Infections & Allergies
Laser Surgery
Consultations & Care
Latest in Contact Lenses, including Bifocal
25+ Years Experience

Eye Care for the Entire Family

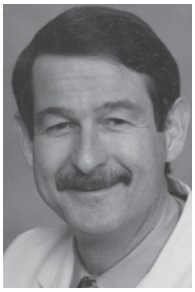

Se Habla Espanol
Most Insurances Accepted

vsp Vision care for life

760.724.2119
110 Escondido Ave
Suite 101, Vista
Next To La Paloma Restaurant

www.villageidoc.com

Bingo for Prizes (Adults 60+)
Play fun Bingo games and win prizes! Free, but you must have a lunch reservation!
Days & Times: Second Wed of month 11:15am-12:00pm; Third Tue of month 11:15am-12:00pm
Fee: Free (must have lunch reservation)
Location: Park Terrace Café
Provider: Leisa Bustanoby

Sell Your Wares
One man's junk is another man's treasure.
Day & Times: Third Thursday of month-10:00am-12:00pm
Fees: $5 for card table/$10 for 60" round
Location: Park Terrace Café
Reserve with Leisa at 760.639.6162

Bocce Ball
Learn how to play Bocce Ball.
Day & Times: Tue 1:00-3:00pm
Location: Brengle Terrace Park, Bocce Ball Courts
Coordinator: Jeanne Wilson, 760.643.2828 for more information

Horseshoes
Learn how to play horseshoes.
Day & Times: Fri 1:00-3:00pm
Location: Brengle Terrace Park, Horseshoe pits near play equipment
Coordinator: Jeanne Wilson. 760.643.2828 for more information

Birthday & Anniversary Celebration
Sign up on the clipboards in the lobby! Cake and presents!
Day & Times: Last Fri of month, 11:45am
Location: Park Terrace Café

Bridge (Contract) (Adults 55+)
Social bridge group-bring a friend!
Day & Times: Thu 12:30-4:00pm
Location: Jasmine Room
Coordinator: John Eastland

Vista Senior Citizens Affairs Commission

Established in 1989, the VSCAC is an advisory commission that makes recommendations to the City Council on all matters pertaining to older adults in Vista.

Carolyn Chetister, *Chair*
Margaret Coon
Robin Iveson
Nancy Kropf
Sharon Larimar
Darcy Mulholland
Phyllis Skall

Computer Lab
Lab open to surf the net, check emails, have some cyber computer fun! Classes, too!
Days & Times: Mon – Fri 10:00am-3:30pm (except when class is in session)
Location: Computer Lab
Coordinator: Maureen Cooper

Drop-In Cards - bring a card partner!
Adults 55+, social group that plays a variety of card games.
Day & Times: Tue 12:00-4:30pm
Location: Lobby Area

Friendship Group (Adults 55+)
Discussion group that socializes and discusses topics of the day – promotes friendship.
Day & Times: Tue 1:45-3:15pm
Location: Park Terrace Café

Monthly Movie
Free movie, snacks and drinks!
Time: Last Friday of month, 1:00-3:30pm
Location: Azalea Room

Ping Pong
Table available. Bring a friend!
Days & Times: Mon-Fri 8:00am-4:00pm
Location: Park Terrace Café

Poker
Three tables! Ante up! Snacks provided.
Day & Times: Mon 1:00-4:00pm
Location: Azalea Lobby Area

Senior Center Amigos
Adults who enjoy socializing with Spanish-speaking friends!
Dates & Times: Mon-Fri 11:00am-12noon
Location: Park Terrace Café

Weekly Wii and Popcorn! (Adults 55+)
Join us for the latest craze! Fresh popped popcorn for players and spectators.
Day & Times: Fri 11:00am - 12noon
Location: Park Terrace Cafe

Toe Tappers
Senior tap dancing group practice.
Dates & Times: Mon/Thu 9:00-10:00am
Location: Park Terrace Café Stage
Contact: Doris 760.480.6112 or 760.471.6553

Culture Caravan

Providing active adults with a variety of day trips and fun social vacations

For over 30 years, the City of Vista's Culture Caravan travel program has brought the cities of North County unique travel experiences to destinations all over Southern California and beyond. With an emphasis on day trips, we take care of all the details including deluxe transportation, best available tickets, delicious meals, and of course our wonderful volunteer guides to guide you through the day. Memories, friendship, no hassle travel, the newest venues, and easy on the wallet; that's what you'll experience when you take a Culture Caravan trip.

MICHIGAN VIA CHICAGO
May 5th – 12th, 2012

You won't need a passport on this custom designed trip by AFC Vacations just for Culture Caravan to the land of lakes and tulips and where we'll spend 8 days touring and tasting Chicago and Michigan. We'll start in Chicago with an Untouchable Gangster tour, take in the view from the Willis Tower (aka the Sears Tower), cruise the Chicago River, and marvel at the extraordinary architecture along the water front. Next we head to Holland, Michigan, for the annual Tulip Festival! Tulips, Veldheer Gardens, tulips, Delft China, tulips, wooden shoes, and then the Windmill Village for the most amazing tulip displays. You'll enjoy beautiful lake shore scenery as we motor to Traverse City. We'll stop at the Sleeping Bear Sand Dunes, recently voted "Good Morning America's" most beautiful place in America. We'll tour the Music House Museum and the Charlevoix Medieval Castle. Then it's on to Mackinac Island, a carriage ride and lunch at the famous Grand Hotel, plus time to explore Mackinac on your own. Then it's Willkommen to the Bavarian town of Frakenmuth, home to the world's largest Christmas store. Lastly, we head to Dearborn and tour the Ford Museum of Americana. This 8 day trip includes 14 meals, 7 breakfasts, 1 lunch, and 6 dinners, roundtrip airfare from San Diego to Chicago and Detroit to San Diego, home shuttle service, and professional tour guide, Chris McCool. So don't miss Michigan via Chicago! Call us for a more detailed brochure.

COST: $2199.00 double pp $2599.00 single $79.00 taxes pp

LAUGHLIN, NEVADA (Call for details.)

Next Party

Join us at our next party on March 8 at 1:00 p.m. We'll provide upcoming trip details, prizes and more.

Upcoming Trips

Nixon Library, Bowers Museum, Palm Springs Follies, Jonathan Winters, and much, much more.

Let Us Plan Your Next Vacation

Culture Caravan provides active adults with fun social vacations with transportation on deluxe motor coaches and no membership fees.

Call 760.643.2828 or email cbyler@cityofvista.com for current offerings.

Volunteers Needed Out & About Vista

Take a Turn in the Right Direction! Become a Volunteer Driver Today!

If you enjoy helping people in your community and have a few hours to spare each week, consider becoming a volunteer driver for local homebound seniors.

Becoming a Driver is Easy!

You provide the ride and we provide you with mileage reimbursement, supplemental auto insurance and appreciation.

For more information about our program, please contact Out & About Vista at 760.639.6161.

Celebrate at the Senior Center! Rental Space Available!

Looking for that special place for a memorable occasion? Planning a special milestone – 50th, 60th, or 70th anniversary? How about a 100-year birthday party or a special family reunion?

The Senior Center offers rental space for all types of events from anniversary parties to company meetings. With such great facilities in your city, why go anywhere else?

Call 760.639.6162 to reserve a time to tour the facility.

Make a difference and join our Paper Plate Campaign!

Help to sponsor lunch meals for seniors in the community. Their average age is 82 and many of them live alone and depend on a daily nutritious meal. Your donation will help to pay their contribution!

Senior Center dining room meals:
$3.50 for one meal
$17.50 for one week
$75 for one month

Home-delivered meals:
$4 for one meal
$20 for one week
$85 for one month

Checks payable to the City of Vista and send directly to the Senior Center, c/o The Paper Plate Campaign, 1400 Vale Terrace Drive, Vista 92084

Paul V. L. Campo
ATTORNEY AT LAW

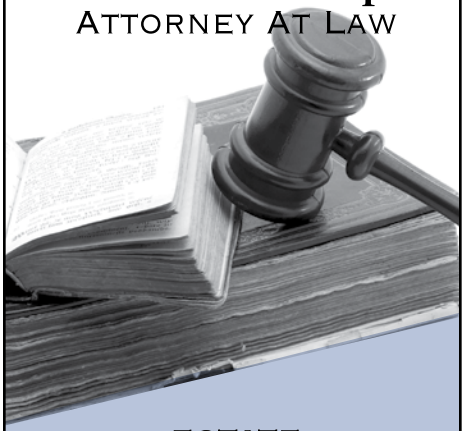

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SUITE 150, VISTA CA 92081

www.attorneypaulcampo.com

55+ Clubs and Meetings

Oil Painting Club

Seniors, 50+, free ongoing class...express your creativity!
Day and Time: Wednesdays 9:00am-12 noon except 2nd Wednesdays
Location: Jasmine Room
Cost: Free
Contact: Leisa Bustanoby, 760.639.6162
NOTE: For this club, you must provide your own materials. A list will be given to you upon registration.

Vista Gem & Mineral Society

Open to the public.
Day and Time: 3rd Thu of month, 7:30pm
Location: Azalea Room
Coordinator: Vista Gem & Mineral Society, 760.724.0395 for membership info

Vista Garden Club

Open to the public – all adults.
Day and Time: 1st Fri (except May, Jul, Aug, and Nov – no meeting) 11:00am-3:00pm
Location: Azalea Room
Provider: Vista Garden Club
760.639.5395

Senior Commission Meeting

Open to the public, advises and discusses issues that affect mature adults in the community.
Day and Time: 4th Wed (Jan, Mar, May, Jul, Sep, & Nov) 1:30-3:00pm
Location: Conference Room

Senior Nutrition Advisory Committee

Nutrition Advisory Committee meeting. All are welcome!
Day and Time: 3rd Wed 1:00-2:30pm
Location: Conference Room

Tri City Computer Club

Seniors 55+, personal computer user group meeting and presentations.
Day and Time: Tue 1:00-3:00pm (except 5th Tuesday)
Location: Jasmine Room
Contact: Randy Crumpler 760.940.4253

Oasis Classes | Winter 2011

We've partnered with OASIS in Escondido to expand our offerings. For more information, please visit the Senior Center for a catalog or go online to oasisnet.org/Escondido. Note: You will pay a per trimester processing fee of $10 in addition to the course fee.
To register, call 760.796.6020.

Which Computer Class is for Me?
Thu, Jan 19, 1-3:00pm, Free

Introduction to Computers
Tue/Thu, Jan 24 – Feb 2, 1-3:00pm, $40

Demystifying Your Computer
Mon, Feb 6 – 13, 1-3:00pm, $24

Google It!
Tue, Feb 7 – 14, 1-3:00pm, $24

Digital Camera Workshop
Wed, Feb 8 – 15, 1-3:00pm, $15

Exploring the Internet
Mon, Feb 21, 1-3:00pm, $18

Open Source Freebies
Wed, Feb 22 – Mar 28, 1-3:00pm, $30

Introduction to Word
Thu, Feb 23 – Mar 15, 1-3:00pm, $50

Wonderful World of Windows 7
Tue, Feb 28, 1-3:00pm, $15

Windows 7 Backup
Tue, Mar 6, 1-3:00pm, $15

Windows 7 Security
Tue, Mar 13, 1-3:00pm, $15

Care and Management of Passwords
Mon, Mar 19, 1-3:00pm, $15

Windows 7 Home Networking
Mon, Apr 16, 1-3:00pm, $15

Introduction to Computers
Mon/Wed, Apr 23 – May 2, 1-3:00pm, $40

CITY OF VISTA

PARKS & FACILITIES

C2 | Avo Playhouse
Historic movie house restored to a stage house in downtown Vista.
303 Main Street

B3 | Breeze Hill Park - 6 acres
Lighted sports fields, basketball courts, picnic tables, restrooms and a tot lot.
645 S Melrose

E2 | Brengle Terrace Park & Rec Center
- 81.7 acres. Vista's master planned park provides lighted sports fields, lighted tennis courts, basketball courts, volleyball courts, picnic tables, barbecues, restrooms, gazebos and pavilions, and bocce ball and horseshoe pits. Recreation Center has meeting rooms, gymnasium, restrooms and auditorium. Alta Vista Gardens, Senior Center and the Moonlight Amphitheatre are featured in the park.
1200 Vale Terrace

A2 | Bub Williamson Park - 8.7 acres
Sports fields, restrooms and a pavilion.
530 Grapevine Road

C5 | Buena Vista Park Ballfields
- 15 acres. Lighted sports fields and restrooms.
1851 S Melrose

C2 | Civic Center Park - 3 acres
Passive park with seat walls, a trail and walkways.
200 Civic Center Drive

C5 | Buena Vista Park Pond & Open Space
- 146 acres. Features walking trails, duck pond, restrooms and picnic tables.
1601 Shadowridge Drive

E2 | Gloria E. McClellan Senior Center
The Senior Center provides health and wellness activities and nutrition programs for the community. Facility located in Brengle Terrace Park includes meeting rooms, restrooms, auditorium and catering.
1400 Vale Terrace

C2 | Luz Duran Park - 6 acres
Synthetic soccer fields, picnic tables, tot lot and restrooms.
340 E Townsite Drive

E2 | Moonlight Amphitheatre
State-of-the-art outdoor amphitheatre provides performance space, meeting rooms, restrooms and permanent seating in Brengle Terrace Park.
1200 Vale Terrace

C2 | Raintree Park - 1 acre
Synthetic turf soccer arena, handball courts, tot lot and restrooms.
545 E Townsite Drive

C2 | Rancho Buena Vista Adobe
- 1.9 acres. Historic home is fully furnished and open for tours Thursday-Saturday, 10 a.m. - 3 p.m. for a small fee. Property has lush gardens featuring exotic roses and native plants. Home provided perfect backdrop for special occasions and meetings.
640 Alta Vista Drive

E5 | Shadowridge Park - 11.4 acres
Basketball courts, picnic tables, restrooms and a children's playground.
2101 Lupine Hills Drive

C6 | South Buena Vista Park - 6 acres
Basketball courts, picnic tables, restrooms and a tot lot. Off-leash play time for dogs available from 7-10 a.m. and 4 p.m. to dusk. Walking trails connect with Buena Vista Park and Open Space trails.
1602 Mountain Pass Circle

Dogs are welcome in Vista's park but must be on-leash and have current license.

C4 | Thibodo Park & Community Center
- 9 acres. Lighted tennis and basketball courts, picnic tables, tot lot and restrooms. Historic home ideal for special occasions and meeting rooms.
1150 Lupine Hills Drive

C2 | The Wave Waterpark - 3 acres
Features six slides, lazy river, children's water playground, competition pool and the FlowRider wave simulator. Admission fees available online at thewavewaterpark.com.
101 Wave Drive

B1 | Vista Sports Park - 16 acres
Lighted sports fields, toddler playground, picnic tables and restrooms.
1600 Sports Park Way

C2 | Wildwood Park - 5 acres
Picnic tables, restrooms and a children's playground.
651 E Vista Way

Vista's parks are smoke-free zones.

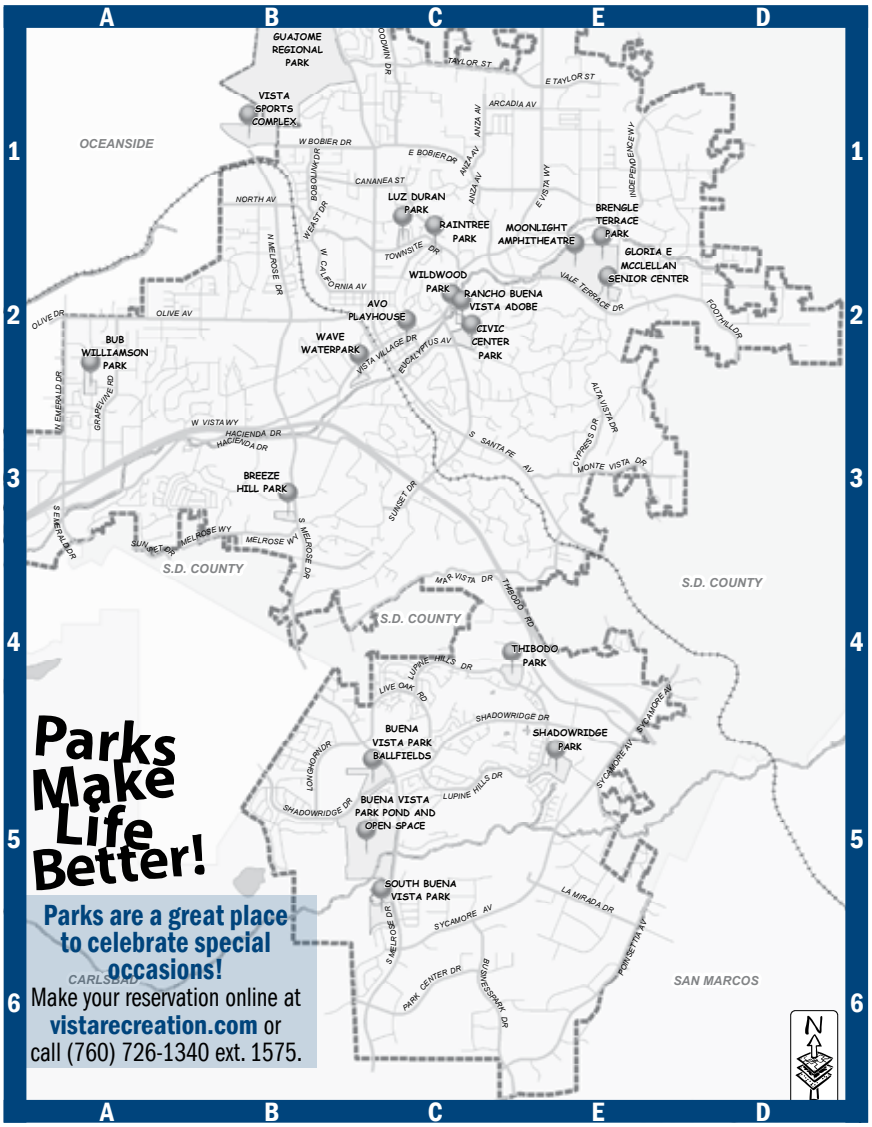

Parks Make Life Better!

Parks are a great place to celebrate special occasions!
Make your reservation online at **vistarecreation.com** or call (760) 726-1340 ext. 1575.

15

cityofvista.com

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CALIFORNIA
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Vista, California 92084

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Book it.
Plan it.
Host it.
In Vista!

With 13 beautiful parks and nine great facilities, the City of Vista can host any size event. From weddings, theatrical performances and concerts, birthday parties, weddings, meetings, business conferences, to dinners, Vista has the right venue to meet your needs.

For information or reservations, call 760.726.1340, Ext. 1575; or visit the Community Section at cityofvista.com.

Morris B. Vance Community Room

Facilities & Venues

AVO Playhouse | Moonlight Amphitheatre | Wave Waterpark
Rancho Buena Vista Adobe | Morris B. Vance Community Room at the Vista Civic Center | Park Terrace Café and the Azalea Room at the Gloria E. McClellan Senior Center
Brengle Terrace Recreation Center
Thibodo Community Center

Reserve now for Weddings, Birthdays, Graduations and other Special Occasions in 2012!

Moonlight Amphitheatre

AVO Playhouse

CITY NEWS
& RECREATION
GUIDE

CITY OF VISTA

SUMMER 2012

CITY DEPARTMENTS AND SERVICES

Abandoned Vehicles	760-639-6141
Affordable Housing	760-639-6191
AVO Playhouse Tickets	760-724-2110
Brengle Terrace Rec Center	760-639-6156
Building Permits	760-639-6105
Building Inspections	760-639-6106
Business License	760-639-6174
City Clerk	760-639-6125
City Council	760-639-6130
City Hall	760-726-1340
City Manager	760-639-6131
Code Enforcement	760-639-6141
Dead Animal Pickup	760-757-4357
Development Services	760-639-6108
Economic Development	760-639-6165
Engineering	760-639-6111
Finance	760-639-6170
Fire Department (Non-emergency)	760-643-2801
Graffiti Hotline	760-726-1340 x 1611
Housing	760-639-6191
Human Resources	760-639-6145
Job Hotline	760-639-6147
Library (County's Vista branch)	760-643-5100
Mayor	760-639-6130
Moonlight Amphitheatre Tickets	760-724-2110
Parking Tickets/Citations	760-639-6141
Planning	760-639-6100
Potholes	760-726-1340 x 1611
Public Works	760-639-6176
Rancho Buena Vista Adobe	760-639-6164
Recreation Classes & Programs	760-639-6151
Redevelopment	760-639-6191
Senior Center (Gloria E. McClellan)	760-639-6160
Sewer Billing	760-639-6170
Sheriff (Non-emergency)	760-940-4551
Stormwater Hotline	760-726-1340 x 1686
Street Lights	760-639-6176
Street Sweeping	760-726-1340 x 1606
Traffic Engineering	760-639-6116
VisTix Ticket Office	760-724-2110
Wave Waterpark	760-940-9283

OTHER SERVICES

Alta Vista Gardens	760-945-3954
Animal Control (Humane Society)	760-757-4357
Boys & Girls Club	760-724-6606
Certificates (Birth, Death, Marriage)	760-940-6868
Chamber of Commerce	760-726-1122
Farmers' Market	760-945-7425
Household Hazardous Waste Disposal	800-714-1195
Lifeline Community Services	760-726-4900
North County Health Services	760-757-4566
Public Transportation (Sprinter, Breeze)	760-966-6500
Recycling Service (EDCO)	760-727-1600
Townsite Community Center	760-806-8980
Trash Service (EDCO)	760-727-1600
Vista Community Clinic	760-631-5000
Vista Unified School District	760-726-2170
Vista Village Business Association	760-414-9391
Vista Historical Society Museum	760-630-0444
Water Service (Vista Irrigation District)	760-597-3100

DIAL 911 For Fire, Sheriff & Medical Emergencies

CITY OF VISTA
CALIFORNIA

City of Vista Publication | **Summer 2012**

citynews

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Design: Drop Dead Design

Vista Civic Center:
200 Civic Center Drive, Vista CA 92084

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This publication is available in an alternate format. Please contact the ADA Coordinator at 760-639-6145.

Vista City Council:
Judy Ritter, Mayor
Steve Gronke, Mayor Pro Tem
Frank Lopez, Jr., Council Member
John J. Aguilera, Council Member
Dave Cowles, Council Member

City Council Meetings:
Second and fourth Tuesday of each month at 5:30 p.m. in the Council Chambers.

Meetings are cablecast on the Friday after each meeting at 5 p.m. on Cox Communications Channel 19, Time Warner Cable Channel 24 and AT&T U-verse Channel 99. Archived webcasts are available online at cityofvista.com.

Road Improvements **Underway**

Some of the roads across the City are wearing down and have performed beyond their intended life span. City engineers are using the limited Capital Improvement funds the city has to focus on roads that carry the most traffic and are prone to deteriorating quickly if not taken care of. The following projects have already begun or are scheduled to begin in the next few months. Some of the work will be completed at night, so daytime traffic is not inconvenienced.

Road Improvements:

Emerald Drive: from Date Street north to Olive Avenue.
Start Date: March, 2012.
Completion: Summer, 2012.
Project Details: Resurfacing of the road.
*Work on final prep work continues, then final overlay will take place in summer.
Work Hours: 7 p.m. to 7 a.m.
Nighttime minimal impact to traffic

S. Santa Fe Detention Basin Project: Monte Vista Drive & S. Santa Fe Avenue
Start Date: March, 2012.
Completion: Six to nine months.
Project Details: Construction of the vital South Santa Fe Detention Basin located east of S. Santa Fe Avenue, on the south side of Monte Vista Drive. After its completion in late 2012, the detention basin will remove a significant portion of the Paseo Santa Fe Corridor out of the 100 year flood plain.
Work Hours: Day time, no impact to traffic or the public.

Bobier Drive: from west of Vista city limit to N. Santa Fe Avenue.
Start Date: March, 2012.
Completion: Summer, 2012.
Project Details: Resurfacing of the road.
*Work on final prep work continues, then final overlay will take place in summer.
Work Hours: 7 p.m. to 7 a.m.

Business Park Drive: Sycamore Avenue to Poinsettia Avenue
Start Date: Summer, 2012.
Completion: Summer, 2012.
Project Details: Resurfacing of the road.
Work Hours: 7 p.m. to 7 a.m.

W. Vista Way Safety Barrier Project
***State Highway Project**
CALTRANS Start Date: January, 2012.
Completion: June, 2012.
Project Details: Construction of a safety barrier along the north side of Hwy 78 between the freeway and W. Vista Way. Some partial closures along the bike lane and eastbound side of W. Vista Way will take place throughout the project.

Dawson Drive & Ridgeline Avenue Sewer Project
Start Date: March 2012.
Completion: Summer, 2012.
Work Hours: 7 a.m. to 5 p.m.

Project Details: The sewer pipeline construction in the Shadowridge area (in the Ridgeline Avenue, Dawson Drive and S. Melrose Drive locations) is wrapping up. The final connections will be completed soon. Demolition and reconfiguration of the old Shadowridge plant is underway to provide for emergency sewer storage. The final phase of the project will take place in May with the resurfacing of Dawson Drive and Ridgeline Avenue. Thank you for your patience throughout this important sewer construction project. The new sewer pipe will ensure reliable sewer service and minimize and/or eliminate the need for costly emergency repairs further down the road. ■

cityofvista.com

To learn more about construction projects around Vista, go to cityofvista.com and click on Construction Updates. You can also sign up for the e-newsletters, or Like "City of Vista" on Facebook, or call the Engineering Department at 760.639.6111.

Theatre, Food and Waves **Entertain this Summer**

From the enchanting Moonlight Amphitheatre under the stars, to the farmers' market and festivals, to cooling down at the Wave Waterpark ...there are a lot of Must Do Things in Vista this summer. Check out the following new and returning events. With so much going on, it's easy to find something to do this summer!

Recreation Summer Camp:
vistarecreation.com

Wave Waterpark:
Opens May 26
thewavewaterpark.com

Vista Strawberry Festival:
May 27
vistastrawberryfest.com

Moonlight Summer Season:
Begins June 27
Runs through October 6
moonlightstage.com

The Taste of Vista on Main Street:
June 27
vvba.org

Red, White, & Boom! July 4 Celebration
cityofvista.com

Vista Farmers' Market:
Saturdays
County Courthouse in Vista
vistafarmersmarket.com

Kites over Vista & Public Art Walking Tour:
vistapublicart.com

Report Potholes ... Graffiti
To report a pothole or graffiti, please call the Public Works Department at 760.639.6176 (evenings & weekends: 760.726.1340 ext. 1611). Include your name, daytime phone number and location of the pothole or graffiti (either address or general description).

Volunteers Needed

Sheriff's Senior Patrol

Thanks to a dedicated group of volunteers, Vista residents can schedule vacation home security checks or have someone drop by to check on an elderly or disabled person. The Vista Sheriff's Senior Patrol program provides this valuable service in the community. The volunteers not only enhance the safety in Vista's neighborhoods but also improve the quality of life for home-bound seniors.

The program is currently recruiting volunteers who are 50 years or older. Participants attend a training academy and responsibilities range from administrative work, to patrolling neighborhoods, issuing parking citations, and marking abandoned vehicles. ■

Learn about available home security check or opportunities for volunteering: 760.940.4434

Keep Safe

Be Prepared

What happens when a disaster strikes without a warning? Would you be prepared? Your family may not be together when disaster strikes, so it is important to plan in advance how you will contact one another; how you will get back together; and what you will do in different situations. The "Family Disaster Plan and Personal Survival Guide" was developed by the San Diego County Office of Emergency Services to help families be prepared in the event of a disaster. The Family Disaster Plan is a template and guide that will help you prepare for and survive a disaster. Download the template at readysandiego.org/make-a-plan.

Never Be Out of Touch in an Emergency. Register with Alert San Diego.
San Diego County manages a regional system, called AlertSanDiego, which sends telephone notifications to residents and businesses impacted by an emergency or disaster (such as an evacuation). All land-line telephones, whether listed or unlisted, are already registered in the system. However, cell phone users must sign up their cell numbers for use by the system. To register your cell phone, go to readysandiego.org. ■

ReadySanDiego.gov and Vista Fire Department 760.643.2801

Economic Briefs

Hyatt Place Hotel

Another new hotel will soon be available to serve the community. This June, the Hyatt Place hotel is scheduled to open on the corner of Faraday Avenue and S. Melrose Drive in southeast Vista. In 2010, the Marriott Town Place Suites opened for business on S. Melrose Drive and Sycamore Avenue. Both of these hotels are ideally located to serve nearby residential communities and neighboring cities, as well as the local, national, and global companies located in the Vista Business Park. In addition, in fall, 2011 one of the largest furniture retailers in the state, Living Spaces & Paul's TV, opened in the former Sam's Club building.

The City has been working behind the scenes to recruit these types of amenities for both the residential and business needs of the community. These companies fill a gap for specific goods and services and provide for job creation and diversity. They will generate significant revenues for the city to help sustain services such as public safety, recreation, and senior and other community services. ■

Economic Development 760.639.6165

Safe Kids Drowning Prevention

Children drown quickly and silently in a matter of seconds. The most at risk for drowning are toddlers ages one and two. Below are tips to help keep children safe around water this summer.

1. Constant supervision in and around water is key to preventing childhood drowning.
2. Never leave a child alone when in or near a body of water, even if it's less than a few inches. Keep toddlers within arms reach.
3. Learn Rescue and CPR skills. June 7 is San Diego County's Sidewalk CPR Day. Check the City's web site (closer to the date) to view locations where trainers will be providing free instruction on this vital skill.
4. Children should wear a life jacket on docks or on boats.
5. Enroll children in swim lessons at the earliest age possible, but still supervise them always.

Prescription Drug Drop-Off

Unwanted, unused or expired prescription drugs are a risk to the community by either falling into the wrong hands, or by damaging the environment through improper disposal. Residents can drop off unwanted medications at secure collection drop-off boxes set up by the San Diego County Sheriff's Office.

Medications in standard containers can be dropped in the containers, while loose medication should first be placed in plastic bags available at the collection box and liquid medication should first be enclosed in a secure container.

Vista Prescription Drop-Off Site
Vista Detention Facility
325 S. Melrose Drive

sdsheriff.net or 760.940.4551

Fiscal **Facts**

The City's budget is adopted by the City Council annually and outlines all of the spending planned for the current fiscal year. The City's 2011/12 General Fund budget is $64.7 million. The general fund is the main fund and includes revenues to provide for services like public safety (police and fire), city parks, recreation activities, programs and community services, and public works. In a few weeks, the 2012/13 draft budget will be reviewed by the City Council with final approval anticipated by the end of June. The current City budget is available at cityovista.com/departments/finance.

2011/12 General Fund Expenditures

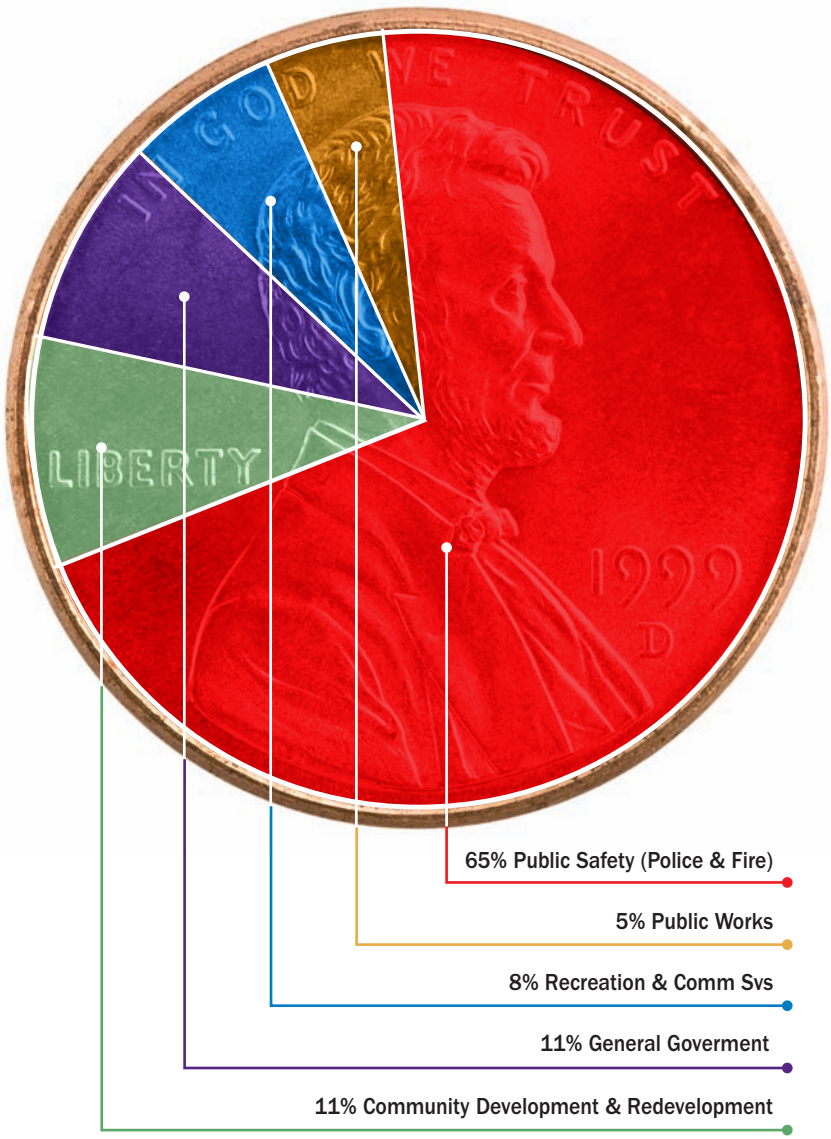

Spring Cleaning Has Arrived

With the warmer weather and the arrival of spring comes the annual tradition of "spring cleaning". During this time of the year many homeowners take on the task of organizing garages, cleaning out attics, and clearing off decks and patios to prepare for another wonderful Vista summer.

While clearing out the closets or garage, think about items that the family no longer needs or wants. Goods such as clothes, furniture, books, small appliances and toys may still have life in them. Consider diverting many of these discarded items out of the local landfill by donating them to charity. Many organizations are always looking for goods that can be reused and possibly resold at thrift stores. In these tough economic times, donating goods to thrift stores can provide others a means to purchase gently used items at a significant discount, while helping non-profits generate income.

Cleaning out the garage? If you have old and broken electronics, half-empty cans of paint or oil, used batteries, or other toxic products that are not suitable for donation, do not throw them away with your regular trash. Instead, take them to the Vista Household Hazardous Waste (HHW) facility. Hazardous waste can pose serious risks to the public's health, safety and welfare. Because of the ability for hazardous waste to create tremendous environmental harm if not disposed of properly, it is dangerous and illegal to throw hazardous waste in the trash or sewer or down storm drains.

Residents can drop off used oil, oil filters, antifreeze, auto batteries, paint, and pesticides. Vehicles "drive through" the facility and staff offloads the items from the car. Drivers do not have to get out. Electronic waste such as computers, television, and toaster ovens can also be dropped off.

The City of Vista's HHW Collection Facility is located at 1145 E. Taylor Street (across the street from the Public Works Yard) and is open from 9 a.m. to 3 p.m. every Saturday, except on holiday weekends. No appointment is necessary. While there is no fee to Vista residents, proof of residency is required. For information on HHW disposal in Vista check the City's web site or call or 800.714.1195.

When tackling spring cleaning this year, please think twice about helping others and helping the environment. Diverting solid wastes from landfills and properly disposing of household hazardous wastes is good for the whole community. ■

cityofvista.com/departments/publicworks
or Public Works Department, 760.639.6176

EDCO Accepting Polystyrene (Styrofoam™) Curbside

In an effort to help preserve the environment and expand its recycling efforts, EDCO, the City's contract waste hauler, is now accepting Polystyrene (Styrofoam™) in residential curbside and commercial recycling programs. Polystyrene, (marked with a number 6), is commonly used in packing material, food containers and in a wide variety of other products. Please note that packing peanuts are not eligible for the program. Make sure that food containers are clean prior to placing them in the recycling containers. For more information, contact EDCO at 760.727.1600 or check on line at edcodisposal.com.

Recycle Want to know more about what to recycle at home? The recycling process?

View educational videos at edcodisposal.com

Discover the **Gloria E. McClellan Senior Center**

Since 1974, the Senior Nutrition Program has served thousands of community residents with good, healthy meals, companionship, socialization, entertainment, and new friendships. The Gloria E. McClellan Senior Center offers a wealth of resources to older adults.

The Gloria E. McClellan Senior Center, located in Brengle Terrace Park, offers a wealth of activities, classes, programs, and services for independent living, health, and social connections. It is a place where 55+ adults are provided with resources that match their diverse needs and interests and provides numerous activities. Activities include exercise classes, card games, knitting circles, dance lessons, support groups, volunteer opportunities, bingo for prizes, Culture Caravan trips, Out & About senior transportation, and more.

While the gift of a longer life means more time to travel, learn new skills, and extra time to volunteer, it may also lead to greater vulnerability in later years - and the Senior Center serves as a valuable resource to meet those with these specific needs, as well. Since 1974, the senior nutrition program has served thousands of community residents with healthy meals, companionship, and entertainment. Hot lunches are served during the week in the Senior Center dining room. For those lacking transportation, the nutrition transportation shuttle provides door-to-door service, transporting Vista residents to and from the Senior Center.

In addition to the nutrition program, the Culture Caravan and Out & About programs are located at the Senior Center. Vista's Culture Caravan trip program offers fun-filled single day, multi-day, and week long trips. There is no membership or other fees, except the trip cost, and residents from all communities are welcome. Trips to locations throughout Southern California including; Viejas Casino, Holiday Lights Tour, and Palm Springs are but a few of the many day trips offered through this travel program.

The Out & About program provides fast, friendly, and affordable transportation to Vista's senior community. Eligible adults receive door-to-door transportation assistance for shopping, medical appointments, and other excursions.

If you or someone you know is in need of transportation, a healthy, delicious meal, or just want to participate in an exercise class or a Culture Caravan trip, then the Senior Center provides a considerable range of opportunities for recreation and socialization. Check the "Adults 55+" in this publication for more information about the Senior Center and discover valuable resources that may help you or others in our community. ■

Gloria E. McClellan Senior Center
Brengle Terrace Park | 1400 Vale Terrace Drive, Vista CA 92084
vistarecreation.com or 760.639.6160 | Mon - Fri 8 a.m. to 4 p.m.

Beginning May 1, the Senior Center's Nutrition Program lunch will begin serving lunch earlier.

Lunch will begin at 11:30 am and will last until 12:30 pm. The extra time will allow more flexibility for lunch participants.

Congratulations Little Cakes Cupcakes Kitchen! Located in Vista Village, the business recently won the Food Network's *Cupcake Wars* competition.

Kevin Ham, Vista Economic Development Director (left) with Little Cakes Cupcake Kitchen staff Torie Tobey, owner Don Hein, and manager Anna Carlson.

30 Main Street
Suite 180, Vista, CA 92083
littlecakeskitchen.com
760.842.5138

2012 summer community calendar

may

May 1: Day Camp Ongoing Registration (page 19)
May 5: "Cat in the Hat & Other Dancing Fantasies" at AVO Playhouse (vistixonline.com)
May 6: Sock Hops and Soda Shoppes at AVO Playhouse (vistixonline.com)
May 12: "Perfume de Gran Precio 2012" at Moonlight Amphitheatre (vistixonlne.com)
May 19: Heart & Soul Benefit Concert at Moonlight Amphitheatre (vistixonline.com)
May 20: The Swing Dolls: from Abba to Swing at AVO Playhouse (vistixonline.com)
May 26: Wave Waterpark opening day
May 27: Strawberry Festival (vistachamber.org)

june

June 3: Crooners: A Salute to the Rat Pack at AVO Playhouse (vistixonline.com)
June 4: Adult Softball Registration begins (page 21)
June 8-17: "West Side Story" at Moonlight Amphitheatre (vistixonline.com)
June 11: Wave Camps begin
June 11: Day Camps Begin at Brengle Terrace Park (page 19)
June 14: World's Largest Swim Lesson record attempt at the Wave
June 24: Elvis: The Tribute at AVO Playhouse (vistixonline.com)
June 27: "Legally Blonde – The Musical" opens at Moonlight Amphitheatre (page 24)
June 30: In My Life: A Musical Tribute to the Beatles at AVO Playhouse (vistixonline.com)

july

July 4: Red, White, and Boom! Independence Day Celebration at Brengle Terrace Park
July 25: "Fiddler on the Roof" opens at Moonlight Amphitheatre (page 24)

august

August 20: First Day of Classes, Vista Unified School District
August 22: "Anything Goes" opens at Moonlight Amphitheatre (page 24).

For information on these events, visit the web site indicated above; and for all others visit cityofvista.com.

Facebook: facebook.com/cityofvistaca
Twitter: twitter.com/cityofvista

registration

Register NOW for all Summer 2012 offerings! Register early as some camps and activities fill-up quickly!

summer camps

Online: vistarecreation.com
In Person: Jim Porter Recreation Center, 1200 Vale Terrace Drive
Phone: 760.726.1340, ext 1501/1571

wave camps

In Person: Wave Waterpark, 101 Wave Drive, Vista
Phone: 760.940.WAVE

youth and adult sports

Online: vistarecreation.com
In Person: Recreation Office, Civic Center, 200 Civic Center Drive
Monday through Thursday 9 am - 5 pm; Fridays 9 am - 4 pm.
Phone: 760.726.1340, ext 1571

Get out and play this summer! The City of Vista is pleased to offer programs and activities that are fun, entertaining, and for you!

recreation guide

CITY OF VISTA
CALIFORNIA

A publication of the City of Vista

Recreation & Community Services
Administrative Office
200 Civic Center Drive
Vista, CA 92084
760.639-6151
vistarecreation.com

Recreation & Sports Office
760.726.1340 ext. 1571

Facility Rentals
760.726.1340 ext. 1575

AVO & Moonlight Facility Rentals
760.726.1340 ext. 1525

VisTix Ticket Office
760.724.2110

Park Directors
760.277.8108

City News & RecGuide Advertising
760.639.6151

Bill Fortmueller
Assistant Director of Recreation & Community Services

Parks and Recreation Commission
Garry Garretson, Chair
Amanda Rigby, Vice Chair
Rob Christ
Norm Halus
John Land
Debbie Piper
Erubey Lopez
Linda Rhoades
Student Commissioners:
Analicia Campos
Luke Spencer

Find us on Facebook:
facebook.com/CityofVistaCA

Follow us on Twitter @cityofvista

WAVE waterpark
page 15

The coolest hot spot in North County is open for another season. Dive in, cool off, and have fun! Check out the special events, too.

summer camps
page 19

Our Summer Camps are packed with indoor and outdoor fun from June through August. If you're looking for adventure, places to explore, or to be sporty this summer, we've got your camp.

youth sports
page 13

Summer is a great time for tennis and we're offering young people plenty of classes to get their game on.

vista's summer of fun!

Your guide to the City of Vista's recreation and community services offerings for summer 2012

adult sports
page 21

We haven't forgotten the grown-ups this summer! Adult softball, Zumba, Tennis, and Flag Football are all on tap.

Culture Caravan
page 25

Culture Caravan is on the move this summer! Join us for single and multi-day trips to destinations in Southern California and beyond.

Moonlight Stage Productions
Senior Services
Rancho Buena Vista Adobe
pages 24-33

Red, White, and Boom!
Independence Day Celebration
July 4, 2012

Celebrate Independence Day in grand Vista style. Festivities will be held at the Moonlight Amphitheatre in Brengle Terrace Park. Events include live music, the Light Up the Night Dinner, and one of the biggest fireworks displays in San Diego County!

Schedule

1:00 pm: Amphitheatre opens
1:00-11:00 pm: Shuttle from Vista High School to Brengle Terrace Park and back.
4:30 pm: Live music
5:30 pm: Dinner seating
6:00-7:00 pm: Dinner service
7:30 pm: The Fabulous Ultratones perform
9:00 pm: Fireworks

Light Up the Night Dinner

Served by the Artisan Café at the Moonlight Amphitheatre
BBQ Buffet Menu: smoked beef brisket, pulled pork, BBQ chicken, bakes beans, potato salad, coleslaw, jalapeño corn bread, and wild berry cobbler. Turkey burgers available.
Tickets: $60 for adults, $40 for children ten-years and younger.
Table seating for eight available for $450. Includes premium table seating, BBQ Buffet, and the best view of the fireworks display.
Reservations: 760.726.1340 ext. 1144 or 1147
Reservations by June 21, 2012 required.

Information to know

Food and non-alcoholic beverages are permitted inside the Moonlight Amphitheatre. Alcoholic beverages may not be brought into the Amphitheatre. Beer and wine will be sold at the Artisan Café within the Amphitheatre. For information on the alcohol policy, visit moonlightstage.com.

The Artisan Café will be open during the festivities serving an assortment of patriotic fare, snacks, and beverages.

Moonlight Amphitheatre
1200 Vale Terrace Drive, Vista

Thank you to our generous sponsors:

Atomic Investments, Inc.
BioFilm
Datron World Communications

Erickson-Hall Construction
EDCO Waste and Recycling
Classic Containers
TricorBraun

youth sports

PEE WEE & INTERMEDIATE TENNIS | 5-12 years | 8-10 classes

Give your child the opportunity to learn a lifelong sport, develop hand-eye coordination and agility, and build self-confidence. Children learn basic strokes in a fun and supportive group lesson. Come prepared with a racquet and a new (unopened) can of balls. Classes are age based and cost is based on the number of classes.

Date	Day	Times	Age	Class	
5/2-5/31*	Mon/Wed	3:30-4:30pm	5-7 yrs	Pee Wee	8 classes
5/2-5/31*	Mon/Wed	4:30-5:30pm	8-12 yrs	Intermediate	8 classes
6/4-6/27	Mon/Wed	3:30-4:30pm	5-7 yrs	Pee Wee	8 classes
6/4-6/27	Mon/Wed	4:30-5:30pm	8-12 yrs	Intermediate	8 classes
7/2-7/30*	Mon/Wed	3:30-4:30pm	5-7 yrs	Pee Wee	8 classes
7/2-7/30*	Mon/Wed	4:30-5:30pm	8-12 yrs	Intermediate	8 classes
8/1-8/29	Mon/Wed	3:30-4:30pm	5-7 yrs	Pee Wee	9 classes
8/1-8/29	Mon/Wed	4:30-5:30pm	8-12 yrs	Intermediate	9 classes

*No classes 5/28 & 7/4

Instructor: Heide Clay

Location:
Brengle Terrace Park Tennis Courts
1200 Vale Terrace Drive

Fees:
$73 resident; $88 non-resident (8 classes);
$82 resident; $99 non-resident (9 classes);
Punch Cards also available in 5 or 7 class increments

Registration & Information:
www.vistarecreation.com
760.726.1340 ext. 1571

Tanya's Dance

Theatrical · Jazz · Tap · Ballet

Very affordable - because we furnish everything to dance and to perform for ages 3-13.

Come 1 to 3 times per week for 4 weeks - $50
Each session is 8 weeks

We love beginners!

Everyone Performs Every Month

760.630.4TAP
(760.630.4827)

149 Ocean View Dr., Vista
(Next to Bank of America)

www.tanyasdance.com

Children's Paradise

"AN OASIS OF FUN"

Science & Nature Adventures!
Arts & Crafts!
Sports & Excercise Daily!
Beautiful & Safe Environment!
Breakfast, Lunch & Snacks!
Camp T-Shirt!
Awesome Pictures!
Great Memories!

FUNTASTIC SUMMER CAMP!

North Melrose Drive
760.724.5600

Vale Terrace Drive
760.941.7578

6am to 6pm
Monday thru Friday

Vista Strawberry Festival

Sunday May 27, 2012

Don't Miss Out!

www.VistaStrawberryFest.com

Vista's **COOLEST** Hot Spot!

OPENING DAY: MAY 26, 2012
Open daily.
Monday-Friday: 10am-4pm
Saturdays: 11am-5:30pm
Sundays: Noon-5:30pm

Friday Nite Splash events on select Fridays throughout the summer from 4-8pm. Discount admission and food along with games and prizes. Check out our website for dates and more information!

Connect to the Wave!
Call, click, or visit for information on hours, classes, and passes.
101 Wave Drive
760.940.WAVE

thewavewaterpark.com
facebook.com/thewavewaterpark
twitter.com/wavewaterpark

2012 SEASON PASSES
Get your pass now for an entire summer of fun and join us for unlimited visits during the 2012 season! Season Pass holders are entitled to great deals at The Wave and special promotions through our partners including Boomers, Vista Entertainment Center, The Moonlight Amphitheatre, Sonic Drive-in and other great businesses. Season Pass holders are also invited on May 20th from 1pm-4pm for a special Season Pass Preview Day.

Individual passes are just $69 each and a family pack of 4 is just $64 per pass.

Passes are on sale now!

AQUA CAMPS | Ages 7 –15 years

Camps are a fun and exciting way to learn basics of lifeguarding, water safety, first aid, and rescue breathing. So much fun you may never want to leave! Each participant will receive a free T-shirt as part of the program. Please remember to bring a swimsuit (one piece for the girls), sack lunch or money, towel, sun block, goggles, and dry clothes. All campers must be able to swim to the other side of the pool and back on their own.

Date Range	Day of Week	Time	Theme/Skill
6/11-6/15	M,T,W,Th,F	8:30AM-2:30PM*	Olympics / Move it!
6/18-6/22	M,T,W,Th,F	8:30AM-2:30PM*	Rock Star / Water Safety
6/25-6/29	M,T,W,Th,F	8:30AM-2:30PM*	Survivor / First Aid
7/02-7/06	M,T,W,Th,F	8:30AM-2:30PM*	Olympics / Move it!
7/09-7/13	M,T,W,Th,F	8:30AM-2:30PM*	Rock Star / Water Safety
7/16-7/20	M,T,W,Th,F	8:30AM-2:30PM*	Survivor / First Aid
7/23-7/27	M,T,W,Th,F	8:30AM-2:30PM*	Olympics / Move it!
7/30-8/03	M,T,W,Th,F	8:30AM-2:30PM*	Rock Star / Water Safety
8/06-8/10	M,T.W,Th,F	8:30AM-2:30PM*	Survivor / First Aid
8/13-8/17	M,T,W,Th,F	8:30AM-2:30PM*	Olympics / Move it!

*Extended play available till 4pm with signed waiver.

Location: The Wave Waterpark, 101 Wave Dr., Vista
Fees: $125 per session / per camper.
Instructor: All Camp instructors are lifeguards certified through Jeff Ellis & Associates.
Contact: The Wave Waterpark at 760.940.WAVE
Registration: Camp programs fill up fast, so register early! Camps must be paid in full to reserve a spot. To reserve your spot please stop by The Wave Office to book in person or call 760.940.WAVE to reserve over the phone.

JR. LIFEGUARDS | Ages 10 –15 years

Jr. Lifeguards is a week long training on all aspects of lifeguarding. Participants will be taught and tested on skills from water rescues, CPR, to First Aid and spinal management. Time will be set aside at the end of the week for Jr. Lifeguards to be able to shadow a real Wave Lifeguard on the job! Please remember to bring a swimsuit (one piece for the girls), sack lunch or money, towel, sun block, goggles, and dry clothes. All Jr. Lifeguards must be able to swim to the other side of the pool and back on their own.

Date Range	Day of Week	Time
6/11-6/15	M,T,W,Th,F	8:30AM-2:30PM*
6/25-6/29	M,T,W,Th,F	8:30AM-2:30PM*
7/09-7/13	M,T,W,Th,F	8:30AM-2:30PM*
7/23-7/27	M,T,W,Th,F	8:30AM-2:30PM*
8/06-8/10	M,T,W,Th,F	8:30AM-2:30PM*

*Extended play available till 4pm with signed waiver.

Location: The Wave Waterpark, 101 Wave Dr., Vista
Fees: $140 per session / per Jr. Lifeguard.
Instructor: All Camp instructors are lifeguards certified through Jeff Ellis & Associates.
Contact: The Wave Waterpark at 760.940.WAVE
Registration: Jr. Lifeguard camp must be paid in full to reserve a spot. To reserve your spot please stop by The Wave Office to book in person or call 760.940.WAVE to reserve over the phone.

Facebook: facebook.com/CityofVistaCA

Twitter: @cityofvista

WATER SPORTS CAMP | Ages 7 –15 years

Water Sports Camp is a fun adventure playing and learning different water sports and experiencing some "dry" sports in a wet environment. Get ready to join a team and have fun in sporting competitions! Please remember to bring a swimsuit (one piece for the girls), sack lunch or money, towel, sun block, goggles, and dry clothes. All sport camp attendees must be able to swim to the other side of the pool and back on their own.

Date Range	Day of Week	Time
6/18-6/22	M,T,W,Th,F	8:30AM-2:30PM*
7/02-7/06	M,T,W,Th,F	8:30AM-2:30PM*
7/16-7/20	M,T,W,Th,F	8:30AM-2:30PM*
7/30-8/03	M,T,W,Th,F	8:30AM-2:30PM*
8/13-8/17	M,T,W,Th,F	8:30AM-2:30PM*

*Extended play available till 4pm with signed waiver.

Location: The Wave Waterpark, 101 Wave Dr., Vista
Fees: $125 per session / per camper.
Instructor: All Camp instructors are lifeguards certified through Jeff Ellis & Associates.
Contact: The Wave Waterpark at 760.940.WAVE
Registration: Water Sports camp must be paid in full to reserve a spot. To reserve your spot please stop by The Wave Office to book in person or call 760.940.WAVE to reserve over the phone.

COUNSELOR IN TRAINING | Ages 12 –15 years

Our Counselor in Training program is designed for youth who are interested in developing leadership skills and assisting with running camp games and activities for younger children. Please remember to bring a swimsuit (one piece for the girls), sack lunch or money, towel, sun block, goggles, and dry clothes. All CITs must be able to swim to the other side of the pool and back on their own.

Date Range	Day of Week	Time
6/11-6/15	M,T,W,Th,F	8:30AM-2:30PM*
6/18-6/22	M,T,W,Th,F	8:30AM-2:30PM*
6/25-6/29	M,T,W,Th,F	8:30AM-2:30PM*
7/02-7/06	M,T,W,Th,F	8:30AM-2:30PM*
7/09-7/13	M,T,W,Th,F	8:30AM-2:30PM*
7/16-7/20	M,T,W,Th,F	8:30AM-2:30PM*
7/23-7/27	M,T,W,Th,F	8:30AM-2:30PM*
7/30-8/03	M,T,W,Th,F	8:30AM-2:30PM*
8/06-8/10	M,T.W,Th,F	8:30AM-2:30PM*
8/13-8/17	M,T,W,Th,F	8:30AM-2:30PM*

*Extended play available till 4pm with signed waiver.

Location: The Wave Waterpark, 101 Wave Dr., Vista
Fees: $125 per session / per Counselor in Training.
Instructor: All Camp instructors are lifeguards certified through Jeff Ellis & Associates.
Contact: The Wave Waterpark at 760.940.WAVE
Registration: Counselor in Training camp must be paid in full to reserve a spot. To reserve your spot please stop by The Wave Office to book in person or call 760.940.WAVE to reserve over the phone.

BIRTHDAY PARTIES | All ages

Let the Wave host your birthday party or special event! A great place for all ages to celebrate and have a "Splashing" good time! The Birthday child will receive a FREE return ticket to the Wave! Visit our website for additional options and upgrades to make your party the best ever!

Date range / Day of week / Time
Any Date / Any time during normal park operating hours

Silver Package **$225**
- 10 admission tickets
- 10 meals – slice of pizza, chips, and drink
- 1 small cabana rental
- FREE return ticket for Birthday child
- Additional guests $17.95ea

Gold Package **$275**
- 10 admission tickets
- 10 meals – slice of pizza, chips, and drink
- 1 small cabana rental
- 10 Big Squirt party favors
- FREE return ticket for Birthday child
- Additional guests $19.95ea

Platinum Package **$325**
- 10 admission tickets
- 10 meals – slice of pizza, chips and drink
- 1 small cabana rental
- 10 Big Squirt party favors
- 10 ice cream desserts
- 2 double tube rentals
- FREE return ticket for Birthday child
- Additional guests $21.95ea

Location: The Wave Waterpark, 101 Wave Dr., Vista
Contact: The Wave Waterpark at 760.940.WAVE.
Registration: Birthday parties must be booked at least 5 days in advance and a $50.00 deposit is required to make a reservation. To reserve your party please stop by The Wave Office to book in person or call 760.940.WAVE to reserve over the phone.

SWIM LESSONS | Infants – Adult

Let the wave be your home for swim lessons. We strive to provide lessons at all levels that help students to develop confidence and competency in the water. Each class is separated into age and level of swimmer. Please remember to bring bathing suit (one piece recommended for the girls), towel, sun block, goggles, and dry clothes.

CLASS LEVELS

POLLIWOG & PARENT: (6 mo to 2 yrs) Emphasis on water adjustment, bubble blowing, water holds, leg and arm action. All skills require adult in water participation.

GUPPIES: (3-5 yrs) Emphasis on water entries, blowing bubbles, bouncing and movement, submersion of face, front & back floating, basic kicks, and jumps from the side.

STARFISH: (3-5 yrs) Emphasis on water entries, bouncing, submersion, object retrieval, floating with face in, basic kicks and arm movements.

SEAHORSES: (3-5 yrs) Emphasis on breath control, front float w/ face in without assistance, back float with limited assistance, front arms with face in & backstroke arms.

GOLDFISH: (5 yrs+) Emphasis on breath control, object retrieval, submersion of body, front & back floats, basic kicks, freestyle arms, backstroke arms, front & back glides.

SEA TURTLES: (5 yrs+) Emphasis on breath control, front & back floats 10 sec., basic kicks 25 yds, freestyle w/ side breathing intro, backstroke 15 yds, front & back glide w/ chest out.

EELS: (5 yrs+) Emphasis in breath control, front & back floats 20 sec., treading water for 20 sec., freestyle kick on front & back, breaststroke kick, backstroke, elementary backstroke 15 yds, breaststroke arms 15 yds and glides into strokes.

SEA LIONS: (5 yrs+) Emphasis on surface dives, underwater swimming, breath control, floats 30 sec., tread 30 sec., freestyle & breaststroke kicks 25 yds, freestyle w/ side breathing 50 yds, backstroke & elementary backstroke 25 yds, butterfly 15 yds.

DOLPHINS: (5 yrs+) Emphasis on floats 60 sec., freestyle kicks 50 yds., freestyle stroke 100 yds, backstroke 50 yds, elementary backstroke 25 yds, breaststroke & sidestroke 50 yds, butterfly 25 yds, flip turns, under-water pull outs, pace clock, circle swimming.

ADULT: (all ages) Adult beginning and intermediate swimmers. Skill levels will vary. Focus on water entries, water adjustments, floats, glides, and stroke development.

Level	Days	Times
All levels	M,T,W,Th	Mornings & Evenings
All levels	Sat	Mornings

REGISTRATION

Visit our website at thewavewaterpark.com for exact dates and times.
Classes run April 2012 – October of 2012.

LOCATION: The Wave Waterpark, 101 Wave Dr. , Vista

FEES: $45 per session / per student

Instructor: All instructors are Ellis & Associates Lifeguard licensed (including first aid, CPR, AED, and oxygen use). In addition the instructors are also certified Jeff Ellis Swimming Instructors and have completed The Wave's instructor training course. The beginner levels (Guppies, Starfish, Seahorse) are designed to have a 1:6 instructor to student ratio. The upper levels (Goldfish, Sea Turtles, Eels, Sea Lions, Dolphins) are designed to have a 1:8 ratio. The parent involvement classes will have a 1:10 ratio and the adult levels will have a 1:10 instructor ratio.

CONTACT: The Wave Waterpark at 760.940.WAVE.

REGISTRATION: You may register in person at the Wave Waterpark or call 760.940.WAVE to make a reservation over the phone. Payment will be taken in order to reserve your spot. Registration is taken on a first come first serve basis. Register now!

BADGE PROGRAMS | Ages 7 –15 years

Experience the fun of the Wave Waterpark with an educational twist! Scouts are invited to register for our badge programs to have a unique educational and fun experience. Choose from Water Safety Badge, First Aid Badge, Water Fun Badge or the Swimming Badge (you choose). Participants receive a behind the scenes tour of the Wave, are provided with an instructor and are guided through different educational scenarios. Upon completion of the program, the participants are provided with a Wave Badge and certificate. Badge programs typically last between 45 minutes to 1 hour depending on the group size and are scheduled at all times throughout the day!

Date range / Day of week / Time Any Date / Anytime during normal park operating hours
Location: Wave Waterpark, 101 Wave Drive
Fees: $17.95 fee per perso
(minimum of 10 participants).
Fee includes waterpark admission for entire day
Contact: The Wave Waterpark at 760-940-WAVE.

Registration: Badge Programs must be booked in advance. A $50.00 deposit is required for making a reservation. Estimates are important for booking your event. Please have an estimated attendance number for easy booking. To reserve your badge program please stop by The Wave Office to book in person or call 760.940.WAVE to reserve over the phone.

BABYSITTING CLASSES – BLAST!

Ages 11 years+

BLAST! (Babysitter Lessons And Safety Training) Training Class is an exciting and important class for potential babysitters. The BLAST! program is exciting and interactive, providing extensive training in pediatric first aid, household safety, and the fundamentals of childcare. You will learn the current practices for safety and injury prevention and basic first aid. The BLAST! program is designed to prepare children for interviewing for a babysitting job, select safe and suitable games and activities, prevent accidents, perform first aid, and begin babysitting safely and competently.

Date	Day	Time	Session #
6/09	Sat	10:00am-2:00pm	#1
6/21	Thurs	10:00am-2:00pm	#2
7/07	Sat	10:00am-2:00pm	#3
7/19	Thurs	10:00am-2:00pm	#4
8/04	Sat	10:00am-2:00pm	#5

Location: The Wave Waterpark, 101 Wave Dr., Vista
Fees: $45 per session / per student.
Instructor: Every instructor is ECSI certified, and students will earn a BLAST! Course completion card. The ECSI is an educational organization created for the purpose of delivering the highest quality training to laypersons and professionals in the areas of First Aid, CPR, and AED and related safety and health areas.
Contact: The Wave Waterpark at 760.940.WAVE
Registration: Classes fill up fast, so register early! Payment will be taken in order to reserve your spot. Registration is taken on a first come first serve basis. Register now!

CPR/ FIRST AID/ AED CLASSES

Ages 14 years+

Right now, stop and think! Would you know what to do in the event of an emergency? What if your mother was having a heart attack or your baby was choking? Life is so precious! Learning CPR & First Aid is worth a few hours of your valuable time. Protect your family by making a commitment to be an educated first responder. It may mean the difference between life & death! This course includes certification in CPR (Adult, Child, Infant), First Aid, and AED (Automated External Defibrillator) for the lay rescuer. Participants should wear comfortable clothes and bring a towel (for kneeling on), water, sunscreen (class will be outside), and food or snacks (all day classes have a lunch break).

Date	Day	Time	Session #
5/26	Sat	11:00am-5:00pm	#1
6/24	Sun	11:00am-5:00pm	#2
7/28	Sat	11:00am-5:00pm	#3
8/19	Sun	11:00am-5:00pm	#4
9/16	Sun	11:00am-5:00pm	#5

Location: The Wave Waterpark, 101 Wave Dr., Vista
Fees: $50 per session / per student.
Instructor: All instructors are lifeguards certified through Jeff Ellis & Associates.
Contact: The Wave Waterpark at 760.940.WAVE
Registration: Payment will be taken in order to reserve your spot. Registration is taken on a first come first serve basis. Register now!

WATERPOLO CLASSES | Ages 7+

Join us at The Wave for an informative lesson in the sport of waterpolo! Classes are designed for the beginner participant who is looking to learn the game and basic skills. This is a great introduction class for future athletes looking to play as part of a waterpolo team at the high school level.

Date Range	Day	Time
6/18-6/21	M,T,W,Th	5:30PM-6:30PM
7/02-7/05	M,T,W,Th	5:30PM-6:30PM
7/16-7/19	M,T,W,Th	5:30PM-6:30PM
7/30-8/02	M,T,W,Th	5:30PM-6:30PM
8/13-8/16	M,T,W,Th	5:30PM-6:30PM

Location: The Wave Waterpark, 101 Wave Dr., Vista
Fees: $45 per session / per student.
Instructor: All instructors are lifeguards certified through Jeff Ellis & Associates.
Contact: The Wave Waterpark at 760.940.WAVE
Registration: Sign up for your Waterpolo class today! Payment will be taken in order to reserve your spot. Registration is taken on a first come first serve basis. Register now!

FLOW RIDER CLASSES | All Ages – MUST MEET 42" HEIGHT REQUIREMENT

We are home to North County's only simulated wave! Check out our classes designed for all levels of participants from those who are just learning how to stay on the surface to those who will be competing in the Flow Rider Competition.

Date Range	Day	Time	Level
6/11-6/14	M,T,W,Th,	4:45PM-5:25PM	Intermediate / Advanced
6/11-6/14	M,T,W,Th	5:30PM-6:10PM	Beginners
6/25-6/28	M,T,W,Th	4:45PM-5:25PM	Intermediate / Advanced
6/25-6/28	M,T,W,Th	5:30PM-6:10PM	Beginners
7/09-7/12	M,T,W,Th	4:45PM-5:25PM	Intermediate / Advanced
7/09-7/12	M,T,W,Th	5:30PM-6:10PM	Beginners
7/23-7/26	M,T,W,Th	4:45PM-5:25PM	Intermediate / Advanced
7/23-7/26	M,T,W,Th	5:30PM-6:10PM	Beginners
8/06-8/09	M,T,W,Th	4:45PM-5:25PM	Intermediate / Advanced
8/06-8/09	M,T,W,Th	5:30PM-6:10PM	Beginners

Location: The Wave Waterpark, 101 Wave Dr., Vista
Fees: $45 per session / per student.
Instructor: All instructors are lifeguards certified through Jeff Ellis & Associates.
Registration: The Wave Waterpark at 760.940.WAVE
Registration: Sign up for your Flow Rider class today! Payment will be taken in order to reserve your spot. Registration is taken on a first come first serve basis. Register now!

day camps

This year's Summer Camps offer so much fun, fun, fun!
Brengle Terrace Park is the place to be this summer.

check-out the camps!

adventure camp grades 5-8

Daily field trips to various locations throughout San Diego and Orange Counties. Visit vistarecreation.com for field trip locations.

explorers camp grades k-5

Weekly themed camps in which all camp activities are based. These camps will include a wide-variety of arts, crafts, games, and sports with one field trip per week!

sports camp grades 1-6

Focused on one sport each week, campers will concentrate on basic skills and game fundamentals. There will be one field trip per week!

Each camp offers tons of activities, field trips, guest speakers, a camp t-shirt, special events EVERY Friday, extended care, snacks and lunch all in a safe and fun environment!

extras!

Free lunch program for all kids under 18!
Free extended care hours from 7:00 am to 6:00 pm!

information

REGISTRATION:
Online: vistarecreation.com
In Person: Jim Porter Recreation Center, 1200 Vale Terrace Drive.
Phone: 760.726.1340 ext 1501 / 1571

CAMPS LOCATION:
Jim Porter Recreation Center (formerly Brengle Terrace)
1200 Vale Terrace Drive

TIMES:
Weekdays: 9:00 am – 3:00 pm
Extended Camp: 7:00 am – 6:00 pm
No camps July 4

CAMP FEES:
Adventure Camp: $177 resident, $212 non-resident
Explorers & Sports Camps: $139 resident, $167 non-resident
Holiday Camp: $112 resident, $132 non-resident
Single day rates are available, check with the office for details.

summer fun
under the vista sun!

Summer day camps

SUMMER DAY CAMP

Come play with us! Spend the day with old friends or make new ones as you create fantastic works of art, participate in fun games, learn new sports skills, travel to exciting destinations and dive into a wide variety hands-on activities. There is so much going on you won't know where to start.

Our fully inclusive camps offer a wide variety of activities, extended programming, guest speakers, special events, field trips, camp shirt, snacks and lunch at no extra cost. Single day advanced registration is permitted, space limitations may apply, see office for details.

COUNSELORS IN TRAINING | 9 - 11 grade

Interested in becoming a future camp counselor? This program will give you the training, skills & experience necessary to be part of the team. Registration Form (application) is available on our website at vistarecreation.com. For more information please contact the Day Camp office.

Dates: June 11 to August 10 from 9:00am to 3:00pm.
Cost: $70 Vista resident per week / $84 non-resident per week

RANCHO BUENA VISTA ADOBE CAMP

Session #	Dates	Ages	Fees
Session 1:	July 9 - 13	Age 7-11*	$62/$74
Session 2:	July 23 - 27	Age 7-11*	$62/$74
Session 3:	Aug 6 -10	Age 7-11*	$62/$74

The history of early Vista and the region comes alive for our campers as they experience the ways of life and traditions of our early residents. Campers will make crafts, play old fashioned games, and make baked goods in our kitchen. Each day will be jammed-packed with plenty of fun!

Location:
Rancho Buena Vista Adobe
651 East Vista Way (adjacent to Wildwood Park)

Times and Days:
9:00 am – Noon Weekdays.
Extended camp not available.

Fees and Ages:
$62 for resident; $74 for non-resident
*Camp is open to ages 7-11, no exceptions

day camp offerings

Session 1, June 11 - 15: SoCal Locals
Adventure Camp: Cruisin' San Diego (grades 5-8)
Explorers Camp: SoCal Kids (grades K-5)
Sports Camp: Basketball (grades 1-6)

Session 2, June 18 - 22: Director's Cut
Adventure Camp: Hot Spots (grades 5-8)
Explorers Camp: Express Yourself (grades K-5)
Sports Camp: Baseball (grades 1-6)

Session 3, June 25 - 29: Earth, Wind & Fire
Adventure Camp: Living Green (grades 5-8)
Explorers Camp: Wacky Science (grades K-5)
Sports Camp: Flag Football (grades 1-6)

Session 4, July 2 - 6: Holiday Camp
Let Freedom Ring! (grades K-8)
All camps this week are combined. No camp July 4.

Session 5, July 9 - 13: Wondrous Wildlife
Adventure Camp: Animal Adventure (grades 5-8)
Explorers Camp: Summer Camp Olympics (grades K-5)
Sports Camp: Soccer (grades 1-6)

Session 6, July 16 - 20: Wacky Sports
Adventure Camp: Pump It Up! (grades 5-8)
Explorers Camp: Summer Day Camp Olympics (grades K-5)
Sports Camp: Baseball (grades 1-6)

Session 7, July 23 - 27: Wet-N-Wild
Adventure Camp: Catch the Wave (grades 5-8)
Explorers Camp: Fun in the Sun (grades K-5)
Sports Camp: Basketball (grades 1-6)

Session 8, July 30 - Aug. 3: Culinary Creations
Adventure Camp: Dog Days of Summer (grades 5-8)
Explorers Camp: Top Chef (grades K-5)
Sports Camp: Super Size Sports Combo (grades 1-6)

Session 9, Aug. 6 - 10: World of Amazement
Adventure Camp: Museum Madness (grades 5-8)
Explorers Camp: Time Travelers (grades K-5)
Sports Camp: Soccer (grades 1-6)

Session 10, Aug 13 - Aug. 17: Island Fever
Adventure Camp: Kahakai – Beach (grades 5-8)
Explorers Camp: Mahalo Hoaloha - Thank you, Friend (grades K-5)
Sports Camp: Flag Football (grades 1-6)

adult sports

SOFTBALL

It's time to break out the bats and get on a team. Vista's coed, men's and women's summer leagues registration begins June 4. Games fit into your work-play schedule and are played evenings Sunday through Friday. At the end of your work day, change out of your work clothes, grab your bat and glove and join your friends to play just for the fun of it.

SOFTBALL 411

Registration: begins June 4-August 3, 2012
Play Ball: placement games begin August 6
Location:Brengle Terrace and Breeze Hill Parks
Fees: $419 resident teams (two or less non-residents permitted on roster). $502 non-resident team (three or more non-residents on the roster). $15 umpire fee per game payable to the umpire.
Registration: on a first-come, first-served basis. Register early! Register at the Civic Center Recreation Office, 200 Civic Center Drive, Monday – Thursday 9 am – 4 pm and Fridays 9 am – 3 pm; or the Jim Porter Recreation Center, 1200 Vale Terrace Drive, Monday – Friday 9 am – 4 pm.
Individual Players: call the number below to be placed on the Free Agents List.
Information: Rob Anderson, 760.726.1340, ext. 1576.

ZUMBA FITNESS | 15 years & Up | Punch Cards

Getting fit has never been so much fun! ZUMBA is one of the fastest growing dance-based fitness crazes in the country. With it's easy-to-follow dance moves and motivating Latin rhythms such as Merengue, Salsa, Cumbia, Reggaeton even Belly Dance and hip hop. Zumba is the most fun you've ever had working out. Zumba is offered the following days, times and locations. Punch cards are available in 5 and 10 class punches. The punch cards also work for the Zumba Toning classes.
Location: Jim Porter Recrreation Center

Day	Time
Wednesdays	6:00-7:00pm
Saturdays	9:00-10:00am

No Zumba or Zumba Toning on the following days: 5/28, 6/25, 7/4, 7/30, 8/27
Fees: $71 resident; $84 non-resident (10 punches); $36 resident; $43 non-resident (5 punches)
Instructor: Jan Saddington

ZUMBA TONING | 15 years & Up | Punch Cards

Jim Porter Recreation Center
Ready to have fun while taking your workouts to a new level? ZUMBA TONING is the perfect way to do just that. It combines body-sculpting techniques along with exciting Zumba music & moves for one calorie-burning, strength-training hour of fun. Students learn how to use 2 1/2 lb lightweight, maraca-like Zumba Toning Sticks to enhance rhythm and tone all their target zones, including arms, abs, glutes and thighs while maintaining the party atmosphere that Zumba is famous for. Punch cards are available in 5 and 10 class punches. The punch cards also work for the Zumba Fitness classes.

Day	Time
Mondays	6:00-7:00pm
Thursdays	6:00-7:00pm

No Zumba or Zumba Toning on the following days: 5/28, 6/25, 7/4, 7/30, 8/27
Fees: $71 resident / $84 non-resident (10 punches); $36 resident / $43 non-resident (5 punches).
One-Time Materials Fee: $20 (Sticks)
Instructor: Jan Saddington

FLIGHT ACTION SPORTS | ADULT FLAG FOOTBALL | 18+ years

Flight Action Sports (FAS) is San Diego County's premier 6-on-6 adult flag football league organization. Our mission is to provide both competitive and recreational flag football leagues for individuals and teams who want to experience and enjoy the true passion of the sport of flag football. Our 6-on-6 adult flag football leagues allow players 18 & up the opportunity to experience an elite sports organization with the focus being on the players.

Flight Action Sports Provides:

- Year-Round Leagues starting in January/May/September
- Online player and team game stats
- Exciting playoffs, county championships & all-star games
- Free Agent & Team Sign-ups
- Championship trophies, medals & apparel
- Competitive league divisions for all skill levels

Day & Time: Saturdays 10am - 6pm
Location: Brengle Terrace Park
Fees: $400 per team; $50 per Free Agent
For more information, please contact Joel Goetzinger at 619.890.3257 or by email at info@flightactionsports.com.

ADULT TENNIS | 13 years & Up | 8-9 classes

For teens and adults who already love the game, know some strokes and have some knowledge of tennis. Come and enjoy further instruction from Heide Clay who gives you pointers on your swing and increase your knowledge of the game. Bring your racquet and a new (unopened) can of balls.

Date	Day	Times	# Sessions
5/2-5/30*	Mon/Wed	5:30-6:30pm	8
6/4-6/27	Mon/Wed	5:30-6:30pm	8
7/2-7/30*	Mon/Wed	5:30-6:30pm	8
8/1-8/29	Mon/Wed	5:30-6:30	9

**No classes on 5/28 & 7/4*
Location: Brengle Terrace Park Tennis Courts
Fees:$73 resident; $88 non-resident (8 classes);
$82 resident; $99 non-resident (9 classes)
Punch Cards also available in 5 or 7 class increments
Instructor: Heide Clay

TENNIS LESSONS: PRIVATE & SEMI-PRIVATE | All Ages

Grab your racquet and learn from a pro to improve your game. Instructor Heide Clay is a Certified USTPA Pro and a USTPA Developmental Coach. She has been playing and teaching tennis for many years. Receive one-on-one attention or bring a couple of friends. The semi-private lessons are for groups of 2-4. Tennis is a great form of exercise and is considered a life-long sport because it can be enjoyed by all ages. You can schedule one lesson or set up a series.

Days & Times Available for lessons: Mon., Wed., and Fri.: 11:30am-3:00pm / Tues. & Thurs: 2:00-5:30pm / Sat. 12:00-2:30pm
Fees: $51 Vista resident; $61 non-resident per one hour session
Location: Brengle Terrace Park, Court # 7
To schedule a lesson: Call 760.726.1340 ext. 1571

WOMENS TENNIS CLUB | 18 + Years

The Women's Tennis Club invites new players to experience doubles play at Brengle Terrace Park weekday mornings.

When: Meets weekday mornings
Where: Brengle Terrace Park, 1200 Vale Terrace
Fees: Varies by member vs. substitute and by residency
Registration: Register with the Women's Tennis Club by calling 760.726.1340 ext. 1571
Contact: Barbara Voelpel 760.716.9517

DROP-IN ROTATION PLAY | 18 + Years

Are you looking for a fun and casual tennis experience? Come out and join the drop-in rotation group.

When: Sunday-Friday 8:00am
Fees: Free
Location: Brengle Terrace Park, 1200 Vale Terrace
Registration: No registration required, just show up ready to play.
Contact: Barbara Voelpel 760.716.9517

OPEN PLAY AT LUZ DURAN PARK AND VISTA SPORTS PARK

Are you looking for a fun and safe place to practice? If so then stop by Luz Duran Park or Vista Sports Park to get involved! All open play activities are subject to change and/or cancellation due to field reservations or field renovations.

Sport	Day	Time	Location
Soccer	Mon-Fri	8:00am-4:00pm	Luz Duran Park
Soccer, Baseball, Football	Mon-Fri	8:00am-4:00pm	Vista Sports Park

Fees: Free Admission, days and times may vary pending on youth league activities.

Moonlight
STAGE PRODUCTIONS

32nd Summer Season
AT THE MOONLIGHT AMPHITHEATRE

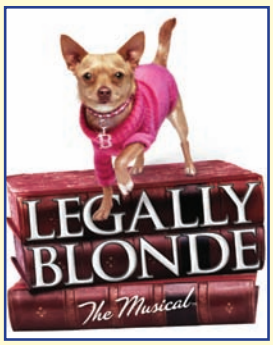

June 27-July 14

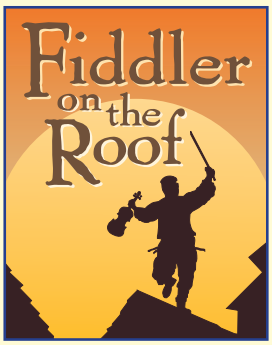

July 25-Aug. 11

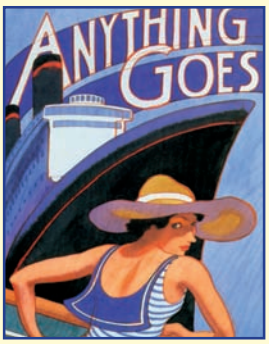

Aug. 22-Sept. 8

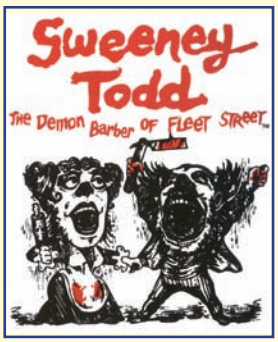

Sept. 19-Oct. 6

An Entertainment Experience Like No Other.

CALL OR CLICK TO ORDER

(760) 724-2110 • moonlightstage.com

Moonlight Amphitheatre • Vista • 1200 Vale Terrace Drive

Produced by the City of Vista in partnership with the Moonlight Cultural Foundation

WICKED
San Diego Civic Theatre
June 23, 2012

Winner of 35 major awards including the Grammy and three Tonys, "Wicked" is the untold story of the witches of Oz. Long before Dorothy drops in, two other girls meet in the land of Oz. One, born with emerald-green skin, is smart, fiery and misunderstood. The other is beautiful, ambitious and very popular. Wicked tells the story of their remarkable odyssey, how these two unlikely friends grew to become the Wicked Witch of the West and Glinda the Good.

AMERICA'S MUSIC CITIES
October 15th – 22nd, 2012

The first stop is Nashville where we'll tour Music Row, downtown, Studio B, and your choice of tours to the Music Hall of Fame or Ryman Auditorium. We'll enjoy a home cooked meal at the Fontanel Mansion and lunch at the famous Wildhorse Saloon. Then it's on to Memphis. Tour Sun Records, Beale Street, St. Jude's Children's Hospital, the Peabody Hotel for the "Duck Walk," and Graceland. Next, head to Branson through the amazing Ozark Mountains. In Branson pick four shows from eight of the most popular entertainers. You'll have free time to shop and explore. Trip includes 14 meals, round-trip airfare, including baggage fees & handling, home pick-up, deluxe motorcoach, and AFC tour manager.

Double per person $2099.00 Single $2459.00
Taxes $89.00

MYSTERY TOUR – HOLIDAY LIGHTS
December 3rd – 8th, 2012

If you're feeling adventurous for more than our usual one day surprise trip, you're going to love this holiday themed mystery trip from AFC tours! Like their other trips, home pick-up, airfare, luggage fees, AFC tour manager, 2 or more meals a day, and all entrance fees and attractions will be paid for; no extra add-ons. From the moment we arrive at the airport until we return, everyday will be like opening a beautifully wrapped gift! Join us for an adventure you won't soon forget. And since we don't leave the USA, you can cross off the North Pole as a guess!

Double per person $1449.00 Single $1729.00

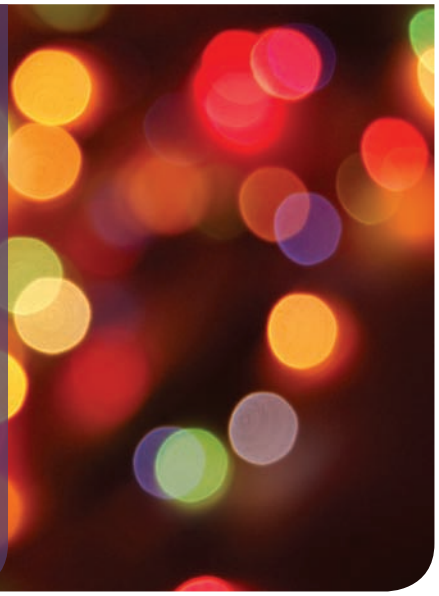

CULTURE CARAVAN

Providing active adults with a variety of day trips and fun social vacations

For over 30 years, the City of Vista's Culture Caravan travel program has brought the cities of North County unique travel experiences to destinations all over Southern California and beyond. With an emphasis on day trips, we take care of all the details including deluxe transportation, best available tickets, delicious meals, and of course our wonderful volunteer guides to guide you through the day. Memories, friendship, no hassle travel, the newest venues, and easy on the wallet; that's what you'll experience when you take a Culture Caravan trip.

Upcoming Day Trips:

Taylor Guitars, Surprise Trip, Rescue 911, Cabrillo & Coronado Flower Show, Living Desert Zoo in Palm Desert, Quail Gardens, Titanic Exhibit, Miracle Workers, New San Diego Museums, Addams Family & Wicked, MCRD & USS Midway, Japanese Gardens, Padre Game, Cirque Wings, Viejas Casino, and Skirball Museum.

Home Run Party on Friday, June 8th at 12:30 p.m. Come have a hotdog and see the new brochure; prizes and lots of fun.

Let Us Plan Your Next Vacation

Culture Caravan provides active adults with fun social vacations with transportation on deluxe motor coaches and no membership fees.

Call 760.643.2828 or email cbyler@cityofvista.com for current offerings.

Make a difference and join our Paper Plate Campaign!

Help to sponsor lunch meals for seniors in the community. Their average age is 82 and many of them live alone and depend on a daily nutritious meal. Your donation will help to pay their contribution!

Senior Center dining room meals:
$3.50 for one meal
$17.50 for one week
$75 for one month

Home-delivered meals:
$4 for one meal
$20 for one week
$85 for one month

Checks payable to the City of Vista and send directly to the Senior Center, c/o The Paper Plate Campaign, 1400 Vale Terrace Drive, Vista 92084

Volunteers Needed for Out & About Vista

Take a Turn in the Right Direction!
Become a Volunteer Driver Today!

If you enjoy helping people in your community and have a few hours to spare each week, consider becoming a volunteer driver for local homebound seniors.

Becoming a Driver is Easy!
You provide the ride and we provide you with mileage reimbursement, supplemental auto insurance and appreciation.

For more information about our program, please contact Out & About Vista at 760.639.6161.

House a Moonlight Actor

Moonlight Stage Productions is in need of housing for its summer season acting company. Moonlight provides accommodations to actors who reside outside of San Diego County. We are looking for private homes, motor homes or travel trailers located on private properties.

For more information, call 760.639.6199.

city survey

CITY OF VISTA
CALIFORNIA

We want to hear from you! Complete this quick survey and be entered to win prizes! Survey responses will be included in the next RecGuide as well as cityofvista.com.

1. What are your favorite summertime activities in Vista?

2. During other times of the year, what else do you like to do in Vista?

3. Where do you get info on Vista events?

4. Do you read any of the daily newspapers? If so, which ones?

5. What websites do you use to obtain information on events in or outside of Vista?

6. Have you signed-up for the City's e-news? ☐ yes ☐ no. If no, you can do so at cityofvista.com. Once a month, you'll receive info on Vista happenings and news.

Thank you for participating. All submissions will be entered into a drawing to win tickets to an upcoming show at the Moonlight Amphitheatre. Please complete this survey and provide your contact information below. The winner will be selected at random. Entries are due June 1. Your contact information will not be shared and will not be used for any other purposes other than for the drawing.

Name:

Street Address:

City:

Zip:

Email:

If you would like to take this survey online, go to cityofvista.com, or mail survey to Communications Office, Vista Civic Center, 200 Civic Center Drive, Vista, CA 92084

Gloria E. McClellan Senior Center

activities & services

Gloria E. McClellan Senior Center

1400 Vale Terrace Drive
Vista, CA 92084

Drop-in Hours: Mon-Fri 8:00am – 4:00pm
Senior Center Phone Numbers:
Administration: 760.639.6160
Lunch Reservations: 760.724.3362
Lunch Transportation: 760.639.6160
Home-Delivered Meals: 760.639.6162
Out & About Transportation: 760.639.6161
Culture Caravan: 760.643.2828
Project CARE: 760.941.0140

Visit the Community Section of cityofvista.com for more information.

Instructors and New Classes Wanted!

Do you have a special talent or a passion you would like to share with others? Class space is available for a fee on weekdays, evenings, and weekends. Give us a call to discuss your ideas! Contact Leisa Bustanoby, Program Coordinator, at 760.639.6162.

Community Garage Sale
8:00am - 12:00pm

Gloria E. McClellan Senior Center in Brengle Terrace Park | 1400 Vale Terrace Drive | Vista
Time for summer cleaning - clean out your closet and make some money at the same time! Outdoor spaces will be available for $15 each. Space proceeds benefit the senior center. The senior center will provide advertising and event promotion. Coffee and donuts available for purchase the morning of the sale!
Call 760.639.6162 to reserve your space!

exercise classes

♥ Heart Healthy Classes

Positively Fit Class ♥ (Adults 60+)
Focus on balance and flexibility; helps participants prevent falls.
Time: Tue/Thu Advanced level 9:30 – 10:20am; Tue/Thu Beginning level 10:30 – 11:20am
Location: Azalea Room
Fees: $24/8 classes
Instructor: Carol Hydrusko
Register first Tuesday of the month.

Stretch Exercise with Carl ♥ (Adults 60+)
An easy and fun way to stretch and build muscle strength.
Time: Wed 10:00am
Location: Park Terrace Café
Fees: Donation of $3.00
Instructor: Carl Grubbs

Line Dance ♥ (Adults 55+)
A great exercise for adults of all ages.
Beginning: Mon 11:30am-12:30pm
Intermediate: Wed (except 2nd Wed) 11:30am-12:30pm
Intermediate & Advanced: Mon 1:30pm-3:00pm
Intermediate Plus: Wed (except 2nd Wed) 1:00pm-2:30pm
Location: Azalea Room
Fees: Donation of $3/am classes or $4/pm classes
Instructor: Helen Pietroforte

Yoga ♥ (Adults 60+)
Please bring a mat.
Time: Tue 1:00-2:30pm
Fee: Requested Donation
Location: Azalea Room
Provider: Silver Age Community Outreach

classes

AARP Driver Safety Class (Adults 55+)
Refresher driving course qualifies adults for discounts on their auto insurance.
8-hour course: 5/29 & 5/31 12:30-5:00pm
4-hour course: 7/31 12:30-5:00pm
Fee: $12 AARP members, $14 non-AARP members (checks only-payable to AARP)
Location: Jasmine Room
Provider: AARP. Sign up in the office of the Senior Center

Knitting Circle (Adults 55+)
Beginning to Advanced – all knitters and crotchetiers welcome!
Time: Wed/Fri 10:00am-12noon
Location: Lobby Area
Fee: No charge, free yarn and needles (if available) or bring your own projects.

Sunset Strummers
A group of adults having fun, singing, and strumming along with their ukuleles! Recorders too!
Beginning Recorders: Mon/Thu 8:00-8:30am
Beginning: Mon/Thu 8:30–10:00am
Intermediate: Mon/Thu 10:00-12:00pm
Location: Jasmine Room
Fee: Free
Contact: Eleanor Nedjar: 760.458.9322

Vista Senior Citizens Affairs Commission

Established in 1989, the VSCAC is an advisory commission that makes recommendations to the City Council on all matters pertaining to older adults in Vista.

Carolyn Chetister, *Chair*
Margaret Coon
Robin Iveson
Nancy Kropf
Sharon Larimar
Darcy Mulholland
Phyllis Skall

No eligible person shall be denied a meal or nutrition transportation because of failure or inability to contribute.

Our senior nutrition program will be changing May 1. New lunch hours will be 11:30 am to 12:30 pm. **Buffets and special luncheons will still be held at noon.**

Senior Nutrition Program (Adults 60+)
Enjoy nutritious meals, entertainment and fellowship every week.
Mon-Fri 12 noon (see new hours above beginning May 1)
Suggested contribution $3.50/meal ($6 charge for less than 60 years old and accompanying a senior)
Location: Park Terrace Café at the Gloria E. McClellan Senior Center
Reservations: 760.724.3362, taken up to 1 day prior to lunch.

Home-Delivered Meals (Adults 60+)
Homebound Vista residents can receive nutritious meals delivered to their home.
Mon-Fri (weekend frozen)
Location: Delivered to home
Contact: 760.639.6162
Suggested contribution is $4/meal

Frozen Meals to Go
Nutritious to go meals; made fresh on site.
Days: Every Friday (call 760.639.6160 to verify if meals are available)
Location: Park Terrace Café
Time: 11:00am – 12noon
Cost: $2

Nutrition Program Transportation
Adults 60+ Vista residents, transportation to and from lunch program.
Mon-Fri
Location: Door-to-door service
Contact: 760.639.6160; call one day prior
Suggested contribution is $1.00 round-trip.

Angel's Depot Food Boxes (Adults 60+)
Vista residents with low income who are 60+ and adults 55+ with disabilities may receive a monthly twenty pound box of nonperishable food. Please pick up application in the administration office.
Contact: 760.599.7093

services

Out & About Transportation (Adults 60+)
Nationally recognized as 1 of 50 'Best of the Best' programs!
Vista residents receive daily bus shuttle service for errands and medical appointments; also provides mileage reimbursement for volunteer drivers when adults are transported in privately-owned vehicles.
Time: Mon-Fri; Sat for special events
Fee: $3/trip; $5/trip outside Vista area; $10 for rides that are more than 50 miles roundtrip; mileage reimbursed to vounteer drivers.
Location: Door to door service
Contact: 760.639.6161; call 24 hours prior.

STRIDE
Adults, families, and caregivers, STRIDE San Diego is your web site source for comprehensive information about San Diego's public and private specialized transportation providers for the elderly and disabled. Free of charge, log onto stridesd.org.

Legal Services (Adults 60+)
For adults in need of legal advice.
Time: 2nd Tuesday 10:00am to 3 pm
Fee: Free
Location: Conference Room
Provider: 760.439.2535 for appointment

Health Insurance Counseling Advocacy Program (HICAP) (Adults 60+)
Trained counselors help with medical bills, insurance questions and HMO assistance.
Days: 1st Wednesday
Time: 9:15am - 12:15pm
Fee: Free
Location: Conference Room
Register: Call 1.800.434.0222 for next available appointment

Project CARE (Adults 60+)
Project CARE is the effort of an entire community to allow those who are vulnerable to live with dignity, security, and comfort knowing that there are many people out there who care. The program includes postal alerts, gatekeeper, "are you okay?" vial of life, minor home repair, care management, home safety checks, safe return, and you are not alone.
Location: Project CARE office
Contact: Nadine Kaina, 760.941.0140

Audiologist (Hearing Screenings) (Adults 55+)
Licensed audiologist provides hearing screenings.
Dates & Times: 2nd Wednesday of month (subject to change) 2:00-4:00pm
Fee: Free
Location: Gloria E. McClellan Senior Center, Conference Room

Parkinson's Support Group
Support Group for those whose lives are impacted by Parkinson's disease including the Parkinsonian, family members, and friends.
Time: 2nd Wed, 10:00am-12:00pm
Fee: For info call 760.940.2763
Location: Azalea Room
Instructor: North County Parkinson Group

Nutrition Education/Individual Dietary Planning
Adults 60+, individual nutrition planning, one hour appointments.
Day & Times: 3rd Thursday 9:30am-11:30am
Fee: Free
Location: Conference Room
Register: Call 760.639.6162.
Counselor: Linda Gastelum, Registered Dietician, Tri-City Medical Center

activities

Bridge (Duplicate) (Adults 55+)
Duplicate bridge group.
Day & Times: Wed 12:30 – 4:00pm
Fee: $2 to play
Location: Jasmine Room
Provider: Vista Duplicate Bridge Club, Paul Landrum, Bridge Director 760.729.3313

Food for Thought – National Award Winning Program
Adults 60+, gentle yoga followed by gourmet lunch.
Days & Times: 1st and 3rd Thu 11:00am-1:00pm
Fee: suggested contribution $3.50/meal ($6 charge for less than 60 years old).
Location: Vista Library, 700 Eucalyptus Avenue
Contact: 760.726.1340 ext. 1531 or 1539

Bingo for Prizes (Adults 60+)
Play fun Bingo games and win prizes! Free, but you must have a lunch reservation!
Days & Times: Second and Third Tuesday of the month 11:15am-12:00pm
Fee: Free (must have lunch reservation)
Location: Park Terrace Café
Provider: Leisa Bustanoby

Sell Your Wares
One man's junk is another man's treasure.
Day & Times: Third Thursday of month, 10:00am-Noon
Fees: $5 for card table/$10 for 60" round table
Location: Park Terrace Café
Reserve with Leisa at 760.639.6162

Bocce Ball
Learn how to play Bocce Ball.
Day & Times: Tue 1:00-3:00pm
Location: Brengle Terrace Park, Bocce Ball Courts
Coordinator: Jeanne Wilson, 760.643.2828 for more information

Horseshoes
Learn how to play horseshoes.
Day & Times: Fri 1:00-3:00pm
Location: Brengle Terrace Park, Horseshoe pits near play equipment
Coordinator: Jeanne Wilson, 760.643.2828 for more information

Birthday & Anniversary Celebration
Sign up on the clipboards in the lobby! Cake and presents!
Day & Times: Last Fri of month, 11:45am
Location: Park Terrace Café

Bridge (Contract) (Adults 55+)
Social bridge group. Bring a friend!
Day & Times: Thursdays 12:30-4:00pm
Location: Jasmine Room
Coordinator: John Eastland

Computer Lab
Lab open to surf the net, check emails, have some cyber computer fun! Classes, too!
Days & Times: Mon – Fri 10:00am-3:30pm (except when class is in session)
Location: Computer Lab
Coordinator: Maureen Cooper

Drop-In Cards - bring a card partner!
Adults 55+, social group that plays a variety of card games.
Day & Times: Tuesdays Noon-4:30pm
Location: Lobby Area

Friendship Group (Adults 55+)
Discussion group that socializes and discusses topics of the day – promotes friendship.
Day & Times: Tuesdays 1:45-3:15pm
Location: Park Terrace Café

Monthly Movie
Free movie, snacks and drinks!
Time: Last Friday of month, 1:00-3:30pm
Location: Azalea Room

Ping Pong
Table available. Bring a friend!
Days & Times: Mon-Fri 8:00am-4:00pm
Location: Park Terrace Café

Weekly Wii and Popcorn! (Adults 55+)
Join us for the latest craze! Fresh popped popcorn for players and spectators.
Day & Times: Fridays 11:00am - 12noon
Location: Park Terrace Cafe

Toe Tappers
Senior tap dancing group practice.
Dates & Times: Mon/Thu 9:00-10:00am
Location: Park Terrace Café Stage
Contact: Doris 760.480.6112 or 760.471.6553

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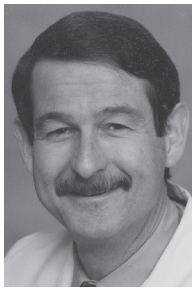

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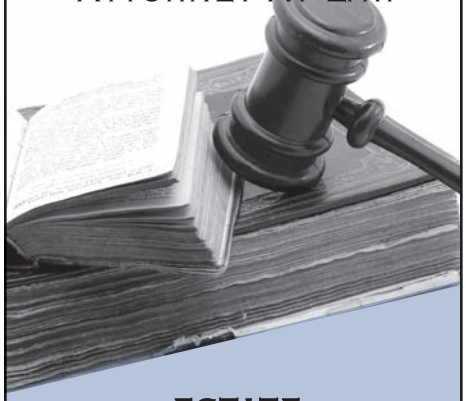

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Day and Time: Wednesdays 9:00am-12 noon except 2nd Wednesdays
Location: Jasmine Room
Cost: Free
Contact: Leisa Bustanoby, 760.639.6162
NOTE: For this club, you must provide your own materials. A list will be given to you upon registration.

Vista Gem & Mineral Society
Open to the public.
Day and Time: 3rd Thursday of the month, 7:30pm
Location: Azalea Room
Coordinator: Vista Gem & Mineral Society, 760.724.0395 for membership info

Vista Garden Club
Open to the public – all adults.
Day and Time: 1st Fri (except May, Jul, Aug, and Nov – no meeting) 11:00am-3:00pm
Location: Azalea Room
Provider: Vista Garden Club, 760.639.5395

Senior Commission Meeting
Open to the public, advises and discusses issues that affect mature adults in the community.
Day and Time: 4th Wed (Jan, Mar, May, Jul, Sep, & Nov) 1:30-3:00pm
Location: Conference Room

Senior Nutrition Advisory Committee
Nutrition Advisory Committee meeting. All are welcome!
Day and Time: 3rd Wed 1:00-2:30pm
Location: Conference Room

Tri-City Computer Club
Seniors 55+, personal computer user group meeting and presentations.
Day and Time: Tue 1:00-3:00pm (except 5th Tuesday)
Location: Jasmine Room
Contact: Randy Crumpler 760.940.4253

Oasis Classes | Summer 2012

We've partnered with OASIS in Escondido to expand our offerings. For more information, please visit the Senior Center for a catalog or go online to oasisnet.org/Escondido. Note: You will pay a per trimester processing fee of $10 in addition to the course fee.
To register, call 760.796.6020.

Which Computer Class is for Me?
Tue, Jun 5, 1-3:00pm, Free

Joys of LibreOffice
Mon, Jun 18, 1-3:00pm, $18

Wonderful World of Windows 7
Tue, Jun 19, 1-3:00pm, $15

Decision Making with Excel
Wed, Jun 20, 1-3:00pm, $18

Creating Graphics with Inkscape
Mon, Jun 25, 1-3:00pm, $18

Windows 7 Backup
Tue, Jun 26, 1-3:00pm, $15

Beyond the Basics
Mon, Jul 9 – 30, 1-3:00pm, $40

Introduction to Computers,
Tue & Thu, Jul 24 – Aug 1, 1-3:00pm, $40

Demystifying Your Computer
Mon, Aug 6 – 13, 1-3:00pm, $24

Windows 7 Security
Tue, Aug 7, 1-3:00pm, $15

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FACILITIES & VENUES

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Wave Waterpark

Rancho Buena Vista Adobe

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Park Terrace Café and the Azalea Room at the Gloria E. McClellan Senior Center

Jim Porter Recreation Center

Thibodo Community Center

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With 13 beautiful parks and nine great facilities, the City of Vista can host any size event. From weddings, theatrical performances and concerts, birthday parties, weddings, meetings, business conferences, to dinners, Vista has the right venue to meet your needs. Our competitive rental fees won't strain your budget.

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COMMUNITY ROOM

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The Wave is looking for great people with Splashtacular Smiles!
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for future marketing and promotional materials along with
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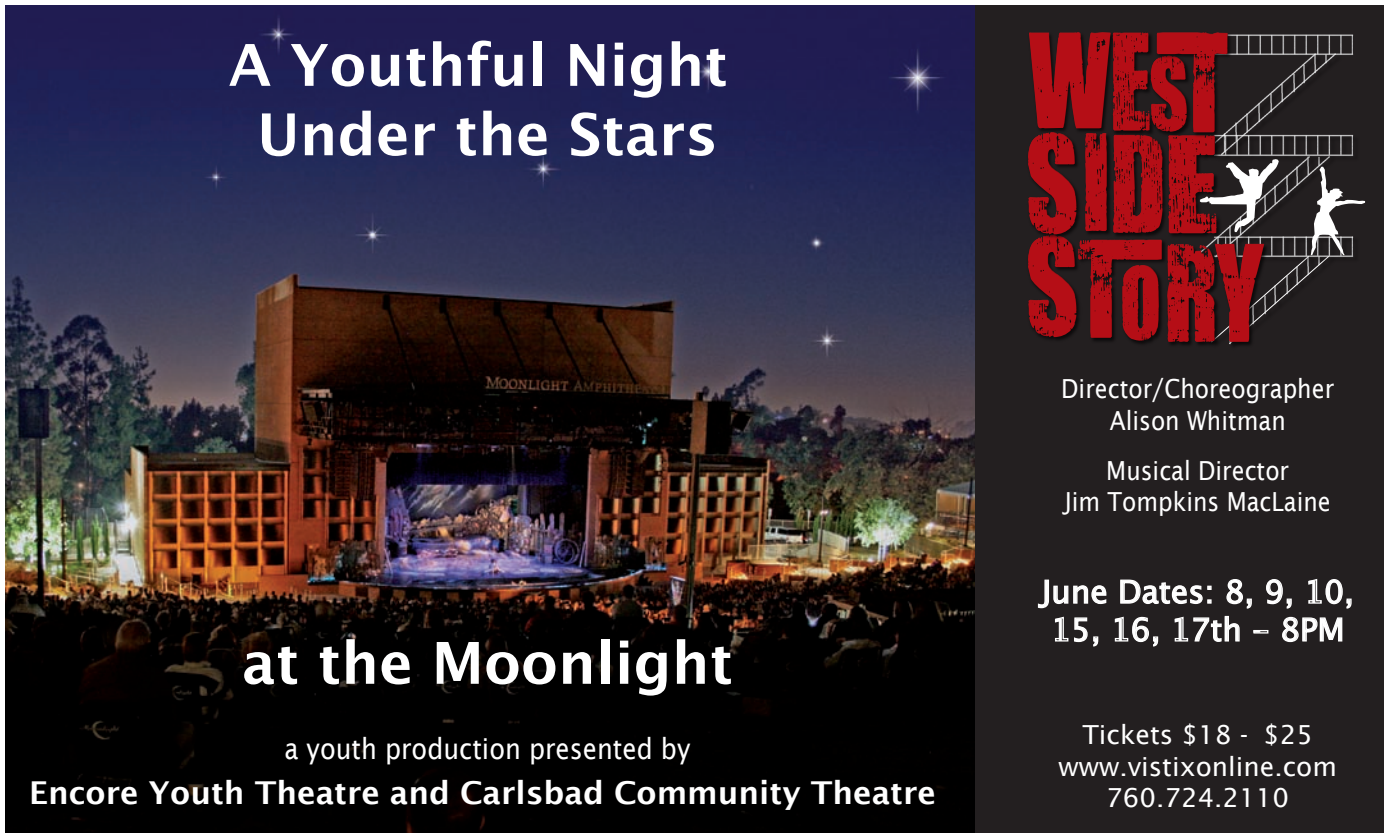
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at the Moonlight
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Encore Youth Theatre and Carlsbad Community Theatre
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Alison Whitman
Musical Director
Jim Tompkins MacLaine
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CITY OF VISTA

PARKS & FACILITIES

C2 | Avo Playhouse
Historic movie house restored to a stage house in downtown Vista.
303 Main Street

B3 | Breeze Hill Park - 6 acres
Lighted sports fields, basketball courts, picnic tables, restrooms and a tot lot.
645 S Melrose

E2 | Brengle Terrace Park & Rec Center - 81.7 acres. Vista's master planned park provides lighted sports fields, lighted tennis courts, basketball courts, volleyball courts, picnic tables, barbecues, restrooms, gazebos and pavilions, and bocce ball and horseshoe pits. Recreation Center has meeting rooms, gymnasium, restrooms and auditorium. Alta Vista Gardens, Senior Center and the Moonlight Amphitheatre are featured in the park.
1200 Vale Terrace

A2 | Bub Williamson Park - 8.7 acres
Sports fields, restrooms and a pavilion.
530 Grapevine Road

C5 | Buena Vista Park Ballfields - 15 acres. Lighted sports fields and restrooms.
1851 S Melrose

C2 | Civic Center Park - 3 acres
Passive park with seat walls, a trail and walkways.
200 Civic Center Drive

C5 | Buena Vista Park Pond & Open Space - 146 acres. Features walking trails, duck pond, restrooms and picnic tables.
1601 Shadowridge Drive

E2 | Gloria E. McClellan Senior Center
The Senior Center provides health and wellness activities and nutrition programs for the community. Facility located in Brengle Terrace Park includes meeting rooms, restrooms, auditorium and catering.
1400 Vale Terrace

C2 | Luz Duran Park - 6 acres
Synthetic soccer fields, picnic tables, tot lot and restrooms.
340 E Townsite Drive

E2 | Moonlight Amphitheatre
State-of-the-art outdoor amphitheatre provides performance space, meeting rooms, restrooms and permanent seating in Brengle Terrace Park.
1200 Vale Terrace

C2 | Raintree Park - 1 acre
Synthetic turf soccer arena, handball courts, tot lot and restrooms.
545 E Townsite Drive

C2 | Rancho Buena Vista Adobe - 1.9 acres. Historic home is fully furnished and open for tours Thursday-Saturday, 10 a.m. - 3 p.m. for a small fee. Property has lush gardens featuring exotic roses and native plants. Home provided perfect backdrop for special occasions and meetings.
640 Alta Vista Drive

E5 | Shadowridge Park - 11.4 acres
Basketball courts, picnic tables, restrooms and a children's playground.
2101 Lupine Hills Drive

C6 | South Buena Vista Park - 6 acres
Basketball courts, picnic tables, restrooms and a tot lot. Off-leash play time for dogs available from 7-10 a.m. and 4 p.m. to dusk. Walking trails connect with Buena Vista Park and Open Space trails.
1602 Mountain Pass Circle

Dogs are welcome in Vista's park but must be on-leash and have current license.

C4 | Thibodo Park & Community Center - 9 acres. Lighted tennis and basketball courts, picnic tables, tot lot and restrooms. Historic home ideal for special occasions and meeting rooms.
1150 Lupine Hills Drive

C2 | The Wave Waterpark - 3 acres
Features six slides, lazy river, children's water playground, competition pool and the FlowRider wave simulator. Admission fees available online at thewavewaterpark.com.
101 Wave Drive

B1 | Vista Sports Park - 16 acres
Lighted sports fields, toddler playground, picnic tables and restrooms.
1600 Sports Park Way

C2 | Wildwood Park - 5 acres
Picnic tables, restrooms and a children's playground.
651 E Vista Way

Vista's parks are smoke-free zones.

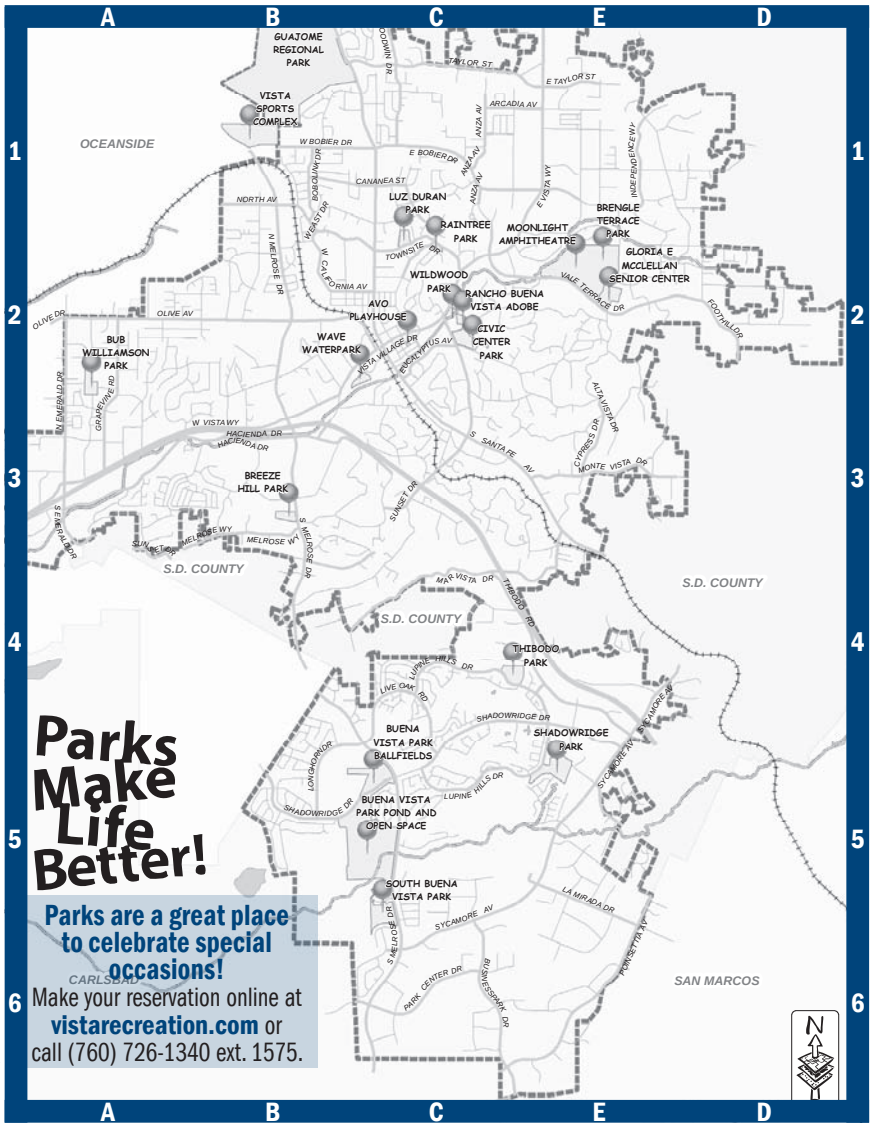

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Vista's Summer of Fun!

APPENDIX G-4
SPLASH LAB & GREEN MACHINE
OUTREACH PROGRAMS

From: Andrea McCullough
Sent: Tuesday, July 26, 2011 9:00 AM
To: Andrea McCullough
Subject: City of Vista Media Rel: Splash Lab Comes to Vista Summer Camps

Attachments: image004.gif; image006.jpg; image001.jpg; image001.gif; image003.jpg; image003.jpg; image001.gif; image006.jpg; image004.gif; image001.gif; image003.jpg; image005.jpg

CITY OF VISTA
200 Civic Center Drive
Vista, CA 92084

FOR IMMEDIATE RELEASE
July 26, 2011

From: Andrea McCullough
City of Vista Communications Officer
Phone: 760.726.1340 ext. 1438
amccullough@cityofvista.com

CONTACT: Paul Hartman
Storm Water Program Manager
Phone: 760.726.1340 ext. 1373
phartman@cityofvista.com

**** PHOTO OPPORTUNITY BETWEEN 10 a.m. and Noon****

SCIENCE ON THE MOVE AT CITY OF VISTA'S SUMMER DAY CAMPS

Vista, CA – It excites children about science and the wonderment of the world around them and is mobile, colorful and full of self-contained laboratory stations. It is the San Diego County Office of Education's Splash Science Mobile Lab which will be visiting the City of Vista's Summer Day Camp participants on Wednesday, July 27 at Brengle Terrace Park, located at 1200 Vale Terrace Drive.

The Splash Lab is a completely self-contained mobile lab that provides children with hands-on water quality and watershed experiences. The program is hosted by the San Diego County Office of Education and funded through various grants awarded to the City's Water Quality Protection Division. The City of Vista is required under State law to provide environmental education and outreach to the community. The grants allowed the City to fund the mobile Splash Lab program in Vista schools this past school year.

During the “Splash” visit, children learn about local water issues and the effects of trash, pesticides, and other pollutants on the region’s water resources. Participants become “investigative scientists” conducting investigations in how water pollution affects the environment and wildlife.

To learn more about the City’s summer day camp program or the Mobile Splash Lab visit, the public should contact Vista Recreation & Community Services at (760) 726-1340 ext. 1501.

###

City of Vista Press Room

****

Andrea McCullough
City of Vista l Communications Officer
200 Civic Center Drive l Vista CA l 92084
p: 760.726.1340 ext. 1438

APPENDIX G-5
MUNICIPAL SURVEY

2012 Water Quality Survey for the City of Vista

1. Water Quality Survey

1. A watershed is...? (choose one)

- ◯ An area that retains water, like a swamp
- ◯ Area of land that drains into a specific waterbody
- ◯ A small building used to store water
- ◯ Don't know/not sure

2. Watersheds within the City of Vista include....? (check all that apply)

- ☐ Agua Hedionda
- ☐ San Luis Rey
- ☐ Buena Vista
- ☐ Los Penasquitos
- ☐ Loma Alta
- ☐ None of the above

3. What are the benefits of a functioning wetlands system? (check all that apply)

- ☐ Flood protection via storage of water
- ☐ Increased habitat quality for local and migratory wildlife
- ☐ Improved water quality through filtration of pollutants via floodplains and plants
- ☐ There are no benefits, fill in the wetlands with soil and develop the land
- ☐ May moderate surrounding air temperatures, some types of wetlands may also reduce CO2 emmissions

4. Rain at Fire Station #5 (on Melrose Dr) enters the storm drain and flows into which creek? (choose one)

- ◯ Buena
- ◯ Agua Hedionda
- ◯ Buena Vista
- ◯ Cottonwood
- ◯ Loma Alta

2012 Water Quality Survey for the City of Vista

5. The Vista Sports Park is located within which watershed? (choose one)

- ◯ San Luis Rey
- ◯ Carlsbad
- ◯ San Dieguito
- ◯ Santa Margarita
- ◯ San Juan

6. Which of the following can pollute creeks, lagoons, etc.? (check all that apply)

- ☐ Fertilizers, pesticides, and insecticides
- ☐ Automobile fluids (oil, anti-freeze, etc.)
- ☐ Home repair materials (paint, cement, etc.)
- ☐ Pet waste
- ☐ Soap from car washing
- ☐ Soil erosion from construction
- ☐ Leaves and grass clippings
- ☐ Irrigation runoff
- ☐ Swimming pool water

7. Where does the excess sediment in our waterbodies come from? (check all that apply)

- ☐ Yards and gardens
- ☐ Construction sites
- ☐ Home improvement projects
- ☐ Agricultural activities
- ☐ Natural areas/open spaces
- ☐ Creek beds/banks

8. What are the best ways to wash a car? (check all that apply)

- ☐ Wash it in the driveway. The soapy water and dirt will go into the street and then into the storm drain.
- ☐ Wash it over the yard/lawn. The soapy water and dirt will get filtered through the ground.
- ☐ Take it to a car wash where the soapy water and dirt will go to the sewer treatment facility.
- ☐ Don't wash it. Let the dirt wash onto the road when it rains, and then it will go down the storm drain.

9. How does pet waste left on the ground impact our health and environment? (check all that apply)

- [ ] Pathogens from pet waste are washed into storm drains/waterbodies and into waterbodies where people swim and fish
- [ ] Excess nutrients wash into creeks causing algal blooms, cloudy water, and fish kills
- [ ] Pet waste on the ground has no impact on people or the environment
- [ ] Don't know/not sure

10. Grass clippings, leaves, and other yard waste should be disposed of properly because they...? (check all that apply)

- [ ] Clog the storm drain system and impede flows
- [ ] Contribute to excess nutrients causing algal blooms, low oxygen levels, and fish kills
- [ ] Have no affect on the storm drain system, go ahead and sweep out into the streets and storm drains
- [ ] Don't know/not sure

11. Which of the following items are recyclable in curbside blue bins? (Check all that apply)

- [ ] Phone books and junk mail
- [ ] Beverage containers labeled CA Redemption Value
- [ ] Regular light bulbs
- [ ] Used clothes for donation
- [ ] Styrofoam packaging
- [ ] Paint, paint thinners, stains, varnishes, etc.
- [ ] Glass bottles and jars
- [ ] Plastic grocery bags
- [ ] Medications/Unused prescription drugs
- [ ] Don't know/not sure

Other (please specify)

APPENDIX H-1

BUENA VISTA CREEK FLOW MONITORING STUDY

FY 2011-12

Buena Vista Creek Flow Monitoring
Final Report

Prepared For:

City of Vista

200 Civic Center Drive
Vista, California 92084

Prepared By:

Weston Solutions, Inc.
2817 Dryden Place, Suite 101
Carlsbad, California 92008

September 2012

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LIST OF ACRONYMS AND ABBREVIATIONS

BVC	Buena Vista Creek
MS4	municipal separate storm sewer system

1.0 PURPOSE AND LOCATION

The purpose of the monitoring was to provide accurate flow data in Buena Vista Creek at the western/downstream boundary of the City of Vista, during ambient and wet weather conditions. Continuous flow monitoring was conducted within Buena Vista Creek at the jurisdictional border between the City of Vista and the City of Oceanside (near the end of Tiberon Drive) to determine the flows and volumes associated with wet and dry weather conditions throughout the year at this jurisdictional location. Figure 1-1 shows Buena Vista Creek near the monitoring location.

Figure 1-1 – Buena Vista Creek near Monitoring Location

2.0 WATERSHED CHARACTERISTICS

The upstream watershed is approximately 8,035 acres (12.6 square miles) in size and extends approximately 6 miles from the monitoring location to the east. The watershed is approximately 80% developed and the predominant land use is residential. The majority of the developed area contains a municipal separate storm sewer system (MS4) to carry storm water to the creek. The majority of the developed portions of the watershed are within the City of Vista jurisdiction with some developed areas within the County of San Diego unincorporated area. Figure 2-1 shows

the monitoring location, the City of Vista jurisdictional boundary, and the watershed area associated with the monitoring location.

The existing land use, broken down by soil type, for the monitored drainage area is provided in Table 2-1. The watershed is underlain by a mixture of Soil Groups B, C, and D (SANGIS, 2009).

Table 2-1. Drainage Area Land Use and Soil Type

Land Use Designation	Total	Percent by Soil Group			
		Group A	Group B	Group C	Group D
Agriculture	1.3%	0%	0.59%	0.56%	0.19%
Commercial with Landscape	4.2%	0%	2.05%	0.39%	1.71%
Commercial	5.5%	0%	2.62%	0.36%	2.54%
Construction	11.8%	0%	5.18%	1.13%	5.51%
Industrial	1.0%	0%	0.14%	0.08%	0.81%
Open Space Landscape	1.1%	0%	0.25%	0.60%	0.27%
Open Space Park	13.6%	0%	3.09%	8.95%	1.60%
Parks and Recreation	1.6%	0%	0.45%	0.55%	0.63%
Residential	51.8%	0%	22.40%	10.60%	18.80%
Rural Residential	6.0%	0%	1.08%	4.26%	0.68%
Transportation	1.9%	0%	1.00%	0.13%	0.81%
Total	**100%**	**0%**	**38.90%**	**27.60%**	**33.50%**

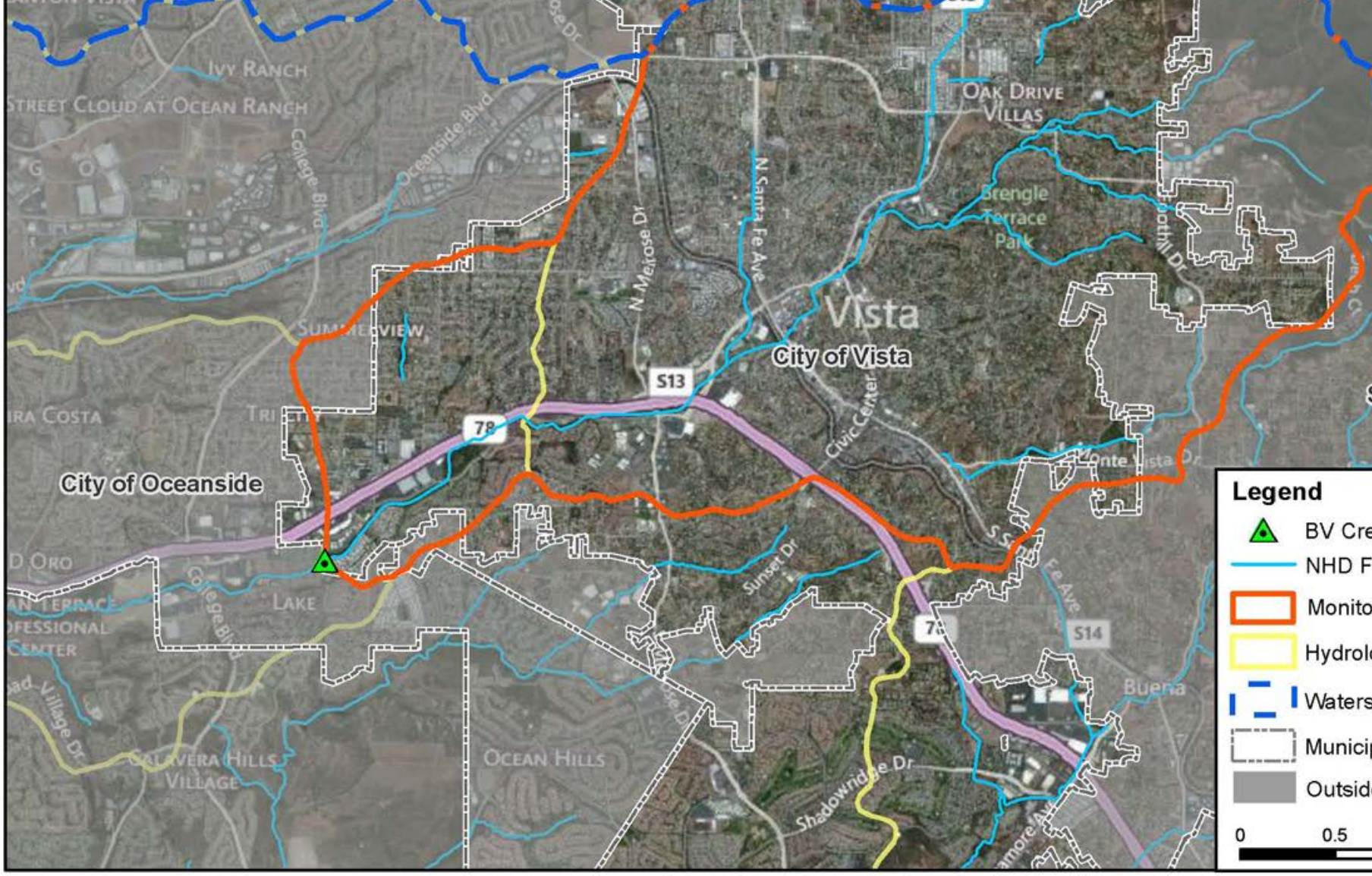

Figure 2-1 - Monitoring Location Watershed Area

3.0 CONTINUOUS MONITORING DATA

A Hach FL900 flowmeter and sensor were installed and maintained at the monitoring site in order to measure level and rainfall at 15 minute intervals from July 2011 through June 2012. At the monitoring location, Buena Vista Creek (BVC) consists of a concrete trapezoidal channel. To quantify flow rates based on stream stage, a relationship between flow and stage was derived using standardized stream rating protocols developed by the USGS (Rantz, 1982).

To accurately measure flow in streams, there are three critical elements needed to develop rating curves, as follows:

- An accurate survey of the stream channel cross section and longitudinal slope,
- Accurate level measurements based on a fixed point, and
- Measurements of velocity and flows at several points throughout the rating curve including low flow and peak flow conditions.

The survey data of the channel cross section and channel slope were used with a Manning's Equation to produce a rating curve. The rating curve was calibrated using instantaneous flow measurements by adjusting the formula roughness coefficient. Instantaneous flow measurements were taken at several points throughout the rating curve including low flow and peak flow conditions. A SonTek FlowTracker Acoustic Doppler Velocimeter was used for the flow measurements to ensure accurate measurements. The table accuracy was verified by measuring instantaneous flow using portable equipment, and comparing the measured flow to the flow measured by the installed equipment.

Manning's Equation is an empirical formula for open channel flow or for flow driven by gravity, as follows:

$$Q = VA = \left(\frac{1.49}{n}\right) AR^{\frac{2}{3}} \sqrt{S}$$

where

Q = Flow
n = Manning Roughness coefficient
A= Cross-sectional area
R = Hydraulic radius
S = Hydraulic slope

The hydraulic radius is derived as follows:

$R = A/P$

where

A = Cross-sectional area of flow (ft^2)
P = Wetted perimeter (ft) To

3.1 Annual Data

Figure 3-1 shows the annual hydrograph for the site.

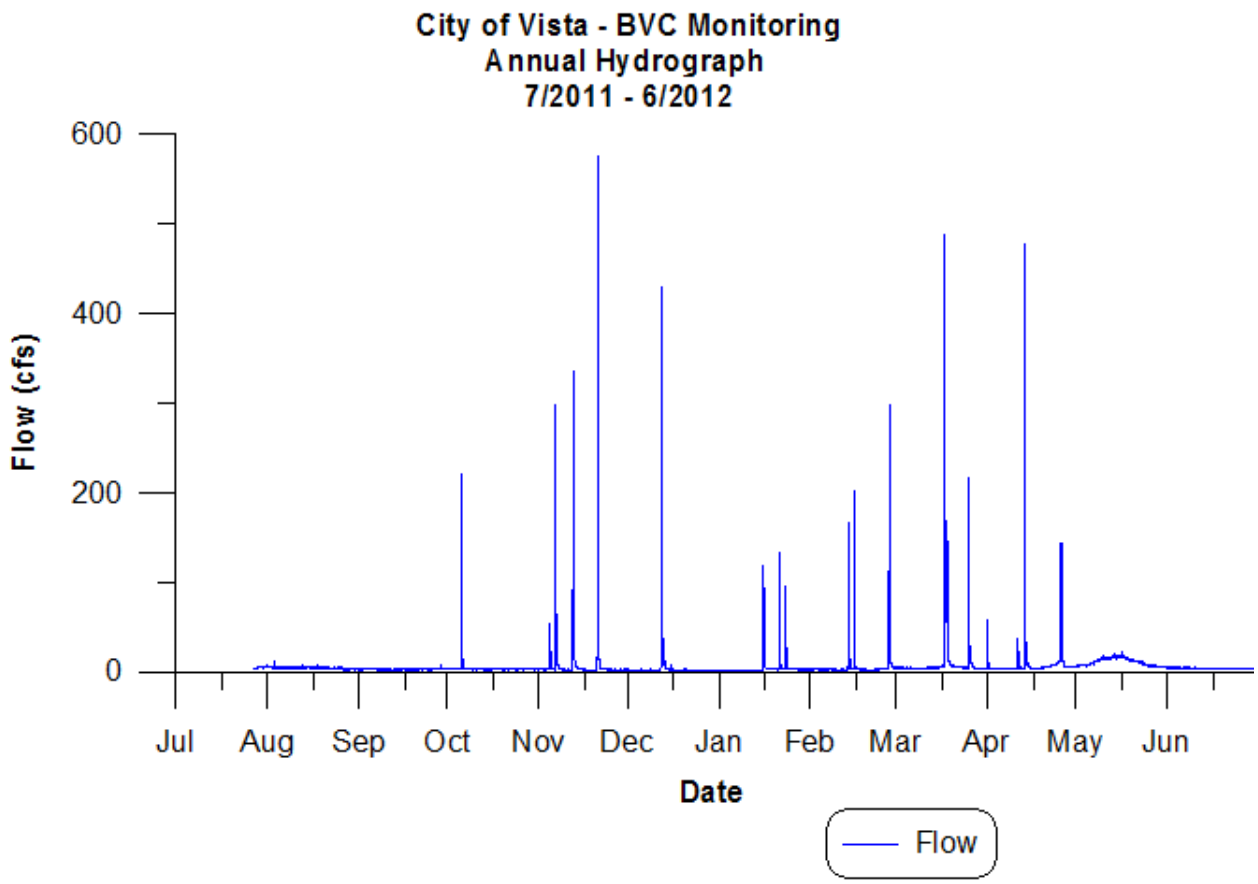

Figure 3-1 – Annual Hydrograph

The data collected was identified as either wet weather or dry weather data. Wet weather data includes the hydrograph flows associated with 0.1-inch or greater rain events. Table 3-1 below provides a summary of the annual volume and rainfall. The following calculations were used to determine parameters in this table:

$$Volume = \sum \text{Flow} \times \text{Time Increment} \times \left(\frac{60 \text{ sec}}{1 \text{ min}}\right)$$

Units:

Volume in cubic feet
Flow in cubic feet per second
Time Increment in minutes

$$Runoff = \frac{Volume}{Drainage\ Area} \times \left(\frac{1\ acre}{43{,}560\ sq\ ft}\right)\left(\frac{12\ in}{1\ ft}\right)$$

Units:

Runoff in inches
Volume in cubic feet
Drainage Area in acres

$$Runoff\ Ratio = \frac{Runoff}{Rainfall}$$

Units:

Runoff in inches
Rainfall in inches

Table 3-1. Summary of Annual Flow

Parameter	Value	Units
Total Drainage Area =	8,032	acres
Total Rainfall =	8.93	inches
Wet Weather		
Wet Weather Flow Volume =	79,169,943	cubic feet
Wet Weather Runoff =	2.72	inches
Wet Weather Runoff Ratio =	30.4%	
Dry Weather		
Dry Weather Flow Volume =	38,214,339	cubic feet
Dry Weather Runoff =	1.31	inches
Dry Weather Runoff Ratio =	14.7%	
Total Flow Volume =	117,384,281	cubic feet
Total		
Total Runoff =	4.03	inches
Total Runoff Ratio	45.1%	

3.2 Wet Weather Data

Figure 3-2 through Figure 3-19 show the hydrographs and calculation for the wet weather storm events (greater than 0.1 inches of rainfall). For information on the calculations performed for these events see Section 3.1 and below.

$$Average\ Intensity = \frac{Event\ Rainfall}{Rainfall\ Duration}$$

$$Maximum\ Intensity = Max\ of\ Incremental\ Rainfall\ for\ each\ 1\ hour\ period$$

$$Runoff\ \mathrm{C} = \frac{Peak\ Flow}{Max.Intensity\ \times Area}$$

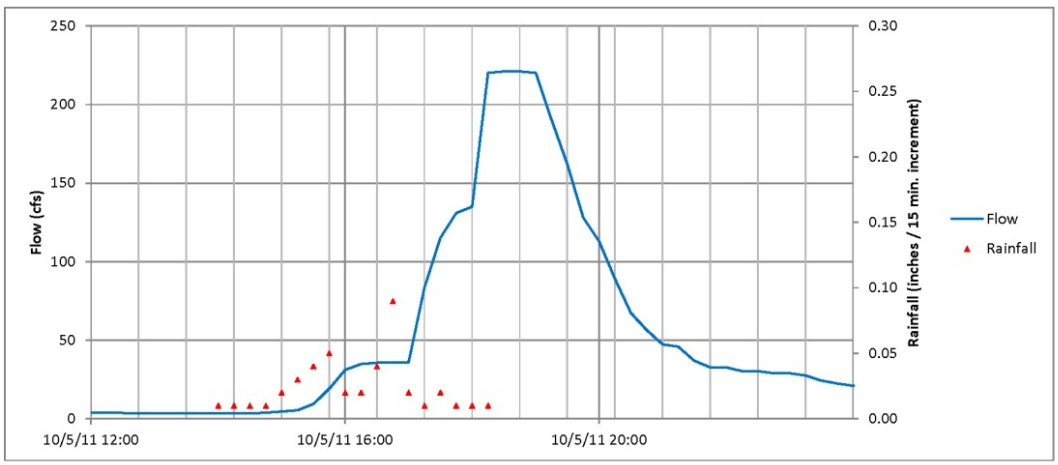

Area	8,036	acres
Date:	10/5/2011	
Rainfall	0.43	inches
Rainfall Durat.	4.25	hours
Avg. Intensity	0.10	in/hr
Max. Intensity	0.17	in/hr
Peak Flow	221.1	cfs
Runoff "C"	0.162	(based on peak flow & max intensity)
Volume	2,845,022	cf
Direct Runoff	0.10	inches (based on flow volume)
Direct Runoff Ratio	22.9%	

Figure 3-2 – October 5, 2011 Event Hydrograph

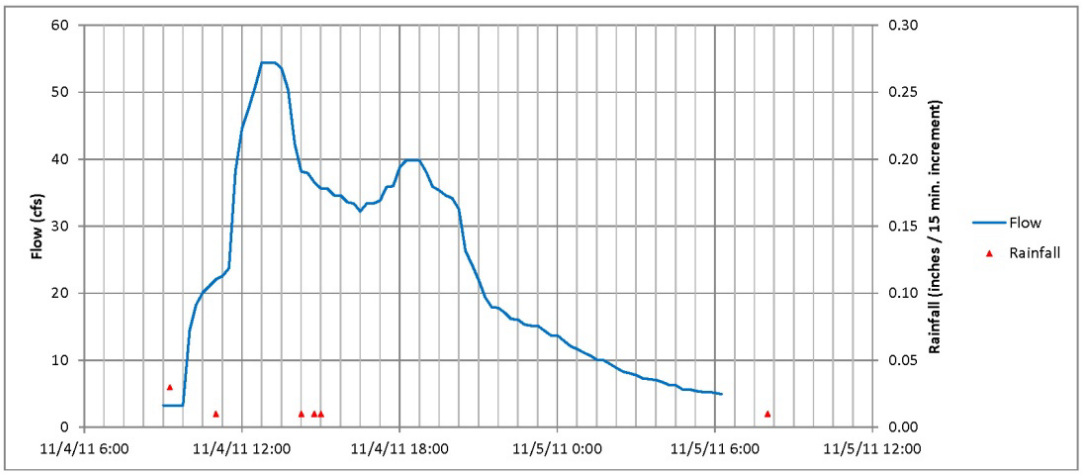

Area	8,036 acres
Date:	11/4/2011
Rainfall	0.07 inches
Rainfall Durat.	5.75 hours
Avg. Intensity	0.01 in/hr
Max. Intensity	0.03 in/hr
Peak Flow	54.4 cfs
Runoff "C"	0.226 (based on peak flow & max intensity)
Volume	1,802,965 cf
Direct Runoff	0.06 inches (based on flow volume)
Direct Runoff Ratio	88.3%

Figure 3-3 – November 4, 2011 Event Hydrograph

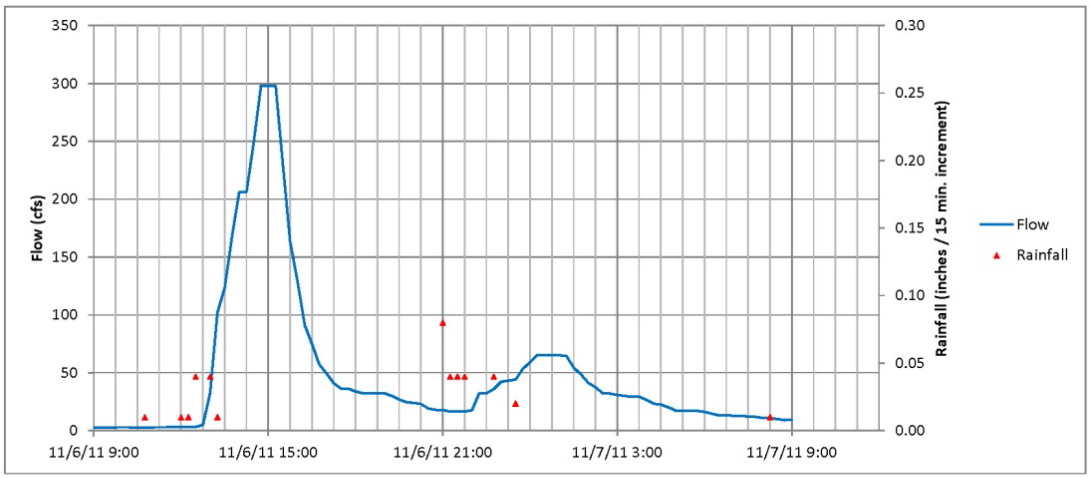

Area	8,036 acres
Date:	11/6/2011
Rainfall	0.39 inches
Rainfall Durat.	2.5 hours
Avg. Intensity	0.16 in/hr
Max. Intensity	0.2 in/hr
Peak Flow	297.9 cfs
Runoff "C"	0.185 (based on peak flow & max intensity)
Volume	4,256,011 cf
Direct Runoff	0.15 inches (based on flow volume)
Direct Runoff Ratio	37.4%

Figure 3-4 – November 6, 2011 Event Hydrograph

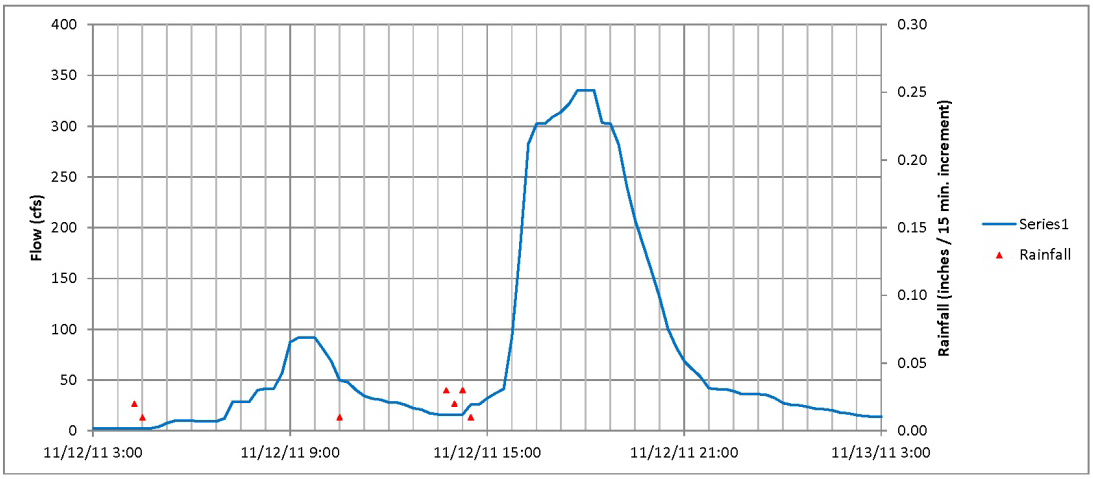

Area	8,036	acres
Date:	11/12/2011	
Rainfall	0.13	inches
Rainfall Durat.	10.25	hours
Avg. Intensity	0.01	in/hr
Max. Intensity	0.09	in/hr
Peak Flow	335.2	cfs
Runoff "C"	0.463	(based on peak flow & max intensity)
Volume	6,623,159	cf
Direct Runoff	0.23	inches (based on flow volume)
Direct Runoff Ratio	174.7%	

Figure 3-5 – November 12, 2011 Event Hydrograph

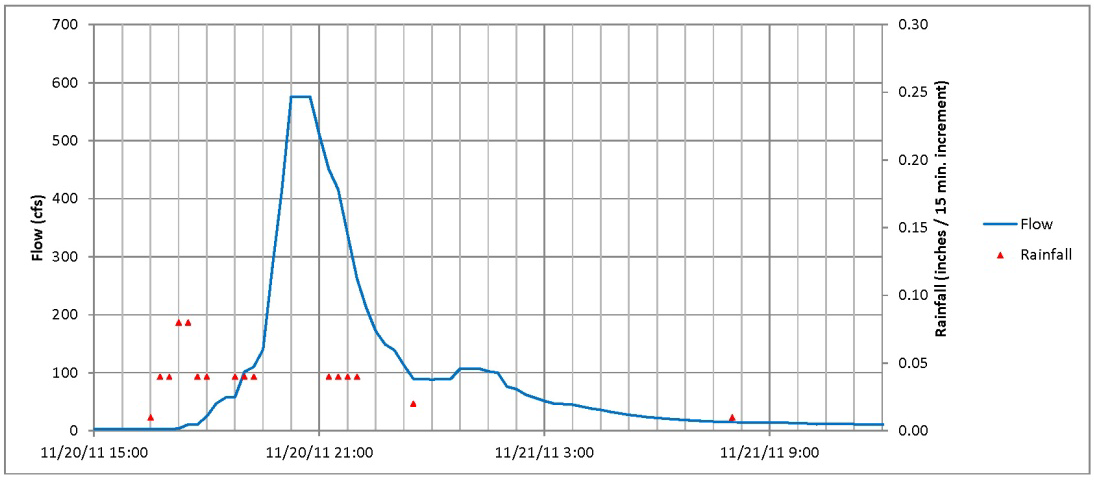

Area	8,036	acres
Date:	11/20/2011	
Rainfall	0.65	inches
Rainfall Durat.	7	hours
Avg. Intensity	0.09	in/hr
Max. Intensity	0.24	in/hr
Peak Flow	575.9	cfs
Runoff "C"	0.299	(based on peak flow & max intensity)
Volume	7,201,335	cf
Direct Runoff	0.25	inches (based on flow volume)
Direct Runoff Ratio	38.0%	

Figure 3-6 – November 20, 2011 Event Hydrograph

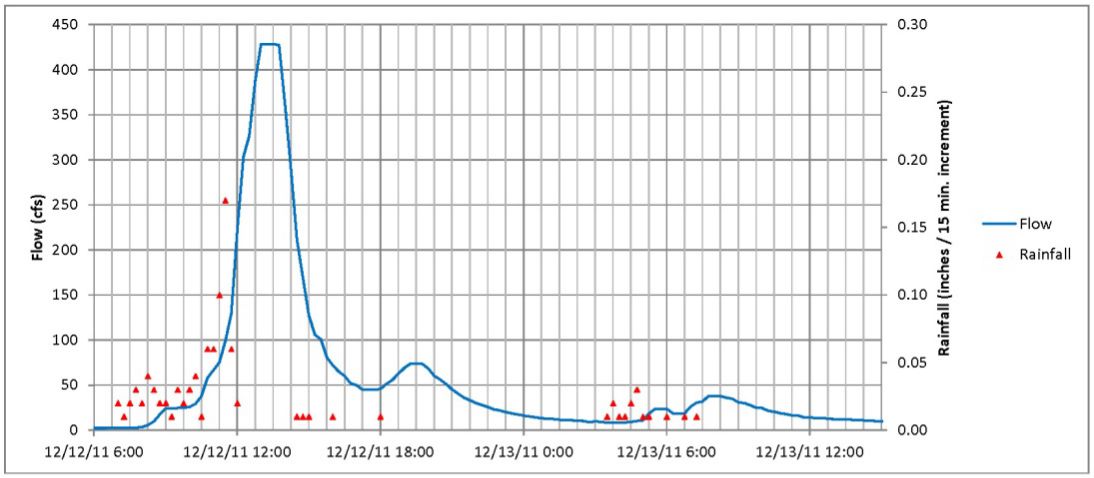

Area	8,036	acres
Date:	12/12/2011	
Rainfall	1.03	inches
Rainfall Durat.	28.75	hours
Avg. Intensity	0.04	in/hr
Max. Intensity	0.390	in/hr
Peak Flow	428.5	cfs
Runoff "C"	0.137	(based on peak flow & max intensity)
Volume	6,958,218	cf
Direct Runoff	0.24	inches (based on flow volume)
Direct Runoff Ratio	23.2%	

Figure 3-7 – December 12, 2011 Event Hydrograph

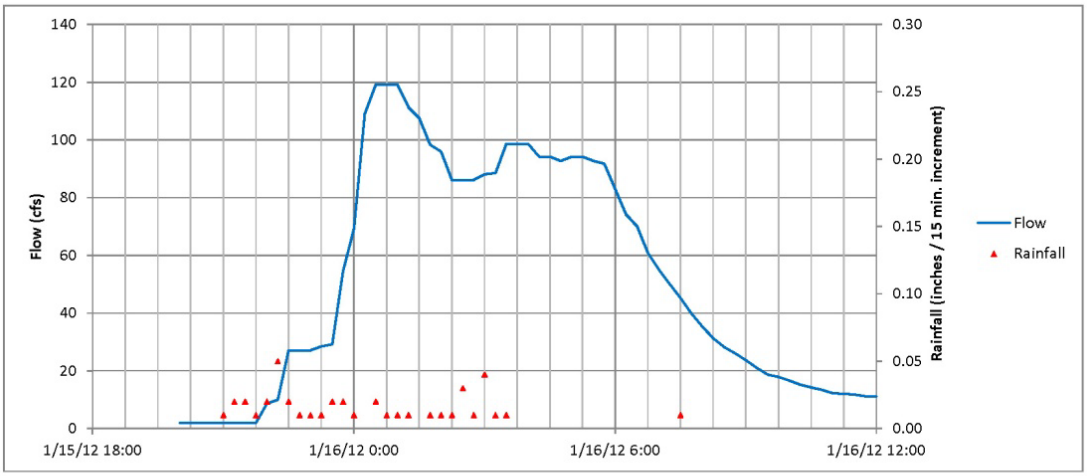

Area	8,036	acres
Date:	1/15/2012	
Rainfall	0.42	inches
Rainfall Durat.	10.5	hours
Avg. Intensity	0.04	in/hr
Max. Intensity	0.1	in/hr
Peak Flow	119.1	cfs
Runoff "C"	0.148	(based on peak flow & max intensity)
Volume	3,021,555	cf
Direct Runoff	0.10	inches (based on flow volume)
Direct Runoff Ratio	24.7%	

Figure 3-8 – January 15, 2012 Event Hydrograph

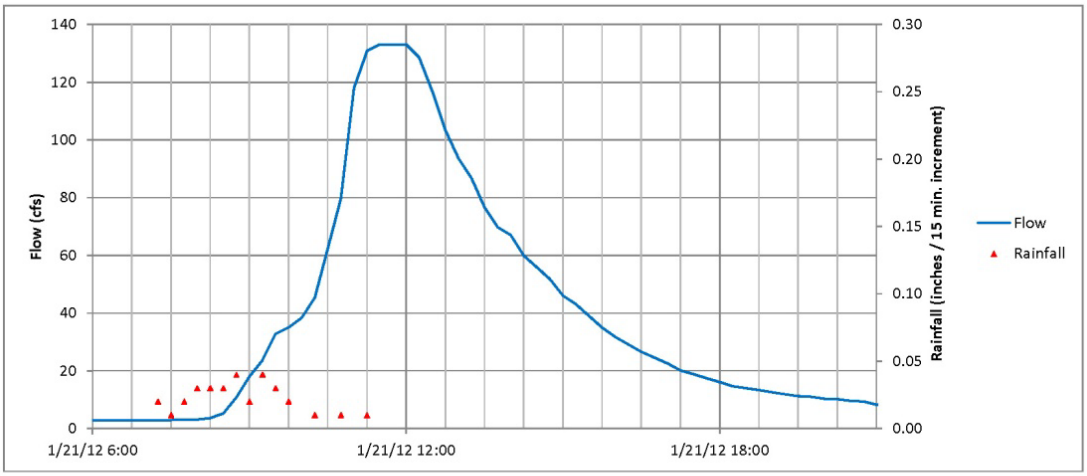

Area	8,036 acres
Date:	1/21/2012
Rainfall	0.32 inches
Rainfall Durat.	4 hours
Avg. Intensity	0.08 in/hr
Max. Intensity	0.13 in/hr
Peak Flow	133.1 cfs
Runoff "C"	0.127 (based on peak flow & max intensity)
Volume	2,229,411 cf
Direct Runoff	0.08 inches (based on flow volume)
Direct Runoff Ratio	23.9%

Figure 3-9 – January 21, 2012 Event Hydrograph

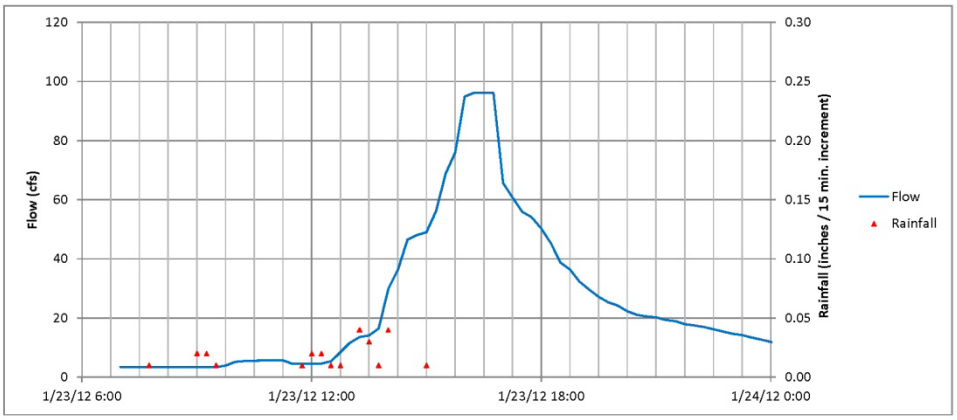

Area	8,036 acres
Date:	1/23/2012
Rainfall	0.26 inches
Rainfall Durat.	7.25 hours
Avg. Intensity	0.04 in/hr
Max. Intensity	0.12 in/hr
Peak Flow	96.2 cfs
Runoff "C"	0.100 (based on peak flow & max intensity)
Volume	1,864,022 cf
Direct Runoff	0.06 inches (based on flow volume)
Direct Runoff Ratio	24.6%

Figure 3-10 – January 23, 2012 Event Hydrograph

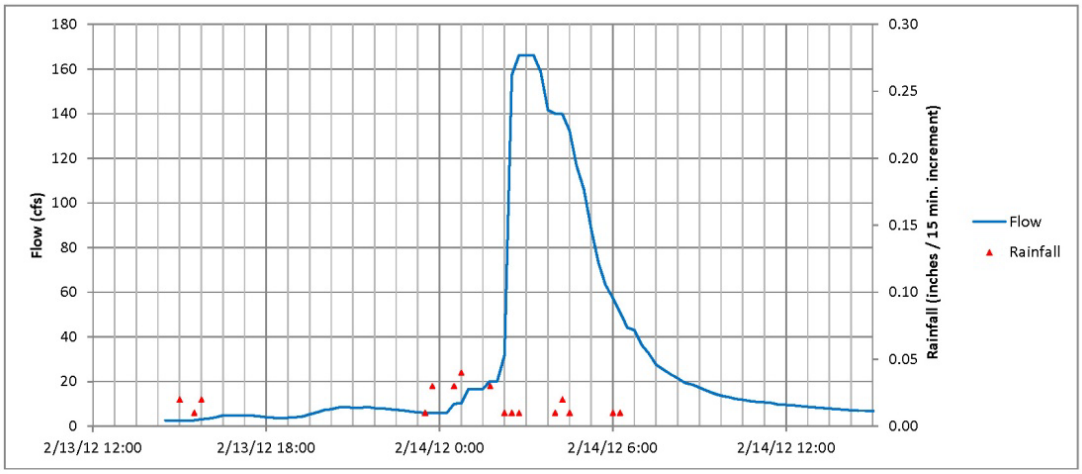

Area	8,036	acres
Date:	2/13/2012	
Rainfall	0.28	inches
Rainfall Durat.	15.25	hours
Avg. Intensity	0.02	in/hr
Max. Intensity	0.07	in/hr
Peak Flow	166.3	cfs
Runoff "C"	0.296	(based on peak flow & max intensity)
Volume	2,579,723	cf
Direct Runoff	0.09	inches (based on flow volume)
Direct Runoff Ratio	31.6%	

Figure 3-11 – February 13, 2012 Event Hydrograph

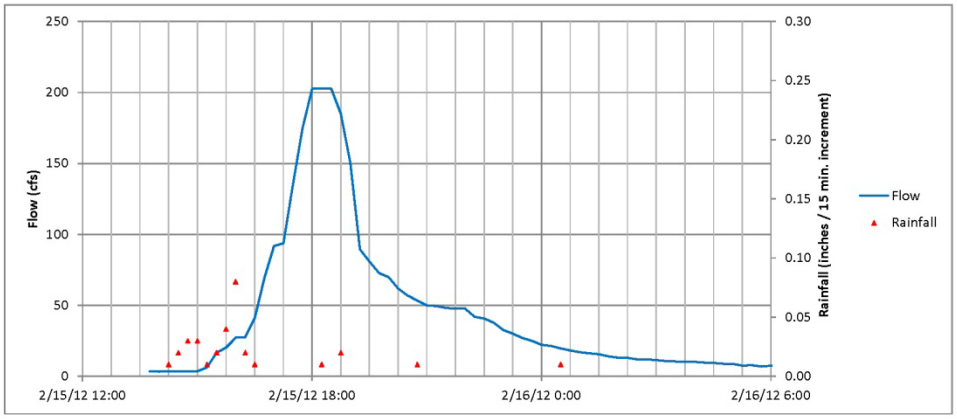

Area	8,036	acres
Date:	2/15/2012	
Rainfall	0.32	inches
Rainfall Durat.	10.25	hours
Avg. Intensity	0.03	in/hr
Max. Intensity	0.16	in/hr
Peak Flow	202.7	cfs
Runoff "C"	0.158	(based on peak flow & max intensity)
Volume	2,670,416	cf
Direct Runoff	0.09	inches (based on flow volume)
Direct Runoff Ratio	28.6%	

Figure 3-12 – February 15, 2012 Event Hydrograph

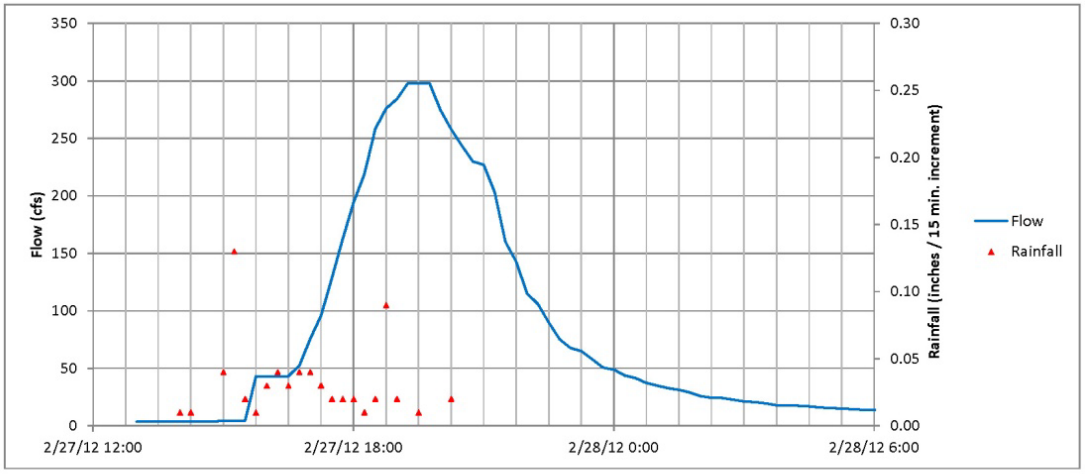

Area	8,036	acres
Date:	2/27/2012	
Rainfall	0.66	inches
Rainfall Durat.	6.25	hours
Avg. Intensity	0.11	in/hr
Max. Intensity	0.2	in/hr
Peak Flow	297.9	cfs
Runoff "C"	0.185	(based on peak flow & max intensity)
Volume	5,405,091	cf
Direct Runoff	0.19	inches (based on flow volume)
Direct Runoff Ratio	28.1%	

Figure 3-13 – February 27, 2012 Event Hydrograph

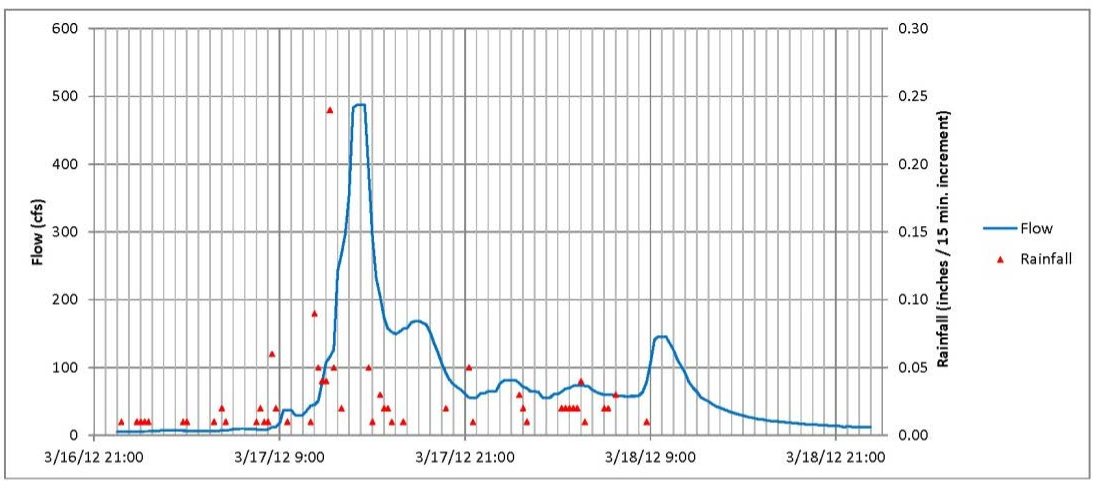

Area	8,036	acres
Date:	3/17/2012	
Rainfall	1.31	inches
Rainfall Durat.	34	hours
Avg. Intensity	0.04	in/hr
Max. Intensity	0.37	in/hr
Peak Flow	487.2	cfs
Runoff "C"	0.164	(based on peak flow & max intensity)
Volume	12,459,735	cf
Direct Runoff	0.43	inches (based on flow volume)
Direct Runoff Ratio	32.6%	

Figure 3-14 – March 17, 2012 Event Hydrograph

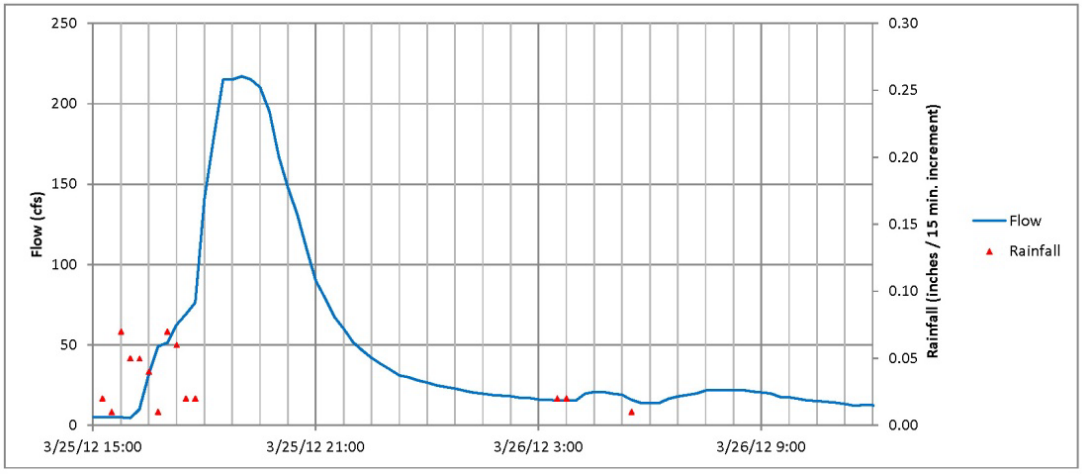

Area	8,036	acres
Date:	3/25/2012	
Rainfall	0.47	inches
Rainfall Durat.	14.25	hours
Avg. Intensity	0.03	in/hr
Max. Intensity	0.21	in/hr
Peak Flow	217.1	cfs
Runoff "C"	0.129	(based on peak flow & max intensity)
Volume	3,639,205	cf
Direct Runoff	0.12	inches (based on flow volume)
Direct Runoff Ratio	26.5%	

Figure 3-15 – March 25, 2012 Event Hydrograph

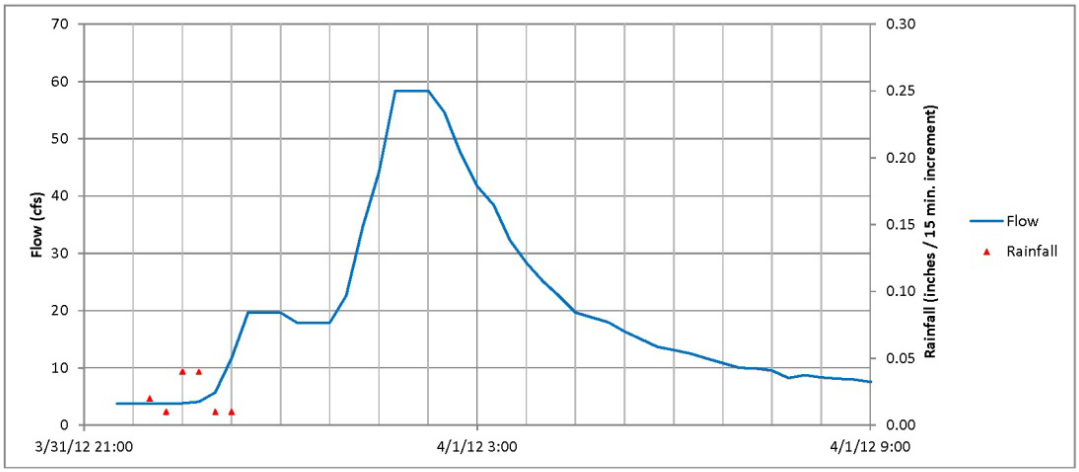

Area	8,036	acres
Date:	3/31/2012	
Rainfall	0.13	inches
Rainfall Durat.	1.25	hours
Avg. Intensity	0.10	in/hr
Max. Intensity	0.11	in/hr
Peak Flow	58.4	cfs
Runoff "C"	0.066	(based on peak flow & max intensity)
Volume	865,144	cf
Direct Runoff	0.03	inches (based on flow volume)
Direct Runoff Ratio	22.8%	

Figure 3-16 – March 31, 2012 Event Hydrograph

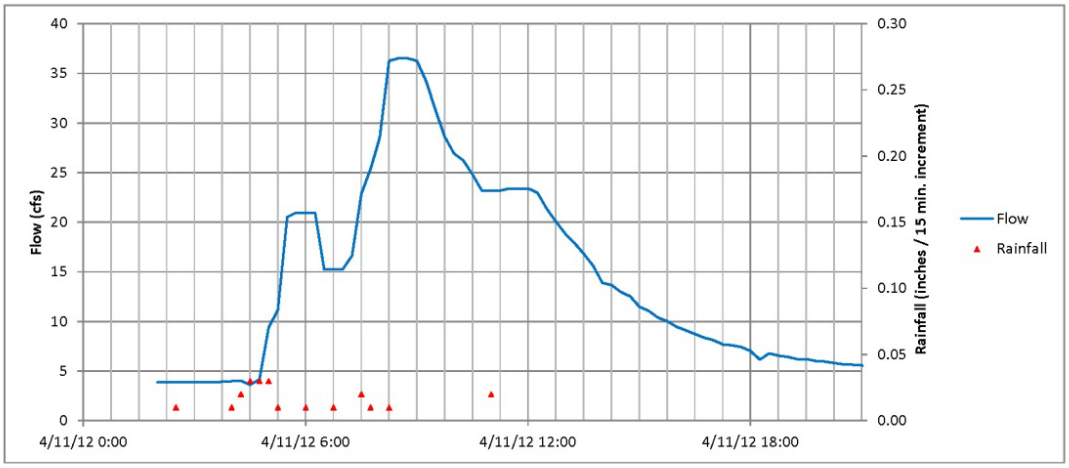

Area	8,036 acres
Date:	4/11/2012
Rainfall	0.22 inches
Rainfall Durat.	5.75 hours
Avg. Intensity	0.04 in/hr
Max. Intensity	0.11 in/hr
Peak Flow	36.5 cfs
Runoff "C"	0.041 (based on peak flow & max intensity)
Volume	1,029,676 cf
Direct Runoff	0.04 inches (based on flow volume)
Direct Runoff Ratio	16.0%

Figure 3-17 – April 11, 2012 Event Hydrograph

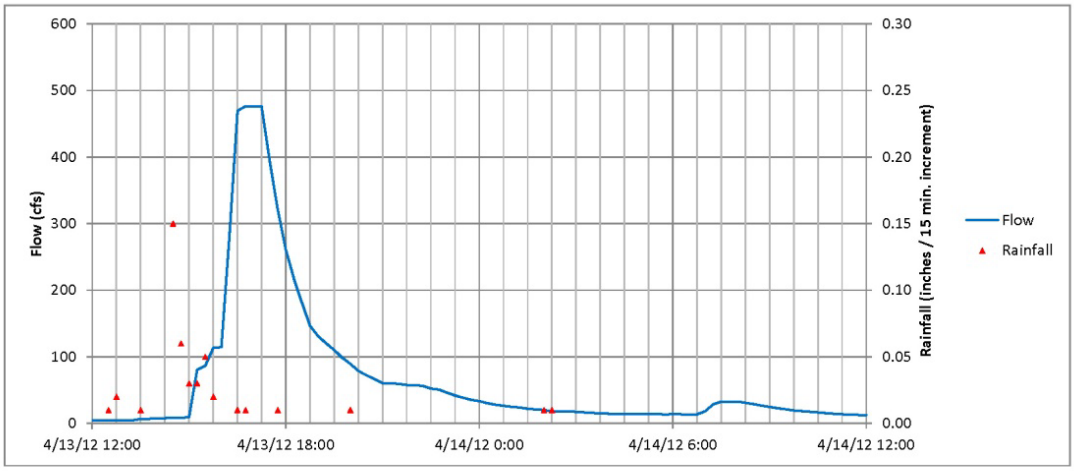

Area	8,036 acres
Date:	4/13/2012
Rainfall	0.44 inches
Rainfall Durat.	13.75 hours
Avg. Intensity	0.03 in/hr
Max. Intensity	0.27 in/hr
Peak Flow	476.5 cfs
Runoff "C"	0.220 (based on peak flow & max intensity)
Volume	5,871,109 cf
Direct Runoff	0.20 inches (based on flow volume)
Direct Runoff Ratio	45.7%

Figure 3-18 – April 11, 2012 Event Hydrograph

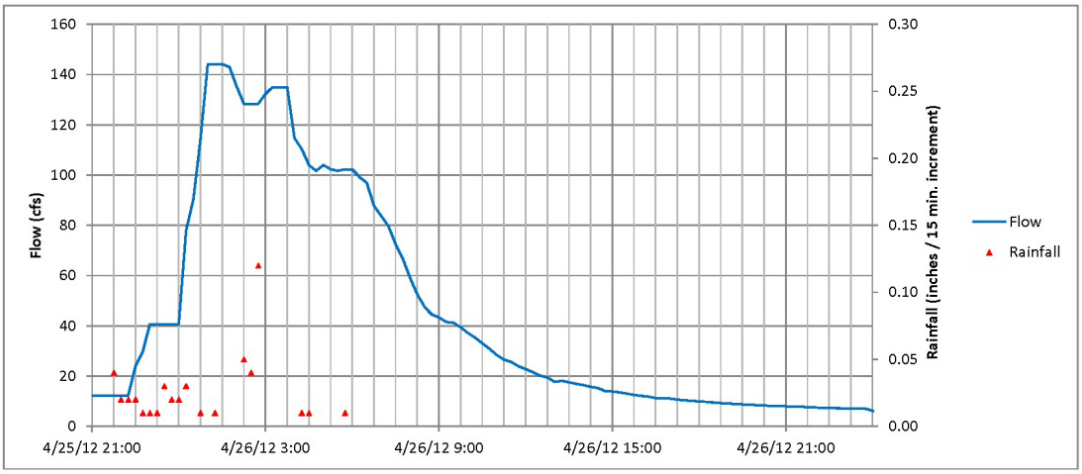

Area	8,036 acres
Date:	4/25/2012
Rainfall	0.49 inches
Rainfall Durat.	8 hours
Avg. Intensity	0.06 in/hr
Max. Intensity	0.21 in/hr
Peak Flow	144.1 cfs
Runoff "C"	0.085 (based on peak flow & max intensity)
Volume	4,507,500 cf
Direct Runoff	0.15 inches (based on flow volume)
Direct Runoff Ratio	31.5%

Figure 3-19 – April 25, 2012 Event Hydrograph

3.3 Dry Weather Data

Figure 3-20 and Figure 3-21 show dry weather flows during a one week period in September 2011 and June 2012, respectively (Sunday through Saturday). The one week period in September is prior to the first rainfall of wet season, and the June period is well after the last rainfall of the wet season. In both figures there does appear to be some diurnal flow, most likely associated with urbanization (e.g., irrigation). In general, the diurnal pattern showed the slightly higher flows in the afternoons. For both periods, base flow (constant flow) appears to be over 2 cubic feet per second, and may be associated with groundwater slowly being released into the creek throughout the watershed. The flow patterns shown in these one week periods are typical and representative of the other dry periods monitored throughout the year. The magnitude of base flow varied and was slightly higher for about a week after each rainfall event (approximately 4 to 5 cubic feet per second).

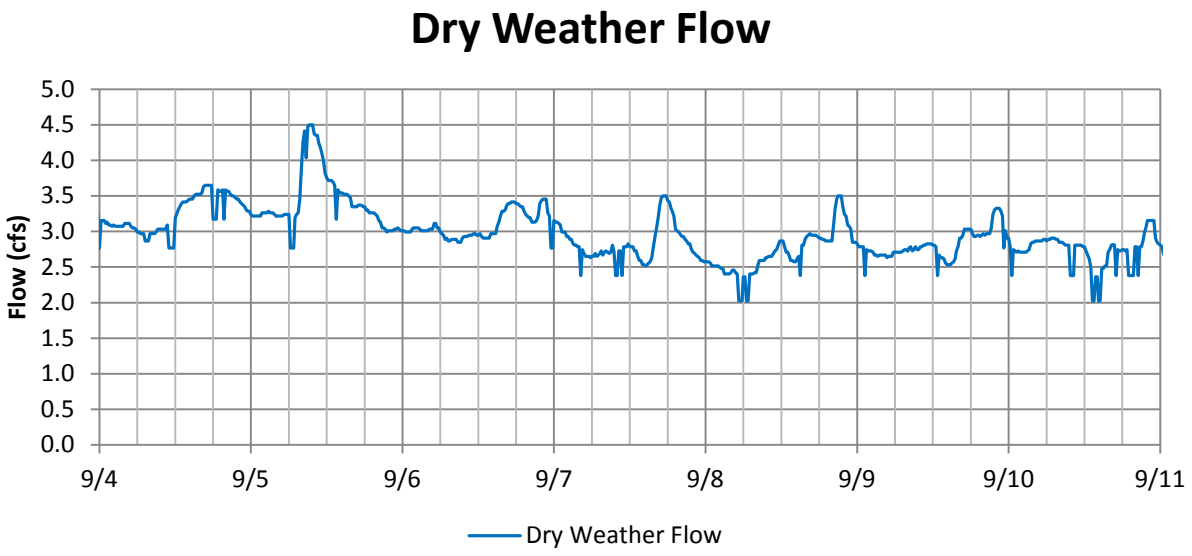

Figure 3-20 – Dry Weather Flow, September 2011

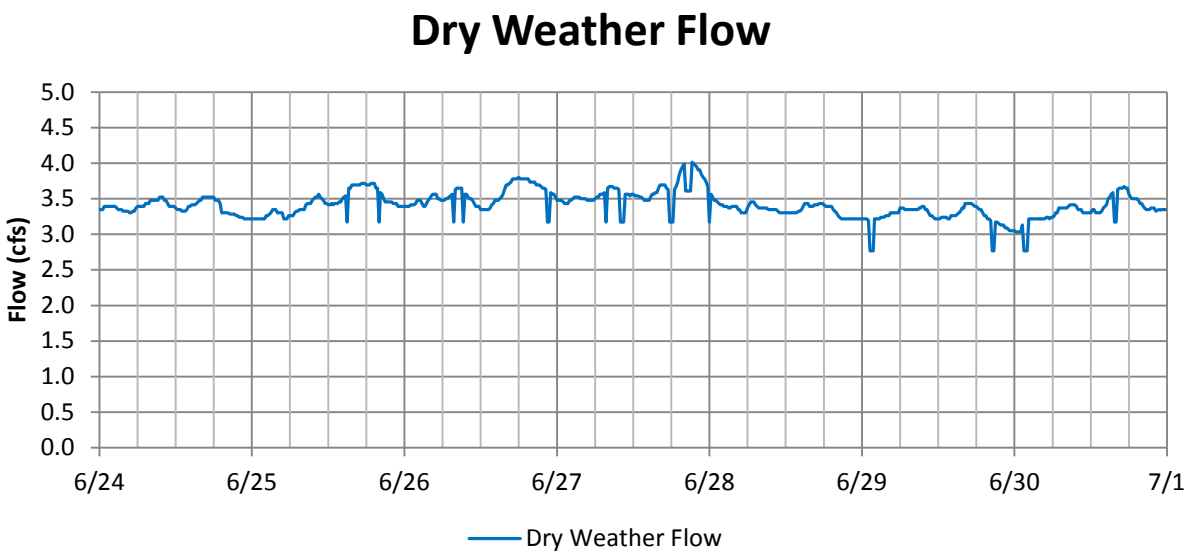

Figure 3-21 – Dry Weather Flow, June 2012

4.0 REFERENCES

SANDAG (San Diego's Regional Planning Agency). 2009. SANDAG GIS Digital Boundary Files & Layers**,** Download**.**

Rantz, S. E., et al., 1982. Measurement and Computation of Streamflow, Vols. 1 and 2. U.S. Geological Survey Water-Supply Paper 2175.

DECLARATION OF SERVICE BY EMAIL

I, the undersigned, declare as follows:

I am a resident of the County of Sacramento and I am over the age of 18 years, and not a party to the within action. My place of employment is 980 Ninth Street, Suite 300, Sacramento, California 95814.

On March 29, 2024, I served the:

- **Current Mailing List dated March 28, 2024**
- **Notice of Waiver of Procedural Requirements, Extension Request Approval, and Postponement of Hearing issued March 29, 2024**
- **Claimants' Comments on the Draft Proposed Decision and Parameters and Guidelines (Volumes 1-14) filed February 20, 2024**

  San Diego Regional Water Quality Control Board Order No. R9-2007-0001, Permit CAS0108758, Parts D.3.a.(3)(b)(iii), D.5.a.(1), D.5.a.(2), D.5.b.(1)(a), D.5.b.(1)(b)(iii-vi), D.5.b.(1)(c), D.5.b.(1)(d), D.5.b.(2), D.5.b.(3), E.2.f., E.2.g., F.1., F.2., F.3., I.1., I.2., I.5., J.3.a.(3)(c)(iv)-(viii), (x)-(xv), the first sentence of L.1. as it applies to the newly mandated activities, and L.1.a.(3)-(6), 07-TC-09-R County of San Diego, Cites of Carlsbad, Del Mar, Imperial Beach, Lemon Grove, Poway, San Marcos, Santee, Solana Beach, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, San Diego, and Vista, Claimants

by making it available on the Commission's website and providing notice of how to locate it to the email addresses provided on the attached mailing list.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration was executed on March 29, 2024 at Sacramento, California.

Jill Magee

Jill Magee
Commission on State Mandates
980 Ninth Street, Suite 300
Sacramento, CA 95814
(916) 323-3562

COMMISSION ON STATE MANDATES

Mailing List

Last Updated: 3/28/24

Claim Number: 07-TC-09-R

Matter: San Diego Regional Water Quality Control Board Order No. R9-2007-0001 Permit CAS0108758 Parts D.1.d.(7)-(8), D.1.g., D.3.a.(3), D.3.a.(5), D.5, E.2.f, E.2.g, F.1, F.2, F.3, I.1, I.2, I.5, J.3.a.(3)(c)iv-viii & x-xv, and L.

Claimants: City of Carlsbad
City of Chula Vista
City of Del Mar
City of Encinitas
City of Escondido
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of Oceanside
City of Poway
City of San Diego
City of San Marcos
City of Santee
City of Solana Beach
City of Vista

TO ALL PARTIES, INTERESTED PARTIES, AND INTERESTED PERSONS:

Each commission mailing list is continuously updated as requests are received to include or remove any party or person on the mailing list. A current mailing list is provided with commission correspondence, and a copy of the current mailing list is available upon request at any time. Except as provided otherwise by commission rule, when a party or interested party files any written material with the commission concerning a claim, it shall simultaneously serve a copy of the written material on the parties and interested parties to the claim identified on the mailing list provided by the commission. (Cal. Code Regs., tit. 2, § 1181.3.)

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Los Peñasquitos Watershed Management Area Water Quality Improvement Plan Annual Report

Submitted to the San Diego Regional Water Quality Control Board by:

January 2017

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.

With:

Executive Summary

The Water Quality Improvement Plan (WQIP) provides a comprehensive watershed-based program to improve surface water quality in the Los Peñasquitos Watershed Management Area (WMA), in receiving waters in the Los Peñasquitos River, and at nearby beaches. The Responsible Agencies tasked with implementing the WQIP in the Los Peñasquitos WMA are the City of Del Mar, the City of Poway, the City of San Diego, the County of San Diego, and the California Department of Transportation (Caltrans). Caltrans is regulated under a separate permit from the state water resource control board (Order No. 2012-0011-DWQ). However, Caltrans has voluntarily participated in the WQIPs throughout the San Diego Region.

The Los Peñasquitos WMA encompasses almost 94 square miles of urban land and undeveloped open space extending from the Los Peñasquitos Lagoon beyond Highway 67 to the east. The WMA includes Torrey Pines, Del Mar, Carmel Valley, Sorrento Valley, Mira Mesa, Rancho Peñasquitos, Carmel Mountain, Sabre Springs, and Poway. Small finger canyons drain into three main creeks (Carmel Valley Creek, Los Peñasquitos Creek, and Carroll Canyon Creek) that lead into the Los Peñasquitos Lagoon and ultimately the Pacific Ocean.

This Annual Report provides an update on monitoring and assessment completed during the previous reporting period and highlights the strategies implemented and progress toward meeting goals set for the highest priorities. Significant progress has been made in obtaining WQIP goals. The permit term performance based goals have been achieved for dry weather flow reduction by the City of Del Mar and City of San Diego. The City of Poway has surpassed their turf conversion goal and the County of San Diego has made progress in implementing the WQIP. BMPs have been installed and maintained in the City of San Diego, reducing or preventing pollutants from entering receiving waters.

Water Quality Improvement Plan Process

The WQIP identifies goals and strategies to improve the quality of urban runoff waters. These improvements to water quality are achieved through the consistent process of evaluation, goal setting, and monitoring and reporting, according to the following process:

With these distinct steps, the WQIP provides a long-term program to measurably improve overall water quality within the Los Peñasquitos WMA. This Annual Report implements Step (6) of the WQIP Process.

Highest Priority Water Quality Conditions

The WQIP identifies the following conditions/pollutants as highest priorities within the Los Peñasquitos WMA:

- Freshwater discharges during dry weather into the Los Peñasquitos Lagoon
- Transport of sediment from upstream sources (current and historical) during rain events into the Los Peñasquitos Lagoon
- Indicator bacteria as measured during both wet and dry weather at Torrey Pines State Beach near the Los Peñasquitos Lagoon mouth

Monitoring and Assessment

The WQIP Monitoring and Assessment Program plays a key role in the Municipal Separate Storm Sewer System (MS4) Permit's new focus on the outcomes of WQIP program implementation to achieve water quality improvement. The long-term receiving water monitoring and MS4 monitoring program provides information on a wide variety of water quality conditions, including the highest priority water quality conditions (HPWQCs) and the other WMA priority water quality conditions (PWQCs).

Receiving waters were last monitored at the long-term monitoring stations during the October 1, 2014, through September 30, 2015, monitoring year. These historical mass loading stations have been monitored since 2001. This data was present in previous monitoring reports. The Responsible Agencies implemented receiving water monitoring in support of the Sediment and Bacteria Total Maximum Daily Loads (TMDLs). Details are provided in Appendix C and highlights are summarized as follows:

- Sediment TMDL:
  - Suspended sediment concentrations (SSCs) were higher at or near peak flow and during the rising limb of the hydrograph for smaller storms such Events 2 and 3 during the 2015–2016 wet season. For the larger storm (Event 1), SSCs in all three WMA creeks remained high throughout the storm and mostly varied with flow, suggesting that the unusually high flows may have mobilized previously deposited sediments that were stored by in-channel vegetation and streambed.
  - The total 2015–2016 sediment load estimate of 23,500 tons per year is above the final Sediment TMDL waste load allocation (WLA) (2,580 tons per year). This TMDL compliance pathway can be achieved by 2034. Monitoring in previous years has recorded annual sediment loads that were below the WLA.

- Bacteria TMDL:
  - During wet weather, the receiving waters at the Los Peñasquitos River Outlet/Beach achieved a 0 percent single-sample maximum exceedance frequency for fecal coliform and a 13 percent (%) single-sample maximum exceedance frequency for total coliform and *Enterococcus*. FM-100 is in compliance with final wet weather single-sample maximum receiving water limitations (RWLs).
  - During the wet season, which evaluates a combination of both wet and dry weather samples, FM-100 achieved a 0% geometric mean exceedance frequency and is in compliance with final dry weather geometric mean RWLs.
  - During the dry season, when recreational activities occur with more regularity, FM-100 achieved a 0% exceedance frequency and is in compliance with the final dry weather geometric mean RWLs.

The MS4 outfall monitoring program provides information on the estimated amount of pollutants coming from monitored MS4 outfalls. Details of this monitoring program are in Appendix C. The results for samples collected during the October 1, 2015, through September 30, 2016, monitoring year were compared with non-storm water action levels and storm water action levels. In dry weather, non-storm water action levels were met over 74% of the time for multiple consituents. In wet weather, only one storm water action level exceedance for turbidity was recorded for wet weather MS4 outfall discharge monitoring locations within the Los Peñasquitos WMA. The Responsbile Agencies plan to continue implementing the WQIP strategies without modification to realize the rewards of these pollutant reduction benefits and will work toward meeting the goals related to the HPWQCs.

The Illicit Discharge Dectection and Elmination (IDDE) Program found non-storm water discharges and worked to eliminate them throughout the WMA. This program helps with dry weather runoff reductions and is one mechanism to achieve some of the fiscal year (FY) 18 performance-based goals. Table ES-1 provides more information about the implementation of the IDDE program throughout the WMA.

Table ES-1
IDDE Program Summary in the Los Peñasquitos WMA

IDDE Program Action	Total Number in WMA
Non-storm water discharges or illicit discharges investigated	589
Sources of non-storm water discharges identified	501
Non-storm water discharges eliminated	465
Sources of illicit discharges or connections identified	488
Illicit discharges or connections eliminated	456
Number of enforcement actions	484[1]

1. The number of enforcement actions issued does not equal the number of identified illicit discharges or connections because some discharge complaints in the last quarter of FY 16 were still under investigation at the end of FY 16.

IDDE = illicit discharge detection and elimination; WMA = Watershed Management Area

In addition to monitoring in the receiving waters and the MS4, the Responsible Agencies conducted special studies. The Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Study found that areas in the upper portion of Los Peñasquitos Creek and in the upper portions of Carmel Valley Creek may have the potential to serve as a sink for sediment within the WMA that can be mobilized during large storms such as the storm in early January 2016. Aerial deposition sampling determined that aerial deposition of sediment was not a significant contributor to the watershed sediment loads compared with the stream loads. The Sediment Load Reduction Quantification Through Outfall Repair and Relocation for the Los Peñasquitos WMA Study estimated the sediment load associated with erosive discharge from 102 City of San Diego outfalls. The load estimation from these 102 outfalls resulted in a load of 85 tons per year that accounts for approximately 1.4% of the total sediment load for the watershed. Of these 102 outfalls, 42 were identified as “high priority” outfalls. Three types of BMPs were investigated to estimate the amount of the loading that could potentially be reduced or eliminated from the high priority outfalls. The San Diego Regional Reference Streams and Beaches Study provided valuable information for the Bacteria TMDL Reopener.

Strategies

Strategies implemented throughout the WMA deliver proven benefits for addressing multiple pollutants by eliminating sources or treating pollutants already found in urban runoff. Responsible Agencies sponsor stream and beach cleanups, provide turf conversion rebates, and work with the public to educate them on the impacts of their actions on the environment. They have also invested in new street sweeping technologies and are refining their catch basin cleaning methodologies. Many of these actions are above and beyond the requirements of the Jurisdictional Runoff Management Program (JRMP) strategies. Figure ES-1 provides a snapshot of the actions that the Responsible Agencies have taken during the previous monitoring year.

Public Outreach and Source Control

- Provide turf conversion rebates
- Engage in enforcement actions for over-irrigation
- Sponsor beach and river cleanup events

Municipal Control Activities

- Sweep streets using new technologies and on a more frequent basis
- Clean debris out of catch basins
- Build and maintain structural best management practices (BMPs)

Figure ES-1
Los Peñasquitos WMA Strategy Overview

The Los Peñasquitos/Sorrento Restoration Program

One of the goals identified for this WMAs is restoration of 84 acres of salt marsh habitat. The Responsible Agencies have made considerable progress towards the implemenantation of the Los Peñasquitos/Sorrento Restoration Program. Phase I of this project includes removal of sediment and construction of sediment management facilities, repairs to storm drain outfalls, and realignment of creeks in the Los Peñasquitos Lagoon to ease water flow, reduce upstream flooding, and improve habitat conditions, as well as pilot restoration activities. Phase II of this project includes the large-scale restoration of salt marsh habitat in the Lagoon. The City of San Diego has been identified as the Lead Agency and is working in collaboration with the Responsible Agencies, State Parks, the Coastal Conservancy, the Los Peñasquitos Lagoon Foundation, and other stakeholders. Modeling was completed in FY 16 to confirm the preferred alternative for the Lagoon restoration. Additionally, some technical studies such as biological efforts and hydraulic and hydrology reports were completed for Phase I of the project. Next steps for FY 17 include additional modeling, completion of the concept design, and commencement of the public outreach process.

Progress Toward Meeting Goals

To measure progress toward achieving their goals and addressing the HPWQCs, the Los Peñasquitos WMA Responsible Agencies developed numeric goals and schedules. Numeric goals may take a variety of forms, but all forms can quantify a benefit to water quality so that progress toward and achievement of the goals are measurable. During this MS4 Permit term, the Responsible Agencies have defined goals based on actions they are taking to improve water quality in the WMA. Many of the goals are on track or have been met. Table ES-2 summarizes the progress of Responsible Agencies toward meeting their goals during the previous monitoring year.

Table ES-2
Los Peñasquitos WMA Progress Toward Performance-Based Goals (FY 16)

Responsible Agency	Weather (Wet/Dry)	FY 18 Goal	FY 16 Progress
City of Del Mar	Dry	10% reduction of anthropogenic surface dry weather flows that originate within the Del Mar's jurisdictional boundaries	Achieved to Date
City of Poway	Wet and Dry	5% increase from the baseline through turf conversion	Achieved
City of San Diego	Wet and Dry	36 acres of drainage area treated through construction of 9 green infrastructure BMPs	Achieved
	Dry	10% reduction in prohibited dry weather flow from baseline measured at persistently flowing outfalls in the WMA	Achieved to Date
County of San Diego	Wet	Progress toward implementing the WQIP.	In Progress

% = percent; BMP = best management practice; FY = fiscal year; WMA = watershed management area

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APPENDIX E Adaptive Management/Modifications

Acronyms and Abbreviations

Acronym or Abbreviation	Definition
%	percent
AB 411	California Assembly Bill 411, the Beach Safety Act
AEP	California Association of Environmental Professionals
AGR	agricultural supply beneficial use
Bacteria TMDL	*Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001
BIOL	biological habitat beneficial use
BMP	best management practice
Caltrans	California Department of Transportation
CCTV	closed-circuit television
CEQA	California Environmental Quality Act
City	City of San Diego
Copermittee	Operator of a municipal separate storm sewer system in San Diego County that is party to the MS4 Permit
County	County of San Diego
EST	estuarine habitat beneficial use
FY	fiscal year
HMP	Hydromodification Management Plan
HPWQC	highest priority water quality condition
IDDE	illicit discharge detection and elimination
IPM	integrated pest management
JRMP	Jurisdictional Runoff Management Program
LID	low-impact development
MS4	Municipal Separate Storm Sewer System

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
MS4 Permit	San Diego Regional Water Quality Control Board Order No. R9-2013-0001 (amended by Order No. R9-2015-0001 and by Order No. R9-2015-0100), National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems Draining the Watersheds Within the San Diego Region
MWD	Metropolitan Water District
NA	not applicable
NPDES	National Pollutant Discharge Elimination System
PDP	priority development project
PGA	pollutant-generating activity
PWQC	priority water quality condition
REC-1	water contact recreation beneficial use
Regional Board	San Diego Regional Water Quality Control Board
Responsible Agency	Responsible Agencies include parties subject to the Bacteria TMDL and participating in the Water Quality Improvement Plan, specifically the Copermittees in the Los Peñasquitos River WMA
RSC	regenerative storm water conveyance
RWL	receiving water limitation
SANDAG	San Diego Association of Governments
SCCWRP	Southern California Coastal Water Research Project
Sediment TMDL	*Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon*, Resolution No. R9-2012-0033
SHELL	shellfish harvesting beneficial use
SOP	standard operating procedure
SSC	suspended sediment concentrations

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
SUSMP	Standard Urban Storm Water Mitigation Plan
TMDL	Total Maximum Daily Load
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
WARM	warm freshwater habitat beneficial use
WDR	waste discharge requirements
WLA	waste load allocation
WMA	Watershed Management Area
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan
WQO	water quality objective

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1 Introduction

The San Diego Regional Water Quality Control Board (Regional Board) regulates discharges from municipal separate storm sewer systems (MS4s) in the San Diego Region *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region* (MS4 Permit) under Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100 (Regional Board, 2015). The MS4 Permit covers portions of San Diego County, southern Orange County, and southwestern Riverside County and regulates Phase I municipalities that own and operate MS4s (i.e., storm drain systems) that discharge storm water (wet weather) runoff and non-storm water (dry weather) runoff to surface waters throughout the San Diego region.

Under the MS4 Permit, the San Diego region is subdivided into 10 watershed management areas (WMAs), which cover the major, natural drainages in the region. The MS4 Permit requires a Water Quality Improvement Plan (WQIP) (Los Peñasquitos WMA Copermittees, 2015) to be developed for each WMA. The San Diego County Copermittees are listed in Table 1a of the MS4 Permit; the Copermittees with jurisdictional area within the Los Peñasquitos WMA are as follows:

- City of Del Mar
- City of Poway
- City of San Diego
- County of San Diego

Each Copermittee, referred to as a Responsible Agency in the WQIP, must comply with the MS4 discharge prohibitions and receiving water limitations outlined in the MS4 Permit through timely implementation of control measures, other actions specified in the MS4 Permit, and adherence to the WQIP.

The California Department of Transportation (Caltrans) is under a separate storm water permit from the State of California to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters (Order No. 2012-0011-DWQ). The California Department of Transportation (Caltrans) maintains multiple major transportation corridors. Caltrans has partial responsibility for the implementation of the *Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001, referred to as the Bacteria Total Maximum Daily Load, or Bacteria TMDL (Regional Board, 2010) and is therefore included as a Responsible Agency, even though it is not listed in the MS4 Permit as a Copermittee. Caltrans is also a named party in the *Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon*, Resolution No. R9-2012-0033 (Sediment TMDL) expected to be implemented in the next Caltrans NPDES Permit. Caltrans voluntarily participated in WQIPs across the San Diego region.

The goal of the WQIP is to guide the Responsible Agencies' to implement jurisdictional programs, known as Jurisdictional Runoff Management Programs (JRMPs) toward an outcome-based approach and to improve water quality. To accomplish this goal, an adaptive planning and management process will be used to identify the highest priority water quality condition(s) (HPWQC) within a watershed. Responsible Agencies will also implement strategies through the WQIP to achieve improvements in the quality of discharges from storm drain systems and within receiving waters such as creeks, rivers, and beaches. The final WQIP for the Los Peñasquitos WMA can be found on the Project Clean Water website (www.projectcleanwater.org).

The MS4 Permit also requires the Responsible Agencies within each WMA to submit an Annual Report to demonstrate progress toward implementing the WQIPs and corresponding JRMPs. The Annual Report covers two different reporting periods. The first reporting period is from July 1, 2015, through June 30, 2016, for the JRMPs and WQIP strategy implementation. The second reporting period is from October 1, 2015, through September 30, 2016, for monitoring and assessment programs. Progress toward goals may be assessed in either reporting period, depending on the goal metric. This Annual Report addresses the requirements in Provision F.3.b.(3) and other provisions of the MS4 Permit.

Table 1-1 provides an overview of the MS4 Permit requirements that must be addressed and where they are addressed within the Annual Report. The corresponding appendix, provides additional detail regarding the specific MS4 Permit requirements and where they are addressed within the Annual Report.

Table 1-1
MS4 Permit WQIP Annual Reporting Provisions and Corresponding Annual Report Sections[1]

MS4 Permit Provision[2]	WQIP Annual Report Section						WQIP Appendix			
	Section 1: Introduction	Section 2: WMA Priorities & Goals	Section 3: Monitoring	Section 4 : Achieving Goals	Section 5: Adaptive Management	Section 6: Conclusions	Appendix B - Goals	Appendix C - Monitoring	Appendix D – Jurisdictional Specific Information	Appendix E – Adaptive Management
Provision A –– Prohibitions and Limitations										
A.4.a.(2)			X		X			X	X	X
Provision B – Water Quality Improvement Plans										
B.5.a.					X			X		X
B.5.b.			X	X	X		X	X	X	X
B.5.c.					X					X

Table 1-1 (continued)
MS4 Permit WQIP Annual Reporting Provisions and Corresponding Annual Report Sections[1]

MS4 Permit Provision[2]	WQIP Annual Report Section						WQIP Appendix			
	Section 1: Introduction	Section 2: WMA Priorities & Goals	Section 3: Monitoring	Section 4 : Achieving Goals	Section 5: Adaptive Management	Section 6: Conclusions	Appendix B - Goals	Appendix C - Monitoring	Appendix D – Jurisdictional Specific Information	Appendix E – Adaptive Management
Provision D – Monitoring and Assessment Program Requirements										
D.1.e.(2)(c)			X					X		
D.2.b.(iv)			X					X		
D.4.b.(1)(a)(ii)			X					X		
D.4.b.(1)(b)			X		X			X		X
D.4.b.(1)(c)			X		X			X		X
D.4.b.(2)(a)					X			X		X
D.4.b.(2)(b)			X		X			X		X
D.4.b.(2)(c)			X		X			X		X
D.4.c.			X					X		
D.4.d.					X					X
D.4.d.(1)					X					X
D.4.d.(2)					X					X
D.4.d.(3)					X					X
Provision E – Jurisdictional Runoff Management Programs										
E.1.b.									X	
E.2.d.(4)			X					X		
E.8.c.	X								X	
Provision F – Reporting										
F.1.b.(6)					X					X
F.2.a.(2)					X					X
F.2.a.(3)					X					X
F.2.b.(1)					X				X	
F.2.b.(2)					X				X	
F.2.c.(1)(c)					X					X

Table 1-1 (continued)
MS4 Permit WQIP Annual Reporting Provisions and Corresponding Annual Report Sections[1]

MS4 Permit Provision[2]	WQIP Annual Report Section						WQIP Appendix			
	Section 1: Introduction	Section 2: WMA Priorities & Goals	Section 3: Monitoring	Section 4 : Achieving Goals	Section 5: Adaptive Management	Section 6: Conclusions	Appendix B - Goals	Appendix C - Monitoring	Appendix D – Jurisdictional Specific Information	Appendix E – Adaptive Management
F.3.b.(3)(a-f)	X		X	X	X			X	X	X
F.6						X		X		
Attachment E - Specific Provisions for Total Maximum Daily Loads Applicable to Order No. R9-2013-0001										
Attachment E			X	X				X		

1. Appendix A provides additional details regarding the specific MS4 Permit requirements and where they are addressed within the Annual Report.
2. Some Permit provisions are addressed in individual jurisdictional JRMPs.

WQIP = Water Quality Improvement Plan

The Los Peñasquitos WMA WQIP Annual Report for 2015–2016 is structured as follows:

Section 1, Introduction – This section provides an overview of the MS4 Permit, the WQIP, and the Annual Reporting requirements. Includes references to Appendix A:

Appendix A. Crosswalk of Permit Requirements and Annual Report References.

Section 2, Overview of the Los Peñasquitos Watershed Management Area – This section introduces the watershed management area and the priority water quality conditions (PWQCs) of the watershed. The numeric goals and schedules developed to measure progress toward addressing the HPWQCs are presented. Includes references to Appendix B:

Appendix B. Water Quality Improvement Plan Numeric Goals

Section 3, Monitoring and Assessment – This section summarizes the monitoring programs and provides an assessment of the data collected relative to the HPWQCs. Includes references to Appendix C:

Appendix C. Monitoring Results and Assessments

Section 4, Implementation and Progress Toward Achieving Numeric Goals – The section discusses the assessment of the progress toward meeting the numeric goals, with a focus on those numeric goals occurring during the MS4 Permit term. The section also provides an overview of the strategies implemented to meet the numeric goals, the status of implementation, and plans for the coming year. Includes references to Appendix D:

Appendix D. Jurisdictional Runoff Management Program Annual Report Forms, Fiscal Analysis, Updated Best Management Plan (BMP) Manuals, and Jurisdictional Strategies

Section 5, Adaptive Management – This section summarizes the elements of the WQIP's process, which can be changed during the course of MS4 Permit implementation based on monitoring results and new information gathered during the reporting period. Includes references to Appendix E:

Appendix E. Adaptive Management/Modifications

Section 6, Conclusions and Recommendations – This section provides the conclusions and recommendations that are based on the data collected and assessments conducted during implementation of the WQIP in fiscal year (FY) 2015–2016 (FY 16).

Section 7, References – This section lists the sources used to prepare this Annual Report.

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2 Overview of Los Peñasquitos Watershed Management Area

The Los Peñasquitos WMA drains an area of approximately 94 square miles in central San Diego County. The southernmost portion of the watershed is just north of Rose Canyon, the northernmost portion is south of Lake Poway, and the easternmost portion is near State Route 67. Five agencies located in the Los Peñasquitos WMA maintain jurisdiction over the land; the land area for each agency is shown in Figure 2-1. Caltrans, along with other non-Phase 1 MS4s dischargers, is regulated under separate permits, as discussed in Section 1 of the Los Peñasquitos WMA WQIP. They have jurisdiction over 2.4 percent (%) of the land are within the WMA. However, Caltrans has voluntarily participated in development of the WQIP to implement the Bacteria and Sediment TMDLs[1].

The Responsible Agencies are responsible for discharges originating from non-MS4 lands outside of their regulatory control (i.e., industrial, agricultural, Phase II, state, federal, and Indian reservation lands) if those pollutants are ultimately discharged from the MS4 of a Responsible Agency. Therefore, Responsible Agencies look to collaborate and improve communication with non-municipal sources and the appropriate regulatory agencies to ensure that these discharges are regulated before they enter the Responsible Agencies' MS4s.

The Los Peñasquitos WMA was divided into four subwatersheds to focus on the receiving waters when selecting PWQCs and implementing the WQIP. These subwatersheds are the Los Peñasquitos Lagoon, Carroll Canyon Creek, Los Peñasquitos Creek, and Carmel Valley Creek.

The Los Peñasquitos Lagoon subwatershed contains a coastal salt marsh lagoon bearing the same name. The lagoon is located in the Torrey Pines State Reserve and ultimately discharges its waters to the Pacific Ocean. The lagoon is one of the few remaining native salt marsh lagoons within the state of California, and many endangered species inhabit the area.

The three remaining subwatersheds each include a stream that flows into the Los Peñasquitos Lagoon. The Carroll Canyon subwatershed is drained by Carroll Canyon Creek; its headwaters originate near the Miramar Reservoir, and once it crosses Highway 805, the creek is referred to as Soledad Canyon Creek or sometimes Sorrento Valley Creek. The Los Peñasquitos Creek is the largest tributary of the Los Peñasquitos Lagoon. Its headwaters extend to the easternmost portion of the WMA just west of Fernbrook, California. The Los Peñasquitos Creek is joined by the Soledad Canyon Creek of the Carroll Canyon subwatershed in Sorrento Valley near Interstate 5 before flowing into the Los Peñasquitos Lagoon. The Carmel Valley Creek subwatershed is drained by a creek bearing the same name. The creek's headwaters begin near Black Mountain and it drains to the northwestern most portion of the Los Peñasquitos Lagoon.

[1] Bacteria TMDL: *Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001
Sediment TMDL: *Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon*, Resolution No. R9-2012-0033

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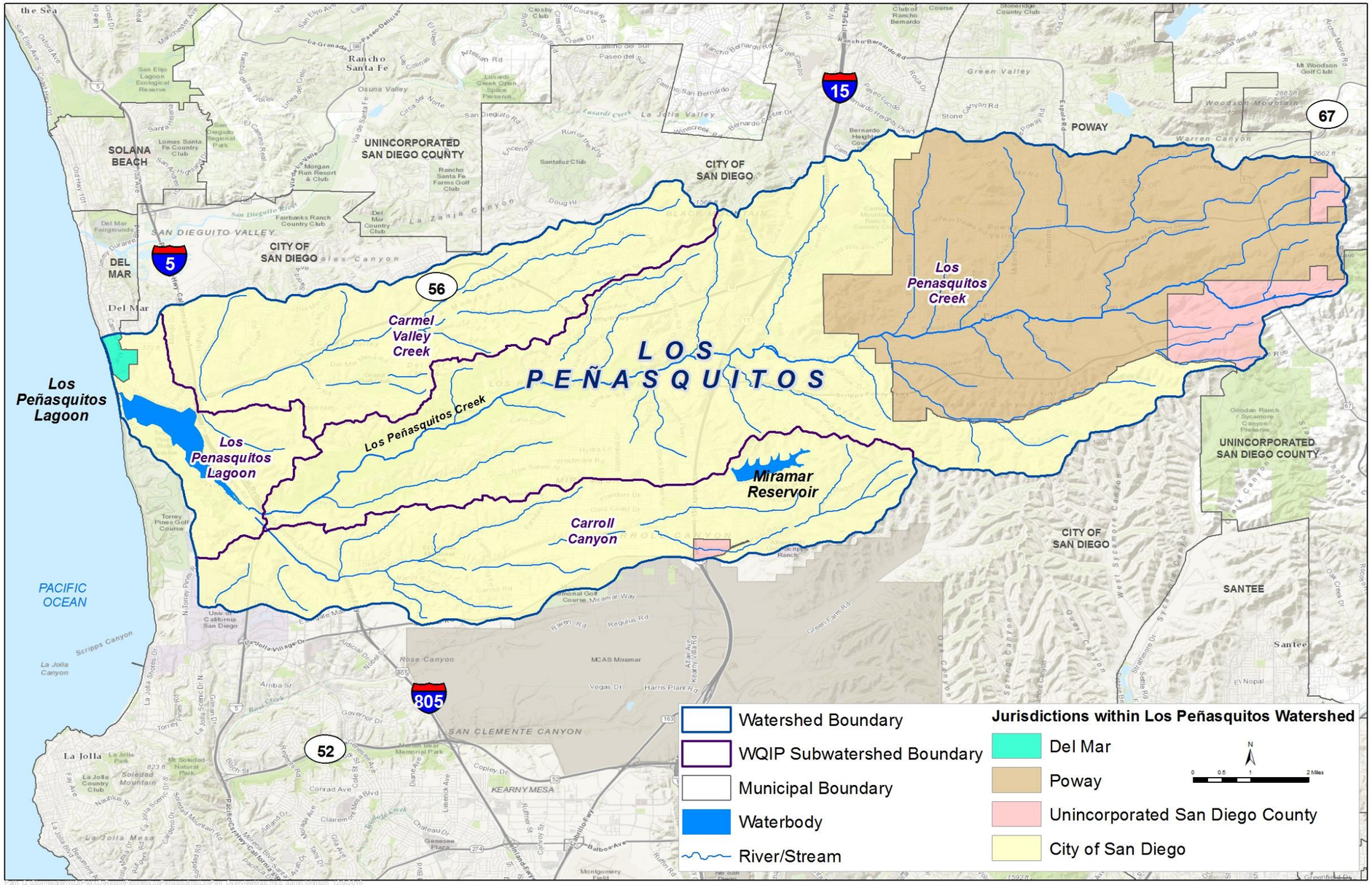

Figure 2-1
Los Peñasquitos WMA Subwatersheds

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2.1 Los Peñasquitos WMA WQIP

The overarching goal of the Los Peñasquitos WMA WQIP is to further the Clean Water Act's objective to protect, preserve, enhance, and restore the water quality and designated beneficial uses of waters of the state. This goal will be accomplished through a planning and adaptive management process that identifies the PWQCs and HPWQCs. The Los Peñasquitos WMA WQIP identifies strategies (implemented through JRMPs) to address water quality conditions in the WMA with a particular focus on the PWQCs and the HPWQCs to achieve measurable numeric goals and to improve the quality of MS4 discharges and, in turn, the receiving waters. The Los Peñasquitos WMA WQIP outlines how the Responsible Agencies within the WMA are evaluating water quality conditions, prioritizing those water quality conditions, and using these common priorities to guide jurisdictional and watershed-scale programs to address the HPWQCs.

2.2 Priority and Highest Priority Water Quality Conditions

The WQIP identifies the PWQCs on the basis of an assessment of receiving water conditions, MS4 discharges and their potential impacts, and the sources of pollutants in the watershed. The PWQCs for the Los Peñasquitos WMA are summarized by the beneficial use and pollutant category in Figure 2-2. Details about the PWQC selection process and a full list of the PWQCs are in Appendix A and Appendix F, respectively, of the Los Peñasquitos WMA WQIP.

The HPWQCs are the foundation for establishing the WQIP numeric goals and schedules and selecting water quality improvement strategies to achieve the necessary improvements in the quality of MS4 discharges and/or receiving waters. Table 2-1 details the following conditions/pollutants as highest priorities within the Los Peñasquitos WMA. The HPWQCs are highlighted in bold in Figure 2-2.

Table 2-1
Highest Priority Water Quality Conditions in the Los Peñasquitos WMA

Highest Priority Water Quality Condition	Potential Stressor	Temporal Extent		Subwatershed(s)
		Dry	Wet	
Impairment of EST and BIOL in Los Peñasquitos Lagoon	Sedimentation/Siltation, Hydromodification	—	✓	Carroll Canyon, Carmel Valley Creek, Los Peñasquitos Creek, Los Peñasquitos Lagoon
Impairment of EST and BIOL in Los Peñasquitos Lagoon	Freshwater Discharges	✓	—	
Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar	Indicator Bacteria	✓	✓	

BIOL = biological habitats beneficial use; EST = estuarine habitat beneficial use; REC-1 = water contact recreation beneficial use

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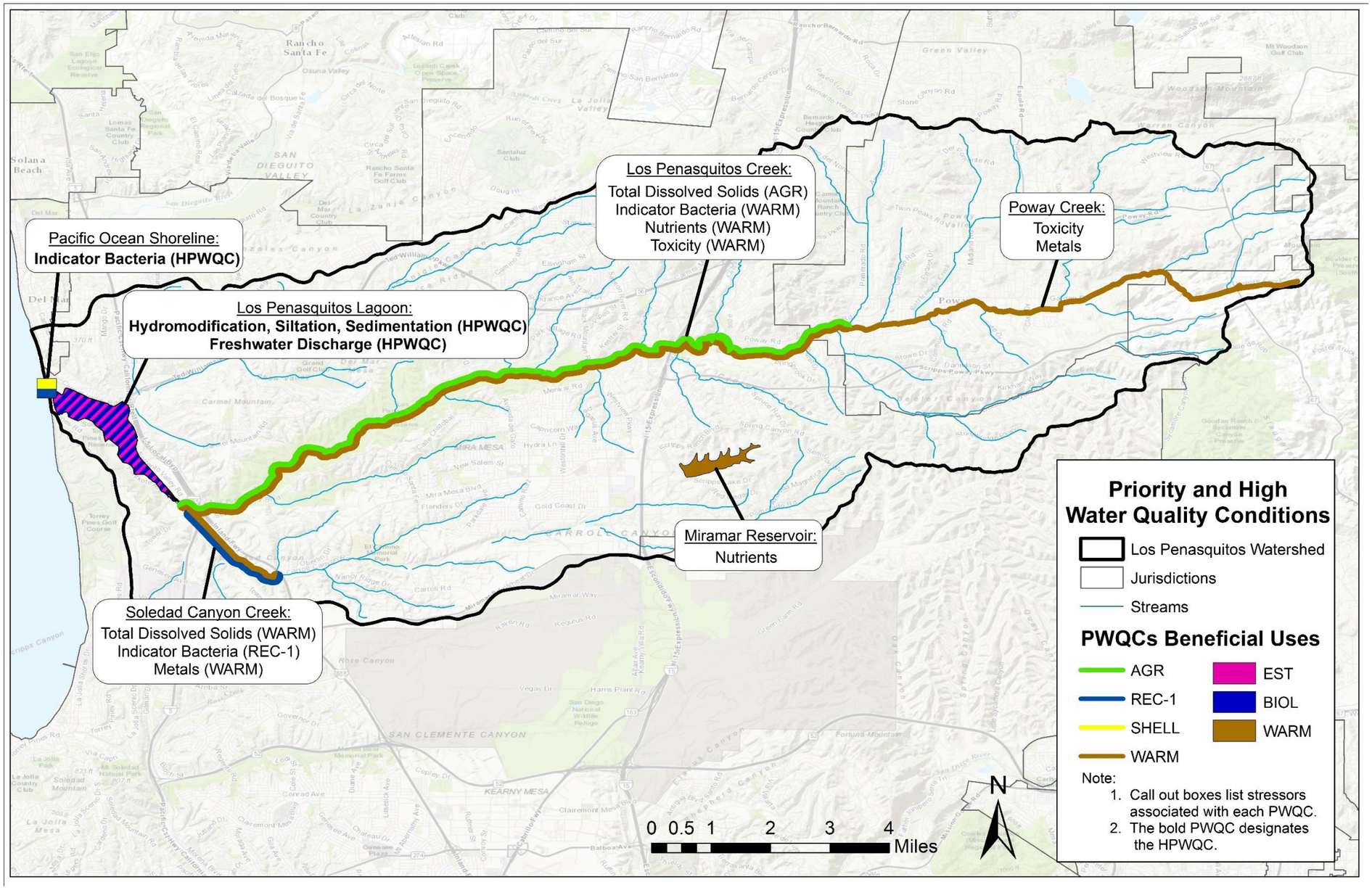

Figure 2-2
Los Peñasquitos WMA Priority and Highest Priority Water Quality Conditions

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2.3 WQIP Numeric Goals

In the WQIP, the Responsible Agencies identified and developed specific water quality improvement numeric goals and strategies to address the HPWQCs identified within the WMA. The numeric goals (interim and final) and corresponding schedules support implementation of the WQIP and measure reasonable progress toward addressing the HPWQCs. In addition, the Responsible Agencies' monitoring and assessment programs measure progress toward attaining these goals.

The numeric goals for the Los Peñasquitos WMA are presented in detail by jurisdiction in Appendix B.

The goals extend beyond the timeframe of the current MS4 Permit. For this reason, the numeric goals within the WQIP are categorized into three distinct time periods:

1. Interim goals within the five-year MS4 Permit term. These goals are typically specific to each Responsible Agency's jurisdiction.
2. Interim goals based on the interim Bacteria TMDL and Sediment TMDL (Regional Board, 2012) compliance pathways.
3. Final goals based on final Bacteria TMDL and Sediment TMDL compliance options.

The timelines for the Los Peñasquitos WMA bacteria and sediment numeric goals are illustrated in Figure 2-3 and Figure 2-4, respectively.

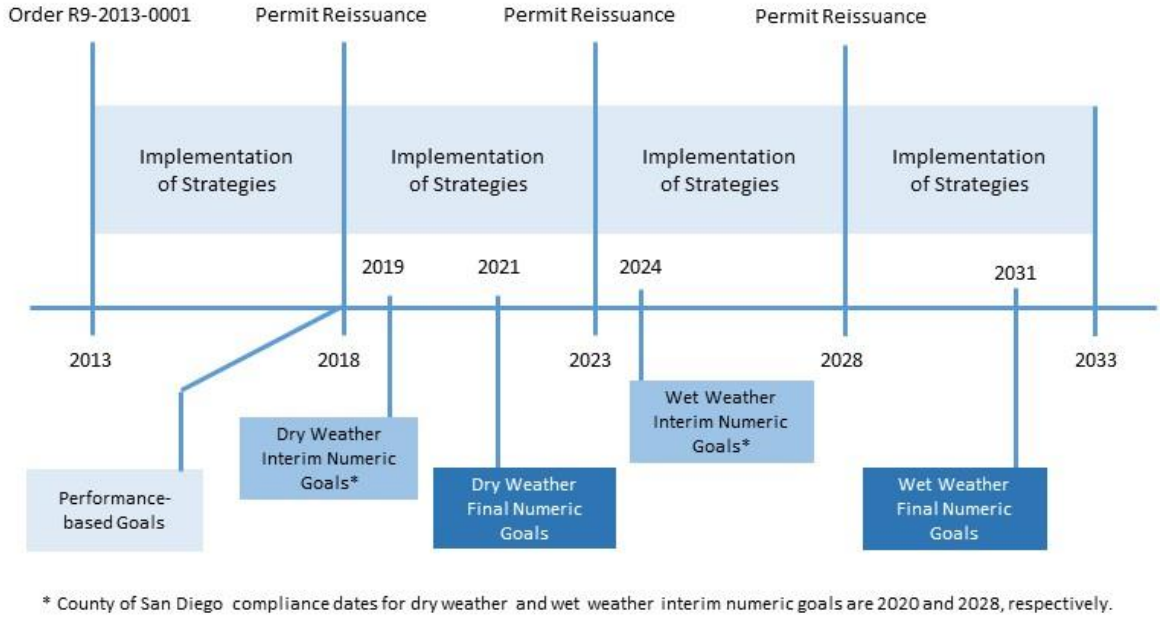

Figure 2-3
Timelines and Relationships for Bacteria TMDL Numeric Goals

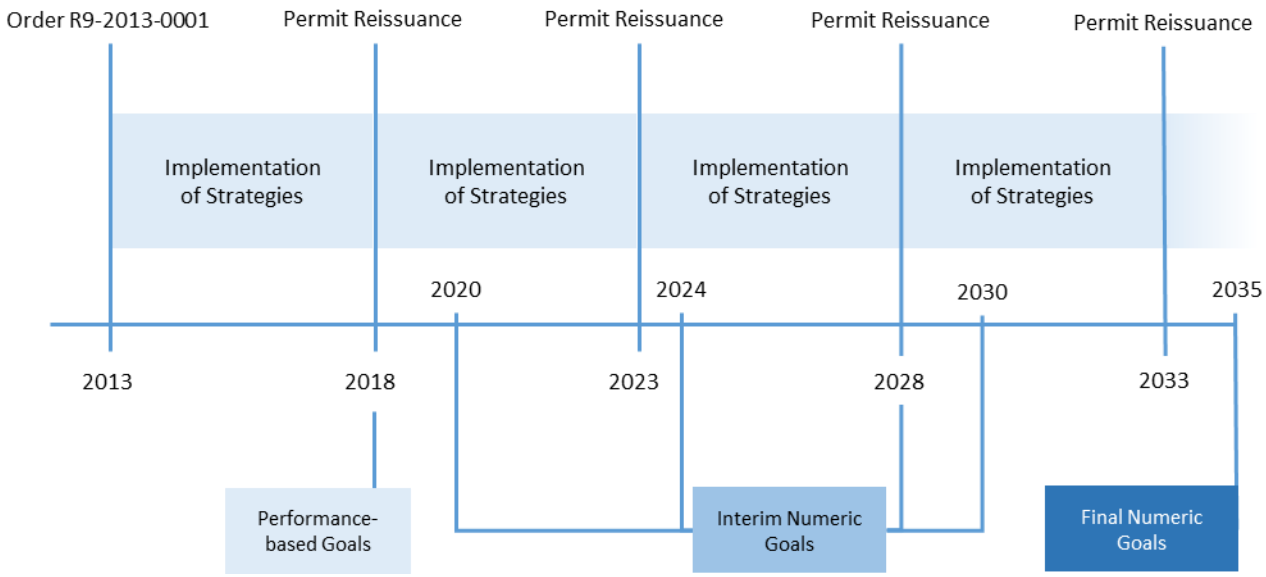

Figure 2-4
Timelines and Relationships for Sediment TMDL Numeric Goals

3 Monitoring and Assessment

The Los Peñasquitos Lagoon is one of the few remaining coastal lagoons in southern California and Torrey Pines State Beach at Del Mar near the Los Peñasquitos Lagoon mouth is a popular state beach. These two important water bodies encompass the HPWQCs in the Los Peñasquitos WMA.

This section discusses the monitoring related to maintaining salt marsh habitat in the Los Peñasquitos Lagoon and water contact recreation uses at the Pacific Ocean Shoreline. Monitoring related to the 2013–2018 MS4 Permit term and interim/final goals is detailed, including tracking of performance-based goals, receiving water monitoring for TMDL compliance, vegetation monitoring in the Los Peñasquitos Lagoon, MS4 monitoring, and special studies.

3.1 Monitoring Related to Performance Based Goals

The Responsible Agencies have established dry and wet weather goals for the 2013–2018 MS4 Permit term. Tables 3-1 and 3-2 summarize the data collected during the 2015–2016 monitoring year to assess progress toward meeting fiscal year (FY) 18 goals.

Table 3-1
Dry Weather Monitoring Related to Performance Based Goals

Jurisdiction	Highest Priority Water Quality Condition	Performance-Based Goal	Monitoring Element
City of Del Mar	Impairment of EST and BIOL in the Los Peñasquitos Lagoon from freshwater discharge Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar from Indicator Bacteria	Reduce anthropogenic surface dry weather flows[1] that originate within Del Mar's jurisdictional boundaries by 10%	Collected flow measurements at selected MS4 outfalls Sampling Days: 2 Field site visits: 15
City of Poway	Impairment of EST and BIOL in the Los Peñasquitos Lagoon due to freshwater discharge Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar due to indicator bacteria	Achieve a 5% increase in turf conversion from the baseline	Tracked the implementation of turf conversion, including turf conversion increase

Jurisdiction	Highest Priority Water Quality Condition	Performance-Based Goal	Monitoring Element
City of San Diego	Impairment of EST and BIOL in the Los Peñasquitos Lagoon due to freshwater discharge Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar due to indicator bacteria	Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality from 36 acres of drainage area	Tracked the acres of drainage area treated by green infrastructure BMPs
		Reduce the prohibited[2] dry weather flow from baseline measured at persistently flowing outfalls during dry weather by 10%	Collected flow measurements at persistently flowing outfalls. Sampling Days: 37
County of San Diego	Impairment of EST and BIOL in the Los Peñasquitos Lagoon due to freshwater discharge Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar due to indicator bacteria	Eliminate anthropogenic dry weather flows[1] from storm drain outfalls either by aggregate flow volume or the number of persistently flowing outfalls during dry weather	Determine baseline for number and aggregate flow in 2016

1. The term "dry weather flows" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.
2. Does not include allowable discharges as defined in Provision A and Provision E.2.a of the MS4 Permit.

% = percent; BIOL = biological habitat beneficial use; BMP = best management practice; EST = estuarine habitat beneficial use; MS4 = municipal separate storm sewer system; REC-1 = water contact recreation beneficial use

Table 3-2
Wet Weather Monitoring Related to Performance Based Goals

Jurisdiction	High Priority Water Quality Condition	Performance-Based Goal	Monitoring Element
City of Del Mar	Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar due to indicator bacteria	Reduce anthropogenic surface dry weather flows[1] that originate within Del Mar's jurisdictional boundaries by 10% to address bacteria regrowth contributing during wet weather	Collected flow measurements at selected MS4 outfalls during dry weather Sampling Days: 2 Field site visits: 15
City of Poway	Impairment of EST and BIOL in the Los Peñasquitos Lagoon due to sediment Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar due to indicator bacteria	Achieve a 5% increase in turf conversion from the baseline	Tracked the implementation of turf conversion, including turf conversion increase
City of San Diego	Impairment of EST and BIOL in the Los Peñasquitos Lagoon due to Sediment Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar due to indicator bacteria	Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality from 36 acres of drainage area	Tracked the acres of drainage area treated by green infrastructure BMPs
County of San Diego	Potential impairment of REC-1 along the Pacific Ocean Shoreline at Torrey Pines State Beach at Del Mar due to indicator bacteria	Implement program strategies to meet FY 18 goal	See Section 4.1.4 for details

1. The term "dry weather flows" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.

% = percent; BIOL = biological habitat beneficial use; BMP = best management practice; EST = estuarine habitat beneficial use; MS4 = municipal separate storm sewer system; REC-1 = water contact recreation beneficial use

3.2 Monitoring Related to Interm and Final Goals

The Responsible Agencies have implemented the Monitoring and Assessment Program outlined in Section 5 of the Los Peñasquitos WMA WQIP to track progress toward meeting long-term WQIP goals. The program includes receiving water monitoring, MS4 outfall monitoring, and the designated special studies. This section provides an overview of the monitoring conducted to track this progress through this reporting period. The full details of the monitoring results are in Appendix C.

Los Peñasquitos WMA Sediment TMDL Compliance Monitoring Program

The Sediment TMDL Compliance Monitoring Program has two components including a sediment monitoring component for the upper watershed and vegetation monitoring component at the lagoon. The sediment component monitors suspended sediment concentrations (SSC), conducts volumetric streambed sampling and pebble counts for particle-size distribution, and estimates wet weather sediment loads in each of the WMA's three major tributary creeks during wet weather. Bedload samplers were installed with each wet weather event and each sampling location. Pebble counts were conducted prior to the first monitored wet weather event and after each monitored event to document changes in the streambed composition. The vegetation component includes annual vegetation monitoring in the Los Peñasquitos Lagoon to track vegetation changes over time. The Responsible Agencies are collaborating with the Los Peñasquitos Lagoon Foundation to represent the vegetation data in an appropriate and consistent manner.

Section 2.6 of Appendix C provides more information about the sampling performed in the 2015–2016 monitoring year and Attachment B of Appendix C provides the Sediment TMDL Compliance Monitoring Report. The data collected as part of this program will be used to assess the receiving water and lagoon restoration compliance pathways in future years. A summary of the results from the 2015–2016 monitoring year includes the following:

- SSCs were higher at or near peak flow and during the rising limb of the hydrograph for smaller storms such Events 2 and 3 during the 2015–2016 wet season. For the larger storm (Event 1), SSCs in all three WMA creeks remained high throughout the storm and mostly varied with flow, suggesting that the unusually high flows may have mobilized previously deposited sediments that were stored by in-channel vegetation and streambed.
- The total 2015–2016 sediment load estimate of 23,500 tons per year is above the final Sediment TMDL waste load allocation (WLA) (2,580 tons per year). This is one TMDL compliance pathway that can be achieved by 2034. Monitoring in previous years has recorded annual sediment loads that were below the WLA.

Bacteria TMDL Compliance Monitoring Program

The Bacteria TMDL Compliance Monitoring Program monitors bacteria indicators at the historical California Assembly Bill 411 (AB 411) monitoring location in San Diego County at the mouth of the Los Peñasquitos Lagoon. Monitoring occurred as required during both dry and wet weather.

Wet weather monitoring was conducted at the monitoring location during three storm events during the wet season (October 1 through April 30). During the recreation season (April 1 through October 31), samples are collected at monitoring location five times per month consistent with AB 411 requirements, and during dry periods of the wet season (November 1 through March 31) on a monthly basis per Bacteria TMDL requirements. Samples were collected on dry weather days, after an antecedent dry period of 72 hours with less than 0.1 inch of rainfall. Grab samples were collected in a manner consistent with requirements of the AB 411 program and were analyzed for total coliform, fecal coliform, and *Enterococcus*.

Section 2.7 of Appendix C provides more information on the sampling performed in the 2015–2016 monitoring year and Attachment A of Appendix C provides the Bacteria TMDL Compliance Monitoring Report. The data collected as part ofthis program will be used to assess the receiving water compliance pathway in future years. The results of the 2015–2016 monitoring year are summarized as follows:

- During wet weather, the receiving waters at the Los Peñasquitos River Outlet/Beach achieved a 0% single-sample maximum exceedance frequency for fecal coliform and a 13% single-sample maximum exceedance frequency for total coliform and *Enterococcus*. FM-100 is in compliance with final wet weather single-sample maximum receiving water limitations (RWLs).
- During the wet season, which evaluates a combination of both wet and dry weather samples, FM-100 achieved a 0% geometric mean exceedance frequency and is in compliance with final dry weather geometric mean RWLs.
- During the dry season, when recreational activities occur with more regularity, FM-100 achieved a 0% exceedance frequency and is in compliance with the final dry weather geometric mean RWLs.

Los Peñasquitos WMA MS4 Outfall Monitoring

The Responsible Agencies implemented the dry and wet weather MS4 outfall monitoring program, as detailed in Section 5 of the WQIP. The dry weather MS4 monitoring program is a combination of field screening and collection of samples at persistently flowing major outfalls. Field screening includes visual monitoring of all major MS4 outfalls to identify and eliminate sources of persistently flowing non-storm water discharges. This information is also used to track the progress of some of the 2018 MS4 Permit term goals.

Water quality sample collection provides information on the impact of MS4 outfalls on receiving water quality during dry weather. The goal of the wet weather MS4 monitoring program is to identify pollutants in storm water discharges from the MS4s and to guide

pollutant source identification efforts by collecting paired water quality samples and flow data. Annually, the data from the dry weather program are compared with the non-storm water action levels and data from the wet weather program are compared with the storm water action levels. During the current monitoring year, in dry weather non-storm water action levels were met over 74% of the time for multiple consituents and in wet weather only one storm water action level exceedance for turbidity was recorded.The data collected as part of this program will be used to assess the MS4 outfall compliance pathway toward reaching interim and long-term goals in future years. Total suspended solids (TSS) concentrations and bacteria indicator concentrations are measured during both dry and wet weather sampling to assess sediment and bacteria concentrations loads, respectively.

Table 3-3 summarizes the number of major outfalls visited during the 2015–2016 monitoring year for each Responsible Agency, along with the dates of the analytical monitoring. The County of San Diego does not have any major outfalls in the Los Peñasquitos WMA, but did monitor 28 minor outfalls twice during this reporting period. No flows were detected at these sites. Sections 3 and 4 of Appendix C provide more information on dry and wet weather MS4 monitoring programs, respectively. Attachments C and D (Dry and Wet Weather Assessments) of Appendix C provide detailed calculations with regard to the these monitoring programs. The data collected as part of this program will be used to assess MS4 compliance pathways in future years.

Table 3-3
Number of Major MS4 Outfalls Monitored During the 2015–2016 Monitoring Year

Jurisdiction	Number of Major Outfalls Visited Per Year				
	Field Screening[1]	Dry Weather Monitoring		Wet Weather Monitoring	
		Number of Sites[2]	Dates	Number of Sites[2]	Dates
City of Del Mar	3 (1)[3]	1	6/30/2016 8/12/2016	1	1/30/2016
City of Poway	30 (37)[3]	5	7/28/2016 7/29/2016 8/2/2016 8/2/2016	3	3/5/2016
City of San Diego	198 (198)[4]	5	2/4/2016 3/16/2016 4/25/2016	1	1/30/2016
County of San Diego	28[5]	0[5]	NA	0[5]	NA

1. Field screening represents the number of major MS4 outfalls visited in the 2015–2016 monitoring year. Total number of major outfalls within each jurisdiction in the WMA is provided in parentheses.
2. Number of sites represents the number of outfalls with priority persistent flows selected for dry weather water quality sampling.
3. For Copermittees with fewer than 125 major outfalls in the WMA, 80% of major outfalls must be screened twice per year.
4. For Copermittees with portions of their jurisdictions in more than one WMA and more than 500 major MS4 outfalls in their jurisdictions, at least 500 major outfalls must be inspected once per year.
5. There are 28 minor outfalls but no major outfalls have been identified within the County of San Diego for this WMA. Therefore, no water quality data was collected by the County of San Diego at major MS4 locations in the Los Peñasquitos WMA.

NA = not applicable

Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Study

The Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Study characterized potential sediment sources contributing to the lagoon by conducting wet weather stream monitoring and dry weather aerial deposition monitoring. Monitoring was conducted concurrently with the Sediment TMDL Monitoring Program, which monitors total sediment loads into the lagoon from the outlet of each of the three subwatersheds. Section 5.1 of Appendix C provides more information on this special study and Attachment E of Appendix C provides the Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Study Final Report.

This study identified reaches within each subwatershed stream reaches that may warrant further investigation. These areas include two reaches within the Carroll Canyon Creek subwatershed including a reach of Carroll Canyon Creek that runs through the gravel mine operations and the immediate reach downstream of the gravel mine. Other reaches are located in the upper portions of both the Los Peñasquitos Creek subwatershed and the Carmel Valley Creek subwatershed. The study found that these areas have the potential to serve as a sink for sediment within the WMA and the sediment can be mobilized during large storms such as the storm in early January 2016. Carmel Valley Creek loads are consistently much smaller than those of the other two subwatersheds, making it a low priority for management measures. The aerial deposition sampling determined that aerial deposition of sediment was not a significant contributor to the watershed sediment loads compared with the stream loads.

Outfall Repair and Relocation Study

The Sediment Load Reduction Quantification Through Outfall Repair and Relocation for the Los Peñasquitos WMA Study was performed in order to assess the current sediment loading to the Los Peñasquitos Lagoon caused by the erosive scour associated with outfall discharge, as well as possible sediment load reductions associated with various BMPs. The load estimations from 102 City of San Diego outfalls resulted in a load of 85 tons per year that accounts for approximately 1.4% of the total sediment load for the watershed. Of these 102 outfalls, 42 were identified as “high priority” outfalls because of their high annual sediment load production.

Three types of BMPs were investigated to estimate the amount of the loading that could potentially be reduced or eliminated. It was determined that the total sediment load modeled could be reduced by implementing the following BMP practices at the 42 high priority outfalls:

- 50% reduction in sediment through outfall relocation (extending storm water conveyance infrastructure from a location near the top of a canyon to one near the valley floor);
- 79% reduction in sediment by installing energy dissipation structures (placing materials below the outfall that reduce the energy of incoming storm flows); and
- 84% reduction in sediment by implementing regenerative storm water conveyance (RSC) practices (a relatively new BMP intended to treat storm water through a series of energy dissipation structures and small retention ponds).

San Diego Regional Reference Streams and Beaches Study

The San Diego Regional Reference Streams and Beach Study (Southern California Coastal Water Research Project [SCCWRP], 2015 and SCCWRP, 2016) characterizes the natural background concentrations of bacteria from natural streams and beaches in a condition minimally disturbed by anthropogenic activities, referred to as a “reference” condition. These data are being used during the Bacteria TMDL Reopener to revisit the Bacteria TMDL numeric targets based on current data and United States Environmental Protection Agency (USEPA) policy, which may lead to revised terms of compliance. The Bacteria TMDL Reopener is in progress and is expected to be completed in 2017. Section 5.2 of Appendix C provides more information on this special study.

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4 Implementation and Progress Toward Achieving Numeric Goals

The MS4 Permit requires the Responsible Agencies to develop specific water quality improvement numeric goals and strategies to address the HPWQCs identified for the Los Peñasquitos WMA. Each year, the Responsible Agencies assess specific water quality data and programmatic information to gauge progress toward achieving the numeric goals. These assessments provide information to determine whether intended outcomes are being realized or whether adaptations of Responsible Agencies' programs are necessary. This section discusses the strategies that have been implemented during the reporting period and the progress toward achieving specific MS4 Permit term goals for the watershed. Many of the selected strategies necessarily target the WMA HPWQCs, but many address other pollutants as well, providing a multi-benefit approach to implementation.

4.1 Strategies and Schedules

The strategies being implemented by the Responsible Agencies are the activities that enable improvements in water quality to achieve the numeric goals outlined in Section 2.3. Strategy selection considered the following:

- Responsible Agencies emphasized strategies that target HPWQCs and provide multiple benefits.
- Responsible Agencies considered the triple bottom line, evaluating the environmental, economic, and social components of the strategies.
- Strategies that improve and promote cooperation and collaboration between the Responsible Agencies and other governmental agencies (WMA groups, Caltrans, water districts, school districts) and other entities, such as private or non-profit organizations, were also given priority. Responsible Agencies also continually collaborate with internal jurisdictional departments.

The success of the strategies will ultimately be measured against the interim and final numeric goals.

In general, all Responsible Agencies are collectively implementing both JRMP-required[2] and optional nonstructural BMPs throughout the Los Peñasquitos WMA to achieve dry and wet weather load reduction goals. As implementation continues and progress is evaluated, distributed and regional structural BMPs will be implemented as needed to meet interim and final goals as funding becomes available. Figure 4-1 shows the different types of strategies implemented by Responsible Agencies to meet WQIP goals.

[2] Caltrans does not have a JRMP.

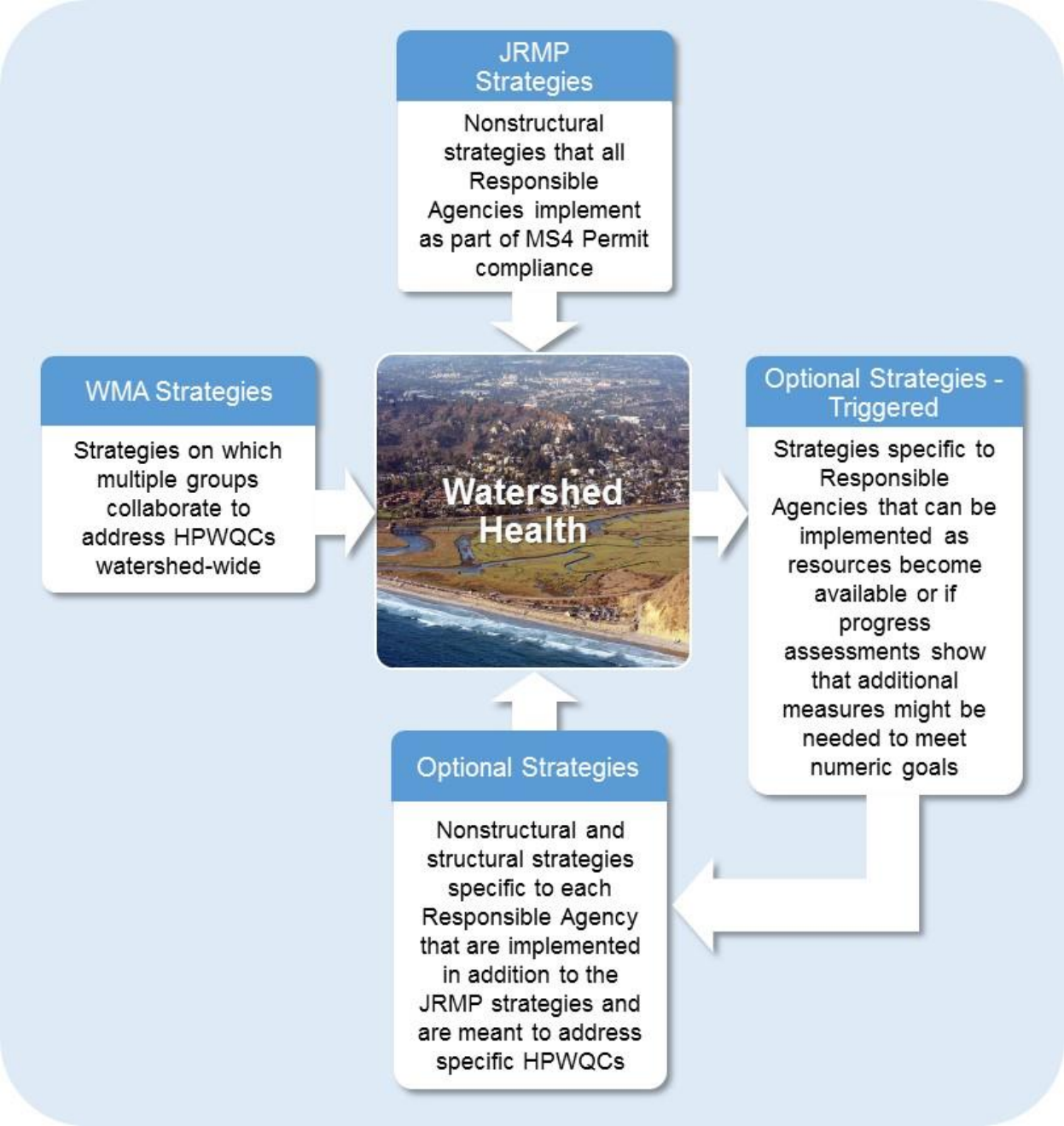

Figure 4-1
Strategies Implemented by Responsible Agencies to Meet WQIP Goals

JRMP strategies implemented by all Responsible Agencies during the reporting period throughout the Los Peñasquitos WMA are summarized by program element in Table 4-1. Detailed jurisdictional strategies are included in Appendix D. Within the detailed strategies tables, information is presented to indicate whether the strategy was implemented during this reporting period, whether it will continue to be implemented during the next reporting period, or whether the strategy will be modified or eliminated for the coming year(s).

Nonstructural strategies reduce pollutant loading to the MS4 by reducing pollutant generation at the source and/or by reducing mobilization of pollutants to the MS4, and either directly or ultimately to receiving waters. Programs designed to attenuate the effects of irrigation runoff, landscaping practices, and pet waste on receiving water quality are primary examples of nonstructural approaches that the Responsible Agencies in the Los Peñasquitos WMA have employed during this MS4 Permit term. The key strategies for each Responsible Agency are described in more detail below in Sections 4.1.1 through 4.1.4, and WMA strategies are presented in Section 4.1.5.

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Table 4-1
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
Jurisdictional Runoff Management Program (JRMP) (E.2-E.7) Strategies							
E.3 Development Planning							
All Development Projects							
Establish guidelines and standards for all development projects and public low-impact development (LID) best management practices (BMPs); provide technical support related to implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area or implement easements to protect water quality, where applicable and feasible. Provide education and outreach to the development community regarding requirements of the Municipal Separate Storm Sewer System (MS4) Permit, Water Quality Improvement Plan (WQIP), and BMP updates.	X	X	X	X	X	X	X
Priority Development Projects (PDPs)							
For PDPs, administer a program and provide technical support to other internal departments to ensure implementation of on-site structural BMPs to control pollutants and manage hydromodification by developing storm water development standards and design guidelines. Includes confirmation of design, construction, and maintenance of PDP structural BMPs. Update the BMP Design Manual to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	X	X	X	X	X	X	X

Table 4-1 (continued)
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
E.4 Construction Management							
Administer a program to oversee implementation of temporary BMPs that control sediment and other pollutants during the construction phase of projects. Includes requirements to inspect at appropriate frequencies and effectively enforce requirements through process controlled by other internal departments.			X	X	X	X	
E.5 Existing Development							
Commercial, Industrial, Municipal, and Residential Facilities and Areas							
Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and pollutant-generating activities (PGAs), as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods. Update minimum BMPs for existing residential, commercial, and industrial development. Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	X	X	X	X	X	X	X
MS4 Infrastructure							
Implement operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, channels as allowed by resource agencies, detention basins, pump stations, etc.) for water quality improvement and for flood control risk management. Includes inspecting and cleaning catch basins, implementing controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers, and repairing and replacing MS4 components.	X	X	X	X	X		

Table 4-1 (continued)
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
Roads, Streets, and Parking Lots							
Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways. Implement street sweeping.	X	X	X	X	X		
Pesticides, Herbicides, and Fertilizer BMP Program							
Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education.		X					X
Retrofit and Rehabilitation in Areas of Existing Development							
Develop a strategy and identification of candidate areas of existing development necessary for implementing retrofit projects and facilitate the implementation of such projects.	X	X	X	X	X	X	X
Develop a strategy and identify candidate areas necessary to implement stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	X	X	X	X	X	X	X
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program							
Implement the Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	X	X	X	X	X	X	X

Table 4-1 (continued)
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
E.7 Public Education and Participation (B.3.b(1)(a)(iii))							
Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences. Enhanced school and recreation-based education and outreach, of which may include irrigation reduction issues, integrated pest management (IPM) for residents and businesses, and implementation and education of pet waste program. Promote and encourage implementation of designated BMPs in commercial and industrial areas.	X	X	X	X	X	X	X
E.6 Enforcement Response Plan							
Continue to implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Storm Water Code Enforcement Unit's Standard Operating Procedures (SOPs) – Enforcement Response Plan.	X	X	X				

1. Highest priority water quality conditions are highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

4.1.1 City of Del Mar

During FY 16, Del Mar implemented the strategies described in the WQIP. Highlights of strategies implemented by Del Mar to address sediment, bacteria, and freshwater input are described below. The full list of strategies implemented is in Appendix D. Additional strategies being implemented are listed in Table 4-2.

- **Enhanced Dry Weather Patrols and BMP Inspections:** The City of Del Mar implements a proactive patrol of the entire city at least six times per year. City staff patrol municipal, commercial, residential, and construction areas and locations to identify any potential illicit discharges and improper BMP implementation. In addition, treatment control BMPs and all minor and major MS4 outfalls are inspected during patrols. For FY 16 Del Mar conducted 11 city-wide patrols (~monthly) and was able to enforce proper BMP implementation throughout the city.
- **Post-Storm Erosion Monitoring:** The City of Del Mar visually monitored for erosion and completed minor repair and slope stabilization after wet weather events within the City's jurisdiction of the Los Peñasquitos WMA to address sediment.

Table 4-2
Summary of Strategies for the Los Peñasquitos WMA —City of Del Mar

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
Promoted and collaborated with water agencies and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	X	X	X	X	X	X	X
Continued participating in source reduction initiatives.	X	X	X	X	X	X	X
Proactively monitored for erosion and complete minor repair and slope stabilization as needed.	X	X	X	X	X	X	X
Protected areas that are functioning naturally.	X	X	X	X	X	X	X
Participated in the San Diego Regional Reference Streams and Beaches Study (see Section 3.2 for study details).		X					
Visually inspected all major and minor MS4 outfalls.	X	X	X	X	X	X	X

1. Highest priority water quality conditions are highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

MS4 = municipal separate storm sewer system

4.1.2 City of Poway

During FY 16, Poway implemented the strategies described in the WQIP. Key strategies being implemented are listed in Table 4-3. The full list of strategies implemented is in Appendix D.

Table 4-3
Summary of Strategies for the Los Peñasquitos WMA—City of Poway

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
Required implementation of low-impact development (LID) best management practices (BMPs) with all new construction.	X	X	X	X	X	X	X
Promoted Metropolitan Water District of Southern California (MWD) and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	X	X	X	X	X	X	X
Proactively repaired and replaced corrugated metal pipe municipal separate storm sewer system (MS4) components to provide source control from MS4 infrastructure.	X	X	X		X		
Targeted human behavior in parks and other public areas, including trash reduction or other high-impact behaviors that affect habitat, wildlife, and water quality.	X	X		X			X
Participated in the Los Peñasquitos Watershed Special Study (see Section 3.2 for study details).					X		
Participated in the San Diego Regional Reference Streams and Beaches Study (see Section 3.2 for study details).	X	X			X		
Implemented numerous green infrastructure; multiuse treatment area; stream, channel, and habitat rehabilitation; and other structural projects located throughout the watershed (see Appendix D for a list of specific projects).	X	X	X	X	X	X	X

1. Highest priority water quality conditions are highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

4.1.3 City of San Diego

During FY 16, City of San Diego (City) implemented the strategies described in the WQIP. Highlights of strategies implemented by City of San Diego to address sediment, bacteria, and freshwater input are described below. The full list of strategies implemented is in Appendix D. Additional strategies being implemented are listed in Table 4-4.

- **Special Study (New in FY 16):** The Sediment Load Reduction Quantification through Outfall Repair and Relocation for the Los Peñasquitos WMA Study was completed to assess the current sediment loading to the Los Peñasquitos Lagoon caused by erosive scour associated with outfall discharge, as well as possible sediment load reductions associated with various BMP practices. Potential next steps include completing field verifications of the modeled sediment loads and/or monitoring to validate model results. In addition, a cost benefit analysis and evaluation of challenges associated with implementation of BMP practices will be considered. *HPWQC: sediment*

- **Enhanced Street Sweeping and Catch Basin Cleaning (New in FY 16):** The City began steps toward increasing staff and equipment to fully implement enhanced street sweeping and catch basin cleaning. In addition, enhanced street sweeping routes are being developed and a schedule for increasing the number of annual catch basin inspections has been established. *HPWQCs: bacteria, sediment*

- **Structural Strategies:** 113.15 acres of drainage area were treated by green infrastructure features in the Los Peñasquitos WMA. *HPWQCs: bacteria, sediment, flow*

- **Los Peñasquitos Lagoon Restoration Efforts (New in FY 16):** The Los Peñasquitos/Sorrento Restoration Program has been divided into two phases. Phase I of this project includes removal of sediment and construction of sediment management facilities, repairs to storm drain outfalls, and realignment of creeks in the Lagoon to ease water flow, reduce upstream flooding, and improve habitat conditions, as well as pilot restoration activities. Phase II of this project includes a large-scale restoration of salt marsh habitat in the lagoon to meet TDML requirements. The City has been identify as the Lead Agency and is working in collaboration with the Responsible Agencies, State Parks, the Coastal Conservancy, the Los Peñasquitos Lagoon Foundation, and other stakeholders. Modeling was completed in FY 16 to confirm the preferred alternative for the Lagoon restoration. Additionally, several biological technical studies were completed for Phase I of the project. Next steps for FY 17 include additional modeling, completion of the concept design, and commencement of the public outreach process. *HPWQCs: sediment, flow*

Table 4-4
Summary of Strategies for the Los Peñasquitos WMA—City of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
Storm Drain Structure Cleaning: 7,087 storm drain structure inspections were conducted, resulting in the cleaning of 1,045 structures and removal of 386.5 tons of debris in the watershed management area (WMA).	X		X	X	X		
New in fiscal year (FY) 16: Enhanced Catch Basin Cleaning Optimization: Enhanced catch basin cleaning is a strategy to address pollutant removal by inspecting catch basins more than the Jurisdictional Runoff Management Program (JRMP)-required minimum of once per year in the Tijuana River, San Diego Bay, and Los Peñasquitos WMAs to meet specific total maximum daily load (TMDL) pollutant removal requirements. In an effort to further optimize its drain cleaning program, the City of San Diego (City) analyzed eight years of catch basin cleaning data and assigned priorities to individual basins based on historical debris removal. This enhancement will allow the City to target high priority drains to maximize pollutant removal while maintaining cost efficiencies.	X		X	X	X		
Street Sweeping: Approximately 21,030 curb miles of roads, streets, highways, medians, parking lots, and operations yards were swept in the WMA.	X	X	X	X	X		
New in FY 16: Median Sweeping: 4,315 median miles were swept citywide.	X	X	X	X	X		
New in FY 16: Targeted Aggressive Street Sweeping Pilot: The City completed a pilot study that quantified the effectiveness of posting limited-hour "no parking" signs on typically non-posted routes. The study found that posting routes resulted in an approximate 50 percent (%) increase in pollutant removal because the sweeper had more access to curbs and gutters. Based on this finding, the City will consider posting additional routes if supported by the community.	X	X	X	X	X		

Table 4-4 (continued)
Summary of Strategies for the Los Peñasquitos WMA—City of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
New in FY 16: MS4 Maintenance: In addition to routine maintenance of the MS4, the City repaired or replaced 12 pump stations and modernized another 14 pump stations, closed-circuit television (CCTV) surveyed 28,000 linear feet of pipe in 62 locations citywide, and began the development of the Waterways Maintenance Plan and Channel **Maintenance Prioritization Plan**. To help minimize the risk of flooding in a flood-prone drainage area, the City also installed a 2,400-volt automatic transfer switch and generator to a 130,000 gallon-per-minute pump station, allowing for sustained function in the event of a power outage.	X		X	X	X		
IDDE Program: 353 discharges were reported by the public, 518 cases were investigated, 429 discharges or illicit connections were eliminated, 436 enforcement actions were issued, and 197 escalated enforcement actions were issued in the WMA. **New in FY 16: Launch of the Get It Done App**: This app allows illicit discharges to be reported quickly via any smartphone. Lastly, the Tiger Team (a proactive escalated monitoring and enforcement team that involves multiple City departments and divisions) was developed to identify, locate, and eliminate sources of human specific bacteria in the MS4. Over several months during the reporting year, one problem area within the City was investigated extensively and a source of human-specific bacteria in the MS4 was identified and abated.	X	X	X	X	X	X	X

Table 4-4 (continued)
Summary of Strategies for the Los Peñasquitos WMA—City of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
Commercial and Industrial Business Inspections: 1,673 inspections were completed, 276 follow-up inspections were completed, 425 violations were issued, 538 enforcement actions were issued, and 156 escalated enforcement actions were issued in the WMA. In addition, the City conducted property-based inspections that focus on common areas/activities shared among multiple businesses or tenants that generate pollution. A previously conducted pilot study on inspection practices found property-based inspections to be more effective at identifying and resolving water quality issues (e.g., improper trash disposal practices and irrigation runoff, etc.) associated with commercial and industrial businesses.	X	X	X	X	X	X	X
Trash Cleanups: 5 cleanup events were sponsored through community-based organizations and 5,468 pounds of trash and debris were collected in the WMA (see Appendix D for a list of specific projects).				X			
Rebates to Reduce Irrigation Runoff: Rebates were issued to convert 203,599 square feet of turf in the WMA and rebates for rain barrels were issued to capture 772,740 gallons of rainwater citywide.	X	X	X	X	X	X	X
New in FY 16: Offsite Alternative Compliance Program: The City implemented Phase I of the Alternative Compliance Program to give development projects that would require onsite structural best management practices (BMPs) the ability to propose offsite alternative compliance projects. The development of Phase II was also initiated and will include the establishment of an in-lieu fee structure and credit system.	X	X	X	X	X	X	X

Table 4-4 (continued)
Summary of Strategies for the Los Peñasquitos WMA—City of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
New in FY 16: Bacteria Regrowth Study: The City completed a study to characterize the magnitude and extent of potential *Enterococcus* loading due to regrowth within the City's storm drain system. This study quantifies the amount of bacteria in receiving water samples that are harmless to humans and could potentially be used to refine bacteria water quality standards of the Bacteria TMDL as a part of the Reopener process.	X						

1. Highest priority water quality conditions are highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters, including freshwater inputs.

4.1.4 County of San Diego

During FY 16, County of San Diego (County) implemented the strategies described in the WQIP. Highlights of strategies implemented by the County of San Diego to address sediment, bacteria, and freshwater input are shown below. The full list of strategies implemented is in Appendix D.

- **Residential Area BMPs:** The County encourages BMPs in residential areas. All residential management areas were inspected in FY 16.
- **Water Conservation:** The County collaborates with and promotes the efforts of partner agencies for incentive programs such as rain barrels, water smart irrigation controllers, soil sensors, turf replacement programs, and residential landscape evaluation programs.
- **Green Streets:** The County developed green street retrofit design standards and specifications. Green streets are now being used to meet compliance for all retrofit and redeveloped road projects in the Capital Improvement Projects plan.
- **Public Education:** The County collaborates with the Regional Education Workgroup and Think Blue San Diego Region to develop and distribute educational materials.
- **Trash Generation Studies:** The County is collaborating with the Responsible Agencies to develop baseline trash generation rates.
- **Offsite Alternative Compliance:** The County supports applicant-implemented offsite alternative compliance. The Water Quality Equivalency provides the currency for structural BMPs and some natural system management practices.
- **Irrigation Runoff Prevention Study:** The County undertook a community-based social marketing pilot study on the effectiveness of irrigation runoff prevention materials.
- **Sustainable Landscapes:** The County is implementing a program to encourage landscape retrofits that replace water-intensive turf grass with landscaping that provides several environmental benefits.
- **Rain Barrel Incentives:** The County offers incentives for rain barrel installation by offering discounts on rain barrel purchases as well as rebates for rain barrel installation.

Additionally, the County recently undertook efforts to update its 2007 Low-Impact Development (LID) Handbook[3] to better align with the County's Standard Urban Storm Water Mitigation Plan (SUSMP) and Hydromodification Management Plan (HMP), and to reflect the most current data on LID approaches and their efficacy. For its distinguished efforts, the County was named the recipient of the 2015 Outstanding Innovation in Green Planning and Design Award by the San Diego Chapter of the California Association of Environmental Professionals (AEP), a non-profit organization established in 1974 and dedicated to enforcing and supporting the California Environmental Quality Act (CEQA). Additionally, the County received a similar award in October 2016 for work done during the fiscal year on development of its Guidance on Green Infrastructure, a document outlining tools to uniformly design, install, and maintain LID features in the public right-of-way (Figure 4-3). Additional strategies being implemented are listed in Table 4-5.

Figure 4-3
LID Incorporated into a Roadway Median

Table 4-5
Summary of Strategies for the Los Peñasquitos WMA —County of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment[1]	Flow[1,2]	Habitat/Wildlife
Began implementing the Sustainable Landscapes Program to encourage landscape retrofits	X	X	X		X	X	X
Began implementing an incentive program for best management practice (BMP) retrofits (Public-Private Partnerships – a County-sponsored program to offer incentives for rain barrel installation, downspout disconnects from the storm water system, etc.).	X	X	X	X	X	X	

1. Highest priority water quality conditions are highlighted in orange
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

[3] http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html

4.1.5 Optional WMA Strategies

In addition to implementing strategies on a jurisdictional basis, Responsible Agencies may collaboratively implement projects within the WMA that improve water quality, as described in Table 4-6.

Table 4-6
Optional WMA Strategies that Address Sediment, Bacteria, and Freshwater Input

WMA Strategy	Implementation Status Update
WMA-1: Watershed Collaboration for Los Peñasquitos Lagoon Restoration	The Los Peñasquitos/Sorrento Restoration Program has been divided into two phases. Phase I of this project includes removal of sediment and construction of sediment management facilities, repairs to storm drain outfalls, and realignment of creeks in the Lagoon to ease water flow, reduce upstream flooding, and improve habitat conditions, as well as pilot restoration activities. Phase II of this project includes a large-scale restoration of salt marsh habitat in the lagoon to meet total maximum daily load (TDML) requirements. The City has been identified as the Lead Agency and is working in collaboration with the Responsible Agencies, State Parks, the Coastal Conservancy, the Los Peñasquitos Lagoon Foundation, and other stakeholders. Modeling was completed in fiscal year (FY) 16 to confirm the preferred alternative for the Lagoon restoration. Additionally, several biological technical studies were completed for Phase I of the project. Please refer to Figure 4-4.
WMA-2: Los Peñasquitos Wetland Restoration Project	In coordination with Copermittees, Caltrans, and the San Diego Association of Governments (SANDAG) completed environmental and construction phases for various rail and transit, highway, and environmental protection projects.
WMA-3: Collaborative Approach to Irrigation Reduction	Responsible Agencies collaborated with water agencies to continue to implement turf replacement and rain barrel rebate programs. Additionally, various Responsible Agencies implemented irrigation reduction programs to help achieve the State-mandated reduction in water consumption.

Table 4-6 (continued)
Optional WMA Strategies that Address Sediment, Bacteria, and Freshwater Input

WMA Strategy	Implementation Status Update
WMA-4: Offsite Alternative Compliance Option (Watershed Management Area Analysis [WMAA])	Responsible Agencies implemented Phase I of the Alternative Compliance Program to give development projects that would require onsite structural BMPs the ability to propose offsite alternative compliance projects.
WMA-5: Collaboration with the Regional Board	Responsible Agencies continued to collaborate with the Regional Board to include non-Phase I MS4s in general permits, waivers, and waste discharge requirements (WDRs).
WMA-6: Refinement of Water Quality Regulations	Responsible Agencies coordinated with the Regional Board to discuss modifications to the Bacteria TMDL as part of the Reopener process.

Los Peñasquitos/Sorrento Restoration Program

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Phase I- targeted for completion by 2023

1. **Creek Restoration**

   Improved flood management within the Sorrento Valley corridor through flood creek enhancement in the upstream portion of the project. Creek enhancements may include improving capacity of existing creeks through removal of accumulated sediment and debris and increasing creek width in combination with sediment management efforts upstream of the Lagoon.

2. **Sediment Management Facilities (Sorrento Valley - Phase I) (Conceptual)**

   Sediment management facilities are being proposed to reduce sediment loading during storm flows and to protect sensitive downstream habitats in the upper Lagoon. The new facilities are intended to address the historic and ongoing sediment deposition that degrades important riparian habitat at the confluence of the canyon creeks and the Lagoon. That deposition also contributes to the unwanted conversion of historic salt marsh in the upper Lagoon. Removal of accumulated sediment and the continued maintenance of the new facilities proposed would protect areas restored downstream.

3. **Storm Drain Outfall Connections for Freshwater and Vector Management**

   Additional connections to the existing storm drain outfalls would reduce ponding of freshwater helping to diminish mosquito breeding habitat.

4. **New Creek Alignment and Side Drainage Creek Alignment for Freshwater Management (Sorrento**
5. **Valley - Phase I) (Conceptual)**

   Upstream tributaries and existing braided tidal creeks would be reconnected to reduce freshwater ponding and inundation, reduce mosquito breeding habitat and to increase downstream creek capacity. Improving freshwater management would aid in the reduction of invasive vegetation (e.g. Festuca perennis) and other organisms that favor more freshwater and brackish environments. The improvements will also support the re-establishment salt marsh habitat and increase the flood-level flow capacity of the lagoon.

6. **Preliminary Salt Marsh Restoration Boundary**

   Restoration of up to 23 acres of historic salt marsh that has transitioned to brackish and fresh water marsh is being considered as the initial step in the Lagoon restoration effort. As currently envisioned, freshwater management techniques would be implemented to expand current tidal influence through extension of existing tidal braided creeks and creation of tidally influenced overbanks. In addition, improved freshwater conveyance would be established between the extended tidal braided creeks and a new branching creek system. Restoration techniques could include removal of invasive plants and select removal and possible amendment of sediment prior to revegetation to reestablish historical salt marsh habitat. This would be a "pilot" area from which these techniques will be assessed for adaptive management in the restoration areas to the northeast of the railroad. This restoration will also be counted toward the salt marsh restoration goals of the Sediment Total Maximum Daily Load requirement (TMDL) and Water Quality Improvement Plan (WQIP).

Phase II- targeted for completion 2030

7. **Salt Marsh Restoration and New Creek Alignment (Carmel Valley- Phase II) (Conceptual)**
8. Freshwater management and salt marsh restoration improvements that may extend tidal braided creeks to reduce ponding and freshwater inundation of the marsh are currently under evaluation. As being considered this effort may also include diversion and beneficial reuse of dry weather flows and existing groundwater seeps into the Lagoon. Freshwater management along with the removal of invasive vegetation would also support the restoration of historic salt marsh and the reduction of mosquito breeding habitat. This effort is being considered in response to salt marsh restoration requirements associated with current TMDL and WQIP goals. The area being evaluated will be subject to sea level rise and potential impacts from that condition is being considered in the current evaluation and modeling.

9. **Sediment Management Facilities (Carmel Valley- Phase II) (Conceptual)**

   Sediment management facilities are proposed to reduce sediment loading during storm flows and to protect sensitive downstream habitats in the upper Lagoon. The new facilities would be necessary to address the historic and ongoing sediment deposition that degrades important riparian habitat at the confluence of the canyon creeks and the Lagoon.

The City of SAN DIEGO

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LOS PEÑASQUITOS/SORRENTO RESTORATION PROGRAM

The City of San Diego is leading a long-term restoration plan for the Los Peñasquitos Lagoon. The plan is being developed in partnership with other cities, community leaders, businesses, regulatory agencies and environmental organizations interested in the health of the lagoon and its nearby waterways. The plan envisions improvements to the lagoon that include restoration of salt marsh areas, the removal of sediment and the construction of sediment management facilities, repairs to storm drain outfalls, and realignment of creeks in the lagoon to ease water flow, reduce upstream flooding and to improve habitat conditions.

This guidebook includes a map and description of the work being considered for the restoration effort. Contact information for City staff working to develop the final restoration plan is listed on the back page.

Figure 4-4
Fact Sheet Describing the Los Peñasquitos/Sorrento Restoration Program

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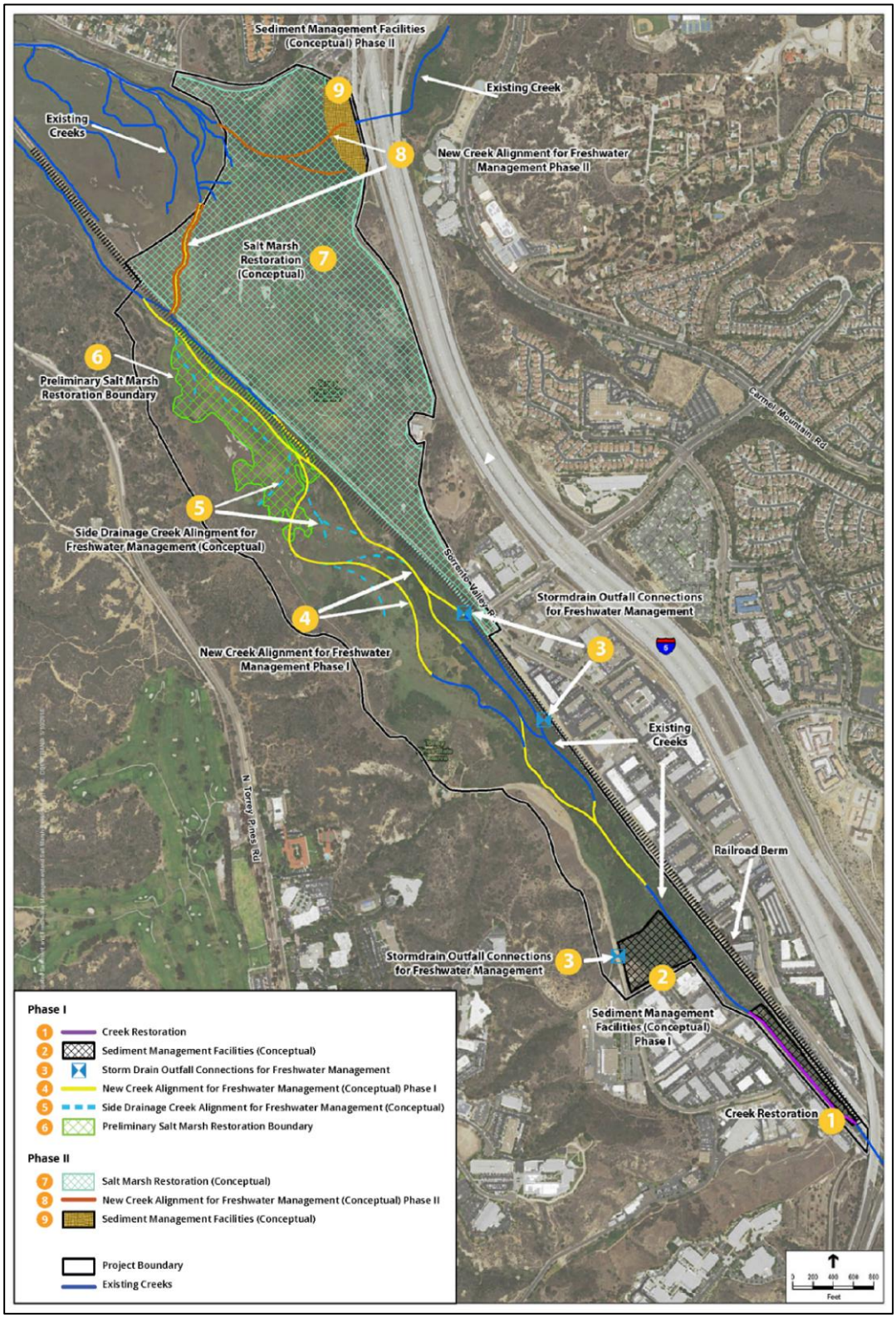

Figure 4-4 (continued)
Fact Sheet Describing the Los Peñasquitos/Sorrento Restoration Program

4.2 Calculating Baseline Values for Assessment of Progress Toward Achieving Numeric Goals

Section 4 of the Los Peñasquitos WMA WQIP included several placeholders for baseline values against which Responsible Agencies can gauge progress in achieving numeric goals. The baseline values were calculated for these placeholders in this Annual Report and are summarized in Table 4-7 for Los Peñasquitos Lagoon Health (sediment and freshwater discharge) and in Table 4-8 Pacific Ocean Shoreline Recreation (bacteria).

Table 4-7
Baseline Values for Numeric Goals for Los Peñasquitos Lagoon Health (Sediment and Freshwater Input)

Compliance Pathway	Metric	Agency	Baseline
Wet Weather Sediment			
MS4 Discharges Number of Direct or Indirect Discharges[1] to Receiving Water	Discharges[1]	City of Del Mar	1 discharge[1]
		City of Poway	37 discharges[1]
		City of San Diego	198 discharges[1]
		County of San Diego	0 discharges[1]
Turf Conversion	Area converted	City of Poway	0 square feet of turf converted
Dry Weather Freshwater Discharge			
MS4 Discharges % Irrigation or Other Dry Weather Flow Reduction	Flow	City of Del Mar	Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute
		City of Poway	Average Dry Weather Flow[2]: 7.1 gallons per minute Maximum Dry Weather Flow[2]: 11.7 gallons per minute
		City of San Diego	Average Dry Weather Flow[2]: 27.6 gallons per minute Maximum Dry Weather Flow[2]: 305.2 gallons per minute
		County of San Diego	0 discharges based on no dry weather flow observed.

Table 4-7 (continued)
Baseline Values for Numeric Goals for Los Peñasquitos Lagoon Health (Sediment and Freshwater Input)

Compliance Pathway	Metric	Agency	Baseline
Reduce anthropogenic dry weather water flows	Flow	City of Del Mar	Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute
Implement runoff reduction programs, including targeted education and outreach, enhanced inspections, rebates, and increased enforcement	Flow	City of San Diego	Average Dry Weather Flow[2]: 27.6 gallons per minute Maximum Dry Weather Flow[2]: 305.2 gallons per minute
Eliminate anthropogenic dry weather flows from storm drain outfalls either by aggregate flow volume or the number of persistently flowing outfalls during dry weather	Flow	County of San Diego	There are no County major outfalls in Los Peñasquitos WMA; however, 28 minor outfalls were observed and no flow was detected during this reporting period

1. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
2. Calculated using historical dry weather MS4 outfall data from 2009-2012. Calculations are described in Appendix D.

% = percent; MS4 = municipal separate storm sewer system; WMA = Watershed Management Are

Table 4-8
Baseline Values for Numeric Goals for Pacific Ocean Shoreline Recreation (Bacteria)

Compliance Pathway	Metric	Agency	Baseline
Wet Weather Bacteria			
MS4 Discharges % Days Exceeding WQO	Fecal coliform	All Responsible Agencies	99%[1]
	Enterococcus		100%[1]
	Total coliform		100%[1]
Number of Direct or Indirect MS4 Discharges[2] to Receiving Water	Discharges[2]	City of Del Mar	1 discharge[2]
		City of Poway	37 discharges[2]
		City of San Diego	198 discharges[2]
		County of San Diego	0 discharges[2]
Reduce anthropogenic surface dry weather flows to address bacteria regrowth contributing during wet weather		City of Del Mar	Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute
Turf conversion		City of Poway	0 square feet of turf converted
Dry Weather Bacteria			
MS4 Discharges % Days Exceeding WQO	Fecal coliform	All Responsible Agencies	100%[3]
	Enterococcus		100%[3]
	Total coliform		100%[3]
Number of Direct or Indirect MS4 Discharges[4] to Receiving Water	Discharges[4]	City of Del Mar	1 discharge[4]
		City of Poway	37 discharges[4]
		City of San Diego	198 discharges[4]
		County of San Diego	0 discharges[4]
Reduce anthropogenic surface dry weather flows	Flow	City of Del Mar	Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute

Table 4-8 (continued)
Baseline Values for Numeric Goals for Pacific Ocean Shoreline Recreation (Bacteria)

Compliance Pathway	Metric	Agency	Baseline
Turf conversion	Area converted	City of Poway	0 square feet of turf converted
Implement runoff reduction programs such as education and outreach, enhanced inspections, rebates, and increased enforcement	Flow	City of San Diego	Average Dry Weather Flow[5]: 27.6 gallons per minute Maximum Dry Weather Flow[5]: 305.2 gallons per minute

1. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008, through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.
2. Wet weather discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008, through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the fifth sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Dry weather discharges are defined as observed dry weather flows from persistently flowing major MS4 outfalls.
5. Calculated using historical dry weather MS4 outfall data from 2009-2012. Calculations are described in Appendix D.

% = percent; MS4 = municipal separate storm sewer system; WMA = Watershed Management Area;
WQO = water quality objective

4.3 Progress Toward Achieving Numeric Goals

As discussed in Section 2, interim and final numeric goals were established for the watershed as a means of measuring reasonable progress toward addressing the HPWQCs; the goals are included in Appendix B. Performance-based goals are included to measure short-term jurisdictional progress toward achieving these goals, given that sustained water quality improvement is typically demonstrated over a longer timeframe. Performance-based goals are intended to measure an outcome from a strategy or suite of strategies and to provide an interim link to demonstrate reasonable incremental progress in the quality of MS4 discharges and receiving waters by FY 18. The strategies presented have been selected as goals because they are measurable and provide a direct water quality benefit in the near term. Table 4-9 and Table 4-10 summarize progress in FY 16 toward meeting these performance-based goals for Los Peñasquitos Lagoon Health (sediment and freshwater input) and Pacific Ocean Shoreline Recreation (bacteria), respectively.

Table 4-9
Progress Toward FY 18 MS4 Permit Term Goals to Address Los Peñasquitos Lagoon Health (Sediment and Freshwater Input) in FY 16

Responsible Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY 18 Goal	Progress
Caltrans	Cooperative Implementation Agreement: Achieve compliance units by contributing funds to a cooperative implementation	Wet	N/A	Ongoing[1]	In progress.
Caltrans	Implement Nonstructural BMPs: Continue to implement wet weather nonstructural BMP activities within the watershed	Wet	N/A	Ongoing[1]	In progress.
Caltrans	Implement Structural BMPs: Continue to implement wet weather structural BMP activities for proposed projects within the watershed	Wet	N/A	Ongoing[1]	In progress.
City of Del Mar	Reduce anthropogenic surface dry weather water flows	Dry	Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute	Reduce anthropogenic surface dry weather flows that originate within Del Mar's jurisdictional boundaries by 10%	Achieved to date. Average annual flow in FY 16 was 0.75 gallons per minute, representing an approximately 81% reduction from the baseline average flow.

Table 4-9 (continued)
Progress Toward FY 18 MS4 Permit Term Goals to Address Los Peñasquitos Lagoon Health (Sediment and Freshwater Input) in FY 16

Responsible Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY 18 Goal	Progress
City of Poway	Implement turf conversion	Wet and Dry	0 square feet of turf converted	Achieve a 5% increase from the baseline through turf conversion	Achieved. 214,105 square feet of turf converted.
City of San Diego	Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	Wet and Dry	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	Treat 36 acres of drainage area through construction of 9 green infrastructure BMPs	In progress. The City has begun the process for developing a green infrastructure policy. The City has treated 113.15[3] acres of drainage area.
	Implement runoff reduction programs, including targeted education and outreach, enhanced inspections, rebates, and increased enforcement	Dry	Average Dry Weather Flow[2]: 27.6 gallons per minute Maximum Dry Weather Flow[2]: 305.2 gallons per minute	Reduce prohibited dry weather flow by 10% from the baseline measured at persistently flowing outfalls in the WMA	Achieved to date. Average dry weather flow in FY 16 was 11.5 gallons per minute, representing a 58.4% reduction from the baseline average flow.

Table 4-9 (continued)
Progress Toward FY 18 MS4 Permit Term Goals to Address Los Peñasquitos Lagoon Health (Sediment and Freshwater Input) in FY 16

Responsible Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY 18 Goal	Progress
County of San Diego	Fully implement an accepted WQIP.	Wet	Acceptance of the WQIP by the Regional Board.	Make progress toward implementing the WQIP.	In progress. The County has begun implementation of the WQIP.

1. Caltrans goals, strategies, and schedules vary from those of other responsible agencies to best address typical freeway characterization discharge from Caltrans rights-of-way.
2. Calculated using historical dry weather MS4 outfall data from 2009–2012.
3. 113.15 acres of drainage area are currently being treated by the following projects: Los Peñasquitos Sediment Basin, Del Mar Mesa Neighborhood Park (catchment basins and impervious areas), Miramar Treatment Plant (vegetated swales), Carrol Canyon Road Extension (vegetated swale), Camino Ruiz Neighborhood park (vegetated swale), Breen Park (vegetated swales), Rancho Peñasquitos Skate Park (basins/trenches), Fire Station #47 (vegetated swale), Torrey Del Mar Neighborhood Park (2 vegetated filter strips and 2 vegetated swales), and Hilltop Community Park (2 bioretention facilities).

% = percent; BMP = best management practice; FY = fiscal year; MS4 = municipal separate storm sewer system; TMDL = total maximum daily load; WMA = Watershed Management Area; WQIP = Water Quality Improvement Plan

Table 4-10
Progress Toward 2018 MS4 Permit Term Goals to Address Pacific Ocean Shoreline Recreation (Bacteria)

Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY 18 Goal	FY 16 Progress
Caltrans	Reduce dry weather flow: eliminate dry weather flows by implementing control measures to ensure effective prohibition	Dry	N/A	Ongoing	In progress.
Caltrans	Implement dry weather BMPs: implement drought-tolerant landscaping and conversion to smart irrigation controllers within the watershed	Dry	N/A	Ongoing	In progress.
City of Del Mar	Reduce anthropogenic surface dry weather water flows	Dry	Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute	Reduce anthropogenic surface dry weather flows that originate within the City's jurisdictional boundaries by 10%	Achieved to date. Average annual flow in FY 16 was 0.75 gallons per minute, representing an approximately 81% reduction from the baseline average flow.
City of Poway	Implement turf conversion	Wet and Dry	0 square feet of turf converted	Achieve a 5% increase from the baseline through turf conversion	Achieved. 214,105 square feet of turf converted.

Table 4-10 (continued)
Baseline Values for Numeric Goals for Pacific Ocean Shoreline Recreation (Bacteria)

Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY 18 Goal	FY 16 Progress
City of San Diego	Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	Wet and Dry	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	Treat 36 acres of drainage area through construction of 9 green infrastructure BMPs	In progress. The City has begun the process for developing a green infrastructure policy. The City has treated 113.15[1] acres of drainage area.
	Implement runoff reduction programs, including targeted education and outreach, enhanced inspections, rebates, and increased enforcement	Dry	Average Dry Weather Flow[1]: 27.6 gallons per minute Maximum Dry Weather Flow[2]: 305.2 gallons per minute	Reduce prohibited dry weather flow from baseline measured at persistently flowing outfalls in the WMA by 10%	Achieved to date. Average dry weather flow in FY 16 was 11.5 gallons per minute, representing a 58.4% reduction from the baseline average flow.

Table 4-10 (continued)
Baseline Values for Numeric Goals for Pacific Ocean Shoreline Recreation (Bacteria)

Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY 18 Goal	FY 16 Progress
County of San Diego	Fully implement an accepted WQIP	Wet	Acceptance of the WQIP by the Regional Board	Achieve progress toward implementing the WQIP.	In progress. The County has begun implementation of the WQIP.
	Eliminate anthropogenic dry weather flows from storm drain outfalls either by aggregate flow volume or the number of persistently flowing outfalls during dry weather	Dry	County of San Diego has no major outfalls in the Los Peñasquitos WMA; however 28 minor outfalls were observed and no flow was detected during this reporting period	The County of San Diego has no major outfalls in the Los Peñasquitos WMA; however, 28 minor outfalls were observed and no flow was detected during this reporting period	In progress. Baseline established in FY 16.
	MS4 discharges: # of direct or indirect discharges[2] to receiving water	Wet	0 discharges[3]	0 discharges[3]	There are no major outfalls in the County in this WMA.

1. 113.15 acres of drainage area are currently being treated by the following projects: Los Peñasquitos Sediment Basin, Del Mar Mesa Neighborhood Park (catchment basins and impervious areas), Miramar Treatment Plant (vegetated swales), Carrol Canyon Road Extension (vegetated swale), Camino Ruiz Neighborhood park (vegetated swale), Breen Park (vegetated swales), Rancho Peñasquitos Skate Park (basins/trenches), Fire Station #47 (vegetated swale), Torrey Del Mar Neighborhood Park (2 vegetated filter strips and 2 vegetated swales), and Hilltop Community Park (2 bioretention facilities).
2. Calculated using historical dry weather MS4 outfall data from 2009–2012.
3. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring. The County of San Diego does not have any major outfalls in the Los Peñasquitos WMA.

% = percent; BMP = best management practice; FY = fiscal year; MS4 = municipal separate storm sewer system; TMDL = total maximum daily load;
WMA = Watershed Management Area; WQIP = Water Quality Improvement Plan

5 Adaptive Management

This section summarizes the potential triggers for adaptation of the WQIP and the results of the MS4 Permit adaptive management process for the Los Peñasquitos WMA during the first year of implementation. The adaptive management approach uses an iterative approach to re-evaluate major components of the WQIP based on the requirements of the MS4 Permit. It details how the Responsible Agencies use new data and information to improve the WQIP through updates to priorities, assessments of and adjustments to goals, updates to strategies to meet the latest goals, and updates to the monitoring and assessment program to provide the necessary data to support the process. Responsible Agencies are continually evaluating and assessing the implementation of the WQIP and making minimal modifications to streamline and optimize execution outside the MS4 Permit adaptive management process.

The MS4 Permit describes various triggers that may warrant program adaptation, including exceedances of water quality standards in receiving waters, new information, Regional Board recommendations, and input from the public. Effectiveness assessments of JRMP programs and strategies may also trigger adaptations to the WQIP.

The adaptive management process is used in conjunction with water quality and program data to evaluate whether modifications to numeric goals, schedules, and/or strategies are necessary to achieve compliance with the interim and final compliance numeric goals. MS4 Permit adaptive management triggers are typically implemented either annually or at the end of the MS4 Permit term.

5.1 Potential Triggers for Adaptation

The adaptive management process may be triggered when new information becomes available. New information to be considered includes results of routine monitoring and special studies, new regulatory drivers, results of program effectiveness assessments and progress toward numeric goals, and recommendations from the public and/or Regional Board. Modifications may be made to the PWQCs, goals, strategies, schedules, and/or the Monitoring and Assessment Program (Appendix E). The potential triggers for adaptation to be considered annually in the Annual Report are summarized in Table 5-1.

Table 5-1
Triggers for Adaptive Management Within the WQIP

Trigger[1]	Frequency for Assessment	Potential Area(s) for Adaptation			
		Priority Water Quality Conditions	Goals and Schedules	Strategies and Schedules	Monitoring and Assessment
Exceedances of Non-Storm Water Action Levels or Storm Water Action Levels	Annual			X	X
Special Studies Results	Annual, as results are available		X	X	X
New Regulatory Actions	Annual, as applicable	X	X	X	X
Regional Board Recommendations	Annual, as applicable	X	X	X	X
Program Effectiveness Assessments/ Progress Toward Goals	Annual			X	X

1. The trigger related to the review of receiving water limitations exceedances will now be assessed on a permit term basis in the Regional Monitoring and Assessment Report. Section 5.2 and Appendix E provide more detail.

5.2 WQIP Elements for Adaptation

The Los Peñasquitos WMA WQIP was approved by the Regional Board in February 2016. The Responsible Agencies have just begun to implement the WQIP strategies. Therefore, there have been no adaptations made to the PWQCs, goals, strategies, or schedules, as summarized in Table 5-2. There have been changes to timing of the receiving water limitation exceedance assessment put forth by Provision A.4 and administrative changes to the City of San Diego's strategies. These changes are summarized in Table 5-2 and additional detail is provided in Appendix E.

Table 5-2
2015–2016 WQIP Annual Report Adaptations

Element for Adaptation	2015–2016 Annual Report Adaptation
Priority Water Quality Conditions	There are no adaptations at to the priority water quality conditions at this time. No new regulations, policies, or recommendations from the Regional Board have triggered adaption of this WQIP Element.
Goals and Schedules	The Responsible Agencies are on track to meet their 2018 WQIP goals and do not plan any adaptations to their goals or the related schedules at this time.
Strategies and Schedules	The Responsible Agencies have just begun implementation of their WQIP strategies that have pollutant reduction benefits. They plan to continue implementing the strategies without modification to realize the rewards of these pollutant reduction benefits. The City of Del Mar identified some administrative changes to their strategies that are reflected in Appendix D. The City of San Diego has identified some administrative changes that are reflected in Appendix D and some operational adaptive management efforts in its JRMP included in Appendix D.
Monitoring and Assessment	The adaptive management process was changed to review receiving water limitation exceedances once per permit term, as allowed by the MS4 Permit, and not annually, as outlined in the WQIP.

JRMP = Jurisdictional Runoff Management Program; WQIP = Water Quality Improvement Plan

5.3 Summary of Previous Adaptation and Implementation

The 2015–2016 Los Peñasquitos WMA WQIP Annual Report is the first annual report submitted by the Responsible Agencies. No prior adaptations or updates have been made to either the WQIP or each Responsible Agency's JRMP.

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6 Conclusions and Recommendations

The Responsbile Agencies have successfully implemented the 2015–2016 program set forth in the WQIP. Progress toward performance-based goals has been achieved. Wet and dry weather water quality monitoring provided an initial data set for assessing and adapting goals and strategies. The conclusions described below highlight the success of the WQIP.

Monitoring and Assessment: The Responsible Agencies successfully completed wet and dry weather MS4 outfall monitoring in 2015–2016 in accordance with Provision D of the MS4 Permit. Monitoring was also conducted for the HPWQCs. The monitoring program and results for 2015–2016 are described in Section 3 and Appendix C. Monitoring and Assessment highlights include:

- Monitoring for the HPWQC – Los Peñasquitos Lagoon: Three storm events were monitored at the subwatershed compliance monitoring locations. Results are as follows:
  - SSCs were higher at or near peak flow and during the rising limb of the hydrograph for smaller storms such Events 2 and 3 during the 2015–2016 wet season. For the larger storm (Event 1), SSCs in all three WMA creeks remained high throughout the storm and mostly varied with flow, suggesting that the unusually high flows may have mobilized previously deposited sediments that were stored by in-channel vegetation and streambed.
  - The total 2015–2016 sediment load estimate of 23,500 tons per year is above the final Sediment TMDL waste load allocation (WLA) (2,580 tons per year). This TMDL compliance pathway can be achieved by 2034. Monitoring in previous years has recorded annual sediment loads that were below the WLA.
- Monitoring for the HPWQC – Pacific Ocean Shoreline: The first year of Bacteria TMDL monitoring at the at the historical San Diego County AB 411 monitoring location at the mouth of the Los Peñasquitos Lagoon (FM-100) was completed for wet and dry weather. Results are as follows:
  - During wet weather, the receiving waters at the Los Peñasquitos River Outlet/Beach achieved a 0% single-sample maximum exceedance frequency for fecal coliform and a 13% single-sample maximum exceedance frequency for total coliform and *Enterococcus*. FM-100 is in compliance with final wet weather single-sample maximum RWLs.
  - During the wet season, which evaluates a combination of both wet and dry weather samples, FM-100 achieved a 0% geometric mean exceedance frequency and is in compliance with final dry weather geometric mean RWLs.
- During the dry season, when recreational activities occur with more regularity, FM-100 achieved a 0% exceedance frequency and is in compliance with the final dry weather geometric mean RWLs.

- MS4 Monitoring: Data collected as part of the MS4 monitoring program were compared to the permit action levels as detailed below:
  - In dry weather, non-storm water action levels were met over 74% of the time for multiple consituents.
  - In wet weather, only one storm water action level exceedance for turbidity was recorded.
- Special Studies: The Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Study found that areas in the upper portion of Los Peñasquitos Creek and in the upper portions of Carmel Valley Creek may have the potential to serve as a sink for sediment within the WMA that can be mobilized during large storms such as the storm in early January 2016. Aerial deposition sampling determined that aerial deposition of sediment was not a significant contributor to the watershed sediment loads compared with the stream loads. The San Diego Regional Reference Streams and Beaches Study provided valuable information for the Bacteria TMDL Reopener. The Sediment Load Reduction Quantification Through Outfall Repair and Relocation for the Los Peñasquitos WMA Study was performed in order to assess the current sediment loading to the Los Peñasquitos Lagoon caused by the erosive scour associated with outfall discharge. Also, the study provided estimates in sediment location reduction provided by three BMP options.

Strategy Implementation: Strategies have been implemented as planned in the WQIP during 2015–2016. Strategies for the HPWQCs are described in Section 4. The following examples highlight efforts by the Responsbile Agencies to improve water quality:

- City of Del Mar: The City of Del Mar proactively implemented its city-wide patrol approach to identify issues or potential issues and ensure proper BMP implementation. Del Mar also conducted visual monitoring after wet weather events to identify areas with erosion. Minor and major repairs and slope stabilization were completed based on the visual monitoring results.
- City of Poway: The City of Poway has implemented a turf replacement program and has successfully converted 214,105 square feet of turf.
- City of San Diego: The City volunteered to be the Lead Agency for the Los Peñasquitos/Sorrento Restoration Program (to help meet restoration of 84 acres of saltwater marsh) and is working in collaboration with the Responsible Agencies, State Parks, the Coastal Conservancy, the Los Peñasquitos Lagoon Foundation, and other stakeholders. Modeling was completed in FY 16 to confirm the preferred alternative for the lagoon restoration. Additionally, several biological technical studies were completed the first phase of the project. Next steps for FY 17 may include additional modeling, completion of the concept design, and commencement of the public outreach process.

- County of San Diego: The County collaborates with and promotes the efforts of partner agencies for incentive programs such as rain barrels, water smart irrigation controllers, soil sensors, turf replacement programs, and residential landscape evaluation programs. The County undertook a community-based social marketing pilot study on the effectiveness of irrigation runoff prevention materials.

Progress Toward Goals: The Responsible Agencies have demonstrated achievement of the performance-based goals planned for 2015–2016, and have either met, surpassed, or demonstrated progress toward achieving the interim numeric goals set for the term of the current MS4 Permit. Goals and performance-based goals achieved include the following:

- BMPs have been installed and maintained in the City of San Diego, reducing or preventing pollutants from entering receiving waters.
- Dry weather flow reduction goals have been surpassed in the City of San Diego.
- Flow reduction goals have been surpassed in the City of Del Mar**.**
- The County has begun implementation of the WQIP.

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7 References

Los Peñasquitos WMA Copermittees. 2015. Los Peñasquitos WMA Water Quality Improvement Plan and Comprehensive Load Reduction Plan. Develop by Amec Foster Wheeler Environment and Infrastructure, Inc.

San Diego Regional Water Quality Control Board (Regional Board). 2010. *Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001.

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Southern California Coastal Water Research Project (SCCWRP), 2015. *Wet and Dry Weather Natural Background Concentrations of Fecal Indicator Bacteria in San Diego, Orange, and Ventura County, California Streams.* SCCWRP Technical Report 862. June 2015.

Southern California Coastal Water Research Project (SCCWRP), 2016. *Microbiological Water Quality at Reference Beaches and an Adjoining Estuary in Southern California during a Prolonged Drought.* SCCWRP Technical Report 936. July 2016.

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Appendix A: Crosswalk of MS4 Permit Requirements and Annual Report References

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Table A1-1
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
Provision A						
A.4.a.(2)	If ***exceedance(s) of water quality standards persist in receiving waters*** notwithstanding implementation of this Order, the Copermittees must comply with the following procedures: (2) Upon a **determination** by either the Copermittees or the San Diego Water Board that discharges from the MS4 are **causing or contributing to a new exceedance** of an applicable water quality standard **not addressed** by the Water Quality Improvement Plan, the Copermittees must submit the following updates to the Water Quality Improvement Plan pursuant to Provision F.2.c ***or as part of the Water Quality Improvement Plan Annual Report*** required under Provision F.3.b, unless the San Diego Water Board directs an earlier submittal:	Section 5		X		X
	(a) The water quality improvement ***strategies being implemented that are effective and will continue to be implemented***,	Section 5.2			X	
	(b) ***Water quality improvement strategies (i.e. BMPs, retrofitting projects, stream and/or habitat rehabilitation projects, adjustments to jurisdictional runoff management programs, etc.) that will be implemented*** to reduce or eliminate any pollutants or conditions that are causing or contributing to the exceedance of water quality standards,	Section 5.2				X
	(c) ***Updates to the schedule for implementation*** of the existing and additional water quality improvement strategies, and	Section 5.2				X
	(d) ***Updates to the monitoring and assessment program*** to track progress toward achieving compliance with Provisions A.1.a, A.1.c and A.2.a of this Order;	Section 5.2				X
Provision B						
B.5.a.	a. The **priority water quality conditions** and potential **water quality improvement strategie**s included in the Water Quality Improvement Plan pursuant to Provisions B.2.c and B.2.e ***may be re-evaluated by the Copermittees as needed during the term of this Order as part of the Water Quality Improvement Plan Annual Report***. Re-evaluation and recommendations for modifications to the priority water quality conditions and potential water quality improvement strategies **must be provided in the Report of Waste Discharge**, and must consider the following: (1) Achieving the outcome of improved water quality in MS4 discharges and receiving waters through implementation of the water quality improvement strategies identified in the Water Quality Improvement Plan; (2) New information developed when the requirements of Provisions B.2.a-c have been re-evaluated; (3) Spatial and temporal accuracy of monitoring data collected to inform prioritization of water quality conditions and implementation strategies to address the highest priority water quality conditions; (4) Availability of new information and data from sources other than the jurisdictional runoff management programs within the Watershed Management Area that informs the effectiveness of the actions implemented by the Copermittees; (5) San Diego Water Board recommendations; and (6) Recommendations for modifications solicited through a public participation process.	Section 5		X		X
B.5.b.	b. The water quality improvement goals, strategies and schedules, included in the Water Quality Improvement Plan pursuant to Provisions B.3, ***must be reevaluated and adapted as new information becomes available*** to result in more effective and efficient measures to address the highest priority water quality conditions identified pursuant to Provision B.2.c. ***Re-evaluation of and modifications to the water quality improvement goals, strategies and schedules must be provided in the Water Quality Improvement Plan Annual Report***, and must consider the following:	Section 5	X			X
	(1) Modifications to the **priority water quality conditions** based on Provision B.5.a;	Section 5				X
	(2) Progress toward **achieving interim and final numeric goals** in receiving waters and MS4 discharges for the highest priority water quality conditions in the Watershed Management Area,	Section 4.3				
	(3) Progress toward achieving outcomes according to established schedules;	Section 4.3			X	X
	(4) New policies or regulations that may affect identified numeric goals;					X
	(5) Measurable or demonstrable reductions of non-storm water discharges to and from each Copermittee's MS4;			X		
	(6) Measurable or demonstrable reductions of pollutants in storm water discharges from each Copermittee's MS4 to the MEP;			X		

Table A1-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
B.5.b. (continued)	(7) New information developed when the requirements of Provisions B.2.b and B.2.d have been re-evaluated;	Section 5		X		X
	(8) Efficiency in implementing the Water Quality Improvement Plan;	Section 5			X	X
	(9) San Diego Water Board recommendations; and	Section 5				X
	(10) Recommendations for modifications solicited through a public participation process.	Section 5				X
B.5.c.	c. The water quality improvement monitoring and assessment program, included in the Water Quality Improvement Plan pursuant to Provision B.4, ***must be reevaluated and adapted when new information becomes available***. Re-evaluation and recommendations for modifications to the monitoring and assessment program, pursuant to the requirements of Provision D, ***may be provided in the Water Quality Improvement Plan Annual Report***, but must be provided in the Report of Waste Discharge.	Section 5		X		X
Provision D						
D.1.e.(2)(c)	**Sediment Quality Monitoring** (c) The Copermittees must incorporate a ***Sediment Monitoring Report as part of the Water Quality Improvement Plan Annual Report*** in accordance with the schedule contained in the Sediment Monitoring Plan, unless otherwise directed in writing by the San Diego Water Board Executive Officer. The Sediment Monitoring Report must contain the following information: (i) Analysis: An evaluation, interpretation and tabulation of the water and sediment monitoring data, including interpretations and conclusions as to whether applicable Receiving Water Limitations in this Order have been attained at each sample station; (ii) Sample Location Map: The locations, type, and number of samples must be identified and shown on a site map; and (iii) California Environmental Data Exchange Network: A statement certifying that the monitoring data and results have been uploaded into the California Environmental Data Exchange Network (CEDEN).			X		
D.2.b.(iv)	**Dry Weather MS4 Outfall Discharge Monitoring** (iv) Each Copermittee must document ***removal or re-prioritization of the highest priority persistent flow MS4 outfall monitoring stations identified under Provision D.2.b.(2)(a) in the Water Quality Improvement Plan Annual Report***. Persistent flow MS4 outfall monitoring stations that have been removed must be replaced with the next highest prioritized major MS4 outfall in the Watershed Management Area within its jurisdiction, unless there are no remaining qualifying major MS4 outfalls within the Copermittee's jurisdiction in the Watershed Management Area.			X		
D.4.b.(1)(a)(ii)	**Non-Storm Water Dischargers Reduction Assessments** (a) Each Copermittee must assess and report the ***progress of its illicit discharge detection and elimination program***, required to be implemented pursuant to Provision E.2, toward effectively prohibiting non-storm water and illicit discharges into the MS4 within its jurisdiction as follows: (ii) Based on the data collected pursuant to Provisions D.2.b, the ***assessments required under <u>Provision D.4.b.(1)(c)</u> must be included in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3).***			X		
D.4.b.(1)(b)	(b) Based on the transitional dry weather MS4 outfall discharge field screening monitoring required pursuant to Provision D.2.a.(2), each Copermittee must assess and report the following: (i) Identify the known and suspected controllable sources (e.g. facilities, areas, land uses, pollutant generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area; (ii) Identify sources of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area that have been reduced or eliminated; and (iii) Identify modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.			X		X

Table A1-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
D.4.b.(1)(c)	(c) Based on the **dry weather MS4 outfall discharge field screening monitoring** required pursuant to Provision D.2.b.(1), each Copermittee must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(1)(b); (ii) Based on the data collected and applicable NALs in the Water Quality Improvement Plan, rank the MS4 outfalls in the Copermittee's jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action to update the Water Quality Improvement Plan, with the goal of eliminating persistent flow non-storm water discharges and/or pollutant loads in order of the ranked priority list through targeted programmatic actions and source investigations; (iii) For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identify the known and suspected sources within the Copermittee's jurisdiction in the Watershed Management Area that may cause or contribute to the NAL exceedances; (iv) Each Copermittee must analyze the data collected pursuant to Provision D.2.b, and utilize a model or other method, to calculate or estimate the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually. [a] Each Copermittee must calculate or estimate the annual non-storm water volumes and pollutant loads collectively discharged from the Copermittee's major MS4 outfalls to receiving waters within the Copermittee's jurisdiction, with an estimate of the percent contribution from each known source for each MS4 outfall; [b] Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters.			X		
	(v) Each Copermittee must review the data collected pursuant to Provision D.2.b and findings from the assessments required pursuant to Provision D.4.b.(1)(c)(i)-(iv) at least once during the term of this Order to: [a] Identify reductions and progress in achieving reductions in non-storm water and illicit discharges to the Copermittee's MS4 in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction, with an estimate, if possible, of the non-storm water volume and/or pollutant load reductions attributable to specific water quality strategies implemented by the Copermittee; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittee in the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction. (vi) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(1)(c)(i)-(v).			X		
D.4.b.(2)(a)	**Storm Water Pollutant Discharge Reduction Assessments** (a) The Copermittees must assess and report the ***progress of the water quality improvement strategies, required to be implemented pursuant to Provisions B and E, toward reducing pollutants in storm water discharges*** from the MS4s within the Watershed Management Area as follows: (ii) Based on the data collected pursuant to Provisions D.2.c, the ***assessments required under Provision D.4.b.(2)(c) must be included in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).			X		

Table A1-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
D.4.b.(2)(b)	(b) Based on the transitional wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.a.(3) the Copermittees must assess and report the following: (i) The Copermittees must analyze the monitoring data collected pursuant to Provision D.2.a.(3), and utilize a watershed model or other method, to calculate or estimate the following for each monitoring year: [a] The average storm water runoff coefficient for each land use type within the Watershed Management Area; [b] The volume of storm water and pollutant loads discharged from each of the Copermittee's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch; [c] The total flow volume and pollutant loadings discharged from the Copermittee's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and [d] The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch.(ii) Identify modifications to the wet weather MS4 outfall discharge monitoring locations and frequencies necessary to identify pollutants in storm water discharges from the MS4s in the Watershed Management Area pursuant to Provision D.2.c.(1).			X		
D.4.b.(2)(c)	(c) Based on the wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.c the Copermittees must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(2)(b); (ii) Based on the data collected and applicable SALs in the Water Quality Improvement Plan, analyze and compare the monitoring data to the analyses and assumptions used to develop the Water Quality Improvement Plans, including strategies developed pursuant to Provision B.3, and evaluate whether those analyses and assumptions should be updated as a component of the adaptive management efforts pursuant to Provision B.5 for follow-up action to update the Water Quality Improvement Plan; (iii) The Copermittees must review the data collected pursuant to Provision D.2.c and findings from the assessments required pursuant to Provisions D.4.b.(2)(c)(i)-(ii) at least once during the term of this Order to: [a] Identify reductions or progress in achieving reductions in pollutant concentrations and/or pollutant loads from different land uses and/or drainage areas discharging from the Copermittees' MS4s in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters within the Watershed Management Area to the MEP, with an estimate, if possible, of the pollutant load reductions attributable to specific water quality strategies implemented by the Copermittees; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittees in the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters in the Watershed Management Area to the MEP. (iv) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(2)(c)(i)-(iii).			X		
D.4.c.	**Special Studies Assessments** c. The Copermittees must ***annually evaluate the results and findings from the special studies developed and implemented pursuant to Provision D.3***, and assess their relevance to the Copermittees' efforts to characterize receiving water conditions, understand sources of pollutants and/or stressors, and control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters in the Watershed Management Area. The Copermittees must ***report the results of the special studies assessments applicable to the Watershed Management Area, and identify any necessary modifications or updates to the Water Quality Improvement Plan based on the results in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).	Section 2		X		X
D.4.d.	Integrated Assessment of Water Quality Improvement Plan d. As part of the ***iterative approach and adaptive management process*** required for the Water Quality Improvement Plan pursuant to Provision B.5, the Copermittees in each Watershed Management Area must integrate the data collected pursuant to Provisions D.1-D.3, the findings from the assessments required pursuant to Provisions D.4.a-c, and information collected during the implementation of the jurisdictional runoff management programs required pursuant to Provision E to assess the effectiveness of, and identify necessary modifications to, the Water Quality Improvement Plan as follows:	Section 5		X		X

Table A1-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
D.4.d.(1)	(1) The Copermittees ***must re-evaluate the priority water quality conditions and numeric goals for the Watershed Management Area, as needed, during the term of this Order pursuant to Provision B.5.a.*** The re-evaluation and recommendations for modifications to the priority water quality conditions, and/or numeric goals and corresponding schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The priority water quality conditions and numeric goals for the Watershed Management Area must be reevaluated as follows: (a) Re-evaluate the receiving water conditions in the Watershed Management Area in accordance with Provision B.2.a; (b) Re-evaluate the impacts on receiving waters in the Watershed Management Area from MS4 discharges in accordance with Provision B.2.b; (c) Re-evaluate the identification of MS4 sources of pollutants and/or stressors in accordance with Provision B.2.d; (d) Identify beneficial uses of the receiving waters that are protected in accordance with Provision D.4.a; (e) Evaluate the progress toward achieving the interim and final numeric goals for protecting impacted beneficial uses in the receiving waters.	Section 5.2		X		X
D.4.d.(2)	(2) The Copermittees ***must re-evaluate the water quality improvement strategies for the Watershed Management Area during the term of this Order pursuant to Provision B.5.b.*** The re-evaluation and recommendations for modifications to the water quality improvement strategies and schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The water quality improvement strategies for the Watershed Management Area must be re-evaluated as follows: (a) Identify the non-storm water and storm water pollutant loads from the Copermittees' MS4 outfalls in the Watershed Management Area, calculated or estimated pursuant to Provisions D.4.b; (b) Identify the non-storm water and storm water pollutant load reductions, or other improvements to receiving water or water quality conditions, that are necessary to attain the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters; (c) Identify the non-storm water and storm water pollutant load reductions, or other improvements to the quality of MS4 discharges, that are necessary for the Copermittees to demonstrate that non-storm water and storm water discharges from their MS4s are not causing or contributing to exceedances of receiving water limitations; (d) Evaluate the progress of the water quality improvement strategies toward achieving the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters.	Section 5.2			X	X
D.4.d.(3)	(3) The Copermittees ***must re-evaluate and adapt the water quality monitoring and assessment program for the Watershed Management Area when new information becomes available to improve the monitoring and assessment program pursuant to Provision B.5.c.*** The re-evaluation and recommendations for modifications to the monitoring and assessment program ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. Modifications to the water quality monitoring and assessment program must be consistent with the requirements of Provision D.1-D.3. The re-evaluation of the water quality monitoring and assessment program for the Watershed Management Area must consider the data gaps identified by the assessments required pursuant to Provisions D.4.a-b, and results of the special studies implemented pursuant to Provision D.4.c	Section 5.2		X		X
Provision E						
E.1.b.	**b.** With the first ***Water Quality Improvement Plan Annual Report*** *required pursuant to Provision F.3.b.(3),* ***each Copermittee must submit a statement certified by its Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative that the Copermittee has taken the necessary steps to obtain and maintain full legal authority*** within its jurisdiction to implement and enforce each of the requirements contained in this Order.	Cert Statement			X	
E.2.d.(4)	(4) Each Copermittee must submit a ***summary of the non-storm water discharges and illicit discharges and connections investigated and eliminated within its jurisdiction with each Water Quality Improvement Plan Annual Report required under Provision F.3.b.(3)*** of this Order.			X		
E.8.c.	**c.** Each Copermittee must submit a ***summary of the annual fiscal analysis with each Water Quality Improvement Plan Annual Report required pursuant to Provision F.3.b.(3)***.				X	

Table A1-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
Provision F						
F.1.b.(6)	(6) During implementation of the Water Quality Improvement Plan the Copermittees must ***correct any deficiencies in the Plan identified by the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report*** following a request by the Board to do so.	Section 5.2				X
F.2.a.(2)	(2) Each Copermittee must update its jurisdictional runoff management program document to incorporate the requirements of Provision E concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the jurisdictional runoff management program document based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;***				X	X
F.2.a.(3)	(3) Each Copermittee must submit ***updates to its jurisdictional runoff management program, with the supporting rationale for the modifications, either in the Water Quality Improvement Plan Annual Report*** required pursuant to Provision F.3.b.(3), or as part of the Report of Waste Discharge required pursuant to Provision F.5.b	Section 5			X	X
F.2.b.(1)	(1) Each Copermittee must update its BMP Design Manual to incorporate the requirements of Provisions E.3.a-d concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the BMP Design Manual based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report****;*	Section 5.2			X	
F.2.b.(2)	(2) Any ***future updates to the BMP Design Manual*** made after it update pursuant to Provision F.2.b.(1) is completed must be consistent with the requirements of Provisions E.3.a-d and ***must be submitted as part of the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b; and				X	
F.2.c.(1)(c)	(c) The Copermittees for each Watershed Management Area ***must submit 1) proposed updates to the Water Quality Improvement Plan and supporting rationale, and 2) recommendations received from the public and the Water Quality Improvement Consultation Panel and the rationale for the requested updates, either in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b.	Section 5.2				X
F.3.b.(3)(a-f)	(3) Water Quality Improvement Plan Annual Reports - The Copermittees for each Watershed Management Area must ***submit a Water Quality Improvement Plan Annual Report for each reporting period no later than January 31*** of the following year. The annual reporting period consists of two different periods: 1) July 1 to June 30 of the following year for the jurisdictional runoff management programs, 2) October 1 to September 30 of the following year for the monitoring and assessment programs. The Water Quality Improvement Plan Annual Reports must be made available on the Regional Clearinghouse required pursuant to Provision F.4. Each ***Annual Report must include the following***:	See below				
	(a) The receiving water and MS4 outfall discharge monitoring data collected pursuant to Provisions D.1 and D.2, summarized and presented in tabular and graphical form;	Section 3.2		X		
	(b) The progress of the special studies required pursuant to Provision D.3, and the findings, interpretations and conclusions of a special study, or each phase of a special study, upon its completion;	Section 3.2		X		
	(c) The findings, interpretations and conclusions from the assessments required pursuant to Provision D.4;			X		
	(d) The progress of implementing the Water Quality Improvement Plan, including, but not limited to, the following: (i) The **progress toward achieving the interim and final numeric goals** for the highest water quality priorities for the Watershed Management Area;	Section 4.3				
	(ii) The water quality improvement **strategies that were implemented and/or no longer implemented by each of the Copermittees during the reporting period and previous reporting periods**;				X	X
	(iii) The water quality improvement strategies planned for implementation during the next reporting period;				X	X

Table A1-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
F.3.b.(3)(a-f) (continued)	(iv) Proposed modifications to the water quality improvement strategies, the public comments received and the supporting rationale for the proposed modifications;	Section 5			X	X
	(v) Previous modifications or updates incorporated into the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document and implemented by the Copermittees in the Watershed Management Area; and	Section 5.3			X	X
	(vi) Proposed modifications or updates to the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document;	Section 5.3			X	X
	(e) A completed Jurisdictional Runoff Management Program Annual Report Form (contained in Attachment D to this Order or a revised form accepted by the San Diego Water Board) for each Copermittee in the Watershed Management Area, certified by a Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative; and				X	
	(f) Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the San Diego Water Board. Any Copermittee monitoring data utilized in developing the Water Quality Improvement Plan Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the Water Quality Improvement Plan Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.			X		
F.6	Each Copermittee must comply with all the reporting and recordkeeping provisions of the Standard Permit Provisions and General Provisions contained in Attachment B to this Order.	Section 6		X		
Attachment E						
Attachment E	Specific Monitoring and Assessment Requirements for each TMDL.TMDL monitoring and assessment results must be submitted as part of Water Quality Improvement Plan Annual Reports required under Provision F.3.b	Section 3.2		X		

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Appendix B: Water Quality Improvement Plan Goals

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The following sections present final and interim numeric goals by jurisdiction.

B.1 City of Del Mar Goals

Del Mar's Water Quality Improvement Plan interim and final goals for wet weather sediment are presented in Tables B-1 and B-2, respectively. Del Mar's Water Quality Improvement Plan numeric goals for wet weather bacteria and dry weather are presented in Tables B-3 and B-4, respectively.

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Table B-1
Wet Weather Sediment Interim Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
Sediment							
			FY18	FY20[1]	FY24[1]	FY28[1]	FY30[1]
Lagoon Restoration Restoration of Salt Marsh Habitat	Acres of Salt Marsh Habitat	262 acres in 2010 (Sediment TMDL)	346 acres[2]				
Or							
MS4 Discharges % Load Reduction		0% Load Reduction Year 2000 (Sediment TMDL Model)	3.0%[3]	7.0%[3]	13.9%[3]	20.9%[3]	27.8%[3]
Or							
MS4 Discharges Sediment Load Within Allowable Limits as Determined by Sediment Loading Model (tons/wet period)		1.6 tons/wet period 2010 (Sediment Water Quality Improvement Plan Model)	–	1.5	1.4	1.2	1.1
Or							

Table B-1 (continued)
Wet Weather Sediment Interim Numeric Goals for the City of Del Mar

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year				
		Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan	Submitting and fully implementing a Water Quality Improvement Plan, accepted by the Regional Board, which provides reasonable assurance[4] that the City's portion of the interim TMDL compliance requirements, described in Attachment A of Resolution No. R9-2010-0033 will be achieved. The compliance schedule in Attachment A provides two pathways to meet interim goals: (1) attain the specified percent load reduction, or (2) show progress in improving Lagoon conditions; see metrics below.					
	0% Load Reduction Year 2000 (Sediment TMDL Model)	3.0%[3]	7.0%[3]	13.9%[3]	20.9%[3]	27.8%[3]
	Or					
	1.6 tons/wet period 2010 (Sediment Water Quality Improvement Plan Model)	–	1.5	1.4	1.2	1.1
	Or					
	262 acres in 2010 (Sediment TMDL)	Increasing trend in the total area of salt marsh habitat				
Or						

Table B-1 (continued)
Wet Weather Sediment Interim Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
MS4 Discharges # of Direct or Indirect Discharges to Receiving Water	Discharges	Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute	0	0	0	0	0

1. Denotes TMDL interim and final target.
2. As defined by the Sediment TMDL and Attachment A to Resolution No. R9-2010-0033, this can mean either:
   - Successful restoration of 80% of the 1973 acreage of Lagoon salt marsh habitat (346 acres); or
   - Demonstration that implementation actions are active on and/or affecting 346 acres with continued monitoring to ensure 80% target achievement.
3. The load reduction is based on Sediment TMDL model updates completed during development of the Water Quality Improvement Plan. The interim goals were calculated on the basis of the required percent reductions in the compliance schedule (Attachment A to Resolution No. R9-2010-0033). Calculation of the load reduction includes loading from Phase II MS4s, general construction, and general industrial permittees within the City of San Diego's jurisdiction. Further analysis of loads specific to the City of San Diego may be completed in the future.
4. Reasonable assurance is provided by the compliance analysis described in Section 4.3.2 and Appendix K. The metric used in the compliance analysis is load reduction.

% = percent; FY = fiscal year; WQO = Water Quality Objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-2
Wet Weather Sediment Final Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year
			FY31-36
Sediment			
			FY35[1]
Lagoon Restoration Restoration of Salt Marsh Habitat	Acres of Salt Marsh Habitat	262 acres in 2010 (Sediment TMDL)	346 acres[2]
Or			
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan		Strategies presented in Appendix I	The Water Quality Improvement Plan must incorporate and the City must implement the BMPs or other implementation actions required to achieve the Lagoon restoration goal
		And	
		Reasonable assurance is provided by the compliance analysis described in Section 4.3.2 and Appendix K	Include a compliance analysis[3], accepted by the Regional Board, to demonstrate that implementation of the BMPs or other implementation actions will achieve the Lagoon restoration goal

Table B-2 (continued)
Wet Weather Sediment Final Numeric Goals for the City of Del Mar

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		FY31-36
Sediment		
		FY35[1]
MS4 Discharges and Receiving Water	**And**	
Implement Accepted Water Quality Improvement Plan	262 acres in 2010 (Sediment TMDL)	Perform monitoring and assessments to demonstrated compliance with the Lagoon restoration goal of 346 acres[2]

1. Denotes TMDL interim and final target.
2. As defined by the Sediment TMDL and Attachment A to Resolution No. R9-2010-0033, this can mean either:
   - Successful restoration of 80% of the 1973 acreage of Lagoon salt marsh habitat (346 acres); or
   - Demonstration that implementation actions are active on and/or affecting 346 acres with continued monitoring to ensure 80% target achievement.
3. The load reduction is based on Sediment TMDL model updates completed during the development of the Water Quality Improvement Plan. The interim goals were calculated on the basis of the required percent reductions in the compliance schedule (Attachment A to Resolution No. R9-2010-0033). Calculation of the load reduction includes loading from Phase II MS4s, general construction, and general industrial permittees within the City of Del Mar's jurisdiction. Further analysis of loads specific to the City of Del Mar may be completed in the future.

FY = fiscal year
All numeric goals are cumulative from the baseline assessment for each fiscal year.

Table B-3
Wet Weather Bacteria Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31-35
Indicator Bacteria							
Compliance Pathways		**Baseline**	**FY18**	**FY19**	**FY24[1]**	**FY29**	**FY31[1]**
Receiving Water % Days Exceeding WQO	Fecal coliform	30% Days Exceeding WQO (2002 TMDL Model)	See performance measures	30%[2]	26%	25%	22%
	Enterococcus	30% Days Exceeding WQO (2002 TMDL Model)		30%[2]	26%	25%	22%
	Total coliform	30% Days Exceeding WQO (2002 TMDL Model)		30%[2]	26%	25%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	0.3%	1.0%	1.4%	2.0%
	Enterococcus			0.3%	1.0%	1.3%	1.9%
	Total coliform			0.2%	0.8%	1.1%	1.6%
Or							

Table B-3 (continued)
Wet Weather Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31-35
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 99%[3]	See performance measures	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 1 discharge[4]	0	0	0	0	0
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge percent load reduction (above). Interim compliance is implementation of strategies and schedule on the basis of analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for modeling results.					

Table B-3 (continued)
Wet Weather Numeric Goals for the City of Del Mar

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14-FY18)
Performance Measures		
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**
Reduce anthropogenic surface dry weather flows[6] to address bacteria regrowth contributing during wet weather	**New:** Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute	10% reduction in anthropogenic surface dry weather flows[6] that originate within the City's jurisdictional boundaries

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceeding frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.
4. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. The term "dry weather flows" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.

% = percent; FY = fiscal year; WQO = Water Quality Objective
All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-4
Dry Weather Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Indicator Bacteria					
			FY18	FY19[1]	FY21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	4% Days Exceeding WQO (2002[2])	See performance measures	2.0%[2]	0%
	Enterococcus	19% Days Exceeding WQO (2002[2])		9.5%[2]	0%
	Total coliform	1% Days Exceeding WQO (2002[2])		0.5%[2]	0%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 100%[3]	See performance measures	0%	0%
	Enterococcus	**New:** 100%[3]		0%	0%
	Total coliform	**New:** 100%[3]		0%	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	48.3%	96.6%
	Enterococcus			49.7%	99.4%
	Total coliform			48.3%	96.5%
Or					
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 1 discharge[4]	0		0

Table B-3 (continued)
Wet Weather Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Or					
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%		100%
	Enterococcus		100%		100%
	Total coliform		100%		100%
Or					
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge percent load reduction (above). Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for modeling results.			

Table B-3 (continued)
Wet Weather Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Freshwater Discharge					
			FY18	**FY19[1]**	**FY21[1]**
MS4 Discharges % Irrigation or Other Dry Weather Flow Reduction	Flow	**New:** Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute	See performance measures	18%	25%
Or					
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge percent load reduction (above). Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for modeling results.			

Table B-3 (continued)
Wet Weather Numeric Goals for the City of Del Mar

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14-FY18)
Performance Measures		
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**
Reduce anthropogenic surface dry weather water flows[6]	**New:** Average Annual Flow: 4 gallons per minute Maximum Flow: 7 gallons per minute	Reduce anthropogenic surface dry weather flows[6] that originate within the City's jurisdictional boundaries by 10%

1. Denotes TMDL interim and final target.
2. Calculated as a 50% reduction in the existing exceedance frequency presented in Appendix H.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. The term "dry weather flow" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.

% = percent; FY = fiscal year; WQO = Water Quality Objective
All numeric goals are cumulative from the baseline assessment for each fiscal year.

B.2 City of Poway Goals

Poway's Water Quality Improvement Plan interim and final goals for wet weather sediment are presented in Tables B-5 and B-6, respectively. Poway's Water Quality Improvement Plan numeric goals for wet weather bacteria and dry weather are presented in Tables B-7 and B-8, respectively.

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Table B-5
Wet Weather Sediment Interim Numeric Goals for the City of Poway

Compliance Pathway		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
Sediment							
			FY18	FY20[1]	FY24[1]	FY28[1]	FY30[1]
Lagoon Restoration Restoration of Salt Marsh Habitat	Acres of Salt Marsh Habitat	262 acres in 2010 (Sediment TMDL)	346 acres[2]				
Or							
MS4 Discharges % Load Reductions		0% Load Reduction Year 2000 (Sediment TMDL Model)	See performance measures	9.4%[3]	18.9%[3]	28.3%[3]	37.8%[3]
Or							
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan		Submitting and fully implementing a Water Quality Improvement Plan, accepted by the Regional Board, which provides reasonable assurance[4] that the City's portion of the interim TMDL compliance requirements, described in Attachment A of Resolution No. R9-2010-0033, will be achieved. The compliance schedule in Attachment A provides two pathways to meet interim goals: (1) attain the specified percent load reduction, or (2) show progress in improving Lagoon conditions; see metrics below.					

Table B-5 (continued)
Wet Weather Sediment Interim Numeric Goals for the City of Poway

Compliance Pathway		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan (continued)		0% Load Reduction Year 2000 (Sediment TMDL Model)	See performance measures	9.4%[3]	18.9%[3]	28.3%[3]	37.8%[3]
		Or					
		262 acres in 2010 (Sediment TMDL)	See performance measures	Increasing trend in the total area of salt marsh habitat			
Or							
MS4 Discharges # of Direct or Indirect Discharges to Receiving Water	Discharges	**New:** 3 discharges[5]	0	0	0	0	0

Table B-5 (continued)
Wet Weather Sediment Interim Numeric Goals for the City of Poway

Compliance Pathway	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14 – FY18)
Performance Measures		
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**
Turf conversion	**New:** 0 square feet of turf converted	5% increase from the baseline through turf conversion

1. Denotes TMDL interim and final target.
2. As defined by the Sediment TMDL and Attachment A to Resolution No. R9-2010-0033, this can either mean:
   - Successful restoration of 80% of the 1973 acreage of Lagoon salt marsh habitat (346 acres); or
   - Demonstration that implementation actions are active on and/or affecting 346 acres with continued monitoring to ensure 80% target achievement.
3. The percent load reduction is based on Sediment TMDL model updates completed during the development of the Water Quality Improvement Plan. The interim goals were calculated on the basis of the required percent reductions in the compliance schedule (Attachment A to Resolution No. R9-2010-0033). Percent load reduction, rather than the mass (or tonnage) of load reduction, was selected as the Water Quality Improvement Plan numeric goal because the mass of sediment reduction is, in part, related to rainfall, which varies year by year. Percent load reduction provides a relative metric that is unaffected by wet or dry water years. Calculation of the percent load reduction includes loading from Phase II MS4s, general construction, and general industrial permittees within the City of Poway's jurisdiction. Further analysis of loads specific to the City of Poway may be completed in the future.
4. Reasonable assurance is provided by the compliance analysis described in Section 4.3.2 and Appendix K. The metric used in the compliance analysis is percent load reduction.
5. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.

% = percent; FY = fiscal year
All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-6
Wet Weather Sediment Final Numeric Goals for the City of Poway

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year
			FY 31–36
Sediment			
			FY35[1]
Lagoon Restoration Restoration of Salt Marsh Habitat	Acres of Salt Marsh Habitat	262 acres in 2010 (Sediment TMDL)	346 acres[2]
Or			
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan		Strategies presented in Appendix I	The Water Quality Improvement Plan must incorporate and the City must implement the BMPs or other implementation actions required to achieve the Lagoon restoration goal
		And	
		Reasonable assurance is provided by the compliance analysis described in Section 4.3.2 and Appendix K	Include a compliance analysis[3], accepted by the Regional Board, to demonstrate that implementation of the BMPs or other implementation actions will achieve the Lagoon restoration goal

Table B-6 (continued)
Wet Weather Sediment Final Numeric Goals for the City of Poway

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		FY 31–36
Sediment		
		FY35[1]
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan	**And**	
	262 acres in 2010 (Sediment TMDL)	Perform monitoring and assessments to demonstrated compliance with the Lagoon restoration goal of 346 acres[2]

1. Denotes TMDL interim and final target.
2. As defined by the Sediment TMDL and Attachment A to Resolution No. R9-2010-0033, this can mean either:
   - Successful restoration of 80% of the 1973 acreage of Lagoon salt marsh habitat (346 acres); or
   - Demonstration that implementation actions are active on and/or affecting 346 acres with continued monitoring to ensure 80% target achievement.
3. The percent load reduction is based on Sediment TMDL model updates completed during the development of the Water Quality Improvement Plan. The interim goals were calculated on the basis of the required percent reductions in the compliance schedule (Attachment A to Resolution No. R9-2010-0033). Percent load reduction, as opposed to the mass (or tonnage) of load reduction, was selected as the Water Quality Improvement Plan numeric goal because the mass of sediment reduction is, in part, related to rainfall, which varies year by year. Percent load reduction provides a relative metric that is unaffected by wet or dry water years. Calculation of the percent load reduction includes loading from Phase II MS4s, general construction, and general industrial permittees within the City of San Diego's jurisdiction. Further analysis of loads specific to the City of San Diego may be completed in the future.

FY = fiscal year
All numeric goals are cumulative from the baseline assessment for each fiscal year.

Table B-7
Wet Weather Bacteria Goals for the City of Poway

Compliance Pathway		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–35
Indicator Bacteria							
			FY18	FY19	FY24[1]	FY29	FY31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	30% Days Exceeding WQO (2002 TMDL Model)	See performance measures	30%[2]	26%	25%	22%
	Enterococcus	30% Days Exceeding WQO (2002 TMDL Model)		30%[2]	26%	25%	22%
	Total coliform	30% Days Exceeding WQO (2002 TMDL Model)		30%[2]	26%	25%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	0.3%	1.0%	1.4%	2.0%
	Enterococcus			0.3%	1.0%	1.3%	1.9%
	Total coliform			0.2%	0.8%	1.1%	1.6%

Table B-7 (continued)
Wet Weather Bacteria Goals for the City of Poway

Compliance Pathway		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–35
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 99%[3]	See performance measures	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 3 discharges[4]	See performance measures	0	0	0	0
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implemented Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge percent load reduction (above). Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for modeling results.					

Table B-7 (continued)
Wet Weather Bacteria Goals for the City of Poway

Compliance Pathway	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14 – FY18)
Performance Measures		
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**
Turf conversion	**New:** 0 square feet of turf converted	5% increase from the baseline through turf conversion

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceeding frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.
4. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WQO = Water Quality Objective
All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-8
Dry Weather Numeric Goals for the City of Poway

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Indicator Bacteria					
			FY18	FY19[1]	FY21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	4% Days Exceeding WQO (2002[2])	See performance measures	2.0%[2]	0%
	Enterococcus	19% Days Exceeding WQO (2002[2])		9.5%[2]	0%
	Total coliform	1% Days Exceeding WQO (2002[2])		0.5%[2]	0%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 100%[3]	See performance measures	0%	0%
	Enterococcus	**New:** 100%[3]		0%	0%
	Total coliform	**New:** 100%[3]		0%	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	48.3%	96.6%
	Enterococcus			49.7%	99.4%
	Total coliform			48.3%	96.5%
Or					
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 5 discharges[4]	0	0	0

Table B-8 (continued)
Dry Weather Numeric Goals for the City of Poway

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Or					
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%
	Enterococcus		100%	100%	100%
	Total coliform		100%	100%	100%
Freshwater Discharge					
			FY18	**FY19[1]**	**FY21[1]**
MS4 Discharges % Irrigation or other Dry Weather Flow Reduction	Flow	**New:** Average Dry Weather Flow[6]: 7.1 gallons per minute Maximum Dry Weather Flow[6]: 11.7 gallons per minute	See performance measures	18%	25%

Table B-8 (continued)
Dry Weather Numeric Goals for the City of Poway

Compliance Pathway	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14 – FY18)
Performance Measures		
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**
Turf conversion	**New:** 0 square feet of turf converted	5% increase from the baseline through turf conversion

1. Denotes TMDL interim and final target.
2. Calculated as a 50% reduction in the existing exceedance frequency presented in Appendix H.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. Dry weather flow baseline calculations were based on Targeted Dry Weather Flow Outfall Monitoring data from 2009 to 2012. Data are only from outfalls with "persistent flow," defined as: “the presence of flowing, pooled, or ponded water more than 72 hours after a measureable rainfall event of 0.1 inch or greater during three consecutive monitoring and/or inspection events. All other flowing, pooled, or ponded water is considered transient.” Persistently flowing annual averages were computed, and an overall average was computed using all data points in this time period and used for comparison. Note, reported flow values of 0 were present and included in the calculations.

% = percent; FY = fiscal year; WQO = Water Quality Objective
All numeric goals are cumulative from the baseline assessment for each fiscal year.

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B.3 City of San Diego Goals

The City of San Diego's Water Quality Improvement Plan interim and final goals for wet weather sediment are presented in Tables B-9 and B-10, respectively. The City of San Diego's Water Quality Improvement Plan numeric goals for wet weather bacteria and dry weather are presented in Tables B-11 and B-12, respectively.

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Table B-9
Wet Weather Sediment Interim Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
Sediment							
			FY18	FY20[1]	FY24[1]	FY28[1]	FY30[1]
Lagoon Restoration Restoration of Salt Marsh Habitat	Acres of Salt Marsh Habitat	262 acres in 2010 (Sediment TMDL)	346 acres[2]				
Or							
MS4 Discharges % Load Reductions		0% Load Reduction Year 2000 (Sediment TMDL Model)	See performance measures	10.6%[3]	21.2%[3]	31.9%[3]	42.5%[3]
Or							

Table B-9 (continued)
Wet Weather Sediment Interim Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan		Submitting and fully implementing a Water Quality Improvement Plan, accepted by the Regional Board, which provides reasonable assurance[4] that the City's portion of the interim TMDL compliance requirements, described in Attachment A of Resolution No. R9-2010-0033, will be achieved. The compliance schedule in Attachment A provides two pathways to meet interim goals: (1) attain the specified percent load reduction, or (2) show progress in improving Lagoon conditions; see metrics below.					
		0% Load Reduction Year 2000 (Sediment TMDL Model)	See performance measures	10.6%[3]	21.2%[3]	31.9%[3]	42.5%[3]
		Or					
		262 acres in 2010 (Sediment TMDL)	See performance measures	Increasing trend in the total area of salt marsh habitat			
Or							
MS4 Discharges # of Direct or Indirect Discharges to Receiving Water	Discharges	**New:** 1 discharge[5]	0	0	0	0	0

Table B-9 (continued)
Wet Weather Sediment Interim Numeric Goals for the City of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year			
		Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30
Performance Measures					
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**			
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	36 acres of drainage area treated through construction of 9 green infrastructure BMPs[6]			

1. Denotes TMDL interim and final target.
2. As defined by the Sediment TMDL and Attachment A to Resolution No. R9-2010-0033, this can mean either:
   - Successful restoration of 80% of the 1973 acreage of Lagoon salt marsh habitat (346 acres); or
   - Demonstration that implementation actions are active on and/or affecting 346 acres with continued monitoring to ensure 80% target achievement.
3. The percent load reduction is based on Sediment TMDL model updates completed during the development of the Water Quality Improvement Plan. The interim goals were calculated on the basis of the required percent reductions in the compliance schedule (Attachment A to Resolution No. R9-2010-0033). Percent load reduction, rather than the mass (or tonnage) of load reduction, was selected as the Water Quality Improvement Plan numeric goal because the mass of sediment reduction is, in part, related to rainfall, which varies year by year. Percent load reduction provides a relative metric that is unaffected by wet or dry water years. Calculation of the percent load reduction includes loading from Phase II MS4s, general construction, and general industrial permittees within the City of San Diego's jurisdiction. Further analysis of loads specific to the City of San Diego may be completed in the future.
4. Reasonable assurance is provided by the compliance analysis described in Section 4.3.2 and Appendix K. The metric used in compliance analysis is percent load reduction.
5. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
6. The 36 acres of drainage area treated are associated with 9 green infrastructure projects that will be completed by FY18.

% = percent; FY = fiscal year
All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-10
Wet Weather Sediment Final Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year
			FY31–36
Sediment			
			FY35[1]
Lagoon Restoration Restoration of Salt Marsh Habitat	Acres of Salt Marsh Habitat	262 acres in 2010 (Sediment TMDL)	346 acres[2]
Or			
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan		Strategies presented in Appendix I	The Water Quality Improvement Plan must incorporate and the City must implement the BMPs or other implementation actions required to achieve the Lagoon restoration goal
		And	
		Reasonable assurance is provided by the compliance analysis described in Section 4.3.2 and Appendix K	Include a compliance analysis[3], accepted by the Regional Board, to demonstrate that implementation of the BMPs or other implementation actions will achieve the Lagoon restoration goal

Table B-10 (continued)
Wet Weather Sediment Final Numeric Goals for the City of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		FY31–36
Sediment		
		FY35[1]
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan	**And**	
	262 acres in 2010 (Sediment TMDL)	Perform monitoring and assessments to demonstrated compliance with the Lagoon restoration goal of 346 acres[2]

1. Denotes TMDL interim and final target.
2. As defined by the Sediment TMDL and Attachment A to Resolution No. R9-2010-0033, this can mean either:
   - Successful restoration of 80% of the 1973 acreage of Lagoon salt marsh habitat (346 acres); or
   - Demonstration that implementation actions are active on and/or affecting 346 acres with continued monitoring to ensure 80% target achievement.
3. The percent load reduction is based on Sediment TMDL model updates completed during the development of the Water Quality Improvement Plan. The interim goals were calculated on the basis of the required percent reductions in the compliance schedule (Attachment A to Resolution No. R9-2010-0033). Percent load reduction, rather than the mass (or tonnage) of load reduction, was selected as the Water Quality Improvement Plan numeric goal because the mass of sediment reduction is, in part, related to rainfall, which varies year by year. Percent load reduction provides a relative metric that is unaffected by wet or dry water years. Calculation of the percent load reduction includes loading from Phase II MS4s, general construction, and general industrial permittees within the City of San Diego's jurisdiction. Further analysis of loads specific to the City of San Diego may be completed in the future.

FY = fiscal year
All numeric goals are cumulative from the baseline assessment for each fiscal year.

Table B-11
Wet Weather Bacteria Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–35
Indicator Bacteria							
			FY18	FY19	FY24[1]	FY29	FY31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	30% Days Exceeding WQO (2002 TMDL Model)	See performance measures	30%[2]	26%	25%	22%
	Enterococcus	30% Days Exceeding WQO (2002 TMDL Model)		30%[2]	26%	25%	22%
	Total coliform	30% Days Exceeding WQO (2002 TMDL Model)		30%[2]	26%	25%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	0.3%	1.0%	1.4%	2.0%
	Enterococcus			0.3%	1.0%	1.3%	1.9%
	Total coliform			0.2%	0.8%	1.1%	1.6%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 99%[3]	See performance measures	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							

Table B-11 (continued)
Wet Weather Sediment Final Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16-20	FY 21-25	FY 26-30	FY 31-35
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 2 discharges[4]	See performance measures	0	0	0	0
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implemented Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge percent load reduction (above). Interim compliance is implementation of strategies and schedule (presented in Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for compliance analysis results.					

Table B-11 (continued)
Wet Weather Sediment Final Numeric Goals for the City of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year				
		Current Permit Term (FY14 – FY18)	FY 16-20	FY 21-25	FY 26-30	FY 31-35
Performance Measures						
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**				
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	36 acres of drainage area treated through construction of 9 green infrastructure BMPs[6]				

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceeding frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.
4. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. The 36 acres of drainage area treated are associated with 9 green infrastructure projects that will be completed by FY18.

% = percent; FY = fiscal year; WQO = Water Quality Objective
All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-12
Dry Weather Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Indicator Bacteria					
			FY18	FY19[1]	FY21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	4% Days Exceeding WQO (2002[2])	See performance measures	2.0%	0%
	Enterococcus	19% Days Exceeding WQO (2002[2])		9.5%	0%
	Total coliform	1% Days Exceeding WQO (2002[2])		0.5%	0%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 100%[3]	See performance measures	0%	0%
	Enterococcus	**New:** 100%[3]		0%	0%
	Total coliform	**New:** 100%[3]		0%	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	48.3%	96.6%
	Enterococcus			49.7%	99.4%
	Total coliform			48.3%	96.5%
Or					
# Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 28 discharges[4]	0	0	0

Table B-12 (continued)
Dry Weather Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Or					
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%
	Enterococcus		100%	100%	100%
	Total coliform		100%	100%	100%
Or					
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge percent load reduction (above). Interim compliance is implementation of strategies and schedule (presented in Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for compliance analysis results.			
Freshwater Discharge					
			FY18	**FY19[1]**	**FY21[1]**
MS4 Discharges % Irrigation or other Wet and Dry Weather Flow Reduction	Flow	**New:** Average Dry Weather Flow[6]: 27.6 gallons per minute Maximum Dry Weather Flow[6]: 305.2 gallons per minute	See performance measures	18%	25%

Table B-12 (continued)
Dry Weather Numeric Goals for the City of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year		
		Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Or				
MS4 Discharges Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule (presented in Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for compliance analysis results.			
Performance Measures				
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**		
Implement runoff reduction programs, including targeted education and outreach, enhanced inspections, rebates[7], and increased enforcement	Historical dry weather monitoring data will be used to establish a baseline in the first Water Quality Improvement Plan Annual Report	10% reduction in prohibited[8] dry weather flow from baseline measured at persistently flowing outfalls in the WMA		

Table B-12 (continued)
Dry Weather Numeric Goals for the City of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year		
		Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry[9] weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	36 acres of drainage area treated through construction of 9 green infrastructure BMPs[10]		

1. Denotes TMDL interim and final target.
2. Calculated as a 50% reduction in the existing exceedance frequency presented in Appendix H.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. Dry weather flow baseline calculations were based on Targeted Dry Weather Flow Outfall Monitoring data from 2009 to 2012. Data are only from outfalls with "persistent flow," defined as: "the presence of flowing, pooled, or ponded water more than 72 hours after a measureable rainfall event of 0.1 inch or greater during three consecutive monitoring and/or inspection events. All other flowing, pooled, or ponded water is considered transient." Persistently flowing annual averages were computed, and an overall average was computed using all data points in this time period and used for comparison. Note, reported flow values of 0 were present and included in the calculations.
7. City of San Diego rebates include grass replacement, rainwater harvesting, downspout disconnect, and micro-irrigation.
8. Does not include allowable discharges as defined in Provision A and Provision E.2.a of the MS4 Permit.
9. Irrigation runoff reduction programs are the primary strategies for addressing dry weather, freshwater flows, and bacteria loading. However, green infrastructure will treat small storm events, in addition to unabated urban runoff in the short term. Green infrastructure also provides other benefits related to providing natural areas throughout urban development. See Section 4.2.3.1 for additional discussion.
10. The 36 acres of drainage area treated are associated with 9 green infrastructure projects that will be completed by FY18.

% = percent; FY = fiscal year; WQO = Water Quality Objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

B.4 County of San Diego Goals

The County of San Diego's Water Quality Improvement Plan interim and final goals for wet weather sediment are presented in Tables B-13 and B-14, respectively. The County of San Diego's Water Quality Improvement Plan numeric goals for wet weather bacteria and dry weather are presented in Tables B-15 and B-16, respectively.

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Table B-13
Wet Weather Sediment Interim Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
Sediment							
			FY18	FY20[1]	FY24[1]	FY28[1]	FY30[1]
Lagoon Restoration Restoration of Salt Marsh Habitat	Acres of Salt Marsh Habitat	262 acres in 2010 (Sediment TMDL)	346 acres[2]				
Or							
MS4 Discharges % Load Reductions		0% Load Reduction Year 2000 (Sediment TMDL Model)	4%[3]	9.5%[3]	19.0%[3]	28.6%[3]	38.1%[3]
Or							
MS4 Discharges Load Reduction (Tons/Wet Period) Determined by Sediment Loading Model		0 tons/wet period Year 2000 (Sediment TMDL Model)	4[3]	9[3]	18[3]	26[3]	35[3]
Or							

Table B-13 (continued)
Wet Weather Sediment Interim Numeric Goals for the County of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year				
		Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan	Submitting and fully implementing a Water Quality Improvement Plan, accepted by the Regional Board, which provides reasonable assurance[4] that the County's portion of the interim TMDL compliance requirements, described in Attachment A of Resolution No. R9-2010-0033, will be achieved. The compliance schedule in Attachment A provides two pathways to meet interim goals: (1) attain the specified percent load reduction or (2) show progress in improving Lagoon conditions; see metrics below.					
	0% Load Reduction Year 2000 (Sediment TMDL Model)	4%[3]	9.5%[3]	19.0%[3]	28.6%[3]	38.1%[3]
	Or					
	0 tons/wet period Year 2000 (Sediment TMDL Model)	4[3]	9[3]	18[3]	26[3]	35[3]
	Or					
	262 acres in 2010 (Sediment TMDL)	Increasing trend in the total area of salt marsh habitat				
~~**Or**~~						

Table B-13 (continued)
Wet Weather Sediment Interim Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	
~~**MS4 Discharges**~~ ~~# of Direct or Indirect Discharges to Receiving Water~~	~~Discharges~~	~~**New:** 0 discharges[5]~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~

1. Denotes TMDL interim and final target.
2. As defined by the Sediment TMDL and Attachment A to Resolution No. R9-2010-0033, this can mean either:
   - Successful restoration of 80% of the 1973 acreage of Lagoon salt marsh habitat (346 acres); or
   - Demonstration that implementation actions are active on and/or affecting 346 acres with continued monitoring to ensure 80% target achievement.
3. The load reduction is based on Sediment TMDL model updates completed during the development of the Water Quality Improvement Plan. The interim goals were calculated on the basis of the required percent reductions in the compliance schedule (Attachment A to Resolution No. R9-2010-0033). Calculation of the load reduction includes loading from Phase II MS4s, general construction, and general industrial permittees within the County of San Diego's jurisdiction. Further analysis of loads specific to the County of San Diego may be completed in the future.
4. Reasonable assurance is provided by the compliance analysis described in Section 4.3.2 and Appendix K. The metric used in compliance analysis is percent load reduction.

% = percent; FY = fiscal year
All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-14
Wet Weather Sediment Final Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year
			FY31–36
Sediment			
			FY35[1]
Lagoon Restoration Restoration of Salt Marsh Habitat	Acres of Salt Marsh Habitat	262 acres in 2010 (Sediment TMDL)	346 acres[2]
Or			
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan		Strategies presented in Appendix I	The Water Quality Improvement Plan must incorporate and the County must implement the BMPs or other implementation actions required to achieve the Lagoon restoration goal
		And	
		Reasonable assurance is provided by the compliance analysis described in Section 4.3.2 and Appendix K	Include a compliance analysis[3], accepted by the Regional Board, to demonstrate that implementation of the BMPs or other implementation actions will achieve the Lagoon restoration goal

Table B-14 (continued)
Wet Weather Sediment Final Numeric Goals for the County of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		FY31–36
Sediment		
		FY35[1]
MS4 Discharges and Receiving Water Implement Accepted Water Quality Improvement Plan	And	
	262 acres in 2010 (Sediment TMDL)	Perform monitoring and assessments to demonstrated compliance with the Lagoon restoration goal of 346 acres[2]

1. Denotes TMDL interim and final target.
2. As defined by the Sediment TMDL and Attachment A to Resolution No. R9-2010-0033, this can mean either:
   - Successful restoration of 80% of the 1973 acreage of Lagoon salt marsh habitat (346 acres); or
   - Demonstration that implementation actions are active on and/or affecting 346 acres with continued monitoring to ensure 80% target achievement.
3. The load reduction is based on Sediment TMDL model updates completed during the development of the Water Quality Improvement Plan. The interim goals were calculated on the basis of the required reductions in the compliance schedule (Attachment A to Resolution No. R9-2010-0033). Calculation of the load reduction includes loading from Phase II MS4s, general construction, and general industrial permittees within the County of San Diego's jurisdiction. Further analysis of loads specific to the County of San Diego may be completed in the future.

FY = fiscal year
All numeric goals are cumulative from the baseline assessment for each fiscal year.

Table B-15
Wet Weather Bacteria Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–35
Indicator Bacteria							
			FY18	FY19	FY24	FY28[1,2]	FY31[1,2]
Receiving Water % Days Exceeding WQO	Fecal coliform	30% Days Exceeding WQO (2002 TMDL Model)	30%[3]	30%[3]	29%	26%	22%
	Enterococcus	30% Days Exceeding WQO (2002 TMDL Model)	30%[3]	30%[3]	29%	26%	22%
	Total coliform	30% Days Exceeding WQO (2002 TMDL Model)	30%[3]	30%[3]	29%	26%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	0.2%	0.3%	0.5%	1.0%	2.0%
	Enterococcus		0.2%	0.3%	0.4%	1.0%	1.9%
	Total coliform		0.1%	0.2%	0.4%	0.8%	1.6%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 99%[4]	22%	22%	22%	22%	22%
	Enterococcus	**New:** 100%[4]	22%	22%	22%	22%	22%
	Total coliform	**New:** 100%[4]	22%	22%	22%	22%	22%
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 0 discharges[5]	0	0	0	0	0

Table B-15 (continued)
Wet Weather Bacteria Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–35
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[6]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implemented Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge percent load reduction (above). Interim compliance is implementation of strategies and schedule (presented in Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for compliance analysis results.					

1. Denotes TMDL interim and final target. Request moving Interim TMDL Compliance Date from April 4, 2021, (per MS4 Permit Attachment E, 6.c(1)) to April 4, 2028, to allow adequate time to monitor progress through the adaptive management process of the Water Quality Improvement Plan.
2. Progress toward final goals will be monitored and, if implemented programmatic BMPs are not enough to meet compliance, then through the adaptive management process of the Water Quality Improvement Plan, more effective and or additional BMPs, including structural controls, will be considered for implementation. The County of San Diego is concerned that a funding source to construct, operate, and maintain structural controls is not identified, if structural controls are needed to meet compliance.
3. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceeding frequency.
4. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.
5. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
6. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WQO = Water Quality Objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

Table B-16
Dry Weather Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
Indicator Bacteria					
			FY18	FY20[1]	FY21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	4% Days Exceeding WQO (2002[2])	See performance measures	2.0%	0%
	Enterococcus	19% Days Exceeding WQO (2002[2])		9.5%	0%
	Total coliform	1% Days Exceeding WQO (2002[2])		0.5%	0%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 100%[3]	See performance measures	0%	0%
	Enterococcus	**New:** 100%[3]		0%	0%
	Total coliform	**New:** 100%[3]		0%	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	48.3%	96.6%
	Enterococcus			49.7%	99.4%
	Total coliform			48.3%	96.5%
Or					
# Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 0 discharges[4]	0	0	0
Or					

Table B-16 (continued)
Dry Weather Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14 – FY18)	FY 16–20	FY 21–25
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%
	Enterococcus		100%	100%	100%
	Total coliform		100%	100%	100%
Or					
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge percent load reduction (above). Interim compliance is implementation of strategies and schedule (presented in Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for compliance analysis results.			
Freshwater Discharge					
			FY18	**FY19[1]**	**FY21[1]**
MS4 Discharges % Irrigation or other Wet and Dry Weather Flow Reduction	Flow	**New:** 0 discharges	See performance measures	18%	25%
Or					
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule (presented in Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See Section 4.3.2 and Appendix K for compliance analysis results.			

Table B-16 (continued)
Dry Weather Numeric Goals for the County of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year		
		Current Permit Term (FY14 – FY18)	FY16 – FY20	FY21 – F25
Performance Measures				
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**	**FY20**	**FY21**
Eliminate anthropogenic dry weather flows[6] from storm drain outfalls either by aggregate flow volume or the number of persistently flowing outfalls during dry weather	To be established during FY15–16 using dry weather flow measurements		Reduce by 75%	Reduce by 100% anthropogenic dry weather discharges from storm drain outfalls to the receiving water or meet the WQOs in the storm drain discharges.

1. Denotes TMDL interim and final target. Request moving Interim TMDL Compliance Date from April 4, 2016 (per MS4 Permit Attachment E, 6.c(1)) to April 4, 2020, to allow adequate time to investigate and mitigate dry weather flows through the adaptive management process of the Water Quality Improvement Plan.
2. Calculated as a 50% reduction in the existing exceedance frequency presented in Appendix H.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. Here and throughout this table, the term "dry weather flows" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.

% = percent; FY = fiscal year; WQO = Water Quality Objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Appendix C: Monitoring Results and Assessment

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Attachment F Wet Weather Outfall Information
Attachment G Sediment Special Study Report
Attachment H CEDEN Certification Statements

Acronyms and Abbreviations

Acronym or Abbreviation	Definition
≥	greater than or equal to
<	less than
≤	less than or equal to
µg/L	micrograms per liter
%	percent
303(d) List	Clean Water Act Section 303(d) List of Water Quality Limited Segments
AB 411	California Assembly Bill 411, the Beach Safety Act
ADCP	Acoustic Doppler Current Profiler
Bacteria TMDL	Los Peñasquitos WMA Bacteria Total Maximum Daily Load
Bight ’13	Southern California Bight 2013 Regional Monitoring Survey
BMI	benthic macroinvertebrates
BMP	best management practice
BSTEM	Bank Stability and Toe Erosion Model
CEDEN	California Environmental Data Exchange Network
cf	cubic feet
CFR	Code of Federal Regulations
cfs	cubic feet per second
cm	centimeters
Copermittee	Operator of a municipal separate storm sewer system in San Diego County that is party to the MS4 Permit
CTR	California Toxics Rule
CWA	Clean Water Act
DEH	San Diego County Department of Environmental Health
E. coli	*Escherichia coli*
EMC	event mean concentration
FIB	fecal indicator bacteria
FRM	Federal Reference Method
FY	fiscal year

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
GIS	geographic information system
HA	hydrologic area
HMP	Hydromodification Monitoring Program
HPWQC	highest priority water quality condition
HSA	hydrologic subarea
IC/ID	illicit connection and/or illicit discharge
ID	identification
IDDE	illicit discharge detection and elimination
in	inches
J	Analytical flag for 'Analyte detected above the method detection limit but below the reporting limit'
JRMP	Jurisdictional Runoff Management Program
Lagoon	Los Peñasquitos Lagoon
lb	pounds
LTMS	long-term monitoring station
MAP	Monitoring and Assessment Program
MDL	method detection limit
mg/L	milligrams per liter
mL	milliliters
MPN	most probable number
MPN/100mL	most probable number per 100 milliliters
MS4	Municipal Separate Storm Sewer System
MS4 Permit	San Diego Regional Water Quality Control Board Order No. R9-2013-0001 (amended by Order No. R9-2015-0001 and R9-2015-0100), National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems Draining the Watersheds Within the San Diego Region
N	nitrogen
NA	not analyzed

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
NA	not applicable
NAL	non-storm water action level
ND	not detected
NSWD	non-storm water discharge
NTU	nephelometric turbidity unit
NWS	National Weather Service
P	phosphorus
PM_{10}	particulate matter less than or equal to 10 microns in diameter
QA	quality assurance
QC	quality control
R^2	coefficient of determination
Regional Board	San Diego Regional Water Quality Control Board
Responsible Agency	Responsible Agencies include parties subject to the Bacteria TMDL and Sediment TMDL and participating in this Water Quality Improvement Plan, specifically the Copermittees in the Los Peñasquitos WMA
RL	reporting limit
RSC	regenerative storm water conveyance
RWL	receiving water limitation
SAL	Storm water action level
SCCWRP	Southern California Coastal Water Research Project
Sediment TMDL	Los Peñasquitos WMA Sediment Total Maximum Daily Load
SMC	Southern California Storm water Monitoring Coalition
SSC	suspended sediment concentration
Storm Water Assessments	Storm Water Pollutant Discharge Reduction Assessments
sub-AV	sub area-velocity probe
SWAMP	Surface Water Ambient Monitoring Program

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
SWMP	Storm Water Management Plan
TBD	to be determined
TDS	total dissolved solids
TIE	toxicity identification evaluation
TKN	total Kjeldahl nitrogen
TMAR	Transitional Monitoring and Assessment Report
TMDL	Total Maximum Daily Load
TRE	toxicity reduction evaluation
TSS	total suspended solids
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
WLA	waste load allocation
WMA	Watershed Management Area
WQBEL	water quality-based effluent limitation
WQIP	Water Quality Improvement Plan
WQO	water quality objective

1 Monitoring and Assessment Program

The Monitoring and Assessment Program (MAP) for the Los Peñasquitos Watershed Management Area (WMA) is Section 5 of the Water Quality Improvement Plan (WQIP). The MAP incorporates requirements of Provision B and Provision D of the Municipal Separate Storm Sewer System (MS4) Permit, along with the specific monitoring and assessment requirements for the Bacteria and Sediment Total Maximum Daily Loads (TMDLs) listed in Attachment E of the MS4 Permit.

The Monitoring Program includes three major components: (1) the receiving water monitoring program that measures the long-term health of the watershed; (2) the MS4 outfall monitoring program that documents non-storm water flows and measures outfall water quality at select sites during dry and wet conditions; and (3) special studies that investigate the highest priority water quality conditions (HPWQCs). Table 1-1 provides an overview of the monitoring that is planned as part of the Los Peñasquitos WMA MAP and Figure 1-1 shows the locations for the 2015–2016 monitoring year.

This appendix summarizes monitoring data collected during the 2015–2016 monitoring year (October 1, 2015, and September 30, 2016), and data that were not summarized in the 2013–2014 and 2014–2015 Transitional Monitoring and Assessment Program Reports for the Los Peñasquitos WMA. Data include both receiving water and MS4 outfall monitoring data. Monitoring methodologies were summarized in Section 5 of the Los Peñasquitos WMA WQIP and were specified in the associated component Monitoring Plans (Project Clean Water, 2016). These documents provide detailed information regarding monitoring locations, monitoring techniques, constituents sampled, and quality assurance and quality control (QA/QC) requirements.

The Assessment Program for the 2015–2016 monitoring year includes only an annual analysis of the monitoring data collected for the 2015–2016 monitoring year. This appendix describes the MS4 Outfall Discharge Assessments (Provision D.4.b), which evaluate both the dry weather data associated with the illicit discharge detection and elimination (IDDE) program that were collected as part of the Jurisdictional Runoff Management Program (JRMP) program, along with the dry and wet weather MS4 monitoring data collected by the Responsible Agencies. The results of the special studies are also assessed in this appendix. The Receiving Water Assessment (Provision D.4.a) and the Integrated Assessments (D.4.b), as well as assessments of wet weather MS4 outfall discharge temporal trends, will be summarized in the Regional Monitoring and Assessment Report to be submitted with the Report of Waste Discharge in December 2017.

Table 1-1
Water Quality Improvement Plan Monitoring Overview

Monitoring Program			Monitoring Element	Program Schedule[1]				
				2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
Monitoring to Assess Goals and Schedules		Dry and Wet	Varies by goal and jurisdiction	–	–	●	●	●
Receiving Water Monitoring	Long-term Receiving Water	Dry	Conventionals[2], FIB, nutrients, metals, pesticides, toxicity (chronic), possible TIE/TREs, visual observations, field measurements	–	●[3]	–	–	–
			Hydromodification (channel conditions, discharge points, habitat integrity, evidence and estimate of erosion and habitat impacts)	–	●[3]	–	–	–
			Bioassessment (BMI taxonomy, algae taxonomy, physical habitat characteristics)	–	●[3]	–	–	–
		Wet	Conventionals[2], FIB nutrients, metals, pesticides, toxicity (chronic), field measurements	–	●[3]	–	–	–

Table 1-1 (continued)
Water Quality Improvement Plan Monitoring Overview

Monitoring Program				Monitoring Element	Program Schedule[1]				
					2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
Receiving Water Monitoring (continued)	Regional Monitoring Participation	Bight	Dry	Chemistry, toxicity, benthic infauna	●	–	–	–	●[4]
		SMC	Dry	Bioassessment	●	●	●	●	●
		AB 411[5]	Dry	FIB	●	●	●	●	●
		2011 HMP	Wet	Channel assessments; flow monitoring; sediment transport monitoring	●	●	●	–	–
	Sediment Quality Monitoring	Sediment Quality Monitoring	Dry	Chemistry, toxicity, benthic infauna	●[6]	●[3]	–	–	–
	TMDL Monitoring	Sediment Monitoring for Los Peñasquitos Lagoon	Dry	Particle size distribution, suspended sediment concentration[2], pebble count, extended flow monitoring; vegetation mapping	●	●	●	●	●
		Bacteria Monitoring for Pacific Ocean Shoreline at Torrey Pines State Beach, Del Mar	Dry	FIB, visual observations, optional field measurements	●[7]	●[7]	●	●	●
			Wet	FIB, visual observations, optional field measurements	●[7]	●[7]	●	●	●

Table 1-1 (continued)
Water Quality Improvement Plan Monitoring Overview

Monitoring Program			Monitoring Element	Program Schedule[1]				
				2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
MS4 Monitoring	MS4 Field Screening	Dry	Visual: flow condition, presence and assessment of trash in and around the station, IC/IDs, descriptions	●[3]	●[3]	●	●	●
MS4 Monitoring	MS4 Outfall	Dry	Field parameters, conventionals[2], nutrients, metals, FIB,	–	–	●	●	●
MS4 Monitoring	MS4 Outfall	Wet	Field parameters, conventionals[2], nutrients, metals, FIB,	●[7]	●[7]	●	●	●
Special Studies	San Diego Regional Reference Streams and Beaches	Dry	Field parameters, conventionals[2], FIB, instantaneous flow	2012 – 2014	●[8]	–	–	–
Special Studies	San Diego Regional Reference Streams and Beaches	Dry	Streams only: nutrients, metals, bioassessment (including physical habitat and chlorophyll a)	2012 – 2014	–	–	–	–
Special Studies	San Diego Regional Reference Streams and Beaches	Wet	Field parameters, conventionals[1], FIB	2012 – 2014	●	–	–	–
Special Studies	San Diego Regional Reference Streams and Beaches	Wet	Streams only: nutrients, metals, toxicity, flow, and precipitation (duration of storm)	2012 – 2014	●	–	–	–

Table 1-1 (continued)
Water Quality Improvement Plan Monitoring Overview

Monitoring Program			Monitoring Element	Program Schedule[1]				
				2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
Special Studies (continued)	Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Monitoring Plan	Dry/ Wet	Particle size distribution, suspended sediment concentration, streambed and bedload sampling, pebble count, extended flow monitoring	–	●	●	–	–
		Dry	Air particle monitoring	–	●	●	–	–
	Outfall Repair and Relocation Study	Dry/ Wet	Priority locations for outfall repair and relocation	–	–	●	–	–

The highlighted cells represent the monitoring that occurred during the October 2015 to September 2016 monitoring year.

1. The MS4 Permit was adopted on May 8, 2013; the MS4 Permit became effective on June 27, 2013. Note that implementation of the programs began when the WQIP was approved in September 2015.
2. Definition of conventionals (conventional parameters) is based on Storm Water Management Program (SWMP) guidelines.
3. Completed under the Transitional Monitoring Program in accordance with MS4 Permit Provisions D.1.a and D.2.a.
4. The 2018 Southern California Bight Regional Monitoring will occur during the summer of 2018 or 2019.
5. The AB 411 program is not required by the MS4 Permit. Responsible Agencies are using the data to track beach water quality conditions related to the highest priority water quality condition for the WMA.
6. Sediment quality monitoring was completed under the 2013 Southern California Bight Regional Monitoring Program.
7. Completed under the Transitional Monitoring Program in accordance with MS4 Permit Provisions D.1.a and D.2.a.
8. Dry weather monitoring at reference streams was completed in spring 2014. Dry weather monitoring at reference beaches began in fall 2014.

AB 411 = California Assembly Bill 411; BMI = benthic macroinvertebrates; FIB = fecal indicator bacteria;
HMP = Hydromodification Monitoring Program; IC/ID = illicit connection and/or illicit discharge;
MS4 = Municipal Separate Storm Sewer System; NA = not applicable; SMC = Southern California Storm water Monitoring Coalition;
TBD = to be determined; TIE = toxicity identification evaluation; TMDL = Total Maximum Daily Load; TRE = toxicity reduction evaluation;
WMA = Watershed Management Area

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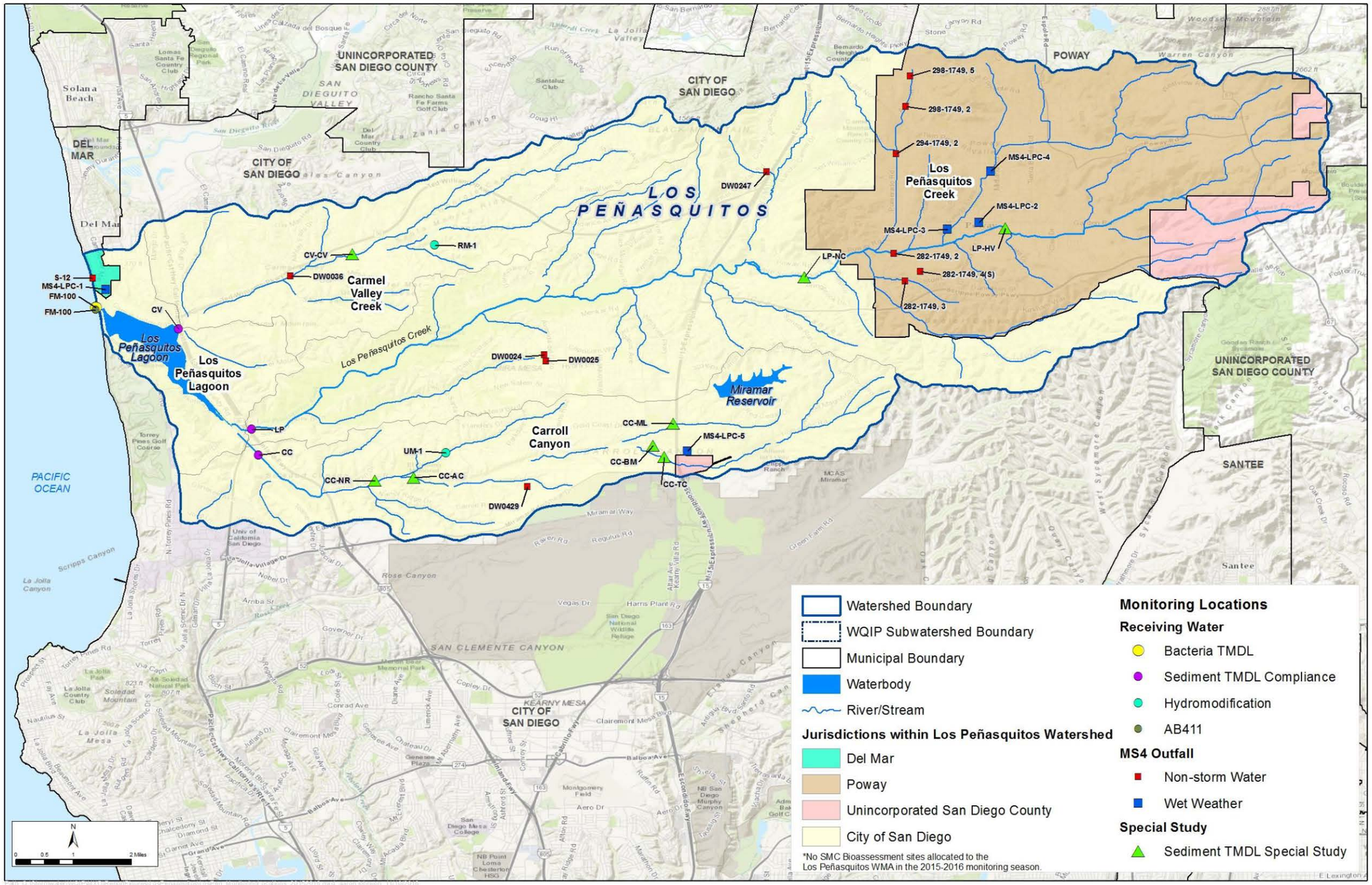

Figure 1-1
2015-2016 MAP Monitoring Locations for the Los Peñasquitos WMA

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1.1 2015–2016 Regional Rainfall Summary

Precipitation during the 2015–2016 monitoring year measured at the National Weather Service Lindbergh Field station (GHCND:USW00023188) was compared with average precipitation totals from 1939–2015. The 2015–2016 observed total of 8.18 inches was slightly less than the average annual total of 9.90 inches. Greater than average rainfall amounts were observed in November 2015, January 2016, May 2016, and September 2016. All other months saw less than average rainfall amounts, including February 2016, which saw much less than the historical average for February (0.05 inch vs. 1.8 inches). Figure 1-2 shows the October 2015 through September 2016 monthly rainfall measured at Lindbergh Field, compared with the average monthly and annual rainfall.

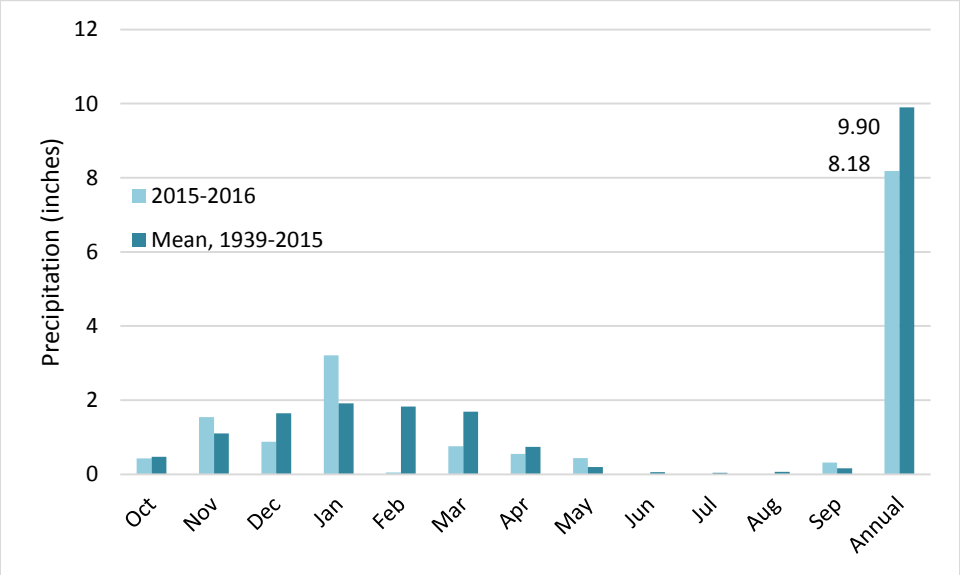

Figure 1-2
2015–2016 Monthly Rainfall vs. Average Monthly Rainfall (Lindbergh Field)

Eighty-four County of San Diego (County) ALERT rain gauges were used to measure rainfall throughout the region during the monitoring year (October 2015 through September 2016). Because the Transitional Monitoring Annual Reports presented rainfall data based on a July through June monitoring year, the July 2015 through September 2015 measured rainfall total is also presented to fill the gap between the end of reporting under the transitional program and the beginning of reporting under the WQIP. Going forward, WQIP Annual Reports will present data based on the October through September monitoring year.

July 2015 through September 2015 regional rainfall totals ranged from less than 0.25 inch in the inland deserts to over 5 inches in the mountains. Totals at the coast ranged from approximately 1 inch near the international border with Mexico to over 3 inches in the Mission Bay area. Rainfall in the Los Peñasquitos WMA was measured at 2.2 inches at the Miramar Lake ALERT station. Figure 1-3 presents regional rainfall totals from July 2015 through September 2015.

October 2015 through September 2016 regional rainfall totals ranged from less than 1 inch in the inland deserts to over 30 inches in the mountains. Totals at the coast ranged from approximately 7 inches near the international border with Mexico to approximately 12 inches in the northern section of the County. Rainfall in the Los Peñasquitos WMA ranged from 12.97 inches at the Miramar Lake ALERT station to 13.89 inches at the Poway ALERT station. Figure 1-4 presents regional rainfall totals from October 2015 through September 2016.

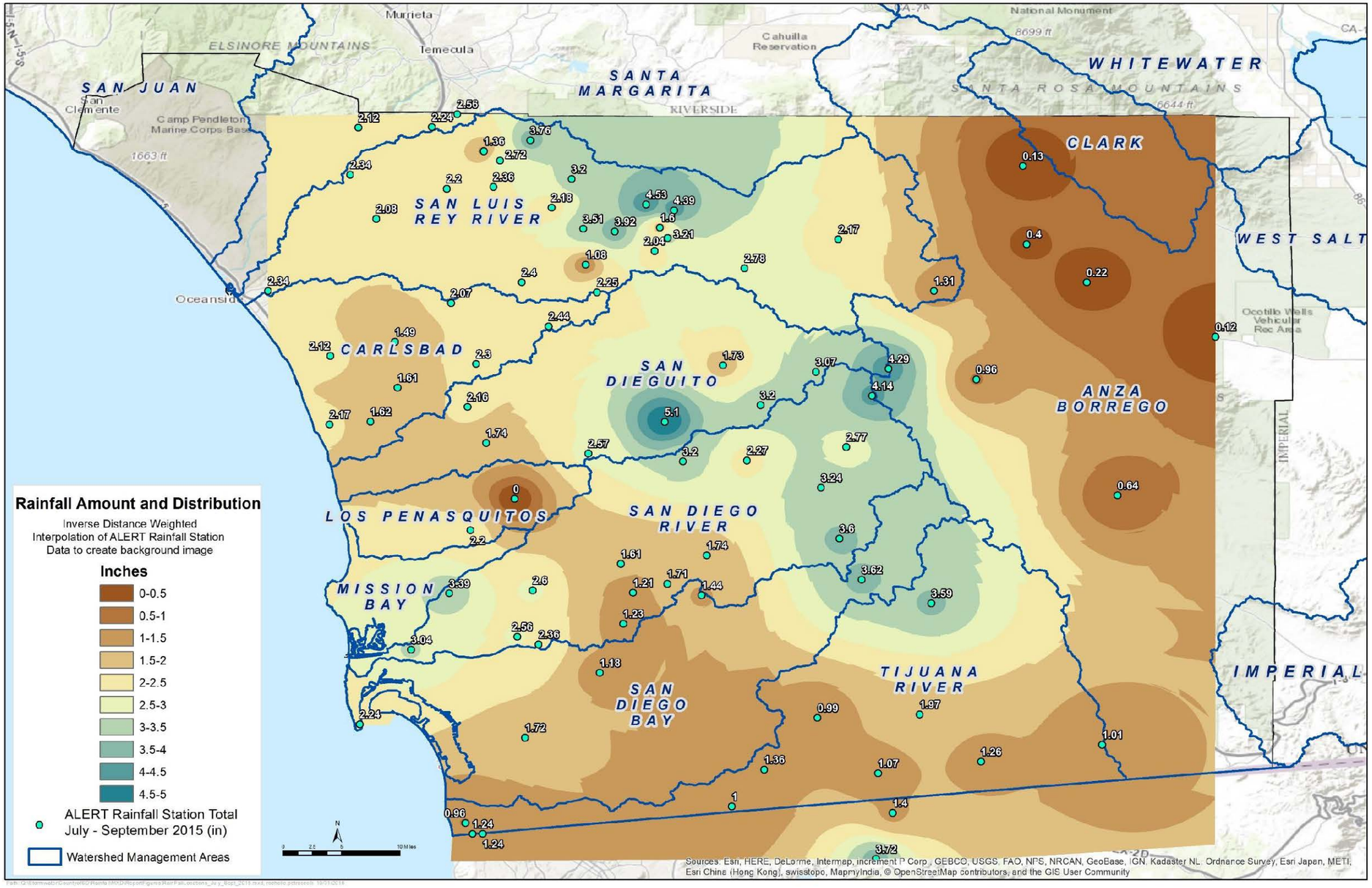

Figure 1-3
July 2015 through September 2015 ALERT Station Rainfall Totals

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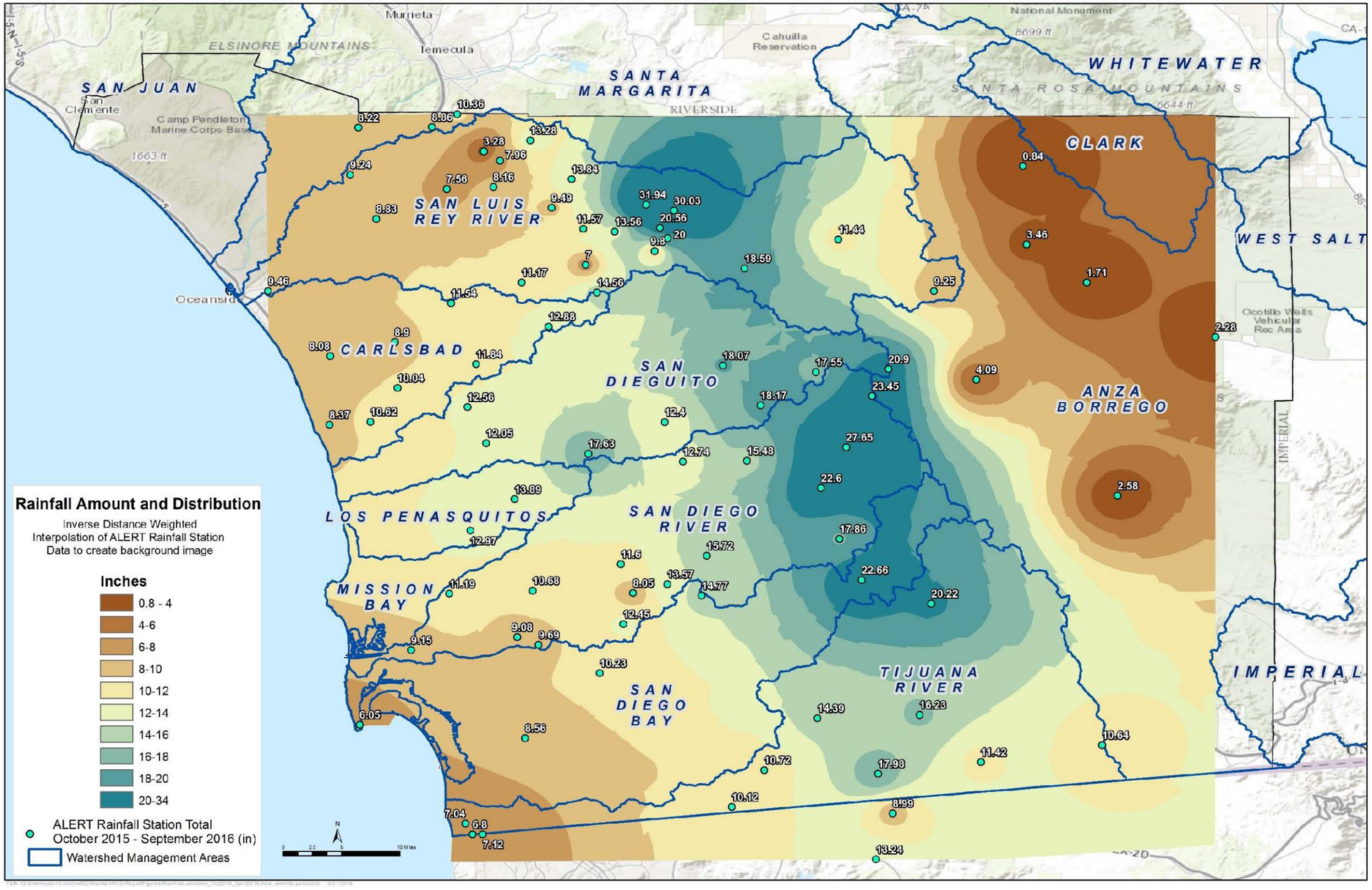

Figure 1-4
October 2015 through September 2016
ALERT Station Rainfall Totals

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1.2 Monitoring Results and Assessments Appendix Organization

This appendix includes the Monitoring Results and Assessments for the Los Peñasquitos WMA Water Quality Improvement Plan Annual Report and is organized as follows:

Section 1, Monitoring and Assessment Program—This section provides an overview of the MAP, the monitoring performed during the October 2015 through September 2016 monitoring year, annual rainfall summary, and the assessments included in this appendix.

Section 2, Receiving Water Data Summary—This section describes the monitoring data collected as part of the Receiving Water Monitoring program. Data from various sources were compiled and summarized. Some data were collected during the October 2015 through September 2016 monitoring year, while other data were collected previously but not included in the Los Peñasquitos WMA Transitional Monitoring Assessment Report submitted in January 2016.

Section 3, Dry Weather Outfall Assessments and Illicit Discharges—This section summarizes the dry-weather MS4 Outfall Discharge Assessments (MS4 Permit Provision B.4.b). It includes a comparison with non-storm water action levels (NALs) and assessments required by the MS4 Permit.

Section 4, Wet Weather Outfall Assessments—This section summarizes the wet-weather MS4 Outfall Discharge Assessments (MS4 Permit Provision B.4.b). It includes a comparison with storm water action levels (SALs) and assessments required by the MS4 Permit.

Section 5, Special Study Assessments- This section provides an overview of the two special studies completed or in progress in the Los Peñasquitos WMA, including the San Diego Regional Reference Streams and Beaches Studies and the Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Compliance Monitoring Program.

Section 6, California Environmental Data Exchange Network (CEDEN) Certification Statement Summary—This section summarizes the CEDEN data submittal certifications for the October 2015–September 2016 monitoring year.

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2 Receiving Water Monitoring Data Summary

Section 2 of the Monitoring Results and Assessments Appendix highlights receiving water data collected as part of the Los Peñasquitos WMA MAP. Because this is the first Annual Report to be submitted under the Los Peñasquitos WMA WQIP, data collected since the acceptance of the MS4 Permit in 2013 will be (1) referenced if they have been previously submitted to the San Diego Regional Water Quality Control Board (Regional Board), (2) summarized if sampling was conducted prior to the October 2015 through September 2016 monitoring year and the data have not been previously submitted to the Regional Board, or (3) summarized in graphical and tabular form as part of this Monitoring Results and Assessments Appendix. As discussed in Section 1, MS4 Permit Provision D.4.a.(b) requires Receiving Water Assessments to be completed as part of the Report of Waste Discharge in December 2017. The data presented in this appendix will be used to complete those assessments as well as the Integrated Assessment detailed in the MAP.

2.1 Long-Term Receiving Water and Sediment Quality Monitoring Data

The Transitional Receiving Water Monitoring Program completed during the October 2014 through September 2015 monitoring year fulfilled a number of the requirements for the long-term monitoring outlined in the MAP. The results of this monitoring were presented in the Transitional Monitoring and Assessment Program Report for the Los Peñasquitos WMA (2014–2015) (San Diego County Municipal Copermittees, 2016). Results presented included water quality monitoring during dry and wet weather, trash assessments, hydromodification monitoring, and bioassessment at the long-term monitoring station (LTMS).

As stated in the Los Peñasquitos WMA WQIP, the Southern California Bight 2013 Regional Monitoring Survey (Bight ’13) Monitoring Program satisfied the initial monitoring requirements of the state's Sediment Control Plan. As many as two sites were monitored in the Los Peñasquitos Lagoon in 2013 for the initial screening of sediment quality. Because both sites were found to be likely unimpacted during the initial screening, no follow-up monitoring was conducted. Based on the monitoring and assessment completed, sediment conditions in the Los Peñasquitos Lagoon are generally protective of the beneficial uses (San Diego County Municipal Copermittees, 2014). The Sediment Monitoring Report was provided in the 2015 Transitional Monitoring and Assessment Report in accordance with the MS4 Permit reporting requirements.

2.2 Bight ’13 Regional Monitoring Data

Sediment quality monitoring was conducted during summer 2013 at 22 sites in 9 estuaries and lagoons in the San Diego region under the Bight ’13 (Los Peñasquitos Responsible Agencies, 2015). The sediment quality monitoring included sediment chemistry and toxicity. Bight ’13 was used to fulfill the initial monitoring requirements for the Sediment Quality Monitoring requirement of the MS4 Permit that is summarized in Section 2.1.

2.3 Southern California Storm Water Monitoring Coalition (SMC) Monitoring Data

The SMC bioassessment program has a probabilistic random sampling design, meaning that sites are selected at random within each designated stratum of the County. Four strata are within the County: Northern San Diego (Santa Margarita and San Luis Rey WMAs), Central San Diego (Carlsbad, San Dieguito, and Los Peñasquitos WMAs), Mission Bay/San Diego River (Mission Bay and San Diego River WMAs), and Southern San Diego (San Diego Bay and Tijuana River WMAs). For the 2015–2019 cycle, there are also two different classes of sites: Trend and Condition. Trend sites will be fixed for all five years of the cycle (unless the site goes dry or access is denied) and will be resampled in each of those five years. Condition sites will be different for each year of the five-year term. In the County as a whole, 16 sites are sampled annually: 4 Trend sites and 12 Condition sites.

At the beginning of the 2015–2019 cycle, the Southern California Coastal Water Research Project (SCCWRP) generated two randomized site lists that will be used to select sites for the entire five-year period, one for Trend sites and one for Condition sites. Trend sites are further categorized as “Open” sites (i.e., not urban or agriculture influenced) and “Developed” sites (i.e., with urban or agriculture influence). Of the four Trend sites in the County, two have been allocated as “Open” and 2 as “Developed” sites. Trend sites were selected on a County-wide basis, and were not allocated to a certain number of sites per County stratum. The two “Open” Trend sites are in the San Dieguito and San Diego Bay WMAs, while the two “Developed” Trend sites are in the Carlsbad and Santa Margarita WMAs. These sites will remain fixed and will be resampled each year, unless the sites go dry or are no longer accessible because of lack of landowner permission or other reasons. The Condition sites will change every year, and these sites are allocated as three Condition sites per County stratum. In 2015, the Condition sites were selected by starting at the top of the randomized Condition list for each County stratum and choosing the first three sites able to be sampled, after reconnaissance confirmation. Then, for each subsequent year (i.e., 2016–2019), site selection would start on the list from where the previous year left off and continue down the list to select three new sites. Within each County stratum for each year of the program, the three Condition sites have the potential to fall into any of the WMAs within that stratum. During the spring 2016 reconnaissance efforts, no Condition sites were allocated to the Los Peñasquitos WMA; the three Condition sites were split between the Carlsbad WMA (1) and San Dieguito River WMA (2).

2.4 California Assembly Bill 411 (AB 411) Data

San Diego County Department of Environmental Health (DEH) implements the Beach and Bay Water Quality Monitoring Program to support the statewide program funded by the Beach Safety Act (AB 411). This program is commonly referred to as AB 411 monitoring. There is one AB 411 beach monitoring station in the Los Peñasquitos WMA. The AB 411 monitoring program is not required by the MS4 Permit. Responsible Agencies are using the AB 411 data to track dry weather beach water quality conditions related to the HPWQCs for the watershed (Los Peñasquitos Responsible Agencies, 2015).

The number of samples collected for each fecal indicator bacteria (FIB) indicator (*Enterococcus*, fecal coliform, and total coliform) for the period between October 1, 2015, and July 31, 2015, is presented in Table 2-1.

Table 2-1
Los Peñasquitos WMA AB 411 Data Summary

Site ID	Location[1]	Total Number of Samples		
		Enterococcus	Fecal Coliform	Total Coliform
FM-100	Los Peñasquitos Lagoon	106	105	105

1. Figure 1-1 shows the AB 411 Monitoring Locations.

ID = identification

The concentrations for the FIB indicators are shown in Figures 2-1 through 2-3. These data will be reviewed during the Receiving Water Assessment completed in the Regional Monitoring and Assessment Report.

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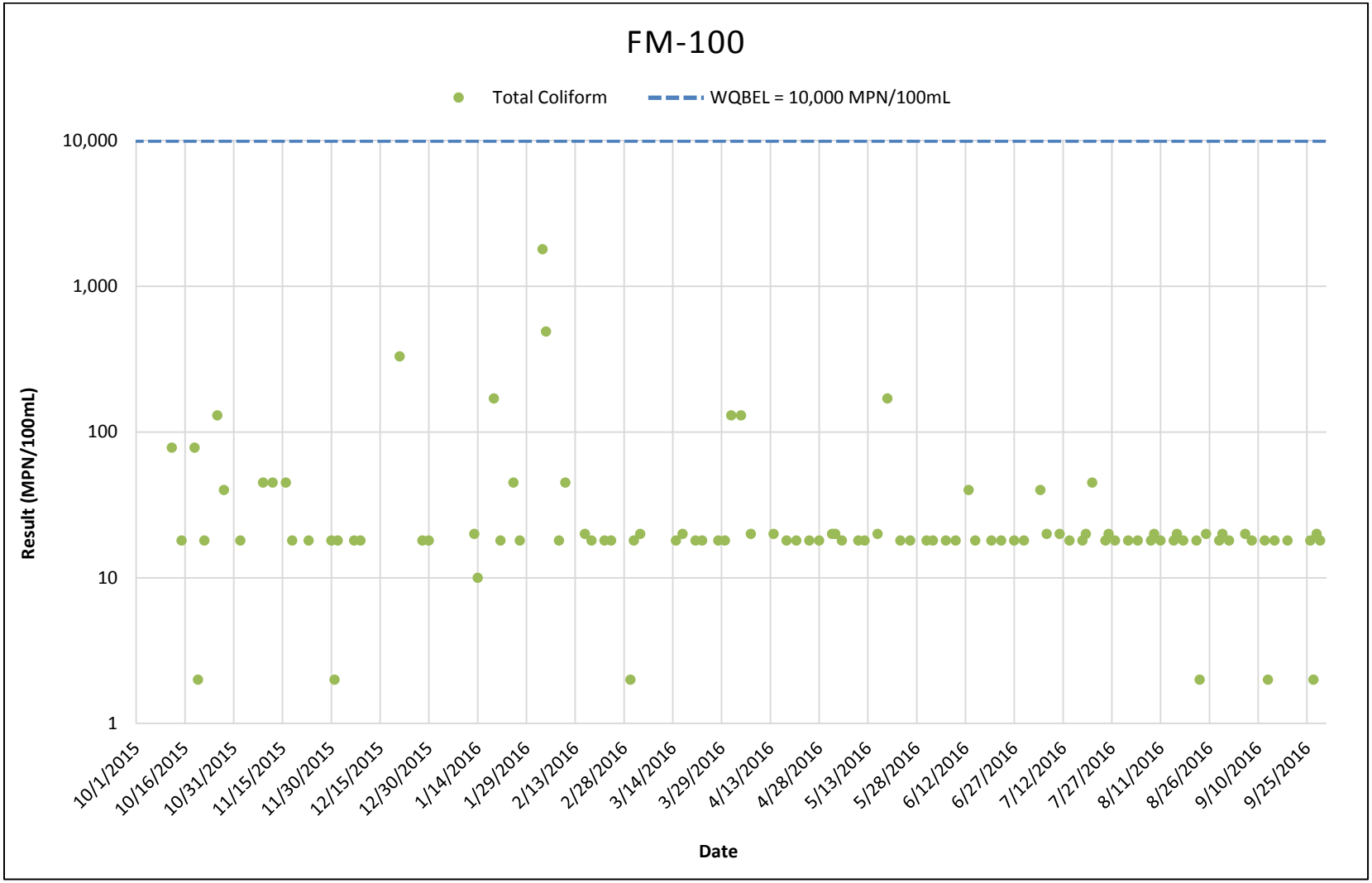

Figure 2-1
Total Coliform Concentrations at AB 411 Site FM-100

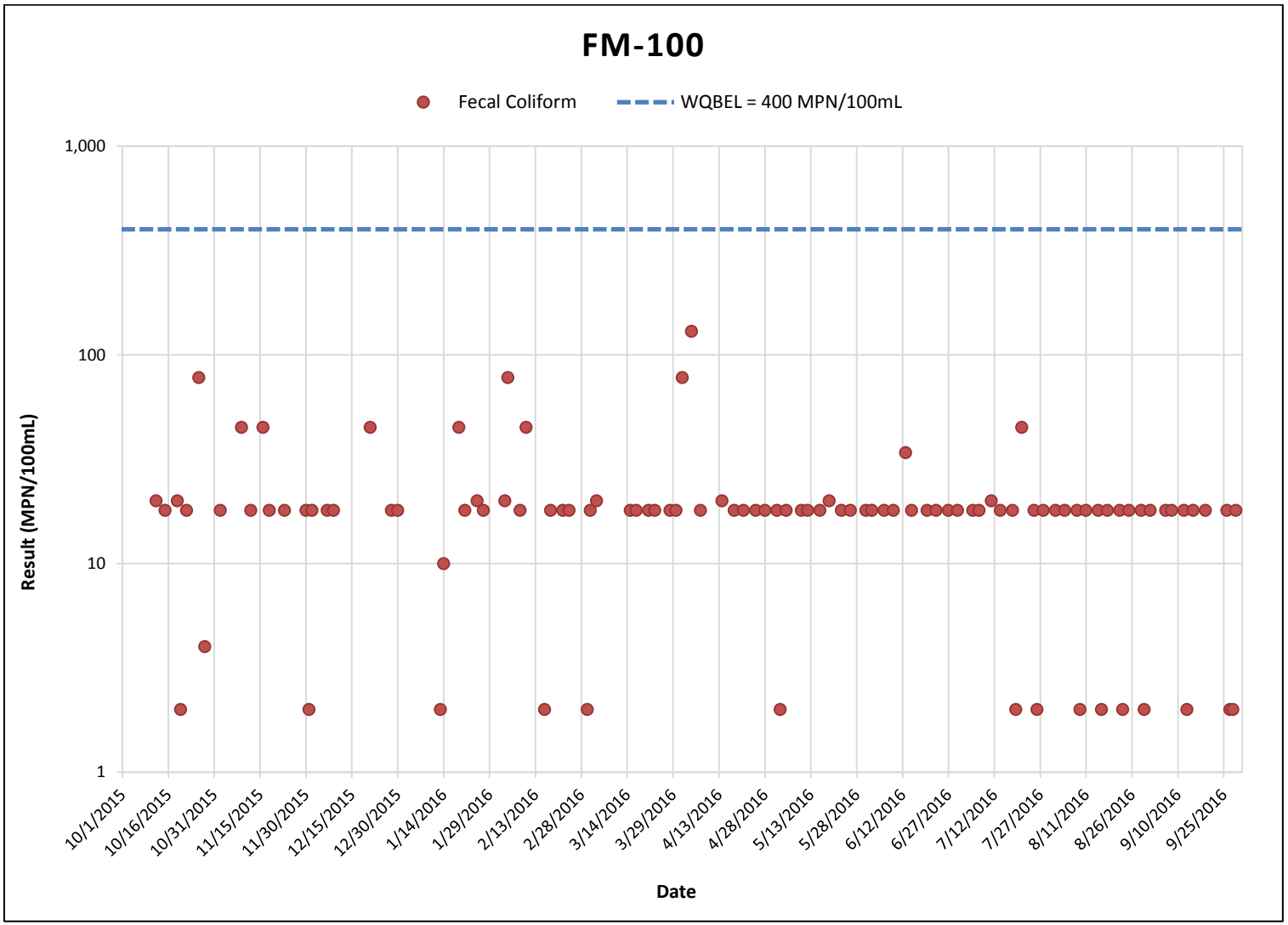

Figure 2-2
Fecal Coliform Concentrations at AB 411 Site FM-100

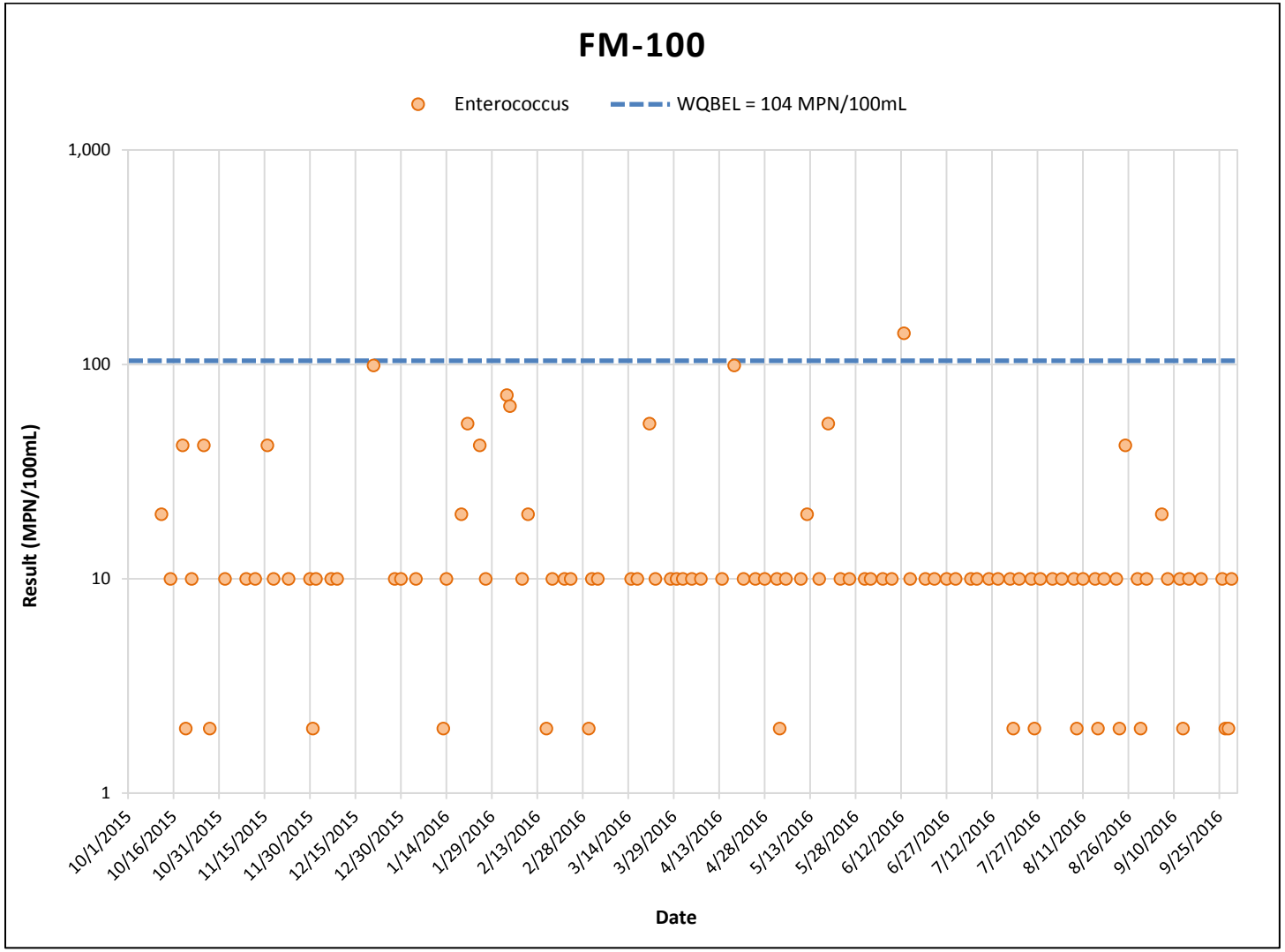

Figure 2-3
***Enterococcus* Concentrations at AB 411 Site FM-100**

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2.5 Hydromodification Monitoring Program

The Hydromodification Monitoring Program (HMP) was initially developed in response to the requirements of the 2007 MS4 Permit. The Monitoring Plan is defined in Chapter 8 of the HMP, and was updated by the San Diego County Regional Copermittees and accepted by the Regional Board in February 2014. The Effectiveness Assessment of the San Diego HMP Report will be submitted to the Regional Board in December 2016.

The Effectiveness Assessment of the San Diego HMP is intended to determine whether the requirements in the checklist for the Chapter 8 of the HMP were fully met. Monitoring results and program evaluations indicate that the HMP elements are protecting stream physical integrity (Regional Board, 2016). Additionally, the report provides answers regionally to three questions:

1. Do field observations confirm that the HMP appropriately defines the flow rate (expressed as a function of the 2-year runoff event) that initiates the movement of channel bed and bank material? The Effectiveness Assessment determined that the HMP does appropriately define the flow rate that initiates movement of channel bed and bank materials (Regional Board, 2016).
2. Are hydromodification mitigation facilities adequately meeting flow duration design criteria outlined in the HMP? The initial plan for this phase of the assessment was to couple best management practice (BMP) monitoring and channel monitoring. The slow pace of development during the economic recession in the first few years of the project did not allow this to happen. The study plan was changed and one BMP location was monitored during the 2015–2016 wet season for flow. Analysis for this one location over the year showed that significant peak flow attenuation occurred and during the monitored events the BMP performed as designed to prevent hydromodification (Regional Board, 2016).
3. What is the effect of development on receiving water channel cross-section stability downstream of urban development? The Effectiveness Assessment found that there were no major changes in channel stability within the nine monitored sites during the monitoring period, which included a relatively dry period due to drought conditions (Regional Board, 2016).

The report provided details of the small changes in channel geomorphology for the two sites located in the Los Peñasquitos WMA, as summarized in Table 2-2.

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Table 2-2
Los Peñasquitos WMA HMP Monitoring Site Summary

Site Name and Number	HMP Monitoring Type	Evidence of Erosion/ Deposition?	Repeat Assessment?	Susceptibility Class Changed?	Notes and interpretation. Is change (if observed) indicative of instability in channel or watershed?
Deer Valley RM-1	Reference	Small patches of up to 6 inches of fine sediment depositing in channel	Yes	Yes (Medium to High)	Fine sediment from watershed has formed a thin layer on the channel bed (originally gravel). Appears to be cyclical deposition; fines likely to be washed out in subsequent years. Fine sediment has caused changed classification. Site appears stable.
Flanders UM-2	Urban	~12 inches of upstream erosion and downstream deposition	Yes	No	Gravel pulse passing through site. Cyclical deposition of intermediate size bed–lining material, likely to be washed out in subsequent years. Site appears stable.

HMP = Hydromodification Monitoring Program; Source: (Regional Board, 2016)

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2.6 Sediment TMDL Monitoring

The Los Peñasquitos Lagoon (Lagoon) has been historically impacted by anthropogenic disturbances that caused excessive sedimentation and degradation of estuarine habitat. As a result, the Lagoon was placed on the Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments (303(d) List) for sedimentation and siltation. In response, on June 13, 2012, the Regional Board adopted Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate the Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon* (referred to as the Sediment TMDL) (Regional Board, 2012). This section summarizes the results of the 2015–2016 monitoring year. The Sediment TMDL Monitoring Compliance Report is provided in Attachment A.

2.6.1 Sediment TMDL Monitoring Methodology

The Los Peñasquitos Lagoon WMA Sediment TMDL Compliance Monitoring Program was designed to assess sediment transport within the three major tributaries that flow through the WMA into the Lagoon: Carroll Canyon Creek, Carmel Valley Creek, and Los Peñasquitos Creek (WMA creeks). The Monitoring Program provides data on (1) streambed conditions (particle sizes), (2) suspended sediment concentrations (SSC) during wet weather, (3) sediment delivery potential from the three WMA creeks discharging into the Lagoon, and (4) estimated total sediment loads to the Lagoon.

For vegetation monitoring, the seven vegetation types consistent with the categories historically used in the 2011 California State Parks analysis (California State Parks, 2011) of Lagoon vegetation from 2010 will be evaluated. These seven vegetation categories will be mapped using the methodology described below as part of the Sediment TMDL compliance monitoring to identify where and how changes in habitat are occurring in Los Peñasquitos Lagoon.

This Monitoring and Assessment Appendix summarizes the results of the Monitoring Program during fiscal year (FY) 2016 (July 1 2015, through June 30, 2016), provides a comparison with historical data, and summarizes the results of the monitoring program to determine compliance with the established TMDL.

Monitoring conducted by Amec Foster Wheeler Environment & Infrastructure, Inc. prior to and during the wet season included the following:

- Pre-wet-season (prior to October 1, 2015):
  - Volumetric streambed sampling for particle-size distribution
  - Pre-storm Wolman pebble counts
  - Photo documentation
  - Channel cross-section surveys

- Wet season (October 1, 2015, through April 30, 2016):
  - Storm bedload sampling for particle-size distribution
  - Post-storm Wolman pebble counts
  - Photo documentation
  - Instantaneous water discharge measurements
  - Continuous water discharge monitoring
  - Pollutograph sampling for SSC

During the 2015–2016 wet season, cross-sectional areas of streambeds at the monitoring locations were updated and used to revise the head-versus-flow tables. Multiple field flow measurements using wading rods and StreamPro Acoustic Doppler Current Profilers (ADCPs) were used to verify and calibrate the head-versus-flow tables. The primary change to the head-versus-flow tables was extending the Los Peñasquitos Creek table to higher stages, because the stages measured during the large storms in early January 2016 exceeded the tables previously developed.

2.6.2 Sediment TMDL Monitoring Results

Hydrology and Analysis

Three storm events (storms) were monitored during the 2015–2016 wet season (Table 2-3). Total rainfall during monitored storms was 2.94 inches, representing 31 percent (%) of the 9.48 inches of total wet season rainfall. A total of 21 "wet weather days" (days with more than 0.1 inch of rainfall) were observed, compared with 11 wet weather days in 2013–2014 and 14 wet weather days in 2014–2015.

Table 2-3
Rainfall Amounts for 2015–2016 Monitored Wet Weather Events

Event	Dates	Rainfall Total[1] (inches)
1	January 5–6, 2016	1.55
2	January 31, 2016	0.49
3	March 6–8, 2016	0.90

1. Rainfall was measured at the Los Peñasquitos Creek monitoring location rain gauge, except during the event on January 5-6, 2016, when it was replaced by Carmel Valley Creek monitoring location rain gauge because of equipment malfunction. Rainfall totals reported are only during the monitoring period. Rainfall continued later on the January 6, 2016, after sampling concluded for Event 1.

SSC Results

Data collected during the three storms showed that changes in SSC were strongly controlled by flow. In general, data collected over three wet seasons (2013–2016) indicated that SSCs were higher at or near peak flow and during the rising limb of the hydrograph for smaller storms, suggesting supply-limited sediment transport. This finding is particularly evident in results of the smaller storms (Events 2 and 3) during the 2015–2016 wet season. For the larger storm (Event 1), SSCs in all three WMA creeks remained high throughout the storm and mostly varied with flow, suggesting that the unusually high flows may have mobilized previously deposited sediments that were stored by in-channel vegetation and streambed.

Bedload and Pebble Count Results

Collection of bedload samples was attempted during each monitored event at the three monitoring locations using both trap samplers (installed in streambed) and manual bedload samplers. Bedload sampling proved challenging and samplers were frequently displaced or buried, making it impossible to determine sampled volume. One manual sample was successfully collected during low flow conditions, but may not be representative of the bedload throughout the storm, particularly at peak flow conditions. Visual observations and photos taken pre- and post-storm documented large amounts of cobble and streambed sediment deposited in the concrete-lined portion of Carroll Canyon Creek, but it is not known whether, or how much of, this material was transported into the Lagoon.

Post-storm pebble counts were conducted on six occasions during the 2015–2016 wet season. Results showed that there was a shift toward a higher proportion of sands (i.e., larger particle size) after the series of large rain events in early January 2016 at Carroll Canyon Creek, which typically has higher velocity flows compared with the other two creeks. Pebble count data after Events 2 and 3 show a return to a lower proportion of sands and more fines, likely due to lower intensity storms. This trend is less apparent or not detected in the other two creeks. The lack of a clear shift after the large January 2016 storms is most likely due to the lower velocities observed in these two creeks, but may also be attributable to sediment supply within the creeks (i.e., higher proportion of fines compared to sands upstream).

Sediment Loads from Watersheds During Measured Storms

Flow-weighted event mean concentrations (EMCs) and total sediment load estimates were calculated using SSC and flow data for three storms during the 2015–2016 wet season and the two previous years. In the two previous wet seasons and a previous estimate (Weston Solutions Inc., 2009), Carroll Canyon Creek typically accounted for 80% to 90% of the sediment loads to the Lagoon, with the remaining 10% to 20% supplied mostly by Los Peñasquitos Creek, and a small percentage (1%) by Carmel Valley Creek. Data collected during the 2015–2016 wet season indicated that relative contributions measured this season differ greatly from previous sediment load measurements and estimates, primarily because of unusually intense storms and resulting high flow rates and large flow volumes in Los Peñasquitos Creek. Because of these unusually high flows, Los Peñasquitos Creek accounted for the majority (~60%) of the total sediment load

during the 2015–2016 wet season. Carroll Canyon Creek supplied approximately 39%, and Carmel Valley Creek supplied approximately 1%.

These estimated annual sediment loads are preliminary values, based on the limited data set collected during the 2013–2014, 2014–2015, and 2015–2016 wet seasons (nine total events). Data collection during future storm events are required to further refine these sediment load estimates, particularly for non-monitored events.

Estimated Annual Sediment Loads

The annual sediment load (23,500 tons per year) was estimated by multiplying the average of the three daily load estimates at each site (per storm) by the number of wet days per year (21 in 2015–2016) ("average estimation method"). This approach can yield skewed results by averaging a single large event over several smaller events, raising the total estimated load. In an effort to better represent load estimations for non-monitored storms, annual sediment load was also estimated using a regression between maximum one-hour rainfall-intensity and estimated loads during monitored events. The regression relationship between one-hour rainfall intensity and sediment loads was strong in previous wet seasons, but the approach was unreliable with the data from the 2015–2016 wet season, likely because of the unusually high rainfall intensities. The annual sediment load estimates from the rainfall intensity method yielded significantly different results than the average estimation method, leading to uncertainty in the annual sediment load estimates. Using the rainfall intensity method, sediment load for the 2015–2016 wet season was estimated to be 688 tons per year compared with the estimated total of 23,500 tons per year calculated using the average estimation method. Relationships between flow and SSC were investigated, but the relationships were not strong at all monitoring locations, and the approach was not extended further. All three methods present different challenges, and future work will be performed to develop an improved method for estimating annual total sediment loading, primarily focusing on regression relationships between maximum event flow rate and total event sediment load.

Total Sediment Load and Waste Load Allocation (WLA)

Based on monitoring during the 2015–2016 wet season, the total sediment load estimate of 23,500 tons per year is significantly above the WLA allowed by the Sediment TMDL (2,580 tons per year). Continued compliance monitoring at the sediment TMDL locations is planned for FY 17.

2.6.3 Vegetation Monitoring Methodology

The vegetation types in Los Peñasquitos Lagoon are monitored annually, in the fall, to measure changes in the spatial extent of the vegetation types. The monitoring is conducted via aerial photography and/or land-based survey methods that are consistent with the methodology used to calculate the numeric target. Ground truthing (i.e., land-based survey methods) of aerial mapping may be performed to distinguish among vegetation types.

The vegetation mapping uses the preferred vegetation classification that is necessary to document attainment of the Sediment TMDL goals. At the minimum, mapping distinguishes with high confidence between the two major vegetation types called out in the Sediment TMDL, tidal saltmarsh and native-dominated non-tidal saltmarsh.

The Sediment TMDL Staff Report and its attachments (Regional Board, 2012) describe the methods that were used for mapping Los Peñasquitos Lagoon pursuant to the development of the numeric target for Lagoon restoration. Aerial photos were digitized onscreen at a 1:2,500 scale and were mapped into generalized classifications that could be reliably interpreted without field verification. Vegetation monitoring currently utilizes the same methodology. Aerial photographs are taken at the height of the growing season (late summer to early fall) for the monitoring year. Vegetation types are mapped as described, with the polygons for each type totaled to indicate the number of acres of each type that were identified. Changes in vegetation types from the previous mapping efforts are quantified to determine whether progress is being made toward the Sediment TMDL numeric target.

2.6.4 Vegetation Monitoring Results

Vegetation was mapped in the Peñasquitos Lagoon using aerial imagery collected in October 2016 to determine whether progress is being toward the standards set in the TMDL documents.

For the purposes of Sediment TMDL compliance, 33 Western San Diego County Vegetation Classifications were consolidated into the seven Sediment TMDL classifications to develop a provisional crosswalk. These classifications are tidal saltmarsh, non-tidal saltmarsh, non-tidal saltmarsh infested with *Lolium*, freshwater marsh, southern willow scrub/mulefat scrub, herbaceous wetland, and upland. Newly designated acreage for the seven TMDL categories is provided in Table 2-4. The full crosswalk and acreage for the 33 Western San Diego County Vegetation Classifications are provided in Attachment C. An updated map of TMDL vegetation types from the October 2016 aerial survey is in Figure 2-4.

Table 2-4
Los Peñasquitos Lagoon TMDL Vegetation Acreage

TMDL Vegetation and Baseline Vegetation	Baseline Area (Acres)	October 2016 Area (Acres)	Difference from Baseline to 2016 (acres)
Developed Total	429.66	429.66	0
Freshwater Marsh Total	64.42	63.27	-1.15
Herbaceous Wetland Total	7.95	7.99	+0.04
Non-Tidal Saltmarsh Total	106.53	106.82	+0.29
Non-Tidal Saltmarsh with Lolium Total	60.46	60.35	-0.11
Southern Willow Scrub Total	140.82	140.87	+0.05
Tidal Saltmarsh Total	186.61	187.36	+0.75
Upland Total	203.70	204.04	+0.34
Water Total	3.53	3.53	0
Grand Total	**1,203.68**	**1,203.89**	**+0.21**

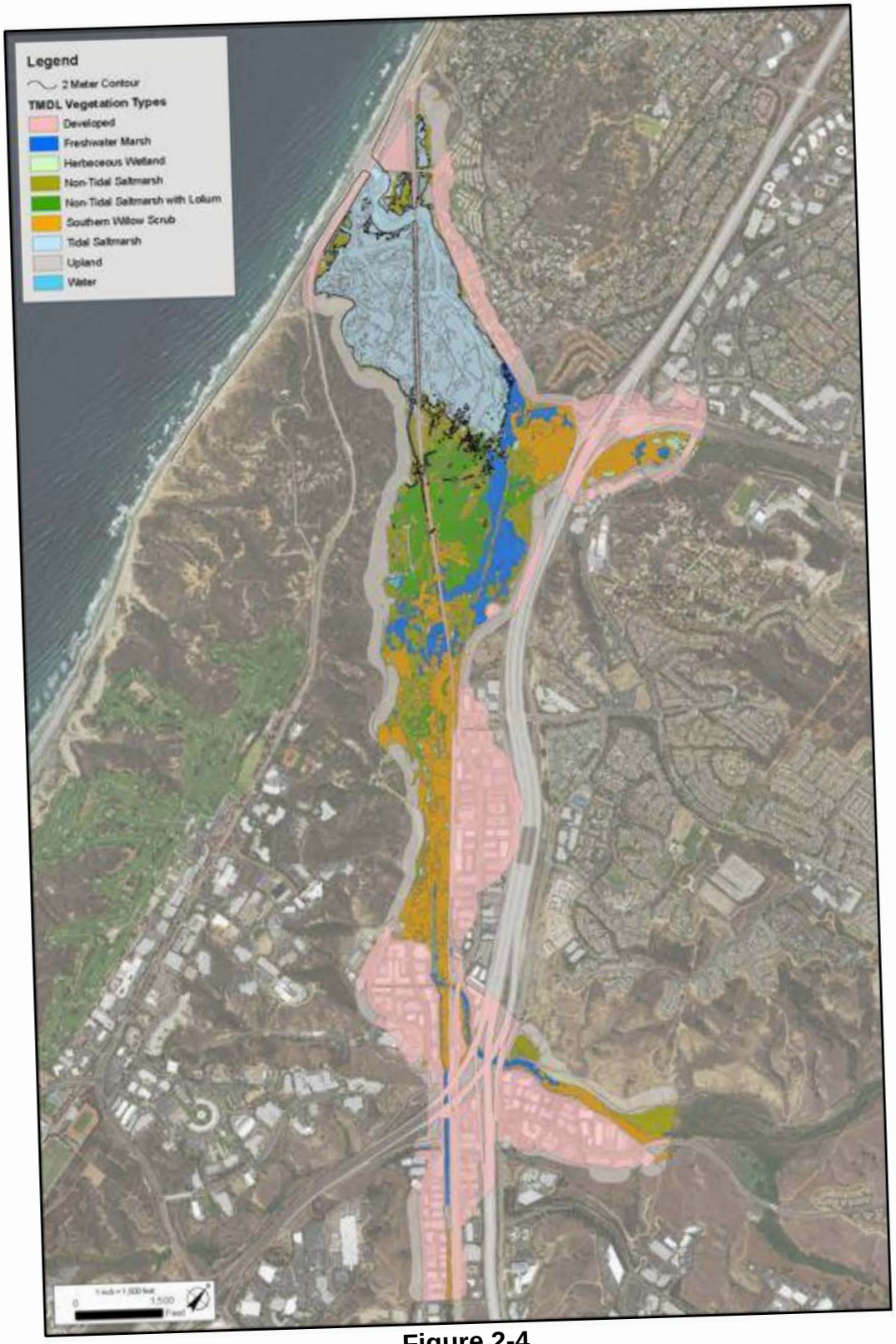

Figure 2-4
October 2016 Vegetation Type Classification

2.7 Bacteria TMDL Monitoring

The 2015–2016 Los Peñasquitos WMA Bacteria Total Maximum Daily Load (Bacteria TMDL) compliance monitoring program was designed to meet the requirements of the MS4 Permit. The Bacteria TMDL monitoring program assesses the conditions of the receiving waters and has the following objectives:

- Characterize levels of bacteria concentrations at compliance monitoring locations.
- Track progress toward meeting the Bacteria TMDL numeric targets.

FIB sampling was completed for the compliance monitoring season (October 2015 through September 2016). Dry weather samples were collected at least monthly on dry weather days from November 1, 2015, through March 31, 2016. Dry weather samples were collected at least weekly in October 2015 and from April 1, 2016, through September 30, 2016. Compliance monitoring location information is presented in Table 2-5. The Bacteria TMDL Compliance Report is provided in Attachment B.

Annual Compliance Reports summarize FIB concentrations and key hydrologic data by season. Compliance is assessed by comparing analytical results for *Enterococcus*, fecal coliform, and total coliform with applicable receiving water limitations (RWLs), in accordance with the Bacteria TMDL requirements in Attachment E of the MS4 Permit. The RWLs are a combination of numeric targets for bacteria density and allowable exceedance frequencies. The single-sample maximum numeric targets are required to be achieved only during wet weather with a 22% final allowable exceedance frequency. For dry weather days, the 30-day geometric mean numeric targets must be achieved with a 0% exceedance frequency. The compliance schedule includes interim milestones that must be achieved to demonstrate progress prior to attaining full compliance with the TMDL. Wet weather samples were collected for three wet weather events, including an extreme wet weather event in January 2016 that produced over 5 inches of rainfall as measured at the Miramar Naval Air Station rain gauge.

Table 2-5
TMDL Monitoring Station

Monitoring Location	Monitoring Identification	Latitude	Longitude
Los Peñasquitos River Outlet/Beach	FM-100	32.935074626	–117.261955166

Summary of Results for 2015–2016

Analytical results for total coliform, fecal coliform, and *Enterococcus* at the Los Peñasquitos River Outlet were compared with numeric targets established in the Bacteria TMDL and MS4 Permit. Results are as follows:

- During wet weather, the receiving waters at the Los Peñasquitos River Outlet/Beach achieved a 0% single-sample maximum exceedance frequency for fecal coliform and a 13% single-sample maximum exceedance frequency for total coliform and *Enterococcus*. FM-100 is in compliance with final wet weather single-sample maximum RWLs.
- During the wet season, which evaluates a combination of both wet and dry weather samples, FM-100 achieved a 0% geometric mean exceedance frequency and is in compliance with final dry weather geometric mean RWLs.
- During the dry season, when recreational activities occur with more regularity, FM-100 achieved a 0% exceedance frequency and is in compliance with the final dry weather geometric mean RWLs.

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3 Dry Weather Outfall Assessments and Illicit Discharges

The purpose of this program is to identify non-storm water and illicit discharges within each Responsible Agency's jurisdiction, determine which discharges are transient flows and which are persistent flows, and prioritize the dry weather MS4 discharges that will be investigated and eliminated. The dry weather MS4 outfall monitoring component involves the following types of data collection activities for the Los Peñasquitos WMA:

- Dry Weather MS4 Outfall Field Screening: inspecting major outfalls during dry weather conditions to identify and prioritize persistently flowing outfalls.
- Dry Weather Persistent MS4 Outfall Discharge Monitoring: testing the discharge for various pollutants and comparing the results with the NALs.

3.1 Non-Storm Water MS4 Outfall Monitoring Data

During the 2015–2016 monitoring season (October 2015 through September 2016), the Responsible Agencies implemented the first year of dry weather outfall discharge monitoring in accordance with Provision D.2.b of the MS4 Permit. The goals of dry weather outfall monitoring are to:

- Identify non-storm water and illicit discharges within each Responsible Agency's jurisdiction.
- Prioritize dry weather MS4 discharges that will be investigated and eliminated.
- Assess effectiveness of JRMP programs toward effectively prohibiting non-storm water discharges into the MS4.

Dry weather data collected at major MS4 outfalls are provided in Attachment D.1. Non-storm water MS4 outfall observations data are provided in Attachment D.2. Attachment E includes a QA/QC summary of the dry weather outfall data collected. Details of the monitoring methodology are provided in the Los Peñasquitos WMA MS4 Outfall Monitoring Plan, available on the Project Clean Water website (Project Clean Water, 2016). The following sections present the results of dry weather discharge monitoring in the Los Peñasquitos WMA.

3.2 Non-Storm Water Action Level Comparisons

Data collected as part of the dry weather MS4 outfall discharge monitoring were compared with NALs per the MS4 Permit. The results are summarized in Tables 3-1 through 3-3.

The MS4 Permit NALs vary according to the receiving water of the MS4 discharge (i.e., there are separate NALs for discharges to ocean surf zone, lagoons/harbors/bays/estuaries, and inland surface waters). In the Ocean Surf Zone (Table 3-1), none of the samples collected had total coliform and fecal coliform concentrations that exceeded their respective NALs. Both samples collected had concentrations of *Enterococcus* that exceeded the NAL.

Table 3-1
NAL Comparison for MS4 Outfalls to Ocean Surf Zone

Parameter	NAL	Monitoring Location	
		City of Del Mar	
		S-12	
		6/30/2016	8/12/2016
Total Coliform	10000/1000 MPN/100 mL*	1600	**30000**
Fecal Coliform	400 MPN/100 mL	50	ND
Enterococcus	104 MPN/100 mL	**1600**	**500**

Bold = exceedance of NAL
MPN/100 mL = most probable number per 100 milliliters; ND = not detected; NAL = non-storm water action level
*The NAL is 1,000 MPN/100mL when the fecal/total coliform ratio exceeds 0.1.

A total of 11 major MS4 outfalls were monitored that flow into inland surface waters. Monitoring results by jurisdiction are shown in Tables 3-2 and 3-3. The City of Poway and City of San Diego monitor six and five major MS4 outfalls, respectively, that flow to inland surface waters in the Los Peñasquitos WMA. The majority of results were below the NALs. A total of 276 of the 366 separate results were below appropriate NALs (including 107 non-detects). NALs were exceeded for concentrations of *Enterococcus*, fecal coliform, iron, manganese, pH, total nitrogen, and total phosphorous, collectively, within these outfalls. Some of these analytes are found in groundwater and may be from unidentified groundwater intrusion. Other analytes will be addressed by the strategies developed by the Responsible Agencies. The Los Peñasquitos WMA Responsible Agencies have just begun implementation of the WQIP. They plan to continue implementing the strategies without modification, and to work toward eliminating dry weather flows. Additionally, they have implemented their IDDE programs, as summarized in Section 3.3.1, to identify sources of illicit dry weather discharges.

Table 3-2
NAL Comparison for MS4 Outfalls to Inland Surface Waters – City of Poway

Parameter	NAL	Monitoring Locations									
		City of Poway									
		282-1749, 2[1]		282-1749, 3[2]		282-1749, 4(S)[1]	294-1749, 2[3]	298-1749, 2[3]		298-1749, 5[4]	
		7/28/2016	8/1/2016	7/28/2016	8/1/2016	7/28/2016	8/1/2016	8/1/2016	8/2/2016	7/28/2016	8/2/2016
Dissolved Cadmium	** µg/L	ND (10.52)	ND (10.52)	0.4 (5.59)	ND (6.25)	0.9 (10.52)	ND (14.45)	ND (14.45)	ND (14.45)	ND (5.91)	ND (5.91)
Dissolved Chromium III	** µg/L	0.2 (994.36)	ND (994.36)	0.4 (491.97)	ND (556.28)	0.6 (994.36)	ND (1417.87)	ND (1417.87)	ND (1417.87)	0.2 (523.19)	ND (523.19)
Dissolved Chromium VI	16 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Copper	** µg/L	3 (53.9)	4 (53.9)	13 (25.87)	7 (29.4)	5 (53.9)	5 (78.05)	2 (78.05)	1 (78.05)	8 (27.58)	9 (27.58)
DO	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	16	8.4	19.4	10.1	16.9	9	9.1	8.4	11.4	8.4
Enterococcus	61 MPN/100 mL	**900**	**3000**	**17000**	**5000**	**900**	**3000**	**1700**	**1700**	**1300**	**22000**
Fecal Coliform	400 MPN/100 mL	**1700**	**5000**	**13000**	**23000**	**3000**	**23000**	**13000**	**13000**	**8000**	**300000**
Total Iron	0.3 mg/L	0.108	0.128	**0.479**	0.116	0.150	**0.358**	0.095	0.048	**0.925**	**1.07**
Dissolved Lead	** µg/L	3 (22.37)	0.4 (22.37)	2 (9.43)	0.1 (11)	0.1 (22.37)	ND (33.77)	0.1 (33.77)	0.6 (33.77)	ND (10.19)	ND (10.19)
Total Manganese	0.05 mg/L	0.003	0.003	0.031	0.004 J	0.006	**0.061**	**0.053**	0.028	0.019	0.038
MBAS	0.5 mg/L	ND	ND	0.4 J	0.1 J	0.1	ND	ND	ND	0.1	ND
Dissolved Nickel	** µg/L	2 (307.47)	ND (307.47)	4 (148.63)	0.2 (168.75)	2 (307.47)	ND (443.58)	ND (443.58)	0.8 (443.58)	3 (158.39)	3 (158.39)
pH	Not in the range of 6.5-8.5	6.6	6.5	6.5	6.8	6.5	7.2	6.8	7.5	6.5	7.3
Dissolved Silver	** µg/L	ND (127.89)	ND (127.89)	ND (29.18)	ND (37.76)	ND (127.89)	ND (269.44)	ND (269.44)	ND (269.44)	ND (33.2)	ND (33.2)
Total Nitrogen	1.0 mg/L	**5.8**	**11.3**	**7.7**	**7.00**	**53.1**	**2.3**	**12.5**	**7.9**	**15.3**	**9.1**
Total Phosphorus	0.1 mg/L	0.09	0.23	**0.5**	**0.63**	**0.98**	**0.62**	**0.24**	**0.84**	**0.86**	**0.66**
Turbidity	20 NTU	1.66	1.28	13.11	0.31	8.1	1.97	0.88	1.21	13.17	18.11
Dissolved Zinc	** µg/L	6 (700.36)	7 (700.36)	329 (338.18)	19 (384.02)	20 (700.36)	1 (1010.97)	3 (1010.97)	2 (1010.97)	3 (360.41)	4 (360.41)

Bold = exceedance of NAL
** = California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent non-storm water action level
µg/L = micrograms per liter; mg/L = milligrams per liter; MPN/100 mL = most probable number per 100 milliliters; NA = not analyzed; NAL = non-storm water action level; ND = not detected; NTU = nephelometric turbidity unit; - = missing data; ( ) = Numbers in parentheses adjacent to analytical results are CTR Freshwater Continuous Concentration Hardness dependent values from 40 Code of Federal Regulations (CFR) 131.38(b)(1) calculated using the hardness result of the receiving water for each designated monitoring location:
[1]282-1749, 2 - RW; [2]282-1749, 3; [3]298-1749, 2 - RW; and [4]298-1749, 5 - RW

Table 3-3
NAL Comparison for MS4 Outfalls to Inland Surface Waters – City of San Diego

Parameter	NAL	Monitoring Locations									
		City of San Diego									
		DW0025[1]		DW0247[1]		DW0036[2]		DW0024[1]		DW0429[1]	
		2/4/2016	4/25/2016	3/16/2016	4/25/2016	2/4/2016	4/25/2016	2/4/2016	4/25/2016	3/16/2016	4/25/2016
Dissolved Cadmium	** µg/L	ND (7.87)	0.18 (9.78)	ND (7.76)	0.22 (9.78)	ND (14.79)	0.16 (18)	ND (7.87)	ND (9.78)	ND (7.76)	ND (9.78)
Dissolved Chromium III	** µg/L	ND (719.1)	1.4 (916.92)	ND (708.37)	0.84 (916.92)	ND (1454.63)	1.2 (1812.05)	ND (719.1)	1.3 (916.92)	ND (708.37)	2.6 (916.92)
Dissolved Chromium VI	16 µg/L	ND	ND	ND	ND	0.29	ND	ND	ND	ND	ND
Dissolved Copper	** µg/L	6.6 (38.44)	6.4 (49.53)	ND (37.84)	ND (49.53)	ND (80.16)	13 (100.81)	22 (38.44)	8.8 (49.53)	5.5 (37.84)	3.7 (49.53)
DO	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	9.65	8.87	9.53	9.12	10.78	7.38	10	9.31	9.37	9.03
Enterococcus	61 MPN/100 mL	**11000**	**340**	20	**200**	**1000**	**2800**	**100**	**1300**	**100**	**580**
Fecal Coliform	400 MPN/100 mL	**1100**	310	20	18	80	**7900**	20	**460**	20	18
Total Iron	0.3 mg/L	**0.99**	**1.2**	0.051	ND	**0.35**	0.14	**0.46**	**1.5**	**0.89**	**0.97**
Dissolved Lead	** µg/L	ND (15.12)	ND (20.3)	ND (14.85)	ND (20.3)	ND (34.76)	ND (44.33)	ND (15.12)	ND (20.3)	ND (14.85)	ND (20.3)
Total Manganese	0.05 mg/L	**0.052**	0.047	ND	0.00083	**0.096**	**0.079**	0.039	**0.16**	ND	0.041
MBAS	0.5 mg/L	0.2	0.29	ND	ND	0.14	0.15	0.19	0.15	0.069	0.19
Dissolved Nickel	** µg/L	ND (219.99)	3.3 (282.77)	ND (216.6)	ND (282.77)	ND (455.46)	2.3 (571.5)	ND (219.99)	2.9 (282.77)	ND (216.6)	1.7 (282.77)
pH	Not in the range of 6.5-8.5	8.5	**8.7**	8.4	**8.9**	8.0	7.9	**8.8**	**8.6**	**8.6**	**8.6**
Dissolved Silver	** µg/L	ND (64.75)	ND (107.87)	ND (62.74)	ND (107.87)	ND (284.32)	ND (451.02)	ND (64.75)	ND (107.87)	ND (62.74)	ND (107.87)
Total Nitrogen	1.0 mg/L	**6.6**	**3.3**	**1.4**	0.16	0.87	**1.7**	**6.6**	**4.0**	**1.4**	0.99
Total Phosphorus	0.1 mg/L	**0.13**	**0.22**	0.027	ND	**0.14**	**0.22**	**0.17**	**0.27**	**0.12**	0.073
Turbidity	20 NTU	5.83	17.92	0.04	1.23	6.89	2.55	1.64	5.9	2.96	8.64
Dissolved Zinc	** µg/L	13 (500.84)	9.8 (644.01)	ND (493.12)	ND (644.01)	ND (1038.1)	19 (1303.02)	11 (500.84)	ND (644.01)	23 (493.12)	12 (644.01)

Bold = exceedance of NAL
** = California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent non-storm water action level
µg/L = micrograms per liter; J = estimate; mg/L = milligrams per liter; MPN/100 mL = most probable number per 100 milliliters; ND = not detected; NA = not analyzed; NAL = non-storm water action level; NTU = nephelometric turbidity unit; - = missing data; ( ) = Numbers in parentheses adjacent to analytical results are CTR Freshwater Continuous Concentration Hardness dependent values from 40 Code of Federal Regulations (CFR) 131.38(b)(1) calculated using the hardness result of the receiving water for each designated monitoring location: [1]LPCMLS and [2]LPCTWAS3

3.3 Non-Storm Water MS4 Outfall Monitoring Data Assessments

Assessments of jurisdictional MS4 monitoring programs were conducted individually by the jurisdictions, watershed-wide. Per Provision D.4. of the MS4 Permit, assessments include:

- Progress of IDDE programs toward effectively prohibiting non-storm water and illicit discharges into the MS4 within Copermittees' jurisdictions.
- Identification of known and suspected controllable sources (e.g., facilities, areas, land uses, pollutant-generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the WMA, sources of transient and persistent flows within the Copermittee's jurisdiction in the WMA that have been reduced or eliminated, and modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in Copermittee inventories.
- Based on the dry weather MS4 outfall discharge field screening monitoring, assessment and reporting of the following:
  - For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identification of the known and suspected sources within the Copermittee's jurisdiction in the WMA that may cause or contribute to the NAL exceedances.
  - Calculations or estimates of the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in the Copermittee's jurisdiction identified as having persistent dry weather flows during the monitoring year.

Each Copermittee is required to conduct field screening to determine which non-storm water MS4 outfall discharges are transient or persistent non-storm water flows. Data collected during dry weather MS4 outfall monitoring are used to prioritize the non-storm water MS4 discharges to be investigated and eliminated.

3.3.1 Illicit Discharge Detection and Elimination Program Data and Assessment

Los Peñasquitos WMA Responsible Agencies implemented IDDE program activities to detect and eliminate illicit discharges and improper disposal of wastes into the MS4. A total of 501 non-storm water discharges were detected during the course of the monitoring year. Illicit discharge investigations included visual observations, additional site visits, field sampling, photo documentation, and follow-up/enforcement activities, as appropriate.

In the course of investigating these non-storm water discharges, 465 non-storm water discharges were eliminated, as shown in Table 3-4. The most common source of non-storm water and illicit discharges is generally irrigation runoff. Other significant sources include groundwater seepages, commercial washing activities, chlorinated pool discharges, and illicit discharges/connections.

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Table 3-4
Dry Weather Discharge Investigations and Discharges Eliminated in the 2015–2016 Monitoring Year

Copermittee	Number of IDDE Investigations Initiated	Number of Sources of Non-Storm Water Discharges Identified	Number of Non-Storm Water Discharges Eliminated	Number of Sources of Illicit Discharges or Connections Identified	Number of Illicit Discharges or Connections Eliminated
City of San Diego	518	442	434	437	429
City of Del Mar	5	5	5	2	2
City of Poway	63	53	25	49	25
County of San Diego	3	1	1	0	0
Total	**589**	**501**	**465**	**488**	**456**

IDDE = illicit discharge detection and elimination

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3.3.2 Classification of Major MS4 Outfalls Within each Copermittee's Jurisdiction

To address the MS4 Permit requirements, Responsible Agencies determined the number of major MS4 outfalls within their jurisdictions within the WMA. Table 3-5 provides the number of major outfalls for each Responsible Agency. Each major outfall was classified as follows:

- Persistent – having flowing, pooled, or ponded water more than 72 hours after a measureable rainfall event of 0.1 inch or greater during the three consecutive most recent monitoring and/or inspection events;
- Transient – having flowing, pooled, or ponded water during at least one but not on all three most recent consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥0.1 inch;
- Tidal – having persistent or transient flow with ocean tides as the source;
- Dry – having no flowing, pooled, or ponded water during the previous three consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥0.1 inch; and
- Unknown – site cannot be evaluated, or has not been visited enough times to determine flow status.

In the Los Peñasquitos WMA, 39% of the major outfalls were classified as persistently flowing outfalls. Table 3-6 and Figure 3-1 presents percentages of all classifications of major outfalls in the 2015–2016 monitoring year. No outfalls were classified as tidal during the monitoring period.

Table 3-5
Number of Major Outfalls in Los Peñasquitos WMA

Copermittee	Total Number of Major Outfalls	Number of Major Outfall Stations Visited	Number of Major Outfall Visual Observations	HA Name	HA Number	Number of Major Outfalls per HA
City of San Diego[1]	200	200[3]	205[4]	Miramar Reservoir	906.1	162
				Poway	906.2	38
City of Del Mar[2]	1	1	15	Miramar Reservoir	906.1	1
City of Poway[2]	32	32	53	Poway	906.2	32
County of San Diego[5]	0	NA	NA	NA	NA	NA
Total	**233**	**233**	**273**			

1. The City of San Diego has 502 outfalls within the City jurisdiction. The City of San Diego, in accordance with Provision D.2.a(2).(a).(iv) of the MS4 Permit, is required to screen 500 sites city wide once per year. The City is not required to screen 500 sites within each watershed.
2. For Responsible Agencies with fewer than 125 major outfalls in the WMA, 80% of total major outfalls presented in the table must be screened twice per year.
3. Proxy sites were visited for 109 major outfalls. Proxy sites were visited when field crews were unable to access the outfall.
4. Observations of multiple upstream proxy sites for the same outfall counted as a single observation if they occurred on the same day.
5. County of San Diego has no major MS4 outfalls in the Los Peñasquitos WMA.

HA = hydrologic area; NA = not applicable

Table 3-6
2015–2016 Flow Classification of Major Outfalls in the Los Peñasquitos WMA

Copermittee	HA Number	Persistent	Transient	Dry	Unknown
City of San Diego	906.1	66	51	43	2
	906.2	15	11	10	2
	Jurisdictional Total	81	62	53	4
City of Del Mar	906.1	1	0	0	0
City of Poway	906.2	9	8	15	0
County of San Diego	Not Applicable. No major MS4 outfalls.				
WMA Total		**91**	**70**	**68**	**4**

HA = hydrologic area; MS4 = municipal separate storm sewer system; WMA = Watershed Management Area

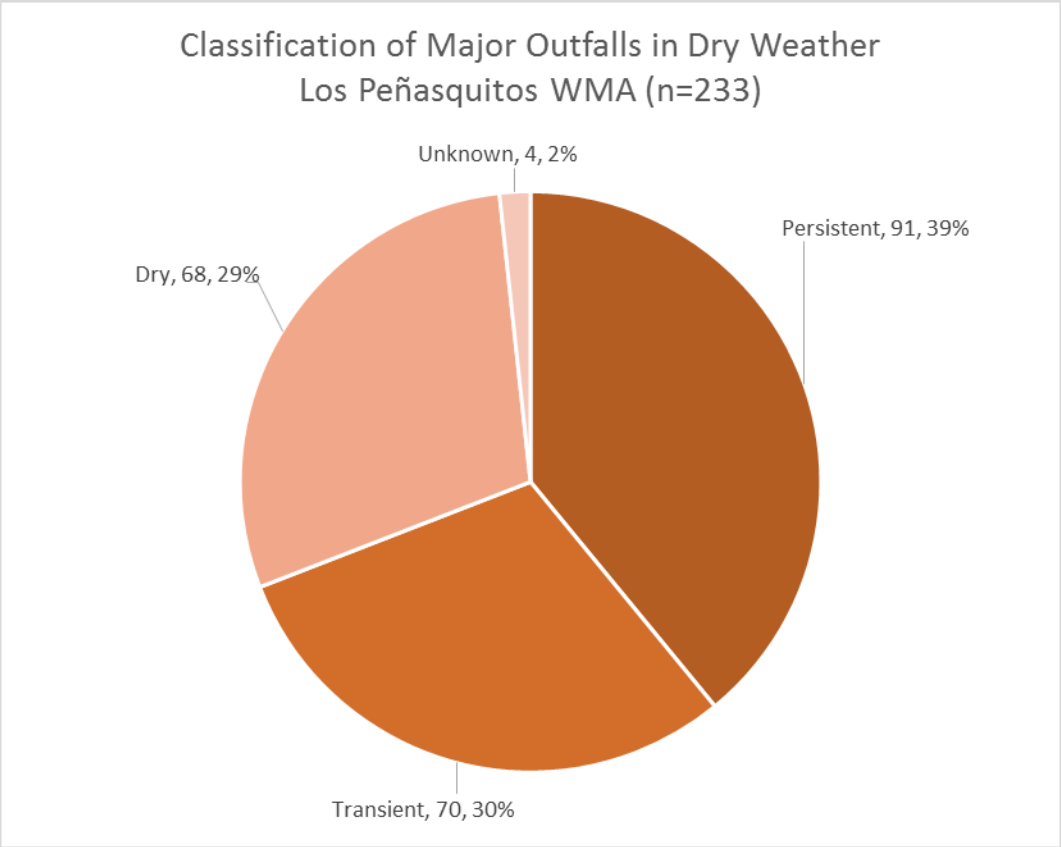

Figure 3-1
Classification of Major Outfalls in Los Peñasquitos WMA

3.3.3 Visual Observations at Major MS4 Outfalls

MS4 outfall visual assessments were performed as required by Table D-5 of the MS4 Permit. Table 3-7 presents the results of visual assessments with regard to trash, including whether trash was observed during each visual observation event, and, if so, the approximate number of pieces of trash. During the 2015–2016 monitoring year, greater than 99% of visual observations indicated no or low (<50 pieces) presence of trash. Additional visual observations are provided in Attachment D.2.

Table 3-7
Trash Assessment Visual Observations in the 2015–2016 Monitoring Year

Copermittee	HA	Number of Major Outfall Visual Observations with Trash Assessments[1]	Number of Observations with No Trash Present	Number of Observations with Trash Present		
				Low (<50 pieces)	Medium (50 to 400 pieces)	High (>400 pieces)
City of San Diego[2]	906.1	180	93	86	1	0
	906.2	41	29	12	0	0
Subtotal		**221**	**122**	**98**	**1**	**0**
City of Del Mar	906.1	15	10	5	0	0
Subtotal		**15**	**10**	**5**	**0**	**0**
City of Poway	906.2	53	30	23	0	0
Subtotal		**53**	**30**	**23**	**0**	**0**
Total		**289**	**162**	**126**	**1**	**0**

1. Trash assessments not conducted for all visual observations. Values in this column may not match total numbers of visual observations in Table 3-5.
2. Trash assessments include observations at multiple upstream proxy sites representing a single outfall. The number of trash assessments is greater than the number of visual observations listed in Table 3-5.

HA = hydrologic area

3.3.4 Controllable and Non-Controllable Sources of Flow

The MS4 Permit requires classification of sources of observed flowing or ponded water in dry weather. Known, controllable sources, such as irrigation runoff and commercial washing activities, were identified by observation. Other suspected sources of flow were noted and may have included pool/spa leaks or overflows. Non-controllable sources were also identified during dry weather visual observations and included mostly groundwater seepage. Unidentified sources of flow were also noted during dry weather visual observations. Tables 3-8 and 3-9 present results of visual observation identifications of controllable and non-controllable sources, respectively, made in the 2015–2016 monitoring year.

Table 3-8
Controllable Sources of Flow Observed in the 2015–2016 Monitoring Year

Copermittee	Number of Flowing or Ponded Observations at Major Outfall[1]	Known Controllable Sources		Suspected Controllable Sources	
		Irrigation Runoff	Other Discharges	Irrigation Runoff	Other Discharges
City of San Diego	123	9	4[2]	42	1[3]
City of Del Mar	13	Source information collected in IDDE program.			
City of Poway	19	11	0	0	0
Total	**156**	**20**	**4**	**44**	**1**

1. Note that the number of flowing or ponded observations may not be the same as the number of Persistent or Transient outfalls in Table 3-8. Some outfall stations were visited more than once.
2. Two commercial washing activities discharges, one curb cut discharge, and one weephole discharge.
3. Suspected pool/spa chlorinated source

Table 3-9
Non-Controllable Sources of Flow Observed in the 2015–2016 Monitoring Year

Copermittee	Known Uncontrollable Sources	Suspected Uncontrollable Sources
	Groundwater Seepage	Groundwater Seepage
City of San Diego	0	0
City of Del Mar	Source information collected in IDDE program.	
City of Poway	0	9
Total	**0**	**9**

Non-storm water discharges (NSWDs) that have been reduced or eliminated during the 2015–2016 monitoring year have also been identified during the visual observations that were conducted by each Copermittee. Table 3-10 presents the number of discharges eliminated through visual outfall monitoring, including the identified sources of eliminated discharges. Additional runoff sources were eliminated through inspection and enforcement action under the Copermittees' IDDE program, as noted in Section 3.3.1.

Table 3-10
Dry Weather Discharges Eliminated in the 2015–2016 Monitoring Year

Copermittee	Number of Eliminated Discharges	Types of Eliminated Discharges
City of San Diego	2	Commercial Washing Activities and Over-irrigation
City of Del Mar	5	Residential and Commercial
City of Poway	0	-
Total	**2**	-

Per MS4 Permit requirements, Responsible Agencies must identify modifications to the field screening monitoring locations and frequencies for the major MS4 outfalls in their inventories. Table 3-11 summarizes these modifications, based on the findings of visual observations during the 2015–2016 monitoring year.

Table 3-11
Modifications to Dry Weather Field Screening Locations and Frequencies

Copermittee	Number of Outfalls Added to Priority Persistent Flow Outfall List	Number of Outfalls Removed from Priority Persistent Flow Outfall List	Number of Outfalls Added to MS4 Inventory	Number of Outfalls Removed from MS4 Inventory
City of San Diego	5	0	0	0
City of Del Mar	0	0	0	0
City of Poway	0	0	0	4[1]
Total	**5**	**0**	**0**	**4**

1. Four outfalls removed from inventory because additional outfalls were discovered to be located downstream.

3.4 Non-Storm Water Volume and Pollutant Load Assessment

Copermittees must assess the non-storm water volumes and pollutant loads collectively discharged from their jurisdictions in the Los Peñasquitos WMA, per MS4 Permit Provision D.4.b(1)(c). The methodology used to calculate the non-storm water volumes and loads is provided in Attachment D.3.

3.4.1 Identification of Dry Weather Days

The first step in calculating annual non-storm water volumes and pollutant loads is to determine the number of dry weather days in the monitoring year. The number of dry weather days was determined using County of San Diego ALERT station data (https://sandiego.onerain.com). The Poway ALERT station was selected to represent rainfall conditions in the Los Peñasquitos WMA. This representative ALERT station was also utilized in Wet Weather MS4 Outfall Discharge Monitoring Assessments, and is the station closest to a majority of wet weather MS4 outfall discharge monitoring stations.

A wet weather day was defined as any day with at least 0.1 inch of measurable rainfall within a 24-hour period, and the subsequent 72 hours. Dry weather days were defined as all other days during the monitoring year (October 1 through September 30). Table 3-12 presents the number of dry weather days identified in the Los Peñasquitos WMA during the 2015–2016 monitoring season.

Table 3-12
Los Peñasquitos WMA Dry Weather Days by Month

Month	Number of Days	Storm Dates	Number of Storm Days	Number of Storm Days +72 Hours	Number of Dry Days
October 2015	31	October 4-5, 2015	2	5	26
November 2015	30	November 3, 2015	3	12	18
		November 15, 2015			
		November 27, 2015			
December 2015	31	December 11, 2015	6	18	13
		December 13, 2015			
		December 19, 2015			
		December 22-23, 2015			
		December 28, 2015			
January 2016	31	January 5-8, 2016	5	8	23
		January 31, 2016			
February 2016	29	February 17, 2016	1	7	22
March 2016	31	March 5-7, 2016	4	10	21
		March 11, 2016			
April 2016	30	April 7, 2016	2	6	24
		April 9, 2016			
May 2016	31	May 5-6, 2016	2	5	26
June 2016	30	NA	0	0	30
July 2016	31	NA	0	0	31
August 2016	31	NA	0	0	31
September 2016	30	September 20-21, 2016	2	5	25

NA = not applicable, no storms recorded

3.4.2 Non-Storm Water Volume Assessment

An annual non-storm water volume was calculated for each persistently flowing major MS4 outfall in each Copermittee's jurisdiction. The calculation method differed, depending on the availability of flow data for each site. Details of each calculation method are presented in the Dry Weather Assessment Methodology in Attachment D.3.

The methods are summarized as follows:

- Scenario A: If a major MS4 outfall station was visited once during the monitoring year, and a single discrete flow rate was measured, this flow rate was applied across all dry weather days within the year.
- Scenario B: If a major MS4 outfall station was visited more than once during the monitoring year, and more than one discrete flow rate was measured, monthly dry weather flow volumes were calculated. The monthly flow volume calculation method varied on the basis of whether a flow measurement was logged at the outfall during that month. For calendar months in which the outfall was visited one or more times, the mean of the measured flow rates was applied to all dry weather days within the month. For calendar months in which the outfall was not visited, the mean of all flow rates observed at that site during the calendar year was applied.
- Scenario C: If a major MS4 outfall station was monitored continuously for a period of time longer than a day, a measured daily flow volume was calculated for each monitored day. The mean of these daily flow volumes was applied to all non-monitored dry days. This scenario was not encountered during the 2015–2016 monitoring season.
- Scenario D: If a major MS4 outfall station was not visited during the monitoring year, the mean of annual outfall flow volumes for all monitored stations in the jurisdiction in the WMA was applied. This scenario was not encountered during the 2015–2016 monitoring season.

Within all these scenarios, observations of ponding (i.e., evidence of non-storm water in the MS4, with no connectivity to the receiving water) were assigned a flow rate of zero. If a station was observed to be flowing, but no flow rate was recorded, the average non-zero flow rate for that station was applied to that observation. If a station was observed to be flowing, but the flow rate was estimated (e.g., <1 gallon per minute), a value of half the estimated flow rate was applied.

The methodology above assumes that a persistently flowing major MS4 outfall is flowing on 100% of dry weather days. This assumption is highly conservative. Additional limitations to the methodology are listed in Section 3.4.6. Major limitations include assuming that rates of dry weather discharge equal the measured values throughout the entire month or year (depending on the calculation scenario used), as well as assuming that pollutant concentrations can be represented by samples collected just twice per year at five or fewer outfalls per jurisdiction.

Tables 3-13 through 3-15 present the outfalls that were identified as persistently flowing by each Copermittee. The number of visual observations made at these locations during the 2015–2016 monitoring year are also presented, and the numbers of flowing, ponded, and dry observations from these site visits are summarized. Finally, the annual dry weather flow volume modeled from each site is presented, as well as the total dry weather flow volume collectively discharged from persistently flowing sites within each Copermittee's jurisdiction in the WMA.

Note that the County of San Diego has no major MS4 outfalls within the Los Peñasquitos WMA.

Table 3-13
City of Del Mar 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
S-12	15	11	2	2	48,421
Total					**48,421**

cf = cubic feet; ID = identification
Highest priority persistently flowing outfalls indicated in **bold**.

Table 3-14
City of Poway 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
278-1749, 2	2	2	0	0	27,913
282-1749, 2	2	2	0	0	262,378
282-1749, 3 (DW Site 2)	2	2	0	0	117,233
282-1749, 4(S)[1]	1	1	0	0	27,913
286-1749, 1[2]	1	1	0	0	245,631
290-1749, 2	1	0	1	0	0
290-1755, 1	1	1	0	0	223,301
294-1749, 2	2	2	0	0	251,213
298-1749, 2	4	4	0	0	34,891
298-1749, 3	2	2	0	0	27,913
298-1749, 5	2	0	2	0	0
Total					**1,218,386**

1. Site removed from outfall inventory. Outfall 282-1749, 3 (DW Site 15) is located downstream.
2. Site removed from outfall inventory. Outfall 282-1749, 6 is located downstream.

cf = cubic feet; ID = identification

Highest priority persistently flowing outfalls indicated in **bold**.

Table 3-15
City of San Diego 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
DW0017	1	1	0	0	125,048
DW0024	2	2	0	0	1,227,234
DW0025	2	2	0	0	1,388,057
DW0027	1	1	0	0	139,563
DW0034	1	0	1	0	0
DW0036	2	0	2	0	0
DW0037	1	0	1	0	0
DW0247	3	3	0	0	369,710
DW0266	0	1	0	0	51,988
DW0281	0	1	0	0	200,412
DW0308	1	1	0	0	247,864
DW0375	1	1	0	0	350,610
DW0422	1	1	0	0	41,590
DW0426	1	0	1	0	0
DW0428	1	1	0	0	31,318
DW0429	2	2	0	0	54,023
DW0435	1	0	1	0	0
DW0478	1	1	0	0	250,543
DW0481	1	0	1	0	0
DW0554	1	1	0	0	3,342,254
DW0638	1	0	1	0	0
DW0643[1]	0	1	0	0	0
DW0839	1	1	0	0	3,908
DW0884	0	1	0	0	166,917
DW0887	0	1	0	0	501,310
DW0903	0	1	0	0	167,476
DW0910	1	1	0	0	44,102
DW0911	1	0	1	0	0
DW0915	0	0	1	0	0

Table 3-15 (continued)
City of San Diego 2015-2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
DW0923	1	1	0	0	40,194
DW0924[1]	0	1	0	0	0
DW0928	0	1	0	0	125,048
DW0931	1	1	0	0	751,407
DW0932	1	1	0	0	375,703
DW0944	0	1	0	0	4,019,413
DW0945	0	1	0	0	292,524
DW0950	1	1	0	0	332,718
DW0958	0	1	0	0	62,636
DW0959	0	1	0	0	20,097
DW0968	0	1	0	0	125,272
DW0969[1]	0	1	0	0	0
DW0971	1	0	1	0	0
DW0976	0	0	1	0	0
DW0978	0	1	0	0	82,621
DW0981	0	1	0	0	2,079,488
DW0987	0	1	0	0	2,255,337
DW0988[1]	0	1	0	0	0
DW0990	0	1	0	0	751,407
DW1003	1	0	1	0	0
DW1004	1	1	0	0	32,044
DW1005	1	0	1	0	0
DW1006	1	0	1	0	0
DW1007	0	1	0	0	464,801
DW1009	0	1	0	0	2,254,779
DW1011[1]	0	1	0	0	0
DW1016	0	1	0	0	501,310
DW1026	1	1	0	0	375,815
DW1049	1	1	0	0	62,524

Table 3-15 (continued)
City of San Diego 2015-2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
DW1051	0	1	0	0	1,002,062
DW1079	0	1	0	0	753,640
DW1083	0	1	0	0	61,408
DW1084	1	1	0	0	1,507,280
DW1085	1	1	0	0	122,815
DW1086	1	1	0	0	189,806
DW1087	1	1	0	0	61,408
DW1088	1	1	0	0	189,806
DW1091	0	0	1	0	0
DW1092	1	1	0	0	831,795
DW1093	1	1	0	0	1,503,372
DW1094	0	1	0	0	10,607
DW1103	1	1	0	0	83,180
DW1105	1	0	1	0	0
DW1106	0	1	0	0	189,806
DW1107	0	1	0	0	626,359
DW1108	0	1	0	0	1,002,062
DW1114	0	1	0	0	1,879,076
DW1122	0	0	1	0	0
DW1124	0	1	0	0	3,758,151
DW1126	0	1	0	0	2,061,624
DW1128	0	1	0	0	80,388
DW1174	1	0	1	0	0
Total					**39,623,712**

1. Site observed to be flowing, but flow rate too low to calculate.

cf = cubic feet; ID = identification

Highest priority persistently flowing outfalls indicated in **bold**.

3.4.3 Non-Storm Water Load Assessment

The Copermittees estimated the annual non-storm water pollutant loads collectively discharged from their persistently flowing major MS4 outfalls to receiving waters in the MS4.

A load was calculated for each pollutant required to be analyzed at each high priority outfall, based on the arithmetic mean of the analytical results from the two dry weather outfall monitoring events at that outfall during the monitoring year. For each non-high priority persistently flowing outfall in a Copermittee's jurisdiction in the WMA, the mean of that Copermittee's monitored outfall results for each pollutant was applied. For any pollutants not detected at the method detection limit (MDL), a concentration of MDL/2 was applied in calculating the loads. The annual non-storm water pollutant loads collectively discharged from each jurisdiction are presented in Table 3-16. The non-storm water pollutant loads for each persistently flowing major MS4 outfall are presented in Attachment D.4.

Table 3-16
City of San Diego 2015–2016 Dry Weather Persistent Flow Volume

Analyte	Units	Jurisdiction		
Site ID	-	City of Del Mar	City of Poway	City of San Diego
Annual Flow Volume	cf	48,421	1,218,385	39,623,712
Conventional Parameters				
Hardness (Total)	lb	3,506	59,345	999,747
MBAS	lb	0.1511	6.9919	361.6408
Indicator Bacteria				
Enterococcus	MPN	1.44E+12	1.59E+14	2.05E+15
Fecal Coliform	MPN	4.11E+10	8.62E+14	1.18E+15
Total Coliform	MPN	2.17E+13	2.08E+15	2.09E+17
Total Metals				
Cadmium	lb	0.0003	0.0295	1.4664
Chromium	lb	NR[1]	0.0491	3.3470
Chromium (III)	lb	NR[1]	0.0484	See Dissolved Load[2]
Chromium (VI)	lb	NR[1]	0.0761	See Dissolved Load[2]
Copper	lb	0.0060	0.6053	27.8707
Iron	lb	0.7089	21.5322	1,671.4499
Lead	lb	0.0005	0.0415	2.7210
Manganese	lb	0.1436	2.0384	131.9244
Nickel	lb	NR[1]	0.2089	6.3897
Selenium	lb	0.0242	0.1483	9.9160
Silver	lb	NR[1]	0.0079	3.6610
Zinc	lb	0.0227	3.2945	65.4980

Table 3-16 (continued)
City of San Diego 2015–2016 Dry Weather Persistent Flow Volume

Analyte	Units	Jurisdiction		
Site ID	-	City of Del Mar	City of Poway	City of San Diego
Annual Flow Volume	cf	48,421	1,218,385	39,623,712
Dissolved Metals				
Cadmium	lb	0.0001	0.0137	1.4098
Chromium	lb	NR[1]	0.0133	3.2189
Chromium (III)	lb	NR[1]	0.0102	2.1101
Chromium (VI)	lb	NR[1]	0.0761	0.3469
Copper	lb	0.0017	0.4076	18.2313
Iron	lb	0.0106	1.4431	153.0765
Lead	lb	0.0002	0.0579	2.7210
Manganese	lb	0.0453	1.1696	123.7423
Nickel	lb	NR[1]	0.0887	5.7698
Selenium	lb	0.0212	0.1339	8.6329
Silver	lb	NR[1]	0.0038	3.6610
Zinc	lb	0.0151	2.7266	26.2945
Nutrients				
Ammonia N	lb	0.5441	19.8712	381.6332
Nitrite as N[3]	lb	0.0423	NR	94.5712
Nitrate as N[3]	lb	4.4133	NR	5,006.8413
Nitrate/Nitrite N[3]	lb	4.4436	306.0245	NR
Total Nitrogen	lb	11.7891	777.0844	7,028.1823
TKN	lb	7.4060	471.3990	2,014.2944
Phosphorus, Total	lb	0.2872	37.8723	348.5531
Orthophosphate as P	lb	0.1564	34.9312	191.3866
Solid Parameters				
TDS	lb	10,988	144,613	2,829,040
TSS	lb	97	368	21,347

1. NAL analyte not required for Ocean Receiving Waters.
2. Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
3. Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = not required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; TSS = total suspended solids

3.4.4 Percent Contribution from Known Sources

Table 3-17 summarizes the percentage of non-storm water volume and load contributions from known sources. This value was calculated by dividing the observed flow rate for each known source by the estimated annual outfall flow volume presented in Section 3.4.2. It was assumed that the known source was flowing for the entire day on which the source was observed. Additionally, it was assumed that the percent load contribution is equal to the percent flow contribution for each known source.

Table 3-17
Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
City of San Diego	DW0024	2/4/2016	Irrigation Runoff	0.09	7,776	1,227,234	0.63%
	DW0025	4/25/2016	Commercial Washing Activities	0.03	2,592	1,388,057	0.19%
	DW0036	8/2/2016	Curb Cut Discharge	0.005	432	0	NA
	DW0375	2/25/2016	Irrigation Runoff	0.014	1,210	350,610	0.35%
	DW0638	12/28/2015	Irrigation Runoff	0	0	0	0%
	DW0887	5/5/2016	Weephole Discharge	0.02	1,728	501,310	0.34%
	DW0928	12/3/2015	Irrigation Runoff	0.005	432	125,048	0.35%
	DW0944	6/14/2016	Irrigation Runoff	0.16	13,824	4,019,413	0.34%
	DW0958	2/25/2016	Irrigation Runoff	0.002	173	62,636	0.28%
	DW0988	3/28/2016	Commercial Washing Activities	0	0	0	0%

Table 3-17 (continued)
Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
City of San Diego (continued)	DW1003	2/25/2016	Irrigation Runoff	0	0	0	0%
	DW1011	3/28/2016	Irrigation Runoff	0	0	0	0%
	DW1103	1/11/2016	Irrigation Runoff	0.003	259	83,180	0.31%
City of Del Mar	-	-	-	-	-	48,421	-
City of Poway	278-1749, 2	7/22/2016	Irrigation Runoff	< 0.002	86[1]	27,913	0.31%
		8/3/2016	Irrigation Runoff	< 0.002	86[1]		0.31%
	282-1749, 3	7/28/2016	Irrigation Runoff	0.007	605	262,378	0.23%
		8/1/2016	Irrigation Runoff	0.002	172		0.07%
	282-1749, 4(S)	7/25/2016	Irrigation Runoff	< 0.002	86[1]	27,913	0.31%
	290-1755, 1	7/22/2016	Irrigation Runoff	0.009	778	223,301	0.35%
	294-1749, 2	7/21/2016	Irrigation Runoff	0.01	864	251,213	0.34%
		8/1/2016	Irrigation Runoff	0.01	864		0.34%
	298-1749, 2	7/21/2016	Irrigation Runoff	0.002	173	34,891	0.50%
		7/27/2016	Irrigation Runoff	< 0.002	86[1]		0.25%

1. Daily Flow Volume was calculated using a flowrate of 0.001 cfs, half of the reporting limit for the City of Poway.

% = percent; cf = cubic feet; cfs = cubic feet per second; ID = identification; NA = not applicable. Modeled annual flow volume for outfall was 0 cfs.

3.4.5 Percent Contribution from Sources Not Subject to Copermittee Legal Authority

Copermittees did not identify sources not subject to their legal authority within the Los Peñasquitos WMA during dry weather monitoring.

3.4.6 Dry Weather Assessment Methodology Assumptions and Limitations

The calculation of the MS4 Permit-required assessments necessitates a number of assumptions to translate the monitoring data into conclusions regarding flow volume and load for the entire WMA. These assumptions may introduce potential sources of error, while propagating potential errors inherent to the monitoring data. These assumptions and sources of error are as follows:

- Monitoring Error—Annual non-storm water volumes and pollutants loads are based on the results of dry weather visual observations and dry weather outfall monitoring events. Error in the monitoring data could have the effect of propagating error in all subsequent calculations. Potential sources of error in the monitoring data include the following:
  - Monitored Flow Selection—The pollutant loading estimations rely on monitoring data from one or more non-storm water visual observations per major MS4 outfall per year. The 2015–2016 monitoring year is the first year of dry weather flow volume and load calculation, and this period generally has represented a drought condition, which can affect the type and volume of non-storm water sources such as irrigation and ground water. The potential for inter-annual variability is a source of error in both the flow and chemistry data.
  - Flow Measurement Method—The MS4 Outfall Monitoring Plan provides different options to determine the non-storm water volume: (1) field-based estimation methods (e.g., “float method” or “bucket and stopwatch method”), and (2) equipment-based flow measurements. The method chosen varies among outfalls and Copermittees, introducing inter-site variability in volume estimations. The field-based estimation methods introduce potential human error in using stopwatches and error in determining volume amounts in non-graduated buckets. The consistent equipment-based flow monitoring approach is more accurate and precise compared with the field-based estimation methods. However, this approach introduces variability through the flow measurement device and sensor type used to account for site-specific conditions, and can also be cost and time prohibitive across the number of outfalls monitored. Each measurement device and sensor type has an inherent accuracy range (e.g., ±2% accuracy for sub area-velocity [sub-AV] probes). Additionally, each flow measurement device and sensor type can produce slightly different values for the same event, adding inter-site variability.
  - Rainfall Measurement—Accuracy in determining the number of dry days relies on the accuracy of the rainfall measurements representing that outfall. Rainfall measurements were based on the County of San Diego ALERT rain gauge

closest to the majority of wet weather outfalls in each WMA, and not site-specific rainfall data. Rainfall totals across the San Diego area can vary widely within a given storm.

- Chemistry Results—An attempt was made to maintain regional consistency in reporting limits (RLs) and MDLs. However, differences in lab capabilities can sometimes lead to different RLs and MDLs. This variability can introduce error if constituent concentrations are near or below the MDL for one monitoring event or Copermittee, and the MDL differs for another monitoring event or Copermittee. For the assessment calculations, an attempt was made to account for this type of error by assigning a value of MDL/2 to constituents that were not detected.

- Assessment Methodology Error—The assessments require a series of assumptions and extrapolations regarding the determination of annual volumes and pollutant loadings. Each assumption carries the possibility of error, including the following:
  - Annual Volume Estimation Representativeness—Regardless of the flow measurement method utilized, error is introduced when utilizing the median of more than one field measurement to determine an annual volume estimation. It is assumed that these field measurements are representative of "typical" non-storm water conditions because persistently flowing non-storm water flows are relatively consistent through the year. However, this may not be the case, and error could be introduced into these estimations. For example, groundwater base flows can increase during the wet season, increasing dry weather flow rates. Or, alternatively, irrigation and irrigation runoff may increase during the dry season, increasing dry weather flow rates. Unless flow observations are made throughout the year under a variety of conditions, this seasonal variation may not be captured.
  - Annual Volume Estimation Confidence—Based on availability of data, multiple calculation methods are used to estimate annual flow volume. The confidence associated with each estimate varies because different sample sizes are used for each estimate. That is to say, volumes calculated based on continuous flow data are associated with a higher confidence than volumes based on one or two instantaneous flow measurements.
  - Annual Pollutant Load Estimations—The annual volume estimation error introduced previously disseminates into the annual pollutant load estimations through calculations discussed in Section 3.4.2. Although persistent non-storm water flows are relatively consistent throughout the year, collecting two grab samples in one year provides a very brief snapshot in time of the pollutant concentration at an outfall, which may not be indicative of typical conditions or pollutant loadings. Additionally, using an arithmetic mean as a "typical" value of pollutant concentrations to estimate pollutant loads can introduce error if the sample size of the mean is too small, as means are sensitive to sample size.

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4 Wet Weather Outfall Data and Assessments

During the 2015–2016 monitoring season, the first year of wet weather outfall discharge monitoring was conducted in accordance with Provision D.2.c of the MS4 Permit. The goals of wet weather outfall monitoring are the following:

- Identify pollutants in storm water discharges from the MS4;
- Guide pollutant source identification efforts; and
- Determine compliance with the water quality-based effluent limitations (WQBELs) associated with the applicable TMDLs presented in Attachment E of the MS4 Permit.

Wet weather outfall monitoring was initiated following completion and acceptance of the Los Peñasquitos WMA WQIP. This program built upon the transitional wet weather outfall discharge monitoring completed during the 2013–2014 and 2014–2015 monitoring seasons. Details of the monitoring methodology are provided in the Los Peñasquitos WMA MS4 Outfall Monitoring Plan, available on the Project Clean Water website (Project Clean Water, 2016).

This section presents the results of wet weather discharge monitoring in the Los Peñasquitos WMA, as well as the results of the required Storm Water Pollutant Discharges Reduction Assessments (Storm Water Assessments).

4.1 Storm Water Action Level Comparisons

The data collected as part of the wet weather MS4 outfall discharge monitoring were compared with the SALs and HPWQC WQBELs per MS4 Permit Provision D.4.b.(2)(c)(ii). These comparisons are shown in Table 4-1 and Table 4-2, respectively.

One SAL exceedance was recorded for all wet weather MS4 outfall discharge monitoring locations within the Los Peñasquitos WMA. This exceedance was for turbidity at MS4-LPC-1 in the City of Del Mar, with a recorded concentration that was more than four times the SAL value. The City of Del Mar has just begun to implement its WQIP strategies during the 2015–2016 monitoring year and plans to continue implementing the strategies without modification to realize the rewards of these pollutant reduction benefits.

At all 2015–2016 Los Peñasquitos WMA monitoring locations, bacteria concentrations exceeded bacteria WQBELs for wet weather. The WQIP (Los Peñasquitos Responsible Agencies, 2015) outlining the Responsible Agencies' strategies was accepted in fall 2015. The Responsible Agencies have just begun to implement their planned strategies in the 2015–2016 monitoring year and plan to continue to implement them as originally designed.

Table 4-1
MS4 Outfall Storm Water Action Level Comparison

Parameter	SAL	Monitoring Location				
		MS4-LPC-1	MS4-LPC-2	MS4-LPC-3	MS4-LPC-4	MS4-LPC-5
		City of Del Mar	City of Poway	City of Poway	City of Poway	City of San Diego
Total Cadmium	3 µg/L	0.097 J	0.092 J	0.13	0.10	0.53
Total Copper	127 µg/L	89	20	35	22	28
Total Lead	250 µg/L	6.4	2.4	1.7	4.5	1.1
Nitrate + Nitrite as N	2600 µg/L	1800	1700	1700	980	2500
Total Phosphorous	1.46 mg/L	0.54	0.27	0.58	0.42	0.64
Total Zinc	976 µg/L	110	140	130	72	130
Turbidity	126 NTU	**546**	9.7	9.25	10.6	42

µg/L = micrograms per liter; J = estimate; mg/L = milligrams per liter; N = nitrogen; NTU = nephelometric turbidity unit; SAL = storm water action level
Bold value = exceedance of SAL

Table 4-2
MS4 Outfall Water Quality-Based Effluent Limitations Comparison

Parameter	WQBEL	Monitoring Location				
		MS4-LPC-1	MS4-LPC-2	MS4-LPC-3	MS4-LPC-4	MS4-LPC-5
		City of Del Mar	City of Poway	City of Poway	City of Poway	City of San Diego
Enterococcus	61(104*) MPN/100mL	**42,000**	**8,164**	**3,873**	**26,030**	**34,000**
Total Coliforms	10,000 MPN/100mL	**60,000**	**17,000**	**33,000**	**1,600,000**	**280,000**
Fecal Coliforms	400 MPN/100mL	**2,000**	**11,000**	**11,000**	**1,600,000**	**7,200**

MPN/100mL = most probable number per 100 milliliters; WQBEL = water quality-based effluent limitation
Bold value = exceedance of WQBEL; *= A single-sample maximum of 104 MPN/100mL may be applied as a receiving water limitation for creeks designated as "moderately or slightly used" or less frequent usage in the Basin Plan.

4.2 Wet Weather Outfall Monitoring

4.2.1 Wet Weather Outfall Monitoring Locations

Responsible Agencies selected wet weather MS4 outfall discharge monitoring locations from their inventories developed pursuant to Provision D.2.a.(3)(a)(i) of the MS4 Permit for the Los Peñasquitos WMA. These locations were compliant with the MS4 Permit requirements for wet weather outfall site selection, namely:

- At least five wet weather MS4 outfall discharge monitoring locations that are representative of storm water discharges from areas consisting primarily of residential, commercial, industrial, and typical mixed-use land uses present within the Los Peñasquitos WMA; and
- At least one wet weather MS4 outfall discharge monitoring location for each Responsible Agency within the Los Peñasquitos WMA.

The five stations monitored during the 2015–2016 monitoring season are presented in Table 4-3. Each wet weather MS4 outfall discharge monitoring location in the Los Peñasquitos WMA was sampled once during the 2015–2016 monitoring season. All five stations were also monitored during the 2014–2015 monitoring season (second transitional monitoring season). Two of the five stations were also monitored during the 2013–2014 monitoring season (first transitional monitoring season). The MS4 outfall stations that changed during the second transitional year were MS4-LPC-3 and MS4-LPC-4 in the City of Poway, and MS4-LPC-5 in the City of San Diego. The outfall monitoring locations and their associated drainage areas are shown in Figure 4-1. Land use types within the drainage area for each location are described in Table 4-5. The representativeness of the outfall drainage areas, relative to the WMA as a whole, is discussed in Section 4.4.

Table 4-3
2015–2016 Los Peñasquitos WMA Wet Weather Outfall Monitoring Locations

Monitoring Location	Responsible Agency	Jurisdictional Identifier	Latitude	Longitude	HA Name	HA Number
MS4-LPC-1	City of Del Mar	S-01	32.93964	-117.25947	Miramar Reservoir	906.1
MS4-LPC-2	City of Poway	286-1755, 1	32.95403	-117.04097	Poway	906.2
MS4-LPC-3[1]	City of Poway	286-1755, 3	32.95467	-117.04841	Poway	906.2
MS4-LPC-4[1]	City of Poway	290-1755, 2	32.96929	-117.03764	Poway	906.2
MS4-LPC-5[2]	City of San Diego	DW839	32.89915	-117.11371	Miramar Reservoir	906.1

1. City of Poway monitoring locations MS4-LPC-3 and MS4-LPC-4 were relocated between the 2013–2014 and 2014–2015 monitoring years. The Jurisdictional Identifiers of the previous monitoring locations are 298-1761, 1 and 286-1767, 1, respectively.
2. City of San Diego monitoring location MS4-LPC-5 was relocated between the 2013-2014 and 2014-2015 monitoring years. The Jurisdictional Identifier of the previous monitoring location is DW289.

HA = hydrologic area

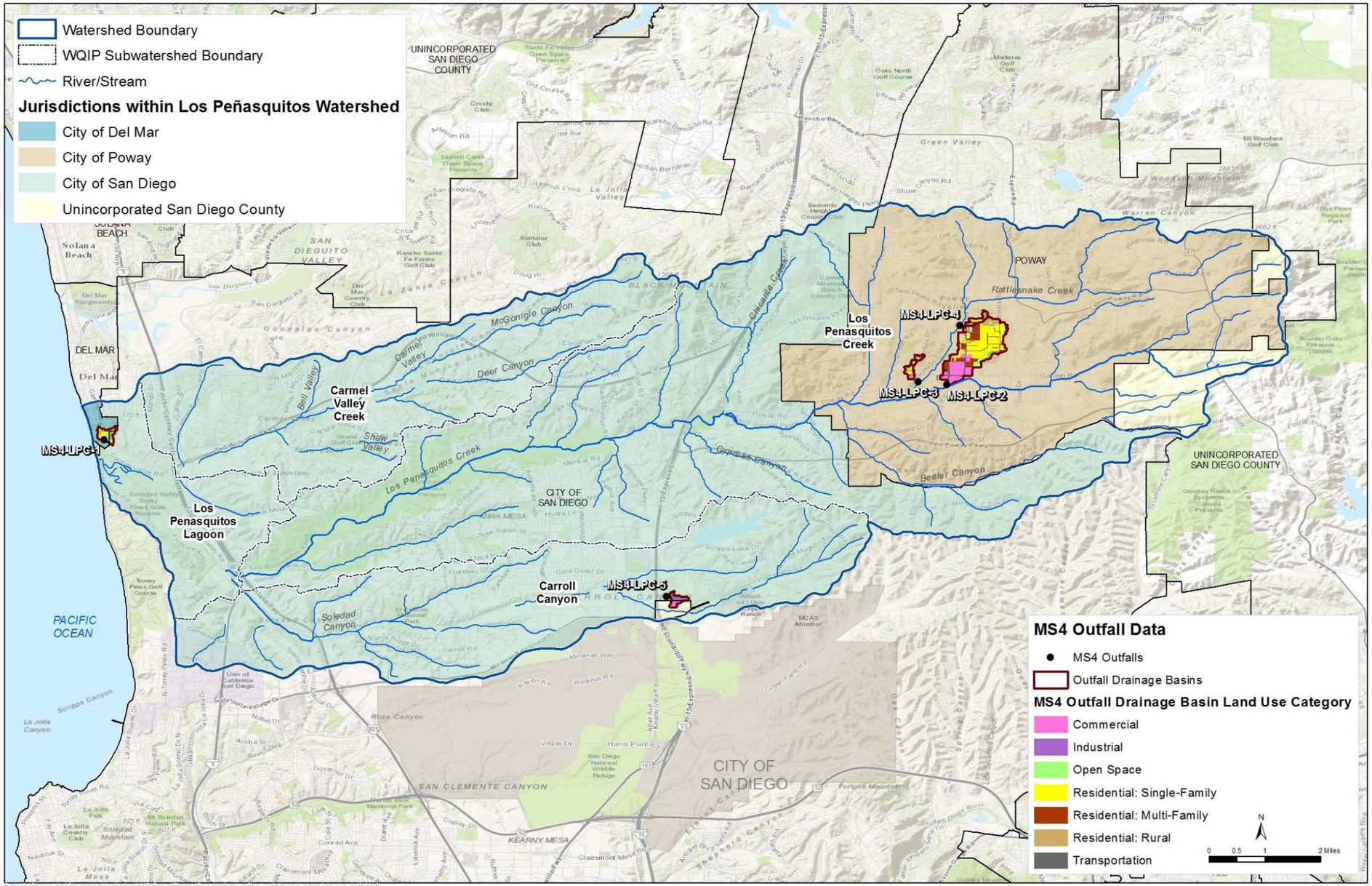

Figure 4-1
Los Peñasquitos WMA Outfall Monitoring Locations

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4.2.2 Wet Weather Outfall Monitoring Event Field Observations

The Los Peñasquitos WMA wet weather outfall locations were monitored during the wet season (i.e., October 1, 2015, through April 30, 2016), across two storm events on January 31, 2016, and March 6, 2016. Each location was monitored once.

During the wet weather monitoring event, narrative descriptions and field observations were recorded at each MS4 outfall discharge monitoring location. Flow was measured using a Hach Sigma 950 flow meter with a sub-AV probe in accordance with the United States Environmental Protection Agency (USEPA) Storm Water Sampling Guidance Document (EPA-833-B-92-001), as described in the Los Peñasquitos WMA MS4 Outfall Monitoring Plan. Rainfall statistics for each monitored event were based on a nearby San Diego County Flood Control District ALERT station. The closest ALERT station to each monitoring location was selected.

Details, including date and duration of the storm events sampled, rainfall estimates of the storm event, and duration between the storm event sampled and the end of the previous measurable storm event with over 0.1 inch of rainfall, are presented in Table 4-4. Hydrographs for each monitored event, displaying event flows and rainfall amounts, are presented in Attachment F.1.

Table 4-4
2015–2016 Los Peñasquitos WMA Wet Weather Outfall Monitoring Event Field Observations

Monitoring Location	Storm Event Date	ALERT Station	Storm Duration (hours)	Rainfall Depth (inches)	Rainfall Intensity (inches/ hour)	Antecedent Dry Days	Flow Volume (cf)
MS4-LPC-1	1/30/2016	Encinitas	19.3	0.54	0.02803	22	12,137
MS4-LPC-2	3/5/2016	Poway	3.3	0.24	0.07347	15	83,929
MS4-LPC-3	3/5/2016	Poway	3.3	0.24	0.07347	15	24,985
MS4-LPC-4	3/5/2016	Poway	3.3	0.24	0.07347	15	30,458
MS4-LPC-5	1/30/2016	Miramar Lake	24.5	0.75	0.03055	21	50,407

cf=cubic feet

4.2.3 Wet Weather Outfall Monitoring Event Analytical Results

During each wet weather event, samples were collected according to the procedures described in the Los Peñasquitos WMA MS4 Outfall Monitoring Plan.

Grab samples were collected for bacterial indicators and receiving water hardness. The grab samples were collected after the second hour of storm water runoff and before the sixth hour of storm water runoff. If the storm duration was less than two hours, the grab samples were collected as close to the peak flow as possible. A time-weighted composite sample was collected for all other analytes. All samples were collected in accordance with Surface Water Ambient Monitoring Program (SWAMP) protocols and following the quality assurance and quality control procedures outlined in the Los Peñasquitos WMA MS4 Outfall Monitoring Plan.

In situ turbidity measurements were collected using a LaMotte 2020 Portable Turbidity Meter. All other field measurements were collected using YSI Pro Plus Quatro field meter.

The required analyses were based upon the following four groupings of constituents, per Provision D.2.c(5)(f) of the MS4 Permit:

- Constituents contributing to the HPWQCs identified in the Los Peñasquitos WMA WQIP;
- Constituents listed as a cause for impairment of receiving waters in the Los Peñasquitos WMA, as listed on the 2010 CWA 303(d) List;
- Constituents for implementation plans or load reduction plans (e.g., Bacteria Load Reduction Plans, Comprehensive Load Reduction Plans) developed for the Los Peñasquitos WMA where the Responsible Agencies are listed as responsible parties under the TMDLs in Attachment E of the MS4 Permit; and
- Applicable SAL constituents listed in Provision C.2 of the MS4 Permit.

Receiving water hardness samples were collected for each wet weather outfall station discharging to a fresh water receiving water. The receiving water hardness results were used to evaluate compliance with the USEPA one-hour maximum concentration criteria for metals, in the case of any SAL exceedances. Receiving water hardness samples were not collected for wet weather outfalls discharging to an ocean receiving water, or to a bay or estuary.

The 2015–2016 monitoring year wet weather outfall analytical results for the Los Peñasquitos WMA are presented in tabular form in Attachment F.2. Attachment E includes a QA/QC summary of the wet weather outfall data collected.

4.3 Volumes and Loads of Storm Water Discharges

Per Provision D.4.b.(2)(b)(i) of the MS4 Permit, the Responsible Agencies are required to use a watershed model or other method to calculate the following:

1. The average storm water runoff coefficient for each land use type within the WMA;
2. The volumes of storm water and pollutant loads discharged from the monitored MS4 outfalls in the jurisdiction of each Responsible Agency to receiving waters within the WMA for each storm event with measurable rainfall greater than 0.1 inch;

3. The total flow volumes and pollutant loadings discharged from the jurisdiction of each Responsible Agency within the WMA over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and
4. The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea to receiving waters or within each jurisdiction of within the WMA for each storm event with measurable rainfall greater than 0.1 inch.

The following sections present the results of these assessments. The methodology used follows the methodology presented in the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego County Regional Copermittees, 2015). Changes from the transitional methodology are noted below. The methodology is presented in Attachment F.3. Complete tables of storm water volumes and pollutant loads are in Attachment F.4.

Calculation of the MS4 Permit-required assessments necessitates a number of assumptions to extrapolate the available monitoring data into watershed-wide estimates of discharge volumes and pollutant loads. These extrapolations introduce potential sources of error in addition to error sources inherent to the monitoring data. A summary of these assumptions and sources of error follows:

- Potential Sources of Error Inherent to Monitoring—Runoff coefficients and pollutant loads are based on the results of wet weather outfall monitoring events. Error in the monitoring data could have the effect of propagating error in all subsequent calculations. Potential sources of error in the monitoring data include the following:
  - *Monitored Storm Selection*—The calculation relies on monitoring data from one storm event per year. Although a range of storm conditions have been targeted over the period of monitoring (2013–2016), this period generally has represented drought conditions. Inter-annual variability in storm duration, intensity, and rainfall depth can be a source of error in both the flow and chemistry data.
  - *Drainage Area Delineation*—The accuracy of the observed outfall runoff coefficient calculation relies on the accuracy of the drainage area delineation for that outfall. Drainage area delineations were based on the most recent jurisdictional delineation. Delineations were based on desktop analysis, and accuracy of the delineations is dependent on the geographic information system (GIS) data layers used.
  - *Flow Measurement Method*—A consistent flow monitoring approach is described in the Monitoring Plan. However, this approach allows for variability in the flow measurement device and sensor type used to account for site-specific conditions. Each measurement device and sensor type has an inherent accuracy range (e.g., ±2% accuracy for sub-AV probes). Additionally, each flow

measurement device and sensor type can produce slightly different values for the same event, adding a layer of inter-site variability.

- *Rainfall Measurement*—The accuracy of the observed outfall runoff coefficient calculation relies on the accuracy of the rainfall measurement for that event at that outfall. Rainfall measurements were based on the nearest County of San Diego ALERT rain gauge to each outfall and not site-specific rainfall data. Rainfall totals across the San Diego area can vary widely within a given storm.
- *Chemistry Results*—An attempt was made to maintain consistent RLs and MDLs across the monitoring seasons. However, differences in lab capabilities can sometimes lead to different RLs and MDLs. This variability can introduce error if constituent concentrations are near or below the MDL one monitoring year, and the MDL changes. For the assessment calculations, an attempt was made to account for this type of error by assigning a value of MDL/2 to constituents that were not detected.

- Potential Sources of Error Inherent to the Assessment Methodology—The assessments require a series of assumptions and extrapolations regarding land-use-based runoff coefficients and pollutant concentrations. Each assumption carries the possibility of error, including the following:
  - *Observed Outfall Runoff Coefficient Calculation*—Total rainfall of a monitored storm event, not accounting for rainfall intensity or duration, is considered in these calculations. Storms of higher intensity generally produce more runoff for a given rainfall amount than storms of lower intensity. Therefore, a storm with an equal total rainfall but a higher intensity than another storm would be expected to exhibit a higher runoff volume or flow rate.
  - *Outfall Drainage Area Land Use Representativeness*—While an attempt has been made to select monitoring locations with drainage areas of one primary land use type, the reality of storm water drainage systems in urban and suburban areas means that most monitoring locations are a mixture of multiple land use categories. To calculate the runoff coefficient from each land use category, the observed runoff coefficient is compared with standard values calculated using the San Diego County Hydrology Manual (County of San Diego, 2003). A correction factor based on the ratio of the observed runoff coefficient to the calculated runoff coefficient is then applied to each land use category to derive land use runoff coefficients.
  - *WMA Land Use Representativeness*—Not all land use categories within the WMA are represented by the monitored outfall drainage areas. Therefore, the pollutant EMCs and runoff coefficient for one land use are sometimes substituted for another land use. For example, open space pollutant concentrations and runoff coefficients may be used as a proxy for agriculture land use values, in the absence of monitoring data from agricultural land uses. These proxies are summarized in Table 4-5.

- *Land Use EMC Assumptions*—Apportioning pollutant loads to each land use type requires an assumption of pollutant concentrations that are "typical" of each land use category. To calculate a pollutant concentration from each land use category, the observed pollutant concentrations are compared with typical (arithmetic mean) values calculated on the basis of land use studies in the Los Angeles and San Diego areas (see Attachment F.3). A correction factor based on the ratio of the observed pollutant concentration to the calculated typical pollutant concentration is then applied to each land use category to derive land use concentrations. Using an arithmetic mean as a "typical" value can introduce error if the sample size of the mean is too small, because means are sensitive to sample size. However, literature values did not exist for all pollutants analyzed, and therefore an additional assumption is made that similar pollutants have similar land-use-based concentrations For example, it is assumed that ratios of other dissolved metals concentrations from the analyzed land use categories follow the ratios of dissolved copper concentrations from those land use categories. This assumes that all dissolved metals behave similarly to dissolved copper, which is not necessarily the case. The full list of assumptions is provided in Attachment F.3.
- *Variability of Standard Runoff Coefficient and Pollutant Concentration Values*—The mean standard runoff coefficients and pollutant concentrations are used in the assessments. In reality, there is a range associated with the real-world land use runoff conditions for both runoff coefficients and pollutant concentrations. For example, land use runoff pollutant concentrations can vary on the basis of socioeconomic factors across a single land use category. The 2015 City of San Diego trash study found that median income of people living in a given drainage area affected trash assessment results at the corresponding outfall. It is possible a similar pattern could be seen for other pollutants (City of San Diego, 2015).

4.3.1 Land Use Storm Water Runoff Coefficient (D.4.b.(2)(b)(i)[a])

The average storm water runoff coefficient ("C") was calculated for each land use type in the WMA, based on data collected through three seasons of wet weather MS4 outfall monitoring (2013–2014, 2014–2015, and 2015–2016). This calculation is based on the measured flow and rainfall values for each monitored outfall (Table 4-2), along with the outfall drainage area characteristics. The quantity (area and percentage) of each land use type by outfall drainage area is presented in Table 4-5. Agriculture and Open Space land uses are subdivided by hydrologic soil group (A, B, C, or D).

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Table 4-5
2015–2016 Los Peñasquitos WMA Wet Weather Outfall Monitoring Stations – Drainage Area Land Use

Land Use Category	Los Peñasquitos WMA									
	MS4-LPC-1		MS4-LPC-2		MS4-LPC-3		MS4-LPC-4		MS4-LPC-5	
	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%
Agriculture-A	0	0%	0	0%	0	0%	0	0%	0	0%
Agriculture-B	0	0%	0	0%	0	0%	0	0%	0	0%
Agriculture-C	0	0%	0	0%	0	0%	0	0%	0	0%
Agriculture-D	0	0%	0	0%	0	0%	0	0%	0	0%
Commercial	0.30	1%	80.40	20%	4.13	14%	0.40	2%	10.70	41%
Educational	0	0%	8.73	2%	0	0%	0	0%	0	0%
Industrial	0	0%	0.25	0%	0	0%	0	0%	12.46	47%
Mixed Use	0	0%	0	0%	0	0%	0	0%	0	0%
Open Space-A	0.58	2%	0	0%	0	0%	0	0%	0	0%
Open Space-B	0.17	0%	2.70	1%	0	0%	0	0%	0	0%
Open Space-C	0	0%	3.53	1%	0	0%	0.01	0%	0	0%
Open Space-D	7.14	19%	21.45	5%	1.95	7%	2.96	13%	0	0%
Residential: Multi Family	0	0%	55.75	14%	0	0%	2.02	9%	0	0%
Residential: Rural	0	0%	19.65	5%	0	0%	7.12	31%	0	0%
Residential: Single Family	21.28	58%	164.38	41%	17.22	59%	7.77	33%	0	0%
Transportation	7.29	20%	43.30	11%	5.80	20%	2.96	13%	3.23	12%
Water[1]	0	0%	0	0%	0	0%	0	0%	0	0%
TOTAL	36.76	100%	400.12	100%	29.10	100%	23.23	100%	26.38	100%

1. Water land use excluded from MS4 outfall assessments. Water land use assumed to be a sink for runoff storage.

% = percent; WMA = Watershed Management Area

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The observed "C" was calculated for each outfall, based on the monitored event characteristics (event flow, event rainfall, and outfall drainage area). For outfalls that were monitored for more than one monitoring season, the Runoff "C" is averaged across all years of monitoring at that outfall. This value was compared with the expected "C" for each outfall, based on runoff coefficients listed in the San Diego County Hydrology Manual (County of San Diego, 2003) The current observed "C" value for each outfall, as well as the expected "C" for each outfall, is presented in Table 4-6.

Table 4-6
2015–2016 Los Peñasquitos WMA Observed vs. Expected Outfall Runoff Coefficients

Monitoring Location	Observed "C"	Hydrology Manual "C"
MS4-LPC-1	0.14	0.50
MS4-LPC-2	0.20	0.58
MS4-LPC-3	0.63	0.57
MS4-LPC-4	0.92	0.49
MS4-LPC-5	0.48	0.83

The WMA "C" for each land use was calculated using an area-weighted average of all monitored event "C" values for the monitored wet weather outfalls. To improve the accuracy of the calculation over time, historical (2013–2015) and current (2015–2016) WMA land use "C" values were included in the calculation. The historical and 2015–2016 WMA "C" values for each land use are presented in Table 4-7.

Table 4-7
Current and Historical Los Peñasquitos WMA Calculated Land Use Runoff Coefficients

Land Use Category	2013-2014 "C"	2014-2015 "C"	2015–2016 "C"
Agriculture-A[1,2]	0.058	0.051	0.053
Agriculture-B[1,2]	0.053	0.053	0.056
Agriculture-C[1,2]	0.052	0.053	0.060
Agriculture-D[1,2]	0.064	0.070	0.090
Commercial	0.263	0.226	0.263
Educational	0.347	0.283	0.265
Industrial	0.068	0.250	0.359
Mixed Use[3]	--	--	--
Open Space-A[2,4]	0.058	0.051	0.053
Open Space-B[2]	0.053	0.053	0.056
Open Space-C[2]	0.052	0.053	0.060
Open Space-D[2]	0.064	0.070	0.090
Residential: Multi Family	0.193	0.162	0.188
Residential: Rural	0.039	0.050	0.077
Residential: Single Family	0.142	0.135	0.157
Transportation	0.266	0.235	0.266

1. Because of limited WMA monitoring data for agriculture land use, "C" and event mean concentration (EMC) values are based on Los Peñasquitos WMA monitored outfalls data for Open Space with corresponding soil type land use type.
2. Agriculture and Open Space land use types were divided into subgroups based on hydrologic soil type. See http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ny/soils/?cid=nrcs144p2_027279 for more information on hydrologic soil types.
3. "C" and EMC values not calculated. Mixed Use land use represents less than 1 acre of area within the Los Peñasquitos WMA.
4. Open Space-A land use, "C," and EMC values are based on Los Peñasquitos WMA monitored outfalls data for Open Space-B land use type.

4.3.2 Monitored MS4 Outfall Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[b])

The volume of storm water and pollutant loads discharged from the MS4 outfalls to receiving waters in the jurisdictions within the WMA was calculated for each storm event with measurable rainfall greater than 0.1 inch. The wet season rainfall data for the ALERT rain gauge closest to each monitoring location were used to calculate the qualifying measured rainfall for each site. Table 4-8 presents the annual wet season storm water volume and pollutant load discharged from each outfall.

Table 4-8
Los Peñasquitos WMA Wet Season Flow Volume and Pollutant Loads by Drainage Area 2015–2016

Analyte	Units	MS4-LPC-1	MS4-LPC-2	MS4-LPC-3	MS4-LPC-4	MS4-LPC-5
Qualifying Measured Rainfall	in	6.92	12.49	12.49	12.49	11.39
Wet Season Flow Volume	cf	132,182	3,650,981	832,507	966,854	527,298
Indicator Bacteria						
Enterococcus	MPN	1.57E+14	8.44E+14	9.13E+13	7.13E+14	5.08E+14
Fecal Coliform	MPN	7.49E+12	1.14E+15	2.59E+14	4.38E+16	1.08E+14
Total Coliform	MPN	2.25E+14	1.76E+15	7.78E+14	4.38E+16	4.18E+15
Total Metals						
Total Cadmium	lb	0.0008	0.0210	0.0068	0.0060	0.0174
Total Copper	lb	0.7344	4.5585	1.8190	1.3279	0.9217
Total Lead	lb	0.0528	0.5470	0.0884	0.2716	0.0362
Total Selenium	lb	0.0021	0.0707	0.0192	0.0115	0.0494
Total Zinc	lb	0.9077	31.9095	6.7564	4.3459	4.2794
Dissolved Metals						
Dissolved Selenium	lb	0.0014	0.0023	0.0025	0.0006	0.0116
Nutrients						
Ammonia	lb	2.8882	59.2604	40.5382	22.3329	2.6005
Nitrate as N	lb	14.0282	364.6795	77.9580	53.1160	75.7122
Nitrite as N	lb	0.2723	11.6242	9.8747	6.0359	5.5961
TKN	lb	18.1542	455.8494	291.0432	126.7541	954.6316
Total Nitrogen	lb	32.1824	820.5289	379.3957	187.1132	1,020.4682
Total Phosphorus as P	lb	4.4560	61.5397	30.1438	25.3508	21.0677
Solid Parameters						
TSS	lb	908	5,470	1,143	7,847	1,876
TDS	lb	1,898	50,143	18,190	4,225	30,943

cf = cubic feet; in = inches; lb = pounds; MPN = most probable number; N = nitrogen; P = phosphorus;
TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; TSS = total suspended solids

4.3.3 Jurisdictional Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[c])

The volume of storm water and pollutant loads discharged from the jurisdictions of Responsible Agencies within the WMA over the course of the wet season was calculated for each storm event with measurable rainfall greater than 0.1 inch. The wet season rainfall data for the ALERT rain gauge closest that most represented the WMA were used. Because the Los Peñasquitos WMA contains more than one ALERT rain gauge, data

from the Poway rain gauge were used, because this station was closest to a majority of the wet season MS4 outfall monitoring stations. Table 4-9 presents the annual wet season storm water volume and pollutant load discharged from the jurisdictions of Responsible Agencies in the Los Peñasquitos WMA.

Table 4-9
Los Peñasquitos WMA Wet Season Flow Volume and Pollutant Loads by Jurisdictional Area 2015–2016

Analyte	Units	City of Del Mar	City of Poway	City of San Diego	County of San Diego
Qualifying Measured Rainfall	in	12.49[1]	12.49	12.49[1]	12.49
Wet Season Flow Volume	cf	217,496	93,713,770	299,584,222	7,344,905
Indicator Bacteria					
Enterococcus	MPN	2.94E+14	7.35E+16	2.35E+17	2.68E+15
Fecal Coliform	MPN	8.04E+14	1.82E+17	4.68E+17	8.26E+15
Total Coliform	MPN	1.12E+15	2.75E+17	7.96E+17	9.99E+15
Total Metals					
Total Cadmium	lb	0.0015	0.8710	3.0370	0.0332
Total Copper	lb	0.4333	138.9753	496.3421	7.3010
Total Lead	lb	0.0334	12.3255	33.9337	0.8745
Total Selenium	lb	0.0104	3.6652	12.3496	0.1865
Total Zinc	lb	1.8433	642.1788	2,437.1346	28.4612
Dissolved Metals					
Dissolved Selenium	lb	0.0101	2.9586	11.6546	0.0763
Nutrients					
Ammonia	lb	8.2695	2,747.0384	9,681.1478	148.0456
Nitrate as N	lb	26.1929	10,341.6817	30,665.6871	790.6406
Nitrite as N	lb	1.3089	536.3859	1,638.9260	37.9328
TKN	lb	45.0288	24,245.4220	85,039.2918	1,090.2261
Total Nitrogen	lb	76.7843	55,336.5705	208,833.9152	1,850.4057
Total Phosphorus as P	lb	6.0673	2,767.2634	7,576.0924	198.5862
Solid Parameters					
TSS	lb	373	447,256	620,050	61,722
TDS	lb	5,084	2,181,985	7,119,814	145,820

1. The qualifying measured rainfall amount used to calculate monitored outfall flow volumes and pollutant loads for the City of Del Mar and City of San Diego outfall monitoring stations (MS4-LPC-1 and MS4-LPC-5, respectively) was less than the rainfall amount used to calculate jurisdictional flow volumes and pollutant loads for these jurisdictions. The rainfall gauge that most represented the WMA as whole was used for WMA and jurisdictional calculations, while the rainfall gauge that most represented each outfall was used for outfall calculations.

cf = cubic feet; in = inches; lb = pounds; MPN = most probable number; N = nitrogen; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; TSS = total suspended solids

4.3.4 Land Use Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[d])

The MS4 Permit requires the percent contribution of storm water and pollutant loads discharged from each land use type within each hydrologic subarea (HSA) with a major MS4 outfall in the jurisdiction of each Responsible Agency in the Los Peñasquitos WMA be calculated. Because there are no HSAs within the Los Peñasquitos WMA, storm water volumes and pollutant loads were calculated on a hydrologic area (HA) level. The wet season rainfall data for the closest ALERT rain gauge that most represented the WMA were used. As in the jurisdictional load calculations described in Section 4.3.3, the Poway ALERT station data were used to calculate the qualifying measured rainfall for the WMA. Tables 4-10 through 4-13 present, by Responsible Agency jurisdiction, the percentage of the wet season storm water volume discharged from each HA with a major outfall in the Los Peñasquitos WMA. The numerator for this calculation is the wet season flow volume from each HA; the denominator is the total jurisdictional wet season flow volume. The percentages of the wet season storm water volume and pollutant loads discharged from each land use type within each HA with a major outfall in the Los Peñasquitos WMA, by Responsible Agency, are presented in Attachment F.4.

Table 4-10
City of Del Mar Percent Contribution of Storm Water Volume, by HA

HA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HA 906.1 – Miramar Reservoir	217,496	100%
Jurisdictional HAs with No Major Outfall	NA	0%
Jurisdictional WMA	**217,496**	**100%**

% = percent; cf = cubic feet; HA = hydrologic area; NA = not applicable; WMA = Watershed Management Area

Table 4-11
City of Poway Percent Contribution of Storm Water Volume, by HA

HA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HA 906.2 - Poway	93,713,770	100%
Jurisdictional HAs with No Major Outfall	NA	0%
Jurisdictional WMA	**93,713,770**	**100%**

% = percent; cf = cubic feet; HA = hydrologic area; NA = not applicable; WMA = Watershed Management Area

Table 4-12
City of San Diego Percent Contribution of Storm Water Volume, by HA

HA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HA 906.1 – Miramar Reservoir	239,254,791	79%
Jurisdictional HA 906.2 - Poway	60,329,430	21%
Jurisdictional HAs with No Major Outfall	NA	0%
Jurisdictional WMA	**299,584,221**	**100%**

% = percent; cf = cubic feet; HA = hydrologic area; NA = not applicable; WMA = Watershed Management Area

Table 4-13
County of San Diego Percent Contribution of Storm Water Volume, by HA

HA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HAs with No Major Outfall[1]	7,344,905	100%
Jurisdictional WMA	**7,344,905**	**100%**

1. The County of San Diego has jurisdictional land area in HAs 906.1, 906.2, and 906.4, but has no major outfalls in those HAs.

% = percent; cf = cubic feet; HA = hydrologic area; NA = not applicable; WMA = Watershed Management Area

4.4 Evaluation of Monitoring Locations and Frequencies

Provision D.4.b.(2)(b)(ii) of the MS4 Permit allows the Responsible Agencies to modify the wet weather MS4 outfall discharge monitoring locations and frequencies to better identify pollutants in storm water discharges from the MS4s in the WMA.

An analysis of wet weather MS4 outfall monitoring locations was performed in the 2014–2015 Transitional Monitoring and Assessment Report for the Los Peñasquitos WMA (TMAR) (San Diego County Municipal Copermittees, 2016). The purpose of the recommendations provided was to accurately quantify the storm water volume and loads from the various land uses in the WMA to improve the effectiveness of MS4 monitoring in meeting the intended MS4 Permit goal. As part of the evaluation of monitoring locations in the TMAR, the WMA land use was compared with the monitored outfall drainage area land uses. The results of this comparison are provided in Table 4-14.

Table 4-14
Land Use Comparison, WMA and Monitored Drainage Areas

Land Use	WMA Area (acres)[1]	WMA Area (%)[1]	Outfalls Area (acres)	Outfalls Area (%)	% Difference
Agricultural (Combined)	940	1.7%	0	0%	-1.7%
Commercial	2,928	5.2%	96	17.3%	12.1%
Educational	1,323	2.4%	9	1.6%	-0.8%
Industrial	4,625	8.3%	13	2.3%	-6.0%
Mixed Use	4	0%	0	0%	0.0%
Open Space (Combined)	23,277	41.7%	40	7.3%	-34.4%
Residential: Multi-Family	1,829	3.3%	58	10.4%	7.1%
Residential: Rural	2,995	5.4%	27	4.8%	-0.6%
Residential: Single-Family	12,057	21.6%	211	37.9%	16.3%
Transportation	5,797	10.4%	63	11.3%	0.9%
Total	**55,775**	**100%**	**517**	**100%**	**-**

1. Acreage excludes state, federal, and tribal lands; Source: San Diego County MS4 Copermittees, 2015

% = percent

Because the wet weather outfall monitoring locations did not change between the 2014–2015 and 2015–2016 monitoring seasons, the conclusions reached in the TMAR remain valid:

- The wet weather MS4 outfall monitoring locations are, overall, representative of land uses in the WMA.
- Open space land uses are under-represented in the monitored outfall drainage areas; however, the intention of monitoring is to characterize drainage from the MS4 (i.e., developed land uses).
- Single-family residential, multi-family residential, and commercial land uses are well represented in the monitored outfall drainage areas.

The evaluation of monitoring frequency includes a comparison of monitored event rainfall conditions with annual rainfall conditions. During the 2015–2016 wet season (October through April), rainfall totals at ALERT station gauges within the Los Peñasquitos WMA ranged from 11.85 inches at the Miramar Lake rain gauge to 12.87 inches at the Poway rain gauge. Both ALERT station gauges within the WMA registered more rainfall during the wet season than the official National Weather Service (NWS) rain gauge at San Diego International Airport – Lindbergh Field (7.42 inches). The storms that occurred generally had totals of less than 1 inch of rainfall, although one very large storm beginning January 4, 2016, produced more than 4 inches of rainfall throughout the WMA. The

average wet season storm event rainfall total at the Poway ALERT station rain gauge is 0.83 inch. The rainfall totals for the monitored storm events were less than this average.

It was recommended in the TMAR to target more monitoring events during average (greater than 0.5 inch) and large (greater than 1 inch) storms. The 2015–2016 sampling targeted one smaller (less than 0.5 inch) and one average storm. It is recommended to continue targeting larger storm events during future wet seasons where feasible, to capture a range of data for “C” calculations.

5 Special Study Assessments

Special studies have been selected to further investigate the HPWQCs in the Los Peñasquitos WMA. The special studies have been conducted and are summarized and assessed in this section. Studies included the Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Compliance Monitoring Program and the San Diego Regional Reference Streams and Beaches Studies. The Outfall Repair and Relocation Study is currently being implemented by the City of San Diego.

5.1 Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Study

Prior to adoption of the Sediment TMDL into the MS4 Permit, the City of San Diego developed a special study to assess sediment sources in the subwatersheds of the Los Peñasquitos WMA (referred to as the Watershed Special Study) (Attachment G). Phase I of the Watershed Special Study focused on monitoring sediment discharge in Carroll Canyon Creek and aerial deposition in the subwatershed. Phase I was conducted during FY 15 (July 1, 2014, through June 30, 2015) and is summarized in this report. In the following year (Phase II), the Watershed Special Study was enhanced by including the Carmel Valley Creek and Los Peñasquitos Creek subwatersheds and was designated as the special study for the Los Peñasquitos WMA during FY 16 (July 1, 2015, through June 30, 2016).

The goal of the Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Study was to characterize potential sediment sources contributing to the Lagoon. It was conducted concurrently with the Los Peñasquitos WMA Sediment TMDL Compliance Monitoring Program (Sediment TMDL Monitoring Program), which monitors total sediment loads into the Lagoon from the outlet of each of the three subwatersheds. Both monitoring programs were designed to provide data on SSC during wet weather conditions, estimated sediment loads, and delivery potential within storm flows. The key questions posed by the Special Study include:

- Wet Season Riverine Monitoring
  - What is the sediment concentration at discrete times throughout a wet weather event hydrograph at points throughout the subwatersheds?
  - What are current sediment load estimates at points throughout the subwatersheds? Is there a greater load from a potential source area?
  - What are the relative wet-weather sediment delivery potentials of each creek?
- Dry Weather Aerial Deposition Monitoring
  - What are the aerial contributions of sediment to the subwatersheds within the WMA?
  - Can airborne sediment particles be associated with specific sources or land uses?

- What is the contribution of aerial sediment deposition relative to wet weather suspended sediment loads observed from the subwatersheds?

5.1.1 Monitoring Overview

Monitoring for Phase II of the special study took place prior to and during the October 1, 2015, through April 30, 2016, wet weather monitoring season. Pre-wet-season (prior to October 1, 2015) monitoring consisted of:

- Volumetric streambed sampling and pebble counts for particle-size distribution
- Cross-section surveys
- Photo documentation

Wet season (October 1, 2015, through April 30, 2016) monitoring consisted of:

- Pollutograph sampling for SSC: continuous flow and precipitation, and discrete SSC samples
- Bedload sampling for particle-size distribution
- Post-storm pebble counts and photo documentation
- Instantaneous flow measurements

FY 16 aerial deposition during dry weather (September 1, 2015, through April 30, 2016) monitoring included:

- Aerial deposition sampling for particulate matter less than or equal to 10 microns in diameter (PM_{10})
- Comparison of two monitoring methods using optical sensors and Federal Reference Method (FRM)

Aerial deposition:

- Three sampling events
  - 2015–2016 monitoring events took place in fall and mid-winter because of planned (February 2016) destruction of Del Mar City Hall, where the reference station was located
- Sampling events consist of three 24-hour sample collection periods at each site: two during weekdays and one during the weekend
- Sampling with both USEPA FRM sampling equipment and optical sensor sampling equipment
  - Comparison of the results between both equipment types for future aerial deposition monitoring consideration

- Three additional aerial deposition monitoring locations were added by the City of San Diego in the Carroll Canyon Creek subwatershed that were monitored in conjunction with the planned locations. Resources for these locations were provided by the City of San Diego, and not through funding approved by the Responsible Agencies.

5.1.2 Monitoring Results

Storm Events

Rainfall data recorded at the Carmel Valley monitoring location (CV-CV) were used as the Watershed Special Study project rainfall data. Wet weather monitoring was conducted for three storm events during Phase II of the Watershed Special Study (2015–2016 wet season) (Table 5-1). Monitored storms in 2015–2016 resulted in 2.93 inches of rainfall, or 28% of the total wet season rainfall (10.33 inches).

Table 5-1
Summary of Monitored Wet Weather Events

Event	Date	Rainfall Total[1] (inches)
1	January 4–6, 2016	1.58
2	January 31, 2016	0.65
3	March 6–8, 2016	0.70

1. Rainfall for the upper WMA areas monitored for the Watershed Special Study was measured at the CV-CV monitoring location.

The storms monitored during the two phases were vastly different in size and intensity, making comparison challenging. Phase I (2014–2015) occurred during drought conditions, and light to moderate, consistent rainfall was observed during storms. Phase II (2015–2016) occurred during an El Niño year and although annual rainfall was below average, storms were generally intense and brief. A series of three particularly intense storms occurred over three days in early January 2016 (the first of which was monitored), as shown in Table 5-1.

For the estimation of annual sediment loads assessed in this project, a count of “wet days” was needed (see Annual Load Estimation below). A wet day is defined as a 24-hour period with at least 0.1 inch of rainfall. During the 2015–2016 wet season, 22 wet days were recorded using the Special Study rainfall data (at CV-CV), compared with 21 wet days recorded using the TMDL Compliance Program rainfall data (at LP), primarily due to orographic factors. For load estimates and comparability with the TMDL Compliance Program monitoring locations, a total of 21 wet days (number of wet days in the lower WMA) was used in the annual load estimation.

Bedload Sampling

Collection of bedload samples was attempted during each monitored event at five of the eight monitoring locations. CC-ML, LP-HV, and CV-CV did not have suitable locations at which to install samplers. Bedload sampling was attempted using both the trap samplers (installed in the streambed), which have been used in previous wet seasons, and manual bedload samplers (where safe access allowed). No samples were successfully collected during the first event. Most samplers were lost or damaged because of the high flows. One sample from CC-TC was collected during the second event and one sample was collected from CC-NR during the third event. However, in each case, samplers were either displaced or partially buried/overfilled upon retrieval, preventing assessment of the amount of material collected and the associated time frame.

Manual bedload sample collection attempts occurred during low flows, when it was safe to enter the stream, and yielded results from CC-AC and CV-CV during the second wet event only. Samples collected and measured from these two sites resulted in load estimates of 0.21 ton per day and 0.015 ton per day, respectively (not significant relative to washload estimated with SSC results). These samples were collected at one point during one storm and may not be representative of a consistent bed movement condition throughout the storm or day, nor of bedload during other non-sampled. This sample collection was an improvement over that of previous monitoring efforts, but further bedload results are required to accurately quantify this factor.

Pebble Count

Six post-storm pebble counts were conducted during the 2015–2016 wet season, showing a general increase in fine material at monitoring locations CC-TC and CC-BM. Results for CC-AC, CC-NR, and LP-NC varied throughout the year, with no apparent trend. No pebble counts were conducted at CC-ML, LP-HV, and CV-CV, because no suitable sampling locations were present.

5.1.3 Suspended Sediment Load Calculations

Annual Load Estimates

The annual suspended sediment load was estimated by multiplying the average of the three daily load estimates at each monitoring location by the number of wet days from the 2014–2015 (14 days) and the 2015–2016 (21 days) monitoring years. Load estimation options are often limited to this type of approach (referred to herein as the “average estimation method”) based on the amount of data. This approach can potentially skew overall estimates in either direction. Alternative approaches were explored in FY 15 by assessing the relationships among rainfall intensity, EMC, and sediment load to determine whether EMC and/or sediment load values can be reasonably estimated on the basis of rainfall intensity. When data from the 2015–2016 wet season were incorporated, the rainfall intensity/sediment load relationships became too weak for use in estimating loads, so the load estimates reported here are calculated using only the average estimation method described above. Although the results may be skewed high, these values are comparable to the TMDL Monitoring Program estimates and facilitate

comparisons and assessments of sediment loads within the subwatersheds and into the Lagoon. Considering these differences in rainfall characteristics between wet seasons, comparability between years is limited but the collected data do provide some useful findings.

Sediment Loads from Subwatersheds

In previous monitoring periods (2013–2015), Carroll Canyon Creek contributed most of the sediment to the Lagoon, but during this monitoring period, Los Peñasquitos Creek delivered the highest overall load because of unusually high flows. Sediment concentrations (SSC and EMC) in Los Peñasquitos Creek were relatively low compared with those of the other two subwatersheds, but the large flow volumes from Los Peñasquitos Creek caused a shift in the relative sediment contribution. As usual, overall contribution from Carmel Valley Creek remained small to insignificant (approximately 1% of the annual load estimate) during the monitoring season, thus making this subwatershed the lowest priority for assessing management measures.

Sediment Loads at Areas of Interest

Stream reaches that may warrant further investigation include the reach of Carroll Canyon Creek running through the gravel mine operations and the immediate reach downstream, the upper portion of Los Peñasquitos Creek, and the upper portions of Carmel Valley Creek. The following provides greater detail regarding each of these stream reaches.

During Phase I, the highest suspended sediment loads were calculated at the Arizona Crossing location (CC-AC), at the downstream end of a highly erodible stream reach. However, during Phase II, the highest sediment loads were measured at the North City location (LC-NC) in the upper Los Peñasquitos Creek subwatershed, due to unusually high flows rather than unusually high EMCs.

Based on the Watershed Special Study (Phases I and II), the central portion of Carroll Canyon Creek between the three upper subwatershed monitoring locations and CC-NR appears to be the primary area contributing sediment to the Lagoon via Carroll Canyon Creek. During Phase I, relatively high loads were measured at the CC-AC location, which were then deposited in the channel, as lower loads were estimated downstream at the CC-NR location. During Phase II, relative sediment load contributions shifted, and higher loads were observed at CC-NR compared to CC-AC. These results suggest the large sediment contribution from the reach between the upper monitoring locations and CC-AC is deposited downstream during typical storm events observed in Phase I, and can be mobilized during larger, more intense storms like those observed during Phase II.

Los Peñasquitos Creek

Another area of interest is the upper subwatershed reaches near the LP-HV and LP-NC sites and downstream through the Los Peñasquitos Creek subwatershed. This result may indicate another source reach followed by a large sink, as the load estimates are slightly higher at LP-NC compared to those at the base of the creek. However, data for only one year are available for this subwatershed; therefore, these results and assessments are preliminary.

Carmel Valley Creek

Similar to Los Peñasquitos Creek, load estimates from the upper portion of Carmel Valley Creek were similar (slightly less) than the estimated load at the base of the creek. However, overall load estimates from Carmel Valley Creek are significantly less than those at Los Peñasquitos and Carroll Canyon Creeks. Similar to findings at Los Peñasquitos Creek, this result is based on a limited data set from one year of monitoring. Furthermore, the relatively small loads from this subwatershed make it a low priority for management measures.

SSC Versus Flow Relationships

An alternative approach to assessing sediment sources and loads focused on relationships between SSC and flow rates. A preliminary analysis compared SSC measured during two wet seasons (2014–2016) and the corresponding flow rates for those samples. CC-NR and CC-AC had the strongest SSC versus flow relationships, with coefficient of determination (R^2) values of 0.78 and 0.74, respectively. These sites were also shown to have ample sediment supply upstream, as found in a geomorphic assessment conducted during the 2014 monitoring program (AMEC Environment & Infrastructure, Inc. [now Amec Foster Wheeler], 2014). The reaches upstream of these monitoring locations were characterized by highly erodible banks, with limited armoring within the channel. Hidden Valley also had a relatively strong SSC versus flow relationship (R^2=0.62) over the study period. The other five sites showed poor relationships between SSC and flow. CC-BM (R^2=0.39) and CC-ML (R^2= -0.13) are similar in that samples are taken as flow enters a storm drain.

5.1.4 Aerial Deposition Monitoring

Aerial deposition monitoring results from both FY 15 and FY 16 indicated that airborne particulate matter equal to or less than 10 microns in diameter (PM_{10}) are not a significant source of sediment within the WMA. PM_{10} analytical results from three monitoring events were generally low, either at or near the reporting limits and monitoring results from the two types of monitoring equipment (FRM and optical sensors) indicated similar results. There were marginal increases in concentrations around anthropogenic activities, particularly in the Carroll Canyon Creek subwatershed relative to other monitored locations; however, these slight increases were not consistent or significant, in that results from both types of equipment were low or negligible.

Visual observations at the Carroll Canyon Creek downwind monitoring location, near the Black Mountain SSC monitoring location, discovered significant, visible particle matter deposition on the surfaces of vehicles, roads, and buildings and other surrounding structures. The observed deposition may be due to the high volume of truck traffic at the mining operations adjacent to the monitoring location. Despite these observations, monitoring equipment placed on the roof of a nearby fire department did not show elevated concentrations of PM_{10}. This result indicates that the observed deposition remained localized to the area just outside the gravel mine driveway.

5.1.5 Conclusions and Recommendations

Per the MS4 Permit (Provision D.4.c) data resulting of special studies should be used (1) assess their relevance to the Responsible Agencies' characterization of receiving water conditions, (2) understand sources of pollutants and/or stressors, and (3) control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters. The Sediment TMDL provides more information on sediment sources in the watershed and an initial framework for assessing management measures and focus areas.

Of the three subwatersheds, Carroll Canyon Creek is the primary subwatershed on which to focus resources and management measures. In typical years, Carroll Canyon Creek delivers the highest percentage of sediment load to the Lagoon (80 to 90%), and despite not contributing the highest percentage this year, its estimated SSC EMCs were the highest of the three subwatersheds. The data also show that sediment is deposited in the lower portions of the subwatershed and can be mobilized during large storm events. Management measures that address controlling sources of sediment where possible can drive down SSC concentrations, and ultimately loads.

The aerial deposition sampling shows that aerial sources are not a significant source of sediment within the WMA. The results were all at or below the reporting limits and were negligible in areas near active gravel mines. Resources do not need to be focused on controlling aerial sources of particulate matter.

5.2 San Diego Regional Reference Streams and Beaches Studies

The San Diego Regional Reference Stream and Beach Studies (SCCWRP, 2015 and SCCWRP, 2016) were designed to measure FIB concentrations and loads at streams and beaches that are minimally disturbed by anthropogenic activities; representing "reference" conditions. Nutrients, metals, and toxicity data were also collected. The resulting data may be used by the Regional Board in the Bacteria TMDL Reopener to derive reasonable and accurate numeric targets for bacteria on the basis of a reference system approach.

5.2.1 San Diego Regional Reference Streams Study

The goal of the San Diego Regional Reference Stream Study was to characterize the natural background concentrations of bacteria, nutrients, heavy metals, and conventional constituents in undeveloped watershed catchments during wet and dry weather. To meet the goal, the study was designed to categorize the exceedance frequencies of FIB water quality objectives (WQOs) by geomorphologic, hydrologic, biotic, and abiotic factors. The human-associated microbial source marker was used to exclude sites and samples with potential human fecal contamination, ensuring that the documented exceedance rates are attributable to nonhuman sources. This summary focuses on presenting the findings for FIB, specifically *Escherichia coli (E. coli)*, *Enterococcus*, and total and fecal coliforms.

The San Diego Reference Stream Study had seven major findings:

1. FIB levels in natural streams likely result from a combination of natural inputs, such as wildlife, birds, and soil erosion and instream bacterial growth facilitated by high summer temperatures, availability of nutrients, and presence of decaying organic matter.

2. Storm event mean concentration exceedances were low except for *Enterococcus*. Based on seven storms, exceedances of single-sample WQOs were 0% for *E. coli*, fecal coliform, and total coliform. The exceedance frequency for *Enterococcus* on the day of the storm was 87%, compared with 37% for the following three days after the end of the storm. The exceedance frequency increased for both *E. coli* and total coliform to 29% if the pollutograph maximum was used. The number of storm events captured was not sufficient to investigate the effect of geology or watershed size on storm event mean concentrations.

3. FIB exceedances occurred in natural sites and were highest in summer dry weather (April through August). No exceedances of fecal coliform single sample WQOs were observed; however, single-sample WQO exceedances of *Enterococcus* were as high as 30%. Annual 30-day geomean exceedance frequencies were 0% for both *E. coli* and fecal coliform, but were 48% and 30% for *Enterococcus* and total coliform, respectively. Exceedance frequencies were highest in the summer, particularly for *Enterococcus*, spiking up to 40% and 68% for single-sample and 30-day geometric mean WQOs, respectively. Using a rolling 30-day geometric mean rather than a monthly mean to calculate exceedance frequencies increased the exceedance frequencies for *Enterococcus* and total coliform as much as 20%.

4. Temperature, and to a lesser extent nutrients and organic carbon, was the major factor associated with elevated summer dry weather FIB concentrations and exceedance frequencies.

5. No significant relationships were found between FIB concentrations and watershed size or geology during dry weather.

6. Water column FIB concentrations could not be attributed directly to instream benthic algal biomass as a measure of stream trophic status, which was low and showed no distinct seasonal variation. In contrast, FIB, temperature, organic carbon, and nitrogen measurements spiked at the end of the season, coinciding with the end of stream flow. This cycle occurs naturally; organic carbon and nutrients are increasingly recycled from organic matter as flow diminishes and temperature increases, conditions that coincide with increased FIB concentrations.

7. Event mean concentration fluctuations during wet weather were found to be 2 to 3 times greater than dry weather FIB fluctuations. Wet and dry weather fluctuations were comparable to those documented in previous southern California regional studies.

5.2.2 San Diego Regional Reference Beaches Study

The goal of the San Diego Regional Reference Beach Study was to characterize natural background concentrations of FIB and determine WQO exceedance frequencies at two "reference" recreational beaches and their adjoining estuary or mixing zones. Two beaches in southern California, San Onofre Creek in San Diego County and Deer Creek in Ventura County, were selected for the Reference Beach Study for dry and wet weather assessments of *Enterococcus*, fecal and total coliforms, and *E. coli*. These locations were selected because watersheds discharging to the beaches were more than 93% undeveloped and had not been subject to fires within the previous three years. Additionally, both beaches are openly exposed with breaking waves and contain freshwater inputs. Analysis of human genetic markers was used to eliminate sites or samples with potential human contamination and therefore not representative of reference conditions.

The San Diego Regional Reference Beach Study was initiated in October 2014 and continued through April 2016. Sampling was conducted in the ocean immediately in front of the inlet or estuary, in the inlet mouth just upstream of the mixing zone, and in the freshwater flowing creek, for a total of three locations at each reference site. Dry weather monitoring was conducted during both wet and dry seasons to characterize baseline conditions throughout the year. Bacteria samples were collected weekly, such that five samples were collected in each 30-day period, to calculate a 30-day dry weather geometric mean. In creeks, dry weather sampling occurred when there was measureable flow at a site. During wet weather, samples were collected during and after the storm. A special study was also conducted to quantify FIB concentrations in the San Onofre estuary. When the estuary was open to tidal exchange, monitoring was extended to collect samples at high and low tides at all sites.

The San Diego Regional Reference Beach Study began during an extended period of drought in the southern California region, which limited the number of samples collected from creeks and during storms, as well as the overall volume of freshwater input to beaches. Dry weather beach sampling achieved the prescribed frequency, but samples from freshwater input sources were limited by extreme drought. From the onset of sampling, San Onofre Creek did not flow during the study period because of the extended drought. Deer Creek began flowing at the end of December 2014 and ceased in early May 2015; Deer Creek did not flow during the 2015–2016 winter dry weather period. In a similar effect, wet weather sampling was limited to only one storm during this study period because of the drought conditions. However human genetic markers were detected and so the results were excluded from the exceedance frequency analysis. The estuary special study was not completed because the San Onofre estuary berm remained closed throughout the study period for all but one storm event, which coincided with a tide in excess of 7 feet. The sampling locations were deemed inaccessible during that event, and so the estuary data collected only characterize concentrations during conditions with a closed estuary mouth.

Although drought conditions limited the conditions in which data were collected, the Reference Beach Study had several key findings:

1. The ranges of annual dry weather FIB concentrations at both beaches were considered low. The ranges are comparable to results from previous FIB beach bacteria reference studies that had estuaries closed to tidal exchange (i.e., San Onofre Creek) or flow to the beach without an estuary (i.e., Deer Creek), with WQO exceedance frequencies in the range of 0% to 3.5%. Prolonged drought conditions resulted in intermittent dry weather flow at Deer Creek and no dry weather flow at San Onofre Creek, which provides important context to interpret data on exceedance frequencies.

2. Concentrations of FIB in the estuary or freshwater mixing zone of both San Onofre and Deer Creeks were typically one to three orders of magnitude higher than their respective beaches, with the highest WQO exceedance frequencies found in San Onofre Creek.

3. In the San Onofre Creek estuary, the dry weather geometric mean exceedance frequency during summer was 72% for fecal coliform; the dry weather geometric exceedance frequency during summer was 100% for both *Enterococcus* and *E. coli*. Dry weather geometric mean exceedances during wet season months ranged from roughly 55% (for total coliform) to 100% (for *Enterococcus*). The higher WQO exceedance frequencies of San Onofre Creek estuary relative to the mixing zone of Deer Creek could be expected, given the abundance of labile organic matter to support microbial growth as well as the presence of water birds typically found in estuaries.

4. At both beaches, no significant relationship was found with water temperature, salinity, or antecedent dry days. In contrast to San Onofre Beach, where FIB concentrations declined with the increasing duration of dry weather, the range and mean FIB concentrations in San Onofre Creek estuary increased with increasing antecedent dry days and salinity, suggesting that freshwater input from the ephemeral channel tended to dilute concentrations, rather than be a source of bacteria to the beach. The slight increase of FIB concentrations as a function of temperature and the lack of surface freshwater input in San Onofre Creek estuary suggests that regrowth may be a factor, which is credible given the organic rich environment of the San Onofre Creek estuary.

5.2.3 Conclusions and Recommendations

Per the MS4 Permit (Provision D.4.c) data resulting from special studies should be used to (1) assess their relevance to the Responsible Agencies' characterization of receiving water conditions, (2) understand sources of pollutants and/or stressors, and (3) control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters. The San Diego Regional Stream and Beach Reference Studies characterized FIB levels in reference waterbodies and contributed to the understanding of non-anthropogenic sources of FIB. The data generated by the study are intended to be used by the Regional

Board in the Bacteria TMDL Reopener to derive reasonable and accurate numeric targets for bacteria that account for contributions from natural sources as characterized by the study.

The San Diego Regional Stream Study is directly related to the highest priority water quality condition. The adaptive management process may use the following key findings to inform the Bacteria TMDL Reopener:

- During dry weather conditions (streams):
  - There are exceedances of FIB WQOs at natural sites for *Enterococcu*s and total coliform (single sample and annual 30-day geomean).
  - These are highest during summer months (April to August).
  - There were no exceedances of the fecal coliform single sample WQOs along with a 0% exceedance frequency of the annual 30-day geomean.
  - *E. coli* also had a 0% exceedance frequency of the annual 30-day geomean.
- During wet weather conditions (streams):
  - Storm event mean concentration exceedances of single sample WQOs were 0% for *E. coli*, fecal coliform, and total coliform, but if the storm maximum pollutograph was included, there were exceedances for *E.coli* and total coliform.
  - For the storm event mean concentration exceedances of single sample WQOs for *Enterococcus,* the exceedance frequency on the day of the storm was 87%, compared with 37% for the following three days after the end of the storm.
- In summary for reference streams:
  - *Enterococcus* concentrations can often exceed the WQO in both dry and wet weather conditions in streams with no anthropogenic impacts.
  - Total coliform concentrations exceeded the WQO only during wet weather conditions in the reference watershed streams when the storm peak was incorporated into the event mean concentration.
  - *E. coli* concentrations exceeded the WQO only during wet weather conditions in the reference watershed streams when the storm peak was incorporated into the event mean concentration.
  - Fecal coliform concentrations did not exceed WQO in dry and wet weather conditions in any reference watershed streams.
- During dry weather conditions (beaches):
  - The *Enterococcus* dry weather annual 30-day geomean exceedance frequency was 100% for the whole year in the San Onofre Creek estuary.

- The total coliform dry weather annual 30-day geomean exceedance frequency was 55% during winter months (October to March) in the San Onofre Creek estuary.
- The *E. coli* dry weather annual 30-day geomean exceedance frequency was 100% during summer months (April to August) in the San Onofre Creek estuary.
- The fecal coliform dry weather annual 30-day geomean exceedance frequency was 72% during the summer months in the San Onofre Creek estuary.

- During wet weather conditions (beaches):
  - No wet weather reference samples were analyzed for the beach study because human genetic markers were found in the samples during the one wet weather sampling event.
- In summary for reference beaches:
  - *Enterococcus* dry weather 30-day geomeans were exceeded during the whole year.
  - Total coliform dry weather 30-day geomeans were exceeded during the winter months (October to March).
  - *E. coli* and fecal coliform dry weather 30-day geomeans were exceeded during the summer months.

Concentrations of FIB were one to three times higher in estuary or freshwater mixings zones than at the beaches. For reference beaches with both streams and estuaries closed from tidal exchange, *Enterococcus* exceeded WQOs. Total coliform, *E. coli*, and fecal coliform concentrations exceeding WQOs varied for seasons and waterbody types. Additionally, the variability in dry weather FIB concentrations is less than the variability in wet weather FIB event mean concentrations, confirming the findings of previous studies.

5.3 Outfall Repair and Relocation Study

The Sediment Load Reduction Quantification Through Outfall Repair and Relocation for the Los Peñasquitos WMA Study was performed to assess the current sediment loading to the Los Peñasquitos Lagoon caused by the erosive scour associated with outfall discharge, as well as possible sediment load reductions associated with various BMPs.

The sediment loading analysis method used in this study utilizes the United States Department of Agriculture (USDA) Bank Stability and Toe Erosion Model (BSTEM) to estimate scour potential. The BSTEM simulation of 102 outfalls in the City of San Diego resulted in a total of 1,400 cubic feet (approximately 85 tons) per year of sediment related to erosive discharge in the Los Peñasquitos WMA. The resulting 85 tons per year from the BSTEM analysis for all 102 modeled outfalls account for approximately 1.4% of the total sediment load for the watershed. Of these 102 outfalls, 42 were identified as “high priority” outfalls because of their high annual sediment load production.

Three types of BMPs were investigated to estimate the amount of the loading that could potentially be reduced or eliminated. It was determined that the total sediment load modeled could be reduced by implementing the following BMP practices at the 42 high priority outfalls:

- 50% reduction in sediment through outfall relocation (extending storm water conveyance infrastructure from a location near the top of a canyon to one near the valley floor);
- 79% reduction in sediment by installing energy dissipation structures (placing materials below the outfall that reduce the energy of incoming storm flows); and
- 84% reduction in sediment by implementing regenerative storm water conveyance (RSC) practices (a relatively new BMP intended to treat storm water through a series of energy dissipation structures and small retention ponds).

Potential next steps include completing field verifications of the BSTEM loads and/or monitoring to validate model results. In addition, a cost benefit analysis and evaluation of challenges associated with implementation of BMP practices will be considered.

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6 Publicly Available Data

The MS4 Permit requires the Responsible Agencies to provide monitoring data and assessment results to the public. The following sections provide the locations where the public may obtain this information.

6.1 California Environmental Data Exchange Network Upload and Retrieval

Provision F.4.a.(6) of the MS4 Permit requires monitoring data collected as part of the Los Peñasquitos MAP to be uploaded to CEDEN. Certifications from CEDEN confirming data upload as required will be included in Attachment H.

CEDEN is a central location for finding and sharing information about California's waterbodies and aggregates water quality, aquatic habitat, and wildlife health data. The data are accessible in downloadable forms at www.ceden.org.

Data collected under the Los Peñasquitos WMA MAP for the October 2015–September 2016 monitoring year will be available in 2017. Data in the CEDEN are searchable by date and by location, project, station, or parameter. Data collected as part of the programs described in this Monitoring Results and Assessment Appendix of the Los Peñasquitos WMA WQIP Annual Report can be retrieved using the project names listed in Table 6-1.

Table 6-1
Project Names for CEDEN Data Retrieval

Monitoring Program	CEDEN Project Name Field Name "ProjectCode"
MS4 Outfall (Wet and Dry Weather)	MS4_WW_OFM MS4_DW_OFSM
Bacteria TMDL	LosPen_BacteriaTMDL
Sediment TMDL	LP_Sediment_TMDL
Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Monitoring Plan	LP_Special_Study

CEDEN = California Environmental Data Exchange Network; MS4 = Municipal Separate Storm Sewer System; TBD = to be determined; TMDL = Total Maximum Daily Load

6.2 Regional Clearing House

For the 2015–2016 monitoring year, the Responsible Agencies are providing the following data and documentation on the Project Clean Water website (Project Clean Water, 2016), which can be accessed by the general public:

- 2015–2016 Annual Report, including all appendices and associated attachments, including:
  - JRMP Annual Report for each Responsible Agency within the WMA
  - Monitoring Results and Assessment Appendix
  - SMC Bioassessment Summary
  - Bacteria TMDL Compliance Report
  - Reports from special studies conducted in the WMA not previously submitted (Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Monitoring Plan)
- BMP Design Manual for each Responsible Agency within the WMA and all updated versions with date of update
- Monitoring data uploaded to the CEDEN with links to the uploaded data
- Available GIS data, layers, and/or shapefiles used to develop the maps to support the WQIP, Annual Reports, and JRMPs

7 References

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Attachment A – Sediment TMDL Compliance Report

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LOS PEÑASQUITOS LAGOON WATERSHED MANAGEMENT AREA
SEDIMENT TMDL COMPLIANCE MONITORING
FINAL REPORT

Submitted to:
City of San Diego
Transportation & Storm Water Department
9370 Chesapeake Drive, Suite 100
San Diego, California 92123

Submitted by:
Amec Foster Wheeler
San Diego, California

November 2016

IMPORTANT NOTICE

This report was prepared exclusively for the City of San Diego (City) by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Amec Foster Wheeler's services and based on (i) information available at the time of preparation; (ii) data supplied by outside sources; and (iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by the City only, subject to the terms and conditions of its contract with Amec Foster Wheeler. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

EXECUTIVE SUMMARY

Los Peñasquitos Lagoon (Lagoon) has been historically impacted by anthropogenic disturbances. These have caused excessive sedimentation leading to the gradual degradation and loss of estuarine habitat. As a result, the Lagoon was placed on the Clean Water Act Section 303(d) List of Water Quality Limited Segments for sedimentation and siltation. To address these water quality impairments, on June 13, 2012, the San Diego Regional Water Quality Control Board (Regional Board) adopted Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate the Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon* (referred to as the Sediment TMDL) (Regional Board, 2012).

Project Objectives. The Los Peñasquitos Lagoon Watershed Management Area (WMA) Sediment TMDL Compliance Monitoring Program (Monitoring Program) was designed for the Responsible Agencies (RAs) to assess sediment transport within the three major tributaries that flow through the WMA into the Lagoon: Carroll Canyon Creek, Carmel Valley Creek, and Los Peñasquitos Creek. The Monitoring Program provides data on (a) suspended sediment concentration (SSC) during wet weather conditions, (b) estimated sediment loads to the Lagoon for comparison with the Waste Load Allocation (WLA) stated in the Sediment TMDL, and (c) sediment delivery potential within storm flows in the creeks just before they empty into the Lagoon. This report presents the results of monitoring during Fiscal Year 2016 (FY16) (July 1 2015 – June 30, 2016), along with a comparison to historical data collected to date.

Monitoring Elements. Monitoring took place prior to and during the wet season

Pre-wet-season (prior to October 1, 2015) monitoring consisted of:

- Volumetric streambed sampling for particle-size distribution;
- Pebble counts;
- Cross-section surveys; and
- Photodocumentation.

Wet season (October 1, 2015 – April 30, 2016) monitoring consisted of:

- Pollutograph sampling for SSC;
- Bedload sampling for particle-size distribution;
- Post-storm pebble counts and photodocumentation;
- Instantaneous flow measurements; and
- Long-term flow monitoring.

SSC Results. Data collected during the three wet weather events monitored during the 2015–2016 wet season showed fluctuations of SSC that generally correlated with changes in flow. However, when compared to previous seasons, concentrations tended to be higher and to remain higher throughout the storm because of the unusually intense rainfall experienced during this season. In general, data collected from the 2013–2016 monitoring events (three seasons) indicated that SSC concentrations were higher at or just after the times that higher flows were recorded and during the rising limb of the hydrograph, as expected for sediment transport influenced by supply limits. Observations of peak SSC coinciding with peak flow or slightly before peak flow indicates sediment was mainly supplied from surface washoff, driven by precipitation.

These sediment sources were either quickly exhausted during rainfall, or ceased to be mobilized and supplied to the stream when rainfall stopped. This contrasts streams where SSC rises after peak flow, indicating sediment deposits on the bed and banks are mobilized by the increased flow, or eroded on the falling limb of the hydrograph. Data collected during the 2013–2014 and 2014–2015 wet seasons at Los Peñasquitos Creek indicated that SSC concentrations were higher during the earlier portions of the hydrographs, and were lower or not detected at the peak of the hydrograph. However, data collected during the 2015–2016 wet season showed higher sustained sediment concentrations in Los Peñasquitos Creek throughout the storm, particularly for a large storm in early January 2016. This pattern may indicate this large, energetic storm event scoured and transported sediment that was stored in vegetation and on the streambed in the lower portion of Los Peñasquitos Creek.

Estimated Loads. Flow-weighted event mean concentrations (EMCs) and SSC load estimates were calculated using analytical SSC data and flow data. The total estimated load for the three monitored creeks for the 2015–2016 wet season was 23,500 tons per year, which is significantly greater than the WMA's Sediment TMDL WLA of 2,580 tons per year. The unusually high load estimates were driven primarily by a series of large, intense storm events in early January 2016.

Data collected during the 2015–2016 wet season indicated a shift in the dynamics of load inputs to the Lagoon. This is primarily due to the unusually intense storms that occurred this season that produced high flows, particularly in Los Peñasquitos Creek. Carroll Canyon Creek typically accounts for the majority (80 to 90 percent) of the sediment loads to the Lagoon. However, because of these unusually high flows, Los Peñasquitos Creek accounted for approximately 60 percent of the total load this season, despite not showing a similar relative shift in EMCs. Carroll Canyon Creek accounted for approximately 39 percent and Carmel Valley Creek accounted for approximately 1 percent. The relative contributions measured this season differ greatly from data collected over the past two seasons and a previous estimate (Weston Solutions Inc., 2009a) that Carroll Canyon Creek can supply up to 92 percent of the total sediment contribution to the Lagoon.

The estimated annual sediment loads are preliminary values, based on the limited data set collected during the 2013–2014, 2014–2015, and 2015–2016 wet seasons (nine total events). Data collection during future storm events are required to further refine these sediment load estimates, particularly for non-monitored events.

Total Sediment Load and WLA. Based on monitoring data collected during the 2015–2016 wet season, the total sediment load estimate of 23,500 tons per year is above the WLA allowed by the Sediment TMDL. The unusually high load estimates were driven primarily by a series of large, intense storm events in early January 2016. Continued compliance monitoring at the sediment TMDL locations is planned for Fiscal Year 2017 (FY 17).

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ACRONYMS AND ABBREVIATIONS

303(d) List	Clean Water Act Section 303(d), List of Water Quality Limited Segments
ADCP	acoustic Doppler current profiler
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
BMP	best management practice
Caltrans	California Department of Transportation
cfs	cubic foot (feet) per second
City	City of San Diego
EMC	event mean concentration
FY	fiscal year
hr	hour
in	inch(es)
Lagoon	Los Peñasquitos Lagoon
LID	low-impact development
mg/L	milligrams per liter
MS4	municipal separate storm sewer system
MS4 Permit	Order Number R9-2013-0001, as Amended by Order No. R9-2015-0001, NPDES No. CAS010266, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*
NPDES	National Pollutant Discharge Elimination System
OAL	California Office of Administrative Law
RAs	Responsible Agencies (these are: Cities of San Diego, Poway, and Del Mar, and the County of San Diego)[1]
Regional Board	San Diego Regional Water Quality Control Board
Sediment TMDL	Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon*
SSC	suspended sediment concentration
TMDL	total maximum daily load
USEPA	United States Environmental Protection Agency
Weston	Weston Solutions, Inc.
WLA	waste load allocation
WMA	Watershed Management Area
WQIP	Water Quality Improvement Plan

[1] Responsible Agencies (RAs) listed are those included in the WQIP implementation. Caltrans is included in the TMDL; however, Caltrans is not part of the WQIP implementation due to their own statewide permit.

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1.0 INTRODUCTION

This report summarizes results from the Los Peñasquitos Lagoon Watershed Management Area (WMA) Sediment Total Maximum Daily Load (TMDL) Compliance Monitoring Program (Monitoring Program) that took place during Fiscal Year 2016 (FY16) (July 1, 2015 – June 30, 2016). The Monitoring Program provides data on (a) suspended sediment concentration (SSC) during wet weather conditions, (b) estimated sediment loads to the Lagoon for comparison with the Waste Load Allocation (WLA) stated in the Sediment TMDL, and (c) sediment delivery potential within storm flows in the creeks just before they empty into the Lagoon.

1.1 BACKGROUND AND REGULATORY FRAMEWORK

The Lagoon is a coastal salt marsh lagoon in west-central San Diego County, in southern California. The WMA is approximately 60,500 acres and contains portions of the cities of Poway and Del Mar, unincorporated areas of San Diego County, and the communities of Mira Mesa, Scripps Ranch, Carmel Valley, and Sorrento Valley within the City of San Diego (City). The WMA is drained by three major creeks, Carroll Canyon Creek, Carmel Valley Creek, and Los Peñasquitos Creek, which ultimately discharge into the Lagoon.

Los Peñasquitos Lagoon (Lagoon) has been historically impacted by anthropogenic disturbances. These have caused excessive sedimentation leading to the gradual degradation and loss of estuarine habitat. As a result, the Lagoon was placed on the Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) for sedimentation and siltation. To address these water quality impairments, in 2012 the San Diego Regional Water Quality Control Board (Regional Board) adopted Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate the Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon* (referred to as the "Sediment TMDL") (Regional Board, 2012).[2]

The Sediment TMDL has been designed to restore the Lagoon to its mid-1970s condition by assigning the responsible parties a WLA for sediment contributions from the WMA. The responsible parties are (a) the Phase I Municipal Separate Storm Sewer System (MS4) copermittees, (b) the Phase II MS4 permittees, (c) the California Department of Transportation (Caltrans), and (d) the General Construction and General Industrial Storm Water National Pollutant Discharge Elimination System (NPDES) permittees.

The Sediment TMDL designates a single WLA of 2,580 tons per year for the entire WMA contribution, which is assigned collectively to the responsible parties.

The Sediment TMDL has been incorporated into the Order Number R9-2013-0001, as Amended by Order No. R9-2015-0001*, NPDES No. CAS010266, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal*

[2] The Sediment TMDL was approved by the State Water Resources Control Board on January 21, 2014; by the California Office of Administrative Law (OAL) on July 14, 2014; and by the United States Environmental Protection Agency (USEPA) on October 30, 2014.

Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region (Regional Board, 2015) (referred to as the MS4 Permit) and included in the Water Quality Improvement Plan (WQIP) for the Los Peñasquitos WMA (Amec Foster Wheeler, 2015). The requirements of the Sediment TMDL and the MS4 Permit are to be executed under the WQIP. The WQIP is being implemented by the Cities of San Diego, Poway, and Del Mar, and the County of San Diego, collectively referred to as the Responsible Agencies (RAs).

1.2 CURRENT STUDY

Understanding the mechanics of sediment transport and relative contributions from the WMA's three major creeks will enable the RAs to effectively address the WLAs required under the Sediment TMDL. Amec Foster Wheeler conducted sediment transport sampling and characterization before and throughout the 2015–2016 wet season (October 1, 2015–April 30, 2016). Data collected at these sites provide an estimate of the current loads from the WMA into the Lagoon.

1.3 PROJECT OBJECTIVES

This Monitoring Program was designed to measure flows at each of the three major WMA creeks, monitor suspended sediment concentration (SSC) during three storm events, assess changes in streambed composition throughout FY16 monitoring, and estimate wet weather sediment loads from each of the creeks. The Monitoring Program was designed to answer the following questions:

- What is the sediment concentration at discrete times throughout a storm event hydrograph at the bases of the three major creeks that discharge to the Lagoon?
- What are the estimated current sediment loads from these creeks, and how do they compare to the Sediment TMDL WLA?
- How do the wet weather sediment delivery potentials of each creek compare with each other?

These data will allow comparison of the WMA's current sediment transport conditions to the Sediment TMDL WLA and will help the RAs evaluate potential management measures, such as best management practices (BMPs) and low-impact development (LID).

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2.0 MONITORING APPROACH AND ANALYTICAL METHODS

This Monitoring Program is a continuation of previous monitoring projects, and uses the same monitoring approach and analyses.[3] The project's monitoring elements are:

Prior to the wet season:

- Volumetric streambed samples for particle-size distribution
- Initial pebble counts and photodocumentation
- Channel cross-sectional surveys

Wet season:

- Continuous flow and rainfall measurements
  - Sampling during three wet weather events
  - SSC pollutograph sampling
- Bedload sampling for particle-size distribution
- Post-storm pebble counts and photodocumentation
- Field flow measurements to calibrate head-versus-flow table (using wading rod and acoustic Doppler current profiler [ADCP] methods)

Figure 2-1 shows the Monitoring Program's monitoring locations and also depicts the Los Peñasquitos Watershed Management Area Sediment Load Special Study (Amec Foster Wheeler, 2016) monitoring locations for reference purposes. These monitoring locations are discussed in detail in the Los Peñasquitos Lagoon Total Maximum Daily Load Sediment Monitoring Final Compliance Monitoring Plan (Amec Foster Wheeler, 2015) (Appendix A).

[3] For brevity, this monitoring report does not include the details of the project's monitoring elements; they are provided in the final *Los Peñasquitos Lagoon Total Maximum Daily Load Sediment Monitoring Final Compliance Monitoring Plan* (Amec Foster Wheeler, 2015), which is provided as Appendix A. This plan discusses vegetation monitoring that will not initiate until fall 2016, and, therefore, is not discussed in this report.

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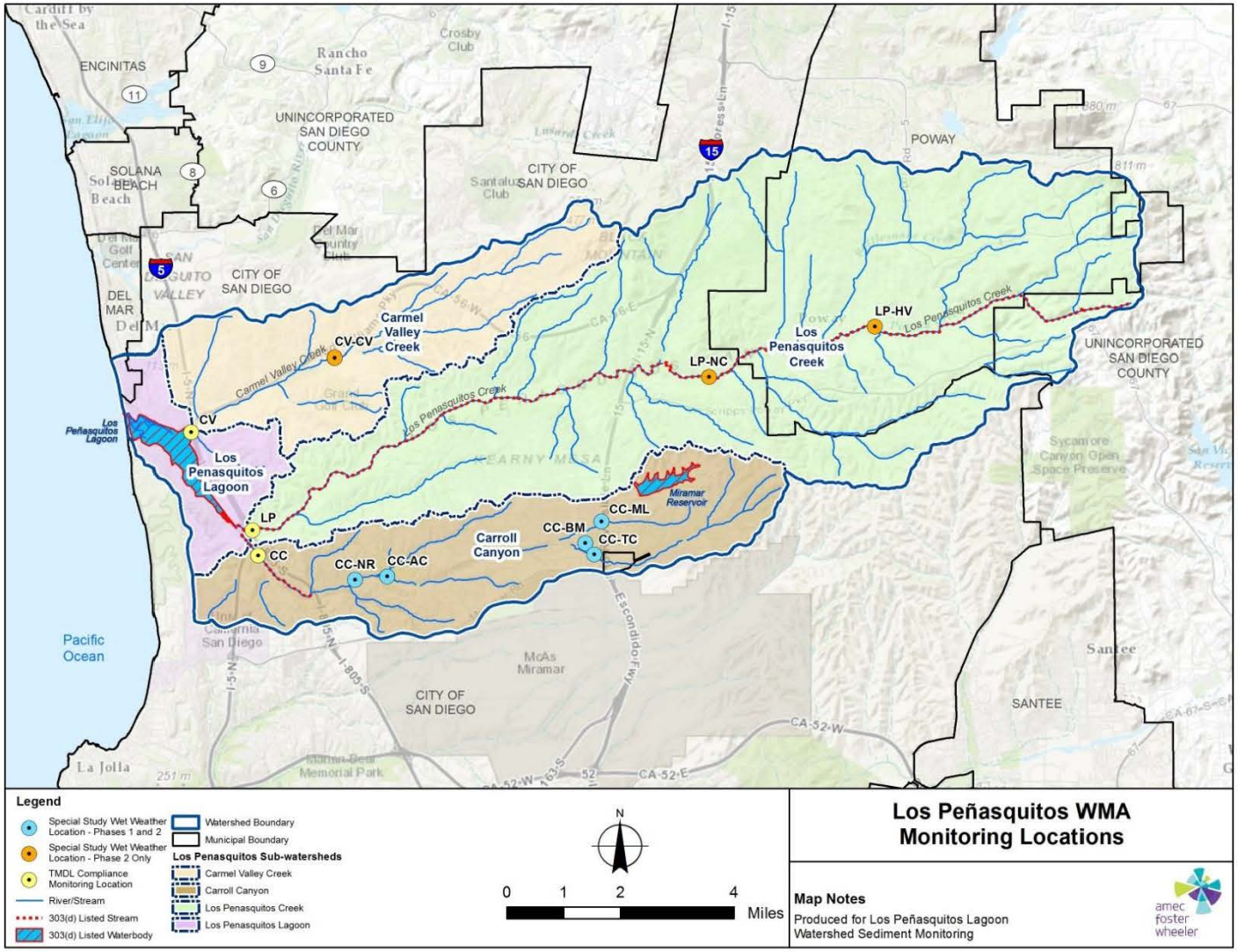

Figure 2-1
Los Peñasquitos WMA Monitoring Locations

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3.0 RESULTS AND DISCUSSION

This section presents the data collected during the 2015–2016 wet season and discusses how the analytical results are used to determine compliance with the Sediment TMDL. Monitoring was conducted during three storm events during the 2015–2016 wet season (October 1 through April 31). Table 3-1 presents the dates and rainfall totals for monitored events. Based on the *San Diego County Hydrology Manual* (County of San Diego, 2003), the 85th percentile, 24-hour storm for the project area is approximately 0.60 inch. The first and third monitored rainfall events were greater than the 85th percentile threshold, while the second was below it.

Table 3-1
Monitored Wet Weather Events

Event	Dates	Rainfall Total[a] (inches)
1	January 5–6, 2016	1.55
2	January 31, 2016	0.49
3	March 6–8, 2016	0.90

a. Rainfall was measured at the Los Peñasquitos Creek monitoring location rain gauge, except during the event on January 5-6, 2016, when it was replaced by Carmel Valley Creek monitoring location rain gauge because of equipment malfunction. Rainfall totals reported are only during the monitoring period. Rainfall continued later on the January 6, 2016, after sampling concluded for Event 1.

3.1 HYDROLOGY AND ANALYSIS

Table 3-2 presents the monthly rainfall totals during the 2015–2016 wet season, as compiled from the onsite rain gauge[4]. Rainfall data were also used to determine the number of "wet" days throughout the year. For the purposes of this project, a wet day is defined as a day with at least 0.1 inch of rainfall. A total of 21 wet days were recorded during the 2015–2016 wet season.

The final number of pollutograph samples selected for analysis varied, depending on the characteristics of each storm event. Table 3-3 summarizes the number of pollutograph samples submitted per monitoring location during the monitored wet weather events.

Figures 3-1 through 3-9 present the event hydrographs showing flow, selected pollutograph samples, and analytical results for SSC analysis at each monitoring location. SSC concentration spikes generally correlate with peaks in storm flow, particularly for Carroll Canyon Creek. Increases in SSC concentrations are related to the start of peak runoff for Carmel Valley and Los Peñasquitos Creeks. Although peak flow typically is most strongly associated with increased SSC, other factors also affect SSC, such as supply fluctuations and limitations, rainfall intensity and the

[4] Rainfall was measured at the Los Peñasquitos Creek monitoring location rain gauge, except during the October 29–November 26, 2015, and January 5–11, 2016, events, when it was replaced by the Carmel Valley Creek monitoring location rain gauge because of equipment malfunction.

associated rate of rise in flow, the preceding baseline flow, sampling timing, and duration of storm flow. Summarized SSC analytical results and laboratory reports are provided in Appendix B.

Table 3-2
Monthly Rainfall Totals for the Wet Season

Month	Rainfall Total[a] (inches)
October 2015	0.66
November 2015	0.46
December 2015	1.58
January 2016	4.37
February 2016	0.15
March 2016	1.32
April 2016	0.94
Season Total	9.48

a. Rainfall was measured at the Los Peñasquitos Creek monitoring location rain gauge, except during the October 29–November 26, 2015, and January 5–11, 2016, events, when it was replaced by the Carmel Valley Creek monitoring location rain gauge because of equipment malfunction.

Table 3-3
Number of Samples Submitted
During Wet Weather Monitoring Events

Site	Number of Samples Submitted		
	Event 1	Event 2	Event 3
Carroll Canyon Creek	21	18	22
Carmel Valley Creek	21	20	31
Los Peñasquitos Creek	16	14	14

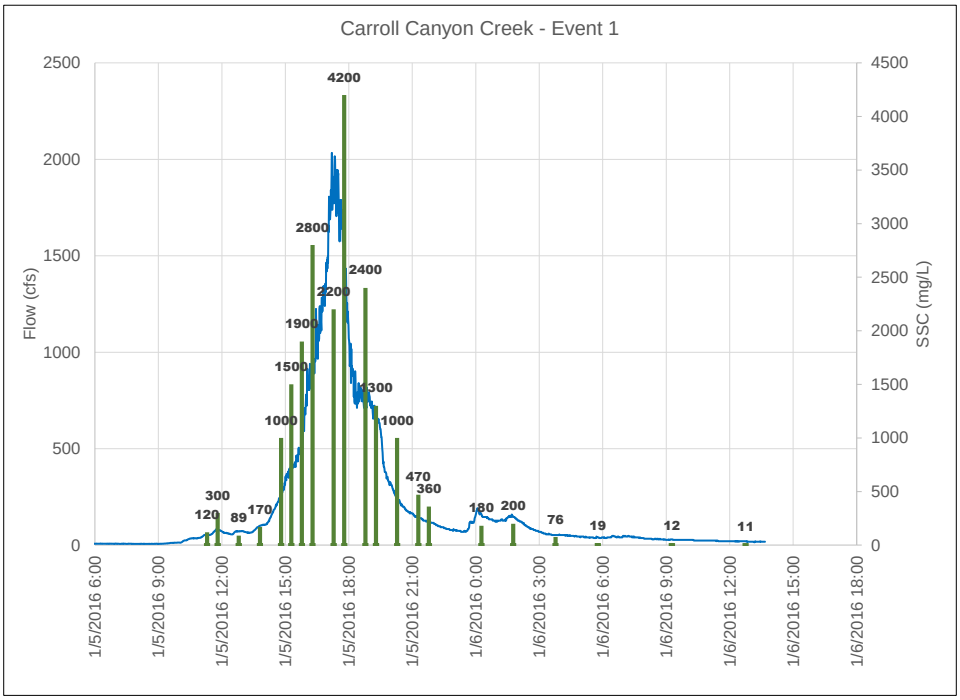

Note: Bars and data labels indicate SSC results and when samples were collected.

Figure 3-1
Hydrograph and Results—Wet Weather Event 1, Carroll Canyon Creek

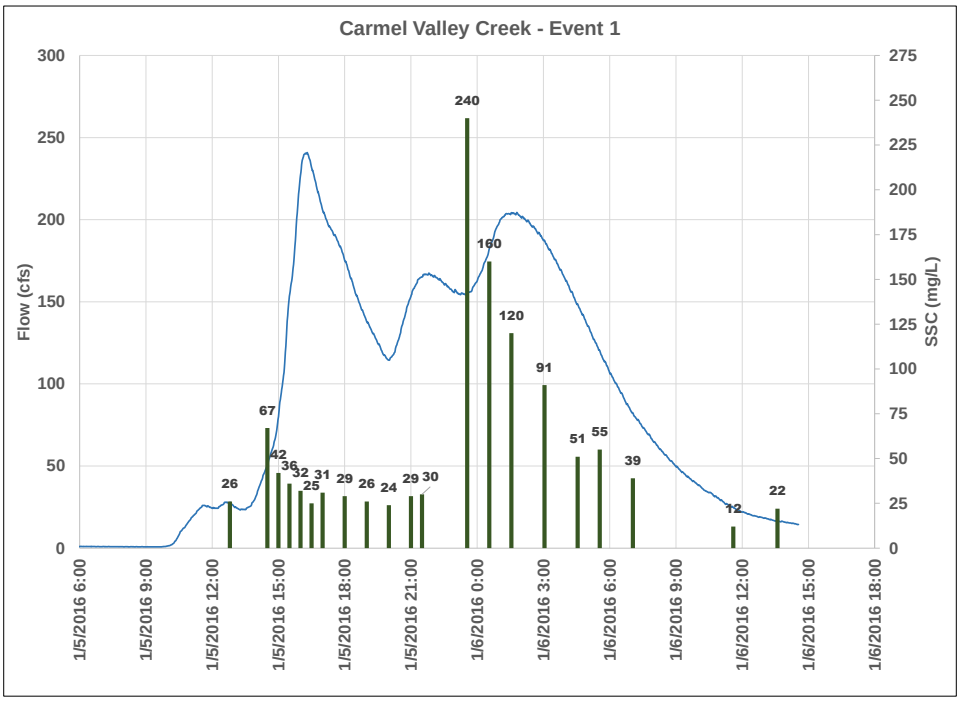

Note: Bars and data labels indicate SSC results and when samples were collected.

Figure 3-2
Hydrograph and Results—Wet Weather Event 1, Carmel Valley Creek

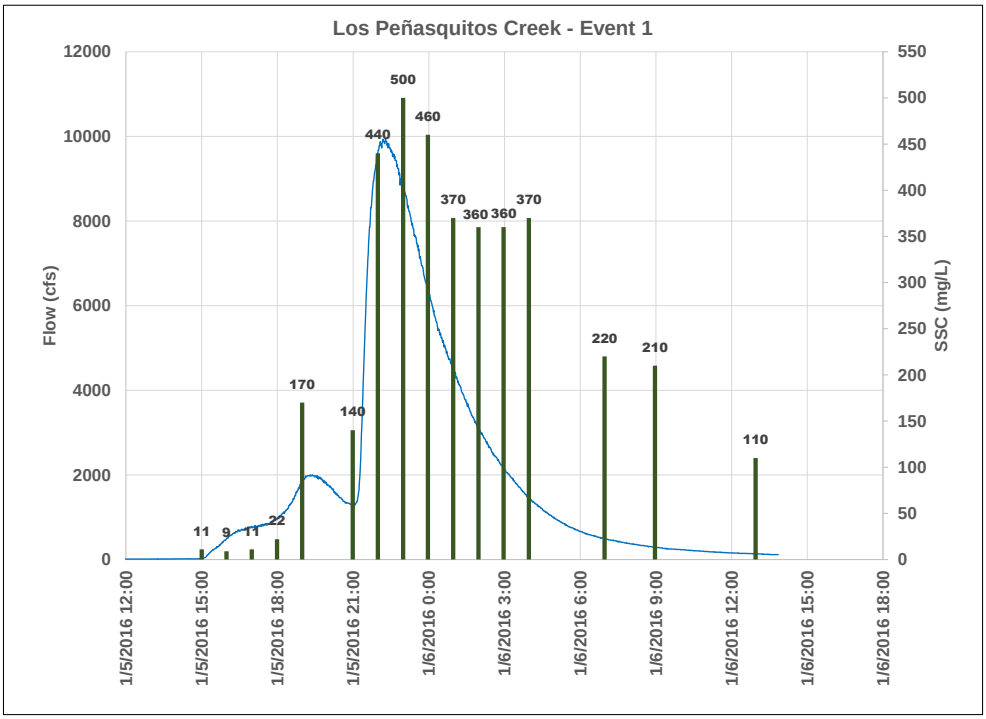

Figure 3-3
Hydrograph and Results—Wet Weather Event 1, Los Peñasquitos Creek

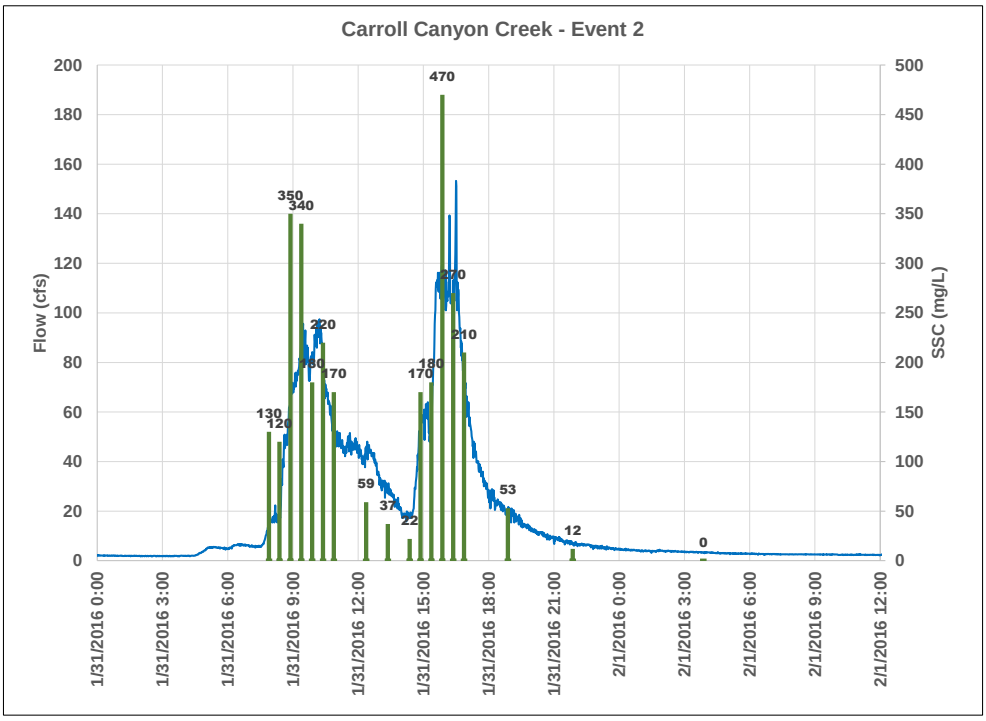

Figure 3-4
Hydrograph and Results—Wet Weather Event 2, Carroll Canyon Creek

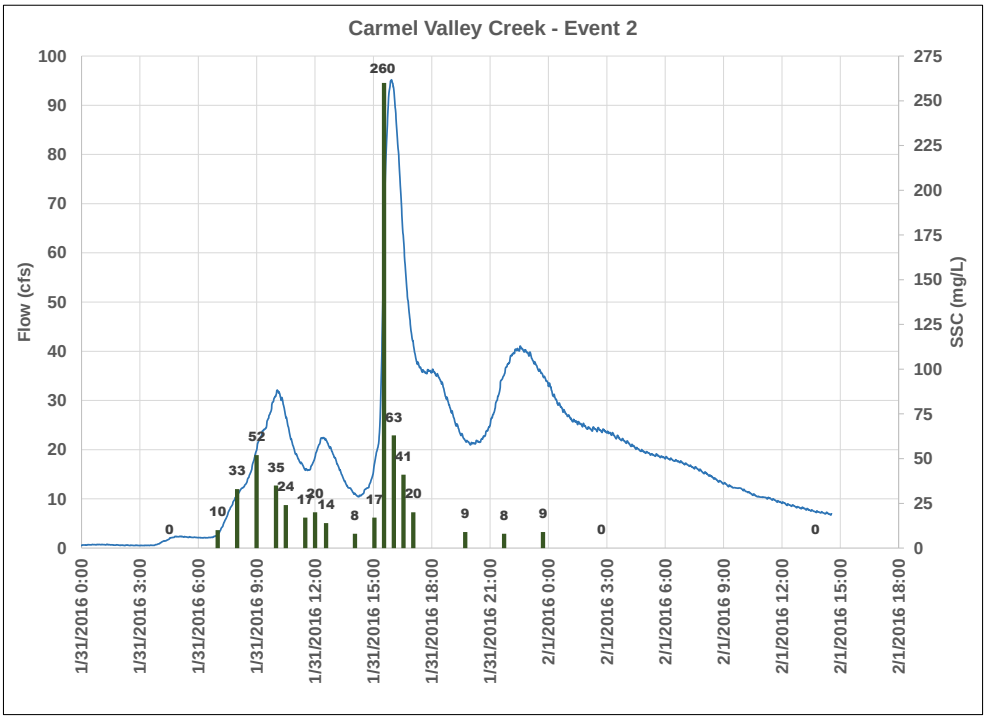

Figure 3-5
Hydrograph and Results—Wet Weather Event 2, Carmel Valley Creek

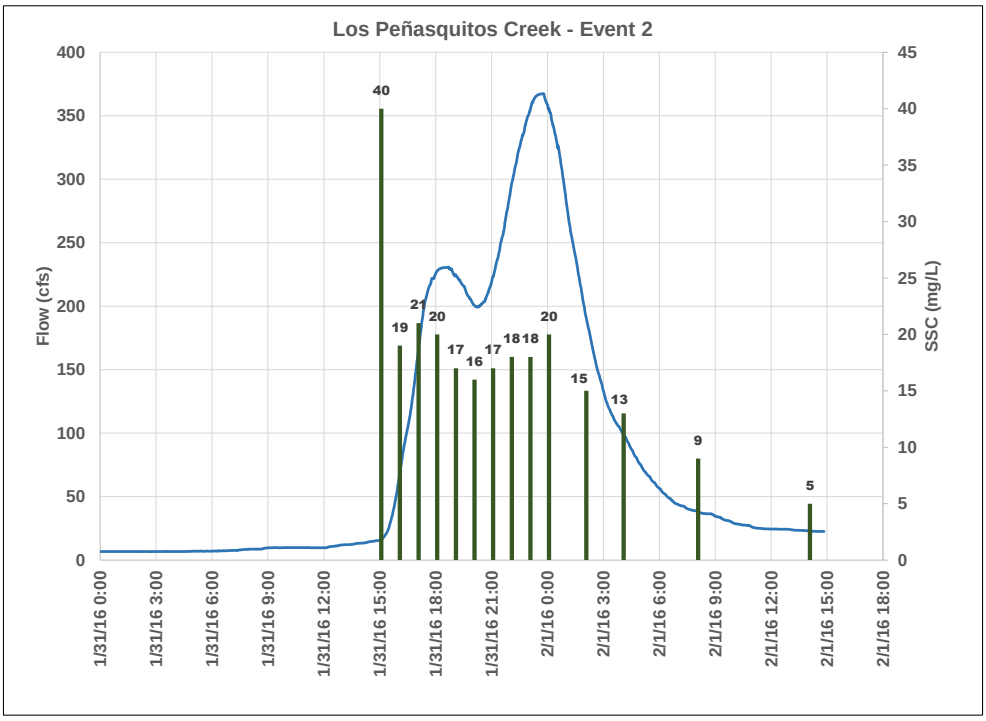

Figure 3-6.
Hydrograph and Results—Wet Weather Event 2, Los Peñasquitos Creek

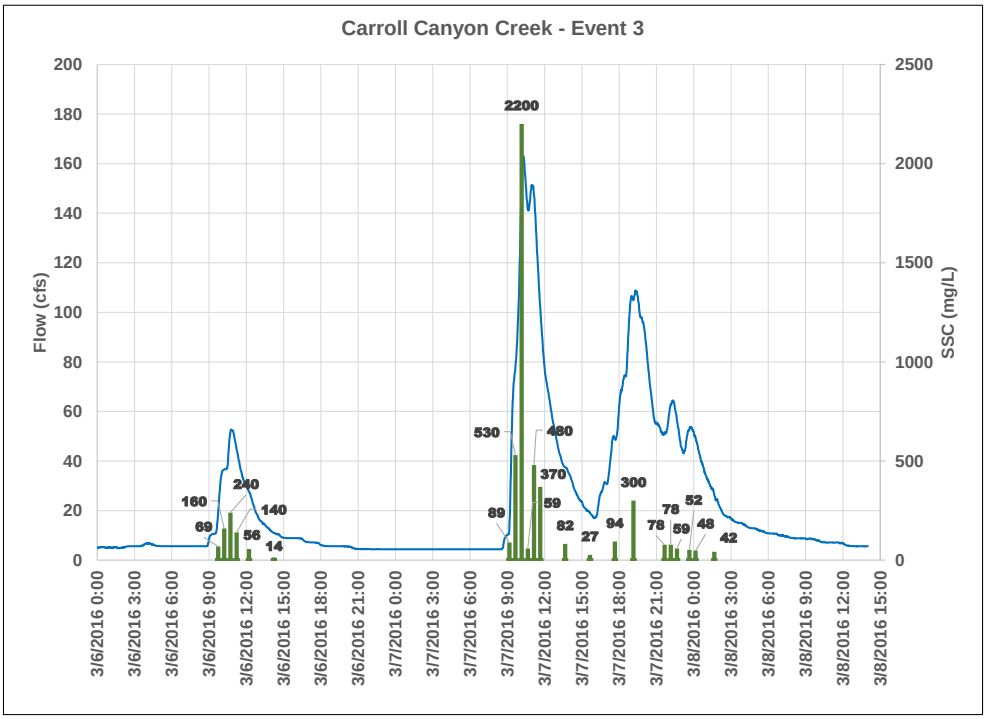

Figure 3-7
Hydrograph and Results—Wet Weather Event 3, Carroll Canyon Creek

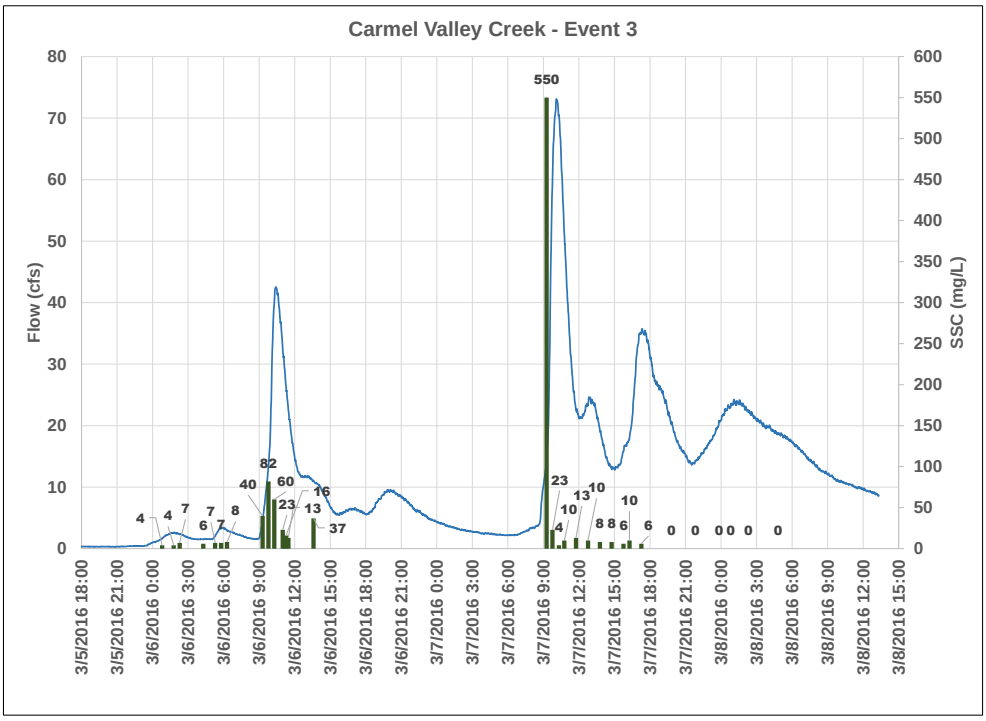

Figure 3-8
Hydrograph and Results—Wet Weather Event 3, Carmel Valley Creek

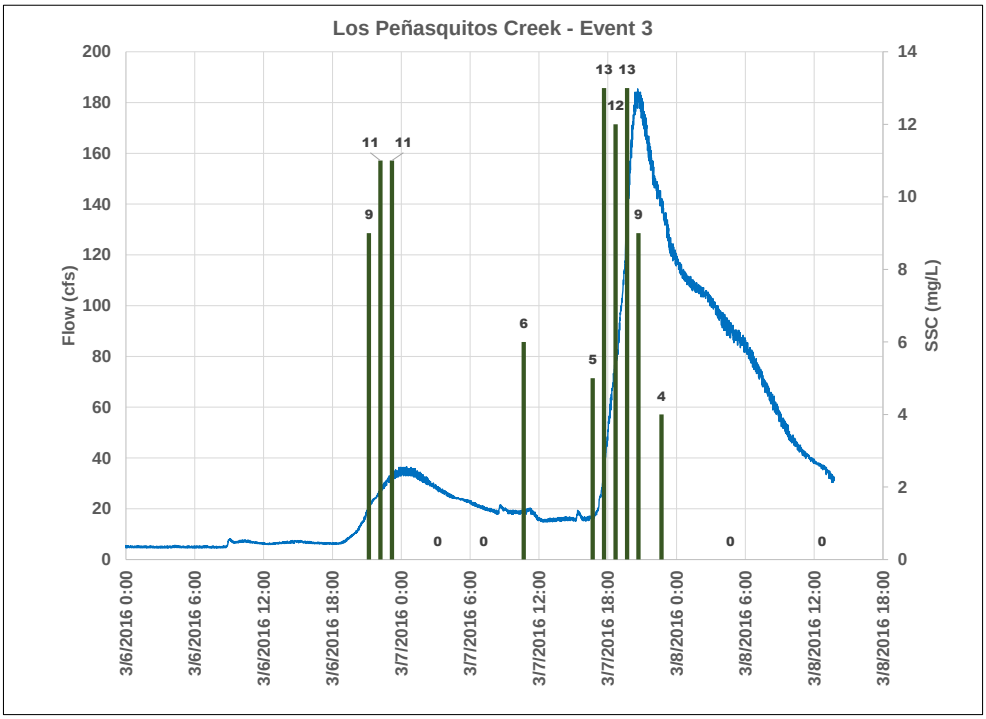

Figure 3-9
Hydrograph and Results—Wet Weather Event 3, Los Peñasquitos Creek

3.2 BEDLOAD SAMPLE COLLECTION

Collection of bedload samples was attempted during each monitored event at the three monitoring locations. Bedload sampling was conduct using both the trap samplers (installed in streambed), which have been used in previous monitoring years (Fiscal Year 2014 [FY14] [July 1, 2013 – June 30, 2014] and Fiscal Year 2015 [FY15] [July 1, 2014 – June 30, 2015]), and manual bedload samplers.

No bedload samples were successfully collected during the first event. Most samplers were lost or damaged because of the high flows. One bedload sample from each site was collected during the second event and one sample was collected from Carroll Canyon Creek during the third event. However, in each case, samplers were either displaced or partially buried/overfilled upon retrieval, making assessment of the amount of material collected and the associated time frame unreliable.

Manual bedload sample collection attempts occurred during low flows, when it was safe to enter the stream. This method yielded one result from Los Peñasquitos Creek during the second event only. Samples collected and measured from this site resulted in load estimates of 0.0022 ton per day (not significant relative to washload estimated with SSC results). However, this sample was collected at one point during one storm and may not be representative of a consistent bed movement condition throughout the storm or day, nor of bedload during other non-sampled

events. Although this sample collection was an improvement over that of previous monitoring efforts, further bedload results are required to accurately quantify this factor.

Visual observations after the first monitored event (January 4-5, 2016), and the subsequent large events (January 6 and 7, 2016) confirmed that a large amount of cobble and streambed material was transported into the concrete-lined portion of Carroll Canyon Creek, but was deposited there and not transported into the Lagoon.

Appendix C provides the bedload particle size analysis for the bedload trap sample. Appendix C also provides the results from the volumetric bedload particle size analysis performed in the pre-wet-season sample at each monitoring location.

3.3 POST-STORM PEBBLE COUNT AND PHOTODOCUMENTATION

Post-storm pebble counts were conducted on six occasions during the 2015–2016 wet season. Results showed that there was a shift toward a higher proportion of sands (i.e., larger particle size) after the series of large rain events in early January 2016 at Carroll Canyon Creek, which typically has higher velocity flows compared with the other two creeks. Pebble count data show a return to a lower proportion of sands and more fines, likely due to lower intensity storms. This trend is less apparent or does not exist for the other two creeks. The lack of a clear shift after the large January 2016 storms is most likely due to the lower velocities observed in these two creeks, but may also be attributable to supplies within the creeks (i.e., higher proportion of fines compared to sands upstream).

For a complete summary and graphs of the pebble count data, refer to Appendix D.

Streambed photographs were taken throughout the wet season at each monitoring location and were compiled into a photograph log in Appendix E.

3.4 EVENT MEAN CONCENTRATION AND SEDIMENT LOAD RESULTS

The annual sediment load was estimated by multiplying the average of the three daily load estimates at each site by the number of wet days per year. In addition, annual sediment load was also estimated using results from a regression between maximum 1-hour rainfall intensity and estimated loads during monitored events (described further in Section 3.5).

Table 3-4 provides the event mean concentrations (EMCs) and sediment load estimates for the monitored events during the 2013–2014, 2014–2015, and 2015–2016 wet seasons.

Based on the monitoring during the 2015–2016 wet season, the annual load estimate of sediment entering the Lagoon from the three creeks is approximately 23,500 tons per year. This total load is significantly greater than the Sediment TMDL WLA of 2,580 tons per year. Data collected during this wet season indicated a shift in the dynamics of load inputs to the Lagoon, likely due to the unusually intense storms that occurred this season that produced high flows, particularly in Los Peñasquitos Creek. Carroll Canyon Creek typically accounts for the majority (80 to 90 percent) of the sediment loads to the Lagoon. However, because of these unusually high flows, Los Peñasquitos Creek accounted for approximately 60 percent of the total load this season. Although SSC results were higher than previous seasons' results at Los Peñasquitos Creek, they were much lower than those at Carroll Canyon Creek. The increase in proportional load from Los Peñasquitos Creek is primarily the result of large flow volumes. Carroll Canyon Creek accounted for approximately 39 percent and Carmel Valley Creek accounted for approximately 1 percent. The relative contributions measured this season differ greatly from data collected over the past two seasons and a previous estimate (Weston, 2009a) that Carroll Canyon Creek can supply up to 92 percent of the total sediment contribution to the Lagoon.

During the 2015–2016 wet season, cross-sectional areas of streambeds at the monitoring locations were updated and used to revise the head-versus-flow tables. Multiple field flow measurements using wading rods and StreamPro ADCPs were used to verify and calibrate the head-versus-flow tables. The primary change to the head versus flow tables was extending the Los Peñasquitos Creek table to higher stages, as the stages measured during the large storms in early January 2016 exceeded the previously developed tables. Appendix F provides further detail on head-versus-flow table development.

Table 3-4
EMC and Sediment Load Monitoring Results

Site	SSC Flow-Weighted EMC (mg/L)			Estimated Daily Load (tons/day)			Estimated Annual Load (tons/year)
	Event 1	Event 2	Event 3	Event 1	Event 2	Event 3	
Previous Monitoring - 2013–2014							
Rainfall Totals (inches)	0.32	0.14	1.9	0.32	0.14	1.9	—
Carroll Canyon Creek (2014)	213	120	284	3.3	2.62	24.5	112 [a]
Carmel Valley Creek (2014)	39.2	14	8.24	0.93	0.14	0.2	4.66 [a]
Los Peñasquitos Creek (2014)	3.03	2.27	10.1	0.048	0.0487	1.69	6.54 [a]
Total WMA Estimated Loads	**—**	**—**	**—**	**4.28**	**2.81**	**26.4**	**123**
Previous Monitoring - 2014–2015							
Rainfall Totals (inches)	1.99	1.44	0.16	1.99	1.44	0.16	—
Carroll Canyon Creek (2015)	381	235	75.6	44.4	33.5	2.6	376 [b]
Carmel Valley Creek (2015)	5.48	10.2	10.6	0.198	0.902	0.041	5.32 [b]
Los Peñasquitos Creek (2015)	11	6.74	1.97	10.4	4.67	0.0855	70.7 [b]
Total WMA Estimated Loads	—	—	—	**55.0**	**39.1**	**2.73**	**452**
Current Year Monitoring - 2015–2016							
Rainfall Totals (inches)	1.55	0.49	0.9	1.55	0.49	0.9	—
Carroll Canyon Creek (2016)	2,030	197	307	1,283	15.2	25.8	9,270 [c]
Carmel Valley Creek (2016)	79.4	30.4	47	23.9	1.73	1.67	191 [c]
Los Peñasquitos Creek (2016)	373	17.1	4.94	2,004	6.11	0.75	14,100[c]
Total WMA Estimated Loads	—	—	—	**3,311**	**23**	**28.2**	**23,500**

a. Based on the 11 wet days recorded during the 2013–2014 wet season.
b. Based on the 14 wet days recorded during the 2014–2015 wet season.
c. Based on the 21 wet days recorded during the 2015–2016 wet season.
EMC = event mean concentration; mg/L = milligrams per liter
NOTE: for 2014–2015 WMA Estimated Loads, previously the totals for Events 1, 2, and 3 were incorrectly reported as 57, 40.5, and 2.89 tons/day (the total annual estimate was reported correctly as 452 tons/year). This has been corrected to 55, 39.1, and 2.73 tons/day.

3.5 ANALYSIS OF RAINFALL INTENSITY, EMC, AND DAILY SEDIMENT LOAD

A traditional method of annual load estimation includes monitoring a few events (e.g., three per year), and taking the average of the results and applying that average to all wet days during the wet season (referred to herein as the "average estimation method"). This is the approach used to calculate the values in Table 3-4. Load estimation options are often limited to this type of approach based on the amount of data. This approach can potentially skew overall estimates in either direction. For example, as in the case for the 2015–2016 wet season, the high load estimate resulting from the unusually large January event drives up the average load. This elevated averaged gets applied to all wet days, regardless of storm size or intensity, potentially resulting in an overestimation.

In an effort to better represent load estimations for non-monitored storms, alternative approaches were explored last year by assessing the relationships among rainfall intensity, EMC, and sediment load. The analysis looked at whether EMC and/or sediment load values can be reasonably estimated based on rainfall intensity. This type of estimation approach allows for load estimations based on a measured parameter (e.g., rainfall) for a non-monitored storm, rather than simply applying an average of monitored events.

Analysis of data collected during FY14 and FY15 included rainfall intensities, EMC and sediment loads, and the 1-hour maximum rainfall intensity versus EMC and sediment load. Additionally, a regression analysis was used as a part of these analyses as a basis for discarding any statistical outlier data points. Data analysis indicated that there was a stronger relationship between maximum 1-hour rainfall intensity and sediment load compared to that of overall maximum rainfall intensity and sediment load. This approach and estimates are provided in greater detail in Appendix G.

When incorporating data collected during the 2015–2016 wet season, the strength of these relationships decreased and they were deemed unreliable for use in estimating loads. This change is most likely due to the unusually intense storms monitored this wet season, in particular the large, high-intensity storm in early January 2016. Moving forward, the relationships between rainfall intensity and loads, as well as other parameters, will continue to be assessed. The goal is to provide a reliable means of estimating loads for non-monitored events (referred to herein as the "rainfall intensity estimation method"). Figures 3-10, 3-11, and 3-12 present the maximum 1-hour rainfall intensity versus estimated daily sediment load, resulting trend curve, and associated coefficient of determination (R^2) for each monitoring location, based on FY14 and FY15 monitoring data.

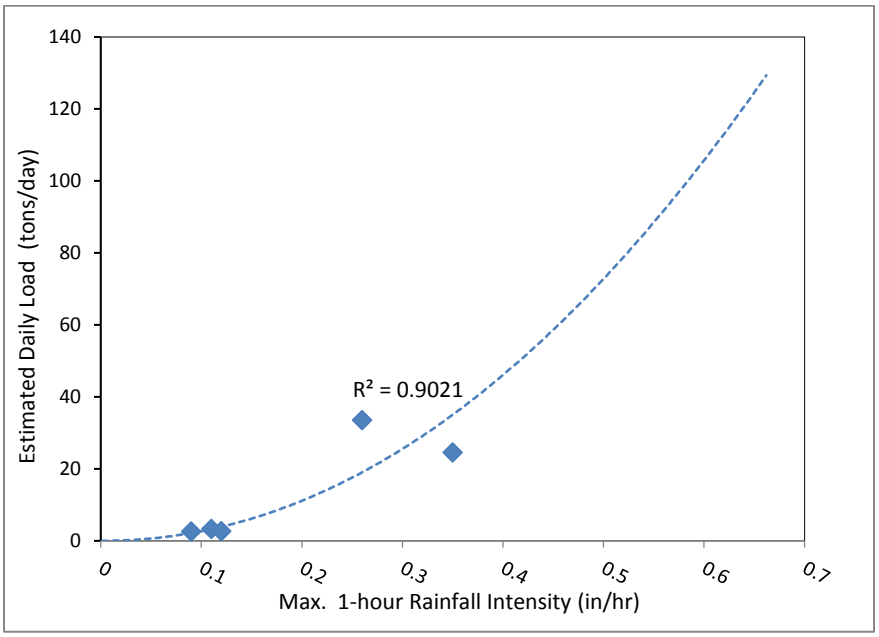

Figure 3-10
Maximum 1-Hour Rainfall Intensity vs. Estimated Daily Load—Carroll Canyon Creek

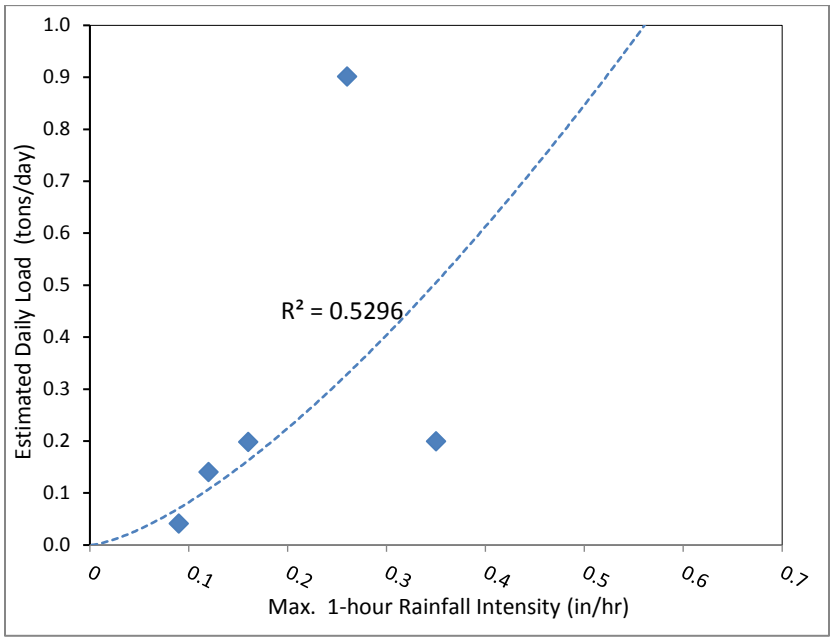

Figure 3-11
Maximum 1-Hour Rainfall Intensity vs. Estimated Daily Load—Carmel Valley Creek

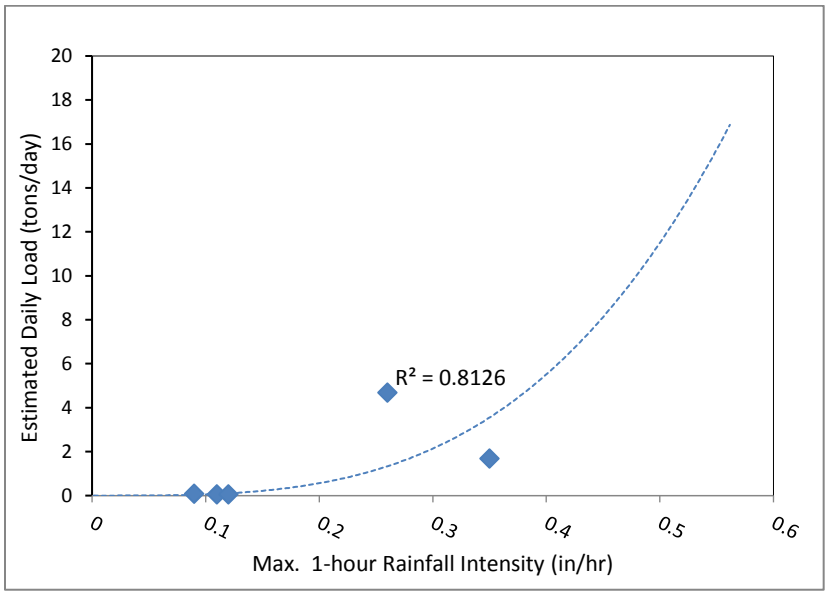

Figure 3-12
Maximum 1-Hour Rainfall Intensity vs. Estimated Daily Load—
Los Peñasquitos Creek

Table 3-5 summarizes the estimated load values based on the rainfall intensity analysis and resulting equations of the curves shown in Figures 3-10 through 3-12. Using these equations, annual load is estimated at 688 tons, which is approximately 24 percent of the 2,850-ton WLA. This method estimated total annual loads as follows:

- Carroll Canyon Creek: 554 tons (approximately 80 percent of the total 2015–2016 annual load and 19 percent of the WLA)
- Carmel Valley Creek: 6.4 tons (approximately 1 percent of the total 2015–2016 annual load, and 0.2 percent of the WLA)
- Los Peñasquitos Creek: 128 tons (approximately 19 percent of the total 2015–2016 annual load, and 4.5 percent of the WLA)

Given the difference between the average estimation method and rainfall intensity estimation methods, there is a clear need for further refinement of load estimation methods for non-monitored storms.

Table 3-5
Annual Load Estimate Method Comparison (FY15 and FY16)

Estimated Annual Loads	Average Estimation Method	Rainfall Intensity Estimation Method
Carroll Canyon Creek 2014–2015 Annual Load (tons/year)	250	376
Carmel Valley Creek 2014–2015 Annual Load (tons/year)	3.80	5.32
Los Peñasquitos Creek 2014–2015 Annual Load (tons/year)	30.6	70.7
Total Estimated Annual Load 2014–2015 (tons/year)	**284**	**452**
Carroll Canyon Creek 2015–2016 Annual Load (tons/year)	554	9,270
Carmel Valley Creek 2015–2016 Annual Load (tons/year)	6.37	191
Los Peñasquitos Creek 2015–2016 Annual Load (tons/year)	128	14,100
Total Estimated Annual Load 2015–2016 (tons/year)	**688**	**23,500**

3.6 ANALYSIS OF SSC AND FLOW

A preliminary analysis compared SSC measured during three wet seasons (2013–2016) and the corresponding flow rates for those samples. Results of this analysis are provided in Figures 3-13, 3-14, and 3-15.

Carroll Canyon Creek and Los Peñasquitos Creek showed similar SSC-versus-flow relationship strengths, with coefficient of determination (R^2) values of 0.66 and 0.69, respectively. These two creeks also showed the strongest relationships between maximum 1-hour rainfall intensity and load estimates, indicating that further in-depth data assessment may help determine a reliable method for predicting sediment transport behavior and estimating loads for non-monitored events. Building on the nine data points collected over the previous three years will provide a more robust data set, offering greater confidence in results of these assessments.

Carmel Valley Creek did not show a relationship between the two variables, likely because of the location of the sampling point, which is at the entrance to a relatively large pool where suspended material may settle out of the water column at variable rates when compared to suspension in flowing sections of other creeks. However, this sampling point is at the transition from the creek to the Lagoon, and is considered representative of what is actually entering the Lagoon. Given the conditions at this sampling point, further data assessment similar to that described above would present many challenges and may not be feasible at the current location. However, Carmel Valley Creek consistently delivers a small fraction of the annual load and is the lowest priority subwatershed on which to focus efforts and resources, so the same level of data analysis may not be needed on Carmel Valley Creek to inform management decisions.

Key elements of further data assessment should include gaining a better understanding of the impacts of varying sediment supply in each creek. The creeks go through changing supply conditions within storms, between storms, and throughout the years. These changes in supply

have a direct impact on the ability to determine relationships among storm-related factors such as rainfall intensity and flow rates with sediment transport factors such as SSC and load estimations. In-depth analysis of monitoring data, such as development of flow-duration and load-duration curves, along with other data (e.g., pebble counts), will allow for an understanding of shear stress, probabilities of exceeding conditions, and other related factors that will facilitate reliable estimates of loads throughout the season and determine whether estimated loads are discharging to the Lagoon or settling out prior to reaching the Lagoon.

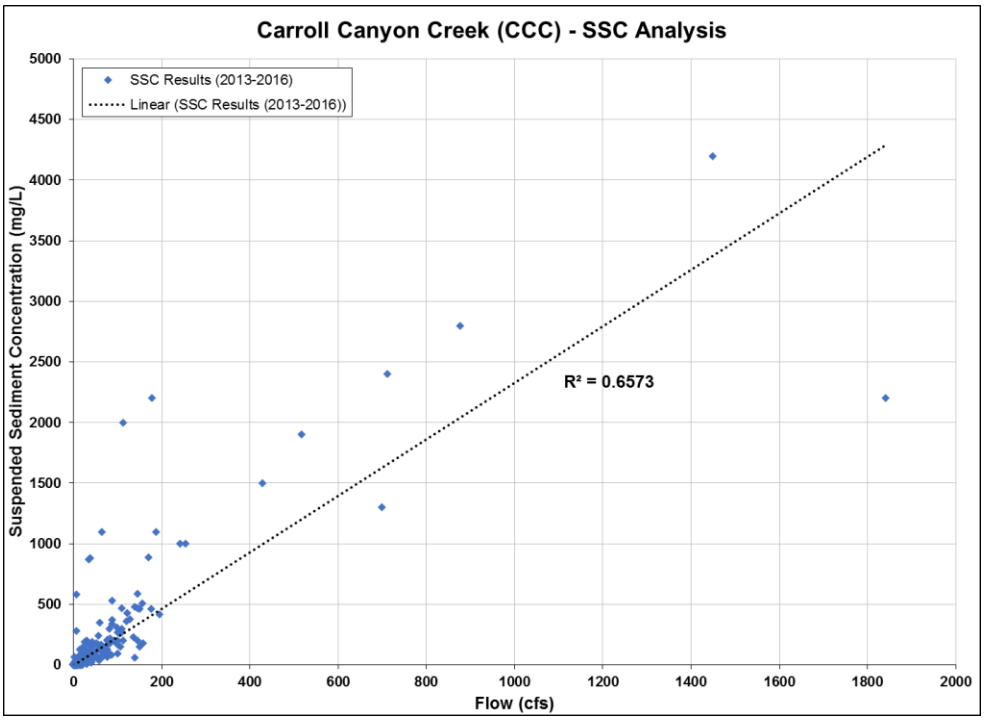

Figure 3-13
Flow Rate vs. SSC—Carroll Canyon Creek

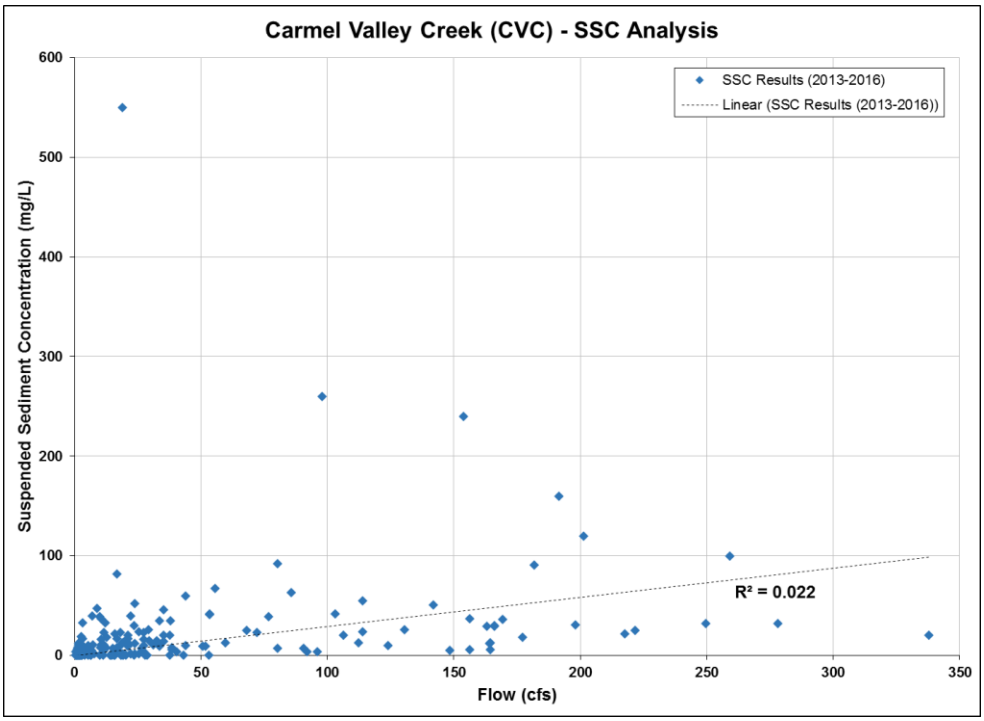

Figure 3-14
Flow Rate vs. SSC—Carmel Valley Creek

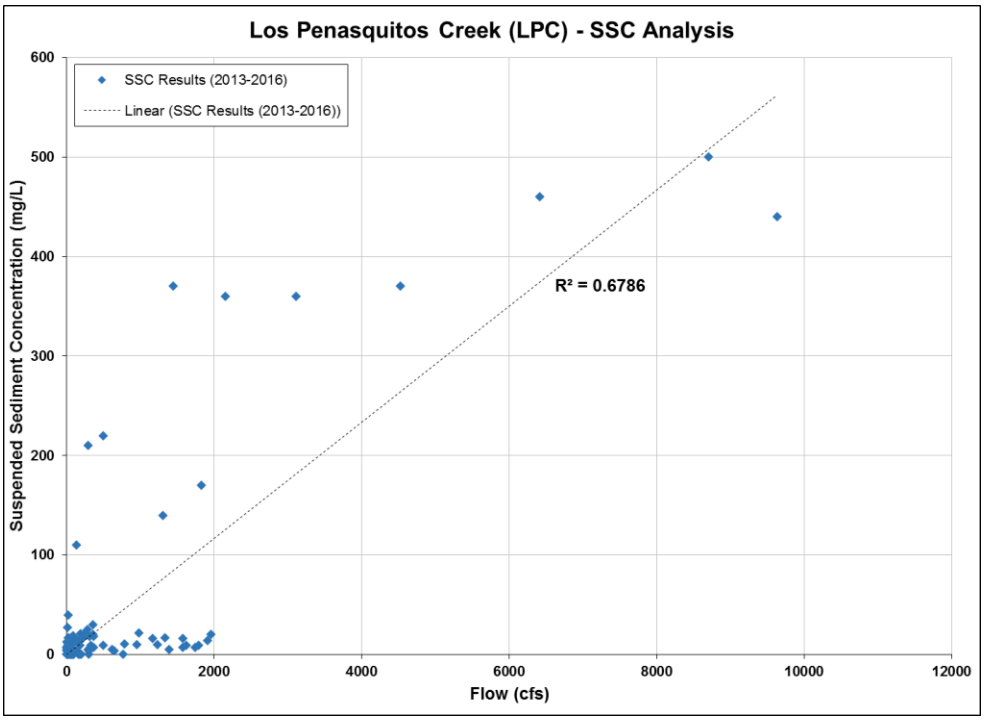

Figure 3-15
Flow Rate vs. SSC—Los Peñasquitos Creek

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4.0 CONCLUSIONS AND RECOMMENDATIONS

Data generated during this Monitoring Program provided additional insight into the sediment transport characteristics of Carroll Canyon, Carmel Valley, and Los Peñasquitos Creeks. The Monitoring Program was designed to answer the following questions:

- What is the sediment concentration at discrete times throughout a storm event hydrograph at the bases of the three major creeks that discharge to the Lagoon?
- What are the estimated current sediment loads from these creeks, and how do they compare to the Lagoon's WLA?
- How do the wet weather sediment delivery potentials of each creek compare with each other?

4.1 CONCLUSIONS

Data collected during this wet season indicated a shift in the dynamics of load inputs to the Lagoon, compared to results of previous years. This finding is likely due to the unusually intense storms that occurred this season that produced high flows, particularly in Los Peñasquitos Creek. Carroll Canyon Creek typically accounts for the majority (80 to 90 percent) of the sediment loads to the Lagoon. However, because of these high flows, Los Peñasquitos Creek accounted for approximately 60 percent of the total load this season. Carroll Canyon Creek accounted for approximately 39 percent and Carmel Valley Creek accounted for approximately 1 percent. The relative contributions measured this season differ greatly from data collected over the past two seasons and a previous estimate (Weston, 2009a) that Carroll Canyon Creek can supply up to 92 percent of the total sediment contribution to the Lagoon.

Despite the shift in relative loads observed this season, SSC results in samples collected from Carroll Canyon Creek were consistently greater than those in samples from both Carmel Valley and Los Peñasquitos Creeks. The results of this Monitoring Program further indicate that the high sediment concentrations observed in Carroll Canyon Creek may be originating farther upstream. Sediment concentrations from the other two creeks are relatively low compared to those in Carroll Canyon Creek, and under typical conditions, contribute a smaller portion of the total loading into the Lagoon.

Data collected during the three 2015–2016 wet weather events showed fluctuations of SSC that generally correlated with changes in flow. However, when compared to those of previous seasons, concentrations tended to be higher and to remain higher throughout the storm because of the unusually intense rainfall experienced during this season. In general, data collected from the 2013–2016 monitoring events (three seasons) indicated that SSC was higher at or just after the times that higher flows were recorded and during the rising limb of the hydrograph, as expected for sediment transport that is affected by sediment supply. Data collected during the 2013–2015 seasons at Los Peñasquitos Creek indicated that SSC was higher during the earlier portions of the hydrographs, and SSC was lower or not detected at the peak of the hydrograph. However, data collected during the 2015–2016 season showed higher sustained concentrations

at Los Peñasquitos Creek throughout the storm, particularly for the large storm in early January 2016. This result may be due to the high flows releasing and carrying sediments previously entrained within the vegetation and streambed throughout the lower portion of Los Peñasquitos Creek.

The varied levels of SSC relative to flow, as identified by the SSC versus flow analysis, can be explained by various factors. Carmel Valley and Los Peñasquitos Creeks are characterized by lower gradients, armored banks, and thick vegetation. These features are often associated with supply-limited creeks, where the water column is left deprived of sediment even though the creek experiences significantly higher flow. This is particularly true of Los Peñasquitos Creek, where storm event flows are longer and up to six times greater than in Carroll Canyon Creek. Conversely, Carroll Canyon Creek is generally characterized by exposed, erodible banks and less vegetation within the channel and experiences higher velocities compared to Los Peñasquitos and Carmel Valley Creeks.

The relationship between SSC and flow was analyzed to determine their correlation. While SSC was generally shown to increase with higher flows, this correlation showed moderate to weak relationships at the Carroll Canyon and Los Peñasquitos Creek monitoring locations, where R^2 values were 0.65 and 0.67, respectively. Carmel Valley Creek data did not exhibit a reliable relationship between the two parameters. Further analysis of this relationship including other factors such as rainfall intensity, onset of flow, antecedent dry periods, and others may contribute to improved accuracy of estimating loads.

Additional analysis evaluated whether estimated sediment loads for non-monitored events can be based on rainfall intensities. Based on limited data (6 events) collected during the 2013–2014 and 2014–2015 wet seasons, the limited amount of data collected to date indicated that a causal relationship may exist between the maximum 1-hour rainfall intensity and the estimated sediment load for each creek. When incorporating data from the 2015–2016 season, these relationships were not as strong and were not considered to be a reliable avenue for load estimation. This result is likely because of the unusual and intense nature of storms this season, in particular, the large January 2016 event.

Using an average load applied to all non-monitored wet days can misrepresent non-monitored storms. In the case of this season, the unusually high loads for the January 2016 event skew the average to higher loads, which is then applied to storms that are much smaller and/or less intense. To provide some level of comparison of load estimation methods between seasons, the best-fitting curve equations developed over the 2013–2014 and 2014–2015 wet seasons for Carroll Canyon, Carmel Valley, and Los Peñasquitos Creeks were used to estimate loads for the 2015–2016 season. Using this method for estimating the annual sediment load for the 2015–2016 wet season resulted in a total contribution of 688 tons per year compared to the estimated total of 23,500 tons per year calculated using the average of the three monitored events applied to all wet days. Although this alternative assessment approach is in a preliminary stage, this approach, or a similar one, may ultimately provide a more realistic assessment of the annual load. However, the large discrepancy between the load estimates currently using these two methods highlights the clear need for further data assessment to refine load estimations for non-monitored events.

This relationship, along with other alternative estimation approaches, will continue to be assessed moving forward.

4.2 RECOMMENDATIONS

Following are recommendations for the monitoring planned for fiscal year (FY)17 and potentially for later monitoring years as well.

- Continue to monitor at the base of each of the three creeks discharging to the Lagoon. Compliance monitoring for the Sediment TMDL is now required under the WQIP for the Los Peñasquitos WMA (Amec Foster Wheeler, 2015). This includes not only continuing to monitor consistent with this 2015–2016 program, but also monitoring Lagoon vegetation that will begin in fall 2016, as required by the Sediment TMDL. Data gathered under this program will address the goals of both the Sediment TMDL and WQIP.
- Continue to assess storm event load and EMC compared to maximum 1-hour rainfall intensity, a relationship that was shown to be relatively strong for two of the three monitoring locations based on data from 2013–2015. When data were included from 2015–2016, the strength of the relationship decreased, which could be due to the anomalous storms this year, particularly those in early January 2016. Over time, such an assessment may more accurately estimate the annual load, as it is based on empirical data using monitored and non-monitored storm characteristics and direct relationships observed during monitored events, rather than assuming consistent characteristics of every storm within a given year (as assumed when multiplying average load by the number of wet days).
- Perform detailed data analysis using applicable sediment transport methods by utilizing available hydrologic, hydraulic, and geomorphic data for the study reaches. Calibrate the sediment transport prediction with sediment loads collected through previous monitoring efforts. Assessment of data collected during this program over the past three years may be used to develop flow-duration and load-duration curves, assess shear stress within the creeks, and ultimately support sediment transport predictions that provide more accurate annual load estimations.
- Continue to monitor long-term flow throughout the entire year (including the dry season) to provide a data set that (a) increases the accuracy of annual load calculations, (b) increases opportunities to manually measure flows used to validate the head vs. flow tables, and (c) provides greater insight into how these three creeks respond to storm events and the variability throughout the season.
- Continue cross-section surveys at the beginning and end of each wet season to verify or increase the accuracy of head versus flow estimates. Cross-sectional surveys may also be used to assess changes in channel morphology.
- Continue to gauge higher flows during storm conditions to improve head versus flow table verification, which can be done by using a StreamPro ADCP flow

monitor. These measurements, along with stream gauging directly in the creek when it is safe to do so, should be conducted on multiple occasions throughout the season (as budget allows), to validate and calibrate the head-versus-flow table.

- Continue attempting bedload sampling using manual samplers. Attempts to collect bedload samples during storm events monitored between 2012 and 2016 were largely unsuccessful. This failure may be related to the accumulation of debris in the trap samplers. Manual bedload samplers used during the storm event may provide more accurate samples of the bedload transport, because field staff can target specific portions of the creek at various points in the hydrograph (as safe access allows) and accurately time the measurement period. This method provided minimal successful samples in 2015-2016; however, they were successful compared to repeated failures or uncertainties associated with the portable samples. Continued manual bedload sampling efforts will build on data collected this season and provide important data to relate suspended sediment and bedload sediment loads.

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APPENDIX A
LOS PEÑASQUITOS LAGOON WMA SEDIMENT TMDL MONITORING FINAL COMPLIANCE MONITORING PLAN

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LOS PEÑASQUITOS LAGOON
TOTAL MAXIMUM DAILY LOAD
SEDIMENT MONITORING
FINAL COMPLIANCE MONITORING PLAN

Submitted to:

Submitted by:
Amec Foster Wheeler Environment & Infrastructure, Inc.
San Diego, California

June 2015

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
303(d) List	Clean Water Act (CWA) Section 303(d), List of Water Quality Limited Segments
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
ASTM	ASTM International (formerly known as American Society for Testing and Materials)
AVB	area-velocity bubbler
Caltrans	California Department of Transportation
CC	Carroll Canyon (used for Site ID)
COC	chain of custody
CV	Carmel Valley (used for Site ID)
CWA	Clean Water Act
EDD	electronic data deliverable
ELAP	California Environmental Laboratory Accreditation Program
GPS	Global Positioning System
HASP	Health and Safety Plan
ID	identification
Lagoon	Los Peñasquitos Lagoon
LCS	laboratory control sample
LP	Los Peñasquitos (used for Site ID)
MCV	Manual of California Vegetation
mg/L	milligrams per liter
MLS	mass loading station
mm	millimeters
MOU	Memorandum of Understanding
MQO	measurement quality objective
NA	not applicable
NWS	National Weather Service
OAL	California Office of Administrative Law
QA	quality assurance
QA/QC	quality assurance and quality control
QC	quality control
RL	reporting limit

ACRONYMS AND ABBREVIATIONS (CONTINUED)

Regional Board	San Diego Regional Water Quality Control Board
Sediment TMDL	Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon*
SOP	standard operating procedure
State Board	State Water Resources Control Board
SSC	suspended sediment concentration
TMDL	total maximum daily load
TSS	total suspended solids
TWAS	temporary watershed assessment station
USEPA	United States Environmental Protection Agency
VDC	volts direct current
Weck	Weck Laboratories, Inc.
WMA	Watershed Management Area

1.0 INTRODUCTION

1.1 BACKGROUND

The Los Peñasquitos Watershed Management Area (WMA) encompasses an approximate 94-square-mile drainage area in west-central San Diego County. Within the WMA are the City of Poway, a portion of the City of Del Mar, unincorporated areas of San Diego County, and the City of San Diego communities of Mira Mesa, Scripps Ranch, Carmel Valley, and Sorrento Valley.

The WMA drains a highly urbanized region that supports a variety of water supply, economic, recreational, and habitat-related beneficial uses. The WMA includes four subwatersheds: Carmel Valley Creek, Los Peñasquitos Creek, Carroll Canyon Creek, and Los Peñasquitos Lagoon (the area immediately surrounding the lagoon). For the purposes of this monitoring plan, the three major streams (Carmel Valley Creek, Los Peñasquitos Creek, and Carroll Canyon Creek [also known as Soledad Canyon Creek]) will be referred to collectively as the subwatersheds that are included for monitoring purposes, as these are the primary conveyances that ultimately discharge into Los Peñasquitos Lagoon (Lagoon). The subwatershed of Los Peñasquitos Lagoon is not included in the monitoring under this program.

The Lagoon has incurred a number of anthropogenic disturbances, which have resulted in excessive sedimentation and the gradual degradation and loss of the estuarine habitat. Accordingly, the Lagoon was placed on the 2006 Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments (303(d) list) for sedimentation and siltation on June 28, 2007. Under the 303(d) listing, beneficial uses that are most impaired by sedimentation are estuarine habitat and preservation of biological habitats of special significance. Sedimentation in the Lagoon also restricts tidal flows between the Lagoon and the ocean, and degrades critical saltmarsh habitats.

On June 13, 2012, the San Diego Regional Water Quality Control Board (Regional Board) adopted Resolution Number R9-2012-0033, *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon* (hereinafter referred to as the Sediment TMDL). The Sediment TMDL is designed to restore the Los Peñasquitos Lagoon to its mid-1970s condition. The Sediment TMDL has been approved by the State Water Resources Control Board (State Board) and was approved by the California Office of Administrative Law (OAL) on July 14, 2014, and the United States Environmental Protection Agency (USEPA) on October 30, 2014. This Compliance Monitoring Plan will be adopted to evaluate progress toward meeting TMDL targets and sediment reduction goals.

The Sediment TMDL will be incorporated into the San Diego Regional Municipal Separate Storm Sewer System (MS4) Permit (MS4 Permit) (Order Number R9-2013-0001) (Regional Board, 2013) and will be included in the Water Quality Improvement Plan for the Los Peñasquitos WMA. The requirements of the Sediment TMDL and the MS4 Permit will be addressed in the Los Peñasquitos WMA Water Quality Improvement Plan. The Sediment TMDL monitoring will include watershed and vegetation monitoring. Compliance monitoring requires quantitative evaluations of the sediment load from the watershed to the Lagoon, comparison of results with TMDL numerical

targets, assessment of progress toward TMDL goals, consistent reporting of sedimentation levels to Responsible Agencies, and projections of the Lagoon's vegetative habitat diversity and response to decreasing sediment loads.

The Responsible Agencies that are party to the development of the Water Quality Improvement Plan for this WMA are:

- City of Del Mar
- City of Poway
- City of San Diego
- County of San Diego
- California Department of Transportation (Caltrans)

Caltrans has partial responsibility for the implementation of the Sediment TMDL along with the Comprehensive Load Reduction Plan (CLRP) for the TMDL for indicator bacteria, *Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001 (Regional Board, 2010), referred to as the Bacteria TMDL. Caltrans is therefore included as a Responsible Agency, but is not listed in the MS4 Permit as a Copermittee. Caltrans is under a separate storm water permit from the State to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters (Order No. 2012-0011-DWQ and Amendment Order No. WQ 2014-0077-DWQ) (State Board, 2014 and 2013). Caltrans is voluntarily participating in the development of several Water Quality Improvement Plans across the San Diego region.

Figure 1-1 shows the Los Peñasquitos WMA, subwatershed boundaries, and jurisdictional boundaries.

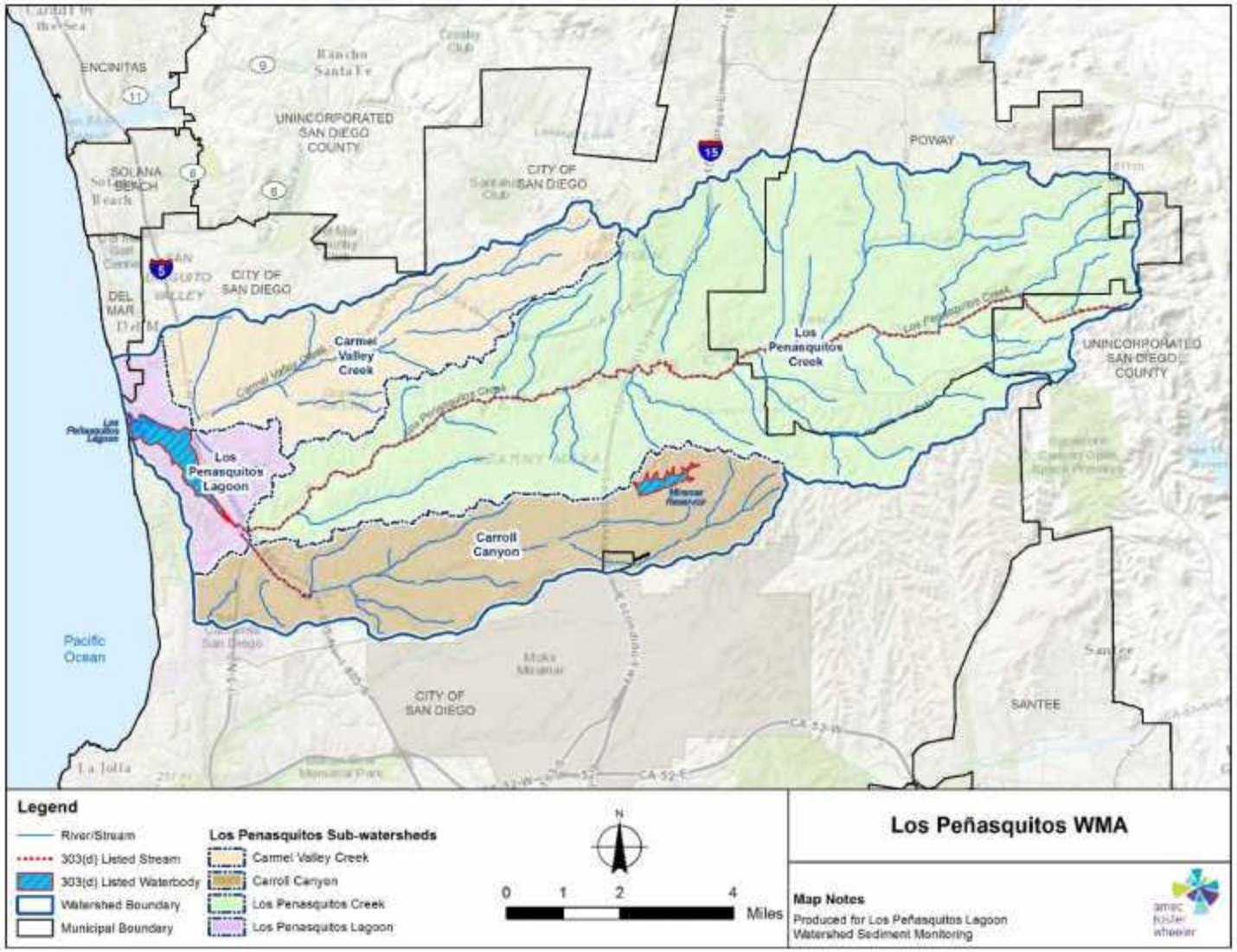

Figure 1-1.
Los Peñasquitos WMA

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1.2 MONITORING OBJECTIVES

The purpose of this project is to monitor suspended sediment concentrations (SSC) and estimate wet weather sediment loads in each of the watershed's three major tributary creeks during wet weather. This TMDL Compliance Monitoring Program is designed to answer the following questions:

- What is the ecological health of the Lagoon?
- How is the Lagoon's health changing with time?
- What is the progress toward ultimate restoration of the Lagoon?
- What additional regulatory and implementation actions are needed to restore the Lagoon?

This information will allow Responsible Agencies to assess their progress toward meeting milestones and final load reduction goals in accordance with the TMDL compliance schedule.

1.3 PROJECT ORGANIZATION

The City of San Diego is the municipal government agency that oversees the project. The other municipalities within the WMA will contribute to the program through a Memorandum of Understanding (MOU). The City of San Diego has assigned two staff members to provide project oversight:

- Ruth Kolb will be responsible for policy-related and special study projects.
- Andre Sonksen will be responsible for compliance-related projects at the City of San Diego. Based on those roles, they will both provide project oversight.

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) will coordinate sample collection, laboratory analysis, data management, data analysis, and reporting. Amec Foster Wheeler has assigned project responsibilities to several staff members:

- Jeremy Burns will serve as the Amec Foster Wheeler Project Manager, and will be responsible for project coordination and development, scheduling, budget management, and oversight of all project plans and reports.
- Kiernan Brtalik, the Amec Foster Wheeler Project Coordinator and Field Sampling Manager, will be responsible for implementing the monitoring activities, coordinating laboratory work, and developing the project report.
- Carla Scheidlinger will be the Amec Foster Wheeler lead for vegetation monitoring and mapping.
- Dr. Theodore VonBitner will be the Amec Foster Wheeler Quality Assurance Officer, with responsibility for the project quality assurance (QA) and quality control (QC) procedures used during sampling, laboratory analysis, data management, and data analysis.

- Jesse Davis, the Amec Foster Wheeler Health and Safety Officer, will be responsible for implementing the project health and safety plan and related practices.
- Dr. Habib Matin, as part of the Amec Foster Wheeler team, will provide senior principal-level oversight and review during development of this monitoring plan, implementation of sampling, data analysis, and reporting.
- Liz Collins is the manager of Amec Foster Wheeler's material testing laboratory, which will conduct particle size distribution analyses for bedload samples; she will ensure that samples are analyzed in accordance with the methods and QA requirements outlined in this monitoring plan.

Weck Laboratories, Inc. (Weck), located in City of Industry, California, will be responsible for SSC analysis:

- Hai Van Nguyen is the Weck Project Manager and will ensure that samples are analyzed in accordance with the methods and QA requirements outlined in this monitoring plan. The Weck laboratory QA/QC manual is in Appendix A.

Figure 1-2 shows the project organization.

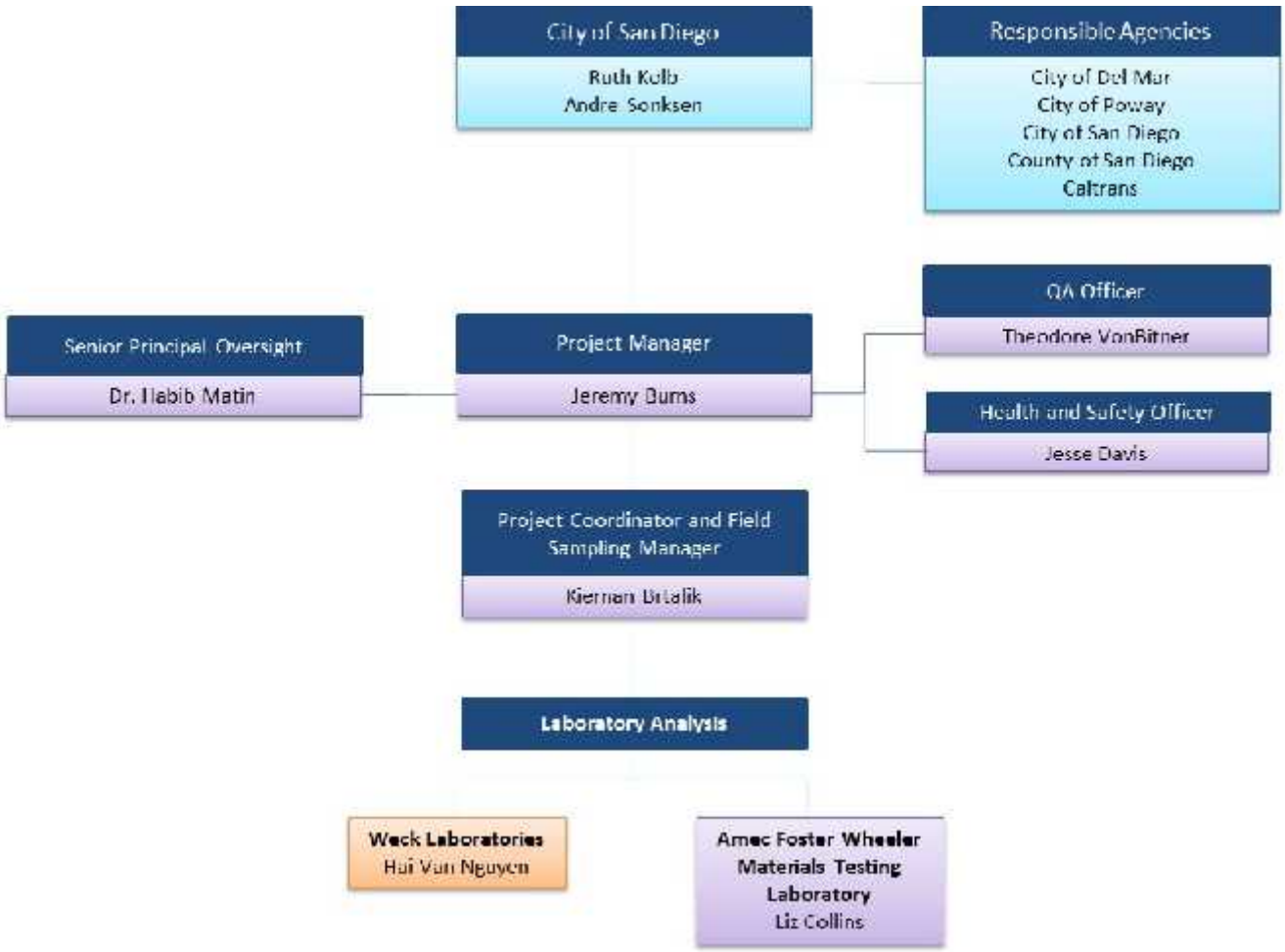

Figure 1-2.
Project Team Organization

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2.0 DESCRIPTION OF MONITORING LOCATIONS

Water quality and sediment will be sampled at one location at the base of each of the three creeks within the project boundary. The monitoring locations are shown in Figure 2-1. Vegetation monitoring will be conducted within the Lagoon and is discussed in detail in Section 5.0

Site names, identifications (IDs), and the geographic coordinates of each creek monitoring location are listed in Table 2-1.

Table 2-1.
Los Peñasquitos WMA Compliance Monitoring Locations

Site Name	Site ID	Latitude	Longitude
Carmel Valley Creek	CV	32.9297	-117.2412
Los Peñasquitos Creek	LP	32.9046	-117.2229
Carroll Canyon Creek	CC	32.8981	-117.2212

Carmel Valley Creek

The Carmel Valley Creek monitoring location is at a culvert that runs below Sorrento Valley Road, south of its intersection with Carmel Valley Road. Long-term flow monitoring data and stream rating curves from this location were incorporated into this monitoring program.

Los Peñasquitos Creek

The Los Peñasquitos Creek monitoring location is the existing San Diego Copermittee Mass Loading Station (MLS) under the Receiving Waters and Urban Runoff Monitoring Program, per Regional Board Order R9-2007-0001 (Regional Board, 2007). This site is at the bridge crossing of Vista Sorrento Parkway, near Sorrento Valley Boulevard. Long-term flow monitoring data and stream rating curves from this location were incorporated into this monitoring program.

Carroll Canyon Creek

The Carroll Canyon Creek monitoring location is approximately 600 feet upstream of the historical San Diego Copermittee Temporary Watershed Assessment Station (LPC-TWAS-1), near 10655 Roselle Street. The TWAS site itself is highly vegetated and full of debris; this condition makes it unsuitable for flow monitoring. Streambed assessments (volumetric sampling, pebble counts, and photo documentation) were conducted approximately 700 feet upstream of this station, where the stream returns to a natural bottom prior to entering the trapezoidal concrete channel. Long-term flow monitoring data and stream rating curves from this location were incorporated into this monitoring program.

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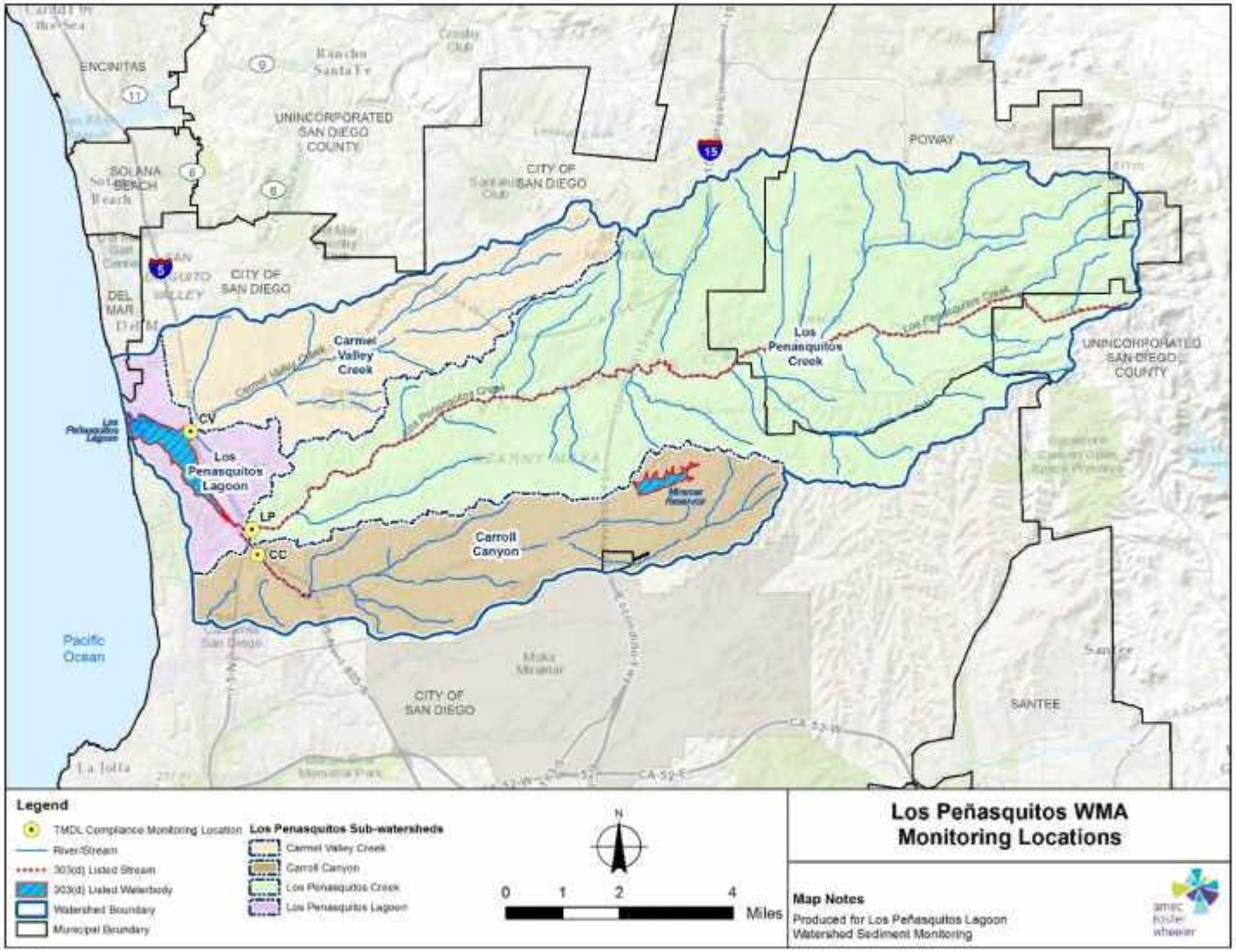

Figure 2-1.
Los Peñasquitos WMA Compliance Monitoring Locations

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3.0 SAMPLING METHODOLOGY

3.1 PRE-STORM SEASON SAMPLING

Sections 3.1.1 through 3.1.3 describe sampling activities for this compliance monitoring program that will be conducted before the wet season (October 1 through April 30) begins.

3.1.1 Volumetric Streambed Sampling

Volumetric stream bed sampling will be conducted at each monitoring location on one occasion prior to the wet season. Two stream bed material samples will be collected at a representative portion along a cross-sectional transect at each monitoring location. Samples will be collected in an area approximately 12 inches by 12 inches in size, and dug down approximately 12 inches, yielding a sample size of approximately 1 cubic foot. If an armor layer of large cobble exists that is distinctly larger than the underlying material grain size, the layers will be sampled separately. Samples will be placed in 5-gallon buckets and will be labeled appropriately. Samples will be transported to Amec Foster Wheeler's materials testing laboratory and analyzed for particle size distribution.

3.1.2 Pebble Count Before Wet Season

A pebble count will be conducted at each monitoring location prior to the wet season. This data point will be used as the baseline for the season and as a comparison point for the subsequent pebble counts that will be conducted after monitored storms and after non-monitored major storms throughout the wet season. It is anticipated that a total of eight pebble counts will occur throughout the season. The method used will be the sampling frame and template method developed by Bunte and Abt (2001a and 2001b), which uses a minimum of 100 particles and half-phi template (gravelometer) to measure particle sizes. A tape measure will be used to space three sampling transects across riffle sections at each location. The pebble count represents the size of material in the area and can be used to assess the representativeness of the volumetric samples. Site locations will be physically marked and recorded using Global Positioning System (GPS) for subsequent pebble counts throughout the wet season.

3.1.3 Photodocumentation

The stream bed will be documented with photographs taken during dry weather volumetric sample collection and initial pebble counts. Photos will be taken of the stream bed using a 1-square-foot frame placed in three designated locations within each stream. These same points will be photographed during subsequent pebble counts, based on pebble count site markings.

3.2 WET WEATHER MONITORING

Wet weather monitoring will occur during three qualifying rainfall events (storms forecast to produce greater than 0.20 inch of rainfall) during each wet season. Monitoring will consist of pollutograph and bedload sampling, post-storm pebble counts, photodocumentation, and long-term flow monitoring.

3.2.1 Pollutograph Sampling

During each monitored event, water samples will be collected for SSC analysis. A target of 10 pollutograph samples will be collected at each monitoring location (as listed in Table 2-1) during each of the three monitored events. More samples may be collected if storm duration is prolonged. Sampling will be conducted either manually or with automated samplers at each monitoring location. Samples will be collected at equal time intervals or at times adjusted to capture multiple peaks throughout the storm duration. Flow data will be collected throughout the wet season at each monitoring location (Section 3.2.5).

3.2.2 Bedload Sampling

Samplers will be installed per United States Department of Agriculture guidelines (Bunte et al., 2007). Attempts will be made to collect bedload samples during monitoring events at the three monitoring locations. Previous sample collection by Amec Foster Wheeler in other City of San Diego project locations (Flanders Canyon Creek [2011–2012] and Carroll Canyon Creek [2011–2013]) has been successful on limited occasions; however, based on best professional judgment for these previous monitoring efforts, bedload sample collection may be unsuccessful for a given storm event. For the aforementioned studies, the cause of sample failure is unknown. It is hypothesized that flows may redirect around bedload samplers because of stream hydrology or sample exclusion caused by large cobbles.

For these challenged bedload sampling locations, efforts will be made to move the in-stream samplers around in the channel if flows appear to be bypassing the samplers. Bedload samples will be collected using a bedload trap sampler installed at two points across the channel at each site. If primary channels are narrow, only one sampler may be used. If a sampler fills with material during the storm and it is safe to access it, attempts will be made to change the mesh bag. These samples will provide data on material that is moving along the stream bed during storms and is not suspended in the water column. If collection is successful, bedload samples will be analyzed for particle size distribution.

3.2.3 Post-Storm Pebble Count

A pebble count will be conducted at each monitoring location after each monitored storm and after major storms throughout the wet season, as budget permits. See Section 3.1.3 for procedure details.

3.2.4 Photodocumentation

The stream bed will be documented with photographs taken during post-storm pebble counts. Photographs will be taken at the same locations that were photographed during the dry weather volumetric sampling. These photographs will provide a time series of stream bed material changes throughout the season. See Section 3.1.4 for procedure details.

3.2.5 Long-term Flow Monitoring

In addition to storm event monitoring, flow will be measured continuously at each of the monitoring locations. Flow data will be logged at 1-minute intervals during storm events and at 15-minute intervals during non-storm events. Data will be downloaded, twice per month, to confirm that data are being recorded and that the equipment is functioning properly.

3.3 WET WEATHER MONITORING PREPARATION AND LOGISTICS

3.3.1 Weather Tracking

Weather will be tracked for monitoring purposes throughout the wet season (October 1 through April 30). Throughout the wet season, several sources of weather information will be monitored continuously; however, the National Weather Service (NWS) webpage will be the primary source used to determine whether and when to mobilize monitoring crews.

3.3.2 Storm Selection Criteria

The following criteria will be used to determine whether to mobilize, on the basis of forecast data from the NWS, for an impending storm event:

- Storm forecasts must meet criteria at least 48 hours prior to the onset of rainfall;
- A storm must be forecast to produce at least 0.20 inch of rainfall;
- The probability of precipitation must be greater than 60 percent; and
- A storm event must be preceded by at least 72 hours of dry conditions (less than 0.10 inch of precipitation).

The Field Sampling Manager and/or Project Manager may modify the criteria on a storm-by-storm basis in consultation with the City of San Diego.

3.3.3 Staffing and Mobilization

Staffing Plan

Monitoring both the flow characteristics and water quality of storm water requires considerable planning before any actual rain falls. Obtaining representative samples and complete storm data is possible only with trained and alert field teams. The uncertainty of weather forecasts coupled with abrupt changes in the weather can greatly alter the expected workload. It is critical to plan and prepare in advance as many aspects of the field work as possible. A staffing plan that designates personnel and specifies the equipment required for each facet of monitoring will be completed as soon as a potential event has been forecast.

Each monitoring team will consist of two field individuals. The staffing plan will include the following:

- Personnel assigned to each position
- Shift (e.g., startup and relief) and monitoring location designations
- Equipment mobilization requirements
- Communication channels

No field teams will be mobilized for a storm event that would require field sampling or laboratory analysis on federal holidays.

Staffing Positions and Personnel

Storm monitoring tasks require a variety of skills. Amec Foster Wheeler personnel will be assigned to the following positions:

- Project Manager
- Field Sampling Manager
- Field technicians

Project Manager

During storm events, the Project Manager will monitor the status of the storm conditions and communicate with the Field Sampling Manager. The Project Manager must be able to obtain and interpret the most recent weather forecasts to estimate the appropriate timing and duration of the storm. This information will be used to determine the time span between pollutograph sample collections and to make informed decisions regarding the storm status. It is also the responsibility of the Project Manager to notify all personnel of shift start- and end-time changes.

The assigned Project Manager has excellent decision-making and dispatching skills as well as an understanding of the project requirements. If the Project Manager is not available during the storm event, an individual with similar skills will be assigned; however, the Project Manager will be available to answer questions.

Field Sampling Manager

This position requires an understanding of project requirements, sampling procedures, and equipment operations. The Field Sampling Manager must be able to troubleshoot most of the common problems that could be experienced by any of the field teams. The Field Sampling Manager will lead sampling activities, monitor the ability of field teams to safely and effectively complete their shifts, and communicate frequently with the Project Manager to prioritize tasks, request relief teams as needed, and provide onsite weather observations.

The Field Sampling Manager is a technically skilled field supervisor and is the most experienced member of the field team.

Field Technicians

Field technicians are field personnel trained in storm water sample collection and health and safety procedures. They will assist the Field Sampling Manager in storm water sample collection.

Equipment Mobilization

Equipment needed for storm water sampling includes automated sampling equipment, sample containers, safety equipment, personal rain gear, and storm kits. The necessary equipment will be loaded into the appropriate vehicles early in the storm preparation sequence. During the monitoring season, field crews will use safety equipment, personal rain gear, and other monitoring location maintenance equipment.

Table 3-1 lists the contents of a field technician's "field kit."

Table 3-1.
Storm Kit Equipment and Mobilization List

Storm Kit Equipment List	Mobilization List
Flashlights or headlamps	Field notebook
High-quality alkaline batteries for lamps	Paper towels
Maps of all required areas	Cellular phone
Pencils and indelible markers	Personal rain gear
Desiccant (packages and jar)	Digital or disposable camera
Diagonal clipper	Safety gear (see Appendix B, Health and Safety Plan)
Electrical tape	Spare sample labels
Cable ties (assorted sizes)	Sample control paperwork
Utility knife	Spare sets of 1-liter bottle suites for carousel
Ziploc® plastic bags (assorted sizes)	Automated sampling equipment not existing onsite (including appropriate spare batteries)
Nitrile gloves	Spoons, trowels, and shovels
Full set of keys (if necessary)	Bedload trap equipment and spare bedload trap nets

Communication Channels

Communication channels must be established for personnel to contact each other before and during the event. The project field notebook will include lists of home, work, and cellular telephone numbers of the Amec Foster Wheeler field team and the work telephone numbers of the primary laboratory contacts and City of San Diego personnel. Cellular telephone communication links to field teams are essential for efficient storm water monitoring because the Project Manager and the Field Sampling Manager will need to track the location and workload of each field team and to prioritize tasks.

Training of Field Personnel

Field personnel will be properly trained in the use of the monitoring equipment and in all appropriate health and safety protocols (Appendix B). Specifically, the following elements will be included in the training of all field personnel:

- Review of health and safety plan
- Classroom training
- Field training (if necessary)

Each field team member will review the Health and Safety Plan (HASP) and consult with the Field Sampling Manager for any questions before mobilization. Classroom and field training will be provided prior to the first monitored storm event to inform field personnel of the project-specific objectives.

3.3.4 Station Preparation

Field Equipment Installation

Each field installation team will consist of two technicians who are knowledgeable about using the storm water samplers. The technicians will also be familiar with equipment siting requirements. The team will deliver and install the enclosure, monitoring equipment, intake tubing, and flow monitoring sensors prior to the onset of the storm season. Any equipment that is not installed or stored on site will be mobilized during pre-storm activities.

Determination of Sampling Time Intervals

Water quality monitoring using pollutograph sampling requires an understanding of forecast storm length to determine the proper time intervals between the targeted ten samples. If automated samplers are used to collect pollutograph samples, the proper time interval must be entered into the automated samplers before the storm starts. Although 10 samples are targeted to be collected throughout the storm, achievement of that target is based on actual storm duration. If the storm ends much earlier than forecast, 10 samples may not be collected; if the storm runs longer than anticipated, more than 10 samples may be collected.

This project requires individual samples per analysis based on analytical methods. One-liter containers will be used to collect water samples for SSC; one container will be filled at each sample collection interval.

Preparation of Automated Equipment

A maintenance program will be performed on each automated sampler before each wet weather event during each wet season. Maintenance will include checking the performance of all the equipment, checking power supplies, inspecting and clearing intake structures, checking the status of the instrumentation desiccant, and performing any necessary equipment repairs to keep the monitoring equipment operational.

Field teams will make sure that the flow-monitoring equipment at all flow-monitoring locations is functional. The equipment will be inspected and then its functionality verified on the field forms.

If automated samplers are used for sample collection, field teams will check that the automated sampler has been reset and that it has been programmed to collect samples based on specified time intervals. The automated sampler will be programmed to collect 10 samples.

Sample Handling

Once samples are collected, the sample bottles will be iced, with sufficient ice maintained around the bottle to ensure that the sample temperature is 6 degrees Celsius or less.

General Inspection of Monitoring Location

The general suitability for installation of monitoring equipment will be surveyed at each location and assessed to determine whether there is debris or trash that could clog or foul equipment. The equipment will be physically observed for potential problems, such as a damaged cable or a kinked hose. When access allows, intake strainers and flow sensors will be visually checked and cleared of debris, if necessary.

3.3.5 Documentation

Each time a monitoring location is visited (whether during a storm or not), the visit will be recorded in the field log. The field data sheets in Appendix C are a guide to ensure that all the required data are obtained. Occasional checks of equipment parameters, such as date, time, and current water level (when safe access allows), will be conducted to verify that the data being recorded is accurate and that any deviations can be addressed in a timely fashion.

The following information will be entered during monitoring location visits during storms:

- Site ID (alphanumeric)
- Date and time
- Monitoring program
- Field team
- Conveyance type
- Weather conditions
- Runoff characteristics
- Equipment condition
- Sample count (if applicable)
- Miscellaneous comments

Additional data will be recorded on the field data sheet at the end of a storm event. The following data will be collected at all stations where applicable:

- Total Flow Volume—Total volume of water that passed the station during the storm
- Pollutograph Sample Count and Collection Times and Flow Rates—Total number of pollutograph samples collected throughout the storm, the time at which each was collected, and the flow rate at the time of sample collection
- Total Rainfall—Total accumulated rainfall (in inches) since the start of the storm, measured each time the rain bucket tips

Flow and rainfall data will be logged by the flow meter and will be downloaded after the storm. However, if downloaded data are lost for any reason, the data recorded on the field data sheet will serve as a secondary data reference.

3.3.6 Field Equipment Installation, Calibration, and Maintenance

Field teams will install the equipment, making sure that all equipment is securely mounted, using stainless-steel hardware. Sampling tubing and wiring will be routed through conduits that will be placed between the monitoring locations and the sampling enclosures. Above-ground instruments will be protected within the monitoring location equipment enclosure. Conduit runs will be buried in short, shallow trenches or secured to other basin features using stainless-steel hardware. Exposed conduit, intakes, and sensors will be securely fastened using stainless-steel brackets, screws, and anchors.

Bedload trap samplers will be installed prior to a monitored event.

Calibration of monitoring equipment will be performed upon installation and during maintenance and pre-storm visits. During wet weather events, the field crew will document the equipment status, which will include:

- Checking the performance of all equipment
- Checking power supplies
- Inspecting and clearing intake structures
- Calibrating equipment, as necessary

Field crews will attempt to address maintenance needs that arise while onsite. If issues remain, field crews will note the nature of the problem and return to perform required maintenance.

3.3.7 Flow Monitoring and Water Quality Monitoring Equipment Specifications

Data-Logging Flow Meter

The Sigma 950 area-velocity-bubbler (AVB) data-logging flow meters measure, calculate, and log flow data, based on a set of continuous measurements and programmed information.

Based on channel type and available historical flow data, water flow at each monitoring location will be measured, using either a head vs. flow table or an AVB probe, which measures water stage and velocity. The flow meter allows programming of the geometry of the conveyance and, based on input from the AVB probe, the flow meter calculates instantaneous flow rates. The flow meters also have inputs for a rain gauge and sampler communication.

Flow meters will have data logging capability that allows the flow meter to be connected to an automated sampler. The flow meter provides a method for controlling (pacing or triggering) the sampler and storing the corresponding sampling data.

The flow meters will measure and log flow levels and rainfall at 1-minute intervals. During storm events, the flow meters convert instantaneous flow into total runoff volume. Storm and hydrological data are electronically stored in the flow meter. The information recorded includes:

- Level, velocity (if applicable), flow, and rainfall data at the programmed logging interval
- Flow rate at the time of each sample
- Time of peak flow rate
- Cumulative rainfall
- Discharge volume totals

Automated Sampler

One of two automated samplers will be used for this project: an American Sigma 900 MAX or a SD900 sampling system. Each system consists of an intake strainer, Teflon-lined intake tubing, flexible silicon pump tubing, a peristaltic pump, a distributor arm, and sample bottles. If manual sample collection is determined to be more practical or successful, the automated samplers will not be used. The decision regarding the method of sample collection will be made on a case-by-case basis by the Field Sampling Manager.

The intake strainers will be securely fastened in a manner that allows sample collection in the estimated middle depth of water column. The intake tubing will be securely fastened to the intake strainer and will be housed in protective conduit to the point where the tubing enters the monitoring equipment enclosure. The intake tubing will be attached to the flexible silicon pump tubing at the sampler. The flexible silicon pump tubing will run through the sampler peristaltic pump into a distributor arm to fill the sample bottles.

Rain Gauges

A tipping bucket rain gauge is configured with a small "bucket" that holds a known amount of rainfall. When the bucket is full, it tips the water out, momentarily closes a switch, and then resets itself and starts the process again. The data logger counts each switch closure and so accumulates rainfall totals. The rain gauges to be used in this monitoring program are manufactured by American Sigma and will tip after every 0.01 inch of rainfall.

Rain gauges are installed at the Los Peñasquitos Creek and Carmel Valley Creek locations. The Carroll Canyon Creek location has trees surrounding the enclosure, not allowing for accurate rainfall measurement. Given the proximity of these sites, only one rain gauge is necessary.

Power

The automated sampling equipment (if used) will be powered by 12-volts direct current (VDC) power sources, either 12-VDC deep-cycle marine batteries or 12-VDC gel cell batteries. At each monitoring station, one battery will power each piece of equipment separately; this reduces the chance of batteries running low on power and also gives redundancy in the power system at the monitoring locations. If a battery fails, the other battery can power all of the equipment until a backup battery can be installed by the field crew.

Equipment Security Housing

All monitoring equipment will be housed in fiberglass or metal equipment enclosures at the monitoring locations, where access allows. The enclosures will be installed for the entire monitoring season.

4.0 ANALYTICAL PROCEDURES

Analytical procedures and laboratory information are provided in Sections 4.1 through 4.5. Table 4-1 provides the analytical methods, units, and reporting limits (RLs). Table 4-2 provides the analytical holding times, container types, and preservation requirements.

Table 4-1.
Analytical Requirements for Water and Sediment Samples

Analysis	Method	Matrix	Units	Reporting Limit
Particle Size Distribution	ASTM C 136/117	Sediment	Millimeters (mm)	NA
Suspended Sediment Concentration	ASTM D 3977	Water	Milligrams per liter (mg/L)	2.0

ASTM = ASTM International
NA = not applicable

Table 4-2.
Analytical Holding Times, Container Types, and Preservation Requirements

Analysis	Method	Matrix	Holding Time	Container Type	Preservation
Particle Size Distribution	ASTM C 136/117	Sediment	None	Mesh bag or bucket	None
Suspended Sediment Concentration	ASTM D 3977	Water	7 days	½-gallon glass	≤6 Degrees Celsius (°C)

ASTM = ASTM International

4.1 VOLUMETRIC SAMPLE ANALYSIS

Two stream bed material samples will be collected at each monitoring location prior to the start of the wet season. Samples will be analyzed for particle size distribution. If a distinct layer of large cobble (i.e., armor layer) exists above smaller grain size material at any sample point, the two layers will be sampled separately. Table 4-1 provides the analytical methods, units, and RLs. Table 4-2 provides the analytical holding times, container types, and preservation requirements.

4.2 WET WEATHER SAMPLE ANALYSIS

Water samples collected will be analyzed for SSC; bedload sediment samples will be analyzed for particle size distribution. Table 4-1 provides the analytical methods, units, and RLs. Table 4-2 provides the analytical holding times, container types, and preservation requirements. SSC was selected for water sample analysis over total suspended solids (TSS) because SSC analysis uses the entire sample volume rather than an aliquot used in TSS analysis. Based on this analytical difference, SSC is considered more representative than TSS of actual sample concentrations, particularly when a sample is composed of larger, heavier particle sizes.

4.3 PEBBLE COUNT

The pebble count procedure measures the size of a random selection of pebbles along a selected stream path to represent the size of material in the area. This procedure does not require collection of samples.

4.4 PHOTODOCUMENTATION

Photodocumentation of the stream bed will occur initially during the dry weather volumetric sample collection. It will also occur following major storm events, when pebble counts are conducted. This procedure does not require collection of samples.

4.5 LABORATORY SELECTION

For volumetric and bedload samples, particle size distribution analyses will be conducted by Amec Foster Wheeler's materials testing laboratory at:

- **Amec Foster Wheeler Environment & Infrastructure, Inc.**
  9177 Sky Park Court, San Diego, CA 92123
  (858) 278-3600 (office); (858) 278-5300 (fax)

For water samples, SSC analysis will be performed by:

- **Weck Laboratories, Inc**.
  14859 East Clark Avenue, City of Industry, CA 91745
  (626) 336-2139 (office); (626) 336-2634 (fax)

4.6 SAMPLE LABELING

Sample bottles and containers will be pre-labeled, to the extent possible, before each monitoring event. Pre-labeling simplifies field activities and leaves only date, time, and sampling personnel names to be filled out in the field. Each sample container provided will be labeled with the following information:

- Sample ID
- Project name
- Event number
- Sample collection date (month/day/year)
- Time of collection (24-hour time)
- Bottle _ of _ (for multi-bottle samples)
- Sampler's initials
- Analysis

Field samples will be labeled as described below. Samples will be labeled, recorded on the chain of custody (COC) form, and then transported to the analytical laboratory.

Each sample collected will be assigned a unique alphanumeric code (sample ID) for tracking. The sample ID will be standardized for all samples and will contain information related to the monitoring location, event, and type of sample. The required sample ID components, applicable to all samples, are:

- Site ID:
  - CV = Carmel Valley Creek
  - LP = Los Peñasquitos Creek
  - CC = Carroll Canyon Creek
- Event Number:
  - DW = Dry weather
  - 1 = First wet weather event
  - 2 = Second wet weather event
  - 3 = Third wet weather event
- Sample Type:
  - PG1–PG10 = Pollutograph number (for water samples)
  - RB or LB = Right bank or left bank (for bedload samples)

4.7 LABORATORY DATA PACKAGE DELIVERABLES

Laboratories will be required to provide a deliverable package within a three-week turnaround time per event. The deliverable package will include a hard copy of the report and electronic data files. The hard copy will include standard narratives identifying any analytical problems, QA/QC exceedances, and corrective actions. Individual data sets may be submitted to Amec Foster Wheeler as either Microsoft Excel workbook files or as Microsoft Access database files.

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5.0 VEGETATION MONITORING

As stated in Section 4 of the Los Peñasquitos WMA Water Quality Improvement Plan (Regional Board, 2014), a numeric target has been set for wetland restoration of the Los Peñasquitos Lagoon. Specifically the target area is defined as "an increasing trend in the total area of tidal saltmarsh and non-tidal saltmarsh toward 346 acres." The main restoration objective is to convert non-tidal saltmarsh wetland and upland or weed-infested non-tidal saltmarsh wetland habitat areas to "tidal wetland" and "native-dominated non-tidal wetland" habitats. These two vegetation types were identified in the Sediment TMDL for the numeric target. For vegetation monitoring, however, the seven vegetation types consistent with the categories historically used in the 2011 California State Parks analysis (California State Parks, 2011) of Lagoon vegetation from 2010 will be evaluated. These seven vegetation categories will be mapped using the methodology described below as part of the Sediment TMDL compliance monitoring to identify where and how changes in habitat are occurring in Los Peñasquitos Lagoon.

5.1 SEDIMENT TMDL AERIAL IMAGERY VEGETATION TYPE DETERMINATION

The Sediment TMDL Staff Report (Regional Board 2012b) described how the different vegetation types were mapped for the information shown in Figure 5-1 and described in Table 5-1.

Table 5-1.
Los Peñasquitos Lagoon Vegetation Types with Acres and Confidence of Mapping in 2010 (California State Parks, 2011)

	Acres	Confidence in Mapping (2010)
Saltmarsh	217	High (saltmarsh) to Moderate (tidal)
Non-tidal Saltmarsh	45	Moderate (non-tidal) to High (saltmarsh)
Non-tidal Saltmarsh with *Lolium*[1]	67	Moderate
Freshwater Marsh	55	High
Southern Willow Scrub	147	High
Herbaceous Wetland	34	High
Upland	0	High

1. The name of this species was recently changed to Festuca perennis. The original name Lolium perenne will be used throughout this document.

A detailed description of the seven vegetation types and discussion of the confidence in the aerial mapping are provided in the following subsections.

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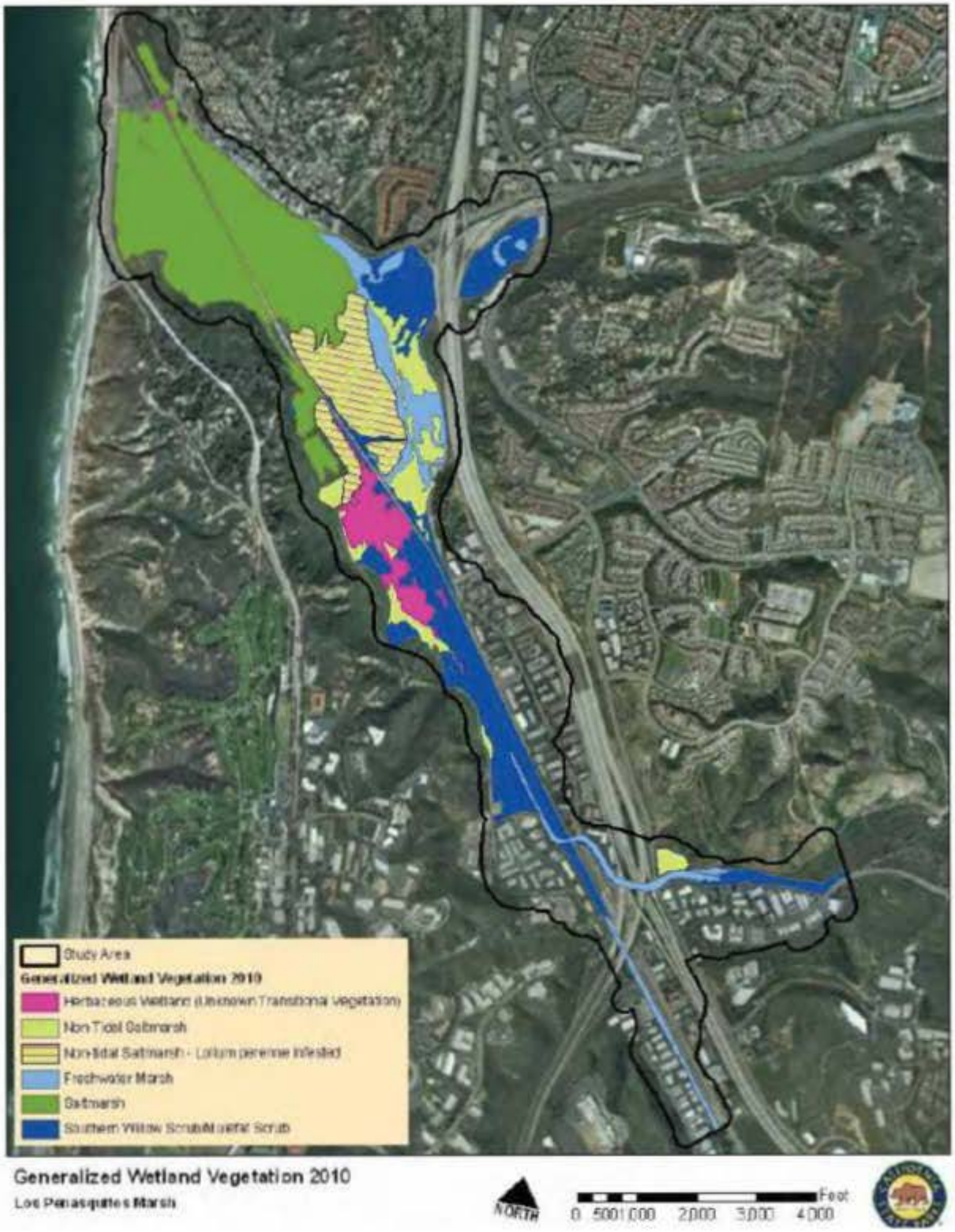

Figure 5-1.
Map of Vegetation in Los Peñasquitos Lagoon 2010

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5.1.1 Saltmarsh

Tidal wetland habitat areas consist of vegetated saltmarsh floodplain where the direct or immediately adjacent hydrology is influenced primarily by tidal flooding hydrology. This type of vegetation exists below 6 feet (mean sea level) in elevation with an obvious tidal connection and no obvious presence of annual grasses or freshwater marsh vegetation. It also includes salt panne, mudflat, and tidal channels, none of which are vegetated (Mendel et al., 2014).

Because of the variety of physical conditions (e.g. elevation, inundation regime, soil texture), tidal saltmarsh habitat supports a diverse range of vegetation sub-types, which will not be distinguished in this mapping and monitoring exercise. Although low marsh may be absent, both marsh plain and high marsh are present.

Image indicators for this type are deep brown and red-orange colors, with smooth textured vegetation. Common species in this type include *Sarcoconia pacifica* (*Salicornia virginica*)*, Frankenia grand flora,* and *Jaumea carnosa*.

The mapper found that they could distinguish this type with moderate to high confidence. Confidence that the vegetation was saltmarsh was high; confidence that it was tidal was moderate (Regional Board, 2012a). This is presumably because it is not possible to determine from an air photo the elevation of the area relative to mean sea level. Also, some mixed non-native grasses are found in areas with minimal tidal inundation, which would indicate that these areas intergrade with non-tidal saltmarsh.

5.1.2 Non-tidal Saltmarsh

Non-tidal saltmarsh habitat is defined by the persistence of native-dominant saltmarsh vegetation in areas whose hydrology is not influenced by tides. This type of vegetation exists above 4 feet (mean sea level) in elevation with no obvious tidal connection, but has the presence of annual grasses or freshwater marsh vegetation. This habitat is typically in depressional or historical saltmarsh areas where remnant accrued salts remain in high enough concentrations within soils to sustain salt-tolerant vegetation and to eliminate non-halophytes (Mendel et al., 2014).

Image indicators for this vegetation type are deep brown and red-orange colors with smooth textured vegetation as was found for saltmarsh, but with overall lighter or less intense color than tidal saltmarsh due to there being less moisture. This type may also include unvegetated salt panne, but with no obvious tidal connection. Common species in this type include *Sarcoconia pacifica* (*Salicornia virginica*) and *Frankenia grandiflora*. Vegetation distant from tidal connection has higher cover of *Frankenia salina, which shows as an* orange color in aerials, and includes more brackish species such as *Scirpus maritimus* and *Iva hayesiana*. Based on species composition, this vegetation could be considered cismontane alkali marsh. Non-native plant species are more prevalent within non-tidal habitats than tidal saltmarsh areas but should not be co-dominant. Common non-native plant species may include *Brassica nigra* (black mustard), *Festuca perennis* (Italian rye grass)*, Polypogon monspeliensis* (rabbit's foot grass), and *Bromus* spp. (brome grass) (Regional Board, 2012b).

Confidence that the vegetation mapped as such in the image was non-tidal saltmarsh was moderate to high, with high confidence that vegetation was saltmarsh, and moderate confidence it was non-tidal.

5.1.3 Non-tidal Saltmarsh – *Lolium perrene* Infested

This type of vegetation exists above 4 feet (mean sea level) in elevation with no obvious tidal connection. It is dominated by annual grasses, but has presence of saltmarsh vegetation as well. This category is similar to non-tidal saltmarsh habitat but with higher or codominant non-native species cover and distinct functional differences and reductions based primarily on altered and non-native vegetation communities. These areas may experience lower soil salinities or more infrequent freshwater inundation, which would serve to increase the habitat vulnerability to non-native species invasion along the saltmarsh–upland transitional boundaries.

The principal image indicator for this type of vegetation is the straw color of senescent annual grasses. Common species present include *Sarcoconia pacifica* (*Salicornia virginica*), *Frankenia grandiflora,* and *Lolium perenne*. *Bromus diandrus* or other nonnative grasses may be present as well.

Confidence that the vegetation mapped as such in the image was non-tidal saltmarsh *Lolium perrene* infested was moderate.

5.1.4 Freshwater Marsh

This type of vegetation contains typical freshwater marsh species. This marsh habitat has high levels of freshwater influence and is typically found in areas lacking direct tidal influence. Most of the Los Peñasquitos WMA freshwater marshes include areas that experience seasonal freshwater inputs from wet weather and storm water flows. The image indicators were of vegetation that is taller statured, more round-patterned, and of a more pillowy texture than saltmarsh and non-tidal saltmarsh vegetation. This vegetation shows with a lighter color than saltmarsh and non-tidal saltmarsh. It has a smooth texture and light color compared to Southern Willow Scrub/Mulefat Scrub. Common species include *Typha* spp., *Scirpus californica,* and *Scirpus americanus.*

Confidence that the vegetation mapped as such in the image was high.

5.1.5 Southern Willow Scrub/Mulefat Scrub

This vegetation type consists of tall-statured woody vegetation. These habitat areas generally occur in lower elevation regions that direct and capture both overland and subterranean water flows from higher elevation areas; the primary characteristic is defined by the presence of riparian woody vegetation. Image indicators are lumpy texture and bright green color, with presence of shadows. Common species include *Salix lasiolepis (*western willow*) and Baccharis salicifolia (*mulefat*)*.

Confidence that the vegetation mapped as such in the image was high.

5.1.6 Herbaceous Wetland (Unknown or Transitional Vegetation)

This generalized vegetation type may contain a variety of more specific but undifferentiated vegetation types and textures mixed at close scales. Mappers indicated that in these areas, it was difficult to differentiate between vegetation types. Common species in this type may include non-native grasses, some freshwater marsh species, saltmarsh species, *Leymus tritichoides, Scirpus maritimus*, *Anemopsis californica* (yerba mansa), *Euthamia occidentalis* (western goldenrod), and others.

Confidence that the vegetation mapped as such in the image was high, primarily based on location in the Lagoon footprint and the lack of evidence for inclusion in other vegetation types.

5.1.7 Upland Land Cover (Urban, Beach, Dune, Upland Vegetation, etc.)

This type of vegetation is non-wetland. Image indicators are inclusion in areas with urban infrastructure or non-wetland vegetation. Common species are not distinguished.

Confidence that areas mapped as such in the image was high.

5.2 VEGETATION MONITORING METHODOLOGY

5.2.1 Mapping Standards

The vegetation types in Los Peñasquitos Lagoon will be monitored annually, in the fall, starting in 2014, to measure changes in the spatial extent of the vegetation types. The monitoring will be conducted via aerial photography and/or land-based survey methods. The monitoring will be consistent with the methodology used to calculate the numeric target. Ground truthing of aerial mapping “may” be performed to distinguish between vegetation types.

The vegetation mapping will be conducted according to the preferred vegetation classification that is compatible with the documentation of the attainment of the requirements of the Sediment TMDL. At the minimum, mapping will be able to distinguish with high confidence between the two major vegetation types called out in the Sediment TMDL, tidal saltmarsh and native-dominated non-tidal saltmarsh. The current plan is to provide sufficient detail to map to the seven communities described in Section 5.1. This level of mapping will provide a more detailed understanding of the dynamics of the changes in habitat in the Lagoon. Mapping will be done with aerial photographs, using image and mapping standards employed in the Sediment TMDL. Alliance species as described in the most recent Manual of California Vegetation (MCV) (Sawyer et al., 2009) with an appropriate crosswalk to the vegetation types in the Sediment TMDL listed above will be used as a reference, as the MCV is the current standard for vegetation mapping state-wide. This approach may be supplemented with additional input as provided by the City of San Diego and California Department of Fish and Wildlife, prior to the survey. Table 5-2 shows that cross-walk.

Table 5-2.
Crosswalk Between Vegetation Types Identified in the Sediment TMDL and Vegetation Alliances in MCV (MCV Crosswalk, 2009)

Vegetation Type	Potential Alliances (MCV 2009)
Non-Tidal Saltmarsh	*Arthocnemum subterminale*
	Cressa truxillensis-Distichlis spicata
	Distichlis spicata
	Frankenia salina
	Grindelia stricta
	Lasthenia fremontii-distichlis spicata
	Sueda moquinii
	Schoenoplectus americanus
Non-Tidal Saltmarsh with *Lolium*	*Lolium perenne* semi-natural stand
Freshwater Marsh	*Typha*
	Phragmites australis
	Schoenoplectus acutus
	Schoenoplectus californicus
Southern Willow Scrub	*Salix gooddingii*
	Baccharis salicifolia
	Sambucus mexicana
	Salix lasiolepis
	Salix exigua
Herbaceous Wetland	*Atriplex prostrata-Cotula coronopifolia* semi-natural stands
	Sesuvium verrucosum
Upland	Not applicable to Lagoon Vegetation
	California Annual Grassland

MCV = Manual of California Vegetation
TMDL = Total Maximum Daily Load

5.2.2 Mapping Methods

The Sediment TMDL Staff Report and its attachments (Regional Board, 2012b) detail the methods that were used for mapping Los Peñasquitos Lagoon pursuant to the development of the numeric target for Lagoon restoration. Aerial photos were digitized on-screen at a 1:2,500 scale and mapped into generalized classifications that could be reliably interpreted without field verification. Future mapping efforts will utilize the same methodology. Aerial photographs will be taken at the height of the growing season (late summer to early fall) for the year for which monitoring is to be accomplished. Vegetation types will be mapped as described, with the polygons for each type totaled to indicate the number of acres of each type that was identified. Change in each vegetation type from the previous mapping efforts will then be quantified to determine if progress is being made toward the Sediment TMDL numeric target.

5.2.3 Ground Truthing Standards

Although ground truthing was not specified in the Sediment TMDL document, it will be conducted for two reasons. The first is that it will assist in improving the accuracy of the maps, by allowing the mappers to field verify the appearance of various vegetation types in the photographs. Of particular importance will be the ability to distinguish transitions between target and non-target vegetation. Small detection differences over a long vegetation type interface can amount to a considerable number of acres, and those acres of target communities are important to Sediment TMDL compliance. Second, the ground truthing allows for some level of interpretation regarding how and why vegetation changes are occurring. This interpretation will guide any efforts that may need to be made for active restoration to accomplish the numeric target goals.

Ground truthing will be conducted during the first year to increase the confidence level of identification of the tidal and non-tidal saltmarsh communities, which is required for Sediment TMDL compliance. Ground truthing will continue during subsequent years of monitoring until a high level of confidence in vegetation type identification is attained. Ground truthing will be performed using maps that have delineated polygons of vegetation derived from the aerial imagery, with the vegetation type assigned to each polygon. Using information recorded with GPS units, the exact location of the transition from one vegetation type to another will thus be verified in the field. The map will be updated, and the acres of each vegetation type will be recalculated.

The seven vegetation types are listed below, with some discussion of how transitions between a non-target type and a target type could be realized, thus advancing toward attainment of the numeric target of the Sediment TMDL.

- Tidal saltmarsh: This vegetation type should either remain the same or expand for Sediment TMDL compliance. Expansion would be by conversion from a non-tidal saltmarsh type. Such expansion would occur if less sediment were introduced into the Lagoon, or if the connection to the ocean were expanded. Both actions would allow for increased tidal flow into higher Lagoon areas.
- Non-tidal saltmarsh: This category should either remain the same or expand for Sediment TMDL compliance. Expansion would be by conversion from a non-saltmarsh type. Increased tidal flow could introduce enough salinity into areas that were not acquiring new sediment load, converting non-tidal areas to tidal saltmarsh.
- Non-tidal saltmarsh infested with *Lolium*: This type should be converted to saltmarsh without *Lolium* infestation. It is unlikely to convert to tidal saltmarsh unless there is active restoration that would move sediment to lower the marsh surface, or at least to develop channels to allow for flooding with saltwater. This type could also be converted to non-tidal saltmarsh with native species by active control of the *Lolium* using mechanical or chemical methods, followed by appropriate seed introduction. It could also convert to non-tidal saltmarsh dominated by native species if tidal action were increased and sediment introduction decreased, so that soil salinity is increased, making the area less suitable for weedy species and favoring native saltmarsh species.

- Freshwater marsh: This vegetation type should be shown to not be expanding. Reduction of nuisance flows of fresh water could slowly convert some areas to non-tidal saltmarsh, as freshwater supplies diminish. Otherwise, the vegetation type could convert to saltmarsh only with active intervention for sediment removal either by earthmoving or by increasing local scouring from tributary creeks that would carry sediment out to sea.
- Southern willow scrub/mulefat scrub: This vegetation type should not be expanding. It could convert to saltmarsh only with active intervention for sediment removal either by earthmoving or by increasing local scouring from tributary creeks that would carry sediment out to sea.
- Herbaceous wetland: This vegetation type should be shown to not be expanding. It could convert to saltmarsh only with active intervention for sediment removal either by earthmoving or by increasing local scouring that would carry sediment out to sea.
- Upland: No changes would be expected in this area without extensive earthwork to lower the surface into the tidal range. It was not mapped as part of the Lagoon in 2010.

Transects will be used for the ground truthing. They will be positioned strategically to allow for increasing confidence regarding the location of transition zones between mapped vegetation types. Although transects are often used in restoration and monitoring work, there are no general standards for the placement or sampling of transects for vegetation mapping unless such sampling is coupled with additional sampling to identify and describe ecological parameters and processes such as soil characteristics, tidal channels, or elevation changes (Vasey et al., 2002; U.S. Geological Survey [USGS], 2011; South Bay Salt Pond, 2012). This effort would ***not*** identify and describe such parameters; it will be limited to the evaluation of vegetation type. These transects will be referenced to aerial imagery, and their location will be identified by installing permanent endpoints in the field using T-posts or other durable markers. Transect locations will be selected for specific ability to quantify with optimum accuracy the habitat acres of target vegetation types needed to conform to numeric targets for the TMDL.

Figure 5-2 shows the 2010 Los Peñasquitos Lagoon vegetation map with the preliminary location of transects that would assist in refining any changes in the boundaries between target and non-target vegetation types. The exact location of these transects will be determined in the field. Specifically, the transect purpose, by transect number, is as follows:

1. Identify the extent of the conversion of freshwater wetland or southern willow/mulefat scrub to tidal saltmarsh.
2. Identify the extent of the conversion of non-tidal *Lolium* infested marsh tidal to tidal saltmarsh.
3. Same as (2) in a different location.

4. Identify the conversion of freshwater marsh to non-tidal saltmarsh. The area shown is currently infested with *Lolium*; monitoring any reduction in *Lolium* at these interfaces and determining that the reduction can be detected in aerial photographs will be of value.
5. Same as (4) in a different location.
6. Identify the conversion of freshwater marsh to native non-tidal saltmarsh.
7. Identify the conversion of freshwater marsh and of *Lolium* infested non-tidal saltmarsh to native non-tidal saltmarsh.
8. Identify the conversion of herbaceous wetland and non-tidal *Lolium* infested saltmarsh to native non-tidal saltmarsh. These interfaces will become important with time and being able to identify them readily from aerial photographs will be useful.
9. Identify the conversion of southern willow/mulefat scrub and herbaceous wetland to non-tidal saltmarsh. These interfaces will become important with time and being able to identify them readily from aerial photographs will be useful.

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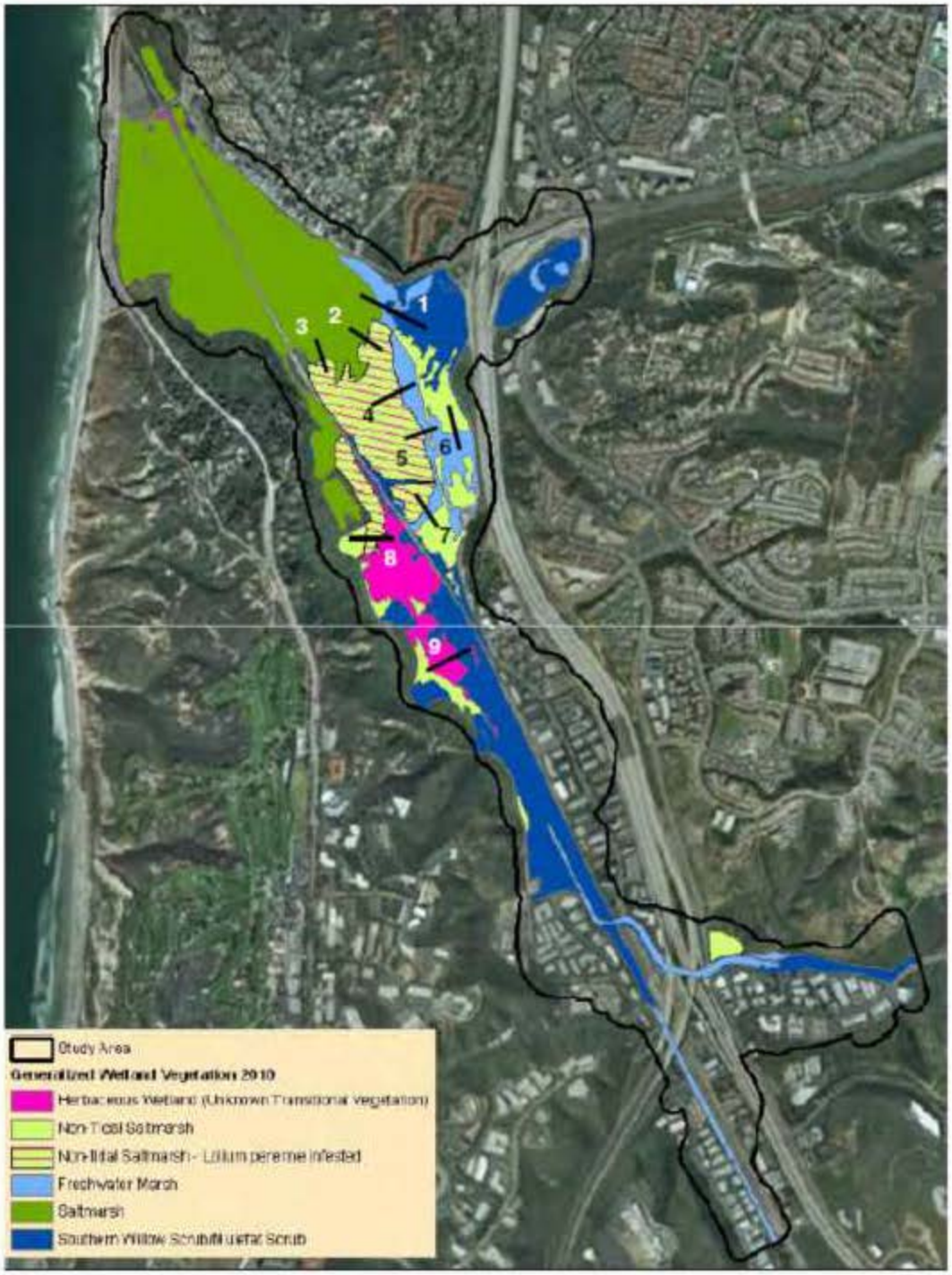

Figure 5-2.
Preliminary Location of Transects for Ground Truthing

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5.2.4 Ground Truthing Methods

Data fields for ground truthing along the transects should include dominant species, and total vegetation cover quantified at least to cover class (Daubenmire, 1959). Methods for transect establishment and sampling are as follows:

1. Use the vegetation map generated during the first year of monitoring to select tentative transect locations that will accomplish the monitoring goals described above. Assign preliminary GPS coordinates to each end of each transect so that they can be located in the field.
2. Install the transects in the field, adjusting location and end points to suit actual field conditions. Collect actual GPS coordinates for each endpoint. Install a permanent marker such as a T-post at each end of each transect.
3. Finalize a data collection sheet for use in the field. Data fields will include cover of major species as well as an inventory of species present in a belt along each transect.
    a. A belt transect is a 1-meter-wide band that extends from the transect line to one side of the transect. Class cover for each major species and all species present along it based on 1-meter increments will be recorded (Daubenmire, 1959). This information converts to species cover, total cover, and species richness.
    b. The data sets will indicate when one vegetation type stops and another one begins, and will show how sharp the boundary is between those two types. That boundary can then be placed with great accuracy on the map, which will allow for a clear evaluation of the photographic appearance of each vegetation type evaluated.
4. Update the vegetation map using the data from the transects. Provide a narrative of what the differences were in initial assessment and final assessment, and indicate the image information that should be taken into consideration for future mapping efforts.

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6.0 QUALITY ASSURANCE AND QUALITY CONTROL

This section addresses QA/QC activities associated with laboratory analyses.

6.1 WATER SAMPLING QUALITY OBJECTIVES

The laboratory will have written standard operating procedures (SOPs) that specify (for each analytical method) instrument operation and maintenance, determination of method detection limits, QC acceptance criteria, blank requirements, and stepwise procedures. At a minimum, SOPs will be written for the following procedures: sample receipt, control, and disposal; sample preparation; health and safety practices; and corrective action.

The SOPs and all revisions will be available to the analysts in the laboratory. The laboratory will maintain written records of all activities that might affect the quality of the laboratory results.

All instruments will be calibrated and the calibration acceptance criteria will be met before samples are analyzed. For SSC analysis, the balance used will be calibrated on the day of sample analysis in the range of samples.

6.1.1 Measurement Quality Objectives

Measurement Quality Objectives (MQOs) establish acceptable levels of uncertainty for each measurement process conducted during monitoring. Analytical MQOs will be assessed through application of accuracy, completeness, and representativeness parameters, as discussed in this section. For SSC analyses, laboratory duplicates are not conducted because the entire sample is used for analysis, so precision is not measured. Table 6-1 specifies the analytes and specific MQOs for each.

Table 6-1.
Measurement Quality Objectives for Laboratory Analyses

Analyte	Accuracy	Completeness
Particle Size	NA	90%
Suspended Sediment Concentration	90% below RL of 2.0 for each method blank	90%

NA = Not Applicable

Accuracy

Accuracy is defined as the nearness of a result, or the mean of a set of results, to the true or accepted value. Because there are no analyte spikes or laboratory control samples (LCSs) available for SSC analysis, analytical accuracy for SSC analysis is measured only by analysis of method blanks. The goal of accuracy is 90 percent below the RL.

The method blank ensures that the equipment used in preparing the samples is free of contaminants that could interfere with the analysis. For SSC analysis, one method blank will be analyzed per batch or 20 samples, whichever is more frequent.

Completeness

Completeness is a measure of the percentage of project-specific data that are valid. Valid data are obtained when samples are collected and analyzed in accordance with QC procedures outlined in this monitoring plan, and when none of the QC criteria that affect data usability are exceeded. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set. The requirement of completeness is 90 percent for samples and is determined using the following equation:

$$Completeness = \frac{Actual\ number\ of\ samples\ collected}{Project\ required\ total\ samples\ to\ be\ collected} * 100$$

Representativeness

Representativeness is a measure of how well the samples represent the area from which they were taken. In order to ensure representativeness in the samples, this study will temporal variability by using automated equipment that collects samples during regular time intervals. Sampling locations were chosen because of their representation of the entire stream channel. Monitoring locations will be inspected to ensure that debris or other outside forces do not inhibit the representativeness of the samples. Representativeness does not have a quantitative MQO.

6.1.2 Corrective Action

Corrective action is taken when an analysis is deemed suspect for some reason, such as high blank concentrations. The corrective action varies somewhat from analysis to analysis, but typically involves:

- Checking the procedure
- Reviewing the documents and calculations to identify any possible error
- Correcting the error
- Re-analyzing the sample, if it is available, to see whether results can be improved
- Completely reprocessing and re-analyzing additional sample material, if it is available

The laboratories have procedures in place to follow when failures occur, will identify the individual(s) responsible for corrective action, and will appropriately document the incident.

6.2 VEGETATION MONITORING QUALITY OBJECTIVES

In the field, data collectors will work in pairs, and each person will independently be able to identify species and to estimate cover class. This provides onsite quality control.

When data sheets are returned to the office, they will be scanned and the data digitized. A preliminary evaluation of data completeness will be made by inspection.

The map specialist will incorporate the field data into revised map polygons and evaluate the photographic signatures for each vegetation type. If this specialist detects apparent discrepancies in the vegetation identifications within a transect, the transect may be resurveyed to resolve the issue.

Based on the results of the initial air photo mapping and the ground truthing verification, a confidence for the aerial identification of each vegetation type will be developed. It is expected that the confidence for mapping the vegetation types from aerial photography will increase with the incorporation of ground truthing results.

6.3 DATA COMPILATION, ANALYSIS, AND REPORTING

6.3.1 Review of data transfer and lab reports

Once field data are collected, field sheets will be checked for accuracy and completeness by the Project Manager. Before submitting samples to the analytical lab, the field technician is responsible for ensuring that all samples are labeled correctly.

COC forms will accompany all samples submitted for laboratory analysis. COC forms will be filled out completely and will include the date, time, and signature of the Amec Foster Wheeler and laboratory employees present during the transfer. The technician making the transfer to the laboratory should make copies of all COC forms for the project records.

Electronic data deliverables (EDDs) and reports received from the lab will be reviewed for accuracy. Once the lab result data has passed QA/QC criteria, summary tables and figures can be created. The summary tables will then be checked against lab reports to confirm that the data has been transferred correctly. Laboratory raw data from 10 percent of monitoring events will be chosen randomly and checked against the original data set. If errors are found during this 10 percent check, they will be corrected and an additional 10 percent will be checked for accuracy. The process will be continued until no errors are found in the data sets.

6.3.2 Training and Certification

Field sampling will be carried out by trained field technicians and sampling managers. Field technicians will have sufficient storm water classroom and field training, as well as preliminary training in health and safety procedures.

The sample analysis will be conducted by Weck Laboratories. Weck is certified under the State of California Environmental Laboratory Accreditation Program (ELAP).

6.3.3 Equipment Maintenance and Calibration

Equipment calibration will be performed upon installation, during maintenance, and during pre-storm visits. The equipment status will be documented during wet weather events to ensure that performance, power, calibration, and intake structures are working properly.

Maintenance will also be addressed as necessary when field crews visit the sites. Any remaining problems with equipment will be documented and perform the required maintenance once they are able to do so, prior to the next sampling event.

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APPENDIX A
LABORATORY QA/QC MANUALS

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Quality Assurance Manual

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Weck Laboratories, Inc.

Analytical Laboratory Services - Since 1964

QUALITY ASSURANCE MANUAL

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Section 3

INTRODUCTION AND SCOPE
(TNI V1:M2 – Sections 1,2,3)

The purpose of this ***Quality Assurance Manual (QM)*** is to outline the management system for Weck Laboratories, Inc. The QM defines the policies, procedures, and documentation that assure analytical services continually meet a defined standard of quality that is designed to provide clients with data of known and documented quality and, where applicable, demonstrate regulatory compliance.

The ***Quality Manual*** sets the standard under which all laboratory operations are performed, including the laboratory's organization, objectives, and operating philosophy. The ***Quality Assurance Manual*** has been prepared to assure compliance with the 2009 TNI Environmental Laboratory Sector Standard – Volume 1 – Management and Technical Requirements for Laboratories Performing Environmental Analysis (EL-V1-M1 through M7-ISO-2009) as well as the DoD Quality Systems Manual for Environmental Laboratories, Version 4, dated 3/19/09. It also covers all applicable requirements, regulations, guidance, and technical standards from the USEPA and State regulatory agencies. This Standard is consistent with ISO/IEC 17025:2005 requirements that are relevant to the scope of environmental testing services and thus, the laboratory operates a quality system in conformance with ISO/IEC 17025:2005(E). In addition, the policies and procedures outlined are compliant with the various accreditation and certification programs listed in Appendix F.

3.1 Scope of Testing

The services provided by this facility include Organic Chemical Analyses, Inorganic Chemical Analyses, Trace Metal analyses, Microbiological Analysis, Physical Analyses and Field services (sampling and simple field determinations).
The laboratory's scope of analytical testing services includes those listed in Appendix E (list of Standard Operating Procedures) and also in the certifications presented in Appendix F.

3.2 Table of Contents, References and Appendices

The Table of Contents is in Section 2 and Appendices are in Section 29.

This ***Quality Manual*** uses the references included in Modules 1-7 in the 2009 TNI Environmental Laboratory Sector Standard – Volume 1 – Management and Technical Requirements for Laboratories Performing Environmental Analysis.
Other references used in this QM include the following in addition to SW-846, Standard Methods, EPA methods for drinking water and wastewater, ASTM and other recognized sources of analytical methods and guidance documents:

a) Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80, December 29, 1980, Office of Monitoring Systems and Quality Assurance, ORD, USEPA, Washington, DC 20460
b) RCRA QAPP Instructions, USEPA Region 5, Revision: April 1998

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c) ASTM D-5283-92. Generation of Environmental Data Related to Waste Management Activities: Quality Assurance and Quality Control Planning and Implementation.
d) American National Standards Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs (ANSI/ASQC E-4), 1994.
e) EPA 2185 – Good Automated Laboratory Practices, 1995
f) ISO/IEC Guide 25: 1990. General Requirements for the Competence of Calibration and Testing Laboratories.
g) QA/R-2: EPA Requirements for Quality Management Plans, August 1994.
h) QA/G-4: Guidance for the Data Quality Objectives Process EPA/600/R-96/055, September 1994.
i) A/R-5: EPA Requirements for Quality Assurance Project Plans Draft – November 1997
j) QA/G-5: Guidance on Quality Assurance Project Plans EPA/600/R-98/018, February 1998.
k) A/G-6: Guidance for the Preparation of Standard Operating Procedures for Quality Related Operations EPA/600/R-96/027, November 1995.
l) A/G-9: Guidance for the Data Quality Assessment: Practical Methods for Data Analysis EPA/600/R-96/084, January 1998.
m) Manual for the Certification of Laboratories Analyzing Drinking Water EPA/570/9-90/008.
n) ISO. 2005. General requirements for the competence of testing and calibration laboratories. ISO 17025
o) DoD Quality Systems Manual for Environmental Laboratories, Version 4, dated 3/19/09.

3.3 Glossary and Acronyms Used

Quality control terms are generally defined within the Section that describes the activity.

3.3.1 Glossary

The ***Terms and Definitions*** Section of Modules 1-7 in the 2009 TNI Environmental Laboratory Sector Standard – Volume 1 – Management and Technical Requirements for Laboratories Performing Environmental Analysis.

Other Terms and Definitions used in the laboratory are the following:

Accreditation body - Authoritative body that performs accreditation.
Aliquot - A discrete, measured, representative portion of a sample taken for analysis.
Analyte - The specific chemicals or components for which a sample is analyzed; it may be a group of chemicals that belong to the same chemical family, and which are analyzed together.
Assessment - The evaluation process used to measure the performance of effectiveness of a system and its elements against specific criteria. It includes any of the following: audit, performance evaluation, peer review, inspection, or surveillance.

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Atomization - A process in which a sample is converted to free atoms.
Audit - A documented investigative evaluation used to determine the degree of compliance with established procedures and guidelines, applied to specific analytical processes.
Calibration Range - The range of values (concentrations) between the lowest and highest calibration standards of a multi-level calibration curve. For metals analysis with a single-point calibration, the low-level calibration check standard and the high standard establish the linear calibration range, which lies within the linear dynamic range.
Chain of Custody - An unbroken trail of accountability that verifies the physical security of samples, data and records.
Client - Any individual or organization for whom items or services are furnished or work performed in response to defined requirements and expectations.
Congener - A member of a class of related chemical compounds (e.g., PCBs, PCDDs).
Consensus Standard - A standard established by a group representing a cross-section of a particular industry or trade, or a part thereof.
Continuing calibration verification (CCV) - The verification of the initial calibration that is required during the course of analysis at periodic intervals. Continuing calibration verification applies to both external standard and internal standard calibration techniques, as wells as to linear and non-linear calibration models.
Definitive Data - Analytical data of known quality, concentration, and level of uncertainty. The levels of quality and uncertainty of the analytical data are consistent with the requirements for the decision to be made. Suitable for final decision-making.
Detection Limit (DL) - The lowest concentration or amount of the target analyte that can be identified, measured, and reported with confidence that the analyte concentration is not a false positive value. The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence. At the DL, the false positive rate (Type I error) is 1%.
Digestion - A process in which a sample is treated (usually in conjunction with heat) to convert the sample to a more easily measured form.
Dissolved - The concentration of analyte in an aqueous sample that will pass through a 0.45 µm membrane filter assembly prior to sample acidification.
Duplicate - The analysis or measurement of the variable of interest performed identically on two subsamples of the same sample. The results of duplicate analysis are used to evaluate analytical or measurement precision but not the precision of sampling, preservation or storage internal to the laboratory.
Eluent - A solvent used to carry the components of a mixture through a stationary phase.
Elute - To extract; specifically, to remove (adsorbed material) from an adsorbent by means of a solvent.
Elution - A process in which solutes are washed through a stationary phase by a movement of a mobile phase.
Environmental Data - Any measurement or information that describe environmental processes, locations, or conditions; ecological or health effects and consequences; or the performance of environmental technology.
Environmental Monitoring - The process of measuring or collecting environmental data.

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False Negative - An analyte incorrectly reported as absent from the sample, resulting in potential risks from their presence.
False Positive - An item incorrectly identified as present in the sample, resulting in a high reporting value for the analyte of concern.
Finding - An assessment conclusion referenced to a NELAC Standard and supported by objective evidence that identifies a deviation from a NELAC requirement. An assessment conclusion that identifies a condition having a significant effect on an item or activity. An assessment finding may be positive or negative and is normally accompanied by specific examples of the observed condition and may be linked to a specific requirement.
Holding Times - The maximum times that samples may be held prior to analysis and still be considered valid or not compromised. The time elapsed from the time of sampling to the time of extraction or analysis, or from extraction to analysis, as appropriate.
Homologue - One in a series of organic compounds in which each successive member has one more chemical group in its molecule than the next preceding member. For instance, CH_3OH (methanol),
C_2H_5OH (ethanol), C_3H_7OH (propanol), C_4H_9OH (butanol), etc., form a homologous series.
Interference, spectral - Occurs when particulate matter from the atomization scatters the incident radiation from the source or when the absorption or emission of an interfering species either overlaps or is so close to the analyte wavelength that resolution becomes impossible.
Instrument Performance Check Solution (IPC) - A solution of the method analyte, used to evaluate the performance of the instrument system with respect to a defined set of method criteria.
Isomer - One of two or more compounds, radicals, or ions that contain the same number of atoms of the same elements but differ in structural arrangement and properties. For example, hexane (C_6H_{14}) could be n-hexane, 2-methylpentane, 3-methylpentane, 2,3-dimethylbutane, 2,2-dimethylbutane.
Limit of Detection (LOD) - An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte and matrix-specific and may be laboratory-dependent. The smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.
Limits of Quantitation (LOQ) - The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The lowest concentration that produces a quantitative result within specified limits of precision and bias. The LOQ is set at or above the concentration of the lowest initial calibration standard. Also known as Practical Quantitation Limit or PQL and Method Reporting Limit or MRL.
Laboratory Reagent Blank - An aliquot of reagent water or other blank matrices that are treated exactly as a sample including exposure to all glassware, equipment, solvents, reagents, and internal standards that are used with other samples. The LRB is used to determine if the method analyte or other interferences are present in the laboratory environment, reagents, or apparatus.
Management - Those individuals directly responsible and accountable for planning, implementing, and assessing work.
Management System - System to establish policy and objectives and to achieve those objectives.

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Matrix Spike (MS) - Also known as spiked sample or fortified sample, it is a sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency.

Matrix Spike Duplicate (MSD) - Also known as fortified sample duplicate, a second replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.

Method Detection Limit - One way to establish a Limit of Detection, defined as the minimum concentration of a substance (an analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

Method of Standard Additions (MSA) - A set of procedures adding one or more increments of a standard solution to sample aliquots of the same size in order to overcome inherent matrix effects. The procedures encompass the extrapolation back to obtain the sample concentration. (This process is often called spiking the sample.)

Nonconformance - An indication or judgment that a product or service has not met the requirement of the relevant specifications, contract, or regulation; also the state of failing to meet the requirements.

Quality Assurance Project Plan (QAPP) - A formal document describing the detailed quality control procedures by which the quality requirements defined for the data and decisions pertaining to a specific project are to be achieved.

Quality Control Sample (QCS) - A solution of the method analyte of known concentration, which is used to fortify an aliquot of LRB or sample matrix. The QCS is obtained from a source external to the laboratory and different from the source of the calibration standards. It is used to check either laboratory or instrument performance.

Quantitation Range - The range of values in a calibration curve between the LOQ and the highest successfully analyzed initial calibration standard. The quantitation range lies within the calibration range.

Reporting Limit (RL) - A client-specified lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

Retention Time (RT) - The time between sample injection and the appearance of a solute peak at the detector.

Sample - Portion of material collected for analysis, identified by a single, unique alphanumeric code. A sample may consist of portions in multiple containers, if a single sample is submitted for multiple or repetitive analysis.

Sampling and Analysis Plan (SAP) - See Quality Assurance Project Plan.

Second-source calibration verification (ICV) - A standard obtained or prepared from a source independent of the source of standards for the initial calibration. Its concentration should be at or near the middle of the calibration range. It is done after the initial calibration.

Signal to Noise Ratio - The signal carries information about the analyte, while noise is made up of extraneous information that is unwanted because it degrades the accuracy and precision of an analysis and also places a lower limit on the amount of analyte that can be detected. In most measurements, the average strength of the noise is constant and independent of the magnitude of the signal. Thus, the effect of noise on the relative error of a measurement becomes greater and greater as the quantity being measured (producing the signal) decreases in magnitude.

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Standard - Standard samples are comprised of a known amount of standard reference material in the matrix undergoing analysis. A standard reference material is a certified reference material produced by the US National Institute of Standards and Technology (NIST) and characterized for absolute content, independent of analytical test method.
Target Analytes - Analytes specifically named by a client (also called project-specific analytes).
Tuning - A check and/or adjustment of instrument performance for mass spectrometry as required by the method.
Work Cell - A well-defined group of analysts that together perform the method analysis. The members of the group and their specific functions within the work cell must be fully documented.

3.3.1.1 **The TNI Standard:** Modules 1-7 in the 2009 TNI Environmental Laboratory Sector Standard – Volume 1 – Management and Technical Requirements for Laboratories Performing Environmental Analysis (EL-V1, M1 through M7, ISO-2009).

3.3.2 Acronyms

A list of acronyms used in this document and their definitions are:

AA	-	Atomic Absorption Spectrometry
AB	–	Accrediting Body
ANSI	–	American National Standards Institute
ASQC	–	American Society for Quality Control
ASTM	–	American Society for Testing and Materials
BFB	-	Bromofluorobenzene
Blk	–	Blank
BNA	-	Base, Neutral and Acid Extractables
BOD	-	Biochemical Oxygen Demand
BS	-	Blank Spike, equivalent to LCS and LFB
°C	–	degrees Celsius
cal	–	calibration, Calibration Standard (CAL)
CAR	-	Corrective Action Report
CAS	–	Chemical Abstract Service
CCV	–	Continuing calibration verification
CCC	-	Continuing Calibration Check, equivalent to CCV
CFR	-	Code of Federal Regulations
CI	-	Chemical Ionization
CLP	–	Contract Laboratory Program
COC	–	Chain of custody
COD	–	Chemical Oxygen Demand
CRDL	-	Contract Required Detection Limit
CV	-	Coefficient of Variation
CVAA	-	Cold Vapor Atomic Absorption
DBP	-	Disinfection by Product
DFTPP	-	Decafluorotriphenylphosphine
DLR	-	Detection Limit for Reporting Purposes (established by California)
DO	–	Dissolved oxygen

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DOC	–	Demonstration of Capability
DOD	-	Department of Defense
DOE	-	Department of Energy
DOT	-	Department of Transportation
DQO	-	Data Quality Objectives
DQI	-	Data Quality Indicators
DRO	-	Diesel-range Organics
ECD	-	Electron Capture Detector
EDD	-	Electronic Data Deliverable
EI	-	Electron Impact Ionization
ELAP	-	Environmental Laboratory Accreditation Program
EPA	–	Environmental Protection Agency
FIA	-	Flow Injection Analysis
FID	-	Flame Ionization Detector
g/L	–	grams per liter
GC/MS	–	gas chromatography/mass spectrometry
GPC	-	Gel Permeation Chromatography
GRO	-	Gasoline Range Organics
HAA	-	Haloacetic acids
HDPE	-	High Density Polyethylene
HPLC	-	High Performance Liquid Chromatography
HRMS	-	High Resolution Mass Spectrometry
IC	-	Ion Chromatography
IC/MS/MS	-	Ion Chromatography Tandem Mass Spectrometry
ICP	–	Inductively coupled Optical Emission Spectrometry (ICP-OES)
ICP-MS	–	Inductively coupled plasma-mass spectrometry
ICV	–	Initial calibration verification
ICS	-	Interference Check Sample
ICS	-	Interference Check Sample
IDL	-	Instrument Detection Limit
IEC	-	Interelement Correction Factor
ISE	-	Ion Selective Electrode
ISO/IEC	–	International Organization for Standardization/International Electrochemical Commission
lb/in2	–	Pound per square inch
LC/MS/MS	-	Liquid chromatography Tandem Mass Spectrometry
LCL	–	Lower Control limit
LCS	–	Laboratory control sample, equivalent to LFB and BS
LD	-	Laboratory Duplicates (LD1 and LD2)
LDR	-	Linear Dynamic Range
LFB	–	Laboratory fortified blank
LFM	-	Laboratory Fortified Matrix, equivalent to Matrix Spike (MS)
LFMD	-	Laboratory fortified Matrix Duplicate, equivalent to MSD
LIMS	-	Laboratory Information Management System
LLE	-	Liquid-Liquid Extraction
LOD	-	Limit of Detection
LOQ	-	Limit of Quantitation
LRB	-	Laboratory Reagent Blank
LWL	-	Lower Warning Limit
MDL	–	Method detection limit
MRL	-	Method Reporting Limit or Level, equivalent to RL

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mg/Kg	–	Milligrams per kilogram
mg/L	–	Milligrams per liter
MS	–	Matrix spike, equivalent to LFM
MSD	–	Matrix spike duplicate, equivalent to LFMD
MSDS	–	Material Safety Data Sheet
NELAC	–	National Environmental Laboratory Accreditation Conference
NELAP	–	National Environmental Laboratory Accreditation Program
NIOSH	-	National Institute for Occupational Safety and Health
NIST	–	National Institute of Standards and Technology
NPD	-	Nitrogen-Phosphorus Detector
NPDES	-	National Pollutant Discharge Elimination System
OCP	-	Organochlorine Pesticides
OPP	-	Organophosphorus Pesticides
OSHA	-	Occupational Safety and health Administration
PAH	-	Polynuclear Aromatic Hydrocarbons
PMBS	-	Performance based Measurement System
PCBs	-	Polychlorinated Biphenyls
PCDD	-	Polychlorinated dibenzo-p-dioxins
PCDF	-	Polychlorinated dibenzofurans
PID	-	Photoionization Detector
PQL	-	Practical Quantitation Limit
PT	–	Proficiency Test(ing)
PTP	-	Proficiency Testing Provider
PTPA	–	Proficiency Testing Provider Accreditor
QA	–	Quality Assurance
QAP	-	Quality Assurance Program
QAPP	-	Quality Assurance Project Plan
QC	–	Quality Control
QCS	-	Quality Control Sample
QM	–	***Quality Manual***
RF	–	Response Factor
RL	–	Reporting level
RPD	–	Relative percent difference
RSD	–	Relative standard deviation
RT	-	Retention Time
SCAQMD	-	Southern California Air Quality Management District
SI	-	International System of Units
SIM	-	Selected Ion Monitoring
SOC	-	Synthetic Organic chemical
SOPs	–	Standard operating procedures
SPCC	-	System Performance Check Compounds
SPE	-	solid Phase Extraction
SPME	-	Solid Phase Microextraction
spk	–	Spike
SRM	-	Standard Reference Material
std	–	standard
SUR	-	Surrogate compound
SVOA	-	Semivolatile Organic Analysis
TCD	-	Thermal conductivity Detector
TCLP	-	Toxic Characteristics leaching Procedure
TDS	-	Total Dissolved Solids

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TEM	-	Transmission Electron Microscope
TIC	-	Tentatively Identified Compound
TKN	-	Total Kjeldahl Nitrogen
TNI	-	The NELAC Institute
TOC	-	Total Organic Carbon
TOX	-	Total Organic Halogens
TPH	-	Total Petroleum Hydrocarbons
TRPH	-	Total Recoverable Petroleum Hydrocarbons
TSS	-	Total Suspended solids (Non-filterable residue)
UCL	-	Upper control limit
ug/L	–	micrograms per liter
UV-Vis	–	Ultraviolet visible light
UWL	–	Upper Warning Limit
VOA	–	Volatile organic analysis
VOC	–	Volatile organic compound
WET	–	Whole effluent toxicity
WET	–	Waste Extraction Test (California leaching test for hazardous waste)
ZHE	–	Zero Headspace extraction

3.4 Management of the *Quality Manual*

The Quality Assurance Manager is responsible for maintaining the currency of the ***Quality Manual***.

The ***Quality Manual*** is reviewed annually by the Quality Manager and laboratory personnel to ensure it still reflects current practices and meets the requirements of any applicable regulations or client specifications. Sections of the manual are updated by making a change to the Section and then increasing the revision number by one. The cover sheet of the ***Quality Manual*** (Section 1) must be re-signed and the Table of Contents (Section 2) is updated whenever a Section is updated.

The ***Quality Manual*** is considered confidential within Weck Laboratories, Inc. and may not be altered in anyway except by approval of the Laboratory Director and Quality Manager. If it is distributed to external users, it is for the purpose of reviewing Weck Labs' management system and may not be used for any other purpose without written permission.

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Section 4

ORGANIZATION
(TNI V1:M2 – Section 4.1)

The laboratory is a legally identifiable organization. The laboratory is responsible for carrying out testing activities that meet the requirements of the TNI Standard, the ISO/EIC 17025 Standard, and that meet the needs of the client. Through application of the policies and procedures outlined in this Section and throughout the ***Quality Manual***:

- The laboratory assures that it is impartial and that personnel are free from undue commercial, financial, or other undue pressures that might influence their technical judgment.
- Management and technical personnel have the authority and resources to carry out their duties and have procedures to identify and correct departures from the laboratory's management system.
- Personnel understand the relevance and importance of their duties as related to the maintenance of the laboratory's management system.
- Ethics and data integrity procedures (see Appendix A, Section 5 – "Management" and Section 19 – "Data Integrity Investigations") ensure personnel do not engage in activities that diminish confidence in the laboratory's capabilities.
- Confidentiality is maintained.

4.1 Organization

The laboratory is a commercial enterprise organized as a California corporation under the legal name Weck Analytical Environmental Services, Inc, DBA Weck Laboratories Inc. The Tax ID number is available upon request, if applicable.
The laboratory operates in the City of Industry, Los Angeles County, California.

The laboratory's organization chart can be found in Appendix B. Additional information regarding responsibilities, authority and interrelationship of personnel who manage, perform or verify testing is included in Section 5 –"Management" and Section 20 – "Personnel". These Sections also include information on supervision, training, technical management, job descriptions, quality personnel, and appointment of deputies for key managerial personnel.

The laboratory has the resources and authority to operate a management system that is capable of identifying departures from that system and from procedures during testing, and initiates actions to minimize or prevent departures.

4.2 Conflict of Interest and Undue Pressure

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The organizational structure indicated above minimizes the potential for conflicting or undue interests that might influence the technical judgment of analytical personnel. In addition, procedures are in place to prevent outside pressures or involvement in activities that may affect competence, impartiality, judgment, operational integrity, or the quality of the work performed at the laboratory.

In order to assist the laboratory technical personnel in performing their duties without detrimental influences, it is the policy of the Company that the laboratory be impartial and that it and its personnel are free from any undue commercial, financial and other pressures which might influence or adversely affect their normal performance having an impact on the quality of the work they produce or their technical judgment. By this policy all laboratory personnel dedicated to technical activities should not be influenced by, or involved in any financial or commercial matter while performing laboratory work. If any employee feels that he or she might be under any kind of pressure as described above, the Laboratory Director must be notified immediately. Additionally, the Laboratory will not engage in any activities that may endanger the trust in its independence of judgment and integrity in relation to its environmental testing.

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Section 5

MANAGEMENT
(TNI V1:M2 – Section 4.2)

The laboratory maintains a management system that is appropriate to the scope of its activities.

5.1 Management Requirements

Top management includes the Laboratory Director, Technical Directors, Laboratory Supervisors/Team Leaders and Customer Service/Project Managers and the Quality Assurance Director.

Management's commitment to good professional practice and to the quality of its products is defined in the Quality Policy statement, Section 5.3

Management has overall responsibility for the technical operations and the authority needed to generate the required quality of laboratory operations. Management ensures communication within the organization to maintain an effective management system and to communicate the importance of meeting customer, statutory, and regulatory requirements. Management assures that the system documentation is known and available so that appropriate personnel can implement their part. When changes to the management system occur or are planned, managers ensure that the integrity of the system is maintained.

Management is responsible for carrying out testing activities that meet the requirements of the TNI Standard, the ISO/IEC 17025 Standard, and that meet the needs of the client in relation to other Federal and State requirements, such DoD.

Managers implement, maintain, and improve the management system, and identify noncompliance with the management system of procedures. Managers initiate actions to prevent or minimize noncompliance.

Management ensures technical competence of personnel operating equipment, performing tests, evaluating results, or signing reports, and limits authority to perform laboratory functions to those appropriately trained and/or supervised. This is done by requiring minimum level of education for each position as specified in the corresponding job descriptions, receiving training from senior chemists or lab managers and as described in Section 20 of this QM.

Management is responsible for defining the minimal level of education, qualifications, experience, and skills necessary for all positions in the laboratory and assuring that technical staff have demonstrated capabilities in their tasks.

Training is kept up to date as described in Section 20 – "Personnel" by periodic review of training records and through employee performance review.

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Management bears specific responsibility for maintenance of the management system. This includes defining roles and responsibilities to personnel, approving documents, providing required training, providing a procedure for confidential reporting of data integrity issues, and periodically reviewing data, procedures, and documentation. The assignment of responsibilities, authorities, and interrelationships of the personnel who manage, perform, or verify work affecting the quality of environmental tests is documented in Job Descriptions documentation.

Management ensures that audit findings and corrective actions are completed within required time frames.

Designated deputies are appointed by management during the absence of the Laboratory Manager, Technical Manager or the Quality Manager, and always if the absence is more than 15 days.

5.2 Management Roles and Responsibilities

5.2.1 Laboratory Director

The Laboratory Director is responsible for the overall quality, safety, financial, technical, human resource and service performance of the laboratory. The Laboratory Director provides the resources necessary to implement and maintain an effective quality and data integrity program.

5.2.1.1 Responsibilities

The Laboratory Director is responsible for:

a. Ensuring that personnel are free from any commercial, financial, and other undue pressures that might adversely affect the quality of their work
b. Ensuring that all analysts and supervisors have the appropriate education, skills and training to properly carry out the duties assigned to them and ensures that this training has been documented.
c. Ensuring that appropriate corrective actions are taken to address analyses identified as requiring such actions by internal and external performance or procedural audits. Procedures that do not meet the standards set forth in the Quality Manual, laboratory SOPs or laboratory policies may be temporarily suspended by the Laboratory Director.
d. Reviews and approved all SOPs and policies prior to their implementation and ensures all approved SOPs and policies are provided to laboratory personnel and are adhered to.
e. Documenting all relevant analytical and operational activities
f. Supervising all personnel
g. Performing with the other management staff an annual Management System Review

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h. Ensuring that the laboratory has the appropriate resources and facilities to perform requested work
i. Nominating deputies when the Technical Directors or QA Officer are absent for a prolonged period of time
j. Developing and implementing a proactive program for prevention and detection of improper, unethical or illegal actions and operating in accordance with the Laboratory's documented ethics policy
k. Ensuring that only those outside support services and supplies that are of adequate quality to sustain confidence in the laboratory's tests are used
l. Commitment to meet customer requirements and whenever possible exceed their expectations
m. Commitment to operate in accordance with statutory and regulatory requirements

5.2.2 Quality Assurance Manager (QA Manager)

The QA Manager (or designee) is responsible for the oversight and review of quality control data, but is independent from laboratory operations. The QA manager reports directly to the Officers of the Corporation as indicated in the Organizational chart (Appendix B). The QA Manager's training and proof of experience in QA/QC procedures, knowledge of analytical methods, and the laboratory's management system are available in the personnel records.

5.2.2.1 Responsibilities

The Quality Manager is responsible for:

a. serving as a focal point for QA/QC;
b. arranging or conducting annual internal audits without outside (e.g., managerial) influence;
c. notifying management of deficiencies, and monitoring corrective actions;
d. oversight and review of quality control data;
e. arranging or conducting internal audits annually;
f. monitoring corrective actions;
g. ensuring that the management system related to quality is implemented and followed at all times;
h. have a general knowledge of the analytical test methods for which data review is performed;
i. Ensuring communications take place within the laboratory regarding the effectiveness of the quality system;
j. Using available tools, such as audit and surveillance results, control charts, proficiency testing results, data analysis, corrective and preventive actions, customer feedback, and management reviews in efforts to monitor trends and continually improve the quality system;
k. Stop work as deemed necessary in the event of serious QA/QC issues;
l. monitoring and maintaining laboratory certifications; and
m. keeping this ***Quality Manual*** current.

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5.2.3 Technical Directors

The Technical Director (or designee) is a full-time laboratory staff member and supervises laboratory operations and data reporting. The Technical Director's proof of experience in the fields of accreditation may be found in the personnel records.

If the Technical Director is absent for fifteen (15) calendar days or more, a deputy (see Table 5-1 below) with appropriate qualifications will perform the Technical Directors' duties. Beyond a thirty-five (35) calendar day absence, management will notify the primary accreditation body in writing of the absence of the Technical Director and the appointment of the deputy.

The Technical Director is the technical director of more than one accredited environmental laboratory.

5.2.3.1 Responsibilities

The Technical Manager is responsible for:

a. meeting the general and education requirements and qualifications found in Sections 4.1.7.2 and 5.2.6.1 of the TNI Standard - EL-V1M2-2009;
b. monitoring performance data and the validity of the analyses for the laboratory;
c. Ensuring that sufficient number of qualified personnel are employed to supervise and perform the work of the laboratory;
d. Provide educational direction to laboratory staff;
e. Exercise day-to-day supervision of laboratory operations for the corresponding department
f. Ensuring personnel have the appropriate education and technical background to perform the tests for which the laboratory is accredited.

5.2.4 Lab Supervisors/Team Leaders

The Lab supervisors are full time employees that work under the direction of the Technical Directors and are responsible managing the group or section. Training records and educational background can be found in the personnel records.

5.2.4.1 Responsibilities

The Lab Supervisor/Team leader is responsible for:

a. Reviewing section workload and distribute work among available chemists;
b. Perform secondary data review of data packages;
c. ensuring analytical instruments are performing correctly;
d. Provide educational direction to laboratory staff;
e. Assist the Technical Director in performing day-to-day supervision of laboratory operations for the corresponding department

5.2.5 Customer Service/Project Managers (PM)

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The PMs are full time or part-time employees that work under the direction of the Laboratory Director and are responsible for the relationship between the laboratory and the external clients. Training records and educational background can be found in the personnel records.

5.2.5.1 Responsibilities

The PMs are responsible for:

f. Reviewing final reports for completeness and accuracy prior to be submitted to clients;
g. Maintain projects and bids in LIMS accurate and updated;
h. Maintain good communications with customers in all aspects related with their projects;
i. Make the necessary arrangements for sampling supplies delivery and samples pick up;
j. Answer customer technical questions or relate to appropriate lab personnel when needed
k. Ensure data deliverables including hard copy reports, EDDs and invoices are accurate and delivered on time

5.2.6 Laboratory Key Personnel Deputies

The following table defines who assumes the responsibilities of key personnel in their absence:

Table 5-1 Key Personnel Deputies

Key Personnel	Deputy
Laboratory Director	Technical Director Inorganics
QA Manager	Laboratory Director
Technical Director Inorganics	Inorganic Section Group Leader
Technical Director Organics	Organic Section Group Leader
Technical Director Microbiology	Laboratory Director
Technical Director Radiochemistry	Laboratory Director

Note: The designees or deputies are for temporary absence only; for prolonged absence a new person should be appointed to the position on a permanent basis.

5.3 Quality Policy

Management's commitment to quality and to the management system is stated in the Quality Policy below, which is upheld through the application of related policies and procedures described in the laboratory's ***Quality Manual***, SOPs and policies.

Weck Laboratories provides qualitative and quantitative data for use in critical decisions relating to the protection of the public and the environment. The data used

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for such purposes must be scientifically valid, defensible and of known and documented quality. All environmental testing activities are carried out in such a way as to meet the requirements of the current TNI Standard and to satisfy the needs of the client, the regulatory authorities or organizations providing recognition.

It is our goal to provide our clients with the best possible services, in terms of quality of laboratory work, honesty in our procedures and reporting, efficiency in our turnaround time and reasonable prices for our services and at the same time satisfy the needs of the regulatory authorities and organizations providing recognition.

The management of the laboratory is totally committed to the attainment of the best possible quality of data and instructs and educates the staff on this company policy.

All the necessary resources and materials shall be provided to the personnel of the laboratory in order to meet and/or improve the quality requirements of TNI and consequently of ISO 17025, of the analytical methods performed at the lab and any special requirements from clients.

Our policy is to use good professional practices, to maintain quality, to uphold the highest quality of service, and to comply with the TNI Standard. The laboratory ensures that personnel are free from any commercial, financial, and other undue pressures, which might adversely affect the quality of work. This policy is implemented and enforced through the unequivocal commitment of management, at all levels, to the Quality Assurance (QA) principles and practices outlined in this manual. However, the primary responsibility for quality rests with each individual within the laboratory organization. Every laboratory employee must ensure that the generation and reporting of quality analytical data is a fundamental priority. Every laboratory employee is required to familiarize themselves with the quality documentation and to implement the policies and procedures in their work. All employees are trained annually on ethical principles and procedures surrounding the data that is generated. The laboratory maintains a strict policy of client confidentiality.

The objective of the Quality Assurance Program is to monitor the reliability of the analytical data produced by the Laboratory and to implement effectively the quality control procedures and operations defined for each analysis. The purposes of this program are:

a. Provide data that is scientifically valid, defensible, and of known and documented quality in accordance with standards developed by TNI and any applicable state or EPA regulations or requirements.
b. Ensure that analytical results fall between acceptable control limits.
c. Provide mechanisms for corrective action when necessary.
d. Establish standardized practices to provide consistency in the generation of data.
e. Define the quality of each analytical system in terms of accuracy, precision and sensitivity.
f. Identify in the early stages possible problems that may affect data quality.
g. Ensure that all personnel involved with testing and calibration are familiar with the quality documentation;
h. Ensure that all policies and procedures are implemented;

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i. Commitment that management will comply with the standard and will continually improve the effectiveness of the management system

5.4 Ethics and Data Integrity System

The laboratory has developed an Ethics and Data Integrity policy for prevention and detection of improper, unethical or illegal actions that is included in Appendix A. The laboratory's Ethics and Data Integrity program, training and investigations are discussed in Section 19 – "Data Integrity Investigations".

A main component of this program is the periodic training and communications that the employees receive from management about the ethics policy and the utmost importance of an honest and ethical behavior in all activities performed at the laboratory.

Proper ethical conduct in the laboratory is strictly enforced. The Company's Code of Ethics is presented to current and prospective employees in both the QA manual and the Employee Handbook.

The Data Integrity Plan, which includes the description of the data integrity procedures, serves to combine the elements currently in place and document further procedures to ensure our compliance with requirements in the TNI standard and from other regulatory agencies.

These procedures include the following elements:

a. data Integrity training
b. signed data integrity documentation for all laboratory employees
c. in-depth, periodic monitoring of data integrity
d. data integrity procedure documentation.

The data integrity procedures are signed and dated by senior management. These procedures and the associated implementation records are properly maintained and made available for assessor review. The data integrity procedures are annually reviewed and updated if necessary by management.

The Data Integrity Plan also provides a mechanism for confidential reporting of data integrity issues in the laboratory. A primary element of the mechanism is to assure confidentiality and a receptive environment in which all employees may privately discuss ethical issues or report items of ethical concern. In instances of ethical concern, the mechanism also includes a process whereby laboratory management is to be informed of the need for any further detailed investigation.

Each employee is required to understand and sign a Data Integrity Agreement, contained in the Data Integrity Plan document. The Laboratory Ethics seminar that is presented as a refresher to current employees on an annual basis and as part of the hiring process for new employees include elements describing examples of improper and illegal actions, how to identify appropriate and inappropriate laboratory and

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instrument manipulation practices, guidance for manual integration practices and consequences of unethical or improper behavior.

Punishment for improper, illegal or unethical activities range from suspension to termination, depending on the degree and nature of the unethical activity.

Employees are required and encouraged to bring up to management any improper activities they detect or are suspicious of. Any incident reported is immediately investigated by the management and the person or persons involved are subject to disciplinary actions.

The Management shall also monitor the program for detecting improper, unethical or illegal action by performing internal proficiency testing (single or double blind), reviewing of analytical data post-analysis, performing electronic data audits using special software as Mint Miner® and providing an open door policy for employees to report any suspicious activity without fears.

In order to assist the laboratory technical personnel in performing their duties without detrimental influences, it is the policy of the Company that the laboratory be impartial and that it and its personnel are free from any undue commercial, financial and other pressures which might influence or adversely affect their normal performance having an impact on the quality of the work they produce or their technical judgment. By this policy all laboratory personnel dedicated to technical activities should not be influenced by, or involved in any financial or commercial matter while performing laboratory work. If any employee feels that he or she might be under any kind of pressure as described above, the Laboratory Director must be notified immediately. Additionally, the Laboratory will not engage in any activities that may endanger the trust in its independence of judgment and integrity in relation to its environmental testing.

5.5 Documentation of Management/Quality System

The management system is defined through the policies and procedures provided in this ***Quality Manual*** and written laboratory Standard Operating Procedures (SOPs) and policies.

5.5.1 Quality Manual

The ***Quality Manual*** contains the following required items:

5.5.1.1 document title;

5.5.1.2 laboratory's full name and address;

5.5.1.3 name, address (if different from above), and telephone number of individual(s) responsible for the laboratory;

5.5.1.4 identification of all major organizational units which are to be covered by this quality manual and the effective date of the version;

5.5.1.5 identification of the laboratory's approved signatories;

5.5.1.6 the signed and dated concurrence (with appropriate names and titles), of all responsible parties including the quality assurance manager, technical

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directors, and the agent who is in charge of all laboratory activities, such as the laboratory director or laboratory manager;

5.5.1.7 the objectives of the management system and contain or reference the laboratory's policies and procedures;

5.5.1.8 the laboratory's official quality policy statement, which shall include management system objectives and management's commitment to ethical laboratory practices and to upholding the requirements of this Standard; and

5.5.1.9 a table of contents, and applicable lists of references, glossaries and appendices.

This ***Quality Manual*** contains or references all required elements as defined by the TNI Standard - V1:M2, Section 4.2.8.4.

5.5.2 Standard Operating Procedures (SOPs)

Standard operating procedures (SOPs) represent all phases of current laboratory operations (they include an effective date, revision number, and signature of the approving authorities which are the Technical Director of the section involved or the Laboratory Director and QA Manager and are available to all personnel. They contain sufficient detail such that someone with similar qualifications could perform the procedures. There are two types of SOPs used in the laboratory: 1) test method SOPs, which have specific requirements as outlined below, and 2) general use or administrative SOPs which document general procedures.

A list of the SOPs currently in use at the laboratory can be found in Appendix E.

Each accredited analyte or method has an SOP. Sometimes an SOP is a copy of a method, and any additions are clearly described. The laboratory's test method SOPs include the following topics, where applicable, as indicted in the SOP MIS048:

i. identification of the method;
ii. applicable matrix or matrices;
iii. limits of detection and quantitation;
iv. scope and application, including parameters to be analyzed;
v. summary of the method;
vi. definitions;
vii. interferences;
viii. safety;
ix. equipment and supplies;
x. reagents and standards;
xi. sample collection, preservation, shipment and storage;
xii. quality control;
xiii. calibration and standardization;
xiv. procedure;
xv. data analysis and calculations;
xvi. method performance;
xvii. pollution prevention;
xviii. data assessment and acceptance criteria for quality control measures;
xix. corrective actions for out-of-control data;

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xx. contingencies for handling out-of-control or unacceptable data;
xxi. waste management;
xxii. references; and
xxiii. any tables, diagrams, flowcharts and validation data.

5.5.3 Order of Precedence

In the event of a conflict or discrepancy between policies, the order of precedence is as follows unless otherwise noted:

1. Quality Manual
2. SOPs and Policies
3. Other (Work Instructions (WI), memos, flow charts, etc.

If there is a Quality assurance Project Plan (QAPP) for a particular project, this will take precedence over the above item just for that particular project.

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Section 6

DOCUMENT CONTROL
(TNI V1:M2 – Section 4.3)

This Section describes how the laboratory establishes and maintains a process for document management. Procedures for document management include controlling, distributing, reviewing, and accepting modifications. The purpose of document management is to preclude the use of invalid and/or obsolete documents.

Documents can be SOPs, policy statements, specifications, calibration tables, charts, textbooks, posters, notices, memoranda, software, drawings, plans, etc. These may be on various media, whether hard copy or electronic, and they may be digital, analog, photographic or written.

The laboratory manages three types of documents: 1) controlled, 2) approved, and 3) obsolete.

A controlled document is one that is uniquely identified, issued, tracked, and kept current as part of the management system. Controlled documents may be internal documents or external documents.

An approved document means it has been reviewed and either signed and dated, or acknowledged in writing or by secure electronic means by the issuing authority(ies).

Obsolete documents are documents that have been superseded by more recent versions or are no longer needed.

6.1 Controlled Documents

Documents will be reviewed, revised (as appropriate) and approved for use by appropriate management personnel prior to issue. SOPs are approved by both the Technical Director or Laboratory Director and the QA Manager. Policies and other similar documents are approved by the Laboratory Director alone. The QA Manual is approved by all management personnel (Lab Director, Technical Directors and QA Manager).

Documents are reviewed annually to ensure their contents are suitable and in compliance with the current management systems requirements, and accurately describe current operations.

Approved copies of documents are available to staff at all locations where operations are essential to the effective functions of the laboratory.
The procedure for document control and distribution of documents is detailed in SOP MIS045.

SOPs and other controlled documents are accessible to all analysts electronically as PDF documents located in the laboratory computer network. Each analysis in LIMS has a link to the corresponding SOP for that method.

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The QA Manager or Laboratory Director will update the controlled documents by keeping in the active folder the current documents and moving to the "obsolete" folder the documents that have been replaced. The new document will have the date it is effective and the revision number while the old document with a prior revision number will be considered obsolete starting with the date the new revision becomes effective.

Controlled internal documents are uniquely identified with 1) a unique name or number identification 2)date of issue, 3) revision identification, 4) page number, 5) the total number of pages (or a mark to indicate the end of the document), and 6) the signatures of the issuing authority (i.e. management) that approve documents after reviewing for accuracy.

A master list of controlled internal documentsis maintained that includes distribution, location, and revision dates. A master list of controlled external documents is also maintained that includes title, author, copyright date, and date of publication, and location. The controlled document list is maintained electronically by the QA Manager and is updated as needed and reviewed annually for accuracy.

6.1.1 Document Changes to Controlled Documents

6.1.1.1 Paper Document Changes

Document changes are approved by the original approving authority.

The document management process allows for handwritten modifications to documents if the modifications are not substantial. The date and approval is documented with the modifications and these changes are tracked by the QA Manager who will redistribute the modified document to its users.

All document modifications are approved. Changes that are not process modifications but clarifications may be performed without revision. Approval is required. The modified document is then copied and distributed, and obsolete documents are removed according to the master list of controlled documents.

Amendments/modifications to documents are incorporated into a new revision and reissued when the document is reviewed and updated on or before its scheduled review cycle.

A reason for the modification or change is provided as historical information in the revised document as an appendix.

6.1.1.2 Electronic Document Changes

Suggested revisions to electronic documents are presented to the QA Manager or Laboratory Director for review and approval. Changes to electronic documents are approved through electronic means such as an email notification for interested parties.

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Where practical, the altered text or new text in the draft is identified during the revision or review process to provide for easy identification of the modifications.

6.2 Obsolete Documents

All invalid or obsolete documents are removed from general distribution, or otherwise prevented from unintended use.

Obsolete documents retained for legal use or historical knowledge preservation are appropriately marked and retained. Obsolete documents are identified as being obsolete by management. All copies of the obsolete document are collected from employees according to the master distribution list and destroyed; the original copy or a remaining copy is clearly marked “Old” or “Obsolete” on the front cover and kept in a folder properly identified as containing old or obsolete documents. They are retained for 10 years or as required by regulations or clients from the date they became obsolete in the area designated for document storage.
Electronic documents that have being identified obsolete or old are also moved to a computer directory or folder clearly identified as such.

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Section 7

REVIEW OF REQUESTS, TENDERS AND CONTRACTS
(TNI V1:M2 – Section 4.4)

The review of all new work assures that oversight is provided so that requirements are clearly defined, the laboratory has adequate resources and capability, and the test method is applicable to the customer's needs. This process assures that all work will be given adequate attention without shortcuts that may compromise data quality.

Contracts for new work may be formal bids, signed documents, verbal, or electronic. The client's requirements, including the methods to be used, must be clearly defined, documented and understood. Requirements might include target analyte lists, project specific reporting limits (if any), project specific quality control requirements (if any), turnaround time, and requirements for data deliverables. The review must also cover any work that will be subcontracted by the laboratory.

7.1 Procedure for the Review of Work Requests

The Client Service Manager in conjunction with the Technical Directors or Laboratory Director determines if the laboratory has the necessary accreditations, physical, personnel and information resources, including schedule, equipment and deliverables to meet the work request. The purpose of this review of capability is to establish that the laboratory's personnel have the skills and expertise necessary for the performance of the tests in question. The review may encompass results of earlier participation in interlaboratory comparisons or proficiency testing and/or the running of trial environmental test or calibration programs using samples or items of known value in order to determine uncertainties of measurement, detection limits of confidence limits, or other essential quality control requirements. The current accreditation status of the laboratory is also reviewed. The laboratory then informs the client of the results of this review if it indicates any potential conflict, deficiency, lack of appropriate accreditation status, or inability on the laboratory's part to complete the client's work.

Other aspects to be evaluated and reviewed include whether or not the appropriate test method is selected and capability of meeting the clients' requirements, contractual obligations, bonding issues and payment terms, method capabilities, analyte lists, reporting limits, quality control limits turnaround time feasibility, QA/QC issues, formal laboratory quote, final report formatting, electronic deliverable documents, time required to keep sample in house and final sample disposal requirements.

The Client Services Manager or designated staff will discuss and resolve any differences between the request or tender and the contract before any work commences in order to assure that each contract is acceptable both to the laboratory and the client. A contract may be any written or oral agreement to provide a client with environmental testing or other laboratory services.

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Records of reviews, including any significant changes, shall be maintained either as written documents in the project/client folder, in forms of emails received and sent or in other electronic documentation such as electronic files in the client computer folders or LIMS. Records shall also be maintained of pertinent discussions with a client relating to the client's requirements or the results of the work during the period of execution of the contract.

For review of routine and other simple tasks, the date and the identification (e. g. the initials) of the person in the laboratory responsible for carrying out the contracted work are considered adequate.

For repetitive routine tasks, the review need be made only at the initial enquiry stage or on granting of the contract for on-going routine work performed under a general agreement with the client, provided that the client's requirements remain unchanged. For new, complex or advanced environmental testing, a more comprehensive record should be maintained.

The review shall also cover any work that is subcontracted by the laboratory.

The client shall be informed of any deviation from the contract. If a contract needs to be amended after work has commenced, the same contract review process shall be repeated and any amendments shall be communicated to all affected personnel.

If there is any suspension of accreditation, revocation of accreditation, or voluntary withdrawal of accreditation during the time the contract is in effect, this must be reported to the client

The review process is repeated when there are amendments to the original contract by the client. The participating personnel are given copies of the amendments. The amendments are maintained electronically in the project information area of LIMS.

7.2 Documentation of Review

Records are maintained for every contract or work request, when appropriate. This includes pertinent discussions with a client relating to the client's requirements or the results of the work during the period of execution of the contract. The information if in the form of hard copies, is maintained in folders kept by the assigned Project Manager, this will also include phone logs, communications and faxes. Electronic records, such as emails, PDF files, word processing documents, spreadsheets and charts are kept electronically in the “Office_PM” section of the file server under the client’s folder and project subfolder.

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Section 8

SUBCONTRACTING OF ENVIRONMENTAL TESTS
(TNI V1:M2 – Section 4.5)

A subcontract laboratory is defined as a laboratory external to this laboratory, or at a different location than the address indicated on the front cover of this manual, that performs analyses for this laboratory.

A subcontracted laboratory will be used only if Weck Laboratories does not have the capability of performing the requested test, because of unforeseen reasons (e. g. workload, need for further expertise or temporary incapacity) or if the client specifically requests a particular analysis to be subcontracted.

For DoD related work, only subcontracted laboratories accredited by DoD or its designated representatives will be used. Subcontracted laboratories must receive project-specific approval from the DoD client before any samples are analyzed.

When subcontracting analytical services, the laboratory assures work requiring accreditation is placed with an appropriately accredited laboratory or one that meets applicable statutory and regulatory requirements for performing the tests.

The laboratory will ensure that the subcontract laboratory understands the requirements and will meet the same commitments made to the client by the primary laboratory.

8.1 Procedure

The Client Service Manager maintains a list of subcontractors.

A register for all subcontractors that are routinely used by the laboratory is kept on file including copies of the certifications and analyte list among other documents. This information is maintained by the Client Services Manager and is kept at the main office and electronically in the “Marketing-Sales” folder of the file server under subcontractor information.

The certificate and analyte list are reviewed by the Client Services Manager to ensure the subcontracting laboratory has the appropriate accreditation to do the work.

The Client Services Manager or the Project Manager involved notifies the client of the intent to subcontract the work in writing or by verbal communications. When possible, the laboratory gains the approval of the client to subcontract their work prior to implementation, preferably in writing.

The laboratory performing the subcontracted work is identified in the final report and a copy of the subcontractor’s report is kept in file in case the client requests it at a later time.

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The laboratory assumes responsibility to the client for the subcontractor's work, except in the case where a client or a regulating authority specified which subcontractor is to be used.

More detailed procedures for subcontracting laboratory work are in SOP MIS041.

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Section 9

PURCHASING SERVICES AND SUPPLIES
(TNI V1:M2 – Section 4.6)

The laboratory ensures that purchased supplies and services that affect the quality of environmental tests are of the required or specified quality, by using approved suppliers and products.

The laboratory has procedures for purchasing, receiving, and storage of supplies that affect the quality of environmental tests.

Weck Laboratories, Inc. only uses those outside support services and supplies that are of adequate quality to sustain confidence in the laboratory's tests. Services and supplies that may affect the quality of environmental tests include, but are not limited to, balance calibration, solvents, standards, and sample containers; their records include the following, where applicable:

- Date of receipt;
- Expiration date;
- Source;
- Lot or serial number;
- Calibration and verification records
- Certifications.

9.1 Procedure

The Technical Directors review and approve the supplier of services and supplies and approves technical content of purchasing documents prior to ordering.

Specific procedures to evaluate, select and monitor suppliers of materials and services as well as required documentation are detailed in the corresponding SOP (MIS042).

Evaluation of suppliers is accomplished by ensuring the supplier ships the product or material ordered and that the material is of the appropriate quality by signing packing slips or other supply receipt documents. The purchasing documents contain the data that adequately describes the services and supplies ordered. The description may include type, class, grade, identification, specifications or other technical information.

The supplies received are inspected for breakage, leaks or any other damage. The supplies and chemicals are checked for Expiration date, concentration, grade and other relevant information. The supplies received are stored according to manufacturer's recommendations, laboratory SOPs or test method specifications.

Any documents received with the supplies and services including specifications, certificates of analyses, warranties, maintenance records, calibration records etc are kept on file as follows:

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- Certificates of standards are scanned and stored in the file server under by department and date, kept by the section leaders
- Records for instrument repair services are kept with each instrument maintenance records by the main analyst assigned to the instrument
- Records for balance calibration services, thermometers and other equipment requiring periodic calibration are kept in binders in the QA department by the QA Manager.

The purchased supplies and reagents that affect the quality of the tests are not used until they are inspected or otherwise verified as complying with requirements defined in the test method.

9.2 Approval of Suppliers

The QA Manager maintains a list of approved suppliers, which is included in the SOP for Outside support Services and Supplies MIS042.

The evaluation procedure for approving vendors is described in the above mentioned SOP.

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Section 10

SERVICE TO THE CLIENT
(TNI V1:M2 – Section 4.7)

The laboratory collaborates with clients and/or their representatives in clarifying their requests and in monitoring laboratory performance related to their work. Each request is reviewed to determine the nature of the request and the laboratory's ability to comply with the request within the confines of prevailing statutes and/or regulations without risk to the confidentiality of other clients.

10.1 Client Confidentiality

The laboratory confidentiality policy is to not divulge or release any information to a third party without proper authorization. Third party requests for data and information are referred to the client. Data and records identified as proprietary, privileged, or confidential are exempt from disclosure.

All electronic data (storage or transmissions) are kept confidential, based on technology and laboratory limitations, as required by client or regulation.

The client is the person or entity who requested the analyses. Any information or data is only released to third parties with written permission from a properly authorized representative of the client. This information includes, but is not limited to COCs, Certificates of Analysis, raw data, bench sheets, electronic information and sample results.
In addition no information pertaining to clients is posted in public areas where the access is not restricted.

Access to laboratory records and LIMS data is limited to authorized laboratory personnel except with the permission of the QA Officer or Laboratory Director. NELAC-related records are made available to authorized accrediting authority personnel.

10.2 Client Support

Communication with the client, or their representative, is maintained to provide proper instruction and modification for testing. Technical staff is available to discuss any technical questions or concerns the client may have.

The client, or their representative, may be provided reasonable access to laboratory areas for witnessing testing, provided that the laboratory ensures confidentiality to other clients.

Delays or major deviations to the testing are communicated to the client immediately. Communications are verbal, via telephone or in writing via email, fax or letter and are performed normally by the Project Manager assigned to that client or in some cases by the Client Services Manager or Laboratory Director.

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The laboratory will provide the client with all requested information pertaining to the analysis of their samples. An additional charge may apply for additional data/information that was not requested prior to the time of sample analysis or previously agreed upon.

10.3 Client Feedback

The laboratory seeks both negative and positive feedback following the completion of projects and periodically for ongoing projects. Feedback provides acknowledgement, corrective actions where necessary, and opportunities for continuous improvement.

Negative customer feedback is documented as a customer complaint (see Section 11 – "Complaints").

The following are specific situations for which immediate clarification or feedback is required from the client:

- The client has specified incorrect, obsolete, or improper methods;
- Methods require modification to ensure achievement of project-specific objectives contained in planning documents (e.g., difficult matrix, poor-performing analyte);
- Project-planning documents (e.g., Quality Assurance Project Plan (QAPP) or Sampling and Analysis Plan (SAP)) are missing or requirements in the documents (e.g., action levels, detection and quantification capabilities) require clarification; or
- The laboratory has encountered problems with sampling or analysis that may impact results (e.g., improper preservation of sample).

Customer feedback are obtained by Project Managers that maintain regular communication with the clients, by the Client Services Manager, who contacts different client to ask about the development of each project and by survey conducted by external agencies such as ACIL Seal of Excellence in which the Laboratory participates on regular basis.

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Section 11

COMPLAINTS
(TNI V1:M2 – Section 4.8)

The purpose of this Section is to assure that customer complaints are addressed and corrected. This includes requests to verify results or analytical data. Complaints provide the laboratory an opportunity to improve laboratory operation and client satisfaction.

Complaints by customers or other parties are reviewed by management and an appropriate action is determined. All customer complaints are documented by the person receiving the complaint and addressed to the responsible manager.

If it is determined that the complaint has merit, the procedures outlined in Section 14 – Corrective Action are utilized. If it is determined that a complaint is without merit, it is documented, and the client is contacted by the person who received the complaint or the Client Services Manager.

A complaint such as a concern that data is repeatedly late should be reviewed for preventive action (see Section 15 – “Preventive Action”) to minimize a future occurrence.

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Section 12

CONTROL OF NON-CONFORMING ENVIRONMENTAL TESTING WORK
(TNI V1:M2 – Section 4.9)

Non-conforming work is work that does not meet acceptance criteria or requirements. Nonconformances can include departures from standard operating procedures or test methods or unacceptable quality control results (see Section 27 – "Quality Assurance for Environmental Testing"). Identification of non-conforming work can come through customer complaints, quality control, instrument calibration, evaluating consumable materials, staff observation, final report review, management reviews and internal and external audits.

12.1 Exceptionally Permitting Departures from Documented Policies and Procedures

Requests for departures from laboratory procedures are approved by the QA Manager in agreement with the Laboratory Director and documented. The specific procedures are described in SOP MIS044. Planned departures from procedures or policies do not require audits or investigations.

12.2 Non-Conforming Work

The lab policy for control of non-conforming work is to identify the non-conformance, determine if it will be permitted, and take appropriate action. All employees have the authority to stop work on samples when any aspect of the process does not conform to laboratory requirements.

The responsibilities and authorities for the management of non-conforming work are detailed in SOP MIS044. The procedure for investigating and taking appropriate corrective actions of non-conforming work are described in Section 14 – "Corrective Actions". Section 14.3 describes procedures for Technical Corrective Actions. Formal corrective action procedures must be followed for non-conforming work that could reoccur (beyond expected random QC failures) or where there is doubt about the laboratory's compliance to its own policies and procedures.

The investigation and associated corrective actions of non-conforming work involving alleged violations of the company's Ethics and Data Integrity policies must follow the procedures outlined in Section 19 – "Data Integrity Investigations".

The laboratory evaluates the significance of the non-conforming work, and takes corrective action immediately. The customer is notified if their data has been impacted. The laboratory allows the release of non-conforming data only with approval by the QA Manager or appropriate Technical Director or their designee on a case-by-case basis. Non-conforming data is clearly identified in the final report (see Section 28 – "Reporting the Results").

The discovery of a nonconformance for results that have already been reported to the customer must be immediately evaluated for significance of the nonconformance,

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its acceptability to the customer, and determination of the appropriate corrective action.

Corrective action for routine, non-recurring exceedances can be documented on raw data worksheets, logbooks, e-mail, a database or other documents. More serious corrective actions (non-conforming work that could reoccur or where there is doubt that the laboratory is in compliance with its own policies and procedures) will require a more formal corrective action process that usually includes the use of a corrective action report.

12.3 Stop Work Procedures

In some cases it might necessary to stop work until the issue is corrected; the procedure to stop work and to evaluate when this is necessary is detailed in SOP MIS044.

Resumption of work after work has been stopped is authorized by the QA Manager in consultation with the Laboratory Director.

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Section 13

IMPROVEMENT
(TNI V1:M2 – Section 4.10)

Improvement in the overall effectiveness of the laboratory management system is a result of the implementation of the various aspects of the laboratory's management system: quality policy and objectives (Section 5 – "Management"); internal auditing practices (Section 17 – "Internal Audits"); the review and analysis of data (Section 27 – "Quality Assurance for Environmental Testing"); the corrective action (Section 14 – "Corrective Action") and preventive action (Section 15 – "Preventive Action") process; and the annual management review of the quality management system (Section 18 – "Management Reviews") where the various aspects of the management/quality system are summarized, and evaluated and plans for improvement are developed.

During the Management review other aspects of the laboratory operation are evaluated; these include On Time Delivery, PT performance, re-issuing reports, numbers and types of corrective actions, Audit performance, complaints, control charting, customer feedback, etc.

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Section 14

CORRECTIVE ACTION
(TNI V1:M2 – Section 4.11)

Corrective action is the action taken to eliminate the causes of an existing non-conformity, defect, or other undesirable situation in order to prevent recurrence.

Deficiencies cited in external assessments, internal quality audits, data reviews, customer feedback/complaints, control of nonconforming work or managerial reviews are documented and require corrective action. Corrective actions taken are appropriate for the magnitude of the problem and the degree of risk.

14.1 General Procedure

The laboratory uses forms to document and track corrective actions. The form used to document corrective as well as the procedures involved are in SOP MIS016.

The SOPs specify conditions during and after analysis that may automatically trigger corrective action or optional procedures. These conditions may include dilution of samples, additional sample extract cleanup, and automatic reinjection/reanalysis when certain QC criteria are not met.

Any QC sample result outside of acceptance limits requires corrective action, which may be document in worksheets, LIMS, etc. and not necessarily in the corrective Action form. Once the problem has been identified and addressed, corrective action may include the reanalysis of samples, or appropriately qualifying the results.

The data reviewers or supervisors will identify the need for corrective action and are responsible for initiating corrective action on routine data reviews where a nonconformance is found that could reoccur (beyond expected random QC failures) or where there is doubt about the compliance of the laboratory to its own policies and procedures. The Technical Director will approve the required corrective action to be implemented by the laboratory staff. The QA Manager will ensure implementation and recording of the corrective action.

All deficiencies are investigated and a corrective action plan is developed and implemented if determined necessary. The implementation is monitored for effectiveness.

14.1.1 <u>Cause Analysis</u>

When failures due to systematic errors have been identified, the first step of the corrective action process starts with the initial investigation and determination of root cause(s) of the problem. Records are maintained in the corrective action binder and the corrective action reports computer folder where electronic copies of the Corrective Action Reports are kept of nonconformances requiring corrective action to show that the root cause(s) was investigated, and includes the results of the investigation.

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Where there may be non-systematic errors and as such the initial cause is readily identifiable or expected random failures (e.g. failed quality control), a formal root cause analysis is not performed and the process begins with selection and implementation of corrective action (also see Section 14.3 "Technical Corrective Actions").

14.1.2 Selection and Implementation of Corrective Actions

Where uncertainty arises regarding the best approach for analysis of the cause of exceedances that require corrective action, appropriate personnel will recommend corrective actions that are appropriate to the magnitude and risk of the problem and that will most likely eliminate the problem and prevent recurrence

The QA Manager or the appropriate Technical Director ensure that corrective actions are discharged within the agreed upon time frame.

14.1.3 Monitoring of Corrective Action

The QA Manager will monitor implementation and documentation of the corrective action to assure that the corrective actions were effective.
The procedures for the implementation of corrective action are detailed in SOP MIS016.

14.2 Additional Audits

Where the identification of nonconformances or departures from normal lab procedures cast doubt on the laboratory's compliance with its own policies and procedures, or on its compliance with the TNI Standard, the laboratory ensures that the appropriate areas of activity are audited in accordance with Section 17 – "Internal Audits" as soon as possible.

In many cases, the additional audits are follow-ups after the corrective action has been implemented to ensure it is effective. These are done when a serious issue or risk to the laboratory have been identified.

14.3 Technical Corrective Action

Sample data associated with a failed quality control are evaluated for the need to be reanalyzed or qualified. Unacceptable quality control results are documented, and if the evaluation requires cause analysis, the cause and solution are recorded (also see Section 12 – "Control of Nonconforming Environmental Testing Work"***).*** Analysts routinely implement corrective actions for data with unacceptable QC measures. First level correction may include re-analysis without further assessment. If the test method SOP addresses the specific actions to take, they are followed. Otherwise, corrective actions start with assessment of the cause of the problem.

Corrective action for non-systematic errors or expected random failures is documented in as specified in SOP MIS016. Corrective actions for nonconformances

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that may reoccur (beyond expected random QC failures) or where there is concern that the laboratory is not in compliance with its own policies and procedures require that a corrective action report be completed (see Section 14.1) and may trigger an Internal Audit to be performed on that area of the laboratory.

Technical Directors review corrective action reports and suggest improvements, alternative approaches, and procedures where needed.

If the data reported are affected adversely by the nonconformance, the affected data is clearly identified in the report and the customer is notified.

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Section 15

PREVENTIVE ACTION
(TNI V1:M2 – Section 4.12)

Preventive action is a pro-active process to identify opportunities for improvement rather than a reaction to the identification of problems or complaints.

Preventive action includes, but is not limited to: review of QC data to identify quality trends, regularly scheduled staff quality meetings to ensure staff is knowledgeable in quality procedures, review of client feedback to look for improvement opportunities, review of proficiency testing data to look for analytes that were nearly missed, annual managerial reviews, scheduled instrument maintenance and other actions taken to prevent problems.

When improvement opportunities are identified or if preventive action is required, action plans are developed, implemented and monitored to reduce the likelihood of the occurrence of nonconformities.

Procedures for preventive actions include the initiation of such actions and subsequent monitoring to ensure that they are effective.

All personnel have the authority to offer suggestions for improvements and to recommend preventive actions, however management is responsible for implementing preventive action.

laboratory has also implemented a Management of Change process. This process is designed to formally review any changes that are planned for the laboratory and look for potential issues that might arise. Issues are minimized through the development of preventive measures. Changes that are considered under this type of process include the installation of a new LIMS, key personnel changes, building renovations, addition/deletion of an accreditation, addition of a new technology that requires new instrumentation, etc. The process is evaluated by all Management personnel that will be affected in any way with the change and they take a decision on the convenience or not of implementing the change. The opinions of other laboratory personnel involved are also requested and evaluated.

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Section 16

CONTROL OF RECORDS
(TNI V1:M2 – Section 4.13)

Records are a subset of documents, usually data recordings that include annotations, such as daily refrigerator temperatures posted to a laboratory form, lists, spreadsheets, or analyst notes on a chromatogram. Records may be on any form of media, including electronic and hard copy. Records allow for the historical reconstruction of laboratory activities related to sample-handling and analysis.

The laboratory maintains a record system appropriate to its needs, records all laboratory activities, and complies with applicable standards or regulations as required. Records of original observations and derived data are retained to establish an audit trail. Records help establish factors affecting the uncertainty of the test and enable test repeatability under conditions as close as possible to the original.

16.1 Records Maintained

Records of all procedures to which a sample is subjected while in the possession of the laboratory are kept. The laboratory retains all original observations, calculations and derived data (with sufficient information to produce an audit trail), calibration records, personnel records and a copy of the test report for a minimum of five years from generation of the last entry in the records. At a minimum, the following records are maintained by the laboratory to provide the information needed for historical reconstruction:

i) all raw data, whether hard copy or electronic, for calibrations, samples and quality control measures, including analysts' worksheets and data output records (chromatograms, strip charts, and other instrument response readout records);

ii) a written description or reference to the specific method(s) used, which includes a description of the specific computational steps used to translate parametric observations into a reportable analytical value (a copy of all pertinent Standard Operating Procedures);

iii) laboratory sample ID code;

iv) date of analysis;

v) time of analysis is required if the holding time is seventy-two (72) hours or less, or when time critical steps are included in the analysis (e.g., extractions and incubations);

vi) instrumentation identification and instrument operating conditions/parameters (or reference to such data);

vii) all manual calculations (including manual integrations);

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viii) analyst's or operator's initials/signature or electronic identification;

ix) sample preparation, including cleanup, separation protocols, incubation periods or subculture, ID codes, volumes, weights, instrument printouts, meter readings, calculations, reagents;

x) test results (including a copy of the final report);

xi) standard and reagent origin, receipt, preparation, and use;

xii) calibration criteria, frequency and acceptance criteria;

xiii) data and statistical calculations, review, confirmation, interpretation, assessment and reporting conventions;

xiv) quality control protocols and assessment;

xv) electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries;

xvi) method performance criteria including expected quality control requirements;

xvii) proficiency test results;

xviii) records of demonstration of capability for each analyst;

xix) a record of names, initials, and signatures for all individuals who are responsible for signing or initialing any laboratory record;

xx) correspondence relating to laboratory activities for a specific project;

xxi) corrective action reports;

xxii) preventive action records;

xxiii) copies of internal and external audits including audit responses;

xxiv) copies of all current and historical laboratory SOPs, policies and ***Quality Manual***s;

xxv) sample receiving records (including information on any interlaboratory transfers);

xxvi) sample storage records;

xxvii) data review and verification records;

xxviii) personnel qualification, experience and training records;

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xxviv) archive records; and

xxviv) management reviews.

16.2 Records Management and Storage

The laboratory maintains a record management system for control of laboratory notebooks, instrument logbooks, standards logbooks, and records for data reduction, validation, storage, and reporting. Most records are maintained electronically as computer files, others are kept in appropriate binders. Data is recorded immediately and legibly in permanent ink (data generated by automated data collections systems is recorded electronically.) Corrections are initialed and dated with the reason noted for corrections other than transcription errors. A single line strikeout is used to make corrections so that the original record is not obliterated. The original record is not obliterated. Correction on electronic records is made by the addition of notes or by audit trails.
Electronic records are kept according to the procedures described in SOP MIS045. Data backups are routinely performed according to SOP MIS003. Records, including electronic records, are easy to retrieve, legible, and protected from deterioration or damage; held secure and in confidence; and are available to accrediting bodies for a minimum of five years or as required by regulation or contract. Records that are stored only on electronic media are supported by the hardware and software necessary for their retrieval. Access to protected records is limited to the QA Manager or Laboratory Director and the personnel they authorize to prevent unauthorized access or amendment.

Additional information regarding control of data is included in Section 22.5 – “Control of Data”.

Procedures for identification, collection, indexing, access, filing, storage, maintenance and disposal of quality and technical records are found in SOP MIS045.

A document control system is used to ensure that all personnel have access to current policies and procedures at all times. Documents, which are managed by this system, include this Quality Manual, reports from internal audits and management reviews as well as records of corrective and preventive actions, all SOPs, policy statements, procedures, specifications, calibration tables, charts, textbooks, posters, notices, memoranda, software, drawings, plans, etc. The system consists of a document review, revision and approval system, and document control and distribution. The documents may be on various media, whether hard copy or electronic, and they may be digital, analog, photographic or written.

All quality documents (this manual, SOPs, policies, etc.) are reviewed and approved by the QA Officer, the Technical Directors and the Laboratory Director. Such documents are revised whenever the activity described changes significantly. All documents are reviewed at least every 5 years, with the exception of the QA Manual, which is reviewed annually.

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More detailed procedures related to Document Control are specified in the corresponding SOP (MIS045).

If records are archived electronically as PDF files through scanning of hardcopy records and both are kept, the electronic copy is used for long term storage of vital records. The accuracy of the scanning procedure is verified upon the scan is completed to make sure all pages were properly copied and are legible. Storage of vital records is maintained by the IT manager to allow minimal access only to authorized personnel.

Archived information and access logs are protected against fire, theft, loss, environmental deterioration, vermin, and in the case of electronic records, electronic or magnetic sources. Archived records have limited access and are checked out through an access log. Records are archived on site.

In the event that the laboratory transfers ownership or goes out of business, records are maintained or transferred according to client instructions. Appropriate regulatory and state legal requirements concerning laboratory records shall be followed.

16.3 Legal Chain of Custody Records

Evidentiary sample data are used as legal evidence. Procedures for evidentiary samples can be found in SOP MIS038.

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Section 17

AUDITS
(TNI V1:M2 – Section 4.14)

Audits measure laboratory performance and verify compliance with accreditation/ certification and project requirements. Audits specifically provide management with an on-going assessment of the management system. They are also instrumental in identifying areas where improvement in the management/quality system will increase the reliability of data. Audits are of four main types: internal, external, performance, and system. Section 17.5 discusses the handling of audit findings.

17.1 Internal Audits

Annually, the laboratory prepares a schedule of internal audits to be performed during the year. These audits verify compliance with the requirements of the management/quality system, including analytical methods, SOPs, the ***Quality Assurance Manual***, ethics policies, data integrity, other laboratory policies, and the TNI Standard.

The internal audit program shall address all elements of the quality system, including all of the environmental testing activities.

The internal system audits include an examination of laboratory documentation and records on sample receiving, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, instrument operating records, etc. Specific records that are subject to review are detailed in the corresponding SOP for performing audits and data review (SOP MIS014).

It is the responsibility of the QA Manager to plan and organize audits as required by the schedule and requested by management. These audits are carried out by trained and qualified personnel who are, wherever resources permit, independent of the activity to be audited.

The auditor should not be the person responsible for the work being audited or be the supervisor of the person responsible for the work. The auditor should have the necessary qualifications to review the area being audited and use a checklist approved by the Quality Manager.

In addition to the scheduled internal audits, it may sometimes be necessary to conduct special audits as a follow-up to corrective actions, PT results, complaints, regulatory audits or alleged data integrity issues. These audits address specific issues.

The area audited, the audit findings, and corrective actions are recorded. Audits are reviewed after completion to assure that corrective actions were implemented and effective. This review may occur during the next scheduled audit unless findings are observed that cast doubt on the validity of data. Corrective actions that warrant sooner review cannot wait for the next scheduled audit.

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17.2 External Audits

It is the laboratory's policy to cooperate and assist with all external audits, whether performed by clients or an accrediting body. Management ensures that all areas of the laboratory are accessible to auditors as applicable and that appropriate personnel are available to assist in conducting the audit.

17.2.1 Confidential Business Information (CBI) Considerations

During on-site audits, on-site auditors may come into possession of information claimed as business confidential. A business confidentiality claim is defined as "a claim or allegation that business information is entitled to confidential treatment for reasons of business confidentiality or a request for a determination that such information is entitled to such treatment." When information is claimed as business confidential, the laboratory must place on (or attach to) the information at the time it is submitted to the auditor, a cover sheet, stamped or typed legend or other suitable form of notice, employing language such as "trade secret", "proprietary" or "company confidential". Confidential portions of documents otherwise non-confidential must be clearly identified. CBI may be purged of references to client identity by the responsible laboratory official at the time of removal from the laboratory. However, sample identifiers may not be obscured from the information.

17.3 Performance Audits

Performance audits may be Proficiency Test Samples, internal single-blind samples, double-blind samples through a provider or client, or anything that tests the performance of the analyst and method.

Proficiency Test Samples are discussed in Section 27 – "Quality Assurance for Environmental Testing".

17.4 System Audits

The Laboratory's management system is audited though annual management reviews. Refer to Section 18 – "Management Reviews" for further discussion of management reviews.

17.5 Handling Audit Findings

Internal or external audit findings are responded to within the time frame agreed to at the time of the audit. The response may include action plans that could not be completed within the response time frame. A completion date is established by management for each action item and included in the response.

The responsibility for developing and implementing corrective actions to findings is the responsibility of the Technical Directors or Lab supervisor corresponding to the particular section of the lab. Corrective actions are documented through the corrective action process described in Section 14 – "Corrective Actions".

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Audit findings that cast doubt on the effectiveness of the laboratory operation to produce data of known and documented quality or that question the correctness or validity of sample results must be investigated. Corrective action procedures described in Section 14 – "Corrective Action" must be followed. Clients must be notified in writing if the investigation shows the laboratory results have been negatively affected and the clients requirements have not been met. The client must be notified within 30 days after the laboratory discovers the issue. Laboratory management will ensure that this notification is carried out within the specified time frame.

All investigations that result in findings of inappropriate activity are documented and include any disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients. See Section 19 (Data Integrity Investigation) for additional procedures for handling inappropriate activity.

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Section 18

MANAGEMENT REVIEWS
(TNI V1:M2 – Section 4.15)

At least once per year, laboratory executive management (top management) conducts a review of the quality system and environmental testing activities to ensure its continuing suitability and effectiveness and to introduce any necessary changes or improvements in the quality system and laboratory operations. The management review is a separate activity from the internal audit and records of review findings and actions are maintained.

18.1 Management Review Topics

The following are reviewed to ensure their suitability and effectiveness:

- the suitability of policies and procedures;
- reports from managerial and supervisory personnel;
- the outcome of recent internal audits;
- corrective and preventive actions;
- assessments by external bodies;
- the results of interlaboratory comparisons or proficiency tests;
- changes in the volume and type of the work;
- customer feedback;
- complaints;
- recommendations for improvement;
- other relevant factors, such as quality control activities, resources, and staff training.

18.2 Procedure

The procedure on how to conduct the managerial review is described in SOP MIS030.

Findings and follow-up actions from management reviews are recorded. Management will determine appropriate completion dates for action items and ensure they are completed within the agreed upon time frame.

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Section 19

DATA INTEGRITY INVESTIGATIONS
(TNI V1:M2 – Section 4.16)

In addition to covering data integrity investigations, this Section covers all topics related to ethics and data integrity policies, procedures and training.

Weck Laboratories, Inc. is committed to ensuring the integrity of its data and providing valid data of known and documented quality to its clients. The elements in Weck Laboratories' Ethics and Data Integrity program include:

- Documented data integrity procedures signed and dated by top management.
- An Ethics and Data Integrity Policy signed by all management and staff at the time of employment (see Appendix A). This policy is signed, dated and distributed by the President of the Company
- Annual data integrity training.
- Procedures for confidential reporting of alleged data integrity issues.
- An audit program that monitors data integrity (see Section 17 – "Audits") and procedures for handling data integrity investigations and client notifications.

Proper ethical conduct in the laboratory is strictly enforced. The Company's Code of Ethics (Appendix A) is presented to current and prospective employees in both the QA manual and the Employee Handbook.

In order to assist the laboratory technical personnel in performing their duties without detrimental influences, it is the policy of the Company that the laboratory be impartial and that it and its personnel are free from any undue commercial, financial and other pressures which might influence or adversely affect their normal performance having an impact on the quality of the work they produce or their technical judgment. By this policy all laboratory personnel dedicated to technical activities should not be influenced by, or involved in any financial or commercial matter while performing laboratory work. If any employee feels that he or she might be under any kind of pressure as described above, the Laboratory Director must be notified immediately. Additionally, the Laboratory will not engage in any activities that may endanger the trust in its independence of judgment and integrity in relation to its environmental testing.

19.1 Ethics and Data Integrity Procedures

The Ethics and Data Integrity Policy provides an over view of the program. Written procedures that are considered part of the Ethics and Data Integrity program include:

- Ethics and Data Integrity Policy (see Appendix A)
- Manual integration procedures (SOP MIS039)
- Implementation of Business Ethics and Data Integrity Policy (SOP MIS043)
- Corrective action procedures (SOP MIS016 and Section 14 of this ***QAM***)

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Management reviews data integrity procedures yearly and updates these procedures as needed.

19.2 Training

Data integrity training is provided as a formal part of new employee orientation and a refresher is given annually for all employees. Employees are required to understand that any infractions of the laboratory data integrity procedures shall result in a detailed investigation that could lead to very serious consequences including immediate termination, debarment or civil/criminal prosecution. This is discussed in the Ethics and Data Integrity Policy that every employee is required to sign upon commencement of employment. Attendance for required training is monitored through a signature attendance sheet.

An agenda is provided to each trainee prior to the training class. Data integrity training emphasizes the importance of proper written narration on the part of the analyst with respect to those cases where analytical data may be useful, but are in one sense or another partially deficient. The following topics and activities are covered:

- organizational mission and its relationship to the critical need for honesty and full disclosure in all analytical reporting;
- how and when to report data integrity issues;
- record keeping;
- training, including discussion regarding all data integrity procedures;
- data integrity training documentation;
- in-depth data monitoring and data integrity procedure documentation; and
- specific examples of breaches of ethical behavior such as improper data manipulations, adjustments of instrument time clocks, and inappropriate changes in concentrations of standards.
- guidelines for manual integration practices
- consequence of unethical or improper behavior

When contracted technical or support personnel are used, the QA Manager or Laboratory Director are responsible for ensuring that they are trained to the laboratory's management system and data integrity procedures, competent to perform the assigned tasks, and appropriately supervised.

Topics covered are provided in writing and provided to all trainees.

19.3 Confidential Reporting of Ethics and Data Integrity Issues

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The Data Integrity Plan also provides a mechanism for confidential reporting of data integrity issues in the laboratory. A primary element of the mechanism is to assure confidentiality and a receptive environment in which all employees may privately discuss ethical issues or report items of ethical concern. In instances of ethical concern, the mechanism also includes a process whereby laboratory management is to be informed of the need for any further detailed investigation.

Employees are required and encouraged to bring up to management any improper activities they detect or are suspicious of. Any incident reported is immediately investigated by the management and the person or persons involved are subject to disciplinary actions

19.4 Investigations

All investigations resulting from data integrity issues are conducted confidentially. They are documented and notifications are made to clients who received any negatively affected data that did not meet the client's data quality requirements. Procedures for investigation are included in SOP MIS043.

The Management shall also monitor the program for detecting improper, unethical or illegal action by performing internal proficiency testing (single or double blind), reviewing of analytical data post-analysis, performing electronic data audits using special software as Mint Miner® and providing an open door policy for employees to report any suspicious activity without fears.

The procedures for investigations are described in SOP MIS043.

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Section 20

PERSONNEL
(TNI V1:M2 – Section 5.2)

Weck Laboratories, Inc. employs competent personnel based on education, training, experience and demonstrated skills as required. The laboratory's organization chart can be found in Appendix B.

20.1 Overview

All personnel are responsible for complying with all quality and data integrity policies and procedures that are relevant to their area of responsibility.

All personnel who are involved in activities related to sample analysis, evaluation of results or who sign test reports, must demonstrate competence in their area of responsibility. Appropriate supervision is given to any personnel in training and the trainer is accountable for the quality of the trainees work. Personnel are qualified to perform the tasks they are responsible for based on education, training, experience and demonstrated skills as required for their area of responsibility.

The laboratory provides goals with respect to education, training and skills of laboratory staff. These goals are outlined in the Job Descriptions for each laboratory position. Training needs are identified at the time of employment and when personnel are moved to a new position or new responsibilities are added to their job responsibilities. Ongoing training, as needed, is also provided to personnel in their current jobs. The effectiveness of the training must be evaluated before the training is considered complete.

Contracted personnel, when used, must meet the same competency standards and follow the same policies and procedures that laboratory employees must meet.

20.2 Job Descriptions

Job descriptions are available for all positions that manage, perform, or verify work affecting data quality, and are located in the Personnel binder and also under personnel records in the file server as electronic files. An overview of top management's responsibilities is included in Section 5 – "Management".

Job descriptions include the specific tasks, minimum education and qualifications, skills, and experience required for each position.

20.3 Training

All personnel are appropriately trained and competent in their assigned tasks before they contribute to functions that can affect data quality. It is management's

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responsibility to assure personnel are trained. Training records are used to document management's approval of personnel competency. The date on which authorization and/or competence is confirmed is included.

Training records are maintained by the QA Manager and include evidence of acknowledgement that each employee has read, understood, and is committed to follow the current versions of the established Standard Operating Procedures and Analytical Method Protocols, which relates to his/her job responsibilities. The Training records show evidence of the revisions of the SOPs the employees have reviewed. Each employee demonstrates initial proficiency and demonstrates continued proficiency on a yearly basis by acceptable performance on Laboratory Control Samples (LCS), successful analysis of blind samples or by analyzing in parallel a sample analyzed by a trained or re-trained analyst. The training records of the analysts are organized by analyst and kept with personnel files. They include initial and continuing training, continuing education, participation in technical conferences or seminars and internal training activities.

20.3.1 Training for New Staff

Initial training for new employees is performed by experienced personnel with management guidance and includes the observation of the QC procedures described in this manual.

New staff members are given the New Employee Training as specified in SOP MIS035.

20.3.2 Ongoing Training

Staff members are given the following ongoing training:

All staff members are given refresher data integrity training and are required to sign off on the Ethics and Data Integrity Policy if they had not done so previously. The training is documented on a training attendance sheet that outlines what was covered during the training.

Ongoing training consists of:

- The employee attests, through signature, that they have read, understood, and agree to perform the latest version of the ***Quality Assurance Manual*** and any SOPs or policies that the analyst is responsible for following.
- Annually, the analyst shows continued proficiency in each method they perform by obtaining acceptable performance on Laboratory Control Samples (LCS), successful analysis of blind samples or by analyzing in parallel a sample analyzed by a trained or re-trained analyst.
- Attending training related to job function as applicable.
- Maintaining training documentation in the employees training record

The company has a policy that encourages all technical personnel to participate in technical seminars, conferences and scientific meetings involving innovative analytical technologies, new instrumentation and software applied to

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environmental testing. Records of this participation are maintained in the personnel files. The management of the laboratory shall formulate the goals with respect to the education, training and skills of the laboratory personnel.

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Section 21

ACCOMODATIONS AND ENVIRONMENTAL CONDITIONS
(TNI V1:M2 – Section 5.3)

21.1 Environmental

The laboratory facility is designed and organized to facilitate testing of environmental samples. Environmental conditions are monitored to ensure that conditions do not invalidate results or adversely affect the required quality of any measurement. Such environmental conditions include physical space, energy sources, lighting, temperature, workbenches, ventilation, utilities, access and entryways to the laboratory, sample receipt area(s), sample storage area(s), chemical and waste storage area(s); data handling and storage area(s), humidity, biological sterility, dust, sound and vibration levels.

The laboratory has backup power supplies to keep operating the most critical areas of the lab such as computer systems, telephones, sample storage and some laboratory equipment for short holding time samples.

If the laboratory environment is required to be controlled by a method or regulation, the adherence is monitored, controlled and recorded as per SOPs, such as is the recording of temperature during TCLP extraction and monitoring biological sterility and other environmental effects, as appropriate to the technical activities concerned.

Environmental tests are stopped when the environmental conditions jeopardize the results.

21.2 Work Areas

Work areas may include access and entryways to the laboratory, sample receipt area, sample storage area, sample process area, instrumental analysis area, chemical and waste storage area and data handling and storage area.

Access to, and use of, areas affecting the quality of the environmental tests is controlled by restriction of areas to authorized personnel only. See Section 21.4 below.

The laboratory work spaces are adequate for their use, and appropriately clean to support environmental testing and ensure an unencumbered work area.

The Laboratory is segregated into different areas for operations that are not compatible with each other. This separation prevents contamination of low levels of common laboratory solvents in the volatile organics analyses and maintains culture handling or incubation areas segregated from other areas. The access to the volatile organics laboratory, which is isolated from other areas of the laboratories and has a separate air system and microbiology laboratory is restricted to appropriate personnel only; signs to that effect are posted on the entry doors of

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these areas. Electronic balances are located away from drafts and doorways, and mounted on marble slabs or special tables in areas where their use is not affected by vibration. Biological sterility is monitored using air blanks for plate counts or density plates according to the SOPs for bacteriological test methods. Biological work areas are cleaned and sterilized between uses.

For microbiology, floors and work surfaces are non-absorbent and easy to clean and disinfect. Work surfaces are adequately sealed and are cleaned periodically in order to be free from dust accumulation. Plants, food, and drink are prohibited from the laboratory work area. The company will procure to improve the condition of the facilities whenever possible and make plans for future expansions or improvements.

In order to prevent cross-contamination, samples suspected of containing high concentrations of target analytes shall be isolated from other samples. Samples or extracts designated for volatile organics analysis are stored in separate refrigerators located in volatile organics area, completely segregated from all other samples and extracts. Samples suspected of containing high concentrations of volatile organics are further isolated from other volatile organics samples and samples for volatile organic analysis in potable water are kept in designated refrigerator.

When the project requires it, travel blanks, used as storage blanks, are kept with the samples until the moment of analysis to determine whether or not cross-contamination occurred. The procedures for evaluation of storage blanks, as well as other considerations for incompatible activities as detailed in the SOP MIS036.

Adequate measures are taken to ensure good housekeeping in the laboratory and to ensure that any contamination does not adversely affect data quality.

21.3 Floor Plan

A floor plan can be found in Appendix C.

21.4 Building Security

The laboratory is kept secure during off hours with an alarm, locked doors and locked entry gate.

A Visitor's Logbook is maintained for every visitor to sign in and out. Visitors must be accompanied by laboratory personnel when in secure areas.

Signs are used to designate secure areas.

Segregated areas are only accessible to authorized personnel, with signs posted, such as the volatile organics laboratory and clean rooms.

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Section 22

ENVIRONMENTAL METHODS AND METHOD VALIDATION

(TNI V1:M2 – Section 5.4 and Sections 1.4, 1.5 and 1.6 of Technical Modules TNI V1:M 3-7)

Methods and/or procedures are available for all activities associated with the analysis of the sample including preparation and testing. For purposes of this Section, "method" refers to both the sample preparation and determinative methods.

Before being put into use, a test method is confirmed by a demonstration of capability or method validation process.

All methods are published or documented. Deviations from the methods are allowed only if the deviation is documented, technically justified, authorized by management and accepted by the customer

The methods and procedures used at the laboratory are the appropriate ones for all environmental tests within its scope. These include sampling, handling, transport, storage and preparation of samples, and, where appropriate, an estimation of the measurement uncertainty as well as statistical techniques for analysis of environmental test and/or calibration data.

The methods used at the laboratory, including methods for sampling, must meet the needs of the client and are appropriate for the environmental tests it undertakes. These analytical procedures currently in use are based on the methodology approved by the regulatory agencies, such as EPA and State Agencies.

The Laboratory maintains Standard Operating Procedures (e.g., SOPs, Laboratory Method Manual) that accurately reflect all phases of current laboratory activities such as assessing data integrity, corrective actions, handling customer complaints, and all test methods. The SOPs provide all information needed to perform the different analytical tasks in accordance with regulatory requirements and in a consistent and controlled manner following the guidelines described in this QAP manual. All technical SOPs (e.g., sample preparation, analytical procedures, sample storage, sample receipt, etc.) are reviewed for accuracy and adequacy annually and whenever method procedures change, and updated as appropriate. Copies of all SOPs, both electronic and paper, are accessible to all personnel. Each SOP has an alphanumeric code that indicates the section it belongs, the number that identifies it, the revision number, the effective date and the signature of the QA Officer, Technical Director or Laboratory Director.

If other documents besides laboratory generated SOPs (i.e. equipment manuals, copies of published methods, etc.) are used as Standard Operating Procedures, they must be written in a way that they can be used as written and any changes, including the use of a selected option must be documented and included in the laboratory's SOP manual. For DoD related work, where published methods are specified as required for a project, requirements

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contained within that method shall be followed and any modifications to existing method requirements will require project-specific approval by DoD personnel.

SOPs are written in a standardized format and with standardized contents, as indicated in SOP MIS048.

A current list of the Standard Operating Procedures in use is in Appendix E.

22.1 Method Selection

A reference method is a method issued by an organization generally recognized as competent to do so. (When ISO refers to a standard method, that term is equivalent to reference method.) When a laboratory is required to analyze a parameter by a specified method due to a regulatory requirement, the parameter/method combination is recognized as a reference method.

The laboratory will use methods that meet the needs of the customer. Such methods will be based on the latest edition of the method unless it does not meet the needs of the customer.

The laboratory selects methods that are appropriate to the customer needs. When the regulatory authority mandates or promulgates methods for a specific purpose, only those methods will be used.

If a method proposed by a customer is considered to be inappropriate or out-of-date, the customer is informed and the issue resolved before proceeding with analysis of any samples (see Section 7 – Review of Requests, Tenders and Contracts).

The analytical procedures currently in use are based on the methodology approved by the EPA, the California Department of Health Services, the AIHA, DoD and other regulatory agencies.

When a method is not specified by the customer, or the proposed method is inappropriate, the laboratory will select a method that is appropriate to the end use of the data:

- If the data are to be submitted to a regulatory authority, the method(s) specified by the regulatory authority will be used.
- For drinking water compliance a method will be selected from those specified in 40 CFR Part 141, or the applicable state regulations.
- For NPDES permits, the method will be selected from those specified in 40 CFR Part 136.
- If the end use of the data is not regulatory or if the regulatory authority does not specify a method, the laboratory will determine the customer needs in terms of reporting level (e.g., LOD, LOQ), bias (e.g., screening versus quantitative) and the laboratory capabilities and capacity. Based on these criteria, the laboratory will select an appropriate method based on the following hierarchy:

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- Resources from published in regional, national or international standards
- Methods published by other technical organizations such as ASTM, Standard Methods or AOAC
- Methods develop by the instrument manufacturer
- Laboratory –developed methods.

In some cases, Weck Laboratories can perform analyses that are not specifically described in the guidelines cited above. In these cases, the following approach is taken:

- Review other sources of test methods such as AOAC, ASTM, Pesticide Manual, and methods mandated by the applicable regulatory authorities to find a suitable method for the matrix and analyte in question.
- Review Methods published in international, regional or national standards.
- Review methods developed by instrument manufacturers
- Produce a modification of a standard test procedure for similar parameter or matrix
- Develop a special method in house suitable for the particular problem

For these special situations the analytical procedure is discussed with the client and performed upon the client's approval. Whenever possible, the same QA/QC guidelines as for standard methods are used, but the laboratory may deviate from these guidelines if necessary. All communications between the laboratory and the customer are documented.
Most methods in use at the laboratory are described in the following publications:

- Tests Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, current edition,
- Methods for Chemical Analysis of Water and Wastewater, EPA-600/4-79-020.
- Standard Methods for the Examination of Water and Wastewater, current approved edition, APHA, AWWA, WPCF.
- Criteria for Identification of Hazardous and Extremely Hazardous Wastes, California Code of Regulations Title 22.
- Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater EPA-600/4-82-057.
- Recommended Methods of Analysis for the Organic components required for AB1803, 5th Edition Revised April 1986.
- Draft Method for Total Petroleum Hydrocarbons and Total Organic Lead, LUFT Methods, California Department of Health Services.
- Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water - EPA 500 series.
- NIOSH Manual of Analytical Methods, US Department of Health and Human Services.
- Laboratory Methods of Analysis for Enforcement samples, SCAQMD, 1986.
- Stationary Source Test Methods, Air Resources Board, 1990.
- OSHA Analytical Methods Manual, 2nd Ed., U.S. Dept. of Labor, 1990.

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Reference methods for all analytical procedures are kept in the Laboratory Office. Copies of specific methods are also in the corresponding sectors where the analyses are performed.

22.2 Laboratory-Developed Methods

If the laboratory develops a method, the process of designing and validating the method is carefully planned and documented.

The Laboratory in some instances will develop methods for its own use; in this case this is considered a planned activity and will be assigned to qualified personnel equipped with adequate resources. All personnel involved in the method design, development and implementation will be in constant communication during all stages of development. Plans are also updated as development proceeds.

Once the method is satisfactorily developed a validation process takes place before it is implemented and used.

For multi-analyte methods, the laboratory uses a standard set of target analytes but those target analytes identified by the client on a project specific basis will be analyzed. If project-specific information is not available, then the standard list of analytes or the list published in the method is used

22.3 Method Validation

Validation is the confirmation, by examination and objective evidence, that the particular requirements for a specific intended use are fulfilled.

At a minimum, reference methods are validated by performing an initial demonstration of capability. Additional requirements are discussed for each technology.

All methods that are not reference methods are validated before use. The validation is designed so that the laboratory can demonstrate that the method is appropriate for its intended use. All records (e.g., planning, method procedure, raw data and data analysis) shall be retained while the method is in use. Based on the validation process, the laboratory will make a statement in the corresponding SOP of the intended use requirements and whether or not the validated method meets the use requirements.

Method validation and Demonstration of Capability procedures can be found in:

- Appendix J - Chemistry
- Appendix K - Microbiology
- Appendix L - Radiochemistry

22.4 Estimation of Analytical Uncertainty

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Analytical Uncertainty: A subset of Measurement Uncertainty that includes all laboratory activities performed as part of the analysis.

When requested, the laboratory will provide an estimate of the analytical uncertainty as determined by the procedure described in SOP MIS047.

22.5 Control of Data

To ensure that data are protected from inadvertent changes or unintentional destruction, the laboratory uses procedures to check calculations and data transfers (both manual and automated).

Some instruments have a computerized data reduction and calculation, such as GC, GC/MS, HPLC, LC/MS, ICP, ICP-MS and automated wet chemistry analyzers. The protocols to perform these tasks are described in the corresponding SOPs and the computer programs used for data reduction are validated before use and checked periodically by manual calculations.

- Data entry maintains integrity during the analytical process and it is kept confidential.
- Data storage is performed on real time as the data is collected in local hard drives of computers connected to the analytical instruments
- Data processing is done by the analysts using the software from the instruments
- Data transmission is performed directly from instruments to the LIMS by a Data Tool software

Results for analyses that are performed manually or with instruments that do not have controlling software are entered in appropriate bench sheets or directly in LIMS by the analysis. Results are reviewed by supervisor or peer.

Additional information can be found in Section 16 – “Control of Records”.

22.5.1 Computer and Electronic Data Requirements

The laboratory assures that computers, user-developed computer software, automated equipment, or microprocessors used for the acquisition, processing, recording, reporting, storage, or retrieval of environmental test data are:

- documented in sufficient detail and validated as being adequate for use;
- protected for integrity and confidentiality of data entry or collection, data storage, data transmission and data processing;
- maintained to ensure proper functioning and are provided with the environmental and operating conditions necessary to maintain the integrity of environmental test data; and

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- held secure including the prevention of unauthorized access to, and the unauthorized amendment of, computer records. Data archive security is addressed in Section 16 – "Control of Records" and building security is addressed in Section 21- "Accommodations and Environmental Conditions".

  Procedures are described in SOP MIS037.

The laboratory uses spreadsheets to calculate final results from the raw data. Before reporting any results derived from these programs, the laboratory shall validate the underlying calculations and the

If any changes are made to the spreadsheet program, the laboratory revalidates the entire system before reporting results.

In addition, the algorithms all spreadsheet calculations or other programs that are used to reduce raw data to a reported value will be verified upon first use and annually thereafter to ensure that the process produces accurate results.

Data from all electronic media are backed up daily to ensure that data are not lost. The backed up copies are stored out of premises by IT Manager.

After the spreadsheet is validated, the calculations are protected from inadvertent manipulations.

Procedures for electronic backups are described in SOP MIS003.

22.5.2 Data Reduction

Some instruments have a computerized data reduction and calculation, such as GC/MS, HPLC, GC and ICP. The protocols to perform these tasks are described in the corresponding SOPs and the computer programs used for data reduction are validated before use and checked periodically by manual calculations.

Internal data review consists of a tiered or sequential system of verification, consisting of at least three tiers, with each check performed by a different person. The three tiers include a 100% review of the entire data package and completion of corresponding Data Review Checklist the analyst, then a 100% verification review by a technically qualified person, such as a supervisor or another chemist, experienced in that particular method or procedure, who checks for proper integration of peaks, identification of compounds, QC, etc. The third review is mainly an administrative one, to check for accuracy and completeness, typically performed by the Project Manager in charge of that project. The procedures used for performing the data review are detailed in the SOP MIS018.

If a discrepancy is noted in any stage of the reviewing process, the package is returned to the primary analyst for corrective action. For analyses that do not have automatic data reduction, the analyst performs the necessary calculations to obtain the final result, and then the results are reviewed as indicated above.

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All information used in the calculations (e.g., raw data, calibration files, tuning records, results of standard additions, interference check results, sample response, and blank or background correction protocols) as well as sample preparation information (e.g., weight or volume of sample used, percent dry weight for solids, extract volume, dilution factor used) are recorded in order to enable reconstruction of the final result.

The results of the quality control sample analysis are reviewed, and evaluated before data are reported.

After the results are entered into the LIMS, the third tier is completed and if no discrepancies are encountered they are released for reporting.

If electronic audit trail functions are available, they must be in use at all times, and associated data must be accessible. If the instrument does not have an audit trail, the integrity of the data is documented as described in SOP MIS043 Implementation of the Business Ethics and Data Integrity Policy.

The laboratory has manual integration procedures that must be followed when integrating peaks during data reduction. The manual integration procedures are described in SOP MIS039.

The laboratory procedures for use of significant figures are described in SOP MIS012 and in each analytical method SOP.

All raw data must be retained electronically in hard drives or storage boxes if it is printed material for seven years. The storage location is the second story of the laboratory building but could be moved to another location if necessary. Records are maintained as described in Section 16 – “Control of Records”.

22.5.3 Data Review Procedures

Data review procedures are located in Section 23.4 – “Data Review”.

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Section 23

CALIBRATION REQUIREMENTS
(TNI V1:M2 – Sect 5.5 and Section 1.7 of Technical Modules TNI V1:M 3-7)

23.1 General Equipment Requirements

The Laboratory is furnished with all items of sampling, measurement and test equipment required for the correct performance of the environmental tests (including sampling, preparation of samples, processing and analysis of environmental data).

All equipment and software used for testing and sampling are capable of achieving the accuracy required for complying with the specifications of the environmental test methods as specified in the laboratory SOPs.

Equipment is operated only by authorized and trained personnel (see Section 20 – "Personnel").

The laboratory has procedures for the use, maintenance, handling and storage of equipment and they are readily available to laboratory personnel.

Manuals provided by the manufacturer of the equipment provide information on use, maintenance, handling and storage of the equipment. The laboratory maintains an equipment table that includes additional information on storage location. The laboratory also has an SOP to summarize planned equipment maintenance (MIS055). These procedures ensure proper functioning of the equipment and prevent contamination or deterioration.

All equipment is calibrated or verified before being placed in use to ensure that it meets laboratory specifications and relevant standard specifications. The calibration procedures are specified in each method SOP and calibration records are as required and kept as electronic files in the corresponding folder of the computer system.

Documents detailing the receipt and specification of analytical equipment are retained. A history of the maintenance record of each system serves as an indication of the adequacy of maintenance schedules and parts inventory. As appropriate, the maintenance guidelines of the equipment manufacturer are followed. When maintenance is necessary, it is documented either in logbooks in the instrument work area or as electronic records in LIMS.

Test equipment, including hardware and software, are safeguarded from adjustments that would invalidate the test result measurements by limiting access to the equipment and using password protection where possible (see Section 22.5 – "Control of Data").

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Equipment that has been subject to overloading, mishandling, given suspect results, or shown to be defective or outside specifications is taken out of service. The equipment is isolated to prevent its use or clearly labeled as being out of service until it has been shown to function properly. If it is shown that previous tests are affected, then procedures for nonconforming work are followed and results are documented (see Section 12 – "Control of Nonconforming Environmental Testing Work" and Section 14 – "Corrective Action").

Older instruments shall be replaced with newer ones or updated if possible as technology improves and efforts shall be made to provide a greater degree of automation and security in analytical instruments.

The Laboratory does not use any equipment outside the permanent control of the laboratory.

Each item of equipment and software used for testing and significant to the results is uniquely identified. Records of equipment and software are maintained. This information includes the following:

a) identity of the equipment and its software;

b) manufacturer's name, type identification, serial number or other unique identifier;

c) checks that equipment complies with specifications of applicable tests;

d) current location;

e) manufacturer's instructions, if available, or a reference to their location;

f) dates, results and copies of reports and certificates of all calibrations, adjustments, acceptance criteria, and the due date of next calibration;

g) maintenance plan where appropriate, and maintenance carried out to date; documentation on all routine and non-routine maintenance activities and reference material verifications;

h) any damage, malfunction, modification or repair to the equipment;

i) date received and date placed into service (if available); and

j) condition when received, if available (new, used, reconditioned).

The list of equipment that is currently in service at the laboratory can be found in Appendix H.

Glassware is cleaned to meet the sensitivity of the method. Any cleaning and storage procedures that are not specified by the method are documented in laboratory records or SOPs.

23.2 Support Equipment

Support Equipment includes, but is not limited to: balances, ovens, refrigerators, freezers, incubators, water baths, temperature measuring devices, volumetric

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dispensing devices (such as Eppendorf®, or automatic dilutor/dispensing devices) and thermal/pressure sample preparation devices.

All support equipment is maintained in proper working order. Records are kept for all repair and maintenance activities, including service calls. The procedure used for calibration is described in SOP MIS031.

Lab Support equipment is also calibrated or verified annually using NIST traceable references when available, over the entire range of use. The results of such calibration must be within the specifications required in the application for which the equipment is used, if not, the equipment is either removed from service until repaired or a correction factor is applied to it, if applicable.

All raw data records are retained to document equipment performance. These records include logbooks, data sheets, or equipment computer files.

23.2.1 Support Equipment Maintenance

Regular maintenance of support equipment, such as balances and fume hoods is conducted at least annually.

Maintenance on other support equipment, such as ovens, refrigerators, and thermometers is conducted on an as needed basis.

Records of maintenance to support equipment are documented in Instrument Maintenance Logs. The logbooks are sometimes one per instrument or a logbook/record for a group of instruments that are housed in the same laboratory area and can be kept either electronically in the laboratory computer network or as hard copy.

Table 23-2 describes the maintenance performed on laboratory support equipment.

Table 23-1 Summary of Support Equipment Calibration And Maintenance

Instrument	Activity	Frequency	Documentation
Balance	1. Clean 2. Check alignment 3. Service Contract	1. Before use 2. Before use 3. Annually	Worksheet/log book Post annual service date on balance
ASTM Class 1Weights	1. Only use for the intended purpose 2. Use plastic forceps to handle 3. Keep in case 4. Re-calibrate	1. Every year if weight is used for daily checks. 2. Every 5 years if weight is used only to check working standard weights which are then used for the daily checks.	Keep certificate

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Table 23-1 Summary of Support Equipment Calibration And Maintenance

Instrument	Activity	Frequency	Documentation
Working Standard Weights	1. Used to check balances before their use.	Every 6 months.	Worksheet / logbook
NIST Traceable Thermometer	Accuracy determined by an accredited weights and measurement laboratory.	Every 5 years.	Keep certificate
Thermometers: 1. Glass and electronic 2. Dial thermometers 3. IR thermometer	Check at the temperature used, against a reference NIST certified thermometer	1. Annually for glass and electronic 2. Quarterly for dial and IR thermometers	Calibration factor and date of calibration on thermometer and worksheet/log book
pH electrometers	Calibration: 1. pH buffer aliquot are used only once 2. Buffers used for calibration will bracket the pH of the media, reagent, or sample tested.	Before use	Worksheet/log book
pH probe	Maintenance: Use manufacturer's specifications	As needed	Worksheet/log book
Spectrophotometer	1. Keep cells clean 2. Check wavelength settings with color standards	Annually	Post service date on instrument
Automatic or digital type pipettes	Calibrate for accuracy and precision using reagent water and analytical balance	Quarterly	Worksheet/logbook
Refrigerators, Freezers, and BOD incubators	1. Thermometers are immersed in liquid to the appropriate immersion line 2. The thermometers are graduated in increments of 1°C or less	Temperatures are recorded each day in use	Worksheet/log book

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Table 23-1 Summary of Support Equipment Calibration And Maintenance			
Instrument	**Activity**	**Frequency**	**Documentation**
Sterilizer	1. Use a maximum-temperature-registering thermometer or a continuous recording device. 2. Use spore strips or ampoules. 3. In house maintenance of autoclave or service contract. 4. Hot air ovens must maintain a stable temperature of 170°C - 180°C for at least two hours	1. Each cycle 2. One sterilizing cycle per month. 3. Once per year	Worksheet/log book
Microbiological incubators, and water baths	1. Thermometers in each unit are immersed in liquid to the appropriate immersion line 2. The thermometers will be graduated in increments of 0.5°C (0.2°C increments for tests which are incubated at 44.5°C) or less	Temperature of incubators and water baths will be recorded twice a day for each day in use with readings separated by at least four hours	Worksheet/log book
DO electrometer	Calibrate as specified in SOP	Before use	Worksheet/log book
DO probe	Maintenance as specified by manufacturer	As needed	Worksheet/log book
Conductivity Meters	Maintenance as specified by manufacturer	As needed	Worksheet/log book
Block Digesters	Verify that the temperature measured by the instrument measurement device is accurate	Daily	Worksheet/log book
Portable Field equipment	Maintenance as specified by manufacturer	As needed	Worksheet/log book

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23.2.2 Support Equipment Calibration

Calibration requirements for analytical support equipment are found in Tables 23-3 and 23-4.

All support equipment is calibrated or verified annually over the entire range of use using NIST traceable references where available. The results of the calibration of

support equipment are within specifications or (1) the equipment is removed from service until repaired, or (2) records are maintained of correction factors to correct all measurements. If correction factors are used this information is clearly marked on or near the equipment.

Support equipment such as balances, ovens, refrigerators, freezers, and water baths are verified with a NIST traceable reference if available, each day prior to use, to ensure operation is within the expected range for the application for which the equipment is to be used

Volumetric dispensing devices (except Class A glassware and Glass microliter syringes) are checked for accuracy on a quarterly basis.

For microbiology analyses records for autoclaves used in the laboratory are required for the following:

- initial performance of the autoclave functional properties (supplied by the installer);
- temperature demonstration of sterilization continuous monitoring device or maximum registering temperature;
- for every cycle, record date, contents, maximum temperature reached, pressure, time in sterilization mode, total run time, and analysts initials;
- quarterly check of autoclave timing device against a stopwatch; and
- annual maintenance checks to include a pressure check and calibration of temperature device.

The type of calibration, frequency and acceptance criteria for laboratory support equipment, including equipment used for microbiology analyses is specified in SOP MIS031.

23.3 Analytical Equipment

23.3.1 Maintenance for Analytical Equipment

All equipment is properly maintained, inspected, and cleaned.

Maintenance of analytical instruments and other equipment may include regularly scheduled preventive maintenance or maintenance on an as-needed basis. Instrument malfunction is documented in the Instrument Maintenance logs, either in hardcopy or as electronic records, which become part of the laboratory's permanent records. A description of what was done to repair the malfunction and proof of return to control are also documented in the log.

A description of the laboratory instrumentation maintenance can be found in SOP MIS055

23.3.2 Instrument Calibration

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Information on instrument calibration can be found in Appendix J (Chemistry), Appendix K (Microbiology) and Appendix L (Radiochemistry).

Initial instrument calibration and continuing instrument calibration verification are an important part of ensuring data of known and documented quality. If more stringent calibration requirements are included in a mandated method or by regulation, those calibration requirements override any requirements outlined here or in laboratory SOPs. Generally, procedures and criteria regarding instrument calibrations are provided in the SOPs corresponding to each test method.

All instruments are calibrated in accordance with the respective SOPs and/or method of analysis. The typical calibration procedure consists of an initial calibration, performed by running a series of standards and calculating the response by using either the response factors or by linear or polynomial regression analysis. This is followed by a calibration verification. All calibration procedures are thoroughly documented.

When an initial instrument calibration is not performed on the day of analysis, it is verified by analyzing CCVs standards using the following criteria, unless something different is specified in the corresponding SOPs or QAPP:

- The concentration of the CCV standard shall be from the low-calibration standard to the midpoint of the calibration range;
- The source of the CCV standard should be the same as the source for the initial calibration standard(s); and
- The baseline for evaluating the CCV is the initial calibration curve, except for the evaluation of retention times in organic chromatographic methods, which may be based on comparison with the retention times in the initial CCV.

When the method specifies to run CCVs at specific sample intervals, the count of these samples shall be of field samples only.

When a CCV fails to fall within acceptance limits then CCVs and all samples analyzed since last successful calibration verification are re-analyzed. If reanalysis is not possible, the client is notified prior to reporting data associated with a noncompliant CCV and if data are reported, appropriate qualifiers are used and if further clarification is needed this is explained in the case narrative. The exception to this is when a CCV fails with high bias, but the field samples remain not detected.

In all cases, the validity of the standards used in the initial calibration is verified using an independently prepared calibration verification solution. For all chemical determinations in which standards are involved for calibration, it is the policy of the company to use a secondary reference material (second source) obtained from a second manufacturer or lot if the lot can be demonstrated from the manufacturer as prepared independently from other lots. Traceability shall be to a national standard, when commercially available. If not commercially available, it can be prepared in-house. This secondary reference can be an LCS or other standard run to verify the integrity of the primary standard. Ideally, the secondary reference will be prepared identically to the calibration standards (i.e. if the calibration standard

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is directly injected without preparation, then directly injecting the reference standard removes any biases present by any field sample preparation steps).

When project-specific or method-specific requirements do not exist:

- The initial calibration verification shall be successfully completed prior to analyzing any samples;
- The use of a standard from a second lot is acceptable when only one manufacturer of the standard exists (note: manufacturer refers to the producer of the standard, not the vendor); and
- The concentration of the second source standard shall be at or near the midpoint of the calibration range. Acceptance criteria for the initial calibration verification must be at least as stringent as those for the continuing calibration verification.

Specific analyses' calibrations are checked more frequently. Some instruments, such as TOX analyzers have built-in calibration features. The internal calibration of these instruments is monitored daily for accuracy.

Some calibration curves for spectrophotometric methods are very stable over a long period of time, however it is the policy of the Laboratory to perform a new initial calibration curve even if the continuing calibration check meets specified criterion, in any of the following events:

- At least every three years
- When the instrument is moved to a different location
- If any maintenance that can affect the calibration has been performed
- If the analysts judges it necessary for special projects or different range of calibration

Spectrophotometers are also subject to wavelength calibration which it shall be performed at least annually, according to the procedure described by the manufacturer in the instrument manual or other documentation.

All results are calculated based on the response curve from the initial calibration and generally not quantitated from any continuing instrument calibration verification unless otherwise required by regulation, method, or program. The results are bracketed by calibration standards which cover the entire quantitation range for each analyte. Any data reported below the lower-limit of quantitation is considered to have an increased quantitative uncertainty and consequently it is reported using defined qualifiers or flags or explained in the case narrative. The highest calibration standard is the highest concentration for which quantitative data are to be reported. Any data reported above this highest standard is considered to have an increased quantitative uncertainty and it is reported as an estimated value using the defined data qualifiers or explained in the case narrative, unless the sample can be diluted and re-run within the limits of the initial calibration curve.

The following is the criteria used for the acceptance of an initial calibration, unless specified differently in the analytical methods:

- Use the average response factor (RF) if the percent relative standard deviation (%RSD) of the points is less than 20%. In this case, linearity through the origin is assumed.

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- If the %RSD is greater than 20%, linearity through the origin cannot be assumed and a linear regression, a weighed linear regression or a non-linear regression can be used. The acceptance criteria for linear regression are a coefficient of correlation (r) equal or greater than 0.99 and for non-linear regression the coefficient of determination (COD) or r^2 equal or greater than 0.99. In both cases, the curve is not to be forced through the origin nor is the origin used as another point. The sample results must be within the first and last standards.
- It is recommended and a good practice (but not mandatory un less the SOP specifies that) to back calculate the data points in which case a deviation of less than 20% is considered acceptable (could be as great as 50% for low level points is the system is pushed to the lowest possible limits)
- The number of data points to construct the initial calibration curve shall be obtained from the analytical method employed. If no criteria are specified, the laboratory shall construct initial calibration curves using a minimum of five calibration points for organic analytes and three calibration points for inorganic analytes and IH samples. All reported target analytes and surrogates (if applicable) shall be included in the initial calibration. Reported results for all target analytes shall be quantified using a multipoint calibration curve; surrogates are calibrated according to each analytical method requirements, unless there are project specific requirements in which case these are followed. It is not permitted to exclude calibration points unless there is technical justification for it.
- The lowest standard shall be at or below the reporting limit for the method and at or below the regulatory limit/decision level if known by the laboratory.
- The lowest calibration standard must be above the detection limit. Noted exceptions: for turbidity analysis and for instrument technology (such as ICP or ICP/MS) with validated techniques from manufacturers or methods employing standardization with a zero point and a single point calibration standard:

    - Prior to the analysis of samples the zero point and single point calibration must be analyzed and the linear range of the instrument must be established by analyzing a series of standards, one of which must be at the lowest quantitation level.
    - Zero point and single point calibration standard must be analyzed with each analytical batch.
    - A standard corresponding to the lowest quantitation level must be analyzed with each analytical batch and must meet established acceptance criteria.
    - The linearity is verified at a frequency established by the method and/or the manufacturer.
    - If a sample within an analytical batch produces results above its associated single point standard then one of the following should occur:
        - analyze reference material at or above the sample value that meets established acceptance criteria for validating the linearity; dilute the sample such that the result falls below the single point calibration concentration (when sufficient sample volume permits);
        - Report the data with an appropriate data qualifier and/or explain in the case narrative.

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§ For metals analysis with a single-point calibration, a sample result may be reported up to 90% of the linear dynamic range (LDR). All samples exceeding this value must be diluted to within the LDR.

If the initial calibration fails, the analysis procedure is stopped and evaluated. For example, a second standard may be analyzed and evaluated or a new initial calibration curve may be established and verified. In all cases, the initial calibration must be acceptable before analyzing samples. If samples cannot be reanalyzed, data associated with an unacceptable initial instrument calibration must be reported with appropriate data qualifiers.

When an initial calibration is not performed on the day of the analysis, a calibration verification check standard is analyzed at the beginning and at the end of each batch. An exception to this policy is for internal standard methods (e.g., most organic methods). For these analyses, the calibration check is only analyzed at the beginning of the analytical sequence or analytical batch. The concentration of this calibration check is specified in each method SOP and whenever possible is varied within the established calibration range.

Sufficient raw data records are retained electronically as printouts to permit reconstruction of the continuing instrument calibration verification, e.g., test method, instrument, analysis date, each analyte name, concentration and response, calibration curve or response factor, or unique equations or coefficients used to convert instrument responses into concentrations. Continuing calibration verification records explicitly connect the continuing verification data to the initial instrument calibration by listing in the quantification report the initial calibration file that was used for the calculation.

When intermediate checks are needed to maintain confidence in the calibration status of the equipment, these checks shall be carried out according to each Standard Operating Procedure for the analytical method.

Where calibrations give rise to a set of correction factors, the laboratory shall have procedures to ensure that copies (e.g., in computer software) are correctly updated.

If the continuing instrument calibration verification results obtained are outside established acceptance criteria, corrective actions are performed. If routine corrective action procedures fail to produce a second consecutive (immediate) calibration verification within acceptance criteria, the following options are available:

§ Demonstrate performance after corrective action with two consecutive successful calibration verifications
§ Perform a new initial instrument calibration.

If acceptable performance has not been demonstrated, sample analyses shall not occur until a new initial calibration curve is established and verified. However, sample data associated with an unacceptable calibration verification may be reported as qualified data under the following special conditions:

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- When the acceptance criteria for the continuing calibration verification are exceeded high, i.e., high bias, and there are associated samples that are non-detects, then those non-detects may be reported.
- When the acceptance criteria for the continuing calibration verification are exceeded low, i.e., low bias, those sample results may be reported if they exceed a maximum regulatory limit/decision level or if the samples are not for regulatory compliance and accurate values are not required by the customer.

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Section 24

MEASUREMENT TRACEABILITY
(TNI V1:M2 – Section 5.6)

Measurement quality assurance comes in part from traceability of standards to certified materials.

All equipment used affecting the quality of test results are calibrated prior to being put into service and on a continuing basis (see Section 23 – "Calibration Requirements"). These calibrations are traceable to national standards of measurement where available.

If traceability of measurements to SI units is not possible or not relevant, evidence for correlation of results through interlaboratory comparisons, proficiency testing, or independent analysis is provided.

24.1 Reference Standards

Reference standards are standards of the highest quality available at a given location, from which measurements are derived.

Reference Standards, such as ASTM Class 1 weights, are used for calibration only and for verification on unless it is shown that their performance as reference standards will not be invalidated.

Reference standards, such as ASTM Class 1 weights, are calibrated by an entity that can provide traceability to national or international standards. The following reference standards are sent out to be calibrated to a national standard as indicated in Section 23 – "Calibration Requirements":

- Class 1 weights.
- NIST traceable reference thermometers.

24.2 Reference Materials

Reference materials are substances that have concentrations that are sufficiently well established to use for calibration or as a frame of reference.

Reference materials, where commercially available, are traceable to national standards of measurement, or to Certified Reference Materials, usually by a Certificate of Analysis.

Purchased reference materials require a Certificate of Analysis where available. If a reference material cannot be purchased with a Certificate of Analysis, it is verified by analysis and comparison to a certified reference material and/or demonstration of capability for characterization.

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Internal reference materials, such as working standards or intermediate stock solutions, are checked as far as is technically and economically practical against a second source independent from it an known to be of high quality

Working standards or intermediate stock solutions are checked against a second source at first time of use. When a second source is not available, a vendor certified different lot is accepted as a second source. In most cases, the analysis of an Initial Calibration Verification (ICV) standard or a Laboratory Control Sample (LCS) can be used as a second source confirmation. Working standards and intermediate stock solutions are given expiration dates when they are prepared based on method or regulatory requirements. These standards are used up or disposed of by the expiration date.

Additional working standards such as working class weights or internal thermometers are checked using the frequency summarized in SOP MIS031.

24.3 Transport and Storage of Reference Standards and Materials

The laboratory handles and transports reference standards and materials in a manner that protects the integrity of the materials. Reference standard and material integrity is protected by separation from incompatible materials and/or minimizing exposure to degrading environments or materials.

Reference standards and materials are stored according to manufacturer's recommendations, method SOP requirements and separately from samples. The frequency of preparation is specified in each method SOP and the receipt, storage and preparation of solutions is detailed in SOP MIS004.

24.4 Labeling of Reference Standards, Reagents, and Reference Materials

The laboratory has procedures for purchase, receipt and storage of standards, reagents and reference materials. Purchase procedures are described in Section 9 – "Purchasing Services and Supplies" and receipt and storage procedures are described in SOP MIS004.

Expiration dates can be extended if the reference standard or material's integrity is verified. The extended date may not be beyond the expiration date of the referenced standards used to re-verify. The verification process involves analyzing the expiring standard against a valid standard and obtaining a deviation of not more than 5%.

The reagents and chemicals used in the laboratory are obtained from reputable suppliers that have proven consistency over the years. Purity specifications are chosen based on the analysis and this is always verified by the routine analysis of solvent blanks, method blanks and check standards. In methods where the purity of reagents is not specified, analytical reagent grade are used. Reagents of lesser purity than those specified by the test method are not used. Upon receipt of reagents, the labels on the container are checked to verify that the purity of the

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reagents meets the requirements of the particular test method. Such information is documented in the corresponding section of the LIMS.

The following are some of the reagents used:

- Solvents used for Gas Chromatography and GC/MS are "organic residue analysis" grade.
- Methanol used for volatile organics by GC or GC/MS is "Purge and Trap" grade.
- All inorganic chemicals are "reagent grade" or better, depending of the requirement.
- Nitric acid used for preparation of standards for ICP/MS analysis is "trace metals".

The quality (e.g., purity) specifications for all standards and reagents (including water) are documented in SOP MIS004.

The quality of reagent water sources used for microbiological analyses is monitored for trace metals, TKN, TOC and bacteria content. The results are documented in the corresponding logbook kept at the Microbiological Lab. On daily basis, the quality of reagent water is monitored by performing method blanks and system blanks for all tests that require water and the results documented with the analytical batch. If the reagent water does not meet method specific requirements a corrective action procedure is initiated.

The concentration of titrants is verified in accordance with written laboratory procedures (SOPs) and documented in the Standardization log book kept in the Wet Chemistry section of the Laboratory.

24.4.1 Stock Standards, Reagents, Reference Materials and Media

Records for all standards, reagents, reference materials, and media include:

- the manufacturer/vendor name (or traceability to purchased stocks or neat compounds)
- the manufacturer's Certificate of Analysis or purity (if supplied)
- the date of receipt
- recommended storage conditions

The information is recorded and the materials are given a unique identification number as described in SOP MIS004.

If the original container does not have an expiration date provided by the manufacturer or vendor it is not required to be labeled with an expiration date. If an expiration date is provided, it must be labeled with the expiration date.

In methods where the purity of reagents is not specified, analytical reagent grade is used. If the purity is specified, that is the minimum acceptable grade. Purity is verified and documented according to Section 9 – "Purchasing Services and Supplies" and to SOP MIS004.

24.4.2 Prepared Standards, Reagents, Reference Materials and Media

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Records for standards, reagents, reference materials, and media preparation include:

- traceability to purchased stock or neat compounds
- reference to the method of preparation
- date of preparation
- an expiration date after which the material shall not be used (unless its reliability is verified by the laboratory)
- preparer's initials (if prepared)

This information is recorded as per SOP MIS004.

All containers of prepared standards, reagents, or materials are labeled with a unique ID and an expiration date. The unique ID is determined by the LIMS system and consists of 7 digits being the first digit the year, then two digits for the month and the last four digits are correlative numbers from 0001 to 9999. Each container must be uniquely identified even if it is the same sample in each container.

Prepared reagents are verified to meet the requirements of the test method through the analysis of blanks.

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Section 25

COLLECTION OF SAMPLES
(TNI V1:M2 – Section 5.7)

Most samples processed at the laboratory are collected by clients or their representatives. When required, Weck Laboratories can provide technical assistance for sample collection and handling and can prepare and provide the necessary coolers, reagent water, sample containers, preservatives, sample labels, custody seals, COC forms, ice, and packing materials required to properly preserve, pack, and ship samples to the laboratory.

Weck Laboratories field personnel conduct sampling of wastewater and potable water for projects that require this service. Our personnel do not perform industrial hygiene sampling. Sampling procedures are described in the following SOPs: MIS002 and MIS010

In order to assure the quality of the entire analytical process, Weck Laboratories works closely with field personnel employed by the client to meet general QA criteria and if available specific criteria as per the QAPP.

The procedures to obtain subsamples, such as obtaining sample aliquots, are documented in each analytical SOP that requires it.

Where the client requires deviations, additions or exclusions from the documented sampling procedure, these are recorded in detail in the case narrative of the work order and reported with the analytical report. They are also communicated to the appropriate personnel.

In the instances that the laboratory does not perform the sampling and whenever possible, all sampling information, such as name of sampler, company that employs the sampler, sampling procedure, etc. is recorded in the sampling section of each work order and reported to the client. All other pertinent sampling information and relevant data for operations relating to sampling that forms part of the environmental testing that is undertaken is also recorded and reported with the analytical report.

25.1 Sampling Containers

The laboratory offers clean sampling containers for use by clients. The sample containers are obtained and managed as specified in SOPs MIS007 and MIS028.

25.1.1 Preparing Container Orders

Containers (containing any required preservatives) are provided to the client upon request.

Bottle orders are processed by the Project Managers as per Client's instructions and information provided for the site (whether the site is chlorinated to provide sampling containers with the correct preservation, etc.). The LIMS has a facility in the Project Management section to generate the bottle orders which is done by the PMs after entering the necessary information, such as due date, bottle type and number of bottles. The Shipping Department checks schedules daily for bottle due to be delivered and mode of delivery (FEDEX, Courier, etc) and ship accordingly. If

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special instructions or required the bottle order form is printed put and brought to shipping with the special written instructions. For rush orders due in less than 48 hrs, the PM needs to verbally notify shipping to take the necessary steps to complete the order on time.

25.1.2 Sampling Containers, Preservation Requirements, Holding Times

Sampling container, preservation and holding time requirements can be found in Appendix I of this QA Manual and in Appendix 1 of SOP MIS001.

If preservation or holding time requirements are not met, the procedures in Section 12 – "Control of Nonconforming Environmental Testing Work" are followed.

25.2 Sampling Plan

The laboratory uses sampling plans provided by clients or prepared in consultation with the client. The plan must include any factors that must be controlled to ensure the validity of the test. Sampling plans and written sampling procedures are used for sampling substances, materials or products for testing. The plan and procedures are made available at the sampling location.

The laboratory's procedures for dealing with nonconformances are used when the client requests any deviations from the sampling plan or sampling procedures. The requests are documented and included in the final test report.

25.3 Sampling Records

The following relevant sampling data are recorded: sampling procedure used, the date and time of sampling, the identification of the sampler, environmental conditions (if relevant), the sampling location, and the statistics upon which the sampling procedures are based.

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Section 26

HANDLING SAMPLES AND TEST ITEMS
(TNI V1:M2 – Section 5.8 and Section 1.7 of Technical Modules TNI V1:M 3-7)

26.1 Sample Receipt

When samples are received at the laboratory, chain-of-custody is reviewed, condition is documented, samples are given unique identifiers, and they are logged into the sample tracking system.

26.1.1 Chain of Custody

The chain of custody or sample submission sheets from the field are reviewed. This documentation is completed in the field and provides a written record of the handling of the samples from the time of collection until they are received at the laboratory. Section 25 – "Collection of Samples" outlines what information is needed on this record. The chain of custody form also provides information on what type of testing is being requested and can act as an order for laboratory services in the absence of a formal contract. An example chain of custody form can be found in Figure 26-1. Chain of custody and any additional records received at the time of sample submission are scanned and maintained by the laboratory in the form of electronic records.

26.1.1.1 Legal Chain of Custody

When full Legal/Evidentiary Chain of Custody protocols are required, COC records are used to establish an intact, continuous record of the physical possession, storage and disposal of sample containers, collected samples, sample aliquots, and sample extracts or digestates, The COC records account for all time periods associated with the samples. The COC records identify all individuals who physically handled individual samples. The COC forms remain with the samples during transport or shipment. If shipping containers and/or individual sample containers are submitted with sample custody seals, and any seals are not intact, the lab shall note this on the chain of custody. Other documents pertaining to the transport of the samples, such as receipts from common carriers are kept as part of the documentation.
When evidentiary samples, subsamples, digestates or extracts are transferred to another party they are subject to the requirements of legal chain of custody. These samples are kept in a locked area or refrigerator with the key in possession of the designated sample custodian

26.2 Sample Acceptance

Procedures for opening shipping containers and examining samples are provided in SOP MIS001.

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The laboratory has a sample acceptance policy that is made available to sample collection personnel. An example is provided in Figure 26-2. It emphasizes the need for use of water resistant ink, providing proper documentation (to include sample ID, location, date and time of collection, collector's name, preservation type, sample type and any special remarks about the sample), labeling of sample containers to include a unique sample ID, use of appropriate containers, adherence to holding times, and sample volume requirements. In addition the laboratory has nonconformance/corrective action procedures to handle samples that don't meet the requirements above or show signs of damage, contamination or inadequate preservation. Data will be appropriately qualified where samples are reported that do not meet sample acceptance requirements.

If any of the requirements for the sample acceptance policy are not met, the client is notified immediately by the Project Manager or Lab Supervisor, and the irregularity is documented:

- If the client acknowledges the irregularity and instructs the laboratory to continue with analysis; the decision to proceed is documented either on the COC , LIMS or other lab receipt documents and samples accepted and if needed the data is qualified in the final report
- If the client does not acknowledge the irregularity the samples are rejected; also the client may agree that samples need to be rejected.
- If the irregularity is noted in samples submitted for bacteriological analysis for compliance purposes, the samples are rejected without exception.

When a request for a new project is received involving multiple samples or tests that have a short holding time the Management is notified. The Management staff with the assistance of the appropriate technical personnel evaluates the project and calculates the resources needed to complete it within the turnaround time required and the holding times, taking into consideration the volume of work in house and/or expected.

If it is determined that the new project will not affect the proper completion of jobs already in house and that the laboratory has the resources (personnel, equipment and facilities) necessary to accommodate the new project, this is accepted.

If the Management or any of the technical staff involved thinks that the new job will create problems in terms of reduced quality of work, completion out of specified or required time, or any other detrimental situation, the new project is not accepted and the client notified. If there are alternatives, such as postponement, modification of sampling schedules or partial subcontracting to another lab in order to accommodate the project, this is proposed to the client.

26.2.1 Preservation Checks

The preservation verification is detailed in SOP MIS001; the following common preservation checks are performed and documented upon receipt:

26.2.1.1 ***Thermal preservation:***

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a) For temperature preservation, the temperature must be within ± 2°C of the required temperature unless otherwise stated. For samples that require preservation at 4°C, the acceptable range is from just above freezing to 6°C.

b) Samples that are delivered to the lab the same day as they are collected are likely not to have reached a fully chilled temperature. This is acceptable if the samples were received on ice and the chilling process has begun.

c) Record on the receipt form if ice is present and the temperature.

26.2.1.2 ***Chlorine checks:***

d) Laboratories that receive samples from potable water supplies (including source water) that have a demonstrated history of acceptable preservation may check a sample from each client at a frequency of once per month if:

i) the laboratory can show that the received sample containers are from their laboratory;

ii) sufficient sodium thiosulfate was in each container before sample collection to neutralize at minimum 5 mg/l of chlorine for drinking water and 15 mg/l of chlorine for wastewater samples;

iii) one container from each batch of laboratory prepared containers or lot of purchased ready-to-use containers is checked to ensure efficacy of the sodium thiosulfate to 5 mg/l chlorine or 15 mg/l chlorine as appropriate and the check is documented;

iv) chlorine residual is checked in the field and actual concentration is documented with sample submission.

26.2.1.3 ***pH checks:***

e) The pH of samples requiring acid/base preservation is checked upon sample receipt or upon initiation of analysis, except for volatile organic analysis.

26.3 Sample Identification

Samples, including subsamples, extracts and digestates, are uniquely identified in a permanent chronological record in the LIMS database to prevent mix-up and to document receipt of all sample containers.

Samples are assigned sequential numbers that reference more detailed information kept in the LIMS. The sample identification number contains seven digits such as "YMDD###"

Where:
Y correspond to the last digit of the current year

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M corresponds to the month using a letter, for example "A" being January, "B", February and so forth
DD Corresponds to the two numerical digits for the month
A three digit subsequent number from 001 to 999 automatically assigned by the system

The detailed description of the sample identification is listed in SOP MIS001

The following information is included in the sample receipt screen of the LIMS:

- Client or project name
- Date and time of receipt at lab
- Unique laboratory identification number
- Signature or initials of person making the entries

In addition, the following information is maintained and linked to the log-in record:

- Date and time of sampling linked to the date and time of laboratory receipt.
- Unique field identification number linked to the laboratory sample ID
- Analyses requested (including applicable approved method numbers) linked to the laboratory sample ID.
- Comments regarding rejection (if any).

All documentation received regarding the sample, such as memos or chain of custody, are scanned and retained as electronic copies in the computer system.

26.4 Sample Aliquots / Subsampling

In order for analysis results to be representative of the sample collected in the field, the laboratory has subsampling procedures. These procedures are described in SOP MIS026.

26.5 Sample Storage

Storage conditions are monitored for any required criteria, verified, and the verification recorded in logbooks.

Samples that require thermal preservation are stored under refrigeration that is +/-2°C of the specified preservation temperature unless regulatory or method specific criteria require something different. For samples with a specified storage temperature of 4°C, storage at a temperature above the freezing point of water to 6°C is acceptable.

Samples are held secure, as required. Samples are accessible only to laboratory personnel.

Samples are stored apart from standards, reagents, food or potentially contaminating sources, and such that cross-contamination is minimized. All

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portions of samples, including extracts, digestates, leachates, or any product of the sample is maintained according to the required conditions.

Samples for volatile organic analyses are stored in segregated refrigerators kept in the volatile organics laboratory completely segregated from other samples.

Sample storage is described in Section 2.11 of SOP MIS001

26.6 Sample Disposal

Samples are retained for a minimum of thirty days from report date unless otherwise instructed by the client or if the samples are part of litigation or have been received under legal/evidentiary requirements, in which case the disposal of the physical sample is accomplished with the concurrence of the affected legal authority.

After the retention period samples are either returned to the client or properly disposed of according to Federal, State and local regulations.
Procedures are described in SOP MIS051 for the disposal of samples, digestates, leachates, and extracts.

26.7 Sample Transport

Samples that are transported under the responsibility of the laboratory, where necessary, are done so safely and according to storage conditions. This includes moving bottles within the laboratory. Specific safety operations are addressed outside of this document.

Sample shipping procedures are described in SOP MIS007.

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ADDRESS:

PHONE:
FAX:
EMAIL:

PROJECT MANAGER

SAMPLER

- Same Day Rush 1
- 24 Hour Rush 100
- 48-72 Hour Rush
- 4 - 5 Day Rush 30
- Rush Extractions
- 10 - 15 Business
- QA/QC Data Pack

Charges will apply for weeker

Method of Shipment:

ID# (For lab Use Only)	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION/SITE LOCATION	# OF CONT.										COMMENTS

RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

SAMPLE CONDITION:

Actual Temperature:

Received On Ice	Y / N
Preserved	Y / N
Evidence Seals Present	Y / N
Container Attacked	Y / N
Preserved at Lab	Y / N

SAMPLE
AQ=Aqu
NA= No
SL = Slu
DW = D
WW = W
RW = R
GW = G
SO = So
SW = So
OL = Oil
OT = Ot

PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY OVER UNSCHEDULED RUSH REQUESTS
Client agrees to Terms & Conditions at: www.wecklabs.com

SPECIAL REQUIREMENTS / BILLING INFORMATION

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Property of Weck Laboratories, Inc.

Figure 26-2

Example Sample Acceptance Policy

- Proper, full, and complete documentation, including the sample identification, the location, date and time of collection, collector's name, preservation type, sample type and any special remarks concerning the sample. This information must be fully documented in the chain of custody record. See Figure 26-1.
- Unique identification of samples using durable labels completed in indelible ink on all sample containers.
- Use of appropriate sample containers and preservatives as per table in SOP MIS001 – Appendix 1.
- All samples have adequate holding time to be analyzed (SOP MIS001 - Appendix 1).
- If no previous special arrangements were made, parameters that are "field" analysis (i.e. pH, residual chlorine, etc.) will be analyzed within 24 hours from arrival at the laboratory. Samples that arrive at the laboratory after 4 PM on Friday or on the weekend will be analyzed no later than the next business day after receipt (Monday unless a holiday).
- Adequate sample size for all analysis requested.
- Special instructions and additional information required to perform the analysis properly (i.e., time, flow rate, etc.).
- Procedures that are used when samples show signs of damage or contamination.
- Samples received at the required temperature (usually ≤ 6 ^{o}C, but above freezing) or with evidence of chilling process started (received "on ice") if they were collected the same day as received at the lab.

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Section 27

QUALITY ASSURANCE FOR ENVIRONMENTAL TESTING *(TNI V1:M1, V1:M2 – Section 5.9 and Section 1.7 of Technical Modules TNI V1:M 3-7)*

Weck Laboratories, Inc. has procedures for monitoring the validity of the testing it performs. The qualities of test results are recorded in a computerized database contained within the LIMS system and in such a way that trends are detectable, and where practicable, are statistically evaluated. To evaluate the quality of test results, the laboratory utilizes the following:

a) Use of certified reference materials or cultures and/or internal quality control using secondary reference materials
b) Control charting
c) Participation in proficiency testing programs, interlaboratory comparisons and round robin programs
d) Replicate testing using same or different methods
e) Retesting of retained samples
f) Correlation of results for different characteristics of a sample (for example, total phosphate should be greater than or equal to orthophosphate).
g) Confirmation analyses comparison to historical data

In addition to procedures for calibration, the laboratory monitors quality control measurements such as blanks, laboratory control samples (LCS), matrix spikes (MS), duplicates, surrogates and internal standards to assess precision and accuracy. Proficiency Testing samples are also analyzed to assess laboratory performance.

Quality control samples are processed in the same manner as field samples. They are analyzed and reported with their associated field samples. Quality control data are analyzed and, when found to be outside pre-defined criteria, action is taken to correct the problem and to prevent incorrect results from being reported. Data associated with quality control data outside of criteria and still deemed reportable will be qualified so the end user of the data may make a determination of the usability of the data - see Section 28 – “Reporting of Results”.

For additional guidance on batch-specific QC samples, refer to the Quality Assurance Matrix contained in the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP).

27.1 Essential Quality Control Procedures

The quality control procedures specified in test methods are followed by laboratory personnel. The most stringent of control procedures is used in cases where multiple controls are offered. If it is not clear which is the most stringent, that mandated by test method or regulation is followed.

For test methods that do not provide acceptance criteria for an essential quality control element or where no regulatory criteria exist, acceptance criteria are developed following the criteria established for another similar method or similar technology. In some specialized projects, the client may set criteria and this should be stated. These limits can be found in the analytical methods SOPs and also in LIMS.

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Written procedures to monitor routine quality controls including acceptance criteria are located in the test method SOPs and in LIMS, except where noted, and include such procedures as:

- use of laboratory control samples and blanks to serve as positive and negative controls for chemistry methods;
- use of laboratory control samples to monitor test variability of laboratory results;
- use of calibrations, continuing calibrations, certified reference materials and/or PT samples to monitor accuracy of the test method;
- measures to monitor test method capability, such as limit of detection, limit of quantitation, and/or range of test applicability, such as linearity;
- use of regression analysis, internal/external standards, or statistical analysis to reduce raw data to final results;
- use of reagents and standards of appropriate quality and use of second source materials as appropriate;
- procedures to ensure the selectivity of the test method for its intended use;
- measures to assure constant and consistent test conditions, such as temperature, humidity, rotation speed, etc., when required by test method;
- use of sterility checks for equipment, media and dilution water for microbiology; and
- use of positive and negative culture controls for microbiology.
- For Radiochemistry: Measures to monitor test method capability, such as Minimum Detectable Activity.

27.2 Internal Quality Control Practices

Analytical data generated with QC samples that fall within all prescribed acceptance limits indicate the test method is deemed to be in control.

QC samples that fall outside QC limits indicate the test method are deemed to be out of control (nonconforming) and that corrective action is required and/or that the data are qualified (see Section 12 – “Control of Nonconforming Environmental Testing Work” and Section 14 - “Corrective Actions”).

Detailed QC procedures and QC limits are included in test method standard operating procedures (SOPs), or where unspecified in the SOPs, are detailed in LIMS.

All QC measures are assessed and evaluated on an on-going basis, so that trends are detected.

27.2.1 General Controls

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The following general controls are used:

27.2.1.1 Positive and Negative Controls such as:

a) Blanks (negative)
b) Laboratory control sample (positive)
c) Sterility checks and control cultures (positive and negative).

27.2.1.2 Selectivity is assured through:

a) absolute and relative retention times in chromatographic analyses;
b) two-column confirmation when using non-specific detectors;
c) use of acceptance criteria for mass-spectral tuning (found in test method SOPs);
d) use of the correct method according to its scope assessed during method validation; and
e) use of reference cultures (positive and negative) from a recognized manufacturer (where applicable).

27.2.1.3 Consistency, Variability, Repeatability, and Accuracy are assured through:

a) proper installation and operation of instruments according to manufacturer's recommendations or according to the processes used during method validation;
b) monitoring and controlling environmental conditions (temperature, access, proximity to potential contaminants);
c) selection and use of reagents and standards of appropriate quality; and
d) cleaning glassware appropriate to the level required by the analysis as demonstrated with method blanks (SOP MIS028).
e) For microbiology, glassware care includes use of borosilicate glassware, use of detergents designed for laboratory use, testing each day for alkaline or acid residue with bromothymol blue, and conduct of the Inhibitory Residue test when the detergent is changed or annually, whichever is more frequent.
f) following SOPs and documenting any deviation, assessing for impact, and treating data appropriately;
g) testing to define the variability and/or repeatability of the laboratory results, such as replicates;
h) use of measures to assure the accuracy of the test method, including calibration and/or continuing calibrations, use of certified reference materials, proficiency test samples, or other measures; and
i) use of duplicate plate counts on positive samples (microbiology only).

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27.2.1.4 Test Method Capability (also see Section 22 – "Environmental Methods and Method Validation") is assured through:

a) establishment of the limit of detection "minimum detectable activity" for Radiochemistry work;

b) establishment of the limit of quantitation or reporting level; and/or

c) establishment of the range of applicability such as linearity.

27.2.1.5 Data reduction is assured to be accurate by:

a) selection of appropriate formulae to reduce raw data to final results such as regression;

b) following specific procedures for data reduction such as manual integration procedures;

c) periodic review of data reduction processes to assure applicability;

d) microbiological calculations, data reduction, and statistical interpretations specified by each test method; and

e) for Radiochemistry work, results reported with its measurement uncertainty. Reports indicate whether the uncertainty is combined standard or expanded uncertainty.

27.2.1.6 Sample Specific controls are used to evaluate the effect of sample matrix on the performance of the selected analytical method (not a measure of laboratory performance):

Examples:

- Matrix Spike and Matrix Spike Duplicate (MS/MSD)
- Surrogate Spikes
- Sample Duplicates

27.2.1.7 The following tables summarize the key elements of a quality control system for a laboratory performing chemistry and microbiology testing.

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Table 27-1 Essential Quality Control Elements for Chemistry			
Item	**Frequency**	**Acceptance Criteria**	**Corrective action**
Negative Control (Method Blank)	1/batch	Method specific or reporting limit	Qualify data and take corrective action
Positive Control (Laboratory Control Sample)	1/batch	Method specific or determined by laboratory	Reprocess, reanalyze, or qualify data.
Matrix Spike; Matrix Spike Duplicates ***Note : Samples are designed as data quality indicators for a specific sample using the designated method. These controls alone are not used to judge a laboratory's performance.***	Per method requirement	Method specific or determined by laboratory	Corrective action and qualify data.
Surrogate spikes ***See note above.***	Per method requirement	Method specific or determined by laboratory	Corrective action and qualify data
Matrix Duplicates ***See note above.***	Per method requirement	Method specific or determined by laboratory	Corrective action and qualify data
Continuing Calibration Verification	Per method requirement	Method specific or determined by the laboratory	Reanalyze standard immediately; Corrective action
Initial calibration Verification	Start of each analytical run	Method specific or determined by laboratory	Reanalyze standard immediately; Corrective action

Table 27-2 Essential Quality Control Requirements for Microbiology – All Methods			
Item	**Frequency**	**Acceptance Criteria**	**Corrective Action[2]**
Sterility check	Each lot of media prior to first use	No growth	Investigate cause
Sterility check containers	One container (bottle) for each lot or batch sterilized (NSGM)	No growth	Investigate cause
Sterility check dilution water	One per batch of dilution water (NSGM)	No growth	Investigate cause
Positive control[1]	pure culture of target organisms/ each lot or batch	Positive reaction	Investigate cause If necessary reject the

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Table 27-2 Essential Quality Control Requirements for Microbiology – All Methods

Item	Frequency	Acceptance Criteria	Corrective Action[2]
	of medium (prior to first use of medium)		medium
Negative control[1]	Pure culture of non-target organisms/each lot or batch of medium (prior to first use of medium)	Negative reaction	Investigate cause If necessary reject the medium
Duplicate colony counts (For numeric results only)	Monthly on one positive sample for each month performed.	Same analyst <5% difference between counts Two analysts <10% difference between counts	Investigate cause Qualify data

1) Microorganisms may be single use preparations or cultures maintained by documented procedures that demonstrate the continued purity and viability of the organism.
2) Corrective Action may include the need to retrain.
3) NSGM: Non-selective growth media

Table 27-3 Essential Quality Control Requirements for Microbiology – Filtration Methods Only

Item	Frequency	Acceptance Criteria	Corrective Action
Sterility check	Each lot of media prior to first use. Also done on containers, reagents and materials prior to first use. Use NSGM for containers, reagents and materials.	No growth	Investigate cause
Method blank	Beg/end of each run Select one: - 1 for every 10 samples Done as part of the test, use method media.	No growth	Investigate cause Qualify data
Sterility check filters	One filter for each new lot of membrane filters (NSGM)	No growth	Investigate cause
Target organism verification (D.3.4.b)	Method specific	Confirmation of reaction	Investigate cause

Table 27-4 Essential Quality Control Requirements for Microbiology – Pour Plate Methods Only

Item	Frequency	Acceptance Criteria	Corrective action
Method Blank	Minimum of one plate per batch Done as part of test, use method media	Less than 8 cfu/plate	Investigate cause, qualify/ reject data

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Table 27-5 Stock Cultures		
Item	**Frequency**	**Handling**
Reference cultures	Single use	Preserved and handled per mfg. specifications
Reference culture Reference stock	Culture stocks to make working stocks	Preserved and not refrozen Handling per mfg specs
Working stocks	Not transferred more than five times. Not sub-cultured to replace reference stocks	

Table 27-6 Essential Quality Control Elements for Radiochemistry			
Item	**Frequency**	**Acceptance Criteria**	**Corrective action**
Negative Control (Method Blank)	1/batch	Method specific or reporting limit	Qualify data and take corrective action
Positive Control (Laboratory Control Sample)	1/batch	Method specific or determined by laboratory	Reprocess, reanalyze, or qualify data.
Matrix Duplicates ***Note : Samples are designed as data quality indicators for a specific sample using the designated method. These controls alone are not used to judge a laboratory's performance.***	Per method requirement	Method specific or determined by laboratory	Corrective action and qualify data

27.2.2 Specific Controls

27.2.2.1 Method Blanks

Method blanks are processed along with and under the same conditions as the associated samples to include all steps in the method. A method blank must be analyzed at a minimum of one per preparation batch. When no separate preparation method is used the batch is defined as the environmental samples that are analyzed with the same method and personnel, using the same lots of reagents, not to exceed the analysis of twenty environmental samples, not including method blanks, LCS, matrix spikes and matrix duplicates. The matrix of the method blank must be similar to the associated samples and be free from any analytes of interest. Method blanks are not required for some analyses such as pH, conductivity, flash point and temperature.

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The method blank is used to assess the preparation batch for possible contamination during the preparation and processing steps. The method blank is processed along with and under the same conditions as the associated samples to include all steps of the analytical procedure.

Contaminated blanks are identified according to the acceptance limits in the test method SOPs or laboratory documentation.

Blanks are prepared and analyzed in the following situations, or whenever there is a need to obtain further information:

- A blank is extracted for every batch and type of matrix for analysis of semi-volatile organics by GC, GC/MS or HPLC.
- A blank is carried through all the digestion procedures for analysis of metals by AA, ICP or ICP-MS for every batch of samples and type of matrix for each instrument used.
- A blank is carried through the leaching procedures (TCLP, EP TOX, and WET) using the same extraction fluid, bottles and agitators as the samples.
- System/Reagent blanks are analyzed at the beginning of the day prior to calibration, after a high level standard, after changing matrix and after samples that are known or suspected to be very concentrated.
- Reagent blanks are analyzed for all wet chemistry determinations involving titrations or spectrophotometry and their value are subtracted from the reading of the samples, if appropriate.
- Blanks for mobility procedures (TCLP, ZHE, EP TOX, and WET) are analyzed by the appropriate method.
- Additional field and trip blanks are prepared and analyzed where required or whenever requested by the client

Sometimes the blanks may show detectable amounts of target analytes. In these cases the source of the contamination must be investigated and measures taken to correct, minimize or eliminate the problem if:

- The blank contamination is at or above the reporting limit and exceeds a concentration greater than 1/10 of the measured concentration of any sample in the associated sample batch or
- The blank contamination exceeds the concentration present in the samples and is greater than 1/10 of the specified regulatory limit.
- The blank contamination otherwise affects the sample results as per the test method requirements or the individual project data quality objectives.
- For DoD samples, in addition to the above, the method blank will be considered contaminated for a particular target analyte if it concentrations exceeds ½ the reporting limit unless is a common laboratory contaminant such as acetone, methylene chloride, MTBE, zinc and aluminum, among others.

If the method blank is contaminated as described above, then the affected samples shall be reprocessed in a subsequent preparation

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batch, qualified or voided, except when sample results are unaffected by the blank contamination (non-detects or other analytes) in which case the results are reported unqualified. If insufficient sample volume remains for reprocessing, the results shall be reported with appropriate data qualifiers.

27.2.2.2 Laboratory Control Samples

Laboratory Control Samples (LCS) are also known as LFBs or Blank Spikes, are prepared from analyte free water or other clean matrix, and spiked with verified and known amounts of analytes for the purpose of establishing precision or bias measurements.

Laboratory control samples are analyzed at a frequency mandated by method, regulation, or client request, whichever is more stringent. The standard frequency of LCS preparation and analysis is one per analytical batch or as otherwise stated in a laboratory SOP. Exceptions would be for those analytes where no spiking solution is available, such as TSS, TDS, Total Volatile Solids, Total Solids, pH, color, odor, temperature, dissolved oxygen or turbidity. When no separate preparation method is used the batch is defined as the environmental samples that are analyzed with the same method and personnel, using the same lots of reagents, not to exceed the analysis of twenty environmental samples, not including method blanks, LCS, matrix spikes and matrix duplicates.

The LCS is a quality system matrix, known to be free of analytes of interest, spiked with known and verified concentrations of analytes. The matrix spike (Sect. 27.2.2.3) may be used in place of this control as long as the acceptance criteria are as stringent as for the LCS. Alternatively the LCS may consist of a media containing known and verified concentrations of analytes or as Certified Reference Material (CRM). All analyte concentrations shall be within the calibration range of the methods.

The analytes to be spiked in the LCS are specified in the test method SOP. In some cases a client may specify a list of analytes for spiking and the request is handled using the laboratory's nonconformance procedures.

In the absence of specified spiking components the laboratory shall spike per the following:

- For those components that interfere with an accurate assessment such as spiking simultaneously with technical chlordane, toxaphene and PCBs, the spike should be chosen that represents the chemistries and elution patterns of the components to be reported.
- For those test methods that have extremely long lists of analytes, a representative number may be chosen. The analytes selected should be representative of all analytes reported. The following criteria shall be used for determining the minimum number of analytes to be

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spiked. However, the laboratory shall insure that all targeted components are included in the spike mixture over a 2-year period:

a) For methods that include 1-10 targets, spike all components.
b) For methods that include 11-20 targets, spike at least 10 compounds or 80% of the total, whichever is greater.
c) For methods with more than 20 targets, spike at least 16 components.

The results of laboratory control samples (LCS) are calculated in percent recovery or other appropriate statistical technique that allows comparison to established acceptance criteria. The calculation used is as follows:

$$\%R = \frac{AV}{TV} \times 100$$

Where
AV = Analyzed Value
TV = True Value

The individual LCS is compared to the acceptance criteria as published in the mandated test method, or where there are no established criteria, the laboratory establishes limits as described below. If found to be outside of these criteria, there is an indication that the analytical system is "out of control". Any affected samples associated with an out of control LCS shall be reprocessed for re-analysis or the results reported with appropriate data qualifying codes. Note: Samples that are not detected (ND) may be reported with an LCS that failed with high bias, but any qualifier may only be used for two consecutive batches before the problem must be corrected.

Where there are no established criteria, internal criteria are generated based on recoveries of past LCSs.
To determine these criteria, at least 30 data points generated under the same analytical process are used and the upper and lower acceptance limits are calculated as the "Mean + 3 SD" and "Mean – 3 SD" respectively, where SD is the standard deviation. These statistically derived limits must:

- Meet the limits specified by the project or as stated in the method, if available;
- Should be updated on an annual basis, or as stated in the method, and re-established after major changes in the analytical process (e.g., new instrumentation);
- Should not exclude failed LCS recovery data and statistical outliers from the calculation, unless there is a documented and scientifically valid reason.

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Control charts generated from the LIMS are used to detect trends and prevent out-of-control conditions. Control limits are continually monitored for shifts in mean recovery, changes in standard deviation, and development of trends.

If a large number of analytes are in the LCS, it becomes statistically likely that a few will be outside control limits. This may not indicate that the system is out of control, therefore corrective action may not be necessary. Upper and lower marginal exceedance (ME) limits can be established to determine when corrective action is necessary. A ME is defined as being beyond the LCS control limit (3 standard deviations), but within the ME limits. ME limit is 4 standard deviations around the mean. The number of allowable marginal exceedances is based on the number of analytes in the LCS. If more analytes exceed the LCS control limits than is allowed, or if any one analyte exceeds the ME limits, the LCS fails and corrective action is necessary. This marginal exceedance approach is relevant for methods with long lists of analytes. It will not apply to target analyte lists with fewer than 11 analytes. Certain projects, such as DoD work do not allow any target analyte to exceed its LCS control limits, even marginally and if this happens the batch is considered not acceptable .

The number of allowable marginal exceedances is as follows:

1) >90 analytes in LCS, 5 analytes allowed in ME of the LCS control limit;
2) 71-90 analytes in LCS, 4 analytes allowed in ME of the LCS control limit;
3) 51-70 analytes in LCS, 3 analytes allowed in ME of the LCS control limit;
4) 31-50 analytes in LCS, 2 analytes allowed in ME of the LCS control limit;
5) 11-30 analytes in LCS, 1 analytes allowed in ME of the LCS control limit;
6) <11 analytes in LCS, no analytes allowed in ME of the LCS control limit;

Marginal exceedances must be random. If the same analyte exceeds the LCS control limit repeatedly (i.e. 2 out of 3 consecutive LCS), it is an indication of a systemic problem. The source of the error must be located and corrective action taken.

The procedure to monitor the application of marginal exceedance allowance to the LCS to ensure random behavior consist of establishing a data base with all exceedances and compare the analytes affected on quarterly basis to verify is not the same analyte having the problem.

27.2.2.3 Matrix Spikes and Matrix Spike Duplicates

Matrix Spikes and Matrix Spike Duplicates (MS/MSD) are environmental samples fortified with a known amount of analyte to help assess the

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effect of the matrix on method performance. These controls alone are not used to judge laboratory performance. The information from these controls is sample/matrix specific and would not normally be used to determine the validity of the entire batch

The frequency of the analysis of matrix specific samples is determined as part of a systematic planning process (e.g., Data Quality Objectives) or as specified by the required mandated test method or SOP and it is at a minimum, one per batch of 20 samples or less, per matrix type.

The components to be spiked are the ones specified by the mandated test method or laboratory SOP. Any permit specified analytes, as specified by regulation or client requested analytes shall also be included. Matrix spikes are not performed for analytes for which spiking solutions are not available such as, solids determinations (total suspended, total dissolved, total volatile), pH, color, odor, temperature, dissolved oxygen, BOD, COD or turbidity. If there are no specified components, the following guideline is used:

- For those components that interfere with an accurate assessment such as spiking simultaneously with technical chlordane, toxaphene and PCBs, the spike should be chosen that represents the chemistries and elution patterns of the components to be reported.
- For those test methods that have extremely long lists of analytes, a representative number may be chosen using the following criteria for choosing the number of analytes to be spiked, but alternating them in order to ensure that all targeted components are included in the spike mixture over a 2 year period.
  - i. For methods that include 1-10 targets, spike all components;
  - ii. For methods that include 11-20 targets, spike at least 10 components or 80% of the total, whichever is greater;
  - iii. For methods with more than 20 targets, spike at least 16 components.

Some project may require MS/MSD to be performed on their samples (i.e. DoD) in which case these are used for the entire batch if it also contains samples from other clients.

The requirements for MS/MSD are not applicable to all methods (e.g., asbestos, certain air-testing samples, classic chemistry, and industrial hygiene samples). Additional MS/MSDs may be required on a project-specific basis.

The calculations of percent recoveries and relative percent difference (RPD) are performed by the following procedures:

$$\%R = \frac{AV}{TV} \times 100$$

Where

AV = Spike Result – Sample Result

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TV = True Value

$$RPD = \frac{|S - D|}{\frac{(S + D)}{2}} \times 100$$

Where:

S=Sample Concentration
D=Duplicate Concentration

Where there are no established criteria, the laboratory uses the mean plus or minus three standard deviations as the control limits for MS/MSD as described in section 27.2.2.2. Some projects may have specific criteria such as DoD work that require that the results of all MS/MSDs must be evaluated using the same acceptance criteria used for the LCS.

For MS/MSD results outside established criteria corrective action is documented or the data are reported with appropriate data qualifying codes. Only the data from the spiked sample is qualified. Poor performance in a matrix spike generally indicates a problem with the sample composition, and not the laboratory analysis and is reported to the client whose sample was used for the spike with the appropriate data qualifiers or in the case narrative to assist in data assessment.

The corrective action for organics may be to evaluate the LCS for comparison and note in the narrative that there may be a matrix interference present. The data to be qualified is only that of the parent sample.

27.2.2.4 Surrogate Spikes

Surrogate spikes are substances with chemical properties and behaviors similar to the analytes of interest used to assess method performance in individual samples. Surrogates are added to all samples (in test methods where surrogate use is appropriate) prior to sample preparation or extraction.

Surrogate recovery results are compared to the acceptance criteria as published in the mandated test method or laboratory SOP, specified in the project by the client or lab generated if there are no established criteria. Acceptance limits generated at the laboratory are established based on a minimum of 30 valid data points by calculating the mean and standard deviation, the upper limit is set at “mean + 3SD” and the lower limit at “Mean – 3SD”.

Surrogate results outside the acceptance criteria are evaluated for the effect indicated for the individual sample results. A corrective action is initiated which is guided by the data quality objectives or other site specific requirements. Results reported from analyses with surrogate

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recoveries outside the acceptance criteria include appropriate data qualifiers
The recovery for a surrogate is calculated using the following equation:

$$\%\,\text{Recovery} = \frac{\text{ConcentrationFound}}{\text{ConcentrationAdded}}\, x100\%$$

Where:
Concentration found = Result obtained after analysis
Concentration added = Amount of surrogate spiked

27.3 Proficiency Test Samples or Interlaboratory Comparisons

27.3.1 Compliance to Accreditation Requirements

The laboratory analyzes at least two TNI-compliant PT samples per calendar year for each accreditation Fields of Proficiency Testing (FoPT) for which the laboratory is accredited. An exception is made for analytes where there is no PT available from any PTPA approved PT provider at least twice per year. In these cases the lab will run the PTs in the minimum time frame the PTs are available and not at all if they are not available.

For DoD related work, PT samples are obtained from a Proficiency Testing Oversight Body (PTOB)/Proficiency Testing Provider Accreditor (PTPA)-approved PT Provider.

Additional analytes or experimental analytes are analyzed based on specific regulatory program requirements and special client requests at the stipulated frequency such as perchlorate and hexavalent chromium for California ELAP certification and NDMA for certain client requests performed once a year.

The successive PTs are analyzed at least five months apart and no more than 7 months apart unless the PT is being used for corrective action to maintain or reinstate accreditation, in which case the dates of successive PT samples for the same accreditation FoPT is at least fifteen days apart.

The goal for PT results is obtaining 100% of all analytes within acceptable limits. When there are results out of the acceptance range, corrective action is initiated to prevent the error from reoccurring. A report with the documentation of the corrective action is also filed.

The following are the proficiency testing programs in which the laboratory currently participates on regular basis:

- Drinking water analysis: WS Studies
- Wastewater analysis: WP studies
- Hazardous waste and soil
- Bacteriological Performance Evaluation Study.

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- Radiochemistry

27.3.2 PT Sample Handling, Analysis and Reporting

The laboratory does not share PT samples with other laboratories, does not communicate with other laboratories regarding current PT sample results, and does not attempt to obtain the assigned value of any PT sample from the PT provider.

Proficiency Testing (PT) samples are treated as typical samples in the normal production process where possible, including the same analysts, preparation, calibration, quality control and acceptance criteria, sequence of analytical steps, number of replicates, and sample log-in. PT samples are not analyzed multiple times unless routine environmental samples are analyzed multiple times. Where PT samples present special problems in the analysis process, they will be treated as laboratory samples where clients have special requests.

The type, composition, concentration and frequency of quality control samples analyzed with the PT samples are the same as with typical samples.

Prior to the closing date of a study, laboratory personnel do not:

- Subcontract analysis of a PT sample to another laboratory being run for accreditation purposes.
- Knowingly receive and analyze a PT for another laboratory being run for accreditation purposes.
- Communicate with an individual from another laboratory concerning the analysis of the PT sample.
- Attempt to find out the assigned value of a PT from the PT Provider.

The laboratory's procedure for handling low level PT samples is explained in SOP MIS015.

The laboratory institutes corrective action procedures for failed PT samples following the guidelines in Section 14 – "Corrective Action" and SOP MIS015.

Retention of PT records is similar to that maintained for regular environmental samples. In addition the lab maintains a copy of the online data entry summary when the PT results are submitted online.

27.4 Data Review

The laboratory reviews all data generated in the laboratory for compliance with method, laboratory and, where appropriate, client requirements.

Initially, the analyst reviews data for acceptability of quality control measures and accuracy of the final result(s).

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After the initial review, a second reviewer, a technically qualified person, such as a supervisor or another chemist, experienced in that particular method or procedure considers all manual transfers and calculations of data in detail and spot checks all electronic transfers of data.

Final reports are compared to raw data either directly or through several reviewed steps.

Internal data review consists of a tiered or sequential system of verification, consisting of at least three tiers, with each check performed by a different person. The three tiers include a 100% review of the entire data package and completion of corresponding Data Review Checklist the analyst, then a verification review by a technically qualified person, such as a supervisor or another chemist, experienced in that particular method or procedure, who checks for proper integration of peaks, identification of compounds, QC, data qualifiers, electronic transfer of data (if not performed automatically), etc. The third review is mainly an administrative one, to check for accuracy and completeness, typically performed by the Project Manager in charge of that project. The procedures used for performing the data review are detailed in the SOP MIS018.

If a discrepancy is noted in any stage of the reviewing process, the package is returned to the primary analyst for corrective action. For analyses that do not have automatic data reduction, the analyst performs the necessary calculations to obtain the final result, and then the results are reviewed as indicated above.

All information used in the calculations (e.g., raw data, calibration files, tuning records, results of standard additions, interference check results, sample response, and blank or background correction protocols) as well as sample preparation information (e.g., weight or volume of sample used, percent dry weight for solids, extract volume, dilution factor used) are recorded in order to enable reconstruction of the final result.

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Section 28

REPORTING THE RESULTS
(TNI V1:M2 – Section 5.10)

The result of each test performed is reported accurately, clearly, unambiguously, and objectively and complies with all specific instructions contained in the test method.

Laboratory results are reported in a test report or "Certificate of Analysis" that includes all the information requested by the client and necessary for the interpretation of the test results and all information required by the method used. This report could be either as a hard copy or an electronic data transfer or other electronic format.

Data are reported without qualification if they are greater than the lowest calibration standard, lower than the highest calibration standard, and without compromised sample or method integrity.

28.1 Test Reports

The report format has been designed to accommodate each type of test performed and to minimize the potential for misunderstanding or misuse.

The laboratory does not issue multiple reports for the same samples where there is different information on each report unless required to meet regulatory needs and approved by the Quality Manager.

Each test report generated contains the following information:

a) a title, such as "Certificate of Analysis";

b) the name, address and phone number of the laboratory and name of the contact person (project Manager);

c) unique identification of the test report, such as a serial number, on each page and a pagination system that ensures that each page is recognized as part of the test report and a clear identification of the end of the report, such as 3 of 10;

d) the name and address of the client;

e) the identification of the method used;

f) a description of, the condition of, and unambiguous identification of the sample(s) tested, including the client identification code and client project name and number if available;

g) the date of sample receipt when it is critical to the validity and application of the results, date and time of sample collection, dates the tests were performed,

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the time of sample preparation and analysis if the required holding time for either activity is less than or equal to 72 hours;

h) reference to the sampling plan and procedures used by the laboratory where these are relevant to the validity or application of the results;

i) the test results, units of measurement, an indication of when results are reported on any basis other than as received (e.g. dry weight), failures identified (Data Qualifiers list - Appendix G);

j) the name, function, and signature or an equivalent electronic identification of the person authorizing the test report, and the date of issue;

k) where relevant, a statement to the effect that the results relate only to the samples;

l) Any non-accredited tests or parameters shall be clearly identified as such to the client when claims of accreditation to this Standard are made in the analytical report or in the supporting electronic or hardcopy deliverables; and

m) A statement that the report shall not be reproduced except in full without written approval of the laboratory.

Exceptions to this standard approach for reporting are allowed with the approval of the QA Manager and should be documented; for DoD related work, both date and time of preparation and analysis are considered essential information, regardless of the length of the holding time, and shall be included as part of the laboratory report. If the time of the sample collection is not provided, the laboratory must assume the most conservative time of day (i.e., earliest).

28.2 Supplemental Test Report Information

When necessary for interpretation of the results or when requested by the client, test reports include the following additional information:

a) deviations from, additions to, or exclusions from the test method, information on specific test conditions, such as environmental conditions, and any non-standard conditions that may have affected the quality of the results, and any information on the use and definitions of data qualifiers;

b) a statement of compliance/non-compliance when requirements of the management system are not met, including identification of test results that did not meet the laboratory and regulatory sample acceptance requirements, such as holding time, preservation, etc.;

c) where applicable and when requested by the client, a statement on the estimated uncertainty of the measurement;

d) where appropriate and needed, opinions and interpretations. When opinions and interpretations are included, the basis upon which the opinions and interpretations are documented. Opinions and interpretations are clearly marked as such in the test report.

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e) additional information which may be required by specific methods or client;

f) qualification of results with values outside the calibration range as appropriate.

In addition to the items above, for test reports that contain the results of sampling, the following is provided when necessary for the interpretation of the results and if the information is available:

a) the date and time of sampling;

b) unambiguous identification of the material sampled;

c) the locations of the sampling;

d) a reference to the sampling plan and procedures used;

e) details of any environmental conditions during sampling that may affect the interpretations of the test results;

f) any standard or other specification for the sampling method or procedure, and deviations, additions to or exclusions from the specification concerned.

28.3 Environmental Testing Obtained from Subcontractors

Test results obtained from tests performed by subcontractors are clearly identified on the test report by subcontractor name and/or accreditation number.

The subcontractors report their results in writing or electronically. A copy of the subcontractors report is made available to the client if requested.

28.4 Electronic Transmission of Results

All test results transmitted by telephone, fax, telex, e-mail, or other electronic means comply with the requirements of the TNI Standard and associated procedures to protect the confidentiality and proprietary rights of the client (see Section 22- "Environmental Methods and Method Validation").

28.4.1 Electronic Data Deliverables

The IT Manager and Project Manager coordinate report generation using Promium Element DataSystem LIMS with assistance from the Office Assistant. The reporting requirements and the process to generate reports are described in Standard Operating Procedure MIS053. However, since each client may require their own format, SOP MIS053 generally addresses how to verify the EDD to insure its accuracy and agreement with the final report. Weck Laboratories, Inc. makes a concerted effort, whenever possible, to reduce the amount of hand entering of data to avoid transcription errors. Results from the instruments are electronically processed into the LIMS using Promium's Data Tool or various other electronic means (typically Microsoft Excel).

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28.5 Amendments to Test Reports

Material amendments to a test report after it has been issued are made only in the form of another document or data transfer. All supplemental reports meet all the requirements for the initial report and the requirements of this ***Quality Manual***.

Amended test reports include the statement, ”Supplement to Certificate of Analysis, identification number’ or an equivalent form of wording to assure they can be differentiated from other test reports.

When it is necessary to issue a complete new report, the new report is uniquely identified and contains a reference to the original that it replaces.

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Appendix A

Ethics and Data Integrity Policy

Weck Laboratories, Inc. has developed a proactive program for prevention and detection of improper, unethical or illegal actions. A main component of this program is the periodic training and communications that the employees receive from management about the ethics policy and the utmost importance of an honest and ethical behavior in all activities performed at the laboratory.

Proper ethical conduct in the laboratory is strictly enforced. The Company's Code of Ethics is presented to current and prospective employees in both the QA manual and the Employee Handbook.

The Data Integrity Plan, which includes the description of the data integrity procedures, serves to combine the elements currently in place and document further procedures to ensure our compliance with requirements in the TNI standard and from other regulatory agencies.

These procedures include the following elements:

- data Integrity training
- signed data integrity documentation for all laboratory employees
- in-depth, periodic monitoring of data integrity
- data integrity procedure documentation.

The data integrity procedures are signed and dated by senior management. These procedures and the associated implementation records are properly maintained and made available for assessor review. The data integrity procedures are annually reviewed and updated if necessary by management.

The Data Integrity Plan also provides a mechanism for confidential reporting of data integrity issues in the laboratory. A primary element of the mechanism is to assure confidentiality and a receptive environment in which all employees may privately discuss ethical issues or report items of ethical concern. In instances of ethical concern, the mechanism also includes a process whereby laboratory management is to be informed of the need for any further detailed investigation.

Each employee is required to understand and sign a Data Integrity Agreement, contained in the Data Integrity Plan document. The Laboratory Ethics seminar that is presented as a refresher to current employees on an annual basis and as part of the hiring process for new employees include elements describing examples of improper and illegal actions, how to identify appropriate and inappropriate laboratory and instrument manipulation practices, guidance for manual integration practices and consequences of unethical or improper behavior.

Punishment for improper, illegal or unethical activities range from suspension to termination, depending on the degree and nature of the unethical activity.

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Employees are required and encouraged to bring up to management any improper activities they detect or are suspicious of. Any incident reported is immediately investigated by the management and the person or persons involved are subject to disciplinary actions.
The Management shall also monitor the program for detecting improper, unethical or illegal action by performing internal proficiency testing (single or double blind), reviewing of analytical data post-analysis, performing electronic data audits using special software as Mint Miner® and providing an open door policy for employees to report any suspicious activity without fears.

In order to assist the laboratory technical personnel in performing their duties without detrimental influences, it is the policy of the Company that the laboratory be impartial and that it and its personnel are free from any undue commercial, financial and other pressures which might influence or adversely affect their normal performance having an impact on the quality of the work they produce or their technical judgment. By this policy all laboratory personnel dedicated to technical activities should not be influenced by, or involved in any financial or commercial matter while performing laboratory work. If any employee feels that he or she might be under any kind of pressure as described above, the Laboratory Director must be notified immediately. Additionally, the Laboratory will not engage in any activities that may endanger the trust in its independence of judgment and integrity in relation to its environmental testing.

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CODE OF ETHICS

Weck Laboratories, Inc. is committed to ensuring the integrity of our data and meeting the quality needs of our clients. We pledge to manage our business according to the following principals:

- To produce results that are technically sound and legally defensible;
- To assert competency only for work for which adequate equipment and personnel are available;
- To present services in a confidential, honest, and forthright manner;
- To have a clear understanding with the client as to the extent and kind of services to be rendered;
- To provide employees with guidelines and an understanding of the ethical and quality standards required in this industry;
- To operate facilities in a manner that protects the environment and the health and safety of employees and the public;
- To obey all pertinent federal, state, and local laws and regulations;
- To continually improve product and service quality;
- To treat employees equitably, acknowledge their scientific contributions, and provide them with opportunities for professional growth and development;
- To recognize and respond to community concerns; and
- To deal openly, honestly, and fairly in all business and financial matters with employees, clients and the public.

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Appendix B

Laboratory Organization Chart and Resumes of Key Personnel

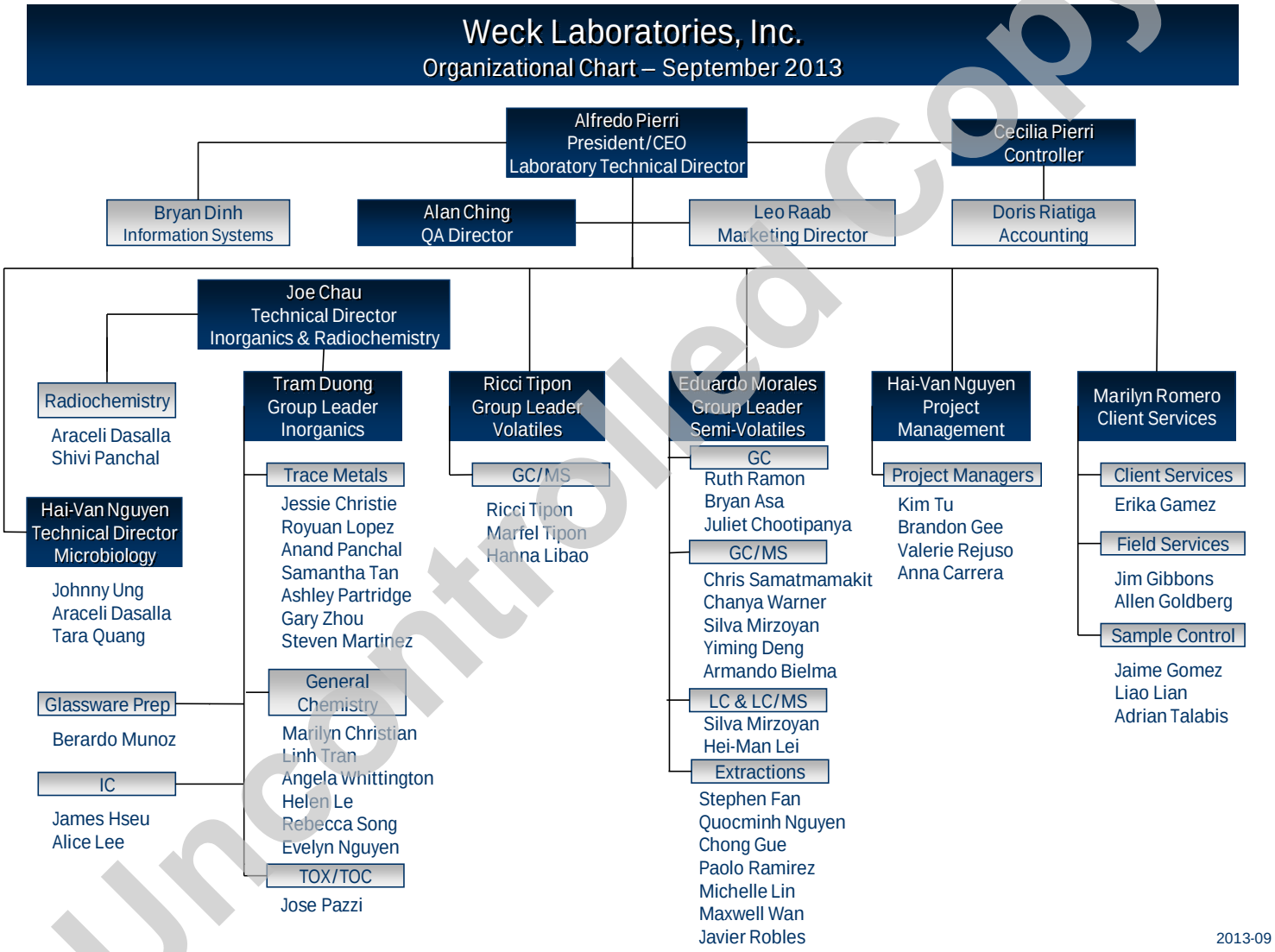

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RESUMES OF KEY PERSONNEL

Name	Position
Alfredo Pierri	President – Laboratory Director
Alan Ching	Director of QA - QA Officer
Joe Chau	Technical Director Inorganics/Radiochemistry and Safety Officer
Hai-Van Nguyen	Technical Director Microbiology - Senior Project Manager
Ricci Tipon	Technical Director Volatile Organics
Marilyn Romero	Customer Service Manager
Tram Duong	Inorganic Section Group Leader
Eduardo Morales	Organic Section Group Leader

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ALFREDO E. PIERRI

Title

President, Laboratory Director

Education

M.S. (equiv.) - University of Buenos Aires, Argentina, 1978. Organic Chemistry

- University of California, Los Angeles
Certificate in Hazardous Materials Control and Management, 1991 - 1993

Affiliations

American Chemical Society, member
American Council of Independent Laboratories (ACIL), member
The NELAC Institute, member
AOAC, member

Professional Experience

Jan/1987 to Present	Weck Laboratories, Inc., City of Industry, CA Full Service Environmental Testing laboratory
Sep/1984 to Dec/1986	SCS Engineers, Long Beach, CA Environmental Testing laboratory
Jul/1979 to Aug/1984	Argentina Atomic Energy Commission, Buenos Aires Government Agency – Research and Development

Mr. Pierri has extensive experience in analytical chemistry. Most of his work in this field has been in the application and development of instrumental methods of analysis for organic analytes using GC, GC/MS, HPLC, IR and UV-Visible spectrometry. He has also worked in Spectrometric techniques for metals analysis such as Atomic Absorption with flame and graphite furnace and Inductively Coupled Plasma with Optical Emission and Mass Spectrometry.

Since 1984 he has been working exclusively in the environmental field obtaining in 1993 the certification as Registered Environmental Assessor (REA-04975) from the California Environmental Protection Agency.

As Laboratory Director, Mr. Pierri is responsible for all laboratory operations including the supervision of the overall performance of the laboratory, revision of analytical reports and Quality Assurance Program, provision of technical assistance and direction to laboratory personnel and consulting with clients about technical and regulatory issues.

Mr. Pierri is well acquainted in all aspects of environmental regulations at Federal and State level, providing consulting services and guidance to clients in regulatory compliance and chemical treatment issues as well as understanding and interpreting analytical data.

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Other relevant experience and projects in which Mr. Pierri has participated are as follows:

- For over 22 years provided Project Management for large environmental monitoring projects for wastewater treatment plants, desalination plants, groundwater studies, potable water compliance monitoring and unregulated contaminants studies managed by the EPA such as ICR, UCMR 1 and UCMR 2. These projects required dealing with significant technical issues, regulatory compliance and innovative analytical methods.
- Characterization of wastes to be classified as hazardous as per State of California and Federal Regulations.
- Developing of analytical methods for emerging contaminants in water using GC/MS, LC/MS and other analytical techniques and writing the operating procedures.
- Identification and selection of new laboratory equipment for the laboratory
- Determination of contamination in soil and groundwater due to leaking underground storage tanks.
- Design and implementation of a Quality Assurance Program based on NELAC requirements for the laboratory, writing of the QA manual and training of laboratory personnel.
- Developing and implementation of an Ethics Training Program for the Laboratory, writing the documentation and training course for laboratory employees.
- Interpretation of analytical data and compliance with regulations for drinking water for different potable water purveyors in Southern California.
- Compliance for wastewater discharges with local regulatory agencies and NPDES permits.
- Consulting services to industrial clients on pre-treatment of effluents in order to minimize organic matter and solids and reduce costs in taxes imposed by POTWs.
- Identification of unknown materials by chemical and physical methods.
- Implementation of a LIMS and use of personal computers for data acquisition, handling, and reporting.
- Teaching of Analytical Organic Chemistry at University Level for MS program.

Participation in Seminars and Conferences

Over the years, Mr. Pierri has participated in innumerable conferences and technical meeting involving environmental testing, environmental policy and remediation.

He has been speaker in several conferences and technical meetings related to environmental monitoring in general and emergent contaminants in particular.

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ALAN CHING

Title

Director of Quality Assurance/QA Manager

Education

B.S. - Chu Hai College, Hong Kong, 1985
Chemistry
Shangai University of Technology, China
Analytical Chemistry Courses 1978 - 1981

M.S. - California Polytechnic University, Pomona
Analytical Chemistry, 1997

Professional Experience

Oct/1990 to Present	Weck Laboratories, Inc., City of Industry, CA Full Service Environmental Testing laboratory
Jan/1985 to Jun/1989	Dinippon Ink and Chemical, Sheng Zheng, China Chemical Manufacturing Company

Mr. Ching' primary experience is in the organic analysis field although he has performed as bench chemist inorganic and metal analyses as well. At Weck Labs, he has hands on experience in GC, GC/MS, HPLC and organic extractions.
Mr. Ching has developed many analytical procedures for volatile organic compounds, pesticides, herbicide and semivolatile organic analysis.
As lab supervisor, Mr. Ching has provided training and technical advice to bench chemists in the organic section.
Mr. Ching has also served in the past as QA Manager being instrumental in developing the QA/QC program, obtaining accreditation under NELAC for the laboratory, writing the QA Manual and monitoring its implementation.
Mr. Ching also provides technical support to clients in the areas of Quality Assurance, analytical chemistry and regulatory compliance.

Other relevant experience and projects in which Mr. Ching has participated are as follows:

- Project Management for ICR, UCMR 1 and UCMR 2 analysis, including method development, interaction with Utilities and reporting to the EPA.

- Analysis of environmental samples for metals, and other elements by atomic absorption and ICP spectrometry using flame, hydride generation, cold vapor and graphite furnace.

- Hazardous waste characterization by different analytical techniques.

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- Maintenance and troubleshooting of GC, GC/MS and HPLC instrumentation.
- Separation and detection of four different arsenic compounds using ion exchange chromatography and UV detection. (Master's degree project).
- Development of new methods for UCMR testing and other emergent contaminants
- Developing a comprehensive QA/QC program for the Laboratory in compliance with NELAC and ISO 17025.

Participation in Seminars and Conferences

Mr. Ching regularly attends many technical meeting regarding technical and regulatory issues. He has participated in NELAC conferences and other meeting related to Quality Assurance and regulatory compliance issues.

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JOE CHAU

Title

Technical Director Inorganic

Education

B.S. - California Polytechnic University, Pomona, CA, 1988
Electrical Engineering

B.S. - California Polytechnic University, Pomona, CA, 1988
Chemistry, Industrial Option

- University of California, Irvine
Certificate in Hazardous Materials Control and Management, 1991

Professional Experience

Sep/1989 to Present	Weck Laboratories, Inc., City of Industry, CA Full Service Environmental Testing laboratory
Sep/1988 to Sep/1989	Lights of America, Walnut, CA Electrical Engineering

Mr. Chau has extensive experience in environmental analysis, especially for inorganic and physical parameters.
He has been working as analytical chemist for inorganic and wet chemistry determinations, metal analyses by Flame and Graphite furnace AA, ICP, ICP-MS and Cold vapor AA and AF. Mr. Chau has been instrumental in developing analytical methods for trace metal analyses in a variety of matrices, including brines and sea water. He has also developed for the laboratory especially methods for physical parameters, metal speciation and non-routine determinations. As lab supervisor, Mr. Chau has provided guidance, technical advice and training to bench chemists and other lab personnel and has managed lab operations to improve logistics such as sample receiving and project management

Mr. Chau is an expert in spectroscopic analysis and provides advice to clients about technical and QA/QC issues.

Other relevant experience and projects in which Mr. Chau has participated are as follows:

- Coordination of monitoring projects that requires large number of analysis on short turnaround time for metals.
- Supervision of lab personnel for the Inorganic Section

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- Development of analytical procedures for the determination of environmental samples by ICP-MS in particularly difficult matrices

- Develop of methods by atomic fluorescence and amalgamation for ultra trace level analysis of mercury.

- Design of a clean room and develop protocols for its operation for analysis of trace metals in ambient waters and ultra trace levels of mercury

- Maintenance and troubleshooting of spectroscopy instrumentation.

- Design and improvement of sample digestion procedures for metal analysis to reduce contamination and improve recoveries.

- Development of analytical methods for speciation analysis of metals, including the use of hyphenated analytical techniques.

Participation in Seminars and Conferences

During his time at Weck Laboratories, Mr. Chau has participated in many technical and user meetings provided by spectroscopy equipment manufacturers, such as Perkin Elmer, Thermo and Agilent.
He routinely participates in technical conferences about environmental analysis, where technical issues, new techniques and regulatory subjects are discussed; they include NEMC, NELAC and Pittcon, among others.

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HAI-VAN NGUYEN

Title

Senior Project Manager – Technical Director Microbiology

Education

B.S. - California Polytechnic University, Pomona, CA, 2000
Biology, Minor in Chemistry

University of California, Irvine, CA, 2008
Environmental management Certificate Program

Professional Experience

Apr/2000 to Present Weck Laboratories, Inc., City of Industry, CA
Full Service Environmental Testing laboratory

Ms. Nguyen has extensive experience in the environmental laboratory. She has been a bench chemist for inorganic, bacteriological testing, HPLC, GC and GC/MS, which has given her a well rounded view of the operation of the environmental laboratory in all its aspects. Other important tasks completed include assisting the QA Manager in preparing SOPs and updating the program.
As Technical Director for Microbiology she oversees the department and provides training to analysts.
Ms. Nguyen is also very well versed in compliance regulations for potable water and wastewater programs, as well as interpretation of analytical data.
In her position as Senior Project Manager, she has managed many large environmental projects for potable water, wastewater and groundwater investigations, proving consulting to clients and interacting with regulatory agencies.

Other relevant experience and projects in which Ms. Nguyen has participated are as follows:

- Managing testing projects for large clients.
- Assisting the QA Manger in supervising and designing QA/QC operations.
- Writing and upgrading of SOPs.
- Evaluation and reviewing analytical data for inorganic analysis, HPLC, GC, GC/MS and wet chemistry methods.
- Reviewing analytical data for microbiological determinations and providing technical support to analysts.

Participation in Seminars and Conferences

Ms. Nguyen regularly participates in technical seminars and meeting regarding regulatory compliance issues.

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RICCI TIPON

Title

Group Leader – Technical Director GC/MS volatiles

Education

B.S. - University of the Philippines at Los Banos, 1986
Microbiology

Professional Experience

Aug/1996 to Present	Weck Laboratories, Inc., City of Industry, CA Full Service Environmental Testing laboratory
Apr/1996 to Aug/1996	RCH Laboratories, Dominguez, CA Wastewater testing Laboratory
Jul/1992 to Apr/1996	LVD Phils, Inc., Philippines Pharmaceutical Manufacturing Company

Ms. Tipon has extensive experience in the analysis of volatile organic compounds by GC/MS using purge and trap as the front end. She provides troubleshooting and maintenance of instruments, training of analysts and develops and improves analytical methods used for volatile organic constituents in potable water, wastewater, groundwater and soil.
Ms. Tipon has also experience in the analysis of semivolatile organics by GC and GC/MS and helps in performing secondary data review of analytical batches for these techniques.
As a microbiologist, Ms. Tipon provides consulting to lab personnel in the Microbiology department.

Other relevant experience and projects in which Ms. Tipon has participated are as follows:

- Microbiological determinations in environmental samples
- Review data packages generated by GC/MS for volatile and semivolatile organics
- Development of analytical methods for trace level contaminants in water by Purge and Trap and GC/MS
- GC/MS troubleshooting and maintenance
- Analysis of water, wastewater, soil and hazardous waste samples by GC/MS for volatile organics
- Analysis of air samples by GC/MS.

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MARILYN ROMERO

Title

Customer Service Manager - Project Coordinator

Education

Mt. San Antonio College, Walnut, CA. AA, Liberal Arts, 1991

Certification

Grade II Water Treatment Operator CA DHS

Professional Experience

Mar/1985 to Present	Weck Laboratories, Inc., City of Industry, CA Full Service Environmental Testing laboratory

Ms. Romero has extensive experience in customer service providing assistance to large and medium size environmental testing projects with logistic support and report preparation. She has also successfully provided Project Management to a large number of potable water and wastewater testing projects.
Ms. Romero is also very knowledgeable about environmental regulations, especially in the field of potable water testing.

Other relevant experience and projects in which Ms. Romero has participated are as follows:

- Sample log-in including verification of proper containers, storage conditions, holding times and documentation. Sample custodian
- Preparation of analytical reports using LIMS and other computer programs.
- Customer support for environmental analysis.
- Archival and retrieval of analytical results and related documentation.
- Project Management

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TRAM DUONG

Title

Group Leader – Inorganic Section

Education

B.S. - University of Southern California, 1998
Nursing Minor Biology

Professional Experience

Jul/2000 to Present Weck Laboratories, Inc., City of Industry, CA
Full Service Environmental Testing laboratory

Ms. Duong is responsible for the supervision of the section performing metal analyses (ICP, ICP-MS, and CVAA) and wet chemistry determinations. She performs training of personnel, troubleshooting and maintenance of equipment and data review.
As a bench chemist, Ms. Duong became very familiar with the operation of all instrumentation within her section and has been instrumental in selecting and setting up new lab equipment.
Ms. Duong duties also involve scheduling daily tasks and performing data reviews. She also assists the Technical Director with tasks related to the section and interacts with the QA Manager.

Other relevant experience and projects in which Ms. Duong has participated are as follows:

- Developing analytical methods by ICP and ICP-MS for environmental samples.
- Improving analytical methods by optimizing conditions for different analytical methods.
- Writing Standard Operating Procedures for newly developed methods and recertifying current SOPs.
- ICP and ICP-MS troubleshooting and maintenance

Participation in Seminars and Conferences

Mr. Duong regularly attends user meetings and technical seminars for subjects related with his field.

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EDUARDO MORALES

Title

Group Leader – GC/MS semivolatiles

Education

B.S. - California State University, Los Angeles, 2001
Biochemistry

Professional Experience

Jul/1999 to Present Weck Laboratories, Inc., City of Industry, CA
Full Service Environmental Testing laboratory

Mr. Morales is responsible for the operation and maintenance of GC, GC/MS and extraction equipment used for semivolatile organic analysis. Over the years he has developed many methods for emergent contaminant testing using non-routine GC/MS techniques such as MS/MS, CI and PTV.
Mr. Morales also provides training for new analysts in the field of GC and GC/MS and has been involved in the decisions for purchasing new instruments for the section. He also provides secondary reviews on data packages produced in his section.

Other relevant experience and projects in which Mr. Morales has participated are as follows:

- Developing of methods for ultra trace level analysis of NDMA and other nitrosamines by Liquid-Liquid and Solid Phase extractions coupled with GC/MS in various forms.
- Improving GC/MS analytical methods by optimizing conditions.
- Writing Standard Operating Procedures for newly developed methods.
- GC/MS troubleshooting and maintenance
- Developing of methods for emergent contaminants and low level pesticides.

Participation in Seminars and Conferences

Mr. Morales regularly attends user meetings and technical seminars for subjects related with his field.

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Appendix C

Laboratory Floor Plan

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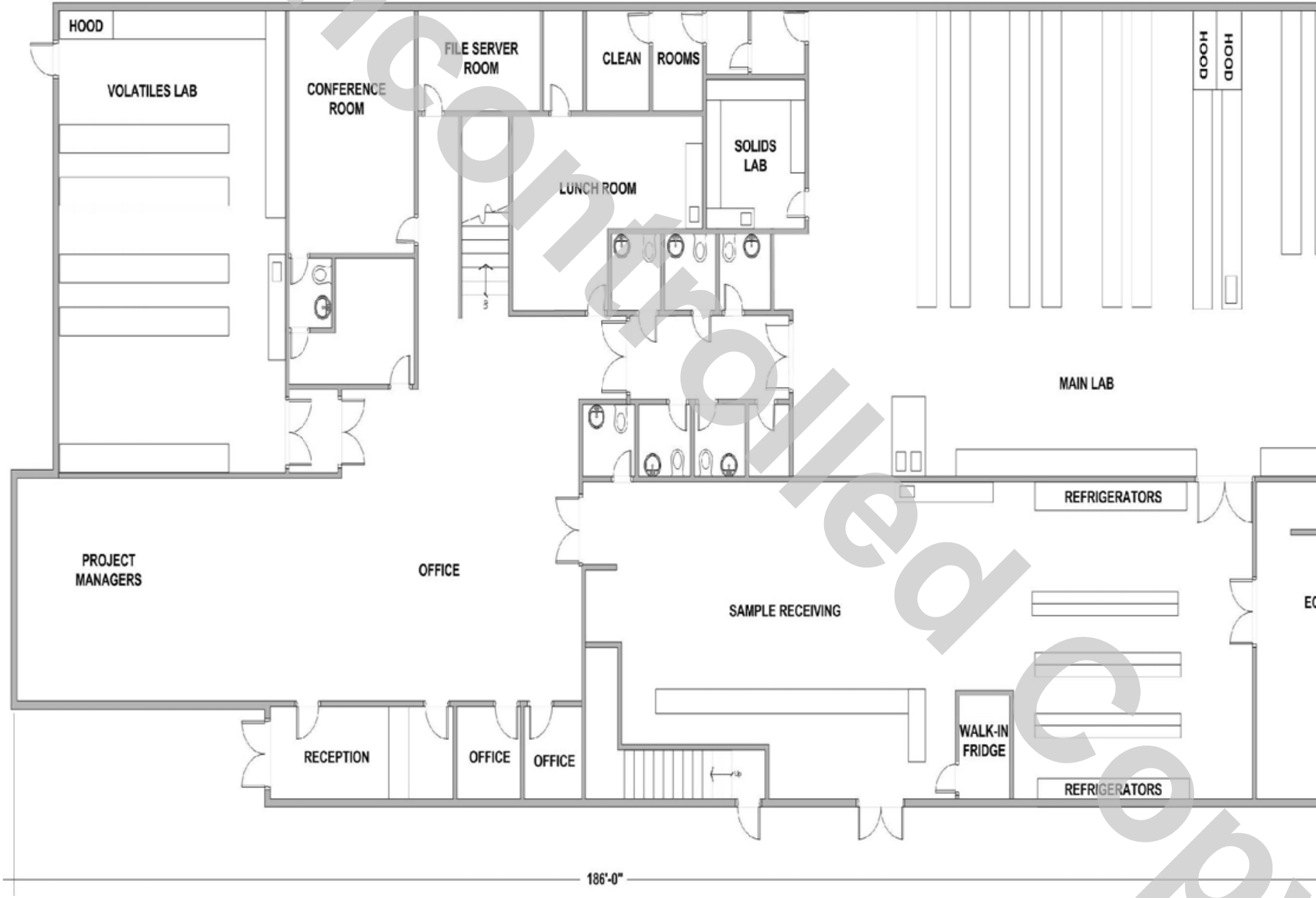

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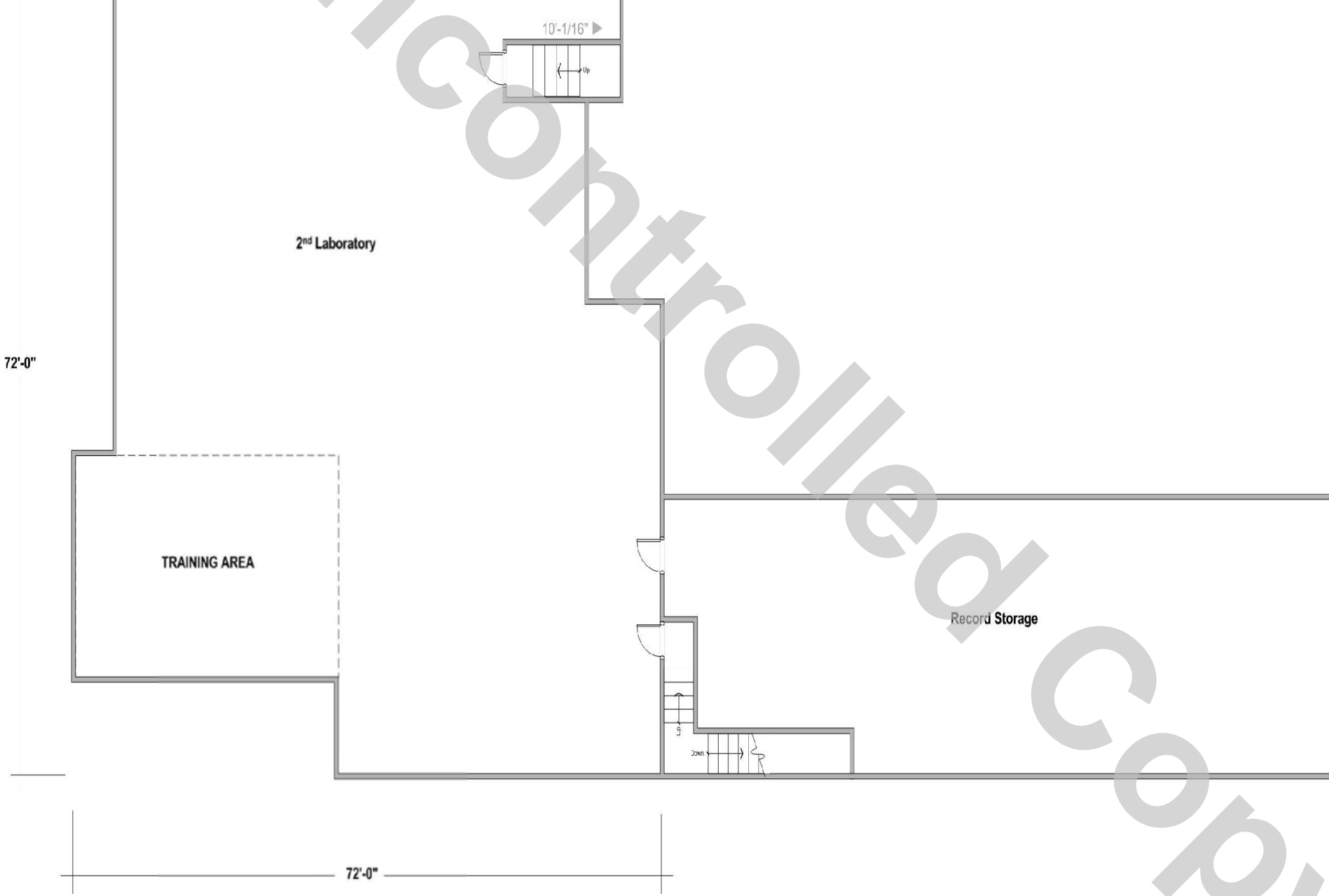

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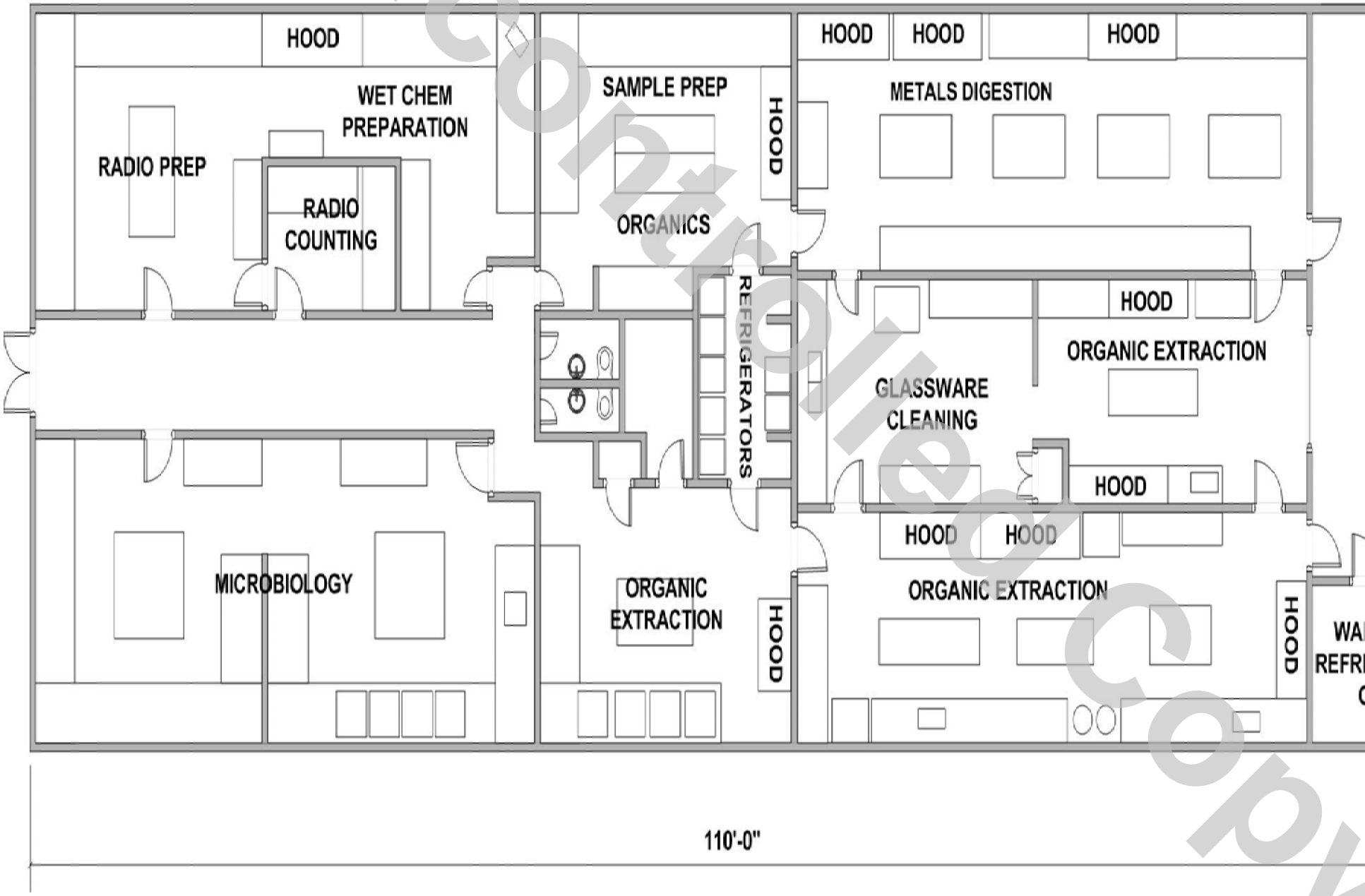

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Appendix D

QC Acceptance Limits

The Acceptance Limits for QC determinations are in some cases mandatory limits and in other cases the limits are updated periodically from past results. This process is performed though the LIMS. For current acceptance limits please refer to the LIMS.

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Appendix E

List of Standard Operating Procedures (SOPs)

Administration - Miscellaneous and Administrative SOPs

File Name	Rev No	Rev Date	Method	Title
MIS001	19	Dec-12	General	Sample Receiving, Log in, Storage and Disposal
MIS002	5	Mar-09	Sampling	Industrial Wastewater Sampling Instructions
MIS003	4	Dec-10	General	Back Up and Restoration Systems
MIS004	5	Apr-08	General	Chemicals, Standards and consumable materials, Receipt, Storage and Preparation of Solutions
MIS005	4	Dec-10	General	Procedures for Start Up and Shut Down the File Servers
MIS007	3	Mar-10	General	Sample Container Management and Shipping
MIS008	4	Aug-11	General	Waste Management and Laboratory Disposal Practices
MIS009	4	Jul-11	General	Receiving and Handling Foreign Soil Samples
MIS010	2	Mar-08	Sampling	Sampling Instructions for Protected Groundwater Supplies and Water Supplies with Treatment
MIS011	4	Mar-08	General	Preparation, Approval, Distribution, & Revision of standard Operating Procedures
MIS012	2	Mar-08	General	Significant Figures and Rounding
MIS013	2	Mar-08	General	Generation and Utilization of Control Charts
MIS014	6	Mar-12	General	Performing Internal Audits
MIS015	6	Sep-11	General	Handling and Analysis of Proficiency Testing (PT) Samples
MIS016	5	Mar-12	General	Corrective Action Procedures
MIS017	3	Apr-08	General	Maintenance, Utilization and Review of Laboratory Logbooks
MIS018	5	Jun-09	General	Internal Laboratory Data Verification and Review
MIS019	3	Apr-08	General	Resolution of Customer Complaints
MIS020	3	Apr-08	General	Calibration and Verification of Analytical Balances
MIS021	3	Apr-08	General	Calibration and Maintenance of Mechanical Pipettes
MIS022	3	Dec-10	General	LIMS Security Systems
MIS024	2	Apr-08	General	DI Water Quality Checks
MIS025	5	Jul-12	General	Control of Data and Manual Data Entry
MIS026	3	May-09	General	Taking Representative Samples and Sub-samples in the Laboratory.
MIS028	4	Mar-09	General	Standard Cleaning Protocols for Containers and Labware
MIS029	3	Apr-08	General	Calibration and Verification of Thermometers
MIS030	5	Jun-11	General	Performing Managerial Reviews
MIS031	7	Sep-11	General	Calibration and Verification of Lab Support Equipment
MIS032	3	Mar-09	General	Calculation of Method Detection Limits (MDL) and Reporting Limits (RL)
MIS033	2	Apr-08	General	Rejection/acceptance Criteria for Special Analyses
MIS034	5	Sep-11	General	Performing Initial Demonstration of Capability (IDC)
MIS035	5	Jun-11	General	New Employee Training
MIS036	3	Apr-09	General	Use of Areas of Incompatible Activities
MIS037	4	Jul-11	General	Computers and Electronic Data Requirements
MIS038	2	Apr-08	General	Chain of Custody Procedures for Legal and Evidentiary Custody of Samples
MIS039	2	Apr-08	General	Proper Raw Data Handling and Manual Integration Procedures
MIS040	3	Jun-08	General	Archival System for Instrument Raw Data

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MIS041	3	Jun-11	General	Procedures for Subcontracting Client Samples
MIS042	5	Jun-11	General	Outside Support Services and Supplies
MIS043	4	Oct-11	General	Implementation of the Business Ethics and Data Integrity Policy
MIS044	4	Jul-11	General	Control of Nonconforming Environmental Testing
MIS045	4	Mar-09	General	Control of Records and Documents
MIS046	3	Mar-09	General	Training of Laboratory Personnel
MIS047	4	Mar-12	General	Estimating the Uncertainty of Measurements
MIS048	4	Apr-09	General	Development and Maintenance of Test Method SOPs
MIS049	2	Apr-08	General	Health and Safety Training Procedures
MIS050	1	Oct-08	General	Disaster Procedures
MIS051	2	May-12	General	Sample Disposal
MIS052	2	Mar-10	General	Acceptance criteria for analyte confirmation
MIS053	2	Apr-12	General	Project Management, Reports Generation and Electronic Data Transfer
MIS055	1	May-12	General	Preventive Maintenance of Laboratory Analytical Instruments
MIS056	1	Oct-12	General	Compiling Level II, III and IV Data Packages
MIS057	1	Jul-13	General	Operating an company vehicle

Inorganic Department - Microbiology SOPs

File Name	Rev. No	Rev Date	Method	Title
MIC003	8	Feb-09	SM9223	Analysis of Total Coliform and E. Coli in Water by P/A Colilert™ and Enumeration by the Quanti-Tray® method, SM9223
MIC004	6	Feb-09	SM9215B/SimPlate	Analysis of Heterotrophic Plate Count by Pour Plate and SimPlate Methods, SM 9215B
MIC005	8	Jan-10	SM9221	Analysis of Total and Fecal Coliform in Water by Multiple Tube Fermentation Technique, SM9221
MIC006	5	May-09	QAQC	Quality Assurance for Microbiological Tests
MIC007	2	Jul-09	QAQC	Using New Methods or Test Kits for Microbiological Determinations
MIC008	3	Jul-09	QAQC	Verification of Support Equipment Used for Microbiological Determinations
MIC009	2	Apr-09	Enterolert	Bacteriological Analysis of Ambient Water Samples for Enterococci by Enterolert Presence/Absence and Quanti-Tray® Method
MIC010	1	Apr-09	Disposal	Disposal of Material Used for Microbiological Determinations
MIC011	1	Feb-10	SM9230B	Analysis of Fecal Streptococcus and Enterococcus in Water and Solid Samples by Multiple Tube Fermentation Technique, SM9230B
MIC012	1	Mar-11	SM9222BD	Analysis of Total and Fecal Coliform in Water by Membrane Filtration Technique, SM9222B and D
MIC013	1	Mar-11	1600	Analysis of *E. coli* in Water by Membrane Filtration Technique, EPA 1600
MIC014	1	Mar-11	1600	Analysis of Enterococci in Water by Membrane Filtration Technique, EPA 1600
MIC015	2	Feb-12	BAM	Detection of Salmonella by FDA-Bacteriological Analytical Manual (BAM) Method 8th Edition
MIC016	2	Dec-11	API 20E	Speciation of Bacteria belonging to the Family Enterobacteriaceae, using API 20 E Identification system from BioMerieux, INC
MIC017	1	Dec-11	AOAC997.02	Enumeration of Yeast and Mold in Food Samples by 3M Petrifilm Plating Method, AOAC 997.02
MIC018	1	Dec-11	BAM Ch 3	Aerobic Plate Count by FDA Bacteriological Analytical Manual (BAM) Ch.3

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MIC019	1	Jan-12	SM9217B	Determination of Assimilable Organic Carbon (AOC) by SM 9217B Mod.
MIC020	1	Feb-12	BAM Ch1	Sampling and Preparation of Sample Homogenate for Microbiological Determinations
MIC021	1	Feb-12	AOAC992.30	Confirmation of Total Coliform and E. Coli in Food Matrices by AOAC Official Method 992.30

Inorganic Department - Metals SOPs

File Name	Rev No	Rev Date	Method	Title
MET001	7	Jan-13	1311	Toxicity Characteristic Leaching Procedure (TCLP)
MET005	7	Jan-13	3010A	Acid Digestion of Aqueous Samples and Extracts for Total Metals by ICP and ICP-MS, EPA Method 3010A Modified
MET007	5	Sep-08	3050B	Acid Digestion of Sediments, Sludges and Soils, EPA Method 3050B
MET009	3	Sep-08	3050B Mod	Acid Digestion of Sediments, Sludges, Soils and Wipes, EPA Method 3050 Modified.
MET010	7	Sep-08	7471	Analysis of Mercury in Solid Matrices by Cold Vapor Atomic Absorption, EPA 7471A/B
MET011	5	Sep-08	245.1	Analysis of Hg in water by manual cold vapor technique EPA method 245.1
MET015	2	Jul-12	1420	Determination of Lead in Suspended Particulate Matter Collected from Ambient Air (Title 40 CFR Part 50, Appendix G)
MET017	8	Dec-09	6010	Analysis of Trace Metal in Water and Solid Matrices by ICP-AES, EPA Method 6010
MET018	10	Jul-10	200.8	Analysis of Trace Metals in Water by ICP-MS, EPA Method 200.8
MET019	8	Aug-12	6020	Analysis of Trace Metal in Water and Solid Matrices by ICP-MS, EPA Method 6020A
MET020	5	Sep-08	200.2	Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements, EPA Method 200.2
MET021	3	Sep-08	WET	Waste Extraction Test Procedure, Title 22 Part 66261.126 Appendix II
MET023	3	May-12	As-ICPMS	Analysis of Arsenic by Hydride Generation-ICPMS, EPA Method 200.8 Modified
MET024	3	May-12	Se-ICPMS	Analysis of Selenium by Hydride Generation-ICPMS, EPA Method 200.8 Modified
MET025	5	Dec-08	200.7	Analysis of Trace Metals in Water by ICP-AES, EPA Method 200.7
MET031	3	Sep-08	7470	Analysis of Mercury in Aqueous Samples and Liquid Waste by Cold Vapor Atomic Absorption, EPA 7470A
MET034	2	Jun-12	1631	Analysis of Low Level Mercury by CVAFS with Gold Amalgamation, EPA Method 1631E
MET035	1	May-07	245.7	Analysis of Low Level Mercury by CVAFS, EPA Method 245.7
MET036	1	Jan-10	1640	Determination of Trace Elements in Saline Waters by Direct Injection and Preconcentration and ICP-MS - EPA Method 1640
MET037	1	Jun-08	3500FeB	Determination of Ferrous Iron by the Phenantrloline Colorimetric Method, SM3500-Fe B
MET038	1	Oct-08	1638	Analysis of Trace Elements in Ambient Waters by ICP-MS - EPA Method 1638
MET039	1	May-09	SM2330B	Determination of Corrosivity (Langlier Index) in Water, SM 2330B

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MET040	1	Aug-10	1312	Synthetic Precipitation Leaching Procedure (SPLP), EPA Method 1312
MET041	1	Jul-11	3051A	Microwave Assisted Acid Digestion of Sediments, Sludge, Soils, and Oils, EPA Method 3051A
MET042	2	Feb-12	CPSC	Analysis of Lead and Heavy Metals in Consumer Products by Microwave Assisted Digestion and ICP-OES – CPSC Methods E1001-08.1, E1002-08.1 and E1003-09
MET043	1	Dec-11	200.8UCMR	Analysis of Trace Metal in Water and Aqueous Matrices by ICP/MS under UCMR 3 Program , EPA Method 200.8
MET044	1	May-12	LC-ICPMS	Determination of Arsenic and Selenium Species by HPLC/ICP-MS
MET045	1	Jul-12	CARB12	Determination of Inorganic Lead Emissions from Stationary Sources. Method 12
MET046	1	Jul-12	CARB436	Determination of Multiple Metals Emissions from Stationary Sources, CARB Method 436
MET047	1	Jan-13	3005A	Acid digestion of waters for total recoverable and dissolved metals for ICP (EPA 6010) and ICP/MS (EPA 6020)

Radio Chemistry Department - RadChem SOPs

File Name	Rev. No	Rev Date	Method	Title
RAD001	2	Nov-07	900.0	Determination of Gross Alpha and Gross Beta Radioactivity in Drinking Water, EPA Method 900.0
RAD002	1	Jul-05	SM7110C	Determination of Gross Alpha Radioactivity in Water by Coprecipitation, SM 7110C
RAD003	2	Apr-08	903.0	Determination of Alpha-emitting Radium Isotopes in Water, EPA Method 903.0
RAD004	1	Oct-05	All	Quality Control for Radiochemical Analysis
RAD005	1	Apr-06	All	The Procedure for Monitoring Radiation Measurement Instrumentation for Radioactive Contamination
RAD006	1	Apr-06	All	The Procedure for Handling, Storing and Establishing Expiration Dates for Reference Standards
RAD007	1	Jul-06	RA-05	Radiochemical Determination of Radium-228 in Water Samples, EPA Method Ra-05
RAD008	2	May-08	904	Radiochemical Determination of Radium-228 in Water Samples, EPA Method 904.0
RAD009	2	Feb-11	200.8	Spectrometric Determination of Uranium in Water Samples for Radiological Compliance, EPA Method 200.8
RAD010	1	Aug-08	SM7500Rn	Radiochemical Determination of Radon-222 in water samples, SM7500-Rn

Inorganic Department - Wet Chemistry SOPs

File Name	Rev No	Rev Date	Method	Title
WET001	11	Dec-09	300	Analysis of Anions by Ion Chromatography, EPA 300.0
WET004	10	Aug-12	SM5210B	Biological Oxygen Demand (BOD) Test, SM 5210B

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WET008	3	May-12	SM5540D	Non-ionic Surfactants as CTAS (Cobalt Thiocyanate Active Substances) SM 5540D
WET009	8	Oct-08	SM2120B	Analysis of Color in Water, SM 2120B
WET010	2	Oct-08	SM4500CNM	Analysis of Thiocyanate in Wastewater by SM 4500-CN M
WET013	3	Oct-08	140.1	Analysis of Odor in Drinking Water, EPA Method 140.1/SM 2150
WET018	4	Oct-08	SM4500CN G	Analysis of Cyanide Amenable to Chlorination in Water - Manual Colorimetric, SM 4500CN-G
WET021	7	Oct-08	1010	Ignitability by Pensky Marten Closed Cup Method, EPA Method 1010
WET022	4	Oct-09	SM2320B	Determination of Alkalinity by the Titrimetric Method, SM 2320B
WET024	5	Nov-09	SM2310B	Analysis of Acidity as $CaCO_3$, SM 2310B
WET027	3	Nov-09	3060A	Alkaline Digestion for Analysis of Hexavalent Chromium in Solid Matrices, EPA Method 3060
WET028	5	Jan-08	SM4500 H B	pH (Electrometric), SM 4500-H+ B
WET029	4	Dec-08	SM3500 Cr D	Analysis of Hexavalent Chromium in Water - Manual Colorimetric, SM 3500-Cr D
WET032	5	Sep-12	SM4500 S2 D	Analysis of Dissolved Sulfide - Methylene Blue Method, SM 4500-S= D)
WET033	4	Dec-08	9030/9034	Analysis of Acid-Soluble and Acid-Insoluble Sulfides, EPA Method 9030B
WET038	4	Jun-10	SM4500Cl G	Analysis of Total Residual Chlorine by Colorimetry with DPD, SM 4500Cl G
WET039	7	Jan-08	SM2510B	Determination of Specific Conductance, SM 2510B
WET041	8	May-11	SM2540C	Filterable Residue (TDS) by Gravimetric analysis, SM 2540C
WET042	7	Dec-08	SM2540D	Determination of Non-filterable Residue (TSS) by Gravimetry, SM 2540D
WET043	5	Dec-09	SM5540C	Determination of Methylene Blue Active Substances (MBAS) by Spectrophotometry, SM 5540C
WET044	2	Dec-08	253B	Analysis of Thiosulfate and Sulfite by Iodometric Titration, LACSD Procedure 253B
WET046	3	Dec-08	SM2540B	Determination of Total Residue (TS) by Gravimetry, SM 2540B
WET047	4	Jun-08	160.4	Determination of Volatile Residue (VS) by Gravimetry, EPA Method 160.4
WET048	4	Dec-08	SM2540F	Determination of Settleable Residue (SS) by Volumetric Imhoff Cone, SM 2540F
WET050	6	May-10	410.4	Determination of Chemical Oxygen Demand in Water by Colorimetry, EPA Method 410.4
WET055	7	Nov-09	1664	Determination of Oil & Grease (HEM and SGT-HEM) by Solid Phase Extraction and Gravimetry, EPA Method 1664A
WET056	5	May-09	180.1	Determination of Turbidity by Nephelometric Method, EPA Method 180.1
WET059	3	May-12	USPerox	Analysis of Hydrogen Peroxide in Water by the US Peroxide Method
WET062	3	Dec-08	9065M	Analysis of Total Recoverable Phenolics in Solid Matrices, EPA Method 420.1 Modified
WET064	3	Mar-10	9045C	Determination of pH in Soil and Solid Matrices, EPA Method 9045C
WET065	3	May-09	9040B	Determination of pH in Liquid Waste and Multiphase Waste, EPA Method 9040B
WET069	2	May-09	SM2340B/ EPA 200.7	Determination of Hardness by Calculation, SM 2340B/EPA 200.7/Langlier Index
WET070	3	May-12	SM4500ClO2 D	Analysis of Chlorine Dioxide by Colorimetric Method with DPD, SM 4500-ClO2 D
WET072	3	Nov-09	SM4500 O G	Determination of Dissolved Oxygen by Membrane Electrode Method, SM 4500-O G
WET073	3	Mar-10	SM4500SO3 B	Analysis of Sulfite by Iodometric Method, SM4500SO_3^{2-} B

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WET074	3	Jun-12	9010/9014	Distillation and Analysis of Total and Amenable Cyanide in Waste and Solid Matrices ,EPA Method 9010B/9014
WET075	2	Nov-09	CCR ch10	Determination of Ignitability in Waste, CCR Chapter 10, Article 3
WET077	2	Mar-10	CCR ch10	Determination of Corrosivity in Waste, CCR Chapter 10, Article 3
WET078	3	May-11	SM5910B	Determination of UV Absorbing Constituents (UV-254), SM 5910B
WET079	2	Dec-09	7196	Analysis of Hexavalent Chromium by Manual Spectrophotometric, EPA Method 7196A
WET080	4	Apr-10	365.3	Analysis of Total Phosphorus and Ortho Phosphate in Water by Manual Colorimetric Method, EPA Method 365.3
WET082	1	May-00	E 203-75	Water by Karl Fischer ASTM E-203-75
WET084	3	Apr-13	353.2	Analysis of Nitrate and Nitrite by Automated Colorimetry and Segmented Flow Analysis, EPA Method 353.2
WET086	2	May-10	350.1	Analysis of Ammonia in Water by Automated Colorimetry, EPA Method 350.1
WET087	2	May-09	365.1	Analysis of Total Phosphorus in Water by Acid Persulfate Digestion and Automated Colorimetry, EPA Method 365.1
WET088	2	May-09	365.1	Analysis of Orthophosphate in Water by Automated Colorimetry, EPA Method 365.1
WET089	3	Jun-12	351.2	Analysis of Total Kjeldahl Nitrogen (TKN) in Water by Heating Block Digestion and Automated Colorimetry, EPA Method 351.2
WET091	2	May-12	335.4	Analysis of Total Cyanide in Water by Midi-Distillation and Automated Colorimetry, EPA Method 335.4
WET093	2	May-12	SM10200H	Analysis of Chlorophyll-a and Pheophytin-a, SM 10200-H
WET094	2	Oct-10	SM5710B	Determination of Trihalomethane Formation Potential (THMFP), SM 5710B
WET095	2	Jan-09	415.3	Determination of TOC and SUVA in Drinking Water, EPA Method 415.3
WET096	2	Jan-09	D6646-03	Analysis of the Accelerated Hydrogen Sulfide Breakthrough Capacity of Granular and Pelletized Activated Carbon, ASTM D6646-03
WET097	2	Jan-09	D2862	Standard Test Method for Particle Size distribution of Granular Activated Carbon, ASTM D2862-82
WET098	2	Jan-09	D2867	Standard Test Method for Moisture in Activated Carbon, ASTM D2867-83
WET099	2	Jan-09	D2866	Standard Test Method for Total Ash in Activated Carbon, ASTM D2866-83
WET100	2	Jan-09	D3802	Standard Test Method for Ball-Pan Hardness of Activated Carbon, ASTM D3802-79
WET101	2	Jan-09	D5029	Standard Test Methods for Water Solubles in Activated Carbon, ASTM D5029-98
WET102	2	Jan-09	D5832	Standard Test Methods for Volatile Matter Content of Activated Carbon, ASTM D5832-98
WET103	2	Jan-09	USFilter	Standard Test Methods for Contact pH Test Method
WET104	2	Jan-09	D93	Standard Method for Test for Flash Point by Pensky-Martens Closed Cup Tester, ASTM D93-73
WET105	1	Sep-07	420.4	Determination of Total Recoverable Phenolics in Water by Semi-Automated Colorimetry, EPA Method 420.4
WET106	2	Dec-10	160.4	Total, Fixed, and Volatile solids in solid and semisolid samples
WET107	1	Apr-10	SM 5220C	COD Titrimetric method
WET108	1	May-11	160.3M	Total Residue (TS) and Moisture Content by Gravimetric Method, Dried at 103-105ºC
WET109	1	Jun-11	SM10300C	Analysis of Dry and Ash-Free Weight (DAFW) by SM1030C (Section 5)

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WET110	1	Jan-13	9056A	Analysis of Anions in Soil and Solid Matrices by Water Extraction and Ion Chromatography, EPA 9056A
WET111	1	Sep-12	9071M	Lipids in tissue, EPA 9071M
WET112	2	Jan-13	ASTMD7511	Total Cyanide by Segmented Flow Injection Analysis, In-Line Ultraviolet Digestion and Amperometric Detection
WET113	1	Dec-12	OIA1677	Available Cyanide by Ligand Exchange and Flow Injection Analysis
WET114	1	Mar-13	350.1/351.2	Analysis of Ammonia and TKN by Gas Diffussion Segmented Flow Analysis (SFA) and Colorimetric Detection, EPA Methods 350.1 and 351.2

Organic Department - Organics SOPs

File Name	Rev. No	Rev Date	Method	Title
ORG003	9	Aug-12	SM5310C	Total Organic Carbon (TOC) and Dissolved Organic Carbon (DOC) by UV-Persulfate oxidation, SM 5310C
ORG004	10	Aug-13	SM5320B	Determination of Total Organic Halides (TOX) in Water by Adsorption-Pyrolysis-Titrimetric Method, SM 5320B
ORG005	7	Mar-08	8315A	Analysis of Ketones and Aldehydes by HPLC, EPA Method 8315
ORG006	7	Apr-08	8318	Analysis of N-Methylcarbamates by HPLC, EPA Method 8318
ORG007	1	Sep-92	9076	Analysis of Total Halogens and Total Extractable Organic Halides in Solid matrices, EPA Method 9076
ORG008	6	Oct-12	551.1	Analysis of Chlorination Disinfection Byproducts (DBPs) in Drinking water by Liquid-Liquid Extraction and GC/ECD, EPA Method 551.1
ORG009	12	Feb-11	8260B	Determination of Volatile Organic Compounds in Groundwater and Soil by GC/MS, EPA 8260B
ORG011	5	Jun-09	8330A	Analysis of Explosive Residues by HPLC
ORG013	6	Oct-10	8015B-GRO	Analysis of Volatile Petroleum Hydrocarbons (VPH, C6 to C10) in Soil and Water samples by P&T and GC/FID, EPA Method 8015
ORG014	4	Sep-01	8021A	Determination of Aromatic and Halogenated Volatiles by GC/PID and GC/ELCD, EPA Method 8021A
ORG015	7	Jan-10	8141A	Analysis of Organophosphorus Pesticides in Water and Solid Matrices by GC/NPD, EPA Method 8141A
ORG016	8	Jan-10	8081A	Analysis of Organochlorine Pesticides in Water and Solid Matrices by GC/ECD, EPA Method 8081A
ORG017	6	Sep-08	549.2	Analysis of Diquat and Paraquat by Solid Phase Extraction and HPLC-UV, EPA Method 549.2
ORG020	6	Apr-08	547	Analysis of Glyphosate by HPLC-Fluorescence, EPA Method 547
ORG022	5	Jun-10	508	Analysis of Organochlorine Pesticides and PCBs in Drinking Water by LL Extraction and GC-ECD, EPA Method 508
ORG023	6	Oct-10	8015B-DRO	Analysis of Diesel Range Organics in soil and water samples by GC-FID, EPA Method 8015
ORG025	3	Sep-12	EPA 24	Determination of Volatile Organic Content (VOC) in Paints and Related Coatings, EPA Method 24
ORG026	10	Apr-12	524.2	Determination of Volatile Organic Compounds in Water by GC/MS, EPA Method 524.2
ORG028	6	Mar-11	531.1	Analysis of N-Methylcarbamates in Water by Direct Aqueous Injection HPLC with Post Column Derivatization, EPA Method 531.1
ORG029	6	Oct-08	8151A	Analysis of Chlorinated Acid Herbicides in Water and Solid Matrices by GC-ECD, EPA Method 8151

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ORG030	6	Jan-10	504.1	Analysis of EDB, DBCP and 123TCP in Water by Microextraction and GC/ECD, EPA 504.1
ORG032	1	Mar-94	N1003	Analysis of Halogenated Hydrocarbons in Charcoal Tubes, NIOSH Method 1003
ORG033	5	Apr-08	632	Analysis of Diuron by HPLC-UV, EPA Method 632
ORG034	1	Jun-94	OSHA57	Analysis of 4,4-Methylenedianiline (MDA) in Air Filters, OSHA Method 57
ORG036	11	Jan-10	8270C	Analysis of Semi-Volatile Organic Compounds in Water and Solid Matrices by GC/MS, EPA Method 8270C
ORG037	5	Mar-01	548.1	Analysis of Endothall in Drinking Water by Solid Phase Extraction and GC/MS, EPA Method 548.1
ORG039	8	Apr-04	525.2	Analysis of Semi-volatile Organic Compounds in Drinking Water by Solid Phase Extraction and GC/MS, EPA Method 525.2
ORG040	5	Feb-01	625	Analysis of Semivolatile Organics in Wastewater by LL Extraction and GC/MS, EPA Method 625
ORG041	3	Apr-00	601/602	Analysis of Purgeable Halocarbons and Aromatics in Waste Water by GC-ELCD and GC-PID, EPA Method 601/602
ORG042	11	Jun-10	314	Analysis of Perchlorate in Water and Solid Matrices by Ion Chromatography, EPA Method 314.0
ORG043	5	May-10	8270M	Determination of 1,4 Dioxane in Water and Soil by L-L Extraction and Isotopic Dilution GC/MS, EPA Method 8270M
ORG045	5	Mar-10	3600	Cleanup Procedures for Organic Analyses, EPA Method 3600
ORG046	3	Feb-02	3500	Sample Preparation and Extraction for Hazardous Waste Samples, EPA Method 3500B
ORG047	3	Feb-02	3510	Separatory Funnel Liquid-Liquid Extraction, EPA Method 3510B
ORG048	3	Feb-02	3550	Ultrasonic Extraction, EPA Method 3550B
ORG049	2	Feb-02	3580	Waste Dilution Procedure, EPA Method 3580A
ORG050	3	Mar-02	5030	Purge-and-Trap Extraction Procedure, EPA 5030B
ORG056	2	Feb-02	3520	Continuous Liquid-Liquid Extraction Procedure, EPA Method 3520C
ORG058	5	Mar-02	8082	Analysis of Polychlorinated Biphenyl's (PCBs) in Liquid and Solid Matrices by GC-ECD, EPA Method 8082
ORG059	2	May-12	1666	Determination of Volatile Organic Compounds Specific to the Pharmaceutical Industry by Isotope Dilution GC/MS, EPA Method 1666
ORG060	4	Apr-12	624	Analysis of Volatile Organic Compounds in Wastewater by GC/MS, EPA Method 624
ORG062	7	May-10	9020B	Determination of Total Organic Halides in Water by Adsorption-Pyrolysis-Titrimetric Method, EPA Method 9020B
ORG063	3	Jul-02	9020M	Determination of Total Halogens and Total Extractable Organic Halides in Solid and Oil Matrices, EPA Method 9020B Modified
ORG064	3	Mar-02	608	Analysis of Organochlorine Pesticides and PCBs in Wastewater by GC-ECD, EPA Method 608.
ORG065	13	Oct-09	1625M	Determination of Ultra Low Levels of N-Nitrosodimethylamine (NDMA) by Continuous L-L Extraction and Isotopic Dilution GC/MS. EPA Method 1625C Mod
ORG066	3	Apr-12	8270SIM	Determination of Low Levels of PAHs in Water and Solid Matrices by GC/MS in SIM Mode, EPA Method 8270C-SIM
ORG067	4	May-12	5035	Determination of Volatile Organic Compounds in Soil by Closed-System Purge and Trap and GC/MS, EPA 5035/8260
ORG069	6	May-08	7199	Analysis of Hexavalent Chromium by Ion Chromatography, EPA Method 7199

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ORG071	3	Apr-08	8015B - Alc	Analysis of Alcohols by GC-FID, EPA Method 8015B
ORG072	2	Mar-02	515.3	Analysis of Chlorinated Acid Herbicides in Water by Microextraction and GC-ECD, EPA Method 515.3
ORG073	3	Sep-01	505	Analysis of Chlorinated Pesticides and PCBs in Drinking Water by Microextraction and GC-ECD, EPA Method 505
ORG074	3	Mar-10		Identification of Target Analytes via Retention Time
ORG075	2	Mar-01	552.2	Analysis of Haloacetic Acids by Microextraction and GC-ECD, EPA 552.2
ORG076	2	031/2002	maint	Instrument Maintenance for Organic Analysis
ORG077	4	May-08	218.6	Analysis of Hexavalent Chromium in Water by Ion Chromatography, EPA 218.6
ORG078	2	May-12	524.2M	Analysis of tert-butyl alcohol (TBA) in drinking water by EPA 524.2M
ORG079	2	Jun-11	LUFT GC/MS	Analysis of Volatile Gasoline Range Petroleum Hydrocarbons (C_6 to C_{10}) and BTEX-MTBE in soil and water samples by Purge and Trap and GC/MS, LUFT Method
ORG080	1	Jan-02	528	Analysis of Phenols in Drinking Water by SPE and GC/MS, EPA Method 528
ORG081	1	Jan-02	526	Analysis of Selected SVOA in Drinking Water by SPE and GC/MS, EPA Method 526
ORG083	2	Jan-10	TCP-PT	Analysis of Low Levels of 1,2,3-Trichloropropane by Purge and Trap and GC/MS SIM mode, SRL Method
ORG085	2	Aug-07	556	Analysis of Aldehydes by Microextraction and GC-ECD, EPA Method 556
ORG086	1	Jul-02	3535	Solid Phase Extraction Procedures - Manual and Automated, EPA Method 3535
ORG087	3	Jul-11	300.1	Analysis of Low Levels of Oxyhalides by Ion chromatography, EPA Method 300.1
ORG088	2	May-08	532	Analysis of Diuron and Linuron in Water by SPE and HPLC-UV, EPA Method 532
ORG090	2	Aug-12	8270SIM	Determination of Low Levels of Phenols compounds in Water and Solid Matrices by GC/MS in SIM Mode, EPA Method 8270C-SIM
ORG091	3	Jun-08	326	Analysis of Low Level Chlorite, Chlorate and Bromate by Ion Chromatography and Post-column derivatization, EPA Method 326
ORG092	2	Jan-08	OSHA 20M	Analysis of Hydrazine by HPLC, OSHA Method 20M (Modified)
ORG094	2	May-09	8316	Analysis of Acrylamide by HPLC, EPA Method 8316
ORG095	1	Sep-05	1614M	Analysis of PBDEs by isotopic dilution GC/MS-EI, EPA Method 1614 Modified
ORG096	1	Nov-06	orgtin	Determination of Low Levels Organotins by GC-MS.
ORG097	2	Apr-10	332	Analysis of Low Level Perchlorate by IC-MS/MS, EPA Method 332.0
ORG099	3	Apr-10	331	Analysis of Low Level Perchlorate by LC-MS/MS, EPA Method 331.0
ORG100	2	Mar-08	535	Analysis of Chloroacetanilide/acetamide Herbicides by LC/MS, EPA Method 535
ORG101	1	Mar-06	521	Analysis of Nitrosamines by SPE-GC/MS/MS EPA Method 521
ORG102	2	Mar-08	527	Analysis of Pesticides and Flame Retardants by SPE-GC/MS EPA Method 527
ORG103	2	Nov-08	529	Analysis of Explosives by SPE-GC/MS EPA Method 529
ORG104	1	May-06	9056	Analysis of Iodide by Ion Chromatography, EPA Method 9056
ORG107	1	Oct-06	6850	Analysis of Perchlorate at Low Levels in water and soil matrices by LC-MS/MS, EPA Method 6850
ORG108	1	Jan-07	556M	Analysis of Aldehydes in Solid/Soil by GC-ECD, EPA Method 556 Modified
ORG109	1	Sep-07	1671	Analysis of Triethanolamine by Direct Injection and GC-FID

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ORG110	1	Dec-07	D7065	Analysis of Alkyl Phenols and Alkyl Phenol Ethoxylates by L-L extraction and GC/MS full scan and SIM, ASTM Method D7065
ORG111	2	Mar-09	1694M	Analysis of Pharmaceuticals, Personal Care Products and Endocrine Disruptive Compounds LC-MS/MS.
ORG113	1	May-08	632M	Determination of Diuron in solid matrices
ORG114	1	Jun-08	IC/MS/MS	Analysis of 4-Chlorobenzenesulfonic acid (pCBSA) by IC/MS/MS
ORG115	1	Aug-09	525.2	Determination of organophosphorous pesticides in drinking water by liquid-solid extraction and capillary column GC/MS, via EPA Method 525.2
ORG116	1	Aug-08	8316M	Analysis of Acrylamide by LC/MS/MS
ORG117	1	Dec-11	GCMS CI	Analysis of Pyrethroid Pesticides in Water and Soil/Sediment by Extraction and GC/MS in NCI mode and SIM
ORG118	2	Apr-11	537	Analysis of Perfluorinated Compounds in Water by LC-MS/MS
ORG119	1	Aug-09	607M	Analysis of NDMA and DMN and Bromacil by EPA Method 607 modified
ORG120	1	May-09	SM6040D	Analysis of MIB and Geosmin by on line SPME and GC/MS/MS, SM6040D
ORG121	1	Dec-10	LC/MS-MS	Analysis of Bicine by LC/MS-MS
ORG122	1	May-11	8270M-QQQ	Analysis of Low Level Pesticides by Tandem GC/MS/MS
ORG123	1	Nov-10	8270M-QQQ	Screening for PCB congeners by Tandem GC/MS/MS
ORG124	1	Jul-11	522	Determination of 1,4-Dioxane in Drinking Water by SPE and GC/MS SIM
ORG125	1	Jul-11	524.3	Determination of Volatile Organics in Water by Purge & Trap and GC/MS
ORG126	1	Sep-11	539	Determination of Hormones in water by SPE and LC/MS/MS
ORG127	2	Apr-12	1613M	Analysis of 2,3,7,8-TCDD in Drinking Water by Tandem GC/MS/MS, EPA Method 1613 Modified
ORG128	1	May-09	Algal Toxins	Analysis of Algal Toxins in Water by LC/MS/MS
ORG129	1	May-09	Melamine	Analysis of Melamine in Water by LC/MS
ORG130	1	Dec-11	218.7	Analysis of Hexavalent Chromium in Drinking Water by IC with Post-Column Derivatization and UV Detection
ORG131	1	Aug-12	SM5310B	Total Organic Carbon (TOC) and Dissolved Organic Carbon (DOC) by Combustion, SM 5310B
ORG132	2	Nov-12	9060M	Total Organic Carbon (TOC) and Inorganic Carbon (IC) in Soil and Solid Matrices by Dry Combustion and NIR detection, EPA Method 9060 modified
ORG133	1	Nov-12	USP<643>	Total Organic Carbon (TOC) for Equipment Cleaning Validation by Direct Swab Combustion, USP <467>
ORG134	1	Dec-12	LCMS	Analysis of nicotine by LC/MS/MS
ORG135	1	Jan-13	RSK175	Analysis Hydrocarbons and COS in water by Headspace and GC-FID/TCD by Method RSK-175
ORG136	1	Mar-13	8270M-QQQ	Determination of Low Levels of PAHs in Water by SPE and tamdem GC/MS/MS, EPA Method 8270 Modified-QQQ
ORG137	1	Aug-13	524.4	Determination of Volatile Organics in Water by Purge & Trap using nitrogen as purge gas and GC/MS

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Appendix F

Laboratory Accreditation / Certification / Recognition

Weck Laboratories, Inc. maintains the following certifications and accreditations with numerous state and national entities:

Organization	Certificate Number
NELAP (CA Accrediting Body)	04229CA
State of California ELAP	1132
USEPA – UCMR 2 Accreditation	CA00211
State of Nevada	CA211-2004-41
State of Hawaii	N/A
State of New Jersey	CA015
Guam Environmental Protection Agency	09-007r
Los Angeles County Sanitation Districts	10143
South Coast Air Quality Management District	93LA107

The certificates and parameter lists (which may differ) for each organization may be found in the company web page at http://www.wecklabs.com/Resources/Certifications.aspx

If accreditation is terminated or suspended, the laboratory will immediately cease to use the certificate number reference in any way and inform clients impacted by the change.

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Appendix G

Data Qualifiers

Qualifier	Description
B	Blank contamination. The analyte was found in the associated blank as well as in the sample.
B-01	This analyte was found in the method blank, which was possibly contaminated in the lab during preparation. The reporting limit was raised due to the contamination.
B-04	Analyte was found in the travel blank, which was possibly contaminated in the lab during preparation. The batch was accepted since this analyte was not detected for all the samples in the batch.
B-06	This analyte was found in the method blank, which was possibly contaminated during sample preparation. The batch was accepted since this analyte was either not detected or more than 10 times of the blank value for all the samples in the batch.
B-07	This analyte was found in the method blank at levels above the MDL but below the reporting limit.
B-08	Analyte is found in the method blank, which was possibly contaminated during sample preparation.
B-field	No field blank was either received or specified in this batch. Therefore, samples were analyzed without field blank.
BOD-01	The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criterion of at least 2 mg/l, therefore the reported result is an estimated value only.
BOD-02	The sample dilutions set up for the BOD analysis did not meet the criterion of a residual dissolved oxygen of at least 1 mg/l, therefore the reported result is an estimated value only.
BOD-03	The sample dilutions set-up for the BOD analysis did not meet the final DO reading with a value of equal or greater than 1 mg/l, therefore the reported result is an estimated value only.
BR	Analyte was found in the method blank, which was possibly contaminated in the lab during preparation. The reporting limit was raised to account for the contamination.
BS-01	The recovery of this analyte in the BS/LCS was over the control limit due to a possible contamination. The batch was accepted based on another acceptable BS and/or MS and MSD that meet the BS criteria.
BS-03	The recovery of this analyte in the BS/LCS was outside the control limits. The sample result was accepted based on another acceptable BS/LCS and/or MS and MSD that meet BS criteria.

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BS-04	The recovery of this analyte in LCS or LCSD was outside control limit. Sample was accepted based on the remaining LCS, LCSD or LCS-LL.
BS-H	The recovery of this analyte in the BS/LCS was over the control limit. Sample result is suspect.
BS-L	The recovery of this analyte in the BS/LCS was below the control limit. Sample result is suspect.
CN-1	See case narrative for an explanation of results.
CN-2	See Case Narrative
COD_CI	COD result is analyzed with chloride correction.
DI_WET	On Deionized Water W.E.T extract (STLC).
DryWt	The result is in dry weight basis.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate (CLP E-flag).
E-01	The concentration indicated for this analyte is an estimated value above the calibration range.
FILT	The sample was filtered prior to analysis.
FP	Formation Potential
GB-Ad	Adjusted Gross Beta equal to total Gross Beta activity minus Potassium-40 activity
HC-02	Hydrocarbon pattern present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel.
I-03	Low internal standard recovery possibly due to matrix interference or leak in system. The result is suspect.
I-05	Low internal standard recovery possibly due to matrix interference. The result is suspect.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
J-01	No J value detected.
K-40	Potassium-40 calculated based on the concentration of total potassium in mg/L multiplied by the factor 0.82 to convert to activity in pCi/L.
M	Sample result is matrix suspect.
M-01	Result is not valid due to high sample background
M-02	Due to the nature of matrix interferences, sample was diluted prior to preparation. The MDL and MRL were raised due to the dilution.
M-03	Due to insufficient sample volume, sample was diluted prior to preparation. The MDL and MRL were raised due to the dilution.
M-04	Due to the nature of matrix interferences, sample extract was diluted prior to analysis. The MDL and MRL were raised due to the dilution.
M-05	Due to the nature of matrix interferences, sample was diluted prior to analysis. The MDL and MRL were raised due to the dilution.

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M-06	Due to the high concentration of analyte inherent in the sample, sample was diluted prior to preparation. The MDL and MRL were raised due to this dilution.
M-07	Due to high concentration of solid particles in the sample, a smaller volume was used for analysis. The MDL and RL were raised due to this dilution.
MIC-2	Result is suspect due to QC failure.
MS-01	The spike recovery for this QC sample is outside of established control limits possibly due to sample matrix interference.
MS-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
MS-03	Multiple analyses indicate the percent recovery is out of acceptance limits due to a possible matrix effect.
MS-04	Visual evaluation of the sample indicates the RPD or QC spike is above the control limit due to a non-homogeneous sample matrix.
MS-05	The spike recovery and/or RPD were outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
MS-06	Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.
MS-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
MS-08	Due to the nature of matrix interferences, sample was diluted prior to analysis. The MS/MSD could not be quantitated due to the dilution. The batch was accepted based on acceptable LCS recovery.
MS-09	The recoveries of MS/MSD are not valid due to high sample background
MS-10	Due to insufficient sample, LCS/LCSD were analyzed in place of MS/MSD.
MS-11	The QC limits for MS/MSD are not applicable due to positive sample background.
MS-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
MS-BG	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to sample background. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
O-02	This result was analyzed outside of the EPA recommended holding time.
O-04	This analysis was performed outside the EPA recommended holding time.

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O-05	The extraction for this analyte was performed outside of the EPA recommended holding time.
O-07	Sample date and/or time not provided by client. Therefore, default date and/or time has been entered. The analysis may be outside of recommended holding time.
O-08	The original extraction and/or analysis of this sample yielded QC recoveries outside acceptance criteria. It was re-extracted/re-analyzed after the recommended maximum hold time.
O-09	This sample was received with the EPA recommended holding time expired.
O-10	The original analysis of this sample yielded QC recoveries outside acceptance criteria. It was re-analyzed after the recommended maximum hold time.
O-11	The sample was originally analyzed within holding time. However, it required a dilution and the re-analysis was performed after the recommended holding time had expired.
O-12	The sample was originally analyzed within holding time. However, it was reanalyzed without dilution that exceeded the recommended holding time.
O-14	This analysis was requested by the client after the holding time was exceeded.
O-15	The sample was received with the recommended holding time nearly expired. It was analyzed as soon as possible but the maximum holding time was slightly exceeded.
O-21	This sample was analyzed 1 hour past the EPA recommended holding time.
O-22	This sample was analyzed 2 hours past the EPA recommended holding time.
O-25	This sample was received unpreserved and with the recommended holding time for preservation of 48 hours expired.
P-01	Low recovery due to preservative. Sample data accepted based on passing LCS result.
P-2	Sample received without proper preservation and was preserved at the lab upon receiving.
P-3	The sample was preserved with ascorbic acid, but the pH was >2 possibly due to no, or insufficient preservation with HCl. The sample was not analyzed within 24 hours, as required by method for sample with pH>2.
P-5	Due to the nature of the sample matrix a 1:10 dilution was necessary to perform a corrosivity measurement.
Q	One or more quality control criteria failed.
Q-01	The recovery of this analyte in QC sample was outside control limits. Sample was justified as ND based on the low level standard at or below the reporting limit.
Q-02	Low recovery of this analyte in the QC sample. The analysis of the low level standard produced acceptable recovery indicating that the sample result might be accurately reported as Not Detected.

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Q-08	High bias in the QC sample does not affect sample result since analyte was not detected or below the reporting limit.
Q-09	This analyte bias high in QC sample. A fresh spiking solution is going to be prepared.
Q-10	This analyte has high bias in QC sample, the result is suspect.
Q-11	This analyte is low in QC sample, the result is suspect.
Q-12	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on the percent recoveries and/or other acceptable QC data.
Q-H-1	High bias, data was accepted since sample was not detected.
Q-L-03	This analyte is low in QC sample. Sample data is accepted based on acceptable CCVs.
Q-R-01	Analyses are not controlled on RPD values from sample concentrations less than the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QR-04	The RPD value for the MS/MSD was outside of QC acceptance limits however both recoveries were acceptable. The QC batch was accepted based on acceptable results for the recoveries and RPD for the LCS and LCSD.
QR-BS	The RPD value for the BS/BSD (LCS/LCSD) was outside of QC acceptance limits however both recoveries were acceptable. The QC batch was accepted based on acceptable results for the recoveries of the BS (LCS) and BSD (LCSD).
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
R-02	Elevated Reporting Limits due to limited sample volume.
R-03	The RPD is not applicable for result below the reporting limit (either ND or J value).
R-04	Due to foaming, the sample was diluted prior to analysis. The reporting limits were raised due to the dilution.
R-05	The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.
R-06	Sample was diluted prior to extraction due to high sample concentration, reporting limit was raised due to the dilution.
R-MS	Results reported using MS/MS as the primary detector.
RAD-1	Gross Alpha: DLR (Detection Limits for Purposes of Reporting) = 3 pCi/L, and MCL (Maximum contaminant Level) = 15 pCi/L.
RAD-2	Gross Beta: DLR (Detection Limits for Purposes of Reporting) = 4 pCi/L, and MCL (Maximum contaminant Level) = 50 pCi/L.

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RAD-3	The elevated counting error and MDA was caused by smaller sample aliquot used for analysis due to matrix effect (high TDS).
S-01	The surrogate recovery could not be calculated due to sample dilution required from high analyte concentration and/or matrix interferences.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
S-03	High surrogate recovery for this sample is possibly due to a sample matrix effect. The data was accepted since all target analytes were not detected.
S-04	The surrogate recovery for this sample is outside of established control limits due to possible sample matrix effect.
S-05	Surrogate recovery was below acceptance limit possibly due to matrix effect. Sample data was justified as acceptable since all target analytes were still not-detected or below the reporting limits when adjusted accordingly to surrogate recovery.
S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-07	Surrogate recovery out of acceptance limits for this sample is possibly due to sample matrix effect, confirmed by re-extracting and/or re-analyzing the sample.
S-08	No surrogate recovery, possibly surrogate spiking was missed.
S-09	Wrong amount spiked, quantification is not accurate
S-10	Surrogate recovery outside method QC limits due to extraction related problems
S-11	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
S-AC	Acid surrogate recovery outside of control limits due to a possible matrix effect. The data was accepted based on valid recovery of remaining two acid surrogates.
S-BLK	Surrogate recovery outside of control limits for Method Blank. The data was accepted since all target analytes were not detected
S-BN	Base/Neutral surrogate recovery outside of control limits due to a possible matrix effect. The data was accepted based on valid recovery of remaining two base/neutral surrogates.
S-BS	Surrogate recovery outside of control limits for LCS. The data was accepted based on valid recovery of the target analytes.
S-DUP	Duplicate analysis confirmed surrogate failure due to matrix effects.
S-GC	Surrogate recovery outside of control limits due to a possible matrix effect. The data was accepted based on valid recovery of the remaining surrogate.
S-HI	High surrogate recovery was confirmed as a matrix effect by a second analysis.

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S-LOW	Low surrogate recovery confirmed as a matrix effect by a second analysis.
S-MS	Surrogate recovery outside of control limits for MS/MSD. The data was accepted based on valid recovery of the target analytes.
S-MS1	Surrogate recovery outside of acceptance window confirmed as matrix effect by analysis of MS/MSD on this sample.
S_ABC	Analysis subcontracted to Aquatic Bioassay & Consulting Laboratories, Inc., non NELAP certified, but is ELAP certified (ELAP Certificate 1907)
S_AIR	Analysis subcontracted to Air Technology Laboratories, Inc., NELAP Certificate # E87847
S_Associat	Analysis subcontracted to Associated Laboratories, NELAP Certificate 04232CA.
S_BIO	Analysis subcontracted to Biovir Laboratories, NELAC Certificate #05234CA, ELAP Certificate #1795.
S_CAL	Analysis subcontracted to Caltest Analytical Laboratory, NELAP Certificate 01103CA, ELAP Certificate 1664
S_CEL	Analysis subcontracted to Calscience Environmental Laboratories, NELAP Certificate 03220CA, and ELAP Certificate 1230.
S_COL	Analysis subcontracted to Columbia Analytical Services, NELAP Accredited.
S_CRG	Analysis subcontracted to CRG Marine Laboratories Inc. Non-NELAP certified, ELAP Certificate 2261.
S_EMS	Analysis subcontracted to EMS Laboratories, non NELAP certified, but is ELAP certified (ELAP Certificate 1119)
S_EMSL	Analysis subcontracted to EMSL Analytical, Inc., non NELAP certified, but is ELAP certified (ELAP Certificate 1620).
S_FAL	Analysis subcontracted to Frontier Analytical Laboratory, NELAP Certificate 02113CA
S_FGL	Analysis subcontracted to FGL Laboratories, NELAC Certificate 01110CA
S_MAX	Analysis subcontracted to Maxxam Analytics INC., NELAP Certificate 02106A
S_MIC	Analysis subcontracted to Michelson Laboratories, non NELAP certified, but is ELAP certified (ELAP Certificate 1198)
S_NCL	Analysis subcontracted to North Coast Laboratories, ELAP Certificate 1247
S_PAR	Analysis subcontracted to Paradigm Analytical, NELAP Certificate E87634, and ELAP Certificate 2451.
S_PTS	Analysis subcontracted to PTS Laboratories, Inc.
S_RSE	Analysis subcontracted to Radiation Safety Engineering, Inc., Nevada certified.
S_TRU	Analysis subcontracted to Truesdail Laboratories, ELAP Certificate 1237
S_Zymax	Analysis subcontracted to Zymax Forensics.
SeeAtt	See Attachment
Supp	This result has been revised from the original report.

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T-AgBaH	The sample was treated with Silver, Barium and H+ cartridges to minimize chloride and sulfates interferences prior to analysis.
T-AgBaHRP	The sample was treated with Silver, Barium, H+, and Organics cartridges to minimize chloride, sulfates, and organic interferences prior to analysis.
T-AgH	The sample was treated with silver and H+ cartridges to minimize chloride interferences prior to analysis.
T-BaH	The sample was treated with Ba and H cartridges to reduce sulfates background interferences.
TIC	Tentatively Identified Compound using mass spectrometry. The reported concentration is relative concentration based on the nearest internal standard. If the library search produces no matches at, or above 85%, the compound is reported as unknown.
U-01	The sample was received without the proper preservation.
U-02	The sample was received at the lab without proper preservation. However, the sample was then preserved at the lab.

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Appendix H

Laboratory Equipment

Name	Location	Description (Brand/Model)	Serial Number	Date in Service
AA01	Bldg. 1 - Wet Chem	Lachat model 8500 + FIAS auto analyzer with four simultaneous channels and autosampler	FIA 050300000107 A/S A81010-1197 Pump A82000-1412	Apr-05
AA02	Bldg. 1 - Wet Chem	Automated Titration-ISE instrument Man-Tech Associates, model PC Titrate with autosampler	Titrat MS-0C6-683 Interface MS0C6-415 Buret MS-0C6-691 A/S 190AG026 RiseA MS-0D6-280 RiseB MS-0L3-595	Jun-06
AA03	Bldg. 1 - Wet Chem	Seal Analytical model AQ2+ discrete spectrophotometric analyzer	090655	Oct-07
AC01	Bldg. 2 - Glassware Prep	Market Forge autoclave Sterimatic model STM-EL	097825	Nov-04
AC02	Bldg. 2 - Glassware Prep	Market Forge autoclave Sterimatic model STM	022193	Jan-11
AIRGEN01	Bldg. 1 - GC Section	Zero air generator Matheson Tri-Gas model Chrysalis	14621	Sep-04
BAL01	Bldg. 2 - Wet Chem	Analytical Balance Mettler Toledo Model AG104	1115473812	Jan-03
BAL02	Bldg. 2 - Wet Chem	Top Loader balance Denver Instruments	P2K2112009	Jan-08
BAL03	Bldg. 1 - Solids Lab	Sartorius Top loader balance model BP310S	11406244	Jan-10
BAL04	Bldg. 2 - Organic Sample Prep	To loader balance Mettler Toledo model PR503	1120110503	Jan-03
BAL05	Bldg. 2 - Wet Chem	Top loader Balance Shimadzu model UW420H	D447200490	Jan-08
BAL07	Bldg. 1 - Solids Lab	Sartorius Analytical balance model LA120S	81104431	Jan-03
BAL08	Bldg. 1 - Solids Lab	Sartorius analytical balance model 1712 MP8	3412034	Jan-99
CENT01	Bldg. 2 - Organic Sample Prep	Standalone centrifuge IEC model UV	2998M	Jan-99
CENT02	Bldg. 2 - Organic Sample Prep	Centrifuge Eppendorf Model 5810	00815	Jul-09
CENT03	Bldg. 2 - Radiochemistry	Bench Top centrifuge Fisher model Centrific 225	202U0047	Jan-05
CHILL03	Bldg. 1 - Equipment Room	Water chiller recirculator Nesslab model CTF150	197197115	Oct-05
CHILL04	Bldg. 2 - Organic Sample Prep	Recirculating chiller Thermo Nesslab model Merlin M150	102192053	Jan-06
CHILL05	Bldg. 2 - Inorganic Sample Prep	Recirculating chiller Nesslab model CTF-25	198160029	Jan-08
CN01	Bldg. 2 – Wet Chem	O-I Analytical FS3100 automated cyanide analyzer with autosampler	Dispenser #371828-1 Detector #246831862 UV-Digester #245814911	Jan-13
COMP01	Bldg. 1 - Equipment Room	Air Compressor Ingersoll Rand Model SS3-E	0610180412	Jan-06
COMP02	Bldg. 1 - Equipment Room	Air Compressor Gast	LR22132	Jan-99

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Name	Location	Description (Brand/Model)	Serial Number	Date in Service
CONC01	Bldg. 2 - Organic Sample Prep	Automated solvent blow-down apparatus Horizon model Dry-Vap with 6 positions	1040	Mar-06
CONC02	Bldg. 2 - Organic Sample Prep	Turbo Vap solvent blow-down apparatus with 50 positions	TV0840N14820	Oct-08
CONC03	Bldg. 2 - Inorganic Sample Prep	Horizon Technologies Evaporator for Oil and Grease model Speed Vap III	06-0311	Jan-07
CONC04	Bldg. 2 - Organic Sample Prep	Organomation nitrogen blowdown OASYS SPE area	16978	Jan-05
CONC05	Bldg. 2 - Organic Sample Prep	Organomation Nitrogen Evaporator OA-SYS model N-Evap III	52006	Jan-07
CONC06	Bldg. 2 - Organic Sample Prep	Organomation K-D concentrator water bath model OA-SYS ROT-X-TRACT-LC	50553	Jan-01
CONC07	Bldg. 2 - Organic Sample Prep	Organomation Nitrogen Evaporator Model OA-SYS N-Evap III	50839	Jan-99
DIGE01	Bldg. 2 - Inorganic Sample Prep	Block digester for trace metal sample preparation Environmental Express	No S/N	Jan-99
DIGE02	Bldg. 2 - Inorganic Sample Prep	Block digester for trace metals SCP Science model DigiPrep MS	Unit: MSX0206370244 KPX0509241380	Jan-99
DIGE03	Bldg. 2 - Inorganic Sample Prep	Seal Analytical Block digester for TKN/Total P model 3Ds	Digester 4744A12621 Cont 4744A12616	Feb-08
DIST01	Bldg. 1 - Wet Chem	Andrews Glass Midi distillation system for CN	A3Z0002	Jan-99
DIST02	Bldg. 1 - Wet Chem	Andrews Glass Midi distillation system for CN	No S/N	Jan-02
DIST03	Bldg. 1 - Wet Chem	Andrews Glass Midi distillation system for NH4	18M0292	Oct-05
DIST04	Bldg. 1 - Wet Chem	Andrews Glass Midi distillation system for NH4	16T0012	Oct-05
DIST05	Bldg. 2 - Inorganic Sample Prep	Sub boiling Acid Distillation system Milestone model Subpur	0603219	Jan-10
DIST06	Bldg. 2 - Organic Sample Prep	Glas-Col heating Mantle for solvent distillation Model TM114	159279A	Jan-10
ELGEN01	Bldg. 1 - Equipment Room	Electrical generator Honda model Power Boss	1013675619	Jul-06
FP01	Bldg. 2 - Wet Chem	Koehler Flash point tester Pensky-Martens model KJ6200	R07002113	Jan-99
FURN01	Bldg. 1 - Equipment Room	Muffle furnace Barnstead model 48000	1285051004472	Nov-05
GC02	Bldg. 1 - VOC Section	Gas Chromatograph, Hewlett-Packard 5890A with FID/PID in series with Tekmar 2016 autosampler and Tekmar 2000 Purge and Trap and Whatman hydrogen generator	GC 2443A04516 P&T 39150010 A/S 88172010 H2 75340187A	Jul-92
GC03	Bldg. 1 - GC Section	Gas chromatographs Agilent 6890 with autosampler FID and ECD and 7683 autosampler	US00022351 A/S CN43820815	Jul-02
GC04	Bldg. 1 - GC Section	Gas chromatograph Hewlett Packard model 5890A with 7683 autosampler and FID/TCD detectors.	GC 2643A12306 A/S 3120A28203	Jan-99
GC05	Bldg. 1 - GC Section	Agilent Gas chromatograph model 6890 with dual ECD and 7683 autosampler	GC US00020904 A/S US94309801	Jan-99
GC06	Bldg. 1 - GC Section	Gas chromatograph Varian 3800 with 8400 autosampler and dual ECDs and TSD detectors	GC 07952 A/S 00572	Jul-01

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Name	Location	Description (Brand/Model)	Serial Number	Date in Service
GC07	Bldg. 1 - GC Section	GG Agilent model 6890N with autosampler and dual ECD detectors and 7683B autosampler	CN10439023 A/S CN43820815	Oct-04
GC08	Bldg. 1 - VOC Section	Gas Chromatograph Hewlett Packard 5890 Series II GC with Tekmar 7050 Headspace autosampler and TCD/FID detectors	GC 3140A38787 A/S 91123001	Jul-12
GC08	Bldg. 1 - GC Section	GG Agilent model 7890B with autosampler and dual ECD detectors and 7693A autosampler	GC US13203004 A/S CN1316027 A/SCN13160010	Jun-13
GCMS02	Bldg. 1 - VOC Section	GC/MS system, Hewlett-Packard 5890 series II/5972 MSD with Archon autosampler and O-I Eclipse 4460 Purge and Trap	GC 3434A01692 MS 3336A57733 P&T D543466417P A/S 13055	Apr-06
GCMS03	Bldg. 1 - VOC Section	GC/MS system, Hewlett-Packard 5890 series II/5972 MSD with Aquatek 70 autosampler and Tekmar 3000 Purge and Trap	GC 3310A48667 MS 3307A00414 P&T 962680098 A/S 00203007	May-95
GCMS04	Bldg. 1 - VOC Section	GC/MS system, Agilent 6890/5973 with Tekmar Solatek autosampler and Tekmar 3100 Purge & Trap	GC US00010707 MS US72810788 P&T US02120004 A/S US02120005	Jun-02
GCMS06	Bldg. 1 - GC Section	GC/MS system, Agilent 6890/5973N Turbo with EI and CI capabilities	GC US0003804 MS US03970025 A/S US73903518	Jan-99
GCMS07	Bldg. 1 - GC Section	GC/MS system ThermoFinnigan Model Trace/DSQ II with AS2000 autosampler and EI, CI and PTV	GC 20025308 MS MS100008 A/S 20022938	Nov-02
GCMS08	Bldg. 1 - VOC Section	GC/MS system, Agilent 6890/5973 with Archon autosampler and Tekmar 3100 Purge and Trap	GC CN10422005 MS US43146861 P&T 00217007 A/S 12012	Oct-04
GCMS09	Bldg. 1 - GC Section	GC/MS (Ion Trap) system, Varian 3800/4000 with EI and CI and LVI	GC 12003 MS 00174 A/S 02982	Apr-05
GCMS10	Bldg. 1 - GC Section	GC/MS (Ion Trap) system, Varian 3800/4000 with EI and CI and LVI and Combi-Pal robotic autosampler	GC 12227 MS 00200 CTC 5888	Oct-08
GCMS11	Bldg. 1 - GC Section	GC/MS system, Agilent 7890/5975 Turbo with EI and PTV injection	GC US10736015 MS US73326961 A/S CN73445154	Oct-07
GCMS12	Bldg. 1 - VOC Section	GC/MS system, Agilent 6890/5973 with Archon autosampler and Tekmar 3000 Purge and Trap	GC US00032416 MS US93123032 P&T 93250014 A/S 13752	Mar-08
GCMS13	Bldg. 1 - GC Section	GC/MS/MS Triple Quadrupole system, Agilent 7000B with EI, CI and backflush and 7693 autosampler	GC CN10111086 MS US10196201 A/S CN10150023 A/S CN10160152	Jun-10
GCMS14	Bldg. 1 - VOC Section	GC/MS system Agilent 6890N/5975 with Tekmar Velocity XPT Purge and Trap and Archon autosampler	GC CN10517104 MS US54421710 P&T US04329005 A/S No S/N	Jul-10
GCMS15	Bldg. 1 - GC Section	GC/MS/MS Triple Quadrupole system, Agilent 7000B with EI, CI and backflush and 7693 autosampler	GC CN11221016 MS US11196602 A/S CN11130088 A/S CN11180126	Dec-12

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Name	Location	Description (Brand/Model)	Serial Number	Date in Service
GCMS16	Bldg. 1 - GC Section	GC/MS system Agilent Technologies 7890B/5977 with 7693A autosampler	GC US13233012 MS US1323M207 A/S CN13150088 A/S CN13200108	Jun-13
GPC01	Bldg. 2 - Organic Sample Prep	Automated GPC cleanup system LC Tech Model Ultra with solvent delivery system model LC1122	GPC 52000 Solvent Deli 015408 Chiller: 00278677 UV Det: DS00005558	Dec-09
H2GEN01	Bldg. 1 - GC Section	Hydrogen generator Hogen model 600	GC36D0910000557	Sep-10
H2GEN02	Bldg. 1 - GC Section	Hydrogen generator Matheson Tri-Gas model Chrysalis II 500	TNM040815160	Feb-09
H2GEN03	Bldg. 1 - GC Section	Hydrogen generator Parker Balstom Model 200	LR91932	Aug-13
HG01	Bldg. 1 - Metals Section	Mercury analyzer CETAC model M-6000A with autosampler	Hg 080002MAS A/S 0800053ASX	Jul-03
HG02	Bldg. 1 - Clean Room	Low Level Mercury Analyzer Leeman Labs model Hydra AF Gold +	AFG+6001	Feb-06
HOTP01	Bldg. 2 - Radiochemistry	Barnstead Hot Plate model HPA2245M Type 2200	1065051005617	Jan-11
HOTP02	Bldg. 2 - Radiochemistry	Corning Hot Plate model PC101	No S/N	Jan-99
HOTP03	Bldg. 2 - Radiochemistry	Barnstead Hot Plate model Cimarec	1313060458023	Jan-09
HOTP04	Bldg. 2 - Radiochemistry	Heidolph Hot Plate Model MR Standard	505-20000-01-0	Jan-05
HOTP05	Bldg. 2 - Radiochemistry	Corning Hot Plate Model PC-420D	133510251500	Jan-10
HOTP06	Bldg. 2 - Radiochemistry	Thermoline Hot Plate Model Cimarec 3	1073971148034	Jan-99
HOTP07	Bldg. 2 - Radiochemistry	Cole Palmer Hot Plate Model 51450-72	1714070607065	Jan-05
HOTP08	Bldg. 2 - Radiochemistry	Barnstead Hot Plate Model Cimarec	1313060453867	Jan-09
HOTP09	Bldg. 2 - Radiochemistry	Barnstead Hot Plate Model Cimarec	1313060453870	Jan-09
HOTP10	Bldg. 2 - Radiochemistry	Corning Magnetic Stirrer Model Scholar 171	023104310241	Jan-05
HOTP11	Bldg. 2 - Radiochemistry	Fisher magnetic stirrer model automixer	411N0279	Jan-05
HOTP12	Bldg. 2 - Microbiology	Hot plate stirrer Corning model PC-620D	133810292306	Jan-10
HOTP13	Bldg. 2 - Microbiology	Hot plate stirrer Corning model PC-620D	013806332160	Jan-10
HOTP14	Bldg. 2 - Inorganic Sample Prep	Hot Plate PMC	No S/N	Jan-99
HOTP15	Bldg. 2 - Microbiology	Fisher Scientific magnetic stirrer model 120S	1685051006025	Jan-10

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Name	Location	Description (Brand/Model)	Serial Number	Date in Service
ICP01	Bldg. 1 - Metals Section	ICP Spectrometer Perkin Elmer model Optima 5300DV with ESI FAST autosampler and Polyscience recirculating chiller	ICP 077C8032502 A/S FST04-080108 CHILL 108600599	Apr-08
ICPMS01	Bldg. 1 - Clean Room	ICP-MS Spectrometer Perkin Elmer model ELAN DRC-II with ESI SC Fast autosampler option with Preconcentration column On-line and Nesslab Merlin M33 recirculating chiller	MS Q1370301 A/S FST04-070908 Chiller 105145007	Feb-03
ICPMS02	Bldg. 1 - Metals Section	ICP-MS Spectrometer Agilent 7500ce with Cetac autosampler model ASX 520 and Polyscience recirculator chiller	MS JP51201842 A/S 040705A520 Chiller 107800695	Jan-07
ICPMS03	Clean Room	ICP-MS Spectrometer Perkin Elmer model Nexion 300S with ESI SeaFast3 system preconcentration-hydride and SC-4DX autosampler and Nesslab chiller		Mar-12
INC03	Bldg. 2 - Microbiology	Fisher Scientific Incubator model 650D	101N0006	Aug-01
INC04	Bldg. 2 - Microbiology	VWR Incubator model 1545	0101703	May-04
INC05	Bldg. 2 - Microbiology	VWR Incubator model 1535	08-00800	Aug-04
INC06	Bldg. 2 - Microbiology	Incubator VWR Double door Model 1555	1000402	May-05
INC07	Bldg. 2 - Microbiology	Precision low temp incubator for BOD model 815	600111548	Dec-01
INC11	Bldg. 2 - Microbiology	Lab line Incubator model 120	0402-0845	Jan-11
INC12	Bldg. 2 - Microbiology	VWR Incubator model 1915	06016006	Apr-11
ISCO01	Field	Composite water sampling equipment Teledyne ISCO model 2910	197J01248	Jan-99
ISCO02	Field	Composite water sampling equipment Teledyne ISCO model 2910	No S/N	Jan-99
ISCO03	Field	Composite water sampling equipment Teledyne ISCO model 3700	195K01248	Jan-99
ISCO04	Field	Composite water sampling equipment Teledyne ISCO model 6700	195H01872	Jan-99
ISCO05	Field	Composite water sampling equipment Teledyne ISCO model GLS	209A00127	Jan-05
ISCO06	Field	Composite water sampling equipment Teledyne ISCO model GLS	209A00128	Jan-99
ISCO07	Field	Composite water sampling equipment Teledyne ISCO model GLS	209B01683	Jan-99
ISCO08	Field	Composite water sampling equipment Teledyne ISCO model GLS	207L00574	Jan-99
ISCO09	Field	Composite water sampling equipment Teledyne ISCO model GLS	205B01683	Jan-99
ISCO10	Field	Flow meter ISCO model 4250	197J00181	Jan-99

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Name	Location	Description (Brand/Model)	Serial Number	Date in Service
LC01	Bldg. 1 - LC Section	Liquid Chromatograph system Dionex DX500 with GP40 gradient pump, Pickering PCX5200 post-column reaction systems, Pickering column heater model CHX650 and Shimadzu fluorescence detector RF551	Pump 96100057 A/S 072/01162 P/C 0399205 Det 10028S	Dec-00
LC02	Bldg. 1 - LC Section	Liquid Chromatograph system Dionex DX500 with GP-40 gradient pump, AD-20 UV-VIS detector, Autosampler AS3500 and column heater Timberline 101	Pump 98070264 A/S 106/06479 Det 97080547 HTR 0110309C3	Feb-02
LC03	Bldg. 1 - LC Section	Ion Chromatograph Dionex with GP-40 gradient pump, post-column derivatization and Shimadzu SP10AVi UV-Vis detector and AS40 autosampler. (formerly IC02)	Pump 95040456 A/S 00030208 Det C20873300048	Jan-99
LC04	Bldg. 1 - LC Section	Ion chromatograph Dionex DX-120 with isocratic pump and AS40 conductivity detector (formerly IC04)	IC 99110573 AS 05030579	Dec-99
LC05	Bldg. 1 - LC Section	Ion Chromatograph system Dionex DX-600 with gradient pump, PC10 post column derivatization, ED-50 electrochemical detector, AS3500 autosampler, PDA100 Photodiode array detector and auxiliary pump. (formerly IC05)	Pump 00110546 PDA 00080053 ED50 00110094 A/S 118/09555 Aux Pump 893745	Jan-05
LC06	Bldg. 1 - LC Section	Ion Chromatograph Dionex ICS-2000 with conductivity detector and reagent generation system and AS40 autosampler	iC 091000908 A/S 98060834	Jun-09
LC07	Bldg. 1 - Metals Section	Liquid Chromatograph system Shimadzu Sil-10ADVP with dual pumps, autosampler and controller	Cont C21013550000US A/S C21053850554US PMP C20963502897 PMP C20963502722	Nov-08
LC08	Bldg. 1 - LC Section	Ion Chromatograph system Dionex model ICS 5000 dual channel with conductivity detector and ASI autosampler and AXP supplemental pumps	DC5 1011254 DP5 10120142 EG5 10120034 AS1 10120206 AXP Z0041645	Dec-10
LCMS01	Bldg. 1 - LC Section	LC/MS/MS Varian 1200L Triple Quadrupole with positive and negative ESI, APCI and MS/MS capabilities	MS 03055 Pumps 04130/31 A/S 50061	Apr-05
LCMS02	Bldg. 1 - LC Section	Triple Quadrupole LC/MS/MS system model 4000Q trap with ESI and APCI with Shimadzu LC model Prominence and Shimadzu UV-Vis detector SPD-10AVvp	MS 21616080401 UVVIS C21003750176 Oven L20214650322 A/S L20354655309 CBM20 L20234557542 Pump L20104652350 Pump L20104652553 Degas SSI3-0889	Jun-08
LL01	Bldg. 2 - Organic Sample Prep	Organomation 8 Position Continuous accelerated L-L extractor/conc. model Rot-X-Tract LC 14169	Module 1 17283 Module 2 50552	Jun-00
MIC01	Bldg. 2 - Microbiology	Quantitray sealer IDEXX model 2X	03275	May-04
MIC02	Bldg. 2 - Microbiology	Laboratory microscope Reichert Scientific Model 410 Microstar IV	BE317748	Jul-10
MIC03	Bldg. 2 - Microbiology	Bacti-cinerator IV Tyco Healthcare	K0414877	Aug-04

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Name	Location	Description (Brand/Model)	Serial Number	Date in Service
MIC04	Bldg. 2 - Microbiology	UV Light for Microbiology Sprectroline Model EA-160 with cabinet model CM-10	Light 1714731 Cabinet 864363	Oct-08
MIC05	Bldg. 2 - Microbiology	Laminar flow hood for microbiology Baker Company model Sterilgard II	61800	Jan-10
MIC06	Bldg. 2 - Microbiology	Peristaltic pump Wheaton model Unispense	E95-1039	Jan-11
MIC07	Bldg. 2 - Microbiology	Darkfield colony counter Quebec model 3330	No S/N	Jan-99
MIX01	Bldg. 1 - Equipment Room	SPEX laboratory Mixer model 8000	No S/N	Jan-99
MIX02	Bldg. 1 - Equipment Room	Waring Laboratory Blender	No S/N	Jan-08
MIX03	Bldg. 2 - Radiochemistry	Laboratory Mixer Jung Ang Model Hi-Tec	No S/N	Jan-99
MW01	Bldg. 2 - Inorganic Sample Prep	Microwave digestion system CEM model MARS 907501	MD4344	Jun-11
N2GEN01	Bldg. 1 - LC Section	Nitrogen generator Dominick Hunter Model G4510W	000646	Apr-05
N2GEN02	Bldg. 1 - LC Section	Parker Balston Nitrogen generator with compressor model LCMS5000	Comp H5/13/2008-3968417-33 N2gen LCMS-1091	Jun-08
OVEN01	Bldg. 1 - Solids Lab	Fisher Scientific Isotemp oven	15790603436	Jan-05
OVEN02	Bldg. 1 - Solids Lab	Fisher Scientific Isotemp oven	603N0053	Jan-05
OVEN03	Bldg. 2 - Radiochemistry	Fisher Scientific Isotemp oven model 650G	158006242965	Mar-06
OVEN04	Bldg. 2 - Glassware Prep	High Temperature Oven Duke Model E101-E	20JBJB0103	Feb-02
OVEN08	Bldg. 2 - Organic Sample Prep	Precision Laboratory oven	605051093	Jan-06
OVEN09	Bldg. 2 - Wet Chem	Precision Laboratory oven	No S/N	Jan-99
PH01	Bldg. 2 - Microbiology	Fisher Accumet pH/ISE/mV meter model 50	C0013507	Jan-99
PH02	Bldg. 2 - Radiochemistry	pH/mV meter Corning model Scholar 425	01348	Jan-99
PH03	Bldg. 2 - Microbiology	Fisher Accumet portable pH/mV meter model AP62	No S/N	Jan-99
PH05	Bldg. 2 - Radiochemistry	Portable TDS Meter TDSTestrII+	1298618	Jan-09
RAD01	Bldg. 2 - Radiochemistry	Gas flow Alpha + Beta Counter Protean model MPC 9604 4 positions	0512258	May-05
RAD02	Bldg. 2 - Radiochemistry	Gas flow Alpha + Beta Counter Protean model MPC 9604 4 positions	07003108	Jan-07
RAD03	Bldg. 2 - Radiochemistry	Beckman Liquid Scintillation apparatus model LS6500	7069164	Jul-08
SHAKE01	Bldg. 2 - Inorganic Sample Prep	TCLP rotary extractors for leaching procedures Environmental Express	No S/N	Jan-99
SHAKE02	Bldg. 2 - Inorganic Sample Prep	TCLP rotary extractors for leaching procedures Associated Design	1049	Jan-99

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Name	Location	Description (Brand/Model)	Serial Number	Date in Service
SHAKE03	Bldg. 2 - Organic Sample Prep	Zero Headspace apparatus for TCLP extractions for Volatiles model 3745	No S/N	Jan-99
SHAKE04	Bldg. 2 - Organic Sample Prep	Zero Headspace apparatus for TCLP extractions for Volatiles model 3745	No S/N	Jan-99
SHAKE05	Bldg. 2 - Organic Sample Prep	Glas-Col Separatory funnel shaker 4-positions	377944	Jul-02
SHAKE06	Bldg. 2 - Organic Sample Prep	Shaker for sieve testing WS Tyler model RX-29	24286	Jan-05
SHAKE07	Bldg. 2 - Inorganic Sample Prep	Bench Top shaker for STLC leaching Procedure Eberbach	No S/N	Jan-99
SOILEX01	Bldg. 2 - Organic Sample Prep	Ultrasonic Extractor Sonics & Materials model Vibracell VC600-2 with 2 probes models CV17 and V1A	Cont 10402 Probe1 V53813L Probe2 V8195	Jan-99
SOILEX02	Bldg. 2 - Organic Sample Prep	Accelerated Solvent Extraction Dionex model ASE 200 for solids with solvent delivery system	ASE 40507 SOL 2030099	Mar-04
SONIC01	Bldg. 1 - GC Section	Ultrasonic cleaner Branson Model 2510	RLB060606522D	Feb-07
SONIC02	Bldg. 2 - Organic Sample Prep	Ultrasonic cleaner Fisher Scientific Model FS20	RSA031070533A	Jan-10
SPE00	Bldg. 2 - Organic Sample Prep	Solid phase disk extraction system Horizon Technologies Controller for 4790 extractors	01-0332	May-03
SPE01	Bldg. 2 - Organic Sample Prep	Horizon Tech. 4790 SPE extractor	02-0345	May-03
SPE02	Bldg. 2 - Organic Sample Prep	Horizon Tech. 4790 SPE extractor	03-0381	May-03
SPE03	Bldg. 2 - Organic Sample Prep	Horizon Tech. 4790 SPE extractor	03-0377	May-03
SPE04	Bldg. 2 - Organic Sample Prep	Horizon Tech. 4790 SPE extractor	01-0244	May-03
SPE05	Bldg. 2 - Organic Sample Prep	Horizon Tech. 4790 SPE extractor	02-0344	May-03
SPE06	Bldg. 2 - Organic Sample Prep	Horizon Tech. 4790 SPE extractor	01-0245	May-03
SPE07	Bldg. 2 - Organic Sample Prep	Caliper/Dionex model Autotrace automated 6 positions cartridge SPE extractor	AT0745N0059	Oct-08
SPE08	Bldg. 2 - Organic Sample Prep	Caliper/Dionex model Autotrace automated 6 positions cartridge SPE extractor	AT0837N0030	Oct-08
SPE09	Bldg. 2 - Organic Sample Prep	Caliper/Dionex model Autotrace automated 6 positions cartridge SPE extractor	AT0839N0033	Oct-08
SPE10	Bldg. 2 - Organic Sample Prep	Caliper/Dionex model Autotrace automated 6 positions cartridge SPE extractor	09090663	Oct-08
SPE11	Bldg. 2 - Organic Sample Prep	Automated SPE extractor for Oil and Grease with 3 positions Horizon Technologies Model 3000 XL	Extractor 06-2049 Cont 09-1087	May-06
SPE12	Bldg. 2 - Organic Sample Prep	Supelco SPE manifold model Visiprep 24	No S/N	Jan-07
SPE13	Bldg. 2 - Organic Sample Prep	Thermo Scientific Autotrace 280 SPE automated 6 positions cartridge SPE extractor	12120708	Feb-13
TOC01	Bldg. 1 - Wet Chem	Total organic carbon (TOC) Tekmar-Dorhman Phoenix 8000 with autosampler.	US02267004	Oct-02

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Name	Location	Description (Brand/Model)	Serial Number	Date in Service
TOC02	Bldg. 1 - Wet Chem	Total organic carbon (TOC) Shimadzu Combustion model TOC-L with solids module SSM-5000A and autosampler	TOC-L F54214900325 A/S H571114900359 SSM H52514900057	Jul-12
TOX01	Bldg. 1 - Wet Chem	Total organic halides (TOX) Mitsubishi TX-10.	TOX A7M41083 ABC A7B30013	Sep-03
TRUCK01	Field	Pickup truck for field sampling Toyota Tacoma, model 2006	5TETX22N76Z259560	Jun-06
TRUCK02	Field	Pickup truck for field sampling Toyota Tacoma, model 2010	5TETX22N99Z603152	Aug-09
TURB01	Bldg. 1 - Wet Chem	HF Scientific Turbidity meter model Micro 100	611039	Nov-00
UVVIS02	Bldg. 1 - Wet Chem	UV-Visible Spectrophotometer Hach model DR4000U	No S/N	Feb-04
WAPU01	Bldg. 2 - Organic Sample Prep	Water purification system Millipore model Milli-Q with UV and RO	MilliQ FOBN21415B RO F9SM17017B Tank FOAN25329	Mar-00
WAPU03	Bldg. 2 - Wet Chem	Water purification system Millipore model Milli-Q	FOJA53493D	Jan-09
WAPU06	Bldg. 1 - GC Section	Water purification Unit Barnstead model E-Pure	0606670680	Jan-07
WB02	Bldg. 2 - Microbiology	Blue M water batch incubator model MW-1120A-1	M5-16873	Nov-99
WB04	Bldg. 2 - Organic Sample Prep	Blue M water batch incubator	MW-5871	Jan-04
WB05	Bldg. 1 - Wet Chem	Water bath Labline Model Magnestir	1077	Jan-99
WB06	Bldg. 2 - Microbiology	Fisher Isotemp water batch incubator model 120	87-07	Jan-11
WB08	Bldg. 2 - Microbiology	Precision water bath Incubator model 265	601061695	Aug-11
WASH01	Bldg. 2 - Glassware Prep	Laboratory glassware washing machine Miele	44/74349180	Oct-11

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Appendix I

Summary of Sampling Container, Preservation and Holding Time Requirements

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				Preservative (chill all [8], unless noted)					
Test Name	Matrix	Bottle Type	Bottle size	Unchlorinated Water (Raw)	Chlorinated Water (Treated)	Soil/Solid	Holding Time until start of analysis	Analytical Technique	Analytical Method
1,2,3-TCP	Water	Amber Glass	2 x 40 mL	HCl	Ascorbic/HCl		14 days	GC/MS Isot. Dil.	EPA 524.2SIM
1,4-Dioxane	Water	Amber Glass	2 x 1 L (*)	None	None		7 days	GC/MS Isot. Dil.	EPA 8270M
Acrolein/Acrylonitrile	Water	Glass	2 x 40 mL	None	Thiosulfate		3 Days	GC/MS	EPA 624/8260B
Alcohols	Water	Glass	1 x 40 mL	None	None		14 days	Dir. Inj./FID	EPA 8015B
Aldehydes	Water	Amber Glass	2 x 40 mL	$CuSO_4$	$NH_4Cl/CuSO_4$		7 Days	GC/ECD	EPA 556
Aldehydes	Water	Glass	1 L (*)	None	None		3 days	HPLC-UV	EPA 8315
Aldehydes[1]	Soil/Solid	Glass	4 oz			None	3 days	HPLC-UV	EPA 8315
Alkalinity, Total	Water	Poly	250 mL		None		14 Days	Titration	SM2320B
Anions by IC (F^-, Cl^-, SO_4^{2-})	Water	Poly	250 mL	None	None		28 days	IC	EPA 300.0
Anions by IC (NO_2^-, NO_3^-, PO_4^{3-})	Water	Poly	250 mL	None	None		48 hours	IC	EPA 300.0
Arsenic speciation	Water	Poly	250 mL	EDTA/acetic acid	EDTA/acetic acid		14 Days	Resin-ICP/MS	EPA 200.8
Asbestos-Sub	Water	Poly	1 L	None	None		48 Hours	TEM	EPA 100.1/.2-Sub
Bacteria-Coliform - solid/sludge/soil	Soil/solid	Glass-Sterile	4 oz			None	N/A	MTF	SM 9221B
Bacteria-Coliform - Wastewater	Water	Poly-Sterile	125 mL	Thiosulfate	Thiosulfate		6 hours	MTF	SM 9221B
Bacteria-Coliform - Drinking Water	Water	Poly-Sterile	125 mL	Thiosulfate	Thiosulfate		24 Hours	Colilert P/A or enumeration	SM 9223B
Bacteria-Enterococcus - Wastewater	Water	Poly-Sterile	125 mL	Thiosulfate	Thiosulfate		6 Hours	Enumeration Quantitray	Enterolert
Bacteria-Heterotrophic Plate Count	Water	Poly-Sterile	125 mL	Thiosulfate	Thiosulfate		24 Hours	Pour Plate Method	SM 9215B
BOD	Water	Poly	1 L	None	None		48 Hours	DO Probe	SM 5210B
BOD, Carbonaceous	Water	Poly	1 L	None	None		48 Hours	DO Probe	SM 5210
Bromate	Water	Amber Glass	40 mL	EDA	EDA		28 Days	IC	EPA 300.1
Bromate- Low Level	Water	Amber Glass	40 mL	EDA	EDA		28 Days	IC	EPA 326
Bromide	Water	Poly	250 mL	None[7]	None[7]		28 Days	IC	EPA 300.0

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Test Name	Matrix	Bottle Type	Bottle size	Preservative (chill all [8], unless noted) Unchlorinated Water (Raw)	Chlorinated Water (Treated)	Soil/Solid	Holding Time until start of analysis	Analytical Technique	Analytical Method
Bromide-Low Level	Water	Amber Glass	40 mL	None	None		28 Days	IC	EPA 300.1
Carbamates	Water	Amber Glass	1 x 40 mL	MCAA	MCAA/thiosulfate		28 Days	HPLC	EPA 531.1
COD	Water	Poly	250 mL	H_2SO_4	H_2SO_4		28 Days	Colorimetric	EPA 410.4
Chloral Hydrate	Water	Glass	2 x 60 mL	Sulfite/buffer	Sulfite/buffer		14 days	GC/ECD	EPA 551.1
Chlorate	Water	Amber Glass	40 mL	EDA	EDA		28 Days	IC	EPA 300.1
Chloride	Water	Poly	250 mL	None[7]	None[7]		28 Days	IC	EPA 300.0
Chlorine Dioxide	Water	Amber Glass	250 mL	None	None		24 Hours	Colorimetric	SM 4500CLO2D
Chlorine Residual	Water	Amber Glass	250 mL	None	None		15 Minutes[2]	Colorimetric	SM 4500CL-G
Chlorite	Water	Amber Glass	40 mL	EDA	EDA		14 Days	IC	EPA 300.1
Chlorophyll-a	Water	Amber Poly	2 x 1 L	None			48 Hours	Spectrophotometric	SM 10200H
Chromium, Hexavalent	Water	Poly	250 mL	$(NH_4)_2SO_4$ buffer pH 9.3-9.7	$(NH_4)_2SO_4$ buffer pH 9.3-9.7		24 Hours	Spectrophotometric	SM3500CR-D
Chromium, Hexavalent	Water	Poly	250 mL	$(NH_4)_2SO_4$ buffer pH 9.3-9.7	$(NH_4)_2SO_4$ buffer pH 9.3-9.7		24 Hours	IC	EPA 7199
Chromium, Hexavalent	Soil/solid	Glass	4 oz	None	None		30 days	Spectrophotometric	EPA 3060/7196
Chromium, Hexavalent (low-level)	Water	Poly	250 mL	$(NH_4)_2SO_4$ buffer pH 9.3-9.7	$(NH_4)_2SO_4$ buffer pH 9.3-9.7		24 Hours (DW) 28 days (WW)	IC	EPA 218.6
Chromium, Hexavalent (low-level)	Soil/solid	Glass	4 oz	None	None		30 days	IC	EPA 3060/7199
Color	Water	Glass	500 mL	None	None		48 Hours	Visual	SM2120B
Conductivity (Specific Conductance)	Water	Poly	250 mL	None	None		28 Days	Electrometric	SM2510B
Cyanide	Water	Poly	500 mL	NaOH	NaOH/ascorbic		14 Days	FIA-Colorimetric	EPA 335.2/335.4
Dioxin-Sub	Water	Glass	2 x 1 L	None	None		1 year	HR GC/ MS	EPA 1613/8290
Dioxin-Sub	Soil/Solid	Glass	4 oz	None	None		1 year	HR GC/ MS	EPA 8280/8290
Diquat/Paraquat	Water	Amber poly	1 L	None	Thiosulfate		7 Days	HPLC	EPA 549.2
Disinfection by-products	Water	Glass	2 x 60 mL	Sulfite/buffer	Sulfite/buffer		14 days	GC/ECD	EPA 551.1
Diuron	Water	Amber Glass	1 L (*)	None	None		7 days	HPLC/UV	EPA 632

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Test Name	Matrix	Bottle Type	Bottle size	Preservative (chill all [8], unless noted) Unchlorinated Water (Raw)	Chlorinated Water (Treated)	Soil/Solid	Holding Time until start of analysis	Analytical Technique	Analytical Method
Diuron-UCMR	Water	Amber Glass	1 L (*)	$CuSO_4$/Trizma	$CuSO_4$/Trizma		14 days	HPLC/UV	EPA 532
EDB and DBCP	Water	Glass	2 x 40 mL	None	Thiosulfate		14 Days	GC/ECD	EPA 504.1
Endothall	Water	Amber Glass	250 mL	None	None		7 days	GCMS	EPA 548.1
Ethanol	Water	Glass	1 x 40 mL	None	None		14 Days	Dir. Inj./FID	EPA 8015B
Explosives	Water	Amber Glass	1 L (*)	None	Thiosulfate		7 days	HPLC/UV	EPA 8330A
Explosives	Soil/Solid	Amber Glass	4 oz	None	None		14 days	HPLC/UV	EPA 8330A
Fluoride	Water	Poly	250 mL	None[7]	None[7]		28 Days	IC	EPA 300.0
General Minerals (excluding metals)	Water	Poly	1 L	None	None		Various	Wet Chem methods	various
General Minerals (metals only)	Water	Poly	250 mL	HNO_3[3]	HNO_3[3]		6 Months	ICP-AES	EPA 200.7
General Physical (Color, Odor, Turbidity	Water	Glass	500 mL	None	None		24 Hours	Wet Chem methods	various
Glyphosate	Water	Amber Glass	1 x 40 mL	None	Thiosulfate		14 Days	HPLC	EPA 547
HAAs	Water	Amber Glass	250 mL (*)	NH_4Cl	NH_4Cl		14 days	GC/ECD	EPA 552.2
HAAs-Formation Potential	Water	Amber Glass	1 L	None	None		14 days	GC/ECD	SM 5710B/EPA 552.2
Herbicides-DW	Water	Amber Glass	250 mL (*)	None	Thiosulfate		14 days	GC/ECD	EPA 515.3
Herbicides-GW	Water	Amber Glass	2 x 1 L (*)	None	Thiosulfate		7 Days	GC/ECD	EPA 8151A
Herbicides-Soil	Soil/solid	Glass	4 oz	None	None		14 Days	GC/ECD	EPA 8151A
Mercury	Water	Glass jar	250 mL	HNO_3	HNO_3		28 Days	Cold Vapor AAS	EPA 245.1/7470
Mercury in soil/solid/sludge	Soil/Solid	Glass jar	4 oz.	None	None		28 Days	Cold Vapor AAS	SW 7471
Metals	Water	Poly	250 mL	HNO_3[3]	HNO_3[3]		6 Months	ICP/MS or ICP-AES	EPA 200.8/200.7
Metals	Soil/solid	Glass/Poly	4 oz	None	None		6 Months	ICP/MS or ICP-AES	EPA 6010B/6020
Methanol	Water	Glass	1 x 40 mL	None	None		14 Days	Dir. Inj./FID	EPA 8015B
NDMA	Water	Amber Glass	2 x 1 L (*)	None	Thiosulfate		7 days	GC/MS/CI SIM	EPA1625M
Nitrate	Water	Poly	250 mL	None	None		48 Hours	IC or FIA	EPA 300.0/353.2
Nitrite	Water	Poly	250 mL	None	None		48 Hours	IC or FIA	EPA 300.0/353.2

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Test Name	Matrix	Bottle Type	Bottle size	Preservative (chill all [8], unless noted) Unchlorinated Water (Raw)	Chlorinated Water (Treated)	Soil/Solid	Holding Time until start of analysis	Analytical Technique	Analytical Method
Nitrite+Nitrate as N	Water	Poly	250 mL	H_2SO_4	H_2SO_4		28 Days	FIA-Colorimetric	EPA353.2
Nitrogen, Total Kjeldahl (TKN)	Water	Poly	250 mL	H_2SO_4	H_2SO_4		28 Days	FIA-Colorimetric	EPA 351.2
Nitrogen-Ammonia	Water	Poly	250 mL	H_2SO_4	H_2SO_4		28 Days	FIA-Colorimetric	EPA 350.1
Nitrogen-Ammonia in ww with distillation	Water	Poly	250 mL	H_2SO_4	H_2SO_4		28 Days	FIA-Colorimetric	EPA 350.1
Nitrosamines	Water	Amber Glass	2 x 1 L (*)	None	Thiosulfate		14 days	GC/MS/CI SIM	EPA 521
Odor	Water	Glass	500 mL	None	None		24 Hours	Odor	SM 2150B
Oil and Grease	Water	Glass	1 L	HCl	HCl		28 Days	Gravimetric	EPA1664
Organotins (tributyltin)	Water	Glass	1 L (*)	None	None		7 Days	GC/MS	GC/MS
Oxygen, Dissolved	Water	Glass	BOD bottle	None	None		15 Minutes[2]	O_2 Probe	SM 4500-OG
PBDEs	Water	Amber Glass	2 x 1 L (*)	None	None		14 days	GC/MS SIM	EPA 1614M
Perchlorate	Water	Poly	250 mL	None[7]	None[7]		28 Days	IC	EPA 314
Perchlorate - Low Level by LC/MS/MS	Water	Poly Sterile	125 mL	Sterile field filtration	Sterile field filtration		28 Days	LC/MS/MS	EPA 331/332
Perchlorate in soils	Soil	Glass jar	4 oz	None	None		28 Days	IC	EPA 314M
PCBs - GW	Water	Amber Glass	2 x 1 L (*)	None	Thiosulfate		7 Days	GC/ECD	EPA 8082
Pesticides-Organophosphorus	Water	Amber Glass	2 x 1 L (*)	None	Thiosulfate		7 Days	GC/NPD	EPA8141
Pesticides-Chlorinated (DW)	Water	Amber Glass	2 x 1 L (*)	None	Thiosulfate		7 days	GC/ECD	EPA 508
Pesticides-Chlorinated WW/GW	Water	Amber Glass	2 x 1 L (*)	None	Thiosulfate		7 Days	GC/ECD	EPA 608/8081
Pesticides- N/P -DW	Water	Amber Glass	2 x 1 L (*)	None	Thiosulfate		14 days	GC/ NPD	EPA 507/8141
Pesticides- All & PCBs Soil/solid	Soil/solid	Glass jar	4 oz	None	None		14 days	GC/ ECD or NPD	EPA 8081/8141/8082
pH	Water	Poly	250 mL	None	None		15 Minutes[2]	Electrometric	SM4500H
Phenolics	Water	Amber Glass	500 mL	H_2SO_4	H_2SO_4		28 Days	Spectrophotometric	EPA 420.1
Phosphate, Ortho	Water	Poly	250 mL	None	None		48 hours	FIA-Colorimetric	EPA 365.1
Phosphate, Total	Water	Poly	250 mL	H_2SO_4	H_2SO_4		28 Days	FIA-Colorimetric	EPA 365.1
Polynuclear Aromatics (PNAs) Low level	Water	Amber Glass	2 x 1 L	None	Thiosulfate		7 Days	GC/MS SIM mode	EPA 625/8270SIM

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Test Name	Matrix	Bottle Type	Bottle size	Preservative (chill all [8], unless noted) Unchlorinated Water (Raw)	Chlorinated Water (Treated)	Soil/Solid	Holding Time until start of analysis	Analytical Technique	Analytical Method
Polynuclear Aromatics (PNAs) Low level	soil/solid	Glass jar	4 oz	None	None		14 Days	GC/MS SIM Mode	EPA 625/8270SIM
PPCP Alkyl Phenols	Water	Amber Glass	1 L (*)	H_2SO_4	H_2SO_4		28 Days	GC/MS SIM	In-house
PPCP Hormones, Morphine, Pharma-Neg, Pharma-Pos	Water	Amber Glass	2 x 1 L (*)	Sodium azide, Ascorbic acid	Sodium azide, Ascorbic acid		28 Days	LC/MS/MS	EPA 1694M
Radiological-Gross Alpha	Water	Poly	1 L	None[5]	None[5]		6 Months	GPC	EPA 900.0
Radiological-Gross Alpha high TDS	Water	Poly	1 L	None[5]	None[5]		6 Months	Coprecipitation-GPC	SM7110C
Radiological-Gross Beta	Water	Poly	1 L	None[5]	None[5]		6 Months	GPC	EPA 900.0
Radiological-Radium 226-Sub	Water	Poly	2 x 1 L	HNO_3	HNO_3		6 Months		EPA 903.0/903.1 Sub
Radiological-Radium 228-Sub	Water	A-Poly	2 x 1 L	HNO_3	HNO_3		6 Months		RA-05 Sub
Radiological-Radon 222-Sub	Water	Glass	2 x 40 mL	None	None		4 Days (DW), 8 Days (WW)	LSC	SM7500-RN
Radiological-Strontium 90-Sub	Water	Poly	1 L	HNO_3	HNO_3		6 Months		EPA 905.0 sub
Radiological-Tritium-Sub	Water	Amber Glass	2x125 mL	None	None		6 Months	LSC	EPA 906.0 sub
Radiological-Uranium-Sub	Water	Poly	250 mL	HNO_3	HNO_3		6 Months	ICP-MS	EPA 200.8
Semivolatile Organics (BNA) - GW or WW	Water	Amber Glass	2 x 1 L	None	Thiosulfate		7 Days	GC/MS	EPA 625/8270C
Semivolatile Organics (BNA) - Soil/Solid	Soil/solid	Glass jar	4 oz	None	None		14 Days	GC/MS	EPA 8270C
Silica by ICP	Water	Poly	250 mL	None	None		28 Days	ICP	EPA 200.7
SOCs - Drinking Water	Water	Amber Glass	2 x 1 L	HCl	Sulfite/HCl		14 days	GC/MS	EPA 525.2
SOCs - Special Analytes	Water	Amber Glass	2 x 1 L	HCl	Asc., EDTA, Diazol. Urea, Buffer		14 days	GCMS	EPA 526

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				Preservative (chill all [8], unless noted)					
Test Name	Matrix	Bottle Type	Bottle size	Unchlorinated Water (Raw)	Chlorinated Water (Treated)	Soil/Solid	Holding Time until start of analysis	Analytical Technique	Analytical Method
SOCs - Phenolics	Water	Amber Glass	2 x 1 L	HCl	Sulfite/HCl		14 days	GCMS	EPA 528
Solids, Settleable	Water	Poly	1 L	None	None		48 Hours	Gravimetric	EPA 160.5
Solids, TDS	Water	Poly	500 mL	None	None		7 Days	Gravimetric	SM2540C
Solids, Total	Water	Poly	500 mL	None	None		7 Days	Gravimetric	SM2540B
Solids, TSS	Water	Poly	500 mL	None	None		7 Days	Gravimetric	EPA 160.2
Solids, TVS	Water	Poly	500 mL	None	None		7 Days	Gravimetric	EPA 160.4
Solids, VSS	Water	Poly	500 mL	None	None		7 Days	Gravimetric	SM 2540E
Sulfate	Water	Poly	250 mL	None	None		28 Days	IC	EPA 300.0
Sulfide, Dissolved	Water	Poly	250 mL	ZnAc/NaOH	ZnAc/NaOH		7 Days	Colorimetric	SM4500S2D
Surfactants (MBAS)	Water	Poly	500 mL	None	None		48 Hours	Colorimetric	SM5540C
t-Butyl Alcohol	Water	Glass	2 x 40 mL	none	None		14 Days	GC/MS	EPA 524.2
THMs	Water	Amber Glass	2 x 40 mL	Thiosulfate	Thiosulfate		14 Days	GC/MS	EPA 524.2
THMs-Formation Potential	Water	Amber Glass	1 L	None	None		14 Days	GC/MS	SM5710/EPA 524.2
Total Organic Carbon	Water	Amber Glass	250 mL	H_3PO_4	H_3PO_4		28 Days	UV-Persulfate	SM5310C
Total Organic Halides	Water	Amber Glass	500 mL	H_2SO_4	Sulfite/H_2SO_4		14 Days	Pyrolysis/ Coulometric	SM5320B/EPA 9020
Turbidity	Water	Poly	250 mL	None	None		48 Hours	Nephelometric	EPA 180.1
UCMR2-PBDEs	Water	Amber Glass	2 x 1 L	Ascorbic, EDTA, Citrate	Ascorbic, EDTA, Citrate		14 days	GCMS	EPA 527
UCMR2-Explosives	Water	Amber Glass	2 x 1 L	CuSO4/Trizma Buffer	CuSO4/Trizma Buffer		14 days	GCMS	EPA 529
UCMR2-Acetanilide Degradates	Water	Amber Glass	2 x 500 mL	NH_4Cl	NH_4Cl		14 days	LC/MS/MS	EPA 535
UCMR2-Acetamide Pesticides	Water	Amber Glass	2 x 1 L	Sulfite/HCl	Sulfite/HCl		14 days	GCMS	EPA 525.2
UCMR2-Nitrosamines	Water	Amber Glass	1 x 1 L	Thiosulfate	Thiosulfate		14 days	GCMS	EPA 521
UV254	Water	Amber Glass	250 mL	None	None		48 Hours	Spectrophotometric	SM 5910B
Volatile Organics-DW	Water	Glass	3 x 40 mL	HCl	Ascorbic/HCl		14 Days	GC/MS	EPA 524.2
Volatile Organics-Aromatics only	Water	Glass	2 x 40 mL	HCl	Thiosulfate/HCl		14 Days	P&T/PID	EPA 602

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Test Name	Matrix	Bottle Type	Bottle size	Preservative (chill all [8], unless noted) Unchlorinated Water (Raw)	Chlorinated Water (Treated)	Soil/Solid	Holding Time until start of analysis	Analytical Technique	Analytical Method
Volatile Organics-WW/GW	Water	Glass	2 x 40 mL	HCl	Thiosulfate/HCl		14 Days	GC/MS	EPA 624/8260B
Volatile Organics-Soil/Solid	Soil/solid	Glass Jar/other[6]	4 oz/other[6]	None	None		14 Days	GC/MS	EPA 8260B
Gasoline -TPH	Water	Glass	2 x 40 mL	HCl	Thiosulfate/HCl		14 Days	P&T/FID	EPA 8015B
Gasoline -TPH soil/solid	Soil/solid	Glass Jar/other[6]	4 oz/other[6]	None	None		14 Days	P&T/FID	EPA 8015B
Diesel/Oil-TPH	Water	Amber Glass	1 L (*)	HCl	Thiosulfate/HCl		7 Days	GC/FID	EPA 8015B
Diesel/Oil-TPH	Soil/Solid	Glass jar	4 oz	None	None		14 Days	GC/FID	EPA 8015B

Notes:

[1]: Formaldehyde and acetaldehyde only.

[2]: This is field test; if requested to be performed at the lab it will be done ASAP.

[3]: Samples can be received unpreserved and preserved at the lab at least 24 hours before analysis.

[4]: Al,Sb,As,Ba,Be,B,Cd,Ca,Na,Mg,K,Cr,Co,Cu,Fe,Pb,Li,Mn,Mo,Ni,Se,Ag,Sr,Tl,Ti,V,Zn

[5]: Preserve at the lab with Nitric acid to pH <2 and wait 24 hours before analysis starts.

[6]: No headspace required or preferably EPA Method 5035 sample collection. Consult the laboratory for special requirements.

[7]: No cooling required.

[8]: Chill samples to ≤ 6ºC, but above freezing.

[*]: Needs extra bottles for QA/QC for certain projects.

Effective as of 7/15/11

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Appendix J

Chemistry

J.1 Method Validation

Reference methods are validated by determining the LOD and/or LOQ by procedures outlined below, and determining precision and bias by using the demonstration of capability procedures.

Non-standard methods, laboratory-designed/developed methods, standard methods used outside their intended scope are validated prior to their use. The validation shall be as extensive as is necessary to meet the needs of the given application or field of application using quality control procedures and acceptance criteria that are consistent with those of similar standard methods or technology. At a minimum, quality control procedures must address:

- Calibration;
- Interferences/contamination (method blanks, calibration blanks);
- Analyte identification;
- Selectivity;
- Sensitivity (LOD and/or LOQ);
- Precision and Bias.

Based on the intended use, the laboratory establishes quality control acceptance criteria for precision, accuracy, selectivity (if applicable). In addition, the action level (compliance level, project decision level, etc.) is used to establish the LOQ and/or LOD.

a) Limit of Detection (LOD)

The Limit of Detection (LOD) is the laboratory's estimate of the minimum amount of an analyte in a given matrix that an analytical process can reliably detect in their facility.

LODs are not required for any component for which spiking solutions or quality control samples are not available, such as temperature and pH, or, when test results are not to be reported to the LOD (versus the limit of quantitation or working range of instrument calibration). Where an LOD study is not performed, the laboratory may not report a value below the Limit of Quantitation.

The laboratory will select methods with LODs that are expected to meet the intended data use.

LODs are determined in samples that represent the quality system matrices to be evaluated. All sample processing/preparation steps and all determinative steps are used to validate the method for all targeted analytes. The representative quality system matrix will be free from the target analytes of interest or interfering analytes that impact the LOD.

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When the method or applicable regulation specifies a LOD study, only the specified method will be used. The laboratory will document the process used to derive the LOD and will retain all the supporting data.

When providing compliance data under 40-CFR Part 136 or equivalent delegated state programs, the laboratory follows 40 CFR Part 136, Appendix B, and uses the method detection limit (MDL) derived from the procedure as the LOD. The procedures are described in SOP MIS032.

The laboratory uses the procedure described in SOP MIS032 to determine the LOD for the method:

Once the LOD has been determined the validity of the LOD is verified by a detection (value above zero) for each target analyte in a quality control sample of a representative quality system matrix. The concentration of the analytes in the sample will be no more than 3 times the derived LOD unless the test contains multiple analytes. In the latter case, the concentration of the target analytes will be no greater than 4 times the LOD. This verification will be performed on each instrument that is used for the test.

LODs are performed/repeated:

- before reporting the LOD for a given analyte
- any time there is a change that affects how the method is performed or
- when there is a change in instrumentation that affects the sensitivity of the analysis.

LODs are verified annually for each quality system matrix/technology/analyte combination and quarterly for DoD related work.

b) Limit of Quantitation

The Limit of Quantitation (LOQ) is an estimate of the minimum amount of a substance that can be reported with a specified degree of confidence.

If an LOD study is not performed, concentration values less than the Limit of Quantitation are not reported but are appropriately flagged.

LOQs are not required for components or properties for which spiking solutions or QC samples are not available. These include temperature, pH, etc.

An LOQ study includes all sample processing and analysis steps in the analytical method. The study is performed in each quality system matrix for which the test will be performed. The procedure is documented and all supporting data are retained. The resulting LOQ will be above the LOD (if determined).

The LOQ is determined by the procedure specified in SOP MIS032 and it must be above the LOD is one has been determined for that particular analyte/method/matrix and must be above or equal to the lowest calibration point if a multi-point calibration curve is used.

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The laboratory will verify the LOQ by the analysis of a QC sample containing the analytes of concern at a concentration of 1 to 2 times the derived (claimed) LOQ. The LOQ is considered verified if recovery of each analyte is within the laboratory's acceptance limits, or the client's data quality objectives.

The LOQ will be verified annually (quarterly for DoD related work) for each quality system matrix, technology and analyte unless the LOD was determined or verified.

c) Precision and Bias

Precision is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. Precision is usually expressed as standard deviation, variance, or range, in either absolute or relative terms.

Bias is the systematic error that contributes to the difference between the mean of a significant number of test results and the accepted reference value.

Precision and bias using non-reference, modified reference or laboratory-developed methods are established using the procedure outlined below and compared to the criteria established by the client (when requested), the method, or the laboratory.

Precision and bias are determined by processing samples through all phases of the method (sample preparation, cleanup, analysis, etc.) and are evaluated across the analytical calibration range of the method. This study is performed for all quality system matrices for which the test is to be used.

Precision is determined by the demonstration of capability procedure described below.

Precision is assessed through the calculation of relative percent differences (RPD) and relative standard deviations (RSD) for replicate samples. For analyses that have detectable levels of analytes (for example inorganic analyses), laboratory precision is usually assessed through the analysis of a sample/sample duplicate pair and field duplicate pairs. For analyses that frequently show no detectable levels of analytes (e.g., organic analyses), the precision is usually determined through the analysis of matrix spike/matrix spike duplicates (MS/MSD) and field duplicate samples.

d) Selectivity

Selectivity is the capability of a test method or instrument to respond to a target substance or constituent in the presence of non-target substances (EPA-QAD).

The laboratory evaluates selectivity through procedures defined in the test method SOPs.

Absolute retention time and relative retention time aid in the identification of components in chromatographic analyses and to evaluate the effectiveness of a

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column to separate constituents. Acceptance criteria for retention time windows are documented in the corresponding method SOP or in the SOP ORG074.

A confirmation shall be performed to verify the compound identification when positive results are detected on a sample from a location that has not been previously tested by the laboratory. Such confirmations shall be performed on organic tests such as pesticides, herbicides, or acid extractable or when recommended by the analytical test method except when the analysis involves the use of a mass spectrometer. Confirmation is required unless stipulated in writing by the client. The confirmation is documented in the bench sheets and/or the LIMS.

When reporting data for methods that require analyte confirmation using a secondary column or detector, project-specific reporting requirements shall be followed. If project-specific requirements have not been specified, the reporting requirements in the method are followed. If the method does not include reporting requirements, the results from the primary column or detector are reported, unless there is a scientifically valid and documented reason for not doing so.

Results that are unconfirmed, or for which confirmation was not performed, shall be identified in the test report, using appropriate data qualifier flags, and explained in the narrative. The laboratory shall use method-specified acceptance criteria for analyte confirmation. If method-specific criteria do not exist, the analyte confirmation is performed as specified in SOP MIS052.

Other procedures for evaluating selectivity are described in the analytical methods, which may include mass spectral tuning, ICP inter-element interference checks, sample blanks, spectrochemical absorption or fluorescence profiles, co-precipitation evaluations, and electrode response factors. Acceptance criteria for mass spectral tuning are contained in the corresponding analytical method SOPs.

J.2 Demonstration of Capability

Demonstration of Capability (DOC): A procedure to establish the ability of the analyst to generate analytical results of acceptable accuracy and precision.

Before reporting any data with a given method, a satisfactory DOC is performed. Thereafter, each analyst demonstrates continuing proficiency through the procedures outlined in Ongoing Demonstration of Capability.

The laboratory has several methods that meet the requirements of EL-V1M4-2009, Section 1.6.1, paragraph 3 of the TNI Standard (methods that have been in use at the laboratory for over one year prior to applying for accreditation and there has been no significant changes in instrument type, personnel or test method) and is demonstrating capability through the use of on-going DOCs (see below). Records to indicate that the requirements of the cited paragraph have been met are available for review.

a) <u>Initial Demonstration of Capability (IDOC)</u>

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An IDOC is performed:

- Before using any method
- Each time there is a change in instrument type, personnel or method and
- If the laboratory or analysts has not performed the method in a twelve-month period.

The IDOC(s) for each analyst is documented electronically as spreadsheets in the QC\IDCs folder under each analytical method with different tabs for different analysts. The document identifies the analyst(s) involved in preparation and/or analysis; matrix; analyte(s), class of analyte(s), or measured parameter(s); the method(s) performed; the laboratory-specific SOP used for analysis (including revision number); the date(s) of analysis; and a summary of the results used to calculate the mean recovery and standard deviations.

All raw data, preparation records, and calculations for each IDOC are retained and are available for review.

For new methods that need to be implemented, a validation procedure is documented before they are used in the laboratory. Appropriate method validation techniques include the following:

- Testing of reference standards or reference materials;
- Comparison of results to those achieved using other validated, standard methods
- Interlaboratory comparisons.

When the above techniques are not feasible, the following options are used:

- Systematic assessment of factors that could influence the result; and/or
- Assessment of the precision and bias of the result based on the science of the method and practical experience.

When the method specifies a procedure to be followed, only those procedures will be used. If no procedures are specified the laboratory uses its own procedure, which is documented in SOP MIS034.

b) Ongoing Demonstration of Capability

After the demonstration of capability is completed, on-going proficiency is maintained and demonstrated at least annually. Each analyst is expected to consistently meet the QC requirements of the method, the laboratory SOP, client requirements and/or the TNI Standard. Ongoing DOCS are documented in spreadsheets under each department in the QC\IDC folder of the computer system and all records related to the demonstration are retained.

The laboratory uses any of the following procedures to demonstrate ongoing DOC:

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a) acceptable performance of a blind sample (single blind to the analyst). This can be PT sample or other blind sample prepared by QA personnel or obtained from external source. Successful analysis of a blind performance sample on a similar method using the same technology (e.g., GC/MS volatiles by purge and trap for Methods 524.2, 624 or 8260) would only require documentation for one of the test.;
b) another initial DOC; perform this as per SOP MIS034
c) at least four (4) consecutive laboratory control samples with acceptable levels of precision and accuracy, as specified by the method or using lab generated acceptance limits. The laboratory shall tabulate or be able to readily retrieve four (4) consecutive passing laboratory control samples (LCS) for each method for each analyst each year; The four LCSs used for demonstration of ongoing capability must be obtained within a period of no more than 3 months and the date of the last one used as demonstration of ongoing capability.
d) a documented process of analyst review using quality control (QC) samples. QC samples can be reviewed to identify patterns for individuals or groups of analysts and determine if corrective action or retraining is necessary; or
e) if a) through d) are not technically feasible, then analysis of real-world samples with results within predefined acceptance criteria (as defined by the laboratory or method) shall be performed.

J.3 Calibration

Section 23.2.2 includes information on calibration of support equipment. This Section covers calibration of analytical equipment.

Initial instrument calibration and continuing instrument calibration verification are an important part of ensuring data of known and documented quality. If more stringent calibration requirements are included in a mandated method or by regulation, those calibration requirements override any requirements outlined here or in laboratory SOPs. Generally, procedures and criteria regarding instrument calibrations are provided in the SOPs for each analytical method.

J.3.1 Initial Instrument Calibration

- Records:

Initial instrument calibration includes calculations, integrations, acceptance criteria, and associated statistics. All instruments are calibrated in accordance with the respective SOPs and/or method of analysis. The typical calibration procedure consists of an initial calibration, performed by running a series of standards and calculating the response by using either the response factors or by linear or polynomial regression analysis. This is followed by a calibration verification. All calibration procedures are thoroughly documented.

Sufficient raw data records are collected to allow reconstruction of the initial instrument calibration. These include, at a minimum, calibration date, test method, instrument, analysis date, analyte names, analysts signature or initials,

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concentration and response, calibration curve or response factor, or unique equation or coefficient used to reduce instrument responses to concentration. Calibration date and expiration date (when recalibration is due) is documented for equipment requiring calibration, where practicable (see Section 23.1).

- Number of Standards and Concentrations:

  If the reference or mandated method does not specify the number of calibration standards to use, the minimum number is three, not including blanks or a zero standard.

  For instrumentation where single point calibration is recommended by manufacturer's instructions, such as with some ICP and ICP/MS technologies (with a zero and single point calibration), the following apply:

  a) For single point plus zero blank calibrations, the zero point and the single point standard are analyzed prior to the analysis of samples, and the linear range of the instrument established by analyzing a series of standards, one of which is at the lowest quantitation level.
  b) Zero blank and single point calibration standards are analyzed with each analytical batch for methods where they are specified.
  c) A standard corresponding to the limit of quantitation is analyzed with each analytical batch and must meet established acceptance criteria when using single point plus zero blank calibrations.
  d) The linearity of single point plus zero blank calibrations is verified at a frequency established by the method or the manufacturer.

  The lowest calibration standard is the lowest concentration for which quantitative results can be reported without qualification. The lowest calibration standard is at or below the Limit of Quantitation (LOQ) and is greater than the Limit of Detection. Results that are less than the LOQ are considered to have increased uncertainty, and are either reported with a qualifier code or explained in the case narrative.

  The highest calibration standard is the highest concentration for which quantitative results can be reported. Data reported exceeding the highest calibration standard without dilutions is considered to have increased uncertainty and are reported with a qualifier code or reanalyzed and explained in the case narrative.

- Evaluation, Verification and Corrective Action

  All initial instrument calibrations are verified with a standard obtained from a second source or lot if the lot can be demonstrated from the manufacturer as prepared independently from other lots. Traceability shall be to a national standard, when commercially available. If not commercially available, it can be prepared in-house.

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The following is the criteria used for the acceptance of an initial calibration, unless specified differently in the analytical methods, the criteria used are appropriate to the calibration technique:

- Use the average response factor (RF) if the percent relative standard deviation (%RSD) of the points is less than 20%. In this case, linearity through the origin is assumed.
- If the %RSD is greater than 20%, linearity through the origin cannot be assumed and a linear regression, a weighed linear regression or a non-linear regression can be used. The acceptance criteria for linear regression are a coefficient of correlation (r) equal or greater than 0.99 and for non-linear regression the coefficient of determination (COD) must be equal or greater than 0.98. In both cases, the curve is not to be forced through the origin nor is the origin used as another point. The sample results must be within the first and last standards.
- The number of data points to construct the initial calibration curve shall be obtained from the analytical method employed. If no criteria are specified, the laboratory shall construct initial calibration curves using a minimum of five calibration points for organic analytes and three calibration points for inorganic analytes and IH samples. All reported target analytes and surrogates (if applicable) shall be included in the initial calibration. Reported results for all target analytes shall be quantified using a multipoint calibration curve; surrogates are calibrated according to each analytical method requirements, unless there are project specific requirements in which case these are followed. It is not permitted to exclude calibration points unless there is technical justification for it.
- The lowest standard shall be at or below the reporting limit for the method and at or below the regulatory limit/decision level if known by the laboratory.
- The lowest calibration standard must be above the detection limit. Noted exceptions: for turbidity analysis and for instrument technology (such as ICP or ICP/MS) with validated techniques from manufacturers or methods employing standardization with a zero point and a single point calibration standard:
    - Prior to the analysis of samples the zero point and single point calibration must be analyzed and the linear range of the instrument must be established by analyzing a series of standards, one of which must be at the lowest quantitation level.
    - Zero point and single point calibration standard must be analyzed with each analytical batch.
    - A standard corresponding to the lowest quantitation level must be analyzed with each analytical batch and must meet established acceptance criteria.
    - The linearity is verified at a frequency established by the method and/or the manufacturer.
    - If a sample within an analytical batch produces results above its associated single point standard then one of the following should occur:
        - analyze reference material at or above the sample value that meets established acceptance criteria for validating the linearity; dilute the sample such that the result falls below the

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single point calibration concentration (when sufficient sample volume permits);

§ Report the data with an appropriate data qualifier and/or explain in the case narrative.

§ For metals analysis with a single-point calibration, a sample result may be reported up to 90% of the linear dynamic range (LDR). All samples exceeding this value must be diluted to within the LDR.

Where appropriate, the laboratory has manual integration procedures (SOP MIS039) that are adhered to when evaluating calibration data.

Any samples that are analyzed after an unacceptable initial calibration are re-analyzed or the data are reported with qualifiers, appropriate to the scope of the unacceptable condition (see Section 12 – "Control of Nonconforming Environmental Testing").

Quantitation is always determined from the initial calibration unless the test method or applicable regulations require quantitation from the continuing instrument calibration verification.

Corrective actions are performed when the initial calibration results are outside acceptance criteria. Calibration points are not dropped from the middle of the curve unless the cause is determined and documented. If the cause cannot be determined, the calibration curve is re-prepared. If the low or high calibration point is dropped from the curve, the working curve is adjusted and sample results outside the curve are qualified.

Specific analyses' calibrations are checked more frequently. Some instruments, such as TOX analyzers have built-in calibration features. The internal calibration of these instruments is monitored daily for accuracy.

Some calibration curves for spectrophotometric methods are very stable over a long period of time, however it is the policy of the Laboratory to perform a new initial calibration curve even if the continuing calibration check meets specified criterion, in any of the following events:

- At least every three years
- When the instrument is moved to a different location
- If any maintenance that can affect the calibration has been performed
- If the analysts judges it necessary for special projects or different range of calibration

Spectrophotometers are also subject to wavelength calibration which it shall be performed at least annually, according to the procedure described by the manufacturer in the instrument manual or other documentation.

J.3.2 <u>Continuing Instrument Calibration</u>

- Records

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The calculations and associated statistics for continuing instrument calibration are included or referenced in the test method SOP.

Sufficient raw data records are retained to allow reconstruction of the continuing instrument calibration verification. Continuing instrument calibration verification records connect the continuing verification date to the initial instrument calibration.

Where appropriate, the laboratory has manual integration procedures (SOP MIS039) that are adhered to when evaluating calibration data.

- Frequency

Calibration is verified for each compound, element, or other discrete chemical species. For multi-component analytes, such as aroclors, chlordane, toxaphene, or total petroleum hydrocarbons, a representative chemically related substance or mixture is used.

Calibration verifications are performed:

- at the beginning and end of each analytical batch, except for instances when an internal standard is used. For methods employing internal standards, one verification is performed at the beginning of the analytical batch. Some methods have more frequent CCV requirements (see specific SOPs). Many inorganic methods require the CCV to be analyzed after every 10 samples.
- whenever it is expected that the analytical system may be out of calibration or might not meet verification acceptance criteria.
- when the time period for calibration or the most recent calibration verification has expired.
- for all analytical systems that have a calibration verification requirement. Requirements can be found in the method SOPs. Many inorganic methods require the CCV to be analyzed after every 10 samples.

- Evaluation, Verification and Corrective Actions

The validity of the initial calibration is verified prior to sample analysis by use of a continuing instrument calibration verification (CCV) standard.

The acceptance criteria, unless something different is specified in the corresponding SOPs or QAPP, is the following:

- The concentration of the CCV standard shall be from the low-calibration standard to the midpoint of the calibration range;
- The source of the CCV standard should be the same as the source for the initial calibration standard(s); and
- The baseline for evaluating the CCV is the initial calibration curve, except for the evaluation of retention times in organic chromatographic methods, which may be based on comparison with the retention times in the initial CCV.
- The actual acceptance ranges for CCVs are specified in each method SOP

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When the method specifies that CCVs shall be run at specific sample intervals, the count of these samples shall be of field samples only.

When a CCV fails to fall within acceptance limits then CCVs and all samples analyzed since last successful calibration verification are re-analyzed. If reanalysis is not possible, the client is notified prior to reporting data associated with a noncompliant CCV and if data are reported, appropriate qualifiers are used and if further clarification is needed this is explained in the case narrative. The exception to this is when a CCV fails with high bias, but the field samples remain not detected.

Corrective action is initiated for CCV results that are outside of acceptance criteria (see Section 12 – "Control of Nonconforming Environmental Testing").

J.3.3 Unacceptable Continuing Instrument Calibration Verifications

If routine corrective action for continuing instrument calibration verification fails to produce a second consecutive (immediate) calibration verification within acceptance criteria, then a new calibration is performed or acceptable performance is demonstrated after corrective action with two consecutive calibration verifications.

For any samples analyzed on a system with an unacceptable calibration, some results may be useable if qualified and under the following conditions:

a) If the acceptance criteria are exceeded high (high bias) and the associated samples are below detection, then those sample results that are non-detects may be reported as non-detects.

b) If the acceptance criteria are exceeded low (low bias) and there are samples that exceed the maximum regulatory limit, then those exceeding the regulatory limit may be reported.

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Appendix K

Microbiology

K.1 Method Validation

Microbiological methods are validated according to the following:

a) Accuracy – The methods are validated for accuracy by using at least one (1) known pure reference culture at the anticipated environmental conditions, and compare the method results to that of a reference method.
b) Precision – Is validated by performing at least ten (10) replicate analyses with both the proposed and reference method, using the target microorganisms of choice. The results shall show that the methods are not statistically different.
c) Selectivity (sensitivity) – By verifying all responses in at least ten (10) samples using mixed cultures that include the target organism(s), and at varying concentrations (microbial identification testing or equivalent processes may be used). Calculate the number of false positive and false negative results.

The laboratory will compare the results of these tests with the data quality objectives stated by the client. The data from the above tests must be equal to or better than the stated DQOs. A statement comparing the client DQOs against the above-mentioned QC measures will be included in the validation records.

The laboratory will confirm the validation by participating in a proficiency test program with acceptable results and retain the records of the validation for five years past the date of last use of the method.

K.2 Demonstration of Capability (DOC)

Demonstration of Capability: A procedure to establish the ability of the analyst to generate analytical results of acceptable accuracy and precision.

Before reporting any data with a given method, a satisfactory initial DOC (IDOC) is performed. Thereafter, each analyst will demonstrate continuing proficiency through the procedures outlined in Ongoing Demonstration of Capability.

The laboratory has several methods that meet the requirements of EL-V1M5-2009, Section 1.6.1, paragraph 3 of the TNI Standard and is demonstrating capability through the use on-going DOCs (see below). Records to indicate that the requirements of the cited paragraph have been met are available for review. The methods are: Total Coliforms and E. Coli by SM9223B, Total Coliforms by SM9221B, Fecal Coliforms by SM9221E and Heterotrophic Plate Count by SM9215B.

a) <u>Initial Demonstration of Capability (IDOC)</u>

An IDOC is performed:

- before using any method;

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- each time there is a change in instrument type, personnel or method; and
- if the laboratory or analysts has not performed the method in a twelve-month period.

The IDOC(s) for each analyst is documented electronically in the QC\IDC folder of the computer system. The document identifies the analyst(s) involved in preparation and/or analysis; matrix; analyte(s), class of analyte(s), or measured parameter(s); the method(s) performed; the laboratory-specific SOP used for analysis (including revision number); the date(s) of analysis; and a summary of the results used to calculate the mean recovery and standard deviations.

All raw data, preparation records, and calculations for each DOC are retained and are available for review.

When methods specify a procedure to be followed, only those procedures will be used. If no procedures are specified the laboratory uses its own procedure, which is documented in the corresponding SOP.

The procedure for IDOC for Microbiological methods is as follows:

a) The target organism(s) is diluted in a volume of clean quality system matrix (a sample in which no target organisms or interferences are present at concentrations that will impact the results of a specific method). This matrix shall be sterile phosphate or sterile peptone solution unless specified by the manufacturer. Prepare at least four (4) aliquots at the concentration specified, or if unspecified, to the countable range for plate methods or working range for most probable number (MPN) type methods.
b) At least four (4) aliquots shall be prepared and analyzed according to the method either concurrently or over a period of days.
c) Using all of the results, convert these results to logarithmic values, then calculate the mean recovery and standard deviation of the log converted results in the appropriate reporting units for each organism of interest. When it is not possible to determine mean and standard deviations, such as for presence/absence, the laboratory shall assess performance against established and documented criteria.
d) For qualitative tests, acceptable performance in a blind study, either internally or externally generated, may be used to meet this Standard, provided that the study consists of a minimum of a blank, a negative culture, and a positive culture for each target organism or metabolite (e.g. b-glucuronidase in E. coli.).
e) Compare the information from c) above to the corresponding acceptance criteria for precision and accuracy in the method (if applicable) or in laboratory-generated acceptance criteria (if there are not established mandatory criteria). If all parameters meet the acceptance criteria, the analysis of actual samples may begin. If any one of the parameters does not meet the acceptance criteria, the performance is unacceptable for that parameter.
f) When one or more of the tested parameters fail at least one of the acceptance criteria, the analyst shall proceed according to i) or ii) below.
   i) Locate and correct the source of the problem and repeat the initial DOC for all parameters of interest beginning with b) above.

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ii) Repeat the initial DOC for all parameters that failed to meet criteria.

g) Repeated failure, however, confirms a general problem with the measurement system. If this occurs, locate and correct the source of the problem and repeat the test for all organisms of interest beginning with b).

The organisms used ***Escherichia coli*** for positive total coliform and fecal coliform bacteria source, ***Enterobacter aerogenes*** for positive total coliform and negative fecal coliform bacteria and ***Pseudomonas aeruginosa*** for negative total coliform and negative fecal coliform bacteria

For enumeration, since it is hard to determine the amount of bacteria in the source, a senior chemist or the Microbiology Technical Director makes a serial dilution of bacteria source and run it side by side with the chemist performing the IDOC; the results from the senior chemist are used as True Value.

For Heterotrophic Plate Count (HPC) real samples are used to perform IDOCs. The chemist performing the IDOC runs the samples side by side with a senior chemist or supervisor and record their findings in comparison to result of the senior chemist.

b) Ongoing Demonstration of Capability

After the demonstration of capability is completed, on-going proficiency is maintained and demonstrated at least annually. Each analyst is expected to consistently meet the QC requirements of the method, the laboratory SOP, client requirements and/or the TNI standard. Ongoing DOCS are documented as electronic files in spreadsheets located in the folder QC\IDC of the computer system, and all records related to the demonstration are retained.

The laboratory uses the following procedure to demonstrate ongoing DOC:

a) Performing another initial demonstration of capability
b) Analysis of one sample or clean matrix that is fortified with a known quantity of the target organism, with results meeting the laboratory acceptance criteria for accuracy and, where applicable to the testing technique, also meeting the observational details expected for the presumptive, confirmed and completed phases defined in the method.
c) Analysis of one sample in duplicate for each target organism and test, with results meeting the laboratory acceptance criterion for precision.
d) Acceptable results for one-single-blind proficiency test sample for target organisms in each field of accreditation.
e) Performance of an alternate adequate procedure for the field of accreditation, the procedure and acceptance criteria being documented in the laboratory's quality system.
f) A documented process of analyst review using QC samples. QC samples can be reviewed to identify patterns for individuals or groups of analysts and determine if corrective action or retraining is necessary; or
g) if a) through f) are not technically feasible, then analysis of real-world samples with results within predefined acceptance criteria (as defined by the laboratory or method) shall be performed.

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K.3 Calibration

Section 23.2.2 includes information on calibration of support equipment. This section covers calibration of analytical equipment.

The laboratory has methods that describe how the support equipment such as conductivity meters, oxygen meters, pH meters, hygrometers, and other similar equipment are calibrated and verified. These are found in logbooks or as electronic records.

The laboratory is not currently using continuous monitors but if these monitors are used in the future they will be verified at least once per month. If the verification fails, an initial calibration is performed and verified. If the instrument is taken off-line, an initial calibration and verification is performed before returning to service.

K.3.1 Specific Equipment Requirements

- Autoclave

  The laboratory initially evaluates the performance of each autoclave before first use by establishing its functional properties and performance by the procedures described in SOP MIS031.

  Autoclaves meet specified manufacturer's temperature tolerances. Pressure cookers shall not be used for sterilization of growth media.

  With each use:

  - The laboratory ensures that the sterilization temperature is reached by using a maximum registering thermometer.
  - The laboratory records date, contents, maximum temperature reached, pressure, time in sterilization mode, total run time (may be recorded as time in and time out) and analyst's initials.
  - Temperature sensitive tape is used with the contents of each autoclave run to indicate that the autoclave contents have been processed.

  On a monthly basis, when the autoclave is in use, the laboratory verifies that the autoclave is effectively sterilizing the contents by using BT Sure Biological indicator, Geobacillus stearothermophilus, for steam sterilization at 121°C, kills in a normal cycle time as lactose based media.
  The autoclave mechanical timing device is checked quarterly against a stopwatch and the actual time elapsed documented.

  Autoclave maintenance, which is performed internally, is performed annually. The activities include a pressure check and verification of temperature device.

- Volumetric Equipment

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Equipment with movable parts such as automatic dispensers, dispensers/diluters, and mechanical hand pipettes are verified for accuracy quarterly.

Equipment such as filter funnels, bottles, non-Class A glassware, and other containers with volumetric markings (including sample analysis vessels) are verified once per lot prior to first use. The volume of the disposable volumetric equipment, such as sample bottles, and disposable pipettes are checked once per lot. The verification is either volumetric or gravimetric depending on the volume measured, acceptance range is 5%.

- UV instruments Used for Sanitization

  UV instruments for sanitation are not used in the lab. If put in operation they will tested quarterly for effectiveness by using uvcide strips.

  Bulbs would be replaced when the output is less than 70% of original for light tests or if count reduction is less than 99% for a plate containing 200 to 300 organisms.

- Water Baths and Incubators
  The laboratory initially establishes the uniformity of temperature distribution in incubators and water baths by placing calibrated thermometer in different areas of the water batch or incubator.

  On each day of use, the temperature of incubators and water baths is recorded twice a day, at least four hours apart.

- Ovens Used for Sterilization

  Ovens are not currently used at the laboratory for sterilization. If they were used, they would be checked for sterilization effectiveness monthly with the appropriate biological indicator. Records would be maintained for each cycle that include date, cycle time, temperature, contents and analyst's initials

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Appendix L

Radiochemistry

L.1 Method Validation

Reference methods are validated by determining the minimum detectable activity as outlined below, and precision and bias using an initial demonstration of capability.

The laboratory will compare the results of these tests with the data quality objectives stated by the client. The data from the above tests must be equal to or better than the stated DQOs. A statement comparing the client DQOs against the above-mentioned QC measures will be included in the validation records.

The laboratory will confirm the validation by participating in a proficiency test program with acceptable results and retain the records of the validation for five years past the date of last use of the method.

a) Detectable Activity

1. Minimum Detectable Activity (MDA)

The laboratory will determine the MDA of a method by a procedure that reflects instrument limitations and the intended data use. When the method requires a specific procedure for determining the MDA, only that procedure will be used.

MDAs are determined in samples that represent the quality system matrices to be evaluated. All sample processing/preparation steps and all determinative steps are used to validate the method for all targeted analytes. The representative quality system matrix will be free from the target analytes of interest or interfering analytes that impacts the MDA.

For all quality systems (except drinking water), the MDA represents the estimate of the smallest true activity (or activity concentration) of an analyte that ensure a 95% probability of detection.

For the Safe Drinking Water Act (SDWA) (drinking water quality system matrix), the MDA (SDWA “detection limit”), the MDA is equal to the concentration of analyte that can be counted with a precision of 100% at the 95% confidence level (1.96σ where σ is the standard deviation of the net counting rate of the sample). The SDWA detection limit (MDA) is equivalent to the concentration at which the relative standard deviation of the measurement due to counting statistics is 1/1.96. The laboratory shall ensure that the determined MDA meets (or is lower than) the published detection limits published in 40 CFR Part 141.25.

b) Precision and Bias

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Precision is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. Precision is usually expressed as standard deviation, variance, or range, in either absolute or relative terms.
BIAS is the systematic error that contributes to the difference between the mean of a significant number of test results and the accepted reference value.

Precision and bias for non-reference, modified reference or laboratory-developed methods are established using the procedure outlined below and compared to the criteria established by the client (when requested), the method, or the laboratory.
Precision and bias are determined by processing samples through all phases of the method (sample preparation, cleanup, analysis, etc.). This study is performed for all quality system matrices for which the test is to be used.

The following is the procedure use to evaluate precision and bias:

1. Analyze QC samples in triplicate containing the analytes of concern at or near the MDA, at a level near ten (10) times the MDA, and at a mid-range concentration.
2. Process these samples on different days as three (3) sets of samples through the entire measurement system for each analyte of interest.
3. Each day one QC sample at each concentration is analyzed. A separate method blank shall be subjected to the analytical method along with the QC samples on each of the three (3) days.
4. For each analyte, calculate the mean recovery for each day, for each level over days, and for all nine (9) samples. Calculate the relative standard deviation for each of the separate means obtained.
   The precision value that is determined is compared against uncertainly estimates. The precision at each testing level must be statistically greater than the maximum combined standard uncertainty of measurement at the testing level.

c) Measurement of Uncertainty

The laboratory will report the measurement uncertainly of all radioactive tests. The report will explain the uncertainty and will include:

- An indication of whether the uncertainty is the combined standard uncertainty ("one sigma") or an expanded uncertainty; and

- If expanded, an indication of the coverage factor (k) and optionally the approximate level of confidence.

The laboratory uses the a procedure to determine the uncertainly consistent with ISO Guide 98: 1995, Guide to the Expression of Uncertainty in Measurement (GUM), and The recommendations of Chapter 19 of the Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP) Volume I (EPA 402-B-04-001A), Volume II (EPA 402-B-04-001B), Volume III (EPA 402-B-04-001C), July 2004.

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d) Selectivity

The laboratory will evaluate selectivity using the checks established in the method.

L.2 Demonstration of Capability (DOC)

Demonstration of Capability: A procedure to establish the ability of the analyst to generate analytical results of acceptable accuracy and precision.

Before reporting any data with a given method, a satisfactory initial DOC (IDOC) is performed. Thereafter, each analyst will demonstrate continuing proficiency through the procedures outlined in Ongoing Demonstration of Capability.

The laboratory has several methods that meet the requirements of EL-V1M4-2009, section 1.6.1 paragraph 3 of the TNI standard and is demonstrating capability through the use on-going DOCs (see below). Records to indicate that the requirements of the cited paragraph have been met are available for review. The methods are: EPA 900.0, SM7110C, EPA 20.8 and SM7500-Rn.

a) Initial Demonstration of Capability (IDOC)

An IDOC is performed:

- Before using any method,
- Each time there is a change in instrument type, personnel or method, and
- If the laboratory or analysts has not performed the method in a twelve-month period.

The IDOC(s) for each analyst is documented <Where?>. The document identifies the analyst(s) involved in preparation and/or analysis; matrix; analyte(s), class of analyte(s), or measured parameter(s); the method(s) performed; the laboratory-specific SOP used for analysis (including revision number); the date(s) of analysis; and a summary of the results used to calculate the mean recovery and standard deviations.

All raw data, preparation records, and calculations for each DOC are retained and are available for review.

When methods specify a procedure to be followed, only those procedures will be used. If no procedures are specified the laboratory uses its own procedure, as follows:

a) The analyte(s) will be diluted in a volume of clean quality system matrix (a sample in which no target analytes or interferences are present at concentrations that will impact the results of a specific method) sufficient to prepare four (4) aliquots at a laboratory specified concentration. Where gamma-ray spectrometry is used to identify and quantify more than one analyte, the laboratory control sample shall contain gamma-emitting radionuclides that represent the low (e.g., 241Am), medium (e.g., 137Cs)

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and high (e.g., 60Co) energy range of the analyzed gamma-ray spectra. As indicated by these examples, the nuclides need not exactly bracket the calibrated energy range or the range over which nuclides are identified and quantified.

b) At least four (4) aliquots shall be prepared and analyzed according to the method either concurrently or over a period of days.
c) Using all of the results, calculate the mean recovery in the appropriate reporting units and the standard deviations of the population sample (in the same units) for each parameter of interest. When it is not possible to determine mean and standard deviations, such as for presence/absence and logarithmic values, the laboratory shall assess performance against established and documented criteria.
d) Compare the information from (c) above to the corresponding acceptance criteria for precision and accuracy in the method (if applicable) or in laboratory-generated acceptance criteria (if there are not established mandatory criteria). If all parameters meet the acceptance criteria, the analysis of actual samples may begin. If any one of the parameters does not meet the acceptance criteria, the performance is unacceptable for that parameter.
e) When one or more of the tested parameters fail at least one of the acceptance criteria, the analyst shall proceed according to i) or ii) below.
   i) Locate and correct the source of the problem and repeat the test for all parameters of interest beginning with b) above.
   ii) Beginning with b) above, repeat the test for all parameters that failed to meet criteria.
f) Repeated failure, however, confirms a general problem with the measurement system. If this occurs, locate and correct the source of the problem and repeat the test for all compounds of interest beginning with b).
g) When an analyte not currently found on the laboratory's list of accredited analytes is added to an existing accredited method, an initial DOC shall be performed for that analyte. When analytes are added to gamma-ray spectrometry and quantified this is not required.

b) <u>Ongoing Demonstration of Capability</u>

After the demonstration of capability is completed, on-going proficiency is maintained and demonstrated at least annually. Each analyst is expected to consistently meet the QC requirements of the method, the laboratory SOP, client requirements and/or the TNI standard. Ongoing DOCS are documented in the QC\IDC folder of the network computer system, and all records related to the demonstration are retained.

The laboratory uses the following procedure to demonstrate ongoing DOC:

a) Performing another initial demonstration of capability
b) Acceptable results for one-single-blind proficiency test sample (may be applied to similar methods using the same technology).
c) Having at least four (4) consecutive laboratory control samples with acceptable levels of precision and accuracy. The laboratory shall determine the acceptable limits for precision and accuracy prior to analysis. The

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laboratory shall tabulate or be able to readily retrieve four (4) consecutive passing LCS for each method for each analyst each year;

d) Performance of an alternate adequate procedure for the field of accreditation, the procedure and acceptance criteria being documented in the laboratory's quality system.

f) A documented process of analyst review using QC samples. QC samples can be reviewed to identify patterns for individuals or groups of analysts and determine if corrective action or retraining is necessary; or

g) if a) through f) are not technically feasible, then analysis of real-world samples with results within a predefined acceptance criteria (as defined by the laboratory or method) shall be performed.

L.3 Calibration

Section 23.2.2 includes information on calibration of support equipment. This section covers calibration of analytical equipment.

The calibration of the radiation counting equipment is performed as specified in the methods SOPS and following instrument manufacturer's instructions.

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LABORATORY QUALITY ASSURANCE MANUAL

(LQAM)

Rev. 26

March 5, 2014

Quality Assurance Manager: Bahar Amiri

The Laboratory Quality Assurance Manual is effective as of the date of the signature of the Quality Assurance Manager

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LABORATORY QUALITY ASSURANCE MANUAL

Approvals

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Heidi Hayes, Technical Director	3-5-14 Date
Sepideh Saeed, Laboratory Director	3-5-14 Date
Bahar Amiri, Quality Assurance Manager	3-5-14 Date

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1. INTRODUCTION

The purpose of the Laboratory Quality Assurance Manual is to provide a framework to outline the quality systems at Eurofins Air Toxics, Inc.

1.1 Our Unique Promise of Value

Eurofins Air Toxics is the global leader in the The NELAC Institute (TNI) National Environmental Laboratory Accreditation Program (NELAP) for accredited vapor-phase environmental analytical laboratory services, and is also ISO/IEC 17025:2005 accredited for environmental chamber chemical emissions testing and associated analytical laboratory services.

Eurofins Air Toxics supports public and private sectors, including engineering and consulting firms, manufacturers, industry, government, retailers and others by offering a wide variety of certified air methods as well as emissions testing of consumer and building products and materials. Eurofins Air Toxics provides unmatched quality, capacity, and technical expertise to deliver an outstanding service experience to clients worldwide.

1.2 Mission Statement

Eurofins Air Toxics, Inc. is an analytical and environmental laboratory specializing in the analysis of vapor-phase contaminants and air quality parameters. Our business is guided by four key principles:

1) Providing unmatched data integrity
2) Establishing long-term relationships
3) Delivering quality client service
4) Exceeding client expectations

1.3 Quality Policy

The Executive Management Group recognizes quality as a key element of the laboratory's standard of service. This group supports the laboratory's commitment to quality as defined by NELAP and ISO 17025.

The Quality Policy Statement gives employees clear requirements for producing analytical data that is scientifically valid, legally defensible, accurate, impartial, and of known and documented quality, through strict adherence to the Quality Policy Statement. The Quality Assurance Officer wrote the Quality Policy Statement with final approval from the Technical Director. The policy cannot be

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revised without the Technical Director and Quality Assurance Officer's approvals. Employees are trained on the components of the Quality Policy Statement during their orientation. All employees sign the statement as agreement to implement the policy in all aspects of their work. The statement is as follows:

We strive to provide the highest quality data achievable by:

- Describing clearly and accurately all activities performed; documenting "real time" as the task is carried out; understanding that it is never acceptable to "back date" entries; and should additional information be required at a later date, the actual date and by whom the notation is made must be documented.
- Providing accountability and traceability for each sample analyzed through proper sample handling, labeling, preparation, instrument calibration/ qualification, analysis, and reporting; establishing an audit trail that identifies date, time, analyst, instrument used, instrument conditions, quality control samples (where appropriate and/or required by the method), and associated standard material.
- Emphasizing a total quality management process and commitment to continuous improvement that provides accuracy; strict compliance with agency regulations and client requirements, giving the highest degree of confidence; and understanding that meeting the requirements of the next employee in the work-flow process is just as important as meeting the needs of the external client.
- Providing thorough documentation and explanation to qualify reported data that may not meet all requirements and specifications but is still of use to the client, and understanding this occurs only after discussion with the client on the data limitations and acceptability of this approach.
- Responding immediately to indications of questionable data, out-of-specification occurrences, equipment malfunctions, and other types of laboratory problems with investigation and applicable corrective action; and documenting these activities completely, including the reasons for the decisions made.
- Providing a work environment that ensures accessibility to all levels of management and encourages questions and expressions of concern to management regarding quality issues.

We each take personal responsibility to provide this quality product while meeting the company's high standards of integrity and ethics, understanding that improprieties, such as failure to conduct the required test, manipulation of test

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procedures or data, or inaccurate documentation, will not be tolerated. Intentional misrepresentation of activities performed is considered fraud and is grounds for termination.

1.4 Statement of Values

At Eurofins Air Toxics, we strive to be the BEST in everything that we do. Our very existence is based on our continued ability to provide innovative, dependable, and cost-effective environmental services to our clients. We CARE about our clients as well as our co-workers and manage our daily activities to build relationships based on mutual TRUST, HONESTY, and RESPECT. We are LEADERS in our field and accept the risks associated with building new frontiers in our professional lives. Our strength comes from our TEAMS for through them we can achieve our goals.

1.5 Certifications, Accreditations, and Registration

Accreditation/Certification is the process by which an agency or organization evaluates and recognizes a laboratory as meeting certain predetermined qualifications and/or standards. It is the one generally accepted method by which a laboratory such as ours can demonstrate its capability of generating acceptable, professional, quality test results in those areas in which it claims competence. To this end, we have actively sought accreditation by organizations offering it in areas relevant to our technical expertise. We strive to ensure that the facility, equipment, procedures, records, and methods used by Eurofins Air Toxics laboratory in the testing of environmental samples are in compliance with the requirements of these standards.

Appendix C lists accreditations held by Eurofins Air Toxics, Inc. in support of environmental and product testing work. Current copies of all scopes of accreditation are kept on file in the Quality Assurance Department.

2. ORGANIZATION AND PERSONNEL

2.1 Organizational Structure

Eurofins Air Toxics' management organization includes six core areas: Operations, Information Technology (IT), Client Services, Research, Sales and Marketing, and Finance and Administration. The management staff includes executives, directors, managers, and group leaders. Each operating area is lead by a manager and/or a group leader. In the absence of a member of the laboratory and operational management team, deputies are appointed as follows:

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Position	Deputy
President	Technical Director or appointee
Technical Director	Quality Assurance Manager or appointee
Quality Assurance Manager	Technical Director or appointee
Laboratory Director	Technical Director or appointee
Vice President of VOC Materials Testing	Technical Director or appointee
Managers/Group Leaders	Laboratory Director

Eurofins Air Toxics' senior executives and managers are committed to following and assuring compliance with the TNI Standard as defined in this Laboratory Quality Assurance Manual (LQAM). Each manager is responsible for implementing and maintaining systems as they affect their teams and for participating in their respective role in the management systems as outlined in the LQAM.

An Organizational Chart is presented in Appendix D of this manual. This organizational structure is created in a way to avoid any potential for conflicts of interest or undue pressure that might influence the technical judgment of analytical personnel.

2.2 Management Responsibilities

Management and/or supervisor is defined as group leaders, managers, and directors, and positions above those. The following is a list of management responsibilities:

- Personnel hiring and training
- Supervision of personnel
- Ensuring quality of data produced
- Resources allocation
- Directing daily work operations, including scheduling of work
- Maintaining awareness of technical development and regulatory requirements
- Assessing laboratory capacity and workload
- Contributing to the continuous improvement of the laboratory operation
- Providing resources to ensure a safe work environment

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- Providing resources to ensure a work environment free of undue pressures
- Communicating problems and concerns to senior and executive management to enlist a higher level of support for corrections and continuous improvement, ensuring compliance with the requirements of NELAP and ISO 17025
- Ensuring that corrective actions are carried out in an appropriate and agreed upon time frame

The Technical Director ensures that the laboratory's policies and objectives for quality of testing services are documented in this quality manual. The Technical Director must assure that the manual is communicated to, and understood and implemented by all personnel concerned.

2.3 Overview of the Quality Assurance Program

The Quality Assurance (QA) Department is responsible for developing planned activities the purpose of which is to provide assurance to all levels of management that a quality program is in place within the laboratory, and that it is functioning in an effective manner that is consistent with the requirements of NELAP and ISO 17025. Although Eurofins Air Toxics is a wholly owned subsidiary of Eurofins Scientific, the Quality Assurance and quality systems described in this manual are specific to Eurofins Air Toxics.

2.3.1 Quality Assurance Manager

The Quality Assurance Manager ensures that the quality system is followed at all times. The QA Manager reports directly to the Technical Director in order to maintain independence from business operating units and facilitate communications regarding quality-related issues. The QA Manager has no direct supervisory responsibility for the generation of technical data to avoid any conflict of interest in administrating the QA program. The QA Manager has the final authority to stop work that compromises the laboratory's integrity or data quality. The situation must be investigated and appropriate corrective action must be put in place before the QA Manager will authorize the resumption of work. The specific duties of the QA Manager are communicated in job description format.

2.4 Quality Assurance Responsibilities

The Quality Assurance team is responsible for implementing and maintaining Quality Assurance procedures throughout the laboratory. This is accomplished

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via coordination and dissemination of internal and external assessment information, review of Standard Operating Procedures (SOPs) to document variances taken to published methods, monitoring of the Quality Assurance Manual to ensure consistency with actual practices, maintenance of an ongoing Corrective Action Program with quarterly reports to the senior management team, a leadership role in employee training, data review, and other quality control-related programs.

The QA team is free from any commercial, financial, or production pressures when making assessments or decisions regarding the quality of work produced or effectiveness of the quality systems.

2.5 Communication of Quality Issues to Management

Communication between the Quality Assurance (QA) team and other management teams occurs on a regular basis (typically via bi-weekly status meetings). Information regarding outstanding corrective action items, upcoming assessments, assessment results, and/or general observations are discussed and documented via a database of agenda notes. The QA databases along with the Laboratory Information Management System (LIMS) database are used to compile a Quarterly Quality Assurance Status Report, which is distributed to the senior management team for review.

2.6 Personnel Qualifications and Responsibilities

Full resumes and specific position descriptions for all personnel are located in Human Resources (HR) Department files. In addition, department managers have copies of position descriptions for their staff.

2.6.1 Executive Team

President: Provides leadership that ensures the founding mission and core values of the company are put into practice. The President leads programs relating to the development of long-range strategy, quality systems, financial infrastructure and sales. The President also provides day-to-day leadership and management of programs for overseeing the processes and resources necessary for establishing long-range service objectives, plans, and policies in cooperation with the Board of Directors. The President is responsible for the measurement and effectiveness of both internal and external processes by providing accurate and timely feedback on the operating condition of the company. In addition, the President directs the definition and operation of the laboratory production

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by fostering a success-oriented and accountable environment within the company.

Technical Director: Provides oversight for the quality systems and technical performance of the laboratory, and manages technical support, the project management team, and the QA Manager. The Technical Director is responsible for developing products and solutions to meet client and industry needs, and also oversees the validation process of current and new products to ensure quality objectives are met and documented as defined.

Laboratory Director: Responsible for managing the operations of the laboratory, profit/loss relating to operations, laboratory efficiency improvement in software and instrument automation, and serves as the primary interface between finance, HR, IT, and sales/marketing. The Laboratory Director has the overall responsibility of ensuring customer satisfaction goals are met while elevating the skill and training of key technical staff as well as assuring that state-of-the-art instrumentation and capital assets are in place to meet global customer needs.

Vice President of VOC Materials Testing: Responsible for the promotion and demonstration of expertise in chamber testing, product emissions, and indoor air quality (IAQ), providing scientific leadership in these areas. Represents Eurofins Air Toxics on technical committees and at technical conferences and trade shows as they relate to the promotion and demonstration of expertise in chamber emissions testing and IAQ. Has the overall responsibility for establishing and maintaining a strategy and business plan for the emissions and product testing markets in the U.S.

2.6.2 Management Team:

Laboratory management and personnel are free from any commercial, financial, or production pressures when making technical judgments or decisions regarding the quality of work produced.

Information Technology Manager: Oversees all aspects of software engineering and development, database administration, and network administration. The IT manager is instrumental in designing and implementing model work-flow processes, defining user requirements, and proposing software design and implementation to satisfy long-term company business goals. This role provides established policies and

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procedures to ensure continuous database and server environment integrity and reliability.

Quality Assurance Manager: Responsible for overseeing the quality systems in the laboratory. Key to the Quality Assurance role is a focus on continuous improvement through effective monitoring of systems and evaluation of non-compliance and corrective actions. To support the quality systems, the Quality Assurance Manager leads the internal and external audit programs, negotiates audit resolution, and oversees the effectiveness of the Corrective Action Report (CAR) program. The QA Manager is tasked with providing timely feedback to front-line managers and bench staff regarding quality programs and also a big-picture assessment to senior management. Additionally, the QA Manager ensures required documentation and certifications are current and accurate, including regulatory accreditations, the LQAM, and SOPs.

Managers/Group Leaders: Responsible for day-to-day operations of the laboratory or specific departments. The Group Leaders oversee technical operations, sample analysis, data entry, report generation, provision of resources, and other related areas. In addition, they are responsible for employee management and review. Group Leaders report directly to the Laboratory Director. Managerial decisions are made by the Laboratory Director in their absence.

2.6.3 Laboratory Staff and Responsibilities

It is the primary responsibility of laboratory staff to produce quality data within the framework of each individual method and within the parameters of the laboratory's quality control guidelines. It is also the responsibility of staff to identify existing problems or inefficiencies, and to improve the processes of the laboratory whenever possible. Duties for these personnel typically include:

- Sample preparations
- Performance of analytical tests
- Calibrations, operation, and maintenance of instruments
- Standard and reagent preparation
- Sample storage
- Data entry
- Data package preparation

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2.7 Training

The experience and training received by personnel is of great importance to Eurofins Air Toxics' clients and regulatory agencies. Accurate training documentation is the responsibility of both employees and their supervisors. On a routine basis, the supervisor reviews and signs training documentation to verify that it is complete and current.

Each laboratory analyst being trained to perform a new analysis is required to perform an initial Demonstration of Capability (DOC) and meet the requirements for accuracy and precision before working independently on the test methods. Typically this is accomplished by the successful analysis of at least four aliquots of a laboratory quality control sample. However, there are certain tests that are not required by the mandated test method or regulation to perform the above procedure (e.g., PM10). In this case, the analyst's proficiency demonstration is satisfied by documentation of having read, understood, and agreed to follow the SOP, specific department or method forms and procedures, and observation by scientist or senior analyst.

Management personnel are responsible for planning ongoing professional growth and development activities for an employee through on-the-job training and/or internal and external training courses so that an employee can maintain a current skill set to match job responsibilities.

An annual performance review based on job accountabilities, objective measures, and pre-defined standards is completed by management personnel for each employee. This assessment is documented and maintained. Input is obtained from other managerial personnel as needed.

2.7.1 New Hire Training

New employees learn about personnel and safety policies as well as business strategies through a formal process administered by our Human Resources Department and the Safety Committee. All new employees are also required to attend the Quality Assurance Orientation course. Completion of this course is documented in the employee's Training Record. The course outline includes:

- Introduction to QA
- Definitions of SOPs and LQAM
- How to use CARS
- Logbook protocol
- Chain-of-custody procedures

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- Training Documentation
- Overview of Eurofins Air Toxics classes including Ethics and Integrity courses
- Overall Training Record organization and upkeep

New employee training continues with review and signing of the Eurofins Air Toxics Ethics Policy (Form F1.56), a review of the Quality Assurance Manual, and signing of the Quality Policy. Upon completion of those, employees move on to analytical method training if required for their position. Other non-testing training materials may be required by the departments.

In general, the laboratory staff reviews the department's SOPs and/or the regulatory method as well as the instrument manual. The employee will then observe while an experienced analyst prepares samples and operates the instrument. Training includes sample handling and preparation, documentation protocols, calibration procedures, QC requirements, data management, data reporting and troubleshooting.

2.7.2 Ongoing Training

After successful completion of the initial Demonstration of Capability, all laboratory staff must demonstrate continued proficiency. Whenever there is a change in test method, instrument method type, and/or personnel a new DOC must be performed. At least once per year, each analyst must demonstrate continued proficiency on assigned technical methods. The QA Department notifies personnel via e-mail whenever a new SOP is generated or a current SOP is updated. Employees responsible for that method or procedure must read the new or updated SOP within 30 days and document the review in the LIMS SOP Tracker module. In addition, the Laboratory Quality Assurance Manual and the Chemical Hygiene Plan must be annually reviewed by all employees.

Employees are re-trained if an issue or investigation warrants that it is a necessary corrective action. Management provides direction as to when employee re-training is required, and to the extent of the re-training.

2.8 Employee Safety

Laboratory staff may, on occasion, be exposed to handling of solvents, compressed gases, calibration standards, or other hazards. Eurofins Air Toxics designates an assigned Safety Officer and several staff members who comprise

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the Safety Committee. Some members are 40-hour OSHA-trained and respirator-fitted.

Employee education in the safe handling and disposal of these materials is accomplished as follows:

- Each new employee is given a safety tour of the facility within the first two days of employment. Documentation of this orientation appears in the employee's Training Record.
- The Safety Committee meets frequently to discuss safety concerns and ways of improving safety in the work place.
- The Safety Committee schedules ongoing safety training throughout the year.
- If special precautions must be taken to perform a method, a safety section is included in the method SOP or in a stand-alone SOP which discusses protocols and other measures for risk reduction through exposure prevention.
- Safety Data Sheets (SDSs), formerly Material Safety Data Sheets (MSDS), are maintained for each chemical used on-site. The SDSs are accessible to personnel in the library area immediately outside the standards room and/or electronically through the chemical inventory database (CISpro) at all times. SDSs are also accessible on the Internet from product vendors.
- The Safety Committee members are assigned to duties that include hazardous waste disposal, incident or spill management, scheduling staff training, safety site assessments, Chemical Hygiene Plan review, and the overall leadership of the Safety Program.

2.9 Client Services/Project Management Responsibilities

The Project Management group is responsible for organizing and managing client projects. Clients are assigned a Project Manager who serves as their primary contact. It is the Project Manager's responsibility to act as client advocate by communicating client requirements to laboratory personnel and ensuring that clients provide complete information needed by the laboratory to meet those requirements. All client verbal and electronic communications are documented by the project managers in the LIMS Contacts module. In addition to information management, project management responsibilities include:

- Coordinating and preparing proposals in conjunction with technical staff, including review of project-specific documents and negotiations of variance requests

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- Documentation of project requirements
- Coordinating and communicating turnaround-time (TAT) requirements
- Scheduling sample submissions, sample containers, and sample pickup via Eurofins Air Toxics courier service
- Informing clients of deviation from their contract

2.10 Confidentiality

Strict confidentiality is maintained in all of Eurofins Air Toxics dealings with clients. All employees are required to protect company data, including client names and/or test results from disclosure to any third party. This policy is presented to employees in SOP #99 and during their orientation period.

Clients are promptly notified if their data is subpoenaed or requested by a regulatory or legal body.

In order to ensure the confidentiality of our systems and procedures within the laboratory, it is Eurofins Air Toxics' policy to restrict the distribution of our internal procedures to clients. Clients are, however, permitted to review the laboratory's procedures while on-site as part of an audit or visit. Based on this policy, the laboratory requests that any document viewed is not shared or made available to any third parties without the permission of Eurofins Air Toxics.

2.11 Operational Integrity

All employees sign an Employee Ethics Statement on their first day of employment. Employees responsible for generating, handling, or reviewing laboratory data understand that Eurofins Air Toxics' mission is to perform all work with the highest level of integrity. Shortcuts or generating results to suit a client's purpose, rather than adhering to good scientific practices, is not considered acceptable under any circumstances. Any violation of the laboratory ethics policy results in a detailed investigation that could lead to termination. Examples of violations of data integrity are listed below:

- Knowingly recording inaccurate data
- Fabrication of data without performing the work needed to generate the information; this includes creating any type of fictitious data or documentation
- Time travel or adjusting clocks on computerized systems to make it appear that data was acquired at some time other than the actual time

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- Manipulation of data for the express purpose of passing systems suitability or quality control criteria
- Selective use of data generated, or not using data that was legitimately generated to impact the outcome of a test
- Executing significant deviations from approved test methods and procedures without prior approval from Eurofins Air Toxics management and/or the client

If an issue does arise which could compromise data integrity, personnel are instructed to perform the following activities:

- Clearly document the situation and maintain all data generated. There is a big difference between poor judgment and fraud. Fraud usually involves intent to conceal an action taken. Therefore, the more documentation that is maintained the less likely an action is considered fraudulent if further scrutinized. All documentation of the inquiry and subsequent disciplinary actions will be maintained by both the Technical Director and the Human Resources Department for at least five years.
- When out-of-specification results or quality control-type issues are detected, all supporting data and relative background information must be documented and presented for management review. Problem resolution and client contact, as applicable, must also be documented.
- Any questionable situations and decisions must be reviewed with a supervisor.
- Questionable or uncomfortable issues are brought directly to QA Manager or a member of the QA Department as part the QA “open door” policy. If an employee desires to remain anonymous, he or she is encouraged to report to the designated laboratory staff ombudsman. The designated ombudsman will meet separately with management and the employee involved, ensuring anonymity.

3. BUILDINGS AND FACILITIES

3.1 Facility

The Eurofins Air Toxics laboratory occupies approximately 35,000 square feet of space in Folsom, California, including 7,000 square feet of office space. The single-story building is custom-designed to suit the specifications of an air laboratory. Design criteria included floor plans to accommodate segregation of conflicting tests and provide an environment that is conducive for cross-functional work teams. The main instrumentation laboratory is based on an “open” concept

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in which walls were removed to promote a sense of community and teamwork. Wide hallways with alcoves were designed to encourage congregation and discussion. The number of private offices was minimized so that barriers between management and staff are absent. Elements of the quality system are evident throughout the facility design. The facility's map is provided in Appendix F.

3.2 Security

Security at Eurofins Air Toxics is maintained through a controlled access system. Representatives of State, Federal, and private entities have access to the laboratory facility and records during normal business hours. Guests and employees must enter/exit through Sample Receiving or the reception area. All visitors must sign in and out upon arrival and departure. After work hours, the building is secured and linked to a commercial security agency. The security system is equipped with perimeter alarms, motion sensors, and speakers that monitor background sounds. Heat-activated fire alarms are monitored by an outside agency. A fire alarm also activates the security system. Security and controlled access protocols are described in SOP #30.

4. DOCUMENT CONTROL

4.1 Controlled Documents at Eurofins Air Toxics

It is Eurofins Air Toxics' policy to restrict the distribution of internal procedures to clients, and we discourage the distribution of company confidential documents outside of the facility. Clients are permitted to review our procedures while on-site as part of an audit or visit. Any documents that are distributed are only done so with the approval of QA.

4.1.1 Quality Policy Manual and Company Policies

Eurofins Air Toxics' Quality policies and Quality Systems must comply with all State and Federal requirements for those programs for which the laboratory maintains accreditation.

All Eurofins Air Toxics employees are required to read the Quality Assurance Manual within 30 days of release of the latest version and maintain current documentation in their Training Record binders. The Quality Assurance Manual is available to all employees electronically on a shared server located at O:\QA\LQAM. A hard copy is also available in the QA department.

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4.1.2 Laboratory Standard Operating Procedures (SOPs)

The SOPs at Eurofins Air Toxics detail the work processes used on a regular basis that are to be conducted and followed within the organization. They document the way activities are to be performed to facilitate consistent conformance to technical and quality system requirements and to support data quality. These SOPs can be administrative or technical. All employees should maintain a record of review of the most current SOPs.

4.1.3 Work Instructions (at the department level)

The intent of these procedures or documents is to define in greater detail the specific "how to". The level of detail in these documents must be sufficient so any appropriately trained person can perform the task accurately.

4.1.4 Logbooks, Forms, and Instructions

The intent of these documents is to provide documented evidence to support Eurofins Air Toxics quality systems and operations. They are used as part of regular laboratory operations to record necessary information.

4.2 Document Approval, Issue, Control, and Maintenance

The Quality Assurance Department is responsible for the approval, issue, control, and maintenance of all documents that are part of the laboratory's quality systems including, but not limited to, the Quality Assurance Manual (LQAM), Standard Operating Procedures (SOPs), Logbooks, Forms and Instructions, Certificates of Analysis (C of As), and calibration and training documents.

All documents issued to personnel in the laboratory as part of the quality system shall be reviewed and approved for use by Technical Director, Laboratory Director, and Quality Assurance Manager prior to use.

The LQAM and SOPs are reviewed to ensure they remain accurate and current. The frequency of review is either annual at the least or as needed, depending on the procedure. Upon generation of new or updated documents, all copies of obsolete documents are removed from the laboratory and its computer network, then archived or destroyed as appropriate. Pertinent staff members are notified of the updates. A new revision number is assigned to the LQAM or SOP at every review.

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All technical changes must have the approval of the Technical Director, the Laboratory Director or Vice President of VOC Materials Testing, and the Quality Assurance Manager.

Detailed instructions regarding document control and how to write SOPs are available in SOPs #46 and #119.

4.3 Laboratory Logbooks and Forms

Procedures are in place to ensure that all data is traceable, authentic, complete, and retrievable. Logbooks, forms, and instructions are created and distributed by the Quality Assurance Department as needed. Used logbooks are returned to QA for archival. The QA Department maintains a master index to uniquely number and identify each logbook and form distributed. Logbooks can contain blank or preformatted pages. They are bound and uniquely identified, and have sequentially pre-numbered pages.

4.4 Archival and Storage of Documents

The majority of documents at Eurofins Air Toxics are stored electronically. Documents which remain in hard-copy format include chain-of-custody forms (COCs), Data Review Checklists, scanned packets (run logs, spectral defenses, manual integrations, etc.), FedEx/UPS air and freight bills, and most logbooks. All other hard-copy documentation is stored in its specific workorder folder. The hard-copy workorder folder is placed in a bar-coded storage box for long-term storage. Bar codes are maintained in an inventory log. An off-site company archives the boxes using the bar-coding system. The storage company provides one-day retrieval service upon request.

Used logbooks are returned to Quality Assurance for archival and remain in the QA Department for no less than five years.

5. SAMPLE HANDLING

5.1 Sample Collection

It is the responsibility of the client to submit representative and/or homogeneous and properly preserved samples of the system from which they are collected. In all cases, field sampling personnel are ultimately responsible for having expertise and knowledge in air sampling methodology or product/materials collection protocols sufficient to ensure that the defensibility of the data will not be compromised due to deficiencies in the field sampling, handling, or transportation. General information regarding the proper use of sampling media

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provided by Eurofins Air Toxics is available as a resource for field personnel. The laboratory provides sample containers, chain-of-custody forms, sampling labels, chemical ice packs (if appropriate), shipping containers, custody seals (per client request), and a copy of the Sample Acceptance Policy.

Air sampling media provided by a qualified vendor or prepared by the laboratory for field use is certified for cleanliness. The laboratory's media cleaning process is typically verified using batch certification protocols. Individually certified canisters are also available per specific client request.

5.2 Sample Receipt and Entry

5.2.1 Sample Receipt

Samples can be received at the laboratory during normal laboratory operating hours. Receipt occurs in one of three ways:

- Commercial courier
- Eurofins Air Toxics courier service
- Personal delivery

Upon arrival at the laboratory, samples are received and inspected following Eurofins Air Toxics' Sample Acceptance Policy as outlined in SOP #50. This SOP establishes specific guidelines for sample acceptance, which are generally accepted practices under U.S. Environmental Protection Agency (USEPA), Department of Defense (DoD), ISO, and NELAP protocols.

5.2.2 Sample Entry

As soon as is practical after sample receipt, the samples are entered into LIMS. Samples awaiting log-in are stored in temporary holding areas, at appropriate storage conditions to maintain sample integrity.

At the time of entry, the LIMS system assigns a unique laboratory sample number to each sample. This number is sequentially assigned, then a label is generated and is attached to the sample container.

A sample acknowledgment in the form of a Sample Receipt Confirmation prints from LIMS for each sample delivery group (SDG), which is the same number as the workorder. This notification is sent to the client to confirm sample receipt and entry.

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5.2.3 Sample Rejection Policy

Any time a sample is received in a condition that does not meet the method requirements, if there is doubt about the suitability of items received, if items do not conform to the description provided, or the testing required is not clear or specified, the condition of the sample is clearly documented on a Sample Discrepancy Report (SDR). The SDR is delivered to the Project Manager for review and communicated to the client as needed. Directions on next steps, which may include canceling the sample or proceeding with qualifiers and/or narrative, are documented on the SDR. Details are outlined in SOP#50.

5.3 Sample Identification and Tracking

A sample label is generated for each sample, and in addition to the assigned Eurofins Air Toxics' sample number the following information is printed on the label: workorder number, laboratory sample ID, and, if needed, a sample release date. For canister analysis, the label is not affixed directly to the canister but attached with a tag.

To ensure traceability of results, the unique sample number assigned is used to identify the sample in all laboratory data documentation, including logbooks, instrument printouts, and final reports.

5.4 Sample Storage

After entry into LIMS, samples are placed in an assigned and identified storage location until needed for analysis. Room temperature, refrigerated, and freezer storage are available, and samples are stored in accordance with regulatory, method, or client directions. The LIMS system is used to assign storage locations for bar-coded media, which promotes orderly storage of samples. Sample storage locations for sorbent and condensate samples requiring refrigeration are monitored for accurate temperature control.

When a canister, bag, or product sample is scheduled for analysis, the analyst obtains custody of the sample by scanning the canister tag or sticker bar code as well as the bar-coded destination location of each individual sample. The scanned information is electronically transmitted to LIMS to reflect the custody of canister and bag samples at all times. All other media samples are logged into the Internal Extractable Sample Tracking Logbook and the pertinent storage area.

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5.5 Sample Return/Disposal

Samples are released for disposal upon satisfactory completion of analysis unless prior contractual arrangements have been made. Product samples are held for a minimum of 30 days after satisfactory completion of the analysis, unless otherwise specified by the customer. The release of samples is electronically documented in the LIMS tracking system via scanning of the canisters and bags. This ensures verification of completion of all analyses including all samples in each workorder. Samples are released following the procedures outlined in SOP #63.

Sample disposal varies based on the sampling media. Whole air samples are vented through a charcoal scrubber, while liquid samples are disposed of according to procedures noted in SOP #24.

5.6 Chain of Custody

Samples received by the laboratory must be documented using a chain-of-custody (COC) form and relinquished following standard EPA-approved guidelines, including the following:

- Unique sample name or number
- Location, date, and time of collection
- Canister number (if applicable)
- Collector's name
- Preservation type (if applicable)
- Matrix or product type
- Any special remarks

Additional information may be required depending on the requested analysis.

A copy of the signed COC will be e-mailed to the client in conjunction with the Sample Receipt Confirmation.

Once a sample is received by the laboratory, the internal chain-of-custody procedure is followed.

Disclaimer: *Eurofins Air Toxics assumes no real or implied responsibility or liability for client-related field sampling and shipping activities. It is the responsibility of the individual client to ensure that referenced methodologies are followed with respect to sample collection and shipment to the laboratory. Air sampling media and equipment should only*

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be used by experienced field engineers. It is the ultimate responsibility of the client to be knowledgeable both in sample preservation requirements as well as relevant State, Federal, and international shipping requirements. Any time a chemical substance is collected using Eurofins Air Toxics media, the client bears sole responsibility for understanding and abiding by the laws involving shipment of potentially hazardous substances by common carrier.

6. TECHNICAL REQUIREMENTS – TRACEABILITY OF MEASUREMENTS

6.1 Reagents and Solvents

The reliability of Eurofins Air Toxics' analytical results can be directly affected by the quality of reagents used in the laboratory. Procedures are in place to control labeling, storing, and evaluation of these materials. All purchased supplies, reagents, solvents, and standards are verified as acceptable and meeting criteria for analysis prior to use. The Eurofins Air Toxics' Chemical Hygiene Plan (CHP) provides safety information in regard to the storage and handling of laboratory chemicals. All reagent certificates and Safety Data Sheets (SDSs) are retained by the laboratory (see section 2.8).

6.2 Calibration Standards

Written calibration procedures are required, where applicable, for all instruments and equipment used in the laboratory. The source and accuracy of standards used for calibration purposes are integral to obtaining quality data. Requirements for calibration are provided in each analytical method including specifications for the standard used. Calibration measurements made by the laboratory must be traceable to national standard of measurement (e.g., NIST) where available. Certificates of Analysis are maintained for each material, as applicable.

Standards are usually purchased from commercial suppliers either as neat (pure) compounds or as solutions with certified concentrations. The accuracy and quality of these purchased standards are documented on the C of A, and hard-copy certificates are maintained on file in the laboratory. Upon receipt at Eurofins Air Toxics, material is labeled with a date of receipt and stored appropriately.

Stock standard solutions are recorded in the proper standard logbook and are assigned a unique standard code number. When a working standard is prepared, the compound(s), standard code number, date prepared, analyst, expiration date, and solvent are noted in the working standard logbook. All working standards are kept in containers and at temperatures that will not alter their integrity. All containers are clearly labeled with concentrations, unique standard code number,

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and expiration date. Standards are not to be used in the laboratory past their expiration date.

6.3 Equipment and Instrumentation

The laboratory is equipped with all equipment and instrumentation required for testing the scope of work it supports. All equipment and instrumentation is maintained in proper working order. Eurofins Air Toxics' major equipment capabilities are summarized in the table below:

Major Instrumentation

Number	Instrumentation
24	GC-MS
7	Gas Chromatographs with various detectors (TCD, PID, FID, SCD, ECD)
2	HPLC-UV
11	Air Concentrators
7	Automated Thermal Desorption Units
3	Liquid Auto-samplers
1	Extractors
60	119 L Dynamic Environmental Chambers
1	Micro-chamber/Thermal Extractor
1	Air Generator
1	Industrial Air Compressor
1	Air Humidification System

6.3.1 General Requirements

- Equipment and instrumentation are assigned a unique identifier designation to identify them within the data documentation.
- An equipment logbook is established in conjunction with installation and is readily available to document all incidents that pertain to the equipment and instruments as they occur.
- All test, measuring, and inspection of laboratory systems, equipment, and instruments used at Eurofins Air Toxics are routinely calibrated and maintained in accordance with applicable Standard Operating Procedures.
- A member of the technical group, or another designated individual, performs routinely scheduled maintenance and calibration of laboratory equipment as required by laboratory procedures. These activities are documented.

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- If appropriate standards or expertise for calibration or maintenance are not available in-house, the operation is conducted by an outside service firm.
- All equipment taken out of service is tagged accordingly.

6.3.2 Standard Operating Procedures

Information regarding operation, maintenance, and calibration of equipment and instrumentation are found in respective SOPs. The procedures include a routine schedule for preventative maintenance and calibration as applicable, along with acceptance criteria and remedial action to be taken in the event of failure. These procedures are maintained in the document control system and reviewed on a regular basis to verify they remain current and accurate. Equipment manuals are also available to provide additional information with regard to operations and maintenance.

6.3.3 Maintenance

- Equipment maintenance is performed as either a preventative or corrective operation.
- Preventative maintenance procedures and schedules for each piece of equipment are assigned where applicable. Preventative maintenance operations are performed by an analyst, scientist, senior scientist, or contracted manufacturer's representative or service firm personnel. Documentation is maintained for the procedures performed as part of the preventative maintenance operation. It is the responsibility of Group Leaders to ensure that a preventative maintenance schedule is addressed by a procedure where appropriate and is followed.
- A supply of commonly needed replacement parts is maintained by the laboratory.

6.3.4 Calibration

- Calibration is the establishment of, under specified conditions, the relationship between the values/response indicated by a measuring instrument or system and the corresponding known/certified values associated with the standard used. Some types of calibrations are performed within a set of frequency (e.g., daily), while others provide intermediate checks to ensure that the instrument response has not changed significantly.

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- All measuring and testing equipment having an effect on the accuracy, precision, or validity of calibrations and tests are calibrated and/or verified on an ongoing and routine basis. Methods for calibration of instruments and equipment vary widely with the nature of the device and the direction given by analytical procedures, department procedures, or manufacturer recommendations. Frequency of calibration can also depend on additional factors, including robustness of the instrument or equipment and the frequency of use.
- Calibration information is recorded in a logbook that is associated with the instrument/equipment and/or a calibration certificate is maintained and/or data printouts are generated to document the activity.
- Calibration measurements are traceable to national standard of measurement (e.g., NIST) where available. Physical standards, such as NIST-certified weights or thermometers are re-certified on a routine basis. Calibration certificates are maintained on file, where applicable, to indicate the traceability to national standard of measurement.
- Calibration failures are documented in the logbook for the instrument and/or within the data printouts from the instrument.
- After repair, adjustments, or relocation that could affect instrument response, calibration/verification activities are performed, as applicable, before the unit is returned to service.
- Analytical data is not reported from instrumentation or equipment that fails to meet calibration requirements.

6.4 Computerized Systems and Computer Software

6.4.1 Computer Usage

Eurofins Air Toxics provides computer equipment for employees to use as a tool in performing their work. Computer equipment is the property of Eurofins Air Toxics and is to be used in accordance with defined terms and conditions. The laboratory's goal is to provide standard hardware and software that meets the needs of the user.

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6.4.1.1 Physical security of computer systems: It is company policy to protect computer hardware, software, and data documentation from misuse, theft, unauthorized access, and environmental hazards. All of the laboratory servers are housed in a locked office, which maintains favorable environmental conditions to allow for optimal server performance. Access to the laboratory's networks is granted by the Systems Administrator or Information Technology (IT) Manager. Network access is tightly controlled for the entire company. Users maintain individual network accounts and are allowed to access specific areas of the network based on the privileges assigned to them. A user is granted access to only those areas needed to fulfill his or her job function.

6.4.1.2 Passwords: All software used to reduce sample data or generate sample reports is password-protected; users are granted rights to these systems based on a "read/write/none" privilege system. The following procedures apply regardless of what system(s) is being utilized:

- Passwords must be kept confidential.
- Users must log-out of a system when not in use to prevent unauthorized access.
- Forgotten passwords can only be reset by the IT Department or by an appropriate System Administrator.
- Network passwords automatically expire every 90 days. The computer prompts a user to change the password when the expiration date nears.

6.4.1.3 Computer viruses: Eurofins Air Toxics continuously monitors its computer network for computer viruses. Anti-virus software is employed to detect viruses on the Windows network. Employees must report any virus concerns to the IT department as soon as possible. Employees who share files between their home computer and the laboratory should install anti-virus software on their home computer. If an employee does not have such software, the laboratory can suggest various no-cost anti-virus software products.

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6.4.1.4 Internet and e-mail System: The e-mail system is used primarily for Eurofins Air Toxics business purposes. The Employee Handbook provides additional information in regard to system usage. Employee access to the Internet is restricted to those employees who have a business need for it. All employees have access to e-mail. All Internet and e-mail activity is subject to monitoring. All messages created, sent, or received over the Internet are property of Eurofins Air Toxics and can be regarded as public information. E-mail and Website filtering software is utilized.

6.4.1.5 Software Policy:

Eurofins Air Toxics' Software Policy is as follows:

- Copyright laws protect software, and Eurofins Air Toxics' intent is to abide by all software agreements.
- Software purchases must be formally requested and approved by management, IT Department, and/or validation personnel, as necessary.
- All software is used in accordance with applicable license agreements.
- Employees are not to install any software on computer(s) unless authorized by the IT Department.
- Employees must not give software to outsiders (e.g., clients, contractors, etc.), unless approval is granted by management.
- Users must not make copies of any licensed software or related documentation without permission. Any user that illegally reproduces software is subject to civil and criminal penalties including fines and imprisonment.

6.4.1.6 Computer system backup, data restoration, and data archival: All data systems are backed up on a daily, weekly, and monthly basis using a modified "grandfather-father-son" (GFS) rotation protocol. Specifically, these backups are conducted on the servers responsible for all laboratory production data files and databases (i.e., Project Management files, analytical data, audit trails, Quality Assurance documents, etc.). A daily incremental backup is scheduled to run each night Monday through Saturday. The daily incremental backup is limited to files modified the same day. On Sunday, a weekly full backup of all files on each server is completed. At the end of each month, a

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full backup of each data system is conducted. This monthly backup tape is then placed in permanent storage. The permanent historical backup tapes are stored in an off-site data storage facility. Data is not removed from the server until at least three permanent monthly backup tapes have been created. This ensures that no archived data will be lost due to corruption of the magnetic tape. A more comprehensive description of the laboratory's electronic data archiving system can be found in SOP #55.

6.4.1.8 Remote access to computer systems: With special permissions, employees are able to remotely connect to the laboratory computer network through a VPN system. When logging in, users are authenticated with their Windows account and password.

6.4.2 System and software verification: Before each new computer system or significant modification of an existing system is implemented in the laboratory, the following requirements must be met:

- Required documents – Describe the required system functionality and specification (e.g., Software Development Change Control, Change Control Log, IT Logic New Rule or Rule Update)
- Design documents – System overview, screen design, report layout, data description, system configuration, file structure, and module design
- Testing documentation for system development/verification – structural testing of the internal mechanisms and user testing of the installation and system qualification.

7. PURCHASING EQUIPMENT AND SUPPLIES

7.1 Procurement

The primary materials procured by the laboratory are analytical instrumentation and software, media and reagents including standards, carrier gases and cryogens, miscellaneous laboratory supplies, computer hardware and software, and service contracts.

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Control of the purchase of these items and services is maintained using a standard purchase order system described in SOP #105 and outlined below:

- Purchase requests must be approved by a director or manager.
- An assigned purchase order (PO) number is entered along with the date, vendor, and requester.
- An evaluation of the supplier is conducted to determine whether it has been deemed a qualified vendor.
- Requires that upon receipt or delivery of services the product is inspected by the purchasing agent and compared to the packing slip and/or request for services.
- Each PO is matched with invoices prior to payment to insure that purchased items or services were delivered as expected.

Purchasing documents are maintained by the Accounting Department, calibration certificates are maintained by the Quality Assurance Department, and Certificates of Analysis for reagents and media are maintained by laboratory personnel.

7.2 Supplier Evaluation

Suppliers and vendors are evaluated in accordance with SOP #105 to assure that the quality of the products purchased meet the quality expectations of Eurofins Air Toxics, Inc. and do not interfere in the quality of testing. A laboratory database is maintained with a list of approved vendors.

8. ANALYTICAL METHODS

8.1 SCOPE OF TESTING

Soil vapor, landfill gas, indoor and outdoor ambient air, source (stack) emissions, and other types of air-phase samples are analyzed in accordance with official published methods or validated in-house methods. Method modifications made by Eurofins Air Toxics, Inc. are detailed in a summary of modifications table in the method SOP. Measurement and analysis of volatile organic compound (VOC) emissions from products using environmental chambers are performed in accordance with the relevant ASTM, EPA, and ISO methods. Specific operational and assessment parameters required for product compliance to voluntary and regulatory labels and testing are outlined in documents such as CDPH/EHLB SM V1.1 (CA 01350), ANSI/BIFMA M7.1, and AgBB.

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The methods used by Eurofins Air Toxics are approved by a broad range of regulatory agencies.

A list of methods covered under the laboratory's NELAP accreditation can be found in the table in section 8.2.

Eurofins Air Toxics specializes in and has expertise with the following types of projects:

- Vapor Intrusion investigations
- Environmental assessments
- Remediation system monitoring (soil vapor extraction)
- Landfill gas characterization
- Source emissions testing
- Soil vapor surveys
- Ambient air monitoring
- Indoor air quality (IAQ)
- Material emissions using environmental chambers

Appendix E contains summaries for each commonly performed analytical procedure in the laboratory. Each summary contains the following information:

- A brief method description
- Laboratory variances to method compendium or other regulatory reference methodologies
- Tables containing analyte lists, Reporting Limits (RLs), Limits of Quantitation (LOQs), and quality control (QC) acceptance criteria
- A table of calibration and QC procedures

This Quality Assurance Manual references methods in a general manner; specific procedures used by the laboratory can be found in the method-specific SOPs.

8.2 Analytical Test Methods

Eurofins Air Toxics' NELAP-certified analytical methods, parameters, instrumentation, sampling media, holding times, and SOP numbers are summarized in the table below:

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Method	Parameter	Type	Sampling Container	Holding Time in days	Eurofins Air Toxics SOP #
TO-14A/TO-3	BTEX/TPH	GC/FID/PID	Summa Canister Tedlar Bag	30 3	43
TO-4A/TO-10A	Pesticides/PCBs	GC/ECD	PUF	7	26
TO-11A	Aldehydes/ Ketones	HPLC/UV	DNPH Cartridge	14	11
TO-12	Non-methane Organic Carbon (NMOC)	GC/FID	Summa Canister Tedlar Bag	30 3	36
TO-13A	PAHs/ Semi-volatiles	GC/MS	XAD/PUF	7	3/10
TO-14A/TO-15	VOCs	GC/MS	Summa Canister Tedlar Bag	30 3	6/38/83/114
TO-17	VOCs	GC/MS	Sorbent Tube	30	5/109/110/ 112/122
ASTM D-1946	Fixed Gases, CH_4, C_2+	GC/TCD/FID	Summa Canister Tedlar Bag	30 3	08
ASTM D-1945	Fixed & Natural Gases	GC/TCD/FID	Summa Canister Tedlar Bag	30 3	54
ASTM D-5504	Sulfur Gases	GC/SCD	Tedlar Bag	24 hours	13
PM10/TSP	Particulate Matter	Mass	Quartz Filter	14	66

8.3 Method Validation

As part of the initial test method evaluation for new standard methods, analytical runs must be performed the same way an analyst would perform an initial Demonstration of Capability (DOC) to evaluate precision and bias along with a Method Detection Limit (MDL) study as applicable.

Non-standard methods, including laboratory-developed methods, standard methods outside their intended scope or application, and requested changes to existing instrumentation will follow a planned process explained in detail in SOP #107 and outlined below:

- Measurement Quality Objectives (MQOs) – should be clearly outlined prior to validation.

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- Development of Test Plan – Technical Director and assigned personnel are responsible for the development of such plan.
- Validation – Implementation of the test plan with documentation of all results will be reviewed by the Technical Director.
- Review and Approval – Review of performance against the MQOs, supporting documents, and written procedures is performed by the Technical Director. After approval, the QA Manager reviews for completeness and finalizes the method for production.

8.4 Procedural Deviations

Eurofins Air Toxics communicates and addresses procedural deviations in the following ways:

- Modifications to standard methods made by Eurofins Air Toxics are detailed in a summary of modifications table in the analytical method SOP. The modification table is also included in the laboratory narrative of the final data report.
- Differences between a project request and laboratory standard protocol are documented in a variance table created by the laboratory's project chemist for submission with the proposal to the client. Agreement is documented by the client's initials and date in the approval column or with written documentation from the client that all variances have been approved.
- If a sample received did not meet the established criteria for quality testing, the Sample Receiving Department will issue a Sample Discrepancy Report (SDR), and the Project Manager will communicate the discrepancy to the client. If the client still wants the sample to be processed, the discrepancy will be narrated in the final report.
- Other analytical procedural deviations that are within allowable variations established for every method and listed in the method SOPs are discussed with the client, and if accepted the sample results will be reported with a narrative of the deviation and the affected result will be flagged accordingly.
- Analytical procedural deviations that are not within allowable variations and directly affect the sample result will require the initiation of a Corrective Action Report request.

The Corrective Action Program is explained in detail in section 12 of this Quality Manual.

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9. INTERNAL QUALITY CONTROL CHECKS

9.1 Laboratory Quality Control Samples and Acceptance Criteria

9.1.1 Blanks: For the whole air methods for which no sample preparation step is required, a blank is a designated sample designed to monitor for contamination originating from the analytical system. The Laboratory Blank is comprised of clean, humidified air or nitrogen. A Laboratory Blank is analyzed after any applicable standards and prior to the analysis of project samples. A blank is also analyzed in the event saturation-level concentrations are incurred to demonstrate that contamination does not exist. The blank and the field samples are treated with the same internal standards and surrogate standards and carried through the entire analytical procedure. For methods requiring a sample preparation step (e.g., TO-11A and TO-13A), a Laboratory Blank is prepared using un-sampled media and extracted alongside the batch of field samples. Ideally, blanks demonstrate that no artifacts were introduced during the preparation and/or analysis process. The specific acceptance criterion for each test is given in the analytical method and is usually based on the required Reporting Limit (RL).

9.1.2 Surrogates: Surrogates are organic compounds that are chemically similar to the analytes of interest but are not naturally occurring in environmental samples. For GC-MS methods and some GC methods, the recovery of the surrogate standard is used to monitor for unusual matrix effects and gross sample processing errors, and to provide a measure of recovery for every sample matrix. When required by the analytical method, surrogates are spiked into all the field and QC samples to monitor analytical efficiency by measuring recovery on an individual sample basis. The percent recovery is determined and compared to the acceptance criteria. Acceptance criteria limits are set as required by the method or based on a statistical determination from laboratory data.

9.1.3 Matrix Spikes: Matrix spikes are not required QC for whole air samples collected in Summa canisters. Accurately spiking target compounds into an evacuated canister prior to deployment in the field for sample collection or post-sample collection is neither practical nor technically appropriate. Therefore, matrix spiking is performed only on samples submitted as part of a sampling train, such as condensates, or on extractable samples, provided they are submitted in duplicate for matrix spike and in triplicate for the matrix spike duplicate. It is the responsibility of the client to provide additional samples to fulfill any method

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requirements regarding matrix spikes. When applicable, matrix and matrix duplicate spiking is performed using a subset of target analytes. Recoveries and demonstrated reproducibility values that do not meet the acceptance criteria are flagged and explained in the laboratory narrative.

9.1.4 Laboratory Control Samples: Laboratory control samples (LCS) are samples of known composition that are analyzed with each batch of samples to demonstrate laboratory accuracy. The LCS is prepared by fortifying clean matrix with known target concentrations. In the case of non-extracted batches, the LCS is generally analyzed daily prior to sample analysis, but could also serve as an end check standard. Percent recovery is calculated and compared to acceptance criteria, which are set as required by the method or based on a statistical determination from laboratory data.

9.1.5 Sample Duplicates and Laboratory Control Sample Duplicates: A duplicate is a second aliquot of a sample that is treated identically to the original to determine precision of the test. To compare the values for each compound, the relative percent difference (RPD) is calculated by dividing the difference between the numbers by their average. Precision for analytes that are not typically found in environmental samples is determined by analyzing a pair of Laboratory Control Samples (LCS), and comparing the RPD for the spiked compounds. The acceptance criteria are described as a maximum for the RPD value as required by the method or based on a statistical determination from laboratory data.

9.1.6 Internal Standards: Internal standards (IS) are organic compounds that are chemically similar to the analytes of interest but are not naturally occurring in environmental samples. For extractable methods and when required by the method, IS are added to every field and QC sample typically after extractions but prior to analysis. For all GC-MS methods an IS blend is introduced into each standard and blank to monitor the stability of the analytical system. Comparison of the peak area of the IS is used for quantitation of target analytes. The IS peak area and retention time also provide a check for changes in the instrument response and chromatographic performance. The acceptance criteria are stipulated in the analytical method.

9.1.7 Second Source Check: A second source check is analyzed using either the Laboratory Control Sample (LCS) and/or an Initial Calibration Verification (ICV). The second source is a standard that is made from a solution or neat compound purchased from a different vendor than that

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used for the calibration standards. For some organic custom mixes, the same vendor but a different lot and preparation is used. This ensures that potential problems with a vendor supply would be evident in the analysis. Some areas of the laboratory use continuing calibration verification standards as a second source from the initial calibration.

9.2 Quality Control Sample Frequency and Corrective Action

Each analytical method defines the frequency for required quality control (QC) samples. A summary is provided in Appendix E. The corrective action required when a QC result fails to meet acceptance criteria is also given. If the method reference requires the use of specific limits, the laboratory uses the published limits that are documented as part of the analytical method. Many methods require that each laboratory determine their own acceptance criteria based on statistics from performance of the method. In these cases, the limits are available to the analyst and are entered into the laboratory computerized QC system described in SOP #48. Statistically determined acceptance criteria are frequently subject to change as the laboratory recalculates its control limits. Due to their dynamic nature, acceptance criteria are not included in this manual.

9.3 Quality Control Charts

Quality control (QC) results entered into the computer are used to generate control charts that are plotted via computer and can be accessed at any time by all analysts and by the Quality Assurance Department. The system charts results from surrogates and laboratory control samples. These charts provide a graphical method for monitoring precision and bias over time. The computerized quality control system is used to report QC data to clients and to collect data for assessment of precision and accuracy statistical limits.

9.4 Measurement Uncertainty

As stated in ISO 17025, “All uncertainty components which are of importance in a given situation shall be taken into account using appropriate methods of analysis” (5.4.6.3).

This means the laboratory must determine the uncertainty contribution of all steps in the testing process such as equipment, calibration, standards, reagents, preparation, etc. Since, in most methods, the laboratory control sample (LCS) goes through the entire process of preparation to analysis, all factors that would contribute to uncertainty is evident through the LCS results. As such, LCSs are performed with every batch of samples where appropriate for the method.

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Measurement uncertainty is calculated as two times the standard deviation of the LCS recoveries for the group and date range of data points selected for all applicable methods. This is reported as a percentage. Reports for uncertainty shall be generated and submitted to the Quality Assurance Department for review on an annual basis. At this point, it is not necessary to apply or report the uncertainty determination with sample results. When a client requests the measurement uncertainty it is applied by multiplying the determined analyte concentration by the uncertainty percentage.

10. ASSURING QUALITY OF TEST RESULTS

10.1 Data Management

At a minimum, data management is initiated when Eurofins Air Toxics receives samples from the client. More often, the process begins with client communication of their needs and requirements for a specific project and/or testing. The Project Managers are responsible for entering this information into the client services modules of LIMS. Upon receipt of the samples, a unique tracking number is generated based on this information in the project profile. At this point, computer technology becomes an integral part of tracking the samples through laboratory operations.

10.2 Data documentation

Analytical data generated in the laboratory is collected through the associated data system or is manually documented in bound logbooks. Analysts review data as it is generated to determine that the instruments and systems are performing within specifications. If any problems are observed during an analytical run or the testing process, corrective action is taken and documented.

Procedures are in place to ensure that all data is traceable, authentic, and complete. The following general requirements outline the Eurofins Air Toxics' system for logbooks, notebooks, and documentation recording:

- Observations, data, and calculations are recorded at the time they are made and are identifiable to the specific task.
- Entries are legible, signed, and dated.
- Errors are corrected in a manner that does not obliterate the original entry, initialed, and dated.
- Blank pages or substantial portions of pages which are left blank are crossed out to eliminate the possibility of data entry at a later date.

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- Logbook pages and instrument printouts are signed and dated to indicate completion.
- At periodic intervals the Quality Assurance Department checks equipment/instrument logbook entries and temperature recordings for completeness, legibility, and conformance to procedures.
- At a minimum, the following is recorded as part of data documentation:
    - Date of analysis/operation
    - Initials/date of analyst performing test/operation
    - Identification of client sample(s) and material(s) analyzed
    - Materials, reagents, and standards used to perform the test/operation
    - Method used to perform test/operation
    - Equipment/instrumentation used to perform test/operation
    - Deviations, planned or unplanned, from the analytical method
    - Signature/date of person reviewing data documentation
- For computer-generated data, the following information is recorded:
    - Samples(s) analyzed/operations performed
    - Date of analysis/operation
    - Unique instrument identification
    - Name or initial/date of person operating the instrument
    - Name or initial/date of person reviewing data
    - Any manual notation, interpretations, or integrations made on instrument printouts are signed, dated, and reviewed.

10.3 Data Calculations

Most instruments either include or are connected to a data system programmed to perform calculations needed to reduce the raw data to a reportable form. All calculations are maintained in the instrument manuals and/or as part of the analytical method.

In many cases, data from the local instrument system are uploaded directly to LIMS for review and reporting. This direct upload eliminates the need to re-type data and any associated source of transcription errors from the analytical scheme.

Some instruments report data that require application of additional factors before the data is in final form. Analysts input these additional factors into the laboratory sample management system, where final calculations are performed.

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10.4 Reporting Limits

It is important to ascertain the Limit of Quantitation (LOQ) that can be achieved by a given method, particularly when the method is commonly used to determine trace levels of analyte. The USEPA has established one method for determining Method Detection Limits (MDLs) from which LOQs can be extrapolated, which is summarized in the laboratory procedures.

MDLs are verified or determined annually on each instrument and are the basis for the LOQ used in the default reporting format. Because MDLs change each time they are re-evaluated, they are not included in this manual but are available at the laboratory and available to clients upon request.

For DoD-certified methods and compounds, quarterly evaluation of the LOQ and determination of Limit of Detection (LOD) is performed. The LOQ evaluation entails the calculation of precision and accuracy at the LOQ or Reporting Limit. The LOD for each compound is determined by analyzing a calibration standard or set of standards between the MDL and LOQ. The LOD is assigned the concentration at which the peak meets the signal-to-noise criteria.

The Reporting Limit used to determine whether a result is significant and reported as detectable is dependent upon agency and client requirements. A variety of formats are available and include use of the MDL, LOD, LOQ, method-specified limits, and project-specific limits.

10.5 Data Review

Final review and verification of the data is performed by a trained analyst or scientist using the sample results and quality control information entered into the laboratory sample management system. Another tool used for data review involves the use of proprietary in-house data validation software to review every data point generated and to alert the reviewer when manual integrations occur. The software is also programmed to report each analyte that does not meet acceptance criteria in the quality control and/or sample(s).

After determining that all necessary requirements for valid data are met, the reviewer electronically approves the data by updating the “Report Approved By” status with their initials. This action applies the electronic signature of the Technical Director. The computer is programmed with a list of approved reviewers for each test, and the system is password-protected to ensure that only qualified individuals verify the data.

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10.6 Data Qualification

Data qualifiers are used to provide additional information about the results reported. The most typical use for data qualifiers is for results that fall below the quantitation limit. The data systems used to generate and report results are programmed to flag values in this range as estimated.

Other qualifiers are applied to advise data users of any validation issues associated with the data. The laboratory makes every effort to meet all of the requirements for generation of data. Occasionally, data is generated that does not meet all the method requirements due to sample matrix or other analytical problems. If the test cannot be repeated, or re-analysis would not yield more useable data, qualified data is reported. Qualifiers can be in the form of comments on the analytical report or flags applied to the results.

10.7 Data Reporting

When each analysis is completed, reviewed, and verified, a report is generated. The client receives a copy of the report containing the results of the analysis, plus comments added by the analyst when necessary. The report contains the electronic signature of the Technical Director. Copies of the reports and associated supporting raw data are retained in the Eurofins Air Toxics' archives.

Eurofins Air Toxics offers a variety of data levels and formats, from a basic report of sample and QC results only (Level II) to a comprehensive data package including all supporting quality control information and raw sample data (Level IV). The client directs the selection of report type. Various electronic formats are also available, formatted to client-specific file structure and sent via e-mail, direct upload, Website access, or commercial courier.

Client confidentiality of Eurofins Air Toxics' Web data is ensured by the use of a secured firewall Internet environment coupled with the use of a user ID and password to gain log-in access to the system.

If amendments to a final report are required due to omissions, errors, or additional requests, a workorder reissue is initiated. All reissues receive a unique workorder number to distinguish them from the original issue. Reissued reports require a reason for the reissue and date of the reissue in the laboratory narrative. The laboratory maintains all supporting documentation for the revision including corrections, additions, or deletions relative to the original report.

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10.7.1 Reporting the Results

Analytical reports are printed with a cover page that summarizes all samples in that group. This page lists the Eurofins Air Toxics' assigned sample number and the corresponding client description. The cover page identifies the laboratory contact person's name and the laboratory's phone number in case there is a question about the report. Within this package, each page is uniquely identified and paginated. Analytical test results which meet all the requirements of NELAP and ISO 17025 are noted as so in the footer of the summary cover page.

10.8 Data Storage, Security, and Archival

Eurofins Air Toxics has documented procedures and instructions for the identification, collection, access, filing, storage, maintenance, and disposal of data records. Records are in the form of hard-copy paper records, electronic data files, magnetic tape, and CD-ROMs.

Eurofins Air Toxics maintains records to demonstrate conformance to specified requirements and the effective operation of its quality systems. Records are stored and maintained in such a way that they are readily retrievable in facilities that provide a suitable environment to minimize deterioration or damage and prevent loss. Retention time for the records is in accordance with NELAP's minimum five-year requirement and/or specific procedures or instructions.

The laboratory maintains all documentation necessary for historical reconstruction of data, as follows:

- Analysis reports
- Data logbooks
- Instrument printouts
- Correspondence and client files
- Instrument and equipment logbooks
- Quality Assurance records
- Corporate documents
- Electronic records

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11. AUDITS AND INSPECTIONS

11.1 Internal Quality Assurance Audits

Internal audits are performed by trained Quality Assurance personnel following a schedule planned yearly by the Quality Assurance Manager or at any time by the request of management. The audits cover all quality systems including but not limited to documentation practices, training, and adherence to current SOPs and methodology.

The following areas are identified to be audited by Quality Assurance:

a. Operations
b. Support Services
c. Sample Receiving and Login
d. Project Management and Sales
e. Information Technology (IT)
f. Quality Assurance

A written report with findings, observations, and/or recommendations is presented to the audited personnel, the team leaders, and management by the auditor. Responses to findings and observations are then submitted to the Quality Assurance Department within 30 days.

All audit notes, documentation, and reports are scanned and filed on the QA network drive.

11.2 Management Review System

A review of the laboratory's systems is performed by senior management on a biannual basis to evaluate effectiveness, identify areas requiring improvement, and establish timelines and accountability in addressing agreed-upon action items. This review includes internal assessment of the quality program and laboratory operations and external assessment through client feedback and audits. Four types of reports are generated by management or designated personnel:

11.2.1 **Quality Assurance Status Report:** Summarizes the results of internal and external assessments, the numbers and types of Corrective Action Reports (CARs) generated, status of any outstanding CARs, a summary of client inquiries received, proficiency tests (PT) results, and the number and types of reissued sample reports.

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11.2.2 **Production Status Report:** Summarizes performance against key metrics such as turnaround time, details changes in sample mix and sample numbers, and outlines resource needs.

11.2.3 **Client Assessment Report:** Summarizes feedback from clients based on daily communication with project management and sales team as well as feedback collected by a third party as part of our Client Satisfaction Index (CSI) determination.

11.2.4 **Safety Assessment Report:** Outlines the safety incidents and "near misses" for the quarter and lists site assessment deficiencies.

The reports and records of the meetings are stored on a secure drive with management-only access for a minimum of five years.

11.3 Client Audits and Agency Inspections

Clients may audit our facility as assurance that their objectives are being met and that the laboratory is compliant with all applicable regulations, data quality, and project requirements.

Client audits can range from a laboratory tour to an intensive inspection of technical operations, procedures, regulatory compliance, and/or review of specific projects. Clients can only review data that pertains to their projects, and a non-disclosure agreement must be signed as per SOP #99.

Inspections can be performed by investigators or auditors from the USEPA, DoD, state and other regulatory agencies, third party accreditors (ACLASS), or regulatory agencies outside of the U.S.

The Quality Assurance Department is assigned the responsibility of hosting and working with agency and client representatives.

The Quality Assurance role includes:

- Escorting the investigator(s)
- Ensuring all questions are answered promptly and accurately
- Making note of all unresolved issues
- Informing management of the audit status and outcome
- Responding to the audit report
- Ensuring that appropriate corrective action is completed

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11.4 Proficiency Testing Program

11.4.1 Proficiency Testing Samples (TNI/DoD)

Proficiency testing (PT) samples are used to measure analytical accuracy, precision, and report completeness. To be accredited under TNI and DoD-ELAP, the laboratory contracts with an outside approved PT sample provider in each field of testing (FOT). Testing is limited by availability of samples that meet NELAP and DoD-ELAP criteria (noted below). The provider must be a NIST-accredited PT provider. It may be necessary to participate in more than one proficiency testing program to be evaluated for multiple interdependent analyte groups. Currently, Eurofins Air Toxics participates in PT programs for EPA Method TO-15, which is ISO 17025 compliant, TO-13A, TO-17 VI, formaldehyde and emissions testing. In each calendar year, the laboratory will complete a minimum of one PT sample for each analyte or interdependent analyte group.

The following policies apply to laboratory PT sample analysis and reporting:

- The samples shall be analyzed and reported to the PT provider within 45 calendar days of receipt or the specific deadline specified by the PT provider.
- The PT sample is received and logged into an electronic sample receiving database in the same fashion as field samples.
- The laboratory must follow the PT provider's instructions for preparing the PT sample.
- The laboratory management and bench chemist ensure that the PT samples are prepared, analyzed, and reported in the same fashion as field samples using the same staff, equipment, and methods.
- Initial and continuing calibrations for the PT sample are analyzed at the same frequency of field samples.
- The PT sample cannot undergo duplicate or replicate analyses that would not ordinarily be performed on field samples. The PT sample result cannot be derived from averaging the results of multiple analyses unless specifically called for in the reference method.
- The PT sample can only be analyzed on equipment leased or owned by the company and handled only by bona fide employees of the company.
- The analysis of PT samples by temporary or contract employees is explicitly forbidden.

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- The laboratory shall not subcontract any PT sample or portion.
- The laboratory shall not knowingly receive any PT sample or portion from another laboratory.
- The laboratory shall not communicate in any fashion with another laboratory concerning the PT sample or results.
- The laboratory shall not attempt to obtain the PT sample result prior to reporting.
- The PT sample reporting forms provided by the sample provider will be used to report the results and will be maintained in the laboratory's record system.
- The laboratory shall maintain copies of all written, printed, and electronic records relating the analysis or reporting of the PT sample for a period of five years or as required by the applicable regulatory program.
- A CAR will be generated any time an analyte result fails the PT assessment. A copy of the PT results will be sent to the accrediting agency, and associated corrective action summary will be sent upon request.
- The laboratory authorizes provider to release any PT assessment information to the accrediting agency.
- The QA Manager must sign the PT results form and, by so doing, attests that the sample was analyzed and reported in the same fashion as a field sample and followed the PT provider instructions for preparation.
- The laboratory must notify its primary accrediting agency and any other agencies under reciprocity that it has enrolled with a particular PT provider.
- The laboratory must notify its primary accrediting agency and any other agencies under reciprocity in the event it wishes to change PT providers.
- For each analyte or interdependent analyte group for which proficiency is not available, the certified laboratory will establish, maintain, and document the accuracy and reliability of its procedures through a system of internal quality management.
- Results of any failed PT samples are summarized in the Quarterly QA Status Report.

11.4.2 Proficiency Testing Samples (Non-NELAP/DoD)

Occasionally proficiency testing (PT) samples are submitted along with field samples by private clients. The laboratory processes and reports the

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samples in the same fashion as field samples. When the client notifies the laboratory that one or more analytes appear to have failed, the report is processed through the normal Client Inquiry Corrective Action Process. The QA Manager will carry out an assessment and investigation into the circumstances surrounding the proficiency results, including aspects relating to how the client prepared the sample for submission. The outcome of the assessment will be documented as a CAR and maintained on file for a period of five years. Results of any failed external PT samples are summarized in the Quarterly QA Status Report.

12. CORRECTIVE AND PREVENTIVE ACTION

12.1 Laboratory Investigations and Corrective Action

The Quality Assurance (QA) Department manages the Corrective Action Program and maintains the Corrective Action tracking database using the c.Support software program. A Corrective Action Report is initiated any time sample results are affected by non-conformance with established SOPs or program requirements, any time an external assessment results in a finding, any time there is a failed proficiency evaluation sample, and when a client inquiry results in a quality finding. The expectation is that any CAR should be resolved within 30 days.

The client is notified if there is an issue that could potentially affect the quality of sample results. The communication with the clients is recorded.

The software program tracks all parts of the CAR system: root cause investigation, immediate corrective action, long-term corrective action, and preventive action. It also tracks client communications regarding the incident. The QA Manager reviews all opened CARs for completeness and resolution.

Detailed information about the CAR process is described in SOP #61.

13. SERVICE TO CLIENTS

The Project Management System is defined in SOP #1. The following are brief descriptions of the elements comprising project management systems.

13.1 Review of Work Requests, Tenders, and Contracts

Eurofins Air Toxics places great importance on understanding client requirements for a project. The laboratory ensures, to the best of our ability, that client and project requirements are outlined and understood prior to acceptance

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of the project, including required laboratory accreditations and nonstandard work requests. All inconsistencies are discussed and addressed with both the client and the technical laboratory staff before the project is initiated and samples arrive. This is achieved in various ways, including the review of client work plans, Request for Proposals (RFPs) project Quality Assurance Project Plans (QAPPs), requested analytical methods and protocols, business contracts, and quality agreements. A key client contact is assigned to oversee each project. Communication between the client and Eurofins Air Toxics technical staff is coordinated through the Project Managers. The Project Management group relays any project changes or modifications to the technical group. They also relay issues encountered by the laboratory back to the client.

13.2 Timely Delivery

Evaluating laboratory capacity, assignment of resources, and ability to perform specific projects is a joint responsibility between the Technical Director and the Laboratory Director. Eurofins Air Toxics recognizes that one of the most important aspects of the services offered is turnaround time.

To ensure timely delivery, many analysts are cross-trained to perform a variety of tests, and there is redundant equipment available in the laboratory creating operation flexibility for routine work. Larger projects are reviewed against capacity estimates before a bid is submitted in order to meet a client's schedule.

Management regularly monitors the status of turnaround time including those projects that have exceeded a current turnaround time. Proactive communication regarding potentially missed deadlines is expected from the laboratory management to the Project Managers to keep the client informed of report delivery status.

Any changes to the established timeline by the client or the laboratory must be communicated to the client or laboratory as soon as possible. Upon communication of changes, a new timeline is established and agreed upon by both parties.

13.3 Subcontracting

Occasionally, Eurofins Air Toxics subcontracts analyses to other laboratories if the requested testing is not routinely performed in our laboratory. Testing is only subcontracted with the client's knowledge and approval. Subcontract laboratories are selected based on their qualifications. If tests require a specific agency certification, only an appropriately certified laboratory will be used.

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LABORATORY QUALITY ASSURANCE MANUAL

(LQAM)

Appendix A

Terms and Definitions

(nine total pages including this cover)

Current as of March 5, 2014

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TERMS AND DEFINITIONS

Accuracy: The degree of agreement between an observed value and an accepted reference value.

Active sampling: The process of collecting a sample using pump or vacuum source to pull a known volume of vapor through a sorbent cartridge, filter, or liquid impinger.

Ambient air: Outdoor air (also can include indoor air).

Analyte: The substance or component for which a sample is analyzed to determine its presence or quantity.

APH (air-phase hydrocarbons): Aliphatic and aromatic fractions identified in vapor-phase samples.

Approved: The determination by a state or federal accrediting agency that a certified laboratory may analyze for an analyte under the specified method.

Assessment: The process of inspecting, testing, and documenting findings for purposes of certification or to determine compliance.

ASTM International (formerly known as American Society for Testing and Materials)**:** Organization which develops international voluntary consensus-based standards.

Bag: An air-sampling container consisting of inert polymeric material.

Batch: A group of analytical samples (≤ 20) of the same matrix processed together, including extraction, concentration, and analysis using the same process, staff, and reagents.

BFB (4-Bromofluorobenzene): Compound used to verify that the mass spectrometer meets the tuning requirements of the method. Also can be used as an internal standard or surrogate.

Blank samples: Negative control samples used to assess potential contamination from sampling procedures or analytical processes. They can be field blanks or laboratory blanks.

BTEX: Benzene, toluene, ethylbenzene, and xylenes

Canister: A stainless steel spherical air-sampling device consisting of Summa polished or glass-lined internal walls and a leak-tight on/off valve.

Certificate of Analysis (C of A): An authenticated document, issued by an appropriate authority, that assures a regulated product has met its product specification and quality.

Chain of Custody (COC): The chronological documentation of the custody of an environmental sample from the time it is taken until it is disposed.

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Contamination: The effect caused by the introduction of a target analyte from an outside source into the test system.

Continuing Calibration Verification (CCV): A component of Quality Control used to verify instrument linearity with respect to the Initial Calibration (ICAL). A CCV is analyzed at the beginning of every analytical sequence and then periodically depending on the method. Certain methods also include a CCV in every analytical sequence as an End Check.

Control charts: Statistical tools for monitoring the performance of a particular task on a continuing basis. The control chart is prepared for each test parameter after 20 determinations have been performed. The mean is plotted with the warning limits being ±2s and the control limits being ±3s (s = Standard deviation).

Corrective action: An action taken to eliminate the cause(s) of an existing nonconformity, defect, or other undesirable situation in order to prevent recurrence.

Corrective Action Report: See NCCAR.

Data reduction: A qualitative and quantitative evaluation of the documentation and procedures associated with environmental measurements to verify that the resulting data are of acceptable quality.

Demonstration of Capability: A procedure to establish the ability of the analyst to generate analytical results by a specific method and meet measurement quality objectives.

Detection Limit (DL): The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration with 99% confidence.

%Difference (%D): A measure of precision between the expected value and the actual value, typically used to measure performance of the daily CCV RRF as compared to the Initial Calibration average RRF.

DoD: U.S. Department of Defense

Duplicate sample: A sample collected for checking the preciseness of the sampling process. Duplicate samples are collected at the same time and from the same source as the study samples.

Equipment Blank: A sample that is known not to contain the target analyte, used to check the cleanliness of sampling devices. It is collected in a sampling container from a clean sample collection device and returned to the laboratory as a sample.

Field Blank: A sample that is known not to contain the target analyte, used to check for analytical artifacts or contamination introduced by sampling and analytical procedures. It is taken to the sampling site and exposed to sampling conditions, then returned to the laboratory and treated as an environmental sample.

Field Duplicate: A sample collected at the same time from the same source but submitted and analyzed as a separate sample.

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GC (gas chromatograph): Analytical instrumentation used to resolve complex mixtures into individual peaks for identification and quantitation. Separation is achieved as chemicals are retained at varying rates by the column phase.

Holding time: The maximum time that a sample may be held prior to preparation or analysis.

HPLC (high-pressure liquid chromatography): A form of liquid chromatography used to separate compounds that are dissolved in solution (also known as high-performance liquid chromatography).

Impinger: A glass vessel used to contain collection solution through which a stream of air is bubbled for sampling purposes.

Initial Calibration (ICAL): Demonstration of a linear response to different concentrations of calibration standards within a defined range.

Initial Calibration Verification (ICV): Verifies the Initial Calibration using a different source standard from the one used for Initial Calibration.

Initial Demonstration of Analytical Capability: The procedure described in USEPA 40 CFR 136 Appendix A, used to determine a laboratory's accuracy and precision in applying an analytical method.

Instrument Blank: A sample that is known not to contain the target analyte, processed through the instrumental steps of the measurement process and used to determine the absence of instrument contamination prior to analysis of field samples.

Instrument Detection Limit (IDL): The concentration of the analyte that produces a signal greater than five times the signal-to-noise ratio of the instrument.

Interference: The effect on the final result caused by the sample matrix.

Internal Standard (IS): A measured amount of a certain compound added after preparation or extraction of a sample.

Ketones: Any of a class of organic compounds characterized by a carbonyl group attached to two carbon atoms.

Key Personnel: The laboratory director, technical director, quality assurance manager, and team leader, all of whom meet the requirements of the NELAP rule.

Laboratory Control Sample (LCS): An independent second source reference standard that goes through the same pretreatment and preparation procedures as the samples. It validates the accuracy of the Initial Calibration.

Laboratory Duplicate: An aliquot of the same sample that is prepared and analyzed at the same time.

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Laboratory Information Management System (LIMS): A laboratory's electronic data system that collects, analyzes, stores, and archives records and documents.

Limit of Detection (LOD): The smallest concentration of a substance that must be present in a sample in order to be detected at the DL with 99% confidence.

Limit of Quantitation (LOQ): The smallest concentration that produces a quantitative result with known and recorded precision and bias.

Matrix: The component or substrate (e.g., surface water, drinking water, air, liquid waste) which contains the analyte(s) of interest.

Matrix Spike (MS): A sample prepared to determine the effect of the matrix on a method's recovery efficiency by adding a known amount of the target analyte to a specified amount of matrix sample for which an independent estimate of the target analyte concentration is available. It is used to evaluate accuracy.

Matrix Spike Duplicate (MSD): Duplicate of the matrix spike sample. Results are compared with MS to determine precision.

Mass spectrometer (MS): Analytical instrumentation used to identify and quantify chemicals utilizing spectral fragmentation patterns based on chemical structures.

Measurement uncertainty: Measurement uncertainty is the estimation of potential errors in a measurement process and is expressed as $\pm$ 2X(*s*) of the historical mean of LCS recoveries.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero as determined from analysis of a sample containing the analyte in a given matrix (40 CFR Part 136, Appendix B, July 1995).

NCCAR (Non-conformance/Corrective Action Report): A report that identifies, communicates, tracks, and resolves a non-conformance.

NIST: National Institute of Standards and Technology

NMOC: Non-methane organic compounds

OSHA: Occupational Safety and Health Administration

PAHs (polycyclic aromatic hydrocarbons): Hydrocarbons made up of fused aromatic ring molecules.

Passive sampling: Sample collection conducted without the use of mechanical pumps or vacuums. Collection relies on principle of diffusion.

PCBs (polychlorinated biphenyls): Biphenyl compounds with chlorine atoms positioned on the benzene rings.

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ppbv: parts per billion by volume

ppmv: parts per million by volume

Practical Quantitation Limit (PQL): A synonym for the standard of lowest concentration contained in the Initial Calibration. It is the smallest concentration of the analyte that can be reported with a specific degree of confidence.

Precision: The degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. Precision is usually expressed as standard deviation, variance or a range, in either absolute or relative terms.

Preservation: The temperature control or the addition of a substance to maintain the chemical or biological integrity of the target analyte.

Proficiency Testing (PT): A means to evaluate a laboratory's performance under controlled conditions relative to a given set of criteria, through analysis of unknown samples provided by an external source.

Proficiency Test (PT) sample: A sample, the composition of which is unknown to the laboratory and is provided to test whether the analyst/laboratory can produce analytical results within specified acceptance criteria.

Quality Assurance (QA): An integrated system of activities involving planning, quality control, reporting, and quality assessment and improvement to ensure that the product meets defined standards of quality with a stated level of confidence.

Quality Assurance Project Plan (QAPP): An orderly assemblage of detailed procedures designed to produce data of sufficient quality to meet the data quality objectives for a specific data collection activity.

Quality Control (QC): A procedure or set of procedures intended to ensure that a product or performed service adheres to a defined set of quality criteria.

%R: %Recovery

Relative Percent Difference (RPD): A measure of precision between two measurements calculated by dividing the absolute value of the difference between the measurements by their average and expressed as a percentage.

Reporting Limit (RL): The smallest concentration of an analyte that can be measured with a stated probability of significance. All Initial Calibrations contain a standard at the Reporting Limit. The Reporting Limit is never less than the Practical Quantitation Limit (PQL).

Reporting Limit verification: A re-quantification of the lowest concentration data point of an Initial Calibration to test the percent recovery of each component. Analyte recovery should be between 50–150% to verify detection limit accuracy.

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Relative Standard Deviation (RSD): A measure of precision often used to evaluate linearity of an Initial Calibration. The relative response factor is calculated at each calibration level, and the RSD is calculated by dividing the standard deviation by the average value.

RRF: Relative Response Factor

RT: Retention Time

Safety Data Sheet (SDS): A technical document that contains information on the chemical make-up, use, storage, handling, emergency procedures, and potential health effects related to a hazardous material (formerly Material Safety Data Sheets).

Selectivity: The capability of a method or instrument to respond to the target analyte in the presence of other substances or things.

Semivolatile compound (SVOC): An organic compound which has a boiling point higher than water and which may vaporize when exposed to temperatures above room temperature.

Sensitivity: The capability of a method or instrument to discriminate between measurement responses representing different levels of a target analyte.

Soil vapor (also referred to as "soil gas"): Vapor-phase volatile compounds that migrate or evaporate from contaminated soil.

Soil vapor extraction (SVE): A physical treatment process for in situ remediation of volatile contaminants in vadose zone (unsaturated) soils.

Standard Operating Procedure (SOP): A written document that details the steps of an operation, analysis, or action, the techniques and procedures for which are thoroughly prescribed and accepted as the procedure for performing certain routine or repetitive tasks.

Surrogate: A substance unlikely to be found in the environment that has properties which mimic the target analyte and that is added to a sample to check for analytical efficiency.

Target analyte: The analyte that a test is designed to detect or quantify.

Technical employee: A designated individual who performs the analytical method and associated techniques.

TIC: Tentatively Identified Compound

TNMOC: Total non-methane organic compounds

TPH: Total petroleum hydrocarbons

TRH: Total recoverable hydrocarbons, which are differentiated from total petroleum hydrocarbons (TPH) in that non-fuel-related peaks are subtracted from the TPH result but are included in TRH.

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Trip Blank: A sample known not to contain the target analyte, which is carried to the sampling site and transported to the laboratory for analysis without having been exposed to the sampling procedures.

TVH: Total volatile hydrocarbons

Vapor intrusion (VI): The process by which vapors originating from contaminated soil or groundwater migrate through the subsurface into nearby buildings, potentially impacting indoor air quality.

VPH: Volatile Petroleum Hydrocarbons

CHAMBERS
TERMS AND DEFINITIONS

Air change rate: The flow rate of clean air into the chamber divided by the chamber volume. Also, the ratio of volume of clean, conditioned air brought into the emission test chamber or building space per unit time to the chamber or building space volume.

Air flow rate: Air volume entering the emission test chamber per unit time.

Air velocity: Air speed over the surface of the test specimen.

Aldehydes: Formaldehyde, acetaldehyde, and other carbonyl compounds detectable by derivatization with DNPH and analysis by HPLC.

Area specific flow rate: Ratio of the inlet air flow rate to the nominal surface area of the product or the product test specimen.

Background concentration: VOC concentrations in emission test chamber in the absence of a product test specimen.

CREL: Non-cancer chronic reference exposure level developed by Cal/EPA OEHHA. These are inhalation concentrations to which the general population, including sensitive individuals, may be exposed for long periods (10 years or more) without the likelihood of serious adverse systemic effects other than cancer.

Emission factor: Mass of VOC emitted per unit time from a specific unit area of product surface. Other unit measures such as product mass or length may be used as appropriate.

Emission rate: Mass of VOC emitted by an entire product or test specimen per unit time.

Emission test chamber: Non-contaminating, inert enclosure of defined volume with controlled environmental conditions for inlet air flow rate, temperature, and humidity used for determination of VOC emissions from product test specimens.

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Loading factor: Ratio of the exposed surface area of the product or the test specimen to the volume of the building space or the emission test chamber.

Manufacturer's identification number: Unique product identifier from which a manufacturer is able to determine the product name, product category or subcategory, manufacturing location, date of manufacture, production line, and/or other pertinent identifying information for the product.

Product category: General group of similar products intended for a particular application and performance, such as VCT, laminated wood flooring, broadloom carpet, sheet vinyl flooring, plywood, OSB, interior paint, etc.

Product subcategory: Group of products within a product category having similar chemistry, construction, weight, formulation, and manufacturing process and which may have a similar VOC emissions profile.

Representative product sample: A product sample that is representative of the product manufactured and produced under typical operating conditions.

Sampling interval: Time over which a single air sample is collected.

Sampling period: Established time for collection of air sample from emission test chamber.

Specific emission rate: Emission rate normalized to the area, mass, or length of a product (i.e., equivalent to emission factor).

Test specimen: Portion of representative sample prepared for emission testing in an emission test chamber following a defined procedure.

TVOC: Sum of the concentrations of all identified and unidentified VOCs between and including n-hexane through n-hexadecane (i.e., C_6 – C_{16}) as measured by the GC/MS TIC method and expressed as a toluene equivalent value.

Ventilation rate: Same as air change rate.

Volatile organic compounds (VOCs): Carbon-containing compounds (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates, and ammonium carbonate) with vapor pressures at standard conditions approximately ranging between those for n-pentane through n-heptadecane. For the purposes of this method, formaldehyde and acetaldehyde are considered to be VOCs.

Zero time: Time establishing the beginning of an emission test.

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LABORATORY QUALITY ASSURANCE MANUAL

(LQAM)

Appendix B

Procedure Cross-Reference List

(Three total pages including this cover)

Current as of March 5, 2014

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Procedure Cross-Reference List

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Appendix C

Certifications and Accreditations

(Two total pages including this cover)

Current as of March 5, 2014

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Certifying Agency	Air Toxics Certificate #	Basis of Certification/Approval	Location of Certificate and Parameter List
Arizona DHS	AZ0775	Onsite assessment (annual), LQAM and SOP	Laboratory internal network: O:\QA\Certifications
California DPH (Primary NELAP)	12282CA	Onsite assessment (biennial) LQAM, SOP and WP PTs	Laboratory internal network: O:\QA\Certifications
New York State DOH	11291	LQAM, Secondary NELAP	Laboratory internal network: O:\QA\Certifications
Oregon DHS (Primary NELAP)	CA300005	Onsite assessment (biennial) LQAM and SOP Review	Laboratory internal network: O:\QA\Certifications
Texas CEQ	T104704434-13-6	LQAM, Secondary NELAP	Laboratory internal network: O:\QA\Certifications
State of Utah DOH	CA009332013-4	LQAM, WP PT, Secondary NELAP	Laboratory internal network: O:\QA\Certifications
Washington DOE	C935-13	PT, Secondary NELAP	Laboratory internal network: O:\QA\Certifications
DoD-ELAP_ ISO/IEC 17025:2005	ADE-1451	DOD QSM for Environmental Laboratories v.4.2 Onsite assessment (biennial)	Laboratory internal network: O:\QA\Certifications
Virginia DCLS	2612	Secondary NELAP	Laboratory internal network: O:\QA\Certifications
New Jersey DEP	CA016	LQAM, SOPs, Secondary NELAP	Laboratory internal network: O:\QA\Certifications

All latest certificates and licenses are posted by the laboratory entrance.

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Appendix D

Organizational Charts

(four total pages including this cover)

Current as of March 5, 2014

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Organization Chart – Eurofins Air Toxics, Inc.

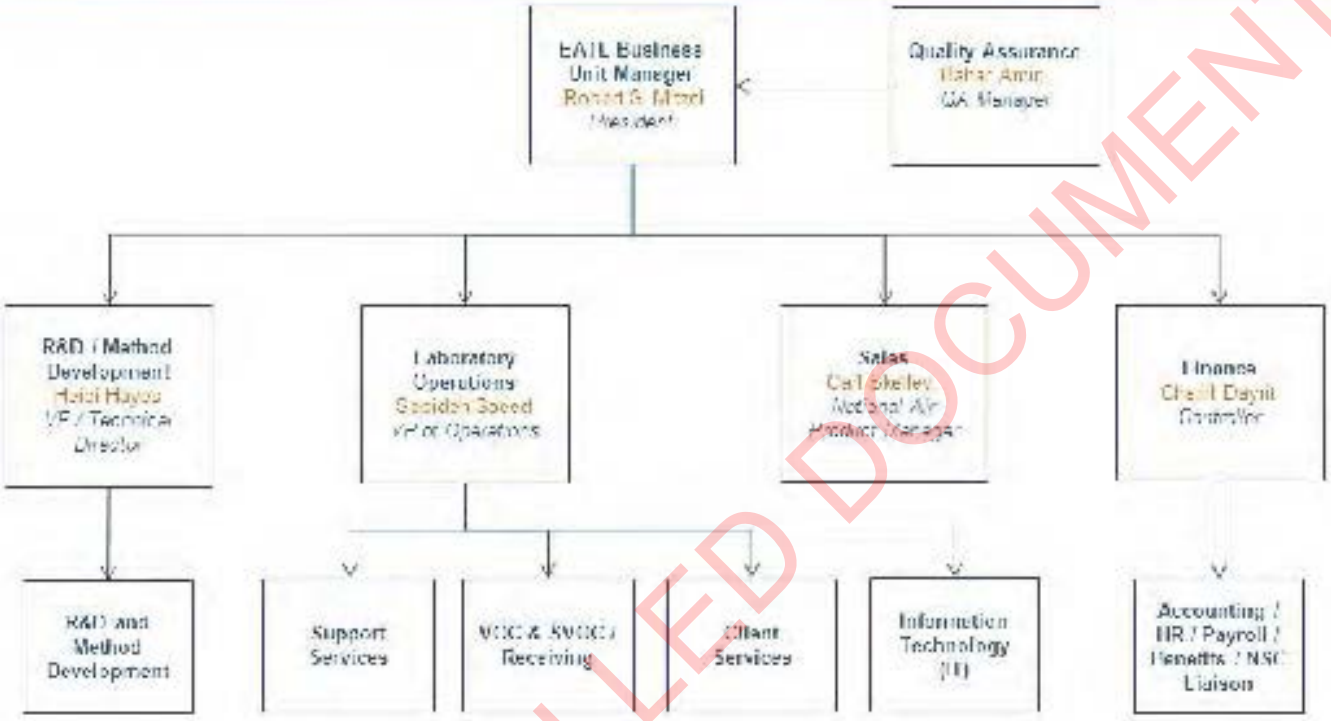

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Organization Chart – Product Testing

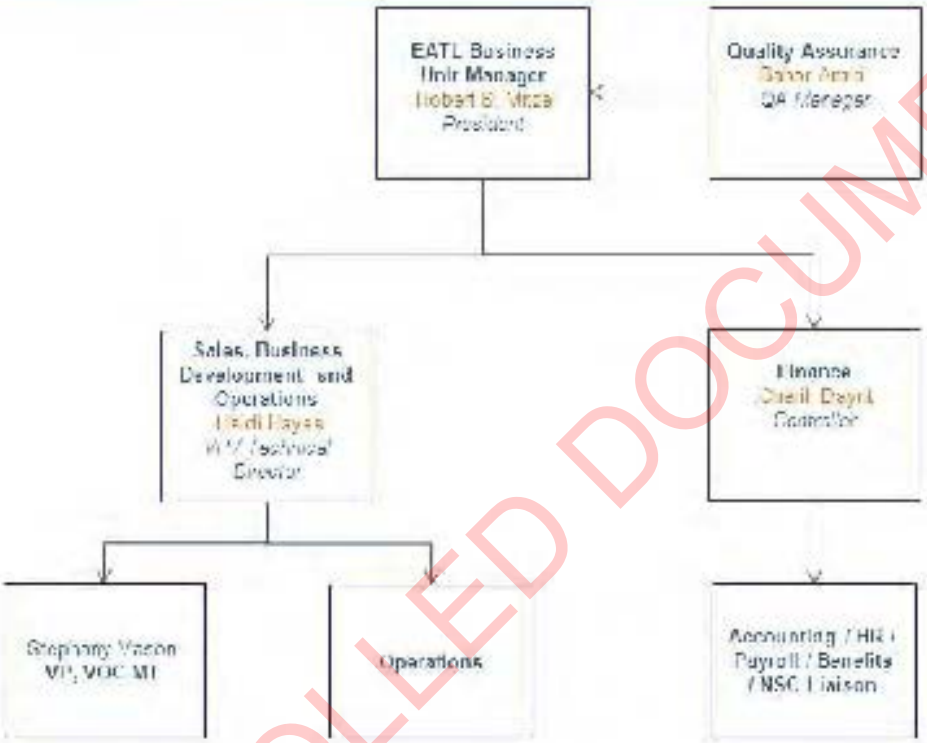

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Appendix E

Analytical Methods

(seventy-seven total pages including this cover)

Current as of March 5, 2014

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ANALYTICAL METHODS

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ANALYTICAL METHODS

Section 1.0

Method: Modified EPA TO-17 VOCs and SVOCs – General Applications

Eurofins Air Toxics SOP #5 Revision 15 Effective Date: December 23, 2013 Methods Manual Summary

Description: This method is an alternative to the canister-based sampling and analysis methods that are presented in EPA Compendium Methods TO-14A and TO-15. Sorbent sampling is also amenable to efficient collection and measurement of semi-volatile compounds that are prone to condensing on the surface of the canister. Thermal desorption gas chromatograph/mass spectrometer (GC/MS) can be applied to matrices beyond ambient air such as soil gas and materials emissions by carefully selecting the appropriate sorbent and sampling parameters. Single bed sorbents such as Tenax TA and Carbopack B can be utilized to collect a specific volatility range while multi-bed sorbent tubes are effective in collecting a wide volatility range. (See Air Toxics' TO-17 VI method for the multi-bed tube application.)

Samples are collected by drawing a measured volume of air through the sorbent tubes. Collection is performed using a low flow vacuum pump or a volumetric syringe attached to the outlet side of the tube. Analysis is accomplished by heating the sorbent tube and sweeping the desorbed compounds onto a secondary "cold" trap for water management and analyte refocusing. The secondary trap is heated for efficient transfer of compounds onto the gas chromatograph (GC) for separation followed by detection using mass spectrometry (MS).

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, the laboratory reports these non-standard compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. In addition, stability of the non-standard compound during sample storage, safe sampling volume, and desorption efficiency are not validated. Full validation may be available upon request.

The TO-17 method offers significant flexibility in its scope and application depending on the sorbent selected. The most commonly requested sorbent tubes and associated analytes are summarized in the QC tables below.

Table 1. Summary of Sorbent Applications

Sorbent	Typical Analyte Range	Water Management
Tenax TA	C7 – C26	Hydrophobic
Tenax GR	C7 – C30	Hydrophobic
Multi-bed "VI tube" (See TO-17 VI application)	C3 – C26	Largely Hydrophobic

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Table 2. Method TO-17 VOCs (Tenax GR/TA) Reporting Limits and QC Limits

Analytes	Reporting Limit (ng)	QC Acceptance Criteria		
		ICAL (%RSD)	LCS (% R)	CCV (%D)
1,1,1-Trichloroethane	5.0	30	70 – 130	30
1,1,1,2-Tetrachloroethane	5.0	30	70 – 130	30
1,1,2,2-Tetrachloroethane	5.0	30	70 – 130	30
1,1,2-Trichloroethane	5.0	30	70 – 130	30
1,1-Dichloropropene	5.0	30	70 – 130	30
1,2,3-Trichlorobenzene	5.0	30	70 – 130	30
1,2,3-Trichloropropane	5.0	30	70 – 130	30
1,2,4-Trichlorobenzene	5.0	30	70 – 130	30
1,2,4-Trimethylbenzene	5.0	30	70 – 130	30
1,2-Dibromo-3-chloropropane	5.0	30	70 – 130	30
1,2-Dichlorobenzene	5.0	30	70 – 130	30
1,2-Dichloroethane	5.0	30	70 – 130	30
1,2-Dichloropropane	5.0	30	70 – 130	30
1,3,5-Trimethylbenzene	5.0	30	70 – 130	30
1,3-Dichlorobenzene	5.0	30	70 – 130	30
1,3-Dichloropropane	5.0	30	70 – 130	30
1,4-Dichlorobenzene	5.0	30	70 – 130	30
2-Chlorotoluene	5.0	30	70 – 130	30
4-Chlorotoluene	5.0	30	70 – 130	30
Benzene	10	30	70 – 130	30
Bromobenzene	5.0	30	70 – 130	30
Bromodichloromethane	5.0	30	70 – 130	30
Bromoform	5.0	30	70 – 130	30
Butylbenzene	5.0	30	70 – 130	30
Carbon Tetrachloride	5.0	30	70 – 130	30
Chlorobenzene	5.0	30	70 – 130	30
Chloroform	5.0	30	70 – 130	30
cis-1,3-Dichloropropene	5.0	30	70 – 130	30
cis-1,4-Dichloro-2-butene	5.0	30	70 – 130	30
Cumene	5.0	30	70 – 130	30

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Dibromochloromethane	5.0	30	70 – 130	30
Dibromomethane	5.0	30	70 – 130	30
Ethylbenzene	5.0	30	70 – 130	30
Ethylene Dibromide	5.0	30	70 – 130	30
Hexachlorobutadiene	5.0	30	70 – 130	30
Naphthalene	5.0	30	70 – 130	30
m,p-Xylene	10	30	70 – 130	30
o-Xylene	5.0	30	70 – 130	30
p-Cymene	5.0	30	70 – 130	30
Propylbenzene	5.0	30	70 – 130	30
sec-Butylbenzene	5.0	30	70 – 130	30
Styrene	5.0	30	70 – 130	30
tert-Butylbenzene	5.0	30	70 – 130	30
Tetrachloroethene	5.0	30	70 – 130	30
Toluene	5.0	30	70 – 130	30
trans-1,3-Dichloropropene	5.0	30	70 – 130	30
trans-1,4-Dichloro-2-butene	5.0	30	70 – 130	30
Trichloroethene	5.0	30	70 – 130	30

Note: Full list may not be appropriate, depending on sample volume requirements.

Table 3. Commonly requested TPH parameters (Tenax GR/TA)

TPH	Reporting Limit (ng)	ICAL (%RSD)	ICV (% R)	CCV (%D)	LCS (%R)
GRO (Gasoline Range)	1000	30	70 – 130	30	70 – 130
DRO (C10-C24 Diesel Range)	1000	30	70 – 130	30	70 – 130
Kerosene	1000	30	70 – 130	30	70 – 130
Mineral Spirits (C9-C12 range)	1000	30	70 – 130	30	70 – 130

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Table 4. Internal Standard and Field Surrogate Recoveries

Internal Standards		
Analyte	**CCV IS % Recovery**	**Sample IS % Recovery**
Bromochloromethane	60 – 140	60 – 140
1,4-Difluorobenzene	60 – 140	60 – 140
Chlorobenzene-d5	60 – 140	60 – 140
Field Surrogates		
Analyte	**% Recovery**	
1,2-Dichloroethane-d4	50 – 150	
Toluene-d8	50 – 150	
Naphthalene-d8	50 – 150	

Table 5. TO-17 SVOCs (Tenax GR/TA)

Analytes	Reporting Limit (ng)	Acceptance Criteria		
		ICAL (%RSD)	LCS (% R)	CCV (%D)
Naphthalene	5.0	30	70 – 130	30
2-Methylnaphthalene	5.0	30	70 – 130	30
Acenaphthylene	5.0	30	70 – 130	30
Acenaphthene	5.0	30	70 – 130	30
Fluorene	5.0	30	70 – 130	30
Phenanthrene	5.0	30	70 – 130	30
Anthracene	5.0	30	70 – 130	30
Fluoranthene	5.0	30	70 – 130	30
Pyrene	10	30	70 – 130	30
Internal Standards				
Analyte	**CCV IS % Recovery**		**Sample IS % Recovery**	
Bromofluorobenzene	60 – 140		60 – 140	
Field Surrogates				
Analyte	**% Recovery**			
Naphthalene-d8	50 – 150			

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Table 5. Summary of Calibration and QC Procedures for TO-17 General Application

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
BFB Tune Check	Every 24 hours	TO-15 tune criteria	Correct problem then repeat tune.
5-Point Calibration	Prior to sample analysis	%RSD ≤ 30%, 2 allowed out up to 40%	Correct problem then repeat Initial Calibration Curve.
LCS	After each initial Calibration Curve and daily prior to analysis	Recovery 70 – 130%	If more than 5% target compounds exceed criteria, evaluate system and reanalyze the standard. Re-prepare the standard if necessary. Re-calibrate the instrument if the criteria cannot be met.
LCSD	Each analytical batch	Recovery 70 – 130%; %RPD ≤ 25%	If more than 5% target compounds exceed criteria, evaluate system and recollection process. Correct problem and reanalyze.
Continuing Calibration Verification (CCV)	At the start of each analytical clock	70 – 130 %	If project-specified risk drivers exceed these criteria, more than 5% of the compounds exceed these criteria, or any VOC exceeds 50–150% recovery, maintenance is performed and the CCV test repeated. If the system still fails the CCV, perform a new 5-point Calibration Curve.
Laboratory Blank	After the CCV and at the end of the analytical batch	Results less than the laboratory RL	Inspect the system and re-analyze the Blank. No corrective action for Lab Blank at end of batch.
Internal Standard (IS)	As each standard, Blank, and sample is being loaded	**CCVs:** area counts 60–140%, RT w/in 20 sec of mid-point in ICAL **Blanks and samples**: Retention time (RT) must be within ±0.33 minutes of the RT in the CCV. The IS area must be within ±40% of the CCV's IS area for the Blanks and samples.	**CCV:** Inspect and correct system prior to sample analysis. **Blanks:** Inspect the system and re-analyze the Blank. **Samples:** Samples cannot be re-analyzed due to the nature of the sorbent cartridges. However investigate the problem by reviewing the data. If necessary, run a Lab Blank to check the instrument performance. Report the data and narrate.

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Field Surrogates	Each clean sample tube used for pumped sample collection and lab blank and QC samples	50 – 150%	**For blanks:** Inspect the system and re-analyze the Blank. **For samples:** If no obvious reason can be ascertained after evaluation of the data and sample collection parameters, the sample should be reanalyzed to verify out of control recovery. If recovery is out of acceptance criteria in both the primary and recollected sample, the primary sample is reported with the surrogate flagged.

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ANALYTICAL METHODS

Section 2.0

Method: EPA Method TO-14A/TO-15 Volatile Organic Compounds (Standard/Quad)

Eurofins Air Toxics SOP #6 Revision 30 Effective Date: April 30, 2013 Methods Manual Summary

Description: This method involves full scan gas chromatograph/mass spectrometer (GC/MS) analysis of whole air samples collected in evacuated stainless steel canisters. Samples are analyzed for volatile organic compounds (VOCs) using EPA Method TO-14A/TO-15 protocols. An aliquot of up to 0.5 liters of air is withdrawn from the canister utilizing a volumetric syringe, volumetric loop, or mass flow controller. This volume is loaded onto a hydrophobic multibed sorbent trap to remove water and carbon dioxide and to concentrate the vapor sample. The focused sample is then flash-heated to sweep adsorbed VOCs onto a secondary trap for further concentration and/or directly onto a GC/MS for separation and detection.

Eurofins Air Toxics maintains a suite of TO-14A/TO-15 methods, each optimized to efficiently meet the data objectives for a wide range of targeted concentration ranges. The methods, their reporting limits, and typical applications are summarized in the table below. This method summary describes TO-14A/TO-15 (Standard or Quad).

Eurofins Air Toxics Method	Base Reporting Limits	Typical Application
TO-14A/TO-15 (5&20)	5 – 20 ppbv	Soil gas and ppmv range vapor matrices
TO-14A/TO-15 (Standard or Quad)	0.5 – 5.0 ppbv	Ambient air, soil gas, and ppbv level vapor matrices
TO-14A/TO-15 (Low-level)	0.1 – 0.5 ppbv	Indoor and outdoor air
TO-14A/TO-15 SIM	0.003 – 0.5 ppbv	Indoor and outdoor air

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, Eurofins Air Toxics reports these non-routine compounds with partial validation. Validation may include a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification analyzed, and no method detection limit study performed unless previous arrangements have been made. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

Eurofins Air Toxics takes no modifications of technical significance to Method TO-15 for the "Quad" configurations. Since Eurofins Air Toxics applies TO-15 methodology to all Summa canisters regardless of whether TO-14A or TO-15 is specified by the project, the laboratory performs a modified version of method TO-14A as detailed in Table 1. Please note that Methods TO-14A and TO-15 were validated for specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-14A and TO-15 results generated from Tedlar bags.

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Table 1. Summary of TO-14A Method Modifications

Requirement	TO-14A	Eurofins Air Toxics Modifications
Sample Drying System	Nafion Drier	Multibed hydrophobic sorbent
Blank acceptance criteria	≤ 0.2 ppbv	≤ RL
BFB ion abundance criteria	Ion abundance criteria listed in Table 4 of TO-14A	Follow abundance criteria listed in TO-15.
BFB absolute abundance criteria	Within 10% when comparing to the previous daily BFB	CCV internal standard area counts are compared to ICAL; corrective action when recovery is less than 60%.
Initial Calibration	≤ 30% RSD for listed 39 VOCs	≤ 30% RSD with 2 of Eurofins Air Toxics' 62 standard compounds allowed out to ≤ 40% RSD

The standard target analyte list, reporting limit (RL) also referred to as Limit of Quantitation, QC criteria, and QC summary can be found in Tables 2 through 5.

Table 2. Method TO-14A/TO-15 Analyte List (Quad)

Analyte	RL/LOQ (ppbv)	QC Acceptance Criteria			
		ICAL (%RSD)	CCV (%R)	ICV/LCS (%R)	Precision Limits (Max. RPD)
1,1,2,2-Tetrachloroethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,1,2-Trichloroethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,1-Dichloroethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,1-Dichloroethene	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,2,4-Trichlorobenzene	2.0	≤ 30%	70 – 130	70 – 130	± 25
1,2,4-Trimethylbenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dibromoethane (EDB)	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichlorobenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichloroethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichloropropane	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,3,5-Trimethylbenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,3-Dichlorobenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,4-Dichlorobenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Benzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Bromomethane*	5.0	≤ 30%	70 – 130	70 – 130	± 25
Carbon Tetrachloride	0.5	≤ 30%	70 – 130	70 – 130	± 25
Chlorobenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25

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Chloroethane	2.0	≤ 30%	70 – 130	70 – 130	± 25
Chloroform	0.5	≤ 30%	70 – 130	70 – 130	± 25
Chloromethane	5.0	≤ 30%	70 – 130	70 – 130	± 25
Chlorotoluene (Benzyl Chloride)	0.5	≤ 30%	70 – 130	70 – 130	± 25
cis-1,2-Dichloroethene	0.5	≤ 30%	70 – 130	70 – 130	± 25
cis-1,3-Dichloropropene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Dichloromethane (Methylene Chloride)	5.0	≤ 30%	70 – 130	70 – 130	± 25
Ethylbenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Freon 11 (Trichlorofluoromethane)	0.5	≤ 30%	70 – 130	70 – 130	± 25
Freon 113 (Trichlorotrifluoroethane)	0.5	≤ 30%	70 – 130	70 – 130	± 25
Freon 114	0.5	≤ 30%	70 – 130	70 – 130	± 25
Freon 12 (Dichlorodifluoromethane)	0.5	≤ 30%	70 – 130	70 – 130	± 25
Hexachlorobutadiene	2.0	≤ 30%	70 – 130	70 – 130	± 25
m,p-Xylene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Methyl Chloroform (1,1,1-Trichloroethane)	0.5	≤ 30%	70 – 130	70 – 130	± 25
o-Xylene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Styrene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Tetrachloroethene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Toluene	0.5	≤ 30%	70 – 130	70 – 130	± 25
trans-1,3-Dichloropropene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Trichloroethene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Vinyl Chloride	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,3-Butadiene	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,4-Dioxane	2.0	≤ 30%	70 – 130	70 – 130	± 25
2-Butanone (Methyl Ethyl Ketone)	2.0	≤ 30%	70 – 130	70 – 130	± 25
2-Hexanone	2.0	≤ 30%	70 – 130	70 – 130	± 25
4-Ethyltoluene	0.5	≤ 30%	70 – 130	70 – 130	± 25
4-Methyl-2-Pentanone (MIBK)	0.5	≤ 30%	70 – 130	70 – 130	± 25
Acetone	5.0	≤ 30%	70 – 130	70 – 130	± 25
Bromodichloromethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Bromoform	0.5	≤ 30%	70 – 130	70 – 130	± 25
Carbon Disulfide	2.0	≤ 30%	70 – 130	70 – 130	± 25
Cyclohexane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Dibromochloromethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Ethanol	2.0	≤ 30%	70 – 130	70 – 130	± 25

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Heptane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Hexane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Isopropanol	2.0	≤ 30%	70 – 130	70 – 130	± 25
Methyl t-Butyl Ether (MTBE)	0.5	≤ 30%	70 – 130	70 – 130	± 25
Tetrahydrofuran	0.5	≤ 30%	70 – 130	70 – 130	± 25
trans-1,2-Dichloroethene	0.5	≤ 30%	70 – 130	70 – 130	± 25
2,2,4-Trimethylpentane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Cumene	0.5	≤ 30%	70 – 130	70 – 130	± 25
Propylbenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
3-Chloroprene	2.0	≤ 30%	70 – 130	70 – 130	± 25
Naphthalene**	2.0	≤40%	60 – 140	60 – 140	± 25
TPH (Gasoline) ***	25	1-Point Calibration	N/A	ICV only; 60 – 140	± 25
NMOC (Hexane/Heptane)***	10	1-Point Calibration	N/A	NA	± 25

*Bromomethane recovery can be variable due to moisture/sorbent interactions specifically on the 2-trap concentration system. Data may require qualifier flags.

**Due to its low vapor pressure, Naphthalene may exceed TO-15 performance requirements. The wider QC limits reflect typical performance. Although Naphthalene is not on Eurofins Air Toxics "standard" TO-15 list, it is commonly requested and included in Table 2.

***TPH and NMOC are not on Eurofins Air Toxics' "standard" TO-15 list, but are included in Table 2 due to common requests.

Table 3. Internal Standards

Analyte	Accuracy (% R)
Bromochloromethane	60 – 140
1,4-Difluorobenzene	60 – 140
Chlorobenzene-d_5	60 – 140

Table 4. Surrogates

Analyte	Accuracy (% R)
1,2-Dichloroethane-d_4	70 – 130
Toluene-d_8	70 – 130
4-Bromofluorobenzene	70 – 130

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Table 5. Summary of Calibration and QC Procedures for Methods TO-14A/TO-15

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Tuning Criteria	Every 24 hours	TO-15 ion abundance criteria	Correct problem then repeat tune.
Minimum 5-Point Initial Calibration (ICAL)	Prior to sample analysis	% RSD ≤ 30 with 2 compounds allowed out to ≤ 40% RSD	Correct problem then repeat Initial Calibration curve.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS)	After each Initial Calibration curve, and daily prior to sample analysis	Recoveries for 85% of "Standard" compounds must be 70–130%. No recovery may be < 50%. If specified by the client, in-house generated control limits may be used.	Check the system and reanalyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS) for Non-standard compounds	Per client request or specific project requirements only	Recoveries of compounds must be 60–140%. No recovery may be <50%.	Check the system and reanalyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Continuing Calibration Verification (CCV) for Standard compounds	At the start of each analytical clock after the tune check	70–130%	Compounds exceeding this criterion and associated data will be flagged and narrated with the exception of high bias associated with non-detects. If more than two compounds from the standard list recover outside of 70–130%, corrective action will be taken. If any compound exceeds 60–140%, samples are not analyzed unless data meets project needs. Check the system and reanalyze the standard. Re-prepare the standard if necessary. Re-calibrate the instrument if the criteria cannot be met.
Continuing Calibration Verification (CCV) for Non-standard Compounds	Per client request or specific project requirements only.	Recoveries of compounds must be 60–140%. No recovery may be <50%.	Check the system and reanalyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Laboratory Blank	After analysis of standards and prior to sample analysis, or when contamination is present.	Results less than the laboratory reporting limit	Inspect the system and re-analyze the blank. "B"-flag data for common contaminants.

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QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Internal Standard (IS)	As each standard, blank, and sample is being loaded	Retention time (RT) for blanks and samples must be within ±0.33 min of the RT in the CCV and within ±40% of the area counts of the daily CCV internal standards.	**For blanks:** Inspect the system and reanalyze the blank. **For samples:** Re-analyze the sample. If the ISs are within limits in the re-analysis, report the second analysis. If ISs are out-of-limits a second time, dilute the sample until ISs are within acceptance limits and narrate.
Surrogates	As each standard, blank, and sample is being loaded	70–130% If specified by the client, in-house generated control limits may be used.	**For blanks:** Inspect the system and reanalyze the blank. **For samples:** Re-analyze the sample unless obvious matrix interference is documented. If the %Rs are within limits in the re-analysis, report the second analysis. If %Rs are out-of-limits a second time, report data from first analysis and narrate.
Laboratory Duplicates – Laboratory Control Spike Duplicates (LCSD)	One per analytical batch	RPD ≤25%	Narrate exceedances. If more than 5% of compound list is outside criteria or if compound has >40%RPD, investigate the cause and perform maintenance as required. If instrument maintenance is required, calibrate as needed.

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ANALYTICAL METHODS

Section 3.0

Method: ASTM D1946 – Atmospheric Gases

Eurofins Air Toxics SOP #8 Revision 22 Effective Date: December 24, 2013 Methods Manual Summary

Description: This method involves gas chromatograph (GC) analysis of soil gas, landfill gas, ambient air, or stack gas collected in Summa™ canisters, Tedlar bags, or any vessel that has been demonstrated to be clean and leak free. Samples are analyzed for Methane, fixed gases, and Non-Methane Organic Carbon (NMOC) using modified ASTM D1946 protocols. Because the sample is withdrawn from the vessel by positive pressure, rigid containers are first filled to positive pressure using UHP Helium or Nitrogen. Samples are then analyzed using a GC equipped with a FID and a TCD.

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, the laboratory reports these non-standard compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

Since the protocols in the ASTM D1946 standard were designed for the analysis of reformed gas, the laboratory has taken modifications to apply the method to environmental samples covering a wide concentration range and to implement standard NELAP and EPA calibration criteria. The method modifications, standard target analyte list, reporting limits (RL), Quality Control (QC) criteria, and QC summary can be found in the following tables.

Table 1. Summary of Method Modifications for ASTM D1946

Requirement	ASTM D1946	Eurofins Air Toxics Modifications
Calibration	A single-point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum 3-point calibration curve is performed. Quantitation is based on a daily calibration standard, which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by Eurofins Air Toxics are blended to a ≥ 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5% should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL. Linear range is defined by the calibration curve. Bags may be loaded by vacuum or by positive pressure.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.

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Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections >5X the RL.

Table 2. ASTM D1946 Method Compound List and QC Limits

Compound	Reporting Limit (%)	ICAL Criteria (%RSD)	ICV/LCS Criteria (%R)	CCV Criteria (%D)	Precision Limits (RPD)**
Carbon Dioxide	0.010	≤ 15%	85 – 115	± 15%	± 25%
Carbon Monoxide	0.010	≤ 15%	85 – 115	± 15%	± 25%
Methane	0.00010	≤ 15%	85 – 115	± 15%	± 25%
Ethene	0.0010	≤ 15%	85 – 115	± 15%	± 25%
Ethane	0.0010	≤ 15%	85 – 115	± 15%	± 25%
Nitrogen	0.10	≤ 15%	85 – 115	± 15%	± 25%
NMOC	0.010	≤ 15%	85 – 115	± 15%	± 25%
Oxygen	0.10	≤ 15%	85 – 115	± 15%	± 25%
Helium	0.050	≤ 15%	85 – 115	± 15%	± 25%
Hydrogen	0.010*	≤ 15%	85 – 115	± 15%	± 25%

*Reporting limit is 1.0% when sample is pressurized with Helium.
**For detections greater than 5 times the reporting limit.

Note: Results are reported in units of mol %. If required to report volume % or ppmV, a compressibility factor of 1 for all gases will be assumed. As a result, mol % is assumed to be equivalent to volume %. This assumption may result in a bias for highly compressible gases at high concentrations and pressures.

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Table 3. Summary of Calibration and QC Procedures for Mod. ASTM Method D1946

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Initial Calibration Curve (ICAL)	Prior to sample analysis	RSD ≤ 15%	Correct problem then repeat Initial Calibration.
Second Source Verification (LCS)	All analytes: once per Initial Calibration, and with each analytical batch.	%R between 85–115%	Check the system and re-analyze the standard. Re-calibrate the instrument if the criteria cannot be met.
Continuing Calibration Verification (CCV)	Daily prior to sample analysis and after every 20 reportable samples.	%D ±15%	Check the system and re-analyze the standard. Re-calibrate the instrument if the criteria cannot be met.
Laboratory Blank (He) (N_2 for He and H_2 analysis)	After each daily check standard and prior to sample analysis, or when contamination is present.	Results below the RL	Inspect the system and re-analyze the Blank.
End Check	At the end of analytical sequence. It can be primary (CCV) or Independent Source (LCS).	%R between 85–115%	Check system and re-analyze the standard. If the 2nd analysis fails, identify and correct the problem. Samples analyzed after the last acceptable CCV are re-analyzed.
Sample Duplicates - Laboratory Control Spike Duplicate (LCSD)	One per analytical batch	RPD ≤ 25%	Narrate exceedances. Investigate the cause and perform maintenance as required and re-calibrate as needed.

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ANALYTICAL METHODS

Section 4.0

Method: EPA Method TO-13A PAHs (Full Scan and SIM)

Eurofins Air Toxics SOP #10	Revision 18	Effective Date: April 26, 2013	Methods Manual Summary
Eurofins Air Toxics SOP #74	Revision 10	Effective Date: January 14, 2013	Methods Manual Summary

Description: This method involves drawing a measured volume of air through a filter and sorbent cartridge to collect Polychlorinated Biphenyls (PAHs) in the vapor and particulate phases. The cartridge can be PUF/XAD2 or XAD2 only. While TO-13A describes the use of a high-volume sampling pump, which allows for up to 300 cubic meters (m^3) of air to be collected over a 24-hour period, the method can also be applied to low-volume sample applications suitable for indoor air or soil gas. The sample media is extracted in the laboratory using Soxhlet extraction or pressurized fluid extraction (PFE). The concentrated extracts are analyzed for PAHs using a quadrupole gas chromatograph/mass spectrometer (GC/MS) in full scan or SIM mode by TO-13A protocol. Eurofins Air Toxics performs a modified version of this method. The method modifications, standard target analyte list, Limit of Quantitation (LOQ), QC criteria, and QC summary can be found in the following tables.

In relation to the prescribed media, sampling and collection efficiencies for compounds not listed in TO-13A have not been evaluated. However, if non-standard compounds are required for a project, the laboratory reports these compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

Required Field QC: EPA Method TO-13 requires at least one field blank per sampling episode. Matrix spikes are referenced, but not definitively required in the routine QA specifications.

Table 1. Summary of Method Modifications for TO-13A

Requirements	EPA Method TO-13A	Eurofins Air Toxics Modifications
Extraction Solvent	10% ether in hexane for PUF; DCM for XAD sorbent. Final extract in hexane.	DCM for PUF/XAD cartridge and XAD sorbent. Final extract in DCM.
Glassware Cleaning	Muffle furnace is utilized.	Solvent cleaning procedure is used.
Extraction Technique	Soxhlet extraction	Soxhlet extraction or pressurized fluid extraction (PFE)
Reporting List	19 PAHs	See Table 2
Calibration range	0.1–2.5 µg/mL in hexane	1.0–160 µg/mL in methylene chloride for standard (quad) or 0.1–40 µg/mL for SIM
Method Blank	< MDL	< Reporting Limit

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Table 2. Modified Method TO-13A Analyte List and Reporting Limits

Analyte	SIM RL (µg)	RL (µg)	Minimum ICAL RRF	ICAL (%RSD)	ICV (%R)	CCV (%R)	Precision (%RPD)
2-Chloronaphthalene*	0.1	1.0	NA	≤ 30	± 30	± 30	≤ 25%
2-Methylnaphthalene*	0.1	1.0	NA	≤ 30	± 30	± 30	≤ 25%
Acenaphthylene	0.1	1.0	1.3	≤ 30	± 30	± 30	≤ 25%
Acenaphthene	0.1	1.0	0.8	≤ 30	± 30	± 30	≤ 25%
Anthracene	0.1	1.0	0.7	≤ 30	± 30	± 30	≤ 25%
Benzo(a)anthracene	0.1	1.0	0.8	≤ 30	± 30	± 30	≤ 25%
Benzo(e)pyrene*	0.1	1.0	NA	≤ 30	± 30	± 30	≤ 25%
Benzo(a)pyrene	0.1	1.0	0.7	≤ 30	± 30	± 30	≤ 25%
Benzo(b)fluoranthene	0.1	1.0	0.7	≤ 30	± 30	± 30	≤ 25%
Benzo(g,h,i)perylene	0.1	1.0	0.5	≤ 30	± 30	± 30	≤ 25%
Benzo(k)fluoranthene	0.1	1.0	0.7	≤ 30	± 30	± 30	≤ 25%
Chrysene	0.1	1.0	0.7	≤ 30	± 30	± 30	≤ 25%
Dibenz(a,h)anthracene	0.1	1.0	0.4	≤ 30	± 30	± 30	≤ 25%
Fluoranthene	0.1	1.0	0.6	≤ 30	± 30	± 30	≤ 25%
Fluorene	0.1	1.0	0.9	≤ 30	± 30	± 30	≤ 25%
Indeno(1,2,3-c,d)pyrene	0.1	1.0	0.5	≤ 30	± 30	± 30	≤ 25%
Naphthalene	0.1	1.0	0.7	≤ 30	± 30	± 30	≤ 25%
Phenanthrene	0.1	1.0	0.7	≤ 30	± 30	± 30	≤ 25%
Pyrene	0.1	1.0	0.6	≤ 30	± 30	± 30	≤ 25%

* Not included in the TO-13A method.

The following two compounds can be analyzed upon client request:

Analyte	SIM RL (µg)	RL (µg)	Minimum ICAL RRF	ICAL (%RSD)	ICV (%R)	CCV (%R)	Precision (%RPD)
Perylene	N/A	1.0	0.5	≤ 30	± 30	± 30	≤ 25%
Coronene	N/A	1.0	0.7	≤ 30	± 30	± 30	≤ 25%

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Table 3. Surrogates

Field Surrogates	Accuracy (%R)
Fluoranthene-d_{10}	50 – 150
Benzo(a)pyrene-d_{12}	50 – 150

Extraction Surrogates	Accuracy (%R)*
Fluorene-d_{10}	60 – 120
Pyrene-d_{10}	60 – 120

Table 4. Internal Standards

Analyte	Accuracy (%R)
Acenaphthene-d_{10}	-50 to +100
Chrysene-d_{12}	-50 to +100
1,4-Dichlorobenzene-d_4	-50 to +100
Naphthalene-d_8	-50 to +100
Perylene-d_{12}	-50 to +100
Phenanthrene-d_{10}	-50 to +100

Table 5. Extracted Laboratory Control Samples for TO-13A (PAHs) in Full Scan and SIM

Analyte	(%R)*
Naphthalene	60 – 120
Acenapthylene	60 – 120
Acenaphthene	60 – 120
Fluorene	60 – 120
Phenanthrene	60 – 120
Anthracene	60 – 120
Fluoranthene	60 – 120
Pyrene	60 – 120
Benzo(a)anthracene	60 – 120
Chrysene	60 – 120
Benzo(b)fluoranthene	60 – 120
Benzo(k)fluoranthene	60 – 120
Benzo(a)pyrene	60 – 120
Indeno(1,2,3-cd)pyrene	60 – 120
Dibenzo(a,h)anthracene	60 – 120
Benzo(g,h,i)perylene	60 – 120
2-Methylnaphthalene	60 - 120
2-Chloronaphthalene	60 – 120

*The LCS and Surrogate limits are derived from Compendium Method TO-13A, Sections 13.3.7.4 and 13.4.6.3 (January 1999). These limits only apply to samples that are extracted by Eurofins Air Toxics. When sample extracts are sent to the lab for analysis only, limits of 50-150 % are applied.

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Table 6. Summary of Calibration and QC Procedures for EPA Method TO-13A

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Tuning Criteria	Prior to calibration and at start of every 12 hours	TO-13A tuning criteria	Correct problem then repeat tune.
Initial 5-Point Calibration	Prior to sample analysis	ICAL criteria in Table 2	Correct problem then repeat initial calibration.
ICAL ICV	All analytes: Once per initial calibration	All target compound recoveries must be between 70 – 130%	Determine the source of discrepancy between standards. Re-calibrate if needed.
Continuing Calibration Verification (CCV)	At the start of every clock immediately after the DFTPP tune check	PAHs list: Meet Table 2 Min. RRF requirement; %D ≤ 30%	Investigate and correct the problem, up to and including re-calibration if necessary. High bias associated with non-detects in samples will not result in re-analysis.
Internal Standards (IS)	Injected into each standard, blank, and sample extract prior to analysis	**For CCV:** Area count within 50% to 200% of the midpoint of ICAL. **For blanks, samples, and non-CCV QC checks:** retention times within ± 0.33 minutes (20 seconds) and area counts within 50% to 200% of the CCV.	**For CCVs:** Investigate and correct the problem before proceeding with sample analysis. **For blanks:** Inspect the system and re-analyze the blank. **For samples and non-CCV QC:** Unless there is obvious matrix effect, re-analyze the samples and dilute the sample until the ISs meet the criteria; narrate the data to indicate interference.
Surrogates	Field Surrogates: Blank cartridges prior to transport to field for sampling and lab QC prior to extraction. Extraction Surrogates: All samples and lab QC prior to extraction.	See Table 3.	A new aliquot of the extract is analyzed. If Surrogate recoveries are out-of-control a second time, data is flagged and narrated. Re-analysis is not necessary for obvious matrix effects (data is flagged for out-of-control surrogate recoveries). Air samples cannot be re-extracted.
Extracted Laboratory Control Samples (LCS)	With each set of up to 20 extracted samples	See LCS criteria in Table 5.	Re-aliquot and re-analyze the extract. If within limits, report the re-analysis. Otherwise, narrate.

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Laboratory Blank	With each set of up to 20 extracted samples	Results less than laboratory reporting limit (Table 2).	Re-aliquot and re-analyze the extract. If less than reporting limit, report the re-analysis. Otherwise, narrate and flag the data.
Solvent Blank	When samples that are extracted together are analyzed on different analytical shifts	All target compounds below the reporting limit (Table 2).	Re-aliquot and re-analyze the solvent. If less than reporting limit, report the re-analysis. Identify the source of contamination, and perform maintenance as needed. If maintenance required, restart the analytical clock.
Laboratory Duplicates – Laboratory Control Spike Duplicates	One per analytical batch	RPD ≤ 25%	Re-analyze duplicate. Investigate the cause, perform maintenance as required, and re-calibrate as needed.

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ANALYTICAL METHODS

Section 5.0

Method: Modified EPA Method TO-11A Aldehydes/Ketones

Eurofins Air Toxics SOP #11 Revision 17 Effective Date: March 4, 2014 Methods Manual Summary

Description: This method involves high-pressure liquid chromatography (HPLC) analysis of aldehydes and ketones in ambient air samples. The sampling media is a 2,4-Dinitrophenylhydrazine (DNPH)-coated (silica) cartridge. Aldehydes and ketones are readily converted to a stable hydrazone derivative. The DNPH cartridges are eluted with acetonitrile using gravity-feed technique. Analysis is performed by reverse phase HPLC with UV detection at 360 nm.

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, Eurofins Air Toxics reports these non-standard compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. For the extraction process, the non-standard compound recovery is evaluated in the extracted laboratory control spike. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

Eurofins Air Toxics performs modified versions of this method. The method modifications, standard target analyte list, Limits of Quantitation (LOQs), reporting limits (RLs), Quality Control (QC) criteria, and QC summary can be found in the following tables.

Table 1. Summary of Method TO-11A Modifications

Requirement	TO-11A	Eurofins Air Toxics Modifications
Initial Calibration Curve (ICAL)	Multi-point using linear regression performed every 6 months	Multi-point using average Response Factor; re-calibration if daily calibration fails, major maintenance, or column change. Linear regression is performed when requested. Initial Calibration (ICAL) is performed at least once per year.
ICAL Criteria	R^2 for curve ≥ 0.999	%RSD ≤ 10% unless linear regression is required, with R^2 for curve ≥ 0.999
Blank Subtraction	Average blank concentrations calculated. Blank value subtracted from sample result.	One Lab Blank is analyzed per batch; no automatic blank subtraction performed on samples.
Retention Times	Precision of Retention Times ±7%	Retention Time window study is performed, but RT windows are determined by bracketing standards.

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Table 2. Method TO-11A Analyte List and QC Criteria (Environmental Field Samples)

Analyte	TO-11A LOQ/RL[a] (µg)	ICAL (%RSD)	ISCV (%R)	CCV (%R)
Acetaldehyde	0.10	≤ 10	± 15	± 10
Acrolein[b]	0.25[d]	≤ 10	± 15	± 10
Benzaldehyde	0.25	≤ 10	± 15	± 10
Crotonaldehyde	0.25	≤ 10	± 15	± 10
Formaldehyde	0.05	≤ 10	± 15	± 10
Hexanal	0.25	≤ 10	± 15	± 10
Isopentanal	0.25	≤ 10	± 15	± 10
MEK/Butyraldehydes[c]	0.25	≤ 10	± 15	± 10
m,p-Tolualdehyde	0.25	≤ 10	± 15	± 10
o-Tolualdehyde	0.25	≤ 10	± 15	± 10
Pentanal	0.25	≤ 10	± 15	± 10
Propanal	0.25	≤ 10	± 15	± 10
Acetone	0.25	≤ 10	± 15	± 10
Acetophenone*	N/A	≤ 10	± 15	± 10
Isophorone*	N/A	≤ 10	± 15	± 10
Heptaldehyde*	0.25	≤ 10	± 15	± 10
2,5-Dimethylbenzaldehyde*	0.25	≤ 10	± 15	± 10

[a] Noted reporting limits are subject to change based on most current MDL study.

[b] Because its derivative is not stable, when the target analyte list includes Acrolein the sample will need to be extracted in field. A special order should be placed with the laboratory during the project set-up stage.

[c] Methyl Ethyl Ketone and the Butyraldehydes co-elute.

[d] Not recommended.

* Special compounds upon request only.

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Table 3. Summary of Calibration and QC Procedures for Method TO-11A

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
5-Point Initial Calibration Curve (ICAL)	Analyzed in triplicate prior to sample analysis	%RSD ≤ 10	Repeat calibration.
Instrument LCS	With each ICAL	%R = 85–115%	Check the system and re-analyze the standard. Re-calibrate the instrument if the criteria cannot be met.
Continuing Calibration Verification (CCV)	Daily prior to sample analysis, after a maximum of every 10 injections, and at the end of the analytical batch	Within ±10% of the expected value	Check the system and re-analyze the standard. If the criteria cannot be met, re-calibrate the instrument. If the standard is biased low, re-analyze all samples since last acceptable CCV. If biased high and samples are "ND", re-analysis is not required. "Q"-flag high recoveries.
Instrument (Solvent) Blank Analysis	Following analysis of Standards	Results less than the laboratory RL	Inspect the system and re-analyze the blank.
Laboratory Duplicates - Laboratory Control Spike Duplicate	One per analytical batch	RPD ≤ 25%	Re-analyze the sample a third time. If the limit is exceeded again, investigate the cause and bring the system back to working order. If no problem is found with the system, narrate the data.

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ANALYTICAL METHODS

Section 6.0

Method: ASTM D5504 – Sulfur Compounds

Eurofins Air Toxics SOP #13 Revision 17 Effective Date: December 27, 2013 Methods Manual Summary

Description: This method involves gas chromatograph (GC) analysis of whole air samples for sulfur compounds collected in Tedlar bags. Detection of volatile sulfur compounds is accomplished using a Sulfur Chemiluminescence Detector (SCD) following method ASTM D5504.

Care should be taken to ensure samples to be analyzed for reduced sulfur compounds do not come into contact with any metal surfaces. In addition, because of the reactivity of Hydrogen Sulfide (H_2S), and mercaptans, samples collected in Tedlar bags should be analyzed within 24 hours of collection. Samples collected in Tedlar bags should also be protected from heat and light.

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, the laboratory reports these non-standard compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

The laboratory is not equipped to handle >100 ppmv levels of sulfur compounds. Please notify the laboratory if ppmv levels of sulfur compounds are anticipated.

Method Modifications: The Quality Control (QC) elements listed in the latest ASTM Method D5504-01 are suggested, *not required*. In general, calibration protocols followed by the laboratory are designed to meet standard NELAP and EPA environmental data acceptance criteria. Several method suggestions of note are not included in the laboratory QC procedures unless requested by the client. The deviations from the method recommendations are as follows:

- All field samples are not analyzed in duplicate.
- Daily spiked field samples are not analyzed.

Additionally, upon special request, Eurofins Air Toxics provides passivated canisters for sulfur collection. *Air Toxics does not examine passivated canisters for continued sulfur stability as required by the method, and previous studies have demonstrated that recoveries of the glass-lined canisters indicate a potential loss of inertness which can vary from canister to canister.* Sample analysis results derived from passivated canister media are reported with the appropriate narration. Per the ASTM D5504 method, the storage time when using a passivated/lined canister is not to exceed 7 days.

The standard target analyte list, reporting limits (RL), QC criteria, and QC summary can be found in the following tables.

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Table 1. ASTM Method D5504 Compound List and QC Limits

Analyte	RL (ppbv)	QC Acceptance Criteria		
		ICAL (% RSD)	LCS/ CCV* (% R)	Precision (% RPD)
2,5-Dimethylthiophene	4.0	≤ 30	70 – 130	≤ 25
2-Ethylthiophene	4.0	≤ 30	70 –130	≤ 25
3-Methylthiophene	4.0	≤ 30	70 – 130	≤ 25
Carbon Disulfide	5.0	≤ 30	70 – 130	≤ 25
Carbonyl Sulfide	4.0	≤ 30	70 – 130	≤ 25
Diethyl Disulfide	4.0	≤ 30	70 – 130	≤ 25
Diethyl Sulfide	4.0	≤ 30	70 – 130	≤ 25
Dimethyl Disulfide	4.0	≤ 30	70 – 130	≤ 25
Dimethyl Sulfide	4.0	≤ 30	70 – 130	≤ 25
Ethyl Mercaptan	4.0	≤ 30	70 – 130	≤ 25
Ethyl Methyl Sulfide	4.0	≤ 30	70 – 130	≤ 25
Hydrogen Sulfide	4.0	≤ 30	70 – 130	≤ 25
Isobutyl Mercaptan	4.0	≤ 30	70 – 130	≤ 25
Isopropyl Mercaptan	4.0	≤ 30	70 – 130	≤ 25
Methyl Mercaptan	4.0	≤ 30	70 – 130	≤ 25
n-Butyl Mercaptan	4.0	≤ 30	70 – 130	≤ 25
n-Propyl Mercaptan	4.0	≤ 30	70 – 130	≤ 25
tert-Butyl Mercaptan	4.0	≤ 30	70 – 130	≤ 25
Tetrahydrothiophene	4.0	≤ 30	70 – 130	≤ 25
Thiophene	4.0	≤ 30	70 – 130	≤ 25

*The recovery for all analytes should be 70-130%; end check recoveries are 70-130% with 2 allowed out up to 60-140%. The recovery for Hydrogen Sulfide, Carbonyl Sulfide and Carbon Disulfide must be 70-130%.

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Table 2. Summary of Calibration and QC Procedures for ASTM Method D 5504

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Initial Calibration (ICAL)	Prior to sample analysis	A minimum of 5 points (3 points may be accepted to meet sample hold times.) % RSD ≤ 30	Evaluate system. Re-prepare and/or re-analyze calibration points.
Second Source Verification (LCS)	With each Initial Calibration; with each analytical batch.	70–130% of the expected values for all the compounds	Check the system, re-prepare and/or re-analyze standard. Re-calibrate instrument if CCV shows similar recoveries. If recoveries are high and no detections are expected, sample analysis may proceed. If hold-time is at risk, flagging and narration of non-compliant compounds may be appropriate.
Continuing Calibration Verification (CCV)	Daily prior to sample analysis	%Recovery = 70–130%	Check the system, re-prepare and re-analyze standard. Re-calibrate instrument if re-analysis shows similar recoveries. If recoveries are high and no detections are expected, sample analysis may proceed. If hold-time is at risk, flagging and narration of non-compliant may be appropriate.
Laboratory Blank	After daily LCS and after high level samples and mid-check standards as needed	Results less than the laboratory reporting limit.	Inspect the system and re-prepare the lab blank bag. Flag associated detections with a "B" flag.
End Check	At the end of the analytical sequence	Recoveries within 70–130% with 2 target analytes not exceeding 60–140%. The recovery for Hydrogen Sulfide, Carbonyl Sulfur and Carbon Disulfide must be 70–130%.	Re-analyze the standard to confirm loading procedure. If the 2nd analysis fails, identify and correct the problem. If possible re-analyze all or a subset samples after the last compliant QC check. If re-analysis within hold-time is not possible, flag data affected data. No flags are required if recovery is high and no associated compounds are detected.

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Laboratory Duplicates – LCS/LCSD	One per analytical batch	RPD ≤ 25%	Verify that the sample or LCS is securely attached to the sample introduction line. If a problem is identified, document in the run log and re-analyze the duplicate pair. If no loading problem is identified, narrate exceedances. If LCSD is analyzed immediately after LCS and precision is not met, notify manager or technical support team before proceeding with sample analysis.

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ANALYTICAL METHODS

Section 7.0

Method: Modified EPA Methods TO-4A/TO-10A Pesticides and PCBs

Eurofins Air Toxics SOP #26 Revision 18 Effective Date: December 27, 2013 Methods Manual Summary

Description: These methods involve drawing a measured volume of air through a filter and PUF cartridge to collect pesticides and Aroclors in the vapor and particulate phases. EPA Method TO-4A describes the use of a high-volume sampling pump which allows for up to 300 cubic meters (m^3) of air to be collected over a 24-hour period, while the TO-10A method describes a low-volume sample application suitable for indoor air. Filters are not required for TO-10A sample collection. The sample media is extracted in the laboratory using Soxhlet extraction or Pressurized Fluid Extraction (PFE). The extracts are solvent-exchanged to hexane, concentrated to a final volume, and analyzed for chlorinated pesticides and PCBs using a gas chromatograph (GC) equipped with a dual Electron Capture Detector (ECD) for detection and confirmation.

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, the laboratory reports these non-standard compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. For the extraction process, the non-standard compound recovery is evaluated in the extracted laboratory control spike. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

Eurofins Air Toxics performs modified versions of these methods. The method modifications, standard target analyte list, reporting limit (RL) Quality Control (QC) criteria, and QC summary can be found in the following tables.

Table 1. Summary of Method Modifications for TO-4A/TO-10A

Requirement	EPA Methods TO-4A/TO-10A	Eurofins Air Toxics Modifications
Extraction Solvent	10% (5% for TO-10A) Diethyl Ether in Hexane	Dichloromethane (DCM) exchanging to Hexane during the concentration step
Reagent Blank	Set up extraction system without filter/PUF; reflux with solvent.	No Reagent Blank is extracted. Reagent lots are certified as acceptable prior to use.
Media certification (TO-10A only)	< 0.01 µg for single peak analytes; < 0.1 µg for PCBs	< Reporting Limit for all analytes
Frequency of Continuing Calibration Verification (CCV)	Every 10 samples	Every 20 samples with internal standard
PCB Quantitation	Requires a minimum of 5 peaks.	Use 4 peaks for quantitation.

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Field Spike	Requires one PUF cartridge from each batch of 20 to be spiked with standard and not be used during the sampling period. The spiked PUF plug is placed in a sealed container, then extracted along with samples.	A spike is prepared at the time of sample extraction only.
Sampling Efficiency Determination	Prior to implementation of method and then periodically determine sampling efficiency by spiking PUF and sampling ambient air to determine recoveries.	No sampling efficiencies have been determined by the laboratory.

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Table 2. Methods TO-4A/TO-10A Reporting and QC Limits

Analyte	RL (µg)	Low Point of the Curve (µg)	QC Acceptance Criteria			
			ICAL (%RSD)	ICV (%R)	CCV (%D)	LCS (%R)
4,4'-DDD	0.10	0.10	≤ 20	± 15	± 15	65 – 125
4,4'-DDE	0.10	0.10	≤ 20	± 15	± 15	65 – 125
4,4'-DDT	0.10	0.10	≤ 20	± 15	± 15	65 – 125
4,4'-Methoxychlor	1.0	1.0	≤ 20	± 15	± 15	65 – 125
Aldrin	0.10	0.10	≤ 20	± 15	± 15	65 – 125
alpha-BHC	0.10	0.10	≤ 20	± 15	± 15	65 – 125
cis-Chlordane	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Aroclor 1016/1242	1.0	1.0	≤ 20	± 15	± 15	65 – 125
Aroclor 1221①	1.0	NA	≤ 20	± 15	± 15	
Aroclor 1232①	1.0	NA	≤ 20	± 15	± 15	
Aroclor 1248①	1.0	NA	≤ 20	± 15	± 15	
Aroclor 1254①	1.0	NA	≤ 20	± 15	± 15	
Aroclor 1260	1.0	1.0	≤ 20	± 15	± 15	65 – 125
beta-BHC	0.10	0.10	≤ 20	± 15	± 15	65 – 125
delta-BHC	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Dieldrin	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Endosulfan I	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Endosulfan II	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Endosulfan Sulfate	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Endrin	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Endrin Aldehyde*	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Endrin Ketone	0.10	0.10	≤ 20	± 15	± 15	65 – 125
gamma-BHC (Lindane)	0.10	0.10	≤ 20	± 15	± 15	65 – 125
trans-Chlordane	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Heptachlor	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Heptachlor Epoxide	0.10	0.10	≤ 20	± 15	± 15	65 – 125
Technical Chlordane①④	1.0	NA	≤ 20	± 15	± 15	
Toxaphene①	1.0	NA	≤ 20	± 15	± 15	

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Mirex is not included in the standard pesticides list but can be performed upon request.

*Internal studies have shown poor recoveries of Endrin Aldehyde from PUF cartridge. In-house generated control limits are used to evaluate recovery of this compound.

Surrogates③

Analyte	%R
2,4,5,6-Tetrachloro-m-xylene (TCMX)	60 – 120②
Decachlorobiphenyl (DCB)	60 – 120②

① *The noted multi-component compounds use a one-point calibration.*
② *Recovery limits are derived from Compendium Method TO-10A January 1999.*
③ *Recovery limits are for extracted samples only. Non-extracted samples use limits of 85–115 %R.*
④ *Not routinely reported but available at client request.*

Table 3. Summary of Calibration and QC Procedures for Methods TO-4A/TO-10A

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
5-Point Initial Calibration Curve (ICAL)*	Prior to sample analysis	%RSD ≤ 20 for each compound or average %RSD ≤ 20.	Use linear regression per SW-846 or re-calibrate.
Independent Calibration Verification (ICV)	After each Initial Calibration	Recovery of an individual component or the average of all the target components for a list of 5 or more target components within 85–115% recovery. Not to exceed 75–125% for any individual compounds.	Investigate the source of discrepancy, including re-preparation and re-analysis of standard. Re-calibrate if needed.
Breakdown Check (Endrin and p,p'-DDT)	Daily, prior to Initial Curve; CCV for pesticide analysis only.	Degradation ≤ 15%	Perform maintenance. Repeat breakdown check.
Continuing Calibration Verification (CCV)	Daily, prior to sample analysis, every 20 samples, and at the end of the analysis sequence, at a minimum of every 24 hours.	Recovery of an individual component or the average of all the pesticide target components for a list of 5 or more target components, within 15% of the expected values. Not to exceed 75–125% for any individual compounds.	Analyze new ICAL and/or prepare fresh standards. If the standard analyzed is recovering high and associated samples are ND, "Q" flag the high recoveries. If the standard analyzed is recovering low, re-analyze all samples.
Laboratory Control Spike (LCS) for compounds noted in Table 2.	Extracted with each set of up to 20 samples	As mentioned in Table 2	Analyze another aliquot. If it still fails, "Q" flag the compounds that are outside the control limits.

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Surrogates	All samples, QC, and blanks prior to extraction	As mentioned in Table 2	Analyze another aliquot. If it still fails, "Q" flag the compounds outside the control limits.
Internal Standard	With all analyses	CCV 50–200% compared to midpoint of ICAL; samples 50–200% compared to first CCV of the daily analytical batch.	Analyze another aliquot. If a CCV fails, correct problem before proceeding. If a sample fails, analyze a second time. If it still fails, dilute the sample until IS meets the criteria. Narrate the matrix interference.
Laboratory Blanks	With each set of up to 20 samples extracted	Results less than the Laboratory reporting limit.	Analyze another aliquot. If it still fails, "B" flag the compounds that do not meet the acceptance criteria.
Laboratory Duplicates Laboratory Control Spike Duplicate	One per analytical batch	RPD ≤ 25%	Narrate exceedances. Investigate the cause and perform maintenance as required and re-calibrate as needed.
Second-Column Confirmation	100% for all positive results, for both pesticide and PCB analyses	Same as for initial or primary column analysis	Same as for initial or primary column analysis

* A single-point calibration is performed for Technical Chlordane, Toxaphene, and certain Aroclors.

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ANALYTICAL METHODS

Section 8.0

Method: EPA Method TO-12 (Non-methane Organic Compounds)

Eurofins Air Toxics SOP #36 Revision 16 Effective Date: April 03, 2013 Methods Manual Summary

Description: This method involves gas chromatograph analysis of whole air samples collected in Summa™ canisters or Tedlar bags. Samples are analyzed for Non-Methane Organic Compounds (NMOC) using EPA Method TO-12 protocols. After concentration on a sorbent bed, samples are analyzed using a Flame Ionization Detector (FID). This method is used when speciation is not required.

NMOC concentrations are quantified using the response factor of heptane. As required by the project, NMOC results referenced to heptane can be converted to units of ppmC (parts per million of Carbon). Additionally, hydrocarbon ranges can be provided based on the elution time of the normal alkanes on the GC column.

Eurofins Air Toxics performs a modified version for each of these methods. The method modifications, standard target analyte list, RL, QC criteria, and QC summary can be found in the following tables.

Table 1. Summary of Method Modifications for TO-12

Requirement	EPA Method TO-12	Eurofins Air Toxics Modifications
Reporting Limit	0.02 ppmC	0.010 ppmv
Initial Calibration	Five levels: Each level three runs with %RSD < 3%; linearity criterion not specified	Minimum of three single levels; %RSD ≤ 30%.
Sample Analysis Frequency	Duplicate analysis with RPD<5%; report average results of two analyses.	Single analysis. Duplicate 10% of samples with RPD ≤ 25% for detections > 5X the RL.
Column*	GC column not used.	GC column used for analysis.
Sample concentration	Cyrogenic concentration	Multibed sorbent concentration

* The column modification implemented for sample analysis allows for additional characterization based on carbon ranges.

Table 2. Method Compound List and QC Limits

Analyte	RL (ppmv)	Acceptance Criteria		
		ICAL (%RSD)	LCS/CCV (%R)	Precision (%RPD)
Total NMOC ref. to Heptane	0.010	≤ 30	75-125%	≤ 25

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Table 3. Summary of Calibration and QC Procedures for TO-12 (NMOC)

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Initial Calibration Curve (ICAL)	Prior to sample analysis and/or annually	% RSD ≤ 30	Repeat the calibration.
Laboratory Control Sample (LCS)	With each initial calibration and analytical batch	75–125% of the expected value	Check the system and re-analyze the standard. Re-calibrate the instrument if the criteria cannot be met.
Continuing Calibration Verification (CCV)	Daily prior to sample analysis and after every 20 samples or at the end of the analytical sequence	% Difference ± 25 of expected value	Check the system and re-analyze the standard. Re-calibrate the instrument if the criteria cannot be met. Re-analyze all samples since the last acceptable CCV.
Laboratory Blank	In between analysis of standards and project samples	Results less than laboratory reporting limit	Repeat the Laboratory Blank. If the re-analysis of the Lab Blank contains above but at less than 5X the reporting limit, sample analysis may proceed and the associated sample results will be reported with a B flag.
Laboratory Duplicates/ Laboratory Control Spike Duplicate (LCSD)	One per analytical batch	RPD ≤ 25%	Narrate exceedances. Investigate the cause and perform maintenance as required and re-calibrate as needed.

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ANALYTICAL METHODS

Section 9.0

Method: EPA Method TO-14A/TO-15 Volatile Organic Compounds by SIM

Eurofins Air Toxics SOP #38 Revision 17 Effective Date: December 27, 2013 Methods Manual Summary

Description: This method involves Selective Ion Monitoring (SIM) gas chromatograph/mass spectrometer (GC/MS) analysis of whole air samples collected in evacuated stainless steel canisters. Samples are analyzed for volatile organic compounds (VOCs) using EPA Method TO-14A/TO-15 protocols. An aliquot of the sample is withdrawn from the canister through a mass flow controller and concentrated onto a hydrophobic drying system that removes water from the sample stream. The sample is then focused onto a cryogenic-cooled column prior to analysis by GC/MS in the SIM mode.

Mass spectrometer detectors can be set to acquire both SIM and full scan data simultaneously. This generates two separate data files in the analytical software. One file contains full scan data and the other contains SIM data for selected compounds. The results for each sample in a report will be from two separate data files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

Eurofins Air Toxics maintains a suite of TO-14A/TO-15 methods, each optimized to efficiently meet the data objectives for a wide range of targeted concentration ranges. The methods, their reporting limits, and typical applications are summarized in the table below. This method summary describes TO-14A/TO-15 SIM.

Eurofins Air Toxics Method	Base Reporting Limits	Typical Application
TO-14A/TO-15 (5&20)	5 – 20 ppbv	Soil gas and ppmv range vapor matrices
TO-14A/TO-15 (Standard or Quad)	0.5 – 5.0 ppbv	Ambient air, soil gas, and ppbv level vapor matrices
TO-14A/TO-15 (Low-level)	0.1 – 0.5 ppbv	Indoor and outdoor air
TO-14A/TO-15 SIM	0.003 – 0.5 ppbv	Indoor and outdoor air

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. If full validation of the required compound(s) is not available, the laboratory will present Quality Control (QC) options to the client based on the project objectives.

Please note that Methods TO-14A and TO-15 were validated for specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-14A and TO-15 results generated from Tedlar bags.

All samples submitted for TO-15 SIM are screened prior to analysis. If samples contain high concentrations of target and/or non-target VOCs, samples may be analyzed by an alternative TO-15 method (i.e. Standard or 5&20) with a higher dynamic calibration range.

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Eurofins Air Toxics performs a modified version of TO-15 SIM as detailed in Table 1. Additionally, since Eurofins Air Toxics applies TO-15 methodology to all Summa™ canisters regardless of whether TO-14A or TO-15 is specified by the project, Eurofins Air Toxics performs a modified version of method TO-14A as described in Table 2. The default SIM target list, reporting limits (RL), QC criteria and QC summary may be found in tables 3 and 4.

Table 1. Summary of TO-15 SIM Method Modifications

Requirement	TO-15	Eurofins Air Toxics Modifications
Blank and standards	Zero Air	Nitrogen

Table 2. Summary of TO-14A SIM Method Modifications

Requirement	TO-14A	Eurofins Air Toxics Modifications
Sample Drying System	Nafion Dryer	Multibed hydrophobic sorbent
ICAL %RSD acceptance criteria	≤ 30% RSD for listed 39 VOCs	Follow TO-15 requirements of ≤ 30%RSD with 2 of standard compound list allowed out to ≤ 40%RSD
Blank and standards	Zero air	Nitrogen
BFB ion abundance criteria	Ion abundance criteria listed in Table 4 of TO-14A	Follow abundance criteria listed in TO-15.
BFB absolute abundance criteria	Within 10% when comparing to the previous daily BFB	CCV internal standard area counts are compared to ICAL; corrective action when recovery is less than 60%

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Table 3. Method TO-14A/TO-15 Standard Analyte List (SIM) and QC Limits

Analyte	RL/LOQ (ppbv)	QC Acceptance Criteria			
		ICAL (%RSD)	CCV (%R)	ICV/LCS (%R)	Precision Limits (Max. RPD)
Dichlorodifluoromethane (Fr12)	0.020	≤ 30%	70 – 130	70 – 130	± 25
Freon 114	0.020	≤ 30%	70 – 130	70 – 130	± 25
Chloromethane	0.050	≤ 30%	70 – 130	70 – 130	± 25
Vinyl Chloride	0.010	≤ 30%	70 – 130	70 – 130	± 25
Chloroethane	0.050	≤ 30%	70 – 130	70 – 130	± 25
1,1-Dichloroethene	0.010	≤ 30%	70 – 130	70 – 130	± 25
Trans-1,2-Dichloroethene	0.100	≤ 30%	70 – 130	70 – 130	± 25
Methyl tert-Butyl Ether	0.100	≤ 30%	70 – 130	70 – 130	± 25
1,1-Dichloroethane	0.020	≤ 30%	70 – 130	70 – 130	± 25
cis-1,2-Dichloroethene	0.020	≤ 30%	70 – 130	70 – 130	± 25
Chloroform	0.020	≤ 30%	70 – 130	70 – 130	± 25
1,1,1-Trichloroethane	0.020	≤ 30%	70 – 130	70 – 130	± 25
Carbon Tetrachloride	0.020	≤ 40%	60 - 140	60 - 140	± 25
Benzene	0.050	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichloroethane	0.020	≤ 30%	70 – 130	70 – 130	± 25
Trichloroethene	0.020	≤ 30%	70 – 130	70 – 130	± 25
Toluene	0.020	≤ 30%	70 – 130	70 – 130	± 25
1,1,2-Trichloroethane	0.020	≤ 30%	70 – 130	70 – 130	± 25
Tetrachloroethene	0.020	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dibromoethane	0.020	≤ 30%	70 – 130	70 – 130	± 25
Ethyl Benzene	0.020	≤ 30%	70 – 130	70 – 130	± 25
m,p-Xylene	0.040	≤ 30%	70 – 130	70 – 130	± 25
o-Xylene	0.020	≤ 30%	70 – 130	70 – 130	± 25
1,1,2,2-Tetrachloroethane	0.020	≤ 30%	70 – 130	70 – 130	± 25
1,4-Dichlorobenzene	0.020	≤ 30%	70 – 130	70 – 130	± 25
Naphthalene	0.050	≤ 40%	60 – 140	60 – 140	± 25

Table 3 is the list of Standard compounds, reporting limits and QC acceptance criteria. Each project may be customized as needed. Additional compounds and different reporting limits may be obtainable and/or achieved upon request.

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Table 4. Summary of Calibration and QC Procedures for Methods TO-14A/TO-15 by SIM

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Tuning Criteria	Every 24 hours	TO-15 Ion Abundance criteria	Correct problem then repeat tune.
Multi-point Calibration (Minimum of 5 points)	Prior to sample analysis	≤ 30% for standard compounds with 2 compounds allowed out to ≤ 40% RSD	Correct problem then repeat Initial Calibration Curve.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS)	After each initial calibration curve, and daily prior to sample analysis	Recoveries for 85% of standard compounds must be 70–130% (≤ 40% for Methyl tert-Butyl Ether and trans-1,2-Dichloroethene). No recovery may be ≤ 50%. If specified by the client, in-house generated control limits may be used.	Check the system and re-analyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS) for Non-Standard Compounds	Per client request or specific project requirements only	Recoveries of compounds must be 60–140%. No recovery may be ≤ 50%.	Check the system and re-analyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Continuing Calibration Verification (CCV)	At the start of each day after the BFB tune check	70–130%	Compounds exceeding this criterion and associated data will be flagged and narrated with the exception of high bias associated with non-detects. If more than two compounds from the standard list recover outside of 70–130%, corrective action will be taken. If any compound exceeds 60–140%, samples are not analyzed unless data meets project needs. Check the system and re-analyze the standard. Re-prepare the standard if necessary. Re-calibrate the instrument if the criteria cannot be met.
Continuing Calibration Verification (CCV) for Non-Standard Compounds	Per client request or specific project requirements only	Recoveries of compounds must be 60–140%. No recovery may be ≤ 50%.	Check the system and re-analyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.

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Laboratory Blank	After analysis of standards and prior to sample analysis, or when contamination is present.	Results less than the laboratory reporting limit (Table 4) or project required reporting limit.	Inspect the system and re-analyze the blank. "B" flag data for common contaminants.
Internal Standard (IS)	As each standard, blank, and sample is being loaded	Retention time (RT) for blanks and samples must be within ±0.33 min of the RT in the CCV and within ±40% of the area counts of the daily CCV internal standards.	**For blanks:** Inspect the system and re-analyze the blank. **For samples:** Re-analyze the sample. If the ISs are within limits in the re-analysis, report the second analysis. If ISs are out-of-limits a second time, dilute the sample until ISs are within acceptance limits and narrate.
Surrogates	As each standard, blank, and sample is being loaded	70–130% If specified by the client, in-house generated control limits may be used.	**For blanks:** Inspect the system and re-analyze the blank. **For samples:** Re-analyze the sample unless obvious matrix interference is documented. If the %Rs are within limits in the re-analysis, report the second analysis. If %Rs are out-of-limits a second time, report data from first analysis and narrate.
Laboratory Duplicates - Laboratory Control Spike Duplicate (LCSD)	One per analytical batch	RPD ≤ 25%	Narrate exceedances. If more than 5% of compound list outside criteria or if compound is > 40%RPD, investigate the cause and perform maintenance as required. If instrument maintenance is required, calibrate as needed.

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ANALYTICAL METHODS

Section 10.0

Method: EPA Methods TO-3 and TO-14A (BTEX/TPH)

Eurofins Air Toxics SOP #43 Revision 20 Effective Date: April 02, 2013 Methods Manual Summary

Description: This method involves GC analysis of whole air samples collected in Summa canisters or Tedlar bags. Samples are analyzed for Benzene, Toluene, Ethylbenzene, Xylenes, (BTEX) and Total Petroleum Hydrocarbons (TPH). Either modified EPA Method TO-3 or Method TO-14A or can be used to reference laboratory protocols. BTEX is measured using a Photo Ionization Detector (PID), and TPH is measured using a Flame Ionization Detector (FID). Depending on the client's request, TPH is analyzed and referenced to either gasoline or jet fuel.

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, the laboratory reports these non-standard compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

Eurofins Air Toxics performs a modified version for these methods. The method modifications, standard target analyte list, reporting limit (RL), QC criteria, and QC summary can be found in the following tables.

Table 1. Summary of Method Modifications for TO-14A

Requirement	EPA Method TO-14A	Eurofins Air Toxics Modifications
Sample Drying System*	Nafion Dryer	Multi-bed sorbent
Sample collection containers	Specially treated stainless steel canisters	Method TO-14A is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. Associated results are considered qualified.

* The pre-concentrator modification implemented for sample analysis allows for superior performance over the water management and concentration procedures outlined in Method TO-14A. This multi-bed sorbent approach used in EPA Method TO-15 allows for the inclusion of polar compounds such as MTBE, and demonstrates superior performance by minimizing carryover issues that can be problematic using the Nafion dryer scenario described in Method TO-14A.

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Table 2. Summary of Method Modifications for TO-3

Requirement	EPA Method TO-3	Eurofins Air Toxics Modifications
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture.
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75–125%, or upon significant changes to the procedure or instrumentation.
Daily Calibration Standard Frequency	Prior to sample analysis and every 4-6 hrs	Prior to sample analysis
Minimum Detection Limit (MDL)	Calculated using the equation DL = A+3.3S, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard.	40 CFR Part 136, App. B
Sample pre-concentration and moisture management	Cyrogenic pre-concentrator with a Nafion dryer	Multi-bed sorbent system

Table 3. Method Compound List and QC Limits

Analyte	RL (ppmv)	Acceptance Criteria		
		ICAL (%RSD)	LCS/CCV (%R)	Precision (%RPD)
Benzene	0.001	≤ 30	± 25	≤ 25
Toluene	0.001	≤ 30	± 25	≤ 25
Ethyl Benzene	0.001	≤ 30	± 25	≤ 25
m,p-Xylenes	0.001	≤ 30	± 25	≤ 25
o-Xylene	0.001	≤ 30	± 25	≤ 25
MTBE	0.001	≤ 30	± 25	≤ 25
TPH (Gasoline Range) MW = 100	0.025	≤ 30	± 25	≤ 25
TPH (JP-4 Range) MW = 156	0.025	≤ 30	± 25	≤ 25

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Table 4. Surrogate QC Limits

Surrogate	PID Accuracy (%R)	FID Accuracy (%R)
Fluorobenzene	75–125%	75–150%

Table 5. Summary of Calibration and QC Procedures for TO-3/TO-14A (BTEX & TPH)

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
5-Point Initial Calibration (ICAL)	Prior to sample analysis and annually	%RSD ≤ 30	Correct problem, then repeat the calibration.
Initial Calibration Verification and Laboratory Control Sample (ICV/LCS)	With each initial calibration, and with each analytical batch.	±25% of the expected value	Check the system and re-analyze the standard. Re-prepare the standard or re-calibrate the instrument if the criteria cannot be met.
Continuing Calibration Verification (CCV)	Daily prior to sample analysis and can be used as an End Check	±25% of the expected value	**For initial CCV:** Check the system and re-analyze the standard. Re-calibrate the instrument if the criteria cannot be met. **For Mid- and End Checks:** Check system and re-analyze the standard. If the second analysis fails, identify and correct the problem, then re-analyze all samples since the last acceptable CCV.
Laboratory Blank	In between analysis of standards and project samples	Results less than the laboratory Reporting Limit	Inspect the system and re-analyze the Laboratory Blank.
Surrogate	As each standard, blank, and sample is being loaded	75–125% recovery on the PID; 75–150% on the FID	Low surrogate recovery results in re-analysis (at a higher dilution if high levels of moisture are present). If recovery is out and still low, report the analysis with the better recovery and flag. Because of TPH interference, high surrogate recoveries do not result in re-analysis. Data is flagged to note high recovery.
Laboratory Duplicate - Laboratory Control Spike Duplicate (LCSD)	One per analytical batch	RPD ≤ 25%	Narrate exceedances. Investigate the cause, perform maintenance as required, and re-calibrate as needed.

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ANALYTICAL METHODS

Section 11.0

Method: ASTM D1945 – Fixed Gases & C1-C6

Eurofins Air Toxics SOP #54 Revision 18 Effective Date: December 27, 2013 Methods Manual Summary

Description: This method involves gas chromatograph (GC) analysis of soil gas, landfill gas, ambient air, or stack gas collected in Summa™ canisters, Tedlar bags, or any vessel that has been demonstrated to be clean and leak free. Samples are analyzed for Methane and fixed gases and can be used to speciate individual light hydrocarbons up to C6. This method is also used to provide an estimation of the heating value of the gas by method ASTM D3588. Because the sample is withdrawn from the vessel by positive pressure, rigid containers are first filled to positive pressure using UHP Helium or Nitrogen. Samples are then analyzed using a GC equipped with a Flame Ionization Detector (FID) and a Thermal Conductivity Detector (TCD).

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, the laboratory reports these non-standard compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit (RL), no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. In addition, stability of the non-standard compounds during sample storage is not validated. Full validation may be available upon request.

Since the protocols in the ASTM D1945 standard were designed for the analysis of natural gas, the laboratory has made modifications in order to apply the method to environmental samples covering a wide concentration range and to implement standard NELAP and EPA calibration criteria. The method modifications, standard target analyte list, RL, Quality Control (QC) criteria, and QC summary can be found in the following tables.

Table 1. Summary of Method Modifications for ASTM D1945

Requirement	ASTM D1945	Eurofins Air Toxics Modifications
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL
Reference Standard	Concentration should not be < half of nor differ by more than 2X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum 3-point linear calibration. The acceptance criterion is RSD ≤ 15%. All target analytes must be within the linear range of calibration (with the exception of O_2, N_2, and C6+ hydrocarbons).
Sample Analysis	Equilibrate samples to 20-50° F above source temperature at field sampling.	No heating of samples is performed.
Sample Calculation	Response factor is calculated using peak height for C5 and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.

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Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85–115%; normalization of data not performed unless client requested.

Table 2. ASTM Method D1945 Compound List and QC Limits

Analyte	Reporting Limit (%)	QC Acceptance Criteria		
		ICAL (%RSD)	CCV/LCS/ICV (%R)	Precision* (%RPD)
Carbon Dioxide	0.01	≤ 15%	± 15%	≤ 25%
Carbon Monoxide	0.01	≤ 15%	± 15%	≤ 25%
Ethene	0.001	≤ 15%	± 15%	≤ 25%
Ethane	0.001	≤ 15%	± 15%	≤ 25%
Acetylene	0.001	≤ 15%	± 15%	≤ 25%
Isobutane	0.001	≤ 15%	± 15%	≤ 25%
Isopentane	0.001	≤ 15%	± 15%	≤ 25%
Methane	0.0001	≤ 15%	± 15%	≤ 25%
n-Butane	0.001	≤ 15%	± 15%	≤ 25%
Neopentane	0.001	≤ 15%	± 15%	≤ 25%
n-Pentane	0.001	≤ 15%	± 15%	≤ 25%
Nitrogen**	0.10	≤ 15%	± 15%	≤ 25%
NMOC (C6+)	0.01	≤ 15%	± 15%	≤ 25%
Oxygen	0.10	≤ 15%	± 15%	≤ 25%
Propane	0.001	≤ 15%	± 15%	≤ 25%
Hydrogen***	0.01	≤ 15%	± 15%	≤ 25%
Helium****	0.05	≤ 15%	± 15%	≤ 25%

* For detections at > 5X the Reporting Limit.
**For canisters that have been pressurized with Nitrogen, the amount of Nitrogen in the sample is determined by subtraction.
***For canisters that have been pressurized with Helium, the Reporting Limit is 1.0%.
****Included by special request only.

Note: Results are reported in units of mol %. If required to report volume % or ppmV, a compressibility factor of 1 for all gases will be assumed. As a result, mol % is assumed to be equivalent to volume %. This assumption may result in a bias for highly compressible gases at high concentrations and pressures.

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Table 3. Summary of Calibration and QC Procedures for Mod. ASTM Method D1945

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Initial Calibration (ICAL)	Prior to sample analysis and annually	≤ 15% RSD	Correct problem, then repeat Initial Calibration.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS)	After each Initial Calibration and once per analytical batch.	85–115% Recovery If specified by the client, in-house generated control limits may be used.	Check the system and re-analyze the standard. Re-prepare the standard if necessary. If the primary standard is found to be in error, re-prepare the primary and calibrate the instrument.
Continuing Calibration Verification (CCV)	Daily prior to sample analysis, and can be used as an End Check.	± 15% Difference	Check the system and re-analyze the standard. Re-prepare the standard if necessary. Re-calibrate the instrument if the criteria cannot be met. If the closing CCV fails, the system is checked and the standard is re-analyzed. Re-prepare the standard if necessary. If the second analysis fails, identify and correct the problem, then re-analyze all samples since the last acceptable CCV.
Laboratory Blank	After analysis of standards and prior to sample analysis, or when contamination is present.	Results less than the laboratory Reporting Limit	Inspect the system and re-analyze the Laboratory Blank.
Laboratory Duplicates-Laboratory Control Spike Duplicate (LCSD)	One per analytical batch	RPD ≤ 25%	Narrate exceedances. Investigate the cause and perform maintenance as required and re-calibrate as needed.

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ANALYTICAL METHODS

Section 12.0

Method: PM10/TSP – Particulate Matter

Eurofins Air Toxics SOP #66 Revision 13 Effective Date: December 30, 2013 Methods Manual Summary

Description: This method involves equilibrating quartz filters in a conditioning environment of a specified temperature and humidity range and weighing the filters before and after field sampling. Samples are analyzed for method PM_{10} using 40 CFR Part 50 Appendix J or for Total Suspended Particulate (TSP) using 40 CFR Part 50 Appendix B. An analytical balance with 0.1 mg resolution is used to measure the filter weights. The corresponding change in mass represents the TSP or PM_{10} result, expressed in µg or µg/m^3. The reporting limit is typically 1000 µg. Sampling volumes are required to calculate results in units of µg/m^3.

Table 1. Conditioning Environment Criteria for Methods PM10 and TSP

Method	Conditioning Environment Temperature (˚F)	Conditioning Environment Relative Humidity (%)
PM10	59°F – 86°F ± 5°F	20% – 45% ± 5%
TSP	59°F – 86°F ± 5°F	≤ 50% ± 5%

Table 2. Summary of Calibration and QC Procedures for Methods PM10 and TSP

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Calibration	Calibration checks of 3.00 grams (g) and 5.00 g are weighed to bracket the expected filter weight of ~4.5 g prior to sample analysis and at the end of the analytical batch.	Accuracy limits of 3.00 g weight: 2.997 g – 3.003 g Accuracy limits of 5.00 g weight: 4.995 g - 5.005 g	Correct problem then repeat calibration.
Laboratory Duplicates	Unexposed filters: One per analytical batch Exposed filters: One duplicate per work order	Unexposed filters: Weights of the clean filters should be within ±0.0028 g of the original value. Exposed filters: ≤ 25% RPD and weights must be within ±0.005 g	Re-condition the filter and re-weigh.
Laboratory Blanks	Immediately after the calibration checks	Post-weight of Lab Blank is less than pre-weight and the difference is < 0.0028 g.	Confirm the weight difference and narrate.

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ANALYTICAL METHODS

Section 13.0

Method: EPA Method TO-14A/TO-15 Volatile Organic Compounds (Low-Level)

Eurofins Air Toxics SOP #83 Revision 12 Effective Date: February 13, 2014 Methods Manual Summary

Description: This method involves full scan gas chromatograph/mass spectrometer (GC/MS) analysis of whole air samples collected in evacuated stainless steel canisters. Samples are analyzed for volatile organic compounds (VOCs) using EPA Method TO-14A/TO-15 protocols. An aliquot of up to 250 mL of air is withdrawn from the canister utilizing a volumetric syringe, volumetric loop, or mass flow controller. This volume is loaded onto a hydrophobic multibed sorbent trap to remove water and carbon dioxide and to concentrate the vapor sample. The focused sample is then flash-heated to sweep adsorbed VOCs onto a GC/MS for separation and detection. Compounds are detected using a MS operating in full scan mode.

Eurofins Air Toxics maintains a suite of TO-14A/TO-15 methods, each optimized to efficiently meet the data objectives for a wide range of targeted concentration ranges. The methods, their reporting limits, and typical applications are summarized in the table below. This method summary describes TO-14A/TO-15 (Low-Level).

Eurofins Air Toxics Method	Base Reporting Limits	Typical Application
TO-14A/TO-15 (5&20)	5 – 20 ppbv	Soil gas and ppmv range vapor matrices
TO-14A/TO-15 (Standard or Quad)	0.5 – 5.0 ppbv	Ambient air, soil gas, and ppbv level vapor matrices
TO-14A/TO-15 (Low-Level)	0.1 – 0.5 ppbv	Indoor and outdoor air
TO-14A/TO-15 SIM	0.003 – 0.5 ppbv	Indoor and outdoor air

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, Eurofins Air Toxics reports these non-routine compounds with partial validation. Validation may include a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification analyzed, and no method detection limit study performed unless previous arrangements have been made. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

Since Eurofins Air Toxics applies TO-15 methodology to all Summa™ canisters regardless of whether TO-14A or TO-15 is specified by the project, Eurofins Air Toxics performs a modified version of method TO-14A as detailed in Table 1. Please note that Methods TO-14A and TO-15 were validated for specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and is not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-14A and TO-15 results generated from Tedlar bags.

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All samples submitted for TO-15 Low-Level are screened prior to analysis. If samples contain high concentrations of target and/or non-target VOCs, samples may be analyzed by an alternative TO-15 method (i.e., Standard or 5&20) with a higher dynamic calibration range.

Table 1. Summary of TO-14A Method Modifications

Requirement	TO-14A	Eurofins Air Toxics Modifications
Sample Drying System	Nafion Dryer	Multibed hydrophobic sorbent
Blank acceptance criteria	< 0.2 ppbv	< RL
BFB ion abundance criteria	Ion abundance criteria listed in Table 4 of TO-14A	Follow abundance criteria listed in TO-15.
BFB absolute abundance criteria	Within 10% when comparing to the previous daily BFB	CCV internal standard area counts are compared to ICAL; corrective action taken when recovery is less than 60%.
Blanks and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air.
Initial Calibration	≤ 30% RSD for listed 39 VOCs	≤ 30% RSD with 4 compounds allowed out to ≤ 40%

Table 2. Summary of Method TO-15 Modifications

Requirement	TO-15	Eurofins Air Toxics Modifications
Initial Calibration	≤ 30% RSD with 2 compounds allowed out to < 40% RSD	≤ 30% RSD with 4 compounds allowed out to ≤ 40%
Blanks and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air.

The standard target analyte list, reporting limits (RL), also referred to as Limit of Quantitation (LOQ), Quality Control (QC) criteria, and QC summary can be found in tables 3 through 6.

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Table 3. Method TO-14A/TO-15 Analyte List (Low-Level) and QC Limits

Analyte	RL/LOQ (ppbv)	QC Acceptance Criteria			
		ICAL (%RSD)	CCV (%R)	ICV/LCS* (%R)	Precision Limits (Max. RPD)
1,1,2,2-Tetrachloroethane	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,1,2-Trichloroethane	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,1-Dichloroethane	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,1-Dichloroethene	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,2,4-Trichlorobenzene	0.5	≤ 30%	70 – 130	70 – 130	± 25
1,2,4-Trimethylbenzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dibromoethane (EDB)	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichlorobenzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichloroethane	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichloropropane	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,3,5-Trimethylbenzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,3-Dichlorobenzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,4-Dichlorobenzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Benzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Bromomethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Carbon Tetrachloride	0.1	≤ 30%	70 – 130	70 – 130	± 25
Chlorobenzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Chloroethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Chloroform	0.1	≤ 30%	70 – 130	70 – 130	± 25
Chloromethane	0.5	≤ 30%	70 – 130	70 – 130	± 25
Chlorotoluene (Benzyl Chloride)	0.1	≤ 30%	70 – 130	70 – 130	± 25
cis-1,2-Dichloroethene	0.1	≤ 30%	70 – 130	70 – 130	± 25
cis-1,3-Dichloropropene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Dichloromethane (Methylene Chloride)	0.2	≤ 30%	70 – 130	70 – 130	± 25
Ethylbenzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Freon 11 (Trichlorofluoromethane)	0.1	≤ 30%	70 – 130	70 – 130	± 25
Freon 113 (Trichlorotrifluoroethane)	0.1	≤ 30%	70 – 130	70 – 130	± 25
Freon 114	0.1	≤ 30%	70 – 130	70 – 130	± 25
Freon 12 (Dichlorodifluoromethane)	0.1	≤ 30%	70 – 130	70 – 130	± 25
Hexachlorobutadiene	0.5	≤ 30%	70 – 130	70 – 130	± 25
m,p-Xylene	0.1	≤ 30%	70 – 130	70 – 130	± 25

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Methyl Chloroform (1,1,1-Trichloroethane)	0.1	≤ 30%	70 – 130	70 – 130	± 25
o-Xylene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Styrene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Tetrachloroethene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Toluene	0.1	< 30%	70 – 130	70 – 130	± 25
trans-1,3-Dichloropropene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Trichloroethene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Vinyl Chloride	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,3-Butadiene	0.1	≤ 30%	70 – 130	70 – 130	± 25
1,4-Dioxane	0.1	≤ 30%	70 – 130	70 – 130	± 25
2-Butanone (Methyl Ethyl Ketone)	0.5	≤ 30%	70 – 130	70 – 130	± 25
2-Hexanone	0.5	≤ 30%	70 – 130	70 – 130	± 25
4-Ethyltoluene	0.1	≤ 30%	70 – 130	70 – 130	± 25
4-Methyl-2-Pentanone (MIBK)	0.1	≤ 30%	70 – 130	70 – 130	± 25
Acetone	0.5	≤ 30%	70 – 130	70 – 130	± 25
Bromodichloromethane	0.1	≤ 30%	70 – 130	70 – 130	± 25
Bromoform	0.1	≤ 30%	70 – 130	70 – 130	± 25
Carbon Disulfide	0.5	≤ 30%	70 – 130	70 – 130	± 25
Cumene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Cyclohexane	0.1	≤ 30%	70 – 130	70 – 130	± 25
Dibromochloromethane	0.1	≤ 30%	70 – 130	70 – 130	± 25
Ethanol	0.5	≤ 30%	70 – 130	70 – 130	± 25
Heptane	0.1	≤ 30%	70 – 130	70 – 130	± 25
Hexane	0.1	≤ 30%	70 – 130	70 – 130	± 25
Isopropanol	0.5	≤ 30%	70 – 130	70 – 130	± 25
Methyl tert-Butyl Ether (MTBE)	0.1	≤ 30%	70 – 130	70 – 130	± 25
Propylbenzene	0.1	≤ 30%	70 – 130	70 – 130	± 25
Tetrahydrofuran	0.5	≤ 30%	70 – 130	70 – 130	± 25
trans-1,2-Dichloroethene	0.1	≤ 30%	70 – 130	70 – 130	± 25
2,2,4-Trimethylpentane	0.5	≤ 30%	70 – 130	70 – 130	± 25
3-Chloroprene	0.5	≤ 30%	70 – 130	70 – 130	± 25

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Non-Standard Compounds

Analyte	RL/LOQ (ppbv)	QC Acceptance Criteria			
		ICAL (%RSD)	CCV (%R)	ICV/LCS (%R)	Precision Limits (Max. RPD)
Acrolein	0.5	≤ 40%	60 – 140	60 – 140	± 25
Butane	0.5	≤ 40%	60 – 140	60 – 140	± 25
Ethyl tert-Butyl Ether	0.5	≤ 40%	60 – 140	60 – 140	± 25
Isopentane	0.5	≤ 40%	60 – 140	60 – 140	± 25
Isopropyl Ether	0.5	≤ 40%	60 – 140	60 – 140	± 25
Methylcyclohexane	0.5	≤ 40%	60 – 140	60 – 140	± 25
Naphthalene**	0.5	≤ 40%	60 – 140	60 – 140	± 25
Propylene	0.5	≤ 40%	60 – 140	60 – 140	± 25
tert-Amyl Methyl Ether	0.5	≤ 40%	60 – 140	60 – 140	± 25
Vinyl Acetate	0.5	≤ 40%	60 – 140	60 – 140	± 25
tert-Butyl Alcohol	0.5	≤ 40%	60 – 140	60 – 140	± 25
TPH (Gasoline)***	10	1- Point Calibration	N/A	ICV only: 60 – 140	± 25
NMOC (Hexane/Heptane)***	2.0	1- Point Calibration	N/A	N/A	± 25

*See Table 6.

**Due to its low vapor pressure, Naphthalene does not meet TO-15 performance requirements. The wider QC limits reflect typical performance. Although Naphthalene is not on Eurofins Air Toxics "standard" TO-15 list, it is commonly requested and therefore included in Table 3.

***TPH and NMOC are not on Eurofins Air Toxics' standard TO-15 list, but are included in Table 3 due to common requests.

Table 4. Internal Standards

Analyte	Accuracy (% R)
Bromochloromethane	60 – 140
1,4-Difluorobenzene	60 – 140
Chlorobenzene-d_5	60 – 140

Table 5. Surrogates

Analyte	Accuracy (% R)
1,2-Dichloroethane-d_4	70 – 130
Toluene-d_8	70 – 130
4-Bromofluorobenzene	70 – 130

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Table 6. Summary of Calibration and QC Procedures for Methods TO-14A/TO-15 Low-Level

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Tuning Criteria	Every 24 hours	TO-15 ion abundance criteria	Correct problem then repeat tune.
Minimum 5-Point Initial Calibration (ICAL)	Prior to sample analysis	% RSD ≤ 30 with 4 compounds allowed out to ≤ 40% RSD	Correct problem then repeat Initial Calibration curve.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS)	After each Initial Calibration curve, and daily prior to sample analysis	Recoveries for 85% of Standard compounds must be 70–130%. No recovery may be < 50%. If specified by the client, in-house generated control limits may be used.	Check the system and re-analyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS) for Non-standard Compounds	Per client request or specific project requirements only	Recoveries of compounds must be 60–140%. No recovery may be <50%.	Check the system and re-analyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Continuing Calibration Verification (CCV) for Standard compounds	At the start of each analytical clock after the tune check	70–130%	Compounds exceeding this criterion and associated data will be flagged and narrated with the exception of high bias associated with non-detects. If more than 4 compounds from the standard list recover outside of 70–130%, corrective action will be taken. If any compound exceeds 60–140%, samples are not analyzed unless data meets project needs. Check the system and re-analyze the standard. Re-prepare the standard if necessary. Re-calibrate the instrument if the criteria cannot be met.
Continuing Calibration Verification (CCV) for Non-Standard compounds	Per client request or specific project requirements only	Recoveries of compounds must be 60–140%. No recovery may be <50%.	Check the system and re-analyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.

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Laboratory Blank	After analysis of standards and prior to sample analysis, or when contamination is present	Results less than the laboratory reporting limit	Inspect the system and re-analyze the blank. "B"-flag data for common contaminants.
Internal Standard (IS)	As each standard, blank, and sample is being loaded	Retention time (RT) for blanks and samples must be within ±0.33 min of the RT in the CCV and within ± 40% of the area counts of the daily CCV internal standards.	**For blanks:** Inspect the system and reanalyze the blank. **For samples:** Re-analyze the sample unless obvious matrix interference is documented. If the ISs are within limits in the re-analysis, report the second analysis. If ISs are out-of-limits a second time, report data from first analysis and narrate.
Surrogates	As each standard, blank, and sample is being loaded	70–130% R If specified by the client, in-house generated control limits may be used.	**For blanks:** Inspect the system and re-analyze the blank **For samples:** Re-analyze the sample unless obvious matrix interference is documented. If the %Rs are within limits in the re-analysis, report the second analysis. If %Rs are out-of-limits a second time, report data from first analysis and narrate.
Laboratory Duplicates - Laboratory Control Spike Duplicate (LCSD)	One per analytical batch	RPD ≤25%	Narrate exceedances. If more than 5% of compound list is outside criteria or if compound is >40% RPD, investigate the cause and perform maintenance as required. If instrument maintenance is required, calibrate as needed.

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ANALYTICAL METHODS

Section 14.0

Method: EPA Method TO-14A/TO-15 Volatile Organic Compounds (5&20)

Eurofins Air Toxics SOP #91 Revision 5 Effective Date: January 14, 2013 Methods Manual Summary

Description: This method involves full scan gas chromatograph/mass spectrometer (GC/MS) analysis of whole air samples collected in evacuated stainless steel canisters. Samples are analyzed for volatile organic compounds (VOCs) using EPA Method TO-14A/TO-15 protocols. An aliquot of up to 0.05 liters of air is withdrawn from the canister utilizing a volumetric syringe or mass flow controller. This volume is loaded onto a hydrophobic multibed sorbent trap to remove water and carbon dioxide and to concentrate the vapor sample. The focused sample is then flash-heated to sweep adsorbed VOCs onto a secondary trap for further concentration and/or onto a GC/MS for separation and detection.

Eurofins Air Toxics maintains a suite of TO-14A/TO-15 methods, each optimized to efficiently meet the data objectives for a wide range of targeted concentration ranges. The methods, their reporting limits, and typical applications are summarized in the table below. This method summary describes TO-14A/TO-15 (5&20). The 5&20 analytical configuration is designed to directly measure ppmv concentrations with minimal offline dilutions due to its wide dynamic calibration range.

Eurofins Air Toxics Method	Base Reporting Limits	Typical Application
TO-14A/TO-15 (5&20)	5 – 20 ppbv	Soil gas and ppmv range vapor matrices
TO-14A/TO-15 (Standard or Quad)	0.5 – 5.0 ppbv	Ambient air, soil gas, and ppbv level vapor matrices
TO-14A/TO-15 (Low-level)	0.1 – 0.5 ppbv	Indoor and outdoor air
TO-14A/TO-15 SIM	0.003 – 0.5 ppbv	Indoor and outdoor air

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, Eurofins Air Toxics reports these non-routine compounds with partial validation. Validation may include a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification analyzed, and no method detection limit study performed unless previous arrangements have been made. In addition, stability of the non-standard compound during sample storage is not validated. Full validation may be available upon request.

Eurofins Air Toxics takes no modifications of technical significance to Method TO-15 for the "5&20" configuration. Since Eurofins Air Toxics applies TO-15 methodology to all Summa canisters regardless of whether TO-14A or TO-15 is specified by the project, the laboratory performs a modified version of method TO-14A as detailed in Table 1. Please note that Methods TO-14A and TO-15 were validated for specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient air samples. It is the responsibility of the data user to determine the usability of TO-14A and TO-15 results generated from Tedlar bags.

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Table 1. Summary of TO-14A Method Modifications

Requirement	TO-14A	ATL Modifications
Sample Drying System	Nafion Drier	Multibed hydrophobic sorbent
Blank acceptance criteria	< 0.2 ppbv	< RL
BFB ion abundance criteria	Ion abundance criteria listed in Table 4 of TO-14A	Follow abundance criteria listed in TO-15
BFB absolute abundance criteria	Within 10% when comparing to the previous daily BFB	CCV internal standard area counts are compared to ICAL; corrective action when recovery is less than 60%.
Initial Calibration	≤ 30% RSD for listed 39 VOCs	≤ 30% RSD with 2 of Eurofins Air Toxics' 62 standard compounds allowed out to ≤ 40%

The standard target analyte list, reporting limit (RL), also referred to as Limit of Quantitation (LOQ), QC criteria, and QC summary can be found in Tables 2 through 5.

Table 2. Method TO-14A/TO-15 Analyte List (5&20)

Analyte	RL/LOQ (ppbv)	QC Acceptance Criteria			
		ICAL (%RSD)	CCV (%R)	ICV/LCS (%R)	Precision Limits (Max. RPD)
1,1,2,2-Tetrachloroethane	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,1,2-Trichloroethane	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,1-Dichloroethane	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,1-Dichloroethene	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,2,4-Trichlorobenzene	20	≤ 30%	70 – 130	70 – 130	± 25
1,2,4-Trimethylbenzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dibromoethane (EDB)	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichlorobenzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichloroethane	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,2-Dichloropropane	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,3,5-Trimethylbenzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,3-Dichlorobenzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,4-Dichlorobenzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Benzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Bromomethane*	5.0	≤ 30%	70 – 130	70 – 130	± 25
Carbon Tetrachloride	5.0	≤ 30%	70 – 130	70 – 130	± 25
Chlorobenzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Chloroethane	20	≤ 30%	70 – 130	70 – 130	± 25

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Dibromochloromethane	5.0	≤ 30%	70 – 130	70 – 130	± 25
Chloroform	5.0	≤ 30%	70 – 130	70 – 130	± 25
Chloromethane	20	≤ 30%	70 – 130	70 – 130	± 25
Chlorotoluene (Benzyl Chloride)	5.0	≤ 30%	70 – 130	70 – 130	± 25
cis-1,2-Dichloroethene	5.0	≤ 30%	70 – 130	70 – 130	± 25
cis-1,3-Dichloropropene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Dichloromethane (Methylene Chloride)	5.0	≤ 30%	70 – 130	70 – 130	± 25
Ethylbenzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Freon 11 (Trichlorofluoromethane)	5.0	≤ 30%	70 – 130	70 – 130	± 25
Freon 113 (Trichlorotrifluoroethane)	5.0	≤ 30%	70 – 130	70 – 130	± 25
Freon 114	5.0	≤ 30%	70 – 130	70 – 130	± 25
Freon 12 (Dichlorodifluoromethane)	5.0	≤ 30%	70 – 130	70 – 130	± 25
Hexachlorobutadiene	20	≤ 30%	70 – 130	70 – 130	± 25
m,p-Xylene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Methyl Chloroform (1,1,1-Trichloroethane)	5.0	≤ 30%	70 – 130	70 – 130	± 25
o-Xylene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Styrene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Tetrachloroethene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Toluene	5.0	≤ 30%	70 – 130	70 – 130	± 25
trans-1,3-Dichloropropene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Trichloroethene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Vinyl Chloride	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,3-Butadiene	5.0	≤ 30%	70 – 130	70 – 130	± 25
1,4-Dioxane	20	≤ 30%	70 – 130	70 – 130	± 25
2-Butanone (Methyl Ethyl Ketone)	20	≤ 30%	70 – 130	70 – 130	± 25
2-Hexanone	20	≤ 30%	70 – 130	70 – 130	± 25
4-Ethyltoluene	5.0	≤ 30%	70 – 130	70 – 130	± 25
4-Methyl-2-Pentanone (MIBK)	5.0	≤ 30%	70 – 130	70 – 130	± 25
Acetone	20	≤ 30%	70 – 130	70 – 130	± 25
Bromodichloromethane	5.0	≤ 30%	70 – 130	70 – 130	± 25
Bromoform	5.0	≤ 30%	70 – 130	70 – 130	± 25
Carbon Disulfide	5.0	≤ 30%	70 – 130	70 – 130	± 25
Cyclohexane	5.0	≤ 30%	70 – 130	70 – 130	± 25

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Dibromochloromethane	5.0	≤ 30%	70 – 130	70 – 130	± 25
Ethanol	20	≤ 30%	70 – 130	70 – 130	± 25
Heptane	5.0	≤ 30%	70 – 130	70 – 130	± 25
Hexane	5.0	≤ 30%	70 – 130	70 – 130	± 25
Isopropanol	20	≤ 30%	70 – 130	70 – 130	± 25
Methyl t-Butyl Ether (MTBE)	5.0	≤ 30%	70 – 130	70 – 130	± 25
Tetrahydrofuran	5.0	≤ 30%	70 – 130	70 – 130	± 25
trans-1,2-Dichloroethene	5.0	≤ 30%	70 – 130	70 – 130	± 25
2,2,4-Trimethylpentane	5.0	≤ 30%	70 – 130	70 – 130	± 25
Cumene	5.0	≤ 30%	70 – 130	70 – 130	± 25
Propylbenzene	5.0	≤ 30%	70 – 130	70 – 130	± 25
3-Chloroprene	20	≤ 30%	70 – 130	70 – 130	± 25
Naphthalene**	20	≤ 40%	60 – 140	60 – 140	± 25
TPH (Gasoline) ***	100	1- Point Calibration	NA	ICV only: 60 – 140	± 25
NMOC (Hexane/Heptane)***	100	1- Point Calibration	NA	NA	± 25

*Bromomethane recovery can be variable due to moisture/sorbent interactions specifically on the 2-trap concentration system. Data may require qualifier flags.

**Due to its low vapor pressure, Naphthalene may exceed TO-15 performance requirements. The wider QC limits reflect typical performance. Although Naphthalene is not on Eurofins Air Toxics "standard" TO-15 list, it is commonly requested and included in Table 2.

***TPH and NMOC are not on Eurofins Air Toxics' "standard" TO-15 list, but are included in Table 2 due to common requests.

Table 3. Internal Standards

Analyte	Accuracy (% R)
Bromochloromethane	60 – 140
1,4-Difluorobenzene	60 – 140
Chlorobenzene-d_5	60 – 140

Table 4. Surrogates

Analyte	Accuracy (% R)
1,2-Dichloroethane-d_4	70 – 130
Toluene-d_8	70 – 130
4-Bromofluorobenzene	70 – 130

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Table 5. Summary of Calibration and QC Procedures for Methods TO-14A/TO-15 (5&20)

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Tuning Criteria	Every 24 hours.	TO-15 ion abundance criteria	Correct problem then repeat tune.
Minimum 5-Point Initial Calibration (ICAL)	Prior to sample analysis.	% RSD ≤ 30 with 2 compounds allowed out to ≤ 40% RSD	Correct problem then repeat Initial Calibration Curve.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS)	After each Initial Calibration curve, and daily prior to sample analysis	Recoveries for 85% of "Standard" compounds must be 70-130%. No recovery may be <50%. If specified by the client, in-house generated control limits may be used.	Check the system and reanalyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Initial Calibration Verification and Laboratory Control Spike (ICV and LCS) for Non-standard compounds	Per client request or specific project requirements only.	Recoveries of compounds must be 60–140%. No recovery may be <50%.	Check the system and reanalyze the standard. Re-prepare the standard if necessary to determine the source of error. Re-calibrate the instrument if the primary standard is found to be in error.
Continuing Calibration Verification (CCV)	At the start of each analytical clock after the tune check.	70–130%	Compounds exceeding this criterion and associated data will be flagged and narrated with the exception of high bias associated with non-detects. If more than two compounds from the standard list recover outside of 70-130%, corrective action will be taken. If any compound exceeds 60-140%, samples are not analyzed unless data meets project needs. Check the system and reanalyze the standard. Re-prepare the standard if necessary. Re-calibrate the instrument if the criteria cannot be met.
Laboratory Blank	After analysis of standards and prior to sample analysis, or when contamination is present.	Results less than the laboratory reporting limit	Inspect the system and re-analyze the blank. "B"-flag data for common contaminants.
Internal Standard (IS)	As each standard, blank, and sample is being loaded	Retention time (RT) for blanks and samples must be within ±0.33 min of the RT in the CCV and within ±40% of the area counts of the daily CCV internal standards.	**For blanks:** Inspect the system and reanalyze the blank. **For samples:** Re-analyze the sample. If the ISs are within limits in the re-analysis, report the second analysis. If ISs are out-of-limits a second time, dilute the sample until ISs are within acceptance limits and narrate.

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Surrogates	As each standard, blank, and sample is being loaded.	70–130% If specified by the client, in-house generated control limits may be used.	**For blanks:** Inspect the system and reanalyze the blank. **For samples:** re-analyze the sample unless obvious matrix interference is documented. If the %Rs are within limits in the re-analysis, report the second analysis. If %Rs are out-of-limits a second time, report data from first analysis and narrate.
Laboratory Duplicates – Laboratory Control Spike Duplicates (LCSD)	One per analytical batch	RPD ≤25%	Narrate exceedances. If more than 5% of compound list is outside criteria or if compound has >40%RPD, investigate the cause and perform maintenance as required. If instrument maintenance is required, calibrate as needed.

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ANALYTICAL METHODS

Section 15.0

Method: TO-15 Aliphatic and Aromatic Volatile Petroleum Hydrocarbons (VPH) Fractions by GC/MS

Eurofins Air Toxics SOP #103 Revision 5 Effective Date: January 29, 2014 Methods Manual Summary

Description: The TO-15 VPH method outlines procedures to estimate the concentrations of gaseous phase Aliphatic and Aromatic ranges in ambient air and soil gas collected in stainless steel Summa canisters. The volatile Aliphatic hydrocarbons are collectively quantified within the C5 to C6 range, C6 to C8 range, C8 to C10 range, and the C10 to C12 range. Additionally, the volatile Aromatic hydrocarbons are collectively quantified within the C8 to C10 range and the C10 to C12 range. The Aromatic ranges refer to the equivalent carbon (EC) ranges.

Data is acquired using standard TO-15 GC/MS instrumentation. Procedures are largely based on the hydrocarbon ranges and calibration reference compounds defined by the Washington State Department of Ecology (WSDE) Method for the Determination of Volatile Petroleum Hydrocarbons (VPH) Fractions, dated June 1997. Additionally, the WSDE VPH calibration and quantitation procedures for the Aromatic fraction have been enhanced to more effectively isolate the compounds of interest. The Aromatic fraction measurement is based on a modification of the Massachusetts Department of Environmental Protection (MADEP) Air Phase Hydrocarbon Method (2009).

Eurofins Air Toxics performs a modified version of this method. The method modifications, standard target analyte list, reporting limit (RL) or Limit of Quantitation (LOQ), QC criteria, and QC summary can be found in the following tables.

Table 1. Summary of Method Modifications for TO-15 VPH

Requirement	VPH	Eurofins Air Toxics Modifications
Detector	Tandem GC/FID/PID	GC/MS
Matrix	Soil, water, and sediments	Whole air samples
C6-C8 Reference Compound	Octane	Heptane
Surrogate	2,5-Dibromotoluene	Bromochloromethane, 1,2-Dichloroethane-d4, Toluene-d8, Chlorobenzene-d5, and 4-Bromofluorobenzene
%RSD for Reference Compounds	≤ 20% RSD	≤ 30% RSD with the exception of Decane, Dodecane, 1,2,4,5-Tetramethylbenzene, and Naphthalene at ≤ 40% RSD
%D for the CCV	±20%D	±30%D with the exception of Decane, Dodecane, 1,2,4,5-Tetramethylbenzene, and Naphthalene at ±40%D

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Laboratory Control Spike	Matrix Spiking Solution	Independently prepared source performed after initial calibration, 70–130% recovery, with the exception of Decane, Dodecane,1,2,4,5-Tetramethylbenzene, and Naphthalene at 60–140%
CCV Frequency	Before and after every 10 samples	Daily before sample analysis
IDOC	4 Replicates of a CCV at ±20%D; %RSD ≤ 20%	Not performed for this method; TO-15 IDOC performed on the same instrument

Table 2. VPH Standard Target Analyte List (Note: TO-15 analytes can also be included.)

Analyte	Standard RL (ppbv)	5&20 RL (ppbv)	Acceptance Criteria		
			ICAL %RSD	ICV (%R)	CCV (%D)
Pentane	NA	NA	≤ 30%	70-130	≤ 30%
Hexane	NA	NA	≤ 30%	70-130	≤ 30%
C_5-C_6 Aliphatics Pentane + Hexane	**10**	**50**	**≤ 30%**	**70-130**	**≤ 30%**
C_6-C_8 Aliphatics ref. to Heptane	**10**	**50**	**≤ 30%**	**70-130**	**≤ 30%**
C_8-C_{10} Aliphatics ref. to Decane	**10**	**50**	**≤ 40%**	**60-140**	**≤ 40%**
C_{10}-C_{12} Aliphatics ref. to Dodecane	**10**	**50**	**≤ 40%**	**60-140**	**≤ 40%**
Ethyl benzene	2	10	≤ 30%	70-130	≤ 30%
m/p-Xylene	2	10	≤ 30%	70-130	≤ 30%
o-Xylene	2	10	≤ 30%	70-130	≤ 30%
1,2,3-Trimethylbenzene	NA	NA	≤ 30%	70-130	≤ 30%
C_8-C_{10} Aromatics	**10**	**50**	**≤ 30%**	**70-130**	**≤ 30%**
Naphthalene	2	10	≤ 40%	60-140	≤ 40%
1,2,4,5-Tetramethylbenzene	NA	NA	≤ 40%	60-140	≤ 40%
C_{10}-C_{12} Aromatics	**10**	**50**	**≤ 40%**	**60-140**	**≤ 40%**

Table 3. Internal Standard Acceptance Criterion – Aliphatic Fraction

Analyte	Recovery Limits (%R)
1,4-Difluorobenzene	50 – 200%

Table 4. Internal Standard Acceptance Criterion – Aromatic Fraction

Analyte	Recovery Limits (%R)
Chlorobenzene-d_5	60 – 140%

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Table 4. Summary of Calibration and QC Procedures

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Tuning Criteria	Every 24 hours	Compendium of Methods for Toxic Organic Air Pollutants, Method TO-15, January 1999	Correct problem then repeat tune.
6-Point Initial Calibration (ICAL)	Prior to sample analysis	%RSD ≤ 30% for VPH Target Analyte List with exceptions for 1,2,4,5-Tetramethylbenzene and Naphthalene, which are ≤40%	Correct problem then repeat initial calibration curve.
Initial Calibration Verification (ICV)	After each initial calibration curve	Recoveries for VPH target compounds 70–130%, or 60–140% for 1,2,4,5-Tetramethylbenzene and Naphthalene. If recovery of any compound is above 130%, analyze samples as long as compound is not detected.	Check the system and re-analyze the standard. Re-prepare the standard if necessary. Re-calibrate the instrument if the criteria cannot be met.
Continuing Calibration Verification (CCV)	At the start of each analytical clock after the tune check	%D ≤ 30% for VPH target compounds with exceptions for 1,2,4,5-Tetramethylbenzene and Naphthalene, which are <40%. One compound is allowed to be out as long as it is ≤ 50%D. If recovery of any compound is above 150% the instrument must be re-calibrated.	Perform maintenance and repeat test. If the CCV still fails, perform maintenance and a new 6-point calibration curve.
Laboratory Blank	After the CCV	Results less than the laboratory RL	Inspect the system and re-analyze the blank.
Internal Standard (IS)	As each standard, blank, and sample is being loaded.	Retention time (RT) for the blanks and samples must be within ±0.33 min of the RT in the CCV. For the aliphatic fraction using the total ion area, the IS area must be within -50% to 200% of the CCV's IS area for the blanks and samples. For the aromatic fraction using extracted ion areas, the IS area must be within -40% to +40% of the CCV's extracted ion IS area.	**For blanks:** Inspect the system and re-analyze the blank **For samples:** If there is not obvious interference with the internal standard, re-analyze the sample. If the ISs are within limits in the re-analysis, report the second analysis. Dilution of the sample to get IS areas within limits may be used if the RL is being obtained.
Laboratory Duplicates	One per analytical batch; since VPH analysis occurs with TO-15 analysis, the Duplicate is reported from the daily TO-15 LCS/LCSD pair. The result is not reported with the VPH fraction.	RPD ≤ 25% for detections >5X the RL	Re-analyze the sample a third time. If the limit is exceeded again, investigate the cause and bring the system back to working order. If no problem is found with the system, narrate.

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ANALYTICAL METHODS

Section 16.0

Method: Modified EPA TO-17 VOCs and SVOCs (Vapor Intrusion Application) by GC/MS (Full Scan)

Eurofins Air Toxics SOP #109 Revision 4 Effective Date: December 24, 2013 Methods Manual Summary

Description: The TO-17 "Vapor Intrusion" method utilizes a multi-bed thermal desorption tube for the measurement of air-phase Volatile Organic Compounds (VOCs) and Polycyclic Aromatic Hydrocarbons (PAHs). These tubes are marketed by Eurofins Air Toxics as "TO-17 VI" tubes. The TO-17 VI tubes are applicable to a wide variety of vapor matrices including soil gas, indoor air, and outdoor air. Parameters are optimized to effectively manage high humidity conditions. The TO-17 VI method is an alternative to the canister-based sampling and analysis methods that are presented in EPA Compendium Methods TO-14A and TO-15 as well as an alternative to PUF/XAD sampling for semi-volatile compounds as described by EPA Compendium TO-13A. The VI tube provides sufficient retention of light VOCs such as 1,3-Butadiene while providing an efficient desorption of semi-volatile compounds such as Pyrene.

Samples are collected by drawing a measured volume of air through the VI sorbent tubes. Collection is performed using a low-flow vacuum pump or a volumetric syringe attached to the outlet side of the tube. Analysis is accomplished by heating the sorbent tube and sweeping the desorbed compounds onto a secondary "cold" trap for water management and analyte refocusing. The secondary trap is heated for efficient transfer of compounds onto the gas chromatograph (GC) for separation followed by detection using mass spectrometry (MS).

Certain compounds are not included in Eurofins Air Toxics' standard target analyte list. These compounds are communicated at the time of client proposal request. Unless otherwise directed, the laboratory reports these non-standard compounds with partial validation. Validation includes a 3-point calibration with the lowest concentration defining the reporting limit, no second source verification is analyzed, and no method detection limit study is performed unless previous arrangements have been made. In addition, stability of the non-standard compounds during sample storage, safe sampling volume, and desorption efficiency are not validated. Full validation may be available upon request.

Since the TO-17 VI application significantly extends the scope of target compounds addressed in EPA Method TO-15 and TO-17, the laboratory has implemented several method modifications as outlined in Table 1.

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Table 1. EPA TO-17 Method Modifications – VI Application

Requirement	TO-17	Eurofins Air Toxics Modifications
Initial Calibration	%RSD ≤ 30% with 2 allowed out up to 40%	For the VOC list: %RSD ≤ 30% with 2 allowed out up to 40% For the PAH list: %RSD ≤ 30% with 2 allowed out up to 40%
Daily Calibration	%D for each target compound within ±30%.	Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene within ±40%D
Audit Accuracy	70 – 130%	Second source recovery limits for Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene = 60 – 140%
Distributed Volume Pairs	Collection of distributed volume pairs required for monitoring ambient air to ensure high quality.	If the client is sampling well-characterized air or has verified performance through previous sampling or distributed pairs, single tube sampling may be appropriate. Distributed volume pairs may not be practical or useful for soil vapor collection due to required configuration and volume constraints.

Table 2. Method TO-17 VI Standard Analyte List and QC Limits

Volatile Organic Compounds	Reporting Limit (ng)	QC Acceptance Criteria			
		ICAL (%RSD)	ICV (%R)	CCV (%D)	LCS (%R)
Freon 114	14	30	70 – 130	30	70 – 130
Vinyl Chloride	2.6	30	70 – 130	30	70 – 130
1,3-Butadiene	2.2	30	70 – 130	30	70 – 130
Isopentane	5.9	30	70 – 130	30	70 – 130
Freon 11	11	30	70 – 130	30	70 – 130
1,1-Dichloroethene	4.0	30	70 – 130	30	70 – 130
Methylene Chloride	21	30	70 – 130	30	70 – 130
Freon 113	7.7	30	70 – 130	30	70 – 130
Trans-1,2-Dichloroethene	4.0	30	70 – 130	30	70 – 130
1,1-Dichloroethane	4.0	30	70 – 130	30	70 – 130
cis-1,2-Dichloroethene	4.0	30	70 – 130	30	70 – 130
Hexane	35	30	70 – 130	30	70 – 130
Chloroform	4.9	30	70 – 130	30	70 – 130
1,2-Dichloroethane	4.0	30	70 – 130	30	70 – 130
1,1,1-Trichloroethane	5.4	30	70 – 130	30	70 – 130
Benzene	6.4	30	70 – 130	30	70 – 130
Carbon Tetrachloride	6.3	30	70 – 130	30	70 – 130

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Cyclohexane	6.9	30	70 – 130	30	70 – 130
1,2-Dichloropropane	4.6	30	70 – 130	30	70 – 130
Trichloroethene	5.4	30	70 – 130	30	70 – 130
1,4-Dioxane	11	30	70 – 130	30	70 – 130
2,2,4-Trimethylpentane	9.4	30	70 – 130	30	70 – 130
Heptane	8.2	30	70 – 130	30	70 – 130
Methylcyclohexane	8.0	30	70 – 130	30	70 – 130
1,1,2-Trichloroethane	5.4	30	70 – 130	30	70 – 130
Methyl isobutyl ketone	8.2	30	70 – 130	30	70 – 130
Toluene	7.5	30	70 – 130	30	70 – 130
Methylbutylketone	8.2	30	70 – 130	30	70 – 130
Tetrachloroethene	6.8	30	70 – 130	30	70 – 130
Chlorobenzene	4.6	30	70 – 130	30	70 – 130
Ethylbenzene	4.3	30	70 – 130	30	70 – 130
M,p-xylene	8.7	30	70 – 130	30	70 – 130
o-Xylene	8.7	30	70 – 130	30	70 – 130
Styrene	8.5	30	70 – 130	30	70 – 130
1,1,2,2-Tetrachloroethane	6.9	30	70 – 130	30	70 – 130
Cumene	9.8	30	70 – 130	30	70 – 130
n-Propylbenzene	9.8	30	70 – 130	30	70 – 130
4-Ethyltoluene	9.8	30	70 – 130	30	70 – 130
1,3,5-Trimethylbenzene	9.8	30	70 – 130	30	70 – 130
1,2,4-Trimethylbenzene	29	30	70 – 130	30	70 – 130
1,3-Dichlorobenzene	6.0	30	70 – 130	30	70 – 130
1,4-Dichlorobenzene	6.0	30	70 – 130	30	70 – 130
1,2-Dichlorobenzene	6.0	30	70 – 130	30	70 – 130
1,2,4-Trichlorobenzene	15	30	70 – 130	30	70 – 130
Hexachlorobutadiene	21	30	70 – 130	30	70 – 130
Chloroethane†	16	30	70 – 130	30	70 – 130
Isopropyl alcohol†	49	30	70 – 130	30	70 – 130
Carbon Disulfide†	6.2	30	70 – 130	30	70 – 130
MTBE†‡	22	30	70 – 130	30	70 – 130
Methyl Ethyl Ketone†	59	30	70 – 130	30	70 – 130

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Polyaromatic Hydrocarbons	Reporting Limit (ng)	ICAL (%RSD)	ICV (%R)	CCV (%D)	LCS (%R)
Naphthalene	0.5	30	70 – 130	30	70 – 130
2-Methylnaphthalene	1.0	30	70 – 130	30	70 – 130
1-Methylnaphthalene	1.0	30	70 – 130	30	70 – 130
Acenaphthylene	5.0	30	70 – 130	30	70 – 130
Acenaphthene	5.0	30	70 – 130	30	70 – 130
Fluorene	5.0	30	60 – 140	40	60 – 140
Phenanthrene	5.0	30	60 – 140	40	60 – 140
Anthracene	5.0	30	60 – 140	40	60 – 140
Fluoranthene	5.0	30	60 – 140	40	60 – 140
Pyrene	5.0	30	60 – 140	40	60 – 140

†Non-routine compounds by special request only.
‡Poor recovery performance when dry purge is applied for sample collection volumes greater than 1 Liter.

Table 3. Commonly requested TPH parameters – Optional

TPH	Reporting Limit (ng)	ICAL (%RSD)	ICV (%R)	CCV (%D)	LCS (%R)
GRO (Gasoline Range)	1000	30	60-140	30	60 – 140
DRO (C10-C24 Diesel Range)	1000	30	60-140	30	60 – 140

Table 4. Internal Standard and Field Surrogate Recoveries

Internal Standards		
Analyte	**CCV IS % Recovery**	**Sample IS % Recovery**
Bromochloromethane	60 – 140	60 – 140
1,4-Difluorobenzene	60 – 140	60 – 140
Chlorobenzene-d_5	60 – 140	60 – 140
Bromofluorobenzene	60 – 140	60 – 140
Field Surrogates		
Analyte	**% Recovery**	
1,2-Dichloroethane-d4	50 – 150	
Toluene-d8	50 – 150	
Naphthalene-d8	50 – 150	

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Table 5. Summary of Calibration and QC Procedures for Modified Method TO-17 VI

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
BFB Tune Check	Before initial and daily calibration. Check is valid for 24 hours.	TO-15 tune criteria	Correct problem then repeat tune.
5-Point Calibration	Prior to sample analysis	%RSD ≤ 30% with 2 VOCs exceeding up to 40% RSD and 2 PAHS exceeding criteria up to 40%RSD.	Correct problem then repeat Initial Calibration Curve.
Initial Calibration Verification (ICV)	After each initial Calibration Curve	See Table 2; 20% of the compounds are allowed to exceed criterion.	Determine if the exceedance is due to an inaccurate calibration standard or inaccurate ICV standard. Recalibrate with an accurate standard or re-prepare the ICV as necessary. If any VOC exceeds 50–150% recovery, system is checked and the ICV is reanalyzed. For compounds with recoveries greater than 150% and no positive detections in the samples, approval to proceed will be granted on a case-by-case basis.
Continuing Calibration Verification (CCV)	At the start of each 24-hour clock after the Tune Check	70 – 130% 60–140% for Fluorene, Phenanthrene, Anthracene, Fluoranthene and Pyrene	If project-specified risk drivers exceed these criteria, more than 5% of the compounds exceed these criteria, or any VOC exceeds 50–150% recovery, maintenance is performed and the CCV test repeated. If the system still fails the CCV, perform a new 5-point Calibration Curve.
Laboratory Blank	After the CCV and before the samples and at end of sequence	Results less than the laboratory RL for Lab Blank analyzed prior to samples	Inspect the system and re-analyze the Blank. Flag associated data as appropriate.
Laboratory Control Spike (LCS)	Once per analytical batch	70 – 130% 60–140% for Fluorene, Phenanthrene, Anthracene, Fluoranthene and Pyrene; 20% of compound list may exceed criteria before corrective action is required.	Verify accuracy of standard. Re-prepare LCS if necessary. If calibration curve and/or system is found to be out of control, perform maintenance and re-calibrate. If any VOC exceeds 50–150% recovery, maintenance is performed and the ICV test is repeated. For compounds with recoveries greater than 150% and no positive detections in the samples, approval to proceed will be granted on a case-by-case basis.

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QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Laboratory Control Spike Duplicate (LCSD)	Once per analytical batch (reanalysis of LCS)	≤ 20% RPD	Verify accuracy of standard. Re-prepare LCS if necessary. If calibration curve and/or system is found to be out of control, perform maintenance and re-calibrate. If any VOC exceeds 50–150% recovery, maintenance is performed and the ICV test is repeated. For compounds with recoveries greater than 150% and no positive detections in the samples, approval to proceed will be granted on a case-by-case basis.
Internal Standard (IS)	As each QC sample and sample are being loaded	**CCVs:** Area counts > 60% recovery; Retention Time (RT) within 20 seconds of mid-point in ICAL. **Blanks and samples**: Retention time (RT) must be within ±0.33 minutes of the RT in the CCV. The IS area must be within ±40% of the CCV's IS area for the Blanks and samples.	**CCV:** Inspect and correct system prior to sample analysis. **Blanks:** Inspect the system and re-analyze the Blank. **Samples:** Investigate the problem by verifying the instrument is in control by running a Lab Blank. Re-analyze recollected samples to verify recovery. Report the run with acceptable IS recovery. If both runs are unacceptable, narrate and flag associated data.
Field Surrogates	Added to each tube prior to shipment to field. Added to QC samples prior to analysis.	50–150%	**For blanks:** Inspect the system and re-analyze the Blank. **For samples:** Review data to determine whether sample collection parameters or matrix interference resulted in the exceedances. If so, narrate and flag recovery. If no cause is evident, verify the instrument is in control by running a Lab Blank. Re-analyze recollected sample to verify recovery.
Field Blank	Project-dependent	Artifact levels should be less than the reporting limit or less than 10% of the mass measured on the sampled tubes, whichever is less.	Flag associated results and evaluate tube conditioning and storage procedures.
Distributed Pairs	Project-dependent	%RPD ≤ 25%	Narrate discrepancy.

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ANALYTICAL METHODS

Section 17.0

Method: ANALYSIS OF VOCS BY GC/MS COLLECTED ON CHARCOAL-BASED PASSIVE SAMPLERS

Eurofins Air Toxics SOP #100 Revision 4 Effective Date: January 10, 2014 Methods Manual Summary

Description: This method involves gas chromatograph/mass spectrometer (GC/MS) analysis of volatile organic compounds (VOCs) collected using charcoal-based passive samplers. These passive samplers include the Radiello® 130, SKC badges (575 and Ultra series), 3M™ OVM badges, and the WMS™ permeation sampler. Passive samplers are used to measure vapor-phase VOCs in a variety of gaseous matrices including indoor air, outdoor air, extracted soil gas, and emissions from materials. VOCs in the sampling environment pass through the diffusive barrier or permeable membrane of the sampler at a known, controlled rate (defined as the sampling rate) and adsorb to the charcoal-based sorbent pad of the sampler. The sorbent is extracted using a volume of carbon disulfide, and the extract is directly injected into a GC equipped with an MS. The retention time and spectral pattern of a compound are compared with that of known standard. Concentrations of the analytes are calculated from the average relative response factors of calibration curves obtained from analysis of standard solutions. The results are reported in units of µg/sample or µg/m^3 if the sampling rate and duration is known. Results for subsurface soil gas measurements are typically reported in units of µg/sample since there may be a low bias in the calculated µg/m^3 concentration due to starvation effects. Starvation effects occur when the uptake rate of the sampler exceeds the delivery rate of vapors from the surrounding soil.

There are no regulatory methods for the preparation and analysis of the Radiello and WMS samplers, while OSHA methods are available for workplace exposure measurements for several of the VOCs using 3M OVM 3500 and SKC 575 series samplers. The OSHA methods and recommended procedures published by Radiello (FSM) and 3M serve as the basis for this standard operating procedure for the analysis of environmental samples. Additionally, QC elements outlined in EPA SW-846 8260 and 8270 are incorporated as applicable. One variance of note that Eurofins Air Toxics has taken to the OSHA, Radiello, and the OVM 3500 methods is the use of GC/MS instead of GC/FID, thus providing more definitive compound identification and quantification for trace level environmental measurements.

Table 1 lists the target analytes routinely calibrated, along with the extract reporting limits and QC acceptance criteria. Tables 4 through 6 list the reporting limit for each sampler type in units of mass and the sampling rate. The sampling rates for the WMS sampler are maintained as proprietary and are not published as part of this document. To calculate the sample reporting limit in terms of µg/m^3, the compound sampling rate and the sample duration are required. Please consult with the laboratory to determine the appropriate sampler to meet project objectives.

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Table1. Target Analytes, (Extract) Reporting Limits, and QC Criteria

Analytes	Reporting Limit (µg/mL)	Acceptance Criteria			
		ICAL (%RSD)	ICV (% R)	LCS (%R)	CCV (%D)
Chloromethane	0.2	30	70 – 130	50 – 140	%D ≤ 40%
Vinyl Chloride	0.2	30	50 – 140	50 – 140	%D ≤ 40%
Ethanol	0.5	30	70 – 130	50 – 130*	%D ≤ 30%
1,1-Dichloroethene	0.2	30	70 – 130	70 – 130	%D ≤ 30%
Acetone	0.1	30	70 – 130	70 – 130	%D ≤ 30%
2-Propanol	0.1	30	50 – 130	50 – 130	%D ≤ 30%
MTBE	0.05	30	70 – 130	70 – 130	%D ≤ 30%
trans-1,2-Dichloroethene	0.1	20	80 – 120	70 – 130	%D ≤ 20%
Hexane	0.05	30	70 – 130	70 – 130	%D ≤ 30%
1,1-Dichloroethane	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Ethyl Acetate	0.2	30	70 – 130	70 – 130	%D ≤ 30%
2-Butanone	0.05	30	70 – 130	70 – 130	%D ≤ 30%
cis-1,2-Dichloroethene	0.1	20	80 – 120	70 – 130	%D ≤ 20%
Chloroform	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Cyclohexane	0.05	30	70 – 130	70 – 130	%D ≤ 20%
1,1,1-trichloroethane	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Carbon Tetrachloride	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Benzene	0.2	30	70 – 130	70 – 130	%D ≤ 30%
1,2-Dichloroethane	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Heptane	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Trichloroethene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
4-Methyl-2-pentanone	0.1	30	70 – 130	70 – 130	%D ≤ 30%
Toluene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
1,1,2-Trichloroethane	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Tetrachloroethene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Chlorobenzene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
Ethylbenzene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
m,p-Xylene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
o-Xylene	0.05	30	70 – 130	70 – 130	%D ≤ 20%
Styrene	0.05	30	70 – 130	20-100*	%D ≤ 30%

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1,1,2,2-Tetrachloroethane	0.05	30	70 – 130	60 – 130	%D ≤ 30%
Propylbenzene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
1,3,5-Trimethylbenzene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
1,2,4-Trimethylbenzene	0.05	20	80 – 120	70 – 130	%D ≤ 20%
1,3-Dichlorobenzene	0.05	30	70 – 130	50 – 110**	%D ≤ 30%
1,4-Dichlorobenzene	0.05	30	70 – 130	50 – 110**	%D ≤ 30%
1,2-Dichlorobenzene	0.05	30	70 – 130	50 – 110**	%D ≤ 30%
Naphthalene	0.05	30	70 – 130	5-80*	%D ≤ 30%

*Acceptance limits based on desorption efficiency studies
**60 – 130% for WMS

Table 2. Internal Standard

Analyte	CCV IS (%R)	Sample IS (%)R
2-Fluorotoluene	50 – 200	50 – 200

Table 3. Surrogate

Analyte	%R
Toluene-d8	70-130

Table 4. Sampling Rates for "Standard" target compounds (RAD 130)

Analytes	Reporting Limit (µg/mL)	Reporting Limit (µg/sampler)	Sampling Rates for Radiello 130 Sampler (mL/min)
Chloromethane	0.2	0.4	107*
Vinyl Chloride	0.2	0.4	90*
Ethanol	0.5	1.0	102
1,1-Dichloroethene	0.2	0.4	76*
Acetone	0.1	0.2	77
2-Propanol	0.1	0.2	52
MTBE	0.05	0.1	65
trans-1,2-Dichloroethene	0.1	0.2	60*
Hexane	0.05	0.1	66
1,1-Dichloroethane	0.05	0.1	63*
Ethyl Acetate	0.2	0.4	78
2-Butanone	0.05	0.1	79
cis-1,2-Dichloroethene	0.05	0.1	62*
Chloroform	0.05	0.1	75
Cyclohexane	0.05	0.1	54
1,1,1-trichloroethane	0.05	0.1	62
Carbon Tetrachloride	0.05	0.1	67
Benzene	0.2	0.4	80
1,2-Dichloroethane	0.05	0.1	77
Heptane	0.05	0.1	58
Trichloroethene	0.05	0.1	69
4-Methyl-2-pentanone	0.1	0.2	67
Toluene	0.05	0.1	74

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1,1,2-Trichloroethane	0.05	0.1	66*
Tetrachloroethene	0.05	0.1	59
Chlorobenzene	0.05	0.1	68
Ethylbenzene	0.05	0.1	68
m,p-Xylene	0.05	0.1	70
o-Xylene	0.05	0.1	65
Styrene	0.05	0.1	61
1,1,2,2-Tetrachloroethane	0.05	0.1	60*
Propylbenzene	0.05	0.1	57
1,3,5-Trimethylbenzene	0.05	0.1	53*
1,2,4-Trimethylbenzene	0.05	0.1	50
1,3-Dichlorobenzene	0.05	0.1	59*
1,4-Dichlorobenzene	0.05	0.1	51
1,2-Dichlorobenzene	0.05	0.1	58*
Naphthalene	0.05	0.1	25

*Estimated rate

Table 5. Sampling Rates for "Standard" target compounds (OVM)

Analytes	Reporting Limit (µg/mL)	Reporting Limit (µg/sampler)	Sampling Rates for OVM Sampler (mL/min)
Chloromethane	0.2	0.30	Estimated
Vinyl Chloride	0.2	0.30	41
Ethanol	0.5	0.75	44
1,1-Dichloroethene	0.2	0.30	Estimated
Acetone	0.1	0.15	40
2-Propanol	0.1	0.15	39
MTBE	0.05	0.075	38
trans-1,2-Dichloroethene	0.1	0.15	Estimated
Hexane	0.05	0.075	32
1,1-Dichloroethane	0.05	0.075	33
Ethyl Acetate	0.2	0.3	34
2-Butanone	0.05	0.075	36
cis-1,2-Dichloroethene	0.05	0.075	Estimated
Chloroform	0.05	0.075	34
Cyclohexane	0.05	0.075	32
1,1,1-trichloroethane	0.05	0.075	31
Carbon Tetrachloride	0.05	0.075	30
Benzene	0.2	0.30	80
1,2-Dichloroethane	0.05	0.075	33
Heptane	0.05	0.075	29
Trichloroethene	0.05	0.075	31
4-Methyl-2-pentanone	0.1	0.15	30
Toluene	0.05	0.075	31
1,1,2-Trichloroethane	0.05	0.075	30
Tetrachloroethene	0.05	0.075	28
Chlorobenzene	0.05	0.075	29
Ethylbenzene	0.05	0.075	27
m,p-Xylene	0.05	0.075	27

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o-Xylene	0.05	0.075	27
Styrene	0.05	0.075	29
1,1,2,2-Tetrachloroethane	0.05	0.075	28
Propylbenzene	0.05	0.075	Estimated
1,3,5-Trimethylbenzene	0.05	0.075	Estimated
1,2,4-Trimethylbenzene	0.05	0.075	Estimated
1,3-Dichlorobenzene	0.05	0.075	Estimated
1,4-Dichlorobenzene	0.05	0.075	27.8
1,2-Dichlorobenzene	0.05	0.075	27.8
Naphthalene	0.05	0.075	25

Table 6. Sampling Rates for "Standard" target compounds (SKC Badge)

Analytes	Reporting Limit (µg/mL)	Reporting Limit (µg/sampler)	Sampling Rates for Indoor Air Applications „Zero Face velocity" (mL/min)	Sampling Rates for Outdoor/Worker Exposure (mL/min)
Chloromethane	0.2	0.4	Estimated	Estimated
Vinyl Chloride	0.2	0.4	17.4*	21.2*
Ethanol	0.5	1.0	11.7	20.0
1,1-Dichloroethene	0.2	0.4	9.74	12.3
Acetone	0.1	0.2	12.6	15.2
2-Propanol	0.1	0.2	9.65	20.0
MTBE	0.05	0.1	9.84	13.6
trans-1,2-Dichloroethene	0.1	0.2	10.2	14.8
Hexane	0.05	0.1	9.59	14.3
1,1-Dichloroethane	0.05	0.1	13.14	12.3
Ethyl Acetate	0.2	0.4	9.26	13.75
2-Butanone	0.05	0.1	6.27	17.1
cis-1,2-Dichloroethene	0.05	0.1	11.54*	14.8*
Chloroform	0.05	0.1	10.14	13
Cyclohexane	0.05	0.1	7.76	15.6
1,1,1-trichloroethane	0.05	0.1	9.40	14.1
Carbon Tetrachloride	0.05	0.1	10.41	14.1
Benzene	0.2	0.4	10.69	16
1,2-Dichloroethane	0.05	0.1	11.79	14.2
Heptane	0.05	0.1	9.38	13.9
Trichloroethene	0.05	0.1	11.47	14.9
4-Methyl-2-pentanone	0.1	0.2	7.29	13.5
Toluene	0.05	0.1	8.90	14.5
1,1,2-Trichloroethane	0.05	0.1	9.64	12.5
Tetrachloroethene	0.05	0.1	10.02	13.1
Chlorobenzene	0.05	0.1	8.23*	18.74*
Ethylbenzene	0.05	0.1	9.02	12.9
m,p-Xylene	0.05	0.1	8.1	12.65
o-Xylene	0.05	0.1	8.11	11.9
Styrene	0.05	0.1	9.04	13.7
1,1,2,2-Tetrachloroethane	0.05	0.1	9.98	11.8
Propylbenzene	0.05	0.1	6.41*	11.69*
1,3,5-Trimethylbenzene	0.05	0.1	7.29*	12.1*

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1,2,4-Trimethylbenzene	0.05	0.1	9.92*	12.1*
1,3-Dichlorobenzene	0.05	0.1	5.79*	12.7*
1,4-Dichlorobenzene	0.05	0.1	10.74*	12.7*
1,2-Dichlorobenzene	0.05	0.1	4.97*	12.6*
Naphthalene	0.05	0.1	2.71*	13.7*

*Calculated by SKC

Table 7. Summary of Calibration and QC Procedures

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Tuning Criteria	Prior to calibration and at the start of every 12-hour clock	Method 8260B tuning criteria	Correct problem then repeat tune.
Initial 5-Point Calibration (ICAL)	Prior to sample analysis	Compound criteria in Table 1	Correct problem then repeat initial calibration. Analysis may proceed if no more than 2 VOCs exceed criteria or 5% of VOCs if short list is used. Narrate exceedances.
Initial Calibration Verification (ICV)	Once per initial calibration	See Table 1	Verify concentrations and standard preparation. Analysis may proceed if no more than 2 VOCs exceed criteria or 5% of VOCs if short list is used. Narrate exceedances.
Continuing Calibration Verification (CCV)	At the start of every shift immediately after the BFB tune check	See "CCV criteria" column in Table 1	Investigate and correct the problem, up to and including recalibration if necessary. Analysis may proceed if no more than 2 VOCs exceed criteria or 5% of VOCs if short list is used. Associated results are flagged.
Internal Standards (IS)	IS is added at the time of extraction to all samples and QC samples.	**For CCVs:** Area counts 50 –200%; RT w/in 30 seconds of midpoint in ICAL **For blanks, samples and non-CCV QC checks:** Area counts 50 – 200%; RT within 20 seconds of RT in CCV	**CCV:** Inspect and correct system prior to sample analysis. **For blanks:** Inspect the system and re-analyze the blank. **For samples:** Re-analyze; if out again, flag data.
Surrogate	Surrogate is added at the time of extraction to all samples and QC samples.	70–130%	Same as for Internal Standards.
Solvent Blanks	Immediately after the calibration standard or after samples with high concentrations	Results less than laboratory reporting limit (see Table 1)	Re-aliquot and re-analyze solvent blank. If detections remain, flag concentrations in associated samples.

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Extracted Laboratory Blank	Each set of up to 20 samples	Results less than the reporting limit	Flag sample concentrations in associated extraction batch.
Extracted Laboratory Control Spike (LCS)	Each set of up to 20 samples	See Table 1.	Re-aliquot and re-analyze the extract. If within limits, report the re-analysis. Otherwise, narrate.
Extracted Laboratory Control Spike Duplicate (LCSD)	Each set of up to 20 samples	%RPD ≤ 25%	Analysis may proceed if no more than 2 VOCs exceed criteria (or 5% for short list exceed criteria). Run a 3rd time; perform corrective action or narrate as appropriate.

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LABORATORY QUALITY ASSURANCE MANUAL

(LQAM)

Appendix F

Facility Map

(Two total pages including this cover)

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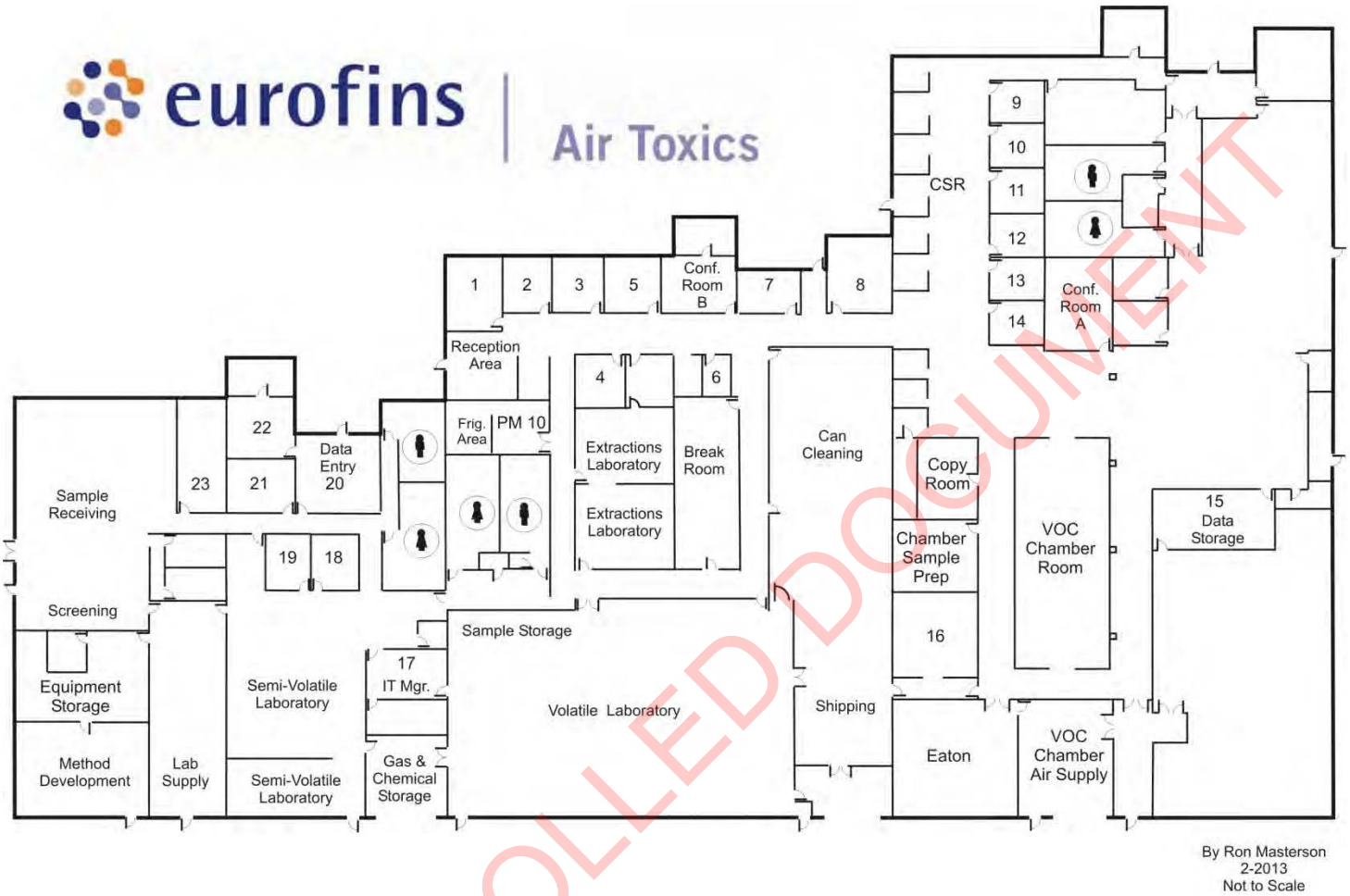

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LABORATORY QUALITY ASSURANCE MANUAL

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Appendix G

References

(Two total pages including this cover)

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APPENDIX B
HEALTH AND SAFETY PLAN (HASP)

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LOS PEÑASQUITOS LAGOON TMDL SEDIMENT MONITORING

HEALTH AND SAFETY PLAN (HASP)

Prepared by Amec Foster Wheeler

June 2015

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) addresses health and safety concerns related to the fieldwork associated with the Los Peñasquitos Lagoon TMDL Sediment Monitoring Program. All Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) field team members and subcontractor's field teams must become familiar with the contents of this HASP and site-specific safety concerns.

The project Health and Safety Officer (HSO) will be responsible for assuring that all members of the field team are familiar with the requirements of the HASP and appropriate training is receive for their specific roles. The Field Sampling Manager is responsible for enforcing site-specific health and safety protocols (SSHS), including emergency response/contingency plans. The Project Manager and individual employees have the authority to suspend work, if necessary, due to health and safety concerns.

1.1 Field Activities

Amec Foster Wheeler is responsible for field activities associated with the Los Peñasquitos Lagoon TMDL Sediment Monitoring. The following sub-sections discuss these field activities in detail.

1.1.1 Site Selection of Monitoring Sites

Site selection for this project will include physical exertion (walking, standing, and bending) in extreme weather conditions (heat and cold) for moderate periods over uneven surfaces. This will also include moderate lifting (manhole covers, sample, and equipment handling).

1.1.2 Equipment Installation and Maintenance

Equipment installation and maintenance may include working with power tools in wet or damp environments and the operation of heavy equipment. Confined space entry may be required for equipment installation and occasional maintenance activities.

1.1.3 Travel

Travel to and from the selected monitoring sites will occur for equipment installation, maintenance activities, and pre- and post-storm event monitoring. Although automated equipment lessens required travel during storm events, some access is typically necessary during storm events and often at night to: document observations, collect samples, take field measurements, replace composite sample containers, and repair any malfunctioning equipment.

Establishment of Work Zones and Traffic Control

Field crew will make efforts to locate equipment in safe work zones, far from high-traffic and high-use areas. If equipment location is adjacent to high-traffic and high-use zone, field crew will implement appropriate traffic control measures, as needed.

Removal and Replacement of Sample Containers

Composite sample containers will need to be removed and replaced immediately after each storm event and, perhaps, during storm events.

1.2 Traffic Safety

Working near roadways presents inherent risks dominated by the possibility of errant vehicles. The motoring public is largely made of conscientious drivers operating well-maintained equipment. However, some percentage of vehicles on the road at any given time may be marginally under control due to driving factors like distractions, fatigue, confusion, or inadequate training, as well as mechanical factors like vehicle age and condition. Any or all of these factors may contribute to a vehicle leaving the traveled lanes and entering the work site.

Traffic load, posted speed limits, and proximity to travel lanes all have a direct relation to the probability of worker exposure to errant vehicles. Work site selection can reduce the exposure potential relating to these factors. In all cases, the Field Sampling Manager will make the final evaluation of the appropriateness for performing work based on present site conditions.

Field teams will use signs, cones, and flashing amber lights when necessary based on traffic control permitting requirements for sites within the roadway in order to inform motorists of activities that may influence roadway travel conditions. To avoid shoulder and lane closures, field crew will attempt to pull vehicles off the road and perform work as far away from the edge of pavement as possible.

Field members will work in teams and utilize high-visibility, reflective (Class 2 ANSI/ISEA minimum) vests and/or clothing. Steel-toed boots and hard hats are required for the entrant during confined space entry, if overhead hazards exist, and/or if operating heavy equipment when working along roadsides.

When working on or near the shoulder, physical barriers will be employed whenever possible to protect workers from errant vehicles. Physical barriers include barrier vehicles, guardrails, fences, and other fabricated or natural objects capable of slowing, stopping, or diverting an errant vehicle. Barrier vehicles are to be unoccupied, positioned upstream of the work zone, and parked to prevent the vehicle from rolling into the work area or active travel lanes if struck by an errant vehicle. Workers not protected by a physical barrier should employ the use of a lookout.

1.3 Confined Space Entry

There are no known instances where a permitted confined space entry will be necessary during the course of site selection or monitoring. However, non-permitted confined space entry may occur for installation of automated equipment. The Project Manager, the Site Health and Safety Officer, and the Health and Safety Director must be notified and proper procedures will be followed should a situation arise that requires a non-permitted confined space entry;

The Occupational Safety and Health Administration (OSHA) requires that all individuals entering a permitted or non-permitted confined space be trained in confined space entry, instructed in the nature of the hazards involved, the necessary precautions to be taken, and the use of protective and emergency equipment required for the job. Amec Foster Wheeler employees will be trained in confined space entry procedures prior to entry.

1.4 General Safety

In addition to traffic hazards, field teams may face a variety of potential dangers while maintaining the facilities, installing equipment, and performing environmental monitoring. Some of these dangers include:

- Slippery and wet pavements
- Unstable earth and surfaces
- Poor visibility, especially at night and during rain storms
- Back injuries
- Swift moving water
- Falling into water/drowning
- Trip and fall
- Pinching and/or crushing of hands and fingers
- Dermal/eye contact with storm contaminants
- Walking on uneven/unstable surfaces
- Ergonomic injury/repetitive motions
- Heat illness
- Prolonged weather exposure (heat and cold)
- Power tools and heavy equipment
- Lifting heavy objects
- Electrical hazards posed by field equipment malfunctions
- Light to moderate carrying of field equipment and supplies

- Transients, muggers, and criminals
- Sharp edges and broken glass
- Animals and other biological hazards

Field crews are trained to take the following safety while working in the field:

- Stay away from the edges of fast moving water and avoid areas of pooled water by roadways. These areas are usually slippery during rainy conditions.
- If sampling is required within the riparian zone, use a lifeline and a personal flotation device. Always have one crewmember serve as a lookout on shore.
- Watch your step while walking in and around rocks in the riparian zones. Wet rocks are usually sharp and slippery during rainy conditions.
- Never work alone at night or during the day. Two people are required during each site visit. Stay within shouting distance of your partner at all times.
- Avoid leaving materials, tools, and equipment lying around where someone can trip over them.
- Maximize lighting at all times, especially at night.
- Always keep a charged cellular phone or other means of communication nearby.
- Do not use your back to lift heavy objects. When lifting objects weighing 50 lbs or more, two or more employees are required to excuse the lift.
- Never use drugs or alcohol while working.
- Always wear an orange reflective vest during site visits, when necessary and a hard hat when overhead dangers exist.
- Always wear appropriate footwear, including steel-toed boots and/or rain boots.
- Use a buddy system if working over water. Stay clear from edges of swift water.
- Do not use power tools and equipment unless trained in the proper use and care of the specific tools.
- Always wear eye protection when working with tools or chemicals.
- Wear nitrile gloves when collecting samples.
- Respond appropriately to protect workers from the elements, including but not limited to sun, rain and wind.
- Avoid excessive sun or hat exposure. Wear a hat, sunglasses, and sunscreen.
- Be knowledgeable of heat illness symptoms and know how to respond to them.
- If lightning is observed while working in the field, seek shelter.

- Be aware of your surroundings. Watch for plants, animals, people, and tripping hazards. Clean up the work area before leaving.
- Always carry sufficient amounts of drinking water. Employees should drink at a minimum one quart of water per hour for the entire shift.
- Be aware of the nearest toilet and hand washing facilities.

Field crew will complete the following personal hygiene procedures:

- Toilet and hand washing facilities will not be located on-site. An alternate sanitary facility and its specific location will be identified prior to beginning work activities.
- Personal protective equipment (PPE) shall be kept clean, in good repair, and on-site. Safety devices, including protective clothing worn by the employee, shall not be interchanged among the employees until properly cleaned.
- All equipment will be free of gross hazardous and non-hazardous waste (i.e., mud and/or soil) upon leaving the work site.

2.0 SITE-SPECIFIC HASP

This section provides information on unique hazards and necessary precautions for the types of sites included in this program. Emergency response phone numbers and routes to the nearest medical emergency facilities can be found at the end of this appendix. Field personnel will be responsible for adhering to the requirements of this HASP and the task-specific Activity Hazard Assessments (AHAs) for installation, maintenance, and wet/dry weather monitoring. If additional measures are required due to unforeseen or temporary changes to the work environment, the on-site team leader will make the final judgment for any safety procedure changes.

2.1 Errant Vehicles

There is a minimum to moderate exposure hazard from errant vehicles while accessing most sites. While personnel are station along the shoulder of the roadway, they should be located far away from the roadway lanes and face the approaching traffic. Field crew should always remain on the side of the vehicle furthest from the travel lane and employ the use of flashing amber lights. A lookout person is required if two or more field crew are engaged in exposed activity within 30 feet of the travel lane. Exposed activities may occur before, during, and after storm events.

2.2 Chemical Hazards

Chemical hazards may collect within pipes and/or collection channels. Chemicals can be corrosive and can burn exposed flesh, and/or they can cause severe illness if they are absorbed through the skin or ingested. When encountering a suspected liquid hazard exercise caution. Use a pH meter or pH test paper to test for corrosives, but always assume that a hazardous chemical is present and wear personal protective clothing. Chemical hazards other than those described above could be hazardous chemicals that have precipitated or accumulated on the sides of the pipes and channels. Table 2-1 lists potential chemicals in gaseous form that may be on-site along with each chemical's Permissible Exposure Limit (PEL), Immediately Dangerous to Life and Health (IDHL), odor thresholds, and routes of entry. Personnel will use proper PPE to guard against chemical hazards.

Table 2-1: Toxic Gases

Name	Source/Use	IDLH[a] Ceiling PPM	STEL[b] PPM/Exposure Time (min)	TWA[c] 8-Hr PEL[d] PPM	Odor Threshold
Acetone	Solvent	2,500	1,000/15	750	100
Carbon Dioxide	Comb./Sludge	40,000	30,000/15	5,000	–
Carbon Monoxide	Comb./Exhaust	1,200	–	25	–
Chlorine	–	10	1/15	0.5	–
Gasoline	Fuel	–	500/15	300	0.005-10
Hydrogen Sulfide	Sewer/Sludge Coal Gas/Petrol	100	15/15	10	Impairs smell
Nitrogen Oxides	–	20	1/15	–	–
Ozone	Electric Arcing	5	0.3/15	0.1	0.015

[a] IDLH = Immediately Dangerous to Life and Health
[b] STEL = Short Term Exposure Limit
[c] TWA = Time Weighted Average
[d] PEL = Permissible Exposure Limit

2.3 Physical Hazards

Always be alert and use adequate protection to safeguard against the physical hazards associated with working at these sites. The most common hazard encountered is falling or tripping, potentially causing mechanical injury. The following are some other common hazards:

- Sharp objects
- "Flash" flooding
- High water
- Strong currents
- Electrical risk
- Moving vehicles
- Travel risk
- Uneven walking surfaces
- Heat and cold
- Plant and structures

2.4 Biological Hazards

Beware of poison ivy, poison oak, and other plants that cause allergic reactions. Also, use protection against bacteria and other micro biota that could be present in the water and sediment. Be aware that mosquitoes are a common vector for human diseases. Use caution when unlocking or opening equipment that has been stored on-site as black widows, snakes, and other venomous or stinging insects/animals may be present.

2.5 Drowning Hazards

Working in or near the rivers may expose field crews to potential drowning hazards. The chance of drowning can occur along the riverbed or in the water. However, drowning hazards are more common when wading or standing in the river. Do not enter the water if the field team leader determines the conditions to be unsafe or if posted advisories are along the sampling site. Field crew should equip personal floatation devices, lifelines, and all necessary PPE.

2.6 Heat Stress

Heat stress is a major hazard, especially for workers wearing protective clothing. The same protective materials that shield the body from chemical exposure also limit the dissipation of body heat and moisture causing dangerous rises in body temperature. In its early stages, heat stress can cause rashes, cramps, discomfort, and drowsiness, resulting in impaired functional ability that threatens the safety of both the individual and coworkers. Untreated heat stress can lead to heat stroke and even death. Careful training and frequent monitoring of personnel who wear protective clothing, sensible scheduling of work and rest periods, and frequent replacement of fluids can protect against this hazard.

There is a possibility that heat stress may occur on this project during the dry weather season. Workers will be instructed to take breaks in a shaded area in order to mitigate any symptoms or signs of heat stress, should they exist. Symptoms of heat stress include excessive sweating, muscle spasms, thirst, dizziness, rapid/weak pulse, flushed skin, loss of consciousness, or convulsions. Breaks will last until symptoms are relieved and/or the pulse of the worker is less than 110 beats per minute. As a preventive measure, workers will be instructed to drink fluids to keep hydrated. For severe heat stress, workers will be examined by a health-care professional as soon as possible.

Additionally, during periods of hot weather or other potential heat stress conditions the following safe work practices must apply:

- Be knowledgeable of heat illness symptoms during periods of abnormally high heat.
- Watch for symptoms of heat illness which include excessive sweating, headache, poor concentration, muscle pain, headache, cramping, dizziness, and irritability, loss of coordination, vomiting, blurry vision, confusion, and lack of sweating, fainting, or seizures.
- Drink plenty of water throughout the day. Employees working in the heat need to drink (4) eight ounce glasses of water per hour, including at the start of the shift to replace the water lost due to sweat. This is the minimum amount per person that should be brought into the field.
- Dress appropriately for weather conditions. Wear lightweight, light-colored, loose clothing. Wear a wide brimmed hat if possible.
- Wear sunscreen and sunglasses.

- Use cool compresses to stay cool. Placing cool compresses on the back of the neck lowers the body's core temperature.
- Take scheduled rest periods and spend them in the shade.
- Tell your supervisor immediately if you feel you may be getting sick from the heat.
- Know the locations of the closest drinking water supplies.
- Keep track of your coworkers. You all need to look out for each other.
- Know how to contact emergency services in the event of heat illness, how to effectively report the work location to 911, and the location of the nearest hospital and the quickest route for arrival.

2.7 Cold Exposure

Storms can bring unusual cold weather to the area. Low temperatures and wet conditions are potential dangers that can cause cold injury (frostbite and hypothermia) and impair the ability to work. Wear appropriate clothing, have warm shelter readily available (vehicle), carefully schedule work and rest periods, and monitor workers' physical conditions to safeguard against these types of hazards. Should an employee begin to feel the effects of cold injury they should be removed from cold exposure in a manner that will not cause their condition to worsen or cause their body to go into shock.

2.8 Dehydration

Dehydration can occur during wet or dry weather, and in heat or in cold. High altitudes, limited shade, extreme temperatures, and physical exertion increase the rate of dehydration. Drink plenty of water throughout the day. Ensure sufficient amounts of water are brought to the site for each employee. Take water and rest breaks in shaded areas where possible and safe to do so.

2.9 Worker Safety

Only personnel trained in the use of the proper safety equipment will be allowed to complete the required tasks.

2.9.1 Personal Protective Equipment (PPE)

Recommended PPE includes hard hats, safety vests, work boots, gloves, and sturdy clothing. This equipment will not only help protect against numerous potential hazards but will also allow others to identify you as belonging to the work site. Additionally, Nitrile, latex, or other plastic-based PPE will be used by any personnel who is likely to come in contact with storm water runoff as the contents of the water are unknown and potentially dangerous.

The safety officer will select the PPE ensemble based on the potential hazards. **Each worker will be responsible for maintaining his or her own PPE**.

In general the following in Table 2-2 applies:

Table 2-2: Standard PPE for Non-Hazardous Work Zones

Activity	Head/Face/Ear	Foot	Hands	Respirator	Clothing
General Site Labor	Hard hat (Class B or E)[c] Safety glasses Hearing protection[b]	Steel-toed boots w/ puncture resistant insoles.[d]	Leather/Nitrile gloves as needed	None[a]	Shirt w/sleeves. Long pants. High-visibility reflective vest Personal Floatation Device
Supervision of Work	Hard hat (Class B or E) [c] Safety glasses Hearing protection[b]	Steel-toed boots w/ puncture resistant insoles. [d]	Leather/Nitrile gloves as needed	None[a]	Shirt w/sleeves. Long pants. High-visibility reflective vest Personal Floatation Device
Site Visitors	Hard hat (Class B or E) [c] Safety glasses Hearing protection[b]	Steel-toed boots w/ puncture resistant insoles. [d]	None	None[a]	Shirt w/sleeves. Long pants. High-visibility reflective vest Personal Floatation Device

[a] Voluntary use of respirators is authorized for nuisance dusts and exposures known to be below PEL levels. For nuisance dust use disposable N, R, or P95 or better (dispose of N or R types daily and P type weekly). For odors use half mask with OV or OV/P95 or better (change at start of week).
[b] Hearing protection with adequate noise reduction rating (if consistently exposed to greater than 85 decibels steady-state or 140 decibels impulse). Workers should use clean hands to insert earplugs. Ample supplies of disposable earplugs will be available onsite.
[c] Hard hats are required only when overhead dangers exist.
[d] Steel-toed boots are required at sites when site conditions pose a risk to foot injury from falling objects.

2.9.2 Special Circumstances

Extreme caution will be used when maintaining pole-mounted equipment. Qualified individuals will perform this task with proper equipment due to the danger of potential slips and falls.

2.10 Traffic Safety

A shoulder or lane closure will be considered for all work near the shoulder that is expected to last more than 30 minutes.

2.11 Sample Collection Safety

The following precautions will be taken while collecting samples at the monitoring stations:

- Use plenty of light during the evening hours and use reflective ANSI/ISEA class II or III vests (23 CFR Part 634) if working near the roadway.

- Always wear protective gloves, a reflective vest, and a hard hat when overhead dangers exist.
- Wear boots and foul weather gear during rainy weather.
- Keep a safe distance from the water body if deep water, rapid flow or flash flood conditions are present or imminent. Employees should avoid unstable banks, employ the use of a grab pole, and use a lifeline and a personal flotation device. If the Field Team Leader determines the site is unsafe to collect samples even with proper precautions in place, do not collect samples.
- Do not eat or smoke while on the job site.
- Use proper lifting techniques and get assistance when moving coolers and large sample containers or other equipment.
- Handle glass sample containers with care. If a glass container breaks, employees should wear proper PPE and use appropriate cleanup equipment.

2.12 Installation Safety

The following precautions will be taken while installing the storm water monitoring stations:

- Use plenty of light during the evening hours and use reflective ANSI/ISEA class II or III vests (23 CFR Part 634) if working near the roadway.
- Always wear protective gloves, a reflective vest, and a hard hat when overhead dangers exist.
- Wear boots and foul weather gear during rainy weather.
- Do not eat or smoke while on the job site.
- Use proper lifting techniques and get assistance when moving coolers and large sample composite containers or other equipment.

2.13 Medical Emergency Procedures

Even with full safety awareness and compliance by field teams, medical emergencies can and do occur. To handle minor injuries, field teams will have a basic first aid kit on-site at all times. Table 2-3 is a list of site-specific emergency contacts.

Table 2-3: Emergency Contacts

Name	Phone	Comments
San Diego Police Department	911	From cell phone
Jeremy Burns, Project Manager	858-342-8828	From cell phone

Document all information related to the accident or incident that resulted in injury or damage and report it to the Consultant Safety Manager.

The nearest hospital is located at:

Scripps Memorial Hospital
9888 Genesee Avenue
La Jolla, CA 92037

Maps showing driving routes are presented in Figures 2-1 – 2-3 show the location and driving route to the nearest hospital. Driving directions to the hospital from each monitoring location are also provided in Tables 2-4 through 2-6.

Table 2-4: Driving Directions to Hospital from Site CCC

Site	Directions/Hospital Name/Address		Hospital Route Map Figure No.
Carroll Canyon Creek (CCC)	• Head north on Roselle St toward Sorrento Valley Blvd • Turn left to merge onto I-5 S • Take the Genesee Ave exit • Keep left at the fork, follow signs for Genesee Avenue E • Turn left at Genesee Ave • Turn right at light with sign indicating Scripps Hospital • Hospital entrance will be on the right.	Scripps Memorial Hospital 9888 Genesee Ave La Jolla, CA 92037	Figure 2-1

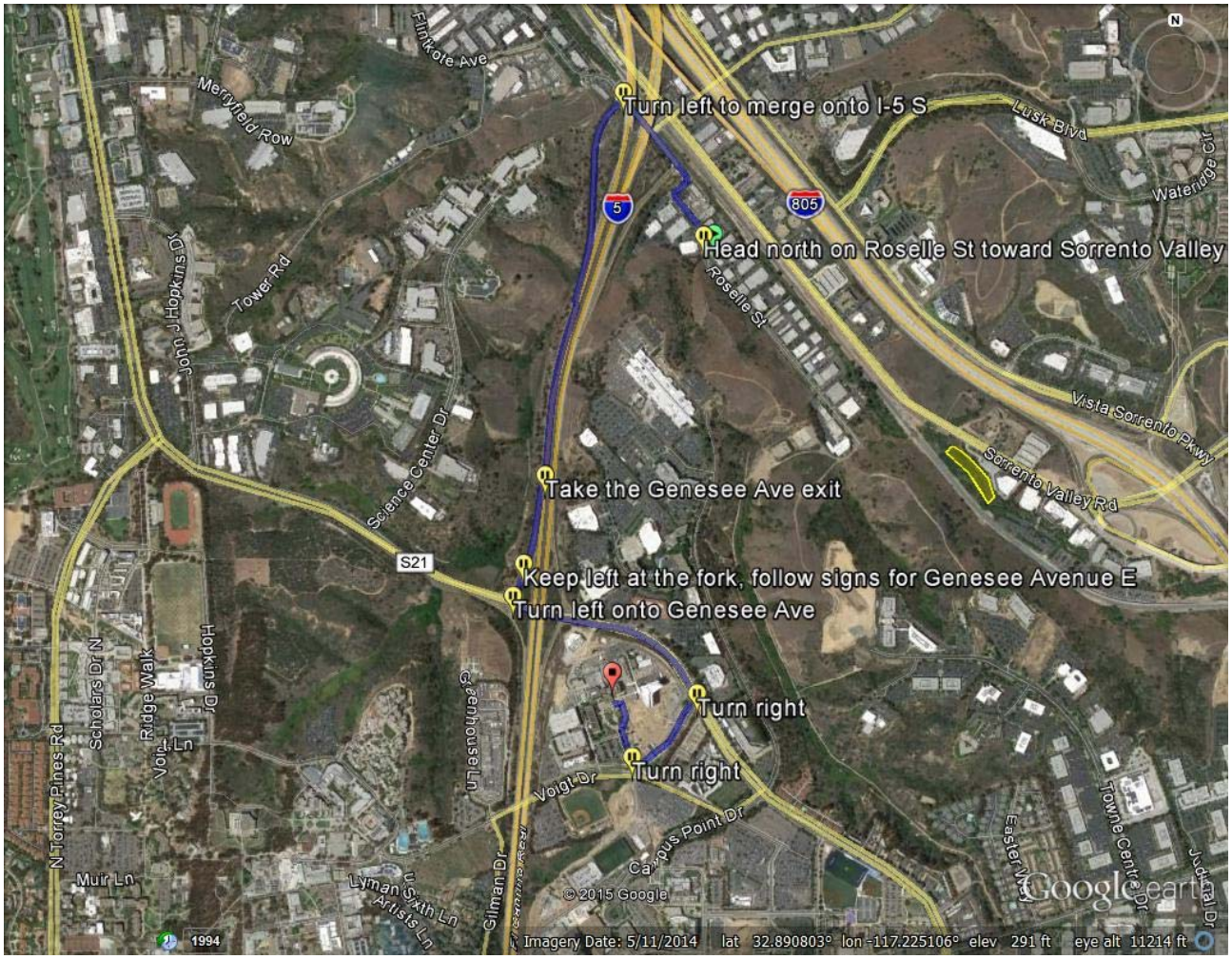

Figure 2-1: Hospital Map from Site CCC

Table 2-5: Driving Directions to Hospital from Site LPC

Site	Directions/Hospital Name/Address		Hospital Route Map Figure No.
Los Peñasquitos Creek (LPC)	• Head northwest on Vista Sorrento Pkwy toward Calle Mar De Mariposa • Turn left onto Carmel Mountain Rd • Turn left onto the I-5 S ramp • Merge onto I-5 Local Bypass S • Take the exit on the left onto I-5S toward Downton • Take the Genesee Ave exit • Keep left at the fork, follow signs for Genesee Avenue E • Turn left at Genesee Ave • Turn right at light with sign indicating Scripps Hospital • Hospital entrance will be on the right.	Scripps Memorial Hospital 9888 Genesee Ave La Jolla, CA 92037	Figure 2-2

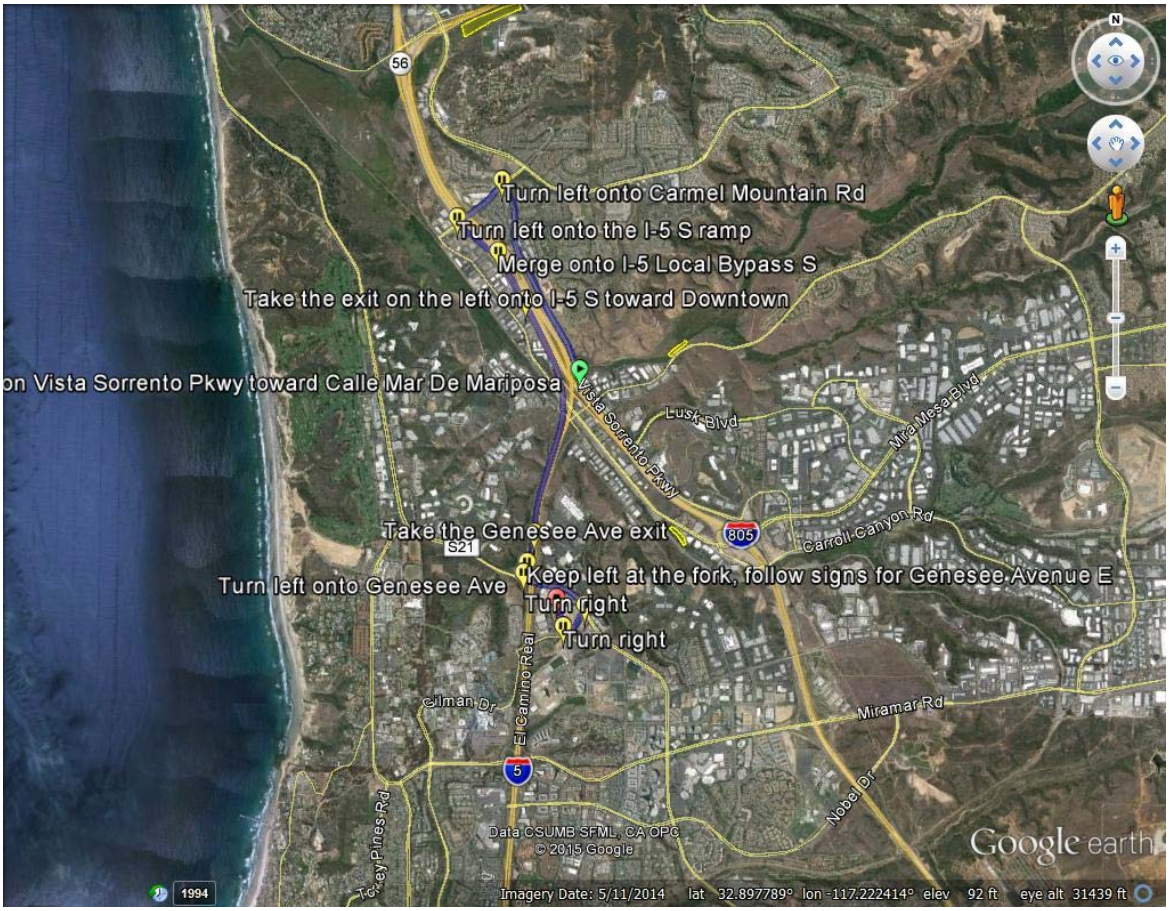

Figure 2-2: Hospital Map from Site LPC

Table 2-6: Driving Directions to Hospital from Site CVC

Site	Directions/Hospital Name/Address		Hospital Route Map Figure No.
Carmel Valley Creek (CVC)	• Head northwest on Sorrento Valley Rd toward Carmel Valley Rd • Turn right onto Carmel Valley Rd • Turn right to merge onto I-5 S toward San Diego • Merge onto I-5 S • Keep right at the fork to stay on I-5 S, follow signs for Interstate 5 S/ Downtown • Take the Genesee Ave exit • Keep left at the fork, follow signs for Genesee Avenue E • Turn left at Genesee Ave • Turn right at light with sign indicating Scripps Hospital • Hospital entrance will be on the right.	Scripps Memorial Hospital 9888 Genesee Ave La Jolla, CA 92037	Figure 2-3

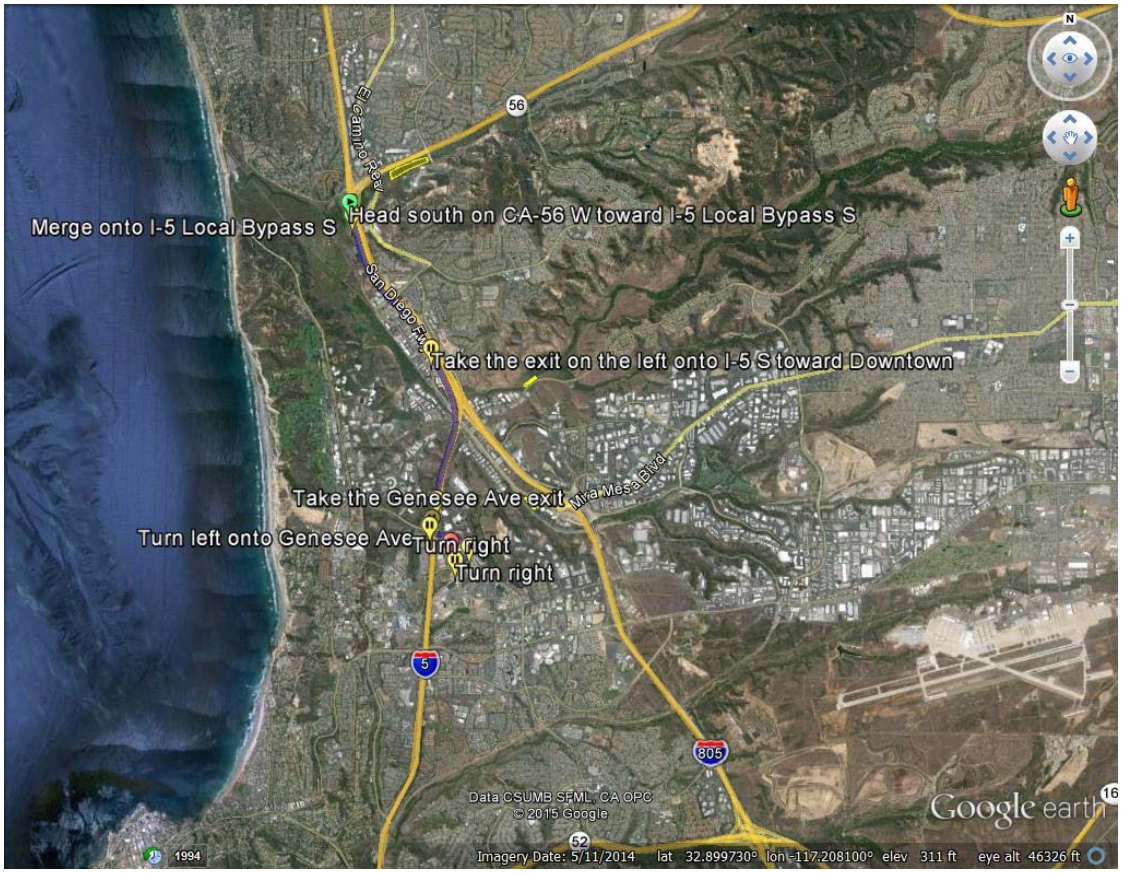

Figure 2-3: Hospital Map from Site CVC

2.14 Hazardous Spills

Hazardous substances may be used for various purposes at and around the site. When working with hazardous substances, leaks and spills are always a concern. At sites within close proximity to the roadway, the potential also exists of hazardous spills originating from traveling vehicles.

A spill may present a number of hazards. The specific hazards depend on the substance(s) involved. Among the possibilities are:

- Fire
- Explosion
- Contamination of individuals who come in contact with the spilled substance
- Hazardous substances entering the water supply

Spill response procedures are designed to minimize the risk of any of these things occurring as a result of a spill or, at the very least, reducing the degree of hazard. The primary concern of spill contamination is to stop or retard the spill before it becomes serious. Field teams working with potentially hazardous materials will be trained in the use of proper PPE, the safe usage or handling of the substances, and contingency plans for spills and leaks.

2.15 Tailgate Safety Training

The Health and Safety Officer or another designated Safety Officer will conduct tailgate safety training sessions regularly. These meetings will be held on-site prior to work operations. New personnel working on-site will be required to attend a tailgate meeting prior to work operations. The purpose of the safety-training meeting is to ensure that field team members understand and will abide by all safety and potential emergency response measures that may be necessary for the wellbeing of the field team.

The following items will be discussed at each safety meeting:

- Traffic safety
- Safe entering and exiting of the highway or roadway
- Use of personal protective clothing and equipment
- Potential chemical and physical hazards and how to deal with them
- Nearest hospital information
- Emergency response procedures
- Any other site-specific safety issues

Field team members must sign the tailgate safety training meeting form in acknowledgment of understanding all issues discussed. An example of a tailgate meeting form is included Figure 2-4.

Figure 2-4: Tailgate Safety Meeting Form

Amec Foster Wheeler SITE VISIT TAILGATE SAFETY MEETING

PROJECT: Los Peñasquitos Lagoon TMDL Sediment Monitoring

Safety Topics Discussed
1. Protective clothing and equipment: PPE – Use the PPE that has been provided to prevent injury, exposure to the cold and wet weather conditions, and exposure to storm water runoff containing diluted levels of chemical contaminates. Typical PPE may consist of a hard hat, rain gear, rubber rain boots, nitrile gloves, pants, long sleeved shirts, and layered clothing. Use and wear a PFD if working over water, on piers or quay walls. Equipment and tool use - Use proper equipment for the task in the prescribed manner to prevent injury.
2. Chemical hazards: Dermal/eye contact with water contaminants - Do not overfill containers. Fill bottles only to the neck or as otherwise instructed by the site manager. Food, drinks, or cigarettes will not be consumed while observing or sampling. Prior to handling food, drinks, or cigarettes, personnel will wash hands and face.
3. Physical hazards: Lifting - Use proper equipment and lifting and motion technique. Do not twist back, stay balanced and use your legs. Vehicle Hazards - Be aware of vehicle operations in your area. Make eye contact with vehicle operators on approaching equipment. Driving - Drive vehicle in accordance with company policy. Drive in right lane, use 3-second rule or extended distance from vehicle in front of you. Drive speed limit or slower depending on road conditions and visibility. Working over water - Exercise care and alertness when working around water. Use the buddy system and wear a PFD if working over water, on piers or quay walls.
4. Vehicle Hazards: - Wear seat belt while vehicle is in motion. - Do not exceed the posted speed limit. - Reduce speed in adverse weather conditions. - Always drive with headlights on. Drive vehicle in accordance with Amec Foster Wheeler policy. Drive in the right lane and maintain an extended distance (3-second rule) from the vehicle in front of you. - Drive defensively and follow traffic regulations. - Do not make sudden lane changes, weave through traffic, or cut off other drivers. - Do not use handheld or hands-free cell phones while driving. - Stop at intersections and give the right-of-way to other vehicles and pedestrians. - Check tires for proper inflation.
5. Traffic Hazards: - Be aware of vehicles in your area. Make eye contact with approaching vehicle operators. - In dry weather, a reflective vest should be worn for maximum visibility in high-traffic areas. - Use traffic cones around the work zone in high-traffic areas. - At least two persons must be present to perform any work in high-traffic areas. One of these persons must monitor approaching traffic for any potential hazards. Watch out for moving vehicles and equipment and equipment.

Safety Topics Discussed (continued)

6. Environmental and biohazards: Dangerous animals and insect bites and stings – Be aware of your surroundings and watch for dangerous animals and insects such as spiders and snakes. Wear appropriate clothing such as pants, long sleeved shirts, and steel toe boots. Watch for Poison oak, Poison ivy, and other biological hazards.
7. Equipment hazards: Pinch Points – Use proper equipment in the prescribed manner in conjunction with proper lifting techniques to avoid pinch points. Wear leather or canvas gloves - to protect the hands when performing manual labor, such as moving manhole covers.
8. Decontamination procedures: If an exposure or eye contact occurs, respond with appropriate first aid and immediately notify the supervisor.
9. Other: The supervisor will review any other significant safety matters specific to sampling and observation activities at this site.
10. Review of emergency procedures: In case of emergency, immediately dial 911.

Attendance Signature

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____

_____
Amec Foster Wheeler Representative's Signature

APPENDIX C
FIELD FORMS

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Los Peñasquitos Lagoon TMDL Sediment Monitoring

SITE DESCRIPTION

Station ID: _____ **Station Name:** _____ **Date/Time:** _____

Sample Collector: _____ **Data Recorder:** _____

Current Level (in): _____ **Current Flow (cfs):**_____ **Current Total Rainfall (in):**_____

FLOW CHARACTERISTICS

Clarity ☐ Clear ☐ Cloudy ☐ Opaque ☐ Turbid ☐ Other: _____

Sediment Accumulation ☐ None ☐ Left, Mid, Right Bank (specify location, facing downstream direction)

POLLUTOGRAPH SAMPLE COLLECTION

Pollutograph Sample Number	Date	Time	Flow (cfs)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

EVENT TOTALS

Total Number of Samples	Total Flow (cf)	Total Rainfall (in)

BEDLOAD SAMPLE COLLECTION

Bedload Sampler 1 Location (facing downstream): _____ Install time(s): _____ Removal time(s): _____

Bedload Sampler 2 Location (facing downstream): _____ Install time(s): _____ Removal time(s): _____

COMMENTS: _____

_____

_____

_____

_____

Los Penasquitos Lagoon TMDL Sediment Monitoring

Bedload Sample Collection

Date: _____

Site ID	Transect Length (Feet)	Collection Width (Feet) (25%, 50%, and 75% of Transect Width)		
Example: CV	*39*	*10*	*20*	*30*

NOTE: WHEN DETERMINING BANK LOCATION FACE DOWNSTREAM R M L

Downstream

Additional Notes:

Los Penasquitos Lagoon TMDL Sediment Monitoring
Post Storm Pebble Count

Date: _____ Site ID: _____

Time: _____ Sampler(s): _____

Size Class	Count (Tally)	Count	Frequency (%)	Notes
>= 180				
<128				
<90				
<64				
<45				
<32				
<22.6				
<16				
<11				
<8				
<5.6				
<4				
	Totals			

Additional Observations/Notes/Photo ID's

APPENDIX B
SUSPENDED SEDIMENT CONCENTRATION DATA SUMMARY AND LABORATORY REPORTS

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Table B-1.
Wet Weather Event 1 SSC Concentrations

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Carroll Canyon Creek	1	1/5/2016	11:18	120
	2		11:48	300
	3		12:48	89
	4		13:48	170
	5		14:48	1000
	6		15:17	1500
	7		15:47	1900
	8		16:17	2800
	9		17:17	2200
	10		17:47	4200
	11		18:47	2400
	12		19:17	1300
	13		20:17	1000
	14		21:17	470
	15		21:47	360
	16	1/6/2016	0:16	180
	17		1:46	200
	18		3:46	76
	19		5:46	19
	20		9:16	12
	21		12:45	11
Carmel Valley Creek	1	1/5/2016	12:48	26
	2		14:30	67
	3		15:00	42
	4		15:30	36
	5		16:00	32
	6		16:30	25
	7		17:00	31
	8		18:00	29
	9		19:00	26
	10		20:00	24
	11		21:00	29
	12		21:30	30

Table B-1.
Wet Weather Event 1 SSC Concentrations (continued)

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Carmel Valley Creek (continued)	13	1/5/2016	23:00	240
	14	1/6/2016	0:33	160
	15		1:33	120
	16		3:03	91
	17		4:33	51
	18		5:33	55
	19		7:03	39
	20		11:36	12
	21		13:36	22
Los Peñasquitos Creek	1	1/5/2016	15:00	11
	2		15:59	9
	3		16:59	11
	4		17:59	22
	5		18:59	170
	6		20:59	140
	7		21:59	440
	8		22:59	500
	9		23:58	460
	10	1/6/2016	0:58	370
	11		1:58	360
	12		2:58	360
	13		3:58	370
	14		6:58	220
	15		8:58	210
	16		12:57	110

Table B-2.
Wet Weather Event 2 SSC Concentrations

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Carroll Canyon Creek	1	1/31/2016	7:54	130
	2		8:23	120
	3		8:53	350
	4		9:23	340
	5		9:53	180
	6		10:23	220
	7		10:53	170
	8		12:22	59
	9		13:22	37
	10		14:22	22
	11		14:52	170
	12		15:22	180
	13		15:52	470
	14		16:22	270
	15		16:52	210
	16		18:53	53
	17		21:52	12
	18	2/1/2016	3:52	ND
Carmel Valley Creek	1	1/31/2016	4:31	ND
	2		7:00	10
	3		8:00	33
	4		9:00	52
	5		10:00	35
	6		10:30	24
	7		11:30	17
	8		12:00	20
	9		12:34	14
	10		14:03	8
	11		15:03	17
	12		15:33	260
	13		16:03	63
	14		16:33	41
	15		17:03	20
	16		19:43	9

Table B-2.
Wet Weather Event 2 SSC Concentrations (continued)

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Carmel Valley Creek (continued)	17	1/31/2016	21:43	8
	18		23:43	9
	19	2/1/2016	2:43	ND
	20		13:43	ND
Los Peñasquitos Creek	1	1/31/2016	15:05	40
	2		16:05	19
	3		17:05	21
	4		18:05	20
	5		19:05	17
	6		20:05	16
	7		21:05	17
	8		22:05	18
	9		23:05	18
	10	2/1/2016	0:05	20
	11		2:05	15
	12		4:05	13
	13		8:05	9
	14		14:05	5

Table B-3.
Wet Weather Event 3 SSC Concentrations

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Carroll Canyon Creek	1	3/6/16	09:44	69
	2		10:13	160
	3		10:43	240
	4		11:13	140
	5		12:13	56
	6		14:13	14
	7	3/7/16	09:10	89
	8		09:39	530
	9		10:09	2200
	10		10:39	59
	11		11:09	480
	12		11:39	370
	13		13:39	82
	14		15:39	27
	15		17:39	94
	16		19:09	300
	17		21:39	78
	18		22:09	78
	19		23:39	59
	20		23:39	52
	21	3/8/16	00:09	48
	22		1:39	42
Carmel Valley Creek	1	3/6/16	00:48	4.0
	2		01:47	4.0
	3		02:17	7.0
	4		04:17	6.0
	5		05:17	7.0
	6		05:47	7.0
	7		06:17	8.0
	8		09:17	40
	9		09:47	82
	10		10:17	60
	10a		10:59	23
	11		11:28	13
	12		13:35	37
	13	3/7/16	09:16	550
	14		09:46	23
	15		10:46	10

Table B-3.
Wet Weather Event 3 SSC Concentrations (continued)

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Carmel Valley Creek (continued)	15a	3/7/16	11:16	16
	16		11:45	13
	17		12:46	10
	18		13:46	8.0
	19		14:46	8.0
	20		15:46	6.0
	21		16:16	10
	22		17:16	6.0
	22a		18:19	4
	23		19:49	ND
	24		21:49	ND
	25		13:49	ND
	26	3/8/16	00:49	ND
	27		02:19	ND
	28		4:49	ND
Los Peñasquitos Creek	1	3/6/16	21:11	9.0
	2		21:11	11
	3		12:11	11
	4	3/7/16	03:11	ND
	5		07:11	ND
	6		10:41	6.0
	6a		16:41	5
	7		17:41	13
	8		17:41	12
	9		19:41	13
	10		20:41	9.0
	11		22:41	4.0
	12	3/8/16	22:41	ND
	13		12:41	ND

CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	02/17/16 14:27
		Received Date:	01/08/16 12:15
		Turn Around:	Normal
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos Sediment Transport Mon. 2014-15
Phone:	(858) 514-6464		
Fax:	(858) 278-5300		
Work Order(s):	6A08046		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 01/08/16 12:15 with the Chain of Custody document. The samples were received in good condition, at 5.1 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:

Reviewed by:

Hai Van Nguyen
Project Manager

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CCC-SSC-WW1-01	KB	6A08046-01	Water	01/05/16 11:18
CCC-SSC-WW1-02	KB	6A08046-02	Water	01/05/16 11:48
CCC-SSC-WW1-03	KB	6A08046-03	Water	01/05/16 12:48
CCC-SSC-WW1-04	KB	6A08046-04	Water	01/05/16 13:48
CCC-SSC-WW1-05	KB	6A08046-05	Water	01/05/16 14:48
CCC-SSC-WW1-06	KB	6A08046-06	Water	01/05/16 15:17
CCC-SSC-WW1-07	KB	6A08046-07	Water	01/05/16 15:47
CCC-SSC-WW1-08	KB	6A08046-08	Water	01/05/16 16:17
CCC-SSC-WW1-09	KB	6A08046-09	Water	01/05/16 17:17
CCC-SSC-WW1-10	KB	6A08046-10	Water	01/05/16 17:47
CCC-SSC-WW1-11	KB	6A08046-11	Water	01/05/16 18:47
CCC-SSC-WW1-12	KB	6A08046-12	Water	01/05/16 19:17
CCC-SSC-WW1-13	KB	6A08046-13	Water	01/05/16 20:17
CCC-SSC-WW1-14	KB	6A08046-14	Water	01/05/16 21:17
CCC-SSC-WW1-15	KB	6A08046-15	Water	01/05/16 21:47
CVC-SSC-WW1-01	KB	6A08046-16	Water	01/05/16 12:48
CVC-SSC-WW1-02	KB	6A08046-17	Water	01/05/16 14:30
CVC-SSC-WW1-03	KB	6A08046-18	Water	01/05/16 15:00
CVC-SSC-WW1-04	KB	6A08046-19	Water	01/05/16 15:30
CVC-SSC-WW1-05	KB	6A08046-20	Water	01/05/16 16:00
CVC-SSC-WW1-06	KB	6A08046-21	Water	01/05/16 16:30
CVC-SSC-WW1-07	KB	6A08046-22	Water	01/05/16 17:00
CVC-SSC-WW1-08	KB	6A08046-23	Water	01/05/16 18:00
CVC-SSC-WW1-09	KB	6A08046-24	Water	01/05/16 19:00
CVC-SSC-WW1-10	KB	6A08046-25	Water	01/05/16 20:00
CVC-SSC-WW1-11	KB	6A08046-26	Water	01/05/16 21:00
CVC-SSC-WW1-12	KB	6A08046-27	Water	01/05/16 21:30
CVC-SSC-WW1-13	KB	6A08046-28	Water	01/05/16 23:33
CVC-SSC-WW1-14	KB	6A08046-29	Water	01/06/16 00:33
CVC-SSC-WW1-15	KB	6A08046-30	Water	01/06/16 01:33
LPC-SSC-WW1-01	KB	6A08046-31	Water	01/05/16 15:00
LPC-SSC-WW1-02	KB	6A08046-32	Water	01/05/16 15:59
LPC-SSC-WW1-03	KB	6A08046-33	Water	01/05/16 16:59
LPC-SSC-WW1-04	KB	6A08046-34	Water	01/05/16 17:59
LPC-SSC-WW1-05	KB	6A08046-35	Water	01/05/16 18:59
LPC-SSC-WW1-06	KB	6A08046-36	Water	01/05/16 20:59
LPC-SSC-WW1-07	KB	6A08046-37	Water	01/05/16 21:59
LPC-SSC-WW1-08	KB	6A08046-38	Water	01/05/16 22:59
LPC-SSC-WW1-09	KB	6A08046-39	Water	01/05/16 23:58
LPC-SSC-WW1-10	KB	6A08046-40	Water	01/06/16 00:58
LPC-SSC-WW1-11	KB	6A08046-41	Water	01/06/16 01:58
LPC-SSC-WW1-12	KB	6A08046-42	Water	01/06/16 02:58
LPC-SSC-WW1-13	KB	6A08046-43	Water	01/06/16 03:58

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
LPC-SSC-WW1-14	KB	6A08046-44	Water	01/06/16 06:58
LPC-SSC-WW1-15	KB	6A08046-45	Water	01/06/16 08:58
CCC-SSC-WW1-16	KB	6A08046-46	Water	01/06/16 00:16
CCC-SSC-WW1-17	KB	6A08046-47	Water	01/06/16 01:46
CCC-SSC-WW1-18	KB	6A08046-48	Water	01/06/16 03:46
CCC-SSC-WW1-19	KB	6A08046-49	Water	01/06/16 05:46
CCC-SSC-WW1-20	KB	6A08046-50	Water	01/06/16 09:16
CVC-SSC-WW1-15	KB	6A08046-51	Water	01/06/16 03:03
CVC-SSC-WW1-16	KB	6A08046-52	Water	01/06/16 04:33
CVC-SSC-WW1-17	KB	6A08046-53	Water	01/06/16 05:33
CVC-SSC-WW1-19	KB	6A08046-54	Water	01/06/16 07:03

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-01 CCC-SSC-WW1-01

Sampled: 01/05/16 11:18 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	01/08/16 21:49	

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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-02 **CCC-SSC-WW1-02**

Sampled: 01/05/16 11:48 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**300**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-03 **CCC-SSC-WW1-03**

Sampled: 01/05/16 12:48 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**89**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-04 **CCC-SSC-WW1-04**

Sampled: 01/05/16 13:48 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	01/08/16 21:49	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-05 CCC-SSC-WW1-05

Sampled: 01/05/16 14:48 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1000**	3.1	5.0	mg/l	1	01/08/16 21:49	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-06 **CCC-SSC-WW1-06**

Sampled: 01/05/16 15:17 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1500**	3.1	5.0	mg/l	1	01/08/16 21:49	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-07 CCC-SSC-WW1-07

Sampled: 01/05/16 15:47 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1900**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-08 CCC-SSC-WW1-08

Sampled: 01/05/16 16:17 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**2800**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-09 CCC-SSC-WW1-09

Sampled: 01/05/16 17:17 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**2200**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-10 **CCC-SSC-WW1-10**

Sampled: 01/05/16 17:47 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**4200**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-11 CCC-SSC-WW1-11

Sampled: 01/05/16 18:47 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**2400**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-12 CCC-SSC-WW1-12

Sampled: 01/05/16 19:17 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1300**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-13 **CCC-SSC-WW1-13**

Sampled: 01/05/16 20:17 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1000**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-14 **CCC-SSC-WW1-14**

Sampled: 01/05/16 21:17 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**470**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-15 CCC-SSC-WW1-15

Sampled: 01/05/16 21:47 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**360**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-16 CVC-SSC-WW1-01

Sampled: 01/05/16 12:48 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**26**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-17 CVC-SSC-WW1-02

Sampled: 01/05/16 14:30 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**67**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-18 CVC-SSC-WW1-03

Sampled: 01/05/16 15:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**42**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Reported: 02/17/16 14:27

6A08046-19 **CVC-SSC-WW1-04**

Sampled: 01/05/16 15:30 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**36**	3.1	5.0	mg/l	1	01/08/16 21:49	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-20 CVC-SSC-WW1-05

Sampled: 01/05/16 16:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0408 Prepared: 01/08/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**32**	3.1	5.0	mg/l	1	01/08/16 21:49	

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6A08046-21 **CVC-SSC-WW1-06**

Sampled: 01/05/16 16:30 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**25**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-22 CVC-SSC-WW1-07

Sampled: 01/05/16 17:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**31**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-23 CVC-SSC-WW1-08

Sampled: 01/05/16 18:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**29**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-24 CVC-SSC-WW1-09

Sampled: 01/05/16 19:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**26**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-25 CVC-SSC-WW1-10

Sampled: 01/05/16 20:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**24**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-26 **CVC-SSC-WW1-11**

Sampled: 01/05/16 21:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**29**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-27 CVC-SSC-WW1-12

Sampled: 01/05/16 21:30 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-28 CVC-SSC-WW1-13

Sampled: 01/05/16 23:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**240**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-29 CVC-SSC-WW1-14

Sampled: 01/06/16 00:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**160**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-30 **CVC-SSC-WW1-15**

Sampled: 01/06/16 01:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-31 LPC-SSC-WW1-01

Sampled: 01/05/16 15:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**11**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-32 **LPC-SSC-WW1-02**

Sampled: 01/05/16 15:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-33 **LPC-SSC-WW1-03**

Sampled: 01/05/16 16:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**11**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-34 LPC-SSC-WW1-04

Sampled: 01/05/16 17:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**22**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Reported: 02/17/16 14:27

6A08046-35 LPC-SSC-WW1-05

Sampled: 01/05/16 18:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	01/09/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-36 LPC-SSC-WW1-06

Sampled: 01/05/16 20:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**140**	3.1	5.0	mg/l	1	01/09/16 13:35	

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9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-37 LPC-SSC-WW1-07

Sampled: 01/05/16 21:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**440**	3.1	5.0	mg/l	1	01/09/16 13:35	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-38 LPC-SSC-WW1-08

Sampled: 01/05/16 22:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**500**	3.1	5.0	mg/l	1	01/09/16 13:35	

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AMEC Environment & Infrastructure
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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-39 **LPC-SSC-WW1-09**

Sampled: 01/05/16 23:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**460**	3.1	5.0	mg/l	1	01/09/16 13:35	

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AMEC Environment & Infrastructure
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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-40 LPC-SSC-WW1-10

Sampled: 01/06/16 00:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0428 Prepared: 01/09/16 08:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**370**	3.1	5.0	mg/l	1	01/09/16 13:35	

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9177 Sky Park Court, Ste A
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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-41 **LPC-SSC-WW1-11**

Sampled: 01/06/16 01:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**360**	3.1	5.0	mg/l	1	01/09/16 15:09	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-42 LPC-SSC-WW1-12

Sampled: 01/06/16 02:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**360**	3.1	5.0	mg/l	1	01/09/16 15:09	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-43 LPC-SSC-WW1-13

Sampled: 01/06/16 03:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**370**	3.1	5.0	mg/l	1	01/09/16 15:09	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-44 LPC-SSC-WW1-14

Sampled: 01/06/16 06:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**220**	3.1	5.0	mg/l	1	01/09/16 15:09	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-45 LPC-SSC-WW1-15

Sampled: 01/06/16 08:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**210**	3.1	5.0	mg/l	1	01/09/16 15:09	

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AMEC Environment & Infrastructure
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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-46 CCC-SSC-WW1-16

Sampled: 01/06/16 00:16 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**180**	3.1	5.0	mg/l	1	01/09/16 15:09	

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AMEC Environment & Infrastructure
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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-47 CCC-SSC-WW1-17

Sampled: 01/06/16 01:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**200**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-48 CCC-SSC-WW1-18

Sampled: 01/06/16 03:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**76**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-49 **CCC-SSC-WW1-19**

Sampled: 01/06/16 05:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**19**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-50 CCC-SSC-WW1-20

Sampled: 01/06/16 09:16 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	01/09/16 15:09	

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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-51 CVC-SSC-WW1-15

Sampled: 01/06/16 03:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**91**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-52 CVC-SSC-WW1-16

Sampled: 01/06/16 04:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**51**	3.1	5.0	mg/l	1	01/09/16 15:09	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-53 CVC-SSC-WW1-17

Sampled: 01/06/16 05:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**55**	3.1	5.0	mg/l	1	01/09/16 15:09	

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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

6A08046-54 CVC-SSC-WW1-19

Sampled: 01/06/16 07:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**39**	3.1	5.0	mg/l	1	01/09/16 15:09	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

QUALITY CONTROL SECTION

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AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6A0408 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0408-BLK1)					Analyzed: 01/08/16 21:49						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6A0428 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0428-BLK1)					Analyzed: 01/09/16 13:35						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6A0440 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0440-BLK1)					Analyzed: 01/09/16 15:09						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:27

Notes and Definitions

ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	02/17/16 14:14
		Received Date:	01/12/16 08:00
		Turn Around:	Normal
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos Special Study 2014-2015
Phone:	(858) 514-6464		
Fax:	(858) 278-5300		
Work Order(s):	6A12003		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 01/12/16 08:00 with the Chain of Custody document. The samples were received in good condition, at 3.1 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:

Reviewed by:

Hai Van Nguyen
Project Manager

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/12/16 08:00
Date Reported: 02/17/16 14:14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CCC-SSC-WW1-21	KB	6A12003-01	Water	01/06/16 12:45
CVC-SSC-WW1-20	KB	6A12003-02	Water	01/06/16 11:36
CVC-SSC-WW1-21	KB	6A12003-03	Water	01/06/16 13:36
LPC-SSC-WW1-16	KB	6A12003-04	Water	01/06/16 12:57

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/12/16 08:00
Date Reported: 02/17/16 14:14

6A12003-01 **CCC-SSC-WW1-21**

Sampled: 01/06/16 12:45 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0570 Prepared: 01/12/16 13:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**11**	3.1	5.0	mg/l	1	01/12/16 15:00	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/12/16 08:00
Date Reported: 02/17/16 14:14

6A12003-02 **CVC-SSC-WW1-20**

Sampled: 01/06/16 11:36 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0570 Prepared: 01/12/16 13:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	01/12/16 15:00	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/12/16 08:00
Date Reported: 02/17/16 14:14

6A12003-03 **CVC-SSC-WW1-21**

Sampled: 01/06/16 13:36 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0570 Prepared: 01/12/16 13:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**22**	3.1	5.0	mg/l	1	01/12/16 15:00	

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AMEC Environment & Infrastructure
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Date Received: 01/12/16 08:00
Date Reported: 02/17/16 14:14

6A12003-04 **LPC-SSC-WW1-16**

Sampled: 01/06/16 12:57 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0570 Prepared: 01/12/16 13:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**110**	3.1	5.0	mg/l	1	01/12/16 15:00	

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Date Received: 01/12/16 08:00
Date Reported: 02/17/16 14:14

QUALITY CONTROL SECTION

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
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Date Received: 01/12/16 08:00
Date Reported: 02/17/16 14:14

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6A0570 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0570-BLK1)					Analyzed: 01/12/16 15:00						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/12/16 08:00
Date Reported: 02/17/16 14:14

Notes and Definitions

ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	02/29/16 11:50
		Received Date:	02/03/16 16:50
		Turn Around:	Normal
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos Sediment Transport Mon. 2015-16
Phone:	(858) 514-6464		
Fax:	(858) 278-5300		
Work Order(s):	6B03070		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 02/03/16 16:50 with the Chain of Custody document. The samples were received in good condition, at 1.8 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:

Reviewed by:

Hai Van Nguyen
Project Manager

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CCC-SSC-WW2-01	KB	6B03070-01	Water	01/31/16 07:54
CCC-SSC-WW2-02	KB	6B03070-02	Water	01/31/16 08:23
CCC-SSC-WW2-03	KB	6B03070-03	Water	01/31/16 08:53
CCC-SSC-WW2-04	KB	6B03070-04	Water	01/31/16 09:23
CCC-SSC-WW2-05	KB	6B03070-05	Water	01/31/16 09:53
CCC-SSC-WW2-06	KB	6B03070-06	Water	01/31/16 10:23
CCC-SSC-WW2-07	KB	6B03070-07	Water	01/31/16 10:53
CCC-SSC-WW2-08	KB	6B03070-08	Water	01/31/16 12:22
CCC-SSC-WW2-09	KB	6B03070-09	Water	01/31/16 13:22
CCC-SSC-WW2-10	KB	6B03070-10	Water	01/31/16 14:22
CCC-SSC-WW2-11	KB	6B03070-11	Water	01/31/16 14:52
CCC-SSC-WW2-12	KB	6B03070-12	Water	01/31/16 15:22
CCC-SSC-WW2-13	KB	6B03070-13	Water	01/31/16 15:52
CCC-SSC-WW2-14	KB	6B03070-14	Water	01/31/16 16:22
CCC-SSC-WW2-15	KB	6B03070-15	Water	01/31/16 16:52
CCC-SSC-WW2-16	KB	6B03070-16	Water	01/31/16 18:53
CCC-SSC-WW2-17	KB	6B03070-17	Water	01/31/16 21:52
CCC-SSC-WW2-18	KB	6B03070-18	Water	02/01/16 03:52
CVC-SSC-WW2-01	KB	6B03070-19	Water	01/31/16 04:31
CVC-SSC-WW2-02	KB	6B03070-20	Water	01/31/16 07:00
CVC-SSC-WW2-03	KB	6B03070-21	Water	01/31/16 08:00
CVC-SSC-WW2-04	KB	6B03070-22	Water	01/31/16 09:00
CVC-SSC-WW2-05	KB	6B03070-23	Water	01/31/16 10:00
CVC-SSC-WW2-06	KB	6B03070-24	Water	01/31/16 10:30
CVC-SSC-WW2-07	KB	6B03070-25	Water	01/31/16 11:30
CVC-SSC-WW2-08	KB	6B03070-26	Water	01/31/16 12:00
CVC-SSC-WW2-09	KB	6B03070-27	Water	01/31/16 12:34
CVC-SSC-WW2-10	KB	6B03070-28	Water	01/31/16 14:03
CVC-SSC-WW2-11	KB	6B03070-29	Water	01/31/16 15:03
CVC-SSC-WW2-12	KB	6B03070-30	Water	01/31/16 15:33
CVC-SSC-WW2-13	KB	6B03070-31	Water	01/31/16 16:03
CVC-SSC-WW2-14	KB	6B03070-32	Water	01/31/16 16:33
CVC-SSC-WW2-15	KB	6B03070-33	Water	01/31/16 17:03
CVC-SSC-WW2-16	KB	6B03070-34	Water	01/31/16 19:43
CVC-SSC-WW2-17	KB	6B03070-35	Water	01/31/16 21:43
CVC-SSC-WW2-18	KB	6B03070-36	Water	01/31/16 23:43
CVC-SSC-WW2-19	KB	6B03070-37	Water	02/01/16 02:43
CVC-SSC-WW2-20	KB	6B03070-38	Water	02/01/16 13:43
LPC-SSC-WW2-01	KB	6B03070-39	Water	01/31/16 15:05
LPC-SSC-WW2-02	KB	6B03070-40	Water	01/31/16 16:05
LPC-SSC-WW2-03	KB	6B03070-41	Water	01/31/16 17:05
LPC-SSC-WW2-04	KB	6B03070-42	Water	01/31/16 18:05
LPC-SSC-WW2-05	KB	6B03070-43	Water	01/31/16 19:05

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
LPC-SSC-WW2-06	KB	6B03070-44	Water	01/31/16 20:05
LPC-SSC-WW2-07	KB	6B03070-45	Water	01/31/16 21:05
LPC-SSC-WW2-08	KB	6B03070-46	Water	01/31/16 22:05
LPC-SSC-WW2-09	KB	6B03070-47	Water	01/31/16 23:05
LPC-SSC-WW2-10	KB	6B03070-48	Water	02/01/16 00:05
LPC-SSC-WW2-11	KB	6B03070-49	Water	02/01/16 02:05
LPC-SSC-WW2-12	KB	6B03070-50	Water	02/01/16 04:05
LPC-SSC-WW2-13	KB	6B03070-51	Water	02/01/16 08:05
LPC-SSC-WW2-14	KB	6B03070-52	Water	02/01/16 14:05

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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AMEC Environment & Infrastructure
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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-01 CCC-SSC-WW2-01

Sampled: 01/31/16 07:54 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**130**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-02 CCC-SSC-WW2-02

Sampled: 01/31/16 08:23 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	02/04/16 12:30	

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AMEC Environment & Infrastructure
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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-03 CCC-SSC-WW2-03

Sampled: 01/31/16 08:53 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**350**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-04 CCC-SSC-WW2-04

Sampled: 01/31/16 09:23 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**340**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-05 CCC-SSC-WW2-05

Sampled: 01/31/16 09:53 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**180**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-06 CCC-SSC-WW2-06

Sampled: 01/31/16 10:23 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**220**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-07 CCC-SSC-WW2-07

Sampled: 01/31/16 10:53 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-08 CCC-SSC-WW2-08

Sampled: 01/31/16 12:22 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**59**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-09 CCC-SSC-WW2-09

Sampled: 01/31/16 13:22 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**37**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-10 CCC-SSC-WW2-10

Sampled: 01/31/16 14:22 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**22**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-11 CCC-SSC-WW2-11

Sampled: 01/31/16 14:52 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-12 CCC-SSC-WW2-12

Sampled: 01/31/16 15:22 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**180**	3.1	5.0	mg/l	1	02/04/16 12:30	

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AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-13 CCC-SSC-WW2-13

Sampled: 01/31/16 15:52 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**470**	3.1	5.0	mg/l	1	02/04/16 12:30	

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AMEC Environment & Infrastructure
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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-14 CCC-SSC-WW2-14

Sampled: 01/31/16 16:22 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**270**	3.1	5.0	mg/l	1	02/04/16 12:30	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-15 CCC-SSC-WW2-15

Sampled: 01/31/16 16:52 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**210**	3.1	5.0	mg/l	1	02/04/16 12:30	

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AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-16 CCC-SSC-WW2-16

Sampled: 01/31/16 18:53 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**53**	3.1	5.0	mg/l	1	02/04/16 12:30	

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AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-17 CCC-SSC-WW2-17

Sampled: 01/31/16 21:52 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	02/04/16 12:30	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-18 CCC-SSC-WW2-18

Sampled: 02/01/16 03:52 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	02/04/16 12:30	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-19 CVC-SSC-WW2-01

Sampled: 01/31/16 04:31 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	02/04/16 12:30	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-20 CVC-SSC-WW2-02

Sampled: 01/31/16 07:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0294 Prepared: 02/04/16 09:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	02/04/16 12:30	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-21 CVC-SSC-WW2-03

Sampled: 01/31/16 08:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**33**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-22 CVC-SSC-WW2-04

Sampled: 01/31/16 09:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**52**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-23 CVC-SSC-WW2-05

Sampled: 01/31/16 10:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**35**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-24 CVC-SSC-WW2-06

Sampled: 01/31/16 10:30 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**24**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-25 CVC-SSC-WW2-07

Sampled: 01/31/16 11:30 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**17**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-26 CVC-SSC-WW2-08

Sampled: 01/31/16 12:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-27 CVC-SSC-WW2-09

Sampled: 01/31/16 12:34 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**14**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-28 CVC-SSC-WW2-10

Sampled: 01/31/16 14:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-29 CVC-SSC-WW2-11

Sampled: 01/31/16 15:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**17**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-30 CVC-SSC-WW2-12

Sampled: 01/31/16 15:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**260**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-31 CVC-SSC-WW2-13

Sampled: 01/31/16 16:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**63**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-32 CVC-SSC-WW2-14

Sampled: 01/31/16 16:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**41**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-33 CVC-SSC-WW2-15

Sampled: 01/31/16 17:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-34 CVC-SSC-WW2-16

Sampled: 01/31/16 19:43 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-35 CVC-SSC-WW2-17

Sampled: 01/31/16 21:43 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-36 CVC-SSC-WW2-18

Sampled: 01/31/16 23:43 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-37 CVC-SSC-WW2-19

Sampled: 02/01/16 02:43 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-38 CVC-SSC-WW2-20

Sampled: 02/01/16 13:43 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-39 LPC-SSC-WW2-01

Sampled: 01/31/16 15:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**40**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-40 LPC-SSC-WW2-02

Sampled: 01/31/16 16:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0295 Prepared: 02/04/16 09:22 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**19**	3.1	5.0	mg/l	1	02/04/16 15:32	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-41 LPC-SSC-WW2-03

Sampled: 01/31/16 17:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**21**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-42 LPC-SSC-WW2-04

Sampled: 01/31/16 18:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-43 **LPC-SSC-WW2-05**

Sampled: 01/31/16 19:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**17**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-44 **LPC-SSC-WW2-06**

Sampled: 01/31/16 20:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**16**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-45 LPC-SSC-WW2-07

Sampled: 01/31/16 21:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**17**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-46 LPC-SSC-WW2-08

Sampled: 01/31/16 22:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**18**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-47 LPC-SSC-WW2-09

Sampled: 01/31/16 23:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**18**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-48 LPC-SSC-WW2-10

Sampled: 02/01/16 00:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-49 **LPC-SSC-WW2-11**

Sampled: 02/01/16 02:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**15**	3.1	5.0	mg/l	1	02/04/16 14:20	

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9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-50 LPC-SSC-WW2-12

Sampled: 02/01/16 04:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-51 LPC-SSC-WW2-13

Sampled: 02/01/16 08:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

6B03070-52 LPC-SSC-WW2-14

Sampled: 02/01/16 14:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**5.0**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

QUALITY CONTROL SECTION

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6B0294 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0294-BLK1)					Analyzed: 02/04/16 12:30						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6B0295 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0295-BLK1)					Analyzed: 02/04/16 15:32						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6B0296 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0296-BLK1)					Analyzed: 02/04/16 14:20						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 11:50

Notes and Definitions

ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	04/01/16 10:37
		Received Date:	03/10/16 16:30
		Turn Around:	Normal
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos Special Study 2015-16
Phone:	(858) 514-6464		
Fax:	(858) 278-5300	**PO Number:**	C013106084/502515C011
Work Order(s):	6C10070		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 03/10/16 16:30 with the Chain of Custody document. The samples were received in good condition, at 5.8 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:

Reviewed by:

Hai Van Nguyen
Project Manager

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CCC-SSC-WW3-01	Client	6C10070-01	Water	03/06/16 09:44
CCC-SSC-WW3-02	Client	6C10070-02	Water	03/06/16 10:13
CCC-SSC-WW3-03	Client	6C10070-03	Water	03/06/16 10:43
CCC-SSC-WW3-04	Client	6C10070-04	Water	03/06/16 11:13
CCC-SSC-WW3-05	Client	6C10070-05	Water	03/06/16 12:13
CCC-SSC-WW3-06	Client	6C10070-06	Water	03/06/16 14:13
CCC-SSC-WW3-07	Client	6C10070-07	Water	03/07/16 09:10
CCC-SSC-WW3-08	Client	6C10070-08	Water	03/07/16 09:39
CCC-SSC-WW3-09	Client	6C10070-09	Water	03/07/16 10:09
CCC-SSC-WW3-10	Client	6C10070-10	Water	03/07/16 10:39
CCC-SSC-WW3-11	Client	6C10070-11	Water	03/07/16 11:09
CCC-SSC-WW3-12	Client	6C10070-12	Water	03/07/16 11:39
CCC-SSC-WW3-13	Client	6C10070-13	Water	03/07/16 13:39
CCC-SSC-WW3-14	Client	6C10070-14	Water	03/07/16 15:39
CCC-SSC-WW3-15	Client	6C10070-15	Water	03/07/16 17:39
CCC-SSC-WW3-16	Client	6C10070-16	Water	03/07/16 19:09
CCC-SSC-WW3-17	Client	6C10070-17	Water	03/07/16 21:39
CCC-SSC-WW3-18	Client	6C10070-18	Water	03/07/16 22:09
CCC-SSC-WW3-19	Client	6C10070-19	Water	03/07/16 23:39
CCC-SSC-WW3-20	Client	6C10070-20	Water	03/07/16 23:39
CCC-SSC-WW3-21	Client	6C10070-21	Water	03/08/16 00:09
CVC-SSC-WW3-01	Client	6C10070-22	Water	03/06/16 00:48
CVC-SSC-WW3-02	Client	6C10070-23	Water	03/06/16 01:47
CVC-SSC-WW3-03	Client	6C10070-24	Water	03/06/16 02:17
CVC-SSC-WW3-04	Client	6C10070-25	Water	03/06/16 04:17
CVC-SSC-WW3-05	Client	6C10070-26	Water	03/06/16 05:17
CVC-SSC-WW3-06	Client	6C10070-27	Water	03/06/16 05:47
CVC-SSC-WW3-07	Client	6C10070-28	Water	03/06/16 06:17
CVC-SSC-WW3-08	Client	6C10070-29	Water	03/06/16 09:17
CVC-SSC-WW3-09	Client	6C10070-30	Water	03/06/16 09:47
CVC-SSC-WW3-10	Client	6C10070-31	Water	03/06/16 10:17
CVC-SSC-WW3-11	Client	6C10070-32	Water	03/06/16 11:28
CVC-SSC-WW3-12	Client	6C10070-33	Water	03/06/16 13:35
CVC-SSC-WW3-13	Client	6C10070-34	Water	03/07/16 09:16
CVC-SSC-WW3-14	Client	6C10070-35	Water	03/07/16 09:46
CVC-SSC-WW3-15	Client	6C10070-36	Water	03/07/16 10:46
CVC-SSC-WW3-16	Client	6C10070-37	Water	03/07/16 11:45
CVC-SSC-WW3-17	Client	6C10070-38	Water	03/07/16 12:46
CVC-SSC-WW3-18	Client	6C10070-39	Water	03/07/16 13:46
CVC-SSC-WW3-19	Client	6C10070-40	Water	03/07/16 14:46
CVC-SSC-WW3-20	Client	6C10070-41	Water	03/07/16 15:46
CVC-SSC-WW3-21	Client	6C10070-42	Water	03/07/16 16:16
CVC-SSC-WW3-22	Client	6C10070-43	Water	03/07/16 17:16

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CVC-SSC-WW3-23	Client	6C10070-44	Water	03/07/16 19:49
CVC-SSC-WW3-24	Client	6C10070-45	Water	03/07/16 21:49
CVC-SSC-WW3-25	Client	6C10070-46	Water	03/07/16 13:49
CVC-SSC-WW3-26	Client	6C10070-47	Water	03/08/16 00:49
CVC-SSC-WW3-27	Client	6C10070-48	Water	03/08/16 02:19
LPC-SSC-WW3-01	Client	6C10070-49	Water	03/06/16 21:11
LPC-SSC-WW3-02	Client	6C10070-50	Water	03/06/16 21:11
LPC-SSC-WW3-03	Client	6C10070-51	Water	03/06/16 12:11
LPC-SSC-WW3-04	Client	6C10070-52	Water	03/07/16 03:11
LPC-SSC-WW3-05	Client	6C10070-53	Water	03/07/16 07:11
LPC-SSC-WW3-06	Client	6C10070-54	Water	03/07/16 10:41
LPC-SSC-WW3-07	Client	6C10070-55	Water	03/07/16 17:41
LPC-SSC-WW3-08	Client	6C10070-56	Water	03/07/16 17:41
LPC-SSC-WW3-09	Client	6C10070-57	Water	03/07/16 19:41
LPC-SSC-WW3-10	Client	6C10070-58	Water	03/07/16 20:41
LPC-SSC-WW3-11	Client	6C10070-59	Water	03/07/16 22:41
LPC-SSC-WW3-12	Client	6C10070-60	Water	03/08/16 22:41
LPC-SSC-WW3-13	Client	6C10070-61	Water	03/08/16 12:41

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-01 **CCC-SSC-WW3-01**

Sampled: 03/06/16 09:44 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**69**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-02 CCC-SSC-WW3-02

Sampled: 03/06/16 10:13 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**160**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-03 CCC-SSC-WW3-03

Sampled: 03/06/16 10:43 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**240**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-04 CCC-SSC-WW3-04

Sampled: 03/06/16 11:13 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**140**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-05 CCC-SSC-WW3-05

Sampled: 03/06/16 12:13 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**56**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-06 CCC-SSC-WW3-06

Sampled: 03/06/16 14:13 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**14**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-07 CCC-SSC-WW3-07

Sampled: 03/07/16 09:10 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**89**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-08 CCC-SSC-WW3-08

Sampled: 03/07/16 09:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**530**	3.1	5.0	mg/l	1	03/11/16 15:30	

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AMEC Environment & Infrastructure
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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-09 CCC-SSC-WW3-09

Sampled: 03/07/16 10:09 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**2200**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-10 CCC-SSC-WW3-10

Sampled: 03/07/16 10:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**59**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-11 CCC-SSC-WW3-11

Sampled: 03/07/16 11:09 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**480**	3.1	5.0	mg/l	1	03/11/16 18:51	

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AMEC Environment & Infrastructure
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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-12 CCC-SSC-WW3-12

Sampled: 03/07/16 11:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**370**	3.1	5.0	mg/l	1	03/11/16 18:51	

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AMEC Environment & Infrastructure
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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-13 CCC-SSC-WW3-13

Sampled: 03/07/16 13:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**82**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-14 CCC-SSC-WW3-14

Sampled: 03/07/16 15:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**27**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-15 CCC-SSC-WW3-15

Sampled: 03/07/16 17:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**94**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-16 CCC-SSC-WW3-16

Sampled: 03/07/16 19:09 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**300**	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-17 CCC-SSC-WW3-17

Sampled: 03/07/16 21:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**78**	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-18 CCC-SSC-WW3-18

Sampled: 03/07/16 22:09 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**78**	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-19 CCC-SSC-WW3-19

Sampled: 03/07/16 23:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**59**	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-20 CCC-SSC-WW3-20

Sampled: 03/07/16 23:39 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**52**	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-21 **CCC-SSC-WW3-21**

Sampled: 03/08/16 00:09 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**48**	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-22 CVC-SSC-WW3-01

Sampled: 03/06/16 00:48 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**4.0**	3.1	5.0	mg/l	1	03/11/16 13:51	J

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-23 **CVC-SSC-WW3-02**

Sampled: 03/06/16 01:47 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**4.0**	3.1	5.0	mg/l	1	03/11/16 13:51	J

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-24 CVC-SSC-WW3-03

Sampled: 03/06/16 02:17 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**7.0**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-25 CVC-SSC-WW3-04

Sampled: 03/06/16 04:17 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**6.0**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-26 CVC-SSC-WW3-05

Sampled: 03/06/16 05:17 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**7.0**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-27 CVC-SSC-WW3-06

Sampled: 03/06/16 05:47 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**7.0**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-28 CVC-SSC-WW3-07

Sampled: 03/06/16 06:17 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-29 CVC-SSC-WW3-08

Sampled: 03/06/16 09:17 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**40**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-30 CVC-SSC-WW3-09

Sampled: 03/06/16 09:47 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**82**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-31 CVC-SSC-WW3-10

Sampled: 03/06/16 10:17 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**60**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-32 CVC-SSC-WW3-11

Sampled: 03/06/16 11:28 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-33 CVC-SSC-WW3-12

Sampled: 03/06/16 13:35 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**37**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-34 CVC-SSC-WW3-13

Sampled: 03/07/16 09:16 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**550**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-35 CVC-SSC-WW3-14

Sampled: 03/07/16 09:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**23**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-36 CVC-SSC-WW3-15

Sampled: 03/07/16 10:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-37 CVC-SSC-WW3-16

Sampled: 03/07/16 11:45 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-38 CVC-SSC-WW3-17

Sampled: 03/07/16 12:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-39 CVC-SSC-WW3-18

Sampled: 03/07/16 13:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-40 CVC-SSC-WW3-19

Sampled: 03/07/16 14:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-41 CVC-SSC-WW3-20

Sampled: 03/07/16 15:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**6.0**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-42 CVC-SSC-WW3-21

Sampled: 03/07/16 16:16 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	03/14/16 11:40	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-43 CVC-SSC-WW3-22

Sampled: 03/07/16 17:16 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**6.0**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-44 CVC-SSC-WW3-23

Sampled: 03/07/16 19:49 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-45 CVC-SSC-WW3-24

Sampled: 03/07/16 21:49 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-46 CVC-SSC-WW3-25

Sampled: 03/07/16 13:49 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-47 CVC-SSC-WW3-26

Sampled: 03/08/16 00:49 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-48 CVC-SSC-WW3-27

Sampled: 03/08/16 02:19 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-49 LPC-SSC-WW3-01

Sampled: 03/06/16 21:11 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	03/11/16 15:30	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-50 LPC-SSC-WW3-02

Sampled: 03/06/16 21:11 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**11**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-51 LPC-SSC-WW3-03

Sampled: 03/06/16 12:11 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**11**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-52 LPC-SSC-WW3-04

Sampled: 03/07/16 03:11 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-53 LPC-SSC-WW3-05

Sampled: 03/07/16 07:11 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-54 LPC-SSC-WW3-06

Sampled: 03/07/16 10:41 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**6.0**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-55 LPC-SSC-WW3-07

Sampled: 03/07/16 17:41 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-56 LPC-SSC-WW3-08

Sampled: 03/07/16 17:41 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-57 LPC-SSC-WW3-09

Sampled: 03/07/16 19:41 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	03/14/16 10:50	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-58 LPC-SSC-WW3-10

Sampled: 03/07/16 20:41 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	03/14/16 10:50	

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9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-59 LPC-SSC-WW3-11

Sampled: 03/07/16 22:41 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**4.0**	3.1	5.0	mg/l	1	03/14/16 10:50	J

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San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-60 LPC-SSC-WW3-12

Sampled: 03/08/16 22:41 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/14/16 10:50	

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9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

6C10070-61 LPC-SSC-WW3-13

Sampled: 03/08/16 12:41 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/14/16 10:50	

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San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

QUALITY CONTROL SECTION

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AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6C0683 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0683-BLK1)					Analyzed: 03/11/16 13:51						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0699 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0699-BLK1)					Analyzed: 03/11/16 13:31						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0703 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0703-BLK1)					Analyzed: 03/11/16 15:30						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0709 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0709-BLK1)					Analyzed: 03/11/16 18:51						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0711 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0711-BLK1)					Analyzed: 03/14/16 11:40						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0788 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0788-BLK1)					Analyzed: 03/14/16 10:50						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:37

Notes and Definitions

J	Estimated conc. detected <MRL and >MDL.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then not detected at or above the MDL.
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	05/16/16 11:01
		Received Date:	03/15/16 11:40
		Turn Around:	Normal
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos TMDL Compliance 2015-16
Phone:	(858) 514-6464		
Fax:	(858) 278-5300	**PO Number:**	C013106081/502515C004
Work Order(s):	6C15066		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 03/15/16 11:40 with the Chain of Custody document. The samples were received in good condition, at 1.3 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:
This is a Supplement to the Certificate of Analysis previously issued 4/1/16 for the above referenced project to correct sample ID to reflect COC and to split report to separate projects.

Reviewed by:

Hai Van Nguyen
Project Manager

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CCC-SSC-WW3-22	RW	6C15066-02	Water	03/08/16 01:39
CVC-SSC-WW3-10a	RW	6C15066-04	Water	03/06/16 10:59
CVC-SSC-WW3-15a	RW	6C15066-05	Water	03/06/16 11:16
CVC-SSC-WW3-22a	RW	6C15066-06	Water	03/07/16 18:19
CVC-SSC-WW3-28	RW	6C15066-07	Water	03/08/16 04:49
LPC-SSC-WW3-6a	RW	6C15066-09	Water	03/07/16 16:41

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

6C15066-02 CCC-SSC-WW3-22

Sampled: 03/08/16 01:39 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**42**	3.1	5.0	mg/l	1	03/18/16 12:28	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

6C15066-04 **CVC-SSC-WW3-10a**

Sampled: 03/06/16 10:59 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**23**	3.1	5.0	mg/l	1	03/18/16 12:28	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

6C15066-05 **CVC-SSC-WW3-15a**

Sampled: 03/06/16 11:16 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**16**	3.1	5.0	mg/l	1	03/18/16 12:28	

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

6C15066-06 **CVC-SSC-WW3-22a**

Sampled: 03/07/16 18:19 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**4.0**	3.1	5.0	mg/l	1	03/18/16 12:28	J

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

6C15066-07 CVC-SSC-WW3-28

Sampled: 03/08/16 04:49 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	03/18/16 12:28	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

6C15066-09 **LPC-SSC-WW3-6a**

Sampled: 03/07/16 16:41 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**5.0**	3.1	5.0	mg/l	1	03/18/16 12:28	

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

QUALITY CONTROL SECTION

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6C1146 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C1146-BLK1)					Analyzed: 03/18/16 12:28						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:01

Notes and Definitions

J	Estimated conc. detected <MRL and >MDL.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then not detected at or above the MDL.
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

APPENDIX C
BEDLOAD AND VOLUMETRIC STREAMBED PARTICLE-SIZE ANALYSIS

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Particle Size Distribution Report

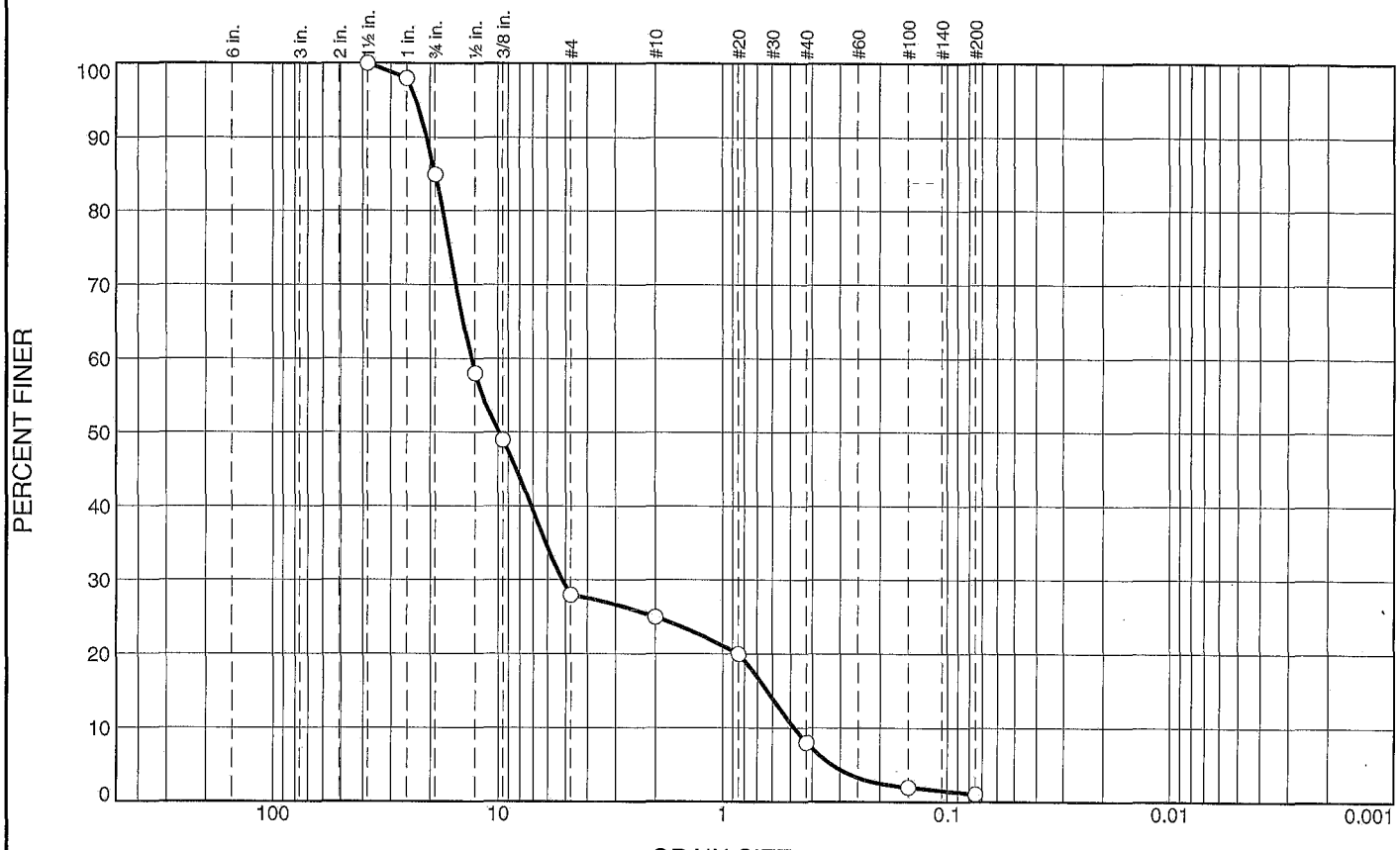

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	15.0	57.0	3.0	17.0	6.9	1.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1	98.0		
0.75"	85.0		
0.5"	58.0		
0.375"	49.0		
#4	28.0		
#10	25.0		
#20	20.0		
#40	8.0		
#100	2.0		
#200	1.1		

* (no specification provided)

Material Description

GP (#29644)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 20.7471 D_{85}= 19.0500 D_{60}= 13.2023
D_{50}= 9.9020 D_{30}= 5.1790 D_{15}= 0.6351
D_{10}= 0.4826 C_u= 27.36 C_c= 4.21

Classification

USCS= GP AASHTO=

Remarks

Sample Number: CVC-WW1-BL-LB

Date: 2/12/16

amec

Client:

Project: Los Penasquitos Sediment TMDL

Project No: 502515C004.02 **Figure** #29644

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment TMDL
Project Number: 502515C004.02
Sample Number: CVC-WW1-BL-LB
Material Description: GP (#29644)
Date: 2/12/16
USCS Classification: GP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1.5"	100.0
1	98.0
0.75"	85.0
0.5"	58.0
0.375"	49.0
#4	28.0
#10	25.0
#20	20.0
#40	8.0
#100	2.0
#200	1.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	15.0	57.0	72.0	3.0	17.0	6.9	26.9			1.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.3266	0.4826	0.6351	0.8500	5.1790	7.1430	9.9020	13.2023	17.6903	19.0500	20.7471	23.1259

Fineness Modulus	C_u	C_c
5.70	27.36	4.21

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025150004.02	NAME: Kiernan Portalik Amec Fw	LAB NO.: 29644
LOCATION: Los Penasquitos	SAMPLED BY: Kevin Stolzenbach	DATE: 1-7-16
SOURCE: Sediment TMDL	SUBMITTED BY:	DATE:
~~MATERIAL~~: Time: 1200	AUTHORIZED BY:	DATE:
BORING: CVC-WW1-BL-LB	TESTED BY: RW	DATE: 2-12-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS		
1 1/2"	0	0	100		
1"	208.9	1.8	98.2		98
3/4"	1731.2	15.3	84.7		85
1/2"	4761.2	42.1	57.9		58
3/8"	5706.1	50.5	49.5		49
#4	8081.9	71.5	28.5		28
#10	72.79	14.2	85.8	24.6	25
#20	157.88	30.9	69.1	19.7	20
#40	365.54	71.5	28.5	8.1	8
#100	480.80	94.0	6.0	1.7	2
#200	492.56	96.3	3.7	1.1	

CTB-4 = 511.5

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____
Weight of soil ~~& tare~~ (dry) 11302.4 w/o Pan
Weight of Tare 0
Weight of H20 _____
Net weight of dry soil _____
% H20 _____

WEIGHT BEFORE WASH: 11302.4 (+4)
511.5 (-4)

EQUIPMENT USED:
Scale I.D.: CW 9204
Sieve Set I.D.: Gilson - 12"
Oven I.D.: 184078 - 184077
Shaker I.D.: Gilson / Ginger

Particle Size Distribution Report

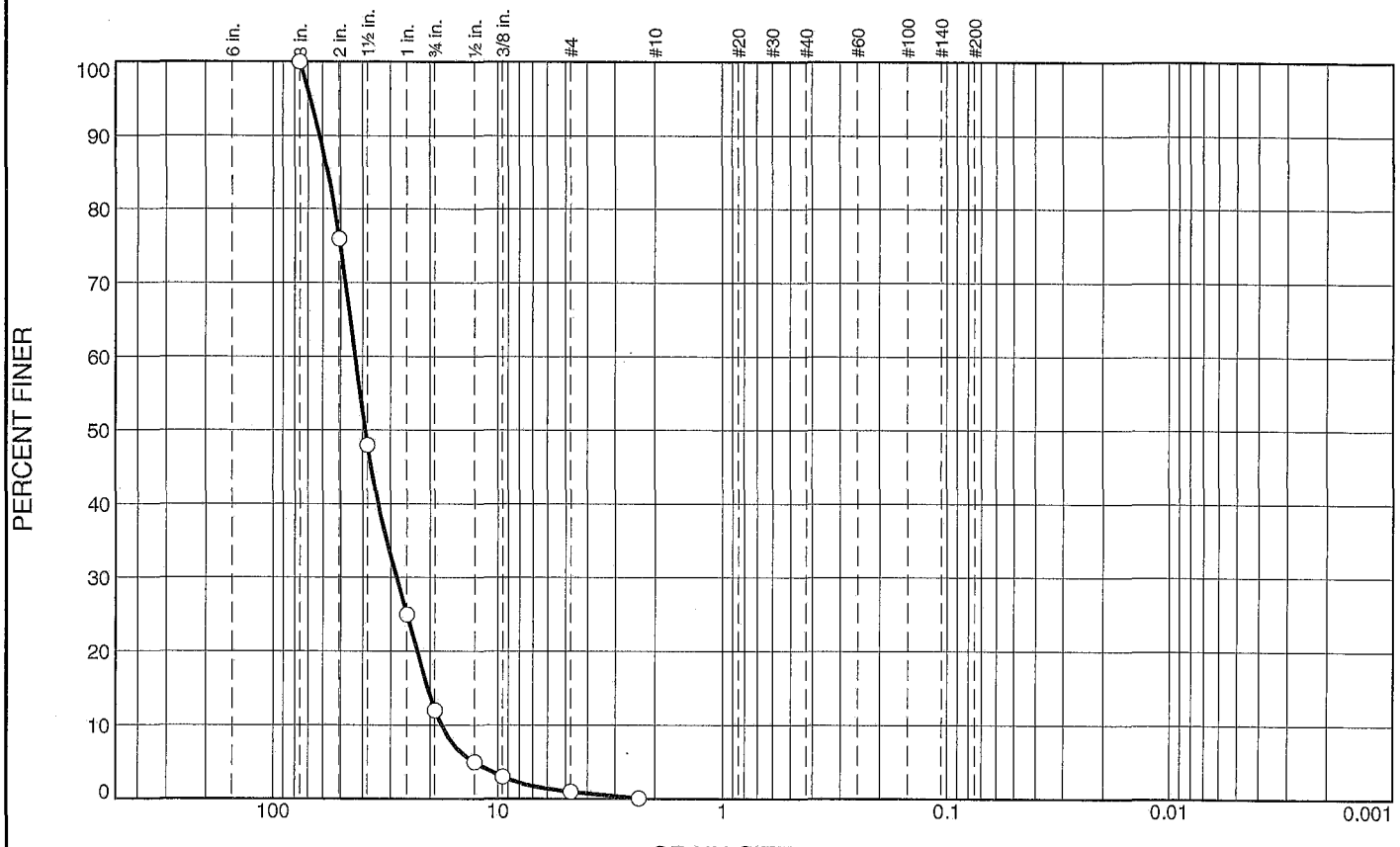

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	88.0	11.0	1.0				

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2"	76.0		
1.5"	48.0		
1"	25.0		
0.75"	12.0		
0.5"	5.0		
0.375"	3.0		
#4	1.0		
#8	0.1		

* (no specification provided)

Material Description

(#29646)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 62.0017 D_{85}= 57.1221 D_{60}= 43.1870
D_{50}= 38.9786 D_{30}= 28.3195 D_{15}= 20.5604
D_{10}= 17.8616 C_u= 2.42 C_c= 1.04

Classification

USCS= AASHTO=

Remarks

Sample Number: CCC-WW2-BL-MID

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment TMDL

Project No: 502515C004.02 **Figure** #29646

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment TMDL
Project Number: 502515C004.02
Sample Number: CCC-WW2-BL-MID
Material Description: (#29646)
Date: 2/9/16
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
3"	100.0
2"	76.0
1.5"	48.0
1"	25.0
0.75"	12.0
0.5"	5.0
0.375"	3.0
#4	1.0
#8	0.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	88.0	11.0	99.0							

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
12.7000	17.8616	20.5604	22.9022	28.3195	34.1920	38.9786	43.1870	53.3048	57.1221	62.0017	68.3211

Fineness Modulus	C_u	C_c
4.36	2.42	1.04

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Brtalik, AmecFW	LAB NO.: 29646
LOCATION: Los Penasquitos	SAMPLED BY:	DATE: 2-1-16
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time 1010	AUTHORIZED BY:	DATE:
BORING: CCC-WW2-BL-MID	TESTED BY:	DATE:
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE 3"	WEIGHT RETAINED GRAMS.	% RETAINED	% PASS 100	
2"	1217.8	24.0	76.0	✓
1 1/2"	2601.3	51.8	48.2	✓
1"	3823.8	74.8	25.2	✓ 25
~~3/4"~~	~~4494.6~~	~~87.9~~	~~12.1~~	✓ 12
~~3/4"~~ 1/2"	4852.3	94.9	5.1	✓ 5
~~1/2"~~ 3/8"	4940.0	96.6	3.4	✓ 3
~~3/8"~~ #4	5059.6	98.9	1.1	1 ✓
~~#4~~ #8	5110.9	99.9	.1	
#10	.80	14.5	85.5	.0
#20	2.55	46.4	53.6	.0
#40	3.13	56.9	43.1	.0
#100	3.93	71.5	28.5	.0
#200	4.41	80.2	19.8	.1

+8

-8 = 5.5

CTB-13

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 5733.8

Weight of Tare CTB-10 620.0

Weight of H20 _____

Net weight of dry soil _____

% H20 _____

WEIGHT BEFORE WASH: 5113.8 (+8)

5.5 (-8)

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184079

Shaker I.D.: Gilson - Gyratory

Particle Size Distribution Report

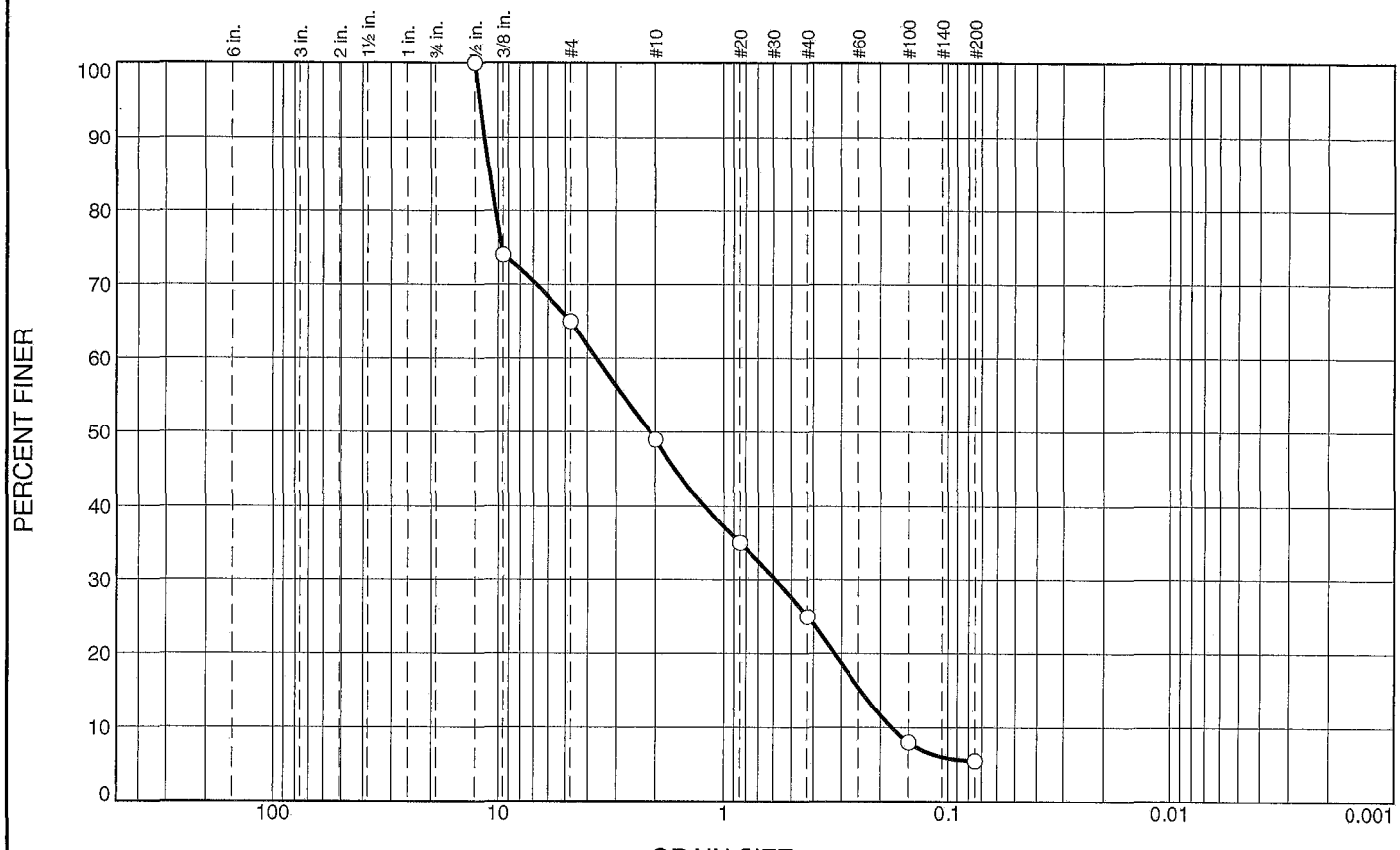

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	35.0	16.0	24.0	19.5	5.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5"	100.0		
0.375"	74.0		
#4	65.0		
#10	49.0		
#20	35.0		
#40	25.0		
#100	8.0		
#200	5.5		

* (no specification provided)

Material Description

(#29645)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 11.5085 D_{85}= 10.9232 D_{60}= 3.6634
D_{50}= 2.1177 D_{30}= 0.5873 D_{15}= 0.2452
D_{10}= 0.1786 C_u= 20.51 C_c= 0.53

Classification

USCS= AASHTO=

Remarks

Sample Number: LPC-WW2-MBL-1

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment TMDL

Project No: 502515C004.02 **Figure** #29645

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment TMDL
Project Number: 502515C004.02
Sample Number: LPC-WW2-MBL-1
Material Description: (#29645)
Date: 2/9/16
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
0.5"	100.0
0.375"	74.0
#4	65.0
#10	49.0
#20	35.0
#40	25.0
#100	8.0
#200	5.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	35.0	35.0	16.0	24.0	19.5	59.5			5.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
	0.1786	0.2452	0.3219	0.5873	1.2238	2.1177	3.6634	10.3213	10.9232	11.5085	12.0961

Fineness Modulus	C_u	C_c
4.13	20.51	0.53

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004.02	NAME: Kiernan Bertalik, AmecFW	LAB NO.: 29645
LOCATION: Los Penasquitos	SAMPLED BY:	DATE: 1-31-16
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time: 1630	AUTHORIZED BY:	DATE:
BORING: LPC-WW2-MBL-1	TESTED BY: RW	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS	
1 1/2"				
1"				
3/4"				
1/2"	0	0	100	
3/8"	3.65	25.7	74.3	74
#4	4.78	34.5	65.5	65
#10	7.1	51.3	48.7	49
#20	9.00	65.0	35.0	35
#40	10.37	74.9	25.1	25
#100	12.77	92.3	7.7	8
#200	13.08	94.5	5.5	

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____
Weight of soil & tare (dry) 96.9
Weight of Tare LC11 83.06
Weight of H20 _____
Net weight of dry soil 13.84
% H20 _____

WEIGHT BEFORE WASH: 13.84

EQUIPMENT USED:
Scale I.D.: CW9204
Sieve Set I.D.: Gilson #12" Sieves
Oven I.D.: 184078 - 184077
Shaker I.D.: Gilson - Gyrator

Particle Size Distribution Report

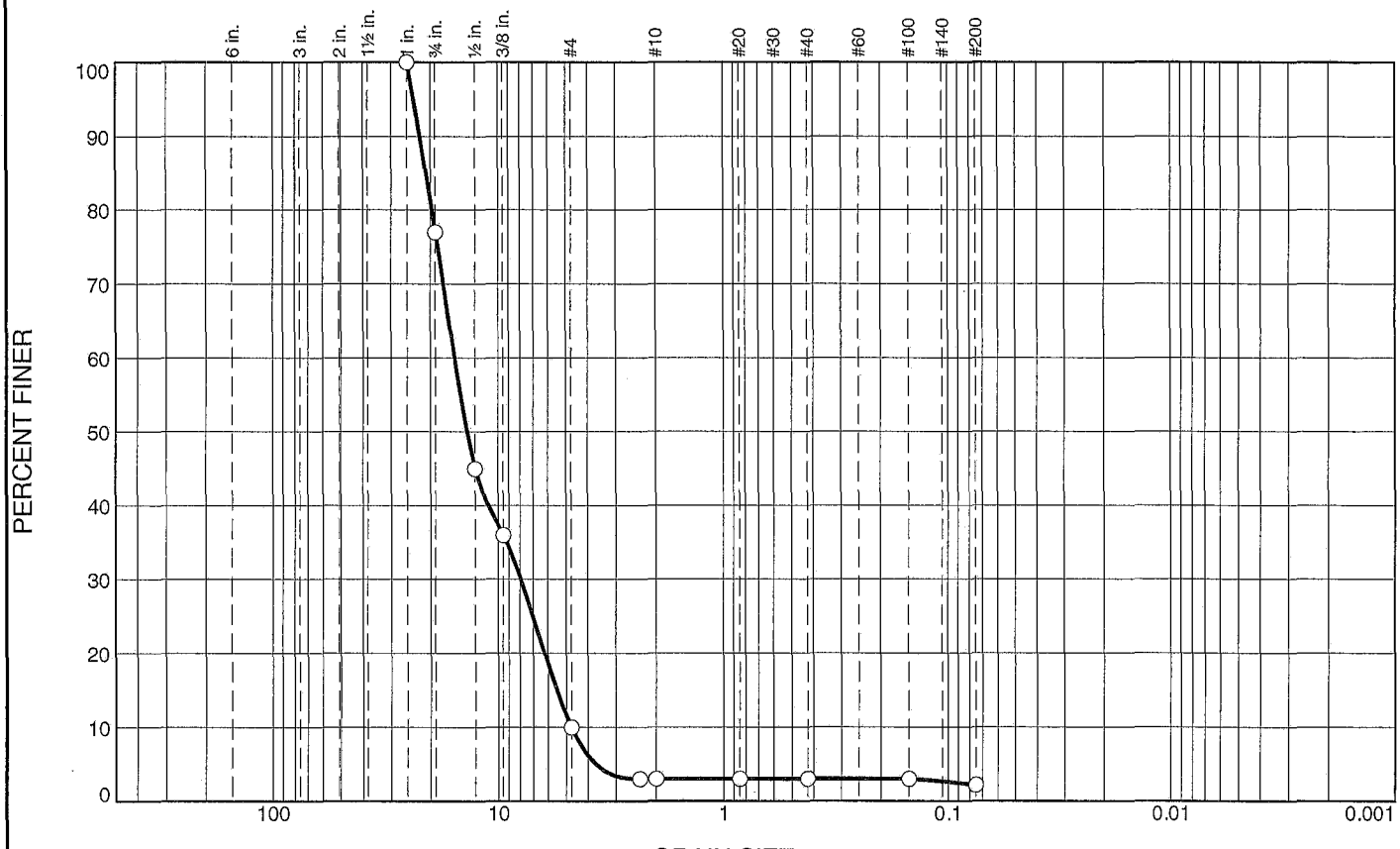

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	23.0	67.0	7.0	0.0	0.8	2.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
0.75"	77.0		
0.5"	45.0		
0.375"	36.0		
#4	10.0		
#8	3.0		
#10	3.0		
#20	3.0		
#40	3.0		
#100	3.0		
#200	2.2		

* (no specification provided)

Material Description

(#29647)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 22.3216 D_{85}= 20.9656 D_{60}= 15.7039
D_{50}= 13.8062 D_{30}= 7.9664 D_{15}= 5.5112
D_{10}= 4.7500 C_u= 3.31 C_c= 0.85

Classification

USCS= GP AASHTO=

Remarks

Sample Number: CVC-WW2-BL-MID

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment TMDL

Project No: 502515C004.02 **Figure** #29647

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment TMDL
Project Number: 502515C004.02
Sample Number: CVC-WW2-BL-MID
Material Description: (#29647)
Date: 2/9/16
USCS Classification: GP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1"	100.0
0.75"	77.0
0.5"	45.0
0.375"	36.0
#4	10.0
#8	3.0
#10	3.0
#20	3.0
#40	3.0
#100	3.0
#200	2.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	23.0	67.0	90.0	7.0	0.0	0.8	7.8			2.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
3.6970	4.7500	5.5112	6.2462	7.9664	11.1301	13.8062	15.7039	19.7327	20.9656	22.3216	23.8015

Fineness Modulus	C_u	C_c
6.62	3.31	0.85

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Brtalik, AmecFW	LAB NO.: 29647
LOCATION: Los Penasquitos	SAMPLED BY:	DATE: 2-1-16
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time 1045	AUTHORIZED BY:	DATE:
BORING: CVC-WW2-BL- MID	TESTED BY: RU	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS	
~~1 1/2"~~ 1"	0	0	100	
~~1"~~ 3/4	337.9	22.6	77.4	77 ✓
~~3/4"~~ 1/2	819.8	54.9	45.1	45 ✓
~~1/2"~~ 3/8	958.8	64.2	35.8	36 ✓
~~3/8"~~ #4	1339.5	89.8	10.2	10
~~#4~~ #8	1445.2	96.8	3.2	3 ✓
#10	1.64 1446.8	~~8.8~~ 97.0	~~91.2~~ 2.9	3
#20	5.59 1450.8	~~29.9~~ 97.2	~~70.1~~ 2.2	3
#40	7.89 1453.1	~~42.2~~ 97.4	~~57.8~~ 1.8	3
#100	12.04 1457.2	~~64.4~~ 97.6	~~35.6~~ 1.1	~~2~~ 3
#200	14.23 1459.4	~~76.1~~ 97.8	~~23.9~~ .8	2.2

-8

+8 18.7

CTB-15

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 1997.8

Weight of Tare CTB.25 506.5

Weight of H20 _____

Net weight of dry soil _____

% H20 _____

WEIGHT BEFORE WASH: 1492.3 (+8)

18.7 (-8)

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184077

Shaker I.D.: Gilson - Grady

Particle Size Distribution Report

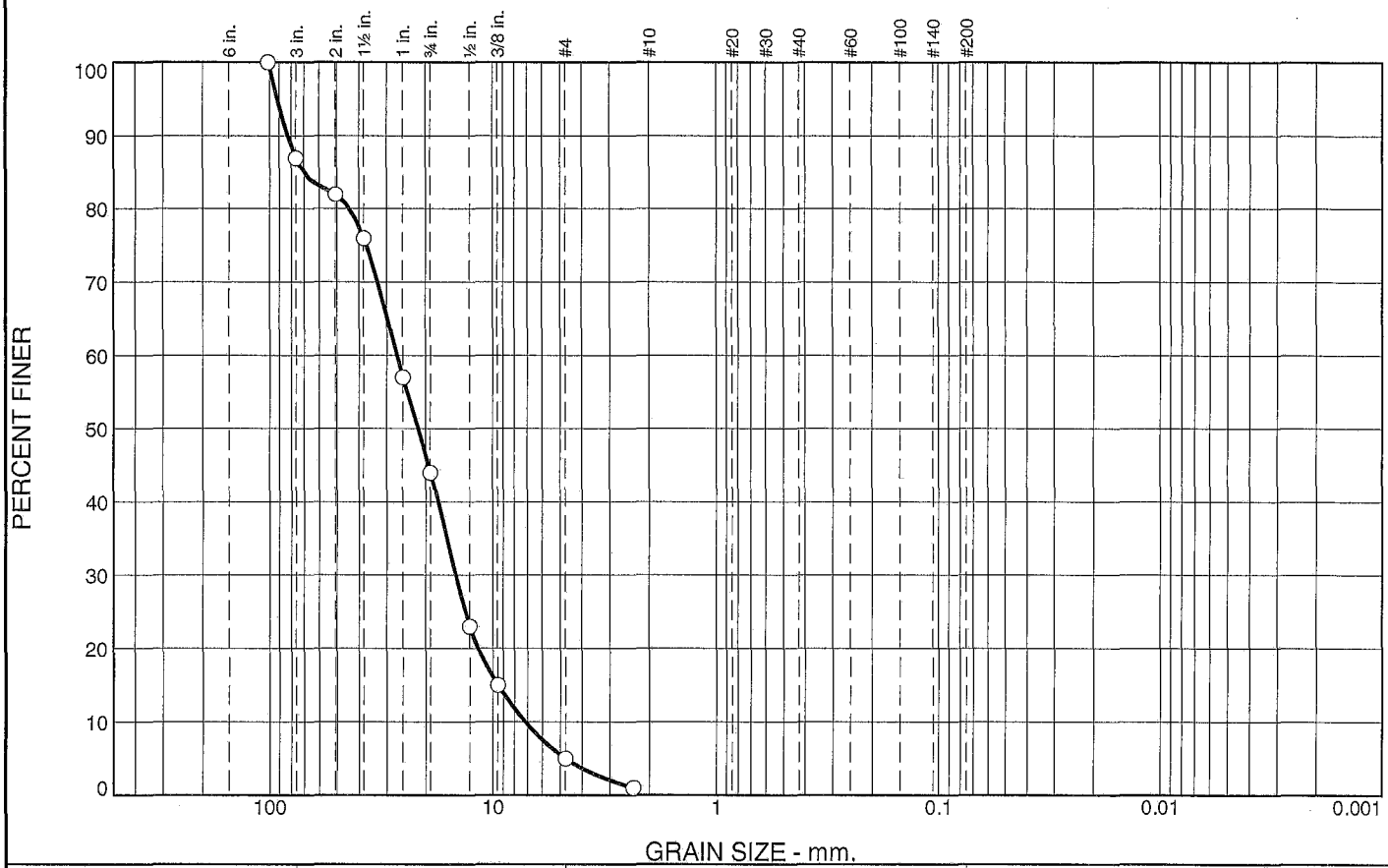

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
13.0	43.0	39.0	5.0				

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
4"	100.0		
3"	87.0		
2"	82.0		
1.5"	76.0		
1"	57.0		
0.75"	44.0		
0.5"	23.0		
0.375"	15.0		
#4	5.0		
#8	1.0		

* (no specification provided)

Material Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 82.8396 D_{85}= 70.0649 D_{60}= 27.0200
D_{50}= 21.6978 D_{30}= 14.7103 D_{15}= 9.5250
D_{10}= 7.1843 C_u= 3.76 C_c= 1.11

Classification

USCS= AASHTO=

Remarks

Location: ~~CVC~~-WW3-BL
CCC

Date: 3/8/16

amec

Client:

Project: Los Penasquitos Sediment Transport Monitoring 2014-2015

Project No: 502515C011.02 **Figure** #29699

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

3/18/2016

Project: Los Penasquitos Sediment Transport Monitoring 2014-2015
Project Number: 502515C011.02
Location: ~~CVC~~ CCC WW3-BL
Date: 3/8/16
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
4"	100.0
3"	87.0
2"	82.0
1.5"	76.0
1"	57.0
0.75"	44.0
0.5"	23.0
0.375"	15.0
#4	5.0
#8	1.0

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
13.0	43.0	39.0	82.0							

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
4.7500	7.1843	9.5250	11.6762	14.7103	17.6447	21.6978	27.0200	44.1888	70.0649	82.8396	92.2829

Fineness Modulus	C_u	C_c
3.72	3.76	1.11

AMEC

amec

SIEVE ANALYSIS OF AGGREGATE - SAND EQUIVALENT

ASTM D2419 / AASHTO T176 / CTM217
ASTM C117 / AASHTO T11
ASTM C136 / AASHTO T27

Project No.		Project Name:	Los Pertasquitos Sediment.		
Lab No.	29699	Sampled by:		Date:	
Type of Aggregate:		Submitted by:		Date:	
Source of Aggregate:		Tested by:		Date:	3-17-10
Sample Location:		Reviewed by:		Date:	

SAMPLE WEIGHT DRY GMS.					
Screen	Weight Retained	% Retained	% Pass	Cum. Pass	Specification Limit
~~4"~~ 5	0	0	100	100	
~~3"~~ 4	0	0	100	100	
~~2"~~ 3	655.4	13.2	86.8		
1-~~1/2"~~ 2	872.1	17.6	82.4		
~~1"~~ 1½	1186.2	23.9	76.1		
~~3/4"~~ 1	2123.0	42.8	57.2		
~~1/2"~~ ¾	2781.6	56.1	43.9		
~~3/8"~~ ½	3834.7	77.3	22.7		
~~#4~~ ⅜	4217.3	85.0	15.0		
#4 Grading Portion _____ gm					
~~#8~~ 4	4701.6	94.8	5.2		
~~#16~~ 8	4907.1	98.9	1.1		
#30					
#50					
#100					
#200					

MOISTURE CONTENT			SAND EQUIVALENT 5468.0 w/pan	
Weight of sample & tare (wet)			/ =	
Weight of sample & tare (dry)	5467.0		/ =	
Weight of tare CTB2	507.0		/ =	
Weight of H_2O				
Net weight of dry sample	← 4960.0			
% H20			Ave.=	

EQUIPMENT USED:
Sieve Set I.D.: Gilson Mechanical Shaker: I.D.: Gilson
Scale I.D. _____ S.E. Shaker I.D.: _____
Oven I.D.: 184077

Amec Foster Wheeler - Materials Lab

CHAIN OF CUSTODY RECORD

9177 Sky Park Court San Diego, CA 92213-4341
Tel 858-514-3000

STANDARD

Page_____Of_____

CLIENT NAME: Kiernan Brtalik, Amec Foster Wheeler

PROJECT: Los Penasquitos Sediment TMDL
5025150004.02

ADDRESS:
9177 Sky Park Court San Diego, CA 92213-4341

PHONE: 858-514-7752
FAX:
EMAIL: Kiernan.Brtalik@amecfw.com

PROJECT MANAGER Jeremy Burns

SAMPLER Kevin Stolzenbach

ANALYSES REQUESTED

SPECIAL HANDLING

- ☐ Same Day Rush 150%
- ☐ 24 Hour Rush 100%
- ☐ 48-72 Hour Rush 75%
- ☐ 4 - 5 Day Rush 30%
- ☐ Rush Extractions 50%
- ☐ 10 - 15 Business Days
- ☐ QA/QC Data Package

Charges will apply for weekends/holidays

Method of Shipment:

COMMENTS

ID# (For lab Use Only)	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION/SITE LOCATION	# OF CONT.	Particle Size Distribution
29644	1/7/16	1200	SED	CVC - WW1 - BL - LB	2	X
29645	1/31/16	1630	↓	LPC - WW2 - MBL - 1	1	X
29646	2/1/16	1010	↓	CCC - WW2 - BL - MID	2	X
29647	2/1/16	1045	↓	CVC - WW2 - BL - MID	1	X

RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

SAMPLE CONDITION:

Actual Temperature:

Received On Ice	Y / N
Preserved	Y / N
Evidence Seals Present	Y / N
Container Attacked	Y / N
Preserved at Lab	Y / N

SAMPLE TYPE CODE:
AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY OVER UNSCHEDULED RUSH REQUESTS
Client agrees to Terms & Conditions at: www.wecklabs.com

SPECIAL REQUIREMENTS / BILLING INFORMATION
Bill to 5025150004-02

C&C version 042707

Particle Size Distribution Report

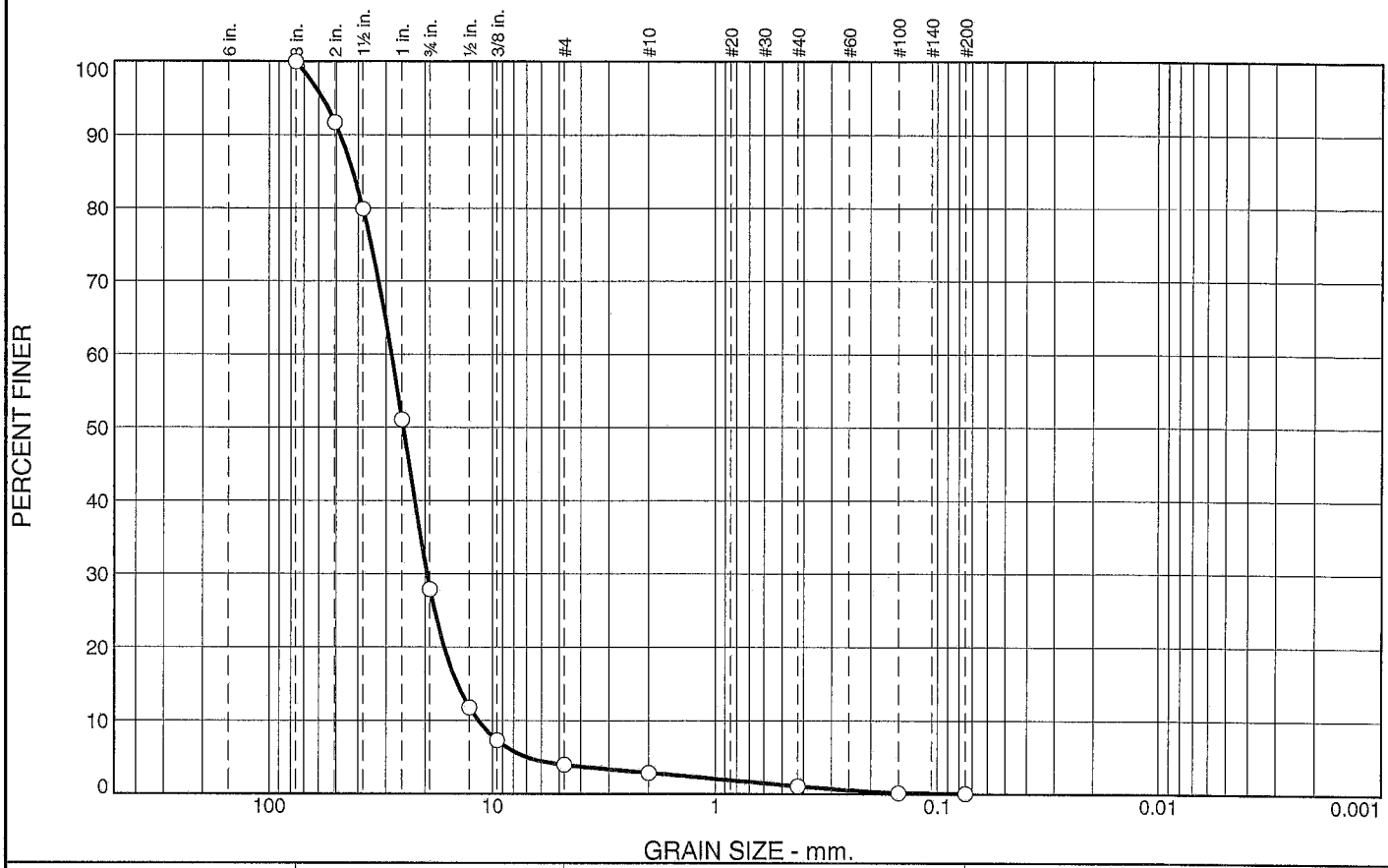

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	72.1	23.9	1.1	1.8	1.0	0.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2"	91.7		
1.5"	79.9		
1"	51.1		
0.75"	27.9		
0.5"	11.8		
0.375"	7.3		
#4	4.0		
#10	2.9		
#40	1.1		
#100	0.2		
#200	0.1		

* (no specification provided)

Material Description

Poorly Graded Gravel, GP (#29240)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 48.1326 D_{85}= 42.2843 D_{60}= 28.3312
D_{50}= 25.0721 D_{30}= 19.6399 D_{15}= 14.4079
D_{10}= 11.5734 C_u= 2.45 C_c= 1.18

Classification

USCS= GP AASHTO=

Remarks

Location: CCC-VBL

Date: 9/14/15

amec

Client: City of San Diego
Project: City of San Diego Los Penasquitos Sediment Transport Monitoring 2015-2016
Project No: 5025151109.02 **Figure** #29240

Tested By: H. Alwaque **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

9/14/2015

Client: City of San Diego
Project: City of San Diego Los Penasquitos Sediment Transport Monitoring 2015-2016
Project Number: 5025151109.02
Location: CCC-VBL
Material Description: Poorly Graded Gravel, GP (#29240)
Date: 9/14/15
USCS Classification: GP
Tested by: H. Alwaque **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
3"	100.0
2"	91.7
1.5"	79.9
1"	51.1
0.75"	27.9
0.5"	11.8
0.375"	7.3
#4	4.0
#10	2.9
#40	1.1
#100	0.2
#200	0.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	72.1	23.9	96.0	1.1	1.8	1.0	3.9			0.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
6.9838	11.5734	14.4079	16.5000	19.6399	22.3008	25.0721	28.3312	38.1707	42.2843	48.1326	57.7471

Fineness Modulus	C_u	C_c
7.73	2.45	1.18

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

City of San Diego 2015-2016

PROJECT NO: 5025.15.1109.02	NAME: Los Penasquitos Sediment Trans.	LAB NO.: 29240
LOCATION: CCC-VBL	SAMPLED BY: DKB/RW	DATE: 9/10/15
SOURCE:	SUBMITTED BY: Jeremy Burns	DATE: 9/10/15
MATERIAL:	AUTHORIZED BY:	DATE:
BORING:	TESTED BY: HA	DATE: 9/11 + 9/14/15
~~DEPTH~~: 10:50	REVIEWED BY:	DATE: 100

TIME 2" 583.6 8.3 91.7 92

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS		
1 1/2"	1416.6	20.1	79.9	80	
1"	3451.1	48.9	51.1	51	
3/4"	5086.0	72.1	27.9	28	
1/2"	6224.8	88.2	11.8	12	
3/8"	6541.9	92.7	7.3		
#4	235.5	45.4	54.6	4.0	4
#10	312.2	60.1	39.9	2.9	3
#20	366.3	70.6	29.4	2.2	2
#40	439.7	84.7	15.3	1.1	1
#100	501.3	96.6	3.4	0.2	
#200	509.1	98.1	1.9	0.1	
PAN	511.1	98.5	1.5	0.1	

~~516.5~~ 519.1

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____
Weight of soil & tare (dry) 9225.4
Weight of Tare 2167.0
Weight of H20 _____
Net weight of dry soil 7058.4
% H20 _____

WEIGHT BEFORE WASH: 519.1 Bowl CTB-19 Net soil wt

After wash 511.0

EQUIPMENT USED:
Scale I.D.: CW 9204
Sieve Set I.D.: 12" SET 1
Oven I.D.: 148875
Shaker I.D.: Ginger

Particle Size Distribution Report

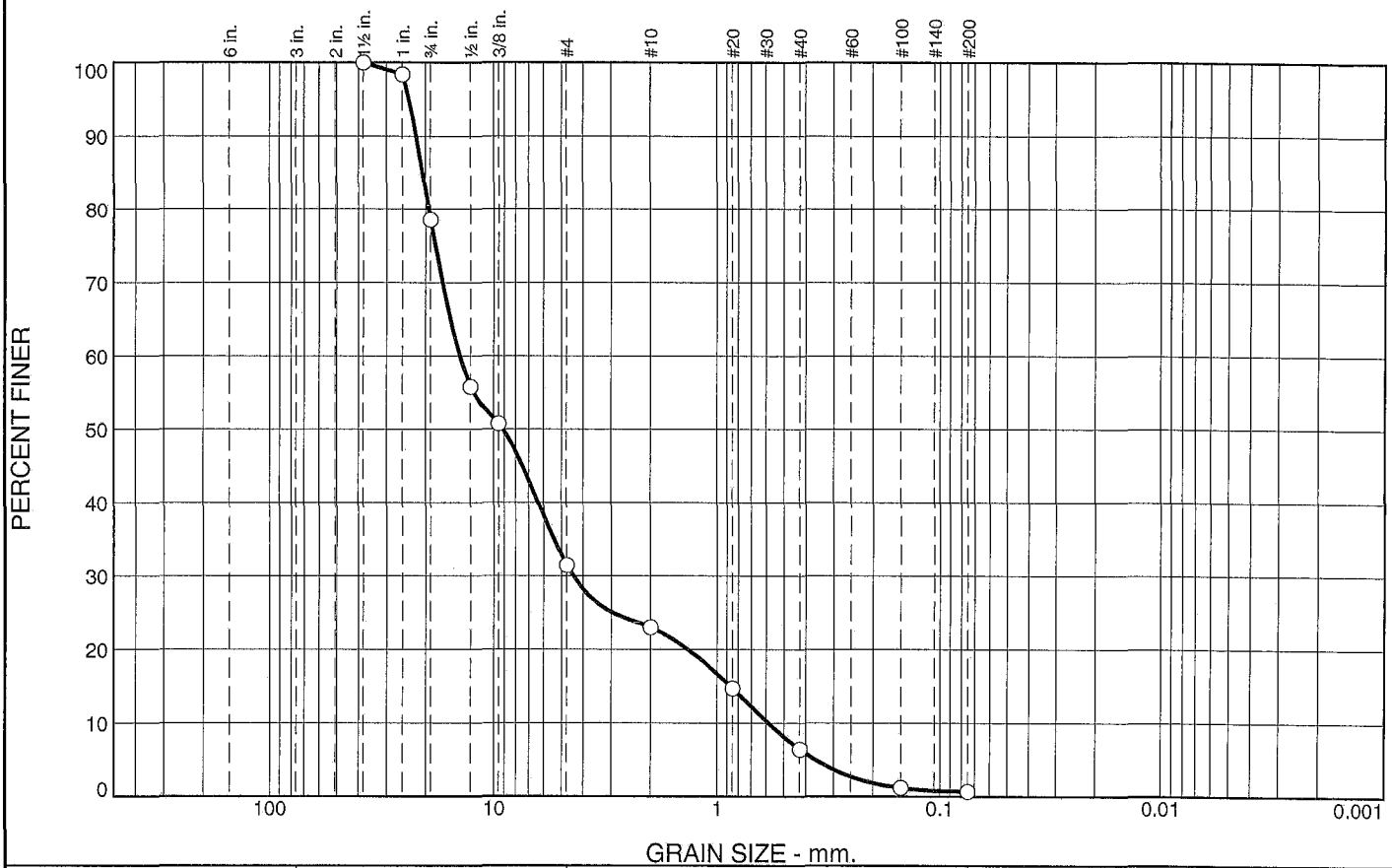

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	21.4	47.1	8.5	16.6	5.7	0.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1"	98.4		
0.75"	78.6		
0.5"	55.8		
0.375"	50.8		
#4	31.5		
#10	23.0		
#20	14.7		
#40	6.4		
#100	1.2		
#200	0.7		

* (no specification provided)

Material Description

(#29241)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 22.0954 D_{85}= 20.6827 D_{60}= 14.1816
D_{50}= 9.1172 D_{30}= 4.4362 D_{15}= 0.8707
D_{10}= 0.5863 C_u= 24.19 C_c= 2.37

Classification

USCS= GW AASHTO=

Remarks

Location: CVC-VBL

Date: 9/14/15

amec

Client: City of San Diego
Project: City of San Diego Los Penasquitos Sediment Transport Monitoring 2015-2016
Project No: 5025151109.02 **Figure** #29241

Tested By: H. Alwaque **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

9/14/2015

Client: City of San Diego
Project: City of San Diego Los Penasquitos Sediment Transport Monitoring 2015-2016
Project Number: 5025151109.02
Location: CVC-VBL
Material Description: (#29241)
Date: 9/14/15
USCS Classification: GW
Tested by: H. Alwaque **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1.5"	100.0
1"	98.4
0.75"	78.6
0.5"	55.8
0.375"	50.8
#4	31.5
#10	23.0
#20	14.7
#40	6.4
#100	1.2
#200	0.7

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	21.4	47.1	68.5	8.5	16.6	5.7	30.8			0.7

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.3625	0.5863	0.8707	1.3594	4.4362	6.3622	9.1172	14.1816	19.3995	20.6827	22.0954	23.8063

Fineness Modulus	C_u	C_c
5.82	24.19	2.37

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

City of San Diego 2015-2016

PROJECT NO: 5026.15.1109.02	NAME: Los Penasquitos Sediment Trans.	LAB NO.: 29241
LOCATION: CVC	SAMPLED BY: DKB/RW	DATE: 9/10/15
SOURCE:	SUBMITTED BY: Jeremy Burns	DATE: 9/10/15
MATERIAL:	AUTHORIZED BY:	DATE:
BORING:	TESTED BY: HA	DATE: 9/11 + 9/14/15
~~DEPTH~~: 11:30 TIME	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS	
1 1/2"	0	0	100	
1"	93.9	1.6 ✓	98.4	98
3/4"	1236.4	21.4	78.6	79
1/2"	2549.9	44.2 ✓	55.8	
3/8"	2841.8	49.2	50.8	✓
#4	257.5	37.9 ✓	62.1	31.5 ✓
#10	371.1	54.7 ✓	45.3	23.0 ✓
#20	482.1	71.0 ✓	29.0	14.7 ✓
#40	592.9	87.4 ✓	12.6	6.4 ✓
#100	662.2	97.6 ✓	2.4	1.2 ✓
#200	669.1	98.6	1.4	0.7 ✓
PAN	671.3	98.9	1.1	0.6

~~2931.0~~

678.7

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 4987.6

Weight of Tare 4214.6

Weight of H20 _____

Net weight of dry soil 5773.0

% H20 _____

WEIGHT BEFORE WASH: 678.7 NET SOIL WT. Bowl 008A

After Wash 671.5

EQUIPMENT USED:

Scale I.D.: CW 9204

Sieve Set I.D.: 12" SET 1

Oven I.D.: 148875

Shaker I.D.: Ginger

Particle Size Distribution Report

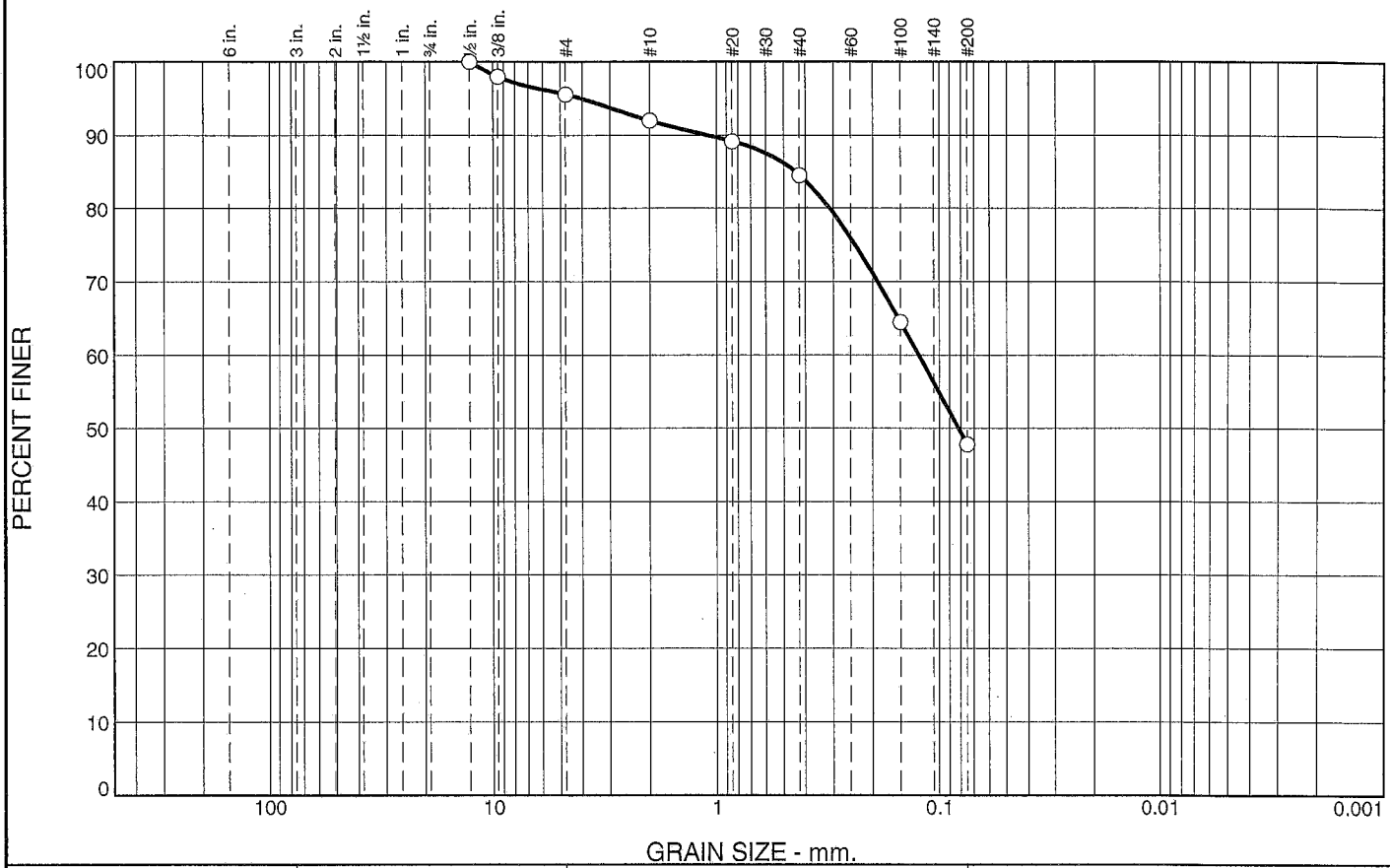

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.4	3.6	7.4	36.8	47.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5"	100.0		
0.375"	98.0		
#4	95.6		
#10	92.0		
#20	89.2		
#40	84.6		
#100	64.5		
#200	47.8		

* (no specification provided)

Material Description

(#29242)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.0825 D_{85}= 0.4402 D_{60}= 0.1242
D_{50}= 0.0821 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Location: LPC

Date: 9/15/15

amec

Client: City of San Diego
Project: City of San Diego Los Penasquitos Sediment Transport Monitoring 2015-2016
Project No: 5025151109.02 **Figure** #29242

Tested By: H. Alwaque **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

9/15/2015

Client: City of San Diego
Project: City of San Diego Los Penasquitos Sediment Transport Monitoring 2015-2016
Project Number: 5025151109.02
Location: LPC
Material Description: (#29242)
Date: 9/15/15
Tested by: H. Alwaque **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
0.5"	100.0
0.375"	98.0
#4	95.6
#10	92.0
#20	89.2
#40	84.6
#100	64.5
#200	47.8

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	4.4	4.4	3.6	7.4	36.8	47.8			47.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.0821	0.1242	0.3108	0.4402	1.0825	4.0163

Fineness Modulus
0.92

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

City of San Diego 2015-2016

PROJECT NO: 5025.15.1109.02	NAME: Los Penasquitos Sediment Trans.	LAB NO.: 29242
LOCATION: LPC	SAMPLED BY: JKB/RW	DATE: 9/10/15
SOURCE:	SUBMITTED BY: Jeremy Burns	DATE: 9/10/15
MATERIAL:	AUTHORIZED BY:	DATE:
BORING:	TESTED BY: HA	DATE: 9/15/15
~~DEPTH~~: 11:00 TIME	REVIEWED BY:	DATE:

+3/8 @ 132.3

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS	
1 1/2"				
1"				
3/4"				
1/2"			100	
3/8"		2.0	98.0	
#4	14.1	2.4	97.6	95.6
#10	35.5	6.1	93.9	92.0
#20	52.3	9.0	91.0	89.2
#40	79.1	13.7	86.3	84.6
#100	198.2	34.2	65.8	64.5
#200	296.5	51.2	48.8	47.8
PAN	322.2	55.7	44.3	

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 10,802.3

Weight of Tare 4199.6

Weight of H20 _____

Net weight of dry soil 6602.7

% H20 _____

WEIGHT BEFORE WASH: 578.9 NET WT SOIL BOWL YB

After Wash: 321.4

EQUIPMENT USED:

Scale I.D.: CW 9204

Sieve Set I.D.: 12" SET #1

Oven I.D.: 148873

Shaker I.D.: Ginger

5025 15 1109.02

Analysis Request and Chain of Custody

City of San Diego 2015-2016

Los Penasquitos Sediment Transport Monitoring ~~2014-2015~~

From:
AMEC Environment & Infrastructure
Attn: Jeremy Burns
9177 Sky Park Court
San Diego, CA 92123
Phone: (858) 278-3600 Fax: (858) 278-5300

To:
AMEC Environment Infrastructure
Attn: Liz Collins
9177 Sky Park Court San
Diego, CA 92123
Phone: (858) 278-3600 Fax: (858) 278-5300

SampleID	Date	Time	Analyses	Bottle Type	Preservative	Bottle Count
29240 CCC-VBL	9/10/15	10:50	Particle Size Distribution	5 Gallon Plastic Bucket	NA	1 of 1
29241 CVC-VBL	↓	11:30	Particle Size Distribution	5 Gallon Plastic Bucket	NA	1 of 1
29242 LPC-VBL	↓	11:00	Particle Size Distribution	5 Gallon Plastic Bucket	NA	1 of 1

USE SOIL SIEVES

Sampler's Initials: KB/RW

Relinquished By: [signature] Date/Time: 9/10/15 12:45 Received By: [signature] Date/Time: 9/10/15 12:45

Relinquished By: Date/Time: Received By: Date/Time:

Page 1 of 1

APPENDIX D
PEBBLE COUNT PARTICLE-SIZE DISTRIBUTION ANALYSIS

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APPENDIX D: POST-STORM PEBBLE COUNT PARTICLE SIZE DISTRIBUTION ANALYSIS

This appendix presents the particle size distribution analysis results conducted for Carroll Canyon, Carmel Valley, and Los Peñasquitos Creek using the post-storm pebble count data collected throughout the wet weather season.

The graphs for Carroll Canyon and Carmel Valley Creeks are relatively consistent, but show a trend toward larger pebble sizes after the largest series of rainfall events of the monitoring season, January 4 to January 7, 2016. This series of events had intense periods of rain resulting in high flow rates, known to transport particles (particularly smaller particles) at higher rates based on supply limits, leaving behind a higher proportion of larger pebbles. The results for Los Peñasquitos Creek did not show a consistent pattern until after the large rainfall event in January, where the grain size distribution shifted to larger percentages of sand accumulating compared to the beginning of the monitoring season. This may be to the very high flow during the January 4 to January 7 storm scouring the bottom of fine material and depositing larger particles (e.g., sand), with subsequent storms (with low flows) depositing fine particles again. The survey at this site on October 6, 2015 seems to be the outlier in terms of having the lowest percentage of sand. If that survey is removed, the lowest percentage of sand observed in the streambed occurred after the largest storm in January 2016. While large events may mobilize particles and transport them downstream, results from past years in addition to this season suggest that low flow conditions do not alter the streambed composition at Los Peñasquitos Creek by transporting material downstream, rather the composition is most affected by deposition over time.

Complete pebble count results and particle-size distribution plots are provided below.

Carroll Canyon Creek:

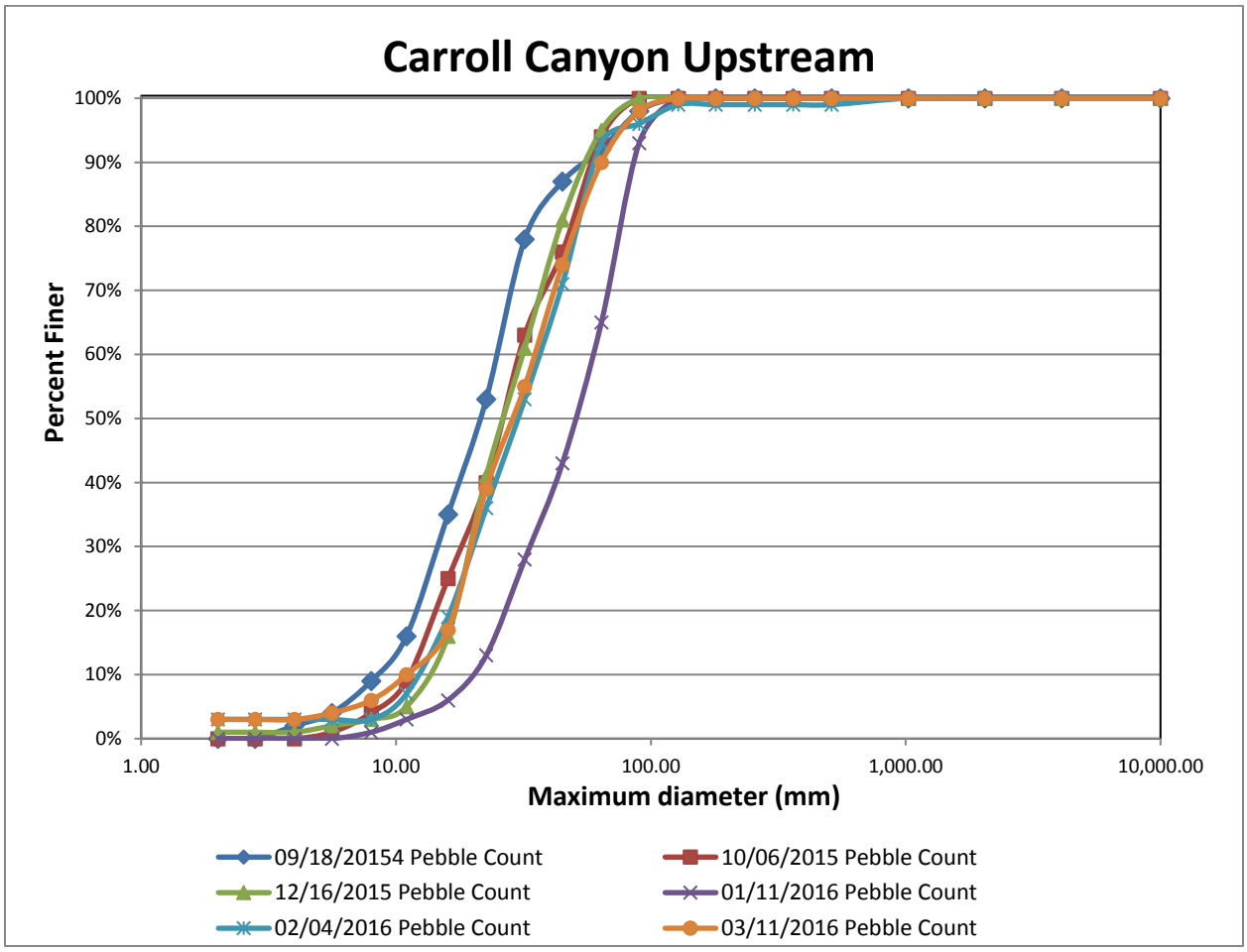

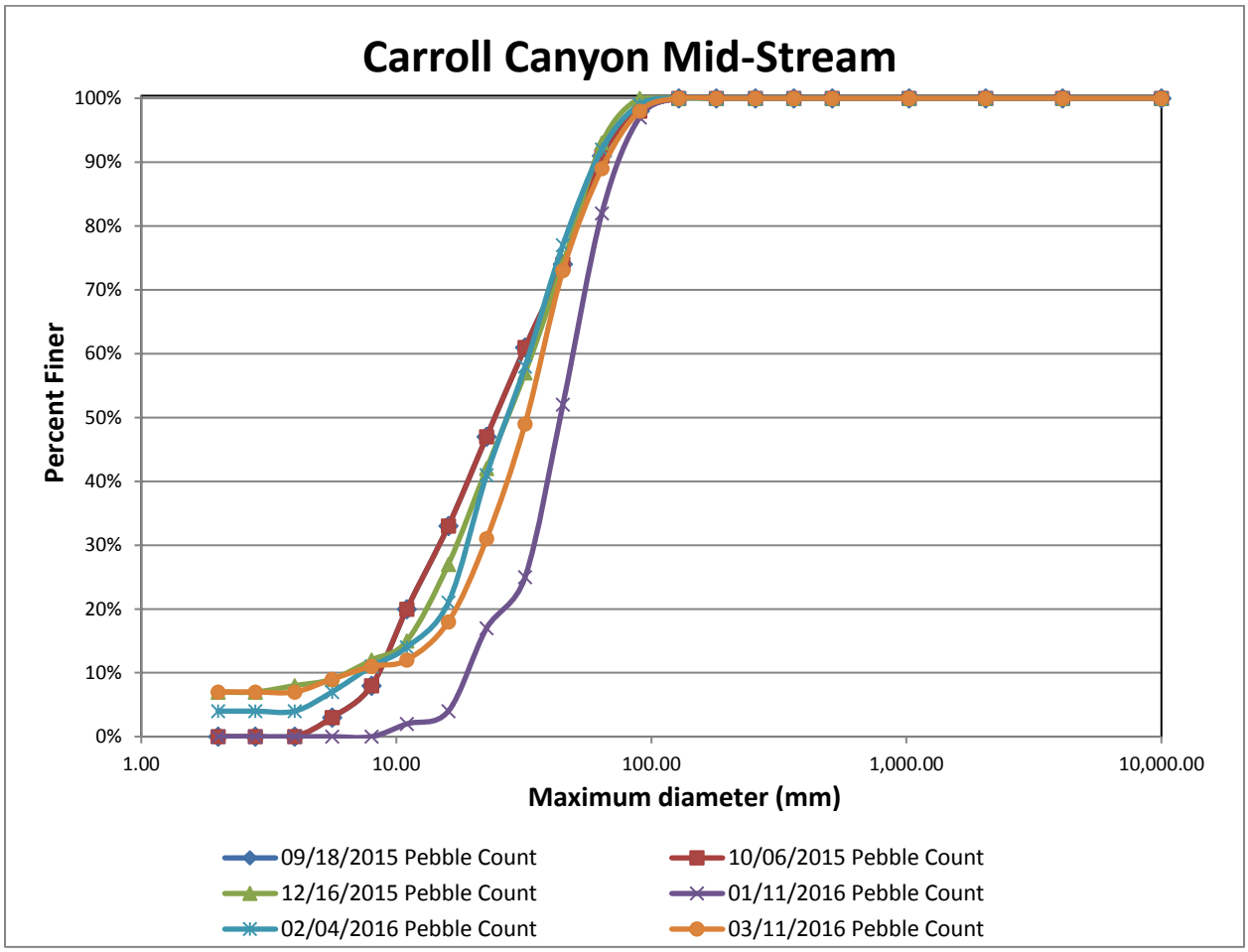
Carroll Canyon Mid-Stream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1.00
10.00
100.00
1,000.00
10,000.00
Maximum diameter (mm)
09/18/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

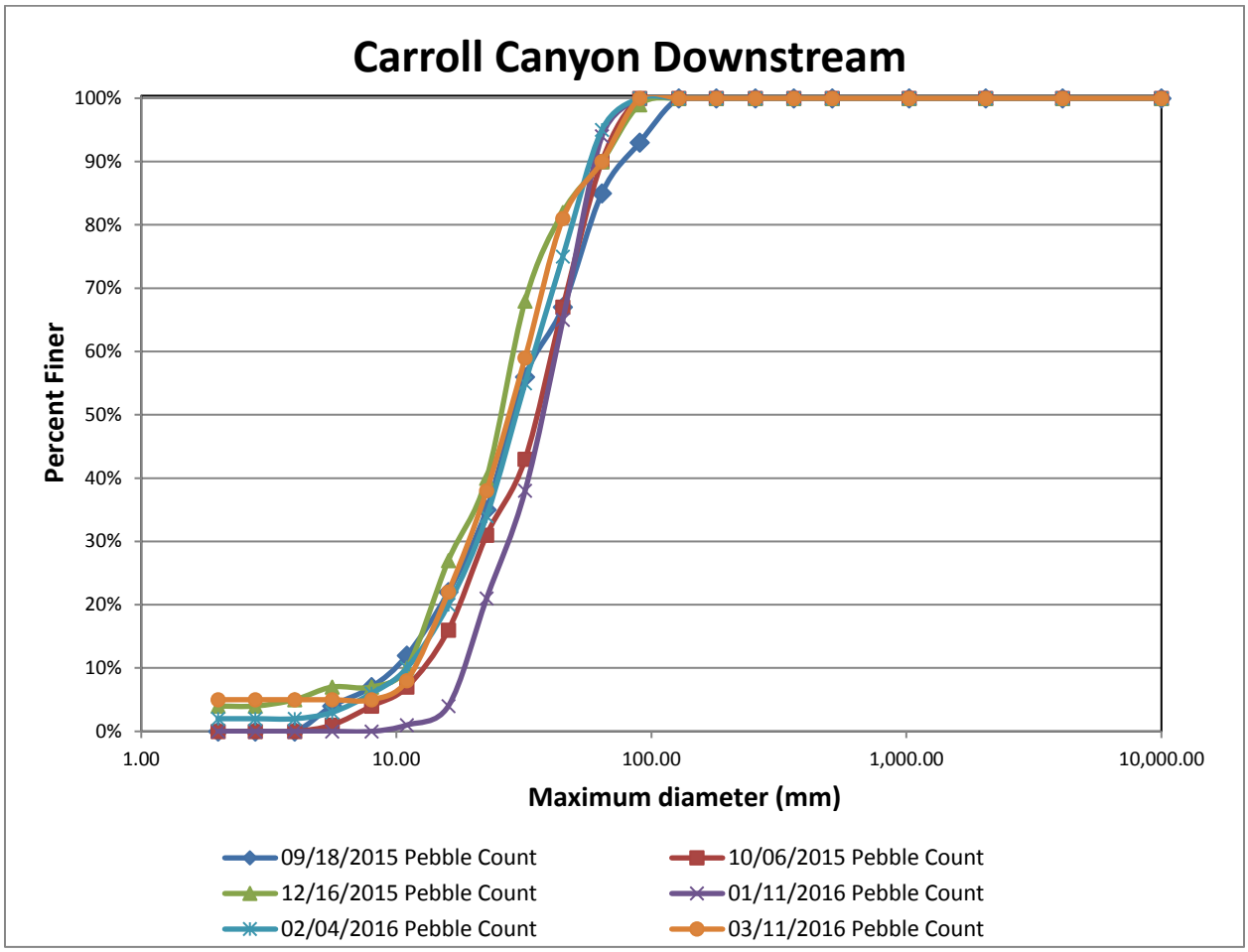
Carroll Canyon Downstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1.00
10.00
100.00
1,000.00
10,000.00
Maximum diameter (mm)
09/18/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

Carmel Valley Creek:

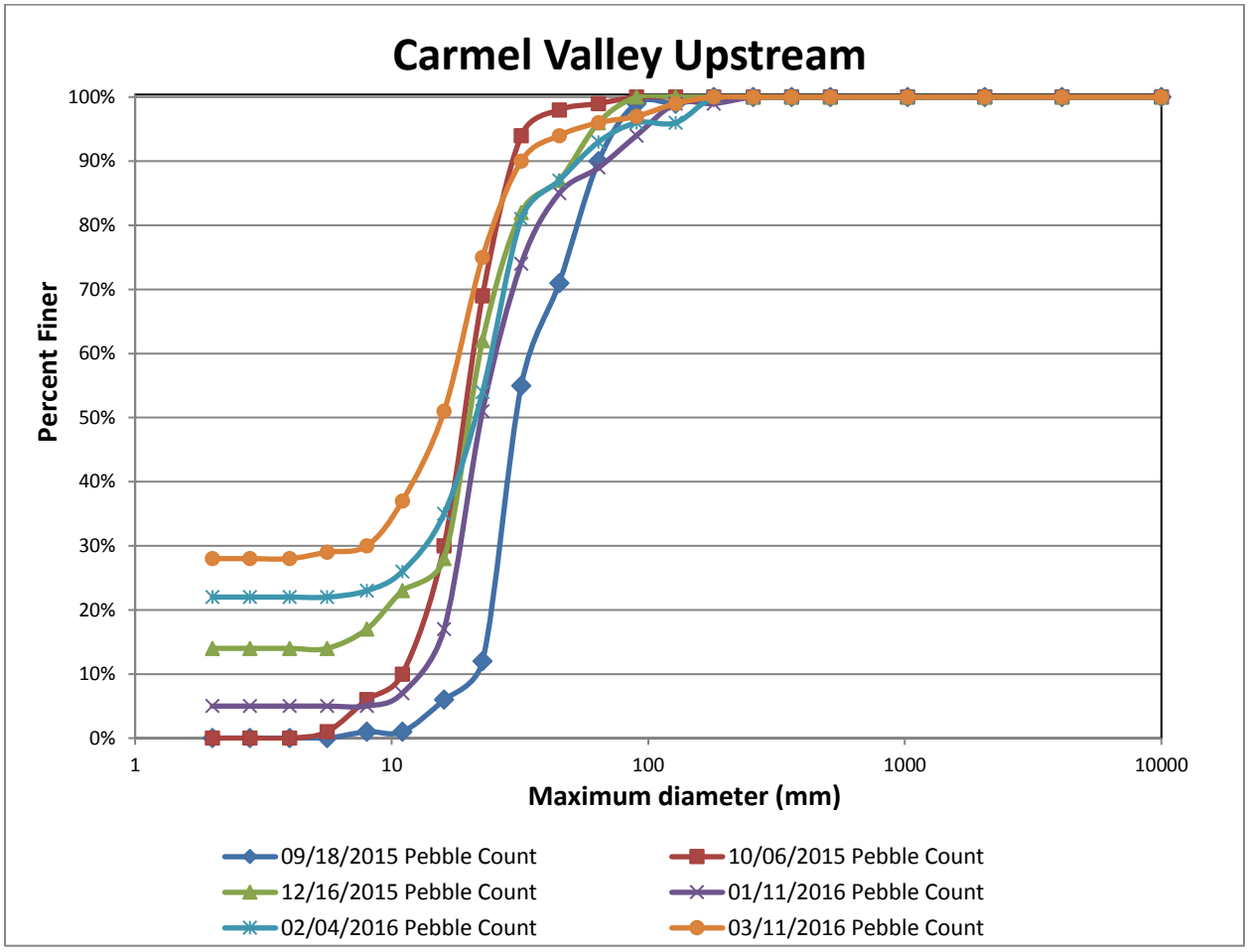

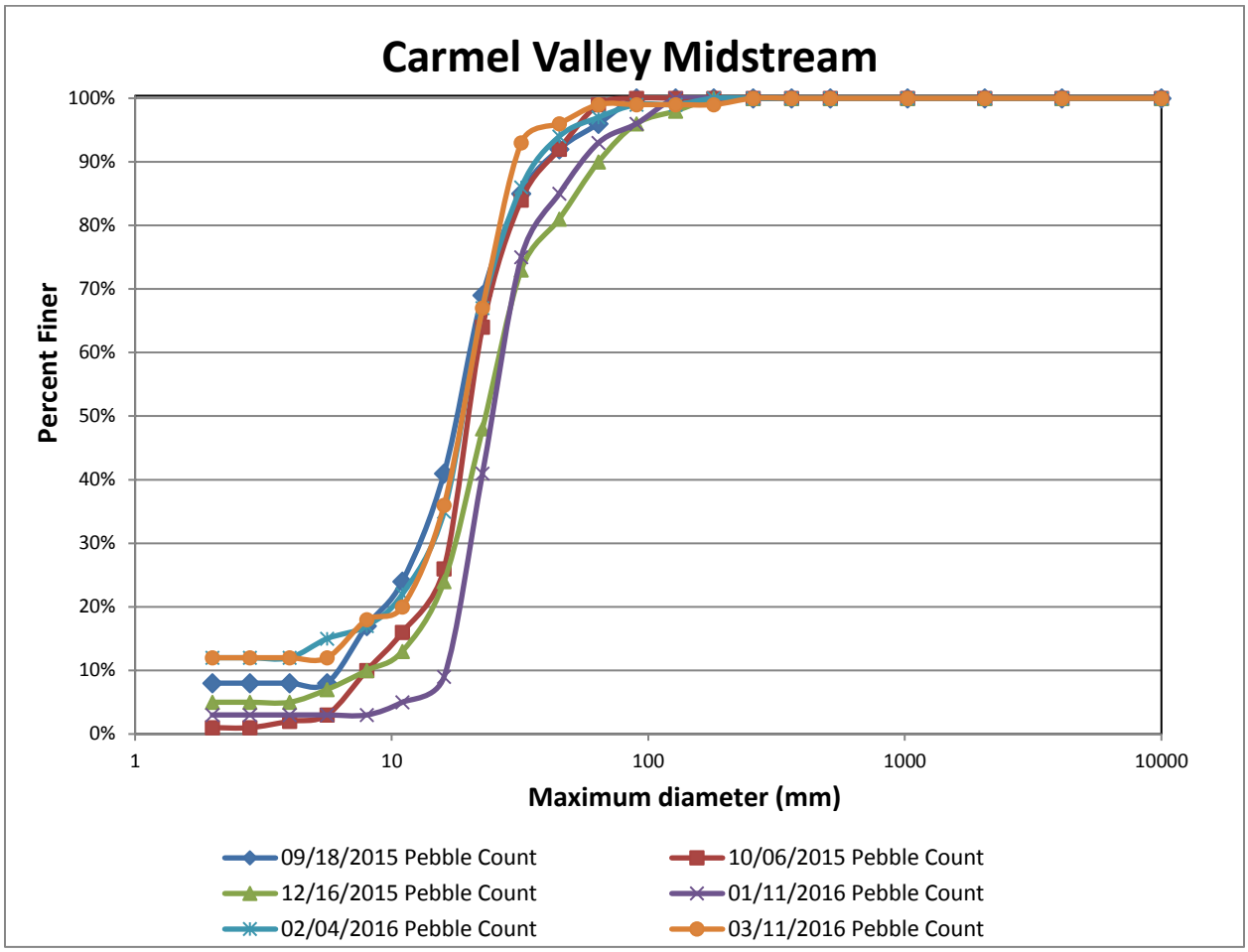
Carmel Valley Midstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/18/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

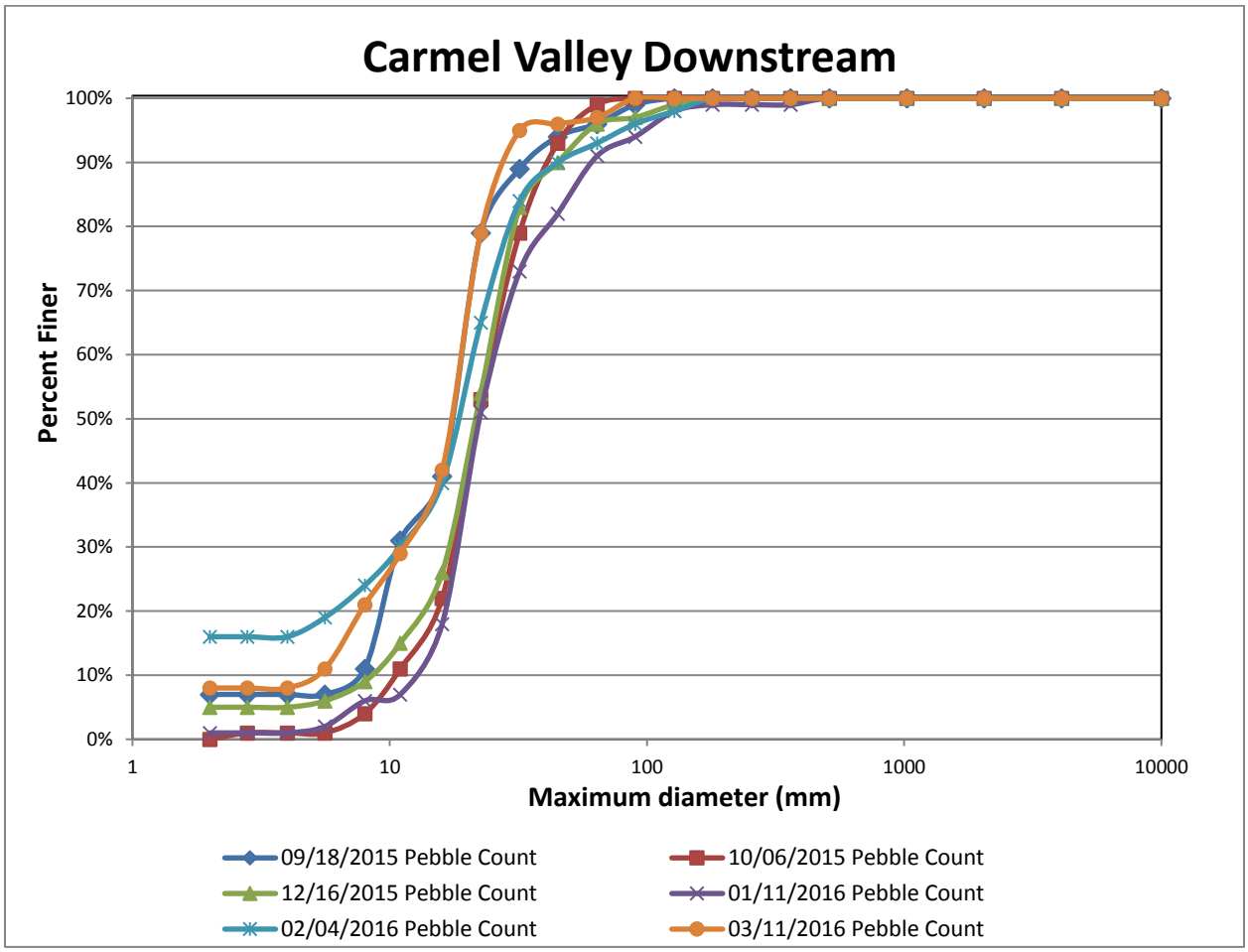
Carmel Valley Downstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/18/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

Los Peñasquitos Creek:

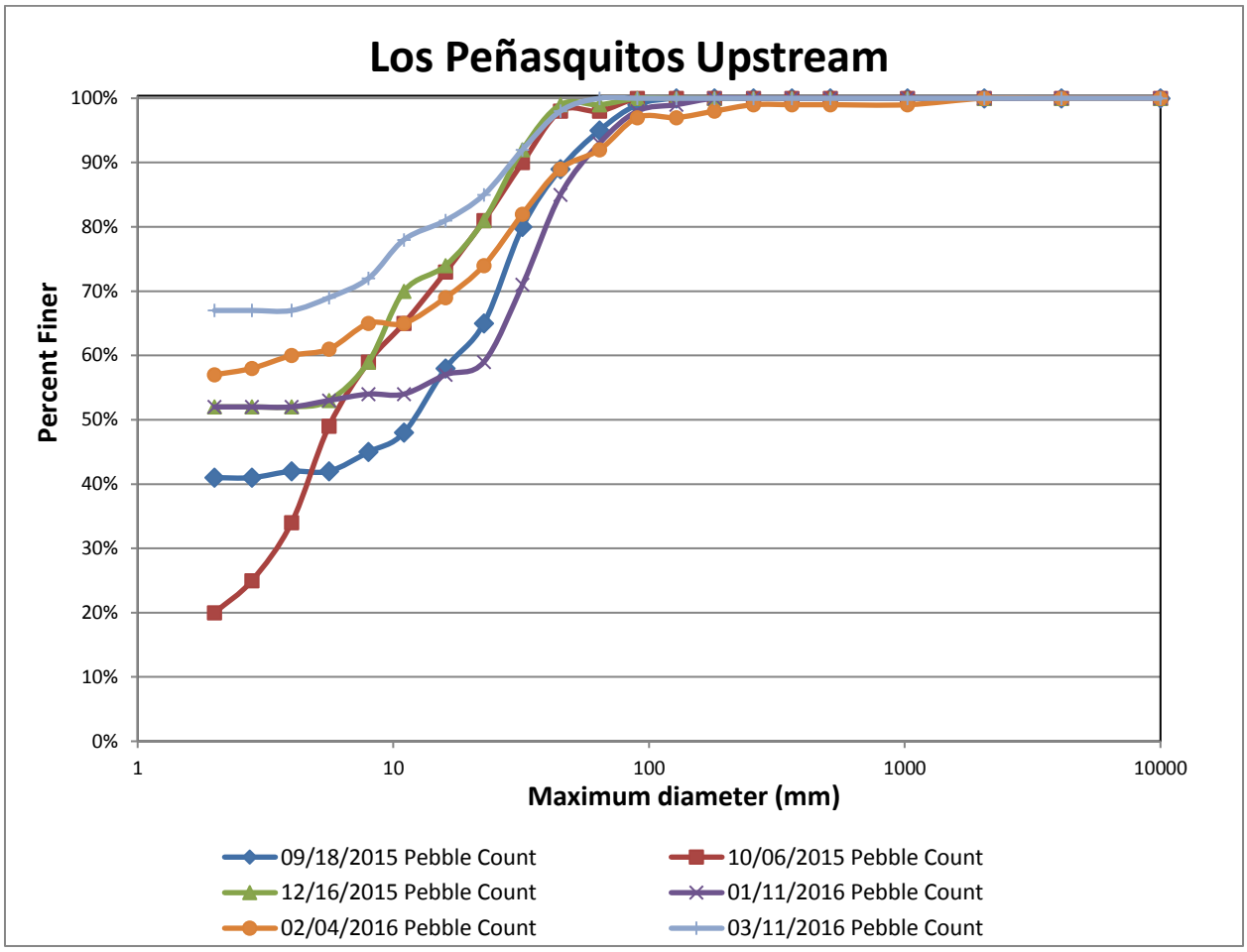

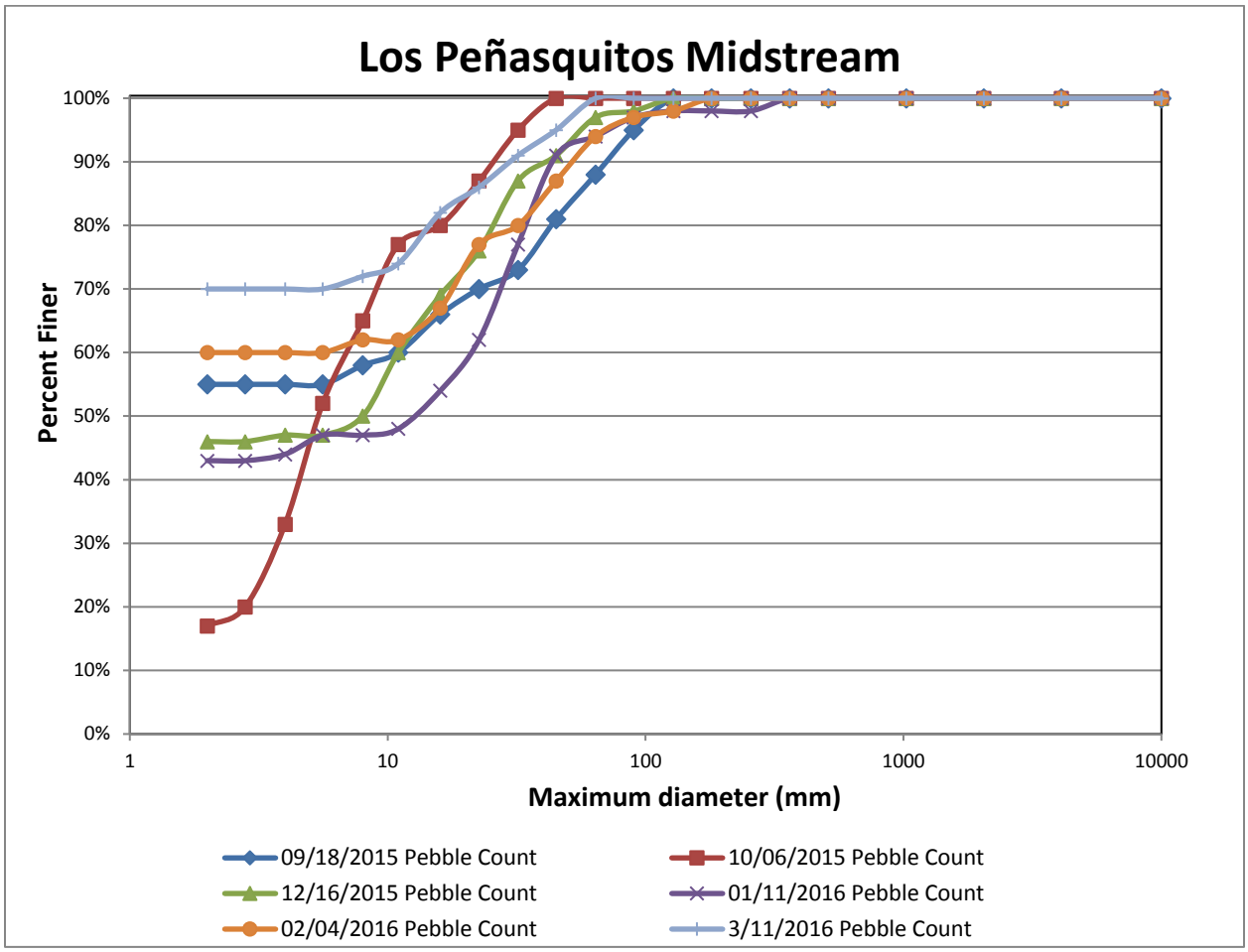
Los Peñasquitos Midstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/18/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
3/11/2016 Pebble Count

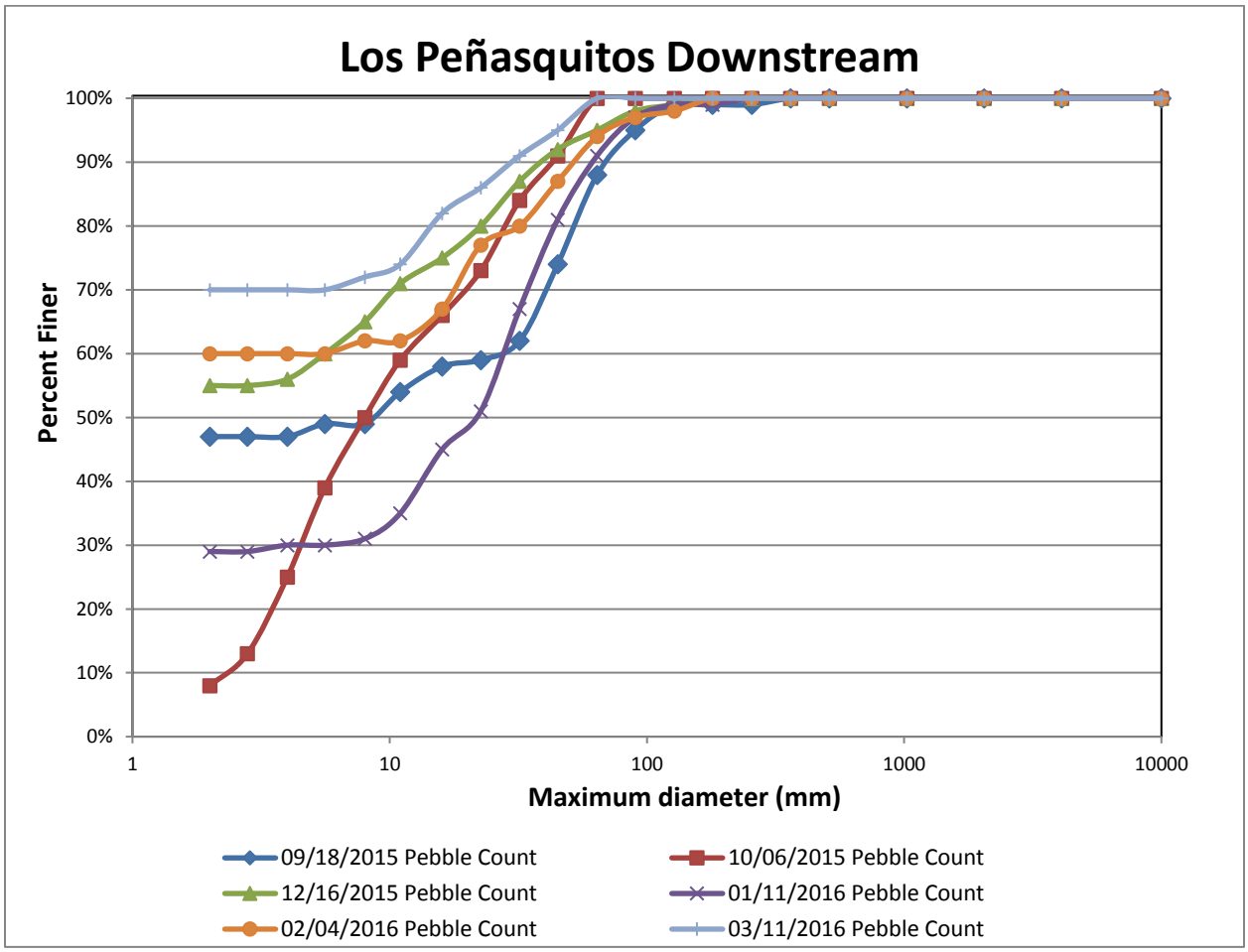
Los Peñasquitos Downstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/18/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

APPENDIX E
STREAMBED PHOTOGRAPH LOG

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Carroll Canyon Creek Bedload Monitoring Location	
Facing Downstream	Facing Upstream
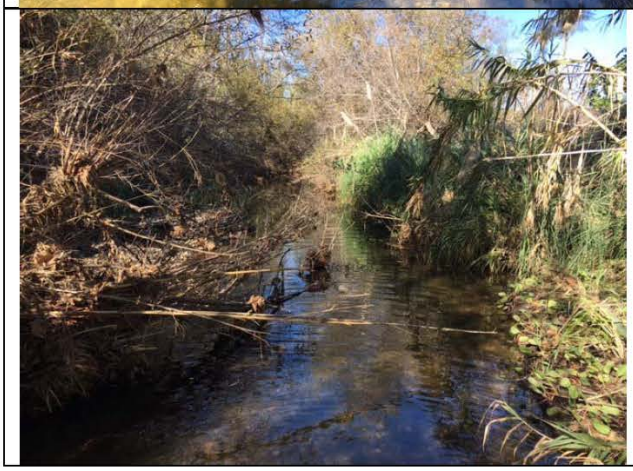	

Carroll Canyon Creek Bedload Monitoring Location	
Facing Downstream	Facing Upstream
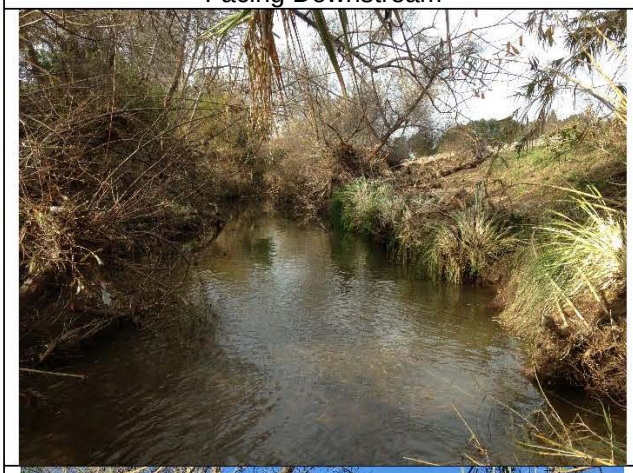	
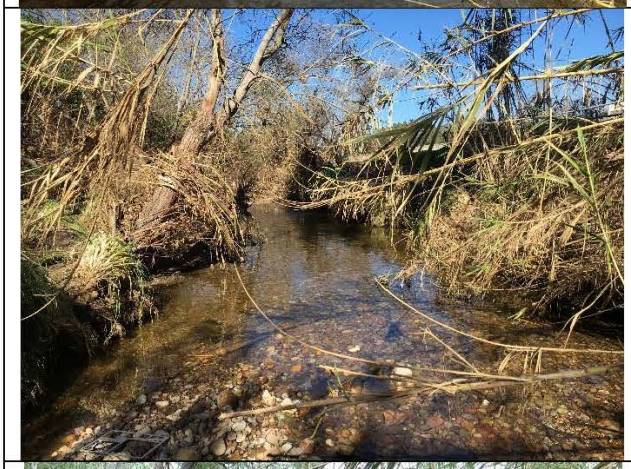	

Carmel Valley Creek Bedload Monitoring Location	
Facing Downstream	Facing Upstream
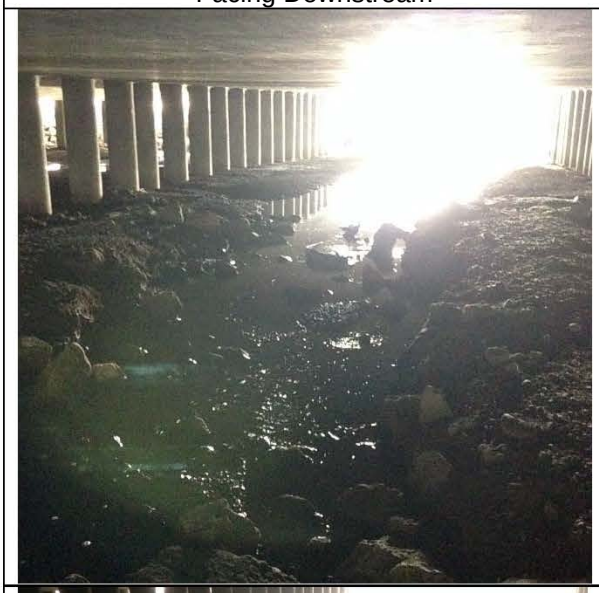	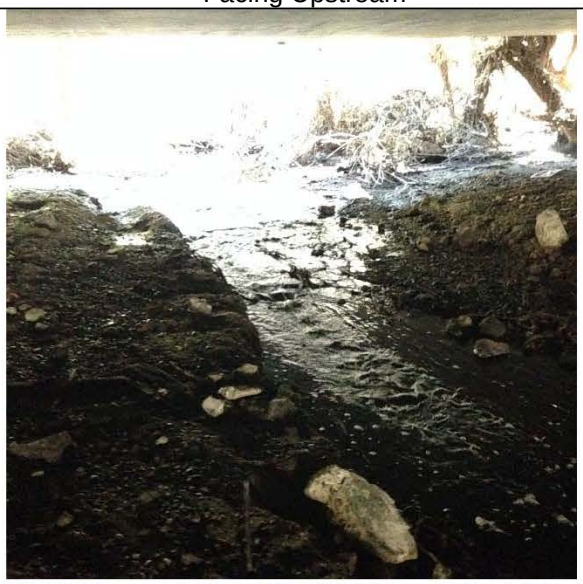
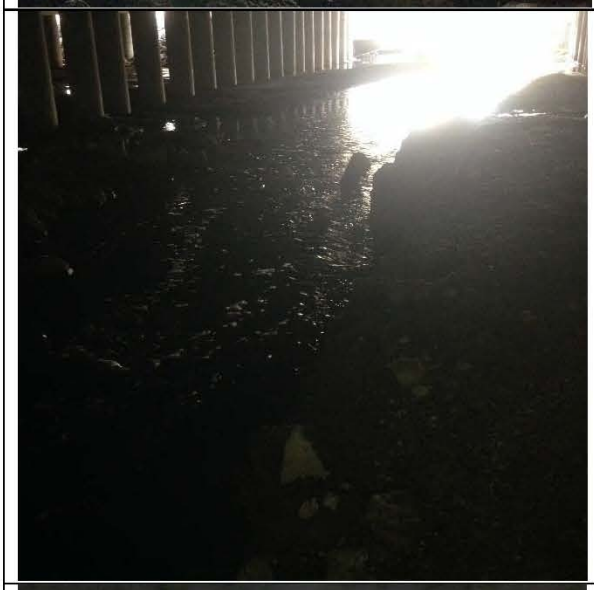	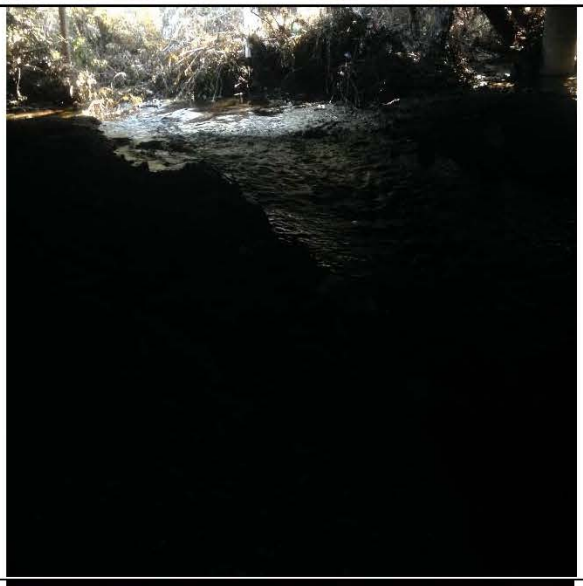

Carmel Valley Creek Bedload Monitoring Location	
Facing Downstream	Facing Upstream
	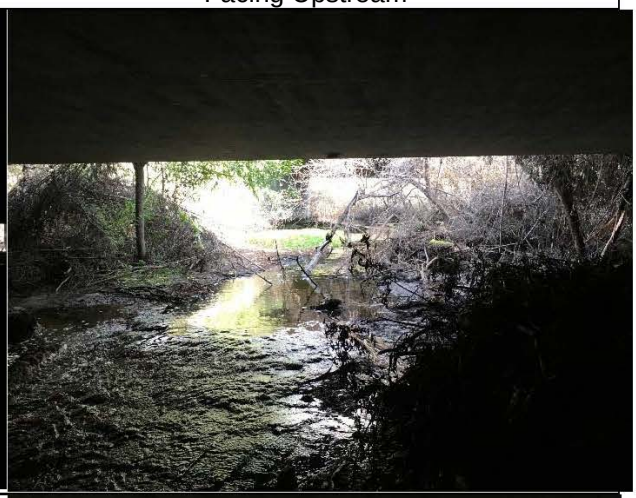
	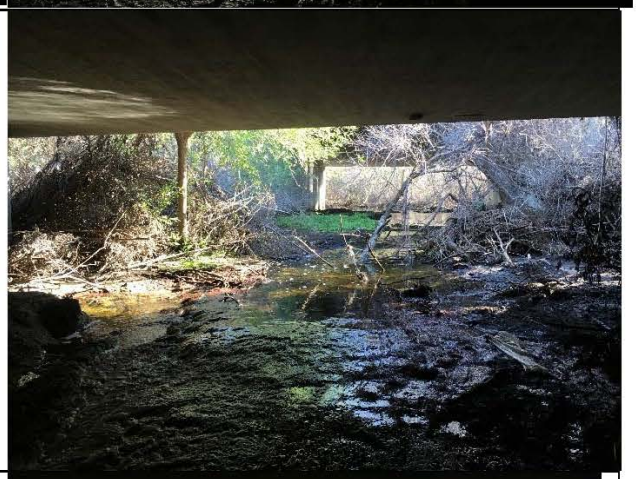

Los Peñasquitos Creek Bedload Monitoring Location	
Facing Downstream	Facing Upstream
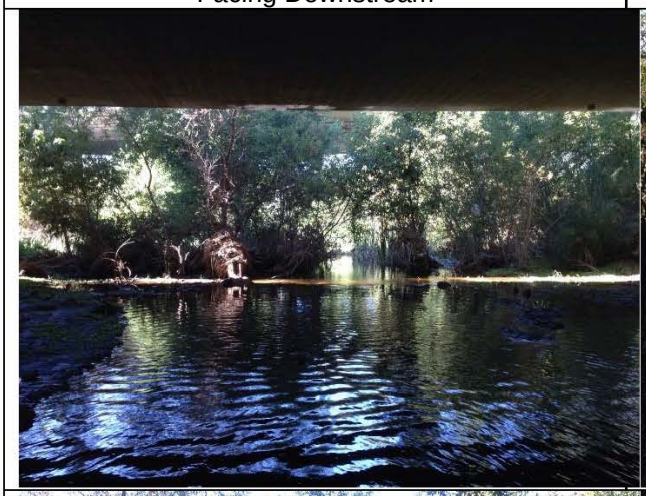	
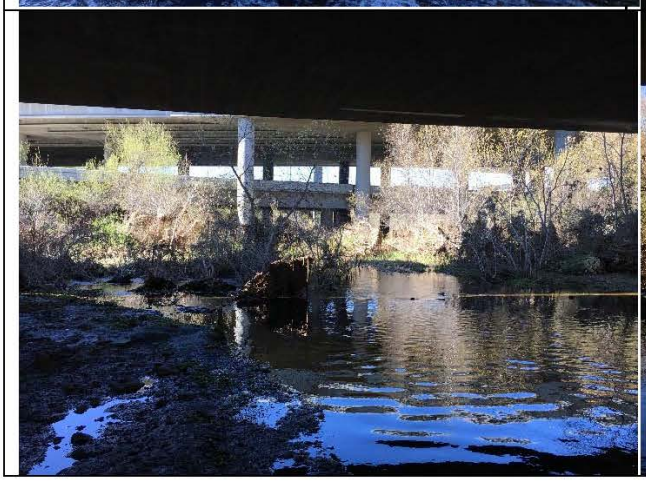	

Los Peñasquitos Creek Bedload Monitoring Location	
Facing Downstream	Facing Upstream

APPENDIX F
CROSS-SECTION SURVEYS AND HEAD-VERSUS-FLOW TABLE CALCULATIONS

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Revised Head versus Flow Estimates

During the 2015–2016 monitoring season, cross-sectional areas of streambeds at the three monitored locations were updated and used to revise the head-versus-flow tables. Refined cross-sectional areas were captured using a laser-level scope. Cross-sectional survey results are provided in the following tables and graphs:

Cross Section Survey Results for Carroll Canyon Creek

Note: Cross-sectional survey of streambeds conducted using a laser-level scope.

Distance (ft)	Height (ft)
5	2.65
7	3.5
9	3.95
11	5.65
13	6.52
15	7.51
17	8.02
19	8.55
21	10.81
23	10.8
25	10.45
27	10.36
29	10.42
31	10.52
33	10.45
35	8.52
37	7.3
39	6.31
41	6.14
43	4.8
45	4

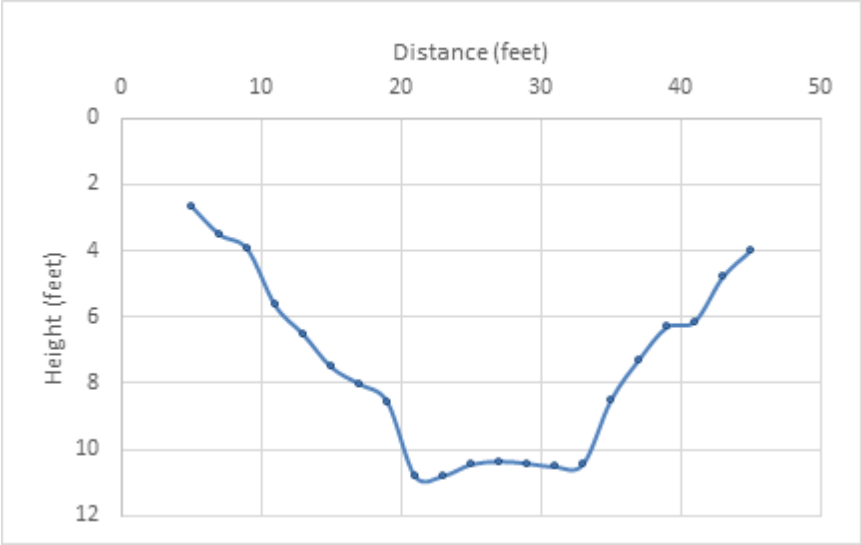

Note: Chart represents data from last year, no updated survey data is available for this site.

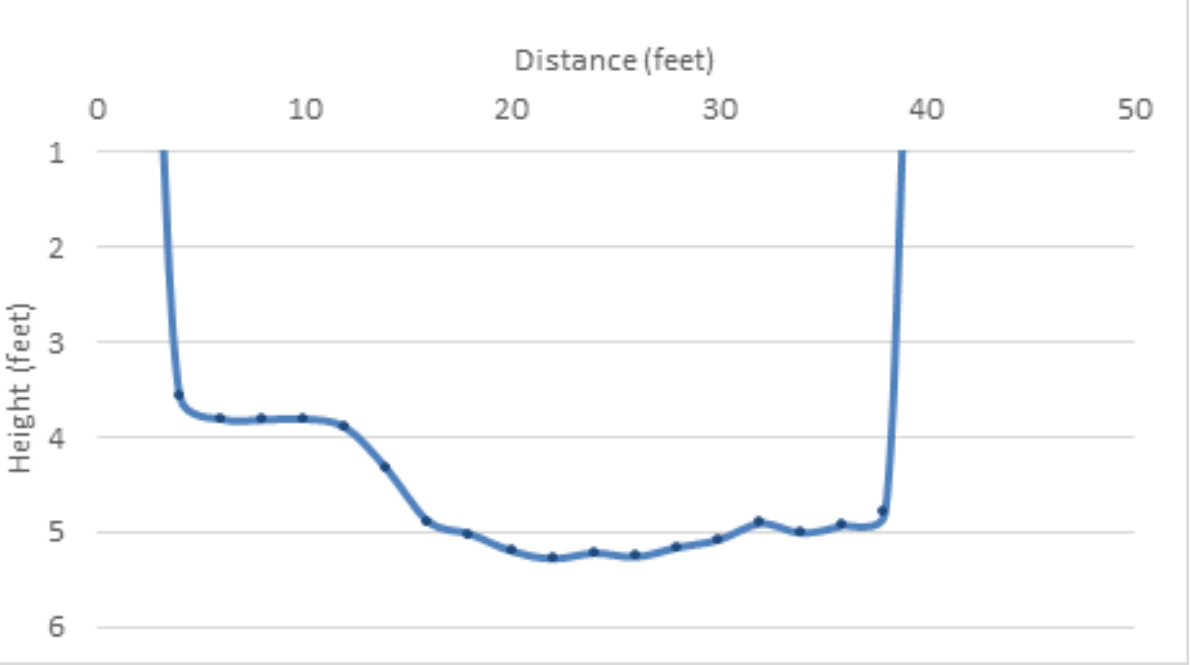

Distance (ft)	Height (ft)	Distance (ft)	Height (ft)
3	0.00	**22**	5.28
4	3.57	**24**	5.22
6	3.81	**26**	5.26
8	3.82	**28**	5.16
10	3.81	**30**	5.08
12	3.90	**32**	4.91
14	4.34	**34**	5.01
16	4.89	**36**	4.93
18	5.02	**38**	4.80
20	5.20	**39**	0.00

1014

Cross Section Survey Results for Los Peñasquitos Creek

Note: Cross-sectional survey of streambeds conducted using a laser-level scope.

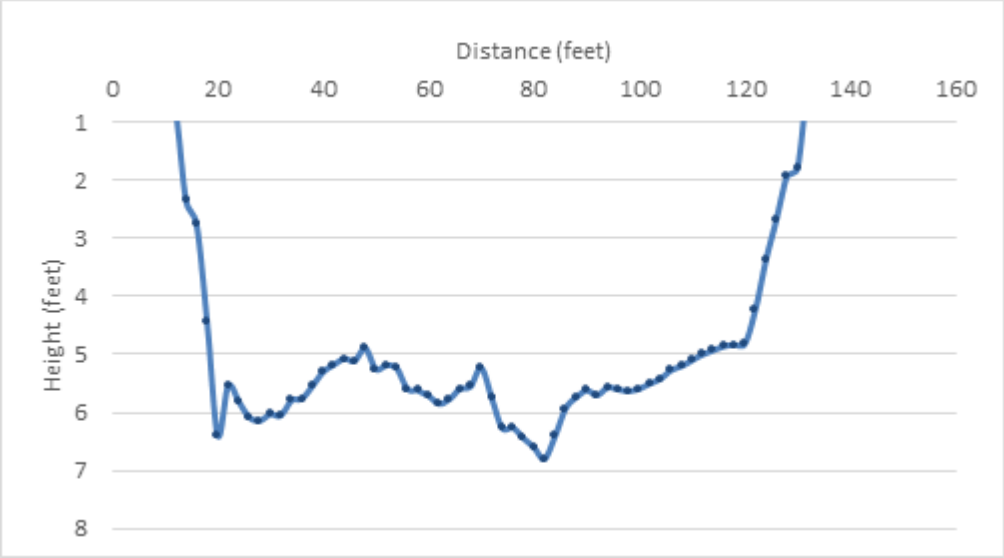

Distance (ft)	Height (ft)	Distance (ft)	Height (ft)	Distance (ft)	Height (ft)
8	-0.82	**52**	5.19	**96**	5.6
10	0.47	**54**	5.24	**98**	5.63
12	0.80	**56**	5.59	**100**	5.59
14	2.35	**58**	5.62	**102**	5.5
16	2.76	**60**	5.71	**104**	5.42
18	4.43	**62**	5.85	**106**	5.27
20	6.39	**64**	5.77	**108**	5.2
22	5.54	**66**	5.59	**110**	5.1
24	5.81	**68**	5.55	**112**	5
26	6.08	**70**	5.23	**114**	4.93
28	6.14	**72**	5.75	**116**	4.86
30	6.03	**74**	6.27	**118**	4.83
32	6.05	**76**	6.26	**120**	4.82
34	5.79	**78**	6.44	**122**	4.24
36	5.76	**80**	6.60	**124**	3.38
38	5.54	**82**	6.80	**126**	2.68
40	5.30	**84**	6.41	**128**	1.93
42	5.18	**86**	5.93	**130**	1.79
44	5.07	**88**	5.74	**132**	0.35
46	5.11	**90**	5.62	**134**	-0.23
48	4.89	**92**	5.7	**136**	-1.32
50	5.25	**94**	5.57		

Multiple field flow measurements using wading rods and StreamPro ADCPs were used to verify and calibrate the revised head-versus-flow table. Flow estimates were estimated using the Manning's equation, which is used to calculate cross-sectional average velocity in open channels:

$$v = k_n / n\, R^{2/3}\, S^{1/2} \quad (1)$$

Where,

v = cross-sectional mean velocity (ft/s)
k_n = 1.486
n = Manning coefficient of roughness
R = hydraulic radius (ft)
S = slope of pipe (ft/ft)

Hydraulic radius can be expressed as:

$$R = A / P \quad (2)$$

Where,

A = cross sectional area of flow (ft^2)
P = wetted perimeter (ft)

The following figures show the revised and previous head versus flow estimates and field flow measurements for Carroll Canyon, Carmel Valley and Los Peñasquitos Creeks:

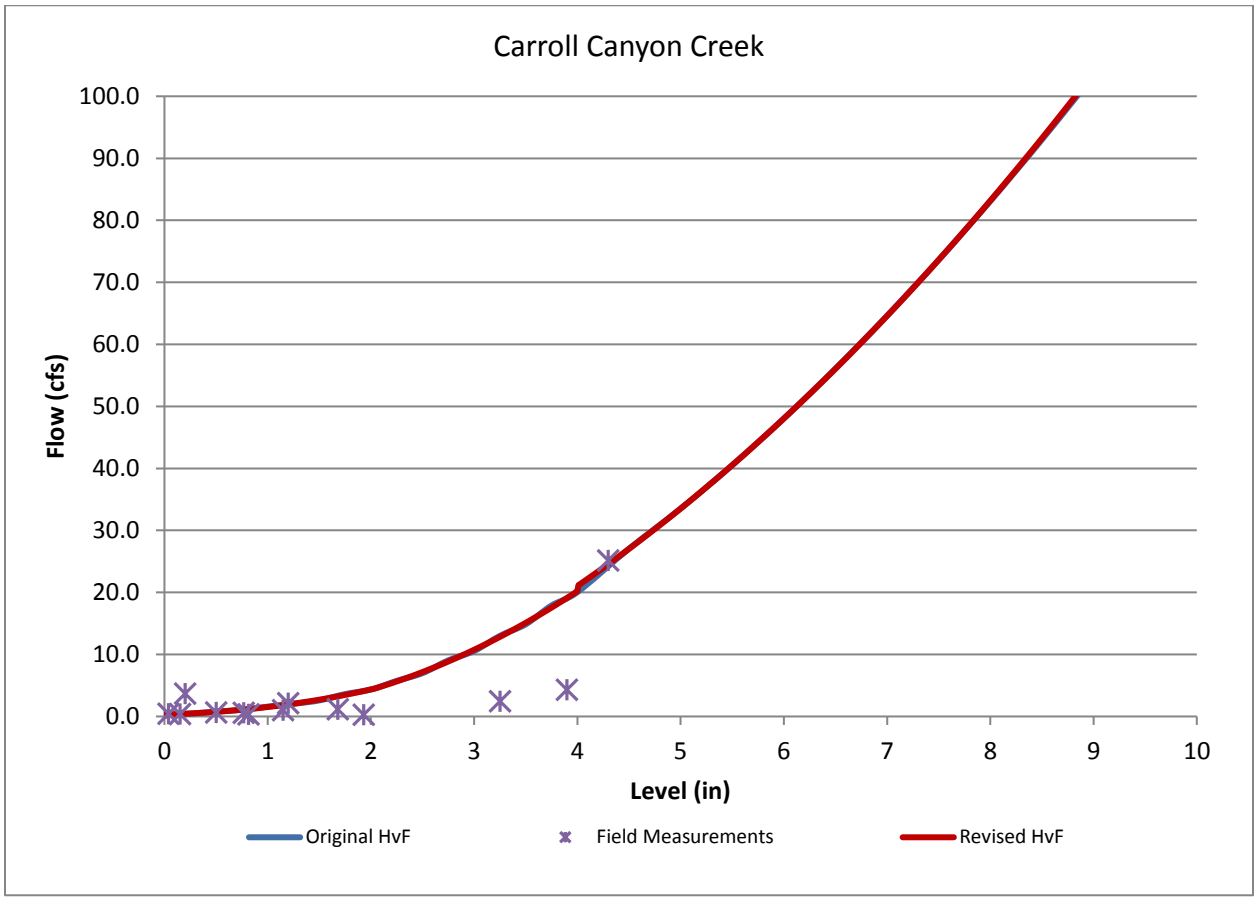
Carroll Canyon Creek
Flow (cfs)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0
1
2
3
4
5
6
7
8
9
10
Level (in)
Original HvF
Field Measurements
Revised HvF

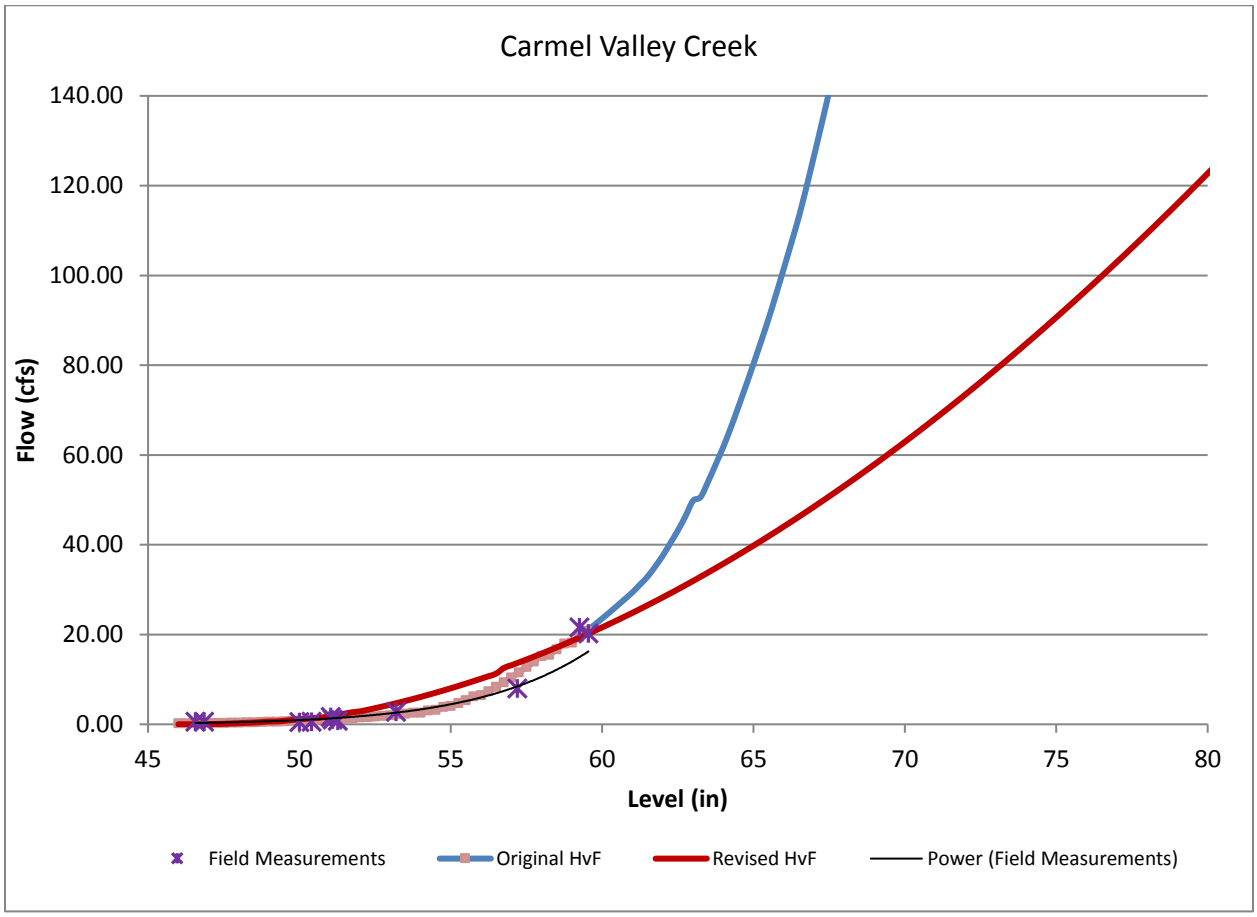
Carmel Valley Creek
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Flow (cfs)
45
50
55
60
65
70
75
80
Level (in)
Field Measurements
Original HvF
Revised HvF
Power (Field Measurements)

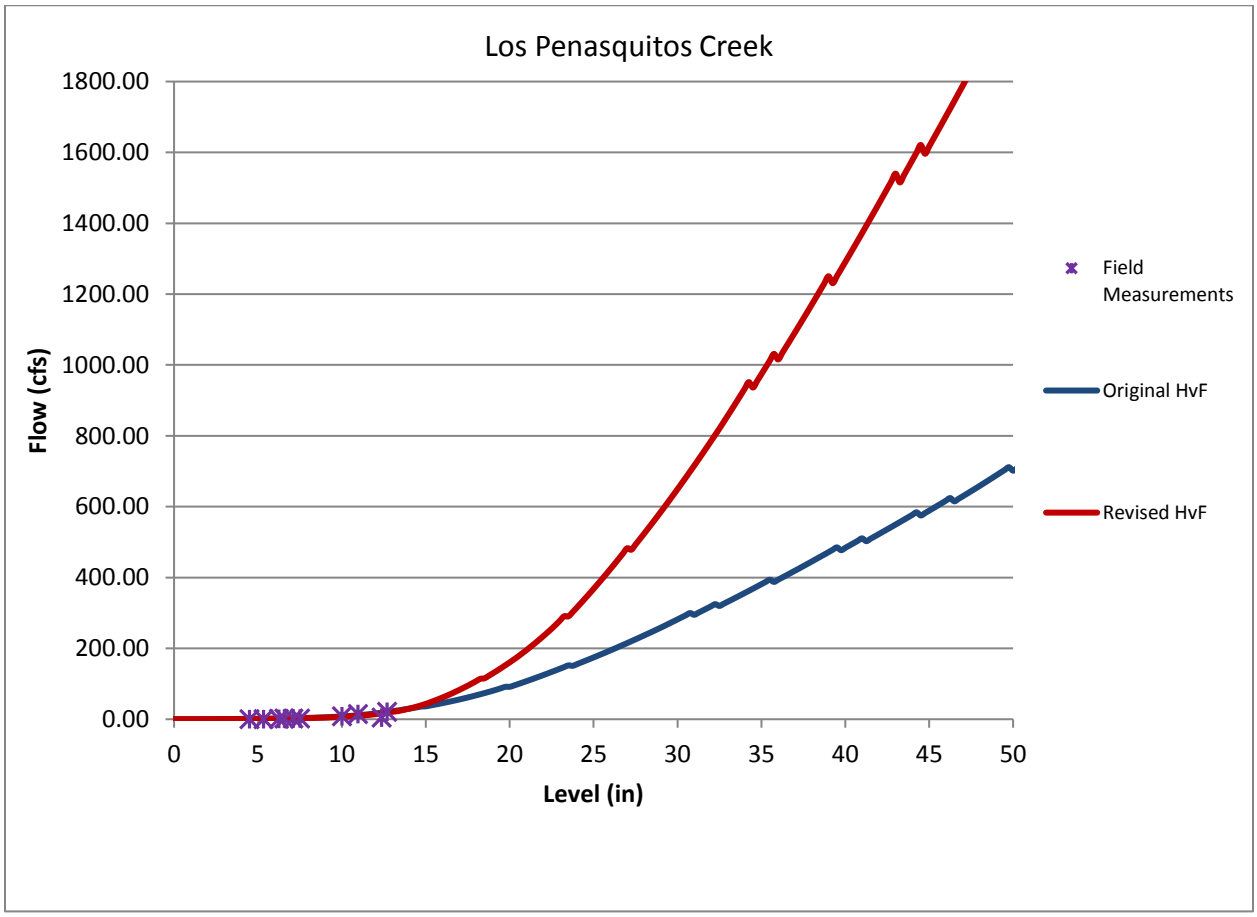
Los Penasquitos Creek
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
Flow (cfs)
0
5
10
15
20
25
30
35
40
45
50
Level (in)
Field Measurements
Original HvF
Revised HvF

APPENDIX G
ALTERNATIVE LOAD ESTIMATION ANALYSIS

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FY16 Update

Rainfall intensities were estimated for both FY15 and FY16 based on data recorded from Los Peñasquitos Creek rain gauge and relationships between maximum 1-hour rainfall intensity and estimated daily load using data collected during FY14 and FY15. When incorporating data collected during FY16, the relationships were much weaker and deemed unreliable. This is likely due to the intense nature of storms monitoring in FY16. Therefore, the best fit line developed in FY15 was used to calculate non-monitored load estimates for FY15 and FY16. Although this analysis is preliminary, the equations from FY15 were used for comparison purposes between the FY16 load estimations using the "average estimation method" described in the Monitoring Report, and for comparison of the effectiveness of the current form of the "rainfall intensity estimation method" described in this appendix between two hydrologically different years. The procedures described below are those used in FY15 (as reported in the FY15 Monitoring Report). Estimation results for FY16 were added to Table G-1.

Estimates of Rainfall Intensities

Estimates of maximum rainfall intensity and maximum 1-hour moving rainfall intensity were calculated using the following method:

- Cumulative event rainfall depths are estimated throughout the storm event using rainfall detection values (when the rain gauge bucket tips and a known depth of rain is recorded) and specific dates and times;
- Rainfall Intensities (in/hr) are estimated based on the slope or measured of depth per time ($\Delta D/\Delta t$) divided by 24, where ΔD is the depth associated with each bucket tip;
- Estimates of rainfall intensities assume the intensity starts at zero and increases to the intensity between the first two recorded bucket tips, and the time of the unrecorded start of the rainfall is equal to the time when rainfall was detected for the first time Δt_1 minus Δt;
- Maximum rainfall intensity (in/hr) is observed as the maximum of all estimated rainfall intensities; and lastly,
- The maximum 1-hour rainfall intensity (in/hr) is estimated as the depth of recorded rainfall that occurs within an hour.

The following table summarizes rainfall intensities calculated for the 2013-2014 and 2014-2015 storm events:

Table G-1.
Rainfall Intensity, EMC and Sediment Daily Load Results

Site	Event Date	Max. 1-Hour Rainfall Intensity (inches/hour)	Predicted Estimated Daily Load (tons/day)	Monitored Storm Event Load Estimation (tons/day)
Carroll Canyon Creek	November 1–2, 2014	0.55	88.5	NM
	December 2–4, 2014	0.16	7.04	44.4
	December 12–13, 2014	0.26	19.0	33.5
	December 16–17, 2014	0.22	13.5	NM
	December 30–31, 2014	0.24	16.2	NM
	January 12, 2015	0.17	7.97	NM
	February 22, 2015	0.09	2.16	2.6
	March 1–2, 2015	0.13	4.6	NM
	April 23–24, 2015	0.08	1.7	NM
	October 4–5, 2015	0.05	0.65	NM
	November 27, 2015	0.04	0.41	NM
	December 11, 2015	0.08	1.70	NM
	December 13–14, 2015	0.07	1.29	NM
	December 19, 2015	0.12	3.90	NM
	December 22, 2015	0.04	0.41	NM
	December 28, 2015	0.1	2.69	NM
	January 4, 2016	0.04	0.41	1,283
	January 5, 2016	0.78	181	
	January 6, 2016	0.82	200.62	NM
	January 7, 2016	0.25	17.57	NM
	January 31, 2016	0.1	2.69, 15.2[b c]	15.2
	February 18, 2016	0.1	2.69	NM
	March 5, 2016	0.24	16.2	25.8
	March 7, 2016	0.23	14.81	
	March 11, 2016	0.25	17.57	NM
	April 7, 2016	0.13	4.60	NM
	April 8, 2016	0.15	6.17	NM
	April 10, 2016	0.3	25.54	NM
Estimated Annual Loads			**Average Method**	**Rainfall Intensity Method**
Carroll Canyon Creek 2014–2015 Annual Load (tons/year)			**250**	**376**
Carroll Canyon Creek 2015–2016 Annual Load (tons/year)			**554**	**9,270**

Table G-1.
Rainfall Intensity, EMC and Sediment Daily Load Results (continued)

Site	Event Date	Max. 1-Hour Rainfall Intensity (inches/hour)	Predicted Estimated Daily Load (tons/day)	Monitored Storm Event Load Estimation (tons/day)
Carmel Valley Creek	November 1–2, 2014	0.55	0.972	
	December 2–4, 2014	0.16	0.163	0.198
	December 12–13, 2014	0.26	0.329	0,902
	December 16–17, 2014	0.22	0.258	
	December 30–31, 2014	0.24	0.293	
	January 12, 2015	0.17	0.178	
	February 22, 2015	0.09	0.0707	0.041
	March 1–2, 2015	0.13	0.12	
	April 23–24, 2015	0.08	0.06	
	October 4–5, 2015	0.05	0.03	
	November 27, 2015	0.04	0.02	
	December 11, 2015	0.08	0.06	
	December 13–14, 2015	0.07	0.05	
	December 19, 2015	0.12	0.11	
	December 22, 2015	0.04	0.02	
	December 28, 2015	0.1	0.08	
	January 4, 2016	0.04	0.02	23.9
	January 5, 2016	0.78	1.61	
	January 6, 2016	0.82	1.73	
	January 7, 2016	0.25	0.31	
	January 31, 2016	0.1	0.08, 1.73[b]	1.73
	February 18, 2016	0.1	0.08	
	March 5, 2016	0.24	0.29	1.67
	March 7, 2016	0.23	0.28	
	March 11, 2016	0.25	0.31	
	April 7, 2016	0.13	0.12	
	April 8, 2016	0.15	0.15	
	April 10, 2016	0.3	0.40	
Estimated Annual Loads			**Average Method**	**Rainfall Intensity Method**
Carmel Valley Creek 2014–2015 Annual Load (tons/year)			**3.80**	**5.32**
Carmel Valley Creek 2015–2016 Annual Load (tons/year)			**6.37**	**191**

Table G-1.
Rainfall Intensity, EMC and Sediment Daily Load Results (continued)

Site	Event Date	Max. 1-Hour Rainfall Intensity (inches/hour)	Predicted Estimated Daily Load (tons/day)	Monitored Storm Event Load Estimation (tons/day)
Los Peñasquitos Creek	November 1–2, 2014	0.55	15.7	
	December 2–4, 2014	0.16	0.270	10.4
	December 12–13, 2014	0.26	1.33	4.67
	December 16–17, 2014	0.22	0.77	
	December 30–31, 2014	0.24	1.03	
	January 12, 2015	0.17	0.329	
	February 22, 2015	0.09	0.0405	0.0855
	March 1–2, 2015	0.13	0.136	
	April 23–24, 2015	0.08	0.03	
	October 4–5, 2015	0.05	0.01	
	November 27, 2015	0.04	0.0028	
	December 11, 2015	0.08	0.03	
	December 13–14, 2015	0.07	0.02	
	December 19, 2015	0.12	0.10	
	December 22, 2015	0.04	0.0028	
	December 28, 2015	0.1	0.06	
	January 4, 2016	0.04	0.0028	2004
	January 5, 2016	0.78	49.76	
	January 6, 2016	0.82	58.67	
	January 7, 2016	0.25	1.17	
	January 31, 2016	0.1	0.06, 6.11[b]	6.11
	February 18, 2016	0.1	0.06	
	March 5, 2016	0.24	1.03	0.75
	March 7, 2016	0.23	0.89	
	March 11, 2016	0.25	1.17	
	April 7, 2016	0.13	0.14	
	April 8, 2016	0.15	0.22	
	April 10, 2016	0.3	2.14	
Estimated Annual Loads			**Average Method**	**Rainfall Intensity Method**
Los Peñasquitos Creek 2014–2015 Annual Load (tons/year)			**30.6**	**70.7**
Los Peñasquitos Creek 2015–2016 Annual Load (tons/year)			**128**	**14,100**

Table G-1.
Rainfall Intensity, EMC and Sediment Daily Load Results (continued)

Estimated Annual Loads	Average Estimation Method	Rainfall Intensity Estimation Method
Carroll Canyon Creek 2014–2015 Annual Load (tons/year)	250	376
Carmel Valley Creek 2014–2015 Annual Load (tons/year)	3.80	5.32
Los Peñasquitos Creek 2014–2015 Annual Load (tons/year)	30.6	70.7
Total Estimated Annual Load 2014–2015 (tons/year)	**284**	**452**
Carroll Canyon Creek 2015–2016 Annual Load (tons/year)	554	9,270
Carmel Valley Creek 2015–2016 Annual Load (tons/year)	6.37	191
Los Peñasquitos Creek 2015–2016 Annual Load (tons/year)	128	14,100
Total Estimated Annual Load 2015–2016 (tons/year)	**688**	**23,500**

a. For the 2014–2015 year, monitoring occurred on December 2–4, 2014, December 12–13, 2014, and February 22, 2015; For the 2015–2016 year, monitoring occurred on January 4–5, 2016, January 31, 2016, and March 5–7, 2016; daily loads are calculated using SSC data and flow duration (see Sections 3.1 and 3.4).
b. Represents calculated value for monitored event.
c. Calculated value for monitored event covers all days of the monitored storm, not just the listed day. For example, for Carroll Canyon Creek, the value of 1,283 represents the calculated value for January 4 and 5, 2016, and 25.8 represents the calculated value for March 5–7, 2016.

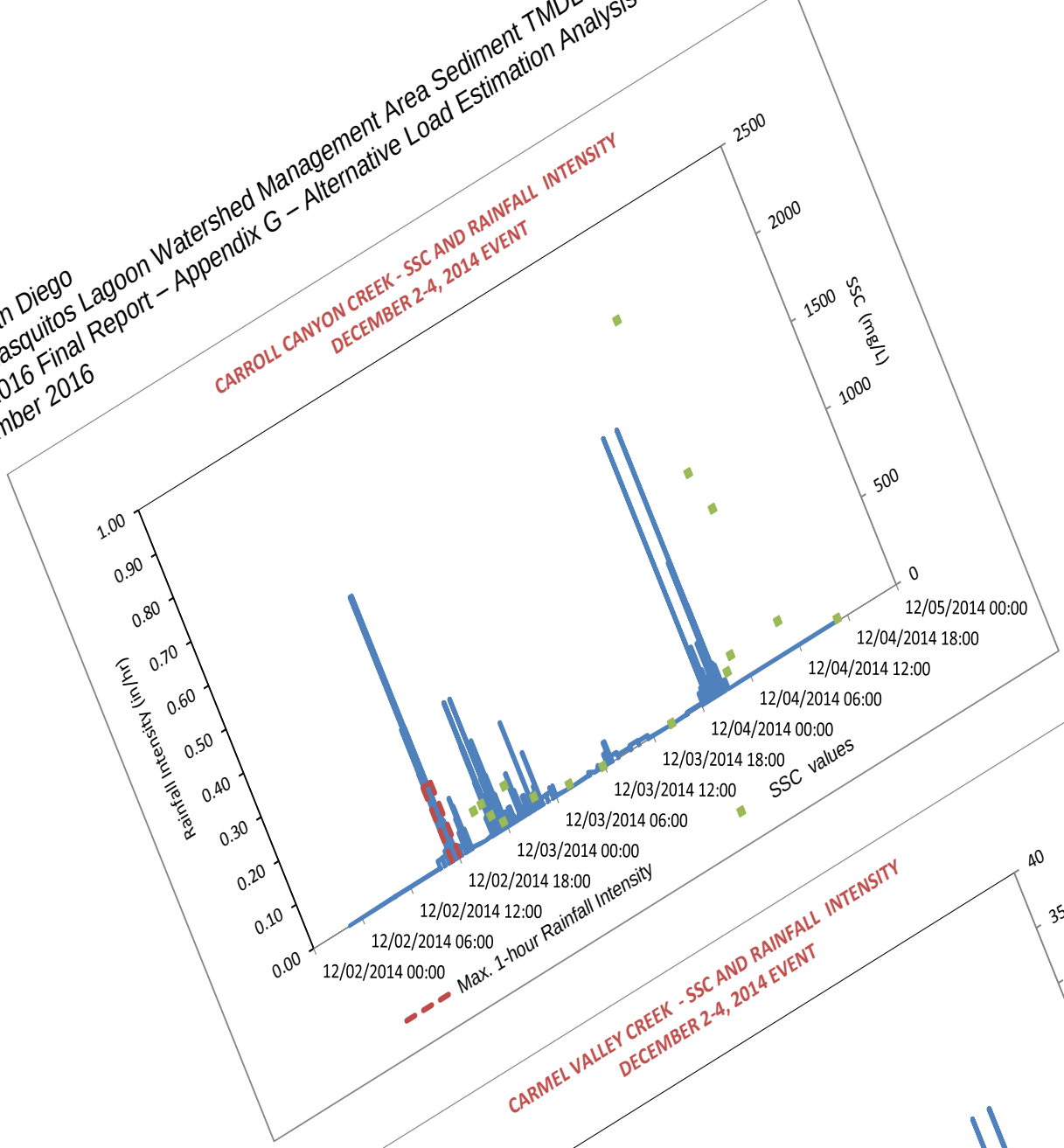
CARROLL CANYON CREEK - SSC AND RAINFALL INTENSITY
DECEMBER 2-4, 2014 EVENT
Rainfall Intensity (in/hr)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
SSC (mg/L)
2500
2000
1500
1000
500
0
12/02/2014 00:00
12/02/2014 06:00
12/02/2014 12:00
12/02/2014 18:00
12/03/2014 00:00
12/03/2014 06:00
12/03/2014 12:00
12/03/2014 18:00
12/04/2014 00:00
12/04/2014 06:00
12/04/2014 12:00
12/04/2014 18:00
12/05/2014 00:00
Max. 1-hour Rainfall Intensity
SSC values

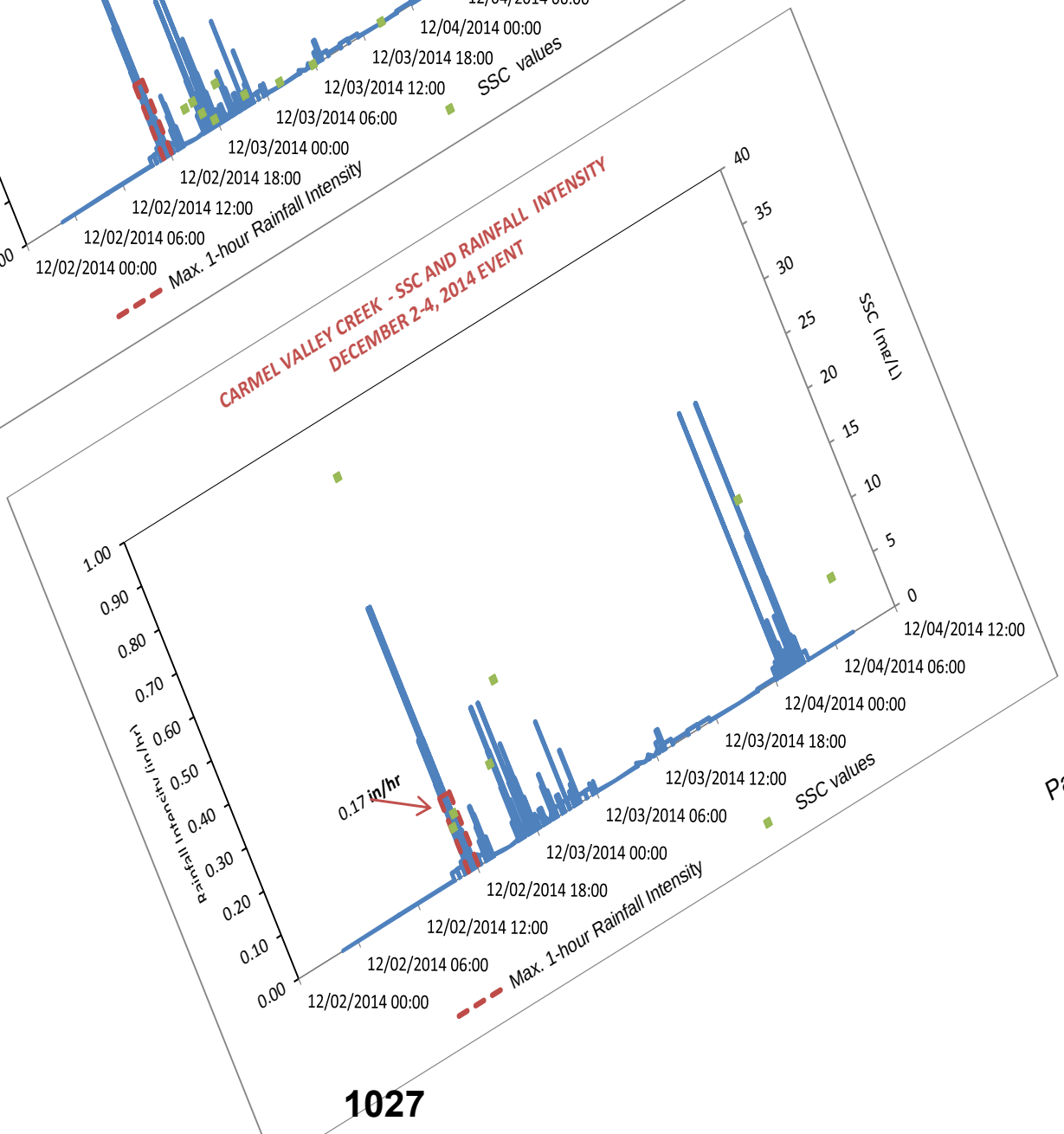
CARMEL VALLEY CREEK - SSC AND RAINFALL INTENSITY
DECEMBER 2-4, 2014 EVENT
Rainfall Intensity (in/hr)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
SSC (mg/L)
40
35
30
25
20
15
10
5
0
0.17 in/hr
12/02/2014 00:00
12/02/2014 06:00
12/02/2014 12:00
12/02/2014 18:00
12/03/2014 00:00
12/03/2014 06:00
12/03/2014 12:00
12/03/2014 18:00
12/04/2014 00:00
12/04/2014 06:00
12/04/2014 12:00
Max. 1-hour Rainfall Intensity
SSC values

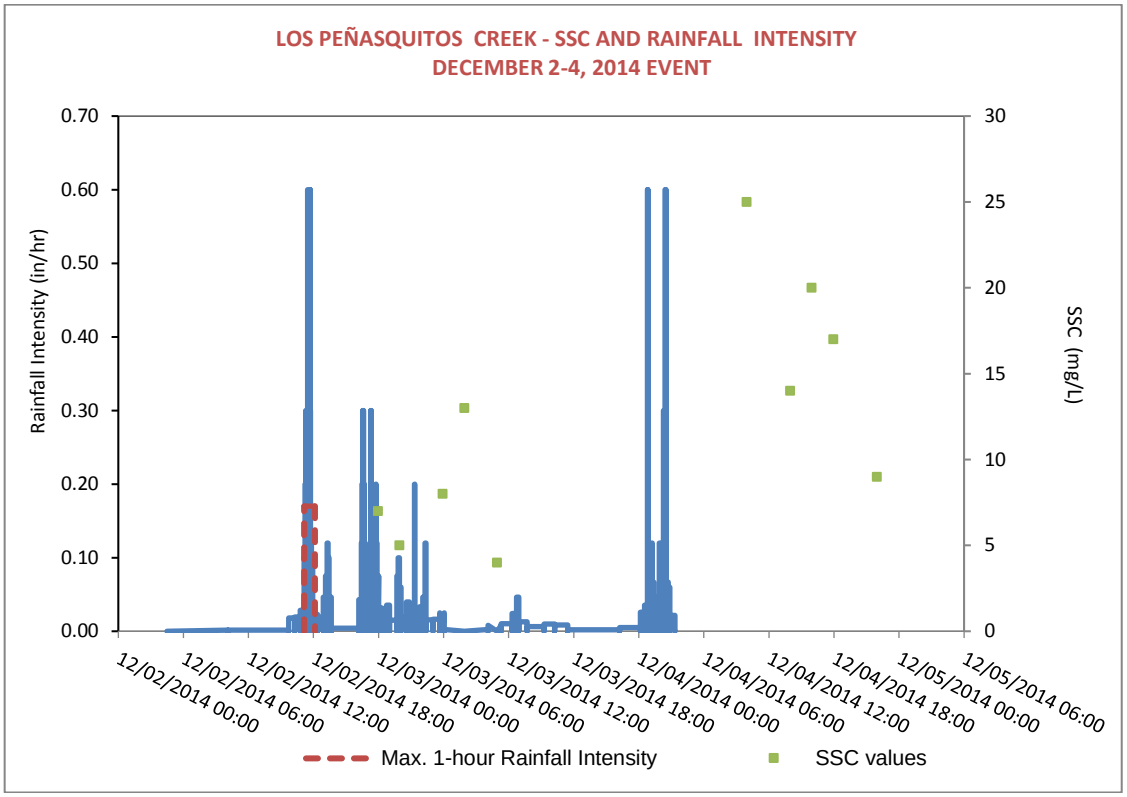

Comparative Graphs: Rainfall Intensities versus EMC and Sediment Loads

Estimates of flow-weighted event mean concentrations (EMCs) and sediment loads, which are estimates based analytical SSCs and flow data, were compared with the maximum rainfall intensities. Six pair of estimated values was plotted for each monitoring location: Carroll Canyon, Carmel Valley and Los Peñasquitos Creek. Preliminary graphs using all data indicating a stronger relationship between the maximum 1-hour rainfall intensity and sediment load than maximum rainfall intensity and sediment load. For example, Los Peñasquitos Creek trend curve had a coefficient of determination (R^2) higher (0.51) using the maximum 1-hour rainfall intensity than using the maximum rainfall for the limited set of data (0.31).

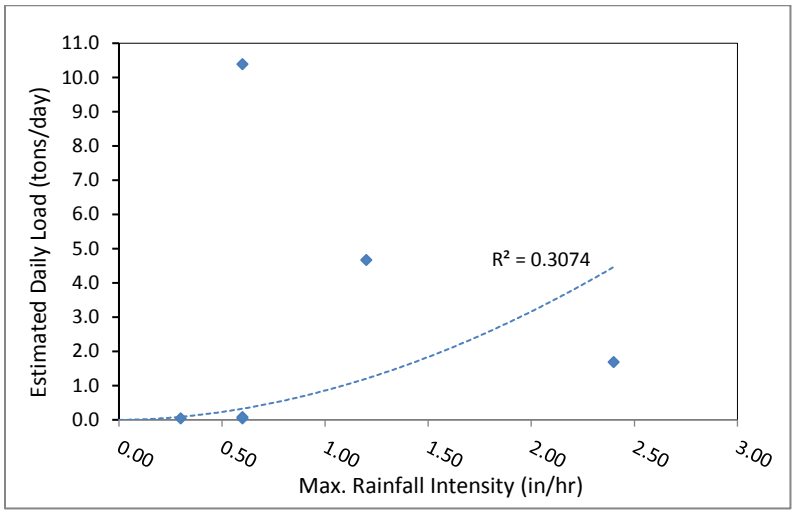

Figure G-1.
Los Peñasquitos Creek, Maximum Rainfall Intensity vs. Daily Sediment Load

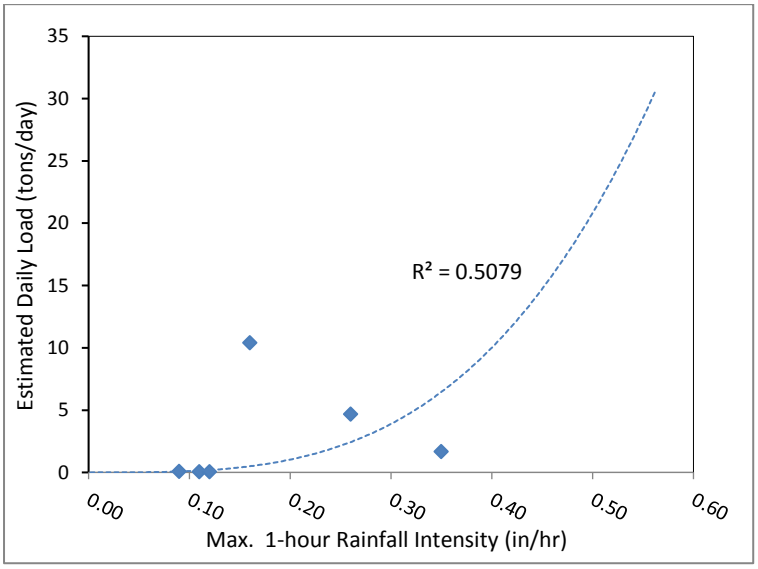

Figure G-2.
Los Peñasquitos Creek, Maximum 1-hour Rainfall Intensity vs. Daily Sediment Load

To further refine trend lines and as part of this evaluation, outliers in this set of data pairs were identified using a statistical regression analysis. For example, if the estimated standardized residual for a data pair was above 2 (standard deviations) and was not consistent with its neighbor points, the data pair was identified as an outlier. See example below.

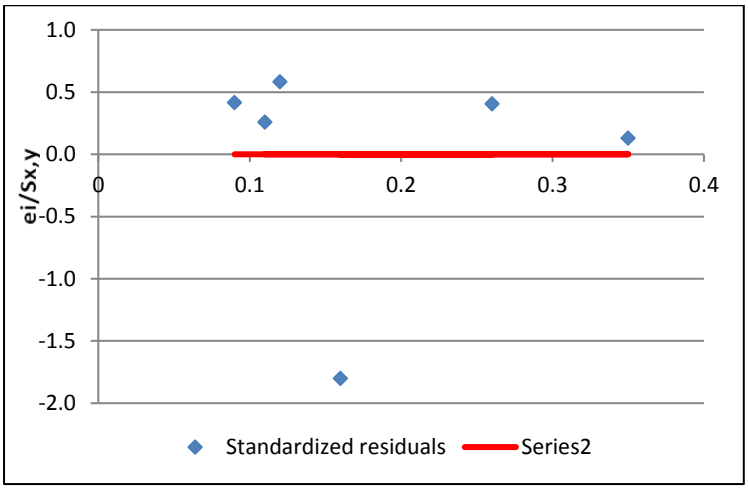

Figure G-3.
Los Peñasquitos Creek, 1-hour Maximum Rainfall Intensity versus Standardized Residual

Data from the December 2-4, 2014 monitoring storm event was identified as outlier for Carroll Canyon and Los Peñasquitos Creeks and from the November 21, 2013 monitoring storm event for Carmel Valley Creek.

Based on final set of limited data, revised graphs were prepared and provided in Figures 3-10 through 3-12 (see Section 3.5).

Estimated Sediment Loads during Monitored and Non-monitored Storm Events

Best-fitting equations from the refined set of data for Carroll Canyon, Carmel Valley and Los Peñasquitos Creeks were used to estimate EMC and sediment load values for the 2014-2015 monitored and non-monitored storm events (See Section 3.5). Equations used to predict sediment loads are as follow:

Table G-2.
Best-fitting Equations

Site	EMC	Daily Sediment Load
Carroll Canyon Creek	$Y= 648.2*X^{0.7434}$	$Y= 301.34*X^{2.0499}$
Carmel Valley Creek	$Y= -10.011*X + 11.67$	$Y= 2.3091*X^{1.4476}$
Los Peñasquitos Creek	$Y= 33.86*X^{1.1806}$	$Y= 112.81*X^{3.294}$

Note: X as Maximum 1-hour Rainfall Intensity, and Y as EMC and Sediment Load Values

Estimated EMC and daily sediment loads for monitored and non-monitoring storm events are provided in Table 3-5 (See section 3.5).

Refinement of sediment load estimates will be conducted during future monitoring activities at these locations. A statistical regression analysis will be rerun and trend lines will be re-estimated as more data become available (wider range of rainfall intensity values and storm patterns). It is

expected that equations from this analysis will be refined to provide a better relationship between rainfall intensity and estimated EMC and sediment load values for each monitoring location.

Additional parameters (such as total rainfall volume, storm duration, etc) may be evaluated in addition to the maximum 1-hour rainfall intensity to conduct a multiple regression analysis using more than one independent variable. Although this would add more complexity, it can also provide a more robust and realistic approach since the sediment loads is dependent on a variety of factors.

Attachment B – Bacteria TMDL Compliance Report

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LOS PEÑASQUITOS WATERSHED MANAGEMENT AREA

BACTERIA TOTAL MAXIMUM DAILY LOAD

2015–2016 COMPLIANCE MONITORING REPORT

Submitted to the San Diego Regional Water Quality Control Board by:

Prepared by:
Amec Foster Wheeler Environment & Infrastructure, Inc.
San Diego, California

January 2017

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ACRONYMS AND ABBREVIATIONS

%	percent
303(d) List	CWA Section 303(d) List of Water Quality Limited Segments
µS/cm	microSiemens per centimeter
AB 411	(California) Assembly Bill 411, the Beach Safety Act
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
Bacteria TMDL	*A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek),* 2010
Bight ’08	Southern California Bight 2008 Regional Monitoring Program
CFU	colony-forming unit
Compliance Monitoring Plan	*Los Peñasquitos River WMA Bacteria TMDL Compliance Monitoring Plan*
CWA	Clean Water Act
DW	dry weather
EM&TS	(City of San Diego) Environmental Monitoring and Technical Services Laboratory
FIB	fecal indicator bacteria
FM-100	Los Peñasquitos River Outlet/Beach compliance monitoring location
FY	fiscal year
ID	identification
MDL	method detection limit
mL	milliliters
Miramar	Marine Corps Air Station Miramar
MNAS	Miramar Naval Air Station
MPN	most probable number
MS4	Municipal Separate Storm Sewer System
MS4 Permit	*National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region,* Order Number R9 2013-0001, 2013
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit
NWS	National Weather Service
Ocean Plan	*California Ocean Plan,* SWRCB Resolution No. 2012-0056, 2012
QA	quality assurance
QC	quality control
RA	Responsible Agency
REC-1	water contact recreation beneficial use
Regional Board	San Diego Regional Water Quality Control Board

ACRONYMS AND ABBREVIATIONS (CONTINUED)

RL	reporting limit
RWL	receiving water limitation
SCCWRP	Southern California Coastal Water Research Project
SM	USEPA Standard Method
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load
USEPA	United States Environmental Protection Agency
WMA	Watershed Management Area
WQBEL	water quality-based effluent limitation
WQIP	Water Quality Improvement Plan
WRCC	Western Regional Climate Center
WW	wet weather

EXECUTIVE SUMMARY

This report presents the 2015–2016 compliance monitoring data required by the Bacteria Total Maximum Daily Load (TMDL)[1] for the Los Peñasquitos Watershed Management Area (WMA) as incorporated into the Municipal Separate Storm Sewer System (MS4) Permit[2] (San Diego Regional Water Quality Control Board [Regional Board], 2010 and 2013, respectively).

The Bacteria TMDL Compliance Monitoring Program is designed to assess the conditions of the receiving waters and has the following objectives:

- Characterize levels of bacteria concentrations at compliance monitoring locations.
- Track progress toward meeting the Bacteria TMDL numeric targets.

Fecal indicator bacteria[3] (FIB) sampling for the compliance monitoring period (October 2015 through September 2016) was conducted at one beach compliance monitoring location:

- **Los Peñasquitos River Outlet/Beach–FM-100:** An ocean receiving water of the Los Peñasquitos River that receives discharges from the Los Peñasquitos Lagoon and upstream creeks.

Wet weather samples were collected between October 1, 2015, and April 30, 2016, within the first 72 hours after the end of rainfall for three wet weather events. Dry weather samples were collected at least weekly in October 2015 and from April 2016 through September 2016, and at least monthly on dry weather days from November 1, 2015, through March 31, 2016. Weekly monitoring was scheduled so that a minimum of five samples were collected in each calendar month. Samples were analyzed for the FIB compliance constituents: total coliform, fecal coliform, and *Enterococcus*.

This report summarizes FIB concentrations and key hydrologic data at the compliance monitoring location by season. Compliance was assessed by comparing analytical results for total coliform, fecal coliform, and *Enterococcus* with the applicable receiving water limitations (RWLs), in accordance with the Bacteria TMDL requirements in Attachment E of the MS4 Permit. The RWLs are a combination of numeric targets for bacteria density and allowable exceedance frequencies. The MS4 Permit clarifies the final RWLs (as the most probable number [MPN]) for total coliform, fecal coliform, and *Enterococcus*. The single-sample maximum numeric targets are required to be achieved only during wet weather, with a final allowable exceedance frequency of 22 percent (%). For dry weather days, the 30-day geometric mean numeric targets must be achieved, with a 0% exceedance frequency. Table ES-1 lists the numeric targets for beaches.

---

[1] *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek),* Resolution No. R9-2010-0001, Regional Board, February 10, 2010 (Bacteria TMDL).

[2] *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region,* Order Number R9-2013-0001, May 14, 2013 (MS4 Permit).

[3] Fecal indicator bacteria include total colifom, fecal coliform, and *Enterococcus*.

Table ES-1.
Final Receiving Water Limitations for Beaches

(Maximum Bacteria Densities and Allowable Exceedance Frequencies)

Constituent	Wet Weather Days [a] Single-Sample Maximum		Dry Weather Days [b] 30-Day Geometric Mean	
	Numeric Target [c] (MPN/100mL)	Final Allowable Exceedance Frequency [d]	Numeric Target [e] (MPN/100mL)	Final Allowable Exceedance Frequency
Total Coliform	10,000	22%	1,000	0%
Fecal Coliform	400	22%	200	0%
Enterococcus	104	22%	35	0%

Notes:
% = percent; mL = milliliters; MPN = most probable number
Source (including footnotes): Bacteria TMDL, Regional Board, Order No. R9-2010-0001, 2010.

a. Wet weather days are defined as days with rainfall events of 0.2 inch or greater, plus the following 72 hours.
b. Dry weather days are defined as days with less than 0.2 inch of rainfall observed on each of the previous 3 days.
c. Wet weather numeric objectives are based on the single-sample maximum (or equivalent) water quality objectives in the *California Ocean Plan* (State Water Resources Control Board [SWRCB], 2012). Compliance with the wet weather TMDLs in the receiving water is based on the frequency of the wet weather days in any given year exceeding the wet weather numeric objective, but the 30-day geometric mean must also be met.
d. The wet weather allowable exceedance frequency is set at 22 percent. In the calculation of the wet weather TMDLs, the Regional Board chose to apply the 22% allowable exceedance frequency as determined for Leo Carrillo Beach in Los Angeles County. At the time the wet weather watershed model was developed, this 22% exceedance frequency was the only reference beach exceedance frequency that was available. The 22% allowable exceedance frequency that is used to calculate the wet weather TMDLs is justified because the San Diego region watersheds' exceedance frequencies will likely be close to the value calculated for Leo Carrillo Beach, and are consistent with the exceedance frequency that was applied by the Los Angeles Regional Board.
e. Dry weather numeric objectives are based on the 30-day geometric mean (or equivalent) water quality objectives in the California Ocean Plan (SWRCB, 2012). Compliance with the dry weather TMDLs in the receiving water is based on the frequency of the dry weather geometric mean exceeding the dry weather numeric objective.

Monitoring Results and Compliance Discussion

In accordance with the monitoring and assessment requirements in the MS4 Permit, three separate weather-based evaluations were used to address the program objectives: wet weather, wet season, and dry season. Table ES-2 summarizes the 2015–2016 exceedance frequency results and compares them with interim and final allowable exceedance frequencies.

Table ES-2.
2015–2016 Bacteria TMDL Exceedance Frequency Results for Los Peñasquitos River WMA

Site ID	Bacteria TMDL Constituent	Wet Weather [a] Single-Sample Maximum (CFU/100mL)			Wet Season [a, c] 5-Sample Geometric Mean (CFU/100mL)			Dry Season [b] 30-Day Geometric Mean (CFU/100mL)		
		2015–2016 [d] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency	2015–2016 [e] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency	2015–2016 [e] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency
FM-100	Total Coliform	13%	26%	22%	0%	1%	0%	0%	1%	0%
	Fecal Coliform	0%	26%	22%	0%	2%	0%	0%	2%	0%
	Enterococcus	13%	26%	22%	0%	10%	0%	0%	10%	0%

Notes:
% = percent; CFU = colony-forming unit; FM-100 = Los Peñasquitos River Outlet/Beach
Green shaded cells show the 2015-2016 observed exceedance frequency.

a. October 1, 2015–April 30, 2016
b. May 1, 2016–September 30, 2016
c. In accordance with the MS4 Permit, wet and dry weather FIB data were combined to calculate geometric means for the wet season and compared with dry weather RWLs (numeric targets and allowable exceedance frequencies) as shown in Table ES-1.
d. The exceedance frequency was derived by dividing the total number of wet weather days (days with 0.2 inch of rainfall or greater plus the following 72 hours) that exceeded the single-sample maximum numeric target divided by the total number of wet weather days during the wet season. To determine exceedances for non-sampled wet weather days, the average (interpreted as the geometric mean) of the analytical results from three monitored storm events was applied to the remaining observed wet weather days that were not sampled. The results from the total number of wet weather days, with either assigned averages or analyzed result values, were then compared with single-sample maximum numeric targets.
e. The exceedance frequency was derived by dividing the total number of geometric exceedances by the total number of geometric means calculated during the season.

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Wet Weather Single-Sample Maximum Exceedance Frequencies

The wet weather exceedance rate applies only to wet weather days (days with 0.2 inch of rainfall or more, plus the following 72 hours) between October 1 and April 30 of each year. Wet weather exceedance rates for total coliform, fecal coliform, and *Enterococcus* were derived by calculating the average result of wet weather samples and applying that average to the remaining (not sampled) observed wet weather days. Sampling results and the assigned averages were compared with single-sample maximum numeric targets, as established in the Bacteria TMDL. A total of three storm events were sampled during the 2015–2016 wet weather season, at the following location:

- **FM-100:** During wet weather, the receiving waters at Los Peñasquitos River Outlet/Beach achieved a 0% single-sample maximum exceedance frequency for compliance constituent fecal coliform. The single-sample maximum exceedance frequency for compliance constituents total coliform and *Enterococcus* was 13%.

Wet Season Geometric Mean Exceedance Frequencies

The wet season is from October 1 through April 30 of each year. Wet season exceedance rates for total coliform, fecal coliform, and *Enterococcus* are derived by calculating a rolling geometric mean using results from the last five sampling results (combined dry weather and wet weather):

- **FM-100:** During the wet season, the receiving waters at Los Peñasquitos River Outlet/Beach achieved 0% exceedance frequencies for compliance constituents total coliform, fecal coliform, and *Enterococcus.*

Dry Season Geometric Means and Exceedance Frequencies

The dry season is May 1 through September 30 of each year. Dry season exceedance rates for total coliform, fecal coliform, and *Enterococcus* are derived by calculating a rolling 30-day geometric mean using the last five sampling results, as described in the *California Ocean Plan,* (Ocean Plan) (SWCRB, 2012), at the compliance monitoring location:

- **FM-100:** During the dry season, the receiving waters at Los Peñasquitos River Outlet/Beach achieved 0% exceedance frequencies for compliance constituents total coliform, fecal coliform, and *Enterococcus.*

Summary

Collectively, these findings suggest that bacteria densities support water contact recreation beneficial use (REC-1) conditions in the Los Peñasquitos WMA year-round.

During the wet season, which evaluates a combination of both wet and dry weather samples, FM-100 achieved a 0% exceedance frequency and is in compliance with the final dry weather geometric mean RWLs.

During the dry season, when recreational activities occur with more regularity, FM-100 achieved a 0% exceedance frequency and is in compliance with the final dry weather geometric mean RWLs.

Ongoing Efforts

Certain studies and activities of the Los Peñasquitos WMA Responsible Agencies (RAs) may provide additional data that could be used in subsequent Bacteria TMDL compliance assessments:

- The City and County of San Diego are participating in data assessments and coordination meetings with the Regional Board and other Copermittees to determine potential modifications to be considered in the Bacteria TMDL Reopener. During the Bacteria TMDL Reopener, the Regional Board will update the TMDL based on current data and United States Environmental Protection Agency (USEPA) policy, which may lead to revised terms of compliance. The Bacteria TMDL Reopener is in progress and is expected to be completed in 2018.
- The RAs have completed the San Diego Regional Reference Stream Study and San Diego Regional Reference Beach Studies. The data are being used in the Bacteria TMDL Reopener to evaluate natural sources of bacteria in reference streams and at beaches and these data are being utilized in the Bacteria TMDL Reopener to update numeric targets (Southern California Coastal Water Research Project [SCCWRP], 2015, 2016).
- Additional information regarding bacteria densities and sources in the Los Peñasquitos WMA may be included in Water Quality Improvement Plan Annual Report.
- RAs will continue to monitor for the Bacteria TMDL Compliance Monitoring Program for fiscal year (FY)17.

1.0 INTRODUCTION

This report presents the 2015–2016 Los Peñasquitos Watershed Management Area (WMA) Bacteria Total Maximum Daily Load (TMDL)[4] (San Diego Regional Water Quality Control Board [Regional Board], 2010) compliance monitoring data, in accordance with Attachment E.6 of the Municipal Separate Storm Sewer System (MS4) Permit.[5] The Los Peñasquitos River WMA Bacteria TMDL Compliance Monitoring Plan (Los Peñasquitos Watershed Management Area Responsible Agencies [Responsible Agencies], 2015) (Compliance Monitoring Plan) was developed to meet the Bacteria TMDL requirements of the MS4 Permit and to generate data to support the Los Peñasquitos WMA Water Quality Improvement Plan (Responsible Agencies, 2016). Supporting information for this compliance monitoring report is in the Compliance Monitoring Plan and Los Peñasquitos WMA Water Quality Improvement Plan located on the Project Clean Water websites (www.projectcleanwater.org).

The Bacteria TMDL Compliance Monitoring Program is designed to assess the conditions of the receiving waters and has the following objectives:

- Characterize levels of bacteria concentrations at compliance monitoring locations.
- Track progress toward meeting the Bacteria TMDL numeric targets.

In accordance with the Compliance Monitoring Plan, the Responsible Agencies (RAs) monitored the Pacific Ocean Shoreline at the Los Peñasquitos River Outlet/Beach (Los Peñasquitos River compliance monitoring location, or FM-100). Table 1-1 provides the location name and coordinates for the compliance monitoring location, and Figure 1-1 presents a map of the compliance monitoring location within the WMA. Indicator bacteria sampling for the 2015–2016 compliance monitoring season was conducted during wet and dry weather at the Los Peñasquitos River Outlet/Beach compliance monitoring location and samples were analyzed for three fecal indicator bacteria (FIB) compliance constituents: total coliform, fecal coliform, and *Enterococcus.*

Table 1-1.
Bacteria TMDL Compliance Monitoring Location

Site ID	Site Name	Site Type	Latitude	Longitude
FM-100 [a]	Los Peñasquitos River Outlet/Beach	Pacific Ocean Shoreline	32.935	–117.261

Notes:
ID = identification
a. Approximately 25 meters north of the river outlet.

[4] *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek),* Resolution No. R9-2010-0001, Regional Board, February 10, 2010 (Bacteria TMDL).

[5] *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region,* Order Number R9-2013-0001, May 14, 2013 (MS4 Permit).

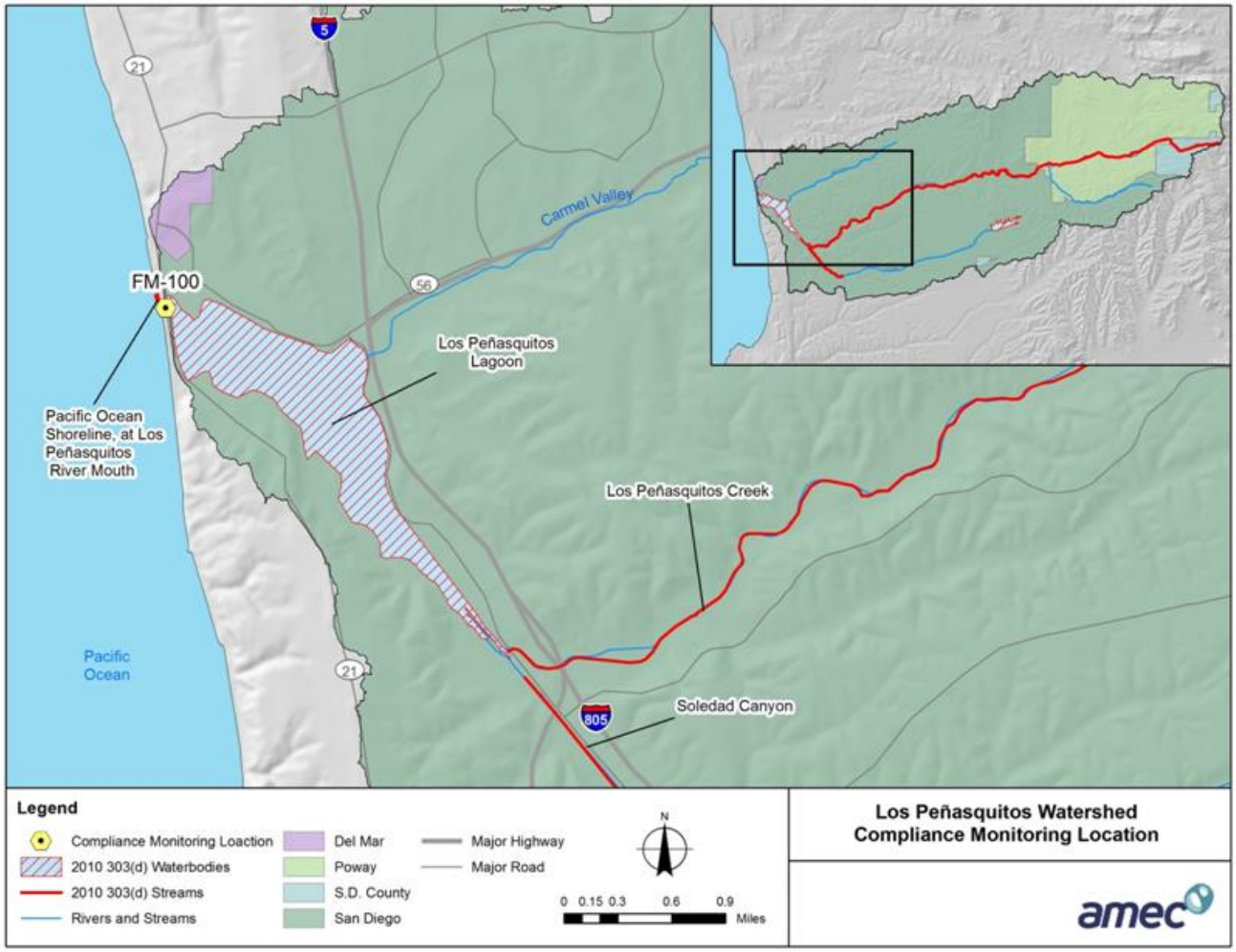

Figure 1-1.
Los Peñasquitos River WMA Compliance Monitoring Location, FM-100

1.1 Document Overview

This report has five sections that contain the following information:

- **Section 1—Introduction:** Information on purpose of report, the Bacteria TMDL, compliance monitoring location, numeric targets, and schedule.
- **Section 2—Monitoring and Analytical Methodology:** Overview of the compliance monitoring conducted during the reporting period, including any changes to monitoring or analytical methods, hydrology summaries, event data and observations, and FIB concentrations in wet and dry weather during 2015—2016, along with an evaluation of seasonal patterns in FIB concentrations.
- **Section 3—Compliance Evaluation:** Evaluation of current receiving water conditions and a comparison with the Bacteria TMDL receiving water limitations (RWLs) based on 2015–2016 data.

- **Section 4—Summary:** Program objectives and ongoing efforts.
- **Section 5—References:** Sources used to prepare this report.

1.2 Compliance Requirements for Bacteria Total Maximum Daily Load

As described in the Los Peñasquitos River WMA Water Quality Improvement Plan, the basis for Bacteria TMDL compliance is demonstrated through interim and final water quality-based effluent limitations (WQBELs). The WQBELs include RWLs for the Los Peñasquitos River Outlet/Beach compliance monitoring location and are provided in Table 1-2.

Table 1-2.
Final Receiving Water Limitations for Beaches

(Maximum Bacteria Densities and Allowable Exceedance Frequencies)

Constituent	Wet Weather Days [a]		Dry Weather Days [b]	
	Single-Sample Maximum (MPN/100mL) [c]	Single-Sample Maximum Allowable Exceedance Frequency [d]	30-Day Geometric Mean (MPN/100mL) [e]	30-Day Geometric Mean Allowable Exceedance Frequency
Total Coliform	10,000	22%	1,000	0%
Fecal Coliform	400	22%	200	0%
Enterococcus	104	22%	35	0%

Notes:
% = percent; mL = milliliters; MPN = most probable number
Source (including footnotes): Bacteria TMDL, Regional Board, Order No. R9-2010-0001, 2010.

a. Wet weather days are defined as days with rainfall events of 0.2 inch or greater, plus the following 72 hours.

b. Dry weather days are defined as days with less than 0.2 inch of rainfall observed on each of the previous 3 days.

c. Wet weather numeric objectives are based on the single-sample maximum (or equivalent) water quality objectives in the *California Ocean Plan* (State Water Resources Control Board [SWRCB], 2012). Compliance with the wet weather TMDLs in the receiving water is based on the frequency of the wet weather days in any given year exceeding the wet weather numeric objective, but the 30-day geometric mean must also be met.

d. The wet weather allowable exceedance frequency is set at 22%. In the calculation of the wet weather TMDLs, the Regional Board chose to apply the 22% allowable exceedance frequency as determined for Leo Carrillo Beach in Los Angeles County. At the time the wet weather watershed model was developed, this 22% exceedance frequency was the only reference beach exceedance frequency that was available. The 22% allowable exceedance frequency that is used to calculate the wet weather TMDLs is justified because the San Diego region watersheds' exceedance frequencies will likely be close to the value calculated for Leo Carrillo Beach, and are consistent with the exceedance frequency that was applied by the Los Angeles Regional Board.

e. Dry weather numeric objectives are based on the 30-day geometric mean (or equivalent) water quality objectives in the *California Ocean Plan* (SWRCB, 2012). Compliance with the dry weather TMDLs in the receiving water is based on the frequency of the dry weather geometric mean exceeding the dry weather numeric objective.

The Los Peñasquitos River WMA Water Quality Improvement Plan provides the compliance timeline for the Bacteria TMDL, which outlines the interim and final reduction milestones for both dry and wet weather. Per Attachment E.6.c(1) of the MS4 Permit, interim compliance dates may be modified by an accepted Water Quality Improvement Plan. Full dry weather compliance requires a 0% exceedance frequency for all dry weather periods by 2021, and full wet weather compliance requires a 22% allowable exceedance frequency during wet weather periods by 2031.

The "existing" or historical exceedance frequency is used to calculate 50% interim milestones for both wet and dry weather. Progress toward achieving dry weather and wet weather

milestones is demonstrated through comparison with interim and final allowable exceedance frequencies. Table 1-3 presents dry weather existing, interim, and final allowable exceedance frequencies. Per the Water Quality Improvement Plan, the 50% reduction milestone is to be met in 2019 for the Cities of Del Mar, Poway, and San Diego and in 2020 for the County of San Diego, with a 100% reduction milestone in 2021 for all RAs.

Table 1-3.
Los Peñasquitos WMA Bacteria TMDL Compliance Reduction Milestones—Dry Weather

Constituent	"Existing" Exceedance Rate	Interim Milestone [a]	2021 Final Compliance
Total Coliform	1%	1%	0%
Fecal Coliform	4%	2%	0%
Enterococcus	19%	10%	0%

Notes:
% = percent
a. Interim dry weather goals are a 50% reduction of existing dry weather exceedance frequencies, based on available historical data from the years 1996 to 2002. Source: Los Peñasquitos WMA Bacteria TMDL Compliance Monitoring Plan (Responsible Agencies, 2015). For reporting purposes, values are rounded to the nearest whole percent.

Table 1-4 presents wet weather existing, interim, and final allowable exceedance frequencies. Per the Water Quality Improvement Plan, the 50% reduction milestone is to be met in 2024 for the Cities of Del Mar, Poway, and San Diego and in 2028 for the County of San Diego, with a 100% reduction milestone in 2031 for all RAs.

Table 1-4.
Los Peñasquitos WMA Bacteria TMDL Compliance Reduction Milestones—Wet Weather

Constituent	"Existing" Exceedance Rate [a]	Interim Milestone [b]	2031 Final Compliance [c]
Total Coliform	30%	26%	22%
Fecal Coliform	30%	26%	22%
Enterococcus	30%	26%	22%

Notes:
a. Interim wet weather goals are provided in the Bacteria TMDL (Regional Board, 2010).
b. Interim wet weather goals are provided in Attachment E of the MS4 Permit (Regional Board, 2013).
c. The final milestone is a 100% reduction from the existing exceedance frequency to the allowable exceedance frequency.

1.3 Monitoring and Analytical Methods

The Pacific Ocean Shoreline at Los Peñasquitos River Mouth segment named in the Bacteria TMDL was removed from the Clean Water Act 303(d)-List for REC-1 impairment in 2010 and is considered de-listed. Per Attachment E of the MS4 Permit, because of the de-listed status of their segment, the Los Peñasquitos WMA RAs have the flexibility to propose alternative monitoring procedures (such as reduced monitoring) for Bacteria TMDL compliance monitoring as part of the Water Quality Improvement Plan and its updates. For their first year of implementation, the RAs elected to monitor more frequently than the minimum monitoring requirements described in Attachment E of the MS4 Permit.

The Compliance Monitoring Plan describes the monitoring and analytical methods (Sections 3 and 4) and data management methods (Section 5.1). Compliance monitoring was performed in accordance with the Compliance Monitoring Plan, except as noted in Sections 1.3.1 and 1.3.2.

1.3.1 Dry Weather Monitoring

Per the Compliance Monitoring Plan, weekly dry weather monitoring was scheduled so that five samples were collected in each calendar month. However, in May 2016 and September 2016, only four samples were collected in each of these months because of wet weather interference.

1.3.2 Precipitation Data

Per the MS4 Permit, rainfall precipitation data are not a requirement for Bacteria TMDL compliance monitoring. Per the Compliance Monitoring Plan, precipitation data from the National Weather Service (NWS) Del Mar rain gauge were to be used to track the total number of wet weather days as defined in the MS4 Permit. However, the NWS Del Mar rain gauge was relocated in September 2015, and was also missing data for a portion of the 2015–2016 monitoring year. To provide a more complete dataset, the NWS Miramar Naval Air Station (MNAS) gauge was used in its place. Because MNAS officially became Marine Corps Air Station Miramar (Miramar) in 1999, this gauge is referred to as the Miramar gauge in this report (Shettle, 2001). The Miramar gauge is technically within the Mission Bay WMA; however, it is less than 1 mile from the Los Peñasquitos WMA and is the nearest gauge that is representative of rainfall in the middle of watershed. Historical daily rainfall amounts generated by the NWS will be used to assess the annual rainfall and historical average for San Diego County.

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2.0 MONITORING RESULTS SUMMARY

This section outlines hydrology summaries, event data and observations, and FIB concentrations for both wet and dry weather conditions.

Precipitation data from the NWS Miramar rain gauge were used to track the total number of wet weather days as defined in the Compliance Monitoring Plan. Historical daily rainfall amounts generated by the NWS at the Miramar gauge were used to compare the annual rainfall and historical averages for San Diego County.

A summary of quality assurance and quality control data is provided in Appendix A. Field measurements and analytical results for wet weather are presented in Appendix B. Field measurements and analytical results for dry weather are presented in Appendix C.

2.1 Wet Weather Compliance Monitoring

Wet weather monitoring was conducted at the compliance monitoring location by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) for three storm events during the 2015–2016 wet season. The RAs elected to monitor during wet weather at a higher frequency than required by the Compliance Monitoring Plan to provide additional baseline data. Storms resulting in greater than 0.2 inch of precipitation were targeted for analysis. One grab sample was collected per storm event along with *in situ* field measurements within 72 hours after the end of precipitation. Event field data, including atmospheric conditions, sample characteristics, sampling times, field measurements, and other notable observations, were documented. Bacteria grab samples were submitted to the City of San Diego Environmental Monitoring and Technical Services (EM&TS) Laboratory or Weck Laboratories, Inc., for analysis.

2.1.1 Wet Weather Hydrology Summary

Precipitation data from Miramar were used to track the total number of wet weather days. To assess rainfall for the current monitoring year, measured precipitation values at Miramar are compared with the 1893–2016 historical rainfall average for Poway Valley, located approximately 6 miles northeast of Miramar. This comparison will support future evaluations of annual precipitation and potential effects on FIB concentrations or the assessment of exceedances. The historical data were obtained through the Western Regional Climate Center (WRCC) website, which maintains climate data collected by the National Oceanic and Atmospheric Administration (NOAA), the National Climatic Data Center, and the NWS.

Total precipitation recorded at Miramar for the 2015–2016 wet season was 10.74 inches, which was below the historical average of 12.5 inches at Poway Valley (WRCC, 2016). Below-average rainfall was observed in November and December, 2015, and February and March 2016. Above-average rainfall was observed in January 2016 (including an extreme 25-year storm event[6]) and April 2016. The total rainfall observed in January 2016 was largely from one storm event in early January 2016 that produced 5.39 inches of rainfall at the Miramar gauge.

Table 2-1 summarizes wet weather monthly precipitation data for Miramar for the 2015–2016 wet season, along with the historical Poway Valley data for comparison.

Table 2-1.
Wet Weather Monthly Rainfall Summary

Month	Miramar Rainfall (inches)	
	Miramar 2015–2016 Monitoring Season	Poway Valley 1893–2016 Historical Average
October 2015	0.53	0.52
November 2015	0.47	1.36
December 2015	1.30	1.87
January 2016	6.00	2.80
February 2016	0.06	2.70
March 2016	1.29	2.30
April 2016	1.09	0.95
Total Rainfall	**10.74**	**12.50**

Source: National Oceanic and Atmospheric Administration (NOAA); Western Regional Climate Center (WRCC)

Three storm events were successfully captured at the compliance monitoring location. The monitored storms represent three sizes. Wet Weather Event 1 was the smallest storm, with 0.35 inch of rainfall; Wet Weather Event 2 was the largest, with 5.39 inches observed; and Wet Weather Event 3 was moderate in size, with 0.59 inch observed. Wet Weather Events 1 and 3 depict the usual range of events that may occur during a typical wet season, while Wet Weather Event 2 was exceptionally large and was not representative of wet weather events in the region.

The watershed response also varies throughout the wet season, based on factors such as antecedent soil moisture conditions, impervious area, rainfall amount, and rainfall intensity. During larger storms, runoff from previously pervious surfaces can increase after soils are completely saturated. Earlier in the season, soil conditions are drier, increasing infiltration and therefore decreasing runoff. Later in the season, the ground is more saturated, resulting in greater discharge volumes to ocean receiving waters.

Precipitation values for the three storm events as recorded at the Miramar gauge are presented in Table 2-2. Each monitored storm event is described in detail in the following sections.

[6] According to the NWS NOAA ATLAS 14 Point Precipitation Frequency Estimate for Miramar MCAS (http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ca). Accessed November 3, 2016.

Table 2-2.
Total Rainfall for 2015–2016 Monitored Events

Event	Event Start Date	Event End Date	Sampling Date	Rainfall Miramar (inches)
Wet Weather Event 1	11/2/2016	11/4/2016	11/6/2015	0.35
Wet Weather Event 2	1/4/2016	1/11/2016	1/9/2016	5.39
Wet Weather Event 3	1/30/2016	2/3/2016	2/3/2016	0.59

2.1.1.1 Wet Weather Event 1 – November 6, 2015

A qualifying wet weather event (greater than or equal to 0.2 inch of rainfall preceded by at least 72 hours of less than 0.1 inch of rainfall) occurred from November 2–4, 2015. A total of 0.07 inch of rainfall was recorded on November 2, 2015, followed by the majority of event rainfall (0.27 inch) on November 3, 2015. A total of 0.01 inch of rainfall was measured on November 4, 2015, for a total of 0.35 inch for Wet Weather Event 1, as recorded by the Miramar gauge.

Wet weather samples were collected at the compliance monitoring location approximately 57 hours after the end of the storm event. Samples were submitted to Weck Laboratories, Inc. for analysis within prescribed holding times. Conductivity in the receiving water at the time of sample collection was the highest of all three monitored wet weather events (44,000 microSiemens per centimeter [µS/cm]), and turbidity was the lowest of all three monitored wet weather events (1.44 nephelometric turbidity units [NTU]). This relationship is expected, considering that Wet Weather Event 1 was the smallest monitored storm and discharge from the lagoon and upper drainage area was likely limited compared with conditions for other storm events.

2.1.1.2 Wet Weather Event 2 – January 9, 2016

The second monitored storm event occurred from January 4–9, 2016. This event was the largest storm event of the 2015–2016 wet season, with a total of 5.39 inches of rainfall. The greatest amount of rainfall occurred on January 6, 2016 (2.03 inches), followed by January 5, 2016 (1.87 inches) and January 7, 2016 (1.26 inches), with lesser amounts recorded on January 4, 8, and 9, 2016 (0.08 inch, 0.14 inch, and 0.01 inch, respectively). The intensity of this event dislodged concrete-lined channels, caused flooding, and mobilized large amounts of sediment and debris (City of San Diego, 2016).

Wet weather samples were collected at the compliance monitoring location approximately 32 hours after the end of the storm event. Samples were submitted to Weck Laboratories, Inc. for analysis within prescribed holding times. Conductivity in the receiving water at the time of sample collection was the lowest of all three monitored wet weather events (20,700 µS/cm), and turbidity was the highest of all three monitored wet weather events (55 NTU), as would be expected, considering the size of the storm and increased discharge from the lagoon and upper drainage area.

2.1.1.3 Wet Weather Event 3 – February 3, 2016

The third and final monitored event for the 2015–2016 wet season occurred from January 30 through February 3, 2016, and generated a total of 0.59 inch of rainfall. On January 30, 2016, 0.02 inch of rainfall was measured, followed by 0.57 inch on January 31, 2016, as recorded at the Miramar gauge.

Wet weather samples were collected at the compliance monitoring location approximately 70 hours after the end of the storm event. Bacteria grab samples were submitted to the City EM&TS Laboratory for analysis within prescribed holding times. Conductivity in the receiving water at time of sample collection was 32,300 µS/cm and turbidity was 15.3 NTU.

2.1.2 Wet Weather FIB Concentrations

Generally, FIB concentrations at FM-100 during wet weather were below single-sample maximum thresholds. Elevated FIB concentrations during wet weather were observed once in 2015–2016, following the exceptionally large wet weather event in early January 2016 that produced over 5 inches of precipitation. *Enterococcus* and total coliform concentrations exceeded single-sample maximum thresholds in samples collected immediately following the exceptionally large wet weather event (Wet Weather Event 2). Note that field measurements for this event reflected increased freshwater discharge from the lagoon and upper drainage area: conductivity values were lower (20,700 µS/cm) and turbidity values were higher (55 NTU) than those observed during any other wet weather event.

Table 2-3 presents 2015–2016 wet weather analytical results for compliance constituents (total coliform, fecal coliform, and *Enterococcus*). Figure 2-1 illustrates 2015–2016 wet weather bacteria densities compared with the single-sample maximum numeric targets. Optional field measurements for 2015–2016 wet weather monitoring are in Appendix B.

Wet weather laboratory reports for the 2015–2016 monitoring year are in Appendix D. Wet weather field data sheets for 2015–2016 are in Appendix E.

Table 2-3.
Wet Weather Analytical Results for Los Peñasquitos WMA

Analyte	Unit	Numeric Target	Method	MDL [a]	RL [a]	Analytical Results – Site ID FM-100		
						Wet Weather Event 1 11/6/15 [b]	Wet Weather Event 2 1/9/16 [b]	Wet Weather Event 3 2/3/16 [b]
Total Coliform	CFU/100mL	10,000	SM 9222B	2	20 [c] 200 [d] 2 [e]	940	**44,000**	1,800
Fecal Coliform	CFU/100mL	400	SM 9222D	2	2	38	190	<20
Enterococcus	CFU/100mL	104	USEPA 1600	1	1 [c] 10 [d] 2 [e]	19	**570**	72

Notes:
% = percent; CFU = colony-forming unit; FM-100 = Los Peñasquitos River Outlet/Beach; ID = identification; mL = milliliters; MDL = method detection limit; RL = reporting limit; SM = USEPA Standard Method; TMDL = total maximum daily load; USEPA = United States Environmental Protection Agency
Bolded value = concentration exceeds the single-sample maximum numeric target.
a. MDL/RL values vary with the dilutions used to generate plates within the countable range.
b. Date sample was collected.
c. Reporting limit used for Wet Weather Event 1.
d. Reporting limit used for Wet Weather Event 2.
e. Reporting limit used for Wet Weather Event 3.

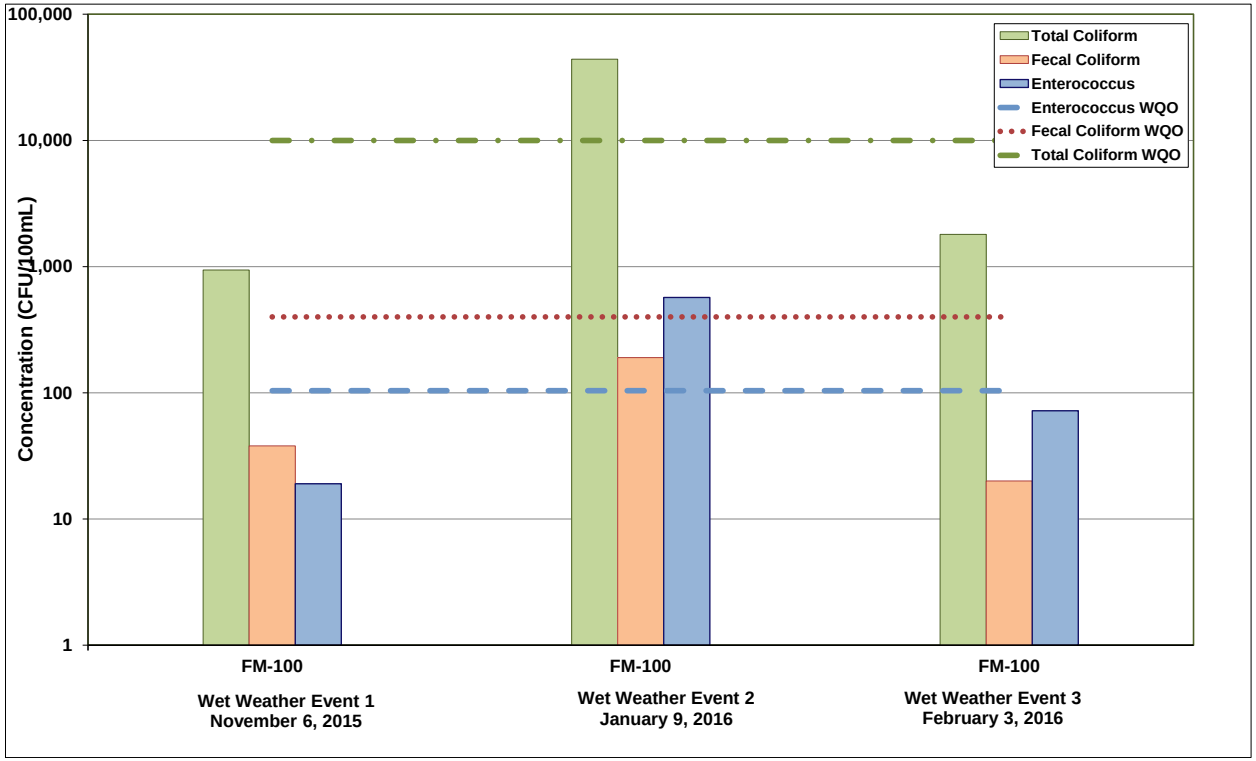

Figure 2-1.
2015–2016 Wet Weather Fecal Indicator Bacteria Concentrations – FM-100

2.2 Dry Weather Compliance Monitoring

Dry weather monitoring was performed during both the wet season (October 1, 2015, through April 30, 2016) and the dry season (May 1 through September 30, 2016) by the City of San Diego. As specified in the Compliance Monitoring Plan, the following sampling was conducted:

- Weekly dry weather monitoring in October 2015 and from April 2016 through September 2016.
  - RAs elected to perform weekly monitoring during October 2015 and from April 2016 through September 2016 to capture potential conditions with more recreational activities, consistent with the recreational monitoring season of the California Assembly Bill 411 (the Beach Safety Act, or AB 411) program. Weekly dry weather sampling is also above and beyond the requirements of Attachment E of the MS4 Permit: only monthly sampling is required.
  - At least five samples were collected in each calendar month, except during May 2016 and September 2016, when only four samples were collected because of wet weather interference.
- Monthly dry weather monitoring from November 2015 through March 2016.

Dry weather events, as defined by the Compliance Monitoring Plan, may occur on dry weather days with an antecedent dry period of 72 hours with less than 0.1 inch of rainfall. All dry weather samples were collected by City Storm Water Department staff. Bacteria samples were submitted to the City of San Diego EM&TS Laboratory for analysis.

2.2.1 Dry Weather Monitoring Summary

Dry weather monitoring was conducted from May 2016 through September 2016. During each successful dry weather event, water grab samples were collected in the receiving waters at the compliance monitoring location. Tables presenting dry weather FIB concentrations and field measurements for the 2015–2016 monitoring year are provided in Appendix C. During the wet season, a total of 15 dry weather events took place at the compliance monitoring location. During the dry season, City of San Diego field scientists were unable to collect a fifth monthly sample in May 2016 and September 2016 because of storm events. Thus, only 23 (of 25 targeted) dry weather events were captured in the dry season.

Visual observations were noted by the City of San Diego field scientists during each dry weather sampling event. In general, field observations such as seaweed, sea grass, and shorebirds were recorded. Table 2-4 presents sampling event information (approximate tidal stage and total antecedent dry weather days before each event), with wet season dry weather sampling dates highlighted in blue.

Table 2-4.
Dry Weather Sampling Summary and Antecedent Dry Days

Date Visited	Tide Height [a] (feet)	Antecedent Dry Days [b]	
		<0.1 inch	<0.2 inch
10/12/2015	3	6	6
10/13/2015	6	7	7
10/19/2015	3.5	13	13
10/20/2015	3.7	14	14
10/28/2015	7	22	22
11/19/2015	3.19	16	16
12/1/2015	4	28	28
1/13/2016	5.8	5	6
2/16/2016	0.1	16	16
3/1/2016	1.5	30	30
4/5/2016	6	25	25
4/13/2016	0	3 [c]	3 [c]
4/19/2016	2	9	9
4/20/2016	3	10	10
4/26/2016	2	16	16
5/2/2016	2	22	22
5/3/2016	1	23	23
5/16/2016	3.5	10	10
5/31/2016	0.6	25	25
6/6/2016	4	31	31
6/9/2016	2	34	34
6/13/2016	1.1	38	38
6/20/2016	4	45	45
6/30/2016	2	55	55
7/5/2016	4.3	60	60
7/7/2016	3.8	62	62
7/11/2016	1.65	66	66
7/19/2016	3.995	74	74
7/26/2016	1.878	81	81
8/1/2016	3.772	87	87
8/9/2016	3.268	95	95
8/16/16	4.245	102	102
8/23/16	2.218	109	109
8/30/16	3.668	116	116
9/6/16	4.405	123	123
9/15/16	3.261	132	132
9/27/16	3.384	6	7
9/30/16	3.706	9	10

Notes:
Source: National Oceanographic and Atmospheric Administration (NOAA)
Blue-shading indicates dry weather events during the wet season.
a. Tide height is approximate, as reported by City of San Diego field staff.
b. National Weather Service (NWS) archived rain gauge data for Miramar were used to determine antecedent dry days.
c. 4/13/16 was defined as a wet weather day based on precipitation >0.2 inch on 4/10/16. However, hourly weather observations at the MCAS Miramar KNKX rain gauge place the end of measureable precipitation on 4/10/16 at 04:55 PDT, before the first sampling time. Thus, samples collected on 4/13/16 were collected >72 hours after the end of precipitation and are considered dry weather samples.

Although total measured rainfall during the wet season was below average, above-average rainfall was recorded throughout the 2016 dry season. From May 1, 2016, through September 30, 2016, a total of 0.95 inch of precipitation was measured at the Miramar gauge. Table 3-3 summarizes total monthly rainfall for the 2016 dry season. Above-average rainfall during the dry season was also observed in 2015. These consecutive elevated dry season rainfall totals may because of the influence of a strong El Niño event in late 2015.

Table 2-5.
Dry Season Monthly Rainfall Summary

Month	Rainfall (inches)	
	Miramar 2015–2016 Monitoring Season	Poway Valley 1893–2016 Historical Average
May 2016	0.59	0.37
June 2016	0.00	0.08
July 2016	0.00	0.04
August 2016	0.00	0.07
September 2016	0.36	0.19
Total Rainfall	**0.95**	**0.75**

Notes:
Source: National Oceanic and Atmospheric Administration (NOAA); Western Regional Climate Center (WRCC)

2.2.2 Dry Weather FIB Concentrations

Dry weather samples were collected during the 2015–2016 wet season and the 2016 dry season. Dry weather samples collected during the 2016 dry season consistently displayed lower bacteria concentrations than dry weather samples collected during the wet season.

FIB concentrations were generally low, with frequent non-detects. No correlation between duration of the antecedent dry period and FIB concentrations was observed. Elevated *Enterococcus* results were found on only one occasion, in June 2016. The source of the elevated *Enterococcus* value is not known; potential sources include land areas draining directly to the Bacterial TMDL-listed segment, upstream sources in the Los Peñasquitos WMA, and natural sources (regrowth and marine life). Note that the lagoon was not flowing into the ocean during this sampling event. Under dry weather conditions, the lagoon occasionally discharges to the ocean receiving water. In the 2015–2016 monitoring year, the lagoon was observed flowing into the ocean during only 8 dry weather events, 5 of which were at the end of the monitoring year (August through September 2016). According to the Southern California Bight 2008 Regional Monitoring Program (Bight ’08) Shoreline Microbiology Study conducted by the Southern California Coastal Water Research Project (SCCWRP) at southern California beaches (SCCWRP, 2012), resident bird populations are natural sources of FIB; FIB regrowth on beach wrack and beach sand is a potential source of increased FIB densities.

Figure 2-2 depicts FIB concentrations for each dry weather monitored event between October 1, 2015, and September 30, 2016. The blue-shaded areas indicate dry weather results of sampling during the wet season, when elevated FIB densities are more likely to occur.

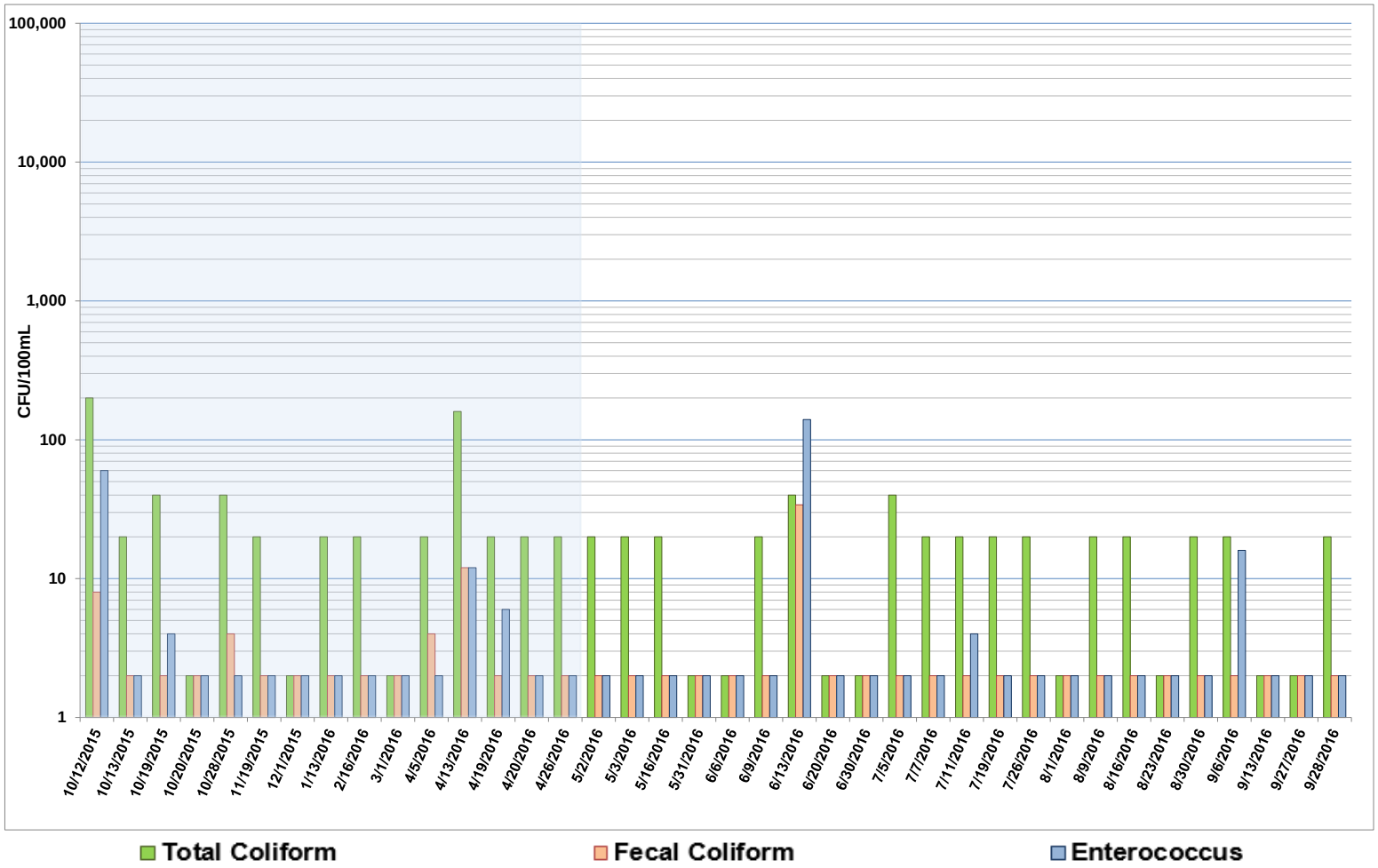

Figure 2-2.
2015–2016 Dry Weather Fecal Indicator Bacteria Concentrations – FM-100

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3.0 COMPLIANCE EVALUATION

This section presents the results of the compliance evaluation for dry and wet seasons in accordance with the assessment requirements of Attachment E of the MS4 Permit.

3.1 Compliance Evaluation Methods

Separate evaluations were completed using geometric means for dry season dry weather and wet season combined all weather, and single-sample maximums for wet weather results as described in this report. FIB data collected between October 2015 and September 2016 in accordance with the Compliance Monitoring Plan were used in the compliance assessments.

Several inconsistencies were identified in Attachment E.6.6 of the MS4 Permit that may affect the interpretation of compliance; these inconsistencies are explained in detail in Appendix F.

3.1.1 Wet Weather Single-Sample Maximum Exceedance Frequency

Wet weather exceedances are based on a comparison of the rate of exceedances of the single-sample maximum numeric target with the allowable 22% exceedance frequency. Wet weather events include the storm day(s) (0.2 inch of rainfall or more) and the following 72 hours, resulting in a minimum wet weather event duration of 4 days. Per of Attachment E of the MS4 Permit, for monitored storm events, the highest reported result from a storm event is applied to each non-monitored day for the duration of that event. An inferred exceedance rate must also be calculated to account for non-monitored storm events.

For the remaining wet weather days that are not associated with a monitored event, the average (interpreted as geometric mean) of the highest reported results from each of the three monitored wet weather events is assigned to the remaining wet weather days in the wet season:

$$\text{Geometric Mean} = n^{th} \text{ root of } (X_1)(X_2)\ldots X_n$$

where: n is the number of monitored storm events
X_n is sample *n* result (e.g., X_1 = Wet Weather 1 Result)

The wet weather exceedance frequency is then determined by dividing the number of wet weather days that exceeded the single-sample maximum numeric target by the total number of wet weather days observed during the 2015–2016 wet season.

$$\text{Wet Weather Exceedance Frequency (\%)} = 100 * \frac{\Sigma(\text{WWD} > \text{Wet Weather RWL})}{\Sigma\text{WWD}}$$

where: ΣWWD is the sum of wet weather days (0.2 inch of rainfall or more) and the following 72 hours

A list of observed wet weather days for the 2015–2016 wet season, both monitored and observed, is presented in Appendix B.

3.1.2 Wet Season Geometric Mean and Exceedance Frequency

Per of Attachment E of the MS4 Permit, a wet season exceedance frequency was calculated using the combined wet and dry weather results between October 1 and April 30, and was compared with dry weather RWLs. During the wet season, the amount of time summarized by each geometric mean varies. Dry weather sampling was conducted weekly during the wet season in October 2015 and April 2016, and monthly from November 2015 through March 2016. In addition, three wet weather events were monitored during the wet season; one sample was collected for each wet weather event. A rolling geometric mean calculation was calculated from the five most recent wet season samples. With each subsequent sample collected, the first sample from the preceding five-sample geometric mean was dropped. The wet season geometric mean is calculated as follows:

$$5\text{-Sample Geometric Mean} = n\sqrt{(X_1)(X_2)(X_3)(X_4)(X_5)}$$

where: n is the number of individual results used in the calculation
X_n is sample *n* result (e.g., X_1 = November result, X_2 = Wet Weather 1 Result)

A wet season exceedance occurs when a geometric mean exceeds the dry weather numeric target. The first geometric mean was calculated after the fifth sample in October 2015.

To determine the wet season exceedance frequency, the number of wet season geometric means that exceed the dry weather numeric target was divided by the total number of calculated wet season geometric means, expressed as follows:

$$\text{Wet Season Exceedance Frequency (\%)} = 100 * \frac{\text{Wet Season } G_n > \text{DW NT}}{\text{Wet Season } G_n}$$

where: Wet Season G_n is the number of wet season geometric means
DW NT is the dry weather numeric target

3.1.3 Dry Season Geometric Mean and Exceedance Frequency

Attachment E of the MS4 Permit states that the geometric mean calculation should be consistent with the requirements in the Ocean Plan (SWRCB, 2012). A 30-day rolling geometric mean calculation was based on a minimum of five samples for any 30-day period. Geometric means were calculated as follows:

$$30\text{-Day Geometric Mean} = n\sqrt{(X_1)(X_2)(X_3)(X_4)(X_5)}$$

where: n is the number of individual results used in the calculation
X_n is week *n* result (e.g., X_1 = week 1 result)

Dry season dry weather monitoring began in early May 2016; the first geometric mean was calculated after the fifth sample, in early June 2016. With each subsequent sample collected, the first sample from the preceding five-sample geometric mean was dropped outside of a

30-day window. Samples collected between May 1 and September 30, 2016, are used in this calculation.

A dry weather exceedance occurs when the geometric mean exceeds the dry weather numeric target. The first exceedance rate was calculated in early June 2016, after the first geometric mean calculation. The number of geometric means that exceed the dry weather numeric target is divided by the total number of calculated dry season geometric means to determine the dry season exceedance frequency, as follows:

$$\text{Dry Season Exceedance Frequency (\%)} = 100 * \frac{\text{Dry Season } G_n > \text{DW NT}}{\text{Dry Season } G_n}$$

where: Dry Season G_n is the number of dry season geometric means
DW NT is the dry weather numeric target

3.2 Wet Weather Exceedance Rates and Compliance Evaluation

Per MS4 Permit Attachment E assessment requirements, the wet weather exceedance rate is inferred for the wet season, based on the three sampled wet weather events. A wet weather day is defined as any wet weather event with 0.2 inch of rainfall or more, plus the following 72 hours. Using this criterion, 45 wet weather days were observed during the 2015–2016 wet season, as recorded at the Miramar gauge. Results for wet weather days in 2015–2016 are presented in Appendix B. This assessment applies the average (applied as a geometric mean) of the three wet weather sampling results to each day of non-sampled wet weather events. A total of 14 of the 45 wet weather days were associated with sampled storm events (three storm events plus the following 72 hours per event); the geometric mean of the results was assigned to each of the remaining 31 non-sampled wet weather days.

A 0% exceedance frequency for fecal coliform and a 13% exceedance frequency for total coliform and *Enterococcus* were achieved at FM-100 during wet weather. The exceedances observed for total coliform and *Enterococcus* were driven by one sample collected following an exceptionally large rain event in early January 2016: over 5 inches of precipitation were observed on the Miramar gauge. Without this sample, the 2015–2016 exceedance frequency for all compliance constituents would have been 0%. Regardless, based on current monitoring, FM-100 is meeting both interim and final RWLs for all compliance constituents.

Table 3-1 presents wet weather single-sample maximum exceedance frequencies for the compliance monitoring location. The geometric mean is presented in the table to illustrate the average derived from the three sampled events applied to the remaining non-sampled wet weather days, as compared with the numeric target.

Table 3-2 compares 2015–2016 exceedance frequencies with historical exceedance rates, and interim and final RWLs.

Table 3-1.
2015–2016 Wet Weather Single-Sample Maximum Exceedance Rates

Site ID	Analyte	Single-Sample Maximum (CFU/100mL)		Number of Results	Number of Exceedances	2015–2016 Wet Weather Exceedance Rate
		Numeric Target	Geometric Mean			
FM-100	Total Coliform	10,000	4,207	3	1	13%
	Fecal Coliform	400	53	3	0	0%
	Enterococcus	104	93	3	1	13%

Notes:
% = percent; CFU = colony-forming unit; ID = identification; mL = milliliters
Site ID: FM-100 = Los Peñasquitos River Outlet/Beach
Bolded values = Geometric mean or exceedance rate is greater than the final allowable limit established in the Bacteria TMDL

Table 3-2.
2015–2016 Wet Weather Exceedance Rates and Compliance Reduction Milestones

Site ID	Analyte	Existing Exceedance Rate [a]	2015–2016 Exceedance Rate	50% Reduction Milestone	50% Reduction Achieved?	Final Allowable RWLs	100% Reduction Achieved?
FM-100	Total Coliform	30%	13%	26%	Yes	22%	Yes
	Fecal Coliform	30%	0%	26%	Yes	22%	Yes
	Enterococcus	30%	13%	26%	Yes	22%	Yes

Notes:
% = percent; ID = identification; RWL = receiving water limitation
Site ID: FM-100 = Los Peñasquitos River Outlet/Beach
Bolded value = Geometric mean or exceedance rate is greater than the final allowable limit established in the Bacteria TMDL.
a. Existing exceedance rate for wet season is a modeled estimate established in the Bacteria TMDL.

3.3 Wet Season Geometric Mean Exceedance Rates

The overall wet season evaluation combines bacteria results during both dry weather and wet weather events. Higher exceedance rates are expected during the wet season, with the inclusion of storm samples that reflect high-flow conditions. However, for the 2015–2016 wet season, geometric mean exceedance rates were 0% for all compliance constituents. Thus, both interim and final RWLs are being achieved at the compliance monitoring location.

Table 3-3 presents the wet season geometric mean exceedance rates for all compliance constituents, based on the available data, including the number of geometric means calculated from the results, the number of geometric means that exceeded the numeric target, and the maximum geometric mean.

Table 3-4 compares current wet season geometric exceedance frequencies with the existing dry weather exceedance rates and the status of progress compared with interim and final RWLs.

Table 3-3.
2015–2016 Wet Season Geometric Mean Exceedance Rates

Site ID	Analyte	5-Sample Geometric Mean (CFU/100mL)		Number of Geomeans	Number of Exceedances	Wet Season Exceedance Rate
		Numeric Target	Maximum Geomean			
FM-100	Total Coliform	1,000	146	14	0	0%
	Fecal Coliform	200	10	14	0	0%
	Enterococcus	35	13	14	0	0%

Notes:
% = percent; CFU = colony-forming unit; ID = identification; mL = milliliters
Site ID: FM-100 = Los Peñasquitos River Outlet/Beach

Table 3-4.
2015–2016 Wet Season Exceedance Rates and Compliance Reduction Milestones

Site ID	Analyte	Existing Exceedance Rate [a]	2015–2016 Exceedance Rate	50% Reduction Milestone	50% Reduction Achieved?	Final Allowable RWLs	100% Reduction Achieved?
FM-100	Total Coliform	1%	0%	1%	Yes	0%	Yes
	Fecal Coliform	4%	0%	2%	Yes	0%	Yes
	Enterococcus	19%	0%	10%	Yes	0%	Yes

Notes:
% = percent; ID = identification; RWL = receiving water limitation; TMDL = total maximum daily load
Site ID: FM-100 = Los Peñasquitos River Outlet/Beach
a. Existing exceedance rate is based on available 1996–2002 historical data.

3.4 Dry Season Exceedance Rates

The overall dry season evaluation combines bacteria results during dry weather events from May 1, 2016, through September 30, 2016. Lower exceedance rates are typically expected during the dry season, which does not include the influence of wet weather events that reflect high-flow conditions.

Dry season monitoring occurred approximately weekly, and exceedances were based on a 30-day geometric mean composed of the preceding five samples. Of the 23 monitored events during the dry season at the compliance monitoring location, the *Enterococcus* concentration was elevated on one occasion. However, the geometric mean did not exceed dry weather numeric objectives at the compliance monitoring location during the dry season for the FIB compliance constituents.

Table 3-5 presents the dry season geometric mean exceedance rates for all compliance constituents, including the number of geometric means calculated from the results, the number of geometric means that exceeded the numeric target, and the maximum geometric mean.

Table 3-6 compares current dry season geometric exceedance frequencies with the existing dry weather exceedance rates, and provides the status of progress as compared with interim and final RWLs.

Table 3-5.
2016 Dry Season Geometric Mean Exceedance Rates

Site ID	Analyte	30-Day Geometric Mean (CFU/100mL)		Number of Geomeans	2015 Number of Exceedances	2015 Dry Season Exceedance Rate
		Dry Numeric Target	Maximum Geomean			
FM-100	Total Coliform	1,000	23	16	0	0%
	Fecal Coliform	200	4	16	0	0%
	Enterococcus	35	5	16	0	0%

Notes:
% = percent; CFU = colony-forming units; ID = identification; mL = milliliters

Table 3-6.
Dry Season Exceedance Rates and Compliance Reduction Milestones

Site ID	Analyte	Existing Exceedance Rate [a]	2015–2016 Exceedance Rate	50% Reduction Milestone	50% Reduction Achieved?	100% Reduction Final RWLs	100% Reduction Achieved?
FM-100	Total Coliform	1%	0%	1%	Yes	0%	Yes
	Fecal Coliform	4%	0%	2%	Yes	0%	Yes
	Enterococcus	19%	0%	10%	Yes	0%	Yes

Notes:
% = percent; ID = identification; RWL = receiving water limitation
a. Existing exceedance rate is based on available 1996–2002 historical data.

3.5 Wet and Dry Season Overview

Figure 3-1 presents the 2015–2016 rolling geometric means throughout the wet and dry seasons from October 1, 2015, through September 30, 2016. Wet season geometric means are illustrated with a blue line with blue markers throughout the blue areas (wet season), which reflect the rolling geometric mean using the previous five samples. Wet weather numeric targets are illustrated with a blue dashed line. FIB concentrations in dry and wet weather are indicated with gold circles and blue triangles, respectively. The red line with green markers illustrates the rolling 30-day geometric means throughout the dry season (May through September 2016). Dry weather TMDL numeric targets are illustrated with an orange dashed line.

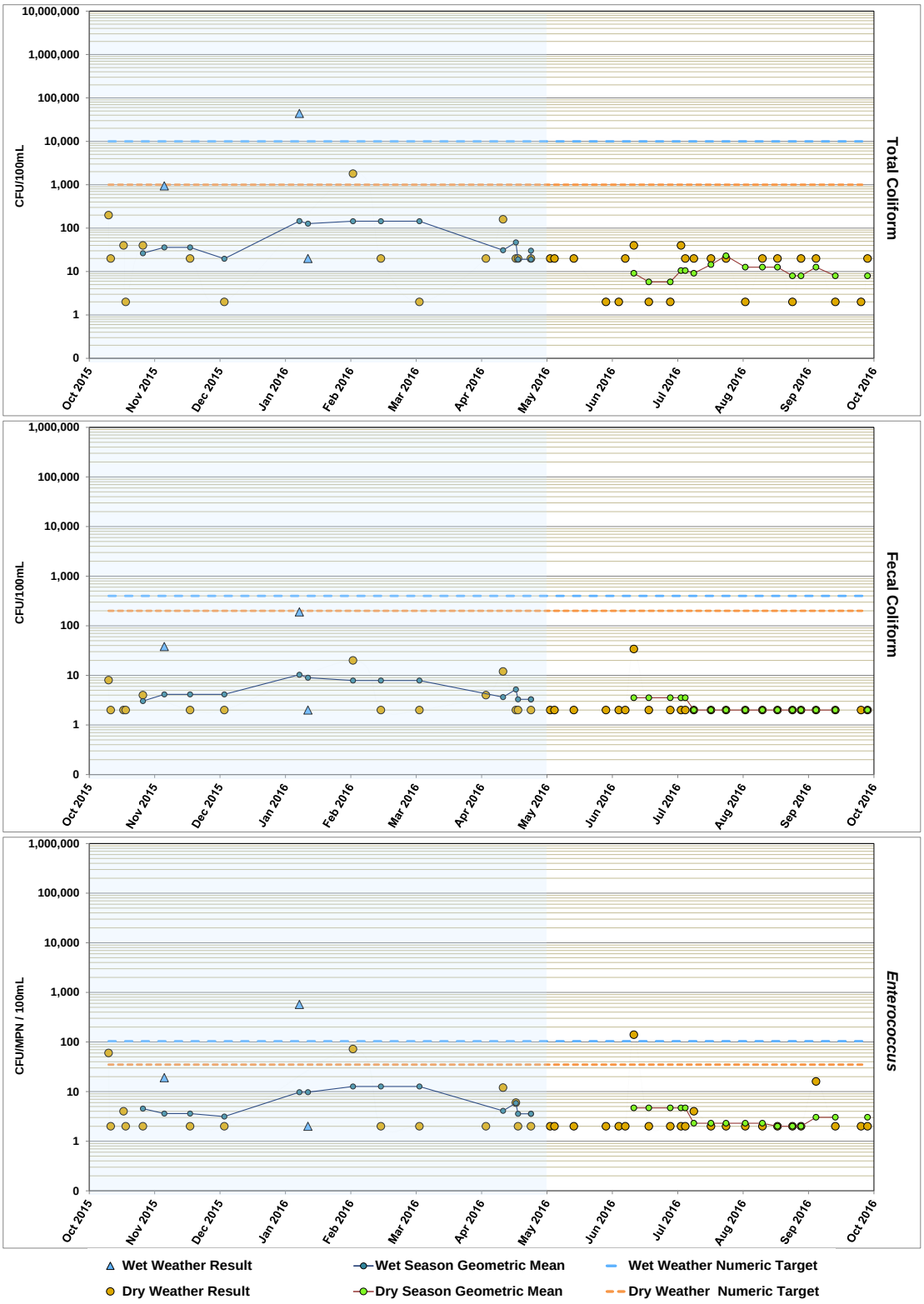

Figure 3-1.
FIB Densities and Geometric Means, 2015–2016 Wet and Dry Season – FM-100

3.6 Progress Toward Attaining Interim and Final Receiving Water Limitations

Table 3-7 depicts the general progress toward meeting interim and final numeric targets by season for the compliance monitoring location in the Los Peñasquitos WMA. This table indicates whether targets for collective FIB have been met (●), have been partially met (O), or have not yet been met (**X**). A partially met goal means that at least one of the FIB constituents is meeting the RWL.

Table 3-7.
General Progress Toward Interim and Final Targets for Los Peñasquitos Watershed Management Area, 2015–2016

2015–2016 Wet Weather Single-Sample Maximum		2015–2016 Wet Season Geomeans		2016 Dry Season Geomeans	
Interim	Final	Interim	Final	Interim	Final
●	●	●	●	●	●

Notes:

● = Currently, interim or final receiving water limitations (RWLs) have been fully achieved.

O = Currently, interim or final RWLs have been partially achieved, but not all compliance constituents have attained the RWL.

X = Currently, no fecal indicator bacteria (FIB) constituents meet Bacteria Total Maximum Daily Load (TMDL) RWL.

4.0 SUMMARY

This section describes current receiving water conditions in the Los Peñasquitos WMA related to the project goals. Dry and wet weather data collected during the 2015–2016 wet season and dry weather data collected during the 2016 dry season were used to evaluate compliance on the basis of current conditions.

4.1 Characterization of Current FIB Concentrations

Overall, full compliance with both interim and final wet weather RWLs was achieved for 2015–2016 wet weather samples. Observed exceedance rates were below the final allowable wet weather exceedance rate of 22% for all compliance constituents.

During the wet season, which evaluates a combination of both wet and dry weather samples using dry weather geometric mean RWLs, 0% exceedance frequencies were achieved for all compliance constituents. Full compliance with both interim and final dry weather RWLs was achieved for the 2015–2016 wet season.

During the dry season, when recreational activities occur with more regularity, 0% exceedance frequencies were achieved for all compliance constituents.

Collectively, these data sets suggest that bacteria densities support water contact recreation beneficial use (REC-1) conditions in the Los Peñasquitos WMA year-round. The 2015–2016 monitoring results are summarized below.

Wet Weather Single-Sample Maximum Comparison

The compliance monitoring location is achieving interim and final wet weather RWLs for all three compliance constituents.

Wet Season Geometric Mean Comparison

The compliance monitoring location is achieving interim and final dry weather RWLs for all three compliance constituents during the wet season.

Dry Season Geometric Mean Comparison

The compliance monitoring location is achieving interim and final dry weather RWLs for all three compliance constituents during the dry season.

Table 4-1 presents the 2015–2016 exceedance rate frequency results by season in the Los Peñasquitos WMA.

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Table 4-1.
2015–2016 Bacteria TMDL Exceedance Frequency Results for Los Peñasquitos River WMA

Site ID	Bacteria TMDL Constituent	Wet Weather [a] Single-Sample Maximum (CFU/100mL)			Wet Season [a, c] 5-Sample Geometric Mean (CFU/100mL)			Dry Season [b] 30-Day Geometric Mean (CFU/100mL)		
		2015–2016 [d] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency	2015–2016 [e] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency	2015–2016 [e] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency
FM-100	Total Coliform	13%	26%	22%	0%	1%	0%	0%	1%	0%
	Fecal Coliform	0%	26%	22%	0%	2%	0%	0%	2%	0%
	Enterococcus	13%	26%	22%	0%	10%	0%	0%	10%	0%

Notes:
% = percent; CFU = colony-forming unit; ID = identification; mL = milliliters; Site ID: FM-100 = Los Peñasquitos River Outlet/Beach; TMDL = total maximum daily load
Green shaded cells show the 2015-2016 observed exceedance frequency.
a. October 1, 2015–April 30, 2016
b. May 1, 2016–September 30, 2016
c. In accordance with the Compliance Monitoring Plan, wet and dry weather FIB data were combined to calculate geometric means for the wet season and compared with dry weather RWLs, as shown in Table ES-1.
d. The exceedance frequency was derived by dividing the total number of wet weather days (days with 0.2 inch of rainfall or greater plus the following 72 hours) that exceeded the single-sample maximum numeric target divided by the total number of wet weather days during the wet season. To determine exceedances for non-sampled wet weather days, the average (interpreted as the geometric mean) of the analytical results from three monitored storm events was applied to the remaining observed wet weather days that were not sampled. The results from the total number of wet weather days, with either assigned averages or analyzed result values, were then compared with single-sample maximum numeric targets.
e. The exceedance frequency was derived by dividing the total number of geometric exceedances by the total number of geometric means calculated during the season.

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5.0 REFERENCES

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APPENDIX A

QUALITY ASSURANCE / QUALITY CONTROL SUMMARY

A. QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

This appendix describes the quality assurance/quality control (QA/QC) activities associated with compliance and special study monitoring for the Bacteria TMDL. Some measurement quality objectives (MQOs) and QA/QC activities were fulfilled jointly for the Los Peñasquitos, Scripps, Tecolote Creek, Chollas Creek Compliance, and Chollas Creek Special Study Bacteria TMDL monitoring programs due to the overlapping nature of the five programs. Laboratory QA/QC activities provide information needed to assess laboratory contamination, analytical precision, and analytical accuracy. The QA/QC program includes both field and laboratory components.

A.1 Field Sampling Quality Assurance and Quality Control (QA/QC)

Monitoring and analyses followed Surface Water Ambient Monitoring Program (SWAMP) Quality Assurance (QA) guidelines. SWAMP requires the collection of field blanks in order to evaluate potential contamination and sampling errors, and recommends collection of field duplicates. These samples isolate errors related to grab sampling prior to submittal of the samples to the analytical laboratory. Field sampling protocols can be found in the Bacteria TMDL Project Monitoring Plans and QAPPs[1] for each watershed.

A brief summary of each measurement type is provided below:

Field Blanks

Field blanks verify that field conditions, field sampling activities, and air deposition are not sources of contamination. Field blanks were taken by filling sample bottles with reagent grade, analyte-free deionized water in the field during a sampling event. The samples were then submitted blind to the laboratory for analysis. The project QAPP outlined frequency for field blanks is at least 5 percent of the total sample count. Results of field blank analysis should be below the reporting limit for each analyte.

For the 2015-2016 monitoring year, field blank data for the joint program fulfilled MQOs for accuracy and frequency. All field blank indicator bacteria concentrations were below the reporting limit, which fulfilled the accuracy MQO. Field blank samples were collected at a frequency of 10 percent for *Enterococcus,* fecal coliform, and total coliform and at a frequency of 19 percent for *E. coli*, which fulfilled the frequency MQO. Field blank data are provided in Table A-1.

Table A-1.
Field Blank Results

Analyte	Accuracy MQO	Result	Accuracy MQO Met	Frequency MQO	Frequency Achieved	Frequency MQO Met
Enterococcus	<RL for target analyte	ND	Yes	5% of total project sample count	10%	Yes
Fecal Coliform		ND	Yes		10%	Yes
Total Coliform		ND	Yes		10%	Yes
E. coli		ND	Yes		19%	Yes

[1] Note: The Los Peñasquitos Bacteria TMDL program does not have a standalone QAPP: instead, quality control and quality assurance procedures are defined in the monitoring plan.

Field Duplicates

Field duplicates measure precision and evaluate error introduced by field sampling. Duplicate samples consist of two replicates (an original and a duplicate) of the same matrix collected at the same time and location using the same sampling technique. The project QAPPs outlined frequency for field duplicates is at least 5 percent of the total sample count. The relative percent difference (RPD) was calculated to determine the precision between duplicate samples. This calculation is shown below:

$$RPD = \frac{abs[log(x_1) - log(x_2)]}{0.5 * [log(x_1) + log(x_2)]}$$

Where: abs is the absolute value
x_1 is measurement 1 (primary sample, log-transformed)
x_2 is measurement 2 (e.g., duplicate sample, log-transformed)

Field duplicate samples for the joint program were collected at the following frequencies, all of which satisfied the MQO of 5 percent: 10 percent for *Enterococcus*, fecal coliform, and total coliform, and 20 percent for *E. coli*.

For the Los Peñasquitos program, field duplicate RPDs were as follows: average RPD results were 2 percent and 1 percent for *Enterococcus* and fecal coliform, respectively, and average RPD results were 76% for total coliform. *E. coli* was not an analytical constituent for the Los Peñasquitos monitoring location. Though the average RPD for total coliform did not meet the precision MQO of RPD<25%, the duplicate sample pairs responsible for the elevated RPDs were all non-detects, and the elevated RPD was a function of different detection limits between the two duplicate samples, not real results. Thus, the data should not be qualified.

Field duplicate RPD and frequency data are provided in Table A-2 for wet and dry weather samples collected from October 1, 2015 – September 30, 2016.

Table A-2.
Field Duplicate Results

Analyte	Precision MQO	Average RPD Result[a]	Precision MQO Met[a]	Frequency Data Quality Objective	Frequency Achieved	Frequency MQO Met
Enterococcus	RPD<25%[b]	2%	Yes	5% of total project sample count	10%	Yes
Fecal Coliform		1%	Yes		10%	Yes
Total Coliform		76%	No[c]		10%	Yes
E. coli		NA[d]	NA[d]		20%	Yes

Notes:
NA = not analyzed
a. Evaluated using field duplicates collected at the Los Peñasquitos monitoring location only
b. USEPA studies suggest a RPD of less than or equal to 50 percent for field duplicates would be more appropriate for bacteriological methods given the spatial variability of bacteria concentrations in surface waters.
c. The precision MQO was not met because of 3 duplicate pairs where both results in the pair were non-detects, but had different detection limits, which generated an RPD of 125%. Because the sample sets were all in agreement regarding the non-detect, the data are considered valid.
d. *E. coli* is not an analytical constituent for the Los Peñasquitos monitoring location, but was analyzed for some duplcates as part of the joint program.

A.2 Laboratory Quality Assurance and Quality Control (QA/QC)

Laboratory QC samples include laboratory replicates, positive and negative controls as described below. Table A-3 describes the planned frequency and types of quality control samples as outlined in the QAPPs.

Laboratory Replicate – For a laboratory replicate, a sample is prepared and analyzed twice to assess the repeatability (precision). Precision is evaluated by calculating the running mean between the two sets of results for each specific type. A minimum of one laboratory replicate was to be analyzed from each batch per the QAPP.

Per the SWAMP requirements for Indicator Bacteria in Fresh Water published in 2013 and revised in 2015, precision will be measured using the following calculation:

$$R_{log} \leq 3.27 \times \bar{R}$$

To calculate the precision for bacterial analyses, the results from the preceding 15 positive samples of a specific type (matrix) are used to calculate a running mean. The results used to calculate the running mean must all correspond to the same quality control parameter (such as laboratory duplicates). The results of different quality control parameters such as laboratory and field duplicates must not both be used t
o calculate a single running mean.

Step 1:
Record the results from duplicate analyses (these results are here designated as D_1 and D_2).

Step 2:
Calculate the logarithm (here designated as L_1 and L_2) of each duplicate result.
Note: If either of the values D_1 or D_2 are less than 1, add 1 to both values before calculating the logarithms.

$$L_1 = \log D_1$$
$$L_2 = \log D_2$$

Step 3:
Calculate the range of logarithms (R_{log}) for each pair of duplicates. (R_{log}) is equal to the absolute value of the difference between the two numbers.

$$(R_{log}) = |L_1 - L_2|$$

Step 4:
Calculate the mean of R_{log} $(\bar{R})$ for the duplicates analyzed

$$\bar{R} = \frac{\sum R_{log}}{n}$$

where

$\sum R_{log}$ = the sum of the ranges of logarithms calculated for each pair of duplicates

n = the number of pairs of duplicates (in this case, *n* = 15)

Step 5:
Assess the precision of the duplicate analyses.

In order for the laboratory to demonstrate an acceptable level of precision, the range of logarithms for a particular duplicate must be less than the mean of the range of logarithms multiplied by 3.27.

$$R_{log} \leq 3.27 \times \bar{R}$$

Positive and Negative Controls –A positive control is generated by analyzing a matrix known to contain the target bacteria (such as wastewater influent), which is filtered and incubated the same way as a sample. Target bacteria growth should be observed on the filter after incubation. A positive control is used to detect procedural errors or the presence of contaminants in the laboratory analysis that might inhibit bacteria growth (USEPA, 2012). A negative control is generated by analyzing the buffered rinse water, which is filtered and incubated the same way as a sample. There should be no growth on the negative control plates after incubation. A negative control is used to detect laboratory contamination of the analyses.

Table A-3.
Laboratory QC

Constituent Category	Method Blanks	
	Frequency	Acceptance Limits
Laboratory Replicate	One per 20 samples or analytical batch, whichever is more frequent	$R_{log} \leq 3.27 \times \bar{R}$
Positive and Negative Controls	Per batch of bottles or reagents	Positive Control = Growth on filter; Negative Control = No growth on filter

Laboratory QC–Dry Weather:

Dry weather sample analyses were conducted in full by the City of San Diego Environmental & Technical Services (EM&TS) Laboratory. Dry weather QA/QC data were generated daily for each method used, including laboratory replicates and positive and negative controls (including dilution blanks and media controls), unless otherwise noted. Additional sample volume was collected in the field at the discretion of the City of San Diego field staff and submitted to the EM&TS Laboratory for replicate analyses throughout the monitoring program. Dry weather QA/QC data, sample types and results for the joint program are summarized in Table A-4.

Table A-4.
Dry Weather Quality Control Results

Analyte	Accuracy			
	Positive Control	Negative Control	Dilution Blank	Media Control
Enterococcus[a]	100% Pass	100% Pass	100% Pass	100% Pass
Fecal Coliform[b]	100% Pass	100% Pass	Not Analyzed	100% Pass
Total Coliform[b]	100% Pass	100% Pass	100% Pass	100% Pass
E. coli[c]	100% Pass	98% Pass[d]	Not Analyzed	100% Pass

a. 2 batches not run for EPA 1600 controls
b. 6 batches not run for SM 9222B/D controls
c. 3 batches not run for SM 9223B controls.
d. One lab batch (9/7/16) failed negative control tests. Contaminated tests were re-run and passed.

Laboratory QC–Wet Weather:

Wet weather sample analyses were conducted by Weck Laboratories and the City of San Diego EM&TS Laboratory. Wet weather laboratory QA/QC for the joint program included laboratory replicates, positive and negative controls, and method blanks.

Weck Laboratories analyzed positive controls, negative controls, and filter blanks as method blanks for wet weather events on November 4 and November 6, 2015, and January 9, 2016. The City of San Diego EM&TS Laboratory analyzed media and dilution blanks as method blanks for all other wet weather events. Method blanks were analyzed during each wet weather event (batch) and reported with the analytical results. All method blank QA/QC data for Weck Laboratories and EM&TS Laboratory were reported as below the reporting limit. Wet weather QA/QC data, sample types and results are summarized in Table A-5.

Table A-5.
Wet Weather Quality Control Results

Analyte	Accuracy		
	Positive[a] Control	Negative[a] Control	Method[a] Blank
Enterococcus	100% Pass	100% Pass	100% Pass
Fecal Coliform	100% Pass	100% Pass	100% Pass
Total Coliform	100% Pass	100% Pass	100% Pass
E. coli	100% Pass	100% Pass	100% Pass

Notes:
a. Data is combined from both Weck Laboratories and City of San Diego EM&TS Laboratory.

Laboratory QC–Precision:

Per recent updates to the SWAMP QA guidelines for indicator bacteria in freshwater, and as described above, log-transformation has been incorporated into laboratory precision MQOs for Bacteria TMDL analyses. The precision results for combined dry and wet weather laboratory replicates are presented in Table A-6. The acceptance rates for laboratory precision were 86, 88, 88, and 95 percent for *Enterococcus*, fecal coliform, and total coliform, and *E. coli*, respectively.

The higher precision observed for *E. coli* compared to the other constituents is potentially related to the method type. *Enterococcus,* fecal coliform, and total coliform are all analyzed by membrane filtration methods, where the bacteria are cultured and counted directly: thus, any positive integer result is possible. The *E. coli* method is a most probable number (MPN) method, where the sample is mixed with media and incubated in a multi-celled tray. The tray cells are then counted as positive or negative: an MPN table converts the number of positive cells into a result. Because of the use of the MPN table, the number of possible results is limited and may explain the higher precision. Laboratory replicates that did not meet precision criteria typically had low concentrations near the reporting limit, where variability is higher than normal.

Table A-6.
Lab Replicate Precision Acceptance Results

Analyte	Precision Acceptance Rate
Enterococcus	86%
Fecal Coliform	88%
Total Coliform	88%
E. coli	95%

APPENDIX B

2015–2016 WET WEATHER ANALYTICAL RESULTS

Table B-1.
2015–2016 Wet Weather Field Parameters and Analytical Results for FM-100

Analyte	Units	WQO	Method	MDL/RL[a]	FM-100		
					WW1 11/6/2015	WW2 01/09/2016	WW3 02/03/2016
Field Measurements [b]							
Specific Conductivity	µS/cm	-	-	-	44,000	20,700	32,300
pH	pH Units	-	-	-	7.47	7.81	7.98
Temperature	°C	-	-	-	20.08	16.51	16.81
Turbidity	NTU	-	-	-	1.44	55	15.3
Compliance Constituents							
Total Coliform	CFU/100mL	10,000	SM 9222B	2-200	940	**44,000**	1,800
Fecal Coliform	CFU/100mL	400	SM 9222D	2	38	190	<20
Enterococcus	CFU/100mL	104	USEPA 1600	1-10	19	**570**	72

Notes:
WQO = Water Quality Objective; °C = degree Celsius; NTU = Nephelometric Turbidity Units; µS/cm = microsiemens per centimeter; MDL = Method Detection Limit; RL = Reporting Limit; WW = Wet Weather
Bold values indicate a value above the WQO.
a. MDL/RL values vary with the dilutions used to generate plates within the countable range.
b. Field measurements were collected using a calibrated Horiba U-53.

Table B-2.
2015-2016 Wet Weather Days

Wet Weather Day No.	2015-2016 Wet Weather Days	
	Date	Rainfall (inches)
1	10/4/2015	0.25
2	10/5/2015	0.25
3	10/6/2015	0
4	10/7/2015	0
5	10/8/2015	0
6	11/3/2015	0.27
7	11/4/2015	0.01
8	11/5/2015	0
9	11/6/2015	0
10	12/11/2015	0.28
11	12/12/2015	0
12	12/13/2015	0.24
13	12/14/2015	0
14	12/15/2015	0
15	12/16/2015	0
16	12/22/2015	0.48
17	12/23/2015	0.05
18	12/24/2015	0
19	12/25/2015	0.01
20	1/5/2016	1.87
21	1/6/2016	2.03
22	1/7/2016	1.26
23	1/8/2016	0.14
24	1/9/2016	0.01
25	1/10/2016	0
26	1/31/2016	0.57
27	2/1/2016	0
28	2/2/2016	0
29	2/3/2016	0
30	3/6/2016	0.26
31	3/7/2016	0.56
32	3/8/2016	0
33	3/9/2016	0
34	3/10/2016	0
35	3/11/2016	0.24
36	3/12/2016	0
37	3/13/2016	0.04
38	3/14/2016	0.02
39	4/7/2016	0.41
40	4/8/2016	0.12
41	4/9/2016	0
42	4/10/2016	0.49

Table B-2. (cont.)
2015-2016 Wet Weather Days

Wet Weather Day No.	2015-2016 Wet Weather Days	
	Date	Rainfall (inches)
43	4/11/2016	0
44	4/12/2016	0
45	4/13/2016	0

Notes: Blue shaded = Sampled wet weather events.
Non-shaded = Non-sampled wet weather days.
Actual sampling dates: 11/06/2015; 01/09/2016; 02/03/2016.
Wet Weather day is defined as precipitation ≥0.2” + 72 hours

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APPENDIX C

2015–2016 DRY WEATHER ANALYTICAL RESULTS

Table C-1.
2015–2016 Dry Weather Field Measurements and Analytical Results at Los Peñasquitos

Dry Weather Event	Date	Field Measurements / Observations					Compliance Constituents		
		Flow To Ocean (Y/N)	Temp (ºC)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Total Coliform (CFU/100mL)	Fecal Coliform (CFU/100mL)	Enterococcus (CFU/ 100mL)
1*	10/12/2015	N	23.7	8.0	55.2	5.40	200	8	60
2	10/13/2015	N	25.50	8.1	53.0	7.85	<20	<2	2
3	10/19/2015	N	22.3	8.0	57.6	3.17	40	<2	4
4	10/20/2015	N	23.7	8.0	52.7	14.01	<2	<2	<2
5	10/28/2015	N	22.7	8.1	51.0	2.45	40	4	<2
6*	11/19/2015	N	20.9	8.1	56.2	1.45	<20	<2	<2
7	12/1/2015	N	18.40	8.1	49.8	1.25	<2	<2	<2
8	1/13/2016	N	15.9	8.0	45.0	8.57	<20	<2	2
9	2/16/2016	N	21.0	8.1	57.2	14.44	<20	<2	<2
10*	3/1/2016	N	18.2	8.1	55.0	7.01	<2	<2	<2
11	4/5/2016	Y	18.1	8.0	54.4	5.16	<20	4	<2
12*	4/13/2016	N	20.0	7.9	43.9	9.89	160	12	12
13	4/19/2016	N	19.6	8.1	52.8	11.07	<20	<2	6
14	4/20/2016	N	20.2	8.0	51.1	9.93	<20	<2	<2
15	4/26/2016	N	18.7	8.1	48.3	10.44	<20	<2	2
16	5/2/2016	N	20.7	8.1	51.4	7.89	<20	<2	<2
17	5/3/2016	N	20.0	7.9	53.9	6.63	<20	<2	<2
18	05/16/2016	N	19.2	8.0	53.6	3.50	<20	<2	<2
19	05/31/2016	N	19.2	8.2	53.6	2.82	<2	<2	<2
20	06/06/2016	Y	19.5	8.0	57.9	2.31	<2	<2	<2
21	06/09/2016	NR	18.8	8.1	52.8	1.11	<20	<2	<2
22	06/13/2016	NR	19.8	8.0	52.4	0.00	40	34	140
23	06/20/2016	Y	21.1	8.1	50.9	3.29	<2	<2	<2
24	06/30/2016	N	23.6	8.1	54.3	5.48	<2	<2	<2
25	07/05/2016	N	23.1	8.2	53.3	1.99	40	<2	<2
26	07/07/2016	N	22.8	8.2	44.6	0.00	<20	<2	<2
27	07/11/2016	N	22.8	8.1	57.8	9.11	<20	<2	4
28	07/19/2016	N	25.0	8.2	45.5	2.36	<20	<2	2
29	07/26/2016	N	25.3	8.1	44.3	0.93	<20	<2	<2
30	08/01/2016	N	25.6	8.2	52.7	0.00	<2	<2	<2
31	08/09/2016	N	23.3	8.0	51.2	1.62	<20	2	<2
32*	08/16/2016	N	21.0	7.8	52.4	0.00	<20	2	<2
33	08/23/2016	N	20.4	7.4	53.5	1.30	<2	<2	<2
34*	08/30/2016	Y	23.1	7.8	47.8	1.72	<20	<2	2
35	09/06/2016	Y	22.8	8.1	51.5	0.00	16	<2	16
36	09/13/2016	Y	20.0	7.9	53.4	2.44	<2	<2	<2
37	09/27/2016	Y	23.5	7.9	52.7	2.30	2	2	2
38	09/28/2016	Y	21.9	7.3	52.4	2.16	20	<2	<2

Notes:
* indicates sample that was taken at point zero (as opposed to 75 feet north)
NR= Not recorded
No flow to the ocean depicts when a naturally occurring sand berm prevents tidal exchange between the Los Penasquitos Lagoon and Pacific Ocean.

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APPENDIX D

WET WEATHER ANALYTICAL LABORATORY REPORTS

CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	12/14/15 12:51
		Received Date:	11/06/15 15:55
		Turn Around:	Normal
Attention:	Roshan Christoph	**Client Project:**	5025-15-1111
Phone:	(858) 278-3600		
Fax:	(858) 278-5300	**PO Number:**	C013105334
Work Order(s):	5K06083		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Roshan Christoph :

Enclosed are the results of analyses for samples received 11/06/15 15:55 with the Chain of Custody document. The samples were received in good condition, at 3.8 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:
Quality Controls ran on 11/6/15 are as follows:
Total and Fecal Coliform ws spiked with E. coli was positive
Enterococcus was spiked with E. faecalis was positive
Blanks were all Non-Detected

Reviewed by:

Hai Van Nguyen
Project Manager

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 11/06/15 15:55
Date Reported: 12/14/15 12:51

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
1516-W1-FM-100-G-01	Client	5K06083-01	Water	11/06/15 10:15
1516-W1-FM-100-G-02	Client	5K06083-02	Water	11/06/15 10:15

ANALYSES

Microbiological Parameters by Standard Methods

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 11/06/15 15:55
Date Reported: 12/14/15 12:51

5K06083-01 **1516-W1-FM-100-G-01**

Sampled: 11/06/15 10:15 **Sampled By:** Client **Matrix:** Water

Microbiological Parameters by Standard Methods

Method: EPA 1600 Batch: W5L0779 Prepared: 11/06/15 16:30 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Enterococcus	**19**	1.0	1.0	CFU/100 ml	1	11/07/15 16:40	

Method: SM 9222B/D Batch: W5L0775 Prepared: 11/06/15 17:26 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Fecal Coliform	**38**	2.0	2.0	CFU/100 ml	2	11/07/15 17:30	
Total Coliform	**940**	20	20	CFU/100 ml	20	11/07/15 16:45	

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San Diego CA, 92123

Date Received: 11/06/15 15:55
Date Reported: 12/14/15 12:51

5K06083-02 **1516-W1-FM-100-G-02**

Sampled: 11/06/15 10:15 **Sampled By:** Client **Matrix:** Water

Microbiological Parameters by Standard Methods

Method: EPA 1600 Batch: W5L0779 Prepared: 11/06/15 16:30 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Enterococcus	**25**	1.0	1.0	CFU/100 ml	1	11/07/15 16:40	

Method: SM 9222B/D Batch: W5L0775 Prepared: 11/06/15 17:26 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Fecal Coliform	**50**	2.0	2.0	CFU/100 ml	2	11/07/15 17:30	
Total Coliform	**1600**	20	20	CFU/100 ml	20	11/07/15 16:55	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 11/06/15 15:55
Date Reported: 12/14/15 12:51

QUALITY CONTROL SECTION

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 11/06/15 15:55
Date Reported: 12/14/15 12:51

Microbiological Parameters by Standard Methods - Quality Control

Batch W5L0775 - SM 9222B/D

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W5L0775-BLK1)					Analyzed: 11/07/15 16:45						
Fecal Coliform	ND	1.0	1.0	CFU/100 ml							
Total Coliform	ND	1.0	1.0	CFU/100 ml							

Batch W5L0779 - EPA 1600

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W5L0779-BLK1)					Analyzed: 11/07/15 16:40						
Enterococcus	ND	1.0	1.0	CFU/100 ml							

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 11/06/15 15:55
Date Reported: 12/14/15 12:51

Notes and Definitions

ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	02/01/16 12:46
		Received Date:	01/09/16 16:58
		Turn Around:	Normal
Attention:	Roshan Christoph	**Client Project:**	Los Penasquitos Bacteria TMDL 5025-15-1111
Phone:	(858) 278-3600		
Fax:	(858) 278-5300		
Work Order(s):	6A11005		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

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Dear Roshan Christoph :

Enclosed are the results of analyses for samples received 01/09/16 16:58 with the Chain of Custody document. The samples were received in good condition, at 3.8 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:
Quality Controls ran on 1/09/16 are as follows:
Total and Fecal Coliform ws spiked with E. coli was positive
Enterococcus was spiked with E. faecalis was positive
Blanks were all Non-Detected

Reviewed by:

Hai Van Nguyen
Project Manager

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/09/16 16:58
Date Reported: 02/01/16 12:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
1516-W2-FM-100-G-01	PS,DE	6A11005-01	Water	01/09/16 12:55

ANALYSES

Microbiological Parameters by Standard Methods

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/09/16 16:58
Date Reported: 02/01/16 12:46

6A11005-01 **1516-W2-FM-100-G-01**

Sampled: 01/09/16 12:55 **Sampled By:** PS,DE **Matrix:** Water

Microbiological Parameters by Standard Methods

Method: EPA 1600 Batch: W6B0039 Prepared: 01/09/16 20:00 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Enterococcus	**570**	10	10	CFU/100 ml	10	01/10/16 20:00	

Method: SM 9222B/D Batch: W6B0019 Prepared: 01/09/16 19:20 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Total Coliform	**44000**	200	200	CFU/100 ml	200	01/10/16 19:00	

Method: SM 9222B/D Batch: W6B0029 Prepared: 01/09/16 18:25 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Fecal Coliform	**190**	2.0	2.0	CFU/100 ml	2	01/10/16 19:00	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/09/16 16:58
Date Reported: 02/01/16 12:46

QUALITY CONTROL SECTION

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/09/16 16:58
Date Reported: 02/01/16 12:46

Microbiological Parameters by Standard Methods - Quality Control

Batch W6B0019 - SM 9222B/D

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0019-BLK1)					Analyzed: 01/10/16 19:00						
Total Coliform	ND	1.0	1.0	CFU/100 ml							

Batch W6B0029 - SM 9222B/D

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0029-BLK1)					Analyzed: 01/10/16 19:00						
Fecal Coliform	ND	1.0	1.0	CFU/100 ml							

Batch W6B0039 - EPA 1600

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0039-BLK1)					Analyzed: 01/10/16 20:00						
Enterococcus	ND	1.0	1.0	CFU/100 ml							

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/09/16 16:58
Date Reported: 02/01/16 12:46

Notes and Definitions

ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

Environmental Monitoring and Technical Services
2392 Kincaid Rd. MS 45A, San Diego, CA 92101
Tel (619) 758-2361 Fax (619) 758-2309

TMDL Bacteriological Results

11/01/2016

Source			Total Coliforms	Fecal Coliforms	Enterococcus
Sample Date	Station	Time	CFU/100 mL	CFU/100 mL	CFU/100 mL
02/03/2016	**FM-100-RW-G-01**	955	1,800e	<20	72
02/03/2016	**FM-100-RW-G-03**	955	<1	<1	<1

e, estimated value, plate count falls outside recommended reporting limits per EPA method guidelines.
ND, No data; the total number of bacterial colonies, coliforms plus non-coliform exceed 200 colonies per plate

APPENDIX E

WET WEATHER
FIELD DATA FORMS

Bacteria TMDL Monitoring
FIELD DATA SHEET

Site ID: FM-100 Date: 11/6/15 Time: 1015

Watershed: Los Pen [X] Receiving Water [ ] Storm Drain

Field Crew: KB, CE Photos Collected? [X] Yes [ ] No Photo Count#: 3-4

Observed Land Use: [X] Residential [X] Commercial [ ] Industrial [ ] Agricultural [X] Parks [ ] Open

ATMOSPHERIC CONDITIONS

Weather [ ] Partly Cloudy [X] Sunny [ ] Overcast [ ] Fog [ ] Rain [ ] Drizzle

Tide [ ] N/A [ ] Low [ ] Incoming [ ] High [X] Outgoing Tide Height: 2.5 ft.

Last Rain [ ] > 72 hours [X] < 72 hours

Rainfall [ ] None [ ] < 0.1" [X] > 0.1"

BEACH CHARACTERISTICS

Biology [X] None [ ] Insects [ ] Algae [ ] Mollusk [ ] Snails [ ] Crustacean [ ] Other

Deposits [X] None [ ] Sediment/Gravel [ ] Oily Deposits [ ] Stains [ ] Fine Particulates [ ] Other

Vegetation [ ] None [ ] Limited [ ] Excessive [X] Normal [ ] Other

RUNOFF CHARACTERISTICS N/A

Composition: CE ~~[X] Sandy~~ N/A ~~[ ] Rocky~~ ~~[ ] Grass~~

Floatables ~~[ ] None~~ ~~[ ] Trash~~ ~~[ ] Bubbles/Foam~~ ~~[ ] Sheen~~ ~~[ ] Fecal Matter~~ ~~[ ] Other~~

Beach Odor ~~[ ] None~~ ~~[ ] Musty~~ ~~[ ] Rotten Eggs~~ ~~[ ] Chemical~~ ~~[ ] Sewage~~ ~~[ ] Other~~

Beach Color ~~[ ] None~~ ~~[ ] Yellow~~ ~~[ ] Brown~~ ~~[ ] White~~ ~~[ ] Gray~~ ~~[ ] Other~~

Beach Clarity ~~[ ] Clear~~ ~~[ ] Slightly Cloudy~~ ~~[ ] Opaque~~ ~~[ ] Other~~

ACTIVITIES/INDICATORS

[ ] Evidence Reclaimed Water Usage [ ] Ag/Livestock Facility [ ] Encampments #

[ ] Waste Water Discharge [ ] Leaking Trashcan [ ] Dom. Animals #

[ ] Sewer Overflow [ ] Food Waste/scraps [X] Birds # 5

[ ] Trash Accumulation [X] Seaweed Accumulation [ ] Wildlife #

[ ] Organic Matter [ ] Children (Diapers) # [ ] Other

FLOW CONDITIONS N/A

Outfall Reaches Receiving Waters? ~~[ ] Yes~~ ~~[ ] No~~ ~~[ ] N/A~~ [ ] Dry [ ] Ponded [ ] Trickle [ ] Tidal

Flow Estimation:

Width | Diameter [ ] ft. | in. Depth [ ] ft. | in. Velocity [ ] ft/sec. Flow [ ] cfs | gpm

FIELD MEASUREMENTS

pH: 7.47 Temp(°C): 20.08 Turbidity (NTU): 1.44 Sp Conductivity (µS/cm): 44,000

SAMPLE COLLECTION [ ] Visited, Not Sampled

Grab Sample Collected? [X] Yes [ ] No

Sample ID: 1516-WI-FM100-G01

Date: 11/6/15 Time: 1015

QAQC Sample Collected? [X] Yes [ ] No QAQC Type:

Sample ID: 1516-WI-FM100-G02 [X] DUP

Date: 11/6/15 Time: 1015 [ ] FB

SAMPLE CHARACTERISTICS [ ] N/A

Floatables [X] None [ ] Trash [ ] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Sample Odor [X] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Sample Color [X] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Sample Clarity [X] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

COMMENTS:

Salinity was 28.6 ppt which indicates sample was collected within mixing zone.

Lagoon discharging to ocean

Bacteria TMDL Monitoring
FIELD DATA SHEET

Site ID: FM-100 Date: 1/9/16 Time: 1255

Watershed: Los Pen [X] Receiving Water [ ] Storm Drain

Field Crew: PS DE Photos Collected? [X] Yes [ ] No Photo Count#: 2

Observed Land Use: [X] Residential [X] Commercial [ ] Industrial [ ] Agricultural [X] Parks [ ] Open

ATMOSPHERIC CONDITIONS

Weather	[ ] Partly Cloudy	[ ] Sunny	[X] Overcast	[ ] Fog	[ ] Rain	[ ] Drizzle
Tide	[ ] N/A	[ ] Low	[ ] Incoming	[ ] High	[X] Outgoing	Tide Height: 0.5 ft.
Last Rain	[ ] > 72 hours	[X] < 72 hours				
Rainfall	[ ] None	[ ] < 0 .1"	[X] > 0 .1"			

BEACH CHARACTERISTICS

Biology	[X] None	[ ] Insects	[ ] Algae	[ ] Mollusk	[ ] Snails	[ ] Crustacean	[ ] Other
Deposits	[ ] None	[ ] Sediment/Gravel	[ ] Oily Deposits	[ ] Stains	[X] Fine Particulates		[X] Other sand
Vegetation	[ ] None	[ ] Limited	[ ] Excessive	[X] Normal			[ ] Other

RUNOFF CHARACTERISTICS → N/A

Composition:	[ ] Sandy	[ ] Rocky	[ ] Grass			
Floatables	[ ] None	[ ] Trash	[ ] Bubbles/Foam	[ ] Sheen	[ ] Fecal Matter	[ ] Other
Beach Odor	[ ] None	[ ] Musty	[ ] Rotten Eggs	[ ] Chemical	[ ] Sewage	[ ] Other
Beach Color	[ ] None	[ ] Yellow	[ ] Brown	[ ] White	[ ] Gray	[ ] Other
Beach Clarity	[ ] Clear	[ ] Slightly Cloudy	[ ] Opaque			[ ] Other

ACTIVITIES/INDICATORS

[ ] Evidence Reclaimed Water Usage	[ ] Ag/Livestock Facility	[ ] Encampments #
[ ] Waste Water Discharge	[ ] Leaking Trashcan	[ ] Dom. Animals #
[ ] Sewer Overflow	[ ] Food Waste/scraps	[X] Birds # 150
[ ] Trash Accumulation	[ ] Seaweed Accumulation	[ ] Wildlife #
[ ] Organic Matter	[ ] Children (Diapers) #	[ ] Other

FLOW CONDITIONS → N/A

Outfall Reaches Receiving Waters? [ ] Yes [ ] No [ ] N/A [ ] Dry [ ] Ponded [ ] Trickle [ ] Tidal

Flow Estimation:

Width | Diameter [ ] ft. | in. Depth [ ] ft. | in. Velocity [ ] ft/sec. Flow [ ] cfs | gpm

FIELD MEASUREMENTS

pH: 7.81 Temp(°C): 16.51 Turbidity (NTU): 55 Sp Conductivity (µS/cm): 20,700

SAMPLE COLLECTION [ ] Visited, Not Sampled

Grab Sample Collected? [X] Yes [ ] No

Sample ID: W2-FM100-G01

Date: 1/9/16 Time: 1255

QAQC Sample Collected? [ ] Yes [X] No

Sample ID:

Date: Time:

QAQC Type: [ ] DUP [ ] FB

SAMPLE CHARACTERISTICS [ ] N/A

Floatables	[X] None	[ ] Trash	[ ] Bubbles/Foam	[ ] Sheen	[ ] Fecal Matter	[ ] Other
Sample Odor	[X] None	[ ] Musty	[ ] Rotten Eggs	[ ] Chemical	[ ] Sewage	[ ] Other
Sample Color	[X] None	[ ] Yellow	[ ] Brown	[ ] White	[ ] Gray	[ ] Other
Sample Clarity	[X] Clear	[ ] Slightly Cloudy	[ ] Opaque			[ ] Other

COMMENTS: ongoing bridge (Railroad) construction

Lagoon flow reaching ocean

Bacteria TMDL Monitoring
FIELD DATA SHEET

Site ID: FM-100 Date: 2/3/16 Time: 0955

Watershed: Los Pen [X] Receiving Water [ ] Storm Drain

Field Crew: PS, DA Photos Collected? [X] Yes [ ] No Photo Count#: 3

Observed Land Use: [X] Residential [X] Commercial [ ] Industrial [ ] Agricultural [X] Parks [ ] Open

ATMOSPHERIC CONDITIONS

Weather [ ] Partly Cloudy [X] Sunny [ ] Overcast [ ] Fog [ ] Rain [ ] Drizzle

Tide [ ] N/A [ ] Low [ ] Incoming [ ] High [X] Outgoing Tide Height: 2 ft.

Last Rain [ ] > 72 hours [X] < 72 hours

Rainfall [ ] None [ ] < 0.1" [X] > 0.1"

BEACH CHARACTERISTICS

Biology [ ] None [ ] Insects [ ] Algae [ ] Mollusk [ ] Snails [ ] Crustacean [X] Other NR

Deposits [ ] None [ ] Sediment/Gravel [ ] Oily Deposits [ ] Stains [ ] Fine Particulates [X] Other Sand

Vegetation [ ] None [ ] Limited [ ] Excessive [ ] Normal [X] Other NR

RUNOFF CHARACTERISTICS N/A

Composition: [ ] Sandy [ ] Rocky [ ] Grass

Floatables [ ] None [ ] Trash [ ] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Beach Odor [ ] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Beach Color [ ] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Beach Clarity [ ] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

ACTIVITIES/INDICATORS

[ ] Evidence Reclaimed Water Usage [ ] Ag/Livestock Facility [ ] Encampments #

[ ] Waste Water Discharge [ ] Leaking Trashcan [ ] Dom. Animals #

[ ] Sewer Overflow [ ] Food Waste/scraps [X] Birds # 15

[ ] Trash Accumulation [ ] Seaweed Accumulation [ ] Wildlife #

[ ] Organic Matter [ ] Children (Diapers) # [ ] Other

FLOW CONDITIONS N/A

Outfall Reaches Receiving Waters? [ ] Yes [ ] No [ ] N/A [ ] Dry [ ] Ponded [ ] Trickle [ ] Tidal

Flow Estimation:

Width | Diameter ft. | in. Depth ft. | in. Velocity ft/sec. Flow cfs | gpm

FIELD MEASUREMENTS

pH: 7.98 Temp(°C): 16.81 Turbidity (NTU): 15.3 Sp Conductivity (µS/cm): 32,300

SAMPLE COLLECTION [ ] Visited, Not Sampled

Grab Sample Collected? [X] Yes [ ] No

Sample ID: 1516-W3-FM100-G01

Date: 2/3/16 Time: 0955

QAQC Sample Collected? [X] Yes [ ] No QAQC Type:

Sample ID: 1516-W3-FM100-G03 [ ] DUP

Date: 2/3/16 Time: 0955 [X] FB

SAMPLE CHARACTERISTICS [ ] N/A

Floatables [X] None [ ] Trash [ ] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Sample Odor [X] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Sample Color [X] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Sample Clarity [X] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

COMMENTS: lagoon discharging to ocean

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APPENDIX F

BACTERIA TMDL AND MS4 PERMIT DISCREPANCIES

F.1 Inconsistencies in Bacteria Total Maximum Daily Load (TMDL) Requirements (Attachment E.6)

The Bacteria TMDL Compliance Monitoring Program and this compliance monitoring report are designed to address the monitoring and assessment requirements defined in Attachment E.6.6 of the MS4 Permit. A number of inconsistencies were identified that may affect the interpretation of compliance.

MS4 Permit Monitoring and Assessment:

This report includes three compliance evaluations outlined in Sections 2.7 through 2.9, based on the MS4 Permit assessment requirements *(*San Diego Regional Water Quality Control Board [Regional Board], 2013*,* page E-49).

There is discrepancy between Table 6.2b–*Final Receiving Water Limitations Expressed as Bacteria Densities and Allowable Exceedance Frequencies for Creeks (Regional Board, 2013,* page E-32) and Table 6.5–*Interim Wet Weather Receiving Water Limitations Expressed as Interim Wet Weather Allowable Exceedance Frequencies (Regional Board, 2013,* page E-44).

As a clarification to the TMDLs, Table 6.2b in the MS4 Permit clarifies the final receiving water limitations (RWLs) for fecal coliform and *Enterococcus* and removes total coliform as a numeric target for creeks. However, Table 6.5 still includes a 41 percent interim wet weather allowable exceedance frequency for total coliform.

There is discrepancy between the monitoring procedures and assessment requirements. The sampling frequency defined in the monitoring procedures would provide insufficient data to complete the dry season geometric mean assessment requirement. The following are summaries of the MS4 Permit requirements and how the monitoring program addressed the discrepancies:

- The monitoring procedures of MS4 Permit Attachment E.6 require dry weather samples at creeks to be consistent with those of receiving monitoring stations in accordance with Provision D of the MS4 Permit as stated in Provision E.6.d(2)b.(i) (Regional Board, 2013, page E-50). Provision D of the MS4 Permit requires three dry weather monitoring events at receiving water stations.
- The assessment requirements for dry weather geometric mean exceedance frequencies state that the method and number of samples must be consistent with the requirements of the Basin Plan, which requires 5 samples per 30 days (Regional Board, 2010). The wet season geometric mean evaluation requirements do not stipulate that the Basin Plan methodology be applied.
- The Bacteria TMDL Monitoring Program was designed to generate the data needed to complete the assessment requirements. Dry weather monitoring was conducted at a higher frequency than required by the Bacteria TMDL monitoring procedures. Dry weather monitoring was conducted weekly during the dry season and monthly during the wet season to compare results with the dry weather geometric mean numeric targets.

There is an inconsistency between RWLs and assessment requirements that is traced back to inconsistencies between written requirements and tables in the Bacteria TMDL. The assessment section does not require a calculation of single-sample maximum (SSM) exceedances for dry weather. The following are summaries of the MS4 Permit requirements and how the monitoring program addressed the discrepancies:

- The assessment section requires exceedance frequencies to be calculated for dry season geometric means, wet season geometric means, and wet weather SSMs. The assessment requirements of the MS4 Permit are reinforced by the table of RWLs for creeks and the discussion of numeric targets, as presented in the Bacteria TMDL (Regional Board, 2010, pages A52 and A13, respectively).
- The footnotes of Table 6.2b of the MS4 Permit state that for "*dry weather days, the single sample maximum and 30-day geometric mean receiving water limitations are required to be achieved" and "wet weather days, only the single sample maximum receiving water limitations are required to be achieved" (*Regional Board, 2013*,* page E-32). These are not consistent with the footnotes for the same table presented in the Bacteria TMDL. The footnotes in the MS4 Permit are reinforced by the discussion of compliance with dry weather TMDLs described in the Bacteria TMDL, which states that, "*In addition to geometric means, the bacteria densities must be consistent with the SSM REC-1 WQOs in the Basin Plan for creeks.*"
- The Bacteria TMDL Compliance Monitoring Program was designed to generate the data needed to complete the assessment requirements.

The MS4 Permit assessment section clearly defines an evaluation of wet season geometric means that includes wet weather sampling results and dry weather sampling results. This assessment applies the dry weather numeric target to a data set that includes storm samples.

Attachment C – Los Peñasquitos Lagoon TMDL Vegetation Acreage

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Table C-1
Los Peñasquitos Lagoon TMDL Vegetation Acreage

TMDL Vegetation and Baseline Vegetation	Baseline Area (Acres)	October 2016 Area (Acres)	Difference from Baseline to 2016 (acres)
Developed			
Channel	0.52	0.52	0
Developed	429.14	429.14	0
Developed Total	**429.66**	**429.66**	**0**
Freshwater Marsh			
Bolboschoenus maritimus Association	1.01	0.98	-0.03
Channel	3.78	3.78	0
Schoenoplectus acutus Association	0.51	0.51	0
Schoenoplectus americanus Association	5.38	5.32	-0.06
Schoenoplectus californicus Association	12.08	11.85	-0.23
Typha Alliance	41.66	40.83	-0.83
Freshwater Marsh Total	**64.42**	**63.27**	**-1.15**
Herbaceous Wetland			
Iva hayesiana Special Stands	2.11	2.11	0
Juncus xiphioides Association	0.99	1.03	+0.04
Naturalized Warm-Temperate Riparian and Semi-Natural Stands	4.85	4.85	0
Herbaceous Wetland Total	**7.95**	**7.99**	**+0.04**
Non-Tidal Saltmarsh			
Arthrocnemum subterminale Association	1.03	1.03	0
Arthrocnemum subterminale-Salicornia pacifica Association	6.06	5.99	-0.07
Brackish Pond	0.10	0.10	0
Distichlis spicata-Annual Grasses Association	9.72	9.76	+0.04
Frankenia salina Alliance	18.64	18.68	+0.04
Frankenia salina-Distichlis spicata Association	11.51	11.21	-0.30
Isocoma menziesii/Distichlis spicata Association	9.19	9.01	-0.18
Jaumea carnosa	0.03	0.03	0
Juncus acutus Provisional Association	0.93	1.09	+0.16
Juncus acutus-Jaumea carnosa Provisional Association	1.23	1.31	+0.08
Mudflat	0.10	0.10	0
Salicornia pacifica Association	8.33	8.36	+0.03
Salicornia pacifica-Frankenia salina Association	29.93	30.09	+0.16
Salicornia pacifica-Jaumea carnosa Association	1.72	1.89	+0.17

Table C-1 (continued)
Los Peñasquitos Lagoon TMDL Vegetation Acreage

TMDL Vegetation and Baseline Vegetation	Baseline Area (Acres)	October 2016 Area (Acres)	Difference from Baseline to 2016 (acres)
Salicornia pacifica-Jaumea carnosa-Frankenia salina	5.32	5.48	+0.16
Salt Panne	2.69	2.69	0
Non-Tidal Saltmarsh Total	**106.53**	**106.82**	**+0.29**
Non-Tidal Saltmarsh with Lolium			
Arthrocnemum subterminale-Salicornia pacifica Association	2.05	2.05	0
Baccharis salicifolia Association	0.27	0.27	0
Frankenia salina Alliance	1.66	1.71	+0.05
Frankenia salina-Distichlis spicata Association	3.34	3.34	0
Lolium perenne Semi-Natural Stands	27.82	27.82	0
Naturalized Warm-Temperate Riparian and Semi-Natural Stands	0.39	0.39	0
Salicornia pacifica Association	1.24	1.24	0
Salicornia pacifica-Frankenia salina Association	23.04	22.88	-0.16
Salicornia pacifica-Jaumea carnosa-Frankenia salina	0.65	0.65	0
Non-Tidal Saltmarsh with Lolium Total	**60.46**	**60.35**	**-0.11**
Southern Willow Scrub			
Arundo donax	3.35	3.35	0
Baccharis salicifolia Association	17.99	17.83	-0.16
Fraxinus uhdei	0.04	0.04	0
Mixed Salix spp./Platanus racemosa	18.16	18.39	+0.23
Myoporum spp.	0.06	0.06	0
Pluchea sericea Association	0.62	0.62	0
Salix gooddingii Association	2.09	2.09	0
Salix lasiolepsis Association	98.40	98.38	-0.02
Salix lucida ssp. lasiandra Association	0.08	0.08	0
Washingtonia sp./Phoenix canariensis	0.03	0.03	0
Southern Willow Scrub Total	**140.82**	**140.87**	**+0.05**
Tidal Saltmarsh			
Arthrocnemum subterminale-Salicornia pacifica Association	0.60	0.60	0
Frankenia salina Alliance	1.85	1.85	0
Frankenia salina-Distichlis spicata Association	11.22	11.14	-0.08
Jaumea carnosa	0.20	0.20	0
Juncus acutus Provisional Association	0.60	0.60	0

Table C-1 (continued)
Los Peñasquitos Lagoon TMDL Vegetation Acreage

TMDL Vegetation and Baseline Vegetation	Baseline Area (Acres)	October 2016 Area (Acres)	Difference from Baseline to 2016 (acres)
Juncus acutus-Jaumea carnosa Provisional Association	3.83	3.83	0
Mudflat	2.90	2.90	0
Salicornia pacifica Association	29.81	29.81	0
Salicornia pacifica-Frankenia salina Association	41.58	41.55	-0.03
Salicornia pacifica-Jaumea carnosa Association	31.04	31.76	+0.72
Salicornia pacifica-Jaumea carnosa-Frankenia salina	18.32	18.42	+0.10
Salt Panne	0.43	0.43	0
Water	44.23	44.27	+0.04
Tidal Saltmarsh Total	**186.61**	**187.36**	**+0.75**
Upland			
Ambrosia chamissonis-Abronia maritima-Cakile maritima Association	1.25	1.60	+0.35
Beach	8.83	8.83	0
Carpobrotus edulis	1.66	1.66	0
Cortaderia selloana	0.36	0.36	0
Disturbed	6.45	6.45	0
Eucalyptus sp.	1.75	1.75	0
Isocoma menziesii Provisional Association	6.69	6.58	-0.11
Upland	176.71	176.81	+0.1
Upland Total	**203.70**	**204.04**	**+0.34**
Water			
Water	3.53	3.53	0
Water Total	**3.53**	**3.53**	**0**
Grand Total	**1203.68**	**1203.89**	**+0.21**

Attachment D – Dry Weather Outfall Information

Attachment D.1 – MS4 Outfall Dry Weather Monitoring Data
Attachment D.2 – MS4 Outfall Dry Weather Visual Observations Data
Attachment D.3 – Dry Weather Assessment Methodology
Attachment D.4 – Dry Weather Volumes and Pollutant Loads

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Attachment D.1 – Dry Weather Outfall Analytical Results

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Table D.1-1
2015-2016 Los Peñasquitos WMA Dry Weather Outfall Monitoring Analytical Results

Analyte	Units	City of San Diego										City of Del Mar		City of Poway									
Location		DW0024		DW0025		DW0036		DW0247		DW0429		S-12		282-1749, 2		282-1749, 3		282-1749, 4	294-1749,2	298-1749, 2		298-1749, 5	
Date		2/4/16	4/25/16	2/4/16	4/25/16	2/4/16	4/25/16	3/16/16	4/25/16	3/16/16	4/25/16	6/30/16	8/12/16	7/28/16	8/1/16	7/28/16	8/1/16	7/28/16	8/1/16	8/1/16	8/2/16	7/28/16	8/2/16
Conventional Parameters																							
Dissolved Oxygen	mg/L	10.00	9.31	9.65	8.87	10.78	7.38	9.53	9.12	9.37	9.03	7.62	6.8	16	8.4	19.4	10.1	16.9	9	9.1	8.4	11.4	8.4
Outfall Hardness (Total)	mg CaCO3/L	490	380	410	380	490	530	380	350	280	350	1150	1170	745	714	346	402	341	658	655	677	2880	2440
MBAS	mg/L	0.19	0.15	0.20	0.29	0.14	0.15	< 0.050	< 0.050	0.069 J	0.19	< 0.1	< 0.1	< 0.1	< 0.1	0.4 J	0.1 J	0.1 J	< 0.1	< 0.1	< 0.1	0.1 J	< 0.1
pH	pH units	8.8	8.6	8.5	8.7	8.0	7.9	8.4	8.9	8.6	8.6	8.41	8.3	6.6	6.5	6.5	6.8	6.5	7.2	6.8	7.5	6.5	7.3
Specific Conductivity	mS/cm	2.16	1.87	1.944	1.663	3.38	2.18	1.373	1.28	1.289	1.528	5.874	5.54	3.13	3.0	1.32	1.34	1.17	2.68	2.53	2.56	7.73	6.41
Temperature	°C	13.5	16.3	13.8	17.0	11.1	17.7	17.3	17.0	17.8	17.2	20.42	23.4	24.9	26.1	23.5	22.6	25.9	25.4	25.8	24	31.4	27.1
Turbidity	NTU	1.64	5.9	5.83	17.92	6.89	2.55	0.04	1.23	2.96	8.64	1.54	2.22	1.66	1.28	13.11	0.31	8.1	1.97	0.88	1.21	13.17	18.11
Receiving Water Hardness (Total)	mg $CaCO_3$/L	550	740	550	740	1300	1700	550	740	550	740	Not Applicable. CTR not used for NAL determination		817	817	346	402	817	1260	1260	1260	373	373
Receiving Water Station		LPCMLS		LPCMLS		LPCTWAS3		LPCMLS		LPCMLS				282-1749, 2 - RW		282-1749, 3		282-1749, 2 - RW	298-1749, 2 - RW	298-1749, 2 - RW		298-1749, 5 - RW	
Indicator Bacteria																							
Enterococcus	MPN/100 mL	100* e	1,300* e	11,000*	340* e	1,000*	2,800* e	< 20*	200* e	100*	580*	1,600	500	900	3,000	17,000	5,000	900	3,000	1,700	1,700	1,300	22,000
Fecal Coliform	MPN/100 mL	< 20*	460	1,100*	310	80* e	7,900	< 20*	< 18	< 20*	< 18	50	< 20	1700	5,000	13,000	23,000	3,000	23,000	13,000	13,000	8,000	300,000
Total Coliform	MPN/100 mL	2,200* e	49,000	>1,600,000*	1,400	6,000* e	33,000	1,200* e	110	10,000* e	3,300	1,600	30,000	5,000	5,000	110,000	30,000	80,000	50,000	30,000	50,000	50,000	500,000
Total Metals																							
Cadmium	µg/L	< 2	0.14 J	< 2	0.26 J	< 2	< 0.14	< 2	0.21 J	< 2	0.24 J	< 0.2	< 0.2	0.2 J	0.2 J	0.4 J	< 0.2	0.2 J	0.4 J	2	0.5 J	0.2 J	0.4 J
Chromium	µg/L	< 2.5	1.3 J	< 2.5	1.4 J	< 2.5	1.2 J	< 2.5	0.84 J	< 2.5	2.6 J	NR***	NR***	0.8 J	0.3 J	2 J	0.8 J	1 J	0.2 J	0.3 J	< 0.2	1 J	1 J
Chromium (III)**	µg/L	See Dissolved Chromium (III) and Dissolved Chromium (VI)**										NR***	NR***	0.8 J	0.3 J	2	0.8 J	1	< 0.3	0.3 J	< 0.3	1	1
Chromium (VI)**	µg/L											NR***	NR***	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Copper	µg/L	21	12 J	8 J	13 J	16	27	< 5	< 1.9	6 J	5.8 J	2	2	4 J	5 J	20	9 J	8 J	8 J	4 J	3 J	11	13
Iron	µg/L	460	1500	990	1200	350	140	51	< 13	890	970	107	362	108	128	479	116	150	358	95	48 J	925	1070
Lead	µg/L	< 2.5	< 1.9	< 2.5	< 1.9	< 2.5	< 1.9	< 2.5	< 1.9	< 2.5	< 1.9	< 0.06	0.3	0.2 J	0.9 J	2 J	0.3 J	0.4 J	0.2 J	0.3 J	0.2 J	0.6 J	0.9 J
Manganese	µg/L	39	160	52	47	96	79	< 10	0.83 J	< 10	41	39	56	3 J	3 J	31	4 J	6	61	53	28	19	38
Nickel	µg/L	< 5	3.8 J	< 5	3.6 J	< 5	2.7 J	< 5	< 0.76	< 5	2.6 J	NR***	NR***	3 J	1 J	7	2 J	4 J	2 J	1 J	2 J	5	4 J
Selenium	µg/L	13	< 4	< 6.1	< 4	7.5 J	< 4	< 6.1	< 4	< 6.1	< 4	8	8	3	3	0.7 J	0.6 J	0.4 J	1	0.8 J	0.8 J	7	6
Silver	µg/L	< 5	< 0.92	< 5	< 0.92	< 5	< 0.92	< 5	< 0.92	< 5	< 0.92	NR***	NR***	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.2 J
Zinc	µg/L	17 J	25 J	37	31 J	36	37 J	< 10	< 9.6	28	45 J	1	14	10 J	10 J	341	27	29	7 J	10 J	10 J	17 J	28

Table D.1-1 (continued)
2015-2016 Los Peñasquitos WMA Dry Weather Outfall Monitoring Analytical Results

Analyte	Units	City of San Diego										City of Del Mar		City of Poway									
Location		DW0024		DW0025		DW0036		DW0247		DW0429		S-12		282-1749, 2		282-1749, 3		282-1749, 4	294-1749,2	298-1749, 2		298-1749, 5	
Date		2/4/16	4/25/16	2/4/16	4/25/16	2/4/16	4/25/16	3/16/16	4/25/16	3/16/16	4/25/16	8/12/16	6/30/16	7/28/16	8/1/16	7/28/16	8/1/16	7/28/16	8/1/16	8/1/16	8/2/16	7/28/16	8/2/16
Dissolved Metals																							
Cadmium	µg/L	< 2	< 0.14	< 2	0.18 J	< 2	0.16 J	< 2	0.22 J	< 2	< 0.14	< 0.07	< 0.07	< 0.2	< 0.2	0.4 J	< 0.2	0.9 J	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	µg/L	< 2.5	1.2 J	< 2.5	1.0 J	< 2.5	2.8 J	< 2.5	0.92 J	< 2.5	0.96 J	NR***	NR***	0.2 J	< 0.2	0.4 J	< 0.2	0.6 J	< 0.2	< 0.2	< 0.2	0.2 J	< 0.2
Chromium (III)**	µg/L	< 0.5	1.3	< 0.5	1.4	< 0.5	1.2	< 0.5	0.84 J	< 0.5	2.6	NR***	NR***	0.2 J	<0.06	0.4 J	<0.06	0.6 J	<0.06	<0.06	<0.06	0.2 J	<0.06
Chromium (VI)**	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	0.29 J	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	NR***	NR***	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Copper	µg/L	22	8.8 J	6.6 J	6.4 J	< 5	13 J	< 5	< 1.9	5.5 J	3.7 J	0.5	0.6	3	4	13	7	5	5	2	1	8	9
Iron	µg/L	140	89 J	50	91 J	28 J	59 J	< 10	< 13	120	15 J	5	< 4	2 J	2 J	58	17 J	27 J	31 J	12 J	9 J	10 J	9 J
Lead	µg/L	< 2.5	< 1.9	< 2.5	< 1.9	< 2.5	< 1.9	< 2.5	< 1.9	< 2.5	< 1.9	< 0.2	< 0.06	3	0.4 J	2	0.1 J	0.1 J	< 0.06	0.1 J	0.6 J	< 0.06	< 0.06
Manganese	µg/L	39	78	37	8.5 J	260	79	< 10	< 0.46	< 10	1.5 J	8	15	1 J	0.8 J	21	2 J	0.6 J	40	26	18	2 J	9
Nickel	µg/L	< 5	2.9 J	< 5	3.3 J	< 5	2.3 J	< 5	< 0.76	< 5	1.7 J	NR***	NR***	2 J	< 0.2	4 J	0.2 J	2 J	< 0.2	< 0.2	0.8 J	3 J	3 J
Selenium	µg/L	12	< 4	< 6.1	< 4	< 6.1	< 4	< 6.1	< 4	< 6.1	< 4	7	7	3	2	0.8 J	0.6 J	0.4 J	1	0.7 J	0.8 J	7	5
Silver	µg/L	< 5	< 0.92	< 5	< 0.92	< 5	< 0.92	< 5	< 0.92	< 5	< 0.92	NR***	NR***	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Zinc	µg/L	11 J	< 9.6	13 J	9.8 J	< 10	19 J	< 10	< 9.6	23	12 J	7	3	6 J	7 J	329	19 J	20	1 J	3 J	2 J	3 J	4 J
Nutrients																							
Ammonia as N	mg/L	< 0.10	0.15 J	0.12 J	0.12 J	< 0.10	0.22	0.23	0.13 J	0.40	0.10 J	0.19	0.17	0.2	0.2	0.54	0.4	0.36	0.23	0.06	0.1	0.4	0.18
Nitrite as N****	mg/L	< 0.070	< 0.070	< 0.070	< 0.070	< 0.14	< 0.070	< 0.070	< 0.070	< 0.070	< 0.070	0.02	0.008	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nitrate as N****	mg/L	5.3	3.5	5.5	2.1	0.28	0.75	0.14	0.16	0.60	0.65	1.02	1.90	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nitrate/Nitrite as N****	mg/L	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1.04	1.90	4.16	9.72	2.78	2.02	3.66	1.14	0.62	0.52	12.2	8.75
Total Nitrogen	mg/L	6.6	4.0	6.6	3.3	0.87	1.7	1.4	0.16	1.4	0.99	4.7	3.1	5.8	11.3	7.7	7	53.1	2.3	12.5	7.9	15.3	9.1
TKN	mg/L	1.3	0.47	1.1	1.2	0.59	0.91	1.3	< 0.10	0.75	0.34	3.7	1.2	1.6	1.6	4.9	5	49.4	1.2	11.9	7.4	3.1	0.3
Phosphorus, Total	mg/L	0.17	0.27	0.13	0.22	0.14	0.22	0.027 J	< 0.025	0.12	0.073	0.14	0.05	0.09	0.23	0.5	0.63	0.98	0.62	0.24	0.84	0.86	0.66
Orthophosphate as P	mg/L	< 0.080	0.18	< 0.080	0.095	< 0.16	0.16	0.022 J	0.028 J	0.082	0.045 J	0.10	< 0.007	0.07	0.2	0.42	0.59	0.87	0.59	0.2	0.83	0.81	0.65
Solid Parameters																							
Total Dissolved Solids	mg/L	1500	1200	1200	1100	1900	1100	850	830	800	920	3610	3660	2060	2030	897	872	799	1820	1720	1730	5160	4570
Total Suspended Solids	mg/L	8.5	11	5.2	6.8	12	3.4	< 0.53	3.4	1.9	35	2.0	62.0	< 1	2 J	8 J	2 J	2 J	3 J	1 J	< 1	23	37

Notes:
< = Analyte not detected at method detection limit shown; J = Analyte detected above the method detection limit but below the reporting limit; e = CFU/100mL, estimated value, plate count falls outside recommended reporting limits per EPA method guidelines; NA = Not Analyzed; NR = Not Required, * = CFU; ** = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal; ***NAL analyte not required for Ocean Receiving Waters; **** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Attachment D.2 – Major MS4 Outfall Dry Weather Visual Observation Data

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Major MS4 Outfall Dry Weather Monitoring Data Files

The following dry weather MS4 outfall data files are included in this attachment:

- County of San Diego Non-Major MS4 Outfall Dry Weather Visual Observation Data (County of San Diego has no major MS4 outfalls in Los Peñasquitos WMA)
- City of Del Mar Major MS4 Outfall Dry Weather Visual Observation Data
- City of Poway Major MS4 Outfall Dry Weather Visual Observation Data
- City of San Diego Major MS4 Outfall Dry Weather Visual Observation Data

All data files are referenced in the Monitoring Results and Assessment Appendix C.

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Attachment D.3 – Dry Weather Assessment Methodology

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1 Assessment of Dry Weather Outfall Monitoring Results

In 2013 the San Diego Regional Water Quality Control Board (Regional Board) issued *Order No. R9-2013-0001 (amended by Order Nos. R9-2015-0001 and R9-2015-0100), National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*, herein referred to as the MS4 Permit, regulating MS4 discharges throughout the San Diego Region. The MS4 Permit requires a series of dry weather MS4 outfall assessments be performed annually to assess and report the progress of each Copermittee toward effectively prohibiting non-storm water and illicit discharges into the MS4 within its jurisdiction. This Attachment describes the methodology used to perform these required assessments.

Dry weather monitoring requirements are not discussed here, and can be found in the MS4 outfall monitoring plan for each Watershed Management Area (WMA). MS4 outfall monitoring plans are available through Project Clean Water (www.projectcleanwater.org).

Per MS4 Permit Provision D.4.b(1)(b), Copermittees will annually assess and/or report the following, beginning in the Transitional Monitoring Annual Reports and continuing in the Water Quality Improvement Plan Annual Reports:

(i) The known and suspected controllable sources (e.g. facilities, areas, land uses, pollutant generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area;

(ii) Sources of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area that have been reduced or eliminated; and

(iii) Modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.

The following additional assessments, listed in Permit Provision D.4.b(1)(c), are required in the Water Quality Improvement Plan Annual Reports:

(i) The assessments listed in Provision D.4.b.(1)(b);

(ii) Based on the data collected and applicable NALs [non-storm water action levels] in the Water Quality Improvement Plan, rank the MS4 outfalls in the Copermittee's jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action to update the Water Quality Improvement Plan, with the goal of eliminating persistent flow non-storm water discharges and/or pollutant loads in order of the ranked priority list through targeted programmatic actions and source investigations;

(iii) For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identify the known and suspected sources within the Copermittee's jurisdiction in the Watershed Management Area that may cause or contribute to the NAL exceedances;

(iv) Each Copermittee must analyze the data collected pursuant to Provision D.2.b, and utilize a model or other method, to calculate or estimate the non-storm water

volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually.

[a] Each Copermittee must calculate or estimate the annual non-storm water volumes and pollutant loads collectively discharged from the Copermittee's major MS4 outfalls to receiving waters within the Copermittee's jurisdiction, with an estimate of the percent contribution from each known source for each MS4 outfall; and

[b] Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters.

The sections that follow describe the assessments in greater detail. Within each section are references to the data sources used in each assessment; these are suggestions for regional consistency, and additional supporting data may be used as necessary. Data sources are provided [within brackets] and include the following:

- Jurisdictional MS4 outfall inventory;
- Jurisdictional Illicit Discharge Detection and Elimination (IDDE) investigation results and follow-up actions;
- Jurisdictional Runoff Management Program (JRMP) Annual Report Forms; and
- Dry Weather MS4 Data Sharing Template (Data Sharing Template) results.

2 Provision D.4.b.(1)(b) Assessments

2.1 Persistent Flow Classification

As part of the MS4 Outfall Discharge Monitoring Station Inventory required by Permit Provision D.2.a(1), each Copermittee must identify all major outfalls that discharge directly to receiving waters within its jurisdiction in the WMA. Each Copermittee must maintain the following information for each major MS4 outfall:

- Latitude and longitude of MS4 outfall point of discharge;
- Watershed Management Area;
- Hydrologic subarea;
- Outlet size;
- Accessibility (i.e. safety and without disturbance of critical habitat);
- Approximate drainage area; and
- Classification of whether the MS4 outfall is known to have persistent dry weather flows, transient dry weather flows, no dry weather flows, or unknown dry weather flows.

Copermittees regularly update this information and include the geo-located outfalls on an MS4 map as part of their JRMP. The accuracy of the MS4 map must be confirmed during field screening monitoring. The frequency with which each Copermittee must field screen the MS4 outfalls in its inventory varies according to the number of major MS4 outfalls discharging from a Copermittee's jurisdiction to receiving waters within the region and within each WMA. The frequency of required field screening is outlined in MS4 Permit Provision D.2.a.(2)(a).

A summary of the updated persistent flow classification will also be reported in the Water Quality Improvement Plan Annual Report. This information will include the number of persistent, transient, dry, and unknown dry weather flow sites for each jurisdiction [Data Sharing Template, "Station Information" tab, "Current Flow Classification" column]. These flow classifications can be defined as the following:

- Persistent - having flowing, pooled, or ponded water more than 72 hours after a measurable rainfall event of 0.1 inch or greater during the three consecutive most recent monitoring and/or inspection events;
- Transient - having flowing, pooled, or ponded water during at least one but not on all three most recent consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥ 0.1 inch;
- Tidal - persistent or transient flow with ocean tides as the source;
- Dry - having no flowing, pooled, or ponded water during the last three consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥ 0.1 inch; and
- Unknown - site cannot be evaluated, or has not been visited enough times to determine flow status.

2.2 Known and Controllable Source Categorization

As described in Provision E.2 of the MS4 Permit, each Copermittee must seek to identify the source(s) of non-storm water discharge from their MS4, where there is evidence of non-storm water having been discharged into or from the MS4 [i.e., ponding or flow, in the absence of wet weather]. In the Water Quality Improvement Plan Annual Reports, the Copermittees will categorize the known and suspected controllable sources of transient and persistent flows within their jurisdiction in the WMA. As part of this categorization, each Copermittee will report the number of major outfalls within its jurisdiction in the WMA, the number of dry weather visual inspections performed in the monitoring year (October 1 through September 30), and the following additional information:

1) The number of sites with flowing or ponded observations in the monitoring year [Data Sharing Template, “Visual Observation” tab, “Flow Status” column];
2) Whether the sources of flow at the identified flowing and/or ponded sites are known or suspected [Data Sharing Template, “Runoff Sources” tab, “Runoff Sources Suspected or Known?” column];
3) If the source of flow is known or suspected, whether it is:
    a. Authorized by a separate NPDES Permit [Data Sharing Template, “Runoff Sources” tab, “NPDES Allowable Discharge”/ column];
    b. Identified as a category of non-storm water discharge that must be addressed as an illicit discharge, based on Provision E.2.a of the MS4 Permit [Data Sharing Template, “Runoff Sources” tab, “Unpermitted Discharge” column]; or
    c. Identified as a category of non-storm water discharge that is not controllable by the Copermittee (e.g., ground water seepage) [Data Sharing Template, “Runoff Sources” tab, “Unpermitted Discharge” column].

It should be noted that a site with flowing or ponded observations may have multiple known or suspected sources of flow. For example, a site may be impacted by both irrigation runoff and groundwater seepage.

2.3 Dry Weather Flow Elimination Assessment

As described in their Jurisdictional Runoff Management Plans (JRMPs), each Copermittee must initiate the implementation of procedures, in a timely manner, to eliminate all detected and identified illicit discharges and connections within its jurisdiction. If the Copermittee identifies the source of illicit discharge or connection as controllable, the Copermittee must implement its Enforcement Response Plan as described in its JRMP. Copermittees will submit a summary of the non-storm water discharges and illicit discharges and connections eliminated within its jurisdiction in the previous monitoring year as part of the JRMP Annual Report Form (Permit Attachment D, Section IV). Specific investigations initiated through monitoring are compiled [Data Sharing Template, “Runoff Sources” tab, “Was Flow Source Eliminated” column; Jurisdictional IDDE investigation forms (optional)] and summarized in the Water Quality Improvement Plan Annual Report Monitoring and Assessment Appendix.

2.4 Field Screening Modifications

Copermittees will identify modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.

Modifications to the field screening monitoring locations will be reported in the Water Quality Improvement Plan Annual Reports [Data Sharing Template, “Station Information” tab, “Modifications to Locations and Frequencies Necessary to Identify and Eliminate Sources of Flow D.4.b.(1).(b).(iii)” column].

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3 Provision D.4.b.(1)(c) Assessments

3.1 Dry Weather MS4 Outfall Prioritization

Based on the data collected and applicable NALs in the Water Quality Improvement Plan, each Copermittee will rank the MS4 outfalls in the their jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action. The prioritization will be conducted annually by each Copermittee and will include at least five highest priority major MS4 outfalls with non-storm water persistent flows, per WMA, that will be monitored in the subsequent monitoring year. If a Copermittee has fewer than five major MS4 outfalls with non-storm water persistent flows in the WMA, all the Copermittee's persistently flowing sites in the WMA will be monitored. For Copermittee's identified as responsible parties to a TMDL in Attachment E of the MS4 Permit, additional highest priority outfall monitoring locations may be selected if five sites are not sufficient to determine compliance with the TMDL.

Each Copermittee's prioritization methodology may differ. Data that will be used in the prioritization may include but are not limited to:

- Persistent flow status (defined as evidence of flow in each of the 3 most recent visual inspections) [Data Sharing Template, "Station Information" tab, "Current Flow Classification" column];
- Receiving water connectivity [Data Sharing Template, "Visual Observations" tab, "Flow Reaches Receiving Water" column];
- Potential to contribute to Highest Priority Water Quality Condition [Data Sharing Template, "Laboratory Data" tab];
- NAL exceedance [Data Sharing Template, "Laboratory Data" tab];
- Historical data; and
- Data not collected by the Copermittees.

The updated prioritization will be included in the Water Quality Improvement Plan Annual Reports, with explanations for any sites that have been added or removed from the Copermittee's list of highest priority outfalls. Once a site has been identified as highest priority, it may only be removed from the prioritization for one of the following reasons identified in Provision D.2.B.(2).(b).(ii) of the MS4 Permit:

- The non-storm water discharges have been effectively eliminated (i.e. no flowing, pooled, or ponded water) for three consecutive dry weather monitoring events; or
- The source(s) of the persistent flows has been identified as a category of non-storm water discharges that does not require an NPDES permit and does not have to be addressed as an illicit discharge because it was not identified as a source of pollutants (i.e. constituents in non-storm water discharge do not exceed NALs), and the persistent flow can be re-prioritized to a lower priority; or
- The constituents in the persistent flow non-storm water discharge do not exceed NALs, and the persistent flow can be re-prioritized to a lower priority; or

- The source(s) of the persistent flows has been identified as a non-storm water discharge authorized by a separate NPDES permit.

If a site has been removed from the list of five highest priority outfalls, it will be replaced with the Copermittee's next highest priority major MS4 outfall in the WMA, unless there are fewer than five persistently flowing major MS4 outfalls remaining.

3.2 Analysis of NAL Exceedance

Each major MS4 outfall identified as a highest priority persistently flowing outfall will be monitored under dry conditions at least semi-annually. The semi-annual monitoring event includes field observations, field monitoring, and analytical monitoring, including monitoring of NAL constituents. NALs are based on the receiving water type, and different NALs will be applicable to different outfalls in each WMA, depending on whether the outfall discharges to ocean receiving waters, bays, harbors, lagoons, estuaries, or inland streams and rivers. The NALs are presented in tables in the MS4 Permit by receiving water type, as follows:

- Ocean Surf Zone:
  - Table C-1: total coliform, fecal coliform, and *Enterococcus*.
- Bays, Harbors, and Lagoons/Estuaries:
  - Table C-2: turbidity, pH, fecal coliform, *Enterococcus*, and priority pollutants from Table C-3 (cadmium, copper, chromium III, chromium VI, lead, nickel, silver, and zinc).
- Inland Surface Waters:
  - MS4 Permit Table C-4: dissolved oxygen, turbidity, pH, fecal coliform, *Enterococcus*, total nitrogen, total phosphorus, methylene blue active substance (MBAS), iron, manganese, and priority pollutants from Table C-3 (cadmium, copper, chromium III, chromium VI, lead, nickel, silver, and zinc).

The NALs from the MS4 Permit tables are replicated in Tables 3-1 through 3-4. The Water Quality Improvement Plans may include additional WMA-specific NALs related to the highest priority water quality conditions in that WMA, or any applicable TMDLs in Attachment E of the MS4 Permit.

Table C.2-1
Non-Storm Water Action Levels for Discharges from MS4s to Ocean Surf Zone

Parameter	Units	AMAL	MDAL	Instantaneous Maximum	Basis
Total Coliform	MPN/100mL	1,000	–	10,000/1,000[1]	OP
Fecal Coliform	MPN/100mL	200[2]	–	400	OP
Enterococcus	MPN/100mL	35	–	104[3]	OP

AMAL = average monthly action level; MDAL = maximum daily action level; OP = Ocean Plan water quality objective; MPN/100mL = most probable number per 100 milliliters

1. Total coliform density NAL is 1,000 MPN/100 mL when the fecal/total coliform ratio exceeds 0.1.
2. Fecal coliform density NAL is 200 MPN/100mL during any 30 day period.
3. This value has been set to the Basin Plan water quality objective for saltwater "designated beach areas."

Table C.2-2
Non-Storm Water Action Levels for Discharges from MS4s to Bays, Harbors, and Lagoons/Estuaries

Parameter	Units	AMAL	MDAL	Instantaneous Maximum	Basis
Turbidity	NTU	75	–	225	OP
pH	Units	Within limit of 6.0 to 9.0 at all times.			OP
Fecal Coliform	MPN/100mL	200[1]	–	400[2]	BP
Enterococcus	MPN/100mL	35	–	104[3]	BP
Priority Pollutants	µg/L	See Table 3-4			

BP = Basin Plan water quality objective; µg/L = microgram per liter.

1. Based on a minimum of not less than five samples for any 30-day period.
2. The NAL is reached if more than 10 percent of total samples exceed 400 MPN/100mL during any 30 day period.
3. This value has been set to the Basin Plan water quality objective for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with the water contact recreation (REC-1) beneficial use.

Table C.2-3
Non-Storm Water Action Levels for Discharges from MS4s to Inland Surface Waters

Parameter	Units	AMAL	MDAL	Instantaneous Maximum	Basis
Dissolved Oxygen	mg/L	Not less than 5.0 in WARM waters and not less than 6.0 in COLD waters.			BP
Turbidity	NTU	–	20	See MDAL	BP
pH	Units	Within limit of 6.5 to 8.5 at all times.			BP
Fecal Coliform	MPN/100mL	200[1]	–	400[2]	BP
Enterococcus	MPN/100mL	33	–	61[3]	BP
Total Nitrogen	mg/L	–	1.0	See MDAL	BP
Total Phosphorus	mg/L	–	0.1	See MDAL	BP
MBAS	mg/L	–	0.5	See MDAL	BP
Iron	mg/L	–	0.3	See MDAL	BP
Manganese	mg/L	–	0.05	See MDAL	BP
Priority Pollutants	µg/L	See Table 3-4			

WARM = warm freshwater habitat beneficial use; COLD = cold freshwater habitat beneficial use;
MBAS = Methylene Blue Active Substance

1. Based on a minimum of not less than five samples for any 30-day period.
2. The NAL is reached if more than 10 percent of total samples exceed 400 MPN/100mL during any 30 day period.
3. This value has been set to the Basin Plan water quality objective for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with the water contact recreation (REC-1) beneficial use.

Table C.2-4
Non-Storm Water Action Levels for Priority Pollutants

Parameter	Units	Freshwater (CTR)		Saltwater (CTR)	
		MDAL	AMAL	MDAL	AMAL
Cadmium	µg/L	**	**	16	8
Copper	µg/L	*	*	5.8	2.9
Chromium III	µg/L	**	**	–	–
Chromium VI	µg/L	16	8.1	83	41
Lead	µg/L	*	*	14	2.9
Nickel	µg/L	**	**	14	6.8
Silver	µg/L	*	*	2.2	1.1
Zinc	µg/L	*	*	95	47

CTR = California Toxics Rule

* Action levels developed on a case-by-case basis (see below).

** Action levels developed on a case-by-case basis (see below), but calculated criteria are not to exceed Maximum Contaminant Levels (MCLs) under the California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64431.

The Cadmium, Copper, Chromium (III), Lead, Nickel, Silver, and Zinc NALs for MS4 discharges to freshwater receiving waters will be developed on a case-by-case basis based on site-specific water quality data (receiving water hardness). For these priority pollutants, refer to 40 CFR 131.38(b)(2).

For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, Copermittees will identify the known and suspected sources within the Copermittee's jurisdiction in the WMA that may cause or contribute to the NAL exceedances [Data Sharing Template, "Runoff Sources" tab; Jurisdictional IDDE forms].

3.3 Non-Storm Water Volume and Pollutant Load Assessment

Each Copermittee must analyze the data collected under the Dry Weather MS4 Outfall Discharge Monitoring program, and utilize a model or other method to calculate or estimate the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually.

3.3.1 Identification of Dry Weather Days

The first step in calculating annual non-storm water volumes and pollutant loads is to determine the number of dry weather days in the monitoring year. The number of dry weather days will be determined using County of San Diego ALERT Station Data (https://sandiego.onerain.com). A single ALERT Station will be selected to represent rainfall conditions in each WMA. This representative ALERT Station will be the same station utilized in Wet Weather MS4 Outfall Discharge Monitoring Assessments, and will

be the station that is closest to a majority of wet weather MS4 outfall discharge monitoring stations. This station may vary each year, depending on the wet weather MS4 outfall discharge stations monitored and the availability of ALERT Station data.

A wet weather day is defined as any day with at least 0.1 inches of measurable rainfall within a 24-hour period, and the subsequent 72 hours. A dry weather day will be defined as all other days during the monitoring year (October 1-September 30).

3.3.2 Non-Storm Water Volume Assessment

An annual non-storm water volume will be assigned to each persistently flowing major MS4 outfall station in the Copermittee's jurisdiction in the WMA. This annual non-storm water volume will be calculated by summing a daily flow volume for each persistently flowing major MS4 outfall station across each dry weather day. The following guidelines will be applied:

- Scenario A: If a major MS4 outfall station was visited once during the monitoring year, and a single discrete flow rate was measured, this flow rate will be applied across all dry weather days within the year. In Scenario A, the following equations will be applied.

$$V_{Daily} = Q \times 86{,}400$$

$$V_{Annual_Outfall} = V_{Daily} \times (\#Dry\ Days)$$

Where:

V_{Daily} = Daily flow volume from MS4 Outfall (cubic feet)

Q = Monitored outfall flow rate (cfs)

86,400 = Conversion Factor, seconds per day

$V_{Annual_Outfall}$ = Annual flow volume from MS4 Outfall (cubic feet)

$\#Dry\ Days$ = Number of dry weather days as assessed at the applicable County ALERT Station

- Scenario B: If a major MS4 outfall station was visited more than once during the monitoring year, and more than one discrete flow rate was measured, monthly dry weather flow volumes will be calculated. The monthly flow volume calculation method will vary based on whether a flow measurement was logged at the outfall during that month. For calendar months in which the outfall was visited one or more times, the mean of the measured flow rates will be applied to all dry weather days within the month. For calendar months in which the outfall was not visited, the mean of all flow rates observed at that site during the calendar year will be applied. In Scenario B, the following equations will be applied.

For each month in the monitoring year with at least one site visit and corresponding instantaneous flow estimate:

$$V_{Month_Mon} = \frac{\sum Q_{n_Month}}{n_{Month}} \times 86{,}400 \times (\#Dry\ Days/month)$$

For each month in the monitoring year with no site visits or instantaneous flow estimates:

$$V_{Month_NonMon} = \frac{\sum Q_{n_Year}}{n_{Year}} \times 86{,}400 \times (\#Dry\ Days/month)$$

To calculate an annual dry weather flow volume:

$$V_{Annual_Outfall} = \sum V_{Month_Mon} + \sum V_{Month_NonMon}$$

Where:

V_{Month_Mon}= Monthly flow volume from MS4 Outfall during month when outfall was visited one or more times (cubic feet)

Q_{n_Month} = Monitored outfall flow rate during visual observation event "n", during month when outfall was visited one or more times (cfs)

n_{Month} = Number of site visits with instantaneous flow measurements during month when outfall was visited one or more times

86,400 = Conversion Factor, seconds per day

#Dry Days = Number of dry weather days as assessed at the applicable County ALERT Station

V_{Month_NonMon}= Monthly flow volume from MS4 Outfall during month when outfall was not visited (cubic feet)

Q_{n_Year} = Monitored outfall flow rate during visual observation event "n", during monitoring year (cfs)

n_{Year}= Number of site visits with instantaneous flow measurements during monitoring year

$V_{Annual_Outfall}$ = Annual flow volume from MS4 Outfall (cubic feet)

- Scenario C: If a major MS4 outfall station was monitored continuously for a period of time longer than a day, a measured daily flow volume will be calculated for each monitored day. The mean of these daily flow volumes will be applied to all non-monitored dry days. In Scenario C, the following equations will be applied.

$$V_{Daily_n} = Measured\ Daily\ Flow\ Volume$$

$$V_{Daily_Mean} = \frac{\sum V_{Daily_n}}{n}$$

$$V_{Annual_Outfall} = \sum V_{Daily_n} + V_{Daily_Mean} \times (\#Dry\ Days - n)$$

Where:

V_{Daily_n} = Daily flow volume from MS4 Outfall during dry weather day with a continuous flow monitoring event (cubic feet)

V_{Daily_Mean} = Mean of measured daily outfall flow volumes (cubic feet)

n = number of dry days of continuous flow data at the outfall

$V_{Annual_Outfall}$ = Annual flow volume from MS4 Outfall (cubic feet)

#Dry Days = Number of dry weather days as assessed at the applicable County ALERT Station

- Scenario D: If a major MS4 outfall station was not visited during the monitoring year, the mean of annual outfall flow volumes for all monitored stations in the jurisdiction in the WMA will be applied.

When the annual dry weather flow volume has been calculated for each persistently flowing major MS4 outfall within the jurisdiction within the WMA, a Copermittee's annual non-storm water volume will be calculated by summing the annual dry weather flow volume for each persistently flowing outfall.

Within all the above scenarios, observations of ponding (i.e., evidence of non-storm water in the MS4, with no connectivity to the receiving water) will be assigned a flow rate of zero.

The methodology above assumes that a persistently flowing major MS4 outfall is flowing on 100% of dry weather days. This assumption is highly conservative.

3.3.3 Non-Storm Water Pollutant Load Assessment

The Copermittees will estimate the annual non-storm water pollutant loads collectively discharged from their persistently flowing major MS4 outfalls to receiving waters in the MS4. A load will be calculated for each pollutant analyzed at each high priority outfall, based on the arithmetic mean of the analytical results from the two dry weather outfall monitoring events at that outfall during the monitoring year. The following equation will be applied:

$$Pollutant\ Load_{Annual} = \left(V_{Annual} \times \frac{Pollutant\ Concentration_{Event1} + Pollutant\ Concentration_{Event2}}{2}\right) \times \mathrm{UC}$$

Where:
$Pollutant\ Load_{Annual}$ = Annual dry weather pollutant load from monitored outfall (lb or MPN)
V_{Annual} = Annual flow volume from MS4 outfall (cubic feet)
$Pollutant\ Concentration_{Event1}$ = Pollutant concentration measured at the outfall during dry weather monitoring event 1 (units vary)
$Pollutant\ Concentration_{Event2}$ = Pollutant concentration measured at the outfall during dry weather monitoring event 2 (units vary)
UC = Unit Conversion. Varies according to units used to express pollutant concentration, but common conversions are:

a. mg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\ g}{1000mg}\right)\left(\frac{1\ lb}{453.592\ g}\right)$
b. µg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\ g}{1\times10^6\mu g}\right)\left(\frac{1\ lb}{453.592\ g}\right)$
c. MPN/100mL: $UC = \left(\frac{100mL}{0.1L}\right)\left(\frac{28.317L}{1ft^3}\right)$

For each non-high priority persistently flowing outfall in a Copermittee's jurisdiction in the WMA, the mean of that Copermittee's monitored outfall results for each pollutant will be applied. It should be noted that only analytical data for outfalls that were identified as

persistently flowing during the monitoring year will be included in the mean. In this case, the following equation will be applied:

$$Pollutant\ Load_{Annual} = \left(V_{Annual} \times Pollutant\ Concentration_{Mean}\right) \times \mathrm{UC}$$

Where:
$Pollutant\ Load_{Annual}$ = Annual dry weather pollutant load from non-monitored outfall (lb or MPN)
V_{Annual} = Annual flow volume from MS4 outfall (cubic feet)
$Pollutant\ Concentration_{Mean}$ = Mean pollutant concentration measured across high priority persistently flowing outfalls within the Copermittee's jurisdiction in the WMA during the monitoring year (units vary)
UC = Unit Conversion. Varies according to units used to express pollutant concentration, but common conversions are:

a. mg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\ g}{1000mg}\right)\left(\frac{1\ lb}{453.592\ g}\right)$
b. µg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\ g}{1\times10^6\mu g}\right)\left(\frac{1\ lb}{453.592\ g}\right)$
c. MPN/100mL: $UC = \left(\frac{100mL}{0.1L}\right)\left(\frac{28.317L}{1ft^3}\right)$

For any pollutants not detected at the method detection limit (MDL), a concentration of MDL/2 will be applied in calculating loads.

3.4 Non-Storm Loads Not Subject to Copermittee's Legal Authority

Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters. If a Copermittee has identified a source of non-storm water not subject to their jurisdiction during field screening events or IDDE inspections, the volumes and loads for this source will be quantified according to the methodology outlined in Section 3.3.

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4 Dry Weather Assessment Methodology Assumptions and Limitations

The calculation of the MS4 Permit required assessments necessitates a number of assumptions be made to translate the monitoring data into conclusions regarding flow volume and load for the entire WMA. This may introduce potential sources of error, while propagating potential errors inherent to the monitoring data. A summary of these assumptions and sources of error follows:

- Monitoring Error—Annual non-storm water volumes and pollutants loads are based on the results from dry weather visual observations and dry weather outfall monitoring events. Error in the monitoring data could have the effect of propagating error in all subsequent calculations. Potential sources of error in the monitoring data include the following:
  - *Monitored Flow Selection*—The pollutant loading estimations rely on monitoring data from one or more non-storm water visual observations per major MS4 outfall per year. The 2015-2016 monitoring year is the first year of dry weather flow volume and load calculation, and this period generally has represented a drought condition. This can affect the type and volume of non-storm water sources such as irrigation and ground water. The potential for inter-annual variability is a source of error in both the flow and chemistry data.
  - *Flow Measurement Method*—The MS4 Outfall Monitoring Plans provides different options to determine the non-storm water volume: (1) field-based estimation methods (e.g., “float method” or “bucket and stopwatch method”) and (2) equipment-based flow measurements. The method chosen varies among outfalls and Copermittees, introducing inter-site variability in volume estimations. The field-based estimation methods introduce various amounts of human error with the use of stopwatches and error in determining volume amounts in non-graduated buckets. Consistent equipment-based flow monitoring approach is more accurate and precise compared to the field-based estimation methods. However, this approach introduces variability through the flow measurement device and sensor type used to account for site-specific conditions, and can also be cost and time prohibitive across the number of outfalls monitored. Each measurement device and sensor type has an inherent accuracy range (e.g., ±2% accuracy for sub-AV probes). Additionally, each flow measurement device and sensor type can produce slightly different values for the same event, adding a layer of inter-site variability.
  - *Rainfall Measurement*—The accuracy of determining the number of dry days relies on the accuracy of the rainfall measurements representing that outfall. Rainfall measurements were based on the County of San Diego ALERT rain gauge closest to the majority of wet weather outfalls in each WMA, and not site specific rain data. Rainfall totals across the San Diego area can vary widely within a given storm.

- *Chemistry Results*—An attempt to maintain regional consistency in reporting limits (RLs) and method detection limits (MDLs) was made. However, differences in lab capabilities can sometimes lead to different RLs and MDLs. This can introduce error if constituent concentrations are near or below the MDL for one monitoring event or Copermittee, and the MDL differs for another monitoring event or Copermittee. An attempt was made to account for this type of error by assigning constituents that were not detected a value of MDL/2 for the purposes of the assessment calculations.

❖ Assessment Methodology Error—The assessments require a series of assumptions and extrapolations be made regarding the determination of annual volumes and pollutant loadings. Each assumption carries the possibility of error, including the following:

- *Annual Volume Estimation Representativeness*—Regardless of the flow measurement method utilized, error is introduced when utilizing the median of more than one field measurement to determine an annual volume estimation. It is assumed these field measurements are representative of "typical" non-storm water conditions since persistently flowing non-storm water flows are relatively consistent through the year. However, this may not be the case, and error could be introduced into these estimations. For example, groundwater base flows can increase during the wet season, increasing dry weather flow rates. Or, alternatively, irrigation and irrigation runoff may increase during the dry season, increasing dry weather flow rates. Unless flow observations are made throughout the year under a variety of conditions, this seasonal variation may not be captured.

- *Annual Volume Estimation Confidence*—Based on availability of data, multiple calculation methods are used to estimate annual flow volume. The confidence associated with each estimate varies because differing amounts of data go into each estimate. That is to say, volumes calculated based on continuous flow data are associated with a higher confidence than volumes based on one or two instantaneous flow measurements.

- *Annual Pollutant Load Estimations*—The annual volume estimation error introduced previously disseminates into the annual pollutant load estimations through calculations discussed in Section 3.3.3. Although persistent non-storm water flows are relatively consistent throughout the year, collecting two grab samples in one year provides a very brief snapshot in time of the pollutant concentration at an outfall, which may not be indicative of typical conditions or pollutant loadings. Additionally, using an arithmetic mean as a "typical" value of pollutant concentrations to estimate pollutant loads can introduce error if the sample size of the mean is too small, as means are sensitive to sample size.

Attachment D.4 – Dry Weather Volumes and Pollutant Loads

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Table D.4-1
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part I

Analyte	Units	City of San Diego													
Site ID		DW0017	DW0024	DW0025	DW0027	DW0034	DW0036	DW0037	DW0247	DW0266	DW0281	DW0308	DW0375	DW0422	DW0426
Highest Priority Outfall		N	Y	Y	N	N	Y	N	Y	N	N	N	N	N	N
Annual Flow Volume	cf	125,048	1,227,234	1,388,057	139,563	0	0	0	369,710	51,988	200,412	247,864	350,610	41,590	0
Conventional Parameters															
Hardness (Total)	lb	3,154	33,327	34,228	3,520	0	0	0	8,424	1,311	5,055	6,251	8,843	1,049	0
MBAS	lb	1.116	13.0244	21.23	1.245	0	0	0	0.5770	0.4638	1.788	2.2112	3.1278	0.3710	0
Indicator Bacteria															
Enterococcus	MPN	6.17E+12	2.43E+13	2.23E+14	6.89E+12	0	0	0	1.10E+12	2.57E+12	9.89E+12	1.22E+13	1.73E+13	2.05E+12	0
Fecal Coliform	MPN	3.50E+12	8.17E+12	2.77E+13	4.34E+12	0	0	0	9.95E+10	1.62E+12	6.24E+12	6.95E+12	9.83E+12	1.17E+12	0
Total Coliform	MPN	6.04E+14	8.90E+14	3.15E+16	6.74E+14	0	0	0	6.86E+12	2.51E+14	9.68E+14	1.20E+15	1.69E+15	2.01E+14	0
Total Metals															
Cadmium	lb	0.0046	0.0437	0.0546	0.0052	0	0	0	0.0140	0.0019	0.0074	0.0092	0.0130	0.0015	0
Chromium	lb	0.0106	0.0977	0.1148	0.0118	0	0	0	0.0241	0.0044	0.0170	0.0210	0.0297	0.0035	0
Chromium (III)*	lb	See Dissolved Chromium (III) and Dissolved Chromium (VI)*													
Chromium (VI)*	lb														
Copper	lb	0.0876	1.264	0.9099	0.0978	0	0	0	0.0398	0.0364	0.1404	0.1737	0.2457	0.0291	0
Iron	lb	5.119	75.08	94.89	5.713	0	0	0	0.6636	2.128	8.204	10.1469	14.3531	1.7026	0
Lead	lb	0.0086	0.0843	0.0953	0.0096	0	0	0	0.0254	0.0036	0.0138	0.0170	0.0241	0.0029	0
Manganese	lb	0.4097	7.623	4.289	0.4573	0	0	0	0.0673	0.1703	0.6566	0.8121	1.1487	0.1363	0
Nickel	lb	0.0200	0.2413	0.2643	0.0223	0	0	0	0.0332	0.0083	0.0320	0.0396	0.0560	0.0066	0
Selenium	lb	0.0310	0.5746	0.2188	0.0345	0	0	0	0.0583	0.0129	0.0496	0.0614	0.0868	0.0103	0
Silver	lb	0.0116	0.1134	0.1282	0.0129	0	0	0	0.0342	0.0048	0.0185	0.0229	0.0324	0.0038	0
Zinc	lb	0.2075	1.609	2.946	0.2316	0	0	0	0.1131	0.0863	0.3326	0.4113	0.5818	0.0690	0
Dissolved Metals															
Cadmium	lb	0.0044	0.0410	0.0511	0.0050	0	0	0	0.0141	0.0018	0.0071	0.0088	0.0125	0.0015	0
Chromium	lb	0.0103	0.0939	0.0975	0.0114	0	0	0	0.0250	0.0043	0.0164	0.0203	0.0287	0.0034	0
Chromium (III)*	lb	0.0067	0.0594	0.0715	0.0075	0	0	0	0.0126	0.0028	0.0107	0.0133	0.0188	0.0022	0
Chromium (VI)*	lb	0.0011	0.0096	0.0108	0.0012	0	0	0	0.0029	0.0005	0.0018	0.0022	0.0031	0.0004	0
Copper	lb	0.0562	1.180	0.5633	0.0627	0	0	0	0.0398	0.0234	0.0900	0.1113	0.1575	0.0187	0
Iron	lb	0.4711	8.772	6.109	0.5258	0	0	0	0.1327	0.1959	0.7551	0.9338	1.3209	0.1567	0
Lead	lb	0.0086	0.0843	0.0953	0.0096	0	0	0	0.0254	0.0036	0.0138	0.0170	0.0241	0.0029	0
Manganese	lb	0.4007	4.482	1.971	0.4472	0	0	0	0.0604	0.1666	0.6421	0.7942	1.1234	0.1333	0
Nickel	lb	0.0180	0.2069	0.2513	0.0201	0	0	0	0.0332	0.0075	0.0289	0.0357	0.0505	0.0060	0
Selenium	lb	0.0267	0.5363	0.2188	0.0298	0	0	0	0.0583	0.0111	0.0428	0.0529	0.0749	0.0089	0
Silver	lb	0.0116	0.1134	0.1282	0.0129	0	0	0	0.0342	0.0048	0.0185	0.0229	0.0324	0.0038	0
Zinc	lb	0.0838	0.6053	0.9879	0.0936	0	0	0	0.1131	0.0349	0.1344	0.1662	0.2351	0.0279	0

Table D.4-1 (continued)
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part I

Analyte	Units	City of San Diego													
Site ID		DW0017	DW0024	DW0025	DW0027	DW0034	DW0036	DW0037	DW0247	DW0266	DW0281	DW0308	DW0375	DW0422	DW0426
Highest Priority Outfall		N	Y	Y	N	N	Y	N	Y	N	N	N	N	N	N
Annual Flow Volume	cf	125,048	1,227,234	1,388,057	139,563	0	0	0	369,710	51,988	200,412	247,864	350,610	41,590	0
Nutrients															
Ammonia N	lb	1.226	7.661	10.40	1.368	0	0	0	4.154	0.5095	1.964	2.429	3.4364	0.4076	0
Nitrite as N**	lb	0.3006	2.681	3.033	0.3354	0	0	0	0.8078	0.1250	0.4817	0.5957	0.8427	0.1000	0
Nitrate as N**	lb	14.82	337.1	329.3	16.54	0	0	0	3.462	6.160	23.75	29.37	41.54	4.928	0
Nitrate/Nitrite N**	lb	NR	NR	NR	NR	0	0	0	NR	NR	NR	NR	NR	NR	0
Total Nitrogen	lb	21.09	406.1	428.9	23.54	0	0	0	18.00	8.769	33.81	41.81	59.14	7.015	0
TKN	lb	6.253	67.80	99.65	6.979	0	0	0	15.58	2.600	10.02	12.39	17.53	2.079	0
Phosphorus, Total	lb	1.079	16.86	15.16	1.205	0	0	0	0.4558	0.4487	1.730	2.139	3.026	0.3590	0
Orthophosphate as P	lb	0.6027	8.428	5.849	0.6726	0	0	0	0.5770	0.2506	0.9659	1.195	1.689	0.2004	0
Solid Parameters															
TDS	lb	8,899	103,429	99,652	9,932	0	0	0	19,388	3,700	14,263	17640	24952	2960	0
TSS	lb	68.28	747.0	519.9	76.21	0	0	0	42.29	28.39	109.4	135.34	191.44	22.71	0

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table D.4-2
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part II

Analyte	Units	City of San Diego													
Site ID		DW0428	DW0429	DW0435	DW0478	DW0481	DW0554	DW0638	DW0643	DW0839	DW0884	DW0887	DW0903	DW0910	DW0911
Highest Priority Outfall		N	Y	N	N	N	N	N	N	N	N	N	N	N	N
Annual Flow Volume	cf	31,317	54,023	0	250,543	0	3,342,253	0	0	3,907	166,917	501,310	167,475	44,101	0
Conventional Parameters															
Hardness (Total)	lb	790	1,062	0	6,319	0	84,295	0	0	99	4,210	12,644	4,224	1,112	0
MBAS	lb	0.2794	0.4368	0	2.2351	0	29.8163	0	0	0.0349	1.4891	4.4722	1.4941	0.3934	0
Indicator Bacteria															
Enterococcus	MPN	1.55E+12	5.20E+11	0	1.24E+13	0	1.65E+14	0	0	1.93E+11	8.24E+12	2.47E+13	8.27E+12	2.18E+12	0
Fecal Coliform	MPN	8.78E+11	1.45E+10	0	7.79E+12	0	1.04E+14	0	0	1.22E+11	5.19E+12	1.56E+13	5.21E+12	1.37E+12	0
Total Coliform	MPN	1.51E+14	1.02E+13	0	1.21E+15	0	1.61E+16	0	0	1.89E+13	8.06E+14	2.42E+15	8.09E+14	2.13E+14	0
Total Metals															
Cadmium	lb	0.0012	0.0021	0	0.0093	0	0.1235	0	0	0.0001	0.0062	0.0185	0.0062	0.0016	0
Chromium	lb	0.0027	0.0065	0	0.0213	0	0.2836	0	0	0.0003	0.0142	0.0425	0.0142	0.0037	0
Chromium (III)*	lb	See Dissolved Chromium (III) and Dissolved Chromium (VI)*													
Chromium (VI)*	lb														
Copper	lb	0.0219	0.0199	0	0.1756	0	2.3421	0	0	0.0027	0.1170	0.3513	0.1174	0.0309	0
Iron	lb	1.2821	3.1365	0	10.2566	0	136.8	0	0	0.1600	6.8332	20.52	6.856	1.805	0
Lead	lb	0.0022	0.0037	0	0.0172	0	0.2295	0	0	0.0003	0.0115	0.0344	0.0115	0.0030	0
Manganese	lb	0.1026	0.0776	0	0.8209	0	10.95	0	0	0.0128	0.5469	1.6425	0.5487	0.1445	0
Nickel	lb	0.0050	0.0086	0	0.0400	0	0.5337	0	0	0.0006	0.0267	0.0801	0.0267	0.0070	0
Selenium	lb	0.0078	0.0085	0	0.0620	0	0.8273	0	0	0.0010	0.0413	0.1241	0.0415	0.0109	0
Silver	lb	0.0029	0.0050	0	0.0231	0	0.3088	0	0	0.0004	0.0154	0.0463	0.0155	0.0041	0
Zinc	lb	0.0520	0.1231	0	0.4157	0	5.546	0	0	0.0065	0.2770	0.8318	0.2779	0.0732	0
Dissolved Metals															
Cadmium	lb	0.0011	0.0018	0	0.0089	0	0.1189	0	0	0.0001	0.0059	0.0178	0.0060	0.0016	0
Chromium	lb	0.0026	0.0037	0	0.0205	0	0.2740	0	0	0.0003	0.0137	0.0411	0.0137	0.0036	0
Chromium (III)*	lb	0.0017	0.0048	0	0.0134	0	0.1792	0	0	0.0002	0.0090	0.0269	0.0090	0.0024	0
Chromium (VI)*	lb	0.0003	0.0004	0	0.0022	0	0.0295	0	0	0.0000	0.0015	0.0044	0.0015	0.0004	0
Copper	lb	0.0141	0.0155	0	0.1125	0	1.5012	0	0	0.0018	0.0750	0.2252	0.0752	0.0198	0
Iron	lb	0.1180	0.2276	0	0.9439	0	12.59	0	0	0.0147	0.6289	1.8887	0.6310	0.1662	0
Lead	lb	0.0022	0.0037	0	0.0172	0	0.2295	0	0	0.0003	0.0115	0.0344	0.0115	0.0030	0
Manganese	lb	0.1003	0.0110	0	0.8027	0	10.71	0	0	0.0125	0.5348	1.6062	0.5366	0.1413	0
Nickel	lb	0.0045	0.0071	0	0.0361	0	0.4816	0	0	0.0006	0.0241	0.0722	0.0241	0.0064	0
Selenium	lb	0.0067	0.0085	0	0.0535	0	0.7136	0	0	0.0008	0.0356	0.1070	0.0358	0.0094	0
Silver	lb	0.0029	0.0050	0	0.0231	0	0.3088	0	0	0.0004	0.0154	0.0463	0.0155	0.0041	0
Zinc	lb	0.0210	0.0590	0	0.1680	0	2.241	0	0	0.0026	0.1119	0.3361	0.1123	0.0296	0

Table D.4-2 (continued)
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part II

Analyte	Units	City of San Diego													
Site ID		DW0428	DW0429	DW0435	DW0478	DW0481	DW0554	DW0638	DW0643	DW0839	DW0884	DW0887	DW0903	DW0910	DW0911
Highest Priority Outfall		N	Y	N	N	N	N	N	N	N	N	N	N	N	N
Annual Flow Volume	cf	31,317	54,023	0	250,543	0	3,342,253	0	0	3,907	166,917	501,310	167,475	44,101	0
Nutrients															
Ammonia N	lb	0.3070	0.8431	0	2.456	0	32.76	0	0	0.0383	1.636	4.913	1.641	0.4323	0
Nitrite as N**	lb	0.0753	0.1180	0	0.6022	0	8.033	0	0	0.0094	0.4012	1.204	0.4025	0.1060	0
Nitrate as N**	lb	3.7108	2.1079	0	29.69	0	396.0	0	0	0.4630	19.77	59.39	19.84	5.225	0
Nitrate/Nitrite N**	lb	NR	NR	0	NR	0	NR	0	0	NR	NR	NR	NR	NR	0
Total Nitrogen	lb	5.2828	4.0302	0	42.26	0	563.8	0	0	0.6592	28.15	84.56	28.25	7.439	0
TKN	lb	1.5661	1.8381	0	12.53	0	167.1	0	0	0.1954	8.346	25.06	8.374	2.205	0
Phosphorus, Total	lb	0.2703	0.3255	0	2.162	0	28.85	0	0	0.0337	1.440	4.326	1.445	0.3806	0
Orthophosphate as P	lb	0.1509	0.2142	0	1.207	0	16.11	0	0	0.0188	0.8045	2.416	0.8071	0.2125	0
Solid Parameters															
TDS	lb	2229	2900	0	17831	0	237,863	0	0	278.1	11,879	35,677	11,919	3,139	0
TSS	lb	17.10	62.22	0	136.8	0	1825	0	0	2.134	91.14	273.7	91.45	24.08	0

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table D.4-3
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part III

Analyte	Units	City of San Diego													
Site ID		DW0915	DW0923	DW0924	DW0928	DW0931	DW0932	DW0944	DW0945	DW0950	DW0958	DW0959	DW0968	DW0969	DW0971
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	N	N	N
Annual Flow Volume	cf	0	40,194	0	125,048	751,406	375,703	4,019,413	292,523	332,718	62,635	20,097	125,271	0	0
Conventional Parameters															
Hardness (Total)	lb	0	1,014	0	3,154	18,951	9,476	101,374	7,378	8,392	1,580	507	3,159	0	0
MBAS	lb	0	0.3586	0	1.1156	6.7033	3.3517	35.8572	2.6096	2.9682	0.5588	0.1793	1.1176	0	0
Indicator Bacteria															
Enterococcus	MPN	0	1.98E+12	0	6.17E+12	3.71E+13	1.85E+13	1.98E+14	1.44E+13	1.64E+13	3.09E+12	9.92E+11	6.18E+12	0	0
Fecal Coliform	MPN	0	1.25E+12	0	3.89E+12	2.34E+13	1.17E+13	1.25E+14	9.10E+12	1.04E+13	1.95E+12	6.25E+11	3.90E+12	0	0
Total Coliform	MPN	0	1.94E+14	0	6.04E+14	3.63E+15	1.82E+15	1.94E+16	1.41E+15	1.61E+15	3.03E+14	9.71E+13	6.05E+14	0	0
Total Metals															
Cadmium	lb	0	0.0015	0	0.0046	0.0278	0.0139	0.1485	0.0108	0.0123	0.0023	0.0007	0.0046	0	0
Chromium	lb	0	0.0034	0	0.0106	0.0637	0.0319	0.3410	0.0248	0.0282	0.0053	0.0017	0.0106	0	0
Chromium (III)*	lb	See Dissolved Chromium (III) and Dissolved Chromium (VI)*													
Chromium (VI)*	lb														
Copper	lb	0	0.0282	0	0.0876	0.5266	0.2633	2.8166	0.2050	0.2332	0.0439	0.0141	0.0878	0	0
Iron	lb	0	1.6454	0	5.1192	30.7606	15.3803	164.5443	11.9752	13.6206	2.5641	0.8227	5.1283	0	0
Lead	lb	0	0.0028	0	0.0086	0.0516	0.0258	0.2760	0.0201	0.0228	0.0043	0.0014	0.0086	0	0
Manganese	lb	0	0.1317	0	0.4097	2.4619	1.2310	13.1693	0.9584	1.0901	0.2052	0.0658	0.4104	0	0
Nickel	lb	0	0.0064	0	0.0200	0.1200	0.0600	0.6419	0.0467	0.0531	0.0100	0.0032	0.0200	0	0
Selenium	lb	0	0.0099	0	0.0310	0.1860	0.0930	0.9949	0.0724	0.0824	0.0155	0.0050	0.0310	0	0
Silver	lb	0	0.0037	0	0.0116	0.0694	0.0347	0.3714	0.0270	0.0307	0.0058	0.0019	0.0116	0	0
Zinc	lb	0	0.0667	0	0.2075	1.2468	0.6234	6.6696	0.4854	0.5521	0.1039	0.0333	0.2079	0	0
Dissolved Metals															
Cadmium	lb	0	0.0014	0	0.0044	0.0267	0.0134	0.1430	0.0104	0.0118	0.0022	0.0007	0.0045	0	0
Chromium	lb	0	0.0033	0	0.0103	0.0616	0.0308	0.3295	0.0240	0.0273	0.0051	0.0016	0.0103	0	0
Chromium (III)*	lb	0	0.0022	0	0.0067	0.0403	0.0201	0.2155	0.0157	0.0178	0.0034	0.0011	0.0067	0	0
Chromium (VI)*	lb	0	0.0004	0	0.0011	0.0066	0.0033	0.0355	0.0026	0.0029	0.0006	0.0002	0.0011	0	0
Copper	lb	0	0.0181	0	0.0562	0.3375	0.1688	1.8054	0.1314	0.1494	0.0281	0.0090	0.0563	0	0
Iron	lb	0	0.1514	0	0.4711	2.8310	1.4155	15.1433	1.1021	1.2535	0.2360	0.0757	0.4720	0	0
Lead	lb	0	0.0028	0	0.0086	0.0516	0.0258	0.2760	0.0201	0.0228	0.0043	0.0014	0.0086	0	0
Manganese	lb	0	0.1288	0	0.4007	2.4075	1.2038	12.8782	0.9372	1.0660	0.2007	0.0644	0.4014	0	0
Nickel	lb	0	0.0058	0	0.0180	0.1083	0.0541	0.5791	0.0421	0.0479	0.0090	0.0029	0.0180	0	0
Selenium	lb	0	0.0086	0	0.0267	0.1604	0.0802	0.8582	0.0625	0.0710	0.0134	0.0043	0.0267	0	0
Silver	lb	0	0.0037	0	0.0116	0.0694	0.0347	0.3714	0.0270	0.0307	0.0058	0.0019	0.0116	0	0
Zinc	lb	0	0.0269	0	0.0838	0.5038	0.2519	2.6949	0.1961	0.2231	0.0420	0.0135	0.0840	0	0

Table D.4-3 (continued)
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part III

Analyte	Units	City of San Diego													
Site ID		DW0915	DW0923	DW0924	DW0928	DW0931	DW0932	DW0944	DW0945	DW0950	DW0958	DW0959	DW0968	DW0969	DW0971
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	N	N	N
Annual Flow Volume	cf	0	40,194	0	125,048	751,406	375,703	4,019,413	292,523	332,718	62,635	20,097	125,271	0	0
Nutrients															
Ammonia N	lb	0	0.3940	0	1.2256	7.3647	3.6824	39.3953	2.8671	3.2611	0.6139	0.1970	1.2278	0	0
Nitrite as N**	lb	0	0.0966	0	0.3006	1.8060	0.9030	9.6606	0.7031	0.7997	0.1505	0.0483	0.3011	0	0
Nitrate as N**	lb	0	4.7626	0	14.8169	89.0335	44.5167	476.2563	34.6609	39.4234	7.4217	2.3813	14.8433	0	0
Nitrate/Nitrite N**	lb	0	NR	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	0	0
Total Nitrogen	lb	0	6.7800	0	21.0933	126.7484	63.3742	678.0003	49.3434	56.1234	10.5655	3.3900	21.1310	0	0
TKN	lb	0	2.0099	0	6.2531	37.5742	18.7871	200.9912	14.6277	16.6376	3.1321	1.0050	6.2642	0	0
Phosphorus, Total	lb	0	0.3469	0	1.0793	6.4852	3.2426	34.6904	2.5247	2.8716	0.5406	0.1735	1.0812	0	0
Orthophosphate as P	lb	0	0.1937	0	0.6027	3.6214	1.8107	19.3714	1.4098	1.6035	0.3019	0.0969	0.6037	0	0
Solid Parameters															
TDS	lb	0	2861	0	8,899	53,476	26,738	286,055	20,818	23,679	4,458	1,430	8,915	0	0
TSS	lb	0	21.95	0	68.28	410.3	205.1	2,195	159.7	181.7	34.20	10.97	68.40	0	0

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table D.4-4
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part IV

Analyte	Units	City of San Diego													
Site ID		DW0976	DW0978	DW0981	DW0987	DW0988	DW0990	DW1003	DW1004	DW1005	DW1006	DW1007	DW1009	DW1011	DW1016
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	N	N	N
Annual Flow Volume	cf	0	82,621	2,079,488	2,255,337	0	751,407	0	32,044	0	0	464,801	2,254,779	0	501,310
Conventional Parameters															
Hardness (Total)	lb	0	2,084	52,447	56,882	0	18,951	0	808	0	0	11,723	56,868	0	12,644
MBAS	lb	0	0.7371	18.5511	20.1199	0	6.7033	0	0.2859	0	0	4.1465	20.1149	0	4.4722
Indicator Bacteria															
Enterococcus	MPN	0	4.08E+12	1.03E+14	1.11E+14	0	3.71E+13	0	1.58E+12	0	0	2.29E+13	1.11E+14	0	2.47E+13
Fecal Coliform	MPN	0	2.57E+12	6.47E+13	7.02E+13	0	2.34E+13	0	9.97E+11	0	0	1.45E+13	7.01E+13	0	1.56E+13
Total Coliform	MPN	0	3.99E+14	1.00E+16	1.09E+16	0	3.63E+15	0	1.55E+14	0	0	2.25E+15	1.09E+16	0	2.42E+15
Total Metals															
Cadmium	lb	0	0.0031	0.0769	0.0834	0	0.0278	0	0.0012	0	0	0.0172	0.0833	0	0.0185
Chromium	lb	0	0.0070	0.1764	0.1913	0	0.0637	0	0.0027	0	0	0.0394	0.1913	0	0.0425
Chromium (III)*	lb	See Dissolved Chromium (III) and Dissolved Chromium (VI)*													
Chromium (VI)*	lb														
Copper	lb	0	0.0579	1.4572	1.5804	0	0.5266	0	0.0225	0	0	0.3257	1.5801	0	0.3513
Iron	lb	0	3.3823	85.1288	92.32	0	30.76	0	1.311	0	0	19.02	92.30	0	20.52
Lead	lb	0	0.0057	0.1428	0.1549	0	0.0516	0	0.0022	0	0	0.0319	0.1548	0	0.0344
Manganese	lb	0	0.2707	6.8133	7.3894	0	2.4619	0	0.1050	0	0	1.5229	7.3876	0	1.6425
Nickel	lb	0	0.0132	0.3321	0.3602	0	0.1200	0	0.0051	0	0	0.0742	0.3601	0	0.0801
Selenium	lb	0	0.0205	0.5147	0.5583	0	0.1860	0	0.0079	0	0	0.1151	0.5581	0	0.1241
Silver	lb	0	0.0076	0.1921	0.2084	0	0.0694	0	0.0030	0	0	0.0429	0.2083	0	0.0463
Zinc	lb	0	0.1371	3.4506	3.7424	0	1.2468	0	0.0532	0	0	0.7713	3.7415	0	0.8318
Dissolved Metals															
Cadmium	lb	0	0.0029	0.0740	0.0803	0	0.0267	0	0.0011	0	0	0.0165	0.0802	0	0.0178
Chromium	lb	0	0.0068	0.1705	0.1849	0	0.0616	0	0.0026	0	0	0.0381	0.1848	0	0.0411
Chromium (III)*	lb	0	0.0044	0.1115	0.1209	0	0.0403	0	0.0017	0	0	0.0249	0.1209	0	0.0269
Chromium (VI)*	lb	0	0.0007	0.0184	0.0199	0	0.0066	0	0.0003	0	0	0.0041	0.0199	0	0.0044
Copper	lb	0	0.0371	0.9340	1.0130	0	0.3375	0	0.0144	0	0	0.2088	1.0128	0	0.2252
Iron	lb	0	0.3113	7.8346	8.4971	0	2.8310	0	0.1207	0	0	1.7512	8.4950	0	1.8887
Lead	lb	0	0.0057	0.1428	0.1549	0	0.0516	0	0.0022	0	0	0.0319	0.1548	0	0.0344
Manganese	lb	0	0.2647	6.6627	7.2261	0	2.4075	0	0.1027	0	0	1.4892	7.2243	0	1.6062
Nickel	lb	0	0.0119	0.2996	0.3250	0	0.1083	0	0.0046	0	0	0.0670	0.3249	0	0.0722
Selenium	lb	0	0.0176	0.4440	0.4815	0	0.1604	0	0.0068	0	0	0.0992	0.4814	0	0.1070
Silver	lb	0	0.0076	0.1921	0.2084	0	0.0694	0	0.0030	0	0	0.0429	0.2083	0	0.0463
Zinc	lb	0	0.0554	1.3943	1.5122	0	0.5038	0	0.0215	0	0	0.3116	1.5118	0	0.3361

Table D.4-4 (continued)
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part IV

Analyte	Units	City of San Diego													
Site ID		DW0976	DW0978	DW0981	DW0987	DW0988	DW0990	DW1003	DW1004	DW1005	DW1006	DW1007	DW1009	DW1011	DW1016
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	N	N	N
Annual Flow Volume	cf	0	82,621	2,079,488	2,255,337	0	751,407	0	32,044	0	0	464,801	2,254,779	0	501,310
Nutrients															
Ammonia N	lb	0	0.8098	20.3816	22.1051	0	7.3647	0	0.3141	0	0	4.5556	22.0997	0	4.9135
Nitrite as N*	lb	0	0.1986	4.9980	5.4207	0	1.8060	0	0.0770	0	0	1.1171	5.4193	0	1.2049
Nitrate as N*	lb	0	9.7897	246.3965	267.2327	0	89.0335	0	3.7968	0	0	55.0738	267.1666	0	59.3997
Nitrate/Nitrite N*	lb	0	NR	NR	NR	0	NR	0	NR	0	0	NR	NR	0	NR
Total Nitrogen	lb	0	13.9367	350.7710	380.4335	0	126.7484	0	5.4052	0	0	78.4033	380.3393	0	84.5617
TKN	lb	0	4.1315	103.9850	112.7784	0	37.5742	0	1.6023	0	0	23.2424	112.7505	0	25.0681
Phosphorus, Total	lb	0	0.7131	17.9475	19.4652	0	6.4852	0	0.2766	0	0	4.0116	19.4604	0	4.3267
Orthophosphate as P	lb	0	0.3982	10.0220	10.8695	0	3.6214	0	0.1544	0	0	2.2401	10.8668	0	2.4160
Solid Parameters															
TDS	lb	0	5,880	147,994	160,509	0	53,476	0	2,280	0	0	33,079	160,469	0	35,677
TSS	lb	0	45.11	1,135	1,231	0	410.3	0	17.50	0	0	253.8	1,231	0	273.7

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table D.4-5
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part V

Analyte	Units	City of San Diego													
Site ID		DW1026	DW1049	DW1051	DW1079	DW1083	DW1084	DW1085	DW1086	DW1087	DW1088	DW1091	DW1092	DW1093	DW1094
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	N	N	N
Annual Flow Volume	cf	375,815	62524	1,002,062	753,640	61,408	1,507,280	122,815	189,806	61,408	189,806	0	831,795	1,503,372	10,607
Conventional Parameters															
Hardness (Total)	lb	9,478	1,577	25,273	19,008	1,549	38,015	3,098	4,787	1,549	4,787	0	20,979	37,917	268
MBAS	lb	3.3527	0.5578	8.9394	6.7232	0.5478	13.4465	1.0956	1.6933	0.5478	1.6933	0	7.4205	13.4116	0.0946
Indicator Bacteria															
Enterococcus	MPN	1.85E+13	3.09E+12	4.95E+13	3.72E+13	3.03E+12	7.44E+13	6.06E+12	9.37E+12	3.03E+12	9.37E+12	0	4.11E+13	7.42E+13	5.24E+11
Fecal Coliform	MPN	1.17E+13	1.95E+12	3.12E+13	2.34E+13	1.91E+12	4.69E+13	3.82E+12	5.91E+12	1.91E+12	5.91E+12	0	2.59E+13	4.68E+13	3.30E+11
Total Coliform	MPN	1.82E+15	3.02E+14	4.84E+15	3.64E+15	2.97E+14	7.28E+15	5.93E+14	9.17E+14	2.97E+14	9.17E+14	0	4.02E+15	7.26E+15	5.12E+13
Total Metals															
Cadmium	lb	0.0139	0.0023	0.0370	0.0279	0.0023	0.0557	0.0045	0.0070	0.0023	0.0070	0	0.0307	0.0556	0.0004
Chromium	lb	0.0319	0.0053	0.0850	0.0639	0.0052	0.1279	0.0104	0.0161	0.0052	0.0161	0	0.0706	0.1275	0.0009
Chromium (III)*	lb	See Dissolved Chromium (III) and Dissolved Chromium (VI)*													
Chromium (VI)*	lb														
Copper	lb	0.2634	0.0438	0.7022	0.5281	0.0430	1.0562	0.0861	0.1330	0.0430	0.1330	0	0.5829	1.0535	0.0074
Iron	lb	15.3849	2.5596	41.0218	30.8521	2.5139	61.7041	5.0277	7.7701	2.5139	7.7701	0	34.0515	61.5441	0.4342
Lead	lb	0.0258	0.0043	0.0688	0.0518	0.0042	0.1035	0.0084	0.0130	0.0042	0.0130	0	0.0571	0.1032	0.0007
Manganese	lb	1.2313	0.2049	3.2832	2.4692	0.2012	4.9385	0.4024	0.6219	0.2012	0.6219	0	2.7253	4.9257	0.0348
Nickel	lb	0.0600	0.0100	0.1600	0.1204	0.0098	0.2407	0.0196	0.0303	0.0098	0.0303	0	0.1328	0.2401	0.0017
Selenium	lb	0.0930	0.0155	0.2480	0.1865	0.0152	0.3731	0.0304	0.0470	0.0152	0.0470	0	0.2059	0.3721	0.0026
Silver	lb	0.0347	0.0058	0.0926	0.0696	0.0057	0.1393	0.0113	0.0175	0.0057	0.0175	0	0.0769	0.1389	0.0010
Zinc	lb	0.6236	0.1037	1.6628	1.2505	0.1019	2.5011	0.2038	0.3150	0.1019	0.3150	0	1.3802	2.4946	0.0176
Dissolved Metals															
Cadmium	lb	0.0134	0.0022	0.0357	0.0268	0.0022	0.0536	0.0044	0.0068	0.0022	0.0068	0	0.0296	0.0535	0.0004
Chromium	lb	0.0308	0.0051	0.0821	0.0618	0.0050	0.1235	0.0101	0.0156	0.0050	0.0156	0	0.0682	0.1232	0.0009
Chromium (III)*	lb	0.0202	0.0034	0.0537	0.0404	0.0033	0.0808	0.0066	0.0102	0.0033	0.0102	0	0.0446	0.0806	0.0006
Chromium (VI)*	lb	0.0033	0.0006	0.0089	0.0067	0.0005	0.0133	0.0011	0.0017	0.0005	0.0017	0	0.0073	0.0133	0.0001
Copper	lb	0.1688	0.0281	0.4501	0.3385	0.0276	0.6770	0.0552	0.0853	0.0276	0.0853	0	0.3736	0.6753	0.0048
Iron	lb	1.4159	0.2356	3.7753	2.8394	0.2314	5.6788	0.4627	0.7151	0.2314	0.7151	0	3.1338	5.6640	0.0400
Lead	lb	0.0258	0.0043	0.0688	0.0518	0.0042	0.1035	0.0084	0.0130	0.0042	0.0130	0	0.0571	0.1032	0.0007
Manganese	lb	1.2041	0.2003	3.2106	2.4147	0.1968	4.8293	0.3935	0.6081	0.1968	0.6081	0	2.6651	4.8168	0.0340
Nickel	lb	0.0541	0.0090	0.1444	0.1086	0.0088	0.2172	0.0177	0.0273	0.0088	0.0273	0	0.1198	0.2166	0.0015
Selenium	lb	0.0802	0.0133	0.2139	0.1609	0.0131	0.3218	0.0262	0.0405	0.0131	0.0405	0	0.1776	0.3210	0.0023
Silver	lb	0.0347	0.0058	0.0926	0.0696	0.0057	0.1393	0.0113	0.0175	0.0057	0.0175	0	0.0769	0.1389	0.0010
Zinc	lb	0.2520	0.0419	0.6719	0.5053	0.0412	1.0106	0.0823	0.1273	0.0412	0.1273	0	0.5577	1.0080	0.0071

Table D.4-5 (continued)
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part V

Analyte	Units	City of San Diego													
Site ID		DW1026	DW1049	DW1051	DW1079	DW1083	DW1084	DW1085	DW1086	DW1087	DW1088	DW1091	DW1092	DW1093	DW1094
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	N	N	N
Annual Flow Volume	cf	375,815	62524	1,002,062	753,640	61,408	1,507,280	122,815	189,806	61,408	189,806	0	831,795	1,503,372	10,607
Nutrients															
Ammonia N	lb	3.683	0.6128	9.821	7.386	0.6019	14.77	1.2037	1.8603	0.6019	1.8603	0	8.1526	14.7349	0.1040
Nitrite as N**	lb	0.9033	0.1503	2.408	1.811	0.1476	3.6227	0.2952	0.4562	0.1476	0.4562	0	1.9992	3.6133	0.0255
Nitrate as N**	lb	44.53	7.4084	118.7	89.29	7.276	178.59	14.5523	22.4899	7.2761	22.4899	0	98.5586	178.1331	1.2568
Nitrate/Nitrite N**	lb	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0	NR	NR	NR
Total Nitrogen	lb	63.39	10.54	169.0	127.1	10.35	254.2	20.7167	32.0167	10.3583	32.0167	0	140.3084	253.5909	1.7892
TKN	lb	18.79	3.1265	50.10	37.68	3.0707	75.3717	6.1414	9.4913	3.0707	9.4913	0	41.5940	75.1763	0.5304
Phosphorus, Total	lb	3.243	0.5396	8.648	6.504	0.5300	13.0089	1.0600	1.6382	0.5300	1.6382	0	7.1790	12.9752	0.0915
Orthophosphate as P	lb	1.811	0.3013	4.829	3.632	0.2960	7.2643	0.5919	0.9148	0.2960	0.9148	0	4.0088	7.2455	0.0511
Solid Parameters															
TDS	lb	26746	4450	71315	53635	4370	107271	8741	13508	4370	13508	0	59197	106992	754.9
TSS	lb	205.2	34.1	547.2	411.5	33.5	823.0	67.1	103.6	33.5	103.6	0	454.2	820.9	5.792

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table D.4-6
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part VI

Analyte	Units	City of San Diego											
Site ID		DW1103	DW1105	DW1106	DW1107	DW1108	DW1114	DW1122	DW1124	DW1126	DW1128	DW1174	**Jurisdictional Total**
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	**NA**
Annual Flow Volume	cf	83,180	0	189,806	626,359	1,002,062	1,879,076	0	3,758,151	2,061,624	80,388	0	**39,623,712**
Conventional Parameters													
Hardness (Total)	lb	2,098	0	4,787	15,797	25,273	47,392	0	94,785	51,996	2,027	0	**999,747**
MBAS	lb	0.7420	0	1.6933	5.5878	8.9394	16.7633	0	33.5265	18.3918	0.7171	0	**361.6408**
Indicator Bacteria													
Enterococcus	MPN	4.11E+12	0	9.37E+12	3.09E+13	4.95E+13	9.27E+13	0	1.85E+14	1.02E+14	3.97E+12	0	**2.05E+15**
Fecal Coliform	MPN	2.59E+12	0	5.91E+12	1.95E+13	3.12E+13	5.85E+13	0	1.17E+14	6.41E+13	2.50E+12	0	**1.18E+15**
Total Coliform	MPN	4.02E+14	0	9.17E+14	3.03E+15	4.84E+15	9.08E+15	0	1.82E+16	9.96E+15	3.88E+14	0	**2.09E+17**
Total Metals													
Cadmium	lb	0.0031	0	0.0070	0.0231	0.0370	0.0694	0	0.1389	0.0762	0.0030	0	**1.4664**
Chromium	lb	0.0071	0	0.0161	0.0531	0.0850	0.1594	0	0.3188	0.1749	0.0068	0	**3.3470**
Chromium (III)*	lb	See Dissolved Chromium (III) and Dissolved Chromium (VI)*											
Chromium (VI)*	lb												
Copper	lb	0.0583	0	0.1330	0.4389	0.7022	1.3168	0	2.6336	1.4447	0.0563	0	**27.8707**
Iron	lb	3.4052	0	7.7701	25.6415	41.0218	76.9245	0	153.8489	84.3975	3.2909	0	**1,671.4499**
Lead	lb	0.0057	0	0.0130	0.0430	0.0688	0.1290	0	0.2581	0.1416	0.0055	0	**2.7210**
Manganese	lb	0.2725	0	0.6219	2.0522	3.2832	6.1567	0	12.3133	6.7548	0.2634	0	**131.9244**
Nickel	lb	0.0133	0	0.0303	0.1000	0.1600	0.3001	0	0.6001	0.3292	0.0128	0	**6.3897**
Selenium	lb	0.0206	0	0.0470	0.1550	0.2480	0.4651	0	0.9302	0.5103	0.0199	0	**9.9160**
Silver	lb	0.0077	0	0.0175	0.0579	0.0926	0.1736	0	0.3472	0.1905	0.0074	0	**3.6610**
Zinc	lb	0.1380	0	0.3150	1.0393	1.6628	3.1180	0	6.2361	3.4209	0.1334	0	**65.4980**
Dissolved Metals													
Cadmium	lb	0.0030	0	0.0068	0.0223	0.0357	0.0669	0	0.1337	0.0734	0.0029	0	**1.4098**
Chromium	lb	0.0068	0	0.0156	0.0513	0.0821	0.1540	0	0.3080	0.1690	0.0066	0	**3.2189**
Chromium (III)*	lb	0.0045	0	0.0102	0.0336	0.0537	0.1008	0	0.2015	0.1106	0.0043	0	**2.1101**
Chromium (VI)*	lb	0.0007	0	0.0017	0.0055	0.0089	0.0166	0	0.0332	0.0182	0.0007	0	**0.3469**
Copper	lb	0.0374	0	0.0853	0.2813	0.4501	0.8440	0	1.6881	0.9260	0.0361	0	**18.2313**
Iron	lb	0.3134	0	0.7151	2.3598	3.7753	7.0795	0	14.1590	7.7673	0.3029	0	**153.0765**
Lead	lb	0.0057	0	0.0130	0.0430	0.0688	0.1290	0	0.2581	0.1416	0.0055	0	**2.7210**
Manganese	lb	0.2665	0	0.6081	2.0069	3.2106	6.0206	0	12.0412	6.6055	0.2576	0	**123.7423**
Nickel	lb	0.0120	0	0.0273	0.0902	0.1444	0.2707	0	0.5415	0.2970	0.0116	0	**5.7698**
Selenium	lb	0.0178	0	0.0405	0.1337	0.2139	0.4012	0	0.8024	0.4402	0.0172	0	**8.6329**
Silver	lb	0.0077	0	0.0175	0.0579	0.0926	0.1736	0	0.3472	0.1905	0.0074	0	**3.6610**
Zinc	lb	0.0558	0	0.1273	0.4200	0.6719	1.2599	0	2.5198	1.3823	0.0539	0	**26.2945**

Table D.4-6 (continued)
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part VI

Analyte	Units	City of San Diego											
Site ID		DW1103	DW1105	DW1106	DW1107	DW1108	DW1114	DW1122	DW1124	DW1126	DW1128	DW1174	**Jurisdictional Total**
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	**NA**
Annual Flow Volume	cf	83,180	0	189,806	626,359	1,002,062	1,879,076	0	3,758,151	2,061,624	80,388	0	**39,623,712**
Nutrients													
Ammonia N	lb	0.8153	0	1.860	6.139	9.821	18.41	0	36.83	20.20	0.7879	0	**381.6332**
Nitrite as N**	lb	0.1999	0	0.4562	1.505	2.408	4.516	0	9.0327	4.955	0.1932	0	**94.5712**
Nitrate as N**	lb	9.855	0	22.48	74.21	118.7	222.6	0	445.2	244.2	9.5251	0	**5,006.8413**
Nitrate/Nitrite N**	lb	NR	0	NR	NR	NR	NR	0	NR	NR	NR	0	**NR**
Total Nitrogen	lb	14.03	0	32.01	105.6	169.0	316.9	0	633.9	347.7	13.56	0	**7,028.1823**
TKN	lb	4.159	0	9.491	31.32	50.10	93.96	0	187.9	103.0	4.019	0	**2,014.2944**
Phosphorus, Total	lb	0.7179	0	1.638	5.405	8.648	16.21	0	32.4	17.79	0.6938	0	**348.5531**
Orthophosphate as P	lb	0.4009	0	0.9148	3.018	4.829	9.056	0	18.11	9.935	0.3874	0	**191.3866**
Solid Parameters													
TDS	lb	5,920	0	13,508	44,577	71,315	133,731	0	267,461	146,722	5,721	0	**2,829,040**
TSS	lb	45.42	0	103.6	342.0	547.2	1,026	0	2,052	1,126	43.89	0	**21,347**

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table D.4-7
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of Del Mar and City of Poway

Analyte	Units	City of Del Mar		City of Poway											
Site ID		S12	**Jurisdictional Total**	278-1749, 2	282-1749, 2	282-1749, 3 (DW Site 2)	282-1749, 4(S)	286-1749, 1	294-1749, 2	298-1749, 2	298-1749, 5	290-1749, 2	290-1755, 1	298-1749, 3	**Jurisdictional Total**
Highest Priority Outfall		Y	**NA**	N	Y	Y	Y	N	Y	Y	Y	N	N	N	**NA**
Annual Flow Volume	cf	48,421	**48,421**	27,913	262,378	117,233	27,913	245,631	251,213	34,891	0	0	223,301	27,913	**1,218,385**
Conventional Parameters															
Hardness (Total)	lb	3,506	**3,506**	1,718	11,949	2,737	594	15,117	10,319	1,451	0	0	13,742	1,718	**59,345**
MBAS	lb	0.1511	**0.1511**	0.1655	0.8190	1.8297	0.1743	1.5334	0.7841	0.1089	0	0	1.3940	0.1743	**6.9919**
Indicator Bacteria															
Enterococcus	MPN	1.44E+12	**1.44E+12**	4.47E+12	1.45E+13	3.65E+13	7.11E+11	3.93E+13	2.13E+13	1.68E+12	0	0	3.57E+13	4.47E+12	**1.59E+14**
Fecal Coliform	MPN	4.11E+10	**4.11E+10**	3.18E+13	2.49E+13	5.98E+13	2.37E+12	2.80E+14	1.64E+14	1.28E+13	0	0	2.55E+14	3.18E+13	**8.62E+14**
Total Coliform	MPN	2.17E+13	**2.17E+13**	7.19E+13	3.71E+13	2.32E+14	6.32E+13	6.33E+14	3.56E+14	3.95E+13	0	0	5.75E+14	7.19E+13	**2.08E+15**
Total Metals															
Cadmium	lb	0.0003	**0.0003**	0.0008	0.0033	0.0018	0.0003	0.0071	0.0063	0.0027	0	0	0.0064	0.0008	**0.0295**
Chromium	lb	NR**	**NR****	0.0013	0.0090	0.0102	0.0017	0.0115	0.0031	0.0004	0	0	0.0105	0.0013	**0.0491**
Chromium (III)	lb	NR**	**NR****	0.0013	0.0090	0.0102	0.0017	0.0115	0.0024	0.0005	0	0	0.0105	0.0013	**0.0484**
Chromium (VI)	lb	NR**	**NR****	0.0017	0.0164	0.0073	0.0017	0.0153	0.0157	0.0022	0	0	0.0139	0.0017	**0.0761**
Copper	lb	0.0060	**0.0060**	0.0148	0.0737	0.1061	0.0139	0.1303	0.1255	0.0076	0	0	0.1185	0.0148	**0.6053**
Iron	lb	0.7089	**0.7089**	0.6059	1.9328	2.1773	0.2614	5.3317	5.6145	0.1557	0	0	4.8470	0.6059	**21.5322**
Lead	lb	0.0005	**0.0005**	0.0010	0.0090	0.0084	0.0007	0.0092	0.0031	0.0005	0	0	0.0084	0.0010	**0.0415**
Manganese	lb	0.1436	**0.1436**	0.0429	0.0491	0.1281	0.0105	0.3772	0.9567	0.0882	0	0	0.3429	0.0429	**2.0384**
Nickel	lb	NR**	**NR****	0.0054	0.0328	0.0329	0.0070	0.0475	0.0314	0.0033	0	0	0.0432	0.0054	**0.2089**
Selenium	lb	0.0242	**0.0242**	0.0041	0.0491	0.0048	0.0007	0.0357	0.0157	0.0017	0	0	0.0325	0.0041	**0.1483**
Silver	lb	NR**	**NR****	0.0002	0.0016	0.0007	0.0002	0.0017	0.0016	0.0002	0	0	0.0015	0.0002	**0.0079**
Zinc	lb	0.0227	**0.0227**	0.0852	0.1638	1.3466	0.0505	0.7498	0.1098	0.0218	0	0	0.6817	0.0852	**3.2945**
Dissolved Metals															
Cadmium	lb	0.0001	**0.0001**	0.0004	0.0016	0.0018	0.0016	0.0032	0.0016	0.0002	0	0	0.0029	0.0004	**0.0137**
Chromium	lb	NR**	**NR****	0.0003	0.0025	0.0018	0.0010	0.0029	0.0016	0.0002	0	0	0.0026	0.0003	**0.0133**
Chromium (III)	lb	NR**	**NR****	0.0003	0.0019	0.0016	0.0010	0.0024	0.0005	0.0001	0	0	0.0022	0.0003	**0.0102**
Chromium (VI)	lb	NR**	**NR****	0.0017	0.0164	0.0073	0.0017	0.0153	0.0157	0.0022	0	0	0.0139	0.0017	**0.0761**
Copper	lb	0.0017	**0.0017**	0.0099	0.0573	0.0732	0.0087	0.0874	0.0784	0.0033	0	0	0.0795	0.0099	**0.4076**
Iron	lb	0.0106	**0.0106**	0.0308	0.0328	0.2744	0.0470	0.2714	0.4862	0.0229	0	0	0.2467	0.0308	**1.4431**
Lead	lb	0.0002	**0.0002**	0.0011	0.0278	0.0077	0.0002	0.0098	0.0005	0.0008	0	0	0.0089	0.0011	**0.0579**
Manganese	lb	0.0453	**0.0453**	0.0210	0.0147	0.0842	0.0010	0.1846	0.6273	0.0479	0	0	0.1678	0.0210	**1.1696**
Nickel	lb	NR**	**NR****	0.0027	0.0172	0.0154	0.0035	0.0235	0.0016	0.0010	0	0	0.0213	0.0027	**0.0887**
Selenium	lb	0.0212	**0.0212**	0.0037	0.0409	0.0051	0.0007	0.0327	0.0157	0.0016	0	0	0.0297	0.0037	**0.1339**
Silver	lb	NR**	**NR****	0.0001	0.0008	0.0004	0.0001	0.0008	0.0008	0.0001	0	0	0.0007	0.0001	**0.0038**
Zinc	lb	0.0151	**0.0151**	0.0687	0.1065	1.2734	0.0349	0.6042	0.0157	0.0054	0	0	0.5492	0.0687	**2.7266**

Table D.4-7 (continued)
Los Peñasquitos WMA Dry Season Flow Volume and Pollutant Loads: City of Del Mar and City of Poway

Analyte	Units	City of Del Mar		City of Poway											
Site ID		S12	**Jurisdictional Total**	278-1749, 2	282-1749, 2	282-1749, 3 (DW Site 2)	282-1749, 4(S)	286-1749, 1	294-1749, 2	298-1749, 2	298-1749, 5	290-1749, 2	290-1755, 1	298-1749, 3	**Jurisdictional Total**
Highest Priority Outfall		Y	**NA**	N	Y	Y	Y	N	Y	Y	Y	N	N	N	**NA**
Annual Flow Volume	cf	48,421	**48,421**	27,913	262,378	117,233	27,913	245,631	251,213	34,891	0	0	223,301	27,913	**1,218,385**
Nutrients															
Ammonia N	lb	0.5441	**0.5441**	0.4653	3.2760	3.4398	0.6273	4.0943	3.6071	0.1743	0	0	3.7221	0.4653	**19.8712**
Nitrite as N*	lb	0.0423	**0.0423**	NR	NR	NR	NR	NR	NR	NR	0	0	NR	NR	**0.0000**
Nitrate as N*	lb	4.4133	**4.4133**	NR	NR	NR	NR	NR	NR	NR	0	0	NR	NR	**0.0000**
Nitrate/Nitrite N*	lb	4.4436	**4.4436**	7.9407	113.6762	17.5648	6.3777	69.8785	17.8784	1.2416	0	0	63.5259	7.9407	**306.0245**
Total Nitrogen	lb	11.7891	**11.7891**	23.0015	140.0477	53.7921	92.5287	202.41	36.0705	22.2173	0	0	184.0119	23.0015	**777.0844**
TKN	lb	7.4060	**7.4060**	15.0555	26.2078	36.2273	86.0813	132.49	18.8194	21.0194	0	0	120.4442	15.0555	**471.3990**
Phosphorus, Total	lb	0.2872	**0.2872**	0.9845	2.6208	4.1350	1.7077	8.6639	9.7234	1.1762	0	0	7.8763	0.9845	**37.8723**
Orthophosphate as P	lb	0.1564	**0.1564**	0.9113	2.2113	3.6959	1.5160	8.0199	9.2529	1.1218	0	0	7.2908	0.9113	**34.9312**
Solid Parameters															
TDS	lb	10,988	**10,988**	3,774	33,497	6,473	1,392	33,211	28,543	3,757	0	0	30,192	3,774	**144,613**
TSS	lb	96.73	**96.73**	13.77	20.47	36.59	3.485	121.1	47.05	1.634	0	0	110.1	13.766	**368**

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit); ** NAL analyte not required for Ocean Receiving Waters.

Attachment E – Data Quality Objectives and Quality Control

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1 Data Quality Objectives

This attachment addresses Quality Assurance/Quality Control (QA/QC) activities associated with the Los Peñasquitos Watershed Management Area Monitoring Program for both wet and dry weather monitoring activities and the relevant data quality objectives (DQOs). The QA/QC program included both field and laboratory procedures.

DQOs are quantitative and qualitative statements that define project objectives and specify the acceptable ranges of field sampling and laboratory performance. Results that did not meet data quality objectives were qualified and may be considered estimates. Data quality objectives for this project included the following:

- Precision
- Frequency

Precision describes how well repeated measurements agree. The evaluation of precision described here relates to repeated measurements/samples collected in the field (field duplicates). Precision measurements were determined by comparing results from field duplicates to the precision objectives. Relative percent differences (RPDs) were calculated to determine the precision between duplicate samples. This calculation is shown below:

$$RPD = \frac{abs[x_1 - x_2]}{0.5 * (x_1 + x_2)}$$

Where:

abs is the absolute value.

x1 is measurement 1 (e.g., Sample).

x2 is measurement 2 (e.g., Duplicate).

Frequency is the rate at which a required analysis is performed. The frequency of field QC samples and laboratory QC samples is verified with stated DQOs. The field QC frequency DQOs were five percent. Laboratory frequency DQOs were dependent upon the QC sample type.

DQO results for precision and frequency are presented in the following sections.

2 Field Quality Assurance/Quality Control

This section addresses QA/QC activities associated with field sampling. The field QA/QC samples were used to evaluate potential contamination and sampling errors applicable to field sampling introduced prior to submittal of the samples to the analytical laboratory. Field QA/QC procedures utilized field blanks and field duplicates. A brief summary of each measurement type is described below, followed by a summary of their respective DQOs, and frequencies in Table E-1:

- **Field Blank** – Field blanks were collected to check for cross-contamination. A field blank sample was prepared during a non-storm water monitoring event and for each type of grab sample collected as part of a storm water monitoring event. A field blank was not conducted for composite samples during the storm water monitoring event per the Monitoring Plan. The field blanks were created by pouring laboratory-grade distilled, deionized water into laboratory supplied bottles at one of the monitoring locations.

- **Field Duplicates** – Field duplicates were collected to check the reproducibility of both laboratory procedures and field collection procedures. A field duplicate sample was collected during two non-storm water events and for each type of grab sample collected as part of a storm water monitoring event. A field duplicate was not collected for composite samples during the storm water monitoring event. A field duplicate of in-situ parameters was not performed per the Monitoring Plan.

Table E-1
Field Quality Control Samples

Constituent Category	Measurement Quality Objectives		Frequency of Analysis
	Field Blank	Field Duplicate	
Conventionals	<RL for target analyte	RPD < 25%[(a)]	5% of total project sample count
Indicator Bacteria	<RL for target analyte	RPD < 25%[(b)]	5% of total project sample count
Metals	<RL for target analyte	RPD < 25%[(a)]	5% of total project sample count
Nutrients	<RL for target analyte	RPD < 25%[(a)]	5% of total project sample count
Solid Parameters	<RL for target analyte	RPD < 25%[(a)]	5% of total project sample count
Organics	<RL for target analyte	Per method	5% of total project sample count

Notes: NA= Not applicable; RL = reporting limit; RPD = relative percent difference.
(a) NA if native concentration of either sample <RL.
(b) Field duplicates are not a current SWAMP requirement for indicator bacteria. However, the collection and analysis of a field duplicate is recommended.

Analytical results from the field QA/QC sampling program are summarized below.

2.1 Wet Weather Results

A field blank was collected from MS4-LPC-2 during Wet Weather Event 2 for fecal indicator bacteria analytes. No analytes were detected above their reporting limits. Table E-2 presents the reported results of the field blanks below.

Table E-2
Wet Weather Field Blank Results

Analyte	Units	Reporting Limit	MS4-LPC-2
			3/6/16
Enterococcus	MPN/100 mL	1	< 1
Fecal Coliform	MPN/100 mL	18	< 18
Total Coliform	MPN/100 mL	18	< 18

A precision goal of less than twenty-five percent RPD was assessed using results obtained from a field duplicate sample taken at RW-LPC-3 during Wet Weather Event 2. Because microbiological constituents have an exponential growth curve, their RPDs are typically higher than chemical constituents. To give an accurate representation, their results are log transformed prior to calculating the RPD value. Parameters met this DQO for both the conventional parameters and indicator bacteria. Relative percent difference values calculated from field duplicate data are provided below in Table E-3.

Table E-3
Wet Weather Field Duplicate Results

Relative Percent Difference					
Analyte	**Units**	**MS4-LPC-03-01**	**MS4-LPC-03-02**	**3/6/2016**	**DQO**
Conventional Parameters					
Total Calcium	mg/L	77.9	70.6	9.8%	< 25%
Total Magnesium	mg/L	50.3	45.9	9.1%	< 25%
Hardness as CaCO3	mg/L	401	365	9.4%	< 25%
Indicator Bacteria					
Enterococcus	log(MPN/100mL)	3.6	3.3	9.4%	< 25%
Fecal Coliform	log(MPN/100mL)	4.0	3.5	13.8%	< 25%
Total Coliform	log(MPN/100mL)	4.5	4.5	0.0%	< 25%

2.2 Dry Weather Results

Of the 22 dry weather samples taken within 3 jurisdictions, only one field blank was collected, which was from Outfall 282-1749, 3 (DW Site 2) on 8/31/16. No analytes were detected above their reporting limits in this field blank, as shown in Table E-4 below.

Table E-4
Dry Weather Field Blank Results

Analyte	Units	Reporting Limit	282-1749, 3 (DW Site 2)
			8/31/2016
Conventional Parameters			
Chloride	mg/L	0.05	< 0.05
Color, True	Color Units	1	< 1
Hardness as CaCO3	mg/L	10	< 10
MBAS	mg/L	0.5	< 0.5
Indicator Bacteria			
Enterococcus	MPN/100 mL	20	< 20
Coliform, Fecal	MPN/100 mL	20	< 20
Coliform, Total	MPN/100 mL	20	< 20
Total Metals			
Aluminum	ug/L	10	< 10
Cadmium	ug/L	1	< 1
Chromium	ug/L	5	< 5
Chromium (III)	ug/L	1	< 1
Chromium VI	ug/L	20	< 20
Copper	ug/L	10	< 10
Iron	ug/L	50	< 50
Lead	ug/L	5	< 5
Manganese	ug/L	5	< 5
Mercury	ug/L	0.1	< 0.1
Nickel	ug/L	5	< 5
Selenium	ug/L	1	< 1
Silver	ug/L	1	< 1
Zinc	ug/L	20	< 20

Table E-4
Dry Weather Field Blank Results (continued)

Analyte	Units	Reporting Limit	282-1749, 3 (DW Site 2)
Dissolved Metals			
Aluminum	ug/L	10	< 10
Cadmium	ug/L	1	< 1
Chromium	ug/L	5	< 5
Chromium (III)	ug/L	1	< 1
Chromium VI	ug/L	20	< 20
Copper	ug/L	1	< 1
Iron	ug/L	50	< 50
Lead	ug/L	1	< 1
Manganese	ug/L	5	< 5
Mercury	ug/L	0.1	< 0.1
Nickel	ug/L	5	< 5
Selenium	ug/L	1	< 1
Silver	ug/L	1	< 1
Zinc	ug/L	20	< 20
Nutrients			
Ammonia as N	mg/L	0.1	< 0.1
Nitrate + Nitrite as N	mg/L	0.05	< 0.05
Nitrogen, Total	mg/L	0.5	< 0.5
Nitrogen, Total Kjeldahl	mg/L	0.5	< 0.5
Dissolved Phosphorus	mg/L	0.05	< 0.05
Total Phosphorus as P	mg/L	0.05	< 0.05
OrthoPhosphate as P	mg/L	0.05	< 0.05
Sulfate	mg/L	5	< 5
Solid Parameters			
Total Dissolved Solids	mg/L	20	< 20
Total Suspended Solids	mg/L	20	< 20
Synthetic Organics			
Pentachlorophenol	ug/L	5	< 5

A precision goal of less than twenty-five percent RPD was assessed using results obtained from field duplicate samples taken at S-12 on 6/30/16, and 282-1749-3 on 8/1/16 during non-storm events. Again, the fecal indicator bacteria was log transformed prior to RPD calculation. Analyzed parameters met this DQO with the exception of iron, manganese, dissolved zinc, TKN, total nitrogen, total phosphorous, orthophosphate, and total suspended solids at S-12, and fecal indicator bacteria, chromium, magnesium, dissolved nickel, and total suspended solids at 282-1749-3. Relative percent difference values calculated from field duplicate data are provided in Table E-5 below.

Table E-5
Dry Weather Field Duplicate Results

Relative Percent Difference			
Analyte	**S-12**	**282-1749, 3**	**DQO**
	6/30/2016	**8/1/2016**	
Conventional Parameters			
Hardness (Total)	2.6%	7.5%	< 25%
MBAS	NA	0.0%	< 25%
Indicator Bacteria			
Enterococcus	8.1%	17.2%	< 25%
Fecal Coliform	21.8%	5.8%	< 25%
Total Coliform	0.0%	2.6%	< 25%
Total Metals			
Cadmium	NA	NA	< 25%
Chromium	NA	**46.2%**	< 25%
Chromium (III)	NA	**46.2%**	< 25%
Chromium (VI)	NA	NA	< 25%
Copper	0.0%	11.8%	< 25%
Iron	**26.7%**	9.0%	< 25%
Lead	NA	0.0%	< 25%
Manganese	**26.7%**	**66.7%**	< 25%
Nickel	NA	0.0%	< 25%
Selenium	13.3%	0.0%	< 25%
Silver	NA	NA	< 25%
Zinc	**166.7%**	7.7%	< 25%
Dissolved Metals			
Cadmium	NA	NA	< 25%
Chromium	NA	NA	< 25%
Chromium (III)	NA	NA	< 25%
Chromium (VI)	NA	NA	< 25%
Copper	18.2%	15.4%	< 25%
Iron	0.0%	11.1%	< 25%
Lead	NA	0.0%	< 25%
Manganese	13.3%	0.0%	< 25%
Nickel	NA	**40.0%**	< 25%
Selenium	13.3%	0.0%	< 25%
Silver	NA	NA	< 25%
Zinc	**111.1%**	11.1%	< 25%

Table E-5
Dry Weather Field Duplicate Results (continued)

Relative Percent Difference			
Analyte	**S-12**	**282-1749, 3**	**DQO**
	6/30/2016	**8/1/2016**	
Nutrients			
Ammonia as N	NA	9.5%	< 25%
Nitrate as N	4.0%	NA	< 25%
Nitrite as N	0.0%	NA	< 25%
Nitrate+Nitrite	3.9%	4.0%	< 25%
Total Nitrogen	**35.0%**	9.0%	< 25%
TKN	**46.7%**	10.5%	< 25%
Phosphorus, Total	**30.3%**	10.0%	< 25%
Orthophosphate as P	**62.1%**	5.2%	< 25%
Solid Parameters			
Total Dissolved Solids	2.2%	1.4%	< 25%
Total Suspended Solids	**127.3%**	**66.7%**	< 25%

3 Laboratory Analyses Holding Times

All wet weather samples were analyzed within the required holding time limits. Fecal Indicator Bacteria exceeded the 8-hour hold time for the dry weather samples. Nitrate and Nitrite exceeded the 48-hour hold time for samples taken at SB-12. Total Dissolved Solids analyses exceeded the 7 day hold time for dry weather samples taken. All other samples were analyzed within the required holding time, as shown in Table E-6 below. The results were within the historical range, and thus are considered valid. Details of hold time exceedances are shown in Table E-7. The laboratory reports are included in Appendix C.

Table E-6
Dry Weather Holding Time Results

Analyte	Holding Time Limits	QA/QC Results
Conventional Parameters		
Hardness (Total)	6 months	Samples analyzed within holding time.
MBAS	7 days until extraction; 40 days after extraction	Samples analyzed within holding time.
Indicator Bacteria		
Enterococcus	8 hours	**Dry weather samples exceeded hold time.**
Fecal Coliform	8 hours	**Dry weather samples exceeded hold time.**
Total Coliform	8 hours	**Dry weather samples exceeded hold time.**
Total Metals		
Cadmium	6 months at room temp following acidification	Samples analyzed within holding time.
Chromium	6 months at room temp following acidification	
Chromium (III)	6 months at room temp following acidification	
Chromium (VI)	28 days at 6°C; 24 hours without preservation	
Copper	6 months at room temp following acidification	
Iron	6 months at room temp following acidification	
Lead	6 months at room temp following acidification	
Manganese	6 months at room temp following acidification	
Nickel	6 months at room temp following acidification	
Selenium	6 months at room temp following acidification	
Silver	6 months at room temp following acidification	
Zinc	6 months at room temp following acidification	
Dissolved Metals		
Cadmium	6 months at room temp following acidification	Samples analyzed within holding time.
Chromium	6 months at room temp following acidification	
Chromium (III)	6 months at room temp following acidification	
Chromium (VI)	28 days at 6°C; 24 hours without preservation	
Copper	6 months at room temp following acidification	
Iron	6 months at room temp following acidification	
Lead	6 months at room temp following acidification	
Manganese	6 months at room temp following acidification	
Nickel	6 months at room temp following acidification	
Selenium	6 months at room temp following acidification	
Silver	6 months at room temp following acidification	
Zinc	6 months at room temp following acidification	

Table E-6
Dry Weather Holding Time Results (continued)

Analyte	Holding Time Limits	QA/QC Results
Nutrients		
Ammonia N	48 hours; 28 days if acidified	Samples analyzed within holding time.
Nitrate as N	48 hours	**Dry weather samples exceeded hold time.**
Nitrite as N	48 hours	Samples analyzed within holding time.
Nitrogen, Total	28 days	Samples analyzed within holding time.
TKN	7 days; 28 days if acidified	Samples analyzed within holding time.
Phosphorus, Total	28 days	Samples analyzed within holding time.
Orthophosphate as P	48 hours	Samples analyzed within holding time.
Solid Parameters		
TDS	7 days	**Dry weather samples exceeded hold time.**
TSS	7 days	Samples analyzed within holding time.
Synthetic Organics		
Pentachlorophenol	7 days until extraction; 40 days after extraction	Samples analyzed within holding time.

Table E-7
Dry Weather Holding Time Exceedances

Analyte	Station ID	Sample Date	Analysis Date	Holding Days	Holding Time Limit
Indicator Bacteria					
Enterococcus	282-1749, 2	7/28/2016	8/1/2016	4	8 hours
	282-1749, 2	8/1/2016	8/5/2016	4	
	282-1749, 3 (DW Site 2)	7/28/2016	8/1/2016	4	
	282-1749, 3 (DW Site 2)	8/1/2016	8/5/2016	4	
	282-1749, 3 (DW Site 2)-A	8/1/2016	8/5/2016	4	
	282-1749, 3 (DW Site 2)-B	8/1/2016	8/3/2016	2	
	282-1749, 4(S)	7/28/2016	8/1/2016	4	
	294-1749, 2	8/1/2016	8/5/2016	4	
	298-1749, 2	8/1/2016	8/5/2016	4	
	298-1749, 2	8/2/2016	8/6/2016	4	
	298-1749, 5	7/28/2016	8/1/2016	4	
	298-1749, 5	8/2/2016	8/6/2016	4	
	S-12 - 06-30-16 - 001	6/30/2016	7/4/2016	4	
	S-12 - 08-12-16 - 001	8/12/2016	8/16/2016	4	
	S-12-06-30-16 - 501	6/30/2016	7/4/2016	4	
Fecal Coliforms	282-1749, 2	7/28/2016	7/31/2016	3	8 hours
	282-1749, 2	8/1/2016	8/4/2016	3	
	282-1749, 3 (DW Site 2)	7/28/2016	7/31/2016	3	
	282-1749, 3 (DW Site 2)	8/1/2016	8/4/2016	3	
	282-1749, 3 (DW Site 2)-A	8/1/2016	8/4/2016	3	
	282-1749, 3 (DW Site 2)-B	8/1/2016	8/3/2016	2	
	282-1749, 4(S)	7/28/2016	7/31/2016	3	
	294-1749, 2	8/1/2016	8/4/2016	3	
	298-1749, 2	8/1/2016	8/4/2016	3	
	298-1749, 2	8/2/2016	8/5/2016	3	
	298-1749, 5	7/28/2016	7/31/2016	3	
	298-1749, 5	8/2/2016	8/5/2016	3	
	S-12 - 06-30-16 - 001	6/30/2016	7/3/2016	3	
	S-12 - 08-12-16 - 001	8/12/2016	8/15/2016	3	
	S-12-06-30-16 - 501	6/30/2016	7/3/2016	3	

Table E-7
Dry Weather Holding Time Exceedances (continued)

Analyte	Station ID	Sample Date	Analysis Date	Holding Days	Holding Time Limit
Indicator Bacteria					
Total Coliforms	282-1749, 2	7/28/2016	8/1/2016	4	8 hours
	282-1749, 2	8/1/2016	8/5/2016	4	
	282-1749, 3 (DW Site 2)	7/28/2016	8/1/2016	4	
	282-1749, 3 (DW Site 2)	8/1/2016	8/5/2016	4	
	282-1749, 3 (DW Site 2)-A	8/1/2016	8/5/2016	4	
	282-1749, 3 (DW Site 2)-B	8/1/2016	8/3/2016	2	
	282-1749, 4(S)	7/28/2016	8/1/2016	4	
	294-1749, 2	8/1/2016	8/5/2016	4	
	298-1749, 2	8/1/2016	8/5/2016	4	
	298-1749, 2	8/2/2016	8/6/2016	4	
	298-1749, 5	7/28/2016	8/1/2016	4	
	298-1749, 5	8/2/2016	8/6/2016	4	
	S-12 - 06-30-16 - 001	6/30/2016	7/4/2016	4	
	S-12 - 08-12-16 - 001	8/12/2016	8/16/2016	4	
	S-12-06-30-16 - 501	6/30/2016	7/4/2016	4	
Nutrients					
Nitrate as N	S-12 - 06-30-16 - 001	6/30/2016	7/7/2016	7	48 hours
	S-12 - 08-12-16 - 001	8/12/2016	8/17/2016	5	
	S-12-06-30-16 - 501	6/30/2016	7/7/2016	7	
Solid Parameters					
Total Dissolved Solids	282-1749, 2	7/28/2016	8/8/2016	11	7 days
	282-1749, 2	8/1/2016	8/9/2016	8	
	282-1749, 3 (DW Site 2)	7/28/2016	8/8/2016	11	
	282-1749, 3 (DW Site 2)	8/1/2016	8/9/2016	8	
	282-1749, 3 (DW Site 2)-A	8/1/2016	8/9/2016	8	
	282-1749, 3 (DW Site 2)-B	8/1/2016	8/9/2016	8	
	282-1749, 4(S)	7/28/2016	8/8/2016	11	
	294-1749, 2	8/1/2016	8/9/2016	8	
	298-1749, 2	8/1/2016	8/9/2016	8	
	298-1749, 2	8/2/2016	8/10/2016	8	
	298-1749, 5	7/28/2016	8/8/2016	11	
	298-1749, 5	8/2/2016	8/10/2016	8	
	S-12 - 08-12-16 - 001	8/12/2016	8/22/2016	10	

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Attachment F – Wet Weather Outfall Information

Attachment F.1 – Wet Weather Outfall Hydrographs
Attachment F.2 – Wet Weather Outfall Analytical Results
Attachment F.3 – Wet Weather Assessment Methodology
Attachment F.4 – Wet Weather HSA Storm Water Volumes and Pollutant Loads

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Attachment F.1 – Wet Weather Outfall Hydrographs

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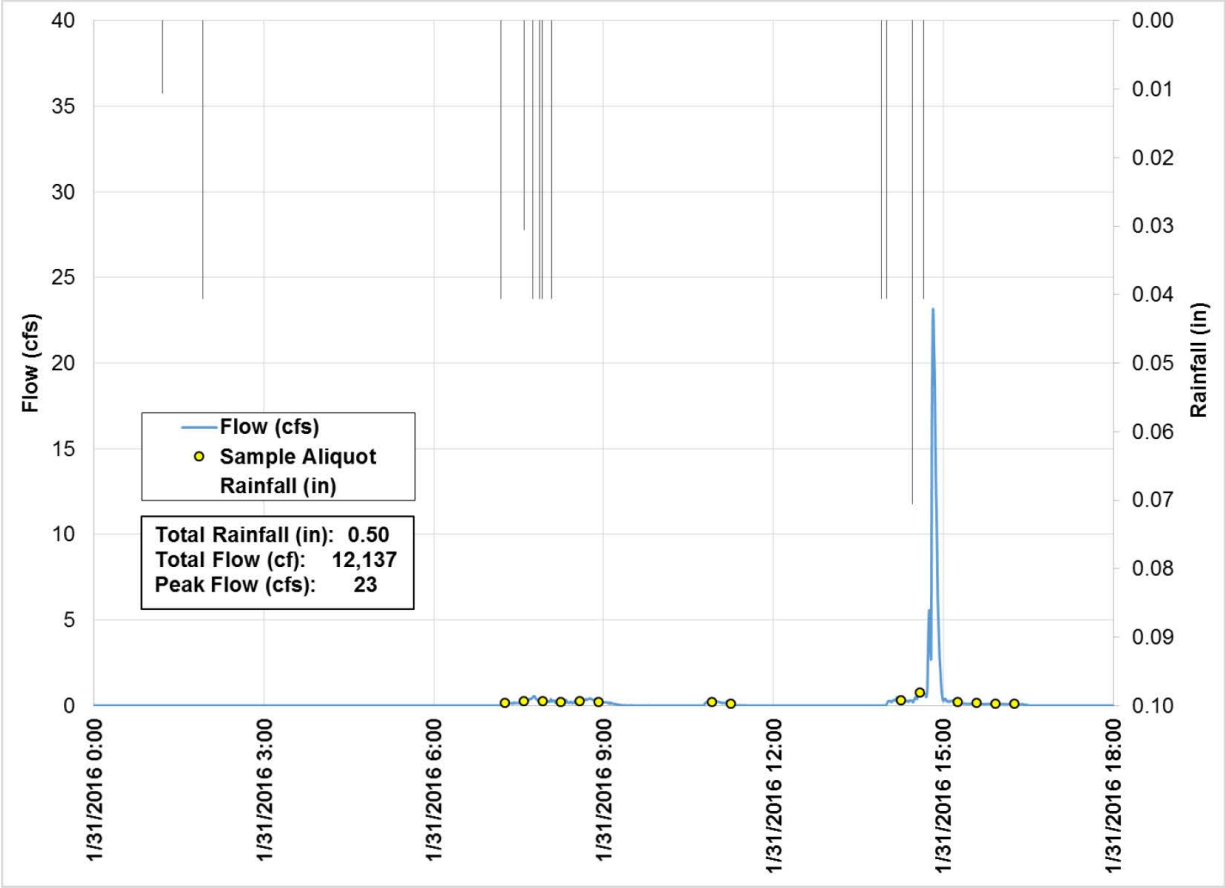

Figure F.1-1: MS4-LPC-1 Event Hydrograph

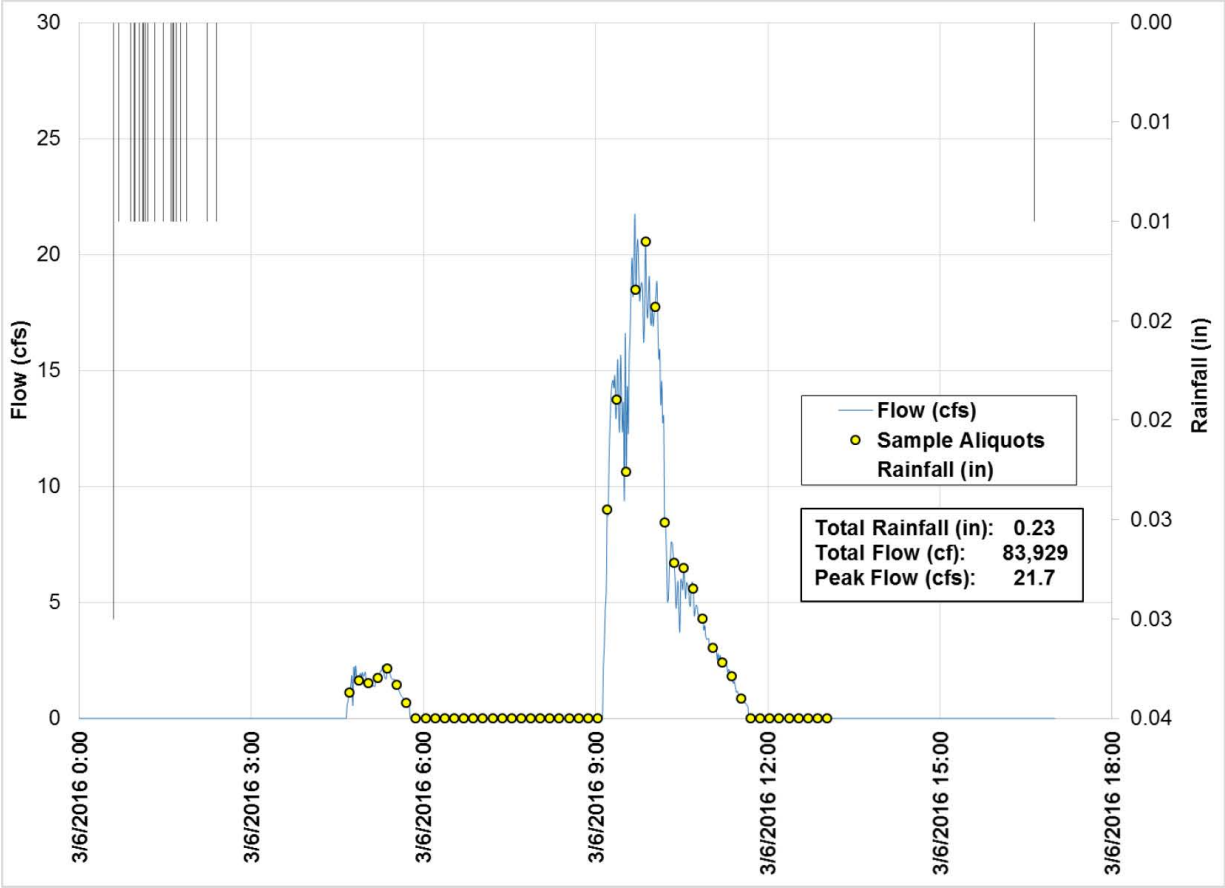

Figure F.1-2: MS4-LPC-2 Event Hydrograph

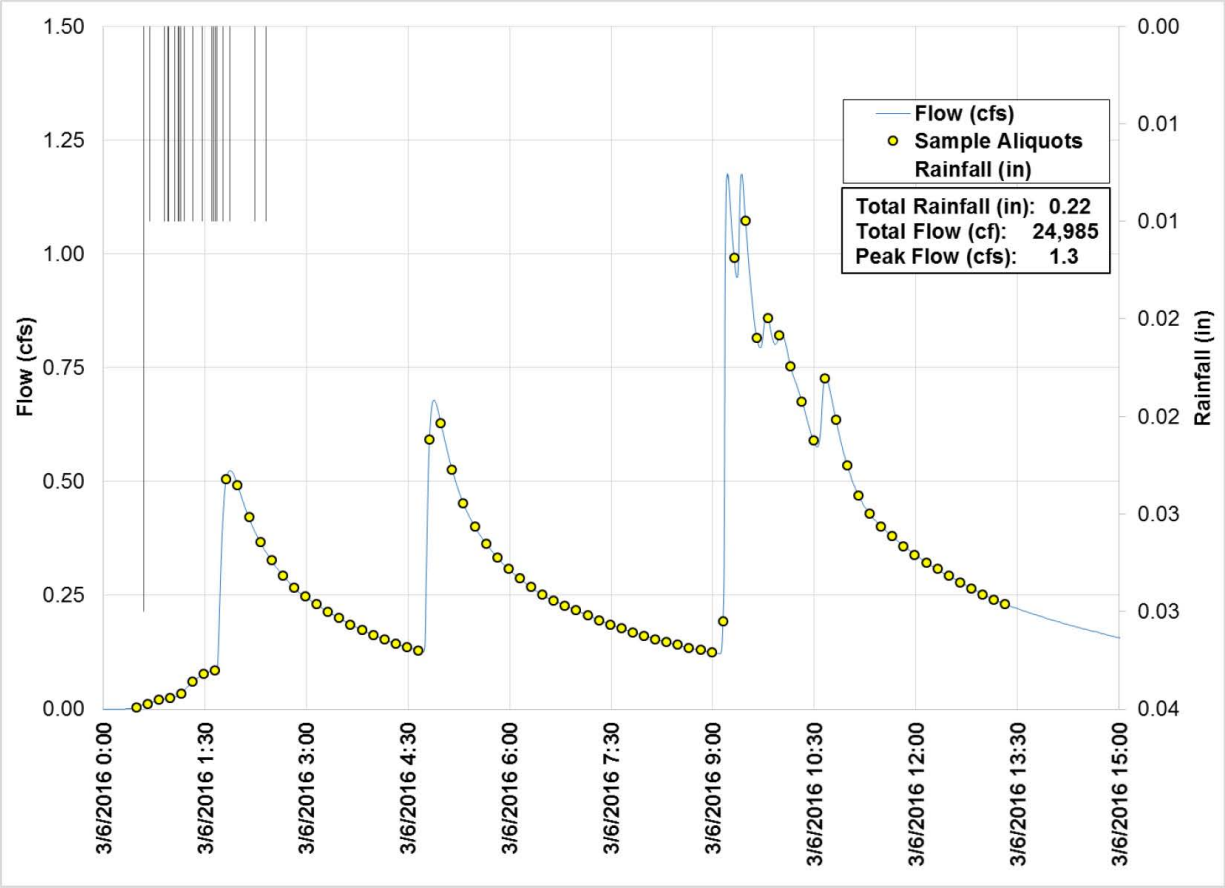

Figure F.1-3: MS4-LPC-3 Event Hydrograph

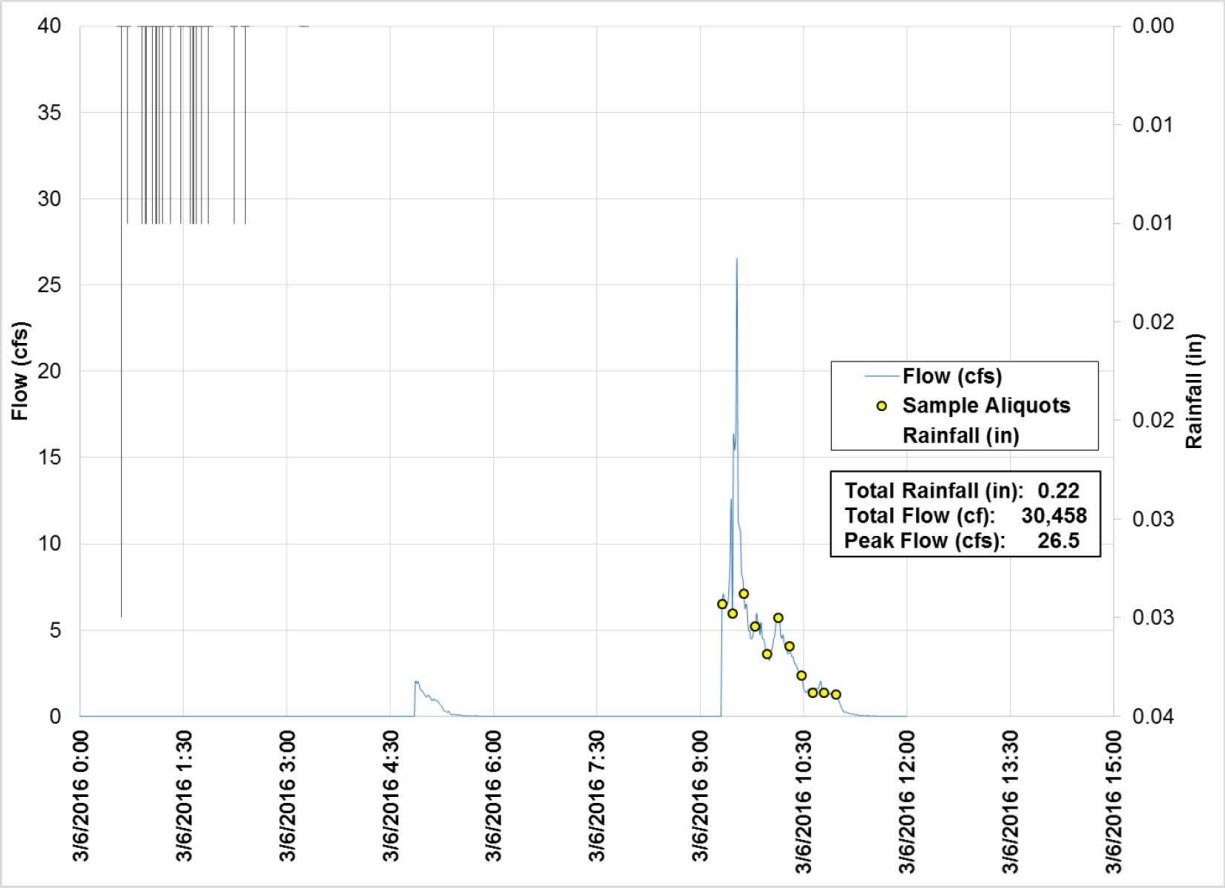

Figure F.1-4: MS4-LPC-4 Event Hydrograph

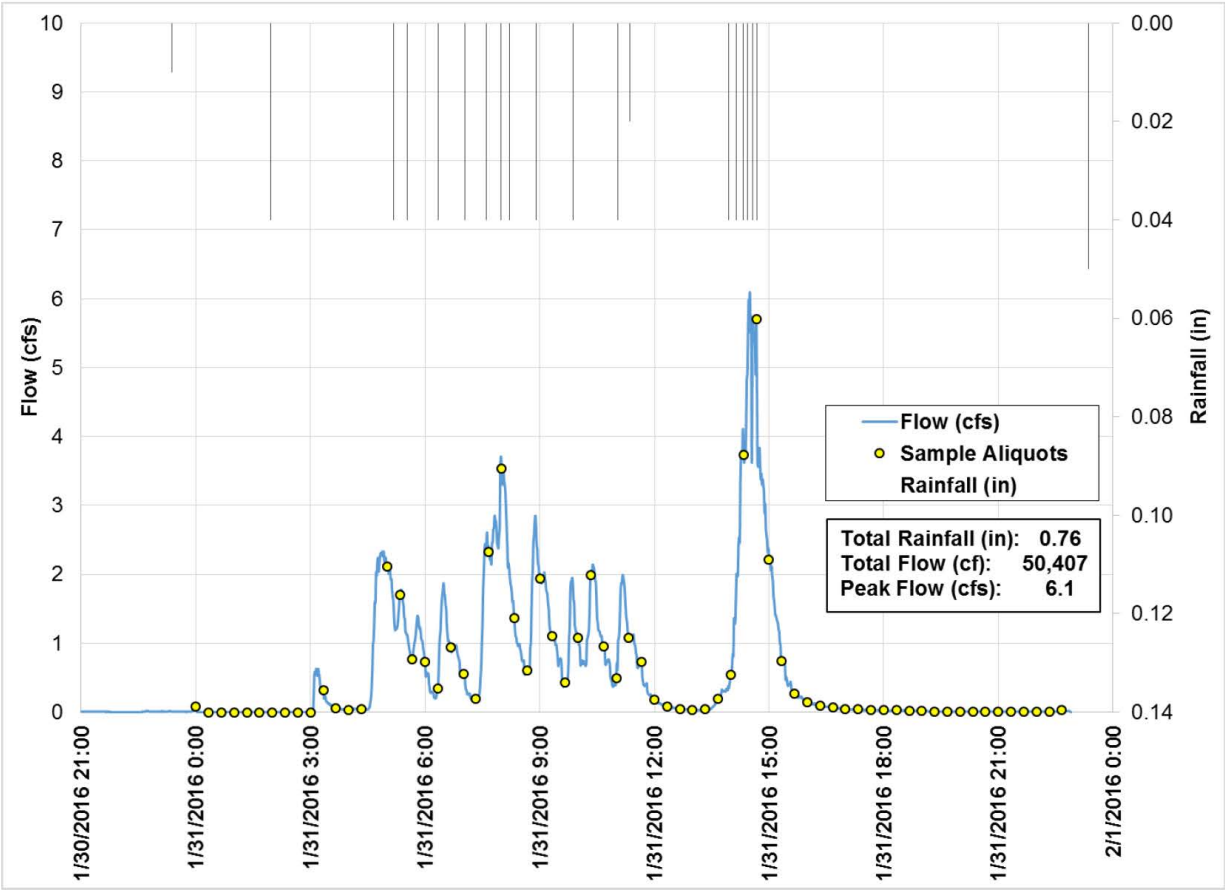

Figure F.1-5: MS4-LPC-5 Event Hydrograph

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Attachment F.2 – Wet Weather Outfall Analytical Results

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Table F.2-1
2015-2016 Los Peñasquitos WMA Wet Weather Outfall Monitoring Analytical Results

Analyte	Units	MS4-LPC-1	MS4-LPC-2	MS4-LPC-3	MS4-LPC-4	MS4-LPC-5
Conventional Parameters						
Dissolved Oxygen	mg/L	8.26	7.13	4.9	6.34	10.81
pH	pH units	7.68	8.27	8.18	8.22	7.52
Specific Conductivity	µS/cm	277	464	293	650	1,060
Temperature	°C	16.01	18.9	19.9	19.2	15.2
Turbidity	NTU	546	9.7	9.25	10.6	42
Indicator Bacteria						
Enterococcus	MPN/100mL	42,000	8,164	3,873	26,030	34,000
Fecal Coliform	MPN/100mL	2,000	11,000	11,000	1,600,000	7,200
Total Coliform	MPN/100mL	60,000	17,000	33,000	1,600,000	280,000
Total Metals						
Cadmium	µg/L	0.097 J	0.092 J	0.13	0.1	0.53
Copper	µg/L	89	20	35	22	28
Lead	µg/L	6.4	2.4	1.7	4.5	1.1
Selenium	µg/L	0.25 J	0.31 J	0.37 J	0.19 J	1.5
Zinc	µg/L	110	140	130	72	130
Selenium	µg/L	0.17 J	0.28 J	0.3 J	< 0.14	1.4
Nutrients						
Ammonia	mg/L	0.35	0.26	0.78	0.37	0.079 J
Nitrate as N	mg/L	1.7	1.6	1.5	0.88	2.3
Nitrite as N	mg/L	0.033 J	0.051 J	0.19	0.1	0.17
TKN	mg/L	2.2	2	5.6	2.1	29
Total Nitrogen	mg/L	3.9	3.6	7.3	3.1	31
Total Phosphorus as P	mg/L	0.54	0.27	0.58	0.42	0.64
Solid Parameters						
TSS	mg/L	110	24	22	130	57
TDS	mg/L	230	220	350	70	940

Notes:
< = Analyte not detected at method detection limit shown.
J = Analyte detected above the method detection limit but below the reporting limit.

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Attachment F.3 – Wet Weather Assessment Methodology

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1 Assessment of Wet Weather Outfall Results

In 2013 the San Diego Regional Water Quality Control Board (Regional Board) issued *Order No. R9-2013-0001 (amended by Order Nos. R9-2015-0001 and R9-2015-0100), National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*, herein referred to as the MS4 Permit, regulating MS4 discharges throughout the San Diego Region. The MS4 Permit requires a series of wet weather MS4 outfall assessments be performed annually to assess and report the progress of water quality improvement strategies toward reducing pollutants in storm water discharges from the MS4. This Attachment describes the methodology used to perform these required assessments. The methodology outlined here is largely based on the transitional methodology described in the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego Regional Copermitees, 2015). Areas where the methodology differs from the transitional methodology are described in the relevant section, and also summarized in Section 5.0

Per MS4 Permit Provision D.4.b.(2)(b), Copermittees will annually assess and report the following:

- The average storm water runoff coefficient for each land use type within the Watershed Management Area (WMA);
- The volume of storm water and pollutant loads discharged from each of the Copermittee's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch;
- The total flow volume and pollutant loadings discharged from the Copermittee's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls;
- The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch; and
- Modifications to the wet weather MS4 outfall discharge monitoring locations and frequencies necessary to identify pollutants in storm water discharges from the MS4s in the Watershed Management Area.

Following acceptance of the Water Quality Improvement Plans and completion of the first year of Water Quality Improvement Plan Wet Weather MS4 Outfall Discharge Monitoring (2015-2016), annual assessments will also include comparison to applicable storm water action levels (SALs) in each Watershed Management Area as required by MS4 Permit Provision D.4.b.(2)(c). Compliance with applicable SALs will be used to evaluate whether the analyses and assumptions used to develop the Water Quality Improvement Plan should be updated as a component of the adaptive management process (MS4 Permit Provision B.5).

Table 1-1 provides the equations used in this methodology and lists the input and output variables for each equation. The sections that follow describe the application of these equations in greater detail.

Table 1-1
MS4 Wet Weather Outfall Assessment Equations

Permit Provision	Equation Reference	Equation	Inputs	Outputs
D.4.b.(2)(b)(1)[a]	A.1	$C_{Outfall_Actual} = \frac{V_{Outfall_Event}}{A_{Outfall} \times d_{Outfall_Event}} \times \frac{12in}{1ft} \times \frac{1acre}{43{,}560\ ft^2}$	$V_{Outfall_Event}$ (cf) $A_{Outfall}$ (acre) $d_{Outfall_Event}$ (in)	$C_{Outfall_Actual}$ (dimensionless)
	A.1a (Optional) [1]	$C_{Outfall_His} = \frac{\sum_{Yr=1}^{n} C_{Outfall_Actual_Yr}}{n}$	$C_{Outfall_Actual_Yr}$ (dimensionless) n (year)	$C_{Outfall_His}$ (dimensionless)
	A.2	$C_{Outfall_HM} = \frac{\sum(A_{Outfall_LU} \times C_{HM_LU})}{\sum A_{Outfall_LU}}$	$A_{Outfall_LU}$ (acre) C_{HM_LU} (dimensionless)	$C_{Outfall_HM}$ (dimensionless)
	A.3	$CF_{Outfall_C} = \frac{C_{Outfall_Actual}}{C_{Outfall_HM}}$	$C_{Outfall_Actual}$ (dimensionless) $C_{Outfall_HM}$ (dimensionless)	$CF_{Outfall_C}$ (dimensionless)
	A.4	$C_{Outfall_LU} = CF_{Outfall_C} \times C_{HM_LU}$	$CF_{Outfall_C}$ (dimensionless) C_{HM_LU} (dimensionless)	$C_{Outfall_LU}$ (dimensionless)
	A.5[2]	$C_{WMA_LU} = \frac{\sum(A_{Outfall_LU} \times C_{Outfall_LU})}{\sum A_{Outfall_LU}}$	$A_{Outfall_LU}$ (acre) $C_{Outfall_LU}$ (dimensionless)	C_{WMA_LU} (dimensionless)
D.4.b.(2)(b)(1)[b]	B.1	$V_{Outfall_Annual} = (A_{Outfall} \times C_{Outfall_Actual}) \times \sum d_{Outfall_Annual} \times \frac{1ft}{12in} \times \frac{43{,}560ft^2}{1acre}$	$C_{Outfall_Actual}$ (dimensionless) $A_{Outfall}$ (acre) $d_{Outfall_Annual}$ (inches)	$V_{Outfall_Annual}$ (cf)
	B.2[3]	$Pollutant\ Load_{Outfall} = (V_{Outfall_Annual} \times Pollutant\ Concentration_{Outfall}) \times \mathrm{UC}$	$V_{Outfall_Annual}$ (cf) Pollutant Concentration$_{Outfall}$ (units vary)	Pollutant Load$_{Outfall}$ (lb or MPN)
D.4.b.(2)(b)(1)[c]	C.1	$V_{WMA_Juris_LU} = (A_{WMA_Juris_LU} \times C_{WMA_LU}) \times \sum d_{Outfall_Annual} \times \frac{1ft}{12in} \times \frac{43{,}560ft^2}{1acre}$	C_{WMA_LU} (dimensionless) $A_{WMA_Juris_LU}$ (acre) $d_{Outfall_Annual}$ (inches)	$V_{WMA_Juris_LU}$ (cf)
	C.2	$V_{WMA_Juris} = \sum V_{WMA_Juris_LU}$	$V_{WMA_Juris_LU}$ (cf)	V_{WMA_Juris} (cf)
	C.3	$EMC_{Outfall_Actual} = Pollutant\ Concentration_{Outfall}$	Pollutant Concentration$_{Outfall}$ (units vary)	$EMC_{Outfall_Actual}$ (units vary)
	C.4	$EMC_{Outfall_Calculated} = \frac{\sum(A_{Outfall_LU} \times C_{Outfall_LU} \times EMC_{Typical_LU})}{\sum(A_{Outfall_LU} \times C_{Outfall_LU})}$	$A_{Outfall_LU}$ (acre) $C_{Outfall_LU}$ (dimensionless) $EMC_{Typical_LU}$ (units vary)	$EMC_{Outfall_Calculated}$ (units vary)
	C.5	$CF_{Outfall_EMC} = \frac{EMC_{Outfall_Actual}}{EMC_{Outfall_Calculated}}$	$EMC_{Outfall_Actual}$ (units vary) $EMC_{Outfall_Calculated}$ (units vary)	$CF_{Outfall_EMC}$ (units vary)
	C.6	$EMC_{Outfall_LU} = CF_{Outfall_EMC} \times EMC_{Typical_LU}$	$CF_{Outfall_EMC}$ (units vary) $EMC_{Typical_LU}$ (units vary)	$EMC_{Outfall_LU}$ (units vary)
	C.7	$EMC_{WMA_LU} = \frac{\sum(A_{Outfall_LU} \times C_{Outfall_LU} \times EMC_{Outfall_LU})}{\sum(A_{Outfall_LU} \times C_{Outfall_LU})}$	$C_{Outfall_LU}$ (dimensionless) $A_{Outfall_LU}$ (acre) $EMC_{Outfall_LU}$ (units vary)	EMC_{WMA_LU} (units vary)

Permit Provision	Equation Reference	Equation	Inputs	Outputs
	C.8[4]	$EMC_{WMA_LU_HIS} = \frac{\sum_{Yr=1}^{n} \sum (EMC_{WMA_LU_Yr})}{n}$	$EMC_{WMA_LU_Yr}$ (units vary) n (years)	$EMC_{WMA_LU_HIS}$ (units vary)
	C.9[3]	$Pollutant\ Load_{WMA_Juris} = \sum (V_{WMA_Juris_LU} \times EMC_{WMA_LU_HIS} \times \mathrm{UC})$	$V_{WMA_Juris_LU}$ (cf) $EMC_{WMA_LU_HIS}$ (units vary)	Pollutant $Load_{WMA_Juris}$ (lb or MPN)
D.4.b.(2)(b)(1)[d]	D.1	$V_{HSA_Juris_LU} = (A_{HSA_Juris_LU} \times C_{WMA_LU}) \times \sum d_{Outfall_Annual} \times \frac{1ft}{12in} \times \frac{43{,}560ft^2}{1acre}$	C_{WMA_LU} (dimensionless) $d_{Outfall_Annual}$ (inches) $A_{HSA_Juris_LU}$ (acre)	$V_{HSA_Juris_LU}$ (cf)
	D.2	$V_{HSA_Juris} = \sum V_{HSA_Juris_LU}$	$V_{HSA_Juris_LU}$ (cf)	V_{HSA_Juris} (cf)
	D.3	$\%V_{HSA_Juris} = \frac{V_{HSA_Juris}}{V_{WMA_Juris}} \times 100$	V_{HSA_Juris} (cf) V_{WMA_Juris} (cf)	$\%V_{HSA_Juris}$ (dimensionless)
	D.4[3]	$Pollutant\ Load_{HSA_Juris} = \sum (V_{HSA_Juris_LU} \times EMC_{WMA_LU_HIS} \times \mathrm{UC})$	$V_{HSA_Juris_LU}$ (cf) $EMC_{WMA_LU_HIS}$ (units vary)	Pollutant $Load_{HSA_Juris}$ (lb or MPN)
	D.5	$\%Pollutant\ Load_{HSA_Juris} = \frac{Pollutant\ Load_{HSA_Juris}}{Pollutant\ Load_{WMA_Juris}} \times 100$	Pollutant $Load_{HSA_Juris}$ (lb or MPN) Pollutant $Load_{WMA_Juris}$ (lb or MPN)	%Pollutant $Load_{HSA_Juris}$ (lb or MPN)

Notes:

1) For those outfalls monitored for more than one monitoring year, the outfall runoff "C" ($C_{outfall_Actual}$) will be averaged across all years of monitoring. This average value ($C_{outfall_His}$) is to be substituted for the calculated outfall runoff "C" ($C_{outfall_Actual}$) in all subsequent calculations.
2) Historical data are included in this calculation. The WMA land use runoff "C" (C_{WMA_LU}) is calculated based on the area-weighted average of all years of outfall monitoring data.
3) Unit conversion (UC) varies by units used to express pollutant concentration. Common unit conversions include:
   a. mg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\,g}{1000mg}\right)\left(\frac{1\,lb}{453.592\,g}\right)$
   b. µg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\,g}{1\times10^6\mu g}\right)\left(\frac{1\,lb}{453.592\,g}\right)$
   c. MPN/100mL: $UC = \left(\frac{100mL}{0.1L}\right)\left(\frac{28.317L}{1ft^3}\right)$
4) The WMA land use EMC is averaged across all years of monitoring. This average EMC (EMCWMA_LU_HIS) is included in all subsequent calculations.

V=Runoff Volume; A=Area; d=depth; C=Runoff Coefficient
HM=County of San Diego Hydrology Manual; LU=Land Use; CF=Correction Factor; WMA=Watershed Management Area; EMC=Event Mean Concentration; HSA=Hydrologic SubArea; Juris=Jurisdictional; UC=Unit Conversion
in = inches; cf=cubic feet; lb=pounds

2 Land Use Analysis

2.1 Land Use Categorization

The process of calculating average storm water runoff coefficients for land use types first requires defining land use types within the WMA and locating the boundaries of each type. Geographic Information Systems (GIS) can be used to locate the boundaries and measure the area of each land use type. Grouping specific land use types into larger categories simplifies the calculation of average storm water runoff coefficients within the WMA. The categorizations used are based on the updated land use categorizations in the Transitional Monitoring and Assessment Program Report for the San Diego River WMA (2014-2015) (San Diego County MS4 Copermittees, 2016). These categories differ slightly from the categories presented in the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego Regional Copermitees, 2015).

Table 2-1 lists each San Diego Geographic Information Source (SanGIS) land use type and the corresponding land use category used in the wet weather MS4 assessments. The latest SanGIS land use GIS data layer can be downloaded from the SanGIS website (www.sangis.org).

Table 2-1
Land Use Types and Categories for Wet Weather MS4 Outfall Assessments

Land Use Category	SanGIS Land Use Type	SanGIS Land Use Code
Agriculture	Golf course	7204
	Orchard and Vineyard	8001
	Intensive Agriculture	8002
	Field Crops	8003
Commercial	Jail/Prison	1401
	Hotel/Motel (Low-Rise)	1501
	Hotel/Motel (High-Rise)	1502
	Resort	1503
	Rail Station/Transit Station	4111
	Parking Lot - Surface	4114
	Parking Lot - Structure	4115
	Park and Ride Lot	4116
	Wholesale Trade	5001
	Regional Shopping Center	5002
	Community Shopping Center	5003
	Neighborhood Shopping Center	5004
	Specialty Commercial	5005

Land Use Category	SanGIS Land Use Type	SanGIS Land Use Code
	Automobile Dealership	5006
	Arterial Commercial	5007
	Service Station	5008
	Other Retail Trade and Strip Commercial	5009
	Office (High-Rise)	6001
	Office (Low-Rise)	6002
	Government Office/Civic Center	6003
	Cemetery	6101
	Religious Facility	6102
	Library	6103
	Post Office	6104
	Fire/Police Station	6105
	Mission	6108
	Other Public Services	6109
	UCSD/VA Hospital/Balboa Hospital	6501
	Hospital - General	6502
	Other Health Care	6509
	Tourist Attraction	7201
	Stadium/Arena	7202
	Racetrack	7203
	Golf Course Clubhouse	7205
	Convention Center	7206
	Marina	7207
	Casino	7209
	Residential Under Construction	9501
	Commercial Under Construction	9502
	Office Under Construction	9504
	Olympic Training Center	7208
	Other Recreation - High	7210
	Residential Recreation	7607
Educational	SDSU/CSU San Marcos/UCSD	6801
	Other University or College	6802
	Junior College	6803
	Senior High School	6804

Land Use Category	SanGIS Land Use Type	SanGIS Land Use Code
	Junior High School or Middle School	6805
	Elementary School	6806
	School District Office	6807
	Other School	6809
	School Under Construction	9505
Industrial	Heavy Industry	2001
	Industrial Park	2101
	Light Industry - General	2103
	Warehousing	2104
	Public Storage	2105
	Extractive Industry	2201
	Junkyard/Dump/Landfill	2301
	Commercial Airport	4101
	Military Airport	4102
	General Aviation Airport	4103
	Airstrip	4104
	Communications and Utilities	4113
	Marine Terminal	4120
	Industrial Under Construction	9503
	Freeway	4112
Mixed Use	Mixed Use	9700
Residential: Multi-Family	Multi-Family Residential	1200
	Single Room Occupancy Units (SRO's)	1280
	Multi-Family Residential Without Units	1290
	Mobile Home Park	1300
	Dormitory	1402
	Military Barracks	1403
	Monastery	1404
	Other Group Quarters Facility	1409
Residential: Rural	Spaced Rural Residential	1000
Residential: Single-Family	Single Family Residential	1100
	Single Family Detached	1110

Land Use Category	SanGIS Land Use Type	SanGIS Land Use Code
	Single Family Multiple-Units	1120
	Single Family Residential Without Units	1190
Open Space	Military Use	6701
	Military Training	6702
	Weapons Facility	6703
	Other Recreation - Low	7211
	Park - Active	7601
	Open Space Park or Preserve	7603
	Beach - Active	7604
	Beach - Passive	7605
	Landscape Open Space	7606
	Undevelopable Natural Area	7609
	Vacant and Undeveloped Land	9101
Transportation	Freeway Under Construction	9507
	Railroad Right of Way	4117
	Road Right of Way	4118
	Other Transportation	4119
	Road Under Construction	9506
Water[1]	Water	9200
	Bay or Lagoon	9201
	Lake/Reservoir/Large Pond	9202

Source: San Diego County MS4 Copermittees, 2016
Notes:
1) Water land uses excluded from MS4 outfall assessments. Water land uses assumed to be a sink for runoff storage.

The Agriculture and Open Space land use categories were further subdivided based on hydrologic soil group (i.e., Soil Group A, B, C, or D). Any Agriculture or Open Space areas with an undefined soil group were classified as belonging to Soil Group D.

Federal, State, and Indian Reservation land uses were excluded from the load calculations. MS4 Permit Copermittees have limited jurisdiction over these land uses. Categorization of these land uses was based on the SanGIS LAND_OWNERSHIP_SG shape file. The following categories were excluded:

- Bureau of Land Management
- California Department of Fish and Game
- Indian Reservations

- Military Reservations
- Other Federal
- State
- State (Caltrans)
- State Parks
- U.S. Fish & Wildlife Service
- U.S. Forest Service

2.2 Expected Runoff Coefficients

Each land use category was assigned an expected runoff coefficient (Runoff "C") based on values listed in the San Diego County Hydrology Manual (County of San Diego, 2003). The Runoff "C" is a unitless coefficient representing fraction of rainfall that runs off a given land area rather than infiltrating. A larger Runoff "C" (approaching one) corresponds to a higher fraction of runoff, and typically corresponds to areas of low permeability (e.g., parking lots). A smaller Runoff "C" is often associated with undeveloped areas or other areas of high permeability.

Table 2-2 lists the expected runoff coefficients for each land use category (San Diego Regional Copermitees, 2015).

Table 2-2
Expected Runoff "C" Values by Land Use Category

Land Use Category	Runoff Coefficient
Agriculture[1]	0.2, 0.25, 0.3, OR 0.35
Commercial	0.82
Educational	0.58
Industrial	0.87
Mixed Use	0.66
Residential: Multi-Family	0.6
Residential: Rural	0.41
Residential: Single-Family	0.49
Open Space[1]	0.2, 0.25, 0.3, OR 0.35
Transportation	0.71

Notes:
1) Runoff coefficient varies by hydrologic soil group. Values presented are for soil groups A, B, C, and D, respectively.
Source: County of San Diego, 2003

2.3 Volumes and Loads of Storm Water Discharges

2.3.1 Land Use Storm Water Runoff Coefficient (D.4.b.(2)(b)(i)[a])

MS4 Permit Provision D.4.b.(2)(b)(i) requires calculation of the average storm water runoff coefficient (Runoff "C") for each land use type within the WMA. This calculation is based on the measured flow and rainfall values for each monitored outfall, along with the outfall drainage area characteristics.

The average Runoff "C" is calculated according to the following steps. The corresponding equation or equations for each step, as listed in Table 1-1, are provided in brackets.

1) Calculate the observed (actual) runoff coefficient for each monitored outfall. The observed runoff coefficient for each outfall ($C_{Outfall_Actual}$) is calculated based on the observed runoff volume, size of the outfall drainage area, and depth of observed rainfall for the monitored storm. Rainfall data for each event is obtained from the County of San Diego Automatic Local Evaluation in Real Time (ALERT) System rain gauge closest to each monitoring station. [Equation A.1]. This is repeated for each monitored outfall in the WMA. For those outfalls monitored during more than one monitoring year (e.g., during 2014-2015 and 2015-2016), the observed runoff coefficient is averaged across all years of monitoring. This new value ($C_{Outfall_His)}$ is used in place of $C_{Outfall_Actual}$ in all subsequent calculations [Equation A.1.a].

2) Calculate the expected Runoff "C" for each monitored outfall. The expected Runoff "C" ($C_{Outfall_HM}$) for each outfall is calculated based on the areas of each land use category in the outfall drainage area and the expected Runoff "C" for each land use category from the San Diego County Hydrology Manual, as listed in Table 1-2. [Equation A.2]. This is repeated for each monitored outfall in the WMA.

3) Calculate a Runoff "C" correction factor ($CF_{Outfall_C}$) for each monitored outfall. The Runoff "C" Correction Factor is calculated by dividing the observed runoff coefficient ($C_{Outfall_Actual}$) by the expected runoff coefficient ($C_{Outfall_HM}$) [Equation A.3]. This is repeated for each monitored outfall in the WMA.

4) Calculate a land use Runoff "C" for each land use represented in the drainage area of each monitored outfall. A unique Runoff "C" ($C_{Outfall_LU}$) is calculated for each land use category represented in each outfall drainage area [Equation A.4]. This is repeated for each land use category in each monitored outfall drainage area.

5) Calculate a WMA Runoff "C" for each land use category in the WMA. The WMA Runoff "C" (C_{WMA_LU}) is calculated as the area-weighted average of the outfall land use Runoff "C" values calculated in Step 4. In order to improve the accuracy of the resulting WMA Runoff "C" over time, results from each year of MS4 Outfall Monitoring are incorporated into the average [Equation A.5]. This equation is repeated for each land uses category in the WMA.

2.3.2 Monitored MS4 Outfall Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[b])

MS4 Permit Provision D.4.b.(2)(b)(i)[b] requires calculation of the storm water volume and pollutant loads discharged from each of the Responsible Agency's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area, for each storm event with measurable rainfall greater than 0.1 inch. This calculation is based on the actual Runoff "C" values, the size of each outfall drainage area, ALERT rain data for the rain gauge closest to each outfall, and the observed chemistry data.

The wet season storm water volume and pollutant loads are calculated according to the following steps. The corresponding equation or equations for each step, as listed in Table 1-1, are provided in brackets.

1) <u>Calculate the annual storm water volume from each outfall.</u> The storm water volume ($V_{Outfall_Annual}$) is calculated using the actual runoff coefficient for each outfall ($C_{Outfall_Actual}$ from Equation A.1) and the area of each outfall, multiplied by the total rainfall for the wet season. Total rainfall is calculated as the sum of rainfall from qualifying wet season rain events, based on the closest ALERT system gauge for each outfall. A qualifying storm event is defined as a wet season storm event with measureable rainfall greater than 0.1 inch. [Equation B.1]. This equation is repeated for each monitored outfall.

2) <u>Calculate annual pollutant loads for each pollutant at each monitored outfall.</u> The monitored event analytical result for each pollutant at each outfall is used to calculate an annual pollutant load ($PollutantLoad_{Outfall}$). [Equation B.2]. This equation is repeated for each pollutant at each monitored outfall.

2.3.3 Jurisdictional Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[c])

MS4 Permit Provision D.4.b.(2)(b)(i)[c] requires calculation of the total flow volume and pollutant loadings discharged from each Responsible Agency's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls. The WMA Runoff "C" values, calculated as described in Section 3.1, will be used in combination with land use area data and ALERT rainfall data to calculate a total flow volume for each jurisdiction. The annual volumes will be applied to pollutant event mean concentrations (EMCs) to calculate annual jurisdictional pollutant loadings.

The jurisdictional flow volume and pollutant loads are calculated according to the following steps. The corresponding equation or equations for each step, as listed in Table 1-1, are provided in brackets.

1) Calculate the wet season flow volume from each land use area in each jurisdiction in the WMA. An annual flow volume for each land use type in each jurisdiction ($V_{WMA_Jurisd_LU}$) is calculated using the land use Runoff "C" (C_{WMA_LU}), calculated as described in Section 3.1, the area of each land use type in each jurisdiction within the WMA, and the total qualifying wet season rainfall. The total qualifying wet season rainfall (sum of rainfall from events with rainfall totals exceeding >0.1inch) is calculated using a representative ALERT station from each WMA. If more than one ALERT station is present in a WMA, the station closest to the majority of monitoring locations will be used. [Equation C-1]. This equation is repeated for each land use type for each Responsible Agency.

2) Calculate the wet season flow volume from each jurisdiction in the WMA. The wet season flow volume from each land use in a jurisdiction will be summed to generate the wet season jurisdictional flow volume (V_{WMA_Juris}). [Equation C.2]. This equation is repeated for each Responsible Agency in the WMA.

3) Define the event mean concentration (EMC) for each monitored event. The event mean concentration (EMC) for each constituent ($EMC_{Outfall_Actual}$) for each monitored outfall is defined as the measured constituent concentration for the outfall [Equation C.3].

4) Calculate the expected (calculated) EMC for each pollutant at each monitored outfall. An expected (calculated) EMC ($EMC_{Outfall_Calculated}$) for each constituent at a monitored outfall will be calculated as the area-weighted average of literature EMC values for each land use type represented by the monitored outfall drainage area. The literature EMC values, based on literature EMCs provided in the San Diego River WMA Water Quality Improvement Plan (LWA & Amec Foster Wheeler, 2016) are provided in Table 2-3. [Equation C.4]. This equation is repeated for each pollutant at each monitored outfall.

5) Calculate an EMC correction factor for each pollutant measured from each monitored outfall. A ratio, or correction factor for the Estimated Mean Concentration ($CF_{Outfall_EMC}$), is calculated using the actual EMC and the expected (calculated) EMC for each constituent at each outfall [Equation C.5]. This equation is repeated for each pollutant at each monitored outfall.

6) Calculate a land use EMC for each land use represented in the drainage area of each monitored outfall. The EMC correction factor is multiplied by the expected EMC (Table 2-3) for each constituent at each monitored outfall [Equation C.6], resulting in a corrected EMC for each constituent for each outfall ($EMC_{Outfall_LU}$). This equation is repeated for each pollutant and each land use at each outfall.

7) Calculate a WMA EMC for each pollutant and each land use category. An EMC for each monitored constituent in the WMA by each land use type (EMC_{WMA_LU}) is then calculated as the area-weighted average of the outfall land use EMC [Equation C.7]. This equation is repeated for each pollutant and each land use in the WMA.

8) Calculate the historical average WMA EMC for each pollutant and each land use category. Each EMC calculated using Equation C.7 is averaged with the historical EMCs for that constituent and land use, to derive the historical average WMA EMC ($EMC_{WMA_LU_HIS}$) [Equation C.8]. This equation is repeated for each pollutant and each land use in the WMA.

9) Calculate the annual pollutant load for each pollutant from each Responsible Agency in the WMA. Wet season jurisdictional pollutant loads (Pollutant $Load_{WMA_Juris}$) are calculated for each constituent by summing the load from each land use in the jurisdiction [Equation C.9]. This equation is repeated for each pollutant and each Responsible Agency.

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Table 2-3
Literature EMCs by Land Use Type

Constituent	Agriculture (Row Crop)[6]	Orchard[6]	Commercial[7]	Educational	Industrial	Vacant/ Open Space	Residential: Multi-Family[7]	Residential: Rural	Residential: Single Family	Transportation
Dissolved Oxygen	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Color[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Dissolved Color[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Specific Conductivity[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Sulfates[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Temperature	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Hardness[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Turbidity[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Enterococcus[1]	60300	1344	51600	2148	26703	484	11800	6684	35557	1680
Fecal Coliform	60300	1344	51600	2148	26703	484	11800	6684	35557	1680
Total Coliform[1]	60300	1344	51600	2148	26703	484	11800	6684	35557	1680
Aluminum (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Aluminum (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Beryllium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Beryllium (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Cadmium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Cadmium(Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Copper (Dissolved)	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Copper (Total)	100.1	100.1	54.84	12.02	53.54	10.6	12.1	8.36	25.96	52.2
Iron (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Iron (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Lead (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Lead (Total)	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Manganese (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Manganese (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Mercury (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Mercury (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Molybdenum (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Molybdenum (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Nickel (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Nickel (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Selenium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Selenium (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Silver (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Silver (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Thallium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Thallium (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Titanium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Titanium (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Zinc (Dissolved)	40.1	40.1	224.4	73.13	214.58	28.1	77.5	14.99	50.02	222
Zinc (Total)	274.8	274.8	483.7	174.1	428.39	26.3	125.1	39.19	153.29	292.9
Ammonia	1.65	0.04	1.21	0.4	0.6	0.11	0.5	0.11	0.49	0.37

Constituent	Agriculture (Row Crop)[6]	Orchard[6]	Commercial[7]	Educational	Industrial	Vacant/ Open Space	Residential: Multi-Family[7]	Residential: Rural	Residential: Single Family	Transportation
Nitrate	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Nitrite[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Total Orthophosphate[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
TKN	7.32	2.31	3.44	1.71	2.87	0.96	1.8	2.65	2.51	1.84
Total Nitrogen2	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Dissolved Phosphorus	1.41	0.13	0.29	0.26	0.26	0.09	0.2	0.12	0.45	0.56
Total Phosphorus	3.34	0.36	0.32	0.46	0.45	0.12	0.23	1.59	0.49	0.68
TDS[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
TSS	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
SSC[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Trash	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DDT[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
PCP[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Chlordane[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Diazanon[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
MBAS[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
PAHs[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
PCBs[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Organophosphorus Pesticides[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Pesticides/PCBs[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Pyrethroid Pesticides[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Nitrogen Pesticides[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
di(2-ethylhexyl) adipate[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
di(2-ethylhexyl phthalate[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
hexachlorobenzene[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
hexachlorocyclopentadiene (HEX)[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8

Notes:
NA=Not applicable. EMCs not provided because annual load not calculated for these constituents.
1. Distribution of constituent EMCs based on values listed for fecal coliform
2. Distribution of constituent EMCs based on values listed for nitrate as N
3. Distribution of constituent EMCs based on values listed for total lead
4. Distribution of constituent EMCs based on values listed for dissolved copper.
5. Distribution of constituent EMCs based on values listed for total suspended solids.
6. Values for Agricultural land use based on average of Agriculture (Row Crop) and Orchard values.
7. Values for Mixed Use land use based on average of Commercial and Residential: Multi-Family values.

2.3.4 Land Use Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[d])

MS4 Permit Provision D.4.b.(2)(b)(i)[d] requires calculating the percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea (HSA) with a major MS4 outfall to receiving waters, or within each major MS4 outfall to receiving waters, in the Responsible Agency's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch. The methods used to perform these calculations are similar to those used to calculate the WMA jurisdictional storm water volumes and pollutant loads described in Section 2.4.3, except HSAs without a major outfall are excluded.

The HSA flow volume and pollutant loads are calculated according to the following steps. The corresponding equation or equations for each step, as listed in Table 1-1, are provided in brackets.

1) <u>Calculate the wet season flow volume from each land use area in each HSA with a major outfall in the WMA.</u> An annual flow volume for each land use type in each HSA ($V_{HSA_Juris_LU}$) is calculated using the land use Runoff "C" (C_{WMA_LU}), calculated as described in Section 2.4.1, the area of each land use type in each HSA in each jurisdiction within the WMA, and the total qualifying wet season rainfall. [Equation D.1]. This equation is repeated for each land use type in each HSA for each jurisdiction in the WMA.
2) <u>Calculate the wet season flow volume from each jurisdiction in each HSA with a major outfall in the WMA.</u> The wet season flow volume from each land use in the HSA (by jurisdiction) is added to calculate the total storm water volume by HSA (V_{HSA_Juris}) for the jurisdiction [Equation D.2]. This equation is repeated for each Responsible Agency.
3) <u>Calculate the percent of storm water volume discharged from each HSA, by jurisdiction.</u> A percent volume for each jurisdiction ($\%V_{HSA_Juris}$) can be calculated by dividing the wet season flow volume from the HSA by the total jurisdictional runoff volume in the WMA [Equation D.3]. This equation is repeated for each Responsible Agency.
4) <u>Calculate the annual pollutant load for each pollutant from each Responsible Agency in the WMA, by HSA.</u> Pollutant loads by HSA by jurisdiction (Pollutant $Load_{HSA_Juris}$) are calculated for each constituent by summing the load from each land use area in the HSA [Equation D.4]. This equation is repeated for each pollutant, each Responsible Agency, and each HSA in which that Responsible Agency has a major outfall.
5) <u>Calculate the percent pollutant load contribution for each pollutant from each HSA.</u> The percent contribution of pollutant load for each jurisdiction (%Pollutant $Load_{HSA_Juris}$) can be calculated by dividing the HSA pollutant load for each jurisdiction by the WMA pollutant load for that jurisdiction [Equation D.5]. This equation is repeated for each pollutant, each Responsible Agency, and each HSA in which that Responsible Agency has a major outfall.

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3 Storm Water Action Level Comparison

Per MS4 Permit Provision D.4.b.(2)(c), Responsible Agencies must compare pollutant concentrations from monitored wet weather outfalls to applicable Storm Water Action Levels (SALs). The Responsible Agencies will include this comparison in each Water Quality Improvement Plan Annual Report. The SALs listed in Provision C.2 of the MS4 Permit are provided in Table 3-1. Additional SALs may apply, on a WMA-specific basis, for pollutants that cause or contribute to a receiving water condition associated with the highest priority water quality condition. These SALs will be provided in the applicable Water Quality Improvement Plan Annual Report.

Table 3-1
Storm Water Action Levels (SALs) for Discharges from MS4s to Receiving Waters

Parameter	Units	Action Level
Turbidity	NTU	126
Nitrate & Nitrite (Total)	mg/L	2.6
Phosphorus (Total P)	mg/L	1.46
Cadmium (Total Cd)[1]	µg/L	3.0
Copper (Total Cu)[1]	µg/L	127
Lead (Total Pb)[1]	µg/L	250
Zinc (Total Zn)[1]	µg/L	976

Notes:
NTU= Nephelometric Turbidity Units; mg/L = milligrams per liter; µg/L = micrograms per liter
1) If a total metals concentration exceeds the listed action level, the concentration must be compared to the California Toxics Rule criteria and the USEPA 1-hour maximum concentration for the detected level of receiving water hardness associated with that sample. If the sample does not exceed the USEPA 1-hr maximum concentration criterion for the measured level of hardness, the sample results will not be considered above the SAL.

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4 Summary of Changes from Transitional Methodology

The methodology presented is largely identical to the transitional methodology outlined in the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego Regional Copermitees, 2015). Differences from the transitional work plan include the following:

- Land use categorization, presented in Table 2-1, is based on the revised categorization presented in the San Diego River Transitional Monitoring Annual Report.
- For the purposes of calculating land use areas, agricultural and open space land uses of an undefined soil group are classified as soil group D.
- Literature EMCs are based on values listed in the San Diego River WMA Water Quality Improvement Plan (LWA & Amec Foster Wheeler, 2016). Literature EMCs for constituents not described in that document are estimated as described in Table 2-3.
- For outfalls monitored during more than one monitoring season, the outfall runoff coefficient (Runoff “C”) is averaged based on all years of monitoring.
- The WMA land use Runoff “C” is an area-weighted average across all years of monitoring.
- The land use EMC values are based on an average of the land use EMC values for all years of monitoring.
- The assessment excludes State, Federal, and Indian Reservation lands from the WMA and HSA load calculations. The transitional monitoring and assessment program excluded Federal and Indian Reservation lands only. These land uses are often outside the jurisdiction of the Copermittees.

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5 References

County of San Diego. 2003. San Diego County Hydrology Manual. Prepared by the County of San Diego Department of Public Works Flood Control Section. June 2003.

Larry Walker and Associates (LWA) & Amec Foster Wheeler. 2016. San Diego River Watershed Management Area Water Quality Improvement Plan. January 2016.

San Diego County MS4 Copermittes. 2016. Transitional Monitoring and Assessment Program Report for the San Diego River WMA (2014-2015) Prepared by Weston Solutions. January 2016.

San Diego County Regional Copermittees. 2015. 2013-2014 and 2014-2015 Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan. Prepared by Weston Solutions. January 2015.

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Attachment F.4 – Wet Weather HA Storm Water Volumes and Pollutant Loads

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Table F.4-1
Los Peñasquitos WMA Wet Season Flow Volume and Pollutant Loads: City of Del Mar HA 906.1

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	0	0	16,918	0	6,805	0	22,272	12,232	0	58,353	79,936	19,660	559,048	546,625	1,321,848
% Contribution	%	0%	0%	0%	0%	1%	0%	1%	0%	2%	1%	0%	4%	6%	1%	42%	41%	100%
Indicator Bacteria																		
Enterococcus	MPN	0	0	0	0	2.73E+13	0	7.21E+11	0	5.45E+09	2.05E+09	0	2.39E+11	0	0	2.61E+14	4.67E+12	2.94E+14
Fecal Coliform	MPN	0	0	0	0	1.93E+13	0	2.49E+11	0	4.81E+08	8.20E+08	0	1.43E+12	0	0	7.66E+14	1.70E+13	8.04E+14
Total Coliform	MPN	0	0	0	0	3.82E+13	0	4.44E+12	0	1.74E+10	4.61E+09	0	1.81E+12	0	0	1.05E+15	2.35E+13	1.12E+15
Total Metals																		
Cadmium	lb	0	0	0	0	1.04E-04	0	6.01E-05	0	6.39E-07	2.21E-07	0	1.30E-05	0	0	0.0010	2.97E-04	0.0015
Copper	lb	0	0	0	0	0.0299	0	0.0026	0	9.12E-04	2.14E-04	0	0.0061	0	0	0.2191	0.1745	0.4333
Lead	lb	0	0	0	0	0.0020	0	1.94E-04	0	3.04E-05	7.85E-06	0	3.75E-04	0	0	0.0242	0.0066	0.0334
Selenium	lb	0	0	0	0	3.49E-04	0	1.19E-04	0	2.56E-06	9.65E-07	0	1.73E-04	0	0	0.0073	0.0024	0.0104
Zinc	lb	0	0	0	0	0.2427	0	0.0145	0	3.04E-04	1.47E-04	0	0.0096	0	0	0.9183	0.6577	1.843
Dissolved Metals																		
Selenium	lb	0	0	0	0	2.95E-04	0	9.82E-05	0	4.54E-06	9.45E-08	0	8.82E-06	0	0	0.0043	0.0054	0.0101
Nutrients																		
Ammonia	lb	0	0	0	0	0.9870	0	0.0387	0	0.0035	0.0014	0	0.1038	0	0	5.541	1.594	8.269
Nitrate as N	lb	0	0	0	0	0.5633	0	0.2105	0	0.0509	0.0194	0	1.007	0	0	20.47	3.869	26.19
Nitrite as N	lb	0	0	0	0	0.0281	0	0.0155	0	0.0013	6.34E-04	0	0.0477	0	0	1.014	0.2015	1.309
TKN	lb	0	0	0	0	4.163	0	1.400	0	0.0271	0.0112	0	0.7072	0	0	29.30	9.421	45.03
Total Nitrogen	lb	0	0	0	0	3.250	0	4.657	0	0.1016	0.0386	0	2.306	0	0	50.54	15.89	76.78
Total Phosphorus as P	lb	0	0	0	0	0.1967	0	0.0790	0	0.0038	0.0012	0	0.0619	0	0	3.658	2.067	6.067
Solid Parameters																		
TSS	lb	0	0	0	0	13.1	0	5.336	0	4.228	0.8656	0	28.35	0	0	255.4	66.12	373.4
TDS	lb	0	0	0	0	109.5	0	78.58	0	5.032	2.282	0	211.4	0	0	3868	809.4	5084

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation; TSS = total suspended solids

Table F.4-2
Los Peñasquitos WMA Wet Season Flow Volume and Percent Pollutant Loads: City of Del Mar HA 906.1

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	0	0	16,918	0	6,805	0	22,272	12,232	0	58,353	79,936	19,660	559,048	546,625	1,321,848
% Contribution	%	0%	0%	0%	0%	1%	0%	1%	0%	2%	1%	0%	4%	6%	1%	42%	41%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%	4%	1%	86%	5%	100%
Fecal Coliform	%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	5%	2%	88%	5%	100%
Total Coliform	%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	5%	2%	87%	5%	100%
Total Metals																		
Cadmium	%	0%	0%	0%	0%	2%	0%	3%	0%	0%	0%	0%	1%	2%	3%	48%	39%	100%
Copper	%	0%	0%	0%	0%	1%	0%	0%	0%	2%	0%	0%	2%	2%	0%	31%	62%	100%
Lead	%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	2%	3%	4%	53%	36%	100%
Selenium	%	0%	0%	0%	0%	2%	0%	3%	0%	0%	0%	0%	1%	2%	2%	49%	39%	100%
Zinc	%	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	1%	4%	0%	33%	59%	100%
Dissolved Metals																		
Selenium	%	0%	0%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%	2%	0%	22%	72%	100%
Nutrients																		
Ammonia	%	0%	0%	0%	0%	3%	0%	0%	0%	1%	0%	0%	1%	5%	0%	51%	38%	100%
Nitrate as N	%	0%	0%	0%	0%	1%	0%	1%	0%	2%	1%	0%	4%	8%	1%	56%	27%	100%
Nitrite as N	%	0%	0%	0%	0%	1%	0%	1%	0%	1%	1%	0%	4%	5%	2%	56%	30%	100%
TKN	%	0%	0%	0%	0%	4%	0%	5%	0%	1%	0%	0%	2%	3%	1%	41%	44%	100%
Total Nitrogen	%	0%	0%	0%	0%	1%	0%	4%	0%	1%	1%	0%	3%	5%	1%	47%	36%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%	2%	3%	37%	55%	100%
Solid Parameters																		
TSS	%	0%	0%	0%	0%	1%	0%	1%	0%	11%	1%	0%	7%	1%	21%	33%	23%	100%
TDS	%	0%	0%	0%	0%	1%	0%	2%	0%	1%	1%	0%	3%	6%	1%	52%	32%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table F.4-3
Los Peñasquitos WMA Wet Season Flow Volume and Pollutant Loads: City of Poway HA 906.2

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	207,875	468,104	484,248	7,942,478	1,995,982	18,041,952	0	0	1,670,329	3,329,163	22,537,842	2,389,260	10,272,036	24,226,155	14,835,513	108,400,940
% Contribution	%	0%	0%	0%	0%	7%	2%	17%	0%	0%	2%	3%	21%	2%	9%	22%	14%	100%
Indicator Bacteria																		
Enterococcus	MPN	0	3.79E+12	1.87E+13	1.15E+13	1.99E+16	1.76E+14	5.03E+15	0	0	2.01E+13	1.06E+14	4.85E+14	1.46E+15	4.55E+15	4.07E+16	1.08E+15	7.35E+16
Fecal Coliform	MPN	0	1.07E+12	7.23E+12	6.26E+13	1.40E+16	5.39E+13	1.74E+15	0	0	8.06E+12	4.74E+13	2.91E+15	4.36E+15	3.58E+16	1.19E+17	3.94E+15	1.82E+17
Total Coliform	MPN	0	6.87E+12	1.41E+13	8.13E+13	2.77E+16	4.61E+14	3.10E+16	0	0	4.53E+13	9.07E+13	3.67E+15	5.05E+15	3.75E+16	1.64E+17	5.45E+15	2.75E+17
Total Metals																		
Cadmium	lb	0	2.70E-04	5.96E-04	5.78E-04	0.0753	0.0064	0.4189	0	0	0.0022	0.0052	0.0265	0.0061	0.1010	0.1591	0.0689	0.8710
Copper	lb	0	0.3274	0.2852	0.2630	21.71	0.9273	17.79	0	0	2.100	1.879	12.46	1.502	5.084	34.15	40.50	139.0
Lead	lb	0	0.0088	0.0152	0.0131	1.469	0.1430	1.350	0	0	0.0772	0.1254	0.7627	0.1625	2.896	3.775	1.527	12.33
Selenium	lb	0	0.0012	0.0026	0.0077	0.2540	0.1046	0.8294	0	0	0.0095	0.0173	0.3519	0.0228	0.3558	1.144	0.5639	3.665
Zinc	lb	0	0.1879	0.5820	0.3548	176.4	11.36	101.3	0	0	1.440	4.108	19.49	14.88	16.35	143.1	152.6	642.2
Dissolved Metals																		
Selenium	lb	0	1.58E-04	4.06E-04	0.0010	0.2148	0.0503	0.6846	0	0	9.28E-04	0.0022	0.0179	0.0100	0.0535	0.6673	1.256	2.959
Nutrients																		
Ammonia	lb	0	2.318	4.678	4.708	717.6	46.92	269.9	0	0	13.54	30.41	210.8	93.10	119.5	863.6	369.9	2747
Nitrate as N	lb	0	29.53	55.29	43.28	409.6	103.9	1467	0	0	191.0	365.2	2045	316.6	1227	3191	897.6	10342
Nitrite as N	lb	0	0.9274	2.487	2.007	20.40	4.248	107.8	0	0	6.226	15.88	96.82	13.79	60.91	158.1	46.75	536.4
TKN	lb	0	16.33	40.22	27.88	3027	189.9	9758	0	0	109.8	273.7	1437	367.2	2246	4567	2186	24245
Total Nitrogen	lb	0	47.26	104.0	102.3	2363	235.1	32460	0	0	379.2	690.0	4685	615.7	2091	7877	3687	55337
Total Phosphorus as P	lb	0	1.477	2.490	2.355	143.0	37.36	550.4	0	0	11.71	18.99	125.7	29.31	794.8	570.1	479.6	2767
Solid Parameters																		
TSS	lb	0	1062	821.2	903.1	9513	2127	37193	0	0	8506	7873	57597	1403	265116	39802	15341	447256
TDS	lb	0	3012	7546	9341	79642	25770	547728	0	0	22422	54402	429412	51437	160582	602896	187794	2181985

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation; TSS = total suspended solids

Table F.4-4
Los Peñasquitos WMA Wet Season Flow Volume and Percent Pollutant Loads: City of Poway HA 906.2

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	207,875	468,104	484,248	7,942,478	1,995,982	18,041,952	0	0	1,670,329	3,329,163	22,537,842	2,389,260	10,272,036	24,226,155	14,835,513	108,400,940
% Contribution	%	0%	0%	0%	0%	7%	2%	17%	0%	0%	2%	3%	21%	2%	9%	22%	14%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	14%	0%	37%	0%	0%	0%	0%	1%	1%	7%	39%	1%	100%
Fecal Coliform	%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	2%	3%	21%	67%	2%	100%
Total Coliform	%	0%	0%	0%	0%	6%	0%	14%	0%	0%	0%	0%	1%	2%	17%	57%	2%	100%
Total Metals																		
Cadmium	%	0%	0%	0%	0%	7%	1%	58%	0%	0%	0%	0%	3%	0%	9%	14%	7%	100%
Copper	%	0%	0%	0%	0%	12%	1%	21%	0%	0%	1%	1%	10%	1%	3%	23%	28%	100%
Lead	%	0%	0%	0%	0%	8%	1%	10%	0%	0%	0%	1%	8%	1%	27%	30%	13%	100%
Selenium	%	0%	0%	0%	0%	8%	1%	59%	0%	0%	0%	0%	3%	0%	7%	14%	7%	100%
Zinc	%	0%	0%	0%	0%	20%	2%	24%	0%	0%	0%	1%	3%	2%	2%	21%	24%	100%
Dissolved Metals																		
Selenium	%	0%	0%	0%	0%	8%	1%	60%	0%	0%	0%	0%	0%	1%	1%	10%	20%	100%
Nutrients																		
Ammonia	%	0%	0%	0%	0%	20%	1%	5%	0%	0%	0%	1%	9%	3%	4%	39%	18%	100%
Nitrate as N	%	0%	0%	0%	0%	4%	1%	28%	0%	0%	2%	3%	16%	3%	8%	27%	8%	100%
Nitrite as N	%	0%	0%	0%	0%	4%	0%	32%	0%	0%	1%	2%	16%	2%	9%	26%	9%	100%
TKN	%	0%	0%	0%	0%	9%	0%	67%	0%	0%	0%	0%	3%	0%	3%	10%	6%	100%
Total Nitrogen	%	0%	0%	0%	0%	4%	0%	61%	0%	0%	1%	1%	8%	1%	4%	13%	6%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	5%	1%	28%	0%	0%	0%	1%	4%	1%	21%	20%	19%	100%
Solid Parameters																		
TSS	%	0%	0%	0%	0%	3%	0%	14%	0%	0%	1%	1%	15%	0%	55%	7%	3%	100%
TDS	%	0%	0%	0%	0%	4%	1%	50%	0%	0%	1%	2%	10%	1%	4%	19%	7%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation; TSS = total suspended solids

Table F.4-5
Los Peñasquitos WMA Wet Season Flow Volume and Pollutant Loads: City of San Diego HA 906.1

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	3,887	324,578	9,922	988,432	26,029,292	13,894,446	94,379,768	44,939	2,097,099	2,229,546	539,095	51,384,478	9,927,521	379,152	56,172,805	51,921,581	310,326,541
% Contribution	%	0%	0%	0%	0%	8%	4%	30%	0%	1%	1%	0%	17%	3%	0%	18%	17%	100%
Indicator Bacteria																		
Enterococcus	MPN	9.56E+10	5.92E+12	3.97E+11	1.80E+13	6.39E+16	1.07E+15	2.04E+16	5.05E+12	1.97E+13	2.10E+13	1.50E+13	1.01E+15	5.94E+15	1.68E+14	9.31E+16	3.60E+15	1.89E+17
Fecal Coliform	MPN	1.49E+10	1.68E+12	1.53E+11	9.80E+13	4.50E+16	3.28E+14	7.06E+15	5.70E+13	1.74E+12	8.42E+12	6.67E+12	6.05E+15	1.77E+16	1.32E+15	2.73E+17	1.31E+16	3.63E+17
Total Coliform	MPN	1.60E+11	1.07E+13	2.99E+11	1.27E+14	8.92E+16	2.81E+15	1.26E+17	7.21E+13	6.30E+13	4.73E+13	1.28E+13	7.62E+15	2.05E+16	1.38E+15	3.76E+17	1.81E+16	6.41E+17
Total Metals																		
Cadmium	lb	5.15E-06	4.22E-04	1.26E-05	9.05E-04	0.2419	0.0391	1.700	8.74E-05	0.0023	0.0023	7.31E-04	0.0550	0.0246	0.0037	0.3636	0.2290	2.664
Copper	lb	0.0076	0.5111	0.0060	0.4119	69.78	5.648	72.21	0.0176	3.299	2.194	0.2648	25.88	6.100	0.1877	78.04	134.5	399.1
Lead	lb	2.45E-04	0.0137	3.22E-04	0.0205	4.722	0.8712	5.479	0.0015	0.1101	0.0806	0.0177	1.585	0.6599	0.1069	8.627	5.073	27.37
Selenium	lb	2.07E-05	0.0018	5.54E-05	0.0120	0.8163	0.6373	3.366	2.70E-04	0.0093	0.0099	0.0024	0.7311	0.0927	0.0131	2.615	1.873	10.18
Zinc	lb	0.0035	0.2933	0.0123	0.5555	567.0	69.20	411.0	0.1311	1.100	1.504	0.5788	40.49	60.42	0.6036	327.1	506.9	1987
Dissolved Metals																		
Selenium	lb	2.47E-06	2.46E-04	8.62E-06	0.0016	0.6904	0.3061	2.779	2.39E-04	0.0164	0.0010	3.10E-04	0.0372	0.0405	0.0020	1.525	4.170	9.570
Nutrients																		
Ammonia	lb	0.0455	3.620	0.0992	7.373	2306	285.8	1095	0.3434	12.49	14.14	4.285	438.1	378.0	4.412	1973	1229	7752
Nitrate as N	lb	0.5275	46.11	1.172	67.77	1316	633.1	5955	1.198	184.2	199.6	51.45	4249	1285	45.28	7292	2982	24309
Nitrite as N	lb	0.0151	1.448	0.0527	3.144	65.57	25.87	437.7	0.0521	4.727	6.505	2.237	201.2	56.01	2.248	361.2	155.3	1323
TKN	lb	0.3121	25.50	0.8525	43.66	9727	1157	39608	4.030	98.11	114.7	38.56	2985	1491	82.92	10435	7260	73072
Total Nitrogen	lb	0.8195	73.80	2.205	160.1	7594	1432	131754	12.50	367.6	396.2	97.22	9733	2500	77.18	18001	12246	184447
Total Phosphorus as P	lb	0.0311	2.306	0.0528	3.688	459.5	227.5	2234	0.1652	13.63	12.24	2.675	261.2	119.0	29.34	1303	1593	6261
Solid Parameters																		
TSS	lb	31.18	1658	17.41	1414	30576	12956	150962	12.28	15290	8887	1109	119667	5694	9786	90951	50955	499966
TDS	lb	53.26	4703	160.0	14628	255968	156962	2223175	195.1	18198	23427	7665	892175	208828	5927	1377670	623764	5813499

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation; TSS = total suspended solids

Table F.4-6
Los Peñasquitos WMA Wet Season Flow Volume and Percent Pollutant Loads: City of San Diego HA 906.1

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	3,887	324,578	9,922	988,432	26,029,292	13,894,446	94,379,768	44,939	2,097,099	2,229,546	539,095	51,384,478	9,927,521	379,152	56,172,805	51,921,581	310,326,541
% Contribution	%	0%	0%	0%	0%	8%	4%	30%	0%	1%	1%	0%	17%	3%	0%	18%	17%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	13%	0%	57%	0%	0%	0%	0%	1%	1%	0%	26%	1%	100%
Fecal Coliform	%	0%	0%	0%	0%	8%	0%	1%	0%	0%	0%	0%	2%	5%	0%	79%	4%	100%
Total Coliform	%	0%	0%	0%	0%	8%	0%	30%	0%	0%	0%	0%	1%	4%	0%	54%	3%	100%
Total Metals																		
Cadmium	%	0%	0%	0%	0%	6%	1%	76%	0%	0%	0%	0%	2%	0%	0%	8%	6%	100%
Copper	%	0%	0%	0%	0%	11%	1%	33%	0%	1%	0%	0%	7%	1%	0%	16%	30%	100%
Lead	%	0%	0%	0%	0%	12%	4%	22%	0%	1%	0%	0%	8%	2%	0%	31%	20%	100%
Selenium	%	0%	0%	0%	0%	6%	1%	76%	0%	0%	0%	0%	2%	0%	0%	8%	6%	100%
Zinc	%	0%	0%	0%	0%	19%	4%	36%	0%	0%	0%	0%	2%	2%	0%	14%	23%	100%
Dissolved Metals																		
Selenium	%	0%	0%	0%	0%	6%	1%	72%	0%	0%	0%	0%	0%	1%	0%	5%	15%	100%
Nutrients																		
Ammonia	%	0%	0%	0%	0%	23%	3%	8%	0%	0%	0%	0%	7%	4%	0%	31%	22%	100%
Nitrate as N	%	0%	0%	0%	0%	4%	2%	47%	0%	1%	1%	0%	12%	3%	0%	20%	9%	100%
Nitrite as N	%	0%	0%	0%	0%	4%	1%	52%	0%	0%	0%	0%	12%	2%	0%	19%	10%	100%
TKN	%	0%	0%	0%	0%	7%	1%	80%	0%	0%	0%	0%	2%	0%	0%	5%	5%	100%
Total Nitrogen	%	0%	0%	0%	0%	3%	1%	77%	0%	0%	0%	0%	4%	1%	0%	7%	5%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	5%	3%	49%	0%	0%	0%	0%	3%	1%	0%	16%	22%	100%
Solid Parameters																		
TSS	%	0%	0%	0%	0%	6%	2%	46%	0%	3%	1%	0%	22%	0%	1%	11%	7%	100%
TDS	%	0%	0%	0%	0%	4%	1%	69%	0%	0%	0%	0%	6%	2%	0%	11%	7%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation; TSS = total suspended solids

Table F.4-7
Los Peñasquitos WMA Wet Season Flow Volume and Pollutant Loads: City of San Diego HA 906.2

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	52,947	148,217	974,832	5,897,687	2,247,352	13,591,762	0	36,650	246,498	457,001	20,502,732	5,341,354	190,338	15,896,016	14,630,500	80,213,884
% Contribution	%	0%	0%	0%	1%	7%	3%	17%	0%	0%	0%	1%	26%	7%	0%	20%	18%	100%
Indicator Bacteria																		
Enterococcus	MPN	0	9.65E+11	5.94E+12	2.31E+13	1.31E+16	1.98E+14	1.24E+15	0	4.14E+11	2.97E+12	1.56E+13	4.03E+14	3.27E+15	8.43E+13	2.68E+16	1.07E+15	4.62E+16
Fecal Coliform	MPN	0	2.73E+11	2.29E+12	1.26E+14	9.25E+15	6.07E+13	4.30E+14	0	3.66E+10	1.19E+12	6.95E+12	2.42E+15	9.75E+15	6.63E+14	7.84E+16	3.88E+15	1.05E+17
Total Coliform	MPN	0	1.75E+12	4.46E+12	1.64E+14	1.83E+16	5.19E+14	7.66E+15	0	1.32E+12	6.69E+12	1.33E+13	3.04E+15	1.13E+16	6.95E+14	1.08E+17	5.37E+15	1.55E+17
Total Metals																		
Cadmium	lb	0	6.89E-05	1.89E-04	0.0012	0.0497	0.0072	0.1037	0	4.86E-05	3.21E-04	7.61E-04	0.0220	0.0135	0.0019	0.1045	0.0679	0.3730
Copper	lb	0	0.0834	0.0903	0.5295	14.33	1.044	4.404	0	0.0694	0.3102	0.2757	10.34	3.359	0.0942	22.43	39.92	97.28
Lead	lb	0	0.0022	0.0048	0.0264	0.9696	0.1610	0.3342	0	0.0023	0.0114	0.0184	0.6331	0.3634	0.0537	2.480	1.505	6.566
Selenium	lb	0	3.01E-04	8.27E-04	0.0155	0.1676	0.1178	0.2053	0	1.95E-04	0.0014	0.0025	0.2921	0.0511	0.0066	0.7516	0.5559	2.169
Zinc	lb	0	0.0478	0.1843	0.7141	116.4	12.79	25.07	0	0.0231	0.2127	0.6026	16.18	33.27	0.3030	94.00	150.4	450.3
Dissolved Metals																		
Selenium	lb	0	4.02E-05	1.29E-04	0.0021	0.1418	0.0566	0.1695	0	3.45E-04	1.37E-04	3.23E-04	0.0149	0.0223	0.0010	0.4383	1.238	2.085
Nutrients																		
Ammonia	lb	0	0.5905	1.481	9.478	473.6	52.83	66.81	0	0.2625	2.000	4.461	175.0	208.1	2.215	567.2	364.6	1929
Nitrate as N	lb	0	7.521	17.51	87.12	270.3	117.0	363.2	0	3.872	28.22	53.56	1697	707.7	22.73	2096	884.8	6357
Nitrite as N	lb	0	0.2362	0.7874	4.041	13.46	4.783	26.70	0	0.0994	0.9198	2.329	80.37	30.84	1.129	103.8	46.08	315.6
TKN	lb	0	4.159	12.73	56.12	1997	213.8	2416	0	2.063	16.21	40.15	1193	821.0	41.63	2999	2155	11967
Total Nitrogen	lb	0	12.04	32.94	205.8	1559	264.7	8036	0	7.728	56.03	101.2	3889	1376	38.74	5174	3634	24387
Total Phosphorus as P	lb	0	0.3761	0.7884	4.741	94.36	42.06	136.2	0	0.2865	1.731	2.785	104.3	65.53	14.73	374.4	472.7	1315
Solid Parameters																		
TSS	lb	0	270.5	260.0	1818	6278	2395	9207	0	321.5	1257	1155	47812	3135	4913	26142	15121	120085
TDS	lb	0	767.2	2389	18805	52557	29015	135594	0	382.6	3312	7980	356462	114990	2976	395975	185109	1306315

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation; TSS = total suspended solids

Table F.4-8
Los Peñasquitos WMA Wet Season Flow Volume and Percent Pollutant Loads: City of San Diego HA 906.2

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	52,947	148,217	974,832	5,897,687	2,247,352	13,591,762	0	36,650	246,498	457,001	20,502,732	5,341,354	190,338	15,896,016	14,630,500	80,213,884
% Contribution	%	0%	0%	0%	1%	7%	3%	17%	0%	0%	0%	1%	26%	7%	0%	20%	18%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	15%	0%	41%	0%	0%	0%	0%	1%	4%	0%	37%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	6%	0%	1%	0%	0%	0%	0%	3%	10%	1%	76%	4%	100%
Total Coliform	%	0%	0%	0%	0%	8%	0%	17%	0%	0%	0%	0%	2%	8%	1%	61%	3%	100%
Total Metals																		
Cadmium	%	0%	0%	0%	0%	8%	1%	63%	0%	0%	0%	0%	4%	1%	0%	13%	10%	100%
Copper	%	0%	0%	0%	1%	11%	1%	20%	0%	0%	0%	0%	11%	2%	0%	19%	35%	100%
Lead	%	0%	0%	0%	1%	10%	2%	13%	0%	0%	0%	0%	12%	4%	1%	34%	22%	100%
Selenium	%	0%	0%	0%	0%	8%	1%	62%	0%	0%	0%	0%	4%	1%	0%	13%	10%	100%
Zinc	%	0%	0%	0%	0%	19%	3%	23%	0%	0%	0%	0%	4%	5%	0%	17%	29%	100%
Dissolved Metals																		
Selenium	%	0%	0%	0%	0%	8%	1%	57%	0%	0%	0%	0%	0%	2%	0%	8%	24%	100%
Nutrients																		
Ammonia	%	0%	0%	0%	0%	19%	2%	4%	0%	0%	0%	0%	10%	8%	0%	32%	23%	100%
Nitrate as N	%	0%	0%	0%	1%	4%	1%	29%	0%	0%	0%	1%	20%	8%	0%	24%	11%	100%
Nitrite as N	%	0%	0%	0%	1%	4%	1%	33%	0%	0%	0%	0%	21%	5%	0%	23%	12%	100%
TKN	%	0%	0%	0%	0%	9%	1%	67%	0%	0%	0%	0%	4%	1%	0%	8%	9%	100%
Total Nitrogen	%	0%	0%	0%	0%	4%	1%	61%	0%	0%	0%	0%	10%	3%	0%	12%	8%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	6%	2%	33%	0%	0%	0%	0%	6%	3%	1%	21%	29%	100%
Solid Parameters																		
TSS	%	0%	0%	0%	2%	5%	1%	28%	0%	0%	0%	0%	36%	1%	3%	13%	9%	100%
TDS	%	0%	0%	0%	1%	4%	1%	51%	0%	0%	0%	0%	12%	4%	0%	16%	9%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation; TSS = total suspended solids

Attachment G – Sediment Special Study Report

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LOS PEÑASQUITOS WATERSHED MANAGEMENT AREA
SEDIMENT LOAD SPECIAL STUDY
FINAL MONITORING REPORT

Submitted to:
City of San Diego
Transportation & Storm Water Department
9370 Chesapeake Drive, Suite 100
San Diego, California 92123

Submitted by:
Amec Foster Wheeler, Inc.
San Diego, California

November 2016

IMPORTANT NOTICE

This report was prepared exclusively for the City of San Diego (City) by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Amec Foster Wheeler's services and based on (i) information available at the time of preparation; (ii) data supplied by outside sources; and (iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by the City only, subject to the terms and conditions of its contract with Amec Foster Wheeler. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

EXECUTIVE SUMMARY

Los Peñasquitos Lagoon (Lagoon) has been historically impacted by anthropogenic disturbances. These have caused excessive sedimentation leading to the gradual degradation and loss of estuarine habitat. As a result, the Lagoon was placed on the Clean Water Act Section 303(d) List of Water Quality Limited Segments for sedimentation and siltation. To address these water quality impairments, the San Diego Regional Water Quality Control Board (Regional Board) adopted Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate the Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon* (referred to as the Sediment TMDL) (Regional Board, 2012).

More recently, the Sediment TMDL has been adopted into Order Number R9-2013-0001, as Amended by Order No. R9-2015-0001*, NPDES No. CAS010266 National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region* (Regional Board, 2015) (referred to as the MS4 Permit).

Prior to adoption of the Sediment TMDL into the MS4 Permit, the City of San Diego (City) developed a special study to assess source areas of sediment within the subwatersheds of the Los Peñasquitos Watershed Management Area (WMA) (referred to as the Watershed Special Study). Phase I of the Watershed Special Study focused on the Carroll Canyon Creek subwatershed based on previous data identifying Carroll Canyon Creek as the largest contributor of suspended sediment load to the Lagoon. It also included aerial deposition monitoring to determine alternate inputs of sediment to the subwatershed. Phase I was conducted during Fiscal Year 2015 (FY15) (July 1 2014 – June 30, 2015) and is summarized in this report.

The MS4 Permit required development of a Water Quality Improvement Plan (WQIP) for each WMA. The MS4 permit required that WQIP Monitoring and Assessment program include a special study to address the highest priority water quality condition or conditions in that WMA. For the Los Peñasquitos WMA, the highest priority water quality condition is the impairment of the Estuarine and Biological beneficial uses in the Lagoon. During wet weather condition this impairment is caused by hydromodification and siltation/sedimentation. Phase I of the Watershed Special Study was enhanced by including the Carmel Valley Creek and Los Peñasquitos Creek subwatersheds and designated as the special study for the Los Peñasquitos WMA. The second year (Phase II) of the Watershed Special Study was conducted during Fiscal Year 2016 (FY16) (July 1 2015 – June 30, 2016).

Project Objectives. The Watershed Special Study looks to characterize upland sources of sediment that might be transported into the Lagoon. It was conducted concurrently with the Los Peñasquitos WMA Sediment TMDL Compliance Monitoring Program (TMDL Monitoring Program). The TMDL Monitoring Program includes monitoring at the base of the three subwatersheds and focused on assessing sediment load to the Lagoon. By monitoring both the upland portions of the subwatersheds (Watershed Special Study) and what was is being transported into the lagoon (TMDL Monitoring Program), the system can be assessed as a whole. Both monitoring programs were designed to provide data on suspended sediment concentration (SSC) during wet weather conditions, estimated sediment loads, and delivery potential within storm flows.

Monitoring Elements. Monitoring took place prior to and during the wet season

Pre-wet-season (prior to October 1, 2015) monitoring consisted of:

- Volumetric streambed sampling for particle-size distribution;
- Pebble counts;
- Cross-section surveys; and
- Photodocumentation.

Wet season (October 1, 2015 – April 30, 2016) monitoring consisted of:

- Pollutograph sampling for SSC;
- Bedload sampling for particle-size distribution;
- Post-storm pebble counts and photodocumentation;
- Instantaneous flow measurements; and
- Long-term flow monitoring.

FY16 Aerial Deposition during dry weather (September 1, 2015 – April 30, 2016) monitoring consisted of:

- Aerial deposition sampling for particulate matter equal to or less than 10 microns in diameter (PM_{10});
- Monitoring using optical sensors and Federal Reference Method (FRM); and
- Comparison of the two methods.

Load Estimation and Comparison. Data collected during the 2015–2016 wet season showed fluctuations of SSC that generally correlated with changes in water flow; SSC was higher at or just after the times when higher flows were recorded and during the rising limb of the hydrograph, as expected for sediment transport influenced by supply limits. During Phase I, the highest suspended sediment loads were calculated at the Arizona Crossing location (CC-AC) in the Carroll Canyon Creek subwatershed, which is at the downstream end of a stream reach that is dominated by highly erodible features and gravel mining operations. However, during Phase II, the highest sediment loads were calculated at the North City (LP-NC) location in the upper Los Peñasquitos Creek subwatershed, near the border of the Cities of Poway and San Diego.

The storms monitored during the two phases were vastly different in size and intensity, which makes comparisons challenging. Phase I occurred during drought conditions and storms were generally characterized by light to moderate, consistent rainfall. Phase II occurred during an El Niño year. Although rainfall totals were below annual averages, storms were generally intense and brief. There was a series of three particular intense storms that occurred over three days in early January 2016 (the first of which was monitored). Certain stream reaches may warrant further investigation to clarify potential sources and sinks of sediment. This includes a reach of Carroll Canyon Creek running through gravel mine operations (potential source area) and the immediate downstream reach (potential sink area). The sink area stores material that can be mobilized during large, intense storms, which are the types of storms that the data indicate occurred this year. Another area of interest is the reaches near the LP-NC site and downstream through the Los Peñasquitos Creek subwatershed. Load estimates at LP-NC are of magnitude similar to those measured at the base of the creek. This may also be another source reach followed by a large sink. However, there is only one year of data for this subwatershed; therefore, these results and assessments are preliminary.

Aerial Deposition Monitoring. Based on the results of aerial deposition monitoring, the contribution of airborne particles to the sediment loads in the WMA is not significant. PM_{10} analytical results from three monitoring events were generally low, either at or near the reporting limits. There were marginal increases in concentrations around anthropogenic activities, particularly in the Carroll Canyon Creek subwatershed relative to other monitored locations; however, these slight increases were not consistent or significant. Monitoring results from the two types of monitoring equipment (federal reference method and optical sensors) indicated that results were similar in that results from both types of equipment were low or negligible. However, within the low ranges of concentrations, results did not correlate well and showed a mean relative percent difference of 108 percent. Although the RPD is high, this is due to very low concentrations measured that are within 10 times the laboratory reporting limit and standard flow volume. RPD calculations for low concentrations such as those measured during this program mischaracterize what are actually very small differences in concentration.

Visual observations at the Carroll Canyon Creek downwind monitoring location, near the Black Mountain SSC monitoring location, discovered a large amount of dirt and dust deposited on the surface of vehicles, roads, and buildings and other surrounding structures. This observed dust and dirt deposition may be due to the high volume of truck traffic in the mining operations adjacent to the monitoring location, which may trigger turbulent diffusion and transport sediment from the road and vehicles to the proximate surroundings. However, this finding is more likely attributable to track-out from trucks directly to the road surfaces, and contributes only locally to aerial suspension and deposition, rather than as particles becoming airborne and being transported over longer distances throughout the subwatershed. Monitoring equipment placed on the nearby roof of a fire department did not show high concentrations of PM_{10}.

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ACRONYMS AND ABBREVIATIONS

303(d) List	CWA Section 303(d), List of Water Quality Limited Segments
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc. (formerly AMEC)
BMP	best management practice
City	City of San Diego
EMC	event mean concentration
FRM	Federal Reference Methodology
FY	fiscal year
ID	identification
Lagoon	Los Peñasquitos Lagoon
LID	low-impact development
mg/L	milligrams per liter
MS4	municipal separate storm sewer system
MS4 Permit	Order Number R9-2013-0001, as Amended by Order No. R9-2015-0001, *NPDES No. CAS010266, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*
NPDES	National Pollutant Discharge Elimination System
OAL	California Office of Administrative Law
PM_{10}	particulate matter equal to or less than 10 microns
RA	Responsible Agency
Regional Board	San Diego Regional Water Quality Control Board
Sediment TMDL	Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon* (Regional Board, 2012)
SSC	suspended sediment concentration
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load
Watershed Special Study	Los Peñasquitos Watershed Management Area Sediment Load Special Study
USEPA	United States Environmental Protection Agency
WLA	Waste Load Allocation
WMA	Watershed Management Area
WQIP	Water Quality Improvement Plan

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1.0 INTRODUCTION

This report summarizes monitoring and sampling activities conducted during Phase II of the Los Peñasquitos Watershed Management Area (WMA) Sediment Load Special Study (Watershed Special Study) that took place during Fiscal Year 2016 (FY16) (July 1, 2015 – June 30, 2016). Results discussed in this report will incorporate findings from Phase I of this study, which occurred during Fiscal Year 2015 (FY15) (July 1, 2014 – June 30, 2015), to provide an assessment based on the complete dataset. The purpose of this study is to (a) assess the sediment transport characteristics of the WMA that contributes sediment load to the Los Peñasquitos Lagoon (Lagoon), (b) assess potential for load contribution from aerial deposition, and (c) incorporate summarized findings from the concurrent Los Peñasquitos WMA Sediment TMDL Compliance Monitoring Program (TMDL Monitoring Program) (Amec Foster Wheeler, 2016).

1.1 BACKGROUND

The Lagoon is a coastal salt marsh lagoon in west-central San Diego County, in southern California. The WMA is approximately 60,500 acres and contains portions of the cities of Poway and Del Mar, unincorporated areas of San Diego County, and the communities of Mira Mesa, Scripps Ranch, Carmel Valley, and Sorrento Valley within the City of San Diego (City). The WMA is drained by three major creeks, Carroll Canyon Creek, Carmel Valley Creek, and Los Peñasquitos Creek, which ultimately discharge into the Lagoon.

The Lagoon has incurred a number of anthropogenic disturbances that have caused excessive sedimentation and the gradual degradation and loss of estuarine habitat. As a result, the Lagoon was placed on the Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) for sedimentation and siltation. To address these water quality impairments, the San Diego Regional Water Quality Control Board (Regional Board) adopted Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate the Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon* (referred to as the Sediment TMDL) (Regional Board, 2012).[1] More recently, the Sediment TMDL has been adopted into Order Number R9-2013-0001, as Amended by Order No. R9-2015-0001*, NPDES No. CAS010266, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region* (Regional Board, 2015) (referred to as the MS4 Permit).

Prior to adoption of the Sediment TMDL into the MS4 Permit and based on previous data identifying Carroll Canyon Creek as the largest contributor of sediment load to the Lagoon, the City developed a special study to assess source areas of sediment within the Carroll Canyon Creek subwatershed (referred to as the Watershed Special Study, Phase I), which took place during the 2014–2015 wet season.

[1] The Sediment TMDL has been approved by the State Water Resources Control Board (SWRCB), the California Office of Administrative Law (OAL), and the United States Environmental Protection Agency (USEPA).

The MS4 Permit required development of a Water Quality Improvement Plan (WQIP) for each WMA. The MS4 permit required that WQIP Monitoring and Assessment program include a special study to address the highest priority water quality condition or conditions in that WMA. For the Los Peñasquitos WMA, the highest priority water quality condition is the impairment of the Estuarine and Biological beneficial uses in the Lagoon. During wet weather condition this impairment is caused by hydromodification and siltation/sedimentation. Phase I of the Watershed Special Study was enhanced by including the Carmel Valley Creek and Los Peñasquitos Creek subwatersheds and designated as the special study for the Los Peñasquitos WMA. The second year (Phase II) of the Watershed Special Study was conducted during Fiscal Year 2016 (FY16) (July 1 2015 – June 30, 2016). The WQIP is being implemented by the Cities of San Diego, Poway, and Del Mar, and the County of San Diego, collectively referred to as the Responsible Agencies (RAs).

1.2 CURRENT STUDY

The City of San Diego initiated Phase I of the Watershed Special Study during FY 15 that comprised sediment sampling and characterization before and throughout the 2014–2015 wet season (October 1 – April 30) in the upper reaches of the Carroll Canyon Creek subwatershed. This Phase I monitoring was coordinated with monitoring at the TMDL Monitoring Program for FY15.

Amec Foster Wheeler conducted monitoring for Phase II of the Watershed Special Study during FY 16 that comprised sediment sampling and characterization before and throughout the 2015–2016 wet season (October 1 – April 30) in the upper reaches of the three subwatersheds. Phase II monitoring was coordinated with monitoring at the TMDL compliance monitoring sites. The goal of the Watershed Special Study is to preliminarily identify source and sink areas within the Watershed, and to provide insight as to which areas may require further investigation and/or management measures by the RAs, in order to address the highest priority water quality condition in the Los Peñasquitos WMA.

1.3 PROJECT OBJECTIVES

The objective of Phase II of the Watershed Special Study was to monitor the upper regions of the Carroll Canyon Creek, Los Peñasquitos Creek, and Carmel Valley Creek subwatersheds, both within the riverine water column during storm events and for aerial deposition during ambient dry conditions. Phase II included air and water monitoring locations in the Carmel Valley and Los Peñasquitos Creeks subwatersheds (Phase I took place in the Carroll Canyon Creek subwatershed only). The purpose of the riverine monitoring was to (a) measure flows, (b) monitor suspended sediment concentration (SSC) during three storm events, (c) assess changes in streambed composition throughout the season, (d) estimate wet weather sediment loads from the various stream reaches, and (e) assess whether aerial deposition of airborne particulates contributes significantly to sediment loading in the subwatershed.

This monitoring program was designed to answer the following questions:

- Wet Season Riverine Monitoring
  - What is the sediment concentration at discrete times throughout a wet weather event hydrograph at points throughout the subwatersheds?
  - What are current sediment load estimates at points throughout the subwatersheds? Is there a greater load from a potential source area?
  - How do the wet weather sediment delivery potentials of each creek compare with each other?
- Dry Weather Aerial Deposition Monitoring
  - What are the aerial contributions of sediment to the subwatersheds within the WMA?
  - Can these airborne particles be associated with specific sources or land uses?
  - What is the contribution of aerial deposition relative to wet weather suspended sediment concentrations observed in the subwatersheds?

These data will allow comparison of the current sediment transport conditions within the WMA and relative to the Sediment TMDL waste load allocation (WLA). It will also help the RAs evaluate potential management measures, such as best management practices (BMPs) and low-impact development (LID).

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2.0 MONITORING APPROACH AND ANALYTICAL METHODS

The Watershed Special Study complements the TMDL Monitoring Program described in the final report (Amec Foster Wheeler, 2016), which is a continuation of previous monitoring using the same monitoring approach and analyses.[2] The Watershed Special Study's monitoring elements are:

Before the wet season:

- Volumetric streambed samples for particle-size distribution
- Initial pebble counts and photodocumentation
- Channel cross-sectional surveys

Wet season:

- Continuous flow and rainfall measurements
  - Sampling during three wet weather events
  - SSC pollutograph sampling
- Bedload sampling for particle-size distribution
- Post-storm pebble counts and photodocumentation
  - Field flow measurements to calibrate head-versus-flow table
- Site identification (ID) and descriptions (See Figure 2-1 for locations of sites)
  - Carroll Canyon Creek Subwatershed
    - CC-TC – Carroll Canyon – Trapezoidal Channel
    - CC-BM – Carroll Canyon – Black Mountain
    - CC-ML – Carroll Canyon – Maya Linda
    - CC-AC – Carroll Canyon – Arizona Crossing
    - CC-NR – Carroll Canyon – Nancy Ridge
  - Los Peñasquitos Creek Subwatershed
    - LP-HV – Los Peñasquitos – Hidden Valley
    - LP-NC – Los Peñasquitos – North City
  - Carmel Valley Creek Subwatershed
    - CV-CV – Carmel Valley – Carmel Valley

Aerial deposition:

[2] For brevity, this monitoring report does not include the details of the individual monitoring elements; they are given in the final *Los Peñasquitos Watershed Management Area Sediment Load Special Study Monitoring Plan* (Amec Foster Wheeler, 2015) provided in Appendix A.

- Three sampling events
  - 2015–2016 monitoring events took place in fall and mid-winter because of planned (February 2016) destruction of Del Mar City Hall, where the reference station was located
- Sampling events consist of three 24-hour sample collection periods at each site: two during weekdays and one during the weekend
- Sampling with both USEPA Federal Reference Methodology (FRM) sampling equipment and optical sensor sampling equipment
  - Comparison between the results of both equipment types for future aerial deposition monitoring consideration
- Site IDs and descriptions:
  - CC-CC – Carroll Canyon Optical
  - CC-DM – Reference - Del Mar (Optical and FRM site)
  - CC-DW – Carroll Canyon – Downwind (Optical and FRM site)
  - CC-SR – Carroll Canyon – Scripps Ranch
  - CC-UP – Carroll Canyon – Upwind (Optical and FRM site)
  - CV-CD – Carmel Valley – Camino Del Sur
  - LP-PO – Los Peñasquitos – Poway
  - LP-PR – Los Peñasquitos – Preserve

Figures 2-1 and 2-2 show the project's monitoring locations, and also depicts the Sediment TMDL compliance monitoring sites. These monitoring locations are described in detail in the Los Peñasquitos Watershed Management Area Sediment Load Special Study Monitoring Plan (Monitoring Plan) (Amec Foster Wheeler, 2015) (Appendix A).

<u>Deviations from the Monitoring Plan:</u>

Three additional aerial deposition monitoring locations were added by the City in the Carroll Canyon Creek subwatershed that were monitored in conjunction with the planned locations. Resources for these locations were provided by the City, and not through funding approved by the RAs (see Figure 2-2 for monitoring locations). The additional sites were:

- CC-ER – Carroll Canyon – Eco Rentals
- CC-MP – Carroll Canyon – Maddox Park
- CC-SF – Carroll Canyon – Camino Santa Fe

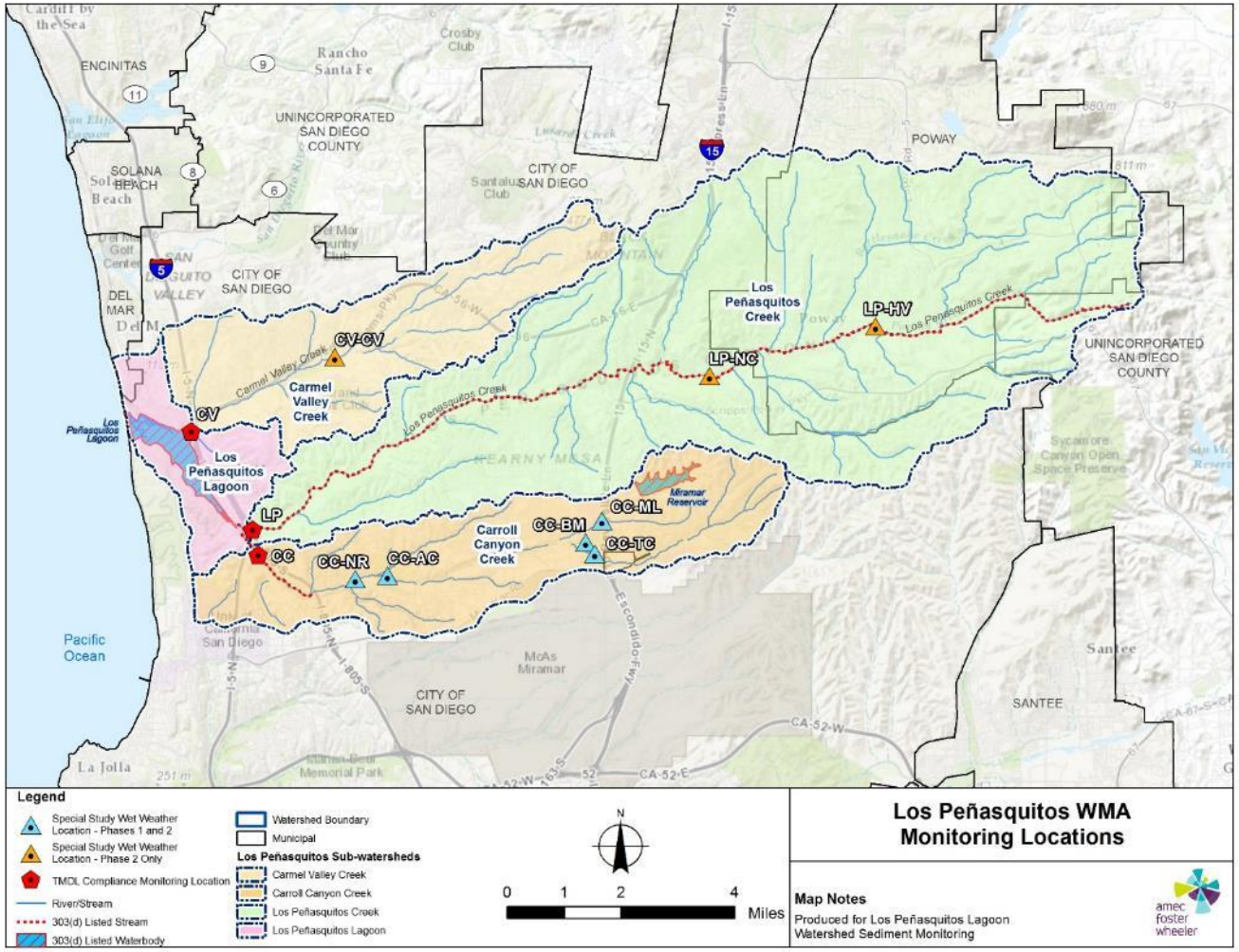

Figure 2-1.
Los Peñasquitos WMA Wet Season Monitoring Locations

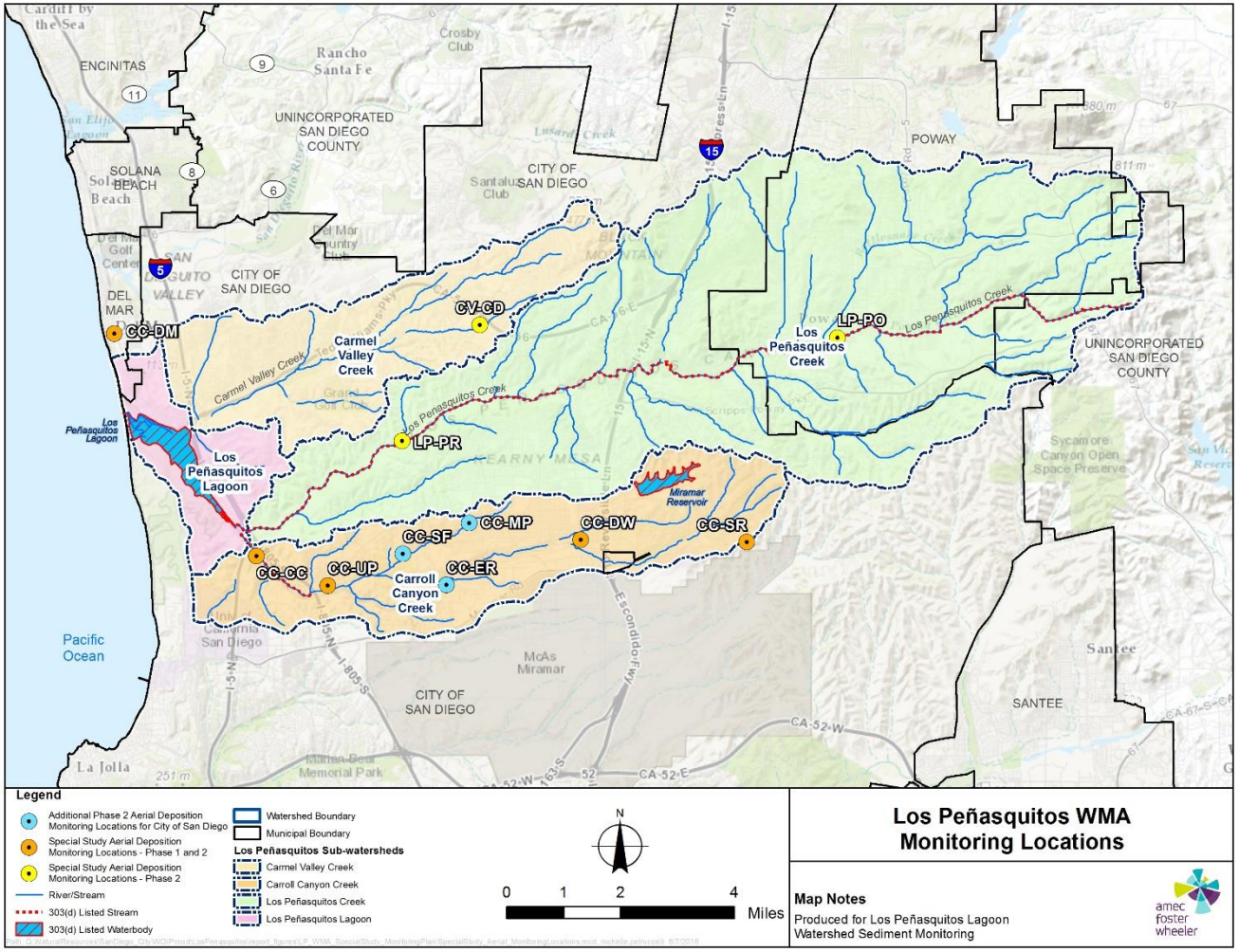

Figure 2-2.
Los Peñasquitos WMA
Aerial Deposition Monitoring Locations

3.0 RESULTS AND DISCUSSION

This section presents the data collected during Phase II and discusses the results of both Phase I and II of the Watershed Special Study.

3.1 WET WEATHER MONITORING

Wet weather monitoring was conducted for a total of three storm events during Phase II of the Watershed Special Study. Table 3-1 presents the dates and rainfall totals for monitored events. Rainfall totals recorded at the Carmel Valley (CV-CV) monitoring location were used for as the Watershed Special Study project rainfall data. Based on the *San Diego County Hydrology Manual* (County of San Diego, 2003), the 85th percentile, 24-hour storm for the project area is approximately 0.65 to 0.75 inch. The first monitored rainfall event was greater than the 85th percentile threshold, while the second and third were approximately at the 85th percentile threshold.

Table 3-1
Summary of Monitored Wet Weather Events

Event	Date	Rainfall Total[a] (inches)
1	January 4–6, 2016	1.58
2	January 31, 2016	0.65
3	March 6–8, 2016	0.70

a. Rainfall for the upper WMA areas monitored for the Watershed Special Study was measured at the CV-CV monitoring location.

3.1.1 Hydrology

Table 3-2 presents the monthly rainfall totals from the onsite rain gauge at the CV-CV monitoring location. The CC-TC monitoring location was used for rainfall measurement during Phase I; however, equipment failures at CC-TC during Phase II, where data was not reported during known rain events and other periods of non-reported data, did not allow for a reliable continuous data set. The rainfall data presented are representative of the upper WMA rainfall totals, where the majority of the Watershed Special Study sites are located. Lower WMA rainfall data are presented in the Los Peñasquitos Lagoon WMA Sediment TMDL Compliance Monitoring Report (Amec Foster Wheeler, 2016). Rainfall data were also used to determine the number of “wet” days throughout the year. For the purposes of this project, a wet day is defined as a 24-hour period with at least 0.1 inch of rainfall. A total of 22 wet days were recorded during the 2015–2016 wet season at CV-CV, compared to 21 wet days recorded for the TMDL Compliance Program. This is because the upper WMA area received more rainfall overall, primarily due to orographic factors. For load estimates and comparability with the TMDL Compliance Program monitoring locations, a total of 21 wet days (number of wet days in the lower WMA) was used in the annual load estimation.

Table 3-2.
Monthly Rainfall Totals
2015–2016 Wet Weather Season

Month	Rainfall Total (inches)
October 2015	0.90
November 2015	0.71
December 2015	1.67
January 2016	4.77
February 2016	0.16
March 2016	1.26
April 2016	0.86
Season Total	10.33

3.1.2 Analytical Results

The final number of pollutograph samples selected for analysis for each monitored wet weather event at each monitoring locations varied. The number selected depended on the characteristics of each storm event. Table 3-3 summarizes the number of pollutograph samples submitted per monitoring location during the monitored wet weather events.

Table 3-3.
Number of Samples Collected
During Wet Weather Monitoring Events

Site	Number of Samples Submitted		
	Event 1	Event 2	Event 3
Hidden Valley (LP-HV)	10	12	19
North City (LP-NC)	10	20	24
Upper Carmel Valley (CV-CV)	16	14	15
Black Mountain (CC-BM)	13	16	15
Trap Channel (CC-TC)	18	6	7
Arizona Crossing (CC-AC)	8	15	21
Maya Linda (CC-ML)	15	18	20
Nancy Ridge (CC-NR)	18	13	19

Figures 3-1 through 3-21 present the event hydrographs that show flow and analytical results for SSC analysis at each monitoring location. Data show that peaks in SSC generally correlate with peaks in storm flow. Although peak flow typically is most strongly associated with increased SSC,

other factors also affect SSC, such as rainfall intensity and the associated rate of rise in flow, supply limitations, the preceding baseline flow, sample timing, and duration of storm flow.

The flow meter at CC-AC reported valid data for the majority of the 2015-2016 wet season; however, early in the third wet weather monitoring event field crews noticed the flow meter was reporting, erroneous data. The flow meter was replaced at that time with another flow meter. Once installed, the meter was watched for a period of approximately 20 minutes and appeared to be functioning properly. At some point after the field crew had departed, the second flow meter also malfunctioned, reporting flat-lined data (i.e., one single value) for most of the night, followed by erratic data. This was caught be field crews after storm flows had started. A third flow meter was placed on site at this time. By the time the third flow meter was in place, too much of the storm flows had passed to reconstruct a hydrograph. Therefore, total event flow was estimated and a hydrograph could not be graphed for CC-AC for the third wet weather monitoring event.

Summarized SSC analytical results and laboratory reports are provided in Appendix B.

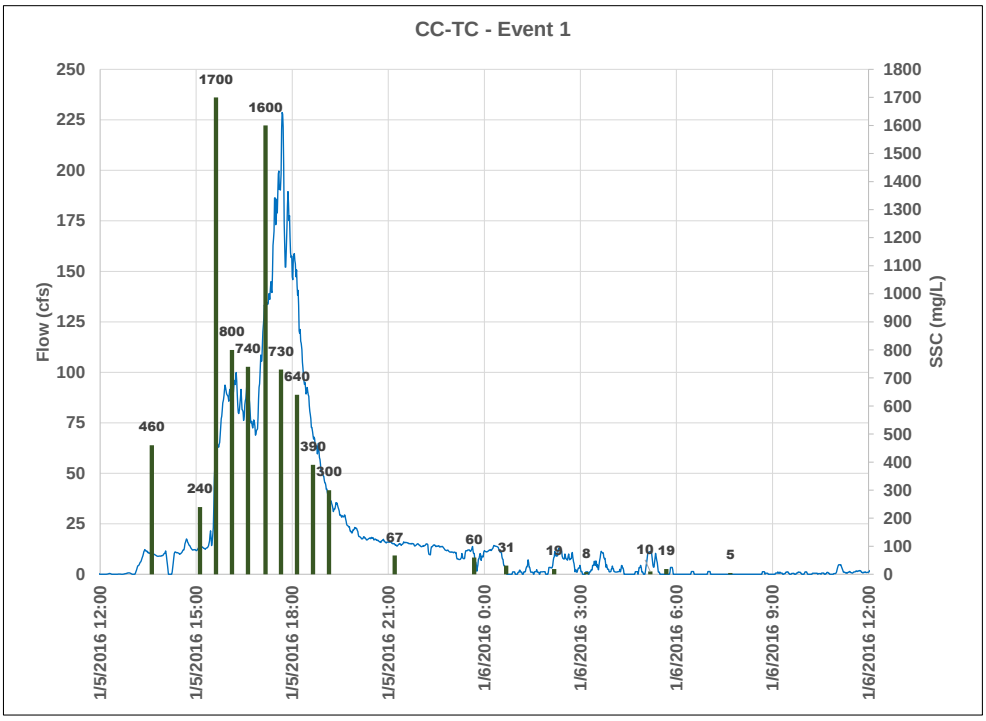

Figure 3-1.
Hydrograph and Results—Wet Weather Event 1 at CC-TC

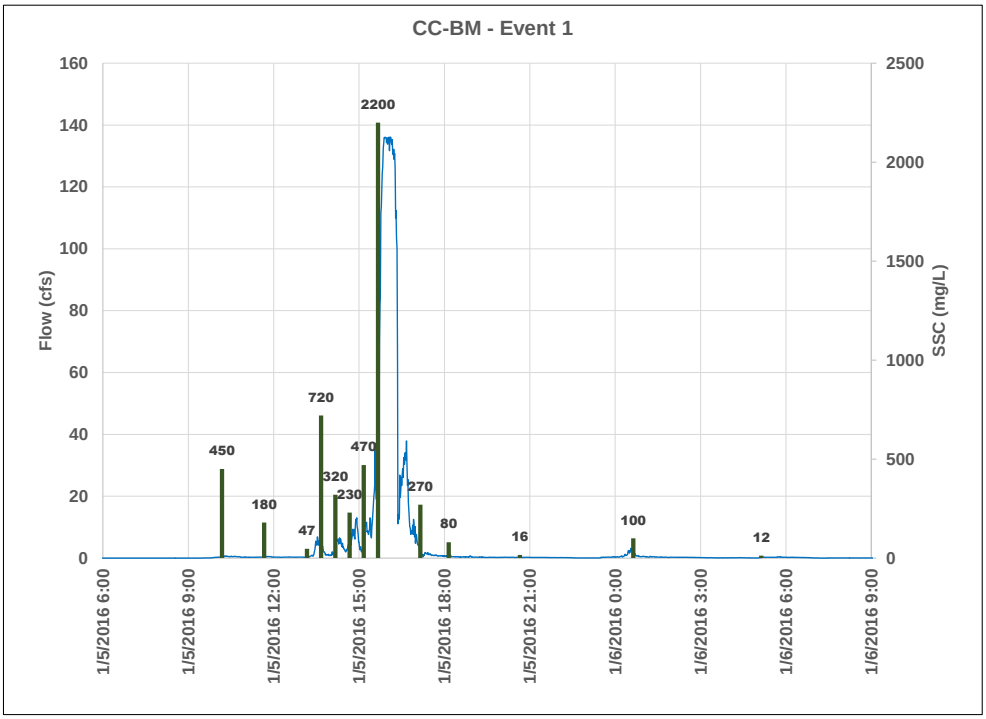

Figure 3-2.
Hydrograph and Results—Wet Weather Event 1 at CC-BM

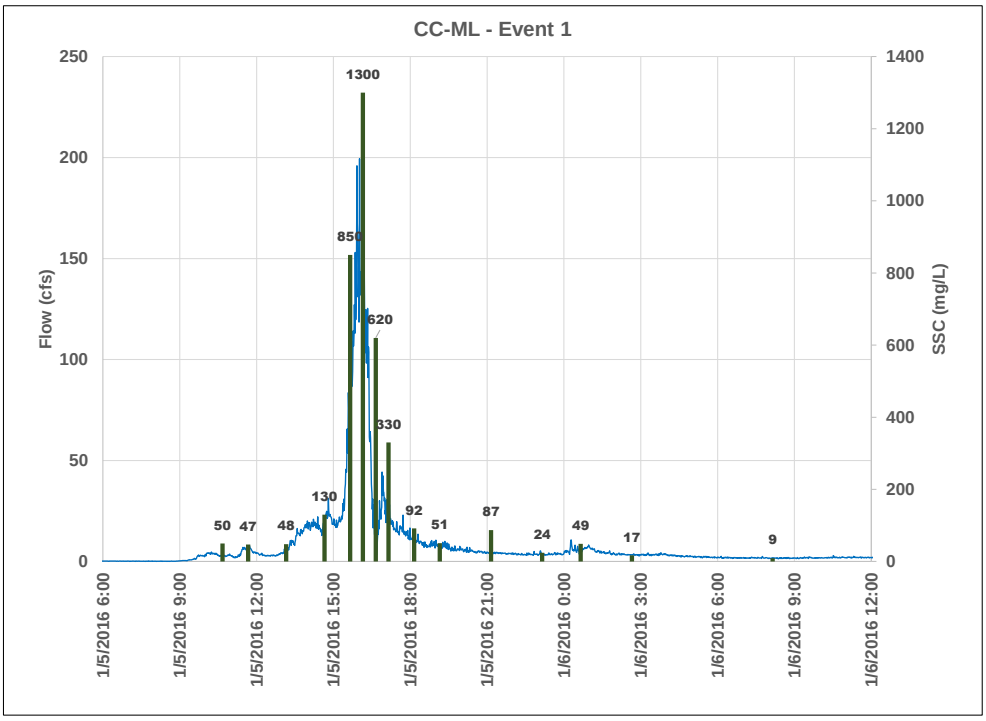

Figure 3-3.
Hydrograph and Results—Wet Weather Event 1 at CC-ML

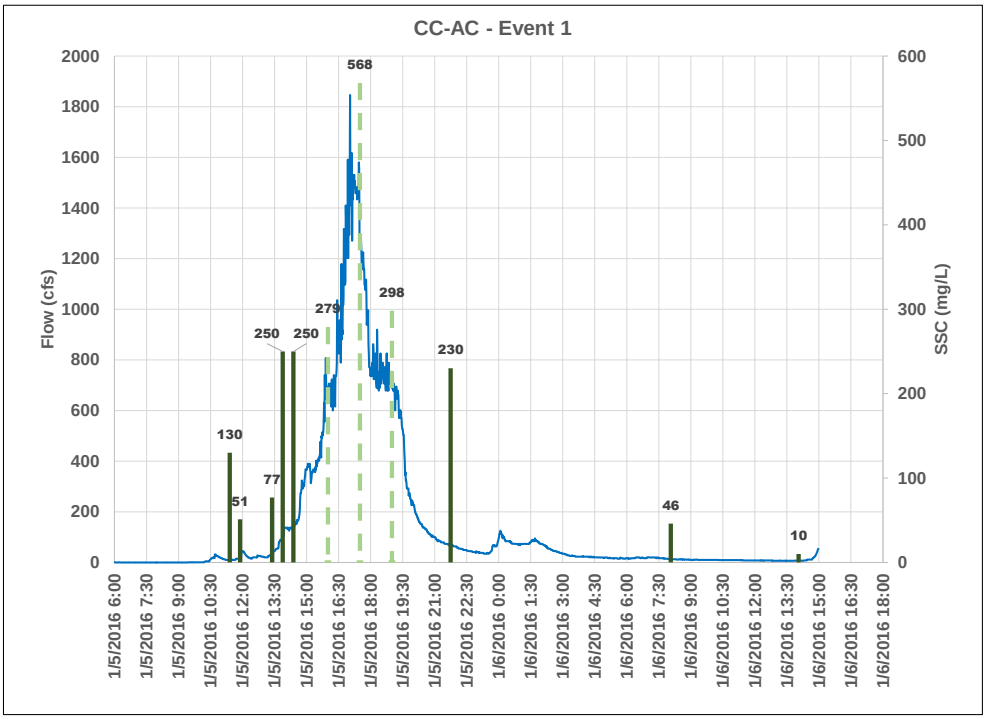

Note: Dashed lines indicate estimated SSC results for missed samples

Figure 3-4.
Hydrograph and Results—Wet Weather Event 1 at CC-AC

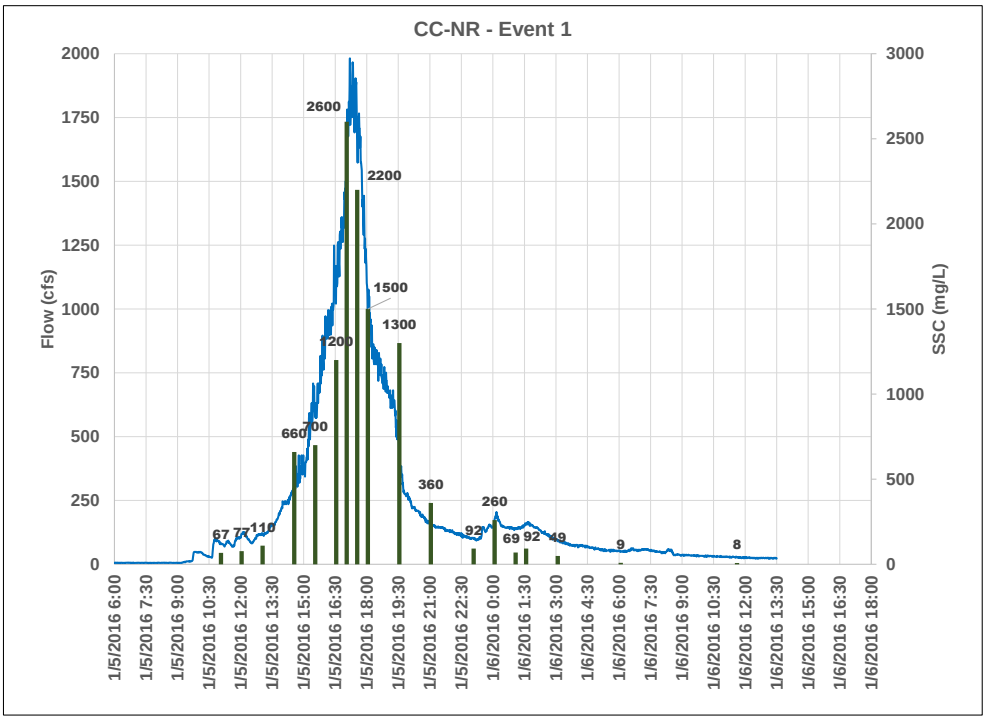

Figure 3-5.
Hydrograph and Results—Wet Weather Event 1 at CC-NR

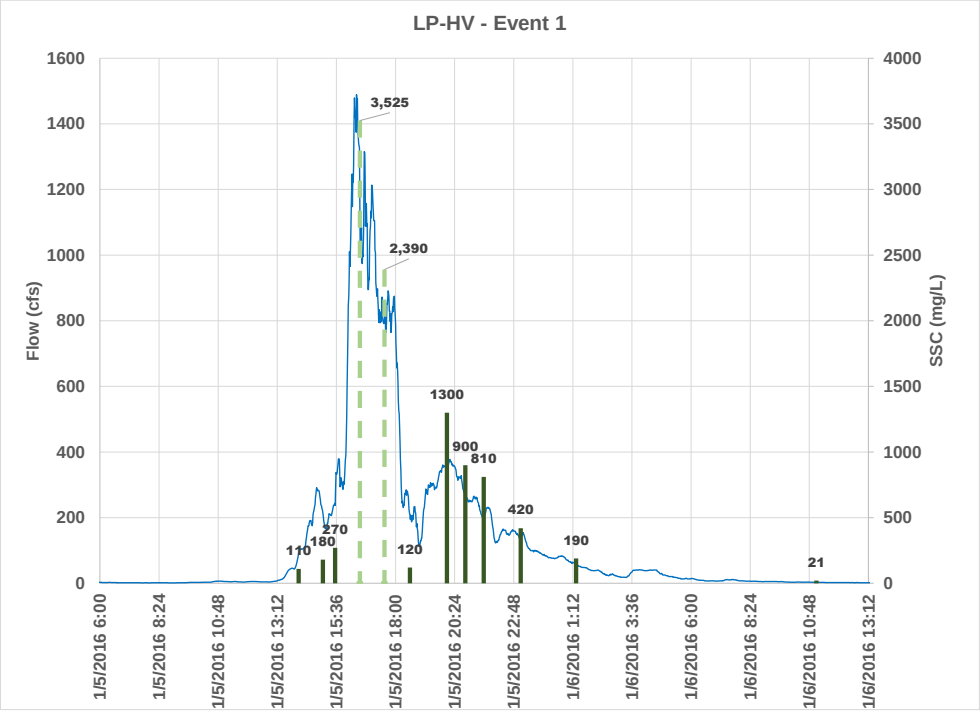

Note: Dashed lines indicate estimated SSC results for missed samples

Figure 3-6.
Hydrograph and Results—Wet Weather Event 1 at LP-HV

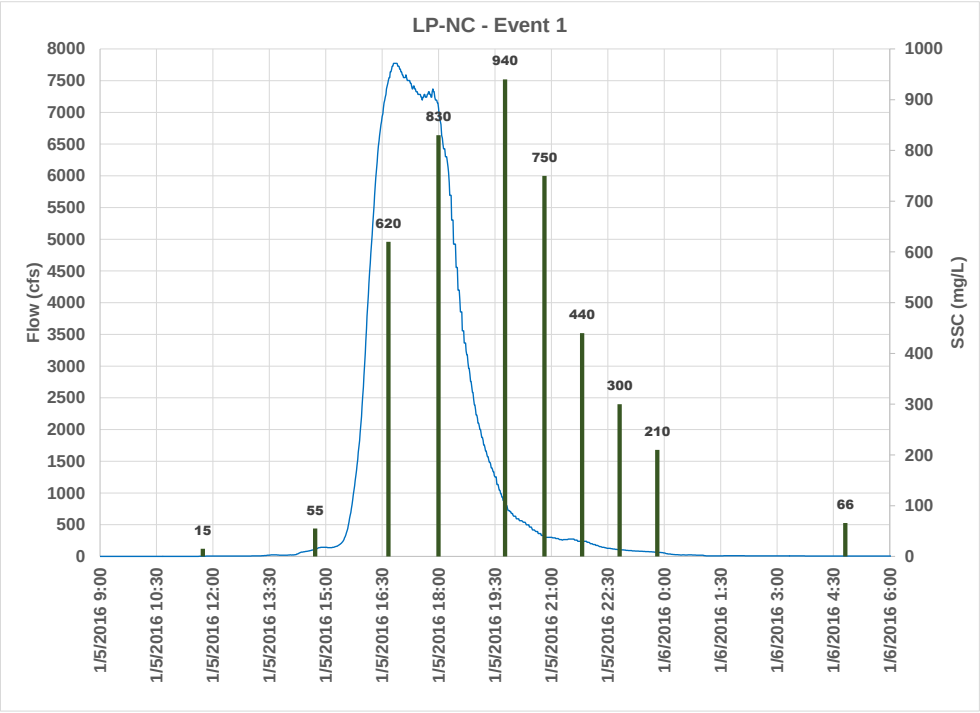

Figure 3-7.
Hydrograph and Results—Wet Weather Event 1 at LP-NC

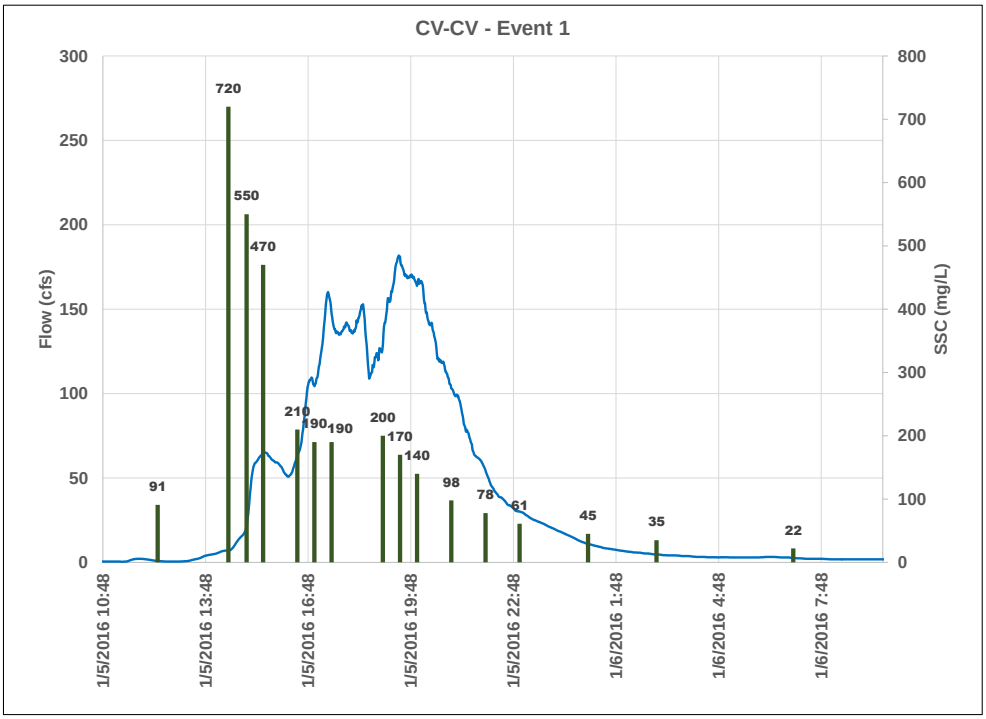

Figure 3-8.
Hydrograph and Results—Wet Weather Event 1 at CV-CV

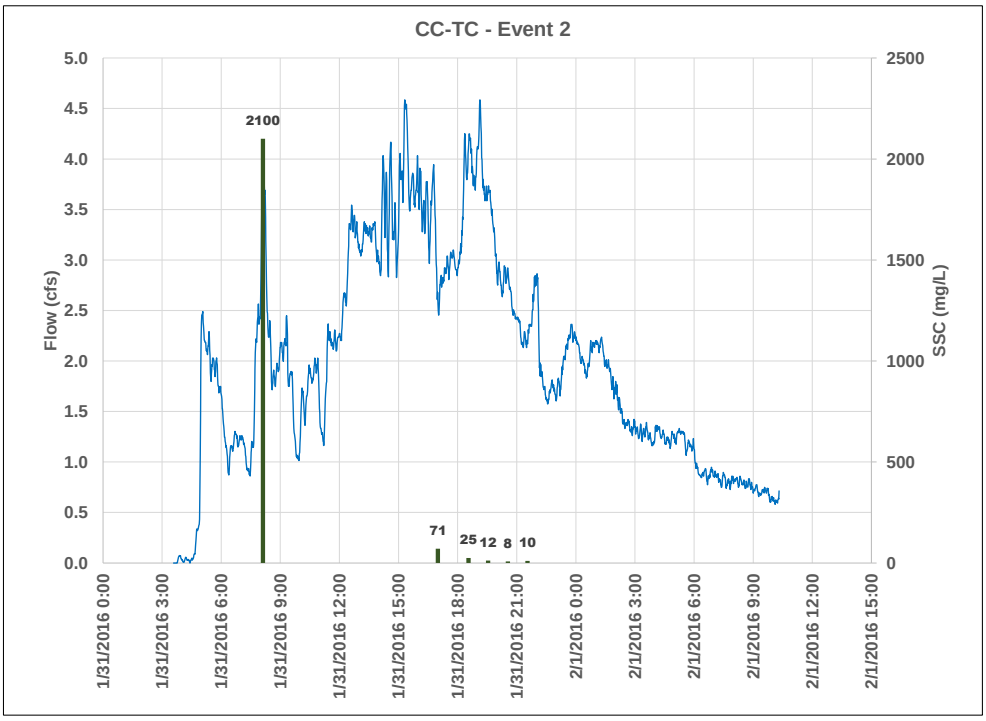

Figure 3-9.
Hydrograph and Results—Wet Weather Event 2 at CC-TC

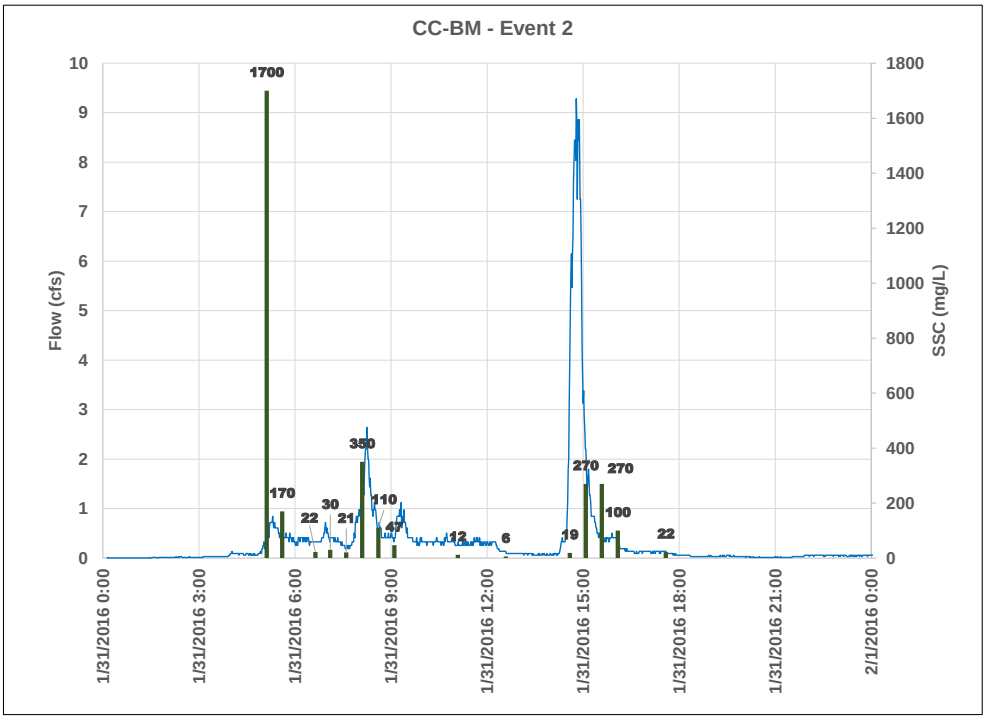

Figure 3-10.
Hydrograph and Results—Wet Weather Event 2 at CC-BM

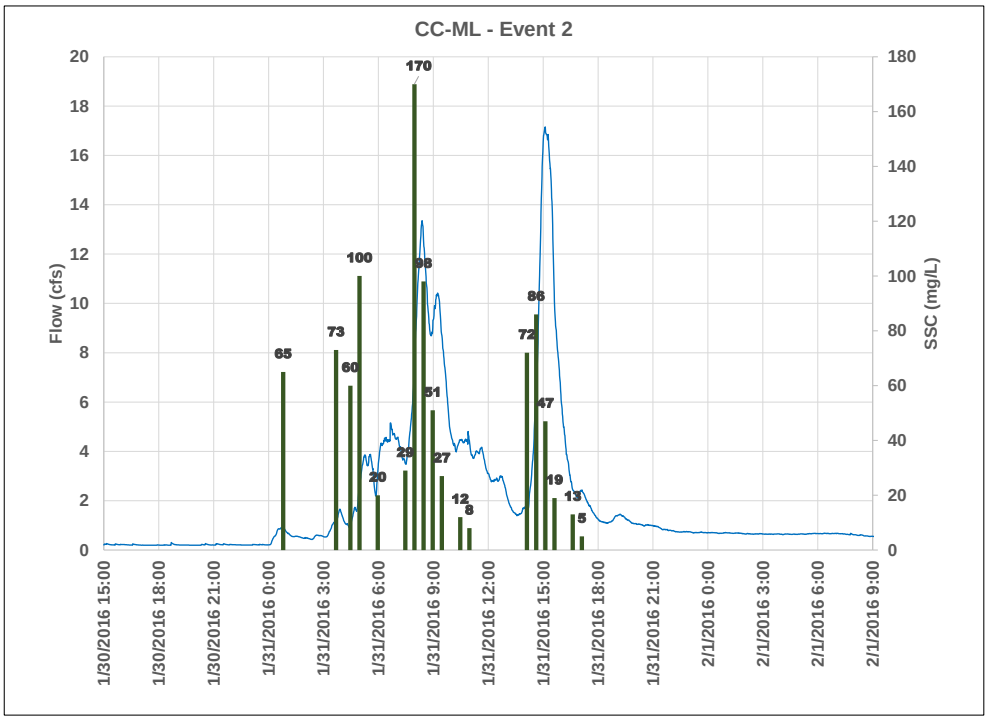

Figure 3-11.
Hydrograph and Results—Wet Weather Event 2 at CC-ML

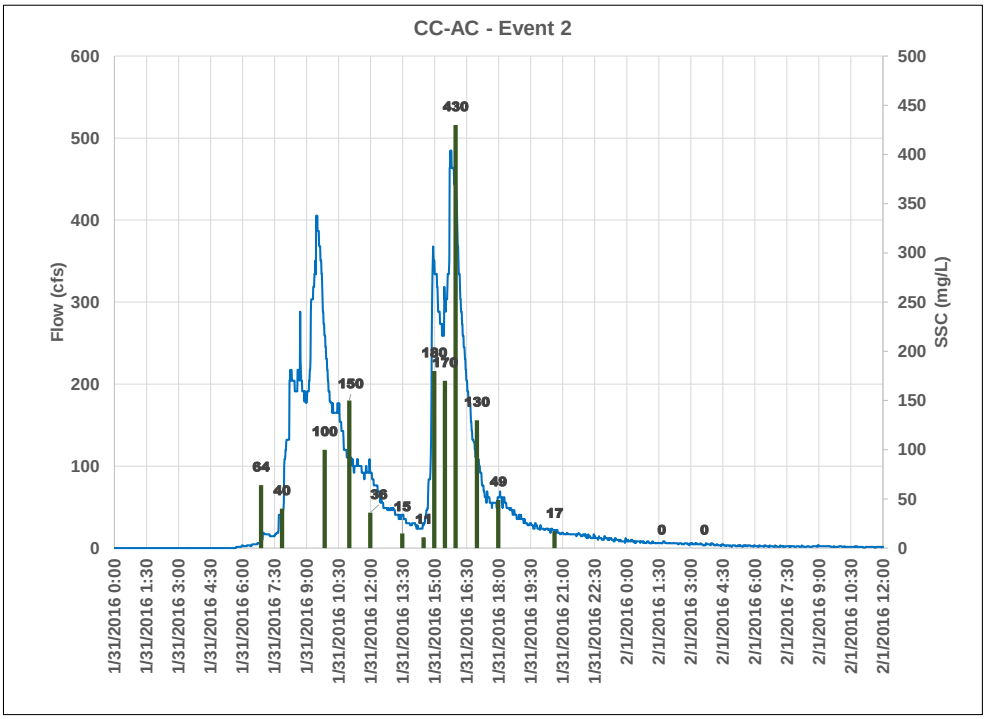

Figure 3-12.
Hydrograph and Results—Wet Weather Event 2 at CC-AC

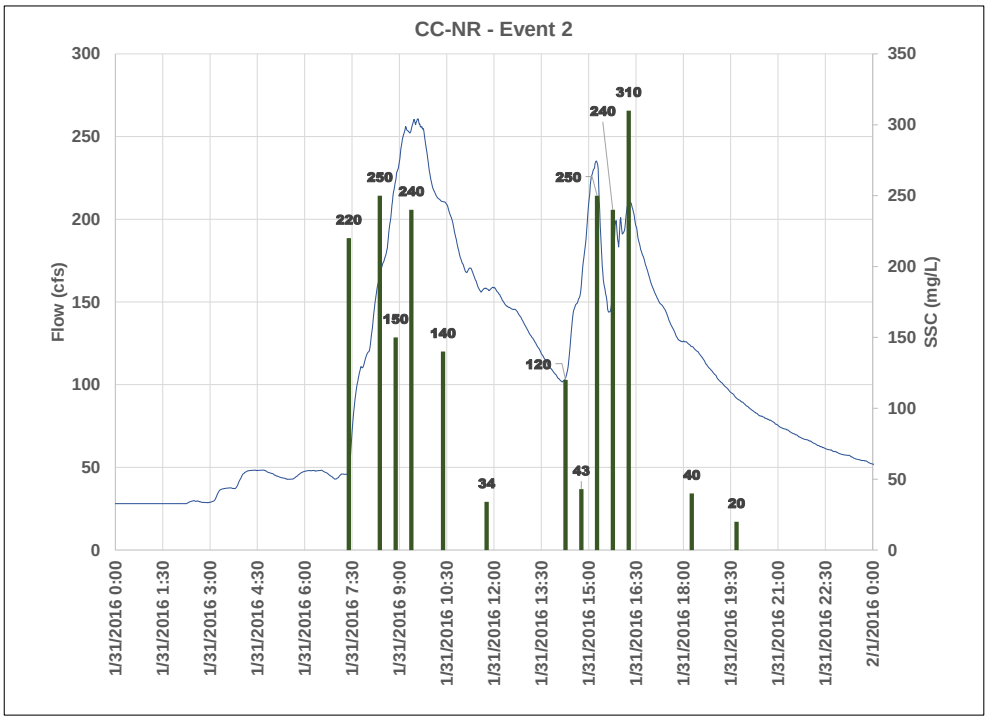

Figure 3-13.
Hydrograph and Results—Wet Weather Event 2 at CC-NR

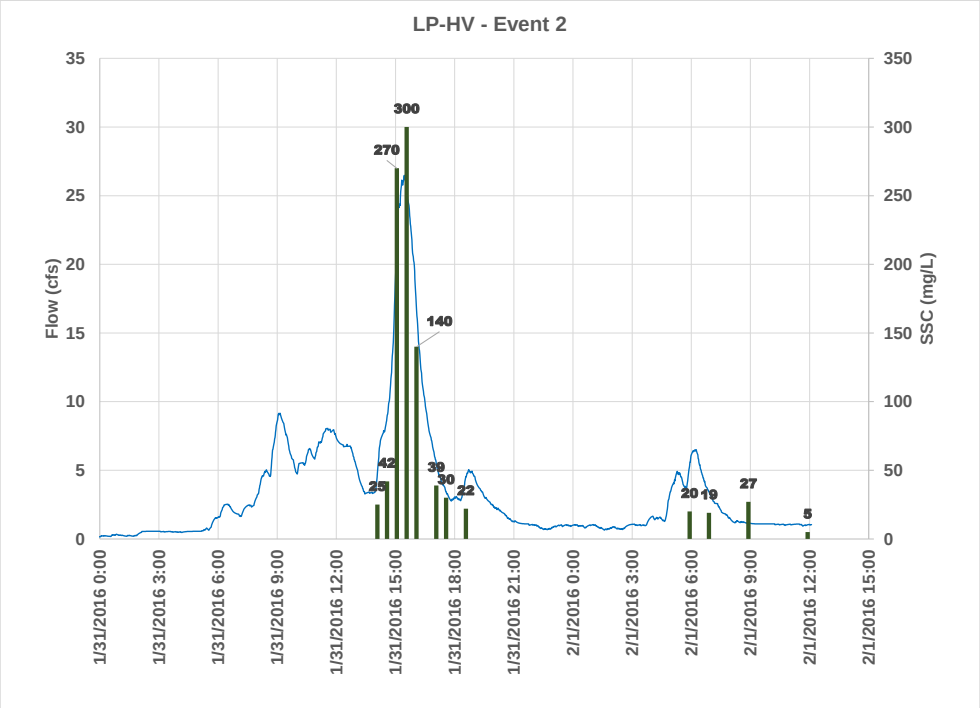

Figure 3-14.
Hydrograph and Results—Wet Weather Event 2 at LP-HV

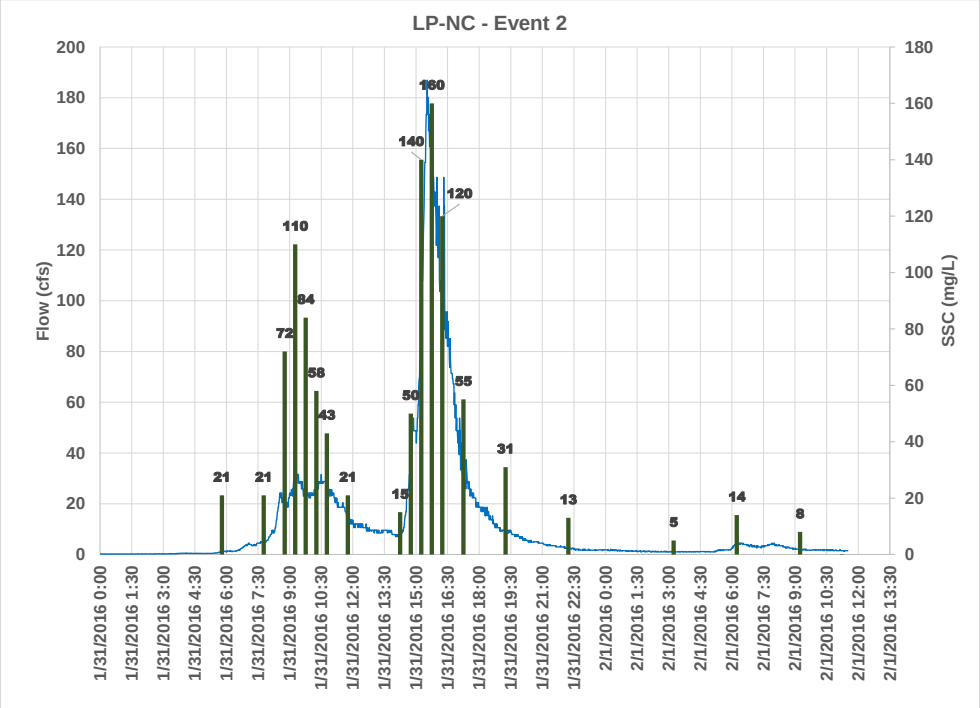

Figure 3-15.
Hydrograph and Results—Wet Weather Event 2 at LP-NC

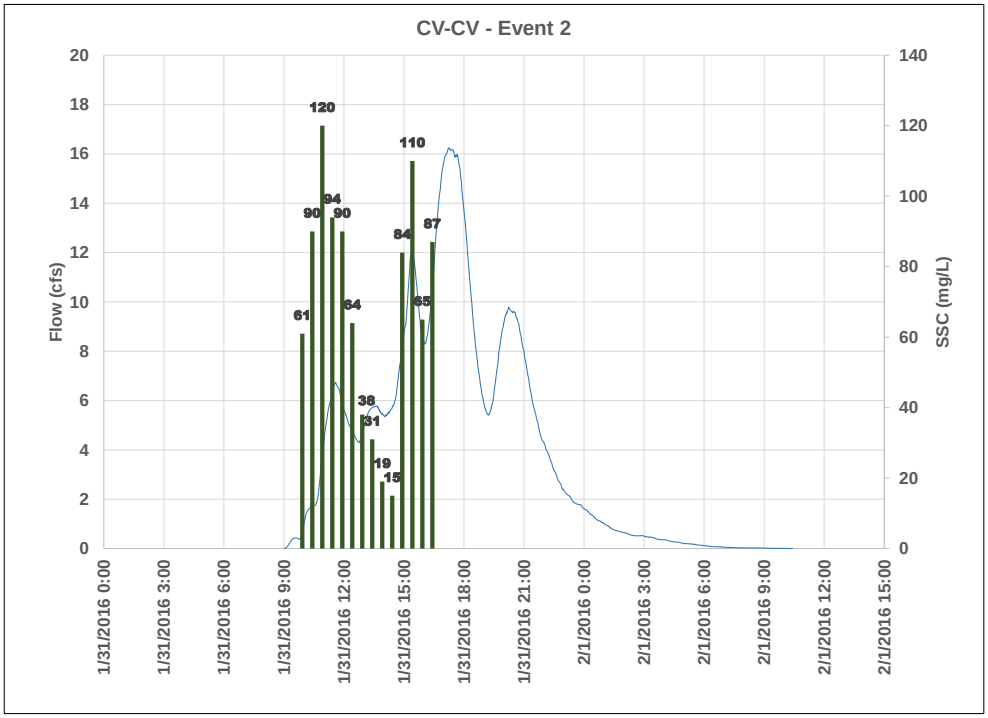

Figure 3-16.
Hydrograph and Results—Wet Weather Event 2 at CV-CV

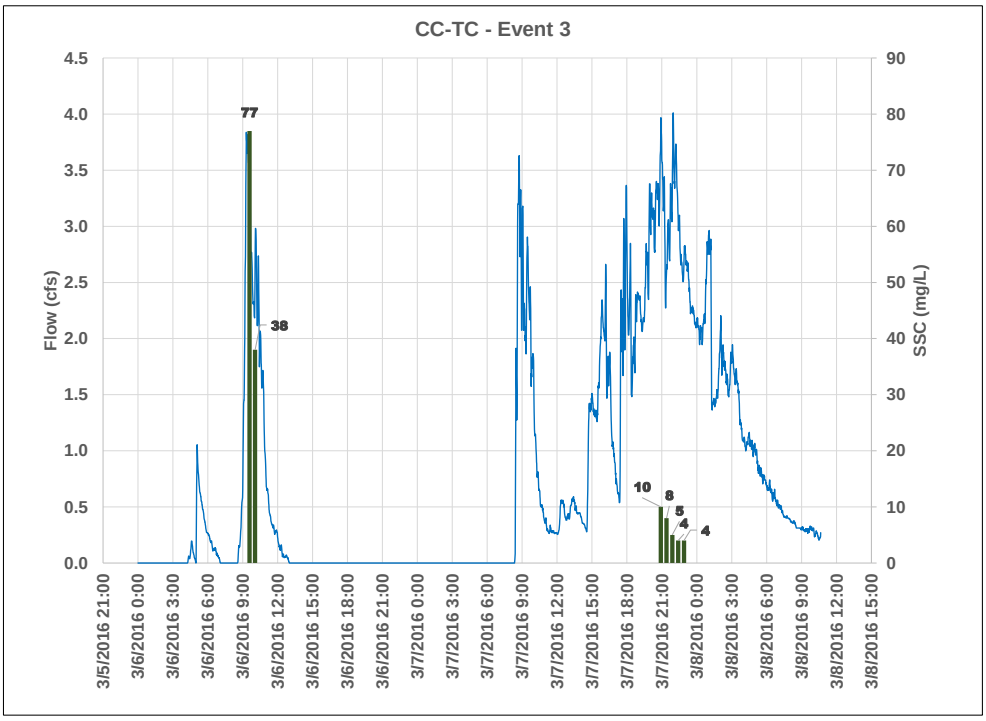

Figure 3-17.
Hydrograph and Results—Wet Weather Event 3 at CC-TC

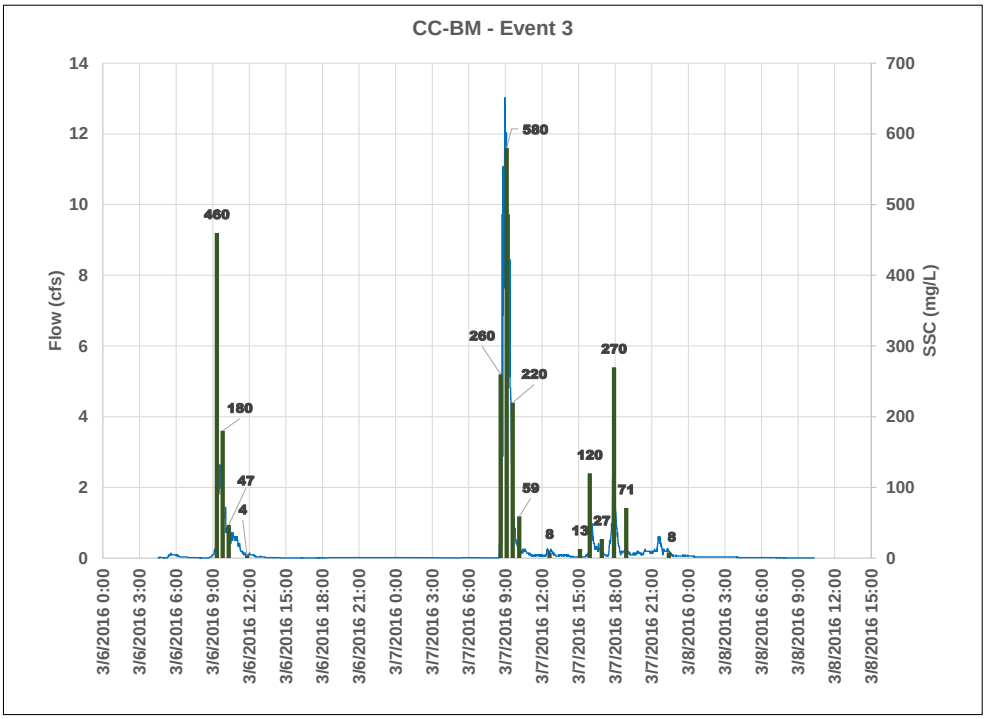

Figure 3-18.
Hydrograph and Results—Wet Weather Event 3 at CC-BM

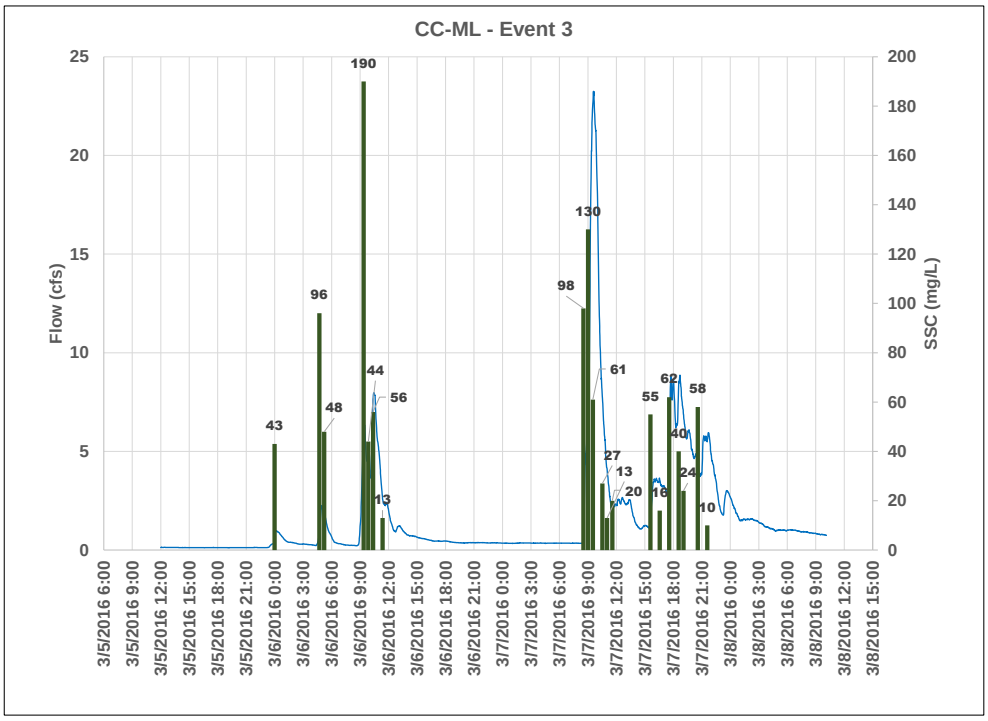

Figure 3-19.
Hydrograph and Results—Wet Weather Event 3 at CC-ML

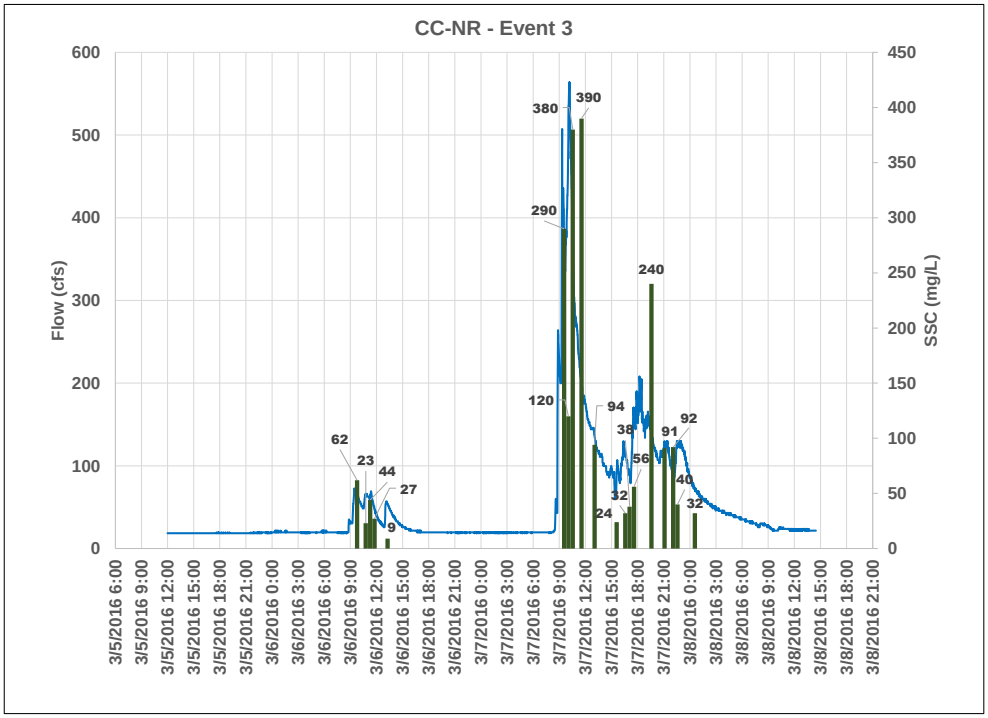

Figure 3-20.
Hydrograph and Results—Wet Weather Event 3 at CC-NR

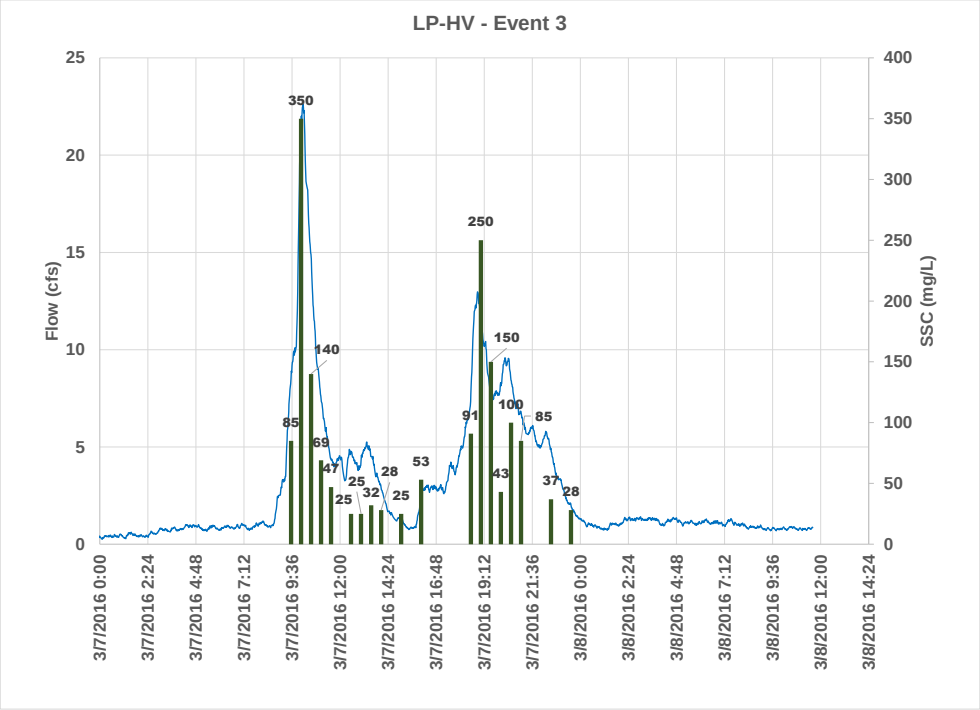

Figure 3-21.
Hydrograph and Results—Wet Weather Event 3 at LP-HV

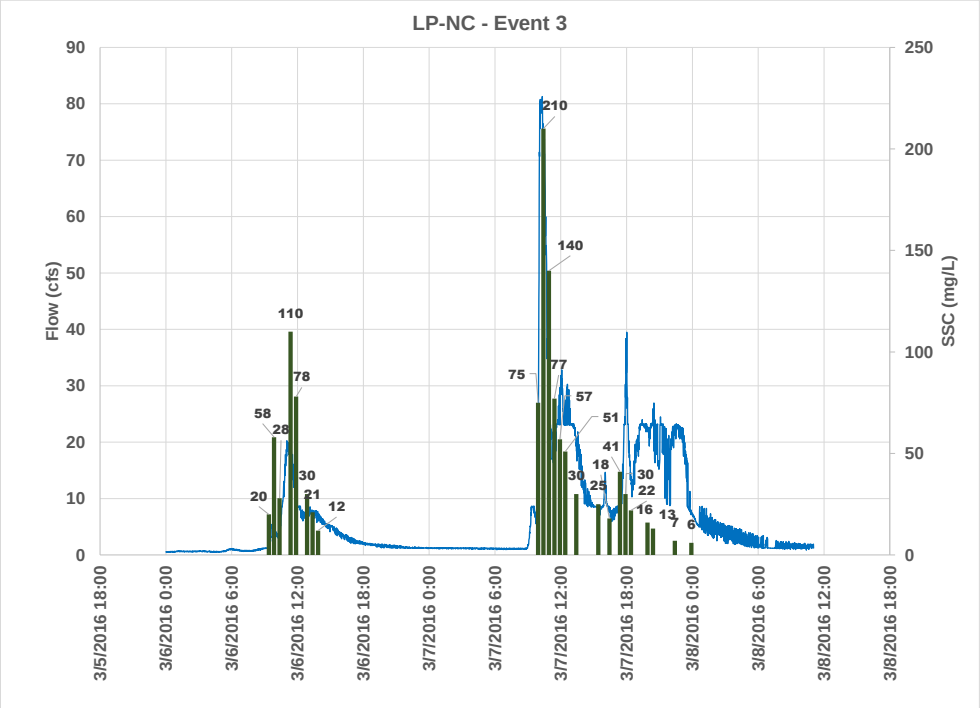

Figure 3-22.
Hydrograph and Results—Wet Weather Event 3 at LP-NC

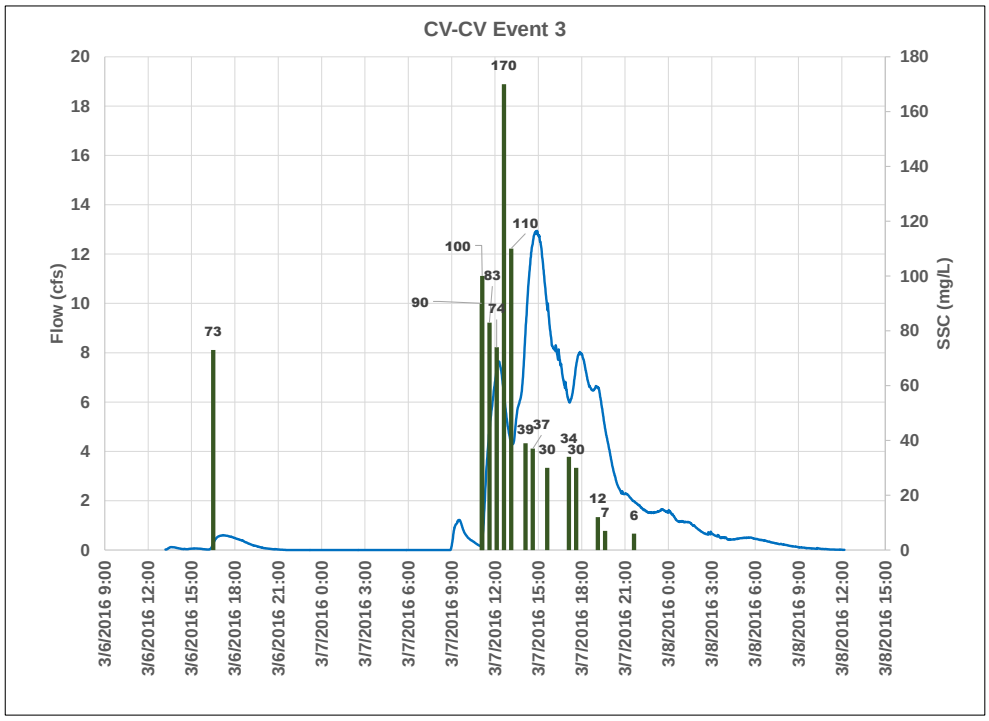

Figure 3-23.
Hydrograph and Results—Wet Weather Event 3 at CV-CV

3.1.3 Bedload Sample Collection

Collection of bedload samples was attempted during each monitored event at five of the eight monitoring locations. CC-ML, LP-HV, and CV-CV did not have suitable locations at which to install samplers. Bedload sampling was attempted using both the trap samplers (installed in the streambed), which have been used in previous wet seasons, and manual bedload samplers (where safe access allowed). No samples were successfully collected during the first event. Most samplers were lost or damaged because of the high flows. One sample from CC-TC was collected during the second event and one sample was collected from CC-NR during the third event. However, in each case, samplers were either displaced or partially buried/overfilled upon retrieval, preventing assessment of the amount of material collected and the associated time frame.

Manual bedload sample collection attempts occurred during low flows, when it was safe to enter the stream, and yielded results from CC-AC and CV-CV during the second wet event only. Samples collected and measured from these two sites resulted in load estimates of 0.21 ton per day and 0.015 ton per day, respectively (not significant relative to washload estimated with SSC results). These samples were collected at one point during one storm and may not be representative of a consistent bed movement condition throughout the storm or day, nor of bedload during other non-sampled. This sample collection was an improvement over that of previous monitoring efforts, but further bedload results are required to accurately quantify this factor.

Appendix C provides the bedload particle size analysis for the bedload samples. Appendix C also provides the results from the volumetric bedload particle size analysis performed in the pre-wet-season sample at each monitoring location.

3.1.4 Post-Storm Pebble Count and Photo Documentation

Post-storm pebble counts were conducted on six occasions during the 2015–2016 wet season. Results from the pebble counts show a general increase in the presence of fine material at CC-TC and CC-BM. Results for CC-AC, CC-NR, and LP-NC varied throughout the year, with no apparent trend. No pebble counts were conducted at CC-ML, LP-HV, and CV-CV, as there were no suitable locations at which to conduct sampling.

For a complete summary of the pebble count findings, refer to Appendix D.

Streambed photographs taken throughout the wet season at each monitoring location were compiled into a photograph log, which is in Appendix E.

3.1.5 Event Mean Concentration and Suspended Sediment Load Results

The annual suspended sediment load was estimated by multiplying the average of the three daily load estimates at each monitoring location by the number of wet days from the 2014–2015 (14 days) and the 2015–2016 (21 days) monitoring years.

Load estimation options are often limited to this type of approach (referred to herein as the “average estimation method”) based on the amount of data. This approach can potentially skew overall estimates in either direction. For example, as in the case for the 2015–2016 wet season,

the high load estimate resulting from the unusually large January event drives up the average load. This elevated averaged gets applied to all wet days, regardless of storm size or intensity, potentially resulting in an overestimation. In an effort to better represent load estimations for non-monitored storms at the TMDL Monitoring Program sites, alternative approaches were explored in FY15 by assessing the relationships among rainfall intensity, event mean concentration (EMC), and sediment load to determine whether EMC and/or sediment load values can be reasonably estimated based on rainfall intensity.

This type of approach allows for load estimations based on a measured parameter (e.g., rainfall) for a non-monitored storm, rather than simply applying an average of monitored events. When incorporating data collected during the 2015–2016 wet season, the strength of these relationships decreased and they were deemed unreliable for use in estimating loads. This change is most likely due to flow-duration effects and the non-linear nature of high versus low flows on SSC transport. This also resulted in the inability to use this approach for the Watershed Special Study sites, given the limited data points. Therefore, the load estimations in this report are calculated using only the average estimation method described above. Although the results may be skewed high, these values are comparable to those calculated in the same manner for the TMDL Monitoring Program and they allow for relative comparisons and assessments of fluctuating loads within the subwatersheds.

Table 3-4 provides the EMCs and daily and annual sediment load estimates for Phase I and Phase II.

Table 3-4.
Event Mean Concentration and Load Results

Site	SSC Flow-Weighted EMC (mg/L)			Estimated Daily Load (tons/day)			Estimated Annual Load (tons/year) [a]
	Event 1	Event 2	Event 3	Event 1	Event 2	Event 3	
Previous Monitoring – Phase I - 2014–2015							
Trap Channel (CC-TC)	75	29	100	0.4	0.18	0.26	4
Black Mountain (CC-BM)	859	221	90	6.3	1.09	0.25	36
Maya Linda (CC-ML)	230	68	134	3.5	0.8	0.74	24
Subtotal of Upstream Sites[b]	—	—	—	**10.2**	**2.07**	**1.25**	**63**
Arizona Crossing (CC-AC)	764	197	56	141	64	2.9	970
Nancy Ridge (CC-NR)	233	99	58	7.3	4.3	0.63	57
Previous Monitoring - 2014–2015 Compliance Site Monitoring Results							
Carroll Canyon Creek	381	235	76	44.4	33.5	2.6	376
Carmel Valley Creek	5.5	10	10.6	0.2	0.9	0.04	5
Los Peñasquitos Creek	11	6.7	2	10.4	4.7	0.09	71
Total	—	—	—	**55**	**39.1**	**2.73**	452
Current Year Monitoring – Phase II – 2015–2016							
Carroll Canyon Subwatershed							
Trap Channel (CC-TC)	720	677	15.4	50	4.82	0.03	384
Black Mountain (CC-BM)	79	111	322	1.11	0.18	0.25	11
Maya Linda (CC-ML)	598	50.8	50.4	16.71	0.54	0.28	123
Subtotal of Carroll Upstream Sites[b]	—	—	—	**67.82**	**5.54**	**0.56**	**517**
Arizona Crossing (CC-AC)	234	150	59.9	110	31.9	5.38	1031
Nancy Ridge (CC-NR)	1216	152	162	809	62.5	34.7	6343
Los Peñasquitos Subwatershed							
Poway (LP-HV)	365	118	124	162	1.16	1.88	1155
Sabre Springs (LP-NC)	826	90.9	56.7	2249	3.5	1.45	15,778
Carmel Valley Subwatershed							
Carmel Valley Upper (CV-CV)	180	75.1	45.6	20	1.29	0.27	151
Compliance Site Monitoring Results							
Carroll Canyon Creek	2,030	197	307	1,283	15.2	25.8	9,268
Carmel Valley Creek	79.4	30.4	47	23.9	1.73	1.67	191
Los Peñasquitos Creek	373	17.1	4.94	2,004	6.11	0.75	14,076
Total	—	—	—	**3,311**	**23**	**28.2**	23,535

a. Based on the 14 wet days during 2014–2015, and 21 wet days during 2015–2016, as determined during this wet season (Section 3.1.1)
b. The three sites upstream of the confluence to Carroll Canyon Creek were summed to provide a subtotal of the upstream contribution.
mg/L = milligrams per liter

During Phase I, the highest suspended sediment loads were calculated at the Arizona Crossing location (CC-AC), which is at the downstream end of a stream reach that is dominated by highly erodible features. However, during Phase II, the highest sediment loads were calculated at the

North City location (LC-NC) in the upper Los Peñasquitos Creek subwatershed, and were attributable to unusually high flows rather than unusually high EMCs.

There are some challenges when comparing the two phases or years, given the differences in storm characteristics. Phase I occurred during drought conditions and storms were generally characterized by light to moderate consistent rain. Phase II occurred during an El Niño year and, although rainfall totals were slightly below annual averages, storms were generally intense and brief, in particular during storms that occurred over three days in early January 2016, when over half of the total wet season rainfall occurred. Considering these differences in seasons and the data collected through both phases, comparability between years is limited. However, the data collected do provide some preliminary findings.

Stream reaches that may warrant further investigation include the reach of Carroll Canyon Creek running through the gravel mine operations and the immediate reach downstream, the upper portion of Los Peñasquitos Creek, and the upper portions of Carmel Valley Creek. The following provides greater detail regarding each of these stream reaches.

Carroll Canyon Creek. The reach of Carroll Canyon Creek running through the gravel mine operations and the immediate reach downstream appear to be source and sink areas, respectively, with the sink storing material that can be mobilized during large, intense storms, which are the types of storms that the data seem to indicate occurred this year. During Phase I monitoring, the CC-AC site estimated loads were 970 tons per year, while the next downstream site (CC-NR) had an estimated load of 57 tons per year. This result led to a hypothesis last year that the reach between these two locations can serve as a sink, with the sink storing material that can be mobilized during large, intense storms. Monitoring during Phase II indicated that this hypothesis may be true, because much of that material was mobilized and transported downstream based on calculated loads of 1,031 tons per year at CC-AC and 6,343 tons per year at CC-NR (downstream of CC-AC). Input from Flanders Canyon Creek, which is downstream of CC-AC, was not measured this season but may have also contributed unusually high loads.

During sampling, field crews experienced some equipment issues that do not affect the overall assessment of the data. During the first event, there were sample collection failures during a portion of the storm (see dashed lines in Figure 3-4), which may have biased the flow-weighted EMC low, because missed samples were during higher flows. SSC estimates were made for the period of missed samples, based on flow rates and SSC comparisons during that event. When these estimations were incorporated into calculations for this site, the EMC and estimated load increased for this event. Using these estimated SSC values, the estimated load was 1,479 tons per year (compared to 1,031 tons per year calculated without the additional SSC estimated values). This higher estimated load for CC-AC is still less than that for CC-NR.

For the third event, total flow had to be estimated on the basis of previously collected data at CC-AC because of flow monitoring equipment failure (as discussed in Section 3.1.2). Therefore, a flow-weighted EMC could not be calculated for this event at this site. Sample collection was not affected by this failure. The CC-AC load for this storm was estimated using mean SSC and total estimated flow.

Despite the equipment issues encountered at the CC-AC site, preliminary data appear to indicate that this source-sink dynamic does exist in the stream between the upper limit of the gravel mine and CC-NR, and may warrant further investigation for potential management measures to control loads to the Lagoon from Carroll Canyon Creek. Although there were some equipment issues encountered during monitoring, results are representative of the overall conditions within the subwatershed.

Los Peñasquitos Creek. Another area of interest is the upper subwatershed reaches near the LP-HV and LP-NC sites and downstream through the Los Peñasquitos Creek subwatershed. Load estimates are of magnitude similar to those measured at the base of the creek. Table 3-4 provides estimated loads based on submitted samples. Similar to equipment issues during the first event at CC-AC, damaged equipment caused some samples at LP-HV to be missed during peak flows. SSC estimates were made for this period based on samples collected during the monitoring event and associated flows (see dashed lines in Figure 3-6). When these estimates are included in EMC and load calculations, the estimated first event daily load and annual loads at LP-HV are approximately 70 percent of the estimates at LP-NC.

This result may indicate another source reach followed by a large sink, as the load estimates are slightly higher at LP-NC compared to those at the base of the creek. The portion of Los Peñasquitos Creek downstream of the LP-NC location is generally characterized by less developed lands immediately surrounding the creek when compared to portions through Poway. The more natural portion of the creek may be able manage higher flows with less scouring and erosive effects of hydromodification. However, there is only one year of data for this subwatershed; therefore, these results and assessments are preliminary.

Carmel Valley Creek. Similar to Los Peñasquitos Creek, load estimates from the upper portion of Carmel Valley Creek were similar (slightly less) than the estimated load at the base of the creek. However, overall load estimates from Carmel Valley Creek are significantly less than those at Los Peñasquitos and Carroll Canyon Creeks. The proportionally high loads from the upper subwatershed may be attributable to less restricted flows coming from the upper reaches, prior to converging and flowing through the lower reaches, which are generally characterized as lower gradient with heavy vegetation. Also, similar to findings at Los Peñasquitos Creek, this result is based on a limited data set from one year of monitoring. Furthermore, the relatively small loads from this subwatershed make it a low priority for management measures.

Overall WMA Findings Summary. Although these findings are based on limited data, they do provide an initial framework for assessing management measures and focus areas. Of the three subwatersheds, Carroll Canyon Creek is the primary subwatershed on which to focus resources and management measures. In typical years, Carroll Canyon Creek delivers the highest percentage of sediment load to the Lagoon (80 to 90 percent), and despite not contributing the highest percentage this year, its estimated SSC EMCs were the highest of the three subwatersheds. Management measures that address controlling sources of sediment where possible can drive down SSC concentrations, and ultimately loads.

Land use and creek condition through the portion of Carroll Canyon Creek that contributes the highest EMCs and proportion of sediment loads are important factors to consider when assessing methods to control sources. Figure 3-16 presents the land uses surrounding the section of Carroll

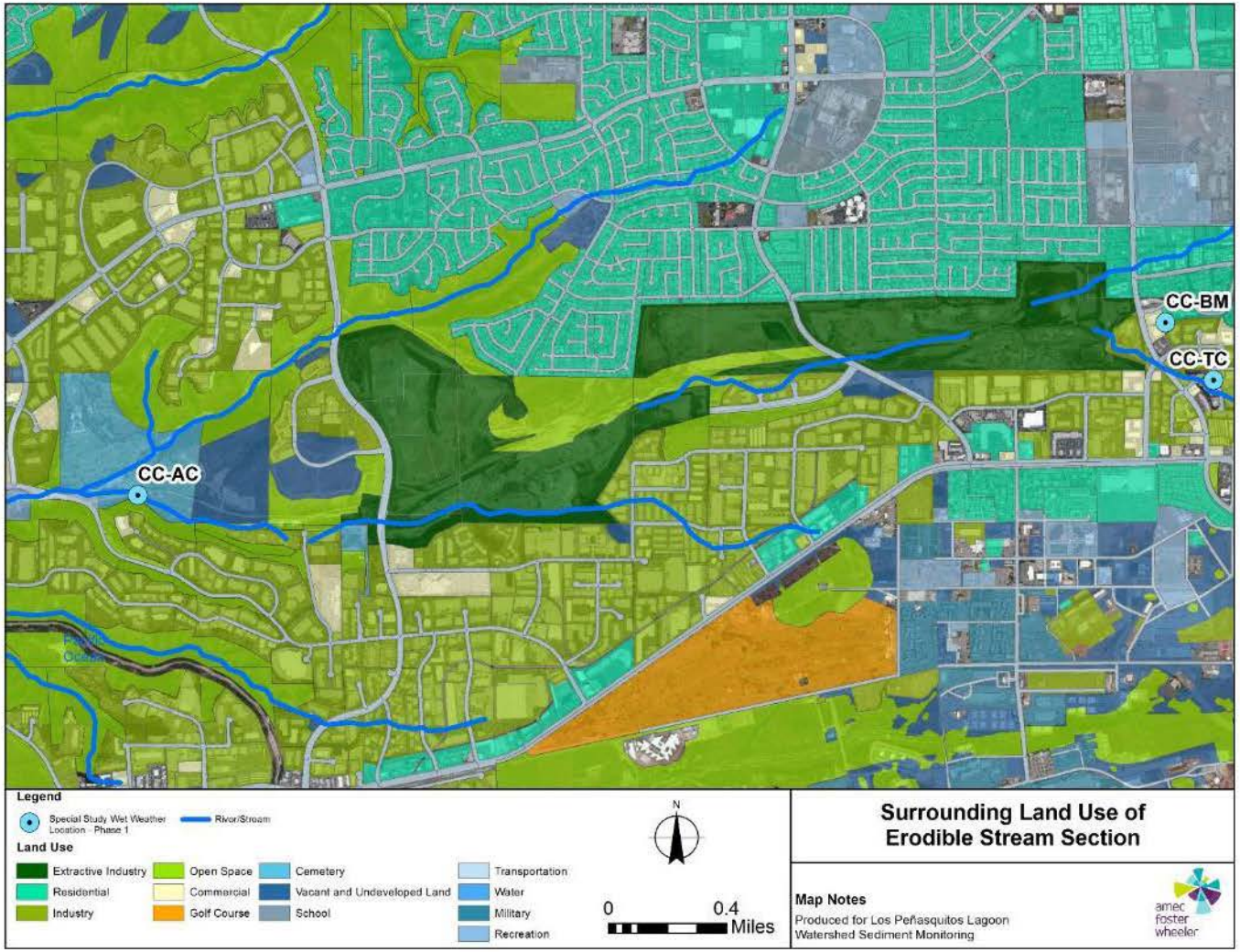

Figure 3-16.
Central Carroll Canyon Creek Land Uses

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Canyon Creek between the monitoring locations described above. These reaches are characterized by lack of vegetation and erodible and unstable banks. The land uses surrounding the section of creek between the three upper subwatershed monitoring locations and CC-AC include heavily developed residential land uses to the north, active industrial land uses to the south and east, and a mining operation along the northern banks of the creek itself.

Flow presents a much more challenging factor to control or reduce. During the unusually high flows encountered during this wet season, loads were elevated throughout the WMA and this was the driving force for the increase in the relative contribution from Los Peñasquitos Creek and the magnitude of the annual load estimate. Managing such high flow through these systems may not be the most cost-effective strategy and doing so to a significant degree may not be feasible. Flows observed this season were large and strong enough to destroy the upper portion of the concrete lined channel in Carroll Canyon Creek and flood the area between CC-AC and CC-NR and the commercial area near the base of Carroll Canyon Creek. BMPs typically are not designed to be effective for storms and/or flows of this size. However, implementing measures to reduce existing impacts of hydromodification may help drive down flow rates, which will likely help reduce erosion and sediment transport (SSC concentrations).

3.1.6 Analysis of SSC and Flow

A preliminary analysis compared SSC measured during two wet seasons (2014–2016) and the corresponding flow rates for those samples. Results of this analysis are provided in Figures 3-16 through 3-23.

CC-NR and CC-AC had the strongest SSC versus flow relationships, with coefficient of determination (R^2) values of 0.78 and 0.74, respectively. These sites were also shown to have ample sediment supply upstream, as found in a geomorphic assessment conducted during the 2014 monitoring program (AMEC, 2014). The reaches upstream of these monitoring locations were characterized by highly erodible banks, with limited armoring within the channel. Hidden Valley also had a relatively strong SSC versus flow relationship (R^2=0.62) over the study period.

The other five sites showed poor relationships between SSC and flow. CC-BM (R^2=0.39) and CC-ML (R^2=-0.13) are similar in that samples are taken as flow enters a storm drain. These two sites, along with CC-TC (R^2=0.22), have small drainage areas with high proportions of impervious surfaces that contribute to their “flashy” behavior and unreliable sediment supply. The LP-NC (R^2=0.38) sample collection point is near the bank after the creek passes over a small pool, which may cause suspended material to settle out of the water column before it can be measured. The collection point faces a similar obstacle at CV-CV (R^2=-0.28), as it is located in a section of the creek directly downstream of a large pool and is situated among small boulders that can become small rapids during high-flow conditions.

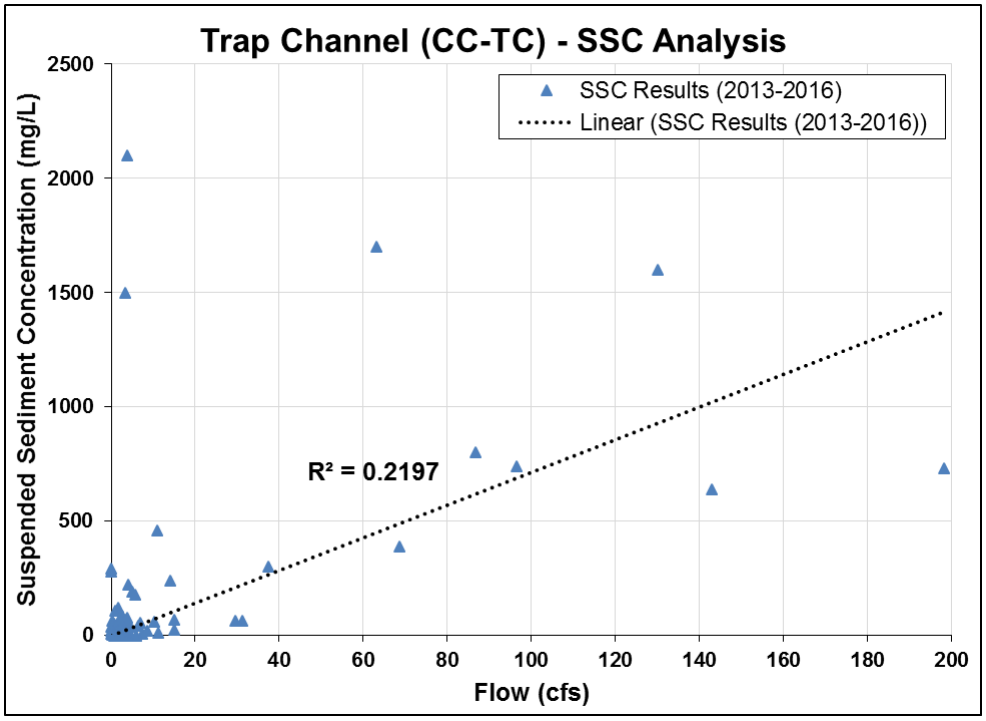

Figure 3-16.
Flow Rate vs. SSC—CC-TC

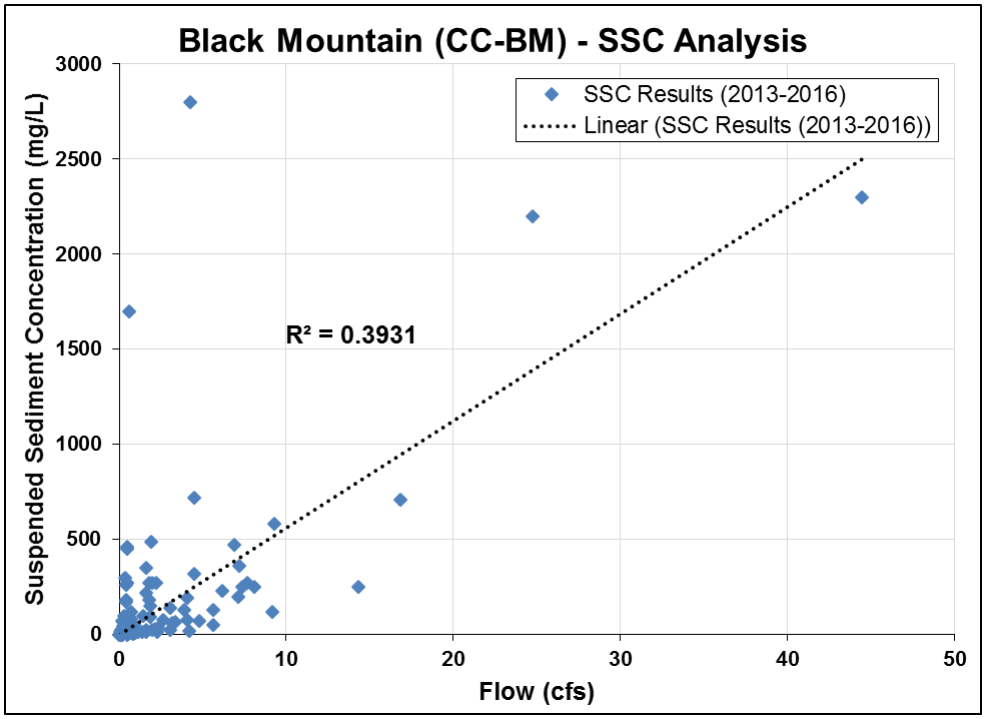

Figure 3-17.
Flow Rate vs. SSC—CC-BM

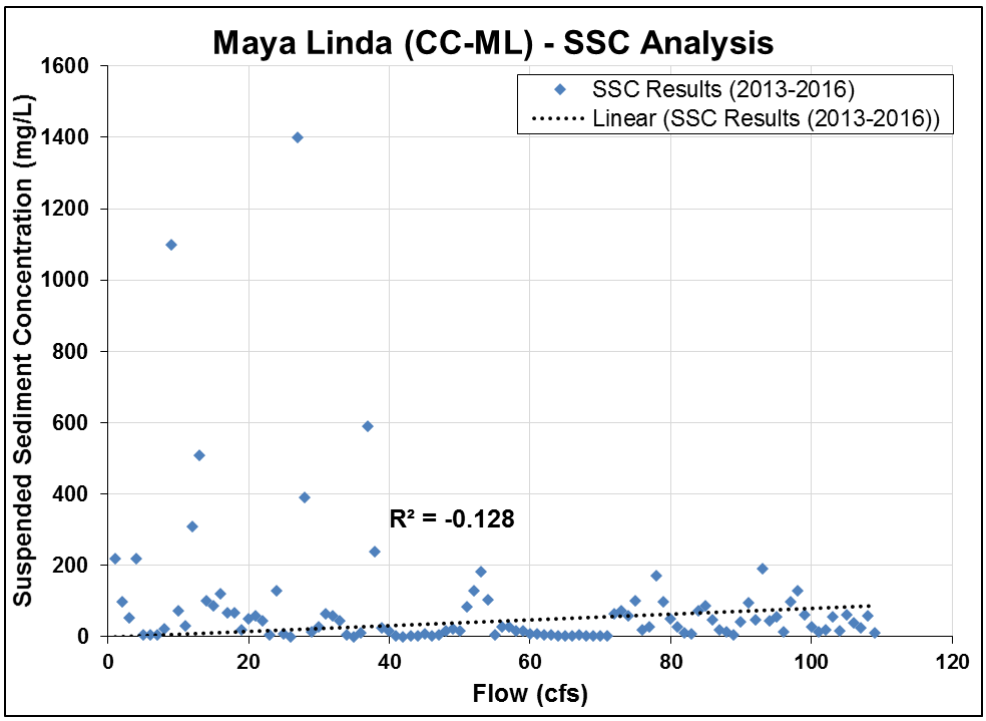

Figure 3-18.
Flow Rate vs. SSC—CC-ML

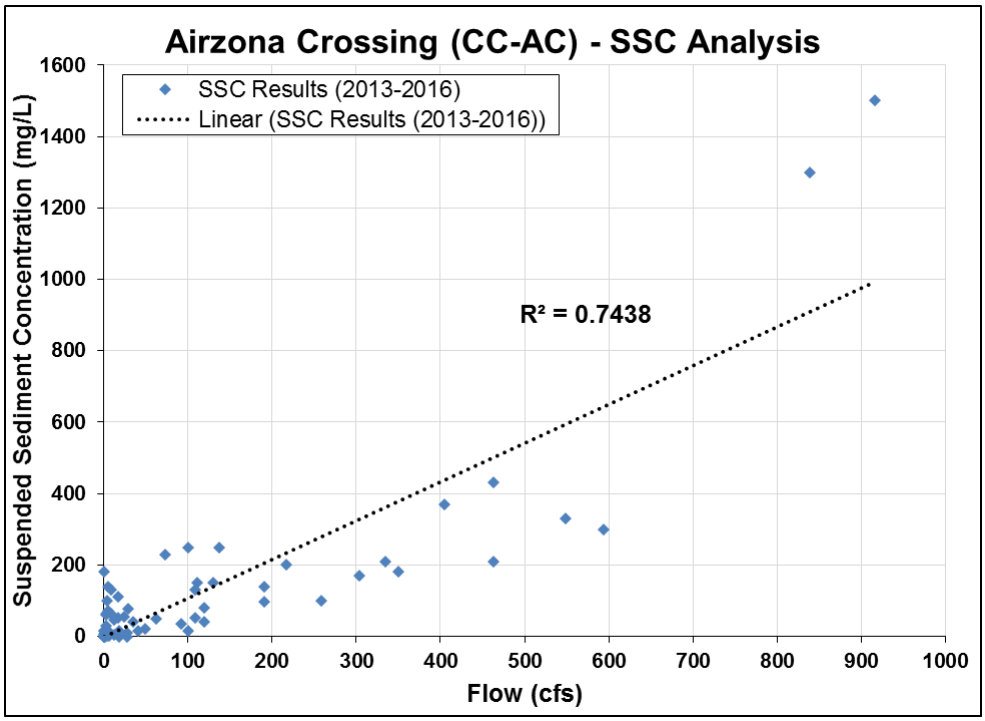

Figure 3-19.
Flow Rate vs. SSC—CC-AC

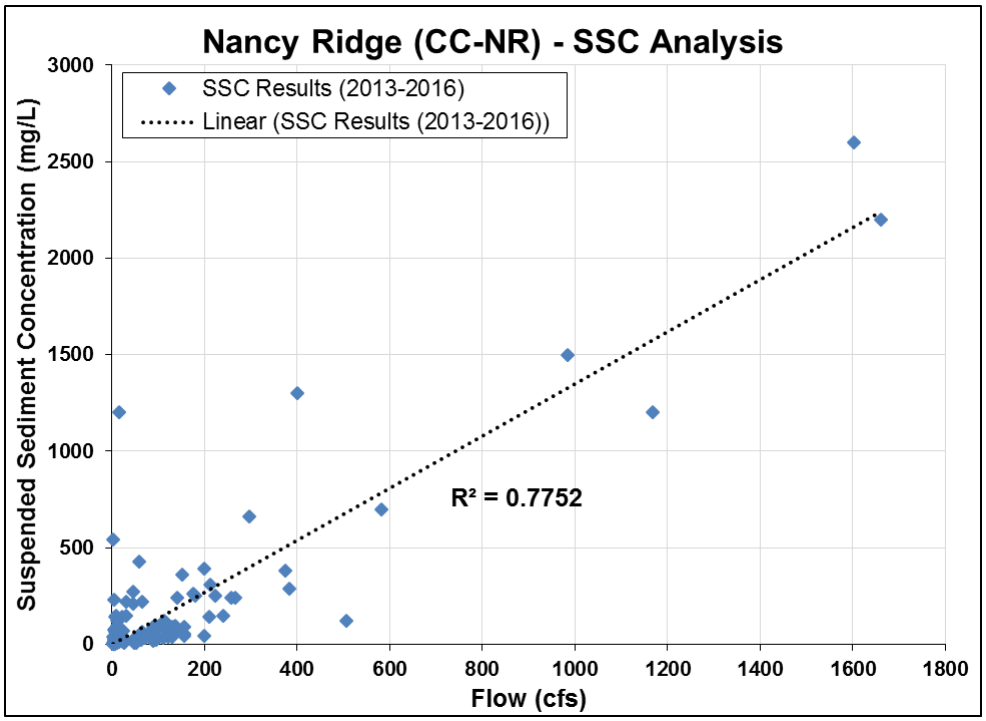

Figure 3-20.
Flow Rate vs. SSC—CC-NR

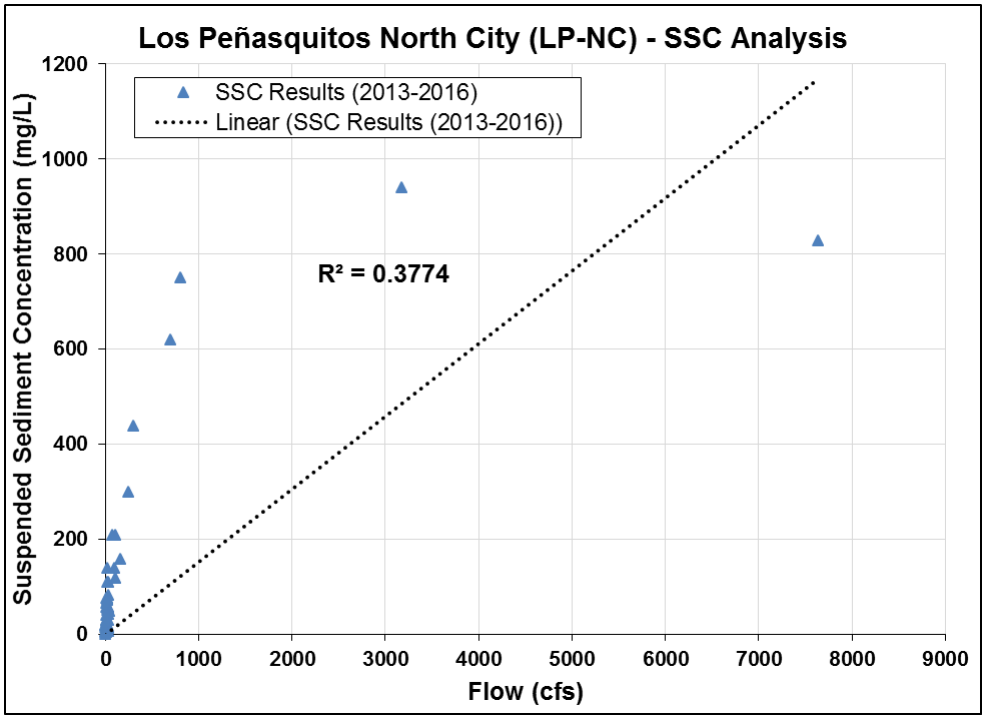

Figure 3-21.
Flow Rate vs. SSC—LP-NC

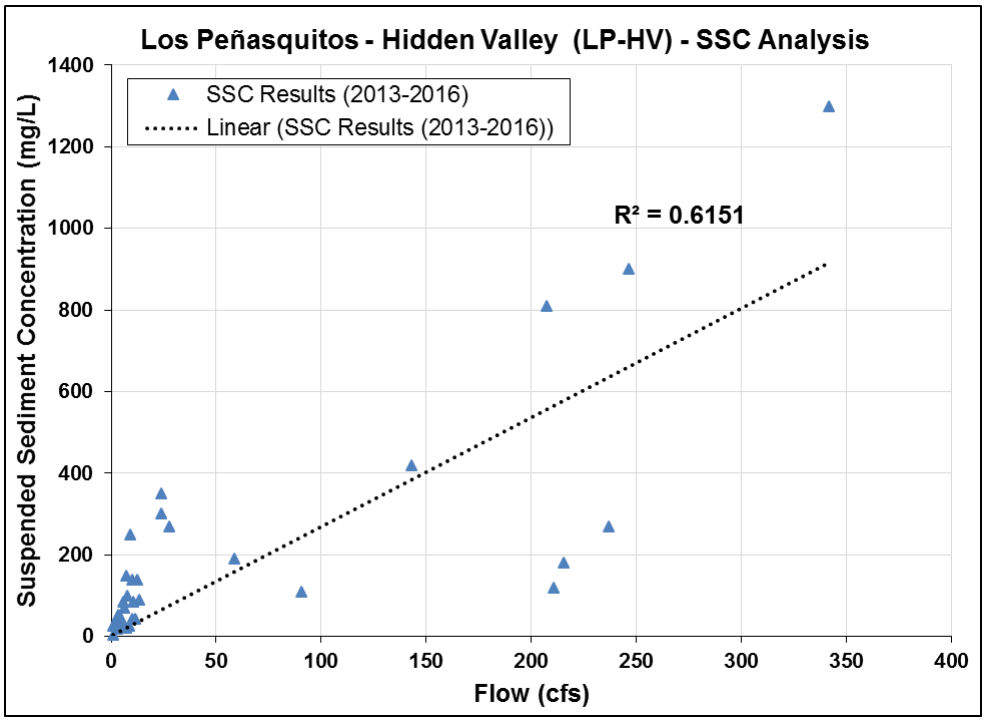

Figure 3-22.
Flow Rate vs. SSC—LP-HV

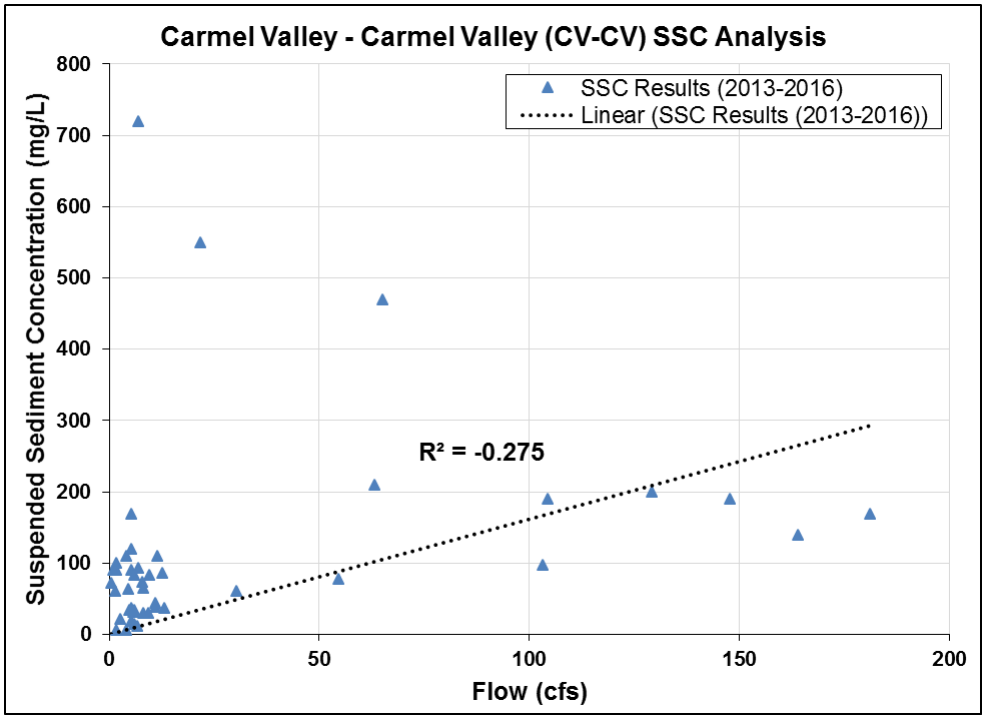

Figure 3-23.
Flow Rate vs. SSC—CV-CV

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3.2 AERIAL DEPOSITION SAMPLING RESULTS

Aerial deposition monitoring results from both FY15 and FY16 indicated that airborne particulate matter equal to or less than 10 microns in diameter (PM_{10}) are not a significant source of sediment within the WMA. Review of the data from the six dry weather deposition sampling events in the Carroll Canyon Creek subwatershed and three events in the other two subwatersheds show generally low concentrations, either at or near the reporting limits. There were marginal increases in concentrations around anthropogenic activities, particularly in the Carroll Canyon Creek subwatershed relative to other monitored locations; however, these slight increases were not consistent or significant. Monitoring results from the two types of monitoring equipment (FRM and optical sensors) indicated that results were similar, in that results from both types of equipment were low or negligible. However, within the low ranges of concentrations, results did not correlate well and showed a mean relative percent difference of 108 percent. Although the RPD is high, this is due to very low concentrations measured that are within 10 times the laboratory reporting limit and standard flow volume. RPD calculations for low concentrations such as those measured during this program mischaracterize what are actually very small differences in concentration. Appendix F provides detailed results and technical memorandum for aerial deposition monitoring.

Visual observations at the Carroll Canyon Creek downwind monitoring location, near the Black Mountain SSC monitoring location, discovered significant particle matter deposition on the surfaces of vehicles, roads, and buildings and other surrounding structures. The observed deposition may be due to the high volume of truck traffic at the mining operations adjacent to the monitoring location, which may trigger turbulent diffusion and transport sediment from the road and vehicles to the nearby surroundings. Despite these observations, monitoring equipment placed on the roof of a nearby fire department did not show high concentrations of PM_{10}. This result indicates that the observed deposition in the immediate area is not being suspended high into the air column and remains localized to the area just outside the gravel mine driveway.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data generated during the Watershed Special Study monitoring program provided initial insight into the sediment transport characteristics of three subwatersheds within the Los Peñasquitos WMA. The monitoring program was designed to answer the following questions:

- Wet Season Riverine Monitoring
  - What is the sediment concentration at discrete times throughout a wet weather event hydrograph at points throughout the subwatersheds?
  - What are current sediment load estimates at points throughout the subwatersheds? Is there a greater load from a potential source area?
  - How do the wet weather sediment delivery potentials of each creek compare with each other?
- Dry Weather Aerial Deposition Monitoring
  - What are the aerial contributions of sediment to the subwatersheds within the WMA?
  - Can these entrained particles be associated with specific sources or land uses?
  - What is the contribution of aerial deposition relative to wet weather suspended sediment concentrations observed in the subwatersheds?

4.1 CONCLUSIONS

Based on the Watershed Special Study (both phases), the central portion of Carroll Canyon Creek between the three upper subwatershed monitoring locations and CC-NR appears to be the primary area affecting loads to the Lagoon via Carroll Canyon Creek. During Phase I, relatively high loads were estimated at the CC-AC location, which then seemed to be deposited in the channel, as lower loads were estimated at the CC-NR location. During Phase II, there was a relative shift in load proportion, with CC-NR showing higher loads than CC-AC. This dynamic suggests that during typical seasons the large contribution of sediment load that comes from the reach between the upper monitoring locations and CC-AC is deposited downstream, and can be mobilized during years with larger, more intense storms, as encountered during Phase II. The remobilized material contributed to the elevated SSC EMCs and load estimates for Carroll Canyon Creek. Data from the Los Peñasquitos Creek and Carmel Valley Creek subwatersheds suggest that proportionally high loads are generated in the upper portion of these subwatersheds, and may be deposited and/or pick up relatively low amounts of sediment prior to discharging to the Lagoon.

Although Los Peñasquitos Creek delivered the highest overall load this season, this result was driven by the unusually high flows encountered during Phase II; SSC EMCs were relatively low when compared to those of the other two subwatersheds. Overall contribution from Carmel Valley Creek was approximately 1 percent of the annual load estimate this season, and is consistently a small percentage of the total load, thus making this subwatershed the lowest priority for assessing management measures.

Based on data collected during both phases of the Watershed Special Study, two key monitoring locations within the Carroll Canyon subwatershed, CC-AC and CC-NR, showed relatively strong relationships between flow and SSC results, with R^2 values of 0.74 and 0.78, respectively. The other monitoring locations exhibited weak to no relationship between these two parameters, with R2 values ranging from 0.62 to -0.28. Further assessment of the data collected during this program, along with data collected at the TMDL compliance sites, will allow for a better understanding of these relationships at each site, and ultimately will facilitate better load estimations and key areas for potential management measures. Further assessment that includes factors such as supply limitations, dynamic hydrologic factors, and development of flow-duration and load-durations curves (when sufficient data allow) can assist in assessing shear stress within the creeks, which is a key factor in development of management measures.

Aerial deposition monitoring results from Phase II indicated that the contribution from airborne particles to the suspended sediment loads observed in the WMA is not significant relative to those generated by storm flows. PM_{10} analytical results from three monitoring events were generally low or negligible, as they were at or near the analytical laboratory's reporting limits. There were marginal increases in concentrations around anthropogenic activities, particularly in the Carroll Canyon Creek subwatershed relative to other monitored locations; however, these slight increases were not consistent or significant. Monitoring results from the two types of monitoring equipment (FRM and optical sensors) indicated that results were similarly low or negligible; however, within the low ranges of concentrations, results did not correlate well and showed a mean relative percent difference of 108 percent. The variability observed is primarily due to the low range of concentrations, where RPD calculations can misrepresent very small concentration differences.

4.2 RECOMMENDATIONS

The Watershed Special Study is complete. Monitoring at these locations is not planned to continue. The following are recommendations for potential future assessment efforts:

Perform detailed data analysis of both TMDL compliance site and Watershed Special Study monitoring location data using applicable sediment transport methods by utilizing available hydrologic, hydraulic, and geomorphic data for the study reaches. Calibrate the sediment transport predictions with sediment load collected through previous monitoring efforts. Assessment of data collected during this program over the past three years may be used to develop flow-duration and load-duration curves, assess shear stress within the creeks, and ultimately support sediment transport predictions for more accurate annual load estimations.

Focus assessments of management measures on the central portion of Carroll Canyon Creek. Based on data collected during both phases of this program, this portion of the creek appears to be the primary area within the WMA impacting SSC levels and associated impacts to estimated loads to the Lagoon. Reduction of SSC generated and stored in this area will provide a key reduction in sediment loads to the Lagoon.

Assess existing hydromodification impacts and methods to reduce those impacts. Increased flow rates attributed to land use development and associated hydromodification impacts increase erosion and the sediment transport capability of the creeks. This finding appears to be particularly

true within the Carroll Canyon Creek subwatershed, where there is a high level of development and measured flows are “flashy” in response. This also appears to exist in the upper portion of Los Peñasquitos Creek subwatershed, in the Poway area, because flows measured at the LP-NC location showed a rapid response to rainfall and had the highest SSC EMCs within the subwatershed.

Focus potential future monitoring on the central Carroll Canyon Creek reaches. If future monitoring is determined to be needed, the scale of the monitoring program should be reduced to focus on the central Carroll Canyon Creek reaches, similar to Phase I. Data collected during both phases of the Watershed Special Study indicated that this area has the greatest sediment transport dynamics driven by storm flows. Further aerial deposition monitoring for load contribution is not recommended, because the data indicated an insignificant contribution from aerial suspension and deposition. Monitoring may be required for various reasons, including further assessment of concentrations and loads for design purposes or effectiveness assessment of potential future management measures implemented within the subwatershed.

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APPENDIX A
LOS PEÑASQUITOS WATERSHED MANAGEMENT AREA SEDIMENT LOAD SPECIAL STUDY FINAL MONITORING PLAN

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LOS PEÑASQUITOS WATERSHED MANAGEMENT AREA
SEDIMENT LOAD SPECIAL STUDY
FINAL MONITORING PLAN

Submitted to:
City of San Diego
Transportation & Storm Water Department
9370 Chesapeake Drive Suite 100
San Diego, California 92123

Submitted by:
Amec Foster Wheeler Environment & Infrastructure, Inc.
San Diego, California

June 2015

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
303(d) list	Clean Water Act Section 303(d), List of Water Quality Limited Segments
AC	alternating current
Air Toxics	Eurofins Air Toxics Laboratory
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
ASTM	ASTM International (formerly American Society for Testing and Materials)
AVB	area-velocity bubbler
Bacteria TMDL	Resolution No. R9-2010-0001: Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)
Caltrans	California Department of Transportation
CC	Carroll Canyon (used for Site ID)
CFR	Code of Federal Regulations
City	City of San Diego
CLRP	Comprehensive Load Reduction Plan
COC	chain of custody
CV	Carmel Valley (used for Site ID)
CWA	Clean Water Act
DC	direct current
DW	dry weather
FRM	Federal Reference Method
FY	fiscal year
GPS	Global Positioning System
HASP	Health and Safety Plan
HDPE	high-density polyethylene
ID	identification
Lagoon	Los Peñasquitos Lagoon
LB	left bank
LCS	laboratory control sample
LP	Los Peñasquitos (used for Site ID)
MB	method blank
MCAS	Marine Corps Air Station
mg/m3	milligrams per cubic meter
MOU	Memorandum of Understanding
MQO	measurement quality objective
MS4	municipal separate storm sewer system
MS4 Permit	Order Number R9-2013-0001: San Diego Regional Municipal Separate Storm Sewer System (MS4) Permit
NWS	National Weather Service
OAL	(California) Office of Administrative Law

ACRONYMS AND ABBREVIATIONS (CONTINUED)

PCH	Pacific Coast Highway
PM	particulate matter
PM10	Particulate matter with an aerodynamic diameter of 10 microns or less
PM2.5	Particulate matter with an aerodynamic diameter of 2.5 microns or less
QA	quality assurance
QC	quality control
RB	right bank
Regional Board	San Diego Regional Water Quality Control Board
RL	reporting limit
RPD	relative percent difference
Sediment TMDL	Resolution Number R9-2012-0033: A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon (Regional Board, 2012)
SOP	standard operating procedure
SSC	suspended sediment concentration
State	State of California
State Board	State Water Resources Control Board
TMDL	Total Maximum Daily Load
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
VAC	volts alternating current
VDC	volts direct current
Weck	Weck Laboratories, Inc.
WLA	waste load allocation
WMA	Watershed Management Area

1.0 INTRODUCTION

This special study will complement and provide supporting information for the implementation of Resolution Number R9-2012-0033, *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load (TMDL) for Sedimentation in Los Peñasquitos Lagoon* (Sediment TMDL) (Regional Board, 2012). The study will monitor suspended sediment concentrations (SSCs) and the deposition of airborne particulates at multiple points along the major tributaries within the greater Los Peñasquitos Watershed Management Area (WMA). The purpose of this special study is to better understand sediment loading and transport within the Los Peñasquitos WMA. Data collected during this special study are intended to provide information on potential source areas within the subwatersheds and to determine whether aerial deposition is a contributing factor to sediment loads. Results of this monitoring are aimed at assisting Responsible Agencies to determine the most effective use of resources to manage sediment loading throughout the WMA.

1.1 BACKGROUND

The Los Peñasquitos WMA encompasses an approximate 94-square-mile drainage area in west-central San Diego County. Within the WMA are the City of Poway, a portion of the City of Del Mar, unincorporated areas of San Diego County, and the City of San Diego communities of Mira Mesa, Scripps Ranch, Carmel Valley, and Sorrento Valley.

The WMA drains a highly urbanized region that supports a variety of water supply, economic, recreational, and habitat-related beneficial uses. The WMA includes four subwatersheds: Carmel Valley Creek, Los Peñasquitos Creek, Carroll Canyon Creek, and Los Peñasquitos Lagoon (the area immediately surrounding the lagoon). For the purposes of this monitoring plan, the three major streams (Carmel Valley Creek, Los Peñasquitos Creek, and Carroll Canyon Creek [also known as Soledad Canyon Creek]) will be referred to collectively as the subwatersheds that are included for monitoring purposes, as these are the primary conveyances that ultimately discharge into the Los Peñasquitos Lagoon (Lagoon). The subwatershed of Los Peñasquitos Lagoon is not included in the monitoring under this special study.

The Lagoon has incurred a number of anthropogenic disturbances that have resulted in excessive sedimentation and the gradual degradation and loss of the estuarine habitat. Accordingly, the Lagoon was placed on the 2006 Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments (303(d) list) for sedimentation and siltation on June 28, 2007. Under the 303(d) listing, beneficial uses that are most impaired by sedimentation are estuarine habitat and preservation of biological habitats of special significance. Sedimentation in the Lagoon also restricts tidal flows between the Lagoon and the ocean, and degrades critical saltmarsh habitats.

On June 13, 2012, the San Diego Regional Water Quality Control Board (Regional Board) adopted the Sediment TMDL, which is designed to restore the Lagoon to its mid-1970s condition. The Sediment TMDL has been approved by the State Water Resources Control Board (State Board) and was approved by the California Office of Administrative Law (OAL) on July 14, 2014, and the United States Environmental Protection Agency (USEPA) on October 30, 2014. This Monitoring Plan will be adopted to evaluate progress toward meeting TMDL targets and sediment reduction goals.

The Sediment TMDL will be incorporated into the San Diego Regional Municipal Separate Storm Sewer System (MS4) Permit (MS4 Permit) (Order Number R9-2013-0001) (Regional Board, 2013) and will be included in the Water Quality Improvement Plan for the Los Peñasquitos WMA. The requirements of the Sediment TMDL and the MS4 Permit will be addressed in the Los Peñasquitos WMA Water Quality Improvement Plan. This special study assessing sediment transport within the subwatersheds of the Los Peñasquitos WMA fulfills requirements set forth in the Water Quality Improvement Plan. This study is to be conducted in two phases during the current MS4 Permit cycle, as described in Section 1.2. The first phase was initiated solely by the City of San Diego to serve as a pilot study to assess the feasibility of implementation. The second phase is implemented by the Responsible Agencies throughout the entire WMA, per Water Quality Improvement Plan requirements.

The Responsible Agencies that are party to the development of the Water Quality Improvement Plan for this WMA are:

- City of Del Mar
- City of Poway
- City of San Diego
- County of San Diego
- California Department of Transportation (Caltrans)

Caltrans has partial responsibility for the implementation of the Sediment TMDL along with the Comprehensive Load Reduction Plan (CLRP) for the TMDL for indicator bacteria, *Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001 (Regional Board, 2010), referred to as the Bacteria TMDL. Caltrans is therefore included as a Responsible Agency, but is not listed in the MS4 Permit as a Copermittee. Caltrans is under a separate storm water permit from the State of California (State) to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters (Order No. 2012-0011-DWQ and Amendment Order No. WQ 2014-0077-DWQ) (State Board, 2014 and 2013). Caltrans is voluntarily participating in the development of several Water Quality Improvement Plans across the San Diego region.

1.2 SPECIAL STUDY PLANNING AND OBJECTIVES

This special study will assess sediment transport at multiple points throughout the WMA's subwatersheds (Carmel Valley Creek, Los Peñasquitos Creek, and Carroll Canyon Creek) in both the riverine water column (during storms) and aerial deposition (during ambient dry conditions). Data collected during this program will provide current sediment loading information for the monitored segments of the creeks. Outcomes from this special study are intended to assist in evaluating and refining the sources of sediment within the study area, which will ultimately assist in addressing potential management measures related to the Sediment TMDL waste load allocation (WLA). This special study is designed to answer the following study questions:

- Wet Season Riverine Monitoring
  - What is the sediment concentration at discrete times throughout a wet weather event hydrograph at points throughout the subwatersheds?

  - What are current sediment load estimates (washload and bedload) at points throughout the subwatersheds? Is there a greater load from a potential source area?
  - How do the sediment delivery potentials of the various creek reaches compare with each other during wet weather events?
- Dry Weather Aerial Deposition Monitoring
  - What are the aerial contributions of sediment to the subwatersheds within the WMA?
  - Can these entrained particles be associated with specific sources or land uses?
  - What is the contribution of aerial deposition relative to wet weather suspended sediment concentrations observed in the sub-watersheds?

This special study is to be executed in two phases as follows:

- Phase 1
  - Initiated by the City of San Diego to assess the feasibility of the study design and provide additional data on Carroll Canyon Creek discharges, as the creek has been identified as the primary contributor of sediment loads to the Lagoon
  - Conducted during Fiscal Year (FY) 2015 (FY15), July 2014 through June 2015. This phase could potentially continue in future fiscal years if Phase 2 is not initiated
  - Includes wet season riverine and dry weather aerial deposition monitoring in the Carroll Canyon Creek subwatershed only
- Phase 2
  - Implemented by the WMA Responsible Agencies throughout the WMA, per the Water Quality Improvement Plan
  - Conducted during one fiscal year, July through June, before the current MS4 Permit Report of Waste Discharge submittal in 2018
  - Includes wet season riverine and dry weather aerial deposition monitoring in the three subwatersheds: Carroll Canyon, Los Peñasquitos, and Carmel Valley Creeks

1.3 SUBWATERSHED STUDY AREAS

There are three monitored subwatersheds within the Los Peñasquitos WMA: Carmel Valley Creek, Los Peñasquitos Creek, and Carroll Canyon Creek. Figure 1-1 shows subwatersheds, boundaries of the creeks' drainage areas, 303(d)-listed segments, and jurisdictional boundaries. Caltrans' jurisdiction occurs in the three subwatershed and consists of the corridors associated with their highways (e.g., Interstate 5, Highway 1/Pacific Coast Highway [PCH]) and are not delineated separately in WMA maps.

Carmel Valley Creek, the northernmost creek, drains the approximate 15.71-square-mile (10,057-acre) sub-basin of Carmel Valley. Carmel Valley Creek flows westward from its headwaters (on Black Mountain) to its drainage point, at the northeastern corner of the Lagoon. The Carmel Valley Creek subwatershed is entirely within City of San Diego boundaries.

Los Peñasquitos Creek is the largest subwatershed in the WMA, draining approximately 59 square miles (37,760 acres) through the middle of the WMA. This creek conjoins with Carroll

Canyon Creek prior to entering the Lagoon. The Los Peñasquitos Creek subwatershed includes portions of the Cities of Poway, Del Mar, and San Diego, and unincorporated areas of San Diego County.

Carroll Canyon Creek, also known as Soledad Canyon Creek, is the southernmost of the three major drainages in the WMA. The creek runs through Carroll Canyon and ultimately drains into the Lagoon at the southwestern end, near its confluence with Los Peñasquitos Creek. Carroll Canyon Creek drains an area of approximately 17.19 square miles (11,004 acres). The Carroll Canyon Creek subwatershed is entirely within City of San Diego boundaries.

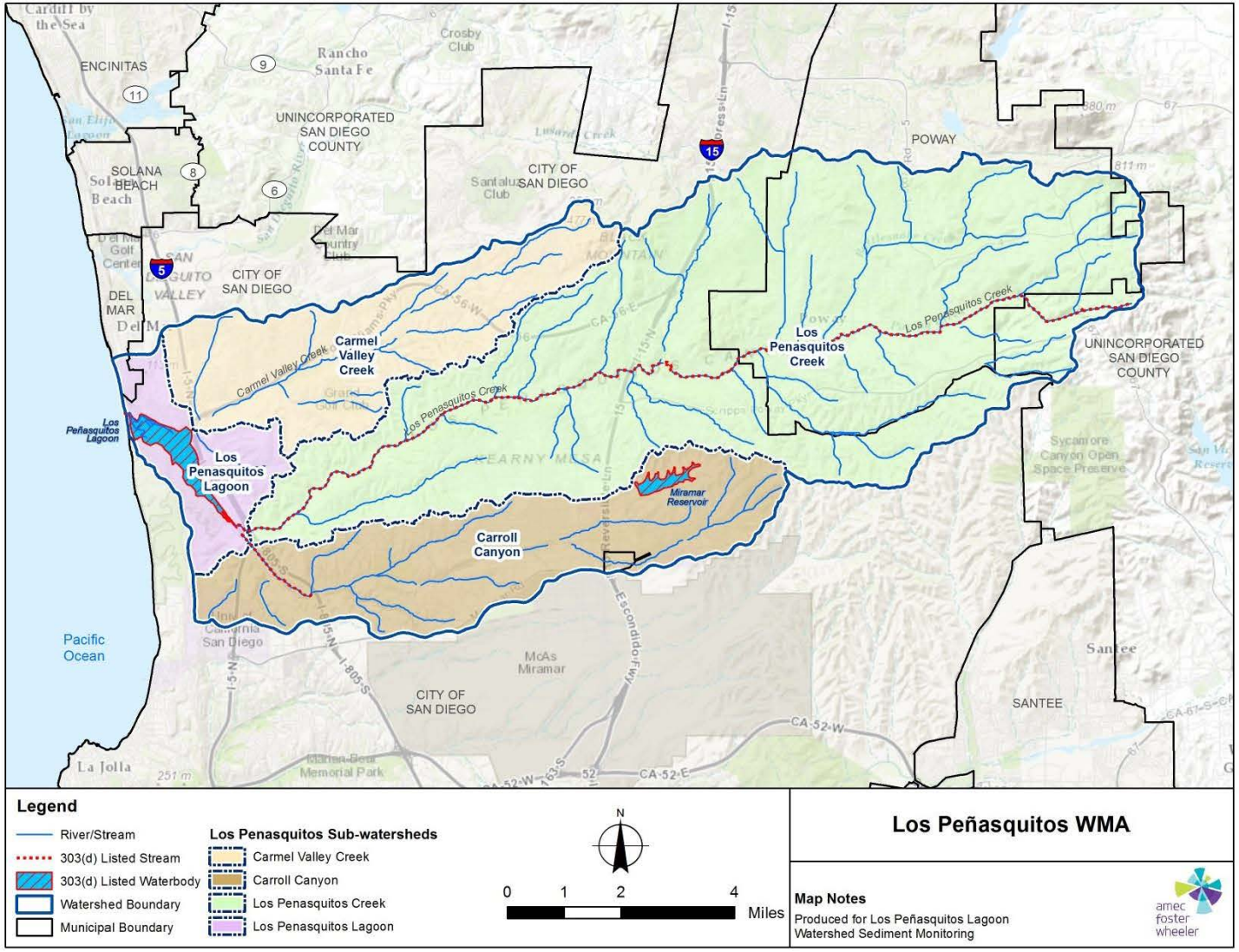

Figure 1-1.
Los Peñasquitos Water Management Area

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1.4 PROJECT ORGANIZATION

The City of San Diego is the municipal government agency that oversees the project. The other municipalities within the WMA will contribute to the program through a Memorandum of Understanding (MOU). The City of San Diego has assigned two staff members to provide project oversight:

- Andre Sonksen is responsible for storm water compliance-related projects at the City of San Diego and will provide project oversight.

- Karina Danek will provide Water Quality Improvement Plan and MS4 Permit-related support, as needed.

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) will coordinate sampling design, sample collection, laboratory analysis, data management, data analysis, and reporting. Amec has assigned project responsibilties to several staff members:

- Jeremy Burns will serve as the Amec Foster Wheeler Project Manager, and will be responsible for project coordination and development, scheduling, budget management, and oversight of all project plans, activities, and reports.
- Kiernan Brtalik, the Amec Foster Wheeler Project Coordinator and Field Sampling Manager, will be responsible for implementing the monitoring activities, coordinating laboratory work, and developing the project report.
- Dr. Theodore VonBitner will be the Amec Foster Wheeler Quality Assurance Officer, with responsibility for the project quality assurance (QA) and quality control (QC) procedures used during sampling, laboratory analysis, data management, and data analysis.
- Jesse Davis, as the Amec Foster Wheeler Health and Safety Officer, will be responsible for implementing the project health and safety plan and related practices.
- Dr. Habib Matin will provide Amec Foster Wheeler senior principal-level oversight and review during development of this monitoring plan, implementation of sampling, data analysis, and reporting.
- Liz Collins is the manager of Amec Foster Wheeler's material testing laboratory, which will conduct particle-size distribution analyses for bedload samples; she will ensure that samples analyzed by Amec Foster Wheeler are analyzed in accordance with the methods and QA requirements outlined in this monitoring plan.

Weck Laboratories, Inc. (Weck), located in City of Industry, California, will be responsible for wet weather SSC analysis:

- Hai Van Nguyen is the Weck Project Manager and will ensure that samples are analyzed in accordance with the methods and QA requirements outlined in this monitoring plan. The Weck laboratory QA/QC manual is in Appendix A.

Eurofins Air Toxics Laboratories, Inc. (Air Toxics), located in Folsom, California, will be responsible for analyzing the aerial deposition samples:

- Kyle Vagadori is the Air Toxics Project Manager and will ensure that aerial deposit samples are analyzed in accordance with the methods and QA requirements outlined in this monitoring plan. The Air Toxics laboratory QA/QC manual is provided in Appendix A.

The project organization is provided in Figure 1-2.

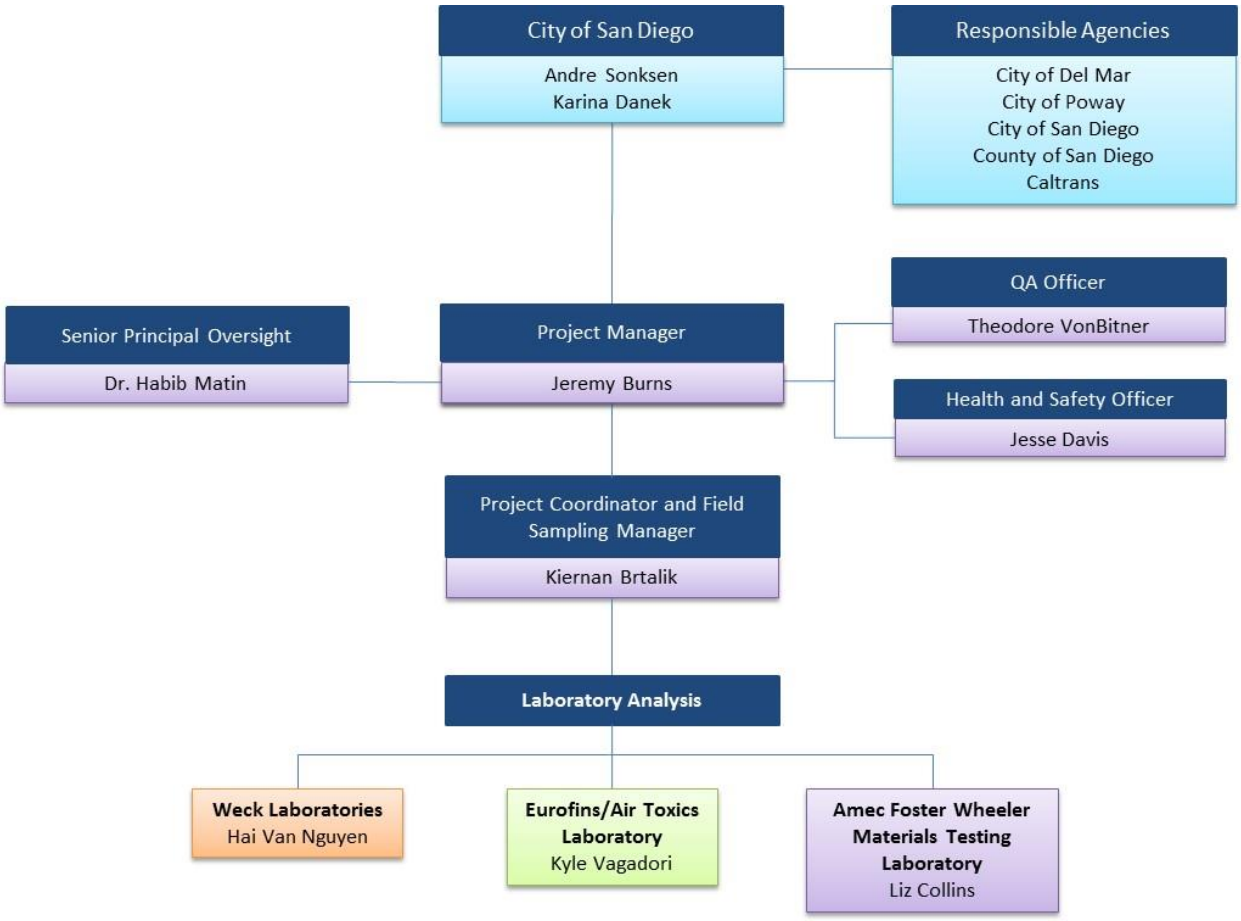

Figure 1-2.
Amec Foster Wheeler Team Organization

1.5 MONITORING PLAN ORGANIZATION

This monitoring plan encompasses wet weather riverine and dry weather aerial depositions monitoring. Given the different media, monitoring locations, and analyses, the structure of the monitoring and analytical procedures in this document is organized on the basis of monitoring type. The Introduction, QA/QC, and Data Analysis and Reporting sections (Sections 1, 5, and 6) are inclusive of both monitoring aspects and describe the overall, collective goals of this special study. For the sake of clarity, the monitoring details (e.g., locations, approach, analyses, etc.) for each monitoring type have been separated in this document.

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2.0 WET SEASON RIVERINE MONITORING

Wet weather and related sediment sampling will occur at several locations in Carmel Valley Creek, Los Peñasquitos Creek, and Carroll Canyon Creek within the study boundary. This section describes the monitoring locations, sampling procedures, and analytical requirements associated with the wet season riverine sampling.

2.1 WET SEASON SAMPLING LOCATIONS

Approximate wet weather sampling locations were pre-selected along Carroll Canyon Creek, Los Peñasquitos Creek, and Carmel Valley Creek. Locations were targeted on the basis of site accessibility, spacing along each creek, characteristics of creek segments, and/or jurisdictional boundaries.

Site names, identifications (IDs) and the approximate geographic coordinates within each subwatershed are listed in Table 2-1. The locations are also shown in Figure 2-1.

Included in Figure 2-1 are three TMDL compliance monitoring locations that are sampled as part of the Los Peñasquitos WMA compliance monitoring program. The three TMDL compliance sites are at the base of each primary tributary creek and are named after their respective subwatersheds: Carmel Valley Creek, Los Peñasquitos Creek, and Carroll Canyon Creek. These locations are shown in the map for context, but are not included in Table 2-1, because they are not part of this special study. Site locations for Phase 1 of this special study are currently being monitored. Site locations for Phase 2 are approximate and may change on the basis of site reconnaissance and suitability for monitoring, as determined during siting efforts in these subwatersheds during Phase 1.

Table 2-1.
Los Peñasquitos WMA Speical Study
Wet Season Monitoring Locations

Site Name	Subwatershed	Site ID	Site Description	Latitude[1]	Longitude[1]	Monitoring Phase
Nancy Ridge	Carroll Canyon Creek	CC-NR	Approx. 100 feet east of the Carroll Canyon Road and Nancy Ridge Drive intersection	32.89168	-117.19194	1 and 2
Arizona Crossing	Carroll Canyon Creek	CC-AC	Approx. 900 feet east of the Fenton Road and Carroll Canyon Road intersection	32.89249	-117.18221	1 and 2
Maya Linda	Carroll Canyon Creek	CC-ML	Large underground storm drain in the Mira Monte Apartments parking lot – northeastern corner of Building "A"	32.90605	-117.11719	1 and 2
Black Mountain	Carroll Canyon Creek	CC-BM	Creek behind office building, approximately 500 feet southeast of the Black Mountain Road and Maya Linda Road intersection	32.90055	-117.12223	1 and 2
Trap Channel	Carroll Canyon Creek	CC-TC	Lined drainage channel approximately 65 feet east of the Via Pasar and Candida Street intersection	32.89770	-117.11947	1 and 2
North City[1]	Los Peñasquitos Creek	LP-NC	Creek near the Sabre Springs Road and Springbrook Drive intersection near Poway	32.94275	-117.08428	2 only
Hidden Valley[1]	Los Peñasquitos Creek	LP-HV	Creek near the Gate Drive and Fairgate Drive intersection in Poway	32.95502	-117.03386	2 only
Carmel Valley[1]	Carmel Valley Creek	CV-CV	Creek location where it passes under Carmel Valley Road	32.94843	-117.19762	2 only

1. Site locations are subject to change. The number of Phase 2 locations (Los Peñasquitos Creek and Carmel Creek) may be increased or decreased on the basis of site reconnaissance and suitability for monitoring.

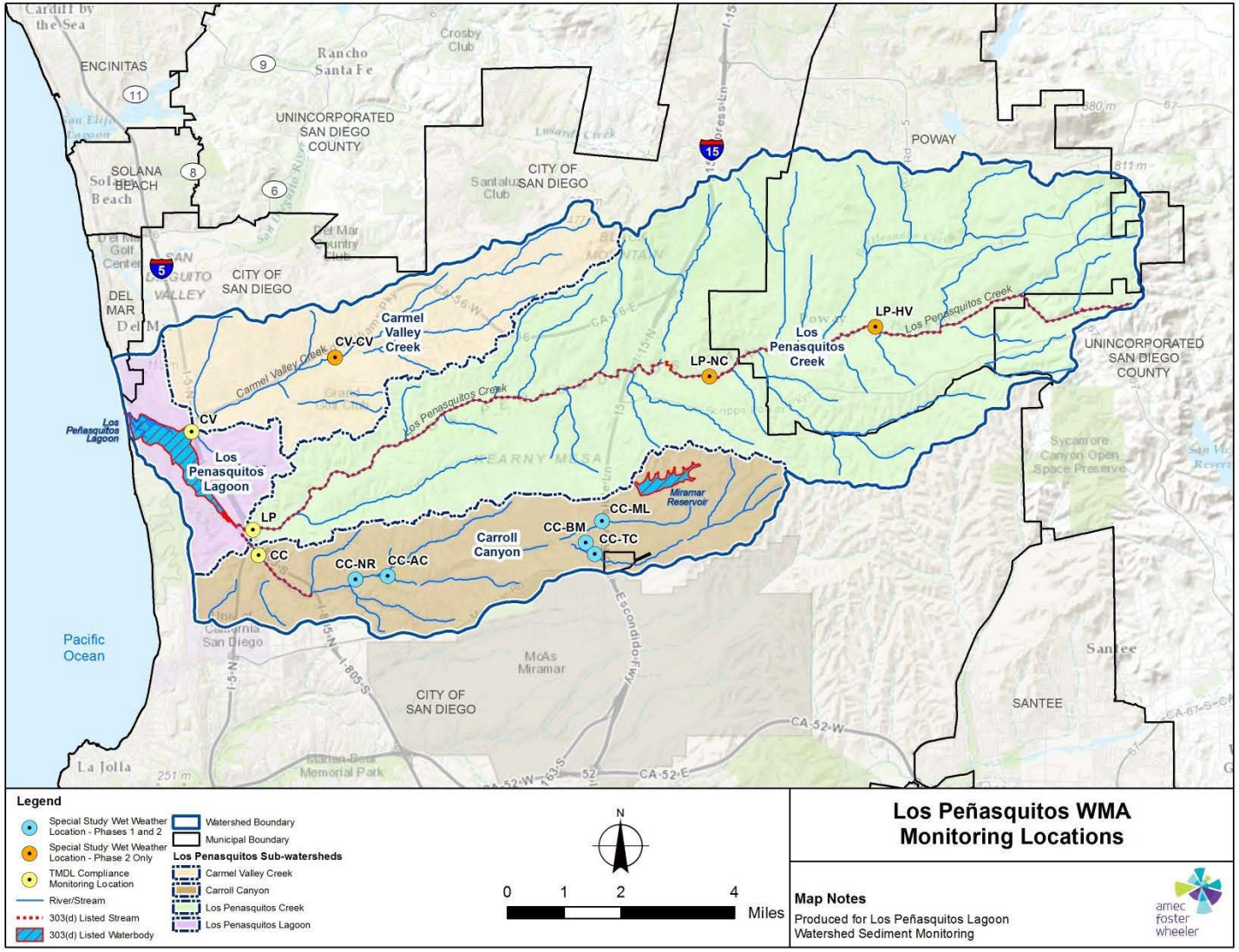

Figure 2-1.
Los Peñasquitos WMA Wet Season Monitoring Locations

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2.2 SAMPLING METHODOLOGY

2.2.1 Pre-Wet Season Sampling

Sections 2.2.1.1 through 2.2.1.4 describe sampling activities for this special study to be performed prior to the wet season.

2.2.1.1 Volumetric Stream Bed Sampling

Volumetric stream bed sampling will be conducted at each monitoring location (except Maya Linda, since it is located in a concrete conveyance) on one occasion prior to the wet weather season. Up to three stream bed material samples will be collected at a representative portion along a cross-sectional transect at each monitoring location. Samples will be collected in an area approximately 12 inches by 12 inches, and by digging down approximately 12 inches, yielding a sample size of approximately 1 cubic foot. If an armor layer of large cobble exists that has a grain size that is distinctly larger than the grain size of the underlying material, the layers will be sampled separately. Samples will be placed in 5-gallon buckets and will be labeled by Site ID. Samples will be transported to Amec Foster Wheeler's materials testing laboratory and analyzed for particle-size distribution (PSD). Data from this sampling provide information on existing grain size and potential susceptibility to erosion. The PSD data provide valuable information on the streambed armoring processes and changes in PSD due to geomorphic changes at the study reach. This PSD monitoring will document the changes in particle size distributions at the beginning of each season in comparison to the size distribution form the previous year.

2.2.1.2 Cross-Sectional Channel Surveys

During the volumetric sampling, field crews will conduct cross-sectional channel surveys at each monitoring location. Surveys will be used to refine flow measurements.

2.2.1.3 Pebble Count Before Wet Season

A pebble count will be conducted at each monitoring location prior to the wet season, except the Maya Linda location. This data point will be used as the baseline for the season and as a comparison point for the subsequent pebble counts that will be conducted after monitored storms and after non-monitored major storms throughout the wet season. It is anticipated that a total of eight pebble counts will occur throughout the project. The method used will be the sampling frame and template method developed by Bunte and Abt (2001a and 2001b), which uses a minimum of 100 particles and half-phi template (gravelometer) to measure particle sizes. A tape measure will be used to space three sampling transects across riffle sections at each location. The pebble count represents the size of material in the area and can be used to assess the representativeness of the volumetric samples. Site locations will be physically marked and recorded using Global Positioning System (GPS) for subsequent pebble counts throughout the wet season. Pebble counts can be used to assess stream power and its ability to move particles downstream. They also provide PSD data after storm events. This information will be used to evaluate the changes in PSD (i.e., D35, D50, and D90) after each storm event compared to the size distribution at the beginning of the wet season. This data will provide information on whether the streambed is coarsening as a result of the storm events.

2.2.1.4 Photodocumentation

The stream bed will be documented with photographs taken during dry weather volumetric sample collection and initial pebble counts. Photos will be taken of the stream bed using a 1-square-foot frame placed in three designated locations within each stream. These same points will be photographed during subsequent pebble counts, based on pebble count site markings. These photographs will provide a time series of stream bed material changes throughout the wet season.

2.2.2 Wet Weather Monitoring

Wet weather monitoring will occur during three qualifying rainfall events (storms forecast to produce greater than 0.20 inch of rainfall) during each wet season. Monitoring will consist of pollutograph and bedload sampling, post-storm pebble counts, photodocumentation, and long-term flow monitoring.

2.2.2.1 Pollutograph Sampling

During each monitored event, water samples will be collected for SSC analysis. A target of 10 pollutograph samples will be collected at each monitoring location (as listed in Table 2-1) during each of the three monitored events. Sampling will be conducted either manually or with automated samplers at each monitoring location. Samples will be collected at equal time intervals or at times adjusted to capture multiple peaks throughout the storm duration. Data from these samples will provide insight on sediment concentrations throughout a storm and will be used to calculate load estimations.

2.2.2.2 Bedload Sampling

Samplers will be installed per United States Department of Agriculture guidelines (Bunte et al., 2007). Attempts will be made to collect bedload samples during monitored events at each monitoring location, with the exception of the Maya Linda site. The Maya Linda site is in a large, underground storm drain that is not considered a feasible location for bedload sampling.

Previous sample collection by Amec Foster Wheeler in other City project locations (Flanders Canyon Creek [2011–2012] and Carroll Canyon Creek [2011–2013]) has been successful on limited occasions; however, based on best professional judgment for these previous monitoring efforts, bedload sample collection may be unsuccessful for a given storm event. For the aforementioned studies, the cause of sample failure is unknown. It is hypothesized that flows may redirect around bedload samplers because of stream hydrology or sample exclusion due to large cobbles.

For these challenged bedload sampling locations, efforts will be made to move the in-stream samplers around in the channel if flows appear to be bypassing the samplers. Bedload samples will be collected using a bedload trap sampler installed at two points across the channel at each site. If a sampler fills with material during the storm and it is safe to access it, attempts will be made to change the mesh bag. These samples will provide data on material that is moving along the stream bed during storms and is not suspended in the water column. If collection is successful, bedload samples will be analyzed for particle size distribution. Bedload data will be used in conjunction with SSC sample data to calculate load estimations. Bedload data will be used in conjunction with SSC sample data to estimate sediment loads. Particle size data for bedload samples will provide insight into stream power and its potential to cause erosion. Bedload data

will also provide information on bed shear stress during storm events on the incipient motion of particles for each storm and the effect of bed armoring on particle motion and its transport capacity

2.2.2.3 Post-Storm Pebble Count

A pebble count will be conducted at each monitoring location after each monitored storm and after major storms throughout the wet season, as budget permits. See Section 2.2.1.3 for procedure details.

2.2.2.4 Photodocumentation

The stream bed will be documented with photographs taken during post-storm pebble counts. Photographs will be taken at the same locations that were photographed during the prior to the wet season. These photographs will provide a time series of stream bed material changes throughout the wet season. See Section 2.2.1.4 for procedure details.

2.2.2.5 Long-term Flow Monitoring

In addition to storm event monitoring, flow will be measured continuously at each of the monitoring locations. Flow data will be logged at 1-minute intervals during storm events and at 15-minute intervals during non-storm events. Data will be downloaded, twice per month, to confirm that data are being recorded and that the equipment is functioning properly. Flow data collected at these monitoring locations will be used to calculate load estimations and provide an understanding of the flow regimes at each location, which can affect the sediment transport capabilities at each monitoring location. The continuous flow data can be used in evaluating sediment transport load during storm events. The flow data will be used in evaluating stream transport capacity using particle size distribution and bedload sampling results.

2.3 WET WEATHER MONITORING PREPARATION AND LOGISTICS

2.3.1 Weather Tracking

Weather will be tracked for monitoring purposes throughout the wet season. Throughout the wet season, several sources of weather information will be monitored continuously; however, the National Weather Service (NWS) webpage will be the primary source used to determine whether and when to mobilize monitoring crews.

2.3.2 Storm Selection Criteria

The following criteria will be used to determine whether to mobilize, on the basis of forecast data from the NWS, for an impending storm event:

- Storm forecasts must meet criteria at least 48 hours prior to the onset of rainfall;
- A storm must be forecast to produce at least 0.20 inch of rainfall;
- The probability of precipitation must be greater than 60 percent; and
- A storm event must be preceded by at least 72 hours of dry conditions (less than 0.10 inch of precipitation).

The Field Sampling Manager and/or Project Manager may modify the criteria on a storm-by-storm basis, in consultation with the City of San Diego.

2.3.3 Staffing and Mobilization

Staffing Plan

Monitoring both the flow characteristics and water quality of storm water requires considerable planning before any rain actually falls. Obtaining representative samples and complete storm data is possible only with trained and alert field teams. The uncertainty of weather forecasts coupled with abrupt changes in the weather can greatly alter the expected workload. It is critical to plan and prepare in advance as many aspects of the field work as possible. A staffing plan that designates personnel and specifies the equipment required for each facet of monitoring will be completed as soon as a potential event has been forecast.

Each monitoring team will consist of two field individuals. The staffing plan will specify the following:

- Personnel assigned to each position
- Shift times (e.g., startup and relief) and assigned monitoring location
- Equipment mobilization requirements
- Communication channels

No field teams will be mobilized for a storm event that would require field sampling or laboratory analysis on federal holidays.

Staffing Positions and Personnel

Storm monitoring tasks require a variety of skills. Amec Foster Wheeler personnel will be assigned to the following positions:

- Project Manager
- Field Sampling Manager
- Field Technicians

Project Manager

During storm events, the Project Manager will monitor the status of the storm conditions and communicate with the Field Sampling Manager. The Project Manager must be able to obtain and interpret the most recent weather forecasts to estimate the appropriate timing and duration of the storm. This information will be used to determine the time span between pollutograph sample collections and to make informed decisions regarding the storm status. It is also the responsibility of the Project Manager to notify all personnel of shift start- and end-time changes.

The assigned Project Manager has excellent decision-making and dispatching skills as well as an understanding of the project requirements. If the Project Manager is not available during the storm event, an individual with similar skills will be assigned; however, the Project Manager will be available to answer questions.

Field Sampling Manager

This position requires an understanding of project requirements, sampling procedures, and equipment operations. The Field Sampling Manager must be able to troubleshoot most of the common problems that could be experienced by any of the field teams. The Field Sampling Manager will lead sampling activities, monitor the ability of field teams to safely and effectively complete their shifts, and communicate frequently with the Project Manager to prioritize tasks, request relief teams as needed, and provide onsite weather observations.

The Field Sampling Manager is a technically skilled field supervisor and is the most experienced member of the field team.

Field Technicians

Field technicians are field personnel trained in storm water sample collection and health and safety procedures. They will assist the Field Sampling Manager in storm water sample collection.

Equipment Mobilization

Equipment needed for storm water sampling includes automated sampling equipment, sample containers, safety equipment, personal rain gear, and storm kits. The necessary equipment will be loaded into the appropriate vehicles early in the storm preparation sequence. During the monitoring season, field crews will use safety equipment, personal rain gear, and other monitoring location maintenance equipment.

Table 2-2 lists the contents of a field technician's field kit.

Table 2-2.
Field Equipment for Storm Monitoring and Mobilization

Storm Kit Equipment List	Mobilization List
Flashlights or headlamps	Paper towels
High-quality alkaline batteries for lamps	Cellular phone
Maps of all required areas	Personal rain gear
Pencils and indelible markers	Digital or disposable camera
Desiccant (packages and jar)	Safety gear (see Appendix B, Health and Safety Plan)
Diagonal clipper	Spare sample labels
Electrical tape	Sample control paperwork
Cable ties (assorted sizes)	Spare sets of 1-liter bottle suites for carousel
Utility knife	Automated sampling equipment not existing onsite (including appropriate spare batteries)
Ziploc® plastic bags (assorted sizes)	Spoons, trowels, and shovels
Nitrile gloves	Bedload trap equipment and spare bedload trap nets
Full set of keys (if necessary)	
Field notebook	

Communication Channels

Communication channels must be established for personnel to contact each other before and during the event. The project field notebook will include lists of home, work, and cellular telephone numbers of the Amec Foster Wheeler field team and the work telephone numbers of the primary

laboratory contacts and City personnel. Cellular telephone communication links to field teams are essential for efficient storm water monitoring because the Project Manager and Field Sampling Manager will need to track the location and workload of each field team and to prioritize tasks.

Training of Field Personnel

Field personnel will be properly trained in the use of the monitoring equipment and in all appropriate health and safety protocols (see Appendix B). Specifically, the following elements will be included in the training of all field personnel:

- Review of health and safety plan
- Classroom training
- Field training (as necessary)

Each field team member will review the Health and Safety Plan (HASP) and consult with the Field Sampling Manager for any questions before mobilization. Classroom and field training will be provided prior to the first monitored storm event to inform field personnel of the project-specific objectives.

2.3.4 Station Preparation

Field Equipment Installation

Each field installation team will consist of two technicians who are knowledgable on the use of storm water samplers. The technicians will also be familiar with equipment siting requirements. The team will deliver and install the enclosure, monitoring equipment, intake tubing, and flow monitoring sensors prior to the onset of the storm season. Any equipment that is not installed or stored onsite will be mobilized during pre-storm activities.

Determination of Sampling Time Intervals

Water quality monitoring using pollutograph sampling requires an understanding of forecast storm length to determine the proper time intervals between the targeted 10 samples. If automated samplers are used to collect pollutograph samples, the proper time interval must be entered into the automated samplers before the storm starts. Although 10 samples are targeted to be collected throughout the storm, achievement of that target is based on actual storm duration; if the storm ends much earlier than forecast, 10 samples may not be collected.

This project requires individual samples per analysis on the basis of analytical methods. One-liter containers will be used to collect water samples for SSC; one container will be filled at each sample collection interval.

Preparation of Automated Equipment

A maintenance and calibration program will be performed at each automated water sampler before each wet weather event during the monitoring season. Maintenance will include checking the performance of all the equipment, checking power supplies, inspecting and clearing intake structures, checking the status of the instrumentation desiccant, and performing any necessary equipment repairs to keep the monitoring equipment operational.

Field teams will inspect the monitoring equipment at all flow monitoring locations to make sure that it is functional and will verify that the equipment is functional on field forms.

If automated samplers are used for water sample collection, field teams will make sure that the automated sampler has been reset and that it has been programmed to collect samples on the basis of the specified time intervals. The automated sampler will be programmed to collect 10 samples.

Sample Handling

Once samples are collected, the sample bottles will be iced, with sufficient ice maintained around the bottle to ensure that the sample temperature is 6 degrees Celsius or less.

General Inspection of Monitoring Location

The general suitablity for installation of monitoring equipment will be surveyed at each location and assessed to determine whether there is debris or trash that could clog or foul equipment. The equipment will be physically observed for potential problems, such as a damaged cable or a kinked hose. When access allows, intake strainers and flow sensors will be visually checked and cleared of debris, if necessary.

2.3.5 Documentation

Each time a monitoring location is visited (whether during a storm or not), the visit will be recorded in the field log. The field data sheets in Appendix C are a guide to ensure that all the required data are obtained. Occasional checks of equipment parameters, such as date, time, and current water level (when safe access allows), will be conducted to verify that the data being recorded are accurate and that any deviations can be addressed in a timely fashion.

The following information will be entered during monitoring location visits:

- Site identification (alphanumeric)
- Date and time
- Monitoring program
- Field team
- Conveyance type
- Weather conditions
- Runoff characteristics
- Equipment condition
- Sample count
- Miscellaneous comments

Additional data will be recorded on the field data sheet at the end of a monitoring event. The following data will be collected at all stations where applicable:

- Total Flow Volume—Total volume of water that passed the station during the storm.
- Pollutograph Sample Count and Collection Times and Flow Rates—Total number of pollutograph samples collected throughout the storm, the time at which each was collected, and the flow rate at the time of sample collection.
- Total Rainfall—Total accumulated rainfall (in inches) since the start of the storm, measured each time the rain bucket tips.

Flow and rainfall data will be logged by the storm water flow meter and will be downloaded after the storm. However, if any downloaded data are lost, the data recorded on the field data sheet will serve as a secondary data reference.

2.3.6 Field Equipment Installation, Calibration, and Maintenance

Field teams will install the equipment, making sure that all equipment is securely mounted, using stainless-steel hardware. Sampling tubing and wiring will be routed through conduits that will be placed between the monitoring locations and the sampling enclosures. Above-ground instruments will be protected within the monitoring location equipment enclosure. Conduit runs will be buried in short, shallow trenches or secured to other basin features using stainless-steel hardware. Exposed conduit, intakes, and sensors will be securely fastened, using stainless-steel brackets, screws, and anchors.

Bedload trap samplers will be installed prior to a monitored event.

Monitoring equipment will be calibrated upon installation and during maintenance and pre-storm visits. During wet weather events, the field crew will document the equipment status, which will include:

- Checking the performance of all equipment
- Checking power supplies
- Inspecting and clearing intake structures
- Calibrating equipment, as necessary

Field crews will attempt to address maintenance needs that arise while onsite. If issues remain, field crews will note the nature of the problem and return to perform the required maintenance.

2.3.7 Flow Monitoring and Water Quality Monitoring Equipment Specifications

Data-Logging Flow Meter

The Sigma 950 area-velocity-bubbler (AVB) data-logging flow meters measure, calculate, and log flow data, based on a set of continuous measurements and programmed information.

Based on channel type and available historical flow data, water flow at each monitoring location will be measured, using either a head versus flow table or an AVB probe, which measures water stage and velocity. The flow meter allows programming of the geometry of the conveyance and, based on input from the AVB probe, the flow meter calculates instantaneous flow rates. The flow meters also have inputs for a rain gauge and sampler communication.

Flow meters will have data logging capability that allows the flow meter to be connected to an automated sampler. The flow meter provides a method for controlling (pacing or triggering) the sampler and storing the corrresponding sampling data.

The flow meters will measure and log flow levels and rainfall at 1-minute intervals. During rain events, the flow meters convert instantaneous flow into total runoff volume. Storm and hydrological data are electronically stored in the flow meter, with each monitoring event stored separately. The information recorded includes:

- Level, velocity (if applicable), flow, and rainfall data at the programmed logging interval
- Flow rate at the time of each sample
- Time of peak flow rate
- Cumulative rainfall
- Discharge volume totals

Automated Sampler

One of two automated samplers will be used for this project: an American Sigma 900 MAX or a SD900 sampling system. Each system consists of an intake strainer, Teflon-lined intake tubing, flexible silicon pump tubing, a peristaltic pump, a distributor arm, and sample bottles. If manual sample collection is determined to be more practical or successful, the automated samplers will not be used. The decision regarding the method of sample collection will be made on a case-by-case basis by the Field Sampling Manager.

The intake strainers will be securely fastened in a manner that allows sample collection in the estimated middle depth of water column. The intake tubing will be securely fastened to the intake strainer and will be housed in protective conduit to the point where the tubing enters the monitoring equipment enclosure. The intake tubing will be attached to the flexible silicon pump tubing at the sampler. The flexible silicon pump tubing will run through the sampler peristaltic pump into a distributor arm to fill the sample bottles.

Rain Gauges

A tipping bucket rain gauge is configured with a small "bucket" that holds a known amount of rainfall. When the bucket is full, it tips the water out, momentarily closes a switch, and then resets itself and starts the process again. The data logger counts each switch closure and so accumulates rainfall totals. The rain gauges used in this monitoring program are manufactured by American Sigma and will tip after every 0.01 inch of rain.

Rain gauges are installed at the Black Mountain and Trap Channel locations. The other monitoring locations do not allow for rainfall measurement because of site conditions or logistics. The two locations are representative of the upper watershed, while the lower watershed is represented by data collected at the TMDL Compliance Monitoring locations.

Power

The automated sampling equipment (if used) will be powered by 12-volts direct current (VDC) power sources, either 12-VDC deep-cycle marine batteries or 12-VDC gel cell batteries. At each monitoring location, one battery will power each piece of equipment separately; this reduces the chance of batteries running low on power and also gives redundancy in the power system at the monitoring locations. If a battery fails, the other battery can power all of the equipment until a backup battery can be installed by the field crew.

Equipment Security Housing

All monitoring equipment will be housed for the entire monitoriong season in fiberglass or metal equipment enclosures at the monitoring locations, where access allows.

2.4 ANALYTICAL PROCEDURES

Analytical procedures and laboratory information for wet season monitoring are provided in Sections 2.3.1 through 2.3.6. Table 2-3 provides the analytical methods, units, and reporting limits (RLs). Table 2-4 provides the analytical holding times, container types, and preservation requirements.

Alternative laboratory analytical methods may be used as long as appropiate detection limits and quality assurance requirements can be met.

Table 2-3.
Analytical Requirements for Water and Sediment Samples

Analysis	Method	Matrix	Units	Reporting Limit
Particle Size Distribution	ASTM C 136/117	Sediment	Millimeters	NA
Suspended Sediment Concentration	ASTM D 3977	Water	Milligrams per liter	2.0

ASTM = ASTM International; NA = not applicable;

Table 2-4.
Analytical Holding Times, Container Types, and Preservation Requirements

Analysis	Method	Matrix	Holding Time	Container Type	Preservation
Particle Size Distribution	ASTM C 136/117	Sediment	—	Mesh bag or bucket	—
Suspended Sediment Concentration	ASTM D 3977	Water	7 days	1-liter HDPE	≤6 degrees Celsius (°C)

ASTM = ASTM International; HDPE = high-density polyethylene

2.4.1 Volumetric Sample Analysis

Stream bed material samples will be collected at each monitoring location prior to the start of the wet season and analyzed for particle size distribution. If there is a distinct layer of large cobble (i.e., armor layer) above smaller-grain-size material at any sample point, the two layers will be sampled separately. Tables 2-3 and 2-4 provide anayltical and handling requirements.

2.4.2 Wet Weather Sample Analysis

This study aims to sample three wet weather events during each monitoring year. Schedule permitting, wet weather sampling will be conducted during the same three events trageted for the Sediment TMDL Compliance Monitoring program. This will provide paired data and a better overall view of the subwatershed function and the contribution to the Lagoon from the other subwatersheds.

Water samples collected will be analyzed for SSC; bedload sediment samples will be analyzed for particle-size distribution (except for at the Maya Linda monitoring location, because it is an underground storm drain). Table 2-3 provides the analytical methods, units, and RLs. Table 2-4

provides the analytical holding times, container types, and preservation requirements. SSC was selected for water sample analysis over total suspended solids (TSS) because SSC analysis uses the entire sample volume rather than an aliquot, as used in TSS analysis. Based on this anlaytical difference, SSC is considered more representative than TSS of actual sample concentrations, particularly when a sample is composed of larger, heavier particle sizes.

2.4.3 Pebble Count

The pebble count procedure is to measure the size of a random selection of pebbles along a selected stream path to represent the size of material in the area. This does not require collection and/or analysis of samples.

2.4.4 Photodocumentation

The stream bed will be photodocumented initially during the volumetric sample collection before the wet season, as well as after each major storm event, when pebble counts are conducted. This does not require collection and/or analysis of samples.

2.4.5 Laboratory Selection

For volumetric and bedload samples, analyses of particle-size distribution will be conducted by Amec Foster Wheeler's materials testing laboratory at:

- **Amec Foster Wheeler Environment & Infrastructure, Inc.**
  9177 Sky Park Court, San Diego, CA 92123
  (858) 278-3600 (office); (858) 278-5300 (fax)

For water samples, SSC analysis will be performed by:

- **Weck Laboratories, Inc**.
  14859 East Clark Avenue, City of Industry, CA 91745
  (626) 336-2139 (office); (626) 336-2634 (fax)

If necessary, alternative analytical laboratories may be used as long as the required detection limits and project QA/QC objectives can be achieved.

2.4.6 Sample Labeling

Sample bottles and containers will be pre-labeled, to the extent possible, before each monitoring event. Pre-labeling simplifies field activities and leaves only the date, time, and sampling crew's names to be filled out in the field. Each sample container provided will be labeled with the following information:

- Sample identification (ID)
- Project name
- Event number
- Sample collection date (month, day, year)
- Time of collection (in 24-hour [military] time)

- Bottle _N_ of_N__ (for multi-bottle samples)
- Sampler's initials
- Analysis

Field samples will be labeled as described below. These samples will be labeled, recorded on the chain-of-custody (COC) form, and then transported to the appropriate analytical laboratory.

Each sample collected will be assigned a unique alphanumeric code (sample ID) for tracking. The sample ID will be standardized for all samples and will contain information related to the monitoring location, event, and type of sample. The required sample ID components, applicable to all samples, are:

- Site ID:
  - According to Table 2-1
- Event Number:
  - DW = Dry weather
  - 1 = First wet weather event
  - 2 = Second wet weather event
  - 3 = Third wet weather event
- Sample Type:
  - PG1–PG10 = Pollutograph number (for water samples)
  - RB or LB = Right bank or left bank (for bedload samples)

2.4.7 Laboratory Data Package Deliverables

Laboratories will be required to provide analytical results within a three-week turnaround time per event. The deliverable package will include one hard (paper) copy and electronic data files of the results. The hard copy will include standard narratives identifying any analytical problems, QA/QC exceedances, and corrective actions. Individual data sets may be submitted to Amec Foster Wheeler as either Microsoft Excel workbook files or Microsoft Access database files.

3.0 DRY WEATHER AERIAL DEPOSITION MONITORING

3.1 AERIAL DEPOSITION SAMPLING LOCATIONS

Anthropogenic activities throughout the WMA have exposed sediments to wind and water erosion and suspension forces. Storm water flow is the primary transport mechanism of these pollutants, by eroding soils during significant rainfall and transporting sediment particles into streams. Erosion and suspension of particulate matter (PM) by wind or physical suspension may also contribute to sediment loading in the Lagoon.

Preliminary locations for aerial deposition monitoring have been identified and were based on the goal of attaining data that represent upwind and downwind concentrations of sediment from anthropogenic activities, measurement of background concentrations, predominant seasonal wind direction, accessibility of each sampling site, and/or security. Marine Corps Air Station (MCAS) Miramar measurements indicate that typical wind directions in the vicinity of Carroll Canyon are from the west-northwest to east-southeast.

The five current locations that are sampled under Phase 1 are indicated on Figure 3-1. The five current locations include a control site in Del Mar[1] (minimal anthropogenic exposure) and four locations throughout Carroll Canyon. Phase 2 will include these five sites along with two locations in the Los Peñasquitos Creek subwatershed and one location in the Carmel Valley subwatershed. The approximate locations of the three additional sites for Phase 2 are shown in Figure 3-1. Site names, identifications (IDs), brief descriptions, and the geographic coordinates of each aerial deposition monitoring location are listed in Table 3-1. Phase 2 specific site locations are subject to change, based on field reconnaissance efforts and site suitability for sampling determined during Phase 1. Monitoring methodologies will include the USEPA Federal Reference Method (FRM) and optical sensor monitoring. These methods are decribed further in Section 3.2.

[1] The Del Mar control site falls outside of the Los Peñasquitos WMA; however, this location was deemed representative of aerial conditions along the coastline of the Los Peñasquitos WMA, as it is approximately one mile north of the WMA boundary and is minimally impacted by anthropogenic activity.

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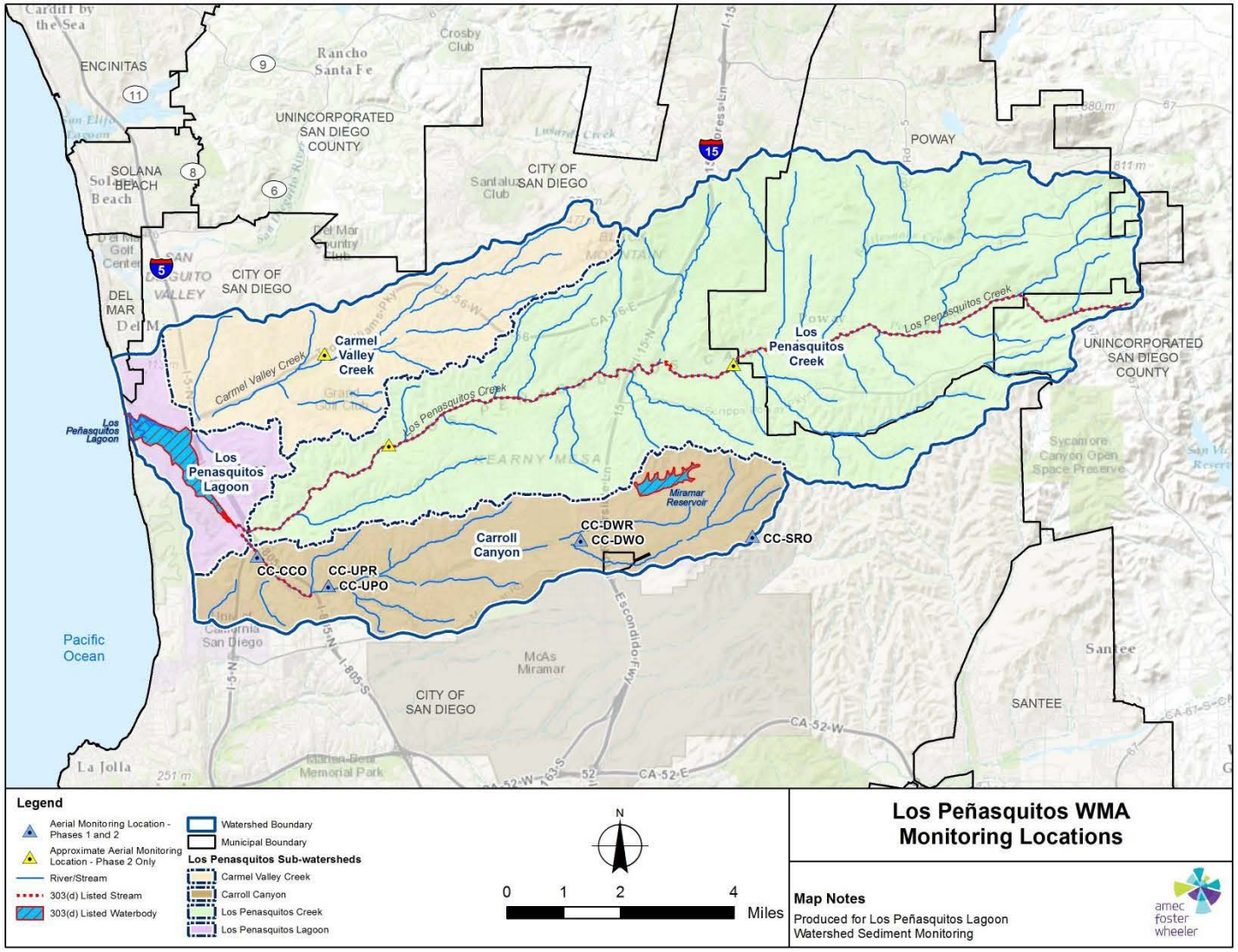

Figure 3-1.
Los Peñasquitos WMA
Aerial Deposition Sampling Locations

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Table 3-1.
Los Peñasquitos WMA
Aerial Deposition Sampling Locations

Site Name	Sub-Watershed	Site ID	Monitoring Method	Site Description	Latitude	Longitude	Monitoring Phase
Del Mar	Lagoon / Control Site	CC-DMR / CC-DMO	FRM and Optical	Elevated location near the corner of 11th Street and Camino Del Mar	32.95497	-117.26404	1 and 2
Carroll Canyon Upwind	Carroll Canyon Creek	CC-UPR / CC-UPO	FRM and Optical	Elevated location near the corner where Scranton Road turns into Carroll Canyon Road	32.89019	-117.20006	1 and 2
Carroll Canyon Downwind	Carroll Canyon Creek	CC-DWR / CC-DWO	FRM and Optical	Elevated location near the Black Mountain Road and Carroll Canyon Road intersection	32.90134	-117.12352	1 and 2
Carroll Canyon Optical	Carroll Canyon Creek	CC-CCO	Optical Only	Elevated location close to the Carroll Canyon TMDL compliance monitoring location	32.89794	-117.22160	1 and 2
Scripps Ranch Optical	Carroll Canyon Creek	CC-SRO	Optical Only	Elevated location in Scripps Ranch	32.90191	-117.07146	1 and 2
TBD	Los Peñasquitos Creek	TBD	Optical Only	TBD	TBD	TBD	2 only
TBD	Los Peñasquitos Creek	TBD	Optical Only	TBD	TBD	TBD	2 only
TBD	Carmel Valley Creek	TBD	Optical Only	TBD	TBD	TBD	2 only

TBD = to be determined. Aerial deposition sampling locations in the Phase 2 subwatersheds will be based on the results and recommendations of Phase 1 monitoring.

Phase 1: Carroll Canyon Creek Aerial Deposition Monitoring

A total of five monitoring locations will be monitored during Phase 1, as listed in Table 3-1. One of the locations is a control site in Del Mar. This location serves as a control site because it is minimally exposed to anthropogenic activities in the small area near the coastline. The remaining four are located throughout the WMA.

Three of the five monitoring locations are coupled stations that include both FRM and optical monitoring. Optical monitoring is cost-effective means of monitoring PM_{10}; however, it is not a method that qualifies as a FRM. The coupled locations allow confirmation and/or calibration of the optical station data with the FRM station data. The cost-effectiveness of the optical stations allows for more monitoring points throughout the entire project area (Phases 1 and 2). This approach is discussed further in Section 3.2.2.

Phase 2: Los Peñasquitos Creek and Carmel Valley Creek Aerial Deposition Monitoring Planned Locations

In addition to the five locations monitored during Phase 1, Phase 2 will include two planned locations within the Los Peñasquitos Creek subwatershed and one in the Carmel Valley Creek subwatershed. Phase 1 includes the Del Mar control site, which will be applicable to the three subwatersheds. The three additional Phase 2 monitoring locations will be optical monitoring stations only.

A higher number of locations were included within the Carroll Canyon sub-watershed compared to the others due to the gravel mining operations being a potentially significant source of dust particles.

3.2 SAMPLING METHODOLOGY

Data from the sampling rounds will be used to estimate direct and indirect deposition in the study area and to determine the relative contributions of sediment input to the Lagoon.

Anthropogenic activities such as construction, automobile traffic, and mining activities can contribute to dust emissions. Aerial deposition sampling for particulate matter will occur at aerial sampling locations during three sampling rounds per year: (1) early fall, prior to the wet season; (2) mid-winter; and (3) late spring, near the end of the wet season. Sampling rounds will not be conducted during rain events or within 72 hours after the end of a rain event. During each sampling round, three 24-hour sample collection periods will occur at each monitoring location: two during weekdays and one during the weekend. This will allow for appropriate representation of varying anthropogenic activity between weekdays and weekends.

Aerial deposition sampling generally falls into two measurement categories: monitoring for PM with an aerodynamic diameter of 10 microns or less (PM_{10}) and monitoring for PM with a diameter of 2.5 microns or less ($PM_{2.5}$). PM_{10} is the particle size most generally associated with construction and land-movement activities, and therefore is the proposed measurement standard for this project.

Two different types of sampling equipment will be used for this study: the FRM and optical sensor sampling. These methods are described further in Sections 3.2.1 and 3.2.2.

3.2.1 USEPA Federal Reference Methodology Sampling

The USEPA specifies sampler design, performance characteristics, and operational requirements applicable to the PM_{10} FRM in Appendix J of 40 Code of Federal Regulations (CFR) Part 50. PM_{10} FRM samplers are intended to acquire deposits over 24-hour periods on Teflon-membrane filters from air drawn at a controlled flow rate through the PM_{10} inlet. The inlet and size separation components, filter types, filter cassettes, and internal configurations of the filter holder assemblies are specified by design, with drawings and manufacturing tolerances published in Appendix O of 40 CFR Part 50. Other sampler components and procedures (such as flow rate control, operator interface controls, exterior housing, and data acquisition) are specified by performance characteristics, with specific test methods to assess that performance.

FRM samplers will be installed with filters specific to PM_{10} to determine the mass concentration. Filters will be analyzed for PM_{10} mass. PM_{10} mass is collected using a high-volume sampler and quartz fiber filters, and then weighed to the nearest microgram by the laboratory using special ultra-sensitive balances under exacting conditions. The laboratory will be required to perform pre-analysis and post-analysis of the filters used to capture the particulate samples.

Inlets for the samplers will be located at least 2 meters above ground level and will be free of interference from nearby buildings, structures, or vegetation. Air is drawn into a sampler and deposited on a filter by the sampler. The sampler records the flow rate and sampling interval for calculating concentrations by volume. The FRM sampling equipment to be used is the BGI PQ100 PM Portable Air Sampler (USEPA Designation No. RFPS-1298-124). This sampler is a low-volume sampler, which can run on direct current (DC) power or on alternating current (AC) power.

3.2.2 Optical Sensor Sampling

Real-time, light-scattering optical PM sensors generally have lower power requirements and offer installation and mounting flexibility that allow a wider range of applications than FRM stations do. The optical sensor equipment to be used is the TSI DustTrak II Aerosol Monitor (model 8530).

Optical sensors are a more cost-effective approach to collecting PM_{10} emissions data. Although these sensors are not an accepted FRM device, using the three co-located stations as calibration points between the FRM and optical sensor data will allow for applying any necessary calibrations or offsets to the independent optical sensors. This procedure provides a higher degree of confidence in the optical sensor data.

3.3 AERIAL DEPOSITION MONITORING PREPARATION AND LOGISTICS

3.3.1 Staffing and Mobilization

Staffing Plan

Installation, maintenance, and operation of the aerial deposition samplers require knowledge of the sampler operation and the ability to troubleshoot issues in the field. Field personnel will be scheduled to run the samplers for each sampling round during a period when no rainfall is forecast.

Each installation and sampling team will consist of two field individuals. The staffing plan will specify the following:

- Personnel assigned to each position
- Shift times (e.g., start-up and relief) and assigned monitoring locations
- Equipment mobilization requirements
- Communication channels

No field sampling or laboratory analysis will be performed on the following holiday black out dates:

- Thanksgiving (November 27–28, 2014)
- Christmas Eve and Day (December 24–25, 2014)

- New Year's Eve Day (December 31, 2014) and New Year's Day (January 1, 2015)

Staffing Positions and Personnel

Aerial deposition sampling tasks require a variety of skills. Amec Foster Wheeler personnel will be assigned to the following positions:

- Project Manager
- Field Sampling Manager
- Field Technicians

Project Manager: The Project Manager will provide guidance and oversight during each aerial deposition sampling round. If the Project Manager is not available, an individual with similar skills will be assigned; however, the Project Manager will still be available to answer questions.

Field Sampling Manager: The Field Sampling Manager is a technically skilled field supervisor and is the most experienced member of the field team. This position requires an understanding of project requirements, sampling procedures, and equipment operations. The Field Sampling Manager must be able to troubleshoot most of the common problems that could be experienced by any of the field teams. This manager will lead sampling activities.

Field Technicians: Field technicians are field personnel trained in aerial deposition sample collection, equipment operation, and health and safety procedures.

Equipment Mobilization

Equipment needed for activation and operation of the aerial deposition samplers includes filters, power supplies, tools, sample handling and shipping supplies, laptop computers for downloading data, and safety equipment.

Table 3-2 lists the content of a field technician's field kit for installation and operation of the aerial deposition monitors.

Table 3-2.
Field Equipment for Aerial Deposition Monitoring

Aerial Deposition Monitoring Kit Equipment List	
Maps of all required areas	Tools (clamps, crimps, polyvinyl chloride pipes (PVC), wires, tubes, nails, screws, hammer, screwdrivers, pliers)
Pencils and indelible markers	Cable ties (assorted sizes)
Field logbook	Utility knife
New (unexposed) filter packs	Filter pack shipping envelopes
Electrical tape	Ziploc® plastic bags (assorted sizes)
Chain-of-custody forms	Nitrile gloves
High-visibility safety vest	Full set of keys (if necessary)
FRM and optical samplers	
Power supplies and/or cables	

FRM = USEPA Federal Reference Method

Communication Channels

Communication channels must be established so that field personnel can contact each other before and during the sampling event. The project field notebook will include lists of home, work, and cellular telephone numbers of the Amec Foster Wheeler field team and the work telephone numbers of the primary laboratory contacts and City personnel.

Training of Field Personnel

Field personnel will be properly trained in the use of the sampling equipment and in all appropriate health and safety protocols (see Appendix B). Specifically, the following elements will be included in the training of all field personnel:

- Review of health and safety plan
- Classroom training
- Field training (as necessary)

Each field team member will review the project's HASP and consult with the Field Sampling Manager about any issues that arise before mobilization. Classroom and field training will be provided prior to the first aerial deposition sampling round to inform field personnel of the project-specific objectives.

3.3.2 Station Preparation

Field Equipment Installation

Each field installation team will consist of two technicians who are trained in using the aerial deposition samplers and knowledgable about utility installation requirements. The technicians will also be familiar with equipment siting requirements. The team will deliver and install the shelter, towers, support materials, and all monitoring equipment procured and tested in accordance with the equipment procedures manuals. The team will coordinate utility installation, if needed, such

as AC power capabilities, site security, shipping of major equipment and support materials, and compliance with local codes.

Determination of Sampling Time Intervals

The aerial deposition samplers will be programmed to collect measurements and/or samples at 5-minute intervals for 24 hours for each sampling period; 24 hours is a standard time frame for aerial deposition sampling.

Preparation of Automated Equipment

Equipment for aerial deposition sampling will be rented from an equipment vendor, and is expected to be calibrated and in good working order upon its arrival. Equipment received will be checked to verify that it is in good working order prior to mobilizing. Maintenance on the sampling equipment will be conducted by the equipment vendor.

FRM and optical sensor sampling equipment will be installed onsite for approximately one week or long enough to allow sampling in the three targeted sampling periods.

Field teams will confirm that the aerial deposition monitor data have been downloaded and that each sampler has been reset and programmed to collect samples, based on specified time intervals.

Sample Filters

Once the PM samples are collected, the filters will be removed from the samplers, and handled and shipped according to the requirements of the manufacturer and the laboratory.

General Inspection of Monitoring Locations

The general functionality of the area surrounding the air sampling locations will be observed and assessed to determine whether there is debris or trash that could clog or foul equipment. The equipment will be physically observed for potential problems, such as damaged components.

3.3.3 Documentation

Each time an aerial deposition monitoring location is visited, the visit will be recorded in the field log. The field data sheets in Appendix C are a guide to ensure that all the required data are obtained. Occasional checks of equipment parameters, such as date and time, will be conducted to verify that the data being recorded are accurate and that any deviations can be addressed in a timely fashion.

The following general information will be entered during aerial deposition monitoring location visits:

- Site identification (alphanumeric)
- Date and time
- Monitoring program
- Field team
- Conveyance type
- Weather conditions
- Visual observations
- Equipment condition
- Sample count
- Miscellaneous comments

Additional data will be recorded on the field data sheet at the end of a sampling round. The following data will be collected at all monitoring locations, where applicable:

- Total Flow Volume—Total volume of air (in gallons) that passed the monitoring location during the sampling round.
- Measurement and Sample Count and Collection Times—Total number of samples collected throughout the sampling and the time at which each sample was collected.

3.3.4 Air Intake and Air Quality Monitoring Equipment

Federal Reference Method Samplers

USEPA-approved FRM samplers will be used to measure, calculate, and log PM_{10} data, on the basis of a set of continuous measurements and programmed information. The approved FRM low-volume sampler to be used is the BGI Incorporated PQ100 PM Portable Air Sampler (USEPA Designation No. RFPS-1298-124).

Optical Sensor

Light-scattering optical sensors will be used both in conjunction with the FRM samplers and independently. TSI Incorporated Dust Trak II monitors (model 8530) will be used in this study.

Power

The aerial deposition sampling equipment will be powered by 12- VDC power sources or 110-volts alternating current (VAC), if available. At each 12-VDC monitoring station, one battery will power each piece of equipment separately.

Equipment Security Housing

All monitoring equipment will be housed in enviromental enclosures at the monitoring locations. The samplers and enclosures will be installed for each sampling round.

3.4 ANALYTICAL PROCEDURES

Analytical procedures and laboratory information are provided in Sections 3.4.1 through 3.4.4. Table 3-3 provides the analytical methods, units, and RLs. Table 3-4 provides the analytical holding times, container types, and preservation requirements.

Alternative laboratory analytical methods may be used as long as appropiate detection limits and quality assurance requirements can be met.

Table 3-3.
Analytical Requirements for Air, Water, and Sediment Samples

Analysis	Method	Matrix	Units	Reporting Limit
PM_{10} Mass	40 CFR Part 50 Appendix J	Air (filter)	Milligrams [a]	1.0

PM_{10} = particulate matter of 10 microns or less
a. PM_{10} analytical results are also expressed in milligrams per cubic meter (mg/m^3)

Table 3-4.
Analytical Holding Times, Container Types, and Preservation Requirements

Analysis	Method	Matrix	Holding Time	Container Type	Preservation
PM_{10} Mass	40 CFR Part 50 Appendix J	Air (filter)	—	Laboratory provided, pre-weighed bag	—

PM_{10} = particulate matter of 10 microns or less

3.4.1 Aerial Deposition Particulate Matter Analysis

Federal Reference Method Analysis

PM_{10} samples will be collected during three sampling rounds per year and analyzed for total PM_{10} mass. Tables 3-3 and 3-4 provide anayltical and handling requirements.

Optical Sensor Analysis

The optical sensor is designed to measure and record the total mass at specified intervals. Optical sensor data will be analyzed in accordance with the manufacturer's specification of the meter used for PM_{10} monitoring.

3.4.2 Laboratory Selection

For aerial deposition samples, PM_{10} analysis will be performed by:

- **Eurofins|Air Toxics, Inc.**
  180 Blue Ravine Road, Ste. B Folsom, CA 95630
  (916) 985-1000 (office)

If necessary, alternative analytical laboratories may be used as long as the required detection limits and project QA/QC objectives can be achieved.

3.4.3 Sample Labeling

Sample filters will be pre-labeled, to the extent possible, before each monitoring event. Pre-labeling simplifies field activities and leaves only the date, time, and sampling crew's names to be filled out in the field. Each sample container provided will be labeled with the following information:

- Sample identification (ID)
- Project name
- Event number
- Sample collection date (month, day, year)
- Time of collection (in 24-hour [military] time)
- Sampler's initials
- Analysis

Field samples will be labeled as described below. These samples will be labeled, recorded on the COC form, and then transported to the appropriate analytical laboratory.

Each sample collected will be assigned a unique alphanumeric code (sample ID) for tracking. The sample ID will be standardized for all samples and will contain information related to the monitoring location, event, and type of sample. The required sample ID components, applicable to all samples, are:

- Site ID:
  - According to Table 2-2
- Event Number:
  For the aerial deposition samples:
  - 1 = First sampling round
  - 2 = Second sampling round
  - 3 = Third sampling round
- Sample Type:
  - PG1–PG10 = Pollutograph number (for water samples)
  - RB or LB = Right bank or left bank (for bedload samples)

3.4.4 Laboratory Data Package Deliverables

Laboratories will be required to provide analytical results within a three-week turnaround time per event. The deliverable package will include one hard (paper) copy and electronic data files of the results. The hard copy will include standard narratives identifying any analytical problems, QA/QC exceedances, and corrective actions. Individual data sets may be submitted to Amec Foster Wheeler as either Microsoft Excel workbook files or Microsoft Access database files.

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4.0 QUALITY ASSURANCE AND QUALITY CONTROL

This section addresses QA/QC activities associated with laboratory analyses.

4.1 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

The laboratories will have written standard operating procedures (SOPs) that specify (for each analytical method) instrument operation and maintenance, determination of method detection limits, QC acceptance criteria, blank requirements, and stepwise procedures. At a minimum, SOPs will be written for the following procedures:

- Sample receipt, control, and disposal
- Sample preparation
- Health and safety practices
- Corrective action(s)

The SOPs and all revisions will be available to the analysts in the laboratories. The laboratories will maintain written records of all activities that might affect the quality of the results.

4.1.1 Laboratory QC Samples

The following laboratory QC checks will be required for this project.

Calibration: All instruments will be calibrated and the calibration acceptance criteria will be met before samples are analyzed. For SSC and PM_{10} analyses, the balance used will be calibrated on the day of sample analysis in the range of samples.

Method Blanks: The method blank ensures that the equipment and reagents used in preparing the samples are free of contaminants that could interfere with the analysis. For SSC analysis, one method blank will be analyzed per batch.

4.1.2 Corrective Action

Corrective action is taken when an analysis is deemed suspect for some reason, such as high blank concentrations. The corrective action varies from analysis to analysis, but typically involves:

- Checking the procedure
- Reviewing the documents and calculations to identify any possible error
- Correcting the error
- Re-analyzing the sample, if it is available, to see whether results can be improved
- Completely reprocessing and re-analyzing additional sample material, if it is available

The laboratories have procedures in place to follow when failures occur, will identify the individual(s) responsible for corrective action, and will appropriately document the incident.

4.2 MEASUREMENT QUALITY OBJECTIVES

The measurement quality objectives (MQOs) for SSC and PM_{10} analyses are quantitative and qualitative statements that define project objectives and specify the acceptable ranges of laboratory performance.

Analytical MQOs willl be assessed through application of accuracy and completeness parameters, as discussed in this section. For SSC analyses, no laboratory duplicates are conducted because the entire sample is used for analysis, so precision is not measured. For PM_{10} analyses, accuracy, precision, and completeness are measured by the laboratory. Due to high variability in SSC concentrations, field duplicates are not collected, as they would be collected by the automated sampler in succession and potential for variability is very high. Field duplicates are not collected for PM_{10} analysis, as the samplers are not configured to hold two filiters and, thus, would require setting up a complete second sampling device. MQOs are summarized in Table 4-1.

Accuracy: Accuracy is defined as the nearness of a result, or the mean of a set of results, to the true or accepted value. Because there are no analyte spikes or laboratory control samples (LCSs) available for SSC or PM_{10} analyses, analytical accuracy of SSC and PM_{10} analyses is measured only by analysis of method blanks. For SSC and PM_{10} analyses, one method blank will be analyzed per batch or 20 samples, whichever is more frequent.

Precision: Precision describes how well repeated measurements agree. The evaluation of precision described here relates to repeated measurements and samples analyzed by the laboratory (laboratory replicates). For PM_{10} analysis, one method blank will be analyzed per batch or 20 samples, whichever is more frequent. Laboratory replicates are not conducted for SSC analysis.

Completeness: Completeness is a measure of the percentage of project-specific data that are valid. Valid data are obtained when samples are collected and analyzed in accordance with QC procedures outlined in this monitoring plan, and when none of the QC criteria that affect data usability are exceeded. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set. The requirement of completeness is 90 percent for samples and is determined using the following equation:

$$Completeness = \frac{Actual\ number\ of\ samples\ collected}{Project\ required\ total\ samples\ to\ be\ collected} * 100.$$

Table 4-1.
Water Sample Measurement Quality Objectives

Constituent	Accuracy (Laboratory Method Blank)	Precision (Laboratory Duplicate)	Completeness
SSC	MB: <RL	NA[1]	90%
PM_{10}	Post-weight of filter is within 0.0028 grams of pre-weight filter	Unexposed filters: Weights of the clean filters should be within ±0.0028 grams of the original value Exposed filters: ≤ 25% RPD and weights must be within ±0.005 grams	90%

Notes:
MB = Method blank, NA = Not Applicable, RL = Reporting limit, g = grams, RPD = relative percent difference
1. NA due to complete sample being used for primary analysis (i.e., the one-liter sample cannot be split per method).

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5.0 DATA ANALYSIS AND REPORTING

The data collected during the each monitoring season will be compiled and analyzed with the findings presented in the Draft Los Peñasquitos WMA Special Study Report. The draft report will summarize the sample collection methods and events and will present the findings of the wet season and aerial deposition monitoring. It will provide spatial loading information throughout the monitored portions of the creeks used to compare with the loading data calculated from the TMDL Compliance Monitoring program.

Any deviations from protocols listed in the monitoring plan and the implications of those deviations on the interpretation of the data will be included in the report. A data quality assessment and analytical, field, and hydrological data will be provided as appendices on compact discs. Dr. Habib Matin will provide principal-level support for data interpretation and report review during development of the draft monitoring report.

The draft report will be completed prior to the end of each fiscal year and incorporated into the Water Quality Improvement Plan Annual Report as appropriate. Upon completion of the entire special study, a comprehensive draft report will be developed that summarizes the findings from each phase of the study. The final report will incorporate comments from the City and other Responsible Agencies and will be incorporated into the Report of Waste Discharge.

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6.0 REFERENCES

40 Code of Federal Regulations (CFR) Part 50, National Ambient Air Quality Standards for Particulate Matter.

Bunte, K.; K. Swingle; S. Abt. 2007. Guidelines for using bedload traps in coarse-bedded mountain streams: Construction, installation, operation, and sample processing. Gen. Tech. Rep. RMRS-GTR-191. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 91 pp.

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Regional Board. 2012. *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon,* Resolution Number R9-2012-0033.

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State Water Resources Control Board (State Board). 2014. Amendment Order No. 2014-0077-DWQ, National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit Waste Discharge Requirements (WDRs) for Caltrans.

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APPENDIX A
LABORATORY QA/QC MANUALS

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APPENDIX B
HEALTH AND SAFETY PLAN (HASP)

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APPENDIX C
FIELD FORMS

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APPENDIX B
SUSPENDED SEDIMENT CONCENTRATION DATA SUMMARY AND LABORATORY REPORTS

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Table B-1.
Wet Weather Event 1 SSC Concentrations

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Arizona Crossing	1	1/5/16	11:24	130
	2		11:53	51
	3		13:23	77
	4		13:53	250
	5		14:23	250
	6		21:45	230
	7	1/6/16	08:04	46
	8		14:03	10
Black Mountain	1	1/5/16	10:11	450
	2		11:40	180
	3		13:10	47
	4		13:40	720
	5		14:10	320
	6		14:40	230
	7		15:10	470
	8		15:40	2200
	9		17:09	270
	10		18:09	80
	11		20:39	16
	12	1/6/16	00:38	100
	13		05:08	12
Maya Linda	1	1/5/16	10:40	50
	2		11:40	47
	3		13:09	48
	4		14:39	130
	5		15:39	850
	6		16:09	1300
	7		16:39	620
	8		17:09	330
	9		18:09	92
	10		19:09	51
	11		21:09	87
	12		23:09	24
	13	1/6/16	00:39	49
	14		02:39	17
	15		08:09	9.0

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Nancy Ridge	1	1/5/16	11:04	67
	2		12:03	77
	3		13:03	110
	4		14:33	660
	5		15:33	700
	6		16:33	1200
	7		17:03	2600
	8		17:33	2200
	9		18:03	1500
	10		19:33	1300
	11		21:03	360
	12		23:05	92
	13	1/6/16	00:05	260
	14		01:05	69
	15		01:35	92
	16		03:05	49
	17		06:05	9.0
	18		11:37	8
Trap Channel	1	1/5/16	13:37	460
	2		15:07	240
	3		15:37	1700
	4		16:07	800
	5		16:37	740
	6		17:10	1600
	7		17:39	730
	8		18:09	640
	9		18:39	390
	10		19:09	300
	11		21:12	67
	12		23:41	60
	13	1/6/16	00:41	31
	14		02:11	19
	15		03:11	8.0
	16		05:11	10
	17		05:41	19
	18		07:41	5.0
Carmel Valley Upstream	1	1/5/16	12:24	91
	2		14:28	720
	3		15:00	550

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Carmel Valley Upstream (continued)	4	1/5/16	15:29	470
	5		16:29	210
	6		16:59	190
	7		17:29	190
	8		18:59	200
	9		19:29	170
	10		19:59	140
	11		20:59	98
	12		21:59	78
	13		22:59	61
	14	1/6/16	00:59	45
	15		02:59	35
	16		6:59	22
North City	1	1/5/16	11:44	15
	2		14:43	55
	3		16:40	620
	4		18:00	830
	5		19:46	940
	6		20:49	750
	7		21:49	440
	8		22:49	300
	9		23:49	210
	10	1/6/16	04:49	66
Hidden Valley	1	1/5/16	14:04	110
	1		15:03	180
	1		15:33	270
	1		18:35	120
	1		20:05	1300
	1		20:50	900
	1		21:35	810
	1		23:05	420
	1	1/6/16	01:20	190
	1		11:05	21

Table B-2.
Wet Weather Event 2 SSC Concentrations

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Arizona Crossing	1	1/31/16	06:52	64
	2		07:51	40
	3		09:51	100
	4		11:00	150
	5		11:59	36
	6		13:29	15
	7		14:29	11
	8		14:59	180
	9		15:29	170
	10		15:59	430
	11		16:59	130
	12		17:59	49
	13		20:37	17
	14	2/1/16	01:38	ND
	15		03:38	ND
Black Mountain	1	1/31/16	05:07	1700
	2		05:36	170
	3		06:38	22
	4		07:06	30
	5		07:36	21
	6		08:06	350
	7		08:36	110
	8		09:06	47
	9		11:05	12
	10		12:35	6.0
	11		14:05	ND
	12		14:35	19
	13		15:05	270
	14		15:35	270
	15		16:05	100
	16		17:35	22
Maya Linda	1	1/31/16	00:48	65
	2		03:41	73
	3		04:28	60
	4		04:58	100
	5		05:58	20
	6		07:28	29
	7		07:58	170
	8		08:28	98
	9		08:58	51
	10		09:28	27

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Maya Linda (continued)	11	1/31/16	10:28	12
	12		10:58	8.0
	13		14:07	72
	14		14:37	86
	15		15:07	47
	16		15:37	19
	17		16:37	13
	18		17:07	5.0
Nancy Ridge	1	1/31/16	07:24	220
	2		08:23	250
	3		08:53	150
	4		09:23	240
	5		10:23	140
	6		11:46	34
	7		14:16	120
	8		14:46	43
	9		15:16	250
	10		15:46	240
	11		16:16	310
	12		18:16	40
	13		19:41	20
Trap Channel	1	1/31/16	08:07	2100
	2		17:00	71
	3		18:33	25
	4		19:33	12
	5		20:33	8.0
	6		21:33	10
Carmel Valley Upstream	1	1/31/16	09:55	61
	2		10:25	90
	3		10:55	120
	4		11:25	94
	5		11:55	90
	6		12:25	64
	7		12:55	38
	8		13:25	31
	9		13:55	19
	10		14:25	15
	11		14:55	84
	12		15:25	110
	13		15:55	65
	14		16:25	87
North City	1	1/31/16	05:47	21
	2		07:46	21

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
North City (continued)	3	1/31/16	08:46	72
	4		09:16	110
	5		09:46	84
	6		10:16	58
	7		10:46	43
	8		11:46	21
	9		14:15	15
	10		14:45	50
	11		15:15	140
	12		15:45	160
	13		16:15	120
	14		17:15	55
	15		19:15	31
	16		22:14	13
	17	2/1/16	03:14	5.0
	18		06:14	14
	19		09:14	8.0
	20		11:14	ND
Hidden Valley	1	1/31/16	14:05	25
	2		14:34	42
	3		15:04	270
	4		15:34	300
	5		16:04	140
	6		17:04	39
	7		17:34	30
	8		18:34	22
	9	2/1/16	05:55	20
	10		06:54	19
	11		08:54	27
	12		11:54	5.0

Table B-3.
Wet Weather Event 3 SSC Concentrations

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Arizona Crossing	1	3/6/16	09:57	130
	2		10:26	82
	3		10:56	31
	4		11:26	15
	5		11:56	10
	6		12:26	16
	7		12:56	76
	8		13:56	10
	9	3/7/16	10:36	54
	10		14:57	9.0
	11		15:23	30
	12		15:52	45
	13		16:22	17
	14		17:22	100
	15		18:22	200
	16		18:52	230
	17		19:52	81
	18		20:52	58
	19		21:22	30
	20		21:52	25
	21		23:52	9.0
Black Mountain	1	3/6/16	09:20	460
	2		09:49	180
	3		10:19	47
	4		11:49	4.0
	5	3/7/16	08:37	260
	6		09:06	580
	6a		9:36	220
	7		10:08	59
	8		12:37	8.0
	9		15:07	13
	10		15:55	120
	11		16:54	27
	12		17:54	270
	13		18:54	71
	14		22:24	8.0
Maya Linda	1	3/5/16	23:59	43
	2	3/6/16	04:42	96
	3		05:13	48
	4		09:22	190
	5		09:52	44

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Maya Linda (continued)	6	3/6/16	10:22	56
	7		11:22	13
	8	3/7/16	08:32	98
	9		09:01	130
	10		09:31	61
	11		10:31	27
	12		11:01	13
	13		11:34	20
	14		15:35	55
	15		16:34	16
	16		17:34	62
	17		18:34	40
	18		19:04	24
	19		20:34	58
	20		21:34	10
Nancy Ridge	1	3/6/16	09:46	62
	2		10:46	23
	3		11:16	44
	4		11:46	27
	5		13:16	9.0
	6	3/7/16	09:33	290
	7		10:03	120
	8		10:33	380
	9		11:33	390
	9a		13:03	94
	10		15:36	24
	11		16:35	32
	12		17:05	38
	13		17:35	56
	14		19:35	240
	15		21:05	91
	16		22:05	92
	17		22:35	40
	18	3/8/16	00:35	32
Trap Channel	1	3/6/16	09:35	77
	2		10:04	38
	3	3/7/16	20:55	10
	4		21:24	8.0
	5		21:54	5.0
	6		22:24	4.0
	7		22:54	4.0
Carmel Valley Upstream	1	3/6/16	16:30	73
	2		11:05	90

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Carmel Valley Upstream (continued)	2a	3/7/16	11:07	100
	3		11:37	83
	4		12:07	74
	5		12:37	170
	6		13:07	110
	7	3/7/16	14:07	39
	8		14:37	37
	9		15:37	30
	10		17:07	34
	11		17:37	30
	12		19:07	12
	13		19:37	7.0
	14		21:37	6.0
North City	1		09:23	20
	2		09:52	58
	3		10:22	28
	4	3/6/16	11:22	110
	5		11:52	78
	6		12:52	30
	7		13:22	21
	8		13:52	12
	9		09:56	75
	10		10:25	210
	11		10:55	140
	12		11:25	77
	13		11:55	57
	14		12:25	51
	15		13:25	30
	16	3/7/16	15:25	25
	17		16:26	18
	18		17:24	41
	19		17:54	30
	20		18:24	22
	21		19:54	16
	22		20:24	13
	23		22:24	7.0
	24		23:54	6
Hidden Valley	1		09:33	85
	2	3/7/16	10:03	350
	3		10:33	140
	4		11:03	69
	5		11:33	47
	6		12:33	25

Site	Sample Number	Sample Date	Collection Time	SSC (mg/L)
Hidden Valley (continued)	7	3/7/16	13:03	25
	8		13:33	32
	9		14:03	28
	10		15:03	25
	11		16:03	53
	12		18:32	91
	13		19:02	250
	14		19:32	150
	15		20:02	43
	16		20:32	100
	17		21:02	85
	18		22:32	37
	19		23:32	28

CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	02/17/16 14:22
		Received Date:	01/08/16 12:15
		Turn Around:	Normal
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos Sediment Transport Mon. 2014-15
Phone:	(858) 514-6464		
Fax:	(858) 278-5300		
Work Order(s):	6A08047		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 01/08/16 12:15 with the Chain of Custody document. The samples were received in good condition, at 5.1 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:

Reviewed by:

Hai Van Nguyen
Project Manager

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CC-AC-SSC-WW1-01	KB	6A08047-01	Water	01/05/16 11:24
CC-AC-SSC-WW1-02	KB	6A08047-02	Water	01/05/16 11:53
CC-AC-SSC-WW1-03	KB	6A08047-03	Water	01/05/16 13:23
CC-AC-SSC-WW1-04	KB	6A08047-04	Water	01/05/16 13:53
CC-AC-SSC-WW1-05	KB	6A08047-05	Water	01/05/16 14:23
CC-AC-SSC-WW1-06	KB	6A08047-06	Water	01/05/16 21:45
CC-AC-SSC-WW1-07	KB	6A08047-07	Water	01/06/16 08:04
CC-AC-SSC-WW1-08	KB	6A08047-08	Water	01/06/16 14:03
CC-BM-SSC-WW1-01	KB	6A08047-09	Water	01/05/16 10:11
CC-BM-SSC-WW1-02	KB	6A08047-10	Water	01/05/16 11:40
CC-BM-SSC-WW1-03	KB	6A08047-11	Water	01/05/16 13:10
CC-BM-SSC-WW1-04	KB	6A08047-12	Water	01/05/16 13:40
CC-BM-SSC-WW1-05	KB	6A08047-13	Water	01/05/16 14:10
CC-BM-SSC-WW1-06	KB	6A08047-14	Water	01/05/16 14:40
CC-BM-SSC-WW1-07	KB	6A08047-15	Water	01/05/16 15:10
CC-BM-SSC-WW1-08	KB	6A08047-16	Water	01/05/16 15:40
CC-BM-SSC-WW1-09	KB	6A08047-17	Water	01/05/16 17:09
CC-BM-SSC-WW1-10	KB	6A08047-18	Water	01/05/16 18:09
CC-BM-SSC-WW1-11	KB	6A08047-19	Water	01/05/16 20:39
CC-BM-SSC-WW1-12	KB	6A08047-20	Water	01/06/16 00:38
CC-BM-SSC-WW1-13	KB	6A08047-21	Water	01/06/16 05:08
CC-ML-SSC-WW1-01	KB	6A08047-22	Water	01/05/16 10:40
CC-ML-SSC-WW1-02	KB	6A08047-23	Water	01/05/16 11:40
CC-ML-SSC-WW1-03	KB	6A08047-24	Water	01/05/16 13:09
CC-ML-SSC-WW1-04	KB	6A08047-25	Water	01/05/16 14:39
CC-ML-SSC-WW1-05	KB	6A08047-26	Water	01/05/16 15:39
CC-ML-SSC-WW1-06	KB	6A08047-27	Water	01/05/16 16:09
CC-ML-SSC-WW1-07	KB	6A08047-28	Water	01/05/16 16:39
CC-ML-SSC-WW1-08	KB	6A08047-29	Water	01/05/16 17:09
CC-ML-SSC-WW1-09	KB	6A08047-30	Water	01/05/16 18:09
CC-ML-SSC-WW1-10	KB	6A08047-31	Water	01/05/16 19:09
CC-ML-SSC-WW1-11	KB	6A08047-32	Water	01/05/16 21:09
CC-ML-SSC-WW1-12	KB	6A08047-33	Water	01/05/16 23:09
CC-ML-SSC-WW1-13	KB	6A08047-34	Water	01/06/16 00:39
CC-ML-SSC-WW1-14	KB	6A08047-35	Water	01/06/16 02:39
CC-ML-SSC-WW1-15	KB	6A08047-36	Water	01/06/16 08:09
CC-NR-SSC-WW1-01	KB	6A08047-37	Water	01/05/16 11:04
CC-NR-SSC-WW1-02	KB	6A08047-38	Water	01/05/16 12:03
CC-NR-SSC-WW1-03	KB	6A08047-39	Water	01/05/16 13:03
CC-NR-SSC-WW1-04	KB	6A08047-40	Water	01/05/16 14:33
CC-NR-SSC-WW1-05	KB	6A08047-41	Water	01/05/16 15:33
CC-NR-SSC-WW1-06	KB	6A08047-42	Water	01/05/16 16:33
CC-NR-SSC-WW1-07	KB	6A08047-43	Water	01/05/16 17:03

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CC-NR-SSC-WW1-08	KB	6A08047-44	Water	01/05/16 17:33
CC-NR-SSC-WW1-09	KB	6A08047-45	Water	01/05/16 18:03
CC-NR-SSC-WW1-10	KB	6A08047-46	Water	01/05/16 19:33
CC-NR-SSC-WW1-11	KB	6A08047-47	Water	01/05/16 21:03
CC-NR-SSC-WW1-12	KB	6A08047-48	Water	01/05/16 23:05
CC-NR-SSC-WW1-13	KB	6A08047-49	Water	01/06/16 00:05
CC-NR-SSC-WW1-14	KB	6A08047-50	Water	01/06/16 01:05
CC-NR-SSC-WW1-15	KB	6A08047-51	Water	01/06/16 01:35
CC-NR-SSC-WW1-16	KB	6A08047-52	Water	01/06/16 03:05
CC-NR-SSC-WW1-17	KB	6A08047-53	Water	01/06/16 06:05
CC-TC-SSC-WW1-01	KB	6A08047-54	Water	01/05/16 13:37
CC-TC-SSC-WW1-02	KB	6A08047-55	Water	01/05/16 15:07
CC-TC-SSC-WW1-03	KB	6A08047-56	Water	01/05/16 15:37
CC-TC-SSC-WW1-04	KB	6A08047-57	Water	01/05/16 16:07
CC-TC-SSC-WW1-05	KB	6A08047-58	Water	01/05/16 16:37
CC-TC-SSC-WW1-06	KB	6A08047-59	Water	01/05/16 17:10
CC-TC-SSC-WW1-07	KB	6A08047-60	Water	01/05/16 17:39
CC-TC-SSC-WW1-08	KB	6A08047-61	Water	01/05/16 18:09
CC-TC-SSC-WW1-09	KB	6A08047-62	Water	01/05/16 18:39
CC-TC-SSC-WW1-10	KB	6A08047-63	Water	01/05/16 19:09
CC-TC-SSC-WW1-11	KB	6A08047-64	Water	01/05/16 21:12
CC-TC-SSC-WW1-12	KB	6A08047-65	Water	01/05/16 23:41
CC-TC-SSC-WW1-13	KB	6A08047-66	Water	01/06/16 00:41
CC-TC-SSC-WW1-14	KB	6A08047-67	Water	01/06/16 02:11
CC-TC-SSC-WW1-15	KB	6A08047-68	Water	01/06/16 03:11
CV-UP-SSC-WW1-01	KB	6A08047-69	Water	01/05/16 12:24
CV-UP-SSC-WW1-02	KB	6A08047-70	Water	01/05/16 14:28
CV-UP-SSC-WW1-03	KB	6A08047-71	Water	01/05/16 15:00
CV-UP-SSC-WW1-04	KB	6A08047-72	Water	01/05/16 15:29
CV-UP-SSC-WW1-05	KB	6A08047-73	Water	01/05/16 16:29
CV-UP-SSC-WW1-06	KB	6A08047-74	Water	01/05/16 16:59
CV-UP-SSC-WW1-07	KB	6A08047-75	Water	01/05/16 17:29
CV-UP-SSC-WW1-08	KB	6A08047-76	Water	01/05/16 18:59
CV-UP-SSC-WW1-09	KB	6A08047-77	Water	01/05/16 19:29
CV-UP-SSC-WW1-10	KB	6A08047-78	Water	01/05/16 19:59
CV-UP-SSC-WW1-11	KB	6A08047-79	Water	01/05/16 20:59
CV-UP-SSC-WW1-12	KB	6A08047-80	Water	01/05/16 21:59
CV-UP-SSC-WW1-13	KB	6A08047-81	Water	01/05/16 22:59
CV-UP-SSC-WW1-14	KB	6A08047-82	Water	01/06/16 00:59
CV-UP-SSC-WW1-15	KB	6A08047-83	Water	01/06/16 02:59
LP-NC-SSC-WW1-01	KB	6A08047-84	Water	01/05/16 11:44
LP-NC-SSC-WW1-02	KB	6A08047-85	Water	01/05/16 14:43
LP-NC-SSC-WW1-03	KB	6A08047-86	Water	01/05/16 16:40

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Date Reported: 02/17/16 14:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
LP-NC-SSC-WW1-04	KB	6A08047-87	Water	01/05/16 18:00
LP-NC-SSC-WW1-05	KB	6A08047-88	Water	01/05/16 19:46
LP-NC-SSC-WW1-06	KB	6A08047-89	Water	01/05/16 20:49
LP-NC-SSC-WW1-07	KB	6A08047-90	Water	01/05/16 21:49
LP-NC-SSC-WW1-08	KB	6A08047-91	Water	01/05/16 22:49
LP-NC-SSC-WW1-09	KB	6A08047-92	Water	01/05/16 23:49
LP-NC-SSC-WW1-10	KB	6A08047-93	Water	01/06/16 04:49
LP-POW-SSC-WW1-01	KB	6A08047-94	Water	01/05/16 14:04
LP-POW-SSC-WW1-02	KB	6A08047-95	Water	01/05/16 15:03
LP-POW-SSC-WW1-03	KB	6A08047-96	Water	01/05/16 15:33
LP-POW-SSC-WW1-04	KB	6A08047-97	Water	01/05/16 18:35
LP-POW-SSC-WW1-05	KB	6A08047-98	Water	01/05/16 20:05
LP-POW-SSC-WW1-06	KB	6A08047-99	Water	01/05/16 20:50
LP-POW-SSC-WW1-07	KB	6A08047-AA	Water	01/05/16 21:35
LP-POW-SSC-WW1-08	KB	6A08047-AB	Water	01/05/16 23:05
LP-POW-SSC-WW1-09	KB	6A08047-AC	Water	01/06/16 01:20
LP-POW-SSC-WW1-10	KB	6A08047-AD	Water	01/06/16 11:05
CC-NR-SSC-WW1-18	KB	6A08047-AE	Water	01/06/16 11:37
CC-TC-SSC-WW1-16	KB	6A08047-AF	Water	01/06/16 05:11
CC-TC-SSC-WW1-17	KB	6A08047-AG	Water	01/06/16 05:41
CV-UP-SSC-WW1-16	KB	6A08047-AH	Water	01/06/16 06:59
CV-TC-SSC-WW1-18	KB	6A08047-AI	Water	01/06/16 07:41

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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6A08047-01 CC-AC-SSC-WW1-01

Sampled: 01/05/16 11:24 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**130**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
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6A08047-02 CC-AC-SSC-WW1-02

Sampled: 01/05/16 11:53 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**51**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
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6A08047-03 CC-AC-SSC-WW1-03

Sampled: 01/05/16 13:23 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**77**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
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6A08047-04 CC-AC-SSC-WW1-04

Sampled: 01/05/16 13:53 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**250**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-05 CC-AC-SSC-WW1-05

Sampled: 01/05/16 14:23 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**250**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-06 **CC-AC-SSC-WW1-06**

Sampled: 01/05/16 21:45 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0440 Prepared: 01/09/16 13:17 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**230**	3.1	5.0	mg/l	1	01/09/16 15:09	

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Date Reported: 02/17/16 14:22

6A08047-07 CC-AC-SSC-WW1-07

Sampled: 01/06/16 08:04 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**46**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-08 CC-AC-SSC-WW1-08

Sampled: 01/06/16 14:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-09 CC-BM-SSC-WW1-01

Sampled: 01/05/16 10:11 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**450**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-10 CC-BM-SSC-WW1-02

Sampled: 01/05/16 11:40 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**180**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Reported: 02/17/16 14:22

6A08047-11 CC-BM-SSC-WW1-03

Sampled: 01/05/16 13:10 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**47**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-12 CC-BM-SSC-WW1-04

Sampled: 01/05/16 13:40 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**720**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-13 **CC-BM-SSC-WW1-05**

Sampled: 01/05/16 14:10 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**320**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-14 **CC-BM-SSC-WW1-06**

Sampled: 01/05/16 14:40 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**230**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-15 CC-BM-SSC-WW1-07

Sampled: 01/05/16 15:10 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**470**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-16 **CC-BM-SSC-WW1-08**

Sampled: 01/05/16 15:40 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**2200**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-17 CC-BM-SSC-WW1-09

Sampled: 01/05/16 17:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**270**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-18 CC-BM-SSC-WW1-10

Sampled: 01/05/16 18:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**80**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-19 CC-BM-SSC-WW1-11

Sampled: 01/05/16 20:39 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**16**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-20 CC-BM-SSC-WW1-12

Sampled: 01/06/16 00:38 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**100**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-21 **CC-BM-SSC-WW1-13**

Sampled: 01/06/16 05:08 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-22 CC-ML-SSC-WW1-01

Sampled: 01/05/16 10:40 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**50**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-23 **CC-ML-SSC-WW1-02**

Sampled: 01/05/16 11:40 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**47**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-24 **CC-ML-SSC-WW1-03**

Sampled: 01/05/16 13:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**48**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-25 CC-ML-SSC-WW1-04

Sampled: 01/05/16 14:39 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**130**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-26 CC-ML-SSC-WW1-05

Sampled: 01/05/16 15:39 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0465 Prepared: 01/11/16 09:51 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**850**	3.1	5.0	mg/l	1	01/11/16 14:30	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-27 CC-ML-SSC-WW1-06

Sampled: 01/05/16 16:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1300**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-28 CC-ML-SSC-WW1-07

Sampled: 01/05/16 16:39 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**620**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-29 CC-ML-SSC-WW1-08

Sampled: 01/05/16 17:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**330**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-30 CC-ML-SSC-WW1-09

Sampled: 01/05/16 18:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**92**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-31 **CC-ML-SSC-WW1-10**

Sampled: 01/05/16 19:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**51**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-32 **CC-ML-SSC-WW1-11**

Sampled: 01/05/16 21:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**87**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
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6A08047-33 **CC-ML-SSC-WW1-12**

Sampled: 01/05/16 23:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**24**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-34 **CC-ML-SSC-WW1-13**

Sampled: 01/06/16 00:39 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**49**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-35 CC-ML-SSC-WW1-14

Sampled: 01/06/16 02:39 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**17**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-36 **CC-ML-SSC-WW1-15**

Sampled: 01/06/16 08:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-37 CC-NR-SSC-WW1-01

Sampled: 01/05/16 11:04 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**67**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-38 CC-NR-SSC-WW1-02

Sampled: 01/05/16 12:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**77**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-39 CC-NR-SSC-WW1-03

Sampled: 01/05/16 13:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**110**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-40 CC-NR-SSC-WW1-04

Sampled: 01/05/16 14:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**660**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-41 CC-NR-SSC-WW1-05

Sampled: 01/05/16 15:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**700**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-42 **CC-NR-SSC-WW1-06**

Sampled: 01/05/16 16:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1200**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Reported: 02/17/16 14:22

6A08047-43 **CC-NR-SSC-WW1-07**

Sampled: 01/05/16 17:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**2600**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-44 **CC-NR-SSC-WW1-08**

Sampled: 01/05/16 17:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**2200**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-45 CC-NR-SSC-WW1-09

Sampled: 01/05/16 18:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1500**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-46 CC-NR-SSC-WW1-10

Sampled: 01/05/16 19:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0495 Prepared: 01/11/16 13:43 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1300**	3.1	5.0	mg/l	1	01/11/16 18:51	

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Date Reported: 02/17/16 14:22

6A08047-47 CC-NR-SSC-WW1-11

Sampled: 01/05/16 21:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**360**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-48 **CC-NR-SSC-WW1-12**

Sampled: 01/05/16 23:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**92**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-49 **CC-NR-SSC-WW1-13**

Sampled: 01/06/16 00:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**260**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-50 CC-NR-SSC-WW1-14

Sampled: 01/06/16 01:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**69**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-51 CC-NR-SSC-WW1-15

Sampled: 01/06/16 01:35 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**92**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-52 CC-NR-SSC-WW1-16

Sampled: 01/06/16 03:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**49**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-53 **CC-NR-SSC-WW1-17**

Sampled: 01/06/16 06:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-54 **CC-TC-SSC-WW1-01**

Sampled: 01/05/16 13:37 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**460**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-55 **CC-TC-SSC-WW1-02**

Sampled: 01/05/16 15:07 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**240**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-56 CC-TC-SSC-WW1-03

Sampled: 01/05/16 15:37 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1700**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-57 CC-TC-SSC-WW1-04

Sampled: 01/05/16 16:07 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**800**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-58 **CC-TC-SSC-WW1-05**

Sampled: 01/05/16 16:37 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**740**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-59 **CC-TC-SSC-WW1-06**

Sampled: 01/05/16 17:10 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1600**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-60 **CC-TC-SSC-WW1-07**

Sampled: 01/05/16 17:39 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**730**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-61 **CC-TC-SSC-WW1-08**

Sampled: 01/05/16 18:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**640**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-62 **CC-TC-SSC-WW1-09**

Sampled: 01/05/16 18:39 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**390**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-63 **CC-TC-SSC-WW1-10**

Sampled: 01/05/16 19:09 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**300**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-64 **CC-TC-SSC-WW1-11**

Sampled: 01/05/16 21:12 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**67**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-65 CC-TC-SSC-WW1-12

Sampled: 01/05/16 23:41 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**60**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-66 **CC-TC-SSC-WW1-13**

Sampled: 01/06/16 00:41 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0502 Prepared: 01/11/16 15:04 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**31**	3.1	5.0	mg/l	1	01/11/16 17:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-67 CC-TC-SSC-WW1-14

Sampled: 01/06/16 02:11 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**19**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-68 CC-TC-SSC-WW1-15

Sampled: 01/06/16 03:11 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-69 **CV-UP-SSC-WW1-01**

Sampled: 01/05/16 12:24 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**91**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-70 **CV-UP-SSC-WW1-02**

Sampled: 01/05/16 14:28 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**720**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-71 **CV-UP-SSC-WW1-03**

Sampled: 01/05/16 15:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**550**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-72 CV-UP-SSC-WW1-04

Sampled: 01/05/16 15:29 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**470**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-73 **CV-UP-SSC-WW1-05**

Sampled: 01/05/16 16:29 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**210**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-74 **CV-UP-SSC-WW1-06**

Sampled: 01/05/16 16:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**190**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-75 CV-UP-SSC-WW1-07

Sampled: 01/05/16 17:29 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**190**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-76 CV-UP-SSC-WW1-08

Sampled: 01/05/16 18:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**200**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-77 **CV-UP-SSC-WW1-09**

Sampled: 01/05/16 19:29 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-78 **CV-UP-SSC-WW1-10**

Sampled: 01/05/16 19:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**140**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-79 **CV-UP-SSC-WW1-11**

Sampled: 01/05/16 20:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**98**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-80 **CV-UP-SSC-WW1-12**

Sampled: 01/05/16 21:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**78**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-81 **CV-UP-SSC-WW1-13**

Sampled: 01/05/16 22:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**61**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
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6A08047-82 CV-UP-SSC-WW1-14

Sampled: 01/06/16 00:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**45**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-83 **CV-UP-SSC-WW1-15**

Sampled: 01/06/16 02:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**35**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-84 **LP-NC-SSC-WW1-01**

Sampled: 01/05/16 11:44 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**15**	3.1	5.0	mg/l	1	01/12/16 10:02	

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Date Received: 01/08/16 12:15
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6A08047-85 LP-NC-SSC-WW1-02

Sampled: 01/05/16 14:43 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**55**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-86 **LP-NC-SSC-WW1-03**

Sampled: 01/05/16 16:40 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0534 Prepared: 01/12/16 09:07 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**620**	3.1	5.0	mg/l	1	01/12/16 11:50	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-87 LP-NC-SSC-WW1-04

Sampled: 01/05/16 18:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**830**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-88 **LP-NC-SSC-WW1-05**

Sampled: 01/05/16 19:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**940**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-89 **LP-NC-SSC-WW1-06**

Sampled: 01/05/16 20:49 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**750**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-90 **LP-NC-SSC-WW1-07**

Sampled: 01/05/16 21:49 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**440**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-91 **LP-NC-SSC-WW1-08**

Sampled: 01/05/16 22:49 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**300**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Reported: 02/17/16 14:22

6A08047-92 LP-NC-SSC-WW1-09

Sampled: 01/05/16 23:49 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**210**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-93 **LP-NC-SSC-WW1-10**

Sampled: 01/06/16 04:49 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**66**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-94 **LP-POW-SSC-WW1-01**

Sampled: 01/05/16 14:04 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**110**	3.1	5.0	mg/l	1	01/12/16 12:04	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-95 **LP-POW-SSC-WW1-02**

Sampled: 01/05/16 15:03 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**180**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-96 **LP-POW-SSC-WW1-03**

Sampled: 01/05/16 15:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**270**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Reported: 02/17/16 14:22

6A08047-97 **LP-POW-SSC-WW1-04**

Sampled: 01/05/16 18:35 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-98 **LP-POW-SSC-WW1-05**

Sampled: 01/05/16 20:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1300**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-99 **LP-POW-SSC-WW1-06**

Sampled: 01/05/16 20:50 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**900**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AA **LP-POW-SSC-WW1-07**

Sampled: 01/05/16 21:35 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**810**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AB **LP-POW-SSC-WW1-08**

Sampled: 01/05/16 23:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**420**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AC **LP-POW-SSC-WW1-09**

Sampled: 01/06/16 01:20 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**190**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AD **LP-POW-SSC-WW1-10**

Sampled: 01/06/16 11:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**21**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AE **CC-NR-SSC-WW1-18**

Sampled: 01/06/16 11:37 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AF **CC-TC-SSC-WW1-16**

Sampled: 01/06/16 05:11 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AG **CC-TC-SSC-WW1-17**

Sampled: 01/06/16 05:41 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0551 Prepared: 01/12/16 11:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**19**	3.1	5.0	mg/l	1	01/12/16 13:35	

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Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AH **CV-UP-SSC-WW1-16**

Sampled: 01/06/16 06:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0570 Prepared: 01/12/16 13:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**22**	3.1	5.0	mg/l	1	01/12/16 15:00	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

6A08047-AI **CV-TC-SSC-WW1-18**

Sampled: 01/06/16 07:41 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6A0570 Prepared: 01/12/16 13:55 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**5.0**	3.1	5.0	mg/l	1	01/12/16 15:00	

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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

QUALITY CONTROL SECTION

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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6A0440 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0440-BLK1)					Analyzed: 01/09/16 15:09						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6A0465 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0465-BLK1)					Analyzed: 01/11/16 14:30						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6A0495 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0495-BLK1)					Analyzed: 01/11/16 18:51						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6A0502 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0502-BLK1)					Analyzed: 01/11/16 17:35						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6A0534 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0534-BLK1)					Analyzed: 01/12/16 11:50						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6A0551 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0551-BLK1)					Analyzed: 01/12/16 13:35						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6A0570 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6A0570-BLK1)					Analyzed: 01/12/16 15:00						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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San Diego CA, 92123

Date Received: 01/08/16 12:15
Date Reported: 02/17/16 14:22

Notes and Definitions

ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	02/29/16 12:06
		Received Date:	02/03/16 16:50
		Turn Around:	Normal
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos Special Study 2015-16
Phone:	(858) 514-6464		
Fax:	(858) 278-5300	**PO Number:**	C013106084/502515C011
Work Order(s):	6B03075		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 02/03/16 16:50 with the Chain of Custody document. The samples were received in good condition, at 4.6 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:

Reviewed by:

Hai Van Nguyen
Project Manager

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CC-AC-SSC-WW2-01	KB	6B03075-01	Water	01/31/16 06:52
CC-AC-SSC-WW2-02	KB	6B03075-02	Water	01/31/16 07:51
CC-AC-SSC-WW2-03	KB	6B03075-03	Water	01/31/16 09:51
CC-AC-SSC-WW2-04	KB	6B03075-04	Water	01/31/16 11:00
CC-AC-SSC-WW2-05	KB	6B03075-05	Water	01/31/16 11:59
CC-AC-SSC-WW2-06	KB	6B03075-06	Water	01/31/16 13:29
CC-AC-SSC-WW2-07	KB	6B03075-07	Water	01/31/16 14:29
CC-AC-SSC-WW2-08	KB	6B03075-08	Water	01/31/16 14:59
CC-AC-SSC-WW2-09	KB	6B03075-09	Water	01/31/16 15:29
CC-AC-SSC-WW2-10	KB	6B03075-10	Water	01/31/16 15:59
CC-AC-SSC-WW2-11	KB	6B03075-11	Water	01/31/16 16:59
CC-AC-SSC-WW2-12	KB	6B03075-12	Water	01/31/16 17:59
CC-AC-SSC-WW2-13	KB	6B03075-13	Water	01/31/16 20:37
CC-AC-SSC-WW2-14	KB	6B03075-14	Water	02/01/16 01:38
CC-AC-SSC-WW2-15	KB	6B03075-15	Water	02/01/16 03:38
CC-BM-SSC-WW2-01	KB	6B03075-16	Water	01/31/16 05:07
CC-BM-SSC-WW2-02	KB	6B03075-17	Water	01/31/16 05:36
CC-BM-SSC-WW2-03	KB	6B03075-18	Water	01/31/16 06:38
CC-BM-SSC-WW2-04	KB	6B03075-19	Water	01/31/16 07:06
CC-BM-SSC-WW2-05	KB	6B03075-20	Water	01/31/16 07:36
CC-BM-SSC-WW2-06	KB	6B03075-21	Water	01/31/16 08:06
CC-BM-SSC-WW2-07	KB	6B03075-22	Water	01/31/16 08:36
CC-BM-SSC-WW2-08	KB	6B03075-23	Water	01/31/16 09:06
CC-BM-SSC-WW2-09	KB	6B03075-24	Water	01/31/16 11:05
CC-BM-SSC-WW2-10	KB	6B03075-25	Water	01/31/16 12:35
CC-BM-SSC-WW2-11	KB	6B03075-26	Water	01/31/16 14:05
CC-BM-SSC-WW2-12	KB	6B03075-27	Water	01/31/16 14:35
CC-BM-SSC-WW2-13	KB	6B03075-28	Water	01/31/16 15:05
CC-BM-SSC-WW2-14	KB	6B03075-29	Water	01/31/16 15:35
CC-BM-SSC-WW2-15	KB	6B03075-30	Water	01/31/16 16:05
CC-BM-SSC-WW2-16	KB	6B03075-31	Water	01/31/16 17:35
CC-ML-SSC-WW2-01	KB	6B03075-32	Water	01/31/16 00:48
CC-ML-SSC-WW2-02	KB	6B03075-33	Water	01/31/16 03:41
CC-ML-SSC-WW2-03	KB	6B03075-34	Water	01/31/16 04:28
CC-ML-SSC-WW2-04	KB	6B03075-35	Water	01/31/16 04:58
CC-ML-SSC-WW2-05	KB	6B03075-36	Water	01/31/16 05:58
CC-ML-SSC-WW2-06	KB	6B03075-37	Water	01/31/16 07:28
CC-ML-SSC-WW2-07	KB	6B03075-38	Water	01/31/16 07:58
CC-ML-SSC-WW2-08	KB	6B03075-39	Water	01/31/16 08:28
CC-ML-SSC-WW2-09	KB	6B03075-40	Water	01/31/16 08:58
CC-ML-SSC-WW2-10	KB	6B03075-41	Water	01/31/16 09:28
CC-ML-SSC-WW2-11	KB	6B03075-42	Water	01/31/16 10:28
CC-ML-SSC-WW2-12	KB	6B03075-43	Water	01/31/16 10:58

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CC-ML-SSC-WW2-13	KB	6B03075-44	Water	01/31/16 14:07
CC-ML-SSC-WW2-14	KB	6B03075-45	Water	01/31/16 14:37
CC-ML-SSC-WW2-15	KB	6B03075-46	Water	01/31/16 15:07
CC-ML-SSC-WW2-16	KB	6B03075-47	Water	01/31/16 15:37
CC-ML-SSC-WW2-17	KB	6B03075-48	Water	01/31/16 16:37
CC-ML-SSC-WW2-18	KB	6B03075-49	Water	01/31/16 17:07
CC-NR-SSC-WW2-01	KB	6B03075-50	Water	01/31/16 07:24
CC-NR-SSC-WW2-02	KB	6B03075-51	Water	01/31/16 08:23
CC-NR-SSC-WW2-03	KB	6B03075-52	Water	01/31/16 08:53
CC-NR-SSC-WW2-04	KB	6B03075-53	Water	01/31/16 09:23
CC-NR-SSC-WW2-05	KB	6B03075-54	Water	01/31/16 10:23
CC-NR-SSC-WW2-06	KB	6B03075-55	Water	01/31/16 11:46
CC-NR-SSC-WW2-07	KB	6B03075-56	Water	01/31/16 14:16
CC-NR-SSC-WW2-08	KB	6B03075-57	Water	01/31/16 14:46
CC-NR-SSC-WW2-09	KB	6B03075-58	Water	01/31/16 15:16
CC-NR-SSC-WW2-10	KB	6B03075-59	Water	01/31/16 15:46
CC-NR-SSC-WW2-11	KB	6B03075-60	Water	01/31/16 16:16
CC-NR-SSC-WW2-12	KB	6B03075-61	Water	01/31/16 18:16
CC-NR-SSC-WW2-13	KB	6B03075-62	Water	01/31/16 19:41
CC-TC-SSC-WW2-01	KB	6B03075-63	Water	01/31/16 08:07
CC-TC-SSC-WW2-02	KB	6B03075-64	Water	01/31/16 17:00
CC-TC-SSC-WW2-03	KB	6B03075-65	Water	01/31/16 18:33
CC-TC-SSC-WW2-04	KB	6B03075-66	Water	01/31/16 19:33
CC-TC-SSC-WW2-05	KB	6B03075-67	Water	01/31/16 20:33
CC-TC-SSC-WW2-06	KB	6B03075-68	Water	01/31/16 21:33
CV-UP-SSC-WW2-01	KB	6B03075-69	Water	01/31/16 09:55
CV-UP-SSC-WW2-02	KB	6B03075-70	Water	01/31/16 10:25
CV-UP-SSC-WW2-03	KB	6B03075-71	Water	01/31/16 10:55
CV-UP-SSC-WW2-04	KB	6B03075-72	Water	01/31/16 11:25
CV-UP-SSC-WW2-05	KB	6B03075-73	Water	01/31/16 11:55
CV-UP-SSC-WW2-06	KB	6B03075-74	Water	01/31/16 12:25
CV-UP-SSC-WW2-07	KB	6B03075-75	Water	01/31/16 12:55
CV-UP-SSC-WW2-08	KB	6B03075-76	Water	01/31/16 13:25
CV-UP-SSC-WW2-09	KB	6B03075-77	Water	01/31/16 13:55
CV-UP-SSC-WW2-10	KB	6B03075-78	Water	01/31/16 14:25
CV-UP-SSC-WW2-11	KB	6B03075-79	Water	01/31/16 14:55
CV-UP-SSC-WW2-12	KB	6B03075-80	Water	01/31/16 15:25
CV-UP-SSC-WW2-13	KB	6B03075-81	Water	01/31/16 15:55
CV-UP-SSC-WW2-14	KB	6B03075-82	Water	01/31/16 16:25
LP-NC-SSC-WW2-01	KB	6B03075-83	Water	01/31/16 05:47
LP-NC-SSC-WW2-02	KB	6B03075-84	Water	01/31/16 07:46
LP-NC-SSC-WW2-03	KB	6B03075-85	Water	01/31/16 08:46
LP-NC-SSC-WW2-04	KB	6B03075-86	Water	01/31/16 09:16

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9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
LP-NC-SSC-WW2-05	KB	6B03075-87	Water	01/31/16 09:46
LP-NC-SSC-WW2-06	KB	6B03075-88	Water	01/31/16 10:16
LP-NC-SSC-WW2-07	KB	6B03075-89	Water	01/31/16 10:46
LP-NC-SSC-WW2-08	KB	6B03075-90	Water	01/31/16 11:46
LP-NC-SSC-WW2-09	KB	6B03075-91	Water	01/31/16 14:15
LP-NC-SSC-WW2-10	KB	6B03075-92	Water	01/31/16 14:45
LP-NC-SSC-WW2-11	KB	6B03075-93	Water	01/31/16 15:15
LP-NC-SSC-WW2-12	KB	6B03075-94	Water	01/31/16 15:45
LP-NC-SSC-WW2-13	KB	6B03075-95	Water	01/31/16 16:15
LP-NC-SSC-WW2-14	KB	6B03075-96	Water	01/31/16 17:15
LP-NC-SSC-WW2-15	KB	6B03075-97	Water	01/31/16 19:15
LP-NC-SSC-WW2-16	KB	6B03075-98	Water	01/31/16 22:14
LP-NC-SSC-WW2-17	KB	6B03075-99	Water	02/01/16 03:14
LP-NC-SSC-WW2-18	KB	6B03075-AA	Water	02/01/16 06:14
LP-NC-SSC-WW2-19	KB	6B03075-AB	Water	02/01/16 09:14
LP-NC-SSC-WW2-20	KB	6B03075-AC	Water	02/01/16 11:14
LP-POW-SSC-WW2-01	KB	6B03075-AD	Water	01/31/16 14:05
LP-POW-SSC-WW2-02	KB	6B03075-AE	Water	01/31/16 14:34
LP-POW-SSC-WW2-03	KB	6B03075-AF	Water	01/31/16 15:04
LP-POW-SSC-WW2-04	KB	6B03075-AG	Water	01/31/16 15:34
LP-POW-SSC-WW2-05	KB	6B03075-AH	Water	01/31/16 16:04
LP-POW-SSC-WW2-06	KB	6B03075-AI	Water	01/31/16 17:04
LP-POW-SSC-WW2-07	KB	6B03075-AJ	Water	01/31/16 17:34
LP-POW-SSC-WW2-08	KB	6B03075-AK	Water	01/31/16 18:34
LP-POW-SSC-WW2-09	KB	6B03075-AL	Water	02/01/16 05:55
LP-POW-SSC-WW2-10	KB	6B03075-AM	Water	02/01/16 06:54
LP-POW-SSC-WW2-11	KB	6B03075-AN	Water	02/01/16 08:54
LP-POW-SSC-WW2-12	KB	6B03075-AO	Water	02/01/16 11:54

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-01 **CC-AC-SSC-WW2-01**

Sampled: 01/31/16 06:52 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**64**	3.1	5.0	mg/l	1	02/04/16 14:20	

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San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-02 CC-AC-SSC-WW2-02

Sampled: 01/31/16 07:51 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**40**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-03 **CC-AC-SSC-WW2-03**

Sampled: 01/31/16 09:51 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**100**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-04 **CC-AC-SSC-WW2-04**

Sampled: 01/31/16 11:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**150**	3.1	5.0	mg/l	1	02/04/16 14:20	

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AMEC Environment & Infrastructure
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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-05 **CC-AC-SSC-WW2-05**

Sampled: 01/31/16 11:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**36**	3.1	5.0	mg/l	1	02/04/16 14:20	

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AMEC Environment & Infrastructure
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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-06 CC-AC-SSC-WW2-06

Sampled: 01/31/16 13:29 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**15**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-07 CC-AC-SSC-WW2-07

Sampled: 01/31/16 14:29 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**11**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-08 CC-AC-SSC-WW2-08

Sampled: 01/31/16 14:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0296 Prepared: 02/04/16 09:23 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**180**	3.1	5.0	mg/l	1	02/04/16 14:20	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-09 CC-AC-SSC-WW2-09

Sampled: 01/31/16 15:29 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-10 **CC-AC-SSC-WW2-10**

Sampled: 01/31/16 15:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**430**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-11 **CC-AC-SSC-WW2-11**

Sampled: 01/31/16 16:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**130**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-12 **CC-AC-SSC-WW2-12**

Sampled: 01/31/16 17:59 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**49**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-13 **CC-AC-SSC-WW2-13**

Sampled: 01/31/16 20:37 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**17**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-14 **CC-AC-SSC-WW2-14**

Sampled: 02/01/16 01:38 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-15 CC-AC-SSC-WW2-15

Sampled: 02/01/16 03:38 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-16 **CC-BM-SSC-WW2-01**

Sampled: 01/31/16 05:07 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**1700**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-17 CC-BM-SSC-WW2-02

Sampled: 01/31/16 05:36 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-18 **CC-BM-SSC-WW2-03**

Sampled: 01/31/16 06:38 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**22**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-19 CC-BM-SSC-WW2-04

Sampled: 01/31/16 07:06 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-20 CC-BM-SSC-WW2-05

Sampled: 01/31/16 07:36 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**21**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-21 **CC-BM-SSC-WW2-06**

Sampled: 01/31/16 08:06 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**350**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-22 CC-BM-SSC-WW2-07

Sampled: 01/31/16 08:36 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**110**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-23 **CC-BM-SSC-WW2-08**

Sampled: 01/31/16 09:06 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**47**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-24 **CC-BM-SSC-WW2-09**

Sampled: 01/31/16 11:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-25 **CC-BM-SSC-WW2-10**

Sampled: 01/31/16 12:35 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**6.0**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-26 **CC-BM-SSC-WW2-11**

Sampled: 01/31/16 14:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-27 **CC-BM-SSC-WW2-12**

Sampled: 01/31/16 14:35 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**19**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-28 **CC-BM-SSC-WW2-13**

Sampled: 01/31/16 15:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0297 Prepared: 02/04/16 09:25 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**270**	3.1	5.0	mg/l	1	02/05/16 16:50	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-29 CC-BM-SSC-WW2-14

Sampled: 01/31/16 15:35 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**270**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-30 **CC-BM-SSC-WW2-15**

Sampled: 01/31/16 16:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**100**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-31 **CC-BM-SSC-WW2-16**

Sampled: 01/31/16 17:35 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**22**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-32 **CC-ML-SSC-WW2-01**

Sampled: 01/31/16 00:48 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**65**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-33 **CC-ML-SSC-WW2-02**

Sampled: 01/31/16 03:41 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**73**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-34 **CC-ML-SSC-WW2-03**

Sampled: 01/31/16 04:28 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**60**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-35 CC-ML-SSC-WW2-04

Sampled: 01/31/16 04:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**100**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-36 CC-ML-SSC-WW2-05

Sampled: 01/31/16 05:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-37 CC-ML-SSC-WW2-06

Sampled: 01/31/16 07:28 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**29**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-38 **CC-ML-SSC-WW2-07**

Sampled: 01/31/16 07:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-39 **CC-ML-SSC-WW2-08**

Sampled: 01/31/16 08:28 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**98**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-40 **CC-ML-SSC-WW2-09**

Sampled: 01/31/16 08:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**51**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-41 **CC-ML-SSC-WW2-10**

Sampled: 01/31/16 09:28 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**27**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-42 **CC-ML-SSC-WW2-11**

Sampled: 01/31/16 10:28 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-43 **CC-ML-SSC-WW2-12**

Sampled: 01/31/16 10:58 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-44 **CC-ML-SSC-WW2-13**

Sampled: 01/31/16 14:07 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**72**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-45 CC-ML-SSC-WW2-14

Sampled: 01/31/16 14:37 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**86**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-46 CC-ML-SSC-WW2-15

Sampled: 01/31/16 15:07 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**47**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-47 CC-ML-SSC-WW2-16

Sampled: 01/31/16 15:37 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**19**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-48 **CC-ML-SSC-WW2-17**

Sampled: 01/31/16 16:37 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0312 Prepared: 02/04/16 10:27 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	02/04/16 12:17	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-49 **CC-ML-SSC-WW2-18**

Sampled: 01/31/16 17:07 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**5.0**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-50 CC-NR-SSC-WW2-01

Sampled: 01/31/16 07:24 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**220**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-51 **CC-NR-SSC-WW2-02**

Sampled: 01/31/16 08:23 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**250**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-52 CC-NR-SSC-WW2-03

Sampled: 01/31/16 08:53 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**150**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-53 CC-NR-SSC-WW2-04

Sampled: 01/31/16 09:23 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**240**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-54 **CC-NR-SSC-WW2-05**

Sampled: 01/31/16 10:23 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**140**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-55 CC-NR-SSC-WW2-06

Sampled: 01/31/16 11:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**34**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-56 CC-NR-SSC-WW2-07

Sampled: 01/31/16 14:16 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-57 CC-NR-SSC-WW2-08

Sampled: 01/31/16 14:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**43**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-58 **CC-NR-SSC-WW2-09**

Sampled: 01/31/16 15:16 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**250**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-59 CC-NR-SSC-WW2-10

Sampled: 01/31/16 15:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**240**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-60 **CC-NR-SSC-WW2-11**

Sampled: 01/31/16 16:16 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**310**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-61 **CC-NR-SSC-WW2-12**

Sampled: 01/31/16 18:16 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**40**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-62 **CC-NR-SSC-WW2-13**

Sampled: 01/31/16 19:41 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-63 **CC-TC-SSC-WW2-01**

Sampled: 01/31/16 08:07 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**2100**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-64 **CC-TC-SSC-WW2-02**

Sampled: 01/31/16 17:00 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**71**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-65 **CC-TC-SSC-WW2-03**

Sampled: 01/31/16 18:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**25**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-66 **CC-TC-SSC-WW2-04**

Sampled: 01/31/16 19:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-67 **CC-TC-SSC-WW2-05**

Sampled: 01/31/16 20:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-68 **CC-TC-SSC-WW2-06**

Sampled: 01/31/16 21:33 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0397 Prepared: 02/05/16 10:16 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	02/05/16 13:42	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-69 **CV-UP-SSC-WW2-01**

Sampled: 01/31/16 09:55 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**61**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-70 **CV-UP-SSC-WW2-02**

Sampled: 01/31/16 10:25 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**90**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-71 **CV-UP-SSC-WW2-03**

Sampled: 01/31/16 10:55 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-72 **CV-UP-SSC-WW2-04**

Sampled: 01/31/16 11:25 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**94**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-73 **CV-UP-SSC-WW2-05**

Sampled: 01/31/16 11:55 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**90**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-74 **CV-UP-SSC-WW2-06**

Sampled: 01/31/16 12:25 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**64**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Reported: 02/29/16 12:06

6B03075-75 CV-UP-SSC-WW2-07

Sampled: 01/31/16 12:55 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**38**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-76 **CV-UP-SSC-WW2-08**

Sampled: 01/31/16 13:25 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**31**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Reported: 02/29/16 12:06

6B03075-77 **CV-UP-SSC-WW2-09**

Sampled: 01/31/16 13:55 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**19**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-78 CV-UP-SSC-WW2-10

Sampled: 01/31/16 14:25 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**15**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-79 **CV-UP-SSC-WW2-11**

Sampled: 01/31/16 14:55 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**84**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-80 **CV-UP-SSC-WW2-12**

Sampled: 01/31/16 15:25 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**110**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-81 **CV-UP-SSC-WW2-13**

Sampled: 01/31/16 15:55 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**65**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-82 **CV-UP-SSC-WW2-14**

Sampled: 01/31/16 16:25 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**87**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-83 **LP-NC-SSC-WW2-01**

Sampled: 01/31/16 05:47 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**21**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-84 **LP-NC-SSC-WW2-02**

Sampled: 01/31/16 07:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**21**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-85 LP-NC-SSC-WW2-03

Sampled: 01/31/16 08:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**72**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-86 **LP-NC-SSC-WW2-04**

Sampled: 01/31/16 09:16 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**110**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-87 **LP-NC-SSC-WW2-05**

Sampled: 01/31/16 09:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**84**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-88 **LP-NC-SSC-WW2-06**

Sampled: 01/31/16 10:16 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0433 Prepared: 02/05/16 13:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**58**	3.1	5.0	mg/l	1	02/05/16 17:07	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-89 **LP-NC-SSC-WW2-07**

Sampled: 01/31/16 10:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**43**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-90 **LP-NC-SSC-WW2-08**

Sampled: 01/31/16 11:46 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**21**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-91 **LP-NC-SSC-WW2-09**

Sampled: 01/31/16 14:15 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**15**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-92 **LP-NC-SSC-WW2-10**

Sampled: 01/31/16 14:45 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**50**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-93 **LP-NC-SSC-WW2-11**

Sampled: 01/31/16 15:15 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**140**	3.1	5.0	mg/l	1	02/05/16 17:47	

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-94 **LP-NC-SSC-WW2-12**

Sampled: 01/31/16 15:45 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**160**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-95 **LP-NC-SSC-WW2-13**

Sampled: 01/31/16 16:15 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-96 **LP-NC-SSC-WW2-14**

Sampled: 01/31/16 17:15 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**55**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-97 **LP-NC-SSC-WW2-15**

Sampled: 01/31/16 19:15 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**31**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-98 **LP-NC-SSC-WW2-16**

Sampled: 01/31/16 22:14 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-99 **LP-NC-SSC-WW2-17**

Sampled: 02/01/16 03:14 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**5.0**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AA **LP-NC-SSC-WW2-18**

Sampled: 02/01/16 06:14 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**14**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AB **LP-NC-SSC-WW2-19**

Sampled: 02/01/16 09:14 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AC **LP-NC-SSC-WW2-20**

Sampled: 02/01/16 11:14 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	ND	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AD **LP-POW-SSC-WW2-01**

Sampled: 01/31/16 14:05 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**25**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AE **LP-POW-SSC-WW2-02**

Sampled: 01/31/16 14:34 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**42**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AF **LP-POW-SSC-WW2-03**

Sampled: 01/31/16 15:04 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**270**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AG **LP-POW-SSC-WW2-04**

Sampled: 01/31/16 15:34 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**300**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AH **LP-POW-SSC-WW2-05**

Sampled: 01/31/16 16:04 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**140**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AI **LP-POW-SSC-WW2-06**

Sampled: 01/31/16 17:04 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0442 Prepared: 02/05/16 15:32 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**39**	3.1	5.0	mg/l	1	02/05/16 17:47	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AJ **LP-POW-SSC-WW2-07**

Sampled: 01/31/16 17:34 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0453 Prepared: 02/05/16 17:08 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	02/05/16 17:40	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AK **LP-POW-SSC-WW2-08**

Sampled: 01/31/16 18:34 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0453 Prepared: 02/05/16 17:08 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**22**	3.1	5.0	mg/l	1	02/05/16 17:40	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AL **LP-POW-SSC-WW2-09**

Sampled: 02/01/16 05:55 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0453 Prepared: 02/05/16 17:08 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	02/05/16 17:40	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AM **LP-POW-SSC-WW2-10**

Sampled: 02/01/16 06:54 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0453 Prepared: 02/05/16 17:08 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**19**	3.1	5.0	mg/l	1	02/05/16 17:40	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AN **LP-POW-SSC-WW2-11**

Sampled: 02/01/16 08:54 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0453 Prepared: 02/05/16 17:08 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**27**	3.1	5.0	mg/l	1	02/05/16 17:40	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

6B03075-AO **LP-POW-SSC-WW2-12**

Sampled: 02/01/16 11:54 **Sampled By:** KB **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6B0453 Prepared: 02/05/16 17:08 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**5.0**	3.1	5.0	mg/l	1	02/05/16 17:40	

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

QUALITY CONTROL SECTION

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Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6B0296 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0296-BLK1)					Analyzed: 02/04/16 14:20						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6B0297 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0297-BLK1)					Analyzed: 02/05/16 16:50						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6B0312 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0312-BLK1)					Analyzed: 02/04/16 12:17						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6B0397 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0397-BLK1)					Analyzed: 02/05/16 13:42						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6B0433 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0433-BLK1)					Analyzed: 02/05/16 17:07						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6B0442 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0442-BLK1)					Analyzed: 02/05/16 17:47						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6B0453 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6B0453-BLK1)					Analyzed: 02/05/16 17:40						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 02/03/16 16:50
Date Reported: 02/29/16 12:06

Notes and Definitions

ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	04/01/16 10:35
		Received Date:	03/10/16 16:30
		Turn Around:	7 workdays
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos Special Study 2015-2016
Phone:	(858) 514-6464		
Fax:	(858) 278-5300		
Work Order(s):	6C10069		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 03/10/16 16:30 with the Chain of Custody document. The samples were received in good condition, at 7.7 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:

Reviewed by:

Hai Van Nguyen
Project Manager

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

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AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CC-AC-SSC-WW3-01	Client	6C10069-01	Water	03/06/16 09:57
CC-AC-SSC-WW3-02	Client	6C10069-02	Water	03/06/16 10:26
CC-AC-SSC-WW3-03	Client	6C10069-03	Water	03/06/16 10:56
CC-AC-SSC-WW3-04	Client	6C10069-04	Water	03/06/16 11:26
CC-AC-SSC-WW3-05	Client	6C10069-05	Water	03/06/16 11:56
CC-AC-SSC-WW3-06	Client	6C10069-06	Water	03/06/16 12:26
CC-AC-SSC-WW3-07	Client	6C10069-07	Water	03/06/16 12:56
CC-AC-SSC-WW3-08	Client	6C10069-08	Water	03/06/16 13:56
CC-AC-SSC-WW3-09	Client	6C10069-09	Water	03/07/16 10:36
CC-AC-SSC-WW3-10	Client	6C10069-10	Water	03/07/16 14:57
CC-AC-SSC-WW3-11	Client	6C10069-11	Water	03/07/16 15:23
CC-AC-SSC-WW3-12	Client	6C10069-12	Water	03/07/16 15:52
CC-AC-SSC-WW3-13	Client	6C10069-13	Water	03/07/16 16:22
CC-AC-SSC-WW3-14	Client	6C10069-14	Water	03/07/16 17:22
CC-AC-SSC-WW3-15	Client	6C10069-15	Water	03/07/16 18:22
CC-AC-SSC-WW3-16	Client	6C10069-16	Water	03/07/16 18:52
CC-AC-SSC-WW3-17	Client	6C10069-17	Water	03/07/16 19:52
CC-AC-SSC-WW3-18	Client	6C10069-18	Water	03/07/16 20:52
CC-AC-SSC-WW3-19	Client	6C10069-19	Water	03/07/16 21:22
CC-AC-SSC-WW3-20	Client	6C10069-20	Water	03/07/16 21:52
CC-AC-SSC-WW3-21	Client	6C10069-21	Water	03/07/16 23:52
CC-BM-SSC-WW3-01	Client	6C10069-22	Water	03/06/16 09:20
CC-BM-SSC-WW3-02	Client	6C10069-23	Water	03/06/16 09:49
CC-BM-SSC-WW3-03	Client	6C10069-24	Water	03/06/16 10:19
CC-BM-SSC-WW3-04	Client	6C10069-25	Water	03/06/16 11:49
CC-BM-SSC-WW3-05	Client	6C10069-26	Water	03/07/16 08:37
CC-BM-SSC-WW3-06	Client	6C10069-27	Water	03/07/16 09:06
CC-BM-SSC-WW3-07	Client	6C10069-28	Water	03/07/16 10:08
CC-BM-SSC-WW3-08	Client	6C10069-29	Water	03/07/16 12:37
CC-BM-SSC-WW3-09	Client	6C10069-30	Water	03/07/16 15:07
CC-BM-SSC-WW3-10	Client	6C10069-31	Water	03/07/16 15:55
CC-BM-SSC-WW3-11	Client	6C10069-32	Water	03/07/16 16:54
CC-BM-SSC-WW3-12	Client	6C10069-33	Water	03/07/16 17:54
CC-BM-SSC-WW3-13	Client	6C10069-34	Water	03/07/16 18:54
CC-BM-SSC-WW3-14	Client	6C10069-35	Water	03/07/16 22:24
CC-ML-SSC-WW3-01	Client	6C10069-36	Water	03/05/16 23:59
CC-ML-SSC-WW3-02	Client	6C10069-37	Water	03/06/16 04:42
CC-ML-SSC-WW3-03	Client	6C10069-38	Water	03/06/16 05:13
CC-ML-SSC-WW3-04	Client	6C10069-39	Water	03/06/16 09:22
CC-ML-SSC-WW3-05	Client	6C10069-40	Water	03/06/16 09:52
CC-ML-SSC-WW3-06	Client	6C10069-41	Water	03/06/16 10:22
CC-ML-SSC-WW3-07	Client	6C10069-42	Water	03/06/16 11:22
CC-ML-SSC-WW3-08	Client	6C10069-43	Water	03/07/16 08:32

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San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CC-ML-SSC-WW3-09	Client	6C10069-44	Water	03/07/16 09:01
CC-ML-SSC-WW3-10	Client	6C10069-45	Water	03/07/16 09:31
CC-ML-SSC-WW3-11	Client	6C10069-46	Water	03/07/16 10:31
CC-ML-SSC-WW3-12	Client	6C10069-47	Water	03/07/16 11:01
CC-ML-SSC-WW3-13	Client	6C10069-48	Water	03/07/16 11:34
CC-ML-SSC-WW3-14	Client	6C10069-49	Water	03/07/16 15:35
CC-ML-SSC-WW3-15	Client	6C10069-50	Water	03/07/16 16:34
CC-ML-SSC-WW3-16	Client	6C10069-51	Water	03/07/16 17:34
CC-ML-SSC-WW3-17	Client	6C10069-52	Water	03/07/16 18:34
CC-ML-SSC-WW3-18	Client	6C10069-53	Water	03/07/16 19:04
CC-ML-SSC-WW3-19	Client	6C10069-54	Water	03/07/16 20:34
CC-ML-SSC-WW3-20	Client	6C10069-55	Water	03/07/16 21:34
CC-NR-SSC-WW3-01	Client	6C10069-56	Water	03/06/16 09:46
CC-NR-SSC-WW3-02	Client	6C10069-57	Water	03/06/16 10:46
CC-NR-SSC-WW3-03	Client	6C10069-58	Water	03/06/16 11:16
CC-NR-SSC-WW3-04	Client	6C10069-59	Water	03/06/16 11:46
CC-NR-SSC-WW3-05	Client	6C10069-60	Water	03/06/16 13:16
CC-NR-SSC-WW3-06	Client	6C10069-61	Water	03/07/16 09:33
CC-NR-SSC-WW3-07	Client	6C10069-62	Water	03/07/16 10:03
CC-NR-SSC-WW3-08	Client	6C10069-63	Water	03/07/16 10:33
CC-NR-SSC-WW3-09	Client	6C10069-64	Water	03/07/16 11:33
CC-NR-SSC-WW3-10	Client	6C10069-65	Water	03/07/16 15:36
CC-NR-SSC-WW3-11	Client	6C10069-66	Water	03/07/16 16:35
CC-NR-SSC-WW3-12	Client	6C10069-67	Water	03/07/16 17:05
CC-NR-SSC-WW3-13	Client	6C10069-68	Water	03/07/16 17:35
CC-NR-SSC-WW3-14	Client	6C10069-69	Water	03/07/16 19:35
CC-NR-SSC-WW3-15	Client	6C10069-70	Water	03/07/16 21:05
CC-NR-SSC-WW3-16	Client	6C10069-71	Water	03/07/16 22:05
CC-NR-SSC-WW3-17	Client	6C10069-72	Water	03/07/16 22:35
CC-NR-SSC-WW3-18	Client	6C10069-73	Water	03/08/16 00:35
CC-TC-SSC-WW3-01	Client	6C10069-74	Water	03/06/16 09:35
CC-TC-SSC-WW3-02	Client	6C10069-75	Water	03/06/16 10:04
CC-TC-SSC-WW3-03	Client	6C10069-76	Water	03/07/16 20:55
CC-TC-SSC-WW3-04	Client	6C10069-77	Water	03/07/16 21:24
CC-TC-SSC-WW3-05	Client	6C10069-78	Water	03/07/16 21:54
CC-TC-SSC-WW3-06	Client	6C10069-79	Water	03/07/16 22:24
CC-TC-SSC-WW3-07	Client	6C10069-80	Water	03/07/16 22:54
CV-UP-SSC-WW3-01	Client	6C10069-81	Water	03/06/16 16:30
CV-UP-SSC-WW3-02	Client	6C10069-82	Water	03/07/16 11:05
CV-UP-SSC-WW3-03	Client	6C10069-83	Water	03/07/16 11:37
CV-UP-SSC-WW3-04	Client	6C10069-84	Water	03/07/16 12:07
CV-UP-SSC-WW3-05	Client	6C10069-85	Water	03/07/16 12:37
CV-UP-SSC-WW3-06	Client	6C10069-86	Water	03/07/16 13:07

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CV-UP-SSC-WW3-07	Client	6C10069-87	Water	03/07/16 14:07
CV-UP-SSC-WW3-08	Client	6C10069-88	Water	03/07/16 14:37
CV-UP-SSC-WW3-09	Client	6C10069-89	Water	03/07/16 15:37
CV-UP-SSC-WW3-10	Client	6C10069-90	Water	03/07/16 17:07
CV-UP-SSC-WW3-11	Client	6C10069-91	Water	03/07/16 17:37
CV-UP-SSC-WW3-12	Client	6C10069-92	Water	03/07/16 19:07
CV-UP-SSC-WW3-13	Client	6C10069-93	Water	03/07/16 19:37
CV-UP-SSC-WW3-14	Client	6C10069-94	Water	03/07/16 21:37
LP-NC-SSC-WW3-01	Client	6C10069-95	Water	03/06/16 09:23
LP-NC-SSC-WW3-02	Client	6C10069-96	Water	03/06/16 09:52
LP-NC-SSC-WW3-03	Client	6C10069-97	Water	03/06/16 10:22
LP-NC-SSC-WW3-04	Client	6C10069-98	Water	03/06/16 11:22
LP-NC-SSC-WW3-05	Client	6C10069-99	Water	03/06/16 11:52
LP-NC-SSC-WW3-06	Client	6C10069-AA	Water	03/06/16 12:52
LP-NC-SSC-WW3-07	Client	6C10069-AB	Water	03/06/16 13:22
LP-NC-SSC-WW3-08	Client	6C10069-AC	Water	03/06/16 13:52
LP-NC-SSC-WW3-09	Client	6C10069-AD	Water	03/07/16 09:56
LP-NC-SSC-WW3-10	Client	6C10069-AE	Water	03/07/16 10:25
LP-NC-SSC-WW3-11	Client	6C10069-AF	Water	03/07/16 10:55
LP-NC-SSC-WW3-12	Client	6C10069-AG	Water	03/07/16 11:25
LP-NC-SSC-WW3-13	Client	6C10069-AH	Water	03/07/16 11:55
LP-NC-SSC-WW3-14	Client	6C10069-AI	Water	03/07/16 12:25
LP-NC-SSC-WW3-15	Client	6C10069-AJ	Water	03/07/16 13:25
LP-NC-SSC-WW3-16	Client	6C10069-AK	Water	03/07/16 15:25
LP-NC-SSC-WW3-17	Client	6C10069-AL	Water	03/07/16 16:26
LP-NC-SSC-WW3-18	Client	6C10069-AM	Water	03/07/16 17:24
LP-NC-SSC-WW3-19	Client	6C10069-AN	Water	03/07/16 17:54
LP-NC-SSC-WW3-20	Client	6C10069-AO	Water	03/07/16 18:24
LP-NC-SSC-WW3-21	Client	6C10069-AP	Water	03/07/16 19:54
LP-NC-SSC-WW3-22	Client	6C10069-AQ	Water	03/07/16 20:24
LP-NC-SSC-WW3-23	Client	6C10069-AR	Water	03/07/16 22:24
LP-POW-SSC-WW3-01	Client	6C10069-AS	Water	03/07/16 09:33
LP-POW-SSC-WW3-02	Client	6C10069-AT	Water	03/07/16 10:03
LP-POW-SSC-WW3-03	Client	6C10069-AU	Water	03/07/16 10:33
LP-POW-SSC-WW3-04	Client	6C10069-AV	Water	03/07/16 11:03
LP-POW-SSC-WW3-05	Client	6C10069-AW	Water	03/07/16 11:33
LP-POW-SSC-WW3-06	Client	6C10069-AX	Water	03/07/16 12:33
LP-POW-SSC-WW3-07	Client	6C10069-AY	Water	03/07/16 13:03
LP-POW-SSC-WW3-08	Client	6C10069-AZ	Water	03/07/16 13:33
LP-POW-SSC-WW3-09	Client	6C10069-BA	Water	03/07/16 14:03
LP-POW-SSC-WW3-10	Client	6C10069-BB	Water	03/07/16 15:03
LP-POW-SSC-WW3-11	Client	6C10069-BC	Water	03/07/16 16:03
LP-POW-SSC-WW3-12	Client	6C10069-BD	Water	03/07/16 18:32

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San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
LP-POW-SSC-WW3-13	Client	6C10069-BE	Water	03/07/16 19:02
LP-POW-SSC-WW3-14	Client	6C10069-BF	Water	03/07/16 19:32
LP-POW-SSC-WW3-15	Client	6C10069-BG	Water	03/07/16 20:02
LP-POW-SSC-WW3-16	Client	6C10069-BH	Water	03/07/16 20:32
LP-POW-SSC-WW3-17	Client	6C10069-BI	Water	03/07/16 21:02
LP-POW-SSC-WW3-18	Client	6C10069-BJ	Water	03/07/16 22:32
LP-POW-SSC-WW3-19	Client	6C10069-BK	Water	03/07/16 23:32

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-01 **CC-AC-SSC-WW3-01**

Sampled: 03/06/16 09:57 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**130**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-02 CC-AC-SSC-WW3-02

Sampled: 03/06/16 10:26 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**82**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-03 **CC-AC-SSC-WW3-03**

Sampled: 03/06/16 10:56 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**31**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-04 **CC-AC-SSC-WW3-04**

Sampled: 03/06/16 11:26 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**15**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-05 CC-AC-SSC-WW3-05

Sampled: 03/06/16 11:56 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-06 **CC-AC-SSC-WW3-06**

Sampled: 03/06/16 12:26 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**16**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-07 CC-AC-SSC-WW3-07

Sampled: 03/06/16 12:56 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**76**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-08 **CC-AC-SSC-WW3-08**

Sampled: 03/06/16 13:56 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-09 CC-AC-SSC-WW3-09

Sampled: 03/07/16 10:36 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**54**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-10 **CC-AC-SSC-WW3-10**

Sampled: 03/07/16 14:57 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-11 **CC-AC-SSC-WW3-11**

Sampled: 03/07/16 15:23 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-12 CC-AC-SSC-WW3-12

Sampled: 03/07/16 15:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**45**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-13 **CC-AC-SSC-WW3-13**

Sampled: 03/07/16 16:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**17**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-14 **CC-AC-SSC-WW3-14**

Sampled: 03/07/16 17:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**100**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-15 **CC-AC-SSC-WW3-15**

Sampled: 03/07/16 18:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**200**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-16 **CC-AC-SSC-WW3-16**

Sampled: 03/07/16 18:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**230**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-17 **CC-AC-SSC-WW3-17**

Sampled: 03/07/16 19:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**81**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-18 **CC-AC-SSC-WW3-18**

Sampled: 03/07/16 20:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**58**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-19 **CC-AC-SSC-WW3-19**

Sampled: 03/07/16 21:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-20 **CC-AC-SSC-WW3-20**

Sampled: 03/07/16 21:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**25**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-21 **CC-AC-SSC-WW3-21**

Sampled: 03/07/16 23:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0687 Prepared: 03/11/16 08:33 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	03/11/16 10:10	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-22 **CC-BM-SSC-WW3-01**

Sampled: 03/06/16 09:20 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**460**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-23 **CC-BM-SSC-WW3-02**

Sampled: 03/06/16 09:49 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**180**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-24 **CC-BM-SSC-WW3-03**

Sampled: 03/06/16 10:19 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**47**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Reported: 04/01/16 10:35

6C10069-25 **CC-BM-SSC-WW3-04**

Sampled: 03/06/16 11:49 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**4.0**	3.1	5.0	mg/l	1	03/11/16 11:30	J

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-26 **CC-BM-SSC-WW3-05**

Sampled: 03/07/16 08:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**260**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-27 **CC-BM-SSC-WW3-06**

Sampled: 03/07/16 09:06 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**580**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-28 **CC-BM-SSC-WW3-07**

Sampled: 03/07/16 10:08 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**59**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-29 **CC-BM-SSC-WW3-08**

Sampled: 03/07/16 12:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-30 **CC-BM-SSC-WW3-09**

Sampled: 03/07/16 15:07 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-31 **CC-BM-SSC-WW3-10**

Sampled: 03/07/16 15:55 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-32 CC-BM-SSC-WW3-11

Sampled: 03/07/16 16:54 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**27**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-33 **CC-BM-SSC-WW3-12**

Sampled: 03/07/16 17:54 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**270**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-34 **CC-BM-SSC-WW3-13**

Sampled: 03/07/16 18:54 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**71**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-35 CC-BM-SSC-WW3-14

Sampled: 03/07/16 22:24 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-36 **CC-ML-SSC-WW3-01**

Sampled: 03/05/16 23:59 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**43**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-37 CC-ML-SSC-WW3-02

Sampled: 03/06/16 04:42 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**96**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-38 **CC-ML-SSC-WW3-03**

Sampled: 03/06/16 05:13 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**48**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-39 **CC-ML-SSC-WW3-04**

Sampled: 03/06/16 09:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**190**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-40 **CC-ML-SSC-WW3-05**

Sampled: 03/06/16 09:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0683 Prepared: 03/10/16 17:44 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**44**	3.1	5.0	mg/l	1	03/11/16 13:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-41 **CC-ML-SSC-WW3-06**

Sampled: 03/06/16 10:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**56**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-42 **CC-ML-SSC-WW3-07**

Sampled: 03/06/16 11:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-43 **CC-ML-SSC-WW3-08**

Sampled: 03/07/16 08:32 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**98**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-44 **CC-ML-SSC-WW3-09**

Sampled: 03/07/16 09:01 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**130**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-45 **CC-ML-SSC-WW3-10**

Sampled: 03/07/16 09:31 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**61**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-46 CC-ML-SSC-WW3-11

Sampled: 03/07/16 10:31 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**27**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-47 CC-ML-SSC-WW3-12

Sampled: 03/07/16 11:01 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-48 **CC-ML-SSC-WW3-13**

Sampled: 03/07/16 11:34 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0698 Prepared: 03/11/16 10:14 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	03/11/16 11:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-49 **CC-ML-SSC-WW3-14**

Sampled: 03/07/16 15:35 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**55**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-50 **CC-ML-SSC-WW3-15**

Sampled: 03/07/16 16:34 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**16**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-51 **CC-ML-SSC-WW3-16**

Sampled: 03/07/16 17:34 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**62**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-52 CC-ML-SSC-WW3-17

Sampled: 03/07/16 18:34 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**40**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-53 **CC-ML-SSC-WW3-18**

Sampled: 03/07/16 19:04 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**24**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-54 **CC-ML-SSC-WW3-19**

Sampled: 03/07/16 20:34 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**58**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-55 **CC-ML-SSC-WW3-20**

Sampled: 03/07/16 21:34 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-56 **CC-NR-SSC-WW3-01**

Sampled: 03/06/16 09:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**62**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Reported: 04/01/16 10:35

6C10069-57 CC-NR-SSC-WW3-02

Sampled: 03/06/16 10:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**23**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-58 **CC-NR-SSC-WW3-03**

Sampled: 03/06/16 11:16 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**44**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-59 **CC-NR-SSC-WW3-04**

Sampled: 03/06/16 11:46 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**27**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-60 CC-NR-SSC-WW3-05

Sampled: 03/06/16 13:16 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**9.0**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-61 **CC-NR-SSC-WW3-06**

Sampled: 03/07/16 09:33 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**290**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-62 CC-NR-SSC-WW3-07

Sampled: 03/07/16 10:03 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**120**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-63 **CC-NR-SSC-WW3-08**

Sampled: 03/07/16 10:33 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**380**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-64 **CC-NR-SSC-WW3-09**

Sampled: 03/07/16 11:33 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**390**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-65 **CC-NR-SSC-WW3-10**

Sampled: 03/07/16 15:36 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**24**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-66 **CC-NR-SSC-WW3-11**

Sampled: 03/07/16 16:35 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**32**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-67 CC-NR-SSC-WW3-12

Sampled: 03/07/16 17:05 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**38**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-68 **CC-NR-SSC-WW3-13**

Sampled: 03/07/16 17:35 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**56**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-69 **CC-NR-SSC-WW3-14**

Sampled: 03/07/16 19:35 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**240**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-70 **CC-NR-SSC-WW3-15**

Sampled: 03/07/16 21:05 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**91**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-71 **CC-NR-SSC-WW3-16**

Sampled: 03/07/16 22:05 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**92**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-72 CC-NR-SSC-WW3-17

Sampled: 03/07/16 22:35 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**40**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-73 **CC-NR-SSC-WW3-18**

Sampled: 03/08/16 00:35 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0701 Prepared: 03/11/16 11:38 Analyst: mbc

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**32**	3.1	5.0	mg/l	1	03/11/16 14:33	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-74 **CC-TC-SSC-WW3-01**

Sampled: 03/06/16 09:35 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**77**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-75 CC-TC-SSC-WW3-02

Sampled: 03/06/16 10:04 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**38**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-76 **CC-TC-SSC-WW3-03**

Sampled: 03/07/16 20:55 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**10**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-77 **CC-TC-SSC-WW3-04**

Sampled: 03/07/16 21:24 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**8.0**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-78 **CC-TC-SSC-WW3-05**

Sampled: 03/07/16 21:54 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**5.0**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-79 **CC-TC-SSC-WW3-06**

Sampled: 03/07/16 22:24 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**4.0**	3.1	5.0	mg/l	1	03/11/16 18:50	J

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-80 **CC-TC-SSC-WW3-07**

Sampled: 03/07/16 22:54 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**4.0**	3.1	5.0	mg/l	1	03/11/16 18:50	J

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-81 **CV-UP-SSC-WW3-01**

Sampled: 03/06/16 16:30 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**73**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-82 CV-UP-SSC-WW3-02

Sampled: 03/07/16 11:05 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**90**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-83 **CV-UP-SSC-WW3-03**

Sampled: 03/07/16 11:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**83**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-84 **CV-UP-SSC-WW3-04**

Sampled: 03/07/16 12:07 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**74**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-85 CV-UP-SSC-WW3-05

Sampled: 03/07/16 12:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**170**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-86 **CV-UP-SSC-WW3-06**

Sampled: 03/07/16 13:07 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**110**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-87 CV-UP-SSC-WW3-07

Sampled: 03/07/16 14:07 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**39**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-88 **CV-UP-SSC-WW3-08**

Sampled: 03/07/16 14:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**37**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-89 **CV-UP-SSC-WW3-09**

Sampled: 03/07/16 15:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-90 **CV-UP-SSC-WW3-10**

Sampled: 03/07/16 17:07 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**34**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-91 **CV-UP-SSC-WW3-11**

Sampled: 03/07/16 17:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-92 CV-UP-SSC-WW3-12

Sampled: 03/07/16 19:07 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-93 **CV-UP-SSC-WW3-13**

Sampled: 03/07/16 19:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**7.0**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-94 **CV-UP-SSC-WW3-14**

Sampled: 03/07/16 21:37 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**6.0**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-95 LP-NC-SSC-WW3-01

Sampled: 03/06/16 09:23 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**20**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-96 **LP-NC-SSC-WW3-02**

Sampled: 03/06/16 09:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**58**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-97 **LP-NC-SSC-WW3-03**

Sampled: 03/06/16 10:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**28**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-98 **LP-NC-SSC-WW3-04**

Sampled: 03/06/16 11:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**110**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-99 **LP-NC-SSC-WW3-05**

Sampled: 03/06/16 11:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**78**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-AA **LP-NC-SSC-WW3-06**

Sampled: 03/06/16 12:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
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6C10069-AB **LP-NC-SSC-WW3-07**

Sampled: 03/06/16 13:22 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0699 Prepared: 03/11/16 11:02 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**21**	3.1	5.0	mg/l	1	03/11/16 13:31	

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Date Received: 03/10/16 16:30
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6C10069-AC **LP-NC-SSC-WW3-08**

Sampled: 03/06/16 13:52 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**12**	3.1	5.0	mg/l	1	03/11/16 15:30	

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6C10069-AD **LP-NC-SSC-WW3-09**

Sampled: 03/07/16 09:56 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**75**	3.1	5.0	mg/l	1	03/11/16 15:30	

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6C10069-AE **LP-NC-SSC-WW3-10**

Sampled: 03/07/16 10:25 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**210**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Reported: 04/01/16 10:35

6C10069-AF **LP-NC-SSC-WW3-11**

Sampled: 03/07/16 10:55 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**140**	3.1	5.0	mg/l	1	03/11/16 18:51	

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6C10069-AG **LP-NC-SSC-WW3-12**

Sampled: 03/07/16 11:25 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**77**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-AH **LP-NC-SSC-WW3-13**

Sampled: 03/07/16 11:55 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**57**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Reported: 04/01/16 10:35

6C10069-AI **LP-NC-SSC-WW3-14**

Sampled: 03/07/16 12:25 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**51**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Reported: 04/01/16 10:35

6C10069-AJ LP-NC-SSC-WW3-15

Sampled: 03/07/16 13:25 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	03/11/16 18:51	

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6C10069-AK **LP-NC-SSC-WW3-16**

Sampled: 03/07/16 15:25 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**25**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
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6C10069-AL **LP-NC-SSC-WW3-17**

Sampled: 03/07/16 16:26 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**18**	3.1	5.0	mg/l	1	03/14/16 11:40	

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6C10069-AM **LP-NC-SSC-WW3-18**

Sampled: 03/07/16 17:24 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**41**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-AN **LP-NC-SSC-WW3-19**

Sampled: 03/07/16 17:54 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**30**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Reported: 04/01/16 10:35

6C10069-AO **LP-NC-SSC-WW3-20**

Sampled: 03/07/16 18:24 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**22**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-AP **LP-NC-SSC-WW3-21**

Sampled: 03/07/16 19:54 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**16**	3.1	5.0	mg/l	1	03/11/16 18:50	

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6C10069-AQ **LP-NC-SSC-WW3-22**

Sampled: 03/07/16 20:24 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**13**	3.1	5.0	mg/l	1	03/11/16 18:50	

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6C10069-AR **LP-NC-SSC-WW3-23**

Sampled: 03/07/16 22:24 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**7.0**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
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6C10069-AS **LP-POW-SSC-WW3-01**

Sampled: 03/07/16 09:33 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**85**	3.1	5.0	mg/l	1	03/11/16 15:30	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-AT **LP-POW-SSC-WW3-02**

Sampled: 03/07/16 10:03 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**350**	3.1	5.0	mg/l	1	03/11/16 15:30	

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6C10069-AU **LP-POW-SSC-WW3-03**

Sampled: 03/07/16 10:33 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**140**	3.1	5.0	mg/l	1	03/11/16 15:30	

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6C10069-AV **LP-POW-SSC-WW3-04**

Sampled: 03/07/16 11:03 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0703 Prepared: 03/11/16 12:19 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**69**	3.1	5.0	mg/l	1	03/11/16 15:30	

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6C10069-AW **LP-POW-SSC-WW3-05**

Sampled: 03/07/16 11:33 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**47**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Reported: 04/01/16 10:35

6C10069-AX **LP-POW-SSC-WW3-06**

Sampled: 03/07/16 12:33 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**25**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Reported: 04/01/16 10:35

6C10069-AY **LP-POW-SSC-WW3-07**

Sampled: 03/07/16 13:03 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**25**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Reported: 04/01/16 10:35

6C10069-AZ **LP-POW-SSC-WW3-08**

Sampled: 03/07/16 13:33 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0709 Prepared: 03/11/16 13:37 Analyst: nra

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**32**	3.1	5.0	mg/l	1	03/11/16 18:51	

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Date Reported: 04/01/16 10:35

6C10069-BA **LP-POW-SSC-WW3-09**

Sampled: 03/07/16 14:03 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**28**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Reported: 04/01/16 10:35

6C10069-BB **LP-POW-SSC-WW3-10**

Sampled: 03/07/16 15:03 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**25**	3.1	5.0	mg/l	1	03/14/16 11:40	

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Date Reported: 04/01/16 10:35

6C10069-BC **LP-POW-SSC-WW3-11**

Sampled: 03/07/16 16:03 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0711 Prepared: 03/11/16 13:56 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**53**	3.1	5.0	mg/l	1	03/14/16 11:40	

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San Diego CA, 92123

Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-BD **LP-POW-SSC-WW3-12**

Sampled: 03/07/16 18:32 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**91**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-BE **LP-POW-SSC-WW3-13**

Sampled: 03/07/16 19:02 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**250**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-BF **LP-POW-SSC-WW3-14**

Sampled: 03/07/16 19:32 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**150**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-BG **LP-POW-SSC-WW3-15**

Sampled: 03/07/16 20:02 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**43**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-BH **LP-POW-SSC-WW3-16**

Sampled: 03/07/16 20:32 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**100**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-BI **LP-POW-SSC-WW3-17**

Sampled: 03/07/16 21:02 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**85**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-BJ **LP-POW-SSC-WW3-18**

Sampled: 03/07/16 22:32 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0739 Prepared: 03/11/16 17:21 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**37**	3.1	5.0	mg/l	1	03/11/16 18:50	

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

6C10069-BK **LP-POW-SSC-WW3-19**

Sampled: 03/07/16 23:32 **Sampled By:** Client **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C0788 Prepared: 03/14/16 09:12 Analyst: ajw

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**28**	3.1	5.0	mg/l	1	03/14/16 10:50	

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Date Reported: 04/01/16 10:35

QUALITY CONTROL SECTION

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6C0683 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0683-BLK1)					Analyzed: 03/11/16 13:51						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0687 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0687-BLK1)					Analyzed: 03/11/16 10:10						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0698 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0698-BLK1)					Analyzed: 03/11/16 11:30						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0699 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0699-BLK1)					Analyzed: 03/11/16 13:31						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0701 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0701-BLK1)					Analyzed: 03/11/16 14:33						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0703 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0703-BLK1)					Analyzed: 03/11/16 15:30						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0709 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0709-BLK1)					Analyzed: 03/11/16 18:51						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0711 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0711-BLK1)					Analyzed: 03/14/16 11:40						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

Batch W6C0739 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0739-BLK1)					Analyzed: 03/11/16 18:50						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6C0788 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C0788-BLK1)					Analyzed: 03/14/16 10:50						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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Date Received: 03/10/16 16:30
Date Reported: 04/01/16 10:35

Notes and Definitions

J	Estimated conc. detected <MRL and >MDL.
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then not detected at or above the MDL.
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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CERTIFICATE OF ANALYSIS

Client:	AMEC Environment & Infrastructure 9177 Sky Park Court, Ste A San Diego CA, 92123	**Report Date:**	05/16/16 11:11
		Received Date:	03/15/16 11:40
		Turn Around:	Normal
Attention:	Jeremy Burns	**Client Project:**	Los Penasquitos Special Study 2015-16
Phone:	(858) 514-6464		
Fax:	(858) 278-5300	**PO Number:**	C013106084/502515C011
Work Order(s):	6C15066		

NELAC #4047-002 ORELAP ELAP#1132 NEVADA #CA211 HAWAII LACSD #10143

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. Weck Laboratories, Inc. certifies that the test results meet all NELAC requirements unless noted in the case narrative. This analytical report is confidential and is only intended for the use of Weck Laboratories, Inc. and its client. This report contains the Chain of Custody document, which is an integral part of it, and can only be reproduced in full with the authorization of Weck Laboratories, Inc.

Dear Jeremy Burns :

Enclosed are the results of analyses for samples received 03/15/16 11:40 with the Chain of Custody document. The samples were received in good condition, at 1.3 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Case Narrative:
This is a Supplement to the Certificate of Analysis previously issued 4/1/16 for the above referenced project to correct sample ID to reflect COC and to split report to separate projects.

Reviewed by:

Hai Van Nguyen
Project Manager

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AMEC Environment & Infrastructure
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San Diego CA, 92123

Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sampled by:	Lab ID	Matrix	Date Sampled
CC-BM-SSC-WW3-6a	RW	6C15066-01	Water	03/07/16 09:36
CC-NR-SSC-WW3-9a	RW	6C15066-03	Water	03/07/16 13:03
CV-UP-SSC-WW3-2a	RW	6C15066-08	Water	03/07/16 11:07
LP-NC-SSC-WW3-24	RW	6C15066-10	Water	03/07/16 23:54

ANALYSES

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

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Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:11

6C15066-01 **CC-BM-SSC-WW3-6a**

Sampled: 03/07/16 09:36 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**220**	3.1	5.0	mg/l	1	03/18/16 12:28	

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Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:11

6C15066-03 **CC-NR-SSC-WW3-9a**

Sampled: 03/07/16 13:03 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**94**	3.1	5.0	mg/l	1	03/18/16 12:28	

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Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:11

6C15066-08 **CV-UP-SSC-WW3-2a**

Sampled: 03/07/16 11:07 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**100**	3.1	5.0	mg/l	1	03/18/16 12:28	

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Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:11

6C15066-10 **LP-NC-SSC-WW3-24**

Sampled: 03/07/16 23:54 **Sampled By:** RW **Matrix:** Water

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods

Method: ASTM D3977-97 Batch: W6C1146 Prepared: 03/18/16 10:00 Analyst: lac

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Suspended Sediment Concentration	**6.0**	3.1	5.0	mg/l	1	03/18/16 12:28	

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Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:11

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Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:11

Conventional Chemistry/Physical Parameters by APHA/EPA/ASTM Methods - Quality Control

Batch W6C1146 - ASTM D3977-97

Analyte	Result	MDL	MRL	Units	Spike Level	Source Result	%REC	% REC Limits	RPD	RPD Limit	Data Qualifiers
Blank (W6C1146-BLK1)					Analyzed: 03/18/16 12:28						
Suspended Sediment Concentration	ND	3.1	5.0	mg/l							

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AMEC Environment & Infrastructure
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Date Received: 03/15/16 11:40
Date Reported: 05/16/16 11:11

Notes and Definitions

ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then not detected at or above the MDL.
NR	Not Reportable
Dil	Dilution
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
% Rec	Percent Recovery
Sub	Subcontracted analysis, original report available upon request
MDL	Method Detection Limit
MDA	Minimum Detectable Activity
MRL	Method Reporting Limit

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

An Absence of Total Coliform meets the drinking water standards as established by the California Department of Health Services.

The Reporting Limit (RL) is referenced as the Laboratory's Practical Quantitation Limit (PQL) or the Detection Limit for Reporting Purposes (DLR).

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.

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APPENDIX C
BEDLOAD AND VOLUMETRIC STREAMBED PARTICLE-SIZE ANALYSIS

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Particle Size Distribution Report

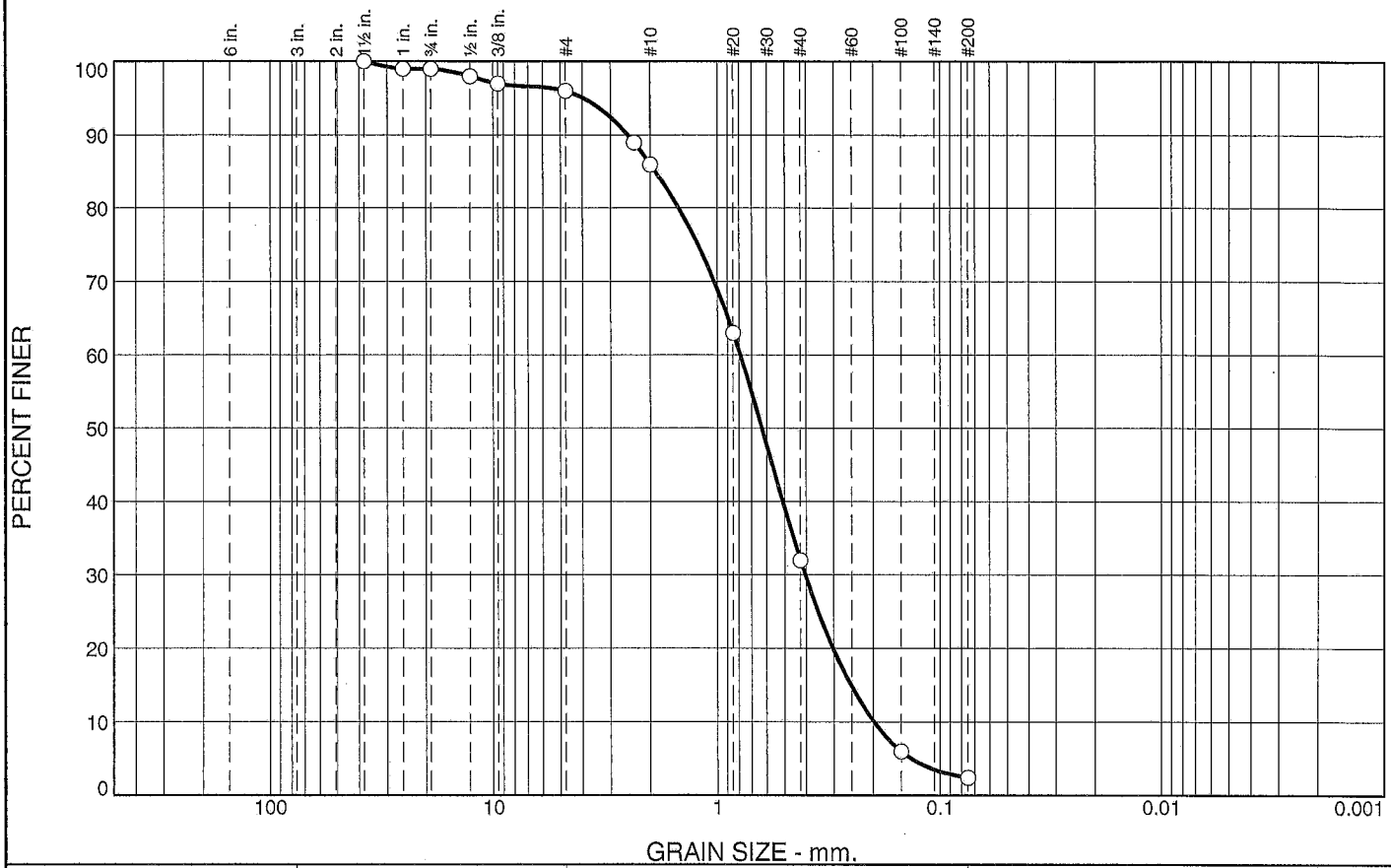

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.0	3.0	10.0	54.0	29.6	2.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1"	99.0		
0.75"	99.0		
0.5"	98.0		
0.375"	97.0		
#4	96.0		
#8	89.0		
#10	86.0		
#20	63.0		
#40	32.0		
#100	6.0		
#200	2.4		

* (no specification provided)

Material Description

SP (#29654)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 2.5109 D_{85}= 1.8990 D_{60}= 0.7898
D_{50}= 0.6319 D_{30}= 0.4045 D_{15}= 0.2523
D_{10}= 0.1990 C_u= 3.97 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Sample Number: LP-POW-VBL

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29654

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: LP-POW-VBL
Material Description: SP (#29654)
Date: 2/9/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1.5"	100.0
1"	99.0
0.75"	99.0
0.5"	98.0
0.375"	97.0
#4	96.0
#8	89.0
#10	86.0
#20	63.0
#40	32.0
#100	6.0
#200	2.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	1.0	3.0	4.0	10.0	54.0	29.6	93.6			2.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1350	0.1990	0.2523	0.3032	0.4045	0.5100	0.6319	0.7898	1.4960	1.8990	2.5109	3.9384

Fineness Modulus	C_u	C_c
2.72	3.97	1.04

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Bertalik, Amec Fw	LAB NO.: 29654
LOCATION: Los Penasquitos	SAMPLED BY:	DATE: 12.29-15
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time 12:30	AUTHORIZED BY:	DATE:
BORING: LP-POW-VBL	TESTED BY: RN	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE 1 1/2	WEIGHT RETAINED, GMS.	% RETAINED	% PASS		100
~~1 1/2"~~ 1"	41.0	.6	99.4		99
~~1"~~ 3/4	41.0	.6	99.4		99
~~3/4"~~ 1/2"	127.8	1.8	98.2		98
~~1/2"~~ 3/8	192.2	2.7	97.3		97
~~3/8"~~ #4	306.9	4.4	95.6		96
~~#4~~ 8	806.2	11.4	88.6		89
#10	16.00	3.3	96.7 ✓	85.7	86
#20	144.36	29.3 ✓	70.7 ✓	62.6	✓63
#40	315.10	64.1 ✓	35.9 ✓	31.8	32
#100	460.30	93.6 ✓	6.4 ✓	5.7	6
#200	478.39	97.3 ✓	2.7 ✓	2.4	✓

+8

-8 491.9 gm/pan

CTB-16

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 8476.9 w/o vegetation

Weight of Tare E4 1429.2

Weight of H20 _____

Net weight of dry soil _____

% H20 _____

WEIGHT BEFORE WASH: 7047.7 (+8) ✓

491.9 (-8)

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184077

Shaker I.D.: Gilson - Gringer

Particle Size Distribution Report

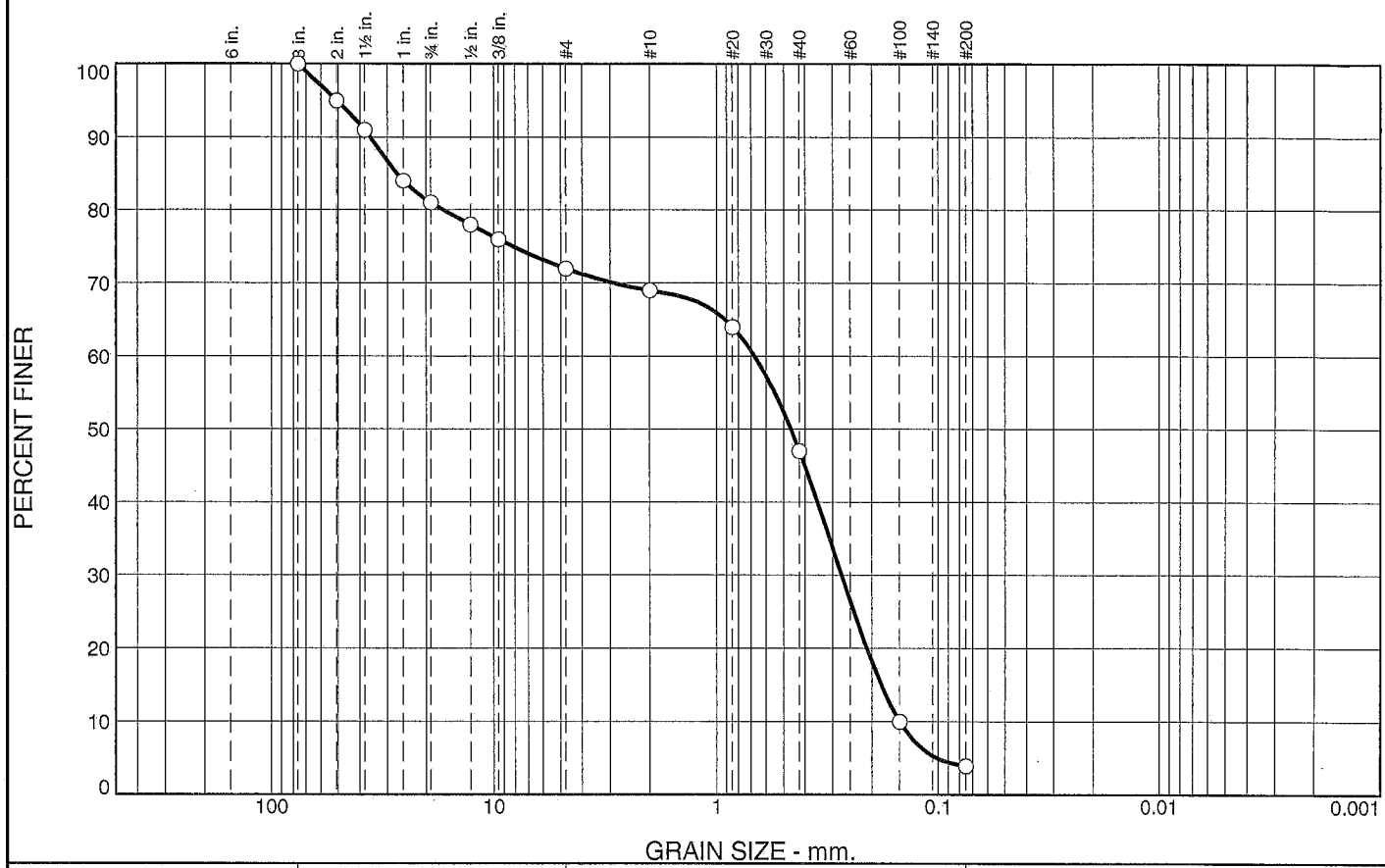

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	19.0	9.0	3.0	22.0	43.1	3.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2"	95.0		
1.5"	91.0		
1"	84.0		
0.75"	81.0		
0.5"	78.0		
0.375"	76.0		
#4	72.0		
#10	69.0		
#20	64.0		
#40	47.0		
#100	10.0		
#200	3.9		

* (no specification provided)

Material Description

SP (#29650)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 35.9213 D_{85}= 27.1293 D_{60}= 0.6768
D_{50}= 0.4648 D_{30}= 0.2740 D_{15}= 0.1814
D_{10}= 0.1500 C_u= 4.51 C_c= 0.74

Classification

USCS= SP AASHTO=

Remarks

Sample Number: CC-BM-WW1-BL-RB

Date: 2/12/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29650

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-BM-WW1-BL-RB
Material Description: SP (#29650)
Date: 2/12/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
3"	100.0
2"	95.0
1.5"	91.0
1"	84.0
0.75"	81.0
0.5"	78.0
0.375"	76.0
#4	72.0
#10	69.0
#20	64.0
#40	47.0
#100	10.0
#200	3.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	19.0	9.0	28.0	3.0	22.0	43.1	68.1			3.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1014	0.1500	0.1814	0.2109	0.2740	0.3520	0.4648	0.6768	16.7671	27.1293	35.9213	50.8000

Fineness Modulus	C_u	C_c
3.42	4.51	0.74

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Bartalik, Amec Fo	LAB NO.: 29650
LOCATION: Los Penasquitos	SAMPLED BY:	DATE:
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL:~~ Time: 1200	AUTHORIZED BY:	DATE:
BORING: CC-BM-WW1-BL-RB	TESTED BY: RW	DATE: 2-12-16
DEPTH:	REVIEWED BY:	DATE:

3" 100

SIEVE SIZE	WEIGHT RETAINED	% RETAINED	% PASS		
2"	247.3	4.9	95.1		95
1 1/2"	429.2	8.5	91.5		91
1"	825.3	16.3	83.7		84
3/4"	978.3	19.4	80.6		81
1/2"	1131.3	22.4	77.6		78
3/8"	1215.9	24.1	75.9		76
#4	1428.8	28.3	71.7		72
#10	19.71	4.1	95.9	68.8	69
#20	50.91	10.5 90.5	89.5	64.2	64
#40	166.23	34.2	65.8	47.2	47
#100	421.06	86.5	13.5	9.6	10
#200	459.59	94.5	5.5	4.0	3.9

CTB-16 = 486.51

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 7231.7 w/o vegetation.

Weight of Tare 2182.5

Weight of H20 FL _____

Net weight of dry soil 5049.2

% H20 _____

WEIGHT BEFORE WASH: 5049.2 (+#4)

486.51 -#4

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184079

Shaker I.D.: Gilson - Ryan

Particle Size Distribution Report

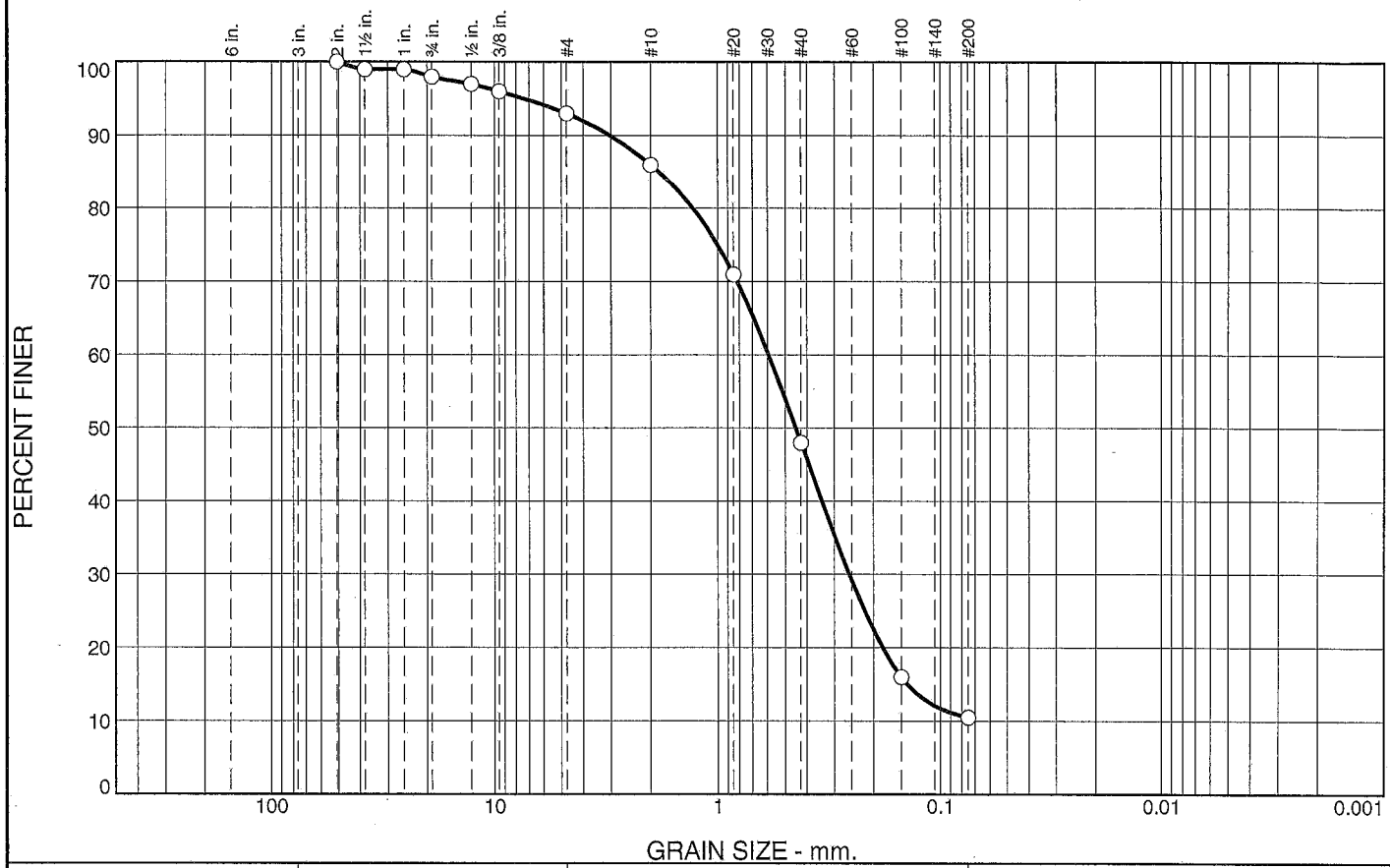

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.0	5.0	7.0	38.0	37.5	10.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2"	100.0		
1.5"	99.0		
1"	99.0		
0.75"	98.0		
0.5"	97.0		
0.375"	96.0		
#4	93.0		
#10	86.0		
#20	71.0		
#40	48.0		
#100	16.0		
#200	10.5		

* (no specification provided)

Material Description

(#29649)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 3.0341 D_{85}= 1.8350 D_{60}= 0.5941
D_{50}= 0.4487 D_{30}= 0.2569 D_{15}= 0.1409
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample Number: CC-BM-WW1-BL-LB

Date: 2/12/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29649

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-BM-WW1-BL-LB
Material Description: (#29649)
Date: 2/12/16
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
2"	100.0
1.5"	99.0
1"	99.0
0.75"	98.0
0.5"	97.0
0.375"	96.0
#4	93.0
#10	86.0
#20	71.0
#40	48.0
#100	16.0
#200	10.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	2.0	5.0	7.0	7.0	38.0	37.5	82.5			10.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.1409	0.1818	0.2569	0.3420	0.4487	0.5941	1.2931	1.8350	3.0341	7.3481

Fineness Modulus
2.36

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025IS0004.02	NAME: Kiernan Portalik Amec FW	LAB NO.: 29649
LOCATION: Los Penasquitos	SAMPLED BY: Kevin Stolzenbach	DATE: 1-7-16
SOURCE: Sediment TMDL	SUBMITTED BY:	DATE:
~~MATERIAL~~: Time 1200	AUTHORIZED BY:	DATE:
BORING: CC-BM-WM-BL-LB	TESTED BY: RW	DATE: 2-12-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS		
			2"		100
1 1/2"	62.1	.6	99.4		99
1"	124.3	1.2	98.8		99
3/4"	185.9	1.9	98.1		98
1/2"	300.8	3.0	97.0		97
3/8"	390.1	3.9	96.1		96
#4	698.6	7.0	93.0		93
#10	39.33	8.0	92.0	85.6	86
#20	115.79	23.5	76.5	71.1	71
#40	237.53	48.3	51.7	48.1	48
#100	408.00	83.0	17.0	15.9	16
#200	436.21	88.7	11.3	10.5	

CTB-10 = 491.8

27.70

SAMPLE MOISTURE CONTENT

W/Bag & Pan 16560.1

Weight of soil & tare (wet) _____
Weight of soil & tare (dry) _____
Weight of Tare 4479.5
Weight of H20 P-1 _____
Net weight of dry soil 10013.6
% H20 _____

WEIGHT BEFORE WASH: 10013.6 (+4)
491.8 (-4)

EQUIPMENT USED:
Scale I.D.: CW 9204
Sieve Set I.D.: Gilson - 12"
Oven I.D.: 184078 - 184077
Shaker I.D.: Gilson / Gingy

Particle Size Distribution Report

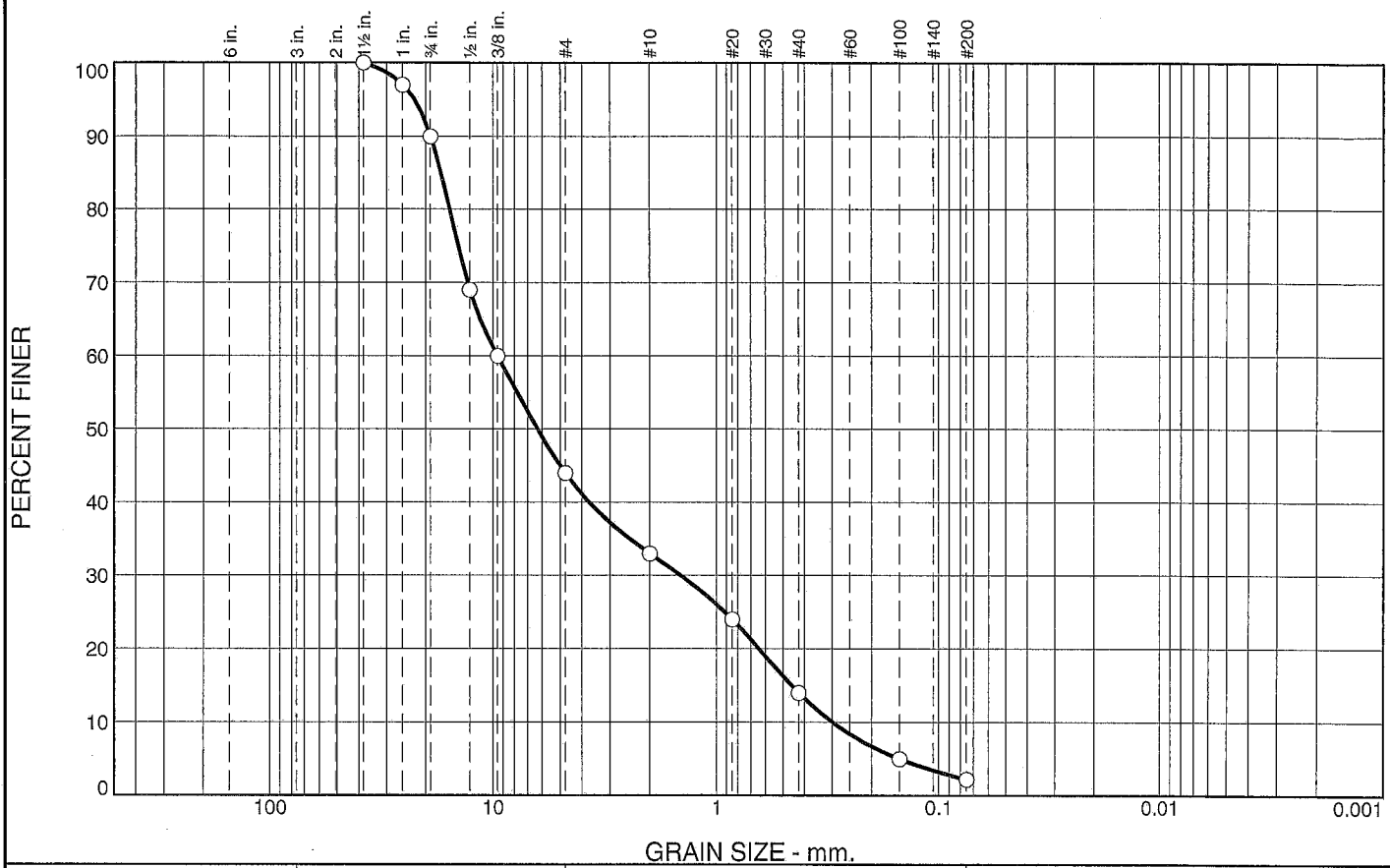

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.0	46.0	11.0	19.0	11.8	2.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1"	97.0		
0.75"	90.0		
0.5"	69.0		
0.375"	60.0		
#4	44.0		
#10	33.0		
#20	24.0		
#40	14.0		
#100	5.0		
#200	2.2		

* (no specification provided)

Material Description

GP (#29648)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 19.0500 D_{85}= 17.1358 D_{60}= 9.5250
D_{50}= 6.3234 D_{30}= 1.4565 D_{15}= 0.4576
D_{10}= 0.2994 C_u= 31.82 C_c= 0.74

Classification

USCS= GP AASHTO=

Remarks

Sample Number: CC-TC-WW1-BL-LB

Date: 2/12/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29648

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-TC-WW1-BL-LB
Material Description: GP (#29648)
Date: 2/12/16
USCS Classification: GP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1.5"	100.0
1"	97.0
0.75"	90.0
0.5"	69.0
0.375"	60.0
#4	44.0
#10	33.0
#20	24.0
#40	14.0
#100	5.0
#200	2.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	10.0	46.0	56.0	11.0	19.0	11.8	41.8			2.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1500	0.2994	0.4576	0.6428	1.4565	3.7216	6.3234	9.5250	15.6460	17.1358	19.0500	22.5144

Fineness Modulus	C_u	C_c
5.10	31.82	0.74

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025150004.02	NAME: Kiernan Portalik Amec Fw	LAB NO.: 29648
LOCATION: Los Penasquitos	SAMPLED BY: Kevin Stolzenbach	DATE: 1-7-16
SOURCE: Sediment TMDL	SUBMITTED BY:	DATE:
~~MATERIAL:~~ Time: 1200	AUTHORIZED BY:	DATE:
BORING: CC-TC-WW1-BL-LB	TESTED BY: Rw	DATE: 2-12-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS		
1 1/2"	0	0	100		
1"	373.0	2.9	97.1		97
3/4"	1203.2	9.5	90.5		90
1/2"	3882.3	30.7	69.3		69
3/8"	5053.6	39.9	60.1		60
#4	7017.2	55.5	44.5		44
#10	120.75	25.7	74.3	33.1	✓
#20	216.00	46	54.0	24.0	✓
#40	321.54	68.5	31.5	14.0	✓
#100	419.29	89.3	10.7	4.7	5 ✓
#200	446.30	95.1	4.9	2.2	✓

CTB-12 = ~~486.0~~ 469.3
16.4

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____
Weight of soil & tare (dry) 16484.1
Weight of Tare (C5) 3829.8
Weight of H20 _____
Net weight of dry soil _____
% H20 _____

WEIGHT BEFORE WASH: 12654.3 (+4)

469.3 (-4)

EQUIPMENT USED:
Scale I.D.: CW 9204
Sieve Set I.D.: Gilson - 12"
Oven I.D.: 184078 - 184077
Shaker I.D.: Gilson / Gringer

Particle Size Distribution Report

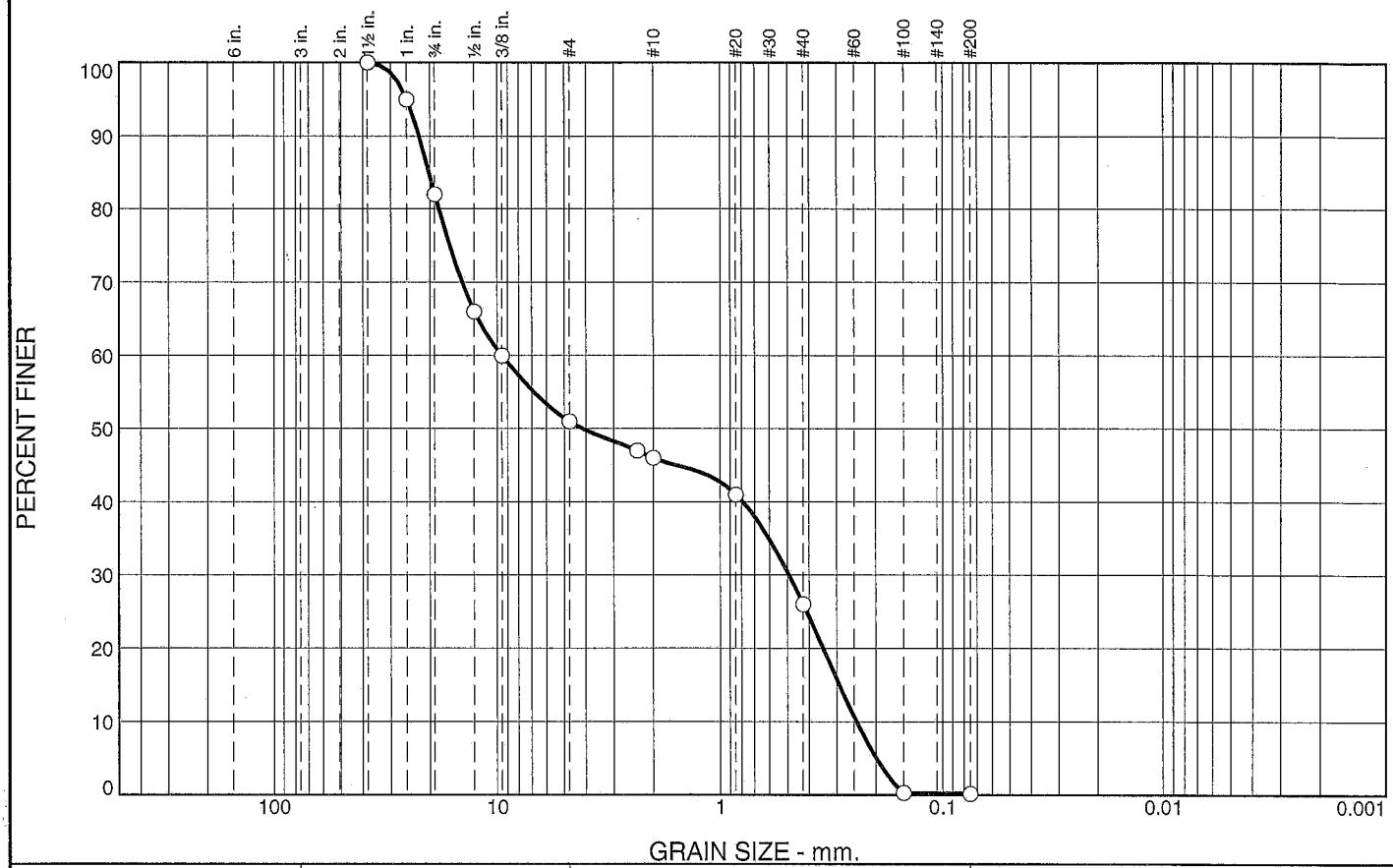

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	18.0	31.0	5.0	20.0	25.8	0.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1"	95.0		
0.75"	82.0		
0.5"	66.0		
0.375"	60.0		
#4	51.0		
#8	47.0		
#10	46.0		
#20	41.0		
#40	26.0		
#100	0.3		
#200	0.2		

* (no specification provided)

Material Description

SP (#29651)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 22.4295 D_{85}= 20.2374 D_{60}= 9.5250
D_{50}= 4.1474 D_{30}= 0.4923 D_{15}= 0.2921
D_{10}= 0.2444 C_u= 38.98 C_c= 0.10

Classification

USCS= SP AASHTO=

Remarks

Sample Number: CC-AC-WW2-MBL-1

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29651

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-AC-WW2-MBL-1
Material Description: SP (#29651)
Date: 2/9/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1.5"	100.0
1"	95.0
0.75"	82.0
0.5"	66.0
0.375"	60.0
#4	51.0
#8	47.0
#10	46.0
#20	41.0
#40	26.0
#100	0.3
#200	0.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	18.0	31.0	49.0	5.0	20.0	25.8	50.8			0.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1990	0.2444	0.2921	0.3460	0.4923	0.7912	4.1474	9.5250	18.2750	20.2374	22.4295	25.4000

Fineness Modulus	C_u	C_c
4.65	38.98	0.10

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C204-02	NAME: Kiernan Bertalik, AmecFW	LAB NO.: 29651
LOCATION: Los Penasquitos	SAMPLED BY:	DATE:
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL:~~ Time 1520	AUTHORIZED BY:	DATE:
BORING: CC-AC-WW2-MRL-1	TESTED BY: RU	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE 1 1/2	WEIGHT RETAINED, GMS.	% RETAINED 0	% PASS 0		
~~1 1/2"~~ 1"	74.9	5.4	94.6		95
~~1"~~ 3/4	236.7	17.9	82.1		82
~~3/4"~~ 1/2	446.8	33.8	66.2		66
~~1/2"~~ 3/8	533.3	40.3	59.7		60
~~3/8"~~ #4	645.1	48.7	51.3		51
~~#4~~ #8	699.4	52.8	47.2		47
#10	9.94	1.6 ✓	98.4	46.4	46
#20	76.70	12.4 ✓	87.6	41.3	41
#40	283.79	46.0 ✓	54.0	25.5	26
#100	612.45	99.3 ✓	.7	.3	0.3 ✓
#200	614.53	99.6 ✓	.4	.2	✓

+8 = 1323.50
-8 617.0

CTB-30

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____
Weight of soil & tare (dry) 1591.8
Weight of Tare CTB-2 268.3
Weight of H20 _____
Net weight of dry soil _____
% H20 _____

WEIGHT BEFORE WASH: 1323.5 (+8) ✓
617.0 (-8)

EQUIPMENT USED:
Scale I.D.: CW9204
Sieve Set I.D.: Gilson + 12" Sieves
Oven I.D.: 184078 - 184077
Shaker I.D.: Gilson - Gyratory

Particle Size Distribution Report

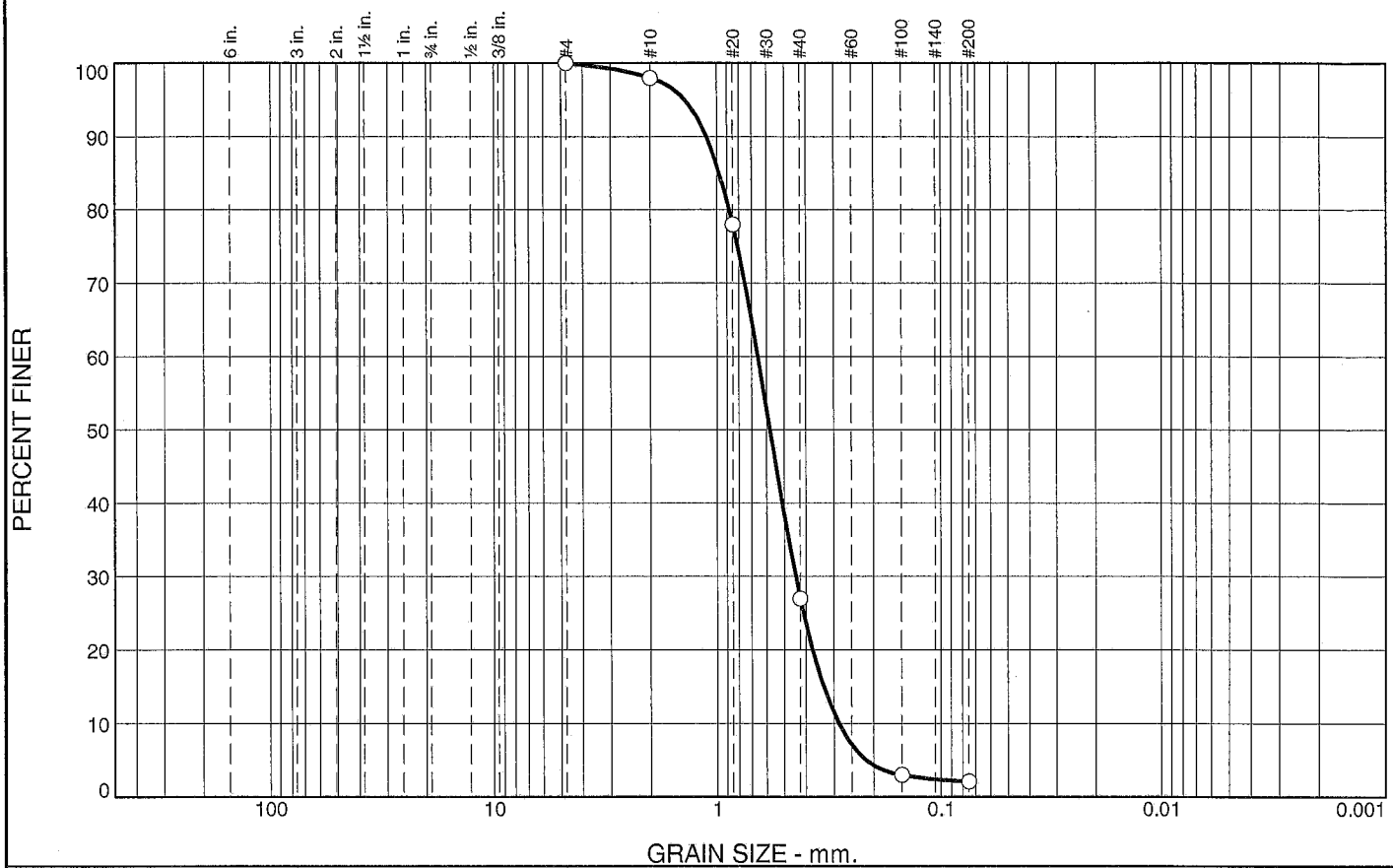

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.0	71.0	24.9	2.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	98.0		
#20	78.0		
#40	27.0		
#100	3.0		
#200	2.1		

* (no specification provided)

Material Description

SP (#29652)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1180 D_{85}= 0.9758 D_{60}= 0.6580
D_{50}= 0.5804 D_{30}= 0.4452 D_{15}= 0.3339
D_{10}= 0.2859 C_u= 2.30 C_c= 1.05

Classification

USCS= SP AASHTO=

Remarks

Sample Number: CV-UP-WW2-MBL-1

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29652

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: C01-UP-WW2-MBL-1
Material Description: SP (#29652)
Date: 2/9/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
#4	100.0
#10	98.0
#20	78.0
#40	27.0
#100	3.0
#200	2.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.0	71.0	24.9	97.9			2.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2163	0.2859	0.3339	0.3745	0.4452	0.5113	0.5804	0.6580	0.8806	0.9758	1.1180	1.3974

Fineness Modulus	C_u	C_c
2.43	2.30	1.05

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Bertalik, AmecFW	LAB NO.: 29652
LOCATION: Los Penasquitos	SAMPLED BY:	DATE: 1-31-16
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time 1730	AUTHORIZED BY:	DATE:
BORING: CV-UP-WW2-MBL-1	TESTED BY: RW	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS
1 1/2"			
1"			
3/4"			
1/2"			
3/8"	0	0	100
#4	0	0	100
#10	1.72	1.9	98.1
#20	20.35	22.0	78.0
#40	67.47	72.8	27.2
#100	90.31	97.4	2.6
#200	90.72	97.9	2.1

27

3

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 318.0

Weight of Tare Fwl 225.35

Weight of H20 _____

Net weight of dry soil 92.65

% H20 _____

WEIGHT BEFORE WASH: 92.65

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184079

Shaker I.D.: Gilson - Gyratory

Particle Size Distribution Report

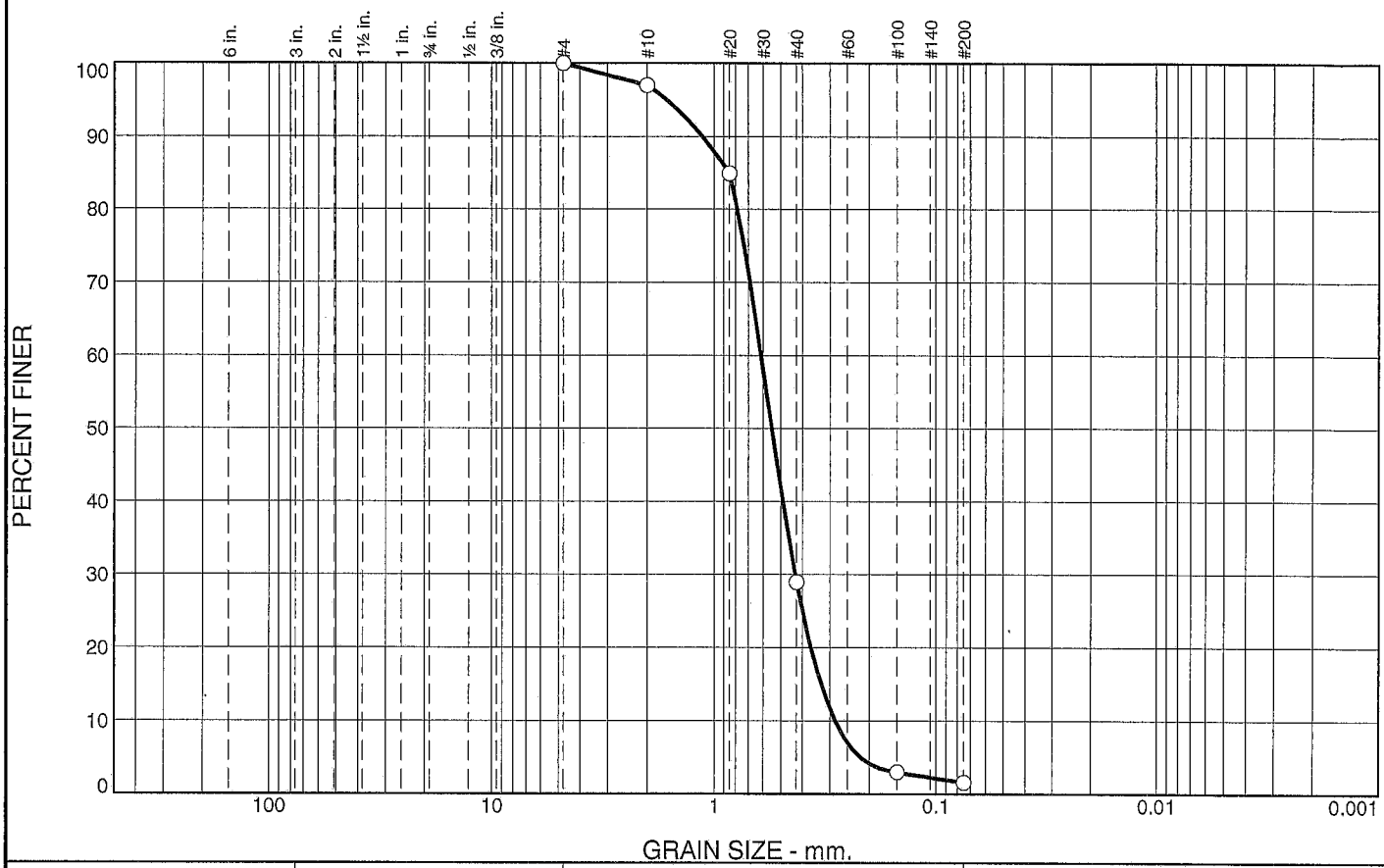

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.0	68.0	27.4	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	97.0		
#20	85.0		
#40	29.0		
#100	3.0		
#200	1.6		

* (no specification provided)

Material Description

SP (#29653)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1307 D_{85}= 0.8500 D_{60}= 0.6143
D_{50}= 0.5493 D_{30}= 0.4310 D_{15}= 0.3292
D_{10}= 0.2845 C_u= 2.16 C_c= 1.06

Classification

USCS= SP AASHTO=

Remarks

Sample Number: CC-TC-WW2-BL-MID

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29653

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-TC-WW2-BL-MID
Material Description: SP (#29653)
Date: 2/9/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
#4	100.0
#10	97.0
#20	85.0
#40	29.0
#100	3.0
#200	1.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	3.0	68.0	27.4	98.4			1.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2186	0.2845	0.3292	0.3666	0.4310	0.4897	0.5493	0.6143	0.7859	0.8500	1.1307	1.6375

Fineness Modulus	C_u	C_c
2.39	2.16	1.06

AMEC

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SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C204-02	NAME: Kiernan Brtalik, AmecFW	LAB NO.: 29653
LOCATION: Los Penasquitos	SAMPLED BY:	DATE:
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time 1030	AUTHORIZED BY:	DATE:
BORING: CC-TC-WW2-BL-MID	TESTED BY: RD	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS	
1 1/2"				
1"				
3/4"				
1/2"				
3/8"	0	0	100	
#4	0	0	100	
#10	21.49	2.6	97.4	97
#20	126.64	15.1	84.9	85
#40	595.99	70.9	29.1	29
#100	817.75	97.4	2.6	3
#200	826.82	98.4	1.6	✓

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 1086.9 w/o vegetation.

Weight of Tare 246.9

Weight of H20 PQ _____

Net weight of dry soil 840

% H20 _____

WEIGHT BEFORE WASH: 840

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184077

Shaker I.D.: Gilson - Orange

Particle Size Distribution Report

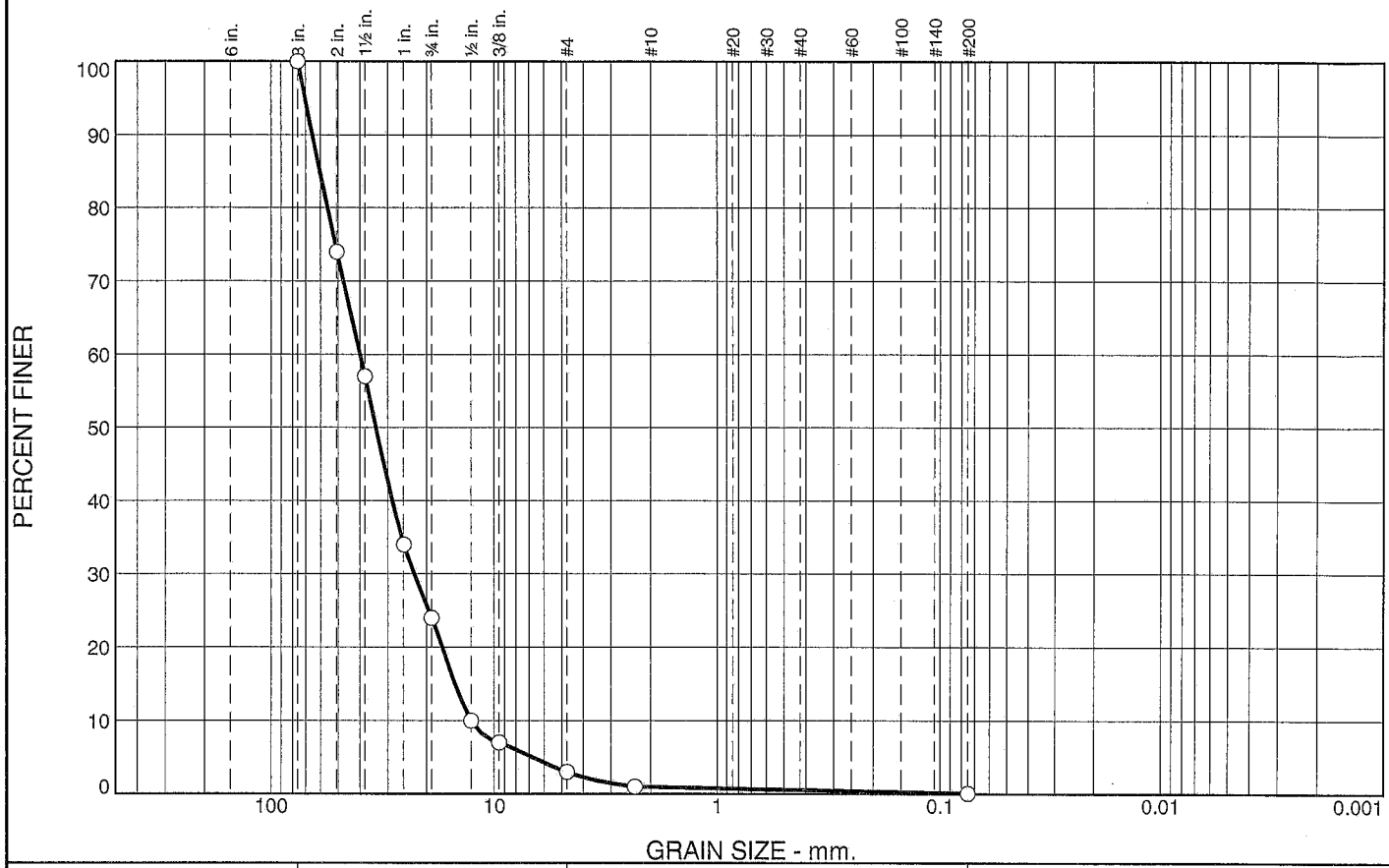

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	76.0	21.0	2.0	0.4	0.5	0.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2"	74.0		
1.5"	57.0		
1"	34.0		
0.75"	24.0		
0.5"	10.0		
0.375"	7.0		
#4	3.0		
#8	1.0		
#200	0.1		

* (no specification provided)

Material Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 65.4479 D_{85}= 60.5835 D_{60}= 40.0559
D_{50}= 33.9999 D_{30}= 22.8671 D_{15}= 14.9984
D_{10}= 12.7000 C_u= 3.15 C_c= 1.03

Classification

USCS= GP AASHTO=

Remarks

Location: CCNR-WW3-BL

Date: 3/17/16

amec

Client:

Project: Los Penasquitos Sediment Transport Monitoring 2014-2015

Project No: 502515C011.02 **Figure** #29700

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

3/18/2016

Project: Los Penasquitos Sediment Transport Monitoring 2014-2015
Project Number: 502515C011.02
Location: CCNR-WW3-BL
Date: 3/17/16
USCS Classification: GP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
3"	100.0
2"	74.0
1.5"	57.0
1"	34.0
0.75"	24.0
0.5"	10.0
0.375"	7.0
#4	3.0
#8	1.0
#200	0.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	76.0	21.0	97.0	2.0	0.4	0.5	2.9			0.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
6.7641	12.7000	14.9984	17.1063	22.8671	28.6926	33.9999	40.0559	55.9967	60.5835	65.4479	70.6358

Fineness Modulus	C_u	C_c
8.06	3.15	1.03

AMEC

amec

SIEVE ANALYSIS OF AGGREGATE - SAND EQUIVALENT

ASTM D2419 / AASHTO T176 / CTM217
ASTM C117 / AASHTO T11
ASTM C136 / AASHTO T27

Project No.		Project Name:	Los Peñesquitos Sediment		
Lab No.	29700	Sampled by:		Date:	
Type of Aggregate:		Submitted by:		Date:	
Source of Aggregate:		Tested by:	RW	Date:	3-17-16
Sample Location:		Reviewed by:		Date:	

SAMPLE WEIGHT DRY GMS.

Screen	Weight Retained	% Retained	% Pass	Cum. Pass	Specification Limit
4"	0	0	100	100	
3"	0	0	100	100	
2"	1068.5	26.4	73.6		
1-1/2"	1732.5	42.7	57.3		
1"	2676.5	66.0	34.0		
3/4"	3094.9	76.4	23.6		
1/2"	3646.0	90.0	10.0		
3/8"	3772.1	93.1	6.9		
#4	3920.8	96.7	3.3		
#4 Grading Portion _____ gm					
#8	3998.5	98.7	1.3		
#16					
#30					
#50					
#100					
#200					

MOISTURE CONTENT			SAND EQUIVALENT	
Weight of sample & tare (wet)			/ =	
Weight of sample & tare (dry)	4666.0		/ =	
Weight of tare 104	613.0		/ =	
Weight of H_2O	4053			
Net weight of dry sample				
% H20	.09%	7.6%	Ave.=	

4049.4 w/pan

EQUIPMENT USED:
Sieve Set I.D.: Gilson Mechanical Shaker: I.D.: Gilson
Scale I.D. _____ S.E. Shaker I.D.: _____
Oven I.D.: 184077

Amec Foster Wheeler - Materials Lab

CHAIN OF CUSTODY RECORD

charge this Code 502515C011.02

9177 Sky Park Court San Diego, CA 92213-4341
Tel 858-514-3000

STANDARD

Page 1 Of 1

CLIENT NAME: Kiernan Brtalik, Amec Foster Wheeler

PROJECT: Los Peñasquitos Sediment Special Study

ADDRESS: 9177 Sky Park Court San Diego, CA 92213-4341

PHONE: 858-514-7752
FAX:
EMAIL: Kiernan.Brtalik@amecfw.com

PROJECT MANAGER Jeremy Burns

SAMPLER Kevin Stolzenbach

ANALYSES REQUESTED

SPECIAL HANDLING

- ☐ Same Day Rush 150%
- ☐ 24 Hour Rush 100%
- ☐ 48-72 Hour Rush 75%
- ☐ 4 - 5 Day Rush 30%
- ☐ Rush Extractions 50%
- ☐ 10 - 15 Business Days
- ☐ QA/QC Data Package

Charges will apply for weekends/holidays

Method of Shipment:

ID# (For lab Use Only)	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION/SITE LOCATION	# OF CONT.	Particle Size Distribution	COMMENTS
29648	1/7/16	12:00	SED	CC-TC-WW1-BL-LB	2	X	3x5" piece of tile in sample
29649	↓	↓	↓	CC-BM-WW1-BL-LB	2	X	
29650	↓	↓	↓	CC-BM-WW1-BL-RB	1	X	
29651	1/31/16	1520	↓	CC-AC-WW2-MBL-1	1	X	
29652	↓	1730	↓	CV-UP-WW2-MBL-1	1	X	
29653	2/1/16	1030	↓	CC-TC-WW2-BL-MID	1	X	
29654	12/29/15	1230	SED	LP-POW-VBL	1	X	

RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

SAMPLE CONDITION:

Actual Temperature:

Received On Ice	Y / N
Preserved	Y / N
Evidence Seals Present	Y / N
Container Attacked	Y / N
Preserved at Lab	Y / N

SAMPLE TYPE CODE:
AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY OVER UNSCHEDULED RUSH REQUESTS
Client agrees to Terms & Conditions at: www.wecklabs.com

SPECIAL REQUIREMENTS / BILLING INFORMATION
Bill to 502515C011.02

COC version 042707

Amec Foster Wheeler - Materials Lab

CHAIN OF CUSTODY RECORD

9177 Sky Park Court San Diego, CA 92213-4341
Tel 858-514-3000

STANDARD

Page_____Of_____

CLIENT NAME: Jeremy Burns, Amec Foster Wheeler

PROJECT: ~~Los Peñasquitos Sediment TMDL~~ Los Peñasquitos Sediment transport Monitoring 2014-2015

ADDRESS: 9177 Sky Park Court San Diego, CA 92213-4341

PHONE: 858-514-7752
FAX:
EMAIL: jeremy.burns@amec.com

PROJECT MANAGER Jeremy Burns

SAMPLER Kevin Stolzenbach & Robert Wheeler

ANALYSES REQUESTED

SPECIAL HANDLING

- ☐ Same Day Rush 150%
- ☐ 24 Hour Rush 100%
- ☐ 48-72 Hour Rush 75%
- ☐ 4 - 5 Day Rush 30%
- ☐ Rush Extractions 50%
- ☐ 10 - 15 Business Days
- ☐ QA/QC Data Package

Charges will apply for weekends/holidays

Method of Shipment:

ID# (For lab Use Only)	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION/SITE LOCATION	# OF CONT.	Particle Size Distribution	COMMENTS
29699 CC				Carroll Canyon			
~~EVE~~-WW3-BL	03/08/16	1414		~~Carmel Valley~~ Bed load		X	#502515C011.02
29700 CCNR-WW3-BL	03/08/16	1540		Nancy Ridge Bed load		X	

RELINQUISHED BY	DATE / TIME	RECEIVED BY
Robert Wheeler R.W.	3/15/16 3:30 pm	Liz Collins
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

SAMPLE CONDITION:

Actual Temperature:

Received On Ice	Y / N
Preserved	Y / N
Evidence Seals Present	Y / N
Container Attacked	Y / N
Preserved at Lab	Y / N

SAMPLE TYPE CODE:
AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY OVER UNSCHEDULED RUSH REQUESTS
Client agrees to Terms & Conditions at: www.wecklabs.com

SPECIAL REQUIREMENTS / BILLING INFORMATION

COC version 042707

amec foster wheeler
9177 Sky Park Court, San Diego, CA 92123
Phone: 858-278-3600 Fax: 858-278-5300

Lab No. : _____

page ____ of ____

REQUEST FOR GEOTECHNICAL TESTING

Completed by: _____
Sampled Logged in OC-Track: _____
Reviewed by: _____
Distribution to Acct.: _____
Distribution : _____

Project Name: PQ Sediment
Project No.: 5013SC011.02
Client:

Sampled By:
Received By:
Requested By:

Date:
Date:
Date Due:

			SAMPLE REMOLDING		CHEMICAL TESTING*				DIRECT SHEAR		CONSOLIDATION / ASTM D2435						PHYSICAL TESTS																	OTHER		
BORING OR TEST PIT NO.	SAMPLE DEPTH	SAMPLE TYPE - (R)ing or (B)ulk	PERCENT COMPACTION	MOISTURE CONTENT / ASTM D2216	SULFATE CONTENT	PH CONTENT / CTM 643	CHLORIDE CONTENT	SOIL RESRISTIVITY	DIRECT SHEAR - SURCHARGE (psf)/ AASHTO T236	SOAK	SOAK AFTER (psf)	LOAD TO (psf)	REBOUND TO (psf)	RELOAD TO (psf)	REBOUND TO (psf)	TIME RATE (Y/N)	COMPACTION / ASTM D1557	VISUAL SOIL CLASSIFICATION	CBR / ASTM D1883	CBR W/ LIME OR CEMENT	R-VALUE / ASTM D2844	R-VALUE W/ LIME	SAMPLE PREP	EXPANSION INDEX / ASTM D4829	- #200 WASH, % / ASTM D1140	- #200 WASH W/ SIEVE / ASTM D1140 & D422	HYDROMETER ASSUMED SPG/ ASTM D422 & D423	PLASTICITY INDEX / ASTM D4318	MOISTURE & DENSITY, RING / ASTM D2216	FINE GRADATION / ASTM C136	COARSE GRADATION / ASTM C136	UNCONFINED COMPRESSION / ASTM D2938	SPECIFIC GRAVITY / ASTM D854	ORGANIC CONTENT / ASTM C40	REMOLD SAMPLE/ CONSOL / ASTM D2435	REMOLD SAMPLE/ SHEAR / ASTM D3080	SAND EQUIVALENT / ASTM D2419
29	6	99																								X										
29	7	00																								X										
N/A	N/A	N/A		UQNN8E	UP220	UP370	UP372	UP371	UQDE6E		UQCD6E						UQCA1E	130270	UQCX3E	131080	UQRT2E	130880	UQST4E	UQEF6E	UQSV4E	UQSV6E	UQHI8E	UQLL9E	UQSW0E	UQSU8E	UQSU6E	UQUZ6E	UQSW6E	UQUZ6E	UQRT3E	130800	UQFG8E

UP CODE or UNIT PRICE *Note all 4 tests use code #UQSX9E*

L:\Forms and Procedures\5014\lab test requests\Geotechnical Testing Request 01122012_Rev 04.2015.xlsx

amec foster wheeler
9177 Sky Park Court, San Diego, CA 92123
Phone: 858-278-3600 Fax: 858-278-5300

Lab No. : _____

page ____ of ____

REQUEST FOR GEOTECHNICAL TESTING

Project Name: PQ SEDIMENT
Project No.: 5025150011.02
Client:

Sampled By:
Received By:
Requested By:

Date:
Date:
Date Due:

Completed by:
Sampled Logged in OC-Track:
Reviewed by:
Distribution to Acct.:
Distribution :

			SAMPLE REMOLDING		CHEMICAL TESTING*				DIRECT SHEAR		CONSOLIDATION / ASTM D2435						PHYSICAL TESTS																	OTHER		
BORING OR TEST PIT NO.	SAMPLE DEPTH	SAMPLE TYPE - (R)ing or (B)ulk	PERCENT COMPACTION	MOISTURE CONTENT / ASTM D2216	SULFATE CONTENT	PH CONTENT / CTM 643	CHLORIDE CONTENT	SOIL RESRISTIVITY	DIRECT SHEAR - SURCHARGE (psf)/ AASHTO T236	SOAK	SOAK AFTER (psf)	LOAD TO (psf)	REBOUND TO (psf)	RELOAD TO (psf)	REBOUND TO (psf)	TIME RATE (Y/N)	COMPACTION / ASTM D1557	VISUAL SOIL CLASSIFICATION	CBR / ASTM D1883	CBR W/ LIME OR CEMENT	R-VALUE / ASTM D2844	R-VALUE W/ LIME	SAMPLE PREP	EXPANSION INDEX / ASTM D4829	- #200 WASH, % / ASTM D1140	- #200 WASH W/ SIEVE / ASTM D1140 & D422	HYDROMETER ASSUMED SPG/ ASTM D422 & D423	PLASTICITY INDEX / ASTM D4318	MOISTURE & DENSITY, RING / ASTM D2216	FINE GRADATION / ASTM C136	COARSE GRADATION / ASTM C136	UNCONFINED COMPRESSION / ASTM D2938	SPECIFIC GRAVITY / ASTM D854	ORGANIC CONTENT / ASTM C40	REMOLD SAMPLE/ CONSOL / ASTM D2435	REMOLD SAMPLE/ SHEAR / ASTM D3080	SAND EQUIVALENT / ASTM D2419
29648																									X											
29649																									X											
29650																									X											
29651																									X											
29652																									X											
29653																									X											
29654																									X											
N/A	N/A	N/A		UQNN8E	UP220	UP370	UP372	UP371	UQDE6E		UQCD6E						UQCA1E	130270	UQCX3E	131080	UQRT2E	130880	UQST4E	UQEF6E	UQSV4E	UQSV6E	UQHI8E	UQLL9E	UQSW0E	UQSU8E	UQSU6E	UQUZ6E	UQSW6E	UQUZ6E	UQRT3E	130800	UQFG8E

UP CODE or UNIT PRICE ***Note all 4 tests use code #UQSX9E***

L:\Forms and Procedures\5014\lab test requests\Geotechnical Testing Request 01122012_Rev 04.2015.xlsx

amec foster wheeler
9177 Sky Park Court, San Diego, CA 92123
Phone: 858-278-3600 Fax: 858-278-5300

Lab No. : _____

page ____ of ____

REQUEST FOR GEOTECHNICAL TESTING

Project Name: PQ SEDIMENT
Project No.: 5025.15C004.02
Client:

Sampled By: _____ Date: _____
Received By: _____ Date: _____
Requested By: _____ Date Due: _____

Completed by: _____
Sampled Logged in OC-Track: _____
Reviewed by: _____
Distribution to Acct.: _____
Distribution : _____

			SAMPLE REMOLDING		CHEMICAL TESTING*				DIRECT SHEAR		CONSOLIDATION / ASTM D2435						PHYSICAL TESTS																	OTHER		
BORING OR TEST PIT NO.	SAMPLE DEPTH	SAMPLE TYPE - (R)ing or (B)ulk	PERCENT COMPACTION	MOISTURE CONTENT / ASTM D2216	SULFATE CONTENT	PH CONTENT / CTM 643	CHLORIDE CONTENT	SOIL RESRISTIVITY	DIRECT SHEAR - SURCHARGE (psf)/ AASHTO T236	SOAK	SOAK AFTER (psf)	LOAD TO (psf)	REBOUND TO (psf)	RELOAD TO (psf)	REBOUND TO (psf)	TIME RATE (Y/N)	COMPACTION / ASTM D1557	VISUAL SOIL CLASSIFICATION	CBR / ASTM D1883	CBR W/ LIME OR CEMENT	R-VALUE / ASTM D2844	R-VALUE W/ LIME	SAMPLE PREP	EXPANSION INDEX / ASTM D4829	- #200 WASH, % / ASTM D1140	- #200 WASH W/ SIEVE / ASTM D1140 & D422	HYDROMETER ASSUMED SPG/ ASTM D422 & D423	PLASTICITY INDEX / ASTM D4318	MOISTURE & DENSITY, RING / ASTM D2216	FINE GRADATION / ASTM C136	COARSE GRADATION / ASTM C136	UNCONFINED COMPRESSION / ASTM D2938	SPECIFIC GRAVITY / ASTM D854	ORGANIC CONTENT / ASTM C40	REMOLD SAMPLE/ CONSOL / ASTM D2435	REMOLD SAMPLE/ SHEAR / ASTM D3080	SAND EQUIVALENT / ASTM D2419
29 644																									X											
29 645																									X											
29 646																									X											
29 647																									X											
N/A	N/A	N/A		UQNN8E	UP220	UP370	UP372	UP371	UQDE6E		UQCD6E						UQCA1E	130270	UQCX3E	131080	UQRT2E	130880	UQST4E	UQEF6E	UQSV4E	UQSV6E	UQHI8E	UQLL9E	UQSW0E	UQSU8E	UQSU6E	UQUZ6E	UQSW6E	UQUZ6E	UQRT3E	130800	UQFG8E

UP CODE or UNIT PRICE ***Note all 4 tests use code #UQSX9E***

1800

Particle Size Distribution Report

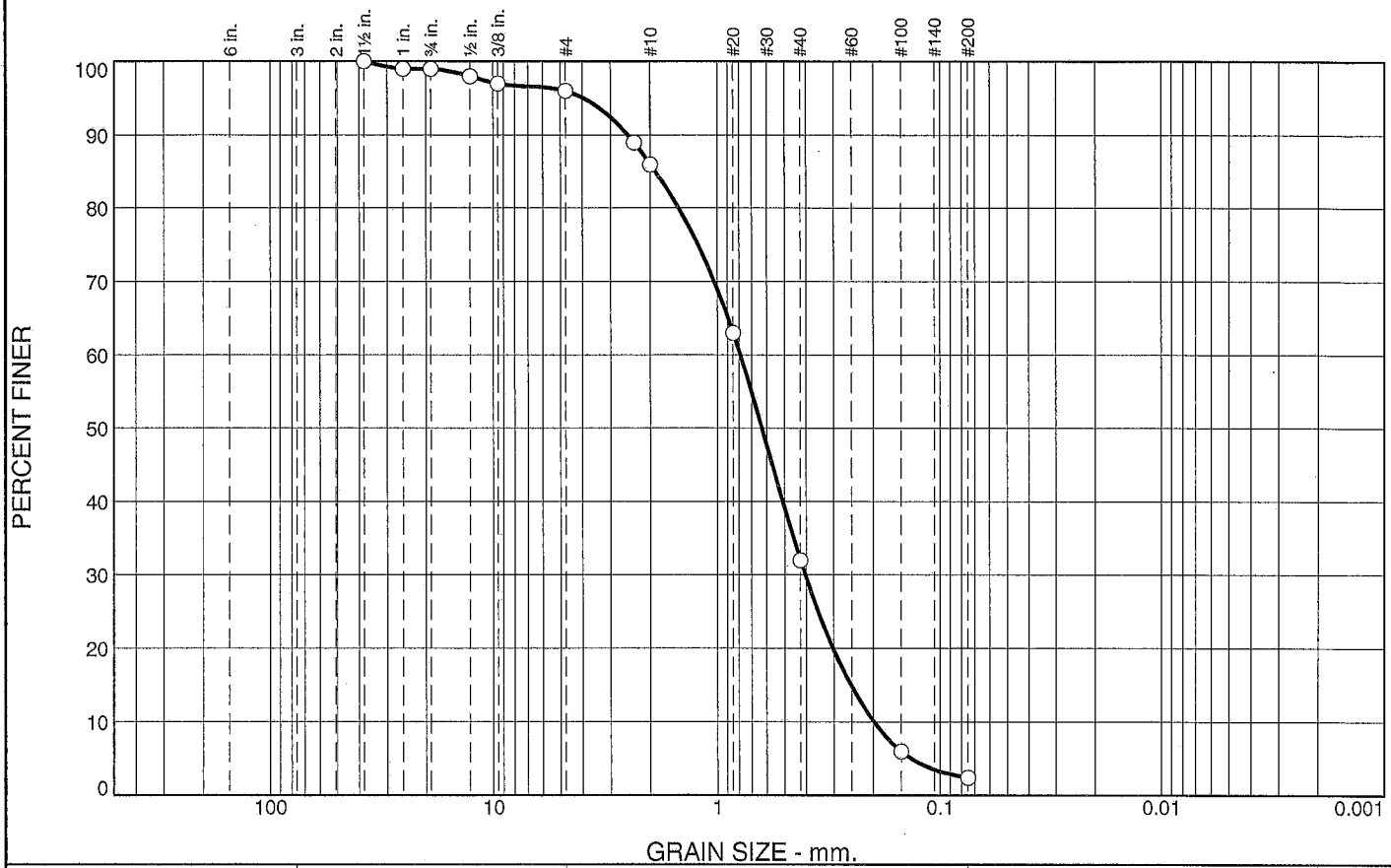

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.0	3.0	10.0	54.0	29.6	2.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1"	99.0		
0.75"	99.0		
0.5"	98.0		
0.375"	97.0		
#4	96.0		
#8	89.0		
#10	86.0		
#20	63.0		
#40	32.0		
#100	6.0		
#200	2.4		

* (no specification provided)

Material Description

SP (#29654)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 2.5109 D_{85}= 1.8990 D_{60}= 0.7898
D_{50}= 0.6319 D_{30}= 0.4045 D_{15}= 0.2523
D_{10}= 0.1990 C_u= 3.97 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Sample Number: LP-POW-VBL

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29654

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: LP-POW-VBL
Material Description: SP (#29654)
Date: 2/9/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1.5"	100.0
1"	99.0
0.75"	99.0
0.5"	98.0
0.375"	97.0
#4	96.0
#8	89.0
#10	86.0
#20	63.0
#40	32.0
#100	6.0
#200	2.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	1.0	3.0	4.0	10.0	54.0	29.6	93.6			2.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1350	0.1990	0.2523	0.3032	0.4045	0.5100	0.6319	0.7898	1.4960	1.8990	2.5109	3.9384

Fineness Modulus	C_u	C_c
2.72	3.97	1.04

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Bertalik, Amec Fw	LAB NO.: 29654
LOCATION: Los Penasquitos	SAMPLED BY:	DATE: 12.29-15
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time 12:30	AUTHORIZED BY:	DATE:
BORING: LP-POW-VBL	TESTED BY: RN	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE 1 1/2	WEIGHT RETAINED, GMS.	% RETAINED	% PASS		100
~~1 1/2"~~ 1"	41.0	.6	99.4		99
~~1"~~ 3/4	41.0	.6	99.4		99
~~3/4"~~ 1/2"	127.8	1.8	98.2		98
~~1/2"~~ 3/8	192.2	2.7	97.3		97
~~3/8"~~ #4	306.9	4.4	95.6		96
~~#4~~ 8	806.2	11.4	88.6		89
#10	16.00	3.3	96.7 ✓	85.7	86
#20	144.36	29.3 ✓	70.7 ✓	62.6	✓63
#40	315.10	64.1 ✓	35.9 ✓	31.8	32
#100	460.30	93.6 ✓	6.4 ✓	5.7	6
#200	478.39	97.3 ✓	2.7 ✓	2.4	✓

+8

-8 491.9 gm/pan

CTB-16

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 8476.9 w/o vegetation

Weight of Tare E4 1429.2

Weight of H20 _____

Net weight of dry soil _____

% H20 _____

WEIGHT BEFORE WASH: 7047.7 (+8) ✓

491.9 (-8)

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184077

Shaker I.D.: Gilson - Gyratory

Particle Size Distribution Report

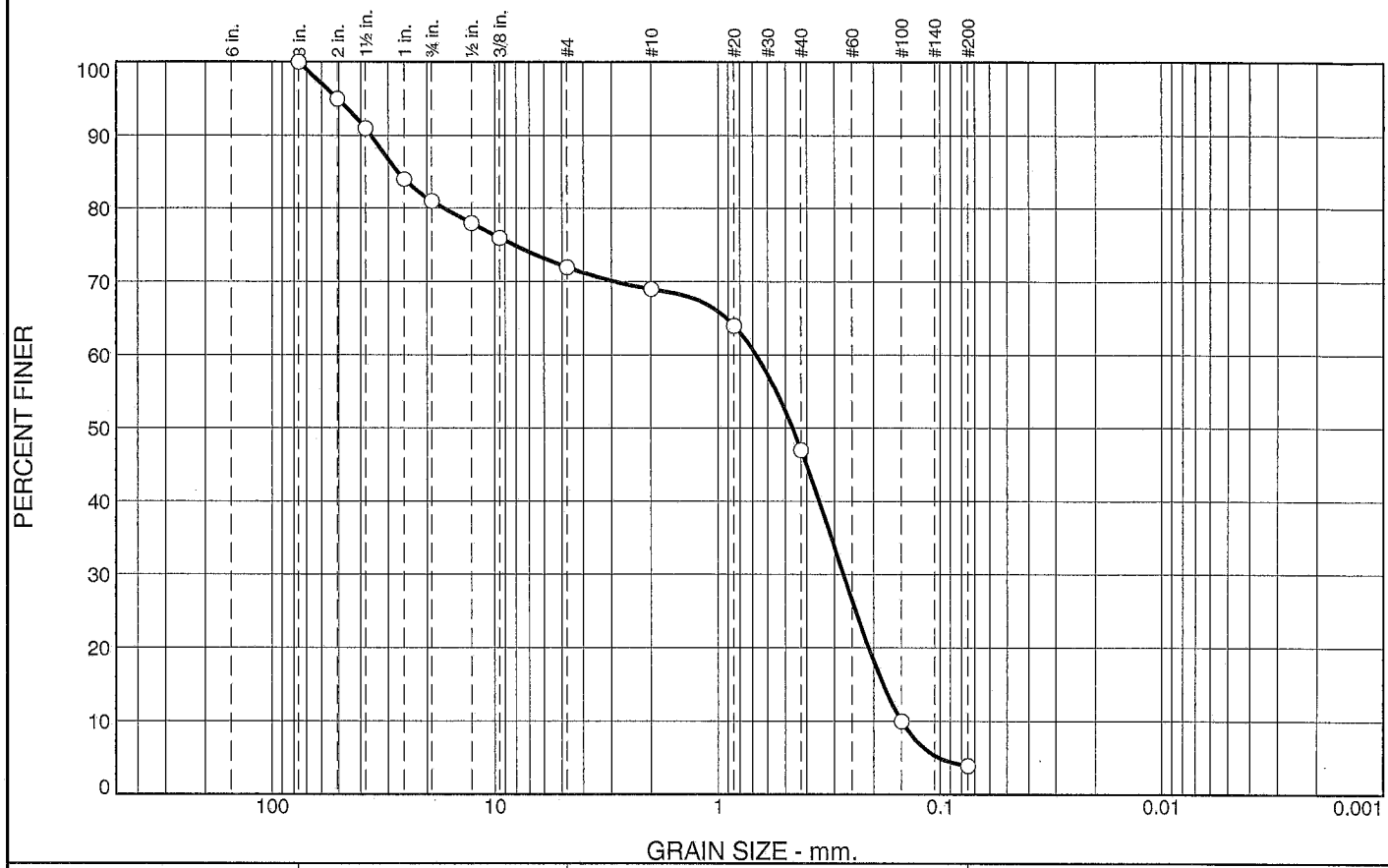

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	19.0	9.0	3.0	22.0	43.1	3.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2"	95.0		
1.5"	91.0		
1"	84.0		
0.75"	81.0		
0.5"	78.0		
0.375"	76.0		
#4	72.0		
#10	69.0		
#20	64.0		
#40	47.0		
#100	10.0		
#200	3.9		

* (no specification provided)

Material Description

SP (#29650)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 35.9213 D_{85}= 27.1293 D_{60}= 0.6768
D_{50}= 0.4648 D_{30}= 0.2740 D_{15}= 0.1814
D_{10}= 0.1500 C_u= 4.51 C_c= 0.74

Classification

USCS= SP AASHTO=

Remarks

Sample Number: CC-BM-WW1-BL-RB

Date: 2/12/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29650

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-BM-WW1-BL-RB
Material Description: SP (#29650)
Date: 2/12/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
3"	100.0
2"	95.0
1.5"	91.0
1"	84.0
0.75"	81.0
0.5"	78.0
0.375"	76.0
#4	72.0
#10	69.0
#20	64.0
#40	47.0
#100	10.0
#200	3.9

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	19.0	9.0	28.0	3.0	22.0	43.1	68.1			3.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1014	0.1500	0.1814	0.2109	0.2740	0.3520	0.4648	0.6768	16.7671	27.1293	35.9213	50.8000

Fineness Modulus	C_u	C_c
3.42	4.51	0.74

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Bartalik, Amec Fo	LAB NO.: 29650
LOCATION: Los Penasquitos	SAMPLED BY:	DATE:
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL:~~ Time: 1200	AUTHORIZED BY:	DATE:
BORING: CC-BM-WW1-BL-RB	TESTED BY: RW	DATE: 2-12-16
DEPTH:	REVIEWED BY:	DATE:

3" 100

SIEVE SIZE	WEIGHT RETAINED	% RETAINED	% PASS		
2"	247.3	4.9	95.1		95
1 1/2"	429.2	8.5	91.5		91
1"	825.3	16.3	83.7		84
3/4"	978.3	19.4	80.6		81
1/2"	1131.3	22.4	77.6		78
3/8"	1215.9	24.1	75.9		76
#4	1428.8	28.3	71.7		72
#10	19.71	4.1	95.9	68.8	69
#20	50.91	10.5 90.5	89.5	64.2	64
#40	166.23	34.2	65.8	47.2	47
#100	421.06	86.5	13.5	9.6	10
#200	459.59	94.5	5.5	4.0	3.9

CTB-16 = 486.51

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 7231.7 w/o vegetation.

Weight of Tare 2182.5

Weight of H20 FL _____

Net weight of dry soil 5049.2

% H20 _____

WEIGHT BEFORE WASH: 5049.2 (+#4)

486.51 -#4

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184079

Shaker I.D.: Gilson - Ryan

Particle Size Distribution Report

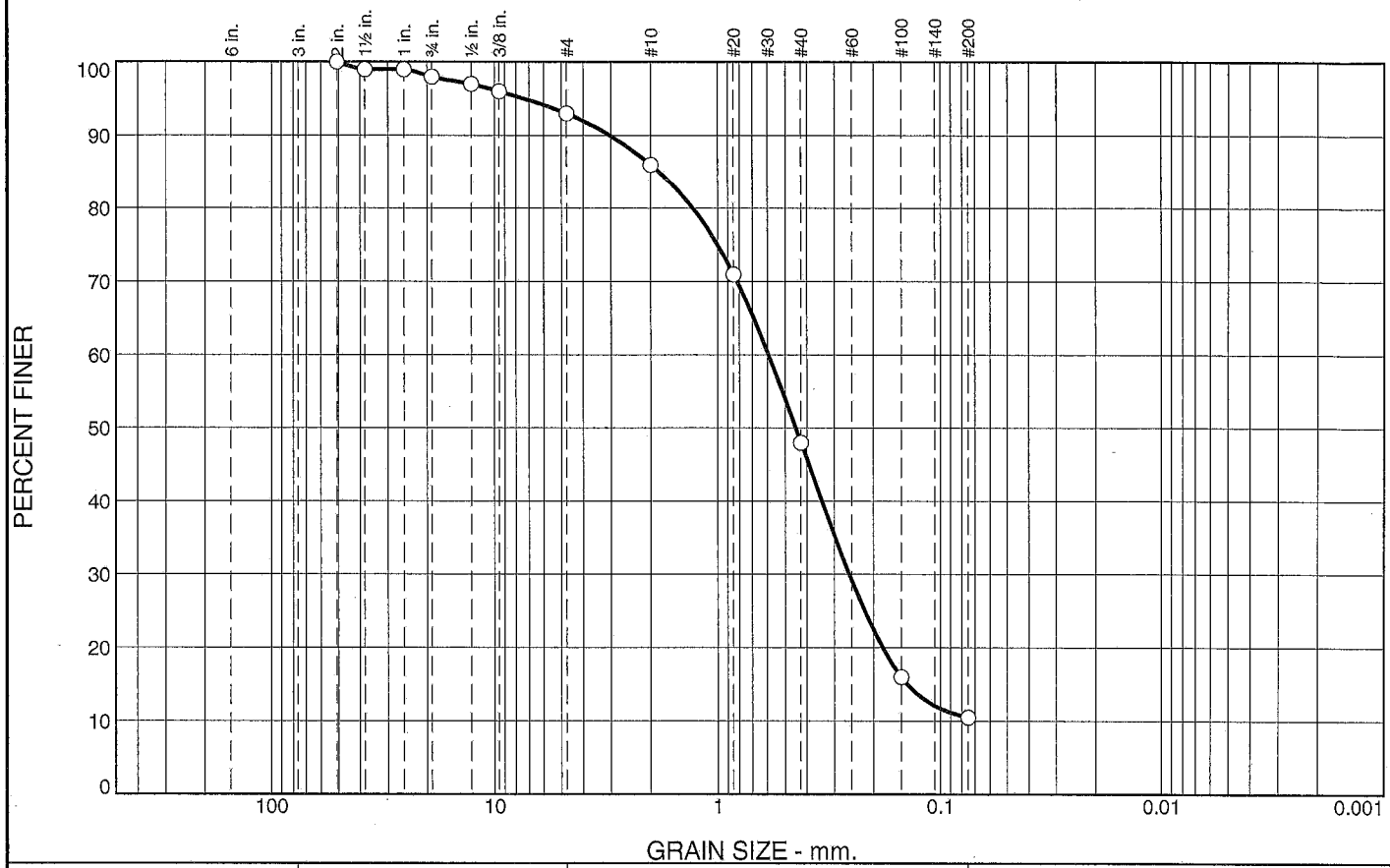

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.0	5.0	7.0	38.0	37.5	10.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2"	100.0		
1.5"	99.0		
1"	99.0		
0.75"	98.0		
0.5"	97.0		
0.375"	96.0		
#4	93.0		
#10	86.0		
#20	71.0		
#40	48.0		
#100	16.0		
#200	10.5		

* (no specification provided)

Material Description

(#29649)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 3.0341 D_{85}= 1.8350 D_{60}= 0.5941
D_{50}= 0.4487 D_{30}= 0.2569 D_{15}= 0.1409
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample Number: CC-BM-WW1-BL-LB

Date: 2/12/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29649

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-BM-WW1-BL-LB
Material Description: (#29649)
Date: 2/12/16
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
2"	100.0
1.5"	99.0
1"	99.0
0.75"	98.0
0.5"	97.0
0.375"	96.0
#4	93.0
#10	86.0
#20	71.0
#40	48.0
#100	16.0
#200	10.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	2.0	5.0	7.0	7.0	38.0	37.5	82.5			10.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.1409	0.1818	0.2569	0.3420	0.4487	0.5941	1.2931	1.8350	3.0341	7.3481

Fineness Modulus
2.36

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025150004.02	NAME: Kiernan Portalik Amec FW	LAB NO.: 29649
LOCATION: Los Penasquitos	SAMPLED BY: Kevin Stolzenbach	DATE: 1-7-16
SOURCE: Sediment TMDL	SUBMITTED BY:	DATE:
~~MATERIAL~~: Time 1200	AUTHORIZED BY:	DATE:
BORING: CC-BM-WM-BL-LB	TESTED BY: RW	DATE: 2-12-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS		2" 100
1 1/2"	62.1	.6	99.4		99
1"	124.3	1.2	98.8		99
3/4"	185.9	1.9	98.1		98
1/2"	300.8	3.0	97.0		97
3/8"	390.1	3.9	96.1		96
#4	698.6	7.0	93.0		93
#10	39.33	8.0	92.0	85.6	86
#20	115.79	23.5	76.5	71.1	71
#40	237.53	48.3	51.7	48.1	48
#100	408.00	83.0	17.0	15.9	16
#200	436.21	88.7	11.3	10.5	

CTB-10 = 491.8

27.70

W/Bag & Pan 16560.1

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____
Weight of soil & tare (dry) _____
Weight of Tare P-1 4479.5
Weight of H20 _____
Net weight of dry soil 10013.6
% H20 _____

WEIGHT BEFORE WASH: 10013.6 (+4)
491.8 (-4)

EQUIPMENT USED:
Scale I.D.: CW 9204
Sieve Set I.D.: Gilson - 12"
Oven I.D.: 184078 - 184077
Shaker I.D.: Gilson / Gingy

Particle Size Distribution Report

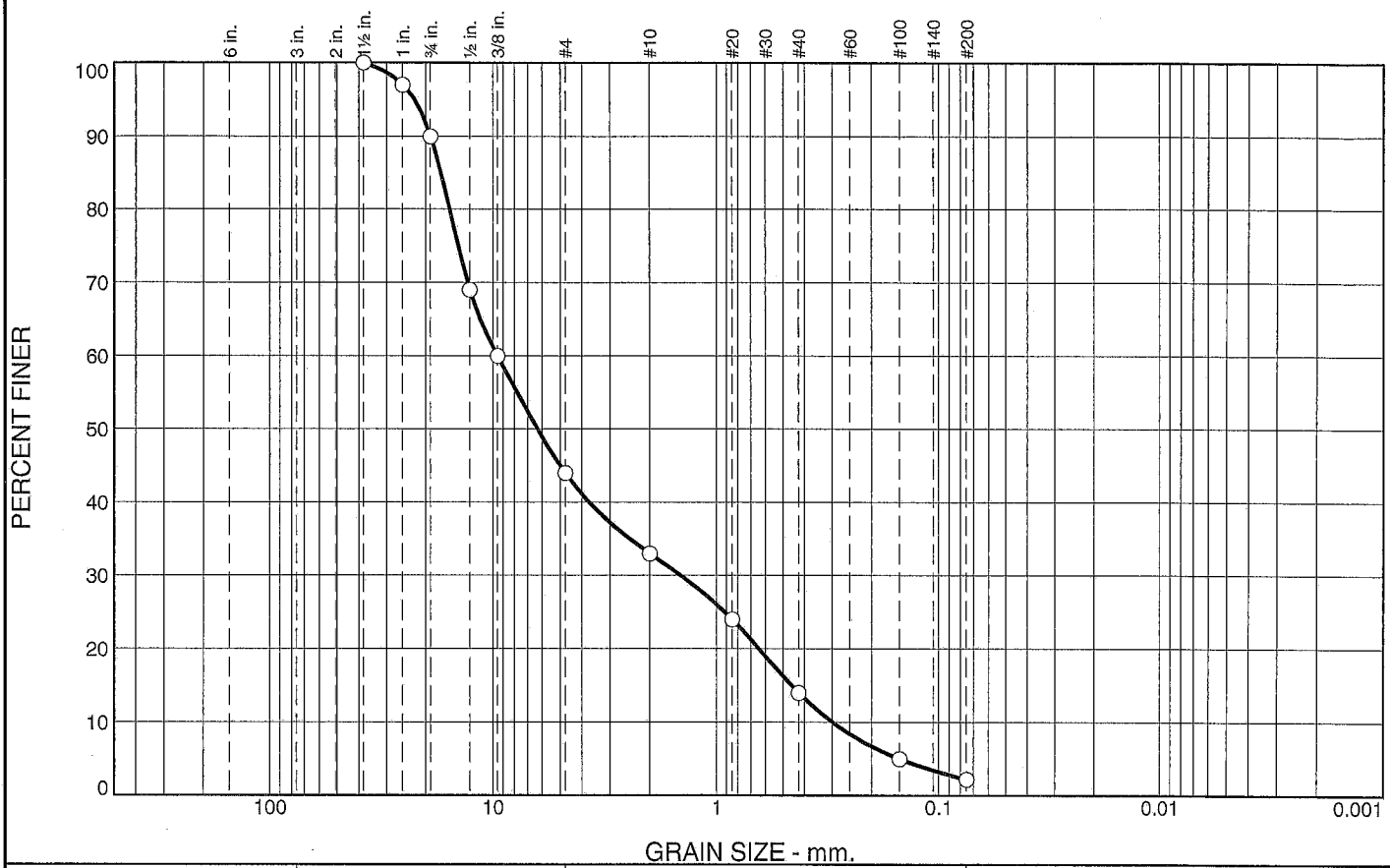

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.0	46.0	11.0	19.0	11.8	2.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1"	97.0		
0.75"	90.0		
0.5"	69.0		
0.375"	60.0		
#4	44.0		
#10	33.0		
#20	24.0		
#40	14.0		
#100	5.0		
#200	2.2		

* (no specification provided)

Material Description

GP (#29648)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 19.0500 D_{85}= 17.1358 D_{60}= 9.5250
D_{50}= 6.3234 D_{30}= 1.4565 D_{15}= 0.4576
D_{10}= 0.2994 C_u= 31.82 C_c= 0.74

Classification

USCS= GP AASHTO=

Remarks

Sample Number: CC-TC-WW1-BL-LB

Date: 2/12/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29648

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-TC-WW1-BL-LB
Material Description: GP (#29648)
Date: 2/12/16
USCS Classification: GP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1.5"	100.0
1"	97.0
0.75"	90.0
0.5"	69.0
0.375"	60.0
#4	44.0
#10	33.0
#20	24.0
#40	14.0
#100	5.0
#200	2.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	10.0	46.0	56.0	11.0	19.0	11.8	41.8			2.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1500	0.2994	0.4576	0.6428	1.4565	3.7216	6.3234	9.5250	15.6460	17.1358	19.0500	22.5144

Fineness Modulus	C_u	C_c
5.10	31.82	0.74

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025150004.02	NAME: Kiernan Portalik Amec Fw	LAB NO.: 29648
LOCATION: Los Penasquitos	SAMPLED BY: Kevin Stolzenbach	DATE: 1-7-16
SOURCE: Sediment TMDL	SUBMITTED BY:	DATE:
~~MATERIAL:~~ Time: 1200	AUTHORIZED BY:	DATE:
BORING: CC-TC-WW1-BL-LB	TESTED BY: Rw	DATE: 2-12-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS		
1 1/2"	0	0	100		
1"	373.0	2.9	97.1		97
3/4"	1203.2	9.5	90.5		90
1/2"	3882.3	30.7	69.3		69
3/8"	5053.6	39.9	60.1		60
#4	7017.2	55.5	44.5		44
#10	120.75	25.7	74.3	33.1	✓
#20	216.00	46	54.0	24.0	✓
#40	321.54	68.5	31.5	14.0	✓
#100	419.29	89.3	10.7	4.7	5 ✓
#200	446.30	95.1	4.9	2.2	✓

CTB-12 = ~~486.0~~ 469.3
16.4

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____
Weight of soil & tare (dry) 16484.1
Weight of Tare (C5) 3829.8
Weight of H20 _____
Net weight of dry soil _____
% H20 _____

WEIGHT BEFORE WASH: 12654.3 (+4)

469.3 (-4)

EQUIPMENT USED:
Scale I.D.: CW 9204
Sieve Set I.D.: Gilson - 12"
Oven I.D.: 184078 - 184077
Shaker I.D.: Gilson / Gringer

Particle Size Distribution Report

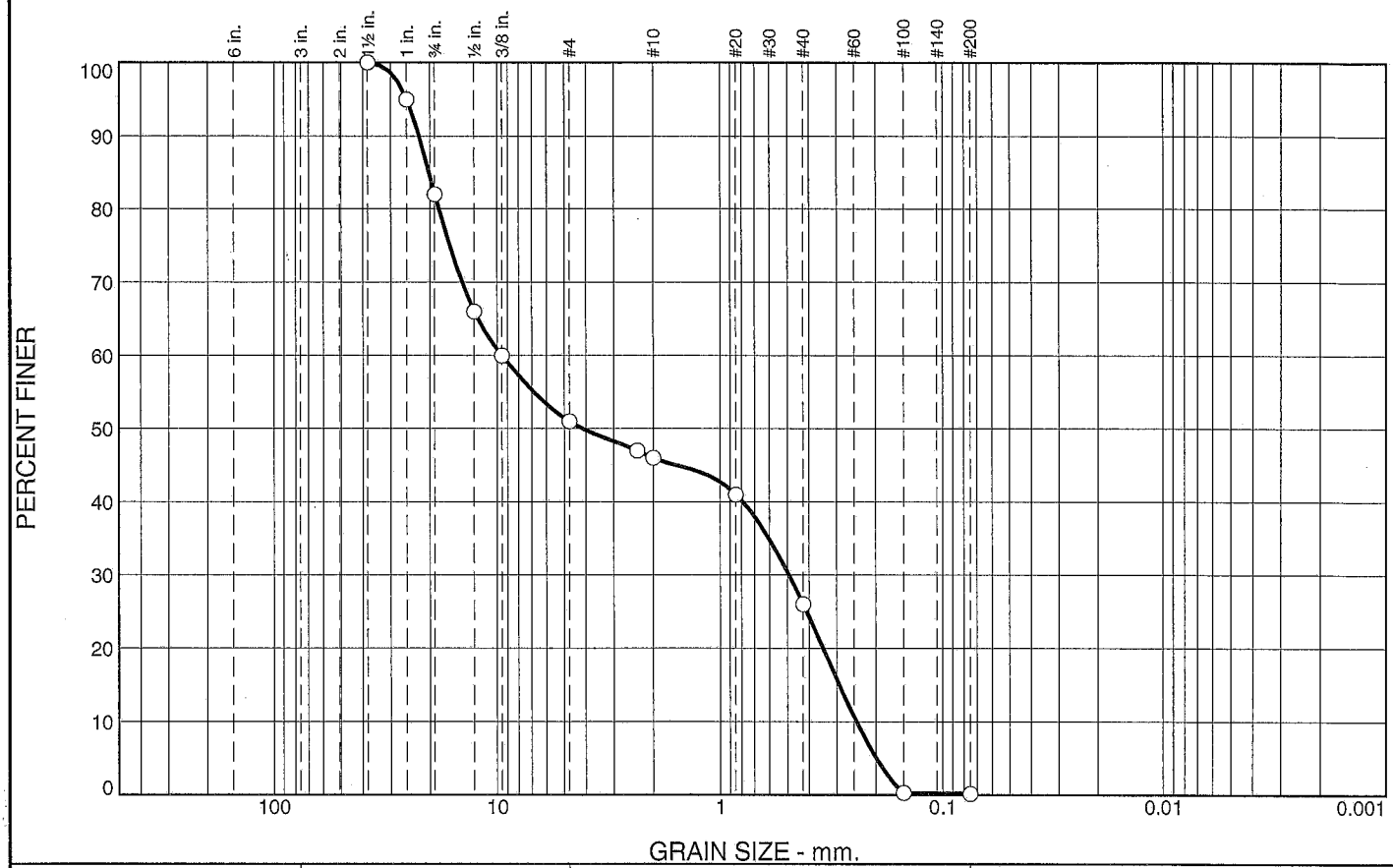

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	18.0	31.0	5.0	20.0	25.8	0.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1"	95.0		
0.75"	82.0		
0.5"	66.0		
0.375"	60.0		
#4	51.0		
#8	47.0		
#10	46.0		
#20	41.0		
#40	26.0		
#100	0.3		
#200	0.2		

* (no specification provided)

Material Description

SP (#29651)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 22.4295 D_{85}= 20.2374 D_{60}= 9.5250
D_{50}= 4.1474 D_{30}= 0.4923 D_{15}= 0.2921
D_{10}= 0.2444 C_u= 38.98 C_c= 0.10

Classification

USCS= SP AASHTO=

Remarks

Sample Number: CC-AC-WW2-MBL-1

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29651

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-AC-WW2-MBL-1
Material Description: SP (#29651)
Date: 2/9/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
1.5"	100.0
1"	95.0
0.75"	82.0
0.5"	66.0
0.375"	60.0
#4	51.0
#8	47.0
#10	46.0
#20	41.0
#40	26.0
#100	0.3
#200	0.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	18.0	31.0	49.0	5.0	20.0	25.8	50.8			0.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1990	0.2444	0.2921	0.3460	0.4923	0.7912	4.1474	9.5250	18.2750	20.2374	22.4295	25.4000

Fineness Modulus	C_u	C_c
4.65	38.98	0.10

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C204-02	NAME: Kiernan Bertalik, AmecFW	LAB NO.: 29651
LOCATION: Los Penasquitos	SAMPLED BY:	DATE:
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL:~~ Time 1520	AUTHORIZED BY:	DATE:
BORING: CC-AC-WW2-MRL-1	TESTED BY: RU	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE 1 1/2	WEIGHT RETAINED, GMS.	% RETAINED 0	% PASS 0		
~~1 1/2"~~ 1"	74.9	5.4	94.6		95
~~1"~~ 3/4	236.7	17.9	82.1		82
~~3/4"~~ 1/2	446.8	33.8	66.2		66
~~1/2"~~ 3/8	533.3	40.3	59.7		60
~~3/8"~~ #4	645.1	48.7	51.3		51
~~#4~~ #8	699.4	52.8	47.2		47
#10	9.94	1.6 ✓	98.4	46.4	46
#20	76.70	12.4 ✓	87.6	41.3	41
#40	283.79	46.0 ✓	54.0	25.5	26
#100	612.45	99.3 ✓	.7	.3	0.3 ✓
#200	614.53	99.6 ✓	.4	.2	✓

+8 = 1323.50
-8 617.0

CTB-30

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____
Weight of soil & tare (dry) 1591.8
Weight of Tare CTB-2 268.3
Weight of H20 _____
Net weight of dry soil _____
% H20 _____

WEIGHT BEFORE WASH: 1323.5 (+8) ✓
617.0 (-8)

EQUIPMENT USED:
Scale I.D.: CW9204
Sieve Set I.D.: Gilson + 12" Sieves
Oven I.D.: 184078 - 184077
Shaker I.D.: Gilson - Gyratory

Particle Size Distribution Report

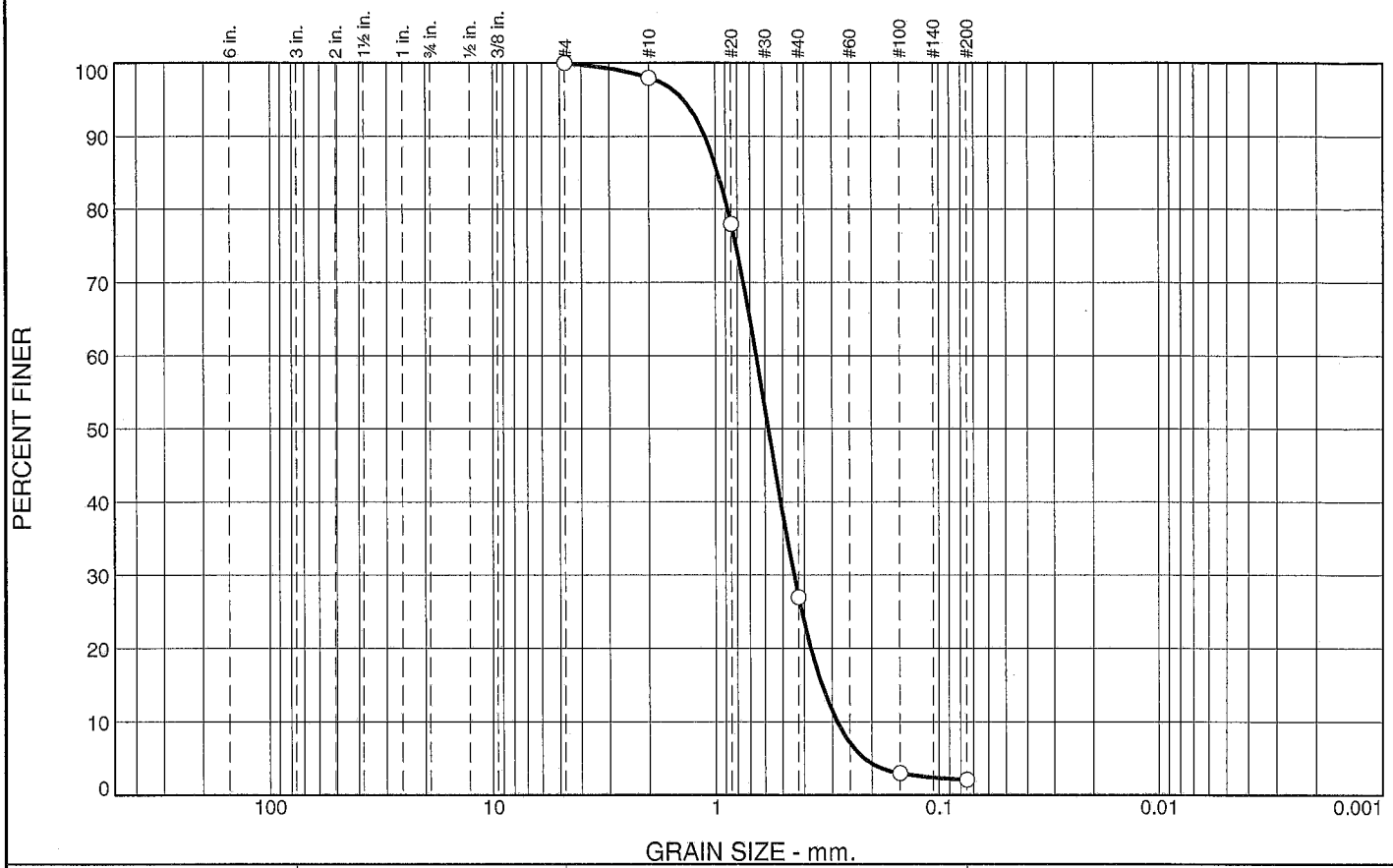

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.0	71.0	24.9	2.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	98.0		
#20	78.0		
#40	27.0		
#100	3.0		
#200	2.1		

* (no specification provided)

Material Description

SP (#29652)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1180 D_{85}= 0.9758 D_{60}= 0.6580
D_{50}= 0.5804 D_{30}= 0.4452 D_{15}= 0.3339
D_{10}= 0.2859 C_u= 2.30 C_c= 1.05

Classification

USCS= SP AASHTO=

Remarks

Sample Number: CV-UP-WW2-MBL-1

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29652

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: C01-UP-WW2-MBL-1
Material Description: SP (#29652)
Date: 2/9/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
#4	100.0
#10	98.0
#20	78.0
#40	27.0
#100	3.0
#200	2.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.0	71.0	24.9	97.9			2.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2163	0.2859	0.3339	0.3745	0.4452	0.5113	0.5804	0.6580	0.8806	0.9758	1.1180	1.3974

Fineness Modulus	C_u	C_c
2.43	2.30	1.05

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Bertalik, AmecFW	LAB NO.: 29652
LOCATION: Los Penasquitos	SAMPLED BY:	DATE: 1-31-16
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time 1730	AUTHORIZED BY:	DATE:
BORING: CV-UP-WW2-MBL-1	TESTED BY: pw	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS
1 1/2"			
1"			
3/4"			
1/2"			
3/8"	0	0	100
#4	0	0	100
#10	1.72	1.9	98.1
#20	20.35	22.0	78.0
#40	67.47	72.8	27.2
#100	90.31	97.4	2.6
#200	90.72	97.9	2.1

27 ✓

3

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) ____

Weight of soil & tare (dry) 318.0

Weight of Tare Fwl 225.35

Weight of H20 ____

Net weight of dry soil 92.65

% H20 ____

WEIGHT BEFORE WASH: 92.65

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184079

Shaker I.D.: Gilson - Gyratory

Particle Size Distribution Report

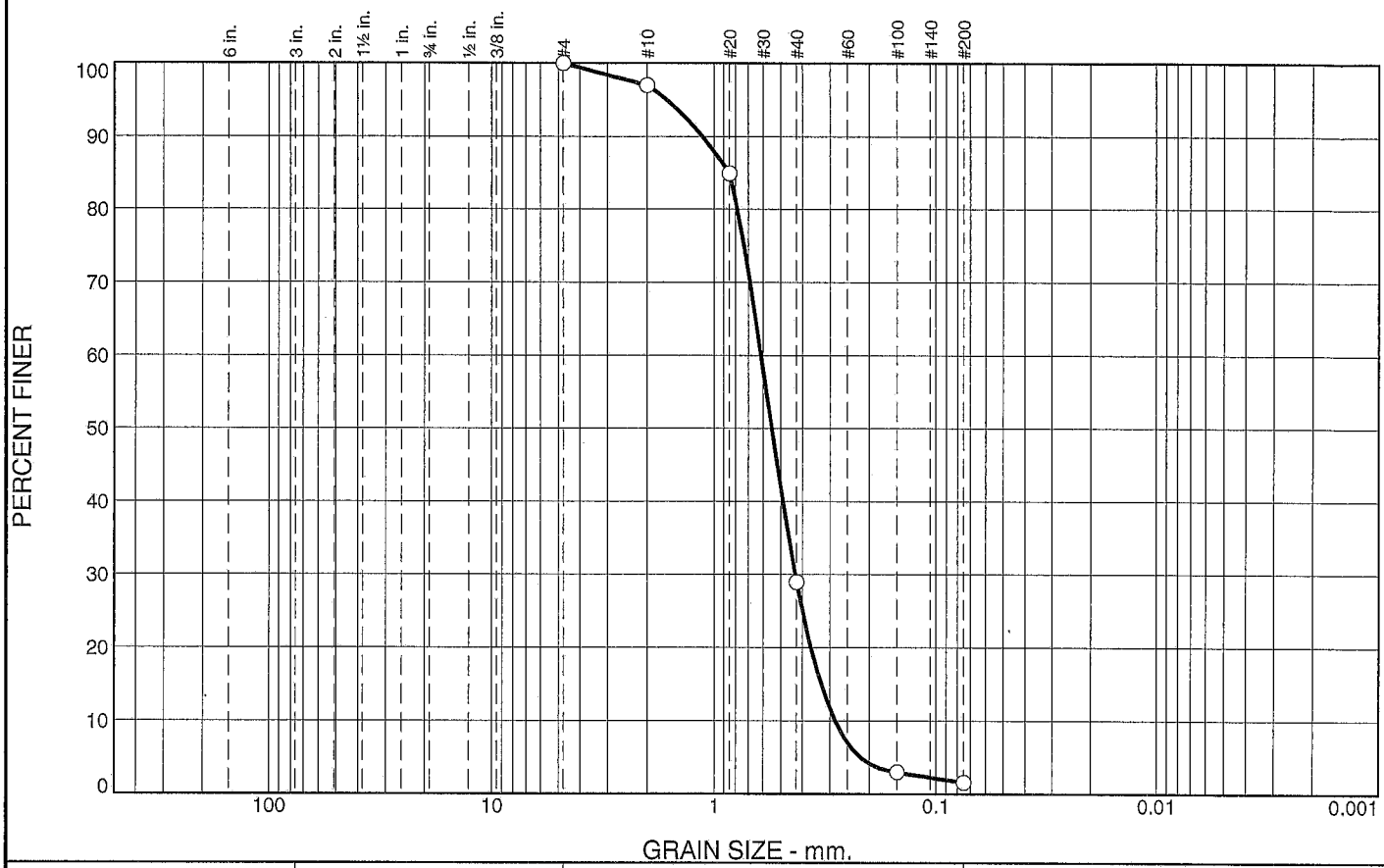

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.0	68.0	27.4	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	97.0		
#20	85.0		
#40	29.0		
#100	3.0		
#200	1.6		

* (no specification provided)

Material Description

SP (#29653)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1307 D_{85}= 0.8500 D_{60}= 0.6143
D_{50}= 0.5493 D_{30}= 0.4310 D_{15}= 0.3292
D_{10}= 0.2845 C_u= 2.16 C_c= 1.06

Classification

USCS= SP AASHTO=

Remarks

Sample Number: CC-TC-WW2-BL-MID

Date: 2/9/16

amec

Client:

Project: Los Penasquitos Sediment Special Study

Project No: 502515C011.02 **Figure** #29653

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

2/15/2016

Project: Los Penasquitos Sediment Special Study
Project Number: 502515C011.02
Sample Number: CC-TC-WW2-BL-MID
Material Description: SP (#29653)
Date: 2/9/16
USCS Classification: SP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
#4	100.0
#10	97.0
#20	85.0
#40	29.0
#100	3.0
#200	1.6

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	3.0	68.0	27.4	98.4			1.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.2186	0.2845	0.3292	0.3666	0.4310	0.4897	0.5493	0.6143	0.7859	0.8500	1.1307	1.6375

Fineness Modulus	C_u	C_c
2.39	2.16	1.06

AMEC

amec

SIEVE ANALYSIS OF SOIL

ASTM D1140/ D422

PROJECT NO: 5025.15C004-02	NAME: Kiernan Brtalik, AmecFW	LAB NO.: 29653
LOCATION: Los Penasquitos	SAMPLED BY:	DATE:
SOURCE: Sediment TMDL	SUBMITTED BY: Kevin S.	DATE:
~~MATERIAL~~: Time 1030	AUTHORIZED BY:	DATE:
BORING: CC-TC-WW2-BL-MID	TESTED BY: RD	DATE: 2-9-16
DEPTH:	REVIEWED BY:	DATE:

SIEVE SIZE	WEIGHT RETAINED, GMS.	% RETAINED	% PASS	
1 1/2"				
1"				
3/4"				
1/2"				
3/8"	0	0	100	
#4	0	0	100	
#10	21.49	2.6	97.4	97
#20	126.64	15.1	84.9	85
#40	595.99	70.9	29.1	29
#100	817.75	97.4	2.6	3
#200	826.82	98.4	1.6	✓

SAMPLE MOISTURE CONTENT

Weight of soil & tare (wet) _____

Weight of soil & tare (dry) 1086.9 w/o vegetation.

Weight of Tare 246.9

Weight of H20 PQ _____

Net weight of dry soil 840

% H20 _____

WEIGHT BEFORE WASH: 840

EQUIPMENT USED:

Scale I.D.: CW9204

Sieve Set I.D.: Gilson + 12" Sieves

Oven I.D.: 184078 - 184077

Shaker I.D.: Gilson - Orange

Particle Size Distribution Report

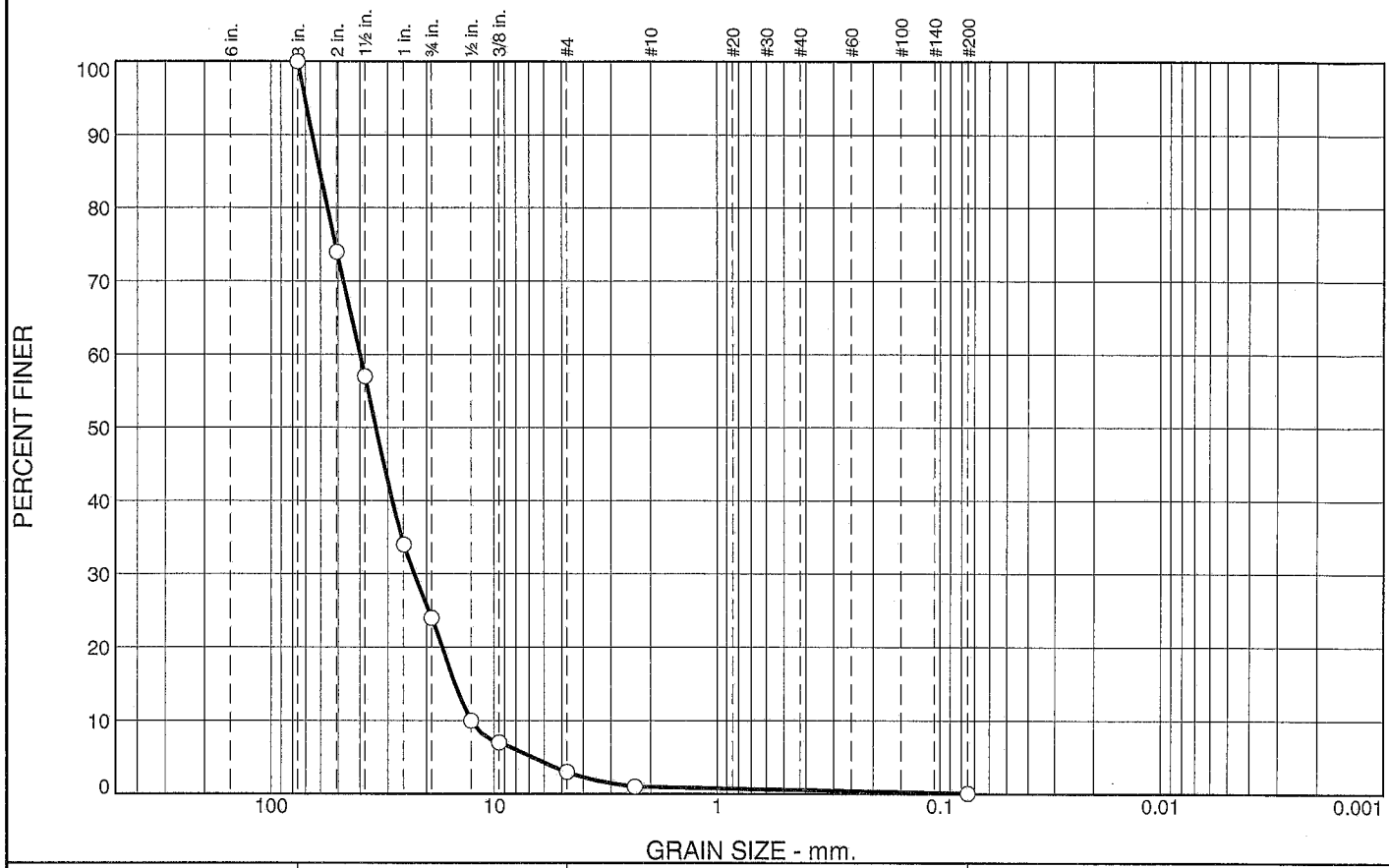

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	76.0	21.0	2.0	0.4	0.5	0.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2"	74.0		
1.5"	57.0		
1"	34.0		
0.75"	24.0		
0.5"	10.0		
0.375"	7.0		
#4	3.0		
#8	1.0		
#200	0.1		

* (no specification provided)

Material Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 65.4479 D_{85}= 60.5835 D_{60}= 40.0559
D_{50}= 33.9999 D_{30}= 22.8671 D_{15}= 14.9984
D_{10}= 12.7000 C_u= 3.15 C_c= 1.03

Classification

USCS= GP AASHTO=

Remarks

Location: CCNR-WW3-BL

Date: 3/17/16

amec

Client:

Project: Los Penasquitos Sediment Transport Monitoring 2014-2015

Project No: 502515C011.02 **Figure** #29700

Tested By: R. Valles **Checked By:** L. Collins

GRAIN SIZE DISTRIBUTION TEST DATA

3/18/2016

Project: Los Penasquitos Sediment Transport Monitoring 2014-2015
Project Number: 502515C011.02
Location: CCNR-WW3-BL
Date: 3/17/16
USCS Classification: GP
Tested by: R. Valles **Checked by:** L. Collins

Sieve Test Data

Sieve Opening Size	Percent Finer
3"	100.0
2"	74.0
1.5"	57.0
1"	34.0
0.75"	24.0
0.5"	10.0
0.375"	7.0
#4	3.0
#8	1.0
#200	0.1

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	76.0	21.0	97.0	2.0	0.4	0.5	2.9			0.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
6.7641	12.7000	14.9984	17.1063	22.8671	28.6926	33.9999	40.0559	55.9967	60.5835	65.4479	70.6358

Fineness Modulus	C_u	C_c
8.06	3.15	1.03

AMEC

amec

SIEVE ANALYSIS OF AGGREGATE - SAND EQUIVALENT

ASTM D2419 / AASHTO T176 / CTM217
ASTM C117 / AASHTO T11
ASTM C136 / AASHTO T27

Project No.		Project Name:	Los Peñesquitos Sediment		
Lab No.	29700	Sampled by:		Date:	
Type of Aggregate:		Submitted by:		Date:	
Source of Aggregate:		Tested by:	RW	Date:	3-17-16
Sample Location:		Reviewed by:		Date:	

SAMPLE WEIGHT DRY GMS.

Screen	Weight Retained	% Retained	% Pass	Cum. Pass	Specification Limit
4"	0	0	100	100	
3"	0	0	100	100	
2"	1068.5	26.4	73.6		
1-1/2"	1732.5	42.7	57.3		
1"	2676.5	66.0	34.0		
3/4"	3094.9	76.4	23.6		
1/2"	3646.0	90.0	10.0		
3/8"	3772.1	93.1	6.9		
#4	3920.8	96.7	3.3		
#4 Grading Portion _____ gm					
#8	3998.5	98.7	1.3		
#16					
#30					
#50					
#100					
#200					

MOISTURE CONTENT			SAND EQUIVALENT	
Weight of sample & tare (wet)			/ =	
Weight of sample & tare (dry)	4666.0		/ =	
Weight of tare 104	613.0		/ =	
Weight of H_2O	4053			
Net weight of dry sample				
% H20	.09%	7.6%	Ave.=	

4049.4 w/o pan

EQUIPMENT USED:
Sieve Set I.D.: Gilson Mechanical Shaker: I.D.: Gilson
Scale I.D. _____ S.E. Shaker I.D.: _____
Oven I.D.: 184077

Amec Foster Wheeler - Materials Lab

CHAIN OF CUSTODY RECORD

charge this Code 502515C011.02

9177 Sky Park Court San Diego, CA 92213-4341
Tel 858-514-3000

STANDARD

Page 1 Of 1

CLIENT NAME: Kiernan Brtalik, Amec Foster Wheeler

PROJECT: Los Peñasquitos Sediment Special Study

ADDRESS: 9177 Sky Park Court San Diego, CA 92213-4341

PHONE: 858-514-7752
FAX:
EMAIL: Kiernan.Brtalik@amecfw.com

PROJECT MANAGER Jeremy Burns

SAMPLER Kevin Stolzenbach

ANALYSES REQUESTED

SPECIAL HANDLING

- ☐ Same Day Rush 150%
- ☐ 24 Hour Rush 100%
- ☐ 48-72 Hour Rush 75%
- ☐ 4 - 5 Day Rush 30%
- ☐ Rush Extractions 50%
- ☐ 10 - 15 Business Days
- ☐ QA/QC Data Package

Charges will apply for weekends/holidays

Method of Shipment:

ID# (For lab Use Only)	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION/SITE LOCATION	# OF CONT.	Particle Size Distribution	COMMENTS
29648	1/7/16	12:00	SED	CC-TC-WW1-BL-LB	2	X	3x5" piece of tile in sample
29649	↓	↓	↓	CC-BM-WW1-BL-LB	2	X	
29650	↓	↓	↓	CC-BM-WW1-BL-RB	1	X	
29651	1/31/16	1520	↓	CC-AC-WW2-MBL-1	1	X	
29652	↓	1730	↓	CV-UP-WW2-MBL-1	1	X	
29653	2/1/16	1030	↓	CC-TC-WW2-BL-MID	1	X	
29654	12/29/15	1230	SED	LP-POW-VBL	1	X	

RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

SAMPLE CONDITION:

Actual Temperature:

Received On Ice	Y / N
Preserved	Y / N
Evidence Seals Present	Y / N
Container Attacked	Y / N
Preserved at Lab	Y / N

SAMPLE TYPE CODE:
AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY OVER UNSCHEDULED RUSH REQUESTS
Client agrees to Terms & Conditions at: www.wecklabs.com

SPECIAL REQUIREMENTS / BILLING INFORMATION
Bill to 502515C011.02

COC version 042707

Amec Foster Wheeler - Materials Lab

CHAIN OF CUSTODY RECORD

9177 Sky Park Court San Diego, CA 92213-4341
Tel 858-514-3000

STANDARD

Page_____Of_____

CLIENT NAME: Jeremy Burns, Amec Foster Wheeler

PROJECT: ~~Los Peñasquitos Sediment TMDL~~ Los Peñasquitos Sediment transport Monitoring 2014-2015

ADDRESS: 9177 Sky Park Court San Diego, CA 92213-4341

PHONE: 858-514-7752
FAX:
EMAIL: jeremy.burns@amec.com

PROJECT MANAGER Jeremy Burns

SAMPLER Kevin Stolzenbach & Robert Wheeler

SPECIAL HANDLING

- ☐ Same Day Rush 150%
- ☐ 24 Hour Rush 100%
- ☐ 48-72 Hour Rush 75%
- ☐ 4 - 5 Day Rush 30%
- ☐ Rush Extractions 50%
- ☐ 10 - 15 Business Days
- ☐ QA/QC Data Package

Charges will apply for weekends/holidays

Method of Shipment:

ID# (For lab Use Only)	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION/SITE LOCATION	# OF CONT.	Particle Size Distribution	COMMENTS
29699 CC				Carroll Canyon			
~~EVE~~-WW3-BL	03/08/16	1414		~~Carroll Valley~~ Bed load		X	#502515C011.02
29700 CCNR-WW3-BL	03/08/16	1540		Nancy Ridge Bed load		X	

RELINQUISHED BY	DATE / TIME	RECEIVED BY
Robert Wheeler R.W.	3/15/16 3:30 pm	Liz Collins
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

SAMPLE CONDITION:

Actual Temperature:

Received On Ice	Y / N
Preserved	Y / N
Evidence Seals Present	Y / N
Container Attacked	Y / N
Preserved at Lab	Y / N

SAMPLE TYPE CODE:
AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

PRESCHEDULED RUSH ANALYSES WILL TAKE PRIORITY OVER UNSCHEDULED RUSH REQUESTS
Client agrees to Terms & Conditions at: www.wecklabs.com

SPECIAL REQUIREMENTS / BILLING INFORMATION

COC version 042707

amec foster wheeler
9177 Sky Park Court, San Diego, CA 92123
Phone: 858-278-3600 Fax: 858-278-5300

Lab No. : _____

page ____ of ____

REQUEST FOR GEOTECHNICAL TESTING

Project Name: PQ Sediment
Project No.: 5013150011.02
Client:

Sampled By:
Received By:
Requested By:

Date:
Date:
Date Due:

Completed by:
Sampled Logged in OC-Track:
Reviewed by:
Distribution to Acct.:
Distribution :

			SAMPLE REMOLDING		CHEMICAL TESTING*				DIRECT SHEAR		CONSOLIDATION / ASTM D2435						PHYSICAL TESTS																	OTHER		
BORING OR TEST PIT NO.	SAMPLE DEPTH	SAMPLE TYPE - (R)ing or (B)ulk	PERCENT COMPACTION	MOISTURE CONTENT / ASTM D2216	SULFATE CONTENT	PH CONTENT / CTM 643	CHLORIDE CONTENT	SOIL RESRISTIVITY	DIRECT SHEAR - SURCHARGE (psf)/ AASHTO T236	SOAK	SOAK AFTER (psf)	LOAD TO (psf)	REBOUND TO (psf)	RELOAD TO (psf)	REBOUND TO (psf)	TIME RATE (Y/N)	COMPACTION / ASTM D1557	VISUAL SOIL CLASSIFICATION	CBR / ASTM D1883	CBR W/ LIME OR CEMENT	R-VALUE / ASTM D2844	R-VALUE W/ LIME	SAMPLE PREP	EXPANSION INDEX / ASTM D4829	- #200 WASH, % / ASTM D1140	- #200 WASH W/ SIEVE / ASTM D1140 & D422	HYDROMETER ASSUMED SPG/ ASTM D422 & D423	PLASTICITY INDEX / ASTM D4318	MOISTURE & DENSITY, RING / ASTM D2216	FINE GRADATION / ASTM C136	COARSE GRADATION / ASTM C136	UNCONFINED COMPRESSION / ASTM D2938	SPECIFIC GRAVITY / ASTM D854	ORGANIC CONTENT / ASTM C40	REMOLD SAMPLE/ CONSOL / ASTM D2435	REMOLD SAMPLE/ SHEAR / ASTM D3080	SAND EQUIVALENT / ASTM D2419
29	69	99																								X										
29	70	00																								X										
N/A	N/A	N/A		UQNN8E	UP220	UP370	UP372	UP371	UQDE6E		UQCD6E						UQCA1E	130270	UQCX3E	131080	UQRT2E	130880	UQST4E	UQEF6E	UQSV4E	UQSV6E	UQHI8E	UQLL9E	UQSW0E	UQSU8E	UQSU6E	UQUZ6E	UQSW6E	UQUZ6E	UQRT3E	130800	UQFG8E

UP CODE or UNIT PRICE ***Note all 4 tests use code #UQSX9E***

L:\Forms and Procedures\5014\lab test requests\Geotechnical Testing Request 01122012_Rev 04.2015.xlsx

amec foster wheeler
9177 Sky Park Court, San Diego, CA 92123
Phone: 858-278-3600 Fax: 858-278-5300

Lab No. : _____

page ____ of ____

REQUEST FOR GEOTECHNICAL TESTING

Project Name: PQ SEDIMENT
Project No.: 5025150011.02
Client:

Sampled By:
Received By:
Requested By:

Date:
Date:
Date Due:

Completed by:
Sampled Logged in OC-Track:
Reviewed by:
Distribution to Acct.:
Distribution :

			SAMPLE REMOLDING		CHEMICAL TESTING*				DIRECT SHEAR		CONSOLIDATION / ASTM D2435						PHYSICAL TESTS																	OTHER		
BORING OR TEST PIT NO.	SAMPLE DEPTH	SAMPLE TYPE - (R)ing or (B)ulk	PERCENT COMPACTION	MOISTURE CONTENT / ASTM D2216	SULFATE CONTENT	PH CONTENT / CTM 643	CHLORIDE CONTENT	SOIL RESRISTIVITY	DIRECT SHEAR - SURCHARGE (psf)/ AASHTO T236	SOAK	SOAK AFTER (psf)	LOAD TO (psf)	REBOUND TO (psf)	RELOAD TO (psf)	REBOUND TO (psf)	TIME RATE (Y/N)	COMPACTION / ASTM D1557	VISUAL SOIL CLASSIFICATION	CBR / ASTM D1883	CBR W/ LIME OR CEMENT	R-VALUE / ASTM D2844	R-VALUE W/ LIME	SAMPLE PREP	EXPANSION INDEX / ASTM D4829	- #200 WASH, % / ASTM D1140	- #200 WASH W/ SIEVE / ASTM D1140 & D422	HYDROMETER ASSUMED SPG/ ASTM D422 & D423	PLASTICITY INDEX / ASTM D4318	MOISTURE & DENSITY, RING / ASTM D2216	FINE GRADATION / ASTM C136	COARSE GRADATION / ASTM C136	UNCONFINED COMPRESSION / ASTM D2938	SPECIFIC GRAVITY / ASTM D854	ORGANIC CONTENT / ASTM C40	REMOLD SAMPLE/ CONSOL / ASTM D2435	REMOLD SAMPLE/ SHEAR / ASTM D3080	SAND EQUIVALENT / ASTM D2419
29648																									X											
29649																									X											
29650																									X											
29651																									X											
29652																									X											
29653																									X											
29654																									X											
N/A	N/A	N/A		UQNN8E	UP220	UP370	UP372	UP371	UQDE6E		UQCD6E						UQCA1E	130270	UQCX3E	131080	UQRT2E	130880	UQST4E	UQEF6E	UQSV4E	UQSV6E	UQHI8E	UQLL9E	UQSW0E	UQSU8E	UQSU6E	UQUZ6E	UQSW6E	UQUZ6E	UQRT3E	130800	UQFG8E

UP CODE or UNIT PRICE ***Note all 4 tests use code #UQSX9E***

L:\Forms and Procedures\5014\lab test requests\Geotechnical Testing Request 01122012_Rev 04.2015.xlsx

amec foster wheeler
9177 Sky Park Court, San Diego, CA 92123
Phone: 858-278-3600 Fax: 858-278-5300

Lab No. : _____

page ____ of ____

REQUEST FOR GEOTECHNICAL TESTING

Project Name: PQ SEDIMENT
Project No.: 5025.15C004.02
Client:

Sampled By: _____ Date: _____
Received By: _____ Date: _____
Requested By: _____ Date Due: _____

Completed by: _____
Sampled Logged in OC-Track: _____
Reviewed by: _____
Distribution to Acct.: _____
Distribution : _____

			SAMPLE REMOLDING		CHEMICAL TESTING*				DIRECT SHEAR		CONSOLIDATION / ASTM D2435						PHYSICAL TESTS																	OTHER		
	BORING OR TEST PIT NO.	SAMPLE DEPTH	SAMPLE TYPE - (R)ing or (B)ulk	PERCENT COMPACTION	MOISTURE CONTENT / ASTM D2216	SULFATE CONTENT	PH CONTENT / CTM 643	CHLORIDE CONTENT	SOIL RESRISTIVITY	DIRECT SHEAR - SURCHARGE (psf)/ AASHTO T236	SOAK	SOAK AFTER (psf)	LOAD TO (psf)	REBOUND TO (psf)	RELOAD TO (psf)	REBOUND TO (psf)	TIME RATE (Y/N)	COMPACTION / ASTM D1557	VISUAL SOIL CLASSIFICATION	CBR / ASTM D1883	CBR W/ LIME OR CEMENT	R-VALUE / ASTM D2844	R-VALUE W/ LIME	SAMPLE PREP	EXPANSION INDEX / ASTM D4829	- #200 WASH, % / ASTM D1140	- #200 WASH W/ SIEVE / ASTM D1140 & D422	HYDROMETER ASSUMED SPG/ ASTM D422 & D423	PLASTICITY INDEX / ASTM D4318	MOISTURE & DENSITY, RING / ASTM D2216	FINE GRADATION / ASTM C136	COARSE GRADATION / ASTM C136	UNCONFINED COMPRESSION / ASTM D2938	SPECIFIC GRAVITY / ASTM D854	ORGANIC CONTENT / ASTM C40	REMOLD SAMPLE/ CONSOL / ASTM D2435	REMOLD SAMPLE/ SHEAR / ASTM D3080	SAND EQUIVALENT / ASTM D2419
29	644																									X										
29	645																									X										
29	646																									X										
29	647																									X										
	N/A	N/A	N/A		UQNN8E	UP220	UP370	UP372	UP371	UQDE6E		UQCD6E						UQCA1E	130270	UQCX3E	131080	UQRT2E	130880	UQST4E	UQEF6E	UQSV4E	UQSV6E	UQHI8E	UQLL9E	UQSW0E	UQSU8E	UQSU6E	UQUZ6E	UQSW6E	UQUZ6E	UQRT3E	130800	UQFG8E

UP CODE or UNIT PRICE ***Note all 4 tests use code #UQSX9E***

APPENDIX D
PEBBLE COUNT PARTICLE-SIZE DISTRIBUTION ANALYSIS

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APPENDIX D: POST-STORM PEBBLE COUNT PARTICLE SIZE DISTRIBUTION ANALYSIS

This appendix presents the particle size distribution analysis results conducted for upper watershed sites of Carroll Canyon (Nancy Ridge, Arizona Crossing, Trap Channel and Black Mountain) and Los Peñasquitos North City using the post-storm pebble count data collected throughout the wet weather season. Note that there is no data available on 12/16/15 for Trap Channel, Black Mountain and North City.

Nancy Ridge, Arizona Crossing and North City are relatively consistent, with Arizona Crossing North City having a slight increase in sand percentage over the course of the season (10-20%). Trap Channel and Black Mountain showed marked increase in sand percentages. At Trap Channel, this was most evident at the upstream and downstream locations which showed a shift of around 60-65%. As mentioned previously, this site was impacted by a construction site which had an outflow located at the mid-stream location where pebble counts were conducted. Black Mountain had a shift of 25-50% measured at each location over the course of the season.

Complete pebble count results and particle-size distribution plots are provided below.

Carrol Canyon – Nancy Ridge:

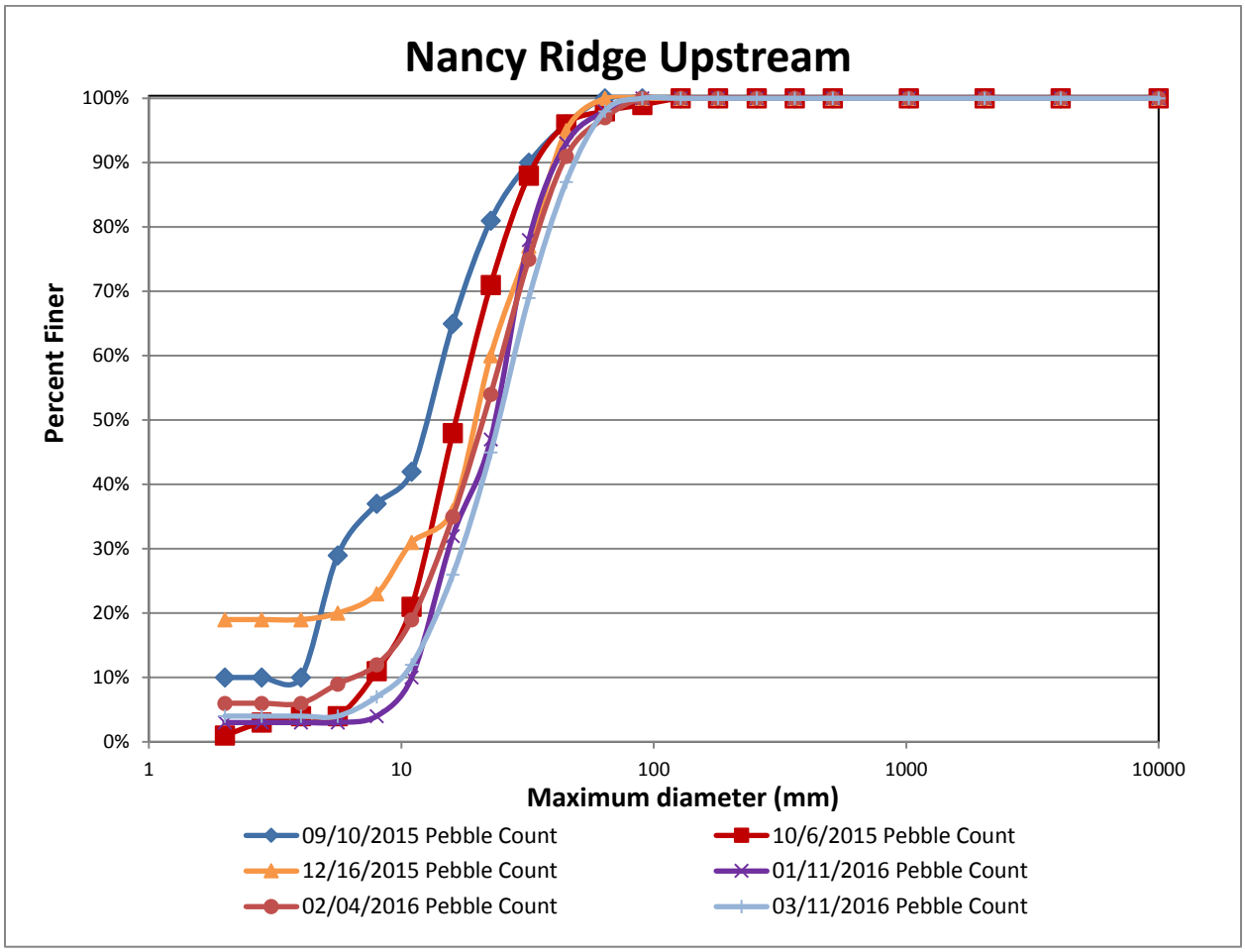

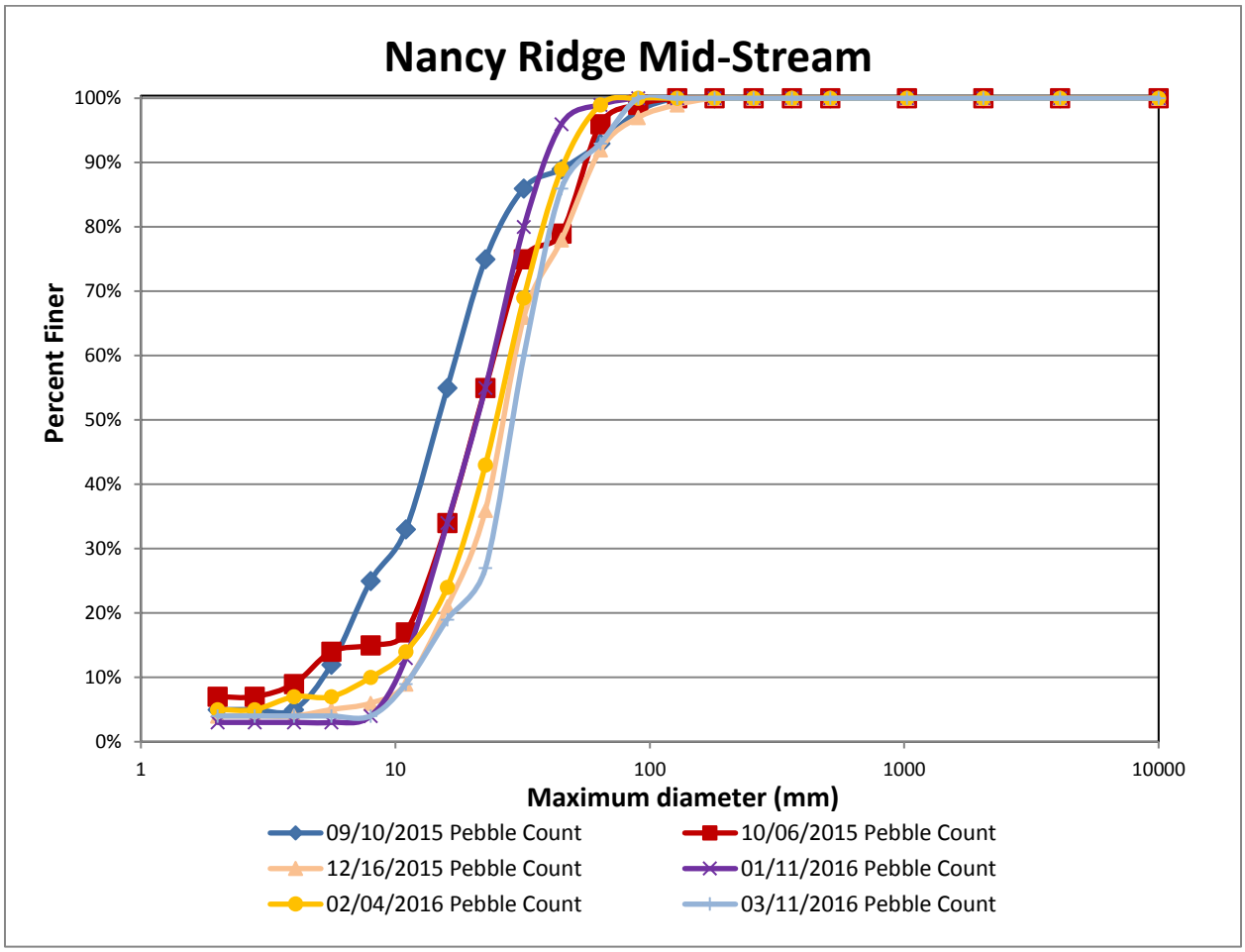
Nancy Ridge Mid-Stream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

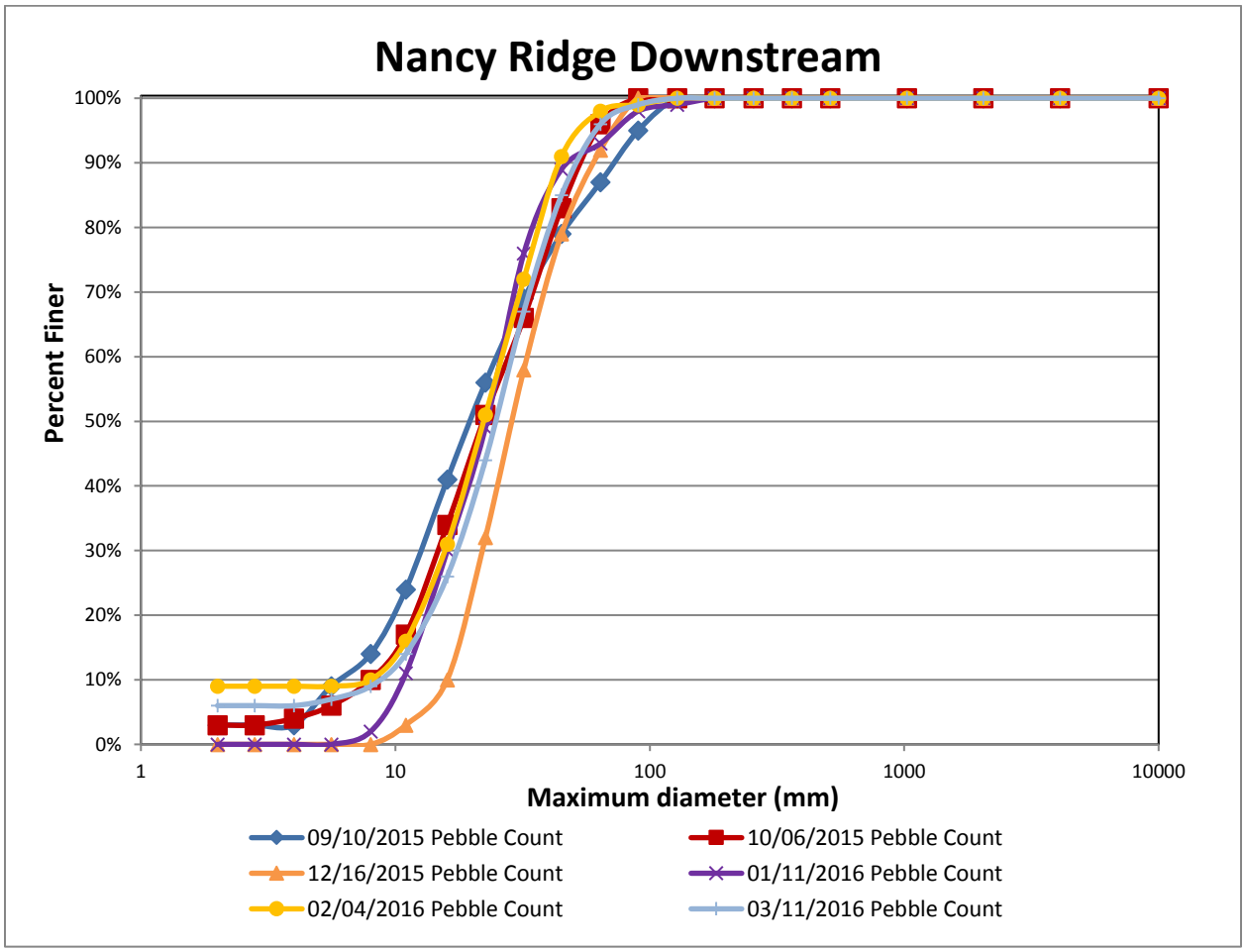
Nancy Ridge Downstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

Carroll Canyon – Arizona Crossing:

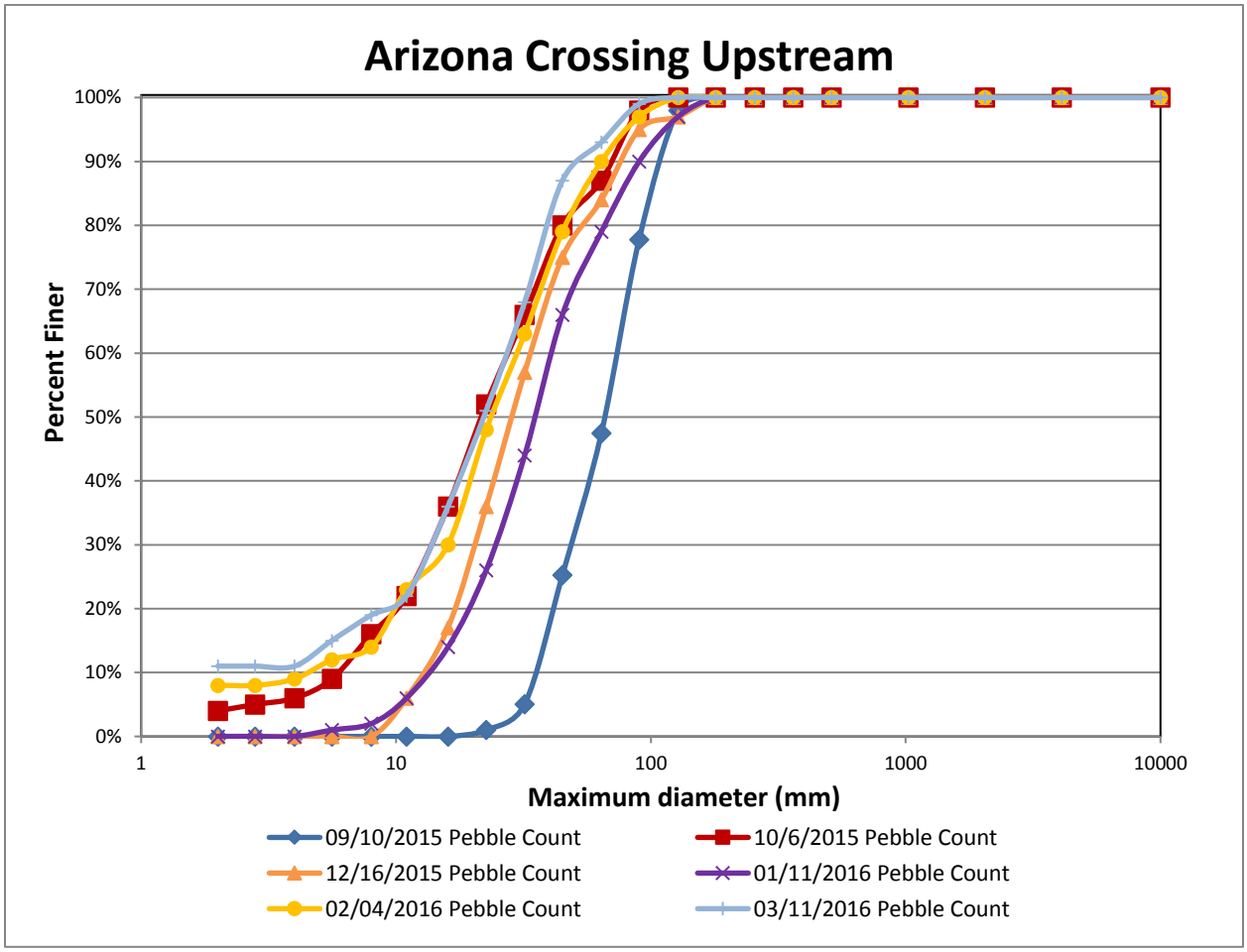

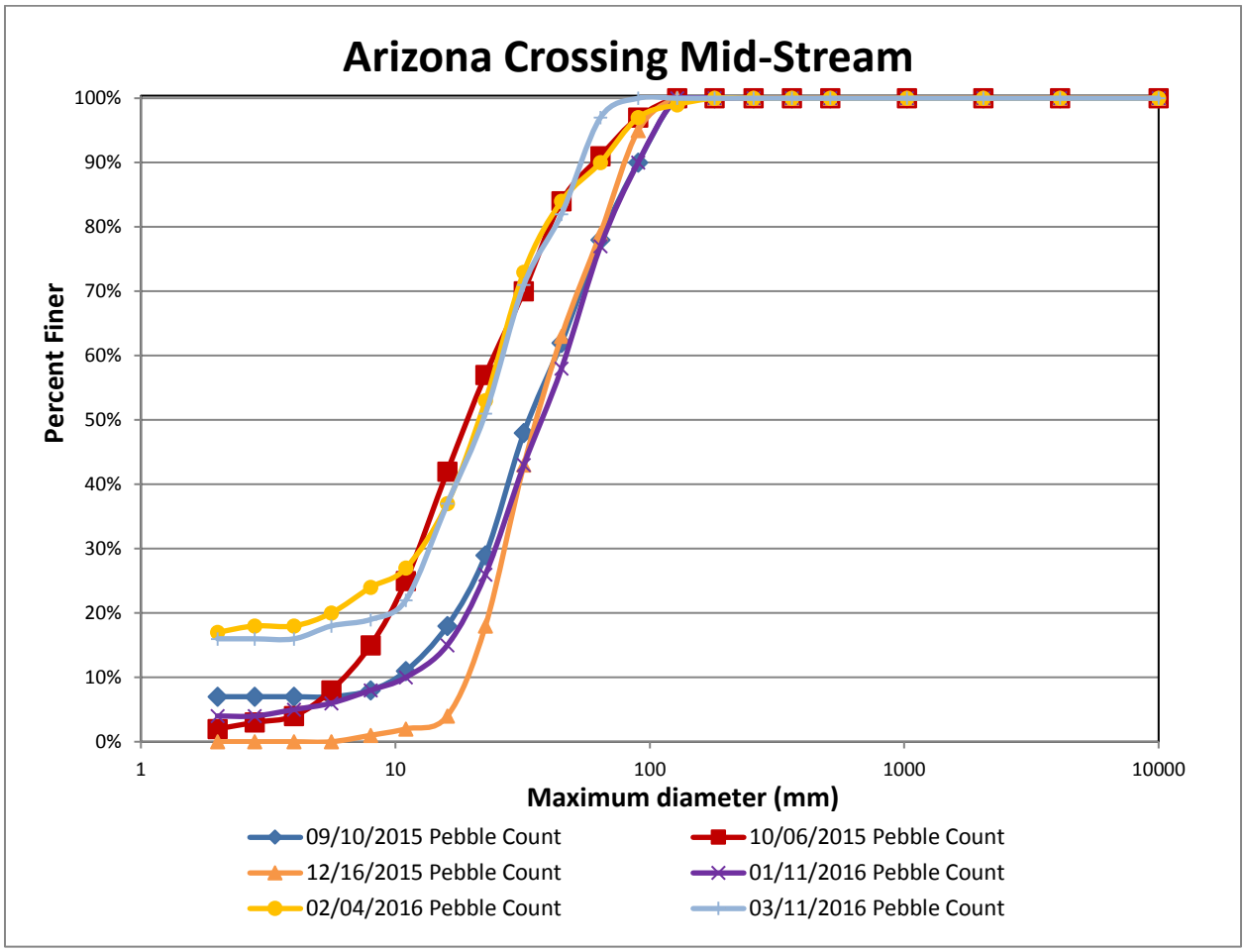
Arizona Crossing Mid-Stream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

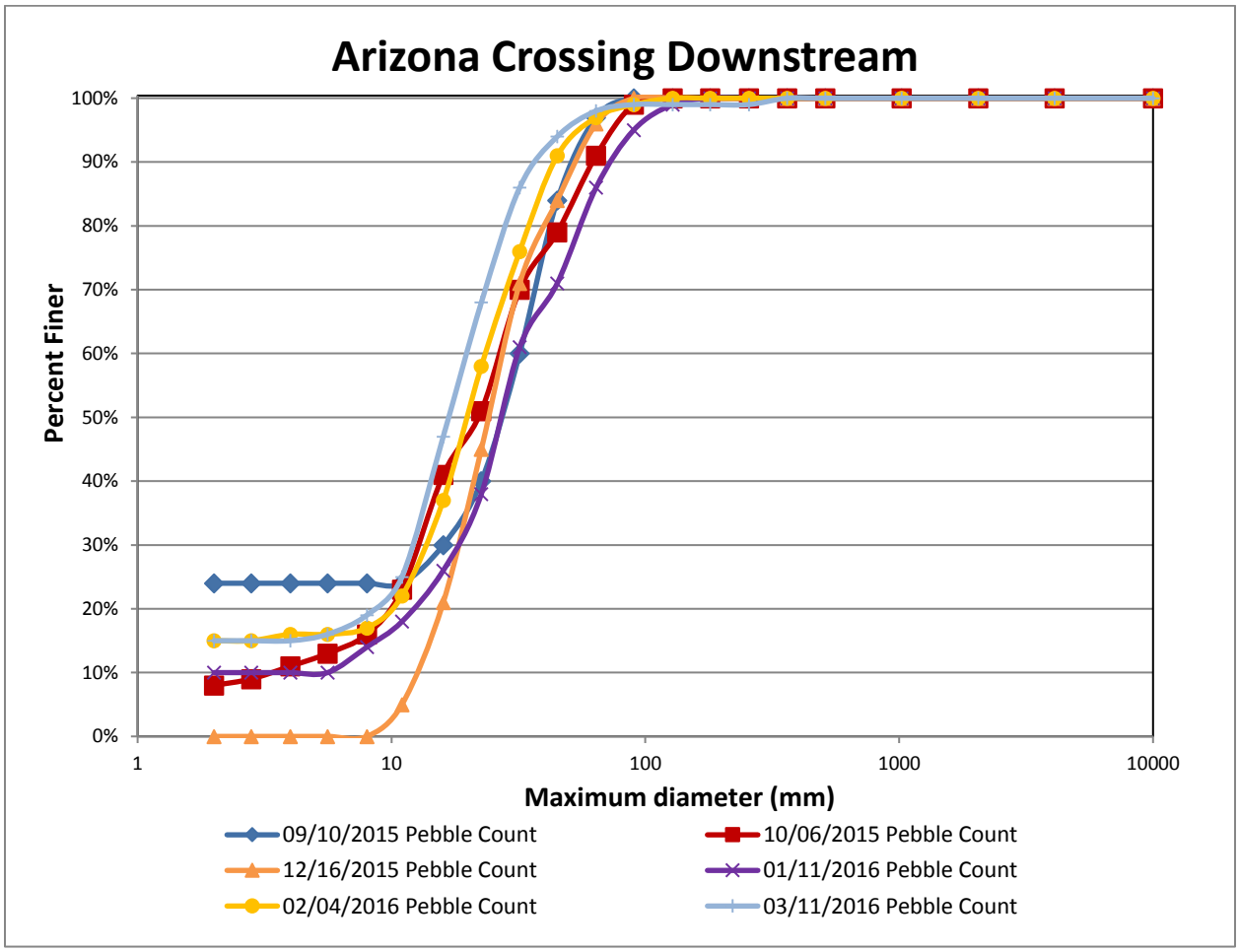
Arizona Crossing Downstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
12/16/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

Carrol Canyon – Trap Channel:

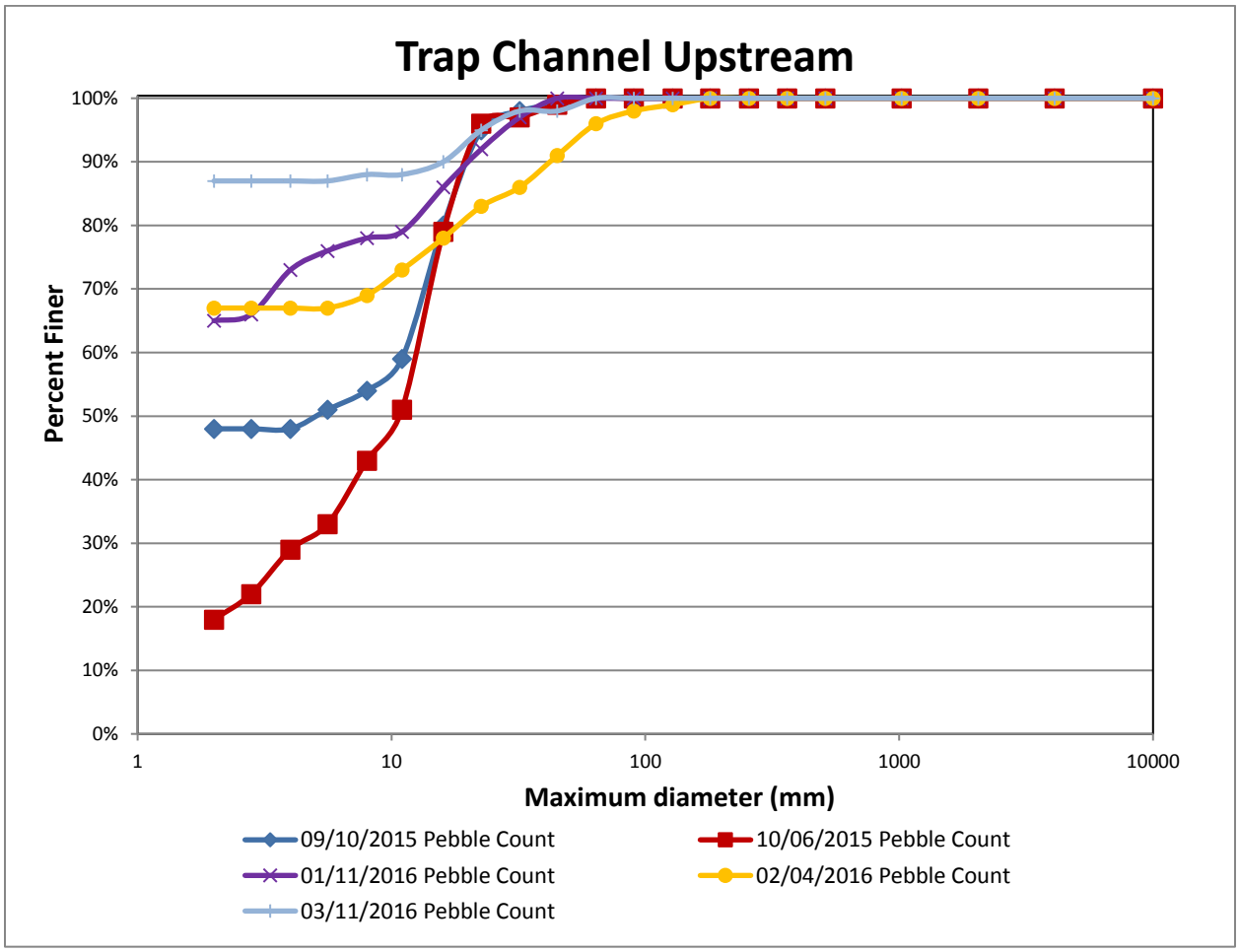

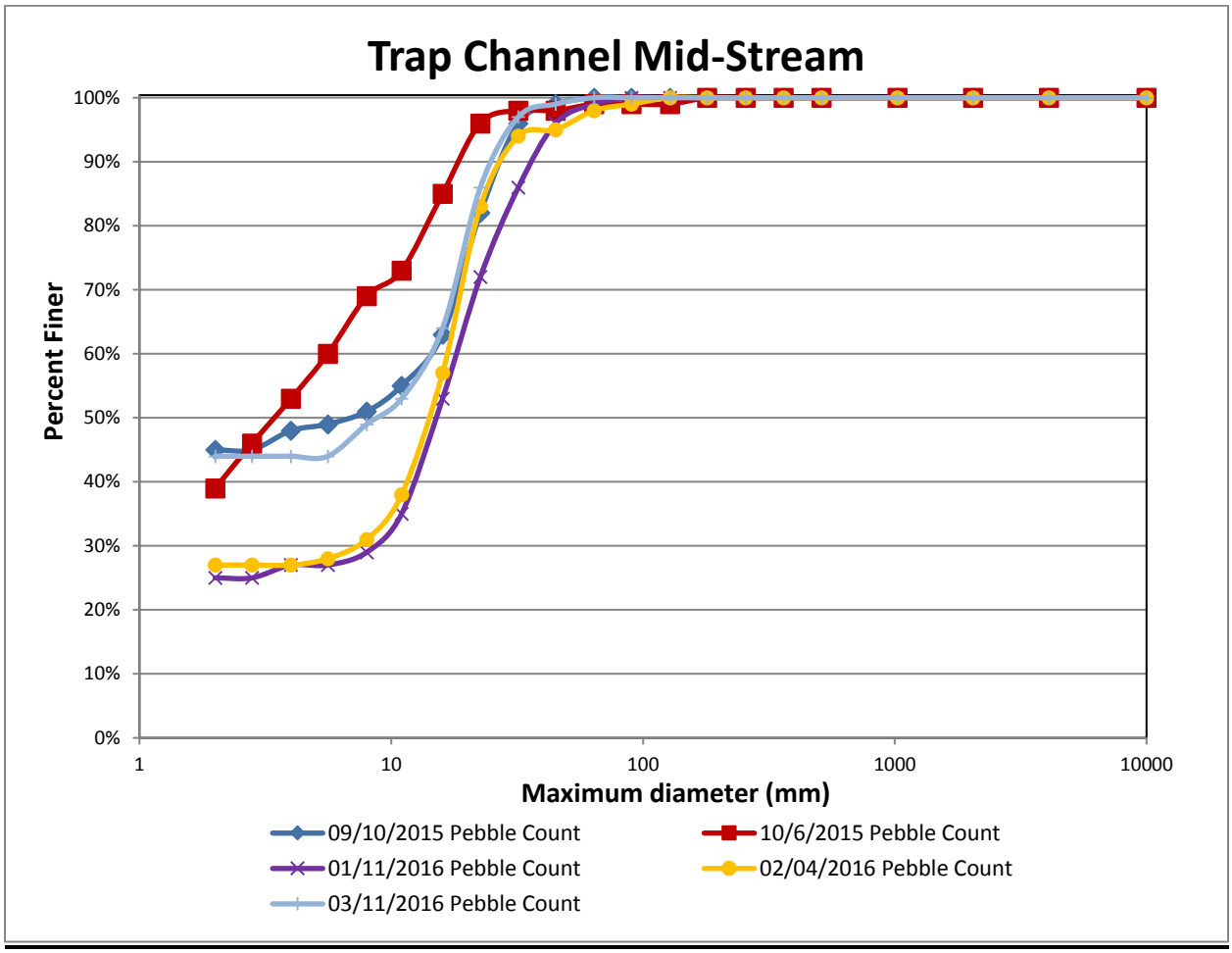
Trap Channel Mid-Stream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/6/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

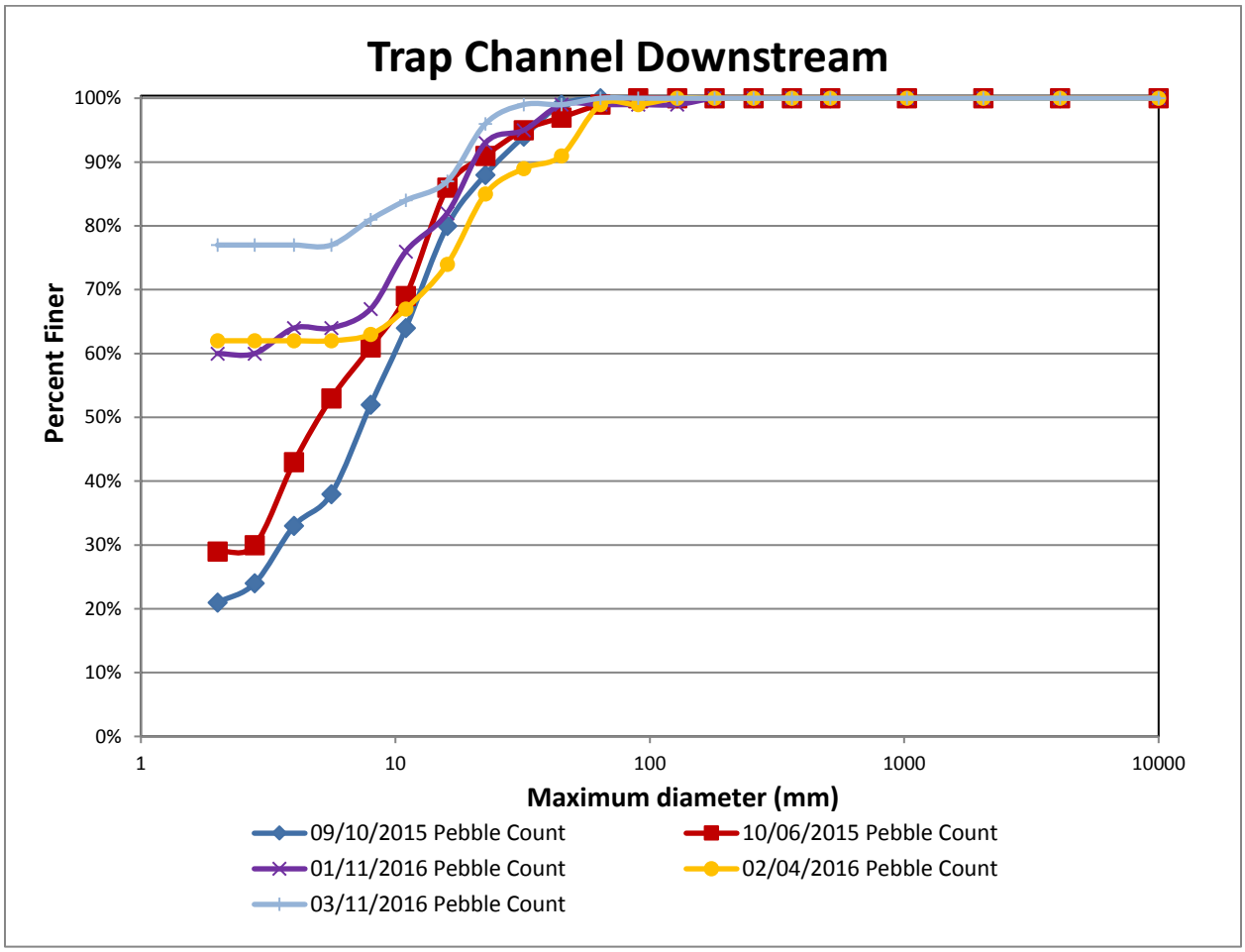
Trap Channel Downstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

Carrol Canyon – Black Mountain:

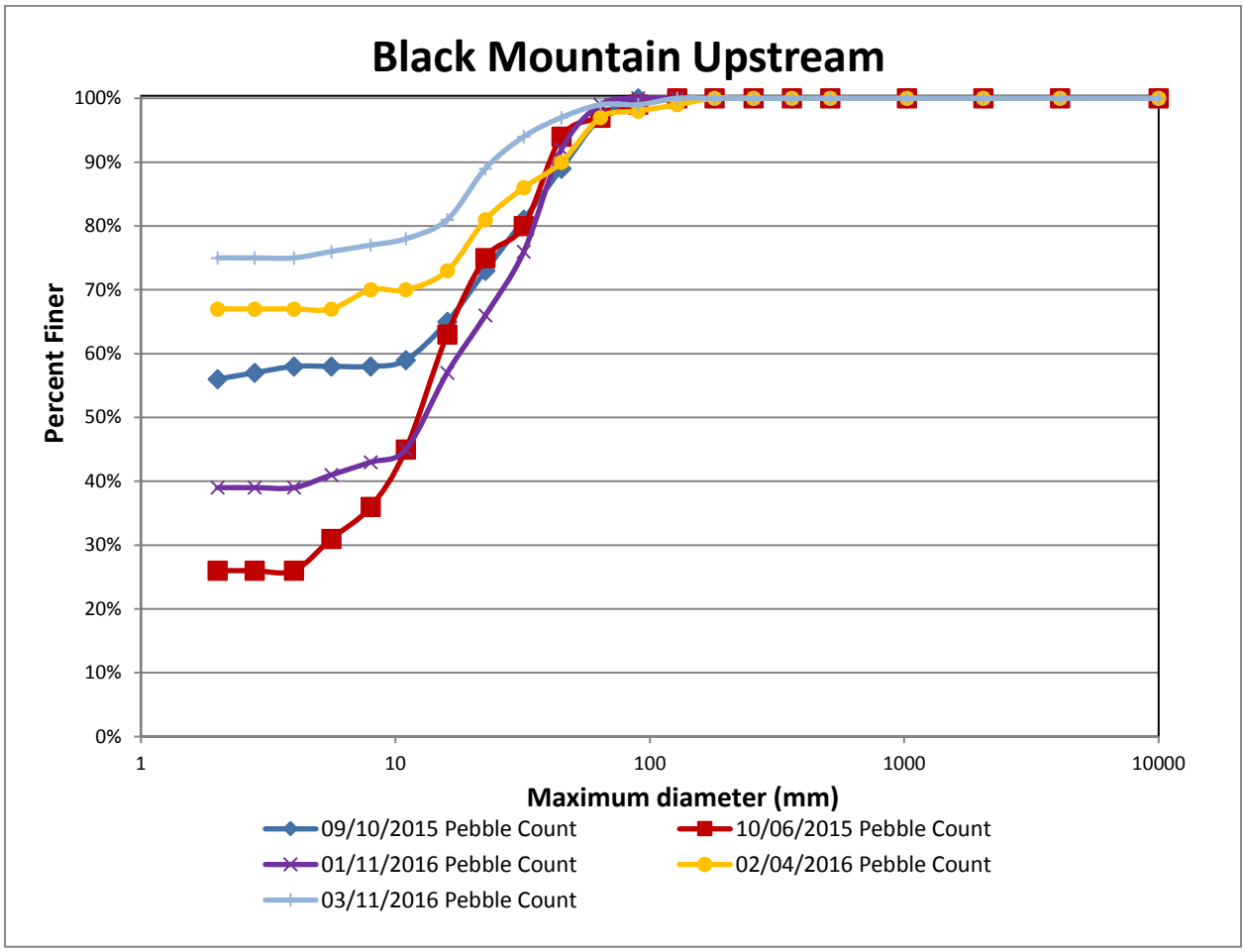

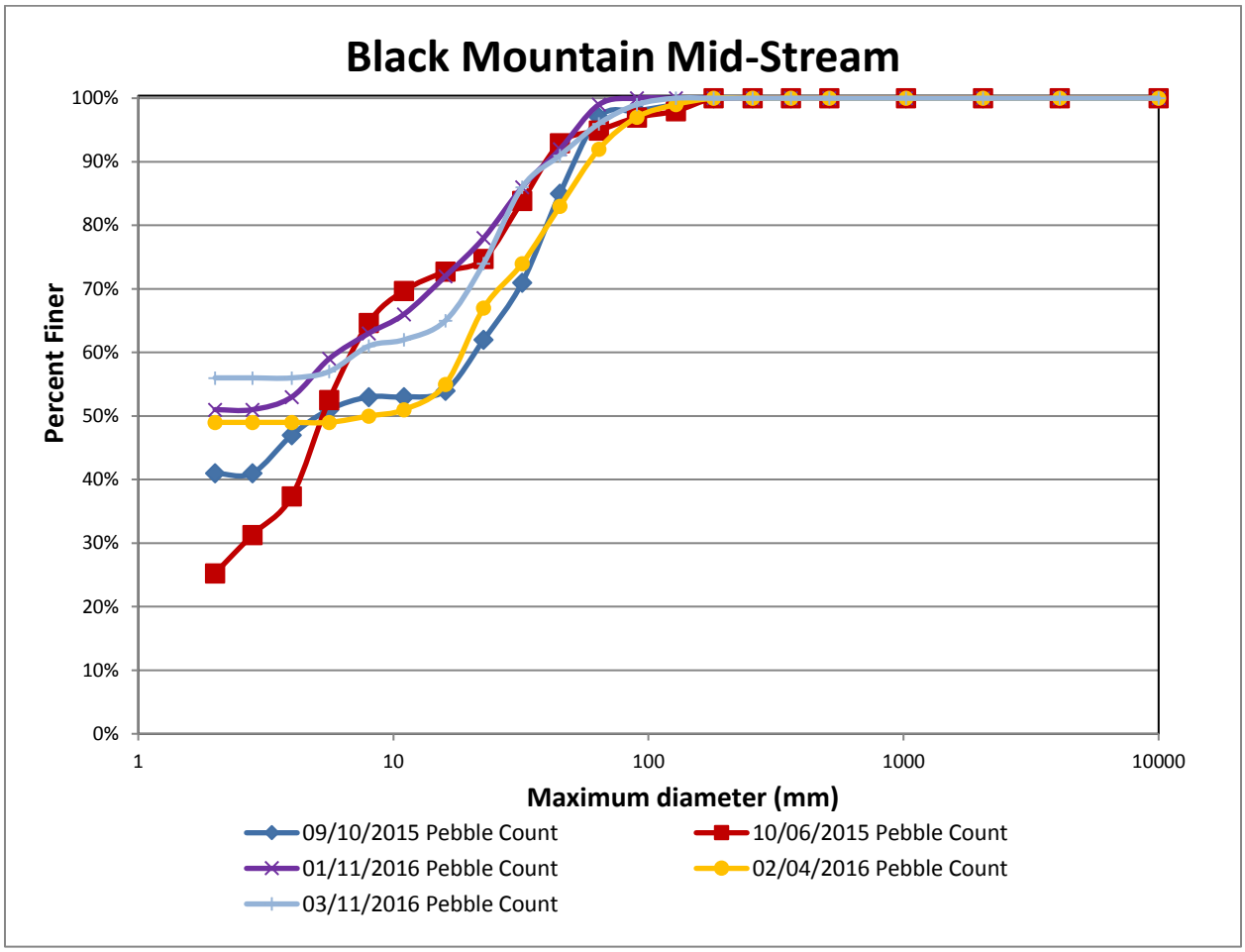
Black Mountain Mid-Stream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

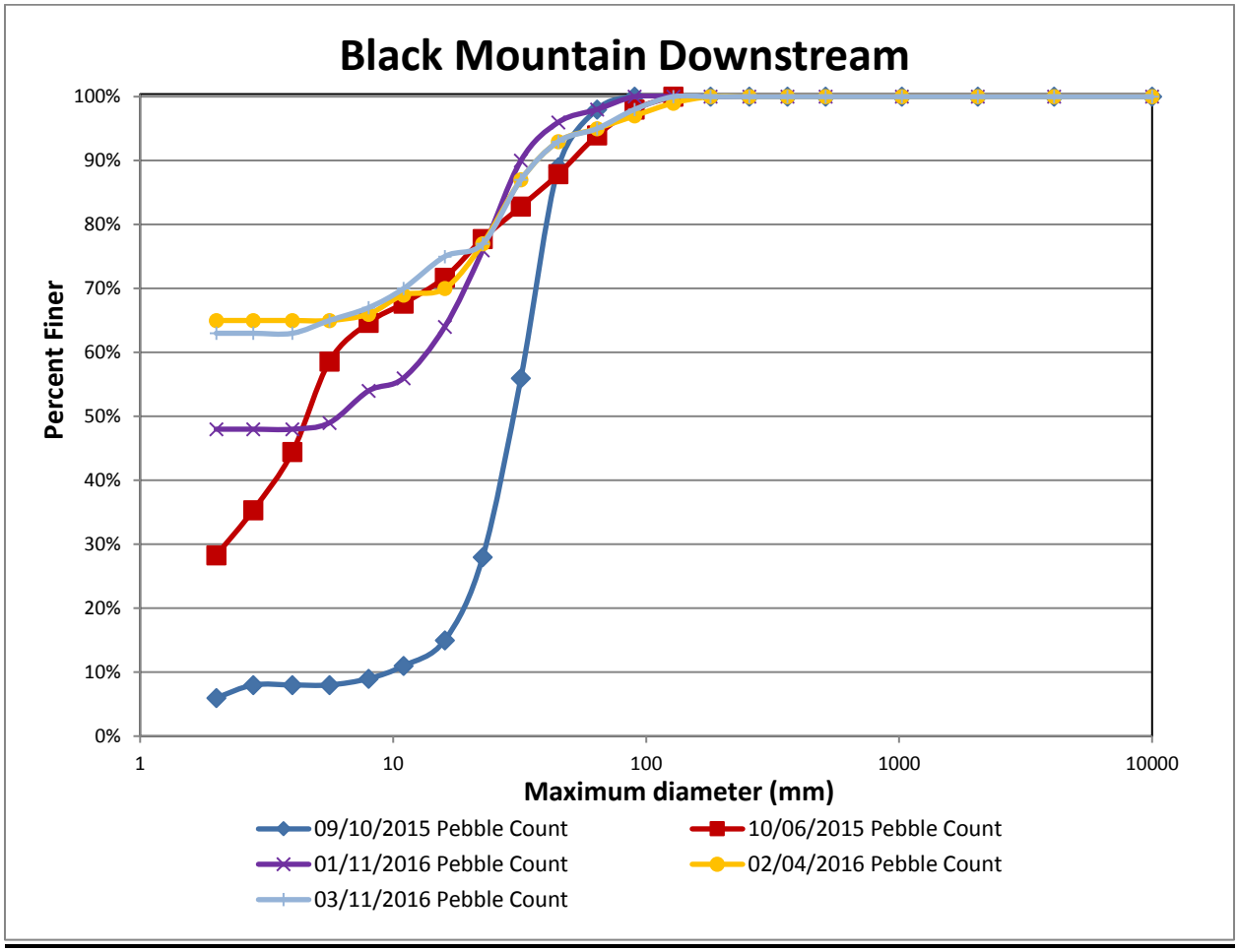
Black Mountain Downstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

Los Peñasquitos – North City:

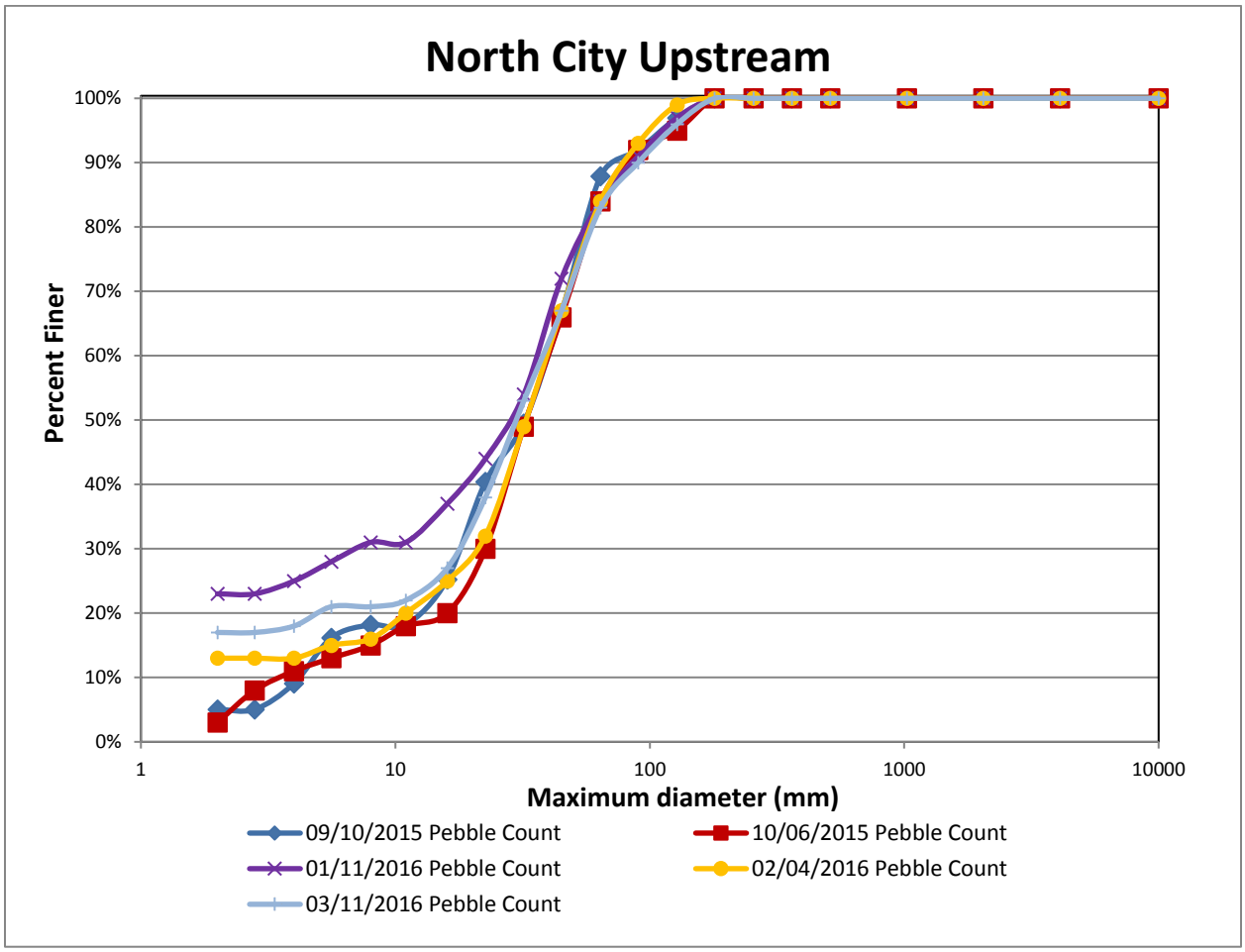

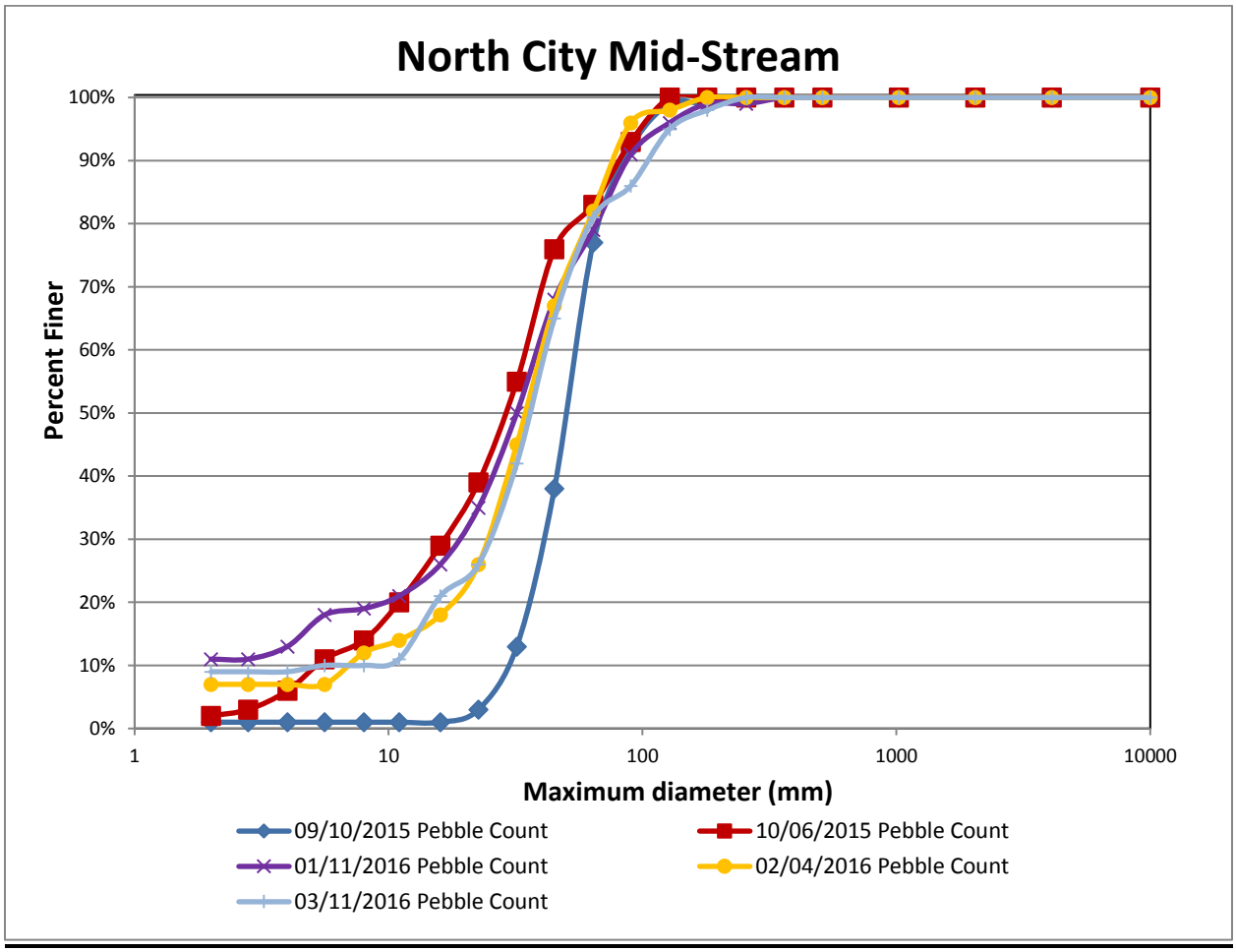
North City Mid-Stream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

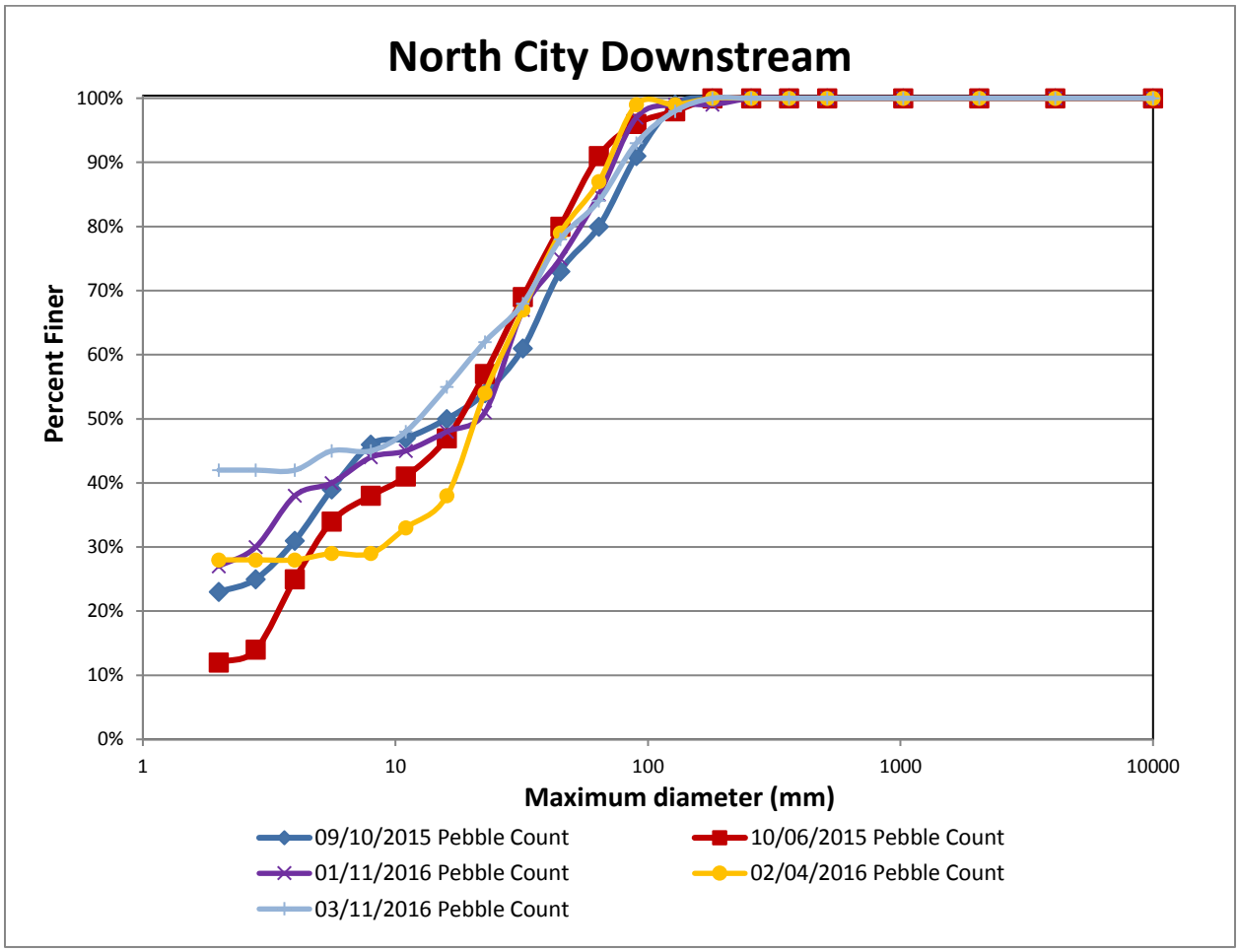
North City Downstream
Percent Finer
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
10
100
1000
10000
Maximum diameter (mm)
09/10/2015 Pebble Count
10/06/2015 Pebble Count
01/11/2016 Pebble Count
02/04/2016 Pebble Count
03/11/2016 Pebble Count

APPENDIX E
STREAMBED PHOTOGRAPH LOG

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Arizona Crossing Bedload Monitoring Location	
Facing Downstream	Facing Upstream
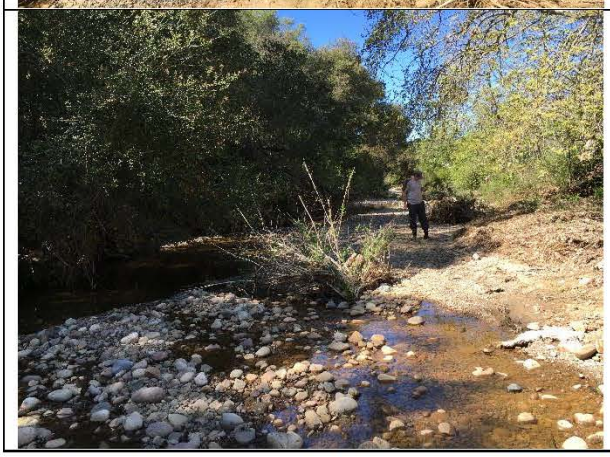	

Black Mountain Bedload Monitoring Location	
Facing Downstream	Facing Upstream
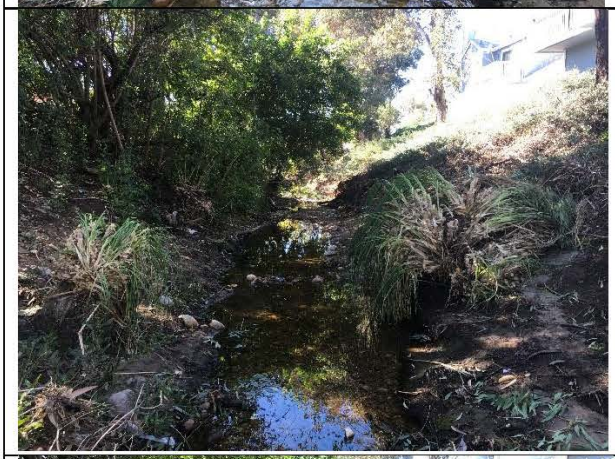	
	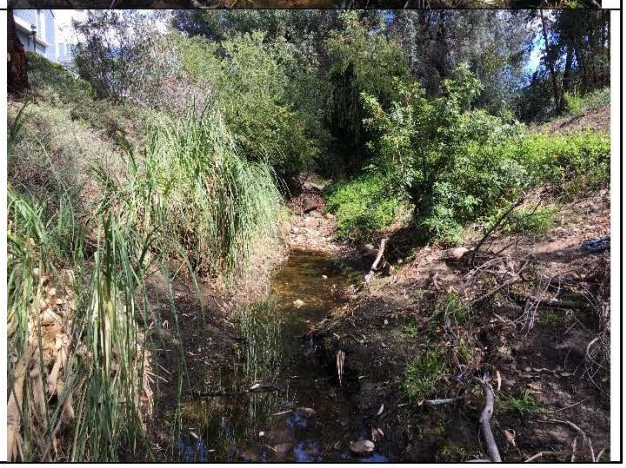

Nancy Ridge Bedload Monitoring Site	
Facing Downstream	Facing Upstream
	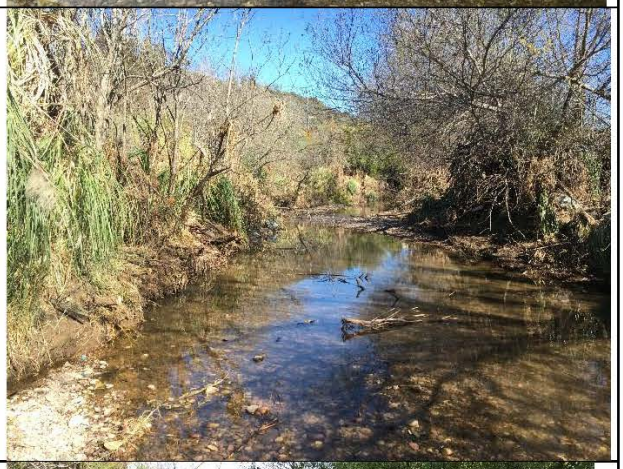

Trap Channel Bedload Monitoring Site	
Facing Downstream	Facing Upstream
	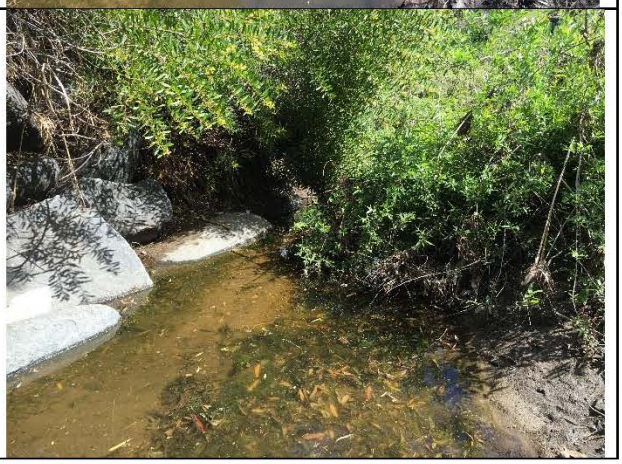

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AERIAL DEPOSITION TECHNICAL MEMORANDUM

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ACRONYMS AND ABBREVIATIONS

%	percent
µg	microgram
µm	micrometer
AMEC	Amec Foster Wheeler plc
CC-CC	Carroll Canyon (used for Site ID)
CC-DM	Reference – Del Mar (used for Site ID)
CC-DW	Carroll Canyon – Downwind (used for Site ID)
CC-ER	Carroll Canyon – Eco Rentals (used for Site ID)
CC-MP	Carroll Canyon – Maddox Park (used for Site ID)
CC-SF	Carroll Canyon – Camino Santa Fe (used for Site ID)
CC-SR	Carroll Canyon – Scripps Ranch (used for Site ID)
CC-UP	Carroll Canyon – Upwind (used for Site ID)
CFR	*Code of Federal Regulations*
CV_CD	Carmel Valley – Camino Del Sur (used for Site ID)
FRM	Federal Reference Method
FRM sampler	BGI PQ100 PM_{10} Federal Reference Method sampler
ID	Identification
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
LP-PO	Los Peñasquitos – Poway (used for Site ID)
LP-PR	Los Peñasquitos – Preserve (used for Site ID)
mg/m^3	milligrams per cubic meter
NAAQS	National Ambient Air Quality Standards (40 CFR Part 50)
Optical monitor	TSI Dusttrack™ II model 8530 continuous particulate monitor
PM_{10}	airborne particulate matter with a diameter of 2.5 to 10 micrometers
RPD	relative percent difference
SDRWQCB	San Diego Regional Water Quality Control Board
Sediment TMDL	Resolution Number R9-2012-0033: *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon* (SDRWQCB, 2012)
USEPA	U.S. Environmental Protection Agency
Watershed	Los Peñasquitos Lagoon Watershed
Watershed Special Study	*Los Peňasquitos Watershed Management Area Sediment Load Special Study Monitoring Report* (Amec Foster Wheeler, 2016)
WMA	watershed management area

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1.0 AERIAL DEPOSITION MONITORING OVERVIEW

This Technical Memorandum summarizes the Phase II aerial deposition monitoring conducted as part of the Los Peñasquitos Watershed Management Area (WMA) Sediment Load Special Study (Watershed Special Study) for Fiscal Year 2016 (FY16) (July 1, 2015 – June 30, 2016). Phase one occurred during FY 2015 (FY15) (July 1, 2014 – June 30, 2015).

Monitoring Schedule. In agreement with the *Los Peñasquitos Watershed Management Area Sediment Load Special Study Monitoring Plan* (Amec Foster Wheeler, 2016), ambient air quality was monitored during FY16 for particulate matter from 2.5 to 10 micrometers in diameter (PM_{10}). Monitoring was conducted at eleven monitoring locations located within and around the greater Los Peñasquitos WMA with an emphasis on the Carroll Canyon Creek subwatershed. Monitoring locations are distributed by one location in Del Mar, seven in the Carroll Canyon Creek subwatershed, two in the Los Peñasquitos Creek subwatershed, and one in the Carmel Valley Creek subwatershed. Each of the three monitored dry weather events had three discrete 24-hour sampling periods. For every sampling event, one sampling period was conducted on a weekend; the other two on weekdays.

Sampling Equipment. Aerial deposition sampling used two types of sampling equipment: (a) an optical TSI Dusttrack™ II model 8530 continuous concentration particulate size monitor (Optical), and (b) a filter-based BGI PQ100 PM_{10} Federal Reference Method sampler (FRM), designated No. RFPS-1298-124 by the U.S. Environmental Protection Agency (USEPA). Consistent with the Phase I implementation of the Watershed Special Study during FY15, Phase II continued to utilize three FRM samplers for reference at the same monitoring locations in conjunction with Optical monitors.

Comparison of Samplers. Deploying the Optical monitor and the FRM sampler synchronously provides reference data for the direct-reading Optical monitors with the USEPA-compliant ambient air monitoring filter-based FRM samplers. The FRM samples provide an air pollutant concentration in milligrams of pollutant per cubic meter at a sensed atmospheric pressure and temperature for the sampling period. The Optical monitor readings provide 5 minute interval direct-read concentrations and subsequent calculated mean concentrations using the same flow speed as the FRM. Using both sampling methods allows the potential bias of the Optical readings to be considered and potentially statistically adjusted, if needed, based off the FRM results. Relative percent difference (RPD) using the FRM as the reference value was calculated for each sampling period and shows the Optical values have a mean RPD of 108.44% compared to the FRM samples. Although the RPD is high, this is due to very low concentrations measured that are within 10 times the laboratory reporting limit and standard flow volume. RPD calculations for low concentrations such as those measured during this program mischaracterize what are actually very small differences in concentration.

Sampling Results. Findings of monitoring during FY16 indicate that the aerial contribution of sediment to the Los Peñasquitos WMA is negligible relative to sediment loads estimated during storm flows directly in the creeks, primarily associated with hydromodification and erosive characteristics of the WMA creek channels. Optical values were generally low and negligible with marginal increases around anthropogenic disturbances, particularly in the Carroll Canyon Creek

subwatershed. Results from all sampling events for both the 24-hour mean Optical concentrations and the gravimetric analysis from the FRM value sampled over 24-hours were below 0.6 micrograms per cubic meter.

2.0 AERIAL DEPOSITION MONITORING

This section provides an overview of the Phase II Watershed Special Study aerial deposition monitoring and objectives, including the sampling equipment, sampling methods, and sampling locations. For a complete discussion of this monitoring program, refer to the *Los Peñasquitos Watershed Management Area Sediment Load Special Study Monitoring Plan* (Amec Foster Wheeler, 2015).

2.1 MONITORING SCHEDULE

The monitoring schedule and activities were conducted in agreement with the *Los Peñasquitos Watershed Management Area Sediment Load Special Study Monitoring Plan* (Amec Foster Wheeler, 2015). Monitoring was conducted over the course of three dry weather events at eleven monitoring locations located within and around the greater Los Peñasquitos WMA. Monitoring locations are identified within their subwatershed and include five monitoring locations from the Phase I implementation in the Carroll Canyon Creek subwatershed, and an additional six monitoring locations as part of the Phase II implementation. Total monitoring locations are distributed with one in Del Mar (the reference monitoring location), seven in the Carroll Canyon Creek subwatershed, two in the Los Peñasquitos Creek subwatershed, and one in the Carmel Valley Creek subwatershed. Each of the three dry weather events had three discrete 24-hour sampling periods. For every sampling event, one sampling period was conducted on a weekend; the other two were conducted on weekdays. This was done to capture different conditions based on anthropogenic activities. Sampling for events 5 and 6 were conducted back-to-back based on planned demolition of the Del Mar City Hall building, which was the reference monitoring location. At the time of sampling, demolition was planned for February 2016.

Table 2-1 presents the monitoring schedule for each sampling event and 24-hour period over the course of the Phase II implementation of the Watershed Special Study.

2.2 SAMPLING METHODOLOGY AND EQUIPMENT

Two types of sampling equipment were used for this study: (a) an optical TSI Dusttrack™ II model 8530 continuous concentration particulate size monitor (Optical), and (b) a filter-based BGI PQ100 PM_{10} Federal Reference Method sampler (FRM), designated No. RFPS-1298-124 by the U.S. Environmental Protection Agency. Consistent with the Phase I implementation of the Watershed Special Study during FY15, Phase II continued to utilize three FRM samplers for reference at the same monitoring locations in conjunction with Optical monitors. Optical monitors were utilized at the eleven monitoring locations.

Table 2-1.
Phase II Monitoring Schedule 2015-2016

Monitoring Schedule	
Dry Weather 4[1]	
Dry Weather 4, Day 4	Wednesday, 11/18/2015 – Thursday, 11/19/2015
Dry Weather 4, Day 5	Saturday, 11/21/2015 – Sunday, 11/22/2015
Dry Weather 4, Day 6	Monday, 11/23/2015 – Tuesday, 11/24/2015
Dry Weather 5	
Dry Weather 5, Day 1	Saturday, 1/16/2016 – Sunday, 1/17/2016
Dry Weather 5, Day 2	Monday, 1/18/2016 – Tuesday, 1/19/2016
Dry Weather 5, Day 3	Wednesday, 1/20/2016 – Thursday, 1/21/2016
Dry Weather 6	
Dry Weather 6, Day 1	Saturday, 1/23/2016 – Sunday, 1/24/2016
Dry Weather 6, Day 2	Monday, 1/25/2016 Tuesday, 1/26/2016
Dry Weather 6, Day 3	Wednesday, 1/27/2016 – Thursday, 1/28/2016

[1]Due to equipment failures on days 1, 2, and 3, sampling was required to continue. Successful sampling occurred on days 4, 5, and 6, after equipment unit changes were made.

The Optical monitors have a PM_{10} fitting over the inlet that allows sampling of aerodynamic diameters of 10 micrometers (µm) or less (PM_{10}). The instrument draws a continuous aerosol stream through the impaction inlet where particles with a greater than 10 µm are removed. The sample stream then passes through a sensing chamber where it is intersected by light emitted from a laser diode. The particles in the sample stream scatter light in all directions and a photodetector measures the proportional mass concentration by internal electronics (Chung et al., 2001). An additional autozero module was placed over the inlet that zero calibrates the meter on a 4-hour interval. This autozero module will align the zero calibration point with the calibration reference dust in order to combat the zero drift that was observed to occur periodically during the Phase I implementation, which resulted in a significant percentage of lost valid measurements during FY15. The samplers were programmed to record at 5-minute intervals within a 24 hour period for a total of 288 readings per sampling period. Recorded values are presented in a concentration versus time graphical representation and statistically summarized in Section 2.1. Statistical analysis of the Optical monitors evaluates the total number of optical measurements compared to valid optical measurements, the minimum and maximum Optical values, and the mean value over each 24-hour sampling period for each sampling event and the overall mean for the Phase II implementation of the Watershed Special Study. Non-valid optical measurements occur when the final reading is negative or there was no reading due to equipment failure.

The FRM sampler is a well impactor ninety-six (WINS impactor) followed by a Teflon® filter. Particles in the sample stream with an aerodynamic diameter greater than 10 µm are captured by the WINS impactor, while smaller particles are collected on the downstream 46-millimeter (mm) Teflon® filter. The concentration of airborne particulate matter was determined by pre- and post-weighing of the Teflon filter and then dividing the accumulated mass by the volume of air that was sampled (Chung et al., 2001).

The relative percent difference (RPD) between the two sampling methods used during this study was calculated to detect differences between their monitoring methods. Utilizing the two methods simultaneously, the monitoring program complied with the ambient monitoring standards of the U.S. Environmental Protection Agency (USEPA) and provides a reference value in conjunction with direct-read measurements.

Relative Percent Difference for this study is calculated by taking the absolute difference between the Optical monitor value and the FRM reference value divided by the value of their arithmetic mean. This is then multiplied by 100.

$$\%RPD = \left(\frac{|X1 - X2|}{\bar{X}}\right) \times 100$$

X1 = (reference value), FRM sampler value

X2 = Optical Monitor value

X = Arithmetic Mean of all X values

2.2.1 Use of Optical (Continuous Concentration) Monitors

The Optical monitors were used at all eleven monitoring locations and programmed to collect readings at 5-minute intervals. These readings can be observed individually to observe trends, as well as be averaged or a 24-hour period. The meters are calibrated within the design limits (once per year) of the recommended calibration period for operation to Arizona1 test dust[1]. An additional event-specific baseline test was performed in a closed environment to assess the differences in output of the individual Optical monitors over a 24-hour period during this period. The baseline test correction was applied to each raw Optical value. Additionally, each raw Optical value was corrected utilizing the ambient aerosol density correction ratio of Optical concentrations over the Arizona1 test dust reference concentration, as established by Wallace et al (2011).

The correction factors resulting from the baseline test and Wallace et al. (2011) are presented in Table 2-2.

[1] The Arizona1 test dust provides a calibration of the sampler and the average density of ambient aerosols as presented by *Validation of Continuous Particle Monitors for Personal, Indoor and outdoor Exposures,* Lance Wallace et.al. (2011).

Table 2-2.
Optical monitor Correction Factors

Site Name	Correction to Optical Monitor
Baseline Correction for Event 4 (mg/m^3)	
CC-CC (Carroll Canyon)	-0.000968184
CC-DM (Reference - Del Mar)	-0.000507218
CC-DW (Carroll Canyon- Downwind)	0.002608024
CC-ER (Carroll Canyon - Eco Rentals)	-0.002268842
CC-MP (Carroll Canyon - Maddox Park)	-0.001280036
CC-SF (Carroll Canyon - Camino Santa Fe)	0.004336649
CC-SR (Carroll Canyon - Scripps Ranch)	0.000652634
CV-CD (Carmel Valley - Camino Del Sur)	-0.000964467
LP-PO (Los Peñasquitos - Poway)	0.000399069
LP-PR (Los Peñasquitos - Preserve)	-0.000929289
Baseline Correction for Event 5 and 6 (mg/m^3)	
CC-CC (Carroll Canyon)	-0.005477466
CC-DM (Reference - Del Mar)	-0.007231789
CC-DW (Carroll Canyon- Downwind)	0.02769846
CC-ER (Carroll Canyon - Eco Rentals)	-0.0030608
CC-MP (Carroll Canyon - Maddox Park)	-0.00318117
CC-SF (Carroll Canyon - Camino Santa Fe)	-0.005045089
CC-SR (Carroll Canyon - Scripps Ranch)	0.000152163
CV-CD (Carmel Valley - Camino Del Sur)	-0.004727466
LP-PO (Los Peñasquitos - Poway)	-0.003218207
LP-PR (Los Peñasquitos - Preserve)	-0.002107096
CC-CC (Carroll Canyon)	0.00619846
Wallace et al, *Ambient Aerosol Density Correction*	
$Gravimetric\ Concentration\ or\ Actual\ Concentration, \frac{\mu g}{m^3} = \frac{DustTrak\ Concentration}{2.64}$	

µg = micrograms; mg = milligrams; m^3 = cubic meter

2.2.2 Use of Federal Reference Method Samplers

The filter-based FRM samplers were used at three of the eleven monitoring locations during the Special Study. Each filter was analyzed by gravimetric analyses for PM_{10} by Title 40 Code of Federal Regulations (40 CFR) Part 50 Appendix J, was conducted by Eurofins Air Toxics, Inc., Laboratories, a laboratory certified by the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC) 17025:2005, located in Folsom, California. The final net weight of the gravimetric analysis can be calculated with the total sensed flow to produce an air pollutant concentration in parts per million by volume. Laboratory reports are presented in Appendix A.

2.3 MONITORING LOCATIONS

Details of the eleven monitoring locations are presented in Table 2-3 and include the site name, subwatershed, site ID and the approximate latitude and longitude. Figure 2-1 presents the monitoring locations throughout the WMA.

The eleven monitoring locations during Phase II are described below.

CC-CC (Carroll Canyon): This station is at an elevated location within the Carroll Canyon Creek channel, off Roselle Street near the Carroll Canyon Sediment TMDL monitoring location.

CC-DM (Reference - Del Mar): This station is on top of Del Mar City Hall near the corner of 11th Street and Camino Del Mar. This is the reference site for the aerial deposition portion of the Watershed Special Study, and was selected as a station away from anthropogenic influence during the prevalent weather patterns. This location is slightly outside of the WMA; however, it was deemed as a suitable, representative location for minimal to no anthropogenic disturbance. Furthermore, wind patterns are not bound to WMA boundaries in the same ways hydrology is bound.

CC-DW (Carroll Canyon - Downwind): This station is on top of San Diego Fire Station 44 at the intersection of Black Mountain Road and Maya Linda Road.

CC-ER (Carroll Canyon – Eco Rentals): This station is located at the northwest corner on top of the facility housing Eco Rentals Solutions and other businesses located at 7340 Trade Street and overlooks the aggregate mine and Carroll Canyon Creek to the north.

CC-MP (Carroll Canyon – Maddox Park): This station is at an elevated location at the southwest corner of Maddox Park, off Flanders Drive and northwest of Jonas Salk Elementary School.

CC-SF (Carroll Canyon – Camino Santa Fe): This station is at an elevated location to the west of the intersection of Camino Ruiz and Carroll Canyon Road, adjacent to the walking path and Carroll Canyon Creek.

CC-SR (Carroll Canyon – Scripps Ranch): This station is at an elevated location in Scripps Ranch at the northern end cul-de-sac of Rue Biarritz.

CC-UP (Carroll Canyon - Upwind): This station is located on top of San Diego Fire Station 41 near the corner where Scranton Road turns into Carroll Canyon Road.

CV-CD (Carmel Valley – Camino Del Sur): This station is at an elevated location on top of an outfall structure southwest of the intersection of Camino Del Sur and Torrey Santa Fe Road.

LP-PO (Los Peñasquitos - Poway): This station is at an elevated location in Poway at the southern end Cul-De-Sac of Bowron Road.

LP-PR (Los Peñasquitos - Preserve): This station is at an elevated location centrally located within the Los Peñasquitos Preserve, north of the waterfall site.

Table 2-3.
Phase I and II Aerial Deposition Sampling Locations in Los Peñasquitos Watershed Management Area

Site Name	Subwatershed	Site ID	Latitude	Longitude
USEPA Federal Reference Method (FRM) Monitoring Stations[1]				
Reference - Del Mar	Los Peñasquitos Lagoon	CC-DM[2]	32.95497	-117.26404
Carroll Canyon - Upwind	Carroll Canyon Creek	CC-UP	32.89019	-117.20006
Carroll Canyon - Downwind	Carroll Canyon Creek	CC-DW	32.90134	-117.12352
Optical monitor Method Monitoring Stations				
Carroll Canyon - Optical[3]	Carroll Canyon Creek	CC-CC	32.89794	-117.22160
Reference - Del Mar[3]	Los Peñasquitos Lagoon	CC-DM[2]	32.95497	-117.26404
Carroll Canyon – Downwind[3]	Carroll Canyon Creek	CC-DW	32.90134	-117.12352
Carroll Canyon – Eco Rentals[4]	Carroll Canyon Creek	CC-ER	32.89016	-117.16418
Carroll Canyon – Maddox Park[4]	Carroll Canyon Creek	CC-MP	32.90592	-117.15722
Carroll Canyon – Camino Santa Fe[4]	Carroll Canyon Creek	CC-SF	32.89814	-117.17733
Carroll Canyon – Scripps Ranch[3]	Carroll Canyon Creek	CC-SR	32.90038	-11707338
Carroll Canyon – Upwind[3]	Carroll Canyon Creek	CC-UP	32.89019	-117.20006
Carmel Valley – Camino Del Sur	Carmel Valley Creek	CV-CD	32.95640	-117.15349
Los Peñasquitos - Poway	Los Peñasquitos Creek	LP-PO	32.95236	-117.04531
Los Peñasquitos - Preserve	Los Peñasquitos Creek	LP-PR	32.92701	-117.177333

[1]USEPA = U.S. Environmental Protection Agency
[2]Reference – Del Mar is located in the Los Peñasquitos Lagoon subwatershed, yet uses the CC-DM nomenclature that suggests otherwise in order to be consistent with Phase I monitoring.
[3]Sites monitored during the Phase I Watershed Special Study for Aerial Deposition.
4Additional sites added to the monitoring program by the City of San Diego. Resources for these additional sites was provided by the City of San Diego, not by RA supported efforts.

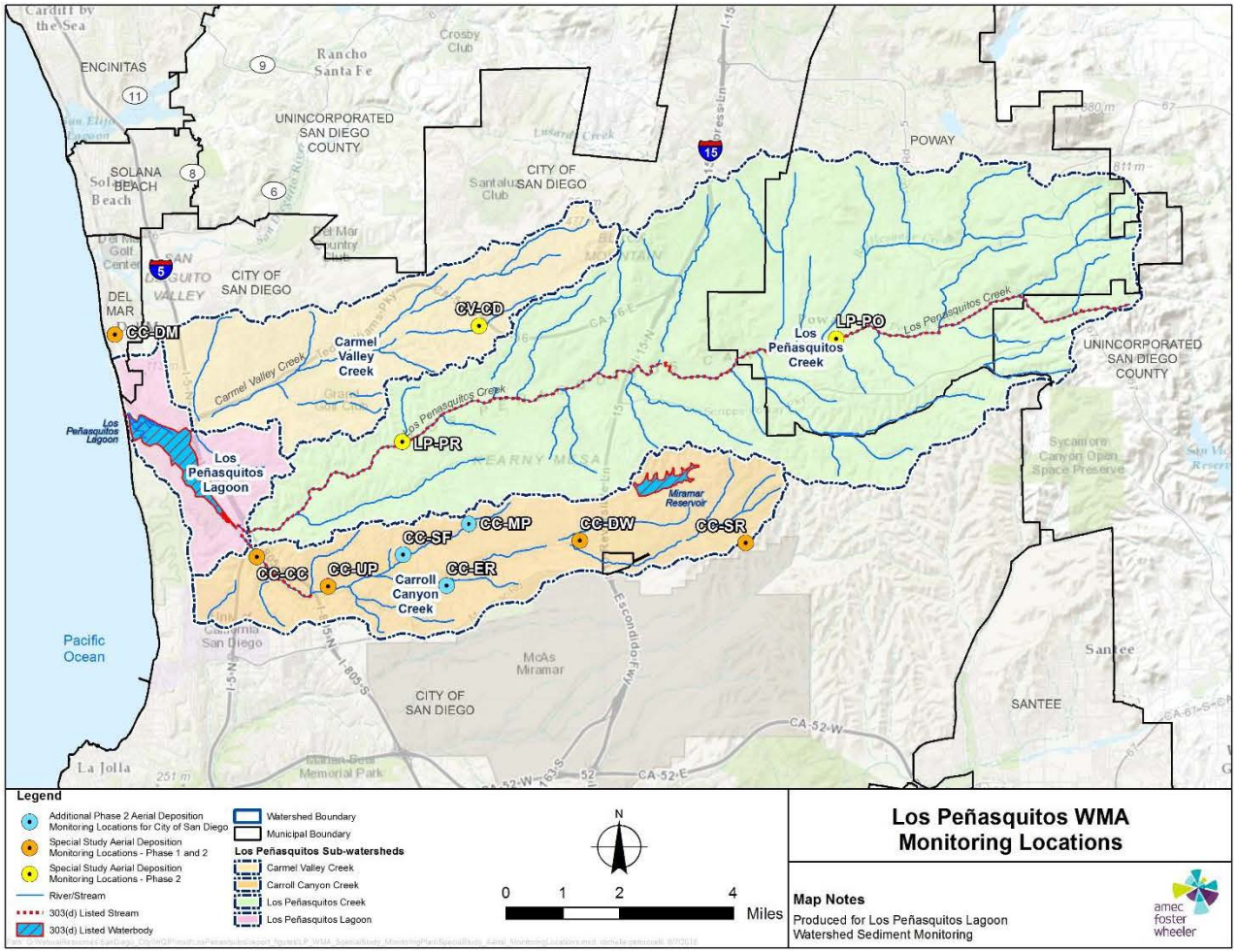

Figure 2-1.
Phase I Aerial Deposition Sampling Locations in Los Peñasquitos Watershed Management Area

3.0 MONITORING RESULTS

This section presents the results of the Phase II aerial deposition monitoring conducted as part of the Watershed Special Study. Summary tables are presented in Tables 3-1 through 3-5 and are organized by the 24-hour sampling period day, the sampling event, and the totals for each sampling event, and for the overall Phase II implementation of the Watershed Special Study.

Sampling event results presented in Section 3.2 provide the quantitative data of ambient PM_{10} using the Optical monitor and the FRM sampler methods organized by monitoring location for each sampling event. Meteorological conditions are summarized using wind roses and are presented in conjunction with graphs for Optical monitoring concentration versus time.

3.1 SUMMARY DATA

Section 3.1 presents the summary data for sampling events Dry Weather 4 through Dry Weather 6. This data is presented as mean and total values for each 24 hour sampling period, sampling event, and through the entire Watershed Special Study. Additionally, mean and total values are presented for each monitoring location.

Summary totals and mean values for each sampling event are presented in Table 3-1 through Table 3-3. Totals and mean values for the entire monitoring period are presented in Table 3-4. Totals and mean values for each monitoring location are presented in Table 3-5.

Table 3-1.
Dry Weather 4 Summary

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
CC-CC (Carroll Canyon)									
Dry Weather 4, Day 4	11/20/2015	288	288	0.0019	0.0136	0.0019	0.0062	N/A	N/A
Dry Weather 4, Day 5	11/22/2014	288	288	0.00001	0.0057	0.0011	0.0028	N/A	N/A
Dry Weather 4, Day 6	11/24/2014	288	288	0.0023	0.0125	0.0026	0.0065	N/A	N/A
Totals/Averages	--	864	864	0.0014	0.0106	0.0019	0.0051	N/A	N/A
RF-DM (Reference - Del Mar)									
Dry Weather 4, Day 4	11/20/2015	288	288	0.0009	0.0199	0.0035	0.0065	0.0291	126.51
Dry Weather 4, Day 5	11/22/2014	288	288	0.0006	0.0210	0.0029	0.0032	0.0166	134.97
Dry Weather 4, Day 6	11/24/2014	288	288	0.0021	0.0222	0.0039	0.0075	0.0266	111.60
Totals/Averages	--	864	864	0.0012	0.0210	0.0034	0.0058	0.0241	124.36
CC-DW (Carroll Canyon- Downwind)									
Dry Weather 4, Day 4	11/20/2015	288	288	0.0025	0.0142	0.0022	0.0049	0.0249	133.93
Dry Weather 4, Day 5	11/22/2014	288	288	0.0017	0.0332	0.0023	0.0033	0.0166	133.47
Dry Weather 4, Day 6	11/24/2014	288	288	0.0010	0.0139	0.0018	0.0060	0.0374	144.42
Totals/Averages	--	864	864	0.0017	0.0204	0.0021	0.0048	0.0263	137.27
CC-ER (Carroll Canyon - Eco Rentals)									
Dry Weather 4, Day 4	11/20/2015	288	288	0.0013	0.0570	0.0066	0.0079	N/A	N/A
Dry Weather 4, Day 5	11/22/2014	288	245	0.0003	0.0067	0.0012	0.0015	N/A	N/A
Dry Weather 4, Day 6	11/24/2014	288	288	0.0022	0.0329	0.0034	0.0062	N/A	N/A
Totals/Averages	--	864	821	0.0013	0.0322	0.0037	0.0052	N/A	N/A
CC-MP (Carroll Canyon - Maddox Park)									
Dry Weather 4, Day 4	11/20/2015	288	248	0.0002	0.0153	0.0037	0.0057	N/A	N/A
Dry Weather 4, Day 5	11/22/2014	288	262	0.0003	0.0332	0.0039	0.0038	N/A	N/A

Table 3-1.
Dry Weather 4 Summary (continued)

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
Dry Weather 4, Day 6	11/24/2014	288	288	0.0022	0.0154	0.0030	0.0064	N/A	N/A
Totals/Averages	--	864	798	0.0009	0.0213	0.0036	0.0053	N/A	N/A
CC-SF (Carroll Canyon - Camino Santa Fe)									
Dry Weather 4, Day 4	11/20/2015	288	288	0.0032	0.0354	0.0056	0.0088	N/A	N/A
Dry Weather 4, Day 5	11/22/2014	288	288	0.0024	0.0134	0.0010	0.0042	N/A	N/A
Dry Weather 4, Day 6	11/24/2014	288	288	0.0016	0.0145	0.0026	0.0069	N/A	N/A
Totals/Averages	--	864	864	0.0024	0.0211	0.0031	0.0066	N/A	N/A
CC-SR (Carroll Canyon - Scripps Ranch)									
Dry Weather 4, Day 4	11/20/2015	288	266	0.0002	0.0037	0.0008	0.0016	N/A	N/A
Dry Weather 4, Day 5	11/22/2014	288	288	0.0002	0.0043	0.0011	0.0018	N/A	N/A
Dry Weather 4, Day 6	11/24/2014	288	288	0.0002	0.0124	0.0025	0.0040	N/A	N/A
Totals/Averages	--	864	842	0.0002	0.0068	0.0015	0.0025	N/A	N/A
CC-UP (Carroll Canyon - Upwind)									
Dry Weather 4, Day 4	11/20/2015	288	262	0.00001	0.0277	0.0051	0.0071	0.0291	121.53
Dry Weather 4, Day 5	11/22/2014	288	262	0.0000	0.0118	0.0015	0.0030	0.0125	121.90
Dry Weather 4, Day 6	11/24/2014	288	288	0.0019	0.0125	0.0022	0.0059	0.2163	189.41
Totals/Averages	--	864	812	0.0006	0.0173	0.0030	0.0053	0.0860	144.2778
CV-CD (Carmel Valley - Camino Del Sur)									
Dry Weather 4, Day 4	11/20/2015	288	288	0.0005	0.0070	0.0016	0.0031	N/A	N/A
Dry Weather 4, Day 5	11/22/2014	288	288	0.0002	0.0043	0.0011	0.0018	N/A	N/A
Dry Weather 4, Day 6	11/24/2014	288	288	0.0013	0.0096	0.0018	0.0046	N/A	N/A
Totals/Averages	--	864	864	0.0007	0.0070	0.0015	0.0032	N/A	N/A
LP-PO (Los Penasquitos - Poway)									

Table 3-1.
Dry Weather 4 Summary (continued)

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
Dry Weather 4, Day 4	11/20/2015	288	288	0.0000	0.0136	0.0032	0.0040	N/A	N/A
Dry Weather 4, Day 5	11/22/2014	288	288	0.0000	0.0152	0.0031	0.0040	N/A	N/A
Dry Weather 4, Day 6	11/24/2014	288	288	0.0004	0.0117	0.0028	0.0056	N/A	N/A
Totals/Averages	--	864	864	0.0001	0.0135	0.0030	0.0045	N/A	N/A
LP-PR (Los Penasquitos - Preserve)									
Dry Weather 4, Day 4	11/20/2015	288	225	0.0003	0.0072	0.0018	0.0042	N/A	N/A
Dry Weather 4, Day 5	11/22/2014	288	226	0.0003	0.0041	0.0009	0.0024	N/A	N/A
Dry Weather 4, Day 6	11/24/2014	288	265	0.0015	0.1003	0.0117	0.0095	N/A	N/A
Totals/Averages	--	864	716	0.0007	0.0372	0.0048	0.0054	N/A	N/A
Dry Weather 4 (DW4) Totals									
Totals/Averages	--	9504	9173	0.0010	0.0190	0.0029	0.0049	0.0455	135.3040

Notes: Values Not Available = "--", Not Applicable = N/A. Data from Days 1 through 3 are not included for presentation due to equipment failure during this monitoring period. *Reference value for Relative Percent Difference (PDF) calculation is the FRM value. ** milligrams of pollutant per cubic meter of air at sensed atmospheric pressure and temperature.

Table 3-2.
Dry Weather 5 Summary

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
CC-CC (Carroll Canyon)									
Dry Weather 5, Day 1	1/17/2016	288	282	0.0002	0.0233	0.0062	0.0107	N/A	N/A
Dry Weather 5, Day 2	1/19/2016	288	288	0.00020	0.0180	0.0039	0.0047	N/A	N/A
Dry Weather 5, Day 3	1/21/2016	288	218	0.0002	0.0248	0.0069	0.0105	N/A	N/A
Totals/Averages	--	864	788	0.0002	0.0220	0.0057	0.0086	N/A	N/A
RF-DM (Reference - Del Mar)									
Dry Weather 5, Day 1	1/17/2016	288	288	0.0014	0.0230	0.0057	0.0093	0.0316	108.66
Dry Weather 5, Day 2	1/19/2016	288	288	0.0007	0.0753	0.0080	0.0116	0.0474	121.21
Dry Weather 5, Day 3	1/21/2016	288	283	0.0007	0.0325	0.0074	0.0111	0.0042	90.66
Totals/Averages	--	864	859	0.0009	0.0436	0.0070	0.0107	0.0277	106.84
CC-DW (Carroll Canyon - Downwind)									
Dry Weather 5, Day 1	1/17/2016	288	288	0.0120	0.0351	0.0072	0.0234	0.0128	58.33
Dry Weather 5, Day 2	1/19/2016	288	288	0.0023	0.0258	0.0061	0.0086	0.0128	39.00
Dry Weather 5, Day 3	1/21/2016	288	288	0.0112	0.0321	0.0052	0.0184	0.0128	36.16
Totals/Averages	--	864	864	0.0085	0.0310	0.0062	0.0168	0.0128	44.50
CC-ER (Carroll Canyon - Eco Rentals)									
Dry Weather 5, Day 1	1/17/2016	288	288	0.0015	0.0208	0.0057	0.0102	N/A	N/A
Dry Weather 5, Day 2	1/19/2016	288	281	0.0004	0.0284	0.0052	0.0057	N/A	N/A
Dry Weather 5, Day 3	1/21/2016	288	218	0.0004	0.0204	0.0049	0.0092	N/A	N/A
Totals/Averages	--	864	787	0.0007	0.0232	0.0053	0.0084	N/A	N/A
CC-MP (Carroll Canyon - Maddox Park)									
Dry Weather 5, Day 1	1/17/2016	288	283	0.0003	0.0291	0.0079	0.0123	N/A	N/A
Dry Weather 5, Day 2	1/19/2016	288	288	0.0003	0.0174	0.0041	0.0051	N/A	N/A

Table 3-2.
Dry Weather 5 Summary (continued)

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
Dry Weather 5, Day 3	1/21/2016	288	225	0.0003	0.0151	0.0040	0.0080	N/A	N/A
Totals/Averages	--	864	796	0.0003	0.0205	0.0054	0.0084	N/A	N/A
CC-SF (Carroll Canyon - Camino Santa Fe)									
Dry Weather 5, Day 1	1/17/2016	288	215	0.0004	0.0201	0.0050	0.0122	N/A	N/A
Dry Weather 5, Day 2	1/19/2016	288	236	0.0004	0.0257	0.0062	0.0067	N/A	N/A
Dry Weather 5, Day 3	1/21/2016	288	211	0.0004	0.0151	0.0042	0.0088	N/A	N/A
Totals/Averages	--	864	662	0.0004	0.0203	0.0051	0.0092	N/A	N/A
CC-SR (Carroll Canyon - Scripps Ranch)									
Dry Weather 5, Day 1	1/17/2016	288	288	0.0020	0.0171	0.0037	0.0076	N/A	N/A
Dry Weather 5, Day 2	1/19/2016	288	288	0.0016	0.0239	0.0046	0.0075	N/A	N/A
Dry Weather 5, Day 3	1/21/2016	288	288	0.0004	0.0160	0.0039	0.0040	N/A	N/A
Totals/Averages	--	864	864	0.0013	0.0190	0.0041	0.0064	N/A	N/A
CC-UP (Carroll Canyon - Upwind)									
Dry Weather 5, Day 1	1/17/2016	288	288	0.0016	0.0100	0.0018	0.0044	0.0168	116.33
Dry Weather 5, Day 2	1/19/2016	288	286	0.0001	0.0228	0.0049	0.0057	0.0083	37.98
Dry Weather 5, Day 3	1/21/2016	288	233	0.0001	0.0293	0.0083	0.0121	0.0083	36.89
Totals/Averages	--	864	807	0.0006	0.0207	0.0050	0.0074	0.0111	63.73
CV-CD (Carmel Valley - Camino Del Sur)									
Dry Weather 5, Day 1	1/17/2016	288	288	0.0007	0.0249	0.0072	0.0107	N/A	N/A
Dry Weather 5, Day 2	1/19/2016	288	288	0.0007	0.0173	0.0044	0.0049	N/A	N/A
Dry Weather 5, Day 3	1/21/2016	288	234	0.0003	0.0173	0.0050	0.0071	N/A	N/A
Totals/Averages	--	864	810	0.0005	0.0199	0.0055	0.0076	N/A	N/A
LP-PO (Los Penasquitos - Poway)									

Table 3-2.
Dry Weather 5 Summary (continued)

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
Dry Weather 5, Day 1	1/17/2016	288	288	0.0007	0.0477	0.0095	0.0138	N/A	N/A
Dry Weather 5, Day 2	1/19/2016	288	288	0.0019	0.0204	0.0039	0.0063	N/A	N/A
Dry Weather 5, Day 3	1/21/2016	288	258	0.0003	0.0098	0.0030	0.0029	N/A	N/A
Totals/Averages	--	864	576	0.0010	0.0260	0.0055	0.0077	N/A	N/A
LP-PR (Los Penasquitos - Preserve)									
Dry Weather 5, Day 1	1/17/2016	288	258	0.0016	0.0152	0.0044	0.0042	N/A	N/A
Dry Weather 5, Day 2	1/19/2016	288	241	0.0001	0.0088	0.0015	0.0032	N/A	N/A
Dry Weather 5, Day 3	1/21/2016	288	264	0.0001	0.0111	0.0028	0.0043	N/A	N/A
Totals/Averages	--	864	763	0.0006	0.0117	0.0029	0.0039	N/A	N/A
Dry Weather 5 (DW5) Totals									
Totals/Averages	--	9504	8576	0.0014	0.0234	0.0052	0.0086	0.0172	71.6910

Notes: Values Not Available = "--", Not Applicable = N/A. * Reference value for Relative Percent Difference (PDF) Calculation is the FRM value. ** milligrams of pollutant per cubic meter of air at sensed atmospheric pressure and temperature.

Table 3-3.
Dry Weather 6 Summary

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
CC-CC (Carroll Canyon)									
Dry Weather 6, Day 1	1/24/2016	288	287	0.0002	0.0214	0.0045	0.0047	N/A	N/A
Dry Weather 6, Day 2	1/26/2016	288	261	0.00020	0.0089	0.0023	0.0052	N/A	N/A
Dry Weather 6, Day 3	1/28/2016	288	273	0.0002	0.0127	0.0020	0.0041	N/A	N/A
Totals/Averages	--	864	821	0.0002	0.0143	0.0029	0.0047	N/A	N/A
RF-DM (Reference - Del Mar)									
Dry Weather 6, Day 1	1/24/2016	288	288	0.0042	0.0239	0.0040	0.0100	0.0416	122.17
Dry Weather 6, Day 2	1/26/2016	288	288	0.0008	0.0208	0.0038	0.0052	0.0208	119.92
Dry Weather 6, Day 3	1/28/2016	288	288	0.0034	0.0519	0.0067	0.0091	0.0582	145.88
Totals/Averages	--	864	864	0.0028	0.0322	0.0048	0.0081	0.0402	129.32
CC-DW (Carroll Canyon - Downwind)									
Dry Weather 6, Day 1	1/24/2016	288	288	0.0015	0.0098	0.0019	0.0057	0.0171	100.45
Dry Weather 6, Day 2	1/26/2016	288	288	0.0000	0.0258	0.0038	0.0053	0.0300	140.01
Dry Weather 6, Day 3	1/28/2016	288	288	0.0011	0.0288	0.0035	0.0054	0.0512	162.06
Totals/Averages	--	864	864	0.0009	0.0215	0.0031	0.0054	0.0328	134.17
CC-ER (Carroll Canyon - Eco Rentals)									
Dry Weather 6, Day 1	1/24/2016	288	280	0.0004	0.0068	0.0016	0.0039	N/A	N/A
Dry Weather 6, Day 2	1/26/2016	288	277	0.0004	0.0204	0.0024	0.0037	N/A	N/A
Dry Weather 6, Day 3	1/28/2016	288	288	0.0011	0.0235	0.0038	0.0047	N/A	N/A
Totals/Averages	--	864	845	0.0006	0.0169	0.0026	0.0041	N/A	N/A
CC-MP (Carroll Canyon - Maddox Park)									
Dry Weather 6, Day 1	1/24/2016	288	288	0.0003	0.0166	0.0047	0.0052	N/A	N/A
Dry Weather 6, Day 2	1/26/2016	288	255	0.0003	0.0185	0.0029	0.0035	N/A	N/A

Table 3-3.
Dry Weather 6 Summary (continued)

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
Dry Weather 6, Day 3	1/28/2016	288	260	0.0003	0.0435	0.0038	0.0044	N/A	N/A
Totals/Averages	--	864	803	0.0003	0.0262	0.0038	0.0044	N/A	N/A
CC-SF (Carroll Canyon - Camino Santa Fe)									
Dry Weather 6, Day 1	1/24/2016	288	235	0.0004	0.0257	0.0056	0.0107	N/A	N/A
Dry Weather 6, Day 2	1/26/2016	288	239	0.0004	0.0201	0.0038	0.0045	N/A	N/A
Dry Weather 6, Day 3	1/28/2016	288	271	0.0004	0.0386	0.0060	0.0056	N/A	N/A
Totals/Averages	--	864	745	0.0004	0.0281	0.0051	0.0069	N/A	N/A
CC-SR (Carroll Canyon - Scripps Ranch)									
Dry Weather 6, Day 1	1/24/2016	288	288	0.0008	0.0069	0.0013	0.0049	N/A	N/A
Dry Weather 6, Day 2	1/26/2016	288	288	0.0001	0.0069	0.0018	0.0026	N/A	N/A
Dry Weather 6, Day 3	1/28/2016	288	269	0.0001	0.0038	0.0011	0.0017	N/A	N/A
Totals/Averages	--	864	845	0.0003	0.0059	0.0014	0.0030	N/A	N/A
CC-UP (Carroll Canyon - Upwind)									
Dry Weather 6, Day 1	1/24/2016	288	288	0.00010	0.0084	0.0019	0.0045	0.0083	59.50
Dry Weather 6, Day 2	1/26/2016	288	277	0.0001	0.0168	0.0025	0.0049	0.0125	86.48
Dry Weather 6, Day 3	1/28/2016	288	288	0.0012	0.0198	0.0027	0.0054	0.0249	128.47
Totals/Averages	--	864	853	0.0005	0.0150	0.0024	0.0050	0.0152	91.48
CV-CD (Carmel Valley - Camino Del Sur)									
Dry Weather 6, Day 1	1/24/2016	288	288	0.0007	0.0219	0.0068	0.0096	N/A	N/A
Dry Weather 6, Day 2	1/26/2016	288	212	0.0003	0.0090	0.0023	0.0037	N/A	N/A
Dry Weather 6, Day 3	1/28/2016	288	278	0.0003	0.0064	0.0015	0.0029	N/A	N/A
Totals/Averages	--	864	778	0.0004	0.0124	0.0036	0.0054	N/A	N/A
LP-PO (Los Penasquitos - Poway)									

Table 3-3.
Dry Weather 6 Summary (continued)

Sampling Period ID (Sampling Event, Day)	24 Hour Period End Date	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)**	Relative Percent Difference (%)*
Dry Weather 6, Day 1	1/24/2016	288	288	0.0015	0.0181	0.0029	0.0052	N/A	N/A
Dry Weather 6, Day 2	1/26/2016	288	248	0.0003	0.0337	0.0047	0.0058	N/A	N/A
Dry Weather 6, Day 3	1/28/2016	288	288	0.0003	0.0219	0.0031	0.0043	N/A	N/A
Totals/Averages	--	864	824	0.0007	0.0246	0.0036	0.0051	N/A	N/A
LP-PR (Los Penasquitos - Preserve)									
Dry Weather 6, Day 1	1/24/2016	288	277	0.0001	0.0080	0.0011	0.0032	N/A	N/A
Dry Weather 6, Day 2	1/26/2016	288	288	0.0008	0.0046	0.0006	0.0026	N/A	N/A
Dry Weather 6, Day 3	1/28/2016	288	288	0.0020	0.0054	0.0006	0.0028	N/A	N/A
Totals/Averages	--	864	853	0.0010	0.0060	0.0008	0.0028	N/A	N/A
Dry Weather 6 (DW6) Totals									
Totals/Averages	--	9504	8807	0.0007	0.0185	0.0031	0.0050	0.0294	118.3265

Notes: Values Not Available = "--", Not Applicable = N/A. * Reference value for Relative Percent Difference (PDF) Calculation is the FRM value. ** milligrams of pollutant per cubic meter of air at sensed atmospheric pressure and temperature.

Table 3-4.
2015-2016 Summary

Event ID	Time Period	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)	Relative Percent Difference (%)*
Phase II Air Deposition Dry Weather Event Totals									
Dry Weather 4	11/18/2015 - 11/24/2015	9504	9173	0.0010	0.0190	0.0029	0.0049	0.0455	135.3040
Dry Weather 5	1/18/2016 - 1/21/2016	9504	8834	0.0014	0.0234	0.0052	0.0086	0.0172	71.6910
Dry Weather 6	1/23/2016 - 1/28/2016	9504	9095	0.0007	0.0185	0.0031	0.0050	0.0294	118.3265
Totals/Averages	--	28512	27102	0.0010	0.0203	0.0037	0.0062	0.0307	108.4405
		Total Percent of Valid Measurements							
		95.05%							

Notes: Values Not Available = "--", Not Applicable = N/A. * Reference value for Relative Percent Difference (PDF) Calculation is the FRM value. ** milligrams of pollutant per cubic meter of air at sensed atmospheric pressure and temperature.

Table 3-5.
Monitoring Location Summary

Monitoring Location	Time Period	Total Number of Optical Measurements (mg/m3)	Valid Optical Measurements (mg/m3)	Minimum Optical Value (mg/m3)	Maximum Optical Value (mg/m3)	Standard Deviation	Mean Value (24-Hour Average Optical) (mg/m3)	FRM Value (mg/m3)*	Relative Percent Difference (%)*
Phase II Air Deposition Dry Weather Monitoring Location Totals									
CC-CC	Dry Weather 4 – Dry Weather 6 11/18/2015 – 1/28/2016	2592	2473	0.0006	0.0157	0.0035	0.0061	--	--
CC-DM		2592	2587	0.0016	0.0323	0.0051	0.0082	0.0307	120.18
CC-DW		2592	2592	0.0037	0.0243	0.0038	0.0090	0.0240	105.31
CC-ER		2592	2453	0.0009	0.0241	0.0039	0.0059	--	--
CC-MP		2592	2397	0.0005	0.0227	0.0042	0.0060	--	--
CC-SF		2592	2271	0.0010	0.0232	0.0044	0.0076	--	--
CC-SR		2592	2551	0.0006	0.0105	0.0023	0.0040	--	--
CC-UP		2592	2472	0.0006	0.0177	0.0034	0.0059	0.0375	99.83
CV-CD		2592	2452	0.0005	0.0131	0.0035	0.0054	--	--
LP-PO		2592	2452	0.0005	0.0131	0.0035	0.0054	--	--
LP-PR		2592	2522	0.0006	0.0214	0.0040	0.0058	--	--

Notes: Values Not Available = "--", Not Applicable = N/A. * Reference value for Relative Percent Difference (PDF) Calculation is the FRM value. ** milligrams of pollutant per cubic meter of air at sensed atmospheric pressure and temperature.

3.2 SAMPLING EVENT RESULTS

3.2.1 Dry Weather 4

3.2.1.1 CC-CC (Carroll Canyon)

CC-CC (Carroll Canyon):

CC-CC is a site monitored during the Phase I and Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0051 mg/m^3.
- Mean standard deviation is $\pm$0.0019 mg/m^3

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CC-CC Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WNW and NW, which is the prevalent weather pattern for the region. Peak Optical monitor readings were observed close to midnight. Minimal disturbance can be observed during high traffic conditions.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CC-CC Optical readings were observed at the lowest mean value for this monitoring location during sampling event Dry Weather 4, and below the mean value. Wind directions were observed primarily from the WNW and NW, which is the prevalent weather pattern for the region. Peak Optical monitor readings were observed from 17:00 to close to midnight, with a sharp decline during the late morning and early afternoon.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CC-CC Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the NW, which is the prevalent weather pattern for the region. Peak Optical monitor readings were observed close to midnight.

Graphical representations of this data are presented in Figure 3-1 through 3-3.

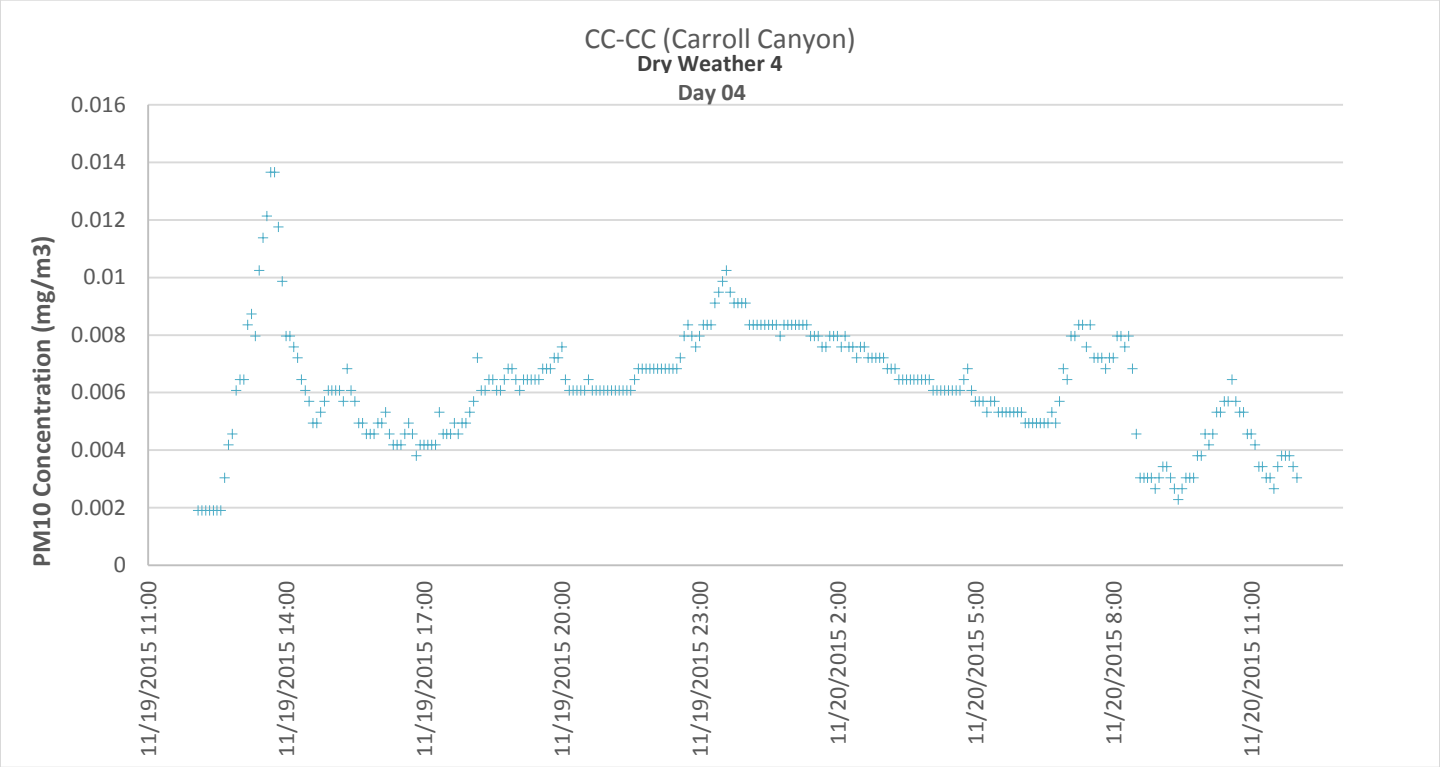

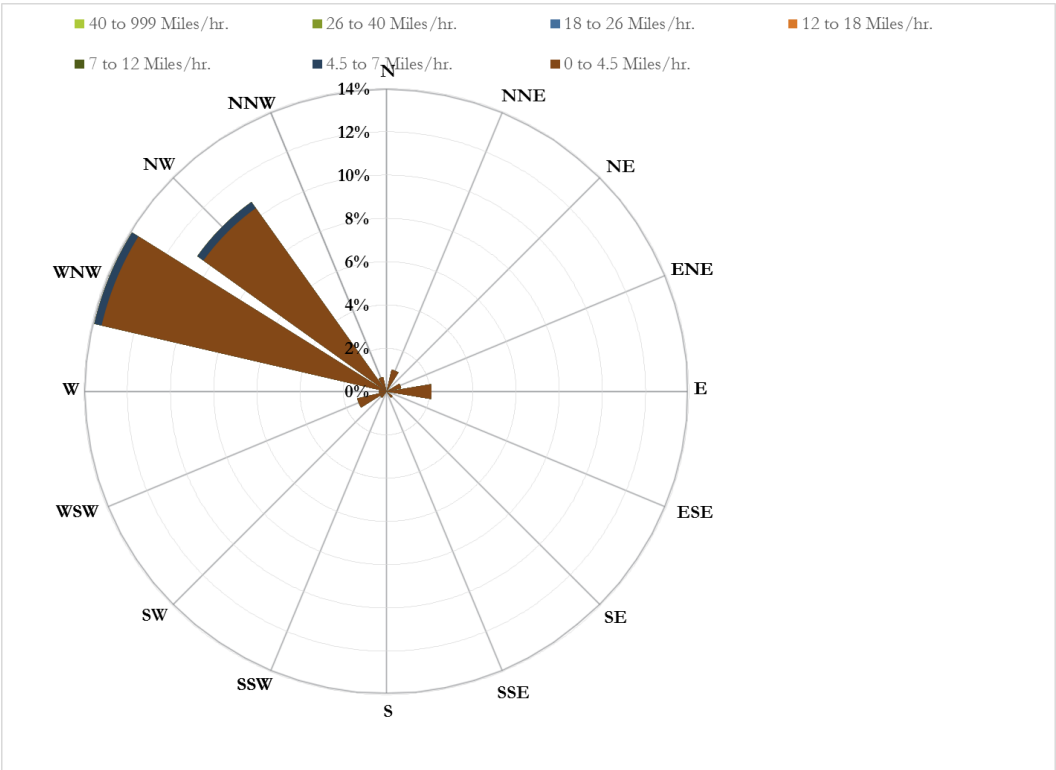

Figure 3-1.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

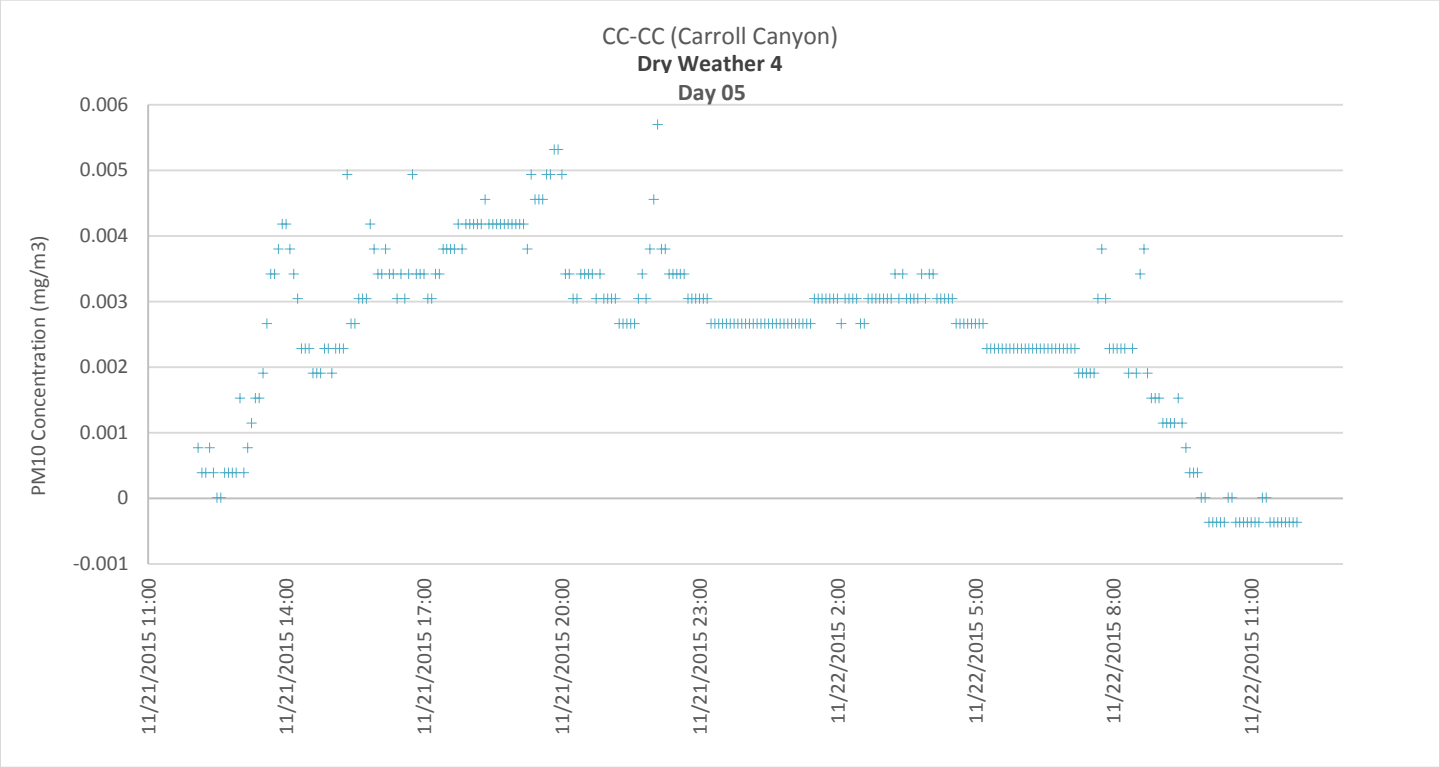

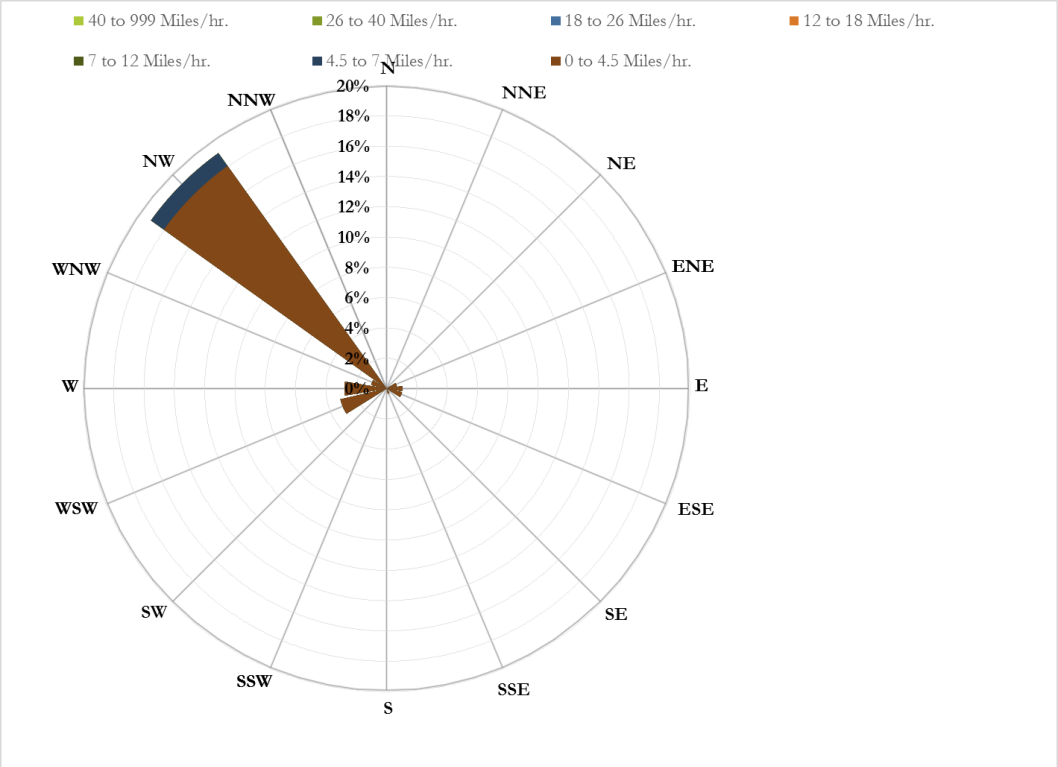

Figure 3-2.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

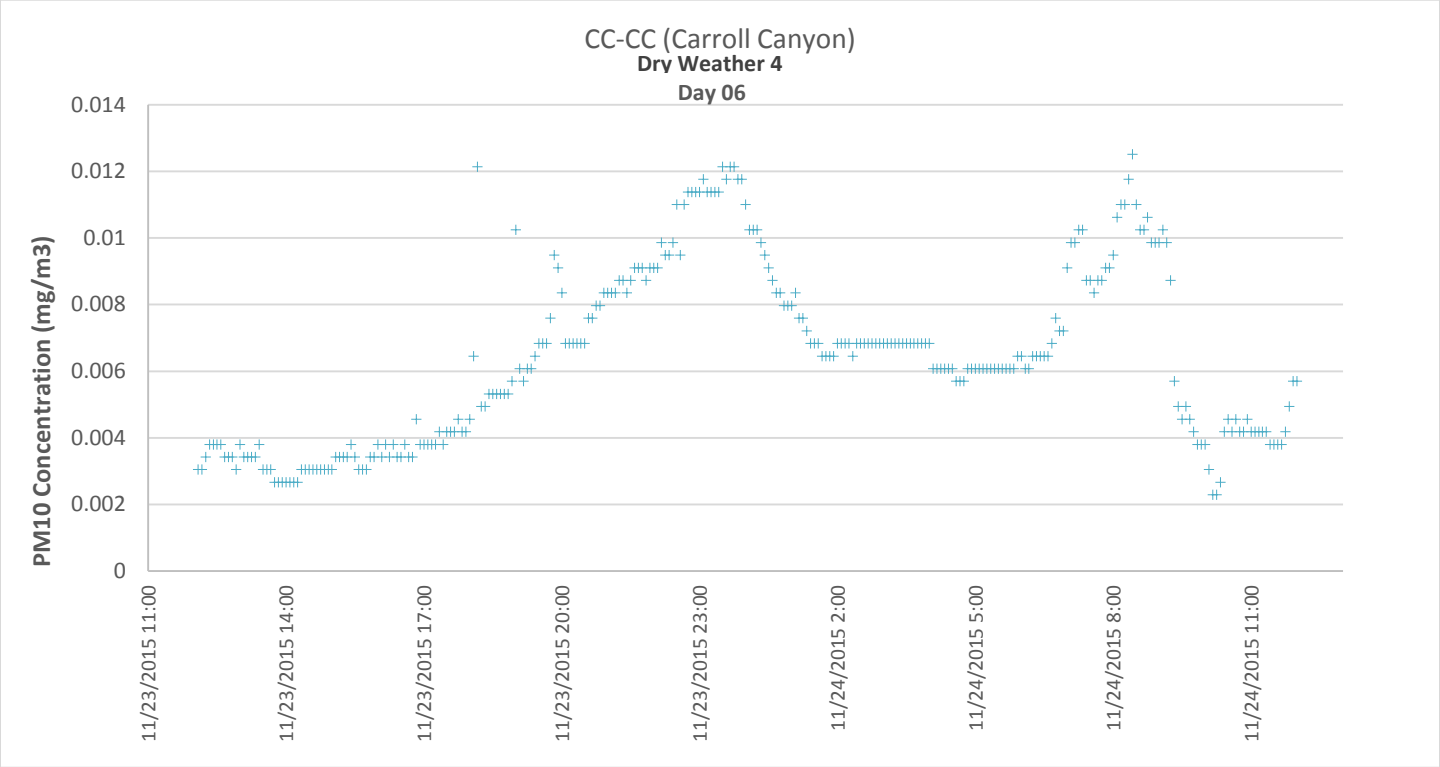

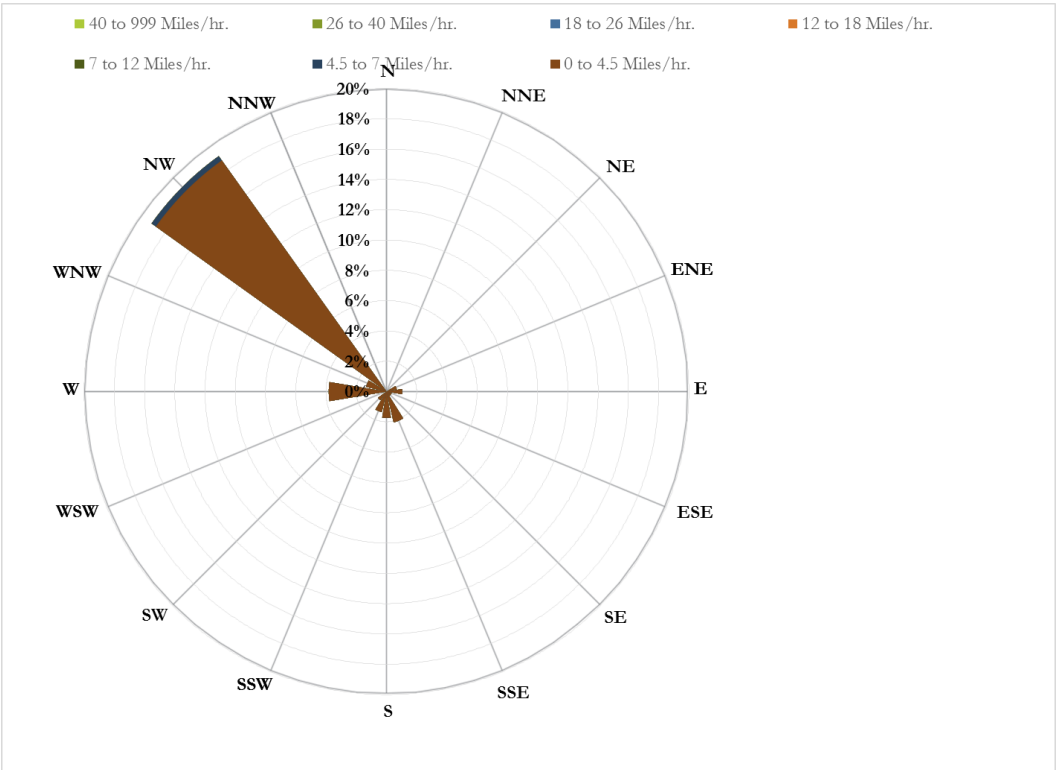

Figure 3-3.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.2 CC-DM (Reference – Del Mar)

CC-DM (Reference – Del Mar):

CC-DM is a site monitored during the Phase I and Phase II Watershed Special Study and includes an Optical monitor and an FRM sampler. This is the reference site for the aerial deposition portion of the Watershed Special Study, and was selected as a station away from anthropogenic influence during the prevalent weather patterns.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0058 mg/m^3.
- Mean standard deviation is $\pm$0.0034 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean values for PM_{10} was 0.0241 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 124.36 percent.
    - Although the RPD is high, this is due to very low concentrations measured that are within 10 times the laboratory reporting limit and standard flow volume. RPD calculations for low concentrations such as those measured during this program mischaracterize what are actually very small differences in concentration.

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CC-DM Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WNW, NW, and the E. Peak Optical monitor readings were observed 15:00 to 20:00.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CC-DM Optical readings were observed at the lowest mean value for this monitoring location during sampling event Dry Weather 4, and below the mean value. Wind directions were observed primarily from the WNW, ENE and the NE, peaking at 4.5 to 7 miles per hour. Peak Optical monitor readings were observed around 15:00 and 9:00.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CC-DM Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WNW, NE, and ENE. Peak Optical monitor readings were observed before midnight.

Graphical representations of this data are presented in Figure 3-4 through 3-6.

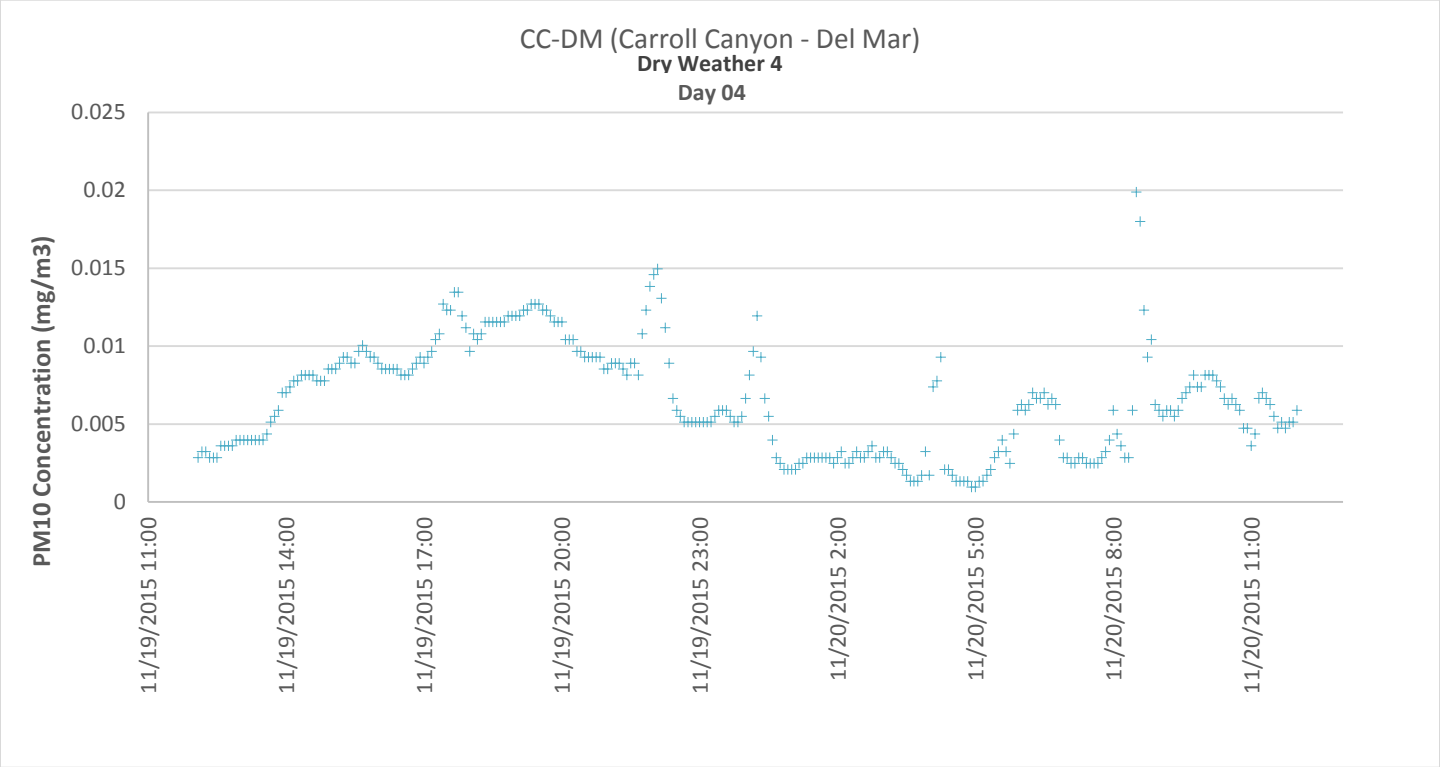

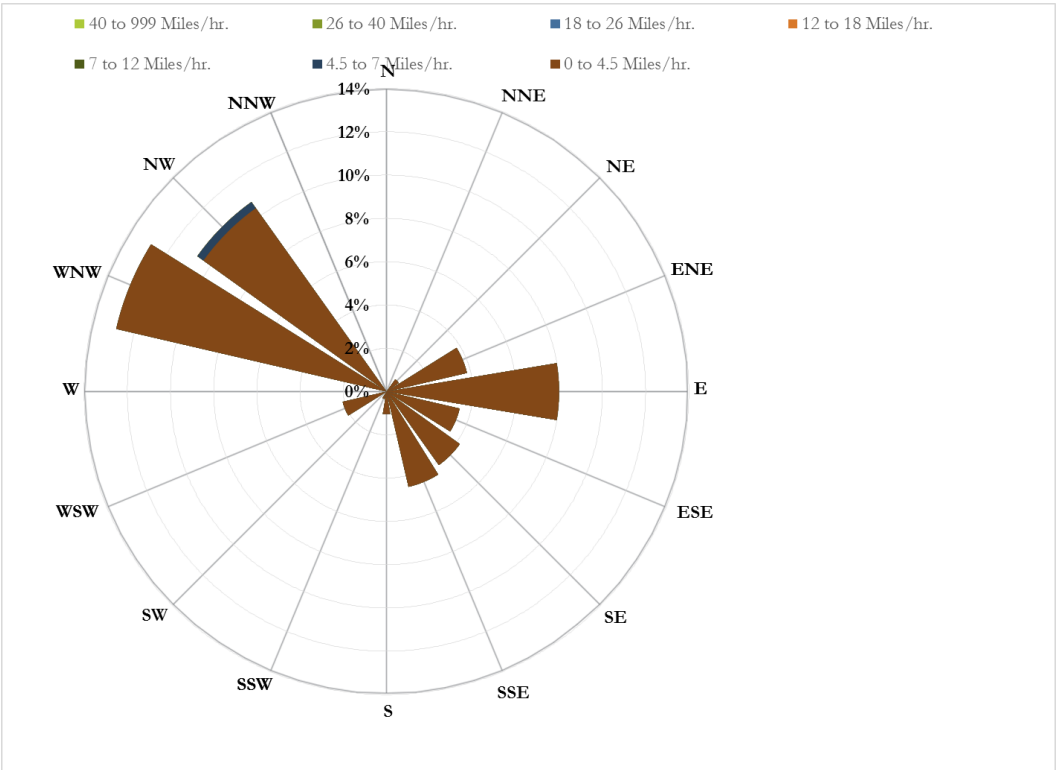

Figure 3-4.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

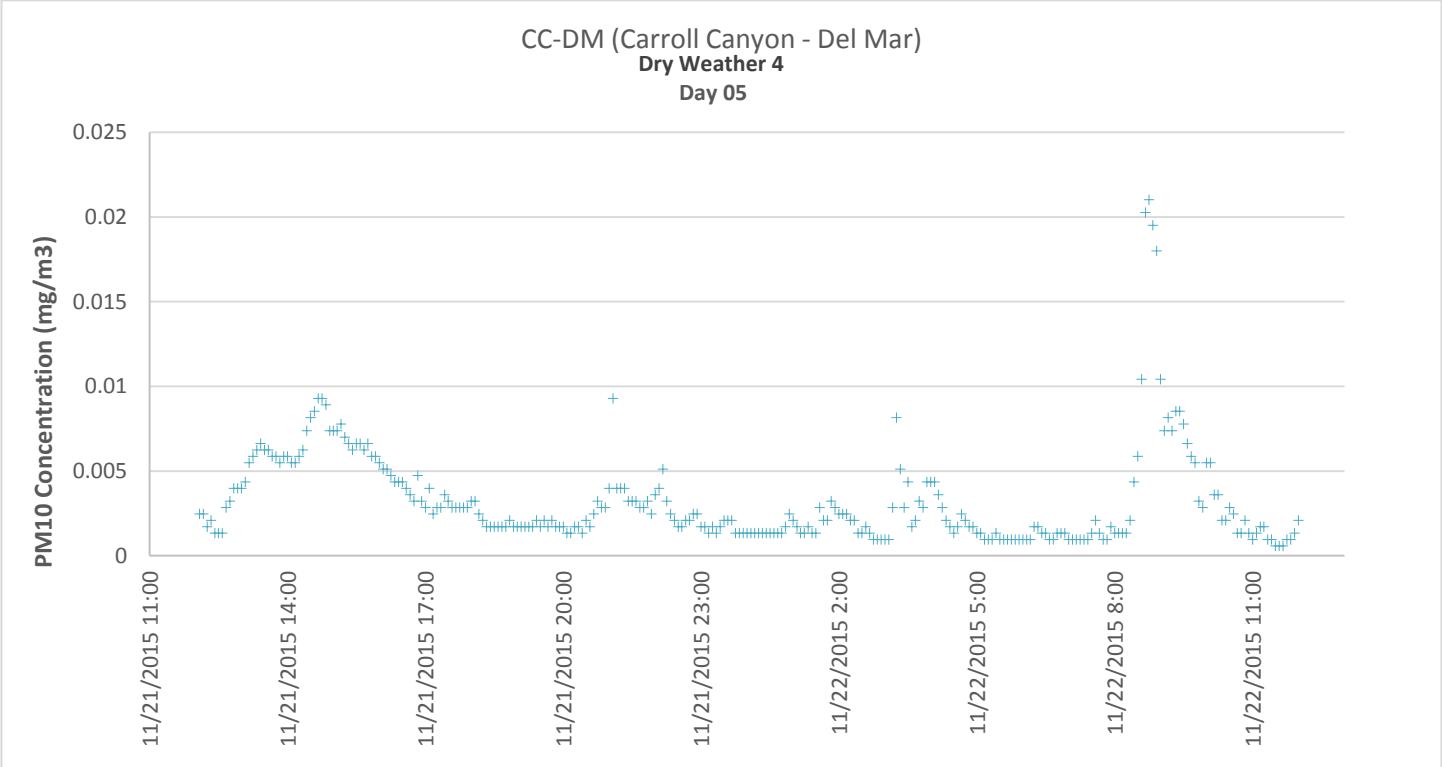

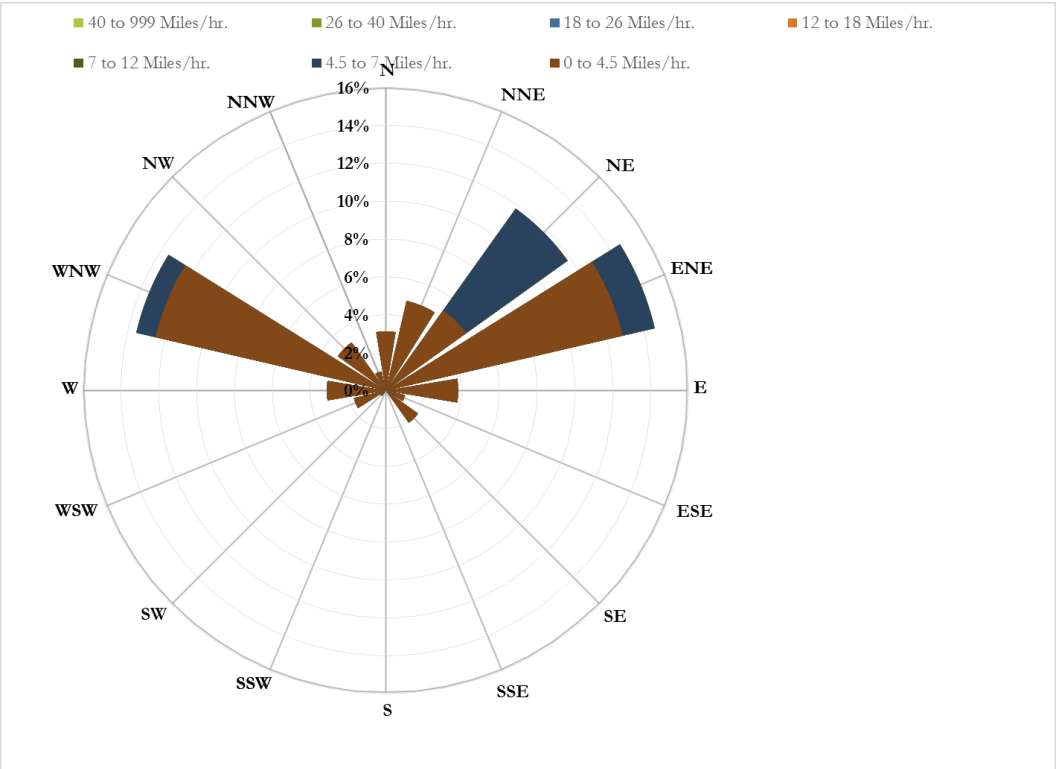

Figure 3-5.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

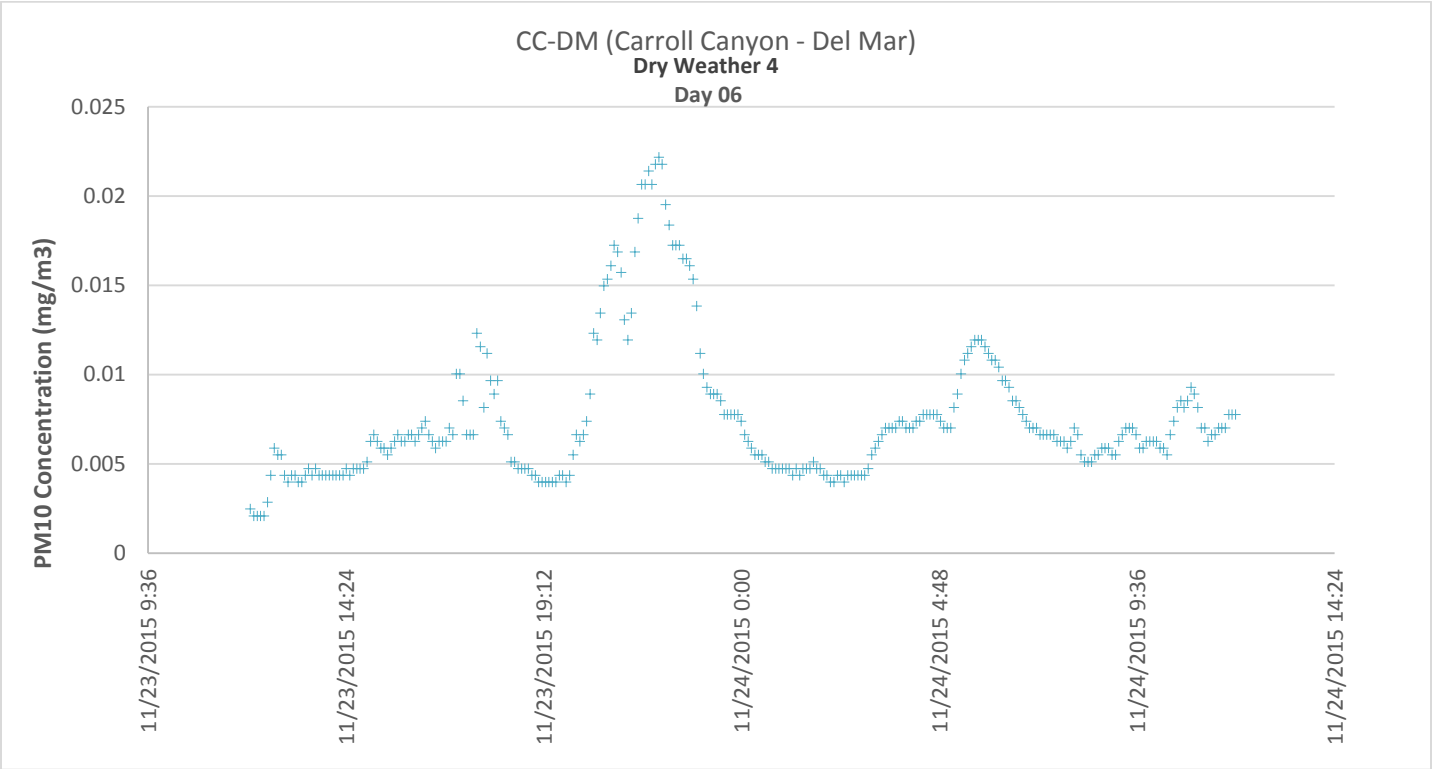

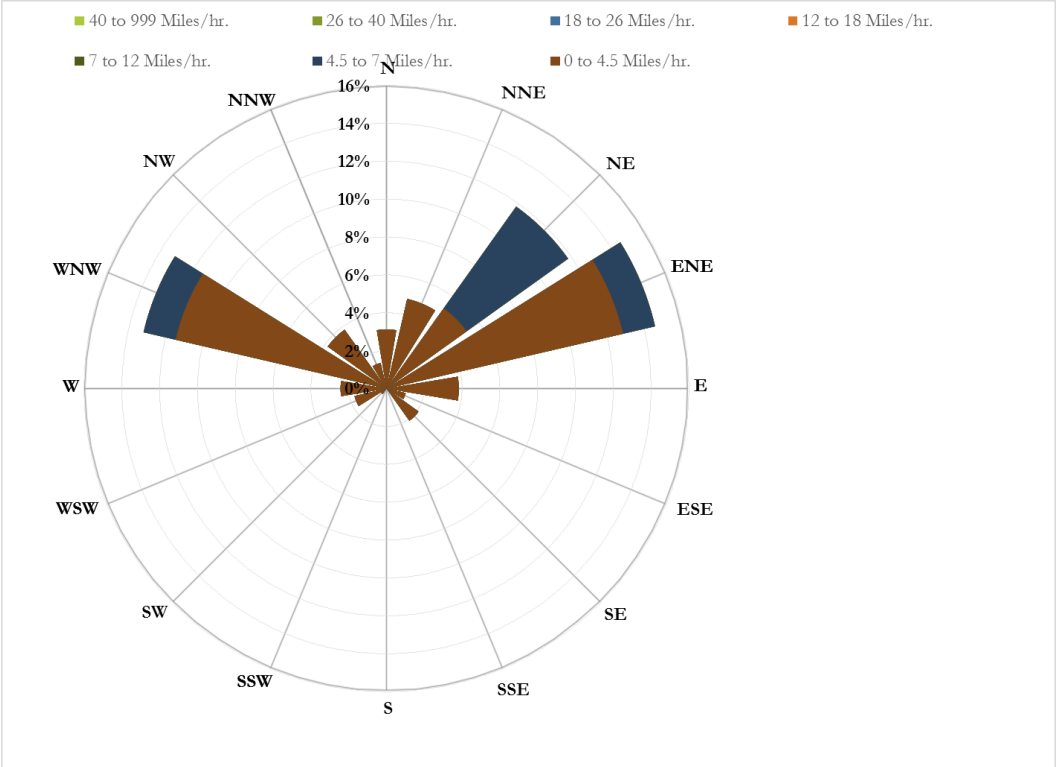

Figure 3-6.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.3 CC-DW (Carroll Canyon – Downwind)

CC-DW (Carroll Canyon – Downwind):

CC-DW is a site monitored during the Phase I and Phase II Watershed Special Study and contains an Optical monitor and an FRM sampler.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0048 mg/m^3.
- Mean standard deviation is $\pm$0.0021 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean value for PM_{10} was 0.0263 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 124.36%

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CC-DW Optical readings were observed at the mean value of the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SE. Peak Optical monitor readings were observed during typical increased traffic conditions.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CC-DW Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Optical monitor readings were consistent, rising slightly during the afternoon traffic conditions.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CC-DW Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SE and S. Peak Optical monitor readings were observed midday, yet were generally consistent during the 24 hour period.

Graphical representations of this data is presented in Figures 3-7 through 3-9.

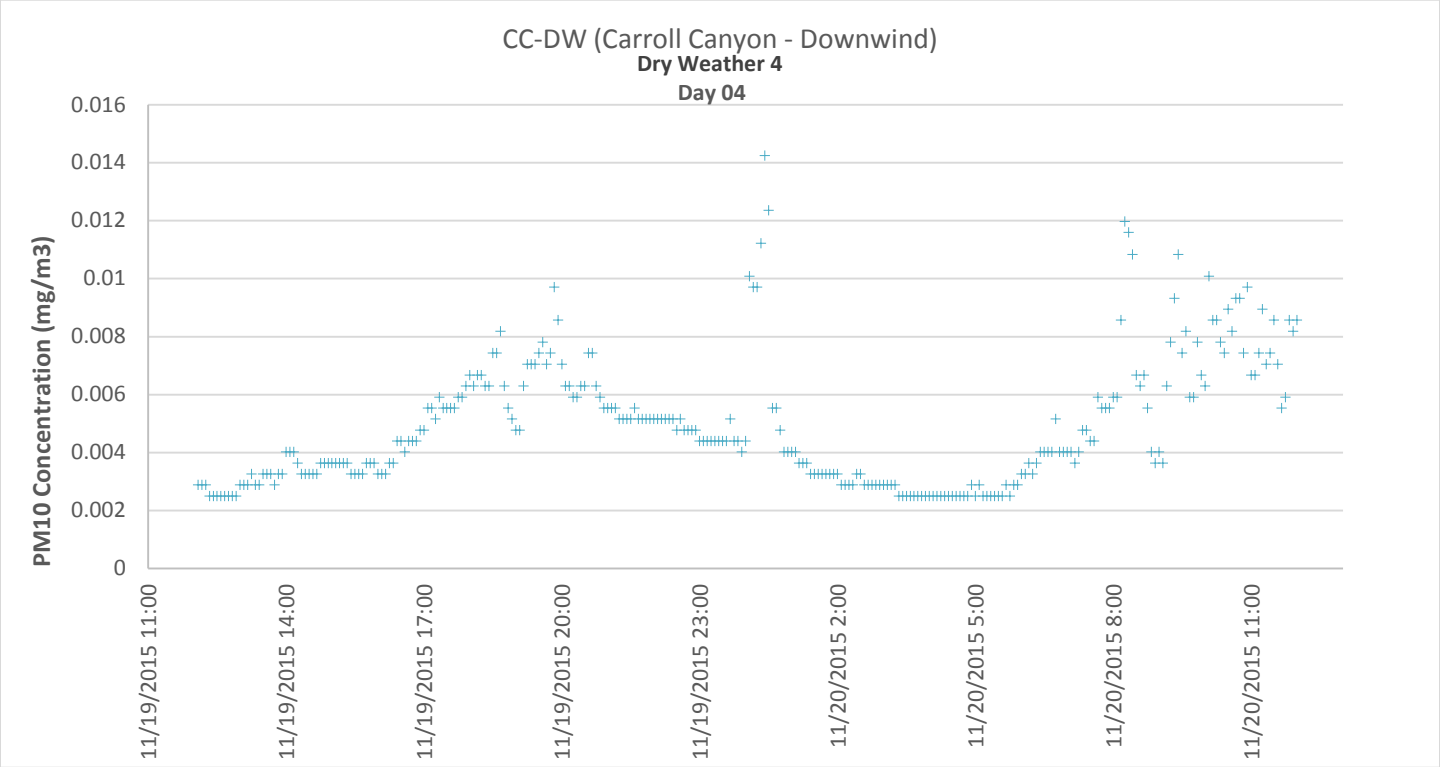

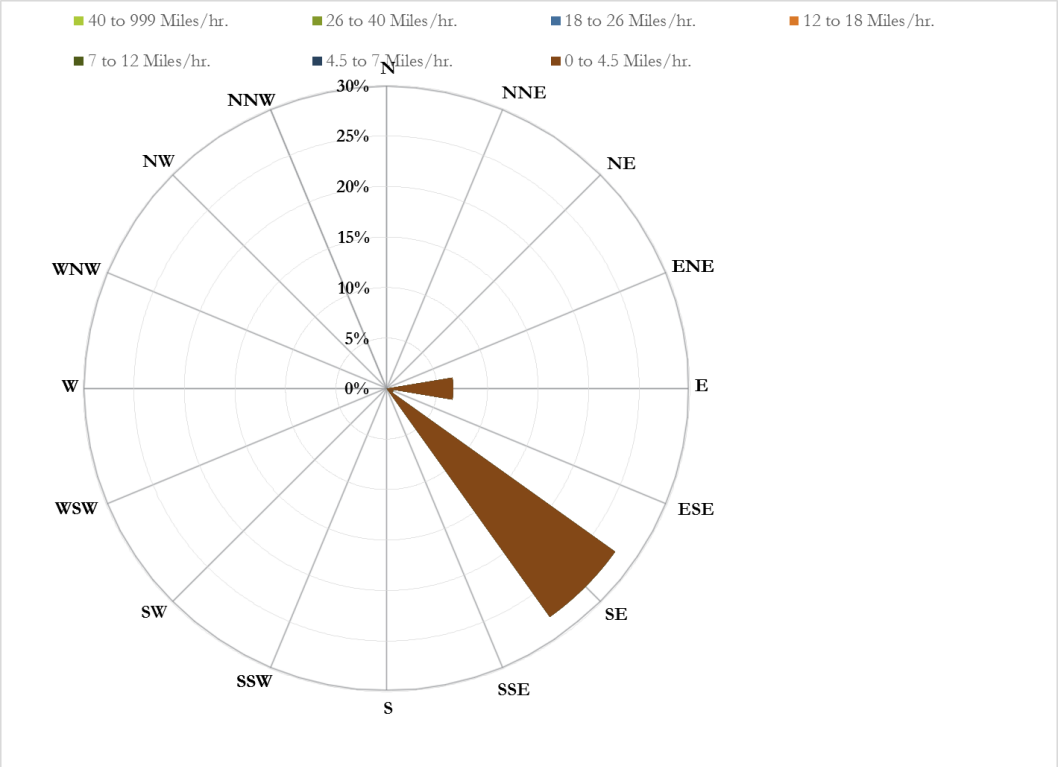

Figure 3-7.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

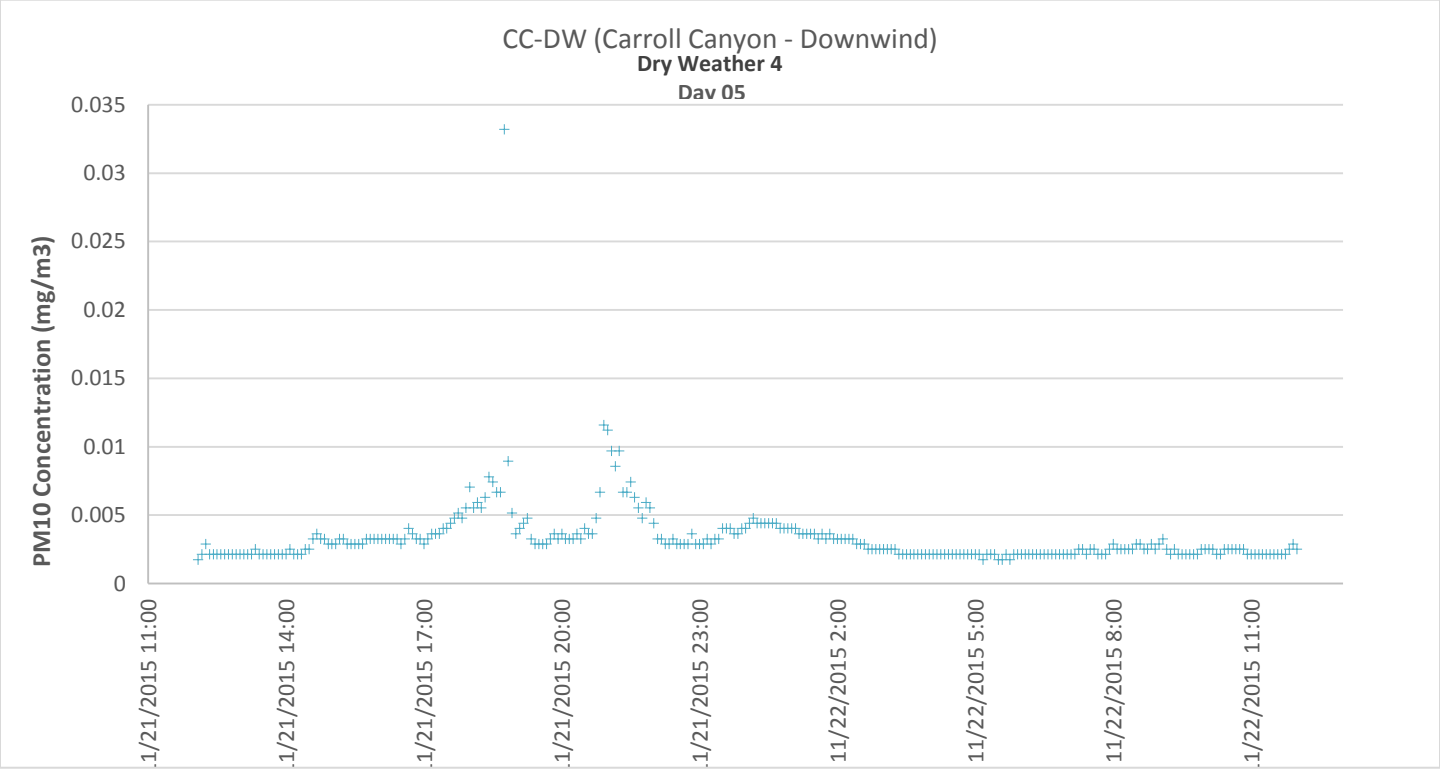

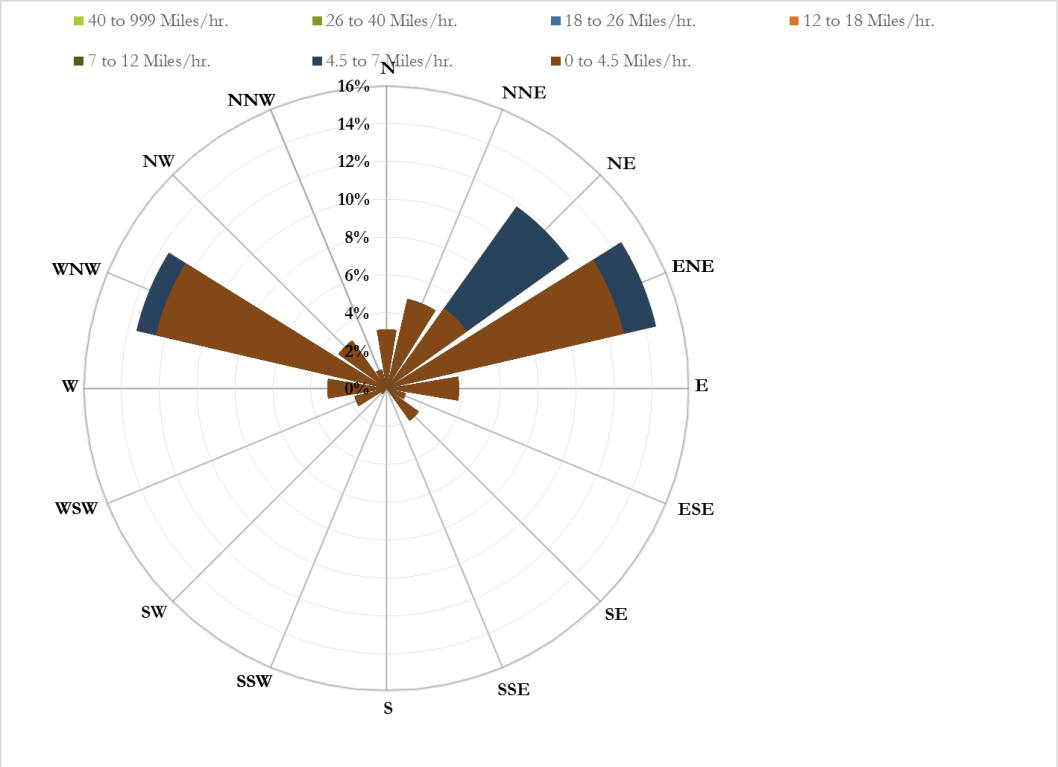

Figure 3-8.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

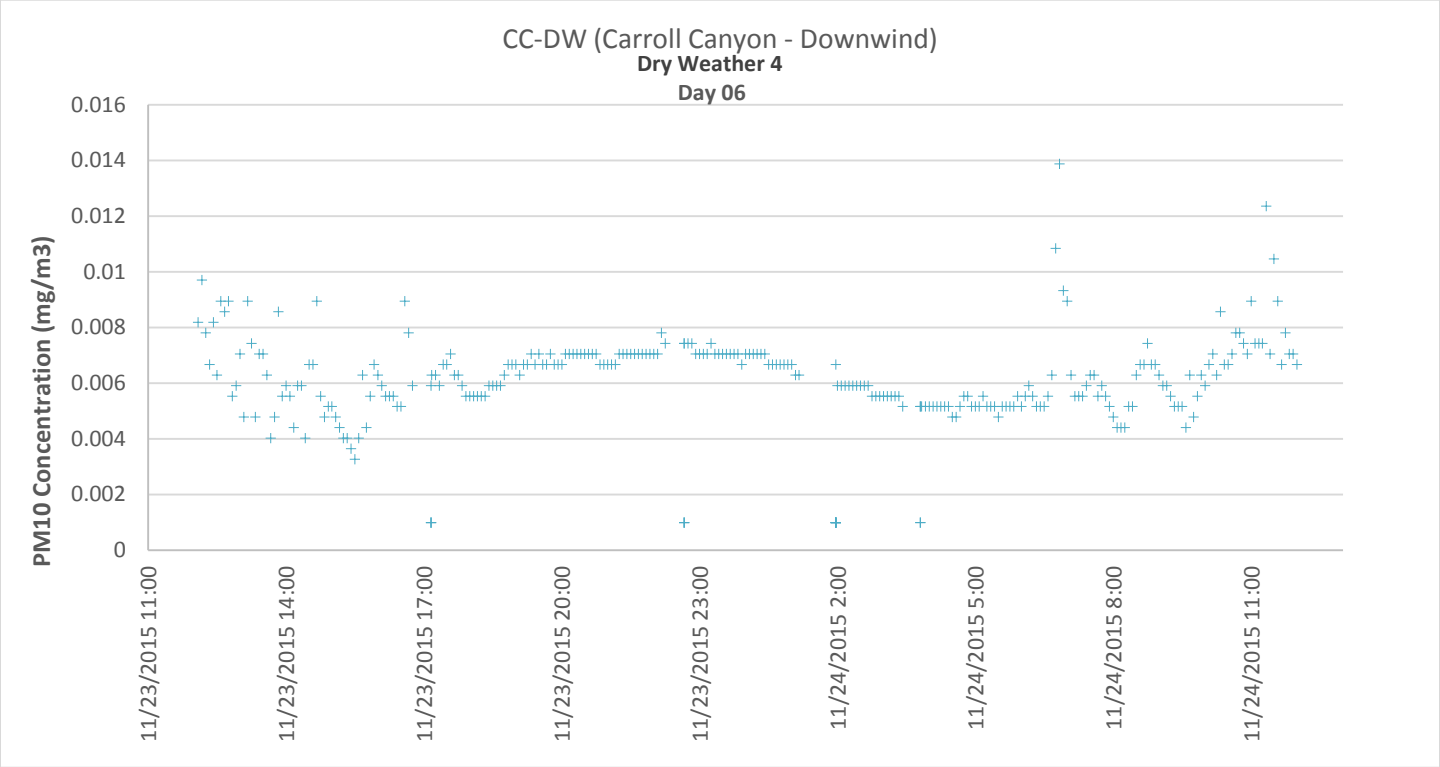

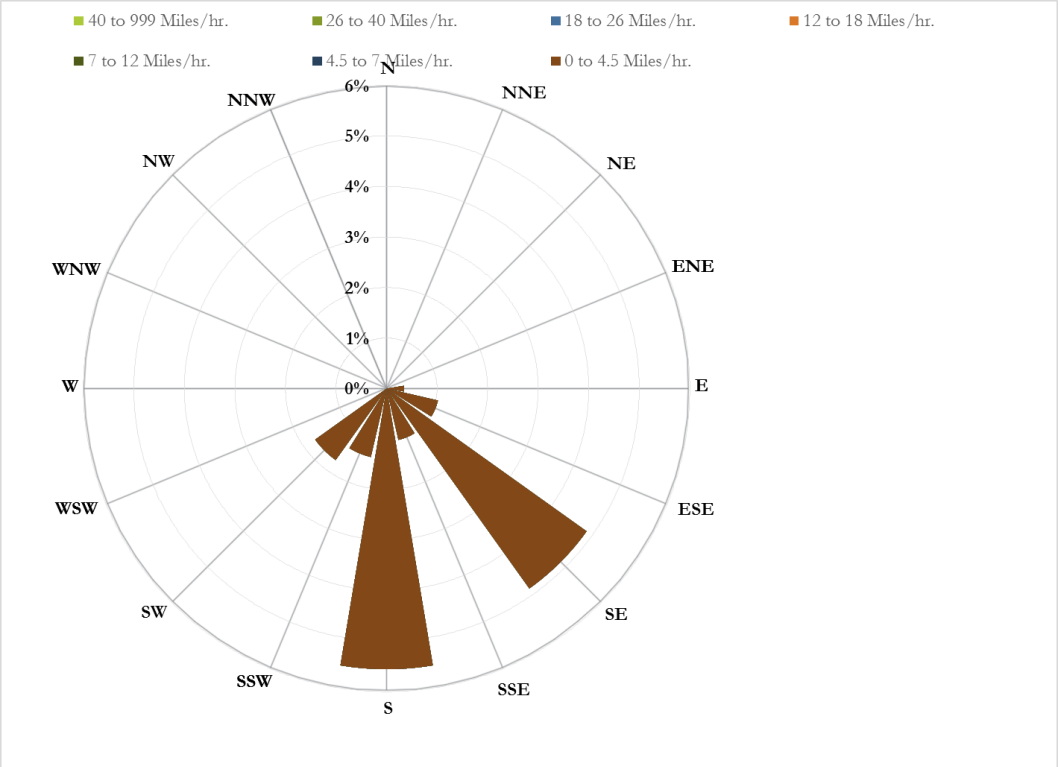

Figure 3-9.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.4 CC-ER (Carroll Canyon – Eco Rental)

CC-ER (Carroll Canyon – Eco Rental):

CC-ER is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the RA group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 821 measurements were determined to be valid (95%).
- Mean values for PM_{10} were 0.0052 mg/m^3.
- Mean standard deviation is $\pm$0.0037 mg/m^3

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CC-ER Optical readings were higher than the mean value of the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WNW and NW. Peak Optical monitor readings were observed during the late evening and times of increased traffic during the morning.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CC-ER Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the NW. Optical monitor readings peaked during increased afternoon traffic conditions.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CC-ER Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during the evening.

Graphical representations of this data is presented in Figures 3-10 through 3-12.

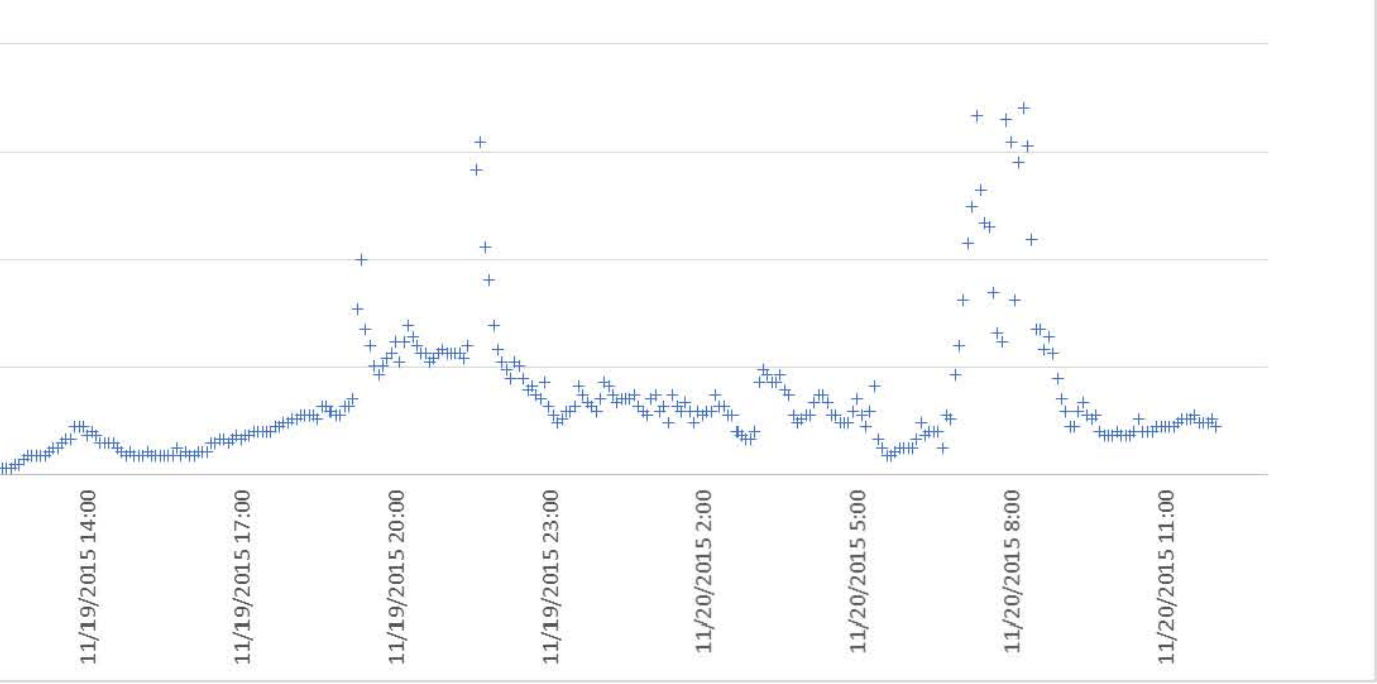

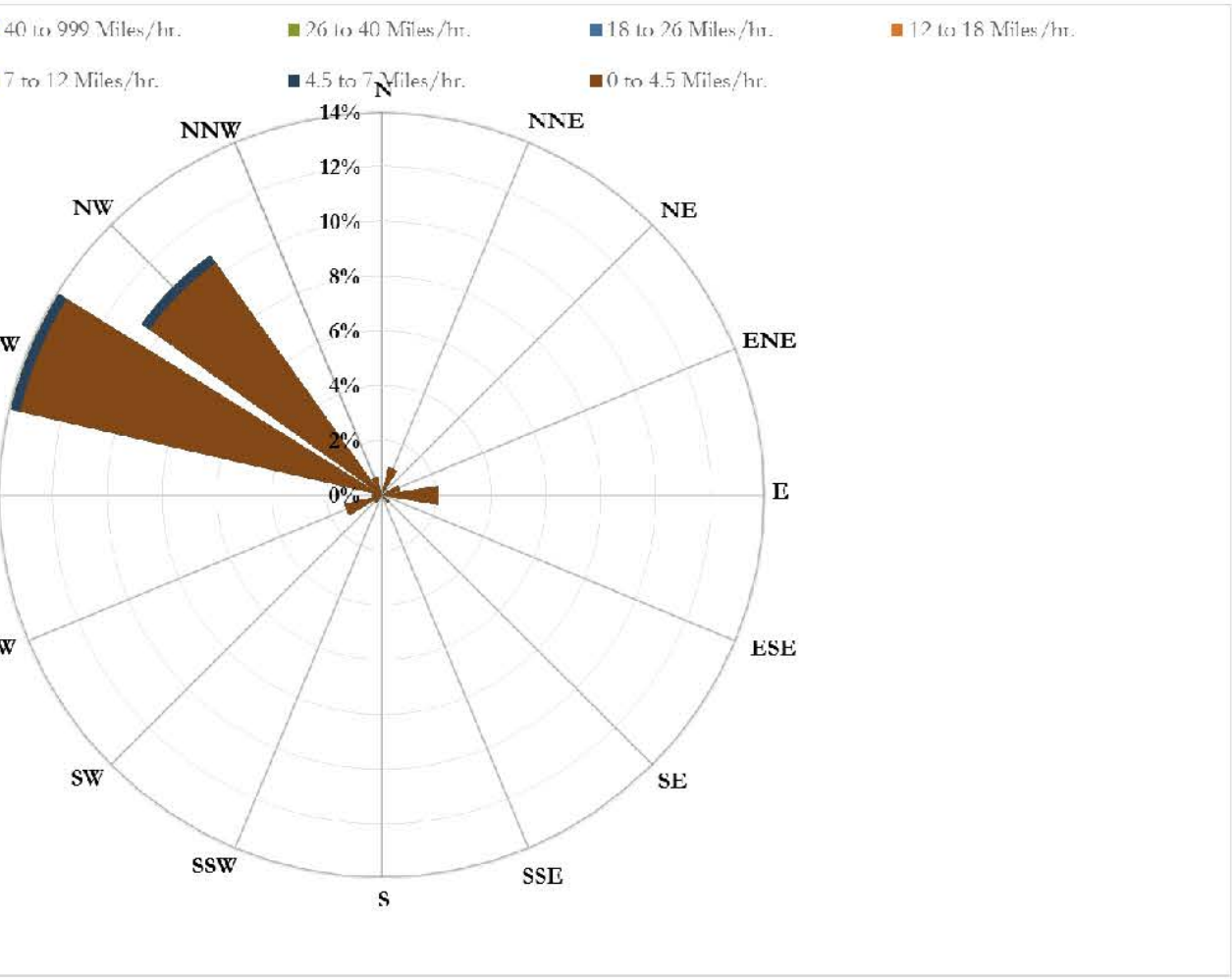

Figure 3-10.
C-ER PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

1896

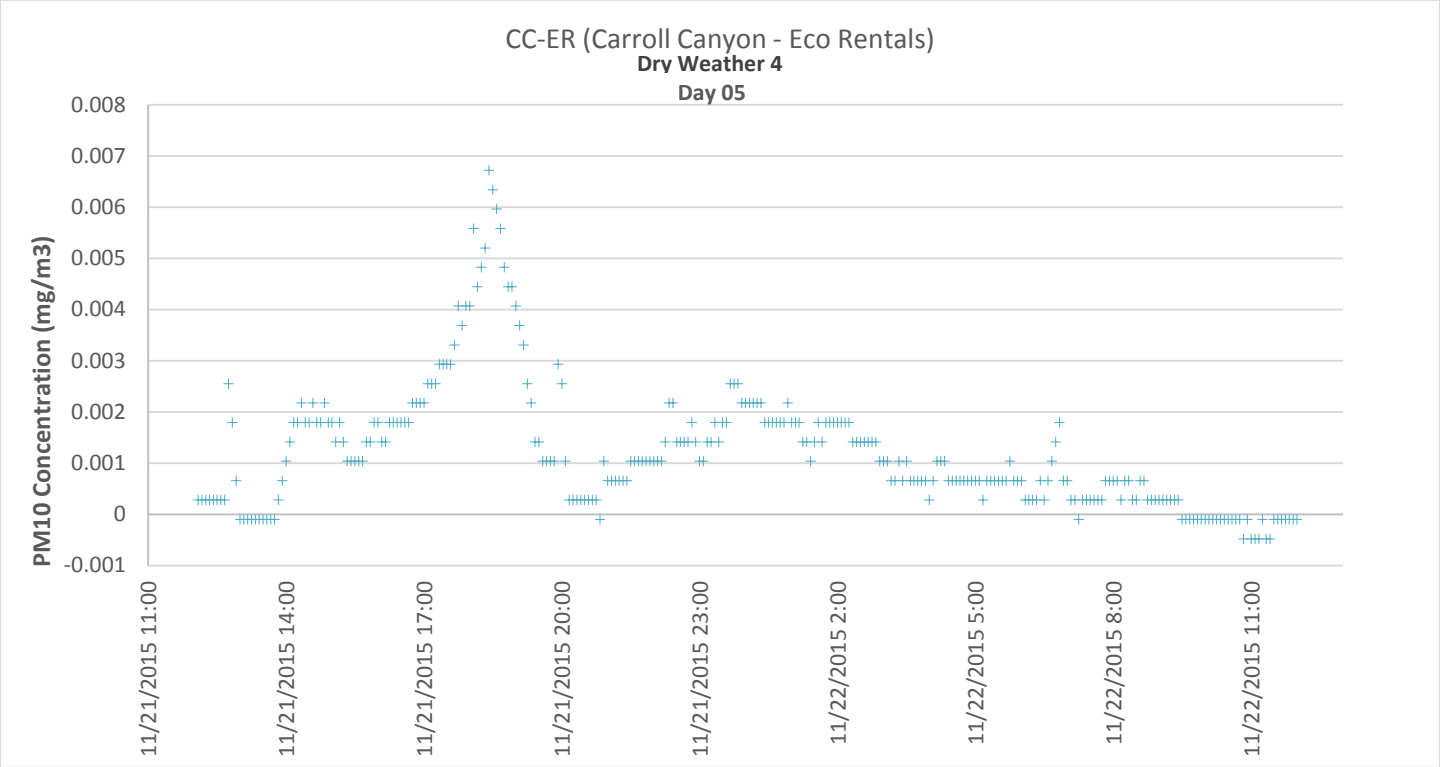

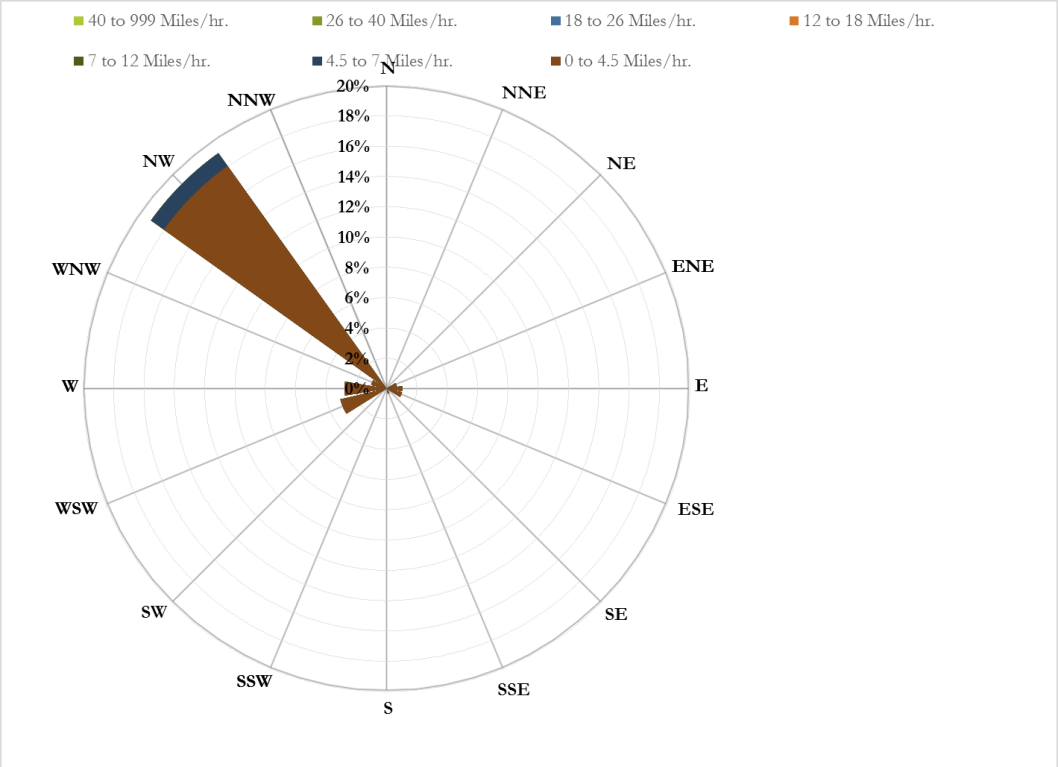

Figure 3-11.
CC-ER PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

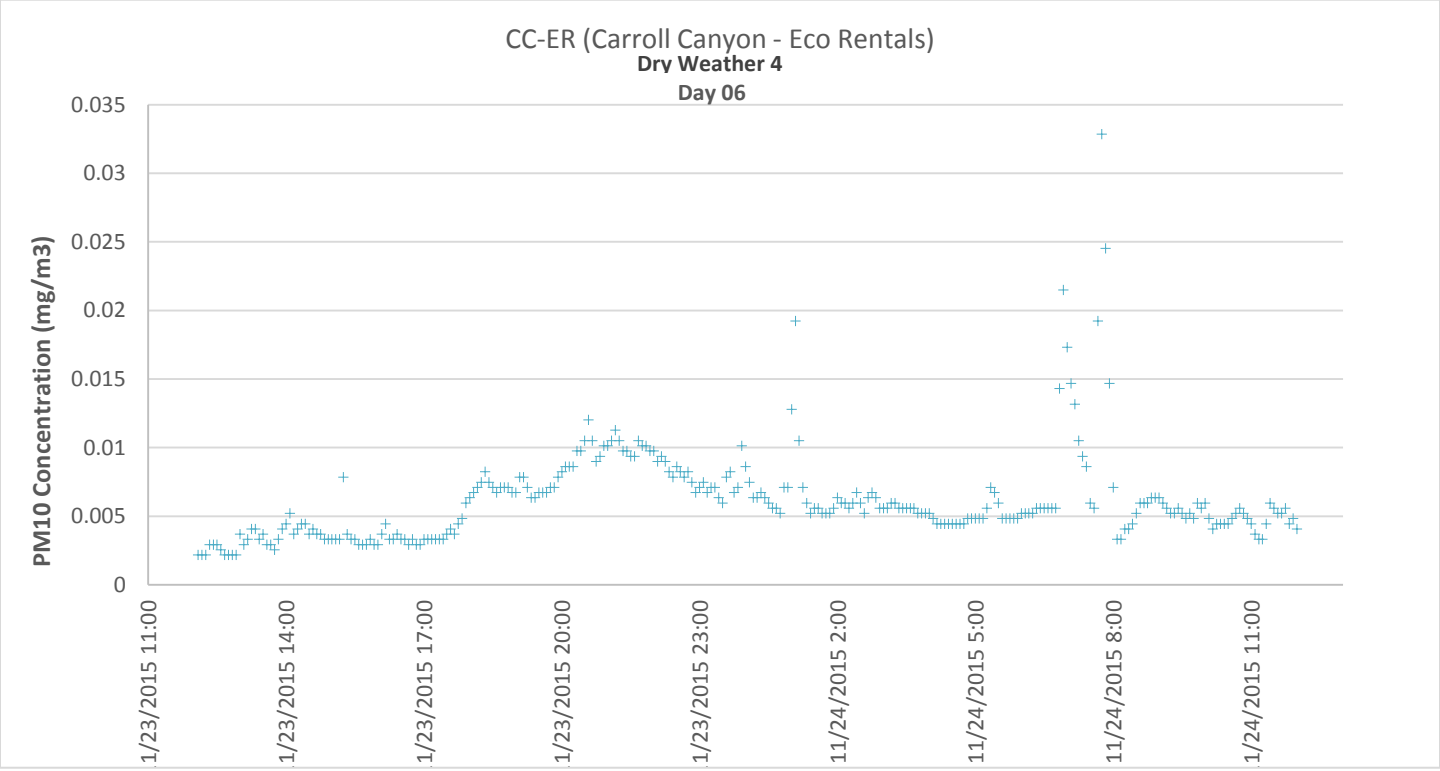

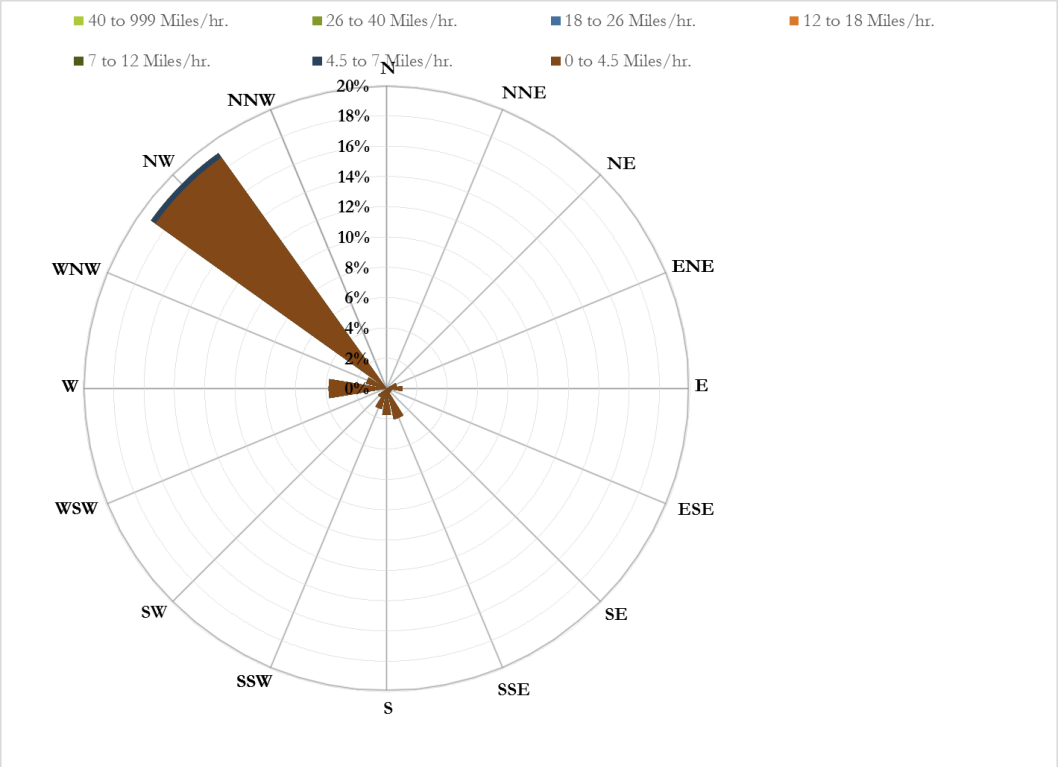

Figure 3-12.
CC-ER PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.5 CC-MP (Carroll Canyon – Maddox Park)

CC-MP (Carroll Canyon – Maddox Park):

CC-MP is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the RA group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0053 mg/m^3.
- Mean standard deviation is $\pm$0.0036 mg/m^3

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CC-MP Optical readings were higher than the mean value of the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SE. Peak Optical monitor readings were observed late evening and times of increased traffic during the morning.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CC-MP Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SW. Peak Optical monitor readings were observed late evening and times of increased traffic during the morning.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CC-MP Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the S and SE. Peak Optical monitor readings were observed after midnight, yet were generally consistent during the 24 hour period.

Graphical representations of this data is presented in Figures 3-13 through 3-15.

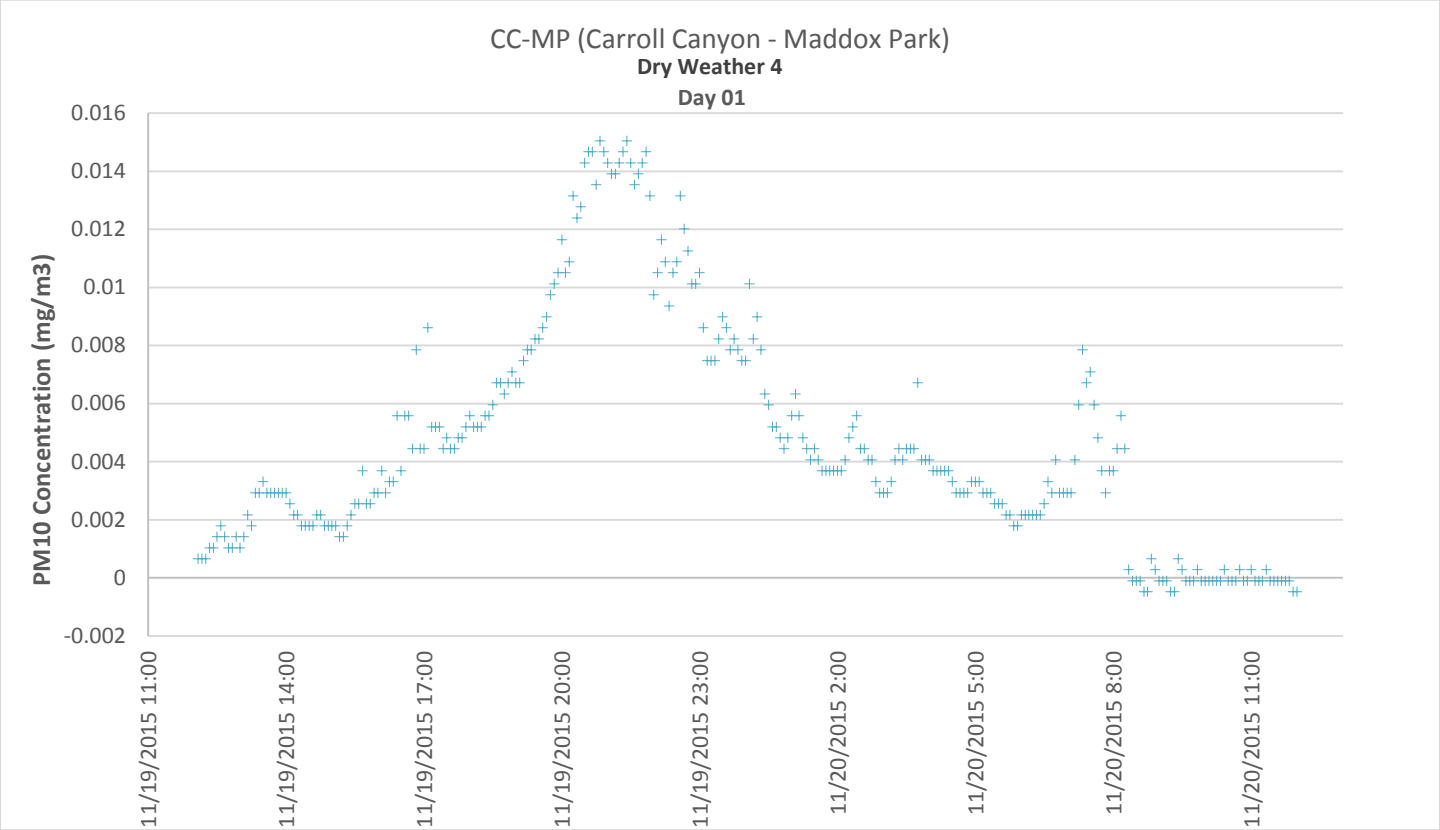

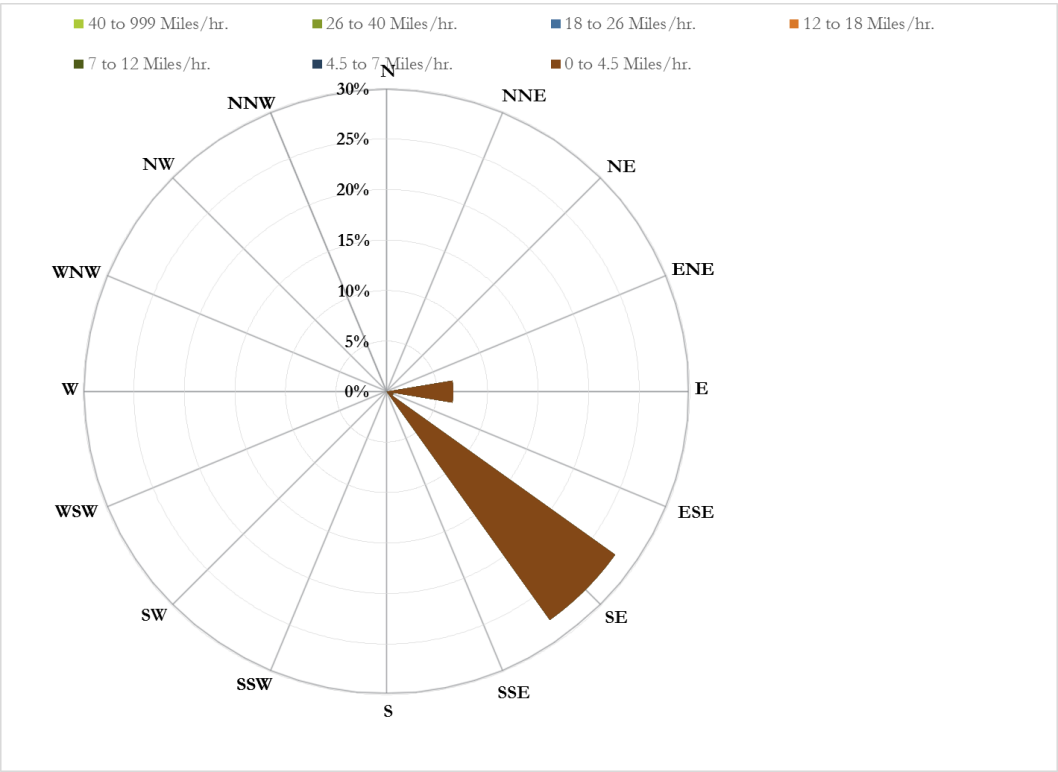

Figure 3-13.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

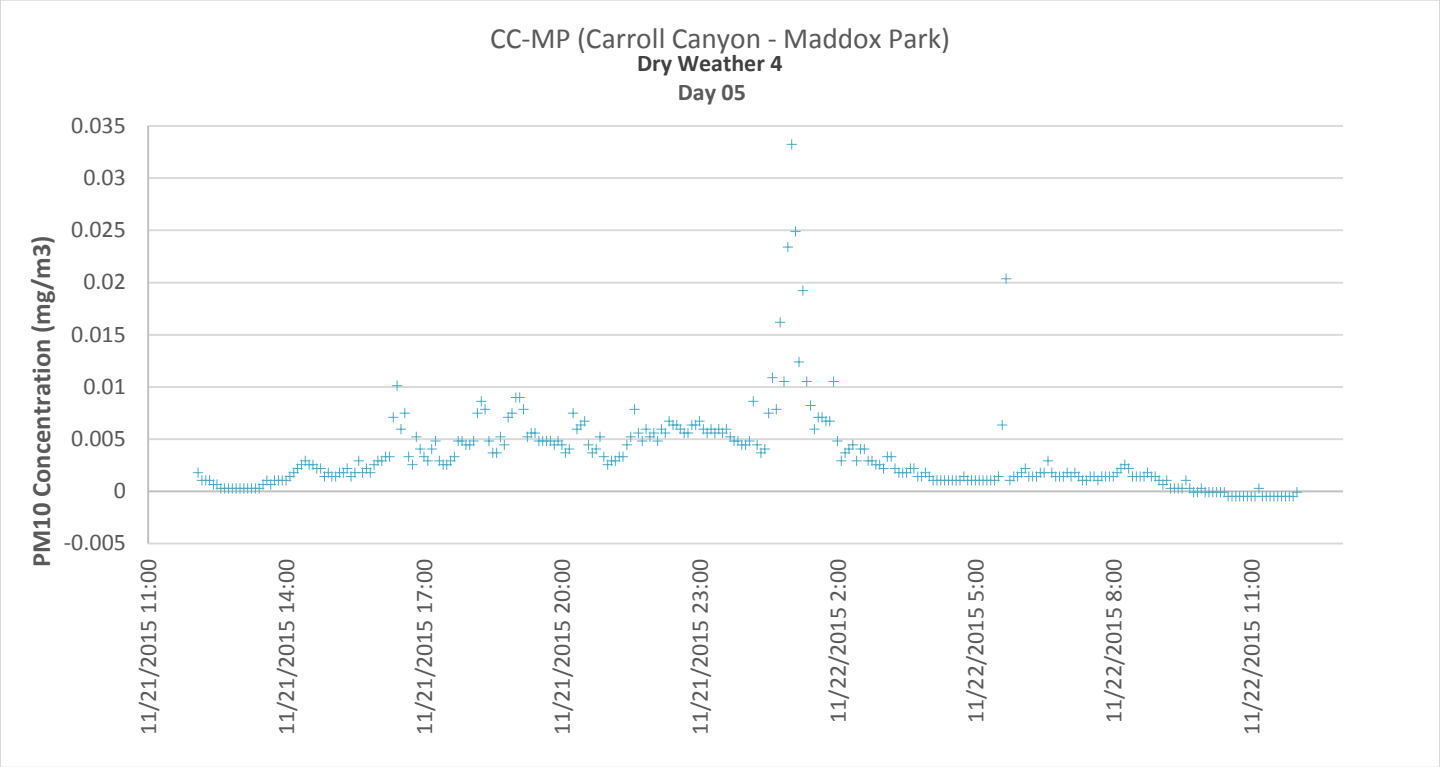

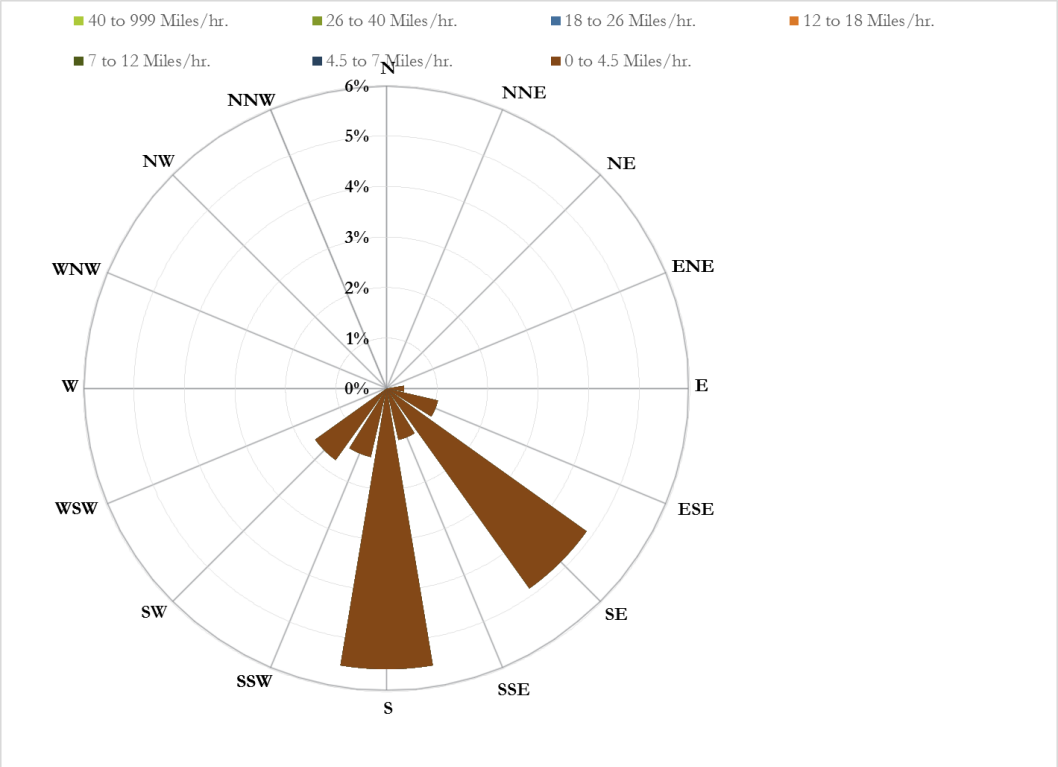

Figure 3-15.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

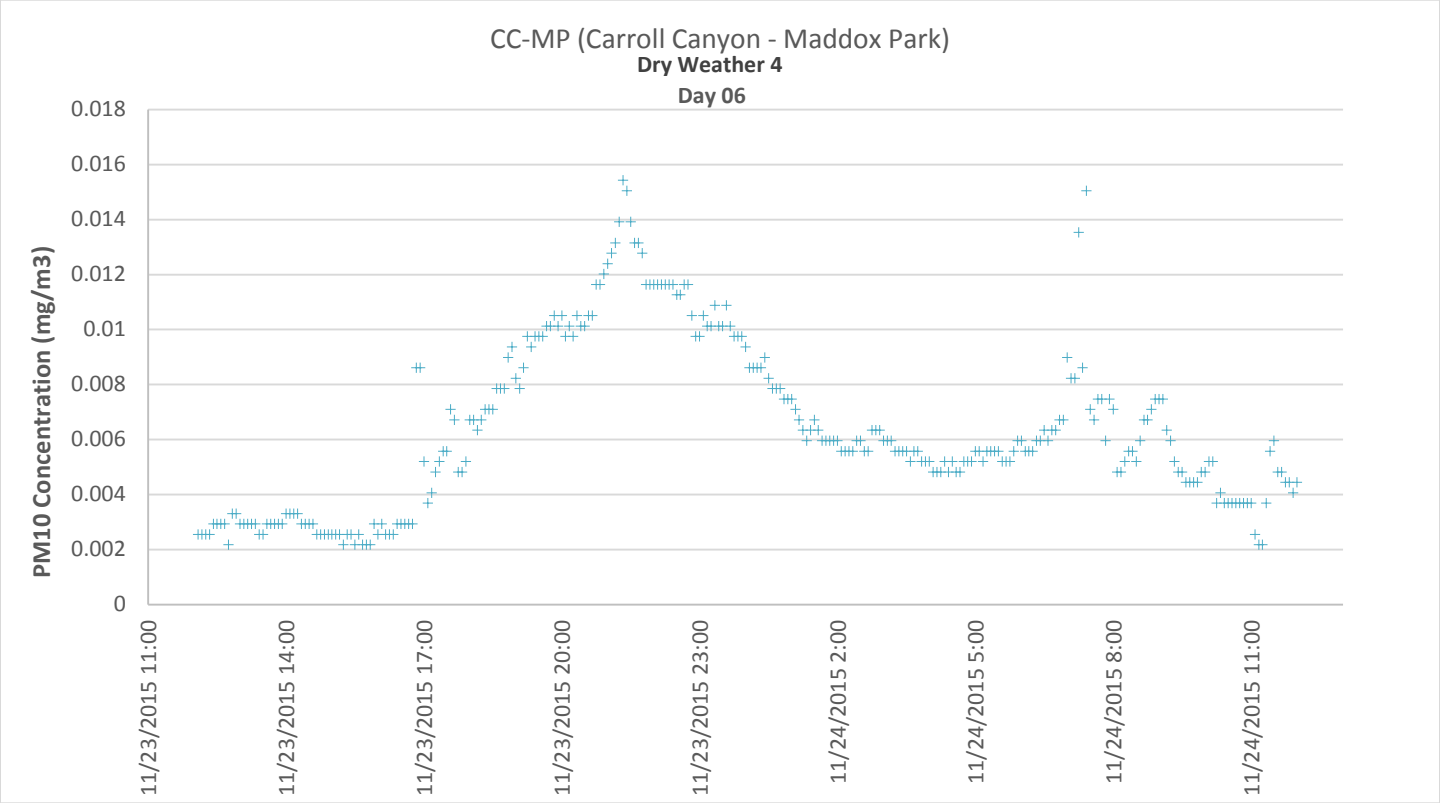

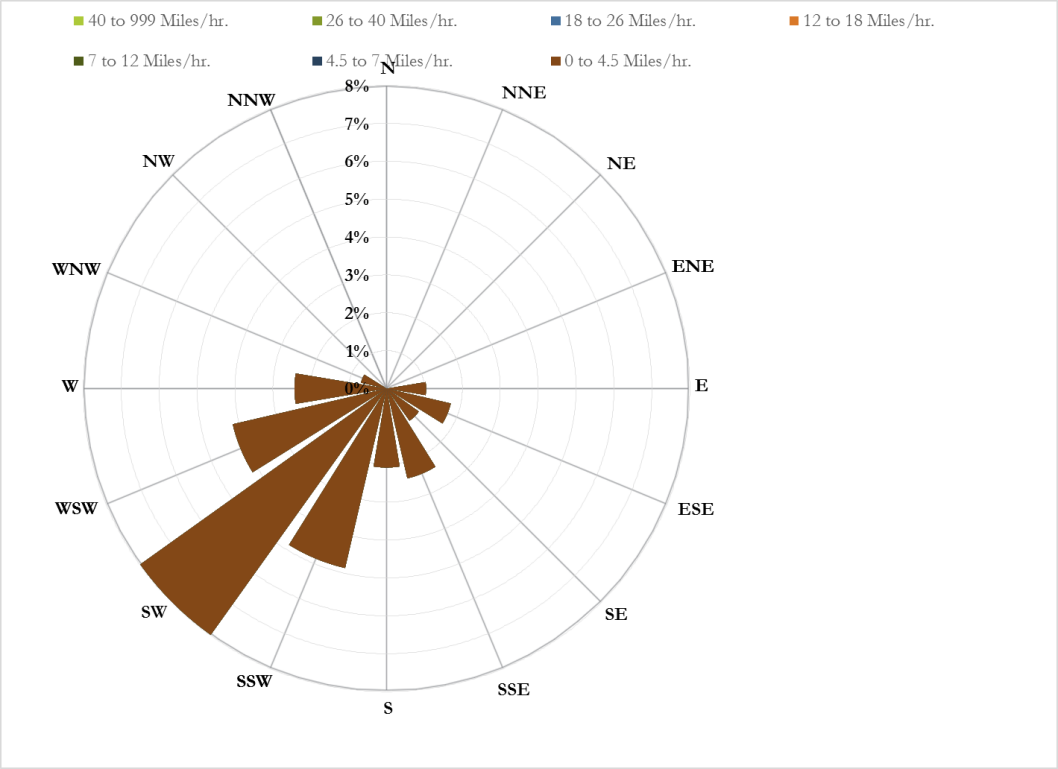

Figure 3-14.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.6 CC-SF (Carroll Canyon – Camino Santa Fe)

CC-SF (Carroll Canyon – Camino Santa Fe):

CC-MP is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the RA group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0066 mg/m^3.
- Mean standard deviation is $\pm$0.0031 mg/m^3

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CC-SF Optical readings were higher than the mean value of the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SE. Peak Optical monitor readings were observed late evening and at times of increased traffic during the morning.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CC-SF Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WSW, SW, and SSW. Optical monitor readings were consistently distributed throughout the 24 hour monitoring period.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CC-SF Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the S and SE. Peak Optical monitor readings were observed during sundown and at times of increased traffic during the morning

Graphical representations of this data is presented in Figure 3-16 through 3-18.

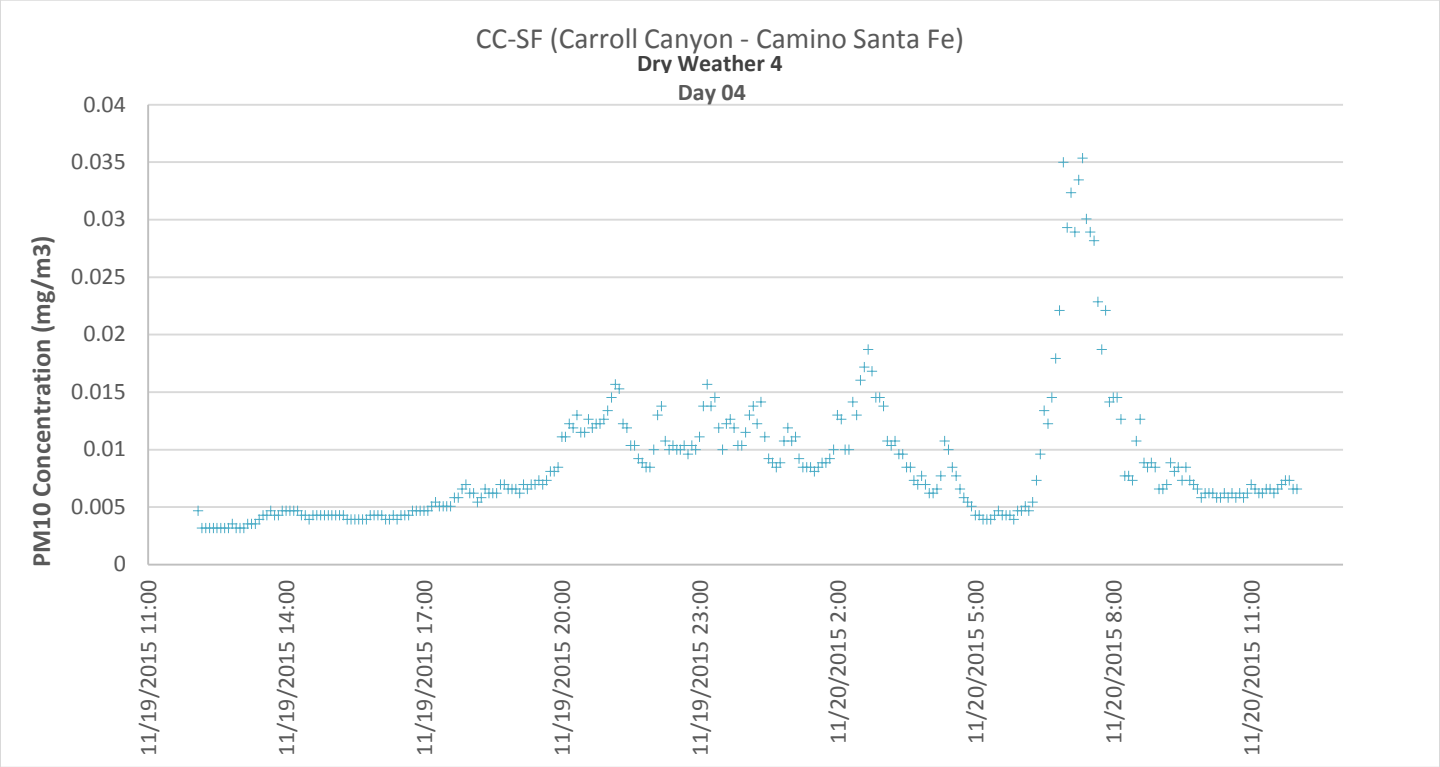

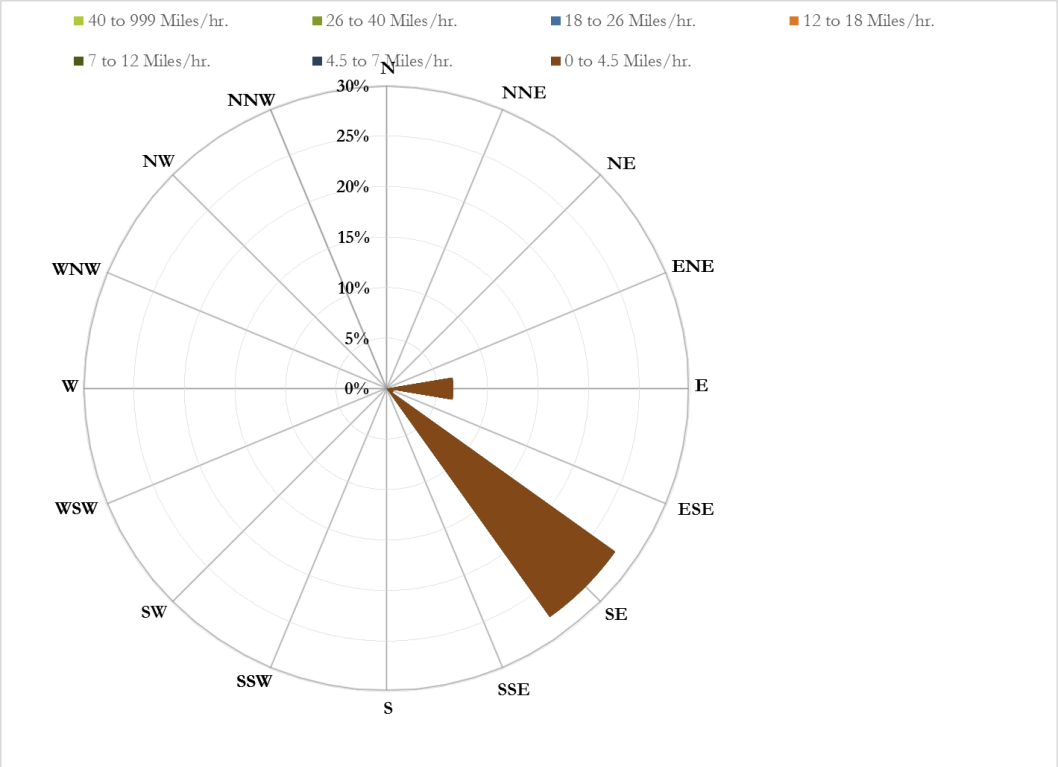

Figure 3-16.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

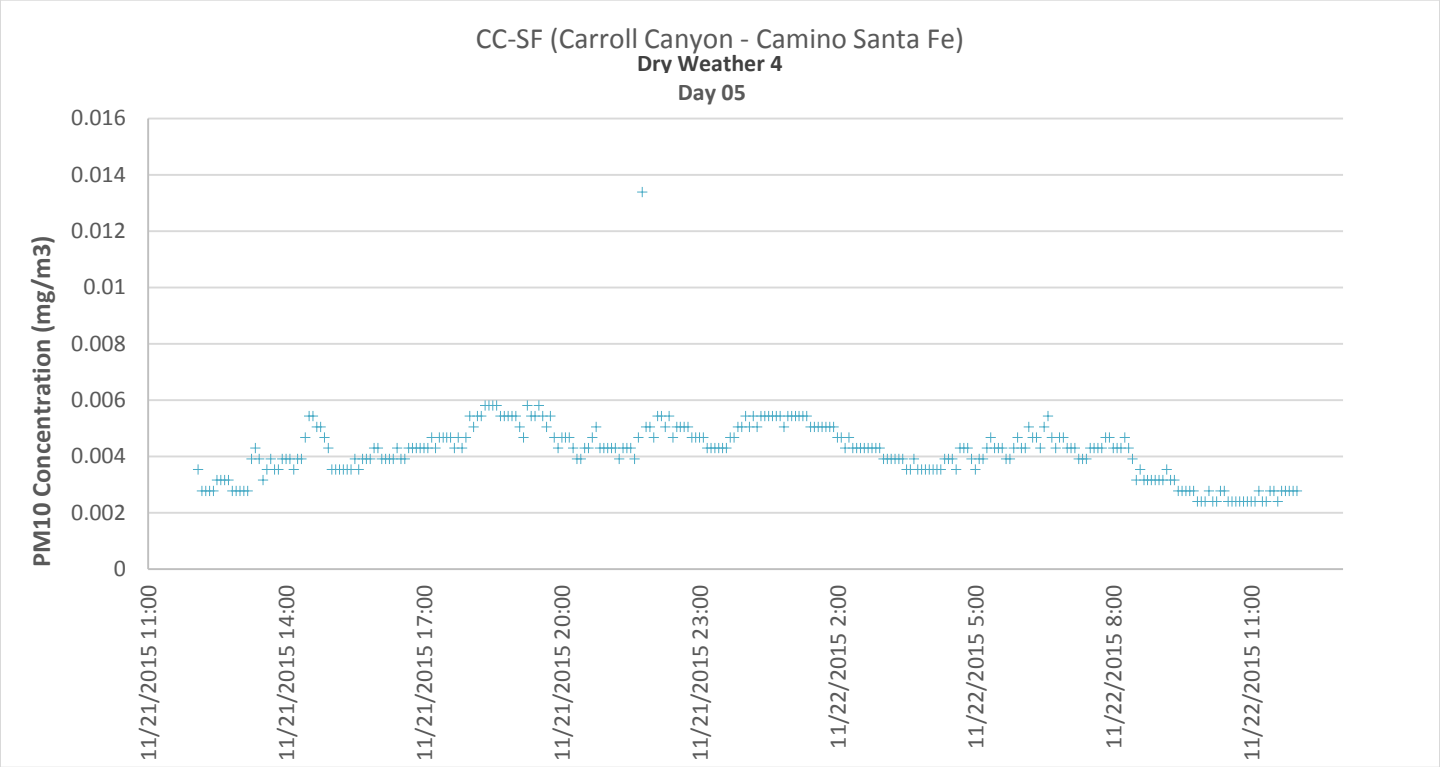

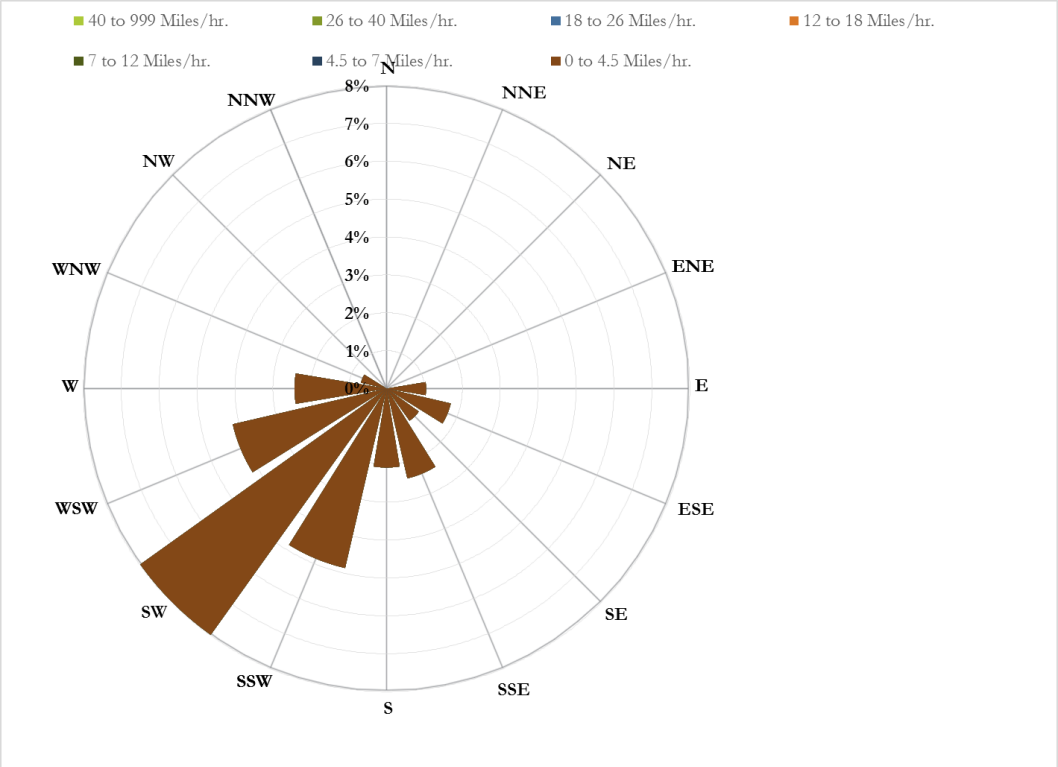

Figure 3-17.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

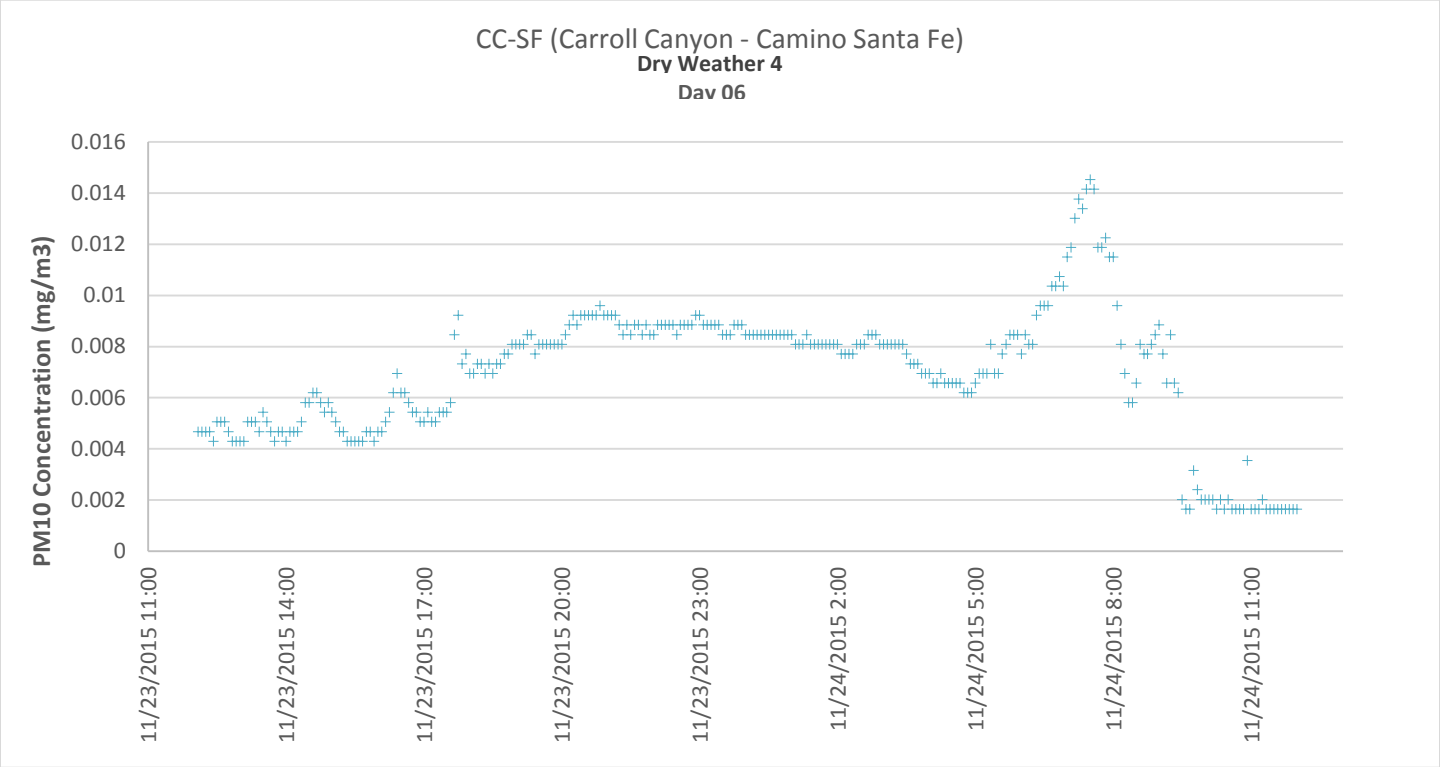

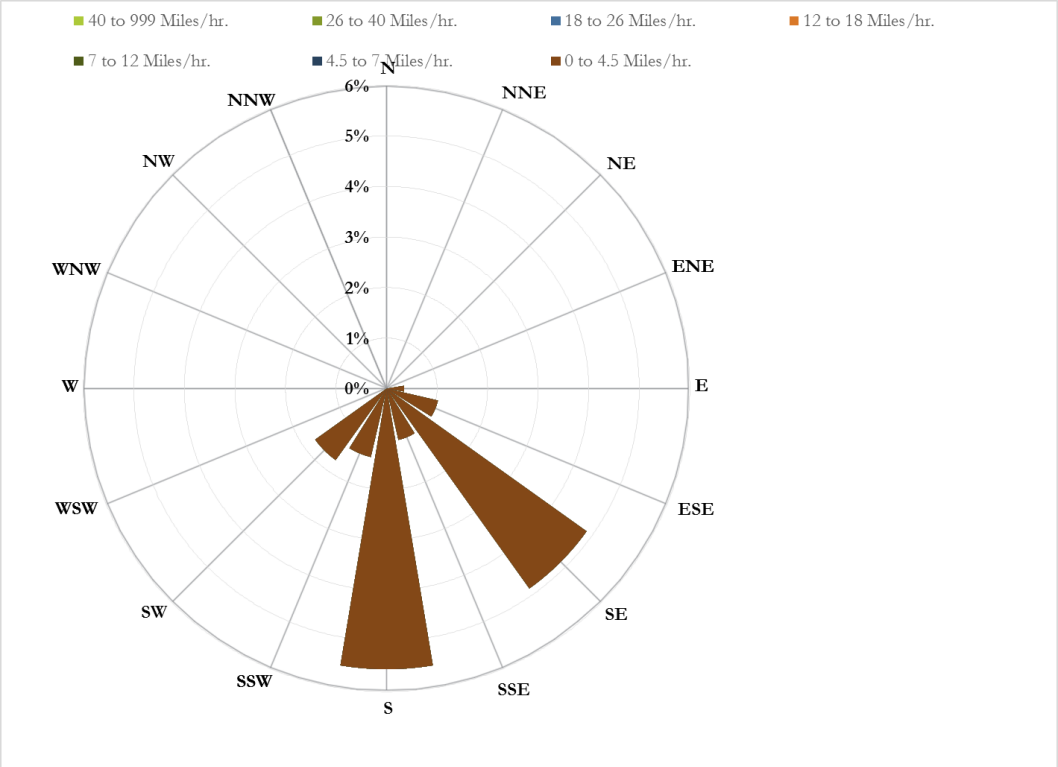

Figure 3-18.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.7 CC-SR (Carroll Canyon – Scripps Ranch)

CC-SR (Carroll Canyon – Scripps Ranch):

CC-SR is a site monitored during the Phase I and 2 Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 842 measurements were determined to be valid (97%).
- Mean values for PM_{10} were 0.0025 mg/m^3.
- Mean standard deviation is $\pm$0.0015 mg/m^3

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CC-SR Optical readings were lower than the mean value of the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SE. Peak Optical monitor readings were observed during sundown and late morning.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CC-SR Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WSW, SW, and SSW. Optical monitor readings peaked during the evening and sundown.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CC-SR Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WNW, NE, and ENE. Peak Optical monitor readings were observed before midnight.

Graphical representations of this data is presented in Figure 3-19 through 3 -21.

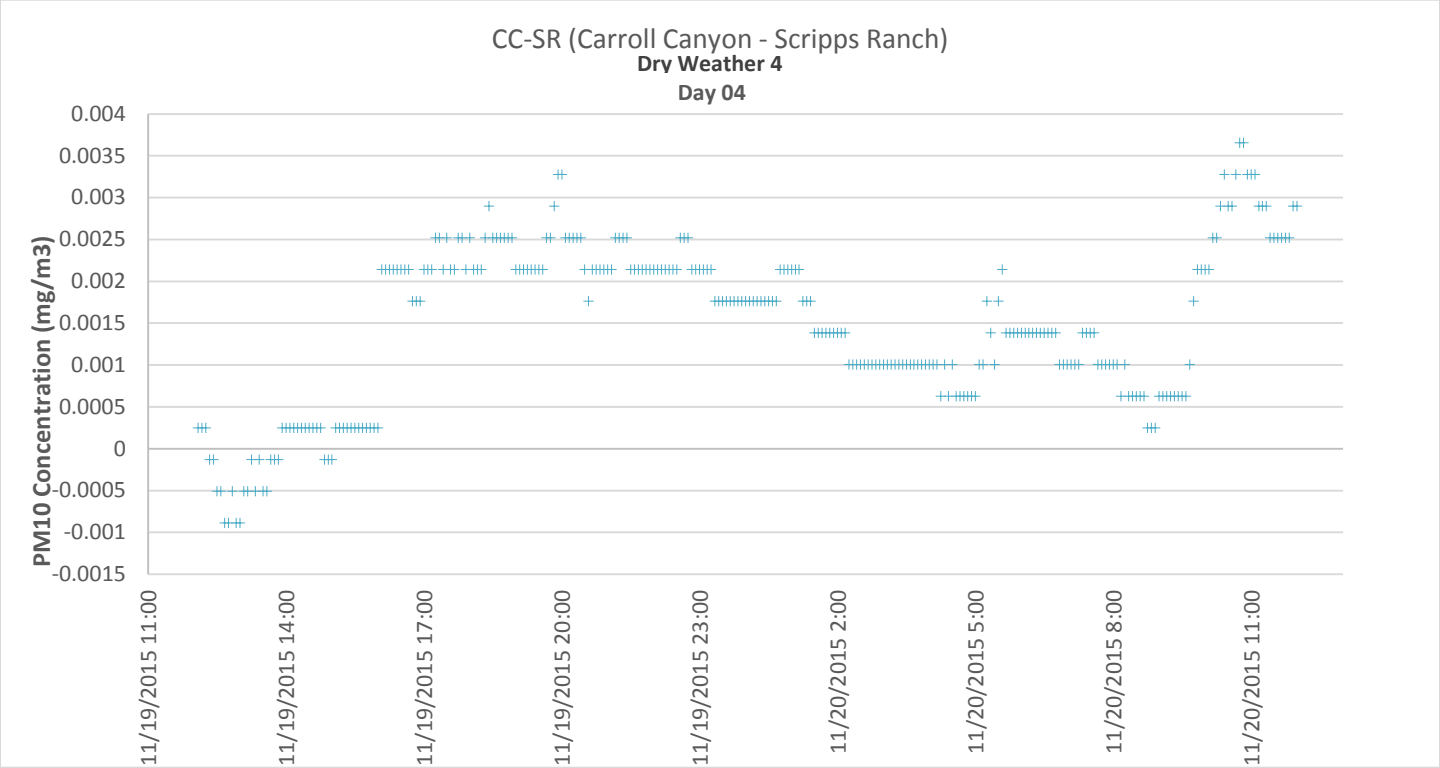

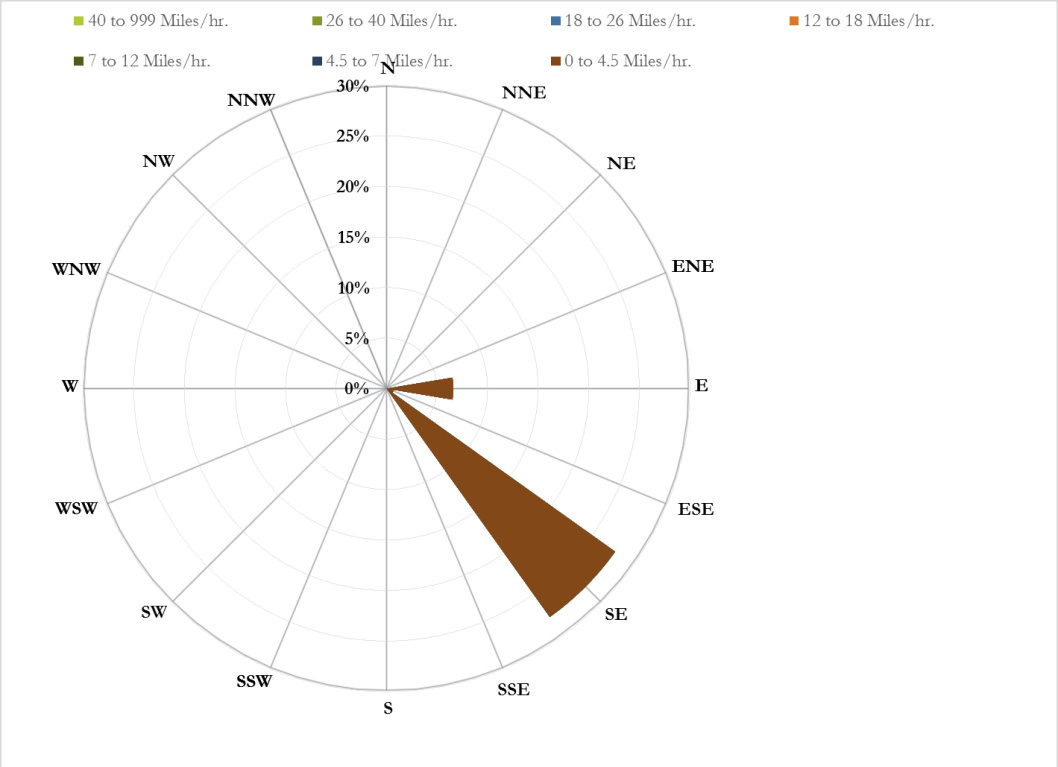

Figure 3-19.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

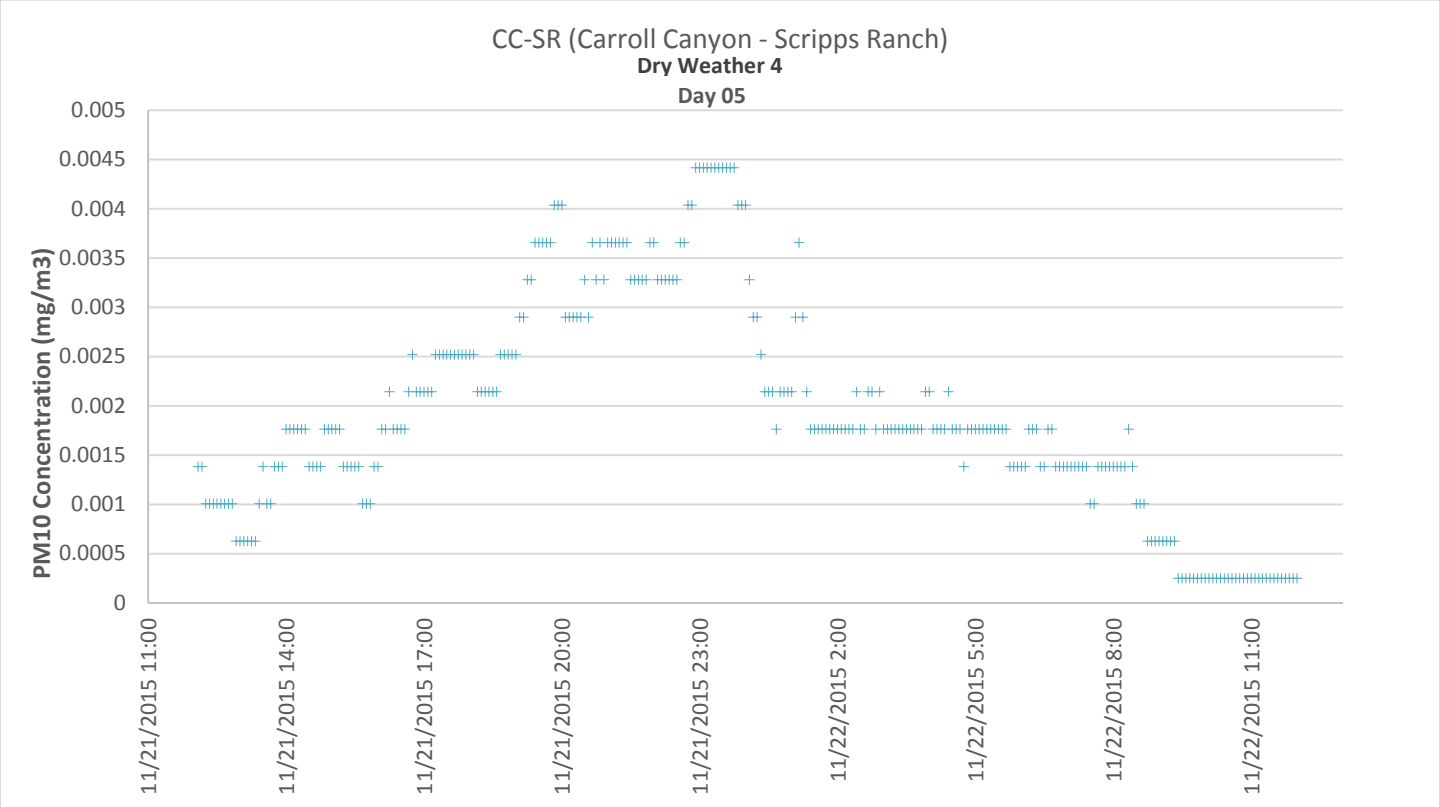

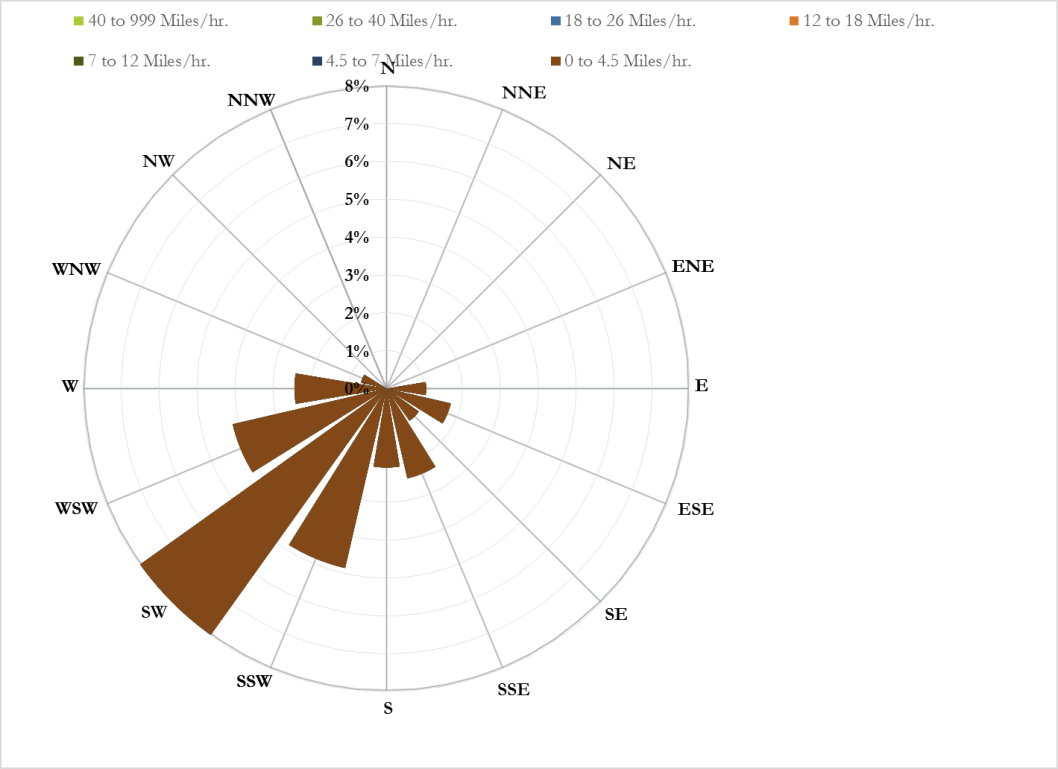

Figure 3-20.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

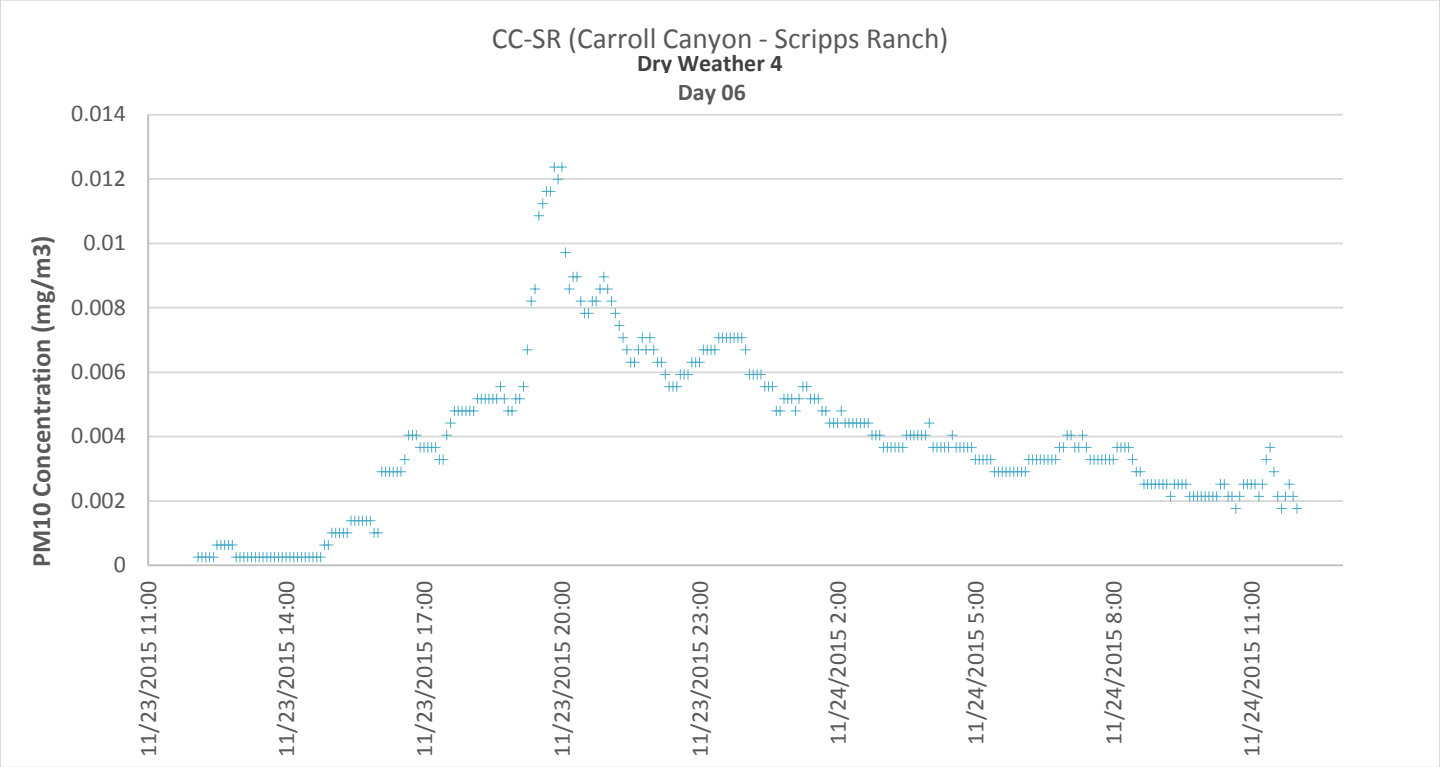

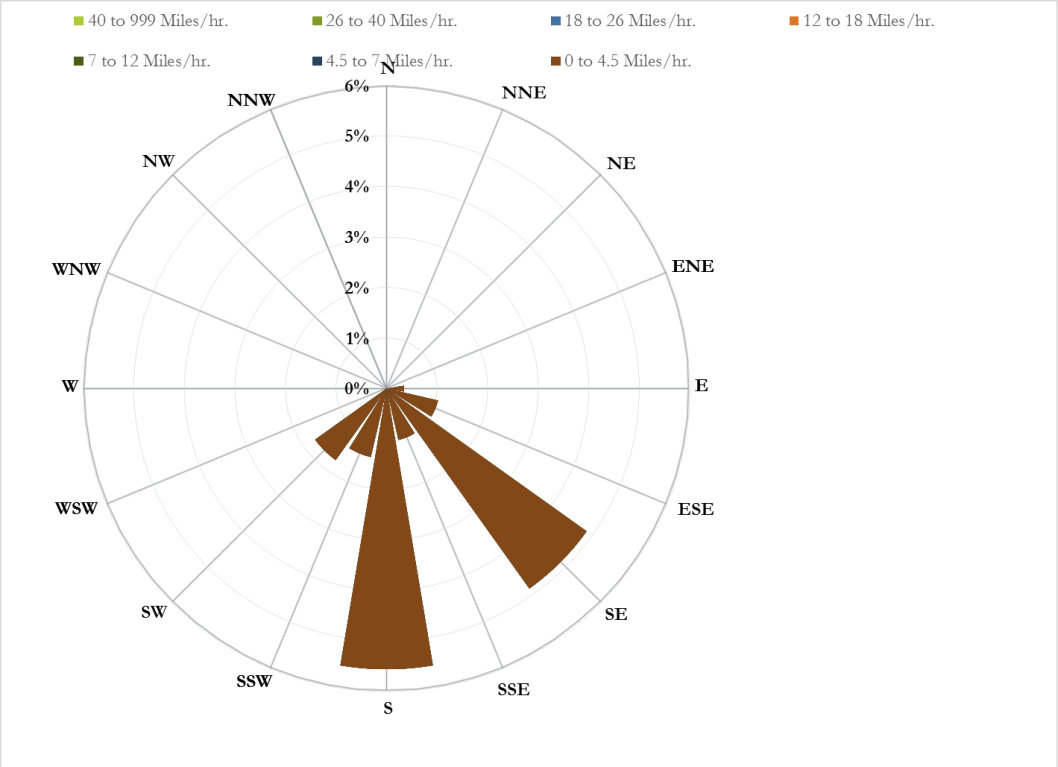

Figure 3-21.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.8 CC-UP (Carroll Canyon – Upwind)

CC-UP (Carroll Canyon – Upwind):

CC-UP is a site monitored during the Phase I and 2 Watershed Special Study and contains an Optical monitor and an FRM sampler.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 812 measurements were determined to be valid (93%).
- Mean values for PM_{10} were 0.0053 mg/m^3.
- Mean standard deviation is $\pm$0.0030 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean values for PM_{10} was 0.0860 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 144.28%

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CC-UP Optical readings were higher than the mean value of the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SE. Peak Optical monitor readings were observed during sundown and late morning.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CC-UP Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the NW. Optical monitor readings increased during the evening and sundown.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CC-UP Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed before midnight and during times of increased traffic in the morning.

Graphical representations of this data is presented in Figures 3-22 through 3-24.

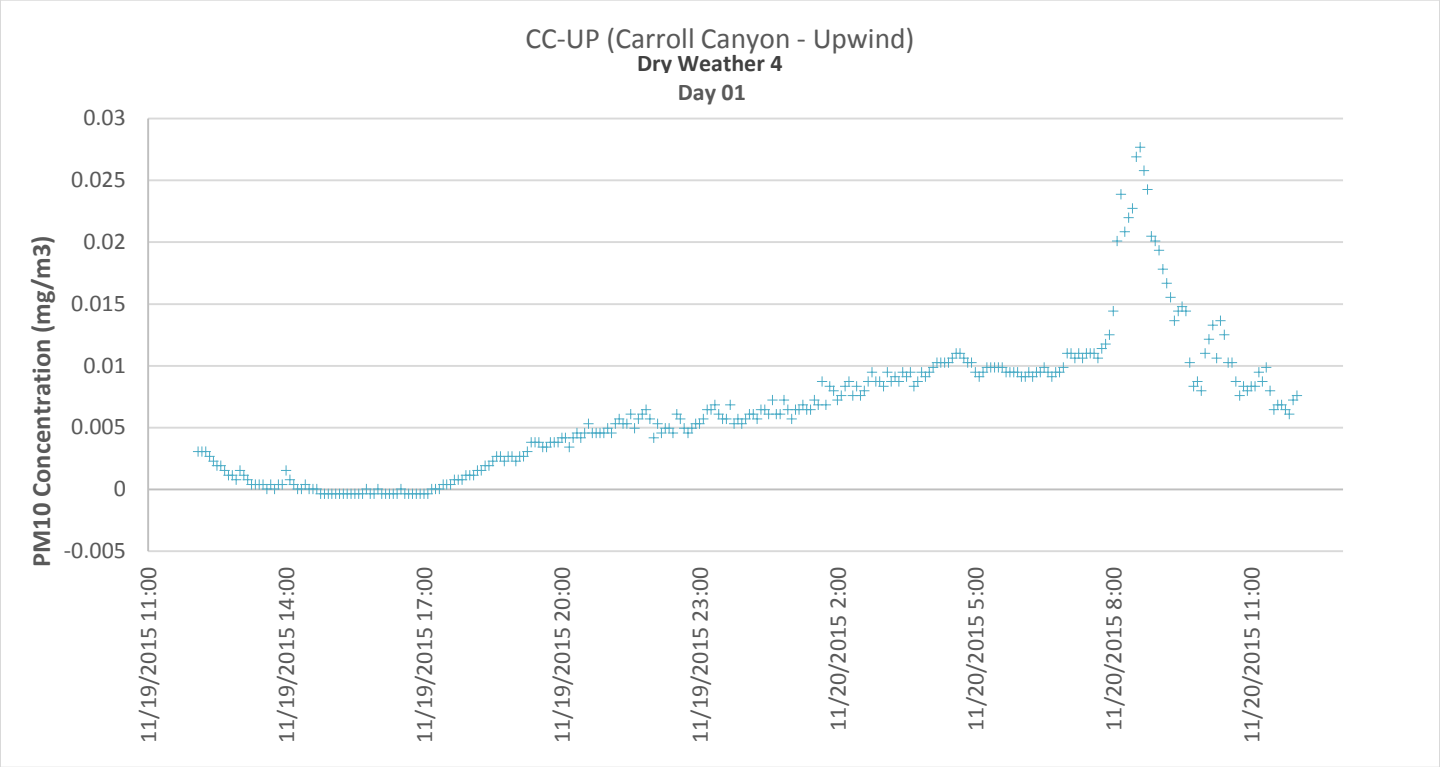

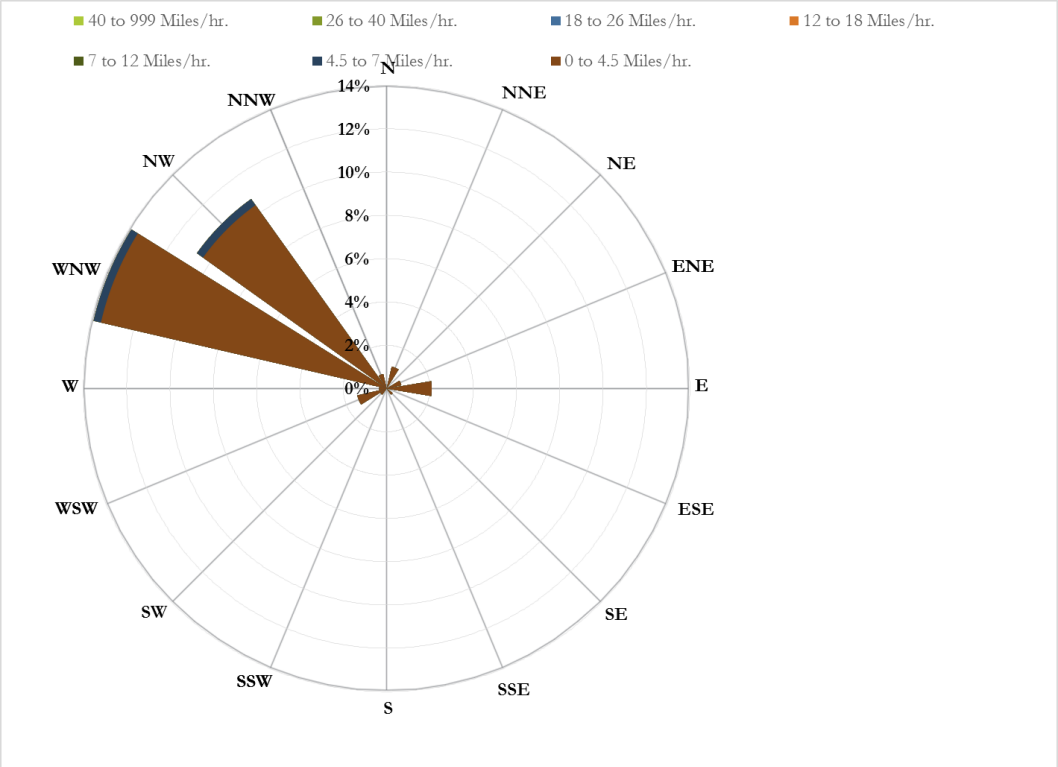

Figure 3-22.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

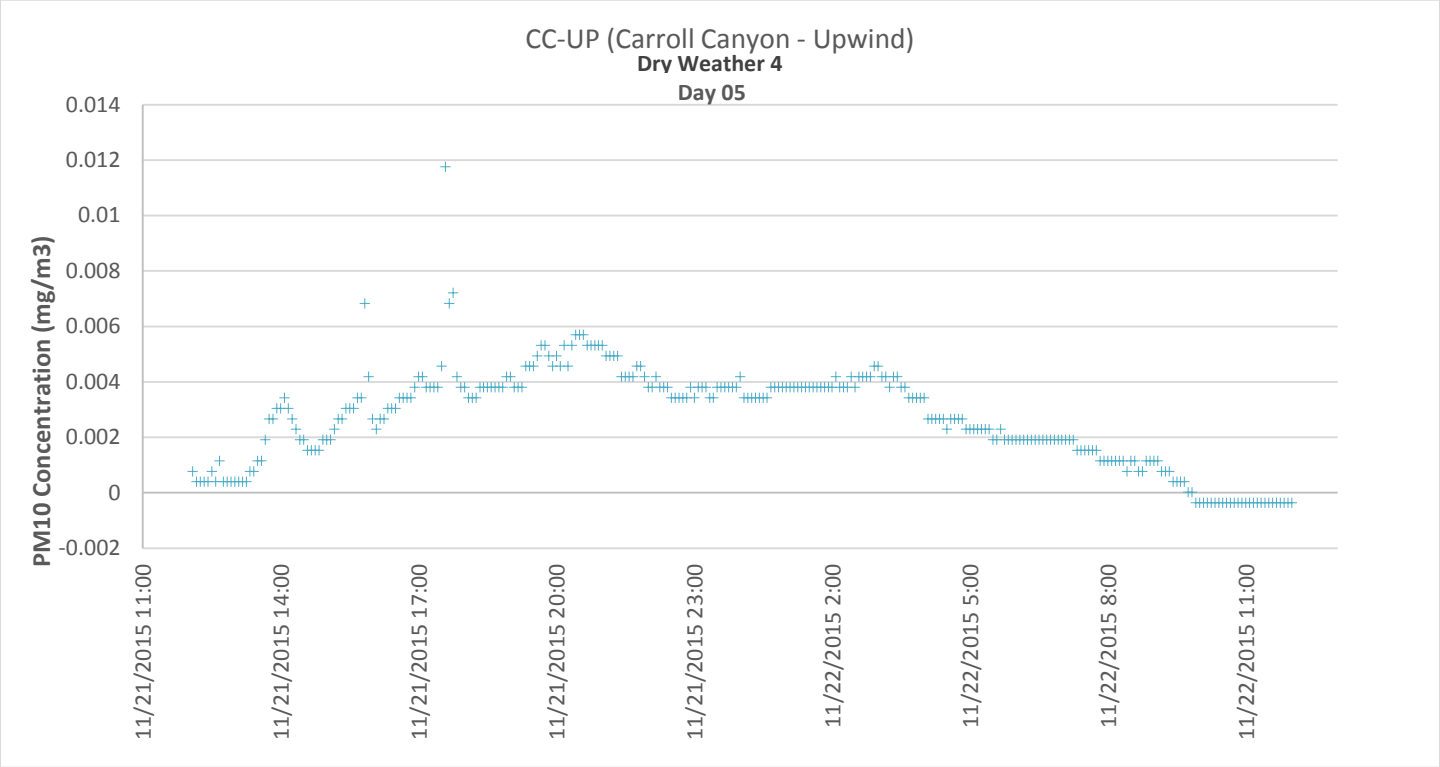

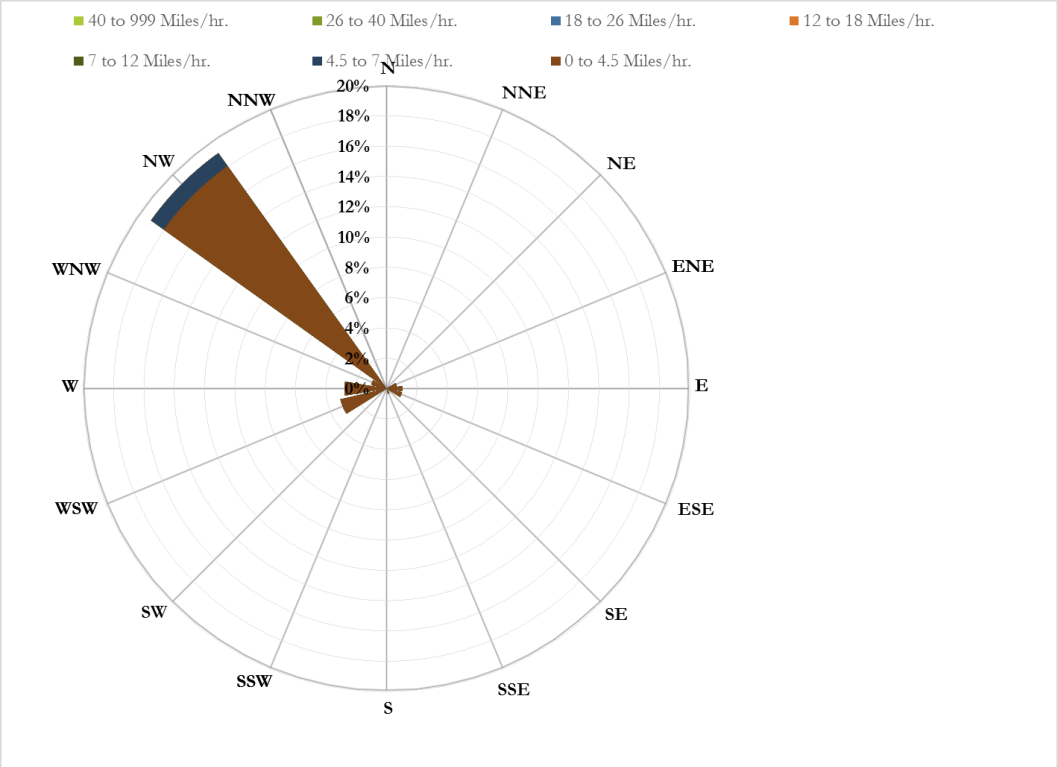

Figure 3-23.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

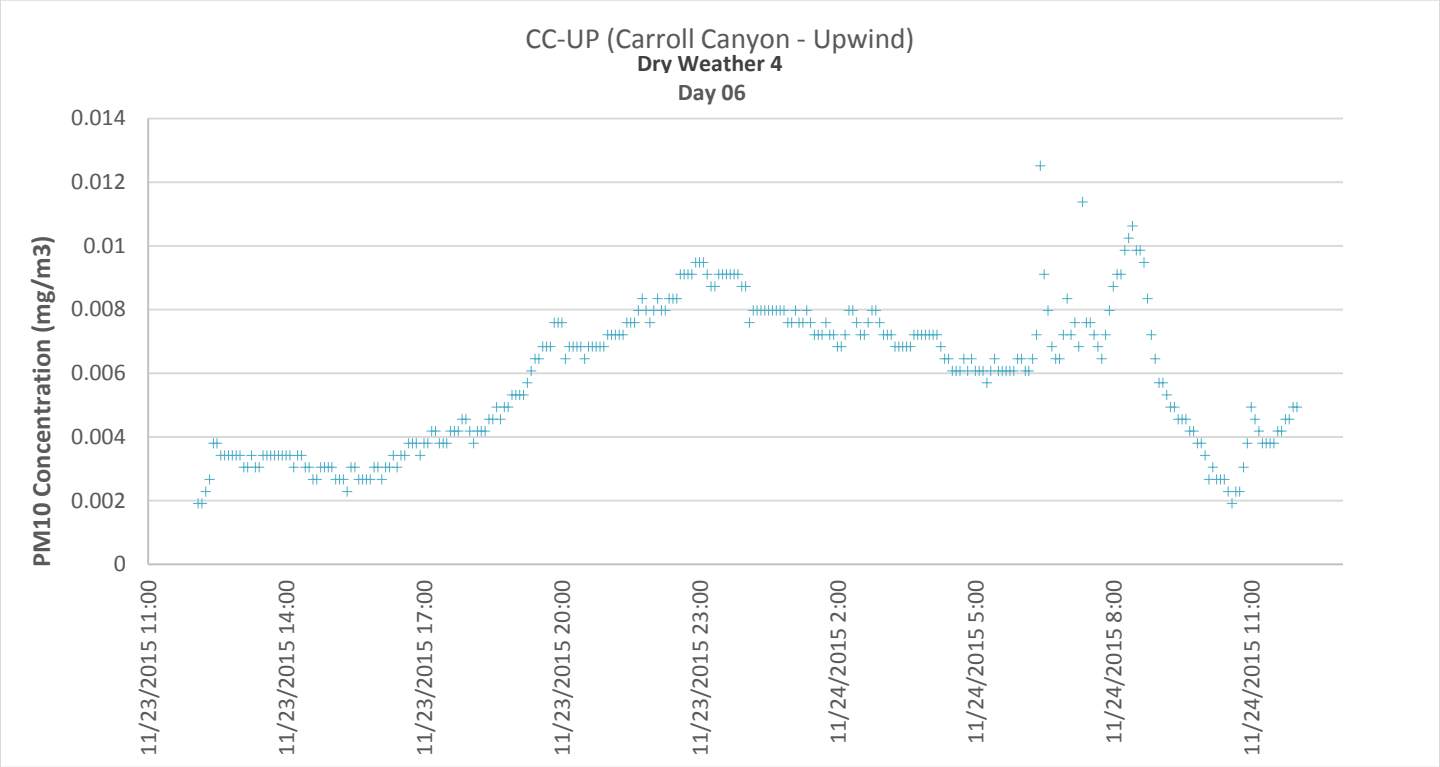

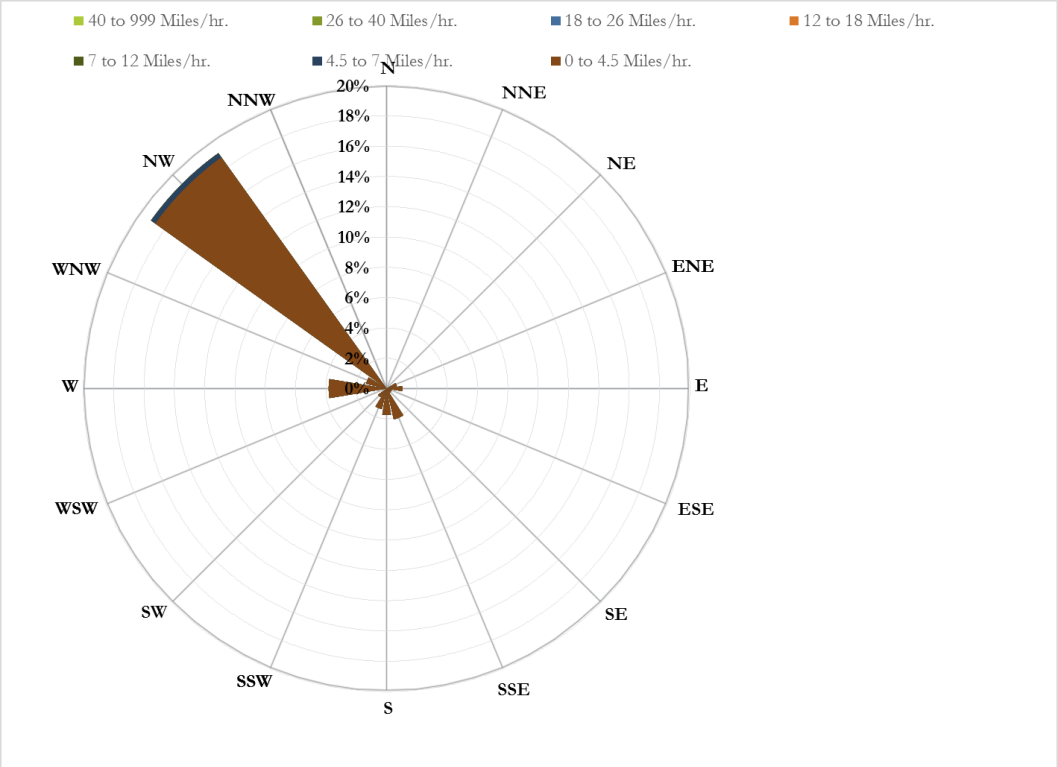

Figure 3-24.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.9 CV-CD (Carmel Valley – Camino Del Sur)

CV-CD (Carmel Valley – Camino Del Sur):

CV-CD is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0032 mg/m^3.
- Mean standard deviation is $\pm$0.0015 mg/m^3

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – CV-CD Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind direction were observed primarily from the WNW, NW, and the E. Peak Optical monitor readings were observed between 15:00 to 20:00.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – CV-CD Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WNW, NE, and ENE. Peak optical monitor readings were observed before midnight.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – CV-CD Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the WNW, NE, and ENE. Peak Optical monitor readings were observed during sundown.

Graphical representations of this data are presented in Figures 3-25 through 3-27.

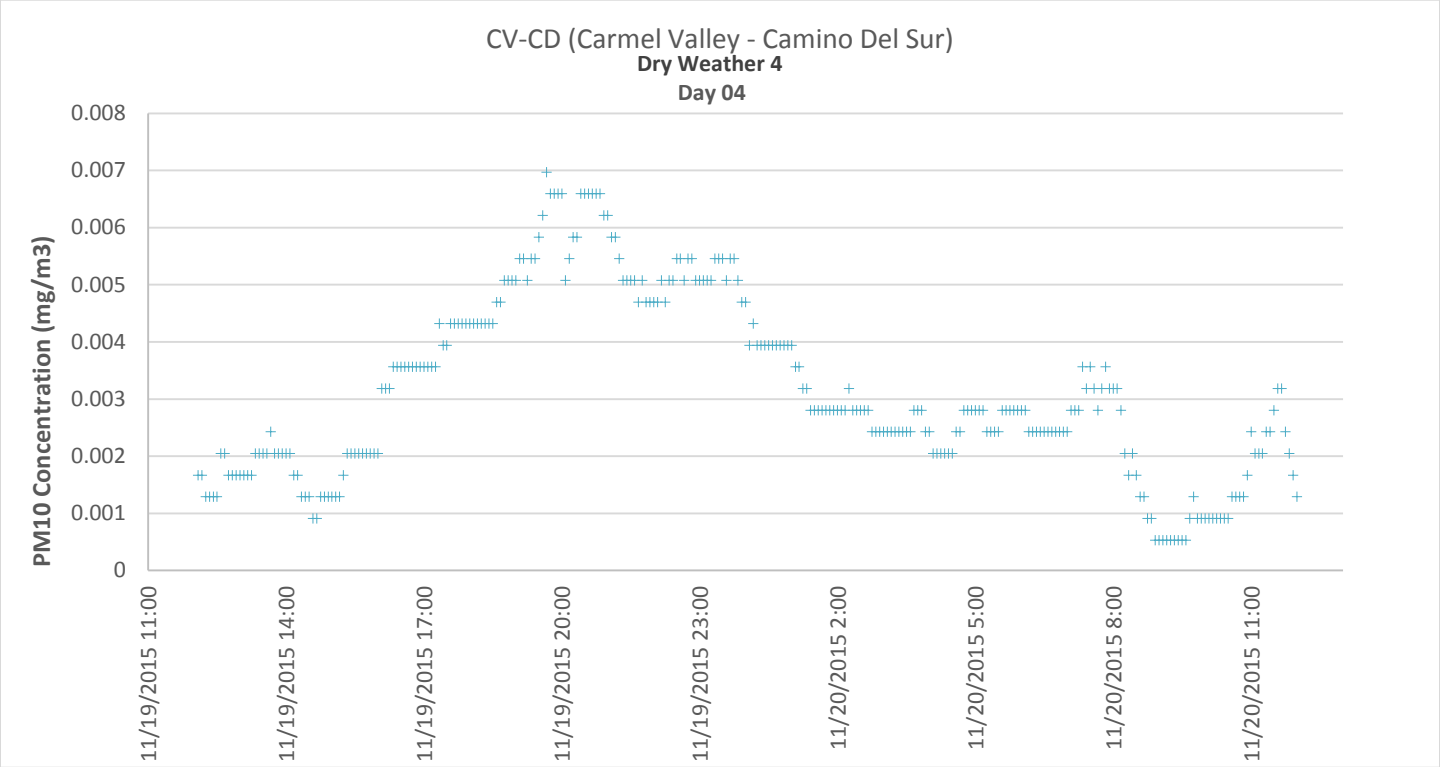

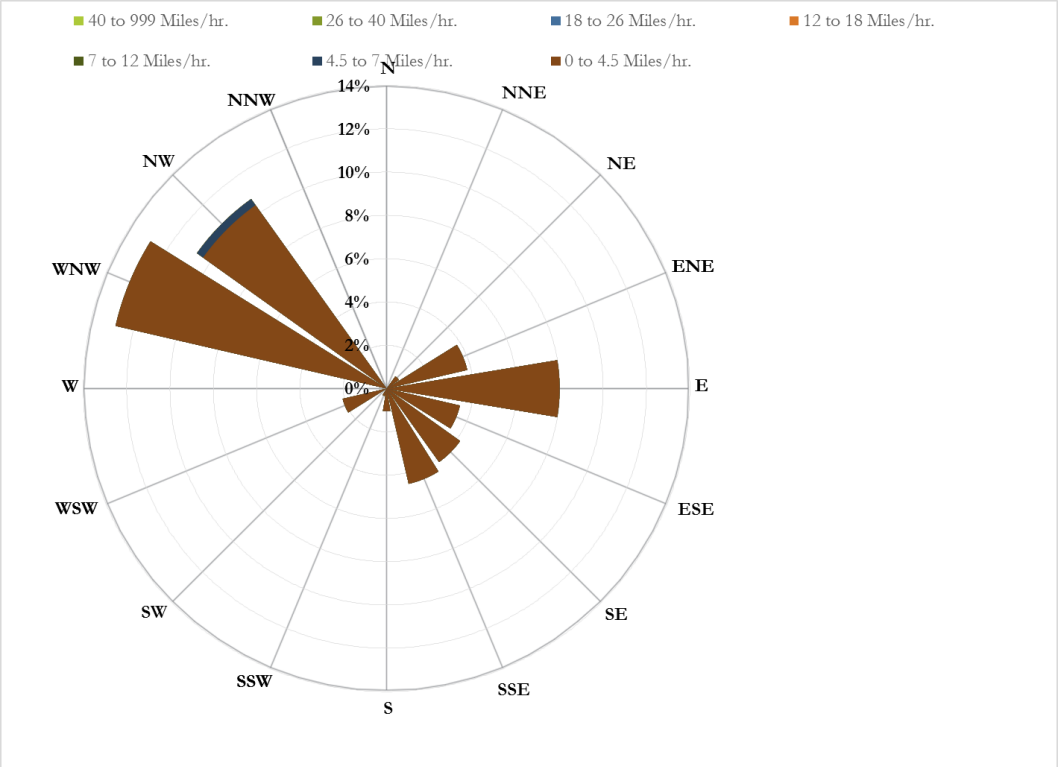

Figure 3-25.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

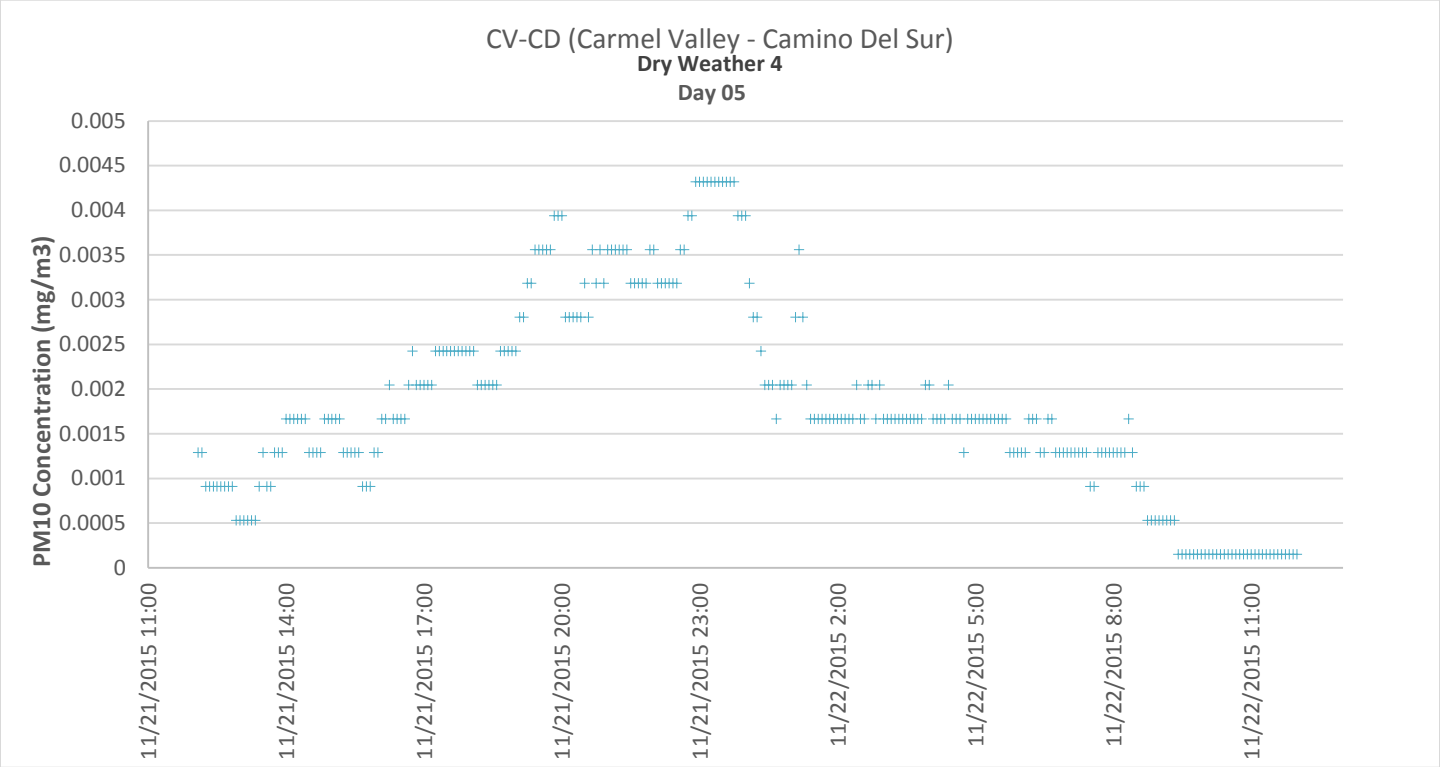

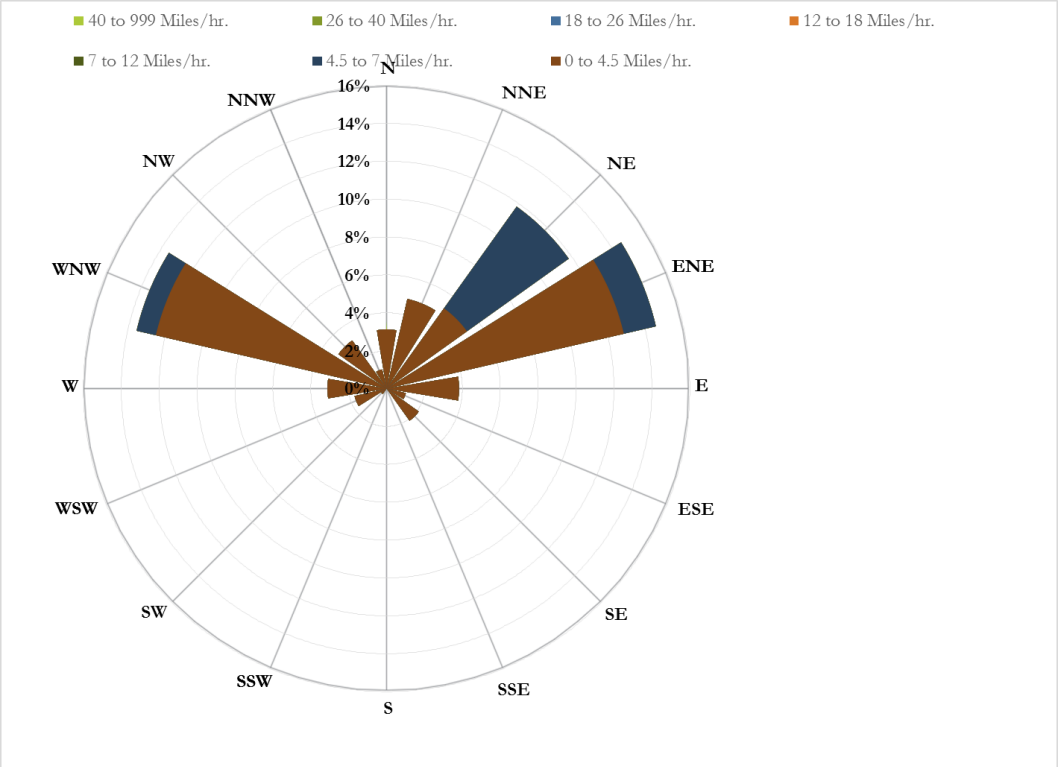

Figure 3-26.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

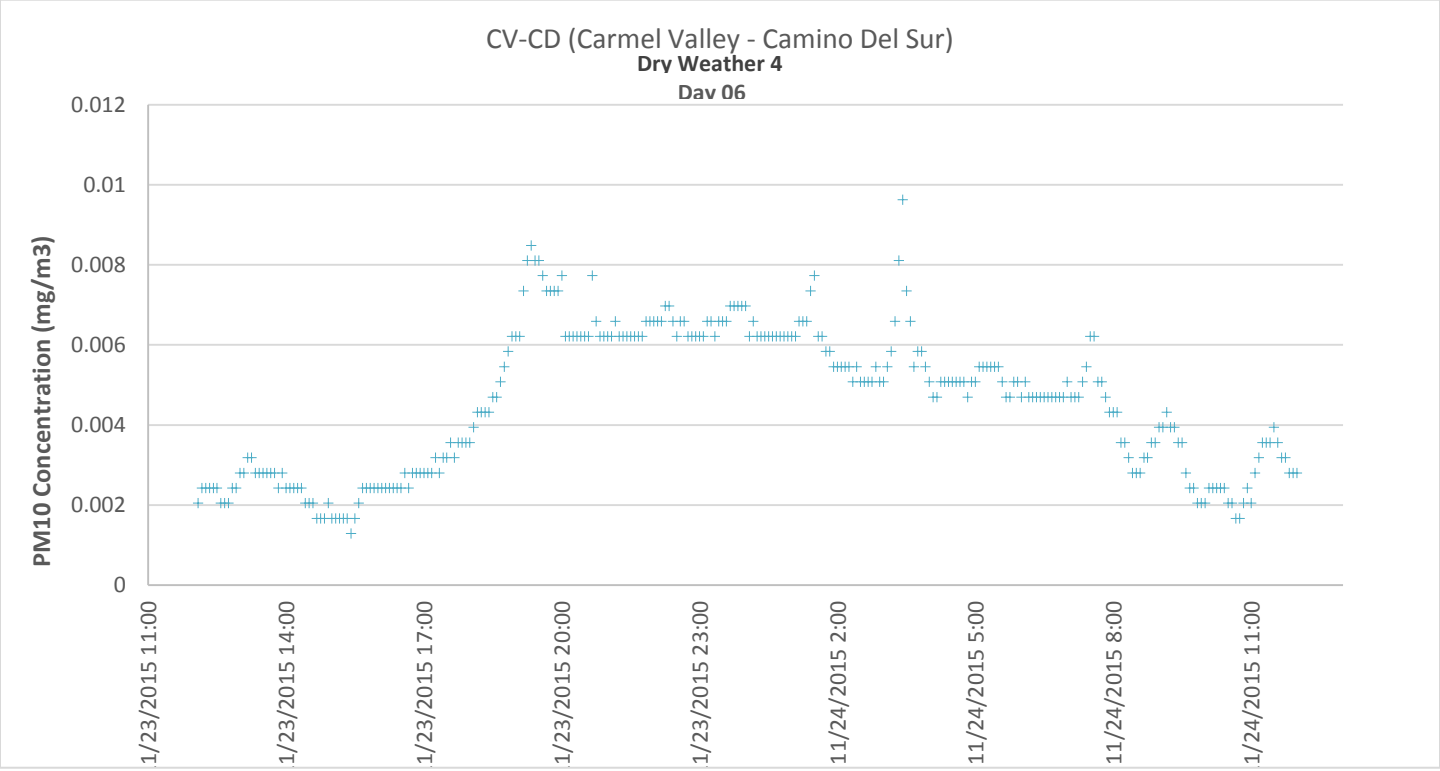

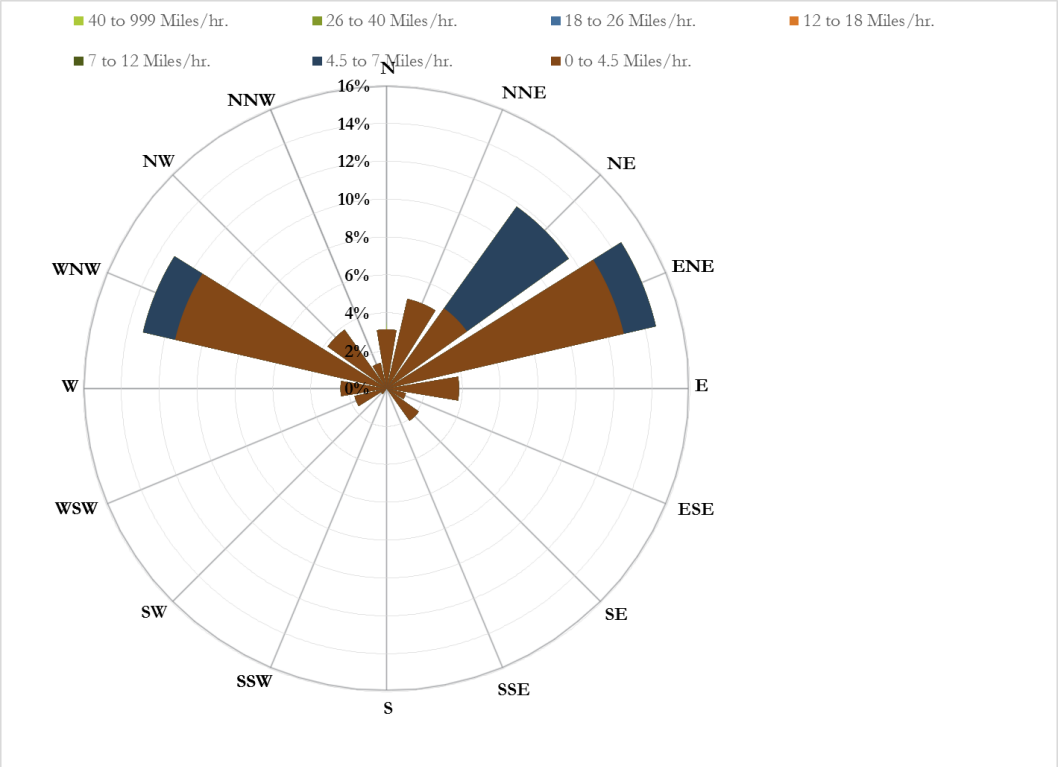

Figure 3-27.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.10 LP-PO (Los Peñasquitos – Poway)

LP-PO (Los Peñasquitos – Poway):

CV-CD is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0045 mg/m^3.
- Mean standard deviation is $\pm$0.0030 mg/m^3

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind direction were observed primarily from the SE. Optical monitor readings increased during periods of increased traffic during the afternoon and morning. Peak Optical readings occurred before midnight.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SW. Peak Optical monitor readings were observed during sundown prior to midnight.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – LP-PO Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the S and SE. Peak Optical monitor readings were observed before midnight. Higher Optical readings were observed during periods of increased traffic in the morning.

Graphical representations of this data are presented in Figures 3-28 through 3-30.

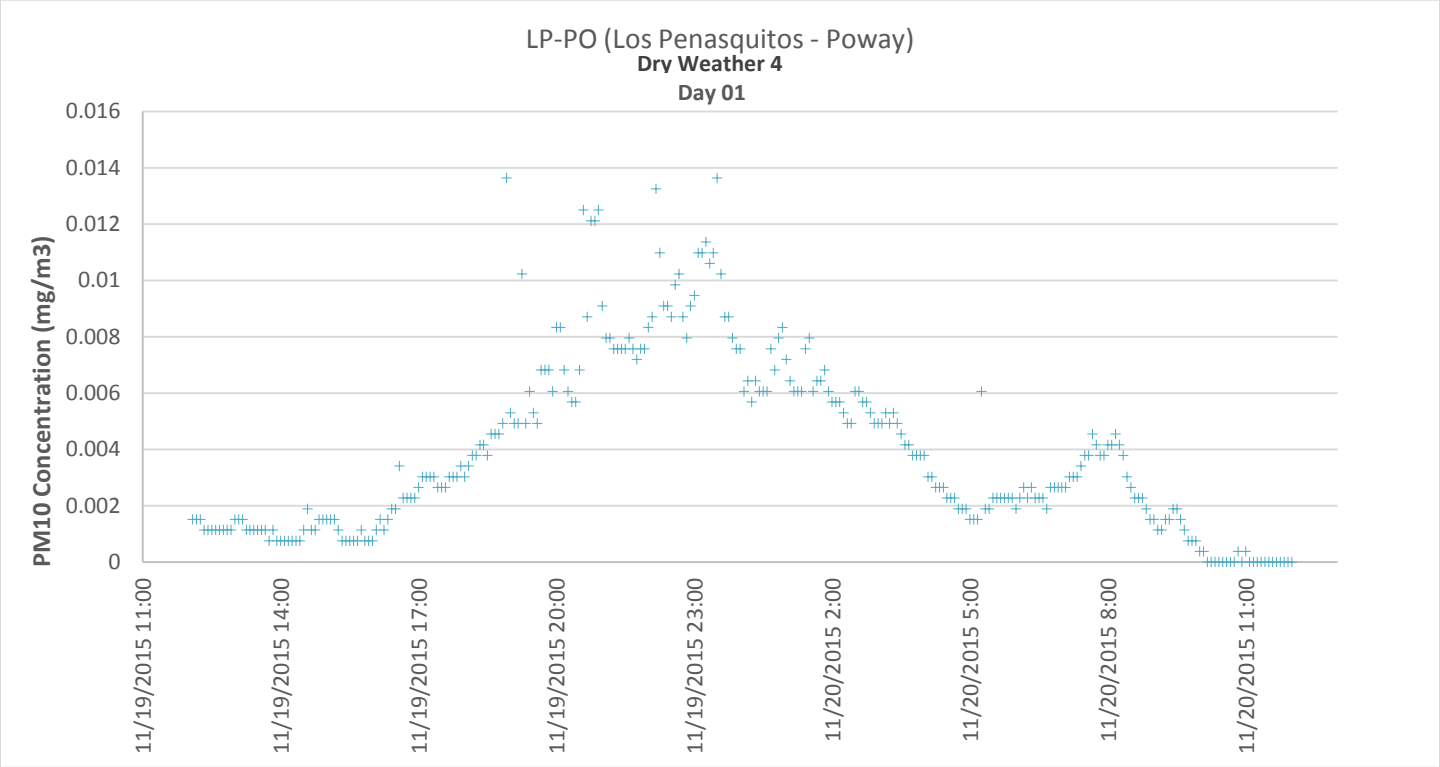

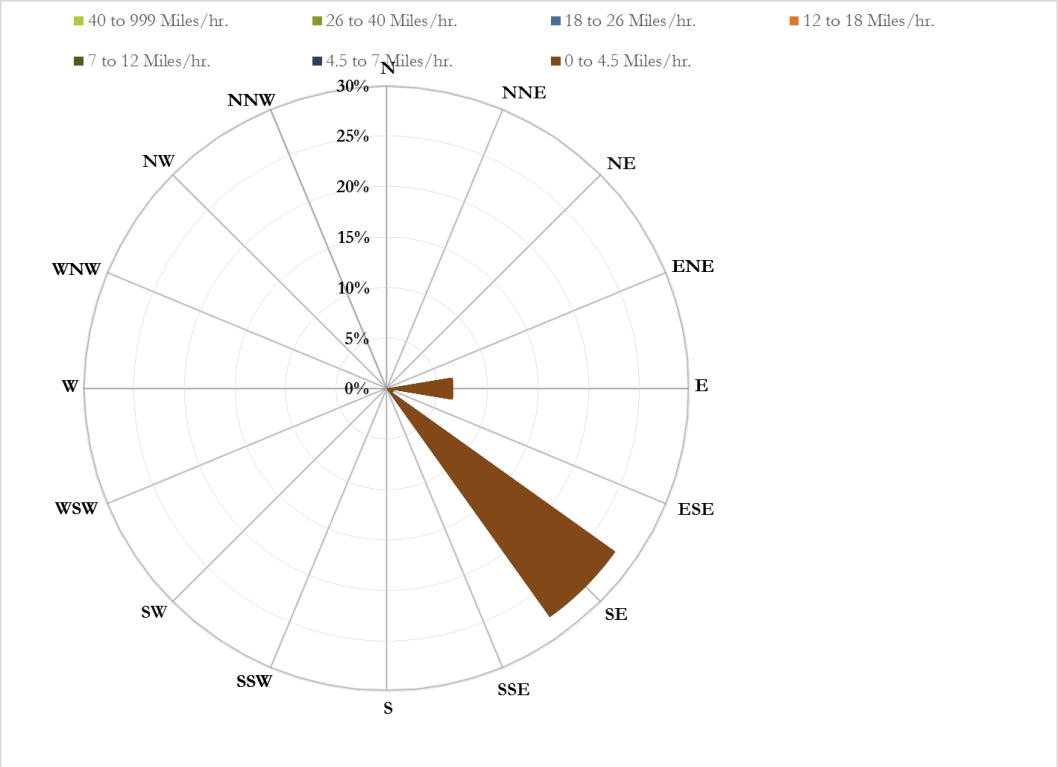

Figure 3-28.
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

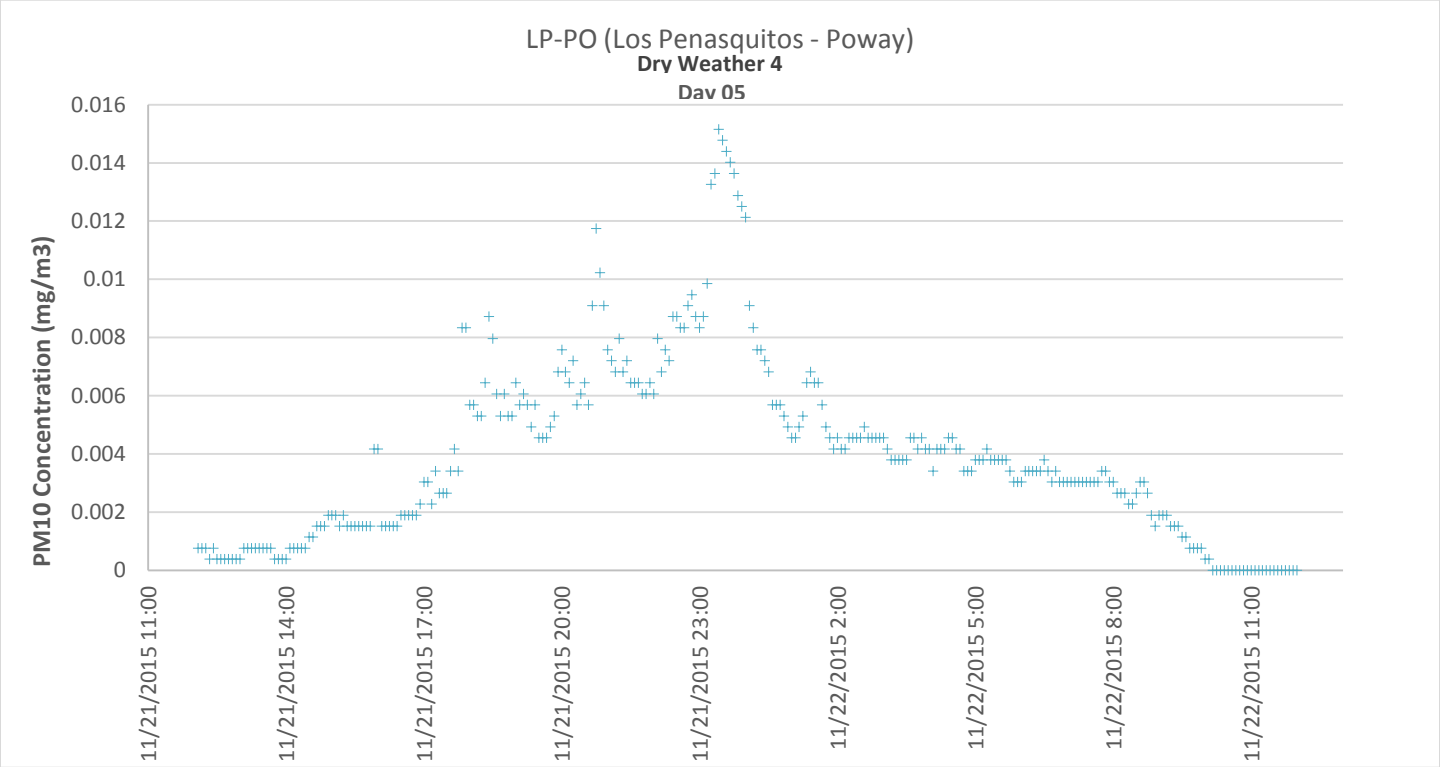

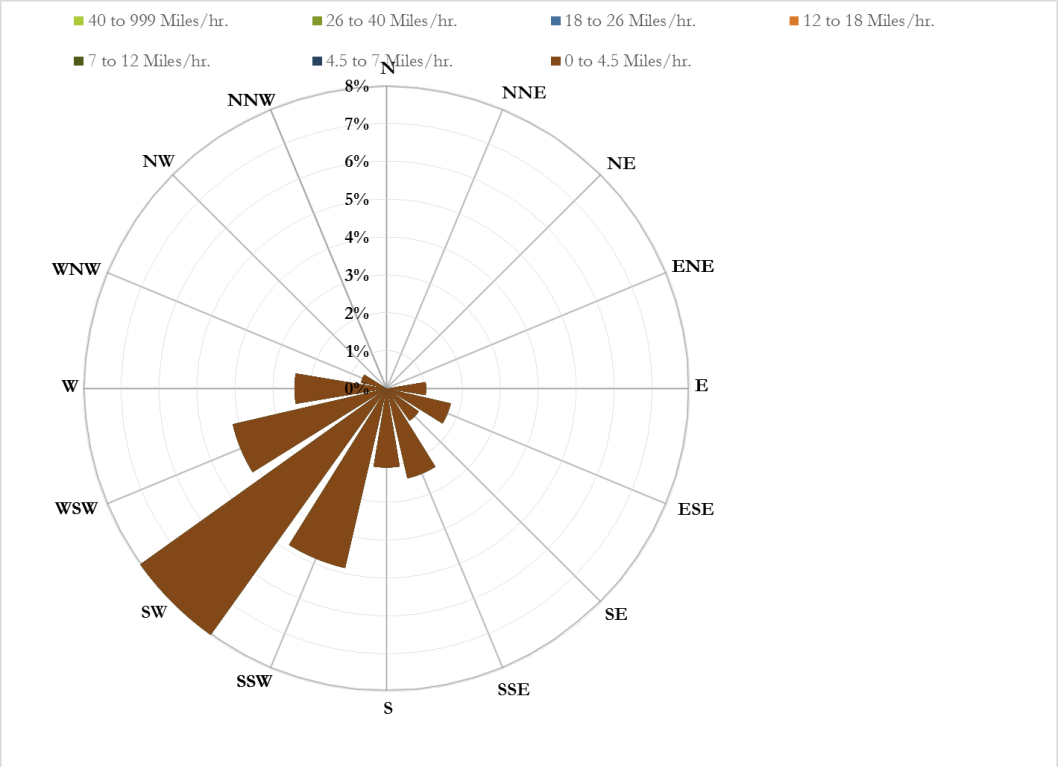

Figure 3-29.
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

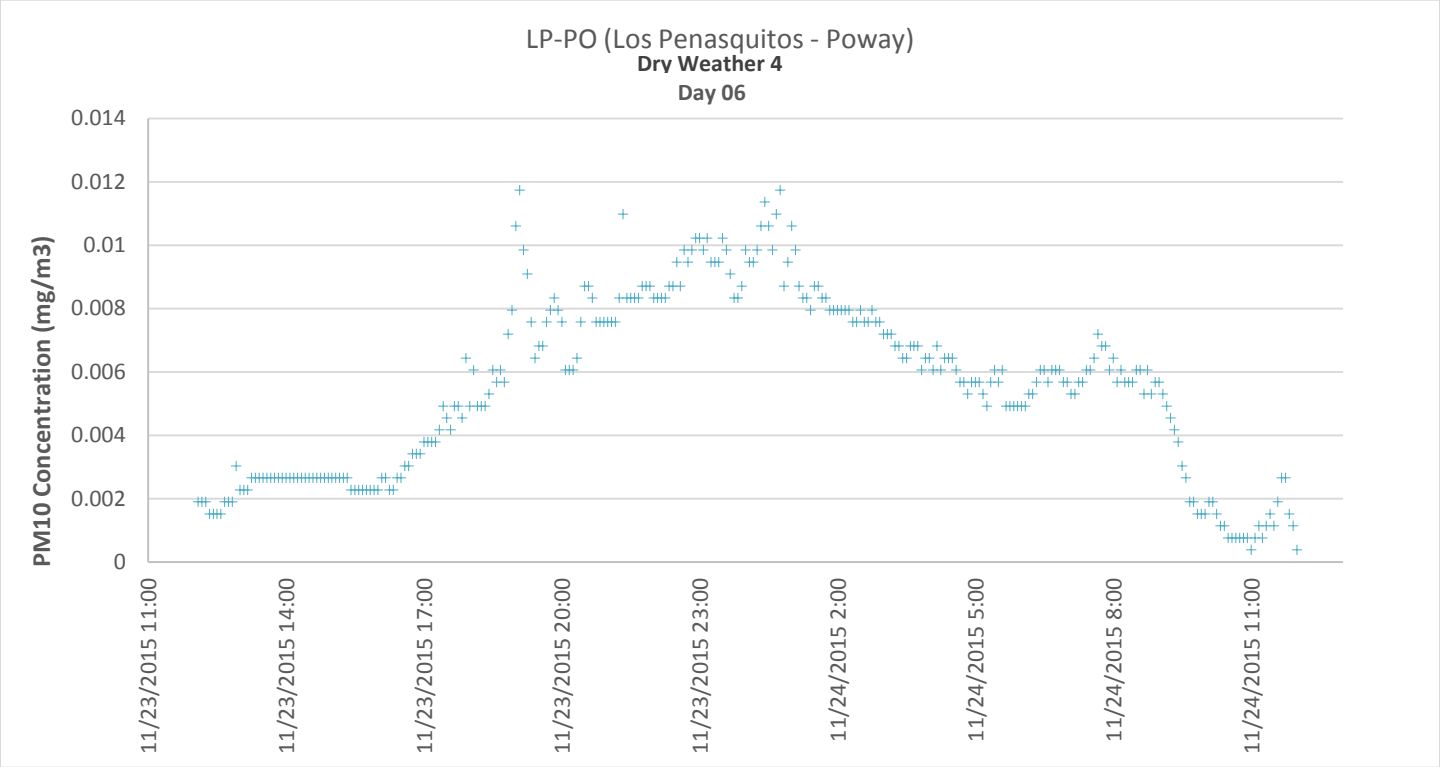

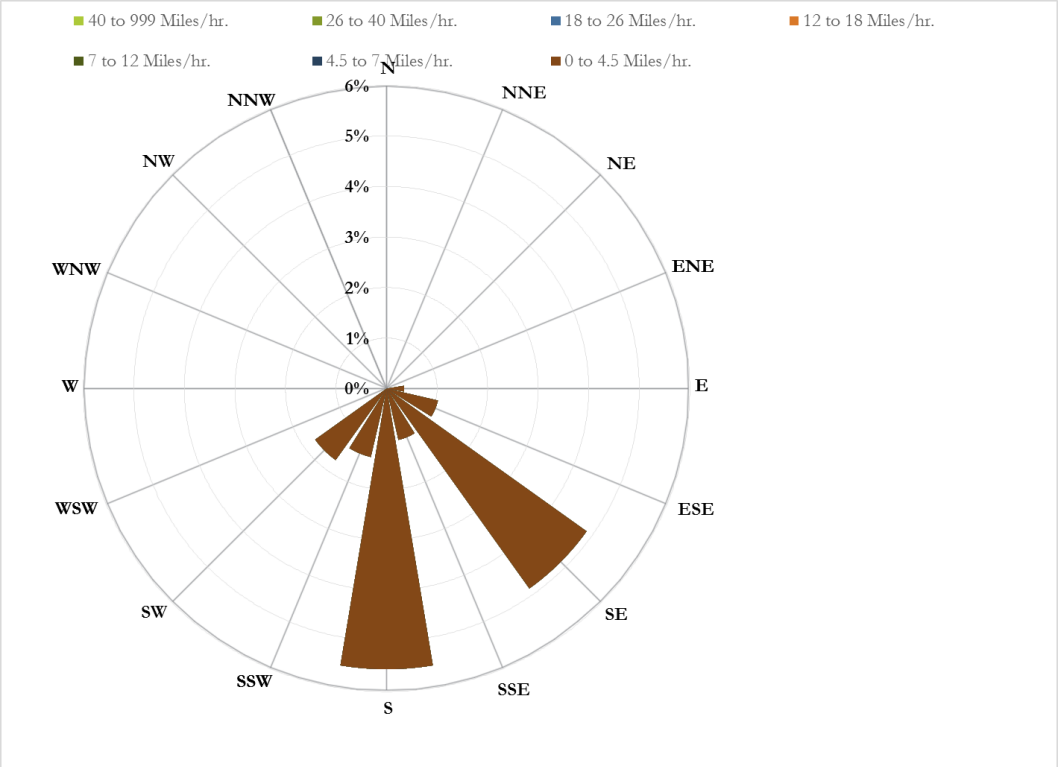

Figure 3-30.
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.1.11 LP-PR (Los Peñasquitos – Preserve)

LP-PR (Los Peñasquitos – Preserve):

LP-PR is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 716 measurements were determined to be valid (82%).
- Mean values for PM_{10} were 0.0054 mg/m^3.
- Mean standard deviation is $\pm$0.0048 mg/m^3

Day 4 (Wednesday, 11/18/15 – Thursday, 11/19/15)

Day 4 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind direction were observed primarily from the SE. Peak Optical readings occurred before midnight and during the morning.

Day 5 (Saturday, 11/21/15 – Sunday, 11/22/15)

Day 5 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the SW. Peak Optical monitor readings were observed during sundown prior to midnight.

Day 6 (Monday, 11/23/15 – Tuesday, 11/24/15)

Day 6 – LP-PO Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 4. Wind directions were observed primarily from the S and SE. Peak Optical monitor readings were observed before midnight. Higher Optical readings were observed during periods of increased traffic in the morning.

Graphical representations of this data are presented in Figure 2-11.

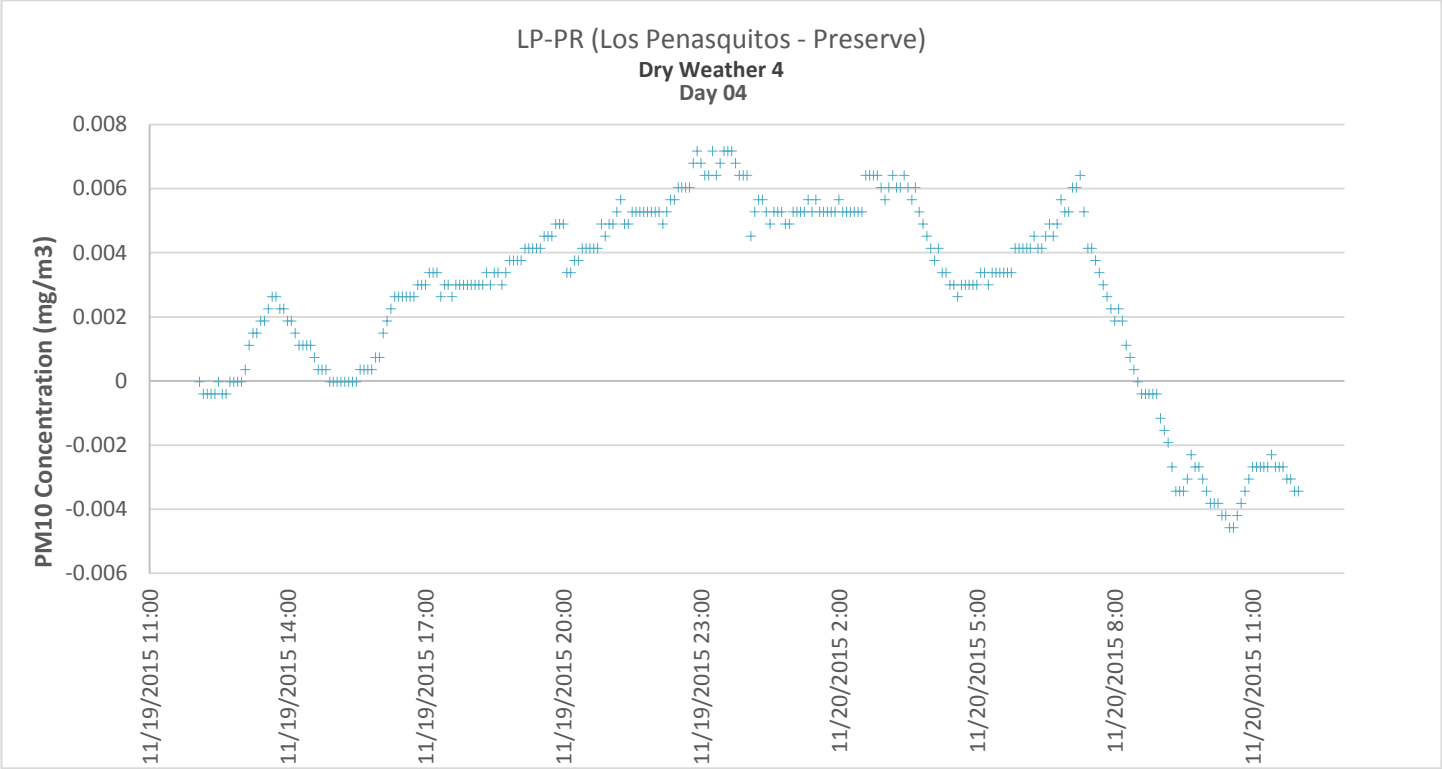

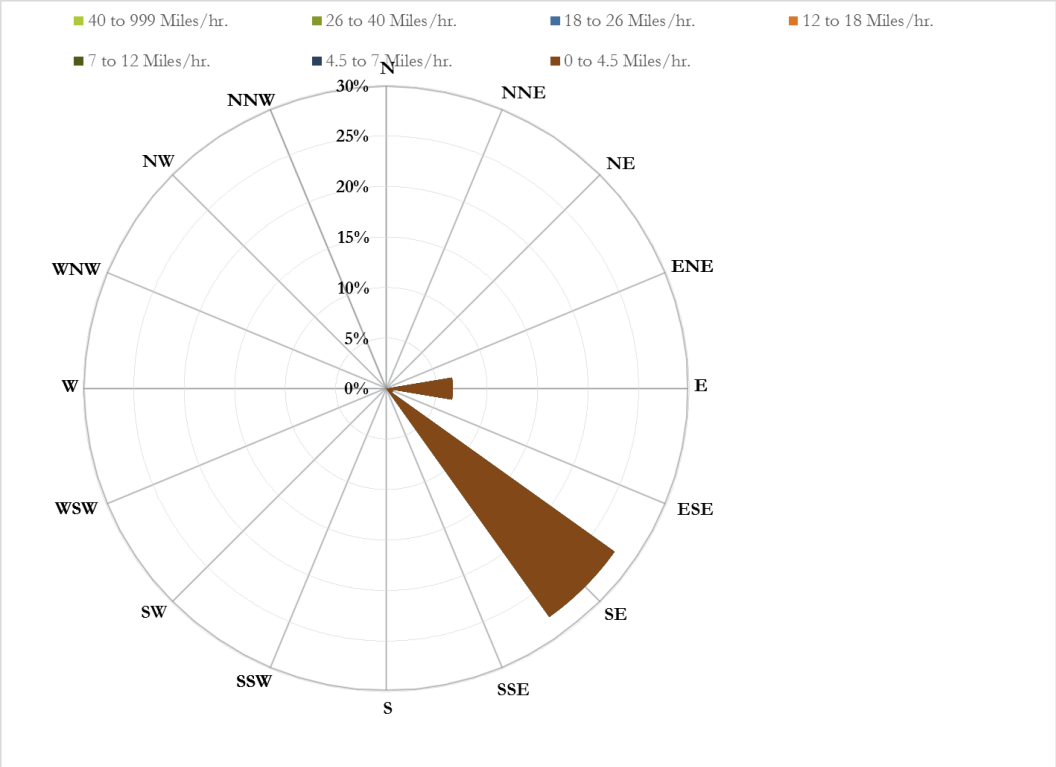

Figure 3-31.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 4

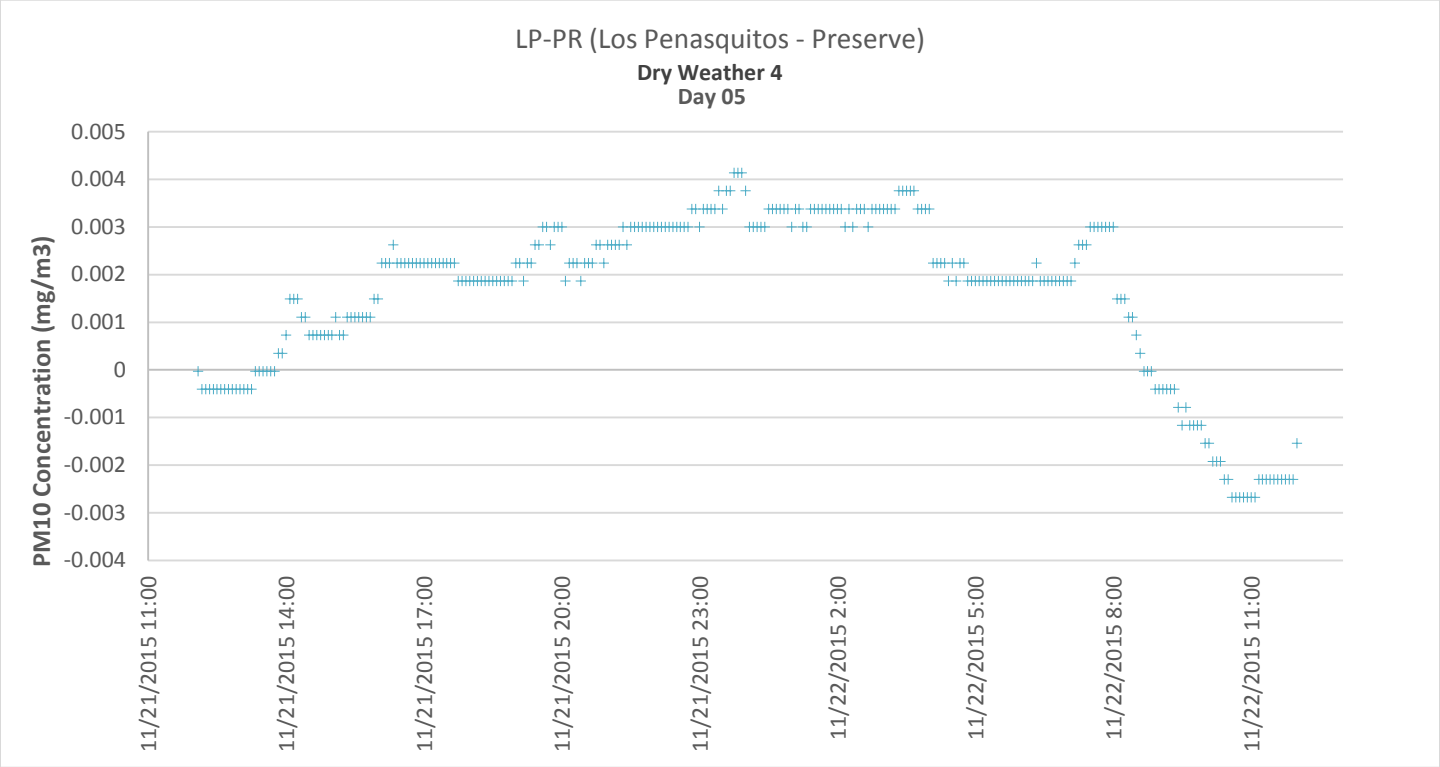

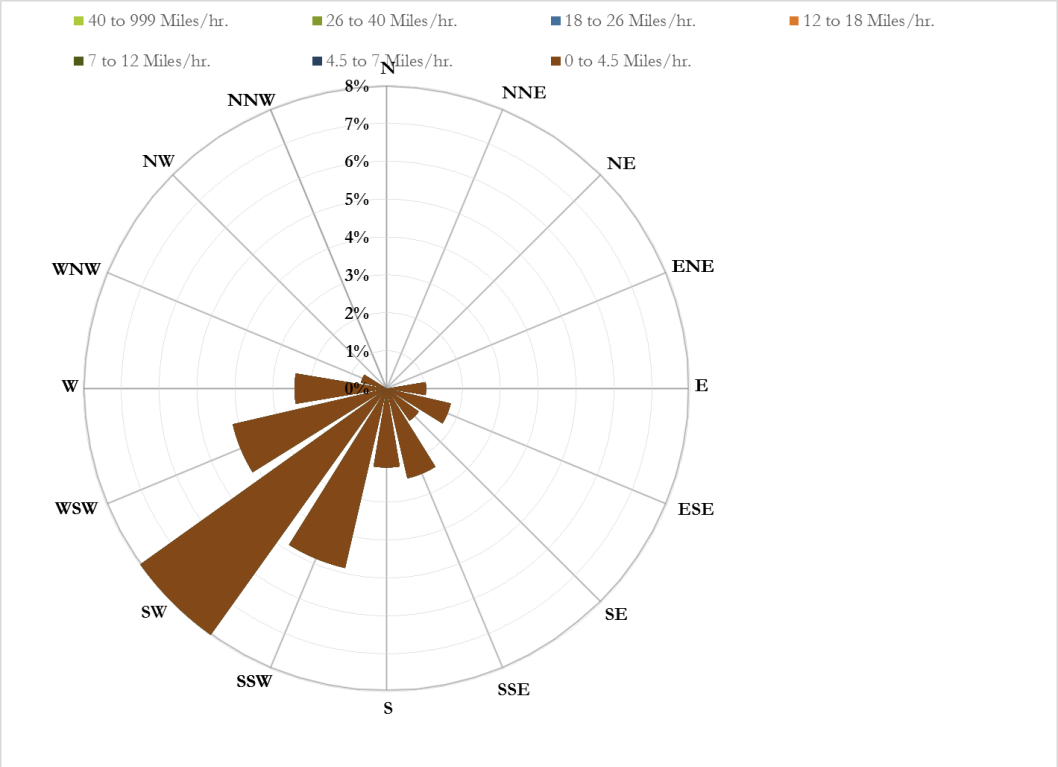

Figure 3-32.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 5

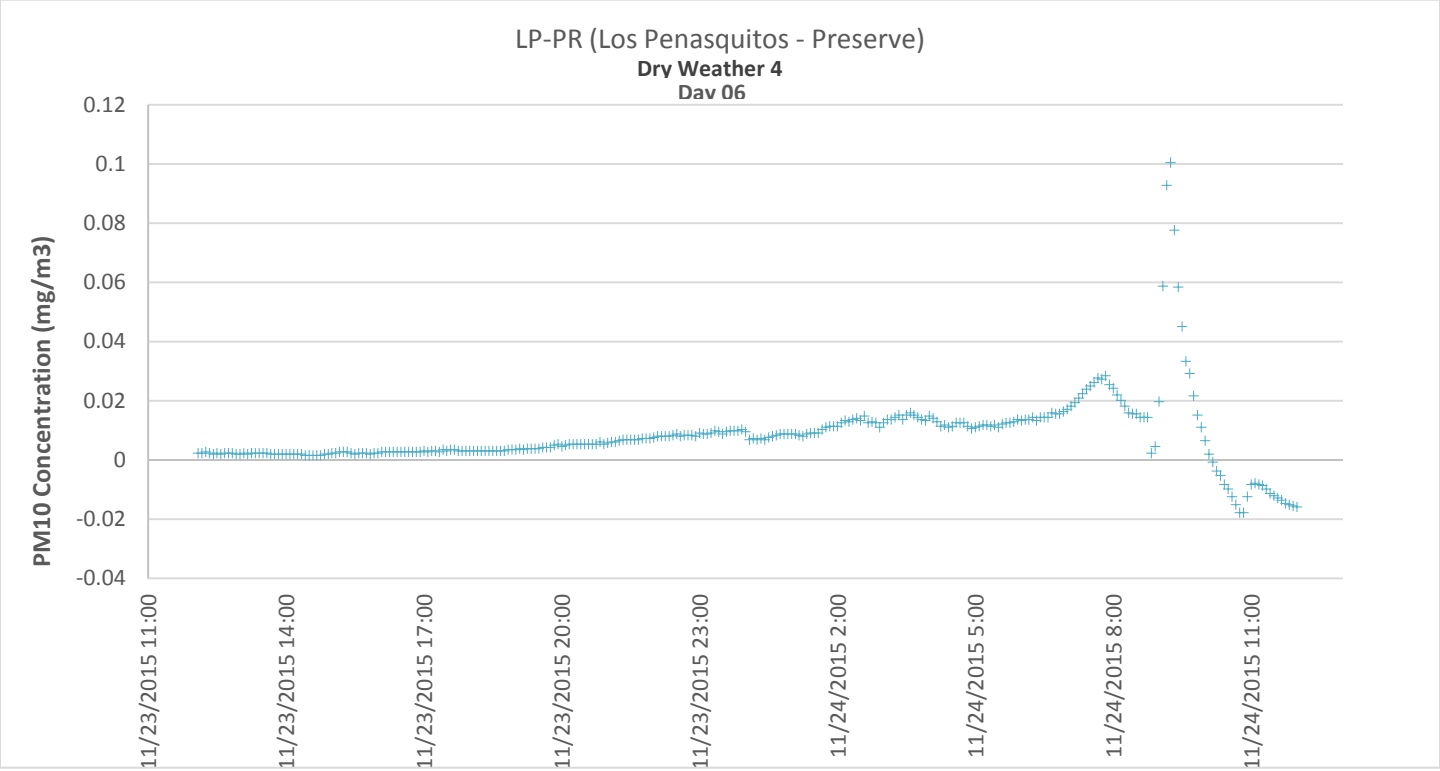

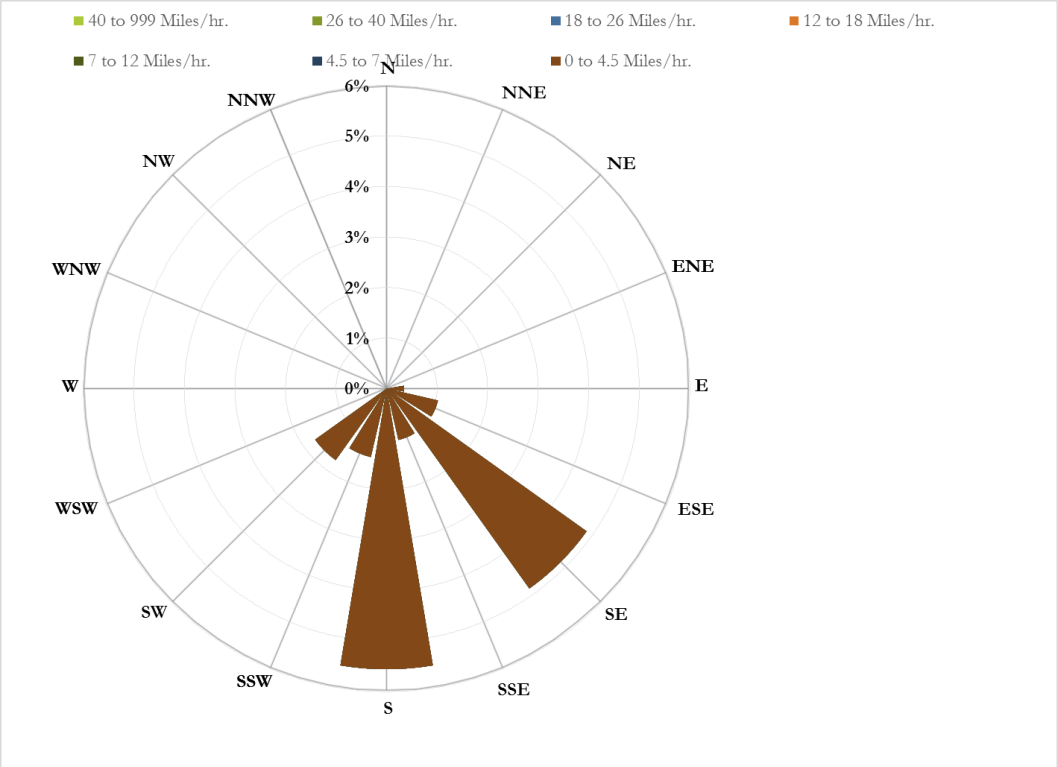

Figure 3-33.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 4 – Day 6

3.2.2 Dry Weather 5

3.2.2.1 CC-CC (Carroll Canyon)

CC-CC (Carroll Canyon):

CC-CC is a site monitored during the Phase I and Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 788 measurements were determined to be valid (91%).
- Mean values for PM_{10} were 0.0086 mg/m^3.
- Mean standard deviation is $\pm$0.0057 mg/m^3

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CC-CC Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed during increased traffic conditions in the morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CC-CC Optical readings were observed at a lower mean value for this monitoring location during sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed in the morning hours after sunrise.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CC-CC Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed in the morning after sunrise.

Graphical representations of this data are presented in Figures 3-34 through 3-36.

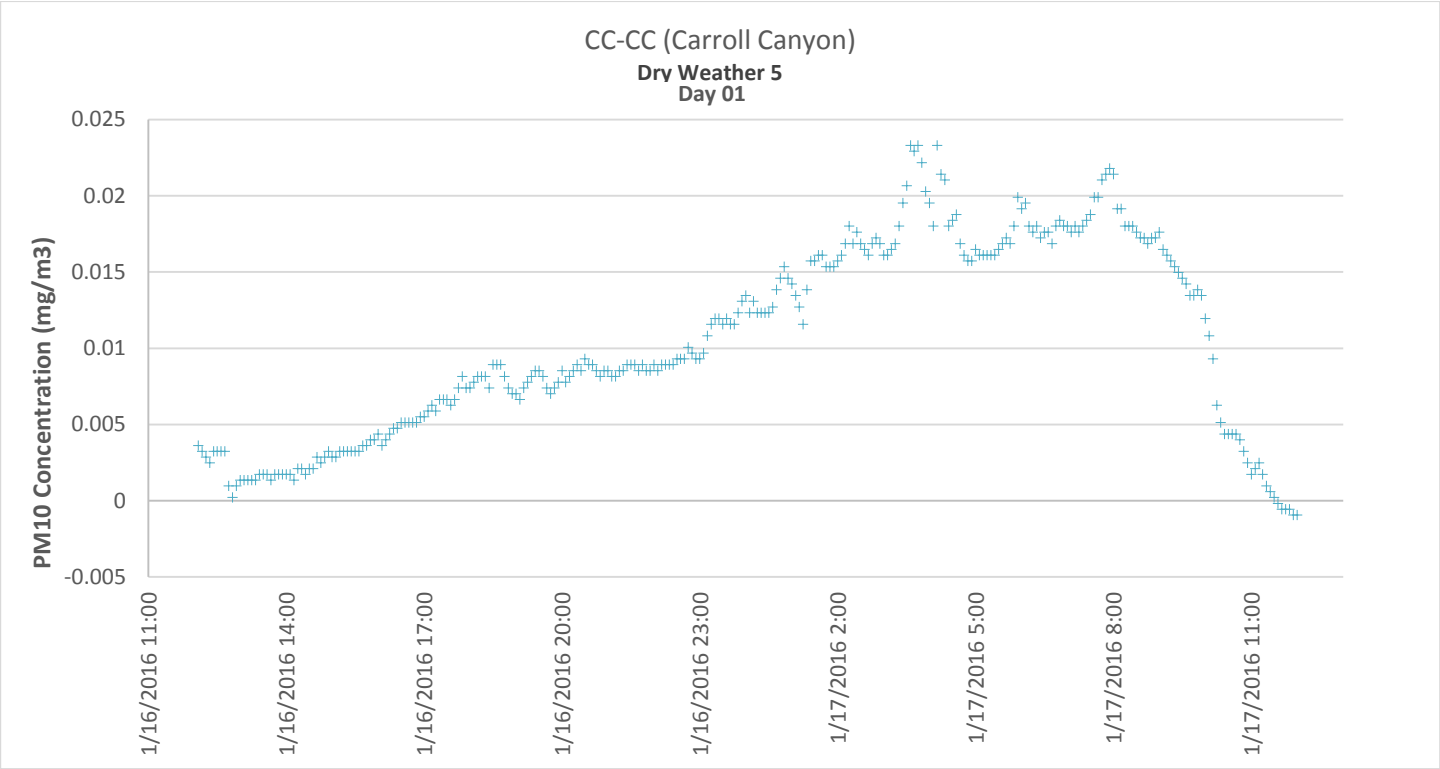

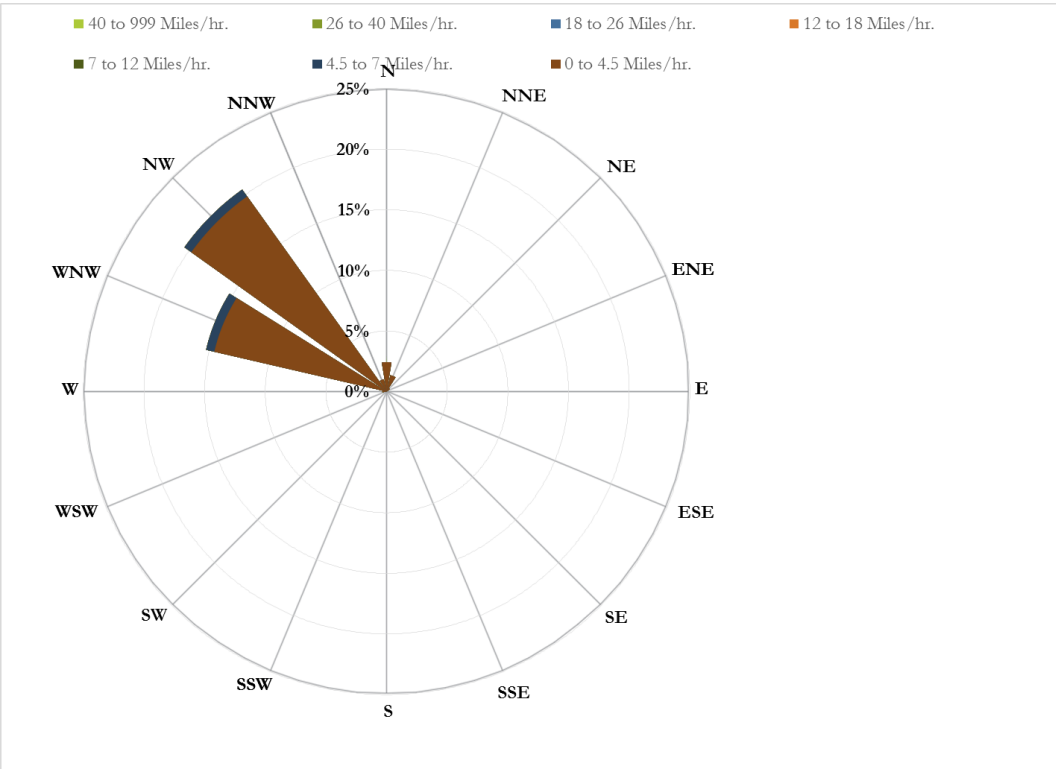

Figure 3-34.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

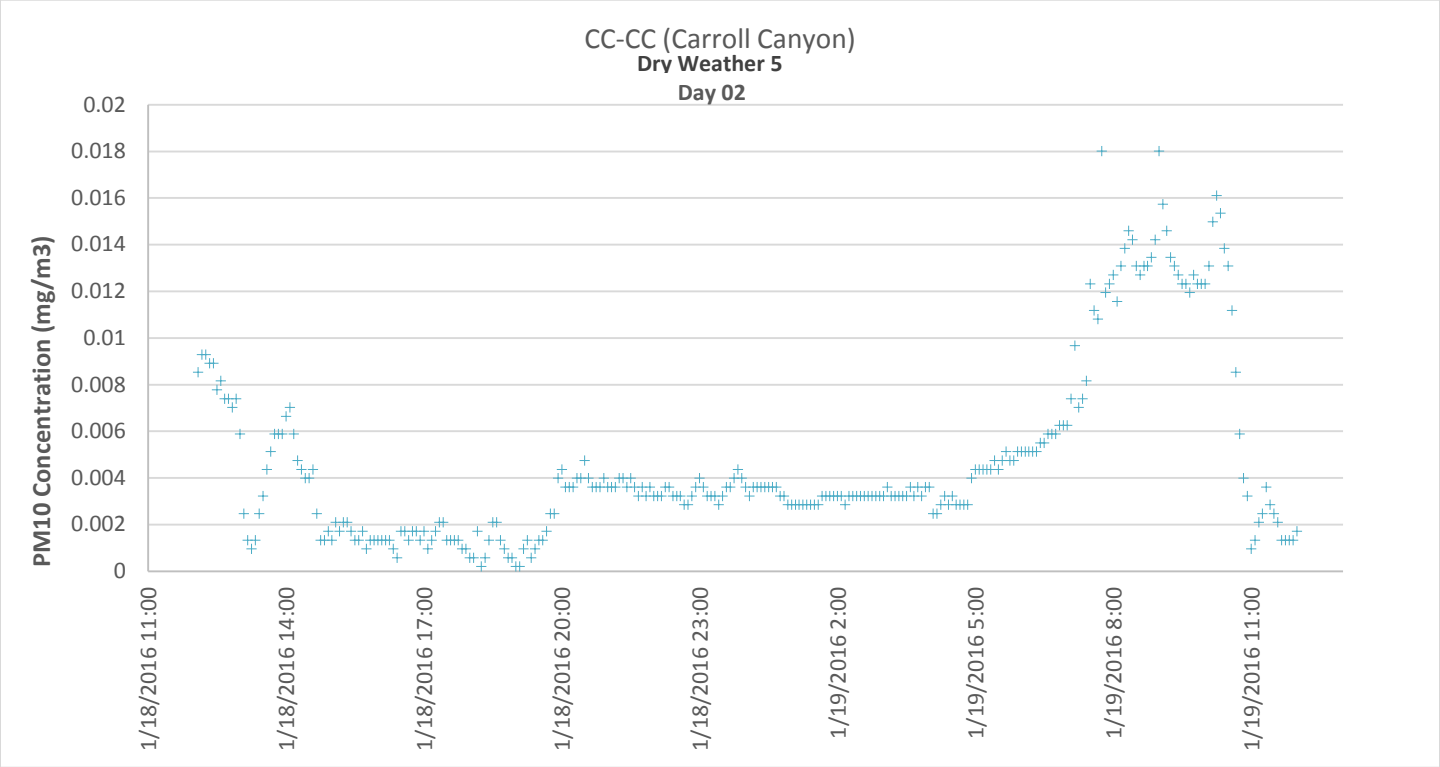

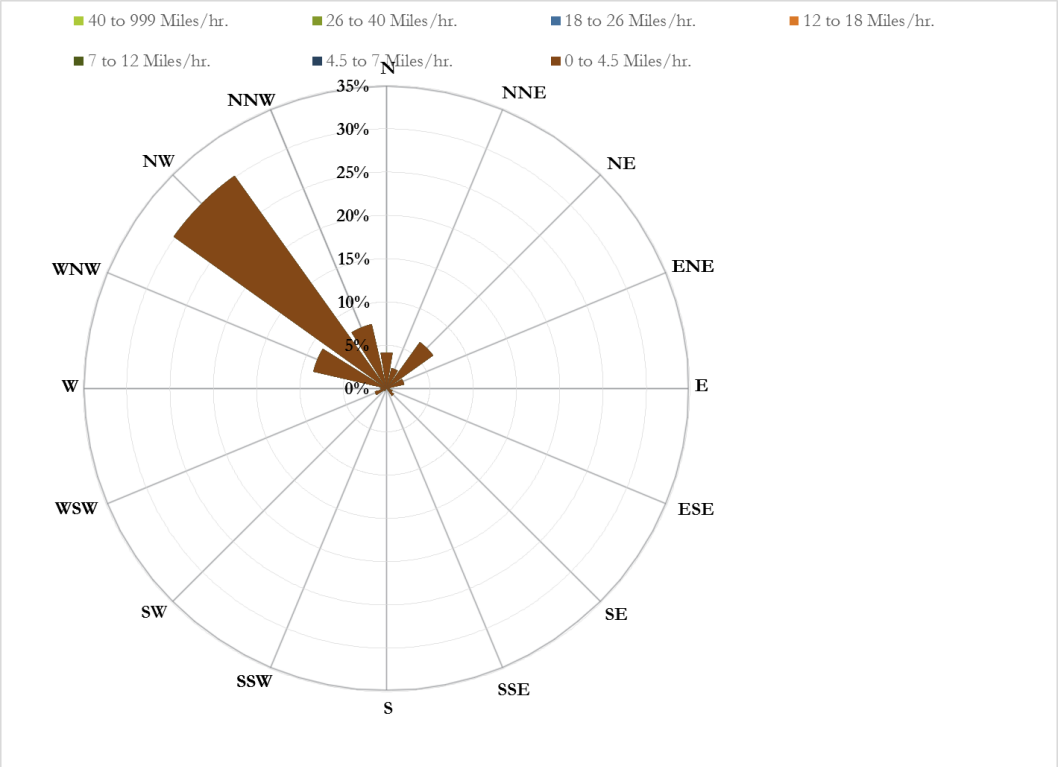

Figure 3-35.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

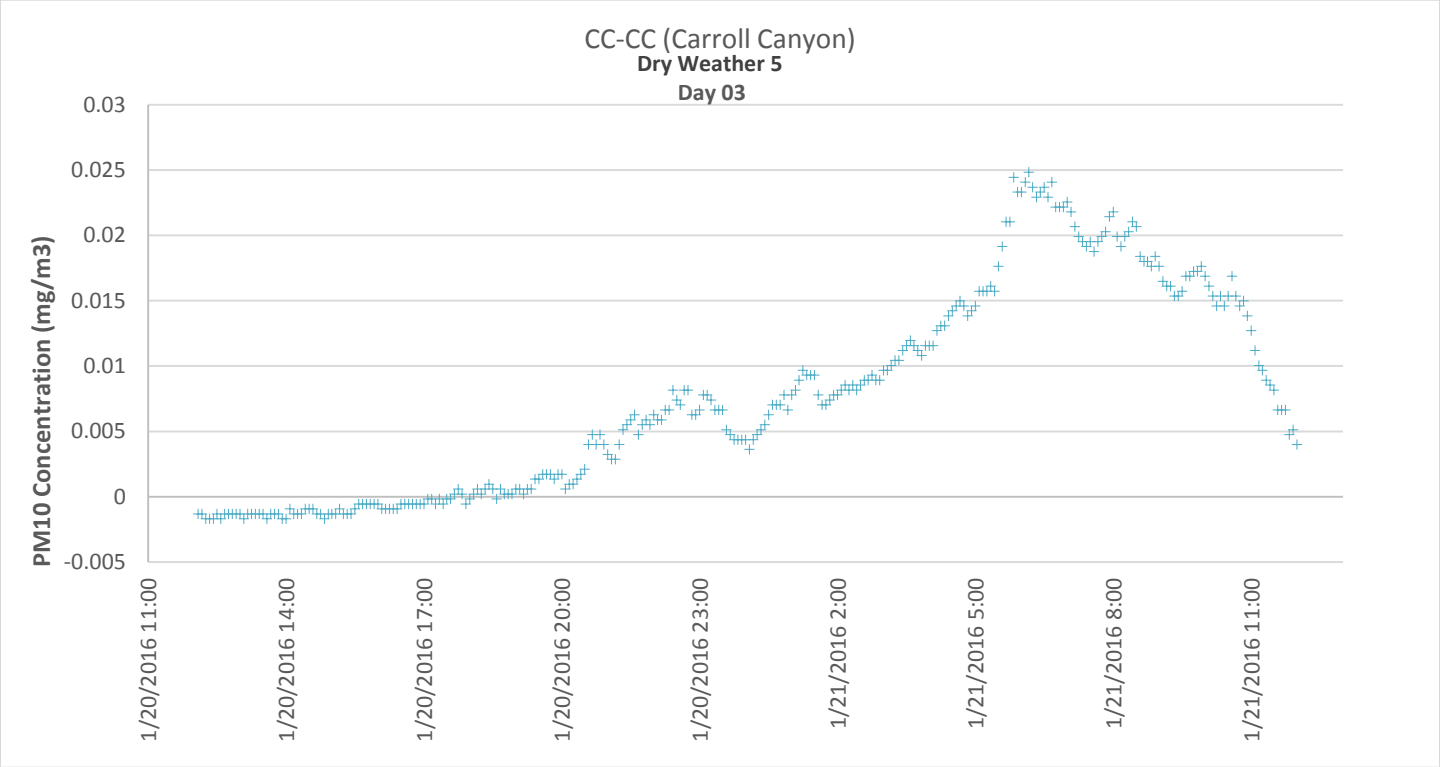

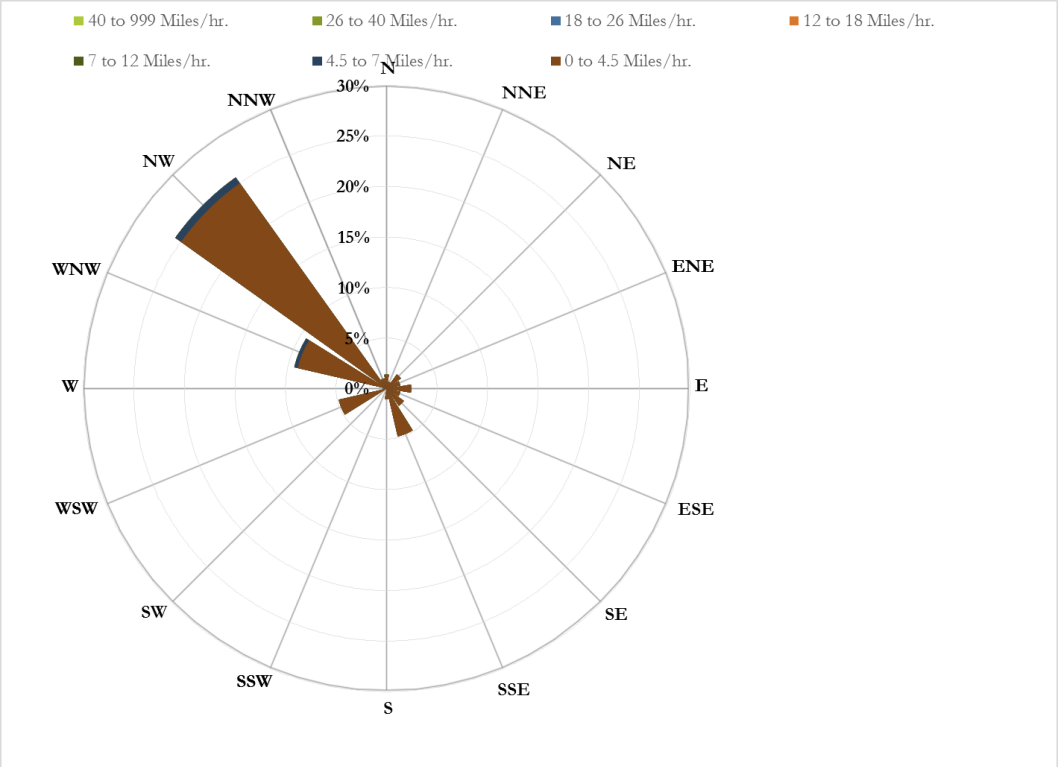

Figure 3-36.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.2 CC-DM (Reference – Del Mar)

CC-DM (Reference – Del Mar):

CC-DM is a site monitored during the Phase I and Phase II Watershed Special Study and contains an Optical monitor and an FRM sampler. This is the reference site for the aerial deposition portion of the Watershed Special Study, and was selected as a station away from anthropogenic influence during the prevalent weather patterns.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 859 measurements were determined to be valid (99%).
- Mean values for PM_{10} were 0.0107 mg/m^3.
- Mean standard deviation is $\pm$0.0070 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean values for PM_{10} was 0.0277 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 106.84%

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CC-DM Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the W, and WSW. Peak Optical monitor readings were observed before sunrise.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CC-DM Optical readings were observed at a higher mean value for this monitoring location for sampling event Dry Weather 5. Wind directions were observed primarily from the NW, W, WSW, and SW. Optical monitor readings were higher late evening to midnight and in the morning after sunrise.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CC-DM Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the WSW, SW, NE and ENE. High wind speeds were observed from the SW at 7 to 12 miles per hour. Peak Optical monitor readings were observed after sunrise through the morning.

Graphical representations of this data are presented in Figures 3-37 through 3-39.

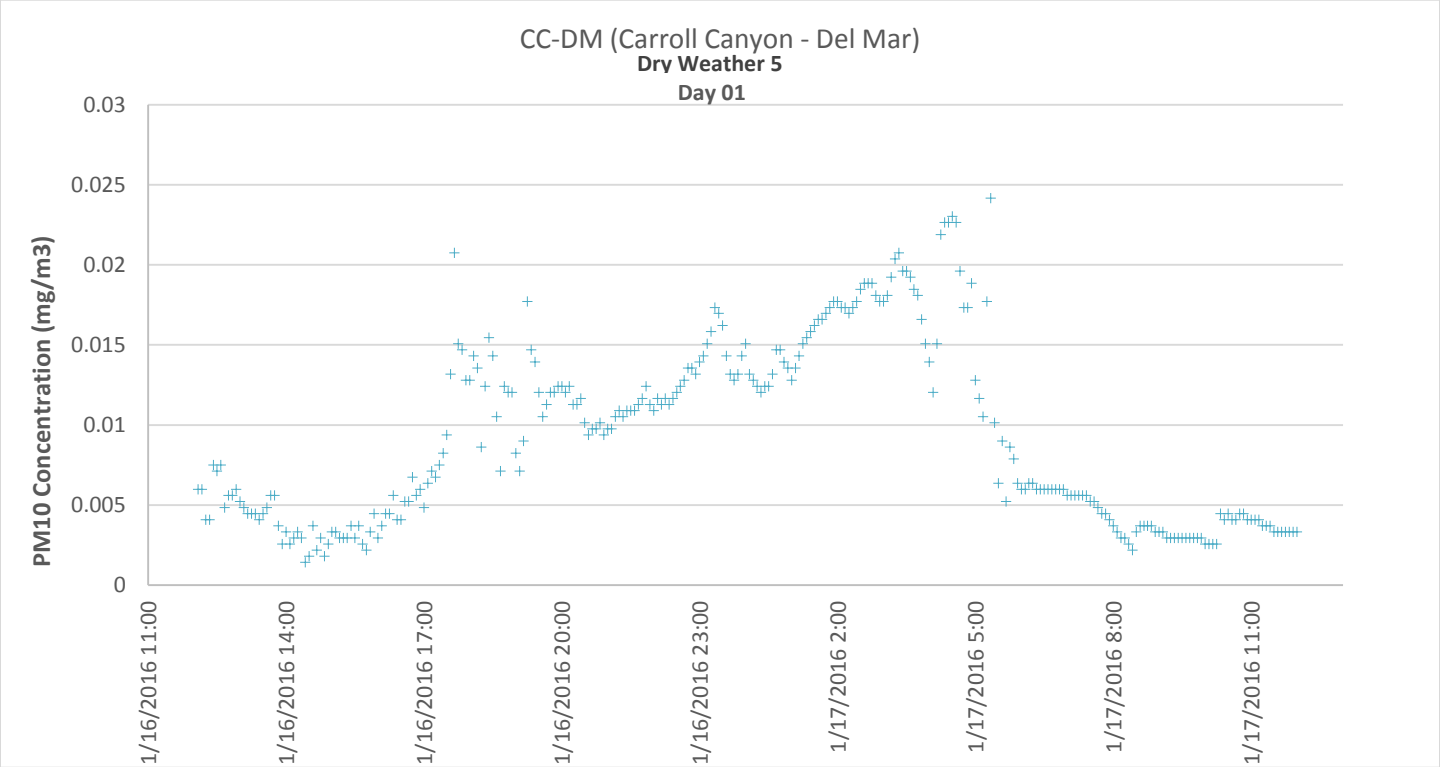

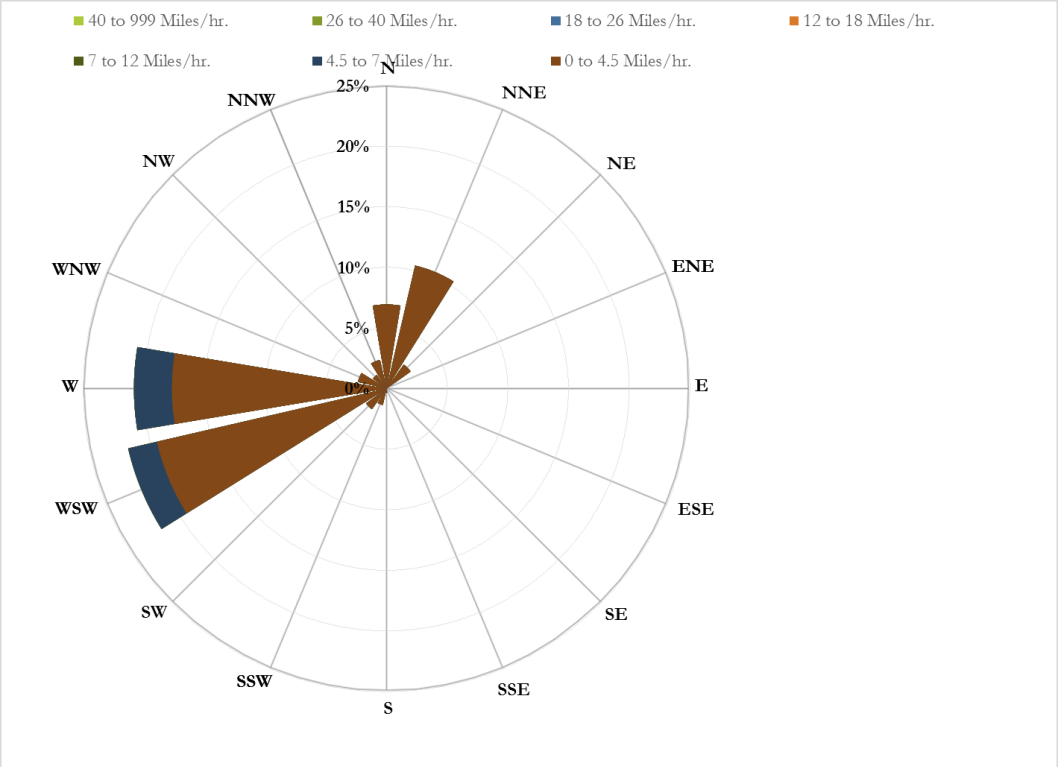

Figure 3-37.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

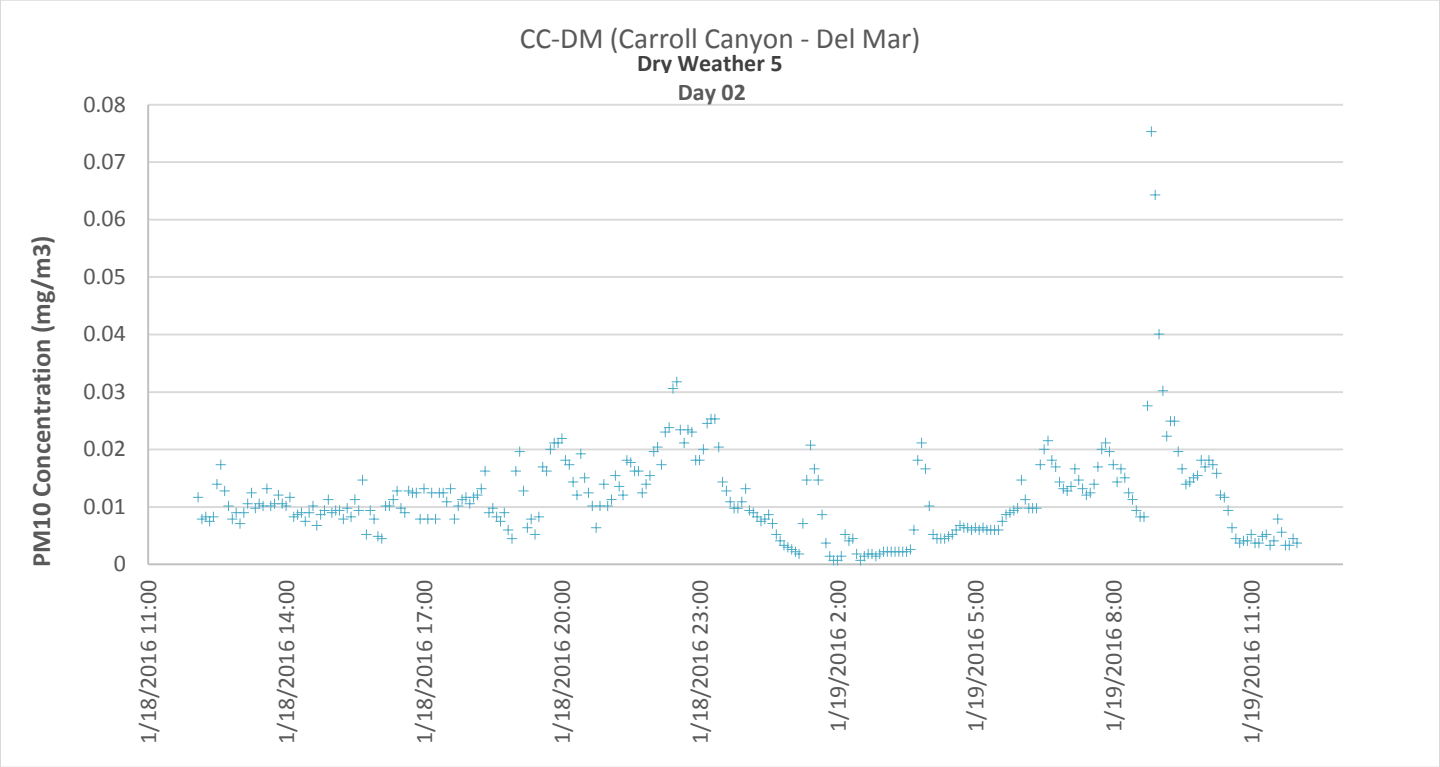

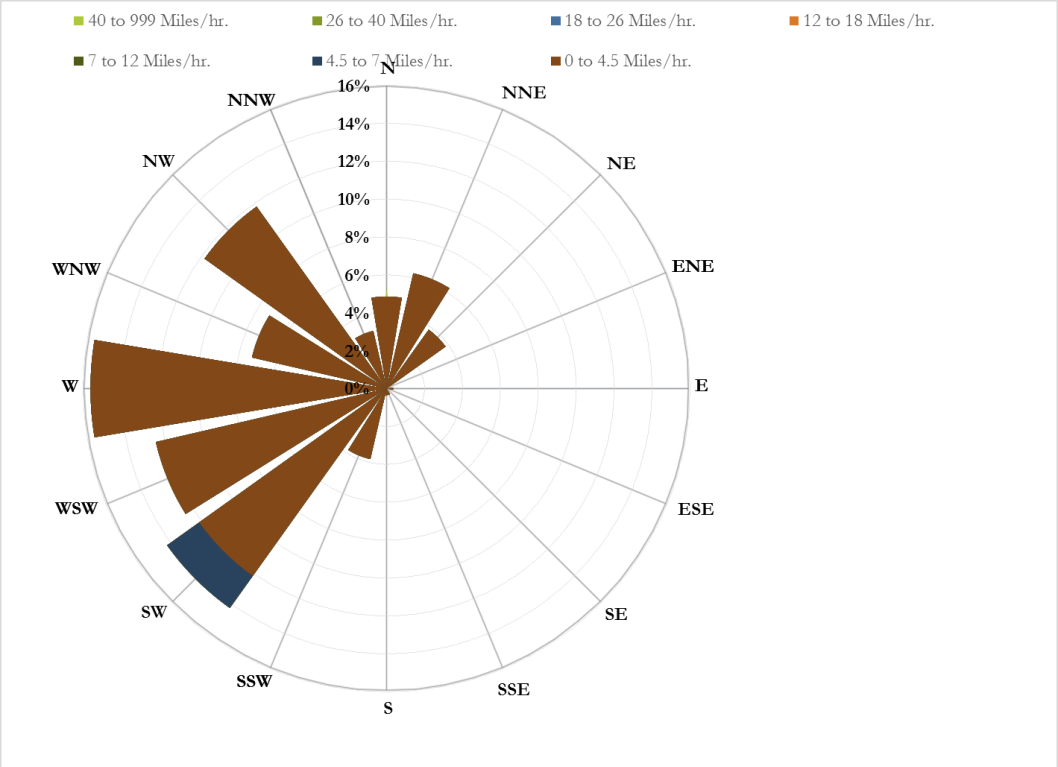

Figure 3-38.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

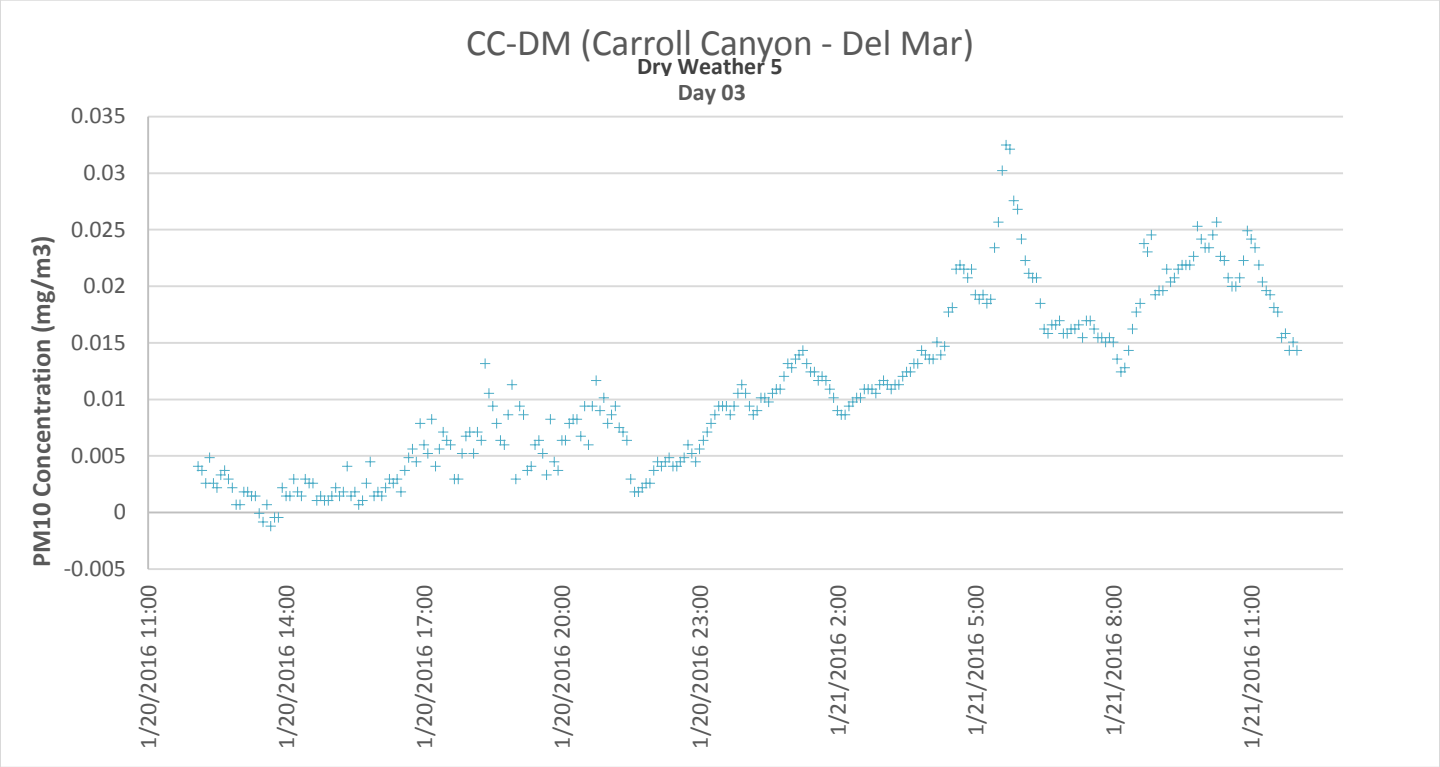

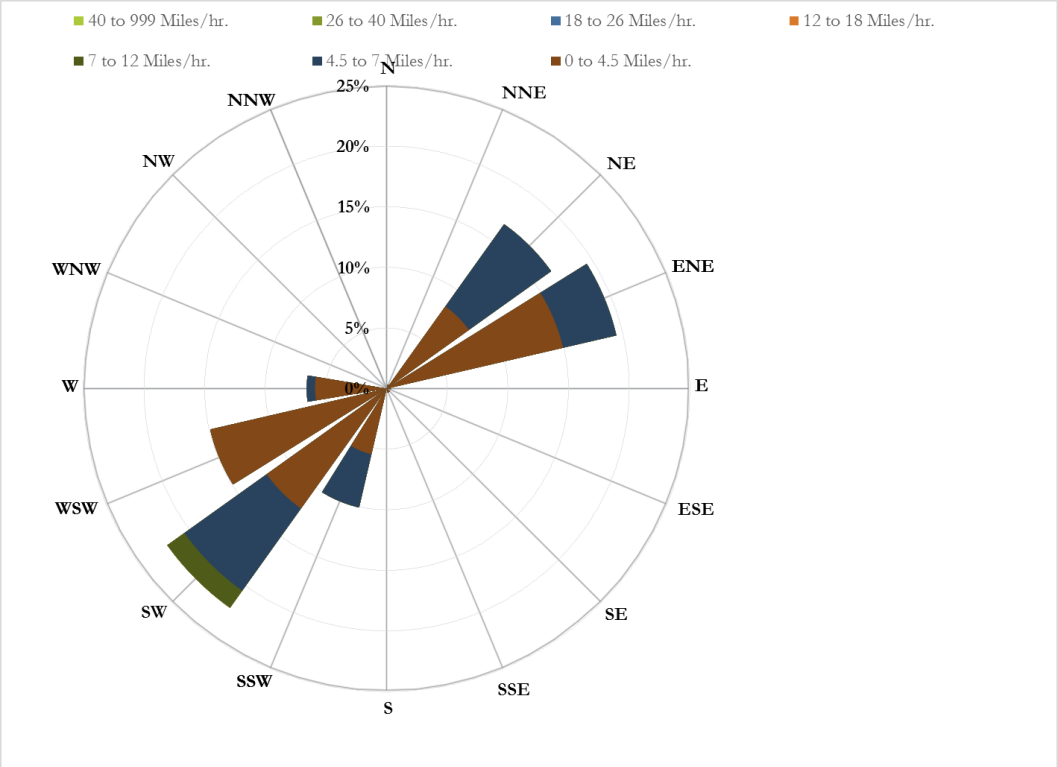

Figure 3-39.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.3 CC-DW (Carroll Canyon – Downwind)

CC-DW (Carroll Canyon – Downwind):

CC-DW is a site monitored during the Phase I and Phase II Watershed Special Study and contains an Optical monitor and an FRM sampler.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 859 measurements were determined to be valid (99%).
- Mean values for PM_{10} were 0.0168 mg/m^3.
- Mean standard deviation is $\pm$0.0070 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean value for PM_{10} was 0.0.128 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 44.50%

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CC-DW Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed during evening and sundown, and during increased traffic conditions in the morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CC-DW Optical readings were observed at the mean value of the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during the times of increased traffic conditions in the morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CC-DW Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed after sundown and during increased traffic conditions in the morning.

Graphical representations of this data is presented in Figures 3-40 through 3-42.

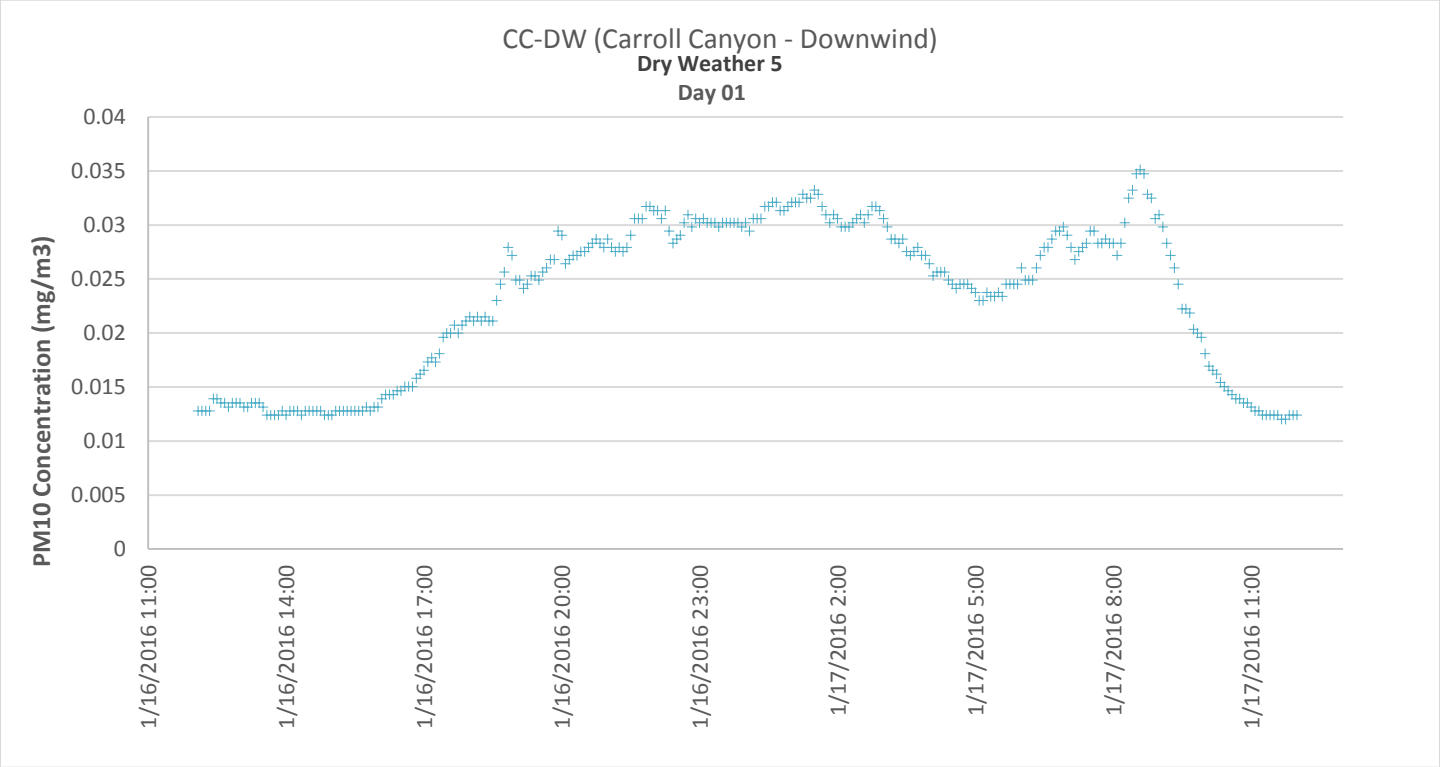

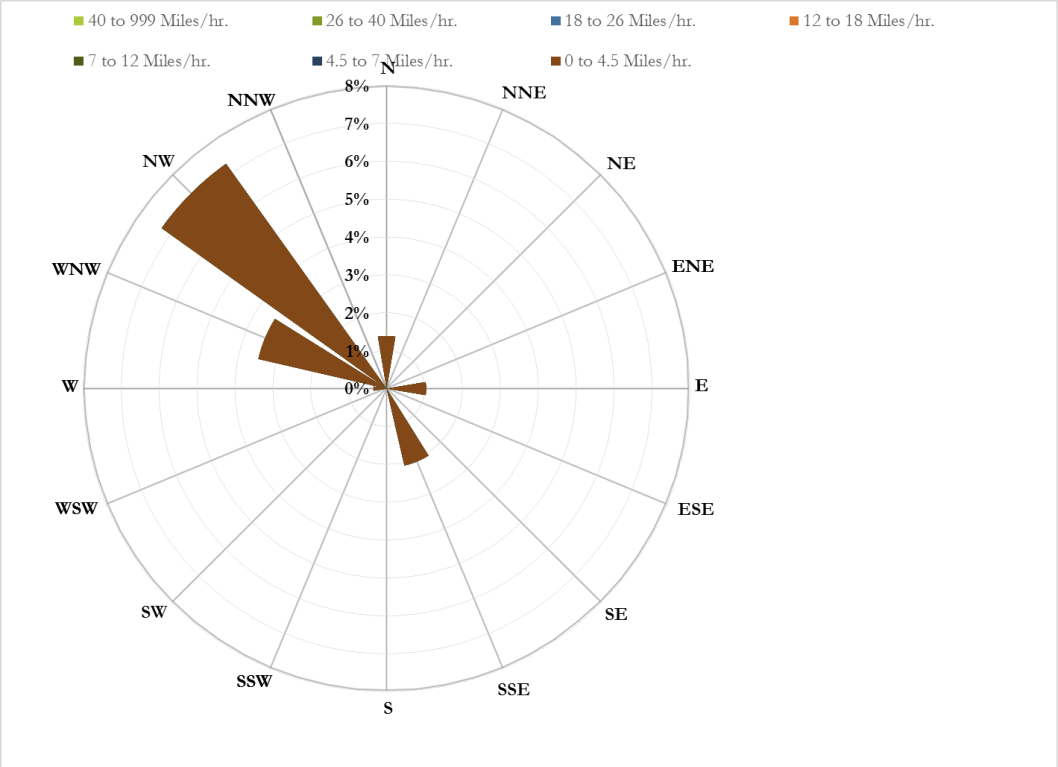

Figure 3-40.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

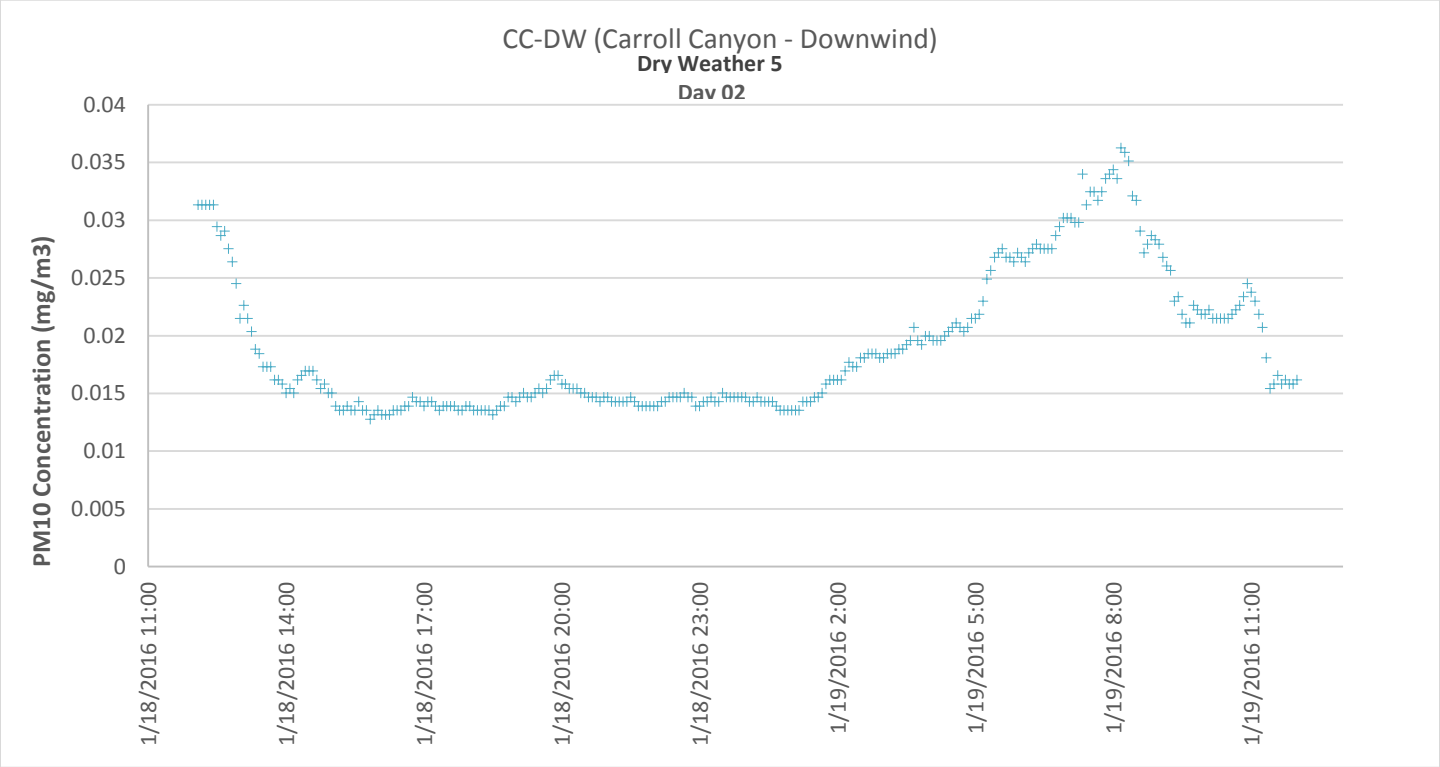

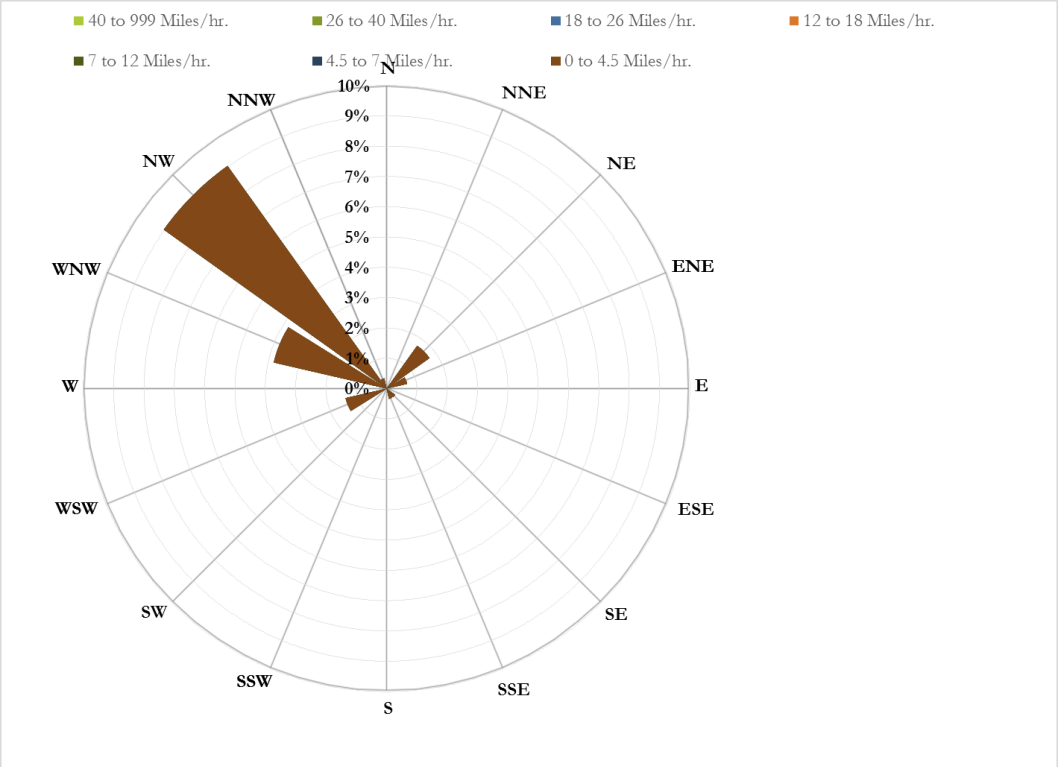

Figure 3-41.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

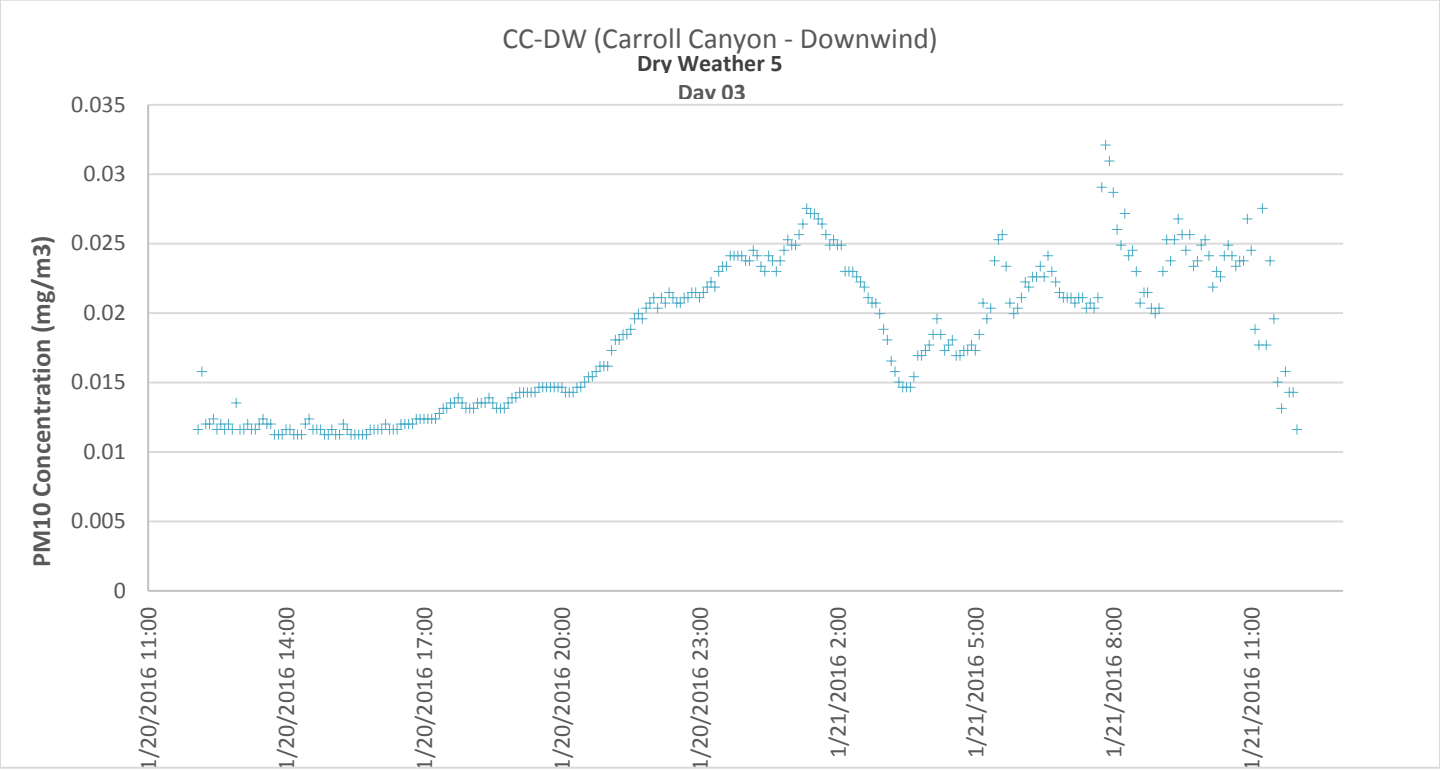

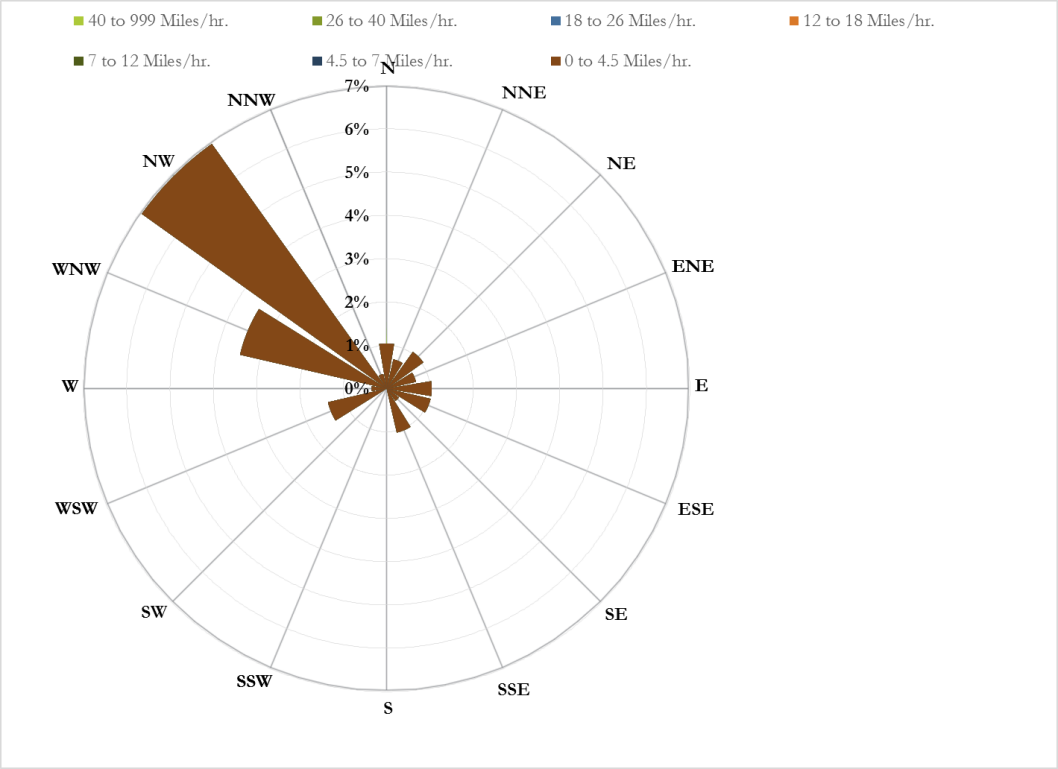

Figure 3-42.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.4 CC-ER (Carroll Canyon – Eco Rental)

CC-ER (Carroll Canyon – Eco Rental):

CC-ER is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the Responsible Agencies[2] [RA] group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 787 measurements were determined to be valid (91%).
- Mean values for PM_{10} were 0.0084 mg/m^3.
- Mean standard deviation is $\pm$0.0053 mg/m^3

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CC-ER Optical readings were higher than the mean value of the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the WNW and NW. Peak Optical monitor readings were observed during the evening and sundown, and times of increased traffic during the morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CC-ER Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Optical monitor readings peaked during increased traffic conditions in the morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CC-ER Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during the evening and sundown, and times of increased traffic during the morning.

Graphical representations of this data is presented in Figures 3-43 through 3-45.

[2] The Responsible Agencies (RAs) are the Cities of San Diego, Poway, and Del Mar, and the County of San Diego.

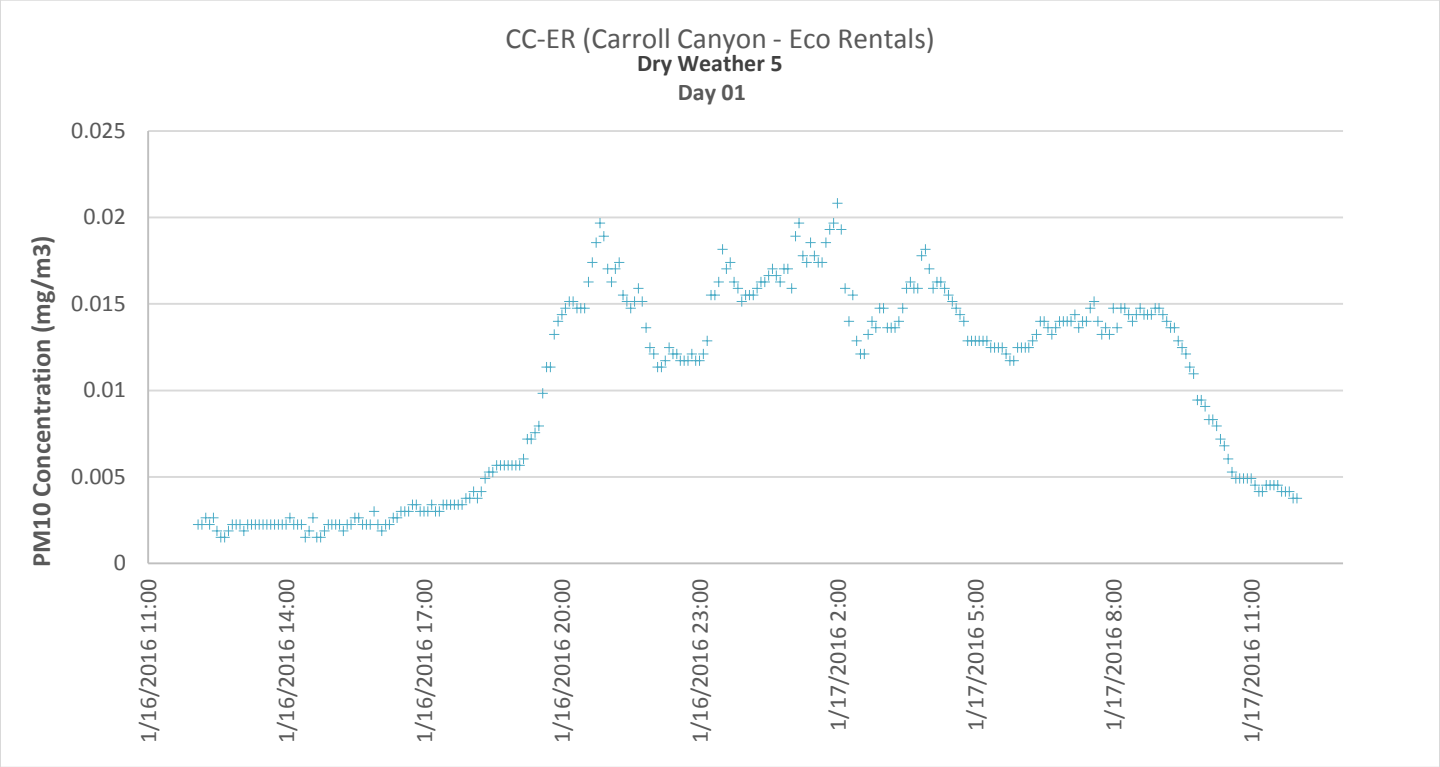

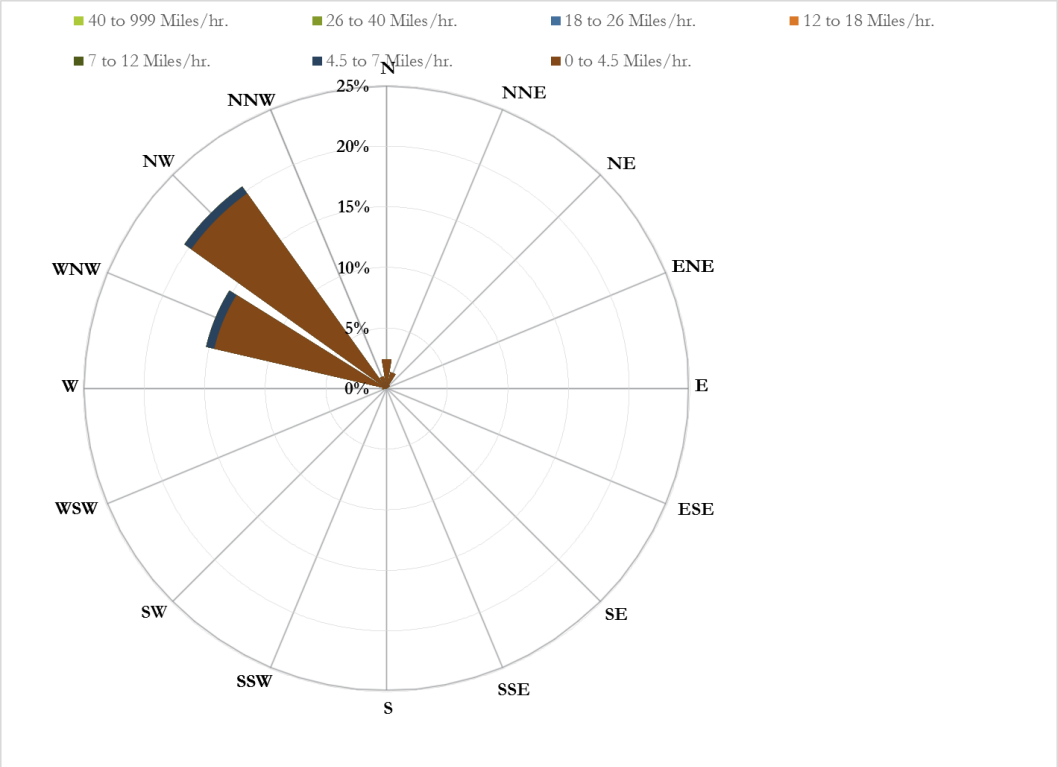

Figure 3-43.
CC-ER PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

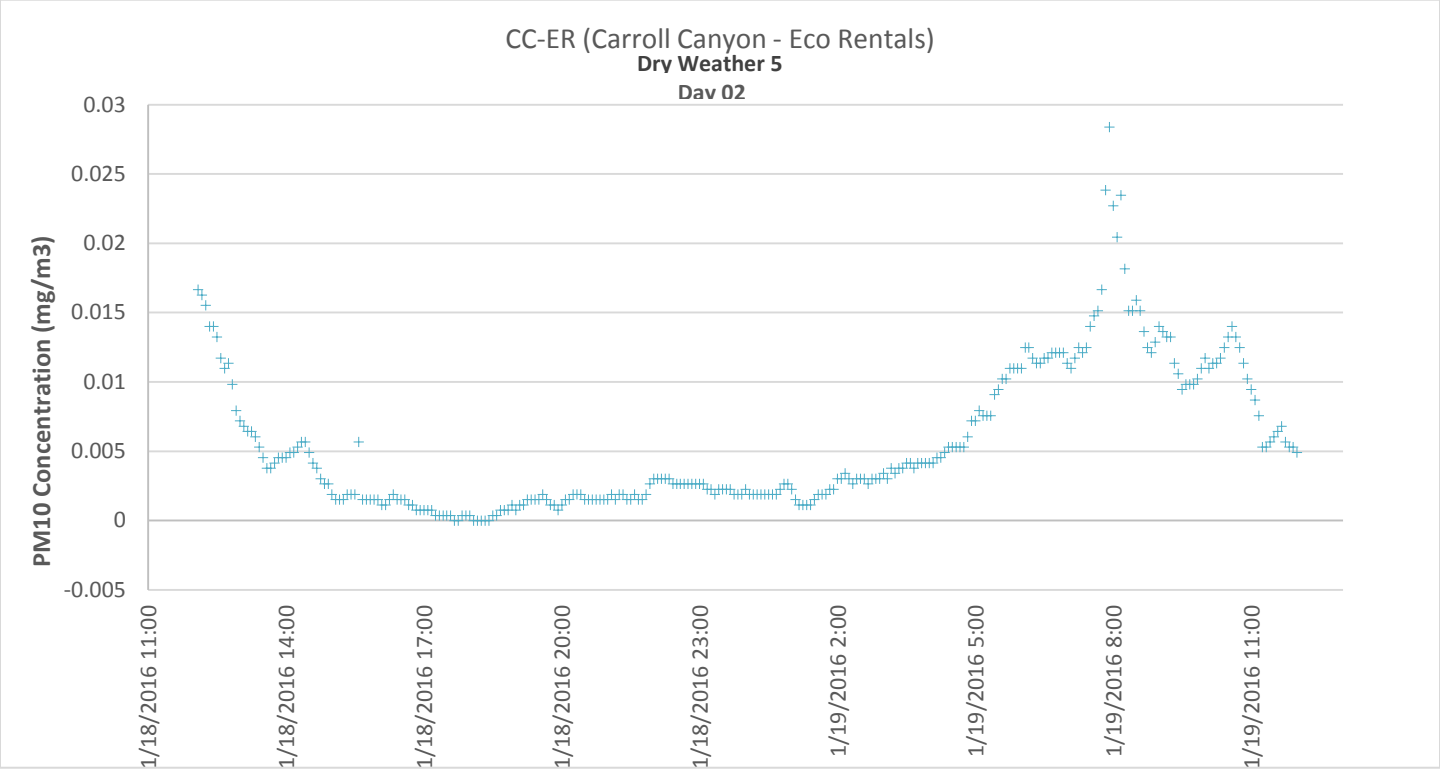

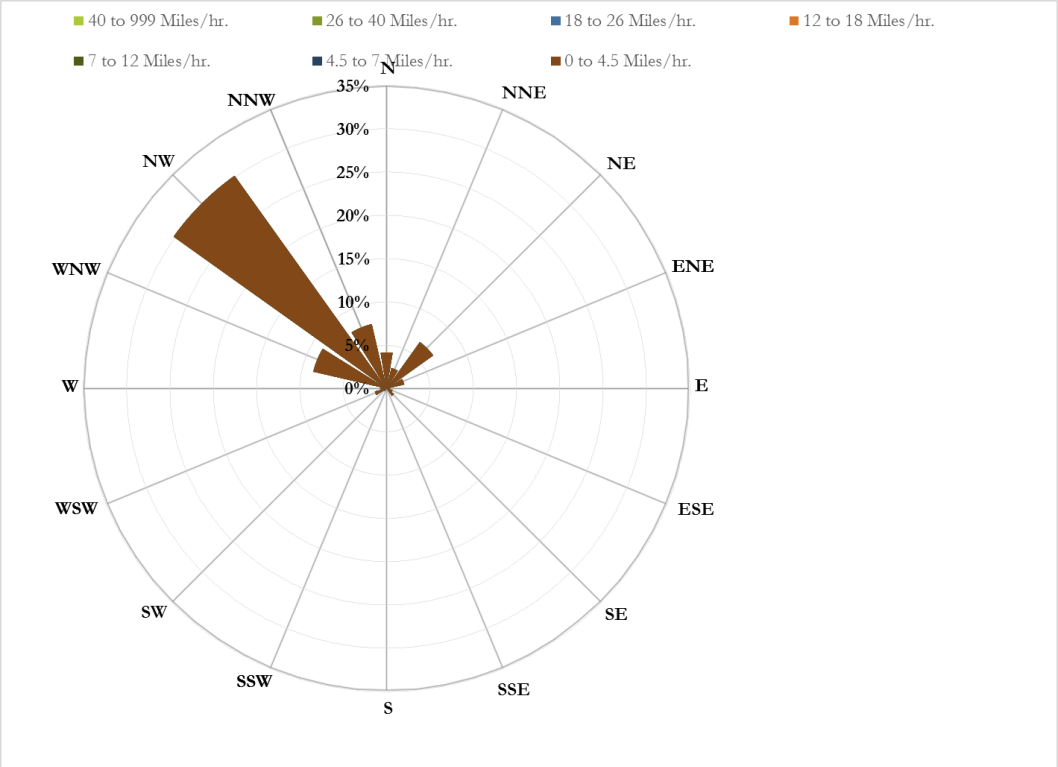

Figure 3-44.
CC-ER PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

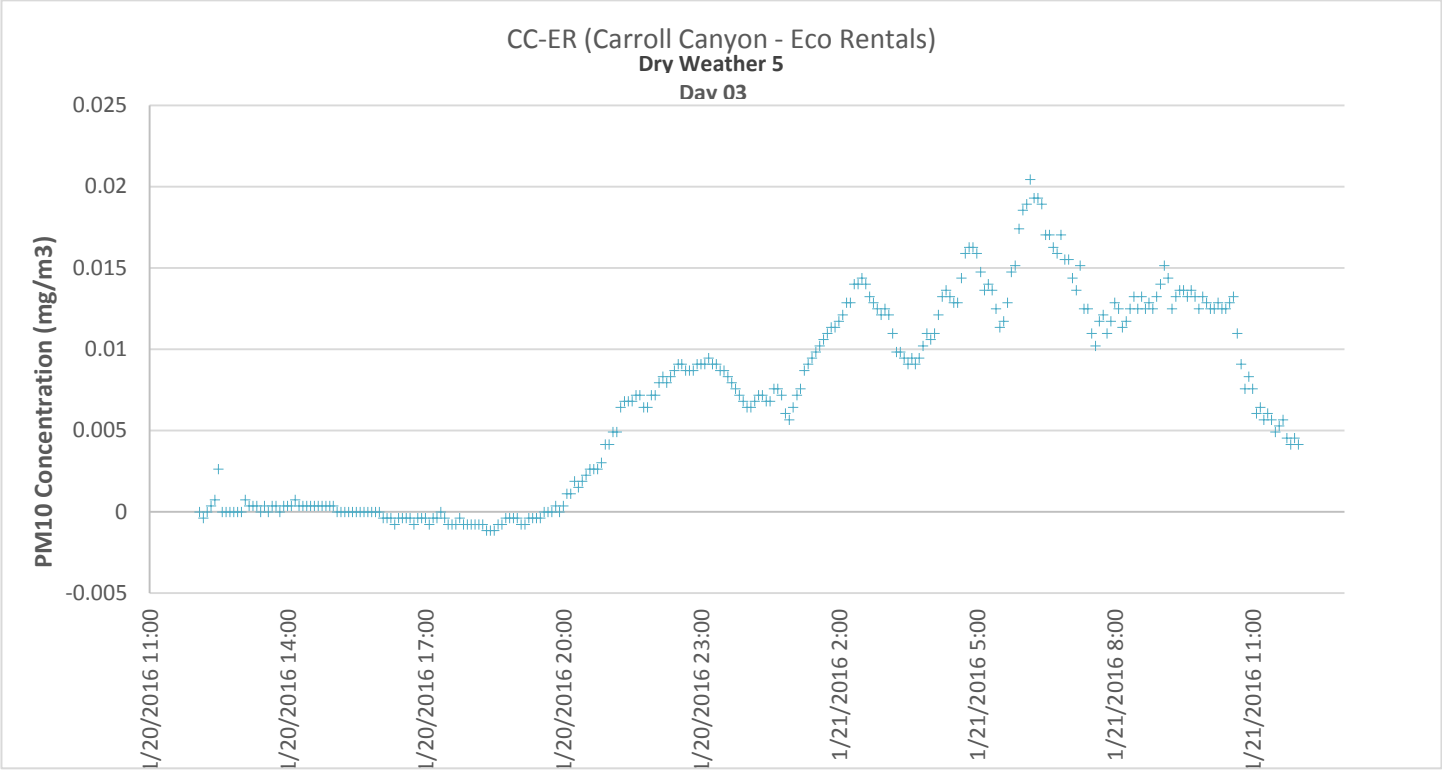

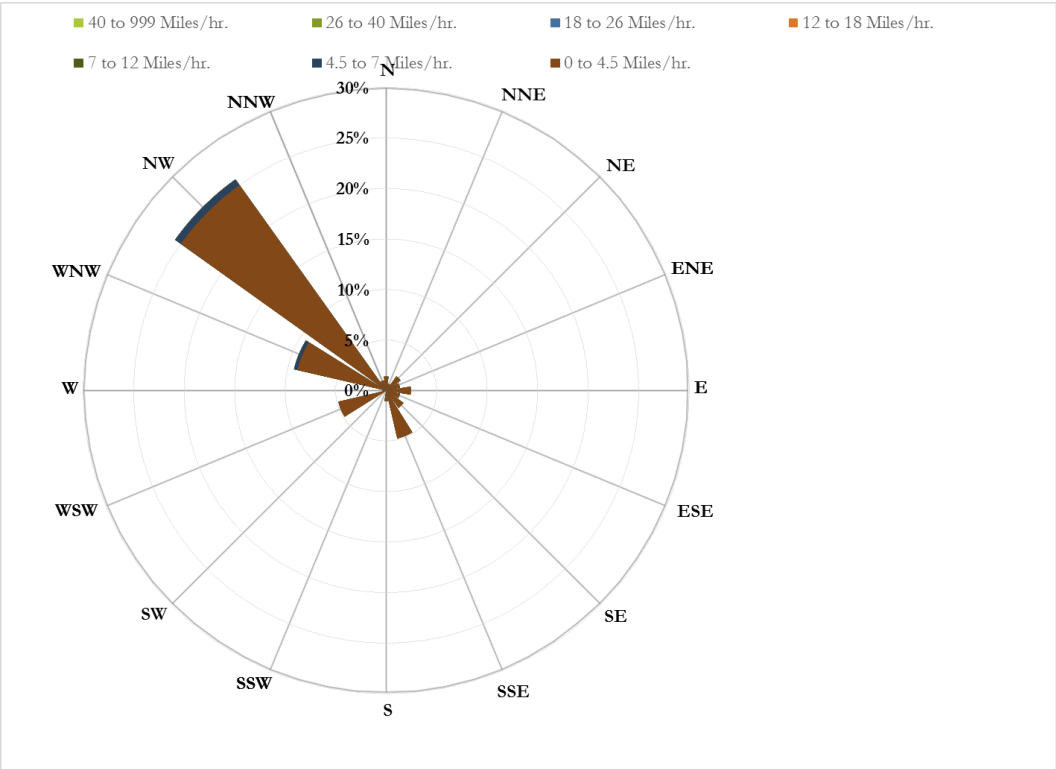

Figure 3-45.
CC-ER PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.5 CC-MP (Carroll Canyon – Maddox Park)

CC-MP (Carroll Canyon – Maddox Park):

CC-MP is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the RA group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 796 measurements were determined to be valid (91%).
- Mean values for PM_{10} were 0.0084 mg/m^3.
- Mean standard deviation is $\pm$0.0054 mg/m^3

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CC-MP Optical readings were higher than the mean value of the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed late evening and sundown, and times of increased traffic during the morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CC-MP Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed at noon and times of increased traffic during the morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CC-MP Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed late evening and sundown, and times of increased traffic during the morning.

Graphical representations of this data is presented in Figures 3-46 through 3-48.

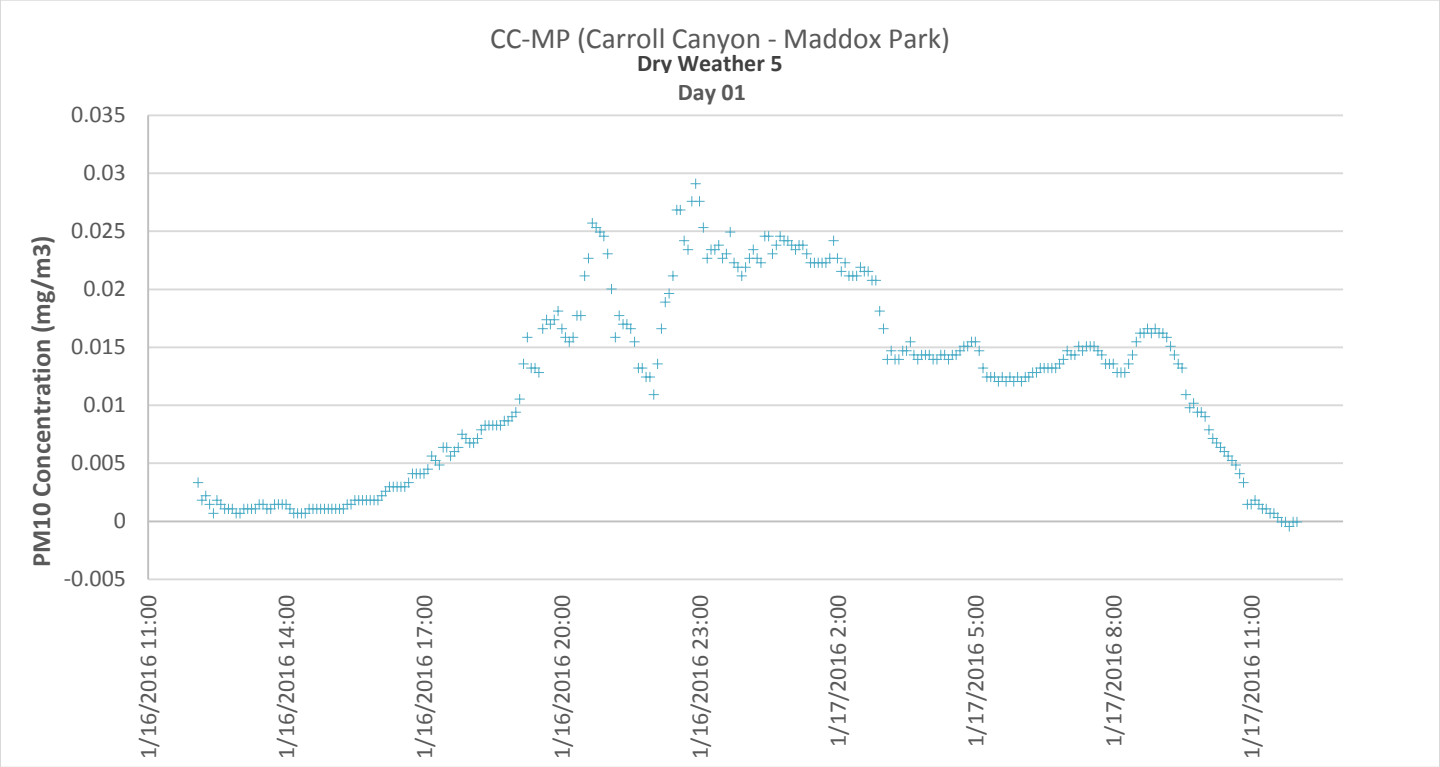

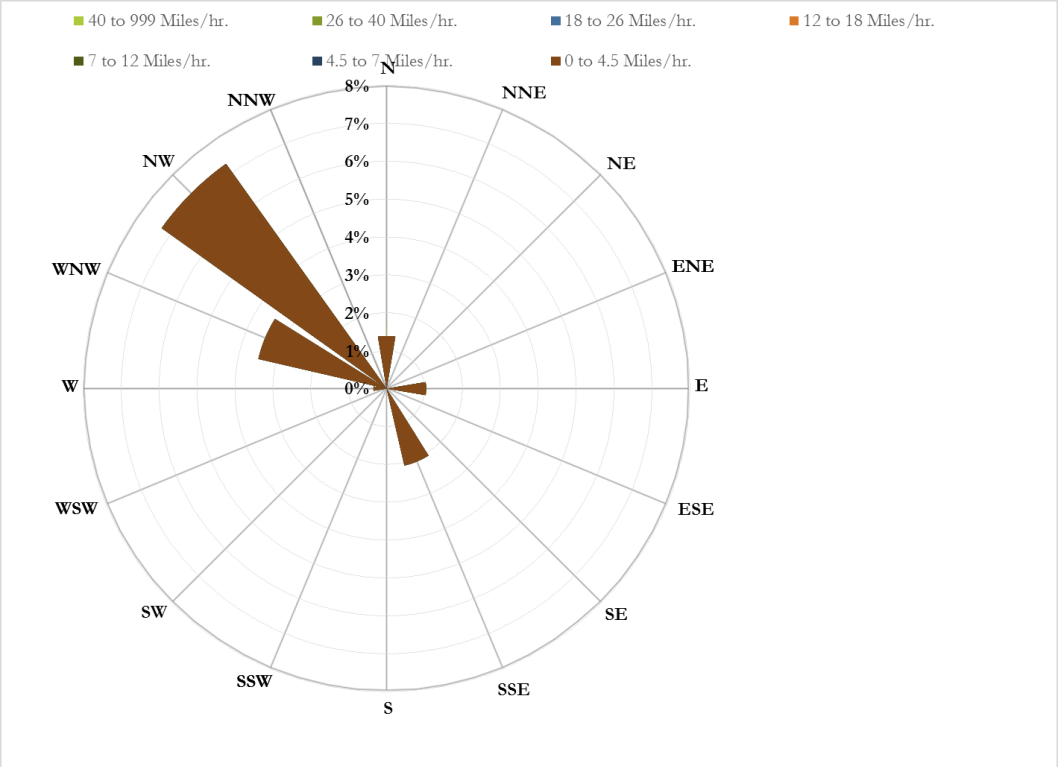

Figure 3-46.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

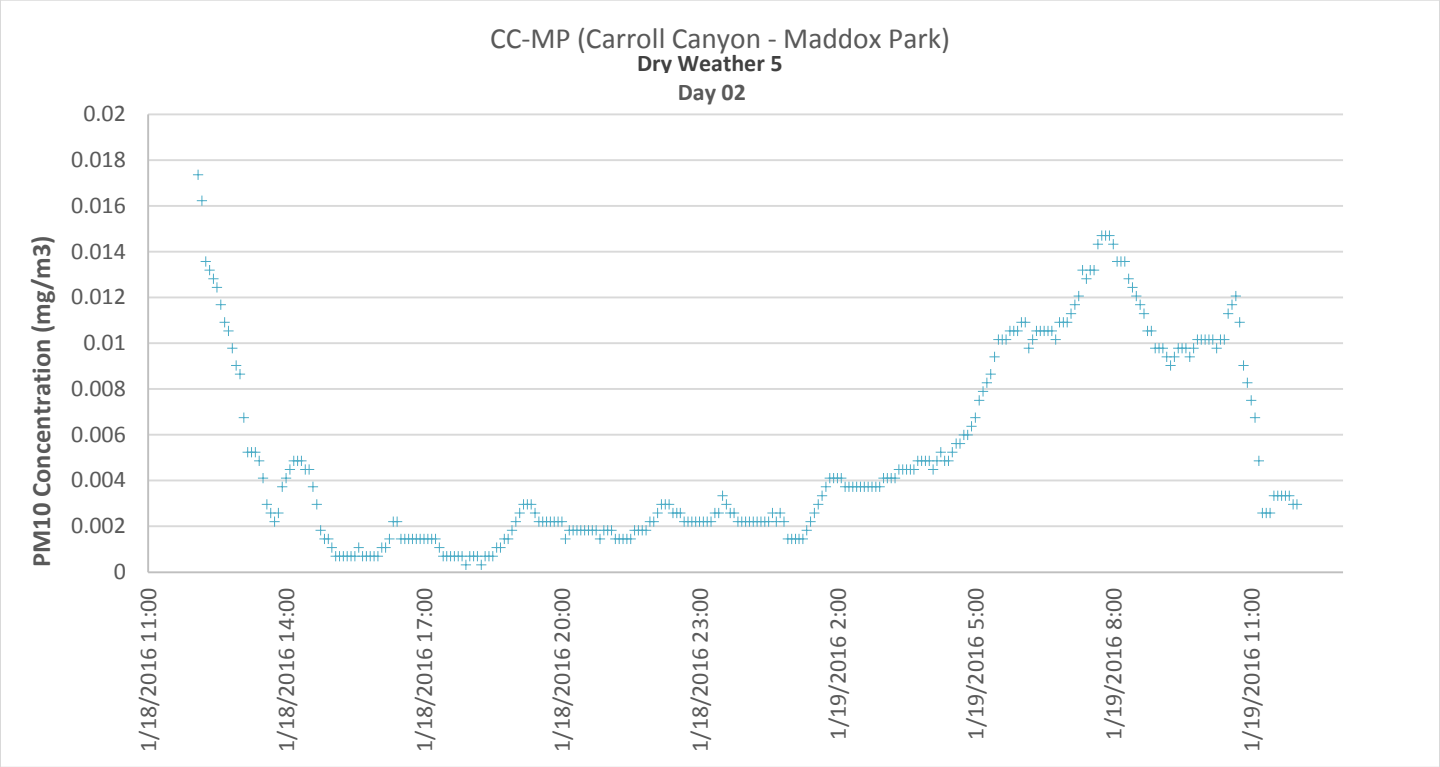

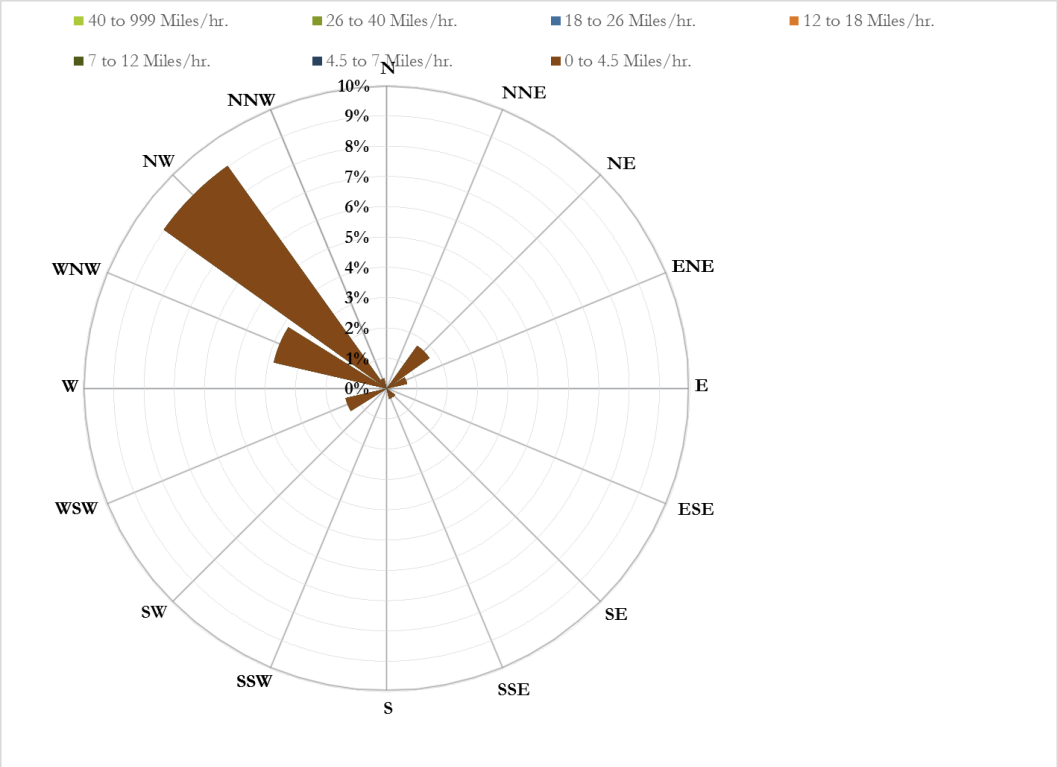

Figure 3-47.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

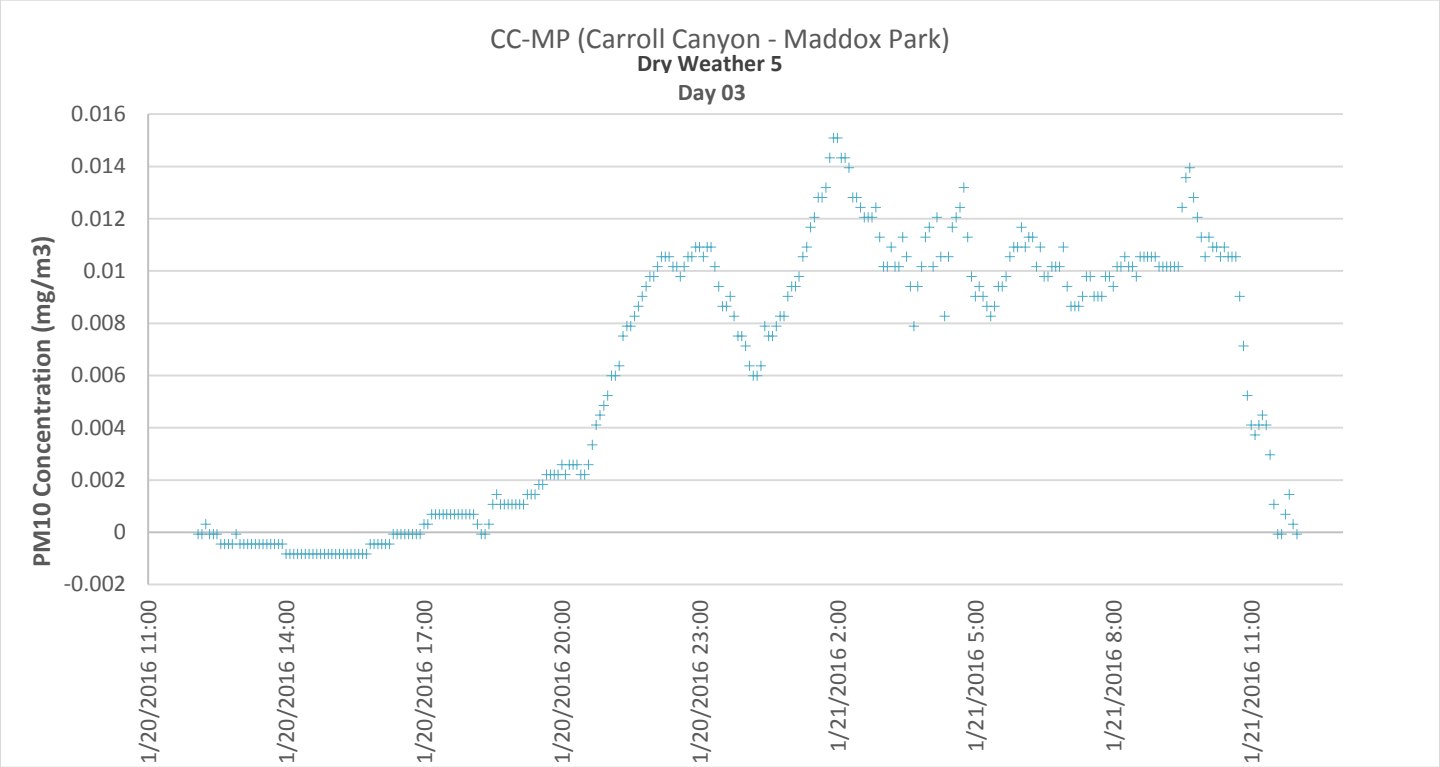

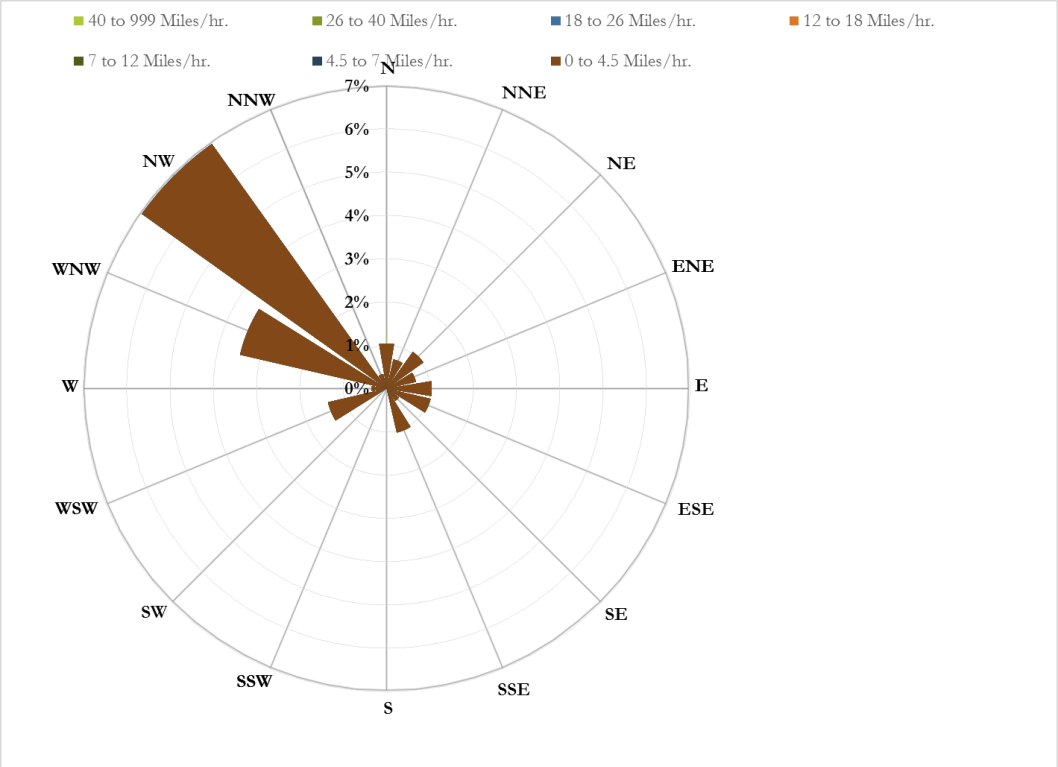

Figure 3-48.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.6 CC-SF (Carroll Canyon – Camino Santa Fe)

CC-SF (Carroll Canyon – Camino Santa Fe):

CC-MP is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the RA group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 662 measurements were determined to be valid (76%).
- Mean values for PM_{10} were 0.0092 mg/m^3.
- Mean standard deviation is $\pm$0.0051 mg/m^3

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CC-SF Optical readings were higher than the mean value of the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed late evening and sundown, at times of increased traffic during the morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CC-SF Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed at noon and times of increased traffic during the morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CC-SF Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed after sundown and at times of increased traffic during the morning.

Graphical representations of this data is presented in Figures 3-49 through 3-51.

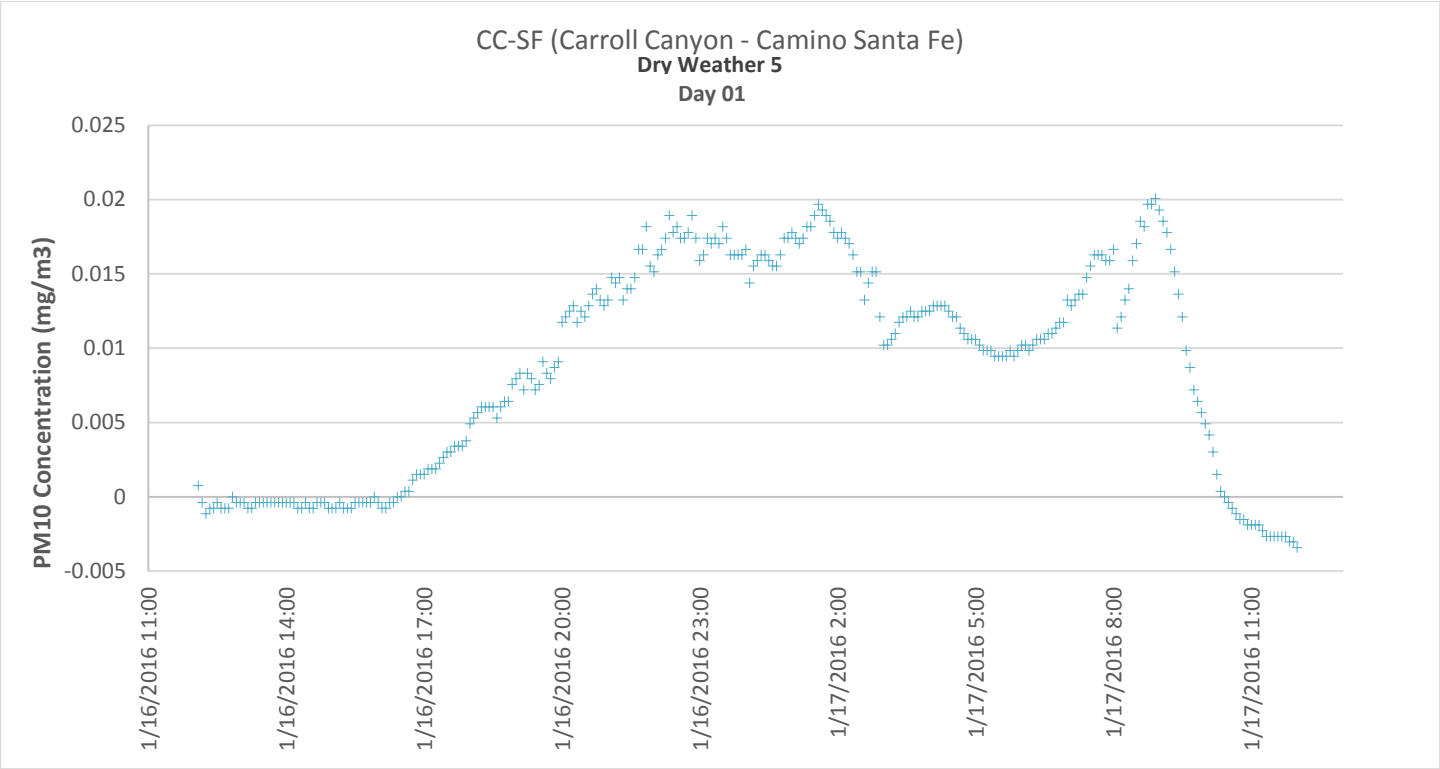

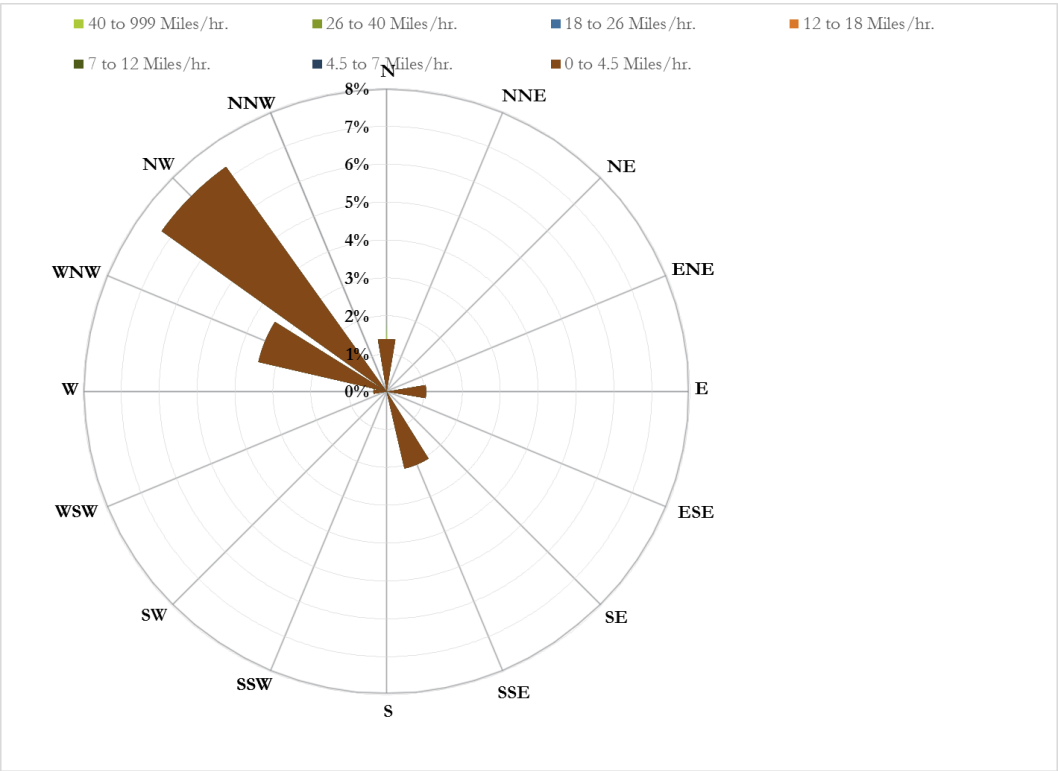

Figure 3-49.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

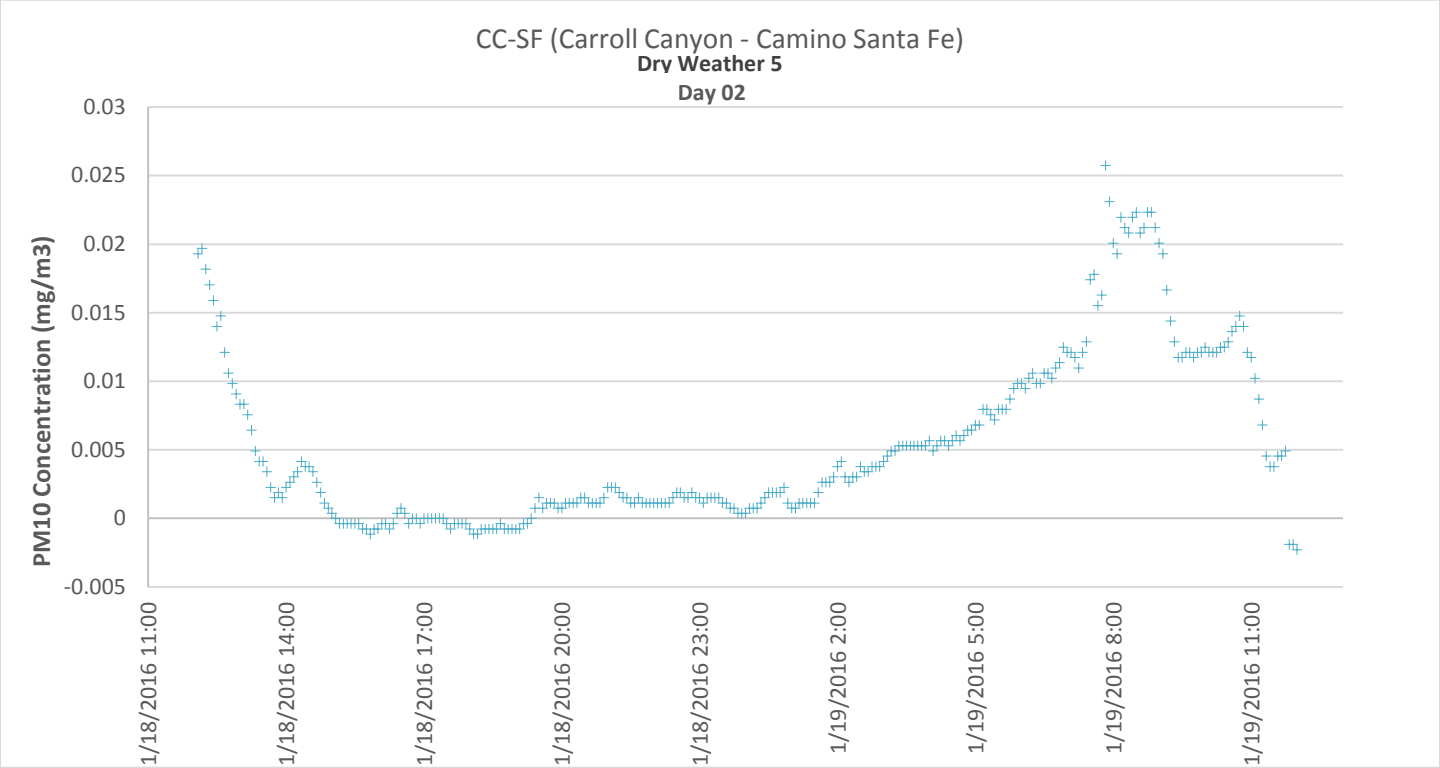

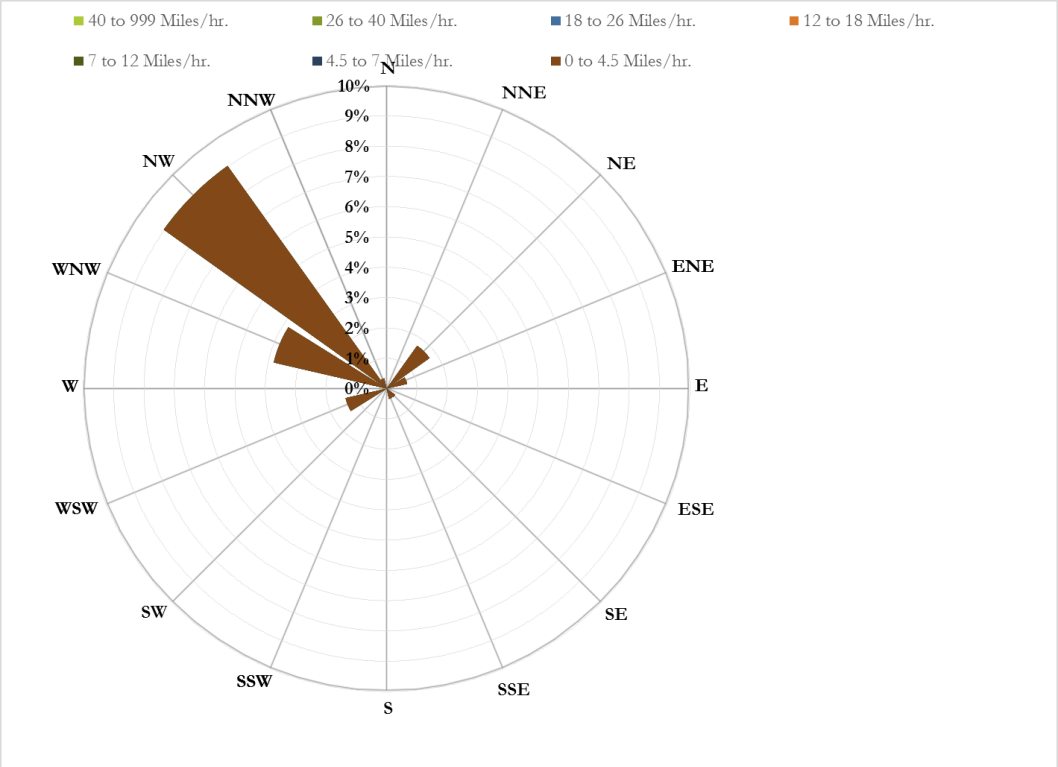

Figure 3-50.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

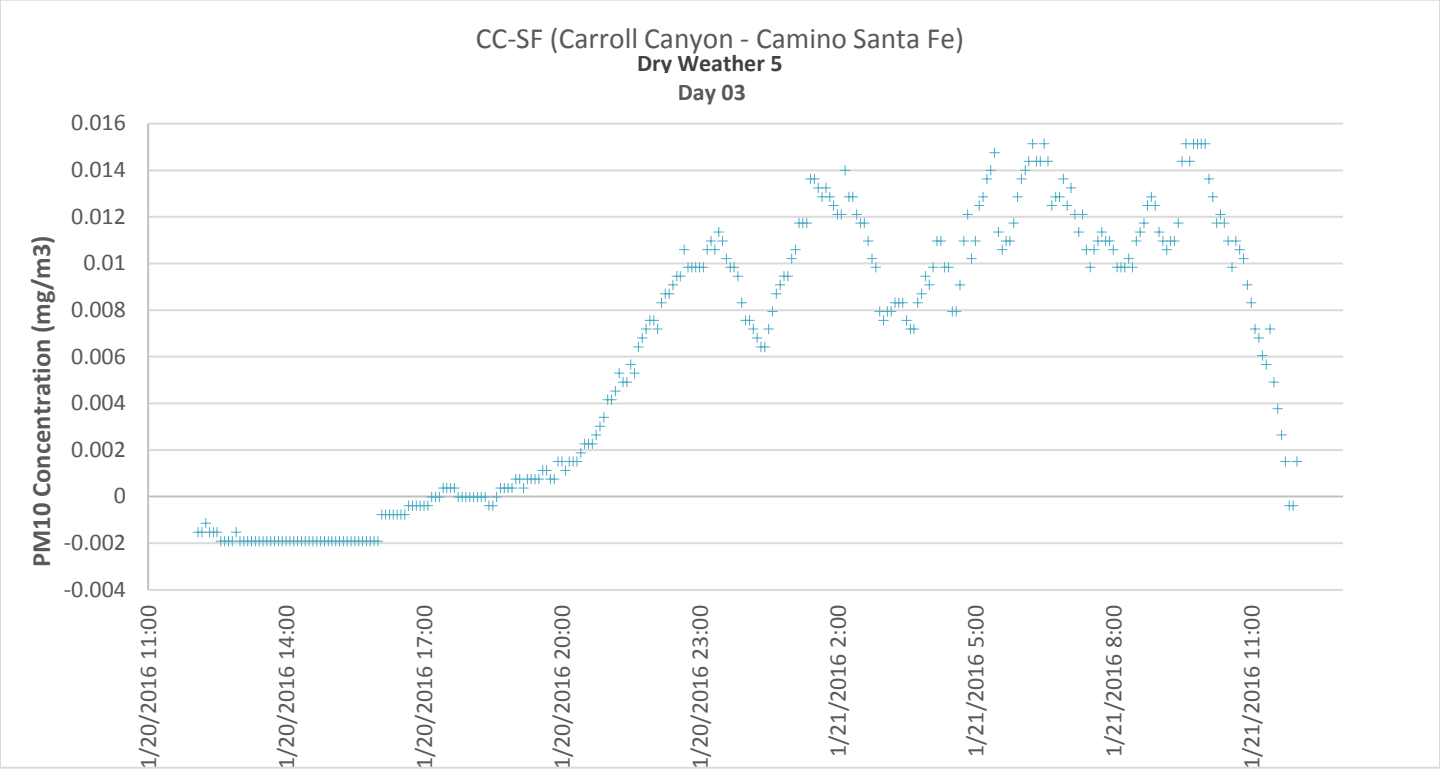

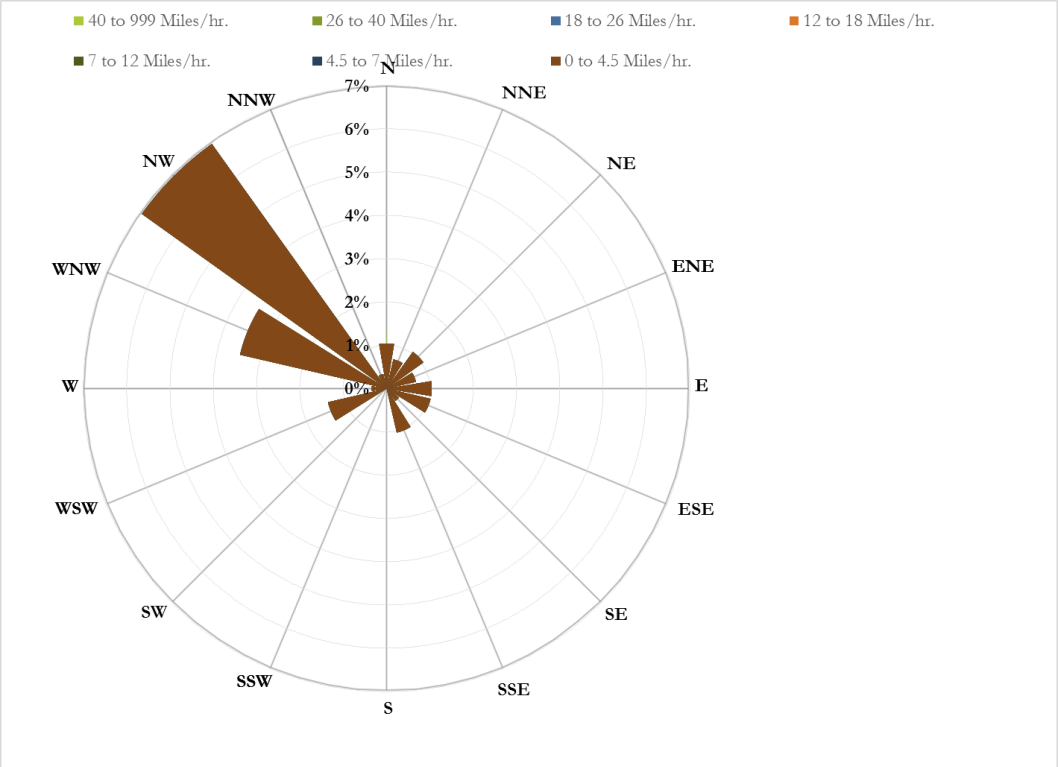

Figure 3-51.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.7 CC-SR (Carroll Canyon – Scripps Ranch)

CC-SR (Carroll Canyon – Scripps Ranch):

CC-SR is a site monitored during the Phase I and 2 Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0064 mg/m^3.
- Mean standard deviation is $\pm$0.0041 mg/m^3

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CC-SF Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during sundown and late morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CC-SF Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Optical monitor readings peaked around noontime and during times of increased traffic conditions in the morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CC-DM Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed around midnight.

Graphical representations of this data is presented in Figures 3-52 through 3-54.

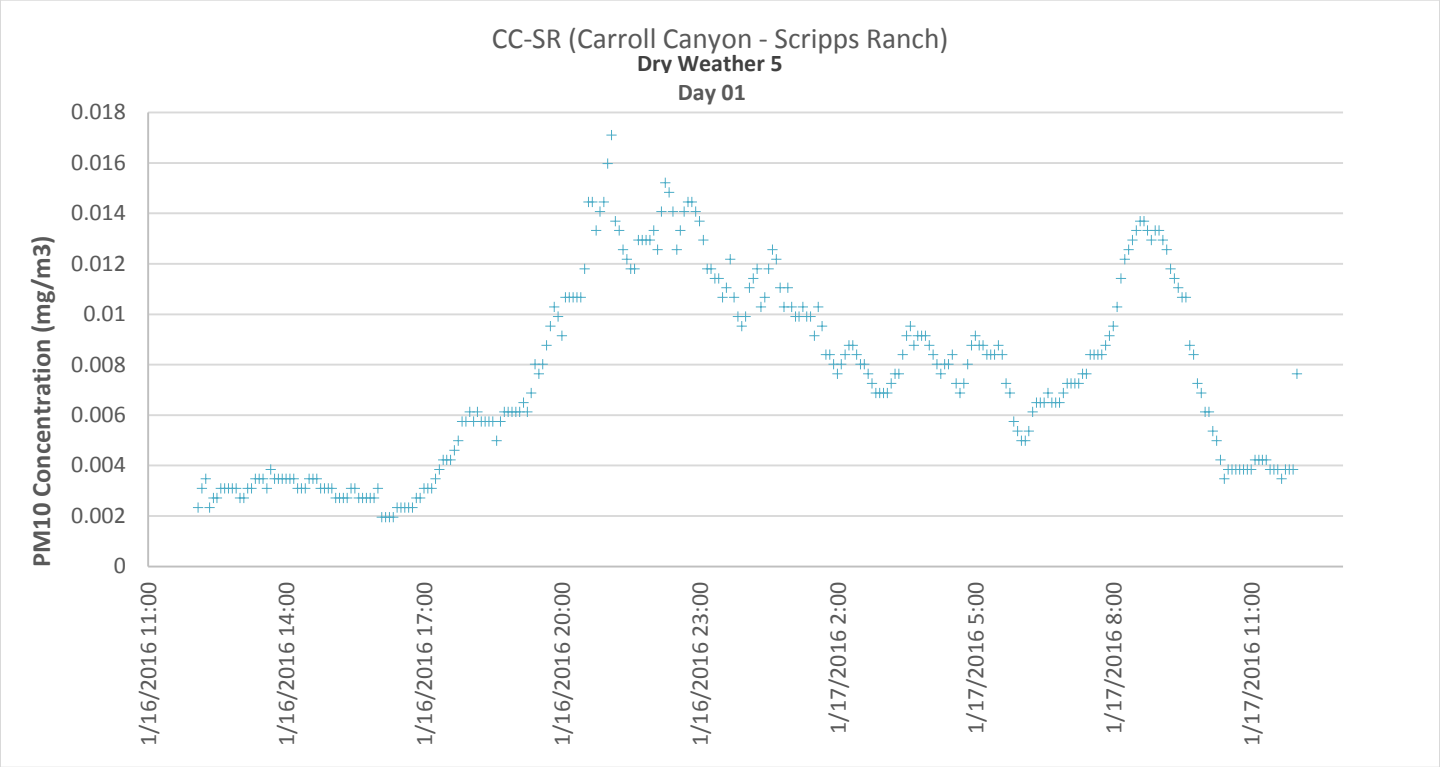

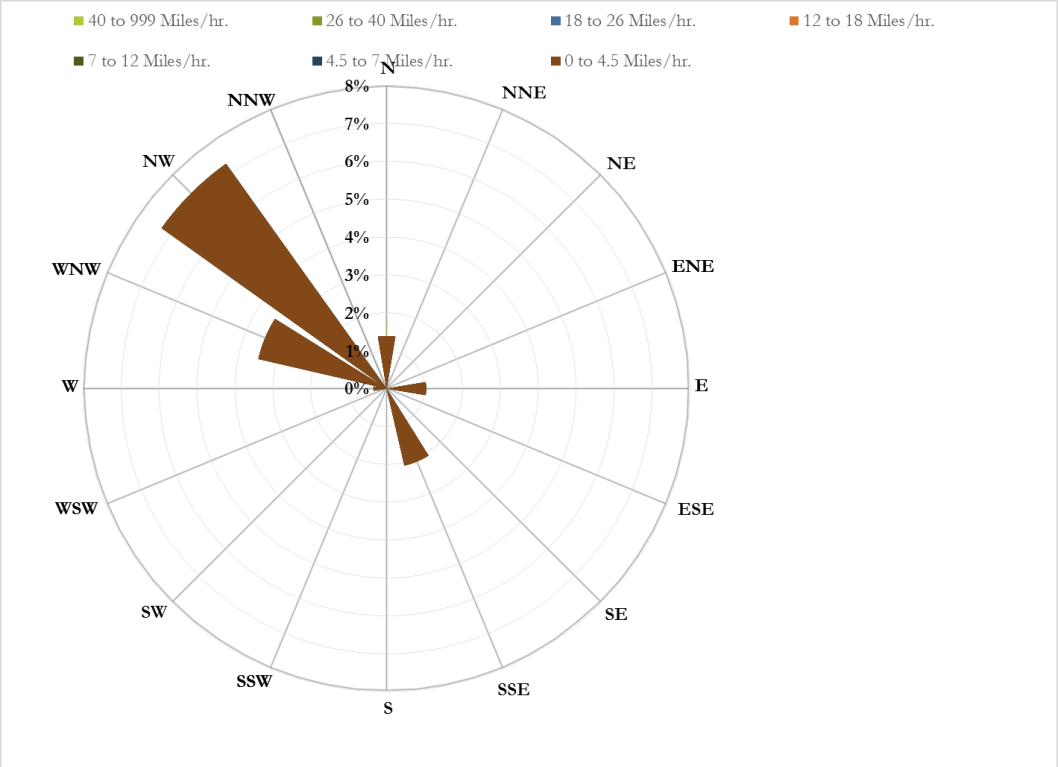

Figure 3-52.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

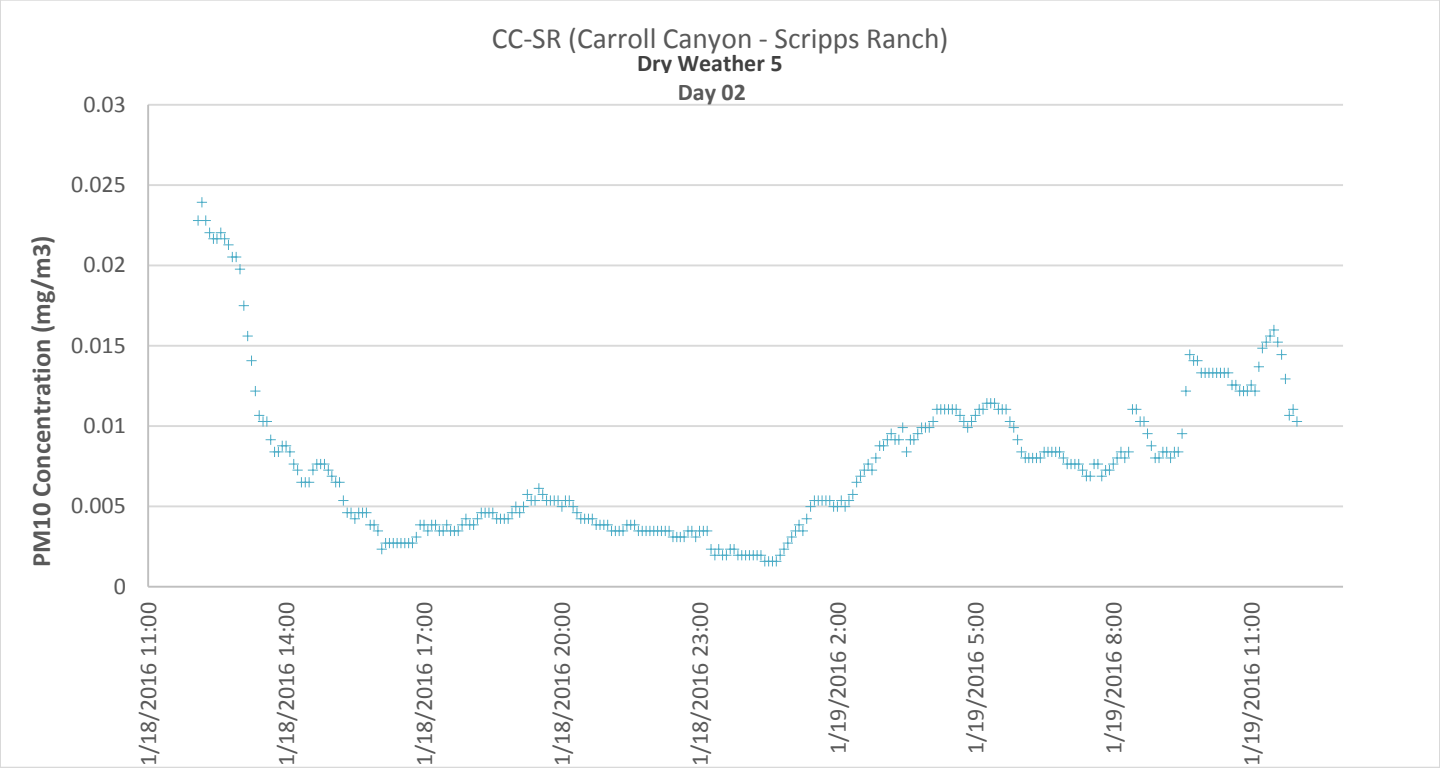

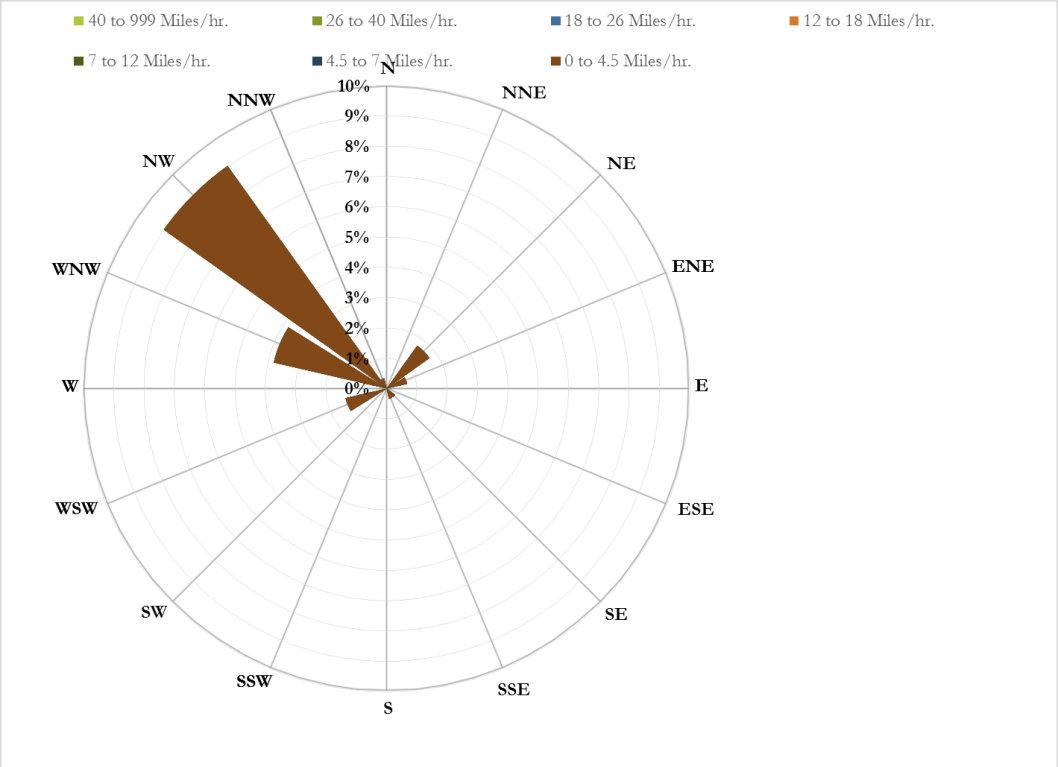

Figure 3-53.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

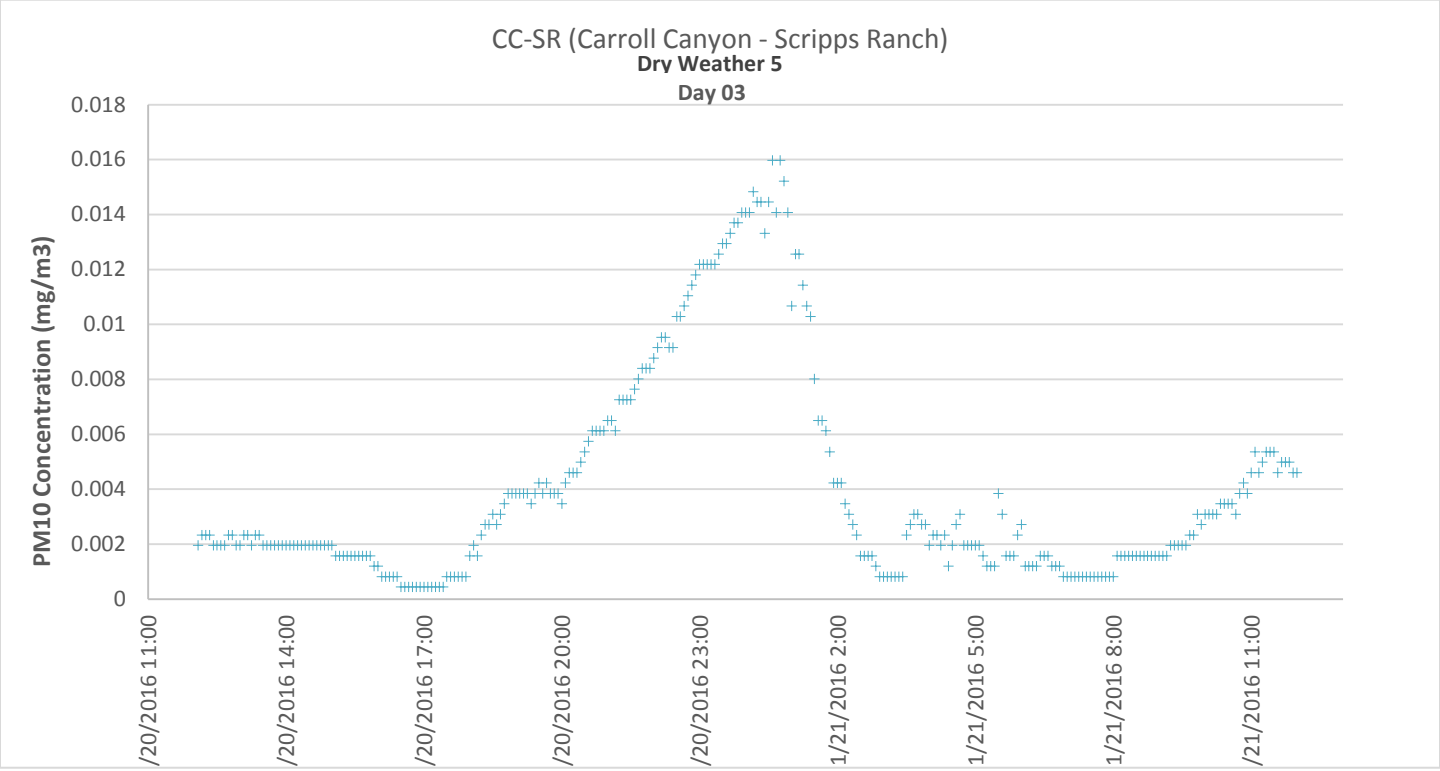

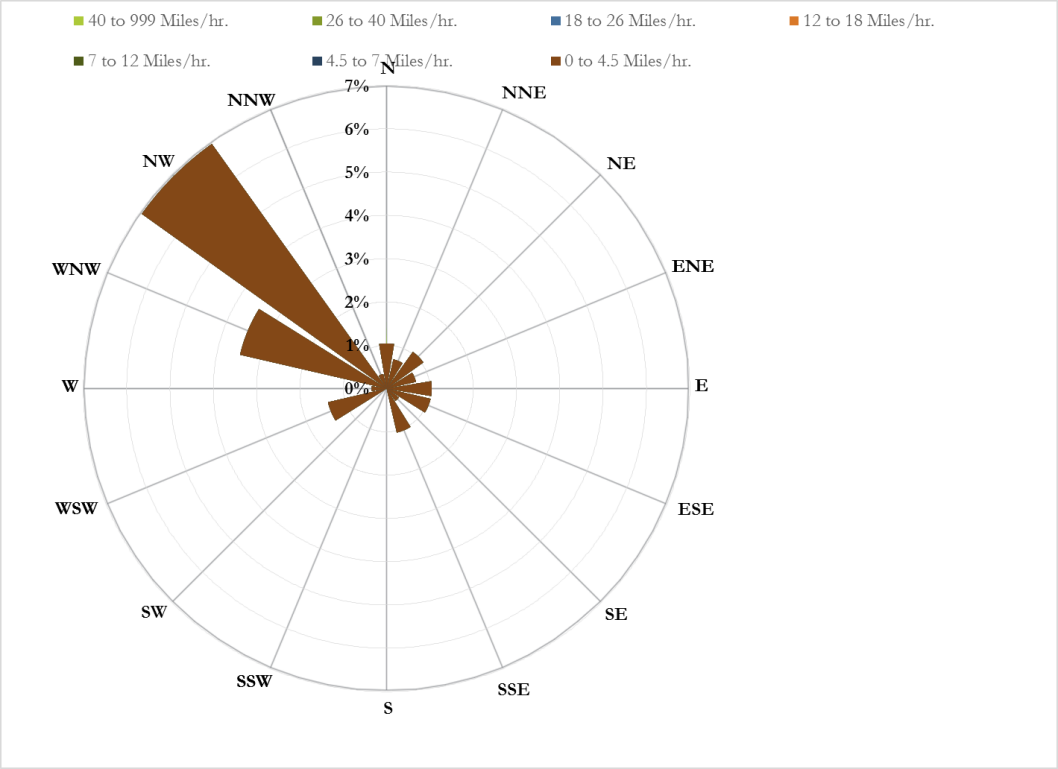

Figure 3-54.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.8 CC-UP (Carroll Canyon – Upwind)

CC-UP (Carroll Canyon – Upwind):

CC-UP is a site monitored during the Phase I and 2 Watershed Special Study and contains an Optical monitor and an FRM sampler.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 807 measurements were determined to be valid (93%).
- Mean values for PM_{10} were 0.0055 mg/m^3.
- Mean standard deviation is $\pm$0.0074 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean values for PM_{10} was 0.0111 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 63.73%

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CC-UP Optical readings were lower than the mean value of the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed during sundown and morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CC-UP Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during periods of increased traffic in the morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CC-UP Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during periods of increased traffic in the morning.

Graphical representations of this data is presented in Figures 3-55 through 3-57.

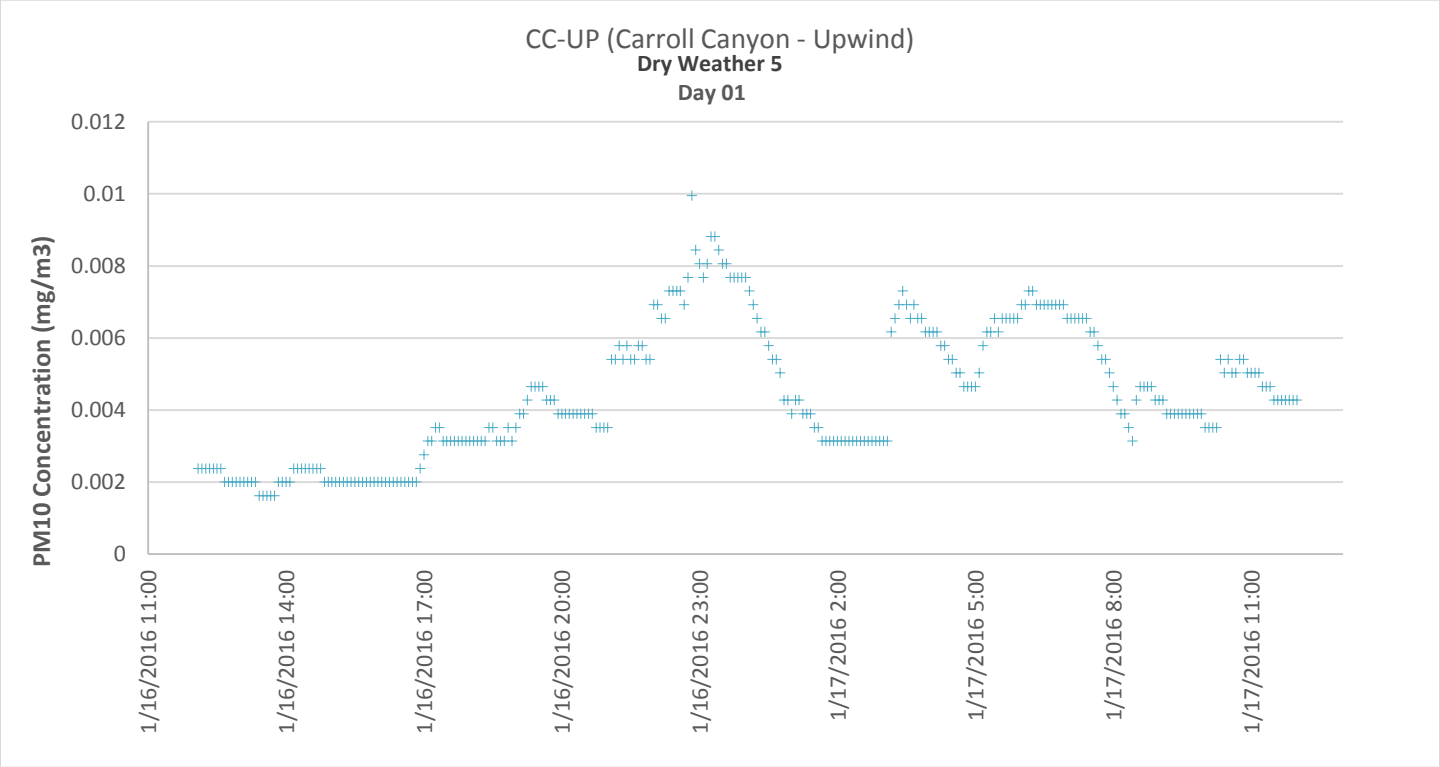

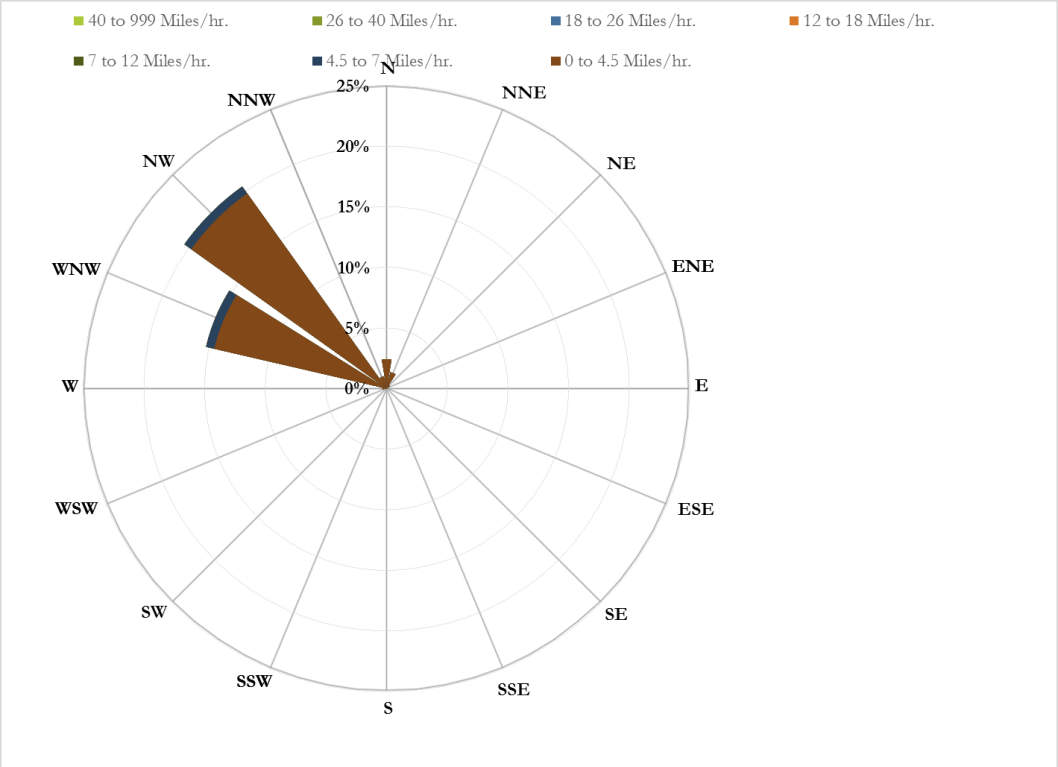

Figure 3-55.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

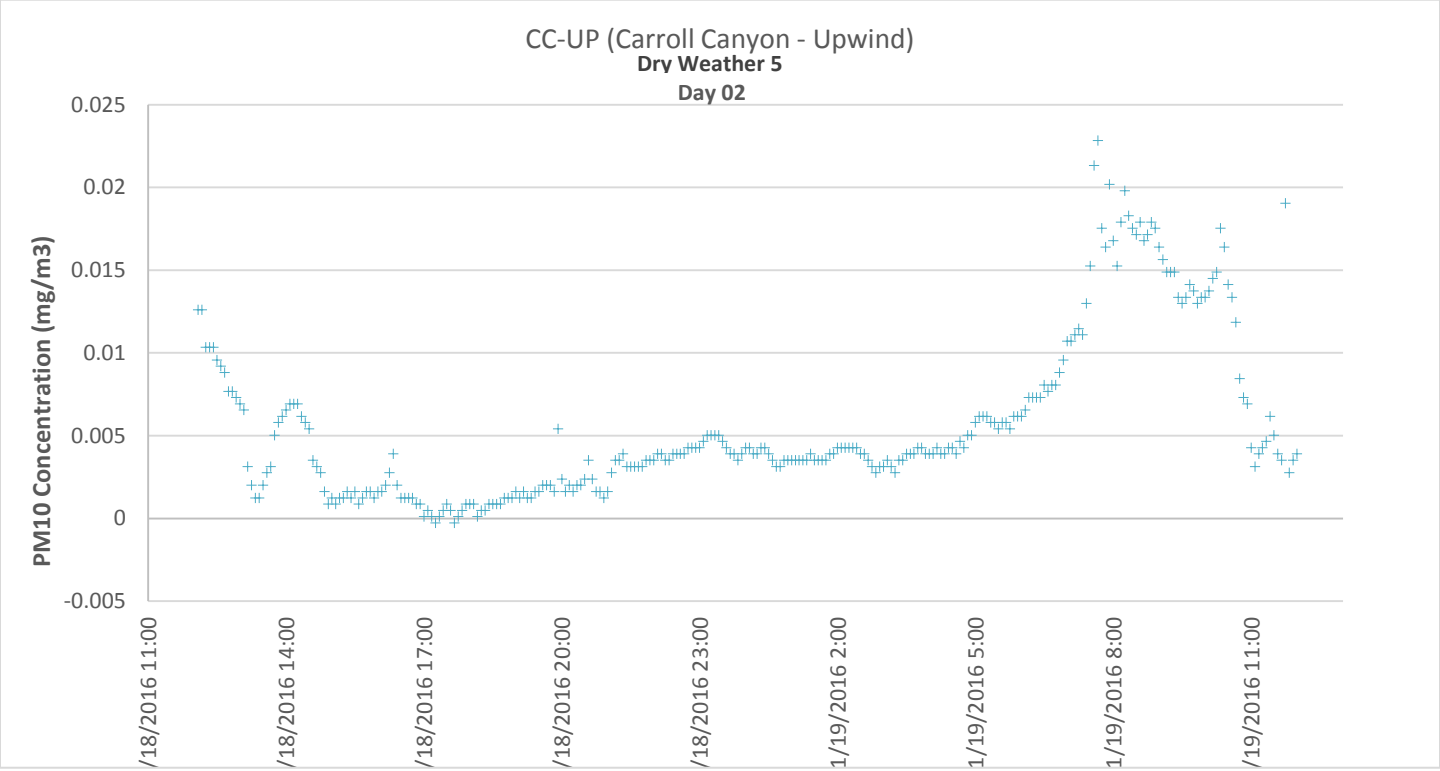

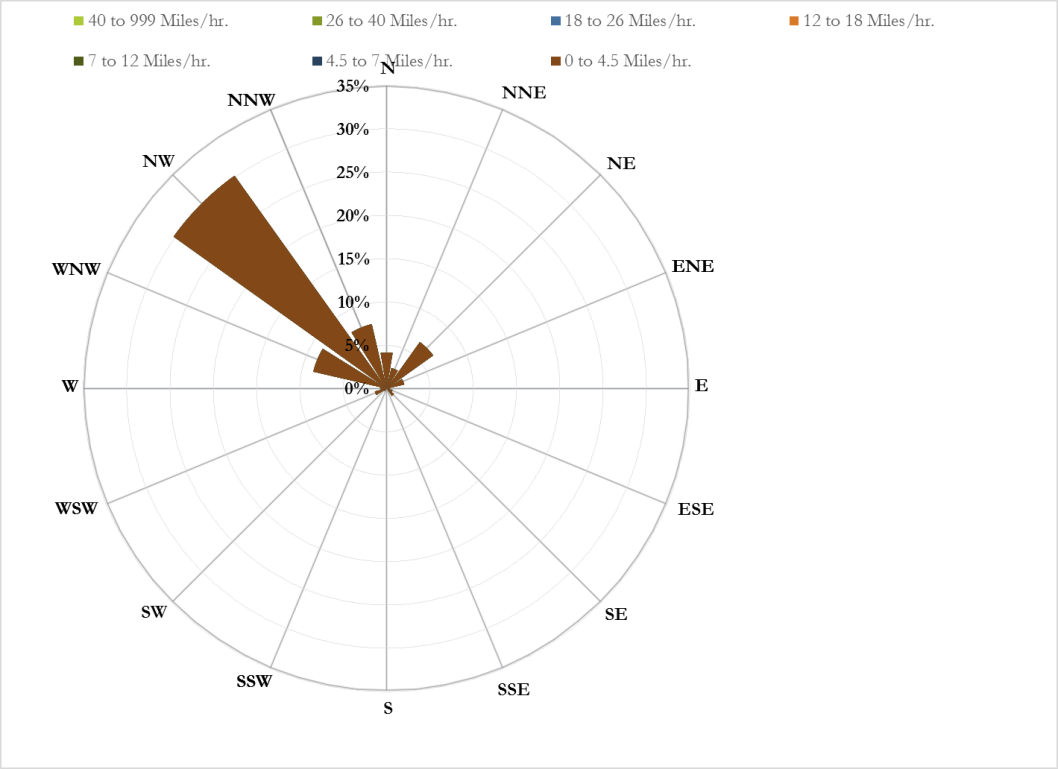

Figure 3-56.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

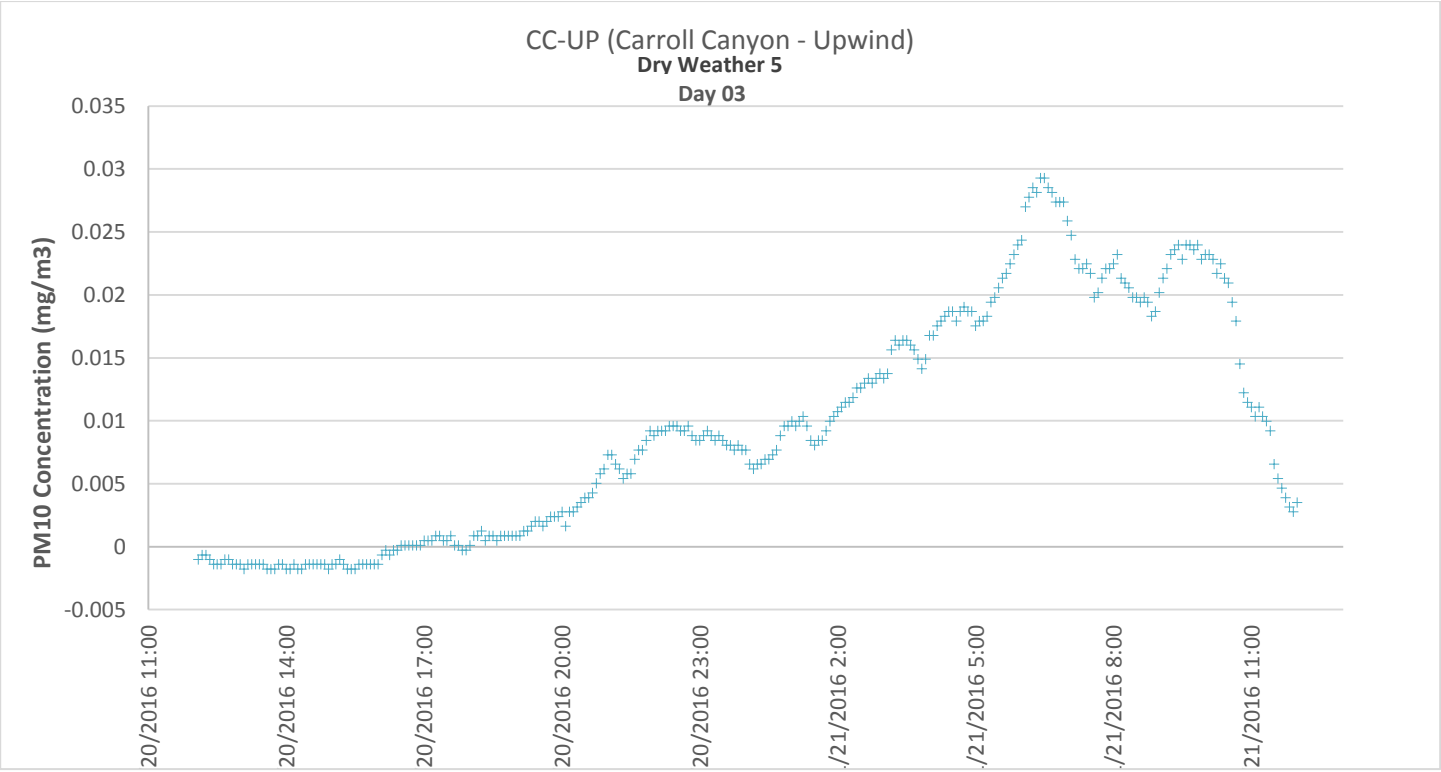

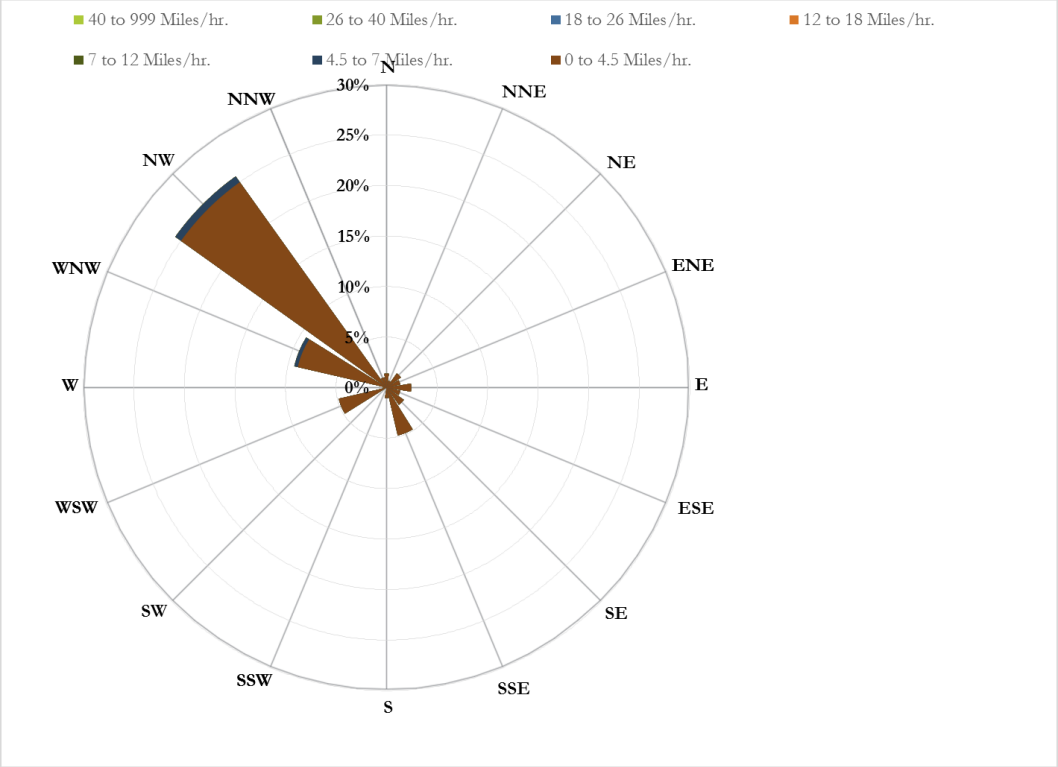

Figure 3-57.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.9 CV-CD (Carmel Valley – Camino Del Sur)

CV-CD (Carmel Valley – Camino Del Sur):

CV-CD is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 810 measurements were determined to be valid (94%).
- Mean values for PM_{10} were 0.0076 mg/m^3.
- Mean standard deviation is $\pm$0.0055 mg/m^3

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – CV-CD Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind direction were observed primarily from the W and WSW. Peak Optical monitor readings were observed between around midnight and through the morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – CV-CD Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW, W, WSW, and SW. Peak optical monitor readings were observed at noontime and during periods of increased traffic in the morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – CV-CD Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the WSW, SW, NE, and ENE. Peak Optical monitor readings were observed during sundown.

Graphical representations of this data are presented in Figures 3-58 through 3-60.

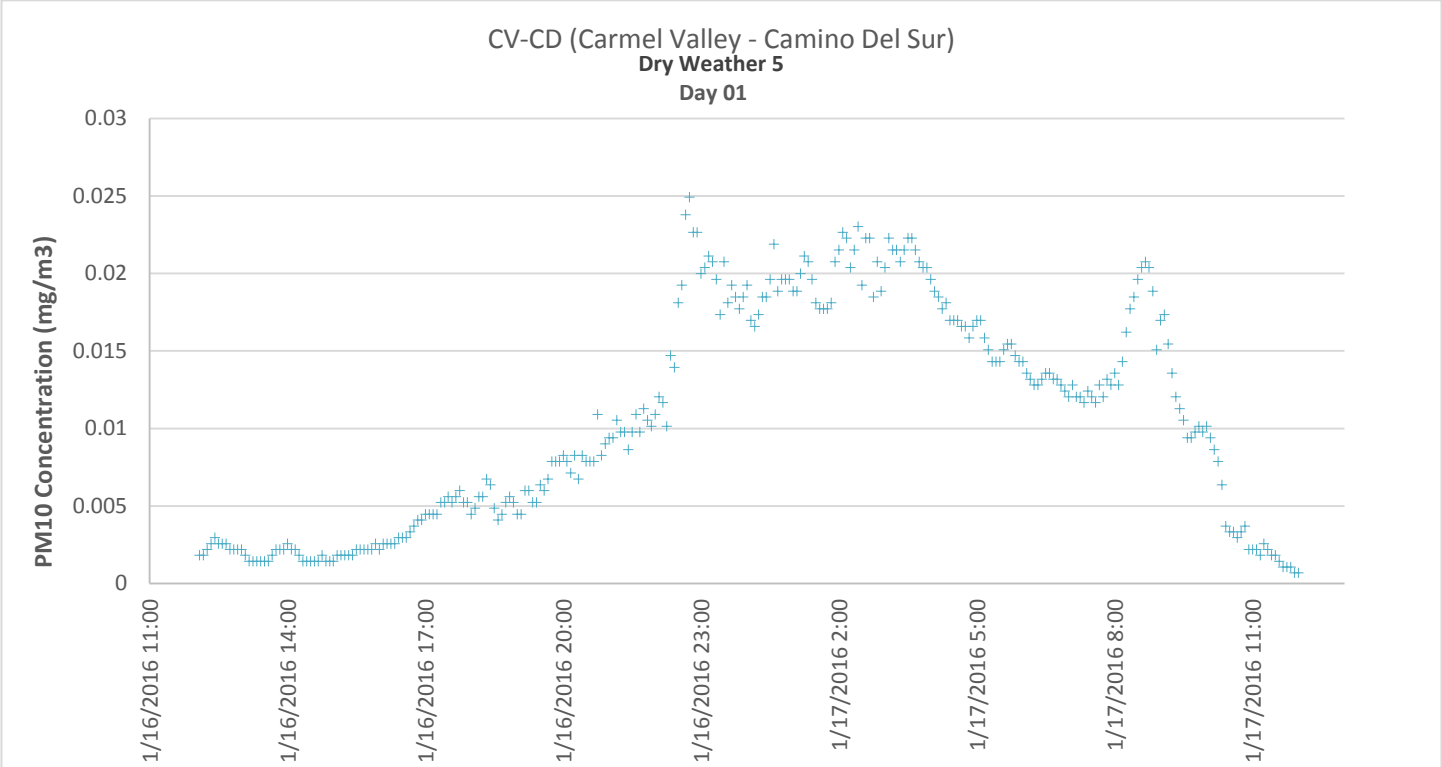

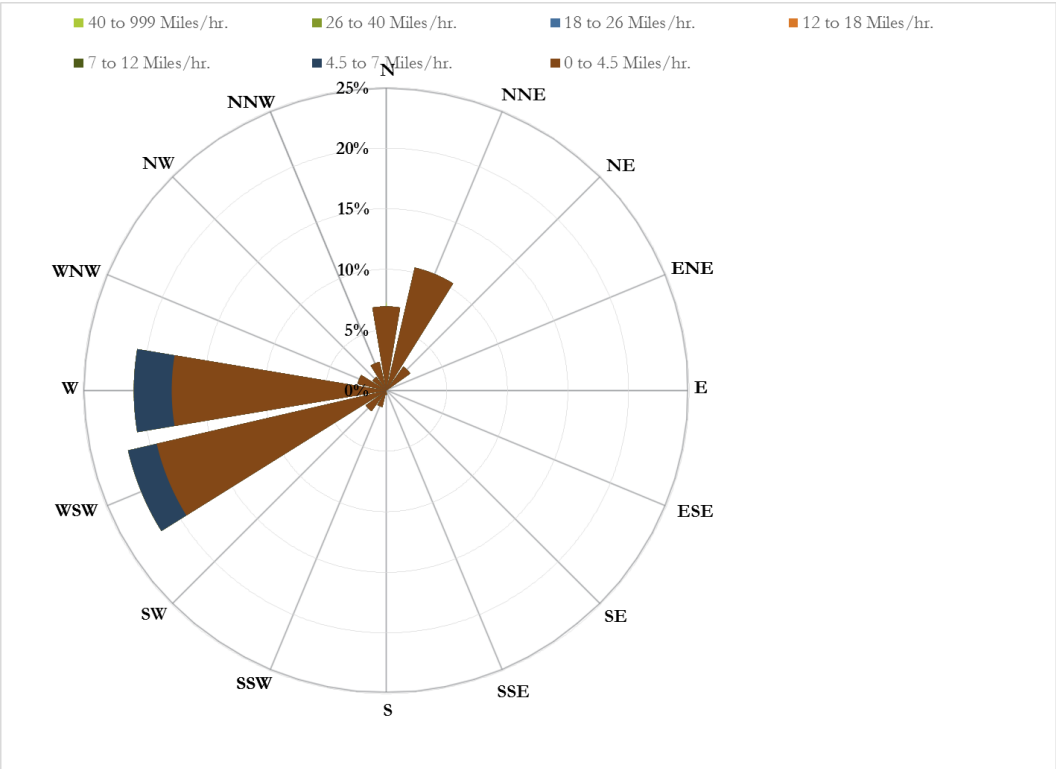

Figure 3-58.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

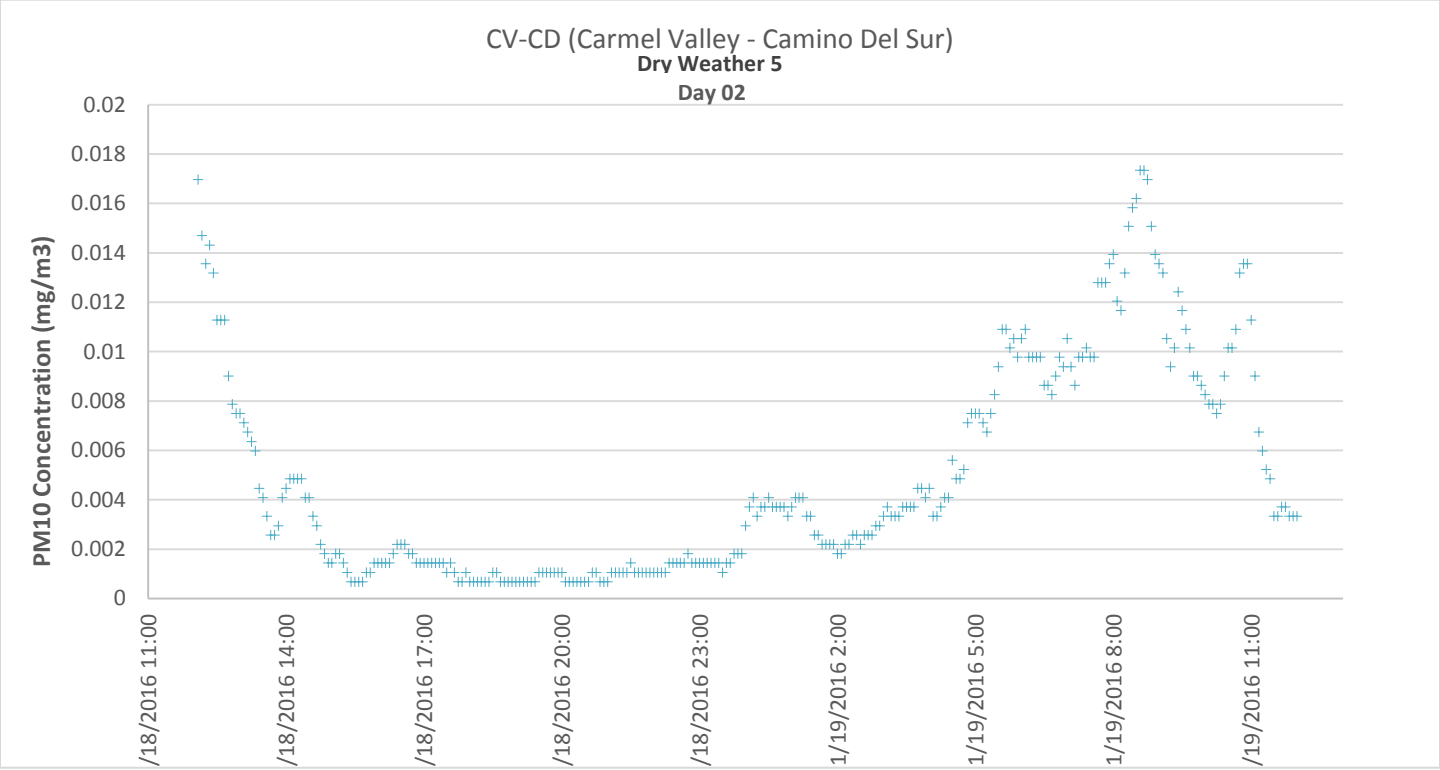

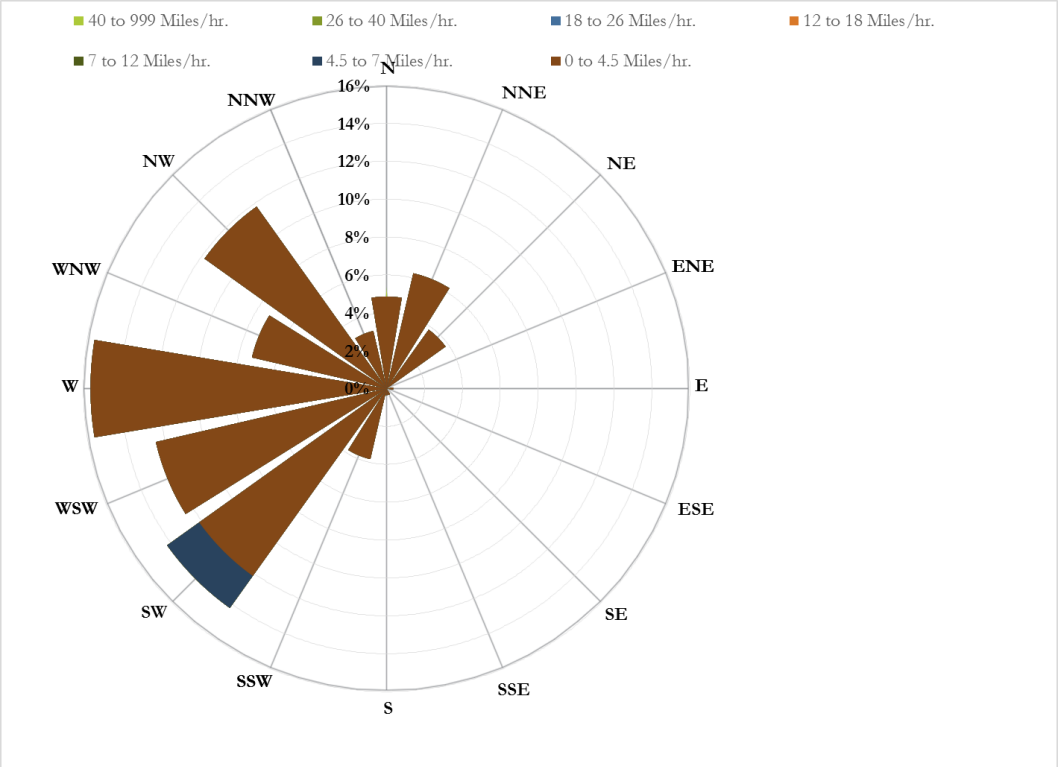

Figure 3-59.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

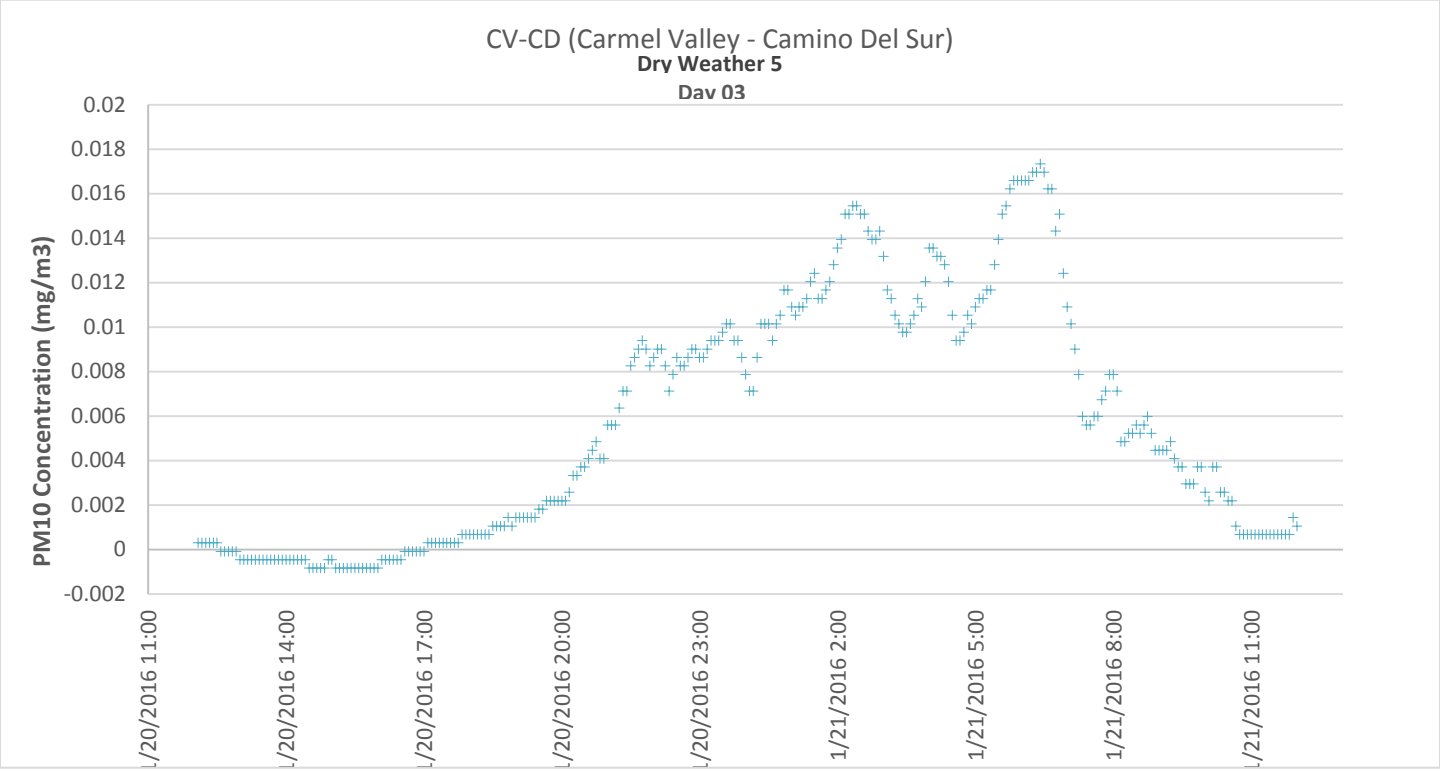

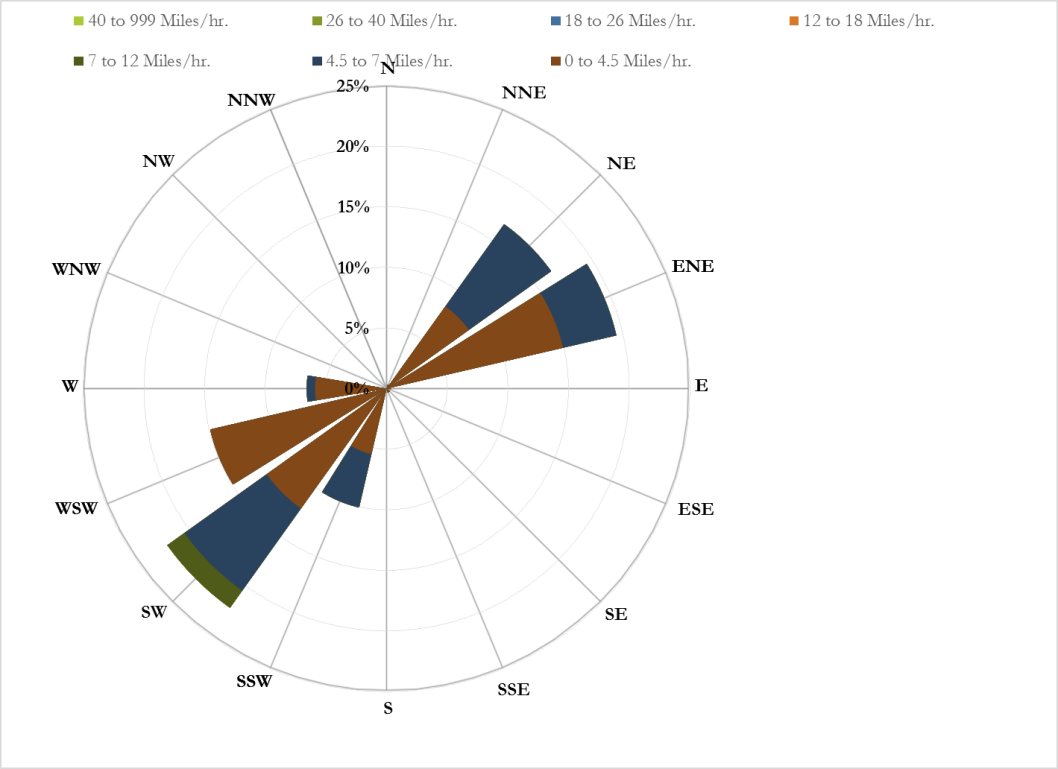

Figure 3-60.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.10 LP-PO (Los Peñasquitos – Poway)

LP-PO (Los Peñasquitos – Poway):

CV-CD is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 576 measurements were determined to be valid (96%).
- Mean values for PM_{10} were 0.0077 mg/m^3.
- Mean standard deviation is $\pm$0.0055 mg/m^3

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 1 – LP-PO Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 5. Wind direction were observed primarily from the NW. Peak Optical monitor readings were observed during sundown and periods of increased traffic in the morning.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 2 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed at noontime and during periods of increased traffic in the morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 3 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed at midnight.

Graphical representations of this data are presented in Figures 3-61 through 3-63.

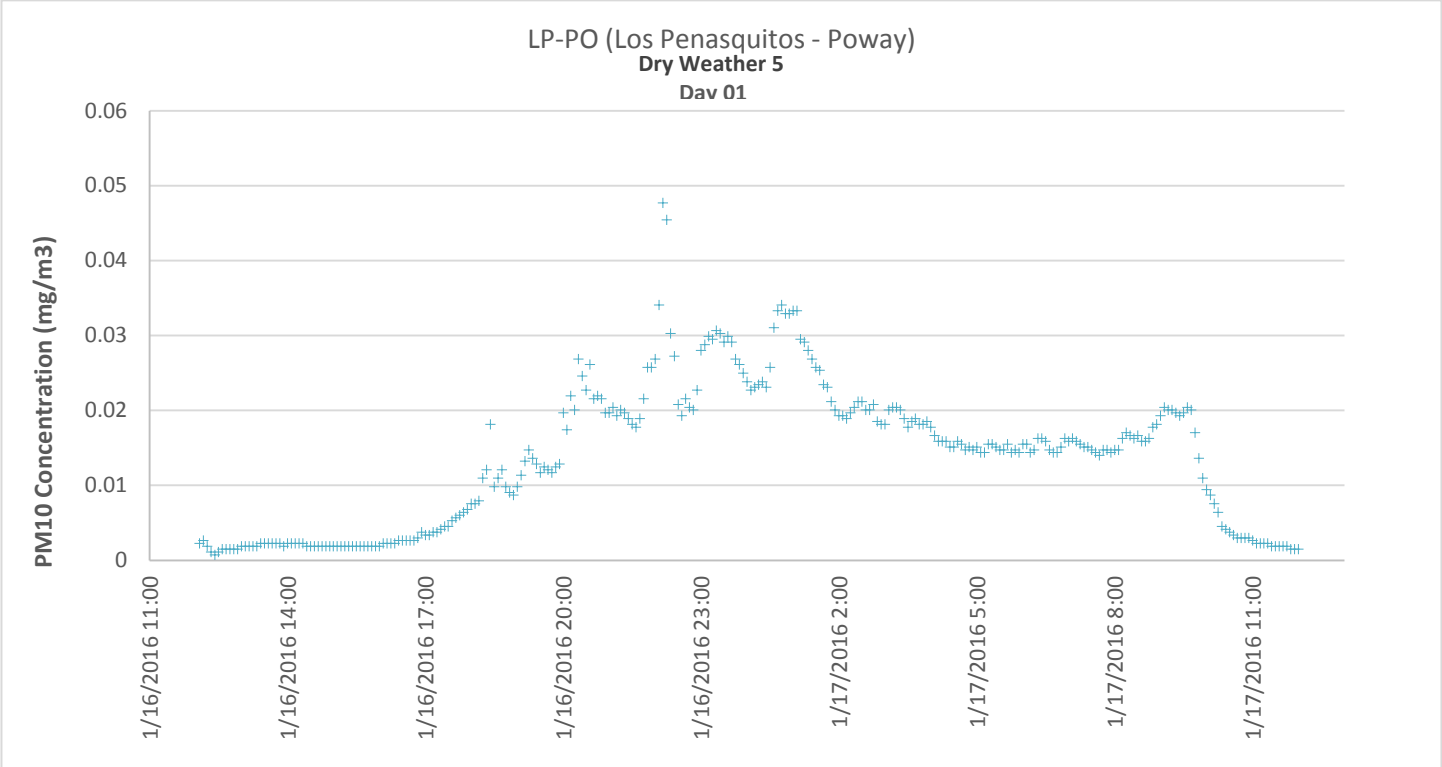

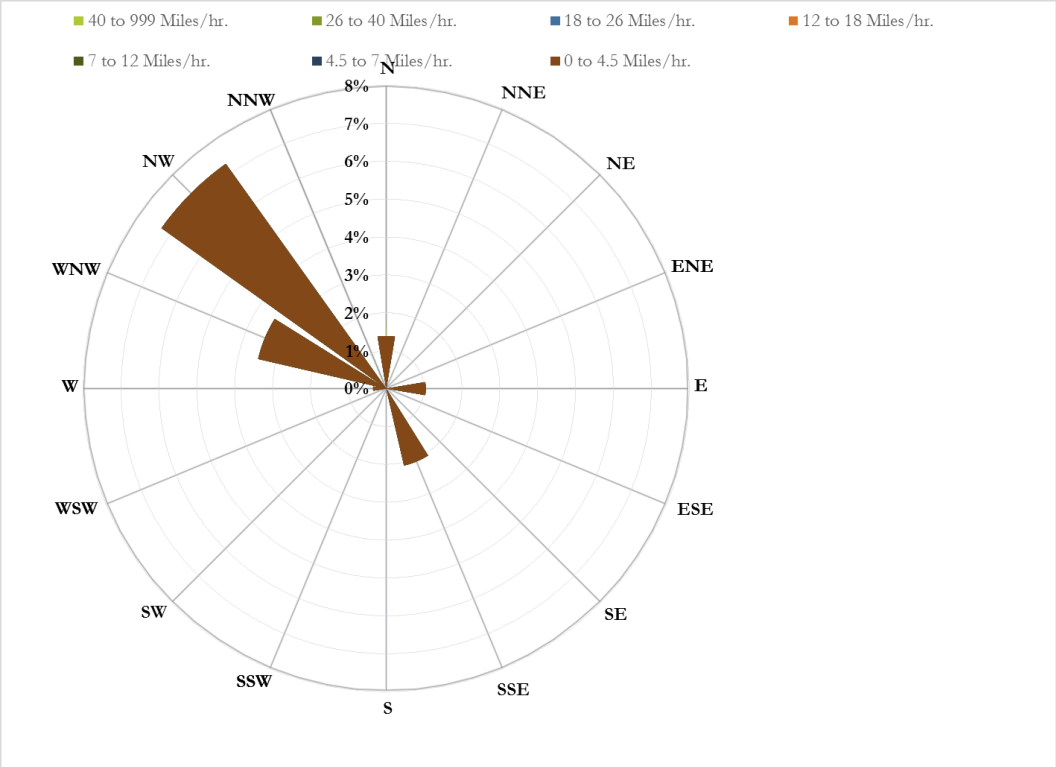

Figure 3-61.
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

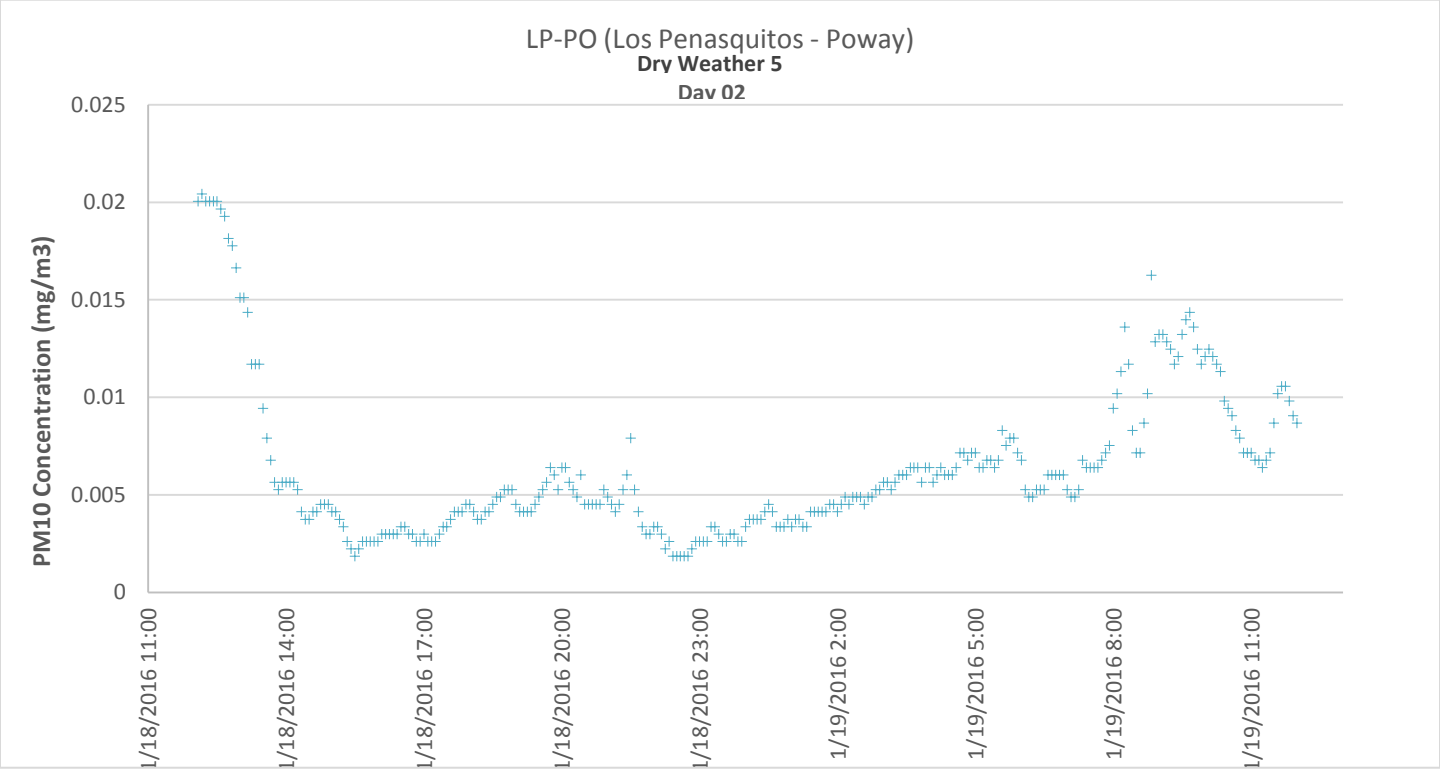

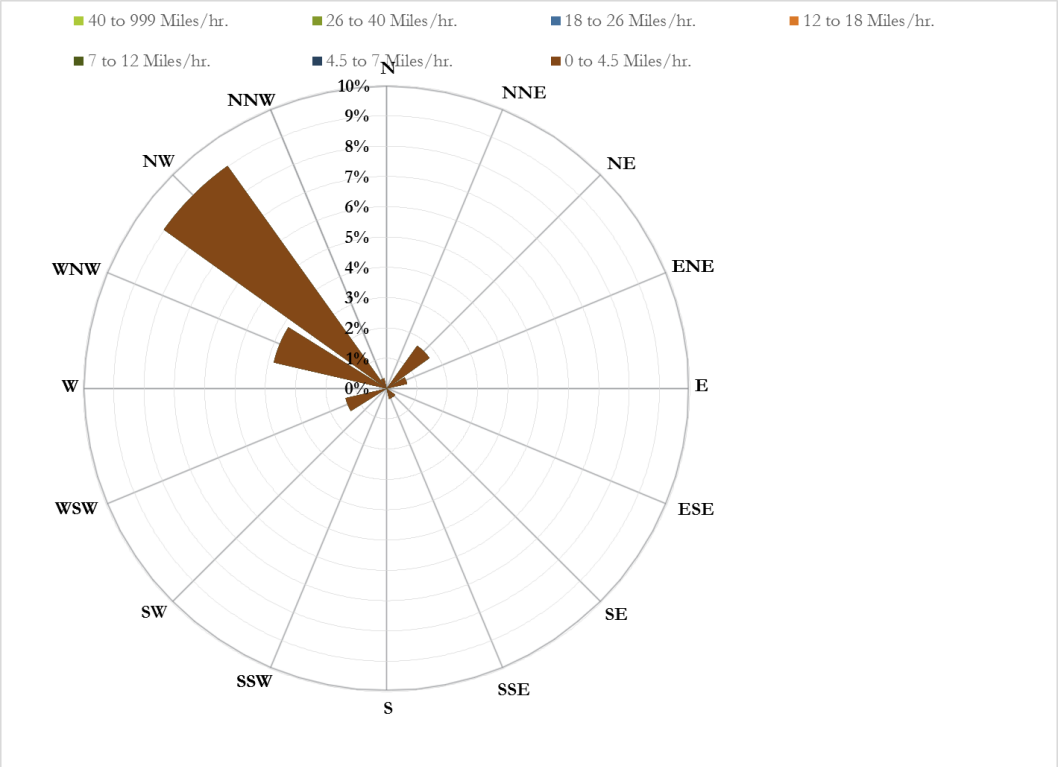

Figure 3-62
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

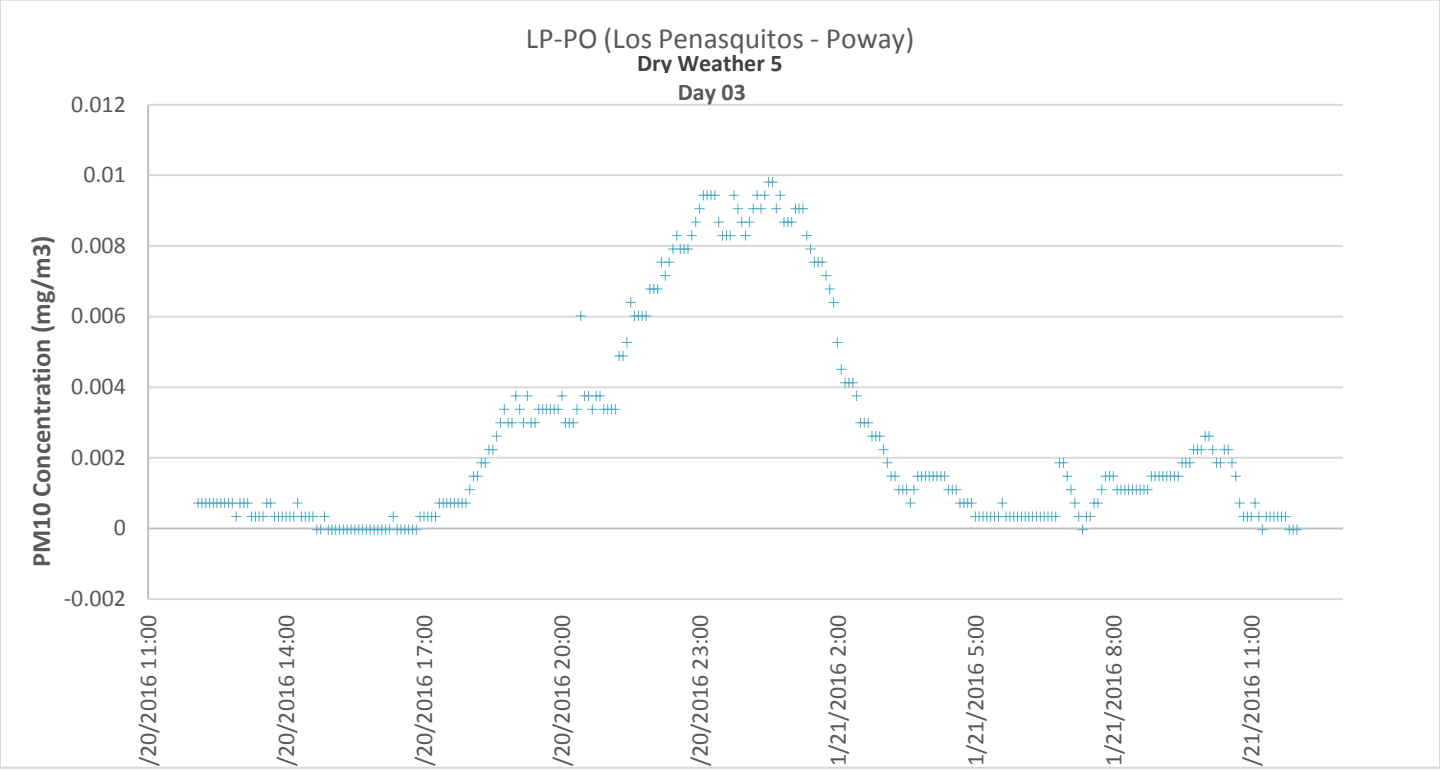

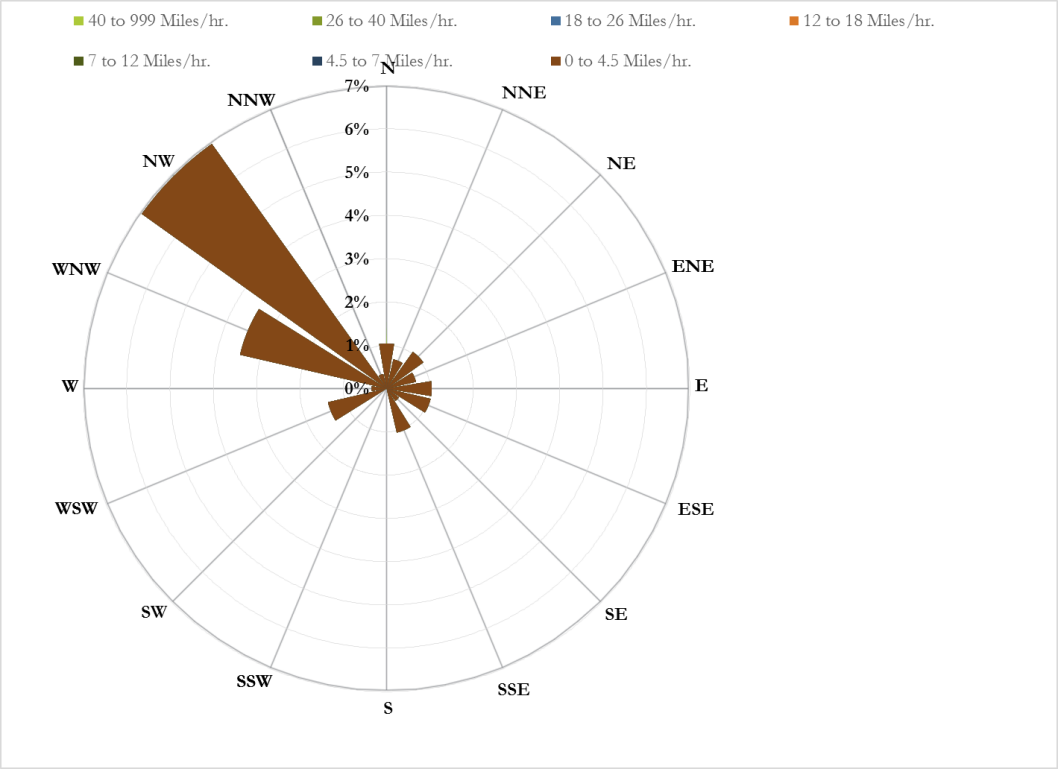

Figure 3-63.
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.2.11 LP-PR (Los Peñasquitos – Preserve)

LP-PR (Los Peñasquitos – Preserve):

LP-PR is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 763 measurements were determined to be valid (88%).
- Mean values for PM_{10} were 0.0039 mg/m^3.
- Mean standard deviation is $\pm$0.0029 mg/m^3

Day 1 (Saturday, 1/16/16 – Sunday, 1/17/16)

Day 4 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind direction were observed primarily from the W and WSW. Peak Optical readings occurred prior to sunrise.

Day 2 (Monday, 1/18/16 – Tuesday, 1/19/16)

Day 5 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the NW, W, WSW, and SW. Peak Optical monitor readings were observed during the late morning.

Day 3 (Wednesday, 1/20/16 – Thursday, 1/21/16)

Day 6 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 5. Wind directions were observed primarily from the WSW, SW, NE, and ENE. Peak Optical monitor readings were observed before midnight. Higher Optical readings were observed before midnight and before to sunrise.

Graphical representations of this data are presented in Figure 3-64 through 3-66.

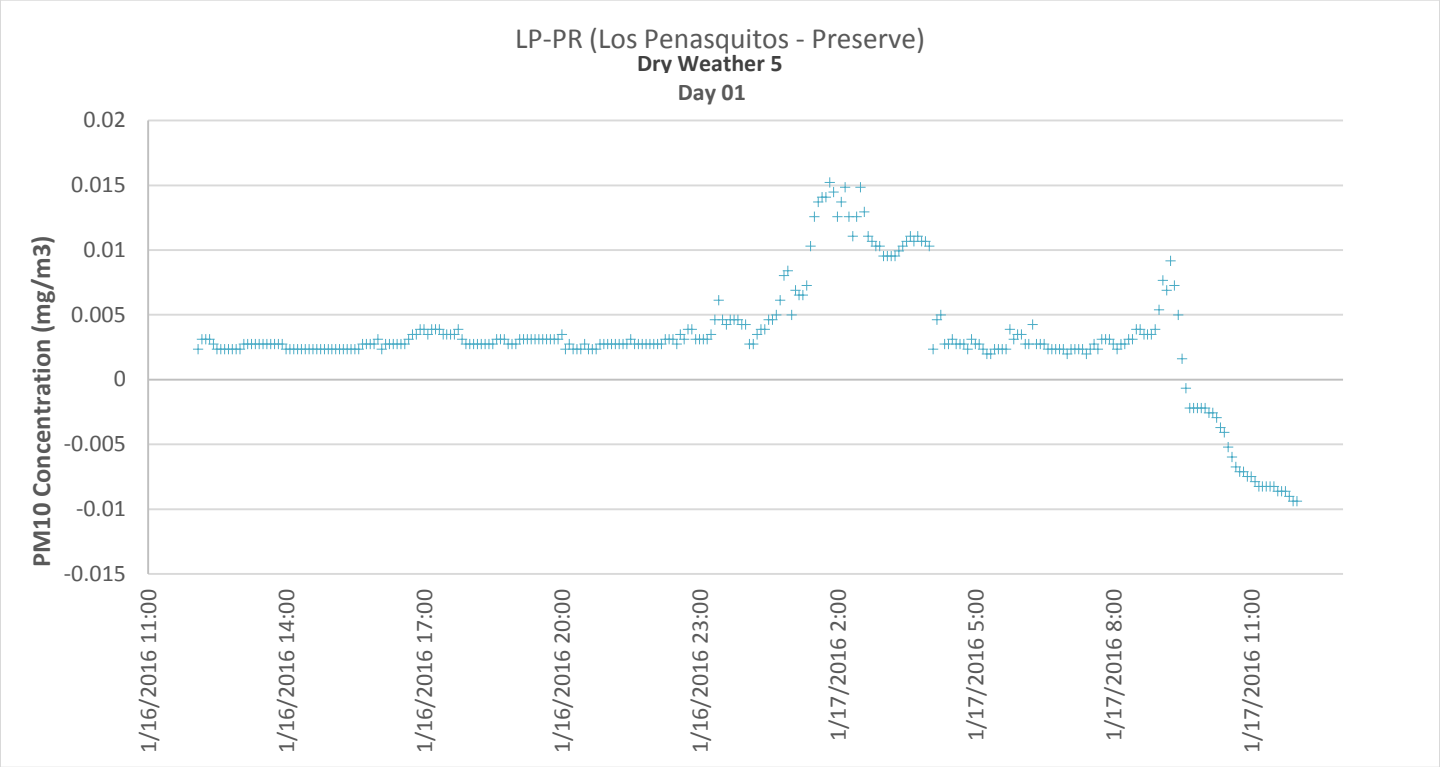

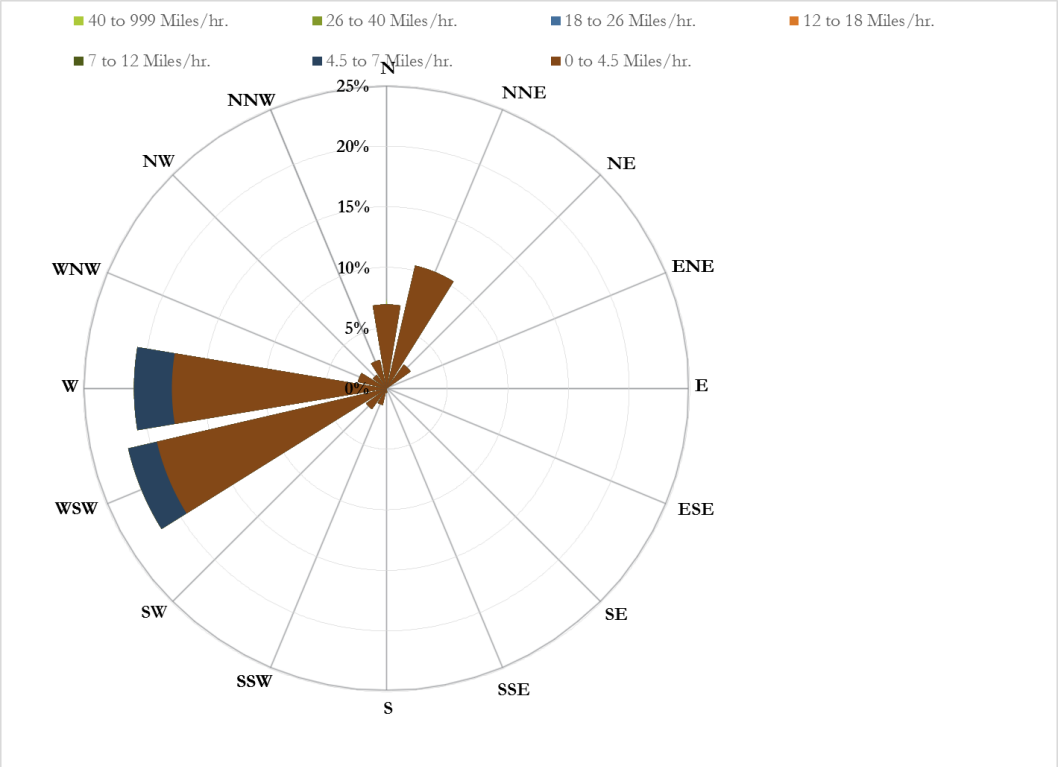

Figure 3-64.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 1

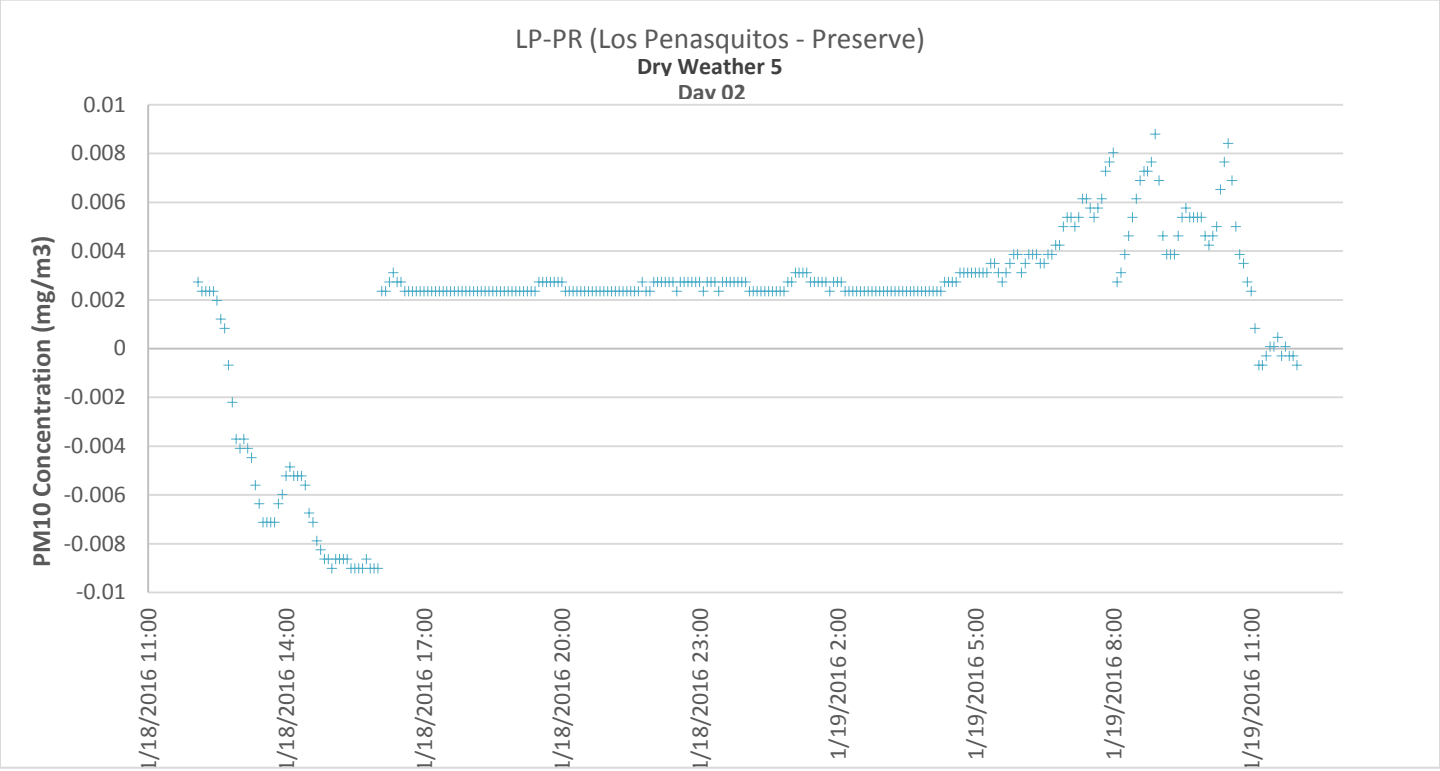

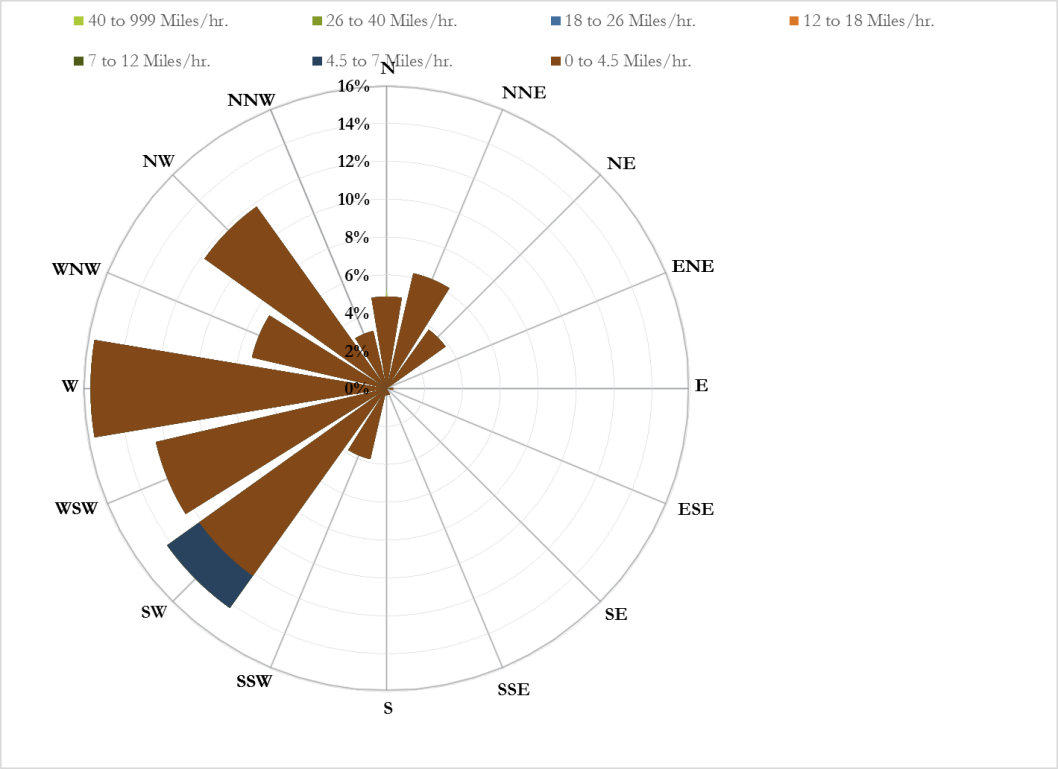

Figure 3-65.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 2

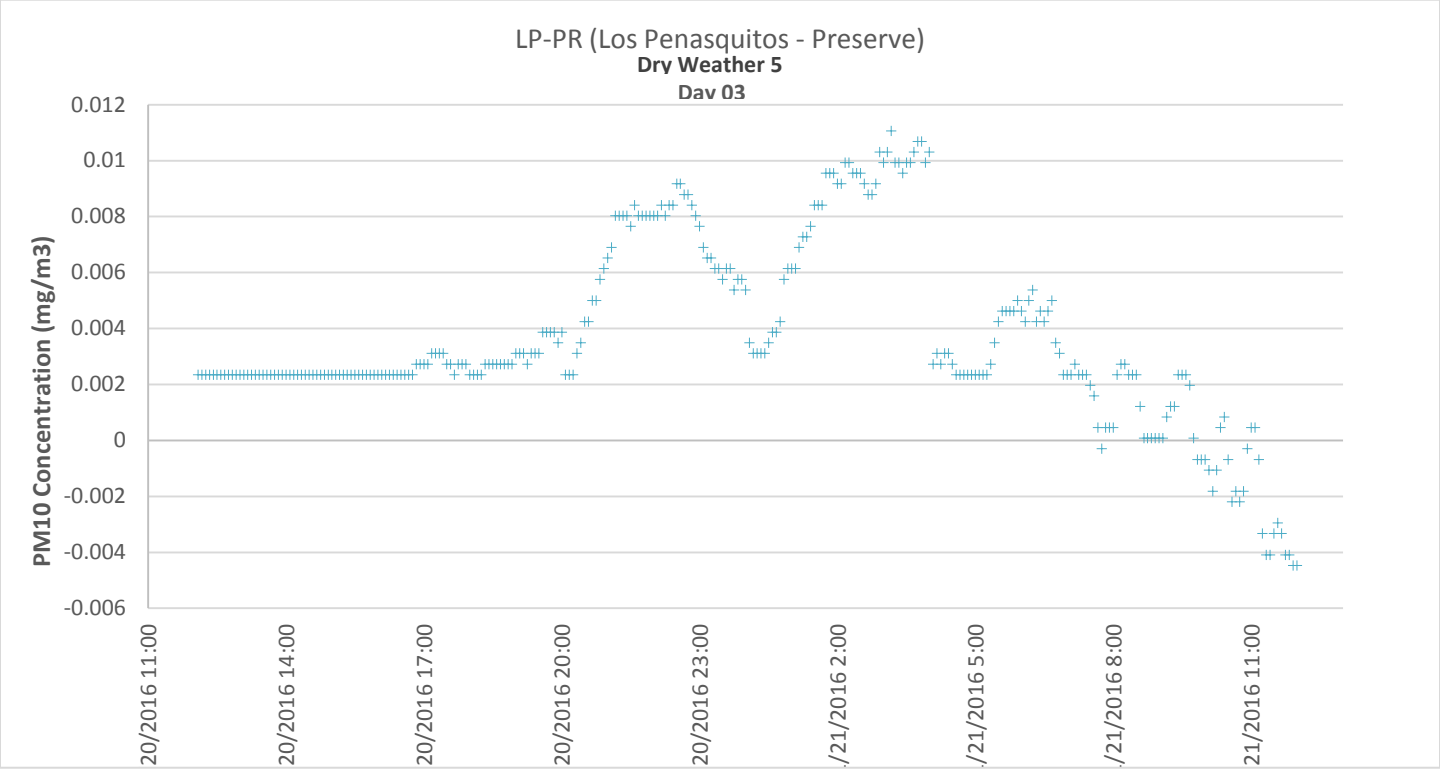

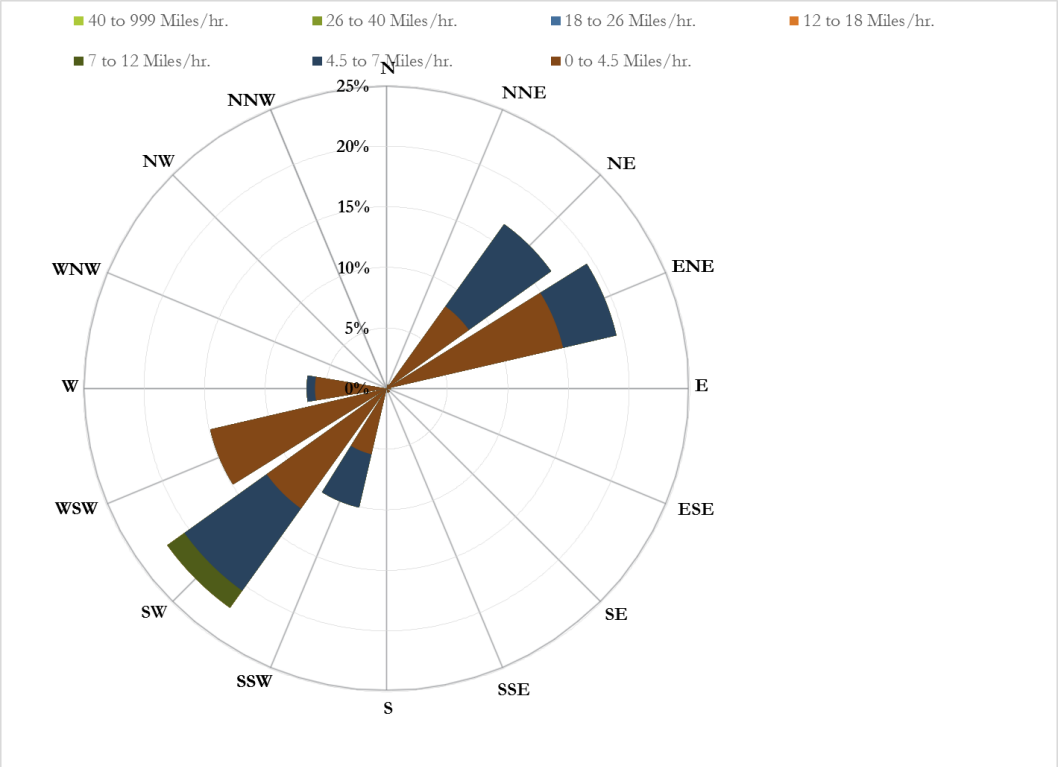

Figure 3-66.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 5 – Day 3

3.2.3 Dry Weather 6

3.2.3.1 CC-CC (Carroll Canyon)

CC-CC (Carroll Canyon):

CC-CC is a site monitored during the Phase I and Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 821 measurements were determined to be valid (95%).
- Mean values for PM_{10} were 0.0047 mg/m^3.
- Mean standard deviation is $\pm$0.0029 mg/m^3

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CC-CC Optical readings were observed at lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed at midnight and during increased traffic conditions in the morning.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CC-CC Optical readings were observed at a higher mean value for this monitoring location during sampling event Dry Weather 6. Wind directions were observed primarily from the WNW. Peak Optical monitor readings were observed late evening through the night and during increased traffic conditions in the morning.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CC-CC Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed at midnight and in the morning after sunrise.

Graphical representations of this data are presented in Figure 2-23.

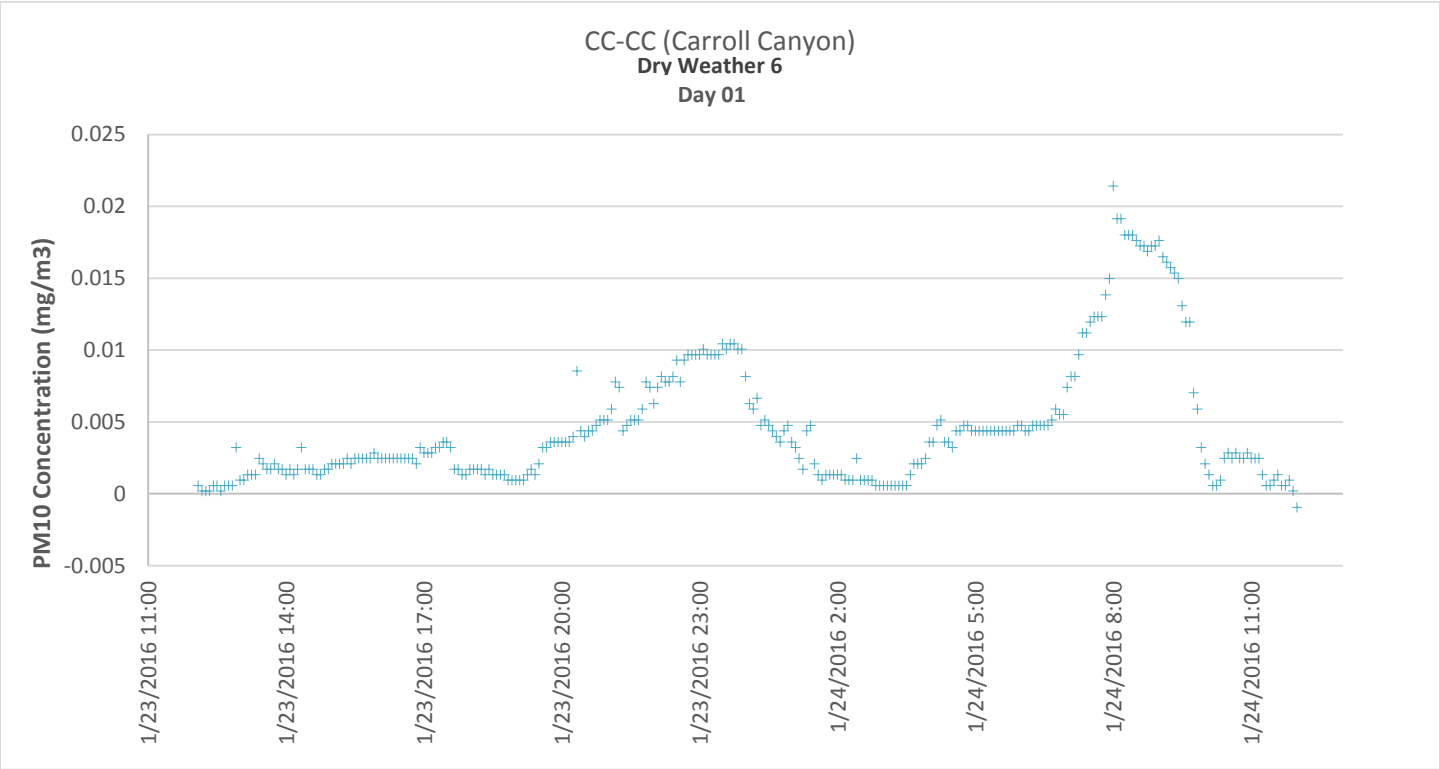

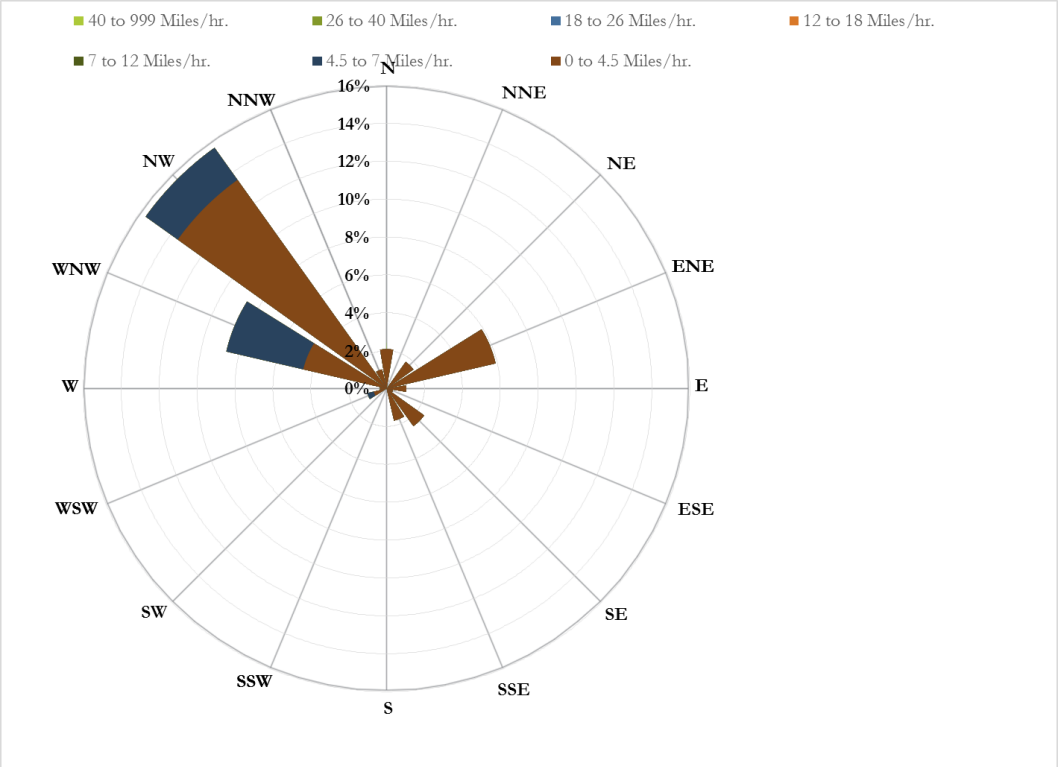

Figure 3-67.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

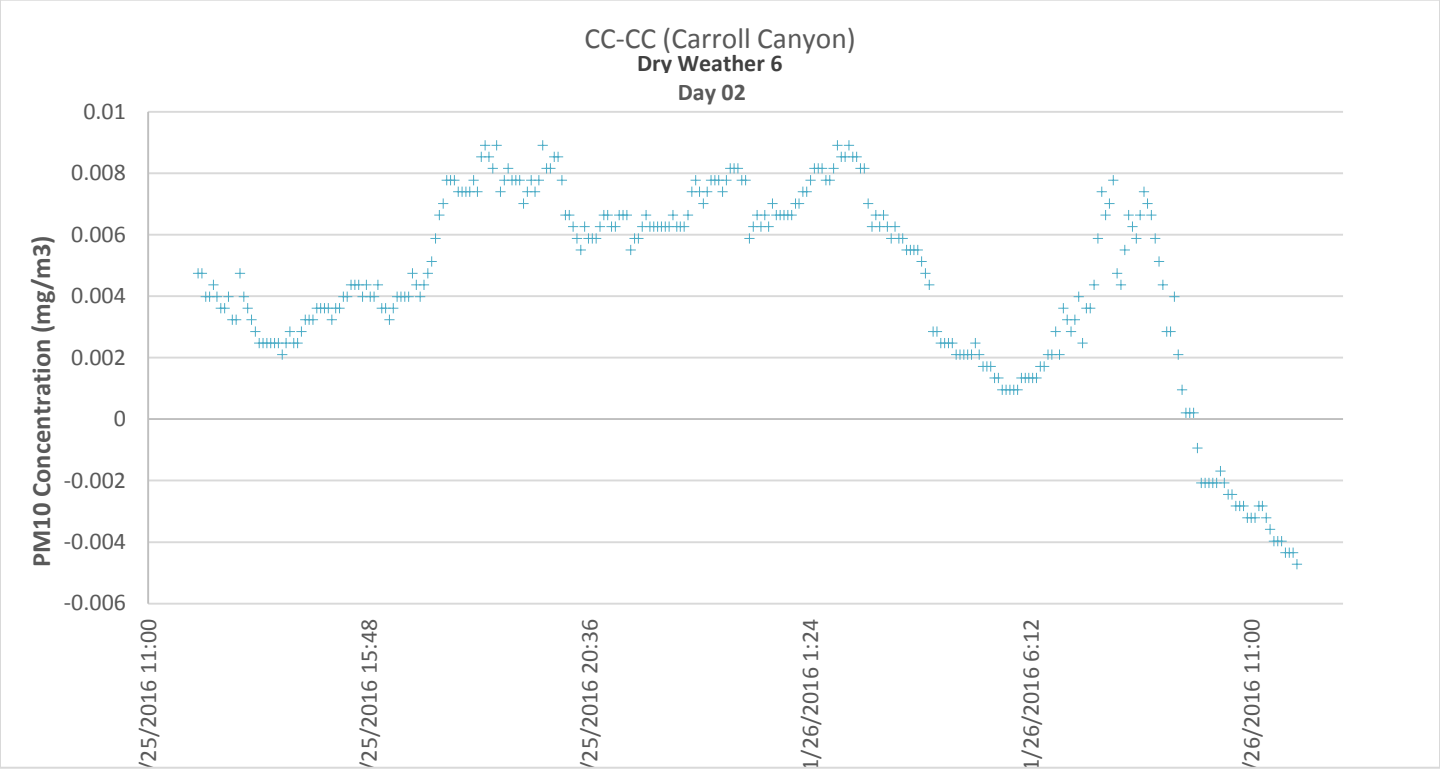

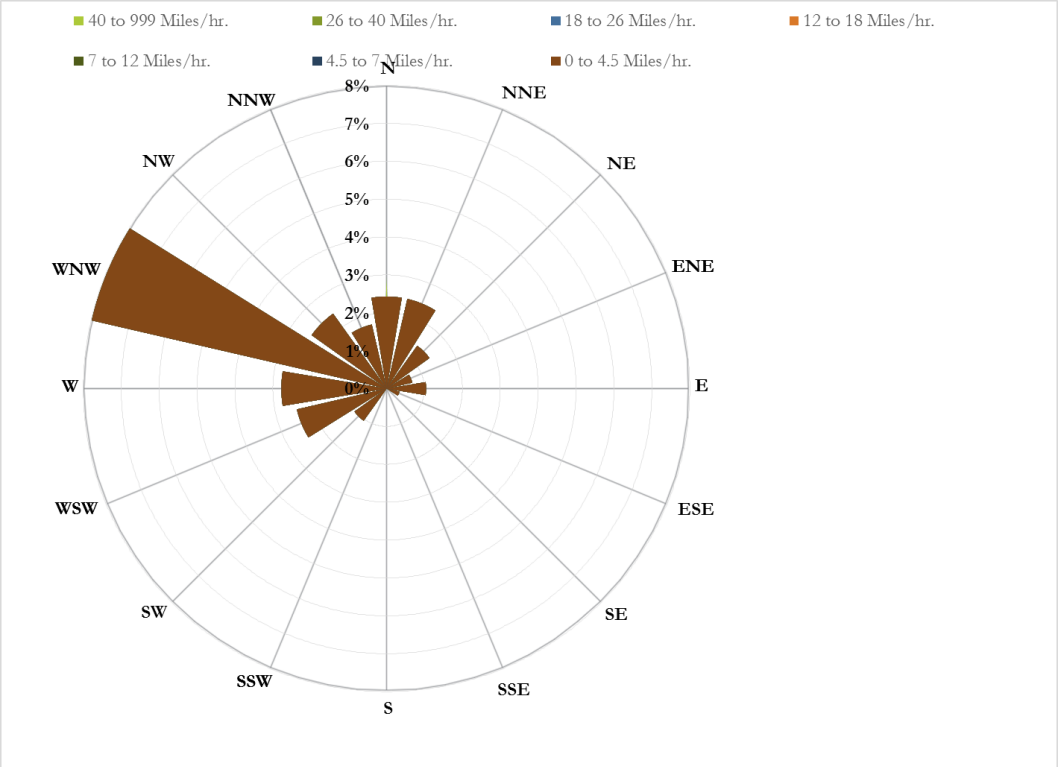

Figure 3-68.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

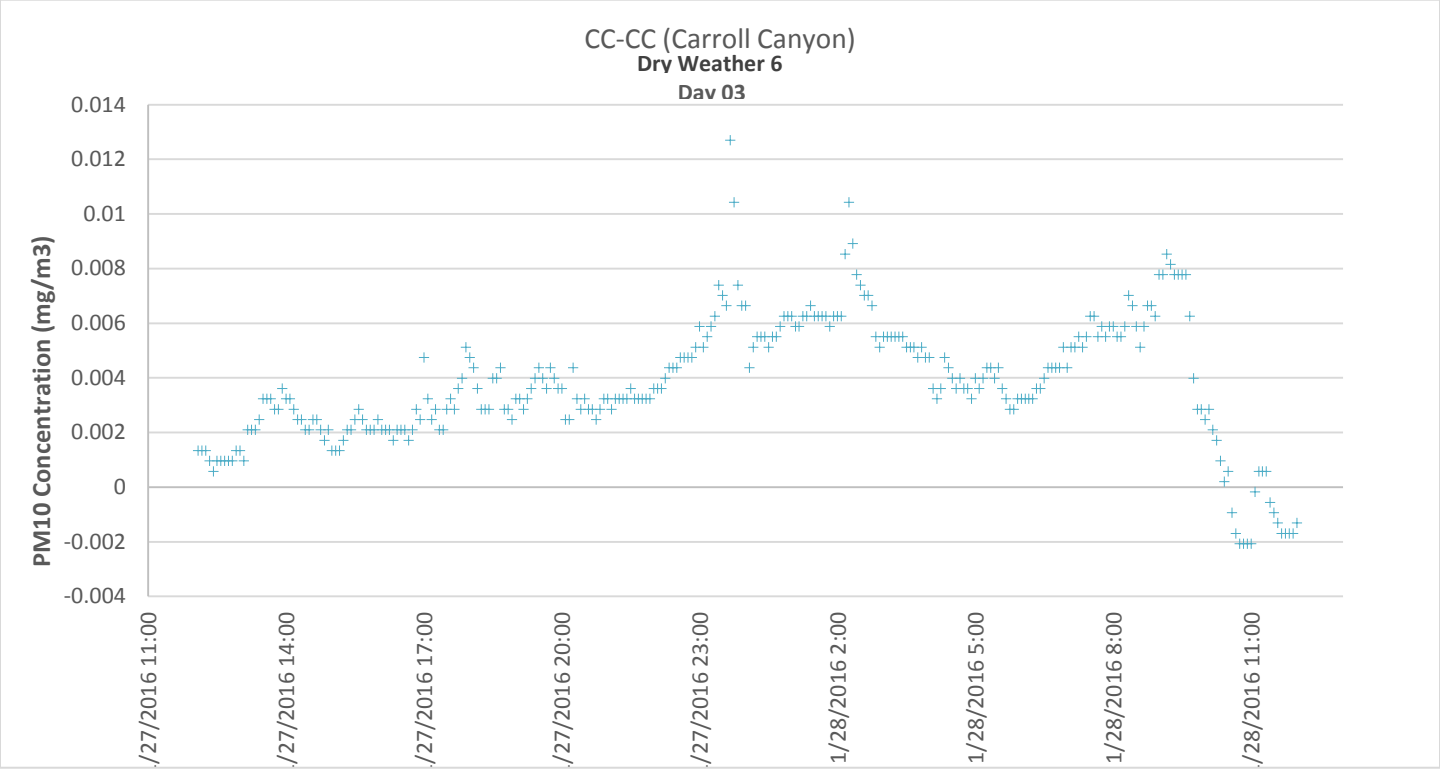

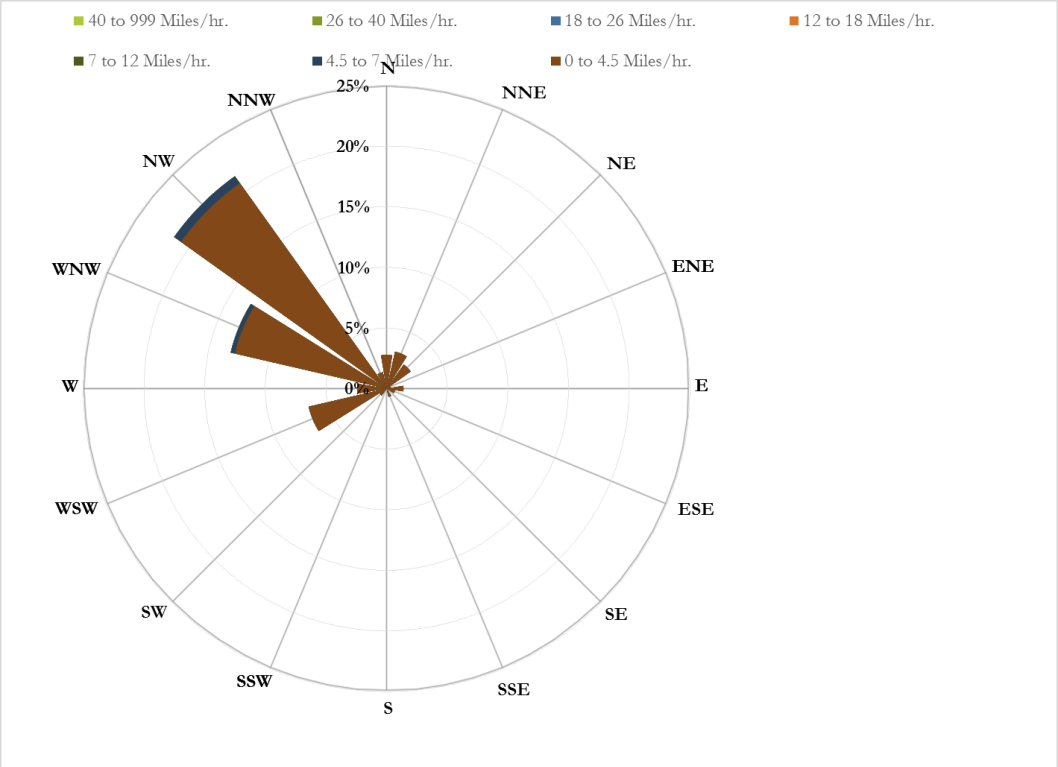

Figure 3-69.
CC-CC PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.2 CC-DM (Reference – Del Mar)

CC-DM (Reference – Del Mar):

CC-DM is a site monitored during the Phase I and Phase II Watershed Special Study and contains an Optical monitor and an FRM sampler. This is the reference site for the aerial deposition portion of the Watershed Special Study, and was selected as a station away from anthropogenic influence during the prevalent weather patterns.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0081 mg/m^3.
- Mean standard deviation is $\pm$0.0048 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean values for PM_{10} was 0.0402 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 129.32%

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CC-DM Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the W, WSW, NNE and NE. Peak Optical monitor readings were observed during the evening and through the night.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CC-DM Optical readings were observed at a higher mean value for this monitoring location for sampling event Dry Weather 6. Wind directions were observed primarily from the W. Optical monitor readings were observed higher during the evening to midnight and in the morning after sunrise.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CC-DM Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the WNW, NW, and NNW. Optical monitor readings were observed consistently distributed with slightly higher readings during the late evening and morning after sunrise.

Graphical representations of this data are presented in Figures 3-70 through 3-72.

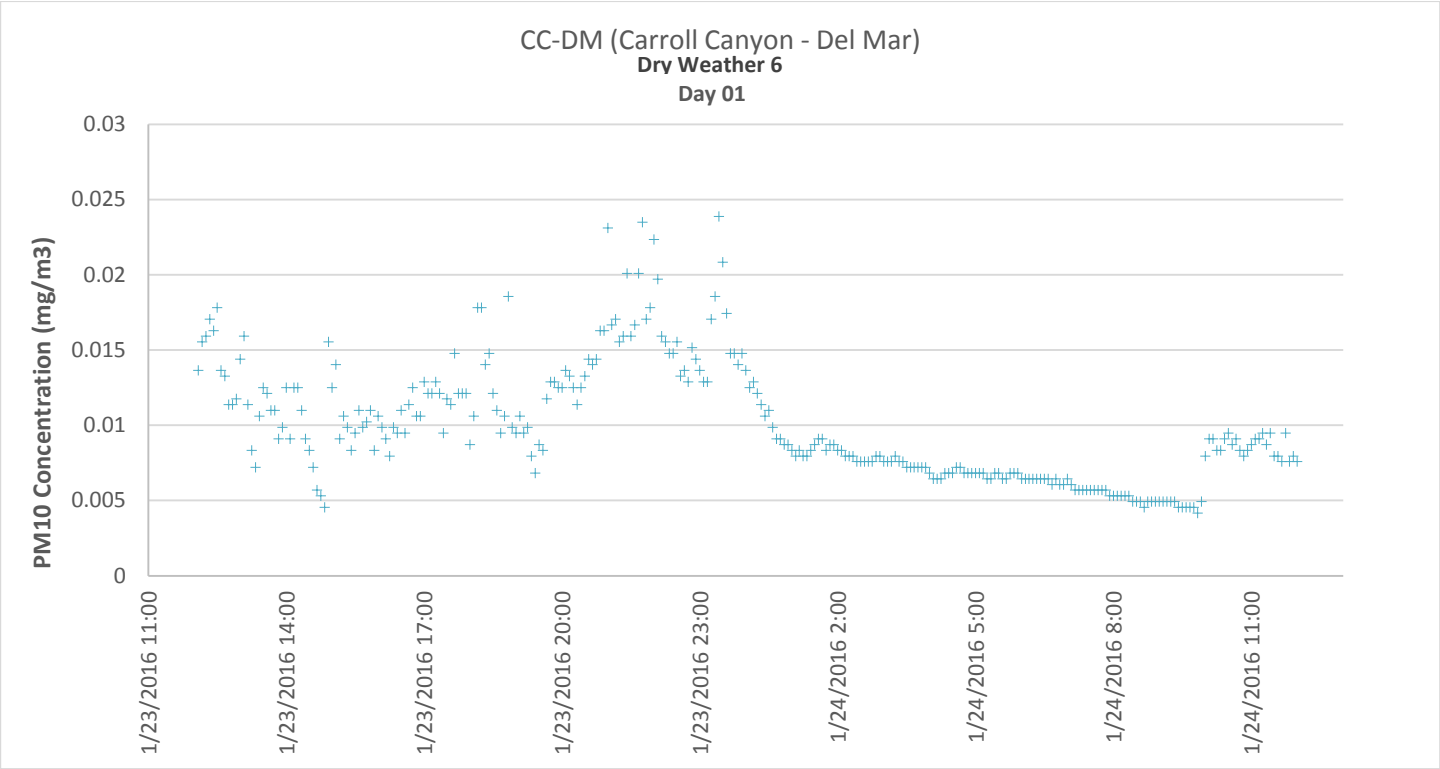

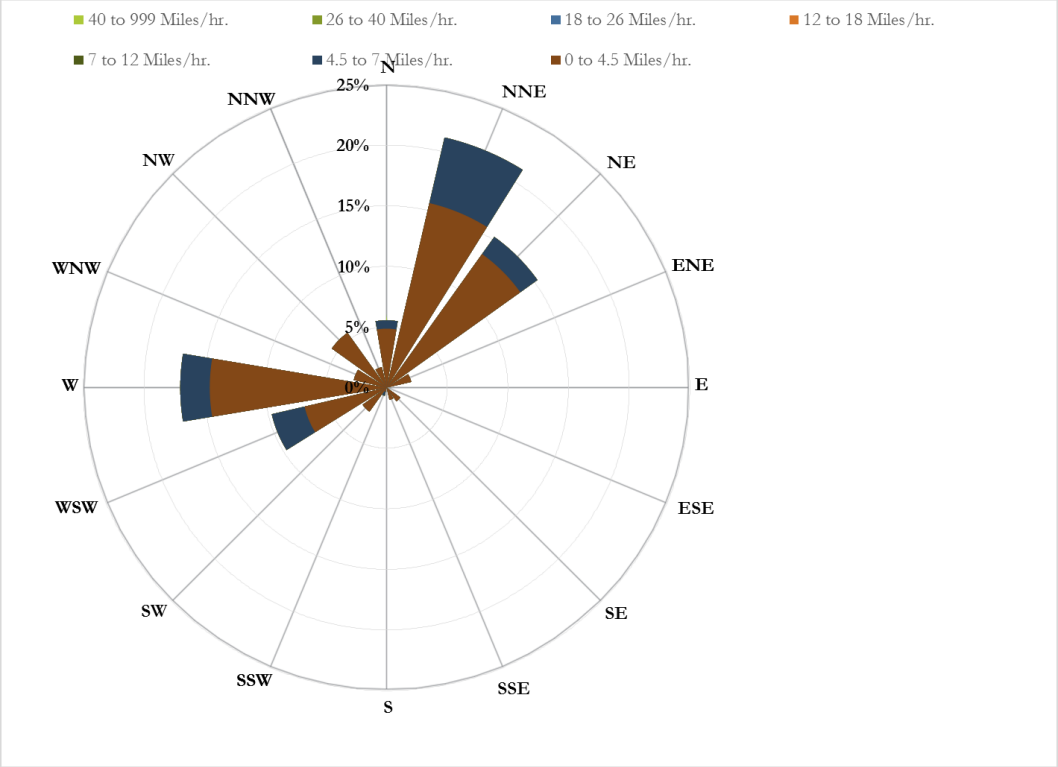

Figure 3-70.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

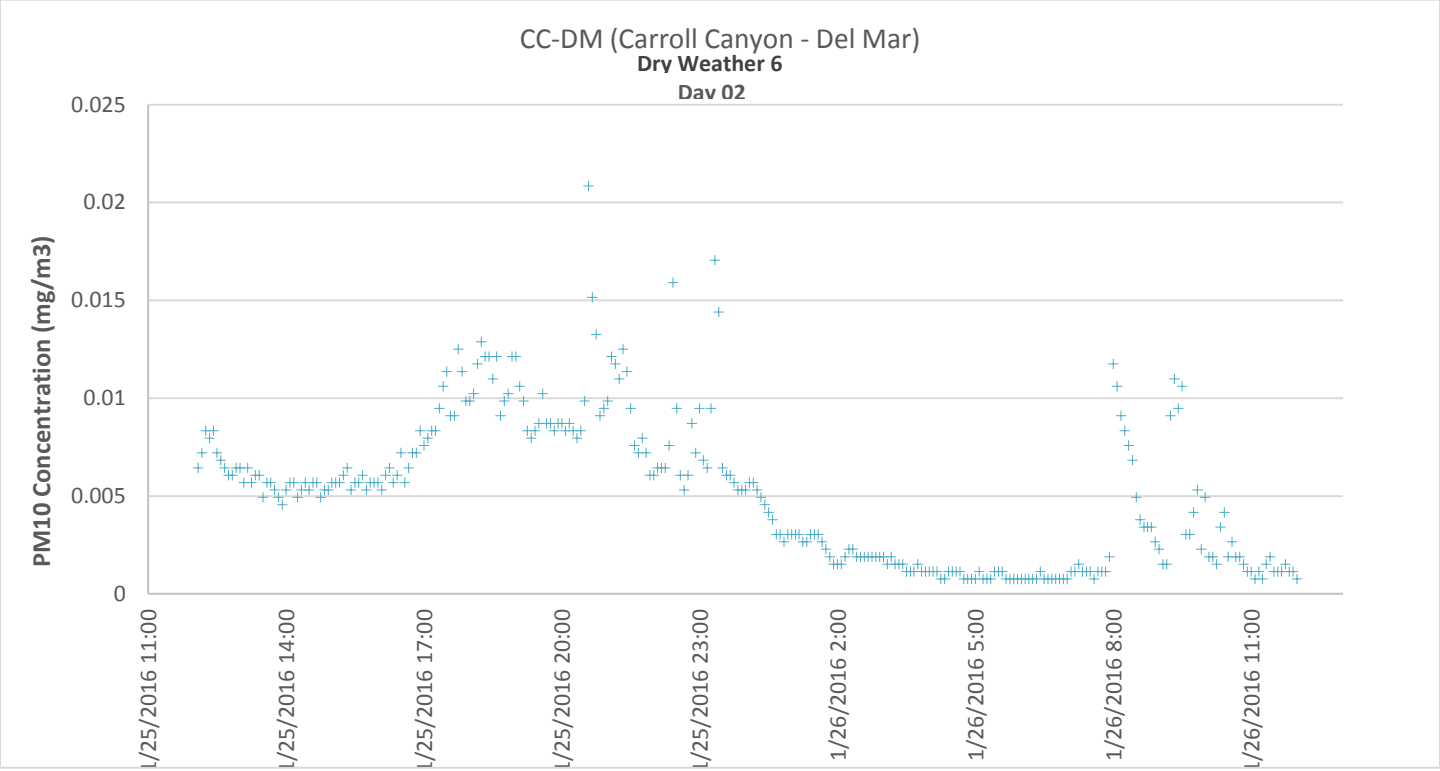

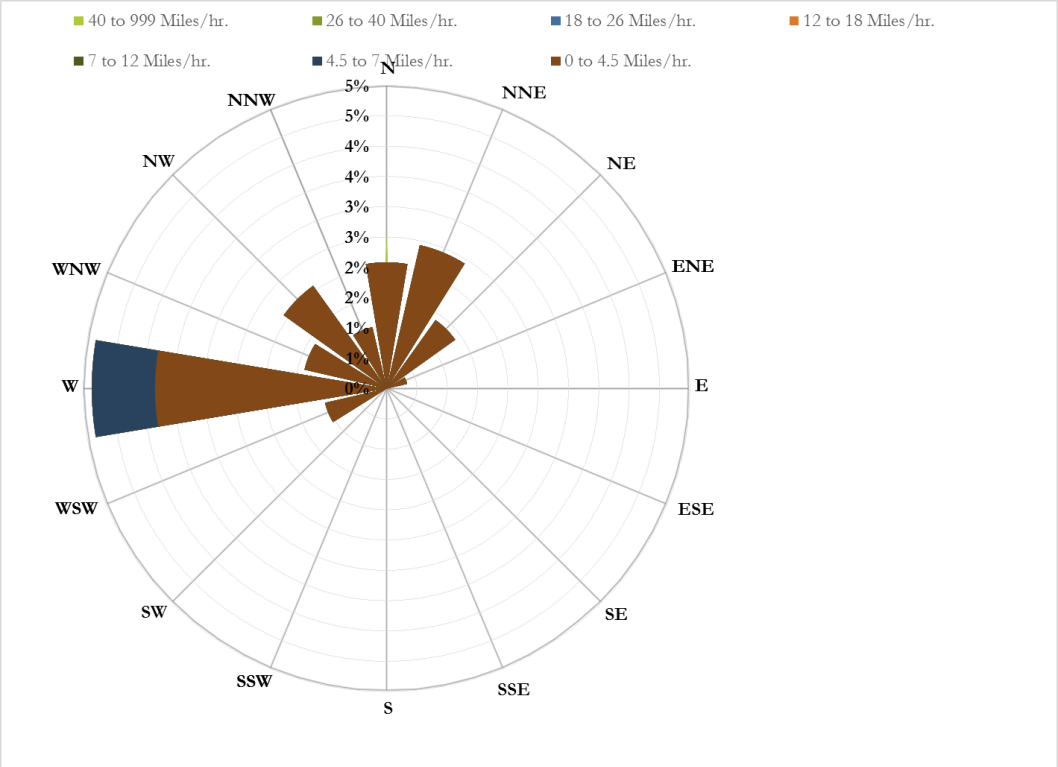

Figure 3-71.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

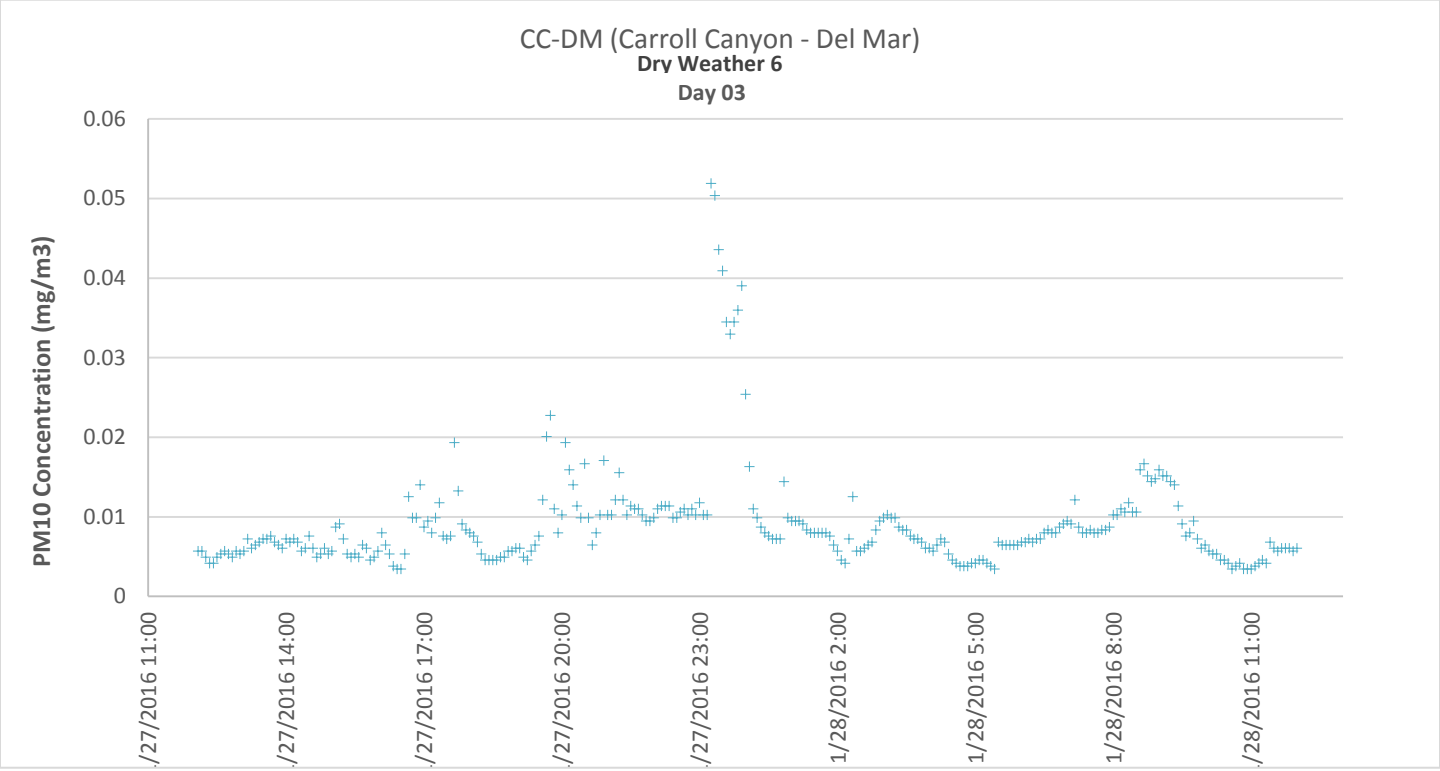

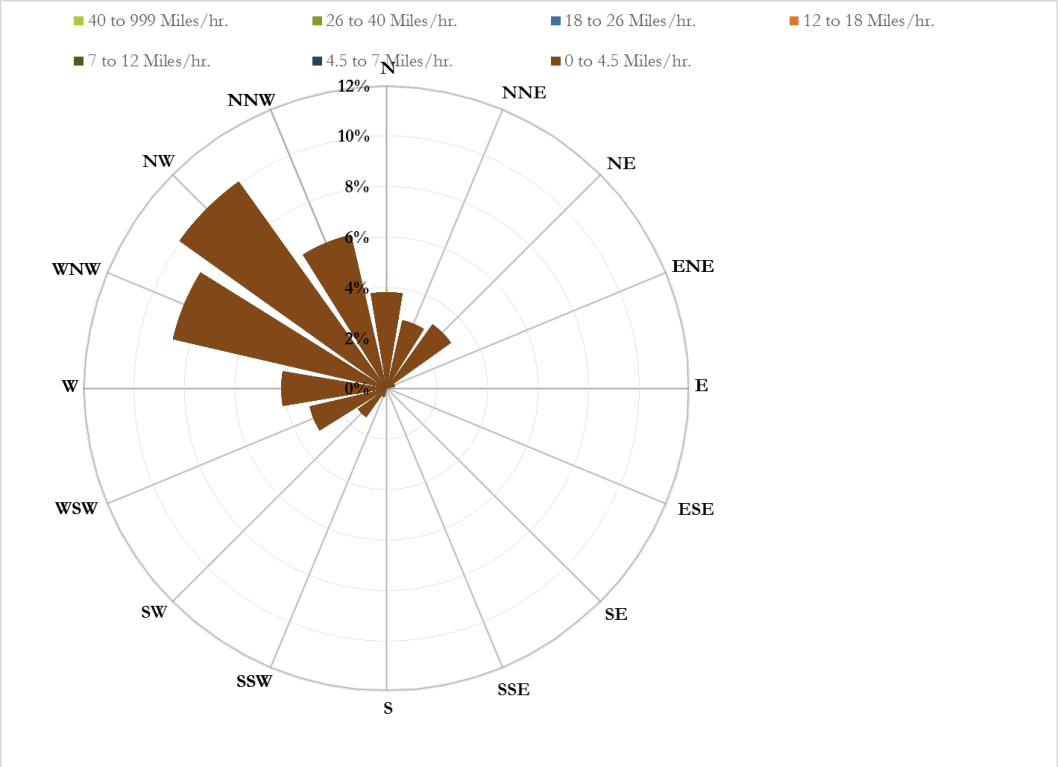

Figure 3-72.
CC-DM PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.3 CC-DW (Carroll Canyon – Downwind)

CC-DW (Carroll Canyon – Downwind):

CC-DW is a site monitored during the Phase I and Phase II Watershed Special Study and contains an Optical monitor and an FRM sampler.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 864 measurements were determined to be valid (100%).
- Mean values for PM_{10} were 0.0054 mg/m^3.
- Mean standard deviation is $\pm$0.0031 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean value for PM_{10} was 0.0328 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 134.17%

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CC-DW Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the WNW and NW. Peak Optical monitor readings were observed during evening and sundown, and during increased traffic conditions in the morning.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CC-DW Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during the afternoon and at times of increased traffic conditions in the morning.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CC-DW Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed during increased traffic conditions in the morning.

Graphical representations of this data is presented in Figures 3-73 through 3-75.

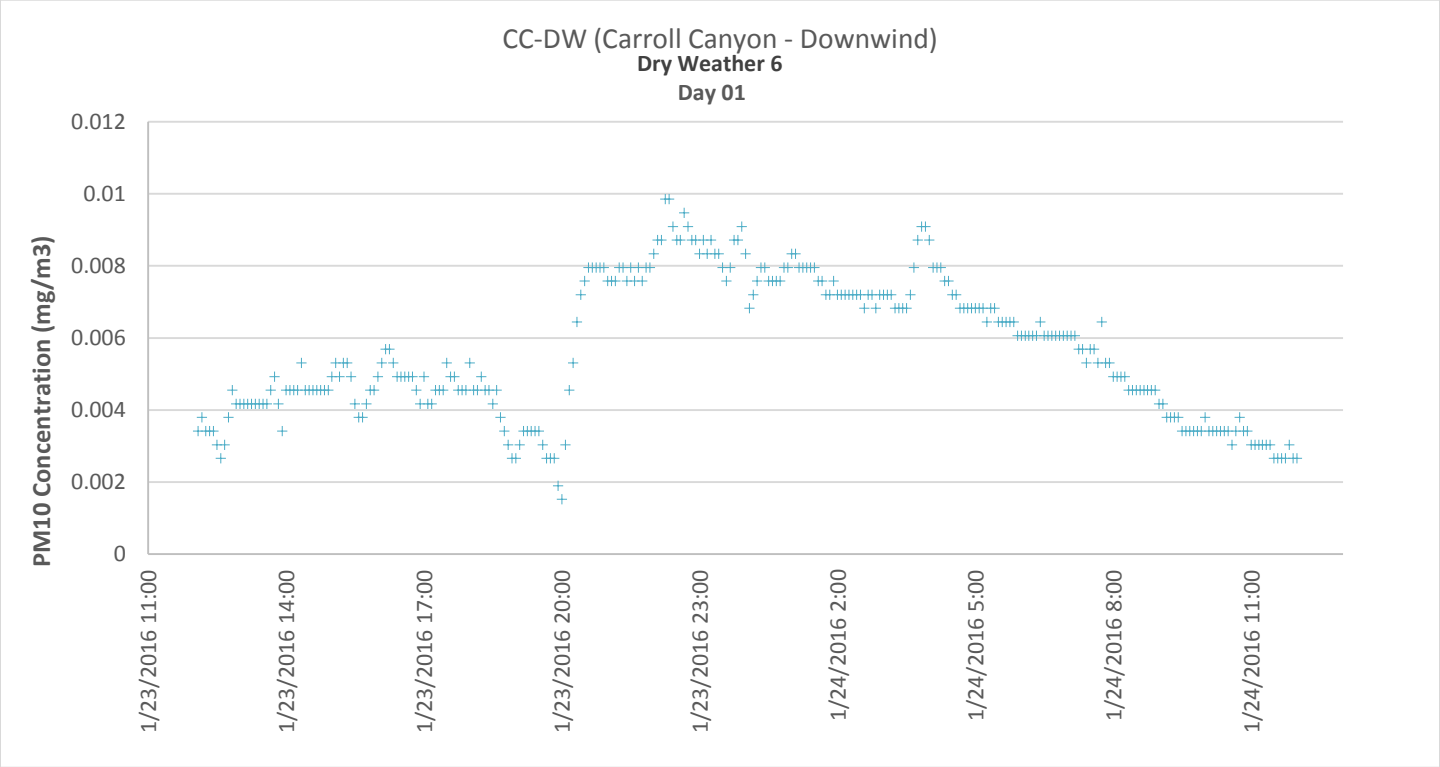

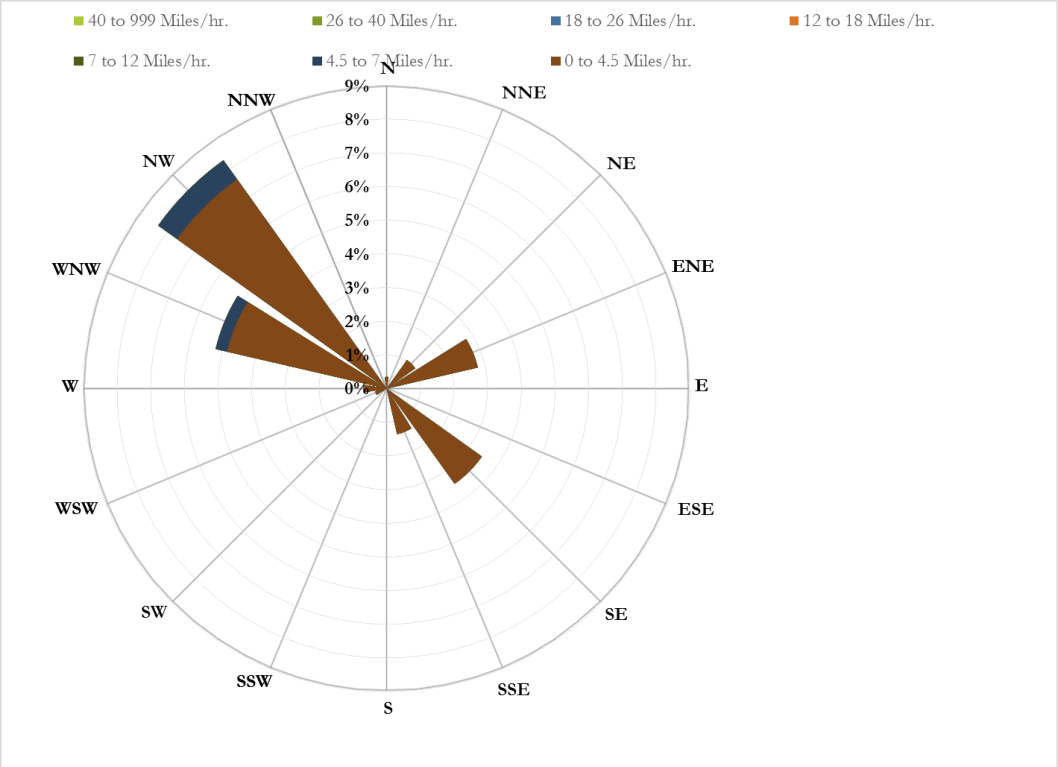

Figure 3-73.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

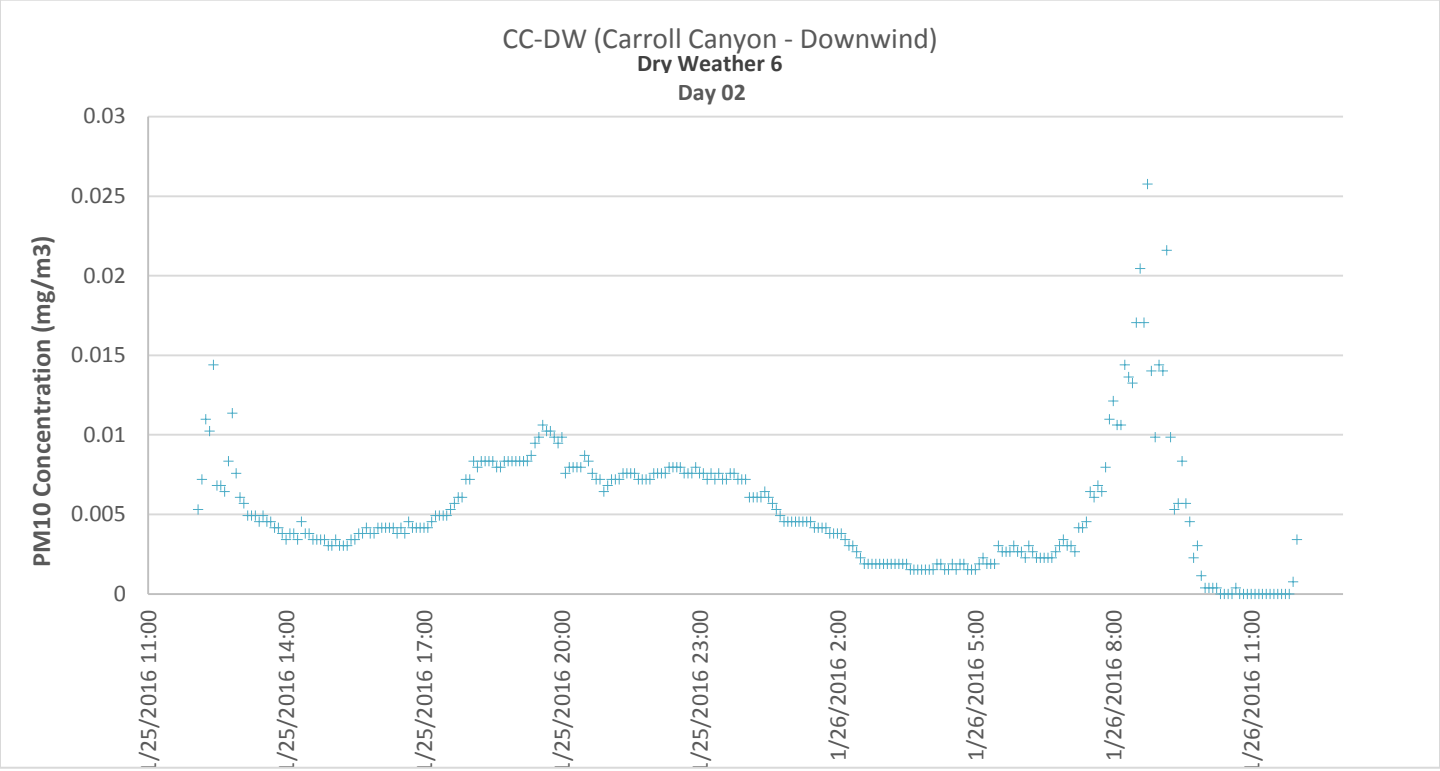

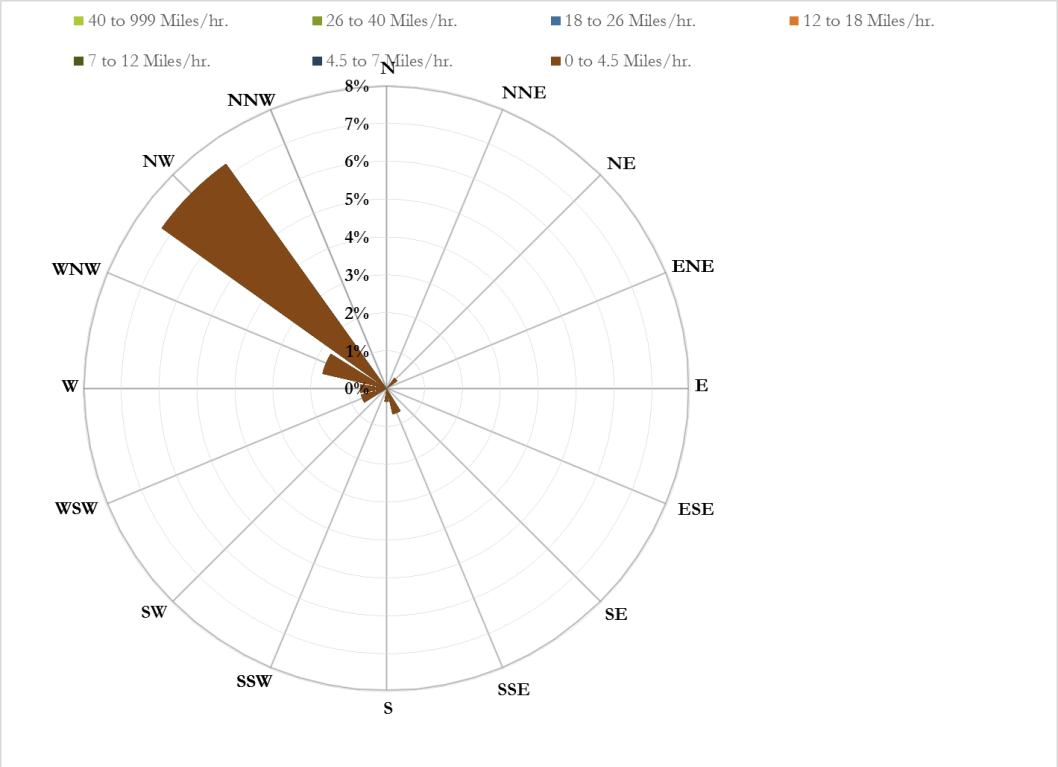

Figure 3-74.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

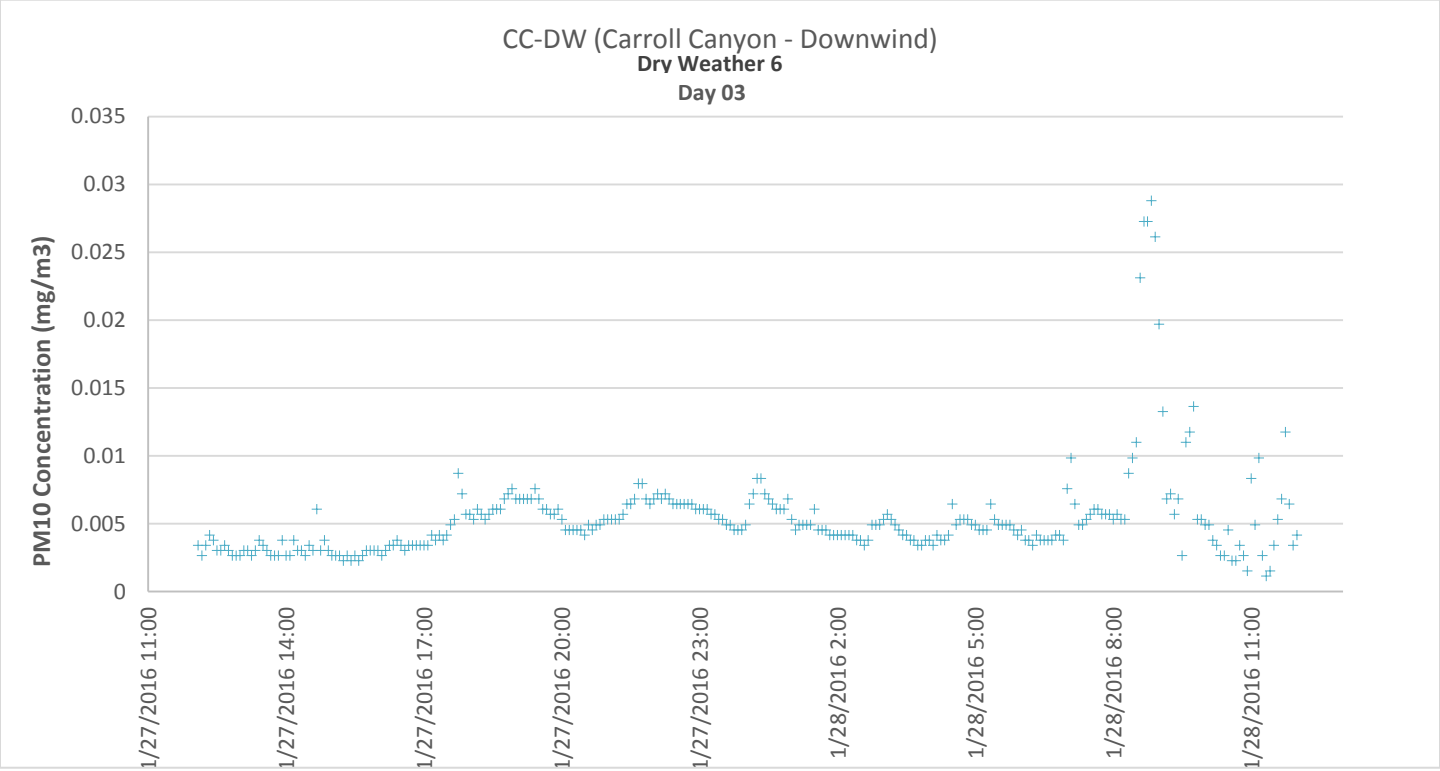

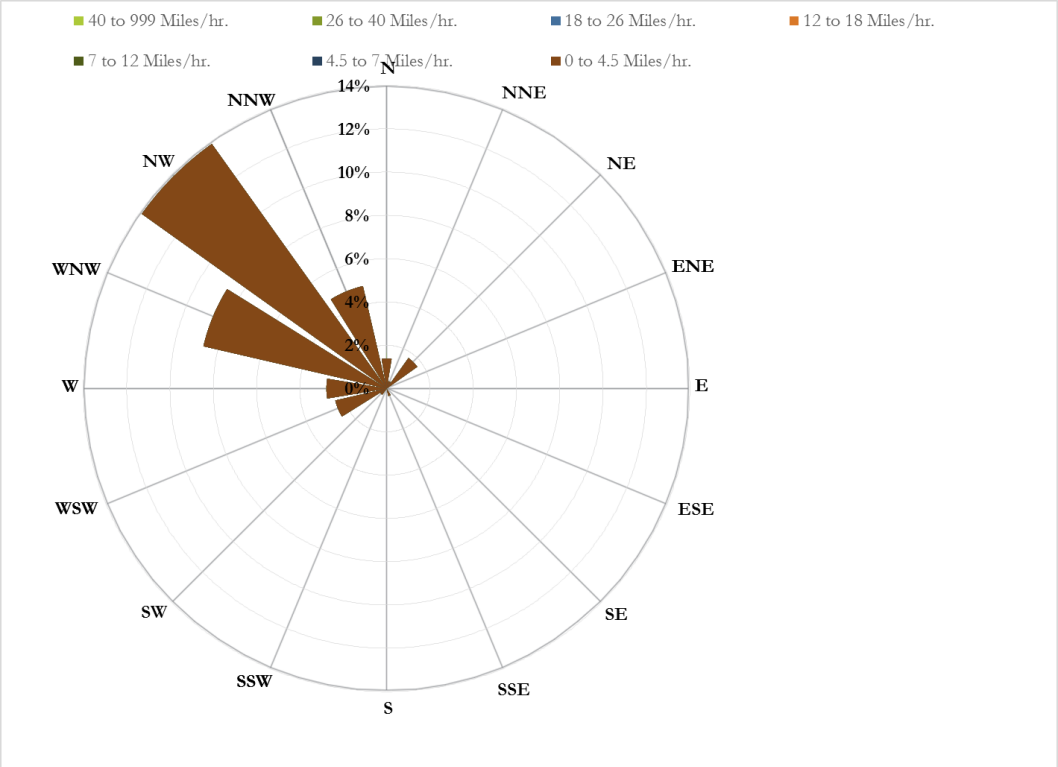

Figure 3-75.
CC-DW PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.4 CC-ER (Carroll Canyon – Eco Rentals)

CC-ER (Carroll Canyon – Eco Rental):

CC-ER is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the RA group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 845 measurements were determined to be valid (98%).
- Mean values for PM_{10} were 0.0041 mg/m^3.
- Mean standard deviation is $\pm$0.0026 mg/m^3

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CC-ER Optical readings were lower than the mean value of the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Optical monitor readings were consistently distributed with slightly higher readings observed during the evening and sundown.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CC-ER Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the WNW. Optical monitor readings peaked during increased traffic conditions in the morning.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CC-ER Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during periods of increased traffic during the morning.

Graphical representations of this data is presented in Figures 3-76 through 3-78.

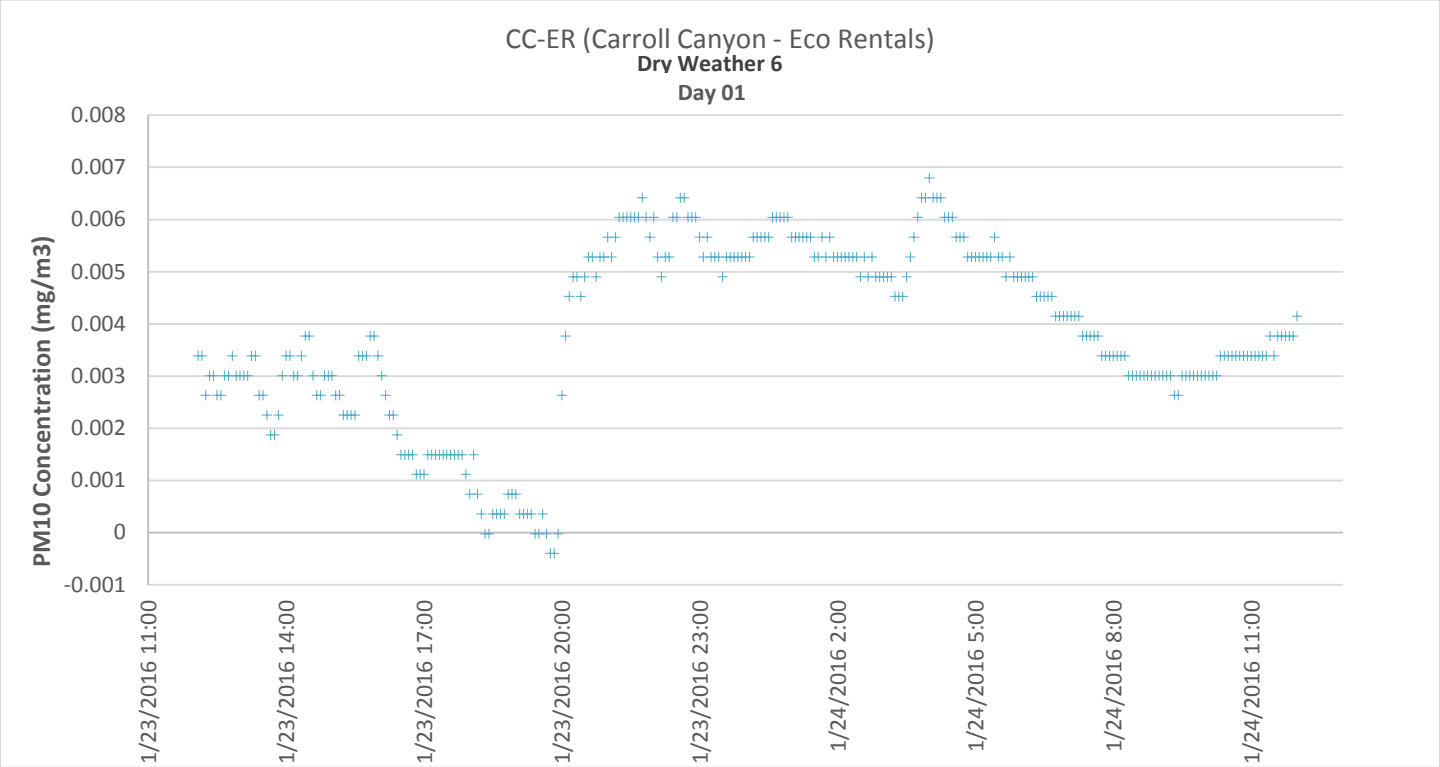

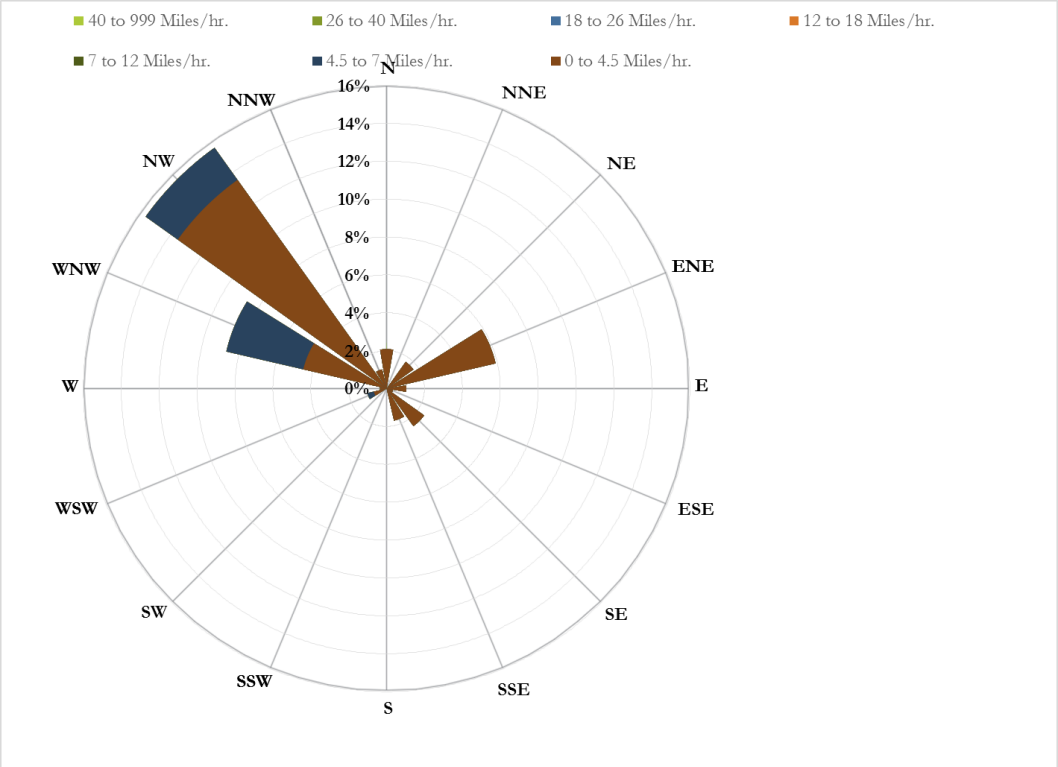

Figure 3-76.
CC-ER PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

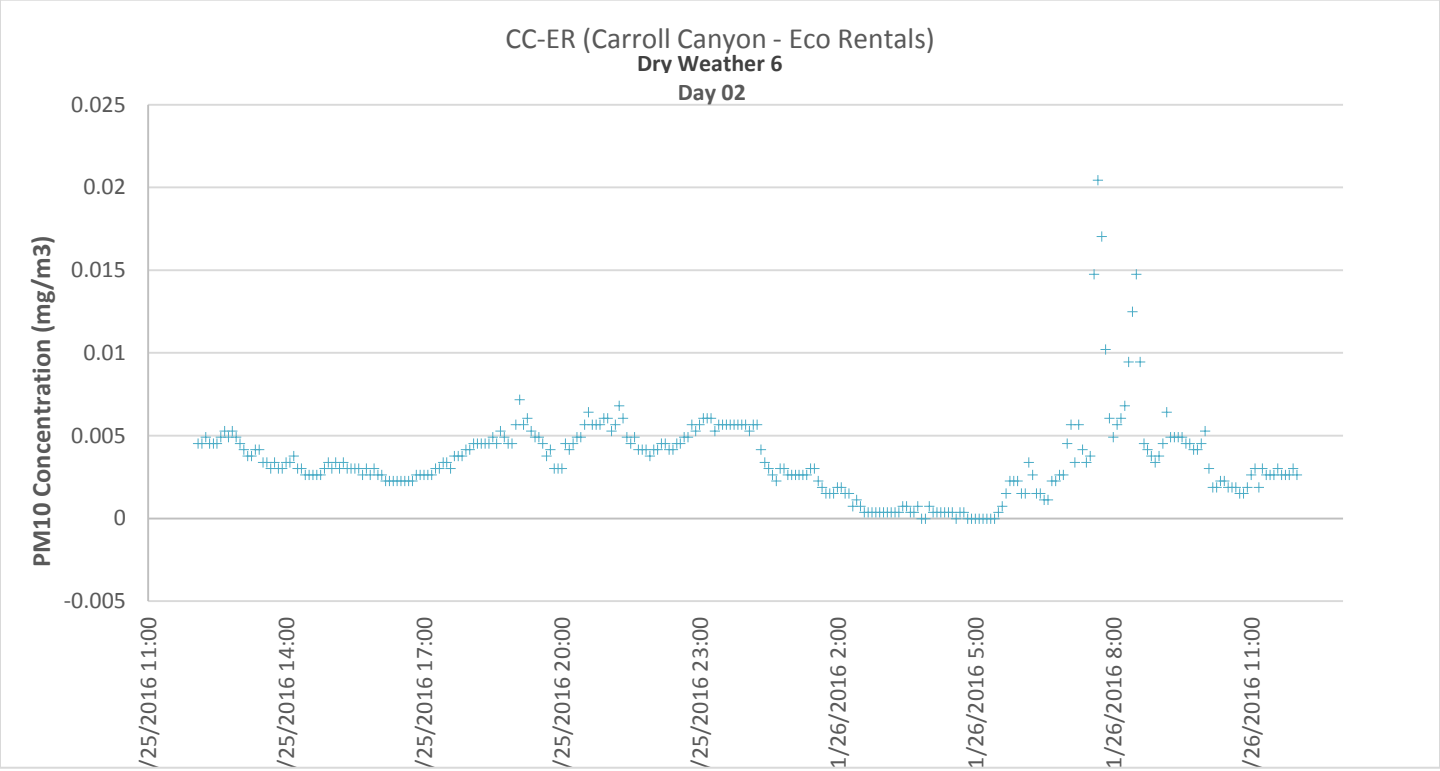

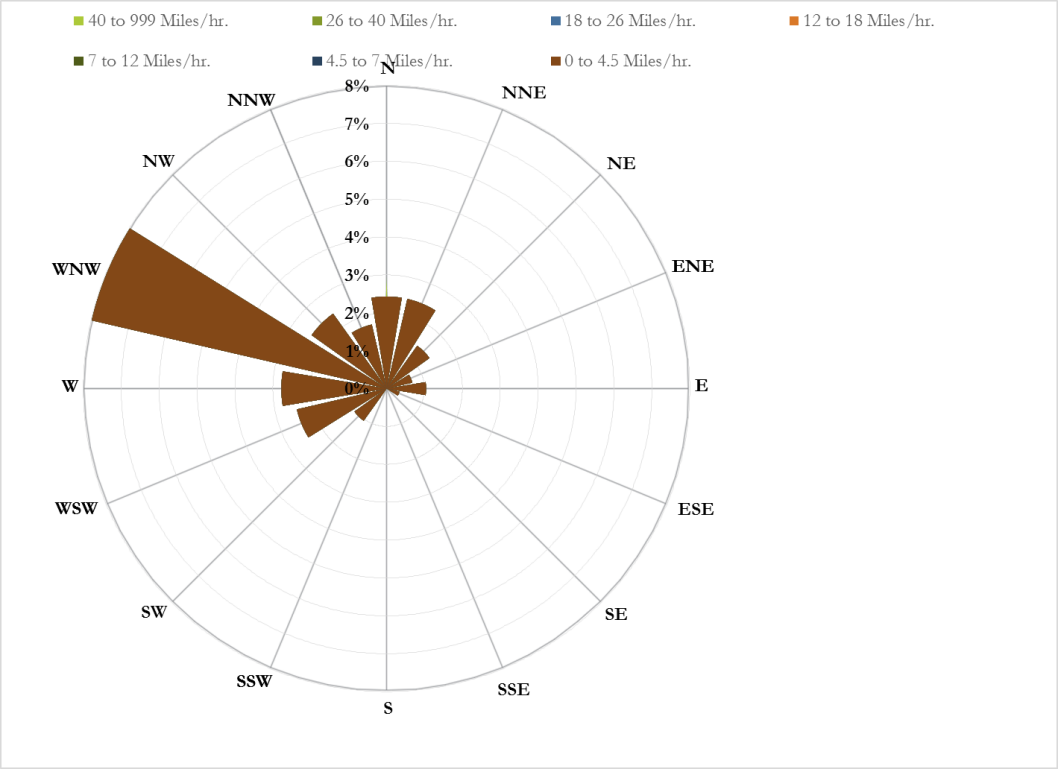

Figure 3-77.
CC-ER PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

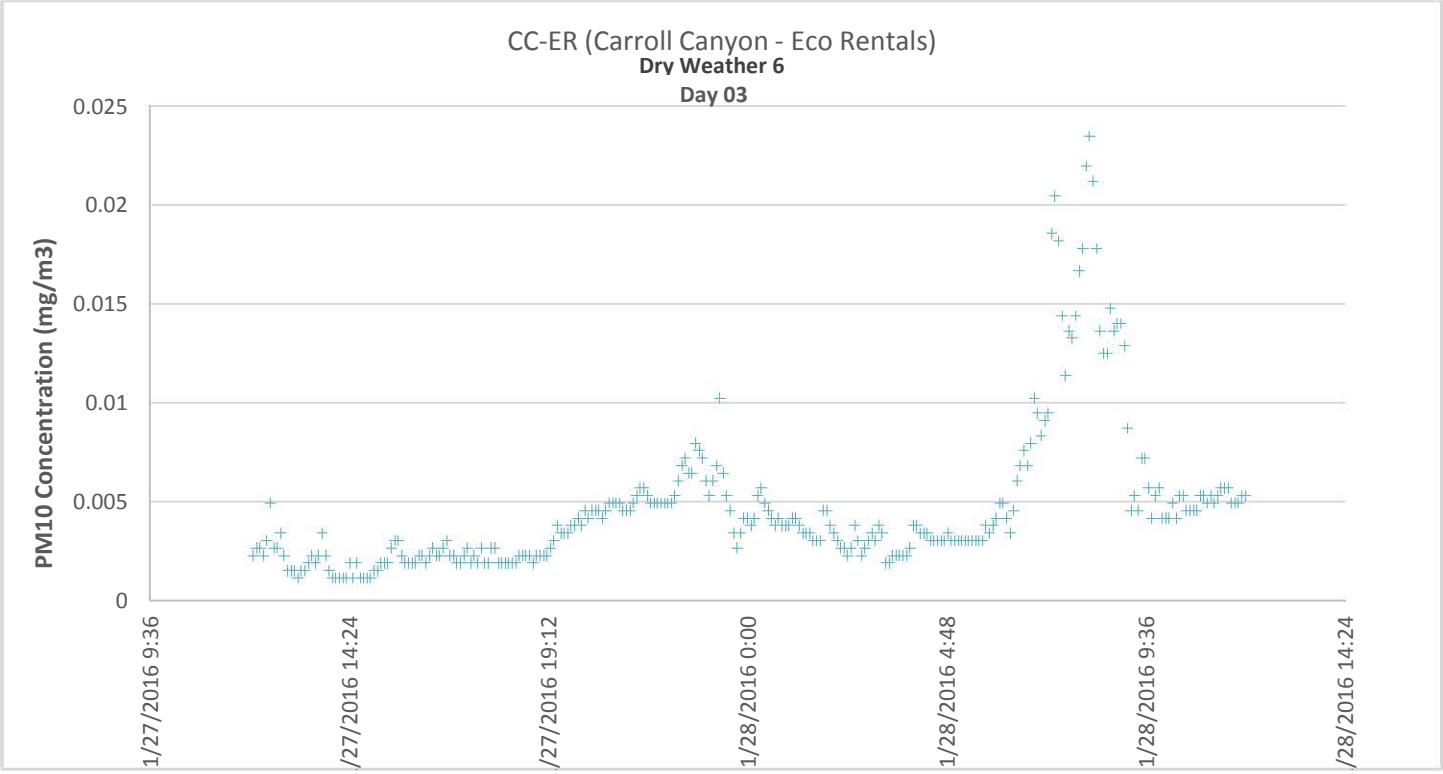

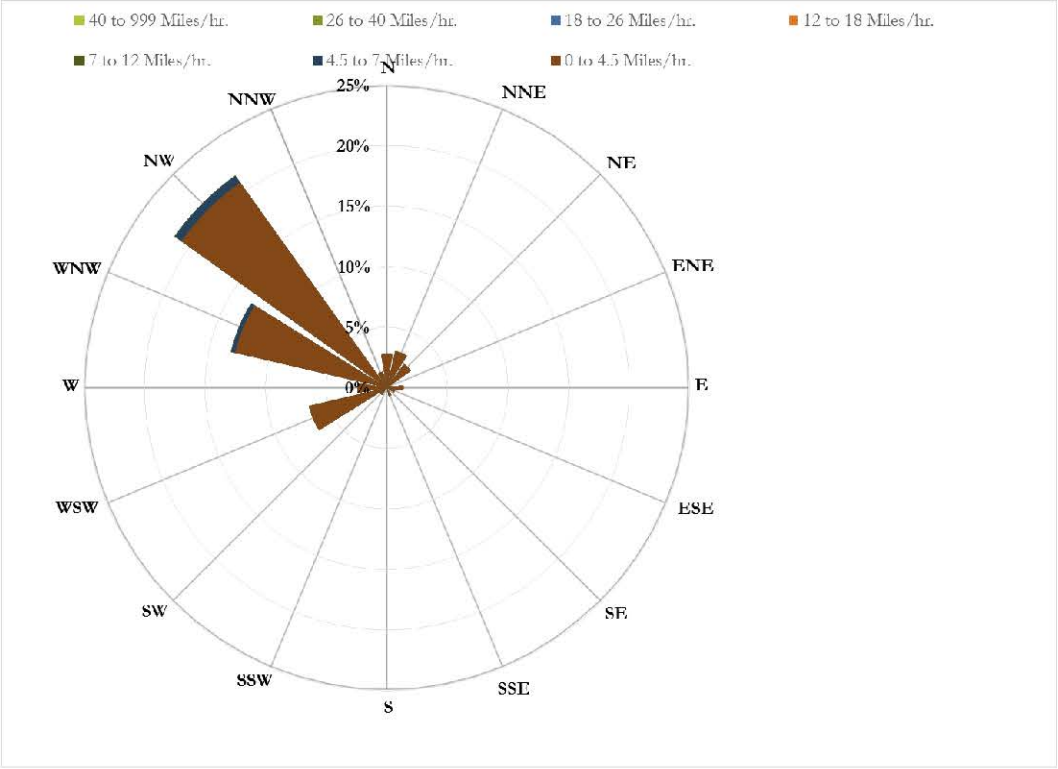

Figure 3-78.
CC-ER PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.5 CC-MP (Carroll Canyon – Maddox Park)

CC-MP (Carroll Canyon – Maddox Park):

CC-MP is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the RA group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 803 measurements were determined to be valid (93%).
- Mean values for PM_{10} were 0.0044 mg/m^3.
- Mean standard deviation is $\pm$0.0038 mg/m^3

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CC-MP Mean Optical readings were observed at the mean value of the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed at noon and during times of increased traffic in the morning.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CC-MP Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed late evening to midnight.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CC-MP Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were consistently distributed with a slightly higher readings before midnight.

Graphical representations of this data is presented in Figures3-79 through 3-81.

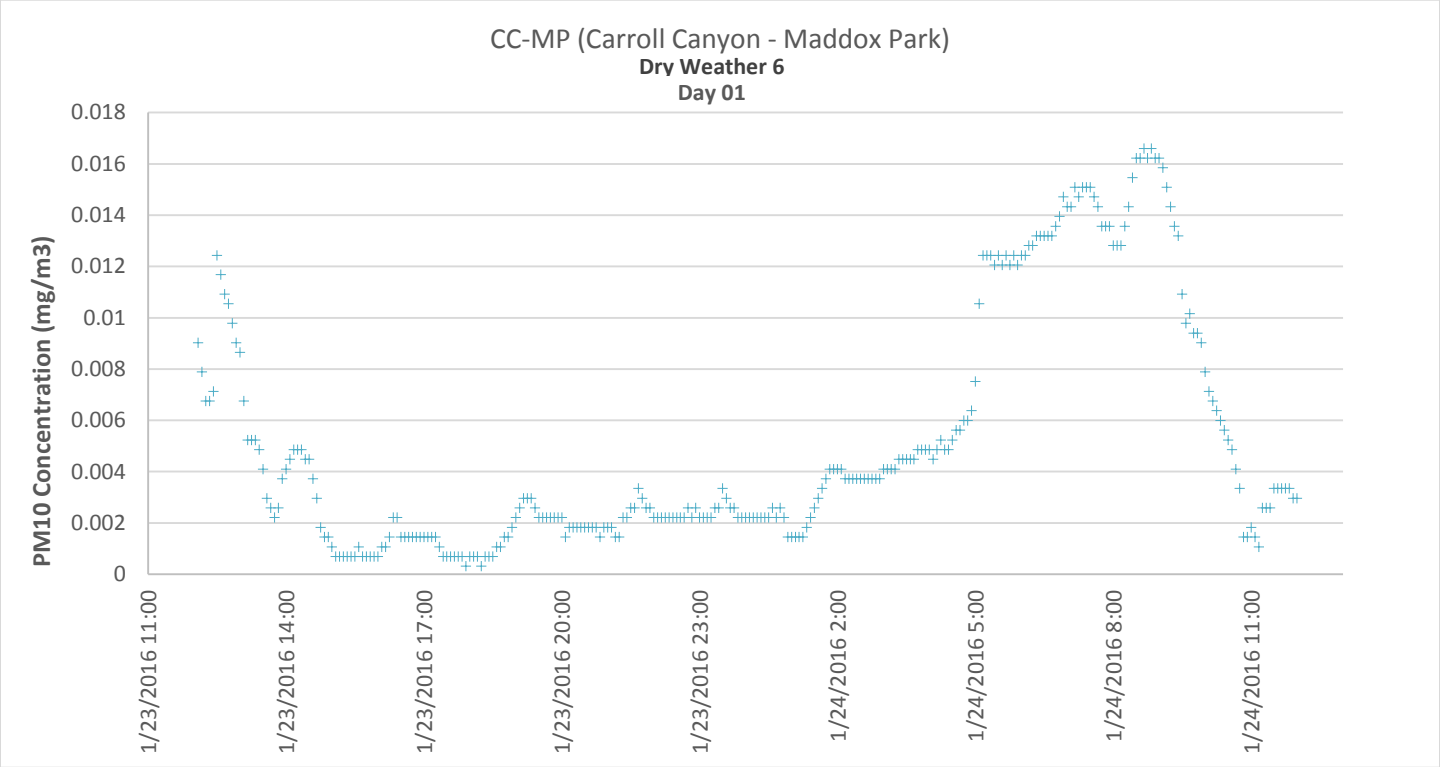

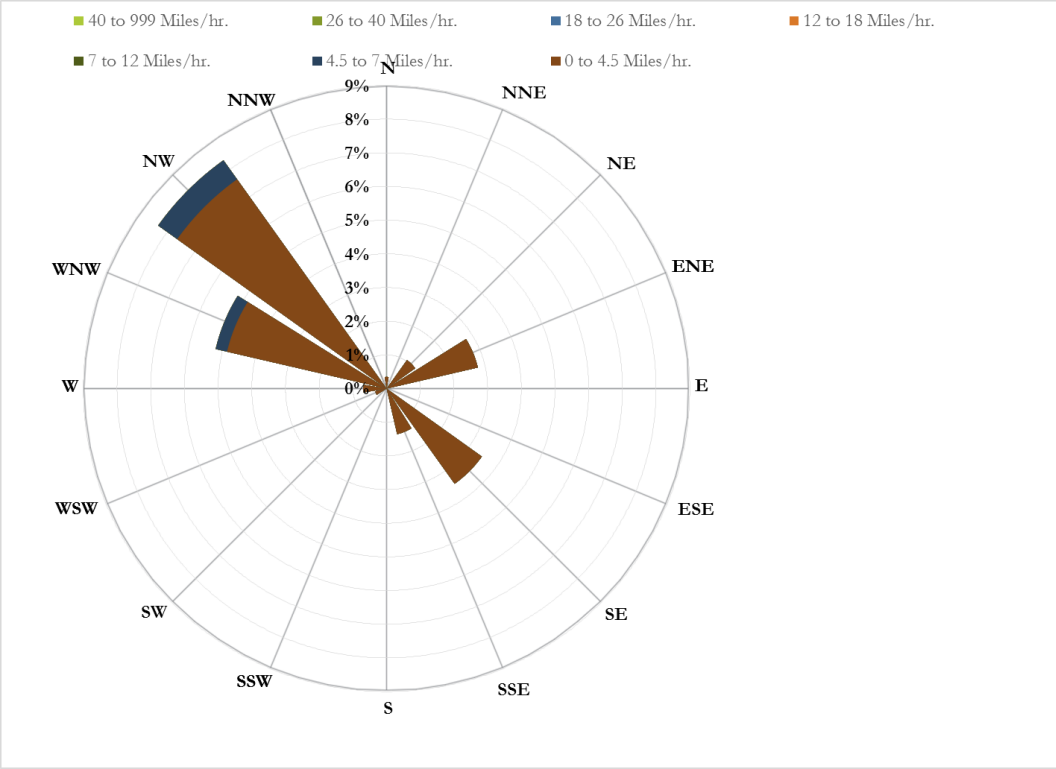

Figure 3-79.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

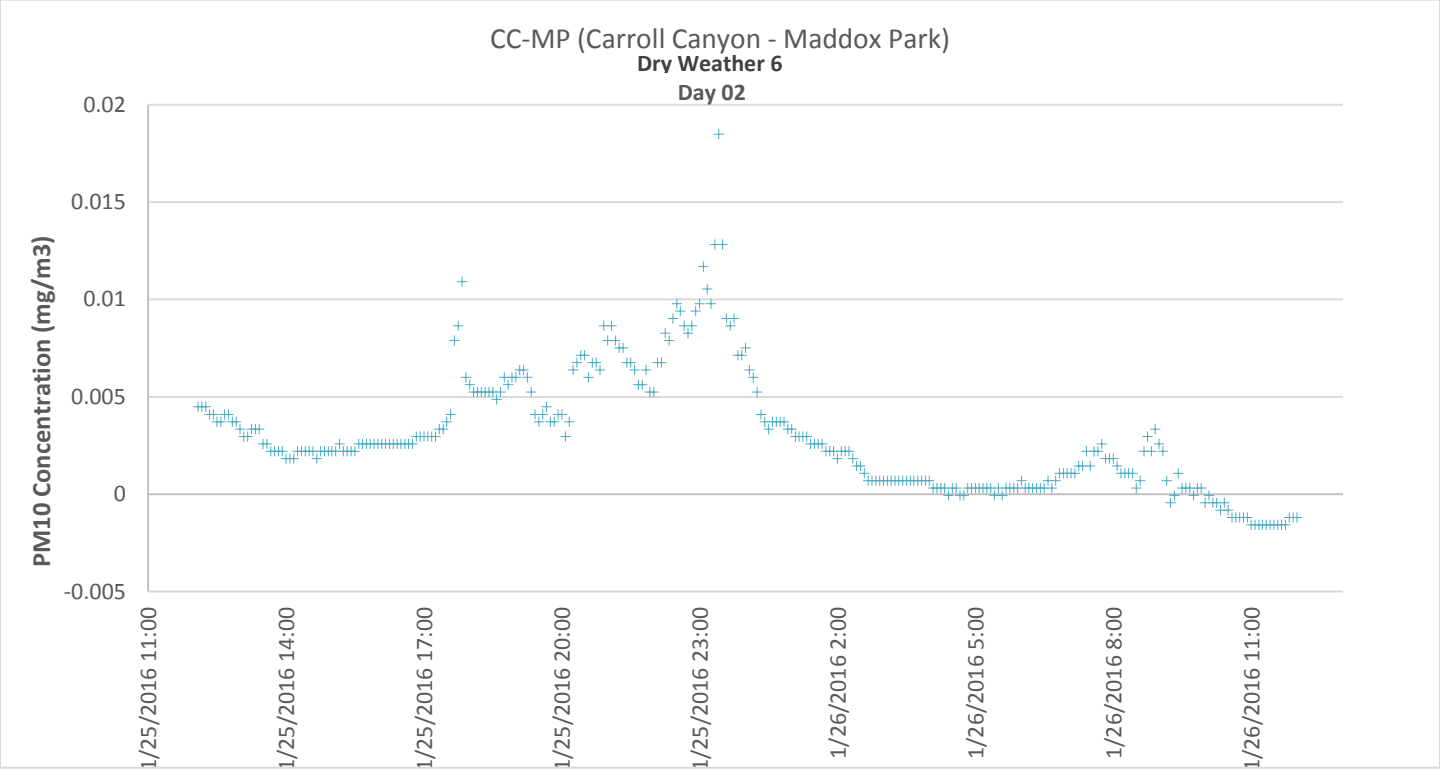

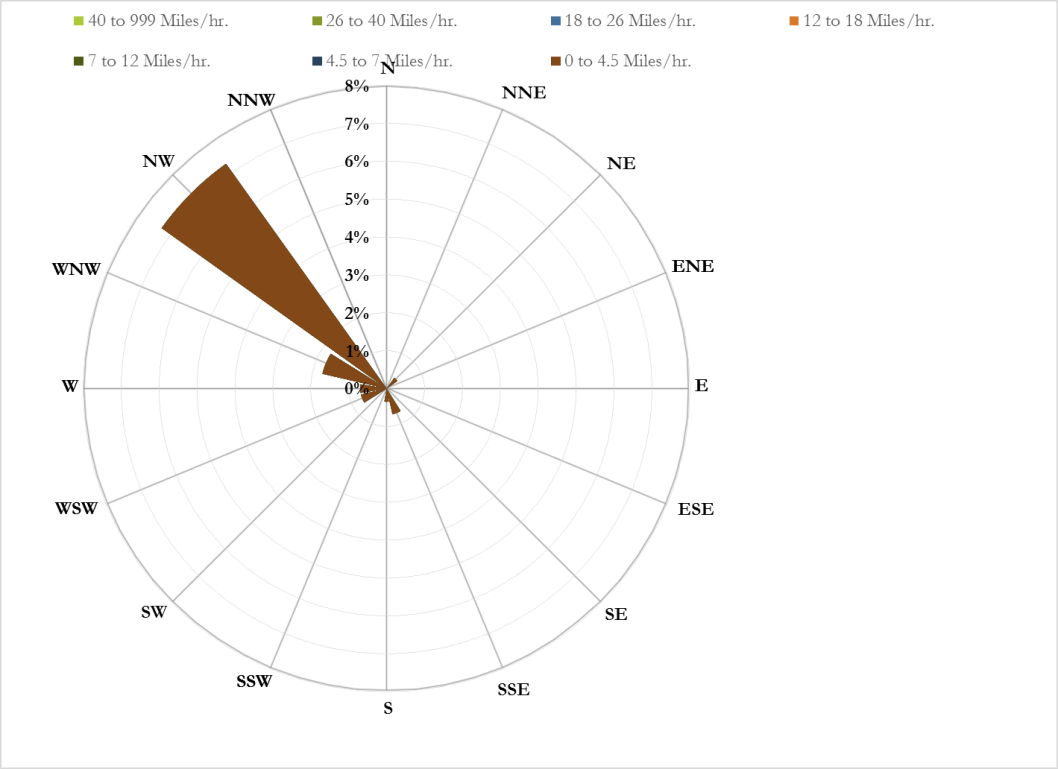

Figure 3-80.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

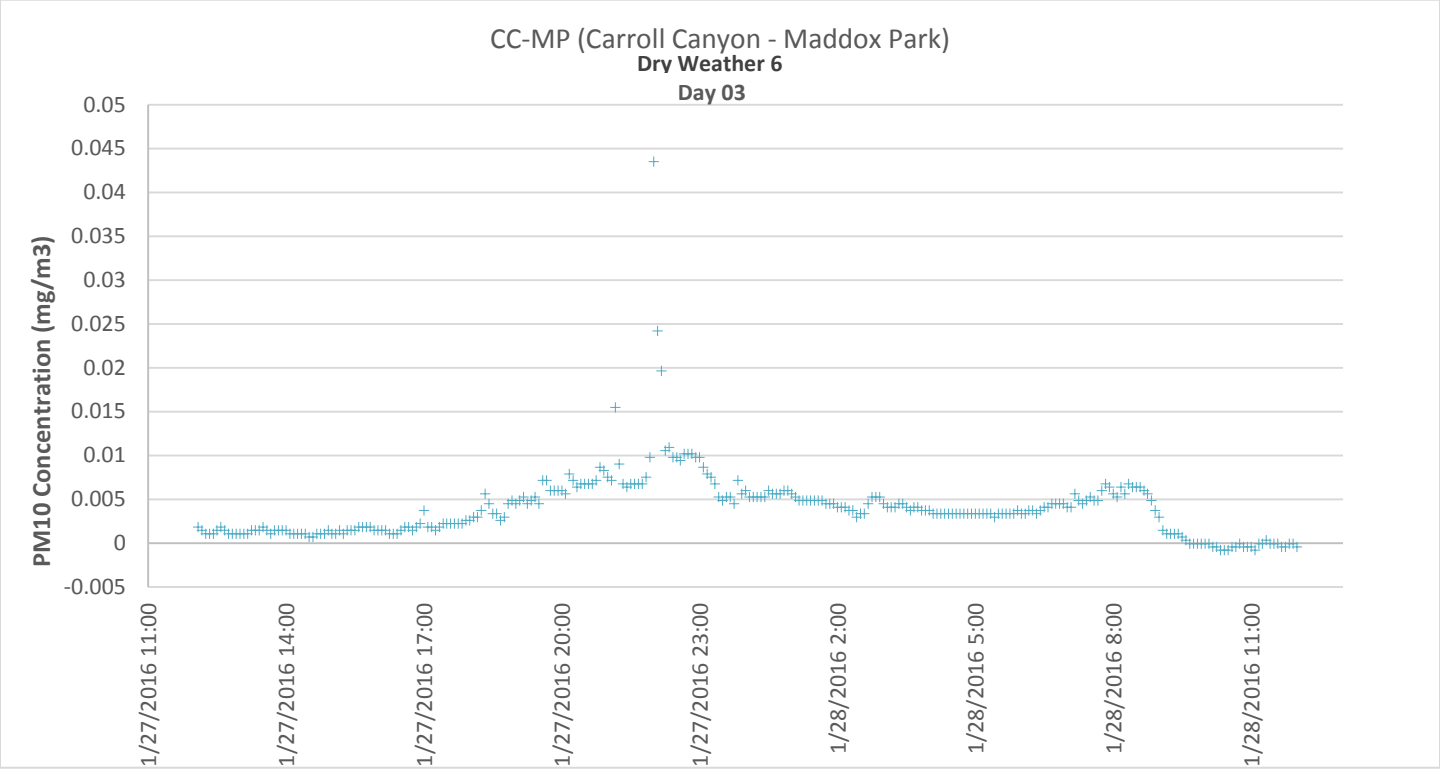

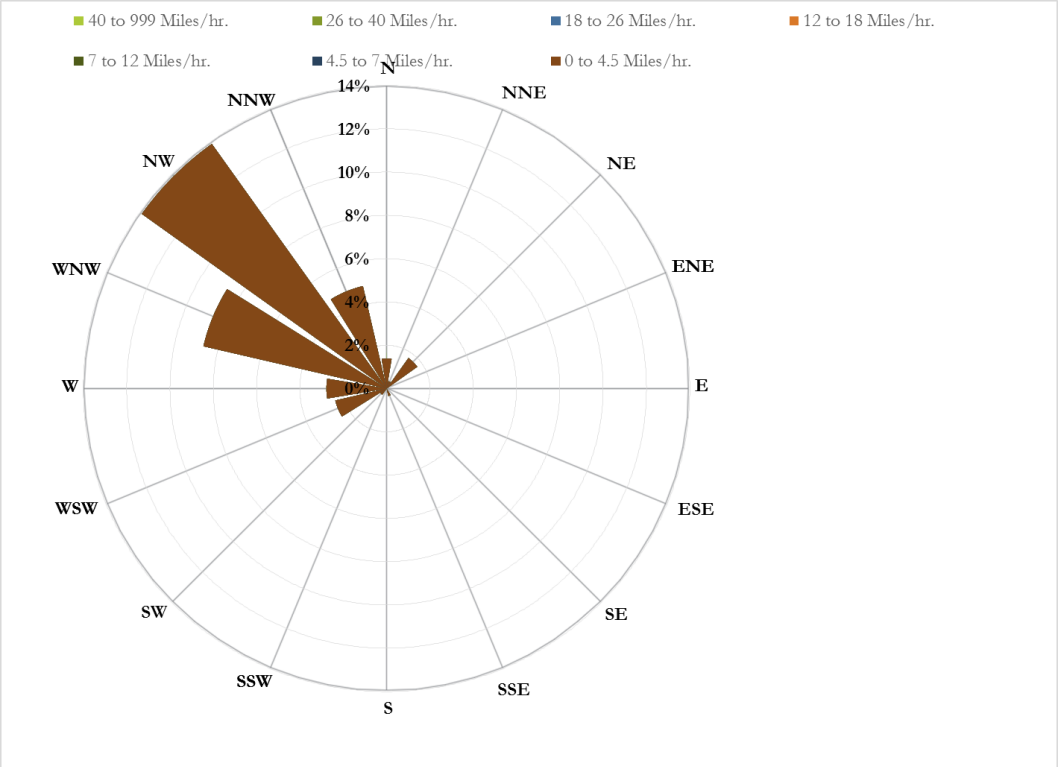

Figure 3-81.
CC-MP PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.6 CC-SF (Carroll Canyon – Camino Santa Fe)

CC-SF (Carroll Canyon – Camino Santa Fe):

CC-MP is a site monitored during the Phase II Watershed Special Study that was added by the City of San Diego (i.e., not funded through the RA group) and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 745 measurements were determined to be valid (86%).
- Mean values for PM_{10} were 0.0069 mg/m^3.
- Mean standard deviation is $\pm$0.0051 mg/m^3

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CC-SF Optical readings were higher than the mean value of the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed late evening and sundown, at times of increased traffic during the morning.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CC-SF Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed in the evening and at periods of increased traffic during the morning.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CC-SF Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed during periods of increased traffic during the morning.

Graphical representations of this data is presented in Figures 3-82 through 3-84.

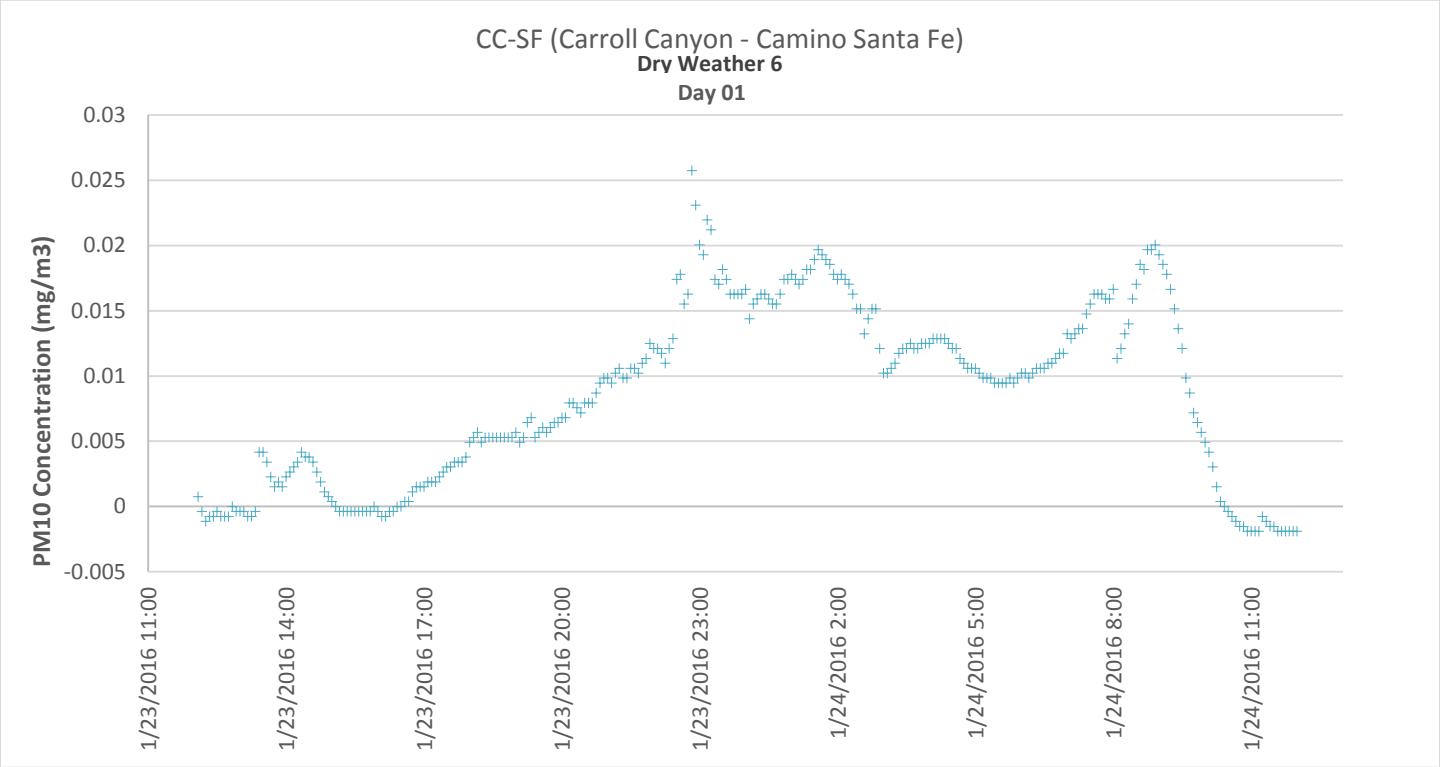

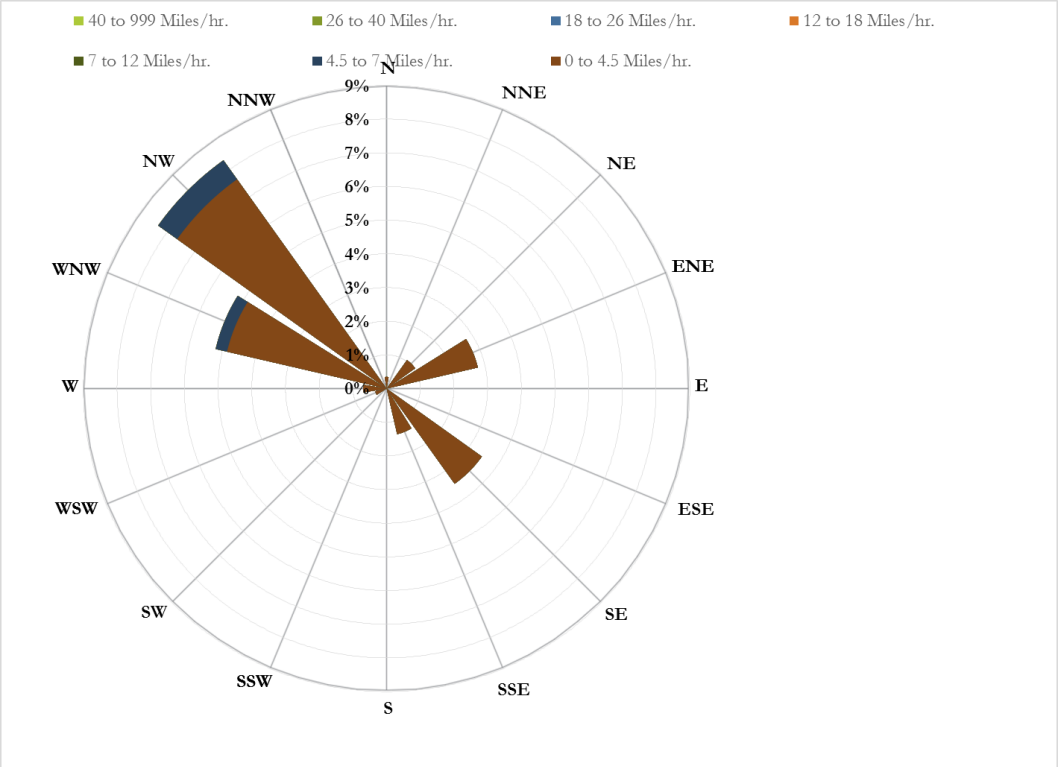

Figure 3-82.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

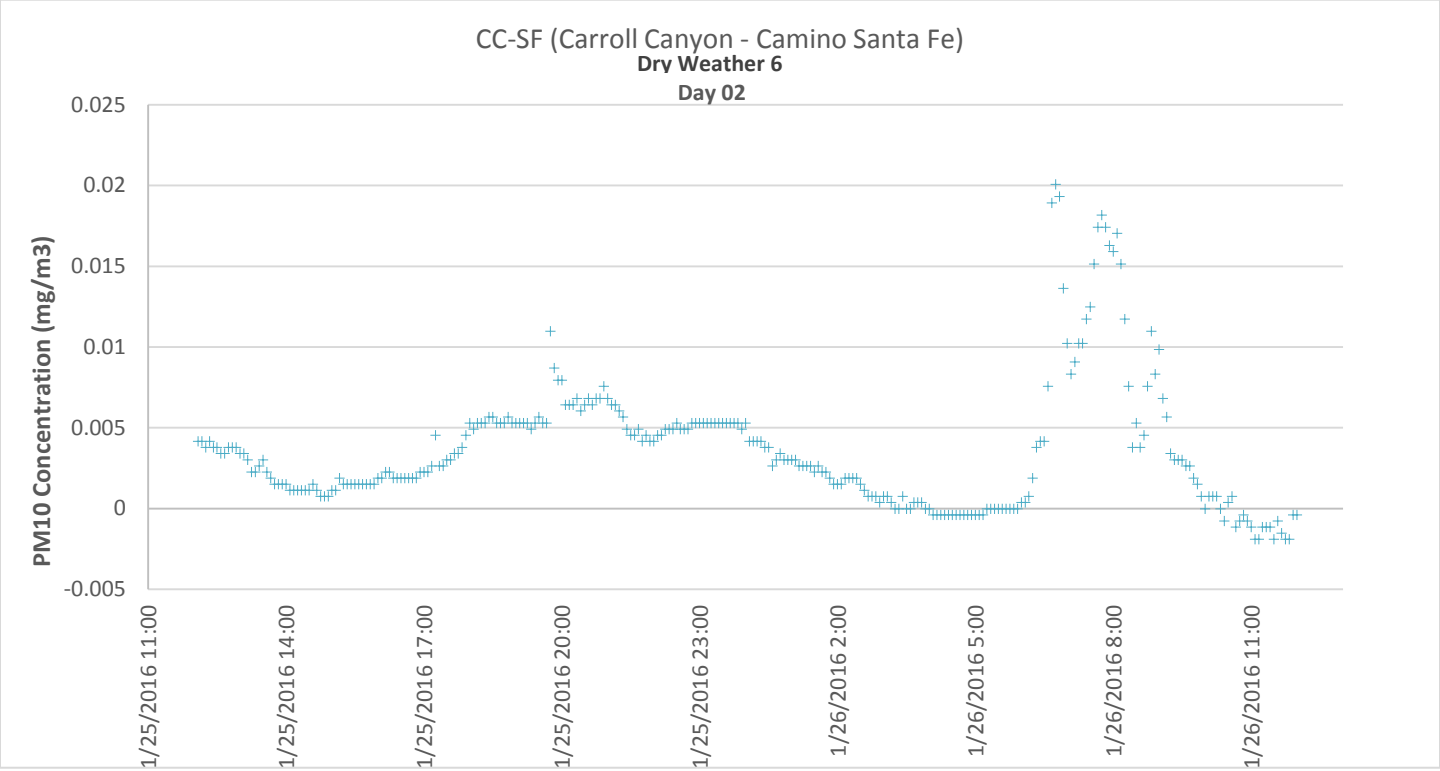

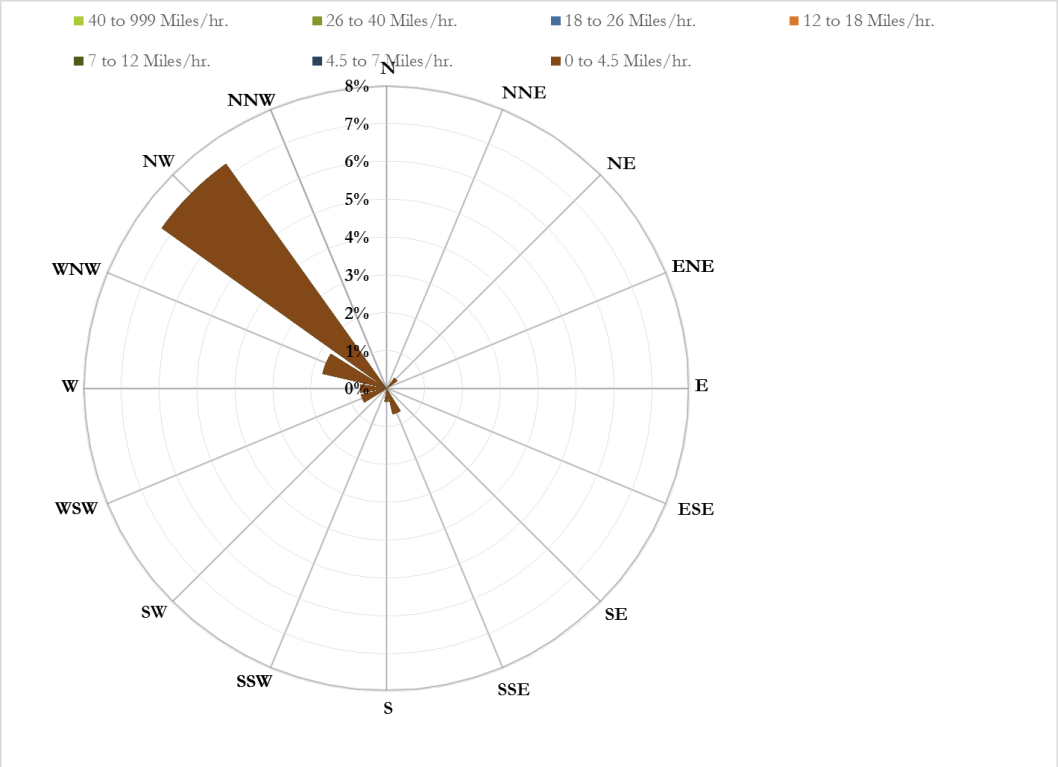

Figure 3-83.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

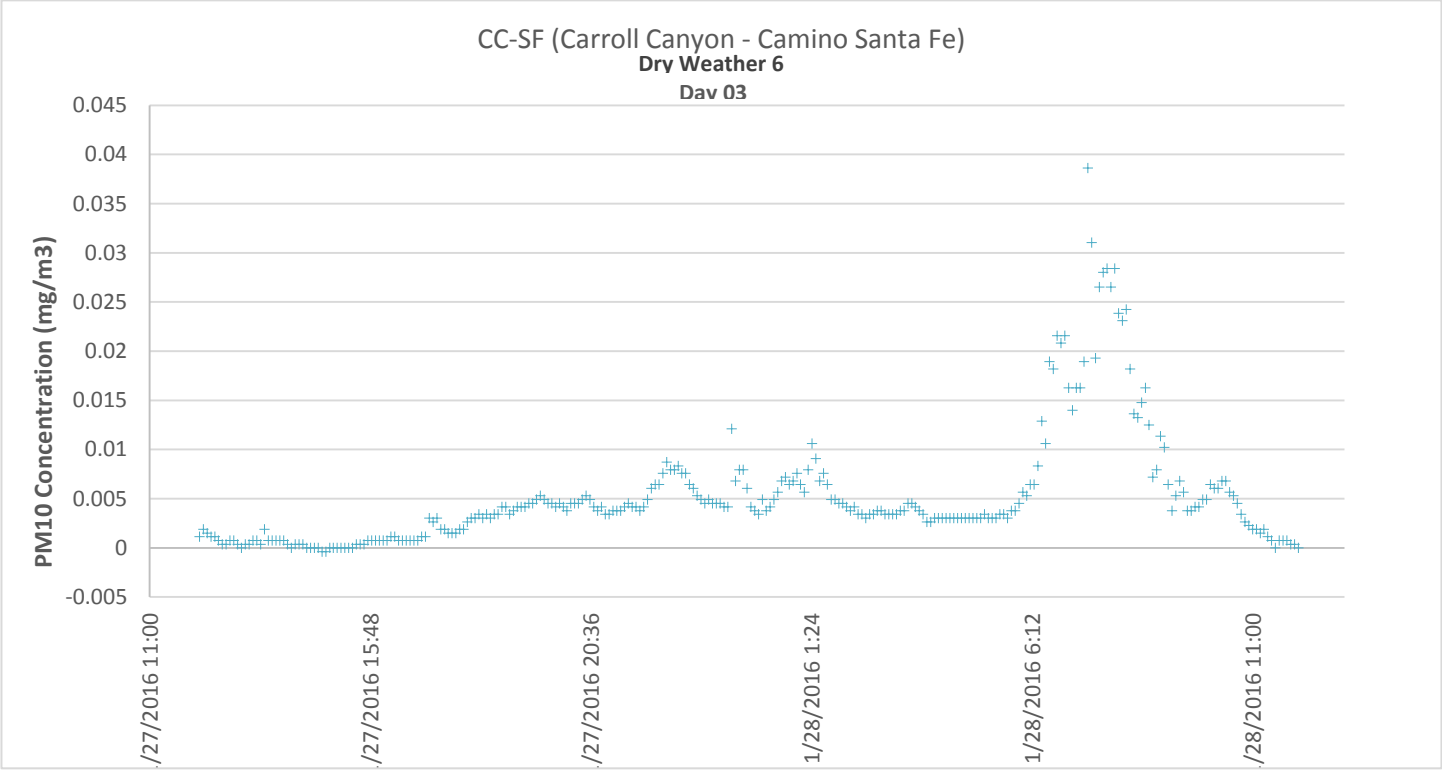

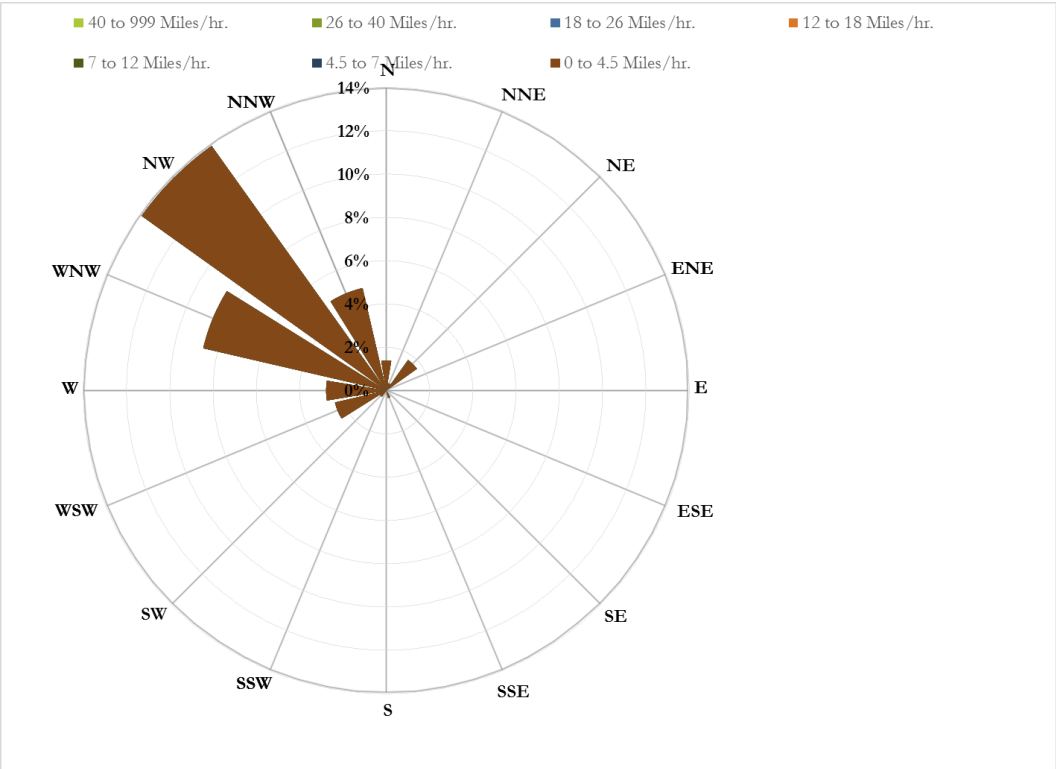

Figure 3-84.
CC-SF PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.7 CC-SR (Carroll Canyon – Scripps Ranch)

CC-SR (Carroll Canyon – Scripps Ranch):

CC-SR is a site monitored during the Phase I and 2 Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 845 measurements were determined to be valid (98%).
- Mean values for PM_{10} were 0.0030 mg/m^3.
- Mean standard deviation is $\pm$0.0014 mg/m^3

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CC-SF Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed at noontime and during sundown.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CC-SF Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Optical monitor readings peaked around noontime and during times of increased traffic conditions in the morning.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CC-DM Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed during the afternoon and evening.

Graphical representations of this data is presented in Figure 2-29.

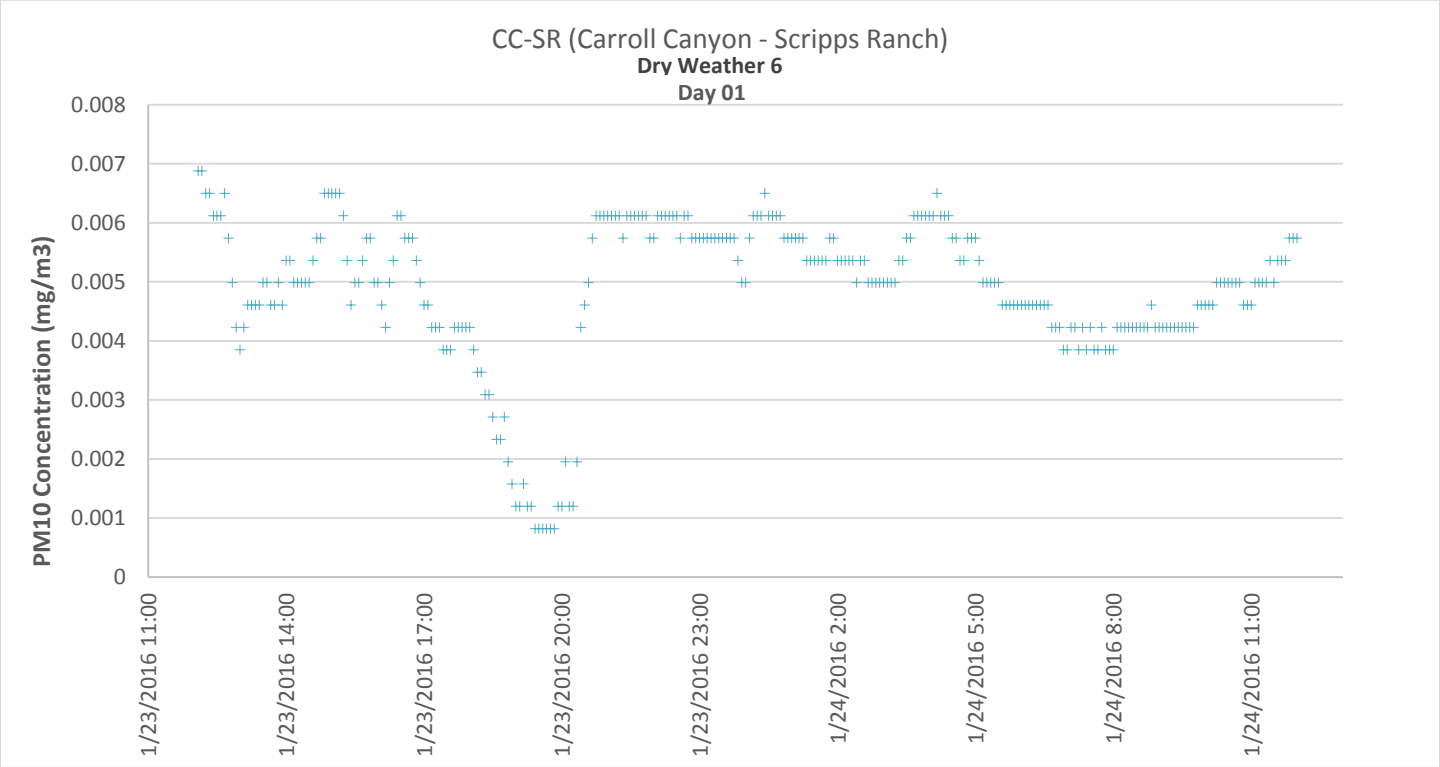

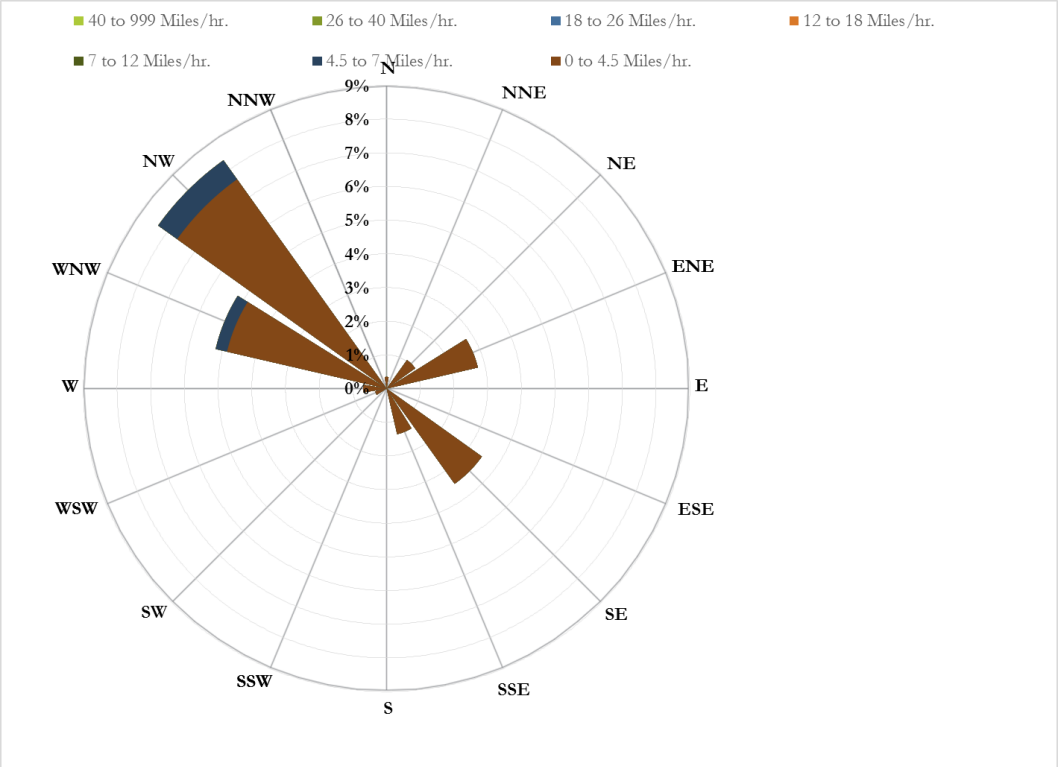

Figure 3-85.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

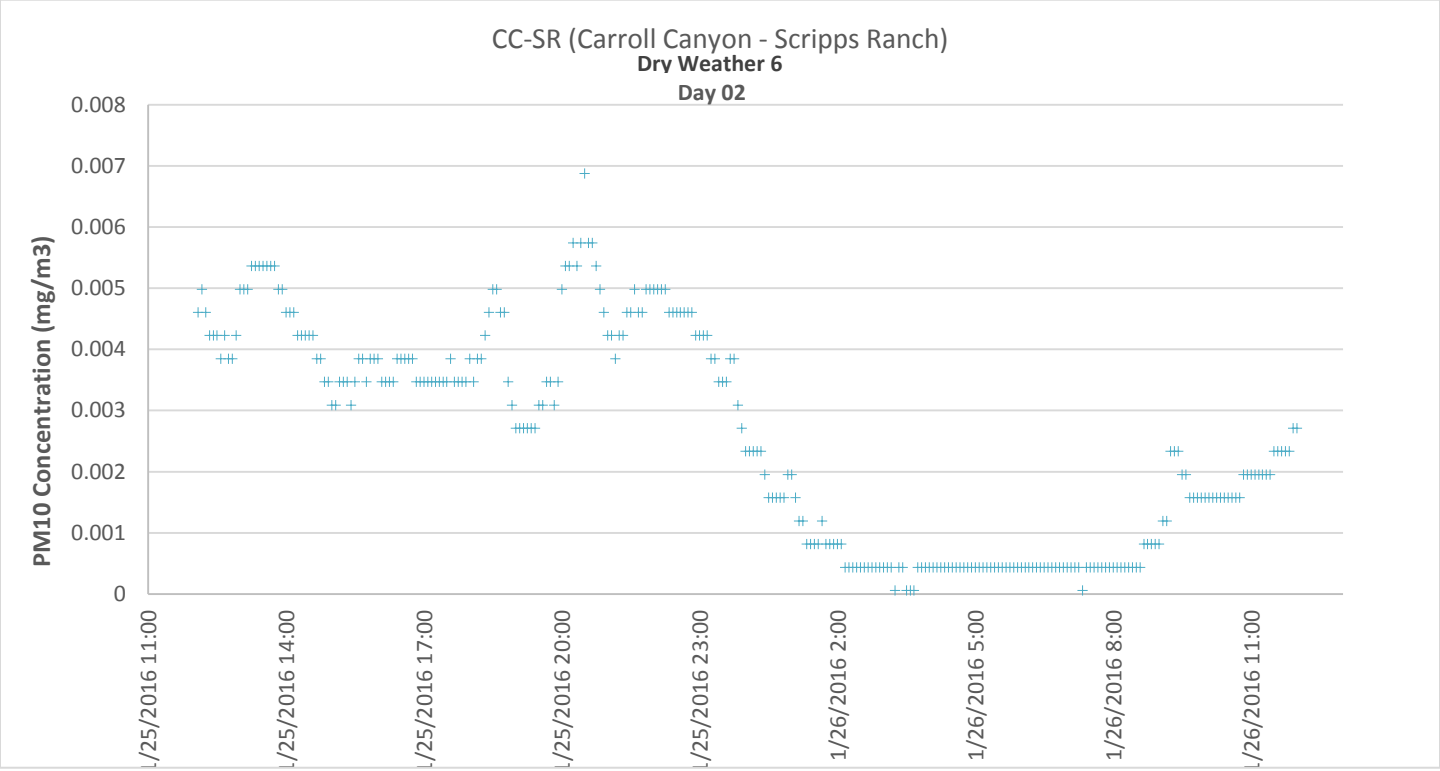

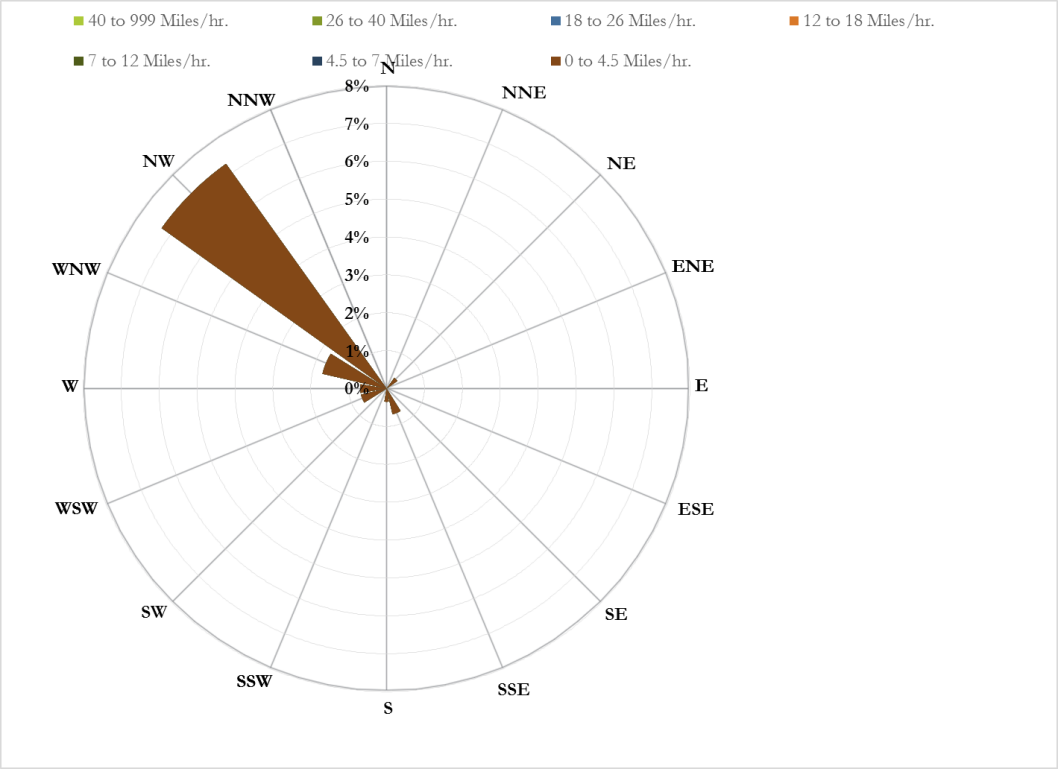

Figure 3-86.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

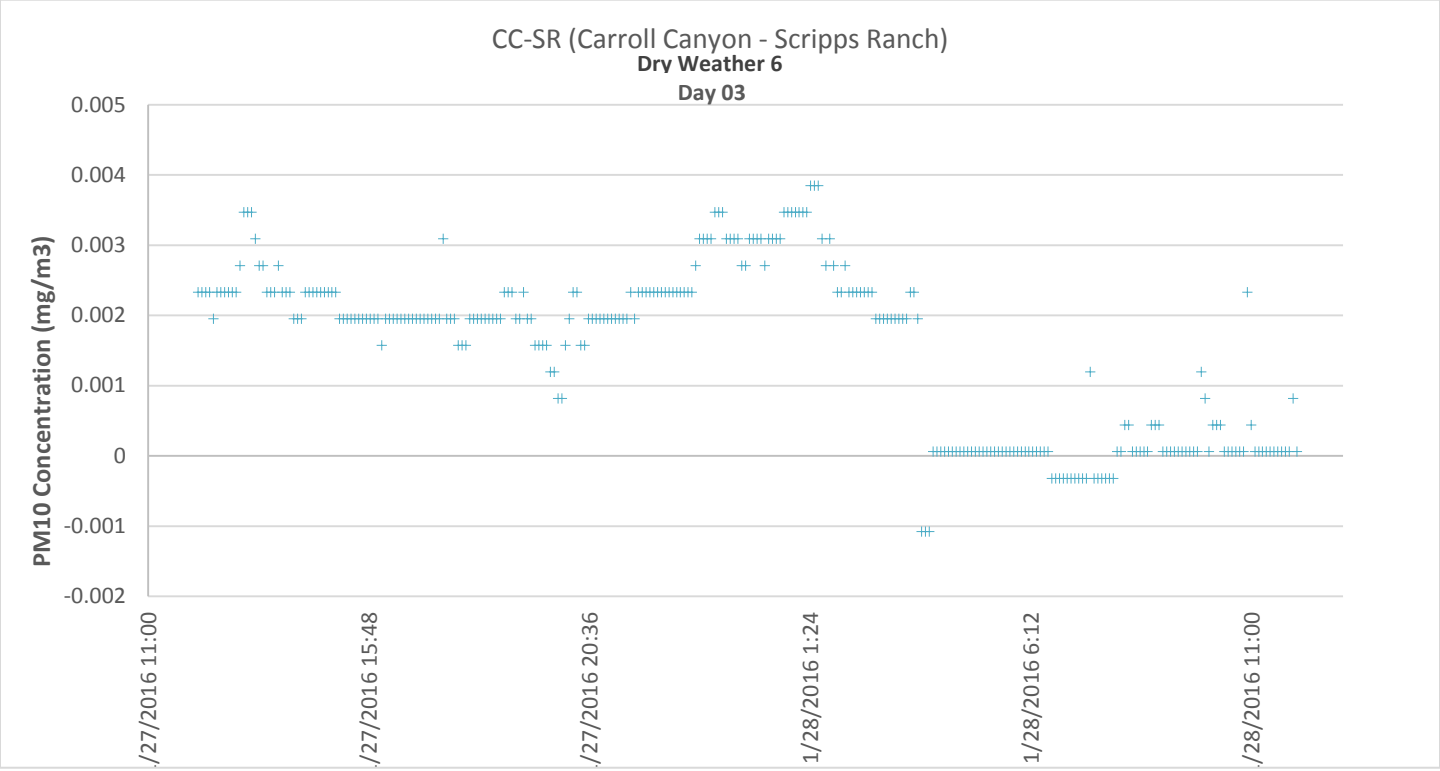

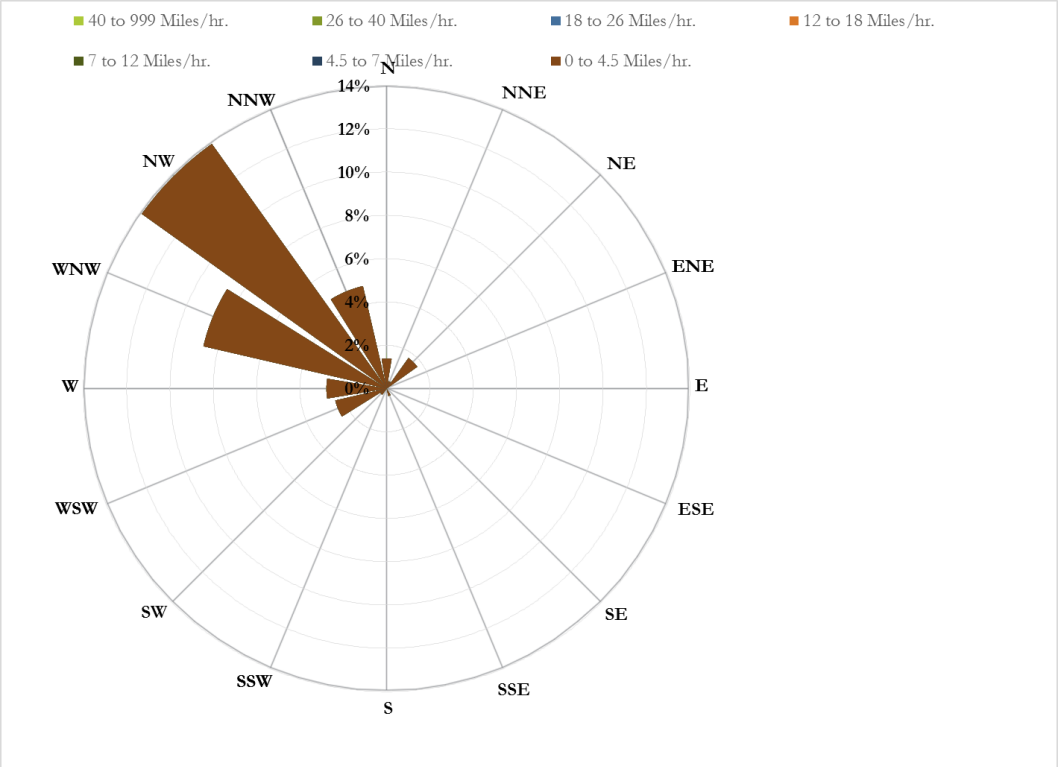

Figure 3-87.
CC-SR PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.8 CC-UP (Carroll Canyon – Upwind)

CC-UP (Carroll Canyon – Upwind):

CC-UP is a site monitored during the Phase I and 2 Watershed Special Study and contains an Optical monitor and an FRM sampler.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 853 measurements were determined to be valid (99%).
- Mean values for PM_{10} were 0.0050 mg/m^3.
- Mean standard deviation is $\pm$0.0024 mg/m^3

FRM Sampler (Laboratory) Results:

- Mean values for PM_{10} was 0.0152 mg/m^3.
- Mean RPD from the FRM results to the Optical monitor results was 91.48%

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CC-UP Optical readings were lower than the mean value of the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed at midnight and during the morning after sunrise.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CC-UP Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the WNW. Peak Optical monitor readings were observed during periods of increased traffic in the afternoon and morning.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CC-UP Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed during periods of increased traffic in the morning.

Graphical representations of this data is presented in Figures 3-88 through 3-90.

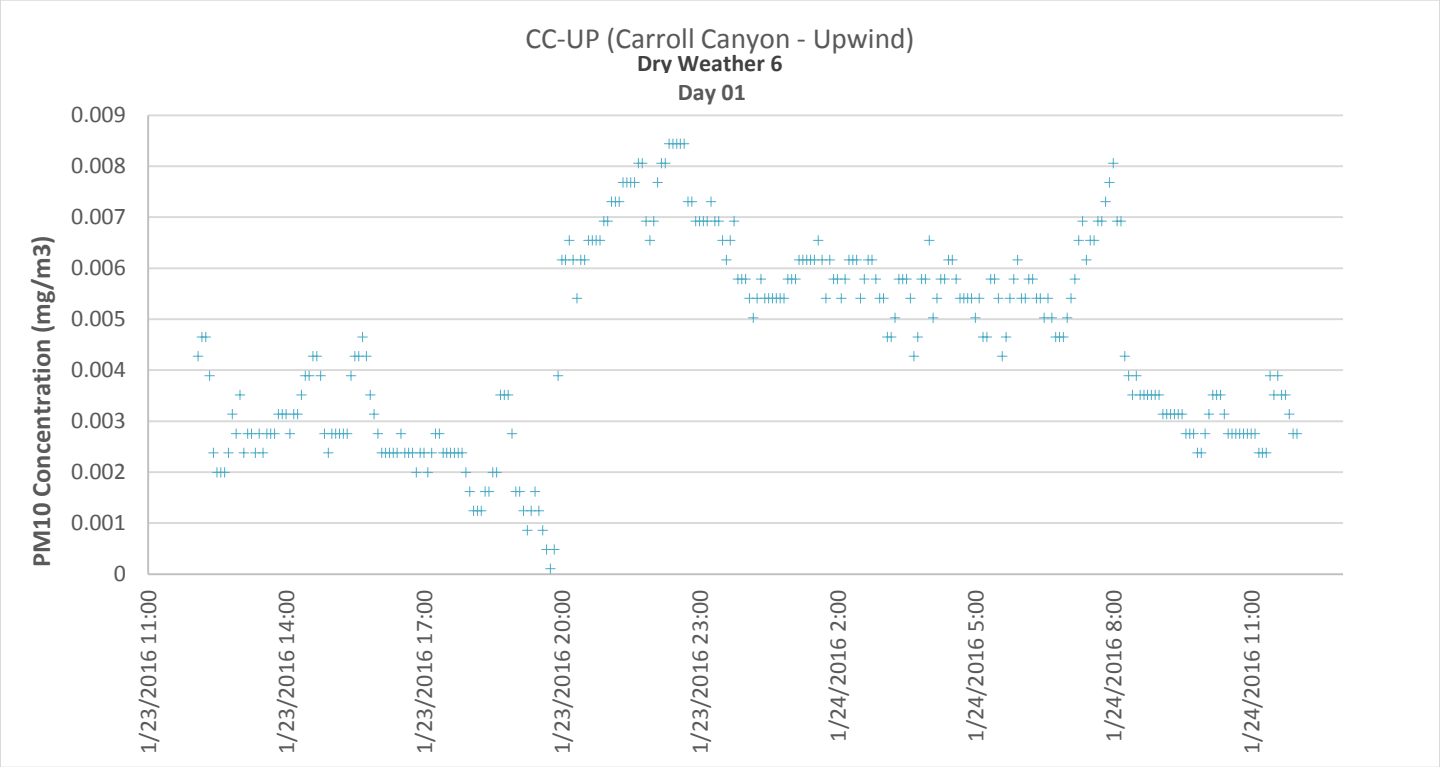

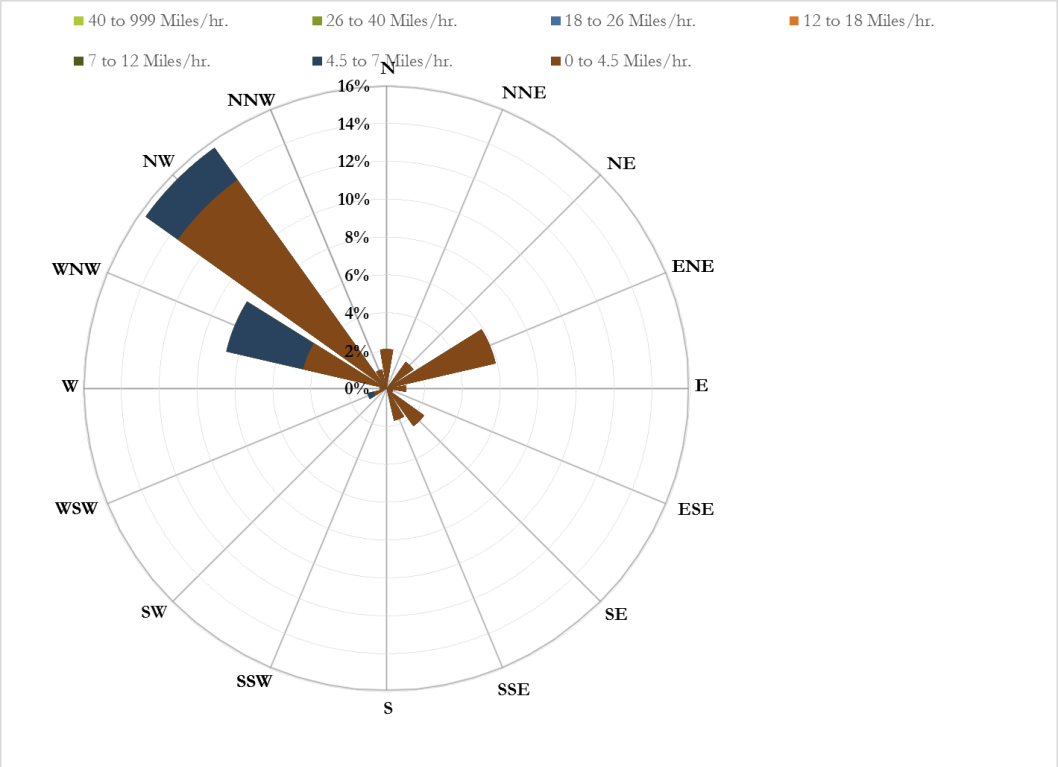

Figure 3-88.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

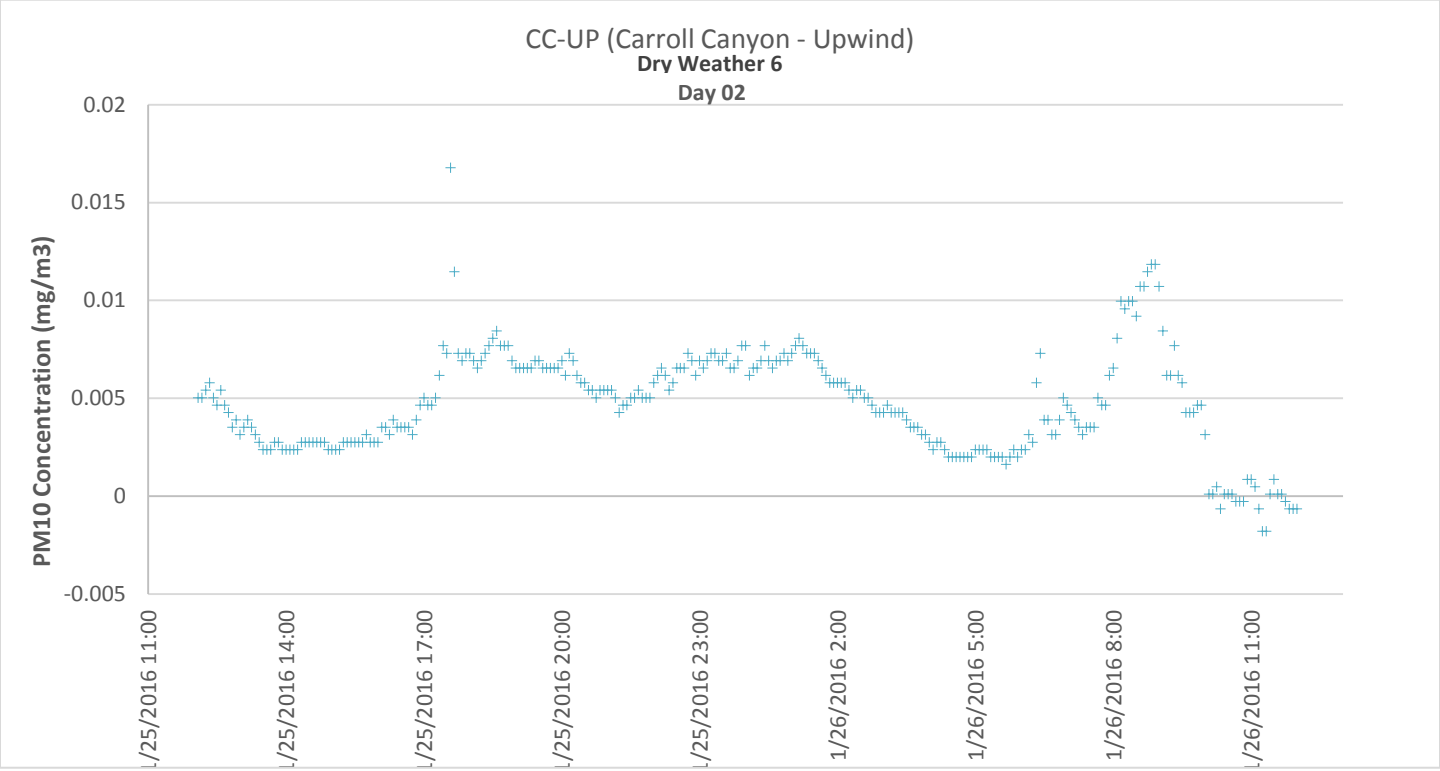

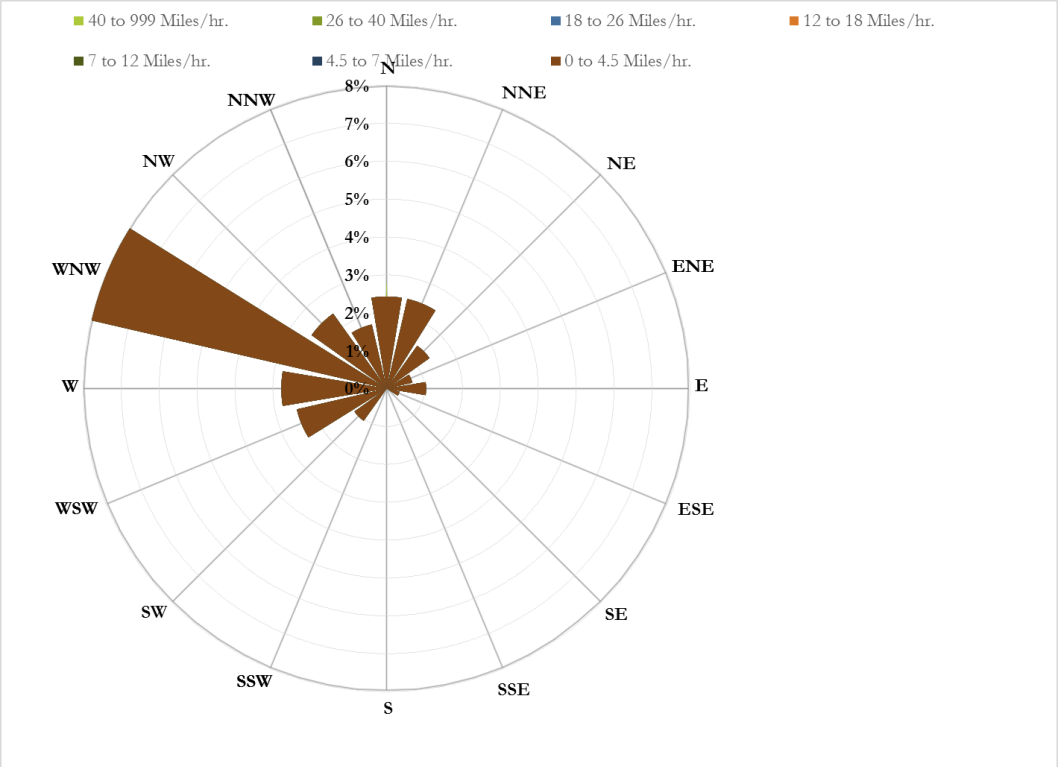

Figure 3-89.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

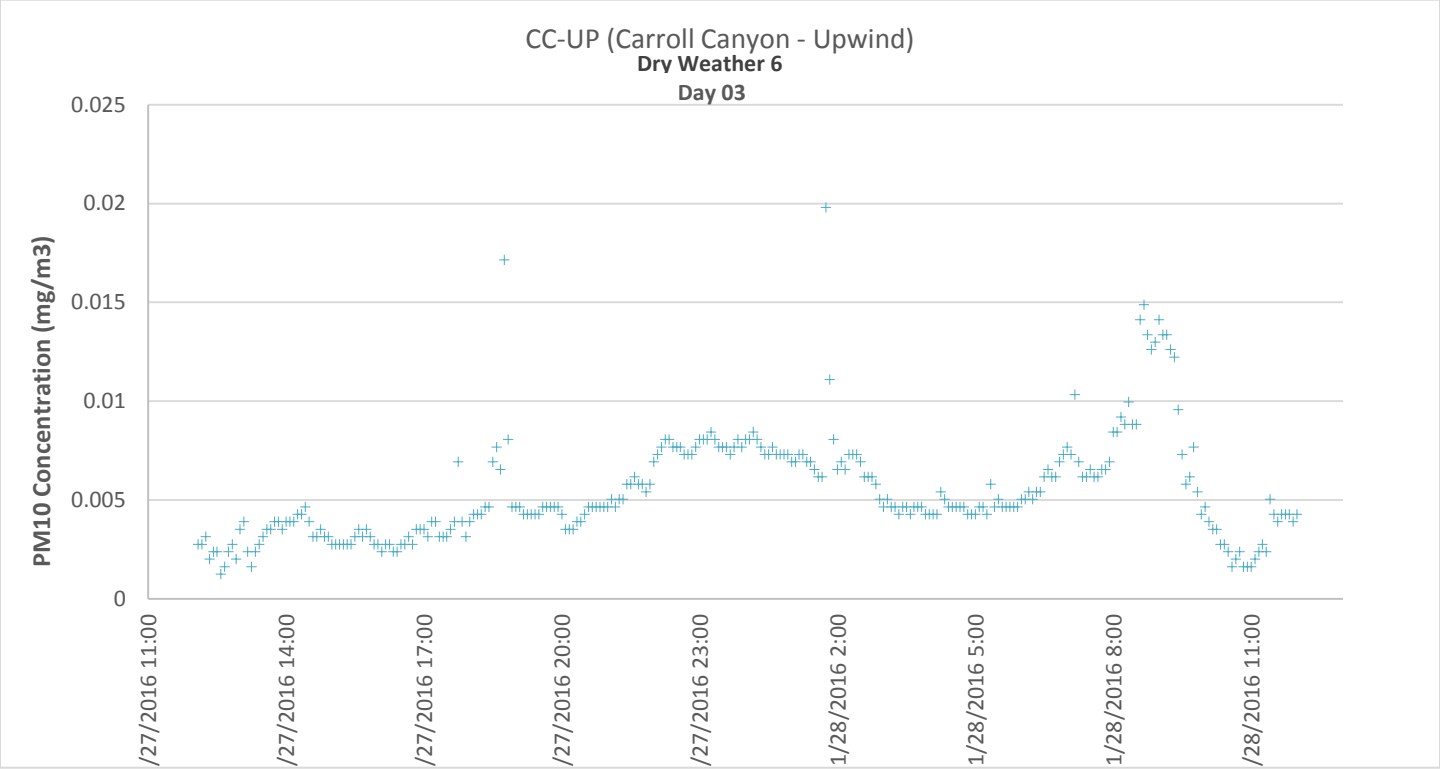

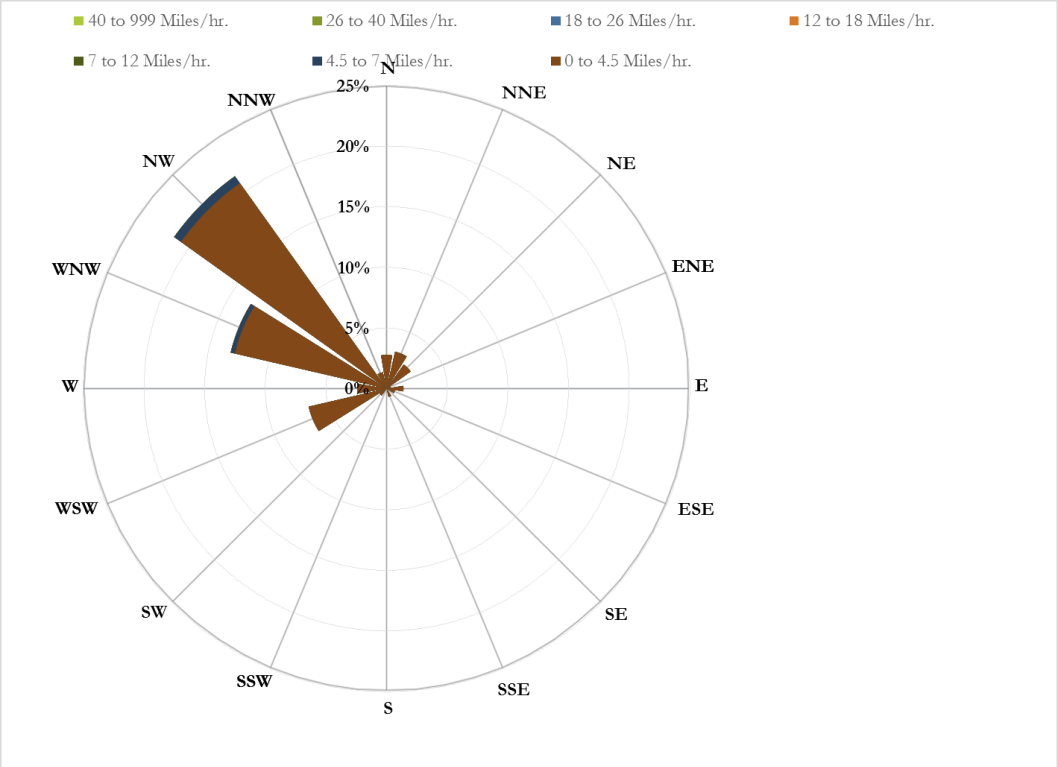

Figure 3-90.
CC-UP PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.9 CV-CD (Carmel Valley – Camino Del Sur)

CV-CD (Carmel Valley – Camino Del Sur):

CV-CD is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 778 measurements were determined to be valid (90%).
- Mean values for PM_{10} were 0.0054 mg/m^3.
- Mean standard deviation is $\pm$0.0036 mg/m^3

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – CV-CD Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind direction were observed primarily from the W, WSW, NNE, and NE. Peak Optical monitor readings were observed between after midnight and through the morning.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – CV-CD Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the W. Peak Optical monitor readings were observed during sundown.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – CV-CD Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the WNW, NE, and NNWE. Peak Optical monitor readings were observed during sundown.

Graphical representations of this data are presented in Figures 3-91 through 3-93.

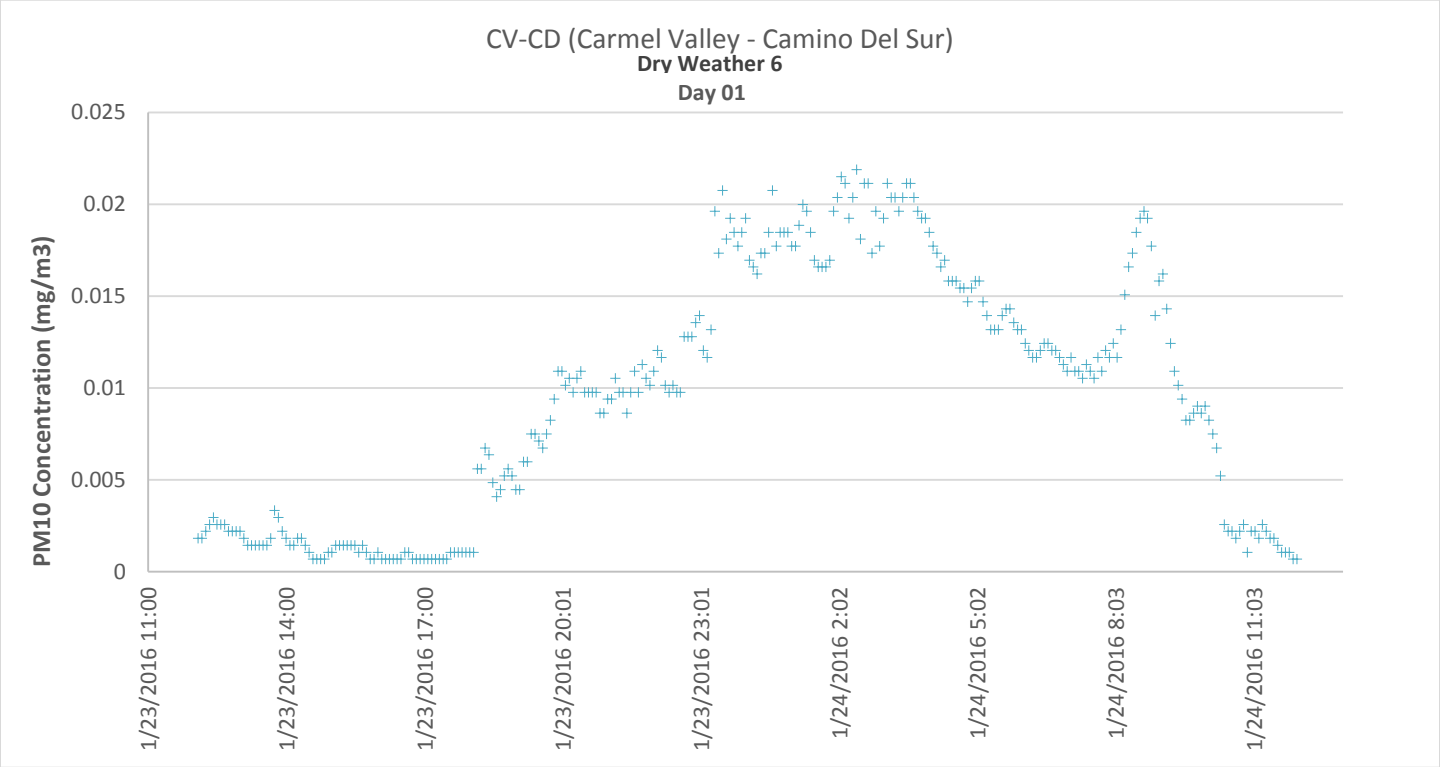

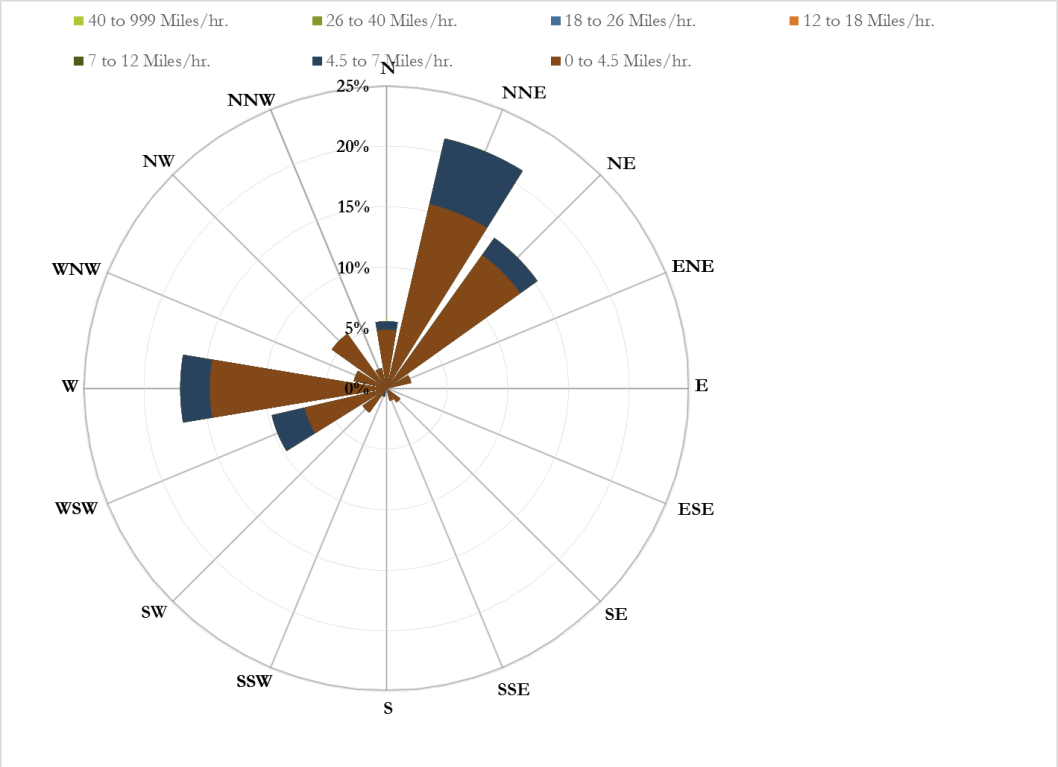

Figure 3-91.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

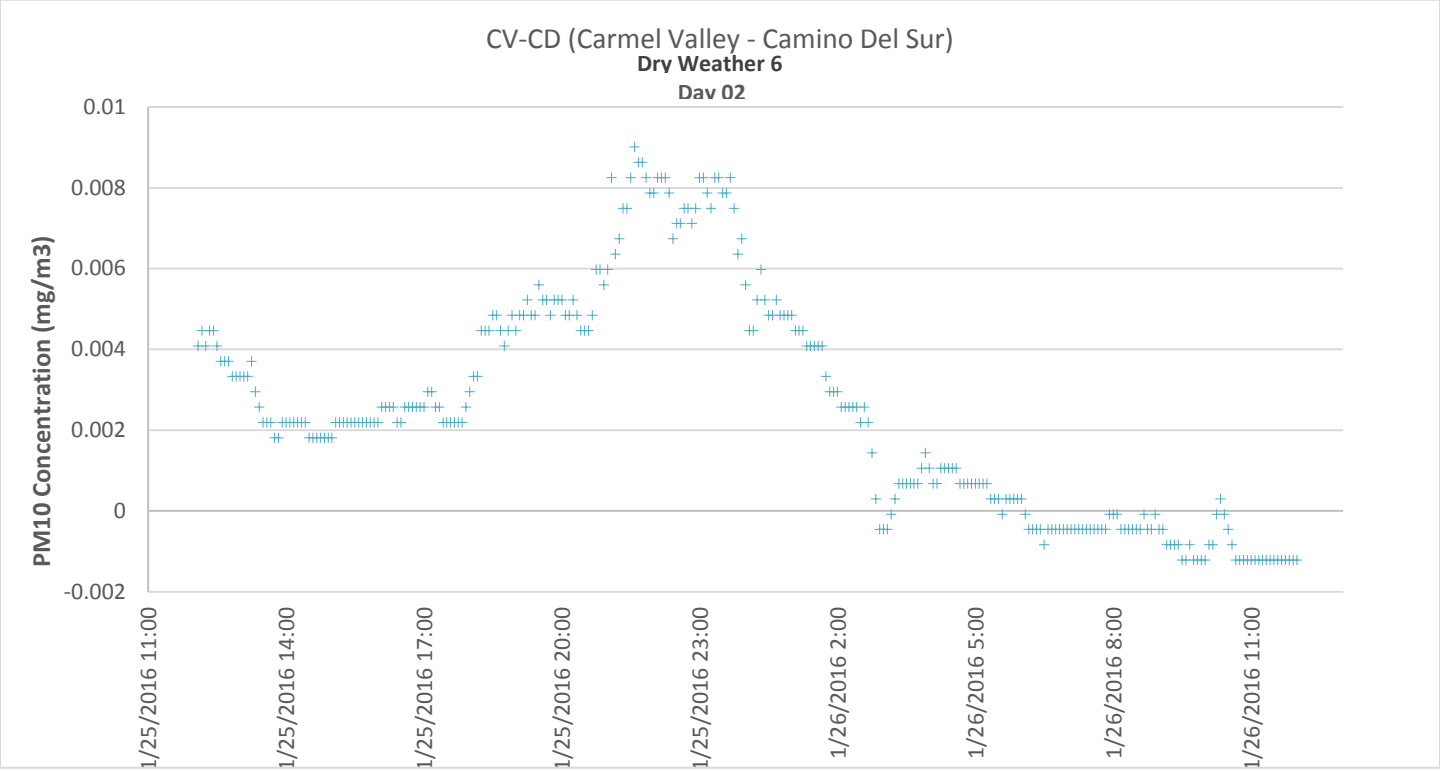

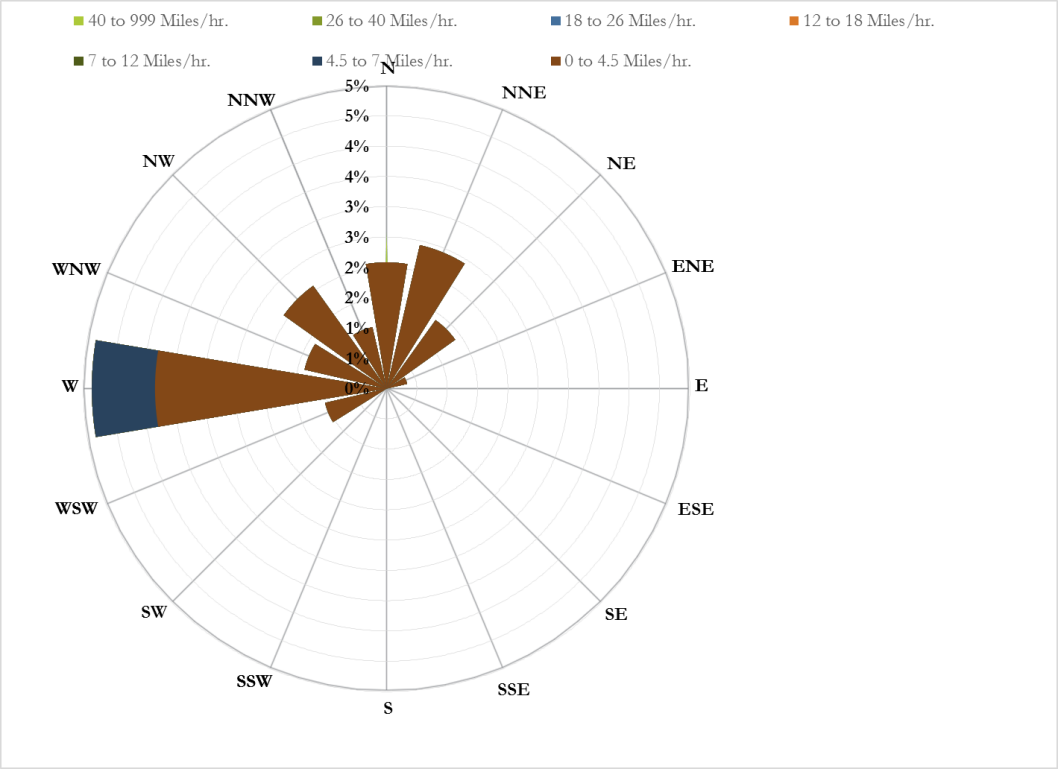

Figure 3-92.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

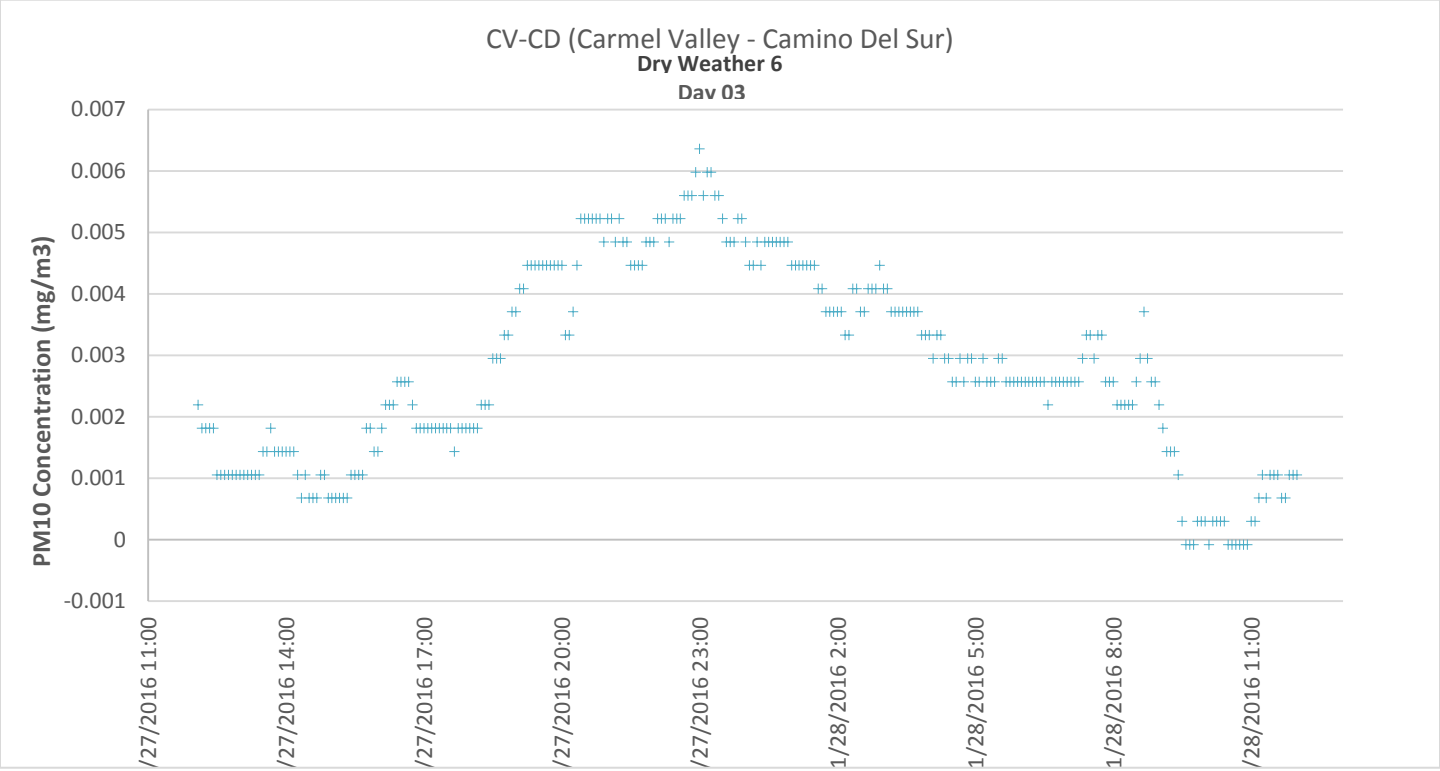

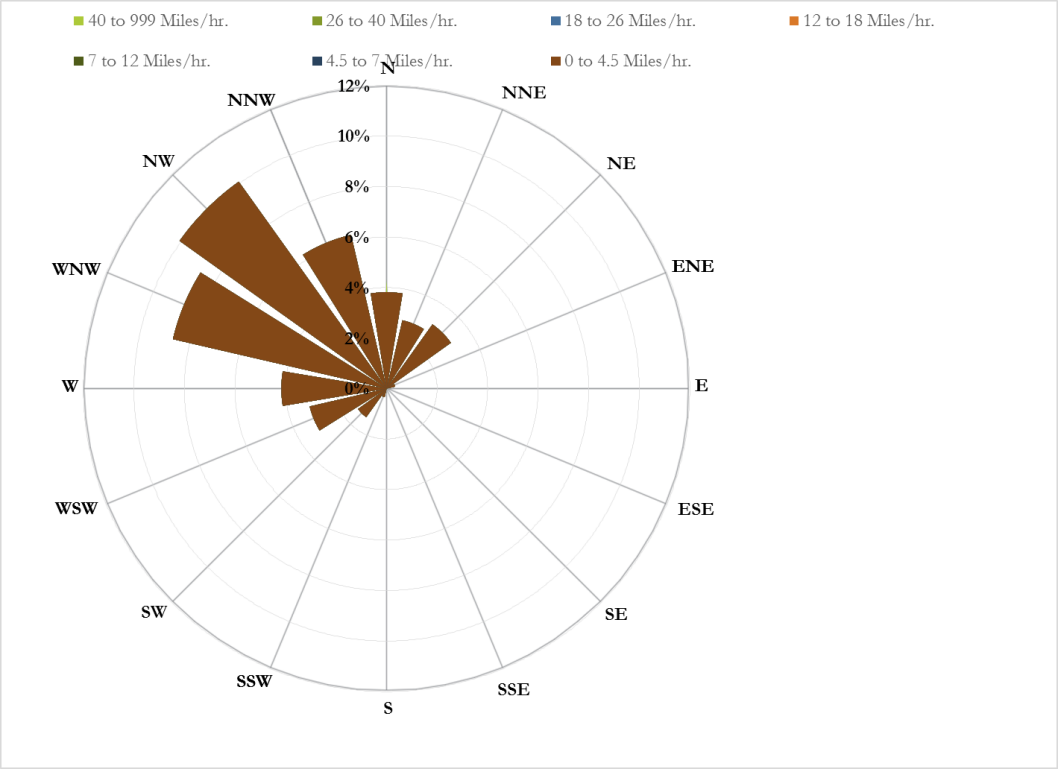

Figure 3-93.
CV-CD PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.10 LP-PO (Los Peñasquitos – Poway)

LP-PO (Los Peñasquitos – Poway):

CV-CD is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 824 measurements were determined to be valid (95%).
- Mean values for PM_{10} were 0.0051 mg/m^3.
- Mean standard deviation is $\pm$0.0036 mg/m^3

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 1 – LP-PO Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind direction were observed primarily from the NW. Peak Optical monitor readings were observed during the early afternoon and periods of increased traffic in the morning.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 2 – LP-PO Optical readings were observed at a higher mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW. Peak Optical monitor readings were observed before midnight.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 3 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the NW and WNW. Peak Optical monitor readings were observed before midnight.

Graphical representations of this data are presented in Figures 3-94 through 3-96.

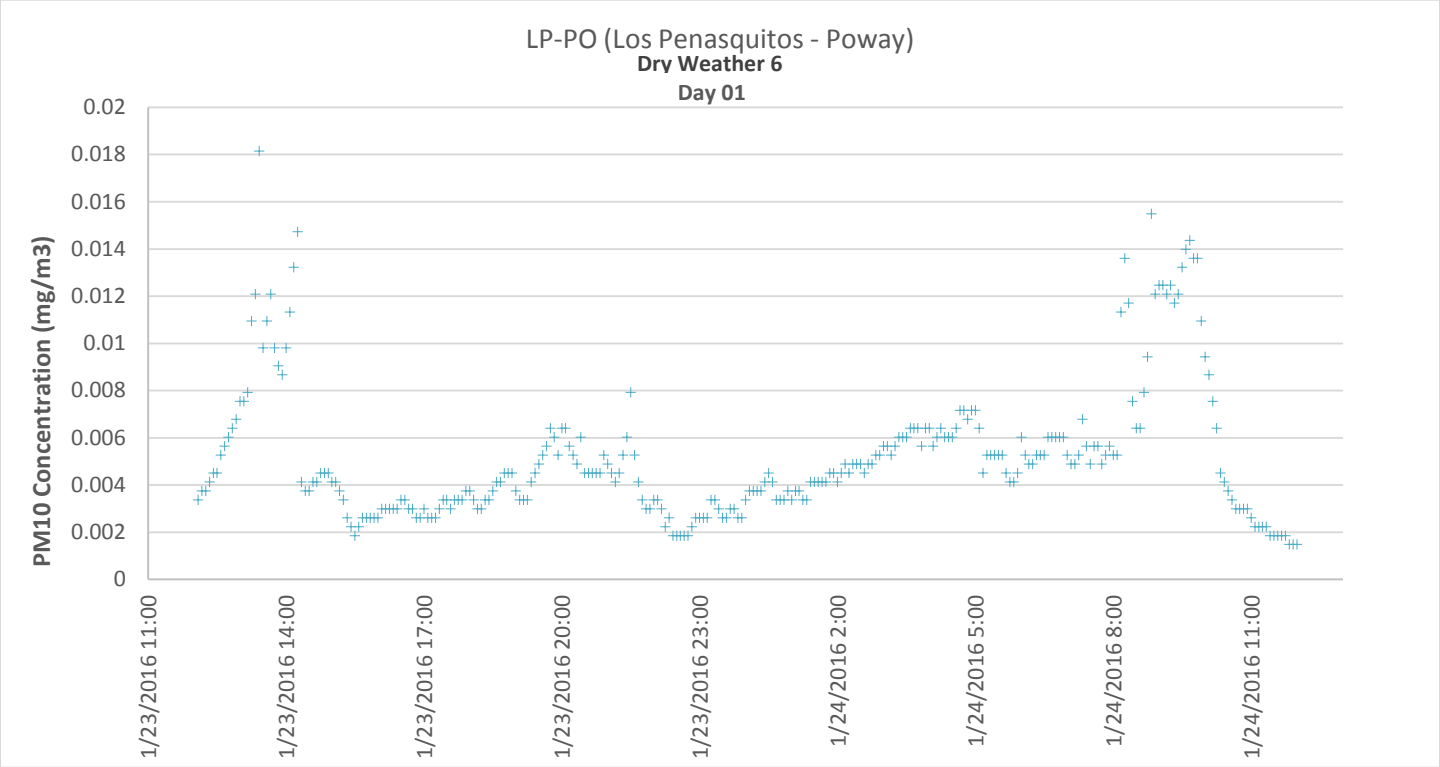

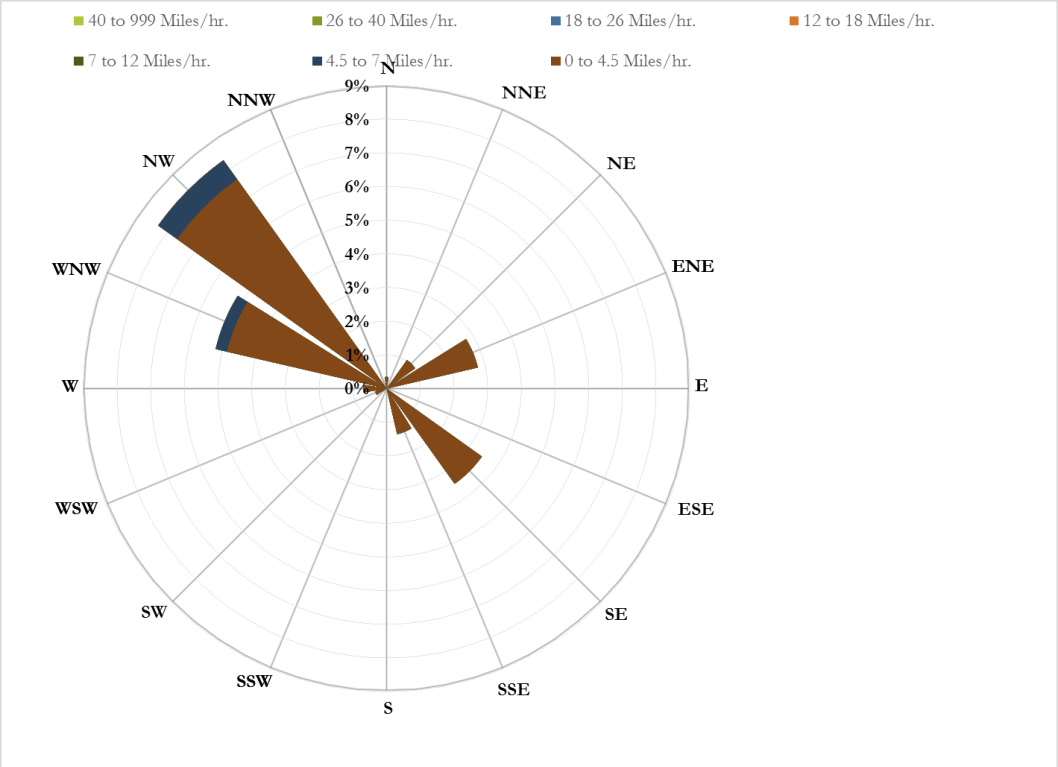

Figure 3-94.
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

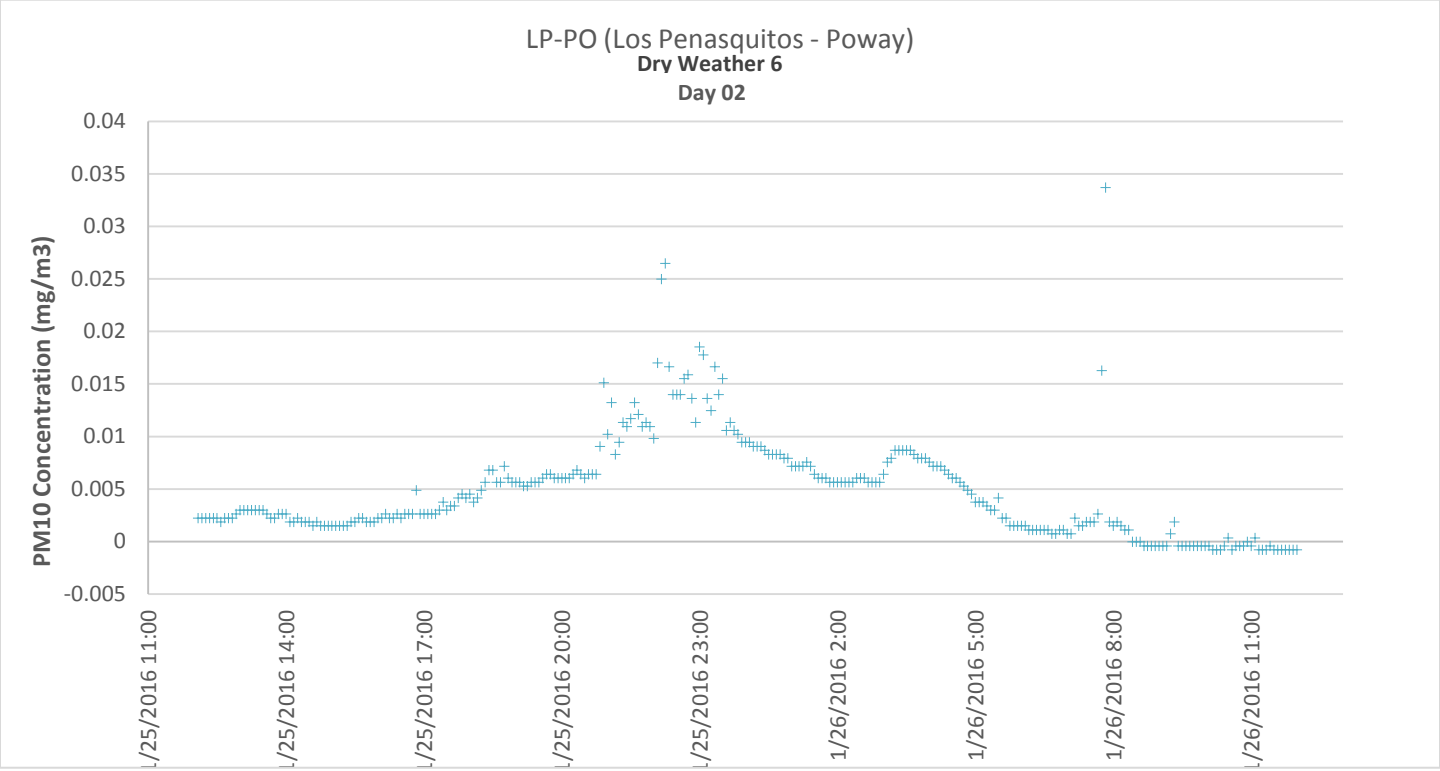

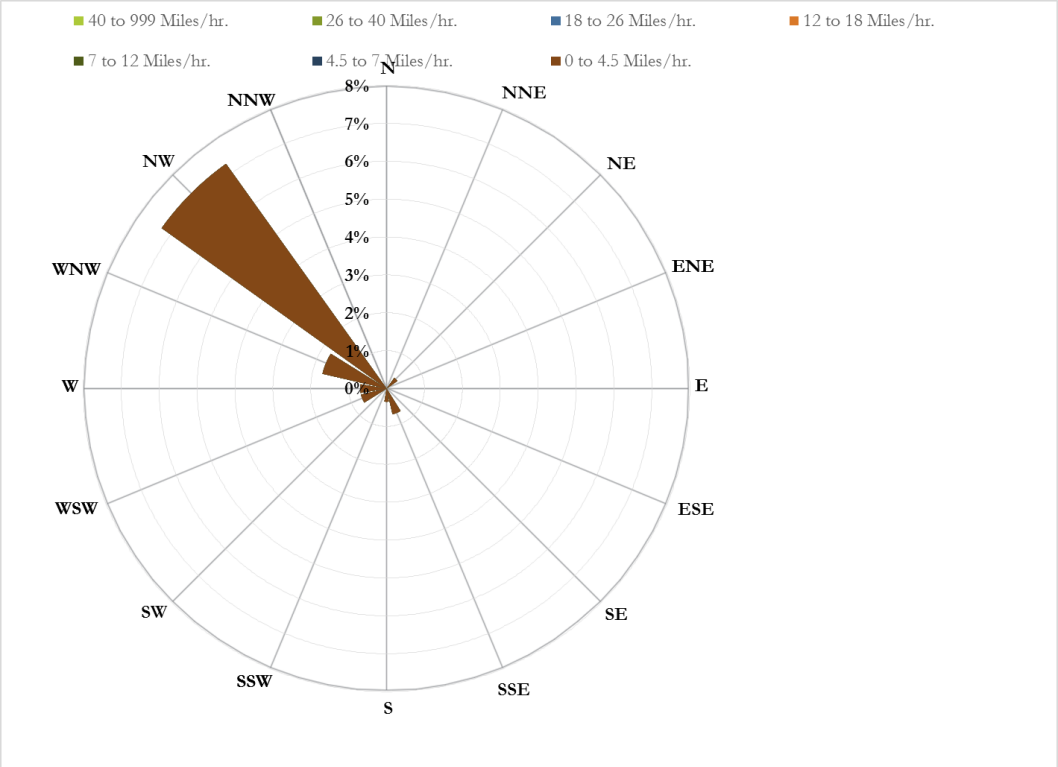

Figure 3-95.
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

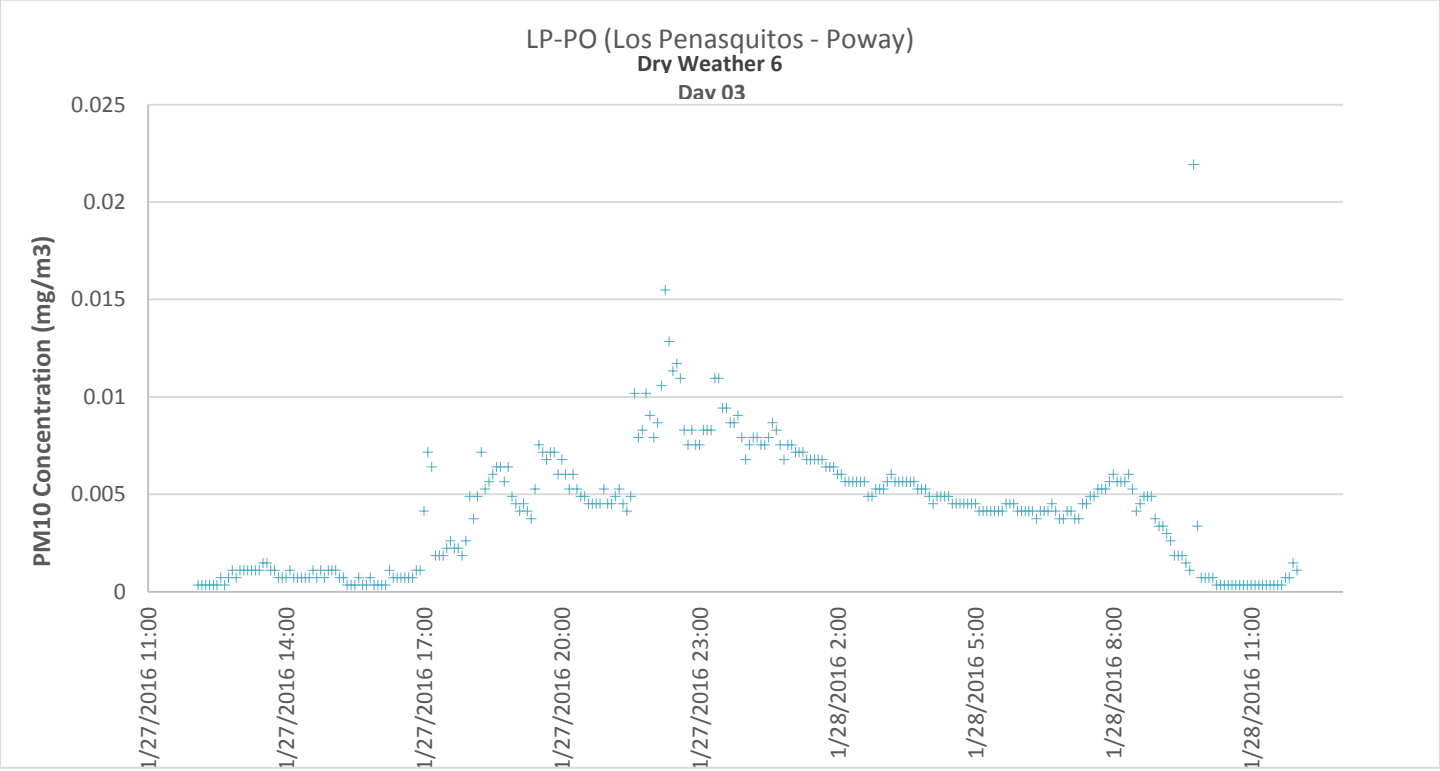

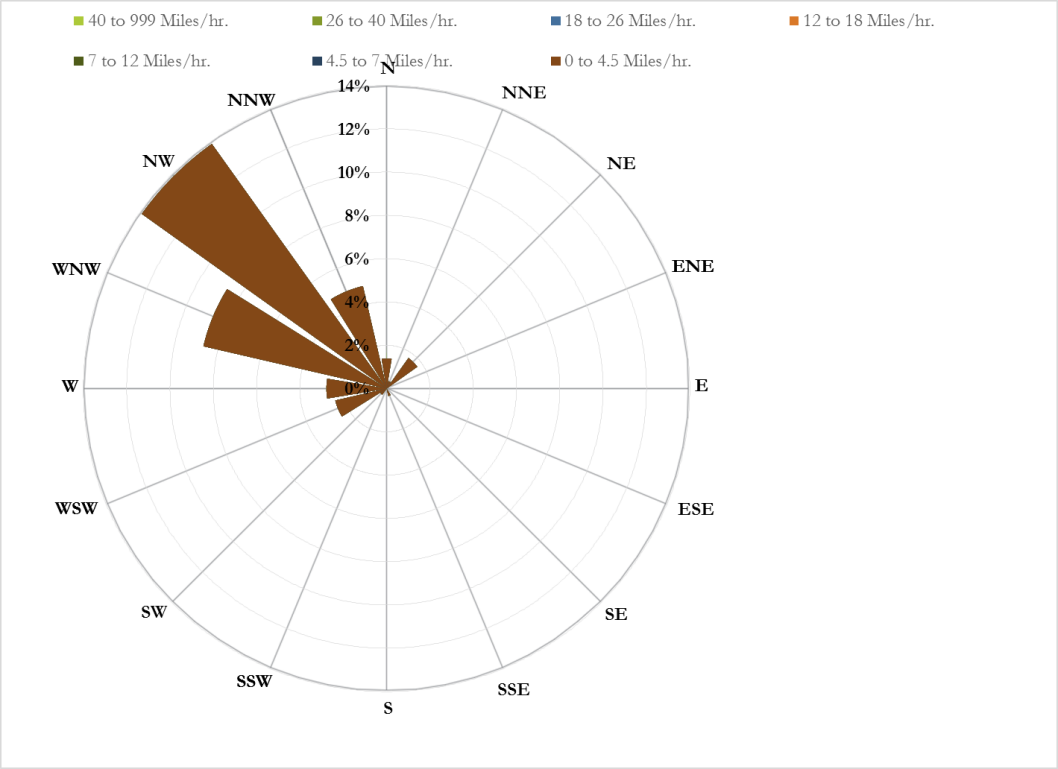

Figure 3-96.
LP-PO PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.2.3.11 LP-PR (Los Peñasquitos – Preserve)

LP-PR (Los Peñasquitos – Preserve):

LP-PR is a site monitored during the Phase II Watershed Special Study and contains an Optical monitor only.

Optical monitor (Continuous Concentration) Results:

- 864 measurements were obtained during the reporting period.
- 853 measurements were determined to be valid (99%).
- Mean values for PM_{10} were 0.0028 mg/m^3.
- Mean standard deviation is $\pm$0.0008 mg/m^3

Day 1 (Saturday, 1/23/16 – Sunday, 1/24/16)

Day 4 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind direction were observed primarily from the W, WSW, NE and NNE. Optical readings were distributed consistently with a slight rise observed after sunrise.

Day 2 (Monday, 1/25/16 Tuesday, 1/26/16)

Day 5 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the W. Optical readings were distributed consistently with a slight rise observed around midnight.

Day 3 (Wednesday, 1/27/16 – Thursday, 1/28/16)

Day 6 – LP-PO Optical readings were observed at a lower mean value than the overall mean for sampling event Dry Weather 6. Wind directions were observed primarily from the WNW, NW and NNW. Optical readings were distributed consistently with a slight rise observed around midnight.

Graphical representations of this data are presented in Figures 3-97 through 3-99.

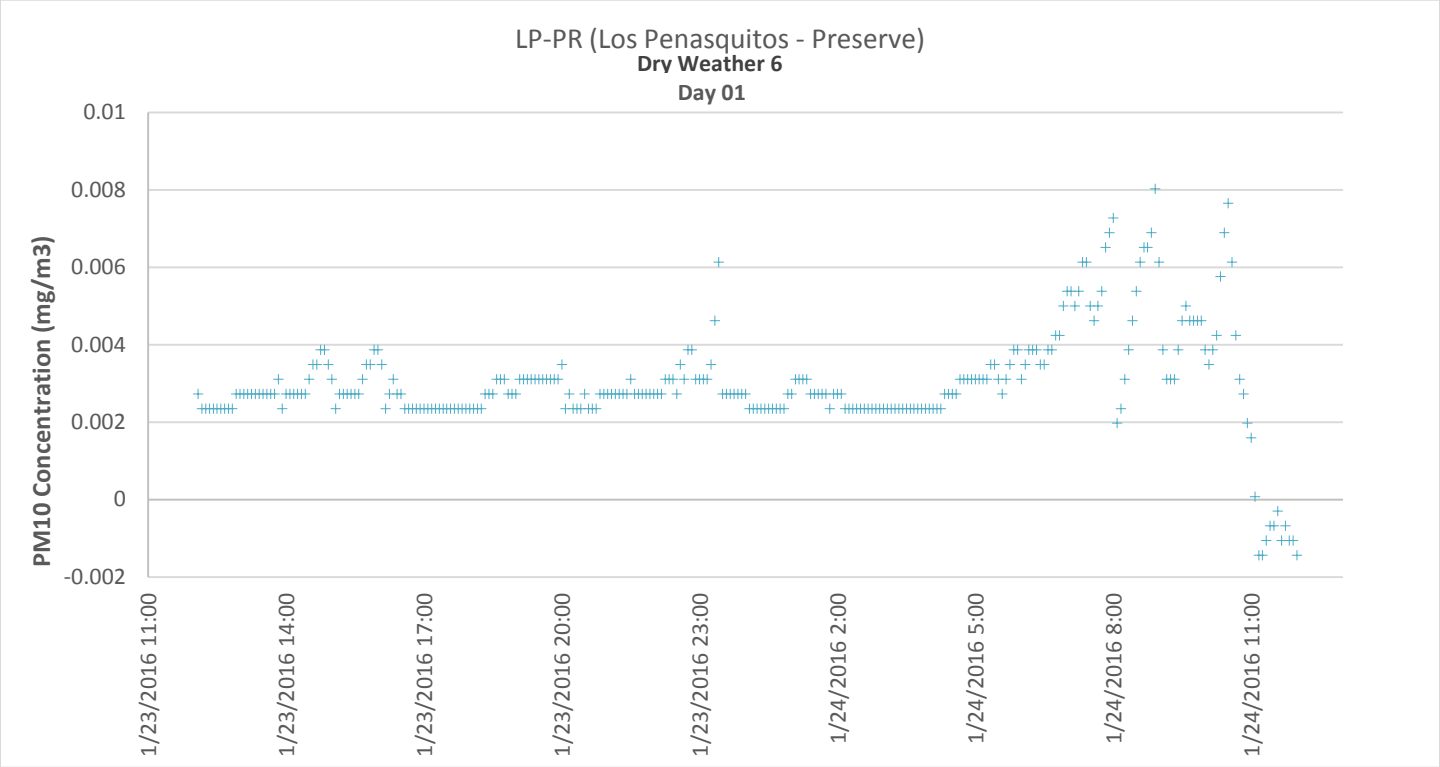

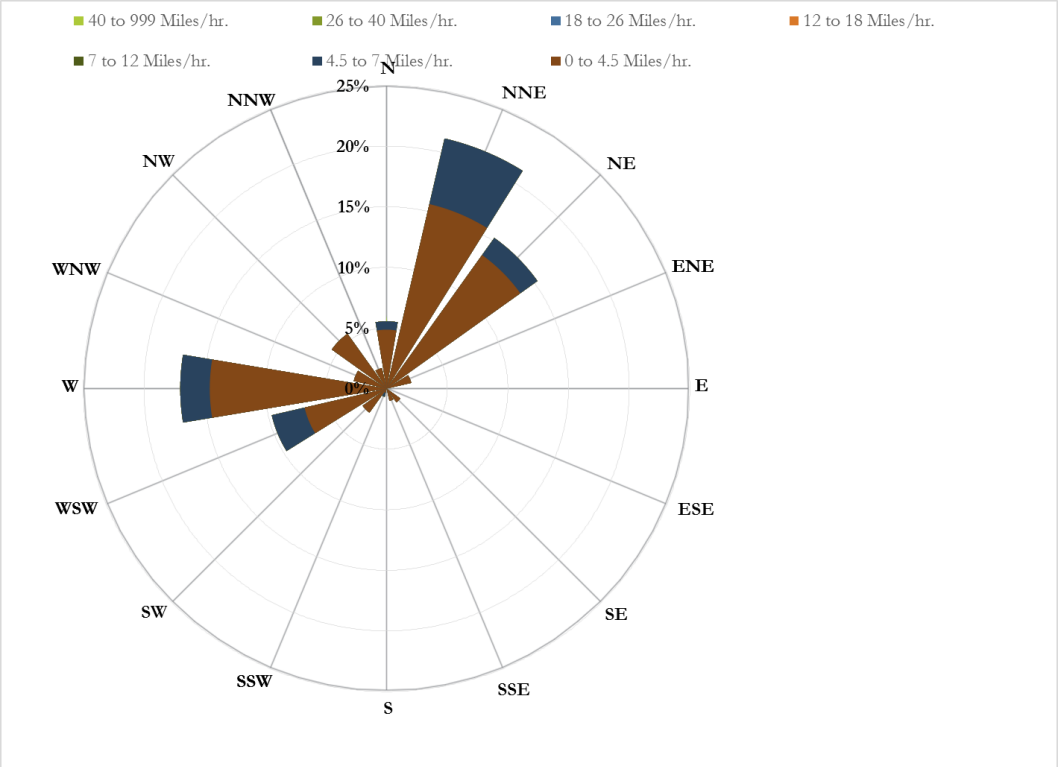

Figure 3-97.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 1

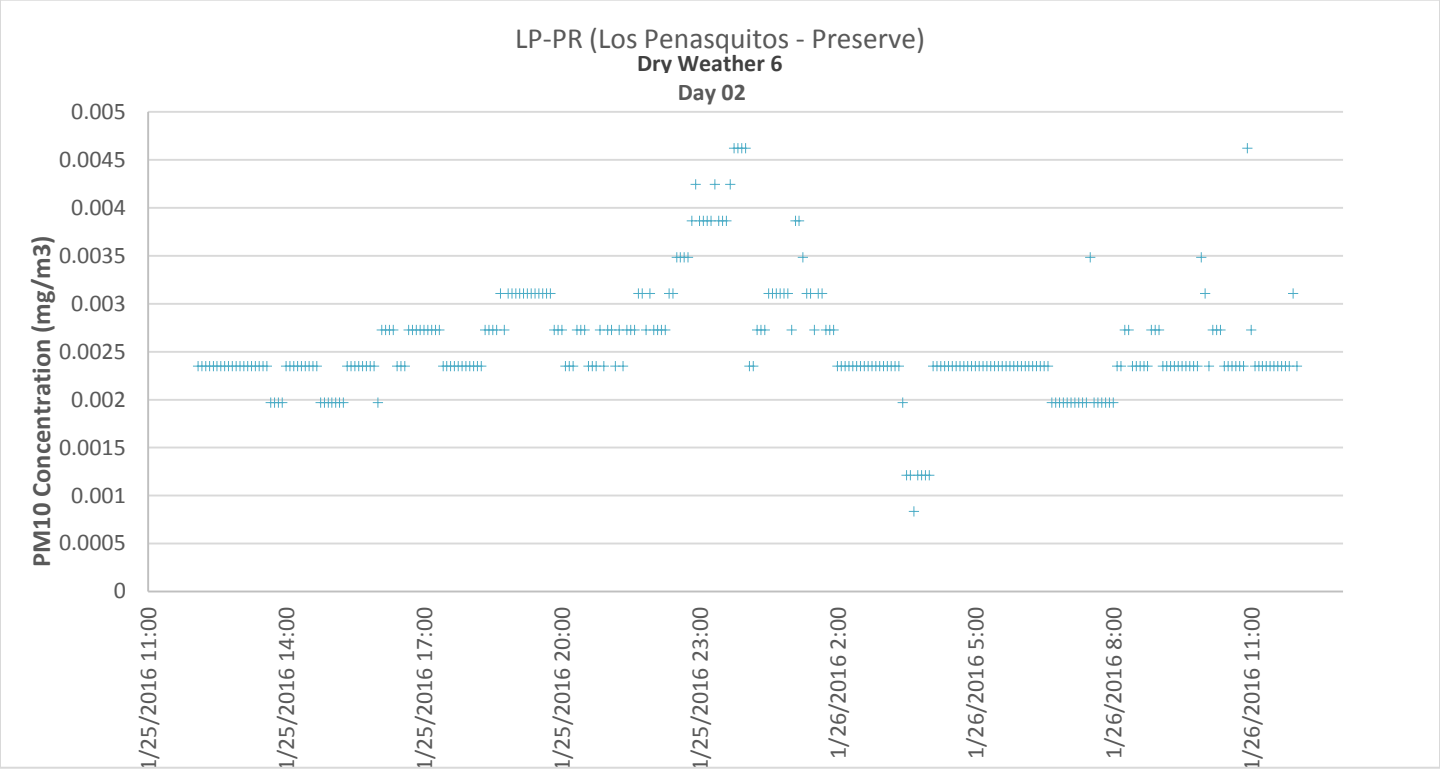

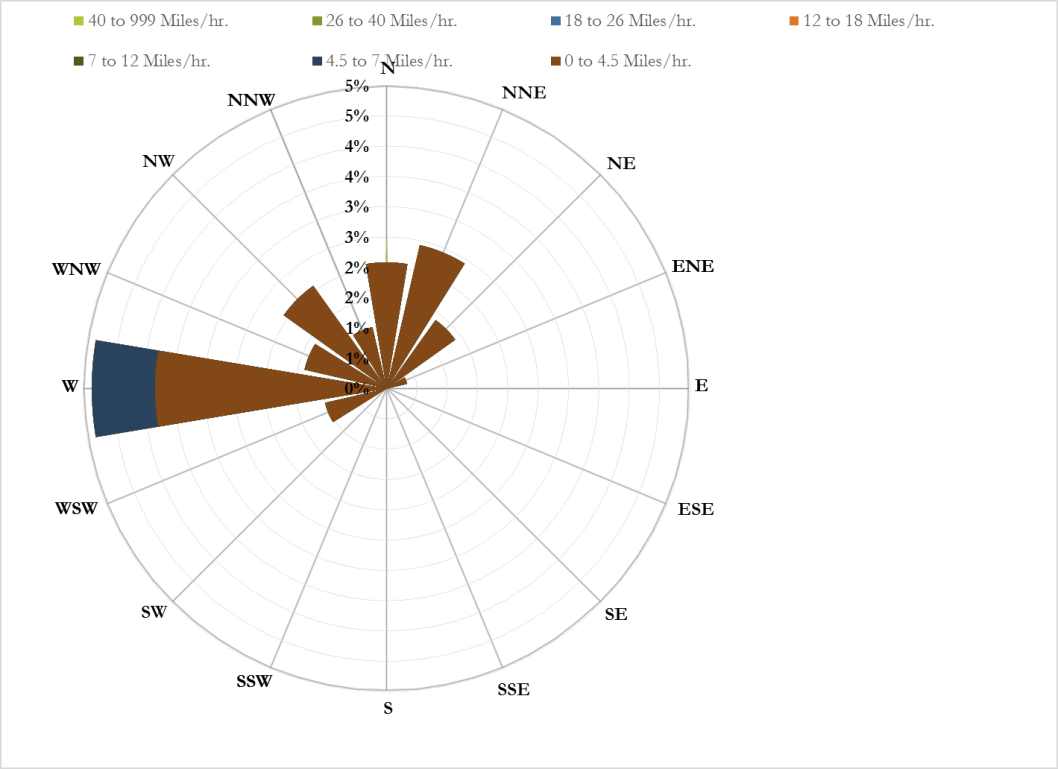

Figure 3-98.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 2

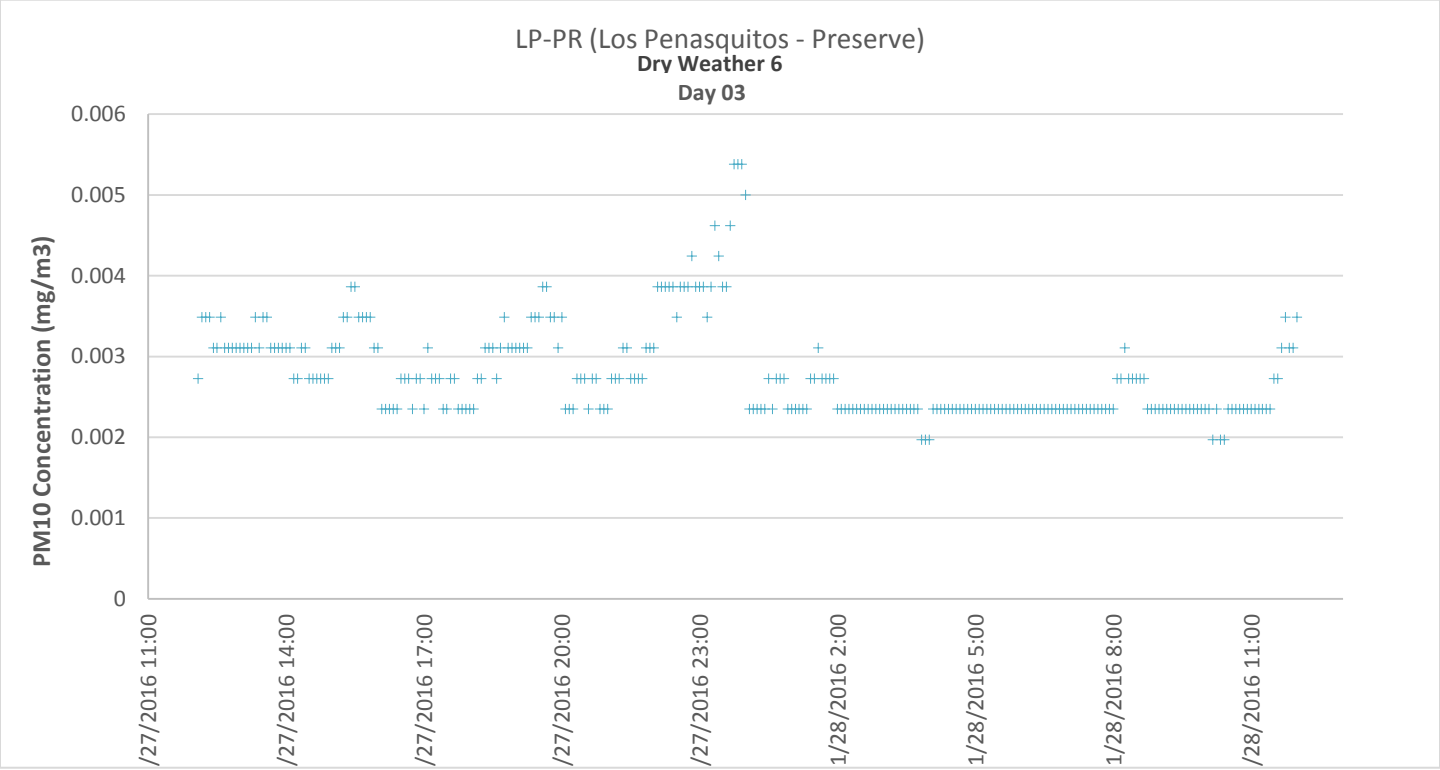

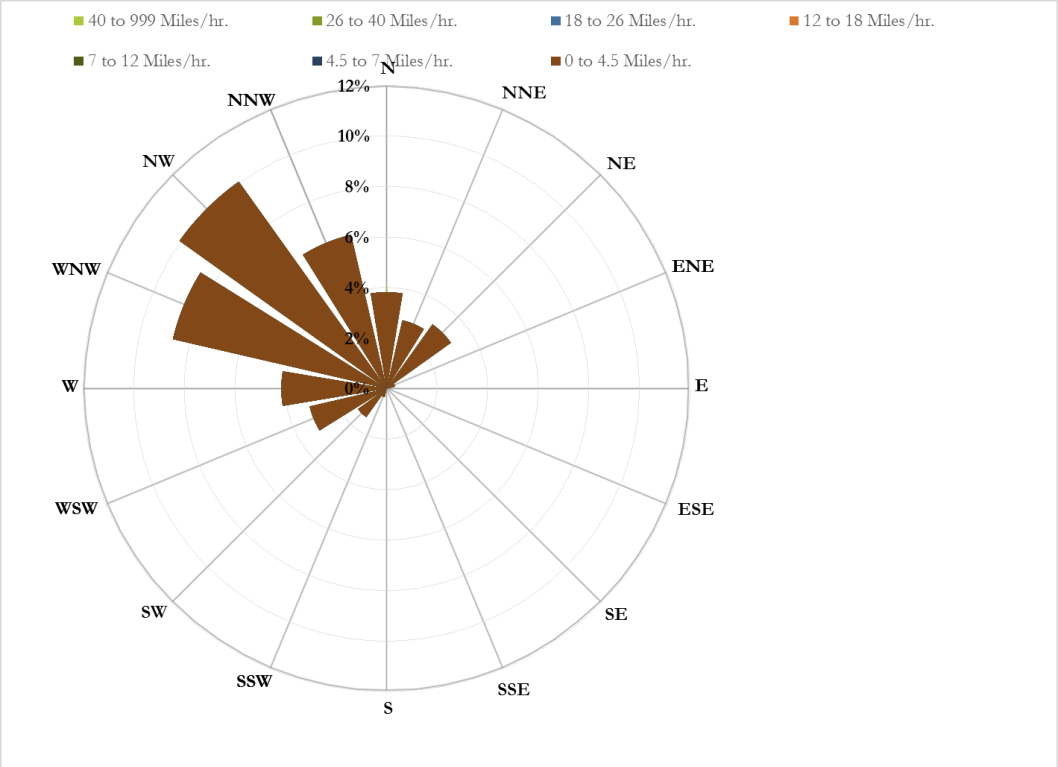

Figure 3-99.
LP-PR PM_{10} Concentrations and Wind Rose, Dry Weather 6 – Day 3

3.3 SAMPLING EQUIPMENT PROBLEMS AND MITIGATION

This section presents problems occurred during the monitoring effort and mitigation efforts performed to prevent future problems. To preserve the integrity of the data, the proper application, handling, calibration and use of the sampling equipment was adhered to at all times. This section describes the typical errors encountered and what solutions, as applicable, mitigated the errors.

Optical monitor

- Values were negative.

Mitigation Solution: The Optical monitor was zero-calibrated prior to every 24-hour monitoring period to curb zero drift. After zero-calibration, a short test was run to verify validity readings. If readings were still negative, additional zero-calibration and/or cleaning was performed. An additional auto-zero module was utilized to zero-calibrate the meter every four hours throughout the monitoring periods.

- A flow error was found.

Mitigation Solution: Before sampling, the filter fitting with the impactor plate and the tubing to the inlet port was checked to ensure that it was properly seated and sealed, and would not pinch or cause an obstruction of flow upon closure of the security case. Additionally, the battery leads to the meter from the power source were confirmed to be in good condition and making proper contact without slip in order to maintain the meter and pump operation.

FRM Sampler:

- Filter was mishandled or poorly protected.

Mitigation Solution: Proper gloves were worn to ensure that residual contaminants did not interact with the filter. All filters were handled as minimally as possible: either by sliding the filter from its pouch into the filter disk without any direct handling by the user, or by using decontaminated forceps. After sampling, filters were placed immediately in their original labeled pouch by the same methods and secured in a Ziplock™ bag surrounded by bubble wrap for transportation to the laboratory.

- Maximum Load Exceeded

Mitigation Solution: Prepare filter setup according to manufacturer's specifications. Make sure equipment is operable and the pump is functioning properly with test prior to execution.

- Program failure

Mitigation Solution: Double check programming and make sure battery power is sufficient for test run.

Table 3-6 describes the errors identified each monitoring location and the related weather events for this reporting period.

Table 3-6.
Sampling Equipment Errors

Site Name	Sampling Event	Day	Description
CC-DW (Carroll Canyon–Downwind)	Dry Weather 4*	Day 1	Maximum Loading Error – FRM Equipment Failure.
CC-DM (Reference–Del Mar)	Dry Weather 4*	Day 2	FRM program did not launch
CC-UP (Carroll Canyon–Upwind)	Dry Weather 4*	Day 3	Maximum Loading Error – FRM Equipment Failure.
CC-UP (Carroll Canyon–Downwind)	Dry Weather 4*	Day 3	Maximum Loading Error – FRM Equipment Failure.
CC-DM (Reference–Del Mar)	Dry Weather 4*	Day 3	Flow Error
CC-SF (Carroll Canyon – Camino Santa Fe)	Dry Weather 5	Day 1	>25% Values Negative
CC-SF (Carroll Canyon – Camino Santa Fe)	Dry Weather 5	Day 3	>25% Values Negative

*Dry Weather 4, Day 1 through 3 data was discarded and is not presented in this report due to multiple FRM equipment failures. This equipment was replaced for days 4 through 6.

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4.0 CONCLUSIONS

No Significant Effects. Based on the results of aerial deposition monitoring, the contribution of airborne particles to the sediment loads in the WMA subwatersheds is not significant. Optical values were generally low and negligible with marginal increases around anthropogenic disturbances, particularly in the Carroll Canyon subwatershed.

FRM and Optical Monitoring Results. For Optical monitor measurements only, higher values were observed at monitoring locations CC-DM, CC-DW, CC-ER, CC-MP, and CC-UP. All of these locations with the exception of CC-DM are located in Carroll Canyon. The highest mean Optical concentrations were observed at CC-DW and CC-DM, with mean values for total optical at 0.0090 and 0.0082 mg/m^3 respectively. High Optical monitor concentrations from the CC-DM (Del Mar) station could be the result of its proximity to the ocean, with the potential effect of higher relative humidity with low wind speeds (Zogou et al., 2012).

FRM values, when applicable, do not directly correlate with the optical values as, by example, CC-DW had the highest mean Optical value and the lowest mean FRM value through the entire study. In general, FRM mean values were similar and at very low detections based off individual monitoring locations.

Additional evaluations show that sampling event Dry Weather 5, conducted 1/18/2016 through 1/21/2016, had the highest Optical monitor values of all three sampling events. Continuing evaluation between the sampling methods, FRM values did not directly correlate with these readings as FRM values were observed at the lowest values for all three sampling events during this sampling event.

During sampling event Dry Weather 4, day 6, at CC-UP (Carroll Canyon – Upwind), FRM sampler results indicated a concentration of an order of magnitude higher than all other sampling period results at 0.2163 mg/m^3. Optical monitor measurements did not reflect any irregular concentration spikes.

FRM and Optical Monitor Comparisons. FRM samplers produce an air pollutant concentration in parts per million by volume after measuring total flow compensated by barometric pressure and temperature. Optical monitors produce instantaneous direct-read concentrations that can be averaged over time to produce 24-hour mean concentrations.

Gravimetric results from the FRM sampler were higher than the average Optical monitor concentrations, with RPDs ranging from 71.69 to 135.30 percent. On an event by event and site by site basis, RPDs were seem to be fairly consistent with each other. For all sampling events, the mean RPD was 108.44%. Sampling event Dry Weather 5 showed significantly lower FRM values than Dry Weather 4 and 6, yet had the highest standard deviation of all three sampling events.

Optical Direct-Read Concentration Trends. Typical Optical monitor data trends showed increased concentrations during hours with potentially high relative humidity (17:00 to 09:00), and with peaks consistent with increased vehicular traffic, especially during the morning commute

(06:00 to 10:00). More variability in the data trends was observed during events with increased average wind speeds relative to the typical base range of 0.0 – 4.5 miles per hour.

5.0 REFERENCES

40 Code of Federal Regulations (CFR) Part 50, *National Ambient Air Quality Standards for Particulate Matter.*

Amec Foster Wheeler. 2015. *Los Peñasquitos Watershed Management Area Sediment Load Special Study Final Monitoring Plan. June, 2015.*

Chung et.al. 2001. "Comparison of Real-Time Instruments Used To Monitor Airborne Particulate Matter*." Journal of the Air & Waste Management Association* 51:1, 109-120*.*

United Sates Environmental Protection Agency (USEPA). 2008. *Quality Assurance Handbook for Air Pollution Measurement Systems,* Volume II, Ambient Air Quality Monitoring Program. EPA-454/B-08-003.

Wallace, Lance et al. 2011. *Validation of Continuous Particle Monitors for Personal, Indoor and Outdoor Exposures.*

Zogou, O. et al. 2012. University of Thessaly. "Analysis of Data from Ambient PM_{10} Concentration Monitoring in Volos in the Period 2005–2010." *American Journal of Environmental Engineering 2012*, 2(4): 97-108.

Attachment H – CEDEN Certification Statements

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The files listed in Table H-1 were uploaded to CEDEN. Confirmation emails are included on the following pages.

Table H-1
Los Peñasquitos WMA CEDEN Files and Upload Dates

Monitoring Program	Copermittee	Results Type	File Name(s)	CEDEN Project Name Field Name "ProjectCode"	CEDEN Upload Date	Confirmation Email in Folder?
Wet Weather MS4 Outfall	Cities of Del Mar and San Diego	Chemistry Results	LPC_MS4_WW_2015_2016-CHEM2.xls	MS4_WW_OFM	1/27/2017	Yes
	City of Poway	Chemistry Results	LPC_MS4_WW_2015_2016-CHEM1.xls	MS4_WW_OFM	1/27/2017	Yes
	Cities of Del Mar, Poway, and San Diego	Bacteria Results	SanDieguito_LosPen_WW_2015-2016-BACT.xls	MS4_WW_OFM	1/27/2017	Yes
	Cities of Del Mar, Poway, and San Diego	Field Results	LPC_MS4_WW_2015_2016-Field.xls	MS4_WW_OFM	1/27/2017	Yes
Dry Weather MS4 Outfall	City of Del Mar	Chemistry Results	LP_DelMar_CEDEN_Chem_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	LP_DelMar_CEDEN_Field_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
	City of Poway	Chemistry Results	LP_Poway_CEDEN_Chem_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	LP_Poway_CEDEN_Field_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
	City of San Diego	Chemistry Results	Los Pen CEDEN CSD Chem DW Template.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	Los Pen CEDEN CSD Field DW Template.xls	MS4_DW_OFSM	1/25/2017	Yes
Bacteria TMDL	Cities of Del Mar, Poway, and San Diego	Chemistry Results	CEDEN EDD_2015-16_ChemResults_LosPen.xlsx	LosPen_BacteriaTMDL	1/9/2017	Yes
		Field Results	CEDEN EDD_2015-16_FieldResults_LosPen.xlsx	LosPen_BacteriaTMDL	1/9/2017	Yes
Sediment TMDL	Cities of Del Mar, Poway, and San Diego	Chemistry Results	LP_TMDLcompliance_2015-2016_Chem.xls	LP_Sediment_TMDL	1/26/2017	Yes
Sediment Special Study	Cities of Del Mar, Poway, and San Diego	Chemistry Results	LP_TMDLspecialstudy_2015-2016_Chem.xls	LP_Special_Study	1/26/2017	Yes

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Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Friday, January 27, 2017 3:38 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file LPC_MS4_WW_2015_2016-CHEM2.xls.

You have successfully submitted file LPC_MS4_WW_2015_2016-CHEM2.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema

Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Friday, January 27, 2017 3:37 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file LPC_MS4_WW_2015_2016-CHEM1.xls.

You have successfully submitted file LPC_MS4_WW_2015_2016-CHEM1.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema Amec Foster Wheeler
8585147756

Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Friday, January 27, 2017 3:42 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file SanDieguito_LosPen_WW_2015-2016-BACT.xls.

You have successfully submitted file SanDieguito_LosPen_WW_2015-2016-BACT.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema Amec Foster Wheeler
8585147756

Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Friday, January 27, 2017 3:39 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file LPC_MS4_WW_2015_2016-Field.xls.

You have successfully submitted file LPC_MS4_WW_2015_2016-Field.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema Amec Foster Wheeler
8585147756

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 12:22 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file LP_DelMar_CEDEN_Chem_Final.xls.

You have successfully submitted file LP_DelMar_CEDEN_Chem_Final.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 12:23 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file LP_DelMar_CEDEN_Field_Final.xls.

You have successfully submitted file LP_DelMar_CEDEN_Field_Final.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 12:52 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file LP_Poway_CEDEN_Chem_Final.xls.

You have successfully submitted file LP_Poway_CEDEN_Chem_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 12:57 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file LP_Poway_CEDEN_Field_Final.xls.

You have successfully submitted file LP_Poway_CEDEN_Field_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 12:11 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file Los Pen CEDEN CSD Chem DW Template.xls.

You have successfully submitted file Los Pen CEDEN CSD Chem DW Template.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 12:14 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file Los Pen CEDEN CSD Field DW Template.xls.

You have successfully submitted file Los Pen CEDEN CSD Field DW Template.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

Johnson, Claire (EI West US)

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Monday, January 09, 2017 2:37 PM
To: Ebentier, Darcy
Subject: Submittal confirmation for file CEDEN EDD_2015-16_ChemResults_LosPen.xlsx.

You have successfully submitted file CEDEN EDD_2015-16_ChemResults_LosPen.xlsx to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Darcy Ebentier darcy.ebentier@amecfw.com

Johnson, Claire (EI West US)

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Monday, January 09, 2017 2:38 PM
To: Ebentier, Darcy
Subject: Submittal confirmation for file CEDEN EDD_2015-16_FieldResults_LosPen.xlsx.

You have successfully submitted file CEDEN EDD_2015-16_FieldResults_LosPen.xlsx to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Darcy Ebentier darcy.ebentier@amecfw.com

Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Thursday, January 26, 2017 2:41 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file LP_TMDLcompliance_2015-2016_Chem.xls.

You have successfully submitted file LP_TMDLcompliance_2015-2016_Chem.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema Amec Foster Wheeler
8585147756

Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Thursday, January 26, 2017 2:42 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file LP_TMDLspecialStudy_2015-2016_Chem.xls.

You have successfully submitted file LP_TMDLspecialStudy_2015-2016_Chem.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema Amec Foster Wheeler
8585147756

Appendix D: Jurisdictional Runoff Management Program (JRMP) Annual Report Forms, Fiscal Analysis, Certifications, Updates to JRMPs, WQIP, and BMP Design Manuals (if applicable), and Jurisdictional Strategies

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Jurisdictional strategies are required as part of the Water Quality Improvement Plan (WQIP), under Provision B of the San Diego Regional Water Quality Control Board (Regional Board) National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region, Order Number R9-2013-0001 (MS4 Permit). The Responsible Agencies (RAs) identified water quality improvement strategies outlined in the WQIP and implemented those strategies in fiscal year (FY) 16, the first year of WQIP implementation, to address the highest priority water quality conditions (HPWQCs). The strategies were selected on the basis of their ability to effectively and efficiently eliminate non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the maximum extent practicable, and achieve the interim and final numeric goals identified in the Los Peñasquitos Watershed Management Area (WMA) WQIP.

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D.1 City of Del Mar

D.1.1 Annual Report Certifications

The City of Del Mar's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.1.2 Annual Report Form

Del Mar's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

City of Del Mar

STATEMENT OF CERTIFICATION

Los Peñasquitos Water Quality Improvement Plan 2015-2016 Annual Report

And

Legal Authority Establishment and Enforcement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (40 C.F.R. 122.22(d)).

Further, I certify under penalty of law that the City of Del Mar has taken necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements contained in section E.1 of the San Diego Regional Water Quality Control Board Order No. R9-2013-0001 as amended by Order No. R9-2015-0100 (Municipal Permit). The Del Mar Municipal Code (DMMC), including the following provisions, provides the City with full legal authority as required by the Municipal Permit as well as authorizes judicial and administrative enforcement procedures to mandate compliance:

1. Stormwater Management and Discharge Control, DMMC Section 11.30
2. Clean Water Storm Drain Program – General, DMMC Section 11.32

Scott Huth
City Manager

1/13/2017
Date

1050 Camino Del Mar, Del Mar, California 92014-2698. Telephone: (858) 755-9313 Fax: (858) 755-2794
www.delmar.ca.us

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
CITY OF DEL MAR – ANNUAL REPORT FORM
FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name: **City of Del Mar – Los Peñasquitos**

Copermittee Primary Contact Name: **Mikhail Ogawa**

Copermittee Primary Contact Information:
Address: **1050 Camino Del Mar**
City: **Del Mar** County: **San Diego** State: **CA** Zip: **92014**
Telephone: **(858) 755-9313** Fax: **(858) 755-2794** Email: **Mikhail@mogawaeng.com**

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES NO	☒ ☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES[1] NO	☒ ☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES NO	☒ ☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES[2] NO	☒ ☐

Number of non-storm water discharges reported by the public	3
Number of non-storm water discharges detected by Copermittee staff or contractors	2
Number of non-storm water discharges investigated by the Copermittee	5
Number of sources of non-storm water discharges identified	5
Number of non-storm water discharges eliminated	5
Number of sources of illicit discharges or connections identified	2
Number of illicit discharges or connections eliminated	2
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES NO	☒ ☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES NO	☒ ☐

Number of proposed development projects in review	11
Number of Priority Development Projects in review	0
Number of Priority Development Projects approved	0
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	0

Number of completed Priority Development Projects in inventory	1
Number of high priority Priority Development Project structural BMP inspections	11
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	10
Number of active construction sites in inventory	6
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	4
Number of construction site inspections	72
Number of construction site violations	4
Number of enforcement actions issued	4
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	1	1	0	12
Number of existing development inspections	11	11	0	132
Number of follow-up inspections	0	0	0	0
Number of violations	0	0	0	4
Number of enforcement actions issued	0	0	0	4
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO[2]	☐

X. CERTIFICATION

I ☒ Principal Executive Officer ☐ Ranking Elected Official ☐ Duly Authorized Representative certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Date 1/9/2017
Scott Huth	City Manager
Print Name	Title
858-755-9313	Citymanager@delmar.ca.us
Telephone Number	Email

[1] The City of Del Mar was required to submit an updated JRMP with the WQIP and post it to the Regional Clearinghouse portal.
[2] The timeframe used for the Illicit Discharge Detection and Elimination component of this JRMP Annual Report matches the timeframe used in the WQIP Annual Report (10/1/15-9/30/16).

1. FISCAL ANALYSIS

1.1 JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM IMPLEMENTATION

This section of the Jurisdictional Runoff Management Program (JRMP) Annual Report provides a fiscal analysis of the City's stormwater management programs. On May 8, 2013 the RWQCB adopted a revised Municipal Permit, Order No. R9-2013-0001, however, during this transitional period the City of Del Mar continued to develop its fiscal analysis according to Section G of the previous Municipal Permit, Order No. R9-2007-0001.

On January 29, 2009, the San Diego Municipal Copermittees adopted the "Standardized Fiscal Method and Format" which provides a model for the City of Del Mar and other Copermittees to perform the review and annual reporting as required in Order R9-2007-0001, Section G. This methodology and reporting format proved to be an effective model for reporting on City expenditures, and for consistency, the City of Del Mar will continue to use the format for this reporting period FY 2015-2016. The City, however, recognizes the additional elements required to be included in the fiscal analysis as specified in Order No. R9-2013-001 Section E.8, and has included those components in the year's report.

1.1.1 Clean Water Program Budget

The City of Del Mar's Clean Water Program is a multi-departmental program, funded as an enterprise fund in the City's Annual Budget. Enterprise funds account for operations that are financed and operated in a manner similar to private businesses, with the costs of providing the services recovered largely through user fees. Fund 55 ("The Clean Water Fund"), is one of three (3) enterprise funds in the City's budget, and was added to the City's budget in Fiscal Year 2004 to account for the mandated costs of the City's responsibilities in order to comply with the Municipal Permit. The budget for the City of Del Mar has the appropriate funds allocated to meet the requirements of Permit 2013-0001, including any development, implementation, and enforcement activities required.

The City of Del Mar Operating and Capital Improvement Budgets for Fiscal Years 2015-2016 and 2016-2017 were presented to the Del Mar City Council on June 1, 2015. The budget was formally adopted during the same meeting.

For the Fiscal Year 2015-2016 reporting period, the final amended budget for Fund 55 totaled $550,670. **Table 1-1** below provides a breakdown of program budget by major budget category for Fiscal Year 2015-2016.

Table 1-1: Budget Summary – Clean Water Fund 55

Fund Account		Adopted Budget Fiscal Year 2015-2016	Description/Comments
55-5530	Clean Water Planning	45,700	Active enforcement of clean water regulations including project plan review, permitting, construction monitoring and plan review of BMPs.
55-5536	Clean Water Code Enforcement	24,830	Active in-field enforcement of clean water regulations, including response to resident complaints.
55-5539	Clean Water Program Management	268,000	All clean water program management and reporting activities, fees to agencies, and interaction with regional and watershed Copermittee groups.
55-5840	Public Works (General)	212,140	Provides for administration and general support for all clean water programs for property and facilities, including supervision of maintenance staff.
Total Clean Water Program Budget – Fund 55		**$550,670**	–

1.1.2 Fiscal Analysis Methods

The City of Del Mar used the format and guidelines included in the Fiscal Analysis Method for reporting purposes; however, given the City's financial accounting methods, a few modifications were necessary. These adjustments are described below.

1.1.3 Fiscal Analysis Results

The City's Fiscal Year 2015-2016 jurisdictional, watershed, and regional projected expenditures for the implementation of the Municipal Permit requirements are summarized in **Table 1-2** below.

Table 1-2: Fiscal Year 2015-2016 Expenditure Summary by Program Component

Component Description	Fiscal Year 2015-2016 Projected Expenditures
Jurisdictional Component	
Administration	60,883
Development Planning	42,690
Construction	29,376
Municipal (Including Non-Emergency Fire Flows)	195,510
Industrial and Commercial	10,700
Residential, Education, and Public Participation	51,278
IDDE	37,066
Jurisdictional Total	**$427,503**
Watershed Component	
San Dieguito Watershed	47,975
Los Peñasquitos Watershed	37,275
Watershed Total	**$85,250**
Regional Component	
Total Copermittee Cost Share for Del Mar	37,918
Total Costs	**$550,670**

1.1.4 JRMP Expenditures

The City of Del Mar used the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, due to the implementation overlap of some of the City's municipal permit components; it is difficult to separate out individual component costs. As a result, the expenditures for residential, education, and public participation are reported as one expenditure category. Additionally, since the City does not explicitly track expenditures by permit component for its budgeting purposes, in many cases estimated percentages were utilized to allocate expenditures into the appropriate municipal permit component categories.

A total of $550,670 was projected to be expended in Fiscal Year 2015-2016 for the implementation of JRMP activities. An overview of the expenditures reflected in JRMP activity component is described below.

Administration
Activities identified in this component represent labor and non-labor expenditures for materials, supplies, equipment, or tools that are not otherwise incorporated into other expenditure categories, general administrative functions (e.g., program planning, budgeting, staff supervision), and program assessment and reporting.

Development Planning
Activities identified in this component represent labor and non-labor expenditures related to issuance or oversight of permits or of plans (e.g., permit counter support, plan checks, permit or application processing), project planning and engineering (e.g. project design specifications, capital improvement projects).

Construction
Activities identified in this component represent labor and non-labor expenditures related to construction site inspections and enforcement.

Municipal
Activities identified in this component represent labor and non-labor expenditures related to maintenance inspections of streets, roads, catch basins and inlets, open channels, and the MS4, municipal facility inspections, street and parking lot sweeping, catch basins and inlets, open channels, and MS4 cleaning, and municipal BMP implementation. Since the City of Del Mar conducts all fire-fighting training outside of the City, and no non-emergency fire-fighting flows occurred during the reporting period, the City does not currently track expenditures relating to non-emergency fire-fighting flows. Any costs associated with preparing for these flows are included in the municipal component.

Industrial and Commercial
Activities identified in this component represent labor and non-labor expenditures related to evaluation and enforcement of program requirements at industrial and commercial sites or sources (e.g. routine inspections and complaint investigations).

Residential, Education, and Public Participation
Activities identified in these components represent labor and non-labor expenditures related to investigation and enforcement of residential areas or activities, staffing outreach events, development and production of outreach materials, and any expenditures associated with waste collection and recycling (e.g. household hazardous waste, used oil).

Illicit Discharge Detection and Elimination
Activities identified in this component represent labor and non-labor expenditures related to the identification and elimination of illicit discharges or connections, enforcing the City of Del Mar's storm water ordinance, and any expenditures related to monitoring programs (e.g. dry weather monitoring, coastal storm drain monitoring, special investigations, field or sampling equipment, materials and supplies).

1.1.5 Watershed Expenditures

The City of Del Mar used the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City of Del Mar expenditures and do not account for any expenditure disbursed by other Copermittees included in the watershed(s).

A total of $85,250 was projected to be expended in Fiscal Year 2015-2016 for the implementation of planned strategies for the San Dieguito and Los Peñasquitos Watersheds.

1.1.6 Regional Expenditures

The City of Del Mar utilized the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City of Del Mar expenditures and do not account for any expenditure disbursed by other Copermittees in the region. A total of $37,918 was projected to be expended in Fiscal Year 2015-2016 for the implementation of regional activities and coordination.

1.1.7 Funding Sources

To ensure adequate funding for the Clean Water Program, the City uses a combination of user fees and general fund monies.

The City of Del Mar City Council created and adopted a user fee, called the Clean Water Fund Service Charge to offset the costs of the program. Initially, the rate was adopted to collect $100,000 of the estimated $300,000 for the program, with an escalator to achieve full cost recovery by 2009. Mid-way through the five-year schedule, on July 24, 2006, the California Supreme Court published a decision in the case of Bighorn-Desert View Water Agency v. Verjil (2006) 39 Cal. 4th 205, which held that consumption-based rates such as water and sewer rates are subject to the notice and hearing requirements of California Constitution, Article XIIID, Section 6 (commonly known as "Proposition 218"). Therefore, on January 22, 2007, and February 5, 2007, the Del Mar City Council held public hearings to receive written protests to comply with Proposition 218. No majority protest was received, and the Council ratified the previously approved five-year rate schedule, including the City's Clean Water Service Charge. However, the adopted rate increases did not account for the actual increases in the costs associated program requirements.

As an additional measure to obtain voter approval of the five-year rate schedule for the City's Clean Water Service Charge, the Council directed staff on April 2, 2007, to start the process to perform a mail ballot election procedure. During the process of researching the mail ballot election procedures and the current rates, it became apparent that the process would immediately need to be repeated to set the Fiscal Year 2010 rates and charges, since the current five-year rate schedule was due to expire in June of 2009. Due to the additional costs incurred in complying with the new requirements of the 2007 Permit, increases to the Clean Water Service Charge were proposed, including an annual rate escalator. All monies appropriated as part of the Clean Water Service Charge are directly identified for the Clean Water Program, and pursuant to law, may not be used by the City for any other purpose.

During the Fiscal Year 2009 reporting period, in compliance with Proposition 218, both the majority protest hearing and mail ballot process were conducted for the proposed increases. Both the ratification of the existing rate structure (required by Proposition 218), and the new rates, including the rate escalator, passed by more than 62%. As a result of the passage of the Clean Water Service Charge, the City will continue to have a secure funding source for the Clean Water Program, outside of general fund monies.

Based on current water allocations for the City of Del Mar, the projected revenues from the Clean Water Service Fee will be $482,700 (page 88 of city budget) for Fiscal Year 2015-2016.

D.1.3 City of Del Mar Strategies

City of Del Mar's strategies are detailed in Table D-1.

Table D-1
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
JRMP (E.2 – E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
DM-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	Refer to JRMP Section 5. As commercial/residential patrol inspections are conducted (see JRMP Section 7 – Existing Development), staff will both inspect and verify 100% of the structural BMPs within the City. These inspections occur a minimum of six times per year.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-2	Train staff on LID regulatory changes during annual stormwater training	Formal staff training implemented annually during stormwater training for staff	FY16	Continuous – Ongoing	Y	N	Y	-
DM-3	Maintain existing floor area ratio requirements to limit impervious surface areas.	Incorporate into planning phase of Land Development program implementation	FY16	Continuous – Ongoing	Y	N	Y	-
DM-4	Continue retention of native vegetation - New or redevelopment projects within the Lagoon Overlay Zone shall include the retention of the maximum amount of native vegetation on the site. Revegetation or landscaping of sites within the Lagoon Overlay Zone shall include the use of non-invasive, drought tolerant species native to the San Diego coastal region and which are compatible with adjacent wetland habitat species.	Retention of native vegetation is a requirement in the City's Municipal Code	FY16	Continuous – Ongoing	Y	N	Y	-
Priority Development Projects (PDPs)								
DM-5	For PDPs, administer a program requiring implementation of on-site structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Refer to JRMP Section 5	FY16	Continuous – Ongoing	Y	N	Y	-
DM-6	Update BMP Design Manual procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP Section 5	FY15	Continuous – Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
E.4 Construction Management								
DM-7	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Refer to JRMP Section 6; Construction site inventory updated monthly and inspections of prioritized sites are conducted biweekly year round.	FY16	Continuous-Ongoing	Y	N	Y	-
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilitates and Areas								
DM-8	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP Section 7. . All industrial, commercial, residential, and municipal areas are inspected at least once every two months. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-8.1	Update minimum BMPs for commercial, industrial, and municipal existing development and enforce. Includes BMPs for water-using mobile businesses.	Refer to JRMP Appendix A and Attachment 1 of this WQIP for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC. .	FY16	Continuous-Ongoing; Updated as needed	Y	N	Y	-
DM-8.2	Provide BMP factsheet to water-using mobile businesses when business license is granted.	To ensure implementation of minimum BMPs for water -using mobile businesses, when a business license is granted for a water-using mobile business, a BMP factsheet is provided.	FY16	Continuous-Ongoing	Y	N	Y	
DM-8.3	Conduct property-based commercial, industrial, municipal, and residential inspections. Includes identification and addressing unmitigated incidents of power washing discharges.	Refer to JRMP Section 7. Inspections of commercial, industrial, municipal, and multifamily residential areas conducted a minimum of six times per year.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-8.4	Update municipal swimming pool discharge ordinance to ensure discharges from swimming pools meet permit requirements.	Municipal Code updated; Refer to JRMP Section 3	FY15	Continuous-Ongoing	Y	N	Y	-
DM-9	Implement pet waste program.	Implement education and prevention program. Pet waste bag dispensers and trash bins provided in public areas. Pet waste removal occurs as part of Dog Beach maintenance.	FY15	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-10	Promote and encourage implementation of designated BMPs at residential areas.	Implement education and prevention program. Utilize over-irrigation door hangers for education and prevention	FY15	Continuous-Ongoing	Y	N	Y	-
DM-11	Promote and encourage implementation of designated BMPs in commercial areas.	Implement education and prevention program through patrol-based program and contact with commercial area owners, tenants etc.	FY15	Continuous-Ongoing	Y	N	Y	-
MS4 Infrastructure								
DM- 12	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.).	Refer to JRMP Section 7. The MS4 inventory is inspected by Public Works staff at least once per year. Based on the findings of the inspections, the City performs required cleanings and proper disposal of collected material. Removal of the collected trash and debris prevents the materials from being pushed through the system and into the receiving waters from runoff	FY16	Continuous-Ongoing	Y	N	Y	-
DM-12.1	Perform catch basin cleaning	Inspect and clean catch basins annually	FY16	Continuous-Ongoing	Y	N	Y	Approximately 101.5 cubic yards of material is removed as a result of catch basin cleaning in the City of Del Mar
DM-12.2	Repair and replace MS4 components as needed to provide source control from MS4 infrastructure.	In order to limit inflow of pollutants and reduce pollutant loads, the City will take proactive measures to improve, repair, and replace MS4 components.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-13	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers and identify sewer leaks and areas for sewer pipe replacement.	Refer to JRMP Section 4.7 and the City's Sanitary Sewer Management Plan. The City conducts a variety of activities to effectively operate, maintain, repair and replace sewer mains, manholes, and pump stations.	FY15	Continuous - Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Roads, Streets, and Parking Lots								

DM-14	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP Section 7. The City implements the street sweeping schedule as follows:
		• Twice per month
		  ○ Primary roads
		  ○ Business district
		  ○ Collection and bike lanes
		  ○ Medians
		  ○ Parking facilities
		• Twice per year
		  ○ Residential areas
			FY16	Continuous-Ongoing	Y	N	Y	882.92 total miles of streets are swept in the City of Del Mar on an annual basis

DM-14.1	Enhanced street sweeping by use of regenerative air vacuum sweepers.	Enhanced sweeping implemented by using regenerative air vacuum sweepers. Residential areas are swept 2x per year; primary roads (Camino Del Mar) and business district are swept 2x per month. Collection and bike lanes and medians are swept 2x per month.	FY16	Continuous-Ongoing	Y	N	Y	882.92 total miles of streets are swept in the City of Del Mar on an annual basis
DM-14.2	Perform sweeping of medians on high-volume arterial roadways.	Primary roads and business district medians are swept 2x per month.	FY16	Continuous-Ongoing	Y	N	Y	882.92 total miles of streets are swept in the City of Del Mar on an annual basis
Pesticides, Herbicides, and Fertilizer BMP Program								
DM-15	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Refer to JRMP Section 7. The City of Del Mar is committed to the application of Integrated Pest Management (IPM) procedures and the use of updated BMPs to prevent or reduce the use of pesticides, fertilizers, and subsequently their discharge into the MS4.	FY16	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Retrofit and Rehabilitation in Areas of Existing Development								
DM-16	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	Refer to JRMP Section 8. The process for identifying retrofits will evaluate the following considerations: • Water Quality Improvement Plan (WQIP) Priority and Highest Priority Water Quality Conditions • Likely sources of pollutants generating pollutants related to WQIP conditions • Focus areas identified in WQIP • Vintage of geographic areas of the City – time period existing development was constructed • Public retrofit opportunities through Capital Improvement Program (CIP) projects • Areas of persistent discharges • Inspection/Illicit Discharge Detection and Elimination program findings • Identified areas of hydromodification or other stream impacts Using the considerations above, the City will identify areas where opportunities could provide water quality improvement benefits. Evaluation will include layering of the findings to determine where compounding factors overlap. The City will consider the locations where overlapping occurs and significance of the factors to prioritize areas suited for retrofits and rehabilitation projects. Once specific areas within the City have been identified and prioritized for retrofits and/or rehabilitation projects, the City will perform field verifications on an as-needed basis to substantiate the: • need for retrofits or rehabilitation projects • locations of potential retrofits or rehabilitation projects • appropriate type(s) of retrofit or rehabilitation project • appropriate responsible party to implement the retrofits or rehabilitation projects Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	Y	N	Y	Project was slated to be implemented in FY18. However, project was implemented in FY16 and is ongoing

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-17	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Refer to JRMP Section 8. The process for identifying retrofits will evaluate the following considerations: • Water Quality Improvement Plan (WQIP) Priority and Highest Priority Water Quality Conditions • Likely sources of pollutants generating pollutants related to WQIP conditions • Focus areas identified in WQIP • Vintage of geographic areas of the City – time period existing development was constructed • Public retrofit opportunities through Capital Improvement Program (CIP) projects • Areas of persistent discharges • Inspection/Illicit Discharge Detection and Elimination program findings • Identified areas of hydromodification or other stream impacts Using the considerations above, the City will identify areas where opportunities could provide water quality improvement benefits. Evaluation will include layering of the findings to determine where compounding factors overlap. The City will consider the locations where overlapping occurs and significance of the factors to prioritize areas suited for retrofits and rehabilitation projects. Once specific areas within the City have been identified and prioritized for retrofits and/or rehabilitation projects, the City will perform field verifications on an as-needed basis to substantiate the: • need for retrofits or rehabilitation projects • locations of potential retrofits or rehabilitation projects • appropriate type(s) of retrofit or rehabilitation project • appropriate responsible party to implement the retrofits or rehabilitation projects	FY18	Continuous-Ongoing	Y	N	Y	Project was slated to be implemented in FY18. However, project was implemented in FY16 and is ongoing

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
DM-18	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP Section 3.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
E.7 Public Education and Participation (B.3.b.(1)(a)(iii))								
DM-19	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP Section 10 and 11.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
DM-19.1	Continue outreach to property managers responsible for HOAs and Maintenance Districts.	As part of the patrol-based program for the residential existing development inventory, provide frequent education and contact to HOAs and maintenance districts targeting outdoor activities and trash areas.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
DM-19.2	Continue education and outreach to reduce over-irrigation through patrol program.	Once per year outside of business hours, patrol jurisdiction for incidents of over-irrigation and leave door-hangers identifying problem areas and appropriate corrective actions.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-19.3	Conduct trash cleanups through community-based organizations involving target audiences.	In partnership with I Love a Clean San Diego, host a site in Del Mar during two beach clean-ups per year.	FY16	Continuous-Ongoing	N	N	Y	1st clean up to take place 9/17/16
DM-19.4	Review City storm water website and identify and implement required updates to reflect WQIP and JRMP revisions	Update City Clean Water Program website with WQIP and JRMP information and highlight what the community can do for water quality.	FY16	Continuous-Ongoing	Y	N	Y	Currently being updated
DM-19.5	Collaborate with regional education and outreach efforts	Participate in Regional Think Blue campaign and collaborate with other regional efforts to provide consistent message or efficiency in training for targeted audiences.	FY16	Continuous-Ongoing	Y	N	Y	Participated in various outreach events

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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E.6 Enforcement Response Plan								
DM-20	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Refer to JRMP Section 9.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
Non-JRMP Strategies (Optional Strategies, B.3.b.(1)(b))								
Nonstructural Strategies								
DM-21	Promote and collaborate with water agencies and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	Collaborate with MWD and promote their SoCal Water$mart rebates and products such as weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal. Collaborate with San Diego County Water Authority (SDCWA) and promote their Water Smart irrigation system checkups and turf replacement incentives.	FY16	Continuous – Ongoing	Y	N	Y	Information regarding rebate opportunities are listed on the City's webpage
DM-22	Continue program to address and capture trash and debris.	Properly maintain trash guards	FY15	Continuous - Ongoing	Y	N	Y	-
DM-23	Continue participating in source reduction initiatives	Continue participating in source reduction initiatives. Continue implementation of cigarette ban on beaches, parks and in commercial areas	FY15	Continuous - Ongoing	Y	N	Y	-
DM-24	Proactively monitor for erosion and complete minor repair and slope stabilization as needed.	Post-storm monitoring is conducted to identify slope and bluff erosion in priority areas. As-needed, repairs and slope stabilization are completed	FY15	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-25	Protect areas that are functioning naturally	As feasible opportunities arise, the City will protect areas that are functioning naturally. This may include avoiding hardscape development and degradation in unpaved open space areas and creating permanent open space protections to undeveloped city-owned land. This strategy will be triggered on a case by case basis. The following resources, funds, and steps are needed to implement this strategy 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants if necessary (2 -18 months) 3) Obtain City Council approval	Must be Triggered	Continuous-Ongoing	NA	NA	NA	Not triggered
DM-26	Reference watershed study ~~Conduct special studies~~	San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Refer to Section 5.1 of the Water Quality Improvement Plan for further details. Will occur region-wide. Funding and resources were previously secured.	FY15	One Time	Y	N	Y	Language revised for accuracy

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-27	Los Peñasquitos Watershed Special Study ~~Reference watershed study~~	~~Assess sources of bacteria in the watersheds using the San Diego Bacteria Source Identification and Prioritization Process developed in 2012 as part of the MS4 Permit Report of Waste Discharge process. Focus is on the beach/lagoon area of the San Dieguito River WMA, with inputs from the upper watershed also considered where relevant and necessary to identify sources of bacteria to the beach/lagoon. Refer to Section 5.1 for further details.~~ The Los Peñasquitos Watershed Special Study will assess sediment loads in the watersheds upstream of the Draft Sediment TMDL compliance monitoring locations. Includes the analysis of sediment water column loads, stream bedload, and air monitoring. Implemented in a phased approach. Monitoring will occur first in the Carroll canyon subwatershed. The Los Peñasquitos Creek and Carmel Valley Creek subwatersheds will be monitored in subsequent phases. Refer to Section 5.1 of the Water Quality Improvement Plan for further details. Funding and resources have been secured for FY 2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY15	One Time	Y	N	Y	Language revised to correct an error. San Dieguito Watershed information was removed and replaced with Los Peñasquitos information. The City of Del Mar is determining additional jurisdictional monitoring to analyze sediment contributions. Updates will be included in the next WQIP Annual Report.
DM-28	Visually inspect all major and minor MS4 outfalls	All major and minor MS4 outfalls are inspected a minimum of six times per year to assist in the identification of any illegal discharges, persistently flowing outfalls or any other issues that may be identified.	FY15	Continuous – Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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Structural Strategies								
Green Infrastructure								
DM-29	0.001 acre BMP has been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 0.06 acre with a total storage volume of 0.002 acre-foot	City will assess opportunities and implement as applicable This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants (2-18 months) 3) Obtain City Council approval 4) Initiate preliminary engineering, design and develop construction plans and cost estimates (6 months-2 Years) 5) Bid and Award process for construction phase (6 months) 6) Construct project (4 months-1 yr; project construction costs are TBD and are based on size of the project). 7) Operation and maintenance will be in perpetuity.	Must be Triggered	Continuous-Ongoing	NA	NA	NA	Not triggered

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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Green Streets								
DM-30[1]	0.06 acres of green streets (0.03 acres of permeable pavement and 0.03 acres of bioretention) have been identified as potential opportunities for green street projects to treat a drainage area of 2.59 acres.	City will assess opportunities and implement as applicable This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants (2-18 months) 3) Obtain City Council approval 4) Initiate preliminary engineering, design and develop construction plans and cost estimates (6 months-2 Years) 5) Bid and Award process for construction phase (6 months) 6) Construct project (4 months-1 yr; project construction costs are TBD and are based on size of the project). 7) Operation and maintenance will be in perpetuity.	Must be Triggered	Continuous-Ongoing	NA	NA	NA	Not triggered

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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Multiuse Treatment Area								
Other Opportunities								
DM-31[1]	Implement 0.18 acres with a total storage volume of 0.35 ac-ft. of multiuse treatment area projects on public/private parcels and/or through public-private partnerships.	City will assess opportunities and implement as applicable This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants (2-18 months) 3) Obtain City Council approval 4) Initiate preliminary engineering, design and develop construction plans and cost estimates (6 months-2 Years) 5) Bid and Award process for construction phase (6 months) 6) Construct project (4 months-1 yr; project construction costs are TBD and are based on size of the project). 7) Operation and maintenance will be in perpetuity.	Must be Triggered	Continuous-Ongoing	NA	NA	NA	Not triggered

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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Water Quality Improvement BMPs								
Dry Weather Flow Separation and Treatment Projects								
DM-32	If interim load reduction goals are not met, dry weather flow separation and treatment projects will be considered.	Construction of dry weather flow separation and treatment projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants (2 -18 months) 3) Obtain City Council approval 4) Initiate preliminary engineering, design and develop construction plans and cost estimates (6 months -2 Years) 5) Bid and Award process for construction phase (6 months) 6) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 7) Operation and maintenance will be in perpetuity.	Must be Triggered	Continuous-Ongoing	NA	NA	NA	Not triggered

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-1	Watershed Collaboration for Los Peñasquitos Lagoon Restoration	Collaborate with stakeholders to promote the restoration of salt marsh areas and overall improvements in estuarine and other beneficial uses within the Los Peñasquitos Lagoon. Benefits of this strategy include more efficient targeting and prioritization of lagoon restoration activities, increased cost-effectiveness of selected BMP strategies in the watershed, and development of partnerships across the MS4 jurisdictions and other TMDL responsible parties. These efforts will be coordinated with the Lagoon Enhancement Program currently being updated by the Los Peñasquitos Lagoon Foundation and will require that (1) funding to address MS4 discharges and dry weather input of freshwater is identified and secured, (2) staff resources are identified and secured, (3) partners are identified and formal memoranda of understanding (MOUs) are developed and executed, (4) permits required by regulatory agencies are secured, and (5) consensus and community support are achieved. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. Implementation is in perpetuity as long as funding is available.	FY16	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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WMA-2	Los Peñasquitos Wetland Restoration Project	Collaborate with Copermittees on the region-wide North Coast Corridor (NCC) Program, led by Caltrans and SANDAG. The program is intended to improve coastal transportation (including Interstate 5 and the coastal rail and transit system) while protecting and restoring coastal habitats throughout the corridor. The 27-mile-long project stretches across the cities of Oceanside, Carlsbad, Encinitas, Solana Beach, Del Mar, and San Diego and provides improvements for six coastal lagoons, including Los Peñasquitos Lagoon. The NCC Program is implementing construction in phases from 2010 through 2040. The program is a $6.5-billion investment in the region that will be paid for through a combination of federal, state, and local funds. The NCC program is part of TransNet, the voter-approved, half-cent sales tax initiative that helps fund transportation projects in the region.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
WMA-3	Collaborative Approach to Irrigation Reduction	Responsible Agencies are collaborating with water agencies to encourage implementation of water conservation efforts. Water conservation that attempts to reduce irrigation and minimize storm water runoff can also improve water quality of receiving waterbodies. MWD's SoCal Water$mart Program supports conservation efforts by offering incentives in the form of rebates for rain barrels, rotating sprinkler nozzles, weather-based irrigation controllers, soil moisture sensor systems, and turf replacement. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council or appropriate legislative body (i.e. Board).	Prior to FY16	Continuous-Ongoing	Y	N	Y	Information regarding rebate opportunities are listed on the City's webpage

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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WMA-4	Offsite Alternative Compliance Option (WMAA)	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015, jurisdictions can formally implement an optional Alternative Compliance Program by December 2015 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
WMA-5	Collaboration with the Regional Board	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit, 2) enforcement of other non-MS4 dischargers, and 3) Bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for Los Peñasquitos WMA

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WMA-6	Refinement of Water Quality Regulations	The Responsible Agencies will collaborate with the Regional Board to refine the accuracy of regulations to ensure that Non-MS4 dischargers are regulated appropriately. The goal of this exercise is to begin a dialog with the Regional Board that may lead to the following outcomes: 1) Removal of Non-MS4 discharges and the associated BMPs needed to treat those discharges from the Responsible Agencies' burden, 2) amendment of current TMDLs and the MS4 Permit to correctly assign responsibilities for Non-MS4 discharges to the appropriate entities, and 3) strengthening of Non-MS4 NPDES permits that are directly tied to the requirements of existing and future TMDLs. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Resources to implement this strategy include staff time and are currently secured.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-

1. Strategy has been identified as potential based on results of a model that may not be reflective of the small drainage area that leads from Del Mar to the lagoon. The strategy is presented until further analysis (including monitoring data) can confirm or revise the needs and strategies.

D.1.4 Modifications to the BMP Design Manual

No modifications to the BMP Design Manual have been made since the WQIP was approved in fall 2015. The current Del Mar BMP Design Manual is posted on the Del Mar's website, and the link to this page is listed on Project Clean Water.

D.1.5 Modifications to the Jurisdictional Runoff Management Plan

No modifications to the Del Mar's JRMP have been made since the WQIP was approved in fall 2015. The current Del Mar JRMP is posted on the Del Mar's website, and the link to this page is listed on Project Clean Water.

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D.2 City of Poway

D.2.1 Annual Report Certifications

The City of Poway's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.2.2 Annual Report Form

Poway's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

STEVE VAUS, Mayor
BARRY LEONARD, Deputy Mayor
JIM CUNNINGHAM, Councilmember
DAVE GROSCH, Councilmember
JOHN MULLIN, Councilmember

CITY OF POWAY

STATEMENT OF CERTIFICATION

Los Peñasquitos Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report and JRMP Certificate of Adequate Legal Authority

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

I also certify that the City of Poway has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 9th day of January, 2017, at the City of Poway.

Robert J. Manis
Director
Development Services Department

1/9/17
Date

City Hall Located at 13325 Civic Center Drive
Mailing Address: P.O. Box 789, Poway, California 92074-0789
www.poway.org

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015/2016

I. COPERMITTEE INFORMATION			
Copermittee Name: City of Poway (Los Peñasquitos Watershed)			
Copermittee Primary Contact Name: Steven Strapac			
Copermittee Primary Contact Information: Address: 13325 Civic Center Drive City: Poway, CA County: San Diego State: CA Zip: 92064 Telephone: (858) 668-4653 Fax: Email: sstrapac@poway.org			

II. LEGAL AUTHORITY		
Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES NO	☒ ☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE		
Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES NO	☐ ☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES NO	☐ ☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM		
Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES NO	☒ ☐

Number of non-storm water discharges reported by the public	13
Number of non-storm water discharges detected by Copermittee staff or contractors	50
Number of non-storm water discharges investigated by the Copermittee	63
Number of sources of non-storm water discharges identified	53
Number of non-storm water discharges eliminated	25
Number of sources of illicit discharges or connections identified	49
Number of illicit discharges or connections eliminated	25
Number of enforcement actions issued	47
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM		
Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES NO	☐ ☒
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES NO	☐ ☐

Number of proposed development projects in review	40
Number of Priority Development Projects in review	12
Number of Priority Development Projects approved	3
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	0

Number of completed Priority Development Projects in inventory	57
Number of high priority Priority Development Project structural BMP inspections	15
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015/2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	62
Number of active construction sites in inventory	62
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	25
Number of construction site inspections	121
Number of construction site violations	19
Number of enforcement actions issued	19
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	53	423	187	38
Number of existing development inspections	26	107	19	38
Number of follow-up inspections	0	39	2	0
Number of violations	0	39	2	13
Number of enforcement actions issued	0	39	2	11
Number of escalated enforcement actions issued	0	4	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Steven E Strapac	10/17/16
Signature	Date
STEVEN E. STRAPAC	SENIOR CIVIL ENGINEER
Print Name	Title
858.668.4653	SSTRAPAC@POWAY.ORG
Telephone Number	Email

FISCAL ANALYSIS

Fiscal information for 2015/2016 is reported in the tables on the following page. The tables are based largely on the standard templates used by the Copermittees in previous fiscal years, but with a distinction between labor costs and other expenses (materials, contracts, etc.) as requested in the Municipal Permit (San Diego Regional Water Quality Control Board, Order No. R9-2013-0001 as amended by Order No. R9-2015-001 and Order No. R9-2015-0100).

Regional programs include Copermittee shared costs for education and other regional expenses, as well as City staff time to participate in regional meetings. Watershed costs include meeting participation, monitoring, and the City's portion of watershed cost shares.

The City anticipates using the same funding sources as shown in Table 2 for 2015/2016 program funding needs. Developer fees are contingent on the number of development projects in the City, and the fees are only used for reviews and similar services provided for those development projects.

Table 1: 2015/2016 Expenditure Summary

Jurisdictional Components	Labor	Expenses	Total
Administration and Permit Fee	$192,655	$24,220	$216,875
Development Planning	$12,120	$0	$12,120
Construction	$22,372	$0	$22,372
Municipal	$703,942	$355,244	$1,059,186
Industrial and Commercial	$27,325	$31,760	$59,085
Residential	$14,375	$176,075	$190,450
IDDE	$0	$48,500	$48,500
Education	$0	$1,000	$1,000
Public Participation	$0	$0	$0
Jurisdictional Total	**$972,789**	**$636,799**	**$1,609,588**
Watershed Programs			
Los Peñasquitos	$14,256	$145,360	$159,616
San Dieguito	$14,256	$27,301	$41,557
Watershed Programs Total	**$28,512**	**$172,660**	**$201,172**
Regional Programs	**$12,217**	**$20,500**	**$32,717**
Total Costs	**$1,013,517**	**$829,960**	**$1,843,477**

Table 2: 2015/2016 Funding Source Summary

Funding by Source	Amount
General Fund	$1,674,987
Storm Water Fee	$0
Developer Deposits and Fees	$21,000
Registration and Inspection Fees	$4,752
Grant Funds	$13,903
Other	$175,075
Total Funding	**$1,889,717**

D.2.3 City of Poway Strategies

City of Poway's strategies are detailed in Table D-2.

Table D-2
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
JRMP (E.2 – E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
PW-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	Refer to JRMP. All high priority projects are inspected annually prior to the rainy season. 20% of all projects are inspected annually.	FY16	Continuous-Ongoing	Y	None	Y	None
Priority Development Projects (PDPs)								
PW-2	For PDPs, administer a program requiring implementation of on-site structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Refer to JRMP. For structural BMPs, all high priority projects will be inspected prior to the start of the rainy season. Any projects that do not provide sufficient documentation to verify that appropriate maintenance work has been performed through the annual maintenance verification program will also be inspected before the end of the fiscal year.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-3	Update BMP Design Manual procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP.	FY16	Continuous- As needed	Y	None	Y	None
PW-3.1	Amend BMP Design Manual for trash areas. Require full four-sided enclosure, siting away from storm drains and cover.	Implemented through the Minor Development Review process and the plan check process.	FY16	Continuous- As needed	Y	None	Y	None
PW-4	Administer an alternative compliance program to on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects). Refer to Section 4.2.5. and Appendix P for further details.	Refer to JRMP.	FY16	Continuous- As needed	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
E.4 Construction Management								
PW-5	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Refer to JRMP; Perform daily inspections during construction. During the wet season, high priority construction sites are inspected every two weeks, medium priority are inspected monthly, and low priority sites are inspected as needed. During the dry season, all construction sites are inspected as needed.	FY16	Continuous-Ongoing	Y	None	Y	None
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
PW-6	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP; Commercial/industrial/municipal are inspected annually, with municipal receiving more frequent inspections by staff.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-6.1	Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	Annually review policies and procedures.	Prior to FY16	Continuous- As needed (Annually)	Y	None	Y	None
PW-6.2	Track stationary and mobile businesses through communication with Business Licensing Division.	Maintain through the City's Commercial/Industrial program.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-7	Promote and encourage implementation of designated BMPs in commercial areas.	Collaborate with MWD and promote their SoCal Water$mart rebates and products such as weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal.	FY16	Continuous-Ongoing	Y	None	Y	The City also partnered with the San Diego County Water Authority to promote their artificial turf rebate program.

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-8	Implement program to investigate illegal grading on private property.	Program to investigate reports of illegal grading. Maintain records of reported illegal gradings and immediately investigate. If activity violates grading or stormwater regulation, issued a "Stop Work" notice and must obtain grading permit and correct stormwater violations. Reports are tracked in "Trackit" software as a code violation and bi-monthly meetings to discuss the status of reports. Grading cases are subject to a strict timeline of action, and enforcement is upped until either compliance, or a Notice of Violation is filed against the property. If it is a stormwater issue, the City's on-call stormwater contractor corrects the issue and City liens the property for payment.	FY16	Continuous-Ongoing	Y	None	Y	None
MS4 Infrastructure								
PW-9	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.).	Refer to JRMP.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-9.1	Perform catch basin cleaning.	Inspect and clean catch basins annually.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-9.2	Clean open-channels to reduce pollutant loads and invasive plants and animals.	Inspect and clean open channels annually.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-10	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers and identify sewer leaks and areas for sewer pipe replacement.	Program implemented through sewer maintenance and inspection program.	FY16	Continuous-Ongoing	Y	None	Y	None
Roads, Street, and Parking Lots								
PW-11	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP; the City of Poway is divided into 8 zones for road operation and maintenance activities; rotational cycle: one zone inspected each year	FY16	Continuous-Ongoing	Y	None	Y	None
PW-11.1	Implement street sweeping.	Refer to JRMP; all areas swept twice per month.	FY16	Continuous-Ongoing	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-11.2	Continue maintenance on access roads and trails by proactively monitoring for erosion and completing minor repair and slope stabilization.	Actively identify and repair eroding slopes that may be contributing to sediment loading. Prepare an inventory and assessment of eroding areas and their risk to surface waters. Follow assessment with a schedule for ongoing inspection and stabilization (potentially based on a number or percentage of sites annually). Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-12	Enhance street sweeping through route optimization.	In Los Peñasquitos River WMA, implement route optimization from results of efficiency studies.	FY18	Continuous-Ongoing	Y	None	Y	None
Pesticide, Herbicides, and Fertilizer BMP Program								
PW-13	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Refer to JRMP.	FY16	Continuous-Ongoing	Y	None	Y	None
Retrofit and Rehabilitation in Areas of Existing Development								
PW-14	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	The Offsite Alternative Compliance Program will include methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including proximity to high priority water quality conditions, potential pollutant load removal effectiveness, and feasibility of implementation. The development of such program is contingent on the completion of a current water quality equivalency study and development of a crediting system across multiple Responsible Agencies. Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-15	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	The Offsite Alternative Compliance Program will include methods for identifying and assessing potential stream, channel, or habitat rehabilitation projects in existing development areas. Rehabilitation project selection will be based upon a variety of factors including existing stream or habitat degradation, potential future cumulative stream or habitat impacts, and feasibility of implementation. The development of such program is contingent on the completion of a current water quality equivalency study and development of a crediting system across multiple Responsible Agencies.	FY18	Continuous-Ongoing	Y	None	Y	None
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
PW-16	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP. The City must visually inspect at least 80% of their outfalls two times per year during dry weather conditions.	FY16	Continuous-Ongoing	Y	None	Y	None
E.7 Public Education and Participation (B.3.b.(1)(a)(iii))								
PW-17	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-17.1	Target school-based education and outreach.	Through "I Love a Clean San Diego," give school presentations to fourth-graders eight times per year.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-17.2	Conduct education through community-based organizations.	Through "I Love a Clean San Diego," staff street fair booths twice per year. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-17.3	Review City storm water website and identify and implement required updates to reflect WQIP and JRMP revisions.	Review City storm water website, identify and implement required updates to reflect WQIP and JRMP revisions.	Prior to FY16	Continuous- As needed	Y	None	Y	None
PW-17.4	Collaborate with regional education and outreach efforts.	Participate in Regional Think Blue campaign and collaborate with other regional efforts to provide consistent message or efficiency in training for targeted audiences.	FY16	Continuous-Ongoing	Y	None	Y	None
E.6 Enforcement Response Plan								
PW-18	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Refer to JRMP.	FY16	Continuous-Ongoing	Y	None	Y	None
Non-JRMP Strategies (Optional Strategies, B.3.b.(1)(b))								
Nonstructural Strategies								
PW-19	Require implementation of low impact development BMPs with all new construction.	The City requires LID at all sites, with an emphasis on an effective combination of both erosion control BMPs and sediment control BMPs to reduce discharges of sediment. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-20	Promote MWD and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	Collaborate with MWD to promote their SoCal Water$mart rebates and products such as weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal. Collaborate with San Diego County Water Authority (SDCWA) to promote their Water Smart irrigation system checkups and turf replacement incentives. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-21	Proactively repair and replace corrugated metal pipe (CMP) MS4 components to provide source control from MS4 infrastructure.	Implement CMP replacement program with an emphasis on pipes in open canyons.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-22	Target human behavior in parks and other public areas including trash reduction or other high impact behavior to habitat, wildlife, and water quality.	Implement trash reduction programs by increasing the number of trash and recycling bins during high-traffic public events and in public parks. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-23	Los Peñasquitos Watershed Special Study	Los Peñasquitos WMA special study will assess sediment loads in the watersheds upstream of the Draft Sediment TMDL compliance monitoring locations. Includes the analysis of sediment water column loads, stream bedload, and air monitoring. Implemented in a phased approach. Monitoring will occur first in the Carroll Canyon subwatershed. The Los Peñasquitos Creek and Carmel Valley Creek subwatersheds will be monitored in subsequent phases. Refer to Section 5.1 of the Water Quality Improvement Plan for further details. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-24	Participate in Reference Watershed Study.	The San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for “natural sources” to establish the concentrations or loads from streams in a minimally disturbed or “reference” condition. Refer to Section 5.1 of the Water Quality Improvement Plan for further details. Will occur region-wide. Funding and resources were previously secured.	Prior to FY16	One Time, With Continuous O&M	Y	None	N	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-25	As opportunities arise and funding sources are identified, protect areas that are functioning naturally by avoiding impervious development and degradation on unpaved open space areas, creating permanent open space protections on undeveloped city-owned land, and acquiring privately-owned undeveloped open areas.	As opportunities arise, where feasible, avoid hardscape development and degradation in unpaved open space areas, create permanent open space protections to undeveloped city-owned land, and acquire privately owned undeveloped parcels of land. This strategy may be implemented if there is interest in participation by the public or private entity with current control of the land. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) identification of partners, if needed (public, private, non-profit), 2) identification of costs and potential sources of funding, 3) final agreement by public or private entity with current control of the land, 4) final agreement by all other participating partners including acceptance by intended land- or asset-owning City department, and 5) funding in place. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The time frame for implementation will vary by project. Implementation is in perpetuity as long as funding is available.	Triggered	Continuous as funding allows	Not triggered in FY16	None	If triggered	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Structural Strategies								
Green Infrastructure								
PW-26	0.26 ac have been identified as potential opportunities for green infrastructure implementation on public parcels.	In the Los Peñasquitos Creek Subwatershed, construction, operation, and maintenance of 0.26 ac of bioretention and permeable pavement. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months-1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function will be approval by City Council as part of the City's annual budget.	FY22	Continuous-Ongoing	N	None	N	Planned implementation in FY22

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Green Streets								
PW-27	32.42 acres of permeable pavement and 32.47 acres of bioretention have been identified as potential opportunities for green street projects.	In the Los Peñasquitos Creek Subwatershed, construction, operation and maintenance of 32.42 acres of permeable pavement and 32.47 acres of bioretention for green streets. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months-1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function will be approval by City Council as part of the City's annual budget.	FY22	Continuous-Ongoing	N	None	N	Planned implementation in FY22
Multiuse Treatment Areas								
Infiltration and Detention Basins								
PW-28	Community Detention Basin	Community Detention Basin is already in place. Funding and resources have been secured. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Y	None	Y	None
PW-29	Gate Detention Basin	Gate Detention Basin is already in place. Funding and resources have been secured. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-30	Kirkham Detention Basin	Kirkham Detention Basin is already in place. Funding and resources have been secured. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Y	None	Y	None
PW-31	Stotler Detention Basin	Stotler Detention Basin is already in place. Funding and resources have been secured. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Y	None	Y	None
PW-32	Stowe Detention Basin	Stowe Detention Basin is already in place. Funding and resources have been secured. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Y	None	Y	None
PW-33	If interim load reduction goals are not met and additional multiuse treatment areas are required, a constructed wetland system can be implemented in the open space adjacent to Carriage Road.	Construction, operation, and maintenance of a 1.7 ac Constructed Wetland System would treat approximately 9,567 acres of drainage area (APN 3175012400). The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function will be approval by City Council as part of the City's annual budget.	FY22	Continuous-Ongoing	N	None	N	Planned implementation in FY22

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-34	If interim load reduction goals are not met and additional multiuse treatment areas are required, a dry extended detention basin can be implemented in Hilleary Park.	Construction, operation and maintenance of a 1.6 ac Dry Extended Detention Basin would treat approximately 138 acres of drainage area (APN 3171020700). The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function will be approval by City Council as part of the City's annual budget.	FY22	Continuous-Ongoing	N	None	N	Planned implementation in FY22

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Additional Watershed Opportunities								
PW-35	Through adaptive management and additional analysis in the future, the City will identify and implement one or more of the following opportunities to meet numeric goals: 1) participate in restorative efforts for the Los Peñasquitos Lagoon with stakeholders, 2) MS4 outfall repair and relocation, 3) slope stabilization, 4) stream restoration, 5) implementation of sediment detention basins upstream of Los Peñasquitos Lagoon or 6) new strategies not yet identified.	Through adaptive management and additional analysis in the future, the City will identify and implement one or more of the following opportunities to meet numeric goals: 1) participate in restorative efforts for the Los Peñasquitos Lagoon with stakeholders, 2) MS4 outfall repair and relocation, 3) slope stabilization, 4) stream restoration, 5) implementation of sediment detention basins upstream of Los Peñasquitos Lagoon or 6) new strategies not yet identified. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	FY26	Continuous-Ongoing	N	None	N	Planned implementation in FY26
Stream, Channel, and Habitat Rehabilitation Projects								
PW-36	Rattlesnake Creek Project (stabilization of ephemeral tributary segment to Rattlesnake Creek)	This project involves the stabilization of a section of an ephemeral tributary to Rattlesnake Creek, which is located west of Midland Road, between Kentfield Drive and Norwalk Street. The project will involve grading in order to widen the channel bottom and contour the banks. It will include installation of rip rap, turf reinforcement matting, concrete pillow blocks, and a headwall, landscape removal and replacement, temporary BMPs, a temporary diversion system, and temporary irrigation. Funding and resources have been secured. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	One Time, With Continuous O&M	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-1	Collaborative Approach to Irrigation Reduction	Responsible Agencies are collaborating with water agencies to encourage implementation of water conservation efforts. Water conservation that attempts to reduce irrigation and minimize storm water runoff can also improve water quality of receiving waterbodies. MWD's SoCal Water$mart Program supports conservation efforts by offering incentives in the form of rebates for rain barrels, rotating sprinkler nozzles, weather-based irrigation controllers, soil moisture sensor systems, and turf replacement. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous - Ongoing	Y	None	Y	The City also partnered with the San Diego County Water Authority to promote their artificial turf rebate program.
WMA-2	Offsite Alternative Compliance Option (WMAA)	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015, jurisdictions can formally implement an optional Alternative Compliance Program by December 2015 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous - Ongoing	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-3	Collaboration with the Regional Board	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit, 2) enforcement of other non-MS4 dischargers, and 3) Bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous - Ongoing	Y	None	Y	None
WMA-4	Refinement of Water Quality Regulations	The Responsible Agencies will collaborate with the Regional Board to refine the accuracy of regulations to ensure that Non-MS4 dischargers are regulated appropriately. The goal of this exercise is to begin a dialog with the Regional Board that may lead to the following outcomes: 1) Removal of Non-MS4 discharges and the associated BMPs needed to treat those discharges from the Responsible Agencies' burden, 2) amendment of current TMDLs and the MS4 Permit to correctly assign responsibilities for Non-MS4 discharges to the appropriate entities, and 3) strengthening of Non-MS4 NPDES permits that are directly tied to the requirements of existing and future TMDLs. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Resources to implement this strategy include staff time and are currently secured.	Prior to FY16	Continuous - Ongoing	Y	None	Y	None

Table D-2 (continued)
City of Poway Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-5	Watershed Collaboration for Los Peñasquitos Lagoon Restoration	Collaborate with stakeholders to promote the restoration of salt marsh areas and overall improvements in estuarine and other beneficial uses within the Los Peñasquitos Lagoon. Benefits of this strategy include more efficient targeting and prioritization of lagoon restoration activities, increased cost-effectiveness of selected BMP strategies in the watershed, and development of partnerships across the MS4 jurisdictions and other TMDL responsible parties. These efforts will be coordinated with the Lagoon Enhancement Program currently being updated by the Los Peñasquitos Lagoon Foundation and will require that (1) funding to address MS4 discharges and dry weather input of freshwater is identified and secured, (2) staff resources are identified and secured, (3) partners are identified and formal memoranda of understanding (MOUs) are developed and executed, (4) permits required by regulatory agencies are secured, and (5) consensus and community support are achieved. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. Implementation is in perpetuity as long as funding is available.	FY16	Continuous as funding allows	Y	None	Y	None

D.2.4 Modifications to the BMP Design Manual

No modifications to the BMP Design Manual have been made since the WQIP was approved in fall 2015. The current Poway's BMP Design Manual is posted on the Poway's website, and the link to this page is listed on Project Clean Water.

D.2.5 Modifications to the Jurisdictional Runoff Management Plan

No modifications to the Poway's JRMP have been made since the WQIP was approved in fall 2015. The current Poway JRMP is posted on the Poway's website, and the link to this page is listed on Project Clean Water.

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D.3 City of San Diego

The City of San Diego is proposing the following administrative changes to the Los Peñasquitos Water Quality Improvement Plan. The proposed administrative changes include clarifications, corrections to errors and typos, and other minor edits that only apply to the City of San Diego.

WQIP Section		Administrative Changes
1	Section 4.4 Alternative BMP Implementation Scenario for Refinement of Water Quality Regulations	Included the following text: "Cost comparison between the Primary and Alternative Scenario presented in this section are a snapshot in time and are based on the best information available at the time they were prepared. As program implementation progresses, updates to estimated funding needs are likely to change. For the most recent estimate of funding needs, refer to the WAMP available at the Storm Water Division website, www.sandiego.gov/stormwater/plansreports."
2	Appendix I – Jurisdictional Strategies and Schedules; Section I.4.2 Funding Needs for the City of San Diego	Included the following text: "Funding needs presented in this section are a snapshot in time and are based on the best information available at the time they were prepared. As program implementation progresses, updates to estimated funding needs are likely to change. For the most recent estimate of funding needs, refer to the WAMP available at the Storm Water Division website, www.sandiego.gov/stormwater/plansreports."
3	Appendix I – Jurisdictional Strategies and Schedules; Table I-5 City of San Diego Jurisdictional Strategies	Refined the text (shown as track changes in red text in Appendix D) to provide greater clarity and/or to correct errors and typos.
4	Appendix I – Jurisdictional Strategies and Schedules; Table I-5 City of San Diego Jurisdictional Strategies	Changed strategy identification numbering system (See Appendix D).
5	Appendix I – Jurisdictional Strategies and Schedules; Table I-5 City of San Diego Jurisdictional Strategies	Structural Strategies, Priority Development Project (PDP) BMPs: All PDP BMPs have been combined into a single strategy for ease of viewing. A table with an updated list of PDP BMPs is included in the WQIP Annual Report (See Appendix D).

6	Appendix I – Jurisdictional Strategies and Schedules; Table I-5 City of San Diego Jurisdictional Strategies	Structural Strategies, Multi Use Treatment Areas (MUTAs): Planned MUTAs that are not yet built have been combined into a single strategy for ease of viewing. The total sum of drainage area treated (level of commitment) has not changed. A table with all structural strategies (MUTAs, Green Infrastructure, Green Streets, etc.) is included in the WQIP Annual Report (See Appendix D).

D.3.1 Annual Report Certifications

The City of San Diego's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.3.2 Annual Report Form

City of San Diego's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

THE CITY OF SAN DIEGO

STATEMENT OF CERTIFICATION

Los Penasquitos Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Drew Kleis
Deputy Director
Transportation & Storm Water Department

1/12/17
Date

Transportation & Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 23[illegible] Fax (858) 541-4350

CITY OF SAN DIEGO

SCOTT CHADWICK
CHIEF OPERATING OFFICER

January 27, 2017

Mr. David W. Gibson, Executive Officer
Regional Water Quality Control Board
San Diego Region
2375 Northside Drive, Suite 100
San Diego, CA 92108

Subject: Certification of Adequate Legal Authority

Dear Mr. Gibson:

Pursuant to San Diego Regional Water Quality Control Board Order No. R9-2013-0001, as amended by Order No. R9-2015-0100 (Municipal Permit or Permit), Provision E.1.b, the City of San Diego, as a Copermittee in the above referenced permit, submits this certification of adequate legal authority with the first Water Quality Improvement Plan Annual Report. The City has adequate legal authority to implement and enforce each requirement contained in 40 C.F.R. section 122.26(d)(2)(i)(A)-(F), and the Municipal Permit (including Provision E.1.a(1)-(10)). The San Diego Municipal Code, including the following provisions, provides the City with adequate legal authority as required by the Municipal Permit:

1. Storm Water Management and Discharge Control, sections 43.0301 through 43.0312. These provisions are being amended, although the current version also complies with the requirements of the Municipal Permit.
2. General Construction Permit Authority and Procedures, sections 129.0101 through 129.0120.
3. Grading Regulations, sections 142.0101 through 142.0150.
4. Storm Water Runoff Control and Drainage Regulations, sections 142.0201 through 142.0230.

The City looks forward to working with you and the Regional Board on storm water management matters. If you have any questions, please contact Senior Planner Jim Harry at (858) 541-4353 or email JHarry@sandiego.gov.

Sincerely,

Scott Chadwick
Chief Operating Officer

AK/jph

202 C Street, MS 9A • San Diego, California 92101 • Tel (619) 236-5587

cc: Mara Elliott, City Attorney, Office of the City Attorney
Stephen Puetz, Chief of Staff, Office of the Mayor
Stacey LoMedico, Assistant Chief Operating Officer
Mike Hansen, Deputy Chief of Staff and Chief of Policy, Office of the Mayor
Paz Gomez, Deputy Chief Operating Officer, Infrastructure/Public Works
Alejandra Gavaldon, Director of Federal Government Affairs & Water Policy, Office of the Mayor
Kris McFadden, Director, Transportation & Storm Water Department
Drew Kleis, Deputy Director, Transportation & Storm Water Department
Davin Widgerow, Deputy City Attorney, Office of the City Attorney
Clem Brown, Program Manager, Transportation & Storm Water Department
Ruth Kolb, Program Manager, Transportation & Storm Water Department
Jim Harry, Senior Planner, Transportation & Storm Water Department

I. COPERMITTEE INFORMATION

Copermittee Name: **City of San Diego (Los Peñasquitos WMA)**

Copermittee Primary Contact Name: **Drew Kleis, Deputy Director, Storm Water Division, Transportation & Storm Water Department**

Copermittee Primary Contact Information:
Address: **9370 Chesapeake Drive, Suite 100**
City: **San Diego** County: **San Diego** State: **CA** Zip: **92123**
Telephone: **858-541-4320** Fax: **858-541-4350** Email: **Akleis@sandiego.gov**

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES[1]	☒
	NO	☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM[2]

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐

Number of non-storm water discharges reported by the public	353
Number of non-storm water discharges detected by Copermittee staff or contractors	172
Number of non-storm water discharges investigated by the Copermittee	518
Number of sources of non-storm water discharges identified	442
Number of non-storm water discharges eliminated	434
Number of sources of illicit discharges or connections identified	437
Number of illicit discharges or connections eliminated	429[3]
Number of enforcement actions issued	436[3]
Number of escalated enforcement actions issued	197

V. DEVELOPMENT PLANNING PROGRAM[2]

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES[4]	☒
	NO	☐

Number of proposed development projects in review	241[5]
Number of Priority Development Projects in review	32[6]
Number of Priority Development Projects approved	110[7]
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	63[8]
Number of completed Priority Development Projects in inventory	178[9]
Number of high priority Priority Development Project structural BMP inspections	9
Number of Priority Development Project structural BMP violations	8[10]
Number of enforcement actions issued	15[11]
Number of escalated enforcement actions issued	3

VI. CONSTRUCTION MANAGEMENT PROGRAM[2]

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES[1,12] ☒ NO ☐
Number of construction sites in inventory	4,300
Number of active construction sites in inventory	47
Number of inactive construction sites in inventory	112
Number of construction sites closed/completed during reporting period	169
Number of construction site inspections	27,037
Number of construction site violations	270
Number of enforcement actions issued	164
Number of escalated enforcement actions issued	91

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM[2]

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	123	8,282 (includes mobile)	915	27[13]
Number of existing development inspections	117	1,533	140	4[13]
Number of follow-up inspections	0	263	13	0
Number of violations	18	388	37	375[13]
Number of enforcement actions issued	22	490	48	285[13]
Number of escalated enforcement actions issued	2	148	8	134

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES[14] ☒ NO ☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	1/12/17 Date
Drew Kleis Print Name	Deputy Director Title
(858) 541-4320 Telephone Number	Akleis@sandiego.gov Email

[1] The City of San Diego approved an update to the Jurisdictional Runoff Management Plan (JRMP) in FY 16. The update of the JRMP was done in compliance with Order No. R9-2013-0001.
[2] See the JRMP Annual Report FY 2016 Attachment 1 for a citywide summary of this data.
[3] The number of enforcement actions issued does not equal the number of identified illicit discharges or connections because some discharge complaints in the last quarter of FY 2016 were still under investigation at the end of FY 2016.
[4] The Storm Water Standards Manual (Part 1: BMP Design Manual, and Part 2: Construction BMP Standards) was updated in January 2016.
[5] The number of ongoing Standard and Priority Development Projects in review as of 6/30/16. The Development Services Department processes other types of permits, in addition to those included in the JRMP Annual Report, that are not subject to the requirements of the municipal permit.
[6] The number of ongoing Priority Development Projects in review as of 6/30/16. Only a portion of the projects that the Development Services Department processes qualify as a priority development project.
[7] The number of Priority Development Projects approved in FY 2016.
[8] This number includes the City's Priority Development Projects that received final inspection in FY 2016 as well as certain Priority Development buildings and grading projects that did not require a Certificate of Occupancy, that were completed in FY 2016.
[9] Represents the total number of completed Priority Development Projects in the City's inventory as of the end of FY 2016. These projects include projects entered into the inventory as complete in previous years.
[10] The number of Priority Development Project structural BMP violations included Notices of Violation, Notices of Deficient Maintenance, and Administrative Citations issued to public and private entities within the City's jurisdiction in this watershed.
[11] The number of enforcement actions included Notices of Violation and Notices of Deficient Maintenance issued to public and private entities within the City's jurisdiction in this watershed. The City has achieved compliance at 146 of the 150 sites identified in the San Diego RWQCB's Notice of Violation (Order Number R9-2014-0034). The San Diego RWQCB granted the City an extension to achieve compliance at the remaining four sites by May 26, 2017.
During the process of achieving compliance for the aforementioned 150 identified sites, the City has discovered an additional 74 sites which initially appear to be out of compliance due to varying degrees of circumstances. Each of these potential violations consist of post-construction BMP issues. Continuing the same process as outlined in our quarterly reports to the RWQCB, the City is currently researching each case. After initial research to verify non-compliance or not, we will follow our established procedures to have each site be in conformance to the MS4 permit under which it was permitted.
[12] Responses in this report are based on the City's internal data. Potential program deficiencies were identified by the Board in FY 2016, however, the City has taken steps to correct issues identified by the Board as detailed in the JRMP Annual Report FY 2016 Appendix. The City has implemented several improvements that address the Regional Board's concerns. These improvements ranged from procedural changes to creating multi-language brochures for contractors. Several operating and internal procedures have been refined to improve enforcement actions, add clarity to how sites are inspected, and to better define the staff's roles and expectations.
[13] Existing facilities for residential uses are characterized as Residential Management Areas (RMA), which could include hundreds of residences. When all of the residences in an RMA are inspected by City staff that is only counted as one inspection. However, all individual issues noted at each residence during an RMA inspection is counted as a separate violation and/or enforcement action.
[14] See the JRMP Annual Report FY 2016 Appendix for the FY 2016 Fiscal Analysis.

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The City of
SAN DIEGO
Development Services Department
Engineering Division

January 12, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Development Services Department Engineering Division Contributions

Please accept this letter as certification of the City of San Diego Development Services Department Engineering Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Edric Doringo, Program Manager at 619-446-5098 or email edoringo@sandiego.gov.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Development Services Department, Engineering Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

Gregory Hopkins

Gregory Hopkins
Deputy Director, Development Services Department

GH/cmm

Enclosure:
cc: Robert Vacchi, Director, Development Services Department
Drew Kleis, Deputy Director, Transportation and Storm Water Department

1222 First Avenue, M.S. 501
San Diego, CA 92101-4155

T (619) 446-5291

The City of
SAN DIEGO

Development Services Department
Inspection Services Division

January 24, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Development Services Department Inspection Services Division Contributions

Please accept this letter as certification of the City of San Diego Development Services Department Inspection Services Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Senior Inspector Sam Lindsey or Project Manager Xavier Del Valle at (858) 492-5070.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Development Services Department, Inspection Services Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

William Barrañón
Inspection Services Manager

The City of
SAN DIEGO
Public Works Department
Construction Management and Field Services Division

November 3, 2016

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Public Works Department, Construction Management and Field Services Division Contributions

Please accept this letter as certification of the City of San Diego Public Works Department Construction Management and Field Services Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Julie Ballesteros, Senior Civil Engineer, at (858) 573-5012.

I certify under penalty of law that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Public Works Department Field Engineering Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Myrna M. Dayton, PE, QSP, QSD, DCE
Deputy Director

9485 Aero Drive, Mail Station 18
San Diego, CA 92123
engineering@sandiego.gov

T (858) 627-3200
sandiego.gov

THE CITY OF SAN DIEGO

January 30, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Public Works Department, Project Implementation Division Contributions

Please accept this letter as certification of the City of San Diego Public Works Department, Project Implementation Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Catherine Dungca, Senior Civil Engineer, at (619) 533-3778.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Public Works Department, Project Implementation Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

Marnell Gibson
Assistant Director
Public Works Department

APPENDIX

1 OPERATIONAL ADAPTIVE MANAGEMENT

In Fiscal Year (FY) 2016 the City of San Diego (City) completed technical and non-technical monitoring, special studies, pilot studies, and various other efforts related to its Storm Water Program. The City gained valuable information that led to effective adaptation of procedures and operations, which ultimately led to more effective implementation of its Storm Water Program and the Jurisdictional Runoff Management Plan (JRMP). The following are operational adaptive management improvements that the City made during FY 2016:

- **Get it Done Application**
  In late FY 2016, the City released the Get it Done Application (App), which provides a modern, efficient method for members of the public to report issues to the City. One of the App's features allows illicit discharges to be reported by taking a photo with a phone that includes Global Positioning System (GPS) coordinates, and uploading it to the App. According to a recent City survey, 83 percent of respondents stated that they did not want to call the City government to report a problem. The new Get It Done App eliminates the need to call the City for various problems, by allowing residents to report issues online, which was the preferred method of 50 percent of survey respondents. The App also allows residents to report problems using their name or anonymously.

- **Phase V Street Sweeping Pilot**
  The City completed the fifth and final pilot study of the Targeted Aggressive Street Sweeping Pilot Program in FY 2016, which tested the effectiveness of posting limited-hour "no parking" signs on traditionally non-posted street sweeping routes. After two years of data collection on two subject routes, the study confirmed the hypothesis that a significant amount of additional debris (48% and 58% over baseline on the subject routes) can be removed from posting no parking signs on traditionally non-posted roadways. Based on this finding, the City will consider posting additional routes if supported by the community.

- **Enhanced Catch Basin Cleaning Optimization**
  Enhanced catch basin cleaning is a strategy to address pollutant removal from the Municipal Separate Storm Sewer System (MS4) in three of the City's six watersheds. While most catch basins are inspected once per year, this strategy involves inspecting catch basins within the specified watersheds between two and four times per year. The optimization study assigned priorities to individual basins and watersheds based on eight years of historic debris removal. This optimization focused efforts by reducing the number of inspections performed per year, while increasing total debris removal from those inspections. This enhancement will allow the City to target high priority drains to maximize pollutant removal while maintaining cost efficiencies. In FY 2016, approximately 2,500 additional catch basin inspections and cleanings (if necessary) were completed in the Chollas Creek area of the San Diego Bay Watershed.

- **Flood Control Pump Stations**
  To help minimize the risk of flooding in flood-prone areas during storm events, the City utilizes a number of pump stations to increase the flow of water through the conveyance network. Considering the pump stations are connected to the electric network, they only

function when power is running. In FY 2016, a 2,400 volt automatic transfer switch and generator were installed at a critical pump station that are capable of pumping 130,000 gallons of water per minute. This significantly decreases the risk of flooding in the related drainage area because the pump station will continue to operate during a storm event. The City also replaced or refurbished 11 other critical pump stations. Additionally, the City modernized operations at 14 pump stations by installing a telemetry system that remotely alerts staff of failures, allowing for a more immediate response.

- **Storm Drain Inspections**
  To help prioritize replacement of corrugated metal piping in the City's conveyance network, the City used closed-circuit televising at 62 locations in FY 2016 to assess pipe conditions. The City assessed the condition of 28,000 linear feet of corrugated metal piping in FY 2016.

- **Property-Based Inspections**
  In FY 2016, the City further committed to implementing property-based inspections to increase the business inspection program's efficiency and effectiveness. A previously conducted pilot study on inspection practices found property-based inspections more effective at identifying and resolving water quality issues (e.g., improper trash disposal practices and irrigation runoff, etc.) associated with commercial and industrial businesses. The inspections are focused on areas and activities associated with businesses that would not otherwise be inspected for storm water compliance. The inspections greatly increase the number of businesses subjected to storm water inspections while focusing on the pollution generating areas and activities without unduly increasing the inspection load of City inspectors. In FY 2016, the City performed 835 property-based inspections that accounted for over 4,700 business inspections.

- **Tiger Team**
  The Tiger Team was established in FY 2016 to identify, locate and eliminate sources of human specific bacteria sources in the MS4. The Transportation & Storm Water Department (TSW) leads this effort in partnership with the Public Utilities Department. After a specific portion of the MS4 with elevated human specific bacteria was identified, the Tiger Team performed escalated enforcement activities through TSW Code Enforcement, MS4 sampling, MS4 sanitary sewer line televising, and MS4 and sanitary sewer cleaning. Over several months during the reporting year, one problem area within the City was investigated extensively and a source of human specific bacteria in the MS4 was identified and abated.

- **Increased Non-Stormwater Discharge Investigations**
  The City received 215 more complaints of non-stormwater discharges in FY 2016. Approximately 81% of the complaints citywide were resolved. A majority of the investigations that were resolved involved irrigation runoff. Cases were unresolved either because the source could not be identified or the source was groundwater.

  The identification and elimination of irrigation efforts in FY 2016 involved the following:
  1) Special irrigation patrols were conducted on a monthly basis. All violating properties were issued notices of violation and/or a citation.
  2) TSW code compliance partnered with the Public Utilities Department. If a complaint of irrigation with runoff was received, a storm water code compliance officer would issue a notice of violation. If the property had multiple complaints,

that property would become part of an irrigation patrol and could result in a citation.

- **Waterways Maintenance Plan**
  The City began development of the Waterways Maintenance Plan in FY 2016, which will replace the Master Storm Water System Maintenance Program, which expires in 2018. The goals of the Plan are to create an overall holistic storm water management strategy with standard mitigation measures and streamlined maintenance approvals. Objectives of the Plan include flood risk reduction, infrastructure sustainability and resource protection and restoration. In addition to technical scoring criteria, the Plan also includes a unique public input metric so that public concerns are given a tangible value. Planning efforts will continue in FY 2017, with implementation beginning in FY 2019.

- **Off-Site Alternative Compliance Program**
  In FY 2016, the City implemented phase I of the Alternative Compliance Program. This gives development projects that would require on-site structural Best Management Practices (BMPs) to comply with pollutant control and hydromodification management the option to propose off-site alternative compliance projects. The development of phase II also began in FY 2016 and includes establishing an in-lieu fee structure and credit system as an alternative to installing on-site stormwater BMPs.

- **Watershed Master Planning**
  To provide the high-resolution data needed to drive systematic and cost-effective implementation of green infrastructure (GI) projects, the City has developed a comprehensive and dynamic Watershed Master Plan (WMP) in the Chollas Creek Watershed that quantifies progress towards water quality goals and incorporates synergies with other municipal programs. The WMP has the capability to dynamically assess the cost-based water quality benefits of specific GI projects against one another and incorporates a robust prioritization logic that realizes the complex nature of implementing retrofit GI facilities within a highly urbanized environment. Ultimately, the output of this project gives the City a project-by-project roadmap that is prioritized to implement high-impact and high-efficiency BMPs first, leaving less desirable projects for later implementation.

- **Bacteria Regrowth Study**
  The bacteria regrowth study currently being completed by the City includes monitoring to characterize the magnitude and extent of potential *Enterococcus* loading due to regrowth within the City's storm drain system. This study will quantify the amount of bacteria in receiving water samples that are harmless to humans and would potentially be used to refine bacteria water quality standards of the Bacteria TMDL as a part of the re-opener process.

- **Los Peñasquitos Lagoon Restoration Project**
  Modeling was completed in FY 2016 to confirm the preferred alternative for the Los Peñasquitos Lagoon Restoration project. The City was identified as the "lead" for the project. The upcoming tasks in FY 2017 include completing the concept design and starting the public outreach process. In coordination with Copermittees, Caltrans and SANDAG completed the environmental and construction phases for various rail and transit, highway, and environmental protection projects.

2 STORMWATER PROGRAM ACCOMPLISHMENTS/NOTABLE UPDATES

The City continued to implement the key elements of the JRMP. The following are stormwater accomplishments and notable updates that occurred during the FY 2016 reporting period.

- **Water Quality Improvement Plans**

  In FY 2016, the San Diego Regional Water Quality Control Board (Regional Board) accepted the six Water Quality Improvement Plans (WQIPs) that included City jurisdiction. The goal of the WQIPs is to protect, preserve, enhance, and restore the water quality of receiving water bodies. These WQIPs identify the adaptive planning and management process necessary to address the highest priority water quality conditions within a watershed. The WQIPs also identify strategies to achieve improvements in the quality of discharges from the Responsible Agencies' storm drain systems. The City is the lead on the WQIP for the San Dieguito, Los Penasquitos, and Mission Bay watersheds. The City is also a participating agency in the San Diego River, San Diego Bay, and Tijuana River watersheds.

- **JRMP Refinements**

  In FY 2016, the City identified refinements to the JRMP. These refinements were incorporated into the JRMP and will be completed in mid FY 2017. Refinements included minor changes to text to update the discussions of WQIP strategies, updates to the fiscal analysis, updates to the minimum BMPs to address pesticide applications, and updated references to the Storm Water Standards Manual that was adopted in FY 2016. The updated JRMP can be viewed at https://www.sandiego.gov/stormwater/plansreports/jrmp.

- **General Plan and Community Plan Amendments**

  Southeastern San Diego and Encanto Neighborhoods Community Plan Updates:

  The recently adopted Southeastern San Diego and Encanto Neighborhoods Community Plans incorporate language, policies and recommendations concerning the reduction of urban runoff and storm water quality. Stormwater quality plays a significant role in both of these communities since Chollas Creek is a significant feature within both plan areas lead directly to the San Diego Bay. A primary recommendation in both community plans is the restoration and enhancement of the creek, consistent with the Chollas Creek Enhancement Program, which includes the reduction of pollutants that enter the storm water system from nearby uses (see respective Conservation Elements). Specific stormwater language and policies have been adopted for the newly updated Southeastern San Diego and Encanto Neighborhoods Community Plans (adopted October 2015 by City Council).

The following policies have been adopted and will be used to implement BMPs for new development projects in Encanto as an example:

- PLU-53:
    - Facilitate urban gardening as a strategy for creating local healthy food systems and fighting chronic obesity related illnesses, contributing to stormwater retention, and fostering community interaction;
    - Figure 3-4 in the Southeastern San Diego and Encanto Neighborhoods Community Plan illustrates stormwater treatment for streets;
    - Images on page 4-15 in the Southeastern San Diego Encanto Neighborhoods Community Plan illustrate stormwater treatment images;

- P-UD-88: Utilize permeable paving, bioswales, green alleys and/or other stormwater design features that will manage rain water and irrigation runoff while supporting the heavy load vehicles that would service the loading docks and refuse containers;

- Upgrade infrastructure for water and sewer facilities and institute a program to clean the storm drain system prior to the rainy season.

- Install infrastructure that includes components to capture, minimize, and/or prevent pollutants in urban runoff from reaching San Diego Bay and Chollas Creek. (See also Urban Runoff Management in the Conservation and Sustainability Element.)

- P-RE-20: Require that all stormwater and urban runoff drainage be filtered or treated before entering into open space lands.

Draft North Park Community Plan: The draft North Park Community Plan, scheduled to be adopted by City Council in October 2016, also contains specific Stormwater and BMP language in the Conservation Element of the Community Plan as well as in the appendices. The draft North Park Community Plan incorporates language, policies and recommendations concerning the reduction of urban runoff and storm water quality specifically in relation to tree planting as well as "Green Streets". Specific policies include:

- PF-1.15 Implement water improvements programs so there are systematic improvements and gradual replacement of water and wastewater facilities throughout the community. Also see General Plan PF-F.6 PF-G.2, PFH. 3, and PF-I.1.
    - Implement Green Infrastructure strategies to address storm water runoff throughout North Park.

- SE-3.17 Encourage property owners to design or retrofit landscaped or impervious areas to better capture stormwater runoff.

Draft Uptown and Golden Hill Community Plans: Public review drafts of the community plans for Uptown and Golden Hill plan updates were made available for public review in June 2016. The Conservation Elements of the draft community plans address conservation of the natural resources in each community, including open space, natural habitats, canyon sewer maintenance, and management of water resources and

urban runoff. The Public Facilities, Services and Safety Elements also address water, sewer and stormwater infrastructure. The discussion and policies related to these topics are intended to guide sustainable development practices that will minimize ecological footprints within each community and preserve natural features and resources. The Draft Programmatic Environmental Impact Reports were released in the summer of 2016. Adoption of the community plans are anticipated at the end of 2016.

San Ysidro Community Plan Update: A comprehensive community plan update started in San Ysidro in June of 2010 and aims to reflect the current conditions, improve mobility, include the pedestrian environment, and address quality of life issues. A Community Plan Update Stakeholders Advisory Committee (Advisory Committee) was established as part of the plan update effort and consists of diverse representation from the residents, property owners, various business interests, local community organizations, and not-for-profit groups, and participating public agencies within the plan update boundary. The San Ysidro Community Planning Group, which provides City decision-makers with input and recommendations regarding land use plans and development proposals within the San Ysidro plan boundary, makes up the majority of the Advisory Committee members. The Plan update effort is informed by technical studies and the City's 2008 General Plan which promotes current storm water, urban runoff, and water conservation policies. A discussion draft of the plan was released in June 2014 and a public review draft was released in April 2015 and 2016. The plan includes a Conservation Element as well as a Public Facilities Services and Safety Element, and contains specific policies related to reducing storm water runoff in the San Ysidro Community planning area. The plan is anticipated to be adopted in fall 2016.

- **Notices of Violation**

Treatment Control BMPs Notice of Violation: The City has achieved compliance at 146 of the 150 sites identified in the Regional Board's Notice of Violation (Order Number R9-2014-0034). The Regional Board granted the City an extension to achieve compliance at the remaining four sites by May 26, 2017.

During the process of achieving compliance for the aforementioned 150 identified sites, the City has discovered an additional 74 sites which initially appear to be out of compliance due to varying degrees of circumstances. Each of these potential violations consist of post-construction BMP issues. The City is continuing the same process outlined in its quarterly reports to the Regional Board, and is researching each case. After initial research to verify non-compliance or not, the City will follow its established procedures to achieve compliance at each site as required by the MS4 permit that it was permitted.

Administrative Civil Liability Complaint: The Regional Board conducted an audit of the City's construction management program during the 2014-2015 rainy season, and issued an Administrative Civil Liability Complaint in July 2016 for several alleged violations involving the City's construction oversight and enforcement practices. The City has worked diligently to address their initial concerns, and will continue to evaluate and implement strategies to ensure long-term success.

Since 2011, there has been a steady increase in the number of construction projects citywide. This surge in activity required the City to respond in a manner that would

enable the staff to keep up with the demand and allow the managers to effectively oversee the growth.

Several substantial improvements have been made, ranging from updating our standard procedures and increasing our outreach efforts to improving the City's escalating enforcement practices and issuing Administrative Citations and Administrative Civil Penalties to repeat offenders. In addition, the City established bi-weekly coordination meetings with the Storm Water teams from Public Works, Development Services and TSW to more effectively share up-to-date project information, discuss various strategies, collaborate on solutions, and coordinate enforcement on a more routine basis so that escalated enforcement is effective.

Another significant improvement involves the development of a unified storm water enforcement database. This will ensure collaboration between Resident Engineers (RE) and storm water inspectors while in the field so they will know the full inspection and enforcement history prior to entering a site. This resource is expected to be available in FY 2017.

Updating the Storm Water Standards Manual is another milestone improvement that was completed during FY 2016. The additional clarity that's now provided in the Construction BMP Standards section (Part 2) gives the responsible party increased guidance to help prevent construction activities from adversely impacting water quality downstream.

The frequency of the citywide storm water training has increased and proven to be a key factor in equipping and empowering our staff to properly address various field challenges and confidently communicate concerns and violations to the responsible parties. Some of the trainings included mandatory annual storm water training for the REs, Inspectors and Code Enforcement Officers, as well as training for our operations staff from the Public Utilities Department and TSW Streets Division.

3 FISCAL ANALYSIS

3.1 GENERAL BUDGET INFORMATION

The Storm Water Division is responsible for reporting annually on the jurisdictional, watershed and regional fiscal analyses to the Regional Board in accordance with the regional Fiscal Analysis Method developed by the Copermittees in response to Regional Board Order No. R9-2007-0001 (2007 Permit). During the reporting period, the Storm Water Division collected and analyzed financial information from 23 City departments/divisions through its "Annual Report Form" questionnaire, as well as from within the Storm Water Division. A summary of the findings is included below.

FY 2016 fell within the transitional period, as defined under Regional Board Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 (Municipal Permit). During the transitional period, most of the jurisdictional portions of the City's program continue to follow the requirements of the 2007 Permit, while the JRMP and WQIPs were being developed in response to the current Municipal Permit. The WQIPs were approved by the Regional Board at the end of FY 2016. The expenditures described for FY 2015 therefore reflect costs to comply with the transitional period stormwater requirements in effect during FY 2015, which are a combination of 2007 Permit and current Municipal Permit standards. Since the WQIPs were approved during FY 2016, partial implementation began, but full implementation will commence in FY 2017.

It is expected that the City will begin full implementation of current Municipal Permit requirements during FY 2017. The City will implement the revised JRMP, which updates the City's jurisdictional stormwater program to follow the current Municipal Permit requirements rather than the 2007 Permit requirements. The City's fiscal analysis reporting structure in turn will change, reporting expenditures, and funding sources in the following three main categories: JRMP (jurisdictional), WQIP (watershed), and flood risk management. That structure is consistent with the framework described in the City's Watershed Asset Management Plan (WAMP), the WQIPs to which the City is a party, and the JRMP. FY 2015 is the last year in which JRMP and flood risk management will be lumped together under the heading of "Jurisdictional Component" rather than reported separately.

3.2 FISCAL ANALYSIS METHODS

While the City used the format and guidelines included in the Fiscal Analysis Method for reporting purposes, a few modifications were necessary to address how the City tracks accounts internally. Modifications to the expenditure categories are described in the relevant sections below. In many cases, estimated percentages were used to allocate expenditures into the appropriate municipal permit component categories, including watershed and regional.

3.2.1 Fiscal Analysis Results

3.2.1.1 Expenditures

The City's FY 2016 Transitional JRMP Regional Program total expenditures ($75,934,083) for implementing the Municipal Permit requirements are summarized in Table 1.

Table 1: FY 2016 Jurisdictional, Watershed, and Regional Expenditures Summary

Jurisdictional Component	
Administration	$11,179,605
Development Planning (including public and private projects)	$1,897,784
Construction (including public and private projects)	$632,646
Municipal (including Non-emergency Fire Fighting expenditures)	$30,146,109
Storm Water Division Capital Improvements Program (CIP)	$7,929,308
Industrial and Commercial	$2,001,544
Residential, Education, and Public Participation	$2,159,991
Illicit Discharge Detection and Elimination (IDDE)	$11,339,120
Jurisdictional Total	**$67,286,108**
Watershed Component[1]	
San Dieguito Watershed	$1,105,348
Los Peñasquitos Watershed	$2,061,071
Mission Bay Watershed	$1,242,769
San Diego River Watershed	$680,843
San Diego Bay Watershed	$2,165,456
Tijuana River Watershed	$686,584
Watershed Total	**$7,942,071**
Regional Component	
Total Copermittee Cost Share for the City of San Diego	$342,001
Additional Regional Costs for education efforts, monitoring, document reviews, regional meeting attendance, and special projects	$363,903
Regional Total	**$705,904**
Total Costs	**$75,934,083**

[1] Watershed Component costs do not include Capital Improvements Program (CIP) costs. CIP costs are only included in the Jurisdictional Component's Storm Water Division Capital Improvements Program Category.

Transitional JRMP Expenditures

The City's FY 2016 Citywide expenditures for implementing the jurisdictional Municipal Permit requirements are depicted in Figure 1. Expenditures were provided as actual costs in most cases, and when the actual costs could not be determined, estimates of actual costs were provided. The Storm Water Division used the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, because of implementation overlap with the City's education, public participation, and residential Municipal Permit components, it is difficult to separate out individual component costs. Therefore, the expenditures for residential, education, and public participation are reported as one expenditure category.

A total of $67,286,108 was expended in FY 2016 to implement JRMP activities citywide. This amount includes costs paid by sewer and water rate payers (which are used for sewer and water-related services) and costs reimbursed by project applicants. An overview of the expenditures reflected in this component is described below.

Administration ($11,179,605)

Activities identified in this section represent personnel and non-personnel expenses for administration and contracts, grant management, citywide management, staff training, reporting, and assessment of the Municipal Permit.

Development Planning ($1,897,784)

Activities identified in this section represent personnel and non-personnel expenses for plan check reviews, incorporating BMPs into project designs, BMP Design Manual development, and General Plan updates. This category includes expenses for private and public projects.

Construction ($632,646)

Activities identified in this section represent personnel and non-personnel expenses for plan check review services, field inspections related to grading permits, public improvements, and building activities. This category includes expenses for private and public projects.

Municipal ($30,146,109)

Activities identified in this section represent personnel and non-personnel expenses for street sweeping, storm drain and channel maintenance, BMP implementation, and municipal facility and activity inspections. Additionally, this section includes the expenditures for Fire Department activities not related to emergency firefighting, such as facility inspections, stormwater BMPs, etc.

Capital Improvement Program ($7,929,308)

Activities identified in this section represent personnel and non-personnel expenses for implementation of new construction and planned improvements to existing facilities for storm water management. Projects may include, but are not limited to, the construction, purchase, or major renovation of buildings, utility systems, and other facilities to achieve storm water requirements. In addition, they may also include land acquisitions and roadway projects to install storm water facilities.

Industrial and Commercial ($2,001,544)

Activities identified in this section represent personnel and non-personnel expenses for inspection of industrial and commercial facilities. This also includes personnel and non-personnel expenses for the stormwater components of Food Establishment Wastewater Discharge Program (FEWD) and Industrial Wastewater Control Program (IWCP) inspections.

Residential, Education, and Public Participation ($2,159,991)

Activities identified in this section represent personnel and non-personnel expenses for educational materials, outreach efforts and events, public service announcements (PSAs), household hazardous waste (HHW) and used oil outreach, and community events.

Illicit Discharge Detection and Elimination ($11,339,120)

Activities identified in this section represent personnel and non-personnel expenses for identification and elimination of illicit discharges, enforcing the City's stormwater ordinance and implementation of the administrative civil penalties and citation process, and the urban runoff monitoring program.

Watershed Expenditures

The City's watershed expenditures during FY 2016 for the implementation of the watershed Municipal Permit requirements were provided as actual costs and when the actual costs could not be determined, estimates of actual costs were provided. The Storm Water Division used the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City expenditures and do not account for any expenditure disbursed by other Copermittees within the watershed(s).

In total, $7,942,071 was expended in FY 2016 for the implementation of citywide watershed activities. This amount includes costs for the implementation of applicable TMDLs along with special studies.

Regional Expenditures

The City's FY 2016 regional expenditures ($705,904) for the implementation of the regional Municipal Permit requirements are primarily the City's share of regional Copermittee stormwater program costs. Additional costs include estimated staff time to attend regional meetings and other related administration costs. The Storm Water Division used the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City expenditures, and do not account for any expenditure disbursed by other Copermittees in the region.

3.2.1.2 Grant Funding for Special Studies

In addition to resources identified for Municipal Permit requirements, the City actively seeks grants, and other funding sources, for special studies and Capital Improvement Projects. For the most part, funding for these projects may be limited to the projects specified and the City may restrict funding reallocation to other projects. Therefore, these resources are currently not incorporated in calculations for total Municipal Permit requirements expenditures detailed in Section 2.2.1.4 above. Table 2 lists projects that were initiated and/or in progress during FY 2016. It is important to note that the projects span multiple years and the amounts listed below are not just representative of FY 2016.

Table 2: Funding for Special Projects

Funding Source	Project	Amount	Matching Fund Amount	Total Amount[2]
San Diego County Water Authority (SDCWA)	Memorial Park Infiltration Basin Construction	$255,651.00	$295,904.00	$551,555.00
State Water Resources Control Board (SWRCB)	43rd & Logan Monitoring & Assessment	$689,300.00	$85,362.00	$774,662.00
SDCWA	Bannock Avenue Infiltration Construction	$630,500.00	$893,300.00	$1,523,800.00
SWRCB	Southcrest Park Infiltration Project	$1,880,070.00	$777,970.00	$2,658,040.00
Total Grant Funding		**$3.5 million**	**$2.0 million**	**$5.5 million**

2 Amounts span multiple years and not just FY 2016

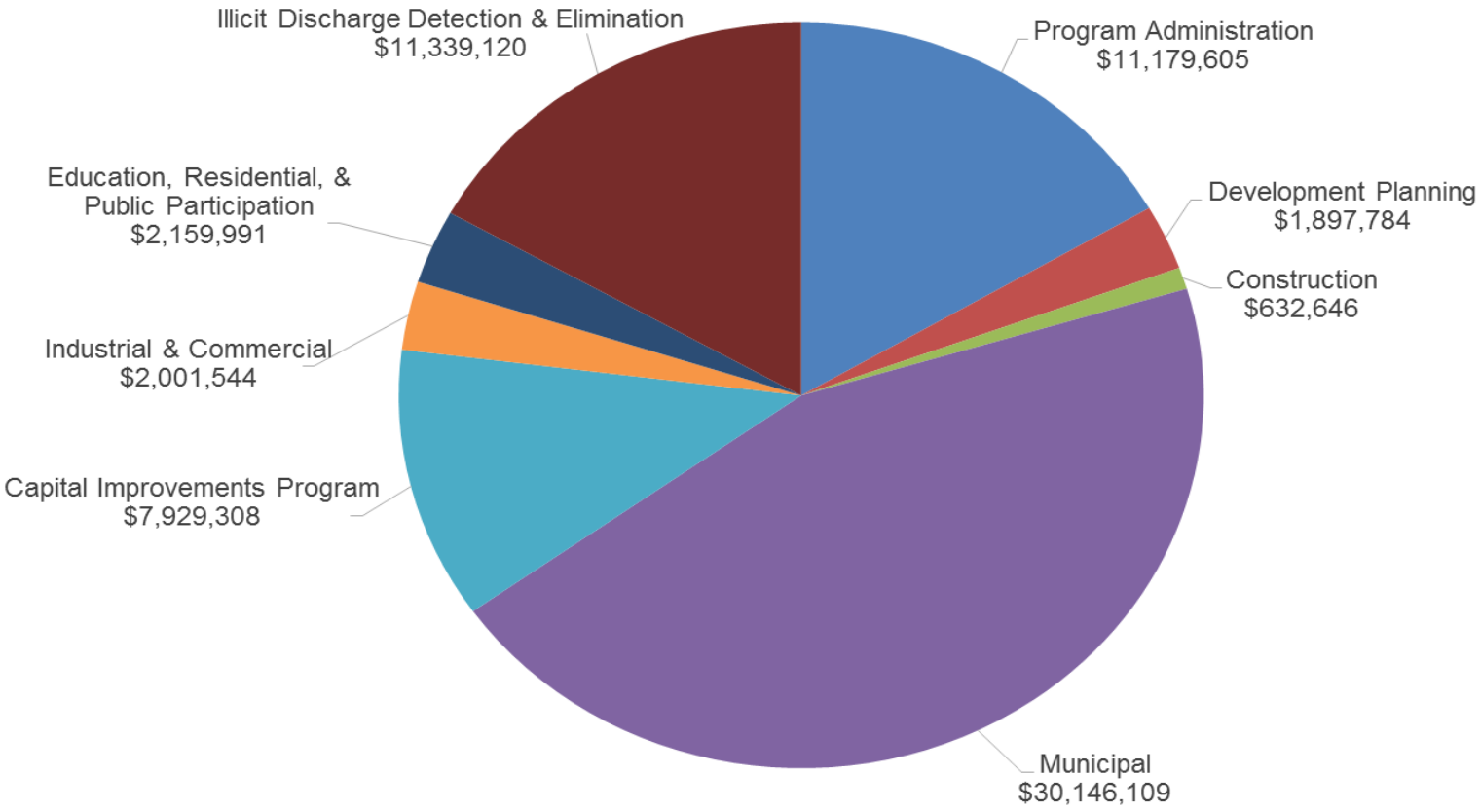

Figure 1: FY 2016 Citywide JRMP Expenditures by Permit Area

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3.2.2 Funding Sources

Citywide implementation of Municipal Permit requirements is funded through four main types of governmental funds: the General Fund, Special Revenue Funds, Enterprise Funds, and Internal Service Funds.

3.2.2.1.1 General Fund

The General Fund is the main fund for the City and is supported by major revenue sources, including property tax, sales tax, transient occupancy tax, and franchise fees. Departments funded by the General Fund provide core community services.

3.2.2.1.2 Special Revenue Funds

Special Revenue Funds account for revenues received for specifically identified purposes. Some of the larger funds that fall under this category include TransNet, Gas Tax, and Special Promotion programs.

3.2.2.1.3 Enterprise Funds

Enterprise Funds are initiated for specific purposes and funded through fees for services. This funding type is designated for the operations, management, maintenance, and development of the department providing the service. For implementation of citywide JRMP activities, activities are funded through the following enterprise funds:

- Airports Fund
- Development Services Enterprise Fund
- Golf Course Enterprise Fund
- Recycling Fund
- Refuse Disposal Fund
- Sewer Revenue Funds
- Water Utility Fund

3.2.2.1.4 Internal Service Funds

Internal Service Funds are comprised of fees for services provided by one City department to another City department or division. For implementation of citywide JRMP activities, activities are funded through the following internal service funds:

- Engineering and Capital Projects Fund
- Equipment Division Funds

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City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 1: Summary of Watershed Specific Data from the IDDE Program

JRMP Annual Report Form – Section IV. Illicit Discharge Detection and Elimination Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of non-storm water discharges reported by the public	119	353	541	368	634	47	**2,062**
Number of non-storm water discharges detected by Copermittee staff or contractors	60	172	317	314	393	50	**1,306**
Number of non-storm water discharges investigated by the Copermittee	171	518	845	683	1,021	97	**3,335**
Number of sources of non-storm water discharges identified	143	442	736	559	828	94	**2,802**
Number of non-storm water discharges eliminated	141	434	697	553	819	92	**2,736**
Number of sources of illicit discharges or connections identified	142	437	715	551	805	94	**2,744**
Number of illicit discharges or connections eliminated	140	429	676	545	796	92	**2,678**
Number of enforcement actions issued	141	436	709	553	819	93	**2,751**
Number of escalated enforcement actions issued	69	197	351	349	445	61	**1,472**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 2: Summary of Watershed Specific Data from the Development Planning Program

JRMP Annual Report Form – Section V. Development Planning Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/ La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of proposed development projects in review	70	241	332	233	561	60	**1,497**
Number of Priority Development Projects in review	5	32	15	21	38	8	**119**
Number of Priority Development Projects approved	88	110	76	61	138	27	**500**
Number of approved Priority Development Projects exempt from any BMP requirements	0	0	0	0	0	0	**0**
Number of approved Priority Development Projects allowed alternative compliance	0	0	0	0	0	0	**0**
Number of Priority Development Projects granted occupancy	75	63	7	30	40	9	**224**
Number of completed Priority Development Projects in inventory	118	178	141	113	213	89	**852**
Number of high priority Priority Development Project structural BMP inspections	1	9	0	1	1	5	**17**
Number of Priority development project structural violations	1	8	0	1	1	5	**16**
Number of enforcement actions issued	1	15	0	3	4	12	**35**
Number of escalated enforcement actions issued	0	3	0	1	1	1	**6**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 3: Summary of Watershed Specific Data from the Construction Managment Program

JRMP Annual Report Form – Section VI. Construction Management Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/ La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of construction sites in inventory	1,364	4,300	2,091	1,830	3,870	448	**13,903**
Number of active construction sites in inventory	26	47	37	38	51	8	**207**
Number of inactive construction sites in inventory	12	112	216	188	425	36	**989**
Number of construction sites closed/completed during reporting period	23	169	276	258	518	44	**1,288**
Number of construction site inspections	10,074	27,037	9,404	8,875	18,737	2,801	**76,928**
Number of construction site violations	169	270	195	78	211	154	**1,077**
Number of enforcement actions issued	114	164	183	51	187	150	**849**
Number of escalated enforcement actions issued	65	91	16	25	32	6	**235**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 4: Summary of Watershed Specific Data from the Existing Development Managment Program

JRMP Annual Report Form – Section VII. Existing Development Management Program	San Dieguito Watershed				Los Peñasquitos Watershed				Mission Bay/La Jolla Watershed				San Diego River Watershed				San Diego Bay Watershed				Tijuana River Watershed				Total Citywide			
	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES
Number of facilities or areas in inventory	23	1,542	81	12	123	8,282	915	27	218	8,911	464	32	121	10,175	513	33	197	14,085	690	70	20	2,075	369	6	702	45,070	3,032	180
Number of existing development inspections	22	308	6	1	117	1,533	140	4	159	4,801	186	5	114	2,573	99	5	195	3,197	102	5	19	233	41	2	626	12,645	574	22
Number of follow-up inspections	0	14	0	0	0	263	13	0	0	166	4	3	0	193	5	4	0	270	44	4	0	31	7	0	0	937	73	11
Number of violations	3	49	0	109	18	388	37	375	34	413	6	424	10	420	11	481	23	511	34	709	1	60	19	69	89	1,841	107	1,819
Number of enforcement actions issued	4	58	0	107	22	490	48	285	46	462	9	407	16	514	13	365	41	623	44	543	1	65	21	62	130	2,212	135	1,790
Number of escalated enforcement actions issued	0	23	0	50	2	148	8	134	0	205	3	182	0	172	0	236	6	217	11	291	0	26	13	36	8	791	35	884

MUN Municipal
COM Commercial
IND Industrial
RES Residential

D.3.3 City of San Diego Strategies

City of San Diego's strategies are detailed in Tables D-3 through D-6.

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Table D-3
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

~~Strikeouts~~ and red text are text edits that have been made up to the current date since the WQIP September 2015 submittal.

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	**Plan to implement next FY (FY17)? (Y/N)** MS4 Permit Section: F.3.b.(3)(d)(iii))	
Jurisdictional Strategies								
Note: Strategy IDs with an asterisk indicate those strategies that are considered "jurisdictional" in the MS4 Permit, but are considered enhancements to the JRMP to target highest priority water quality conditions.								
JRMP (E.2-E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
CSD-JRMP-01	Establish guidelines and standards for all development projects; provide technical support related to implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area or implement easements to protect water quality, where applicable and feasible le. Includes internal coordination and collaboration between City departments (DSD, PWD, and Engineering) to improve success and long-term benefits of BMPs.	Refer to JRMP Section 4. ~~All high priority projects will be inspected annually prior to the rainy season. 20 percent of all projects will be inspected annually. Maintenance inspections include examination of all structural BMPs at a project to verify that each structural BMP is working, being maintained properly, and is in compliance with all applicable City ordinances and permits.~~ May include providing technical support and consultation for other City departments that review project submittals for compliance with Storm Water Standards Manual requirements. May also include review of City projects for compliance with Storm Water Standards Manual requirements.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: Revised Storm Water Standards Manual went into effect on February 16, 2016. FY17 Notes: The Storm Water Standards will be revised to include Critical Coarse Sediment Yield Area mitigation measures that were developed through a TAC process, along with other minor clarifications.
CSD-JRMP-02	Develop Design Standards for Public LID BMPs.	Improve quality of design to ensure efficiency and reliability in public designs.	FY14-FY15	Continuous-As needed	Yes	No Change	Yes	FY16 Notes: Draft Green Infrastructure standard drawings and specifications are currently in the review process. FY17 Notes: Plan to develop more standard drawings and specifications for other green infrastructure components.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-03	Outreach to impacted ~~industry~~ commercial, industrial, municipal, and residential development regarding minimum BMP requirement updates.	~~Affects commercial, industrial, and residential development.~~ May include onsite education at the time of inspections, city staff training, and mailers to business owners and prospective business owners.	FY15	Continuous-As needed	Yes	Revised to clarify strategy	Yes	FY16 Notes: Sent out monthly business Tax License renewal mass mailings, which included information about storm water BMPs. Violation location information from the Residential Patrol Program is used to target outreach.
CSD-JRMP-04*	Train staff on LID regulatory changes and LID practices.	Formal training is required for all staff involved in development plan review to increase knowledge of LID BMPs. Goal of training associated with LID practices and regulations is to promote LID implementation and to avoid adverse conditions such as trees planted within swales, or planned drainage patterns which obstruct or inhibit LID performance.	FY16	Continuous-As needed	Yes	No Change	Yes	FY16 Notes: Presented at a PWD training to discuss the revised Storm Water Standards Manual. Provided a plan to check training for plan reviewers at DSD and PWD staff in May 2016.
CSD-JRMP-05*	Amend municipal code and ordinances, including zoning ordinances, to facilitate and encourage LID opportunities to support compliance with the MS4 Permit and TMDLs in a reasonable manner. Ensure consistency with the City of San Diego's BMP Design Manual. Update the Storm Water Standards Manual accordingly.	Municipal codes and ordinances will be brought to City Council for consideration to encourage LID implementation (e.g., runoff detention and filtration using natural filters and storm water retention for reuse). LID storm water management will be encouraged in proposed codes and ordinances associated with development and redevelopment projects, which are brought to City Council for consideration.	FY15	Continuous-As needed	Yes	No Change	No	None
CSD-JRMP-06	Provide technical education and outreach to the development community on the design and implementation requirements of the MS4 Permit and Water Quality Improvement Plan requirements.	Technical education and outreach to the development community includes outreach on design standards, City design manuals, and the WMAA.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Presented the revised draft Storm Water Standards at two public workshops in September 2016.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Priority Development Projects (PDPs)								
CSD-JRMP-07	For PDPs, administer a program and provide technical support to other City departments to ensure implementation of on-site structural BMPs to control pollutants and manage hydromodification by developing City wide storm water development standards and design guidelines.	Administer a program in coordination with other City departments to promote and confirm a thorough understanding of requirements for implementing structural BMPs that control pollutants and manage hydromodification. Includes requirements to confirm proper design and construction through processes controlled by other City departments. Please see Attachment 1 for details on PDP related BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City enhanced the Storm Water Quality Management Plan (SWQMP) template that was developed as a Copermittee effort for developers to use.
CSD-JRMP-08	Institute a program to verify and enforce maintenance and performance of treatment control BMPs.	Refer to JRMP Section 4.5. The Storm Water Division is responsible for annually verifying that all structural BMPs within its inventory are being properly maintained. The Storm Water Division performs verification through an Annual Maintenance Verification mailing and a direct maintenance inspection program. Parties responsible for maintenance of structural BMPs are required to complete and sign the Annual Maintenance Verification, certifying that the structural BMPs are being properly maintained. Direct maintenance inspections will be performed at all projects for which an Annual Maintenance Verification Form was not completed. All high priority projects will be inspected annually prior to the rainy season. 20 percent of all projects will be inspected annually. Inspect additional BMPs as needed. Medium and low priority projects will not require inspection if they have completed their Annual Maintenance Verification form, unless they are part of the 20 percent of projects that are annually inspected.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY17 Notes: For porous pavement BMPs, staff plan to use an infiltrometer to measure BMP effectiveness.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-09	Update ~~BMP Design Manual procedures~~ Storm Water Standards Manual to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP Section 4. Storm Water Standards Manual will be updated in accordance with the Permit and made available on the City's website.	FY15	Continuous every 5 years/ permit cycle	Yes	Revised to clarify strategy	Yes	FY17 Notes: The Storm Water Standards will be revised to include Critical Coarse Sediment Yield Area mitigation measures that were developed through a TAC process, along with other minor clarifications.
CSD-JRMP-10*	Amend BMP Design Manual for trash areas. Require full four-sided enclosure, siting away from storm drains and cover. Consider the retrofit requirement.	Amend BMP Design Manual and zoning standards/requirements which address reduction of pollutants for common areas of trash build-up (e.g. restaurants, supermarkets, "big box" retail stores with food, pet stores). Most effective method for source control of bacteria and trash is to employ four-sized trash enclosures with a cover over trash areas.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on trash enclosures (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-11*	Amend BMP Design Manual for animal-related facilities, such as such as animal shelters, "doggie day care" facilities, veterinary clinics, breeding, boarding and training facilities, groomers, and pet care stores.	Amend BMP Design Manual and zoning requirements (including retrofits) to provide supplemental standards for animal facilities (including animal shelters, dog daycares, veterinary clinics, groomers, pet car stores, and breeding, boarding, and training facilities). Supplemental standards may include requiring covered trash enclosures, identification of landscaped relief areas on site plans, ensuring drainage connections and treatment swales for areas that will not drain to the sanitary sewer, as well as inspection of grading, drainage, and landscaping for outdoor exercise areas.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on animal facilities (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-12*	Amend BMP Design Manual for nurseries and garden centers.	Amend BMP Design Manual to provide supplemental standards for plant nurseries and garden centers. Standards will focus on reducing irrigation runoff, and loading of sediment, pesticides, and nutrients. Measures may include: covered outdoor storage, green waste management BMPs, improved irrigation efficiency to reduce dry-weather runoff, and containment of runoff from impervious areas where plants and materials are stored.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on nurseries (See Part 1, Appendix E of the Storm Water Standards).

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-13*	Amend BMP Design Manual for auto-related uses.	Amend BMP Design Manual to provide supplemental standards for automotive-related uses to reduce loading of metals, oils, grease, and trash. Measures may include: four-sized covered trash enclosures, and careful review of auto-related usage areas (e.g. garage bays at repair shops) for grading, drainage, and drain connections to sanitary sewer systems.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on auto-related facilities (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-14*	~~Develop and administer an alternative compliance program for on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects). Refer to Section 4.2.5.~~ Offsite Alternative Compliance Option	Refer to JRMP Section 4.2.3.1. WMAA and Water Quality Equivalency Study completed in FY15. Phase I, applicant implemented projects, is anticipated to be in effect by the end of FY16 contingent on Regional Board's approval of the WQIPs. Phase II, the expansion of the program to include other alternative compliance options, is expected to begin in FY16.	FY15	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: Phase 1 of the Alternative Compliance Program (ACP) went into effect on 2/16/16. Development on Phase 2 of the ACP, including public involvement via Technical Advisory Committee (TAC) meetings, began during FY16. FY17 Notes: Continue developing Phase 2 of ACP. Topics to discuss include: environmental permitting, long-term facility maintenance, legal agreements and credit tracking, maintenance and permitting rules, and credit tracking and legal rules. Public involvement via TAC meetings will continue.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
E.4 Construction Management								
CSD-JRMP-15	Administer a program to oversee implementation of temporary BMPs that control sediment and other pollutants during the construction phase of projects. Includes requirements to inspect at appropriate frequencies and effectively enforce requirements through process controlled by other City departments.	Refer to JRMP Section 5. Inspections performed by the City or City staff provide verification that each site is in conformance with the Construction Storm Water BMP Performance Standards in the Storm Water Standards Manual. Inspections are tracked to ensure that they meet the minimum inspection frequencies. High priority active and inactive sites are inspected bi-weekly during the rainy season. Medium priority sites are inspected monthly during the rainy season. Low priority sites are inspected as-needed during the rainy season. All sites are inspected as-needed during the dry season. Please see Attachment 1 for details on construction BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
CSD-JRMP-17	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP Sections 6, 7, and 8. All industrial and commercial areas are inspected once within ~~the Permit term (~~five years~~)~~. At a minimum, 20 percent of industrial and commercial areas receive onsite inspections every year. Municipal facilities are inspected twice annually, once prior to the rainy season, and once during the rainy season. Residential management areas (RMAs) within the City are to be inspected once within five years ~~the Permit term~~, at a minimum. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: The City began patrols of residential management areas in FY16. See the City's JRMP Annual Report form, also included in Appendix D, for numbers of inspections, violations, and enforcement actions for all types of existing development.
CSD-JRMP-18	Update minimum BMPs for existing residential, commercial, and industrial development. Specific updates to BMPs include required street sweeping, catch basin cleaning, and maintenance of private roads and parking lots in targeted areas.	Refer to JRMP Appendix IX. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY15	Continuous every 5 years/ permit cycle	Yes	No Change	Completed	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-19	Outreach to property managers and trash haulers to elevate the emphasis of power washing as a pollutant source.	Emphasis will be placed on non-compliant washing as an enforceable violation. Will occur city-wide in residential, commercial, and industrial areas.	FY15	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: City staff utilized a new fact sheet consistent with updated permit conditions to inform non-compliant power-washing operators of BMP requirements. The fact sheet was also provided to the San Diego Downtown Partnership as part of the Division's education and outreach effort for downtown businesses. FY17 Notes: The City anticipates distributing a comprehensive BMP guidebook to businesses and business district leaders in areas with regular power-washing activities.
CSD-JRMP-20	Implement property based inspections.	Property-based inspections increase awareness and responsibility for individual properties to tackle issues associated with trash, landscapes, and parking areas. Expanding beyond the business-level inspections will achieve different and more effective opportunities for education, outreach, inspection, and enforcement to encourage water conservation strategies. Inspection frequency dependent on type of facility. See CSD-9 for inspection frequency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Inventoried properties have been mapped in GIS. The City's inspection data management system has also been set up to track and map the properties inspected each fiscal year and over the Permit cycle.
CSD-JRMP-21	Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	Verify and bring to City Council for consideration an update (as needed) for the City's Municipal Code (43.0301) to meet new permit requirements for swimming pool discharges.	FY15	Continuous-As needed	Yes	No Change	Completed	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-22*	Promote and encourage implementation of designated BMPs for residential and non-residential areas.	Landscape-based rebates are a "gateway" for adoption of other beneficial practices and are one of the nonstructural methods which address impacts from single-family residential areas (City of San Diego 2011 program development background study). Residential incentives can include: education and training ~~(neighborhood watershed field days)~~, and aggressive subsidies or rebates for grass replacement and rainwater harvesting. Existing programs will be expanded overall, and ~~also have targeted expansion within specific subwatershed, particularly with highest water quality priority conditions. W~~will occur city-wide in residential, commercial, and industrial areas.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	None
MS4 Infrastructure								
CSD-JRMP-23	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, channels as allowed by resource agencies, detention basins, pump stations, etc.) for water quality improvement and for flood control risk management.	Refer to JRMP Section 7. Storm drain inlets are inspected ~~at least once per year~~ generally annually, and cleaned when accumulated materials are present. Other MS4 and related structures are inspected as needed.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: 7,087 storm drain inspections were completed in the WMA, and 386.5 tons of sediment, trash, and debris were removed during storm drain cleaning. In addition to routine maintenance of the MS4, across its entire jurisdiction the City repaired or replaced 12 pump stations and modernized another 14 pump stations, televised 28,000 linear feet of pipe in 62 locations, and began the development of the Waterways Maintenance Plan and Channel Maintenance Prioritization Plan. Removed 0.35 tons of trash from routine open channel trash cleaning.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-24*	Enhanced catch basin cleaning to increase pollutant removal (up to 4 times per year) in the rainy season.	To increase pollutant load removal, catch basins will be cleaned up to four times per year in the rainy season. The City of San Diego's pilot study found that major pollutants may vary from neighborhood to neighborhood (yard waste versus trash and sediment). Implementation may be adapted based on catch basin record keeping and cleaning optimization. Increase in frequency will be phased over 4 Fiscal Years.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Additional staff was hired to begin phased program ramp up, FY17 Notes: Begin performing enhanced catch basin cleaning.
~~CSD-JRMP-26~~	~~Increased frequency of catch basin inspection and as-needed cleaning.~~	~~For every segment of channel that is cleared, the City will conduct an inspection and as-needed cleaning of every catch basin within 100 feet of the cleared segment of channel. Additional inspection and as-needed cleaning will occur every three months for one year after the segment of channel is cleared.~~	~~FY13~~	~~Completed within schedule in 5 years (ends FY18)~~	NA	Incorporated into CSD-JRMP-27	NA	NA
CSD-JRMP-27	Implement additional BMPs in coordination with Master Maintenance Plan Enhancements.	For each channel segment, City will either 1) implement landscape retrofits on one residential property, 2) increase street sweeping frequency by prioritizing high traffic commercial routes adjacent to maintained channel, 3) construct and maintain a stormwater management BMP (e.g. biofiltration system, permeable pavement, vegetated swale, restored wetlands), or 4) increase frequency of catch basin inspection and as-needed cleaning for one year after maintenance.	FY13	Completed within schedule in 5 years (ends FY18)	NA	Strategies CSD-JRMP-26 and CSD-JRMP-36 were combined into one strategy, CSD-JRMP-27, to streamline recordkeeping	Yes	FY16 Notes: Not applicable, channel maintenance did not occur in the Los Peñasquitos WMA during FY16. FY17 Notes: If channel maintenance activities occur in this watershed during FY17, this mitigation approach may be used in FY17.
CSD-JRMP-28	Proactively repair and replace MS4 components to provide source control from MS4 infrastructure.	In order to limit inflow of pollutants and reduce pollutant loads, proactive measures will be taken to improve, repair, and replace MS4 components. The City of San Diego will start a multi-year program of repairing and replacing storm drain pipes to reduce sediment loading to the MS4. Development of an assessment management program and bond issues will be addressed. Exploration of daylighting pipes will take place where feasible and appropriate.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-29	Replacement of hard assets.	Includes needed replacement of storm drains and structures.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-30	Coordinate with other City departments (PUD) to implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Tiger Team was established in FY16 as a joint effort between TSW & PUD to identify and eliminate exfiltration sources from the sanitary sewer system to the MS4. Since the team was created, it has successfully eliminated one major source. FY17 Notes: For FY17, the team is focusing on two sites within the City and are identifying more.
CSD-JRMP-31*	Identify sewer leaks and areas for sewer pipe replacement prioritization.	Risk assessment to include identifying targeted areas (age, location, proximity to MS4), coming up with methodology, pilot, desktop exercise/analysis.	FY16	Continuous-As needed	Yes	No Change	Yes	None
Roads, Streets, and Parking Lots								
CSD-JRMP-32	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Approximately 21,030 curb miles of roads, streets and highways were swept in the WMA.
CSD-JRMP-33	Outreach to street sweeping enhancement-targeted areas.	Division staff will conduct a thorough education and outreach effort beginning months in advance of the expansion of sweeping routes. Staff will work with the affected Council offices, community stakeholders, non-governmental organizations and community groups to build community awareness and acceptance of the enhanced sweeping program.	FY16	Continuous-As needed	Yes	No Change	Yes	FY16 Notes: Developed targeted communication materials for lead commercial property managers that covered various topics, including enhanced street sweeping.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-34*	Enhance street sweeping through equipment replacement (replace mechanical sweepers with regenerative air sweepers) and route optimization (sweep all routes twice per month) in targeted areas.	Following outreach and posting, street sweeping efforts will be increased in target areas (those with sediment or metals as a highest priority water quality conditions). Replacement of street sweeping equipment with high-efficiency regenerative air and vacuum-assisted sweepers over time is expected to further increase load reductions (even if current routes and frequencies remain unchanged).	FY17	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: City purchased five vacuum sweepers. Existing routes in the Los Peñasquitos Watershed were identified and recommended to be swept. Also began sweeping various routes on an individual basis to assess sweeper function. FY17 Notes: The City plans to develop a route optimization process in Los Peñasquitos.
CSD-JRMP-35*	Initiate sweeping of medians on high-volume arterial roadways.	Medians of roadways are also a potential source of pollutants. Consider implementing or increasing sweeping of medians. Consider mechanical and hand sweeping techniques.	FY17	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Median sweeping began in FY16. A total of 4,315 median miles were swept in FY16 City-wide.
~~CSD-JRMP-36~~	~~Implement additional street sweeping (Settlement Agreement).~~	~~City shall increase street sweeping frequency by prioritizing high traffic commercial routes adjacent to maintained channel with vacuum-assisted sweeper for every 400 linear feet of vegetation that is removed (except for removal of invasive species, e.g., Arundo) within a drainage area. Sweeping shall be conducted in median areas that are not subject to regular sweeping routes, and shall occur at a frequency of at least once per quarter for one calendar year after maintenance. Funding and resources were secured for FY2013. Funding for future fiscal years is contingent on annual budget approval by City Council.~~	~~FY13~~	~~Completed within schedule in 5 years (ends FY18)~~	~~NA~~	~~Incorporated into CSD-JRMP-27~~	~~NA~~	~~NA~~
Pesticides, Herbicides, and Fertilizer BMP Program								
CSD-JRMP-37	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education. ~~permits, and certifications.~~	Refer to JRMP Sections 7, 8, and 9.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Retrofit and Rehabilitation in Areas of Existing Development								
CSD-JRMP-38	Development of a strategy and identification of candidate areas of existing development necessary for implementing retrofit projects and facilitate the implementation of such projects.	Refer to JRMP Appendix XIX. The Offsite Alternative Compliance Program will include methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including proximity to high priority water quality conditions, potential pollutant load removal effectiveness, and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards. Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None
CSD-JRMP-39	Development of a strategy and identification of candidate areas necessary to implement stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Refer to JRMP Appendix XIX. The Offsite Alternative Compliance Program ~~(Section 4.2.5.4 and Appendix P)~~ will include methods for identifying and assessing potential stream, channel, or habitat rehabilitation projects in existing development areas. Rehabilitation project selection will be based upon a variety of factors including existing stream or habitat degradation, potential future cumulative stream or habitat impacts, and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
CSD-JRMP-40	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP Section 3. ~~The City must visually inspect at least 500 identified and prioritized major MS4 outfalls at least annually during dry weather conditions.~~ Inspections of major MS4 outfalls conducted in response to public reports and staff or contractor reports and notifications may count toward the required visual inspections of MS4 outfall discharge monitoring stations. Please see Attachment 1 for details on how the IDDE Program will address sources causing or contributing to the HPWQC.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: 518 cases were investigated, including 353 reported by the public; 429 illicit discharges or illicit connections were eliminated; and 436 enforcement actions and 197 escalated enforcement actions were issued in the WMA. City-wide, the number of discharges investigated has almost tripled since FY14 (1,186 in FY14 to 3,335 in FY16). The increase is believed to be mainly due to increased reports of irrigation runoff discharges from the public and from PUD.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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E.7 Public Education and Participation (B.3.b(1)(a)(iii))								
CSD-JRMP-42	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP Section 9.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City continued its extensive education and outreach effort across each of the six watershed areas in the City. This included regular attendance at community events in order to share education materials and the continuing sponsorship of community clean-up and pollution prevention education events with the City's Non-Governmental Organization partners, including I Love A Clean San Diego and San Diego Coastkeeper.
CSD-JRMP-43	Continue implementation of a Pet Waste Program.	Pet Waste Program includes outreach on "Scoop the poop", installation of posts for dispensers, distribution of lawn signs, and attendance at dog-related community activities.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Printed and distributed more pet waste signage. FY17 Notes: New bag dispensers will be installed and there will be outreach at community events. More signage will be installed.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-44	Promote and encourage implementation of designated BMPs in commercial and industrial areas.	Provide education and outreach on BMPs for commercial businesses and industrial facilities. Will occur city-wide in non-residential areas.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City continued its mandated commercial and industrial facility inspection effort sharing industry specific education materials with business and property owners when BMP deficiencies were discovered. FY17 Notes: The City will continue its inspection and education effort while also introducing alternative compliance strategies for new developments and sharing the updated Storm Water Standards Manual with target audiences.
CSD-JRMP-45*	Expand outreach to homeowners' association (HOA) common lands and HOA incentives.	Approaches to consider include: offering incentives to HOAs and maintenance districts to adopt water-conserving/efficiency and stormwater-reduction changes to their landscapes, irrigation, and maintenance; conducting workshops with property managers; providing supplemental standards, inspection, or enforcement for HOA-managed properties.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Finalized updated code compliance fact sheets applicable to common lands activities. Coordinated water conservation pollution prevention incentive programming with PUD.
CSD-JRMP-46*	Develop an outreach and training program for property managers responsible for HOAs and maintenance districts.	Approaches to engage HOAs and property managers include: conducting workshops with property managers, providing supplemental standards, inspections or enforcement around HOA properties, and offering incentives to HOAs and maintenance districts to adopt changes to landscapes, irrigation, or maintenance which promote water conservation or storm water reduction. Property managers are also a target for enhanced outreach.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-47	Develop a targeted education and outreach program for homeowners with orchards or other agricultural land uses on their property.	Educate residents on practices of small-scale or on-site composting to protect local water quality. May include targeted education of owners of chickens to address bacteria. Outreach can be coordinated through the San Diego County Agriculture, Weights, and Measures division.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-48	Enhance school and recreation-based education and outreach.	Develop curriculum and establish distribution in public schools. Includes education on water conservation.	FY15	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City worked with its NGO partners to expand the number of children reached through school-aged education programs. The Division updated curriculum materials for Project Swell in conjunction with San Diego Coastkeeper and provided printed education materials to leaders with the Ocean Discovery Institute in hope of establishing new partnerships with that organization. FY17 Notes: The Division will be expanding the Blue Brigade Middle and High School program sponsored with I Love A Clean San Diego. The Division will also distribute written education materials through the newly completed Ocean Discovery Institute headquarters.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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CSD-JRMP-49	Develop education and outreach to reduce irrigation runoff.	Example approaches to reduce or eliminate irrigation runoff may include: education and outreach, prohibition, enhanced enforcement of existing prohibitions, and pilot projects such as the City of Del Mar's pilot door hanger project.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Division used communication materials designed to address potential threats from El Nino rains as a new vehicle for educating the public about the need to eliminate irrigation runoff. FY17 Notes: The Division is working with partner agencies and other City operations to develop new education and outreach efforts targeting urban runoff.
CSD-JRMP-50*	Develop and distribute regional training materials for water-using mobile businesses.	Consider development of supplemental standards for mobile businesses including: covered trash enclosures, careful review of washing areas (grading, drainage, landscaping, sanitary sewer system connectivity), and appropriate signage (either through zoning for retrofits or "best fix" approaches, or through BMP Design Manual standards). Businesses may include carpet cleaners, tile installers, plumbers, etc.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: The Division updated its suite of fact sheets related to mobile business activities to bring them up-to-date with current permit requirements.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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CSD-JRMP-51*	Enhance education and outreach based on results of effectiveness survey and changing regulatory requirements.	Use effectiveness surveys to enhance existing education and outreach programs while proactively keeping up with and incorporating changing regulatory requirements.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Division annually conducts thousands of event-based surveys gathering information about public understanding of pollution prevention and about the City's storm water management efforts. The survey effort continued in FY16 and allowed the Division to update its education materials and strategies based on current findings about public awareness. FY17 Notes: The Division will contract with a new public opinion research firm to perform a statistically valid assessment of general public awareness. The finding from that effort will be combined with the discoveries of the ongoing event survey effort to drive future outreach priorities.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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CSD-JRMP-52	Continue to promote and encourage implementation of Integrated Pest Management (IPM) for residents and businesses.	The City will continue to provide education on IPM techniques during presentations and on the City's Think Blue website.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Division focused its outreach and education efforts regarding IPM in the Peñasquitos Watershed given vector control concerns associated with limited water flow through the lagoon mouth. City forces addressed the water flow issues and used their time in the area as a means of education the surrounding community about vector control and pest management strategies consistent storm water controls. FY17 Notes: The Division will continue to expand its new partnership with the San Diego Native Plant Society and work with that group to develop new strategies promoting IPM.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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CSD-JRMP-53*	Improve consistency and content of websites to highlight enforceable conditions and reporting methods.	Websites will be updated to provide a user-friendly format and clarity for stormwater violations, conditions which citizens can and should report, and how to make such reports. Examples of reports for common incidents will be developed and posted which may vary locally and regionally. Photographs of allowable practices as well as illegal practices should be shown for utmost clarity. Displaying hotline numbers prominently on the website and near the photographs of illegal practices will ensure that those seeking to report will be able to do so easily. Also ensure hotline number and website are searchable and can be retrieved by simple internet searches.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City completely revamped its website improving public access and availability of web-based resources including the storm water management and pollution prevention materials developed and posted by the Division. The Division also brought forward the environmental response documents associated with its channel maintenance efforts. These documents include descriptions of water quality protections undertaken by the City allowing the public to view our agency's watershed protection strategies. FY17 Notes: The Division will review and renew the entire portfolio of education materials available for public downloading from the City's website.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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E.6 Enforcement Response Plan								
CSD-JRMP-54	Continue to implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Storm Water Code Enforcement Unit's Standard Operating Procedures (SOPs) - Enforcement Response Plan.	Refer to JRMP Appendix XIII.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-55*	~~Increase~~ Focused enforcement of irrigation runoff.	~~Increased~~ Focused enforcement policies against irrigation runoff will be established in tandem with the education and outreach programs on how these actions lead to pollutant loading. By shifting to property-based inspections irrigation runoff can be handled as enforceable violations once the public is well-informed.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: Performed irrigation patrols and Residential Management Area Patrols throughout FY16. Also receive referrals from Water Conservation at PUD for over irrigation cases that have runoff entering the curb and gutter.
CSD-JRMP-56*	~~Increase~~ Focused enforcement of water-using mobile businesses.	In addition to education, pollution associated with mobile business sources can be handled through policy, code development, inspections of business practices, and enforcement.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: Performed early morning patrols to find mobile sources and over-irrigation to the MS4.
CSD-JRMP-57*	~~Increase~~ Focused enforcement of all minimum BMPs for existing residential, commercial, and industrial development.	~~Increased~~ Focused enforcement of existing development minimum BMPs.	FY16	Continuous-As needed	Yes	Revised to clarify strategy	Yes	None
CSD-JRMP-58*	~~Increase~~ Focused enforcement associated with property-based inspections.	Shifting inspections from businesses-specific to property-based will increase effectiveness and sense of responsibility and ownership. Education and outreach must be followed up with inspection and enforcement of regulations to encourage proper landscape and water conservation strategies.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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CSD-JRMP-59*	~~Increase~~ Focused enforcement of sweeping and maintenance of private roads and parking lots in targeted areas.	Refer to Minimum BMPs in JRMP (Appendix IX).	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	None
CSD-JRMP-60*	~~Increase~~ Focused identification and enforcement of actionable erosion and slope stabilization issues on private property and require stabilization and repair.	Eroding and unstable slope areas on private property (excluding construction sites) will be identified as potential sediment loading sources and subject to enforcement. In the short term, this will target enhanced inspection and enforcement programs to ensure inspectors address erosion and slope instability for the purpose of education.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: City staff completed patrols of construction sites that included sediment discharges. They also began the Residential Patrol Program, which notes and addresses sediment discharges in residential areas.
Non-JRMP Strategies (Optional Strategies, B.3.b(1)(b))								
Nonstructural Strategies								
CSD-NS-01	Conduct a special study on outfall repair/relocation.	Implement fourth phase of a special study which will identify priority locations for outfall repair/relocation and sediment load reductions. Funding and resources have been secured for FY2016.	FY16	One time	Yes	No Change	Yes	FY16 Notes: Completed tech memo "Sediment Load Reduction Quantification through Outfall Repair and Relocation for the Los Peñasquitos WMA. Refer to Section 5.3 in Appendix C for more information.
CSD-NS-02	Investigation and research of emerging BMP technology.	Annually the Construction & Development Standards Group identifies new tasks to conduct literature review, communication with researchers outside of the City, physical testing and experimentation of new or emerging technologies, and other research with the goal of updating tools available for reducing pollutant loads from development and redevelopment sites. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-As needed	Yes	No Change	Yes	FY16 Notes: Continued monitoring and assessment of the biofiltration basin and curbside filtration units at 43rd and Logan.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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CSD-NS-03	Approve and implement a green infrastructure policy.	The City will begin developing a policy in FY16 that will increase the green infrastructure requirements for City CIP projects. This policy will be coordinated with ongoing efforts to update City design manuals and LID design standards for public LID BMPs. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-As needed	Yes	No Change	Yes	None
CSD-NS-04	Create a manual that outlines right-of-way design standards.	Create a manual that includes flood control performance standards, permanent BMP elements design standards, design standards for green streets and other BMPs, and maintenance access. Provides drainage and streets design standards. Opportunity to merge various existing manuals and provide consistency. Funding and resources were secured for FY2015.	FY15	Completed within schedule	Yes	No Change	Yes	FY17 Notes: Will be published in FY17.
CSD-NS-05	Create a fund that allows habitat acquisition, protection enhancement, and restoration in conjunction with other cooperating entities including community groups, academic institutions, state county, and federal agencies, etc.	This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired or restored lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. It is anticipated that a minimum of 1 FTE will be needed to implement the program. Once initiated, the time frame for planning to initial implementation is expected to be 3 years. Implementation is in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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CSD-NS-06	Residential and Commercial BMP: Rain Barrel	The existing PUD rebate program will continue for residential properties and expand for commercial properties for water collection, conservation, and reuse with rain barrels. Will occur city-wide in residential areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates for rain barrels were issued to capture 772,740 gallons of rainwater City-wide.
CSD-NS-07	Residential and Commercial BMP: Grass Replacement	The existing PUD grass replacement cash rebate program will continue and expand for residential and commercial properties. Program encourages a reduction in water use through the conversion of non-artificial grass to water wise plant material, while maintaining a high level of living landscape to benefit the environment. Program does not allow for conversion to artificial turf. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates were issued to convert 203,599 sq. ft. of turf in the WMA.
CSD-NS-08	Residential and Commercial BMP: Downspout Disconnect	Disconnecting downspouts provide alternate runoff pathways from rooftops, sidewalks, driveways, and roads. Disconnecting downspouts from residential areas to pervious land can allow for depression storage and infiltration. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Completed downspout redirect guidelines in collaboration with PUD.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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CSD-NS-09	Residential and Commercial BMP: Microirrigation	The existing PUD micro-irrigation rebate program will continue and increase for residential and commercial properties. Application of microirrigation aims to improve the efficiency of landscape irrigation through the precise application of water. Will occur city-wide in residential areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates were issued for installing microirrigation for 29,531 sq. ft. of landscaping in the WMA.
CSD-NS-10	Provide Onsite Water Conservation Surveys.	Provide free onsite water conservation surveys to commercial and residential customers to reduce overirrigation and to encourage water conservation. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-NS-11	Enhance and expand trash cleanups through community-based organizations involving target audiences.	Increase effectiveness and reach of trash/beach cleanups and community based efforts by engaging community groups to self-define and carry-out trash clean-ups. Longstanding partnerships and sponsorships with I Love A Clean San Diego and others are recommended to be continued and enhanced. To effectively target stream clean-up efforts, focus on partnerships with community organizations which provide strong engagement with target audiences and communities. Cleanups target trash, however a reduction in trash also reduces other pollutants such as bacteria and nutrients that can attach to food waste wrappers and yard waste. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY 16 Notes: The City partnered with I Love a Clean San Diego on five clean-ups, which resulted in the removal of 5,468 pounds of trash and debris in the WMA.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-16	Conduct a Comprehensive Benefits Analysis to identify benefits other than water quality that are applicable to each of the specific WQIP strategies.	The analysis identifies which other benefits apply to each strategy, and documents the assumptions making those linkages. The delineation of other benefits to strategies includes a general description of each benefit, and a listing of the assumptions that were made to link those benefits to strategies. In addition, the other benefits are characterized with respect to who is directly affected: the city, local residents, local businesses, or visitors. This analysis may be used as part of the adaptive management process to modify future strategies. Funding and resources were secured for FY2015.	FY15	Completed within schedule	Yes	No Change	No	None
CSD-NS-17	Address and clean up trash from transient encampments with collaboration from the Environmental Services Department, which consults with the Homeless Outreach Team.	Coordinate with the Environmental Services Department, in conjunction with the Homeless Outreach Team, to respond to transient encampment trash complaints. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	None
CSD-NS-18	Continue participating in source reduction initiatives.	Source reduction initiatives are ultimately the most effective measure to remove pollutants from surface waters, where feasible. Bans or progressive phase-outs that may be considered include: leaf blowers, plastic bags, architectural copper (generally a legacy issue), as well as prohibiting or more aggressively regulating vehicle washing. Additional source reduction initiatives to consider include pesticide sales at hardware stores and irrigation supply stores. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City began development of plastic bag ban ordinance. FY17 Notes: Pursuit of City-specific plastic bag ban ordinance will depend on whether Statewide plastic bag ban ballot initiative passes.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-19	Coordinate with Fleet Services to replace City-owned vehicle brake pads with copper-free brake pads as they become commercially available.	Consider legislative mandate and cooperative implementation of copper-free brake pads on city-owned vehicle to reduce pollutant deposition. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None
CSD-NS-22	~~Proactively~~ Coordinate with appropriate City Departments that monitor for erosion, and complete minor repair and slope stabilization on municipal property.	~~Actively~~ Coordinate with Streets Division and other appropriate City Departments that identify and repair eroding slopes that may be contributing to sediment loading. Prepare an inventory and assessment of eroding areas and their risk to surface waters. Follow assessment with a schedule for ongoing inspection and stabilization (potentially based on a number or percentage of sites annually). Consider Caltrans program as a template. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	None
CSD-NS-23	Conduct special studies.	Special studies will be conducted to gather data to identify pollutant sources, appropriate targets, or other information. Includes collaboration with universities. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-25	Los Peñasquitos Watershed Special Study	Los Peñasquitos WMA special study will assess sediment loads in the watersheds upstream of the Draft Sediment TMDL compliance monitoring locations. Includes the analysis of sediment water column loads, stream bedload, and air monitoring. Implemented in a phased approach. Monitoring will occur first in the Carroll Canyon subwatershed. The Los Peñasquitos Creek and Carmel Valley Creek subwatersheds will be monitored in subsequent phases. Refer to Section 5.1 for further details. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	One time	Yes	No Change	Completed	FY16 Notes: Completed the Los Peñasquitos Lagoon TMDL Upper Watershed Sediment Load Study. See Section 5.1 in Appendix C for more information.
CSD-NS-26	Participate in Reference Watershed Study.	The San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Refer to Section 5.1 for further details. Will occur region-wide. Funding and resources were previously secured.	Prior to FY16	Completed within schedule	Yes	No Change	Completed	FY16 Notes: See Section 5.2 in Appendix C for more information.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-27	Participate in Reference Beach Study.	The San Diego Regional Reference Beach Study (currently being conducted by the Southern California Coastal Water Research Project) will develop numeric targets that account for "natural sources" to establish the concentrations or loads from the beach in a minimally disturbed or "reference" condition. The purpose of this monitoring program is to advise the public of potential health risks that could occur with water contact recreation at local beaches. DEH will post a health advisory notice or close a beach when FIB results are above REC-1 water quality standards. Will occur region-wide in the Los Peñasquitos, San Dieguito River, Mission Bay, and San Diego River WMAs. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	One time	Yes	Revised to clarify strategy	Completed	FY16 Notes: See Section 5.1 in Appendix C for more information.
CSD-NS-31	Using adaptive management, delist the beach segment from the TMDL and Attachment E of the MS4 Permit.	Using the adaptive management process outlined in Section 6, remove 303(d) delisted beach segments from the Bacteria TMDL and Attachment E of the MS4 Permit. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Working with the Regional Board on re-evaluating the bacteria TMDL.
CSD-NS-32	Conduct a Storm Water Fee Study~~Cost of Service Study~~.	Conduct a Storm Water Fee Study~~Cost of Service Study~~ that will examine the full cost of flood control and storm water strategies needed to comply with storm water regulations for the City of San Diego. The City of San Diego's Watershed Asset Management Plan will be used as the basis for the study. Funding and resources have been secured for FY2016.	FY16	Completed within schedule	Yes	No Change	Yes	FY16 Notes: Significant progress was made on the fee study; it will be finalized and posted on the City website in FY17. FY17 Notes: Study results to be posted in FY17.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-33	Conduct Sustainable Return on Investment (SROI) analysis to estimate strategies' co-benefits and impacts to the public and the private sector on a common scale.	SROI is an economics-based framework for evaluating quantitative and qualitative performance metrics and monetizing them, if possible, along a triple bottom line (i.e. financial, societal, and environmental). This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated one-time cost to implement is $115,000. Once initiated, the analysis is expected to be complete in 1 year.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-34	Collaborate with the County, if a County-led regional social services effort is established, to provide sanitation and trash management for individuals experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	Support a non-profit or consortium to provide sanitation services associated with hygiene as well as trash management for persons experiencing homelessness. Rented or purchased shower/sanitary trailers providing mobile showers may be organized at specifically scheduled locations and times. This provision has been proposed as a method for preventing surface water usage for sanitation and bathing, as well as opportunity for outreach and referral by social service agencies. The trash management services will include providing trash bags, trash collection areas, and shower/sanitary facilities at centers which provide daytime shelter to their clients, or on a mobile-basis for known transit camps. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy includes an initial first year planning cost of $30,000 and implementation is expected to cost $10,000 annually thereafter. Once initiated, development of the program is expected in 1 year. Implementation is in perpetuity as long as funding is available.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-37	Participate in an assessment to determine if implementation of an urban tree canopy (UTC) program would benefit water quality and other City goals, where feasible.	Perform a feasibility study to determine if implementing an UTC program would be beneficial to the City's goals. UTC intercepts rainfall through increased coverage of leaves, branches, and stems and reduces runoff from the storm drainage system. Benefits associated with enhancing an UTC include reducing heat island effects and air pollution in addition to aesthetics and community benefits. Where feasible, native trees will be utilized to prevent invasive trees from migrating to open spaces and to conserve water. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, implementation and assessment is expected in 2 years.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-38	Conduct a feasibility study to test Permeable Friction Course (PFC), a porous asphalt that overlays impermeable asphalt.	Perform an assessment to determine the feasibility of implementing PFC on City streets. PFC, an overlay of porous asphalt, is an innovative roadway material that improves driving conditions in wet weather and water quality. Placed in a layer 25-50mm thick on top of regular impermeable pavement, PFC allows rainfall to drain within the porous layer rather than on top of the pavement. PFC has also been shown to reduce concentrations of pollutants commonly observed in highway runoff. PFC incorporates stormwater treatment into the roadway surface and does not require additional right-of-way. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy is $50,000. Once initiated, implementation and assessment is expected in 2 years.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-39	As opportunities arise and funding sources are identified, protect areas that are functioning naturally by avoiding impervious development and degradation on unpaved open space areas, creating permanent open space protections on undeveloped city-owned land, and accepting privately-owned undeveloped open areas.	This strategy may be implemented if there is interest in participation by the public or private entity with current control of the land. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) identification of partners, if needed (public, private, non-profit), 2) identification of costs and potential sources of funding, 3) final agreement by public or private entity with current control of the land, 4) final agreement by all other participating partners including acceptance by intended land- or asset-owning City department, and 5) funding in place. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The time frame for implementation will vary by project. Implementation is in perpetuity as long as funding is available.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None
CSD-NS-44	Participate in a watershed council or group if one is established.	This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) partners have been identified and formal MOUs have been developed and 2) consensus and community support has been achieved. Resources necessary to implement this strategy include a coordinator or project manager. Projected funding needs may be met through award of a grant, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, development of the program is expected in 2 years. Implementation would be in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-47	Coordinate with Development Services Department to ~~P~~prohibit introduction of invasive plants in new development and redevelopment projects.	Coordinate with the City's Development Services Department to continue to prohibit introduction of invasive species such as *Arundo donax* and *Cortaderia selloana* for new development or redevelopment projects as specified in the City's municipal code for landscape. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	None
CSD-NS-48	Collaborate with watershed stakeholders to plan and implement projects that will further Los Peñasquitos Lagoon restoration efforts and reduce flooding in the lower watershed.	Efforts may include 1) dredging of tidal channels and inlet area to restore and maintain tidal circulation and facilitate draw down times of floodwater in the lagoon and 2) modeling and/or studies to analyze sediment transport and flood control options. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs are developed and executed, 4) permits required by regulatory agencies are secured, and 5) consensus and community support is achieved. Resources necessary to implement this strategy include a coordinator or project manager. Projected funding needs may be met through award of a grant, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, development of the program is expected in 3 years. Implementation would be in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Yes	No Change	Yes	FY16 Notes: Modeling was completed in FY16 to confirm the preferred alternative for the Los Peñasquitos Lagoon Restoration project. The City of San Diego was identified as the "lead" for the project. FY17 Notes: Continue development of the concept design and starting the public outreach process. Will also coordinate with State Parks on *Arundo* removal maintenance in areas of City Right of Way in the Lagoon.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-49	Los Peñasquitos Wetland Restoration Project	Collaborate with Copermittees on the region-wide North Coast Corridor (NCC) Program, led by Caltrans and SANDAG. The program is intended to improve coastal transportation (including Interstate 5 and the coastal rail and transit system) while protecting and restoring coastal habitats throughout the corridor. The 27-mile-long project stretches across the cities of Oceanside, Carlsbad, Encinitas, Solana Beach, Del Mar, and San Diego and provides improvements for six coastal lagoons, including Los Peñasquitos Lagoon. The NCC Program is implementing construction in phases from 2010 through 2040. The program is a $6.5-billion investment in the region that will be paid for through a combination of federal, state, and local funds. The NCC program is part of TransNet, the voter-approved, half-cent sales tax initiative that helps fund transportation projects in the region. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	City-specific version of WMA strategy	Yes	FY16 Notes: Coordination with Copermittees, Caltrans and SANDAG completed environmental and construction phases for various rail & transit, highway, and environmental protection projects.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-51	Collaboration with the Regional Board.	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit, 2) enforcement of the Ag Waiver, 3) enforcement of other non-MS4 dischargers, and 4) Bacteria TMDL updates, as appropriate for each WMA. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	City-specific version of WMA strategy	Yes	FY16 Notes: Provided written comments to the Regional Board, State Water Board, and US Environmental Protection Agency (EPA) regarding proposed rules and regulations.
CSD-NS-53	Refinement of Water Quality Regulations	Collaborate with other Responsible Agencies and the Regional Board to refine the accuracy of regulations to ensure that Non-MS4 dischargers are regulated appropriately. The goal of this exercise is to begin a dialog with the Regional Board that may lead to the following outcomes: 1) Removal of Non-MS4 discharges and the associated BMPs needed to treat those discharges from the Responsible Agencies' burden, 2) amendment of current TMDLs and the MS4 Permit to correctly assign responsibilities for Non-MS4 discharges to the appropriate entities, and 3) strengthening of Non-MS4 NPDES permits that are directly tied to the requirements of existing and future TMDLs. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Resources to implement this strategy include staff time and are currently secured.	Prior to FY16	Continuous-Ongoing	Yes	City-specific version of WMA strategy	Yes	FY16 Notes: City coordinated with the Regional Board to discuss addressing non-MS4 contributions in TMDL and other water quality regulations.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Structural Strategies								
Green Infrastructure								
CSD-GI-03	0.96 acre of bioretention have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 37.86 acres (total drainage area of 274 ac) with a total storage volume of 1.69 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Carmel Valley Creek Subwatershed, staggered construction, operation, and maintenance of 0.96 acres of bioretention to treat an impervious drainage area of 37.86 acres (total drainage area of 274 ac) with a total storage volume of 1.69 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY22	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-GI-04	17.18 acres of bioretention have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 582.71 acres (total drainage area of 1520 ac) with a total storage volume of 27.21 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Carroll Canyon Creek Subwatershed, staggered construction, operation, and maintenance of 17.18 acres of bioretention to treat an impervious drainage area of 582.71 acres (total drainage area of 1520 ac) with a total storage volume of 27.21 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY26	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-GI-05	2.40 acres of bioretention have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 145.75 acres (total drainage area of 328 ac) with a total storage volume of 6.86 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Los Peñasquitos Creek Subwatershed, staggered construction, operation, and maintenance of 2.40 acres of bioretention to treat an impervious drainage area of 145.75 acres (total drainage area of 328 ac) with a total storage volume of 6.86 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY26	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-GI-06	1.33 acres of bioretention have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 48.97 acres (total drainage area of 466 ac) with a total storage volume of 2.14 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Los Peñasquitos Lagoon Subwatershed, staggered construction, operation, and maintenance of 1.33 acres of bioretention to treat an impervious drainage area of 48.97 acres (total drainage area of 466 ac) with a total storage volume of 2.14 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY28	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Green Streets								
CSD-GS-05	53.20 acres of green streets (26.6 acres of bioretention and 26.6 acres of pervious pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 1,746.8 acres with a total storage volume of 72.54 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Carmel Valley Creek Subwatershed, staggered construction, operation and maintenance of 53.20 acres of green streets (26.60 acres of bioretention and 26.60 acres of pervious pavement) to treat a total drainage area of 1,746.8 acres with a total storage volume of 72.54 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY26	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-GS-06	55.92 acres of green streets (27.96 acres of bioretention and 27.96 acres of pervious pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 2,345.5 acres with a total storage volume of 86.16 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Carroll Canyon Creek Subwatershed, staggered construction, operation and maintenance of 55.92 acres of green streets (27.96 acres of bioretention and 27.96 acres of pervious pavement) to treat a total drainage area of 2,345.5 acres with a total storage volume of 86.16 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY26	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-GS-07	121.42 acres of green streets (60.71 acres of bioretention and 60.71 acres of pervious pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 4,128.6 acres with a total storage volume of 186.11 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Los Peñasquitos Creek Subwatershed, staggered construction, operation and maintenance of 121.42 acres of green streets (60.71 acres of bioretention and 60.71 acres of pervious pavement) to treat a total drainage area of 4,128.6 acres with a total storage volume of 186.11 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY24	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-GS-08	9.06 acres of green streets (4.53 acres of bioretention and 4.53 acres of pervious pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 12.37 acres.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Los Peñasquitos Lagoon Subwatershed, staggered construction, operation and maintenance of 9.06 acres of green streets (4.53 acres of bioretention and 4.53 acres of pervious pavement) to treat a total drainage area of 12.37 acres. An updated inventory of green streets projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY26	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Multiuse Treatment Areas								
Infiltration and Detention Basins								
CSD-MUTA-03	Multiuse Treatment Area BMPs in Los Peñasquitos WMA.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. Modeled MUTA BMPs with footprints of 7.3 acres (ac) in FY21 (total drainage area of 871 ac), 4.7 ac in FY22 (total drainage area of 9,372 ac), 3.0 ac in FY23 (total drainage area of 280 ac), 3.6 ac in FY24 (total drainage area of 559 ac), 5.0 ac in FY25 (total drainage area of 449 ac), and 0.3 ac in FY26 (total drainage area of 49.4 ac). These can be wetland, infiltration, retention and/or detentions systems. An updated inventory of MUTA projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY21, FY22, FY23, FY24, FY25, FY26	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Multiple similar strategies were compiled into this new strategy listing to simplify recordkeeping and reporting, total drainage area treated remains the same	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table D-4.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-MUTA-04	Ashley Falls	In the Los Peñasquitos Creek Subwatershed, a ~~10.16~~ 0.35 acre retention basin (large scale storm storage) designed to capture a drainage area of 29.7 acres. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY19	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Correction to implementation approach description	NA, Not scheduled to be implemented in FY17	Please see Table D-4 for an updated list of completed and planned structural projects.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-MUTA-05	Los Peñasquitos Lagoon Sediment Basin	In the Los Peñasquitos Creek Subwatershed, construction of a custom-designed basin to maximize sediment interception from Los Peñasquitos Creek, while minimizing effects on surrounding habitat and protecting nearby developments from flooding and preserving view corridors of nearby residents (Los Peñasquitos Lagoon Sediment Basin Monitoring & Maintenance Plan). Total footprint for this basin is ~~10.16~~ 1.5 acres designed to treat a drainage area of ~~36,375~~ 77 acres (Total drainage area (Ac) treated was corrected. Additional analysis will be completed to confirm if additional acres of drainage area are required. Findings will be presented in a future WQIP Annual Report). Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Correction to implementation approach description	Yes	Please see Table D-4 for an updated list of completed and planned structural projects.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-MUTA-13	If interim load reduction goals are not met and additional multiuse treatment areas are required, an infiltration basin(s) may be considered on publicly owned open spaces in canyon areas on a case-by-case basis when no other opportunities for load reductions exist.	Construction, operation, and maintenance of infiltration basin(s) in canyon areas. 8 potential canyon sites, owned by City of San Diego, have been identified in Los Peñasquitos WMA that provide up to 60 acres of available space (out of 174 acres of total parcel acreage). This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Stream, Channel and Habitat Rehabilitation Projects (B.3.b.(1)(b)(iii))								
CSD-MUTA-16	El Cuervo del Norte Wetlands	In the Los Peñasquitos Creek Subwatershed, the El Cuervo Norte wetlands were built upon 23.3 acres upstream of the long-term MLS monitoring station. Flows from Los Peñasquitos Creek are diverted into the wetlands, creating the potential for solids to settle out and thus reduce the TSS measured at the MLS. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-MUTA-17	El Cuervo del Sur Wetlands	In the Los Peñasquitos Creek Subwatershed, on a total of 2.3 acres, the primary mitigation strategy in this plan involves the minor grading (one to three feet) of the Site to create three riparian plant zones. Maintenance activities planned during the maintenance and monitoring program revolve around the establishment of the plantings to a self-sufficient state. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Mitigation project is 66% complete. FY17 Notes: Continue with project construction.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-MUTA-20	If interim load reduction goals are not met and additional stream, channel, and habitat rehabilitation projects are required, implement as needed.	This strategy may be triggered as 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, 4) permits required by regulatory agencies are secured, and 5) recommendations from the community are identified and consensus and community support has been achieved. Will occur in areas identified during feasibility studies. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Water Quality Improvement BMPs								
Priority Development Projects (PDPs)								
CSD-PDP-01	Priority Development Project BMPs in Los Peñasquitos WMA.	Per the Storm Water Standards Manual, all non-exempt public PDPs are subject to requirements to construct and maintain permanent BMPs. See WQIP Annual Report for updated PDP BMP Inventory. Funding and resources have been secured for PDPs implemented prior to FY16. Funding for PDP BMPs constructed in future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Multiple similar strategies were compiled into this new strategy listing to simplify recordkeeping and reporting	Yes	See Table D-5 for a current list of PDP BMPs.
Proprietary BMPs								
CSD-WQBMP-01	Rehco Rd.	In the Carroll Canyon Creek Subwatershed, an HSU unit is used to treat onsite runoff on the north end of Rehco Road. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Dry Weather Flow Separation and Treatment Projects								
CSD-WQBMP-09	If interim load reduction goals are not met and additional dry weather flow separation and treatment projects are required, implement as needed.	Construction of dry weather flow separation and treatment projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Trash Segregation								
CSD-WQBMP-10	If interim load reduction goals are not met and additional trash segregation projects are required, implement as needed.	Construction of trash segregation (Trash Guards, etc.) projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in high loading areas city-wide. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Additional Opportunities								
CSD-AddOp-01	Participate in restorative efforts for the Los Peñasquitos Lagoon in collaboration with TMDL Responsible Parties and other stakeholders.	Collaborate with TMDL Responsible Parties and other stakeholders to promote and support the restoration of the Los Peñasquitos Lagoon. Efforts will be coordinated with the Lagoon Enhancement Program currently being updated by the Los Peñasquitos Lagoon Foundation. This effort will require that 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners are identified and formal MOUs are developed and executed, 4) permits required by regulatory agencies are secured, and 5) consensus and community support are achieved. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	FY20	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None
CSD-AddOp-02	Through adaptive management and additional analysis in the future, the City will identify and implement one or more of the following opportunities to meet numeric goals: 1) MS4 outfall repair and relocation, 2) slope stabilization, 3) stream restoration, 4) implementation of sediment detention basins upstream of Los Peñasquitos Lagoon or 5) new strategies not yet identified.	Through adaptive management and additional analysis in the future, the City will identify and implement one or more of the following opportunities to meet numeric goals: 1) MS4 outfall repair and relocation, 2) slope stabilization, 3) stream restoration, 4) implementation of sediment detention basins upstream of Los Peñasquitos Lagoon or 5) new strategies not yet identified. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	FY28	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-1	Watershed Collaboration for Los Peñasquitos Lagoon Restoration	Collaborate with stakeholders to promote the restoration of salt marsh areas and overall improvements in estuarine and other beneficial uses within the Los Peñasquitos Lagoon. Benefits of this strategy include more efficient targeting and prioritization of lagoon restoration activities, increased cost-effectiveness of selected BMP strategies in the watershed, and development of partnerships across the MS4 jurisdictions and other TMDL responsible parties. These efforts will be coordinated with the Lagoon Enhancement Program currently being updated by the Los Peñasquitos Lagoon Foundation and will require that (1) funding to address MS4 discharges and dry weather input of freshwater is identified and secured, (2) staff resources are identified and secured, (3) partners are identified and formal memoranda of understanding (MOUs) are developed and executed, (4) permits required by regulatory agencies are secured, and (5) consensus and community support are achieved. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. Implementation is in perpetuity as long as funding is available.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Modeling was completed in FY 2016 to confirm the preferred alternative for the Los Peñasquitos Lagoon Restoration project. The City of San Diego was identified as the "lead" for the project. FY17 Notes: Next steps for FY 2017 include completing the concept design and starting the public outreach process.

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-2	Los Peñasquitos Wetland Restoration Project	Collaborate with Copermittees on the region-wide North Coast Corridor (NCC) Program, led by Caltrans and SANDAG. The program is intended to improve coastal transportation (including Interstate 5 and the coastal rail and transit system) while protecting and restoring coastal habitats throughout the corridor. The 27-mile-long project stretches across the cities of Oceanside, Carlsbad, Encinitas, Solana Beach, Del Mar, and San Diego and provides improvements for six coastal lagoons, including Los Peñasquitos Lagoon. The NCC Program is implementing construction in phases from 2010 through 2040. The program is a $6.5-billion investment in the region that will be paid for through a combination of federal, state, and local funds. The NCC program is part of TransNet, the voter-approved, half-cent sales tax initiative that helps fund transportation projects in the region.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: In coordination with Copermittees, Caltrans and SANDAG completed environmental and construction phases for various rail & transit, highway, and environmental protection projects.
WMA-4	Collaborative Approach to Irrigation Reduction	Responsible Agencies are collaborating with water agencies to encourage implementation of water conservation efforts. Water conservation that attempts to reduce irrigation and minimize storm water runoff can also improve water quality of receiving waterbodies. MWD's SoCal Water$mart Program supports conservation efforts by offering incentives in the form of rebates for rain barrels, rotating sprinkler nozzles, weather-based irrigation controllers, soil moisture sensor systems, and turf replacement. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council or appropriate legislative body (i.e. the Board).	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-6	Offsite Alternative Compliance Option ~~(WMAA)~~	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, ~~anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015,~~ which was submitted and approved in FY 2016. Following this approval, jurisdictions can formally implement an optional Alternative Compliance Program by ~~December 2015~~ February 2016 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy	Yes	FY16 Notes: Phase 1 of the Alternative Compliance Program (ACP) went into effect on 2/16/16. FY17 Notes: Proposed Water Quality Equivalency (WQE) guideline development for stream restoration.
WMA-8	Collaboration with the Regional Board.	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit, 2) enforcement of other non-MS4 dischargers, and 3) Bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Working with Regional Board to include non-Phase I MS4s in general permits, waivers, and Waste Discharge Requirements (WDRs).

Table D-3 (continued)
City of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-12	Refinement of Water Quality Regulations	The Responsible Agencies will collaborate with the Regional Board to refine the accuracy of regulations to ensure that Non-MS4 dischargers are regulated appropriately. The goal of this exercise is to begin a dialog with the Regional Board that may lead to the following outcomes: 1) Removal of Non-MS4 discharges and the associated BMPs needed to treat those discharges from the Responsible Agencies' burden, 2) amendment of current TMDLs and the MS4 Permit to correctly assign responsibilities for Non-MS4 discharges to the appropriate entities, and 3) strengthening of Non-MS4 NPDES permits that are directly tied to the requirements of existing and future TMDLs. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Resources to implement this strategy include staff time and are currently secured.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: City coordinated with Regional Board to discuss bacteria TMDL addressing non-MS4 contributions.

* Strategy IDs with an asterisk indicate those strategies that are considered "jurisdictional" in the MS4 Permit, but are considered enhancements to the JRMP to target highest priority water quality conditions.

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Table D-4
City of San Diego Structural BMP Implementation Status for Los Peñasquitos WMA

Strategy Number	Strategy	Implementation Approach	Total Drainage Area (Ac)	Implementation Year*	Status	Permit Term Goal**
Green Infrastructure		**Total Acres Treated Required for Green Infrastructure:**	**2,588**			
CSD-GI-03	0.96 acre of bioretention have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 37.86 acres (total drainage area of 274 ac) with a total storage volume of 1.69 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Carmel Valley Creek Subwatershed, staggered construction, operation, and maintenance of 0.96 acres of bioretention to treat an impervious drainage area of 37.86 acres (total drainage area of 274 ac) with a total storage volume of 1.69 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report.	274	FY22	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					
CSD-GI-04	17.18 acres of bioretention have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 582.71 acres (total drainage area of 1520 ac) with a total storage volume of 27.21 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Carroll Canyon Creek Subwatershed, staggered construction, operation, and maintenance of 17.18 acres of bioretention to treat an impervious drainage area of 582.71 acres (total drainage area of 1520 ac) with a total storage volume of 27.21 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report.	1,520	FY26	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					
CSD-GI-05	2.40 acres of bioretention have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 145.75 acres (total drainage area of 328 ac) with a total storage volume of 6.86 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Los Peñasquitos Creek Subwatershed, staggered construction, operation, and maintenance of 2.40 acres of bioretention to treat an impervious drainage area of 145.75 acres (total drainage area of 328 ac) with a total storage volume of 6.86 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report.	328	FY26	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					

Table D-4 (continued)
City of San Diego Structural BMP Implementation Status for Los Peñasquitos WMA

Strategy Number	Strategy	Implementation Approach	Total Drainage Area (Ac)	Implementation Year*	Status	Permit Term Goal**
CSD-GI-06	1.33 acres of bioretention have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 48.97 acres (total drainage area of 466 ac) with a total storage volume of 2.14 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Los Peñasquitos Lagoon Subwatershed, staggered construction, operation, and maintenance of 1.33 acres of bioretention to treat an impervious drainage area of 48.97 acres (total drainage area of 466 ac)with a total storage volume of 2.14 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report.	466	FY28	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					
Green Streets		**Total Acres Treated Required for Green Streets:**	**8,233.27**			
CSD-GS-5	53.20 acres of green streets (26.6 acres of bioretention and 26.6 acres of pervious pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 1,746.8 acres with a total storage volume of 72.54 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Carmel Valley Creek Subwatershed, staggered construction, operation and maintenance of 53.20 acres of green streets (26.60 acres of bioretention and 26.60 acres of pervious pavement) to treat a total drainage area of 1,746.8 acres with a total storage volume of 72.54 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report.	1,746.80	FY26	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					
CSD-GS-6	55.92 acres of green streets (27.96 acres of bioretention and 27.96 acres of pervious pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 2,345.5 acres with a total storage volume of 86.16 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Carroll Canyon Creek Subwatershed, staggered construction, operation and maintenance of 55.92 acres of green streets (27.96 acres of bioretention and 27.96 acres of pervious pavement) to treat a total drainage area of 2,345.5 acres with a total storage volume of 86.16 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report.	2,345.50	FY26	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					

Table D-4 (continued)
City of San Diego Structural BMP Implementation Status for Los Peñasquitos WMA

Strategy Number	Strategy	Implementation Approach	Total Drainage Area (Ac)	Implementation Year*	Status	Permit Term Goal**
CSD-GS-7	121.42 acres of green streets (60.71 acres of bioretention and 60.71 acres of pervious pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 4,128.6 acres with a total storage volume of 186.11 acre-feet.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Los Peñasquitos Creek Subwatershed, staggered construction, operation and maintenance of 121.42 acres of green streets (60.71 acres of bioretention and 60.71 acres of pervious pavement) to treat a total drainage area of 4,128.6 acres with a total storage volume of 186.11 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report.	4,128.60	FY24	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					
CSD-GS-8	9.06 acres of green streets (4.53 acres of bioretention and 4.53 acres of pervious pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 12.37 acres.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. In the Los Peñasquitos Lagoon Subwatershed, staggered construction, operation and maintenance of 9.06 acres of green streets (4.53 acres of bioretention and 4.53 acres of pervious pavement) to treat a total drainage area of 12.37 acres. An updated inventory of green streets projects will be maintained in the WQIP Annual Report.	12.37	FY26	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					
Multiuse Treatment Areas		**Total Acres Treated Required for MUTAs:**	**47,985.1**			
CSD-MUTA-04	Ashley Falls	In the Los Peñasquitos Creek Subwatershed, a 0.35 acre retention basin (large scale storm storage) designed to capture a drainage area of 29.7 acres.	29.7	FY19	Design	
CSD-MUTA-05	Los Peñasquitos Lagoon Sediment Basin	In the Los Peñasquitos Creek Subwatershed, construction of a custom-designed basin to maximize sediment interception from Los Peñasquitos Creek, while minimizing effects on surrounding habitat and protecting nearby developments from flooding and preserving view corridors of nearby residents (Los Peñasquitos Lagoon Sediment Basin Monitoring & Maintenance Plan). Total footprint for this basin is 1.5 acres designed to treat a drainage area of 77 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	77(Total drainage area (Ac) treated was corrected. Additional analysis will be completed to confirm if additional acres of drainage area are required. Findings will be presented in a future WQIP Annual Report)	Prior to FY16	Completed	✓

Table D-4 (continued)
City of San Diego Structural BMP Implementation Status for Los Peñasquitos WMA

Strategy Number	Strategy	Implementation Approach	Total Drainage Area (Ac)	Implementation Year*	Status	Permit Term Goal**
CSD-MUTA-03	Multiuse Treatment Area BMPs in the Los Peñasquitos WMA.	To meet the Los Peñasquitos WMA numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. Modeled MUTA BMPs with footprints of 7.3 acres (ac) in FY21 (total drainage area of 871 ac), 4.7 ac in FY22 (total drainage area of 9,372 ac), 3.0 ac in FY23 (total drainage area of 280 ac), 3.6 ac in FY24 (total drainage area of 559 ac), 5.0 ac in FY25 (total drainage area of 449 ac), and 0.3 ac in FY26 (total drainage area of 49.4 ac). These can be wetland, infiltration, retention and/or detentions systems. An updated inventory of MUTA projects will be maintained in the WQIP Annual Report.	871	FY21	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
			9,372	FY22		
			280	FY23		
			559	FY24		
			449	FY25		
			49.4	FY26		
	Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
	(Projects will be added as they reach the design stage)					

*For additional details, please see the schedule following the City's strategy table in the WQIP.
** Projects with a check in the "Permit Term Goal" column are counted toward the green infrastructure installation goal applicable to the current Permit term. See Table D-6 for a summary.

Table D-5
City of San Diego Priority Development Project Implementation Status for Los Peñasquitos WMA

Los Peñasquitos PDP BMP Ledger (CSD-PDP-01)					
Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal***
Del Mar Mesa Neighborhood Park (Project 985)	In the Los Peñasquitos Creek Subwatershed, this site contains small catchment basins and some impervious areas treated by landscape buffers to treat a drainage area of 3.0 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	3	Prior to FY16	Completed	✓
Miramar Water Treatment Plant (Project ID 1177)	In the Los Peñasquitos Creek Subwatershed, vegetated swales (0.44 acre) are in-place to treat a drainage area of 18 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	18	Prior to FY16	Completed	✓
Carroll Canyon Road Extension (Project ID 1007)	In the Carroll Canyon Creek Subwatershed, a vegetated swale will treat onsite runoff of a drainage area of 5.3 acres, in conjunction with other multiuse treatment areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	5.3	Prior to FY16	Completed	✓
Camino Ruiz Neighborhood Park (Project ID 140)	In the Los Peñasquitos Creek Subwatershed, a vegetated swale is in-place to treat on-site runoff of a drainage area of 1.49 acres. Two bioretention areas are proposed to provide treatment of runoff generated by the 85th percentile storm from the parking lot area. These facilities are proposed to be installed within existing landscaping areas. Additional storage is required to capture the 85th percentile runoff volume from the north side of the parking area and is proposed to be provided in permeable pavement parking stalls adjacent to the proposed bioretention area. The retrofit exceeds applicable regulatory requirements by treating runoff from impervious surfaces through bioretention to capture the 85th percentile storm runoff. Funding and resources were secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by City Council.	1.49	FY15	Completed	✓
Breen Park Site - Development (Project ID 857 & 858 & 859 & 860)	In the Los Peñasquitos Creek Subwatershed, vegetated swales are in-place to treat on-site runoff of a drainage area of 1.33 acres. Swales adjacent to the parking lot are proposed to be converted into bioretention areas to provide treatment for the runoff generated by the 85th percentile storm. The landscaped area on the north side of the park entrance is proposed to be converted to a bioretention area to provide additional treatment of existing impervious area that currently discharges from the site with no treatment. The retrofit exceeds applicable regulatory requirements by treating runoff from 50,377 more square feet of impervious surface than the initial site design and providing enhanced pollutant removal through bioretention and treatment of the 85th percentile storm. Funding and resources were secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by City Council.	1.33	FY15	Completed	✓
Rancho Peñasquitos Skate park (Project ID 866)	In the Los Peñasquitos Creek Subwatershed, two small infiltration units (basins/trenches) are used to treat on-site runoff of a drainage area of 2.08 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	2.08	Prior to FY16	Completed	✓
Fire Station #47 (Project ID 992)	In the Carmel Valley Creek Subwatershed, a vegetated swale is in-place to treat on-site runoff of a drainage area of 1 acre. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	1	Prior to FY16	Completed	✓
Torrey Del Mar Neighborhood Park (Project ID 1022)	In the Carmel Valley Creek Subwatershed, two vegetated filter strips and two vegetated swales are in-place to treat on-site runoff of a drainage area of 3.68 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	3.68	Prior to FY16	Completed	✓

Table D-5 (continued)
City of San Diego Priority Development Project Implementation Status for Los Peñasquitos WMA

Los Peñasquitos PDP BMP Ledger (CSD-PDP-01)					
Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal***
Hilltop Community Park-Development of bioretention areas	In the Carmel Valley Creek Subwatershed, two bioretention facilities are proposed to provide for treatment of the majority of the study area, a drainage area of 0.273 acre. An existing landscaped area near Oviedo Way is proposed to be converted to a bioretention area along with the conversion of three landscaped areas within the existing parking lot area to bioretention areas. The parking lot bioretention areas are proposed to be linked by a narrow bioswale between parking stalls. Additional treatment is proposed to be provided through the conversion of 5 parking stalls to permeable pavement. The retrofit exceeds applicable regulatory requirements by treating runoff from impervious surfaces through bioretention to treat the 85th percentile storm runoff. Funding and resources were secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by City Council.	0.273	FY15	Completed	✓
North Torrey Pines Road Bridge (Project ID 1017)	In the Carroll Canyon Creek and Los Peñasquitos Lagoon Subwatersheds, two drainage inserts are used to treat onsite runoff. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Unknown	Prior to FY16	Completed	
Scripps Ranch Boulevard Median Improvements (Project ID 901)	In the Carroll Canyon Creek and Los Peñasquitos Lagoon Subwatersheds, two bioclean drainage inserts are used to treat onsite runoff. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Unknown	Prior to FY16	Completed	
Northwest Area Police Substation (Project ID 1365)	A Hydrodynamic Separation System is used to treat onsite runoff. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Unknown	Prior to FY16	Completed	
Peñasquitos West Grading (Project ID 1051)	In the Carmel Valley Creek Subwatershed, two Hydrodynamic Separation Systems are used to treat onsite runoff. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Unknown	Prior to FY16	Completed	
Carmel Valley Road Enhancements (Project ID 860)	In the Carmel Valley Creek Subwatershed, Hydrodynamic Separation Systems are used to treat onsite runoff. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Unknown	Prior to FY16	Completed	
Genesee Widening (Project ID 900)	In the Carroll Canyon Creek Subwatershed, Hydrodynamic Separation Systems are used to treat onsite runoff. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Unknown	Prior to FY16	Completed	
Mira Sorrento Place and Vista Sorrento Parkway (Project ID 850)	In the Carroll Canyon Creek Subwatershed, Hydrodynamic Separation Systems are used to treat onsite runoff. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Unknown	Prior to FY16	Completed	
Ocean Air Park (Project ID 906)	In the Los Peñasquitos Lagoon Subwatershed, Hydrodynamic Separation Systems are used to treat onsite runoff. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Unknown	Prior to FY16	Completed	
(Additional PDPs will be added after they are completed.)					

* Projects with a check in the "Permit Term Goal" column are counted toward the green infrastructure installation goal applicable to the current Permit term. See Table D-6 for a summary.

Table D-6
Summary of City of San Diego Priority Structural BMP Implementation Status for Los Peñasquitos WMA

Permit Term Goal FY 2018	Total Drainage Area (Ac)
Structural BMP Total Acres Treated Required by FY 18	**36.00 (Required by FY 18)**
Total Completed/Planned BMPs	77
Total Completed/Planned PDP BMPs	36.15
Remaining to Goal	-77.15 **(Goal Met/Exceeded)**
Final Goals FY 2035[1]	**Total Drainage Area (Ac)**
Green Infrastructure Total Acres Treated Required	**2,588.00**
Total Completed/Planned	0.00
Remaining to Final Amount of Acres Treated	2,588.00
Green Streets Total Acres Treated Required	**8,233.27**
Total Completed/Planned	0.00
Remaining to Final Amount of Acres Treated	8,233.27
MUTA Total Acres Treated Required	**11,687.1[2]**
Total Completed/Planned	106.7
Remaining to Final Amount of Acres Treated	11,580.4

1. Based on the "MS4 Discharges: Implement Accepted WQIP" compliance pathway. Final compliance is implementation of BMPs based on modeling analysis results.
2. Total drainage area treated by CSD MUTA-05 (Los Peñasquitos Sediment Basin) was revised from 36,675 acres to 77 acres. Analysis will be completed to confirm if additional acres of drainage area are required and will be added to this number. Findings will be presented in a future WQIP Annual Report.

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D.3.4 Modifications to the BMP Design Manual

In FY16 the City, along with other government agencies, professional engineers and members of the local development community, developed a new Regional Best Management Practices (BMP) Design Manual that conforms to the 2013 Municipal Storm Water Permit (Order No. R9-2013-0001, as amended by R9-2015-0001 and R9-2015-0100). The Manual supersedes the San Diego County-wide Model Standard Urban Runoff Storm Water Management Plan (SUSMP) and provides technical guidance and regional standards for pollutant and flow control requirements for new development and significant redevelopment. The City of San Diego's local version of the BMP Design Manual, the Storm Water Standards Manual, became effective on February 16, 2016.

D.3.5 Modifications to the Jurisdictional Runoff Management Plan

The City of San Diego is proposing the following administrative changes to its JRMP. The updated JRMP can be viewed at https://www.sandiego.gov/stormwater/plansreports/ jrmp.

JRMP Section/Appendix		JRMP Update
1	Executive Summary	Strategy categories and definitions were modified to align with the categories and definitions in the Municipal Storm Water Permit and San Diego Water Board's approved Water Quality Improvement Plans (WQIPs).
2	Section 2.3	In accordance with the Municipal Storm Water Permit, Section 2.3 was updated to state that JRMP updates can be proposed/submitted as part of the WQIP Annual Reports.
3	Section 7.3.13-8	Updated BMP #16 to provide greater clarity.
4	Section 7.3.14	Updated section to include new BMPs for herbicide application.
5	Section 10	Strategy categories and definitions were modified to align with the categories and definitions in the Municipal Storm Water Permit and San Diego Water Board's approved WQIPs. Updated tables, graphs, charts, and text to reflect funding needs to meet the goals and schedules identified in the WQIPs. Added language stating "Estimates of funding needs presented were based on the best information available at the time they were prepared."
6	Sections 7.3.1, 7.3.2, and 7.3.4-15	Updated Minimum BMP language to reflect changes to Appendix IX.

JRMP Section/Appendix		JRMP Update
7	Section 3, Section 4, Section 5, Section 6, Section 7, Section 8, Section 9	Based on updates made to the categories and definitions of strategies noted above, the "JRMP Strategies Identified in the WQIPs" tables and "Additional Public Education and Participation Program WQIP Strategies" tables for these sections have been updated for consistency. The strategy identification numbering system and text was updated to reflect administrative changes included in the WQIP Annual Reports.
8	Appendix VI- Residential Management Areas and Patrol Protocols	Updated the residential management areas maps and included newly developed patrol protocols.
9	Appendix IX - Minimum BMPs for Residential, Industrial, Commercial, and Municipal Sites/Sources	Updated references to ordinance sections, changed the "Think Blue" references to the Storm Water Division, and made minor changes to some BMP and description wording for clarification.
10	Appendix XIV- Certificate of Adequate Legal Authority	Signed Certificate of Adequate Legal Authority was added.
11	Appendix XX- Water Quality Improvement Plan Strategies	Updated strategies to reflect the administrative changes made to strategies in the Fiscal Year 2016 WQIP Annual Reports.
12	Appendix XXII- Storm Water Division Projected Funding Needs, 2016-2035	Updated Appendix XX to reflect the funding needs to meet the goals and schedules identified in the WQIPs.

D.4 County of San Diego

D.4.1 Annual Report Certifications

The County of San Diego's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.4.2 Annual Report Form

County of San Diego's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

County of San Diego

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

LAND USE AND ENVIRONMENT GROUP
1600 PACIFIC HIGHWAY, ROOM 212, SAN DIEGO, CA 92101
(619) 531-6256 • Fax (619) 531-5476
www.sdcounty.ca.gov/lueg

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT LOS PEÑASQUITOS WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the County of San Diego has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 6th day of January, 2017, at the County of San Diego.

Sarah Aghassi
SARAH E. AGHASSI
Deputy Chief Administrative Officer

Date 1/6/17

ATTACHMENT D

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

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JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

I. COPERMITTEE INFORMATION

I.A Copermittee Name: County of San Diego (PIN 255223)

I.B Copermittee Primary Contact Name: Todd Snyder

I.C Copermittee Primary Contact Information:
Address: 5510 Overland Avenue, Suite 410
City: San Diego County: San Diego State: California Zip: 92123
Telephone: (858) 694-3672 Fax: (858) 495-5623 Email:Todd.Snyder@sdcounty.ca.gov

II. LEGAL AUTHORITY

II.A Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
II.B A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

III.A Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
III.B If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

IV.A Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IV.B.1 Number of non-storm water discharges reported by the public	286
IV.B.2 Number of non-storm water discharges detected by Copermittee staff or contractors	95
IV.B.3 Number of non-storm water discharges investigated by the Copermittee	375
IV.B.4 Number of sources of non-storm water discharges identified	115
IV.B.5 Number of non-storm water discharges eliminated	112
IV.B.6 Number of sources of illicit discharges or connections identified	85
IV.B.7 Number of illicit discharges or connections eliminated	84
IV.B.8 Number of enforcement actions issued	93
IV.B.9 Number of escalated enforcement actions issued	1

V. DEVELOPMENT PLANNING PROGRAM

V.A Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
V.B Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
V.C If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

V.D.1 Number of proposed development projects in review	925
V.D.2 Number of Priority Development Projects in review	237
V.D.3 Number of Priority Development Projects approved	96
V.D.4 Number of approved Priority Development Projects exempt from any BMP requirements	0
V.D.5 Number of approved Priority Development Projects allowed alternative compliance	0
V.D.6 Number of Priority Development Projects granted occupancy	62

V.E.1 Number of completed Priority Development Projects in inventory	410
V.E.2 Number of high priority Priority Development Project structural BMP inspections	691
V.E.3 Number of Priority Development Project structural BMP violations	170
V.E.4 Number of enforcement actions issued	170
V.E.5 Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM	
VI. A Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
VI.B.1 Number of construction sites in inventory	2,748
VI.B.2 Number of active construction sites in inventory	2,684
VI.B.3 Number of inactive construction sites in inventory	0
VI.B.4 Number of construction sites closed/completed during reporting period	1,124
VI.B.5 Number of construction site inspections	18,858
VI.B.6 Number of construction site violations	416
VI.B.7 Number of enforcement actions issued	590
VI.B.8 Number of escalated enforcement actions issued	38

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM	
VII.A Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
VII.B.1 Number of facilities or areas in inventory	a. 263	b. 1,779	c. 150	d.110
VII.B.2 Number of existing development inspections	a. 1,885	b. 974	c. 38	d.468
VII.B.3 Number of follow-up inspections	a. 23	b. 131	c. 12	d.165
VII.B.4 Number of violations	a. 46	b. 279	c. 31	d.346
VII.B.5 Number of enforcement actions issued	a. 28	b. 130	c. 10	d.0
VII.B.6 Number of escalated enforcement actions issued	a.0	b.1	c.0	d.0

VIII. PUBLIC EDUCATION AND PARTICIPATION	
VIII.A Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
VIII.B Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

IX. FISCAL ANALYSIS	
Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Sarah Aghassi
Signature

10/26/16
Date

SARAH E. AGHASSI
Print Name

LAND USE AND ENVIRONMENT GROUP
DEPUTY CHIEF ADMINISTRATIVE OFFICER
Title

(619) 531-5451
Telephone Number

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Email

ATTACHMENT D.1

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM BY WATERSHED

JRMP ANNUAL REPORT ATTACHMENT D.1 by WATERSHED

Fiscal Year 2015-2016

			SANTA MARGARITA	SAN LUIS REY	CARLSBAD	SAN DIEGUITO	PENASQUITOS	SAN DIEGO RIVER	SAN DIEGO BAY	TIJUANA RIVER	JURISDICTION TOTALS
			*(902.00)	*(903.00)	*(904.00)	*(905.00)	*(906.00)	*(907.00)	*(908.00, 909.00, 910.00)	*(911.00)	
IV.	**ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM**										
IV.B.1	Number of non-storm water discharges reported by the public		12	46	30	40	2	78	72	6	286
IV.B.2	Number of non-storm water discharges detected by Copermittee staff or contractors		9	11	7	14	1	28	24	1	95
IV.B.3	Number of non-storm water discharges investigated by the Copermittee		15	57	37	51	3	106	99	7	375
IV.B.4	Number of sources of non-storm water discharges identified		4	22	17	11	1	30	28	2	115
IV.B.5	Number of non-storm water discharges eliminated		4	21	16	10	1	30	28	2	112
IV.B.6	Number of sources of illicit discharges or connections identified		4	14	16	8	0	18	23	2	85
IV.B.7	Number of illicit discharges or connections eliminated		4	14	15	8	0	18	23	2	84
IV.B.8	Number of enforcement actions issued		4	21	17	9	1	23	16	2	93
IV.B.9	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	1	1
V.	**DEVELOPMENT PLANNING PROGRAM**										
V.D.1	Number of proposed development projects in review		27	219	109	189	0	158	183	40	925
V.D.2	Number of Priority Development Projects in review		2	53	30	53	0	43	50	6	237
V.D.3	Number of Priority Development Projects approved		4	23	11	21	0	20	11	6	96
V.D.4	Number of approved Priority Development Projects exempt from any BMP requirements		0	0	0	0	0	0	0	0	0
V.D.5	Number of approved Priority Development Projects allowed alternative compliance		0	0	0	0	0	0	0	0	0
V.D.6	Number of Priority Development Projects granted occupancy		2	16	5	8	0	18	12	1	62
V.E.1	Number of completed Priority Development Projects in inventory		12	89	54	85	0	66	93	11	410
V.E.2	Number of high priority Priority Development Project structural BMP inspections		1	100	70	273	0	110	82	55	691
V.E.3	Number of Priority Development Project structural BMP violations		1	43	31	53	0	24	8	10	170
V.E.4	Number of enforcement actions issued		1	43	31	53	0	24	8	10	170
V.E.5	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	0	0
VI.	**CONSTRUCTION MANAGEMENT PROGRAM**										
VI.B.1	Number of construction sites in inventory		63	637	397	636	2	438	513	62	2748
VI.B.2	Number of active construction sites in inventory		60	622	393	627	2	424	496	60	2684
VI.B.3	Number of inactive construction sites in inventory		0	0	0	0	0	0	0	0	0
VI.B.4	Number of construction sites closed/completed during reporting period		20	314	137	235	1	175	219	23	1124
VI.B.5	Number of construction site inspections		245	3655	4473	3934	3	2868	3361	319	18858
VI.B.6	Number of construction site violations		1	50	55	38	0	64	205	3	416
VI.B.7	Number of enforcement actions issued		1	66	64	66	0	104	286	3	590
VI.B.8	Number of escalated enforcement actions issued		1	6	8	9	0	3	9	2	38
VII.	**EXISTING DEVELOPMENT MANAGEMENT PROGRAM**										
VII.B.1	Number of facilities or areas in inventory	a. Municipal	8	23	27	34	4	63	82	22	263
		b. Commercial	154	315	196	210	2	466	410	26	1779
		c. Industrial	15	4	5	22	0	67	36	1	150
		d. Residential	12	11	11	22	1	15	21	17	110
VII.B.2	Number of existing development inspections	a. Municipal	48	181	239	244	41	421	561	150	1885
		b. Commercial	106	155	115	102	0	180	309	7	974
		c. Industrial	1	5	5	12	0	2	13	0	38
		d. Residential	17	55	67	107	2	109	77	34	468
VII.B.3	Number of follow-up inspections	a. Municipal	0	3	0	0	0	2	14	4	23
		b. Commercial	7	10	10	13	0	22	65	4	131
		c. Industrial	1	3	0	2	0	0	6	0	12
		d. Residential	3	22	30	43	0	34	24	9	165
VII.B.4	Number of violations	a. Municipal	0	7	0	1	0	5	26	7	46
		b. Commercial	15	21	25	16	0	51	140	11	279
		c. Industrial	0	7	0	4	0	0	20	0	31
		d. Residential	4	47	59	85	0	70	50	31	346
VII.B.5	Number of enforcement actions issued	a. Municipal	0	2	0	0	0	3	19	4	28
		b. Commercial	10	13	11	7	0	21	65	3	130
		c. Industrial	0	2	0	2	0	0	6	0	10
		d. Residential	0	0	0	0	0	0	0	0	0
VII.B.6	Number of escalated enforcement actions issued	a. Municipal	0	0	0	0	0	0	0	0	0
		b. Commercial	0	0	0	0	0	0	0	1	1
		c. Industrial	0	0	0	0	0	0	0	0	0
		d. Residential	0	0	0	0	0	0	0	0	0

ATTACHMENT D.2

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FISCAL ANALYSIS

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FISCAL ANALYSIS COMPONENT **1**

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FISCAL ANALYSIS COMPONENT

1.1. Introduction

This section presents an estimated annual budget for the County's runoff management programs for FY 2015-16.

1.2. Fiscal Analysis Methods

This section continues to utilize the methodologies and standards established in *Fiscal Analysis Method* submitted by the Copermittees in January 2009.

1.3. Fiscal Analysis Results

As shown the County estimated its total FY 2015-16 expenditures at $27,414,216. This fiscal analysis addresses each of the County's Runoff Management Program elements (jurisdictional, watershed, and regional activities) for the current reporting period (FY 2015-16). Expenditures are described by department and major program area. They represent an estimate of the expenditures that the County incurred in meeting its compliance obligations for FY 2015-16. They should not be interpreted as either budgeted or actual expenditures. Because stormwater program expenditures are distributed throughout a considerable number of County programs, a single consolidated "budget" does not exist for the program as a whole. As such, these figures should be considered best estimates of stormwater-related expenditures.

1.3.1 Expenditures

1.3.1.1. Jurisdictional

Table 1.1 presents the County's estimated jurisdictional expenditures for FY 2015-16.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
1	**ADMINISTRATION**	**$6,840,583**	These costs correspond to the DPW WPP development, administrative oversight, and assessment of the County's stormwater programs. The WPP is responsible for the development of new and augmented County stormwater programs, regulatory reporting, and program assessment. Some administrative costs are associated with other specific functions shown below, but are included here because they could not be separated out.
2	**DEVELOPMENT PLANNING**	**$1,109,654**	
A	**Land Use Planning**	$0	Expenditures not reported for FY 2015-16; included in other elements.
B	**Environmental Review**	$0	Expenditures not reported for FY 2015-16; included in other elements.
C	**Development Project Approval and Verification**	**$1,109,654**	
C1	**Public Projects (CIP)**	$824,219	
	Project Planning and Engineering	$570,229	Costs include: preparing and reviewing plans and specifications for stormwater BMPs, and SWPPP/WPCP review. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$15,000	
	BMP Implementation	$238,990	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
C2	**Private Projects**	$285,435	
	Permitting and Licensing	$285,435	This cost covers PDS plan reviews at permitted sites. Total costs are estimated as fixed percentages of annual plan-checking fees.
3	**CONSTRUCTION**	**$4,500,593**	
A	**Public Projects (CIP)**	$2,886,893	Costs include: BMP compliance inspections during construction, and implementation of construction phase BMPs. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$1,613,880	
	BMP Implementation	$1,273,013	
B	**Private Projects**	$1,613,700	
	Compliance Inspection and Enforcement	$1,613,700	This cost primarily covers DPW and PDS construction inspections at permitted sites. Total costs are estimated as fixed percentages of inspection program fees.
4	**MUNICIPAL**	**$7,572,297**	
A	**Administration**	$267,805	Expenditures associated with the administrative oversight of the stormwater programs, regulatory reporting, and program assessment of municipal facilities by the DPW - Watershed Protection Program.
B	**Streets, Roads, and Highways Element**	$2,256,091	
	Administration	$291,160	Founded road operations activities include: culvert inspections and cleaning;

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
	Maintenance Inspections	$1,890,813	increased culvert waste disposal costs, street sweeping, installation and maintenance of BMPs and road structures, and the placement of additional controls. 10% of the Maintenance and Inspections and BMP Implementation is reported as Administration cost.
	BMP Implementation	$74,118	
	Other	$0	
C	**MS4 Element**	$1,530,000	
	Administration	$191,000	The combined costs shown here apply across (1) DPW Flood Control -- conversion of existing concrete lined channels to natural bottom channels, updating flood control master plans, increased maintenance of flood control systems, and construction and maintenance of regional treatment BMPs; and (2) DPW Flood Control MS4 Operation & Maintenance -- maintenance on flood control facilities throughout the unincorporated areas of the County, exclusive of facilities within road rights-of-way (included in 4.B above). Other includes the cost of disposal of debris removed from MS4.
	Maintenance Inspections	$1,046,900	
	BMP Implementation	$290,500	
	Other	$2,500	
D	**Solid Waste Facilities Element**	$406,618	
	Administration	$35,047	Costs include Regional Board stormwater permit fees, consultant costs associated with stormwater upgrade and repair projects, and office staff time.
	Maintenance Inspections	$16,922	Costs include staff time to perform site inspections.
	BMP Implementation	$79,149	Costs include stormwater consultant site inspections, sampling/testing and BMP materials.
	Other (construction)	$275,500	Drainage improvement projects and BMP site maintenance projects.
E	**Wastewater Facilities Element**	$187,000	
	Administration	$10,000	This includes costs associated with JRMP report, the sanitary sewer system and facilities including: pump stations, sewage treatment plants and Spring Valley Operations facility. Also includes the cost of BMP design, acquisition,
	Maintenance Inspections	$127,000	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$50,000	maintenance and monitoring, for wastewater Capital Improvement Projects, and Major maintenance projects, and at various wastewater facilities.
	Other	$0	
F	**Road Stations Element**	$919,867	
	Administration	$83,624	This includes DPW road station operations related to Permit compliance. The Administration cost is determined as 10% of the total costs of maintenance and Inspections and BMP Implementation as reported by the DPW Roads Divisions.
	Maintenance Inspections	$799,414	
	BMP Implementation	$36,829	
	Other	$0	
G	**Fleet Maintenance Element**	$11,722	
	Administration	$1,036	This includes costs associated with operation of the County's fleet maintenance and fueling facilities.
	Maintenance Inspections	$7,392	
	BMP Implementation	$3,294	
	Other	$0	
H	**Municipal Airfields Element**	$338,110	These costs involve site inspections, annual reporting, and maintenance of BMPs at airports, including oversight of tenant operations. The BMP implementation item includes Palomar asphalt cap repairs.
	Administration	$12,737	
	Maintenance Inspections	$0	
	Compliance Inspection and Enforcement	$0	
	BMP Implementation	$300,623	
	Other (sampling and analysis)	$24,750	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
I	**Parks & Recreational Facilities Element**	$1,214,562	
	Administration	$121,362	This includes: coordinating all training requirements, preparing and reviewing reports, and overseeing the overall implementation of the stormwater program for DPR.
	BMP Implementation	$991,603	This includes costs associated with implementation of BMPs at County parks.
	Compliance Inspection and Enforcement	$101,597	Costs are for DPR enforcement of stormwater requirements at County parks.
	Other	$0	
J	**Office Buildings & Other Municipal Facilities Element**	$297,867	
	Administration	$0	DGS conducts a variety of storm water activities including: inspections and clean-up of County-owned, occupied, and leased facilities and vacant lands; maintenance and signage of storm drain inlet inserts and trash dumpsters; placement of inlet filters; maintenance of coverage and containment improvements for on-site supplies and materials; parking lot sweeping and controlled parking lot power washing; and application of erosion and sediment control measures. These costs are exclusive of fleet maintenance and fueling operations.
	Maintenance Inspections	$99,808	
	BMP Implementation	$198,059	
	Other	$0	
	Management of Pesticides, Herbicides, & Fertilizers	$142,656	
	Administration	$142,656	Integrated Pest Control Program within the Department of Agriculture, Weights and Measures (AWM) performs eradication and control of invasive weeds. This program also provides weed control on roadsides, airports, flood control channels,
	Maintenance Inspections	$0	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$0	sewage treatment plants and inactive landfills. It also provides structural pest control to facilities owned and operated by the county.
	Other	$0	
5	**INDUSTRIAL and COMMERCIAL**	**$1,575,635**	
	Administration	$253,047	DPW and AWM conduct inspections of a variety of businesses in the unincorporated County, provide regulatory oversight of mobile businesses, and conduct follow-up and enforcement of stormwater violations.
	Compliance Inspection and Enforcement	$1,245,279	
	Educational Outreach	$77,309	
	Other expenditures	$0	
6	**RESIDENTIAL**	**$1,205,386**	
	Compliance Inspection and Enforcement	$688,453	DPW conducts complaint investigations for residential sources in the unincorporated County, and conduct follow-up and enforcement of stormwater violations. DPW also operates a regional hotline.
	Educational Outreach	$516,933	Several County departments coordinate and provide outreach to the residential sector and schoolchildren in support of Permit Section D.5 requirements. Costs reported here correspond to DPW only. Funded activities include developing pollution prevention content and providing direct outreach to various target audiences within the general residential and schoolchildren target audiences.
7	**IDDE**	**$321,523**	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
		$321,523	DPW conducts monitoring programs, assesses scientific data, and provides technical and scientific support to other County program staff. They also provide support for all technical and scientific aspects of JRMP development and implementation. These costs are exclusive of the regional monitoring program which is addressed separately under regional costs.
8	**EDUCATION**	**$0**	Education costs are included in other sections as applicable.
9	**PUBLIC PARTICIPATION**	**$0**	Public participation costs are included in other sections as applicable.
10	**SPECIAL INVESTIGATIONS**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.
11	**NON-EMERGENCY FIREFIGHTING**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.

$23,125,671

1.3.1.2 Watershed

Table 1.2 presents the County's estimated watershed expenditures for FY 2015-16.

Table 1.2 – Estimated Watershed Expenditures for FY 2015-16

	Santa Margarita WMA	San Luis Rey WMA	Carlsbad WMA	San Dieguito WMA	Peñasquitos WMA	San Diego River WMA	San Diego Bay WMA	Tijuana WMA
Administration	$37,583	$201,492	$82,653	$113,035	$75,309	$105,117	$37,583	$75,309
Cost Share Contribution	$0	$62,494	$46,204	$8,885	$1,062	$68,970	$6,659	$2,346
Watershed Activities	$626,917	$119,390	$14,860	$171,640	$26,423	$125,705	$111,491	$80,300
Other	$0	$0	$0	$0	$0	$0	$0	$0
Total Estimated Watershed Costs	**$664,500**	**$383,376**	**$143,717**	**$293,560**	**$102,794**	**$299,792**	**$155,733**	**$157,955**

1.3.1.3 Regional

Table 1.3 presents the County's estimated regional expenditures for FY 2015-16. This includes only those expenditures associated with the Copermittees' adopted Regional Budget and Work Plan. Other costs associated with regional participation (meeting attendance, etc.) are included within the jurisdictional expenditures presented above.

Table 1.3 – Estimated Regional Expenditures for FY 2015-16

Regional Programs	County Costs
Administration	$0
Cost Share Contribution	$2,087,118
Regional Activities	$0
Other	$0
Total Estimated Regional Costs	**$2,087,118**

1.3.1.4 Total Expenditures

Table 1.4 presents the County's total estimated expenditures for FY 2015-16 (jurisdictional, watershed, and regional).

Table 1.4 – Total Estimated County Expenditures for FY 2015-16

Component / Sub-component	Estimated Expenditures
Jurisdictional	
Administration	$6,840,583
Development Planning	$1,109,654
Construction	$4,500,593
Municipal	$7,572,297
Industrial And Commercial	$1,575,635
Residential	$1,205,386
IDDE	$321,523
Education	$0
Public Participation	$0
Special Investigations	$0
Non-emergency Firefighting	$0
Jurisdictional Total	**$23,125,671**
Watershed	
Santa Margarita WMA	$664,500
San Luis Rey WMA	$383,376
Carlsbad WMA	$143,717
San Dieguito WMA	$293,560
Peñasquitos WMA	$102,794
San Diego River WMA	$299,792
San Diego Bay WMA	$155,733
Tijuana WMA	$157,955
Watershed Total	**$2,201,427**
Regional	**$2,087,118**
Total Estimated County Costs	***$27,414,216***

1.3.2 Funding Source

Table 1.5 shows the major sources of funding for the County's urban runoff management programs in FY 2015-16, and describes the legal restrictions applicable to the use of each.

Table 1.5 – Legal Restrictions on the Use of Program Funding

Funding Source	Legal Restrictions
General Fund	There are no restrictions on the use of general fund for County water quality programs and activities except that they must be used only for the purposes for which they are budgeted and allocated by the County Board of Supervisors.
Flood Control District Fees	Revenue generated from these fees must be expended for activities related to flood and storm management.
Developer Deposits / Permit Fees	Deposits / fees may be used only to fund activities related to the work for which the permits are issued.
Gas Tax	Gas Tax is collected by the state and allocated to local government for transportation-related work including maintenance of existing transportation systems and construction of new transportation facilities. These funds may not be used for other purposes.
Sanitary District Fees	Sanitary District Fees are used for work related to the maintenance of sewer lines, pump stations, force mains, and several treatment plants that serve the unincorporated areas. They may be used only for such maintenance-related purposes within the respective sewer district for which they are collected.
Other Funding Sources	Other funding sources collectively account for a relatively small portion of ongoing expenditures. However, all funding for the County's stormwater compliance programs is expended within applicable legal restrictions and limitations.

1.4. Conclusions and Recommendations

The figures presented here are an estimate of the expenditures that the County incurred to meet its compliance obligations for FY 2015-16. For the reasons explained above, they should be considered only best estimates of stormwater-related expenditures.

D.4.3 County of San Diego Strategies

County of San Diego's strategies are detailed in Tables D-7 and D-8.

Table D-7
County of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
Illicit Discharge, Detection, and Elimination (IDDE) Program						
1	Maintain storm water conveyance system map to facilitate IDDE program	Yes	Updated as needed.	N	NA	Y
2	Utilize municipal personnel and contractors to identify and report Illicit Connections and Discharges	Yes	IDDE Program.	N	NA	Y
3	Updated focused training for County field staff	Yes	Updated training for BMP Design Manual and Storm water Implementers.	N	NA	Y
4	Collect effluent on the ground (EOG), sanitary sewer overflow (SSO) data	Yes, fully	Approximately 87 EOG complaints related to septic systems and 14 SSO events recorded and responded to.	N	NA	Y
5	Address septic system failures where observed	Yes, fully	Suspected septic discharges are reported to DEH HIRT Response line when they occur after hours and DEH Land and Water Quality Division during normal hours. All complaints resolved during 15-16.	N	NA	Y
6	Facilitate public reporting of ICID via telephone and email	Yes	Bilingual hotline, dedicated e-mail address, and multiple online reporting tools.	N	NA	Y
7	Refer homeless issue complaints to Sheriff or appropriate jurisdictions	Yes	Collaborate with multi-departmental group to address homeless encampments.	N	NA	Y
8	Bilingual hotline answered by a live operator (I Love a Clean San Diego) to provide better customer service	Yes	Bilingual hotline operated by ILACSD.	N	NA	Y
9	Implement practices and procedures to address spills with the potential to enter the storm drain system	Yes	NOV issued by DEH for failing septic systems when effluent could reach the storm drain. Prompt follow up and mitigation is implemented. Such cases are rare; <5 in 15-16.	N	NA	Y
10	Coordinate spill response with responsible sewer agencies	Yes	Major DEH role is to inform the public of risks associated with sewer spills, conducting sampling, reporting, posting signs, etc.	N	NA	Y
11	Implement practices and procedures to prevent/limit infiltration of seepage from sanitary sewers	Yes	If illicit connections are identified as part of an IDDE investigation, investigation will be conducted to define and eliminate the source.	N	NA	Y
12	Coordinate with upstream entities to prevent illicit discharges from upstream sources entering into the storm drain system	Yes	If illicit connections are identified as part of an IDDE investigation, investigation will be conducted to define and eliminate the source. If determined to be from an upstream entity coordination will occur.	N	NA	Y
13	Utilize municipal personnel and Contractors to monitor stormwater outfalls for discharges of potential ICIDs	Yes	This is part of the IDDE Program.	N	NA	Y
14	Develop and implement a strategy for investigating and addressing ICIDs.	Yes	Focused, collaborative investigations with Planning and Science staff of high priority outfalls.	N	NA	Y

Table D-7 (continued)
County of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
Development Planning						
15	Require implementation of source control and Low Impact Development (LID) BMPs for all development projects.	Fully	The County BMP DM requires all projects regardless of size and location to implement SC and SD BMPs. These requirements are captured in the WPO and County's BMP DM.	N	NA	Y
16	Priority Development Projects: In addition to requirement for all development projects, implement or require implementation of onsite structural BMPs to control pollutants and manage hydromodification for PDPs.	Fully	The County BMP DM requires all PDPs to implement PC and HMP BMPs. These requirements are captured in the WPO and County's BMP DM.	N	NA	Y
17	Update BMP Design Manual procedures to specify stormwater requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria, and establish where implemented alternative compliance options.	Partially	Updated to reflect the Regional Model BMP DM with additional changes to incorporate County implementation practices. BMP DM became effective on February 26, 2015. Rene can provide details on the differences between CoSD BMP DM and Model BMP DM.	N	NA	N
18	Conduct internal (staff) training on the updated BMP Manual	Fully	The JRMP requires the County to conduct internal training every fiscal year and after release of new guidance documents.	N	NA	N
19	Hold external land development workshops targeting the development community	Fully	The County conducts external training regularly and after release of new guidance documents.	N	NA	N
20	Implement a program that ensures that all structural and Low Impact Development (LID) BMPs are designed, constructed and maintained on Priority Development and Redevelopment Projects.	Fully	Structural BMPs and LID BMPs are designed and constructed per the BMP Design Manual. In addition, Structural BMPs are tracked for maintenance through inspections and self verification letters. LID BMPs that are installed as a result of implementation of the BMP Design Manual are proposed to be inspected.	N	NA	Y
21	Impose legal authority to ensure all development and redevelopment projects are in compliance with all post construction requirements.	Fully	The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated permit and the inclusion of applicant-implement offsite alternative compliance.	N	NA	Y
22	Update County codes, ordinances, and stormwater design standards consistent with the permit and the updated BMP Manual	Fully	The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated permit and the inclusion of applicant-implement offsite alternative compliance. WPO update became effective on February 26, 2016.	N	NA	N
Construction Management						
23	Maintain, update and prioritize a watershed based inventory of all projects issued local permits that allow soil disturbing activities.	Yes	Projects that are issued local permits that allow soil disturbance activities are part of the inventory that is watershed-based.	N	NA	Y

Table D-7 (continued)
County of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
24	Require implementation of BMPs that are site specific, seasonally appropriate and appropriate to the construction phase, year round.	Yes	Every project requires implementation of site specific construction BMPs, seasonably appropriate and appropriate to the construction phase.	N	NA	Y
25	Impose legal authority to ensure inventoried construction projects are in compliance with all requirements.	Yes	The Watershed Protection Ordinance is the current legal authority to insure inventoried construction projects are in compliance with all requirements.	N	NA	Y
26	Make updates to County ordinances related to construction; reference to existing grading ordinance	Yes	County ordinances are updated with subsequent Construction General Permit updates; the Watershed Protection Ordinance will be updated as necessary as a result of the future Grading Ordinance Update.	N	NA	N
27	Provide internal staff training related to construction storm water management.	Yes	The County conducts construction stormwater training annually and it targets construction inspectors in DPW-PDCI, PDS-Building, and CIP Inspectors in DPW and DGS.	N	NA	Y
Existing Development						
28	Maintain and update a watershed-based inventory of existing development (i.e. commercial, industrial, municipal and residential areas).	Yes	Inventory is tracked in Accela Automation.	Y	Database is continually updated to increase accuracy and efficiency	Y
29	Improve the tracking of watershed based inventories via consolidated database	Yes	See 28	Y	See 28	Y
30	Designate a minimum set of BMPs required for all existing development inventories, including special event venues. The designated minimum BMPs must be specific to facility or area types and pollutant generating activities, as appropriate.	Yes	JRMP establishes minimum BMPs for all land use types.	N	NA	Y
31	Create an Equestrian BMP Handbook	No	Handbook created in FY2014-15.	Y	Handbook will be revised in FY2016-17 to encompass additional BMPs and be more user friendly.	Y
32	Require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types and pollutant generating activities, as appropriate.	Yes	See 30	N	NA	Y

Table D-7 (continued)
County of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
33	Pet waste management and outreach in County Parks.	Yes	Mutt-mitt dispensers are installed and maintained in many County parks, providing people who are walking their dogs with waste disposal bags to use to pick up after their pets.	N	NA	Y
34	Implement a schedule or operation and maintenance activities for the stormwater conveyance system and related structures.	Yes	Stormwater maintenance is referred to appropriate departments when needed.	N	NA	Y
35	Implement a schedule of operation and maintenance for County paved and unpaved roads.	Yes	County Road Crews employ a schedule for maintenance of County Roads.	N	NA	Y
36	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Yes	1. 450 Facilities received the Agricultural Water Quality Best Management Practices for Pesticides through annual registration notifications. 2. Inspections were conducted at 83 Commercial Ag Facilities.	N	NA	Y
37	Promote and encourage implementation of designated BMPs in residential areas.	Yes	Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas. All Residential Management Areas were inspected in FY15-16.	N	NA	Y
38	Conduct inspections of inventoried existing development to ensure compliance	Yes	Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas.	N	NA	Y
39	Conduct focused residential inspections based on strategic assessments.	Yes	Focused, collaborative investigations with Planning and Science staff of high priority outfalls.	N	NA	Y
40	Develop a residential inspections tracking program via mobile platform - miles, violations, etc.	Yes	In pilot testing phase.	Y	Modifications based on pilot testing phase to increase effectiveness	Y
41	Improve inspections data tracking through mobile phone applications	Yes	See 40	Y	See 40	Y
42	Enforce legal authority established for all inventoried existing development to achieve compliance	Yes	See JRMP	N	NA	Y
43	Update county ordinance related to existing development; reference to existing guidance documents	Yes	Watershed Protection Ordinance and BMP Design Manuals were updated.	N	NA	N
44	Promote incentive program for BMP retrofits (e.g. water smart irrigation controllers, turf replacements programs, residential landscape evaluation program).	Yes	The County continues to collaborate with and promote the efforts of partner agencies incentive programs.	N	NA	N

Table D-7 (continued)
County of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
45	Collaborate with partner agencies and groups to promote non-County sponsored incentive programs for BMP retrofits, including rain barrels, smart controllers, soil sensors, turf replacement, etc.	Yes	The County continues to collaborate with and promote the efforts of partner agencies incentive programs.	N	NA	Y
46	Identify candidate areas of existing development for stream, channel, and/or habitat rehabilitation projects and facilitate implementation of such projects.	No	NA	N	NA	N
Outreach and Public Participation						
47	Develop, improve, distribute outreach materials.	Yes	Improved outreach materials through a focused Community-based Social Marketing approach.	Y	Continual improvement of existing materials, including translation into Spanish	Y
48	Give outreach presentations to elementary, middle, and high school students	Yes	Offer presentations to elementary, middle, and high schools serving unincorporated communities.	N	NA	Y
49	Outreach to mobile landscaping service providers	Yes	Pesticide Regulation Program collaboration with the California Department of Pesticide Regulation on a pilot program to offer workshops for maintenance gardeners. Two workshops were held where attendees were provided training materials and concluded with a pesticide certification exam. Attendees at both workshops had high success rates for the exam.	N	NA	Y
50	Conduct large residential property pet waste management outreach	No	Unable to implement due to lack of community service organization partners.	N	NA	N
51	Conduct over irrigation outreach pilot study	Yes	Community-based Social Marketing pilot study on the effectiveness of irrigation runoff prevention materials.	Y	NA	Y
52	Conduct Homeowners Associations Outreach and Coordination Pilot Study	Partial	HOA Outreach materials in draft format. Additional development will take place in FY2016-17.	Y	NA	Y
53	Expand Homeowners Associations Outreach and Coordination based on the pilot project within San Luis Rey, San Dieguito, or San Diego River as needed and as funding is identified	No	Additional development may occur based on pilot study in FY2016-17.	N	NA	N
54	Collaborate with watershed partners to develop consistent messaging to targeted audiences such as commercial, residents to conserve water and reduce dry weather flows	Yes	Collaboration between the Regional Education Workgroup and Think Blue San Diego Region to develop and distribute educational materials such as the "Be the Solution to Pollution" booklet which includes irrigation and runoff reduction measures. Other items developed under this included posters, calendars and coloring books.	N	NA	y

Table D-7 (continued)
County of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
55	Sponsor Trash Collection Events through public outreach and participation	Yes	The County sponsors ILACSD to establish cleanup sites at the Coastal Cleanup Day and Creek to Bay events.	N	NA	Y
56	Educational Workshops on Integrated Pest Management, manure management and others as needed	Yes	Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.	N	NA	Y
57	Partner with Master Gardeners Programs to provide education opportunities on water use and practices for gardening	Yes	Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.	N	NA	Y
58	Conduct Effectiveness Survey's on Education & Outreach programs	Yes	Surveys to determine the efficacy of watershed education to unincorporated elementary, middle, and high schools serving unincorporated communities.	N	NA	Y
Enforcement Response Plan						
59	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Yes	County implemented the ERP as described in the JRMP.	N	NA	Y
60	Notify the SDWB by email (Nonfilers_R9waterboards.ca.gov) within five (5) calendar days of issuing escalated enforcement to a construction site that poses a significant threat to water quality as a result of violations or other noncompliance	Yes	County implemented the ERP as described in the JRMP.	N	NA	Y
61	Notify the SDWB by email (Nonfilers_R9waterboards.ca.gov) any persons required to obtain coverage under the statewide Industrial General Permit and Construction General Permit and failing to do so, within five (5) calendar days from the time the Copermittee become aware of the circumstances.	Yes	County implemented the ERP as described in the JRMP.	N	NA	Y

Table D-7 (continued)
County of San Diego Jurisdictional Strategies for Los Peñasquitos WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
Public Education and Participation						
62	Implement a public education and participation program to promote and encourage development of programs, management practices and behaviors that reduce the discharge of pollutants in storm water prioritized by high risk behaviors, pollutants of concern, and target audiences.	Yes	The County completes numerous education and public participation programs for a diverse target audiences. See JRMP.	N	NA	Y

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Table D-8
County of San Diego Optional Strategies for Los Peñasquitos WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
Provision B.3.b.(1)(b)(i) - BMPs, incentives, or programs that may be implemented that are in addition to requirements of Provision B.3.b.(1)(a)										
1	Implement Sustainable Landscapes Program to encourage landscape retrofits.	FY 2016-17; Continuous until grant funding and incentives are depleted	Implementation of this strategy may be triggered if (1) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (2) all of the necessary resources have been secured. Continue implementation when the funding and incentives items are secured.	Staff resources, Grant funding, Incentive items, Partnerships	No	Partially	None	N	NA	Y
2	Implement an incentive program for BMP Retrofits (Public-Private Partnerships - a County sponsored program to offer incentives for rain barrel installation, downspout disconnects from the stormwater system, etc.)	FY 2015-16 Continuous, as resources allow	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Incentive items, Partnerships	No	Partially	None	N	NA	Y
3	Implement a program that provides rebates or incentives for pumping septic systems, with a focus in high risk areas adjacent to waterways (within 600 feet).	Once triggered, Pilot program 1 -2 years, as needed thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Incentive items	No	No	Funding source not identified. All 4 triggers have not been met.	No	NA	No
4	Identify where sewer and stormwater infrastructure are in close proximity and subsequently, confirm the absence of flow at nearby stormwater MS4 outfall during dry weather.	Once triggered, 2-3 years; one-time	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	No	None	No	NA	

Table D-8 (continued)
County of San Diego Optional Strategies for Los Peñasquitos WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
5	Implement a program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.	Once triggered, 2-3 years	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) septic systems have been determined to be a pollutant sources to the MS4; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	Partially	Under the Local Area Management Plan (LAMP) for onsite wastewater treatment systems the treatment systems with supplemental treatment are required to be permitted annually. The annual operating permit will define the monitoring and maintenance requirements as specified by the manufacturer and/or qualified professional who designed the system. The LAMP ordinance can be found at: http://www.sandiegocounty.gov/content/dam/sdc/deh/lwqd/RWQCB%20Approved%20LAMP%20Final%202-24-15.pdf	N	NA	Y

Table D-8 (continued)
County of San Diego Optional Strategies for Los Peñasquitos WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
6	Divert persistent dry weather flows from storm drains to sewer	Once triggered, 3-6 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) permission is granted from sewer agency; and (4) ground water or permitted discharges have been ruled out; and (5) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Engineering design, Environmental review, Permits, Ongoing funding for operation/maintenance	No	No	Diversions are a last resort strategy and will be reviewed for outfalls that are persistently flowing after all other implementation strategies have been exhausted.	N	NA	N
Provision B.3.b.(1)(b)(ii) - Incentives or programs that may be implemented to encourage or implement projects to retrofit areas of existing development										
7	Implement trash capture program (e.g., retrofit storm drain intakes with trash capture devices)	Baseline study 2-3 years; FY 15-16 implementation as needed and as resources allow	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) baseline study completion and success; and (4) focus areas identification; and (5) detailed inlet inventory of focus areas; and (6) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Equipment, Permits, Ongoing funding for operation/maintenance	No	Partially	The County of San Diego is in process of conducting several studies to develop Baseline Trash Generation Rates.	N	NA	Y

Table D-8 (continued)
County of San Diego Optional Strategies for Los Peñasquitos WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
8	Implement a Green Streets Retrofits Program	Once triggered, 3-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered on a project-by-project basis if (1) a specified interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Each green street retrofit project is preliminary estimated to cost an average of $5,500,000 per linear mile of retrofit for construction. Resources include: Staff resources, Grant funding or alternative source, Contractor funding, Engineering or landscaping design, Permits, Environmental review, Right of way acquisition, Ongoing funding for operation/maintenance	No	Partially	Design standards and specifications have been developed. Green streets are now being used to meet compliance for all retrofit and/or redeveloped road projects that in the Capital Improvement Projects plan. Pursuing Grant Funding	N	NA	Y
9	Construct Treatment Control BMPs (retrofits projects)	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Engineering or landscaping design, Permits, Environmental review, Ongoing funding for operation/maintenance	No	No	None	N	NA	N

Table D-8 (continued)
County of San Diego Optional Strategies for Los Peñasquitos WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
10	Implement an alternative compliance program to enable "offsite" compliance for new and redevelopment projects.	Once triggered, 3-6 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design , Permits, Environmental review, Right of way acquisition (if needed), Ongoing funding for operation/maintenance	No	Partially	Currently applicant implemented offsite alternative compliance is available for use by the development community. The Water Quality Equivalency (WQE) provides the currency for structural BMPs and some natural system management practices (NSMPs). Additional work on the WQE will be conducted during FY17. The County is not currently pursuing a credit system but is participating as a stakeholder on the City of San Diego TAC and as a member of the Western Riverside Coalition of Governments (WRCOG) discussion on offsite alternative compliance.	N	NA	Y

Table D-8 (continued)
County of San Diego Optional Strategies for Los Peñasquitos WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
Provision B.3.b.(1)(b)(iii) - Incentives or programs that may be implemented to encourage or implement projects that will rehabilitate the conditions of channels or habitats										
11	Flood Control Channel Rehabilitation Projects (e.g., removal of impervious lining in flood control channel and replacement with earthen or vegetated surface)	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (4) engineering design, monitoring, and outreach plans are approved; and (5) all of the necessary resources have been secured.	Project costs vary by size and complexity. Resources include: Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design, Permits, Environmental review, Right of way acquisition (if needed), Ongoing funding for operation/maintenance	No	Partially	One project has been identified in SDR for retrofit/rehabilitation. Project planning, design and environmental review will begin in FY17	N	NA	Y
12	Implement a program to remove invasive non-native plants (i.e. Arundo) upstream areas rivers or tributaries.	Once triggered, 1-2 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) community support and partnerships established; and (4) it has been determined that invasive plants have been found to have an impact on water quality; and (5) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	No	The County has developed several Habitat Restoration Plans and Non-Native Plant Removal Guidelines including for the Otay Valley Regional Park. Implementation of projects resulting from these guidelines requires acquisition of land and funding. No projects were completed during this reporting period.	NA	NA	N

Table D-8 (continued)
County of San Diego Optional Strategies for Los Peñasquitos WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, NA)*	Planned Implementation into next FY? *(Y/N)*
13	Habitat Restoration and rehabilitation projects in County Parks	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Restoration / Rehabilitation Designs Approved, Environmental Permits issued, CEQA / NEPA Environmental review, Ongoing funding for maintenance and monitoring	No	Partially	Habitat restoration and rehabilitation has occurred in the Tijuana River Valley Regional Park and will continue for an additional 3-5 years. Additionally habitat restoration and rehabilitation has been initiated for the Sweetwater Loop Trail Phase I and Phase III however additional funding is necessary to complete Phase I. Phase III will begin in Fall 2016.	N	NA	Y

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D.4.4 Modifications to the BMP Design Manual

No modifications to the BMP Design Manual have been made since the WQIP was approved in fall 2015. The current County of San Diego's BMP Design Manual is posted on the County of San Diego's website.

D.4.5 Modifications to the Jurisdictional Runoff Management Plan

No modifications to the County of San Diego's JRMP have been made since the WQIP was approved in fall 2015. The current County of San Diego's JRMP is posted on County of San Diego's website.

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D.5 Caltrans

D.5.1 Annual Report Certification

Caltrans' required certification regarding the preparation of the Water Quality Improvement Plan Annual Report is included on the following pages.

DEPARTMENT OF TRANSPORTATION
DISTRICT 11
4050 TAYLOR STREET, M.S. 120
SAN DIEGO, CA 92110
PHONE (619) 688-0100
FAX (619) 688-4237
TTY 711
www.dot.ca.gov

Serious drought.
Help save water!

January 4, 2017

STATEMENT OF CERTIFICATION

Los Penasquitos Watershed Management Area Water Quality Improvement Plan
2015-2016 Annual Report

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

1/6/17

BRUCE L. APRIL
Deputy District Director, Environmental

Date

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Appendix E: Adaptive Management

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Adaptive Management – Changes to Water Quality Improvement Plan Elements

1. The assessment of Provision A.4 will now be considered once per MS4 Permit term during the development of the Regional Monitoring and Assessment Report.
2. A number of Responsible Agencies have made adminstrative chagnes to their strategies. Updates are described in Appendix D.

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City of Imperial Beach, California

PUBLIC WORKS DEPARTMENT

825 Imperial Beach Blvd., Imperial Beach, CA 91932 Tel: (619) 423-8311 Fax: (619) 429-4861

January 27, 2017

Mr. David Gibson
California Regional Water Quality Control Board, San Diego Region
2375 Northside Drive, Suite 100
San Diego, CA 92108-2700

Subject: **San Diego Bay WMA-PIN No. 794855:carias**
Submittal of San Diego Bay Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report

Dear Mr. Gibson:

On behalf of the San Diego Bay Watershed Management Area (WMA) Responsible Parties, the City of Imperial Beach is pleased to submit the San Diego Bay WMA Water Quality Improvement Plan Annual Report for the 2015-2016 reporting period. This document was prepared in accordance with Permit Order R9-2013-0001, as amended by Orders No. R9-2015-0001 and No. R9-2015-0100 (Permit). Please accept this submittal on behalf of the responsible parties in the watershed.

Enclosed is one (1) electronic copy of the San Diego Bay Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report, including certification statements. The following are also included the Annual Report:

- Jurisdictional Runoff Management Program (JRMP) Annual Report forms (Appendix 2);
- Legal authority certifications as required by Permit Provision E.1.b (Appendix 2);
- Descriptions of JRMP and BMP Design Manual updates, as applicable (Appendix 2);
- Proposed updates to the Water Quality Improvement Plan, including administrative updates, primarily to jurisdictional strategies (Appendix 2), and a modification to the Airport Authority's airside street sweeping goal (Section 5.1);
- Proposed addition of a hydromodification exemption for the portion of the Otay River between the Lower Otay Reservoir Dam and I-805, as shown in the revised Watershed Management Area Analysis (Appendix 5) and as discussed previously during a Consultation Panel meeting; and
- Monitoring reports for the Chollas Creek TMDLs, the Shelter Island Yacht Basin TMDL, and the City of San Diego's Annual Technical Report: Addressing Trash, Debris, and Floating Material in Chollas and Paleta Creeks (Appendix 4).

In addition to the CD submittal, the Annual Report will also be uploaded to the Regional Clearinghouse hosted by the County of San Diego at: http://www.projectcleanwater.org/. It will not be submitted to the U.S. EPA, as previously directed through email by the San Diego Water Board on June 15, 2015.

If you have any questions, please give me a call at (619) 628-1370.

Sincerely,

Chris Helmer
Assistant Public Works Director, City of Imperial Beach

Enclosures: 1. CD – San Diego Bay Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report, including certification statements

cc: (email) Christina Arias, San Diego Water Board
San Diego Bay WMA Responsible Parties

San Diego Bay

Watershed Management Area Water Quality Improvement Plan

—

FY 2016 Annual Report

Submitted to the
San Diego Regional Water Quality Control Board
by the San Diego Bay Responsible Parties

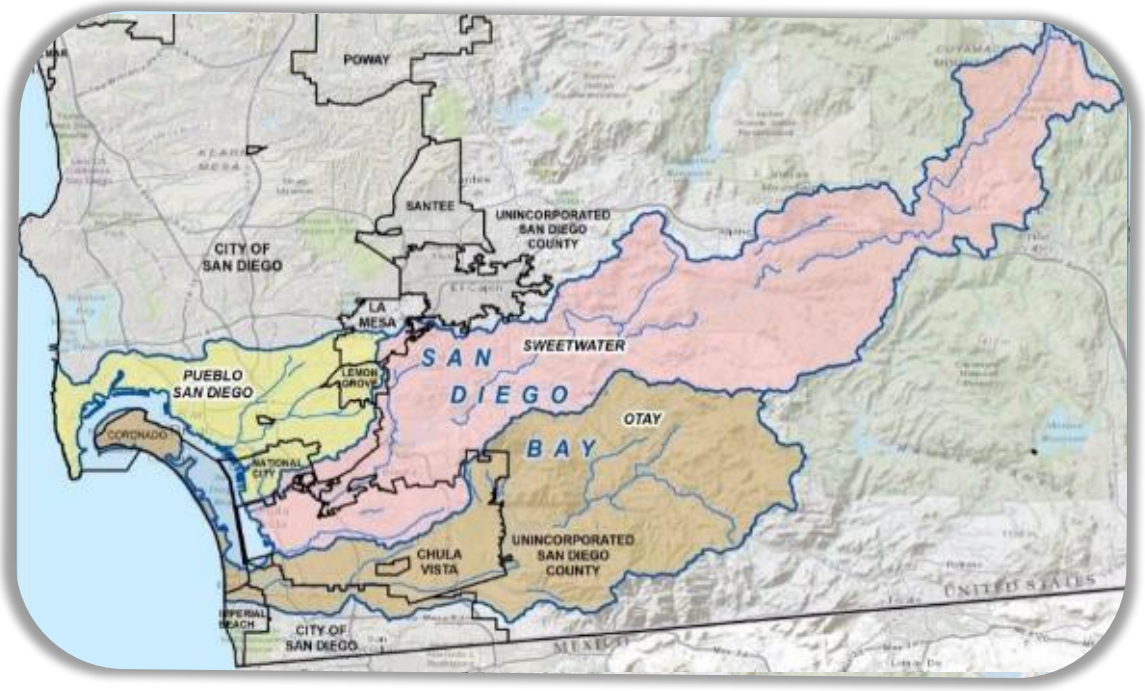

January 2017

Responsible Party Certifications and JRMP Annual Report Forms

The San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report was prepared in accordance with Permit Order No. R9-2013-0001 as amended by Orders No. R9-2015-0001 and No. R9-2015-0100 (Municipal Permit). Appendix 1 provides a crosswalk of Municipal Permit requirements and Annual Report references. The following required items are included in Appendix 2 for each of the Responsible Parties:

- Certification Statements;
- Jurisdictional Runoff Management Program Annual Report Forms; and
- Legal authority certifications as required by Permit Provision E.1.b.

Executive Summary

Background

The San Diego Bay Watershed Management Area (WMA) comprises the 444-square-mile land area in southern San Diego County that drains to San Diego Bay. Ten agencies regulated under the San Diego Regional Water Quality Control Board (Regional Board) Municipal Permit[1] for discharges from municipal separate storm sewer systems (MS4s) have jurisdictional area within this WMA. Those agencies are the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego; the County of San Diego; the San Diego Unified Port District (Port of San Diego); and the San Diego Regional Airport Authority (Airport Authority). The California Department of Transportation (Caltrans) is not regulated by the Municipal Permit but has also chosen to participate in the Water Quality Improvement Plan (WQIP) process, which is described below. Collectively, these 11 agencies are referred to as Responsible Parties (RPs).

In accordance with the Municipal Permit, the RPs developed a WQIP for the San Diego Bay WMA, which was accepted by the Regional Board in February 2016. The WQIP identifies the Highest Priority Water Quality Conditions (Highest Priority Conditions) and Focused Priority Water Quality Conditions (Focused Priority Conditions) in the WMA, sets goals to address those conditions within a specified timeframe, and describes the strategies that will be used to meet the goals.

This San Diego Bay WQIP Annual Report provides information on the RPs' progress in implementing the WQIP during fiscal year (FY) 2016. The reporting period for FY 2016 consists of two components: 1) July 1, 2015 to June 30, 2016, consistent with the fiscal year, for the implementation of all program activities except monitoring and assessment, and 2) October 1, 2015 to September 30, 2016, consistent with the monitoring year for the monitoring and assessment programs. Together, these two periods constitute the reporting year (FY 2016) for the WQIP Annual Report.

San Diego Bay Water Quality Improvement Plan

The RPs evaluated available data, information, and public input and used a multi-step assessment process to identify priority water quality conditions in the San Diego Bay WMA. The WQIP further identified the Highest Priority Conditions and Focused Priority Conditions in the WMA, for which numeric goals were developed. Addressing these conditions is the focus of the WQIP, but many of the strategies implemented to address Highest and Focused Priority Conditions provide multiple benefits by also addressing other pollutants and water quality conditions. Additionally, many strategies are implemented across RPs' entire jurisdictions, providing water quality benefits in parts of

[1] Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100. http://www.waterboards.ca.gov/sandiego/water_issues/programs/storm water/docs/2015-1118_AmendedOrder_R9-2013-0001_COMPLETE.pdf

the watershed outside the areas where Highest or Focused Priority Conditions have been identified. The Highest and Focused Priority Conditions are summarized in Table ES-1.

Table ES-1
San Diego Bay Watershed Management Area Summary of Highest and Focused Priority Conditions

HU	Condition	Pollutant/ Stressor	Geographic Extent (HA/HSA)	Responsible Party
Pueblo (908)	Water Quality[1]	Bacteria; Dissolved copper, lead, and zinc	Chollas Creek (908.22)	City of La Mesa City of Lemon Grove City of San Diego County of San Diego Port of San Diego Caltrans
	Water Quality	Copper and zinc (wet weather)	Airport Authority jurisdiction within HA 908.21	Airport Authority
Sweetwater (909)	Riparian Area Quality	Various	Paradise Creek—lower Sweetwater, HA 909.1[2]	City of National City
	Physical Aesthetics	Trash	The western portion of the City of Chula Vista within HA 909.1	City of Chula Vista Port of San Diego
Otay (910)	Swimmable Waters (Beaches)	Bacteria	Applicable RP jurisdiction within HA 910.1	City of Coronado Port of San Diego
	Physical Aesthetics	Trash	Applicable RP jurisdiction in HA 910.2	City of Chula Vista City of Imperial Beach Port of San Diego

Notes:
HA = hydrologic area; HU = hydrologic unit; RP = Responsible Party
1. The conditions in bold are the Highest Priority Conditions for the San Diego Bay WMA. Conditions in regular font are the Focused Priority Conditions.
2. For the purposes of the WQIP, Paradise Creek is part of the lower Sweetwater area, for which the San Diego Bay priority condition analysis has identified potential impacts to beneficial uses such as habitat and noncontact water recreation

The WQIP identifies numeric goals for each Highest Priority Condition and Focused Priority Condition, including final goals and interim goals. Many of the interim goals to be met during the current Municipal Permit term, which extends through FY 2018, are expressed in terms of performance measures, such as an amount of area treated by installation of green infrastructure. Individual schedules for each goal were established. Together, the goals and schedules define the targets for developing a program of strategies and to measure progress.

Strategies and schedules include both core Municipal Permit required compliance activities and best management practices (BMPs) that RPs have been implementing for several years, and new strategies that are not a part of explicit permit requirements (e.g., creek restoration).

The RPs developed a Monitoring and Assessment Program that is specific to the WQIP and focuses on the outcomes of program implementation. The program contains three major types of monitoring: general permit-required monitoring, Highest and Focused Priority Condition monitoring, and special studies and additional monitoring. Monitoring is intended to measure the progress that RPs make toward achieving the established goals and schedules. The program includes assessment for each of the monitoring types, as well as an integrated assessment to evaluate the overall progress in the WMA.

Water Quality Improvement Plan Implementation and Progress

The RPs implemented strategies to improve water quality and make progress toward achieving numeric goals during FY 2016. Although the WQIP was approved fairly recently (February 2016), results for FY 2016 indicate that progress toward achieving many of the numeric goals has been made within the short timeframe. Summaries of strategy implementation, monitoring, and progress toward achieving numeric goals are described below.

Strategy Implementation

The RPs implemented a variety of strategies to improve water quality in FY 2016. RPs' programs and strategies focus on the Highest and Focused Priority Conditions, as appropriate, and are described in Sections 4 through 8 of this report. Highlights of the RPs' efforts to improve water quality during the reporting year include the following:

- Green Streets: University Avenue Median Water Quality Improvement Project (City of La Mesa). This project will remove and replace impervious medians with pervious biofiltration areas that are designed to reduce pollutant discharges to receiving waters. The project is currently under construction, with an anticipated completion date of May 2017.
- Runoff Redirection (City of Lemon Grove). Lemon Grove performed initial site research to identify feasible locations for curb cuts to divert runoff from paved areas to landscaping at municipal facilities. A curb cut to direct runoff from the parking lot at City Hall to landscaping was completed in early FY 2017. The feasibility of directing downspout runoff to landscaping was also completed at municipal facilities in FY 2016.
- Storm Water BMPs (City of San Diego [City])
    - In FY 2016, more than 25 acres of drainage area were treated by green infrastructure features within the San Diego Bay WMA, and approximately 63 additional acres are expected to be treated by FY 2018.

- To increase removal of metals and sediment, the City has started to enhance street sweeping operations in accordance with strategy CSD-JRMP-34 by sweeping a route in the Chollas Creek subwatershed with a regenerative air sweeper. The City also began sweeping routes using different sweeping technologies to determine the most effective sweeping practices for individual routes.
- In accordance with the enhanced catch basin cleaning program identified in strategy CSD-JRMP-24, the City completed additional inspections and cleanings where necessary based on inspection results, at 2,500 catch basins in the Chollas Creek hydrologic subarea (HSA).
- The City completed the first phase of a drainage master plan for the Chollas Creek HSA. The drainage master plan uses precise light imaging, detection, and ranging (LIDAR) data to identify a vast range of potential structural BMPs and locations. Locations are identified to maximize the efficiency of the BMP by placing the BMP in an area that will treat larger or multiple drainage areas. This planning will maximize pollutant removal from green infrastructure and reduce the number of green infrastructure projects (and associated costs) that will be needed to meet Total Maximum Daily Load (TMDL) requirements.

- Dry Weather Flow Reduction and Water Conservation (County of San Diego [County]): As a regional leader in water conservation, the County implements several programs and strategies, both independently and in partnership with other agencies, to help conserve local water supplies. In response to drought conditions in the region, the County developed a Drought Response Action Plan to reduce water use at its facilities, which has resulted in savings of 60 million gallons of water in County parks during FY 2015–2016. Since 2009, installation of high-efficiency irrigation heads in 20 parks county-wide, many of which are located in the San Diego Bay area, have contributed significantly to these water savings. During the fiscal year, additional efforts included two rain barrel distribution events that were facilitated by the County in partnership with other agencies. Under its WaterSmart Campaign, the County has also collaborated with the San Diego County Water Authority to help distribute water conservation educational materials. This effort included promotion of available water conservation rebates and incentives such as water efficiency audits and other tools to help save water.

- Sweeping Airside Corridors (Airport Authority). Aircraft and vehicle tire and brake wear is a source of copper and zinc from these locations. Under the WQIP, sweeping on the eastern end of the airfield (in particular, the runway and taxiways) will be modified and enhanced to increase the effectiveness of sweeping in FY 2017. The Airport Authority has obtained a Regen-Air vacuum sweeper, which has been shown to perform better than mechanical broom sweepers in removing fine sediments.

- Restoration of Paradise Creek (City of National City). National City's approach is to implement improvements directly in Paradise Creek and in areas tributary to the Creek. National City plans to restore the approximately 1,000-linear-foot reach of

Paradise Creek that runs through Kimball Park by replacing the existing concrete-bottom channel with a natural-bottom channel and replacing turf grass and invasive plant species with native plants along the banks.

- Homeless Outreach Program (City of Chula Vista). Chula Vista formed a Homeless Outreach Team during the reporting period to provide a holistic approach to addressing homelessness issues. The program targets a number of city parks, facilities, and problem areas. Staff visit these areas once per week and have been able to remove over 1,000 pounds of trash per week from the encampments.

- Municipal Solid Waste Receptacle Assessment (Port of San Diego). The Port of San Diego conducted a jurisdiction-wide evaluation of the municipal solid waste receptacles currently in use in the Port of San Diego's parks. The purpose of the assessment was to develop the information necessary to support management decisions related to (1) waste and recycling receptacle type and placement, (2) the adequacy of receptacles to prevent municipal solid waste from entering the MS4 and reduce pollution associated with municipal solid waste (i.e., lids, overhead cover, signage, etc.), and (3) recommended modifications (e.g., either by retrofitting current receptacles, replacing receptacles with more effective models, or adding receptacles/bins where needed). This assessment is scheduled to be completed in FY 2017.

- Improvement of Dirt Alleys (City of Imperial Beach). During this reporting period, Imperial Beach completed the design and construction of the first phase of alley improvements for 14 alley segments (over 1 mile of dirt alleys) in the community. The primary water quality benefit for this project is to address trash, sediment, and bacteria. This project provides a total annual storm water capture volume of 33,000 cubic feet and an annual sediment load reduction of approximately 160 pounds.

- Elimination of Groundwater Intrusion (City of Coronado). During this reporting year, Coronado initiated an MS4 capital improvement project to eliminate groundwater infiltration to the MS4. Project planning and design were completed to install a liner in the existing storm drain and to perform other repairs. Construction is scheduled to start in early 2017. Upon completion, this project will have multiple environmental benefits, including reducing potential bacteria regrowth in the MS4 from standing groundwater in the pipeline, eliminating groundwater diversion to the sanitary sewer, reducing the potential for bacteria discharge to the receiving waters, and reducing greenhouse gas emissions resulting from pump operations to dewater the MS4.

- San Diego Bay WMA Strategies (All Responsible Parties). The RPs have begun to implement wetland restoration, habitat restoration, and public access improvements to support multiple benefits in the San Diego Bay WMA through public-private partnerships and partnerships with other state, federal, and local agencies.

Monitoring

The RPs successfully completed monitoring in 2015–2016 in accordance with the Monitoring and Assessment Program Requirements (Provision D of the Municipal Permit). The monitoring completed in FY 2016 included wet and dry weather MS4 outfall monitoring and bioassessment monitoring, which was conducted in coordination with the Southern California Storm Water Monitoring Coalition (SMC). Monitoring was also conducted for the Highest and Focused Priority Conditions, which is intended to inform programs and assess progress toward the goals outlined in the WQIP. The monitoring program and results for 2015–2016 are described in Section 3 and Appendix 4. Monitoring for Highest and Focused Priority Conditions is described in Sections 4 through 8 and Appendix 4. Monitoring highlights include:

- Monitoring for the Highest Priority Condition: The Chollas Creek Bacteria, Metals, and Diazinon TMDL monitoring programs were successfully completed. Most of the samples collected from Chollas North Fork and Chollas South Fork locations had concentrations of metals that were below water quality objectives (WQOs) for metals. Pesticides, including pyrethroids and diazinon, and toxicity were not detected.
- Water Quality Due to Copper and Zinc, Airport Authority Monitoring: Extensive monitoring was conducted during storm events throughout FY 2016. Copper and zinc, the Focused Priority Condition pollutants of concern, were sampled, analyzed, and evaluated along with several other analytes to comply with the Industrial General Permit (IGP)[2]. Recordkeeping and tracking were also improved because of monitoring.
- Riparian Area Monitoring: National City initiated a special study to collect chemical testing of selenium to support the delisting of the analyte – all 48 of the 48 samples collected had concentrations of selenium that were below the WQO of 5 micrograms per liter (µg/L). Biological monitoring, including vegetation monitoring, will be conducted once restoration is completed in Paradise Creek.
- Physical Aesthetics Monitoring: 73 percent (%) of the 86 dry weather visits to major MS4 outfall locations had “optimal” levels of trash, which is defined as less than 10 pieces of trash per the monitoring methodology. Trash levels were rated on a scale previously developed by the Copermittees’ Regional Monitoring Workgroup. The RPs also initiated a paired monitoring approach in which trash levels were monitored at 12 major MS4 outfall locations and adjacent receiving waters.
- Swimmable Waters Monitoring: North Beach and Tidelands Park was visited on 14 occasions and 20 samples were collected during FY 2016; monitoring will continue in FY 2017. The RPs conducted receiving water monitoring for the first time in FY 2016 and will augment their monitoring with the dry season weather data collected by the County’s Department of Environmental Health (DEH)

[2] Order No. 2014-0057-DWQ, NPDES General Permit for Storm Water Discharges Associated with Industrial Activities jhttp://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0057_dwq.pdf

(California Assembly Bill 411 [AB 411]) program. Tidelands Park was given an A grade for the summer dry season in the Heal the Bay annual report, based on the DEH AB 411 monitoring program's summer dry season results. A delisting feasibility study for Tidelands Park was also completed in FY 2016.

Monitoring and data analysis for five different special studies were performed, as described in the WQIP for Highest and Focused Priority Conditions (Sections 4 through 8; Appendix 4), and in accordance with the Monitoring and Assessment Program Requirements (Provision D of the Municipal Permit). The first year of data provides only a limited basis for conclusions and adaptations; however, the initial results described in Appendix 4 indicate progress toward improving water quality.

Progress Toward Goals

Since the acceptance of the WQIP in February 2016, the RPs have implemented strategies, as highlighted above, and have begun making progress toward achieving numeric goals. The progress toward meeting interim numeric goals, most of which are due to be achieved by FY 2018, is as follows:

- Chollas Creek Metals, Diazinon, and Bacteria:
  - La Mesa –The University Avenue Median Water Quality Improvement project, which is converting University Avenue to a green street by installing biofiltration BMPs, is on schedule to be completed in 2017.
  - Lemon Grove – Lemon Grove performed initial site research to identify feasible locations for curb cuts to divert runoff from paved areas to landscaping at municipal facilities. A curb cut to direct runoff from the parking lot at City Hall to landscaping was completed in early FY 2017.
  - City of San Diego – The City implemented green infrastructure projects that treat 25.14 acres of drainage area and is expected to achieve the 44.6-acre performance measure requirement by implementing additional projects that will treat a total of 88.24 acres by FY 2018.
  - County of San Diego – Ongoing maintenance was performed at two facilities where low-impact development (LID) BMPs were previously constructed: (1) Southeast Family Resource Center, and (2) Central Regional Public Health Center. These efforts have effectively reduced flows during storm events and reduced concentrations of key contaminants.
- Water Quality Due to Copper and Zinc (Airport Authority) – Zinc concentrations measured in MS4 discharges were lower than the current Municipal Permit term interim goal and also lower than the FY 2021 interim goal.
- Riparian Area
  - The current Municipal Permit term goal of collecting and analyzing 48 samples for selenium were achieved, with zero exceedances of the WQOs.

  - Creek restoration work for Paradise Creek to meet numeric goals for habitat restoration is underway and is on track to be completed in 2017.

- Physical Aesthetics – An optimal rating was recorded for 73% of MS4 outfall trash assessments, which exceeds the FY 2018 interim goal of 65%.
- Swimmable Waters – Tidelands Park was given an A grade for the summer dry season in the 2015–2016 Heal the Bay annual report (http://brc.healthebay.org/).

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Acronyms and Abbreviations

Acronym or Abbreviation	Definition
µg/L	micrograms per liter
%	percent
303(d) List	Clean Water Act Section 303(d) List of Water Quality Limited Segments
AB 411	California Assembly Bill 411 (Beach Safety Act)
ABLM	Ambient Bay and Lagoon Monitoring
AEP	California Association of Environmental Professionals
Airport Authority	San Diego County Regional Airport Authority
Bight '13	Southern California Bight 2013 Regional Monitoring Survey
BMP	best management practice
BOD	biological oxygen demand
Caltrans	California Department of Transportation
CCTV	closed-circuit television
CDFW	California Department of Fish and Wildlife
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of San Diego
CMP	corrugated metal pipe
COD	chemical oxygen demand
Consultation Panel	Water Quality Improvement Plan Consultation Panel
Copermittee	An agency named in the Municipal Permit Provision B.1.
County	County of San Diego
CRAM	California Rapid Assessment Method
CTR	California Toxics Rule
DEH	(County of San Diego) Department of Environmental Health
EAD	Environmental Affairs Department

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
FIB	fecal indicator bacteria
FMD	Facilities Maintenance Department
Focused Priority Condition	Focused Priority Water Quality Condition
FY	fiscal year
HA	hydrologic area
Highest Priority Condition	Highest Priority Water Quality Condition
HMP	Hydromodification Monitoring Program
HSA	hydrologic subarea
HU	hydrologic unit
IC/ID	illicit connection and/or illicit discharge
ID	identification
IDDE	illicit discharge, detection, and elimination
IGP	Industrial General Permit
IPM	integrated pest management
JRMP	Jurisdictional Runoff Management Program/Plan
LID	low-impact development
LIDAR	light imaging, detection, and ranging
MAP	Monitoring and Assessment Program
MBAS	methylene blue active substances
MEP	maximum extent practicable
MS4	municipal separate storm sewer system
MSGP	Multi-Sector General Permit
Municipal Permit	San Diego Regional Water Quality Control Board Order Number R9-2013-0001, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region
NAL	non-storm water action level
NASSCO	National Steel and Shipbuilding Company (General Dynamics)

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
NH3	ammonia
NPDES	National Pollutant Discharge Elimination System
O&G	oil and grease
OPP	Office of Pesticide Programs (USEPA)
ORWMP	Otay River Watershed Management Plan
PDP	priority development project
PGA	pollutant-generating activity
Port of San Diego	San Diego Unified Port District or Port of San Diego
QSE	qualifying storm event
RCC	Rental Car Center
REC-1	Contact Water Recreation beneficial use—"Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs." (San Diego Basin Plan, Chapter 2)
Regional Board	San Diego Regional Water Quality Control Board
Responsible Party (RP)	a Copermittee named in the Municipal Permit Provision B.1; all agencies that have included water quality improvement strategies in the Water Quality Improvement Plan
RHMP	Regional Harbor Monitoring Program
ROW	right-of-way
RP	Responsible Party
RWL	receiving water limitation
SCCWRP	Southern California Coastal Water Research Project
SDG&E	San Diego Gas and Electric
SLP	Sustainable Landscapes Program
SMC	Storm water Monitoring Coalition
State	State of California

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
State Board	State Water Resources Control Board
SUSMP	Standard Urban Storm Water Mitigation Plan
SWMM	Storm Water Management Model
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
TBD	to be determined
TCBMP	treatment control best management practice
TMDL	total maximum daily load
TPH	total petroleum hydrocarbons
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
WER	water effects ratio
WLA	waste load allocation
WMA	Watershed Management Area
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan
WQO	water quality objective

1 Introduction to San Diego Bay Watershed Management Area

The San Diego Bay Watershed Management Area (WMA) comprises the 444-square-mile land area in southern San Diego County that drains to San Diego Bay (Figure 1-1). The San Diego Regional Water Quality Control Board (Regional Board) regulates the municipal separate storm sewer systems (MS4s) in the WMA and throughout the San Diego region through the Municipal Permit.[3] The following agencies with jurisdiction in the San Diego Bay WMA are subject to the Municipal Permit: the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (City); the County of San Diego (County); the San Diego Unified Port District (Port of San Diego); and the San Diego Regional Airport Authority (Airport Authority). The California Department of Transportation (Caltrans) has its own permit issued by the State Water Resources Control Board (State Board) and is not regulated by the Municipal Permit, but Caltrans has chosen to voluntarily participate in the Water Quality Improvement Plan (WQIP) process (described below). Collectively, these 11 agencies are referred to as Responsible Parties (RPs). There are also additional jurisdictions in the WMA that have MS4 discharges, such as transit agencies, schools and community colleges, and federal lands, that have not chosen to participate in the WQIP process and over which the RPs do not have legal authority.

1.1 Water Quality Improvement Plan

In accordance with the Municipal Permit, the RPs developed a WQIP for the San Diego Bay WMA, which was approved by the Regional Board in February 2016. The WQIP identifies the Highest Priority Water Quality Conditions (Highest Priority Conditions) and Focused Priority Water Quality Conditions (Focused Priority Conditions) in the WMA, sets numeric goals to address those conditions and schedules for meeting the goals, and describes the strategies that RPs will implement to meet the goals. The RPs' strategies and associated procedures for implementing them are also described in their individual Jurisdictional Runoff Management Programs (JRMPs).[4]

The Highest Priority Conditions and Focused Priority Conditions were selected by the RPs using a process that follows the Municipal Permit requirements, as described in the WQIP. Highest Priority Conditions for the WMA were identified using this process, but some jurisdictions did not discharge or contribute to the Highest Priority Conditions. While this result is positive, these jurisdictions recognized the need to develop numeric goals, strategies, and schedules for selected conditions within their jurisdictions. Accordingly, these RPs identified Focused Priority Conditions. Numeric goals and associated schedules and strategies have been established for all Highest and Focused Priority

[3] Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100. http://www.waterboards.ca.gov/sandiego/water_issues/programs/storm water/docs/2015-1118_AmendedOrder_R9-2013-0001_COMPLETE.pdf

[4] The Water Quality Improvement Plan sets forth activities that may occur within each Responsible Party's jurisdiction to satisfy permit requirements. Responsible Parties need comply only with permit conditions relating to discharges from the MS4s for which they are operators (40 Code of Federal Regulations [CFR] 122.26(a)(3)(vi)),'' Order R9-2013-0001 at I.2 (emphasis added), and that each Responsible Party does not necessarily operate all portions of the MS4 within its jurisdiction.

Conditions. The Highest Priority Conditions and Focused Priority Conditions for the San Diego Bay WMA are summarized in Table 1-1. Highest Priority Conditions are indicated in bold text. Maps of Highest Priority Conditions and Focused Priority Conditions are within each respective section (Sections 4 through 8).

Table 1-1
San Diego Bay WMA Summary of Highest Priority Conditions and Focused Priority Conditions

HU	Condition	Pollutant/ Stressor	Geographic Extent (HA/HSA)	Responsible Party
Pueblo (908)	Water Quality[1]	Bacteria; Dissolved copper, lead, and zinc	Chollas Creek (908.22)	City of La Mesa City of Lemon Grove City of San Diego County of San Diego Port of San Diego Caltrans
	Water Quality	Copper and zinc (wet weather)	Airport Authority jurisdiction within HA 908.21	Airport Authority
Sweetwater (909)	Riparian Area Quality	Various	Paradise Creek—lower Sweetwater, HA 909.1[2]	City of National City
	Physical Aesthetics	Trash	The western portion of the City of Chula Vista within HA 909.1	City of Chula Vista Port of San Diego
Otay (910)	Swimmable Waters (Beaches)	Bacteria	Applicable RP jurisdiction within HA 910.1	City of Coronado Port of San Diego
	Physical Aesthetics	Trash	Applicable RP jurisdiction in HA 910.2	City of Chula Vista City of Imperial Beach Port of San Diego

Notes:

HA = hydrologic area; HU = hydrologic unit; RP = Responsible Party

1. The conditions in **bold** are the Highest Priority Conditions for the San Diego Bay WMA. Conditions in regular font are the Focused Priority Conditions.
2. For the purposes of the WQIP, Paradise Creek is part of the lower Sweetwater area, for which the San Diego Bay priority condition analysis has identified potential impacts to beneficial uses such as habitat and non-contact recreation.

1.2 Water Quality Improvement Plan Annual Report

The Municipal Permit requires the RPs within each WMA to submit an annual report to communicate the status and progress of their approaches and strategies.[5] This San Diego Bay WMA WQIP Annual Report provides information on the RPs' progress to date in implementing the WQIP during fiscal year (FY) 2016. The reporting period for FY 2016

[5] Order No. R9-2013-0001 (as amended), F.3.b.(3) (page 132-133 of 139)

consists of two components: (1) July 1, 2015, to June 30, 2016, consistent with the fiscal year, for the implementation of all program activities except monitoring and assessment, and (2) October 1, 2015, to September 30, 2016, consistent with the monitoring year for the monitoring and assessment programs. Together, these two periods constitute the reporting year (FY 2016) for the WQIP Annual Report. More information about the content and structure of the WQIP Annual Report is provided later in this section.

Table 1-2 summarizes the Municipal Permit requirements that must be addressed and their locations in this Annual Report. Appendix 1 provides additional detail in a crosswalk of the specific Municipal Permit requirements and the location(s) in the Annual Report that address each requirement.[6]

Table 1-2
Regional Municipal Permit Water Quality Improvement Plan Annual Reporting Provisions and Corresponding Annual Report Sections

Municipal Permit Provisions	WQIP Annual Report Sections						WQIP Appendices			
	Section 1: Introduction	Section 2: Goals & Strategies	Section 3: Monitoring & Assessment	Sections 4 - 8 : Achieving Goals	Section 9: Adaptive Management	Section 10: Conclusions	Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
Provision A – Prohibitions and Limitations										
A.4.a.(2)			X		X		X		X	X
Provision B – Water Quality Improvement Plans										
B.5.a.					X				X	X
B.5.b.			X	X	X		X	X	X	X
B.5.c.					X					X
Provision D – Monitoring and Assessment Program Requirements										
D.1.e.(2)(c)			X						X	
D.2.b.(iv)			X						X	
D.4.b.(1)(a)(ii)			X						X	
D.4.b.(1)(b)			X		X				X	X
D.4.b.(1)(c)			X		X				X	X
D.4.b.(2)(a)					X				X	X
D.4.b.(2)(b)			X		X				X	X

[6] Order No. R9-2013-0001 (as amended), F.3.b.(3)(f) – Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the Regional Board. Any Copermittee monitoring data utilized in developing the WQIP Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the WQIP Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.

Table 1-2 (continued)
Regional Municipal Permit Water Quality Improvement Plan Annual Reporting Provisions and Corresponding Annual Report Sections

Municipal Permit Provisions	WQIP Annual Report Sections						WQIP Appendices			
	Section 1: Introduction	Section 2: Goals & Strategies	Section 3: Monitoring & Assessment	Sections 4 - 8 : Achieving Goals	Section 9: Adaptive Management	Section 10: Conclusions	Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
D.4.b.(2)(c)			X		X				X	X
D.4.b.(2)(d)			X		X				X	X
D.4.c.			X						X	
D.4.d.					X					X
D.4.d.(1)					X					X
D.4.d.(2)					X					X
D.4.d.(3)					X					X
Provision E – Jurisdictional Runoff Management Programs										
E.1.b.							X			
E.2.d.(4)			X						X	
E.8.c.	X						X			
Provision F – Reporting										
F.1.b.(6)					X					X
F.2.a.(2)					X		X			X
F.2.a.(3)					X		X			X
F.2.b.(1)					X		X			
F.2.b.(2)					X		X			
F.2.c.(1)(c)					X					X
F.3.b.(3)(a-f)	X		X	X	X	X	X		X	X
F.6						X			X	
Attachment E - Specific Provisions for Total Maximum Daily Loads Applicable to Order No. R9-2013-0001										
Attachment E			X	X					X	

Notes:
WQIP = Water Quality Improvement Plan

This San Diego Bay WMA WQIP Annual Report for FY 2016 is structured as follows:

Section 1. Introduction – Introduces the Regional MS4 Storm Water Permit (Municipal Permit), the San Diego Bay WMA WQIP, and the Annual Reporting requirements [References Appendix 1].

Appendix 1. Crosswalk of Municipal Permit Requirements and Annual Report References

Section 2. Overview of San Diego Bay Watershed Management Area Goals and Strategies – Summarizes the strategies and numeric goals and schedules developed to measure progress in addressing the Highest and Focused Priority Conditions [References Appendices 2 and 3].

Appendix 2. Jurisdictional Strategy Implementation, JRMP Annual Report Forms, Fiscal Analysis, JRMP Updates, and Best Management Practice (BMP) Design Manual Updates

Appendix 3. Water Quality Improvement Plan Numeric Goals

Section 3. Monitoring and Assessment – Summarizes the monitoring programs and provides an assessment of the data collected [References Appendix 4].

Appendix 4. Monitoring Results and Assessments

Sections 4–8. Highest Priority Conditions and Focused Priority Conditions – Provides a detailed assessment of the progress toward achieving numeric goals for each jurisdiction, with a focus on those numeric goals occurring during the Municipal Permit term. The section also provides an overview of the strategies implemented to meet the numeric goals, the status of implementation, and plans for the coming year.

Section 9. Adaptive Management – Provides a summary of the elements of the WQIP process, which can be altered during its implementation, and any changes that were made because of new information obtained during the reporting period [References Appendix 5].

Appendix 5. Adaptive Management/Modifications

Section 10. Conclusions – Provides the conclusions based on data collected and assessments conducted during implementation of the WQIP.

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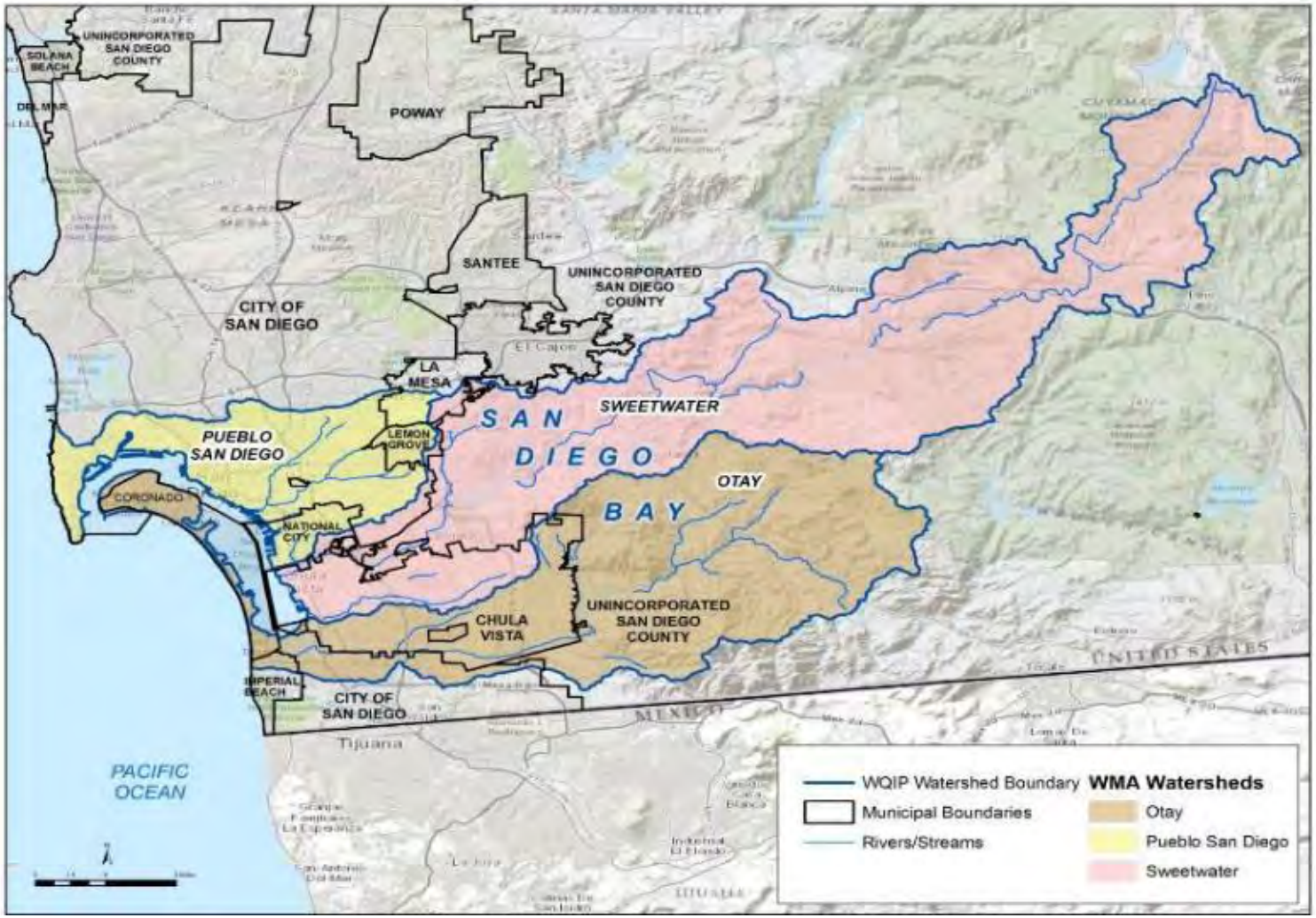

Figure 1-1
San Diego Bay Watershed Management Area

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2 Overview of San Diego Bay Watershed Management Area Goals and Strategies

The San Diego Bay WMA WQIP outlined the process by which the RPs within the watershed are identifying and prioritizing common water quality conditions, how they are prioritizing those water quality conditions, and how these prioritized conditions guide jurisdictional and watershed-scale programs to address the Highest and Focused Priority Conditions.

2.1 Water Quality Improvement Plan Numeric Goals

The numeric goals for the San Diego Bay WMA WQIP are designed to demonstrate improvements in water quality and progress toward preventing MS4 discharges from causing or contributing to beneficial use impairments in the San Diego Bay WMA receiving waters. The numeric goals within the WQIP are categorized into two distinct types:

(1) Interim goals – benchmarks for program performance that are intended to establish checkpoints along the path toward achieving final goals

(2) Final goals – end-points that mark achievement of desired water quality improvements

Interim and final goals may be applicable to either individual RPs or a subgroup of RPs. Interim goals have been developed for each five-year period beginning when the WQIP is approved. In some cases, interim goals consist of performance measures. Performance-based goals are numeric, requiring the completion of a certain number or geographic extent of activities, but may not directly measure water quality. The final goal is the end target goal for the Highest and Focused Priority Conditions. The numeric goals for Highest and Focused Priority Conditions in the San Diego Bay WMA are presented in Appendix 3.

2.2 Water Quality Improvement Strategies

The RPs in the San Diego Bay WMA have identified and implemented or are in the process of implementing various strategies discussed in the WQIP to help improve the quality of MS4 discharges and, in turn, receiving waters. These strategies are also designed to make progress toward achieving interim and final goals. The RPs identified approaches to implement strategies: (1) enhancements to previous JRMP activities, (2) list of potential strategies, and (3) ideas or concepts received via public input and discussion with the WQIP Consultation Panel. To meet the interim and final goals, strategies were selected for their ability to achieve the following specific objectives:

- Effectively prohibit non-storm water discharges to the MS4;
- Reduce pollutants in storm water discharges from the MS4 to the maximum extent practicable (MEP); and

- Implement programmatic or institutional best management practices.

Strategies may be either part of a core program or identified as an optional strategy. Core strategies, many of which have been in place for a decade or more, will be continued or implemented according to the schedules in the WQIP. Implementation of optional strategies depends on meeting one or more triggers identified for each individual optional strategy. For example, a structural BMP may be implemented only if monitoring indicates slower than anticipated progress to meet a specific goal.

Strategies may also be either jurisdiction-specific or collaborative. Each jurisdiction is individually implementing extensive water quality strategies to address the Highest and Focused Priority Conditions in the San Diego Bay WMA, as described in Sections 4 through 8. Individual jurisdictional strategies are described in Appendix 2. Jurisdictional strategies typically are implemented throughout the jurisdictional area, and are often emphasized within a specific area or for an activity to address a Highest or Focused Priority Condition.

Collaboration may take place among RPs at a regional, watershed, or multi-jurisdictional level and is intended to increase efficiency, streamline resources, and increase effectiveness through combined targeted implementation. Table 2-1 highlights key WMA strategies that were implemented or are on schedule to be implemented in the San Diego Bay WMA, identifies the RPs participating in each strategy, and provides detailed information on their implementation. Progress of implementation in this reporting period and planned future implementation are discussed in Appendix 2.

Table 2-1
Watershed Management Area Strategies

Strategy	Jurisdiction									
	San Diego Regional Airport Authority	City of Chula Vista	City of San Diego	City of Coronado	County of San Diego	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	Port of San Diego
Implement an offsite alternative compliance option (WMAA)	✓	✓	✓	-	✓	✓	✓	✓	–	✓
Implement an incentive program for BMP retrofits	–	✓	✓	✓	✓	–	–	–	–	–
Implement sustainable landscapes program to encourage landscape retrofits	–	✓	✓	–	✓	✓	–	✓	✓	–
Implement wetland restoration, habitat restoration, and public access improvements to support multiple benefits in the San Diego Bay WMA through public-private partnerships and partnerships with other state, federal, and local agencies	✓	–	✓	–	✓	✓	–	–	✓	✓
Implement cleanup events	–	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 2-1 (continued)
Watershed Management Area Strategies

Strategy	Jurisdiction									
	San Diego Regional Airport Authority	City of Chula Vista	City of San Diego	City of Coronado	County of San Diego	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	Port of San Diego
Support regional efforts to address trash and other water quality issues from homeless encampments	–	✓	✓	✓	✓	–	✓	✓	✓	✓
Collaborate with the Regional Board	*	*	✓	✓	✓	*	*	*	✓	✓
Participate in the Reference Watershed Study or similar	✓	✓	✓	✓	**	✓	✓	✓	**	✓
Participate in the San Diego Bay Trash Study[1]	–	✓	–	–	–	✓	–	–	–	✓

Notes:

Not all strategies are planned to be completed during the 2015–2016 monitoring year.

BMP = best management practice; WMAA = Watershed Management Area Analysis; WQIP = Water Quality Improvement Plan

* Collaborating with the Regional Board is included as a part of several of the RP's JRMP strategies, such as inspections of industrial businesses and construction sites.

** The jurisdiction is participating in this study as a regional effort, but it was not included as a strategy.

– Strategy not being implemented in FY 2016 by RP.

1. The San Diego Bay Trash Study is a special study component under the Southern California Bight 2013 Regional Monitoring Program.

3 Monitoring and Assessment

The Municipal Permit supports an outcome-based approach that is implemented through the WQIP. Water quality data collection and assessment provide the vehicle for determining whether the interim or final numeric goals are being achieved, or whether RPs' programs may need to be adapted to achieve the goals.

This Annual Report assesses the data in combination with the RPs' management actions (e.g., strategies, schedules, etc.) to determine what actions are improving the quality of MS4 discharges or receiving water conditions and where additional actions may be necessary (Section 9).

The Monitoring and Assessment Program for the San Diego Bay WMA includes three primary monitoring components:

(1) Receiving water and MS4 outfall monitoring required by Municipal Permit Provision D;

(2) Highest Priority Condition and Focused Priority Condition monitoring; and

(3) Special studies, total maximum daily load (TMDL) monitoring, and additional monitoring programs.

Each program component may include various types of monitoring elements, including conducting visual observations, identifying illicit discharges, and collecting flow-weighted composite samples. Monitoring during wet and dry weather is conducted to collect observational and analytical data from the receiving water and MS4 outfalls. The RPs use the data to determine whether discharges from MS4 outfalls are influencing receiving water quality, and, if so, whether the discharges are improving or degrading receiving water conditions over time. While monitoring may include water sample collection, it may also include other types of sampling, including counting the number of trash pieces on a stream bank, collecting sediment or algae grab samples, or measuring physical changes in channel width and depth.

Figure 3-1 maps the monitoring locations for all monitoring programs and for the Highest Priority Conditions and Focused Priority Conditions. Table 3-1 is an overview of the monitoring programs described in the WQIP that have been or are planned to be implemented. Monitoring data relevant to numeric goals are presented in the discussions of Highest Priority Conditions and Focused Priority Conditions in Sections 4 through 8. The Monitoring and Assessment Report (Appendix 4) provides data and results of each of the three components.

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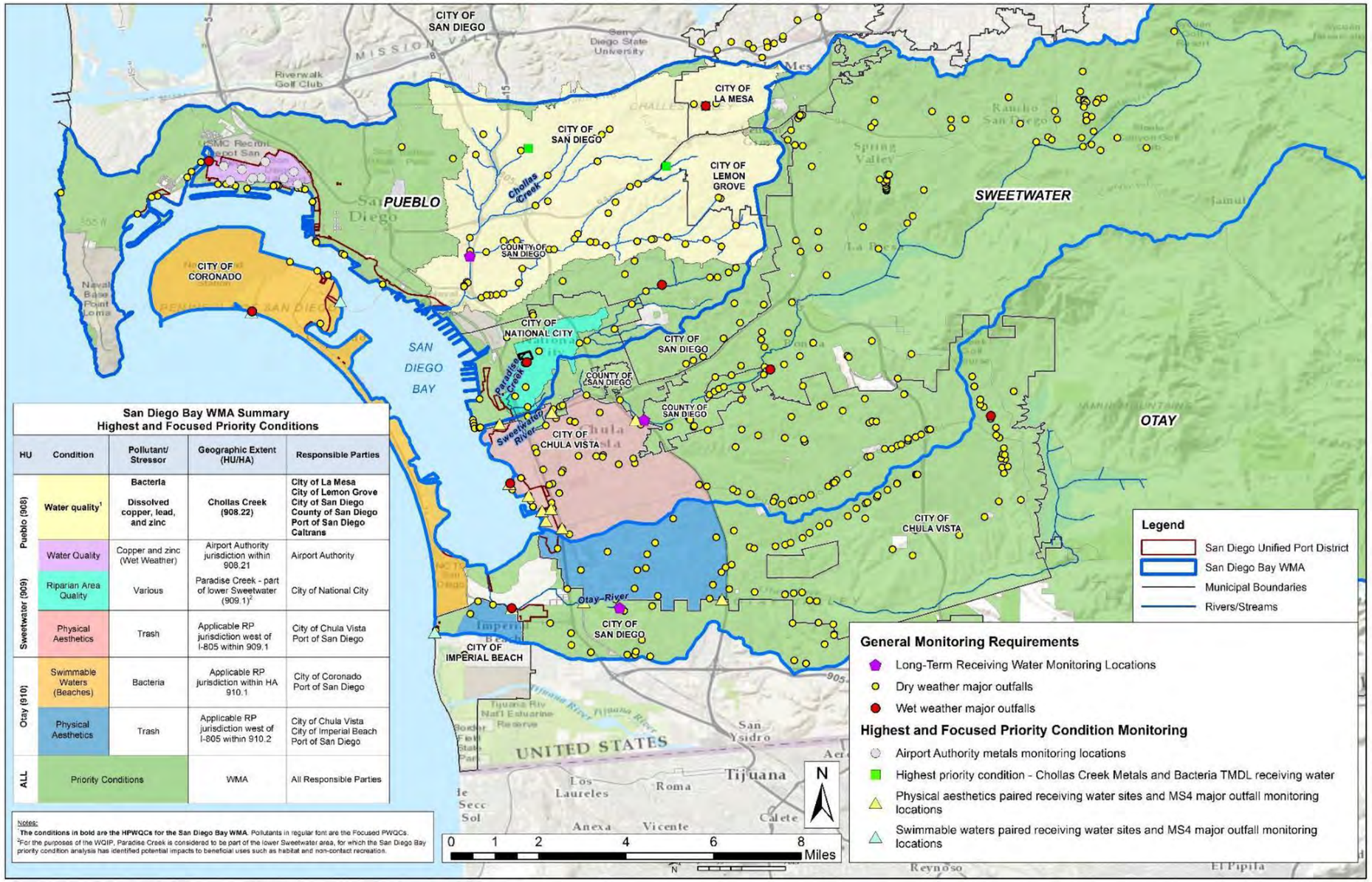

San Diego Bay WMA Summary
Highest and Focused Priority Conditions

HU	Condition	Pollutant/ Stressor	Geographic Extent (HU/HA)	Responsible Parties
Pueblo (908)	**Water quality**[1]	**Bacteria** **Dissolved copper, lead, and zinc**	**Chollas Creek (908.22)**	**City of La Mesa** **City of Lemon Grove** **City of San Diego** **County of San Diego** **Port of San Diego** **Caltrans**
Sweetwater (909)	Water Quality	Copper and zinc (Wet Weather)	Airport Authority jurisdiction within 908.21	Airport Authority
	Riparian Area Quality	Various	Paradise Creek - part of lower Sweetwater (909.1)[2]	City of National City
	Physical Aesthetics	Trash	Applicable RP jurisdiction west of I-805 within 909.1	City of Chula Vista Port of San Diego
Otay (910)	Swimmable Waters (Beaches)	Bacteria	Applicable RP jurisdiction within HA 910.1	City of Coronado Port of San Diego
	Physical Aesthetics	Trash	Applicable RP jurisdiction west of I-805 within 910.2	City of Chula Vista City of Imperial Beach Port of San Diego
ALL	Priority Conditions		WMA	All Responsible Parties

Notes:
The conditions in bold are the HPWQCs for the San Diego Bay WMA. Pollutants in regular font are the Focused PWQCs.
[2]For the purposes of the WQIP, Paradise Creek is considered to be part of the lower Sweetwater area, for which the San Diego Bay priority condition analysis has identified potential impacts to beneficial uses such as habitat and non-contact recreation.

Figure 3-1
San Diego Bay Monitoring and Assessment Plan Monitoring Locations

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Table 3-1
Summary of Water Quality Improvement Plan Monitoring Programs

Monitoring Program	Temporal Extent	Monitoring Element[1]	Timeline (Fiscal Year)
Receiving Water Monitoring			
Long-Term Receiving Water Monitoring	Wet and dry weather	Chemistry/FIB	2013–2014
		Toxicity	
		Trash assessment	
		Bioassessment	
		Hydromodification	
Southern California Bight Regional Monitoring (Bight '13)	Dry weather	Chemistry	2013–2014
		Toxicity	
		Bioassessment	
Regional Storm water Monitoring Coalition (SMC)	Dry weather	To be determined (TBD) (bioassessment)	2013–TBD
Regional Hydromodification Monitoring Program	Wet weather	Rain gauge analysis	2013–2015 (TBD)
		Stream gauge analysis	
		Channel assessment	
		Flow	
		Sediment transport	
Sediment Quality	Dry weather	Chemistry	2013[2] –2018
		Toxicity	
		Bioassessment	
		Trash assessment	
Regional Harbor Monitoring Program (RHMP)	Dry weather	Chemistry	2013–2014
		Bioassessment	
		Trash assessment	
MS4 Monitoring			
MS4 Field Screening	Dry weather	Flow	2013–2018
		Trash	
		IC/ID	
		Condition	
MS4 Outfall Monitoring	Wet and dry weather	Chemistry/FIB	2013–2018
		Visual observations	
		In-situ measurements	
Highest Priority Condition Monitoring			
Chollas Creek Metals TMDL	Wet and dry weather*	Chemistry/FIB	2013–2018
Chollas Creek Bacteria TMDL	Wet and dry weather	FIB	2013–2018

Table 3-1 (continued)
Summary of FY 2016 Monitoring Programs

Monitoring Program	Temporal Extent	Monitoring Element[1]	Timeline (Fiscal Year)
Focused Priority Condition Monitoring			
Airport Metals[3]	Wet weather	Chemistry (metals)	2013–2018
Riparian Area Monitoring (Paradise Creek)	Dry weather	Bioassessment (CRAM), Plant communities	2014 (TBD)–2018
Physical Aesthetics (Sweetwater and Otay)[4]	Wet weather (post-storm) and dry weather	Trash assessments	2016–2018
Swimmable Waters—Beaches (Otay)[2]	Wet weather	FIB	2016–2018
	Dry weather		1999–2018
Additional TMDL Monitoring			
Shelter Island Yacht Basin Copper TMDL—Receiving Water	See Regional Board Investigative Order No. No. R9-2011-0036.		
Shelter Island Yacht basin Copper TMDL—MS4 Outfall	Wet and dry weather	Chemistry (dissolved copper)	2013–2018
Shelter Island Shoreline Park Bacteria TMDL	Wet and dry weather	FIB	2013–2018
Special Studies and AB411 Monitoring			
San Diego Regional Reference Streams and Beaches	Wet and Dry Weather	Chemistry/FIB	2013–2016 (TBD)
		Flow	
		Bioassessment	
San Diego Bay Debris Study	Dry Weather	Trash Assessment	2015-2017
		Physical Habitat	
Pueblo HU Refuse Assessment Program	Dry Weather	Trash Assessment	2013–2018
Chollas Jurisdictional Boundary Study	Wet Weather	Chemistry	2013–2015 (TBD)
Riparian Area Selenium Study	Wet and Dry Weather	Chemistry (selenium)	2013–2015 (TBD)
Regional Beach Water Quality (AB 411)[5]	Dry Weather	FIB	1999–2018

Table 3-1 (continued)
Summary of FY 2016 Monitoring Programs

Monitoring Program	Temporal Extent	Monitoring Element[1]	Timeline (Fiscal Year)

Notes:

AB 411 = California Assembly Bill 411; Bight '13 = Southern California Bight 2013 Regional Monitoring Survey;
BOD = biological oxygen demand; CRAM = California Rapid Assessment Method; FIB = fecal indicator bacteria;
HMP = Hydromodification Monitoring Program; IC/ID = illicit connection and/or illicit discharge;
RHMP = Regional Harbor Monitoring Program; SMC = Southern California Storm water Monitoring Coalition;
TBD = to be determined; TMDL = total maximum daily load

* Dry weather metal monitoring in Chollas Creek has been completed as part of the Regional Monitoring Program.

1. Some monitoring elements may not be conducted under the entire temporal extent of the program. See Appendix K of the WQIP for details.
2. Completed under the Ambient Bay and Lagoon Monitoring (ABLM) Program, as part of Bight '13.
3. Airport monitoring for metals will be conducted as part of the Industrial General Permit (IGP) monitoring. Additional constituents are monitored under that program.
4. Monitoring is paired. Receiving Water and MS4 Outfall will be monitored the same day.
5. The AB 411 program monitoring is conducted during the dry season by the County of San Diego Department of Environmental Health (DEH) will be tracked and incorporated into bacteria-related receiving water assessments. Monitoring under AB 411 is not required under Provision D of the Municipal Permit, but bacteria monitoring is required as part of the Bacteria TMDL (Municipal Permit Attachment E.6). AB 411 monitoring may be used to augment RP monitoring and will be reviewed as part of the data assessment. RPs will be doing dry weather monitoring during wet weather season starting in fiscal year (FY) 2016.

3.1 Receiving Water Monitoring

The Long-Term Receiving Water Monitoring Program was completed during the October 2014 through September 2015 monitoring period, which fulfilled the requirements of long-term monitoring outlined in Appendix K of the WQIP. The results of this monitoring were previously presented in the Transitional Monitoring and Assessment Program Report[7] for the San Diego Bay WMA (2014–2015) (San Diego Bay Watershed Copermittees, 2015). Results reported included water quality monitoring during dry and wet weather, trash assessments, hydromodification monitoring, and bioassessment at the long-term monitoring locations. Further discussion and descriptions of the receiving water monitoring programs are in Section 1.1 of Appendix 4.

[7] Transitional Monitoring and Assessment Repot can be found on the Project Clean Water website: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=24&Itemid=64

3.2 MS4 Outfall Monitoring

The San Diego Bay WMA RPs implemented the wet and dry weather MS4 outfall monitoring program, as described in Section 5 and Appendix K of the WQIP. The dry weather MS4 monitoring program is a combination of field screening and sample collection at major persistently flowing outfalls. Field screening allows visual monitoring of all major MS4 outfalls to identify and eliminate sources of persistently flowing non-storm water discharges. This information is also used to track the progress of some of the Municipal Permit interim goals to be assessed by 2018. Water quality sample collection during dry weather provides information on the impact of MS4 outfalls on receiving water quality.

The goal of the wet weather MS4 monitoring program is to identify pollutants in storm water discharges from the MS4s and to guide pollutant source identification efforts by collecting paired water quality samples and flow data. Bacteria indicator samples are collected during both dry and wet weather MS4 analytical sampling events to assess bacteria concentration loads coming from the MS4.

Sections 1.2 and 1.3 of Appendix 4 provide more information on dry weather and wet weather MS4 monitoring programs, respectively. Attachments F and G of Appendix 4 provide detailed calculations with regard to these monitoring programs. The data collected as part of this program will be used to assess MS4 discharges and the RPs' compliance pathways in future years.

3.3 Special Study Monitoring

Special studies in the San Diego Bay WMA have been selected to further investigate the Highest Priority Conditions and Focused Priority Conditions. The RPs are participating in five different special studies: San Diego Regional Streams and Beaches Studies, San Diego Bay Debris Study, Creek Refuse Assessment Program in the Pueblo HU, Chollas Jurisdictional Boundary Study for Metals and Bacteria, and Riparian Area Selenium Study. The RPs also utilized California Assembly Bill 411 (AB 411) data obtained by the County of San Diego DEH to supplement the Swimmable Waters bacteria monitoring and the Shelter Island Shoreline Park Bacteria TMDL required monitoring. Table 3-1 summarizes the programs, including the monitoring elements addressed and the implementation timelines. Section 5 of Appendix 4 summarizes the special studies and additional program conducted in San Diego Bay WMA.

Pursuant to Section A.4 of the Municipal Storm Water Permit (Regional Board, Order No. R9-2013-0001, as amended by order nos. R9-2015-0001 and R9-2015-0100) and letter from Mr. John H. Robertus dated December 18, 2002 (Regional Board, 2002), requiring technical reports pursuant to California Water Sections 13267, 13225, and 13383 regarding exceedances of Water Quality Objectives for trash, debris, and other floating material in Chollas and Paleta Creeks, the City of San Diego was required to report twice a year on existing and planned BMPs intended to prevent or reduce trash, debris, and floating materials in Chollas and Paleta Creeks. As addressed in the WQIP, the City of San Diego agreed to incorporate the technical report addressing trash, debris, and floating material in Chollas and Paleta Creeks (annual technical report) into the January 2017 WQIP Annual Report. This change in reporting frequency was formally agreed to by

the Regional Board in a letter from Mr. David W. Gibson dated February 5, 2014 (Regional Board, 2014). The annual technical report covers the activities conducted during FY 2016 (July 1, 2015, through June 30, 2016) and includes the information summarized in the semi-annual report covering the activities conducted during the first half of FY 2016 (July 1, 2015, through December 31, 2015) that was submitted to the Regional Board on March 15, 2016. The annual technical report for trash, debris, and other floating material in Chollas and Paleta Creeks is included in Appendix 4.

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4 Highest Priority Condition: Bacteria and Metals in Chollas Creek Hydrologic Subarea

The Chollas Creek Watershed is located within the Pueblo HU in a highly urbanized portion of central San Diego (Figure 4-1). Bacteria and dissolved copper, lead, and zinc in the Chollas Creek hydrologic subarea (HSA) have been identified as Highest Priority Conditions for the San Diego Bay WMA. TMDLs have also developed by the Regional Board for these constituents.[8]

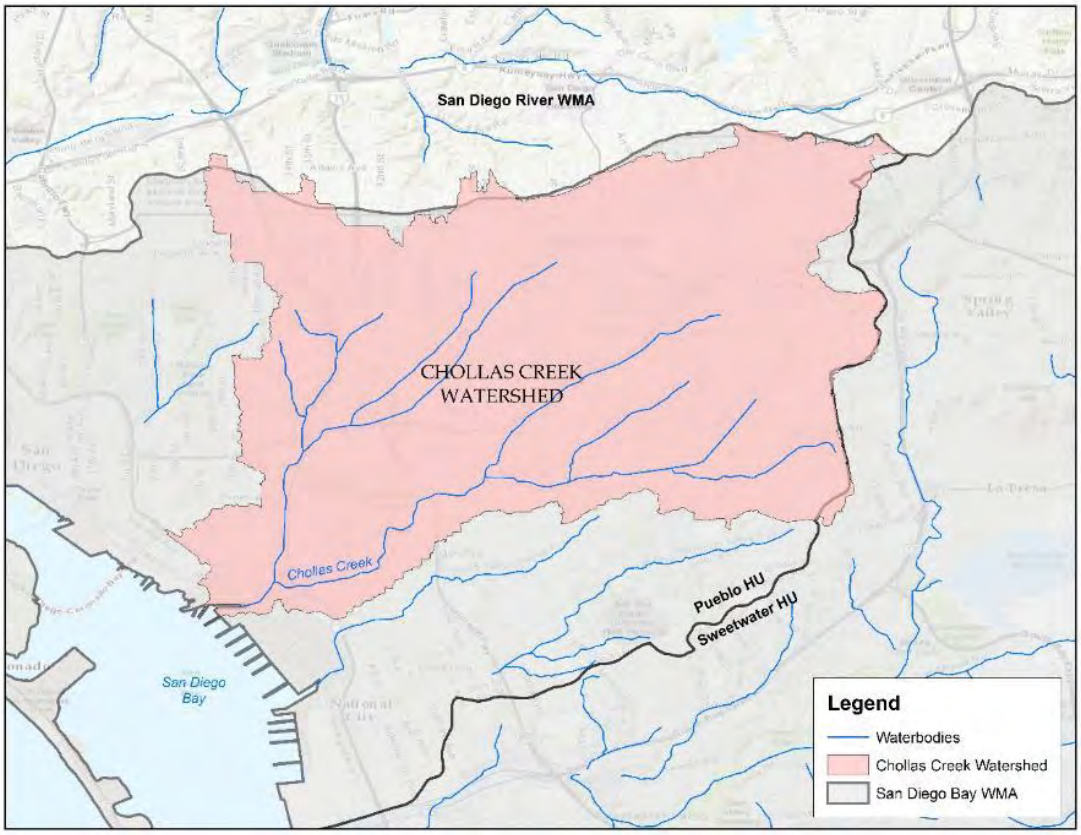

Figure 4-1
Chollas Creek Watershed

4.1 Chollas Creek TMDL Numeric Goals and Performance Measures

The WQIP identified interim and final numeric goals for the Chollas Creek Highest Priority Condition that matched the numeric standards in the TMDLs. These goals are in

[8] Region - Chollas Creek TMDL for Diazinon: adopted August 14, 2002. http://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/chollascreekdiazinon.shtml; San Diego Region - Chollas Creek TMDL for Metals: adopted June 13, 2007. http://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/chollascreekmetals.shtml; Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek): adopted February 10, 2010. http://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/bacteria.shtml.

Appendix 3. In the WQIP, RPs identified additional interim goals, referred to as "Performance Measures," to be achieved during the Municipal Permit term. The Performance Measures were included to measure the short-term jurisdictional progress toward achieving goals, given that sustained water quality improvement is typically demonstrated over a longer timeframe.

Performance Measures assess the outcome of a strategy or suite of strategies, and provide an interim link to demonstrate reasonable incremental progress in the quality of MS4 discharges and receiving waters.

These Performance Measures, and the RPs' progress toward achieving them, are discussed in detail for each RP in Sections 4.2 through 4.7.

The jurisdictions within the Chollas Creek HSA implement strategies to help achieve the numeric goals established for the watershed. Interim, performance-based goals are intended as milestones that help assess progress toward the longer term goals established for the Chollas Creek HSA. Monitoring programs also collect specific data for Chollas Creek to help track progress toward goals, as discussed in Section 3. The following subsections describe jurisdictional strategy implementation and progress toward interim goals. Watershed monitoring results are presented in light of the applicable numeric goals following the jurisdiction-specific discussions.

4.2 City of La Mesa (La Mesa)

The portion of the La Mesa's jurisdiction that drains to Chollas Creek is mainly south of Interstate 8. This southern half of La Mesa is the targeted area for strategies to be implemented to meet the final and interim goals. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis will be updated as needed to provide assurance that numeric goals will be met. Performance-based goals are included to measure the short-term jurisdictional progress toward achieving goals, given that monitoring is required to demonstrate sustained water quality improvement over time.

4.2.1 Strategies and Schedules

During FY 2016, La Mesa implemented the strategies in the Chollas Creek HSA described in the WQIP. The implementation status of strategies listed in the San Diego Bay WMA WQIP is included in Appendix 2. La Mesa has selected jurisdictional strategies that best suit the topography and characteristics of its jurisdiction to comply with Municipal Permit requirements. The following summarizes the implementation approach and key strategies that have been identified to address the Highest Priority Condition in La Mesa's jurisdiction within the Chollas Creek HSA. Figure 4-2 shows La Mesa's jurisdiction within the Chollas Creek Highest Priority Condition.

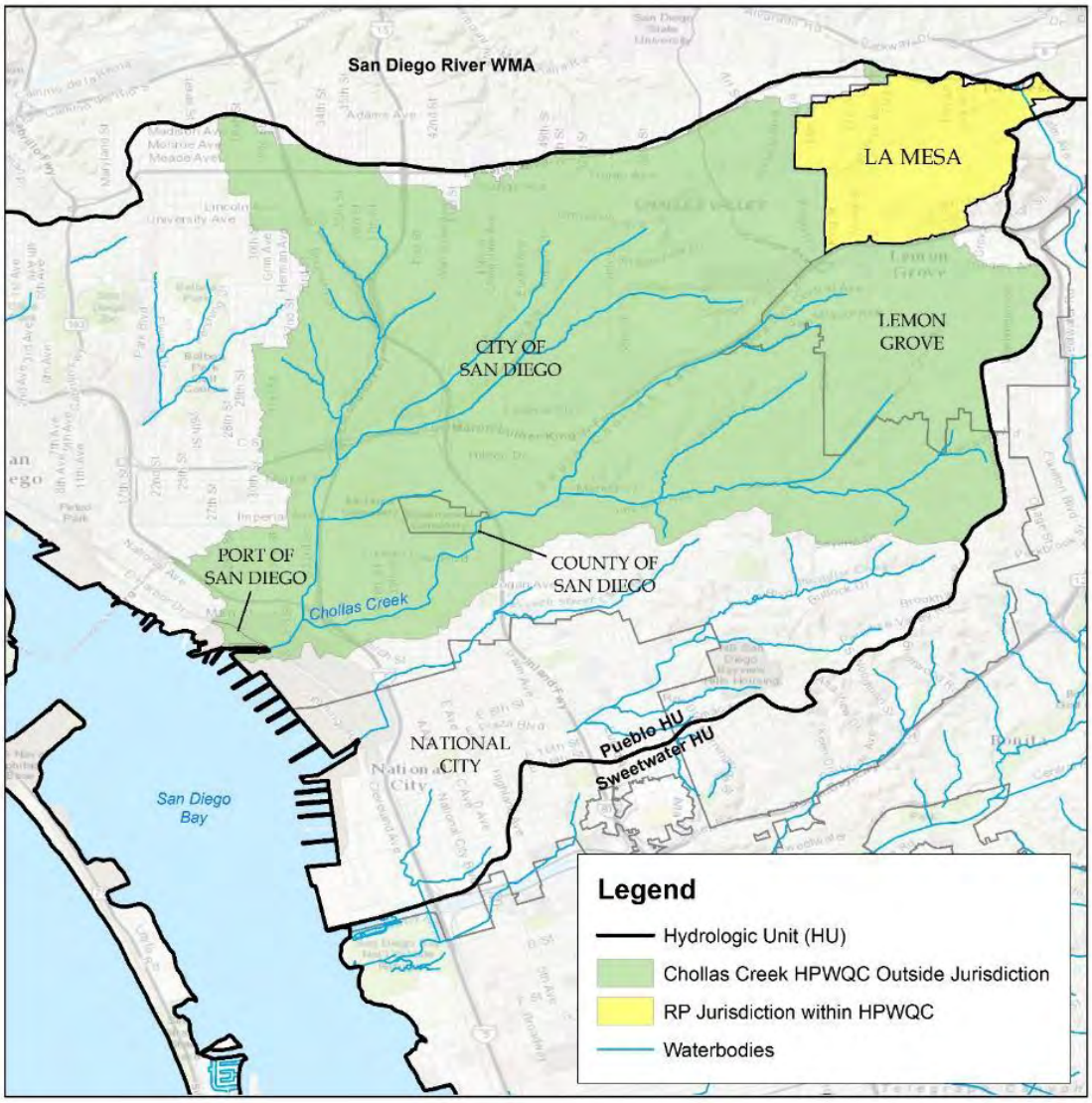

Figure 4-2
La Mesa's Jurisdiction Within the Chollas Creek Highest Priority Condition

To address bacteria, metals, and other pollutants in MS4 discharges in wet and dry weather, La Mesa plans to implement or continue public area enhancements, including low-impact development (LID) retrofit projects in roadway medians, sanitary sewer infrastructure replacement, and enhanced operation and maintenance activities for MS4 infrastructure and public roadways, such as installing trash capture devices in catch basins.

Specifically, La Mesa has been awarded a grant from the State Board Proposition 84 Storm Water Grant Program for the University Avenue Median Water Quality Improvement project to remove and replace impervious medians with pervious bioretention areas that will reduce pollutant discharges to receiving waters. The project is currently under construction, with an anticipated completion date of May 2017, and consists of the conversion of five large roadway median islands into bioretention basins with flows diverted from the outer edge of the crowned roadway. The project also includes Silva Cell type tree boxes, roadway, street light, and landscape improvements. The project will treat storm water from approximately 52 areas of residential, commercial, and transportation areas.

Replacing impervious areas with bioretention areas along University Avenue

In addition, a major effort to prevent bacteria from entering the receiving water is planned. Aging sewer infrastructure within the flood plain will be removed and relocated to reduce the potential for sewer leaks and breaks.

To reduce pollutants from private land uses, La Mesa is planning to expand the commercial facility and construction site inspection program and to increase public education and outreach. High-priority commercial businesses may be inspected twice per year, while high-priority construction sites will be inspected twice per week. La Mesa has a robust education and outreach program that includes collaboration with the Environmental Sustainability Commission, which targets residents and commercial business owners. Educational activities include supporting Boy Scouts of America groups in their efforts to build information kiosks to provide information about pet waste, trash pickup and other park rules.

Table 4-1 summarizes these strategies and schedules for La Mesa within the Chollas Creek HSA. Implementation of the optional strategies is contingent on circumstances supported by the need for the additional effort, the cost/benefit as compared with other options and strategies, and the availability of funding. The full list of optional strategies applicable to the City of La Mesa and the implementation status of each are provided in Appendix 2.

Table 4-1
Summary of Strategies for Chollas Creek—City of La Mesa

Strategy	Jurisdictional Area		Multiple Benefits				Implementation Status			
	Jurisdiction -Wide	Chollas	Trash	Bacteria[1]	Nutrients	Metals[1]	Previous Fiscal Year(s)	FY 2016	FY 2017	Future Fiscal Year(s)
University Avenue median water quality improvements		X	X	X	X	X			P	
Sanitary sewer infrastructure replacement	X	X		X	X				P	
MS4 infrastructure and outfall operation and maintenance	X	X	X	X	X	X				P
Enhanced street sweeping	X	X	X	X		X				P
Installation of trash capture devices on catch basin inlets	X	X	X						P	
Inspection programs	X	X	X	X	X	X	✓	✓	P	P
Education and outreach	X	X	X	X	X	X	✓	✓	P	P
Monitoring		X				X	✓	✓	P	P
Optional Jurisdictional Strategies										
Collaborate with homeowners' associations	X		X	X	X		Strategy was not triggered during the reporting period.			
Participate in a regional social services effort for homelessness	X		X	X			Strategy was not triggered during the reporting period.			
Implement sweeping and maintenance of private roads and parking lots in targeted areas			X	X		X	Strategy was not triggered during the reporting period.			
Replace La Mesa-owned vehicle brake pads with copper-free brake pads as they become commercially available						X	Strategy was not triggered during the reporting period.			
Implement other green infrastructure projects			X	X	X	X	Strategy was not triggered during the reporting period.			

Notes:
FY = fiscal year; MS4 = municipal separate storm sewer system
1. Highest Priority Conditions are highlighted in orange.
Implementation of strategies is dependent on approval of fiscal budgets and available resources.
✓ - Implemented, P – Planned to be implemented; X – Indicates condition benefit

4.2.2 Progress Toward Achieving Numeric Goals

Table 4-2 summarizes La Mesa's progress toward its interim goal established for the Municipal Permit term.

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Table 4-2
Progress Toward City of La Mesa Municipal Permit Term Numeric Goal for the Chollas Creek HSA

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2018					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
Approximately 4,540 linear feet of bioretention areas will replace impervious areas along University Avenue between La Mesa Boulevard and Harbison Avenue.	Linear feet of LID installation	No LID had been installed in the target area before the WQIP was prepared.	Upon completion of construction in spring 2017, wet weather water quality data will be collected according to the monitoring plan.	The design of a large LID retrofit project was largely completed during 2015–2016. The project went out to bid in early summer 2016, and construction started in summer 2016. Construction is anticipated to be completed in spring 2017.	No modifications to the numeric goal, schedule, or supporting strategies are proposed.

Notes:
FY = fiscal year; LID = low-impact development; WQIP = Water Quality Improvement Plan

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4.2.3 Water Quality Strategies and Schedules Adaptations

No modifications to La Mesa's goals, strategies, and schedules presented in the San Diego Bay WMA WQIP are proposed at this time.

4.3 City of Lemon Grove (Lemon Grove)

Lemon Grove's jurisdiction within the Chollas Creek HSA is relatively small and includes a mixture of residential, light industrial, and commercial developments. Industrial and commercial development is primarily concentrated along Federal Boulevard and Broadway. Lemon Grove primarily discharges to the South Fork of Chollas Creek.

4.3.1 Strategies and Schedules

The portion of Lemon Grove located in the Chollas Creek HSA, where the Highest Priority Conditions have been identified, is shown in yellow in Figure 4-3. A small portion of Lemon Grove's jurisdiction, which is east of the yellow area in the figure, is in the Sweetwater HU. Because Lemon Grove is small, and most of the its jurisdiction is in the Chollas Creek HSA, many of Lemon Grove's strategies to address bacteria and metals in the Chollas Creek HSA, the Highest Priority Conditions, were also implemented city-wide.

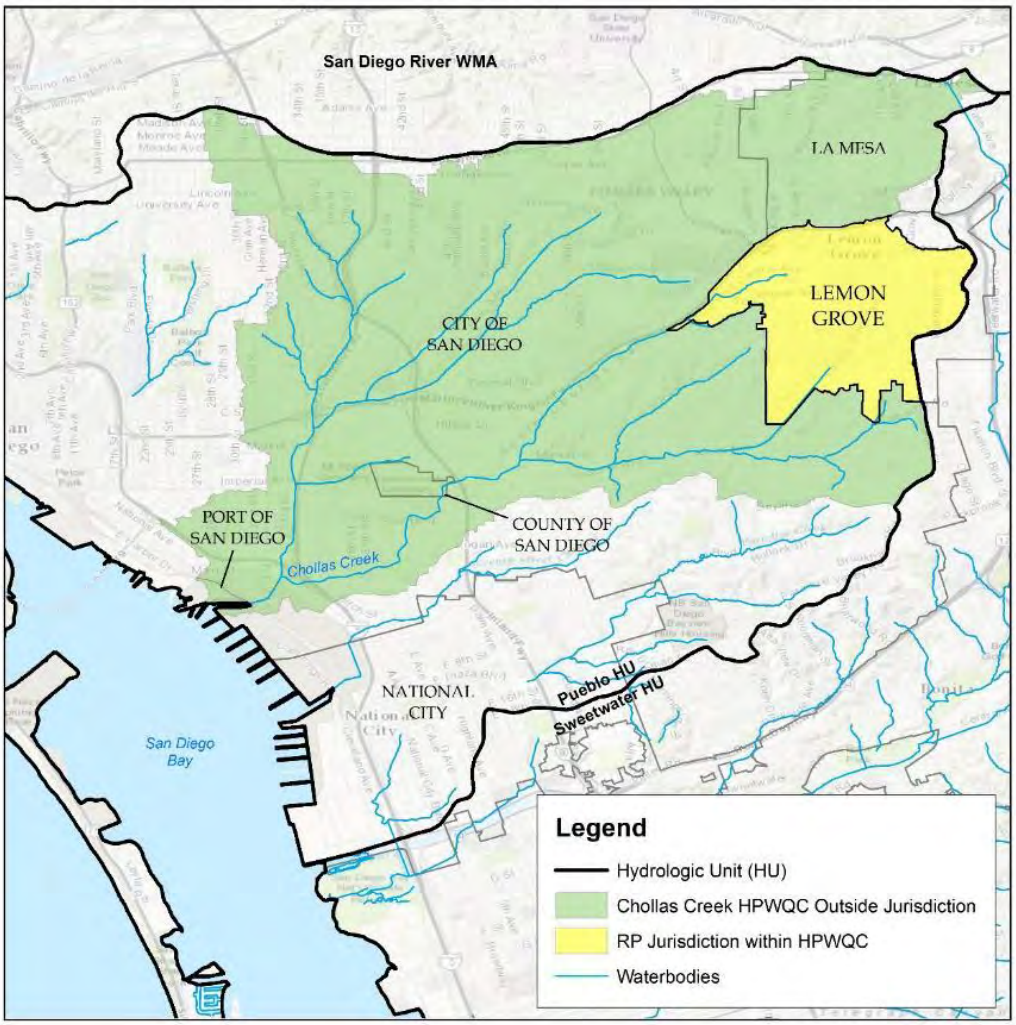

Figure 4-3
Lemon Grove's Jurisdiction Within the Chollas Creek HSA

Goals and strategies for the current Municipal Permit term focus on dry weather implementation of BMPs, specifically the reduction of irrigation runoff, beginning with municipal facilities. Goals and strategies for wet weather during the current Municipal Permit term also focus on municipal facilities and activities, including installation of downspout disconnections and enhanced street sweeping. The enhanced street sweeping program includes regular use of vacuum street sweepers, which are more effective in removing fine particles associated with metals, and higher frequency sweeping and sweeping of medians in the downtown commercial area and business areas, and along arterial streets. Lemon Grove also has implemented a robust inspection program that targets restaurants to reduce bacteria loading and that assesses the potential for implementing retrofits such as disconnecting downspouts, xeriscaping, directing runoff from paved areas to pervious areas, and installing rain barrels.

Lemon Grove downtown commercial area

Additional information on strategies that Lemon Grove implemented during FY 2016 is provided in the following areas:

- Table 4-3 highlights key strategies implemented during FY 2016.
- Appendix 2 includes a table that lists all the strategies that Lemon Grove included in the San Diego Bay WMA WQIP, including optional strategies, along with FY 2016 implementation information for each strategy.

Table 4-3
Summary of Strategies for Chollas Creek—City of Lemon Grove

Strategy[1]	Where Implemented	Multiple Benefits					Implementation Notes
		Trash	Bacteria[2]	Nutrients	Sediment	Metals[2]	
Conduct pilot projects to disconnect downspouts and direct runoff from impervious areas to pervious areas at municipal facilities (LG-41, LG-42).	Municipal Facilities	X	X	X	X	X	Performed initial site research to identify feasible locations in FY 2016. Created curb cuts to direct runoff from the City Hall parking lot to landscaping in early FY 2017.
Perform enhanced street sweeping, including sweeping medians and using vacuum street sweepers (LG-24, LG-25, LG-36).	City-wide	X	X	X	X	X	Applied median sweeping and higher sweeping frequencies to business areas and arterial streets. Alternated vacuum street sweepers with mechanical sweepers every other sweeping for all routes city-wide. Vacuum sweepers are more effective at picking up fine particles to which metals tend to adsorb, and mechanical sweepers are more effective at picking up trash.
Require BMPs to control metals and bacteria discharges from existing development (LG-11).	City-wide	X	X	X	X	X	Implemented via inspection programs.
Conduct higher frequency inspections for high-priority sources of bacteria and metals (LG-35).	Chollas Creek HSA		X			X	Targeted inspection programs at sources of bacteria and metals in Chollas Creek for inspection, and trained inspectors to focus on and identify sources of metals and bacteria.
Install municipal irrigation control system smart controllers (LG-21).	4 parks, 2 medians, and City Hall	X	X	X		X	Performed operations and maintenance on systems to ensure efficient irrigation.

Table 4-3 (continued)
Summary of Strategies for Chollas Creek—City of Lemon Grove

Strategy[1]	Where Implemented	Multiple Benefits					Implementation Notes
		Trash	Bacteria[2]	Nutrients	Sediment	Metals[2]	
Implement outreach, incentives, and increase enforcement to reduce irrigation runoff from private properties (LG-19, LG-20, LG-29, LG-34).	City-wide	X	X	X		X	Partnered with Helix Water District to publicize water conservation incentives and education; followed up on reported discharges identified via inspections and storm water hotline.
Require covered trash enclosures for development projects (LG-5).	City-wide	X	X	X	X	X	Implemented via permitting process.
Require LID at development projects (LG-1, LG-2, LG-4, LG-8).	City-wide	X	X	X	X	X	Implemented a revised project intake system to ensure that project proponents are notified of LID requirements at the initial stage of the permitting process.
Conduct construction site management (LG-10).	City-wide	X	X		X	X	Collaborated with the Regional Board on enforcement actions to address sediment discharges and BMP deficiencies at a project that discharges to Encanto Channel, a tributary of Chollas Creek.

Notes:
BMP = best management practice; FY = fiscal year; LID = low-impact development
1. Strategy identification (ID) numbers from Appendix 2 are included in parentheses at the end of each strategy description. More information about each strategy, and information about additional strategies that are not referenced in this table, is available in Appendix 2.
2. Highest Priority Conditions are highlighted in orange.

4.3.2 Progress Toward Achieving Numeric Goals

Like the other jurisdictions in the Chollas Creek HSA, Lemon Grove is subject to TMDLs for metals and bacteria, and these pollutants are also the relevant Highest Priority Conditions. Monitoring data from the previous three monitoring years at Lemon Grove's jurisdictional boundary have shown metals levels below the TMDL final targets. Lemon Grove's dry weather MS4 outfall monitoring program has determined that only one site in the city has persistent flow, and the rest of the sites are dry.

In addition to the TMDL-derived goals applicable to Lemon Grove described in Appendix 3, progress toward jurisdiction-specific interim WQIP wet and dry weather goals is presented in Table 4-4. Performance-based goals are included to measure short-term jurisdictional progress toward achieving goals.

Table 4-4
Progress Toward City of Lemon Grove Municipal Permit Term Numeric Goals for the Chollas Creek HSA

Metric	Numeric Goal	Schedule	Data Collected/Results	Progress	Adaptive Management Actions
Dry Weather Goal					
Install smart irrigation systems at municipal facilities.	8 Cal-Sense smart irrigation systems installed	Achieve by FY 2018	7 Cal-Sense systems have been installed to date.	Lemon Grove anticipates being able to install one additional Cal-Sense system by FY 2018.	None at this time.
Wet Weather Goals					
Store restaurant used cooking oil bins in covered areas and protect from run-on.	75%	Achieve by FY 2018	Data from the past two fiscal years' inspection programs have been used to develop a baseline, which has been identified as 22%.	Lemon Grove will complete targeted outreach to restaurants and inspections during FY 2017. An update on progress toward the goal after these efforts have been completed will be provided in the FY 2017 Annual Report.	None at this time.
OR					
Redirect parking lot runoff to pervious areas.	2 municipal facilities retrofitted	Achieve by FY 2018	Municipal facilities were evaluated for retrofit suitability during FY 2016.	One retrofit has been completed as of early FY 2017. Lemon Grove expects to complete an additional retrofit before the goal deadline.	None at this time.
Redirect roof downspouts to pervious areas.	2 municipal facilities retrofitted	Achieve by FY 2018	Municipal facilities were evaluated for initial retrofit suitability during FY 2016 inspections.	Potential disconnection locations have been identified at three facilities, and a more detailed assessment to determine which ones will be disconnected will be completed in FY 2017.	None at this time.

Notes:
% = percent; FY = fiscal year

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4.3.3 Water Quality Strategies and Schedules Adaptations

No modifications to the goals and schedules applicable to Lemon Grove that were presented in the San Diego Bay WMA WQIP are proposed at this time. One minor correction to the description of strategy LG-25, which relates to street median sweeping, is listed in Appendix 2.

4.4 City of San Diego (City)

During FY 2015–2016, the City implemented the strategies described in the WQIP. A summary of the progress made in implementing strategies to meet goals for metals and bacteria in the Chollas Creek HSA is presented in Section 4.4.1. The City's progress toward achieving jurisdiction-specific goals is presented in Section 4.4.2. A complete list of strategies planned for implementation within the WMA and the progress made on each strategy during the reporting period are provided in Appendix 2. The jurisdiction of the City o within the WMA is illustrated in Figure 4-4.

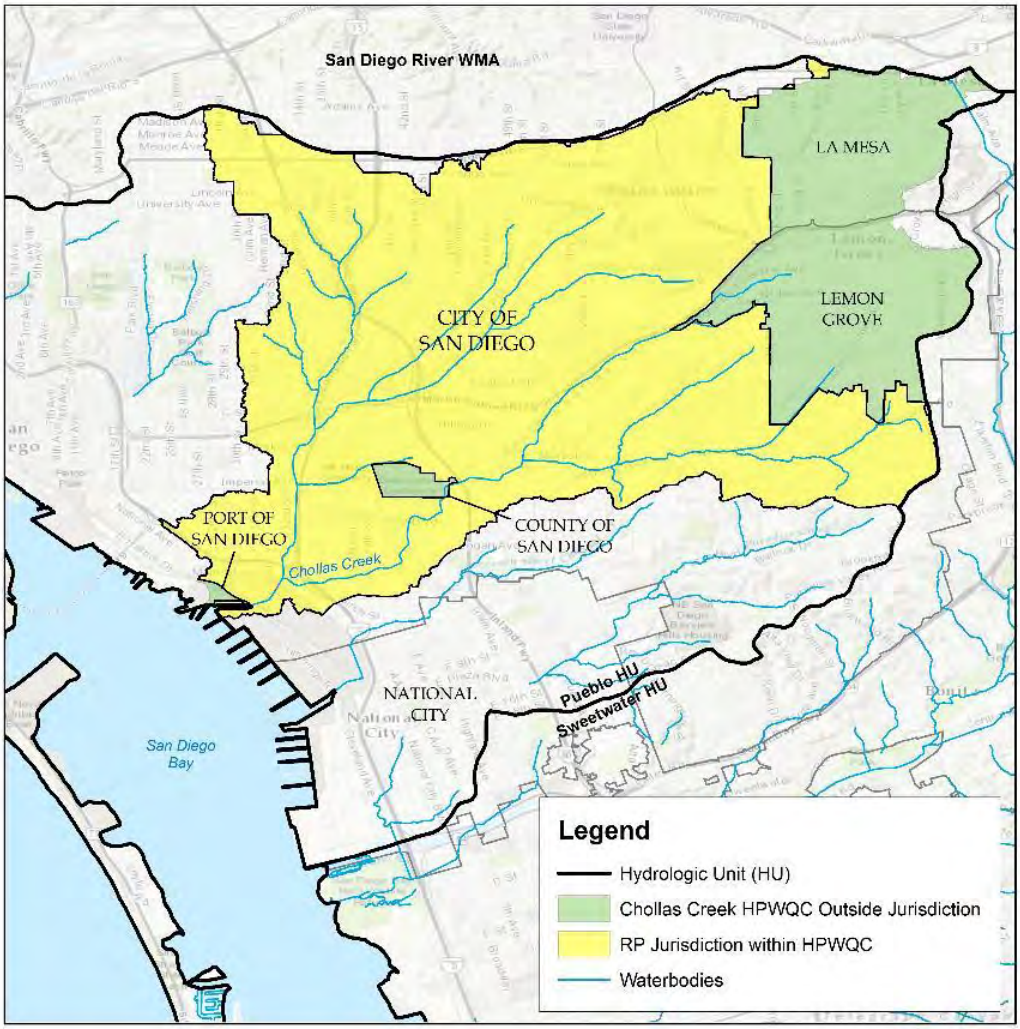

Figure 4-4
City of San Diego's Jurisdiction Within the Chollas Creek Highest Priority Condition

4.4.1 Strategies and Schedules

Highlights of strategies implemented by City to address metals and bacteria in the Chollas Creek HSA are shown in Figure 4-5. Additional strategies being implemented are listed in Table 4-5.

Chollas Creek HSA Drainage Master Plan

The City completed a drainage master plan for the Chollas Creek HSA. The drainage master plan identifies areas where structural BMPs can be completed in the future. Identification of locations is based on maximizing the efficiency of the BMP by locating the facility in an area that will treat larger and/or multiple drainage areas. This planning will maximize pollutant removal from green infrastructure and reduce the number of green infrastructure projects (and associate costs) that will be needed to meet TMDL requirements.

Structural Controls

In FY 2016, more than 25 acres of drainage area were treated by green infrastructure features within the San Diego Bay WMA, and approximately 63 additional acres are expected to be treated by FY 2018.

Enhanced Street Sweeping

To increase removal of metals and sediment, the CIty has started to enhance street sweeping operations in accordance with strategy CSD-JRMP-26 and CSD-JRMP-33 by sweeping a route in the Chollas Creek subwatershed with a regenerative air sweeper. The City also began sweeping routes with different sweeping technologies to determine the most effective sweeping practices for individual routes.

Figure 4-5
Highlights of City of San Diego Strategies

Table 4-5
Summary of Strategies for the San Diego Bay WMA—City of San Diego

Strategy	Multiple Benefits[1]						
	Bacteria[2]	Nutrients	Metals[2]	Trash	Sediment	Flow[3]	Habitat/Wildlife
Storm Drain Structure Cleaning: 11,047 storm drain structure inspections were conducted, resulting in the cleaning of 3,434 structures and removal of 842.2 tons of debris in the WMA.	X		X	X	X		
New in FY 2016: Enhanced Catch Basin Cleaning Optimization: Enhanced catch basin cleaning is a strategy to address pollutant removal by inspecting catch basins more than the JRMP-required minimum of once per year in the Tijuana River, San Diego Bay, and Los Peñasquitos WMAs to meet specific TMDL pollutant removal requirements. In an effort to further optimize its drain cleaning program, the City analyzed eight years of catch basin cleaning data and assigned priorities to individual basins based on historical debris removal. This enhancement will allow the City to target high priority drains to maximize pollutant removal while maintaining cost efficiencies.	X		X	X	X		
Street Sweeping: Approximately 36,646 curb miles of roads, streets, highways, medians, parking lots, and operations yards were swept in the WMA.	X	X	X	X	X		
New in FY 2016: Median Sweeping: 4,315 median miles were swept citywide.	X	X	X	X	X		
New in FY 2016: Targeted Aggressive Street Sweeping Pilot: The City completed a pilot study that quantified the effectiveness of posting limited-hour "no parking" signs on typically nonposted routes. The study found that posting routes resulted in an approximate 50% increase in pollutant removal because the sweeper had more access to curbs and gutters. Based on this finding, the City will consider posting additional routes if supported by the community.	X	X	X	X	X		

Table 4-5 (continued)
Summary of Strategies for the San Diego Bay WMA—City of San Diego

Strategy	Multiple Benefits[1]						
	Bacteria[2]	Nutrients	Metals[2]	Trash	Sediment	Flow[3]	Habitat/Wildlife
New in FY 2016: MS4 Maintenance: In addition to routine maintenance of the MS4, the City repaired or replaced 12 pump stations and modernized another 14 pump stations, closed-circuit television (CCTV) surveyed 28,000 linear feet of pipe in 62 locations citywide, and began developing the Waterways Maintenance Plan and Channel Maintenance Prioritization Plan. To help minimize the risk of flooding in a flood-prone drainage area, the City also installed a 2,400-volt automatic transfer switch and generator to a 130,000-gallon-per-minute pump station, allowing for sustained function in the event of a power outage.	X		X	X	X		
Illicit Discharge Detection and Elimination (IDDE) Program: 634 discharges were reported by the public, 1,021 cases were investigated, 796 discharges or illicit connections were eliminated, 819 enforcement actions were issued, and 445 escalated enforcement actions were issued in the WMA. New in FY 2016: Launch of the Get It Done App: This app allows illicit discharges to be reported quickly and accurately via any smartphone. Lastly, the Tiger Team (a proactive escalated monitoring and enforcement team that involves multiple City departments and divisions) was developed to identify, locate, and eliminate sources of human specific bacteria in the MS4. Over several months during the reporting year, one problem area within the City was investigated extensively and a source of human-specific bacteria in the MS4 was identified and abated.	X	X	X	X	X	X	X

Table 4-5 (continued)
Summary of Strategies for the San Diego Bay WMA—City of San Diego

Strategy	Multiple Benefits[1]						
	Bacteria[2]	Nutrients	Metals[2]	Trash	Sediment	Flow[3]	Habitat/Wildlife
Commercial and Industrial Business Inspections: 3,299 inspections were completed, 314 follow-up inspections were completed, 545 violations were issued, 667 enforcement actions were issued, and 228 escalated enforcement actions were issued in the WMA. In addition, the City conducted property-based inspections that focus on common areas/activities shared among multiple businesses or tenants that generate pollution. A previously conducted pilot study on inspection practices found property-based inspections to be more effective at identifying and resolving water quality issues (e.g., improper trash disposal practices and irrigation runoff, etc.) associated with commercial and industrial businesses.	X	X	X	X	X	X	X
Trash Cleanups: 4 cleanup events were sponsored through I Love a Clean San Diego that collected a total of 14,732 pounds of trash and debris in the WMA (see Appendix 2 for a list of specific projects).				X			
Rebates to Reduce Irrigation Runoff: Rebates were issued to convert 106,041 square feet of turf in the WMA and rebates for rain barrels were issued to capture 772,740 gallons of rainwater citywide.	X	X	X	X	X	X	X
New in FY 2016: Offsite Alternative Compliance Program: The City implemented Phase I of the Alternative Compliance Program to give development projects that would require onsite structural BMPs the ability to propose offsite alternative compliance projects. The development of Phase II was also initiated and will include the establishment of an in-lieu fee structure and credit system.	X	X	X	X	X	X	X
New in FY 2016: Bacteria Regrowth Study: The City completed a study to characterize the magnitude and extent of potential *Enterococcus* loading because pf regrowth within the City's storm drain system. This study quantifies the amount of bacteria in receiving water samples that are harmless to humans and would potentially be used to refine bacteria water quality standards of the Bacteria TMDL as a part of the Reopener process.	X						

1. X – Addresses the water quality conditions.

Table 4-5 (continued)
Summary of Strategies for the San Diego Bay WMA—City of San Diego

Strategy	Multiple Benefits[1]						
	Bacteria[2]	Nutrients	Metals[2]	Trash	Sediment	Flow[3]	Habitat/Wildlife

2. Highest Priority Condition is highlighted in orange.
3. Flow is defined as storm water and non-storm water discharges to receiving waters, including freshwater inputs.

% = percent; FY = fiscal year; JRMP = Jurisdictional Runoff Management Plan;
MS4 = municipal separate storm sewer system; TMDL = total maximum daily load; WMA = Watershed Management Area

4.4.2 Progress Toward Achieving Numeric Goals

The City implemented green infrastructure projects that treat 25.14 acres of drainage area and is expected to achieve the 44.6-acre FY 2018 Performance-Based Goal requirement by implementing additional projects that will treat a total of 69.74 acres by FY 2018. Details regarding achievement of the performance based goals are described further below.

In accordance with the requirements of the WQIP, baseline values were calculated for MS4 discharges in this first Annual Report. The baseline values that will be used for subsequent annual reports are summarized in Table 4-6.

Table 4-6
Baseline Values for Numeric Goals for San Diego Bay WMA—City of San Diego

Compliance Pathway	Metric	Baseline
Wet Weather Metals		
MS4 Discharges # of Direct or Indirect MS4 Discharges[1] to Receiving Water	Number of persistently flowing major storm drain outfalls	94 discharges[1]
Wet Weather Indicator Bacteria		
MS4 Discharges % Days Exceeding WQO	Fecal coliform	100%[2]
	Enterococcus	100%[2]
	Total coliform	100%[2]
MS4 Discharges # of Direct or Indirect Storm Drain Discharges[1] to Receiving Water	Number of flowing major storm drain outfalls during wet weather monitoring	94 discharges[1]
Dry Weather Metals		
MS4 Discharges Allowable % Above Effluent Limitations	Copper	TBD
	Lead	TBD
	Zinc	TBD
MS4 Discharges # of Direct or Indirect MS4 Discharges to Receiving Water	Number of persistently flowing major storm drain outfalls	94 discharges
Dry Weather Bacteria		
MS4 Discharges % Days Exceeding WQO	Fecal coliform	100%[3]
	Enterococcus	100%[3]
	Total coliform	100%[3]
MS4 Discharges # of Direct or Indirect MS4 Discharges to Receiving Water	Number of persistently flowing major storm drain outfalls	94 discharges

Table 4-6 (continued)
Baseline Values for Numeric Goals for San Diego Bay WMA—City of San Diego

Compliance Pathway	Metric	Baseline
Performance-based Goals (Wet and Dry Weather)		
Implement runoff reduction programs, including targeted education and outreach, enhanced inspections, rebates, and increased enforcement	Dry weather flow[4] measured at persistently flowing outfalls in the watershed	Average Dry Weather Flow[4]: 1.3 gallons per minute Maximum Dry Weather Flow[4]: 10.8 gallons per minute

1. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
2. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008, through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 Municipal Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical five-year period.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008, through September 30, 2013. Rolling five-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical five-year period.
4. Calculated using historical dry weather MS4 outfall data from 2009–2014. Calculations are described in in Appendix 3.

% = percent; MS4 = municipal separate storm sewer system; WQO = water quality objective

As discussed in Section 2, interim and final numeric goals were established for the watershed as a means of measuring reasonable progress toward addressing metals and bacteria; the goals are included in Appendix 3. Performance-based goals are included to measure short-term jurisdictional progress toward achieving these goals, given that sustained water quality improvement is typically demonstrated over a longer timeframe. Performance-based goals are intended to measure an outcome from a strategy or suite of strategies, and to provide an interim link to demonstrate reasonable incremental progress in the quality of MS4 discharges and receiving waters by FY 2018. The suite of strategies presented have been selected as goals because they are measurable and provide a direct water quality benefit in the near term.

The City's progress during FY 2015–2016 toward meeting performance-based goals is summarized in Table 4-7 and Figures 4-6 and 4-7.

Table 4-7
Progress Toward City of San Diego Municipal Permit Term Numeric Goals for the Chollas Creek HSA

Performance-Measure	Weather (Wet/Dry)	Baseline	FY 2018 Goal	FY 2016 Progress	Adaptive Management Actions
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	Wet and Dry	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	Treat 44.6 acres of drainage area through construction of 6 green infrastructure BMPs	The City has made the following progress in the achievement of this performance measure. The City has begun the process for developing a green infrastructure policy. The City implemented green infrastructure projects that treat 25.14[a] acres of drainage area and is expected to exceed the performance measure by implementing additional projects that treat 63.1[b] acres of drainage area for a total of 88.24 acres treated by 2018.	No adaptive management actions are required.
Implement runoff reduction programs, including targeted education and outreach, enhanced inspections, rebates, and increased enforcement	Dry	Average Dry Weather Flow[1]: 1.3 gallons per minute Maximum Dry Weather Flow[1]: 10.8 gallons per minute	Reduce prohibited dry weather flow from baseline measured at persistently flowing outfalls in the WMA by 10%	Performance measure has been achieved. Average dry weather flow in FY 2016 was 0.9 gallons per minute, representing a 27.2% reduction from the baseline average flow.	No adaptive management actions are required.

1. Calculated using historical dry weather MS4 outfall data from 2009–2012. Calculations are described in in Appendix 3.

% = percent; BMP = best management practice; FY = fiscal year; TMDL = total maximum daily load; WMA = Watershed Management Area

a. 43rd and Logan structural BMP (6.49 acres); Memorial Park structural and priority development project (18.65 acres)

b. Southcrest Park structural BMP (36 acres), Beta Street (2.1 acres), Alamo Green Street (25 acres)

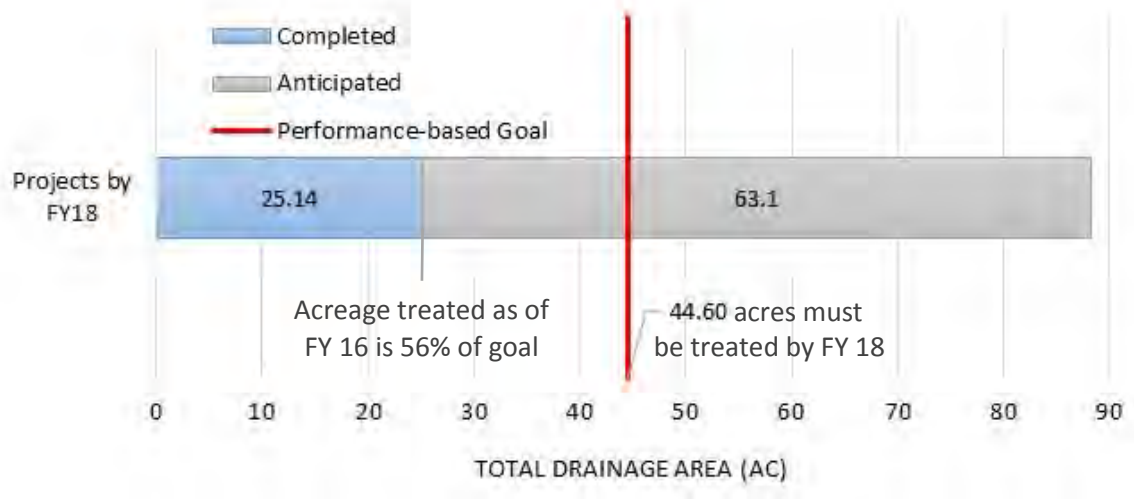

Figure 4-6
Acreage of Drainage Area Treated by Green Infrastructure (Current and Planned) for San Diego Bay—City of San Diego

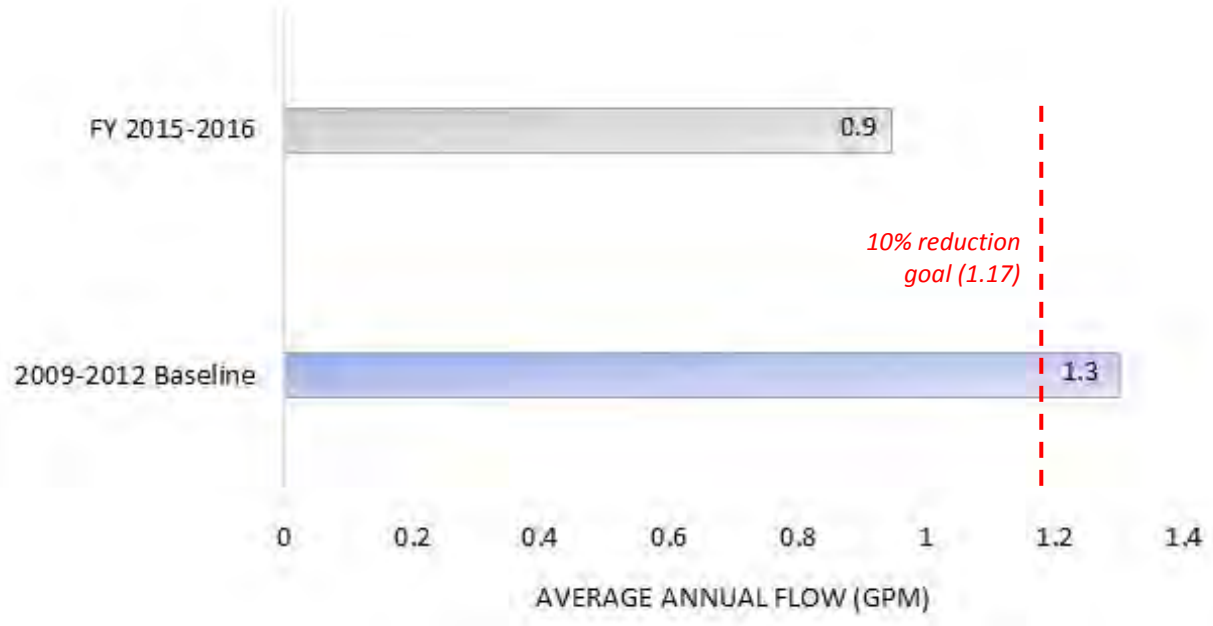

Figure 4-7
Progress Made in Reducing Anthropogenic Dry Weather Flow Relative to the Performance-based Goal for San Diego Bay

4.4.3 Water Quality Strategies and Schedules Adaptations

No modifications to the City's goals, strategies, and schedules presented in the San Diego Bay WMA WQIP are proposed at this time.

4.5 County of San Diego (County)

The key strategies identified to address the Highest Priority Conditions in the County's jurisdiction are presented in Section 4.5.1. The County's WQIP final and interim goals are presented in Appendix 3. In the Chollas Creek HSA, the County's limited jurisdiction includes a cemetery, part of one road, one residence, a YMCA facility, and part of one MS4 outfall. The outfall discharges sheet flow from the cemetery during wet weather, and is reported to be dry (i.e., no discharges) during dry weather. These runoff characteristics will be verified through increased monitoring and visual surveillance. There are no catch basins in the County's area of jurisdiction. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final goals. The strategies and implementation schedules demonstrate that numeric goals will be met. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis will be updated as needed to provide assurance that numeric goals will be met.

4.5.1 Strategies and Schedules

The County selected jurisdictional strategies that best suit the characteristics of its jurisdiction to comply with Municipal Permit requirements. A complete list of jurisdictional strategies implemented or planned for implementation within the WMA is provided in Appendix 2. The following summarizes the implementation approach and key strategies that were identified to address the Highest Priority Conditions in the County's jurisdiction within the Chollas Creek HSA. Figure 4-8 shows the County's jurisdiction within the Chollas Creek Highest Priority Condition where the strategies will be implemented.

Optional strategies that have been considered (based upon need and resource availability) are also summarized. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final goals. The strategies and implementation schedules demonstrate that numeric goals will be met. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis will be updated as needed to provide assurance that numeric goals will be met.

Figure 4-8
County's Jurisdiction Within the Chollas Creek Highest Priority Condition

Throughout its jurisdiction, the County has taken a multi-faceted approach to reduce water consumption and limit dry weather flows by promoting collaboration among departments. In response to drought conditions in the region, the County recently implemented a Water Shortage and Drought Response Plan to reduce water use at its facilities. Since 2009, the Department of Parks and Recreation has completed installation of high-efficiency irrigation heads and smart irrigation controllers in 20 parks county-wide. Many of these parks, including Sweetwater Summit Regional Park, Cottonwood Park, and Woodhaven Park (among others), lie within the San Diego Bay WMA and provide immediate water quality benefits to its receiving waters. These efforts have enabled the County to save over 60 million gallons of irrigation water in County parks during FY 2015–2016. Other measures taken include, but are not limited to, elimination of regularly

scheduled exterior window washing at County facilities and identification of parks and County facilities with the potential for recycled water connections.

Furthermore, potential dry weather flows were evaluated through inspections of MS4 outfalls discharging to receiving waters. The County has shifted to a more active field program to better locate and abate dry weather flows. Staff members spend a greater amount of time in unincorporated communities to identify nuisance anthropogenic flows and to address them through appropriate education and enforcement strategies. County staff members have been trained to identify and report illicit discharges and illicit connections during required annual storm water training; this training has been updated to reflect recent Municipal Permit changes.

In an effort to spread awareness of ways to reduce over-irrigation, the Sustainable Landscapes Program (SLP) was developed by the County in collaboration with a diverse group of partners. The program is intended to integrate multiple sustainability concepts and resource benefits for residential-scale urban landscapes, reduce the amount of potable water applied to the landscape, capture and use rainwater as a resource, and reduce pollutant infiltration into local waterways. The comprehensive approach includes (1) development of landscape guidelines, (2) residential and professional landscape training courses, (3) technical landscaping assistance, including planting and irrigation plans, (4) marketing and outreach, (5) financial incentives for turf conversions, and (6) landscape materials provisions, including mulch and compost/compost tea. During FY 2015–2016, the SLP partners offered free education and training opportunities to more than 1,000 homeowners and professionals throughout the County. All training opportunities align with the San Diego SLP Guidelines, which describe best practices and recommendations for a watershed approach to landscaping, such as downspout diversion to landscaped areas, LID (Site Design BMPs), use of water efficient irrigation equipment, low water use plants, and compost and mulch to amend soils for maximum water retention. Financial incentives for turf conversions and discounts on landscape material are scheduled to commence in late 2016.

Bioretention swale on Logan Ave

The County recently undertook efforts to update its 2007 LID Handbook[9] to better align with the County's Standard Urban Storm Water Mitigation Plan (SUSMP) and Hydromodification Management Plan (HMP), and to reflect the most current data on LID approaches and their efficacy. For its efforts, the County was named the recipient of the 2015 Outstanding Innovation in Green Planning and Design Award by the San Diego Chapter of the California Association of Environmental Professionals (AEP), a nonprofit organization established in 1974 and dedicated to enforcing and supporting the California Environmental Quality Act

[9] County of San Diego Low Impact Development Handbook http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html

(CEQA). Additionally, the County received a similar award in October 2016 for work during the fiscal year on development of its Guidance on Green Infrastructure[10], a document outlining tools to uniformly design, install, and maintain LID features in the public right-of-way.

The County has implemented a number of watershed strategies to reduce pollutants in storm water runoff discharges from storm drain outfalls. Within the County, a schedule was developed for operation and maintenance of the storm water conveyance system and related structures, including retrofits. To reduce metals in MS4 discharges, the County also continued to implement a road maintenance schedule for public roadways within its jurisdiction and has increased the frequency of street sweeping. In two recent examples of retrofit projects that targeted potential runoff from County facilities, LID approaches were utilized in conjunction with drainage and parking improvements at the Southeast Family Resource Center and Central Regional Public Health Center. Previously, the facilities consisted primarily of impervious areas composed of rooftops and parking lots. However, the improvements effectively reduced flows during storm events and reduced concentrations of metals. Table 4-8 lists the key strategies and schedule for the County's jurisdiction within the Chollas Creek HSA. Several optional jurisdictional strategies and their implementation status are also presented in Table 4-8. Implementation of the optional strategies has been and will continue to be contingent upon circumstances supported by the need for the additional effort, the cost/benefit as compared with other options and strategies, and the availability of funding. The full list strategies applicable to the County and the implementation status of each are provided in Appendix 2.

[10] County of San Diego BMP Design Manual Appendix K Guidance on Green Infrastructure
http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html

Table 4-8
Summary of Strategies for Chollas Creek—County of San Diego

Strategy	Jurisdictional Area		Priority Condition				Implementation Status			
	Jurisdiction-Wide	Chollas	Trash	Bacteria[1]	Nutrients	Metals[1]	Previous Fiscal Year(s)	FY 2016	FY 2017	Future Fiscal Year(s)
Implement a schedule of operation and maintenance for County paved and unpaved roads.	X	X	X	X	X	X	✓	✓	P	P
Provide enhanced outreach and education on reducing over irrigation.	X	X	X	X	X	X		✓	P	P
Implement a schedule of operation and maintenance activities for the storm water conveyance system and related structures.	X	X	X	X	X	X	✓	✓	P	P
Optional Jurisdictional Strategies										
Implement sustainable landscapes program to encourage landscape retrofits.	X	X		X	X	X	Strategy was not triggered during the reporting period, but was partially implemented in FY 2016.			
Collaborate with partners in watershed on flood control channel rehabilitation projects.	X	X	X	X	X	X	Strategy was not triggered during the reporting period, but was partially implemented in FY 2016.			

FY = fiscal year
1. Highest Priority Conditions are highlighted in orange.
Implementation of strategies is dependent on approval of fiscal budgets and available resources.
✓ - Implemented, P – Planned to be implemented; X – Indicates condition benefit

4.5.2 Progress Toward Achieving Numeric Goals

During FY 2015–2016, the County successfully implemented strategies outlined in the WQIP and is expecting to meet interim goals. In the Chollas Creek HSA (908.22), ongoing maintenance was performed at two facilities where LID BMPs were previously implemented: (1) Southeast Family Resource Center, and (2) Central Regional Public Health Center. LID implementation and subsequent maintenance have contributed to significantly reduced flows during storm events and lower concentrations of bacteria and metals in the receiving waters.

4.5.3 Water Quality Strategies and Schedules Adaptations

No modifications to the County's goals, strategies, and schedules presented in the San Diego Bay WMA WQIP are proposed at this time.

4.6 Port of San Diego

The Port of San Diego's approach to address the Highest Priority Conditions and to comply with the TMDL-derived watershed goals in Chollas Creek takes into account the nominal, if any, discharges from the Port of San Diego areas to the Chollas Creek HSA. Within the Chollas Creek drainage area, the Port of San Diego's jurisdictional authority is limited to a single tenant, General Dynamics National Steel and Shipbuilding Company (NASSCO). This facility represents less than 1 percent (%) of the Chollas Creek drainage area. The entire NASSCO facility is regulated by an individual National Pollutant Discharge Elimination System (NPDES) permit. As a result of the toxicity standards in NASSCO's NPDES permit, NASSCO elected to install a self-contained retention/treatment system that captures and treats all storm water discharges at its facility. Therefore, NASSCO has minimized potential discharges to San Diego Bay and eliminated discharges from its facility to Chollas Creek. The area highlighted in yellow in Figure 4-9 shows the Port of San Diego's boundaries within the Chollas Creek HSA.

Given the limited jurisdictional area of the Port of San Diego in the Chollas Creek HSA, its approach is to employ strategies that address the Highest Priority Conditions (trash, metals, and bacteria) by verifying that the Port of San Diego's tenant, NASSCO, is in compliance with Municipal Permit-required BMPs, providing education outreach to various audiences that live and/or work in the drainage area, participating in cleanup events within the creek. This approach will help support other water quality efforts in Chollas Creek. The FY 2016 strategies are listed in Section 4.6.1. The complete list of strategies implemented by the Port of San Diego is in Appendix 2.

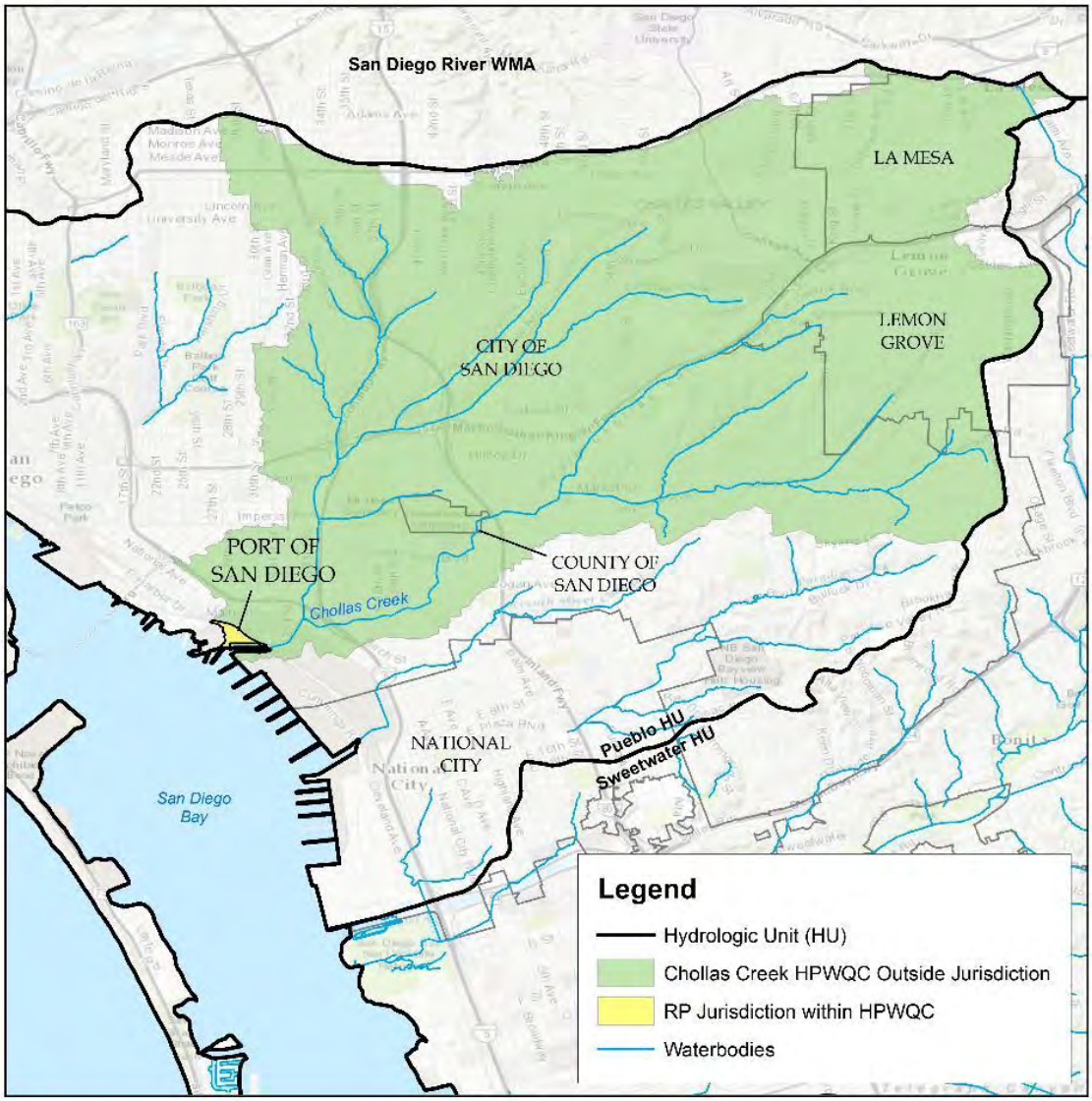

Notes:
As stated above, the Port of San Diego does not operate any segment of MS4 that discharges to Chollas Creek.

Figure 4-9
Port of San Diego's Jurisdiction Within the Chollas Creek Highest Priority Condition

4.6.1 Strategies and Schedules

The Port of San Diego completed all of the strategies outlined for the Chollas Creek HSA for FY 2016. This work includes several public outreach and cleanup events. The Port of San Diego sponsored 16 cleanups overall in Port of San Diego tidelands/San Diego Bay. Two cleanup events occurred within the Chollas Creek HSA. The Port of San Diego also

completed a routine MS4 permit facility inspection at the NASSCO facility. The strategies employed during FY 2016 are discussed further below and are summarized in Table 4-9.

The Port of San Diego's inspection of NASSCO on March 21, 2016, found 100% compliance with the BMP requirements of the Municipal Permit during this reporting period (PO-7). Therefore, no follow-up was required. NASSCO is also required to comply with its own individual NPDES permit reporting requirements (Order NO. R9-2009-0099) and is required to submit results annually. The individual NPDES permit reports are submitted to the Regional Board by NASSCO separately from this WQIP Annual Report.

The Port of San Diego addressed trash, metals (copper and zinc), and bacteria and increased public awareness by providing educational opportunities to various audiences throughout the reporting year, including residential communities, the general public, school children, and underserved audiences (PO-17). Four programs specifically focused on school children in the Chollas Creek HSA (Table 4-9). The programs reached approximately 2,645 students in the Chollas Creek HSA during the reporting year.

One of the Port of San Diego's optional strategies for the Chollas Creek HSA was triggered in FY 2016. Cleanup events hosted or sponsored by the Port of San Diego (PO-35 optional) also provided opportunities for the public to develop a sense of stewardship for the environment and to participate in efforts within the Chollas Creek HSA, as well as at other locations within Port of San Diego's jurisdiction.

In addition, the Port of San Diego sponsored the annual regional seminar on Integrated Pest Management (IPM) for Landscape Professionals (PO-12). Approximately 117 attendees attended the May 19, 2016, public seminar to learn more about environmentally friendly pest management methods. While the seminar was not specific to the Chollas Creek HSA, the landscape professionals in attendance may employ IPM concepts when working within the Chollas Creek HSA.

The Port of San Diego also participated in the San Diego Regional Reference Study, as discussed in Appendix 4. The study assessed the microbial water quality at reference beaches following dry and wet weather events in southern California, with a focus on the San Diego region. The goal is to be able to revise the Bacteria TMDL to base it on local conditions. The findings of the study will be submitted to the Regional Board to include in their analysis when the Bacteria TMDL is reopened.

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Table 4-9
Summary of Strategies for Chollas Creek – Port of San Diego

Strategy	Multiple Benefits			Implementation Status
	Trash	Bacteria[1]	Metals[1]	**FY 2016**
PO-7: Core JRMP Programs – Existing Development (Commercial/Industrial)	X		X	Annual Municipal Permit Industrial Facility Inspections: • The Port of San Diego conducted one facility inspection of National Steel and Shipbuilding Company (NASSCO) on 3/21/2016; 100% of required MS4 Permit BMP compliance was achieved during this reporting period; no follow-up required; therefore, no corrective action was necessary.
PO-17: Core JRMP Programs – Public Education and Outreach[3]	X	X	X	Many of the Port of San Diego's education activities are implemented jurisdiction or San Diego Bay watershed-wide. However, educational programs specifically occurring within the Chollas Creek HSA include: • Groundwork San Diego-Chollas Creek's *Chollas Creek to San Diego Bay Waterkeepers Initiative* – 600 third to seventh graders reached with 27% increase in knowledge • Ocean Discovery Institute – The *Wetlands Avengers* program provided 953 fourth grade students from 11 different schools in the City Heights community with field and classroom activities. • Ocean Discovery Institute – *Ocean Science Explorers: City to Bay Scientists* provided 950 fifth grade students from the City Heights community opportunities to do hands-on experiments in the classroom. • I Love A Clean San Diego, Watershed Education Presentations – Six presentations focused in Chollas Creek HSA to 142 high school students
PO-35: Cleanup and Collection Events	X	X	X	• The Port of San Diego sponsored 16 cleanups overall in Port tidelands/San Diego Bay. • Approximately 100 people collected 962 pounds of trash/debris in two Port-sponsored cleanup events within the Chollas Creek HSA during the reporting year.

Notes:
1. Highest Priority Conditions are highlighted in orange.
% = percent; BMP = best management practice; FY = fiscal year; HSA = hydrologic subarea; JRMP = Jurisdictional Runoff Management Program/Plan; MS4 = municipal separate storm sewer system

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4.6.2 Water Quality Strategies and Schedules Adaptations

No modifications to the Port of San Diego's goals, strategies, and schedules presented in the San Diego Bay WMA WQIP are proposed at this time.

4.7 Caltrans

Caltrans is not regulated under the Municipal Permit; however, Caltrans is subject to similar requirements through its MS4 Permit (Caltrans Permit) (Regional Board, 2012). Caltrans has voluntarily contributed to the WQIP effort to provide a consistent and watershed-wide approach to meeting applicable TMDL requirements. The baseline strategies are continuously implemented and augmented as resources become available.

Attachment IV of the Caltrans Permit outlines a methodology for prioritizing stream segments included in TMDLs to which Caltrans is subject. The Caltrans Permit establishes BMP implementation requirements, evaluated in terms of compliance units. Caltrans is expected to achieve 1,650 compliance units per year through the implementation of retrofit BMPs, cooperative implementation, and post-construction treatment beyond permit requirements.

Impaired reaches throughout the state will be prioritized on the basis of several factors, including, but not limited to, percent reduction needed, Caltrans drainage area contributing to the reach, and proximity to receiving waters. Reaches with metals TMDLs will likely be prioritized. Caltrans continued its efforts to reduce pollutant discharges to receiving waters through ongoing compliance activities and by implementing a consistent statewide approach to address Attachment IV requirements for the named pollutants.

Caltrans' jurisdiction areas include roadway, land adjacent to roadways, and facilities. Caltrans' jurisdictional strategies specifically focus on BMP implementation to reduce known pollutants within these areas. Caltrans' strategies vary from those of other RPs (in both type and name) to best address freeway characterization discharges from its Right-of-Way (ROW). Strategies include programs developed by Caltrans Headquarters for statewide execution and District 11 implementation. Caltrans' implementation of strategies with the WMA is dependent on legislative approval.

4.7.1 Strategies and Schedules

Caltrans' strategies vary from those of other RPs (in both type and name) to best address typical freeway characterization discharges from its ROW. Strategies include programs developed by Caltrans Headquarters for statewide execution and District 11 implementation. Caltrans' implementation of strategies within the WMA is dependent on legislative approval. A complete list of strategies, including optional strategies, and their anticipated implementation schedule are provided in Appendix 2. The strategies and schedules are subject to change and are contingent upon annual budget approvals and funding availability. They will be modified through the adaptive management process as needed.

Several optional jurisdictional strategies and their implementation status are presented in Table 4-8. Implementation of the optional strategies is contingent on circumstances supported by the need for the additional effort, the cost/benefit as compared with other options and strategies, and the availability of funding. The full list of optional strategies applicable to Caltrans and the implementation status of each are provided in Appendix 2.

4.7.2 Progress Toward Achieving Numeric Goals

For the Bacteria TMDL, Caltrans is expected to eliminate dry weather flows by implementing control measures to ensure effective prohibition. For wet weather flows, Caltrans is expected to implement control measures or BMPs to prevent discharge of bacteria from the ROW; these measures can include source control and pre-emptive activities such as street sweeping, cleanup of illegal dumping, and public education on littering. Implementation of these controls is in accordance with the TMDL prioritization list currently under development.

Caltrans' WQIP goals for dry and wet weather are presented in Table 4-10.

Table 4-10
Progress Toward Caltrans Permit Term Numeric Goals for the Chollas Creek HSA

Planning Period			Assessment Period		
Performance Measure – Ongoing					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
Dry Weather					
Eliminate dry weather flows by implementing control measure to ensure effective prohibition.	MS4 Discharges	See Caltrans Annual Report	See Caltrans Annual Report	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.
OR					
Implement drought-tolerant landscaping and conversion to smart irrigation controllers within the watershed.	MS4 Discharges	See Caltrans Annual Report	See Caltrans Annual Report	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.

Table 4-10 (continued)
Progress Toward Caltrans Permit Term Numeric Wet Weather Goal for the Chollas Creek HSA

Planning Period			Assessment Period		
Performance Measure – Ongoing					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
Wet Weather					
Achieve compliance units by contributing funds to a cooperative implementation agreement or grant program.	MS4 Discharges	See Caltrans Annual Report	See Caltrans Annual Report	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.
OR					
Continued implementation of wet weather nonstructural BMP activities within the watershed	MS4 Discharges	See Caltrans Annual Report	See Caltrans Annual Report	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.
OR					

Table 4-10 (continued)
Progress Toward Caltrans Permit Term Numeric Wet Weather Goal for the Chollas Creek HSA

Planning Period			Assessment Period		
Performance Measure – Ongoing					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
Continue to implement wet weather structural BMP activities for proposed projects within the watershed.	MS4 Discharges	See Caltrans Annual Report	See Caltrans Annual Report	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time.

Notes:
Caltrans = California Department of Transportation; MS4 = municipal separate storm sewer system

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4.7.3 Water Quality Strategies and Schedules Adaptations

No modifications to Caltrans' goals, strategies, and schedules presented in the San Diego Bay WMA WQIP are proposed at this time.

4.8 Chollas Creek HSA Monitoring and Assessment

Monitoring for the Highest Priority Condition was developed to comply with the two TMDLs in effect for Chollas Creek. The subsections below provide a brief overview of the monitoring programs and results.

4.8.1 Bacteria Monitoring Results

The 2015–2016 Chollas Creek Bacteria TMDL compliance monitoring is designed to meet the requirements under Resolution No. R9-2010-0001 (Regional Board, 2010)[11], as incorporated into the Regional Board's Order Number R9-2013-0001[12] (Municipal Permit) in 2013. The Bacteria TMDL monitoring program assesses the conditions of the receiving waters and has the following objectives:

- Characterize levels of bacteria concentrations at compliance monitoring locations.
- Track progress toward meeting the Bacteria TMDL numeric targets.

Fecal indicator bacteria (FIB) sampling for the compliance monitoring season (October 2015 through September 2016) was conducted at three creek monitoring locations. Wet weather samples were collected within the first 24 hours after the end of rainfall for three wet weather events. Dry weather samples were collected at least weekly between April and October 2015, and at least monthly on dry weather days from November 2015 through March 2016.

The Chollas Creek Bacteria TMDL 2015–2016 Water Quality Compliance Monitoring Report summarizes FIB concentrations and key hydrologic data by compliance monitoring location and season for the 2015–2016 monitoring season. Compliance is assessed by comparing analytical results for *Enterococcus* and fecal coliform with applicable receiving water limitations (RWLs), in accordance with the Bacteria TMDL requirements in Attachment E of the Municipal Permit. The RWLs are a combination of numeric targets for bacteria density and allowable exceedance frequencies. The compliance schedule includes interim milestones that must be achieved to demonstrate progress prior to attaining full compliance with the TMDL.

Results for 2015–2016 are summarized in Appendix 4, and are discussed in detail in the Chollas Creek Bacteria TMDL 2015–2016 Water Quality Compliance Monitoring Report.

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[11] A Resolution Amending the Water Quality Control Plan (Regional Board, 1994) or the San Diego Basin (9) To Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek), February 10, 2010

[12] National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region, May 14, 2013.

4.8.2 Metals Monitoring Results

The Chollas Creek Diazinon and Dissolved Metals TMDLs Compliance Monitoring program is designed to meet the requirements of Order No. R9-2004-0277 (Regional Board, 2004) and State Board Resolution No. 2008-00054 (Regional Board, 2008). To determine compliance with these TMDLs, the RPs conducted wet weather water quality monitoring at two mass loading stations during three wet weather events during the 2015–2016 wet season.

Samples were analyzed for the TMDL compliance constituents: diazinon, dissolved metals (copper, lead, and zinc), total hardness, and toxicity. Additional constituent analyses were selected by the RPs fill data gaps and track potential water quality contaminants or issues in Chollas Creek.

Compliance was assessed by comparing analytical results with applicable water quality criteria set forth in the approved TMDLs for the Chollas Creek HSA, the pesticide criteria of the California Department of Fish and Wildlife (CDFW), and the Aquatic Life Benchmarks of the United States Environmental Protection Agency (USEPA) Office of Pesticide Programs (OPP) (USEPA, 2014).

Results for 2015–2016 are summarized in Appendix 4, and details are provided in the Chollas Creek Metals and Diazinon TMDL Monitoring Annual Report (Attachment C). Key findings from the report include:

- Concentrations of metals in samples at Chollas Creek South Fork did not exceed WQOs for metals.
- Copper concentrations in samples at Chollas Creek North Fork exceeded WQOs for copper in two of three samples, but did not exceed WQOs for lead or zinc.
- Diazinon was not detected in the samples.
- Toxicity was not observed in the samples.

The City has developed and submitted a Water Effects Ratio (WER) Confirmation Study (City of San Diego, 201) to the Regional Board for dissolved copper and dissolved zinc at Z Street and SD8(1). If approved, the updated WERs would provide for an alternative assessment of compliance with the TMDL waste load allocations (WLAs). The alternative WERs will assess dissolved copper and zinc specific to the ambient water chemistry within Chollas Creek rather than the default WER provided in the California Toxics Rule (CTR).

5 Focused Priority Condition: Water Quality Within Airport Authority Jurisdiction

Water quality impairment due to copper and zinc concentrations in wet weather discharges from the Airport Authority is a Focused Priority Condition in the Pueblo HU. The geographic extent of the Focused Priority Condition is the jurisdiction of the Airport Authority, which is the sole RP for the condition. The Airport Authority identified copper and zinc concentrations in wet weather discharges as a Focused Priority Condition based on a history of sampling results that show that copper and zinc concentrations consistently exceeded the 2008 USEPA NPDES Multi-Sector General Permit (MSGP) benchmark values. The Airport Authority has identified goals and strategies that will be implemented throughout its jurisdiction to address this Focused Priority Condition. In addition, three drainage areas with historically higher concentrations of dissolved copper and zinc have been identified for targeted BMP implementation. Figure 5-1 shows the Airport Authority's jurisdiction within the Water Quality Focused Priority Condition where the strategies will be implemented.

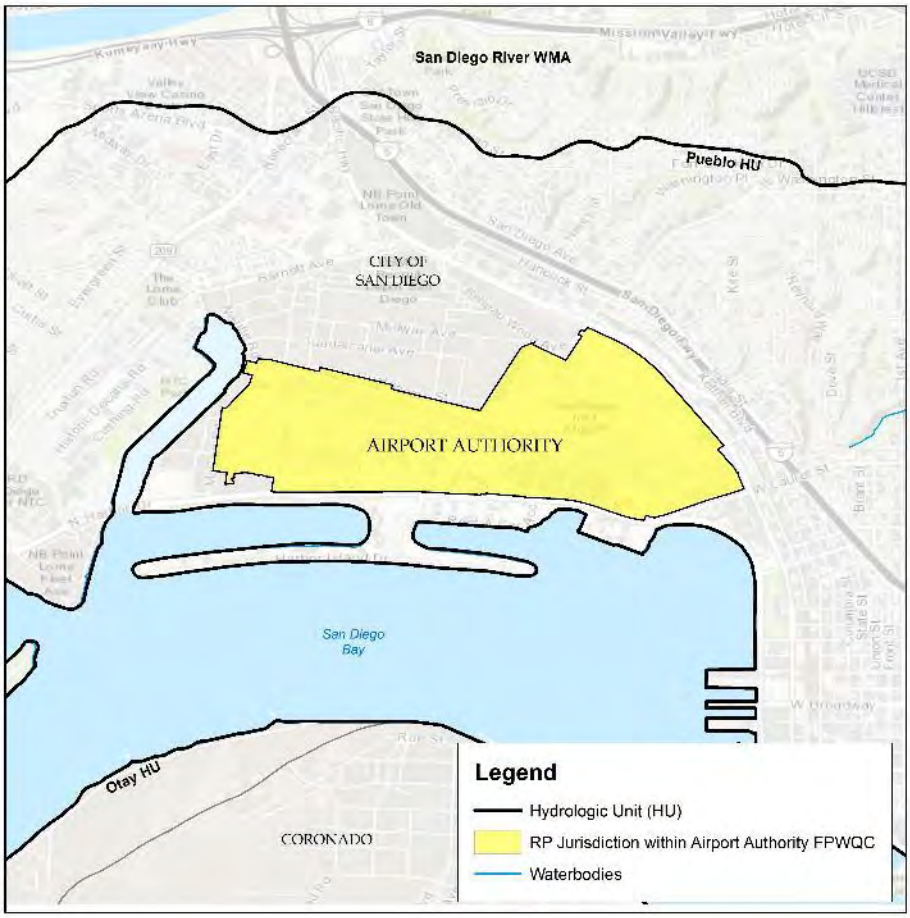

Figure 5-1
Airport Authority's Jurisdiction Within the Water Quality Focused Priority Condition

5.1 Airport Authority Jurisdiction Numeric Goals

Goals developed for the Focused Priority Condition target MS4 discharge concentrations. The goals and schedule for meeting final and interim goals for this Focused Priority Condition are listed in Appendix 3. The interim concentration goals are based on the Numeric Action Levels (NALs) for copper and zinc established in the Industrial General Permit (IGP) (NPDES Permit No. CAS000001) (with the NALs themselves based on the 2008 MSGP benchmarks) and the final concentration goals are based on the CTR criteria for copper and zinc. The interim goals are expressed as the percentage of wet weather discharge samples with concentrations of contaminants that exceed the NALs for copper and zinc (33.2 micrograms per liter [µg/L] and 260 µg/L, respectively). The final goals are expressed as the percentage of wet weather discharge samples with concentrations of contaminants that exceed the CTR values for copper and zinc in saltwater (4.8 µg/L and 90 µg/L, respectively).

The Airport Authority implements strategies designed to achieve the numeric goals established for the area. The Airport Authority has also set an interim goal to be achieved during the Municipal Permit term. Interim goals are intended as milestones that help assess progress toward the longer-term goals. A monitoring program also collects data to be used to help track progress toward goals. The following subsections describe jurisdictional strategy implementation and progress toward interim goals. Monitoring results are then presented in light of the applicable numeric goals following the strategy implementation discussion.

The WQIP numeric goals for the Focused Priority Condition are provided in Appendix 3. Interim goals for the Airport Authority are as follows:

- MS4 discharges jurisdiction-wide (70% of wet weather samples with concentrations exceeding target) for dissolved copper;
- MS4 discharges jurisdiction-wide (65% of wet weather samples with concentrations exceeding target) for dissolved zinc;

  OR

- MS4 discharges in sub-basins 1, 3, and 5 (in total) with 34 acres per week treated with street sweeping.

During FY 2016, the Facilities Management Department (FMD) and the Environmental Affairs Department (EAD) implemented more efficient methods to track the location, date, and frequency of sweeping activities. The total area of runway and taxiways that was swept in sub-basins 1, 3, and 5 combined in FY 2016 was approximately 364 acres, resulting in an average of 7 acres of runway and taxiway pavement swept weekly in these sub-basins. Given that the WQIP FY 2018 interim performance goal for street sweeping in this area was a three-fold increase amount of area currently being swept, the Airport Authority proposes to correct the FY 2016 interim performance goal to 7 acres per week, instead of 34 acres per week, and the FY 2018 interim performance goal for street sweeping to 21 acres/week instead of 100 acres per week of runway and taxiway pavement in sub-basins 1, 3, and 5 combined. The new proposed goals table is presented in Appendix 3.

This goal correction is a result of better recordkeeping, communication, and analysis by FMD and EAD. For the WQIP, the FMD and EAD incorrectly determined that 34 acres of runway and taxiway were being swept weekly in 2015 in sub-basins 1, 3 and 5. The focus of this performance goal was the eastern portion of the runway and taxiways alone (where drainage sub-basins 1, 3, and 5 are located). In addition to this goal, the Airport Authority has focused the optional strategy of an enhanced rubber removal and power-washing program (if it is implemented) on this same eastern portion of the runway for the same reason (because that end of the runway is predominantly used by landing aircraft).

The Airport Authority also proposes some minor modifications to the strategies and schedules in the San Diego Bay WMA WQIP. Those minor modifications are discussed in Appendix 2.

5.2 Strategies and Schedules

The Airport Authority's approach focuses on areas that generate the Focused Priority Condition metals, i.e., the airside impermeable surfaces (e.g., runways and taxiways) and parking lots. Removing pollutant materials from the ground surface and disposing of them properly before they are mobilized by runoff during rain events are fundamental. The Airport Authority's implementation of strategies to achieve the WQIP goals in FY 2016 included implementing enhanced source control BMPs, which were added to the Airport Authority's Storm Water Management Plan prior to the start of FY 2016; continuing the active street sweeping program on the airside to remove copper and zinc generated from aircraft and vehicle tires and brakes; and increasing the frequency of facility and operations storm water BMP inspections. The Airport Authority has also continued its program of sweeping passenger parking lots.

However, the primary method to minimize pollutants entering runoff has been use of green infrastructure and treatment systems that collect and treat parking lot runoff prior to discharge. Development projects completed in FY 2015 or FY 2016, and that became operational in FY 2016, include several projects in parking lots where new, post-construction BMPs, both proprietary and nonproprietary (such as pervious pavement, rock swales, etc.), were deployed. In addition, new treatment control BMP systems were added to the airside in FY 2016.

Catch basin cleaning is also key to addressing general areas of discharge. During FY 2016, the Airport Authority continued the frequency of basin inspection and cleaning from the previous fiscal year, and plans to optimize catch basin cleaning in FY 2017. In FY 2016, this strategy continued to help collect pollutants before they are discharged to receiving waters during rain events; for FY 2017, it is anticipated that more pollutants can be collected as this activity is optimized.

The Airport Authority's key strategies (as well as optional strategies) for FY 2016 are summarized below. A complete list of strategies implemented in FY 2016 within the WMA is provided in Appendix 2. Strategies and implementation schedules were identified during the development of the WQIP using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. Proposed modifications to the Airport Authority's goals are discussed in Section 5.1. The

implementation of each strategy has been and will continue to be contingent upon annual budget approvals and funding availability.

Sweeping Airside Corridors

The Airport Authority has been sweeping the runway, taxiways, ramp areas, roads, and parking lots for several years, if not decades, prior to FY 2016. Aircraft and vehicle tire and brake wear are sources of copper and zinc from these locations. Under the WQIP, sweeping on the eastern end of the airfield (in particular, the runway and taxiways) will be modified and enhanced to optimize its effectiveness in FY 2017. Modifications or enhancements are expected to result in an increase in the area swept and/or the frequency of sweeping by FY 2018, depending on available funding.

Implementation of the street sweeping program during FY 2016, along with compilation of the street sweeping tracking data, has revealed the lack of specificity in the performance metrics for this particular goal. The total airside pavement area (runway, taxiways, ramp and service roads) that was swept in FY 2016 was approximately 1,832 acres. The total area of runway and taxiways that was swept in sub-basins 1, 3, and 5 combined in FY 2016 was approximately 364 acres. As a result, an average of 35 acres of airside pavement were swept each week during FY 2016 and an average of 7 acres of runway and taxiway pavement in sub-basins 1, 3, and 5 combined were swept each week during FY 2016.

Sweeping Landside Parking Lots and Roadways

The Airport Authority has been sweeping the parking lots and roadways for many years. The following roads are swept five times per week (Monday through Friday) for three hours per day: Commuter Terminal and Terminal 1 Roadway System, Winship Lane, Stillwater Road, Airlane Road, Terminal 2 East and Terminal 2 West Roadway System, and Spruance Road. All accessible portions of the parking lots, including the Long-Term Lot, Economy Lot, Lot 6, Cell Phone Lot, Taxi Hold Lot, NTC Lot, and the Terminals 1 and 2 Lots, are swept weekly.

Green Infrastructure, Treatment Systems, and IGP Advanced BMPs

Parking lots, building roofs, and ramp areas are sources of copper and zinc at the airport. To target these areas, the Airport Authority has been focusing on green infrastructure, treatment system, and advanced BMP projects to control these sources of heavy metals in storm water runoff:

During FY 2016:

- The new Rental Car Center (RCC), opened in early 2016, incorporated 1.25 acres of bioretention swales to address heavy metals, including copper and zinc, and other pollutants.
- An overhead canopy was constructed at the FedEx facility. The canopy protects the FedEx cargo work area, reducing contact of rainwater with any potential pollutants from cargo and equipment loading/unloading activities.
- The Airport Authority constructed an enclosed storage area for hazardous waste.

- The RCC Bus Parking facility was completed. The project includes a storm drainage detention basin and two modular wetland systems, among other BMPs, to target trash, debris, sediment, and heavy metals.
- The Taxi Hold Lot was also completed. The project includes an infiltration trench and a permeable pavement bed/area.
- Four permeable pavement/stone reservoir beds were included in the Parking Lot 6 Expansion project, which was completed in March 2016.

Catch Basin Cleaning

The Airport Authority continued its current Storm Water Management Plan (SWMP)/JRMP program of quarterly cleaning of high priority catch basins at San Diego International Airport. High priority areas are typically closer to terminals. All other catch basins are inspected annually, and cleaning and maintenance are performed as necessary. The Airport Authority intends to verify the current high priority catch basins and to identify other high priority areas that may benefit from more frequent inspection and cleaning during FY 2017. The Airport Authority will also determine and implement optimal frequencies for catch basin cleaning. To increase metals removal, catch basins will be cleaned more frequently and additional high priority catch basins will be designated on the basis of the inspections.

Enhanced Tenant and Airport Operations BMP Inspections and Enforcement

The Airport Authority increased inspection and enforcement of BMPs required in tenant and airport operational areas. The required BMPs are generally source controls designed to reduce pollutants, including copper and zinc that are generated by tenant and airport operational activities. These BMPs are listed in Table I.1.2 in Appendix I of the WQIP. Several BMPs have been updated and new BMPs have been developed for:

- Electric Vehicle Maintenance;
- Erodible Areas;
- Construction and Remodeling/Repair.

To ensure compliance, the Airport Authority increased the frequency of inspection from quarterly to monthly; continued education and outreach by inspectors; provided classroom training with other tenants; and fostered a more cooperative approach through ramp walks and numerous meetings with Airport Authority employees and tenants. The increased frequency of inspections, increased visibility of issues using database tracking, and regular follow-up by inspectors all serve to encourage tenants to implement BMPs. Additionally, *ad hoc* inspections following a sampling event were added to the Airport Authority's web-based/interactive inspection response and enforcement database to ensure that action was taken on any BMP deficiencies observed during storms.

Public Education and Participation

The Airport Authority's SWMP/JRMP and WQIP include details on the Public Education and Participation Program. The following highlights some of the education and public participation activities that occurred in FY 2016:

- Classroom and on-the-job training. Over 140 Airport Authority employees and support staff received storm water training in FY 2016.
- Tours of the airport are offered twice per month for students in grades 2 through 8.
- Printed and audiovisual guidance on BMPs and storm water management procedures during storm water training provided by the Airport Authority. Topics included urban runoff concepts; impacts on receiving waters; NPDES permits; the Airport Authority SWMP/JRMP and WQIP; the Airport Authority's Focused Priority Condition; sources, goals, strategies, and Focused Priority Condition BMPs; impacts of construction and land development; inspections; and minimum and advanced BMPs. All of these topics were covered during the storm water training that was provided by the Airport Authority. Posters highlighting the proper implementation of BMPs will be displayed in various airport and tenant employee areas in FY 2017.

Source Identification Study for Highest Pollutant-Generating Areas/Activities

In 2005, the Airport Authority designed, implemented, and evaluated a source identification study to determine the highest potential pollutant-generating activities (PGAs). This "Site Audit" also doubles as the annual comprehensive facility compliance evaluation required under the IGP, and is conducted every two years. It generates a Relative Pollutant Risk Factor for each drainage basin, and tenant and Airport Authority facility, to determine the highest PGA areas and activities and to better target appropriate BMPs or improve existing BMPs for those areas or activities. The next Site Audit was conducted in fall 2016. Additionally, every year following the completion of the annual storm water sampling, a "hot spot" map for copper and zinc is developed to indicate the areas of the airport that generate higher levels of copper and zinc, and recommendations are made to reduce those levels. As part of the IGP Exceedance Response Actions, an evaluation was completed by October 1, 2016. In addition, a report that addresses BMP improvements to reduce any exceedances of benchmarks will be submitted to the State Board in compliance with the IGP by January 1, 2017.

Increased Inspections of Highest Pollutant Generating Areas/Activities

The Airport Authority will increase the inspection frequency for the highest potential PGAs in FY 2018, subject to available funding.

Key Strategies Implemented in FY 2016

The following key strategies were implemented in FY 2016 to achieve the specified goals in Table 5-1:

(1) Continued the current street sweeping program;

(2) Continued the current catch basin cleaning program;

(3) Continued to identify and target high-priority areas for enhanced inspections, increased BMP implementation and enforcement, and compliance incentives;

(4) Continued to implement green infrastructure at San Diego International Airport; and

(5) Continued the Airport Authority's public education and participation, and illicit discharge, detection, and elimination (IDDE) efforts.

Future Key Strategies To Be Implemented

The key strategies to be implemented to achieve the specified goals in Table 5-1 in future fiscal years are as follows:

(1) Determine and implement optimal street sweeping;

(2) Determine and implement optimal catch basin cleaning;

(3) Continue to identify and target high-priority areas for enhanced inspections, increased BMP implementation and enforcement, and compliance incentives;

(4) Continue to implement green infrastructure at San Diego International Airport;

(5) Continue the Airport Authority's public education and participation efforts; and

(6) Continue IDDE program efforts.

Optional Strategies

Optional strategies were implemented in FY 2016, including investigation and research of emerging BMP technologies, capture and reuse of air conditioning condensate, and development of a Draft Master Plan for Water Reuse; implementation of IGP advanced BMPs and LID or treatment control best management practices (TCBMPs); and collaboration with local agencies on habitat restoration and the Reference Watershed Study. During FY 2017 and FY 2018, other optional strategies may be implemented, if triggered, including enhanced runway rubber removal activities (described below); source reduction initiatives such as copper-free brake pads; and collaboration on regional education and outreach activities.

Rubber Removal and Power Washing

The Airport Authority identified runway rubber removal and power washing as a potential optional jurisdictional strategy. Aircraft tires and brakes, known to contain heavy metals, are considered likely to be major sources of copper and zinc on the runway. In FY 2018, if increased airside sweeping in the focused runway/taxiway areas of sub-basins 1, 3, and

5 does not result in meeting interim goals, and if funding and resources allow and consensus agreement is reached, the Airport Authority's optional strategy of determining the optimal runway rubber removal frequencies, equipment, methods, and locations to maximize pollutant removal may be triggered. Expanding rubber removal and/or power washing to a larger portion of the runway, beyond the touchdown zone, is expected to improve runoff water quality.

Collaboration with Local Agencies on Habitat Rehabilitation in San Diego Bay

The San Diego International Airport now includes properties that were once major industrial aircraft manufacturing facilities on Port of San Diego tidelands and lands that were once part of the United States Navy's Naval Training Center. The historical uses at these locations have been identified as potential sources of pollutants to San Diego Bay, and in particular, the Navy Boat Channel, Convair Lagoon, and the Laurel-Hawthorn Embayment. The Airport Authority has and will continue to work with the Port of San Diego, the United States Navy, and other local agencies to investigate these potential source areas and eliminate the sources and restore habitats as necessary and appropriate.

Summary of Strategies Within Airport Authority Jurisdiction

Table 5-1 summarizes the jurisdictional strategies implemented in FY 2016 or before for meeting final and interim goals for this Focused Priority Condition.

Several optional jurisdictional strategies that were implemented in FY 2016 are also presented in Table 5-1. Implementation of the optional strategies is contingent on circumstances supported by the need for the additional effort, the cost/benefit as compared with other options and strategies, and the availability of funding. The full list of optional strategies applicable to the Airport Authority and the implementation status of each are provided in Appendix 2.

Table 5-1
Summary of Strategies for Water Quality (Copper and Zinc) Within Airport Authority Jurisdiction

Strategy	Multiple Benefits					Implementation Status			
	Trash	Bacteria[1]	Nutrients	Sediment	Metals[1]	Previous Fiscal Year(s)	**FY 2016**	FY 2017	Future Fiscal Year(s)
Green infrastructure and treatment systems — parking lot BMPs	X	X	X	X	X	✓	✓	P	P
Green infrastructure and treatment systems —green build terminal expansion project	X	X	X	X	X	✓			
Green infrastructure and treatment systems —northside BMPs	X	X	X	X	X		✓	P	P
Enhanced tenant and airport operational area BMP inspections and enforcement, with incentives for improved BMP implementation	X	X	X	X	X	✓	✓	P	P
Catch basin cleaning	X	X	X	X	X	✓	✓	P	P
Sweeping of airside corridors[3]	X	X	X	X	X	✓	✓	P	P
Continued IDDE Program	X	X	X	X	X	✓	✓	P	P
Continued public education, participation, and staff and tenant storm water training	X	X	X	X	X	✓	✓	P	P
Continued enforcement	X	X	X	X	X	✓	✓	P	P
Optional Strategies[2]									
Investigation and research of emerging BMP technology	X			X	X		✓	P	
Phase in of advanced BMPs (as defined in the IGP) in priority areas	X	X	X	X	X		✓	P	
Collaboration with regional education and outreach activities	X	X	X	X	X		✓	P	
Collaboration on habitat rehabilitation					X		✓		
Additional green infrastructure and proprietary BMPs	X	X	X	X	X		✓		

Notes:
BMP = best management practice; FY = fiscal year; IDDE = illicit discharge, detection, and elimination; IGP = Industrial General Permit
1. Focused Priority Water Quality Conditions are highlighted in orange
2. Implementation of strategies is dependent on approval of fiscal budgets and available resources
3. Refer to Adaptive Management Section 9 or complete strategy table in Appendix 2 for more details and for a list of Optional Strategies not triggered in this reporting period.

✓ – Implemented; P – Planned to be implemented; X – Indicates condition benefit

5.3 Airport Authority Jurisdiction Monitoring and Assessment

To comply with both the Municipal Permit and the IGP, the Airport Authority conducts extensive monitoring during storm events throughout the year. Section 5.3.1 describes the wet weather monitoring program at the San Diego International Airport. Copper and zinc, the Focused Priority Condition pollutants of concern for the Airport Authority, are sampled, analyzed, and evaluated for all sites. Monitoring results are presented in Appendix 4.

5.3.1 MS4 Monitoring

Section XI of the IGP requires wet weather monitoring and assessment of storm water runoff. The major monitoring objectives, as outlined in the IGP Fact Sheet, are to:

(1) Demonstrate compliance with the IGP, per the monitoring implementation plan requirements;

(2) Help implement the Storm Water Pollution Prevention Plan (SWPPP) (which is an integral part of the Airport Authority's SWMP/JRMP); and

(3) Measure the effectiveness of BMPs in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges.

The IGP requires that oil and grease (O&G), total suspended solids (TSS), and pH must be analyzed at all sites. In addition, samples must be analyzed for analytes that are likely to be found in storm water runoff, including any related to receiving waters on the Clean Water Act Section 303(d) list of water quality limited segments (303(d) List) or any approved TMDLs. Three analytes, biochemical oxygen demand (BOD), chemical oxygen demand (COD), and ammonia (NH3), are listed specifically by the IGP for air transportation facilities. The other original analytes, total metals (aluminum, copper, iron, lead, and zinc), dissolved metals (copper and zinc), methylene blue active substances (MBAS), ethylene glycol, and total petroleum hydrocarbons (TPH), were selected on the basis of a review of historical water quality results and activities conducted within the drainage basins at the airport. The suite of analytes was expanded twice in the last few fiscal years, including at the end of FY 2015, to comply with new Municipal Permit and IGP requirements. The latest changes made in FY 2015 to meet new IGP requirements were effective from the start of FY 2016.

Sixteen sampling locations, and one alternative location, have been identified at the San Diego International Airport, pursuant to the IGP. The sampling locations were selected on the basis of a review of the potential pollutants and pollutant sources, the scope of operations within the drainage basins, and the requirements of the IGP. Sampling locations were selected as far downstream as feasible to capture as many areas as possible with industrial activities within a given drainage basin. Where sampling locations were tidally influenced or access was restricted (e.g., when they are in the aircraft movement area), sheet flow runoff was collected. As required by Section XI.B.2 of the IGP, the Airport Authority sampled two qualifying storm events (QSEs) during the first half of the reporting year (July 1 through December 31, 2015) and two QSEs during the second half (January 1 through June 30, 2016). All sites were sampled for all four storms, with the exception of one site that was under construction during the first part of FY 2016.

A hot spot map showing copper and zinc results, in terms of concentration, was developed so that future efforts can be targeted to the highest PGAs for the focused priority pollutants of concern (i.e., copper and zinc).

Wet weather compliance monitoring activities were also conducted at the airport under the San Diego Bay WMA WQIP MS4 Outfall Monitoring Program. Under the Municipal Permit, 10 outfall sites were required to be monitored during one event during the wet season, October 1 through April 30. The three storms for which the outfalls were monitored met the mobilization criteria for monitoring (i.e., greater than or equal to 0.1 inch of rainfall with a forecast of 70%, preceded by 72 hours of less than or equal to 0.1 inch rainfall), and all 10 sites were successfully monitored. The wet weather outfall station for the Airport Authority is upstream from Outfall 12, because the outfall is tidally influenced. Monitoring was conducted on April 7 and 8, 2016. The analytes monitored included turbidity, nitrate and nitrite, phosphorus, cadmium, copper, lead, and zinc.

Finally, pollutant concentrations have been measured at an airside gate area site for the previous 10 years to (1) assess trends in concentrations, and (2) determine the effectiveness of treatment control BMPs in reducing or preventing pollutants in storm water discharges. In FY 2016, the influent, effluent, and bypass of a media filter unit in a terminal parking lot were monitored during five storms.

Overall, many analytes are monitored and compared with Municipal Permit and IGP benchmarks in the Airport Authority's program. Although modifications to strategies are being proposed to target the Focused Priority Conditions (namely, copper and zinc), there are many strategies that will also contribute to reducing other pollutants at the same time (e.g., sweeping and catch basin cleaning will remove trash, sediment, debris, and metals; and green infrastructure, TCBMPs, and advanced BMPs will remove many different pollutants, depending on the type of BMP installed).

5.4 Progress Toward Achieving Numeric Goals

Table 5-2 presents the interim and final goals for the Airport Authority, as well as the goals achieved in FY 2016 in terms of percentage of IGP compliance samples with concentrations of contaminants exceeding the IGP NALs and acres of airside area swept in sub-basins 1, 3, and 5 combined. Table 5-3 shows the target concentrations for dissolved copper and zinc (i.e., the IGP NALs), the number of samples analyzed during FY 2016, the number and percentage of samples with concentrations of pollutants of concern exceeding the target, and the interim goals. Table 5-4 shows the airside street sweeping interim performance goal and the actual airside acreage of runway and taxiways in sub-basins 1, 3, and 5 combined that were swept in FY 2016.

Tables 5-2 and 5-3 compare the analytical results from FY 2016 with the interim goals, showing that the number of samples with dissolved copper concentrations that exceeded the dissolved copper benchmark in FY 2016 (i.e., 76%) has improved from the baseline 2013–2014 sampling results, when the exceedance frequency was 89%. The schedule for the first interim goal to be met is in FY 2017, so the progress toward that goal for copper is on track. FY 2018 and FY 2021 goals are 30% and 20% exceedance frequencies, respectively, with the FY 2026 goal being 0% exceedance frequency for dissolved copper.

The number of samples with dissolved zinc concentrations that exceeded the dissolved zinc benchmark in FY 2016 (i.e., 19%) has greatly improved from the baseline 2013–2014 sampling results, when the exceedance frequency was 78%. The schedule for the first interim goal is FY 2017, so the goal for zinc is ahead of schedule, because FY 2016 results have met not only the FY 2017 goal, but also the FY 2018 and FY 2021 goals (35% and 25%, respectively). The FY 2026 goal for dissolved zinc is 0% exceedance frequency.

Tables 5-2 and 5-4 compare the sweeping conducted in the focused area of the jurisdiction with the FY 2016 street sweeping goal of 34 acres of airside runway and taxiway pavement in drainage sub-basins 1, 3 and 5 combined. The goal was not met, and was missed in part because of inaccurate descriptions and information initially used to establish this performance goal. As such, the Airport Authority has used Section 5.1 and Appendix 3 of this Annual Report to correctly outline the street sweeping performance goal.

Table 5-5 shows the progress toward the numeric goals for water quality to comply with the Municipal Permit within the Airport Authority jurisdiction. The table includes information for three measures: dissolved copper, dissolved zinc, and acres swept. The table describes the interim goal and progress, the metric for progress evaluation, baseline data, data collected/results, progress toward the goal, and the adaptive management actions.

Table 5-2
Interim and Final Goals and FY 2016 Progress Toward Goals

Type	FY 2016 Goal	FY 2017 Goal	FY 2018 Goal	FY 2021 Goal	FY 2026 Goal	Achieved in FY 2016
Dissolved Copper	–	<70% of wet weather samples with concentrations exceeding target for dissolved copper	<30% of wet weather samples with concentrations exceeding target for dissolved copper	<20% of wet weather samples with concentrations exceeding target for dissolved copper	0% of wet weather samples with concentrations exceeding target for dissolved copper	76% of wet weather samples had concentrations exceeding target for dissolved copper (no goal for FY 2016, and not yet meeting FY 2017 goal)
Dissolved Zinc	–	<65% of wet weather samples with concentrations exceeding target for dissolved zinc	<35% of wet weather samples with concentrations exceeding target for dissolved zinc	<25% of wet weather samples with concentrations exceeding target for dissolved zinc	0% of wet weather samples with concentrations exceeding target for dissolved zinc	19% of wet weather samples had concentrations exceeding target for dissolved zinc. (no goal for FY 2016, but already meeting goals for FY 2017, FY 2018, and FY 2021)
Street Sweeping of the Airside Portions of Sub-basins 1, 3, and 5 (total)	34 acres per week (current frequency)	–	21 acres per week (approx. 3-fold increase in area)[1]	–	–	7 acres per week (FY 2016 goal not met)

Notes:

< = less than; FY = fiscal year

1. The original FY 2016 goal was 34 acres per week and increased three-fold by FY 2018. Based on better record keep and tracking, only 7 acres per week were swept in sub-basins 1, 3, and 5. Therefore, the new proposed goal for FY 2018 will be a three-fold increase of 21 acres per week (see Section 5.1).

Table 5-3
Comparison of FY 2016 Monitoring Season Results with FY 2017 With Numeric Goals

Pollutant	Target Concentration	Number of Samples Collected in FY 2016	Number of Samples Exceeding Target	Frequency of Samples Exceeding Target	Interim WQIP Frequency Goal (FY 2017 Goal)
Dissolved Copper	33.2	62	47	76%	< 70%
Dissolved Zinc	260	62	12	19%	< 65%

Notes:
FY = fiscal year; WQIP = Water Quality Improvement Plan

Table 5-4
Comparison of FY 2016 Sweeping Achieved With FY 2016 Interim Numeric Goal

Performance Metric	Actual Average Acres Per Week Swept	Interim WQIP Goal (total acres/week) (FY 2016 Goal)
Street Sweeping of the Airside Portions of Sub-basins 1, 3, and 5 (total)	7	34[1]

Notes:
WQIP = Water Quality Improvement Plan
1. Based on better record keeping, the new proposed FY 2016 interim goal will be 7 acres per week, and the FY 2018 interim goal will be 21 acres per week (see Section 5.1)

Table 5-5
Progress Toward Municipal Permit Term Numeric Goal for Water Quality (Copper and Zinc) Within Airport Authority Jurisdiction

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2017					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
MS4 Discharges Jurisdiction-wide (<70% of Wet Weather Samples With Concentrations Exceeding Target)	Dissolved Copper	The baseline data are the Airport Authority's 2013–2014 IGP compliance sampling results' exceedance frequency for dissolved copper at 89% exceedance frequency.	Data used to support the progress evaluation toward meeting numeric goals are the Airport Authority's 2015–2016 IGP compliance sampling results' exceedance frequency for dissolved copper.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time. FY 2016 achieved 76% of samples with concentrations exceeding target for dissolved copper.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time. Some minor adjustments to the schedule are proposed.

Table 5-5 (continued)
Progress Toward Municipal Permit Term Numeric Goal for Water Quality (Copper and Zinc)
Within Airport Authority Jurisdiction

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2017					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
MS4 Discharges Jurisdiction-wide (<65% of Wet Weather Samples With Concentrations Exceeding Target)	Dissolved Zinc	The baseline data are the Airport Authority's 2013–2014 IGP compliance sampling results' exceedance frequency for dissolved zinc at 78% exceedance frequency.	Data used to support the progress evaluation toward meeting numeric goals are the Airport Authority's 2015–2016 IGP compliance sampling results' exceedance frequency for dissolved zinc.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time. FY 2016 achieved 19% of samples with concentrations exceeding target for dissolved zinc.	The project is progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time. Some minor adjustments to the schedule are proposed.
OR					

Table 5-5 (continued)
Progress Toward Municipal Permit Term Numeric Goal for Water Quality (Copper and Zinc)
Within Airport Authority Jurisdiction

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2017					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
MS4 Discharges Sub-basins 1, 3, and 5 (in total) 34 Acres/Week Area Treated with Street Sweeping	Acres Swept per Week	The baseline data are the Airport Authority's 2013–2014 areas swept data (for drainage basins 1, 3, and 5). However, this goal needs to be adjusted because of inaccurate collection of baseline data, as previously discussed.	Data used to support the progress evaluation toward meeting numeric goals are the Airport Authority's 2015–2016 acres of area swept in drainage basins 1, 3, and 5. Data collection methods have been improved in FY 2016.	Given inaccuracies in the initial establishment of this goal, the project is not progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time. An adjustment to the goal is proposed. FY 2016 achieved 7 acres/week treated with street sweeping.	Given inaccuracies in the initial establishment of this goal, the project is not progressing in accordance with a schedule that will allow completion on or before the scheduled achievement time. The adaptive management action needed is to adjust the goal to better reflect actual areas swept currently, and the projected areas to be swept in future fiscal years, dependent on budget.

Notes:
< = less than; FY = fiscal year; IGP = Industrial General Permit

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5.5 Water Quality Strategies and Schedules Adaptations

The Airport Authority proposes to modify the performance goal for airside street-sweeping, as described in Section 5.1.

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6 Focused Priority Condition: Riparian Area Habitat in Paradise Creek

Riparian area habitat in Paradise Creek is a Focused Priority Condition in the Lower Sweetwater HU. The geographic extent of the Focused Priority Condition is the drainage area of Paradise Creek within the jurisdiction of the City of National City (National City), which is the sole RP for the condition. National City has identified goals and strategies that will be implemented to achieve the goals.

6.1 Riparian Area Habitat in Paradise Creek Numeric Goals

Goals developed for the Focused Priority Condition target MS4 discharge concentrations and creek restoration outcomes. Paradise Creek was chosen as the focused area because it was deemed to have the greatest potential for improvements benefiting both water quality and the community. While most of the other water bodies within National City are channelized and fenced off to prevent public access, several segments of Paradise Creek are directly accessible to the public in National City parks. In Paradise Creek, impacts on riparian area quality include a concrete channel bottom and non-native bank vegetation in the Kimball Park area and occasional trash at various points along the creek.

Improving riparian area quality along Paradise Creek is part of National City's larger vision to provide residents in the central and western portions of its jurisdiction with improved access to natural environments and green spaces. National City expects that improvements to riparian area quality in Paradise Creek will positively impact the downstream Paradise Marsh portion of the Sweetwater Marsh Complex, which is part of the San Diego Bay National Wildlife Refuge. In addition, Paradise Creek is on the 303(d) List for selenium and one of National City's goals is to implement strategies that will lead to its removal from the 303(d) List. Complete goals tables, including final goals for Delisting and Habitat Restoration, are in Appendix 3. Interim goals for the Focused Priority Condition in Paradise Creek and progress made toward achieving them are described in Section 6.4 and Table 6-2.

6.2 Strategies and Schedules

National City implements water quality improvement strategies across its entire jurisdiction, such as street sweeping, inspections of businesses and construction sites, requiring LID for development projects. In addition to those city-wide strategies, National City is also implementing additional strategies to address its Focused Priority Condition, riparian area quality in Paradise Creek. Figure 6-1 shows National City's jurisdiction within the Paradise Creek drainage area.

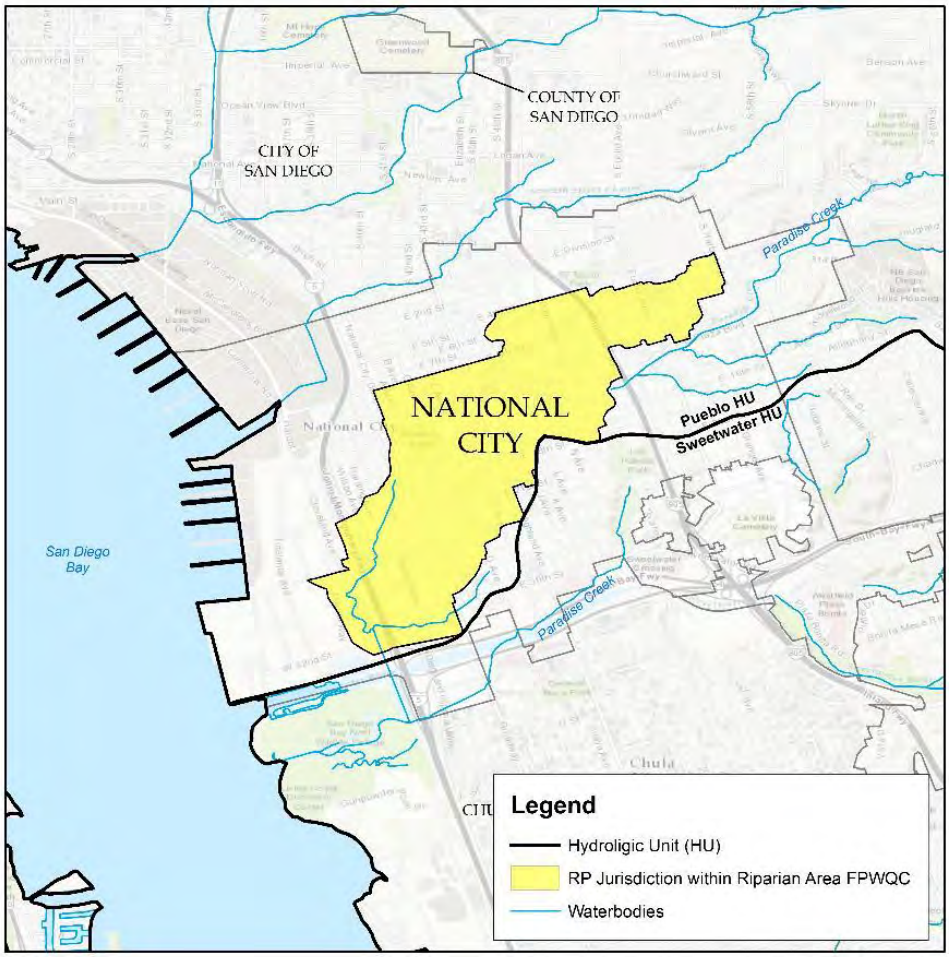

Figure 6-1
National City's Jurisdiction within the Paradise Creek Drainage Area

National City's approach is to implement improvements directly in Paradise Creek and in areas tributary to the Creek. These strategies provide improved aesthetics and better access to green space and natural habitats in a highly urbanized area, improve pedestrian access and walkability, and benefit riparian habitat and water quality. Other benefits include reducing runoff volume and levels of metals, trash, and other pollutants. Key strategies are summarized below, and a complete list of National City's strategies, including optional strategies, is included in Appendix 2.

Infiltration basin installed as part of the "A" Avenue Green Street and Pedestrian Pathway Project

National City completed the "A" Avenue Green Street and Pedestrian Pathway Project ("A" Avenue Green Street Project) in FY 2016, which treats and captures runoff

from 49 acres of urban area within the Paradise Creek drainage area. The "A" Avenue Green Street Project included the installation of 10 LID BMPs—bioretention and infiltration basins—and an underground 30,000-gallon cistern with a hydrodynamic separator to remove trash and other pollutants.

The Kimball Park LID and Paradise Creek Restoration Project is currently under construction and will be completed in FY 2017. This project uses LID to improve urban runoff water quality, restores habitat in Paradise Creek, and provides an opportunity for the public to interact with the newly restored creek in a park setting. The project includes installation of multiple bioretention and infiltration areas within Kimball Park and along surrounding streets to improve water quality of runoff associated with approximately 73 acres of highly urbanized area. The project will restore approximately 1,000 linear feet of Paradise Creek by removing the concrete channel, widening the creek to maintain existing capacity, and restoring the wetland habitat. The project is also removing invasive and non-native plants along the creek banks and replacing them with native plants.

National City is also converting its existing Public Works maintenance yard, which directly borders Paradise Creek, to a transit-oriented residential housing project and a public park. In addition to converting these areas to land uses with lower pollutant discharge potential, water quality treatment measures are being incorporated into the project designs.

With the help of a community group, Paradise Creek Educational Park, Inc., National City was able to secure a grant for Paradise Creek Educational Park that provides the resources to remove existing impervious area and replace it with native vegetation. As part of the project, a bioretention area and an educational garden will also be installed at Paradise Creek Educational Park. Paradise Creek Educational Park, Inc. also maintains native vegetation along portions of Paradise Creek and completes regular creek cleanups.

During industrial and commercial facility inspections during FY 2016, shopping centers and restaurants were targeted in the Paradise Creek drainage area because they can be sources of trash. Inspections focused on requiring facilities to keep dumpster lids closed and surrounding areas clean. Through its development review process, National City also requires all newly constructed trash enclosures to have a full four-sided enclosure, be located away from storm drains, and have structural overhead cover.

To eliminate illicit discharges and connections, National City inspects its major MS4 outfalls twice per year and operates a public hotline to receive reports from the public and city staff and contractors. National City has also coordinated with the Sweetwater Authority on water conservation efforts, including reducing irrigation runoff.

Table 6-1 summarizes the key strategies identified for meeting numeric goals for this Focused Priority Condition. National City's full list of strategies, including optional strategies and the implementation status of each, is provided in Appendix 2.

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Table 6-1
Summary of Strategies for Riparian Area Habitat in Paradise Creek

Strategy	Priority Condition Addressed						Implementation Schedule			
	Bacteria	Nutrients	Habitat/Wildlife[1]	Trash	Sediment	Metals	Previous Fiscal Year(s)	**FY 2016**	FY 2017	Future Fiscal Year(s)
Paradise Creek restoration in Kimball Park (NC-32)	X	X	X	X	X			X	X	X
Green infrastructure and other structural BMPs (NC-29 through 31, NC-34)	X	X	X[2]	X	X		X	X	X	X
Impervious surface reduction (NC-33)	X	X	X	X	X			X	X	X
Community partnerships to address trash (NC-35, NC-38)			X[2]	X			X	X	X	X
Catch basin cleaning (NC-14)	X	X	X[2]	X	X		X	X	X	X
Enhanced street sweeping, including using vacuum street sweepers (NC-18)	X	X	X[2]	X	X		X	X	X	X
Inspections of existing development, including higher frequency inspections for sources of trash (NC-9, NC-36)	X	X	X[2]	X	X			X	X	X
Outreach, incentives, and enforcement to reduce irrigation runoff from private properties, partnering with Sweetwater Authority (NC-23, NC-25, NC-26)	X	X	X[2]	X	X			X	X	X

Notes:
µg/L = micrograms per liter; FY = fiscal year; WQO = water quality objective
1. Focused Priority Condition is highlighted in orange.

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6.3 Riparian Area Habitat in Paradise Creek Monitoring and Assessment

Biological monitoring is the primary type of monitoring being completed for the riparian area quality focused priority condition. Vegetation monitoring will be completed once restoration has been completed. California Rapid Assessment Method (CRAM) assessments are also being completed before and after the creek restoration work in Paradise Creek.

In addition to biological monitoring, chemical testing for selenium is also being completed because Paradise Creek is on the 2010 303(d) List as having a selenium impairment. Because the 303(d) listing is based on a small number of samples from 2005, National City initiated a special study to collect sufficient data to support delisting of the selenium impairment. All 48 of the 48 samples collected had selenium concentrations that were below the WQO of 5 μg/L. When combined with the small number of previously collected samples that did include exceedances, the total exceedance rate is low enough to justify removal from the 303(d) List under the State Listing Policy. The study's Monitoring Plan, Quality Assurance Project Plan, and summary report with results are provided in Appendix 4.

6.4 Progress Toward Achieving Numeric Goals

During FY 2016, National City made significant progress toward achieving its interim goals. Table 6-2 summarizes results for habitat restoration goals, and Table 6-3 summarizes results for the selenium delisting interim goal. In FY 2016, laboratory data collected during the Paradise Creek Selenium Special Study were submitted to the State Board during the 2014 303(d) List public comment period. National City has requested the data to be considered during the 2014 303(d) List development; however, this period was not considered to be a data solicitation period. Depending on the State Board's response to National City's comments, the data will also be submitted during the next solicitation period determined by the State Board by FY 2018.

Progress toward meeting habitat restoration goals is presented in Table 6-3.

6.5 Water Quality Strategies and Schedules Adaptations

No modifications to National City's goals, strategies, and schedules presented in the San Diego Bay WMA WQIP are proposed at this time.

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Table 6-2
Progress Toward City of National City Municipal Permit Term Habitat Restoration Goals for the Riparian Area Habitat in Paradise Creek

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2017					
Interim Goal	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
Remove concrete bottom from Paradise Creek: 1,000 linear feet	Linear feet of restored creek	Zero (0) linear feet removed.	Creek restoration that will achieve the numeric goals is under construction.	The Paradise Creek Restoration project is progressing in accordance with a schedule that will allow completion in FY 2017.	None at this time.
Wetland restoration: 6,000 square feet	Square feet of restored wetland	Zero (0) square feet of restored wetlands.			None at this time.
Total native plant restoration, including wetlands: 35,000 square feet	Square feet of native plant restoration	Zero (0) square feet of native plant restoration.			None at this time.
Provide treatment for tributary urbanized areas: 130 acres	Acres of area treated	58.7 acres of treated tributary areas.	49 acres of area treated through LID and other water quality improvement BMP implementation, principally through the "A" Avenue Green Street project.	107.7 of 130 acres treated to date (83%). Additional projects that will treat over 70 acres are currently under construction.	None at this time.

Notes:
% = percent; FY = fiscal year; LID = low-impact development

Table 6-3
Progress Toward City of National City Municipal Permit Term Delisting Goals for the Riparian Area Habitat in Paradise Creek

Planning Period			Assessment Period		
Interim Goal	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
Performance Measure – Achieve by FY 2016					
Collect and Analyze 48 Samples for Selenium, with Zero Exceedances, to Support Removal of Paradise Creek 303(d) Selenium Listing	Data Collection	Four (4) of four (4) samples collected from Paradise Creek in 2005 exceeded the WQO of 5 µg/L.	All 48 of 48 samples collected in 2014 did not exceed the WQO of 5 µg/L.	All 48 samples were collected, with zero (0) exceedances. The goal was 100% achieved.	None at this time, interim goal has been achieved.
Performance Measure – Achieve by FY 2018					
If data support removal of segment from 303(d) List, submit data during earliest available solicitation period (1 data submission).	Data Submission	Zero (0) data submittals from National City.	Data collected in 2014 (48 samples) was submitted during the 2014 303(d) List public comment period, which occurred in 2016. The City has been informed that data from 2014 is not yet being considered, but that it is possible that the State Water Board will allow for an off cycle data submittal within the next couple years.	Data has been submitted, but it has not been formally accepted since no solicitation period for data from 2014 has occurred yet. Data has been uploaded to CEDEN and will be available for the next listing cycle.	None at this time.

Notes:
% = percent; µg/L = micrograms per liter; CEDEN = California Environmental Data Exchange Network; FY = fiscal year; WQO = water quality objective

7 Focused Priority Condition: Physical Aesthetics in Lower Sweetwater and Otay HUs

Physical aesthetics impairment due to trash is a Focused Priority Condition in the Lower Sweetwater and Otay HUs. Trash assessment data, including historical data, public input, existing management plans such as the Otay River Watershed Management Plan (ORWMP), and anticipated future development along the San Diego Bayfront, were factors that elevated physical aesthetics impairments to a Focused Priority Condition. In addition, the RPs proactively aligned their goals and strategies to address the upcoming state-led Trash Amendments. The monitoring and assessment (Section 7.3) for the physical aesthetics Focused Priority Condition will also initiate the analysis and assessment of the trash condition in the Focused Priority Area requirements in the Trash Amendments.

The geographic extent of the Focused Priority Condition in the Lower Sweetwater HU is the jurisdiction of the City of Chula Vista (Chula Vista) west of Interstate 805 and the Port of San Diego south of Sweetwater River to the northern boundary of the site of the former South Bay Power Plant. The geographic extent of the Focused Priority Condition in the Otay River HU is the jurisdiction of Chula Vista west of Interstate 805, the eastern portion of the City of Imperial Beach, and the Port of San Diego jurisdiction from the southern shoreline of the Sweetwater River channel south to Pond 20 (collectively the RPs).

Trash not only affects the physical aesthetics of an area, but also can pose a health risk to humans and wildlife and can affect the beneficial uses of waterways. By focusing on physical aesthetics, the RPs can increase public awareness and education about proper waste disposal, which will ultimately reduce amounts of trash, leading to improvements in water quality. The RPs worked collaboratively to identify final and interim goals for this Focused Priority Condition. RPs have identified strategies to reduce amounts of trash, improve water quality, and increase public awareness and education within their jurisdictions. In addition to reducing trash, implementing strategies to address trash will also address other pollutants, such as bacteria and other water quality pollutants (e.g., sediment and metals), and will protect wildlife from harmful debris, thus achieving multiple pollutant benefits.

7.1 Numeric Goals for Physical Aesthetics

The RPs have implemented strategies to achieve the numeric goals established for the area. The RPs have also set at least one interim goal to be achieved during the Municipal Permit term (see Appendix 3). Interim goals are intended to serve as milestones that help assess progress toward the longer-term goals outlined in the subsections below. A monitoring program also collects data that can be used to help track progress toward goals. The following subsections describe jurisdictional strategy implementation and progress toward interim goals. Monitoring results are then presented in light of the applicable numeric goals following the jurisdiction-specific discussions.

7.2 Strategies and Schedules for Physical Aesthetics

The RPs' approach to improving the physical aesthetics within the Focused Priority Condition during this reporting period was to identify targeted areas within their jurisdictions and implement strategies focused primarily on trash. An initial assessment is built upon available historical maintenance and monitoring to identify high trash-generating areas within the geographic extent of the Focused Priority Condition for Chula Vista, Imperial Beach, and the Port of San Diego. As part of this assessment, opportunities for retrofits or other treatment methods are being identified and prioritized. Retrofits may be structural BMPs such as trash guards or catch basin inserts within the MS4. Other structural BMP options may include requiring retrofits of trash enclosures on private and public property. The RPs have also provided targeted education and outreach within the Focused Priority Condition areas during this reporting period.

The RPs continue to implement their core JRMP requirements, including many strategies that have positive impacts on the water quality of MS4 discharges. To make progress toward their identified goals, the RPs have identified existing JRMP strategies to enhance and have also implemented optional strategies focused on the physical aesthetics Focused Priority Condition.

It is anticipated that a combination of strategies will allow the RPs to make progress toward, and ultimately achieve, the established goals for this Focused Priority Condition. Overall, the RPs have successfully implemented strategies to address the high-priority sources as well as medium-priority sources of trash in the 909.1 and 910.2 HAs during the reporting period (Table 7-1).

Table 7-1
Sources Addressed by RPs' Strategies in FY 2016

Source	Chula Vista	Port of San Diego	Imperial Beach[1]
High Priority			
General Retail/Commercial Areas, Including Eating or Drinking Establishments (or special events)	X	X	X
Medium Priority			
General Industrial Areas	X	X	
Homeless Encampments[2]	X	X	X
Illegal Dumping	X	X	X
Institutional Facilities	X	N/A	N/A
Roads and Highways[3]	X	X	X

Notes:

N/A = not applicable

1. City of Imperial Beach is only in the 910.2 HA.
2. Recognizing that homeless encampments and illegal dumping are neither fully controllable not fully uncontrollable, they have been assigned a priority of medium.
3. Roads and highways are not limited to Chula Vista and Imperial Beach, and the Port of San Diego's jurisdictions.

The RPs initiated baseline trash assessment studies in the reporting period to better understand trash sources in their respective jurisdictions, gauge the adequacy of current efforts, map out potential “hot spot” locations, and identify solutions. The assessments were considered an important first step in the RPs’ approach to meeting the interim and final goals. The findings of the assessments inform management decisions and identify appropriate strategies. Utilizing available data such as historical MS4 maintenance and monitoring data can help the RPs identify high trash generating areas, and evaluate which BMPs are most effective. The baseline assessments are anticipated to be completed in FY 2017

The RPs are participating in the ongoing San Diego Bay Debris Study, which involves collaboration with a number of local and regional governmental agencies, the United States Navy, environmental groups, and academia. The RPs are participating in this WMA optional strategy via financial support or in-kind services contributions, such as field work assistance. The study intends to provide a first-time assessment of San Diego Bay with respect to trash. Together with the jurisdictional MS4-focused baseline trash assessment, the San Diego Debris Study will help guide RP efforts to assess current efforts and also identify potential future management actions to help address land-based watershed sources of trash and debris.

A complete list of strategies, including optional strategies, to be implemented within the WMA, is provided in Appendix 2. Key strategies implemented during the reporting period are summarized in Table 7-2. Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the WQIP will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

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Table 7-2
Summary of Strategies for Physical Aesthetics in Sweetwater and Otay River HUs

Strategy	Jurisdiction[1]			Additional Water Quality Condition Addressed by Strategy				Highlight Summary
	Chula Vista	Port of San Diego	Imperial Beach	Bacteria	Nutrients	Sediment	Metals	
Enhanced commercial, industrial, and/or municipal inspections	CV-24	PO-9, PO-21	IB-17	X		X	X	• Chula Vista amended its inspection form (CV-24) to collect additional data about trash management from industrial and commercial facilities. Over 260 inspections were performed that included this additional data. • The Port of San Diego assessed eight special events (>500 people) at two parks (Chula Vista Bayside Park and Chula Vista Marina View Park) in the 909.1 HA. The Port of San Diego established a set of designated BMPs for all special events and conducted pre- and post-event inspections for each event (PO-9). All of the events properly implemented BMPs. • The Port of San Diego inspected five general retail or commercial facilities and six industrial facilities in the two HAs. One commercial facility and two industrial facilities were cited for unauthorized non-storm water discharges and/or for BMPs to address trash, bacteria, and/or metals and required escalated enforcement. • Imperial Beach amended its commercial inspection form (IB-17) to collect additional trash data from commercial facilities.

Table 7-2 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Sweetwater and Otay River HUs

Strategy	Jurisdiction[1]			Additional Water Quality Condition Addressed by Strategy				Highlight Summary
	Chula Vista	Port of San Diego	Imperial Beach	Bacteria	Nutrients	Sediment	Metals	
Installation of structural controls (partial/full capture trash BMPs), where feasible		PO-02, PO-45	IB-63	X		X	X	• The Port of San Diego installed a fence along the southern perimeter of Pond 20 in the 910.2 HA to prevent trash and debris from entering Pond 20 starting in FY 2015 (PO-45 Optional). • All bioretention facilities and high-rate media filters were properly maintained at two Port of San Diego PDPs (PO-02) in the 909.1 HA (H Street Extension project and the South Campus Phase 4A Demolition project).
San Diego Bay Watershed education initiatives	CV-22, CV-25	PO-17	IB-43b	X	X	X	X	• Chula Vista continued to improve upon its CLEAN education campaign (CV-22, CV-25) by making significant improvements to its website, updating its residential storm water education brochures, and providing educational information in its bimonthly trash bills.

Table 7-2 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Sweetwater and Otay River HUs

Strategy	Jurisdiction[1]			Additional Water Quality Condition Addressed by Strategy				Highlight Summary
	Chula Vista	Port of San Diego	Imperial Beach	Bacteria	Nutrients	Sediment	Metals	
San Diego Bay Watershed education initiatives (continued)	CV-22, CV-25	PO-17	IB-43b	X	X	X	X	• The Port of San Diego provided funding toward the Chula Vista Elementary School District Coastal Education Program through its core Public Education and Participation program (PO-17). Through classroom and hands-on activities, approximately 4,900 students learned about San Diego Bay's diverse wildlife and vegetation and environmental challenges, including storm water and trash related issues. • Port of San Diego staff created an approximately 15-minute bilingual (English and Spanish) training video "*Storm water Best Management Practices (BMP) Training for Industrial and Commercial Facilities*" in FY 2016 and showed it at a number of training events for commercial and industrial tenants and Port of San Diego staff. https://www.youtube.com/watch?v=Xytid-LlxMk • Imperial Beach amended the agreement with I Love a Clean San Diego to have additional education activities in the special events held within the city. (IB-43)

Table 7-2 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Sweetwater and Otay River HUs

Strategy	Jurisdiction[1]			Additional Water Quality Condition Addressed by Strategy				Highlight Summary
	Chula Vista	Port of San Diego	Imperial Beach	Bacteria	Nutrients	Sediment	Metals	
Trash cleanups	CV-37	PO-35		X				• The Port of San Diego participated in and/or sponsored 16 cleanups overall in Port tidelands/San Diego Bay (PO-35 optional). Nine cleanup events occurred in the 909.1 and 910.2 HAs during the reporting period. A total of 2.7 tons of trash and debris were collected by approximately 398 people. • Chula Vista hosted three cleanup events (CV-37) in 910.2 that focused efforts on trash and graffiti removal within specific communities.
Regional efforts to address pollutants associated with homelessness	CV-36, CV-37	PO-35, PO-37	IB-68	X			X	• Chula Vista initiated a Homeless Outreach Team (CV-36) that coordinates weekly cleanups of trash and debris from city parks and facilities and problem areas. It is estimated that over 1,000 pounds of trash are collected each week. • The Port of San Diego coordinates, as needed, with Chula Vista to identify problem areas impacting the tidelands and to determine appropriate actions. In addition, the Port of San Diego worked with the Alpha Project (PO-37 optional) to provide referrals and/or services for approximately 465 people on tidelands between January and July 2016.

Table 7-2 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Sweetwater and Otay River HUs

Strategy	Jurisdiction[1]			Additional Water Quality Condition Addressed by Strategy				Highlight Summary
	Chula Vista	Port of San Diego	Imperial Beach	Bacteria	Nutrients	Sediment	Metals	
Baseline Trash Assessments and Other Studies	CV-31, CV-33	PO-26, PO-34	IB-63, IB-66					• Baseline Trash Assessments (CV-33, IB-66, and PO-34 optional) were conducted to identify high trash generating areas and potential opportunities for retrofits, such as installation of full capture systems to capture trash in storm water. • The Port of San Diego initiated a trash receptacle assessment in 18 parks (PO-26 optional) to gain insight on existing trash measures and potential retrofit opportunities. The assessment is set to be completed early FY 2017. • Imperial Beach completed an analysis of the feasibility of a trash capture system for the drainage basin H (IB-63). • Chula Vista (CV-31), the Port of San Diego, and Imperial Beach expanded their trash monitoring programs to assess paired receiving water and MS4 outfall sites, and collect additional trash source identification information within the focused area.

Table 7-2 (continued)
RP's Strategies Identified for Meeting Interim and Final Goals
Physical Aesthetics in Sweetwater and Otay River HUs

Strategy	Jurisdiction[1]			Additional Water Quality Condition Addressed by Strategy				Highlight Summary
	Chula Vista	Port of San Diego	Imperial Beach	Bacteria	Nutrients	Sediment	Metals	
San Diego Bay Debris Study	CV-39b	PO-39	IB-66	X			X	• Chula Vista (CV-39b), Imperial Beach, and the Port of San Diego (PO-39 optional) is collaborating with a workgroup[1] led by SCCWRP and Amec Foster Wheeler to characterize and assess the trash and debris in San Diego Bay and its associated watersheds. The final report is currently scheduled to be available in FY 2017.

Notes:
BMP = best management practice; FY = fiscal year; HA = hydrologic area; PDP = priority development project; SCCWRP = Southern California Coastal Water Research Project
1. Other participants include: the San Diego Regional Water Quality Control Board, US Naval Facilities Engineering Command, San Diego Coastkeeper, Ocean Discovery Institute, California Sea Grant, WILDCOAST, Surfrider Foundation San Diego, members of the San Diego Bay Port Tenants Association, Southern California Coastal Waters Research Project, and Amec Foster Wheeler Environment & Infrastucture, Inc.

The RPs coordinated in the wet weather monitoring efforts of the San Diego Bay Monitoring and Assessment Program (MAP). During FY 2016, the RPs coordinated their field efforts for physical aesthetics MS4 outfall and receiving water monitoring at their respective monitoring locations, as described in the WQIP Monitoring and Assessment Program. Monitoring efforts are discussed further in Section 7.3 and Appendix 4, Section 5.

7.2.1 City of Chula Vista Strategies and Schedules

Chula Vista is located within the Sweetwater River and Otay River subwatersheds, as shown in Figures 7-1 and 7-2. The western portion of Chula Vista, west of Interstate 805, typically has older infrastructure and is more densely populated. The portion of Chula Vista east of Interstate 805 generally has newer development and infrastructure, consisting of more pervious area and permanent BMP implementation, because this area was developed under more the recent Municipal Permit land development requirements. Although the Focused Priority Condition area is in the western portion of Chula Vista, the majority of strategies were implemented city-wide. Jurisdictional strategies target a number of pollutants; however, the focus of most strategies is to target trash.

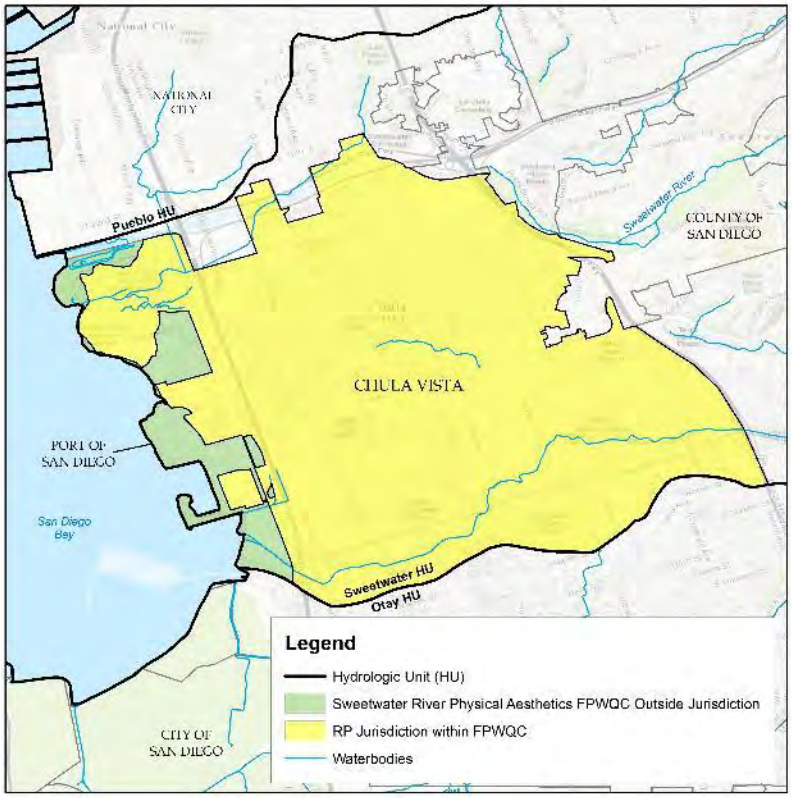

Figure 7-1
Chula Vista's Jurisdiction Within the Sweetwater Physical Aesthetics Focused Priority Area

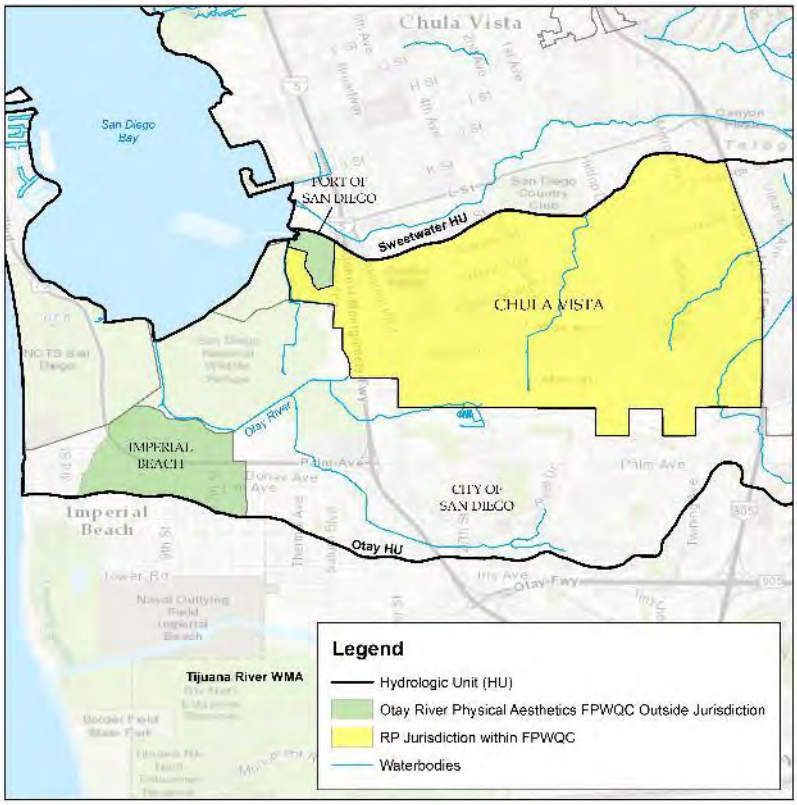

Figure 7-2
Chula Vista's Jurisdiction Within the Otay Physical Aesthetics Focused Priority Condition

Education and Outreach

Chula Vista has a well-rounded education and outreach program, which includes distribution of educational inserts in bimonthly trash bills, coordination of cleanup events with I Love a Clean San Diego, a revamped website that provides easier access to city resources, and updated residential storm water education brochures. The Chula Vista CLEAN Team, which consists of the Conservation, Environmental Services, and Storm Water Management Sections, partner together to provide residents with a cohesive environmental message. The CLEAN Team regularly collaborates on City special events, educational brochures, and environmental programs. In addition, a new City Operations Sustainability Plan, detailing water use, energy use, green purchasing, recycling and waste management, pollution prevention, transportation, green

Chula Vista community members stenciling storm drains at the Annual Beautify Chula event

buildings, and green infrastructure, was adopted in June 2014. Chula Vista also participates in the Regional Think Blue San Diego educational program.

Inspections Program

The WQIP identified general retail and commercial areas, including eating and drinking establishments, as a high-priority source of trash. To address this source, Chula Vista enhanced its commercial and industrial facility inspection forms to collect additional information about the trash enclosures and trash receptacles of these facilities. FY 2016 was the first reporting period in which this additional information was collected. Chula Vista can use these data to help individual facilities improve their trash management BMP implementation, and data collected over time can help Chula Vista identify particular areas where additional efforts are needed, such as targeted education or increased inspection frequency.

Homeless Outreach Team

Notably, Chula Vista formed a Homeless Outreach Team during the reporting period, which consists of Chula Vista Parks, Police Department, Public Works staff, and a variety of nonprofit entities that help to provide a holistic approach to tackling homelessness issues. The program targets a number of city parks, facilities, and problem areas. Staff visit these areas once per week and can remove over 1,000 pounds of trash per week from the encampments. Funding for additional staff was added during the reporting period, which helps to bolster and strengthen the program.

Baseline Trash Assessment Study

An important portion of targeting trash in Chula Vista was the initiation of a Baseline Trash Assessment and BMP Feasibility Study. Planning for the study took place in the reporting period, with results of the study expected in the next fiscal year. The goal of the study is to identify the problem trash areas of Chula Vista and to determine which BMPs are the most appropriate to implement. In addition to helping Chula Vista achieve its strategies and goals to target trash, it helps to guide the city in compliance with the Statewide Trash Amendments. Results of the study are expected to help inform Chula Vista about where program improvements and adjustments are needed, where BMP retrofits and installations are feasible, and how to plan for meeting the WQIP trash goals.

Trash Monitoring and Assessment

In collaboration with the Port of San Diego and Imperial Beach, Chula Vista also expanded its trash assessment monitoring program to help assess progress in implementing strategies and meeting goals. The expanded program includes additional source identification data gathering for MS4 outfalls in the Focused Priority Condition area, as well as paired receiving water and MS4 outfall monitoring.

Although this reporting year was based on only four months of implementation of the WQIP, Chula Vista made strides in implementing several strategies that work toward achieving WQIP goals. Enhanced educational programs in collaboration with the CLEAN Team, the commencement of the Trash Study, and expanded trash inspections and monitoring are a few of the notable activities that took place during the reporting period. Strategies and implementation schedules will be adjusted as necessary over time through the adaptive management process

7.2.2 Port of San Diego Strategies and Schedules

The Port of San Diego's approach to addressing this Focused Priority Condition (physical aesthetics due to trash pollution) was to implement core JRMP and optional strategies (both jurisdictional and WMA). The approach includes implementing some strategies jurisdiction-wide, while targeting sources and collaborating with Chula Vista and Imperial Beach, when possible, in the Lower Sweetwater River (909.1 HA) and Otay River (910.2 HA). The Port of San Diego identified physical aesthetics (due to trash) because public input and the ORWMP identified trash as a priority issue in these HAs, and the recently adopted Trash Amendments. Figures 7-3 and 7-4 show the Port of San Diego's jurisdiction within the two HAs.

Lower Sweetwater (909.1 HA): The Port of San Diego's jurisdictional area in this HA is approximately 347 acres of the tidelands overlaying portions of Chula Vista. Existing facilities or land uses that may be potential sources of trash in this area include four commercial facilities, 6 industrial facilities, 12 municipal facilities, and 3 parks (Chula Vista Bayside Park, Chula Vista Bayfront Park, and Chula Vista Marina View Park). In addition to identifying strategies to address the current sources, the Port of San Diego is also identifying methods to address trash in the future development of the Chula Vista Bayfront area as part of the Port's Chula Vista Bayfront Master Plan.

Otay River (910.2 HA): The Port of San Diego's jurisdictional area in this HA is approximately 241 acres. Although current use of the property within the Port of San Diego in this area is limited, the future Chula Vista Bayfront development will likely require a variety of strategies to be implemented to address trash from both development and commercial and industrial sources. Existing facilities or land uses that may be potential

sources of trash in this area of the Port of San Diego's boundaries include one commercial facility and the site of the former South Bay Power Plant. To effectively target potential problem areas, address the potential sources identified above, and prioritize efforts to address trash, the Port of San Diego has used the same approach used in the Lower Sweetwater River HA.

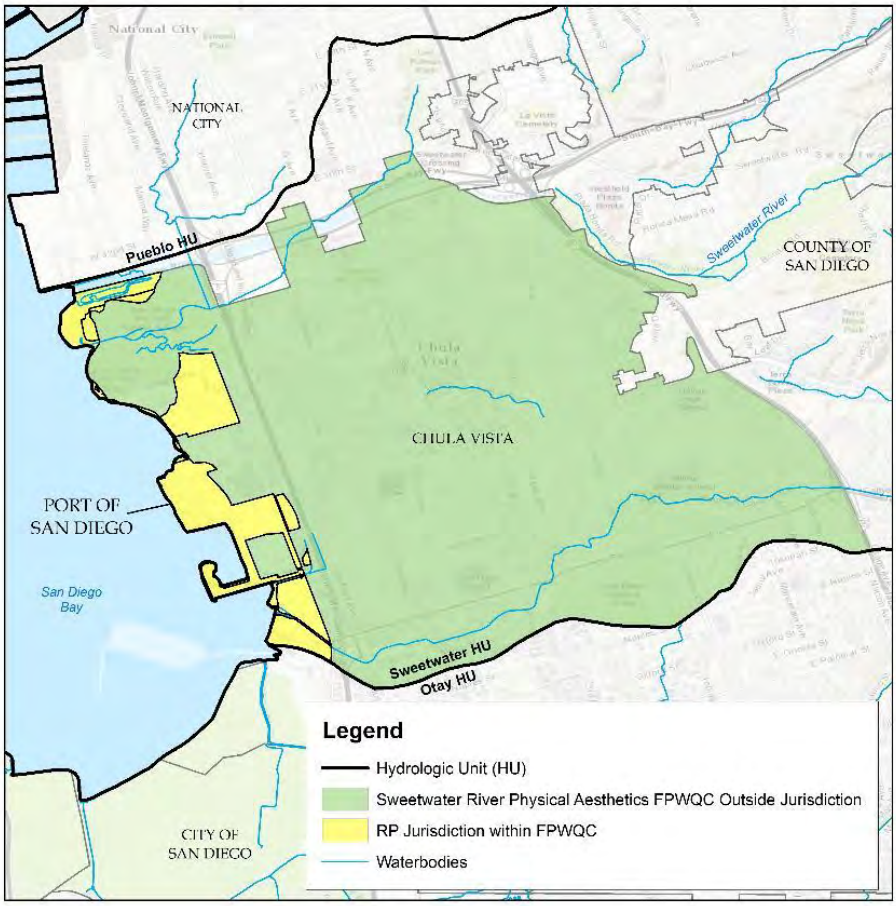

Figure 7-3
Port of San Diego's Jurisdiction within the Lower Sweetwater HA Physical Aesthetics Focused Priority Condition

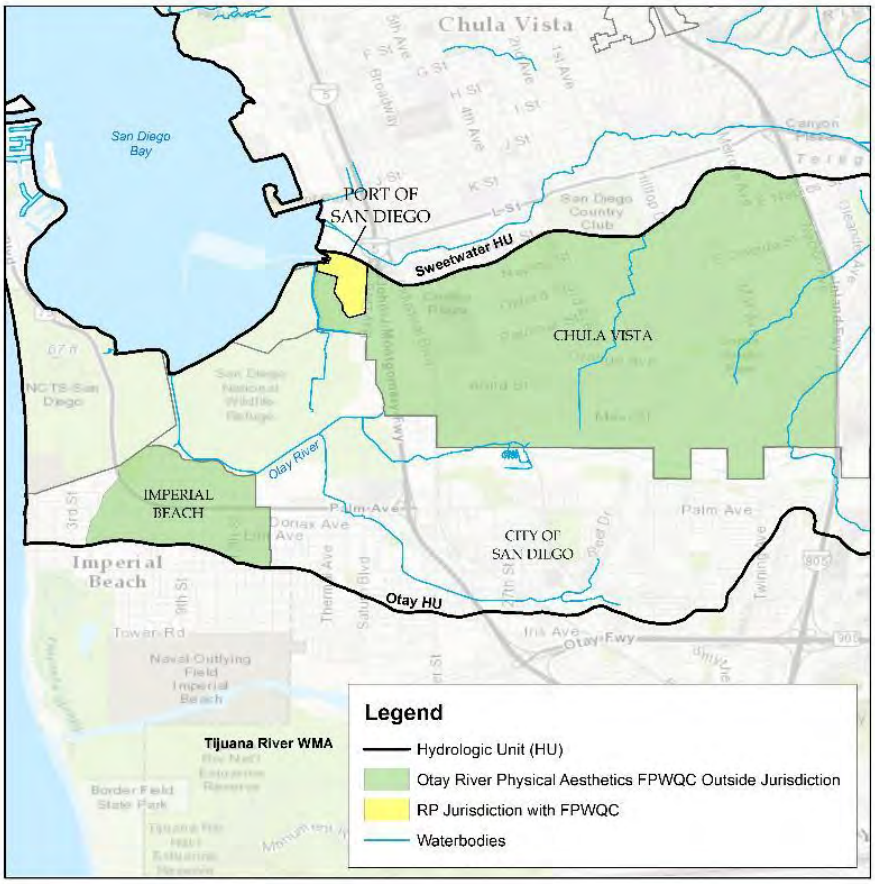

Figure 7-4
Port of San Diego's Jurisdiction Within the Otay River HA Physical Aesthetics Focused Priority Condition

Strategies and implementation schedules focused on high and medium sources of trash and were chosen on the basis of the best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. Source control strategies targeting trash include education and outreach, and a review of existing municipal trash and waste diversion measures (i.e., strategies to reduce the amount of waste going to local landfills or contributing to littering) to identify potential need for structural or source control improvements at high-volume trash-generating areas. A total of 24 strategies, including core jurisdictional and optional strategies, were implemented as planned in the reporting year. To expand on strategies highlighted in Table 7-1, a brief summary of jurisdictional strategies results for this reporting year is provided below. Additional information on all of the Port of San Diego's strategies implemented in FY 2016 are in Appendix 2.

Development Projects

One PDP project occurred in this area of the Port of San Diego tidelands (PO-2). The Port carried out an annual project inspection at the H Street Extension Project that required a follow-up to verify all required post-construction BMPs (i.e., bioretention facilities and high-rate media filters) were installed and maintained as required. The follow-up inspection found no citations or escalated enforcement was required. To ensure the new Municipal Permit and WQIP requirements were understood and followed, Port of San Diego staff also provided outreach and training to applicable internal departments and to the development community throughout the reporting year (PO-3 and PO-4).

Bioretention facility at H Street Extension

Construction Activities

No escalated enforcement measures were required on any project within the Port's jurisdiction during the 2015-16 year. The Minor Maintenance and Construction Activities BMP Guidance document was developed in this reporting period (PO-24 optional). The guidance document was designed to help General Services staff be aware of and to implement necessary BMP procedures to mitigate the discharge of trash, contaminated debris, and other pollutants when engaged in minor maintenance and construction activities at municipal facilities and parks such as Chula Vista Bayside Park and Chula Vista Marina View Park. One training events were provided for 88 staff on the use of the guidance document to select, implement, and monitor the BMPs (PO-25 optional).

Commercial and Industrial Activities

A highlight of the Port of San Diego's commercial and industrial program was a training video created in-house by staff to provide facilities information on storm water management concepts and on the new Municipal Permit requirements. The training video, entitled "*Port of San Diego's Storm water Best Management Practices (BMP) Training for Industrial and Commercial Facilities,*" is approximately 15 minutes long and is in English and Spanish. The video was made available to commercial and industrial tenants to be shown at training events. The training video has been viewed 1,191 times since it was published in November 2015 (https://www.youtube.com/watch?v=Xytid-LlxMk).

The Port of San Diego inspected five commercial facilities and six industrial facilities (PO-7) in the two HAs during the reporting year. Overall, the commercial facilities were successfully implementing BMPs; however, one facility was cited for unauthorized non-storm water discharges and for waste handling BMPs and required escalated enforcement.

Inspections of the six industrial facilities in the 909.1 HA found two facilities that were correctly implementing the BMPs, as described in their respective SWPPPs. Of the remaining four industrial facilities where enforcement was necessary, two were cited for unauthorized non-storm water discharges and/or for BMPs to address trash, bacteria,

and/or metals and required escalated enforcement. All commercial and industrial non-compliance issues requiring corrective enforcement actions were resolved and closed.

Municipal Activities

Strategies that are also core JRMP municipal activities that effectively reduced trash and, to a lesser extent, bacteria include, but are not limited to, MS4 infrastructure cleaning (PO-10), street sweeping (PO-11), and municipal facility inspections (PO-8). Five years of Port of San Diego-wide MS4 monitoring data were assessed (PO-30 optional) in FY 2016 to identify MS4 structures with trash and debris levels that would trigger an adjustment to their cleaning frequencies. The analysis found the current cleaning frequency appears adequate for all MS4 structures in the 909.1 or 910.2 HAs, with no adjustments needed for the MS4 structures in those areas. The Port of San Diego also purchased a regenerative air street sweeper (PO-28 optional) in FY 2015 to improve sweeping effectiveness of the roads and parking lots it maintains. The Port of San Diego began to use the street sweeper in FY 2016. An assessment of the effectiveness of the new sweeper after the first year of use will likely occur in FY 2017.

Municipal inspections found that BMPs to minimize trash were successfully implemented in the Port's municipal parks located in these HAs (PO-8). Any issues identified in the initial inspection of municipal facilities such as parks in these HAs were subsequently addressed by Port of San Diego staff. Special events (for more than 500 people) are held periodically through each fiscal year at the Port of San Diego's various parks. The Port of San Diego established a set of designated BMPs, including those for trash, and conducts pre- and post-event inspections for each event (PO-9). Special events at two parks (Chula Vista Bayside Park and Chula Vista Marina View Park) in these HAs often include eating and drinking activities that generate trash. Pre and post-event inspections found all eight special events in the two HAs have been successful in implementing BMPs to address trash and bacteria.

The Port of San Diego-wide trash receptacle assessment (PO-26 optional) initiated in FY 2016 included the three parks in this area. The information gained from the study upon its completion in the next reporting period will improve trash management in the parks with the goal of reducing littering or illegal dumping and promoting proper waste disposal. The Port of San Diego will continue to implement its core program for publicly maintained facilities such as MS4 infrastructure, roadways, and parks.

Installation of Structural Controls

The Port of San Diego installed a 950-foot custom fence that replaced a chain-link fence along the southern perimeter of the 95 acre Pond 20 site at 1400 Palm Avenue. The Port of San Diego funded the project through its Capital Improvement Program. The new fence

was designed with significant public input and incorporates local flora, fauna, and surfboards to enhance the site's unique, panoramic bay view. The fence also helps protect the Pond 20 area from trash and debris.

Baseline Trash Assessment

To gain insight of the current trash conditions and to be able to help guide future management actions that may be needed, the Port of San Diego initiated an assessment of available trash data to identify high-volume trash-generating areas and locations where implementation of Trash BMP retrofits may be feasible (PO-34 optional). Data assessed were from previous JRMP activities (i.e., dry weather monitoring, street sweeping, MS4 maintenance, and park maintenance), cleanup events, and other data sources relevant to this portion of the Port of San Diego's jurisdiction. The assessment will be completed in FY 2017, and will help prioritize land uses or areas, and identify where full capture systems or partial capture devices may potentially be implemented to meet the WQIP goals and comply with the Trash Amendments. The information will be integrated into the Port of San Diego-wide approach to address trash and will be used to select strategies to be used, ranging from source control activities and retrofitting opportunities to installation of full capture systems.

The full list of optional strategies applicable to the Port of San Diego and the implementation status of each are provided in Appendix 2.

7.2.3 City of Imperial Beach Strategies and Schedules

Imperial Beach's approach to improving the physical aesthetics within the Otay River HA is to identify targeted areas within its jurisdiction and to implement strategies focused primarily on trash. Imperial Beach maintains two major outfalls (H-line and K-line) in the Otay River HA that have known sources of trash from commercial areas, Highway 75, and illegal dumping. Figure 7-5 shows Imperial Beach's jurisdiction within the Otay Focused Priority Condition, where the strategies will be implemented.

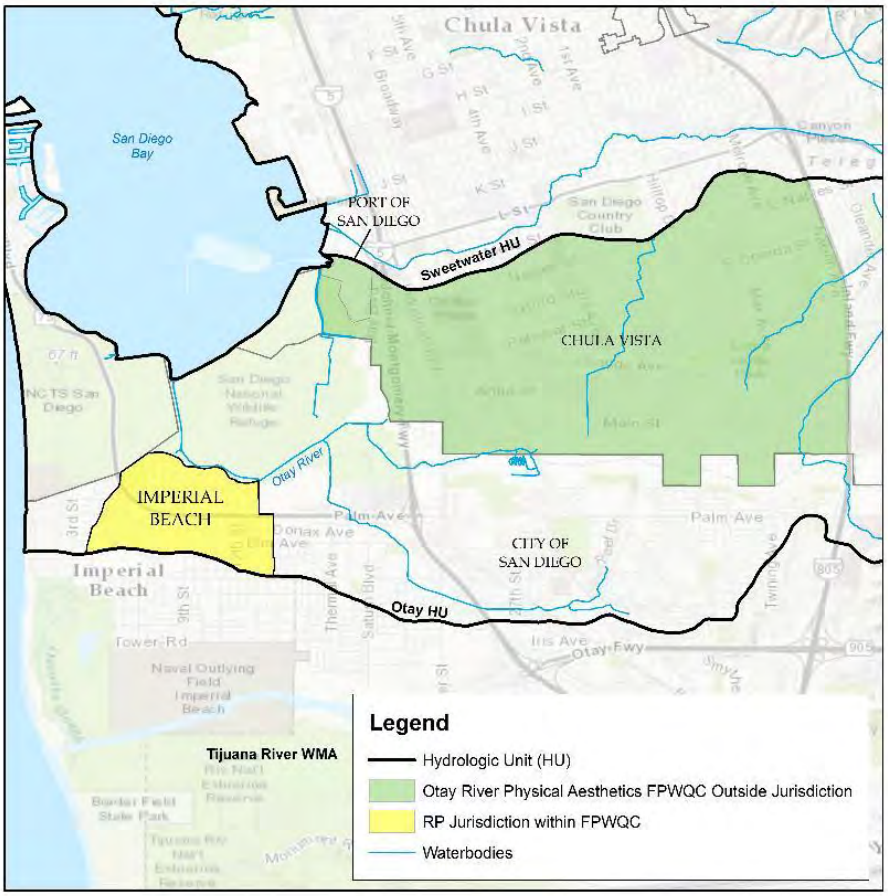

Figure 7-5
Imperial Beach's Jurisdiction Within the Otay River HU Physical Aesthetics Focused Priority Condition

To provide details of the strategies implemented in this reporting period (FY 2016) as summarized in Appendix 2, a synopsis of implemented jurisdictional strategies is provided below.

Improvement of Dirt Alleys (IB-53)

During this reporting period, Imperial Beach completed design and construction of the first phase of alley improvements for 14 alley segments (over 1 mile of dirt alleys) in the community. This first phase of alley improvements specifically targets alleys in the Tijuana River watershed and implements a green streets design that involves permeable concrete, storm water retention, and dry wells. (See the Tijuana River WQIP Annual Report for project details.)

Because of the success of and significant community support for the first phase of alley improvements, on November 18, 2016, the Imperial Beach City Council authorized the accelerated design and construction of the second phase of alley improvements for the eight remaining unimproved alley segments in the city. The alleys included in this second project phase will provide a multi-pollutant water quality benefit and will add another 0.53 mile of green alleys in Imperial Beach. The alleys that are included for the second phase are all located in the San Diego Bay WMA and are designed to specifically target the priority pollutants for trash and sediment.

Street Sweeping

Imperial Beach provides street sweeping service around the high priority areas to target trash, sediment, and debris collected on the street. A total of 130 curb miles are swept per month, including weekly sweeping of commercial areas such as open stripped and raised curb medians on Palm Avenue, Highway 75, 13th Street, Seacoast Drive, and Ocean Lane.

10th St Bikeway Access Project (IB-34b) and Habitat Restoration (IB-54)

In February 2014, Imperial Beach completed the 10th Street Bikeway Access project that includes a storm water bioswale to treat urban runoff from the Public Works facility and flow from the surrounding residential neighborhood. Trash is captured in the energy dissipation system and in the detention pond during storm events and is cleaned up by Imperial Beach maintenance crews on a routine basis. The bioswale provides storm water capture and retention of 33,300 cubic feet. During this reporting period, Imperial Beach provided regular maintenance of the bioswale and over 1 acre of native plant restoration onsite. In addition, Imperial Beach supported an Eagle Scout Project by Troop 53 in North Park to provide continuing maintenance for the native habitat on the site.

Imperial Beach's Bikeway Access Project is also part of the larger United States Fish and Wildlife Service Birder's Point Project (IB-54) to complete a walking trail and series of overlook observation decks along southern San Diego Bay. During the reporting period, the Fish and Wildlife Service completed construction on the walking path and two of the overlook observation decks. This project includes native plant restoration and various interpretive elements to engage the public. Imperial Beach will continue to coordinate restoration efforts and shared maintenance responsibilities with the Fish and Wildlife Service along the city's boundary with San Diego Bay.

El Niño impacts of flooding on the Bayshore Bike Path in Imperial Beach

Bikeway Village Redevelopment Project (IB-58)

The Bikeway Village Project is a public private partnership to redevelop the northern end of 13th Street and to refurbish old industrial buildings into new commercial uses. This project supports Imperial Beach's eco-tourism vision and multiple storm water benefits that include improving a blighted area of the community where illegal dumping is a known issue and creating new storm water retention basins. The Port of San Diego is also partnering in this project and is constructing a new decorative wrought iron fence along the eastern perimeter of 13th Street. During this reporting period, the developer received permit approval and started construction on the project. The developer, Imperial Beach, and Port of San Diego will continue construction over the next reporting period.

Trash Capture H-Outfall Drainage Basin (IB-63)

Imperial Beach's primary outfall into San Diego Bay WMA is the H-line outfall. The city completed multiple studies during the reporting period to investigate options for installing a full trash capture system for this drainage basin, including:

- Bayside Drainage Feasibility Analysis
- Imperial Beach Sea Level Rise and Adaptation Study
- Imperial Beach Drainage Basin H Trash Capture Feasibility Study

These studies identified very serious flooding concerns from impacts of sea level rise on the existing undersized H storm drain line. Even the warm water associated with the El Niño during this reporting period resulted in record sea level heights for San Diego Bay and street flooding through the H storm drain line during high tides. Full trash capture is

feasible on the H-line, but it will need to be done as part of a project to increase the drainage capacity for the H-line and part of an overall adaptation plan for sea level rise.

Collaboration with other watershed stakeholders is integral to Imperial Beach's approach to water quality improvement. Imperial Beach is bordered to the north by the South San Diego Bay Unit of the National Wildlife Refuge, which includes 2,620 acres of important intertidal mudflats, eel grass beds, salt marshes, and submerged tidelands. Imperial Beach partners with the Fish and Wildlife Service and other agencies to protect and enhance wildlife habitat in and around South San Diego Bay, which also serves to provide water quality benefits to the upper watershed. There are several ongoing or planned restoration projects for the South San Diego Bay tidelands and Otay River flood plain that Imperial Beach supports through WMA strategies.

In addition to supporting WMA strategies, Imperial Beach implements a green streets program that incorporates LID and storm water treatment facilities where feasible into capital improvement program projects. Numerous projects are currently being implemented or are under design in the Otay River HA section of Imperial Beach and will provide addition storm water treatment and retention opportunities before discharging into San Diego Bay.

Imperial Beach also implements an effective source control program to maintain MS4 infrastructure and public roadways, and to address discharges from existing development to reduce bacteria, trash, and other pollutants from MS4s to meet the physical aesthetics goals. Effective jurisdictional strategies for trash include street sweeping, annual MS4 operations and maintenance, and targeted cleanup activities. Imperial Beach also maintains numerous trash capture devices throughout the city and is investigating expansion of the program. For the Otay River HA, Imperial Beach is investigating the feasibility of a new trash capture system for the H-outfall drainage basin. The careful consideration of the appropriate trash capture device for any location in Imperial Beach is a necessity because the flat grade and proximity to sea level can result in the flooding of public and private property. Imperial Beach plans to add additional structural treatment controls for trash where feasible.

7.3 Monitoring and Assessment for Physical Aesthetics

Physical aesthetics monitoring was a collaborative effort by the Port of San Diego, Chula Vista, and Imperial Beach. To assess progress toward meeting the interim goal, a total of 64 MS4 outfall locations in the Focused Priority Condition area were visited at least once and up to three times, depending on the RP, as part of the dry weather major MS4 outfall monitoring program.

In FY 2016, the RPs also began a paired monitoring approach at 12 MS4 outfalls. The RPs selected nine sites in the Sweetwater HU and three sites in the Otay HU, where the RPs assessed trash in the receiving water adjacent to the major MS4 outfall. Paired monitoring was conducted during two dry weather events (one dry season [May to September] and one wet season [October to April]) and one wet weather event (event within three days following a storm event with at least 0.2 inch of precipitation) annually.

The RPs collaborated on development of a field monitoring sheet to capture an extensive description of the trash conditions at the MS4 outfalls and adjacent receiving water areas that were monitored by each jurisdiction. On November 12, 2015, a calibration field training session was conducted by the participating RPs at two of the paired monitoring locations. The goal of the calibration and training was to standardize the monitoring and observational procedures for all events.

A total of 64 major MS4 outfalls were visited a combined total of 86 times during dry weather within Chula Vista (68 visits), Port of San Diego (16 visits), and Imperial Beach (2 visits). Assessments were conducted by calculating the percentage of visits observed as having "optimal" trash scores or better of the total number of visits. Optimal is defined as less than 10 pieces of trash observed at a site, as set forth by the Trash Assessment form from the Regional Copermittee Monitoring Workgroup.

Of the 86 visits to major MS4 outfall locations, 73% of the visits had "optimal" levels of trash. The most common trash type found at the MS4 sites was categorized as general packaging or plastic bags, with potential source identifications (IDs) noted as littering or household waste. At the receiving water sites, the most prevalent trash was categorized as general packaging with source IDs as transient, household waste, dumping, or littering.

The site visits and the monitoring results, including trash types, potential trash sources, and routes, are further detailed in Appendix 4 and Attachment E.1 of Appendix 4.

7.4 Progress Toward Achieving Numeric Goals

The RPs initiated the water quality data collection for the physical aesthetics Focused Priority Condition during this reporting period that will allow them to report progress toward achieving numeric goals.

Overall, the initial trash assessment results from the MS4 outfall dry weather monitoring results (86 visits) in the combined Sweetwater and Otay HUs showed an optimal (or greater) trash percentage significantly above the baseline percentage of 60%. In addition, the three RPs initiated baseline trash assessment studies in their respective jurisdictions that will also help assess the percentage of drainage area treated by BMPs to be implemented in the future. The trash assessment results will be available in FY 2017. Table 7-3 summarizes the RPs' progress toward interim goals established for the Municipal Permit term in the Sweetwater and Otay HUs.

Table 7-3
Progress Toward Municipal Permit Term Numeric Goal for Physical Aesthetics in Lower Sweetwater HU and Otay River HU

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2018					
Interim Goal and Progress Information	Performance Metric	Interim Goal[1]	Data Collected/ Results	Progress	Adaptive Management Actions
MS4 Discharges % Optimal[2] Trash Assessment Scores	MS4 Outfalls Assessed for Trash	65% Optimal Trash Assessment scores	Visual trash assessment data was collected from 86 visits to major outfall sites.	73% optimal scores were achieved.[3]	No modifications to the numeric goal, schedule, or supporting strategies are proposed.
OR					
MS4 Discharges % of High Volume Trash Drainage Area Treated for Trash within HSAs 909.1 and 910.2[4]	% Drainage Area Feasible for BMP retrofit	10% High Volume Trash Drainage Area Treated	Data were collected in early FY 2016. Results will be available in the report in FY 2017	Studies were implemented in reporting period and will be completed in FY 2017	No modifications to the numeric goal, schedule, or supporting strategies are proposed.

Notes:
% = percent; FY = fiscal year; MS4 = municipal separate storm sewer system

1. Baseline for % Optimal Trash Assessment Scores is 60% and is based on the RPs' cumulative number of site visits of major MS4 outfalls in the Focused Priority Condition area for dry weather and MS4 outfall monitoring during FY 2012 through FY 2014. Baseline for % of High Volume Trash Drainage Area Treated is based on historical trash assessment data. An assessment is needed and will incorporate review of all available trash and source assessment data, drainage areas, and potential locations in high-volume trash-generating areas to feasibly implement structural control BMPs to identify or verify high-volume trash areas and percentage of area feasible to retrofit with trash BMPs. The goals may be updated accordingly and provided in a future annual report.
2. Based on the RPs' cumulative number of site visits of major MS4 outfalls in the Focused Priority Condition area for dry weather and MS4 outfall monitoring during FY 2012 through FY 2014.
3. 76% of 58 outfall visits in 909.1 had optimal or better trash ratings; 68% of 28 outfall visits in 910.2 had optimal trash ratings or better. Trash ratings in both HAs were above the baseline of 60%.
4. These values are based on best available information and current jurisdictional knowledge. A feasibility study is required to determine where BMP retrofits can be implemented. The interim goals may be adapted if needed.

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7.5 Adaptations to Water Quality Strategies and Schedules

No modifications to the goals, strategies, and schedules presented in the San Diego Bay WMA WQIP for Chula Vista, the Port of San Diego, or Imperial Beach are proposed at this time.

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8 Focused Priority Condition: Swimmable Waters (Beaches) in the Coronado HA

Swimmable water at beaches is a Focused Priority Condition within the Coronado HA of the Otay HU. For the purposes of the WQIP, the term swimmable waters relate to use of the receiving water for recreational activities involving body contact with water where ingestion of water is reasonably possible. These beneficial uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, and fishing. Bacteria typically are the pollutant of concern for protecting public health during recreational activities; however, the RPs will adapt this Focused Priority Condition to address other pollutants of concern as they are identified in the future.

The geographic extent of the Focused Priority Condition is the jurisdictional boundaries of the City of Coronado (Coronado) and the Port of San Diego (collectively, RPs) within the Coronado HA of the Otay HU. Swimmable waters (beaches) strategies apply only to the areas within the RPs' jurisdictions and exclude federal properties (e.g., United States Navy facilities).

Progress toward implementing various strategies and monitoring related to these goals is presented in the sections below. This is the first annual report related to this Focused Priority Condition for swimmable waters and because of the timing of the completion of the San Diego Bay WMA WQIP, the programs have been in place and implemented only since February 2016. The relatively short implementation time limits assessment of the program's effectiveness.

8.1 Swimmable Waters in the Coronado HA Numeric Goals

The WQIP interim (FY 2018) and final numeric goals for the Focused Priority Condition are provided in Table 8-1. The RPs identified at least one interim goal to be achieved during the Municipal Permit term. Interim goals during the current permit term are intended to serve as milestones to help assess progress toward the long-term goals to be achieved at the end of FYs 2021 and 2023, as described in Appendix 3.

The RPs implemented a monitoring program to collect data to help track progress toward the goals. The following subsections summarize jurisdictional strategy implementation, assessment of RPs' progress toward interim goals, and monitoring programs.

Public perception of water quality will also be assessed as a strategy starting in FY 2017, following the development of a survey. The public's perception of water quality is equally as important to the RPs within the Coronado HA as is the impairment assessment. Monitoring data alone may not identify the areas of public concern or perception. Survey results will be used within the adaptive management framework to assess the effectiveness of current strategies and to determine changes that may be needed.

8.2 Strategies and Schedules for Swimmable Waters in the Coronado HA

The RPs' approach to improving swimmable beaches is to implement strategies designed to reduce sources of bacteria.

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Table 8-1
Summary of Strategies for Swimmable Waters in the Coronado HA

Strategies	Additional Water Quality Conditions Addressed by Strategy[1]				Summary
	Trash	Nutrients	Sediment	Metals	
Development/redevelopment (residential, commercial)	X	X	X	X	Coronado (CO-4) amended its BMP Design Manual for trash areas to require full four-sided and/or covered enclosures, away from storm drains. The BMP Design Manual was amended for animal-related facilities such as shelters, "doggie day care" facilities, veterinary clinics, breeding, boarding and training facilities, and pet care stores to address sources in outdoor, storage, and other areas as applicable. Coronado's Municipal Code was amended to support additional requirements in the BMP Design Manual that target Focused Priority Conditions identified through plan review and field inspections.
Existing development (commercial/industrial)	X	X	X	X	Coronado (CO-7) and the Port of San Diego (PO-7) coordinated commercial inspection schedules during the reporting year so that the inspections occurred simultaneously at bayside facilities.
Existing development (municipal)	X	X	X		• Coronado (CO-13.1 and 13.3) implemented enhanced beach patrols, beach maintenance activities for trash and debris, additional trash can placement during peak periods, and replenishment of dog bag dispensers. • The Port of San Diego continued to provide public pet waste bags by maintaining bag dispensers at the park and beach (PO 22 optional).

Table 8-1 (continued)
Summary of Strategies for Swimmable Waters in Coronado HA

Strategies	Additional Water Quality Conditions Addressed by Strategy[1]				Summary
	Trash	Nutrients	Sediment	Metals	
MS4 infrastructure			X	X	Coronado (CO-15.3) prepared a Capital Improvement Program to line storm drain segment to prevent groundwater intrusion.
Enhanced existing development inspections	X	X	X	X	• Coronado (CO-12) coordinated with the Port of San Diego on commercial inspection schedules in during the reporting year so the inspections occurred simultaneously. • The Port of San Diego also assessed three special events (for more than 500 people) at Tidelands Park (PO-9) and completed inspections at the all of the events to ensure compliance with Municipal Permit requirements. Of the three special events in the 910.1 HA, all were properly implementing BMPs.
Inspection and/or preventive maintenance program to prevent sewer system backups in public restrooms		X		X	The Port of San Diego effectively implemented the preventative maintenance program for public restrooms at Tidelands Park (PO-23 optional) to prevent sewer discharges from reaching the MS4. In addition, there was no evidence of bathroom cleaning activities being tracked outdoors at the time of the municipal inspection (PO-8) at Tidelands Park in June 2016. Coronado implements a similar inspection, maintenance, and cleaning program at all public restrooms located near beaches and at parks (CO-6 and CO-13.2) to prevent sewer back-ups and spills.

Table 8-1 (continued)
Summary of Strategies for Swimmable Waters in Coronado HA

Strategies	Additional Water Quality Conditions Addressed by Strategy[1]				Summary
	Trash	Nutrients	Sediment	Metals	
Trash and waste measures	X	X			The Port of San Diego initiated an optional strategy for trash and waste in the 910.1 HA in FY 2016. The assessment of trash receptacle assessments in parks (PO-26 optional) was initiated and is scheduled to be completed in FY 2017.

Notes:
BMP = best management practice; FY = fiscal year; HA = hydrologic area
1. High and medium sources identified in Appendix I of the WQIP. *The RPs complete of strategies are located in Appendix 2.
X – Indicates condition benefit

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The RPs have continued to implement their core JRMP requirements, including many strategies that have positive impacts on the water quality of MS4 discharges. To make progress toward their identified goals, the RPs have identified existing JRMP (core) strategies to enhance and have also implemented optional strategies focused on this Focused Priority Condition.

Overall, Coronado and the Port of San Diego successfully implemented strategies to address the high priority sources as well as medium priority sources of bacteria in the 910.1 HA during the reporting period. Table 8-2 highlights a subset of the RPs' strategies identified to meet interim and final goals for this Focused Priority Condition.

It is anticipated that a combination of strategies will allow the RPs to make progress toward, and ultimately achieve, the established goals for this Focused Priority Condition. All strategies were implemented as scheduled in the reporting period. Additional information on Coronado's and the Port of San Diego's approach and strategies is provided in Sections 8.2.1 and 8.2.2, respectively. RPs' complete lists of strategies are provided in Appendix 2.

Table 8-2
Sources Addressed by RPs' Strategies in FY 2016

Source	City of Coronado	Port of San Diego
High Priority		
Animal facilities	X	N/A
Eating or drinking establishments or special events	X	X
Pet waste	X	X
Sewage Infrastructure and activities	X	X
Medium Priority		
Residential Areas[1]	X	N/A
Groundwater	X	N/A
Over-irrigation	X	X

Notes:
N/A = not applicable
1. The Port of San Diego does not have residential land uses.

Strategies and implementation schedules were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. The modifications of core JRMP strategies or optional strategies, or the addition of new strategies, may also be needed to adequately address MS4 sources so that Tidelands Beach can be delisted from the 303(d) List in the future. As strategies are modified, the WQIP will be updated. The implementation of each strategy will be contingent upon annual budget approvals and funding availability.

Implementation of the optional strategies is contingent on circumstances supported by the need for the additional effort, the cost/benefit as compared with other options and strategies, and the availability of funding.

8.2.1 City of Coronado Strategies and Schedules

Coronado's approach to improve swimmable beaches is to implement strategies focused on sources of bacteria and trash, and to obtain a better understanding of the public's perception of water quality conditions. Figure 8-1 shows Coronado's jurisdiction within the Coronado HA Focused Priority Condition, where the strategies are being implemented.

Figure 8-1
Coronado's Jurisdiction Within the Coronado HA Swimmable Beaches Focused Priority Condition

Medium-ranked sources that are non-existent in Coronado include nurseries/greenhouses. Coronado may collaborate or confer with the Port of San Diego about potential non-MS4 sources from boat waste, homeless encampments, and groundwater contribution if suspected or believed to be a potential source depending on jurisdictional authority or boundaries. Coronado may consider low-ranking sources as part of its strategies at its discretion and may add them as part of its adaptive management approach to achieve interim or final goal metrics for swimmable waters.

Core jurisdictional strategies and BMPs listed in Appendix 2 were implemented as planned for the reporting year. Some examples include performing frequent maintenance of public areas, including parks, beaches, and special events, and engaging the public to implement best practices and desirable behaviors (e.g., pet waste collection and disposal). Specifically, jurisdictional strategies underway include daily beach patrols for trash and debris removal and weekly street sweeping and hardscape cleaning in the commercial corridor where eating and drinking establishments are primarily located. In Coronado, most of the MS4 outfalls, including major outfalls, within the Focused Priority Condition area, have low-flow and first-flush diversions to the sanitary sewer to prevent bacteria from entering the receiving waters during dry weather and during the initial portions of storms. There are 13 low-flow and first-flush diversions from the MS4 to the sanitary sewer throughout Coronado that are proactively inspected bimonthly. Coronado has an extensive, comprehensive operation and maintenance program of its storm drain (or MS4) and sewage infrastructure that is instrumental to achieving and maintaining swimmable beaches. Examples include daily restroom inspections/cleaning and twice-per-week inspections at pump stations at beach restrooms. Staff activities in terms of operation and maintenance, and response to incidents focus on health and safety of employees, the public, and the environment with emphasis on preserving beach water quality.

Coronado's North Beach (Dog Beach)

The continuous maintenance of public areas and facilities reduces the amounts of trash, bacteria, sediment, and other pollutants on beaches and in receiving waters. In addition, Coronado administers surveys to collect data to inform targeted education and outreach campaigns and to evaluate municipal services. Collaboration with the other RPs to assess public perception will build upon historical data to guide adaptive management for Coronado. The assessments are planned for next fiscal year as originally scheduled.

To expand on examples provided in Table 8-1, jurisdictional strategies that were implemented this reporting year include the following.

Development Planning Component

Jurisdictional strategy CO-4: Coronado's BMP Design Manual and Municipal Code were amended to address potential sources of bacteria through BMP requirements. Coronado enhanced the Model BMP Design Manual to include additional BMPs and requirements for potential sources of bacteria from specific types of development (for example, trash enclosure types and design requirements for restaurants identified through inspections

that have persistent problems with trash management). To support the enhanced BMP Design Manual, Coronado's Municipal Code was updated to provide the required legal authority.

Existing Development (Commercial/Industrial) Component

Jurisdictional strategy CO-7: High-priority commercial facilities were inspected. Several facilities located along the bay's waterfront were jointly inspected by Coronado and the Port of San Diego to ensure that potential sources of bacteria are inspected, identified, and addressed, if needed. Some of these facilities may have operations in only one of the RP's jurisdictions or in both. By conducting joint inspections, RPs ensure that each facility receives a thorough inspection and that all BMPs are properly implemented. These joint inspections also provide for more uniform requirements and enforcement, when needed.

MS4 Infrastructure

Jurisdictional strategy CO-15.3: Coronado is proactively repairing/replacing MS4 infrastructure for proper operation and function. During this reporting year, Coronado initiated an MS4 capital improvement project to eliminate groundwater infiltration to the MS4 in the Country Club/Parker drainage basin on the northwestern end of the city's village area. Project planning and design to install a liner in the existing storm drain and perform other repairs were completed. The Public Services and Engineering Department prepared bid documents and initiated regulatory permitting just as the fiscal year ended. The project is scheduled to start construction in early 2017. Upon completion, this project will have multiple environmental benefits, including reducing potential bacteria regrowth in the MS4 from standing groundwater in the pipeline, eliminating groundwater diversion to the sanitary sewer (which in turn reduces the risk of sewer system overflows and strain on the system), reducing the potential for bacteria to the receiving waters, and reducing greenhouse gases from pump operations to dewater the MS4.

Enhanced existing development inspections

Jurisdictional strategy CO-12: Coronado and the Port of San Diego are implementing enhanced inspections in marina areas. As noted earlier, joint inspections were conducted by Coronado and the Port of San Diego. Joint inspection of the Glorietta Bay boat launch areas was conducted as part of this new enhanced oversight related to swimmable waters. Although this strategy is listed as optional and would normally be triggered by an assessment of the goal, it was conducted this reporting year.

Generally, implementation of the optional strategies is contingent on circumstances supported by the need for the additional effort, the cost/benefit as compared with other options and strategies, and the availability of funding. The full list of optional strategies applicable to Coronado and the implementation status of each are provided in Appendix 2.

8.2.2 Port of San Diego Strategies and Schedules

The Port of San Diego's approach to address this Focused Priority Condition and to comply with the WMA goals involved implementing core JRMP and optional strategies, as applicable, to reduce or eliminate sources of bacteria within its MS4. The Port of San

Diego's jurisdictional area in the Coronado HA is approximately 242 acres. There are 32 commercial facilities (including eating and drinking establishments, marinas, general retail, and hotels) and three parks in the Port's jurisdiction in the HA.

While the majority of the Port of San Diego's strategies to address sources of bacteria apply throughout its jurisdiction, the Port of San Diego implemented a targeted effort to address potential sources of bacteria to Tidelands Park. Tidelands Park is a 22-acre waterfront park that offers a small beach, recreational fields, picnic areas, and open space for a variety of outdoor activities. The park is currently on the 303(d) List for *Enterococcus*. Figure 8-2 shows the Port of San Diego's jurisdiction within the Coronado HA Focused Priority Condition, where the strategies are being implemented.

Port of San Diego Tidelands Park

Figure 8-2
Port of San Diego's Jurisdiction Within the Coronado HA Swimmable Beaches Focused Priority Condition

Core jurisdictional strategies and BMPs listed in Appendix 2 were implemented as planned for the reporting year. The Port of San Diego's strategies in Tidelands Park focused on reducing bacteria and trash from sources such as sewage infrastructure and activities from public facilities, pet waste, special events, eating and drinking establishments, and recreational land uses. The Port of San Diego effectively implemented both core and optional strategies in FY 2016 in Tidelands Park. Core JRMP strategies impacting the park included frequent maintenance and inspections (PO-8) of municipal areas (including parks, beaches, and special events (PO-9), MS4 inspection and cleaning (PO-10), and maintenance of streets and parking lots (PO-11). In addition, nine of the Port of San Diego's optional strategies impacting Tidelands Park were triggered for implementation in FY 2016.

Table 8-1 highlights a subset of the Port of San Diego's strategies directly impacting Tidelands Park that will help it meet interim and final goals for this Focused Priority Condition. The full list of strategies applicable to the Port of San Diego and the implementation status of each are provided in Appendix 2.

To expand on strategies highlighted in Table 8-1, jurisdictional strategies that were implemented this reporting year in Tidelands Park include the following.

Enhanced Existing Development Inspections

As stated earlier, the Port of San Diego's approach was to implement a targeted effort to address potential sources of bacteria to Tidelands Park. The Port of San Diego inspected three special events (for more than 500 people) at Tidelands Park to ensure compliance with Municipal Permit requirements. Event organizers were provided a list of BMPs (PO-9) to ensure that the event organizer was knowledgeable about the BMP requirements and was implementing them. Of the three special events in the 910.1 HA, all were found to be properly implementing BMPs. In addition, the Port of San Diego began to coordinate with Coronado on joint inspections of existing development facilities in this HA. Although this strategy was initially implemented in the Glorietta Bay boat launch area, the effort represents a new management approach to implement greater oversight of potential sources of bacteria that may exist in this HA. There were also no new development or construction activities in Coronado HA during FY 2016.

Preventive Maintenance of Public Bathrooms at Tidelands Park

The Port of San Diego's updated Storm Water Ordinance requirements were incorporated into the new janitorial services contract requiring implementation of measures to prevent the discharge of waste material generated from public restroom facilities at parks (PO-23 optional). These preventive maintenance measures help to minimize or prevent discharges from the sewer system or other public bathroom facilities at Tidelands Park. Findings of the June 2016 municipal inspection (PO-8) at Tidelands Park support that these measures have been effective (i.e., no evidence of bathroom activities being tracked outdoors).

Port of San Diego-Wide Park Municipal Solid Waste Receptacle Assessment

One optional strategy initiated in FY 2016 addresses trash management at Tidelands Park. A Port of San Diego-wide park municipal solid waste receptacle assessment was initiated in this reporting period to evaluate the waste receptacles currently in use in the Port of San Diego's parks (PO-26 optional),including Tidelands Park. The purpose of the study is to develop the information necessary to support management decisions related to waste and recycling receptacle type and placement, which will support compliance with California waste diversion mandates, upcoming Trash Amendments requirements, and the San Diego Bay WMA WQIP Focused Priority Conditions. The study is scheduled to be complete in FY 2017. The findings will be used to guide management actions and potential future retrofits to trash enclosures in municipal areas, specifically parks (optional PO-46 optional).

Municipal Guidance Documents and Training

The Minor Maintenance and Construction Activities BMP Guidance document was developed in this reporting period (PO-24 optional). The guidance document was designed to help General Services staff be aware of and to implement necessary BMP procedures to mitigate the discharge of trash, contaminated debris, and other pollutants when doing minor maintenance and construction activities at municipal facilities and parks such as Chula Vista Bayside Park and Chula Vista Marina View Park. One training event was provided to 88 staff on the use of the guidance document to select, implement, and monitor the BMPs (PO-25 optional).

Public education and outreach (PO-17) also continues to be a key component of the Port of San Diego's approach jurisdiction-wide. Engaging the public encourages them to implement best practices and desirable behaviors (e.g., pet waste collection and disposal (optional PO-22 optional), proper trash disposal, and trash cleanups).

8.3 Swimmable Waters in the Coronado HA Monitoring and Assessment

The RPs initiated data collection for the swimmable waters Focused Priority Condition in November 2015 following completion of the final WQIP. The Swimmable Waters monitoring program was implemented in Coronado HA, as detailed in Appendix K of the San Diego Bay WMA WQIP. Data collection for bacterial indicators has proceeded as planned and includes year-round (wet and dry weather) sampling to augment existing data sets, such as the dry weather data collected by the County of San Diego Department of Environmental Health (DEH) for the AB 411 program. The RPs initiated wet weather sampling at two beaches (Tidelands Park and North Beach) in the Coronado HA and sampled three storm events: November 2, 2015, January 5, 2016, and March 8, 2016.

Dry weather site visits were conducted on 14 occasions from November 2015 through September 2016 to inspect the MS4 outfalls and to evaluate conditions for sampling the receiving water and/or MS4 outfalls. The data collected during this reporting period, when combined with data planned for FY 2017, will allow the RPs to begin assessing water quality and progress toward meeting the swimmable waters goals. Further discussion and

description of monitoring efforts and monitoring results for Swimmable Waters Focused Priority Condition, is presented Appendix 4. The complete set of monitoring data collected during this reporting year is presented in Attachment E.1.

8.3.1 Receiving Water Monitoring

Receiving water monitoring related to swimmable waters includes bacterial indicators at two sites, one on San Diego Bay at Tidelands Park managed by the Port of San Diego and one on the Pacific Ocean at North Beach in Coronado. Receiving water monitoring for wet season was initiated at both locations in November 2015. Both dry and wet weather monitoring are slated to continue in the coming reporting year.

During the reporting period, the Port of San Diego initiated a monitoring approach to assess Tidelands Park year-round. In addition to assessing dry weather monitoring data from the DEH AB 411 program, the Port of San Diego began to assess the receiving water during dry weather and wet weather in the wet season period. A total of 35 receiving water samples were collected during dry and wet seasons at Tidelands Park. Four, or 12.5%, of the 32 dry weather samples collected overall (six samples by the Port of San Diego and 26 samples by the DEH) at Tidelands Park beach had concentrations of *Enterococcus* that exceeded the WQO. For the wet season/wet weather receiving water monitoring, *Enterococcus* concentrations exceeded the WQO during one of the three rain events.

Receiving water monitoring at North Beach was initiated in FY 2016 and is being conducted year-round. For North Beach, there are limited receiving waters (beach/ocean) monitoring data points for the site in the previous few years, because the site is no longer monitored by the DEH under the AB 411 program. At North Beach, Coronado collected 14 receiving water samples in the Pacific Ocean surf during the reporting year.

The wet weather receiving water monitoring data set is limited at both locations because this was the first year in which the monitoring was conducted. As planned, receiving water samples will continue to be collected during dry and wet weather over the next two years so that the RPs can obtain a more robust dataset to adequately assess the 2018 interim goals at Tidelands Park and North Beach. A full description and a complete set of receiving water monitoring data collected during this reporting year is presented in Appendix 4.

8.3.2 MS4 Monitoring

MS4 outfall monitoring related to swimmable waters includes bacterial indicators at two locations, at North Beach (Coronado) and one at Tidelands Park (Port of San Diego). MS4 outfall monitoring is performed when flow or standing water is detected at the outfall. The MS4 monitoring related to the Focused Priority Monitoring was initiated in November 2015 and is slated to continue in the coming reporting year. The additional MS4 outfall data collected by RPs will be used to support any future BMP decisions and assess effectiveness, should they be necessary, to meet the interim and final goals.

At Tidelands Park, 14 site visits were conducted during the reporting year resulting in collection of seven MS4 outfall samples (at one outfall site during the dry season/dry

weather and at all three outfalls on two of the wet season/wet weather monitoring events). At North Beach, 14 site visits were conducted during the reporting year, resulting in collection of six MS4 outfall samples. Monitoring efforts and monitoring data collected during this reporting year are presented in Appendix 4. The RPs will continue to collect additional MS4 outfall data to support any future BMP decisions and assess effectiveness, should they be necessary, to meet the interim and final goals.

8.4 Progress Toward Achieving Numeric Goals

The RPs' water quality monitoring program was initiated in November 2015 upon approval of the WQIP and the Monitoring and Assessment Program and the program continued through September 2016. The monitoring program will allow the RPs gain data to report progress toward achieving swimmable waters numeric goals.

The dry weather monitoring results for *Enterococcus* at Tidelands Park indicates that the receiving water quality continued to maintain the current or baseline dry weather exceedance rate at this location. Although, wet weather sampling was initiated in this reporting period, the data set is limited to one year and additional monitoring data will be beneficial in understanding what the exceedance rate of wet weather samples may be and if it may be decreasing. The RPs anticipate having a more robust data set at the end of FY 2017. Table 8-3 summarizes the RPs' progress toward interim goals established for the Municipal Permit term.

In addition, recent Heal the Bay Report Card results indicate that Tidelands Park continued to meet baseline conditions in the receiving water during summer dry season. Tidelands Park was given an A grade for the summer dry season/dry weather in the 2015–2016 Heal the Bay Report[13], using data collected by the DEH in 2014–2015. North Beach was not evaluated by Heal the Bay. Additional data were collected at both sites starting in November 2015 and these data will help track progress toward the goals related to water quality and future report cards assessments (i.e., Heal the Bay).

[13]Heal the Bay Beach Report Card, http://www.healthebay.org/sites/default/files/BRC_2016_final.pdf

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Table 8-3
Progress Toward Municipal Permit Term Numeric Goal for Swimmable Waters in the Coronado HA

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2018					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
Receiving Water Removal from the 303(d) List for Recreation Water Contact (REC-1 Beneficial Use)	% of samples exceeding single-sample *Enterococcus* WQO[1]	Below 15% for dry weather monitoring[2] 44% for wet weather monitoring[3]	12.5% of the dry weather receiving water samples collected at Tidelands Park exceeded single sample *Enterococcus* WQO in this reporting period. Initial wet weather data collection began in November 2015, and a more robust data set is anticipated by the end of FY 2017. During this reporting year, both wet and dry weather data were collected and will be continued as planned. Data collected are presented in Appendix 4.	Data collection is progressing in accordance with a schedule that will allow completion on or before the scheduled completion period.	No adaptive management actions identified or required during this reporting period.
OR					

Table 8-3 (continued)
Progress Toward Coronado Municipal Permit Term Numeric Goal for Swimmable Waters in Coronado HA

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2018					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions
Water Quality Report Card – Achieve grade and inform the public	Dry Weather				
	% Water Quality Report Card grade achieved (dry weather)[5]	80% – Grade A[6]	% Water Quality Report Card grade achieved (dry weather)[5]	Tidelands Park was given an A grade for the summer dry season by the 2015–2016 Heal the Bay report using 2014-2015 data. Data collection is progressing in accordance with a schedule that will allow an assessment once the report card is developed.	% Water Quality Report Card grade achieved (dry weather)[5]
Water Quality Report Card – Achieve grade and inform the public (continued)	Wet Weather				
	% Water Quality Report Card grade achieved (wet weather)	58% – Grade A[7]	% Water Quality Report Card grade achieved (wet weather)	Data collection is progressing in accordance with a schedule that will allow an assessment once the report card is developed.	% Water Quality Report Card grade achieved (wet weather)

Table 8-3 (continued)
Progress Toward Coronado Municipal Permit Term Numeric Goal for Swimmable Waters in Coronado HA

Planning Period			Assessment Period		
Performance Measure – Achieve by FY 2018					
Interim Goal and Progress Information	Performance Metric	Baseline Data	Data Collected/ Results	Progress	Adaptive Management Actions

Notes:

% = percent; CEDEN = California Environmental Data Exchange Network; FY = fiscal year; REC-1 = water contact recreation beneficial use; WQO = water quality objective

1. To include wet weather and wet season (November–March) data in the assessment, which are not collected frequently enough for a geometric mean calculation, single sample WQOs for *Enterococcus* will be used for assessment purposes.
2. Cumulative data from 1999–2014 showed a dry weather exceedance rate below the allowable threshold for 303(d) delisting consideration. Because of this finding, the interim and final goals are focused on maintaining the current dry weather exceedance rate, while simultaneously lowering the exceedance rate of wet weather samples.
3. Baseline determined from line of evidence 27343 in the Final California 2010 Integrated Report 303(d) List/305(b) Report), which found 4 out of 9 wet weather receiving water samples exceeded the *Enterococcus* WQO. At the time the baseline was established, no other wet weather data was available to the RPs.
4. The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) list states that WQOs for bacteria are not exceeded using a binomial distribution methodology. The Policy also allows use of a reference beach to compare results. The binomial distribution allows approximately 15% of samples to exceed WQO.
5. Percentage of beaches will be calculated using a five-year rolling average of two beaches, Tidelands Park and North Beach within in the Coronado HA (910.1), using the report card methodology from Heal the Bay. Data will be collected as planned and will continue to feed into future reports.
6. Baseline for dry weather was calculated using a five-year rolling average (2010–2011 through 2014–2015) for Tidelands Park from the Heal the Bay report cards. Results: Four As all years except for one B in 2012–2013 yield the 80% baseline. Data will be collected for North Beach starting in FY 2016. Interim and final targets are based on the five-year rolling average grade card scores received for Tidelands Park and North Beach locations using the Heal the Bay methodology.
7. Using the Heal the Bay Annual Reports, the baseline for wet weather was calculated using a five-year rolling average for approximately 40 San Diego County Beaches. However, the five-year rolling average scores include data collected drought conditions as noted in the Heal the Bay Report for 2014–2015. Using a five-year rolling average is anticipated to attenuate variability between drought and normal/high rainfall years. Wet weather data to be collected to determine percentage of years the beaches (Tidelands and North Beach) achieve water quality report grade of A.

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8.5 Water Quality Strategies and Schedules Adaptations

Coronado identified one modification to its strategies and schedules. Further evaluation of the MS4 inventory revealed that there are no remaining corrugated metal pipe (CMP) components in the system. Therefore, a Capital Improvement Plan specifically targeting MS4 improvements to replace CMP to mitigate infiltration and reduce diversion flows to the sewer system was not necessary. Jurisdictional strategy CO-15.5 for a CMP Capital Improvement Plan of the MS4 will be deleted because it is no longer relevant. Other types of jurisdictional strategies to improve the MS4 infrastructure and operation will continue in place to prevent infiltration (CO-17), repair and replacement (CO-15.3), etc.

There were no modifications or additions to the Port of San Diego's strategies and schedules.

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9 Adaptive Management

Adaptive management uses an iterative approach to re-evaluate major components of the WQIP based on the requirements of the Municipal Permit. The WQIP details how the RPs use new data and information to improve it through updates to priorities, assessments of and adjustments to goals, updates to strategies to meet the latest goals, and updates to the monitoring and assessment program to provide the necessary data to support the process.

The adaptive management process is used in conjunction with water quality and programmatic data to evaluate whether modifications to numeric goals, schedules, or strategies are necessary to achieve compliance with the interim and final numeric goals. The timing of the adaptive management process may be applied annually but is more likely to be completed at the end of the Municipal Permit term.

9.1 Potential Triggers for Adaptation

The adaptive management process may be triggered when new information becomes available. New information to be considered includes results of routine monitoring and special studies, new regulatory drivers, results of program effectiveness assessments and progress towards numeric goals, and recommendations from the public or Regional Board. The Municipal Permit describes various triggers that may warrant program adaptation, including exceedances of water quality standards in receiving waters, new information, Regional Board recommendations, and input by the public. Effectiveness assessments of JRMP programs and strategies may also trigger adaptations to the Water Quality Improvement Plan.

Modifications may be made to the priority water quality conditions, goals, strategies, schedules, or the Monitoring and Assessment Program. The potential triggers for adaptation that must be considered annually are summarized in Table 9-1; however, no triggers for adapting or modifying the WQIP for this monitoring period were met.

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Table 9-1
Causes for Adaptive Management Within the Water Quality Improvement Plan

Trigger	Frequency for Assessment	Potential Area(s) for Adaptation				Adaptive Management Action for FY 2017?
		Priority Water Quality Conditions	Goals and Schedules	Strategies and Schedules	Monitoring and Assessment	
Exceedances of Receiving Water Limitations	Annual	—	—	X	X	No
Exceedances of Non-Storm Water Action Levels or Storm Water Action Levels	Annual	—	—	X	X	No
Special Studies Results	Annual, as results are available	—	X	X	X	No
New Regulatory Actions	Annual, as applicable	X	X	X	X	No
Regional Board Recommendations	Annual, as applicable	X	X	X	X	No
Program Effectiveness Assessments/ Progress Toward Goals	Annual	—	—	X	X	No[1]

Notes:

FY = fiscal year

1. Minor changes to strategies of multiple jurisdictions are provided in Appendix 2.

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9.2 Water Quality Improvement Plan Elements for Adaptation

The San Diego Bay WMA WQIP was approved by the Regional Board in February 2016. As a result, the RPs have implemented the WQIP and their jurisdictional programs and strategies for approximately a five-month period. Therefore, no adaptations have been made to the Highest Priority Conditions and Focused Priority Conditions. One interim goal was modified after the FY 2016 monitoring year: the Airport Authority has adapted one performance goal, as further discussed in Section 9.2.1. Since the implementation of strategies, multiple jurisdictions have made minor changes to their strategies; all strategy modifications are in Appendix 2 including any new strategies added by jurisdictions. The modifications are summarized in Table 9-2 and details are in Appendix 5.

Table 9-2
FY 2016 Water Quality Improvement Plan Annual Report Adaptations

Elements for Adaptation	FY 2016 Annual Report Adaptation
Highest and Focused Priority Water Quality Conditions	There are no adaptations to the Highest and Focused Priority Water Quality conditions during this reporting period. No new regulations, policies, or recommendations from the Regional Board have triggered adaption of this Water Quality Improvement Plan Element.
Goals and Schedules	The Responsible Parties are on track to meet their 2018 interim Water Quality Improvement Plan goals and do not propose any adaptations to their goals or the related schedules for this reporting period. In addition, the Airport Authority has modified one performance-based goal.
Strategies and Schedules	The Responsible Parties have just begun implementation of their Water Quality Improvement Plan strategies. They plan to continue implementing the strategies with minor modifications, if needed, with the goal of obtaining pollutant reduction benefits.[1]

Notes:
1. Proposed minor administrative changes to select strategies completed by various jurisdictions in FY 2016 do not qualify as an update to the WQIP.

9.2.1 Airport Authority Goal Adaptation

The Airport Authority proposes to modify the performance goal for airside street sweeping in sub-basins 1, 3, and 5 combined as a result of better recordkeeping, communication, and analysis. During FY 2016, the FMD and EAD implemented more efficient methods to track the location, date, and frequency of sweeping activities. The total area of runway and taxiways that was swept in sub-basins 1, 3, and 5 combined in FY 2016 was approximately 364 acres, resulting in an average of 7 acres of runway and taxiway pavement swept weekly. The Airport Authority proposes to modify the FY 2018 interim performance goal for street sweeping to 21 acres/week of runway and taxiway pavement in sub-basins 1, 3, and 5 combined. The Airport Authority's FY 2018 current interim performance goal for street sweeping in this area, as listed in the WQIP, was a three-fold increase amount of area currently being swept. The modification also increases specificity

in the performance goal and focuses street sweeping to the eastern portion of the runway and taxiways alone.

Further details and progress towards goals are provided in Section 5.

9.3 Otay Hydromodification Exemption

A technical study, including hydrologic modeling and an erosion potential analysis supporting a proposed hydromodification management requirements exemption for a portion of the Otay River, was prepared and submitted to the RPs on behalf of developers. The specific portion of the Otay River that the study considered is between Lower Otay Lakes and I-805; the RPs with jurisdictional area that drains to this reach are Chula Vista, the City of San Diego, and the County of San Diego. Figure 9-1 shows the USEPA Storm Water Management Model (SWMM) study areas used in the erosion potential analysis study. These three agencies commissioned a third-party review of the submitted study, which indicated that the study appeared to meet the relevant Municipal Permit requirements for a hydromodification management exemption. The study prepared by developers and the third-party review of the study were provided to the Consultation Panel for review and comment. A public Consultation Panel meeting was also held on August 23, 2016, to discuss comments on the study. No comments objecting to the proposed exemption from hydromodification requirements were submitted by the Consultation Panel. Accordingly, the exemption has been incorporated into the WQIP by modifying the Watershed Management Area Analysis (WMAA), included at Attachment A of Appendix 5. The updated WMAA is considered acceptable for inclusion into the WQIP ninety days after submission, unless the RPs are otherwise notified by the Regional Board.

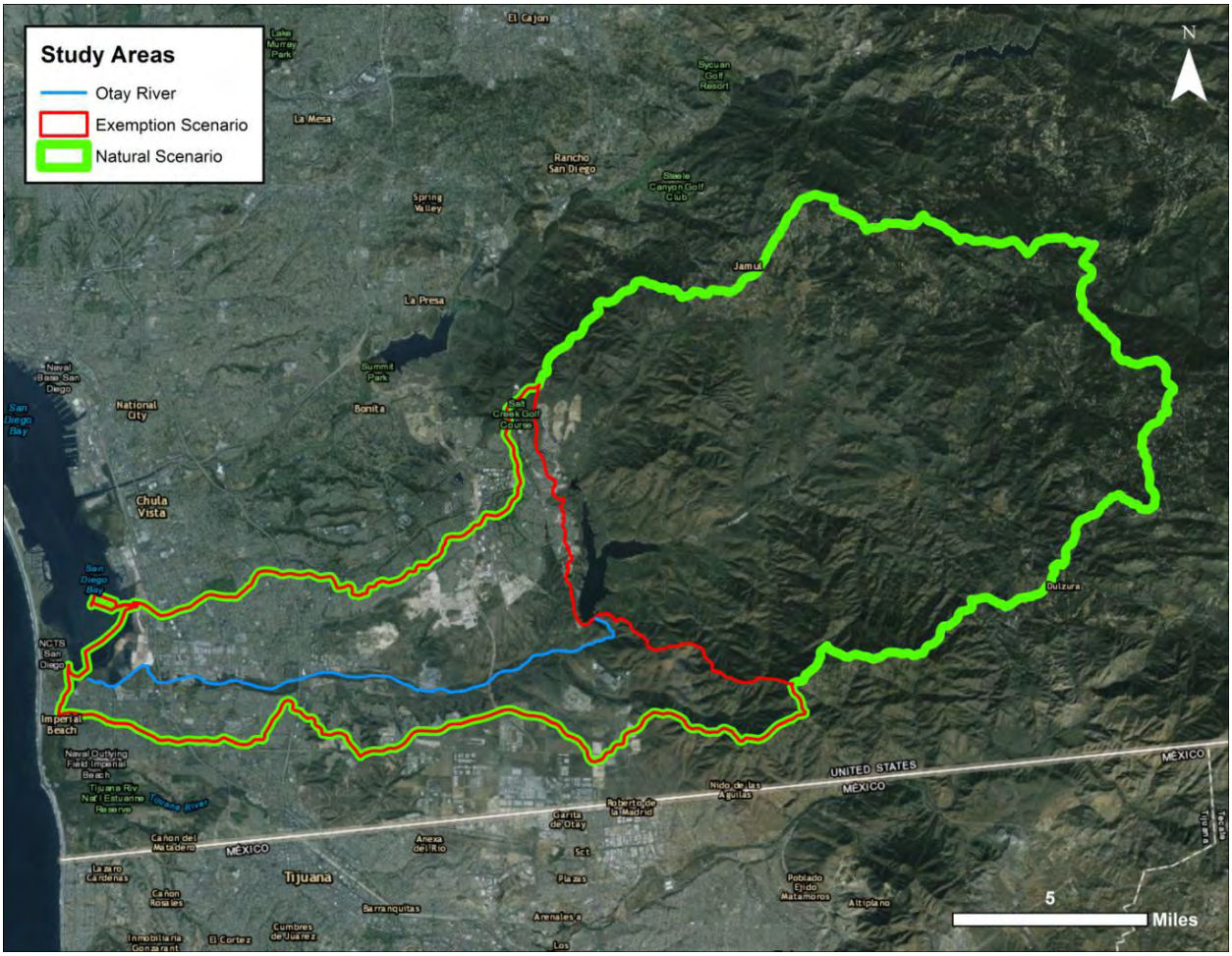

Figure 9-1
Storm Water Management Model Study Areas

9.4 Summary of Previous Adaptation and Implementation

The 2015–2016 San Diego Bay WMA WQIP Annual Report is the first Annual Report submitted by the RPs under the 2013 Municipal Permit. However, in 2016, RPs updated their 2007 permit-based JRMPs, and modified their programs to comply with the 2013 Municipal Permit's WQIP and JRMP requirements. The updated JRMPs are available on each RP's website.

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10 Conclusions

The RPs successfully implemented the FY 2016 program set forth in the WQIP. Although the WQIP has only just begun to be implemented—implementation began after Regional Board acceptance in February 2016—results for FY 2016 indicate significant progress toward achieving numeric goals. Highlights of strategies implemented during FY 2016 and progress toward numeric goals are provided below.

Strategy Implementation

RPs' programs and strategies target the applicable Highest or Focused Priority Conditions but also often provide additional water quality benefits, as described in Sections 4 through Section 8. For example, installing green streets or green infrastructure reduces a wide range of pollutants. Highlights of the RPs' strategy implementation to improve water quality during the reporting year include the following:

- Green Streets: University Avenue Median Water Quality Improvement Project (La Mesa). This project will remove and replace impervious medians with pervious bioretention areas that are designed to reduce pollutant discharges to receiving waters. The project is currently under construction, with an anticipated completion date of May 2017.
- Runoff Redirection (Lemon Grove). Lemon Grove performed initial site research to identify feasible locations for curb cuts to divert runoff from paved areas to landscaping at municipal facilities. A curb cut to direct runoff from the parking lot at City Hall to landscaping was completed in early FY 2017. Feasibility of directing downspout runoff to landscaping was also completed at municipal facilities in FY 2016.
- Storm Water BMPs (City of San Diego [City])
    - In FY 2016, more than 25 acres of drainage area were treated by green infrastructure features within the San Diego Bay WMA, and approximately 63 additional acres are expected to be treated by FY 2018.
    - To increase removal of metals and sediment, the City has started to enhance street sweeping operations in accordance with strategy CSD-JRMP-34 by sweeping a route in the Chollas Creek subwatershed with a regenerative air sweeper. The City also began sweeping routes with different sweeping technologies to determine the most effective sweeping practices for individual routes.
    - In accordance with the enhanced catch basin cleaning program identified in strategy CSD-JRMP-24, the City completed additional inspections, and cleanings where necessary, based on inspection results, at 2,500 catch basins in the Chollas Creek HSA.
    - The City completed the first phase of a drainage master plan for the Chollas Creek HSA. The drainage master plan uses precise light imaging, detection

and ranging (LIDAR) data to identify a vast range of potential structural BMPs and locations. Locations are identified to maximize the efficiency of the BMP by locating the facility in an area that will treat larger and/or multiple drainage areas. This planning will maximize pollutant removal from green infrastructure and reduce the number of green infrastructure projects (and associated costs) that will be needed to meet TMDL requirements.

- Dry Weather Flow Reduction and Water Conservation (County of San Diego [County]). As a regional leader in water conservation, the County implements several programs and strategies, both independently and in partnership with other agencies to help conserve local water supplies. In response to drought conditions in the region, the County developed a Drought Response Action Plan to reduce water use at its facilities, which has resulted in savings of 60 million gallons of water in County parks during FY 2015–2016. Since 2009, the installation of high-efficiency irrigation heads in 20 parks county-wide, many of which are located in the San Diego Bay area, have contributed significantly to these water savings. During the fiscal year, additional efforts included two rain barrel distribution events that were facilitated by the County in partnership with other agencies. Under its WaterSmart Campaign, the County has also collaborated with the San Diego County Water Authority to help distribute water conservation educational materials. This effort has included promotion of available water conservation rebates and incentives such as water efficiency audits and other tools to help save water.

- Sweeping Airside Corridors (Airport Authority). Aircraft and vehicle tire and brake wear are sources of copper and zinc from these locations. Under the WQIP, sweeping on the eastern end of the airfield (in particular, the runway and taxiways) will be modified and enhanced to increase the effectiveness of sweeping in FY 2017. The Airport Authority has obtained a Regen-Air vacuum sweeper, which has been shown to perform better than mechanical broom sweepers in removing fine sediments.

- Restoration of Paradise Creek (National City). National City's approach is to implement improvements directly in Paradise Creek and in areas tributary to the creek. During FY 2016 the City began a project to restore the approximately 1,000-linear-foot reach of Paradise Creek that runs through Kimball Park by replacing the existing concrete-bottom channel with a natural-bottom channel and replacing turf grass and invasive plant species with native plants along the banks.

- Homeless Outreach Program (Chula Vista). Chula Vista formed a Homeless Outreach Team during the reporting period to provide a holistic approach to addressing homelessness issues. The program targets a number of city parks, facilities, and problem areas. Staff visit these areas once per week and have been able to remove over 1,000 pounds of trash per week from the encampments.

- Municipal Solid Waste Receptacle Assessment (Port of San Diego). The Port of San Diego conducted a jurisdiction-wide evaluation of the municipal solid waste

receptacles currently in use in the Port of San Diego's parks. The purpose of the assessment was to develop the information necessary to support management decisions related to (1) waste and recycling receptacle type and placement, (2) the adequacy of receptacles to prevent municipal solid waste from entering the MS4 and reduce pollution associated with municipal solid waste (i.e., lids, overhead cover, signage, etc.), and (3) recommended modifications (e.g., either by retrofitting current receptacles, replacing receptacles with more effective models, or adding receptacles/bins where needed). This assessment is scheduled to be completed in FY 2017.

- Improvement of Dirt Alleys (Imperial Beach). During this reporting period, Imperial Beach completed the design and construction of the first phase of alley improvements for 14 alley segments (over 1 mile of dirt alleys) in the community. The primary water quality benefit for this project is to address the pollutants for trash, sediment, and bacteria. This project provides a total annual storm water capture volume of 33,000 cubic feet and an annual sediment load reduction of approximately 160 pounds.
- Elimination of Groundwater Intrusion (Coronado). During the reporting period, Coronado initiated an MS4 capital improvement project to eliminate groundwater infiltration to the MS4. Project planning and design were completed to install a liner in the existing storm drain and perform other repairs. The project is scheduled to start construction in early 2017. Upon completion, this project will have multiple environmental benefits, including reducing potential bacteria regrowth in the MS4 from standing groundwater in the pipeline, eliminating groundwater diversion to the sanitary sewer, reducing the potential for bacteria to enter the receiving waters, and reducing greenhouse gases from pump operations to dewater the MS4.
- San Diego Bay WMA Strategies (All Responsible Parties): The RPs have begun to implement wetland restoration, habitat restoration, and public access improvements to support multiple benefits in the San Diego Bay WMA through current public-private partnerships and partnerships with other state, federal, and local agencies.

Progress Toward Goals

The RPs have demonstrated achievement of the performance measures planned for 2015–2016, and have either met, surpassed, or demonstrated progress toward achieving the interim numeric goals set for the term of the current Municipal Permit. Goals and examples of performance measures achieved include:

- Chollas Creek Metals, Diazinon, and Bacteria:
    - La Mesa – The University Avenue Median Water Quality Improvement project, which is converting University Avenue to a green street by installing biofiltration BMPs, is on schedule to be completed in 2017.

- Lemon Grove – Lemon Grove performed initial site research to identify feasible locations for curb cuts to divert runoff from paved areas to landscaping at municipal facilities. A curb cut to direct runoff from the parking lot at City Hall to landscaping was completed in early FY 2017.
- City of San Diego – The City implemented green infrastructure projects that treat 25.14 acres of drainage area and is expected to achieve the 44.6-acre performance measure requirement by implementing additional projects that will treat a total of 88.24 acres by FY 2018.
- County of San Diego – Ongoing maintenance was performed at two facilities where LID BMPs were previously constructed: (1) Southeast Family Resource Center, and (2) Central Regional Public Health Center. These efforts have effectively reduced flows during storm events and reduced concentrations of key contaminants.

- Water Quality Due to Copper and Zinc (Airport Authority) – Zinc concentrations measured in MS4 discharges were lower than the FY 2021 goal.
- Riparian Area (National City)
  - The current Municipal Permit term goals of collecting and analyzing 48 samples for selenium were achieved, with zero exceedances of the WQO.
  - Creek restoration work for Paradise Creek is underway and is on track to be completed in 2017.
- Physical Aesthetics (Chula Vista, Imperial Beach, and Port of San Diego) – An optimal rating was recorded for 73% of MS4 outfall trash assessments, which exceeds the 2018 interim goal of 65%.
- Swimmable Waters (Coronado and Port of San Diego) – Tidelands Park was given an A grade for the summer dry season in the 2015–2016 Heal the Bay report (http://brc.healthebay.org/).

11 References

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Regional Board. 2010. Revised TMDL for Indicator Bacteria, Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek). Resolution No. R9-2010-0001. Approved February 10.

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APPENDIX 1

CROSSWALK OF MUNICIPAL PERMIT REQUIREMENTS AND ANNUAL REPORT REFERENCES

Table 1-1
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
Provision A							
A.4.a.(2)	If ***exceedance(s) of water quality standards persist in receiving waters*** notwithstanding implementation of this Order, the Copermittees must comply with the following procedures: (2) Upon a **determination** by either the Copermittees or the San Diego Water Board that discharges from the MS4 are **causing or contributing to a new exceedance** of an applicable water quality standard **not addressed** by the Water Quality Improvement Plan, the Copermittees must submit the following updates to the Water Quality Improvement Plan pursuant to Provision F.2.c ***or as part of the Water Quality Improvement Plan Annual Report*** required under Provision F.3.b, unless the San Diego Water Board directs an earlier submittal:	Section 9		X	X	X	X
	(a) The water quality improvement ***strategies being implemented that are effective and will continue to be implemented***,	Section 9		X			
	(b) ***Water quality improvement strategies (i.e. BMPs, retrofitting projects, stream and/or habitat rehabilitation projects, adjustments to jurisdictional runoff management programs, etc.) that will be implemented*** to reduce or eliminate any pollutants or conditions that are causing or contributing to the exceedance of water quality standards,	Section 9		X		X	
	(c) ***Updates to the schedule for implementation*** of the existing and additional water quality improvement strategies, and	Section 9		X		X	
	(d) ***Updates to the monitoring and assessment program*** to track progress toward achieving compliance with Provisions A.1.a, A.1.c and A.2.a of this Order;	Section 9		X		X	X
Provision B							
B.5.a.	a. The **priority water quality conditions** and potential **water quality improvement strategie**s included in the Water Quality Improvement Plan pursuant to Provisions B.2.c and B.2.e ***may be re-evaluated by the Copermittees as needed during the term of this Order as part of the Water Quality Improvement Plan Annual Report***. Re-evaluation and recommendations for modifications to the priority water quality conditions and potential water quality improvement strategies **must be provided in the Report of Waste Discharge**, and must consider the following: (1) Achieving the outcome of improved water quality in MS4 discharges and receiving waters through implementation of the water quality improvement strategies identified in the Water Quality Improvement Plan; (2) New information developed when the requirements of Provisions B.2.a-c have been re-evaluated; (3) Spatial and temporal accuracy of monitoring data collected to inform prioritization of water quality conditions and implementation strategies to address the highest priority water quality conditions; (4) Availability of new information and data from sources other than the jurisdictional runoff management programs within the Watershed Management Area that informs the effectiveness of the actions implemented by the Copermittees; (5) San Diego Water Board recommendations; and (6) Recommendations for modifications solicited through a public participation process.	Section 9			X	X	

Table 1-1 (continued)
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
B.5.b.	b. The water quality improvement goals, strategies and schedules, included in the Water Quality Improvement Plan pursuant to Provisions B.3, ***must be reevaluated and adapted as new information becomes available*** to result in more effective and efficient measures to address the highest priority water quality conditions identified pursuant to Provision B.2.c. ***Re-evaluation of and modifications to the water quality improvement goals, strategies and schedules must be provided in the Water Quality Improvement Plan Annual Report***, and must consider the following:	Section 9	X			X	
	(1) Modifications to the **priority water quality conditions** based on Provision B.5.a;	Section 9				X	X
	(2) Progress toward **achieving interim and final numeric goals** in receiving waters and MS4 discharges for the highest priority water quality conditions in the Watershed Management Area,	Sections 4-8	X				
	(3) Progress toward achieving outcomes according to established schedules;	Sections 4-8		X			
	(4) New policies or regulations that may affect identified numeric goals;	Section 9				X	
	(5) Measurable or demonstrable reductions of non-storm water discharges to and from each Copermittee's MS4;	Section 3			X		
	(6) Measurable or demonstrable reductions of pollutants in storm water discharges from each Copermittee's MS4 to the MEP;	Sections 4-8			X		
	(7) New information developed when the requirements of Provisions B.2.b and B.2.d have been re-evaluated;	Section 9			X	X	X
	(8) Efficiency in implementing the Water Quality Improvement Plan;	Section 9		X		X	
	(9) San Diego Water Board recommendations; and	Section 9				X	
	(10) Recommendations for modifications solicited through a public participation process.	Section 9				X	
B.5.c.	c. The water quality improvement monitoring and assessment program, included in the Water Quality Improvement Plan pursuant to Provision B.4, ***must be reevaluated and adapted when new information becomes available***. Re-evaluation and recommendations for modifications to the monitoring and assessment program, pursuant to the requirements of Provision D, ***may be provided in the Water Quality Improvement Plan Annual Report***, but must be provided in the Report of Waste Discharge.	Section 9			X	X	X

Table 1-1 (continued)
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
Provision D							
D.1.e.(2)(c)	**Sediment Quality Monitoring** (c) The Copermittees must incorporate a ***Sediment Monitoring Report as part of the Water Quality Improvement Plan Annual Report*** in accordance with the schedule contained in the Sediment Monitoring Plan, unless otherwise directed in writing by the San Diego Water Board Executive Officer. The Sediment Monitoring Report must contain the following information: (i) Analysis: An evaluation, interpretation and tabulation of the water and sediment monitoring data, including interpretations and conclusions as to whether applicable Receiving Water Limitations in this Order have been attained at each sample station; (ii) Sample Location Map: The locations, type, and number of samples must be identified and shown on a site map; and (iii) California Environmental Data Exchange Network: A statement certifying that the monitoring data and results have been uploaded into the California Environmental Data Exchange Network (CEDEN).	Section 3			X		
D.2.b.(iv)	**Dry Weather MS4 Outfall Discharge Monitoring** (iv) Each Copermittee must document ***removal or re-prioritization of the highest priority persistent flow MS4 outfall monitoring stations identified under Provision D.2.b.(2)(a) in the Water Quality Improvement Plan Annual Report***. Persistent flow MS4 outfall monitoring stations that have been removed must be replaced with the next highest prioritized major MS4 outfall in the Watershed Management Area within its jurisdiction, unless there are no remaining qualifying major MS4 outfalls within the Copermittee's jurisdiction in the Watershed Management Area.	Section 3			X		
D.4.b.(1)(a)(ii)	**Non-Storm Water Dischargers Reduction Assessments** (a) Each Copermittee must assess and report the ***progress of its illicit discharge detection and elimination program***, required to be implemented pursuant to Provision E.2, toward effectively prohibiting non-storm water and illicit discharges into the MS4 within its jurisdiction as follows: (ii) Based on the data collected pursuant to Provisions D.2.b, the ***assessments required under Provision D.4.b.(1)(c) must be included in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3).***	Section 3			X		
D.4.b.(1)(b)	(b) Based on the transitional dry weather MS4 outfall discharge field screening monitoring required pursuant to Provision D.2.a.(2), each Copermittee must assess and report the following: (i) Identify the known and suspected controllable sources (e.g. facilities, areas, land uses, pollutant generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area; (ii) Identify sources of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area that have been reduced or eliminated; and (iii) Identify modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.	Section 3			X	X	

Table 1-1 (continued)
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
D.4.b.(1)(c)	(c) Based on the ***dry weather MS4 outfall discharge field screening monitoring*** required pursuant to Provision D.2.b.(1), each Copermittee must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(1)(b); (ii) Based on the data collected and applicable NALs in the Water Quality Improvement Plan, rank the MS4 outfalls in the Copermittee's jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action to update the Water Quality Improvement Plan, with the goal of eliminating persistent flow non-storm water discharges and/or pollutant loads in order of the ranked priority list through targeted programmatic actions and source investigations; (iii) For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identify the known and suspected sources within the Copermittee's jurisdiction in the Watershed Management Area that may cause or contribute to the NAL exceedances; (iv) Each Copermittee must analyze the data collected pursuant to Provision D.2.b, and utilize a model or other method, to calculate or estimate the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually. [a] Each Copermittee must calculate or estimate the annual non-storm water volumes and pollutant loads collectively discharged from the Copermittee's major MS4 outfalls to receiving waters within the Copermittee's jurisdiction, with an estimate of the percent contribution from each known source for each MS4 outfall; [b] Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters.	Section 3			X		
	(v) Each Copermittee must review the data collected pursuant to Provision D.2.b and findings from the assessments required pursuant to Provision D.4.b.(1)(c)(i)-(iv) at least once during the term of this Order to: [a] Identify reductions and progress in achieving reductions in non-storm water and illicit discharges to the Copermittee's MS4 in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction, with an estimate, if possible, of the non-storm water volume and/or pollutant load reductions attributable to specific water quality strategies implemented by the Copermittee; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittee in the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction. (vi) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(1)(c)(i)-(v).	Section 3			X		X

Table 1-1 (continued)
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
D.4.b.(2)(a)	**Storm Water Pollutant Discharge Reduction Assessments** (a) The Copermittees must assess and report the ***progress of the water quality improvement strategies, required to be implemented pursuant to Provisions B and E, toward reducing pollutants in storm water discharges*** from the MS4s within the Watershed Management Area as follows: (ii) Based on the data collected pursuant to Provisions D.2.c, the ***assessments required under Provision D.4.b.(2)(c) must be included in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).	Section 3			X		
D.4.b.(2)(b)	(b) Based on the transitional wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.a.(3) the Copermittees must assess and report the following: (i) The Copermittees must analyze the monitoring data collected pursuant to Provision D.2.a.(3), and utilize a watershed model or other method, to calculate or estimate the following for each monitoring year: [a] The average storm water runoff coefficient for each land use type within the Watershed Management Area; [b] The volume of storm water and pollutant loads discharged from each of the Copermittee's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch; [c] The total flow volume and pollutant loadings discharged from the Copermittee's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and [d] The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch.(ii) Identify modifications to the wet weather MS4 outfall discharge monitoring locations and frequencies necessary to identify pollutants in storm water discharges from the MS4s in the Watershed Management Area pursuant to Provision D.2.c.(1).	Section 3			X		
D.4.b.(2)(c)	(c) Based on the wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.c the Copermittees must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(2)(b); (ii) Based on the data collected and applicable SALs in the Water Quality Improvement Plan, analyze and compare the monitoring data to the analyses and assumptions used to develop the Water Quality Improvement Plans, including strategies developed pursuant to Provision B.3, and evaluate whether those analyses and assumptions should be updated as a component of the adaptive management efforts pursuant to Provision B.5 for follow-up action to update the Water Quality Improvement Plan; (iii) The Copermittees must review the data collected pursuant to Provision D.2.c and findings from the assessments required pursuant to Provisions D.4.b.(2)(c)(i)-(ii) at least once during the term of this Order to: [a] Identify reductions or progress in achieving reductions in pollutant concentrations and/or pollutant loads from different land uses and/or drainage areas discharging from the Copermittees' MS4s in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters within the Watershed Management Area to the MEP, with an estimate, if possible, of the pollutant load reductions attributable to specific water quality strategies implemented by the Copermittees; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittees in the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters in the Watershed Management Area to the MEP. (iv) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(2)(c)(i)-(iii).	Section 3			X		
D.4.b.(2)(d)	(d) The Copermittees must evaluate all the data collected pursuant to Provision D.2.c, and incorporate new outfall monitoring data into time series plots for each long-term monitoring constituent for the Watershed Management Area, and perform statistical trends analysis on the cumulative long-term wet weather MS4 outfall discharge water quality data set.	Section 4			X		

Table 1-1 (continued)
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
D.4.c.	**Special Studies Assessments** c. The Copermittees must ***annually evaluate the results and findings from the special studies developed and implemented pursuant to Provision D.3***, and assess their relevance to the Copermittees' efforts to characterize receiving water conditions, understand sources of pollutants and/or stressors, and control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters in the Watershed Management Area. The Copermittees must ***report the results of the special studies assessments applicable to the Watershed Management Area, and identify any necessary modifications or updates to the Water Quality Improvement Plan based on the results in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).	Section 2, Section 7, Section 9			X	X	X
D.4.d.	Integrated Assessment of Water Quality Improvement Plan d. As part of the ***iterative approach and adaptive management process*** required for the Water Quality Improvement Plan pursuant to Provision B.5, the Copermittees in each Watershed Management Area must integrate the data collected pursuant to Provisions D.1-D.3, the findings from the assessments required pursuant to Provisions D.4.a-c, and information collected during the implementation of the jurisdictional runoff management programs required pursuant to Provision E to assess the effectiveness of, and identify necessary modifications to, the Water Quality Improvement Plan as follows:	Section 9			X	X	
D.4.d.(1)	(1) The Copermittees ***must re-evaluate the priority water quality conditions and numeric goals for the Watershed Management Area, as needed, during the term of this Order pursuant to Provision B.5.a.*** The re-evaluation and recommendations for modifications to the priority water quality conditions, and/or numeric goals and corresponding schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The priority water quality conditions and numeric goals for the Watershed Management Area must be reevaluated as follows: (a) Re-evaluate the receiving water conditions in the Watershed Management Area in accordance with Provision B.2.a; (b) Re-evaluate the impacts on receiving waters in the Watershed Management Area from MS4 discharges in accordance with Provision B.2.b; (c) Re-evaluate the identification of MS4 sources of pollutants and/or stressors in accordance with Provision B.2.d; (d) Identify beneficial uses of the receiving waters that are protected in accordance with Provision D.4.a; (e) Evaluate the progress toward achieving the interim and final numeric goals for protecting impacted beneficial uses in the receiving waters.	Section 9			X	X	X

Table 1-1 (continued)
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
D.4.d.(2)	(2) The Copermittees ***must re-evaluate the water quality improvement strategies for the Watershed Management Area during the term of this Order pursuant to Provision B.5.b.*** The re-evaluation and recommendations for modifications to the water quality improvement strategies and schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The water quality improvement strategies for the Watershed Management Area must be re-evaluated as follows: (a) Identify the non-storm water and storm water pollutant loads from the Copermittees' MS4 outfalls in the Watershed Management Area, calculated or estimated pursuant to Provisions D.4.b; (b) Identify the non-storm water and storm water pollutant load reductions, or other improvements to receiving water or water quality conditions, that are necessary to attain the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters; (c) Identify the non-storm water and storm water pollutant load reductions, or other improvements to the quality of MS4 discharges, that are necessary for the Copermittees to demonstrate that non-storm water and storm water discharges from their MS4s are not causing or contributing to exceedances of receiving water limitations; (d) Evaluate the progress of the water quality improvement strategies toward achieving the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters.	Section 9		X		X	
D.4.d.(3)	(3) The Copermittees ***must re-evaluate and adapt the water quality monitoring and assessment program for the Watershed Management Area when new information becomes available to improve the monitoring and assessment program pursuant to Provision B.5.c.*** The re-evaluation and recommendations for modifications to the monitoring and assessment program ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. Modifications to the water quality monitoring and assessment program must be consistent with the requirements of Provision D.1-D.3. The re-evaluation of the water quality monitoring and assessment program for the Watershed Management Area must consider the data gaps identified by the assessments required pursuant to Provisions D.4.a-b, and results of the special studies implemented pursuant to Provision D.4.c	Section 9			X	X	X
Provision E							
E.1.b.	b. With the first ***Water Quality Improvement Plan Annual Report*** *required pursuant to Provision F.3.b.(3),* ***each Copermittee must submit a statement certified by its Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative that the Copermittee has taken the necessary steps to obtain and maintain full legal authority*** within its jurisdiction to implement and enforce each of the requirements contained in this Order.	Certification Statement		X			

Table 1-1 (continued)
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
E.2.d.(4)	(4) Each Copermittee must submit a ***summary of the non-storm water discharges and illicit discharges and connections investigated and eliminated within its jurisdiction with each Water Quality Improvement Plan Annual Report required under Provision F.3.b.(3)*** of this Order.	JRMP Forms		X	X		
E.8.c.	c. Each Copermittee must submit a ***summary of the annual fiscal analysis with each Water Quality Improvement Plan Annual Report required pursuant to Provision F.3.b.(3)***.	Fiscal Analysis		X			
Provision F							
F.1.b.(6)	(6) During implementation of the Water Quality Improvement Plan the Copermittees must ***correct any deficiencies in the Plan identified by the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report*** following a request by the Board to do so.	Section 9				X	
F.2.a.(2)	(2) Each Copermittee must update its jurisdictional runoff management program document to incorporate the requirements of Provision E concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the jurisdictional runoff management program document based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;***	Section 9		X		X	
F.2.a.(3)	(3) Each Copermittee must submit ***updates to its jurisdictional runoff management program, with the supporting rationale for the modifications, either in the Water Quality Improvement Plan Annual Report*** required pursuant to Provision F.3.b.(3), or as part of the Report of Waste Discharge required pursuant to Provision F.5.b	Section 9		X		X	
F.2.b.(1)	(1) Each Copermittee must update its BMP Design Manual to incorporate the requirements of Provisions E.3.a-d concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the BMP Design Manual based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;***	Section 9		X			
F.2.b.(2)	(2) Any ***future updates to the BMP Design Manual*** made after it update pursuant to Provision F.2.b.(1) is completed must be consistent with the requirements of Provisions E.3.a-d and ***must be submitted as part of the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b; and	Section 9		X			
F.2.c.(1)(c)	(c) The Copermittees for each Watershed Management Area ***must submit 1) proposed updates to the Water Quality Improvement Plan and supporting rationale, and 2) recommendations received from the public and the Water Quality Improvement Consultation Panel and the rationale for the requested updates, either in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b.	Section 9				X	X

Table 1-1 (continued)
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices				
			Appendix 2: WQIP Numeric Goals	Appendix 3: Jurisdictional Information	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management	Appendix 6: GIS Shapefiles
F.3.b.(3)(a-f)	(3) Water Quality Improvement Plan Annual Reports - The Copermittees for each Watershed Management Area must ***submit a Water Quality Improvement Plan Annual Report for each reporting period no later than January 31*** of the following year. The annual reporting period consists of two different periods: 1) July 1 to June 30 of the following year for the jurisdictional runoff management programs, 2) October 1 to September 30 of the following year for the monitoring and assessment programs. The Water Quality Improvement Plan Annual Reports must be made available on the Regional Clearinghouse required pursuant to Provision F.4. Each ***Annual Report must include the following***:	-					
	(a) The receiving water and MS4 outfall discharge monitoring data collected pursuant to Provisions D.1 and D.2, summarized and presented in tabular and graphical form;	Section 3			X		
	(b) The progress of the special studies required pursuant to Provision D.3, and the findings, interpretations and conclusions of a special study, or each phase of a special study, upon its completion;	Section 3			X		
	(c) The findings, interpretations and conclusions from the assessments required pursuant to Provision D.4;	Section 3			X		
	(d) The progress of implementing the Water Quality Improvement Plan, including, but not limited to, the following: (i) The ***progress toward achieving the interim and final numeric goals*** for the highest water quality priorities for the Watershed Management Area;	Sections 4-8					
	(ii) The water quality improvement ***strategies that were implemented and/or no longer implemented by each of the Copermittees during the reporting period and previous reporting periods***;	Sections 4-8		X		X	
	(iii) The water quality improvement strategies planned for implementation during the next reporting period;	Sections 4-8		X		X	
	(iv) Proposed modifications to the water quality improvement strategies, the public comments received and the supporting rationale for the proposed modifications;	Section 9		X		X	X
	(v) Previous modifications or updates incorporated into the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document and implemented by the Copermittees in the Watershed Management Area; and	Section 9		X		X	
	(vi) Proposed modifications or updates to the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document;	Section 9		X		X	X
	(e) A completed Jurisdictional Runoff Management Program Annual Report Form (contained in Attachment D to this Order or a revised form accepted by the San Diego Water Board) for each Copermittee in the Watershed Management Area, certified by a Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative; and	JRMP Forms		X			
	(f) Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the San Diego Water Board. Any Copermittee monitoring data utilized in developing the Water Quality Improvement Plan Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the Water Quality Improvement Plan Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.	CEDEN Upload Certifications			X		X
F.6	Each Copermittee must comply with all the reporting and recordkeeping provisions of the Standard Permit Provisions and General Provisions contained in Attachment B to this Order.	Section 9		X			X
Attachment E							
Attachment E	Specific Monitoring and Assessment Requirements for each TMDL.TMDL monitoring and assessment results must be submitted as part of Water Quality Improvement Plan Annual Reports required under Provision F.3.b	Section 3			X		

APPENDIX 1

CROSSWALK OF MUNICIPAL PERMIT REQUIREMENTS AND ANNUAL REPORT REFERENCES

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Table 1-1
Crosswalk of Municipal Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
Provision A						
A.4.a.(2)	If *exceedance(s) of water quality standards persist in receiving waters* notwithstanding implementation of this Order, the Copermittees must comply with the following procedures: (2) Upon a **determination** by either the Copermittees or the San Diego Water Board that discharges from the MS4 are **causing or contributing to a new exceedance** of an applicable water quality standard **not addressed** by the Water Quality Improvement Plan, the Copermittees must submit the following updates to the Water Quality Improvement Plan pursuant to Provision F.2.c *or as part of the Water Quality Improvement Plan Annual Report* required under Provision F.3.b, unless the San Diego Water Board directs an earlier submittal:	Section 9	X		X	X
	(a) The water quality improvement *strategies being implemented that are effective and will continue to be implemented*,	Section 9.2	X			
	(b) *Water quality improvement strategies (i.e. BMPs, retrofitting projects, stream and/or habitat rehabilitation projects, adjustments to jurisdictional runoff management programs, etc.) that will be implemented* to reduce or eliminate any pollutants or conditions that are causing or contributing to the exceedance of water quality standards,	Section 9.2	X			X
	(c) *Updates to the schedule for implementation* of the existing and additional water quality improvement strategies, and	Section 9.2	X			X
	(d) *Updates to the monitoring and assessment program* to track progress toward achieving compliance with Provisions A.1.a, A.1.c and A.2.a of this Order;	Section 9	X			X
Provision B						
B.5.a.	a. The **priority water quality conditions** and potential **water quality improvement strategies** included in the Water Quality Improvement Plan pursuant to Provisions B.2.c and B.2.e *may be re-evaluated by the Copermittees as needed during the term of this Order as part of the Water Quality Improvement Plan Annual Report*. Re-evaluation and recommendations for modifications to the priority water quality conditions and potential water quality improvement strategies **must be provided in the Report of Waste Discharge**, and must consider the following: (1) Achieving the outcome of improved water quality in MS4 discharges and receiving waters through implementation of the water quality improvement strategies identified in the Water Quality Improvement Plan; (2) New information developed when the requirements of Provisions B.2.a-c have been re-evaluated; (3) Spatial and temporal accuracy of monitoring data collected to inform prioritization of water quality conditions and implementation strategies to address the highest priority water quality conditions; (4) Availability of new information and data from sources other than the jurisdictional runoff management programs within the Watershed Management Area that informs the effectiveness of the actions implemented by the Copermittees; (5) San Diego Water Board recommendations; and (6) Recommendations for modifications solicited through a public participation process.	Section 9			X	X

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
B.5.b.	b. The water quality improvement goals, strategies and schedules, included in the Water Quality Improvement Plan pursuant to Provisions B.3, *must be reevaluated and adapted as new information becomes available* to result in more effective and efficient measures to address the highest priority water quality conditions identified pursuant to Provision B.2.c. *Re-evaluation of and modifications to the water quality improvement goals, strategies and schedules must be provided in the Water Quality Improvement Plan Annual Report*, and must consider the following:	Section 9		X		X
	(1) Modifications to the **priority water quality conditions** based on Provision B.5.a;	Section 9				X
	(2) Progress toward **achieving interim and final numeric goals** in receiving waters and MS4 discharges for the highest priority water quality conditions in the Watershed Management Area,	Sections 4-8		X		
	(3) Progress toward achieving outcomes according to established schedules;	Sections 4-8	X			X
	(4) New policies or regulations that may affect identified numeric goals;	Section 9				X
	(5) Measurable or demonstrable reductions of non-storm water discharges to and from each Copermittee's MS4;	Section 3			X	
	(6) Measurable or demonstrable reductions of pollutants in storm water discharges from each Copermittee's MS4 to the MEP;	Sections 4-8			X	
	(7) New information developed when the requirements of Provisions B.2.b and B.2.d have been re-evaluated;	Section 9			X	X
	(8) Efficiency in implementing the Water Quality Improvement Plan;	Section 9	X			X
	(9) San Diego Water Board recommendations; and	Section 9				X
	(10) Recommendations for modifications solicited through a public participation process.	Section 9				X
B.5.c.	c. The water quality improvement monitoring and assessment program, included in the Water Quality Improvement Plan pursuant to Provision B.4, *must be reevaluated and adapted when new information becomes available*. Re-evaluation and recommendations for modifications to the monitoring and assessment program, pursuant to the requirements of Provision D, *may be provided in the Water Quality Improvement Plan Annual Report*, but must be provided in the Report of Waste Discharge.	Section 9			X	X

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
Provision D						
D.1.e.(2)(c)	Sediment Quality Monitoring (c) The Copermittees must incorporate a *Sediment Monitoring Report as part of the Water Quality Improvement Plan Annual Report* in accordance with the schedule contained in the Sediment Monitoring Plan, unless otherwise directed in writing by the San Diego Water Board Executive Officer. The Sediment Monitoring Report must contain the following information: (i) Analysis: An evaluation, interpretation and tabulation of the water and sediment monitoring data, including interpretations and conclusions as to whether applicable Receiving Water Limitations in this Order have been attained at each sample station; (ii) Sample Location Map: The locations, type, and number of samples must be identified and shown on a site map; and (iii) California Environmental Data Exchange Network: A statement certifying that the monitoring data and results have been uploaded into the California Environmental Data Exchange Network (CEDEN).	Section 3			X	
D.2.b.(iv)	Dry Weather MS4 Outfall Discharge Monitoring (iv) Each Copermittee must document *removal or re-prioritization of the highest priority persistent flow MS4 outfall monitoring stations identified under Provision D.2.b.(2)(a) in the Water Quality Improvement Plan Annual Report*. Persistent flow MS4 outfall monitoring stations that have been removed must be replaced with the next highest prioritized major MS4 outfall in the Watershed Management Area within its jurisdiction, unless there are no remaining qualifying major MS4 outfalls within the Copermittee's jurisdiction in the Watershed Management Area.	Section 3			X	
D.4.b.(1)(a)(ii)	Non-Storm Water Dischargers Reduction Assessments (a) Each Copermittee must assess and report the *progress of its illicit discharge detection and elimination program*, required to be implemented pursuant to Provision E.2, toward effectively prohibiting non-storm water and illicit discharges into the MS4 within its jurisdiction as follows: (ii) Based on the data collected pursuant to Provisions D.2.b, the *assessments required under Provision D.4.b.(1)(c) must be included in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3).*	Section 3			X	
D.4.b.(1)(b)	(b) Based on the transitional dry weather MS4 outfall discharge field screening monitoring required pursuant to Provision D.2.a.(2), each Copermittee must assess and report the following: (i) Identify the known and suspected controllable sources (e.g. facilities, areas, land uses, pollutant generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area; (ii) Identify sources of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area that have been reduced or eliminated; and (iii) Identify modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.	Section 3			X	X

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
D.4.b.(1)(c)	(c) Based on the **dry weather MS4 outfall discharge field screening monitoring** required pursuant to Provision D.2.b.(1), each Copermittee must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(1)(b); (ii) Based on the data collected and applicable NALs in the Water Quality Improvement Plan, rank the MS4 outfalls in the Copermittee's jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action to update the Water Quality Improvement Plan, with the goal of eliminating persistent flow non-storm water discharges and/or pollutant loads in order of the ranked priority list through targeted programmatic actions and source investigations; (iii) For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identify the known and suspected sources within the Copermittee's jurisdiction in the Watershed Management Area that may cause or contribute to the NAL exceedances; (iv) Each Copermittee must analyze the data collected pursuant to Provision D.2.b, and utilize a model or other method, to calculate or estimate the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually. [a] Each Copermittee must calculate or estimate the annual non-storm water volumes and pollutant loads collectively discharged from the Copermittee's major MS4 outfalls to receiving waters within the Copermittee's jurisdiction, with an estimate of the percent contribution from each known source for each MS4 outfall; [b] Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters.	Section 3			X	
	(v) Each Copermittee must review the data collected pursuant to Provision D.2.b and findings from the assessments required pursuant to Provision D.4.b.(1)(c)(i)-(iv) at least once during the term of this Order to: [a] Identify reductions and progress in achieving reductions in non-storm water and illicit discharges to the Copermittee's MS4 in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction, with an estimate, if possible, of the non-storm water volume and/or pollutant load reductions attributable to specific water quality strategies implemented by the Copermittee; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittee in the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction. (vi) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(1)(c)(i)-(v).	Section 3			X	

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
D.4.b.(2)(a)	Storm Water Pollutant Discharge Reduction Assessments (a) The Copermittees must assess and report the *progress of the water quality improvement strategies, required to be implemented pursuant to Provisions B and E, toward reducing pollutants in storm water discharges* from the MS4s within the Watershed Management Area as follows: (ii) Based on the data collected pursuant to Provisions D.2.c, the *assessments required under Provision D.4.b.(2)(c) must be included in the Water Quality Improvement Plan Annual Reports* required pursuant to Provision F.3.b.(3).	Section 3			X	
D.4.b.(2)(b)	(b) Based on the transitional wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.a.(3) the Copermittees must assess and report the following: (i) The Copermittees must analyze the monitoring data collected pursuant to Provision D.2.a.(3), and utilize a watershed model or other method, to calculate or estimate the following for each monitoring year: [a] The average storm water runoff coefficient for each land use type within the Watershed Management Area; [b] The volume of storm water and pollutant loads discharged from each of the Copermittee's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch; [c] The total flow volume and pollutant loadings discharged from the Copermittee's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and [d] The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch.(ii) Identify modifications to the wet weather MS4 outfall discharge monitoring locations and frequencies necessary to identify pollutants in storm water discharges from the MS4s in the Watershed Management Area pursuant to Provision D.2.c.(1).	Section 3			X	
D.4.b.(2)(c)	(c) Based on the wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.c the Copermittees must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(2)(b); (ii) Based on the data collected and applicable SALs in the Water Quality Improvement Plan, analyze and compare the monitoring data to the analyses and assumptions used to develop the Water Quality Improvement Plans, including strategies developed pursuant to Provision B.3, and evaluate whether those analyses and assumptions should be updated as a component of the adaptive management efforts pursuant to Provision B.5 for follow-up action to update the Water Quality Improvement Plan; (iii) The Copermittees must review the data collected pursuant to Provision D.2.c and findings from the assessments required pursuant to Provisions D.4.b.(2)(c)(i)-(ii) at least once during the term of this Order to: [a] Identify reductions or progress in achieving reductions in pollutant concentrations and/or pollutant loads from different land uses and/or drainage areas discharging from the Copermittees' MS4s in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters within the Watershed Management Area to the MEP, with an estimate, if possible, of the pollutant load reductions attributable to specific water quality strategies implemented by the Copermittees; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittees in the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters in the Watershed Management Area to the MEP. (iv) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(2)(c)(i)-(iii).	Section 3			X	

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
D.4.b.(2)(d)*	(d) The Copermittees must evaluate all the data collected pursuant to Provision D.2.c, and incorporate new outfall monitoring data into time series plots for each long-term monitoring constituent for the Watershed Management Area, and perform statistical trends analysis on the cumulative long-term wet weather MS4 outfall discharge water quality data set.	--	--	--	--	--
D.4.c.	Special Studies Assessments c. The Copermittees must *annually evaluate the results and findings from the special studies developed and implemented pursuant to Provision D.3*, and assess their relevance to the Copermittees' efforts to characterize receiving water conditions, understand sources of pollutants and/or stressors, and control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters in the Watershed Management Area. The Copermittees must *report the results of the special studies assessments applicable to the Watershed Management Area, and identify any necessary modifications or updates to the Water Quality Improvement Plan based on the results in the Water Quality Improvement Plan Annual Reports* required pursuant to Provision F.3.b.(3).	Section 2			X	X
D.4.d.	Integrated Assessment of Water Quality Improvement Plan d. As part of the *iterative approach and adaptive management process* required for the Water Quality Improvement Plan pursuant to Provision B.5, the Copermittees in each Watershed Management Area must integrate the data collected pursuant to Provisions D.1-D.3, the findings from the assessments required pursuant to Provisions D.4.a-c, and information collected during the implementation of the jurisdictional runoff management programs required pursuant to Provision E to assess the effectiveness of, and identify necessary modifications to, the Water Quality Improvement Plan as follows:	Section 9			X	X
D.4.d.(1)	(1) The Copermittees *must re-evaluate the priority water quality conditions and numeric goals for the Watershed Management Area, as needed, during the term of this Order pursuant to Provision B.5.a.* The re-evaluation and recommendations for modifications to the priority water quality conditions, and/or numeric goals and corresponding schedules *may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)*, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The priority water quality conditions and numeric goals for the Watershed Management Area must be reevaluated as follows: (a) Re-evaluate the receiving water conditions in the Watershed Management Area in accordance with Provision B.2.a; (b) Re-evaluate the impacts on receiving waters in the Watershed Management Area from MS4 discharges in accordance with Provision B.2.b; (c) Re-evaluate the identification of MS4 sources of pollutants and/or stressors in accordance with Provision B.2.d; (d) Identify beneficial uses of the receiving waters that are protected in accordance with Provision D.4.a; (e) Evaluate the progress toward achieving the interim and final numeric goals for protecting impacted beneficial uses in the receiving waters.	Section 9			X	X

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
D.4.d.(2)	(2) The Copermittees *must re-evaluate the water quality improvement strategies for the Watershed Management Area during the term of this Order pursuant to Provision B.5.b.* The re-evaluation and recommendations for modifications to the water quality improvement strategies and schedules *may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)*, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The water quality improvement strategies for the Watershed Management Area must be re-evaluated as follows: (a) Identify the non-storm water and storm water pollutant loads from the Copermittees' MS4 outfalls in the Watershed Management Area, calculated or estimated pursuant to Provisions D.4.b; (b) Identify the non-storm water and storm water pollutant load reductions, or other improvements to receiving water or water quality conditions, that are necessary to attain the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters; (c) Identify the non-storm water and storm water pollutant load reductions, or other improvements to the quality of MS4 discharges, that are necessary for the Copermittees to demonstrate that non-storm water and storm water discharges from their MS4s are not causing or contributing to exceedances of receiving water limitations; (d) Evaluate the progress of the water quality improvement strategies toward achieving the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters.	Section 9	X			X
D.4.d.(3)	(3) The Copermittees *must re-evaluate and adapt the water quality monitoring and assessment program for the Watershed Management Area when new information becomes available to improve the monitoring and assessment program pursuant to Provision B.5.c.* The re-evaluation and recommendations for modifications to the monitoring and assessment program *may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)*, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. Modifications to the water quality monitoring and assessment program must be consistent with the requirements of Provision D.1-D.3. The re-evaluation of the water quality monitoring and assessment program for the Watershed Management Area must consider the data gaps identified by the assessments required pursuant to Provisions D.4.a-b, and results of the special studies implemented pursuant to Provision D.4.c	Section 9			X	X
Provision E						
E.1.b.	b. With the first *Water Quality Improvement Plan Annual Report required pursuant to Provision F.3.b.(3), each Copermittee must submit a statement certified by its Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative that the Copermittee has taken the necessary steps to obtain and maintain full legal authority* within its jurisdiction to implement and enforce each of the requirements contained in this Order.	Cert Statement	X			

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
E.2.d.(4)	(4) Each Copermittee must submit a *summary of the non-storm water discharges and illicit discharges and connections investigated and eliminated within its jurisdiction with each Water Quality Improvement Plan Annual Report required under Provision F.3.b.(3)* of this Order.	JRMP Forms	X		X	
E.8.c.	c. Each Copermittee must submit a *summary of the annual fiscal analysis with each Water Quality Improvement Plan Annual Report required pursuant to Provision F.3.b.(3).*	Fiscal Analysis	X			
Provision F						
F.1.b.(6)	(6) During implementation of the Water Quality Improvement Plan the Copermittees must *correct any deficiencies in the Plan identified by the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report* following a request by the Board to do so.	Section 9				X
F.2.a.(2)	(2) Each Copermittee must update its jurisdictional runoff management program document to incorporate the requirements of Provision E concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must *correct any deficiencies in the jurisdictional runoff management program document based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;*	Section 9	X			X
F.2.a.(3)	(3) Each Copermittee must submit *updates to its jurisdictional runoff management program, with the supporting rationale for the modifications, either in the Water Quality Improvement Plan Annual Report* required pursuant to Provision F.3.b.(3), or as part of the Report of Waste Discharge required pursuant to Provision F.5.b	Section 9	X			X
F.2.b.(1)	(1) Each Copermittee must update its BMP Design Manual to incorporate the requirements of Provisions E.3.a-d concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must *correct any deficiencies in the BMP Design Manual based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;*	Section 9	X			
F.2.b.(2)	(2) Any *future updates to the BMP Design Manual* made after it update pursuant to Provision F.2.b.(1) is completed must be consistent with the requirements of Provisions E.3.a-d and *must be submitted as part of the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)*, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b; and	Section 9	X			
F.2.c.(1)(c)	(c) The Copermittees for each Watershed Management Area *must submit 1) proposed updates to the Water Quality Improvement Plan and supporting rationale, and 2) recommendations received from the public and the Water Quality Improvement Consultation Panel and the rationale for the requested updates, either in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)*, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b.	Section 9				X

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
F.3.b.(3)(a-f)	(3) Water Quality Improvement Plan Annual Reports - The Copermittees for each Watershed Management Area must *submit a Water Quality Improvement Plan Annual Report for each reporting period no later than January 31* of the following year. The annual reporting period consists of two different periods: 1) July 1 to June 30 of the following year for the jurisdictional runoff management programs, 2) October 1 to September 30 of the following year for the monitoring and assessment programs. The Water Quality Improvement Plan Annual Reports must be made available on the Regional Clearinghouse required pursuant to Provision F.4. Each *Annual Report must include the following*:	-				
	(a) The receiving water and MS4 outfall discharge monitoring data collected pursuant to Provisions D.1 and D.2, summarized and presented in tabular and graphical form;	Section 3			X	
	(b) The progress of the special studies required pursuant to Provision D.3, and the findings, interpretations and conclusions of a special study, or each phase of a special study, upon its completion;	Section 3			X	
	(c) The findings, interpretations and conclusions from the assessments required pursuant to Provision D.4;	Section 3			X	
	(d) The progress of implementing the Water Quality Improvement Plan, including, but not limited to, the following: (i) The progress toward achieving the interim and final numeric goals for the highest water quality priorities for the Watershed Management Area;	Sections 4-8				
	(ii) The water quality improvement strategies that were implemented and/or no longer implemented by each of the Copermittees during the reporting period and previous reporting periods;	Sections 4-8	X			X
	(iii) The water quality improvement strategies planned for implementation during the next reporting period;	Sections 4-8	X			X
	(iv) Proposed modifications to the water quality improvement strategies, the public comments received and the supporting rationale for the proposed modifications;	Section 9	X			X
	(v) Previous modifications or updates incorporated into the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document and implemented by the Copermittees in the Watershed Management Area; and	Section 9	X			X
	(vi) Proposed modifications or updates to the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document;	Section 9	X			X
	(e) A completed Jurisdictional Runoff Management Program Annual Report Form (contained in Attachment D to this Order or a revised form accepted by the San Diego Water Board) for each Copermittee in the Watershed Management Area, certified by a Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative; and	JRMP Forms	X			
	(f) Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the San Diego Water Board. Any Copermittee monitoring data utilized in developing the Water Quality Improvement Plan Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the Water Quality Improvement Plan Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.	CEDEN Upload Certifications			X	
F.6	Each Copermittee must comply with all the reporting and recordkeeping provisions of the Standard Permit Provisions and General Provisions contained in Attachment B to this Order.	Section 9	X			X
Attachment E						

Table 1-1 (continued)
Crosswalk of Permit Requirements and Annual Report References

Municipal Permit Provisions	Permit Language	WQIP Annual Report Sections	WQIP Appendices			
			Appendix 2: Jurisdictional Information	Appendix 3: Numeric Goals	Appendix 4: Monitoring & Assessments	Appendix 5: Adaptive Management
Attachment E	Specific Monitoring and Assessment Requirements for each TMDL.TMDL monitoring and assessment results must be submitted as part of Water Quality Improvement Plan Annual Reports required under Provision F.3.b	Section 3			X	

* This provision requires creation of time-series plots for long-term monitoring data collected under Provision D.2.c and a trend analysis on this cumulative long-term wet weather MS4 outfall discharge monitoring data set. This assessment will be addressed when sufficient data (i.e., at least three monitoring years) have been collected.

APPENDIX 2

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORMS, FISCAL ANALYSIS, UPDATED BMP MANUALS, AND JURISDICTIONAL STRATEGIES

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1 JURISDICTIONAL ANNUAL REPORTS AND STRATEGIES

1.1 JURISDICTIONAL ANNUAL REPORTS

This WQIP annual report includes each of the Copermittee's Jurisdictional Runoff Management Plan (JRMP) annual report for fiscal year (FY) 16. The FY 16 JRMP annual reports include the legal authority certification, annual report certification page, the JRMP annual report form; annual report form supplemental information, as applicable; and the fiscal analysis review summary. As required by the Municipal Permit, each Copermittee has included information on any modifications to their BMP Design Manual and JRMP document as part of the annual report.

1.2 JURISDICTIONAL STRATEGIES

Jurisdictional strategies are required as part of the Water Quality Improvement Plan (WQIP), under Provision B of the San Diego Regional Water Quality Control Board (Regional Board) National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region, Order Number R9-2013-0001(Municipal Permit). The Responsible Parties (RPs) identified water quality improvement strategies outlined in the WQIP and implemented those strategies in FY 2016, the first year of WQIP implementation, to address the Highest Priority Conditions or Focused Priority Conditions. Nonstructural and structural strategies selected by each RP to address Priority Conditions are presented in this document. RP-specific tables for implementation of the selected strategies that outline the method, cost, and additional stakeholder participation are presented in the sections below. The strategies were selected on the basis of their ability to effectively and efficiently eliminate non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the maximum extent practicable (MEP), and achieve the interim and final numeric goals identified in the San Diego Bay Watershed Management Area (WMA) WQIP.

In addition to the strategies and schedules presented in this Appendix, the jurisdictions implemented baseline jurisdictional programs as summarized in the jurisdictional annual reports.

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2 SAN DIEGO COUNTY REGIONAL AIRPORT AUTHORITY

2.1 ANNUAL REPORT CERTIFICATION

The San Diego Airport Authority's signed Statement of Certification for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report is included on the following page.

SAN DIEGO
INTERNATIONAL AIRPORT
LET'S GO.

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Management Area, Water Quality Improvement Plan Fiscal Year 2015-2016 Annual Report

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the San Diego County Regional Airport Authority has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Brendan Reed, Director
Environmental Affairs

1/20/2017
Date

2.2 ANNUAL REPORT FORM

The Airport Authority's completed JRMP Annual Report form for FY16 is included on the following pages.

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JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name:	San Diego County Regional Airport Authority
Copermittee Primary Contact Name:	Richard Gilb

Copermittee Primary Contact Information:
Address: PO Box 82776
City: San Diego County: San Diego State: CA Zip: 92138
Telephone: (619) 400-2790 Fax: (619)-400-2784 Email: rgilb@san.org

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES NO	☒ ☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES NO	☒ ☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES NO	☒ ☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES NO	☒ ☐

Number of non-storm water discharges reported by the public	0
Number of non-storm water discharges detected by Copermittee staff or contractors	4
Number of non-storm water discharges investigated by the Copermittee	4
Number of sources of non-storm water discharges identified	4
Number of non-storm water discharges eliminated	4
Number of sources of illicit discharges or connections identified	1
Number of illicit discharges or connections eliminated	1
Number of enforcement actions issued	1
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES NO	☒ ☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES NO	☒ ☐

Number of proposed development projects in review	7
Number of Priority Development Projects in review	4
Number of Priority Development Projects approved	3
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	2

Number of completed Priority Development Projects in inventory	19
Number of high priority Priority Development Project structural BMP inspections	19
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

Number of construction sites in inventory	12
Number of active construction sites in inventory	4
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	8
Number of construction site inspections	198
Number of construction site violations	2
Number of enforcement actions issued	2
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	44	6	33	0
Number of existing development inspections	44	6	30	0
Number of follow-up inspections	0	0	0	0
Number of violations	25	14	60	0
Number of enforcement actions issued	25	14	60	0
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

X. CERTIFICATION

I ☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

	October 28, 2016 Date
BRENDAN REED Print Name	Director of Environmental Affairs Title
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2.3 SAN DIEGO REGIONAL AIRPORT AUTHORITY STRATEGIES

The San Diego County Regional Airport Authority (Airport Authority) has selected strategies to meet the water quality goals for copper and zinc in wet weather discharges to best suit the unique characteristics of the Airport Authority's jurisdiction, namely, the San Diego International Airport (SDIA). For example, the airport is almost entirely paved, and the space required for many traditional structural BMPs is severely limited. The Airport Authority has continued to implement its core Jurisdictional Runoff Management Plan (JRMP) in FY16, which includes many strategies that have positive impacts on the water quality of MS4 discharges. To make progress toward its identified goals, the Airport Authority enhanced some existing JRMP strategies and also implemented new strategies that concentrate on the Focused Priority Conditions.

In 2013, the Airport Authority completed a major expansion of the airport facilities at a cost of nearly $1B. The new terminal portion of the project was awarded Leadership in Energy and Environmental Design (LEED) Platinum certification from the U.S. Green Building Council. The project included BMPs such as permeable pavement, bioretention swales, and modular wetland treatment units. During FY16, other development projects were completed or initiated, incorporating various structural BMPs, as outlined in Table 2-1. Future projects will continue to consider storm water and water quality improvements during design and implementation, where feasible.

The Airport Authority's FY16 implementation of its jurisdictional strategies to meet WQIP goals is presented in Table 2-1. Any modifications to strategies and implementation schedules have been incorporated based on information gathered on the level of effort and further detail gained during the FY16 WQIP implementation. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allowed for these modifications of original strategies. As strategies are modified, the WQIP will be updated. The implementation of each strategy was contingent upon annual budget approvals and funding availability.

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Table 2-1
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
JRMP (E.2 – E.7) Strategies (E.3.b.(1)(a))									
E.3 Development Planning									
All Development Projects									
AA-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement Low Impact Development (LID) BMPs to maintain or restore hydrology of the area, where applicable and feasible.	Refer to SWMP/JRMP Sections 4, 6 & 7 and Appendix B, Sustainability Policy, and LEED. All development projects, once complete, will be inspected monthly. Annual inspections include examination of all structural BMPs at a project to verify that each structural BMP is working, being maintained properly, and is in compliance with all applicable Authority codes, plans and permits. Funding mechanisms for project construction and long-term maintenance include the rolling five year capital improvement program and tenant leases.	Fiscal Year (FY)16	Yes	Yes	Treatment Control (TC) BMP Inventory updated and all TCBMPs/LID BMPs inspected and maintenance requirements identified.	Clarified funding mechanisms to include tenant leases.	Clarification	Yes
Priority Development Projects (PDPs)									
AA-2	For PDPs, administer a program requiring implementation of structural BMPs to control pollutants. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Refer to SWMP/JRMP Sections 4, 6 & 7 and Appendix B, Sustainability Policy, and LEED. Annual inspections include examination of all structural BMPs at a project to verify that each structural BMP is working, being maintained properly, and is in compliance with all applicable Authority codes, plans and permits. Funding mechanisms for project construction and long-term maintenance include the rolling five year capital improvement program and tenant leases.	FY16	Yes	Yes	SWMP was updated with BMP Design Manual to replace SUSMP in February 2016. Four (4) PDPs submitted either an Urban Storm Water Mitigation Plan (USMP) to comply with SUSMP or a Storm Water Quality Management Plan (SWQMP) to comply with BMP Design Manual	Clarified funding mechanisms to include tenant leases.	Clarification	Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.4 Construction Management									
AA-3	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Refer to SWMP/JRMP Section 5. Inspections performed by the Authority provide verification that each site is in conformance with the SWMP/JRMP. All inspections are performed weekly. Please see Table I.1.2 in the WQIP for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the FPWQC. Funding is from the EAD budget.	Prior to FY16	Yes	Yes	198 construction inspections were conducted in FY 16	Clarified source of budget.	Clarification	Yes
E.5 Existing Development									
Commercial, Industrial, and Municipal Facilities and Areas									
AA-4	Administer and enforce a program to require implementation of minimum BMPs for existing development (commercial, industrial, and municipal) that are specific to the facility, pollutant-generating activities (PGAs), and areas, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to SWMP/JRMP Sections 6 and 7. All industrial, municipal, and commercial areas are inspected monthly. Please see Table I.1.2 of the WQIP for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the FPWQC. Funding is from the EAD budget.	FY16	Yes	Yes	408 inspections were conducted in FY 16			Yes
	1. Update minimum BMPs for existing commercial and industrial development.	Refer to SWMP/JRMP Appendix B. Please see Table I.1.2 of the WQIP for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the FPWQC. Funding is from the EAD budget.	FY16	Yes	Yes	Added the following BMPs during the SWMP update: SC02C – Electric Vehicle Maintenance SC20 – Erodible Areas SC21 – Construction and Remodeling/Repair			Yes
	2. Design, implement, and enforce pollutant-generating-area-based and PGA-based inspections.	Refer to SWMP/JRMP Sections 6 and 7. Please see Table I.1.2 of the WQIP for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the FPWQC. Funding is from the EAD budget.	FY16	Yes	Yes	SWMP updated prior to start of FY16, which included updating the PGAs and pollutants generated, and implementation of updated SWMP began in FY16			Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
AA-4 (cont)	3. Increased inspection frequency for highest potential pollutant generating areas and PGAs.	Funding will be from the EAD budget.	FY18	Not triggered during FY 16					
MS4 Infrastructure									
AA-5	Implement operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.) for water quality improvement.	Refer to SWMP/JRMP Section 6. In order to limit inflow of pollutants and reduce pollutant loads, inspection and maintenance of the MS4 is conducted quarterly. Funding is from the EAD, Facilities Management Department (FMD), and FDD budgets.	FY16	Yes	Yes	Annual inspections of catch basins were conducted airport-wide in July 2015, and catch basin cleaning was conducted in July and October/November 2015 and April 2016, airport-wide. Drain inlet insert BMPs were inspected prior to storms, when ≥ 50% chance of rain, and, when needed, after storms. Maintenance was conducted on an as-needed basis. T2 Airside StormFilter unit was maintained (sediment removed).			Yes
	1. Determine and implement optimal catch basin cleaning locations and frequencies to maximize pollutant removal.		FY17	Not triggered during FY 16					

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Hardscapes (Runway, Taxiways, Ramps, Roads, Streets, and Parking Lots)									
AA-6	Implement operation and maintenance activities for runway, taxiways, ramp areas, roadways, and parking lots.	Refer to SWMP/JRMP Sections 6 and 7, and Appendix B. Please see Table I.1.2 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the FPWQC. Funding is from the FMD and EAD budgets.	FY16	Yes	Yes	Approximately 1,832 acres were swept during FY 16 on the airside of the Airport's property. This resulted in 35 acres of total airside pavement swept per week. Runway rubber removal is conducted every 6-8 weeks depending on the skidometer testing results. The following roads are swept 5 times per week (Monday through Friday) for three hours per day: Commuter Terminal and Terminal 1 Roadway System, Winship Lane, Stillwater Road, Airlane Road, Terminal 2 East and Terminal 2 West Roadway System, and Spruance Road. All of the parking lots, which include the Long Term Lot, Economy Lot, Lot 6, Cell Phone Lot, Taxi Hold Lot, NTC, and Terminal 1 & 2, are swept weekly.	Modification required. Airside sweeping performance goal for FY16 in sub-basins 1, 3, and 5 was not met. Information used to establish this goal was misinterpreted.	Improve sweeping data collection and analysis methods and correction to sweeping goals	Yes
	1. Determine and implement optimal street sweeping locations and frequencies on runway, taxiways, ramp areas, roads, and parking lots to maximize pollutant removal.	Refer to SWMP/JRMP Sections 6 and 7. The Authority will increase sweeping in sub-basins 1, 3, and 5, to address apparent sources of higher concentrations of copper and zinc (the FPWQC).	FY17	Not triggered during FY 16					

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Pesticides, Herbicides, and Fertilizer BMP Program									
AA-7	Require implementation of BMPs in an integrated pest management (IPM) program to address application, storage, and disposal of pesticides, herbicides, and fertilizers in commercial, industrial, and municipal areas. Includes education, permits, and certifications.	Refer to SWMP/JRMP Sections 6, 7 and 9, and Appendix B. All storage and disposal areas are inspected monthly. Funding is from the FMD and EAD budgets.	FY16	Yes	Yes	• FMD is in charge of the herbicides, fertilizer and landscaping • EAD is in charge of the pesticides • 133 gallons and 494.15 grams of pesticides were used in FY 16 • IPM program transferred from FMD to EAD's control. • Areas are inspected at a minimum of twice per month. • SAN was nominated for an IPM Achievement Award from the California Department of Pesticide Regulation. The recipient of the award has not been selected as of 8/29/2016.			Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Retrofit and Rehabilitation in Areas of Existing Development									
AA-8	Identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	Refer to SWMP/JRMP Sections 4 and 6 and Appendix C. The Authority will identify those areas of existing development that are candidates for retrofitting where feasible, to reduce pollutants and/or stressors that contribute to the FPWQC. If retrofitting projects are deemed infeasible, the Authority will collaborate and cooperate with other Responsible Parties in the WMA to identify, develop, and implement regional retrofitting projects adjacent to and/or downstream from the Authority's areas of existing development. Funding mechanisms for project construction and long-term maintenance include the rolling five year capital improvement program and tenant leases.	FY16	Yes	Yes	Areas including the 90 Day Facility and FedEx Overhead Canopy were retrofitted. Both projects are located on the North Ramp of the Airport. The 90 Day Facility is the designated storage for hazardous materials before they are taken off site for proper disposal. The FedEx Overhead Canopy extends over a 700 ft^2 area and was installed to protect the FedEx cargo work area.	Clarified funding mechanisms to include tenant leases.	Clarification	Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program									
AA-9	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the SWMP/JRMP. Requirements include: maintaining an MS4 map, using municipal personnel, tenants, contractors, and vendors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to SWMP/JRMP Sections 3 and 7, and Appendix D. The Authority visually inspects 2 major MS4 outfalls and all sampling locations twice a year during dry weather conditions, as well as inspecting all drainage basins monthly for authorized and unauthorized non-storm water discharges. Please see Table I.1.2 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the FPWQC.	Prior to FY16	Yes	Yes	Thirty (30) Hotline entries are documented for fiscal year 2016. Only 4 spills/leaks (1 fuel, 3 water) reached the storm drain and were immediately cleaned or eliminated. Another fuel spill was captured in the oil water separator at the fuel loading islands, and again was cleaned. MS4 map was updated in March 2016. Airport's 2 major MS4 outfalls and industrial permit sampling locations throughout the airport were inspected in May and June of 2016 during the dry weather inspections, and all areas were inspected monthly for any authorized and unauthorized non-storm water discharges. The only unauthorized discharge observed was eliminated.			Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.7 Public Education and Participation (B.3.b.(1)(a)(iii))									
AA-10	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to WQIP Section 4.4.2 and SWMP/JRMP Section 9.	Prior to FY16	Yes	Yes	The 3 outreach events that the Airport has promoted include the 31nd Annual California Coastal Cleanup Day, the 14th Annual Creek to Bay Cleanup, and the EarthFair in Balboa Park. Tours are available for students in grades 2 through 8 and are offered twice a month. Additional public participation opportunities include, Airport Authority Board Meetings, Lindbergh Airport Managers Committee Meetings, Tenant Safety Committee Meetings, the Authority Webpage, Project Clean Water Webpage, THINK BLUE Webpage, THINK BLUE Hotline, and the Authority 24-Hour Airport Hotline.			Yes
AA-11	Provide municipal staff and tenant training. Highlight goals and strategies of WQIP, in particular copper and zinc as FPWQC for the Authority, sources and BMPs.	Refer to SWMP/JRMP Section 9.	Prior to FY16	Yes	Yes	Authority and tenant employees training was conducted November-January. Over 140 individuals were trained. Storm Water BMP posters are being finalized and will be displayed in various airport and tenant employee areas in FY17			Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.6 Enforcement Response Plan									
AA-12	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for illicit discharge detection and elimination (IDDE), development planning, construction management, and existing development in the Enforcement Response Plan.	Refer to SWMP/JRMP Sections 2, 3, 4, 5, 6, and 7. Escalated enforcement will include, when applicable, highlighting sources of any copper and zinc issues during inspections and during enforcement actions, as a reminder of the Authority's FPWQC, and the requirement, where appropriate, to undergo additional training on copper and zinc as water quality issues.	Prior to FY16	Yes	Yes	Two NOVs were issued by Environmental Affairs Dept. for construction projects during the fiscal year. Every BMP deficiency observed during industrial, municipal, commercial and construction site inspections was brought to the attention of the responsible party and resolved. Education and outreach with tenants and employees was performed throughout the fiscal year.			Yes
Non-JRMP Strategies (Optional Strategies, B.3.b.(1)(b))									
Nonstructural									
AA-13	Determine and implement optimal runway rubber removal locations and frequencies to maximize pollutant removal in Drainage Basins 1, 3 and 5.	This strategy may be implemented at any time at the Authority's discretion if the following triggers are met: 1) increased street sweeping in ramp/runway areas does not result in lower concentrations and loads of the FPWQC, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) consensus and community support has been achieved. All budgets are contingent upon approval by the Authority Board.	FY17	Not triggered during FY 16				FY 18	No
AA-14	Determine and implement potential enhancements to runway rubber removal operations and equipment.	This strategy may be implemented at any time at the Authority's discretion if the following triggers are met: 1) increased street sweeping in ramp/runway areas does not result in lower concentrations and loads of the FPWQC, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) consensus and community support has been achieved. All budgets are contingent upon approval by the Authority Board.	FY18	Not triggered during FY 16					

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
AA-15	Investigation and research of emerging BMP technology.	The Authority periodically conducts literature reviews, communication with other municipalities, researchers and vendors outside of the Authority, and pilot studies of new or emerging BMP technologies, with the goal of updating BMPs available and feasible for reducing pollutant loads from development and redevelopment sites. Funding and resources will be sought for FY2016. Funding for future fiscal years is contingent on annual budget approval by Authority Board.	Prior to FY16	Yes	Yes	Implemented pervious pavement, bioswales, and bioretention. Researched novel treatment control BMPs such as alternative filter media and filter media enhancements (e.g., biochar as filter media for tree boxes, latest developments in downspout filters, and inlet filter socks) to address zinc and copper.			Yes
AA-16	As opportunities arise and funding sources are identified, protect areas that are functioning naturally by avoiding impervious development and degradation on unpaved open space areas.	This strategy may be implemented at any time at the Authority's discretion if the following triggers are met: 1) proposed project includes naturally functioning area, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) consensus and community support has been achieved. All budgets are contingent upon approval by the Authority Board.	FY17	Not triggered during FY16.				FY17	Yes
AA-17	Industrial BMP: Capture and Reuse of Air Conditioning Condensate	The existing Capture and Reuse of Air Conditioning Condensate program will continue for industrial facilities for water collection, conservation, and reuse using drums to collect the condensate, and final use of the water for power washing of sidewalks.	Prior to FY16	Yes	Yes	70,700 gallons of condensate water were collected and reused during FY16.			Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
AA-18	Implement source reduction initiatives.	Reduce FPWQC concentrations and loads by requiring Authority departments and tenants to replace vehicle and aircraft brake pads with copper-free brake pads. This strategy may be implemented at any time at the Authority's discretion if the following triggers are met: 1) funding is identified and secured, 2) technology is available and cost-effective, 3) consensus and community support has been achieved, and 4) interim and/or final goals have not been met. All Authority budgets are contingent upon approval by the Authority Board.	FY18+	Not triggered during FY 16					
	1. Replace Authority-owned vehicle brake pads with copper-free brake pads as they become commercially available.		FY18+	Not triggered during FY 16					
	2. Require replacement of tenant-owned vehicle brake pads with copper-free brake pads as they become commercially available.		FY18+	Not triggered during FY 16					
	3. Require use of maintenance-free, leak-proof batteries for electric vehicles as available.		FY18+	Not triggered during FY 16					
Structural									
Green Infrastructure									
AA-19	Since 2013, approximately 6 acres of permeable surface have been installed at the airport.	Funding is from the rolling five-year capital improvement program, which is contingent on budget approval by Authority Board.	Prior to FY16	Yes	Yes	Permeable pavement installations have continued. Total acreage of permeable pavement currently installed at airport (by end of FY16) is approximately 8.9 acres.			Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
AA-20	Implement runoff water capture and reuse projects and facilitate the implementation of such projects.	Refer to Sustainability Policy and Draft Master Drainage Plan/Water Reuse Plan. Currently, the Authority is conducting workshops to investigate water capture and reuse opportunities.	FY18	In planning phase	No - ongoing	Draft Master Drainage Plan/Water Reuse Plan is being developed			Yes
AA-21	Phase in advanced BMPs (as defined in Industrial General Permit (IGP) i.e., shelters/structures, LID BMPs, TCBMPs and other BMPs) in high priority areas (e.g., runway, taxiways, ramps: sub basins 1, 3, and 5).	Reduce FPWQC concentrations and loads by requiring Authority departments and tenants to phase in advanced BMPs. This strategy may be implemented at any time at the Authority's discretion if the following triggers are met: 1) funding is identified and secured, 2) technology is available and cost-effective, 3) consensus and community support has been achieved, and 4) interim and/or final goals have not been met. All Authority budgets are contingent upon approval by the Authority Board.	FY17 or Trigger	Yes	Yes	Advanced BMPs that were installed were the 90 Day Facility, 1 Overhead Canopy and 1 Clearwater inlet BMP at FedEx, 7 Clearwater inlet BMPs, 1 detention basin, and 2 modular wetland systems at RCC Bus Parking, 1 Clearwater inlet BMP, 1 infiltration trench and 1 permeable pavement area at Taxi Hold Lot, 7 Clearwater inlet BMPs and 1 BioClean inlet skimmer box at Terminal Link Rd, 1 Contech StormFilter and 0.5 acres of permeable pavement at FBO, 4 permeable pavement/stone reservoir beds in Parking Lot 6, and 6 bioretention swales at RCC.		FY 16	Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
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Multiuse Treatment Area									
Infiltration and Detention Basins									
AA-22	Since 2013, approximately 2 acres of bioswales have been installed as part of the airport Terminal 2 Expansion Project and other improvement projects.	Future developments will consider bioswales and other LID BMPs per final adopted BMP Design Manual and Authority codes and rules/regulations. This strategy may be implemented at any time at the Authority's discretion if the following triggers are met: 1) funding is identified and secured, 2) consensus and community support has been achieved, and 3) interim and/or final goals have not been met. All Authority budgets are contingent upon approval by the Authority Board.	Prior to FY16			.			No
AA-23	Bioretention swales being constructed as part of the Rental Car Center.	Future developments will consider bioretention and LID BMPs per final adopted BMP Design Manual and Authority codes and rules/regulations. This strategy may be implemented at any time at the Authority's discretion if the following triggers are met: 1) funding is identified and secured, 2) consensus and community support has been achieved, and 3) interim and/or final goals have not been met. All Authority budgets are contingent upon approval by the Authority Board.	FY17	Yes	Yes	6 bioretention swales totaling 2.8 acres were installed at RCC.		FY 16	No

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Stream, Channel and Habitat Rehabilitation Projects (B.3.b.(1)(b)(iii))									
AA-24	Habitat rehabilitation projects, as necessary and appropriate, in the Navy Boat Channel, Convair Lagoon, or Laurel-Hawthorne Embayment portions of San Diego Bay	This strategy may be triggered as 1) Investigative Orders or other regulatory orders/permits are issued, 2) partners have been identified and collaborative agreements have been developed, 3) funding to address MS4 discharges is identified and secured, 4) habitat rehabilitation is required and projects have been identified and designed, 5) staff resources are identified and secured, and 6) permits required by regulatory agencies are secured. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the Authority's discretion: 1) Obtain Authority Board approval of Capital Improvement Projects budget 2) Assign budget 3) Initiate preliminary engineering to narrow project scope 4) Hire design consultant to develop detailed construction plans and construction cost estimates 5) Complete construction contractor bid and award process for construction phase 6) Construct project (project timing and construction costs are TBD and are based on size of the project). 7) Operation and maintenance will be in perpetuity. Funds and staff resources for this function will be approved by Authority Board.	Triggered	Yes	Yes	Public meeting for the Navy Boat Channel was held on March 3, 2016.			TBD

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Water Quality Improvement BMPs									
Proprietary BMPs									
AA-25	SANPark PacHwy paid public parking lot; North Side Interior Road; Terminal Link Road; Rental Car Center (RCC); RCC Bus Parking Facility; Employee Parking Lot 6 Expansion; Taxicab Hold Lot; Terminal 2 Parking Plaza.	Since 2013, the following proprietary TC BMPs have been installed at the airport: 12 modular wetland treatment units, 6 high-rate media filters, and 4 hydrodynamic separators. Proprietary TC BMPs are currently included in the construction plans for the facilities approved for construction in 2015 and 2016.	Prior to FY16	Yes	Yes	TCBMPs that have been installed in FY16 are 1 Clearwater inlet BMP at FedEx, 7 Clearwater inlet BMPs, 1 detention basin, and 2 modular wetland systems at RCC Bus Parking, 1 Clearwater inlet BMP, 1 infiltration trench and 1 permeable pavement area at Taxi Hold Lot, 7 Clearwater inlet BMPs and 1 BioClean inlet skimmer box at Terminal Link Rd, 1 Contech StormFilter at FBO, 4 permeable pavement/stone reservoir beds in Parking Lot 6, and 6 bioretention swales at RCC.		FY 17	Yes

Table 2-1 (continued)
Airport Authority Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
WMA Strategies (Optional Strategies, B.3.b.(2))									
AA-26	Offsite Alternative Compliance Option (WMAA)	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. This strategy may be implemented at the Authority's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) consensus and community support has been achieved, and 4) interim/final goals are not met. Funding for future fiscal years is contingent on budget approval by Authority Board.	Must be Triggered	Not triggered during FY 16					
AA-27	Participate in Reference Watershed Study	The San Diego Regional Reference Stream Study as currently being conducted by the Southern California Coastal Water Research Project. The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition.	Prior to FY16	Yes	Yes	The Airport helped fund the San Diego Regional Reference Stream Study as part of the Storm Water Copermittees' FY16 Regional Shared Costs Budget		FY 17	Yes

Notes:
1. Metals, and in particular, copper and zinc, are the Airport Authority's Focused Priority Water Quality Condition (FPWQC).

2.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The Airport Authority BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The Airport Authority updated its BMP Design Manual in accordance with Municipal Permit requirements during FY16; the BMP Design Manual replaced the Standard Urban Storm Water Mitigation Plan (SUSMP). No additional changes to the BMP Design Manual have been made since it went into effect. The Airport Authority BMP Design Manual can be accessed via the Project Clean Water website at: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=244&Itemid=212.

2.5 MODIFICATION PROGRAM

No modifications to the Airport Authority's JRMP have been made since the WQIP was approved in spring 2016. The current Airport Authority JRMP is posted on the Airport Authority's website, and the link to this page is listed on Project Clean Water.

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3 CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

3.1 ANNUAL REPORT CERTIFICATIONS

Caltrans' signed Statement of Certification for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report is included on the following page.

DEPARTMENT OF TRANSPORTATION
DISTRICT 11
4050 TAYLOR STREET, M.S. 120
SAN DIEGO, CA 92110
PHONE (619) 688-0100
FAX (619) 688-4237
TTY 711
www.dot.ca.gov

Serious drought.
Help save water!

January 4, 2017

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Management Area Water Quality Improvement Plan
2015-2016 Annual Report

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

BRUCE L. APRIL
Deputy District Director, Environmental

1/6/17
Date

3.2 CALTRANS AUTHORITY STRATEGIES

The jurisdiction areas of Caltrans include roadways, land adjacent to roadways, and facilities; Caltrans' jurisdictional strategies specifically focus on BMP implementation to reduce known pollutants within these areas. Caltrans is not permitted within the Municipal Permit; however, Caltrans is subject to similar requirements through its MS4 Permit (SWRCB, 2013). Though not permitted within the MS4 Permit, Caltrans has voluntarily contributed to the Water Quality Improvement Plan Annual Report effort to provide a consistent and subwatershed-wide approach to meeting applicable TMDL requirements. Caltrans voluntary contributions include a detailed list of strategies developed and provided in Table 2-3-1. The strategies and schedules presented in Table 2-3-1 are subject to change and are contingent upon annual budget approvals and funding availability. They are modified through the adaptive management process as needed.

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Table 3-1
Caltrans Jurisdictional Strategies

ID	Strategy	Implementation Approach/ Level of Effort	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as Planned in Current FY (FY 16)?	Completed in Current FY (FY 16)?	Notes	Modification (if modified or cancelled, provide rationale)	Modification Type (schedule, approach, new)	Planned Implementation into the Next FY? (Y/N)
Jurisdictional Strategies									
Design Storm Water Program									
CT-1	Update and implement design BMPs.	The Office of Storm Water Management Design (OSWMD) develops, evaluates, and enhances guidance documents and tools.	FY16	Yes	Yes				Yes
	1. Update and implement Landscape Architecture Program (LAP).	The OSWMD provides technical assistance on new and ongoing research related to permanent erosion control and permanent BMPs. In addition, the LAP develops methods to enhance roadside vegetation, which protects slopes from erosion and sediment loss, and may remove pollutants from storm water runoff.	FY16	Yes	Yes				Yes
	2. Implement native landscape/LID Design Guide Strategy.	Require native landscaping/LID in project plan design guide. The Project Planning and Design Guide (PPDG) includes an online training program.	FY16	Yes	Yes				Yes
CT-2	Train staff on Design Storm Water Program.	Train staff on Design Storm Water Program. Curriculum updated to reflect the latest strategies.	FY16	Yes	Yes				Yes
CT-3	Plan and implement treatment BMPs as appropriate.	Treatment BMPs are planned and implemented to comply with Caltrans NPDES Permit project development requirements, TMDL waste load allocations, location specific requirements, and the requirements in the Project Planning and Design Guide (PPDG) according to the Targeted Design Constituent (TDC) approach.	FY16	Yes	Yes				Yes
CT-4	Develop procedures to encourage mitigation for projects within the same watershed.	Caltrans will investigate procedures to mitigate within the same watershed as new projects.	FY16	Yes	Yes				Yes
CT-5	Implement a self-audit program to ensure BMPs are designed, implemented, and maintained.	Design Compliance Monitoring Program is a self-audit program that uses various tools for documenting compliance with the design pollution prevention and treatment BMP requirements of the 2013 NPDES Permit and the Caltrans Statewide SWMP. The Project Designs are reviewed to ensure that BMPs are being considered and appropriately incorporated into Caltrans' projects. This review also ensures storm water compliance throughout the project planning and design phases.	FY16	Yes	Yes				Yes

Table 3-1 (continued)
Caltrans Jurisdictional Strategies

ID	Strategy	Implementation Approach/ Level of Effort	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as Planned in Current FY (FY 16)?	Completed in Current FY (FY 16)?	Notes	Modification (if modified or cancelled, provide rationale)	Modification Type (schedule, approach, new)	Planned Implementation into the Next FY? (Y/N)
Construction Management									
CT-6	Administer a program to oversee implementation of BMPs during the construction phase of Caltrans projects. Includes inspections at an appropriate frequency and enforcement of requirements.	Caltrans complies with the statewide Construction General Permit. The district holds pre-construction meetings for all projects that require a SWPPP.	FY16	Yes	Yes				Yes
CT-7	Provide construction storm water training for District staff.	Continue implementation of the construction storm water classes offered throughout the Caltrans districts by the Division of Construction. Classes updated to reflect latest permit requirements.	FY16	Yes	Yes				Yes
CT-8	Implement a self-audit program to ensure compliance with water quality requirements.	Continue implementation of the Construction Compliance Evaluation Plan. Evaluates contractor's Storm Water Pollution Prevention Plan (SWPPP) or WPCP implementation and assesses compliance with water quality requirements, evaluates storm water contract administration, and incorporates quality control, quality assurance.	FY16	Yes	Yes				Yes
CT-9	Provide maintenance training for employees.	The Division of Maintenance has formal storm water management training sessions for new employees and refresher training for existing staff.	FY16	Yes	Yes				Yes
Maintenance									
Facilities and Areas									
CT-10	Administer a program to require implementation of minimum BMPs for facilities and leased space (air space leases).	Refer to SWMP; Leased space is required to meet current storm water regulations.	FY16	Yes	Yes				Yes
CT-11	Inspection of facilities and leased areas.	The Department will continue to reduce the potential for storm water pollution by the development and implementation of Facility Pollution Prevention Plans (FPPPs).	FY16	Yes	Yes				Yes
CT-12	Implement BMPs targeting reduction of over-irrigation.	Reduce over irrigation by requiring native, drought-tolerant plants and irrigation system improvements.	FY16	Yes	Yes				Yes
CT-13	Proactively monitor for erosion, and complete repair and slope stabilization.	Division of Maintenance conduct inspections on a five-year cycle. Program includes self-imposed goal to annually inspect slopes in each District and includes investigating public complaints and widely understood problem areas (WUPAs).	FY16	Yes	Yes				Yes

Table 3-1 (continued)
Caltrans Jurisdictional Strategies

ID	Strategy	Implementation Approach/ Level of Effort	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as Planned in Current FY (FY 16)?	Completed in Current FY (FY 16)?	Notes	Modification (if modified or cancelled, provide rationale)	Modification Type (schedule, approach, new)	Planned Implementation into the Next FY? (Y/N)
MS4 Infrastructure									
CT-14	Inspect and clean catch basins and conduct source investigations to identify upstream source of materials.	Inspect catch basins annually. If needed, catch basins are cleaned. If a catch basin is cleaned, a source inspection is conducted to identify source of sediment or other material.	FY16	Yes	Yes				Yes
CT-15	Proactively repair and replace MS4 components to provide source control from MS4 infrastructure.	Prioritize MS4 repairs. Funding for repairs based on size of project. Districts are able to conduct small repairs immediately, while larger projects are prioritized for repair out of annual budget.	FY16	Yes	Yes				Yes
Roads and Streets									
CT-16	Implement operation and maintenance activities on streets and roadways.	Refer to Work Plan.	FY16	Yes	Yes				Yes
	1. Implement street sweeping.	Refer to Work Plan.	FY16	Yes	Yes				Yes
	2. Perform sweeping of medians on high-volume arterial roadways.	Refer to Work Plan.	FY16	Yes	Yes				Yes
Pesticide, Herbicides, and Fertilizer BMP Program									
CT-17	Implement BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers.	Refer to Vegetation Control Plan. Caltrans is actively reducing fertilizer/pesticide application and only applies to targeted areas. All pesticide use is reported to the California Department of Pesticide Regulation.	FY16	Yes	Yes				Yes
Illicit Connections/Illegal Discharges									
CT-18	Identify and resolve potential illicit connections/illegal discharges (IC/IDs).	Continue maintaining a hotline for reporting of illicit discharges. Majority of calls come from contractors and construction and maintenance staff. Continue coordination with other jurisdictions to address IC/IDs and provide written notification of potential IC/IDs associated with a municipality's jurisdiction.	FY16	Yes	Yes				Yes
CT-19	Identify erosion and slope stabilization issues on private or municipal property and inform the source for repair.	When Caltrans staff or contractors identify erosion or slopes in need of repair, it is treated as an IC/ID and the property owner is notified.	FY16	Yes	Yes				Yes

Table 3-1 (continued)
Caltrans Jurisdictional Strategies

ID	Strategy	Implementation Approach/ Level of Effort	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as Planned in Current FY (FY 16)?	Completed in Current FY (FY 16)?	Notes	Modification (if modified or cancelled, provide rationale)	Modification Type (schedule, approach, new)	Planned Implementation into the Next FY? (Y/N)
Public Education and Participation									
CT-20	Implement a public education and participation program to raise awareness of storm water pollution and prevention on California's freeways and highways.	Continue to implement the "Don't Trash California" Campaign, Adopt-A-Highway program, and the Protect Every Drop program, and partner with local organizations.	FY16	Yes	Yes				Yes
	1. Conduct trash cleanups.	Conduct trash cleanups through local probation and adopt-a-highway programs. Encourage prevention through "Don't Trash California" campaign.	FY16	Yes	Yes				Yes
	2. Target public education and outreach.	Provide outreach to public raising awareness of storm water pollution. Hold bring-your-child-to-work days with watershed model.	FY16	Yes	Yes				Yes
Other Nonstructural Strategies									
CT-21	Provide sanitation and trash management, implement access control in targeted areas.	As necessary, implement methods such as rip-rap, chain link fences, and remove low-lying brush to discourage use of right-of-way areas.	FY16	Yes	Yes				Yes
CT-22	Continue participating in source reduction initiatives.	Continue participation in Brake Pad Partnership through work with California Storm Water Quality Association.	FY16	Yes	Yes				Yes
CT-23	Remove invasive plants.	Remove invasive plants through maintenance and construction programs.	FY16	Yes	Yes				Yes
CT-24	Protect areas that are functioning naturally.	Required as part of the Project Planning and Design Guide (PPDG) and the Natural Environment as Treatment (NEAT) programs, Caltrans minimizes disturbance of exiting vegetation.	TBD	Yes	Yes				Yes
CT-25	Collaborate with RPs on WQIPs.	Voluntarily participate in the development of the WQIP and continue to collaborate with RAs on water quality planning and implementation projects.	FY16	Yes	Yes				Yes
Multiuse Treatment Areas									
Infiltration and Detention Basins									
CT-26	BMP Retrofit (#282401)	Chollas Creek BMP Retrofit Project; Interstate 15 and 94. There are 4 modified infiltration trenches, 1 austin vault sand filter, and 3 biofiltration swales.	2014	Yes	Yes				
CT-27	Construct Lanes and Transit Station) (#2T1301)	Construct BRT Lanes and Transit Station on Interstate 15. Install 2 bioswales and 1 media filter to treat approximately 18 acres.	2014	Yes	Yes				

3.3 MODIFICATIONS TO THE BMP DESIGN MANUAL

The Caltrans BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The Caltrans updated its BMP Design Manual in accordance with Municipal Permit requirements during FY16; the BMP Design Manual replaced the Standard Urban Storm Water Mitigation Plan (SUSMP). No additional changes to the BMP Design Manual have been made since it went into effect. The Caltrans BMP Design Manual can be accessed via the Project Clean Water website at: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=244&Itemid=212.

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4 CITY OF CHULA VISTA

4.1 ANNUAL REPORT CERTIFICATIONS

City of Chula Vista's signed Statement of Certification and Legal Authority Establishment for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report is included on the following page.

STATEMENT OF CERTIFICATION

SAN DIEGO BAY WATERSHED MANAGEMENT AREA WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

AND

LEGAL AUTHORITY ESTABLISHMENT

I certify under penalty of law that this Water Quality Improvement Plan Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the City of Chula Vista has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements contained in Section E.1 of the San Diego Regional Water Quality Control Board Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

William S. Valle
Assistant Director of Engineering/ City Engineer

JAN 17, 2017
Date

4.2 ANNUAL REPORT FORM

The City of Chula Vista's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

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JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name: City of Chula Vista

Copermittee Primary Contact Name: Boushra Salem

Copermittee Primary Contact Information:
Address: 1800 Maxwell Road
City: Chula Vista County: San Diego State: CA Zip: 91911
Telephone: 619-397-6111 Fax: 619-397-6259 Email: bsalem@chulavistaca.gov

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	66	*
Number of non-storm water discharges detected by Copermittee staff or contractors	123	
Number of non-storm water discharges investigated by the Copermittee	188	
Number of sources of non-storm water discharges identified	114	
Number of non-storm water discharges eliminated	64	
Number of sources of illicit discharges or connections identified	79	
Number of illicit discharges or connections eliminated	61	
Number of enforcement actions issued	27	
Number of escalated enforcement actions issued	11	

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

Number of proposed development projects in review	48	
Number of Priority Development Projects in review	10	
Number of Priority Development Projects approved	26	
Number of approved Priority Development Projects exempt from any BMP requirements	1	
Number of approved Priority Development Projects allowed alternative compliance	0	
Number of Priority Development Projects granted occupancy	651	*

Number of completed Priority Development Projects in inventory	250
Number of high priority Priority Development Project structural BMP inspections	171
Number of Priority Development Project structural BMP violations	2
Number of enforcement actions issued	2
Number of escalated enforcement actions issued	0

* Please see Attachment 1

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	60
Number of active construction sites in inventory	28
Number of inactive construction sites in inventory	2
Number of construction sites closed/completed during reporting period	30
Number of construction site inspections	465
Number of construction site violations	159
Number of enforcement actions issued	6
Number of escalated enforcement actions issued	5

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	87	2,522	125	19
Number of existing development inspections	73	217	45	107
Number of follow-up inspections	4	43	18	2
Number of violations	2	7	5	6
Number of enforcement actions issued	1	7	5	6
Number of escalated enforcement actions issued	0	1	5	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒	**
	NO	☐	

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Date: 11/8/16
William S. Valle	Assistant Director of Engineering
Print Name	Title
619-409-5976	wvalle@chulavistaca.gov
Telephone Number	Email

** Please see Attachment 2

CITY OF CHULA VISTA
JRMP ANNUAL REPORT FY 2015-2016
ATTACHMENT 1 TO ANNUAL REPORT FORM

The following explanations are intended to provide clarification on sections of the JRMP Annual Report as noted by an asterisk (*) on the report form.

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

The City proactively seeks to identify sources of non-storm water discharges and when anthropogenic non-storm water discharges are identified, action is taken immediately to address such discharges. Since July 1, 2013, the City has implemented its new field screening program to comply with the requirements of the Municipal Permit.

Number of non-storm water discharges reported by the public:
This is the number of reported potential non-storm water discharges to the City's storm water hotline by citizens (66).

Number of non-storm water discharges detected by Copermittee staff or contractors:
This is the number of reported potential non-storm water discharges to the City's storm water hotline by City employees (23) or the consultant performing MS4 outfall monitoring for the City (100).

Number of non-storm water discharges investigated by the Copermittee:
This is the number of non-storm water discharges that City staff investigated based on reports from the hotline (89 total, 1 cancelled) and by the MS4 outfall monitoring consultant for the City (100).

Number of sources of non-storm water discharges identified:
This is the number of sources of non-storm water discharges investigated where a source was found (60 via hotline calls and 54 via MS4 outfall monitoring).

Number of non-storm water discharges eliminated:
This is the number of non-storm water discharges eliminated based on hotline calls (61) and the consultant's investigation (3).

Number of sources of illicit discharges or connections identified:
This is the number sources of illicit discharges or connections identified based on the investigation of hotline calls (58) and MS4 outfall monitoring (21).

Number of illicit discharges or connections eliminated:
This is the number of illicit discharges or connections eliminated based on hotline calls (58) or MS4 outfall monitoring (3). All illicit discharges or connections were eliminated via the storm drain vactor crew, clean up by the responsible party, enforcement action, or were determined to be transient flow. Minor irrigation runoff was addressed via education. Gross overwaterers receive a letter from the City, and are also reported to the appropriate water district.

V. DEVELOPMENT PLANNING PROGRAM

Number of Priority Development Projects granted occupancy:
The number indicated on the Annual Report Form (651) consists of 637 residential units and 14 non-residential buildings.

Attachment 2
FY 2015-2016 Fiscal Analysis Summary

Jurisdictional Component		Multiple Program	Prior Programs
Administration	$191,586.97		
Development Planning	$62,472.44		
Construction Management	$198,948.22		
Municipal Areas	$1,108,091.28		
Industrial and Commercial Areas	$37,872.04		
Residential Areas	$29,142.76		
Illicit Discharge Detection & Elimination (IDDE)	$403,498.47		
Education	$45,261.96		
Public Participation	$0.00		
Special Studies (Investigations)	$5,592.70		
Non-Emergency Firefighting	$0.00		
Jurisdictional TOTAL	**$2,082,466.82**		

Jurisdictional Component Shared Programs		Multiple Program	Prior Programs
Used Oil Recycling	$11,277.60	x	x
Household Hazardous Waste Management	$277,033.12	x	x
Wastewater Collection Systems Maintenance	$6,372,216.00	x	x
Flood Management Projects and Flood Control Devices	$1,958,329.58	x	x
Jurisdictional Shared Programs Total	**$8,618,856.30**		

Jurisdictional Component Shared Programs For Which Costs Can Not Be Readily Calculated	Multiple Program	Prior Programs
Land Use Planning	x	x
Environmental Review	x	x
Development Project Approval and Verification	x	x
Management of Pesticides, Herbicides, and Fertilizers	x	x
Roads, Streets, Highways, and Parking Facilities	x	x
Parks and Recreational Facilities	x	x

Regional Component Shared Programs		Multiple Program	Prior Programs
Regional Component TOTAL	**$141,137.64**	x	x

Watershed Component Shared Programs		Multiple Program	Prior Programs
Watershed Component TOTAL	**$252,970.42**	x	x

Attachment 2
FY 2015-2016 Fiscal Analysis Summary

Funding Source	Program Element
General Fund	Storm Water Management
	Storm Drain Maintenance
Storm Drain Fee	Storm Water Management
Wastewater Fee	Wastewater Collection System Maintenance
Special Assessment Districts	Storm Drain Maintenance
	Wastewater Collection System Maintenance
Grant Funds	Used Oil Recycling
	Drainage Capital Improvement Projects
Solid Waste Fee	Household Hazardous Waste Management
Developer Deposits and Fees	Environmental Reviews
Transnet	Drainage Capital Improvement Projects

Note: The above fiscal analysis is intended to provide an approximate estimate of program elements costs related to the City's storm water management program. It is not intended to provide a fiscally auditable report of the City's expenditures.

4.3 CITY OF CHULA VISTA STRATEGIES

The City of Chula Vista (Chula Vista) is located within the Sweetwater River and Otay River subwatersheds. The western portion of the City, west of Interstate 805, is characterized by having older infrastructure and is more densely populated. The portion of the City east of Interstate 805, generally has newer development and infrastructure, consisting of more pervious area and permanent BMP implementation, due to this area being developed under more the recent MS4 Permit land development requirements. Although the Focused Priority area is in the western portion of the City, the majority of strategies were implemented City-wide. Jurisdictional strategies target a number of pollutants, however, the focus of most strategies is to target trash.

Chula Vista has a well-rounded education and outreach program, which includes distribution of educational inserts in bimonthly trash bills, coordination of cleanup events with I Love a Clean San Diego, a revamped website that provide easier access to City resources, and updated residential storm water education brochures. The Chula Vista CLEAN Team, which consists of the Conservation, Environmental Services, and Storm Water Management Sections, partner together to provide residents with a cohesive environmental message. The CLEAN Team regularly collaborates on City special events, educational brochures, and environmental programs. In addition, a new City Operations Sustainability Plan, detailing water use, energy use, green purchasing, recycling and waste management, pollution prevention, transportation, green buildings, and green infrastructure, was adopted in June 2014. The City also participates in the Regional Think Blue San Diego educational program.

The WQIP identified general retail and commercial areas, including eating and drinking establishments as a high priority source of trash. In order to address this source, the City enhanced its commercial and industrial facility inspections and updated its inspection forms to collect additional information about the trash enclosures and trash receptacles of these facilities. FY 2016 was the first reporting period that this addition information was collected. The City can use this data to help individual facilities improve on their trash management BMP implementation, and as data is collected over time, it can help the City to identify particular areas where additional efforts are needed, such as targeted education or increased inspection frequency.

Notably, Chula Vista formed a Homeless Outreach Team during the reporting period, which consists of Chula Vista Parks, Police Department, Public Works staff, as well as a variety of non-profit entities that help to provide a holistic approach to tackling homeless issues. The program targets a number of City parks, facilities, and problem areas of the City. Staff visits these areas once per week and can remove over 1,000 pounds of trash per week from the encampments. Funding for additional staff was added during the reporting period, which helps to bolster and strengthen the program.

An important portion of targeting trash in Chula Vista was the initiation of a Baseline Trash Assessment and BMP Feasibility Study. Planning for the study took place in the reporting period, with results of the study coming in the next fiscal year. The goal of the study is to identify the problem trash areas of the City and determine which BMPs are the most

appropriate to implement. In addition to aiding the City in achieving its strategies and goals to target trash, it helps to guide the City in compliance with the Statewide Trash Amendments. Results of the study are expected to help inform the City on where program improvements and adjustments are needed, where BMP retrofits and installations are feasible, and how to plan for meeting the WQIP trash goals.

In collaboration with the Port and Imperial Beach, the City also expanded its trash assessment monitoring program to help inform the City in its progress in implementing strategies and meeting goals. The expanded program includes additional source identification data gathering for MS4 Outfalls in the Focused Priority area, as well as paired receiving water and MS4 outfall monitoring.

Although this reporting year was based on only four months of implementation of the WQIP, Chula Vista made several strides in implementing strategies that works towards achieving WQIP goals. Enhanced educational programs in collaboration with the CLEAN Team, the commencement of the Trash Study, and expanded trash inspections and monitoring are a few of the notable activities that took place during the reporting period. Strategies and implementation schedules will be adjusted as necessary over time through the adaptive management process.

Table 4-1
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Core JRMP Strategies (Provisions E.2 – E.7)								
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
CV-1	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	The City contracts out outfall monitoring for more than 125 major outfalls in the City, receives hotline and email complaints, and works to eliminate illegal discharges. Refer to JRMP Section 3.	Prior to FY16	Yes – Continuous-Ongoing	During FY15-16, the City responded to 7 hotline calls about trash or illegal dumping.	NA		Yes
CV-2	Implement program for employee reporting of potential illicit discharges.	Chula Vista NPDES staff trains City employees to report illegal discharges. Refer to JRMP Section 3.	Prior to FY16	Yes – Continuous- As needed	During FY15-16, City staff reported 2 cases regarding trash or illegal dumping.	NA		Yes
CV-3	Utilize "Act Chula Vista" smartphone application and *website notification* to encourage residents to report potential illicit discharges or other storm water violations.	"Act Chula Vista" smartphone application is currently in use. There is also a hotline for employees and the general public.	Prior to FY16	Yes – Continuous-Ongoing	During FY15-16, there were 5 reports to the City's website about trash or illegal dumping.	Yes – to update the strategy	Approach – Residents have additional ability to report storm water violations via the City's website.	Yes
E.3 Development Planning								
All Development Projects								
CV-4	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	All development projects are required to implement minimum BMPs. Refer to Jurisdictional Runoff Management Program (JRMP) Section 4 and the BMP Design Manual.	FY15-16	Yes – Continuous – Ongoing	BMP Manual was updated accordingly.	NA		Yes
CV-5	Amend municipal code and ordinances to facilitate and encourage LID opportunities.	Appropriate City Ordinances have been amended with the JRMP update. Refer to JRMP Appendix A – Chula Vista Municipal Code Chapter 14.20 – Storm Water Management and Discharge Control.	FY15-16	Yes	Municipal code Chapter 14.20 was updated.	NA		No

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
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CV-6	Train staff on LID regulatory changes and BMP Design Manual.	Storm water staff are in regular contact with Development Services staff regarding development projects. Training is provided as changes occur. Refer to JRMP Sections 4 and 8.	FY15-16	Yes – Continuous – As needed	Staff received training on LID BMPs, hydrology modeling, and model BMP design manual updates.	NA		Yes
Priority Development Projects (PDPs)								
CV-7	For PDPs, administer a program requiring implementation of structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	All PDPs are required to implement and maintain post construction BMPs. Refer to JRMP Section 4.	FY15-16	Yes – Continuous – Ongoing	City intake forms were revised to include new requirements for PDPs.	NA		Yes
	a. Administer self-certification program for treatment control BMP compliance.	Self-certification program and corresponding form are already being utilized by applicable projects. Refer to JRMP Section 4.	Prior to FY16	Yes – Continuous – Ongoing	The City implemented a self-certification program for PDPs.	NA		Yes
CV-8	Amend BMP Design Manual for trash areas. Require the design of trash enclosures to prevent run-on and runoff, away from storm drains, and to provide cover.	Trash enclosure details are included in Chula Vista Municipal Code Chapter 19.58.340, the City's Recycling and Solid Waste Planning Manual, and the BMP Design Manual.	FY15-16	Yes	BMP Manual Section 4 was updated to require that trash enclosures be designed to prevent runon/off and have a solid rooftop enclosure.	NA		Yes – if changes are needed
E.4 Construction Management								
CV-9	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	All construction sites are required to implement minimum BMPs. High priority sites are inspected 2x per month during the rainy season, monthly during the dry season; low priority and inactive sites are inspected monthly during the rainy season, as needed during the dry season. Refer to JRMP Section 5. All Construction projects are required to implement minimum BMPs.	Prior to FY16	Yes – Continuous – Ongoing	Program implemented as scheduled. Over 400 inspections were performed by Construction Inspections staff, with 11 trash BMP corrective actions noted. Storm Water staff provide education and support for projects where escalated enforcement is required.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilitates and Areas								
CV-10	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and pollutants generated, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Current inspection program is facilities-based. High priority areas are inspected once per year, and low priority areas are inspected once every five years. Refer to JRMP Section 6 and Appendix C. Staff has been dedicated to complete this task.	FY15-16	Yes – Continuous - Ongoing	Storm water staff completed 217 commercial inspections, 45 industrial, 73 municipal inspections of existing development during the reporting period. Of the commercial inspections, 61 trash BMP corrective actions were noted.	NA		Yes
	a. Update minimum BMPs for existing residential, commercial, and industrial development.	General minimum BMPs for trash include good housekeeping and proper waste disposal, cleaning of storm drains, stenciling and signage, maintenance of trash receptacle areas. Refer to JRMP Appendix C.	FY15-16	Yes – Continuous - Ongoing	BMPs were updated for existing development which included BMPs specific to trash and waste management.	NA		Yes
	b. Design, implement, and enforce mobile business program.	Chula Vista has a mobile business program in effect. Business License Department administers storm water information packet and questionnaire, and businesses must agree to not discharge pollutants into storm drains. Storm Water Section has final approval. Mobile businesses are inspected as needed.	Prior to FY16	Yes – Continuous - Ongoing	Storm water staff approved 135 mobile businesses during the reporting period.	NA		Yes
CV-11	Implement pet waste program. May include installation and maintenance of pet waste bag dispensers and trash bins, and signage and education.	Pet waste bag stations are in available in the majority of City parks. Pet waste stations are maintained by parks staff and/or citizens and volunteer groups.	Prior to FY16	Yes – Continuous - Ongoing	Existing pet waste station were maintained during the reporting period.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CV-12	Promote and encourage implementation of minimum BMPs at residential areas.	The City's CLEAN education program is geared towards residents and common pollutant generating activities that residents perform such as home and garden maintenance, pool cleaning, and auto maintenance.	FY15-16	Yes – Continuous – Ongoing	Residential minimum BMPs were updated in the JRMP document. Educational brochures for residents were updated to reflect updated BMP requirements and changes to the storm water ordinance.	NA		Yes
	a. Encourage use of compost/soil amendments as opposed to fertilizer to decrease runoff.	The City has classes at the Living Coast Discovery Center to provide information to residents about composting.	FY15-16	Yes – Continuous – Ongoing	Compost education classes were available to residents through the Living Coast Discovery Center. Residents can choose between general composting classes, or take additional courses to become a Master Composter.	NA		Yes
	b. Promote and collaborate with water agencies and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	Chula Vista works with the San Diego County Water Authority, Otay Water District, and Sweetwater Water Authority to provide classes to residents that encourage water smart landscaping and gardening. Funding secure for FY16.	FY15-16	Yes – Continuous – Ongoing	Efficient landscaping classes offered to residents in partnership with Sweetwater Authority and Otay Water District. A free Garden and Water Friendly Plant Fair sponsored by the SD County Water Authority was hosted in the City during the reporting period.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CV-13	Prohibit and discourage illegal dumping.	Storm Water staff respond to reports of illegal dumping via hotline calls and inspections programs and enforces property owners and/or businesses to clean up their sites and maintain them clean. Environmental services works with Chula Vista Code Enforcement and the Police Department to discourage illegal dumping in and around trash dumpsters, alley ways, open fields by providing signage, fines, and education. As an additional effort to discourage illegal dumping, Republic Services (the City's franchise waste hauler) provides for bulky item pick up and landfill passes to single and multi-family residents, which is included in their collection service rate. A Household Hazardous Waste Facility is also available on Wednesday and Fridays from 9am to 1pm for residents and businesses of Chula Vista, Imperial Beach, and National City to promote proper disposal of hazardous materials. One-day collection events are also offered twice a year in convenient locations throughout the City.	Prior to FY16	Yes – Continuous – Ongoing	The City continued to implement its various programs and efforts to prohibit and discourage illegal dumping. Environmental Services provided outreach letters that educate residents or businesses that live or operate near areas where illegal dumping occurs. The letters explain the incident and include proper disposal information and program pamphlets.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
MS4 Infrastructure								
CV-14	Implement operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.) for water quality improvement.	Chula Vista has an MS4 inspection and maintenance program in place. Storm drain structures are inspected once a year and cleaned where necessary based on inspection results. Storm drain pipes are designed to be self-cleaning and do not typically required scheduled cleaning. Storm drain pipes are video surveyed on an as needed basis. Structures and pipes are repaired as needed based on the results of inspections. Open-channel cleaning is completed on an as needed basis.	Prior to FY16	Yes – Continuous – Ongoing	MS4 cleaning proceeded as scheduled.	NA		Yes
	a. Optimize catch basin cleaning to maximize pollutant removal (prioritize catch basin cleaning based on collected data).	Current catch basin inspection (and cleaning is needed) is once per year. Cleanings are prioritized by amount of trash.	Prior to FY16	Yes – Continuous – Ongoing	Catch basins that are characterized as 'high volume trash' are inspected and cleaned more frequently.	NA		Yes
	b. Proactively repair and replace MS4 components to provide source control from MS4 infrastructure.	Chula Vista has an MS4 inspection and maintenance program in place and provides surveys and performs repairs as needed.	Prior to FY16	Yes – Continuous – Ongoing		NA		Yes
CV-15	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	The City inspects, cleans, and maintains a total of 498 miles of sewer main. This includes critical maintenance areas, which are cleaned more than once per year. Chula Vista has a monitoring survey and SSO plan.	Prior to FY16	Yes - Continuous – Ongoing	Sewer system maintenance proceeded as scheduled.	NA		Yes
	a. Identify sewer leaks and areas for sewer pipe replacement prioritization.	Wastewater Section performs repairs.	Prior to FY16	Yes – Continuous – Ongoing		NA		Yes
Roads, Streets, and Parking Lots								
CV-16	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways	Street sweeping is contracted out. Commercial, industrial, and business street segments are swept once per two weeks. Residential, center islands, medians, and center lines street segments and public parking lots are swept once per two months. Republic manages Main Street and areas near landfill. Refer to JRMP Section 6.	Prior to FY16	Yes – Continuous – Ongoing	Streets maintenance activities proceeded as scheduled.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Pesticides, Herbicides, and Fertilizer BMP Program								
CV-17	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	The City has developed a comprehensive program aimed at preventing or reducing pesticides, herbicides, and fertilizers from entering the storm water system and causing direct or indirect harm on non-target flora and fauna and receiving waters for municipal facilities. Whenever practicable, integrated pest management techniques that rely on nonchemical solutions are implemented. Refer to JRMP Section 6 and Appendix C.	FY16	Yes – Continuous – Ongoing	The City continued to implement its pesticides, herbicides, and fertilizers program.	NA		Yes
Retrofit and Rehabilitation in Areas of Existing Development								
CV-18	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	The City will conduct a Baseline Trash Assessment Study to determine where high volume trash areas are located and if their respective drainage areas can be retrofitted with BMPs, especially those for trash. Retrofits pending study results.	FY16	Yes – Continuous – Ongoing	Planning for the Baseline Trash Assessment Study began in FY16, however identification of these areas for retrofit is not expected until the next FY.	NA		Yes
CV-19	Identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	The City's JRMP Appendix F describes the methods used for identifying and assessing potential stream, channel, or habitat rehabilitation projects in existing development areas and facilitating such projects. Rehabilitation project selection will be based upon a variety of factors including addressing the FPWQC of trash, existing stream or habitat degradation, multiple benefits of the project, and feasibility of implementation. Projects can arise as part of the Offsite Alternative Compliance Program. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards. Grant funding can be utilized as available.	FY17	NA		NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.6 Enforcement Response Plan								
CV-20	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	The City has an enforcement program in place, which provides for escalating enforcement. Escalated enforcement actions include issuances of Notices of Violation, Civil Penalties, Notices to Clean and Abate, Notices to Cease and Desist. Refer to the Enforcement Response Plan in the JRMP.	FY15-16	Yes – Continuous – Ongoing	The City continued with implementation of IDDE and enforcement response during the reporting period.	NA		Yes
	a. Increased enforcement on businesses that do not implement trash BMPs.	Based on inspection program and additional information collected based on strategy CV-33. Efforts will rely on education program as well.	FY15-16	Yes – Continuous – Ongoing	The City collected additional trash management BMP information during inspections of industrial and commercial businesses. Trash issues were noted on the inspection form and corrections were brought to the business's attention with a timeframe to complete corrective actions as needed.	NA		Yes
	b. Provide education and enforcement of water-using mobile businesses.	The mobile business program and Enforcement Response Plan are used.	Prior to FY16	Yes – Continuous – Ongoing	The City approved 138 mobile businesses.	NA		Yes
CV-21	Enforce minimum BMPs for existing residential, commercial, and industrial development. Includes power washing at non-residential sites.	Minimum BMPs are required for existing development. Refer to JRMP Section 5 and Appendix C.	FY15-16	Yes – Continuous – Ongoing	The City updated its minimum BMPs for existing development.	NA		Yes
	a. Increased education and enforcement for existing development with trash issues.	Facilities with an identified trash problem will be targeted for increased inspections, education, and enforcement.	FY17	NA	City staff is in the process of collecting additional data from industrial and commercial facilities regarding trash management. This was first year of data collection.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.7 Public Education and Participation (B.3.b.(1)(a)(iii))								
CV-22	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	The CLEAN Team (NPDES, Environmental Services Section, and Conservation Section) works together on public outreach programs. Refer to JRMP Section 8.	Prior to FY16	Yes – Continuous –Ongoing		NA		Yes
	a. Improve consistency and content of websites to highlight updated storm water regulations.	The Chula Vista website is currently being updated and will include information for the public on environmental programs. Information can also be sent out in bimonthly trash bill inserts.	Prior to FY16	Yes – Continuous – Ongoing	Storm water pollution prevention information was updated to include additional information about the City's mobile business program, residential BMPs, an online reporting form, and provide access to storm water documents.	NA		Yes
	b. Promote community events and CLEAN Business Program.	The CLEAN team has booths at public festivals and provides information. The CLEAN business program, led by the Environmental Services Section, verifies business as CLEAN via a checklist process, which includes provisions for pollution prevention and storm water BMPs.	Prior to FY16	Yes – Continuous – Ongoing	CLEAN Team had a booth at all major City events during the reporting period; a total of 8 CLEAN businesses were approved during the reporting period, bringing the total to 180 CLEAN businesses.	NA		Yes
CV-23	Provide municipal staff training.	The City primarily educates its municipal staff through workshop training, refresher sessions, staff meetings, and on the job training. Training for municipal personnel is focused on maintenance crews, land development staff, planners, landscape architects, and staff from other departments. Municipal personnel are also notified of regional workshops, and are encouraged to participate in workshops and seminars relevant to their type of work. Refer to JRMP Section 8.	Prior to FY16	Yes – Continuous – As Needed	Staff received training on various topics such as the Statewide Trash Amendments, hydrology modeling, LID BMPs, construction inspection requirements, and model BMP design manual requirements.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
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Non-JRMP Strategies (Optional Strategies, Provision B.3.b.(1)(b))								
Nonstructural								
CV-24	Enhance commercial and industrial facility inspections to focus on trash.	Current inspection program is facilities-based and will also inspect per high volume trash areas determined in Baseline Assessment Study (CV-33). High priority areas are inspected once per year, and low priority areas are inspected once every five years. Inspection form was revised to further evaluate trash areas. Refer to JRMP Section 6 and Appendix C. Staff secured for FY16.	FY15-16	Yes – Continuous – Ongoing	Inspection form amended to include additional data collection regarding waste handling/disposal BMPs. As more data is collected through both the Trash Assessment Study and through inspections, the inspection program can be tailored to focus on problem areas.	NA		Yes
CV-25	Continue participating in trash source reduction activities and initiatives.	Participate in initiatives as applicable to FPWQC. Triggers include ability to make City ordinance changes, partnering with applicable stakeholders, funding for staff, budget to obtain a consultant or contractor to assist with enhancements to the existing education program.	Prior to FY16	Yes – Continuous – Ongoing	Environmental Services mails an educational insert in the bi-monthly trash bills (6X per year) to approximately 51,000 single family residences. Topics include: HHW, E-waste, recycling tips, composting information, bulky item pickup.	NA		Yes
	a. Continue implementation of smoking ban.	Smoking is banned at City of Chula Vista parks and in all outdoor dining areas. The smoking ban prevents the littering of these areas with cigarette butts.	Prior to FY16	Yes – Continuous – Ongoing	City maintained no-smoking signage in all City parks.	NA		Yes
	b. Continue and enhance education programs to prevent littering.	The City will implement enhancements to existing programs where possible to improve trash education. This activity will be based on the baseline trash assessment study and identification of high volume trash areas, especially from sources such as commercial areas. Funding is secured for FY16.	FY16-17	NA		NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
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CV-25 (cont)	c. Expand educational outreach to multi-unit family complexes.	Provide educational outreach to HOAs. Mailers with trash information are sent out twice a year via Environmental Services Section, and information on over irrigation, BMPs, and general storm water education with a focus on trash can be included. Triggers based on completion of baseline trash assessment study to determine applicable multi-unit family complexes.	FY16-17	NA		NA		Yes
	d. Develop an outreach and training program for residential property managers responsible for HOAs.	The program will target trash and irrigation reduction. Triggers based on results of baseline trash assessment study, budget approval, and staff to implement.	FY16-17	NA		NA		Yes
	e. Enhance education and outreach based on results of effectiveness survey and changing regulatory requirements.	Chula Vista plans to conduct surveys and will collaborate with CLEAN team to improve outreach based on survey results. Trigger based on results of baseline trash study and survey data.	*FY 16-17*	No – Planned for next FY		Yes – pending results of Baseline Trash Assessment Study	Schedule – changed to begin in FY16-17	Yes
CV-26	Storm Drain Stenciling	In collaboration with citizen and/or volunteer groups, install storm drain stencils on storm drains within high volume trash areas as needed. Triggers include completion of baseline trash assessment study, and partnerships with volunteer groups.	FY16-17	NA		NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CV-27	Enhance and expand trash cleanups and educational events through community-based organizations involving target audiences.	Increase effectiveness and reach of trash/beach cleanups, educational opportunities, and community based efforts. Partnerships and sponsorships with I Love A Clean San Diego and others are recommended to be continued and enhanced. To effectively target stream clean-up efforts, focus on partnerships with community organizations which provide strong engagement with target audiences and communities. Triggers include obtaining data from the baseline trash assessment study and budget availability to contract out enhanced educational activities.	FY15-16	Yes	The City had its annual Beautify Chula Vista event that engaged volunteers to participate in trash pick-up, storm drain stenciling, graffiti removal, and tree planting. The Alliance of Californians for Community Empowerment (ACCE) sponsored two neighborhood clean-up events that engaged volunteers in trash pick-up and graffiti removal.	NA		Yes
CV-28	Enhance street sweeping program based on high volume trash area assessment study.	Increase street sweeping in high volume trash areas, as needed. Funding dependent on results of baseline trash assessment study, established hot spot areas, and budget availability.	FY16-17	NA		NA		Yes
CV-29	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	The City will perform a Baseline Trash Assessment Study (CV-33) to determine where high volume trash areas are located and if their respective drainage areas can be retrofitted with BMPs, especially those for trash. Retrofits pending study results.	FY16+	Yes – ongoing through FY17		NA		Yes
	a. Implement program to retrofit trash enclosures of municipal facilities with an established trash problem. Use as a pilot program to expand to existing commercial areas, with the use of an incentive program.	City's Recycling & Solid Waste Planning Manual and CVMC 19.58.340 requires newly constructed trash enclosures to be designed to exclude rain. Trigger for existing trash retrofits dependent upon funding, Baseline Trash Assessment Study, interim goals being met, and ordinance/policy changes. Consider partnerships with waste hauler and other stakeholders to develop incentive program, if feasible.	FY17-18	NA		NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CV-30	Implement stream, channel, and habitat rehabilitation projects as needed.	This strategy may be triggered if 1) Interim goals are not met, 2) Stream or habitat rehabilitation is determined to be a more effective pathway, relative to additional structural or non-structural BMPs to meeting trash goals, 3) Funding and staffing has been secured, 4) Partners, MOUs, and permits required by regulatory agencies are secured, and 5) Recommendations from the community are identified and consensus and community support has been achieved. Will occur in areas identified during feasibility studies. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations, 2) Secure funds in the form of general funds, bonds, or grants, 3) Obtain City Council approval of Capital Improvement Projects budget, 4) Initiate preliminary engineering to narrow project scope, 5) Hire design consultant to develop detailed construction plans and construction cost estimates, 6) Complete construction contractor bid and award process for construction phase, 7) Construct project, 8) Operation and maintenance into perpetuity.	Trigger	NA		NA		Yes, as triggered
CV-31	Conduct additional trash monitoring to target high volume trash areas and determine if BMPs are effective.	Chula Vista will develop a trash monitoring program to increase visual trash monitoring, increase inspections of facilities as needed, and collect additional trash data from commercial/industrial facilities. Funding secured for FY16.	FY15-16	Yes – Continuous- As needed	Trash monitoring program was expanded to collect additional data from the focused priority area as well as paired outfall and receiving water monitoring.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Structural								
CV-32	Install and maintain partial or full capture treatment control BMPs in high volume trash areas as needed.	City will complete Baseline Trash Study to determine where BMP retrofits can occur. Funding for retrofits is based on interim goals and installed in conjunction with Trash Amendment timeline. 1) Identify project locations 2) Secure funds in the form of general funds, bonds, or grants 3) Obtain City Council approval 4) Initiate preliminary engineering 5) Hire design consultant to develop detailed construction plans and construction cost estimates 6) Complete construction contractor bid and award process for construction phase 7) Construct project 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function will be approval by City Council as part of the City's annual budget. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured.	FY17+	NA		NA		Yes
WMA Strategies (Optional Strategies, B.3.b.(2))								
CV-33	Baseline Trash Assessment Study	The City is participating in a Baseline Trash Assessment Study with WMA Copermittees within the Focused Priority Area. The study will assess targeted geographic areas and include elements such as (1) an assessment of current conditions to provide a baseline to demonstrate progress, (2) identify high-priority areas for targeted strategy implementation, and (3) identification of potentially collaborative efforts with different jurisdictions. Implementation of additional strategies will be based on the results of this study and will be updated in the Annual Report.	FY16+	Yes – Continuous through FY17	The City was in the planning process during the reporting period to get a consultant on board to begin the Baseline Trash Assessment Study. Study will begin in FY16-17.	NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CV-34	Promote and collaborate with water agencies and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	Chula Vista works with the San Diego County Water Authority, Otay Water District, and Sweetwater Water Authority to provide classes to residents that encourage water smart landscaping and gardening. Funding secure for FY16.	Prior to FY16	Yes – Continuous – Ongoing	The City provides water-saving information and giveaways at community events and farmers markets; the Naturescape Program helps residents implement sustainable landscaping practices through community workshops; and there are partnerships with water districts to help residents implement affordable water saving improvements.	NA		Yes
CV-35	Offsite Alternative Compliance Option (WMAA)	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Funding for future fiscal years is contingent on annual budget approval by City Council.	Planning prior to FY16	TBD - As needed		NA		TBD

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CV-36	Address and clean up pollutants from homeless encampments through *City of Chula Vista* Homeless Outreach Team. ~~If a regional social services effort is established, support workgroup to provide sanitation and trash management for person experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.~~	~~The~~ *A* City *Homeless Outreach Team was formed during the reporting period that* ~~may participates jointly~~ *collaborates* with other agencies as part of a ~~regional~~ *City-wide* program. ~~Support a non-profit or consortium to provide sanitation services associated with hygiene as well as trash management for persons experiencing homelessness.~~ This *strategy serves as* ~~provision has been proposed as~~ a method for preventing surface water usage for sanitation and bathing, *trash reduction and cleanup,* as well as opportunity for outreach and referral by social service agencies. ~~Trash management services will include providing trash bags, trash collection areas, and shower/sanitary facilities at centers which provide daytime shelter or on a mobile-basis for known transit camps. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff to coordinate with the regional effort.~~	*FY 15-16*	Yes – City program implemented in FY15-16 – Continuous, ongoing	A City Homeless Outreach Team was formed during the reporting period that consists of City Parks staff, Chula Vista Police Department, Streets staff, and other entities. The team performs clean ups every week in known homeless encampment areas within the City, which includes City parks and facilities. Trash is removed from these encampments as a part of this effort. It is estimated that approximately 1,100-1,400 pounds of trash is picked up per week. New staff was budgeted for the next FY to support this program.	Yes – update to program	Approach and Schedule – this became a City program that was implemented in FY15-16	Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CV-37	Enhance and expand trash cleanups through community-based organizations involving target audiences.	Chula Vista partners with "I Love a Clean San Diego" on cleanup events, such as Creek to Bay, Coastal Cleanup, and Adopt a Canyon. Chula Vista also has its own cleanup event called Beautify CV Day. Funding secured for FY16. Dependent on budget availability.	Prior to FY16	Yes	The City continued to support the Creek to Bay Cleanup, Coastal Cleanup Day, and Beautify Chula Vista Day. There were also additional community cleanup events sponsored by the Alliance of Californians for Community Empowerment that targeted neighborhoods in need of graffiti removal and trash cleanup.	NA		Yes
CV-38	Enhance school and recreation-based education and outreach.	Chula Vista works with "I Love a Clean San Diego" on a variety of community events a year for the Boys and Girls Club, schools, high school environment clubs, and adult organizations. Triggers include available budget and obtaining a contract to aid in enhancing education programs.	FY16-17	NA		NA		Yes

Table 4-1 (continued)
City of Chula Vista Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))[1]	Implementation or Construction Year	Implementation Status		Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Additional Information (as needed)	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CV-39	Conduct and/or participate in special studies							
	a. Reference watershed study	The San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Occurs region-wide. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval.	FY15-16	Yes – Completed		NA		No
	b. San Diego Bay Debris Study	The Trash Study is a comprehensive bay-wide study to help managers understand the current extent and magnitude of plastic-based debris accumulation and takes into account seasonal changes to better understand the plastic debris conditions throughout San Diego Bay and its upland contributing areas. Funding and resources were secured for FY2015.	Prior to FY16	Yes – Report will be available FY16-17.		NA		Yes
CV-40	Collaborate with regional education and outreach efforts.	Participate in regional education and outreach program along with other Copermittees. Triggers include opportunities and funding to participate in activities at a regional level.	FY15-16	Yes – Continuous, ongoing	The City participated in numerous Think Blue Events throughout the reporting year. Staff distributed reusable bags, doggie bones, and educational coloring books.	NA		Yes

4.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The Chula Vista BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. Chula Vista updated its BMP Design Manual in accordance with Municipal Permit requirements during FY16; the BMP Design Manual replaced the Chula Vista Storm Water Manual (2011). No additional changes to the BMP Design Manual have been made since it went into effect. The updated Chula Vista BMP Design Manual can be accessed via the Project Clean Water website at: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=244&Itemid=212.

4.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

The current Chula Vista JRMP is posted on the City's website, and the link to this page is listed on Project Clean Water. Modification to the City of Chula Vista's JRMP are as proposed in Table 4-2.

Table 4-2
City of Chula Vista Proposed JRMP Updates January 2017

Section No.	Proposed Changes
Acronym/ Abbreviation	added to the end of the definition the following: & Order No. R9-2015-0100
2.1	Revised Paragraph 4 (page 4) as follows: The City updated its BMP Design Manual (formerly known as the Development Storm Water Manual) which contains the City's regulations and requirements for development and redevelopment projects ~~by~~ on ~~December 2015~~ January 2016
2.1	Reformatted the entire section and added the following after the City Attorney Office paragraph: o City Clerk's Office • Maintain records of Ordinances and Resolutions approved by the City Council and oversee the Ordinances incorporation into the Chula Vista Municipal Code. • Process public records request related to the Municipal Permit and storm water. • Advises and assists Storm Water Management Section with Cease and Desist Orders, Administrative Hearings, and other escalated enforcement action.

Table 4-2 (continued)
City of Chula Vista Proposed JRMP Updates January 2017

Section No.	Proposed Changes
3.2.3	Revised Bullet 4. As follows: Discharges of non-storm water to the MS4 from the following categories are allowed on the condition that the discharge is addressed by the following BMPs, which are also discussed in the City's Minimum BMPs for Residential, Industrial, Commercial, and Municipal Sites/Sources in Appendix C; otherwise, they will be addressed as illicit discharge. ~~must be controlled by the requirements provided below. If the City determines that adequate control measures are not implemented for any of the following categories, then the City may prohibit such discharge on a case by case basis~~.
3.5.1.1	Deleted Table 3-1, it is duplicate of Appendix B.1 Attached to JRMP. Replace table 3-1 reference with Appendix B.1 in said section.
3.5.1.1	Added the following paragraphs to the end of the section: Paired receiving water monitoring sites that will be monitored concurrently with MS4 major outfall monitoring locations in the Focused Priority Condition area locations are presented in Table A3-2 of Attachment A3 of Appendix K of the San Diego Bay WQIP. City continues to assess trash as part of the MS4 Outfall Monitoring Program requirements at other major outfall locations in the Focused Priority Condition area, as presented in Table A3-3.
5.0	Replaced the word CSWMP with CSWPCP throughout the Section
5.2	Revised paragraph 3, page 5-1 as follows: Project applicants whose project disturbs less than one acre of land are required to submit a Construction Storm Water Pollution Control Plan (CSWPCP) or Construction Storm Water Certification Statement (both included in Appendix K of the BMP Design Manual) ~~Management Plan (CSWMP or Form 5504 included in Section 2 of the BMP Design Manual)~~ with their project submittals. The ~~CSWMP~~ CSWPCP is a simplified version of the SWPPP and covers a comprehensive list of BMPs applicable to smaller construction sites. The applicants select from the list all those BMPs that are applicable to their project and sign and certify the form. City staff reviews and approves the completed form before issuing any ~~construction~~ permits
5.2	*Use the paragraph from the BMP manual Appendix K*

Table 4-2 (continued)
City of Chula Vista Proposed JRMP Updates January 2017

Section No.	Proposed Changes
5.6.3	Revised the section as follows: The City requires that temporary or permanent erosion controls be implemented before a construction site has disturbed a total of 50 acres or more. ~~This 50 acre maximum is the current County of San Diego soil disturbance limitation~~. If the site is in compliance with applicable storm water regulations and has adequate control practices implemented to prevent storm water pollution, the City has the option to give the site written authorization to disturb beyond the 50 acre maximum up to 100 acres maximum. The City will require, as necessary, additional controls for construction sites allowed to disturb more than 50 acres, which could include additional BMPs, increased inspection frequency, and/or stronger penalties for non-compliance.
Appendix B.1	Updated Appendix B.1 - Major Outfall Inventory

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5 CITY OF SAN DIEGO

5.1 ANNUAL REPORT CERTIFICATIONS

City of San Diego's signed Statement of Certification and Certification of Adequate Legal Authority for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report are included on the following pages.

THE CITY OF SAN DIEGO

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Management Area Water Quality Improvement Plan

2015-2016 Annual Report

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

1/12/17

Drew Kleis
Deputy Director
Transportation & Storm Water Department

Date

Transportation & Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 23[illegible] Fax (858) 541-4350

CITY OF SAN DIEGO

SCOTT CHADWICK
CHIEF OPERATING OFFICER

January 27, 2017

Mr. David W. Gibson, Executive Officer
Regional Water Quality Control Board
San Diego Region
2375 Northside Drive, Suite 100
San Diego, CA 92108

Subject: Certification of Adequate Legal Authority

Dear Mr. Gibson:

Pursuant to San Diego Regional Water Quality Control Board Order No. R9-2013-0001, as amended by Order No. R9-2015-0100 (Municipal Permit or Permit), Provision E.1.b, the City of San Diego, as a Copermittee in the above referenced permit, submits this certification of adequate legal authority with the first Water Quality Improvement Plan Annual Report. The City has adequate legal authority to implement and enforce each requirement contained in 40 C.F.R. section 122.26(d)(2)(i)(A)-(F), and the Municipal Permit (including Provision E.1.a(1)-(10)). The San Diego Municipal Code, including the following provisions, provides the City with adequate legal authority as required by the Municipal Permit:

1. Storm Water Management and Discharge Control, sections 43.0301 through 43.0312. These provisions are being amended, although the current version also complies with the requirements of the Municipal Permit.
2. General Construction Permit Authority and Procedures, sections 129.0101 through 129.0120.
3. Grading Regulations, sections 142.0101 through 142.0150.
4. Storm Water Runoff Control and Drainage Regulations, sections 142.0201 through 142.0230.

The City looks forward to working with you and the Regional Board on storm water management matters. If you have any questions, please contact Senior Planner Jim Harry at (858) 541-4353 or email JHarry@sandiego.gov.

Sincerely,

Scott Chadwick
Chief Operating Officer

AK/jph

202 C Street, MS 9A · San Diego, California 92101 · Tel (619) 236-5587

cc: Mara Elliott, City Attorney, Office of the City Attorney
Stephen Puetz, Chief of Staff, Office of the Mayor
Stacey LoMedico, Assistant Chief Operating Officer
Mike Hansen, Deputy Chief of Staff and Chief of Policy, Office of the Mayor
Paz Gomez, Deputy Chief Operating Officer, Infrastructure/Public Works
Alejandra Gavaldon, Director of Federal Government Affairs & Water Policy, Office of the Mayor
Kris McFadden, Director, Transportation & Storm Water Department
Drew Kleis, Deputy Director, Transportation & Storm Water Department
Davin Widgerow, Deputy City Attorney, Office of the City Attorney
Clem Brown, Program Manager, Transportation & Storm Water Department
Ruth Kolb, Program Manager, Transportation & Storm Water Department
Jim Harry, Senior Planner, Transportation & Storm Water Department

5.2 ANNUAL REPORT FORM

The City of San Diego's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

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I. COPERMITTEE INFORMATION

Copermittee Name: **City of San Diego (San Diego Bay WMA)**

Copermittee Primary Contact Name: **Drew Kleis, Deputy Director, Storm Water Division, Transportation & Storm Water Department**

Copermittee Primary Contact Information:
Address: **9370 Chesapeake Drive, Suite 100**
City: **San Diego** County: **San Diego** State: **CA** Zip: **92123**
Telephone: **858-541-4320** Fax: **858-541-4350** Email: **Akleis@sandiego.gov**

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES[1]	☒
	NO	☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM[2]

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐

Number of non-storm water discharges reported by the public	634
Number of non-storm water discharges detected by Copermittee staff or contractors	393
Number of non-storm water discharges investigated by the Copermittee	1,021
Number of sources of non-storm water discharges identified	828
Number of non-storm water discharges eliminated	819
Number of sources of illicit discharges or connections identified	805
Number of illicit discharges or connections eliminated	796[3]
Number of enforcement actions issued	819[3]
Number of escalated enforcement actions issued	445

V. DEVELOPMENT PLANNING PROGRAM[2]

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES[4]	☒
	NO	☐

Number of proposed development projects in review	561[5]
Number of Priority Development Projects in review	38[6]
Number of Priority Development Projects approved	138[7]
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	37[8]

Number of completed Priority Development Projects in inventory	213[9]
Number of high priority Priority Development Project structural BMP inspections	1
Number of Priority Development Project structural BMP violations	1[10]
Number of enforcement actions issued	4[11]
Number of escalated enforcement actions issued	1

VI. CONSTRUCTION MANAGEMENT PROGRAM[2]

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES[1,12] ☒ NO ☐

Number of construction sites in inventory	3,870
Number of active construction sites in inventory	51
Number of inactive construction sites in inventory	425
Number of construction sites closed/completed during reporting period	518
Number of construction site inspections	18,737
Number of construction site violations	211
Number of enforcement actions issued	187
Number of escalated enforcement actions issued	32

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM[2]

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	197	14,085 (includes mobile)	690	70[13]
Number of existing development inspections	195	3,179	102	5[13]
Number of follow-up inspections	0	270	44	4
Number of violations	23	511	34	709[13]
Number of enforcement actions issued	41	623	44	543[13]
Number of escalated enforcement actions issued	6	217	11	291

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES[1,14] ☒ NO ☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Date: 1/12/17
Drew Kleis Print Name	Deputy Director Title
(858) 541-4320 Telephone Number	Akleis@sandiego.gov Email

[1] The City of San Diego approved an update to the Jurisdictional Runoff Management Plan (JRMP) in FY 16. The update of the JRMP was done in compliance with Order No. R9-2013-0001.
[2] See the JRMP Annual Report FY 2016 Attachment 1 for a citywide summary of this data.
[3] The number of enforcement actions issued does not equal the number of identified illicit discharges or connections because some discharge complaints in the last quarter of FY 2016 were still under investigation at the end of FY 2016.
[4] The Storm Water Standards Manual (Part 1: BMP Design Manual, and Part 2: Construction BMP Standards) was updated in January 2016.
[5] The number of ongoing Standard and Priority Development Projects in review as of 6/30/16. The Development Services Department processes other types of permits, in addition to those included in the JRMP Annual Report, that are not subject to the requirements of the municipal permit.
[6] The number of ongoing Priority Development Projects in review as of 6/30/16. Only a portion of the projects that the Development Services Department processes qualify as a priority development project.
[7] The number of Priority Development Projects approved in FY 2016.
[8] This number includes the City's Priority Development Projects that received final inspection in FY 2016 as well as certain Priority Development buildings and grading projects that did not require a Certificate of Occupancy, that were completed in FY 2016.
[9] Represents the total number of completed Priority Development Projects in the City's inventory as of the end of FY 2016. These projects include completed projects entered into the inventory in previous years.
[10] The number of Priority Development Project structural BMP violations included Notices of Violation, Notices of Deficient Maintenance, and Administrative Citations issued to public and private entities within the City's jurisdiction in this watershed.
[11] The number of enforcement actions included Notices of Violation and Notices of Deficient Maintenance issued to public and private entities within the City's jurisdiction in this watershed. The City has achieved compliance at 146 of the 150 sites identified in the San Diego RWQCB's Notice of Violation (Order Number R9-2014-0034). The San Diego RWQCB granted the City an extension to achieve compliance at the remaining four sites by May 26, 2017.
During the process of achieving compliance for the aforementioned 150 identified sites, the City has discovered an additional 74 sites which initially appear to be out of compliance due to varying degrees of circumstances. Each of these potential violations consist of post-construction BMP issues. Continuing the same process as outlined in our quarterly reports to the RWQCB, the City is currently researching each case. After initial research to verify non-compliance or not, we will follow our established procedures to have each site be in conformance to the MS4 permit under which it was permitted.
[12] Responses in this report are based on the City's internal data. Potential program deficiencies were identified by the Board in FY 2016, however, the City has taken steps to correct issues identified by the Board as detailed in the JRMP Annual Report FY 2016 Appendix. The City has implemented several improvements that address the Regional Board's concerns. These improvements ranged from procedural changes to creating multi-language brochures for contractors. Several operating and internal procedures have been refined to improve enforcement actions, add clarity to how sites are inspected, and to better define the staff's roles and expectations.
[13] Existing facilities for residential uses are characterized as Residential Management Areas (RMA), which could include hundreds of residences. When all of the residences in an RMA are inspected by City staff that is only counted as one inspection. However, all individual issues noted at each residence during an RMA inspection is counted as a separate violation and/or enforcement action.
[14] See the JRMP Annual Report FY 2016 Appendix for the FY 2016 Fiscal Analysis.

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The City of
SAN DIEGO
Development Services Department
Engineering Division

January 12, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Development Services Department Engineering Division Contributions

Please accept this letter as certification of the City of San Diego Development Services Department Engineering Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Edric Doringo, Program Manager at 619-446-5098 or email edoringo@sandiego.gov.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Development Services Department, Engineering Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

Gregory Hopkins

Gregory Hopkins
Deputy Director, Development Services Department

GH/cmm

Enclosure:
cc: Robert Vacchi, Director, Development Services Department
Drew Kleis, Deputy Director, Transportation and Storm Water Department

1222 First Avenue, M.S. 501
San Diego, CA 92101-4155

T (619) 446-5291

The City of
SAN DIEGO

Development Services Department
Inspection Services Division

January 24, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Development Services Department Inspection Services Division Contributions

Please accept this letter as certification of the City of San Diego Development Services Department Inspection Services Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Senior Inspector Sam Lindsey or Project Manager Xavier Del Valle at (858) 492-5070.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Development Services Department, Inspection Services Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

William Barrañón
Inspection Services Manager

The City of
SAN DIEGO
Public Works Department
Construction Management and Field Services Division

November 3, 2016

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Public Works Department, Construction Management and Field Services Division Contributions

Please accept this letter as certification of the City of San Diego Public Works Department Construction Management and Field Services Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Julie Ballesteros, Senior Civil Engineer, at (858) 573-5012.

I certify under penalty of law that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Public Works Department Field Engineering Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Myrna M. Dayton, PE, QSP, QSD, DCE
Deputy Director

9485 Aero Drive, Mail Station 18
San Diego, CA 92123
engineering@sandiego.gov

T (858) 627-3200
sandiego.gov

THE CITY OF SAN DIEGO

January 30, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Public Works Department, Project Implementation Division Contributions

Please accept this letter as certification of the City of San Diego Public Works Department, Project Implementation Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Catherine Dungca, Senior Civil Engineer, at (619) 533-3778.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Public Works Department, Project Implementation Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

Marnell Gibson
Assistant Director
Public Works Department

APPENDIX

1 OPERATIONAL ADAPTIVE MANAGEMENT

In Fiscal Year (FY) 2016 the City of San Diego (City) completed technical and non-technical monitoring, special studies, pilot studies, and various other efforts related to its Storm Water Program. The City gained valuable information that led to effective adaptation of procedures and operations, which ultimately led to more effective implementation of its Storm Water Program and the Jurisdictional Runoff Management Plan (JRMP). The following are operational adaptive management improvements that the City made during FY 2016:

- **Get it Done Application**
  In late FY 2016, the City released the Get it Done Application (App), which provides a modern, efficient method for members of the public to report issues to the City. One of the App's features allows illicit discharges to be reported by taking a photo with a phone that includes Global Positioning System (GPS) coordinates, and uploading it to the App. According to a recent City survey, 83 percent of respondents stated that they did not want to call the City government to report a problem. The new Get It Done App eliminates the need to call the City for various problems, by allowing residents to report issues online, which was the preferred method of 50 percent of survey respondents. The App also allows residents to report problems using their name or anonymously.

- **Phase V Street Sweeping Pilot**
  The City completed the fifth and final pilot study of the Targeted Aggressive Street Sweeping Pilot Program in FY 2016, which tested the effectiveness of posting limited-hour "no parking" signs on traditionally non-posted street sweeping routes. After two years of data collection on two subject routes, the study confirmed the hypothesis that a significant amount of additional debris (48% and 58% over baseline on the subject routes) can be removed from posting no parking signs on traditionally non-posted roadways. Based on this finding, the City will consider posting additional routes if supported by the community.

- **Enhanced Catch Basin Cleaning Optimization**
  Enhanced catch basin cleaning is a strategy to address pollutant removal from the Municipal Separate Storm Sewer System (MS4) in three of the City's six watersheds. While most catch basins are inspected once per year, this strategy involves inspecting catch basins within the specified watersheds between two and four times per year. The optimization study assigned priorities to individual basins and watersheds based on eight years of historic debris removal. This optimization focused efforts by reducing the number of inspections performed per year, while increasing total debris removal from those inspections. This enhancement will allow the City to target high priority drains to maximize pollutant removal while maintaining cost efficiencies. In FY 2016, approximately 2,500 additional catch basin inspections and cleanings (if necessary) were completed in the Chollas Creek area of the San Diego Bay Watershed.

- **Flood Control Pump Stations**
  To help minimize the risk of flooding in flood-prone areas during storm events, the City utilizes a number of pump stations to increase the flow of water through the conveyance network. Considering the pump stations are connected to the electric network, they only

function when power is running. In FY 2016, a 2,400 volt automatic transfer switch and generator were installed at a critical pump station that are capable of pumping 130,000 gallons of water per minute. This significantly decreases the risk of flooding in the related drainage area because the pump station will continue to operate during a storm event. The City also replaced or refurbished 11 other critical pump stations. Additionally, the City modernized operations at 14 pump stations by installing a telemetry system that remotely alerts staff of failures, allowing for a more immediate response.

- **Storm Drain Inspections**
  To help prioritize replacement of corrugated metal piping in the City's conveyance network, the City used closed-circuit televising at 62 locations in FY 2016 to assess pipe conditions. The City assessed the condition of 28,000 linear feet of corrugated metal piping in FY 2016.

- **Property-Based Inspections**
  In FY 2016, the City further committed to implementing property-based inspections to increase the business inspection program's efficiency and effectiveness. A previously conducted pilot study on inspection practices found property-based inspections more effective at identifying and resolving water quality issues (e.g., improper trash disposal practices and irrigation runoff, etc.) associated with commercial and industrial businesses. The inspections are focused on areas and activities associated with businesses that would not otherwise be inspected for storm water compliance. The inspections greatly increase the number of businesses subjected to storm water inspections while focusing on the pollution generating areas and activities without unduly increasing the inspection load of City inspectors. In FY 2016, the City performed 835 property-based inspections that accounted for over 4,700 business inspections.

- **Tiger Team**
  The Tiger Team was established in FY 2016 to identify, locate and eliminate sources of human specific bacteria sources in the MS4. The Transportation & Storm Water Department (TSW) leads this effort in partnership with the Public Utilities Department. After a specific portion of the MS4 with elevated human specific bacteria was identified, the Tiger Team performed escalated enforcement activities through TSW Code Enforcement, MS4 sampling, MS4 sanitary sewer line televising, and MS4 and sanitary sewer cleaning. Over several months during the reporting year, one problem area within the City was investigated extensively and a source of human specific bacteria in the MS4 was identified and abated.

- **Increased Non-Stormwater Discharge Investigations**
  The City received 215 more complaints of non-stormwater discharges in FY 2016. Approximately 81% of the complaints citywide were resolved. A majority of the investigations that were resolved involved irrigation runoff. Cases were unresolved either because the source could not be identified or the source was groundwater.

  The identification and elimination of irrigation efforts in FY 2016 involved the following:
  1) Special irrigation patrols were conducted on a monthly basis. All violating properties were issued notices of violation and/or a citation.
  2) TSW code compliance partnered with the Public Utilities Department. If a complaint of irrigation with runoff was received, a storm water code compliance officer would issue a notice of violation. If the property had multiple complaints,

that property would become part of an irrigation patrol and could result in a citation.

- **Waterways Maintenance Plan**
  The City began development of the Waterways Maintenance Plan in FY 2016, which will replace the Master Storm Water System Maintenance Program, which expires in 2018. The goals of the Plan are to create an overall holistic storm water management strategy with standard mitigation measures and streamlined maintenance approvals. Objectives of the Plan include flood risk reduction, infrastructure sustainability and resource protection and restoration. In addition to technical scoring criteria, the Plan also includes a unique public input metric so that public concerns are given a tangible value. Planning efforts will continue in FY 2017, with implementation beginning in FY 2019.

- **Off-Site Alternative Compliance Program**
  In FY 2016, the City implemented phase I of the Alternative Compliance Program. This gives development projects that would require on-site structural Best Management Practices (BMPs) to comply with pollutant control and hydromodification management the option to propose off-site alternative compliance projects. The development of phase II also began in FY 2016 and includes establishing an in-lieu fee structure and credit system as an alternative to installing on-site stormwater BMPs.

- **Watershed Master Planning**
  To provide the high-resolution data needed to drive systematic and cost-effective implementation of green infrastructure (GI) projects, the City has developed a comprehensive and dynamic Watershed Master Plan (WMP) in the Chollas Creek Watershed that quantifies progress towards water quality goals and incorporates synergies with other municipal programs. The WMP has the capability to dynamically assess the cost-based water quality benefits of specific GI projects against one another and incorporates a robust prioritization logic that realizes the complex nature of implementing retrofit GI facilities within a highly urbanized environment. Ultimately, the output of this project gives the City a project-by-project roadmap that is prioritized to implement high-impact and high-efficiency BMPs first, leaving less desirable projects for later implementation.

- **Bacteria Regrowth Study**
  The bacteria regrowth study currently being completed by the City includes monitoring to characterize the magnitude and extent of potential *Enterococcus* loading due to regrowth within the City's storm drain system. This study will quantify the amount of bacteria in receiving water samples that are harmless to humans and would potentially be used to refine bacteria water quality standards of the Bacteria TMDL as a part of the re-opener process.

- **Los Peñasquitos Lagoon Restoration Project**
  Modeling was completed in FY 2016 to confirm the preferred alternative for the Los Peñasquitos Lagoon Restoration project. The City was identified as the "lead" for the project. The upcoming tasks in FY 2017 include completing the concept design and starting the public outreach process. In coordination with Copermittees, Caltrans and SANDAG completed the environmental and construction phases for various rail and transit, highway, and environmental protection projects.

2 STORMWATER PROGRAM ACCOMPLISHMENTS/NOTABLE UPDATES

The City continued to implement the key elements of the JRMP. The following are stormwater accomplishments and notable updates that occurred during the FY 2016 reporting period.

- ## Water Quality Improvement Plans

  In FY 2016, the San Diego Regional Water Quality Control Board (Regional Board) accepted the six Water Quality Improvement Plans (WQIPs) that included City jurisdiction. The goal of the WQIPs is to protect, preserve, enhance, and restore the water quality of receiving water bodies. These WQIPs identify the adaptive planning and management process necessary to address the highest priority water quality conditions within a watershed. The WQIPs also identify strategies to achieve improvements in the quality of discharges from the Responsible Agencies' storm drain systems. The City is the lead on the WQIP for the San Dieguito, Los Penasquitos, and Mission Bay watersheds. The City is also a participating agency in the San Diego River, San Diego Bay, and Tijuana River watersheds.

- ## JRMP Refinements

  In FY 2016, the City identified refinements to the JRMP. These refinements were incorporated into the JRMP and will be completed in mid FY 2017. Refinements included minor changes to text to update the discussions of WQIP strategies, updates to the fiscal analysis, updates to the minimum BMPs to address pesticide applications, and updated references to the Storm Water Standards Manual that was adopted in FY 2016. The updated JRMP can be viewed at https://www.sandiego.gov/stormwater/plansreports/jrmp.

- ## General Plan and Community Plan Amendments

  Southeastern San Diego and Encanto Neighborhoods Community Plan Updates:

  The recently adopted Southeastern San Diego and Encanto Neighborhoods Community Plans incorporate language, policies and recommendations concerning the reduction of urban runoff and storm water quality. Stormwater quality plays a significant role in both of these communities since Chollas Creek is a significant feature within both plan areas lead directly to the San Diego Bay. A primary recommendation in both community plans is the restoration and enhancement of the creek, consistent with the Chollas Creek Enhancement Program, which includes the reduction of pollutants that enter the storm water system from nearby uses (see respective Conservation Elements). Specific stormwater language and policies have been adopted for the newly updated Southeastern San Diego and Encanto Neighborhoods Community Plans (adopted October 2015 by City Council).

The following policies have been adopted and will be used to implement BMPs for new development projects in Encanto as an example:

- PLU-53:
    - Facilitate urban gardening as a strategy for creating local healthy food systems and fighting chronic obesity related illnesses, contributing to stormwater retention, and fostering community interaction;
    - Figure 3-4 in the Southeastern San Diego and Encanto Neighborhoods Community Plan illustrates stormwater treatment for streets;
    - Images on page 4-15 in the Southeastern San Diego Encanto Neighborhoods Community Plan illustrate stormwater treatment images;

- P-UD-88: Utilize permeable paving, bioswales, green alleys and/or other stormwater design features that will manage rain water and irrigation runoff while supporting the heavy load vehicles that would service the loading docks and refuse containers;

- Upgrade infrastructure for water and sewer facilities and institute a program to clean the storm drain system prior to the rainy season.

- Install infrastructure that includes components to capture, minimize, and/or prevent pollutants in urban runoff from reaching San Diego Bay and Chollas Creek. (See also Urban Runoff Management in the Conservation and Sustainability Element.)

- P-RE-20: Require that all stormwater and urban runoff drainage be filtered or treated before entering into open space lands.

Draft North Park Community Plan: The draft North Park Community Plan, scheduled to be adopted by City Council in October 2016, also contains specific Stormwater and BMP language in the Conservation Element of the Community Plan as well as in the appendices. The draft North Park Community Plan incorporates language, policies and recommendations concerning the reduction of urban runoff and storm water quality specifically in relation to tree planting as well as "Green Streets". Specific policies include:

- PF-1.15 Implement water improvements programs so there are systematic improvements and gradual replacement of water and wastewater facilities throughout the community. Also see General Plan PF-F.6 PF-G.2, PFH. 3, and PF-I.1.
    - Implement Green Infrastructure strategies to address storm water runoff throughout North Park.

- SE-3.17 Encourage property owners to design or retrofit landscaped or impervious areas to better capture stormwater runoff.

Draft Uptown and Golden Hill Community Plans: Public review drafts of the community plans for Uptown and Golden Hill plan updates were made available for public review in June 2016. The Conservation Elements of the draft community plans address conservation of the natural resources in each community, including open space, natural habitats, canyon sewer maintenance, and management of water resources and

urban runoff. The Public Facilities, Services and Safety Elements also address water, sewer and stormwater infrastructure. The discussion and policies related to these topics are intended to guide sustainable development practices that will minimize ecological footprints within each community and preserve natural features and resources. The Draft Programmatic Environmental Impact Reports were released in the summer of 2016. Adoption of the community plans are anticipated at the end of 2016.

San Ysidro Community Plan Update: A comprehensive community plan update started in San Ysidro in June of 2010 and aims to reflect the current conditions, improve mobility, include the pedestrian environment, and address quality of life issues. A Community Plan Update Stakeholders Advisory Committee (Advisory Committee) was established as part of the plan update effort and consists of diverse representation from the residents, property owners, various business interests, local community organizations, and not-for-profit groups, and participating public agencies within the plan update boundary. The San Ysidro Community Planning Group, which provides City decision-makers with input and recommendations regarding land use plans and development proposals within the San Ysidro plan boundary, makes up the majority of the Advisory Committee members. The Plan update effort is informed by technical studies and the City's 2008 General Plan which promotes current storm water, urban runoff, and water conservation policies. A discussion draft of the plan was released in June 2014 and a public review draft was released in April 2015 and 2016. The plan includes a Conservation Element as well as a Public Facilities Services and Safety Element, and contains specific policies related to reducing storm water runoff in the San Ysidro Community planning area. The plan is anticipated to be adopted in fall 2016.

- Notices of Violation

Treatment Control BMPs Notice of Violation: The City has achieved compliance at 146 of the 150 sites identified in the Regional Board's Notice of Violation (Order Number R9-2014-0034). The Regional Board granted the City an extension to achieve compliance at the remaining four sites by May 26, 2017.

During the process of achieving compliance for the aforementioned 150 identified sites, the City has discovered an additional 74 sites which initially appear to be out of compliance due to varying degrees of circumstances. Each of these potential violations consist of post-construction BMP issues. The City is continuing the same process outlined in its quarterly reports to the Regional Board, and is researching each case. After initial research to verify non-compliance or not, the City will follow its established procedures to achieve compliance at each site as required by the MS4 permit that it was permitted.

Administrative Civil Liability Complaint: The Regional Board conducted an audit of the City's construction management program during the 2014-2015 rainy season, and issued an Administrative Civil Liability Complaint in July 2016 for several alleged violations involving the City's construction oversight and enforcement practices. The City has worked diligently to address their initial concerns, and will continue to evaluate and implement strategies to ensure long-term success.

Since 2011, there has been a steady increase in the number of construction projects citywide. This surge in activity required the City to respond in a manner that would

enable the staff to keep up with the demand and allow the managers to effectively oversee the growth.

Several substantial improvements have been made, ranging from updating our standard procedures and increasing our outreach efforts to improving the City's escalating enforcement practices and issuing Administrative Citations and Administrative Civil Penalties to repeat offenders. In addition, the City established bi-weekly coordination meetings with the Storm Water teams from Public Works, Development Services and TSW to more effectively share up-to-date project information, discuss various strategies, collaborate on solutions, and coordinate enforcement on a more routine basis so that escalated enforcement is effective.

Another significant improvement involves the development of a unified storm water enforcement database. This will ensure collaboration between Resident Engineers (RE) and storm water inspectors while in the field so they will know the full inspection and enforcement history prior to entering a site. This resource is expected to be available in FY 2017.

Updating the Storm Water Standards Manual is another milestone improvement that was completed during FY 2016. The additional clarity that's now provided in the Construction BMP Standards section (Part 2) gives the responsible party increased guidance to help prevent construction activities from adversely impacting water quality downstream.

The frequency of the citywide storm water training has increased and proven to be a key factor in equipping and empowering our staff to properly address various field challenges and confidently communicate concerns and violations to the responsible parties. Some of the trainings included mandatory annual storm water training for the REs, Inspectors and Code Enforcement Officers, as well as training for our operations staff from the Public Utilities Department and TSW Streets Division.

3 FISCAL ANALYSIS

3.1 GENERAL BUDGET INFORMATION

The Storm Water Division is responsible for reporting annually on the jurisdictional, watershed and regional fiscal analyses to the Regional Board in accordance with the regional Fiscal Analysis Method developed by the Copermittees in response to Regional Board Order No. R9-2007-0001 (2007 Permit). During the reporting period, the Storm Water Division collected and analyzed financial information from 23 City departments/divisions through its "Annual Report Form" questionnaire, as well as from within the Storm Water Division. A summary of the findings is included below.

FY 2016 fell within the transitional period, as defined under Regional Board Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 (Municipal Permit). During the transitional period, most of the jurisdictional portions of the City's program continue to follow the requirements of the 2007 Permit, while the JRMP and WQIPs were being developed in response to the current Municipal Permit. The WQIPs were approved by the Regional Board at the end of FY 2016. The expenditures described for FY 2015 therefore reflect costs to comply with the transitional period stormwater requirements in effect during FY 2015, which are a combination of 2007 Permit and current Municipal Permit standards. Since the WQIPs were approved during FY 2016, partial implementation began, but full implementation will commence in FY 2017.

It is expected that the City will begin full implementation of current Municipal Permit requirements during FY 2017. The City will implement the revised JRMP, which updates the City's jurisdictional stormwater program to follow the current Municipal Permit requirements rather than the 2007 Permit requirements. The City's fiscal analysis reporting structure in turn will change, reporting expenditures, and funding sources in the following three main categories: JRMP (jurisdictional), WQIP (watershed), and flood risk management. That structure is consistent with the framework described in the City's Watershed Asset Management Plan (WAMP), the WQIPs to which the City is a party, and the JRMP. FY 2015 is the last year in which JRMP and flood risk management will be lumped together under the heading of "Jurisdictional Component" rather than reported separately.

3.2 FISCAL ANALYSIS METHODS

While the City used the format and guidelines included in the Fiscal Analysis Method for reporting purposes, a few modifications were necessary to address how the City tracks accounts internally. Modifications to the expenditure categories are described in the relevant sections below. In many cases, estimated percentages were used to allocate expenditures into the appropriate municipal permit component categories, including watershed and regional.

3.2.1 Fiscal Analysis Results

3.2.1.1 Expenditures

The City's FY 2016 Transitional JRMP Regional Program total expenditures ($75,934,083) for implementing the Municipal Permit requirements are summarized in Table 1.

Table 1: FY 2016 Jurisdictional, Watershed, and Regional Expenditures Summary

Jurisdictional Component	
Administration	$11,179,605
Development Planning (including public and private projects)	$1,897,784
Construction (including public and private projects)	$632,646
Municipal (including Non-emergency Fire Fighting expenditures)	$30,146,109
Storm Water Division Capital Improvements Program (CIP)	$7,929,308
Industrial and Commercial	$2,001,544
Residential, Education, and Public Participation	$2,159,991
Illicit Discharge Detection and Elimination (IDDE)	$11,339,120
Jurisdictional Total	$67,286,108
Watershed Component[1]	
San Dieguito Watershed	$1,105,348
Los Peñasquitos Watershed	$2,061,071
Mission Bay Watershed	$1,242,769
San Diego River Watershed	$680,843
San Diego Bay Watershed	$2,165,456
Tijuana River Watershed	$686,584
Watershed Total	$7,942,071
Regional Component	
Total Copermittee Cost Share for the City of San Diego	$342,001
Additional Regional Costs for education efforts, monitoring, document reviews, regional meeting attendance, and special projects	$363,903
Regional Total	$705,904
Total Costs	$75,934,083

[1] Watershed Component costs do not include Capital Improvements Program (CIP) costs. CIP costs are only included in the Jurisdictional Component's Storm Water Division Capital Improvements Program Category.

Transitional JRMP Expenditures

The City's FY 2016 Citywide expenditures for implementing the jurisdictional Municipal Permit requirements are depicted in Figure 1. Expenditures were provided as actual costs in most cases, and when the actual costs could not be determined, estimates of actual costs were provided. The Storm Water Division used the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, because of implementation overlap with the City's education, public participation, and residential Municipal Permit components, it is difficult to separate out individual component costs. Therefore, the expenditures for residential, education, and public participation are reported as one expenditure category.

A total of $67,286,108 was expended in FY 2016 to implement JRMP activities citywide. This amount includes costs paid by sewer and water rate payers (which are used for sewer and water-related services) and costs reimbursed by project applicants. An overview of the expenditures reflected in this component is described below.

Administration ($11,179,605)

Activities identified in this section represent personnel and non-personnel expenses for administration and contracts, grant management, citywide management, staff training, reporting, and assessment of the Municipal Permit.

Development Planning ($1,897,784)

Activities identified in this section represent personnel and non-personnel expenses for plan check reviews, incorporating BMPs into project designs, BMP Design Manual development, and General Plan updates. This category includes expenses for private and public projects.

Construction ($632,646)

Activities identified in this section represent personnel and non-personnel expenses for plan check review services, field inspections related to grading permits, public improvements, and building activities. This category includes expenses for private and public projects.

Municipal ($30,146,109)

Activities identified in this section represent personnel and non-personnel expenses for street sweeping, storm drain and channel maintenance, BMP implementation, and municipal facility and activity inspections. Additionally, this section includes the expenditures for Fire Department activities not related to emergency firefighting, such as facility inspections, stormwater BMPs, etc.

Capital Improvement Program ($7,929,308)

Activities identified in this section represent personnel and non-personnel expenses for implementation of new construction and planned improvements to existing facilities for storm water management. Projects may include, but are not limited to, the construction, purchase, or major renovation of buildings, utility systems, and other facilities to achieve storm water requirements. In addition, they may also include land acquisitions and roadway projects to install storm water facilities.

Industrial and Commercial ($2,001,544)

Activities identified in this section represent personnel and non-personnel expenses for inspection of industrial and commercial facilities. This also includes personnel and non-personnel expenses for the stormwater components of Food Establishment Wastewater Discharge Program (FEWD) and Industrial Wastewater Control Program (IWCP) inspections.

Residential, Education, and Public Participation ($2,159,991)

Activities identified in this section represent personnel and non-personnel expenses for educational materials, outreach efforts and events, public service announcements (PSAs), household hazardous waste (HHW) and used oil outreach, and community events.

Illicit Discharge Detection and Elimination ($11,339,120)

Activities identified in this section represent personnel and non-personnel expenses for identification and elimination of illicit discharges, enforcing the City's stormwater ordinance and implementation of the administrative civil penalties and citation process, and the urban runoff monitoring program.

Watershed Expenditures

The City's watershed expenditures during FY 2016 for the implementation of the watershed Municipal Permit requirements were provided as actual costs and when the actual costs could not be determined, estimates of actual costs were provided. The Storm Water Division used the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City expenditures and do not account for any expenditure disbursed by other Copermittees within the watershed(s).

In total, $7,942,071 was expended in FY 2016 for the implementation of citywide watershed activities. This amount includes costs for the implementation of applicable TMDLs along with special studies.

Regional Expenditures

The City's FY 2016 regional expenditures ($705,904) for the implementation of the regional Municipal Permit requirements are primarily the City's share of regional Copermittee stormwater program costs. Additional costs include estimated staff time to attend regional meetings and other related administration costs. The Storm Water Division used the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City expenditures, and do not account for any expenditure disbursed by other Copermittees in the region.

3.2.1.2 Grant Funding for Special Studies

In addition to resources identified for Municipal Permit requirements, the City actively seeks grants, and other funding sources, for special studies and Capital Improvement Projects. For the most part, funding for these projects may be limited to the projects specified and the City may restrict funding reallocation to other projects. Therefore, these resources are currently not incorporated in calculations for total Municipal Permit requirements expenditures detailed in Section 2.2.1.4 above. Table 2 lists projects that were initiated and/or in progress during FY 2016. It is important to note that the projects span multiple years and the amounts listed below are not just representative of FY 2016.

Table 2: Funding for Special Projects

Funding Source	Project	Amount	Matching Fund Amount	Total Amount[2]
San Diego County Water Authority (SDCWA)	Memorial Park Infiltration Basin Construction	$255,651.00	$295,904.00	$551,555.00
State Water Resources Control Board (SWRCB)	43rd & Logan Monitoring & Assessment	$689,300.00	$85,362.00	$774,662.00
SDCWA	Bannock Avenue Infiltration Construction	$630,500.00	$893,300.00	$1,523,800.00
SWRCB	Southcrest Park Infiltration Project	$1,880,070.00	$777,970.00	$2,658,040.00
Total Grant Funding		$3.5 million	$2.0 million	$5.5 million

2 Amounts span multiple years and not just FY 2016

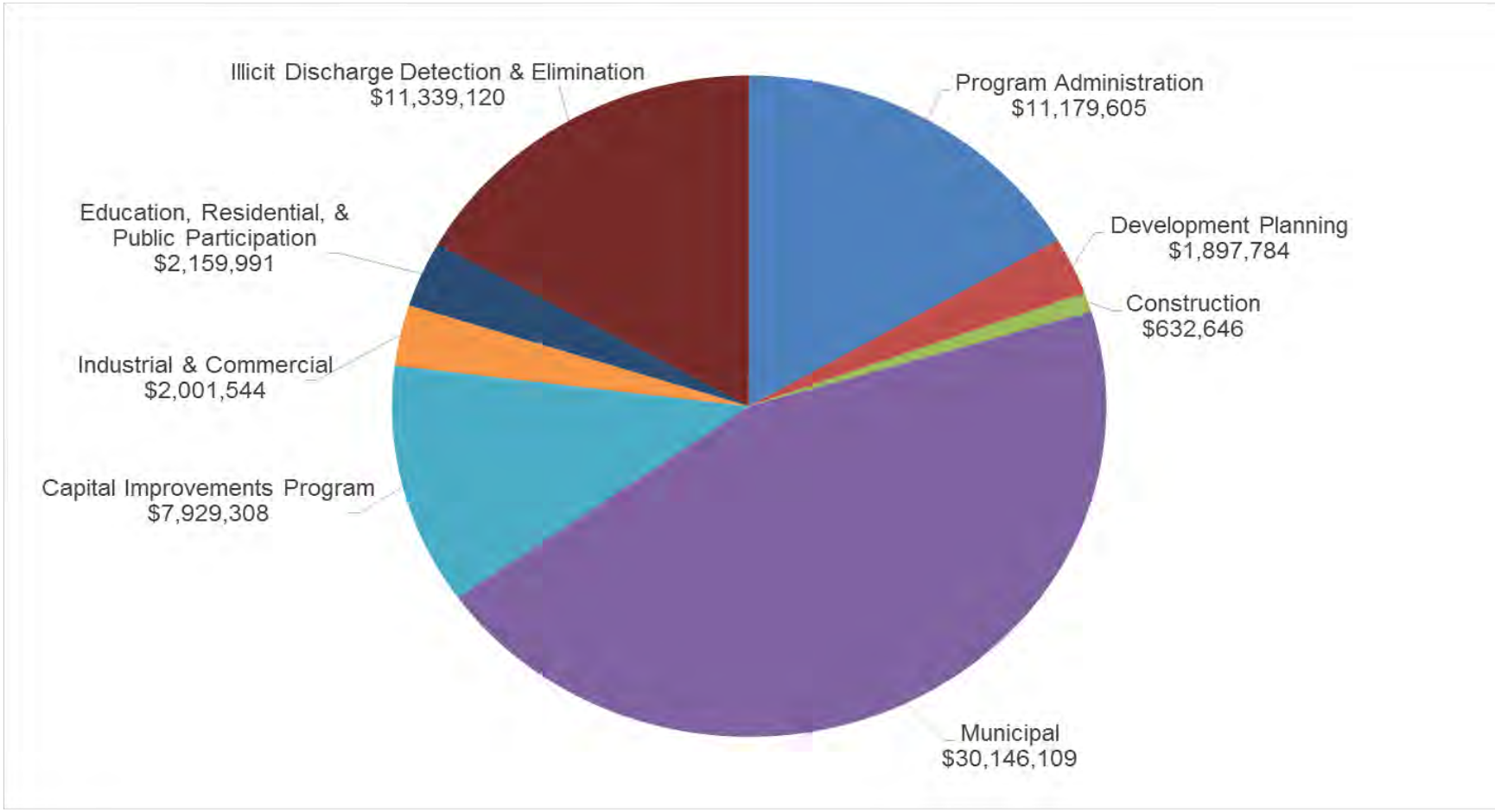

Figure 1: FY 2016 Citywide JRMP Expenditures by Permit Area

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3.2.2 Funding Sources

Citywide implementation of Municipal Permit requirements is funded through four main types of governmental funds: the General Fund, Special Revenue Funds, Enterprise Funds, and Internal Service Funds.

3.2.2.1.1 General Fund

The General Fund is the main fund for the City and is supported by major revenue sources, including property tax, sales tax, transient occupancy tax, and franchise fees. Departments funded by the General Fund provide core community services.

3.2.2.1.2 Special Revenue Funds

Special Revenue Funds account for revenues received for specifically identified purposes. Some of the larger funds that fall under this category include TransNet, Gas Tax, and Special Promotion programs.

3.2.2.1.3 Enterprise Funds

Enterprise Funds are initiated for specific purposes and funded through fees for services. This funding type is designated for the operations, management, maintenance, and development of the department providing the service. For implementation of citywide JRMP activities, activities are funded through the following enterprise funds:

- Airports Fund
- Development Services Enterprise Fund
- Golf Course Enterprise Fund
- Recycling Fund
- Refuse Disposal Fund
- Sewer Revenue Funds
- Water Utility Fund

3.2.2.1.4 Internal Service Funds

Internal Service Funds are comprised of fees for services provided by one City department to another City department or division. For implementation of citywide JRMP activities, activities are funded through the following internal service funds:

- Engineering and Capital Projects Fund
- Equipment Division Funds

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City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 1: Summary of Watershed Specific Data from the IDDE Program

JRMP Annual Report Form – Section IV. Illicit Discharge Detection and Elimination Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of non-storm water discharges reported by the public	119	353	541	368	634	47	**2,062**
Number of non-storm water discharges detected by Copermittee staff or contractors	60	172	317	314	393	50	**1,306**
Number of non-storm water discharges investigated by the Copermittee	171	518	845	683	1,021	97	**3,335**
Number of sources of non-storm water discharges identified	143	442	736	559	828	94	**2,802**
Number of non-storm water discharges eliminated	141	434	697	553	819	92	**2,736**
Number of sources of illicit discharges or connections identified	142	437	715	551	805	94	**2,744**
Number of illicit discharges or connections eliminated	140	429	676	545	796	92	**2,678**
Number of enforcement actions issued	141	436	709	553	819	93	**2,751**
Number of escalated enforcement actions issued	69	197	351	349	445	61	**1,472**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 2: Summary of Watershed Specific Data from the Development Planning Program

JRMP Annual Report Form – Section V. Development Planning Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/ La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of proposed development projects in review	70	241	332	233	561	60	**1,497**
Number of Priority Development Projects in review	5	32	15	21	38	8	**119**
Number of Priority Development Projects approved	88	110	76	61	138	27	**500**
Number of approved Priority Development Projects exempt from any BMP requirements	0	0	0	0	0	0	**0**
Number of approved Priority Development Projects allowed alternative compliance	0	0	0	0	0	0	**0**
Number of Priority Development Projects granted occupancy	75	63	7	30	40	9	**224**
Number of completed Priority Development Projects in inventory	118	178	141	113	213	89	**852**
Number of high priority Priority Development Project structural BMP inspections	1	9	0	1	1	5	**17**
Number of Priority development project structural violations	1	8	0	1	1	5	**16**
Number of enforcement actions issued	1	15	0	3	4	12	**35**
Number of escalated enforcement actions issued	0	3	0	1	1	1	**6**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 3: Summary of Watershed Specific Data from the Construction Managment Program

JRMP Annual Report Form – Section VI. Construction Management Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/ La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of construction sites in inventory	1,364	4,300	2,091	1,830	3,870	448	**13,903**
Number of active construction sites in inventory	26	47	37	38	51	8	**207**
Number of inactive construction sites in inventory	12	112	216	188	425	36	**989**
Number of construction sites closed/completed during reporting period	23	169	276	258	518	44	**1,288**
Number of construction site inspections	10,074	27,037	9,404	8,875	18,737	2,801	**76,928**
Number of construction site violations	169	270	195	78	211	154	**1,077**
Number of enforcement actions issued	114	164	183	51	187	150	**849**
Number of escalated enforcement actions issued	65	91	16	25	32	6	**235**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 4: Summary of Watershed Specific Data from the Existing Development Managment Program

JRMP Annual Report Form – Section VII. Existing Development Management Program	San Dieguito Watershed				Los Peñasquitos Watershed				Mission Bay/La Jolla Watershed				San Diego River Watershed				San Diego Bay Watershed				Tijuana River Watershed				Total Citywide			
	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES
Number of facilities or areas in inventory	23	1,542	81	12	123	8,282	915	27	218	8,911	464	32	121	10,175	513	33	197	14,085	690	70	20	2,075	369	6	702	45,070	3,032	180
Number of existing development inspections	22	308	6	1	117	1,533	140	4	159	4,801	186	5	114	2,573	99	5	195	3,197	102	5	19	233	41	2	626	12,645	574	22
Number of follow-up inspections	0	14	0	0	0	263	13	0	0	166	4	3	0	193	5	4	0	270	44	4	0	31	7	0	0	937	73	11
Number of violations	3	49	0	109	18	388	37	375	34	413	6	424	10	420	11	481	23	511	34	709	1	60	19	69	89	1,841	107	1,819
Number of enforcement actions issued	4	58	0	107	22	490	48	285	46	462	9	407	16	514	13	365	41	623	44	543	1	65	21	62	130	2,212	135	1,790
Number of escalated enforcement actions issued	0	23	0	50	2	148	8	134	0	205	3	182	0	172	0	236	6	217	11	291	0	26	13	36	8	791	35	884

MUN Municipal
COM Commercial
IND Industrial
RES Residential

5.3 CITY OF SAN DIEGO STRATEGIES

The City of San Diego is proposing the following administrative changes to the San Diego Bay Quality Improvement Plan outlined in Table 5-1. The proposed administrative changes include clarifications, corrections to errors and typos, and other minor edits that only apply to the City of San Diego. Changes to individual strategies, with respect to the WQIP September 2015 submittal, are shown in ~~strikeouts~~ and red text in the City's strategy reporting table later in this section (Table 5-2 to 5-5).

Table 5-1
Administrative Changes to the WQIP – City of San Diego

	WQIP Section	Administrative Changes
1	Section 4.3.3.2.3 Alternative BMP Implementation Scenario for Refinement of Water Quality Regulations	Included the following text: "Cost comparison between the Primary and Alternative Scenario presented in this section are a snapshot in time and are based on the best information available at the time they were prepared. As program implementation progresses, updates to estimated funding needs are likely to change. For the most recent estimate of funding needs, refer to the WAMP available at the Storm Water Division website, www.sandiego.gov/storm water/plansreports.
2	Appendix I – Jurisdictional Strategies and Schedules; Section I.4.2 Funding Needs for the City of San Diego	Included the following text: "Funding needs presented in this section are a snapshot in time and are based on the best information available at the time they were prepared. As program implementation progresses, updates to estimated funding needs are likely to change. For the most recent estimate of funding needs, refer to the WAMP available at the Storm Water Division website, www.sandiego.gov/storm water/plansreports.
3	Appendix I – Jurisdictional Strategies and Schedules; Table I-4-2 City of San Diego Jurisdictional Strategies	Refined the text (shown as track changes in red text in Appendix 2) to provide greater clarity and/or to correct errors and typos.
4	Appendix I – Jurisdictional Strategies and Schedules; Table I-4-2 City of San Diego Jurisdictional Strategies	Changed strategy identification numbering system (See Appendix 2).

Table 5-1 (continued)
Administrative Changes to the WQIP – City of San Diego

	WQIP Section	Administrative Changes
5	Appendix I – Jurisdictional Strategies and Schedules; Table I-4-2 City of San Diego Jurisdictional Strategies	Structural Strategies, Priority Development Project (PDP) BMPs: All PDP BMPs have been combined into a single strategy for ease of viewing. A table with an updated list of PDP BMPs is included in the WQIP Annual Report (See Appendix 2).
6	Appendix I – Jurisdictional Strategies and Schedules; Table I-4-2 City of San Diego Jurisdictional Strategies	Structural Strategies, Multi Use Treatment Areas (MUTAs): Planned MUTAs that are not yet built have been combined into a single strategy for ease of viewing. The total sum of drainage area treated (level of commitment) has not changed. A table with all structural strategies (MUTAs, Green Infrastructure, Green Streets, etc.) is included in the WQIP Annual Report (See Appendix 2).

Table 5-2
City of San Diego Jurisdictional Strategies for San Diego Bay WMA

~~Strikeouts~~ and red text are text edits that have been made up to the current date since the WQIP September 2015 submittal.

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Jurisdictional Strategies								
Note: Strategy IDs with an asterisk indicate those strategies that are considered "jurisdictional" in the MS4 Permit, but are considered enhancements to the JRMP to target highest priority water quality conditions.								
JRMP (E.2-E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
CSD-JRMP-01	Establish guidelines and standards for all development projects; provide technical support related to implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area or implement easements to protect water quality, where applicable and feasible le. Includes internal coordination and collaboration between City departments (DSD, PWD, and Engineering) to improve success and long-term benefits of BMPs.	Refer to JRMP Section 4. ~~All high priority projects will be inspected annually prior to the rainy season. 20 percent of all projects will be inspected annually. Maintenance inspections include examination of all structural BMPs at a project to verify that each structural BMP is working, being maintained properly, and is in compliance with all applicable City ordinances and permits.~~ May include providing technical support and consultation for other City departments that review project submittals for compliance with Storm Water Standards Manual requirements. May also include review of City projects for compliance with Storm Water Standards Manual requirements.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Revised Storm Water Standards Manual went into effect on February 16, 2016. FY17 Notes: The Storm Water Standards will be revised to include Critical Coarse Sediment Yield Area mitigation measures that were developed through a TAC process, along with other minor clarifications.
CSD-JRMP-02	Develop Design Standards for Public LID BMPs.	Improve quality of design to ensure efficiency and reliability in public designs.	FY14-FY15	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Draft Green Infrastructure standard drawings and specifications are currently in the review process. FY17 Notes: Plan to develop more standard drawings and specifications for other green infrastructure components.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-03	Outreach to impacted ~~industry~~ commercial, industrial, municipal, and residential development regarding minimum BMP requirement updates.	~~Affects commercial, industrial, and residential development.~~ May include onsite education at the time of inspections, city staff training, and mailers to business owners and prospective business owners.	FY15	Continuous- As needed	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Sent out monthly business Tax License renewal mass mailings, which included information about storm water BMPs. Violation location information from the Residential Patrol Program is used to target outreach.
CSD-JRMP-04*	Train staff on LID regulatory changes and LID practices.	Formal training is required for all staff involved in development plan review to increase knowledge of LID BMPs. Goal of training associated with LID practices and regulations is to promote LID implementation and to avoid adverse conditions such as trees planted within swales, or planned drainage patterns which obstruct or inhibit LID performance.	FY16	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Presented at a PWD training to discuss the revised Storm Water Standards Manual. Provided a plan check training for plan reviewers at DSD and PWD staff in May 2016.
CSD-JRMP-05*	Amend municipal code and ordinances, including zoning ordinances, to facilitate and encourage LID opportunities to support compliance with the MS4 Permit and TMDLs in a reasonable manner. Ensure consistency with the City of San Diego's BMP Design Manual. Update the Storm Water Standards Manual accordingly.	Municipal codes and ordinances will be brought to City Council for consideration to encourage LID implementation (e.g., runoff detention and filtration using natural filters and storm water retention for reuse). LID storm water management will be encouraged in proposed codes and ordinances associated with development and redevelopment projects, which are brought to City Council for consideration.	FY15	Continuous- As needed	Yes	No Change	No	None
CSD-JRMP-06	Provide technical education and outreach to the development community on the design and implementation requirements of the MS4 Permit and Water Quality Improvement Plan requirements.	Technical education and outreach to the development community includes outreach on design standards, City design manuals, and the WMAA.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Presented the revised draft Storm Water Standards at two public workshops in September 2016.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Priority Development Projects (PDPs)								
CSD-JRMP-07	For PDPs, administer a program and provide technical support to other City departments to ensure implementation of on-site structural BMPs to control pollutants and manage hydromodification by developing City wide storm water development standards and design guidelines.	Administer a program in coordination with other City departments to promote and confirm a thorough understanding of requirements for implementing structural BMPs that control pollutants and manage hydromodification. Includes requirements to confirm proper design and construction through processes controlled by other City departments. Please see Attachment 1 for details on PDP related BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City enhanced the Storm Water Quality Management Plan (SWQMP) template that was developed as a Copermittee effort for developers to use.
CSD-JRMP-08	Institute a program to verify and enforce maintenance and performance of treatment control BMPs.	Refer to JRMP Section 4.5. The Storm Water Division is responsible for annually verifying that all structural BMPs within its inventory are being properly maintained. The Storm Water Division performs verification through an Annual Maintenance Verification mailing and a direct maintenance inspection program. Parties responsible for maintenance of structural BMPs are required to complete and sign the Annual Maintenance Verification, certifying that the structural BMPs are being properly maintained. Direct maintenance inspections will be performed at all projects for which an Annual Maintenance Verification Form was not completed. All high priority projects will be inspected annually prior to the rainy season. 20 percent of all projects will be inspected annually. Inspect additional BMPs as needed. Medium and low priority projects will not require inspection if they have completed their Annual Maintenance Verification form, unless they are part of the 20 percent of projects that are annually inspected.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY17 Notes: For porous pavement BMPs, staff plan to use an infiltrometer to measure BMP effectiveness.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-09	Update ~~BMP Design Manual procedures~~ Storm Water Standards Manual to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP Section 4. Storm Water Standards Manual will be updated in accordance with the Permit and made available on the City's website.	FY15	Continuous every 5 years/ permit cycle	Yes	Revised to clarify strategy.	Yes	FY17 Notes: The Storm Water Standards will be revised to include Critical Coarse Sediment Yield Area mitigation measures that were developed through a TAC process, along with other minor clarifications.
CSD-JRMP-10*	Amend BMP Design Manual for trash areas. Require full four-sided enclosure, siting away from storm drains and cover. Consider the retrofit requirement.	Amend BMP Design Manual and zoning standards/requirements which address reduction of pollutants for common areas of trash build-up (e.g. restaurants, supermarkets, "big box" retail stores with food, pet stores). Most effective method for source control of bacteria and trash is to employ four-sized trash enclosures with a cover over trash areas.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on trash enclosures (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-11*	Amend BMP Design Manual for animal-related facilities, such as such as animal shelters, "doggie day care" facilities, veterinary clinics, breeding, boarding and training facilities, groomers, and pet care stores.	Amend BMP Design Manual and zoning requirements (including retrofits) to provide supplemental standards for animal facilities (including animal shelters, dog daycares, veterinary clinics, groomers, pet car stores, and breeding, boarding, and training facilities). Supplemental standards may include requiring covered trash enclosures, identification of landscaped relief areas on site plans, ensuring drainage connections and treatment swales for areas that will not drain to the sanitary sewer, as well as inspection of grading, drainage, and landscaping for outdoor exercise areas.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on animal facilities (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-12*	Amend BMP Design Manual for nurseries and garden centers.	Amend BMP Design Manual to provide supplemental standards for plant nurseries and garden centers. Standards will focus on reducing irrigation runoff, and loading of sediment, pesticides, and nutrients. Measures may include: covered outdoor storage, green waste management BMPs, improved irrigation efficiency to reduce dry-weather runoff, and containment of runoff from impervious areas where plants and materials are stored.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on nurseries (See Part 1, Appendix E of the Storm Water Standards).

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-13*	Amend BMP Design Manual for auto-related uses.	Amend BMP Design Manual to provide supplemental standards for automotive-related uses to reduce loading of metals, oils, grease, and trash. Measures may include: four-sized covered trash enclosures, and careful review of auto-related usage areas (e.g. garage bays at repair shops) for grading, drainage, and drain connections to sanitary sewer systems.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on auto-related facilities (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-14*	~~Develop and administer an alternative compliance program for on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects). Refer to Section 4.2.5.~~ Offsite Alternative Compliance Option	Refer to JRMP Section 4.2.3.1. WMAA and Water Quality Equivalency Study completed in FY15. Phase I, applicant implemented projects, is anticipated to be in effect by the end of FY16 contingent on Regional Board's approval of the WQIPs. Phase II, the expansion of the program to include other alternative compliance options, is expected to begin in FY16.	FY15	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Phase 1 of the Alternative Compliance Program (ACP) went into effect on 2/16/16. Development on Phase 2 of the ACP, including public involvement via Technical Advisory Committee (TAC) meetings, began during FY16. FY17 Notes: Continue developing Phase 2 of ACP. Topics to discuss include: environmental permitting, long-term facility maintenance, legal agreements and credit tracking, maintenance and permitting rules, and credit tracking and legal rules. Public involvement via TAC meetings will continue.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
E.4 Construction Management								
CSD-JRMP-15	Administer a program to oversee implementation of temporary BMPs that control sediment and other pollutants during the construction phase of projects. Includes requirements to inspect at appropriate frequencies and effectively enforce requirements through process controlled by other City departments.	Refer to JRMP Section 5. Inspections performed by the City or City staff provide verification that each site is in conformance with the Construction Storm Water BMP Performance Standards in the Storm Water Standards Manual. Inspections are tracked to ensure that they meet the minimum inspection frequencies. High priority active and inactive sites are inspected bi-weekly during the rainy season. Medium priority sites are inspected monthly during the rainy season. Low priority sites are inspected as-needed during the rainy season. All sites are inspected as-needed during the dry season. Please see Attachment 1 for details on construction BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
CSD-JRMP-17	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP Sections 6, 7, and 8. All industrial and commercial areas are inspected once within ~~the Permit term (~~five years~~)~~. At a minimum, 20 percent of industrial and commercial areas receive onsite inspections every year. Municipal facilities are inspected twice annually, once prior to the rainy season, and once during the rainy season. Residential management areas (RMAs) within the City are to be inspected once within five years ~~the Permit term~~, at a minimum. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: The City began patrols of residential management areas in FY16. See the City's JRMP Annual Report form, also included in Appendix 2, for numbers of inspections, violations, and enforcement actions for all types of existing development.
CSD-JRMP-18	Update minimum BMPs for existing residential, commercial, and industrial development. Specific updates to BMPs include required street sweeping, catch basin cleaning, and maintenance of private roads and parking lots in targeted areas.	Refer to JRMP Appendix IX. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY15	Continuous every 5 years/ permit cycle	Yes	No Change	Completed	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-19	Outreach to property managers and trash haulers to elevate the emphasis of power washing as a pollutant source.	Emphasis will be placed on non-compliant washing as an enforceable violation. Will occur city-wide in residential, commercial, and industrial areas.	FY15	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: City staff utilized a new fact sheet consistent with updated permit conditions to inform non-compliant power-washing operators of BMP requirements. The fact sheet was also provided to the San Diego Downtown Partnership as part of the City's education and outreach effort for downtown businesses. FY17 Notes: The City anticipates distributing a comprehensive BMP guidebook to businesses and business district leaders in areas with regular power-washing activities
CSD-JRMP-20	Implement property based inspections.	Property-based inspections increase awareness and responsibility for individual properties to tackle issues associated with trash, landscapes, and parking areas. Expanding beyond the business-level inspections will achieve different and more effective opportunities for education, outreach, inspection, and enforcement to encourage water conservation strategies. Inspection frequency dependent on type of facility. See CSD-9 for inspection frequency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Inventoried properties have been mapped in GIS. The City's inspection data management system has also been set up to track and map the properties inspected each fiscal year and over the Permit cycle.
CSD-JRMP-21	Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	Verify and bring to City Council for consideration an update (as needed) for the City's Municipal Code (43.0301) to meet new permit requirements for swimming pool discharges.	FY15	Continuous- As needed	Yes	No Change	Completed	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-22*	Promote and encourage implementation of designated BMPs for residential and non-residential areas.	Landscape-based rebates are a "gateway" for adoption of other beneficial practices and are one of the nonstructural methods which address impacts from single-family residential areas (City of San Diego 2011 program development background study). Residential incentives can include: education and training ~~(neighborhood watershed field days)~~, and aggressive subsidies or rebates for grass replacement and rainwater harvesting. Existing programs will be expanded overall, and ~~also have targeted expansion within specific subwatershed, particularly with highest water quality priority conditions. W~~will occur city-wide in residential, commercial, and industrial areas.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
MS4 Infrastructure								
CSD-JRMP-23	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, channels as allowed by resource agencies, detention basins, pump stations, etc.) for water quality improvement and for flood control risk management.	Refer to JRMP Section 7. Storm drain inlets are inspected ~~at least once a year~~ generally annually, and cleaned when accumulated materials are present. Other MS4 and related structures are inspected as needed.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: 11,047 storm drain inspections were completed in the WMA, and 842.2 tons of sediment, trash, and debris were removed during storm drain cleaning. In addition to routine maintenance of the MS4, across its entire jurisdiction the City repaired or replaced 12 pump stations and modernized another 14 pump stations, televised 28,000 linear feet of pipe in 62 locations, and began the development of the Waterways Maintenance Plan and Channel Maintenance Prioritization Plan. Removed 7.55 tons of trash from routine open channel trash cleaning and approximately 725 tons each of sediment and trash from channel maintenance activities that required resource agency permits.
CSD-JRMP-24*	Enhanced catch basin cleaning to increase pollutant removal (up to 4 times per year) in the rainy season.	To increase pollutant load removal, catch basins will be cleaned up to four times per year in the rainy season. The City of San Diego's pilot study found that major pollutants may vary from neighborhood to neighborhood (yard waste versus trash and sediment). Implementation may be adapted based on catch basin record keeping and cleaning optimization. Increase in frequency will be phased over 4 Fiscal Years.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: In FY16 a total of 2,856 enhanced catch basin inspections and cleanings were performed in the Chollas Watershed

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
~~CSD-JRMP-26~~	~~Increased frequency of catch basin inspection and as-needed cleaning.~~	~~For every segment of channel that is cleared, the City will conduct an inspection and as-needed cleaning of every catch basin within 100 feet of the cleared segment of channel. Additional inspection and as-needed cleaning will occur every three months for one year after the segment of channel is cleared.~~	~~FY13~~	~~Completed within schedule in 5 years (ends FY18)~~	NA	Incorporated into CSD-JRMP-27	NA	NA
CSD-JRMP-27	Implement additional BMPs in coordination with Master Maintenance Plan Enhancements	For each channel segment, City will either 1) implement landscape retrofits on one residential property, 2) increase street sweeping frequency by prioritizing high traffic commercial routes adjacent to maintained channel, 3) construct and maintain a storm water management BMP (e.g. biofiltration system, permeable pavement, vegetated swale, restored wetlands), or 4) increase frequency of catch basin inspection and as-needed cleaning for one year after maintenance.	FY13	Completed within schedule in 5 years (ends FY18)	Yes	Strategies CSD-JRMP-26 and CSD-JRMP-36 were combined into one strategy, CSD-JRMP-27, to streamline recordkeeping.	Yes	FY16 Notes: Quarterly catch basin inspections were performed for channel clearing performed in the Chollas Watershed FY17 Notes: If channel maintenance activities occur in this watershed during FY17, this mitigation approach may be used in FY17.
CSD-JRMP-28	Proactively repair and replace MS4 components to provide source control from MS4 infrastructure.	In order to limit inflow of pollutants and reduce pollutant loads, proactive measures will be taken to improve, repair, and replace MS4 components. The City of San Diego will start a multi-year program of repairing and replacing storm drain pipes to reduce sediment loading to the MS4. Development of an assessment management program and bond issues will be addressed. Exploration of daylighting pipes will take place where feasible and appropriate.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-29	Replacement of hard assets.	Includes needed replacement of storm drains and structures.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-30	Coordinate with other City departments (PUD) to implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Tiger Team was established in FY16 as a joint effort between TSW & PUD to identify and eliminate exfiltration sources from the sanitary sewer system to the MS4. Since the team was created, it has successfully eliminated one major source. FY17 Notes: For FY17, the team is focusing on two sites within the City and are identifying more.
CSD-JRMP-31*	Identify sewer leaks and areas for sewer pipe replacement prioritization.	Risk assessment to include identifying targeted areas (age, location, proximity to MS4), coming up with methodology, pilot, desktop exercise/analysis.	FY16	Continuous- As needed	Yes	No Change	Yes	None
Roads, Streets, and Parking Lots								
CSD-JRMP-32	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: 26,974 curb miles were swept in the San Diego Bay watershed management area.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-33	Outreach to street sweeping enhancement-targeted areas.	Division staff will conduct a thorough education and outreach effort beginning months in advance of the expansion of sweeping routes. Staff will work with the affected Council offices, community stakeholders, non-governmental organizations and community groups to build community awareness and acceptance of the enhanced sweeping program.	FY16	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Developed targeted communication materials for lead commercial property managers that covered various topics, including enhanced street sweeping
CSD-JRMP-34*	Enhance street sweeping through equipment replacement (replace mechanical sweepers with regenerative air sweepers) and route optimization (sweep all routes twice per month) in targeted areas.	Following outreach and posting, street sweeping efforts will be increased in target areas (those with sediment or metals as a highest priority water quality conditions). Replacement of street sweeping equipment with high-efficiency regenerative air and vacuum-assisted sweepers over time is expected to further increase load reductions (even if current routes and frequencies remain unchanged).	FY17	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: City purchased five vacuum sweepers. Began sweeping a route in Chollas with regenerative air sweeper. Also began sweeping various routes on an individual basis to assess sweeper function.
CSD-JRMP-35*	Initiate sweeping of medians on high-volume arterial roadways.	Medians of roadways are also a potential source of pollutants. Consider implementing or increasing sweeping of medians. Consider mechanical and hand sweeping techniques.	FY17	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Median sweeping began in FY16. A total of 4,315 median miles were swept in FY16 City-wide.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
~~CSD-JRMP-36~~	~~Implement additional street sweeping (Settlement Agreement).~~	~~City shall increase street sweeping frequency by prioritizing high traffic commercial routes adjacent to maintained channel with vacuum-assisted sweeper for every 400 linear feet of vegetation that is removed (except for removal of invasive species, e.g., Arundo) within a drainage area. Sweeping shall be conducted in median areas that are not subject to regular sweeping routes, and shall occur at a frequency of at least once per quarter for one calendar year after maintenance. Funding and resources were secured for FY2013. Funding for future fiscal years is contingent on annual budget approval by City Council.~~	~~FY13~~	~~Completed within schedule in 5 years (ends FY18)~~	NA	Incorporated into CSD-JRMP-27	NA	NA
Pesticides, Herbicides, and Fertilizer BMP Program								
CSD-JRMP-37	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education. ~~permits, and certifications.~~	Refer to JRMP Sections 7, 8, and 9.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
Retrofit and Rehabilitation in Areas of Existing Development								
CSD-JRMP-38	Development of a strategy and identification of candidate areas of existing development necessary for implementing retrofit projects and facilitate the implementation of such projects.	Refer to JRMP Appendix XIX. The Offsite Alternative Compliance Program will include methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including proximity to high priority water quality conditions, potential pollutant load removal effectiveness, and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards. Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-39	Development of a strategy and identification of candidate areas necessary to implement stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Refer to JRMP Appendix XIX. The Offsite Alternative Compliance Program ~~(Section 4.2.5.4 and Appendix P)~~ will include methods for identifying and assessing potential stream, channel, or habitat rehabilitation projects in existing development areas. Rehabilitation project selection will be based upon a variety of factors including existing stream or habitat degradation, potential future cumulative stream or habitat impacts, and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy.	NA, Not scheduled to be implemented in FY17	None
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
CSD-JRMP-40	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP Section 3. ~~The City must visually inspect at least 500 identified and prioritized major MS4 outfalls at least annually during dry weather conditions.~~ Inspections of major MS4 outfalls conducted in response to public reports and staff or contractor reports and notifications may count toward the required visual inspections of MS4 outfall discharge monitoring stations. Please see Attachment 1 for details on how the IDDE Program will address sources causing or contributing to the HPWQC.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: 1,021 cases were investigated, including 634 reported by the public; 819 illicit discharges or illicit connections were eliminated; and 819 enforcement actions and 445 escalated enforcement actions were issued in the WMA. City-wide, the number of discharges investigated has almost tripled since FY14 (1,186 in FY14 to 3,335 in FY16). The increase is believed to be mainly due to increased reports of irrigation runoff discharges from the public and from PUD.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
E.7 Public Education and Participation (B.3.b(1)(a)(iii))								
CSD-JRMP-42	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP Section 9.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City continued its extensive education and outreach effort across each of the six watershed areas in the City. This included regular attendance at community events in order to share education materials and the continuing sponsorship of community clean-up and pollution prevention education events with the City's Non-Governmental Organization partners, including I Love A Clean San Diego and San Diego Coastkeeper.
CSD-JRMP-43	Continue implementation of a Pet Waste Program.	Pet Waste Program includes outreach on "Scoop the poop", installation of posts for dispensers, distribution of lawn signs, and attendance at dog-related community activities.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Printed and distributed more pet waste signage. FY17 Notes: New bag dispensers will be installed and there will be outreach at community events. More signage will be installed.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-44	Promote and encourage implementation of designated BMPs in commercial and industrial areas.	Provide education and outreach on BMPs for commercial businesses and industrial facilities. Will occur city-wide in non-residential areas.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City continued its mandated commercial and industrial facility inspection effort sharing industry specific education materials with business and property owners when BMP deficiencies were discovered. FY17 Notes: The City will continue its inspection and education effort while also introducing alternative compliance strategies for new developments and sharing the updated Storm Water Standards Manual with target audiences.
CSD-JRMP-45*	Expand outreach to homeowners' association (HOA) common lands and HOA incentives.	Approaches to consider include: offering incentives to HOAs and maintenance districts to adopt water-conserving/efficiency and storm water-reduction changes to their landscapes, irrigation, and maintenance; conducting workshops with property managers; providing supplemental standards, inspection, or enforcement for HOA-managed properties.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Finalized updated code compliance fact sheets applicable to common lands activities. Coordinated water conservation pollution prevention incentive programming with PUD.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-46*	Develop an outreach and training program for property managers responsible for HOAs and maintenance districts.	Approaches to engage HOAs and property managers include: conducting workshops with property managers, providing supplemental standards, inspections or enforcement around HOA properties, and offering incentives to HOAs and maintenance districts to adopt changes to landscapes, irrigation, or maintenance which promote water conservation or storm water reduction. Property managers are also a target for enhanced outreach.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-48	Enhance school and recreation-based education and outreach.	Develop curriculum and establish distribution in public schools. Includes education on water conservation.	FY15	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City worked with its NGO partners to expand the number of children reached through school-aged education programs. The City updated curriculum materials for Project Swell in conjunction with San Diego Coastkeeper and provided printed education materials to leaders with the Ocean Discovery Institute in hope of establishing new partnerships with that organization. FY17 Notes: The City will be expanding the Blue Brigade Middle and High School program sponsored with I Love A Clean San Diego. The City will also distribute written education materials through the newly completed Ocean Discovery Institute headquarters.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-49	Develop education and outreach to reduce irrigation runoff.	Example approaches to reduce or eliminate irrigation runoff may include: education and outreach, prohibition, enhanced enforcement of existing prohibitions, and pilot projects such as the City of Del Mar's pilot door hanger project.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City used communication materials designed to address potential threats from El Nino rains as a new vehicle for educating the public about the need to eliminate irrigation runoff. FY17 Notes: The City is working with partner agencies and other City operations to develop new education and outreach efforts targeting urban runoff.
CSD-JRMP-50*	Develop and distribute regional training materials for water-using mobile businesses.	Consider development of supplemental standards for mobile businesses including: covered trash enclosures, careful review of washing areas (grading, drainage, landscaping, sanitary sewer system connectivity), and appropriate signage (either through zoning for retrofits or "best fix" approaches, or through BMP Design Manual standards). Businesses may include carpet cleaners, tile installers, plumbers, etc.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: The City updated its suite of fact sheets related to mobile business activities to bring them up-to-date with current permit requirements.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-51*	Enhance education and outreach based on results of effectiveness survey and changing regulatory requirements.	Use effectiveness surveys to enhance existing education and outreach programs while proactively keeping up with and incorporating changing regulatory requirements.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City annually conducts thousands or event-based surveys gathering information about public understanding of pollution prevention and about the City's storm water management efforts. The survey effort continued in FY16 and allowed the City to update its education materials and strategies based on current findings about public awareness. FY17 Notes: The City will contract with a new public opinion research firm to perform a statistically valid assessment of general public awareness. The finding from that effort will be combined with the discoveries of the ongoing event survey effort to drive future outreach priorities.
CSD-JRMP-52	Continue to promote and encourage implementation of Integrated Pest Management (IPM) for residents and businesses.	The City will continue to provide education on IPM techniques during presentations and on the City's Think Blue website.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-53*	Improve consistency and content of websites to highlight enforceable conditions and reporting methods.	Websites will be updated to provide a user-friendly format and clarity for storm water violations, conditions which citizens can and should report, and how to make such reports. Examples of reports for common incidents will be developed and posted which may vary locally and regionally. Photographs of allowable practices as well as illegal practices should be shown for utmost clarity. Displaying hotline numbers prominently on the website and near the photographs of illegal practices will ensure that those seeking to report will be able to do so easily. Also ensure hotline number and website are searchable and can be retrieved by simple internet searches.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City completely revamped its website improving public access and availability of web-based resources including the storm water management and pollution prevention materials developed and posted by the City. The City also brought forward the environmental response documents associated with its channel maintenance efforts. These documents include descriptions of water quality protections undertaken by the City allowing the public to view our agency's watershed protection strategies. FY17 Notes: The City will review and renew the entire portfolio of education materials available for public downloading from the City's website.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

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E.6 Enforcement Response Plan								
CSD-JRMP-54	Continue to implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Storm Water Code Enforcement Unit's Standard Operating Procedures (SOPs) - Enforcement Response Plan.	Refer to JRMP Appendix XIII.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-55*	~~Increase~~ Focused enforcement of irrigation runoff.	~~Increased~~ Focused enforcement policies against irrigation runoff will be established in tandem with the education and outreach programs on how these actions lead to pollutant loading. By shifting to property-based inspections irrigation runoff can be handled as enforceable violations once the public is well-informed.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Performed irrigation patrols and Residential Management Area Patrols throughout FY16. Also receive referrals from Water Conservation at PUD for over irrigation cases that have runoff entering the curb and gutter.
CSD-JRMP-56*	~~Increase~~ Focused enforcement of water-using mobile businesses.	In addition to education, pollution associated with mobile business sources can be handled through policy, code development, inspections of business practices, and enforcement.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Performed early morning patrols to find mobile sources and over-irrigation to the MS4.
CSD-JRMP-57*	~~Increase~~ Focused enforcement of all minimum BMPs for existing residential, commercial, and industrial development.	~~Increased~~ Focused enforcement of existing development minimum BMPs.	FY16	Continuous- As needed	Yes	Revised to clarify strategy.	Yes	None
CSD-JRMP-58*	~~Increase~~ Focused enforcement associated with property-based inspections.	Shifting inspections from businesses-specific to property-based will increase effectiveness and sense of responsibility and ownership. Education and outreach must be followed up with inspection and enforcement of regulations to encourage proper landscape and water conservation strategies.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-59*	~~Increase~~ Focused enforcement of sweeping and maintenance of private roads and parking lots in targeted areas.	Refer to Minimum BMPs in JRMP (Appendix IX).	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-JRMP-60*	~~Increase~~ Focused identification and enforcement of actionable erosion and slope stabilization issues on private property and require stabilization and repair.	Eroding and unstable slope areas on private property (excluding construction sites) will be identified as potential sediment loading sources and subject to enforcement. In the short term, this will target enhanced inspection and enforcement programs to ensure inspectors address erosion and slope instability for the purpose of education.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: City staff completed patrols of construction sites that included sediment discharges. They also began the Residential Patrol Program, which notes and addresses sediment discharges in residential areas.
Non-JRMP Strategies (Optional Strategies, B.3.b(1)(b))								
Nonstructural Strategies								
CSD-NS-02	Investigation and research of emerging BMP technology.	Annually the Construction & Development Standards Group identifies new tasks to conduct literature review, communication with researchers outside of the City, physical testing and experimentation of new or emerging technologies, and other research with the goal of updating tools available for reducing pollutant loads from development and redevelopment sites. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Continued monitoring and assessment of the biofiltration basin and curbside filtration units at 43rd and Logan.
CSD-NS-03	Approve and implement a green infrastructure policy.	The City will begin developing a policy in FY16 that will increase the green infrastructure requirements for City CIP projects. This policy will be coordinated with ongoing efforts to update City design manuals and LID design standards for public LID BMPs. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous- As needed	Yes	No Change	Yes	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-04	Create a manual that outlines right-of-way design standards.	Create a manual that includes flood control performance standards, permanent BMP elements design standards, design standards for green streets and other BMPs, and maintenance access. Provides drainage and streets design standards. Opportunity to merge various existing manuals and provide consistency. Funding and resources were secured for FY2015.	FY15	Completed within schedule	Yes	No Change	Yes	FY17 Notes: Will be published in FY17.
CSD-NS-05	Create a fund that allows habitat acquisition, protection enhancement, and restoration in conjunction with other cooperating entities including community groups, academic institutions, state county, and federal agencies, etc.	This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired or restored lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. It is anticipated that a minimum of 1 FTE will be needed to implement the program. Once initiated, the time frame for planning to initial implementation is expected to be 3 years. Implementation is in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None
CSD-NS-06	Residential and Commercial BMP: Rain Barrel	The existing PUD rebate program will continue for residential properties and expand for commercial properties for water collection, conservation, and reuse with rain barrels. Will occur city-wide in residential areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates for rain barrels were issued to capture 772,740 gallons of rainwater City-wide

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-07	Residential and Commercial BMP: Grass Replacement	The existing PUD grass replacement cash rebate program will continue and expand for residential and commercial properties. Program encourages a reduction in water use through the conversion of non-artificial grass to water wise plant material, while maintaining a high level of living landscape to benefit the environment. Program does not allow for conversion to artificial turf. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates were issued to convert 106,041 sq. ft. of turf in the WMA.
CSD-NS-08	Residential and Commercial BMP: Downspout Disconnect	Disconnecting downspouts provide alternate runoff pathways from rooftops, sidewalks, driveways, and roads. Disconnecting downspouts from residential areas to pervious land can allow for depression storage and infiltration. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Completed downspout redirect guidelines in collaboration with PUD.
CSD-NS-09	Residential and Commercial BMP: Microirrigation	The existing PUD micro-irrigation rebate program will continue and increase for residential and commercial properties. Application of microirrigation aims to improve the efficiency of landscape irrigation through the precise application of water. Will occur city-wide in residential areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates were issued for installing microirrigation for 5,160 sq. ft. of landscaping in the WMA.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-10	Provide Onsite Water Conservation Surveys.	Provide free onsite water conservation surveys to commercial and residential customers to reduce overirrigation and to encourage water conservation. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-NS-11	Enhance and expand trash cleanups through community-based organizations involving target audiences.	Increase effectiveness and reach of trash/beach cleanups and community based efforts by engaging community groups to self-define and carry-out trash clean-ups. Longstanding partnerships and sponsorships with I Love A Clean San Diego and others are recommended to be continued and enhanced. To effectively target stream clean-up efforts, focus on partnerships with community organizations which provide strong engagement with target audiences and communities. Cleanups target trash, however a reduction in trash also reduces other pollutants such as bacteria and nutrients that can attach to food waste wrappers and yard waste. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY 16 Notes: The City partnered with I Love a Clean San Diego on four clean-ups, which resulted in the removal of 14,732 pounds of trash and debris.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-13	Coordinate with Parks and Recreation Department on ~~T~~trash mitigation in the western portion of the Otay River HU.	Longstanding partnerships and sponsorships with I Love A Clean San Diego and Otay Valley Regional Park (OVRP) will be continued and enhanced. The City of San Diego has a Joint Exercise Powers Agreement with the City of Chula Vista and the County of San Diego to manage the OVRP. City of San Diego park rangers perform regular maintenance of the Western OVRP including, but not limited to: overseeing all contract services; patrolling the Park and keeping it as clean and safe as possible; providing educational opportunities for visitors; providing consistent public outreach; maintaining the grounds and facilities; and coordinating with various agencies, public utilities, and other organizations. The park rangers work with WildCoast to educate the local community, and WildCoast supports OVRP's educational programs, such as brochure development and public outreach events like OVRP Day, I Love A Clean San Diego cleanups, and various other events throughout the year. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: One clean up event with I Love A Clean San Diego and WildCoast which was on April 16, 2016 at the Saturn Blvd. Staging Area in the Otay Valley Regional Park (OVRP). There were 30 volunteers who helped clean up 600 lbs. of trash and 200 lbs. of recyclables. Also coordinated with WildCoast on two other clean-up events also held at the western portion of OVRP on May 9 and June 18, 2016. Hosted over 40 volunteers who cleaned up approximately 500 lbs. of trash and debris and 150 lbs. of recyclables for those two days.
CSD-NS-16	Conduct a Comprehensive Benefits Analysis to identify benefits other than water quality that are applicable to each of the specific WQIP strategies.	The analysis identifies which other benefits apply to each strategy, and documents the assumptions making those linkages. The delineation of other benefits to strategies includes a general description of each benefit, and a listing of the assumptions that were made to link those benefits to strategies. In addition, the other benefits are characterized with respect to who is directly affected: the city, local residents, local businesses, or visitors. This analysis may be used as part of the adaptive management process to modify future strategies. Funding and resources were secured for FY2015.	FY15	Completed within schedule	Yes	No Change	No	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-17	Address and clean up trash from transient encampments with collaboration from the Environmental Services Department, which consults with the Homeless Outreach Team.	Coordinate with the Environmental Services Department, in conjunction with the Homeless Outreach Team, to respond to transient encampment trash complaints. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-NS-18	Continue participating in source reduction initiatives.	Source reduction initiatives are ultimately the most effective measure to remove pollutants from surface waters, where feasible. Bans or progressive phase-outs that may be considered include: leaf blowers, plastic bags, architectural copper (generally a legacy issue), as well as prohibiting or more aggressively regulating vehicle washing. Additional source reduction initiatives to consider include pesticide sales at hardware stores and irrigation supply stores. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City began development of plastic bag ban ordinance. FY17 Notes: Pursuit of City-specific plastic bag ban ordinance will depend on whether Statewide plastic bag ban ballot initiative passes.
CSD-NS-19	Coordinate with Fleet Services to replace City-owned vehicle brake pads with copper-free brake pads as they become commercially available.	Consider legislative mandate and cooperative implementation of copper-free brake pads on city-owned vehicle to reduce pollutant deposition. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-20	Develop and implement a Zinc Reduction Program.	Develop and implement zinc reduction program. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include a coordinator or project manager. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, the time frame for planning, implementation, and assessment is expected to be 7 years. If effective, continued implementation will be considered.	Must be triggered	Continuous if effective and as funding allows	Not Triggered	No Change	If Triggered	None
CSD-NS-21	Develop and implement targeted roof replacement incentive program for Chollas Creek Watershed.	If determined feasible and effective upon completion of development of Zinc Reduction Program, rebates or other incentive programs to replace metal roofs will be considered. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, implementation and assessment is expected in 7 years. If effective, continued implementation will be considered.	Must be triggered	Continuous if effective and as funding allows	Not Triggered	No Change	If Triggered	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-22	~~Proactively~~ Coordinate with appropriate City Departments that monitor for erosion, and complete minor repair and slope stabilization on municipal property.	~~Actively~~ Coordinate with Streets Division and other appropriate City Departments that identify and repair eroding slopes that may be contributing to sediment loading. Prepare an inventory and assessment of eroding areas and their risk to surface waters. Follow assessment with a schedule for ongoing inspection and stabilization (potentially based on a number or percentage of sites annually). Consider Caltrans program as a template. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-NS-23	Conduct special studies.	Special studies will be conducted to gather data to identify pollutant sources, appropriate targets, or other information. Includes collaboration with universities. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: San Diego Regional Reference Streams and Beaches, San Diego Bay Debris Study, Pueblo HU Refuse Assessment Program, Chollas Jurisdictional Boundary Study, Regional Beach Water Quality (AB411), Riparian Area Selenium Study
CSD-NS-26	Participate in Reference Watershed Study.	The San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Refer to Section 5.1 for further details. Will occur region-wide. Funding and resources were previously secured.	Prior to FY16	Completed within schedule	Yes	No Change	Completed	FY16 Notes: See Section 5.2 in Appendix C for more information

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-32	Conduct a Storm Water Fee Study~~Cost of Service Study~~.	Conduct a Storm Water Fee Study~~Cost of Service Study~~ that will examine the full cost of flood control and storm water strategies needed to comply with storm water regulations for the City of San Diego. The City of San Diego's Watershed Asset Management Plan will be used as the basis for the study. Funding and resources have been secured for FY2016.	FY16	Completed within schedule	Yes	No Change	Yes	FY16 Notes: Significant progress was made on the fee study; it will be finalized and posted on the City website in FY17. FY17 Notes: Study results to be posted in FY17
CSD-NS-33	Conduct Sustainable Return on Investment (SROI) analysis to estimate strategies' co-benefits and impacts to the public and the private sector on a common scale.	SROI is an economics-based framework for evaluating quantitative and qualitative performance metrics and monetizing them, if possible, along a triple bottom line (i.e. financial, societal, and environmental). This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated one-time cost to implement is $115,000. Once initiated, the analysis is expected to be complete in 1 year.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-34	Collaborate with the County, if a County-led regional social services effort is established, to provide sanitation and trash management for individuals experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	Support a non-profit or consortium to provide sanitation services associated with hygiene as well as trash management for persons experiencing homelessness. Rented or purchased shower/sanitary trailers providing mobile showers may be organized at specifically scheduled locations and times. This provision has been proposed as a method for preventing surface water usage for sanitation and bathing, as well as opportunity for outreach and referral by social service agencies. The trash management services will include providing trash bags, trash collection areas, and shower/sanitary facilities at centers which provide daytime shelter to their clients, or on a mobile-basis for known transit camps. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy includes an initial first year planning cost of $30,000 and implementation is expected to cost $10,000 annually thereafter. Once initiated, development of the program is expected in 1 year. Implementation is in perpetuity as long as funding is available.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-37	Participate in an assessment to determine if implementation of an urban tree canopy (UTC) program would benefit water quality and other City goals, where feasible.	Perform a feasibility study to determine if implementing an UTC program would be beneficial to the City's goals. UTC intercepts rainfall through increased coverage of leaves, branches, and stems and reduces runoff from the storm drainage system. Benefits associated with enhancing an UTC include reducing heat island effects and air pollution in addition to aesthetics and community benefits. Where feasible, native trees will be utilized to prevent invasive trees from migrating to open spaces and to conserve water. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, implementation and assessment is expected in 2 years.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-38	Conduct a feasibility study to test Permeable Friction Course (PFC), a porous asphalt that overlays impermeable asphalt.	Perform an assessment to determine the feasibility of implementing PFC on City streets. PFC, an overlay of porous asphalt, is an innovative roadway material that improves driving conditions in wet weather and water quality. Placed in a layer 25-50mm thick on top of regular impermeable pavement, PFC allows rainfall to drain within the porous layer rather than on top of the pavement. PFC has also been shown to reduce concentrations of pollutants commonly observed in highway runoff. PFC incorporates storm water treatment into the roadway surface and does not require additional right-of-way. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy is $50,000. Once initiated, implementation and assessment is expected in 2 years.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-39	As opportunities arise and funding sources are identified, protect areas that are functioning naturally by avoiding impervious development and degradation on unpaved open space areas, creating permanent open space protections on undeveloped city-owned land, and accepting privately-owned undeveloped open areas.	This strategy may be implemented if there is interest in participation by the public or private entity with current control of the land. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) identification of partners, if needed (public, private, non-profit), 2) identification of costs and potential sources of funding, 3) final agreement by public or private entity with current control of the land, 4) final agreement by all other participating partners including acceptance by intended land- or asset-owning City department, and 5) funding in place. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The time frame for implementation will vary by project. Implementation is in perpetuity as long as funding is available.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None
CSD-NS-44	Participate in a watershed council or group if one is established.	This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) partners have been identified and formal MOUs have been developed and 2) consensus and community support has been achieved. Resources necessary to implement this strategy include a coordinator or project manager. Projected funding needs may be met through award of a grant, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, development of the program is expected in 2 years. Implementation would be in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-47	Coordinate with Development Services Department to ~~P~~prohibit introduction of invasive plants in new development and redevelopment projects.	Coordinate with the City's Development Services Department to continue to prohibit introduction of invasive species such as *Arundo donax* and *Cortaderia selloana* for new development or redevelopment projects as specified in the City's municipal code for landscape. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-NS-51	Collaboration with the Regional Board.	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit, 2) enforcement of the Ag Waiver, 3) enforcement of other non-MS4 dischargers, and 4) Bacteria TMDL updates, as appropriate for each WMA. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Provided written comments to the Regional Board, State Water Board, and US Environmental Protection Agency (EPA) regarding proposed rules and regulations.
CSD-NS-52	Collaborate with Metals TMDL RPs and the Regional Board to Adopt Site Specific Objectives	Collaborate with the Metals TMDL RPs, the Regional Board, and water stakeholders to determine site-specific water-effect ratios (WERs) for copper and zinc. The collaborative effort will continue through adoption of the site-specific WERs for Chollas Creek. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Coordinated with the Regional Board to initiate Basin Plan amendment and peer review for basin plan update. FY17 Notes: Will continue.
Structural Strategies								
CSD-STRUCT-01	Restoration of natural areas to allow water percolation, and installation of site appropriate drainage devices to protect Sunset Cliffs Natural Park from soil erosion	A feasibility study is being conducted to assess the potential to restore natural areas in Sunset Cliffs Natural Park from erosion. I	FY22	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Green Infrastructure								
CSD-GI-10	43rd and Logan Roadway Improvement - Project ID 1387 (bioretention to treat a drainage area of 0.73 acre)	The City has implemented a bioretention BMP on the northeast corner of the intersection of 43rd and Logan Avenue to treat storm water runoff from the northerly half of Logan Avenue from Dominion Street to 43rd Street (drainage area of about 0.73 acre). In addition, there are three sets of curbside filters installed along the southeast corner of 43rd Street and Logan Avenue. Storm water from Logan Avenue flows through a curb opening into a pretreatment device to filter out gross solids and some sediment, and then flows into 12 filtration units connected in series. The curbside filtration units treat 5.76 acres (See Proprietary BMP Strategies). The City has received grant funding to conduct BMP effectiveness monitoring for hydrologic performance and pollutant removal over a two-year period.	FY14	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Construction has been completed; BMP is maintained on a regular schedule. FY17 Notes: The installed BMP will continue to be maintained. See Table 5-3 for a current list of completed and planned Structural Projects.
CSD-GI-11	Green lot in Southcrest Park.	Green lot on Newton Ave. west of 43rd to treat a drainage area of 36 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	See Table 5-3 for a current list of completed and planned Structural Projects.
CSD-GI-12	Central Region Public Health Center replacement of impervious pavement with rubberized porous asphalt.	Central Region Public Health Center replaced 6,250 square feet of impervious pavement with rubberized porous asphalt. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Completed	FY16 Notes: Completed County project; City not responsible for maintenance
CSD-GI-13	Southeast Family Resource Center bio-filtration planters	Southeast Family Resource Center constructed four bio-filtration planters in the parking lot and adjacent to the building to filter runoff from the roof and parking surface. They also installed porous pavers at the entrance and exit of the parking lot. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Completed	FY16 Notes: Completed County project; City not responsible for maintenance

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-GI-16	~~10.31~~ 8.3 acres of bioretention and 2 acres of permeable pavement have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 298.12 acres (total drainage area of 462 ac) with a total storage volume with 13.56 acre-feet.	To meet the Chollas watershed numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. Staggered construction, operation, and maintenance of ~~10.31~~ 8.3 acres of bioretention and 2 acres of permeable pavement to treat an impervious drainage area of 298.12 acres (total drainage area of 462 ac) with a total storage volume of 13.56 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy.	NA, Not scheduled to be implemented in FY17	See Table 5-3 for a current list of completed and planned Structural Projects.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Green Streets								
CSD-GS-04	Beta Street	Operation and maintenance of a 0.063 acre (footprint) green street project at Beta Street and 37th to treat a drainage area of 2.1 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY17	Continuous-Ongoing	Yes	No Change	Yes	FY17 Notes: Construction starting in FY17. See Table 5-3 for a current list of completed and planned Structural Projects.
CSD-GS-09	25.52 acres of green streets (12.76 acres of bioretention and 12.76 acres of permeable pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 7,260.34 acres with a total storage volume of 39.66 acre-feet.	To meet the Chollas watershed numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. Staggered construction, operation and maintenance of 25.52 acres of green streets (12.76 acres of bioretention and 12.76 acres of permeable pavement) to treat a total drainage area of 7,260.34 acres with a total storage volume of 39.66 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report. 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy.	NA, Not scheduled to be implemented in FY17	See Table 5-3 for a current list of completed and planned Structural Projects.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Multiuse Treatment Areas								
Infiltration and Detention Basins								
CSD-MUTA-06	Multiuse Treatment Area BMPs in the Chollas Watershed.	To meet the Chollas watershed numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. Modeled MUTA BMPs with a total footprint of 6.2 acres to treat a total drainage area of 441 acres. These can be wetland, infiltration, retention and/or detentions systems. An updated inventory of MUTA projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Multiple similar strategies were compiled into this new strategy listing to simplify recordkeeping and reporting.	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table 5-3.

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-MUTA-07	Memorial Park: An infiltration basin has been constructed from the parking on the west side of Memorial Park to treat a drainage area of 1.4 acres.	A 0.10 acre infiltration basin has been constructed to treat runoff from the parking on the west side of Memorial Park that has been diverted from the existing storm drain system (drainage area of 1.4 acres) . Before entering the basin, the runoff passes through a hydrodynamic separator that removes pollutants that settle out or float. Runoff then enters the basin where it infiltrates into the underlying soils. Runoff in excess of the 5-year storm bypasses the BMP via an overflow pipe and returns to the regular storm drain system. Funding and resources were secured for FY2014. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY14	Continuous-Ongoing	Yes	No Change	Yes	FY17 Notes: Increase inspection & cleaning to a minimum of 2 annually. See Table 5-3 for a current list of completed and planned Structural Projects.
CSD-MUTA-15	If interim load reduction goals are not met and additional multiuse treatment areas are required, an infiltration basin(s) may be considered on publicly owned open spaces in canyon areas on a case-by-case basis when no other opportunities for load reductions exist.	Construction, operation, and maintenance of infiltration basin(s) in canyon areas. Nine potential canyon sites, owned by City of San Diego, have been identified in Chollas watershed that provide up to 30 acres of available space (83 total parcel acreage). This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, 4) partners have been identified and formal MOUs have been developed, and 5) permits required by regulatory agencies are secured.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None
Stream, Channel and Habitat Rehabilitation Projects (B.3.b.(1)(b)(iii))								
CSD-MUTA-20	If interim load reduction goals are not met and additional stream, channel, and habitat rehabilitation projects are required, implement as needed.	This strategy may be triggered as 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, 4) permits required by regulatory agencies are secured, and 5) recommendations from the community are identified and consensus and community support has been achieved. Will occur in areas identified during feasibility studies.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Water Quality Improvement BMPs								
Priority Development Projects (PDPs)								
CSD-PDP-03	Priority Development Project BMPs in San Diego Bay WMA.	Per the Storm Water Standards Manual, all non-exempt public PDPs are subject to requirements to construct and maintain permanent BMPs. See WQIP Annual Report for updated PDP BMP Inventory. Funding and resources have been secured for PDPs implemented prior to FY16. Funding for PDP BMPs constructed in future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Multiple similar strategies were compiled into this new strategy listing to simplify recordkeeping and reporting.	Yes	See Table 5-4 for a current list of PDP BMPs.
Proprietary BMPs								
CSD-WQBMP-02	43rd and Logan Roadway Improvement - Project ID 1387 (filtration units treat 5.76 acres)	Three curbside filtration units were installed along S 43rd street and Logan Avenue The curbside filtration units treat a total of 5.76 acres. Funding and resources were secured for FY2014. Funding for future fiscal years is contingent on annual budget approval by City Council. A bioretention BMP is also implemented on this site (See GI strategies).	FY14	Continuous-Ongoing	Yes	No Change	Yes	FY17 Notes: Increase inspection & cleaning to a minimum of 4 annually. See Table 5-3 for a current list of completed and planned Structural Projects.
Dry Weather Flow Separation and Treatment Projects								
CSD-WQBMP-09	If interim load reduction goals are not met and additional dry weather flow separation and treatment projects are required, implement as needed.	Construction of dry weather flow separation and treatment projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Trash Segregation								
CSD-WQBMP-10	If interim load reduction goals are not met and additional trash segregation projects are required, implement as needed.	Construction of trash segregation (Trash Guards, etc.) projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in high loading areas city-wide.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-5	Collaboration with the Regional Board.	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit and 2) enforcement of other non-MS4 dischargers. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Working with Regional Board to include non-Phase I MS4s in general permits, waivers, and Waste Discharge Requirements (WDRs).

Table 5-2 (continued)
City of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-6	Offsite Alternative Compliance Option ~~(WMAA)~~	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, ~~anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015,~~ which was submitted and approved in FY 2016. Following this approval, jurisdictions can formally implement an optional Alternative Compliance Program by ~~December 2015~~ February 2016 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Phase 1 of the Alternative Compliance Program (ACP) went into effect on 2/16/16. FY17 Notes: Proposed Water Quality Equivalency (WQE) guideline development for stream restoration.
WMA-11	Collaborate with Metals TMDL RPs and the Regional Board to Adopt Site Specific Objectives	Studies to develop site-specific water quality objectives (SSOs) for Chollas Creek in accordance with the Metals TMDL are currently underway. The TMDL RPs will continue to work collaboratively with the Regional Board and watershed stakeholders to determine site-specific water-effect ratios (WERs) for copper and zinc. The collaborative effort will continue through adoption of the site-specific WERs for Chollas Creek. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Coordinated with the Regional Board to initiate Basin Plan amendment and peer review for basin plan update providing a site specific objective for dissolved copper and zinc. FY17 Notes: Will continue working with the Regional Board for the adoption of a Basin Plan amendment.

* Strategy IDs with an asterisk indicate those strategies that are considered "jurisdictional" in the MS4 Permit, but are considered enhancements to the JRMP to target highest priority water quality conditions.

Table 5-3
City of San Diego Structural BMP Implementation Status for San Diego Bay WMA

Strategy Number	Strategy	Implementation Approach	Total Drainage Area (Ac)	Implementation Year*	Status	Permit Term Goal**
Green Infrastructure		Total Acres Treated Required for Green Infrastructure:	498.73			
CSD-GI-10	43rd and Logan Roadway Improvement - Project ID 1387 (bioretention to treat a drainage area of 0.73 acre)	The City has implemented a bioretention BMP on the northeast corner of the intersection of 43rd and Logan Avenue to treat storm water runoff form the northerly half of Logan Avenue from Dominion Street to 43rd Street (drainage area of about 0.73 acre). In addition, there are three sets of curbside filters installed along the southeast corner of 43rd Street and Logan Avenue. Storm water from Logan Avenue flows through a curb opening into a pretreatment device to filter out gross solids and some sediment, and then flows into 12 filtration units connected in series. The curbside filtration units treat 5.76 acres (See Proprietary BMP Strategies). The City has received grant funding to conduct BMP effectiveness monitoring for hydrologic performance and pollutant removal over a two-year period.	0.73	FY14	Completed	✓
CSD-GI-11	Green lot in Southcrest Park.	Green lot on Newton Ave. west of 43rd to treat a drainage area of 36 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	36	Prior to FY16	Design	✓
CSD-GI-16	8.3 acres of bioretention and 2 acres of permeable pavement have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 298.12 acres (total drainage area of 462 ac) with a total storage volume with 13.56 acre-feet.	To meet the Chollas watershed numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. Staggered construction, operation, and maintenance of 8.3 acres of bioretention and 2 acres of permeable pavement to treat an impervious drainage area of 298.12 acres (total drainage area of 462 ac) with a total storage volume of 13.56 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report.	462	FY18	Varies, see below	Varies, see below
	Project Name	Project Description	Total Drainage Area (Ac)	Implementation Year	Status	Permit Term Goal
	El Cerrito & Rolando Park	Green infrastructure - North of University	25	FY19	Design	
	Jamacha Lomita GI	Meadowbrook Dr. south of Jamacha Road, Beacon Dr. south of Jamacha Road	231	FY 20	Design	
	Oak Park SD & GI	Chollas Station Rd., Quince St. & Chollas Pkwy, College Avenue & College Grove Dr.	46	FY 20	Design	
	South Crest GI	Acacia Grove Way, 39th & Boston St., Z St., Alpha St.	86	FY 20	Design	
Green Streets		Total Acres Treated Required for Green Streets:	7,263.04			
CSD-GS-04	Beta Street	Operation and maintenance of a 0.063 acre (footprint) green street project at Beta Street and 37th to treat a drainage area of 2.1 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	2.1	FY17	Construction	✓
CSD-GS-09	25.52 acres of green streets (12.76 acres of bioretention and 12.76 acres of permeable pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 7,260.34 acres with a total storage volume of 39.66 acre-feet.	To meet the Chollas watershed numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. Staggered construction, operation and maintenance of 25.52 acres of green streets (12.76 acres of bioretention and 12.76 acres of permeable pavement) to treat a total drainage area of 7,260.34 acres with a total storage volume of 39.66 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report.	7,260.34	FY18	Varies, see below	Varies, see below

Table 5-3 (continued)
City of San Diego Structural BMP Implementation Status for San Diego Bay WMA

Strategy Number	Strategy	Implementation Approach	Total Drainage Area (Ac)	Implementation Year*	Status	Permit Term Goal**
	Project Name	Project Description	Total Drainage Area (Ac)	Implementation Year	Status	Permit Term Goal
	Alamo, Salvation, & 68th	Green street - University & Alamo Dr to University & 68th	25	FY18	Design	✓
	Cherokee Point NBHD SD & GI	Landis & 35th St to Landis St & Wilson Ave	10	FY20	Design	
	Chollas Creek (S)	Chollas Parkway & Salta Pl to Chollas Parkway & Mina St	20	FY19	Design	
	Group Job 1012	Logan Ave & S 37th St	25	FY 20	Design	
	Group Job 1014	Bioretention/green street - Polk Ave between Chamoune & Menlo	28	FY 19	Design	
	Group Job 1024	Dominion St & T St	40	FY 19	Design	
	Group Job 1027	Common Wealth Ave & Petra Pl	10	FY 19	Design	
	Logan Heights	Newton Ave between S 29th and 33rd St	unknown	FY 19	Design	
	Skyline NW GI	Madrone & 68th St/Jamacha Rd & 69th St	75	FY 19	Design	
Multiuse Treatment Areas		Total Acres Treated Required for MUTAs:	442.4			
CSD-MUTA-07	Memorial Park: An infiltration basin has been constructed from the parking on the west side of Memorial Park to treat a drainage area of 1.4 acres.	A 0.10 acre infiltration basin has been constructed to treat runoff from the parking on the west side of Memorial Park that has been diverted from the existing storm drain system (drainage area of 1.4 acres) . Before entering the basin, the runoff passes through a hydrodynamic separator that removes pollutants that settle out or float. Runoff then enters the basin where it infiltrates into the underlying soils. Runoff in excess of the 5-year storm bypasses the BMP via an overflow pipe and returns to the regular storm drain system. Funding and resources were secured for FY2014. Funding for future fiscal years is contingent on annual budget approval by City Council.	1.4	FY14	Completed	✓
CSD-MUTA-06	Multiuse Treatment Area BMPs in the Chollas Watershed.	To meet the Chollas watershed numeric goals and schedules presented in Section 4, the City of San Diego will implement the following structural strategies. Modeled MUTA BMPs with a total footprint of 6.2 acres to treat a total drainage area of 441 acres. These can be wetland, infiltration, retention and/or detentions systems. An updated inventory of MUTA projects will be maintained in the WQIP Annual Report.	441	FY18	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	Project Description	Total Drainage Area (Ac)	Implementation Year	Status	Permit Term Goal
	(Projects will be added as they reach the design stage)					
Water Quality Improvement BMPs		Total Acres Treated Required for WQI BMPs:	5.76			
CSD-WQBMP-02	43rd and Logan Roadway Improvement - Project ID 1387 (filtration units treat 5.76 acres)	Three curbside filtration units were installed along S 43rd street and Logan Avenue The curbside filtration units treat a total of 5.76 acres. Funding and resources were secured for FY2014. Funding for future fiscal years is contingent on annual budget approval by City Council. A bioretention BMP is also implemented on this site (See GI strategies).	5.76	FY14	Completed	✓

*For additional details, please see the schedule following the City's strategy table in the WQIP.
** Projects with a check in the "Permit Term Goal" column are counted toward the green infrastructure installation goal applicable to the current Permit term. See Table 5-5 for a summary.

Table 5-4
City of San Diego Priority Development Project Implementation Status for San Diego Bay WMA

San Diego Bay PDP BMP Ledger (CSD-PDP-03)					
Project Name	Project Description	Total Drainage Area (Ac)	Implementation Year	Status	Permit Term Goal*
North 252 Corridor Park Phase I (Dorothy Petway Park) - Project ID 1002	2 vegetated filter strips and one vegetated swale was implemented at I-5 and Rigel Street. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY16	Completed	
Memorial Skateboard Park- Addition of detention vault to treat a drainage area of 0.69 acre.	A subsurface detention vault is proposed to be installed in line with the existing 12-inch PVC pipe to capture the runoff generated by the 85th percentile storm. Detained runoff is proposed to be reused to irrigate the athletic fields at Memorial Park. Runoff volume in excess of the detention vault capacity is proposed to overflow into an adjacent subsurface infiltration gallery for additional volume reduction and treatment. This project was initially constructed prior to the 2007 Municipal Storm Water Permit, so implementation of the BMP retrofit recommendations exceeds applicable treatment requirements by treating runoff from 0.69 acre of impervious surface to the 85th percentile storm. Funding and resources were secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by City Council.	17.25	FY15	Completed	✓
N Chollas Community Park Phase 1B - Project ID 855	4 drainage inserts were installed in Chollas Lake Park near College Grove Drive and Caminito Chollas. Funding and resources were secured for FY2014. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY14	Completed	
Lisbon Street Roadway and Utility Improvements - Project ID 858	2 drainage inserts were installed at Imperial Avenue and Lisbon Street. Funding and resources were secured for FY2014. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY14	Completed	
Fire Station #12 - Project ID 989	1 downspout filter and 10 drainage inserts were installed at Willie James Jones Avenue and Imperial Avenue. Funding and resources were secured for FY2014. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY14	Completed	
Rigel St Bridge Replacement - Project ID 1008	5 drainage inserts were installed at Rigel Street and Main Street. Funding and resources were secured for FY2014. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY14	Completed	
1 Priority Development Project BMP at Otay Mesa/ Nestor Library in Otay River HU.	Because of the limited space available at the site and geotechnical issues associated with the proximity to steep slopes, it is recommended that a Filterra type or approved equivalent treatment unit be retrofitted to treat flows from the 85th percentile storm. The retrofit exceeds applicable regulatory requirements by treating runoff from 11,800 more square feet of impervious surface than the initial site design and by treating flows from the 85th percentile storm. Funding and resources were secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	FY15	Completed	
Charles Lewis III Memorial Park	Public PDP project that included a TCBMP	unknown	FY16	Completed	

* Projects with a check in the "Permit Term Goal" column are counted toward the green infrastructure installation goal applicable to the current Permit term. See Table 5-5 for a summary.

Table 5-5
Summary of City of San Diego Priority Structural BMP Implementation Status for San Diego Bay WMA

Permit Term Goal FY2018	Total Drainage Area (Ac)
Structural BMP Total Acres Treated Required by FY 18	44.60 (Required by FY 18)
Total Completed/Planned BMPs	70.99
Total Completed/Planned PDP BMPs	17.25
Remaining to Goal	-43.64 (Goal Met/Exceeded)
Final Goals FY2031*	**Total Drainage Area (Ac)**
Green Infrastructure Total Acres Treated Required	498.73
Total Completed/Planned	424.73
Remaining to Final Amount of Acres Treated	74.00
Green Streets Total Acres Treated Required	7,263.04
Total Completed/Planned	235.10
Remaining to Final Amount of Acres Treated	7,027.94
MUTA Total Acres Treated Required	442.40
Total Completed/Planned	1.40
Remaining to Final Amount of Acres Treated	441.00
WQI BMP Total Acres Treated Required	5.76
Total Completed/Planned	5.76
Remaining to Final Amount of Acres Treated	0.00

*Based on the "MS4 Discharges: Implement Accepted WQIP" compliance pathway. Final compliance is implementation of BMPs based on modeling analysis results. Strategies within the Chollas subwatershed will be implemented on a schedule designed to meet the metals final Goal of FY 29

5.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

In FY16 the City, along with other government agencies, professional engineers and members of the local development community, developed a new Regional Best Management Practices (BMP) Design Manual that conforms to the 2013 Municipal Storm Water Permit (Order No. R9-2013-0001, as amended by R9-2015-0001 and R9-2015-0100). The Manual supersedes the San Diego County-wide Model Standard Urban Runoff Storm Water Management Plan (SUSMP) and provides technical guidance and regional standards for pollutant and flow control requirements for new development and significant redevelopment. The City of San Diego's local version of the BMP Design Manual, the Storm Water Standards Manual, became effective on February 16, 2016.

5.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

The City of San Diego is proposing the following administrative changes to its JRMP. The updated JRMP can be viewed at:

https://www.sandiego.gov/stormwater/plansreports/jrmp.

Table 5-6
Proposed Administrative Changes to City of San Diego's JRMP

	JRMP Section / Appendix	JRMP Update
1	Executive Summary	Strategy categories and definitions were modified to align with the categories and definitions in the Municipal Storm Water Permit and San Diego Water Board's approved Water Quality Improvement Plans (WQIPs).
2	Section 2.3	In accordance with the Municipal Storm Water Permit, Section 2.3 was updated to state that JRMP updates can be proposed/submitted as part of the WQIP Annual Reports.
3	Section 7.3.13-8	Updated BMP #16 to provide greater clarity.
4	Section 7.3.14	Updated section to include new BMPs for herbicide application.

Table 5-6 (continued)
Proposed Administrative Changes to City of San Diego's JRMP

	JRMP Section / Appendix	JRMP Update
5	Section 10	Strategy categories and definitions were modified to align with the categories and definitions in the Municipal Storm Water Permit and San Diego Water Board's approved WQIPs. Updated tables, graphs, charts, and text to reflect funding needs to meet the goals and schedules identified in the WQIPs. Added language stating "Estimates of funding needs presented were based on the best information available at the time they were prepared."
6	Sections 7.3.1, 7.3.2, and 7.3.4-15	Updated Minimum BMP language to reflect changes to Appendix IX.
7	Section 3, Section 4, Section 5, Section 6, Section 7, Section 8, Section 9	Based on updates made to the categories and definitions of strategies noted above, the "JRMP Strategies Identified in the WQIPs" tables and "Additional Public Education and Participation Program WQIP Strategies" tables for these sections have been updated for consistency. The strategy identification numbering system and text was updated to reflect administrative changes included in the WQIP Annual Reports.
8	Appendix VI- Residential Management Areas and Patrol Protocols	Updated the residential management areas maps and included newly developed patrol protocols.
9	Appendix IX - Minimum BMPs for Residential, Industrial, Commercial, and Municipal Sites/Sources	Updated references to ordinance sections, changed the "Think Blue" references to the Storm Water Division, and made minor changes to some BMP and description wording for clarification.
10	Appendix XIV- Certificate of Adequate Legal Authority	Signed Certificate of Adequate Legal Authority was added.

Table 5-6 (continued)
Proposed Administrative Changes to City of San Diego's JRMP

	JRMP Section / Appendix	JRMP Update
11	Appendix XX- Water Quality Improvement Plan Strategies	Updated strategies to reflect the administrative changes made to strategies in the Fiscal Year 2016 WQIP Annual Reports.
12	Appendix XXII- Storm Water Division Projected Funding Needs, 2016-2035	Updated Appendix XX to reflect the funding needs to meet the goals and schedules identified in the WQIPs.

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6 CITY OF CORONADO

6.1 ANNUAL REPORT CERTIFICATIONS

The City of Coronado's signed Statement of Certification and Legal Authority letter for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report and Certification of Legal Authority are included on the following pages.

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CITY OF CORONADO
PUBLIC SERVICES & ENGINEERING

1825 STRAND WAY
CORONADO, CA 92118-3005

TEL: (619) 522-7383
FAX: (619) 522-2408

SAN DIEGO BAY WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

STATEMENT OF CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

Executed on the 24TH day of January, 2017, at the City of Coronado.

Clifford M. Maurer, PE, CEM
Director of Public Services & Engineering

CITY OF CORONADO
PUBLIC SERVICES & ENGINEERING

1825 STRAND WAY
CORONADO, CA 92118-3005

TEL: (619) 522-7383
FAX: (619) 522-2408

I certify that the City of Coronado has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-0001 as amended by Orders R9-2015-0001 and R9-2015-0100. Legal authority is established and maintained as authorized by City Council on February 2, 2016 with the following:

- Updated Coronado Municipal Code (CMC) 61.04 Storm Water and Runoff Management Program
- Updated CMC 61.08 Discharge Regulations and Requirements
- Updated CMC 61.12 Inspection and Enforcement

In addition, the following CMC Chapters support implementation and enforcement activities:

- CMC 1.08 – Enforcement of Provisions of Municipal Code
- CMC 1.10 – Code Enforcement Administrative Fines
- CMC 1.12 – Appeal Hearings

Signed: _____ Date: 12-12-2016

Clifford M. Maurer, PE, CEM
Director of Public Services and Engineering

6.2 ANNUAL REPORT FORM

The City of Coronado's JRMP under the Municipal Permit per Order No. R9-2013-0001 was first prepared in June 2015. Subsequent amendments to the Municipal Permit by Orders No. R9-2015-0001 and R9-2015-0100 included modifications that made necessary some updates to the JRMP to provide accurate references (e.g., order sections and page numbers, definitions, additional information). None of the modifications to the Municipal Permit required modifications to the City of Coronado's programs or overall compliance plans.

The updates to the City of Coronado's JRMP were completed in June 2016 and a new version published and made available on the City's website in July 2016.

The City Council approved revisions to the Coronado Municipal Code relevant to storm water management on February 2, 2016, providing the revisions necessary to update the codes and requirements and provide the updated legal authority to implement the JRMP and Municipal Permit requirements. The City of Coronado's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-16

I. COPERMITTEE INFORMATION

Copermittee Name: CITY OF CORONADO

Copermittee Primary Contact Name: KIM GODBY

Copermittee Primary Contact Information:
Address: 101 B Avenue
City: Coronado County: San Diego State: CA Zip: 92118
Telephone: 619-522-7387 Fax: 619-435-4479 Email: kgodby@coronado.ca.us

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	x	1
	NO		
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	x	
	NO		

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	x	2
	NO		
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	x	
	NO		

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	x	
	NO		

Number of non-storm water discharges reported by the public	40	
Number of non-storm water discharges detected by Copermittee staff or contractors	9	
Number of non-storm water discharges investigated by the Copermittee	48	
Number of sources of non-storm water discharges identified	48	
Number of non-storm water discharges eliminated	48	
Number of sources of illicit discharges or connections identified	15	
Number of illicit discharges or connections eliminated	14	
Number of enforcement actions issued	1	3
Number of escalated enforcement actions issued	1	

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	x	
	NO		
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	x	4
	NO		
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	x	
	NO		

Number of proposed development projects in review	59	
Number of Priority Development Projects in review	2	
Number of Priority Development Projects approved	3	
Number of approved Priority Development Projects exempt from any BMP requirements	0	
Number of approved Priority Development Projects allowed alternative compliance	0	
Number of Priority Development Projects granted occupancy	3	

Number of completed Priority Development Projects in inventory	19	
Number of high priority Priority Development Project structural BMP inspections	1	5
Number of Priority Development Project structural BMP violations	0	
Number of enforcement actions issued	0	
Number of escalated enforcement actions issued	0	

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-16

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	[x]
	NO	[ ]

Number of construction sites in inventory	184
Number of active construction sites in inventory	119
Number of inactive construction sites in inventory	2
Number of construction sites closed/completed during reporting period	63
Number of construction site inspections	302
Number of construction site violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	[x]
	NO	[ ]

	Municipal	Commercial	Industrial	Residential	
Number of facilities or areas in inventory	91	100	0	3	6
Number of existing development inspections	2054	85	NA	22	7
Number of follow-up inspections	4	0	NA	5	
Number of violations	0	0	NA	0	
Number of enforcement actions issued	0	0	NA	0	
Number of escalated enforcement actions issued	0	0	NA	0	

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	[x]
	NO	[ ]
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	[x]
	NO	[ ]

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	[x]
	NO	[ ]

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ■ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	10-27-2016 Date
Clifford M. Maurer, PE, CEM Print Name	Director, Public Services & Engineering Title
619-522-2652 Telephone Number	cmaurer@coronado.ca.us Email

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM - SUPPLEMENT
FY 2015-16

Entry No.	Comments or Explanation
1	The City's revised ordinances were adopted by the City Council on February 2, 2016. The legal authority certification required by the Permit is provided with this annual report.
2	The City completed minor revisions to the JRMP at the end of June 2016 to include revised Permit page numbers and other references as result of amendments R9-2015-0001 and R9-2015-0100, refined procedures, and jurisdictional strategies finalized in the San Diego Bay WQIP.
3	The illicit discharge not eliminated is for a permanent groundwater dewatering operation identified to have been in existence since the early 1990s. The City has referred this case for permitting to the San Diego RWQCB that has jurisdiction over discharges to San Diego Bay and an existing general permit for groundwater NPDES No. CAG929003, Order No. R9-2015-0013. The site was issued City permits in the early 1980's and may be grandfathered into the general permit pursuant to Order 90-31.
4	The City's BMP Design Manual was adapted to meet the final requirements and recommendations issued by the San Diego Water Board for the Copermittee's Regional or Model BMP Design Manual. The modification where completed and implemented during the FY as required.
5	The City conducted inspections in the winter of 2014 and has scheduled conducting them in the fall for FY 2016-17. Therefore, inspections are not logged for this reporting year. For consistency, inspections will be conducted late summer to early fall every year.
6	The City's municipal facility inspection program as noted in the City's JRMP has a goal of annual inspection of the facilities in the inventory. The Permit requires a minimum of once every five years and 20% of the facilities every year.
7	The City's commercial facility inspection program as noted in the City's JRMP has a goal of annual inspection of the facilities in the inventory. In addition, thirteen facilities were inspected between July 1-12, 2016 and will be included in the FY 2016-17 annual report. The Permit requires inspections at a minimum of once every five years and 20% of the facilities every year. Municipal facility inspections include MS4 operation and maintenance inspections.

Fiscal Analysis Annual Review Form

City of Coronado
Storm Water Division

Date: 10/25/2016

FISCAL ANALYSIS QUESTION	EVALUATION	CONCLUSION	NEXT STEP
Part A	**Permit Provision E.8.a**		
Does the City have the resources[1] necessary to meet the requirements of the Permit?	Were all requirements for each JRMP component met as shown in the JRMP Annual Report Form?	Check: √ Yes ☐ No	If yes, City has necessary resources. Go to Part B. If no, provide explanation below
a) Were resources temporarily not available? Check: ☐ Yes √No Explain:			
b) Are resources adequate for next fiscal year? Check: √ Yes ☐ No If no, explain:			
Part B	**Permit Provision E.8.b.(1)**		
Have any of the identified expenditures categories listed in JRMP Section 8.3.2 changed?	Has the comparison yielded any changes in the expenditure categories when compared to the current budget?	Check: ☐ Yes √ No	If no, status quo. Go to Part C. If yes, provide explanation below
a) List any new or revised expenditure categories and provide an explanation of the changes:			
Part C	**Permit Provision E.8.b.(2)**		
Does the City have the staff resources[2] necessary to meet the requirements of the Permit?	Were all requirement for each JRMP component met as shown in the JRMP Annual Report Form?	Check: √ Yes ☐ No	If yes, City has necessary staff resources. Go to Part D and E. If no, provide explanation below
a) Were staff resources temporarily not available? Check: ☐ Yes √No Explain: Not applicable			
b) Are staff resources adequate for next fiscal year? Check: √ Yes ☐ No			

[1] Resources are considered to be the total budget needed to cover planned expenditures to comply with the Permit.
[2] Staff resources are considered to be the total labor and contract personnel needed to comply with the Permit.

If no, explain:

Part D	Permit Provision E.8.b.(3)
Provide an estimate of the expenditures for current fiscal year[3] in the categories listed	
Expenditures by Category for all departments - Storm Water Program (JRMP Section 8.3.2.2)	**FY 2015-16**
Personnel Services	$ 254,263
Services and Supplies	$ 451,990
Property (vehicle)	$ 10,907
Contingency	$ 0
Debt Service	$ 301,476
Other: CIP Projects (various)	$ 61,060
Other:	$ 0
Total:	**$1,079,696**

Part E	Permit Provision E.8.b.(4)		
Have the source(s) of funds listed in JRMP Section 8.3.2.5 significantly changed and how do they affect planned expenditures?	Has the comparison yielded any significant changes in funding sources that affected the expenditures listed in Part D? Will the changes affect expenditures planned for next fiscal year?	Check: ☐ Yes √ No ☐ Yes √ No	If no, status quo. Go to next question. If yes, provide explanation below
a) List any new or revised funds or funding sources and provide an explanation of the changes:			
Have the legal restrictions on the source(s) of funds as noted in JRMP Section 8.3.2.5 significantly changed?	Has the comparison yielded any significant changes in funding sources restrictions?	Check: ☐ Yes √ No	If no, status quo. Annual fiscal analysis is complete. If yes, provide explanation below
a) List any new or revised legal restrictions on the funds or funding sources and provide an explanation of the changes: Not applicable.			

[3] The Permit lists "current fiscal year" interpreted to mean the reporting year corresponding to the annual report being submitted. The "next fiscal year" is interpreted to mean the year already underway when the report is being prepared.

Additional Notes or Comments:

CIP PROJECTS FOR FY 2015-16:
Pine and North Beach Outfall
Storm Drain Inlet Improvements

	Actuals Storm Drain 530030	Balance 530030	Actuals NPDES 530031	Balance 530031	Actuals Total
Personnel Services					
Salaries	$ 25,262.67	$ 1,978.81	$ 209,939.05	$ (1,026.10)	$ 235,201.72
Social Security	$ 2,319.94	$ (165.97)	$ 13,042.50	$ 1,035.66	$ 15,362.44
Medicare	$ 547.34	$ (43.59)	$ 3,151.65	$ 231.66	$ 3,698.99
Subtotal: Salaries	$ 28,129.95	$ 1,769.25	$ 226,133.20	$ 241.22	$ 254,263.15
Services and Supplies					
(8030) Contract Services	$ 33,440.64	$ 38,561.91	$ 283,317.35	$ 236,063.02	$ 316,757.99
(8065) Professional Servcies	$ -	$ -	$ -	$ -	$ -
(8075) Storm Drain Litigation BMP	$ -	$ -		$ 6,000.00	$ -
(8235) Utilities - Electricity	$ 29,833.31	$ (7,833.31)	$ -	$ -	$ 29,833.31
(8236) Utilities - Gas	$ 193.87	$ (83.87)	$ -	$ -	$ 193.87
(8237) Utilities - Water	$ 1,053.35	$ (1,053.35)	$ -	$ -	$ 1,053.35
(8241) Rental-Equipment	$ -	$ -	$ -	$ 1,000.00	$ -
(8250) Repair and Maint. Equipt	$ 2,181.44	$ 9,618.56	$ -	$ -	$ 2,181.44
(8251) Repair and Maint. Office Equipt	$ 46.02	$ (46.02)	$ -	$ -	$ 46.02
(8255) Repair and Maint. Outside	$ 60,965.75	$ 4,034.25	$ 13,802.40	$ 8,397.60	$ 74,768.15
(8260) Sewage & Transport Treatment	$ -	$ -	$ -	$ -	$ -
(8320) Communications	$ 4,962.77	$ (2,462.77)	$ -	$ -	$ 4,962.77
(8415) Training, memberships	$ 205.00	$ 4,675.00	$ 81.00	$ 4,919.00	$ 286.00
(8530) Fuels & Lubricants	$ 1,528.43	$ (1,528.43)	$ -	$ -	$ 1,528.43
(8535) Materials	$ 2,624.55	$ (1,624.55)	$ 7.54	$ 4,992.46	$ 2,632.09
(8555) Small Tools & Instruments	$ 3,976.93	$ (476.93)	$ 6,878.41	$ 121.59	$ 10,855.34
(8560) Misc Supplies	$ 2,136.20	$ (436.20)	$ 4,755.41	$ 3,444.59	$ 6,891.61
Subtotal: Services and Supplies	$ 143,148.26	$ 41,344.29	$ 308,842.11	$ 264,938.26	$ 451,990.37
Property					
(9040) Office/computer equipment	$ -	$ -	$ 9,000.00	$ 21,000.00	$ 9,000.00
(9045) Other fixed assets			$ 1,906.60	$ 4,493.40	$ 1,906.60
(9055) Shop tools					$ -
(9080) Vehicle/Equipt.					$ -
Unit 6-0731 2016 Chevrolet Colorado					
Subtotal: Property	$ -	$ -	$ 10,906.60	$ 25,493.40	$ 10,906.60
Contingency					$ -
Debt Service					
(9315) Interest Expense	$ 89,993.00	$ 485,930.00	$ -	$ -	$ 89,993.00
(9325) Retirement of Principal	$ 211,483.00	$ 2,679,553.00	$ -	$ -	$ 211,483.00
Other(s)					
Subtotal: Debt Service					$ 301,476.00
Subtotal: Service/Supplies, Property, Contigency, Debt	$ 444,624.26	$ 3,206,827.29	$ 319,748.71	$ 290,431.66	$ 764,372.97
Total: Salaries and Service/Supplies	$ 472,754.21	$ 3,208,596.54	$ 545,881.91	$ 290,672.88	$ 1,018,636.12
CIP Projects:	**Expenses end of FY 15-16**	**Balance**			
Pine and North Beach Outfall	$ 11,320.00	$ 88,680.00			
Storm Drain Inlet Improvements	$ 49,740.00	$ 260.00			
Total:	$ 61,060.00	$ 88,940.00			
					$ 1,079,696.12

6.3 CITY OF CORONADO STRATEGIES

The City of Coronado (Coronado) is a small beach community located on an island connected to the mainland via a tombolo, the Silver Strand. Coronado has identified strategies to address the Focused Priority Condition for swimmable waters and implement jurisdictional programs citywide. Maintaining Coronado's streets, sanitary sewer system, storm drain system, and other infrastructure is a high priority for the City. All streets in Coronado are swept once a week, regardless of type. Special events are highly scrutinized, permitted, and conditioned, and Coronado provides extra trash receptacles and traffic control. Since 2005, all newly constructed municipal buildings have been certified LEED Silver. Coronado has also implemented permeable paving, downspout disconnects, and other BMPs on City projects. Coronado also coordinates with the Navy for beach cleanups on the Silver Strand. Strategies and implementation schedules, presented in Table 2-6, were including in the 2016 San Diego Bay WQIP and identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of these (jurisdictional) strategies as conditions, opportunities or constraints are identified. As strategies are modified, the San Diego Bay WQIP is updated. The implementation of each strategy is contingent upon annual budget approvals and funding availability

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Table 6-1
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
JRMP (E.2 – E.7) Strategies (E.3.b.(1)(a))									
E.3 Development Planning									
All Development Projects									
CO-1	Review projects for potential sources of bacteria and require additional source control BMPs as applicable for persistent problems or areas. Also see Public Education and Participation (CO-27).	-	-	-	-	-	-	-	-
	1. Commercial projects. Require additional source control BMPs as applicable for persistent problem or areas. BMPs may address trash enclosures, outdoor areas/facilities/uses, cleaning SOPs, employee training, and others as identified or applicable.	As projects are submitted for permitting. Funding: Storm Drain Enterprise (fees).	FY15-16	Yes	Continuous	None	NA	NA	Yes
	2. Residential and medium risk sources: Review projects for potential sources of bacteria and require additional source control BMPs as applicable. BMPs may include landscaping modifications, impervious area maintenance, and trash storage areas design/location.	As projects are submitted for permitting. May be initiated per findings or in conjunction with CO-4 and CO-39. Funding: Storm Drain Enterprise (fees). Optional strategy trigger: interim or final goal not being met or at risk of not being met as determined by assessment plan.	Triggered by Goal Assessment	Not Triggered	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17	NA	NA	Yes
CO-2	Implement additional requirements for development projects, as specified in the City's version of the BMP Design Manual and JRMP, to target sources of bacteria.	As projects are submitted for permitting. Funding: Storm Drain Enterprise (fees).	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-3	Require projects within the WQSA to implement LID and source control BMPs with focus on potential bacteria sources. BMP examples include: source locations away from water's edge, pervious areas enhanced, design features for sources (e.g., trash enclosures, landscaping)	As projects are submitted for permitting. Funding: Storm Drain Enterprise (fees).	FY15-16	Yes	Continuous	None	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Priority Development Projects (PDPs)									
CO-4	Include in the BMP Design Manual BMP requirements for development projects that have a higher potential to contribute to the Priority Conditions (bacteria).	-	-	-	-	-	-	-	-
	1. Amend BMP Design Manual for trash areas. Require full four-sided and/or covered enclosure, away from storm drains.	As projects are submitted for permitting. Funding: Storm Drain Enterprise (fees).	FY15-16	Yes	Yes	Modifications to BMP Design Manual completed and now being implemented	NA	NA	Yes
	2. Amend BMP Design Manual for animal-related facilities, such as such as animal shelters, "doggie day care" facilities, veterinary clinics, breeding, boarding and training facilities, and pet care stores to address sources in outdoor areas, activities, storage, and other as applicable.	As projects are submitted for permitting. Funding: Storm Drain Enterprise (fees).	FY15-16	Yes	Yes	Modifications to BMP Design Manual completed and now being implemented	NA	NA	Yes
	3. Amend Coronado Municipal Code (CMC) to support additional requirements in the BMP Design Manual targeting Priority Conditions as identified through plan review and field inspections.	As projects are submitted for permitting. Funding: Storm Drain Enterprise. Optional strategy trigger: interim or final goal not being met or at risk of not being met as determined by assessment plan.	Triggered by Goal Assessment	Not Triggered	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17. Note: CMC was modified in FY16 to update it to the 2013 Municipal Permit	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Construction Management									
CO-5	Target permitting and inspection program to identify bacteria sources, and require construction projects within the WQSA to be identified as High Threat to water quality and implement appropriate BMPs for bacteria sources (e.g. location of portable toilets). Note: majority of construction in WQSA is residential or eating and drinking establishments. See Attachment 1 for minimum BMPs.	As projects are submitted for permitting and inspected. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
Existing Development									
Commercial and Residential Facilities and Areas									
CO-7	Implement inspections for identified high priority sources of bacteria (compared to annual inspection core program frequency) within specific drainage basins (e.g., Tidelands), as applicable. Require implementation of BMPs in Attachment 1 as applicable.	Additional targeted, biannual inspections for specific sources and drainage basins as identified through routine annual inspections Funding: Storm Drain Enterprise	FY15-16	Yes	Continuous	The City conducted core inspections with the Port of San Diego as a new activity for commercial facilities. Tidelands Basin inspections were planned and implementation initiated this FY. The program continues into FY17.	NA	NA	Yes
CO-8	Evaluate sweeping and maintenance of private roads and parking lots in targeted areas to identify and require additional BMPs (case-by-case basis): sweeping frequency, type of sweeper, inlet protection. Consider adding private roads to City sweeping program, based on funding availability.	Based on residential inspection results assessment. Funding: Storm Drain Enterprise, if available may require City Council approval. Optional Triggers: 1) residential inspection results; 2) interim or final goal not being met or at risk of not being met as determined by assessment plan.	Triggered by inspection results and goal assessment	Not Triggered	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17.	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CO-9	Implement program that will require sources to retrofit trash enclosures when identified to be persistent and problematic sources through annual or complaint inspections (when public education, employee training, etc. are insufficient solutions) Also see CO-37.	As needed, through annual, routine inspections Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-10	1. Maintain existing pet waste program. Including new installation and maintenance of pet waste bag dispensers and trash bins (as BMPs) to enhance legal disposal in targeted areas based on inspection results. Also see CO-36.2.	Continuous. Funding: Storm Drain Enterprise. Triggers: based on park and beach facility inspection results and continued non-compliance or new areas/sources.	FY15-16	Yes	Continuous	None	NA	NA	Yes
	2. Enhanced or new signage and education (see CO-27 and CO-29), promoting physical removal of pet waste by pet owners.	Based on inspection assessment. Funding: Storm Drain Enterprise (fees). Optional Triggers: 1) park and beach facility inspection results and continued non-compliance; 2) interim or final goal not being met or at risk of not being met as determined by assessment plan.	Triggered by inspection results and goal assessment	Not Triggered	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17.	NA	NA	Yes
CO-11	Promote with water purveyor, as available, residential source control program [BMPs for over-irrigation (smart controllers), rainwater harvesting, and turf conversion] that may include a rebate programs in target areas. Also see CO-43.	As needed and available. Funding: Storm Drain Enterprise and General Fund	FY15-16	Yes	Continuous	Program implemented to replace landscaping at entrance and medians in the Cays with drought tolerant plants, upgraded drip irrigation system.	NA	NA	Yes
CO-12	Implement inspections of City Marina land based areas under City jurisdiction - inlets, pump station and trash areas. Require BMPs as applicable per Attachment 1.	Additional targeted, bi-annual inspections for specific sources as identified. Funding: Storm Drain Enterprise	FY15-16	Yes	Continuous	Some inspections conducted jointly with the Port of San Diego.	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Municipal Facilities and Areas									
CO-13	1. Conduct enhanced beach maintenance activities to remove trash and debris, additional trash cans during peak periods, and replenish dog bag dispensers.	Continuous with daily patrols Funding: Storm Drain Enterprise and General Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
	2. Implement inspection and preventative maintenance (PM) program to prevent sewer system backups and spills in from municipal/public restrooms.	Continuous with inspections twice weekly. Funding: Storm Drain Enterprise, Wastewater Enterprise Fund, and General Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
	3. Implement beach patrols for trash, debris, and pet waste removal.	Continuous with daily patrols Funding: General Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-14	Identify Focused Priority Conditions in municipal facilities and areas to identified specific BMPs to reduce sources (e.g., special events). BMPs included in Attachment 1.	Based on pre-planning/permitting meeting and municipal inspection assessment during each event. Funding: Storm Drain Enterprise (fees). Optional Triggers: 1) park and beach facility inspection results and continued non-compliance, other municipal facilities and operations, special events; 2) interim or final goal not being met or at risk of not being met as determined by assessment plan.	Triggered by inspection results and goal assessment	Not Triggered	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17.	NA	NA	Yes
CO-6	Implement park restroom inspection and cleaning to prevent sewer spill discharges to the MS4 and remove trash/waste.	Continuous with daily inspections and cleaning. Funding: General Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
MS4 Infrastructure									
CO-15	Implement operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, diversion structures, etc.) for optimum water quality. BMPs in Attachment 1 implemented as applicable.	Jurisdictional programs are for City staff and include SOPs, forms, schedules found in JRMP Section 6.5.6 and the Storm Water Standards Manual Sections 6-A and 6-B.	-	-	-	-	-	-	-
	1. Perform MS4 inspection and cleaning at higher frequency (instead of annually) for high debris areas.	Continuous with monthly inspections Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
	2. Evaluate MS4 inspection and cleaning locations and adjust high frequency to target new/modified high debris areas.	Continuous, at minimum biannually. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
	3. Proactively repair and replace MS4 components to maintain proper operation and function.	Continuous. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	MS4 infiltration elimination project (lining) was initiated this reporting year. Design and bid docs completed. Project construction slated to start Jan. 2017.	NA	NA	Yes
	4. Proactively operate, maintain, repair, and replace urban runoff diverters to sanitary sewer.	Continuous. Funding: Storm Drain Enterprise and/or Wastewater Enterprise Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
	5. Proactively repair and replace corrugated metal pipe (CMP) MS4 components to provide source control from MS4 infrastructure (mitigate groundwater infiltration and reduce diversion flow to sewer system).	Continuous. Funding: Storm Drain Enterprise.	FY15-16	No	No	Evaluation of the MS4 inventory revealed that there are no remaining corrugated CMP components in the system. Eliminating the need for a CIP specifically targeting MS4 improvements to replace CMP.	Yes. Deleted in June 2016.	Others in place	No
CO-16	Implement operation and maintenance activities (inspection and cleaning) for Sanitary Sewer System and related structures for optimum operation.	Continuous. Monthly in priority areas and entire system annually (phased). Funding: Wastewater Enterprise Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CO-17	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	Continuous. Funding: Wastewater Enterprise Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-18	Identify sewer leaks and areas for sewer pipe replacement prioritization and timely repair. Sewerage infrastructure overflow prevention.	Continuous. Funding: Wastewater Enterprise Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
Roads, Streets, Parking Lots									
CO-19	Perform sweeping of high-volume streets and hardscape cleaning at enhanced frequency. Indirect, positive impact in commercial area including eating and drinking establishments. See Attachment 1 for BMPs.	Continuous with weekly frequency in high volume areas. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-21	Implement maintenance of bike lanes by proactively monitoring for erosion and completing minor repair and slope stabilization. See Attachment 1 for BMPs.	Continuous. Funding: General Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
Illicit Discharge, Detection, and Elimination (IDDE) Program									
CO-23	Conduct inspections in targeted areas designated as high priority for IDDEs. Follow-up with outreach/education (see CO-22, CO-25 and CO-26) as applicable. Also see CO-37. BMPs listed in Attachment 1.	Continuous. IDDE summer-dry weather residential and commercial inspections. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-24	Conduct "off-hours" inspections to identify and eliminate illicit discharges. See BMPs in Attachment 1.	Continuous. Summer-dry weather residential and commercial inspections/patrols twice during the period. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Public Education and Participation									
CO-20	Implement street sweeping public education, temporary posting, and towing as needed to accomplish sweeping goals. Also see CO-37.	Continuous. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-22	Promote and maintain website to encourage residents to report potential illicit discharges, overirrigation/runoff or other storm water violations.	Continuous. Funding: General Fund and Storm Drain Enterprise Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-25	Implement targeted public education and participation program to promote existing and new programs, BMPs (see Attachment 1), and behaviors that reduce the discharge of pollutants in storm water from high-risk behaviors, pollutants of concern, and target audiences.	Based on inspection assessment. Funding: Storm Drain Enterprise (fees). Optional Triggers: 1) commercial facility and residential areas inspection results and continued non-compliance; 2) interim or final goal not being met or at risk of not being met as determined by assessment plan.	Triggered by inspection results and goal assessment	Not Triggered	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17.	NA	NA	Yes
CO-26	Develop an outreach and training program for property managers responsible for HOAs targeting sources of bacteria and illegal discharges (e.g., impervious area wash down, trash management, pet waste, over-irrigation runoff) through specific BMPs (Attachment 1) for site conditions, design, etc. Assess "turnover" of property managers.	Continuous. Initial outreach (one-time), repeat as needed based on residential area inspection/drive-by results in following years. Funding source: Storm Drain Enterprise	FY16-17	NA	NA	Scheduled for FY17	NA	NA	Yes
CO-27	Support trash and pet waste cleanups through community-based organizations involving target audiences. North Beach (Dog Beach) location.	Continuous. Funding source: General Fund	FY16-17	Yes	Continuous	Implemented in FY16 although originally not planned until FY17. A grant was secured to fund daily clean-up of beach areas.	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CO-2.1	Include staff training to target identification of bacteria pollutant sources during development and building project permitting. Staff training will be conducted, tailored to job duties. See BMP Design Manual.	Training will occur prior to BMP Design Manual implementation, within 3 months of the start of implementation if needed, and annually thereafter. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-28	Improve consistency and content of Coronado HA websites to highlight enforceable conditions and reporting methods for source of bacteria.	Continuous. Initial effort (one-time) Funding source: Storm Drain Enterprise Trigger for as needed: interim or final goal not being met or at risk of not being met as determined by assessment plan.	FY16-17	NA	NA	Scheduled for FY17	NA	NA	Yes
CO-29	Target education toward activities and human behavior (e.g. signage) in beaches/parks and other public areas including trash reduction, bacteria sources (pet waste removal) or other high impact behavior to habitat, wildlife, and water quality (e.g., no feeding of wildlife).	Continuous. Initial effort (one-time) Funding source: Storm Drain Enterprise, General Fund Trigger for as needed: interim or final goal not being met or at risk of not being met as determined by assessment plan.	FY16-17	NA	NA	Scheduled for FY17	NA	NA	Yes
CO-30	Engage with the Main Street Association to promote BMPs - activities and good housekeeping practices -associated with bacteria sources (impervious area cleaning SOPs, outdoor dining areas, trash areas). See Attachment 1 for BMPs.	Continuous. Initial effort (one-time) Funding source: Storm Drain Enterprise, General Fund Trigger for as needed: interim or final goal not being met or at risk of not being met as determined by assessment plan.	FY16-17	NA	NA	Scheduled for FY17	NA	NA	Yes
CO-31	Collaborate with regional, watershed or sub-watershed education and outreach efforts that targets bacteria, including educational/outreach opportunities associated with regional efforts for bacteria TMDL, as applicable.	Funding source: Storm Drain Enterprise Trigger for optional: interim or final goal not being met or at risk of not being met as determined by assessment plan.	Triggered by goal assessment	Not Triggered	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17.	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CO-32	Develop and/or distribute existing materials (from other agencies/groups) education and outreach to reduce over-irrigation/runoff. Assess effectiveness in pilot/target area(s).	Continuous. Initial outreach (one-time), repeat as needed based on residential area inspection/drive-by results in following years. Funding source: Storm Drain Enterprise	FY15-16	Yes	Continuous	Example: City website updates on drought conditions posted and street median signage promoting water conservation by City.	NA	NA	Yes
CO-33	Provide municipal staff training to select groups based on job duties and activities with emphasis on Focused Priority Conditions (bacteria).	Continuous. Initial outreach (one-time), repeat as needed based on municipal facility and other inspections in following years. Funding source: Storm Drain Enterprise	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-34	Conduct public surveys related to swimmable waters. Tailor education and outreach based on results of surveys.	Continuous. Initial survey (one-time), repeat as needed based on need. Tailor outreach as needed. Funding source: Storm Drain Enterprise	FY17-18	NA	NA	Scheduled for FY18	NA	NA	NA
CO-35	Provide technical education and outreach to the development community on the design and implementation requirements with an emphasis on Focused Priority Conditions (bacteria).	Continuous. Initial outreach (one-time), repeat as needed based on development permit submittal and inspections in following years. Funding source: Storm Drain Enterprise	FY15-16	Yes	Continuous	None	NA	NA	Yes
Incentive Programs									
CO-43	Incentive programs or opportunities. Includes programs with water purveyor for water conservation/over-irrigation, runoff (see CO-11). Other incentive programs as they become available.	As needed and available. Funding: Storm Drain Enterprise, General Fund	FY15-16	Yes	Continuous	Program implemented to replace landscaping at entrance and medians in the Cays with drought tolerant plants, upgraded drip irrigation system.	NA	NA	Yes
CO-44	Provide pet waste bags to owners at dog-friendly facilities (dog beach and dog runs).	As needed. Continuous. Funding: General Fund	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-46	Evaluate street infrastructure replacement or repairs for retrofit opportunities	Projects may include green streets and similar retrofit opportunities (e.g., porous pavement), as capital improvement plans are updated and implemented. Funding: General Fund, Grants and Others	FY16-17	NA	NA	Scheduled for FY17. May include in list for Prop. 1 Grant Funding.	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CO-47	Implement a strategy to include incentives or programs to retrofit existing development, and identify candidate areas or projects	Offsite Alternative Compliance Program, when available, will include incentives and projects to encourage or implement projects to retrofit existing development sites in the City. Incentives may include public and/or private projects or sites. Existing development retrofit project selection will be based upon a variety of factors including project size, project location, pollutant reduction potential (compared to existing conditions), cost, funding, cost-benefit analysis, public perception and acceptance (especially for public sites/projects) and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards. Refer to JRMP Storm Water Standards Manual, Section 4.D Funding: Storm Drain Enterprise and General Fund	Project List FY16-17. Policy and Procedures FYs 16-17 and 17-18 (upon availability of regional guidance)	NA	NA	Scheduled for FY17. May include in list for Prop. 1 Grant Funding.	NA	NA	Yes
CO-48	Proactively repair, replace, and retrofit MS4 components to maintain proper operation and function for reduction of infiltration.	As needed and available. Funding: Storm Drain Enterprise and General Fund	Triggered by infrastructure assessment or other determination	Yes	Continuous	A CIP project to line several sections of the MS4 to reduce groundwater infiltration was designed and bid preparation initiated. Project construction slated for FY17	NA	NA	Yes
CO-49	Promote with water purveyor, as available, residential retrofit to reduce irrigation and over-irrigation runoff (smart controllers), rainwater harvesting, and turf conversion that may include a rebate programs in target areas.	As needed and available. Funding: Storm Drain Enterprise and General Fund	FY15-16	Yes	Continuous	Installation of drip irrigation and improved system at the Cays at entrance and medians.	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CO-50	Implement program that will require sources to retrofit trash enclosures when identified to be persistent and problematic sources through annual or complaint inspections (when public education, employee training, etc. are insufficient solutions)	As needed, through annual, routine inspections Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-51	Commercial redevelopment projects. Require additional source control BMPs as applicable for persistent problem or areas. May include retrofit of trash enclosures, outdoor areas/facilities/uses to address pollutants of concern (including bacteria).	As projects are submitted for permitting. Funding: Storm Drain Enterprise (fees).	FY 15-16	Yes	Continuous	None	NA	NA	Yes
CO-52	Residential and medium risk sources: Review projects for potential sources of bacteria and require retrofit of areas, if appropriate, Retrofits may include landscaping modifications, impervious area retrofit, trash storage areas design/location or retrofit.	As projects are submitted for permitting or identified through inspection as persistent and problematic. Funding: Storm Drain Enterprise (fees). Optional strategy trigger: interim or final goal not being met or at risk of not being met as determined by assessment plan.	Triggered by Goal Assessment	NA	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17.	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Enforcement Response Plan									
CO-36	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan. Implement additional strategies such as:	As needed. Continuous. Funding: General Fund, Storm Drain Enterprise Fund	FY 15-16	Yes	Continuous	None	NA	NA	Yes
	1. Increase enforcement and patrols of over-irrigation/runoff.	Continuous. Summer-dry weather residential and commercial inspections/patrols twice during period. Funding: Storm Drain Enterprise Funding: General Fund, Storm Drain Enterprise Fund	FY 15-16	Yes	Continuous	None	NA	NA	Yes
	2. Focus locally on patrols and enforcement of water-using mobile businesses.	Continuous. Summer-dry weather residential and commercial inspections/patrols twice monthly. Funding: Storm Drain Enterprise Funding: General Fund, Storm Drain Enterprise Fund	FY 15-16	Yes	Continuous	None	NA	NA	Yes
	3. Issue NOVs for private property sanitary sewer overflows.	As applicable. Continuous. Funding: General Fund, Storm Drain Enterprise Fund	FY 15-16	Yes	Continuous	None	NA	NA	Yes
	4. Police patrols (code enforcement) targeting dog owners using unauthorized parks for pets as approved by City (signage posted and no dog waste dispersers are available).	As needed. Continuous. Funding: General Fund, Storm Drain Enterprise Fund	FY 15-16	Yes	Continuous	None	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CO-37	Enforce minimum BMPs for existing residential and commercial development as identified in strategies and JRMP. Includes retrofit of trash enclosures (CO-9), no parking on street sweeping days (CO-20), IDDE summer-dry weather inspections (CO-23), eating and drinking establishments (dry sweeping/mop impervious areas/spills within right of way). See BMPs in Attach.1.	Continuous. Funding: Storm Drain Enterprise.	FY15-16	Yes	Continuous	None	NA	NA	Yes
Additional Nonstructural Strategies									
CO-38	Address and clean up homeless encampments to eliminate bacteria sources.	Continuous. Funding: General Fund, Storm Drain Enterprise	FY15-16	Yes	Continuous	None	NA	NA	Yes
CO-39	Conduct special studies related to bacteria sources and reduction measures, as applicable.	-	-	-	-	-	-	-	-
	1. Conduct a reference watershed study.	Funding: Storm Drain Enterprise Trigger for optional: interim or final goal not being met or at risk of not being met as determined by assessment plan.	TBD-Optional	Yes	No. Continues next FY	Regional Trash Generation Rate for Priority Land Use Study was organized and funded. Implementation in FY 16-17.	NA	NA	Yes
	2. Evaluate Tidelands Park data and delisting.	Continuous. Funding: Storm Drain Enterprise	FY15-16	Yes	Continuous	In collaboration with Port of San Diego, in progress	NA	NA	Yes
	3. Evaluate Tidelands Park outfall drainage basin for sources of bacteria, IDDE (including over irrigation), animal waste (birds, pets).	Continuous. Funding: Storm Drain Enterprise	FY15-16	Yes	Continuous	In collaboration with Port of San Diego, in progress	NA	NA	Yes
	4. Evaluate drainage system including condition of MS4 pipes draining to Tidelands Park outfall.	Continuous. Funding: Storm Drain Enterprise	FY15-16	Yes	Continuous	In collaboration with Port of San Diego, in progress	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
CO-39 (cont)	5. Develop work plan and/or revised strategies to address sources and conditions at Tidelands Park outfall based on finding (2-4 above).	Continuous. Funding: Storm Drain Enterprise	FY15-16	No	Continuous	In collaboration with Port of San Diego, in progress. To be implemented when 2-4 are completed.	NA	NA	Yes
CO-39	6. Evaluate with POSD conditions and sources in the drainage basin to Tidelands Park outfall, as applicable.	Continuous. Funding: Storm Drain Enterprise	FY15-16	No	Continuous	In collaboration with Port of San Diego, in progress. To be implemented when 2-4 are completed.	NA	NA	Yes
	7. Evaluate data gaps and monitoring plan options for delisting of Tidelands Park.	Continuous. Funding: Storm Drain Enterprise	FY15-16	No	Continuous	In collaboration with Port of San Diego, in progress. To be implemented when 2-4 are completed.	NA	NA	Yes
CO-40	Implement, as applicable, programs or BMPs with the Navy on water quality-related issues to benefit targeted sources, including bacteria. See Attachment 1 for BMPs.	Continuous. Funding: Storm Drain Enterprise	FY15-16	NA	Continuous	No opportunities arose and no issues were identified during the reporting year.			
CO-41	Implement, as applicable, with the Caltrans on water quality-related issues to benefit water quality, including bacteria.	Continuous. Funding: Storm Drain Enterprise	FY15-16	NA	Continuous	No opportunities arose and no issues were identified during the reporting year.			
CO-42	If invasive plant and pest removal is necessary in key locations, implement remedial measures.	Continuous. Funding: Storm Drain Enterprise	FY15-16	Yes	Continuous	Bark beetle infestation along Margarita Ave. mitigated with the removal of 11 trees to prevent further spread and disease of other trees. Funding for this project was from Parks Budget			
CO-45	Collaborate, as applicable, with the Regional Board on water quality-related issues to benefit water quality, including bacteria.	Continuous. Funding: Storm Drain Enterprise	FY15-16	Yes	Continuous	None	NA	NA	Yes

Table 6-1 (continued)
City of Coronado Jurisdictional Strategies

ID	Strategy and BMPs (B.3.b(1)(a)(ii))	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Non-JRMP Strategies (Optional Strategies, Provision B.3.b.(1)(b)									
CO-53	Implement stream, channel, and habitat rehabilitation projects as needed.	This strategy may be triggered if: 1) Interim goals are not met, 2) Stream or habitat rehabilitation is determined to be a more effective pathway, relative to additional structural or non-structural BMPs to meeting bacterial indicator goals, 3) Funding and staffing has been secured, 4) Partners, MOUs, and permits required by regulatory agencies are secured, and 5) Recommendations from the community are identified and consensus and community support has been achieved. Will occur in areas identified during feasibility studies. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations and feasibility of property or land acquisition, 2) Secure funds in the form of general funds, bonds, or grants, 3) Obtain City Council approval of Capital Improvement Project budget, 4) Initiate preliminary engineering to narrow project scope and demonstrate effectiveness and feasibility, 5) Hire design consultant to develop detailed construction plans and construction cost estimates, including land acquisition, if applicable, 6) Complete construction contractor bid and award process for construction phase, 7) Construct project, 8) Operation and maintenance into perpetuity.	Triggered as noted in Implementation Approach	NA	NA	First year of implementation and assessment of goal to trigger implementation would be in FY17.	NA	NA	Yes

6.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The City of Coronado BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The City of Coronado updated its BMP Design Manual in accordance with Municipal Permit requirements during FY16; the BMP Design Manual replaced the Standard Urban Stormwater Mitigation Plan (SUSMP). No additional changes to the BMP Design Manual have been made since it went into effect. The City of Coronado BMP Design Manual can be accessed via the Project Clean Water website or at the City of Coronado's Main website located at: https://www.coronado.ca.us/government/departments_divisions/public_services_and_engineering/storm_water_operations/

6.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

The City of Coronado completed minor revisions and updates to the Construction Management component in Section 5 of the JRMP. The updates were completed per Municipal Permit section F.2.a.(3). The updates include:

1. Provide criteria that allow for modifications in inspection frequency based on site conditions, BMPs, and compliance status and history of the project site.
2. Clarification that the default inspection frequency for sites determine to be a high threat is biweekly.
3. Updates required inspection content.
4. Clarifies information managed in the TrackIt system used for permitting and inspection management by the City.

The revised JRMP will be posted on the City's website, and may also be accessed through the Copermittee's Regional Clearinghouse on the Project Clean Water website.

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7 COUNTY OF SAN DIEGO

7.1 ANNUAL REPORT CERTIFICATIONS

The County of San Diego's signed Statement of Certification and Legal Authority Establishment for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report is included on the following page.

County of San Diego

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

LAND USE AND ENVIRONMENT GROUP
1600 PACIFIC HIGHWAY, ROOM 212, SAN DIEGO, CA 92101
(619) 531-6256 • Fax (619) 531-5476
www.sdcounty.ca.gov/lueg

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT SAN DIEGO BAY WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the County of San Diego has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 6th day of January, 2017, at the County of San Diego.

Sarah Aghassi
SARAH E. AGHASSI
Deputy Chief Administrative Officer

Date 1/6/17

7.2 ANNUAL REPORT FORM

The County of San Diego's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

I. COPERMITTEE INFORMATION

I.A Copermittee Name: County of San Diego (PIN 255223)

I.B Copermittee Primary Contact Name: Todd Snyder

I.C Copermittee Primary Contact Information:
Address: 5510 Overland Avenue, Suite 410
City: San Diego County: San Diego State: California Zip: 92123
Telephone: (858) 694-3672 Fax: (858) 495-5623 Email:Todd.Snyder@sdcounty.ca.gov

II. LEGAL AUTHORITY

II.A Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
II.B A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

III.A Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
III.B If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

IV.A Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IV.B.1 Number of non-storm water discharges reported by the public	286
IV.B.2 Number of non-storm water discharges detected by Copermittee staff or contractors	95
IV.B.3 Number of non-storm water discharges investigated by the Copermittee	375
IV.B.4 Number of sources of non-storm water discharges identified	115
IV.B.5 Number of non-storm water discharges eliminated	112
IV.B.6 Number of sources of illicit discharges or connections identified	85
IV.B.7 Number of illicit discharges or connections eliminated	84
IV.B.8 Number of enforcement actions issued	93
IV.B.9 Number of escalated enforcement actions issued	1

V. DEVELOPMENT PLANNING PROGRAM

V.A Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
V.B Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
V.C If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

V.D.1 Number of proposed development projects in review	925
V.D.2 Number of Priority Development Projects in review	237
V.D.3 Number of Priority Development Projects approved	96
V.D.4 Number of approved Priority Development Projects exempt from any BMP requirements	0
V.D.5 Number of approved Priority Development Projects allowed alternative compliance	0
V.D.6 Number of Priority Development Projects granted occupancy	62

V.E.1 Number of completed Priority Development Projects in inventory	410
V.E.2 Number of high priority Priority Development Project structural BMP inspections	691
V.E.3 Number of Priority Development Project structural BMP violations	170
V.E.4 Number of enforcement actions issued	170
V.E.5 Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

VI. A Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

VI.B.1 Number of construction sites in inventory	2,748
VI.B.2 Number of active construction sites in inventory	2,684
VI.B.3 Number of inactive construction sites in inventory	0
VI.B.4 Number of construction sites closed/completed during reporting period	1,124
VI.B.5 Number of construction site inspections	18,858
VI.B.6 Number of construction site violations	416
VI.B.7 Number of enforcement actions issued	590
VI.B.8 Number of escalated enforcement actions issued	38

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

VII.A Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
VII.B.1 Number of facilities or areas in inventory	a. 263	b. 1,779	c. 150	d.110
VII.B.2 Number of existing development inspections	a. 1,885	b. 974	c. 38	d.468
VII.B.3 Number of follow-up inspections	a. 23	b. 131	c. 12	d.165
VII.B.4 Number of violations	a. 46	b. 279	c. 31	d.346
VII.B.5 Number of enforcement actions issued	a. 28	b. 130	c. 10	d.0
VII.B.6 Number of escalated enforcement actions issued	a.0	b.1	c.0	d.0

VIII. PUBLIC EDUCATION AND PARTICIPATION

VIII.A Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
VIII.B Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Sarah Aghassi
Signature

10/26/16
Date

SARAH E. AGHASSI
Print Name

LAND USE AND ENVIRONMENT GROUP
DEPUTY CHIEF ADMINISTRATIVE OFFICER
Title

(619) 531-5451
Telephone Number

SARAH.AGHASSI@SDCOUNTY.CA.GOV
Email

ATTACHMENT D.1

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM BY WATERSHED

JRMP ANNUAL REPORT ATTACHMENT D.1 by WATERSHED

Fiscal Year 2015-2016

			SANTA MARGARITA	SAN LUIS REY	CARLSBAD	SAN DIEGUITO	PENASQUITOS	SAN DIEGO RIVER	SAN DIEGO BAY	TIJUANA RIVER	JURISDICTION TOTALS
			*(902.00)	*(903.00)	*(904.00)	*(905.00)	*(906.00)	*(907.00)	*(908.00, 909.00, 910.00)	*(911.00)	
IV.	**ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM**										
IV.B.1	Number of non-storm water discharges reported by the public		12	46	30	40	2	78	72	6	286
IV.B.2	Number of non-storm water discharges detected by Copermittee staff or contractors		9	11	7	14	1	28	24	1	95
IV.B.3	Number of non-storm water discharges investigated by the Copermittee		15	57	37	51	3	106	99	7	375
IV.B.4	Number of sources of non-storm water discharges identified		4	22	17	11	1	30	28	2	115
IV.B.5	Number of non-storm water discharges eliminated		4	21	16	10	1	30	28	2	112
IV.B.6	Number of sources of illicit discharges or connections identified		4	14	16	8	0	18	23	2	85
IV.B.7	Number of illicit discharges or connections eliminated		4	14	15	8	0	18	23	2	84
IV.B.8	Number of enforcement actions issued		4	21	17	9	1	23	16	2	93
IV.B.9	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	1	1
V.	**DEVELOPMENT PLANNING PROGRAM**										
V.D.1	Number of proposed development projects in review		27	219	109	189	0	158	183	40	925
V.D.2	Number of Priority Development Projects in review		2	53	30	53	0	43	50	6	237
V.D.3	Number of Priority Development Projects approved		4	23	11	21	0	20	11	6	96
V.D.4	Number of approved Priority Development Projects exempt from any BMP requirements		0	0	0	0	0	0	0	0	0
V.D.5	Number of approved Priority Development Projects allowed alternative compliance		0	0	0	0	0	0	0	0	0
V.D.6	Number of Priority Development Projects granted occupancy		2	16	5	8	0	18	12	1	62
V.E.1	Number of completed Priority Development Projects in inventory		12	89	54	85	0	66	93	11	410
V.E.2	Number of high priority Priority Development Project structural BMP inspections		1	100	70	273	0	110	82	55	691
V.E.3	Number of Priority Development Project structural BMP violations		1	43	31	53	0	24	8	10	170
V.E.4	Number of enforcement actions issued		1	43	31	53	0	24	8	10	170
V.E.5	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	0	0
VI.	**CONSTRUCTION MANAGEMENT PROGRAM**										
VI.B.1	Number of construction sites in inventory		63	637	397	636	2	438	513	62	2748
VI.B.2	Number of active construction sites in inventory		60	622	393	627	2	424	496	60	2684
VI.B.3	Number of inactive construction sites in inventory		0	0	0	0	0	0	0	0	0
VI.B.4	Number of construction sites closed/completed during reporting period		20	314	137	235	1	175	219	23	1124
VI.B.5	Number of construction site inspections		245	3655	4473	3934	3	2868	3361	319	18858
VI.B.6	Number of construction site violations		1	50	55	38	0	64	205	3	416
VI.B.7	Number of enforcement actions issued		1	66	64	66	0	104	286	3	590
VI.B.8	Number of escalated enforcement actions issued		1	6	8	9	0	3	9	2	38
VII.	**EXISTING DEVELOPMENT MANAGEMENT PROGRAM**										
VII.B.1	Number of facilities or areas in inventory	a. Municipal	8	23	27	34	4	63	82	22	263
		b. Commercial	154	315	196	210	2	466	410	26	1779
		c. Industrial	15	4	5	22	0	67	36	1	150
		d. Residential	12	11	11	22	1	15	21	17	110
VII.B.2	Number of existing development inspections	a. Municipal	48	181	239	244	41	421	561	150	1885
		b. Commercial	106	155	115	102	0	180	309	7	974
		c. Industrial	1	5	5	12	0	2	13	0	38
		d. Residential	17	55	67	107	2	109	77	34	468
VII.B.3	Number of follow-up inspections	a. Municipal	0	3	0	0	0	2	14	4	23
		b. Commercial	7	10	10	13	0	22	65	4	131
		c. Industrial	1	3	0	2	0	0	6	0	12
		d. Residential	3	22	30	43	0	34	24	9	165
VII.B.4	Number of violations	a. Municipal	0	7	0	1	0	5	26	7	46
		b. Commercial	15	21	25	16	0	51	140	11	279
		c. Industrial	0	7	0	4	0	0	20	0	31
		d. Residential	4	47	59	85	0	70	50	31	346
VII.B.5	Number of enforcement actions issued	a. Municipal	0	2	0	0	0	3	19	4	28
		b. Commercial	10	13	11	7	0	21	65	3	130
		c. Industrial	0	2	0	2	0	0	6	0	10
		d. Residential	0	0	0	0	0	0	0	0	0
VII.B.6	Number of escalated enforcement actions issued	a. Municipal	0	0	0	0	0	0	0	0	0
		b. Commercial	0	0	0	0	0	0	0	1	1
		c. Industrial	0	0	0	0	0	0	0	0	0
		d. Residential	0	0	0	0	0	0	0	0	0

ATTACHMENT D.2

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FISCAL ANALYSIS

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FISCAL ANALYSIS COMPONENT

1.1. Introduction

This section presents an estimated annual budget for the County's runoff management programs for FY 2015-16.

1.2. Fiscal Analysis Methods

This section continues to utilize the methodologies and standards established in *Fiscal Analysis Method* submitted by the Copermittees in January 2009.

1.3. Fiscal Analysis Results

As shown the County estimated its total FY 2015-16 expenditures at $27,414,216. This fiscal analysis addresses each of the County's Runoff Management Program elements (jurisdictional, watershed, and regional activities) for the current reporting period (FY 2015-16). Expenditures are described by department and major program area. They represent an estimate of the expenditures that the County incurred in meeting its compliance obligations for FY 2015-16. They should not be interpreted as either budgeted or actual expenditures. Because stormwater program expenditures are distributed throughout a considerable number of County programs, a single consolidated "budget" does not exist for the program as a whole. As such, these figures should be considered best estimates of stormwater-related expenditures.

1.3.1 Expenditures

1.3.1.1. Jurisdictional

Table 1.1 presents the County's estimated jurisdictional expenditures for FY 2015-16.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
1	**ADMINISTRATION**	**$6,840,583**	These costs correspond to the DPW WPP development, administrative oversight, and assessment of the County's stormwater programs. The WPP is responsible for the development of new and augmented County stormwater programs, regulatory reporting, and program assessment. Some administrative costs are associated with other specific functions shown below, but are included here because they could not be separated out.
2	**DEVELOPMENT PLANNING**	**$1,109,654**	
A	**Land Use Planning**	$0	Expenditures not reported for FY 2015-16; included in other elements.
B	**Environmental Review**	$0	Expenditures not reported for FY 2015-16; included in other elements.
C	**Development Project Approval and Verification**	**$1,109,654**	
C1	**Public Projects (CIP)**	$824,219	
	Project Planning and Engineering	$570,229	Costs include: preparing and reviewing plans and specifications for stormwater BMPs, and SWPPP/WPCP review. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$15,000	
	BMP Implementation	$238,990	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
C2	**Private Projects**	$285,435	
	Permitting and Licensing	$285,435	This cost covers PDS plan reviews at permitted sites. Total costs are estimated as fixed percentages of annual plan-checking fees.
3	**CONSTRUCTION**	**$4,500,593**	
A	**Public Projects (CIP)**	$2,886,893	Costs include: BMP compliance inspections during construction, and implementation of construction phase BMPs. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$1,613,880	
	BMP Implementation	$1,273,013	
B	**Private Projects**	$1,613,700	
	Compliance Inspection and Enforcement	$1,613,700	This cost primarily covers DPW and PDS construction inspections at permitted sites. Total costs are estimated as fixed percentages of inspection program fees.
4	**MUNICIPAL**	**$7,572,297**	
A	**Administration**	$267,805	Expenditures associated with the administrative oversight of the stormwater programs, regulatory reporting, and program assessment of municipal facilities by the DPW - Watershed Protection Program.
B	**Streets, Roads, and Highways Element**	$2,256,091	
	Administration	$291,160	Founded road operations activities include: culvert inspections and cleaning;

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
	Maintenance Inspections	$1,890,813	increased culvert waste disposal costs, street sweeping, installation and maintenance of BMPs and road structures, and the placement of additional controls. 10% of the Maintenance and Inspections and BMP Implementation is reported as Administration cost.
	BMP Implementation	$74,118	
	Other	$0	
C	**MS4 Element**	$1,530,000	
	Administration	$191,000	The combined costs shown here apply across (1) DPW Flood Control -- conversion of existing concrete lined channels to natural bottom channels, updating flood control master plans, increased maintenance of flood control systems, and construction and maintenance of regional treatment BMPs; and (2) DPW Flood Control MS4 Operation & Maintenance -- maintenance on flood control facilities throughout the unincorporated areas of the County, exclusive of facilities within road rights-of-way (included in 4.B above). Other includes the cost of disposal of debris removed from MS4.
	Maintenance Inspections	$1,046,900	
	BMP Implementation	$290,500	
	Other	$2,500	
D	**Solid Waste Facilities Element**	$406,618	
	Administration	$35,047	Costs include Regional Board stormwater permit fees, consultant costs associated with stormwater upgrade and repair projects, and office staff time.
	Maintenance Inspections	$16,922	Costs include staff time to perform site inspections.
	BMP Implementation	$79,149	Costs include stormwater consultant site inspections, sampling/testing and BMP materials.
	Other (construction)	$275,500	Drainage improvement projects and BMP site maintenance projects.
E	**Wastewater Facilities Element**	$187,000	
	Administration	$10,000	This includes costs associated with JRMP report, the sanitary sewer system and facilities including: pump stations, sewage treatment plants and Spring Valley Operations facility. Also includes the cost of BMP design, acquisition,
	Maintenance Inspections	$127,000	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$50,000	maintenance and monitoring, for wastewater Capital Improvement Projects, and Major maintenance projects, and at various wastewater facilities.
	Other	$0	
F	**Road Stations Element**	$919,867	
	Administration	$83,624	This includes DPW road station operations related to Permit compliance. The Administration cost is determined as 10% of the total costs of maintenance and Inspections and BMP Implementation as reported by the DPW Roads Divisions.
	Maintenance Inspections	$799,414	
	BMP Implementation	$36,829	
	Other	$0	
G	**Fleet Maintenance Element**	$11,722	
	Administration	$1,036	This includes costs associated with operation of the County's fleet maintenance and fueling facilities.
	Maintenance Inspections	$7,392	
	BMP Implementation	$3,294	
	Other	$0	
H	**Municipal Airfields Element**	$338,110	These costs involve site inspections, annual reporting, and maintenance of BMPs at airports, including oversight of tenant operations. The BMP implementation item includes Palomar asphalt cap repairs.
	Administration	$12,737	
	Maintenance Inspections	$0	
	Compliance Inspection and Enforcement	$0	
	BMP Implementation	$300,623	
	Other (sampling and analysis)	$24,750	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
I	**Parks & Recreational Facilities Element**	$1,214,562	
	Administration	$121,362	This includes: coordinating all training requirements, preparing and reviewing reports, and overseeing the overall implementation of the stormwater program for DPR.
	BMP Implementation	$991,603	This includes costs associated with implementation of BMPs at County parks.
	Compliance Inspection and Enforcement	$101,597	Costs are for DPR enforcement of stormwater requirements at County parks.
	Other	$0	
J	**Office Buildings & Other Municipal Facilities Element**	$297,867	
	Administration	$0	DGS conducts a variety of storm water activities including: inspections and clean-up of County-owned, occupied, and leased facilities and vacant lands; maintenance and signage of storm drain inlet inserts and trash dumpsters; placement of inlet filters; maintenance of coverage and containment improvements for on-site supplies and materials; parking lot sweeping and controlled parking lot power washing; and application of erosion and sediment control measures. These costs are exclusive of fleet maintenance and fueling operations.
	Maintenance Inspections	$99,808	
	BMP Implementation	$198,059	
	Other	$0	
	Management of Pesticides, Herbicides, & Fertilizers	$142,656	
	Administration	$142,656	Integrated Pest Control Program within the Department of Agriculture, Weights and Measures (AWM) performs eradication and control of invasive weeds. This program also provides weed control on roadsides, airports, flood control channels,
	Maintenance Inspections	$0	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$0	sewage treatment plants and inactive landfills. It also provides structural pest control to facilities owned and operated by the county.
	Other	$0	
5	**INDUSTRIAL and COMMERCIAL**	**$1,575,635**	
	Administration	$253,047	DPW and AWM conduct inspections of a variety of businesses in the unincorporated County, provide regulatory oversight of mobile businesses, and conduct follow-up and enforcement of stormwater violations.
	Compliance Inspection and Enforcement	$1,245,279	
	Educational Outreach	$77,309	
	Other expenditures	$0	
6	**RESIDENTIAL**	**$1,205,386**	
	Compliance Inspection and Enforcement	$688,453	DPW conducts complaint investigations for residential sources in the unincorporated County, and conduct follow-up and enforcement of stormwater violations. DPW also operates a regional hotline.
	Educational Outreach	$516,933	Several County departments coordinate and provide outreach to the residential sector and schoolchildren in support of Permit Section D.5 requirements. Costs reported here correspond to DPW only. Funded activities include developing pollution prevention content and providing direct outreach to various target audiences within the general residential and schoolchildren target audiences.
7	**IDDE**	**$321,523**	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
		$321,523	DPW conducts monitoring programs, assesses scientific data, and provides technical and scientific support to other County program staff. They also provide support for all technical and scientific aspects of JRMP development and implementation. These costs are exclusive of the regional monitoring program which is addressed separately under regional costs.
8	**EDUCATION**	**$0**	Education costs are included in other sections as applicable.
9	**PUBLIC PARTICIPATION**	**$0**	Public participation costs are included in other sections as applicable.
10	**SPECIAL INVESTIGATIONS**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.
11	**NON-EMERGENCY FIREFIGHTING**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.

$23,125,671

1.3.1.2 Watershed

Table 1.2 presents the County's estimated watershed expenditures for FY 2015-16.

Table 1.2 – Estimated Watershed Expenditures for FY 2015-16

	Santa Margarita WMA	San Luis Rey WMA	Carlsbad WMA	San Dieguito WMA	Peñasquitos WMA	San Diego River WMA	San Diego Bay WMA	Tijuana WMA
Administration	$37,583	$201,492	$82,653	$113,035	$75,309	$105,117	$37,583	$75,309
Cost Share Contribution	$0	$62,494	$46,204	$8,885	$1,062	$68,970	$6,659	$2,346
Watershed Activities	$626,917	$119,390	$14,860	$171,640	$26,423	$125,705	$111,491	$80,300
Other	$0	$0	$0	$0	$0	$0	$0	$0
Total Estimated Watershed Costs	**$664,500**	**$383,376**	**$143,717**	**$293,560**	**$102,794**	**$299,792**	**$155,733**	**$157,955**

1.3.1.3 Regional

Table 1.3 presents the County's estimated regional expenditures for FY 2015-16. This includes only those expenditures associated with the Copermittees' adopted Regional Budget and Work Plan. Other costs associated with regional participation (meeting attendance, etc.) are included within the jurisdictional expenditures presented above.

Table 1.3 – Estimated Regional Expenditures for FY 2015-16

Regional Programs	County Costs
Administration	$0
Cost Share Contribution	$2,087,118
Regional Activities	$0
Other	$0
Total Estimated Regional Costs	**$2,087,118**

1.3.1.4 Total Expenditures

Table 1.4 presents the County's total estimated expenditures for FY 2015-16 (jurisdictional, watershed, and regional).

Table 1.4 – Total Estimated County Expenditures for FY 2015-16

Component / Sub-component	Estimated Expenditures
Jurisdictional	
Administration	$6,840,583
Development Planning	$1,109,654
Construction	$4,500,593
Municipal	$7,572,297
Industrial And Commercial	$1,575,635
Residential	$1,205,386
IDDE	$321,523
Education	$0
Public Participation	$0
Special Investigations	$0
Non-emergency Firefighting	$0
Jurisdictional Total	**$23,125,671**
Watershed	
Santa Margarita WMA	$664,500
San Luis Rey WMA	$383,376
Carlsbad WMA	$143,717
San Dieguito WMA	$293,560
Peñasquitos WMA	$102,794
San Diego River WMA	$299,792
San Diego Bay WMA	$155,733
Tijuana WMA	$157,955
Watershed Total	**$2,201,427**
Regional	**$2,087,118**
Total Estimated County Costs	***$27,414,216***

1.3.2 Funding Source

Table 1.5 shows the major sources of funding for the County's urban runoff management programs in FY 2015-16, and describes the legal restrictions applicable to the use of each.

Table 1.5 – Legal Restrictions on the Use of Program Funding

Funding Source	Legal Restrictions
General Fund	There are no restrictions on the use of general fund for County water quality programs and activities except that they must be used only for the purposes for which they are budgeted and allocated by the County Board of Supervisors.
Flood Control District Fees	Revenue generated from these fees must be expended for activities related to flood and storm management.
Developer Deposits / Permit Fees	Deposits / fees may be used only to fund activities related to the work for which the permits are issued.
Gas Tax	Gas Tax is collected by the state and allocated to local government for transportation-related work including maintenance of existing transportation systems and construction of new transportation facilities. These funds may not be used for other purposes.
Sanitary District Fees	Sanitary District Fees are used for work related to the maintenance of sewer lines, pump stations, force mains, and several treatment plants that serve the unincorporated areas. They may be used only for such maintenance-related purposes within the respective sewer district for which they are collected.
Other Funding Sources	Other funding sources collectively account for a relatively small portion of ongoing expenditures. However, all funding for the County's stormwater compliance programs is expended within applicable legal restrictions and limitations.

1.4. Conclusions and Recommendations

The figures presented here are an estimate of the expenditures that the County incurred to meet its compliance obligations for FY 2015-16. For the reasons explained above, they should be considered only best estimates of stormwater-related expenditures.

7.3 COUNTY OF SAN DIEGO STRATEGIES

The County of San Diego's (County's) jurisdictional strategies, found in Table 7-1, and optional strategies, found in Table 7-2, were chosen because they best suit the characteristics of its jurisdiction within the Chollas Creek HA. WMA strategies are presented in Table 7-3. Potential dry weather flows are evaluated through inspection of MS4 outfalls and education and outreach. To treat potential runoff from County facilities, retrofit projects utilizing LID approaches in conjunction with drainage and parking improvements were completed at the Southeast Family Resource Center and Central Regional Public Health Center. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final goals. The strategies and implementation schedules identified provide that numeric goals are met. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis is updated as needed to provide assurance that numeric goals are met.

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Table 7-1
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
Illicit Discharge, Detection, and Elimination (IDDE) Program						
CoSD-34	Maintain storm water conveyance system map to facilitate IDDE program	Yes	Updated as needed	N	N/A	Y
CoSD-35	Utilize municipal personnel and contractors to identify and report Illicit Connections and Discharges	Yes	IDDE Program	N	N/A	Y
CoSD-36	*Updated focused training for County field staff*	Yes	Updated training for BMP Design Manual and Storm Water Implementers	N	N/A	Y
CoSD-37	Collect effluent on the ground (EOG), sanitary sewer overflow (SSO) data	Yes	Approximately 87 EOG complaints related to septic systems and 14 SSO events recorded and responded to.	N	N/A	Y
CoSD-38	*Address septic system failures where observed*	Yes	Suspected septic discharges are reported to DEH HIRT Response line when they occur after hours and DEH Land and Water Quality Division during normal hours. All complaints resolved during 15-16	N	N/A	Y
CoSD-39	Facilitate public reporting of ICID via telephone and email	Yes	Bilingual hotline, dedicated e-mail address, and multiple online reporting tools	N	N/A	Y
CoSD-40	*Refer homeless issue complaints to Sheriff or appropriate jurisdictions*	Yes	Collaborate with multi-departmental group to address homeless encampments	N	N/A	Y
CoSD-41	*Bilingual hotline answered by a live operator (I Love a Clean San Diego) to provide better customer service*	Yes	Bilingual hotline operated by ILACSD	N	N/A	Y
CoSD-42	Implement practices and procedures to address spills with the potential to enter the storm drain system	Yes	NOV issued by DEH for failing septic systems when effluent could reach the storm drain. Prompt follow up and mitigation is implemented. Such cases are rare; <5 in 15-16	N	N/A	Y
CoSD-43	*Coordinate spill response with responsible sewer agencies*	Yes	Major DEH role is to inform the public of risks associated with sewer spills, conducting sampling, reporting, posting signs, etc.	N	N/A	Y
CoSD-44	Implement practices and procedures to prevent/limit infiltration of seepage from sanitary sewers	Yes	If illicit connections are identified as part of an IDDE investigation, investigation will be conducted to define and eliminate the source.	N	N/A	Y

Table 7-1 (continued)
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
CoSD-45	Coordinate with upstream entities to prevent illicit discharges from upstream sources entering into the storm drain system	Yes	If illicit connections are identified as part of an IDDE investigation, investigation will be conducted to define and eliminate the source. If determined to be from an upstream entity coordination will occur	N	N/A	Y
CoSD-46	Utilize municipal personnel and Contractors to monitor storm water outfalls for discharges of potential ICIDs	Yes	This is part of the IDDE Program	N	N/A	Y
CoSD-47	Develop and implement a strategy for investigating and addressing ICIDs.	Yes	Focused, collaborative investigations with Planning and Science staff of high priority outfalls.	N	N/A	Y
Development Planning						
CoSD-1	Require implementation of source control and Low Impact Development (LID) BMPs for all development projects.	Yes	The County BMP DM requires all projects regardless of size and location to implement SC and SD BMPs. These requirements are captured in the WPO and County's BMP DM.	N	N/A	Y
CoSD-2	Update BMP Design Manual procedures to specify storm water requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria, and establish where implemented alternative compliance options.	Yes, Partially	Updated to reflect the Regional Model BMP DM with additional changes to incorporate County implementation practices. BMP DM became effective on February 26, 2015. Rene can provide details on the differences between CoSD BMP DM and Model BMP DM.	N	N/A	N
CoSD-3	*Conduct internal (staff) training on the updated BMP Manual*	Yes	The JRMP requires the County to conduct internal training every fiscal year and after release of new guidance documents	N	N/A	N
CoSD-4	*Hold external land development workshops targeting the development community*	Yes	The County conducts external training regularly and after release of new guidance documents	N	N/A	N

Table 7-1 (continued)
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
CoSD-5	Implement a program that ensures that all structural and Low Impact Development (LID) BMPs are designed, constructed and maintained on Priority Development and Redevelopment Projects.	Yes	Structural BMPs and LID BMPs are designed and constructed per the BMP Design Manual. In addition, Structural BMPs are tracked for maintenance through inspections and self-verification letters. LID BMPs that are installed as a result of implementation of the BMP Design Manual are proposed to be inspected	N	N/A	Y
CoSD-7	Impose legal authority to ensure all development and redevelopment projects are in compliance with all post construction requirements.	Yes	The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated permit and the inclusion of applicant-implement offsite alternative compliance.	N	N/A	Y
CoSD-8	*Update County codes, ordinances, and storm water design standards consistent with the permit and the updated BMP Manual*	Yes	The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated permit and the inclusion of applicant-implement offsite alternative compliance. WPO update became effective on February 26, 2016.	N	N/A	N
CoSD-9	Priority Development Projects: In addition to requirement for all development projects, implement or require implementation of onsite structural BMPs to control pollutants and manage hydromodification for PDPs.	Yes	The County BMP DM requires all PDPs to implement PC and HMP BMPs. These requirements are captured in the WPO and County's BMP DM.	N	N/A	Y
Construction Management						
CoSD-10	Maintain, update and prioritize a watershed based inventory of all projects issued local permits that allow soil disturbing activities.	Yes	Projects that are issued local permits that allow soil disturbance activities are part of the inventory that is watershed-based.	N	N/A	Y
CoSD-11	Require implementation of BMPs that are site specific, seasonally appropriate and appropriate to the construction phase, year round.	Yes	Every project requires implementation of site specific construction BMPs, seasonably appropriate and appropriate to the construction phase.	N	N/A	Y

Table 7-1 (continued)
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
CoSD-12	Impose legal authority to ensure inventoried construction projects are in compliance with all requirements.	Yes	The Watershed Protection Ordinance is the current legal authority to insure inventoried construction projects are in compliance with all requirements.	N	N/A	Y
CoSD-13	*Make updates to County ordinances related to construction; reference to existing grading ordinance*	Yes	County ordinances are updated with subsequent Construction General Permit updates; the Watershed Protection Ordinance will be updated as necessary as a result of the future Grading Ordinance Update.	N	N/A	N
CoSD-14	Provide internal staff training related to construction storm water management.	Yes	The County conducts construction storm water training annually and it targets construction inspectors in DPW-PDCI, PDS-Building, and CIP Inspectors in DPW and DGS.	N	N/A	Y
Existing Development						
CoSD-15	Maintain and update a watershed-based inventory of existing development (i.e. commercial, industrial, municipal and residential areas).	Yes	Inventory is tracked in Accela Automation	Y	Database is continually updated to increase accuracy and efficiency	Y
CoSD-16	*Improve the tracking of watershed based inventories via consolidated database*	Yes	Inventory is tracked in Accela Automation	Y	Database is continually updated to increase accuracy and efficiency	Y
CoSD-17	Designate a minimum set of BMPs required for all existing development inventories, including special event venues. The designated minimum BMPs must be specific to facility or area types and pollutant generating activities, as appropriate.	Yes	JRMP establishes minimum BMPs for all land use types.	N	N/A	Y
CoSD-18	*Create an Equestrian BMP Handbook*	No	Handbook created in FY2014-15	Y	Handbook will be revised in FY2016-17 to encompass additional BMPs and be more user friendly.	Y

Table 7-1 (continued)
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
CoSD-19	Require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types and pollutant generating activities, as appropriate.	Yes	JRMP establishes minimum BMPs for all land use types.	N	N/A	Y
CoSD-20	*Pet waste management and outreach in County Parks.*	Yes	Mutt-mitt dispensers are installed and maintained in many County parks, providing people who are walking their dogs with waste disposal bags to use to pick up after their pets.	N	N/A	Y
CoSD-21	Promote and encourage implementation of designated BMPs in residential areas.	Yes	Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas. All Residential Management Areas were inspected in FY15-16	N	N/A	Y
CoSD-22	Conduct inspections of inventoried existing development to ensure compliance	Yes	Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas.	N	N/A	Y
CoSD-23	*Conduct focused residential inspections based on strategic assessments.*	Yes	Focused, collaborative investigations with Planning and Science staff of high priority outfalls.	N	N/A	Y
CoSD-24	*Develop a residential inspections tracking program via mobile platform - miles, violations, etc.*	Yes	In pilot testing phase	Y	Modifications based on pilot testing phase to increase effectiveness	Y
CoSD-25	*Improve inspections data tracking through mobile phone applications*	Yes	In pilot testing phase	Y	Modifications based on pilot testing phase to increase effectiveness	Y
CoSD-26	Enforce legal authority established for all inventoried existing development to achieve compliance	Yes	see JRMP	N	N/A	Y
CoSD-27	*Update county ordinance related to existing development; reference to existing guidance documents*	Yes	Watershed Protection Ordinance and BMP Design Manuals were updated.	N	N/A	N

Table 7-1 (continued)
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
CoSD-28	Implement a schedule or operation and maintenance activities for the storm water conveyance system and related structures.	Yes	Storm Water maintenance is referred to appropriate departments when needed.	N	N/A	Y
CoSD-29	Implement a schedule of operation and maintenance for County paved and unpaved roads.	Yes	County Road Crews employ a schedule for maintenance of County Roads.	N	N/A	Y
CoSD-30	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Yes	1. 450 Facilities received the Agricultural Water Quality Best Management Practices for Pesticides through annual registration notifications. 2. Inspections were conducted at 83 Commercial Ag Facilities	N	N/A	Y
CoSD-31	Promote incentive program for BMP retrofits (e.g. water smart irrigation controllers, turf replacements programs, residential landscape evaluation program).	Yes	The County continues to collaborate with and promote the efforts of partner agencies incentive programs.	N	N/A	N
CoSD-32	*Collaborate with partner agencies and groups to promote non-County sponsored incentive programs for BMP retrofits, including rain barrels, smart controllers, soil sensors, turf replacement, etc.*	Yes	The County continues to collaborate with and promote the efforts of partner agencies incentive programs.	N	N/A	Y
CoSD-33	Identify candidate areas of existing development for stream, channel, and/or habitat rehabilitation projects and facilitate implementation of such projects.	No	N/A	N	N/A	N

Table 7-1 (continued)
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
Outreach and Public Participation						
CoSD-48	Implement a public education and participation program to promote and encourage development of programs, management practices and behaviors that reduce the discharge of pollutants in storm water prioritized by high risk behaviors, pollutants of concern, and target audiences.	Yes	The County completes numerous education and public participation programs for a diverse target audiences. See JRMP.	N	N/A	Y
CoSD-49	*Develop, improve, and distribute outreach materials.*	Yes	Improved outreach materials through a focused Community-based Social Marketing approach.	Y	Continual improvement of existing materials, including translation into Spanish	Y
CoSD-50	*Give outreach presentations to elementary, middle, and high school students*	Yes	Offer presentations to elementary, middle, and high schools serving unincorporated communities.	N	N/A	Y
CoSD-53	*Outreach to mobile landscaping service providers*	Yes	Pesticide Regulation Program collaboration with the California Department of Pesticide Regulation on a pilot program to offer workshops for maintenance gardeners. Two workshops were held where attendees were provided training materials and concluded with a pesticide certification exam. Attendees at both workshops had high success rates for the exam.	N	N/A	Y
CoSD-55	*Expand Homeowners Associations Outreach and Coordination based on the pilot project within San Luis Rey, San Dieguito, or San Diego River as needed and as funding is identified*	No	Additional development may occur based on pilot study in FY2016-17	N	N/A	N
CoSD-56	Collaborate with watershed partners to develop consistent messaging to targeted audiences such as commercial, residents to conserve water and reduce dry weather flows	Yes	Collaboration between the Regional Education Workgroup and Think Blue San Diego Region to develop and distribute educational materials such as the "Be the Solution to Pollution" booklet which includes irrigation and runoff reduction measures. Other items developed under this included posters, calendars and coloring books	N	N/A	y

Table 7-1 (continued)
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
CoSD-57	*Sponsor Trash Collection Events through public outreach and participation*	Yes	The County sponsors ILACSD to establish cleanup sites at the Coastal Cleanup Day and Creek to Bay events.	N	N/A	Y
CoSD-58	*Educational Workshops on Integrated Pest Management, manure management and others as needed*	Yes	Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.	N	N/A	Y
CoSD-59	Partner with Master Gardeners Programs to provide education opportunities on water use and practices for gardening	Yes	Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.	N	N/A	Y
CoSD-60	*Conduct Effectiveness Survey's on Education & Outreach programs*	Yes	Surveys to determine the efficacy of watershed education to unincorporated elementary, middle, and high schools serving unincorporated communities	N	N/A	Y
Enforcement Response Plan						
CoSD-61	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Yes	County implemented the ERP as described in the JRMP.	N	N/A	Y
CoSD-62	Notify the SDWB by email (Nonfilers_R9waterboards.ca.gov) within five (5) calendar days of issuing escalated enforcement to a construction site that poses a significant threat to water quality as a result of violations or other noncompliance	Yes	County implemented the ERP as described in the JRMP.	N	N/A	Y

Table 7-1 (continued)
County of San Diego Jurisdictional Strategies

ID	Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Status		Proposed Modifications		
		Implemented in FY16? *(No/Partially/Yes)*	Comments on Implementation (# events, # attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
CoSD-63	Notify the SDWB by email (Nonfilers_R9waterboards.ca.gov) any persons required to obtain coverage under the statewide Industrial General Permit and Construction General Permit and failing to do so, within five (5) calendar days from the time the Copermittee become aware of the circumstances.	Yes	County implemented the ERP as described in the JRMP.	N	N/A	Y

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Table 7-2
County of San Diego Optional Strategies

ID	Optional Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Timeframe	Triggers	Resources	Implementation Status			Proposed Modifications		
					Triggered?	Implemented in FY16?	Comments on Implementation	Proposed Modifications?	Modification Type & Rationale	Planned Implementation into next FY?
CoSD-Opt1	Implement Sustainable Landscapes Program to encourage landscape retrofits.	FY 2016-17; Continuous until grant funding and incentives are depleted	Implementation of this strategy may be triggered if (1) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (2) all of the necessary resources have been secured. Continue implementation when the funding and incentives items are secured.	Staff resources, Grant funding, Incentive items, Partnerships	No	Partially	N/A	N	N/A	Y
CoSD-Opt 2	Implement an incentive program for BMP Retrofits (Public-Private Partnerships - a County sponsored program to offer incentives for rain barrel installation, downspout disconnects from the storm water system, etc.)	FY 2015-16 Continuous, as resources allow	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Incentive items, Partnerships	No	Partially	N/A	N	N/A	Y
CoSD-Opt 3	Implement a program that provides rebates or incentives for pumping septic systems, with a focus in high risk areas adjacent to waterways (within 600 feet).	Once triggered, Pilot program 1 -2 years, as needed thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Incentive items	No	No	Funding source not identified. All 4 triggers have not been met.	No	N/A	No

Table 7-2 (continued)
County of San Diego Optional Strategies

ID	Optional Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Timeframe	Triggers	Resources	Implementation Status			Proposed Modifications		
					Triggered?	Implemented in FY16?	Comments on Implementation	Proposed Modifications?	Modification Type & Rationale	Planned Implementation into next FY?
CoSD-Opt 4	Identify where sewer and storm water infrastructure are in close proximity and subsequently, confirm the absence of flow at nearby storm water MS4 outfall during dry weather.	Once triggered, 2-3 years; one-time	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	No	N/A	No	N/A	N
CoSD-Opt 5	Implement a program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.	Once triggered, 2-3 years	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) septic systems have been determined to be a pollutant sources to the MS4; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	Partially	Under the Local Area Management Plan (LAMP) for onsite wastewater treatment systems the treatment systems with supplemental treatment are required to be permitted annually. The annual operating permit will define the monitoring and maintenance requirements as specified by the manufacturer and/or qualified professional who designed the system. The LAMP ordinance can be found at: http://www.sandiegocounty.gov/content/dam/sdc/deh/lwqd/RWQCB%20Approved%20LAMP%20Final%202-24-15.pdf	N	N/A	Y

Table 7-2 (continued)
County of San Diego Optional Strategies

ID	Optional Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Timeframe	Triggers	Resources	Implementation Status			Proposed Modifications		
					Triggered?	Implemented in FY16?	Comments on Implementation	Proposed Modifications?	Modification Type & Rationale	Planned Implementation into next FY?
CoSD-Opt 6	Divert persistent dry weather flows from storm drains to sewer	Once triggered, 3-6 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) permission is granted from sewer agency; and (4) ground water or permitted discharges have been ruled out; and (5) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Engineering design, Environmental review, Permits, Ongoing funding for operation/maintenance	No	No	Diversions are a last resort strategy and will be reviewed for outfalls that are persistently flowing after all other implementation strategies have been exhausted.	N	N/A	N
CoSD-Opt 7	Implement trash capture program (e.g., retrofit storm drain intakes with trash capture devices)	Baseline study 2-3 years; FY 15-16 implementation as needed and as resources allow	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) baseline study completion and success; and (4) focus areas identification; and (5) detailed inlet inventory of focus areas; and (6) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Equipment, Permits, Ongoing funding for operation/maintenance	No	Partially	The County of San Diego is in process of conducting several studies to develop Baseline Trash Generation Rates.	N	N/A	Y

Table 7-2 (continued)
County of San Diego Optional Strategies

ID	Optional Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Timeframe	Triggers	Resources	Implementation Status			Proposed Modifications		
					Triggered?	Implemented in FY16?	Comments on Implementation	Proposed Modifications?	Modification Type & Rationale	Planned Implementation into next FY?
CoSD-Opt 8	Implement a Green Streets Retrofits Program	Once triggered, 3-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered on a project-by-project basis if (1) a specified interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Each green street retrofit project is preliminary estimated to cost an average of $5,500,000 per linear mile of retrofit for construction. Resources include: Staff resources, Grant funding or alternative source, Contractor funding, Engineering or landscaping design, Permits, Environmental review, Right of way acquisition, Ongoing funding for operation/maintenance	No	Partially	Design standards and specifications have been developed. Green streets are now being used to meet compliance for all retrofit and/or redeveloped road projects that in the Capital Improvement Projects plan. Pursuing Grant Funding	N	N/A	Y
CoSD-Opt 9	Construct Treatment Control BMPs (retrofits projects)	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Engineering or landscaping design, Permits, Environmental review, Ongoing funding for operation/maintenance	No	No	N/A	N	N/A	N

Table 7-2 (continued)
County of San Diego Optional Strategies

ID	Optional Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Timeframe	Triggers	Resources	Implementation Status			Proposed Modifications		
					Triggered?	Implemented in FY16?	Comments on Implementation	Proposed Modifications?	Modification Type & Rationale	Planned Implementation into next FY?
CoSD-Opt 10	Implement an alternative compliance program to enable "offsite" compliance for new and redevelopment projects.	Once triggered, 3-6 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design , Permits, Environmental review, Right of way acquisition (if needed), Ongoing funding for operation/maintenance	No	Partially	Currently applicant implemented offsite alternative compliance is available for use by the development community. The Water Quality Equivalency (WQE) provides the currency for structural BMPs and some natural system management practices (NSMPs). Additional work on the WQE will be conducted during FY17. The County is not currently pursuing a credit system but is participating as a stakeholder on the City of San Diego TAC and as a member of the Western Riverside Coalition of Governments (WRCOG) discussion on offsite alternative compliance.	N	N/A	Y
CoSD-Opt 11	Flood Control Channel Rehabilitation Projects (e.g., removal of impervious lining in flood control channel and replacement with earthen or vegetated surface)	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (4) engineering design, monitoring, and outreach plans are approved; and (5) all of the necessary resources have been secured.	Project costs vary by size and complexity. Resources include: Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design, Permits, Environmental review, Right of way acquisition (if needed), Ongoing funding for operation/maintenance	No	Partially	N/A	N	N/A	Y

Table 7-2 (continued)
County of San Diego Optional Strategies

ID	Optional Jurisdictional Runoff Management Programs (JRMP) Strategies	Implementation Timeframe	Triggers	Resources	Implementation Status			Proposed Modifications		
					Triggered?	Implemented in FY16?	Comments on Implementation	Proposed Modifications?	Modification Type & Rationale	Planned Implementation into next FY?
CoSD-Opt 12	Implement a program to remove invasive non-native plants (i.e. Arundo) upstream areas rivers or tributaries.	Once triggered, 1-2 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) community support and partnerships established; and (4) it has been determined that invasive plants have been found to have an impact on water quality; and (5) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	No	The County has developed several Habitat Restoration Plans and Non-Native Plant Removal Guidelines including for the Otay Valley Regional Park. Implementation of projects resulting from these guidelines requires acquisition of land and funding. No projects were completed during this reporting period.	N	N/A	N
CoSD-Opt 13	Habitat Restoration and rehabilitation projects in County Parks	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Restoration / Rehabilitation Designs Approved, Environmental Permits issued, CEQA / NEPA Environmental review, Ongoing funding for maintenance and monitoring	No	Partially	Habitat restoration and rehabilitation has occurred in the Tijuana River Valley Regional Park and will continue for an additional 3-5 years. Additionally habitat restoration and rehabilitation has been initiated for the Sweetwater Loop Trail Phase I and Phase III however additional funding is necessary to complete Phase I. Phase III will beginning in Fall 2016.	N	N/A	Y

Table 7-3
County of San Diego WMA Strategies

ID	WMA Strategy	Implementation Timeframe	Triggers	Resources	Implementation Status		
					Pollutants Addressed/Physical and Biological Benefits	Responsible Groups/Collaborating Entities	Comments
San Diego Bay							
SDB1	Offsite Alternative Compliance Option (WMAA)	Prior to FY 2016; Continuous - ongoing	This strategy may be implemented at the Authority's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) consensus and community support has been achieved, and 4) interim/final goals are not met. Funding for future fiscal years is contingent on budget approval by Authority Board.		Bacteria, Nutrients, Metals, Trash, Sediment, Flow, Habitat/Wildlife	EAD/FDD, Copermittees	
SDB2	Participate in Reference Watershed Study	Prior to FY 2016; Continuous - ongoing			Bacteria, Nutrients, Metals, Trash, Sediment, Flow, Habitat/Wildlife	EAD, Copermittees	

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7.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The County BMP Design Manual provides guidance for land development and public improvement projects to comply with the 2013 Municipal Separate Storm Sewer System (MS4) Permit (Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100). This Manual replaces County Standard Urban Storm Water Mitigation Plan (SUSMP). It is focused on project design requirements and related post-construction requirements, not on the construction process itself. No modifications to the BMP DM have been made since its publication on February 2016. The BMP DM is available online on the County of San Diego's website: http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html.

7.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

No modifications to the County of San Diego JRMP have been made since the WQIP was approved. The current County of San Diego JRMP is posted on the County website, and the link to this page is listed on Project Clean Water.

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8 CITY OF IMPERIAL BEACH

8.1 ANNUAL REPORT CERTIFICATIONS

The City of Imperial Beach's signed Statement of Certification and Legal Authority letter for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report are included on the following pages.

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City of Imperial Beach, California

PUBLIC WORKS DEPARTMENT

825 Imperial Beach Blvd., Imperial Beach, CA 91932 Tel: (619) 423-8311 Fax: (619) 429-4861

January 9, 2017

SAN DIEGO BAY WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

STATEMENT OF CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

Hank Levien

Hank Levien
Director Public Works
City of Imperial Beach

City of Imperial Beach, California

OFFICE OF THE CITY MANAGER

825 Imperial Beach Blvd., Imperial Beach, CA 91932 Tel: (619) 423-8303 Fax: (619) 628-1395

I certify that the City of Imperial Beach has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-0001 as amended by Orders R9-2015-0001 and R9-2015-0100. Legal authority is established and maintained by the following:

- Updated BMC Chapter 8.30 for Urban Runoff Management and Discharge Control, Ordinance Number 2016-1158 authorized by City Council on November 2, 2016
- Imperial Beach Jurisdictional Runoff Management Plan authorized through Resolution 2015-7588, authorized by City Council on June 3, 2015
- San Diego Bay Water Quality Improvement Plan authorized through Resolution 2015-7589, authorized by City Council on June 3, 2015
- Tijuana River Water Quality Improvement Plan authorized through Resolution 2015-7590, authorized by City Council on June 3, 2015
- Imperial Beach BMP Design Manual authorized through Resolution 2015-7636, authorized by City Council on October 21, 2015

Signed: Andy Hall 11-16-16

Andy Hall Date

City Manager

8.2 ANNUAL REPORT FORM

The City of Imperial Beach's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

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SAN DIEGO BAY WATERSHED
JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM

FY 2015-16

I. COPERMITTEE INFORMATION

Copermittee Name: Imperial Beach

Copermittee Primary Contact Name: Chris Helmer

Copermittee Primary Contact Information:
Address: 825 Imperial Beach Blvd
City: Imperial Beach County: San Diego State: CA Zip: 91932
Telephone: 619-628-1370 Fax: 619-429-4861 Email: chelmer@imperialbeachca.gov

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	14
Number of non-storm water discharges detected by Copermittee staff or contractors	53
Number of non-storm water discharges investigated by the Copermittee	67
Number of sources of non-storm water discharges identified	53
Number of non-storm water discharges eliminated	53
Number of sources of illicit discharges or connections identified	53
Number of illicit discharges or connections eliminated	53
Number of enforcement actions issued	47
Number of escalated enforcement actions issued	10

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

Number of proposed development projects in review	16
Number of Priority Development Projects in review	1
Number of Priority Development Projects approved	0
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	0

Number of completed Priority Development Projects in inventory	5
Number of priority Priority Development Project structural BMP inspections	5
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

FY 2015-16

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	42
Number of active construction sites in inventory	25
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	17
Number of construction site inspections (includes CIP Projects)	301
Number of construction site violations	4
Number of enforcement actions issued	4
Number of escalated enforcement actions issued	4

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal*	Commercial	Industrial	Residential*
Number of facilities or areas in inventory	26	52	0	6
Number of existing development inspections	26	76	0	12
Number of follow-up inspections	0	24	0	0
Number of violations	0	0	0	0
Number of enforcement actions issued	0	0	0	0
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Hank Levien
Signature

Nov. 14, 2016
Date

HANK LEVIEN
Print Name

PUBLIC WORKS DIRECTOR
Title

619-423-8311
Telephone Number

HLEVIEN@CITYOFIMPERIALBEACHCA.GOV
Email

*Municipal and *Residential inventories include both San Diego Bay and Tijuana River watersheds because many facilities cross watershed boundaries.

Fiscal Analysis Report

During this past fiscal year the City continued to implement its Jurisdictional Runoff Management Program (JRMP) that is available on the City's website (www.imperialbeachca.gov/environment). Part of the City's JRMP includes a storm water cost analysis study with Mikhail Engineer to establish a consistent methodology for calculating storm water program costs (Appendix E of JRMP). The Mikhail fiscal analysis study identifies the various categories of expenditures necessary to implement the requirements of the Storm Water Permit and includes a description of expenditures, staff resources, and funding sources.

The Environmental Programs Division of the Department of Public Works and the Finance Deportment is responsible for compiling the annual fiscal analysis of the storm water program. This current fiscal analysis represents the best estimate for the costs and effort required by the City of Imperial Beach to implement the storm water management program under Permit R9-2013-0001. Implementation expenditures for the JRMP were approximately $1,354,408 during the FY 2015-16 reporting period and primarily funded through the general fund sources. In addition, during the reporting period the City was the lead agency on the San Diego Bay and Tijuana River Water Quality Improvement Plans and managed the implementation of these consultant contracts in the amount of $420,000.

The expenditures for implementation of capital improvement program (CIP) projects get accounted separately. The City had 27 CIP projects either under design or construction during FY 2016 with expenditures made towards the project. All CIP projects include some element of storm water work for the design, construction, and construction management. In addition, the City implemented seven specific CIP projects that had approximately $1,700,000 in expenditures directly related to storm water.

Category of Expenditures

The expenditures for FY 2016 are summarized below in Table 1. The fiscal analysis method does not exactly correspond to the line item budget maintained by the City. The expenditures are therefore an extrapolation that best correspond to the itemized categories as outlined in the Permit. The expenditures for the Tijuana River and San Diego Bay WQIP costs and CIP projects are called out separately. Supporting documentation is also provided in Attachment 1 and Attachment 2.

Table 1 Expenditures on JRMP for FY 2015-16

Administration Tasks	$ 121,342
Development Planning and Construction Management	$ 73,152
Existing Development Management and O&M	$ 1,144,913
Public Education and Participation	$ 15,000
Total	**$ 1,354,408**

*** CIP Expenditures tracked separately from storm water budget.**
FY 2016 expenditures was $1,716,753

- (P15402) Sports Park Tot-Lot (Design): **$1,295**
  The City is including a storm water dry well in the design for the replacement of the Sports Park tot-lot. The rubber playground matting and surface material will drain to a storm water infiltration drywell and infiltrate all storm water onsite. (Funding source from Parks budget)
- (S11106) Bikeway Village Project: **$206,142**
  Public private partnership to rehabilitate old industrial buildings for visitor serving accommodations. Is considered a priority development project and Includes new storm water bioswale. (Funding source from CIP 2010 Bond and ATP Grant)
- (S13309) Elm Ave Street Improvements: **$60,740**
  Street and sidewalk improvements for Mar Vista High School and IB Elementary. Includes a green street element that infiltrates storm water with the use of drywells that capture street runoff from the curb and gutter. (Funding source includes Gas Tax, ATP Grant, transnet, and Sewer Enterprise)
- (S14104) Alley Paving Project Phase 1 and (S16901) Alley Paving Project Phase 2: **$1,375,830**
  The City completed construction of the first phase of dirt alley improvements of over 1 mile of green alleys and initiated the design of the second phase of the project to improve the remaining dirt alleys in the City. (Funding source CIP 2010 Bond)
- (P16302) Bicentennial Triangle Xeriscape: **$4,482**
  Incentive program with Cal American Water for turf removal. (Funding sources include CalAmerican grant and RTCIP)
- (SP1408) Imperial Beach Sea Level Rise Study: **$68,266**
  Completed a Sea Level Rise and adaptation study for the City that includes a hydrologic assessment of the City's storm drain infrastructure and its vulnerability to sea level changes. (Funding sources includes Coastal Conservancy, San Diego Foundation, and General Fund)

FY 2016 Water Quality Improvement Plan Expenditures

- (SP1503) San Diego Bay WQIP: **$131,550**
- (SP1503) Tijuana River WQIP: **$288,283**

Attachment 1

Expenditures by Division for FY 2016

City of Imperial Beach

Storm Water Actual (FY2016)

	Factor	Actual	Budget
Public Works Administration	5%	$ 14,135	$ 14,245
Streets	24%	$ 191,439	$ 197,774
Tidelands	34%	$ 296,204	$ 296,636
Parks	14%	$ 48,378	$ 49,363
Facilities	2%	$ 5,871	$ 6,393
Solid Waste	50%	$ 23,676	$ 24,001
Storm Water	100%	$ 209,211	$ 213,569
Wastewater	10%	$ 379,139	$ 397,433
		$ 1,168,053	$ 1,199,414
Council/Mayor	6%	$ 7,275	$ 7,227
City Manager	6%	$ 27,508	$ 27,917
City Clerk	6%	$ 18,725	$ 19,743
Human Resources	5%	$ 12,541	$ 12,747
City Attorney	6%	$ 8,334	$ 8,309
		$ 74,382	$ 75,943
Planning & Building	10%	$ 73,152	$ 75,945
Code Enforcement	5%	$ 5,995	$ 6,053
City Engineering	included		
		$ 79,147	$ 81,998
Finance	5%	$ 32,825	$ 32,858
		$ 1,354,408	$ 1,390,213

Attachment 2

CIP Project Expenditures for FY 2016

FY2016 CIP Projects Storm Water	Budget	Actual	Storm Water Factor	Total
P15402 : SPORTS PARK TOT-LOT	$ 12,852	$ 12,952	0.1	$ 1,295.19
P16302 : TRIANGLE PARK XERISCAPE L	$ 8,964	$ 8,965	0.5	$ 4,482.38
S13309 : RTIP FY 13-14 ELM AVE ASP	$ 239,090	$ 242,955	0.25	$ 60,738.67
S14104 : ALLEY IMPROV. FY 13-14	$ 1,227,630	$ 1,299,516	1	$ 1,299,516.16
S15702 : BIKEWAY VILLAGE	$ 1,347,108	$ 1,374,280	0.15	$ 206,141.96
S16901 : EIGHT ALLEY PAVING PROJEC	$ 76,313	$ 76,313	1	$ 76,312.91
SP1408 : IB SEA LEVEL RISE STUDY	$ 240,000	$ 273,065	0.25	$ 68,266.37
				$1,716,753.63
Water Quality Improvement Plans				
SP1404 : TIJUANA RIVER WQIP	$ 344,350	$ 339,008	1	$ 288,283.00
SP1503 : SD BAY WQIP FY 16	$ 278,834	$ 131,551	1	$ 131,550.74
				$ 419,833.74

8.3 CITY OF IMPERIAL BEACH STRATEGIES

The City of Imperial Beach (Imperial Beach) is the southernmost jurisdiction in the San Diego Bay WMA. Long term planning for Imperial Beach includes integration of LID and green street concepts into capital improvement projects (CIPs) and other opportunities as they become available. In addition, Imperial Beach requires source control and LID BMPs as conditions on standard development projects greater than $50,000.

Low flow and first flush diversions have been installed within Imperial Beach's MS4 that capture trash and dry weather flows. Imperial Beach's Environmental Division incorporates the underserved community in most education activities, which is particularly important to the City because of the large Spanish-speaking community. Imperial Beach maintains ongoing collaboration with the Fish and Wildlife Service on the cleaning and maintenance of MS4 outfall locations along San Diego Bay. In addition, Imperial Beach collaborates with the Navy on annual inspections and operation and maintenance for the portion of the City's MS4 that drains to a detention basin on Navy property. Imperial Beach also actively participates and partners with multiple agencies and stakeholders in the restoration of South San Diego Bay.

Strategies and implementation schedules, presented in Table 2-8-1, were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the WQIP is updated. The implementation of each strategy is contingent upon annual budget approvals and funding availability.

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Table 8-1
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
JRMP Strategies (E.3.b.(1)(a))								
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
IB-01	Imperial Beach Illicit Discharge Detection and Elimination Program	Refer to JRMP Section 4. This is an ongoing and budgeted JRMP activity. Frequency of implementation is continuous with initial response time by City staff under 1 hour for most IDDE cases. Investigate and eliminate dry weather discharges and illegal connections to the MS4 as reported to the City or identified by staff. Utilize appropriate enforcement actions to achieve compliance. Minimum BMPs provided in Attachment 1 and Attachment 3.	Prior to FY16	YES		NO		YES
IB-04	Dry weather field screening of major MS4 outfalls	Refer to JRMP Section 4. This is an ongoing and budgeted JRMP activity. Perform visual assessment of major MS4 outfalls twice per year to support IDDE efforts and to identify maintenance needs. Minimum BMPs include cleanup of any trash and debris at outfall location post field screening. The TRNERR performs annual maintenance and cleanup at the City's major outfall at 5th and Grove.	Prior to FY16	YES	An additional form was added in FY 15-16 to indicate information addressing the trash data collected at the different outfalls	NO		YES
IB-04a	Persistent dry weather flow monitoring	Refer to JRMP Section 4. This is a new and ongoing budgeted JRMP activity. The Env Division will perform dry weather field screening monitoring at major outfalls with persistent dry weather flows, which is defined as 3 consecutive non-storm water discharges as observed through IB-04. Monitoring results will support IDDE efforts and WQIP priorities.	FY16	YES	No persistent flows in our City	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.3 Development Planning								
Non-Priority Development Projects								
IB-05	Provide storm water BMP conditions during the development review phase for non-Priority Development Projects	Refer to JRMP Section 5. This is an ongoing and budgeted JRMP activity. Administer a program to ensure implementation of source control BMPs to minimize pollutant generation through project design and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible and in accordance to the Imperial Beach BMP Design Manual (IB-07). BMPs are required as conditions of project approval. BMPs include the protection of trash storage areas. Enhanced BMPs are also conditioned through IB-05a for medium sized projects.	FY16	YES		NO		YES
Priority Development Projects (PDPs)								
IB-06	Provide storm water BMP conditions during the development review phase for Priority Development Projects.	Refer to JRMP Section 5. This is an ongoing and budgeted JRMP activity. Priority Development Projects as defined by IBMC requires BMP certification by the City Engineer to meet treatment and retention standards in the Imperial Beach BMP Design Manual (IB-07). Structural BMPs are required as conditions of project approval.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-07	City of Imperial Beach BMP Design Manual	Refer to JRMP Section 5 and IBMC. This is an update to an ongoing JRMP activity. Implement the new BMP design standards applicable to all development and redevelopment projects. PDPs must meet updated treatment and retention standards. The effective date for the new minimum BMP standards for development planning projects is currently scheduled for 12/24/15 and requires an update to the IBMC. Effective date may change pending approval of RWQCB Tentative Order R9-2015-0100. The Imperial Beach BMP Design Manual will be the guiding policy document for minimum BMPs for development and redevelopment projects.	FY16	YES		NO		YES
IB-08	Long-term Structural BMP Maintenance Agreement	Refer to JRMP Section 5. This is an ongoing and budgeted JRMP activity. Frequency is continuous for each applicable development project. Implement a legal agreement, covenant, CEQA mitigation requirement, and/or conditional use permit to ensure long-term maintenance of structural BMPs.	Prior to FY16	YES		NO		YES
IB-10	Structural BMP Maintenance Verification, Database Management, and Inspection	Refer to JRMP Section 5. This is an ongoing and budgeted JRMP activity. The Environmental Division verifies through inspections the long-term maintenance of structural treatment control BMPs at completed PDPs. Frequency of inspections is once per year for BMPs designated as high priority and no less than once per permit cycle for all inventoried BMPs. BMPs are verified for continues operation and maintenance and site inspection include verification of appropriate source control BMPs, which help address the property pollutants of trash and sediment.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
E.4 Construction Management								
IB-14	Approval of a Storm Water Management Plan or equivalent plan for private development projects	Refer to JRMP Section 6. This is an ongoing and budgeted JRMP activity. Private development project applicants must submit and receive approval of a Storm Water Management Plan (or for Construction General Permit a Storm Water Pollution Prevention Plan) prior to receiving a building, grading, or demolition permit. The plan must demonstrate how each project will implement minimum BMPs for the following categories: project planning; housekeeping; non-storm water management; erosion control; sediment control; run-on and run-off control; and active or passive sediment treatment systems. Minimum BMPs provided in Attachment 3.	FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-14a	Inspect and verify implementation of construction management BMPs and maintain a continuous inventory of construction sites and enforcement actions for private development projects	Refer to JRMP Section 6. This is an ongoing and budgeted JRMP activity. The City considers all construction activity a potential high threat to water quality and verifies implementation of minimum BMPs through inspections for the following categories: project planning; housekeeping; non-storm water management; erosion control; sediment control; run-on and run-off control; and active or passive sediment treatment systems. Minimum BMPs provided in Attachment 3. The frequency of inspections at a minimum includes one monthly site inspection. Inspection frequencies also include one initial site inspection at the start of grading or construction activities, drive-by inspections of all active construction sites prior to forecast rain events, and verification of site BMPs during any subsequent building inspection at the project site. The Community Development Department maintains a continuous inventory on the City's HTE database system of active construction sites and notes on enforcement actions.	FY16	YES		NO		YES
IB-15	Approval of a Storm Water Management Plan or equivalent plan for public capital projects	Refer to JRMP Section 6. This is an ongoing and budgeted JRMP activity. Contractors for public development (CIP) projects must submit and receive approval of a Storm Water Management Plan (or for Construction General Permit a Storm Water Pollution Prevention Plan) prior to receiving a notice to proceed. The plan must demonstrate how each project will implement minimum BMPs for the following categories: project planning; housekeeping; non-storm water management; erosion control; sediment control; run-on and run-off control; and active or passive sediment treatment systems. Minimum BMPs provided in Attachment 3.	FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-15a	Inspect and verify implementation of construction management BMPs and maintain a continuous inventory of construction sites and enforcement actions for public development (CIP) projects	Refer to JRMP Section 6. This is an ongoing and budgeted JRMP activity. The City considers all construction activity a potential high threat to water quality and verifies implementation of minimum BMPs through inspections for the following categories: project planning; housekeeping; non-storm water management; erosion control; sediment control; run-on and run-off control; and active or passive sediment treatment systems. Minimum BMPs provided in Attachment 3. The frequency of inspections for implementation occurs daily by the Public Works Inspector that is designated to each project. The Public Works Inspector maintains a continuous inventory of active construction activity and maintains Daily Inspection Reports of enforcement actions.	FY16	YES	City staff performs daily inspections on every active construction sites and a database is maintained for record keeping	NO		YES
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilitates and Areas								
IB-17	Administer a program that requires implementation of minimum BMPs at existing development that covers pollutant generating activities from commercial, residential, and municipal areas (no industrial areas in the City).	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. Frequency of inspections is described below for each category of development. The City currently does not have any industrial areas. The Environmental Division administers this JRMP activity and maintains an annual watershed based inventory of existing development and inspections. Minimum BMPs provided in Attachment 1 and Attachment 2.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-19	Inspect and verify implementation of minimum BMPs for municipal areas and activities	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The responsibility to implement and maintain various municipal BMPs is a task shared by every employee in the Public Works Department. The Environmental Division performs annual training to review minimum BMPs and verifies the implementation of BMPs through an onsite annual inspection at every City owned facility or park. Minimum BMPs provided in Attachment 1.	Prior to FY16	YES		NO		YES
IB-20	Inspect and verify implementation of minimum BMPs for residential areas and commercial facilities	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The Environmental Division performs at a minimum one onsite inspection of each commercial business at least once per permit cycle with no less than 20% of inventoried sites inspected each year. Residential areas receive ongoing JRMP baseline inspections through the IDDE program. Residential and commercial areas also benefit from the enhanced targeted Neighborhood Inspection Program (IB-21), weekly illegal dumping collection (IB-25), annual home front cleanup event (IB-26), and pet waste bag program (IB-27). Minimum BMPs provided in Attachment 2.	Prior to FY16	YES		NO		YES
IB-29	Sewer System Management Program (SSMP)	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The operation and maintenance of the sewer collection system is a top priority and managed in accordance with the City's SSMP. The City jets 100% of its entire sewer collection system annual and inspects and maintains 11 sewer pump stations daily. The City budgets on average $400,000 in sewer CIPs a year. All Public Works staff receives annual training on how to identify and respond to a SSO.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-30	Special Events Permit	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The City provides storm water BMP conditions on every special event permit or conditional use permit. Applicable special event BMPs are the same as Commercial BMPs provided in Attachment 2 and evaluated for each event separately. Examples of special event BMP conditions include prevention of illegal discharges, protection of cooking area, trash and recycling containers, and proper waste management and disposal.	Prior to FY16	YES		NO		YES
IB-31	Residential household hazardous waste program (Incentive Program and Multi-Jurisdiction Program)	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The City partners with the City of Chula Vista and other cities in South Bay to offer free disposal options of HHW for residents. Options include convenient drop off locations, special event drop off, and disabled resident home collection. By incentivizing easy collection of HHW then less material ends up being illegally discharged.	Prior to FY16	YES		NO		YES
MS4 Infrastructure								
IB-32	Catch basin, MS4 line, open channels, and outfalls operation and maintenance	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The City at a minimum inspects and cleans 100% of the City's 92 catch basins, 5-miles of MS4 lines, open channels, and outfalls with a frequency of at least once per year prior to the start of the rainy season. Post rain event inspections may require more frequent cleaning at known areas in the system. Preventative maintenance prevents debris from reaching the receiving waters and ensures full conveyance of storm water system during storm events.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Roads, Streets, and Parking Lots								
IB-24	Street sweeping program	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The City implements an aggressive street sweeping program to target trash, sediment, and debris that collects on the street. The City sweeps a total of 130 curb miles per month, which provides 100% coverage of the entire City at the following sweeping frequencies: Weekly: Commercial areas including open stripped and raised curb medians, Ocean Lane, and parking lots; Twice per month: Beachfront posted residential areas; Monthly: Non-beachfront residential areas and paved alleys;	Prior to FY16	YES		NO		YES
Pesticides, Herbicides, and Fertilizer BMP Program								
IB-28	Pesticide, herbicide, and fertilizer management	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The City and its contractors are required to implement an integrated pest management (IPM) program to address application, storage, disposal, and use of chemical applications. City Council Policy 611 minimizes the use of chemical treatment through IPM strategies. The City also maintains a Unified Program Facility Permit through the County of San Diego. Minimum BMPs provided in Attachment 1.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Retrofit and Rehabilitation in Areas of Existing Development								
IB-34	Perform inspections and provide maintenance to LID BMP facilities installed throughout the City	This is an ongoing and budgeted JRMP activity to maintain various LID BMPs installed by the City. The City or its contractors provide annual maintenance of municipal areas that get retrofit with LID facilities to treat or infiltrate storm water runoff. Maintenance varies according to the select BMP. The following include the list of major retrofit projects in the City: • Bikeway Access Bioswale (February 2014) • Sports Park Crosswalk LID (August 2014) • Palm Ave Eco Bikeway LIDs (December 2013) • Skate Park Bioswale and Infiltration Trench (January 2011) • Alley Infiltration Area (800 block between 10th and 11th) (May 2007) • Emory and Essex storm water retention basin (September 2006) • Beachfront Sidewalk and Street End Permeable Pavers (Multiple) • Baseball Field Permeable Concrete (2003)	Prior to FY16	YES		NO		YES
IB-34b	10th Street Bikeway Access Project (Storm water bioswale and habitat restoration)	The City completed the Bikeway Access project in February 2014 that converted 2.86 acres storage yard for the Public Works Department to a bikeway access spur and trail staging areas to the Bay Shore Bikeway. The project included a bioswale to treat storm water from the Public Works facility and treat flow from the surrounding residential neighborhood. The project also included over 1 acre of native habitat restoration. The City will continue to maintain this new facility in partnership with the FWS who are also completing the adjacent Birder's Point project (IB-54).	Prior to FY16	YES	Provided maintenance to bioswale and native habitat. FWS completed construction on the Birder's Point project.	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-35	Perform inspections and provide maintenance for storm drain inlet filters	This is an ongoing and budgeted JRMP activity to maintain 10 storm drain inlet filters at municipal locations and high trash generating areas. The filters receive quarterly maintenance by a contract company.	Prior to FY16	YES		NO		YES
IB-37	Perform inspection and provide maintenance for the low flow and first flush storm water diverters at Palm Ave and Date Ave and vehicle and equipment washing diverters	This is an ongoing and budgeted JRMP activity. The City maintains 2 major storm water diverters along the beachfront at Palm Ave (installed January 2009) and Date Ave (installed 2004 and refurbished October 2014) that captures and diverts 137 acres of low flow and first flush storm water. The City also maintains 3 vehicle and equipment washing areas (Public Works, Fire Station, and Lifeguards) that are connected to the sanitary sewer. Maintenance frequency is monthly.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-38	Integrate LID retrofits where feasible into CIP rehabilitation projects and partner with local, state and federal agencies to retrofit non-jurisdictional areas	Refer to JRMP Section 7. This is an ongoing and budgeted JRMP activity. The City integrates LIDs into the design phase of CIP projects as discussed in optional strategy IB-13. The City also has a strong working relationship with the US Fish and Wildlife (FWS), Naval Base Coronado, Tijuana River National Estuarine Research Reserve, CA State Parks, Port of San Diego, County of San Diego, South Bay Union School District, and Sweetwater School District, all of which who share jurisdictional authority within the City limit. Successful partnerships among these agencies have resulted in both major and minor retrofit projects that provide significant water quality benefit and enhance wildlife habitat. These projects include: • Napalitano property restoration IB-34a (2002) • 220 acre salt pond restoration in south San Diego Bay (2011) • Mar Vista High School drainage enhancement by Public Works to disconnect impervious drainage channel (2009) • TRNERR bioswale at 3rd and Caspian (2014) • Designation of Pond 20 as mitigation bank (2015) • 55 acre Otay River Flood Plan restoration with River Partners (underway) • 70 acres Otay River Estuary Restoration project (underway)	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-40	Implement LID retrofits in residential and commercial areas where feasible for non-PDP redevelopment projects	Refer to JRMP Section 7 and Section 5. This is an ongoing and budgeted JRMP activity. During the plan check phase the City evaluates non-PDP redevelopment projects for public improvement enhancements, which includes conditions to treat storm water. See strategy IB-05a.	Prior to FY16	YES		NO		YES
E.6 Enforcement Response Plan								
IB-42	Storm water code enforcement	Refer to JRMP Section 8 Enforcement Response Plan. This is an ongoing and budgeted JRMP activity. The City continues to implement escalating enforcement responses to compel with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in accordance with the City's Enforcement Response Plan. The City implements a three level approach for escalating enforcement of storm water violations that include Level 1: Verbal or Written Warnings; Level 2: Administrative Citations; and Level 3: Civil or Criminal Prosecutions.	FY16	YES		NO		YES
E.7 Public Education and Participation (B.3.b.(1)(a)(iii))								
IB-43	Implement a public education and participation program.	Refer to JRMP Section 9. This is an ongoing and budgeted JRMP activity that implements a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and targeted audiences. Specific targeted education BMP activities are described below and in detail in JRMP Section 9.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-44	Provide education opportunities to development community	Refer to JRMP Section 9. This is an ongoing and budgeted JRMP activity that targets the development community. Contractors and developers receive multiple opportunities on storm water education through face-to-face meetings with the Community Development and Public Works Departments during the permitting process, through onsite inspections, and through investigations of illegal discharges. Education brochures are used during the permitting process and during enforcement actions, and web resources are available. The use of LID features in the design of projects is a key water quality improvement strategy that the City encourages for every project. Contracts are also constantly reminded of their responsibility to provide erosion and sediment control on the project site and preventing the discharge of any liquid or material.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-45	Provide education opportunities to municipal departments and personnel	Refer to JRMP Section 9. This is an ongoing and budgeted JRMP activity that targets education of City staff. The Environmental Division provides multiple education opportunities to train municipal staff on the various elements of the storm water management program. Every City employee is trained to identify and report illegal storm water discharges and to implement the proper storm water BMPs during work activities. City staff is also expected to provide superior customer service to the public, which includes providing education on storm water issues. Annual training is provided to the Public Works department to review BMPs and changes to the storm water management program. Storm water management is also a standing issue that gets discussed through multiple interdepartmental meetings which include: monthly code enforcement meetings, weekly development planning meetings, weekly staff meetings, and part of every new employee orientation program.	Prior to FY16	YES		NO		YES
IB-46	Provide education opportunities to commercial businesses	Refer to JRMP Section 9. This is an ongoing and budgeted JRMP activity to target the Imperial Beach businesses community on storm water management. The City provides multiple education opportunities to the local business community which includes: providing a commercial business BMP education brochures during the business license application and annual license renewal, providing education through onsite commercial inspections (IB-20), providing education through IDDE enforcement cases (IB-42), and proving storm water presentations to community groups that include Kiwanis Club and Imperial Beach Chamber of Commerce.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-47	Provide education opportunities to residents, general public, and school children	Refer to JRMP Section 9. This is an ongoing and budgeted JRMP activity to provide storm water education to residents, general public, and school children. Educational information on storm water BMPs is provided on the City's website, through the EDCO quarterly newsletter mailed to residents, printed materials provided at City offices, through community presentations, community events, regional events, through partnerships with NGOs, and various other methods.	Prior to FY16	YES		NO		YES
IB-47a	Support ILACSD watershed presentations to school children as part of the San Diego Bay WMA educational activity	This is a new and ongoing activity that the City is participating in with the San Diego Bay Copermittees in partnership with ILACSD to target annual storm water education presentations to school children. Educational messaging is reviewed annually with ILACSD and customized for the target age group and priority condition and pollutant.	FY16	YES	Amendments were made to the agreement to include database updates of WasteFreeSD.org	NO		YES
IB-47c	Support public participation through community cleanup events	This is a new and ongoing activity to partner in region wide cleanup events to support WMA collaboration. The City supports the annual Creek to Bay and Coastal Cleanup Day. The City also hosts the annual Home Front Cleanup event (IB-26) for Imperial Beach residents. These events raise public awareness on watershed issues and help activate the public to cleanup illegally dumped trash.	FY16	YES		NO		YES
IB-47d	Support the Education and Residential Sources workgroup activities with the San Diego Copermittees	This is an ongoing activity with the San Diego Copermittees to implement a regional education program to more effectively provide regional messaging on priority pollutants. Efforts include community based social marking surveys, targeted messaging through various media, and storm water education at community events. Bacteria, trash, and eliminating dry weather flow are the priority target pollutants.	FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-48	Provide education opportunities to the underserved community	Refer to JRMP Section 9. This is an ongoing and budgeted JRMP activity that ensures educational opportunities are available for both Spanish speaking and lower income residents. The Environmental Division incorporates the underserved community in most educational activities, which is particularly important to the lower income and Spanish speaking community in Imperial Beach. Preventing the discharge of trash and sediment and eliminating dry weather flows are important messages that are shared to the underserved community through community events, in partnerships with NGOs, through school presentations, and a focus of enforcement actions.	Prior to FY16	YES		NO		YES
Non-JRMP Strategies (Optional Strategies, B.3.b.(1)(b))								
Nonstructural								
IB-02	Proactive enforcement of storm water violations and WQIP priority pollutants that enhance baseline IDDE Program efforts	This is a new and budgeted JRMP activity to target WQIP priorities. This activity involves the proactive identification of storm water violations with an emphasis on WQIP priorities of sediment and trash through targeted monthly neighborhood inspections outlined in IB-21. Frequency includes once per week dry-by inspections that cover all sources in each neighborhood section. Minimum BMPs are provided in Attachment 2 and Attachment 3 with specific attention made to priority sources.	FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-04b	MS4 outfall inspection and maintenance program (non-major non-jurisdictional outfalls)	This is a new and budgeted JRMP activity to visually inspect all MS4 outfalls annually (including non-major MS4 outfalls, Caltrans, Navy, and TRNERR) to support IDDE efforts and to identify maintenance needs. Frequency of inspection and any maintenance work is once per year for each outfall. Minimum BMPs include cleanup of any trash and debris at outfall locations post field screening and schedule appropriate follow up maintenance for any scour pond, sedimentation, or vegetation removal. All maintenance activities adjacent to TJ Estuary or SD Bay must be coordinated with FWS and/or TRNERR and performed outside of bird nesting season. Inspections and maintenance activity on Navy property must be coordinated through Navy Public Affairs Liaison.	FY16	YES		NO		YES
IB-13	Implement retrofit of impervious areas, LIDs, and EPA Green Streets guidance in the design phase for Capital Improvement Projects	This is a new and budgeted JRMP activity to consider the retrofit of imperious areas during the initial design phase of CIPs. The City will consider retrofit of impervious areas, LIDs, and EPA Green Streets guidance with the City Engineer in the design phase for all CIPs where feasible, supported by City Council, or required by Priority Development status.	FY16	YES	Completed phase 1 of Green Alleys (IB-53) and received authorization from Council to design Phase 2.	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-21	Neighborhood inspection program	This is a new and budgeted JRMP activity to that allows for focused and targeted inspections by the Environmental Division that are informed by WQIP priorities. Frequency includes once per week dry-by inspections that cover all sources in each neighborhood (residential areas, commercial facilities, and active construction). The City is divided into 6 neighborhoods areas that rotate in priority each month as identified in JRMP Section 7. Minimum BMPs are provided in Attachment 2 and Attachment 3 with specific attention made to the highest priority pollutant of trash and sediment. Program will be evaluated at the end of Permit term for effectiveness.	FY16	YES	Weekly inspections through all the City	NO		YES
IB-25	Collection of illegally dumped material in alleys and public right-of-way	This is an enhanced and budgeted JRMP activity that allows for focused and targeted collection of trash generated by illegal dumping in the public right-of-way and City alleys. Illegally dumped materials observed by City staff or reported by the public in City alleys get inventoried and cleaned up weekly every Thursday by EDCO. Illegally dumped material observed or reported in the public right-of-way get collected at the end of the day by Public Works crew.	FY16	YES	A weekly list is sent out to EDCO to remove illegally dump items in the alleys	NO		YES
IB-26	Home front cleanup event (Incentive Program)	This is an ongoing and budgeted JRMP activity. This free event is an incentive for IB residents and provides a convenient opportunity to dispose or recycle large bulky items or green waste. The City partners with EDCO for this important community activity that also provides an opportunity to dispose e-waste, shred important documents, pickup free mulch for ground cover, and provide education materials. The event occurs annually on the first Saturday in May.	Prior to FY16	YES	159.48 Total Tons collected and 42.91Total Tons diverted	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-27	Pet waste bag program (Incentive Program)	This is an ongoing and budgeted JRMP activity. The City currently maintains 10 pet waste bag dispensers twice per week. The City would like a local community group or non-profit to manage the pet waste bag program, which was previously run by a local group form 1999-2013 and supported through the City's community grant program. The City will continue to implement the pet waste bag program until a community group is identified to take back over the program. The pet waste bag program is important to residents and also helps control a known bacterial source.	Prior to FY16	YES	One pet waste bag dispenser added during FY 15-16 on Seacoast Drive. Also, a second location will be added at Teeple Park on Florida St.	NO		YES
IB-62	EDCO Community Grant Program (Incentive Program)	This is an ongoing and budgeted activity. The City partners with EDCO to provide $5,000 in local community grants per year to local organizations to help improve the community. Examples of include support for a community let pet waste bag program, support for education and outreach through local NGOs, and programs that encourage community involvement. City Council review grant applications and present the grant awards.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-64	Cal American Water Rebate Programs (Incentive Program)	Cal American provides drinking water to the City and also offers rebate programs for water conservation efforts including turf replacements and LID gardens for residents. The City also partners with Cal American and independently funds local community groups (Boy Scouts Eagle Projects) to install local turf replacement projects on City property. Recent projects include: • City Hall xeriscape (2010) • Marina Vista Center (2010) • Sewer Pump Station 8 (2011) • Elm Ave Planters (2013) • Safety Center Planters (2013) • Public Works xeriscape (2015) • Sports Park planters (2015) • Sheriff's Station City Hall (2015) • Triangle Park (2015- under design)	Prior to FY16	YES	Triangle Park (Bicentennial Triangle) project completed concept designs and received Council approval to complete engineering and landscape plans.	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Structural								
Green Infrastructure								
IB-53	Implement improvements to dirt alleys in the City	This is a new and partially budgeted activity to make improvements to the approximate 2 miles of unimproved dirt alleys in the City that contribute sediment and other storm water pollutants during rain events. The City budgeted for FY 16 to complete the design and construction for the first phase of alley improvements for 14 alley segments (over 1 mile of dirt alleys) that target the highest priority areas in the City. These new alleys will include permeable pavers and storm water retention to provide additional water quality benefit. The second phase of the alley improvements to pave the last remaining dirt alleys is unfunded but is considered a priority by the community. The availability of future grant funds, the establishment of an assessment district, or similar funding mechanisms could trigger the second phase of this project to occur sooner. Otherwise the improvement of the remaining dirt alleys will be improved incrementally over time as funding becomes available. This activity specifically targets the highest priority pollutant of sediment during wet weather in the Tijuana River WMA. This project also targets trash in the San Diego Bay WMA because the City takes over ownership and maintenance of the alleys (IB-24, IB-25) once an alley is improved.	FY16-FY28	YES	Phase one of the project started during FY15-16 with a retrofit of 1 mile of green alleys. The retrofit includes permeable concrete, storm water retention, and dry wells that provide multiple water quality benefits.	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-58	Implement the Bikeway Village redevelopment project on 13th Street and Bayshore Bikeway	This is a new and budgeted public private partnership to redevelop existing industrial warehouses adjacent to the Bayshore Bikeway on 13th Street. This project includes a new storm water bioswale and wildlife habitat restoration as part of the new development. In addition, the City is providing bikeway and pedestrian improvements along 13th Street. The City is providing funds towards biking and pedestrian improvements and supporting the Bikeway Village redevelopment project. The project is already designed and the City has dedicated funding for its share of the project. Triggers include meeting Coastal Commission conditions, securing permitting for project, implementing a successful partnership with the developer, and phasing of multiple elements of this project. The benefits of the project include increasing public access to the Bayshore Bikeway, enhanced wildlife viewing of south San Diego Bay, improved storm water treatment from older industrial warehouses, and improved biking and pedestrian safety on 13th Street.	FY16 – FY22	YES	Construction on the Bikeway Village Redevelopment project started during FY 15-16.	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-61	Palm Ave (Hwy 75) Master Plan	This is a new and partially budgeted activity to redevelop the Hwy 75 commercial corridor along Palm Ave. The City has funded with the support of a grant the first phase of the project to hold a series of community and city council workshops and develop design options. The grant includes preliminary designs sufficient for environmental review. Goals of the project are to enhance safety and to encourage new commercial redevelopment in the area. The project also proposes LID facilities similar to the Eco Bike Route. Potential triggers on the project include design limitations from Caltrans and the possible relinquishment of Hwy 75, community and council support, availability of grant funds for the next project phase, and regional support for the project. If successful, the project will implement green streets along Palm Ave and provide a water quality benefit to the San Diego Bay WMA. A secondary benefit would also come from the redevelopment of the older commercial buildings along Hwy 75.	FY16 – FY26+	YES	City completed the 30% designs for the Palm Ave Master Plan Project with grant support through SANDAG Smart Growth Incentive Program. The City also received a second Smart Growth Incentive grant to complete the 100% designs for the western section of the Palm Ave Master Plan project, which will include significant green street elements in the design.	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-65	Imperial Beach Green Streets Program	This is a new and budgeted activity in the City's JRMP program to implement EPA Green Streets guidance and LIDs into the design of CIP projects where feasible. See Strategy IB-13. The City Engineer will consider the retrofit of existing impervious areas through the CIP program and consider options to include LIDs and EPA Green Street guidance into the initial design of projects. Green streets and pollutant source control measures will be included into new CIP projects where feasible given the following triggers: the availability of funds, support from the community, support from City council, where it fits within the scope of the CIP project, and where otherwise required to meet WQIP goals. The City is committed to implementing water quality improvement BMPs for CIP projects that achieve multiple benefits.	FY16-FY28+	YES	Green street elements were included in the Palm Ave Master Plan (IB-61) and Alley Improvements Phase 1 (IB-53)	NO		YES
Multiuse Treatment Area								
Stream, Channel and Habitat Rehabilitation Projects (B.3.b.(1)(b)(iii))								
IB-69	Implementation of stream channel and habitat rehabilitation projects	This is an ongoing and budgeted activity for the following strategies: IB-12, IB-34b, IB-38, IB-54, and IB-58. The City actively seeks projects to retrofit the MS4 system to provide natural treatment of storm water and provide rehabilitation of native habitat. Additional stream channel and habitat restoration projects are contingent upon existing partnerships in the watershed moving specific projects forward based on priorities in the region including triggers for not meeting WQIP priority conditions. The City also partners with local, state, and federal agencies on wetland restoration projects for south San Diego Bay.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Water Quality Improvement BMPs								
Source Control and LID BMPs								
IB-05a	Provide enhanced storm water BMP conditions for non-PDP (Standard Development Projects) with improvement valuation greater than $50,000	This is an ongoing and budgeted activity that provides a 2-step review process to provide enhanced storm water BMP conditions for Standard Development Projects with an improvement valuation greater than $50,000. Applicable projects require an additional review by the Public Works Department for public improvements that include specific project conditions for storm water. BMP conditions typically include at a minimum the disconnection of impervious areas, 12-inches of loamy soil improvement for landscaped areas, designated trash storage area, and LIDs where feasible.	Prior to FY16	YES		NO		YES
IB-39	Eliminate residential and commercial curb cuts	This is an ongoing and budgeted JRMP activity to eliminate curb cuts from residential and commercial areas from older development projects. Curb cuts are eliminated through either permit conditions on new development or when the City has a designated street improvement CIP adjacent to the property. Storm water is required to be directed to landscaped areas.	Prior to FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-63	Implement full trash capture or equivalent for H-outfall drainage basin	This is an ongoing and partially budgeted activity to provide full trash capture for the H-outfall drainage basin that discharges to the San Diego Bay WMA. H-outfall is the City's primary drainage basin to the San Diego Bay WMA and includes commercial areas, residential land uses, and runoff from Hwy 75. Triggers include completion of a Trash Capture Study to determine the most effective BMPs to implement that both prevents the discharge of trash and mitigates flooding issues for low laying areas. Funds are budgeted for FY16 to complete an initial feasibility study.	FY16 – FY28	YES	Multiple studies were completed to evaluate options for full trash capture.	NO		YES (If funds are available)
WMA Strategies (Optional Strategies, B.3.b.(2))								
IB-12	Offsite Alternative Compliance Program and Watershed Management Area Analysis (WMAA)	This is a new and ongoing activity that the City is participating in with the Regional Copermittees and in each WMA. Funding and resources are budgeted to develop of a regional WMAA and an alternative compliance program framework that needs to be approved by the RWQCB. The implantation of an offsite alternative compliance program at a jurisdictional, watershed, or regional level will be evaluated as the program develops and supported by City Council. The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and hydromodification management criteria for new development projects.	FY16	YES		NO		YES
IB-43b	San Diego Bay Watershed Education Programs	This is an ongoing collaborative activity that the City is participating with other Copermittees to support the efforts to address trash, sediment, and water quality issues in the San Diego Bay WMA through education activities. See strategies IB-47a, IB-47c, and IB-47d.	FY16	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-54	Implement wetland restoration, habitat restoration, and public access improvements along San Diego Bay to support multiple benefits in the San Diego Bay WMA through public private-partnerships and partnerships with other state, federal, and local agencies	This is an ongoing and partially budgeted activity that includes multiple development projects and restoration projects along San Diego Bay. The City's Bikeway Access Project (IB-34b) is the City's portion of the larger FWS Birder's Point project to build a walking trail and overlook observation decks to view the recently completed Salt Pond wetland restoration projects. The City is also supportive of the ongoing and planned restoration projects in San Diego Bay and the Otay River flood channel (IB-38). The City's public-private partnership with the Bikeway Village Project at the end of 13th Street (IB-58) also builds upon the successful restoration efforts along San Diego Bay for eco-tourism. The Port of San Diego's recent decision in 2015 to turn Pond 20 into a new wetland mitigation bank also provides a new opportunity for collaborate that will evolve over the Permit term. The successful implementation of projects from partnerships in San Diego Bay WMA will likely result in additional water quality improvement strategies being added to this list.	FY16	YES	FWS Birder's Point started construction	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-56	Update the SCCOOS Tijuana River Plume Tracking model	This is an ongoing collaborative activity that the City is partnering with Scripps and other agencies to better understand the science on how pollution transport from Mexico is impacting beach water quality from Imperial Beach to Coronado. Scripps will be performing a pollution transport study in Fall 2015 to track the northward mixing of near shore and offshore currents that can then be used to update the existing SCCOOS plume tracking model currently used by the IB Lifeguards and County DEH to protect public health. Funding is still needed to update the plume tracking model with the pending results of the 2015 Scripps study. Understanding the transport of pollution from the known point sources of the Tijuana River, IBWC ocean outfall, Punta Bandera, and other sources in Mexico will allow the County DEH to more effectively respond to water quality conditions and help prioritize actions that will support the collaborative efforts in IB-55.	FY16	YES	Scripps successfully completed 3 dye release events. Preliminary results highlight the need to update the Plume Tracking Model. The City met with RWQCB, EPA, and IBWC to seek funding to update the plume tracker. Funding is still needed.	NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-60	Support development of rapid bacteria testing for beach water quality monitoring	This is a new and ongoing collaborative activity in the region to develop rapid beach water quality testing to allow for more accurate and effective response to protect beach water quality. The development of rapid monitoring methods are currently being developed by SCCWRP and evaluated by the County DEH for implementation along San Diego County beaches. Imperial Beach is an ideal location to test pilot rapid qPCR bacteria monitoring if the method proves successful. Triggers include development of qPCR method, availability of funding, and support form County DEH. Rapid response to beach water quality could allow for quicker response to water quality issues along imperial Beach and also raise public awareness on the complex cross border water quality issues.	FY16	YES	County DEH completed an assessment of qPCR along the Imperial Beach shoreline. The City and IB Lifeguards continue to work closely with County DEH on the use of qPCR. More funding is necessary for the County DEH to fully implement qPCR.	NO		YES
IB-66	San Diego Bay Trash Study	The City of Imperial Beach is participating in the San Diego Bay Trash Study with WMA Copermittees. The study will assess targeted geographic areas and include (1) an assessment of current conditions to provide a baseline to demonstrate progress, (2) identify high-priority areas for targeted strategy implementation, and (3) identification of potentially collaborative efforts with different jurisdictions.	Prior to FY16 – FY19	YES		NO		YES
IB-67	Special Study: Participation in the San Diego Regional Reference Stream Study	This is an ongoing and budgeted collaborative activity with the San Diego Copermittees to develop numeric targets for minimally disturbed or "reference" condition for bacteria and other pollutants.	Prior to FY16 – FY17	YES		NO		YES

Table 8-1 (continued)
City of Imperial Beach's Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Proposed Modifications				
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
IB-68	Support regional effort to address trash and other water quality issues from homeless encampments	This activity is currently not developed or funded. If a regional social services effort is established then the City will support the effort to provide sanitation and trash management for persons experiencing homelessness and determine if the program is suitable and appropriate for Imperial Beach. Triggers include the establishment of a regional effort to address homelessness, city council support, availability of funds or staff resources, and community support.	Must be Triggered	Not triggered during current FY		NO		Must be triggered

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8.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The Imperial Beach BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The Imperial Beach updated its BMP Design Manual in accordance with Municipal Permit requirements during FY16; the BMP Design Manual replaced the Standard Urban Storm Water Mitigation Plan (SUSMP). No additional changes to the BMP Design Manual have been made since it went into effect. The Imperial Beach BMP Design Manual can be accessed via the Project Clean Water website at: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=244&Itemid=212.

8.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

No modifications to the Imperial Beach JRMP have been made since the WQIP was approved in spring 2016. The current City of Imperial Beach JRMP is posted on the City's website, and the link to this page is listed on Project Clean Water.

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9 CITY OF LA MESA

9.1 ANNUAL REPORT CERTIFICATIONS

The City of La Mesa's signed Statement of Certification and Legal Authority Establishment for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report is included on the following page.

CITY OF
LA MESA
JEWEL of the HILLS

PUBLIC WORKS DEPARTMENT

SAN DIEGO BAY WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the City of La Mesa has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 3rd day of January 2017, at the City of La Mesa.

Leon Firsht
Acting Director of Public Works/City Engineer
City of La Mesa

1/3/17
Date

9.2 ANNUAL REPORT FORM

The City of La Mesa has modified the industrial commercial inspection program in order to increase efficiency and maximize the number of businesses inspected during the program year. The new format allows inspectors to conduct more inspections in a faster manner, resulting in more frequent compliance checks.

The City's BMP Manual and municipal code have been updated to reflect the required changes in development regulations as related to storm water.

The City of Imperial Beach's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016 SAN DIEGO BAY WATERSHED

I. COPERMITTEE INFORMATION			
Copermittee Name: City of La Mesa			
Copermittee Primary Contact Name: Joe Kuhn, Storm Water Program Manager			
Copermittee Primary Contact Information: Address: 8130 Allison Ave. City: La Mesa	County: San Diego	State: CA	Zip: 91942
Telephone: 619.667.1340	Fax: 619.667.1380	Email: jkuhn@ci.la-mesa.ca.us	

II. LEGAL AUTHORITY		
Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES NO	X
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES NO	X

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE		
Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES NO	X
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES NO	X

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM		
Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES NO	X

Number of non-storm water discharges reported by the public	9
Number of non-storm water discharges detected by Copermittee staff or contractors	4
Number of non-storm water discharges investigated by the Copermittee	12
Number of sources of non-storm water discharges identified	12
Number of non-storm water discharges eliminated	7
Number of sources of illicit discharges or connections identified	4
Number of illicit discharges or connections eliminated	3
Number of enforcement actions issued	3
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM		
Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES NO	X
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES NO	X
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES NO	X

Number of proposed development projects in review	4
Number of Priority Development Projects in review	4
Number of Priority Development Projects approved	1
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	1

Number of completed Priority Development Projects in inventory	14
Number of high priority Priority Development Project structural BMP inspections	14
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued (For not returning form by deadline)	4
Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2014-2015

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]

Number of construction sites in inventory	15
Number of active construction sites in inventory	15
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	6
Number of construction site inspections	28
Number of construction site violations	4
Number of enforcement actions issued	4
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	32	133	1	0
Number of existing development inspections	9	133	1	0
Number of follow-up inspections	0	5	0	0
Number of violations *Includes corrective actions	0	2	0	0
Number of enforcement actions issued	0	2	0	0
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]

X. CERTIFICATION

I [[ ] Principal Executive Officer [ ] Ranking Elected Official [X] Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Date 10/5/16
Gregory P. Humora	Director of Public Works/City Engineer
Print Name	Title
619.667.1146	ghumora@ci.la-mesa.ca.us
Telephone Number	Email

FISCAL ANALYSIS

The City's Sanitation Fund provides most of the funding for the Storm Water Program. There have not been any changes to this funding mechanism during this reporting period. During 2009/2010, a fiscal analysis reporting template was developed collectively by the Copermittees. The City has used this template to report the 2015/2016 expenditures and funding sources in this JURMP Annual Report.

San Diego County Copermittees Fiscal Analysis Report for Urban Runoff Management Programs

EXPENDITURE SUMMARY

JURISDICTIONAL COMPONENTS	
Administration	$64,159
Development Planning	$14,393
Construction	$30,342
Municipal	$3,892
Industrial and Commercial	$71,155
Residential	$957
IDDE	$45,038
Education/Public Participation	$8,793
Special Investigations	$0
Non-Emergency Firefighting	$0
Jurisdictional Total	**$238,733**

WATERSHED	
Watershed 1 – San Diego River	$52.533
Watershed 2 – San Diego Bay	$49,171
Watershed Total	**$101,705**

REGIONAL	
Annual Permit Fee to Regional Board	$17,171
Copermittee Cost Share of Regional Budget	$29,308
Regional Total	**$46,479**

TOTAL COSTS	$386,917

FUND SUMMARY

FUNDING BY SOURCE	
General Fund	$7,474
Storm Water Fee	$0
Permit Fees	$0
Developer Deposits and Fees	$23,285
Registration and Inspection Fees	$18,550
Flood Control Fees	$0
Franchise Fees	$0
Gas Tax	$0
Utility Tax	$0
Road Fund	$0
Enterprise Funds	$252,308
Trust Funds	$0
Special Assessment Districts	$0
State Appropriated Funds	$0
Grant Funds	$0
Other	$0
Total	**$301,617**

ONE-TIME FUNDING	
Grants	$0
Donations	$0
Total	**$0**

TOTAL FUNDING	$301,617

Watershed Program

	Watershed 1 – San Diego River	Watershed 2 – San Diego Bay
Administration (1)	$4,786	$14,358
Cost Share	$47,947	$34,813
Watershed Activities	$0	$0
Other	$0	$0
TOTAL	**$52,733**	**$49,171**

(1) Administration – includes Watershed strategic planning, management, mapping, assessment, and reporting

Permit Requirements for Fiscal Analysis

1. Identification of the various categories of expenditures necessary to implement the requirements of this Order; including a description of the specific capital, operation and maintenance, and other expenditures items to be accounted for in each category of expenditures.

See page 1 of fiscal analysis. Watershed costs include costs for development of required submittal.

2. The staff resources needed and allocated to meet the requirements of this Order, including any development, implementation, and enforcement activities required.

Staff resources include:

(1) Storm Water Program Manager and (1) Engineering Technician II dedicated to the storm water protection program. These two employees complete the vast majority of the work associated with the Order. The City also has two local consulting firms who specialize in storm water management under As-Needed contract.

The City also has (1) Engineering Project Manager, and (1) Public Works Inspector II who is part time desiccated to storm water protection. Other City staff including (1) Associate Engineers, (1) Engineering Technician II, (1) Code Compliance Officer and several field public works operation staff may be utilized on an as needed basis for storm water tasks.

3. The estimated expenditures for Provisions E.8.b (1) and E.8.b (2) for the current fiscal year,

See expenditure summary on Page 1. Costs are anticipated to increase over the future fiscal years, and funding estimates will coincide with the development of the WQIP for the City's Watersheds, and the development of the City's new JURMP.

4. The sources of funds that are provided to meet the necessary expenditures described in Provisions E.8.b.(1) and E.8.b.(2), including legal restrictions on the use of such funds, for the current fiscal year and next fiscal year.

See funding summary on Page 2. Funding source is projected to remain similar next fiscal year.

9.3 CITY OF LA MESA STRATEGIES

The City of La Mesa (La Mesa) is located in the hills of San Diego County with walkable, tree-lined neighborhoods and retail and commercial areas. La Mesa has received funding to implement green infrastructure along a busy corridor of University Avenue. Other strategies to improve water quality include enhancing MS4 infrastructure maintenance and promoting water efficient landscape BMPs. Strategies and implementation schedules, presented in Table 2-9-1, were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. In Chollas Creek, a compliance analysis using a watershed model was conducted to identify the strategies required to be implemented to meet final goals. The strategies and implementation schedules identified demonstrate that numeric goals are met. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the compliance analysis is updated as needed to provide assurance that numeric goals are met.

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Table 9-1
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Jurisdictional Strategies									
Development Planning									
All Development Projects									
LM-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	Triggered upon pulling of building permit.	Prior to FY16	Yes	Yes	Completed within 2016 La Mesa BMP Manual Update	None	N/A	Yes
LM-2	Amend municipal code and ordinances to require LID implementation.	La Mesa has amended ordinances for dry weather component and per new BMP Manual.	FY15	Yes	Yes	Code Updated, Ord. 2015-2840	None	N/A	Yes
LM-3	Train staff on LID regulatory changes and LID Design Manual.	The City shall perform training related to water quality design for CIPs in Q4 2015.	FY15	Yes	Yes	Training Event Completed March 4, 2016	None	N/A	Yes
Priority Development Projects (PDPs)									
LM-4	For PDPs, administer a program requiring implementation of structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Trigger is private project application and PDP status.	Prior to FY16	Yes	Yes	Completed within 2016 La Mesa BMP Manual Update	None	N/A	Yes
	1. Administer self-certification program for treatment control BMP compliance.	La Mesa has a program in place. Continue to add projects as they are constructed.	Prior to FY16	Yes	Yes	Program continues to add projects each year.	None	N/A	Yes
LM-5	Update BMP Design Manual procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	The City will update its BMP Design Manual to comply with approved Regional Manual, and MS4 Permit.	Prior to FY16	Yes	Yes	Completed, with Ord. Update 2015-2840	None	N/A	Yes
	1. Amend BMP Design Manual for trash areas. Require full four-sided enclosure, siting away from storm drains and cover. Consider the retrofit requirement.	La Mesa will amend the BMP Design Manual for trash areas, and implement where feasible.	FY16	Yes	Yes	Amended within 2016 BMP Manual Update	None	N/A	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
LM-5 (cont)	2. Amend BMP Design Manual for mobile businesses.	Businesses are required to read and sign a storm water affidavit and comply with rules in order to receive a permit.	Prior to FY16	Yes	Yes	Any mobile detailing business which wants to obtain a business license shall complete the storm water affidavit.	No	N/A	Yes
LM-6	Administer an alternative compliance program to on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects).	The City will implement an alternative compliance program to meet City and Developer needs and to fund city CIP restoration style/LID projects.	FY18	N/A	N/A	N/A	No	N/A	N/A
Construction Management									
LM-7	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	The City currently implements this program. During wet season, high priority areas are inspected every two weeks, medium areas are inspected monthly, and low priority areas are inspected once per rainy season.	Prior to FY16	Yes	Yes	The construction inspection program is ongoing and is outlined in the City's JURMP.	No	N/A	Yes
Existing Development									
Commercial, Industrial, Municipal, and Residential Facilities and Areas									
LM-8	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	All facilities are inspected at least annually. Many areas are inspected several times per year.	Prior to FY16	Yes	Yes	Commercial/Industrial, Municipal, and Industrial program was developed and is administered per the City's JURMP.	No	N/A	Yes
	1. Update minimum BMPs for existing residential, commercial, and industrial development.	The City will update minimum BMPs during JRMP update to include a new residential program. In addition, outdoor exposure will trigger action for BMPs.	Prior to FY16	Yes	Yes	BMPs were updated as part of Ordinance Revision 2015-2840	No	N/A	Yes
	2. Design, implement, and enforce property based inspections.	La Mesa has implemented property based inspections. Each business will be inspected at least once a year, and high priority areas will be inspected more than once.	FY15	Yes	Yes	Property based inspections were implemented as part of the City's JURMP Update in 2015.	No	N/A	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
LM-8 (cont)	3. Increase inspection for highest pollutant potential businesses.	The City will increase inspections based on effectiveness of new program. It currently has FOG inspections for restaurants and will prioritize auto-related facilities within Chollas. Every business is inspected every year.	FY15	Yes	Yes	No update.	No	N/A	Yes
	4. Provide BMP factsheet to water-using mobile businesses when business license is granted, and require minimum BMPs for mobile businesses.	Trigger is the application for a business license.	Prior to FY16	Yes	Yes	Any mobile detailing business which wants to obtain a business license shall complete the storm water affidavit, and will receive factsheet.	No	N/A	Yes
	5. Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	La Mesa will update swimming pool items per changes in code.	FY15						
	6. Require sweeping and maintenance of private roads and parking lots in targeted areas based on inspection results and follow up.	Optional.	Trigger (upon need)	No	No		Yes. Re-worded strategy to clarify that this pertains to the inspection process.	No	No
	7. Implement Water Efficient Landscape Ordinance.	The City already has a State mandated landscape ordinance.	Prior to FY16	Yes	Yes	Completed prior to 2015.	No	N/A	Yes
LM-9	Implement pet waste program. May include installation and maintenance of pet waste bag dispensers and trash bins, signage and education, and physical removal of pet waste.	La Mesa has a preexisting pet waste program.	Prior to FY16	Yes	Yes	Pet waste bags are stationed in La Mesa Parks	No	N/A	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
LM-10	Promote and encourage implementation of designated BMPs at residential areas.		Prior to FY16						
	1. Expand residential BMP programs to multi-family housing in target areas.	La Mesa will potentially collaborate with HOAs for rebates, inspection reduction programs, and more.	Prior to FY16	No	No	Not administered in FY 16.	Yes. Re-worded.	None	Unknown
	2. Promote and collaborate with water agencies and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	La Mesa will collaborate with Helix Water District on rebate programs, via promotion on website.	Prior to FY16	Yes	Yes	Helix water coordinates the programs.	No	N/A	Yes
	3. Implement Residential BMP: Rain Barrel	The City already has been implementing rain barrels via Helix Water.	Prior to FY16	Yes	Yes	The work is done by Helix Water.	No	N/A	Yes
LM-11	Promote and encourage implementation of designated BMPs in non-residential areas.	La Mesa will work with Helix Water District. There will be dry weather benefits.	Prior to FY16	Yes	Yes	City promotes BMPs during the development process for non-residential areas.	No	N/A	Yes
LM-12	Implement program to investigate illegal grading on private property.	The City investigates illegal grading based on reports to code compliance and Public Works.	Prior to FY16	Yes	Yes	The City's Public Works Dept. actively investigated illegal grading consistently throughout the City.	No	N/A	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
MS4 Infrastructure									
LM-13	Implement operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.) for water quality improvement and flood control.	At least once annually, and high priority areas with added frequency.	Prior to FY16	Yes	Yes	Maintained at least annually.	No	N/A	Yes
	1. Optimize catch basin cleaning to maximize pollutant removal.	La Mesa has 455 catch basins in the Chollas Creek watershed. Current frequency is at least once per year per year. The City is transitioning to Cartagraph Software to optimize the cleaning schedules.	FY18	Yes	Yes		Yes. Approach re-worded.	No	No
	2. Repair MS4 components to provide source control from MS4 infrastructure.	The City repairs MS4 components as needed based on condition assessment and prioritization process.	Prior to FY16	Yes	Yes	The City continuously programs CIP projects to repair storm drain infrastructure.	No	N/A	Yes
LM-14	Identify sewer leaks and areas for sewer pipe replacement prioritization.	La Mesa replaces as needed based on sewer condition assessment and long-term prioritization.	Prior to FY16	Yes	Yes	The City continuously programs CIP projects to repair wastewater infrastructure.	No	N/A	Yes
	1. Replace pipes as needed in Chollas watershed.	La Mesa currently is performing trunk main pipe replacements. One project is occurring at University and Massachusetts Avenues.	FY17	Yes	No	The project has completed the design/permitting phase and is slated for completion in FY 2016-2017.	No	No	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Roads, Street, and Parking Lots									
LM-15	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways	The City has a preexisting street sweeping schedule that is prioritized by area.	Prior to FY16	Yes	Yes	Ongoing	No	N/A	Yes
	1. Perform street sweeping in roads, parking lots, and medians on high-volume arterial roadways.	High traffic and arterial areas are swept once a week, other arterial areas are swept every other week, and residential areas are swept once a month. Parking lots and medians are included in street sweeping program.	Prior to FY16	Yes	Yes	Ongoing	No	N/A	Yes
	2. Enhance street sweeping through equipment replacement (replace every 4 years) and route optimization (sweep commercial routes bi-weekly and residential every other month)	Street sweeping is contracted out, and the contractor uses Regen Air sweepers. The City plans to increase frequency in high traffic areas in Chollas to two times a week.	FY18	N/A	N/A	N/A	No	N/A	No
Pesticide, Herbicides, and Fertilizer BMP Program									
LM-16	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, and municipal properties. Includes education, permits, and certifications.	The City does not have authority over application of pesticides but will implement BMPs. Industrial and commercial inspections cover requirement, and Parks and Rec implement municipal program.	Prior to FY16	Yes	Yes	Ongoing Program	No	N/A	Yes
Retrofit and Rehabilitation in Areas of Existing Development									
LM-17	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	La Mesa will target municipal areas.	FY16	Yes	Yes	Areas have been identified for retrofit, and projects are in construction.	No	N/A	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
LM-18	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Potential stream, channel, or habitat rehabilitation projects will be selected based upon a variety of factors including the reasonable access of a project (right of way, hydrologic factors), areas existing stream or habitat degradation, multiple benefits of the project, and feasibility of implementation. Projects can arise as part of the Offsite Alternative Compliance Program. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards. Grant funding can be utilized as available.	Various	Continuous – Ongoing	Yes	Ongoing	No	N/A	Yes
Illicit Discharge, Detection, and Elimination (IDDE) Program									
LM-19	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.		Prior to FY16	Yes	Yes	Ongoing	No	N/A	Yes
	1. Develop and implement approaches to address the impacts of septic systems within the watershed	City shall maintain a map of septic locations, and forward all concerns to the appropriate agency.	FY 16	No	No		Yes. Re-warded for clarity.	Unknown	Unknown
	2. Develop and implement approaches to address the impacts of homeless activities within the watershed.	Addresses Bacteria caused by homeless.	FY 17	N/A	N/A	Not addressed yet.	No	N/A	Unknown

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Public Education and Participation									
LM-20	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.		Prior to FY16	Yes	Yes	Ongoing	No	N/A	Yes
	1. Conduct trash cleanups through community-based organizations involving target audiences.	La Mesa works with "I Love a Clean San Diego" and holds two major cleanups in each watershed per year. The City will possibly work with Groundworks Chollas or other NGOs. Private cleanups are conducted through code enforcement.	Prior to FY16	Yes	Yes	City conducts cleanups at least biannually.	No	N/A	Yes
	2. Review City storm water website and identify and implement required updates to reflect WQIP and JRMP revisions.	The City will update the website to include new permit information, such as for irrigation.	FY15	Yes	Yes	The City has updated the website with new JURMP and BMP information.	No	N/A	Yes
	3. Target human behavior in parks and other public areas including trash reduction or other high impact behavior to habitat, wildlife, and water quality.	Six kiosks have been built in parks in collaboration with Eagle Scouts and other community groups. Information on trash and other public issues can be included in these kiosks. La Mesa plans to build more storm water kiosks as partners are available.	Prior to FY16	Yes	Yes	Kiosks are maintained periodically.	No	N/A	Yes
	4. Enhance school and recreation-based education and outreach.	"I Love a Clean San Diego" presents in schools.	Prior to FY16	Yes	Yes	City contracts high school presentations every year through Helix High School.	No	N/A	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
LM-20 (cont)	5. Continue to support the Environmental Sustainability Commission (ESC), a committee of local residents and business owners working to preserve La Mesa's environment.	The ESC manages the Environmental Awareness Festival, serves as an advisory body to the City Council on how actions and policies of the City may preserve and enhance the quality of La Mesa's environment, and addresses the effects of climate change and assists in the identification of measures that will improve environmental sustainability in La Mesa and the region.	Prior to FY16	Yes	Yes		No	N/A	Yes
	6. Collaborate with regional education and outreach efforts.	La Mesa collaborates on regional efforts conducted by the Education Workgroup.	Prior to FY16	Yes	Yes	City continuously collaborates with other jurisdictions on regional outreach efforts.	No	N/A	Yes
	7. Develop education and outreach to reduce over-irrigation.	If over irrigation is reported, contact is made via a compliance letter.	FY16	Yes	Yes	Done through Helix Water District	No	N/A	Yes
LM-21	Provide technical education and outreach to the development community on the design and implementation requirements of the Municipal Permit and WQIP requirements.	This will be done regionally and as needed or requested within the City.	FY14	Yes	Yes	Completed.	No	N/A	N/A
Enforcement Response Plan									
LM-22	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Enforcement program consists of warning, NOV, and citation.	Prior to FY16	Yes	Yes	Enforcement plan is complete.	No	N/A	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Additional Nonstructural Strategies									
LM-23	Continue participating in source reduction initiatives.	La Mesa will continue to participate in source reduction initiatives.	Prior to FY16	Yes	Yes	City continues to participate in source reduction activities.	No	N/A	Yes
	1. Replace City-owned vehicle brake pads with copper-free brake pads as they become commercially available.	Optional. Upon availability.	Trigger (upon availability of technology)	No	No	City shall replace upon availability.	No	N/A	Yes
	2. Continue implementation of cigarette ban in parks and commercial areas.	La Mesa will continue the cigarette ban and maintain existing cigarette ash cans.	Prior to FY16	Yes	Yes	Implementation continues	No	N/A	Yes
	3. Enhance program to address and capture trash and debris.	The City will install additional capture/trash guards.	FY18	No	No	Future	No	N/A	Unknown
LM-24	Proactively monitor for erosion, and complete minor repair and slope stabilization on municipal property.	Upon report and funding allocation for the project.	FY16	Yes	No	No work in FY 2015-2016 required	No	N/A	Yes
LM-25	Conduct special studies.								
	1. Reference watershed study.	The City will continue to contribute to the study.	Prior to FY16	Yes	Yes	Study completed.	No	N/A	No
LM-26	Proactively repair and replace corrugated metal pipe (CMP) MS4 components to provide source control from MS4 infrastructure.	La Mesa is trying to get rid of CMP as part of the prioritized replacement program.	Prior to FY16	Yes	Yes	The City continuously programs capital projects to address CMP failure.	No	N/A	Yes
LM-27	If a regional social services effort is established, support workgroup to provide sanitation and trash management for person experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	La Mesa does not have a homeless outreach team. Police and property owners enforce cleanups of encampments. If there is a regional effort, La Mesa will participate.	Trigger (upon regional effort)	No	No	Not established	N/A	N/A	N/A

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Green Infrastructure									
LM-28	Implement stream, channel, and habitat rehabilitation projects as needed.	This strategy may be triggered if 1) Interim goals are not met, 2) Stream or habitat rehabilitation is determined to be a more effective pathway, relative to additional structural or non-structural BMPs to meeting goals, 3) Funding and staffing has been secured, 4) Partners, MOUs, and permits required by regulatory agencies are secured, and 5) Recommendations from the community are identified and consensus and community support has been achieved. Will occur in areas identified during feasibility studies. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations, 2) Secure funds in the form of general funds, bonds, or grants, 3) Obtain City Council approval of Capital Improvement Projects budget, 4) Initiate preliminary engineering to narrow project scope, 5) Hire design consultant to develop detailed construction plans and construction cost estimates, 6) Complete construction contractor bid and award process for construction phase, 7) Construct project, 8) Operation and maintenance into perpetuity.	Various	No	No	Not completed in FY 15-16.	No	N/A	Unknown
LM-29	Identify any planned or potential green infrastructure projects to be constructed.	The City is still considering GI and multi-use project opportunities.	FY25	Yes	Yes	University Ave. Water Quality Medians Project In Construction	No	N/A	Yes

Table 9-1 (continued)
City of La Mesa Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year	Implementation Status			Proposed Modifications		
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Water Quality Improvement BMPs									
Proprietary BMPs									
LM-30	Identify any planned or potential proprietary BMP projects to be constructed.		FY18-20	N/A	No	Not completed in FY 15-16.			
	1. Planned- A city park is proposed to be built in a parcel of barren land along Waite Drive. This area can be included for long-term centralized planning.	City Council funding and final design for the project.	FY 18-20	No	No	No progress	No	N/A	Unknown
	2. Planned- A BMP is proposed to be installed in the Future Rehabilitation Project of Vista La Mesa Park.	City Council funding and final design for the project.	FY 18-20	No	No	No progress	No	N/A	Unknown
	3. University Ave. Median Improvement Project.	Water quality median project within existing arterial roadway.	FY 16	Yes	Ongoing	In Construction	Added	N/A	Yes

9.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

La Mesa BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. La Mesa updated its BMP Design Manual in accordance with Municipal Permit requirements in February 2016; the BMP Design Manual replaced the Standard Urban Storm Water Mitigation Plan (SUSMP). No additional changes to the BMP Design Manual have been made since it went into effect in February 2016. La Mesa BMP Design Manual can be accessed at www.cityoflamesa.com/index.aspx?NID=988.

9.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

No changes were made to the City's JRMP during FY 2016.

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10 CITY OF LEMON GROVE

10.1 ANNUAL REPORT CERTIFICATIONS

The City of Lemon Grove's signed Statement of Certification and Legal Authority Establishment for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report is included on the following page.

CITY OF LEMON GROVE

"Best Climate On Earth"

Office of the City Manager

SAN DIEGO BAY WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT

I certify under penalty of law that this document and all attachments, EXCEPT REPORTS FOR STUDIES PREPARED FOR OTHER AGENCIES AND TO WHICH THE CITY WAS NOT A PARTY, were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the City of Lemon Grove has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 10th day of January, 2017 at the City of Lemon Grove.

Lydia Romero
City Manager

3232 Main Street Lemon Grove California 91945-1705

619.825.3800 FAX: 619.825.3804 www.ci.lemon-grove.ca.us

10.2 ANNUAL REPORT FORM

The City of Lemon Grove's completed JRMP Annual Report form and fiscal analysis for FY 2016 are included on the following pages.

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JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015/2016

I. COPERMITTEE INFORMATION			
Copermittee Name: City of Lemon Grove			
Copermittee Primary Contact Name: Malik Tamimi			
Copermittee Primary Contact Information:			
Address: 3232 Main Street			
City: Lemon Grove	County: San Diego	State: CA	Zip: 91945
Telephone: (619) 825-3827	Fax: (619) 825-3818	Email: mtamimi@lemongrove.ca.gov	

II. LEGAL AUTHORITY		
Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES NO	☒ ☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE		
Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES NO	☐ ☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES NO	☐ ☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM		
Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES NO	☒ ☐

Number of non-storm water discharges reported by the public	2
Number of non-storm water discharges detected by Copermittee staff or contractors	7
Number of non-storm water discharges investigated by the Copermittee	9
Number of sources of non-storm water discharges identified	7
Number of non-storm water discharges eliminated	7
Number of sources of illicit discharges or connections identified	8
Number of illicit discharges or connections eliminated	8
Number of enforcement actions issued	7
Number of escalated enforcement actions issued	1

V. DEVELOPMENT PLANNING PROGRAM		
Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES NO	☒ ☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES NO	☒ ☐

Number of proposed development projects in review	30
Number of Priority Development Projects in review	13
Number of Priority Development Projects approved	7
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	2

Number of completed Priority Development Projects in inventory	13
Number of high priority Priority Development Project structural BMP inspections	5
Number of Priority Development Project structural BMP violations	3
Number of enforcement actions issued	3
Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015/2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	9
Number of active construction sites in inventory	9
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	3
Number of construction site inspections	108
Number of construction site violations	53
Number of enforcement actions issued	64
Number of escalated enforcement actions issued	4

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	13	309	29	9
Number of existing development inspections	3	110	28	4
Number of follow-up inspections	0	16	2	0
Number of violations	0	38	5	0
Number of enforcement actions issued	0	43	5	0
Number of escalated enforcement actions issued	0	1	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☑ Principal Executive Officer ☐ Ranking Elected Official ☐ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	NOVEMBER 8, 2016 Date
LYDIA ROMERO Print Name	CITY MANAGER Title
(619) 825-3800 Telephone Number	LROMERO@LEMONGROVE.CA.GOV Email

FISCAL ANALYSIS

Fiscal information for 2015/2016 is reported in the tables on the following page. The tables are based largely on the standard templates used by the Copermittees in previous fiscal years, but with a distinction between routine operations, including operation and maintenance, and capital expenditures.

Municipal Permit (Order No. R9-2013-0001 as amended by Order Nos. R9-2015-0001 and R9-2015-0100) Section E.8.b.(1) discusses capital, operation and maintenance, and other expenditures. Most of the total for the municipal component of the 2015/2016 costs is devoted to operation and maintenance expenses, both done by City staff and through outside contracts. The City's costs for 2015/2016 do not include significant capital expenditures. The remainder of the expenditures listed in Table 1 are comprised of staff and contract staff resources, as discussed in Municipal Permit Section E.8.b.(2).

Regional programs include Copermittee shared costs for education, preparing regional model requirements for development projects, and other regional expenses, as well as City staff time to participate in regional meetings. Watershed costs include meeting participation and the City's portion of the San Diego Bay watershed cost share, including water quality monitoring and reporting.

The City anticipates using the same funding sources as shown in Table 2 for 2015/2016 program funding needs. Permit fees are contingent on the number of development projects in the City, and the fees are used for reviews and similar services provided for those development projects. The City also seeks grant funding where feasible to augment standard funding sources shown in Table 2.

Table 1: Program Implementation Expenditures, 2015/2016

Expenditure Type[1]	Day to Day Operations[2]	CIP[3]	Total
Annual Municipal Permit Fee to RWQCB	$11,448.00	--	$11,448.00
Administration	$103,556.55	--	$103,556.55
Development Planning	$48,928.08	--	$48,928.08
Construction	$40,507.49	--	$40,507.49
Municipal	$131,356.26	--	$131,356.26
Industrial and Commercial	$31,860.40	--	$31,860.40
Residential	$6,776.50	--	$6,776.50
IDDE	$5,806.35	--	$5,806.35
Education	$8,501.46	--	$8,501.46
Public Participation	$1,348.12	--	$1,348.12
Special Investigations	$0.00	--	$0.00
Non-Emergency Firefighting	$0.00	--	$0.00
Activities Implemented through Cost Share Agreements with Other Agencies			
San Diego Bay Watershed WQIP Cost Share & Admin	$14,216.18	--	$14,216.18
Chollas Creek TMDL Cost Share & Admin	$23,644.90	--	$23,644.90
Regional Stormwater Program Cost Share & Admin	$17,450.71	--	$17,450.71
Total Expenditures	**$445,401.00**	--	**$445,401.00**

Notes

CIP - Capital Improvement Project, RWQCB - Regional Water Quality Control Board, IDDE - Illicit Discharge Detection and Elimination, WQIP - Water Quality Improvement Plan, TMDL - Total Maximum Daily Load

1. Expenditures include implementation of WQIP strategies, where applicable.
2. Day to day operations mainly relate to day to day program activities, such as storm drain cleaning, reviewing plan submittals for development projects, and enforcing compliance with the stormwater requirements in the Municipal Code. This category incudes expenditures for staffing, contracts other than CIP contracts, and operation and maintenance.
3. CIP expenditures include construction of stormwater specific projects, such as BMP retrofits or stream rehabilitation. No stormwater CIPs were initiated during the fiscal year, although the City did pursue grant funding for such projects.

Table 2: Program Funding Summary by Source, 2015/2016

Funding Source	Amount
General Fund	$219,701.05
Commercial Fee	$49,713.25
Building Permit Cost Recovery	$20,810.59
Engineering Permits	$77,540.07
Used Oil Payment Program	$7,201.68
AB 939 Fee	$9,230.36
TransNet	$61,204.00
Total Funding	**$445,401.00**

10.3 CITY OF LEMON GROVE STRATEGIES

The strategies that the City of Lemon Grove included in the final San Diego Bay WQIP are included in Table 2-10-1. The implementation status of each strategy during FY 16 and plans for implementation in FY17 are included in the table. Modifications to strategies, where applicable, are also noted and explained in the table.

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Table 10-1
City of Lemon Grove Jurisdictional Strategies

ID	Strategy	Implementation Approach *Frequency of Inspections*, B.3.b.(1)(a)(iv) *Funds/Resources*, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii) *Triggers*, B.3.b.(1)(b)(v) *Inventory BMPs*, B.3.b.(1)(a)(ii)	Implementation or Construction Year B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii	Implementation Status		Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
JRMP (Provisions E.2-E.7) Strategies (B.3.b.(1)(a))							
Development Planning (Provision E.3)							
All Development Projects							
LG-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	BMPs are required through the permitting process. Examples of BMPs that may be implemented include directing runoff to pervious areas and protecting trash and material storage areas from rain. Additional BMPs are required for Priority Development Projects (PDPs), as described in the PDP strategies below. For more detail on the City's storm water requirements for development projects, see Section 4 of the City's JRMP.	FY16	Yes	None		Yes
LG-2	Update BMP Design Manual and municipal code to require LID site design and source control BMPs.	A new BMP Design Manual is scheduled to go into effect in FY 16. The BMP Design Manual requires development projects to implement LID site design BMPs, which reduce runoff, and source control BMPs, which prevent pollutants from being introduced to runoff.	FY16	Yes	Implemented updated BMP Design Manual		If changes to the regional model BMP Design Manual are made, the City will make those updates in its local manual.
LG-3	Develop and distribute brochure to encourage downspout disconnection in residential areas.	Lemon Grove will develop and distribute informational brochures to project proponents who come to City Hall to apply for permits.	FY16	Yes	None		Yes
LG-4	Require downspout disconnection and/or other runoff reduction measures, where feasible, for non-Priority Projects.	Required through the building permitting process. Downspout disconnection reduces runoff volumes.	FY16	Yes	Incorporated into required plan notes for standard (non-Priority) projects.		Yes
LG-5	Trash area standards for new development and redevelopment projects with trash enclosures: require full four-sided enclosure, siting away from storm drains, and structural overhead cover.	Required through the permitting process for new development and redevelopment.	FY16	Yes	Incorporated into required plan notes for standard projects; also required for Priority Projects.		Yes

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

ID	Strategy	Implementation Approach *Frequency of Inspections*, B.3.b.(1)(a)(iv) *Funds/Resources*, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii) *Triggers*, B.3.b.(1)(b)(v) *Inventory BMPs*, B.3.b.(1)(a)(ii)	Implementation or Construction Year B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii	Implementation Status		Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
LG-6	Implement Water Efficient Landscape Ordinance.	Lemon Grove will implement through the permitting process for development projects. These requirements include using efficient irrigation systems and lower water use plants. This strategy helps prevent irrigation runoff.	FY16	Yes	Ordinance also includes language about downspout disconnects.		Yes
LG-7	Train staff on new BMP Design Manual requirements for development projects.	Staff will be trained on new requirements that apply to development projects, including PDPs, as a result of adopting the new BMP Design Manual. The goal of the training is to result in more effective implementation of the new requirements, including LID implementation.	FY16	Yes	Training focused on counter staff and use of intake form to determine requirements. Plan reviews are completed by a consultant.		Yes, as needed
Priority Development Projects (PDPs)							
LG-8	For PDPs, administer a program requiring implementation of structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Structural BMPs that reduce pollutants and manage hydromodification are required. These BMPs reduce pollutants from sources of bacteria, like trash areas or animal facilities, and metals, like auto repair facilities, industrial businesses, and parking lots. BMPs are required through the permitting process and are required to be shown on the project's plans. Installation is verified in the field prior to project completion. Refer to JRMP Section 4 for additional details.	FY16	Yes	None		Yes
LG-8.1	Administer a program to require structural BMP maintenance.	Parties responsible for maintenance of structural BMPs at completed PDPs are required to complete and sign a form certifying that the structural BMPs are being properly maintained. Direct maintenance inspections will be performed at all high priority projects annually prior to the rainy season. All other projects that do not return a completed annual maintenance verification form will also be inspected.	FY16	Yes	None		Yes
LG-9	As part of the BMP Design Manual update, update procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	As part of the BMP Design Manual update, the City will require source control BMPs, such as overhead coverage, to reduce the potential for pollutant transport from trash enclosures at businesses and residential developments and from material storage and work areas at animal facilities, nurseries and garden centers, industrial businesses, and auto-related facilities. BMPs to prevent dry weather discharges from activities such as car washing and landscape irrigation will also be required. These areas or activities have been identified as sources of bacteria and/or metals.	FY16	Yes	None		No, completed as part of BMP Design Manual update

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

ID	Strategy	Implementation Approach *Frequency of Inspections*, B.3.b.(1)(a)(iv) *Funds/Resources*, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii) *Triggers*, B.3.b.(1)(b)(v) *Inventory BMPs*, B.3.b.(1)(a)(ii)	Implementation or Construction Year B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii	Implementation Status		Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Construction (Provision E.4)							
LG-10	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Prior to beginning work, projects are required to document proposed BMPs through erosion control plans. Grading permits are not issued and work cannot begin until the submitted grading plan, which includes the erosion control plan, is approved. The City inspects projects during construction to verify that each site is in conformance with the required BMPs. Where deficiencies are noted, the City requires corrections in accordance with its Enforcement Response Plan (See Provision E.6 strategies). During the rainy season, high priority sites are inspected twice per month, medium priority sites are inspected monthly, and low priority sites are inspected as needed. During the dry season, all sites are inspected as needed. All construction sites are required to implement erosion control and sediment control BMPs, which reduce discharges of sediment. Construction sites are also required to properly dispose of trash and debris, which reduces discharges of trash and bacteria, and to maintain secondary containment for portable toilets, which reduces discharges of bacteria. Metal materials are required to be covered and protected from run-on. Refer to JRMP Section 5 and the Storm Water BMP Manual for additional information about the City's construction management program.	FY16	Yes	None		Yes
Existing Development (Provision E.5)							
Commercial, Industrial, Municipal, and Residential Facilities and Areas							
LG-11	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development.	20 percent of industrial and commercial facilities are inspected each year, and all industrial and commercial facilities are inspected at least once every five years. Municipal facility inspection frequencies are the same as the industrial and commercial frequency. Residential management areas are inspected at least once every five years. BMP deficiencies discovered during any of these inspection programs are required to be corrected, in accordance with the procedures in the City's enforcement response plan. BMPs targeted at HPWQCs include waste management (trash, animal waste, used cooking oil, etc.), preventing irrigation runoff, catch basin cleaning, and proper storage of materials containing metals (e.g., at industrial sites and auto shops).	FY16	Yes	None		Yes

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

ID	Strategy	Implementation Approach *Frequency of Inspections*, B.3.b.(1)(a)(iv) *Funds/Resources*, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii) *Triggers*, B.3.b.(1)(b)(v) *Inventory BMPs*, B.3.b.(1)(a)(ii)	Implementation or Construction Year B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii	Implementation Status		Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
LG-12	Update minimum BMPs for existing residential, commercial, and industrial development.	Revised BMP requirements are included in the City's Storm Water BMP Manual (JRMP Appendix B). BMPs targeted at HPWQCs include waste management (trash, animal waste, used cooking oil, etc.), preventing irrigation runoff, and proper storage of materials containing metals (e.g., at industrial sites and auto shops).	FY16	Yes	Completed as part of JRMP update		No, completed
LG-13	Analyze and encourage sweeping of parking lots.	The City will gather more information about existing sweeping frequency for larger commercial parking lots and contact property owners or managers to determine existing sweeping frequencies. If investigation determines that parking lots and private roads are not swept, the City may require sweeping, likely through conditional use permits.	FY16	Yes	Based on the analysis, almost all of the largest parking lots in the City (shopping centers, auto dealers, and EDCO) are swept daily. Of the two that are not swept daily, one is swept four times a week and the other is swept three times a week.		No, completed; sweeping frequencies are high enough that the City will not need to require additional sweeping.
LG-14	Require cooking oil storage BMPs for food service establishments.	Lemon Grove will work with grease rendering services to educate businesses on availability and benefits of indoor grease storage containers. Used cooking oil will be required to be stored indoors or in covered, contained areas for businesses for which outreach efforts were not successful in achieving outcome of having used cooking oil stored in a covered, contained area and at which poor used cooking oil storage BMPs have been observed.	FY16	Yes	None		Yes
LG-15	Residential shared outdoor trash storage areas: require full four-sided enclosure, siting away from storm drains, and structural overhead cover when triggered by a building permit application.	Lemon Grove will require retrofit of trash areas at existing multi-family facilities when a building permit is applied for at the same property.	FY16	Yes	None		Yes
LG-16	Industrial and commercial outdoor trash storage areas: require full four-sided enclosure, siting away from storm drains, and structural overhead cover when triggered by a building permit application.	Lemon Grove will require retrofit of trash areas at existing facilities when a building permit is applied for at the same property.	FY16	Yes	None		Yes

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

ID	Strategy	Implementation Approach *Frequency of Inspections*, B.3.b.(1)(a)(iv) *Funds/Resources*, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii) *Triggers*, B.3.b.(1)(b)(v) *Inventory BMPs*, B.3.b.(1)(a)(ii)	Implementation or Construction Year B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii	Implementation Status		Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
LG-17	Work with Regional Board to ensure industrial businesses subject to the Industrial General Permit obtain coverage and implement BMPs to address discharges of pollutants associated with TMDLs.	The City will share inspection results with Regional Board staff and notify of non-filers or potential non-compliance with other IGP requirements, especially requirements specifically related to discharges of HPWQCs.	FY16	Yes	Non-filers reported to Regional Board		Yes
LG-18	Pet waste control program.	Lemon Grove will provide pet waste bags via dispensers in City parks.	FY16	Yes	None		Yes
LG-19	Work with water utility (Helix) to publicize incentives for rain barrel installation and turf conversion and/or sprinkler system upgrades (e.g., rain shutoff systems) in residential areas.	The City will collaborate with Helix Water District to educate the public about the requirement to eliminate irrigation runoff and to promote incentives and rebates for landscape or irrigation system retrofits. Preventing irrigation runoff also can prevent the transport of metals and trash deposited along curb gutters and in storm drains, allowing those pollutants to be removed by routine sweeping and catch basin cleaning.	FY16	Yes	None		Yes
LG-20	Publicize and market any existing outreach and training programs that the water utility (Helix) provides for property managers responsible for homeowner associations (HOAs), multi-family housing developments, and commercial properties. Main focus would be on irrigation runoff reduction.	The City will collaborate with Helix Water District to educate property managers about the requirement to eliminate irrigation runoff and to promote incentives and rebates for landscape or irrigation system retrofits. Preventing irrigation runoff also can prevent the transport of metals and trash deposited along curb gutters and in storm drains, allowing those pollutants to be removed by routine sweeping and catch basin cleaning.	FY16	Yes	None		Yes
LG-21	Install smart irrigation controllers at City facilities and convert median landscaping to drip irrigation.	The City has installed 7 Cal-Sense irrigation control systems Citywide and continues to make the transition from area sprinklers to drip irrigation along its medians. The City anticipates installing at least one Cal-Sense system more by 2018. The current locations of the systems are Berry Street Park, Lemon Grove Park, Civic Center Park, City Hall, Kunkel Park, Lemon Grove Avenue median (near Mt. Vernon), and Lemon Grove Avenue median (near Broadway). Preventing irrigation runoff also can prevent the transport of metals and trash deposited along curb gutters and in storm drains, allowing those pollutants to be removed by routine sweeping and catch basin cleaning.	FY18	Yes	Current systems maintained		Yes

Table 10-1 (continued)
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MS4 Infrastructure							
LG-22	Implement operation and maintenance activities for MS4 and related structures for water quality improvement: perform catch basin cleaning.	Catch basins and inlets are inspected at least annually and cleaned if accumulated debris is found. Open channels are also inspected, and trash is removed from open channels where necessary. The City also responds to reports by citizens or municipal staff regarding MS4 facilities that require inspection/cleaning that is beyond regular maintenance activities.	FY16	Yes	None		Yes
LG-23	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers: identify sewer leaks and areas for sewer pipe replacement prioritization.	The City will repair and replace per standard maintenance schedule and where leaks are identified. In addition to routine maintenance, capital projects to replace or upgrade infrastructure are undertaken. The City's Sewer System Management Plan contains more details on these programs and procedures.	FY16	Yes	None		Yes
Roads, Street, and Parking Lots							
LG-24	Enhance street sweeping through alternating mechanical and vacuum sweepers and route optimization	The City sweeps downtown commercial areas once a week, main arterials and business areas once every two weeks, and residential areas once every four weeks. Sweeping is completed by City contractor (note that only streets with curb and gutter can be swept in the City).	FY16	Yes	None		Yes
LG-25	Sweep medians in downtown commercial areas, main arterials, and business areas.	Downtown commercial medians ~~are swept once a week,~~ and medians along main arterials and in business areas are swept once every two weeks. Sweeping is completed by City contractor.	FY16	Yes, with modification (see modification note)	None	Strategy description was not completely accurate due to internal miscommunication. While downtown commercial streets are swept every week, the medians are swept once every two weeks. This is due to slower accumulation of material on medians than on the streets themselves.	Yes

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

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Pesticide, Herbicides, and Fertilizer BMP Program							
LG-26	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Pesticide application and storage requirements are described in the Storm Water BMP Manual. Pesticide applicators are also subject to a State certification process, and all municipal pesticide application is done by certified individuals.	FY16	Yes	None		Yes
Retrofit and Rehabilitation in Areas of Existing Development							
LG-27	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	The retrofit and rehabilitation appendix to the City's JRMP (Appendix E) describes methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including proximity to high priority water quality conditions, potential pollutant load removal effectiveness, and feasibility of implementation. Grants are the most likely funding mechanism. It is also possible that projects could be built as part of an alternative compliance program.	FY16	Yes	Retrofit and channel rehabilitation projects along Main Street have been identified. Also see project list added for strategy LG-47.		Yes
LG-28	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	The retrofit and rehabilitation appendix to the City's JRMP (Appendix E) describes methods for identifying and assessing potential stream, channel, or habitat rehabilitation projects in existing development areas. Rehabilitation project selection will be based upon a variety of factors including existing stream or habitat degradation, potential future cumulative stream or habitat impacts, and feasibility of implementation. Grants are the most likely funding mechanism. It is also possible that projects could be built as part of an alternative compliance program.	FY16	Yes	See note for strategy LG-27 and project list added for strategy LG-46.		Yes

Table 10-1 (continued)
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Illicit Discharge, Detection, and Elimination (IDDE) Program (Provision E.2)							
LG-29	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	The City's Municipal Code prohibits illicit discharges and illicit connections (IC/ID). All IC/IDs are sources of non-storm water flow and can serve as transport mechanisms for pollutants, including bacteria. IC/IDs can also be direct sources of pollutants. Examples of IC/IDs include the following types of discharges to the MS4: irrigation runoff, power washing, commercial vehicle washing, mop water, wet cleaning of trash enclosures or dumpsters, washing activities as animal facilities, washing off construction equipment, and indoor drains connected to the storm drain system. To identify IC/IDs, the City inspects all its major MS4 outfalls twice per year and operates a public hotline to receive reports from the public and City staff and contractors. The City also identifies IC/IDs during its inspections of existing development (see Provision E.5 strategies) and construction sites (see Provision E.4 strategies). IC/IDs identified through any of these pathways are required to be eliminated per the City's Enforcement Response Plan (see Provision E.6 strategies). Trash accumulation in the MS4 discovered through these programs is removed through infrastructure cleaning (see Provision E.4 strategies). Refer to JRMP Section 3 for additional information about the City's IDDE program.	FY16	Yes	None		Yes

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Public Education and Participation (Provisions E.7, B.3.b(1)(a)(iii))							
LG-30	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Direct education is provided through interaction with the public through inspections, hotline call response investigations, and plan review comments. Educational materials on a variety of storm water topics are also made available on the City's website. Targeted educational content on HPWQCs, such as messages about used cooking oil storage for eating and drinking establishments (bacteria), is provided. The City also educates residents and businesses about sources of HPWQCs, including waste management, metals storage, and discharge prevention, during inspections (see Provision E.5 strategies) and hotline call response investigations (see Provision E.2 strategy).	FY16	Yes	None		Yes
LG-31	Conduct trash cleanups through community-based organizations involving target audiences.	Lemon Grove collaborates with I Love a Clean San Diego (ILACSD) on trash cleanups.	FY16	Yes	Creek to Bay Cleanup		Yes
LG-32	Collaborate with regional education and outreach efforts.	The City contributes to regional education programs run collectively by the Copermittees through a cost-share agreement.	FY16	Yes	None		Yes
LG-33	Municipal staff training.	Staff are trained on BMP requirements and implementation. Key internal target audiences include Public Works field staff, construction inspectors, and plan reviewers. Training covers BMPs to reduce discharges of HPWQCs, such as proper material storage for metals, waste management BMPs for trash, pet waste management, and catch basin cleaning. Plan review training emphasizes the importance of LID, which is effective for all pollutants.	FY16	Yes	Public Works staff trained on BMP implementation and discharge elimination. The City has transitioned to using a consultant for construction inspections and storm water (construction and post-construction BMPs) plan review.		Yes

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

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				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Enforcement Response Plan (Provision E.6)							
LG-34	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	The City has established the legal authority to require BMP implementation, including preventing illicit discharges, through the Municipal Code. Examples of how enforcement is used to bring about compliance with BMPs that reduce discharges of HPWQCs include preventing illicit discharges (metals, bacteria), requiring proper management of trash areas (bacteria), requiring proper management of metals stored in areas potential exposed to runoff (metals), and requiring maintenance to ensure proper functioning of structural BMPs (bacteria, metals). When noncompliance is noted, the City follows an escalated enforcement process to bring about correction. For example, the City has the authority to issue fines and stop work orders. More details about the City's enforcement process are provided in the enforcement response plan section of the City's Storm Water BMP Manual (JRMP Appendix B).	FY16	Yes	None		Yes
Non-JRMP Strategies (Optional Strategies, B.3.b(1)(b))							
Nonstructural							
LG-35	Increase inspection frequency for highest pollutant potential businesses.	High priority facilities are inspected more than once every five years. The typical inspection frequency is annual. High priority facilities are sites that have been identified as having the potential to be significant sources of HPWQCs (bacteria and/or metals) based on past inspections. Prioritization is based on site-specific evaluation of pollutant discharge potential. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Yes	High priority businesses were all inspected in FY16.		Yes
LG-36	Enhance street sweeping through use of vacuum street sweeping equipment.	Vacuum street sweepers are used every other sweeping to enhance removal of fine particulates and associated metals and bacteria. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Yes	None		Yes
LG-37	Participate in regional bacteria reference study.	The San Diego Regional Reference Stream Study is currently being conducted by the Southern California Coastal Water Research Project and is funded by all Copermittees, including the City of Lemon Grove. The study is designed to develop numeric targets that account for natural sources to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. This special study is	FY16	Yes	None		Yes, until study completion

Table 10-1 (continued)
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				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
		discussed in more detail in the Monitoring and Assessment Plan. Funding and resources have been secured.					
LG-38	Support partnership effort by social service providers to provide sanitation and trash management for homeless persons.	Support a non-profit or consortium to provide sanitation services associated with hygiene as well as trash management for persons experiencing homelessness. Rented or purchased shower/sanitary trailers providing mobile showers may be organized at specifically scheduled locations and times. This provision has been proposed as a method for preventing surface water usage for sanitation and bathing, as well as opportunity for outreach and referral by social service agencies. The trash management services will include providing trash bags, trash collection areas, and shower/sanitary facilities at centers which provide daytime shelter to their clients, or on a mobile-basis for known transit camps. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) homeless communities are identified as sources of bacteria to the City's MS4 2) funding to address MS4 discharges is identified and secured through a public process, 3) staff resources necessary to coordinate with a regional group are identified and secured, and 4) partners have been identified and formal MOUs have been developed. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy is approximately $10,000 to $50,000 per year. Once initiated, program development is expected to take at least one year, with implementation following development on a continuous basis as long as funding is available.	If Triggered	Not triggered during current FY	None		If triggered

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

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Structural							
LG-39	Develop and administer an alternative compliance program to onsite structural BMP implementation.	An alternative compliance program allows development projects to use offsite BMPs or rehabilitation projects to comply with storm water requirements. The City, along with other Copermittees, has funded a Watershed Management Area Analysis and a water quality equivalency standards development process, which are necessary initial steps if an alternative compliance program is to be developed. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) The Copermittees finalize water quality equivalency standards and submit it to the Regional Board for approval, 2) the Regional Board approves the water quality equivalency standards, 3) an acceptable framework for allocating credits for offsite BMPs is developed by the Copermittees and approved by the City, 4) the program does not require the City to take on unfunded long-term maintenance responsibility for BMPs used as a means of compliance by private projects, and 5) adequate staffing resources have been obtained. Staffing resources are needed to develop and administer the program. The level of staff administration needed will depend on the number of projects that propose to comply via offsite alternative compliance and the complexity of tracking offsite BMP maintenance. Staffing resources to develop the program are estimated at 0.5 to 1.0 FTE to develop the program initially and 0.25 FTE to administer the program on an ongoing basis. Following the finalization of water quality equivalency and crediting systems on a regional basis, it is anticipated that another one to two years would be needed to develop and implement the program within the City of Lemon Grove.	If Triggered	Not triggered during current FY	None		If triggered

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

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				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
LG-40	Industrial and commercial outdoor trash storage areas retrofits within the Chollas Creek hydrologic area	Trash area retrofits, which typically include installing overhead coverage and a four-sided enclosure or other mechanism to prevent run-on, are intended to prevent trash, bacteria, and other pollutants from being transported by runoff. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) the facility has shown a history of consistent non-compliance for trash area management BMPs and has failed to take appropriate corrective actions, 2) the trash area can be retrofitted in a manner that complies with other requirements (building, planning, fire, etc.), and 3) jurisdictional boundary monitoring shows bacteria exceedances. Resources to complete this strategy include staff time to work with the responsible property owner or manager to see that the additional BMPs are implemented. Once triggered, this strategy could be implemented within approximately one year.	If Triggered	Not triggered during current FY	None		If triggered
LG-41	Develop pilot project to identify and carry out directing runoff from existing parking lots or other hardscape to landscaping.	Lemon Grove will complete field work to identify where existing grades would allow parking lots to be directed to landscaping, and the most suitable site(s) will be selected for retrofit. This program focuses on sites in the Chollas Creek hydrologic area. Resources to evaluate sites have been secured based on a preliminary assessment of level of effort needed. It is expected Public Works staff will be able to complete retrofit of suitable site(s) no later than FY17.	FY16	Yes	Identified a suitable location in part of City Hall parking lot. Will complete retrofit in FY17.		Yes
LG-42	Develop pilot project to identify and carry out site downspout disconnections for targeted City facilities.	Lemon Grove will complete field work to identify where downspouts exist and could be directed to landscaping. The most suitable site(s) will be selected for retrofit. This program focuses on sites in the Chollas Creek hydrologic area. Resources to evaluate sites have been secured based on a preliminary assessment of level of effort needed. It is expected Public Works staff will be able to complete retrofit of suitable site(s) no later than FY17.	FY16	Yes	Initial analysis completed as part of municipal inspections, which include a component to evaluate potential for downspout disconnects.		Yes

Table 10-1 (continued)
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				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
LG-43	Retrofit curb and gutter in selected portions of City to capture and infiltrate or evapotranspire small dry weather flows within the Chollas Creek hydrologic area.	Curb and gutter retrofits, such as curb cuts that allow flows to be directed to landscaping, can help reduce dry weather flows. Preventing irrigation runoff also can prevent the transport of metals and trash deposited along curb gutters and in storm drains, allowing those pollutants to be removed by routine sweeping and catch basin cleaning. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) persistent flows are observed at outfalls downstream of the potential retrofit location(s), 2) regular dry weather flow has also been observed at the potential retrofit location(s) and is believed to contribute to the persistent flow at the downstream outfall, 3) enforcement has not been successful at eliminating the source(s) of flow, 4) retrofit is technically feasible at the potential location(s), and 5) funding has been identified to complete the retrofit(s). Each retrofit is expected to cost $15,000 to $100,000, depending on the size and technical specifications. Potential funding sources include grants and the City's General Fund. Once triggered, this strategy could be implemented within approximately one year.	If Triggered	Not triggered during current FY	None		If triggered
LG-44	Require material storage retrofits/stricter operational controls for sources of metals (copper or zinc) within the Chollas Creek hydrologic area.	Additional BMPs, such as building berms around storage areas and implementing overhead coverage, will be required. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) the facility has shown a history of consistent non-compliance with metal storage BMPs and has failed to take appropriate corrective actions, 2) metals stored are likely to be sources of copper or zinc (e.g., galvanized metal), 3) the metals storage area can be retrofitted in a manner that complies with other requirements (building, planning, fire, etc.), and 4) jurisdictional boundary monitoring shows repeated copper or zinc exceedances. City resources to complete this strategy include staff time to work with the responsible property owner or manager to see that the additional BMPs are implemented. Once triggered, this strategy could be implemented within approximately one year.	If Triggered	Not triggered during current FY	None		If triggered

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

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				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
LG-45	Require parking lot retrofits/stricter operational controls at industrial, commercial, or multi-family residential properties within the Chollas Creek hydrologic area.	Additional BMPs, such as directing runoff to landscaping or filtration systems or using higher efficiency sweeping equipment, will be required for large parking lots. The City has identified the largest parking lots in the City, which are believed to have the highest potential to be sources of metals if BMPs are not implemented. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) the facility's parking lot has been identified as a significant source of copper or zinc, despite implementing frequent sweeping (at least twice per month during the wet season) with standard (not vacuum) sweeping equipment, and 2) jurisdictional boundary monitoring shows repeated copper or zinc exceedances. City resources to complete this strategy include staff time to work with the responsible property owner or manager to see that the additional BMPs are implemented. Sampling to assess whether the site is a significant source of copper or zinc may also be necessary. This would require staff time to collect samples and approximately $50-$100 per sample for laboratory analyses. Once triggered, this strategy could be implemented within approximately one year.	If Triggered	Not triggered during current FY	None		If triggered

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

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LG-46	Implement stream, channel, or habitat rehabilitation projects	This strategy may be triggered if 1) interim goals are not met, 2) stream or habitat rehabilitation is determined to be a more effective pathway, relative to additional structural or non-structural BMPs, to meeting the applicable numeric goals, 3) funding and staff resources for the rehabilitation project has been identified and secured, 4) partners have been identified and formal MOUs have been executed, if necessary, 5) permits required by regulatory agencies have been secured, and 6) recommendations from the community have been identified and consensus and community support has been achieved. Will occur in areas identified by local stakeholders or City staff and found to be feasible rehabilitation locations. This could include multi-jurisdictional efforts, such as Chollas Creek Regional Park. Potential projects identified to date include the following: Bakersfield Street and San Altos Channel Restoration, Federal Boulevard Channel Restoration, Main Street Promenade Extension. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) identify project locations (3-6 months), 2) secure funds in the form of general funds, bonds, and/or grants (6 months-2 years), 3) obtain City Council approval of project budget (occurs annually), 4) initiate preliminary engineering to narrow project scope (6 months; approximately $30,000 per CIP project), 5) hire design consultant to develop detailed construction plans and construction cost estimates (2 years; approximately $500,000 per CIP project), 6) complete construction contractor bid and award process for construction phase (6 months), 7) Construct project (4 months-1 year; project construction costs are TBD and are based on size of the project), 8) secure resources and funding for long-term operation and maintenance costs (ongoing, continuous; cost TBD based on size and nature of the project). Funds and staff resources for this strategy require approval by City Council as part of the City's annual budget.	If Triggered	Not triggered during current FY	Identified a list of potential projects and entered the projects into the San Diego Region IRWM online database.	Added a list of potential projects that have been identified to date.	If triggered

Table 10-1 (continued)
City of Lemon Grove Jurisdictional Strategies

ID	Strategy	Implementation Approach *Frequency of Inspections*, B.3.b.(1)(a)(iv) *Funds/Resources*, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii) *Triggers*, B.3.b.(1)(b)(v) *Inventory BMPs*, B.3.b.(1)(a)(ii)	Implementation or Construction Year B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii	Implementation Status		Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
LG-47	Implement green streets projects	This strategy may be triggered if 1) interim goals are not met, 2) green streets are determined to be a more effective pathway, relative to additional structural or non-structural BMPs, to meeting the applicable numeric goals, 3) funding and staff resources for the rehabilitation project has been identified and secured, 4) partners have been identified and formal MOUs have been executed, if necessary, 5) permits required by regulatory agencies have been secured, and 6) recommendations from the community have been identified and consensus and community support has been achieved. Will occur in areas identified by local stakeholders or City staff and found to be feasible green street locations. Potential projects identified to date include the following: Main Street Promenade Extension, 69th Street Green Street, Broadway/Federal Boulevard Green Street, Canton Drive Green Street, Central Avenue Green Street, Golden Avenue Green Street, Lemon Grove Avenue Green Street, Lincoln Street Green Street, Madera Street Green Street, Massachusetts Boulevard Green Street, Mt. Vernon Street Green Street, North Avenue and Grove Street Green Street, Palm Street Green Street, San Miguel Green Street, Skyline Drive/Kempf Street Green Street, Sweetwater Road Green Street The following resources, funds, and steps are needed to implement this strategy: 1) Secure funds for the project; grants are the most likely funding source. 2) Obtain City Council approval of project budgets 3) Initiate preliminary engineering to narrow project scope (6 months; approximately $30K per CIP project) 4) Hire design consultant to develop detailed construction plans and construction cost estimates (2 years; approximately $500K per CIP project) 5) Complete construction contractor bid and award process for construction phase (6 months) 6) Construct project (4 months- 1 year; project construction costs are TBD and are based on size of the project). 7) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	If Triggered	Not triggered during current FY	Identified a list of potential projects and entered the projects into the San Diego Region IRWM online database.	New strategy added; green streets have been identified as a potential strategy to meet TMDL requirements for Chollas Creek.	If triggered

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10.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The Lemon Grove BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The BMP Design Manual became effective in January 2016 and replaced the City's Standard Urban Storm Water Mitigation Plan (SUSMP). No modifications to the City's BMP Design Manual have been made since February 2016. The BMP Design Manual, applicability checklists for project applicants, and a City-specific Storm Water Quality Management Plan template are available on the City's website: http://www.lemongrove.ca.gov/departments/development-services/storm water/2015-model-bmp-design-manual

10.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

No modifications to the Lemon Grove JRMP have been made since the WQIP was approved in spring 2016. The current Lemon Grove JRMP is posted on the City's website, and the link to this page is listed on Project Clean Water.

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11 CITY OF NATIONAL CITY

11.1 ANNUAL REPORT CERTIFICATIONS

The City of National City's signed Statement of Certification and Legal Authority Establishment for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report is included on the following page.

CALIFORNIA
NATIONAL CITY
1887
INCORPORATED

SAN DIEGO BAY WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the City of National City has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 9th day of January, 2017, at the City of National City.

Kuna Muthusamy, P.E.
Asst. Director of Engineering & Public Works
City of National City

Engineering & Public Works Department
1243 National City Boulevard, National City, CA 91950-4301
619/336-4380 Fax 619/336-4397 www.nationalcityca.gov

11.2 ANNUAL REPORT FORM

The City of National City's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name: **City of National City**

Copermittee Primary Contact Name: **Kuna Muthusamy**

Copermittee Primary Contact Information:
Address: **1243 National City Boulevard**
City: **National City** County: **San Diego** State: **CA** Zip: **91950**
Telephone: **(619) 336-4383** Fax: **(619) 336-4397** Email: **kmuthusamy@nationalcityca.gov**

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	3
Number of non-storm water discharges detected by Copermittee staff or contractors	38
Number of non-storm water discharges investigated by the Copermittee	41
Number of sources of non-storm water discharges identified	39
Number of non-storm water discharges eliminated	39
Number of sources of illicit discharges or connections identified	33
Number of illicit discharges or connections eliminated	31
Number of enforcement actions issued	37
Number of escalated enforcement actions issued	5

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

Number of proposed development projects in review	51
Number of Priority Development Projects in review	12
Number of Priority Development Projects approved	8
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	3

Number of completed Priority Development Projects in inventory	48
Number of high priority Priority Development Project structural BMP inspections	12
Number of Priority Development Project structural BMP violations	9
Number of enforcement actions issued	7
Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	**YES**	☒
	NO	☐

Number of construction sites in inventory	30
Number of active construction sites in inventory	30
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	19
Number of construction site inspections	63
Number of construction site violations	54
Number of enforcement actions issued	54
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	**YES**	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	29	714	141	34
Number of existing development inspections	11	192	13	17
Number of follow-up inspections	0	1	0	0
Number of violations	1	100	3	3
Number of enforcement actions issued	1	109	3	3
Number of escalated enforcement actions issued	0	3	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	**YES**	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	**YES**	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	**YES**	☒
	NO	☐

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Kuna Muthusamy	10-31-2016
Signature	Date
Kuna Muthusamy, P.E.	Assistant Director of Engineering/Public Works
Print Name	Title
(619) 336-4383	kmuthusamy@nationalcityca.gov
Telephone Number	Email

FISCAL ANALYSIS

Fiscal information for 2015/2016 is reported in the tables below. The tables are based largely on the standard templates used by the Copermittees in previous fiscal years, but with a distinction between labor costs and other expenses (materials, contracts, etc.) as requested in the current Municipal Permit (Order No. R9-2013-0001 as amended by R9-2015-0001).

With respect to costs discussed in Municipal Permit Section E.8.b.(1), less than half of the total for the municipal component of the 2015/2016 costs is devoted to labor costs for City staff. The City's costs for 2015/2016 included significant capital expenditures for equipment. The remainder of the expenditures listed in Table 1 are comprised of staff and contract staff resources, as discussed in Municipal Permit Section E.8.b.(2).

Watershed costs include San Diego Bay Water Quality Improvement Plan development and implementation costs, additional park cleaning, and additional street sweeping. Approximately ninety percent of the operation and maintenance costs for street sweeping activities have been included as expenses in the watershed programs total.

In 2015/2016, the City continued construction of the A Avenue Green Street project which is funded by Proposition 84, as well as the Proposition 84 Kimball Park LID/Paradise Creek Restoration project. The development expenses for these two projects are also included in the Watershed costs.

Regional program costs include Copermittee shared costs for monitoring, education, and other regional expenses, as well as the SWRCB annual permit fee.

All program costs are funded by the City's General Fund.

Table 1: 2015/2016 Expenditure Summary

Jurisdictional Components	Labor	Expenses	Total
Administration and Permit Fee	$4,102	$12,095	$16,197
Development Planning	$16,881	$36,615	$53,496
Construction	$10,451	$52,441	$62,892
Municipal	$347,187	$584,818	$932,005
Industrial and Commercial	$2,492	$43,249	$45,741
Residential	$1,912	$7,460	$9,371
IDDE	$2,202	$24,864	$27,066
Education	$1,785	$11,946	$13,731
Public Participation	$1,494	$11,946	$13,441
Special Investigations	$417	$4,100	$4,517
Jurisdictional Total	**$388,925**	**$789,534**	**$1,178,458**
Watershed Programs	**$34,051**	**$1,646,423**	**$1,680,474**
Regional Programs	**$1,658**	**$119,966**	**$121,624**
Total Costs	**$424,634**	**$2,555,923**	**$2,980,557**

Table 2: 2014/2015 Funding Source Summary

Funding by Source	Amount
General Fund	$1,598,597
Proposition 84 Grant	$1,381,960
Total Funding	**$2,980,557**

11.3 CITY OF NATIONAL CITY STRATEGIES

The City of National City (National City) is the second oldest city within San Diego County. National City includes diverse land uses from the San Diego Bay inland. Core jurisdictional programs target the entire National City jurisdiction. National City continues to focus on restoration activities within the small Paradise Creek drainage area to improve water quality. A section of the concrete lined channel in Paradise Creek is to be removed and a buffer area around the channel restored to improve riparian habitat. Additionally, upstream of the targeted area, storm water treatment BMPs are intended to improve and sustain improvement of water and riparian habitat quality. Strategies and implementation schedules, presented in Table 11-1, were identified using best information available on efficiency, effectiveness, and level of effort estimated to achieve compliance with numeric goals. The adaptive management process provides the framework to evaluate progress toward meeting the goals and allows for modification of strategies. As strategies are modified, the WQIP is updated. The implementation of each strategy is contingent upon annual budget approvals and funding availability.

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Table 11-1
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
JRMP (Provisions E.2-E.7) Strategies (B.3.b.(1)(a))								
Development Planning (Provision E.3)								
All Development Projects								
NC-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	BMPs are required through the permitting process. Examples of BMPs that may be implemented include directing runoff to pervious areas and protecting trash areas from rain. Additional BMPs are required for Priority Development Projects (PDPs), as described in the PDP strategies below. For more detail on the City's storm water requirements for development projects, see Section 4 of the City's JRMP.	FY16	Yes	Yes	Implemented updated BMP Design Manual		Yes
NC-2	Implement Water Efficient Landscape Ordinance.	The City will implement through permitting process for development projects.	FY15	Yes	Yes	None		Yes
NC-3	Trash area standards for new development and redevelopment: require full four-sided enclosure, siting away from storm drains, and structural overhead cover.	New development and redevelopment projects will be required to provide protection for trash areas through the permitting process. Protection of trash areas will minimize the exposure of trash, debris, and leaks (trash, bacteria). Trash enclosures will be inspected upon project development completion and during routine compliance inspections.	FY16	Yes	Yes	None		Yes
NC-4	Train staff on LID regulatory changes and LID Design Manual.	Staff are trained on BMP requirements and implementation. Key internal target audiences include Public Works field staff, construction inspectors, and plan reviewers. Training covers BMPs to reduce pollutants, such as proper material storage, waste management BMPs for trash, pet waste management, and catch basin cleaning. Plan review training emphasizes the importance of LID, which is effective for all pollutants. An initial staff training will take place in FY16. Additional refresher trainings will be provided as needed.	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Priority Development Projects (PDPs)								
NC-5	For PDPs, administer a program requiring implementation of structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Structural BMPs that reduce pollutants and manage hydromodification are required. These BMPs reduce pollutants from sources of bacteria, like trash areas or animal facilities, and trash, like commercial businesses or parking lots. BMPs are required through the permitting process and are required to be shown on the project's plans. Structural BMPs using LID techniques like bioretention, infiltration, and rainwater harvesting will be required of PDPs. Installation is verified in the field prior to project completion. Refer to JRMP Section 4 for additional details.	FY16	Yes	Yes	None		Yes
NC-6	Administer self-certification program for treatment control BMP compliance.	Responsible parties are annually required to submit verification that BMPs have been maintained. Inspections are completed at high priority projects and projects that do not return proof of maintenance. When deficiencies are noted, corrective maintenance is required. See JRMP Section 4 for more details.	FY16	Yes	Yes	None		Yes
NC-7	Update BMP Design Manual procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	As part of the BMP Design Manual update, the City will require source control BMPs, such as overhead coverage, to reduce the potential for pollutant transport from trash enclosures at businesses and residential developments. BMPs to prevent dry weather discharges from activities such as landscape irrigation will also be required. These areas or activities have been identified as pollutant sources of bacteria, trash, and sediment.	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Construction Management (Provision E.4)								
NC-8	Administer a program to require implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Prior to beginning work, projects are required to document proposed BMPs through erosion control plans. Grading permits are not issued and work cannot begin until the submitted grading plan, which includes the erosion control plan, is approved. The City inspects projects during construction to verify that each site is in conformance with the required BMPs. Where deficiencies are noted, the City requires corrections in accordance with its Enforcement Response Plan (See Provision E.6 strategies). During the rainy season, high priority sites are inspected twice per month, medium priority sites are inspected monthly, and low priority sites are inspected as needed. During the dry season, all sites are inspected as needed. All construction sites are required to implement erosion control and sediment control BMPs, which reduce discharges of sediment. Construction sites are also required to properly dispose of trash and debris, which reduces discharges of trash and bacteria, and to maintain secondary containment for portable toilets, which reduces discharges of bacteria. Refer to JRMP Section 5 and the Storm Water BMP Manual for additional information about the City's construction management program.	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Existing Development (Provision E.5)								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
NC-9	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	20 percent of industrial and commercial facilities are inspected each year, and all industrial and commercial facilities are inspected at least once every five years. Municipal facility inspection frequencies are the same as the industrial and commercial frequency. Residential management areas are inspected at least once every five years. BMP deficiencies discovered during any of these inspection programs are required to be corrected, in accordance with the procedures in the City's Enforcement Response Plan. BMPs targeted at FPWQCs include waste management (trash, animal waste, used cooking oil, etc.), preventing irrigation runoff, and catch basin cleaning. For example, all businesses and municipal facilities will be required to clean their disposal areas as necessary to prevent trash and debris from entering the storm drain system. Additionally, stored trash and other wastes must be protected from contact with storm water. Parking lots will be required to be swept. Residents will also be required to cover their trash bins and keep their areas free of trash and debris.	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
NC-10	Require minimum BMPs for mobile businesses.	Mobile businesses are subject to the same prohibitions and enforcement mechanisms as stationary industrial and commercial facilities. Mobile businesses will be inspected on an as-needed basis and will be in response to incident reports received via the Storm Water Hotline and direct visual observations by City staff. The City will be able to identify "mobile water users" such as mobile detailers, power washers, window cleaners, or similar businesses that use water in their regular business activities who have the potential of discharging pollutants to the storm drain system. Typical activities performed by mobile water users are power washing of trash enclosures, detailing vehicles, and rinsing surfaces of accumulated dirt, which are potential sources of bacteria and sediment. All wash water from these activities will be required to be contained, captured and reused, or disposed of to the sanitary sewer, an appropriate waste hauler, or to landscaping or other pervious surfaces.	FY16	Yes	Yes	None		Yes
NC-11	Implement pet waste program.	The City will provide pet waste bags via dispensers in City parks.	FY15	Yes	Yes	None		Yes
NC-12	Require used cooking oil to be either stored indoors or under a structural canopy.	The City's minimum BMPs for industrial and commercial businesses (JRMP Appendix B) requires that food service establishments must store their used cooking oil containers in a manner that prevents any discharge of fats, oils, or grease. National City also will educate businesses on availability and benefits of indoor grease storage containers. This will reduce the potential of bacteria discharges to the storm drain system.	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
NC-13	Notify Regional Board of industrial businesses subject to the Industrial General Permit so that the businesses may obtain coverage as required.	National City will share inspection results with Regional Board staff and notify of non-filers or potential non-compliance with other IGP requirements, especially requirements specifically related to discharges of bacteria, nutrients, trash, and sediment.	FY15	Yes	Yes	None		Yes
NC-14	Implement operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, channels, detention basins, etc.) for water quality improvement.	Channels and creeks will be cleaned once per month. Trash will be removed from channels by hand. Catch basins will be cleaned to remove trash and debris once per year. Drains with filter inserts (19th Street & Harding, 12th Street & A Avenue, R Avenue between 7th Street & 8th Street, National City Library, Bay Marina Way & Marina Way north & south of the street) will be cleaned four times per year. The City also responds to reports by citizens or municipal staff regarding MS4 facilities that require inspection/cleaning that is beyond regular maintenance activities.	FY16	Yes	Yes	Additional MS4 cleaning was completed in preparation for El Niño conditions.		Yes
NC-15	Install structural BMPs to prevent unauthorized persons from entering the MS4 and to control trash.	Grates will be placed over the entrances to six box culvert locations along Lower Paradise Creek to prevent unauthorized persons from entering and occupying the drainage ways; these grates will also help trap trash. Inspection and maintenance will be conducted by City staff and will be ongoing once installed.	FY16	Yes	Yes	None		Yes
NC-16	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	The City will repair and replace per standard maintenance schedule and where leaks are identified. In addition to routine maintenance, capital projects to replace or upgrade infrastructure are undertaken. The City's Sewer System Management Plan contains more details on these programs and procedures.	FY15	Yes	Yes	None		Yes
NC-17	Identify sewer leaks and areas for sewer pipe replacement prioritization.	National City will repair and replace per standard maintenance schedule and where leaks are identified. The City's Sewer System Management Plan contains more details on these programs and procedures.	FY15	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Roads, Street, and Parking Lots								
NC-18	Sweep City streets.	Major arterials are swept daily during the work week. All other streets are swept once per week. The City uses both mechanical and vacuum sweepers. Street sweeping personnel are also trained to report and identify obvious illegal connections/discharges to the storm drain system and provides the City with further means to observe, respond to, and potentially prevent illegal connections/discharges.	FY15	Yes	Yes	None		Yes
Pesticide, Herbicides, and Fertilizer BMP Program								
NC-19	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Commercial and industrial businesses and residents are subject to application and storage requirements as described in the City's Storm Water BMP Manual (see JRMP Appendix B). These are required through inspections, as described in JRMP Section 6. Municipal BMPs (JRMP Appendix B) are implemented directly by City staff, while pesticide application is done by certified individuals, as described in JRMP Section 8. Users shall apply pesticides and fertilizers in strict accordance with the manufacturer's label, as authorized by the U.S. EPA to minimize the introduction of pollutants to the storm drain system. Chemicals will also be required to be stored in covered and contained areas.	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Retrofit and Rehabilitation in Areas of Existing Development								
NC-20	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	See multiple retrofit projects described later on down in this list. The retrofit and rehabilitation appendix to the City's JRMP (Appendix E) describes methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including those projects that make progress towards the FPWQCs and WQIP numeric goals, feasibility of the project, total project area of high threat to water quality properties, land use and availability, amount of impervious area, cost effectiveness, and opportunities for infiltration or retention. Grants are the most likely funding mechanism. It is also possible that projects could be built as part of an alternative compliance program.	FY16	Yes	Yes	None		Yes
NC-21	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	See creek restoration project described later on down in this list. Also refer to JRMP Appendix E which describes the factors in identifying candidate projects. Candidate selection will be based upon a variety of factors including those projects that make progress towards the FPWQCs and WQIP numeric goals, feasibility of the project, multiple benefits of a project, land use and availability, and amount of impervious area. Grants are the most likely funding mechanism. It is also possible that projects could be built as part of an alternative compliance program.	FY16	Yes	Yes	The Prop 84-funded Kimball Park LID and Paradise Creek Restoration Project will be completed during FY17 (as summarized in NC-32)		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Illicit Discharge, Detection, and Elimination (IDDE) Program (Provision E.2)								
NC-22	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP.	The City's Municipal Code prohibits illicit discharges and illicit connections (IC/ID). All IC/IDs are sources of non-storm water flow and can serve as transport mechanisms for pollutants, including bacteria. IC/IDs can also be direct sources of pollutants. Examples of IC/IDs include the following types of discharges to the MS4: irrigation runoff, power washing, commercial vehicle washing, mop water, wet cleaning of trash enclosures or dumpsters, washing activities as animal facilities, washing off construction equipment, and indoor drains connected to the storm drain system. To identify IC/IDs, the City inspects all its major MS4 outfalls twice per year and operates a public hotline to receive reports from the public and City staff and contractors. The City also identifies IC/IDs during its inspections of existing development (see Provision E.5 strategies) and construction sites (see Provision E.4 strategies). IC/IDs identified through any of these pathways are required to be eliminated per the City's Enforcement Response Plan (see Provision E.6 strategies). Trash accumulation in the MS4 discovered through these programs is removed through infrastructure cleaning (see Provision E.4 strategies). Refer to JRMP Section 3 for additional information about the City's IDDE program.	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Public Education and Participation (Provisions E.7, B.3.b(1)(a)(iii))								
NC-23	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Direct education is provided through interaction with the public through inspections, hotline call response investigations, and plan review comments. Educational materials on a variety of storm water topics are also made available on the City's website. Targeted educational content on pollutants, such as messages about used cooking oil storage for eating and drinking establishments (bacteria), is provided. The City also educates residents and businesses about sources of pollutants, including waste management (trash), erosion prevention (sediment), proper fertilizer use (nutrients), and discharge prevention, during inspections (see Provision E.5 strategies) and hotline call response investigations (see Provision E.2 strategy).	FY16	Yes	Yes	None		Yes
NC-24	Review City storm water website and identify and implement required updates to reflect WQIP and JRMP revisions.	Website will be updated to inform the public of new and existing requirements for commercial and industrial businesses, residents, and development/redevelopment projects. Educational content will include practices and information that will benefit habitat/wildlife and trash goals.	FY16	Yes	Yes	None		Yes
NC-25	Collaborate with regional education and outreach efforts.	The City contributes to regional outreach efforts done collectively by all Copermittees.	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
NC-26	Collaborate with local water authority to promote and encourage water conservation and irrigation runoff reduction programs, including utility-funded rebate or other incentive programs.	National City will collaborate with Sweetwater Water Authority to educate the public about the requirement to eliminate irrigation runoff and to promote incentives and rebates for landscape or irrigation system retrofits. Collaborative educational material will be distributed to residents and properties as needed.	FY15	Yes	Yes	City staff worked closely with Sweetwater Authority staff to reduce water use during FY16, in accordance with drought requirements.		Yes
NC-27	Provide municipal staff training.	Staff are trained on BMP requirements and implementation. Key internal target audiences include Public Works field staff, construction inspectors, and plan reviewers. Training covers BMPs to reduce discharges of pollutants, such as proper material storage, waste management BMPs for trash, pet waste management, erosion control BMPs, and catch basin cleaning. Plan review training emphasizes the importance of LID, which is effective for all pollutants	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Enforcement Response Plan (Provision E.6)								
NC-28	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	The City has established the legal authority to require BMP implementation, including preventing illicit discharges, through the Municipal Code. Examples of how enforcement is used to bring about compliance with BMPs that reduce discharges of pollutants include preventing illicit discharges (bacteria, trash), requiring proper management of trash areas (bacteria, trash), requiring proper erosion controls for landscaped areas (sediment), and requiring maintenance to ensure proper functioning of structural BMPs (bacteria, trash, sediment). When noncompliance is noted, the City follows an escalated enforcement process to bring about correction. For example, the City has the authority to issue fines and stop work orders. More details about the City's enforcement process are provided in the enforcement response plan section of the City's Storm Water BMP Manual (JRMP Appendix B).	FY16	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Non-JRMP Strategies (Optional Strategies, B.3.b(1)(b))								
Structural								
Green Infrastructure								
Green Streets								
NC-29	8th Street Smart Growth.	Bioretention areas along 8th Street from approximately Highland Avenue to National City Boulevard. Funding and resources have been secured. Implementation of structural BMP maintenance will be ongoing.	FY14	Yes	Yes	None		Yes
NC-30	4th Street Corridor.	Infiltration areas along 4th Street at Clairemont Drive and Belmont Drive. Funding and resources have been secured. Implementation of structural BMP maintenance will be ongoing.	FY14	Yes	Yes	None		Yes
NC-31	"A" Avenue Green Street and Pedestrian Pathway project.	National City is performing green street retrofits for a 49 acre drainage area. Bioretention, infiltration, water harvesting/reuse for irrigation in Kimball Park, and a trash removal device will be installed. This project is funded by Proposition 84 grants awarded to the City and has been a collaboration with the SWRCB. Implementation of structural BMP maintenance will be ongoing upon project completion.	FY15	Yes	Yes	The project will be completed in FY17.		Yes
Green Infrastructure								
NC-40	Sweetwater River Park Bioretention	Regional BMP (approximately 18,500 ft^2 bioretention area) treating a large area east of and north of Plaza Bonita Mall. The project would also include trails in an open space park around the bioretention area that connect to the adjacent Sweetwater River Bikeway. This project will proceed if (1) grant funding or other funding is secured and approved by City Council and (2) appropriate environmental approvals and resource agency permits are obtained.	If Triggered	NA, Not Triggered in FY16	NA, Not Triggered in FY16	The City submitted an application for funding under Round 1 of the Prop 1 Storm Water Grant Program. The project will proceed if requested funds are awarded.	Additional potential strategy added as a part of the City's overall retrofit and rehabilitation program.	If Triggered

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Multiuse Treatment Areas								
Stream, Channel and Habitat Rehabilitation Projects								
NC-32	Kimball Park LID and Paradise Creek Restoration project.	The City will restore approximately 1,000 linear feet of channelized stream with concrete bottom. The concrete bottom will be removed to restore wetland habitat. Approximately 30,000 sq. ft. of native vegetation will be planted along the Creek. The project will also include LID features along streets in the neighborhood to the south of the park and within the park. These LID features will treat an approximately 73 acre tributary drainage area. This project is funded by Proposition 84 grants awarded to the City and has been a collaboration with the SWRCB. Implementation of LID feature maintenance will be ongoing upon project completion.	~~Optional~~ FY17	Yes	Yes	Project is under construction and is scheduled to be completed in FY17.	Revised to clarify when the project will be completed.	Yes, once construction is completed the City will continue to maintain the project
NC-33	Paradise Creek Educational Park.	Paradise Creek Educational Park is located along Hoover Avenue south of 18th Street and continues south along Paradise Creek to 22nd Street. The project includes removing impervious area, constructing LID, and establishing native vegetation along Paradise Creek. This project will be funded by grants awarded to the City. Construction anticipated to be completed in ~~FY 16~~ FY17 and maintenance would be ongoing after the project has been completed.	~~FY15~~ FY17	Yes	No	Project design occurred during FY16. The project was put out for bid and awarded in FY17 and is scheduled to begin construction in November 2016.	The schedule was revised due to the grant process and coordination with stakeholders, including utilities and National School District.	Yes, once construction is completed the City will continue to maintain the project

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
Water Quality Improvement BMPs								
Proprietary BMPs								
NC-34	Coolidge Avenue Pedestrian Improvements.	High-rate biofilters (Filterra or equivalent) were installed at Civic Center & Harding, 14th Street & Wilson, and 18th Street & Hoover. Funds and resources have been secured. Construction completed in FY14 and maintenance would be ongoing after the project has been completed.	FY14	Yes	Yes	BMP maintenance is ongoing.		Yes
Non-Structural								
NC-35	Enhance school and recreation-based education and outreach.	The City partners with National School District to put on a storm water quality themed art contest for elementary students. Teachers encourage students to incorporate native plants, animals, and City landmarks, such as Paradise Creek and Sweetwater River. The themes of the calendar, which have included "Keeping the Community Clean" and "A Clean City Starts With you and Me," concentrates on proper trash disposal. Winners' artwork is displayed in a storm water educational calendar distributed throughout the City. Winners are also recognized by the City Council.	FY15	Yes	Yes	None		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
NC-36	Increase inspection for highest pollutant potential businesses within the Paradise Creek drainage area	Prioritization is based on site-specific evaluation of pollutant discharge potential. If a site has been identified as having the potential to be significant sources of trash to Paradise Creek and do not drain to structural trash control BMPs, it will be considered high threat to water quality. High threat to water quality facilities are inspected more than once every five years, while the typical inspection frequency is annual. Minimum BMPs that will be assessed include waste management and parking lot and outdoor area housekeeping. City resources to complete the strategy include staff time to implement additional inspections and to work with the responsible property owner or manager to see that the additional BMPs are implemented. Funding and resources have been secured through the industrial and commercial inspection program, which is funded through the City's General Plan.	FY16	Yes	Yes	Food service establishments were targeted for inspections in FY16. Inspections emphasized storm water pollution prevention and fats, oils, and grease BMPs, which help prevent sanitary sewer overflows.		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
NC-37	Collaborate with Urban Corps of San Diego or other nonprofit groups to remove invasive species.	Significant populations of invasive species are identified in one or more locations in the City. The Urban Corps or other nonprofit groups are equipped to remove the type(s) of invasives discovered. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) a project area has been identified, including public input as applicable 2) project scope has been prepared and approved 3) staff resources necessary to coordinate with Urban Corps of San Diego are identified and secured, 4) funds have been secured through grants or City Council approval, 5) funds for any future maintenance of the area are secured, and 6) permits required by regulatory agencies have been secured. The duration of each project depends on the specific scope of each project. Potential funding may be through a grant or departmental maintenance budget.	If Triggered	NA, Not Triggered in FY16	NA, Not Triggered in FY16	None		If Triggered
NC-38	Conduct trash cleanups through community-based organizations involving target audiences.	Local organizations regularly conduct cleanups, both on their own and in direct partnership with the City. Paradise Creek Educational Park, Inc. (PCEPI) completes regular cleanups in Paradise Creek. The City also regularly works with "I Love a Clean San Diego" to complete creek cleanup near Sweetwater River, which removes accumulated trash from homeless encampments. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Yes	Yes	Cleanups were completed along Paradise Creek and by the Sweetwater River, adjacent to Plaza Bonita Mall.		Yes

Table 11-1 (continued)
City of National City Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v)) (Inventory BMPs, B.3.b.(1)(a)(ii))	Implementation or Construction Year (B.3.b.(3)(a)(i); B.3.b.(3)(a)(ii))	Implementation Status			Proposed Modifications	
				Implemented as planned in current FY (FY16)?	Completed in current FY (FY16)?	Notes	Modification (If modified or canceled, provide rationale)	Planned Implementation into the next FY? (Y/N)
~~NC-38~~ NC-39	Contribute to regional effort to provide sanitation and trash management for persons experiencing homelessness.	Support a non-profit or consortium to provide sanitation services associated with hygiene as well as trash management for persons experiencing homelessness. Rented or purchased shower/sanitary trailers providing mobile showers may be organized at specifically scheduled locations and times. This provision has been proposed as a method for preventing surface water usage for sanitation and bathing, as well as opportunity for outreach and referral by social service agencies. The trash management services will include providing trash bags, trash collection areas, and shower/sanitary facilities at centers that provide daytime shelter to their clients, or on a mobile-basis for known transit camps. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) homeless communities are identified as sources of bacteria to the City's MS4 2) funding to address MS4 discharges is identified and secured through a public process, 3) staff resources necessary to coordinate with a regional group are identified and secured, and 4) partners have been identified and formal MOUs have been developed. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy is approximately $10,000 to $50,000 per year. Once initiated, program development is expected to take at least one year, with implementation following development on a continuous basis as long as funding is available.	If Triggered	NA, Not Triggered in FY16	NA, Not Triggered in FY16	None	Revised strategy number; no change to strategy implementation approach or schedule.	If Triggered

11.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

No modifications to the BMP Design Manual have been made since the WQIP was The National City BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The BMP Design Manual became effective in February 2016 and replaced the City's Standard Urban Storm Water Mitigation Plan (SUSMP). No modifications to the City's BMP Design Manual have been made since February 2016. The BMP Design Manual, an applicability checklist for project applicants, a City-specific Storm Water Quality Management Plan template, and answers to common developer questions are available on the City's website: http://www.nationalcityca.gov/city-government/engineering-public-works/engineering-division/storm-water-program/development-redevelopment-requirements.

11.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

Modifications to National City's JRMP have been made since the WQIP was approved in spring 2016. Changes include clarifications in language, revisions to program procedures, and updates based on FY 16 data. Table 11-2 summarizes these changes, including the portions of the JRMP that were modified and the rationale for each change. The current National City JRMP is posted on the City's website, and the link to this page is listed on Project Clean Water.

Table 11-2
City of National City JRMP Modifications

Update Description	JRMP Section(s)	Rationale
Removed redundant text that is included in the Enforcement Response Plan (Appendix C) and provided a reference to Appendix C.	3.3.2, 4.6, 5.6 6.5, 7.5, 9.5	Removed redundant text that is included in the Enforcement Response Plan (Appendix C) and provided a reference to Appendix C to streamline future JRMP updates.
Included text that references the completed BMP Design Manual. The BMP Design Manual is now included as an attachment to Appendix B.	4.1, 4.2, 4.3, 4.4, Appendix B	The BMP Design Manual was completed during FY 2016 and has been in effect since February 16, 2016, replacing the SUSMP.
Updated the prioritization process for projects with structural BMPs.	5.5	Based on the City's inspection history, the updated prioritization is more representative of determining high threat to water quality facilities.

Table 11-2 (continued)
City of National City JRMP Modifications

Update Description	JRMP Section(s)	Rationale
Updated text to explain that City inspectors will conduct post-event BMP inspections for special events instead of the special event applicant.	7.3.2	The decision was made to have City inspectors conduct Post-Event BMP inspections for special events instead having the applicant conduct the inspection. This will allow the City to directly evaluate the effectiveness of the BMPs implemented during the special event.
Updates to WQIP Jurisdictional Strategies	Appendix A	Updates were made to Appendix A to reflect changes made to the City's jurisdictional strategies in the San Diego Bay WQIP Annual Report.
Updated the Enforcement Response Plan.	Appendix C	Added text to provide additional information on what is considered an escalated enforcement action and criteria for determining when escalated enforcement is necessary.
Updated the major outfall locations and major outfall drainage area layers of the map (Attachment 1).	Appendix D, Attachment 1	The major outfall drainage areas and the status of major MS4 outfalls as having persistent flow, transient flow, or being dry was updated with the collection of more data from the Dry Weather Major MS4 Outfall Discharge Monitoring Program. Updates to the status of major MS4 outfalls as having persistent flow, transient flow, or being dry will also be provided through the Water Quality Improvement Plan annual reporting process.

12 PORT OF SAN DIEGO

12.1 ANNUAL REPORT CERTIFICATIONS

The Port of San Diego's signed Statement of Certification and Legal Authority Establishment for the San Diego Bay WMA Water Quality Improvement Plan 2015-2016 Annual Report is included on the following page.

Unified Port of San Diego

3165 Pacific Highway, San Diego CA 92101
P.O. Box 120488, San Diego CA 92112-0488
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SAN DIEGO BAY WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the San Diego Unified Port District has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Jason H. Giffen
Assistant Vice President, Operations
San Diego Unified Port District

1/20/17
Date

12.2 ANNUAL REPORT FORM

The Port of San Diego's completed JRMP Annual Report form and supplemental Tables 12-1 through 12-12 are provided below.

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Table 12-1. Illicit Connections and Illicit Discharges Investigations During 2015-2016.

Location	Watershed	Inspection Date	Reporting Source[1]	Source of Discharge[2]	Pollutant	Response[3]	Type[4]	Discharge Eliminated	General Description
N Harbor Drive San Diego, CA	908.21	8/3/2015	Other Jurisdiction	Municipal	None	Closed - No Further Action	N/A	N/A	Port staff investigated report of power washing occurring on airport property. Upon investigation, Port staff determined that Port General Services had power washed sidewalk on Harbor Dr. However, per General Services power washing policy, water was directed to the landscape.
937 Harbor Dr San Diego, CA 92101	908.21	8/6/2015	Harbor Police Department	Other	Sediment and Oil and Grease	Contact Outside Jurisdiction	Non-Stormwater Discharge	Yes	Port staff received report of sediment discharge in the street as a result of a water main break in parking lot of Navy complex near USS Midway. Upon investigation, it was determined that a previous water main break had occurred within the City of San Diego. Incident was referred to the City of San Diego.
Dole Fruit at Tenth Avenue Marine Terminal (TAMT)	908.22	8/13/2015	Contractor	Contractor	Sediment, Metals	Applied Enforcement	Non-Stormwater Discharge	Yes	Port staff was notified of sediment discharge at Dole Fruit leasehold on TAMT. The on-site contractor responsible was required to clean impacted storm drain line and surrounding area.
Cabrillo Isle Marina 1450 Harbor Island Drive San Diego, CA, 92101	908.21	8/20/2015	Harbor Police Department	Citizen	Oil & Grease	Closed - No Further Action	Non-Stormwater Discharge	Yes	Staff responded to report of a fuel line break at Cabrillo Isle Marina. The marina manager had deployed booms around a boat that was leaking the fuel, and boarded the vessel to shut off the bilge power (the source of the discharge). Absorbent pads were placed in water to soak up spill material, and waste remediation contractor was called by boat owner to remove remaining material built up in bilge.
Costerra 880 Harbor Island Drive San Diego, CA, 92101	908.21	9/8/2015	Harbor Police Department	Port Tenant	Oil & Grease, Bacteria	Closed - No Further Action	Non-Stormwater Discharge	Yes	Port staff responded to grease trap spill as a result of plumbing activity at Costerra restaurant. An unknown amount of grease entered parking lot. Additionally, electricity to facility's sump pump malfunctioned and approx. 2 gallons of water discharged into the storm drain equipped with a filtration BMP. The presence of BMP prevented grease from discharging. Plumbing service cleaned up storm drain inlet and BMP where grease and water had entered. No evidence of grease remained after cleaning. No Further Action.
Best Western Posada At The Yacht Harbor 5005 North Harbor Drive San Diego, CA, 92106	908.10	8/12/2015	Port Department	Port Tenant	None	Ongoing	Illicit discharge/connection	No	Port staff received report of discharge from the Best Western Posada Inn to the curb line along N. Harbor Drive. Based on the Port's interview with the site facility general manager, the pool filtration system located in the parking area (below street grade) malfunctioned and the pool water leaked out into the parking lot and into a catch basin on site. Inside the catch basin is a sump pump that pumps the water from the garage (flood mitigation) to the street where it discharges from a small pipe in the curb. This system was installed when the hotel was built in the 1960's-1970's. The Port is investigating this issue to understand the prior permits of the sump pump and the discharges to determine additional enforcement actions. No additional discharges from the pipe have been observed or reported.
Port District Administration Building and Annex 3165 Pacific Highway San Diego, CA, 92101	908.21	10/21/2015	Port Department	Municipal	Gross Pollutants, Oil & Grease	Closed - No Further Action	Non-Stormwater Discharge	Yes	Staff observed wash water on pedestrian bridge at Port administration building, and observed inadequate BMPs implemented next to stair case to try to contain wash water. Absorbent socks were placed near storm drain, but were inadequately placed. General Services staff were contacted to resolve the issue and ensure that proper BMPs for pressure washing are used in the future.

Table 12-1. Illicit Connections and Illicit Discharges Investigations During 2015-2016.

Location	Watershed	Inspection Date	Reporting Source[1]	Source of Discharge[2]	Pollutant	Response[3]	Type[4]	Discharge Eliminated	General Description
G Street Mole Tuna Lane at the Foot of G Street San Diego, CA, 92101	908.21	11/2/2015	Port Department	Citizen	Oil & Grease, Organics	Closed- No Further Action	N/A	N/A	Staff received a complaint of an oil spill and absorbent material left on the pier. No discharge to MS4 was observed. General Services staff was contacted to clean the area. Area was cleaned. No further action.
TAMT 687 Switzer Street San Diego, CA, 92101	908.22	11/5/2015	Port Department	Unknown	Oil & Grease, Organics	Contact Outside Jurisdiction	Non-Stormwater Discharge	Yes	Port staff received report of sheen coming from Switzer creek area discharging into the Bay. Staff checked each Port-owned MS4 that discharges into Switzer Creek. All MS4 lines discharging into the creek were dry, ponded or damp and with no evidence of overland flow. Based on observations, it appeared that discharge was originating from the City of San Diego, therefore the incident was referred to the City for follow-up.
Coronado Yacht Club 1631 Strand Way Coronado, CA, 92118	910.10	11/9/2015	Port Department	Contractor	Gross Pollutants	Closed - Unjustified Complaint	N/A	N/A	Port staff responded to report of concrete discharge to bay at Coronado Yacht Club as a result of construction activity. Staff observed no discharge of concrete-laden water upon arrival, however, approved concrete work was observed with appropriate BMPs. No further action is required.
1360 N. Harbor Drive San Diego, CA 92101 Sewer line located under wharf structure	908.2	12/3/2015	Port Department	Port Tenant	Bacteria	Applied Enforcement	Illicit discharge/connection	Yes	Administrative Citation issued to both Anthony's Fish Market and SD Maritime Museum for leaking sewage pipe. Leak was stopped by responsible party by within approximately 1 hour of detection on 12/3/2015. Corrective actions beyond stopping the leak immediately included (1) a summary report w/photographic documentation regarding the permanent fix of the cause of the leak, and (2) measures/actions to be taken to prevent further discharges and to detect possible leaks. Regional Board was notified of the incident via email on 12/3/2016.
Outfall CSD145 at end of Talbot and Anchorage Lane (Shelter Island)	908.1	1/19/2016	Port Department	Municipal	None	Contact Outside Jurisdiction	Non-stormwater discharge	Yes	Port staff observed non storm water discharge from outfall at end of Anchorage Lane near Shelter Island. The outfall drains a City of San Diego line with no Port influence. City of San Diego staff were notified of the incident, who sampled water and obtained non-detect results for metals, bacteria, nutrients, and sediment. Follow-up revealed no additional outfall discharge.
Derelict Vessel Lot 891 G St. Chula Vista, CA, 91910	909.12	5/10/2016	Port Department	Municipal	None	Closed - Unjustified Complaint	N/A	N/A	Port staff received complaint of possible oil spill within the Derelict Vessel lot. Staff received subsequent notification from General Services that reported spill was in fact was just rain water that collected on a nearby tarp that leaked on the ground. No further action is required.
California Yacht Marina 640 Marina Parkway Chula Vista, CA, 91910	909.12	5/19/2016	Citizen	Unknown	Oil & Grease	Closed - Unjustified Complaint	N/A	N/A	Staff received report of sheen on water in California Yacht Marina. Staff arrived on site and questioned both the California Yacht Marina and Chula Vista marina staff about incident and they both informed staff that they were not notified of fuel in the water. No sheen was observed by staff and marina staff were not aware of incident. No further action.
Cruise Ship Terminal (B St.) 1150 North Harbor Drive San Diego, CA, 92101	908.21	6/20/2016	Port Department	Unknown	None	Closed - Unjustified Complaint	N/A	N/A	Port staff received complaint of possible discharge at B Street cruise ship terminal. Staff observed trash, foam and bubbles near outfall at the terminal. Wind and prevailing current appeared to be the cause of the material arriving on-shore (the material was windblown and likely not discharging from storm drain).

Table 12-1. Illicit Connections and Illicit Discharges Investigations During 2015-2016.

Location	Watershed	Inspection Date	Reporting Source[1]	Source of Discharge[2]	Pollutant	Response[3]	Type[4]	Discharge Eliminated	General Description
Storm Drain inlet 1277 (across the street from Solar Turbines) San Diego, CA, 92101	908.1	6/23/2016	Port Department	Municipal	None	Closed- No Further Action	Illicit discharge/connection	Yes	Irrigation discharge was detected by Port staff while in the field. Port General Services was contacted to correct a leaking sprinkler head which was causing the discharge. Upon follow-up inspection, sprinkler was repaired and discharge was eliminated.
Best Western Island Palms Hotel 2051 Shelter Island Drive San Diego, CA, 92106	908.10	1/6/2016	Port Department	Port Tenant	Organics, Trash/Debris	Closed - No Further Action	N/A	N/A	Port staff observed an uncovered dumpster at the Best Western Island Palms hotel that was leaking a white substance that was later identified as paint. Best Western management was quickly alerted and their staff was directed to cover and contain the dumpster unit and clean the affected area. No discharge to MS4 was observed.
Tuna Harbor	908.21	6/14/2016	Citizen	Port Tenant	None	Closed - Unjustified Complaint	N/A	N/A	Staff received citizen complaint regarding vessel maintenance in Tuna Harbor leading to discharge into the Bay. Upon arrival, Port staff observed on-deck boat maintenance onboard the Trailblazer vessel. The work appeared to be confined to the deck and no discharge to the bay was observed. Staff reminded vessel owner of his responsibilities to keep vessel maintenance from releasing pollutants into the bay. No further action.
3165 Pacific Highway San Diego, CA 92101	908.21	1/27/2016	Port Department	Municipal	Oil & Grease, Gross Pollutants	Closed - No Further Action	Illicit discharge/connection	Yes	Port staff received complaint of coolant leak from broken generator in Port Administration building parking lot. However, upon arrival staff observed General Services staff applying absorbent pads to the spill. Port staff traveled down gradient and observed what appeared to the coolant at the bottom of the storm drain inlet downstream along the north bound land on Pacific Coast Highway. Port cleaned the coolant from the inlet. The coolant did not reach the MS4 across the street along the south bound land of Pacific Highway.
Bali Hai Restaurant 2230 Shelter Island Drive San Diego, CA, 92106	908.10	2/17/2016	Tenant	Municipal	Sediment	Closed - No Further Action	Illicit discharge/connection	Yes	Port staff received notification of water discharge into storm drain in front of Bali Hai. Upon arrival, staff observed water discharging from a sewer manhole and running down the street and discharging into a nearby storm drain. Based on further investigation, it was determined that the water was coming from the Port's irrigation line. General Services was contacted to repair the irrigation line. No further action.
Hilton - San Diego Bayfront 1 Park Boulevard San Diego, CA, 92101	908.21	4/4/2016	Citizen	Unknown	Nutrients, Oil & Grease	Closed - No Further Action	N/A	N/A	Port staff responded to report of irrigation discharge near Hilton San Diego Hilton Hotel. Upon arrival, no evidence of irrigation runoff was observed. Investigation indicated that discharge was unlikely to be the result of irrigation runoff from the Bayfront Hotel. Staff conducted follow-up meeting with hotel staff to reinforce prohibition of irrigation runoff.
Tenth Avenue Marine Terminal 687 Switzer Street San Diego, CA, 92101	908.22	5/3/2016	Port Department	Municipal	Sediment, Gross Pollutants	Closed - No Further Action	Non-stormwater discharge	Yes	Port staff responded to a report of discharge to the Bay. Upon arrival, observed a leaky water pipe on the Crosby street pier. A work order was submitted to General Services to repair. Follow-up investigation indicated that water line had been repaired.

Table 12-1. Illicit Connections and Illicit Discharges Investigations During 2015-2016.

Location	Watershed	Inspection Date	Reporting Source[1]	Source of Discharge[2]	Pollutant	Response[3]	Type[4]	Discharge Eliminated	General Description
Inlet upstream of outfall C3-2.1 Coronado, CA	910.1	5/12/2016	Port Department	Unknown	Metals	Contact Outside Jurisdiction	Illicit discharge/connection	No	During Persistent Outfall Monitoring, Port staff observed a non-storm water discharge upstream of outfall C3-2.1 (outfall is tidally inundated). Salinity test showed 10 ppt water, indicating freshwater influence. Staff conducting sampling for all pollutants outlined in the San Diego Bay WQIP Monitoring and Assessment Program. The discharge was reported to the City of Coronado. Results of the sampling analysis showed a dissolved copper concentration of 7.6 ppb, which is above the non-storm water action level outlined in the municipal permit (all other pollutants tested were below NALs)
Shelter Island Shoreline Park Southerly of Shelter Island Drive San Diego, CA, 92106	908.10	6/30/2016	Citizen	Municipal	Oil & Grease, Sediment	Closed - No Further Action	Non-stormwater discharge	Yes	Port staff received report of discharge to MS4 at Shoreline Park. Upon arrival, staff observed significant over-irrigation and the water was discharging into the MS4. PGP Staff contacted General Services and a work order was submitted to have the water shut off. Follow-up investigation revealed no further irrigation discharge to the MS4.

TABLE KEY

MS4: Municipal Separate Storm Sewer System

[1] **Reporting Source Party:**
Public: A member of the public not associated with the Port
Contractor: A business operating within the Port's jurisdiction on behalf of the Port of San Diego or a Port Tenant.
Harbor Police Department: An employee of the Harbor Police Department (HPD).
Port Department: Port staff not associated with the Port's Environmental and Land Use Management Department (ELUM).
Port Stormwater Monitoring: Port ELUM staff conducting water quality monitoring or inspection activities.
Port Tenant: A Port of San Diego tenant or subtenant operating within the Port's jurisdiction.
Other Jurisdiction: A staff person from another jurisdiction.

[2] **Source of discharge:**
Port Tenant: Incident is the result of activities by a Port of San Diego tenant within the Port's jurisdiction.
Municipal: Incident is the result of Port of San Diego staff or municipal operations.
Contractor: Incident is the result of a contractor operating within the Port's jurisdiction on behalf of the Port of San Diego or a Port Tenant.
Public: Incident is the result of a person or persons not involved in business activities within the Port's jurisdiction.
Mobile Business: Incident is the result of a mobile business operating within the Port's jurisdiction.
Special Event: Incident is the result of a permitted event in a park or other public area within the Port's jurisdiction.
Unknown: Incident is the result of an unidentifiable responsible party.
Other: Incident may be the result of an identifiable source which cannot be characterized otherwise.

[3] **Response:**
Applied Enforcement: Incident involves a spill or release of pollutants from a known source which have the ability to enter the MS4 and/or threaten receiving water quality and requires Port enforcement procedures to resolve the complaint. Where incidents involve Port -maintained facilities, an enforceable work order is issued to resolve the issue.
Closed – No Further Action: Incident may involve the release of pollutants which do not enter the MS4 or threaten receiving water quality and are cleaned properly by a responsible party or may not have the ability to require enforcement actions due to a lack of an identifiable source.
Referred to Other Jurisdiction: Incident occurred outside of Port jurisdictional boundaries or authority and is forwarded to another agency for proper resolution
Closed – Unjustified Complaint: Investigation reveals that the complaint does not involve a spill or release of pollutants which have the ability to reach the MS4 or threaten receiving water quality.
Ongoing: Investigation and/or enforcement actions are ongoing as of the time of this report.

[4] **Type:**
Non-Stormwater Discharge: A discharge of non-stormwater to the MS4, or the receiving water due to failure of appropriate BMPs and/or infrastructure; includes NPDES permitted discharges.
Illicit Discharge or Connection: A non-permitted, intentional release of non-stormwater to the MS4 and/or receiving water as a result of illegal dumping and/or connection.

Table 12-2. Inventory Summary: Treatment Control BMPs, Inspections, and Verification of Maintenance Results 2015-2016.

Project Name	Watershed	Treatment Control BMP	Required BMPs	Port Inspection Date	Port BMP Inspection Results	Operation and Maintenance Verification Results	Follow-up Action
Anchorage Lane (Point Loma Pavement Maintenance)	908.1	Infiltration practices, Darin inlet inserts (2)	3	4/25/2016	Drain inlet #1149 and associated insert need to be cleaned.	Annual verification of maintenance completed by Port Staff as part of annual inspection on 4/25/2016	BMP was cleaned on 6/23/2016.
Cabrillo Isle Marina	908.2	Inlet filters (4), porous pavement strips (5)	9	5/26/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 7/30/2016 indicates BMPs were inspected monthly and appear present and clean. Maintenance was performed monthly and includes cleaning filters, removing debris and securing BMPs.	No corrective action required
Continental Maritime	908.2	Inlet filters	7	5/25/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 3/14/2016 indicates BMPs were inspected 3/11/2016 and no maintenance was required.	No corrective action required
Coronado Cays Yacht Club	910.1	Infiltration strip	1	5/19/2016	BMPs appeared properly maintained	Annual verification of maintenance form dated 3/18/2016 indicates BMPs were inspected 3/12/2016 and are in good working condition, no maintenance required.	No corrective action required
Fisherman's Landing	908.1	Pervious pavement	2	5/18/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 7/4/2016 indicates BMPs were inspected 7/1/2016 and were found to be clean and not requiring maintenance.	No corrective action required
H Street Extension	909.1	Bio retention facility (15), high rate media filter (2)	17	6/8/2016	Media filter BMP #129 appeared to be near capacity, all bio retention facilities appeared to be properly maintained	Annual verification of maintenance completed by Port Staff as part of annual inspection on 6/8/2016	Media filters were cleaned on 9/30/2016
Harbor Drive Improvements @8th Street	908.2	Landscaping, inlet filters (5)	6	5/18/2016	Three inserts were near capacity and required cleaning.	Annual verification of maintenance completed by Port Staff as part of annual inspection on 5/18/2016	BMP inserts were cleaned on 6/23/2016
Hertz Dollar Thrifty Rental Car Temporary Relocation	908.2	Media Filter	7	5/25/2016	Two storm drain inlets located in the parking lot were observed to be missing inlet inserts.	Port inspection on May 25, 2016 indicated two storm drain inlets were missing inlet inserts per the project USMP.	Escalated Enforcement Action taken. Port issued an administrative citation on 6/15/2016 for failing to inspect, maintain and repair treatment control BMPs. Hertz submitted documentation on 7/14/2016 showing corrective action had been addressed and missing BMP inserts were replaced.
Hilton Garden Inn (Island Palms Best Western Hotel)	908.1	Stormceptor, pervious pavement	3	5/26/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 6/24/2016 indicates an inspection occurred 6/24/2016 and BMPs were vacuumed and cleaned monthly.	No corrective action required
Hilton San Diego Bayfront Hotel	908.2	Inlet filters (2), CDS (1), landscaping (1)	4	5/11/2016	A steel plate was installed blocking the majority of flow to one inlet.	Annual verification of maintenance form dated 5/10/2016 indicates inspections occurred on 5/5/2016 and all BMPs were clean and in good working condition.	Escalated Enforcement Action taken. Port issued an administrative citation on May 11, 2016 for the steel plate blocking one storm drain inlet. Port required Hilton remove the plate to inspect and clean the drain filter. Hilton submitted photo documentation on June 28, 2016 indicating the steel plate had been removed as required.
Holiday Inn San Diego Bayside	908.1	Bio retention (1), porous pavement (2), hydrodynamic separators (1), inlet filter (5)	9	5/24/2016	BMPs appeared properly maintained.	Annual verification of maintenance indicates an inspection occurred on 1/11/2016 and 5/03/2016 and all BMPs requiring maintenance were cleaned on 1/13/2016 and 5/06/2016.	No corrective action required
Island Palms Best Western Hotel - parking lot repavement	908.1	Pervious pavement	2	5/26/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 6/24/2016 indicates an inspection occurred 6/24/2016 and BMPs were vacuumed and cleaned monthly.	No corrective action required
Koehler Kraft	908.1	Closed loop water evaporation system, landscaping	2	6/21/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 8/15/2016 indicates BMPs are inspected daily and are maintained weekly. Maintenance includes cleaning and clearing leaves and debris from BMPs. This is a boatyard that is covered under a boatyard NPDES permit. The facility is designed to retain runoff onsite using an evaporation system.	No corrective action required
Kona Kai Resort	908.1	High rate media filter	1	5/17/2016	Filter inserts appeared properly maintained. Downspout media filters were not installed per the approved USMP.	Annual verification of maintenance dated 7/28/2016 indicates inspections and maintenance cleaning occurred 7/24/2015, 11/3/2015, 1/6/2016, 4/8/2016 and 7/7/2016. All BMPwere present and working, with the exception of downspout filters.	Escalated Enforcement Action taken. Port issued an administrative citation on 5/17/2016 for failure to install two downspout media filters per the approved USMP design. In a 10/18/2016 response, Kona Kai sent photographic documentation showing that the downspout media filters had been installed.

Table 12-2. Inventory Summary: Treatment Control BMPs, Inspections, and Verification of Maintenance Results 2015-2016.

Project Name	Watershed	Treatment Control BMP	Required BMPs	Port Inspection Date	Port BMP Inspection Results	Operation and Maintenance Verification Results	Follow-up Action
Marriott Pool/Hall Renovations	908.2	Landscaping	10	5/31/2016	Landscaping in-place and appeared to be maintained	Operation and Maintenance of the landscaping strips were verified by Port staff during 5/31/2016 inspection. A second phase of this project including the installation of additional treatment control BMPs is undergoing construction.	No corrective action required
National City Marine Terminal (SW Perimeter)	908.3	Pervious pavement	1	5/24/2016	BMP requires cleaning. Cleaning scheduled for August 22, 2016	Annual verification of maintenance completed by Port Staff as part of annual inspection on 5/24/2016.	BMP cleaning completed 09/23/2016
North Embarcadero Visionary Plan (NEVP)	908.2	Bio retention facility	1	6/16/2016	The NEVP project site includes portions of Broadway and Harbor Drive. The Port is responsible for the Harbor Drive portion of the project, and the City of San Diego is responsible for the Broadway portion of the project site. The Harbor Drive BMPs have been inspected and appear to be maintained and not requrie replacement at this time.	Annual verification of maintenance completed by Port Staff as part of annual inspection on 6/16/2016.	No corrective action required
Pier 32 Marina	908.3	CDS, landscaping	2	5/19/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 5/20/2016 indicates BMPs were inspected and maintained routinely throughout the year, ranging from weekly to monthly.	No corrective actions required
Point Loma Marina	908.1	Pervious pavement, CDS within landscaping	2	5/25/2016	BMPs appeared properly maintained	Annual verification of maintenance form dated 5/28/2016 indicates weekly and monthly inspections occurred for porous pavement and drains, and an annual inspection of the CDS unit occurred on 5/18/2016. All BMPs were found to be in good working condition and required no maintenance.	No corrective action required
Point Loma Seafood's Remodel	908.1	Landscaping (2), pervious pavement (2)	4	5/11/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 3/16/2016 indicates BMPs were inspected monthly and were found to be in working condition requiring no maintenance.	No corrective action required
Red Sails Inn	908.1	Inlet filters	1	5/20/2016	BMPs appeared properly maintained	Annual verification of maintenance form dated 7/20/2016 indicates BMPs were inspected and cleaned every other week and the filter is replaced every other month.	No corrective action required
Ruocco Park	908.2	Inlet filters (3), landscaping	4	5/2/2016	BMPs appeared properly maintained. Accumulation of debris in the filter is at about 20%	Annual verification of maintenance completed by Port staff as part of annual inspection on 5/2/2016	No corrective action required
San Diego Yacht Club	908.1	Contech media filter, porous pavement, inlet filter	3	5/19/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 6/15/2016 indicates visual inspections occurred monthly and the annual inspection and maintenance for the Contech filter occurred on 6/10/2016.	No corrective action required
Seaport Village/Old Police Headquarters	908.2	Inlet filters (3), pervious pavers	5	5/24/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 8/3/2016 indicates four of five BMPs were in need of maintenance. Maintenance was performed on 5/18/2016. All inserts were inspected, cleaned and filter media was replaced.	No corrective action required
Shelter Island Drive Pavement Repairs	908.1	Inlet filters	9	5/16/2016	Six storm drain inlets appeared to be near capacity and were in need of cleaning/maintenance.	Annual verification of maintenance completed by Port Staff as part of annual inspection on 5/16/2016	BMP inserts were cleaned on 6/23/2016
Shelter Pointe Hotel and Marina (Kona Kai)	908.1	Inlet filters	2	5/1/2015	BMPs appeared properly maintained	Annual verification of maintenance dated 7/28/2016 indicates inspections and maintenance cleaning occurred 7/24/2015, 11/3/2015, 1/6/2016, 4/8/2016 and 7/7/2016. All BMPs were present and working.	No corrective actions required
Sheraton Harbor Island - Temporary Parking	908.2	Gravel lot for infiltration, inlet filters (2)	3	5/17/2016	BMPs appeared properly maintained	Annual verification of maintenance form dated 6/23/2016 indicates an inspection occurred 6/23/2016 and BMPs were found in working condition with no maintenance required.	No corrective action required
Silver Gate Yacht Club	908.1	infiltration basin, drain basket	2	5/12/2016	BMPs appeared properly maintained	Annual verification of maintenance form dated 8/12/2016 indicates BMPs were inspected on 6/23/2016. Waste receptacle was not enclosed and a lid was purchased on the same day. FloGuard filters were present and inspected monthly with cleaning as necessary.	No corrective action required
Solar Turbines Parking Lot Expansion	908.2	Infiltration strips	2	5/10/2016	BMPs appeared properly maintained	Annual verification of maintenance form dated 3/17/2016 indicates the BMP was inspected 3/15/2016 and is on a quarterly inspection schedule. No maintenance was required and the BMP was in good working condition.	No corrective action required

Table 12-2. Inventory Summary: Treatment Control BMPs, Inspections, and Verification of Maintenance Results 2015-2016.

Project Name	Watershed	Treatment Control BMP	Required BMPs	Port Inspection Date	Port BMP Inspection Results	Operation and Maintenance Verification Results	Follow-up Action
Southwestern Yacht Club	908.1	Pervious pavement	1	5/24/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 3/18/2016 indicates the BMP is inspected and swept daily and in good condition. Street sweeping was performed twice, on 7/7/2015 and 2/17/2016.	No corrective action required
Spiro's Gyros (inspected under Coronado Ferry Landing)	910.1	Vegetated swales	1	6/21/2016	BMPs appeared properly maintained	Annual verification of maintenance form submitted 6/22/2016 indicates BMPs were inspected and maintained as necessary in December 2015 and January 2016.	No corrective action required
Sun Harbor Marina	908.1	Inlet filters	4	5/19/2016	BMPs appeared properly maintained. One storm drain inlet BMP was removed as part of the stormwater design for the newly- completed adjacent North Harbor Drive Realignment project. All drainage previously treated by the removed BMP is now treated by a treatment control BMP associated with the new project.	Annual verification of maintenance dated 6/12/2016 indicates BMPs were inspected and cleaned on 8/25/2015, 2/6/2016, and 5/3/2016, including replacement of gasket and replacement of pouches as needed.	No corrective actions required
TAMT North Gate Improvements	908.2	Porous Asphalt	1	5/26/2016	Sediment, oil and asphalt particles accumulated on permeable pavement, cleaning required	Verification of maintenance completed by Port staff as part of annual inspection on 5/26/2016.	Permeable pavement maintenance and cleaning completed on 6/29-30/2016
TAMT Railroad Pavement and Track Improvements	908.2	CDS, inlet filters (2), infiltration strip	4	5/26/2016	BMPs appeared properly maintained	Verification of maintenance completed by Port staff as part of annual inspection 5/26/2016	No corrective action required
TAMT Transit Shed 1, Bay D	908.2	high rate media filter	1	5/26/2016	BMPs appeared properly maintained	Verification of maintenance completed by Port staff as part of annual inspection 5/26/2016	No corrective action required
Tom Ham's Lighthouse Renovations	908.2	Vegetated Bioswale	1	5/18/2016	BMPs appeared properly maintained	Annual verification of maintenance form dated 5/18/2016 indicates BMP is inspected weekly and cleaned as needed, including removal of litter and debris, and managing plants.	No corrective action required
Water Transportation Center (Fifth Avenue Landing)	908.2	Vegetated swale, CDS	2	5/11/2016	BMPs appeared properly maintained	Annual verification of maintenance dated 3/22/2016 indicates the CDS was inspected on 2/11/2016 and no maintenance was required. Floating debris was removed during the inspection.	No corrective action required
Water Street Pavement Repair	908.2	Permeable Pavers (2)	2	5/24/2016	BMPs appeared properly maintained	Annual verification of maintenance completed by Port staff as part of annual inspection 5/24/2016	No corrective action required

Table 12-3: Construction Inspections Conducted in 2015-2016.

Project Name	Priority	Watershed	> 1 Acre	WDID	Weeks of Active Construction in Wet Season	Wet Season Inspection	Dry Season Inspection	Follow-up Inspections Conducted [2]	Active, Inactive, or Completed (As of June 30, 2016)
501 and 505 First Street Coronado Site Work	High	910.1	No	N/A	1	1	0	0	Completed
880 Harbor Island Restaurant	High	908.2	Yes	9 37C36957	8	4	2	2	Completed
BAE Systems Pier 4 Project	High	908.2	Yes	937C364730	9	5	3	1	Completed
Bay Club Hotel and Marina Pool Windscreen Replacement	High	908.2	No	N/A	11	6	0	0	Completed
Broadway Pier North & West Bull Rail Mounting Hardware Repair	High	908.2	No	N/A	0	0	1	0	Active
D Street Fill Restoration Project	High	908.3	Yes	9 37C37398	18	10	0	1	Completed
Driscoll/Kettenburg Boatyard Renovation	High	908.1	Yes	937C346760	31	14	5	3	Active
Humphrey's Half Moon Inn Marina Dock Redevelopment	High	908.1	No	N/A	10	5	2	3	Completed
Lane Field Development (includes Lane Field Development (North) and Lane Field Setback Park)	High	908.2	Yes	937C351660	22	11	3	2	Completed
Navy Pier Fender Pile Removal (South Side)	High	908.2	No	N/A	1	1	2	2	Completed
NCMT Berth 24-10 Structural and Mooring Repairs[1]	High	908.3	Yes	N/A	0	0	2	1	Active
North Embarcadero Emergency Wharf Repairs	High	908.2	No	N/A	0	0	2	0	Completed
Public Viewing Platform Improvement and Repairs Project	High	908.2	No	N/A	23	12	2	1	Completed
SDGE South Bay Substation Relocation Project	High	910.2	Yes	937C370499	9	4	5	4	Active
Shelter Island Boat Yard Crane Replacement & Pier Additions 2014	High	908.1	No	N/A	31	11	4	0	Active
Shoreline Stabilization at Bayside Park (Emergency)	High	909.1	No	N/A	16	5	0	4	Completed
TAMT Berths 10-1 and 10-2 Fender System Upgrade	High	908.2	No	N/A	3	2	2	1	Completed
TAMT Berths 10-3 thru 10-8 Yokohama Fender Replacement	High	908.2	No	N/A	11	2	0	0	Completed
BAE Shipyard Sediment Cleanup Site - North Shipyard	Medium	908.2	No	N/A	31	15	3	1	Completed

Table 12-3: Construction Inspections Conducted in 2015-2016.

Project Name	Priority	Watershed	> 1 Acre	WDID	Weeks of Active Construction in Wet Season	Wet Season Inspection	Dry Season Inspection	Follow-up Inspections Conducted [2]	Active, Inactive, or Completed (As of June 30, 2016)
Coronado Yacht Club Boat Hoist Repair	Medium	910.1	No	N/A	14	7	0	1	Completed
J Street Offsite Drainage Improvements	Medium	908.1	No	937W002055	0	0	2	0	Completed
Kona Kai Resort- Renovations 2014[1]	Medium	908.1	No	N/A	0	0	4	1	Active
Lane Field South	Medium	908.2	Yes	Pending	11	3	2	1	Active
Marriott Marquis SD Marina Dock Repair	Medium	908.2	No	N/A	24	12	2	1	Active
National City Aquatics Center	Medium	908.3	No	N/A	7	11	3	1	Completed
North Harbor Drive Realignment	Medium	908.1	Yes	937C371720	0	0	6	2	Completed
San Diego International Boat Show - Temporary Dock Installation	Medium	908.2	No	N/A	0	0	2	1	Completed
San Diego Marriott Marquis and Marina - New Marriott Hall	Medium	908.2	Yes	9 37C37069	31	15	5	13	Active
South Campus Phase 4A Demolition 2014	Medium	909.1	Yes	9 37C36884	0	6	6	0	Completed
The Wharf - Building C (Point Loma Marina)	Low	908.1	No	N/A	31	9	5	6	Active
The Wharf - Recycling and Trash Enclosure (Point Loma Marina)	Low	908.1	No	N/A	31	7	5	1	Active
Point Loma Marina Harbor Services Parking Lot	Low	908.1	No	N/A	21	7	4	0	Completed
B Street Pier West End Fender System Upgrade	Low	908.2	No	N/A	23	12	0	2	Completed
BAE Systems Pier 1 North Drydock Project	Low	908.2	No	N/A	13	7	2	1	Active
Coronado Cays Dry Boat Storage Facility	Low	910.1	No	N/A	3	1	3	1	Active
Coronado Ferry Landing Accessible Parking Improvements	Low	910.1	No	N/A	4	2	0	0	Completed
DecoBike San Diego Bike Share Stations	Low	908.2	No	N/A	0	0	3	1	Completed
Dole Fresh Fruit - Reefer Outlet Addition	Low	908.2	No	N/A	3	2	3	0	Completed

Table 12-3: Construction Inspections Conducted in 2015-2016.

Project Name	Priority	Watershed	> 1 Acre	WDID	Weeks of Active Construction in Wet Season	Wet Season Inspection	Dry Season Inspection	Follow-up Inspections Conducted [2]	Active, Inactive, or Completed (As of June 30, 2016)
Harbor Police HQ Patrol Building	Low	908.2	No	N/A	0	0	1	0	Completed
Manchester Grand Hyatt - Sally's Restaurant Remodel	Low	908.2	No	N/A	12	4	0	1	Completed
NASSCO Primeline 1 Replacement	Low	908.2	No	N/A	3	1	2	0	Active
San Diego Bay Fiber Optic PH 9	Low	908.1	No	N/A	2	1	2	4	Active
San Diego Symphony - Summer Pops 2015	Low	908.2	No	N/A	0	0	1	0	Completed
San Diego Yacht Club Stair and Roof Eave Repair	Low	908.1	No	N/A	13	5	0	0	Completed
San Salvador Assembly Site	Low	908.2	Yes	N/A	5	1	3	0	Completed
Sheraton San Diego Hotel & Marina Pavement Improvement Project	Low	908.2	No	N/A	6	2	4	0	Completed
South Bay Power Plant Monument	Low	910.2	No	N/A	0	0	3	0	Completed
Spiro's Gyros Building Addition	Low	910.1	No	N/A	0	0	1	0	Completed
Sprint Convention Center (Cell Tree)	Low	908.2	No	N/A	1	1	2	0	Completed
TAMT Dole Facility Pavement Maintenance	Low	908.2	No	N/A	0	0	1	0	Completed
Verizon Cell Site at Spanish Landing Park	Low	908.2	No	N/A	10	7	3	5	Active
Totals						**231**	**118**	**69**	

[1] No escalated enforcement measures were required on any project during the 2015-16 year. Noted in bold in the above table, Administrative Citations were issued by the Port to the following sites:

1) Kona Kai Resort-Renovations 2014. On June 16, 2016, an Administrative Citation was issued to Kona Kai Resort for failing to provide perimeter sediment control BMPs around a portion of the working area observed during the May 27, 2016 inspection. A follow-up inspection conducted on June 3, 2016 confirmed perimeter protection had been put in place and no further action was required.

2) NCMT Berth 24-10 Structural and Mooring Repairs. On June 11, 2016 an Administrative Citation was issued to the contractor for failing to provide perimeter sediment control BMPs around a portion of the working area observed during the May 24, 2016 inspection. A follow-up inspection conducted on May 26, 2016 confirmed perimeter protection had been put in place and no further action was required.

[2] Follow-up inspections were conducted to ensure corrective actions that were identified during an initial inspection are adequately addressed. Corrective actions are relayed to the contractor through inspection reports that also serve as written warnings to the contractor regarding stormwater compliance.

Table 12-4. Summary of Municipal, Commercial, and Industrial Facility Inspections During 2015-2016.

Component	Priority	Facility Name	Watershed	Inspection Date	Follow-up Inspection [1]	Enforcement Required[2,3]	Escalated Enforcement[3,4]
Municipal							
Municipal	High	Anchorage Lane	908.10	5/16/2016	N/A	N/A	N/A
Municipal	High	Anchorage Lane and Canon Street	908.10	6/23/2016	1	N/A	N/A
Municipal	High	Canon Street	908.10	5/16/2016	N/A	N/A	N/A
Municipal	High	Emerson Street	908.10	5/16/2016	N/A	N/A	N/A
Municipal	High	Harbor-Shafter	908.10	6/22/2016	1	N/A	N/A
Municipal	High	Harbor-Torpedo	908.10	6/22/2016	N/A	N/A	N/A
Municipal	High	Shelter Island Boat Launch Ramp	908.10	5/18/2016	2	N/A	N/A
Municipal	High	Shelter Island Drive	908.10	5/16/2016	2	N/A	1
Municipal	High	Shelter Island Fishing Pier	908.10	5/16/2016	N/A	N/A	N/A
Municipal	High	Shelter Island Port Boat Maintenance and Dive Locker	908.10	6/30/2016	1	N/A	N/A
Municipal	High	Shelter Island Shoreline Park	908.10	5/16/2016	2	N/A	1
Municipal	High	Talbot Street	908.10	5/16/2016	N/A	N/A	N/A
Municipal	High	Lane Field Park	908.21	6/28/2016	N/A	N/A	N/A
Municipal	High	Ruocco Park	908.20	5/2/2016	N/A	N/A	N/A
Municipal	High	Broadway Pier Port Pavilion	908.21	5/23/2016	N/A	N/A	N/A
Municipal	High	Cancer Survivor's Park	908.21	5/18/2016	N/A	N/A	N/A
Municipal	High	Coast Guard	908.21	6/22/2016	1	N/A	1
Municipal	High	Convention Way	908.21	5/24/2016	N/A	N/A	N/A
Municipal	High	Embarcadero Marina Park, North	908.21	5/2/2016	N/A	N/A	N/A
Municipal	High	Embarcadero Marina Park, South	908.21	4/18/2016	N/A	N/A	N/A
Municipal	High	Embarcadero Park South Pier	908.21	5/24/2016	N/A	N/A	N/A
Municipal	High	Embarcadero-1	908.21	6/21/2016	2	N/A	1
Municipal	High	Embarcadero-2	908.21	6/21/2016	2	N/A	1
Municipal	High	Embarcadero-3	908.21	6/21/2016	2	N/A	1
Municipal	High	G Street Mole	908.21	5/23/2016	2	N/A	1
Municipal	High	Harbor Island Drive	908.21	5/26/2016	N/A	N/A	N/A
Municipal	High	Harbor Island Park	908.21	5/26/2016	N/A	N/A	N/A

Component	Priority	Facility Name	Watershed	Inspection Date	Follow-up Inspection [1]	Enforcement Required[2,3]	Escalated Enforcement[3,4]
Municipal	High	Harbor Island Taxi Road	908.21	5/26/2016	2	N/A	1
Municipal	High	Harbor Dr - Ash	908.21	6/21/2016	1	N/A	1
Municipal	High	Harbor-Laurel-1	908.21	6/22/2016	N/A	N/A	N/A
Municipal	High	Harbor-Laurel-2	908.21	6/22/2016	1	N/A	N/A
Municipal	High	Kettner Boulevard	908.21	5/24/2016	N/A	N/A	N/A
Municipal	High	Marina Park Way	908.21	5/31/2016	N/A	N/A	N/A
Municipal	High	Midway	908.21	6/29/2016	N/A	N/A	N/A
Municipal	High	N Embarcadero Artery	908.21	6/27/2016	N/A	N/A	N/A
Municipal	High	North Harbor Drive	908.21	6/16/2016	N/A	N/A	N/A
Municipal	High	Pacific Highway - Harbor Dr	908.21	6/20/2016	2	N/A	1
Municipal	High	Pacific Highway	908.21	5/24/2016	N/A	N/A	N/A
Municipal	High	Park Blvd	908.21	5/24/2016	N/A	N/A	N/A
Municipal	High	Rent A Car Access	908.21	5/26/2016	1	N/A	1
Municipal	High	Sea Port Village - Pacific Highway	908.21	6/20/2016	1	N/A	1
Municipal	High	Spanish Landing East Road	908.21	5/18/2016	N/A	N/A	N/A
Municipal	High	Spanish Landing Park	908.21	5/18/2016	N/A	N/A	N/A
Municipal	High	Tuna Harbor Park	908.21	5/23/2016	N/A	N/A	N/A
Municipal	High	Tuna Harbor Park Pier	908.21	5/23/2016	N/A	N/A	N/A
Municipal	High	W G Street	908.21	5/23/2016	N/A	N/A	N/A
Municipal	High	Belt Street	908.22	5/26/2016	N/A	N/A	N/A
Municipal	High	Cesar Chavez Park	908.22	5/25/2016	N/A	N/A	N/A
Municipal	High	Cesar E. Chavez Parkway	908.22	5/25/2016	N/A	N/A	N/A
Municipal	High	Crosby Road	908.22	5/25/2016	N/A	N/A	N/A
Municipal	High	Switzer Street	908.22	5/25/2016	N/A	N/A	N/A
Municipal	High	Water Street	908.22	5/24/2016	N/A	N/A	N/A
Municipal	High	General Services Department Administration Building	908.32	6/27/2016	1	N/A	1
Municipal	High	Pepper Park	908.32	5/26/2016	N/A	N/A	N/A
Municipal	High	Derelict Vessel lot	909.12	6/29/2016	2	N/A	1

Component	Priority	Facility Name	Watershed	Inspection Date	Follow-up Inspection [1]	Enforcement Required[2,3]	Escalated Enforcement[3,4]
Municipal	High	Bay Marina Drive	909.12	5/31/2016	2	N/A	1
Municipal	High	Bayside Parkway	909.12	5/31/2016	N/A	N/A	N/A
Municipal	High	Chula Vista Bayfront Park	909.12	4/18/2016	N/A	N/A	N/A
Municipal	High	Chula Vista Bayside Park	909.12	4/18/2016	N/A	N/A	N/A
Municipal	High	Chula Vista Bayside Park Pier	909.12	4/18/2016	1	N/A	1
Municipal	High	Chula Vista Boat Launch Ramp	909.12	4/18/2016	N/A	N/A	N/A
Municipal	High	G Street	909.12	5/31/2016	N/A	N/A	N/A
Municipal	High	Marina View Park	909.12	4/18/2016	N/A	N/A	N/A
Municipal	High	Quay Avenue	909.12	5/26/2016	2	N/A	1
Municipal	High	Sandpiper Way	909.12	5/31/2016	N/A	N/A	N/A
Municipal	High	Tidelands Avenue	909.12	5/26/2016	2	N/A	1
Municipal	High	W 28th Street	909.12	5/31/2016	N/A	N/A	N/A
Municipal	High	W 32nd Street	909.12	5/26/2016	2	N/A	1
Municipal	High	W J Street	909.12	5/31/2016	N/A	N/A	N/A
Municipal	High	Caribe Cay Boulevard North	910.1	6/1/2016	N/A	N/A	N/A
Municipal	High	Coronado Boat Launch Ramp	910.10	6/1/2016	N/A	N/A	N/A
Municipal	High	Coronado Grand Caribe Shoreline Park	910.10	6/1/2016	N/A	N/A	N/A
Municipal	High	Coronado Landing Park	910.10	6/1/2016	N/A	N/A	N/A
Municipal	High	Coronado Tidelands Park	910.10	6/1/2016	N/A	N/A	N/A
Municipal	High	Glorietta Road	910.10	6/1/2016	N/A	N/A	N/A
Municipal	High	ImpBch-Elkwood	910.10	5/31/2016	N/A	N/A	N/A
Municipal	High	ImpBch-Seacoast	910.10	5/21/2016	N/A	N/A	N/A
Municipal	High	Imperial Beach Dunes Park	910.10	5/31/2016	N/A	N/A	N/A
Municipal	High	Imperial Beach Municipal Pier	910.10	5/31/2016	1	N/A	1
Total Municipal Facilities initial and follow-up inspections:				79	39	0	20
Industrial							
Industrial	High	Nielsen Beaumont Marine Inc.	908.10	2/2/2016	N/A	N/A	N/A
Industrial	High	Driscoll Boat Works	908.10	2/3/2016	1	N/A	1

Component	Priority	Facility Name	Watershed	Inspection Date	Follow-up Inspection [1]	Enforcement Required[2,3]	Escalated Enforcement[3,4]
Industrial	High	Shelter Island Boatyard	908.10	2/9/2016	N/A	N/A	N/A
Industrial	High	Driscoll's West	908.10	5/12/2016	N/A	N/A	N/A
Industrial	High	Koehler Kraft Company, Inc.	908.10	6/21/2016	1	N/A	N/A
Industrial	High	CP Kelco	908.21	1/21/2016	1	N/A	1
Industrial	High	Solar Turbines Incorporated	908.21	5/10/2016	1	1	N/A
Industrial	High	Chesapeake Fish Company	908.21	1/5/2016	N/A	N/A	N/A
Industrial	High	Cruise Ship Terminal	908.21	2/16/2016	1	N/A	1
Industrial	High	Pacific Tugboat Service	908.22	3/24/2016	1	N/A	N/A
Industrial	High	Tenth Avenue Marine Terminal	908.22	5/26/2016	1	N/A	N/A
Industrial	High	BAE Systems San Diego Ship Repair	908.22	2/4/2016	N/A	N/A	N/A
Industrial	High	National Steel and Shipbuilding Company	908.22	3/21/2016	N/A	N/A	N/A
Industrial	High	Continental Maritime	908.22	5/25/2016	N/A	N/A	N/A
Industrial	High	Marine Group Boat Works- National City	908.32	2/10/2016	2	1	N/A
Industrial	High	Dixieline ProBuild - Distribution Center	908.32	2/25/2016	N/A	N/A	N/A
Industrial	High	National City Marine Terminal	908.32	5/24/2016	1	N/A	1
Industrial	High	Goodrich/South Campus	909.10	6/8/2016	1	N/A	N/A
Industrial	High	Marine Group Boat Works- Chula Vista	909.12	2/10/2016	1	N/A	N/A
Industrial	High	Harvest Meat Company, Inc.	909.12	2/2/2016	N/A	N/A	N/A
Industrial	High	Fabrication Technologies	909.12	2/3/2016	N/A	N/A	N/A
Industrial	High	Pepper Oil Company, Inc.	909.12	2/5/2016	1	N/A	1
Industrial	High	San Diego Cold Storage	909.12	2/25/2016	1	N/A	1
Total Industrial Facilities initial and follow-up inspections:				23	14	2	6
Commercial[5]							
Commercial	Low	VMT Auto Sales	910.2	1/27/2016	N/A	N/A	N/A
Commercial	High	Bali Hai Restaurant	908.1	1/4/2016	1	1	N/A
Commercial	High	Point Loma Seafood's	908.1	5/11/2016	1	N/A	N/A
Commercial	High	Red Sails Inn	908.1	5/20/2016	1	N/A	1
Commercial	Medium	Best Western Posada At The Yacht Harbor	908.1	1/5/2016	1	N/A	1

Component	Priority	Facility Name	Watershed	Inspection Date	Follow-up Inspection [1]	Enforcement Required[2,3]	Escalated Enforcement[3,4]
Commercial	High	Humphrey's Half Moon Inn and Suites	908.1	1/11/2016	1	N/A	N/A
Commercial	High	Bay Club Hotel and Marina	908.1	2/16/2016	N/A	N/A	N/A
Commercial	High	Kona Kai Resort	908.1	5/17/2016	1	1	N/A
Commercial	Medium	Holiday Inn San Diego Bayside	908.1	5/24/2016	1	N/A	1
Commercial	High	Best Western Island Palms Hotel	908.1	5/26/2016	N/A	N/A	N/A
Commercial	High	Driscoll's Wharf	908.1	1/28/2016	N/A	N/A	N/A
Commercial	High	Gold Coast Anchoring Marina	908.1	2/2/2016	N/A	N/A	N/A
Commercial	High	Shelter Cove Marina	908.1	2/24/2016	N/A	N/A	N/A
Commercial	High	Silver Gate Yacht Club	908.1	5/12/2016	N/A	N/A	N/A
Commercial	High	Marina Kona Kai (and Yacht Club)	908.1	5/17/2016	1	N/A	1
Commercial	High	Sun Harbor Marina	908.1	5/19/2016	N/A	N/A	N/A
Commercial	High	San Diego Yacht Club	908.1	5/19/2016	N/A	N/A	N/A
Commercial	High	Coronado Cays Yacht Club	908.1	5/19/2016	N/A	N/A	N/A
Commercial	High	Southwestern Yacht Club	908.1	5/24/2016	N/A	N/A	N/A
Commercial	High	Point Loma Marina	908.1	5/25/2016	N/A	N/A	N/A
Commercial	Low	Baker Marine Instruments and Repair	908.1	1/28/2016	N/A	N/A	N/A
Commercial	Medium	San Diego Marine Exchange, Inc.	908.1	2/3/2016	N/A	N/A	N/A
Commercial	Medium	Eichenlaub Marine	908.1	2/22/2016	1	N/A	N/A
Commercial	High	Marlin Club (Fish Weighing)	908.1	2/22/2016	1	N/A	1
Commercial	Medium	Outboard Boating Club	908.1	3/10/2016	N/A	N/A	N/A
Commercial	High	Coronado Ferry Landing	908.1	6/21/2016	N/A	N/A	N/A
Commercial	High	Scott Street Parking, Inc.	908.1	5/18/2016	N/A	N/A	N/A
Commercial	High	Hallmark Yachts, Inc.	908.1	2/1/2016	N/A	N/A	N/A
Commercial	High	Crow's Nest Yacht Sales and Ship Brokerage	908.1	2/4/2016	1	N/A	1
Commercial	High	High Seas Fuel Dock	908.1	1/19/2016	N/A	N/A	N/A
Commercial	High	Pearson Marine Fuels Inc.	908.1	1/27/2016	N/A	N/A	N/A
Commercial	High	H and M Sportfishing Landing	908.1	2/24/2016	N/A	N/A	N/A
Commercial	High	Fisherman's Landing	908.1	5/18/2016	N/A	N/A	N/A

Component	Priority	Facility Name	Watershed	Inspection Date	Follow-up Inspection [1]	Enforcement Required[2,3]	Escalated Enforcement[3,4]
Commercial	High	Point Loma Sportfishing Association	908.1	5/18/2016	N/A	N/A	N/A
Commercial	Low	Sound of Beach	908.1	2/25/2016	N/A	N/A	N/A
Commercial	High	Tonga Landing	908.1	2/29/2016	N/A	N/A	N/A
Commercial	High	Shelter Island Fuel Dock	908.1	N/A[5]	N/A	N/A	N/A
Commercial	Medium	Fish Market Restaurant and Top of the Market	908.21	1/6/2016	1	N/A	N/A
Commercial	High	Joe's Crab Shack	908.21	1/6/2016	N/A	N/A	N/A
Commercial	High	Anthony's Fish Grotto and Star of the Sea Room	908.21	1/7/2016	1	N/A	N/A
Commercial	High	Island Prime	908.21	5/12/2016	1	N/A	N/A
Commercial	High	Tom Ham's Lighthouse	908.21	5/18/2016	1	N/A	1
Commercial	Medium	San Diego Airport Hilton	908.21	1/11/2016	N/A	N/A	N/A
Commercial	High	Manchester Grand Hyatt	908.21	1/25/2016	N/A	N/A	N/A
Commercial	High	Wyndham San Diego Bayside	908.21	2/11/2016	1	N/A	1
Commercial	High	San Diego Marriott Marquis and Marina	908.21	5/10/2016	1	N/A	N/A
Commercial	High	Hilton - San Diego Bayfront	908.21	5/11/2016	1	N/A	1
Commercial	High	Sheraton San Diego Hotel & Marina	908.21	5/17/2016	1	N/A	1
Commercial	High	Marina Cortez, Inc.	908.21	1/4/2016	1	N/A	N/A
Commercial	High	Harbor Island West Marina	908.21	2/9/2016	1	N/A	N/A
Commercial	High	Sunroad Marina	908.21	2/23/2016	N/A	N/A	N/A
Commercial	High	Fifth Avenue Landing	908.21	5/11/2016	1	N/A	N/A
Commercial	High	Cabrillo Isle Marina	908.21	5/26/2016	1	N/A	N/A
Commercial	High	USS Midway Museum	908.21	2/5/2016	N/A	N/A	N/A
Commercial	High	Maritime Museum Assoc. of SD	908.21	2/8/2016	1	N/A	1
Commercial	Medium	San Diego Convention Center Corporation	908.21	3/3/2016	N/A	N/A	N/A
Commercial	High	Seaport Village Management	908.21	5/24/2016	1	N/A	1
Commercial	High	Budget Rent A Car	908.21	1/7/2016	1	N/A	N/A
Commercial	Medium	Park, Shuttle, & Fly Airport Parking	908.21	1/12/2016	N/A	N/A	N/A
Commercial	High	National Rental Car	908.21	1/14/2016	1	N/A	N/A
Commercial	High	Avis Rent A Car	908.21	1/14/2016	N/A	N/A	N/A

Component	Priority	Facility Name	Watershed	Inspection Date	Follow-up Inspection [1]	Enforcement Required[2,3]	Escalated Enforcement[3,4]
Commercial	High	Hertz Rental Car	908.21	5/25/2016	1	N/A	1
Commercial	Medium	Bob Stivers Shell #2	908.21	1/12/2016	N/A	N/A	N/A
Commercial	High	Hornblower Cruises and Events	908.21	2/8/2016	N/A	N/A	N/A
Commercial	High	Flagship Cruises & Events	908.21	6/29/2016	N/A	N/A	N/A
Commercial	Medium	Park N' Go Inc.	908.21	2/17/2016	N/A	N/A	N/A
Commercial	Low	American Tuna Boat Association	908.21	3/8/2016	N/A	N/A	N/A
Commercial	Low	San Diego Sports Fishing Association	908.21	N/A[5]	N/A	N/A	N/A
Commercial	High	Chula Vista Marina (and RV Park)	909.12	1/13/2016	1	N/A	1
Commercial	High	California Yacht Marina	909.12	1/26/2016	N/A	N/A	N/A
Commercial	High	Pier 32 Marina	909.12	5/19/2016	1	N/A	N/A
Commercial	High	JJ's Sunset Deli	909.12	N/A[5]	N/A	N/A	N/A
Commercial	High	Glorietta Bay Marina	910.1	6/28/2016	N/A	N/A	N/A
Commercial	High	Coronado Ferry Landing Management	910.1	6/21/2016	1	N/A	N/A
Commercial	High	Cow-A-Bunga Micro Ice Creamery	910.1	2/17/2016	N/A	N/A	N/A
Commercial	High	The Tin Fish Restaurant	910.10	2/17/2016	N/A	N/A	N/A
Commercial	High	Loews Coronado Bay Resort	910.10	4/28/2016	N/A	N/A	N/A
Commercial	High	Coronado Island Marriott Resort	910.10	4/28/2016	1	N/A	1
Commercial	High	Coronado Yacht Club	910.10	4/28/2016	N/A	N/A	N/A
Total Commercial Facilities initial and follow-up inspections:				76	32	2	15

[1] Follow-up inspections were conducted to ensure corrective actions, such as BMP maintenance, that were identified during an initial inspection are adequately addressed. Corrective actions are relayed to the facility through inspection reports that also serve as written warnings to the facility regarding stormwater compliance.

[2] Municipal facilities: Where corrective actions or discharges were observed at Port maintained facilities, Port stormwater staff submited a compliance work request to the General Services's Department to make corrective actions immediately or as soon as feasible.

[3] All non-compliance issues requiring corrective enforcement actions were resolved and closed.

[4] Escalated enforcement: Any enforcement scenario where a violation or other non-compliance is determined to cause or contribute to the highest or focused priority conditions identified in the San Diego Bay WQIP. The Port's priorities are trash, bacteria, and metals. Of the facility inspections requiring enforcement, 10 out of 15 commercial facility violations and three out of eight industrial facility violations were due to missing stormwater training documentation.

[5] Two facilities in the Port's inventory were not inspected in FY 2016. Shelter Island Fuel Dock does not exist and JJ's Sunset Deli was not in operation. One facility in the inventory, San Diego Sports Fishing Association, is a sub-tenant of a master leaseholder facility and inspected with that facility's inspection.

Table 12-5. Summary of Municipal - Special Event Inspections During 2015-2016.

Watershed	Park Facility Name	Event Name	Pre-Event Inspection Date	Post-Event Inspection Date	Follow-up Required (Y/N)	Follow-up Inspection[1]	Escalated Enforcement[2]
908.1	Scott Street Parking lot	Day at the Docks NPCE	4/13/2016	4/18/2016	Yes	4/25/2016	None
908.1	Shelter Island Shoreline Park	Open Bay Bass Tournament	1/11/2016	1/25/2016	No	N/A	N/A
908.2	Broadway Pier & Pavilion	U.S. Sand Sculpting Challenge and Dimensional Art Exposition	9/4/2015	9/9/2015	No	N/A	N/A
908.2	Broadway Pier & Pavilion	Latin Food Festival	8/12/2015	8/17/2015	Yes	8/18/2015	None
908.2	Broadway Pier & Pavilion	San Diego Reader Feast	9/10/2015	9/14/2015	No	N/A	N/A
908.2	Broadway Pier & Pavilion	OCT Amtrak Century	9/10/2015	9/14/2015	No	N/A	N/A
908.2	Broadway Pier & Pavilion	San Diego HP Global Launch	11/2/2015	11/3/2015	No	N/A	N/A
908.2	Broadway Pier & Pavilion	San Diego Brewers Guild Festival	11/5/2015	11/3/2015	No	N/A	N/A
908.2	Broadway Pier & Pavilion	New Years Eve at Broadway	12/29/2015	1/4/2016	No	N/A	N/A
908.2	Broadway Pier & Pavilion	The Mustache Bash	4/1/2016	4/4/2016	No	N/A	N/A
908.2	Broadway Pier & Pavilion	Charles Froup Corporate Reception	4/7/2016	4/12/2016	No	N/A	N/A
908.2	Broadway Pier & Pavilion	Networking & Sales Entertainment event	4/7/2016	4/12/2016	No	N/A	N/A
908.2	Broadway Pier & Pavilion	Team Rady 2016	5/4/2016	5/12/2016	No	N/A	N/A
908.2	Broadway Pier & Pavilion	Makers Arcade	5/19/2016	5/23/2016	No	N/A	N/A
908.2	Embarcadero Marina Park North	No Alec Zone Rally	7/21/2015	7/23/2015	No	N/A	N/A
908.2	Embarcadero Marina Park North	2015 San Diego Free to Breath Run/Walk	8/7/2015	8/10/2015	No	N/A	N/A
908.2	Embarcadero Marina Park North	Relay For Life Of Downtown San Diego	8/13/2015	8/17/2015	Yes	8/26/2015	None
908.2	Embarcadero Marina Park North	D + H Corporate Celebration	9/2/2015	9/3/2015	No	N/A	N/A
908.2	Embarcadero Marina Park North	CPO Pride Day 2015	9/9/2015	9/14/2015	No	N/A	N/A
908.2	Embarcadero Marina Park North	San Diego Blues Festival	9/21/2015	9/28/2015	Yes	9/28/2015	None
908.2	Embarcadero Marina Park North	Autonomy Farms Dinner	10/7/2015	10/16/2015	Yes	10/20/2015 & 10	None
908.2	Embarcadero Marina Park North	San Diego Bay Wine & Food Festival	11/2/2015	11/3/2015	Yes	Photos submitted by event coordinator	None
908.2	Embarcadero Marina Park North	5K Super Run	3/4/2016	3/7/2015	No	N/A	N/A
908.2	Embarcadero Marina Park North	Uncorked Wine Festivals	4/1/2016	4/4/2016	No	N/A	N/A
908.2	Embarcadero Marina Park North	4th Annual Day @ The Bay Show & Shine	4/12/2016	4/13/2016	Na	N/A	N/A
908.2	Embarcadero Marina Park North	San Diego Oyster Festival 2016	*	6/21/2016	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	7/2/2015	7/8/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	7/9/2015	7/13/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	7/13/2015	7/20/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	Picnic For Cubic	7/16/2015	7/20/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	7/20/2015	7/24/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	Fire Fighter Chili Cookoff	7/24/2015	7/27/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	CFS/SPF Annual Open Reception	7/24/2015	7/27/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	7/30/2015	8/3/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	8/6/2015	8/10/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	8/13/2015	8/17/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	8th Annual Bike the Bay	8/18/2015	8/24/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	8/20/2015	7/28/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	San Diego Symphony Summer Pops	9/3/2015	9/4/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	El Festival del Grito	9/10/2015	9/14/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	Susan G. Komen SD 3 Day Walk	11/2/2015	11/3/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	Lung Force Walk Event Site	11/4/2015	11/9/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	Fit Foodie 5K Event Site	11/4/2015	11/9/2015	Yes	11/10/2015	None
908.2	Embarcadero Marina Park South	FanDuel World Fantasy Football Championship	12/11/2015	12/14/2015	No	N/A	N/A
908.2	Embarcadero Marina Park South	Best Coast Beer Festival	3/3/2016	3/14/2016	No	N/A	N/A
908.2	Embarcadero Marina Park South	Speak Up 5K	4/15/2016	4/18/2016	No	N/A	N/A
908.2	Embarcadero Marina Park South	Walk for Wishes 5K	4/21/2016	4/25/2016	No	N/A	N/A
908.2	Embarcadero Marina Park South	FroYo Run	4/28/2016	5/2/2016	Yes	5/9/2016	**Administrative Citation**

Watershed	Park Facility Name	Event Name	Pre-Event Inspection	Post-Event Inspection	Follow-up Required	Follow-up Inspection[1]	Escalated Enforcement[2]
908.2	Embarcadero Marina Park South	Bacon and Barrels	5/19/2016	5/23/2016	Yes	5/25/2016	None
908.2	Harbor Drive/Ash Street Parking Lot	Port of San Diego Festival of Sail	9/4/2015	9/8/2015	No	N/A	N/A
908.2	Ruocco Park	BAMF	7/10/2015	7/13/2015	No	N/A	N/A
908.2	Ruocco Park	Microsoft Tailgaming	11/5/2015	11/9/2015	No	N/A	N/A
908.2	Ruocco Park	Bumble Bee 5k	12/29/2015	1/4/2016	No	N/A	N/A
908.2	Ruocco Park	Campagnolo Granfondo San Diego	4/6/2016	4/11/2016	No	N/A	N/A
908.2	Ruocco Park	San Diego International Triathalon	6/24/2016	6/27/2016	No	N/A	N/A
908.2	Spanish Landing Park	Mammoth Heart	4/21/2016	4/25/2016	No	N/A	N/A
908.2	Spanish Landing Park	National MS Society Walk 2016	4/22/2016	4/25/2016	No	N/A	N/A
908.2	Spanish Landing Park	Gator By the Bay	5/3/2016	5/9/2016	Yes	5/11/2016	**Administrative Citation**
908.2	Spanish Landing Park	San Diego International Boat Show	*	6/22/2016	No	N/A	N/A
908.3	Pepper Park	Mariachi Festival	3/8/2016	3/14/2016	No	N/A	N/A
908.3	Pepper Park	Dia De San Juan Portorican Festival	6/21/2016	6/27/2016	No	N/A	N/A
909.1	Chula vista Bayside Park	Chula Vista Challenge	7/17/2015	7/20/2015	No	N/A	N/A
909.1	Chula Vista Bayside Park	Chula Vista Harbor Fest	8/20/2015	8/24/2015	No	N/A	N/A
909.1	Chula Vista Bayside Park	South Bay Pride Art and Music Festival	9/10/2015	9/14/2015	No	N/A	N/A
909.1	Chula Vista Bayside Park	CV Bayfront Parade Band Review & Festival A Salute to Veterans	11/13/2015	11/15/2015	No	N/A	N/A
909.1	Chula Vista Bayside Park	Go Green & Clean	4/7/2016	4/12/2016	No	N/A	N/A
909.1	Chula Vista Bayside Park	We Support U 5K RunWalk	4/12/2016	4/18/2016	No	N/A	N/A
909.1/908.2	Chula Vista Bayside Park / Embarcadero Marina Park South	Ragnar Relay SoCal 2016	4/1/2016	4/4/2016	No	N/A	N/A
909.1	Chula Vista Marina View Park	Annual South Bayfront Pow-Wow	7/27/2015	8/3/2015	No	N/A	N/A
910.1	Coronado Tidelands Park	Symphony Concert For Coronado	8/12/2015	8/17/2015	No	N/A	N/A
910.1	Coronado Tidelands Park	GKN Aerospace Picnic	9/10/2015	9/14/2015	No	N/A	N/A
910.1	Coronado Tidelands Park	Navy's 30th Bday	5/13/2016	5/16/2016	No	N/A	N/A
Total Special Event Inspections and follow-up inspections:			**70**	**72**	**10**	**-**	**2**

[1]The need for a follow-up inspections is based on the post-event inspection results.

[2]Escalated enforcement: Any enforcement scenario where a violation or other non-compliance is determined to cause or contribute to the highest or focused priority conditions identified in the San Diego Bay WQIP. The Port's priorities are trash, bacteria, and metals. Of the 72 Special Events that occurred on Port tidelands, **two** required escalated enforcement. Corrective actions were taken by both event organizers and the items were closed.

*Pre-event inspection was not completed due to availability of Port staff

Table 12-6. MS4 Inventory and Inspections During 2015-2016

MS4	Inventory[1]		Inspected	Percent (%) of Inventory Inspected[2]
Total MS4				
	Original	**Revised**		
Catch Basins and Inlets	597	516	585	98%
Manholes	65	51	64	98%
Outfalls	154	154	131	86%
Total MS4	816	721	780	96%
High Priority MS4				
	Original	**Revised**		
Catch Basins and Inlets	592	511	585[3]	99%
Manholes	65	51	64[4]	98%
Outfalls	153	153	131[5]	86%
Total High Priority	810	715	780	96%
Non-High Priority MS4				
Catch Basins and Inlets	5		N/A	N/A
Manholes	0		N/A	N/A
Outfalls	1		N/A	N/A
Total Non-High Priority	6		N/A	N/A
Stormwater Conveyance (miles)				
Total High Priority	16.1[6]		16.1	100%
Total Non-High Priority	0.08		N/A	N/A
Total Miles	16.2		16.1	99%
BMPs				
Total High Priority	115		115	100%
Non High Priority	0		N/A	N/A
Port Total	115		115	100%
Stormwater Conveyance Cleaning				
Total Cleaned (miles)			2.2	
BMP and MS4 Cleanings[7]				
Structure Type	**# Cleaned**		**Trash Observed[8]**	**% With Trash Observed**
BMPs	26		14	53%
MS4s	48		18	38%

1. The 2015 JRMP update indicates 816 total municipal MS4 structures and 810 total high priority municipal MS4 structures in the inventory; however, there were a total of 95 structures confirmed abandoned or removed based on 2015-2016 MS4 inspections. The numbers in the "Revised" column reflect the new MS4 inventory numbers based on the removal of these 95 structures.
2. Percentages are based on 15-16 original inventory numbers (inventory numbers prior to removal of abandoned or removed structures).
3. A total of 5 catch basins were inaccessible and 2 catch basins were located in construction areas with BMPs on them and were not inspected.

4. One manhole was not inspected for traffic safety reasons.
5. All 21 uninspected outfalls were either tidally inundated or inaccessible. In each of these instances, at least one MS4 feature on the outfall's line was inspected.
6. Approximately 2 miles of stormwater conveyance line was confirmed abandoned or removed as a result of construction.
7. BMPs and MS4s were cleaned if inspections indicated >33% accumulation of debris in the structure.
8. Top 2 debris categories accumulated in MS4 and/or BMP structure are recorded during inspections (grass, leaves, sediment, vegetation, debris, or trash). This column denotes MS4 and BMP structures with > 33% accumulation of debris and trash as one of the top 2 observed debris categories.

Table 12-7. Overall Education Activities for Identified Target Audiences during 2015-2016

Target Audience	# of Activities	# of People
Municipal Development Planning	2	25
Municipal Construction	6	77
Municipal Industrial and Commercial[1]	8	52
Municipal Marine	1	10
Municipal Other	9	501
Construction Site Owners and Developers	5	708
Industrial and Commercial Owners and Operators[1]	6	108
Residential Community and General Public[2]	42	133,992
School Children	13	17,810
TOTAL	**92**	**153,283**

[1]A training video created by the Port, entitled "*Port of San Diego's Storm water Best Management Practices (BMP) Training for Industrial and Commercial Facilities,* " was made available to commercial and industrial tenants to be shown at training events in FY 2016. The training video has been viewed 1,191 times since it was published in November 2015 (https://www.portofsandiego.org/environment/stormwater/302-stormwater-management-program.html).

[2] Residential Community and General Public activities include: 16 cleanups (1,748 people), 12 public seminars or outreach events (105,694 people), and sponsorship of Think Blue San Diego PSA announcements (26,550 people).

Table 12-8. Education Activities Reaching Underserved Audiences During 2015-2016

Activity	Completion Date	Description of Underserved Audience Reached	Number Reached
Chula Vista Elementary School District Education Program at the Living Coast Discovery Center	May-16	At least 50% of the schools are Title 1	4,919
Groundworks San Diego Chollas Creek - Chollas Creek to SD Bay Waterkeepers Initiative[1]	May-16	All participating schools are Title 1	600
I Love a Clean San Diego - Kicking Trash, Connecting Kids to Conservation	Feb-16	Title 1 schools reached	934
Living Coast Discovery Center Educational Program	May-16	At least 50% of the schools are Title 1	2,173
Maritime Museum of San Diego Educational Outreach	May-16	At least 50% of the schools are Title 1	790
Ocean Discovery Insitute - Wetland Avengers Field Trips[1]	May-16	At least 50% of the schools are Title 1	953
Ocean Discovery Institute - Ocean Science Explorers, City to Bay Scientists[1]	Feb-16	All participating schools are Title 1	950
Resource Conservation District– Watershed Education Program	May-16	At least 50% of the schools are Title 1	2,460
San Diego Coastkeeper San Diego Bay Environmental Education Kit	May-16	At least 50% of the schools are Title 1	806
The Green Machine	May-16	Title 1 schools reached	1,505
The Ocean Foundation/ The Ocean Connectors - Sea Turtle Education Services	May-16	All participating schools are Title 1	605
The Ocean Foundation/ The Ocean Connectors - Whale Exploration Foundation	May-16	At least 50% of the schools are Title 1	590
Wildcoast - Sea Turtle Education Program	May-16	At least 50% of the schools are Title 1	525
		TOTAL	17,810

[1]Educational programs specifically occurring within the Chollas Creek HSA (908.22). In addition,six watershed education presentations to 142 high school studentsby I Love A Clean San Diego also occured in Chollas Creek.

Table 12-9. Public Participation Opportunities During 2015-2016			
Opportunity	**Target**	**Target Reached?**	**Summary**
Port Environmental Committee	Collaborate	Yes	Collaboration was successfully achieved during the reporting period. At the 3 meetings held, an average of 25 stakeholders attended at each meeting. They represented non-profit groups, Port Tenants, academia, consultants and government agencies. Tehse stakeholders were given the opportunities to review documents, make comments on presentations, and provide input on the selection of enviromental projects benefitting San Diego Bay. Specific projects with opportunity for collaboratoin and relevance to the JRMP included presentations on the California Energy Commission/ Port Collaboarative, native oyster reefs, Climate Action Plan, aquaculture, the Regional Harbor Monitoring Program, mitigation banking and Port Environmental Fund sponsored projects.
Board of Port Commissioner (BPC) Meetings	Consult	Yes	Consultation was successfully achieved during the reporting period. At the BPC meetings held, a told of 92 public comments were made on environmental issues from stakeholders representing non-profit groups, private industry, and Port tenants. All of the comments were taken into consideration during the decision-making process by the Board of Port Commissioners.
Copper Reduction Program	Involve	Yes	Involvement was successfully achieved during the reporting period. Several stakeholders attended the Port's Clean and Green Boating Expo a key outreach event for the Copper Reduction Program. They represented nonprofit groups, Port tenants, local boating public and businesses, and the public. The Port also interacted with stakeholders through their participation in 4 other local boating-related community events: Day at the Docks, Earth Day at the Bay, San Diego Boat Show and the Sunroad Boat Show.
Integrated Pest Management (IPM) Committee	Collaborate	Yes	Collaboration was successfully achieved during the reporting period. On May 19, 2016, the Port sponsored IPM for Landscape Professionals seminar was attended by **117** gardening and landscape professionals. The participants learned about activity-specific BMPs, laws and regulations applicable to pesticide use. The seminar also highlighted the connection between water quality impacts and pesticide use throughout the tideland.

Table 12-10. San Diego County Copermittees Fiscal Analysis Report for Urban Runoff Management Programs.

Copermittee Name:	Port of San Diego
Date:	1/31/2017
Reporting Year:	2015-2016

EXPENDITURE SUMMARY

ADMINISTRATION/MUNICIPAL/IDDE	$	1,570,553
DEVELOPMENT PLANNING/CONSTRUCTION	$	281,698
INDUSTRIAL AND COMMERCIAL	$	255,254
RESIDENTIAL	$	-
EDUCATION	$	264,811
PUBLIC PARTICIPATION	$	-
SPECIAL INVESTIGATIONS/TMDL SUPPORT	$	447,912
NON-EMERGENCY FIREFIGHTING		
	$	**2,820,228**

San Diego Bay Watershed	$	113,592
	$	**113,592**

Copermitttee Cost Share of Regional Budget	$	25,204
	$	**25,204**

	$	**2,959,024**

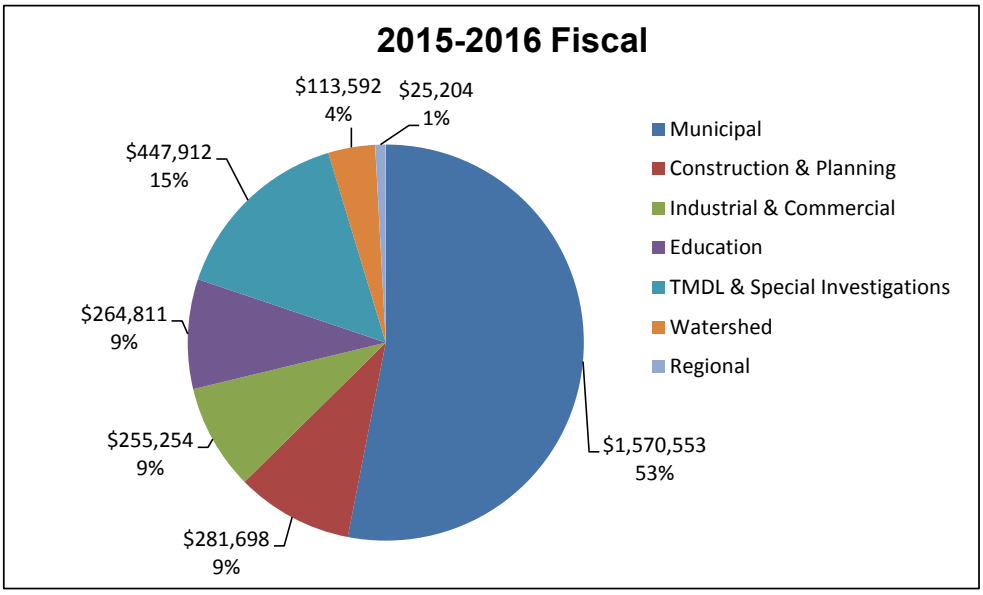

Table 12-11. 2015-2016 Port Staffing Expenditures by Program Component & Activity.

Category	Category Description	Total Spent
MUNICIPAL		
Administration	Administration includes general administrative activities, meetings, general reporting, and PGP staffing for the implementation of the Municipal Stormwater Permit.	$193,485
Municipal Inspections	Includes PGP staffing for storm drain inspections, site inspections (parks, Port facilities, etc.), special event inspections, departmental meetings, storm drain markers/GPS efforts, and BMP studies.	$37,618
Waste Management	PGP staffing to begin development of Waste Program	$7,388
BMP Implementation	General Services dept. staffing for street sweeping.	$198,782
BMP Implementation	General Services dept. staffing for bay debris.	$24,966
BMP Implementation	General Services dept. staffing for trash collection.	$776,882
Other expenditures	Includes PGP staffing for GIS and database management and GIS/Mapping/data utilization.	$2,370
CONSTRUCTION & PLANNING		
Compliance Inspections & Enforcement	Construction activities include meetings with contractors, Port engineers and construction staff, site inspections, follow-ups, and written correspondence.	$65,023
Project Planning & Engineering	Environmental project and proposal review, SUSMP applicability and the review of SWPPP and SUSMP documents.	$22,991
INDUSTRIAL / COMMERCIAL		
Industrial Compliance	Industrial compliance includes staff time for the implementation of the Industrial Permit for the TAMT, NCMT, and Cruise Ship Terminal.	$69,379
IGP Program Update	SWPPP template updates for marine terminals and facilities	$1,590
Compliance Inspections & Enforcement	Tenant compliance includes industrial and commercial inspections (including all follow-ups, written correspondence, meetings, etc.), and ICID tenant issues.	$33,115
EDUCATION		
Education & Outreach	Education includes Port staff training, adult education, children (school) education, regional education meetings, regional outreach efforts, internal and external outreach events, clean-up events, brochure development and website development.	$28,797
WATERSHED		
Administration	Watershed management includes staff time for meetings and report preparation, GIS/Mapping, WQIP strategies (PO-19, PO-20, PO-30, PO-43, PO-44, PO-46, PO-47) watershed education, watershed cleanup events (PO-39), MS4 Permit, etc.	$38,761

Table 12-11. 2015-2016 Port Staffing Expenditures by Program Component & Activity.

TMDL		
SIYB TMDL Implementation	SIYB TMDL for Dissolved Copper /Copper Reduction Program.	$136,936
SISP TMDL	TMDL bacteria sampling, meetings, reporting	$23,117
Chollas TMDL Collaboration	Chollas Creek TMDL for Diazinon, Dissolved Metals and Bacteria.	$4,581
URBAN RUNOFF & RECEIVING WATER MONITORING		
Regional Harbor Monitoring	Regional Harbor Monitoring includes staff time for meetings report preparation and review, coordination and planning.	$9,125
MS4 Permit Required Monitoring	Monitoring includes field work for dry weather monitoring and coastal monitoring, report preparation, ICID response to incoming calls and investigations resulting from complaints.	$7,900
Other Monitoring Programs	Monitoring includes participation in RWQCB San Diego Bay Strategy and San Diego Bay Debris Study	$2,075
	2015-2016 Total Staffing Expenditures	**$1,684,881**

Table 12-12. 2015-2016 Port External Expenditures by Program Component & Activity.

Component	Program Description	Total Spent
PERMITS & FEES		
Copermittee Regional Cost Share	Regional MOU cost share, Wet Weather Copermittee Mass Loading Station Monitoring Program and cost share for Bacterial Reference study.	$25,204
SD Bay Watershed Collaboration Cost Share	Watershed consultant support forcompleting and implementing San Diego Bay WQIP (Port portion of cost-share only)	$8,017
Permits	Fees for municipal, industrial and construction permits.	$8,425
EDUCATION		
Outreach/Education Support	Consultant support for staffing education & outreach efforts for the stormwater program.	$9,552
Ocean Discovery Institute (formerly Aquatic Adventures)	Fourth graders within the Port School Partnerships Program participate in “Wetland Avengers”, a program that teaches students about wetlands in south San Diego Bay .	$37,032
I Love a Clean San Diego	"Kicking Trash: Connecting kids to conservation" program and watershed presentation to students	$22,284
Living Coast Discovery Center	Provides 40 classrooms teacher training and docent-lead tours of the Nature Center.	$67,800
The Ocean Foundation	Elementary school education program	$11,000
Green Machine Outreach Van	Mobile agriculture education program featuring I.P.M. & water cycle demonstrations to 43 schools along Chollas Creek.	$9,370
Groundwork SD - Chollas	Educational outreach program.	$9,793
I.P.M. Training Seminars	Coordinates and funds annual seminars for San Diego County pest controllers on Integrated Pest Management methods and pollution reduction.	$9,000
Maritime Museum Association of San Diego	Educational outreach program.	$20,000
Resource Conservation District	Brings interactive watershed model to classrooms for watershed and storm water demonstrations.	$14,593
Pro Peninsula/ Ocean Foundation	Sea turtle education program.	$7,584
San Diego Coastkeeper		$1,106
Chula Vista School District	Environmental Education Program	$12,400
WiLDCOAST	Provides sea turtle education to students in San Diego County.	$4,500
CONSTRUCTION SUPPORT		
Tenant Projects - Inspections & Support		$104,469
Capital Projects - Inspections & Support		$24,505
USMP and SWPPP Review	Review of SUSMP and SWPPP Documents, consultant support w/JRMP Report, Alternative Compliance Program (PO-42) and template development, and SWQMP Development.	$64,710
INDUSTRIAL COMMERCIAL SUPPORT		
Commercial/Industrial facilities inspection	Contracted services for assistance with conducting inspections of commercial and industrial facilities.	$29,012

Table 12-12. 2015-2016 Port External Expenditures by Program Component & Activity.

TMDL SUPPORT		
SIYB TMDL Implementation	Contracted services for implementation plan, compliance monitoring, reporting, and education efforts.	$196,428
Other TMDL related studies	Contracted services for review, implementation, and monitoring of existing or draft TMDLs (i.e., Shelter Island Shoreline Park).	$7,127
Chollas Creek TMDL Implementation	Port cost-share for Chollas Creek TMDL Compliance.	$4,394
SPECIAL STUDIES & INVESTIGATIONS		
Regional Harbor Monitoring	Compliance with RWQCB directive issued in July 2003.	$64,129
STORMWATER PERMIT MONITORING		
Outfall Monitoring	Includes coastal and targeted MS4 outfall monitoring and transitional monitoring.	$2,090
Industrial Monitoring and Review	Wet weather monitoring at Port Industrial Facilities also includes update to Industrial Stormwater permit (IGP) program and SWPPP review.	$122,158
WATERSHED & OTHER COLLABORATIVE EFFORTS		
SD Bay Watershed	Consultant support for Focused Priority Condition monitoring, and implementing watershed strategies (PO-23 and PO-47)	$65,814
Watershed group-related clean up events	A watershed-based activity sponsored and conducted by the Port as one if the San Diego Bay Watershed Copermittees.	$1,000
MUNICIPAL ACTIVITIES OPERATIONS & MAINTENANCE		
Stormwater Data Management	Contracted services for development and implementation of stormwater database.	$10,788
Trash Collection	Contracted services for waste pick-up, removal, and disposal.	$209,464
Recycling	Paper, glass, plastic, and aluminum recycling for Port facilities.	$16,290
Waste Collection	Baywide debris removal and clean-up programs - Operation Clean Sweep.	$20,000
Stormwater Training, Equipment & Supplies	Provides training for staff, equipment for monitoring projects, special studies, and ICID investigations. (analyte kits, field computers, Arc-pad, etc.), printed materials, meeting supplies, etc.	$4,468
MS4 Maintenance	Contracted services for inspections, maintenance, repair/replacement and cleaning of MS4 and Port owned BMPs.	$49,637
TOTAL		**$1,274,143**

12.3 PORT OF SAN DIEGO STRATEGIES

In FY 2016, the Port implemented strategies as identified in the San Diego Bay Watershed WQIP to address the watershed's Highest Priority and Focused Priority Conditions. In order to capture the benefits and efficiencies of standardized routines and requirements, a majority of the Port's strategies were implemented jurisdiction-wide; such as requiring the same minimum best management practices (BMPs) for construction sites regardless of location. The Port also identified targeted strategies focused on specific priority condition areas. Overall, the Port's strategies targeted trash, bacteria, and metals as the primary pollutants to address the WQIP's Highest and Focused Priority Conditions.

In June 2015, the Port updated its JRMP and incorporated the WQIP strategies thereby meeting the requirements of the Municipal Permit. All of the seventeen (17) strategies identified for FY 2016 were implemented along with eighteen additional (18) optional strategies. The two-page JRMP annual report form with supplemental Tables 12-1 through 12-12 and WQIP Strategies in Table 12-13 provide more information on the Port's activities in FY 2016.

JRMP Implementation

The Port's JRMP program was implemented in accordance with the Municipal Permit requirements. The Regional Board JRMP Annual Report Form and supplemental tables in Section 12.2 contain a more detailed account of the activities conducted and the programs implemented to address the inspection, monitoring, investigation, education, and enforcement requirements of the Municipal Permit.

Several notable accomplishments occurred during the FY 2016 reporting period. Collectively, 681 initial and follow-up inspections of 178 municipal, commercial/industrial facilities and 51 construction sites were completed. The Port inspected 97% of the entire municipal, commercial, and industrial facility inventory, including all of the high priority facilities identified in the inventory. Another 142 initial and close-out inspections were completed for special events. Six new priority development projects were completed within the reporting year resulting in an additional 12 acres of treated area.

In FY 2016, the Port continued to educate the public about pollution prevention and BMP implementation reaching over 153,283 people through 924 education activities. The Port also funded or hosted 16 cleanup events jurisdiction-wide, in which 1,748 people participated overall and approximately 16.5 tons of trash was removed. The municipal component resulted in an additional 1,168 tons of trash and debris being removed from tidelands and the bay.

The Port also conducted an internal audit of its storm water program in June 2016. Specifically, special events, construction, industrial/commercial and illicit discharge inspection processes were reviewed for compliance with the Port 2015 JRMP and internal standard operating procedures (SOP). Overall, the audit indicated that the inspections,

notices, follow-up, and enforcement were processed in accordance with the Port SOPs and the 2015 JRMP. Recommendations were made to further refine the special events inspection process and refine the communication of corrective actions to inspected parties. The audit also recommended an additional quality check process to provide additional verification of the Port's facility inventory. All of these recommendations have been incorporated into the Port's SOP process.

Implementation of the updated JRMP posed several challenges that the Port is continuing to address. First, implementation of the revised JRMP program and incorporation of the finalized WQIP and BMP Design Manual that occurred mid-year required revised SOPs and additional education outreach both internally and with the regulated public. Updates to the storm water database to effectively track all the JRMP program elements, escalated enforcement versus routine enforcement, and WQIP strategies continues to be a challenge the Port is addressing. The Port worked on updates to its storm water database through FY 2016 and will continue through the next FY 2017 to address these issues.

In FY 2016, the Port issued 51 Administrative Citations and Work Orders which is a greater number of enforcement actions than in previous years. This is in part a result of the incorporation of the Enforcement Response Plan in the 2015 JRMP. Escalated enforcement at the municipal facilities was generally a result of greater attention to the presence of trash and debris at Port parks and parking lots. Routine cleaning of all the Port areas and facilities is already in practice however, the Port has also been ramping up its waste management program to address those issues and increasing the inspection frequency in those areas.

A majority of the escalated enforcement citations issued to commercial and industrial facilities in FY 2016 were mainly a result of missing employee storm water training documentation. In the past, this BMP would have triggered a (required corrective action) written warning to complete within a specified timeframe. In the 2015 JRMP, employee storm water training was identified as a minimum required BMP that triggers escalated enforcement. Although the Port sent out notifications to all the facilities in the inventory regarding required BMPs and employee storm water training requirements, and posted a bilingual storm water BMP training video on the Port website, however employee storm water training was still found to be the most frequently deficient BMP and resulted in escalated enforcement actions. It is notable however, that in most of the instances where employee training was deficient or missing, other BMPs were not. For this reason, in FY 2017, the Port has modified the employee storm water training to be a required minimum BMP but it will not be identified as a BMP that will trigger escalated enforcement. Instead, where employee storm water training is found to be deficient or missing, the Port will identify it as a required corrective action that will need to be completed within a specified timeframe in order for the facility to avoid further enforcement action.

Targeted Approach

The Port's approach to address the Highest or Focused Priority Conditions and their sources includes employing targeted efforts focused on specific priority condition areas along with the core (or optional) JRMP strategies. The following three strategies focused specifically on segments of the Port tidelands within the Physical Aesthetics Focused Priority Condition areas.

- PO-34. Baseline Trash Assessment and BMP Feasibility Pilot Study: This optional study was initiated in FY 2016 to identify potential need for structural or source control improvements at high-volume trash-generating areas within the 909.1 and 910.2 HAs. Results of the study are expected to inform the Port on potential program improvements and adjustments identify where BMP retrofits and installations are feasible, and plan for meeting the WQIP trash goals. In addition, the study serves as a template that could be applied jurisdiction-wide. The study is scheduled to be completed in FY 2017.
- PO-30. Program Assessment: The MS4 inspection and cleaning data from the past five years was evaluated to identify whether modifications to inspection and/or cleaning activities were needed to effectively address higher trash generating areas. This optional assessment was done in a phased approach by first assessing the Focused Priority Condition Areas, then evaluating jurisdiction-wide. Of the 780 MS4 components assessed jurisdiction-wide, thirty-one (31) met the prioritization criteria for increased inspection frequency (two times per year) and will be inspected at the higher frequency in FY 2017. However, none of the MS4 components meeting the criteria were located in the Physical Aesthetics Focused Priority Condition areas.
- PO-41. Structural Control: The Port installed a 950-foot custom fence that replaced a chain-link fence along the southern perimeter of the 95-acre Pond 20 site at 1400 Palm Avenue. The fence helps protect the Pond 20 area by preventing trash and debris from entering the area. The Port funded the project through its Capital Improvement Program. The new fence was designed with significant public input and incorporates local flora, fauna, and surfboards to enhance the site's unique, panoramic bay view.

In addition, while the majority of the strategies were implemented jurisdiction-wide, the Port was often able to track results by HA. This provided a more holistic evaluation of the Port's overall implementation efforts to specifically address each of the Priority Conditions in FY 2016. Additional information on the Port's efforts to address the Highest and Focused Priority Conditions is provided in Section 4.6 (Chollas Creek), Section 7 (Physical Aesthetics), and Section 8 (Swimmable Waters) of the San Diego Bay WQIP annual report.

Fiscal Analysis

The Port's overall expenditures for the FY2016 reporting period totaled approximately $3 million dollars. Municipal services, activities and operations comprised the bulk of the program, accounting for over 53% of overall expenditures. TMDL and special investigation efforts accounted for another 15%. Education, industrial and commercial program, and construction each comprised 9% of the overall expenditures. Over half of the fiscal expenditures went toward staffing (57%), with the remaining 43% going to pay for external consultant or contracted services for specialized program assistance.

In summary, it appears that the Port's JRMP program, as a whole, has been effective in addressing the Highest and Focused Priority Conditions and other priority water quality conditions during FY 2016. The Port's JRMP continues to evolve with time and staff continues to make improvements to processes, programs and assessments. As characteristics, policies, and procedures continue to change in the Port's tidelands jurisdiction, so will the Port JRMP program.

Table 12-13
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
JRMP (E.2-E.7) Strategies (E.3.b.(1)(a))								
Development Projects (including Priority Development Projects)								
PO-1	Implement Core JRMP Program for all development projects to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	For proposed development projects, the Port prescribed source control and LID BMP requirements during the project planning process and prior to project approval consistent with the Port BMP Design Manual. Implementation of BMPs will be incorporated into project approvals. Verification of BMP installation was conducted by Port staff. Refer to JRMP Section 4 and JRMP Appendix D Port BMP Design Manual. Optional strategies relating to Development include PO-18, PO-19, PO-20, and PO-47. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by the Port's Board of Commissioners (BPC). Permit-required strategy to be implemented jurisdiction-wide and continuously throughout permit term.	FY16	Implemented as planned, On-going	• 5 USMP (Urban Storm Water Mitigation Plan) documents approved (1 of the 5 was actually a SWQMP [Storm Water Quality Management Plan], under the new permit language) • One USMP document approved in 910.1 HA - Coronado Ferry Landing Restaurant SWQMP (construction has not started on this) • 115 acres treated by BMPs (12 acres of treated area added in 2015-2016)	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-2	For PDPs, administer a program requiring implementation of structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	For all PDPs, the Port prescribed treatment control BMP requirements as applicable and feasible during the project planning process and prior to project approval consistent with the Port BMP Design Manual. Implementation of BMPs will be incorporated into project approvals. Verification of BMP installation was conducted by Port staff. Refer to JRMP Section 4 and JRMP Appendix D Port BMP Design Manual. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and continuously throughout permit term.	FY16	Implemented as planned, Ongoing	The Port implemented the program as scheduled. The FY 2016 jurisdiction-wide construction inspection program results (Treatment Control BMPs, Inspections, and Verification of Maintenance) are provided in the Port's JRMP annual report form and supplemental Table 12-3. • 909.1 HA: Annual inspections to verify maintenance of BMPs occurred at one PDP project in this HA during the reporting period. The Port carried out an annual project inspection at the H Street Extension Project that required a follow-up to verify all required post-construction BMPs were installed. A follow-up inspection found no citations or escalated enforcement was required. • 910.1 HA: Inspections at two PDP projects occurred in this HA during the reporting period. The projects required annual verification of maintenance of BMPs. The BMPs were inspected and found to be maintained as necessary, and did not require corrective actions.	N/A	N/A	Yes
PO-3	Train all applicable departments annually on storm water requirements for all development projects	The Port conducted education efforts focusing on new development and redevelopment projects and their relationship to urban runoff impacts on water quality. See JRMP Sections 4.7.1 and 9.3.1. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on an annual basis throughout the permit term.	FY15	Implemented as planned, On-going	The Port held seven trainings to a total of 102 staff during the reporting year. In addition to new development and redevelopment project information, topics also included a discussion on WQIP priority conditions and pollutants (trash, metals, and bacteria).	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-4	Conduct project closeout inspection for all development projects to verify that Trash, Metals, and Bacteria BMPs are properly implemented	Permit-required strategy to be implemented jurisdiction-wide and will be conducted on a continuous basis as part of the PDP project closeout inspection. Post construction inspections will be conducted at PDP sites to verify that any and all approved structural BMPs have been installed as approved by the Port. The close-out inspection will also verify that trash, metals, and bacteria BMPs are installed and functioning correctly where applicable. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by BPC.	FY16	Implemented as planned, On-going	The BMP Design Manual became effective in February 2016. Five projects were completed between February and June 2016. However, those projects were reviewed, approved and commenced prior to the BMP Design Manual effective date.	N/A	N/A	Yes
PO-5	Provide technical education and outreach to the development community on the design and implementation of the MS4 permit and WQIP requirements	Technical education and outreach to the development community was conducted and included outreach on design standards, Port BMP design manual, and WMAA. See JRMP sections 4.7.1, 9.3.11, and 9.3.2.1. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide at least annually.	FY16	Implemented as planned, On-going	The Port held or sponsored five trainings for a total of 708 people during the reporting year.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Construction Program								
PO-6	Implement Core JRMP Program to require and to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements. [SWPPP Review, inspections, BMP Implementation]	Prior to the approval of a construction project, the Port requires that all applicable minimum and seasonally appropriate BMPs have been identified and the proposed methods of implementation are appropriate to the project site. The review also confirms that minimum BMPs that address WQIP priorities are included. Construction inspections are conducted at a minimum of monthly basis based on assessed threat to water quality. Inspection frequency may increase based on issues of non-compliance with respect to trash, metals, bacteria BMPs. ~~See Supplemental Attachment 1 for details on construction-related BMPs that will be implemented to address sources causing or contributing to the Highest or Focused Priority Conditions~~. See JRMP Section 5.5 and 5.6, and JRMP Appendix C- Enforcement Response Plan. Optional strategies relating to Construction include PO-18 and PO-20. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	The Port implemented the Construction Program as scheduled. Overall, 349 construction inspections/69 follow-up inspections required (total of 418 inspections including follow-ups). No escalated enforcement measures were required on any project during FY 2015-2016.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Existing Development								
Commercial / Industrial Facilities								
PO-7	Implement Core JRMP Program for existing development (commercial and industrial facilities) to require implementation of minimum BMPs that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods, maintenance of an existing development inventory, and enforcement.	The strategy involves implementing the existing development core program, and identifies the minimum BMPs and pollution prevention practices that the Port will require for existing facilities as well as the Port inspection and verification process. For facilities that are not considered a higher priority based upon the WQIP pollutants, inspections will occur at least once during the Permit cycle and at least 20% of the inventoried facilities inspected each year. See JRMP Section 7.5.1 and 7.6.1. Annual inspections were performed at facilities that are determined to be higher sources of trash, metals, and bacteria. See PO-21 for additional information. Other optional strategies relating to Construction include PO-18, PO-21, 44, 45, 47, and 48. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	• Jurisdiction-wide: BMPs inspected at all commercial and/or industrial facilities jurisdiction-wide (76 commercial and 23 industrial) in reporting period. 93.5% BMPs properly implemented. Commercial • 909.1 HA: Of the three commercial facilities inspected, one facility required escalated enforcement. • 910.1 HA: Three of four commercial facilities are properly implementing BMPs to address trash, metals, and bacteria. One facility did require escalated enforcement. • 910.2 HA: One commercial facility was properly implementing MS4 Permit required BMPs Industrial • 908.22 HA: Within Chollas Creek HSA, one industrial facility was properly implementing MS4 Permit required BMPs • 909.1 HA: Two of six industrial facilities are properly implementing BMPs to address trash, metals, and bacteria. Of the four facilities needing follow-ups, only two required escalated enforcement. *Jurisdiction-wide commercial and industrial facilities inspection information is located in the Port of San Diego's JRMP annual report form and supplemental Table 12-4. All non-compliance issues requiring corrective enforcement actions were resolved and closed.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Municipal Areas & Facilities								
PO-8	Implement Core JRMP Program for existing development (municipal facilities) to require implementation of minimum BMPs for municipal facilities that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of the municipal facilities at appropriate frequencies and using appropriate methods, maintenance of a facility inventory and enforcement.	The strategy involved implementing the existing development core program, and identified the minimum BMPs and pollution prevention practices that the Port will require for existing facilities as well as the Port inspection and verification process. For facilities that are not considered a higher priority based upon the WQIP pollutants, inspections will occur at least once during the Permit cycle and at least 20% of the inventoried facilities inspected each year. See JRMP Section 6.5 and 6.6. ~~Please see Supplemental Attachment 1 for details on minimum BMPs that will be implemented to address sources causing or contributing to the Highest or Focused Priority Conditions.~~ Annual inspections will be performed at facilities that are determined to be higher sources of trash, metals, and bacteria. Those facilities are designated as "high priority" in the facility inventory. See PO-21 for additional information. In addition, Optional strategies relating to municipal facilities include PO-22, PO-23, PO-24, PO-25, PO-26, PO-28, PO-31, PO-32, PO-46, and PO-47. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and will be on a continuous basis.	FY15	Implemented as planned, On-going	• Jurisdiction-wide: BMPs inspected at 63 facilities and 18 parks. 92% of the municipal facility inventory was inspected in FY 2016. • 909.1 HA: Nine of 15 facilities are properly implementing BMPs to address trash, metals, and bacteria. All three parks properly implemented BMPs to address trash, metals, and bacteria • 910.1 HA: Nine of 10 facilities are properly implementing BMPs to address trash, metals, and bacteria. All four parks properly implemented BMPs to address trash, metals, and bacteria *Jurisdiction-wide commercial and industrial facilities inspection information is located in the Port of San Diego's JRMP annual report form and supplemental Table 12-4.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-9	Provide List of BMPs for Special Events with requirements for trash, metals, and bacteria, and ensure compliance thru inspections	The strategy involved reducing and/or preventing the discharge of high priority pollutants from special events of 500 or more people on Port Tidelands. The strategy involved establishing a set of designated BMPs and conducting inspections to verify compliance. See JRMP Section 6.3.6 and 6.5.1. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	• BMP list was developed and distributed to special events coordinators • Jurisdiction-wide: A total of 72 special events were held at ten parks and two parking lot/street locations during FY 2016. • 908.2 HA: Of the 58 special events in 908.21 HA, nine special events required follow-up. Seven of the follow-up inspections were for trash and bacteria related issues. Two special events were also issued a citation. • 909.1 HA: Of the eight special events in 909.1 HA, none of the events required follow-up inspections. However, four events were out of compliance for not submitting training and BMP implementation records. • 910.1 HA: Of the three special events in 910.1 HA, none required follow-up inspections. However, two of the three events were out of compliance for not submitting training and BMP implementation records. *Jurisdiction-wide special events inspection information is located in the Port of San Diego's JRMP annual report form and supplemental Table 12-5. All non-compliance issues requiring corrective enforcement actions were resolved and closed.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
MS4 Infrastructure								
PO-10	Implement Core JRMP Program for MS4 infrastructure (inspection and cleaning) for water quality improvement.	The core program involves the inspection and cleaning of the MS4 and associated BMPs that the Port owns and operates. It also includes record keeping and tracking of those activities for MS4 infrastructure. See JRMP Section 6.3.5, 6.5.1, and 6.6.4. In addition, optional strategies relating to the MS4 infrastructure include PO-30, PO-45, and PO-47. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	• 780 High priority MS4 structures inspected • 2.2 miles of MS4 conveyance cleaned • 31 MS4 and BMPs inspected found with accumulated trash exceeding cleaning criteria • MS4 data assessment (PO-30 optional) found the cleaning frequency appears adequate for all current MS4 and BMP structures in the 909.1 or 910.2 HAs. *Jurisdiction-wide MS4 infrastructure information is located in the Port of San Diego's JRMP annual report form and supplemental Table 12-6.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Roads, Streets, and Parking Lots								
PO-11	Implement Core JRMP Program for Street and Parking Lot Maintenance. Includes inspection and cleaning of public streets, paved roads, and parking lots.	The Port has identified minimum BMPs for streets and parking lot maintenance as well as an inspection process to verify compliance. The Port conducted annual drive-by inspections of the streets, roads, and parking lots that are owned and operated by the Port. Although roads and streets will receive an annual drive-by inspection, Port staff or contractors performed street sweeping on a weekly basis. The Port tracked the areas in which the street sweepers operate and tabulates the number of curb miles swept. See JRMP Sections 6.5.1, 6.6.2, and 6.5.11. ~~See Supplemental Attachment1 for details on BMPs that will be implemented to address sources causing or contributing to the Highest or Focused Priority Conditions~~. In addition, optional strategies relating to the MS4 infrastructure include PO-24, PO-25, PO-28, and PO-29. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	• 17,892 total curb-miles swept • 860 parking lots swept; • 133.5 tons of waste and litter removed	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Pesticide, Herbicides, and Fertilizers BMP Program								
PO-12	Implement Core JRMP Program requiring implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	The Port has an Integrated Pest Management policy to limit and/or eliminate the use of toxic substances and has developed minimum BMPs to implement to address potential discharges of pesticides, herbicides, and fertilizers. See JRMP Sections 6.5.1 and 6.5.14. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	On May 19, 2016, the Port sponsored IPM for Landscape Professionals seminar was attended by 117 gardening and landscape professionals. The participants learned about activity-specific BMPs, laws, and regulations applicable to pesticide use. The seminar also highlighted the connection between water quality impacts and pesticide use throughout the tidelands.	N/A	N/A	Yes
Retrofit and Rehabilitation in Areas of Existing Development								
PO-13	Develop and implement a strategy that identifies candidate areas of existing development for retrofit and rehabilitation opportunities to address trash, bacteria, and metals	The retrofit and rehabilitation strategy includes methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including proximity to highest or focused priority conditions, potential pollutant load removal effectiveness, and feasibility of implementation. See JRMP Section 6.8, 7.8, and JRMP Appendix H. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit required administrative update to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	• Completed development of program and submitted June 2015 with Port of San Diego JRMP Update in Appendix H. • Ordered inlet BMPs at Tenth Avenue Marine Terminal.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Illicit Discharge, Detection, and Elimination (IDDE) Program								
PO-14	Implement Core JRMP Program for IDDE program. Requirements include: maintain MS4 map, identify and report illicit discharges, maintain a hotline for public reporting of illicit discharges, monitor MS4 outfalls, and investigate and address any illicit discharges. When sewage is detected, identify source and implement measures to eliminate sources.	Investigate and eliminate dry weather discharges and illegal connections to the MS4 as reported to the Port or identified by Port staff. The Port utilizes appropriate enforcement actions to achieve compliance such as Administrative Citations with or without fines and corrective actions. See JRMP Chapter 3 and JRMP Appendix C. IDDE related BMPs are also included in the Construction, Development, and Existing Development components of the JRMP. This strategy also relates to PO-15 and PO-16. See Supplemental Attachment 1 for IDDE related BMPs that will address sources causing or contributing to the Highest or Focused Priority Conditions. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	The Port implemented the IDDE Program as scheduled. There were 24 IDDE investigations in FY 2016. The FY 2016 jurisdiction-wide IDDE program results are provided in the Port's JRMP annual report form and supplemental Table 12-1. 909.1 HA: The Port was notified two times of discharges at facilities in this HA during the reporting period. The incidents were investigated and found to be either unjustified or did not require further action. 910.1 HA: The Port was notified once in this HA during the reporting period of an incident at a construction site was investigated and found unjustified and did not require further action. A second incident was observed during the Persistent Outfall Monitoring Program by Port staff and reported to the City of Coronado.	N/A	N/A	Yes
Enforcement Response Plan								
PO-15	Develop and implement the Enforcement Response Plan [escalating enforcement responses; statutes, ordinances, permits, contracts, orders, and other requirements].	The Plan includes escalated enforcement process for violations from sources related to bacteria, metals, and trash. The strategy also includes an update. See JRMP Appendix G. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit required administrative update to be implemented jurisdiction-wide and implemented on a continuous basis.	FY15	Completed, and implemented as planned, On-going	Completed development of plan	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-16	Update Port's Storm Water Ordinance	The Port's storm water ordinance was updated to provide Port legal authority to enforce the JRMP and the requirements of the Permit. See JRMP Section 2.2 and JRMP Appendix B. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit required administrative update to be implemented jurisdiction-wide and completed prior to JRMP submittal.	FY15	Completed as planned.	Completed update	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Public Education and Participation								
PO-17	Implement Core JRMP Program for Education and Outreach program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences. ~~Staff training:~~ Municipal Training: ~~Development Planning, Municipal Construction Activities, Municipal Industrial/Commercial Activities, Municipal Other Activities~~ Educational Outreach: Industrial & Commercial Owners & Operators; Residential Community & General Public; School Children; Underserved Audiences	Program will promote public support of the Port's water quality protection efforts through outreach and education as they conduct Port employee-specific training, and promote participation of the public. The education program is tailored towards specific target audiences. Topics also include a discussion on WQIP priority conditions (trash, metals, and bacteria). The strategies include core jurisdictional programs that meet baseline permit requirements which will be implemented throughout the permit term and strategies that enhance the program or focused efforts. See JRMP Chapter 9. Optional public education and participation strategies include PO-24, PO-25, PO-27, PO-33, PO-35, PO-36, and PO-37. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Permit-required strategy to be implemented jurisdiction-wide and on a continuous basis.	FY15	Implemented as planned, On-going	*Jurisdiction-wide public education and outreach FY 2016 information is located on the Port of San Diego's JRMP annual report form and in supplemental Tables 12-7, 12-8, and 12-9. Jurisdiction-wide overall education activities total: • 92 education efforts annually; • 153,283 people reached • Port staff created an approximately 15 minute bi-lingual (English and Spanish) training video "*Stormwater Best Management Practices (BMP) Training for Industrial and Commercial Facilities*" in FY 2016 and has shown it at a number of training events for commercial and industrial tenants and Port staff. https://www.portofsandiego.org/environment/stormwater/302-stormwater-management-program.html or at https://www.youtube.com/watch?v=Xytid-LlxMk	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Non-JRMP Strategies (Optional Strategies, B.3.b(1)(b))								
Non-structural								
PO-18	Add BMP to construction BMPs that requires covering material stockpiles of treated wood during wet weather	Where material stockpiles include treated wood, the concentrated discharge of metals that may be leached from the wood will be minimized by covering the stockpile. See JRMP Section 5.6. ~~Refer to Supplemental Attachment 1 for details on construction-related BMPs that will be implemented to address sources causing or contributing to the Highest or Focused Priority Conditions.~~ This strategy is planned for implementation so no trigger is needed. Funding and resources have been secured for FY2015. Funding for future fiscal years is contingent on annual budget approval by BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide and on a continuous basis.	FY15	Completed as planned.	Completed addition to construction BMPs	N/A	N/A	No
PO-19	Require install shutoff irrigation sensors (e.g., Cal-Sense) for MM/CIP development projects. [CAP Water Conservation Measure (WC 1.3)][1]	This strategy will assist in eliminating non-storm water discharge by requiring the irrigation sensors, where applicable, to development plans. This strategy will be triggered upon identification of new landscape area in Port sponsored major maintenance or capital improvement projects. Funding and resources required include cost for equipment, design, installation, and routine maintenance. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide and as-needed.	FY17	N/A	N/A	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-20	Adopt Construction and Demolition Recycling Ordinance or include language into general requirements for all projects [CAP Waste Reduction and Recycling Measure (SW2)][1]	This strategy will focus on providing direction to development and construction projects regarding how to manage waste and recyclable materials. This strategy will be triggered following an evaluation of potential conflicts with member cities. If member cities have existing ordinances, the Port may elect to follow the corresponding city's ordinance. Funding and resources have been secured for FY2016 and will be requested for FY2017. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide and one-time.	FY17	N/A	N/A	N/A	N/A	Yes
PO-21	Perform annual inspection of commercial, industrial, and municipal facilities that are higher sources of trash, metals, and bacteria	The frequency of inspections will be expanded from the baseline frequency (at least once during the permit cycle) to annually for higher sources of trash, metals, and bacteria. Facilities that may have higher sources of trash, metals, and/or bacteria were identified through standard operating procedures developed by Port staff. The strategy includes ensuring proper implementation of minimum BMPs that are specific to the facility, area types, and Pollutant Generating Areas (PGAs), and, as appropriate; enforcement of violations; and providing education as-needed. This strategy is planned for implementation, so no trigger is needed. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY16	Implemented as planned, On-going	• Of the 184 facilities in the Port's inventory, 178 were inspected. All high priority facilities (those that may have higher sources trash, metals, and/or bacteria) were inspected in FY 2016. • 92.9% facilities inspected had properly implemented BMPs to address trash, metals, and bacteria • Port staff is currently analyzing inspection data and the priority levels associated with the facilities within the tidelands to determine how many facilities will be inspected in FY 2017. Efforts are also underway to determine any changes to the Ports facility inventory which will also determine the number of inspections that will take place in FY 2017.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-22	Continue pet waste bag dispensers in parks	The strategy addresses pet waste in municipal areas and includes ensuring proper installation, maintenance, and restocking of dispensers. Port staff periodically reevaluates the locations of dispensers and where new dispensers may be needed in the future. This strategy has been planned for implementation, so no trigger is needed. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY15	Implemented as planned, On-going	• 74 cases of pet waste bags were purchased in FY16 • 444,000 bags were dispensed in public parks within Port tidelands.	N/A	N/A	Yes
PO-23	Implement Preventative Maintenance (PM) Plan to prevent backups in Municipal public restrooms	The strategy includes implementing a janitorial and preventative maintenance services plan for public restrooms on Port Tidelands to prevent waste material generated from public restroom facilities from entering into storm water conveyance system. This strategy has been implemented, so no trigger is needed. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional Non-Permit Required JRMP Strategy to be implemented jurisdiction-wide.	FY15	Implemented as planned, On-going	• New janitorial contract (three year term) started in FY 2016. The new Scope of Services for janitorial services has Environmental Requirements section (Section C – Article 10 requirements and environmentally preferred products), and includes implementing measures to prevent waste material generated from restroom facilities at the 18 public parks maintained by the Port of San Diego from entering the storm drains. The company maintains the restrooms three times daily between May 1through September 30. The rest of the year, the cleaning frequency is two times per day and trash enclosures will be maintained three times per week. • Eight work orders were issued for sewer line clean outs jurisdiction-wide. All issues were resolved.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-24	Development of BMP guidance document for general services staff conducting minor maintenance operations	This strategy involved the development of a guidance document to help guide General Services staff in implementing the necessary BMPs procedures to mitigate the discharge of contaminated debris, trash, and potential chemicals during minor maintenance and construction activities. The document will provide guidance on selecting the appropriate BMPs, as well as proper BMP implementation, operation, and maintenance This strategy is planned for implementation, so no trigger is needed. Funding and resources have been secured for FY2016. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY16	Completed as planned.	Completed	N/A	N/A	No
PO-25	Train general services staff on proper BMP implementation during minor maintenance operations	This strategy involved training General Services staff on the implementation of a BMP guidance document to use as a guide for selecting, implementing, and monitoring BMPs. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY16	Implemented as planned, On-going	The Port held one training event to 88 staff in the reporting period. The training included guidance on identifying the BMPs to implement to address specific sources of metals, bacteria, and trash associated for each minor maintenance activity.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-26	Conduct Trash Receptacle Assessment in municipal areas	This strategy will identify the current waste management practices in municipal facilities and areas (i.e., parks) and determine whether the size, number, and location of the receptacles provided are adequate. Where improvements are required, the assessment will identify potential options to address deficiencies. This strategy is planned for implementation, so no trigger is needed. Funding and resources have been secured for FY2016. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY16	Implemented as planned, Scheduled to be complete in FY 2017	The assessment was initiated in FY 2016. • Assessment scope of work developed spring 2016 • Consultant tasked with project and initiated assessment in May 2016	N/A	N/A	Yes
PO-27	Develop a process to improve data management for tracking waste and materials diverted from waste stream and landfills [CAP Waste Reduction and Recycling Measure (SW)][1]	The strategy includes identifying effective and efficient use of trash receptacles that are specific to the area types, pollutant generating activities (PGAs), and/or event, as appropriate. The goal of this strategy is to provide recommendations to be implemented to address the WQIP Focused Priority Conditions (Physical Aesthetics and Swimmable Waters (bacteria)) and the State-led Trash Amendments. This strategy is planned for implementation, so no trigger is needed. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY17	N/A	N/A	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-28	Replace/upgrade current maintenance equipment, such as street sweeper or power washer, to new, more efficient and effective options	This strategy involves the acquisition of maintenance equipment that is more efficient and effective than the equipment currently in use by Port's General Services Department (GSD). Equipment acquisition will be based on the GSD's equipment replacement schedule and the BPC approval of funds. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY16	Implemented as planned, On-going	The Port purchased (1) Side-Loader Refuse Truck in FY 2016. The vehicle provides multiple benefits for other programs, such as the Port's Climate Action Plan (CAP). The vehicle is fueled by a cleaner alternative fuel (CNG) which contributes to the CAP's Green House Gas (GHG) emissions reduction goals. In FY 2015, the Port also purchased a new regenerative air street sweeper.	N/A	N/A	Yes
PO-29	Replace all Port owned/leased vehicle brake pads with copper-free brake pads	As copper-free brake pads become commercially available, implement installation of copper-free brake pads on Port owned or leased vehicles to reduce pollution deposition. This strategy will be triggered based on availability of effective copper-free brake pads and equipment replacement schedule. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY17	N/A	N/A	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-30	Evaluate MS4 inspection and cleaning locations and adjust as-needed for higher trash generating areas	This strategy will enhance the current program through an annual jurisdiction-wide evaluation of the inspection and maintenance activities for catch basins, storm water inlets, and other storm water conveyance structures the Port of San Diego owns and operates within the Tideland boundary. The annual evaluation of the MS4 program data will enable the Port to identify whether modifications to inspection and/or cleaning activities are needed and to be implemented (i.e., change in frequency or location) to effectively address higher trash generating areas. This strategy is planned for implementation, so no trigger is needed. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented in a phased approach, targeted areas then jurisdiction-wide.	FY16	Implemented as planned, On-going	31 MS4 and/or BMP structures were identified for increased inspection frequency (two times per year), based on analysis of past five years of MS4 monitoring data. Structures that had greater than 50% accumulation for at least two of the five years, or structures that required cleaning three or more times in five years, were determined to require increased inspection frequencies (none of these structures were located in HSAs 909.1, 910.1, or 910.2).This analysis was performed for all municipal MS4s on Port of San Diego Tidelands.	N/A	N/A	Yes
PO-31	Update Power-washing Standard Operating Procedure Manual	This strategy will provide updates to the Port's General Services Department on new requirements and restrictions on power-washing operations. This strategy is planned for implementation, so no trigger is needed. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY17	N/A	N/A	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-32	Create Standard Operating Procedure for proper washout procedures in public restrooms	This strategy will create a standard operating procedure, or SOP, for General Services staff and contractors to follow when maintaining public restrooms. This strategy is planned for implementation, so no trigger is needed. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, additional Non-Permit Required Jurisdictional Strategy to be implemented jurisdiction-wide.	FY17	N/A	N/A	N/A	N/A	Yes
PO-33	Improve consistency and content of websites to highlight permit requirements and facilitate public reporting	Port staff regularly evaluates the website content and provide updates to ensure that the information on the website remains current and easy to find. In addition, staff collaborates with other Copermittees to improve the consistency in messaging and content on agency websites on a watershed and regional level as part of this ongoing activity. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY16	Implemented as planned, On-going	• The Port participated in the watershed workgroup to provide updates for the public on San Diego Bay WMA WQIP on the Project Clean Water website. • A new Port website is under development. The new website will be designed to improve the public's ability to find information quickly and facilitate public reporting.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-34	Site/Area prioritization study to identify high volume trash areas	This study will assist the Port to prioritize areas under its jurisdictional authority that are high volume trash areas to help focus resources and potentially install structural controls, where feasible. This strategy is planned for implementation, so no trigger is needed. Funding and resources have been secured for FY2016. Optional, jurisdictional program enhancement to be implemented in a phased, targeted approach then jurisdiction-wide.	FY16	Implemented as planned, Scheduled to be complete in FY 2017	Study was initiated in FY 2016: • Study scope of work developed December 2015 • Consultant tasked with project and initiated study in February 2016. • Field work completed in FY 2016, but final report available in first quarter of FY 2017	N/A	N/A	Yes
PO-35	Sponsor, conduct, and host cleanup activities (Operation Clean Sweep, Coastal Cleanup Day, Creek to Bay, etc.). Sponsor regional/watershed collection events for large items or items that may otherwise be illegally dumped.	The Port provided funding to sponsor various cleanup events and/or participate by soliciting volunteers, working as site captains, and participating in the cleanup events. Collection events collect large, unwanted household items (e.g., refrigerators, mattresses, etc.), vegetation, and other debris with the intent of preventing illegal dumping of these items in the San Diego Bay WMA. This strategy may be implemented if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, and 3) partners have been identified and formal MOUs have been developed, as-needed. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. WMA (Multi-jurisdictional) Optional Program Enhancement to be implemented jurisdiction-wide.	FY16	Implemented as planned, On-going	• Jurisdiction-wide: 16 cleanup and/or collection events on Port Tidelands, 1,748 number of people reached/participated, Approximately 16.5 tons of trash collected jurisdiction-wide (includes recycled waste) • 908.22 HSA: Approximately 962 lbs. of trash in 2 events were collected by an estimated 100 people in Chollas Creek • 909.1 and 910.2 HA: Approximately 2.7 tons of trash in nine events were collected by an estimated 398 people • 910.1 HA: Trash was collected by an estimated 60 people at one event in 910.1 HA	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-36	Develop and conduct public perception survey on Physical Aesthetics and Swimmable Waters Conditions	This strategy will be implemented to understand public opinions about the current status of the focused priority conditions and to help the RPs identify how they may adapt their programs to improve both water quality and public perception. This strategy will be triggered upon final approval on a MOU by all RPs involved, the consultant selection and contract(s), and scope of work. Funds/resources needed for this strategy include staff time and/or consultant expenses to develop and implement the survey. WMA (Multi-jurisdictional) Optional, Additional Non-Permit Required Strategy to be implemented in targeted drainage areas.	FY17	N/A	N/A	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-37	Support organizations to address homelessness and to provide resources and educational materials to address trash and bacteria	This strategy involved efforts to research and implement outreach and intervention services through near, medium, and long term strategies to assist the homeless population along the Tidelands, while coordinating efforts at a regional level. This strategy may be implemented if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include Port staff to coordinate with the regional effort and consultant or third party assistance to implement projects. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the Port's annual budget. Funding is secured on an annual basis and is contingent on annual budget approval by Port BPC. WMA (Regional) Optional, Additional Non-Permit Required Strategy to be implemented jurisdiction-wide.	FY16	Implemented as planned, On-going	Since 2014, the Port has sponsored Alpha Project's efforts to provide outreach and intervention services to the homeless on Port tidelands. Alpha Project provides services through their Outreach Team at various hours during the day to capture the most accurate statistics possible. The Port's sponsorship supports Alpha Project programs to provide the homeless with food/water, hygiene supplies, blankets, clothing, housing, work placement, medical and mental health referrals. In addition to the humanitarian aspects of providing these services, MS4 and receiving water quality may be improved due to reduced trash or waste as a result of these efforts.	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-38	Participation in the San Diego Regional Reference Stream Study	WMA (Regional) Optional, project that focuses on collecting data necessary to derive reasonable and accurate numeric targets for bacteria, nutrients, and heavy metals by referencing natural, local conditions. This study will provide a scientific basis for evaluating bacteria compliance levels in the Bacteria TMDL. The results of this study are used to support the forthcoming reopener of the recently adopted Bacteria TMDL and to support numeric targets in future TMDLs for bacteria, nutrients, and metals. This strategy has been planned for implementation, so no trigger is needed. Funding and resources have been secured for FY2016.	FY15/16	Implemented as planned, Completed in FY 2016	The Port collaborated with other Copermittees in the San Diego region in a workgroup and cost share for the Reference Stream Study. The Reference Stream Study report was completed in June 2016. Results of the Reference Stream Study are discussed in Appendix 4, Section 7.1.	N/A	N/A	No

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-39	Participation in the Southern California Coastal Water Research Project's (SCCWRP) San Diego Bay Trash Study.	The Trash Study is a comprehensive bay-wide study to help managers understand the current extent and magnitude of plastic-based debris accumulation and takes into account seasonal changes to better understand the plastic debris conditions throughout San Diego Bay and its upland contributing areas. SCCWRP will initially assess targeted geographic areas and may include (1) assessment of current conditions to provide a baseline to demonstrate progress in the future, (2) identification of high-priority areas for targeted strategy implementation, and (3) identification of commonalities among jurisdictions for potential collaborative outreach opportunities. This strategy has been planned for implementation, so no trigger is needed. Funding and resources were secured for FY2015. WMA (Multi-jurisdictional) Optional, Program Enhancement to be implemented jurisdiction-wide.	FY15	Implemented as planned, Not completed in FY 2016	• Data collection completed in FY 2016 and data analysis initiated • Analysis completed and final report to be available in FY 2017	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-40	Delisting feasibility study for Tidelands Park, Coronado	WMA (Multi-jurisdictional) Optional, Non-Permit Required Strategy to be implemented in targeted drainage areas (Tidelands Park, Coronado). The study will assess available historical AB411 monitoring data from the County of San Diego's Department of Environmental Health to determine the number of exceedances of *Enterococcus* WQOs that have occurred at EH-070 and to identify whether the results warrant consideration of removal of the water body from the SWRCB 303(d) List (i.e., de-listing). This strategy has been planned for implementation, so no trigger is needed. Resources necessary to implement this strategy include Port staff or consulting team. Funding and resources have been secured for FY2016.	FY16	Implemented as planned, Not completed in FY 2016	Dry Weather: Based on the results of this assessment of *Enterococcus* data using three methods from the SWRCB de-listing policy (SWRCB, 2004), the site is below allowable exceedances for single-sample, rolling 30-day geometric mean, and monthly geometric mean. This indicates the section of Tidelands Park on the 303(d) list could be eligible for de-listing in dry weather for *Enterococcus* indicator bacteria. Wet Weather: Limited wet weather monitoring data existed prior to FY 2016. The San Diego Bay WQIP Monitoring and Assessment Plan provided information on the wet weather monitoring approach, which was initiated in FY 2016. The results of the FY2016 monitoring are discussed in Appendix 4, Section 6.	N/A	N/A	Yes
Structural								
PO-41	Install fence along southern parameter of Pond 20 to capture trash and debris	The Port of San Diego installed a custom fence to improve the South San Diego site known as Pond 20. This strategy has been implemented, so no trigger is needed. Funding and resources were secured for FY2015. Optional, jurisdictional program, to be implemented in a Specific drainage area (Otay Sub-watershed).	FY15	Completed as planned.	Installation completed. • The 950-foot fence replaced a chain-link fence and runs within Caltrans' right-of-way along the southern perimeter of the site at 1400 Palm Avenue. • Grates were also installed at stormdrain inlets to capture trash and debris.	N/A	N/A	No

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-42	Develop an alternative compliance program framework that provides options for PDPs	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. This strategy is planned for implementation, so no trigger is needed. Funding and resources have been secured for FY2016. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY16	Completed as planned.	Completed	N/A	N/A	No
PO-43	Implement an alternative compliance program providing options for PDPs	Administer an alternative compliance program for on-site structural BMP implementation (includes identifying WMAA candidate projects). This strategy is planned for implementation, so no trigger is needed. Funding for future FY 2017 is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented jurisdiction-wide.	FY17	N/A	N/A	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-44	Develop and implement a retrofit program to encourage installation of water conservation measures in existing businesses (e.g. xeriscaping, irrigation sensors, etc.) [CAP Water Conservation Measure (WC 1.3)][1]	This strategy involves the development and implementation of the retrofit program to promote water conservation and source abatement. Once the program is developed, Port staff will coordinate with industrial and commercial tenants to voluntarily installing water conservation measures. This strategy will be triggered either by identification of grant funding or may be included as a corrective action for facilities that have repeat violations related to irrigation runoff BMPs. Projected funding needs may be met through grant funding, support from community groups or other institutions, or PGP's annual budget. All Port funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, jurisdictional program enhancement to be implemented in phased, targeted areas then jurisdiction-wide.	FY17	N/A	N/A	N/A	N/A	Yes

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-45	Installation of structural treatment control BMPs in storm drains in high priority areas to address trash, metals, and bacteria	The strategy will address industrial and commercial facilities that have repeat violations for discharges, specifically metals, and bacteria. The facility may be required to install structural treatment control BMPs to reduce or eliminate discharges of pollutants to the MS4 causing or contributing to an impairment of water quality standards. This strategy will be triggered based on facility inspections history, repeat violations and site location and conditions. The industrial or commercial facility tenant will be responsible for providing the necessary funding to implement required systems. Optional, jurisdictional program to be implemented in phased, targeted areas then jurisdiction-wide.	FY16	Implemented as planned, On-going	No facilities triggered this requirement in the reporting period.	N/A	N/A	Yes
PO-46	Retrofit trash enclosures, where applicable, in municipal areas	This strategy will be triggered according to results of PO-26 and PO-34 and identification of the appropriate action to be taken as result of retrofit program. Projected funding needs may be met through grant funding, or PGP or GS annual budget. Resource needs to implement the project include equipment (i.e., trash receptacles) and staff or contract resources to install and maintain. All Port funding for future fiscal years is contingent on annual budget approval by the BPC. Optional, jurisdictional program enhancement to be implemented in phased, targeted areas then jurisdiction-wide.	FY18	N/A	N/A	N/A	N/A	No

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-47	Installation of inlet inserts in storm drains in high priority areas	Trigger is based on results of PO-34 and availability of funding. Projected funding needs may be met through grant funding, or PGP or GS annual budget. Resource needs to implement the project include equipment (i.e., inlet inserts) and staff or contract resources to install and maintain. All Port funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, additional non-permit required to be implemented in phased, targeted areas then jurisdiction-wide.	FY18	N/A	N/A	N/A	N/A	No
PO-48	Installation of trash skimmers in marina basins	Optional, non-permit required to be implemented in a phased approach, implemented first in marinas in areas of the Port specified under the Physical Aesthetics Focused Priority Condition, then will assess application jurisdiction-wide. The trash skimmers will help to collect trash and debris found within marina basins. This strategy will be triggered if marinas are identified as high trash generating area in assessment Projected funding needs may be met through grant funding, or PGP or GS annual budget. All Port funding for future fiscal years is contingent on annual budget approval by Port BPC.	FY18	N/A	N/A	N/A	N/A	No

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
Restoration								
PO-49	Otay District Habitat Improvement (Former South Bay Power Plant)	Decommission the South Bay Power Plant (completed) in a manner that allows habitat improvements to be performed at the site. Buffer area (25 acres) for habitat enhancements and/or mitigation purposes and will create additional upland transition, intertidal and subtidal habitat. This strategy will be triggered upon completion of the following: 1) Multi-jurisdictional approval of development plans; 2) CEQA review process has been completed; and 3) Approval by California Coastal Commission. Projected funding needs may be met through grant funding, support from community groups or other institutions, or as a potential alternative compliance program candidate project. All Port funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, non-permit required strategy involving multiple agencies and third parties.	FY 2025	N/A	N/A	N/A	N/A	No

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-50	Enhance wetland and connections to F and G St marsh and J Street marsh.	Habitat enhancement of marsh, and associated mudflats and low-lying salt marsh and upland transition areas. Enhance through improved flushing of saltwater marsh currently serviced by a small, ineffective culvert. Enhancement potential: An additional channel, refuge islands, secondary tidal channels, and bay-ward expansion of the marsh. This strategy will be triggered upon completion of the following: 1) Multi-jurisdictional approval of development plans; 2) CEQA review process has been completed; and 3) Approval by California Coastal Commission. Projected funding needs may be met through grant funding, support from community groups or other institutions, or as potential alternative compliance program candidate projects. All Port funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional, non-permit required strategy involving multiple agencies and third parties.	FY 2020	N/A	N/A	N/A	N/A	No

Table 12-13 (continued)
Port of San Diego Jurisdictional Strategies

ID	Strategy	Implementation Approach (Frequency of Inspections, B.3.b.(1)(a)(iv)) (Inventory BMPs, B.3.b.(1)(a)(ii)) (Funds/Resources, B.3.b.(1)(b)(iv), B.3.b.(3)(a)(iii)) (Triggers, B.3.b.(1)(b)(v))	Planned Implementation or Construction Year	Implementation		Proposed Modifications		
				Implemented as planned in current FY? Completed in current FY?	Strategy Information	Modification (If modified or canceled, provide rationale)	Modification Type (Schedule, Approach, New)	Planned Implementation into the next FY? (Y/N)
PO-51	Pond 20 – Site Development Mitigation Banking	The strategy will include the establishment of a mitigation bank while entitling certain parcels for future commercial development. This includes a Port Master Plan Amendment to bring the site into the Port's Coastal Permitting jurisdiction, and setting aside parcels for future commercial development. The strategy involves two different objectives for site development-mitigation banking that focus on habitat conservation and developing the site for commercial purposes. This strategy will be triggered upon completion of the following: 1) the necessary entitlement process is completed; 2) CEQA review process has been completed; and 3) Approval by California Coastal Commission. Any proposed method for moving forward with a mitigation bank would require future approvals from the BPC. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by Port BPC. Optional WMA -Multi-jurisdictional, non-permit required strategy.	FY 2020	N/A	N/A	N/A	N/A	No

Notes:
1 CAP - Port of San Diego's Climate Action Plan (2013) (https://www.portofsandiego.org/environment/clean-water/doc_download/5515-port-of-san-diego-climate-action-plan.html)
PGP – Planning and Green Port; REO – Real Estate Department; GS – General Services Department; Eng – Engineering Department; MarCom – Marketing and Communications Department; GCR – Government and Community Relations Department; HPD – Harbor Police Department; USFWS – United States Fish and Wildlife Service.

12.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

No modifications to the BMP Design Manual have been made since the WQIP was approved in spring 2016. The current Port of San Diego BMP Design Manual is posted on the Port's website, and the link to this page is listed on Project Clean Water.

12.5 MODIFICATIONS TO THE JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM

Table 12-14 describes modifications to the Port's JRMP have been made since the WQIP was approved in February 2016. The updated Port of San Diego JRMP is posted on the Port's website, and the link to this page is listed on Project Clean Water.

Table 12-14
Port of San Diego JRMP Updates

Update Number	JRMP Section	Description of Change	Rationale for Change
1	Universal	Update name of department from "Environmental and Land Use Management (ELUM)" to "Planning and Green Port (PGP)"	Change due to Port internal restructuring in FY 2016.
2	Universal	Changes to WQIP strategy numbers	Since the JRMP document was submitted in June 2015, the Port's WQIP strategies table was reorganized and/or WQIP strategies modified prior to final submittal of the WQIP in September 2015. Therefore, some of the individual strategy numbers have changed.
3	1.4.2	Remove the following language: "In fiscal year 2016, the Port will be developing individual strategy "cut sheets" that will include a more detailed description of the strategy, the strategy approach, applicability, and the effectiveness assessment methods the Port will use to determine if the strategy needs to be modified, removed or continue to be implemented as written. Once completed, the cut sheets will be included as part of the JRMP update and added to Appendix A."	The development of individual strategy cutsheets required more resources than anticipated and were not completed in FY 2016. The development of the individual strategy cutsheets will be pursued at a later date.

Table 12-14
Port of San Diego JRMP Updates (continued)

Update Number	JRMP Section	Description of Change	Rationale for Change
4	2.1	Update Port organizational charts (Figure 2-1 and Figure 2-2) to reflect current Port structure	Change due to Port internal restructuring in FY 2016.
5	2.2.3	Modification to fourth sentence in paragraph to read "Consistent with the Port BMP Design Manual, projects are required to implement low impact development (LID) BMPs as well as source control and site design BMPs applicable to the project."	Clarification that the projects, not the BMPs, are required to meet these requirements.
6	2.2.3	Replace last sentence of paragraph with the following: "Additionally, new development and redevelopment are required to submit a storm water quality management plan (SWQMP) identifying post-construction BMPs for the project."	Clarification
7	2.2.6	Change statement to read that the certified statement regarding legal authority was submitted with the first San Diego Bay WQIP annual report.	Clarification
8	3.2, 4.2, 5.2, 6.2, 7.2, 9.2	Modify language to differentiate between core and optional strategies and update to state the strategies will address highest and focused priority conditions.	Clarification
9	3.2, 4.2, 5.2, 6.2, 7.2, 9.2	Updated the WQIP strategies in each program component's table (Tables 3-1, 4-2, 5-2, 6-2, 7-2, and 9-2).	The Port's WQIP strategies table was reorganized since the JRMP document was submitted in June 2015. In addition, some of the WQIP strategies were also modified and/or incorporated into other strategies.
10	3.5	Update second paragraph to reflect Regional Board's acceptance of the WQIP and post-transitional period.	Revised to reflect current Municipal Permit requirements.

Table 12-14
Port of San Diego JRMP Updates (continued)

Update Number	JRMP Section	Description of Change	Rationale for Change
11	3.5.2	Update language to reflect post-transitional period.	Clarification
12	4.4	Updated reference to implementation date of BMP Design Manual	The implementation date was previously listed as December 24, 2015. The date was updated to reflect the February 16, 2016 effective date per the Municipal Permit requirements.
13	4.3, 4.4, and 4.5.1	Deleted reference to two WQIP strategies that removed from the Port's strategies list in the JRMP Update that was submitted in June 2015: • Update Stormwater Requirements Checklist to identify whether a project has a high potential to generate trash, metals, and bacteria (original PO-3) Update BMP Design Manual to include enhancements for projects (both non-PDP and PDP projects) having a high potential to generate trash, metals, and bacteria (original PO-4).	Reference to the two strategies was removed because the Port's WQIP strategies table was reorganized and/or WQIP strategies were modified since the JRMP document was submitted in June 2015. These two strategies were incorporated into the core JRMP strategy (PO-1) and are no longer stand-alone strategies.
14	4.4	Modified language to reflect updates to the Storm Water Requirements Applicability checklist, the Port's BMP Design Manual, and the Storm Water Quality Management Plan (SWQMP) templates.	Ensure section reflects updates to the templates comply with the Municipal Permit requirements that were submitted by the February 16, 2016 effective date.
15	4.5.2	Added Table 4-5 regarding Priority Development categories	The section referred to a table that was inadvertently not included.
16	4.6.3	Added information stating the Port's Alternative Compliance Program was developed in FY 2016 and incorporated into the Port's BMP	Update status of the Alternative Compliance Program

Table 12-14
Port of San Diego JRMP Updates (continued)

Update Number	JRMP Section	Description of Change	Rationale for Change
		Design Manual to be implemented in FY 2017.	
17	5.3	Updated language to reflect updates to the Construction BMP plan template in FY 2016	Ensure section reflects updates to the template.
18	5.7.2	Added a new procedure to the inspection programs that will be initiated in FY 2017. Following all inspections, the Port will email the inspection report with findings and corrective actions to the responsible parties.	The modification was incorporated based on recommendation from an internal audit of the Port's Storm Water Program in June 2016. These new procedures will help improve communications and assist in obtaining timely and complete corrective actions.
19	7.6.2	Added a new procedure to the inspection programs that will be initiated in FY 2017. The Port now requires acknowledgement of inspection results and corrective actions from responsible parties in the form of a signature on hardcopy inspection form or via certified mail.	The modification was incorporated based on recommendation from an internal audit of the Port's Storm Water Program in June 2016. These new procedures will help improve communications and assist in obtaining timely and complete corrective actions.
20	6.3 and 7.4.2	The Port added a new quality assurance process to verify the accuracy of all inventories (i.e., commercial, industrial, and municipal) to ensure all activities are accurately represented and accounted for in the Port's storm water database.	The new quality assurance process will be implemented as a result of the recommendations from an internal audit of the Port's Storm Water Program in June 2016.
21	6	Added new section for Special Events (new Section 6.7). Narrative added to discuss the Special Event BMP requirements and inspection process, inspection frequency, inspection type and content, and tracking and record keeping	The Special Event Section was created since the inspection component has a number of elements specific to this type of activity which were not explicitly discussed in Section 6 previously. In addition, the modification to the inspection process was based on

Table 12-14
Port of San Diego JRMP Updates (continued)

Update Number	JRMP Section	Description of Change	Rationale for Change
		(previous Section 6.7 will now be Section 6.8). In addition, the inspection process was modified to include processes to obtain acknowledgement by event organizer that they have received written BMP guidance prior to the event.	recommendations from an internal audit of the Port's Storm Water Program in June 2016.
22	6.6.4	Updated discussion regarding the review of MS4 inspection results to focus on MS4 structures and BMPs that require more frequent cleaning	In FY 2016, the Port completed the evaluation of the results of MS4 inspections (PO-30). Modifications to the MS4 inspection program were identified based on this analysis.
23	6.8	Added reference to PO-13	Clarification
24	10.3	Updates to Tables 10-2 and 10-3 to reorganize the categories	The modifications were done to improve table organization and reporting.

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APPENDIX 3

WATER QUALITY IMPROVEMENT PLAN NUMERIC GOALS

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Chollas Creek TMDL

Bacteria and Metals

Dry and Wet Weather Numeric Goals

Table 3-1
Dry Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year			
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30
DRY WEATHER METALS						
			FY 18	FY 19[1]	FY 24	FY29[1]
MS4 Discharges Allowable % Above Effluent Limitations	Copper	% exceedance of effluent limitations (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See Performance Measures	20%	15%	0%
	Lead					
	Zinc					
OR						
Receiving Water Allowable % Above Receiving Water Limitations	Copper	0% exceedance of receiving water limitations (Transitional Monitoring and Assessment Program 2012 – 2014)	See Performance Measures	0%	0%	0%
	Lead					
	Zinc					
OR						
# of Direct or Indirect MS4 Discharges to Receiving Water		Number of flowing MS4 outfalls during dry weather monitoring (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See Performance Measures	0	0	0
OR						

Table 3-1 (continued)
Dry Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year			
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30
Implement Accepted Water Quality Improvement Plan Strategies to Reduce MS4 Discharges Will Result in % Load Reduction (Using WER Update 2014)	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix 2). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.					
	Copper	0% Load Reduction (2003 TMDL Model)	See Performance Measures	0%	0%	0%
	Lead		See Performance Measures	0%	0%	0%
	Zinc		See Performance Measures	0%	0%	0%
DRY WEATHER INDICATOR BACTERIA						
			FY 18	FY 19[1, 3]	FY 21[1]	N/A
Receiving Water % Days Exceeding WQO	Fecal coliform	100% (1996-2002[2])	See Performance Measures	50%	0%	
	Enterococcus	100% (1996-2002[2])		50%	0%	
OR						
MS4 Discharges % Load Reduction	Fecal coliform	0% (2002 TMDL Model)	See Performance Measures	49.4%	98.8%	
	Enterococcus			49.7%	99.3%	
	Total coliform[4]			46.1%	92.1%	
OR						
MS4 Discharges % Days Exceeding WQO	Fecal coliform	Historical MS4 dry weather data will be used to identify the baseline in the first annual report	See Performance Measures	0%	0%	
	Enterococcus			0%	0%	
	Total coliform[4]			0%	0%	
OR						

Table 3-1 (continued)
Dry Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year			
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30
# of Direct or Indirect MS4 Discharges to Receiving Water		Number of persistently flowing major MS4 outfalls provided in the Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan	See Performance Measures	0	0	
OR						
% of Exceedances of Final Receiving Water WQOs due to Natural Sources[5]	Fecal coliform	Not Available	100%	100%	100%	
	Enterococcus					
OR						
Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.					

Notes:
1. Denotes TMDL final and interim target. Alternative interim compliance dates are presented.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per Municipal Permit requirements and presented in more detail in Appendix H.
3. The County of San Diego has selected an alternative interim schedule for compliance with interim Chollas Creek Bacteria TMDL targets. The County will meet the goal in FY 20.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

Table 3-2
Wet Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year				
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30	FY 31–36
Wet Weather Metals							
			FY 18	FY 19[1]	FY 24	FY 29[1]	N/A
MS4 Discharges Allowable % Above Effluent Limitations	Copper	100% exceedance of effluent limitations in FY 09 (Year 1 of TMDL compliance)	See performance measures	20%	15%	0%	
	Lead						
	Zinc						
Or							
Receiving Water Allowable % Above Receiving Water Limitations	Copper	100% exceedance of receiving water limitations in FY09 (Year 1 of TMDL compliance)	See performance measures	0%	0%	0%	
	Lead						
	Zinc						
Or							
Number of Direct or Indirect MS4 Discharges to Receiving Water		Number of flowing MS4 outfalls during wet weather monitoring (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See performance measures	0	0	0	
Or							

Table 3-2 (continued)
Wet Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year				
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY 18	FY 19[1]	FY 24	FY 29[1]	N/A
Implement Accepted Water Quality Improvement Plan Strategies to Reduce MS4 Discharges Will Result in % Load Reduction (Using WER Update 2014)	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix 2). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.						
	Copper	0% Load Reduction (2003 TMDL Model)	See performance measures	0%	0%	0%	
	Lead			0%	0%	0%	
	Zinc			23.3%	24.7%	29.1%	
Wet Weather Indicator Bacteria							
			FY 18	FY 19	FY 24[1, 2]	FY 29[2]	FY 31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	60% Days Exceeding WQO (2002 TMDL Model)	See performance measures	60%[3]	41%	32%	22%
	Enterococcus	63% Days Exceeding WQO (2002 TMDL Model)		63%[3]	43%	33%	22%
Or							
			FY 18	FY 19	FY 24[1, 2]	FY 29[2]	FY 31[1]
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	5%	15%	26%	29%
	Enterococcus			4%	12%	20%	24%
	Total coliform[4]			3%	9%	15%	18%
Or							

Table 3-2 (continued)
Wet Weather Numeric Goals for Chollas Creek

Compliance Pathways		Baseline	Assessment Period and Fiscal Year				
			Current Permit Term	FY 16–20	FY 21–25	FY 26–30	FY 31–36
MS4 Discharges % Days Exceeding WQO	Fecal coliform	Historical MS4 wet weather data will be used to identify the baseline in the first annual report	See performance measures.	22%	22%	22%	22%
	Enterococcus			22%	22%	22%	22%
	Total coliform[4]			22%	22%	22%	22%
Or							
Number of Direct or Indirect MS4 Discharges to Receiving Water		Number of flowing MS4 outfalls during wet weather monitoring (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See performance measures.	0	0	0	0
Or							
			FY 18	FY 19	FY 24[1, 2]	FY 29[2]	FY 31[1]
% of Exceedances of Final Receiving Water WQOs due to Natural Sources[5]	Fecal coliform	Not available	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
Or							
Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.						

Table 3-2 (continued)
Wet Weather Numeric Goals for Chollas Creek

Compliance Pathways	Baseline	Assessment Period and Fiscal Year				
		Current Permit Term	FY 16–20	FY 21–25	FY 26–30	FY 31–36

Notes:

1. Denotes TMDL final and interim target. Alternative interim compliance dates are presented.
2. The County of San Diego has selected alternative interim schedules and goals for compliance with the Bacteria TMDL. The County will meet the goal in FY 29. See Section 4.3.4.1 for County of San Diego final and interim goals.
3. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RAs by maintaining the existing wet weather exceedance frequency.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WER = Water-Effect Ratio; WQO = Water Quality Objective

Chollas Creek TMDL

Bacteria Baseline Exceedance Rate

Table 3-3
Chollas Creek (908.22) MS4 Bacteria Baseline Exceedance Rate

Parameter	Dry Weather Percent Days Exceeding[a]	Wet Weather Percent Days Exceeding[b]
Enterococcus	100%	100%
Fecal Coliform	100%	100%
Total Coliform	100%	100%

Notes:

a. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 21013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.

b. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.5 of the 2013 mS4 Permit for each monitoring year for which data were available. The observed wet weather days in exceedance for monitored years were summed and divided by the total wet weather days in exceedance for the historical 5-year period.

Chollas Creek TMDL

Bacteria and Metals

City of La Mesa Numeric Goals

Table 3-4
Goals for Chollas Creek – City of La Mesa

Performance Measure for Key First Permit Term Strategies		**Assessment Period and Fiscal Year**
		Current Permit Term
Performance Measure—Wet and Dry Weather		
Performance Metrics		FY 18
Design, Construct, and Maintain Low-Impact Development (LID) Retrofits	Linear feet	Approximately 4,540 linear feet of bioretention areas will replace impervious asphalt along University Avenue between La Mesa Boulevard and Harbison Avenue.

Chollas Creek TMDL

Bacteria and Metals

City of Lemon Grove Numeric Goals

Table 3-5
Dry and Wet Weather Numeric Goals for Chollas Creek – City of Lemon Grove

Performance Measures for Key First Permit Term Strategies		Current Permit Term (FY 14–FY 18)
		FY 18
Performance Measures—Wet Weather		
Reduction in Bacteria	Restaurant used cooking oil bins stored in covered areas and protected from run-on.	75 percent (%)[1]
Or		
Municipal Facility Retrofits for Reduction of Bacteria and Metals	Redirect parking lot runoff to pervious area.	2 municipal facilities retrofitted (drainage area/facility to be determined (TBD) during site selection in FY 16)
	Redirect roof downspouts to pervious area.	2 municipal facilities retrofitted (drainage area/facility TBD during site selection in FY 16)
Performance Measures—Dry Weather		
Non-Storm Water Flow Reduction Programs	Install smart irrigation systems at municipal facilities.	8 Cal-Sense smart irrigation systems installed

Note:
1. These data have not been directly recorded in past inspection programs. The City's current BMP requirements state that bins must be kept clean but do not always require coverage. Based on discussion with inspection staff, it is estimated that about 20-30% of used oil cooking bins are stored in covered areas protected from run-on.

Chollas Creek TMDL

Bacteria and Metals

City of San Diego Numeric Goals

Table 3-6
Dry and Wet Weather Numeric Goals for Chollas Creek – City of San Diego

Suite of Strategies to Measure Performance during First Permit Term	Baseline	Assessment Period
		Current Permit Term (FY 14–FY 18)
		FY 18
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL.	44.6 acres of drainage area treated through construction of 6 green infrastructure BMPs[1]
Implement runoff reduction programs that include targeted education and outreach efforts, enhanced inspections, additional rebate programs[2], and increased enforcement	Historical dry weather monitoring data will be used to establish a baseline in the first Water Quality Improvement Plan annual report.	10% prohibited[3] dry weather reduction in flow from baseline measured at persistently flowing outfalls in the WMA

Chollas Creek TMDL

Bacteria and Metals

County of San Diego

Table 3-7
Dry Weather Numeric Goals for Chollas Creek – County of San Diego

Compliance Pathways		Baseline	Assessment Period and Fiscal Year		
			Current Permit Term	FY 16–20	FY 21–25
Dry Weather Metals					
			FY 18	FY 19[1]	FY 24
MS4 Discharges	Copper	% exceedance of effluent limitations (Monitoring and Assessment Program Section of the Final Water	See Performance Measures	20%	15%
	Lead				
	Zinc				
Or					
Receiving Water Allowable % Above Receiving Water Limitations	Copper	0% exceedance of receiving water limitations (Transitional Monitoring and Assessment Program 2012 – 2014)	See Performance Measures	0%	0%
	Lead				
	Zinc				
Or					
# of Direct or Indirect MS4 Discharges to Receiving Water		Number of flowing MS4 outfalls during dry weather monitoring (Monitoring and Assessment Program Section of the Final Water Quality Improvement Plan)	See Performance Measures	0	0
Or					
Implement Accepted Water Quality Improvement Plan Strategies to Reduce MS4 Discharges Will Result in % Load Reduction (Using WER Update 2014)	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.				
	Copper	0% Load Reduction (2003 TMDL Model)	See Performance Measures	0%	0%
	Lead		See Performance Measures	0%	0%
	Zinc		See Performance Measures	0%	0%

Table 3-7 (continued)
Dry Weather Numeric Goals for Chollas Creek – County of San Diego

Compliance Pathways		Baseline	Assessment Period and Fiscal Year		
			Current Permit Term	FY 16–20	FY 21–25
Dry Weather Indicator Bacteria					
			FY 18	FY 20[1,3]	FY 21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	100% (1996-2002[2])	See performance measures.	50%[3]	0%
	Enterococcus	100% (1996-2002[2])		50%[3]	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% (2002 TMDL Model)	See performance measures.	49.4%[3]	98.8%
	Enterococcus			49.7%[3]	99.3%
	Total coliforms[4]			46.1%[3]	92.1%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	Historical MS4 dry weather data will be used to identify the baseline in the first annual report.	See performance measures.	0%	0%
	Enterococcus			0%	0%
	Total coliforms[4]			0%	0%
Or					
Number of Direct or Indirect MS4 Discharges to Receiving Water		To be determined	See performance measures.	0	0
Or					

Table 3-7 (continued)
Dry Weather Numeric Goals for Chollas Creek – County of San Diego

Compliance Pathways		Baseline	Assessment Period and Fiscal Year		
			Current Permit Term	FY 16–20	FY 21–25
% of Exceedances of Final Receiving Water WQOs due to Natural Sources[5]	Fecal coliform	Not Available	100%	100%	100%
	Enterococcus				
Or					
Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.[6]				

Notes:
1. Denotes TMDL final and interim target.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per Municipal Permit requirements and presented in more detail in Appendix H.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.
4. Total coliform effluent limitations only apply to MS4 outfalls that discharge to the Chollas Creek mouth.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. The County of San Diego is concerned that a long-term funding source is not identified for constructing and maintaining structural BMPs, if structural BMPs are needed to meet compliance.

Table 3-8
Wet Weather Numeric Goals for Chollas Creek – County of San Diego

Compliance Pathways		Assessment Period and Fiscal Year					
		Baseline	Current Permit Term	FY 16–20	FY 21–25	FY 26–30[3]	FY 31–36
Wet Weather Metals							
			FY 18	FY 19[1,3]	FY 24	FY 29[1]	N/A
MS4 Discharges Allowable % Above Effluent Limitations	Copper	100% allowable exceedance of effluent limitations in FY 09 (Year 1 of TMDL compliance)	See performance measures.	20%	15%	0%	
	Lead						
	Zinc						
Or							
Receiving Water Allowable % Above Receiving Water Limitations	Copper	100% allowable exceedance of receiving water limitations in FY 09 (Year 1 of TMDL compliance)	See performance measures.	0%	0%	0%	
	Lead						
	Zinc						
Or							
Number of Direct or Indirect MS4 Discharges to Receiving Water		To be determined	See performance measures.	0	0	0	
Or							
Implement Accepted Water Quality Improvement Plan Strategies to Reduce MS4 Discharges Will Result in % Load Reduction (Using WER Update 2014)	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.						
	Copper	0% Load Reduction (2003 TMDL Model)	See performance measures.	0%	0%	0%	
	Lead			0%	0%	0%	
	Zinc			23.3%	24.7%	29.1%	

Table 3-8 (continued)
Wet Weather Numeric Goals for Chollas Creek – County of San Diego

Compliance Pathways		Assessment Period and Fiscal Year					
		Baseline	Current Permit Term	FY 16–20	FY 21–25	FY 26–30[3]	FY 31–36
Wet Weather Indicator Bacteria							
			FY 18	FY 19	FY 24	FY 28[1]	FY 31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	60% Days Exceeding WQO (2002 TMDL Model)	See performance measures.	60%[2]	54%	41%[3]	22%
	Enterococcus	63% Days Exceeding WQO (2002 TMDL Model)		63%[2]	57%	43%[3]	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	5%	11%	15%[3]	29%
	Enterococcus			4%	9%	12%[3]	24%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	Historical MS4 wet weather data will be used to identify the baseline in the first annual report	See performance measures.	22%	22%	22%	22%
	Enterococcus			22%	22%	22%	22%
Or							
Number of Direct or Indirect MS4 Discharges to Receiving Water		TBD	See performance measures.	0	0	0	0
Or							

Table 3-8 (continued)
Wet Weather Numeric Goals for Chollas Creek – County of San Diego

Compliance Pathways		Assessment Period and Fiscal Year					
		Baseline	Current Permit Term	FY 16–20	FY 21–25	FY 26–30[3]	FY 31–36
% of Exceedances of Final Receiving Water WQOs due to Natural Sources[4]	Fecal coliform	Not available	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
Or							
Implement Accepted Water Quality Improvement Plan	Metric for compliance analysis is MS4 discharge % load reduction. Interim compliance is implementation of strategies and schedule based on analysis results (Appendix I). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment.[5]						

Notes:
1. Denotes TMDL final and interim target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the RPs by maintaining the existing wet weather exceedance frequency.
3. The County of San Diego has selected alternate interim schedules and goals for compliance with the Bacteria TMDL; alternative dry weather compliance in FY 20 and wet weather compliance in FY 28.
4. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
5. The County of San Diego is concerned that a long-term funding source is not identified for constructing and maintaining structural BMPs, if structural BMPs are needed to meet compliance.

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Water Quality Within Caltrans Jurisdiction

Dry and Wet Weather Numeric Goals

Table 3-9
Goals for Chollas Creek (Wet Weather)—Caltrans

Goals	Unit of Measure	Assessment Metric
MS4 Discharges	Cooperative implementation agreement	Achieve compliance units by contributing funds to a cooperative implementation agreement or grant program.
Or		
MS4 Discharges	Implement nonstructural BMPs.	Continued implementation of wet weather nonstructural BMP activities within the watershed
Or		
MS4 Discharges	Implement structural BMPs.	Continued implementation of wet weather structural BMP activities for proposed projects within the watershed

Table 3-10
Goals for Chollas Creek (Dry Weather)—Caltrans

Goals	Unit of Measure	Assessment Metric
MS4 Discharges	Reduce dry weather flow.	Eliminate dry weather flows by implementing control measure to ensure effective prohibition.
Or		
MS4 Discharges	Implement dry weather BMPs.	Implement drought-tolerant landscaping and conversion to smart irrigation controllers within the watershed.

Water Quality Within Airport Authority Jurisdiction

Copper and Zinc Concentrations

Dry and Wet Weather Numeric Goals

Table 3-11
Goals for Water Quality (Copper and Zinc)
Within Airport Authority Jurisdiction (908.21)

WATER QUALITY					
Numeric Goals		Assessment Period and Fiscal Year			
		Current Permit Term	FY 16-20	FY 21-25	FY 26-30
		FY 17	FY 18	FY 21	FY 26
		Interim Goal[1]			Final Goal[2]
MS4 Discharges Jurisdiction-wide % of Wet Weather Samples With Concentrations Exceeding Target)	Dissolved Copper	70%	30%	20%	0%
	Dissolved Zinc	65%	35%	25%	0%
OR					
Performance Metrics		FY 16	FY 18	FY 21	FY26
MS4 Discharges Sub-basins 1, 3, and 5 (in total) Area Treated with Street Sweeping	Acres/ Week	7 Acres/ Week (Current Frequency)	21 Acres/ Week (3-fold increase in area)		

Notes:
1. Interim Goals are based on State Industrial General Permit (IGP) Numeric Action Levels (NALs), which are based on the 2008 USEPA NPDES Multi-Sector General Permit benchmark values. Benchmark values for copper and zinc are 33.2 ug/L and 260 ug/L, respectively, and were calculated based on the highest hardness as CaCO3 value in the 2008 MSGP hardness table.
2. Final Goals are based on the 1-hour average concentration for dissolved solids from the USEPA California Toxics Rule Criteria for Enclosed Bays and Estuaries. Criteria values for copper and zinc are 4.8 ug/L and 90 ug/L, respectively.

Riparian Area Habitat in Paradise Creek

Dry and Wet Weather Numeric Goals

Table 3-12
Delisting Goals for Riparian Area Habitat in Paradise Creek (909.1)

Riparian Area Quality				
Goal Type/Performance Metrics		Assessment Period and Fiscal Year		
		Current Permit Term (FY 14 – FY 18)	FY 16 – FY 20	FY 21 – FY 25
		FY 16	FY 18	FY 22
Water Body Delisting	Removal of Paradise Creek 303(d) Selenium Listing	Collect and analyze 48 samples for selenium, with 0 exceedances of the water quality objective.[1]	If data support removal of segment from 303(d) List, submit data during earliest available solicitation period (1 data submission).	Removal of Paradise Creek from 303(d) List for selenium (1 delisting)

- Note:
  1. These numbers are designed such that the when analyzed together with the historical data upon which the current 303(d) Listing is based, the entire data set (current study data plus historical data) will meet the delisting criteria in the State listing policy (State Board, 2004).

Table 3-13
Habitat Restoration Goals for Riparian Area Habitat in Paradise Creek (909.1)

Riparian Area Quality							
	Create Restored Areas		Establish and Maintain Restored Areas[1]				
		Current Permit Term (FY 14 – FY 18)			FY 16 – FY 20		
Goal Type	Performance Metrics	FY 17	Performance Metrics		FY 18	FY 19	FY 20[2]
Restore Native Riparian Vegetation and Wetlands	Remove concrete bottom from Paradise Creek	1,000 Linear Feet	Riparian Woodland and Riparian Scrub Areas	% Survival of Plantings[3]	100	90	90
				% Minimum Native Cover[4]	50	60	70
	Wetland restoration	6,000 Square Feet		% Maximum Allowable Non-Native Weed Cover[5]	5	5	5
	Total native plant restoration, including wetlands	35,000 Square Feet		% Bare Ground	45	35	25
			Brackish Marsh and Salt Marsh Areas	% Survival of Plantings[3]	100	90	90
				% Minimum Native Cover[4]	40	50	60
	Provide treatment for tributary urbanized areas	130 Treated Acres		% Maximum Allowable Non-Native Weed Cover[5]	5	5	5
				% Bare Ground	55	45	35

- Notes:
  1. These success criteria are taken from the Wetland and Riparian Habitat Restoration, Maintenance, and Monitoring Plan submitted as part of the resource agency permitting process for the Paradise Creek restoration project.
  2. Monitoring will also be completed to confirm continued attainment of the final (FY 20) goals in FY 21 and FY 22. The City of National City owns the property where the creek restoration is being completed and will protect the restored area in perpetuity.
  3. Denotes container planted species, with percentage based upon original planting quantities.
  4. Percentages based upon absolute cover values from transect data collected in year 3 after restoration completion (anticipated to be FY 20), visual estimates only in years 1 and 2 (FY 18 and FY 19).
  5. Percentages are for annual weed species. The site shall also remain free of invasive exotic/noxious weed species as identified by the California Invasive Plant Pest Council (Cal IPPC), and shall have 0% cover of noxious species by the end of year 3 after restoration completion (anticipated to be FY 20).

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Physical Aesthetics

Dry and Wet Weather Numeric Goals

Table 3-14
Goals for Physical Aesthetics in Lower Sweetwater HA (909.1) and Otay HA (910.2)

PHYSICAL AESTHETICS						
Numeric Goal	Unit of Measure	Baseline	Assessment Period and Fiscal Year			
			Current Permit Term (FY 14 – FY 18)	FY 16–20	FY 21–25	FY26–30
			FY 18	FY 20	FY 24	FY 28
MS4 Discharges % Optimal[1] Trash Assessment Scores	MS4 Outfalls Assessed for Trash	60%[2]	65%	75%	85%	95%
Or						
MS4 Discharges % of High Volume Trash Drainage Area Treated for Trash within 910.2[3]	% Drainage Area Feasible for BMP retrofit	Historical trash assessment data[4]	10%	20%	50%	100%[5]

Notes:
1. Historically, an optimal score was given to sites meeting the following requirements: "On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris." This definition may change in the future and will be noted in Water Quality Improvement Plan updates.
2. Based on the RPs' cumulative number of site visits of major MS4 outfalls in the Focused Priority Condition area for dry weather and MS4 outfall monitoring during FY 12 through FY 14
3. These values are based on best available information and current jurisdictional knowledge. A feasibility study is required to determine where BMP retrofits can be implemented. The interim goals may be adapted if needed.
4. An assessment is needed and will incorporate review of all available trash and source assessment data, drainage areas, and potential locations in high volume trash generating areas to feasibly implement structural control BMPs to identify or verify High Volume Trash Areas and % area feasible to retrofit with trash BMPs. The goals may be updated accordingly and provided in a future annual report.
5. The final numeric goal is in line with the State Trash Amendments compliance tracks and time schedule requirements to demonstrate compliance ten years after the trash amendments are incorporated into the next Municipal Permit.

Swimmable Waters (Beaches) in Coronado

Dry and Wet Weather Numeric Goals

Table 3-15
Dry and Wet Weather Goals for Swimmable Waters (Beaches) in the Coronado HA (910.1)

SWIMMABLE WATERS				
Numeric Goal	Unit of Measure		Assessment Period and Reporting Year	
		Baseline	Current Permit Term (FY 16 – FY 18)	FY 19–23
			FY 18	FY 21
Receiving Water Removal from the List of Impaired Water Quality Impaired Segments of one 303(d) Listing for Recreation Water Contact (REC-1 Beneficial Use)	% of Samples Exceeding Single-Sample *Enterococcus* WQO[1]	Below 15% for dry weather monitoring[2] 44% for wet weather monitoring[3]	Below 15% for dry weather monitoring 33% for wet weather monitoring	• Below 15% for dry weather monitoring[4] • 22% for wet weather monitoring[5] • Submit data to Regional Board to support the delisting of one segment - San Diego Bay Shoreline, Tidelands Park from 303(d) List for *Enterococcus* (REC-1)[6]
Or				
		Baseline	FY 18	FY 23
Water Quality Report Card – Achieve grade and inform the public	% Water Quality Report Card Grade Achieved (Dry Weather)[7]	80% – Grade A[8]	85% - Grade A	90% - Grade A
	% Water Quality Report Card Grade Achieved (Wet Weather)	58% – Grade A[9]	67% - Grade A	87% - Grade A

Table 3-15 (continued)
Dry and Wet Weather Goals for Swimmable Waters (Beaches) in the Coronado HA (910.1)

SWIMMABLE WATERS				
Numeric Goal	Unit of Measure		Assessment Period and Reporting Year	
		Baseline	Current Permit Term (FY 16 – FY 18)	FY 19–23
			FY 18	FY 21

Notes:

1. In order to include wet weather and wet season (November-March) data in the assessment, which are not collected frequently enough for a geometric mean calculation, single sample WQOs for *Enterococcus* will be used for assessment purposes.
2. Cumulative data from 1999-2014 showed a dry weather exceedance rate below the allowable threshold for 303(d) de-listing consideration. Due to this finding, the interim and final goals are focused on maintaining the current dry weather exceedance rate, while simultaneously lowering the exceedance rate of wet weather samples.
3. Baseline determined from line of evidence 27343 in the Final California 2010 Integrated Report 303(d) List/305(b) Report), which found 4 out of 9 wet weather receiving water samples exceeded the *Enterococcus* WQO. At the time the baseline was established, no other wet weather data was available to the RPs.
4. The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List states that WQOs for bacteria are not exceeded using a binomial distribution methodology. The Policy also allows use of a reference beach to compare results. The binomial distribution allows approximately 15% of samples to exceed WQO.
5. Final wet weather exceedance rate is based on the use of a Reference System Approach (Resolution No. R9-2008-0028) for impaired segments included in the Beach and Creeks Bacteria TMDL (RWQCB, 2012) and provided as a final TMDL target in Attachment E to the MS4 Permit. This approach authorizes allowable exceedances of REC-1 WQOs based on the exceedance frequencies observed in reference systems.
6. The goal reflects the RPs actions to submit a scientifically sound delisting that fully meets the delisting policy *Water Quality Control Policy, for Developing California's Clean Water Act Section 303(d) List (2004)*. In requesting the re-evaluation, the RPs will state the reason(s) the listing is no longer appropriate; and will provide valid data and information necessary to enable the Regional Board and State Water Resources Control Board to conduct the review. It should be noted that compliance with this goal is not dependent on the Regional Board's final adoption or delisting since that decision is fully dependent on Regional Board staff and funding responsibilities.
7. Percentage of beaches will be calculated using a five-year rolling average of two beaches, Tidelands Park and North Beach within in the Coronado HA (910.1), using the report card methodology from Heal the Bay.
8. Baseline for dry weather was calculated using a five-year rolling average (Years 10-11 through 14-15) for Tidelands Park from the Heal the Bay report cards. Results: Four As all years except for one B in 2012-13 yield the 80% baseline. Data will be collected for North Beach starting in 2015-16. Interim and final targets are based on the five-year rolling average grade card scores received for Tidelands Park and North Beach locations using the Heal the Bay methodology.
9. Using the Heal the Bay Annual Reports, the baseline for wet weather was calculated using a five-year rolling average for approximately 40 San Diego County Beaches in the Heal the Bay reports. However, the five-year rolling average scores include data collected during drought conditions as noted in the Heal the Bay Report for 2014-15. Using a five-year rolling average is anticipated to attenuate variability between drought and normal/high rainfall years. Wet weather data to be collected to determine percentage of years the beaches (Tidelands and North Beach) achieve water quality report grade of A.

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APPENDIX 4

MONITORING RESULTS AND ASSESSMENT

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Acronyms and Abbreviations

Acronym or Abbreviation	Definition
%	percent
<	less than
>	greater than
≤	less than or equal to
≥	greater than or equal to
°C	degrees Celsius
µg	micrograms
µg/cm^2	micrograms per square centimeter
µg/L	micrograms per liter
µS/cm	micro-Siemens per centimeter
303(d) List	CWA Section 303(d) List of Water Quality Impaired Segments
AB 411	California Assembly Bill 411 (Beach Safety Act)
ABLM	Ambient Bay and Lagoon Monitoring
Bacteria TMDL	*Revised TMDLs for Indicator Bacteria, Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (Bacteria TMDL), Regional Board Resolution No. R9-2010-0001, approved February 10.
Basin Plan	Water Quality Control Plan for the San Diego Basin, Region 9
Bight ’13	Southern California Bight 2013 Regional Monitoring Survey
BMI	benthic macroinvertebrates
BMP	best management practices
BOD	biological oxygen demand
CCC	criteria continuous concentration
CDFW	California Department of Fish and Wildlife
CEDEN	California Environmental Data Exchange Network
cf	cubic feet

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
CFR	Code of Federal Regulations
cfs or ft^3/second	cubic feet per second
City	City of San Diego
cm	centimeters
CMC	criteria maximum concentration
cm^2	square centimeters
Copermittee	an agency named in the Municipal Permit Provision B.1.
County	County of San Diego
CPOM	coarse particulate organic matter
CRAM	California Rapid Assessment Method
CSCI	California Stream Condition Index
CSUSM	California State University, San Marcos
CTR	California Toxics Rule
CWA	Clean Water Act (Federal Water Pollution Control Act, 33 U.S.C. 1251-1376)
DEH	(County of San Diego) Department of Environmental Health
DNA	deoxyribonucleic acid
E. coli	*Escherichia coli*
EMC	event mean concentration
EPA	United States Environmental Protection Agency (Analytical Method)
EPT	Ephemeroptera, Plecoptera, and Trichoptera taxa
FIB	fecal indicator bacteria
Focused Priority Condition	Focused Priority Water Quality Condition

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
FY	fiscal year
HA	hydrologic area
GIS	geographic information system
Highest Priority Condition	Highest Priority Water Quality Condition
HMP	Hydromodification Monitoring Program
HSA	hydrologic subarea
HU	hydrologic unit
IBI	Southern California Index of Biotic Integrity
IC/ID	illicit connection and/or illicit discharge
ID	identification
IDDE	illicit discharge, detection, and elimination
in	inches
J	estimated quantity
JRMP	Jurisdictional Runoff Management Program
lb	pounds
m	meters
MAP	Monitoring and Assessment Program
MBAS	Methylene Blue Active Substances
MDL	method detection limit
mg	milligrams
mg/cm^2	milligrams per square centimeter
mg/L	milligrams per liter
mL	milliliters
MLS	mass loading station

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
mm	millimeters
MMI	multi-metric indices
MPN	most probable number
MPN/100mL	most probable number per 100 milliliters
MS4	municipal separate storm sewer system
MST	microbial source tracking
Municipal Permit	San Diego Regional Water Quality Control Board Order Number R9-2013-0001, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region (Regional Board, 2013a)
NA	not applicable or not available
NAL	non-storm water action limit
ND	not detected
NPDES	National Pollutant Discharge Elimination System
NS	not sampled
NSWD	non-storm water discharge
NTU	nephelometric turbidity unit
NWS	National Water Service
O/E	ratio of observed taxa at a site to the expected taxa at a site
OPP	Office of Pesticide Programs (USEPA)
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PHAB	physical habitat

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
pMMI	predictive multi-metric index of biotic integrity
QA	quality assurance
QC	quality control
qPCR	quantitative Polymerase Chain Reaction
Regional Board	San Diego Regional Water Quality Control Board
Responsible Party (RP)	a Copermittee named in the Municipal Permit Provision B.1; all agencies that have included water quality improvement strategies in the Water Quality Improvement Plan
RHMP	Regional Harbor Monitoring Program
RL	reporting limit
RP	Responsible Party
RW	receiving water
RWL	receiving water limitation
SAFIT	Southwest Association of Freshwater Invertebrate Taxonomists
SAL	storm water action limit
SCCWRP	Southern California Coastal Water Research Project
SIYB	Shelter Island Yacht Basin
SM	Standard Method
SMC	Storm Water Monitoring Coalition
SQO	Sediment Quality Objective
State	State of California
State Board	State Water Resources Control Board
sub-AV	sub area-velocity (probe)
SWAMP	Surface Water Ambient Monitoring Program

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
TBD	to be determined
TDS	total dissolved solids
TKN	total Kjeldahl nitrogen
TMAR	Transitional Monitoring and Assessment Report
TMDL	total maximum daily load
USEPA	United States Environmental Protection Agency
WER	water effects ratio
WLA	waste load allocation
WMA	Watershed Management Area
WQBEL	water quality-based effluent limit
WQIP	Water Quality Improvement Plan
WQO	water quality objective

1 Introduction – Monitoring and Assessment Program

The Monitoring and Assessment Program (MAP) for the San Diego Bay Watershed Management Area (WMA) is discussed in Section 5 and detailed in Appendix K of the Water Quality Improvement Plan (WQIP). The MAP incorporates requirements of Provision B and Provision D of the Municipal Permit,[1] along with the specific monitoring and assessment requirements for the Dissolved Copper Total Maximum Daily Load (TMDL) in the Shelter Island Yacht Basin and the Bacteria TMDL for Shelter Island Shoreline Park listed in Attachment E of the Municipal Permit.

The Monitoring Program includes three major components: (1) the receiving water monitoring program, which measures the long-term health of the watershed; (2) the municipal separate storm sewer system (MS4) outfall monitoring program, which investigates the elimination of dry weather flows from MS4 outfalls and improvement to the quality of the flows that exit the MS4 outfalls during rain events; and (3) special studies. Figure 1-1 shows the locations of the monitoring stations that are a part of the San Diego Bay WMA MAP.

This report summarizes the monitoring data collected from October 1, 2015, through September 30, 2016, as well as data that were not summarized in the 2013–2014 and 2014–2015 Transitional Monitoring and Assessment Program Reports for the San Diego Bay WMA. Reported data include both receiving water and MS4 outfall monitoring data for dry and wet weather events. Monitoring methodologies were summarized in Section 5 of the San Diego Bay WMA WQIP and were specified in the associated Appendix K Monitoring Plans component (Project Clean Water, 2016). These documents provide detailed information regarding monitoring locations, monitoring techniques, analytes sampled, and quality assurance/quality control (QA/QC) requirements.

The Responsible Parties (RPs) have established interim and final goals for the Highest Priority Water Quality Conditions (Highest Priority Conditions) and Focused Priority Water Quality Conditions (Focused Priority Conditions), as appropriate, during this Municipal Permit term to demonstrate progress toward compliance with the Municipal Permit and applicable TMDL requirements. Generally, RPs have identified near-term goals to address potential pollutant sources, reduce non-storm water dry weather flow in MS4 outfalls, and implement best management practices (BMPs).

The MAP includes an annual analysis of the data collected for the monitoring year as well as a time series analysis of all data collected over the entirety of the permit cycle. This appendix details the MS4 Outfall Discharge Assessments, which evaluate the dry weather information associated with the Illicit Discharge, Detection, and Elimination (IDDE) program collected as part of the Jurisdictional Urban Runoff Management Program (JRMP) along with the dry and wet weather MS4 monitoring data collected by the RPs. The results of the special studies are also assessed in this appendix. The Receiving

[1] San Diego Regional Water Quality Control Board Order Number R9-2013-0001, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region

Water Assessment and the Integrated Assessments will be summarized in the Regional Monitoring and Assessment Report that will be submitted with Report of Waste Discharge in December 2017.

Table 1-1 provides an overview of the WQIP for the San Diego Bay WMA.

Table 1-1
Water Quality Improvement Plan Monitoring Overview

Monitoring Program	Temporal Extent	Monitoring Element[1]	Timeline (Fiscal Year)
Receiving Water Monitoring			
Long-Term Receiving Water Monitoring	Wet and dry weather	Chemistry/FIB	2013–2014
		Toxicity	
		Trash assessment	
		Bioassessment	
		Hydromodification	
Southern California Bight Regional Monitoring (Bight '13)	Dry weather	Chemistry	2013–2014
		Toxicity	
		Bioassessment	
Regional Storm water Monitoring Coalition (SMC)	Dry weather	To be determined (TBD) (bioassessment)	2013–TBD
Regional Hydromodification Monitoring Program	Wet weather	Rain gauge analysis	2013–2015 (TBD)
		Stream gauge analysis	
		Channel assessment	
		Flow	
		Sediment transport	
Sediment Quality	Dry weather	Chemistry	2013[2] –2018
		Toxicity	
		Bioassessment	
		Trash assessment	
Regional Harbor Monitoring Program (RHMP)	Dry weather	Chemistry	2013–2014
		Bioassessment	
		Trash assessment	
MS4 Monitoring			
MS4 Field Screening	Dry weather	Flow	2013–2018
		Trash	
		IC/ID	
		Condition	
MS4 Outfall Monitoring	Wet and dry weather	Chemistry/FIB	2013–2018
		Visual observations	
		In-situ measurements	

Table 1-1 (continued)
Water Quality Improvement Plan Monitoring Overview

Monitoring Program	Temporal Extent	Monitoring Element[1]	Timeline (Fiscal Year)
Highest Priority Condition Monitoring			
Chollas Creek Metals TMDL	Wet and dry weather*	Chemistry/FIB	2013–2018
Chollas Creek Bacteria TMDL	Wet and dry weather	FIB	2013–2018
Focused Priority Condition Monitoring			
Airport Metals[3]	Wet weather	Chemistry (metals)	2013–2018
Riparian Area Monitoring (Paradise Creek)	Dry weather	Bioassessment (CRAM), Plant communities	2014 (TBD)–2018
Physical Aesthetics (Sweetwater and Otay)[4]	Wet weather (post-storm) and dry weather	Trash assessments	2016–2018
Swimmable Waters—Beaches (Otay)[2]	Wet weather	FIB	2016–2018
	Dry weather		1999–2018
Additional TMDL Monitoring			
Shelter Island Yacht Basin Copper TMDL—Receiving Water	See Regional Board Investigative Order No. No. R9-2011-0036.		
Shelter Island Yacht basin Copper TMDL—MS4 Outfall	Wet and dry weather	Chemistry (dissolved copper)	2013–2018
Shelter Island Shoreline Park Bacteria TMDL	Wet and dry weather	FIB	2013–2018
Special Studies and AB 411 Monitoring			
San Diego Regional Reference Streams and Beaches	Wet and Dry Weather	Chemistry/FIB	2013–2016 (TBD)
		Flow	
		Bioassessment	
San Diego Bay Debris Study	Dry Weather	Trash Assessment	2014-2017
		Physical Habitat	
Pueblo HU Refuse Assessment Program	Dry Weather	Trash Assessment	2013–2018
Chollas Jurisdictional Boundary Study	Wet Weather	Chemistry	2013–2015 (TBD)

Table 1-1 (continued)
Water Quality Improvement Plan Monitoring Overview

Monitoring Program	Temporal Extent	Monitoring Element[1]	Timeline (Fiscal Year)
Riparian Area Selenium Study	Wet and Dry Weather	Chemistry (selenium)	2013–2015 (TBD)
Regional Beach Water Quality (AB 411)[5]	Dry Weather	FIB	1999–2018

Notes:

AB 411 = California Assembly Bill 411; BOD = biological oxygen demand; CRAM = California Rapid Assessment Method; FIB = fecal indicator bacteria; HMP = Hydromodification Monitoring Program; HU = hydrologic unit; IC/ID = illicit connection and/or illicit discharge; RHMP = Regional Harbor Monitoring Program; SMC = Southern California Storm Water Monitoring Coalition; TBD = to be determined

* Dry weather metal monitoring in Chollas Creek has been completed as part of the Regional Monitoring Program.

1. Some monitoring elements may not be conducted under the entire temporal extent of the program. See Appendix K of the WQIP for details.
2. Completed under the Ambient Bay and Lagoon Monitoring (ABLM) Program, as part of Bight '13.
3. Airport monitoring for metals will be conducted as part of the Industrial General Permit (IGP) monitoring. Additional constituents are monitored under that program.
4. Monitoring is paired. Receiving Water and MS4 Outfall will be monitored the same day.
5. The AB 411 program monitoring is conducted during the dry season by the County of San Diego Department of Environmental Health (DEH) will be tracked and incorporated into bacteria-related receiving water assessments. Monitoring under AB 411 is not required under Provision D of the Municipal Permit, but bacteria monitoring is required as part of the Bacteria TMDL (Municipal Permit Attachment E.6). AB 411 monitoring may be used to augment RP monitoring and will be reviewed as part of the data assessment. RPs will be doing dry weather monitoring during wet weather season starting in fiscal year (FY) 2016.

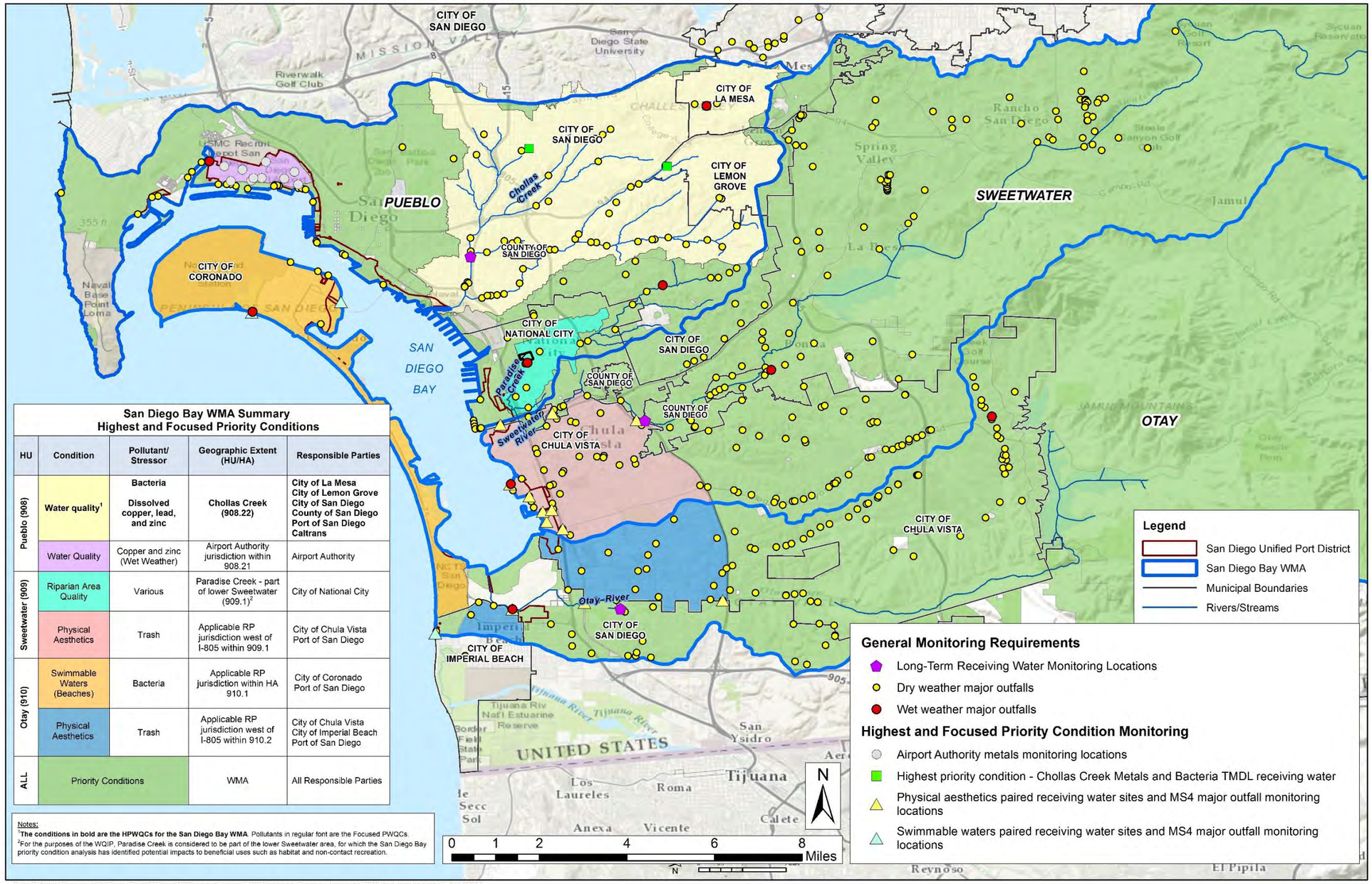

San Diego Bay WMA Summary
Highest and Focused Priority Conditions

HU	Condition	Pollutant/ Stressor	Geographic Extent (HU/HA)	Responsible Parties
Pueblo (908)	**Water quality[1]**	**Bacteria** **Dissolved copper, lead, and zinc**	**Chollas Creek (908.22)**	**City of La Mesa** **City of Lemon Grove** **City of San Diego** **County of San Diego** **Port of San Diego** **Caltrans**
	Water Quality	Copper and zinc (Wet Weather)	Airport Authority jurisdiction within 908.21	Airport Authority
Sweetwater (909)	Riparian Area Quality	Various	Paradise Creek - part of lower Sweetwater (909.1)[2]	City of National City
	Physical Aesthetics	Trash	Applicable RP jurisdiction west of I-805 within 909.1	City of Chula Vista Port of San Diego
Otay (910)	Swimmable Waters (Beaches)	Bacteria	Applicable RP jurisdiction within HA 910.1	City of Coronado Port of San Diego
	Physical Aesthetics	Trash	Applicable RP jurisdiction west of I-805 within 910.2	City of Chula Vista City of Imperial Beach Port of San Diego
ALL	Priority Conditions		WMA	All Responsible Parties

Notes:
[1]**The conditions in bold are the HPWQCs for the San Diego Bay WMA**. Pollutants in regular font are the Focused PWQCs.
[2]For the purposes of the WQIP, Paradise Creek is considered to be part of the lower Sweetwater area, for which the San Diego Bay priority condition analysis has identified potential impacts to beneficial uses such as habitat and non-contact recreation.

Figure 1-1
San Diego Bay WMA Monitoring Locations

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In summary, this Monitoring Results and Assessments Appendix of the San Diego Bay WMA Water Quality Improvement Plan Annual Report includes the following sections.

Section 1, Introduction – Monitoring and Assessment Program – This section provides an overview of the MAP, the monitoring performed during the October 2015 through September 2016 monitoring year, and the assessments included in this appendix.

Section 2, Receiving Water Monitoring – This section describes the monitoring data collected as part of the Receiving Water Monitoring program. Data from various sources are compiled and summarized in this section. The data presented include those collected during the October 2015 through September 2016 monitoring year, as well as data collected previously but not included in the San Diego Bay WMA Transitional Monitoring Assessment report (submitted in January 2016).

Section 3, Non-Storm Water MS4 Outfall Monitoring – This section summarizes the wet weather related MS4 Outfall Discharge Assessments (Provision B.4.b). It includes a comparison with Non-Storm Water Action Limits (NALs) and Municipal Permit required assessments.

Section 4, Storm Water Outfall Monitoring Data – This section summarizes the wet weather related MS4 Outfall Discharge Assessments (Provision B.4.b). It includes a comparison with storm water action limits (SALs) and Municipal Permit-required assessments.

Section 5 Physical Aesthetics Focused Priority Condition Monitoring – This section summarizes the monitoring program and results of the Physical Aesthetics Focused Priority Condition in Sweetwater and Otay hydrologic unit (HU).

Section 6, Swimmable Waters Focused Priority Condition Monitoring – This section summarizes the monitoring program and results of the Swimmable Waters Focused Priority Condition implemented in the Coronado hydrologic area (HA).

Section 7, Special Study and Additional Program Results and Assessments – This section provides an overview of the findings of seven special studies completed or on-going in the San Diego Bay WMA: (1) the San Diego Regional Reference Streams and Beaches Study, (2) the study Addressing Trash, Debris, and Floating Material in Chollas and Paleta Creeks, (3) the San Diego Bay Debris Study, (4) the Pueblo HU Refuse Assessment Program, (5) the Chollas Jurisdictional Boundary Studies for metals and bacteria, and (6) the Riparian Area Selenium Study. The RPs also utilized California Assembly Bill 411 (AB 411) data obtained by the County of San Diego DEH to supplement the Swimmable Waters bacteria monitoring and the Shelter Island Shoreline Park Bacteria TMDL required monitoring.

Section 8, Publicly Available Data – This section provides a summary of the California Environmental Data Exchange Network (CEDEN) data submittal certifications for the October 2015 through September 2016 monitoring year.

2 Receiving Water Monitoring

This section highlights receiving water data collected according to the San Diego Bay WMA MAP. Because this is the first Annual Report to be submitted under the San Diego Bay WMA WQIP, data collected since the acceptance of the Municipal Permit in 2013 will be (1) referenced (if previously submitted to the San Diego Regional Water Quality Control Board [Regional Board]), (2) summarized (if sampling was conducted prior to the October 2015 through September 2016 monitoring year and the data have not been previously submitted to the Regional Board), or (3) reported as part of the October 2015 through September 2016 monitoring year report. Further, the data presented in this appendix will be used to complete the Report of Waste Discharge in December 2017 and the Integrated Assessment (which is detailed in the MAP).

2.1 Long-Term Receiving Water Monitoring

The Transitional Receiving Water Monitoring Program completed during the October 2014 through September 2015 monitoring year met state requirements; no monitoring was conducted during this reporting period. The results of this monitoring were presented in the Transitional Monitoring and Assessment Program Report[2] for the San Diego Bay WMA (2014–2015) (San Diego County Municipal Copermittees, 2016), including water quality monitoring during dry and wet weather, trash assessments, hydromodification monitoring, and bioassessment at the long-term monitoring stations.

2.2 Regional Monitoring

The Bight program is a multi-agency collaborative effort led by the Southern California Coastal Water Research Project (SCCWRP) to assess the ecological condition of the Southern California Bight from a cross-regional perspective.

The core monitoring program consists of sampling for sediment chemistry, sediment toxicity, benthic infauna and invertebrates, and demersal fish that live in the benthic zone. Since the first monitoring event in 1994, sampling has occurred over the course of five-year cycles, generating a long-term data set to monitor overall Bight ecosystem conditions over time.

The goal of the Southern California Bight 2013 Regional Monitoring Survey (Bight ’13) program was to answer three primary questions:

- What are the extent and magnitude of direct impacts from contaminants?
- How do the extent and magnitude of the environmental impacts vary by habitat?
- What is the trend in the extent and magnitude of direct impacts from contaminants?

[2] Transitional Monitoring and Assessment Repot can be found on the Project Cleanwater website: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=24&Itemid=64

In close coordination with Bight ’13, the San Diego Regional Harbor Monitoring Program (RHMP) included the same primary goals and questions and satisfied the initial monitoring requirements of the State of California Sediment Control Plan for San Diego Bay (San Diego Bay WMA Responsible Parties, 2016). The RHMP provides a comprehensive survey of the quality of water, sediments, and aquatic life on a five-year cycle in four southern California embayments in the San Diego Region: Dana Point Harbor, Oceanside Harbor, Mission Bay, and San Diego Bay.

Sampling of sediments and the water column was conducted during August and September 2013 at 59 sites in San Diego Bay and followed the Bight-approved methodologies (Bight ’13 Contaminant Impact Assessment Committee, 2013). There were 13 freshwater-influenced sites monitored in San Diego Bay as part of the Bight/RHMP monitoring in 2013. The data collected from the 13 freshwater influenced sites satisfied the RPs’ initial screening requirements for sediment quality described in the San Diego Bay MAP. Using the State of California Sediment Quality Objectives (SQO) approach, all of the freshwater-influenced locations in San Diego Bay were determined to be unimpacted or likely unimpacted by anthropogenic influences during the initial screening, with the exception of two sites near the mouth of Chollas Creek. There is a current investigative order (R9-2015-0058) at the mouth and tidally influenced area of Chollas Creek for impaired benthic communities.

The 2013 San Diego Regional Harbor Monitoring Report was provided in the 2015 Transitional Monitoring and Assessment Report in accordance with the Municipal Permit reporting requirements (Bight ’13 Contaminant Impact Assessment Committee, 2013). The full report and appendices are available on the Port of San Diego’s website at https://www.portofsandiego.org/document/environment/regional-harbor-monitoring-program/rhmp-2013.html.

2.3 Storm Water Monitoring Coalition Regional Monitoring Results

The SMC Regional Bioassessment Monitoring Program is a collaborative effort of leading storm water agencies as well as multiple local, state, and federal regulatory agencies in southern California. The SMC monitoring program is designed to generate the data to answer three key management questions:

(1) What is the condition of streams in southern California?

(2) What stressors are associated with poor condition?

(3) Are conditions changing over time?

Data are collected to characterize the benthic macroinvertebrate (BMI) and algae communities, as well as the quality of the physical habitat and water chemistry of each monitoring site. The following sections describe both methodology and results from the SMC monitoring program.

2.3.1 Stream Bioassessment Methods

Three monitoring reaches in the Sweetwater River HU were assessed in May and June of the 2015–2016 monitoring year for the SMC Regional Monitoring Program as described in Table 2-1. Stations included two SMC "condition" sites (Stations 909M24925 and 909M24937) and one “trend” site (Station 909WE0662), all located in the main stem of the Sweetwater River in the upper portion of the watershed, spanning approximately 15 stream miles from upstream of Palo Verde Lake to downstream of Green Valley Falls in Cuyamaca Rancho State Park. Condition sites are those that are selected from the SMC sample draw list each year and are sampled only once during the current five-year cycle (2015–2019) to discern an overall condition estimate of the health of streams in the region. Trend sites are those that have been randomly selected from the preceding five-year SMC cycle (2009–2013) list, and are being sampled each year of the current five-year cycle (2015–2019) to evaluate any overall trends in the health of streams in the region. Data from the San Diego Bay WMA sampling stations will be submitted to the SMC program and will be analyzed within the context of the South Coast Region of California in a five-year summary report produced by SCCWRP at the conclusion of the current 2015–2019 sampling cycle. This report will include any conclusions that may be drawn regarding the improving or worsening condition of the selected trend sites.

Table 2-1
San Diego Bay Storm Water Monitoring Coalition Regional Monitoring Program Bioassessment Sites for 2015–2016

SMC Region	WMA	Stream: Location	Site Type	Station Code	Date Sampled	Latitude/ Longitude
South San Diego	San Diego Bay	Sweetwater River: 0.3 Mile Downstream of Cuyamaca Rancho State Park	Trend (Open)	909WE0662	5/10/2016	32.89957/ -116.58789
		Sweetwater River: 0.4 Mile Upstream of Interstate 8	Condition	909M24925	5/10/2016	32.83849/ -116.63815
		Sweetwater River: 0.3 Mile Upstream of Palo Verde Lake	Condition	909M24937	6/22/2016	32.81829/ -116.71039

Notes:
SMC = Storm Water Monitoring Coalition; WMA = Watershed Management Area

All bioassessments were performed between May 10 and June 22, 2016, during the appropriate index period for the SMC (March through July). Biological condition and physical habitat quality were assessed in the field following the SWAMP bioassessment protocol (Ode et al., 2016) and the SMC 2015–2019 Work Plan (Mazor et al., 2015). The California Rapid Assessment Method (CRAM) followed procedures outlined in *California Rapid Assessment Method for Wetlands, Riverine Wetlands Field Book*, version 6.1 (CRAM, 2013).

Analysis of Benthic Community Data

Benthic community data analyses used standardized assessment tools adopted by SWAMP. BMI were identified in accordance with the Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT) Level 2 requirements. Data were then analyzed to produce two different multi-metric indices (MMI) of overall BMI health: (1) Southern California Index of Biotic Integrity (IBI) (Ode et al., 2005), and (2) the California Stream Condition Index (CSCI) (Mazor et al., 2015), and their associated biological metrics (see Attachment A).

According to the IBI, the BMI community is considered unimpaired (i.e., equivalent to reference condition) when a site scores in the Fair (40-59), Good (60-79), or Very Good (80-100) categories. According to the CSCI, a site is considered unimpaired (i.e., equivalent to reference condition) when a site scores in the Possibly Altered (0.79-0.91) or Likely Intact (>0.92) categories.

2.3.2 Stream Bioassessment Results

Table 2-6 summarizes IBI and CSCI index scores for the benthic community health and riverine wetland condition scores (i.e., CRAM) for the Sweetwater River monitoring locations. More detailed results of the IBI, CSCI, and CRAM are presented in Attachment A. Tables 2-7 through 2-9 summarize physical habitat, analytical chemistry, and algal biomass results, respectively. Algal taxonomy samples including soft-bodied algae and diatoms were collected and submitted to California State University, San Marcos (CSUSM) for taxonomic identification. Algal taxonomy sample processing by CSUSM is scheduled to be completed in spring 2017, followed by data submittal to SCCWRP by CSUSM and reported through the SMC program.

Table 2-6
Summary of the 2016 San Diego Bay WMA Bioassessment Monitoring Site Index Scores

Stream Name	Station Code	IBI Score	IBI Condition Category	CSCI Score	CSCI Condition Category	Overall CRAM Score
Sweetwater River	909WE0662	33	Poor	0.68	Likely Altered	82
	909M24925	36	Poor	0.83	Possibly Altered	89
	909M24937	50	Fair	0.87	Possibly Altered	75

Notes:

CRAM = California Rapid Assessment Method; CSCI = California Stream Condition Index; IBI = Southern California Index of Biotic Integrity

Table 2-7
Summary of the 2016 San Diego Bay WMA Physical Habitat Measures of SMC Bioassessment Monitoring Sites

Physical Habitat Measure[1]	Sweetwater River		
	909WE0662	909M24925	909M24937
Elevation (feet above sea level)	3,822	3,105	1,885
Gradient (% of slope)	0.5	4.0	1.3
Flow Volume (cfs, ft^3/second)	0.33	0.23	0.01
Mean Depth (cm)	9.2	16.7	20
Mean Wetted Width (m)	3.0	2.3	1.4
Mean Bankfull Width[2] (m)	7.4	9.1	2.3
Epifaunal substrate cover (0-20 scale)[3]	8	17	14
Sediment deposition (0-20 scale)[3]	18	17	18
Channel alteration (0-20 scale)[3]	20	20	20
Bank stability-left bank	Vulnerable	Stable	Stable
Bank stability-right bank	Vulnerable	Stable	Stable
Average canopy cover (% of reach)	83	74	91
Macroalgal cover (% of reach)	20	24	13
Aquatic macrophyte cover (% of reach)	50	17	1
CPOM presence[4] (% of reach)	95	49	62
Flow Habitats (% of Reach)			
Cascade habitat	0	2	0
Rapid habitat	0	2	0
Riffle habitat (fast-shallow)	12	30	8
Run habitat (fast-deep)	0	1	0
Glide habitat (slow-shallow)	88	45	53
Pool habitat (slow-deep)	0	20	29
Dry substrate	0	0	10
Substrate Composition (% of Reach)			
Roots	59	11	4
Fines (<0.06 mm)	16	16	1
Sand (0.06-2 mm)	19	17	53
Gravel (2-64 mm)	4	15	9
Cobble (64-250 mm)	0	10	22
Boulder (250-1,000 mm)	1	31	11
Bedrock	1	0	0

Table 2-7 (continued)
Summary of the 2016 San Diego Bay WMA Physical Habitat Measures of SMC Bioassessment Monitoring Sites

Notes:

% = percent; cfs or ft^3/second = cubic feet per second; cm = centimeters; m = meters; mm = millimeters

1. Physical habitat measures are described in detail in the SWAMP bioassessment protocol (Ode et al., 2016)
2. Bankfull width is the estimated width of the stream under a one to two year high flow recurrence interval.
3. Qualitative habitat quality assessment on a 0-20 point scale where 0 represents poor conditions and 20 represents optimal conditions.
4. CPOM = coarse particulate organic matter, a food resource for BMI.

Table 2-8
Summary of the San Diego Bay WMA Analytical Chemistry Results for SMC Bioassessment, 2016

Method	Constituent	Units	MDL	RL	Sample Type	Sweetwater River		
						909WE0662	909M24925	909M24937
NA	Water Temperature	°C	--	--	Point	15.7	11.9	16.8
NA	pH	units	--	--	Point	8.79	8.86	7.96
NA	Dissolved Oxygen	mg/L	--	--	Point	6.9	7.3	3.3
NA	Specific Conductance	µS/cm	--	--	Point	322	755	951
NA	Turbidity	NTU	--	--	Point	1.9	2.3	2.3
SM 2320 B	Alkalinity as CaCO3	mg/L	0.56	10	Grab	88	140	180
EPA 350.1	Ammonia as N	mg/L	0.048	0.10	Grab	ND	ND	ND
EPA 200.7	Calcium	mg/L	0.0160	0.100	Grab	36.1	55.1	85.8
EPA 300.0	Chloride	mg/L	1.0-2.5	10-12	Grab	33	79	130
EPA 200.7	Hardness as CaCO3	mg/L	0.0894	0.662	Grab	142	235	385
EPA 200.7	Magnesium	mg/L	0.0120	0.100	Grab	12.5	23.7	41.5
EPA 353.2	Nitrate + Nitrite as N	µg/L	10	100	Grab	ND	27[J]	ND
EPA 353.2	Nitrate as N	mg/L	0.041	0.10	Grab	ND	ND	ND
EPA 353.2	Nitrite as N	µg/L	10	100	Grab	ND	ND	ND
Calculation	Nitrogen, Total	mg/L	0.060	0.20	Grab	0.44	0.59	0.20
EPA 351.2	Nitrogen, Total Kjeldahl	mg/L	0.050	0.10	Grab	0.44	0.56	0.20
EPA 365.3	OrthoPhosphate as P	mg/L	0.00083	0.010	Grab	0.020	0.020	0.031
EPA 365.3	Phosphorus as P	mg/L	0.00083	0.010	Grab	0.010	0.0043[J]	0.024
EPA 300.0	Sulfate	mg/L	1.0-2.5	5.0-12	Grab	72	110	230
SM 2540 D	Total Suspended Solids	mg/L	0.5	5	Grab	1[J]	ND	ND

Notes:
°C = degrees Celsius; µg/L = microgams per liter; µS/cm = micro-Siemens per centimeter; EPA = United States Environmental Protection Agency analytical method; MDL = method detection limit; mg/L = milligrams per liter; NA = not applicable; ND = not detected; NTU = nephelometric turbidity unit; RL = reporting limit; SM = Standard Method
J = Estimated concentration detected was <MRL and >MDL

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Table 2-9
Summary of the Algal Biomass Results for the San Diego Bay WMA SMC Bioassessment Site, 2016

Parameter	Sweetwater River		
	909WE0662	909M24925	909M24937
Total Surface Area Sampled (cm^2)	138.6	116.7	116.7
Sample Composite Volume (mL)	600	660	495
Chlorophyll *a* ($\mu g/cm^2$)	2.73	5.66	3.86
Ash-Free Dry Mass (mg/cm^2)	7.92	5.18	3.17

Notes:
$\mu g/cm^2$ = micrograms per square centimeter; cm^2 = square centimeters; mg/cm^2 = milligrams per square centimeter; mL = milliliters

2.3.3 Stream Bioassessment Discussion

Sweetwater River Below Green Valley Falls (909WE0662)

The uppermost Sweetwater River station (909WE0662) had an IBI score of 33 (Poor) and a CSCI score of 0.68 (Likely Altered) (Table 2-6). The IBI and CSCI scores both indicated a somewhat impaired BMI community (an IBI score of ≤39 is considered impaired and a CSCI score of <0.79 is considered impaired), although the O/E component of the CSCI score rated the site unimpaired with a score of 0.80 (Attachment A). Individual metrics of the BMI community were variable, with some aspects of the community indicating high-quality conditions and others reflecting lower quality community conditions. This variation was likely because the in-stream substrate was not ideal for BMI colonization (discussed below). Indicators of good biotic condition included the presence of intolerant (i.e., sensitive) BMI (5% of the community), including the highly sensitive mayfly, *Ameletus* sp. (15 individuals), the stonefly, *Isoperla* sp. (8 individuals), and two taxa of dixid midges (6 individuals) (Attachment A). Notably, the community lacked Trichoptera (caddisflies) and Coleoptera (beetles) which are typically found in high-quality streams.

According to the CRAM analysis, the riverine wetland condition of the uppermost Sweetwater River site (Figure 2-1) was of good quality with an overall score of 82 of a possible 100 points (Table 2-6). For each of the 14 CRAM attributes, a rating of A through D is given (where a rating of A represents the highest quality conditions). Most of the CRAM attribute metrics at this station scored an A or B, while two attributes (hydrologic connectivity to an active flood plain and number of co-dominant plant species) scored a C (Attachment A).

Figure 2-1
Sweetwater River Site 909WE0662 Looking Upstream

Stream flow at the time of sampling was moderate (0.33 cubic feet per second [cfs]) and the flow habitats were dominated by glide (slow-shallow; 88%) and riffle (fast-shallow; 12%) (Table 2-7). The streambed and riparian corridor were undisturbed and the banks were predicted to be stable under normal stormflows, with some areas potentially vulnerable to erosion under high flows. The vegetation was dominated by native species, and a relatively high percent coverage was observed in all vegetative layers, with a reach-wide overhead canopy cover of 83%. Although macrophytes were very dense and completely covered the stream in one part of the reach, macroalgal and aquatic macrophyte coverages were moderate overall (20% and 50%, respectively). A substantial amount of coarse particulate organic matter (CPOM; a food source for BMI) was present at 95% of the substrate assessment points. The substrate was composed mostly of fibrous roots of macrophytes and willows, fine sediment, and sand (94% combined), and a small percentage of gravel. This substrate composition was not conducive to the colonization of a diverse community of BMI, because many taxa prefer hard substrates and layered cobble.

The results for abiotic water quality and analytical chemistry are presented in Table 2-8. Measured parameters were indicative of reference conditions, where no limitations to BMI colonization would be expected. Because of the chemistry results and the observed poor quality of in-stream physical habitat conditions, the relatively low biotic index scores were likely due to the physical habitat and were not limited by water quality conditions.

Sweetwater River Upstream of Interstate 8 (909M24925)

The middle Sweetwater River site (Figure 2-2) had an IBI score of 36 (Poor) and a CSCI score of 0.82 (Possibly Altered) (Table 2-6). The IBI score indicated a slightly impaired BMI community, while the CSCI score indicated that the benthic community was above the impairment threshold. Breaking down the two components of the CSCI, the O/E rated the community equivalent to reference conditions and was much higher than the pMMI, with scores of 1.07 and 0.59, respectively (Attachment A). The BMI community did not contain any intolerant taxa and the number of EPT was relatively low (4 taxa) with no stoneflies or caddisflies. Of the mayflies present, one type was considered a sensitive EPT (*Centroptilum* sp.), with a tolerance value of 3. The community was dominated by Diptera taxa (true flies), where members of the Family Chironomidae and the black fly, *Simulium* sp., accounted for 63% of the community. Snails (primarily *Physa* sp.) were also present in relatively high numbers and accounted for 28% of the community.

Figure 2-2
Sweetwater River Site 909M24925 Looking Upstream

The riverine wetland condition of the monitoring reach was considered good, with a CRAM score of 89 of 100 possible points (Table 2-6). The site was rated high (A or B) for every attribute of CRAM, with the exception of hydrologic connectivity to an active flood plain, which was rated a C (Attachment A). The gradient of the reach was relatively high (4% slope), flow habitats were diverse, and the flow volume was 0.22 cfs (Table 2-7). The banks were predicted to be stable under high flow conditions and indicators of erosion were not observed. Overhead canopy exhibited 74% coverage across the reach, and macrolagal and aquatic macrophyte cover was somewhat limited with 24% and 17%

cover, respectively. CPOM was detected at 49% of the transect points assessed, which indicated adequate food sources for BMI. The stream substrate was diverse, with boulders identified as the dominant component (31% of the substrate), and all other substrate types composing at least 10% of the substrate. The qualitative assessment of epifaunal substrate quality was 17 of 20 points, indicating optimal habitat for BMI colonization.

The results for abiotic water quality and analytical chemistry indicated that none of the constituents were at levels that would limit the colonization of sensitive BMI (Table 2-8). These results indicate that the low IBI and MMI scores for the benthic community were due to a naturally low diversity of BMI taxa and that the O/E component of the CSCI, which rated the site as Likely Intact, was the best measure of biotic conditions at the site. The site was approximately one mile downstream of low-density housing and three miles downstream of the town of Descanso, and although it is possible that these anthropogenic influences could have contributed to the relatively low diversity of BMI, natural biological variability cannot be ruled out.

Sweetwater River Upstream of Palo Verde Lake (909M24937)

The lower Sweetwater River site (Figure 2-3) had an IBI score of 50 (Fair) and a CSCI score of 0.87 (Possibly Altered) that indicated an unimpaired BMI community by both indices. BMI metrics that indicated a good quality community included a low percentage of non-insects and high diversities of beetle and predator taxa. Relative to reference conditions, the site supported low numbers of EPT and intolerant taxa.

The riverine wetland condition of the monitoring reach was moderate, with an overall CRAM score of 75 out of 100 possible points (Table 2-6). The area surrounding the site was undeveloped open space with a natural streambed and bank. Because of limited and difficult site accessibility, there is likely negligible physical disturbance from humans. The reach received a poor rating (D) for two CRAM attributes related to vegetative biotic structure (number of co-dominant species and vertical biotic structure). The low CRAM scores for these two attributes could be directly related to the naturally rocky topography of the site (i.e., large car-sized boulders piled two to three deep throughout the entire reach), which naturally inhibited plant growth. Additionally, the observed boulder field also influenced both structural patch richness and vegetative horizontal interspersion, which that exhibited attribute scores of “C.”

The streambanks were stable, the gradient was moderate (1.3% slope), and flow volume was 0.01 cfs. The low flow volume at the time of sampling made riffles rare (8% of the flow habitat), although it was apparent that greater flow would enhance the amount of riffles. At the time of sampling, slow-moving glide and pool habitat dominated (53% and 29%, respectively). The rocky topography of the reach provided relatively unique streambed conditions, with very large (i.e., car-sized and larger) boulders stacked upon one another to create cave-like segments of the stream. The 91% canopy cover that was recorded was mostly attributed to rocky overhangs rather than vegetative canopy. The shading effect of the boulders likely inhibited aquatic macroalgae and macrophyte growth within the reach (13% and 1% cover, respectively), while CPOM was detected at 63% of

the transect points. The wetted substrate within the reach was dominated by sand (53%), cobble (22%), and boulder (11%).

Figure 2-3
Sweetwater River Site 909M24937 Looking Downstream

The results of the abiotic water quality and analytical chemistry indicated that most of the constituents measured would likely not limit colonization of sensitive BMI, although a few constituents were near levels that could potentially inhibit full colonization. Dissolved oxygen was relatively low with a value of 3.3 milligrams per liter (mg/L), sulfate was 230 mg/L, and specific conductance was 951 micro-Siemens per centimeter (µS/cm) (which equates to a total dissolved solids value of 637 mg/L). The Water Quality Control Plan for the San Diego Basin (Basin Plan) (Regional Board, 1994) lists the Water Quality Objective (WQO) for chloride and total dissolved solids in this hydrologic unit at 250 and 500 mg/L, respectively.

2.3.4 Stream Bioassessment Conclusion

The trend site in Sweetwater River, 909WE0662, the farthest upstream, had a BMI community that was considered impaired according to both the IBI and the CSCI scores, although the site did support several sensitive organisms. The O/E component of the CSCI, however, rated the site unimpaired and there were no water quality constituents measured that would likely have a negative impact on BMI. The instream epifaunal substrate conditions were lacking hard substrates (e.g., cobble or boulder) and were not conducive to colonization by many types of BMI. Physical habitat limitations were the most likely cause of the relatively low index scores of the site.

The middle Sweetwater River site, 909M24925, had a BMI community that was slightly below the IBI impairment threshold, but was rated unimpaired by the CSCI score. EPT taxa diversity was relatively low and there were no highly sensitive organisms collected. The physical habitat was of high quality and the water quality constituents measured were all below Basin Plan benchmarks. The site was downstream of low-density housing and the town of Descanso, which have the potential to negatively impact BMI community quality, although this relationship could not be confirmed.

The lower Sweetwater River site, 909M24937, had a BMI community that was rated unimpaired by both the IBI and the CSCI scores. The community had high beetle diversity but had few sensitive or EPT taxa. The physical habitat was unique, with large boulders covering much of the streambed, which inhibited a dense and diverse riparian vegetative community. Overall, water quality constituents indicated favorable conditions for BMI diversity, with the exception of total dissolved solids (TDS) and sulfate, which were near levels that could potentially impact sensitive BMI.

Certain water quality constituents exhibited a pattern of increasing concentrations from upstream to downstream. Observed increases included ionic and dissolved constituents such as alkalinity, calcium, chloride, and sulfate. For example, sulfate increased from 72 mg/L at the upstream site to 110 mg/L and 230 mg/L at the middle and downstream sites, respectively. These constituents can occur naturally, and may be increasing in concentrations as geology changes through the watershed. Notably, nutrient levels were low at all sites and did not increase substantially from the upper to the lower site, although levels at the middle site (with closer proximity to development) were nominally higher than at the upstream and downstream sites. The lack of increasing nutrient levels in tandem with increasing ionic constituents could support the presumption that geology (and not anthropogenic input) was affecting water quality in this portion of the watershed.

2.4 Hydromodification Regional Monitoring Program

The Hydromodification Monitoring Program (HMP) was initially developed in response to the requirements of the 2007 Municipal Permit. The Monitoring Plan is defined in Chapter 8 of the HMP, and was updated by the San Diego County Regional Copermittees and accepted by the Regional Board in February 2014. The final report for the program is included as Attachment B.

2.5 Chollas Metals TMDL and Bacteria TMDL Monitoring

Monitoring for the Highest Priority Condition was developed to comply with the two TMDLs in effect for Chollas Creek. Sections 2.5.1 and 2.5.2 provide a brief overview of the monitoring programs and results. Full reports of monitoring results are in Attachment C.

2.5.1 Chollas Dissolved Metals and Diazinon TMDL

The Chollas Creek Diazinon and Dissolved Metals TMDLs Compliance Monitoring Program is designed to meet the requirements of Order No. R9-2004-0277 and State Water Resources Control Board (State Board) Resolution No. 2008-00054. To determine

TMDL compliance, the RPs conducted wet weather water quality monitoring at two mass loading stations (MLSs)—Z Street (South Fork of Chollas Creek) and SD8(1) (North Fork of Chollas Creek)—during three wet weather events during the 2015–2016 wet season (October 1 through April 30). MLS information is presented in Table 2-10.

Table 2-10
Chollas Creek TMDL Mass Loading Stations

Mass Loading Station (MLS)	MLS Identification	Latitude	Longitude
South Chollas Creek	Z Street	32.69296	-117.10945
North Chollas Creek	SD8(1)	32.70493	-117.12132

Samples were analyzed for the following TMDL compliance constituents: diazinon, dissolved metals (copper, lead, and zinc), total hardness, and toxicity. Additional constituent analyses were selected by the RPs to track potential water quality contaminants or issues in Chollas Creek.

Compliance was determined by comparing analytical results with applicable water quality criteria set forth in the approved TMDLs for the Chollas Creek hydrologic subarea (HSA), the pesticide criteria of the California Department of Fish and Wildlife (CDFW), and the Aquatic Life Benchmarks of the United States Environmental Protection Agency (USEPA) Office of Pesticide Programs (OPP). The data collected during the 2015–2016 wet season are summarized below by TMDL compliance constituent category. The final report for the Chollas Creek Diazinon and Dissolved Metals TMDL is included as Attachment C.1.

Dissolved Metals

Analytical results for dissolved copper, lead, and zinc were compared with the numeric targets on the basis of the hardness-dependent California Toxics Rule (CTR) set forth in the Chollas Creek Dissolved Metals TMDLs. Results are as follows:

- Chollas South Fork (Z Street)
  - During 3 of 3 wet events, dissolved copper, lead, and zinc concentrations were below acute and chronic WQOs.
- Chollas North Fork (SD8(1)):
  - Dissolved copper concentrations exceeded acute WQOs during 1 of 3 events and exceeded chronic WQOs during 2 of 3 event s.
  - Dissolved lead and zinc concentrations did not exceed acute and chronic WQOs during 3 of 3 events.
- Historical Dissolved Metals Trends:
  - Historical dissolved copper concentrations in Chollas Creek during wet weather monitoring events have fluctuated above and below both the acute and chronic WQOs.

- Historical dissolved lead concentrations have been consistently below the acute WQO and of the same magnitude to the chronic WQO.
- Historical dissolved zinc concentrations at the South Fork have been below the acute and chronic WQOs throughout the compliance monitoring period. Dissolved zinc concentrations at North Fork have fluctuated above and below the acute and chronic WQOs.

The City of San Diego has developed and submitted a Water Effects Ratio Confirmation Study (City of San Diego, 2015b) to the Regional Board for dissolved copper and dissolved zinc at Z Street and SD8(1). If approved, the updated water effects ratios (WERs) would provide for an alternative assessment of compliance with the TMDL waste load allocations (WLAs). The alternative WERs will assess dissolved copper and zinc specific to the ambient water chemistry within Chollas Creek rather than the default WER provided in the CTR.

Diazinon

Diazinon was not reported at concentrations above the method detection limit (MDL) at the Chollas Creek North or South Forks during the three wet weather monitoring events. The USEPA banned the retail sale of diazinon products as of December 31, 2004, because of their adverse health effects on the human nervous system. Since the ban, diazinon concentrations at both Chollas Creek MLSs have shown statistically significant decreasing trends (Weston, 2011).

Toxicity

No acute or chronic toxicity was reported for the samples collected during the 2015–2016 wet season.

2.5.2 Chollas Bacteria TMDL

The 2015–2016 Chollas Creek Bacteria Total Maximum Daily Load (Bacteria TMDL) compliance monitoring is designed to meet the requirements under Resolution No. R9-2010-0001 (Regional Board, 2013b), as incorporated into the Municipal Permit in 2013. The Bacteria TMDL monitoring program assesses the conditions of the receiving waters and has the following objectives:

- Characterize levels of bacteria concentrations at compliance monitoring locations.
- Track progress toward meeting the Bacteria TMDL numeric targets.

A full report of the monitoring results for the Chollas Creek Bacteria TMDL is in Attachment C.2.

Fecal indicator bacteria (FIB) sampling for the compliance monitoring season (October 2015 through September 2016) was conducted at three creek monitoring locations: the North and South Fork MLSs (SD8(1) and Z Street, respectively), and the tidally influenced mouth of Chollas Creek (CTL(1)). Wet weather samples were collected during three storm events on wet weather days (days with 0.2 inch of rainfall or more plus the following 72 hours) within 24 hours of the end of rainfall. Dry weather samples were

collected on dry weather days (days with less than 0.1 inch of rainfall observed on each of the previous three days) at least weekly between April 1, 2015, and October 31, 2015, and at least monthly on dry weather days from November 1, 2015, through March 31, 2016. Compliance monitoring locations are presented in Table 2-11 and Figure 2-4.

The Chollas Creek Bacteria TMDL 2015–2016 Compliance Monitoring Report (Attachment C.2) summarizes FIB concentrations and key hydrologic data for the three compliance monitoring locations during the 2015–2016 monitoring season (October 1, 2015 through September 30, 2016). Compliance is determined by comparing analytical results for *Enterococcus* and fecal coliform with applicable receiving water limitations (RWLs), in accordance with the Bacteria TMDL requirements in Attachment E of the Municipal Permit. The RWLs are a combination of numeric targets for bacteria density and allowable exceedance frequencies. The single-sample maximum numeric targets are required to be achieved only during wet weather with a 22% final allowable exceedance frequency and apply only to wet weather days between October 1 and April 30 of each monitoring year. The 30-day geometric mean numeric targets must be achieved with a 0% exceedance frequency, and apply to both dry weather days during the dry season and combined wet and dry weather days during the wet season. The compliance schedule includes interim targets that must be achieved to demonstrate progress prior to attaining full compliance with the TMDL.

Table 2-11
Chollas Creek TMDL Monitoring Stations

Monitoring Location	Monitoring Identification	Latitude	Longitude
Chollas Creek South Fork	Z Street [1]	32.69296	-117.10945
Chollas Creek North Fork	SD8(1) [1]	32.70493	-117.12132
Chollas Creek tidal location downstream of North and South Fork Confluence	CTL(1)	32.69120	-117.12354

Notes:
1. Compliance monitoring location for Bacteria, Diazinon and Dissolved Metals TMDLs.

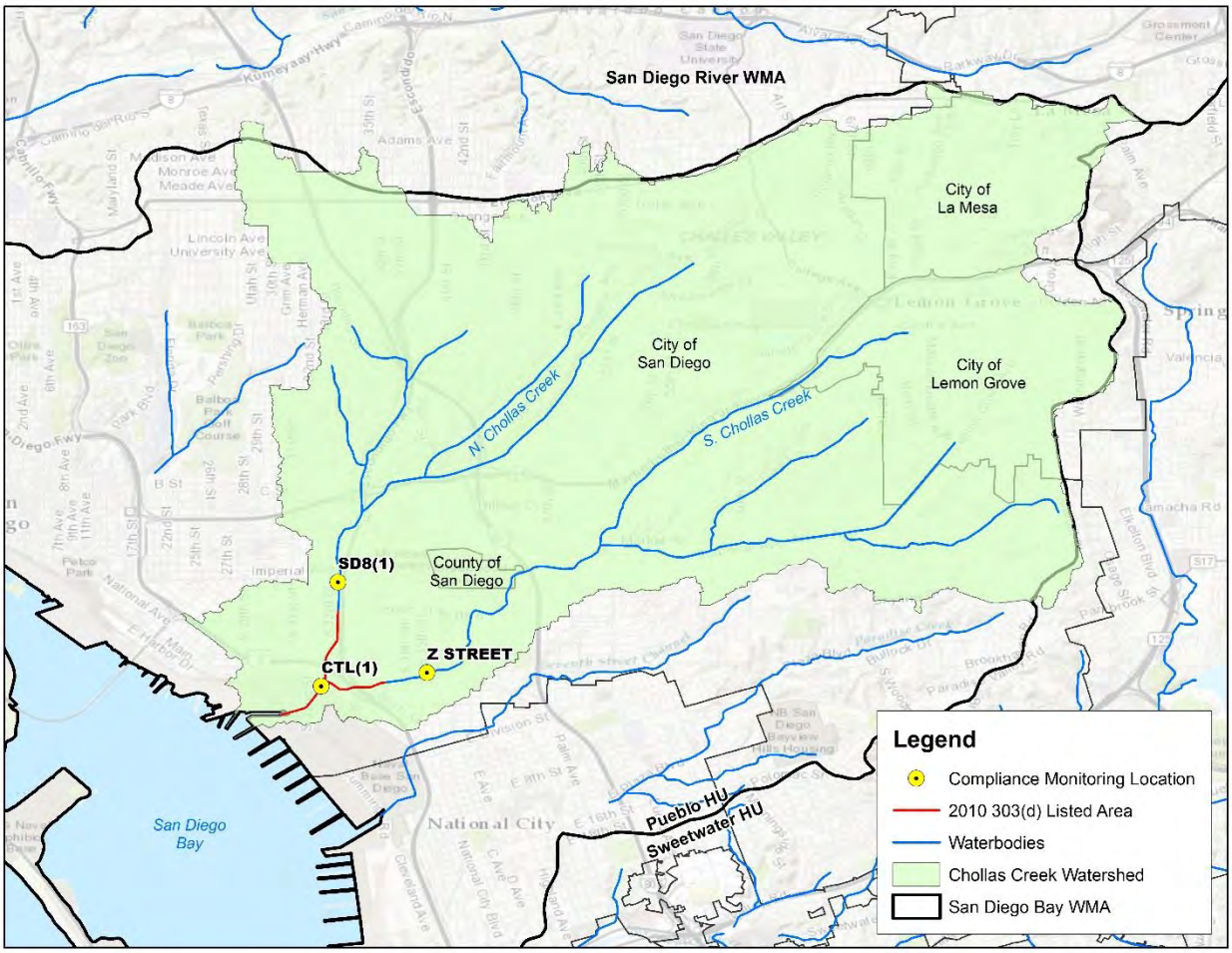

Figure 2-4
Chollas Creek Bacteria TMDL Compliance Monitoring Locations

2.6 Shelter Island Yacht Basin Metals Total Maximum Daily Load Monitoring

The Shelter Island Yacht Basin (SIYB) TMDL identified the City of San Diego (City) as a Responsible Copermittee for MS4 discharges to SIYB and required the City to demonstrate accordance with Shelter Island Dissolved Copper TMDL compliance requirements. The SIYB TMDL monitoring was conducted in fiscal year (FY) 2016 in accordance with the TMDL requirements. The annual report is provided in Attachment D.

2.7 Shelter Island Shoreline Park Bacteria Total Maximum Daily Load Monitoring

2.7.1 Shoreline Park Bacteria TMDL Monitoring Methods

To comply with the Shelter Island Shoreline Park TMDL, wet and dry weather indicator bacteria monitoring was performed during 2015–2016 at one receiving water location at Shelter Island Shoreline Park, EH-200. In addition to bacteria sampling of the receiving

water, visual observations were recorded at site EH-200 (the swim beach), as well as four storm drains in the approximate vicinity of the beach. The responsible Copermittee (the Port of San Diego) utilized existing monitoring data collected by the San Diego County Department of Environmental Health (DEH) in accordance with AB 411. The DEH collects receiving water samples at EH-200 weekly during dry weather from April through October. From November 2015 through March 2016, the Port of San Diego collected monthly dry weather receiving water samples at the same location. In addition, the Port of San Diego collected receiving water samples at EH-200 during three wet weather events during 2015–2016. Wet weather samples were collected during the first 24 hours of a storm resulting in at least 0.1 inch of precipitation. Samples are analyzed for total and fecal coliform and *Enterococcus*. A summary of the sampling conducted in compliance with the TMDL is presented in Table 2-12. Results were compared with numeric targets in Attachment E.5 of the 2013 Municipal Permit.

In addition to the TMDL-required indicator bacteria sampling, the Port of San Diego has incorporated sampling for analysis of bacterial deoxyribonucleic acid (DNA) using quantitative Polymerase Chain Reaction (qPCR) with microbial source tracking (MST) markers to determine the genetic origin of *Enterococcus* species in water samples into its monitoring plan. Samples for MST analysis were collected when there were recent FIB WQO exceedances or when potential bacterial sources were observed during TMDL monitoring. This method may be a useful tool to identify sources of *Enterococcus* bacteria at Shelter Island Shoreline Park. *Enterococcus* was the only indicator bacteria to exhibit regular exceedances of WQOs at Shelter Island Shoreline Park during the 2015–2016 monitoring year (11 single-sample *Enterococcus* exceedances, compared with 2 fecal coliform exceedances and 0 total coliform exceedances).

Table 2-12
2015–2016 Shelter Island Shoreline Park Bacteria TMDL Monitoring Locations and Sampling Frequency

Location	Site	Analyte	Wet Weather Event Sampling Frequency	Dry Weather Event Sampling Frequency	
				April through October	November through March
Shelter Island Shoreline Park	EH-200	Total coliform	3 per Season (October through April)	Weekly	Monthly
		Fecal coliform			
		Enterococcus			

2.7.2 Shelter Island Shoreline Park Bacteria TMDL Monitoring Results

Results of dry weather monitoring at site EH-200, including concentrations of the indicator bacteria total coliform, fecal coliform, and *Enterococcus,* are summarized as follows:

- During wet weather, one single-sample exceedance was observed for both total and fecal coliform, while two exceedances were observed for *Enterococcus*.
- A single instance of a non-storm water discharge was observed from storm drains at Shelter Island Shoreline Park. The discharge volume was not large enough to sample. The source was determined to be irrigation runoff from a broken sprinkler head on Port of San Diego municipal property. The sprinkler head was repaired by Port of San Diego staff and a follow-up investigation revealed no irrigation runoff.
- The single-sample WQO exceedances were as follows: 14 for *Enterococcus* (of 55 samples), 2 for fecal coliform (of 45 samples), and 2 for total coliform (of 45 samples).
- A large number of gulls and other birds were observed in and around the receiving water at Shelter Island Shoreline Park, and some evidence of an anthropogenic contribution to the large number of birds (i.e., bird feeding) was observed. Of four bacteria samples collected for MST analysis, all four were positive for gull genetic marker, dog marker was positive in two of the four samples, and human marker was positive in one of the four samples.

The annual monitoring report is provided in Attachment E.

3 Non-Storm Water MS4 Outfall Monitoring

The purpose of this program is to identify non-storm water and illicit discharges within each RP's jurisdiction, determine which discharges are transient flows and which are persistent flows, and prioritize the dry weather MS4 discharges that will be investigated and eliminated. The MS4 Outfall Discharge Monitoring component involves the following types of data collection activities for the San Diego Bay WMA:

- Dry Weather MS4 Outfall Field Screening: inspecting major outfalls during dry weather conditions to identify and prioritize persistently flowing outfalls.
- Dry Weather Persistent MS4 Outfall Discharge Monitoring: testing the discharge for various pollutants and comparing the results with NALs.

3.1 Non-Storm Water MS4 Outfall Monitoring Data

During the 2015–2016 monitoring season (October 2015 through September 2016), the RPs implemented the first year of dry weather outfall discharge monitoring in accordance with Provision D.2.b of the Municipal Permit. The goals of dry weather outfall monitoring are to:

- Identify non-storm water and illicit discharges within its jurisdiction.
- Prioritize dry weather MS4 discharges that will be investigated and eliminated.
- Assess effectiveness of JRMPs toward effectively prohibiting non-storm water discharges into the MS4.

Dry weather outfall data are provided in Attachment F.1. Focused Priority Condition monitoring data are provided in Attachment F.2.

Details of the monitoring methodology are provided in the San Diego Bay WMA MS4 Outfall Monitoring Plan, available on the Project Clean Water website (www.projectcleanwater.org). The following subsections present the results of dry weather discharge monitoring in the San Diego Bay WMA.

To address the Municipal Permit requirements, the RPs determined the number of major MS4 outfalls within their jurisdictions within the WMA, as shown in Table 3-1.

Table 3-1
Number of Major Outfalls in San Diego Bay WMA

Copermittee	Total Number of Major Outfalls	HSA	Number of Major Outfalls per HSA
San Diego Airport Authority[1]	2[2]	908.21	2
City of Chula Vista	178[3]	909.11	32
		909.12	61
		910.20	81
		910.21	1
		910.32	2
City of San Diego	93[4]	908.10	4
		908.22	52
		908.31	4
		908.32	6
		909.12	7
		910.20	20
City of Coronado	7[2]	910.10	7
County of San Diego	57[2]	909.12	26
		909.21	26
		909.22	3
		909.24	1
		909.34	1
City of Imperial Beach	7[2]	910.2	5
		911.11	2
City of La Mesa	3[2]	908.22	3
City of Lemon Grove	4[2]	908.22	4
City of National City	21[2]	908.32	11
		908.31	3
		909.12	7
Port of San Diego[2]	52[2]	908.1	4
		908.21	16
		908.22	6
		908.32	12
		909.11	1
		909.12	10
		910.1	3
Total	424		

Table 3-1 (continued)
Number of Major Outfalls in San Diego Bay WMA

Notes:
HSA = hydrologic subarea

1. The Airport Authority has two major outfalls that are tidally influenced and cannot be safely screened or monitored. The nearest safe upstream access points will be screened/monitored as a proxy.
2. For RPs with fewer than 125 major outfalls in the WMA, 80% of total major outfalls must be screened twice per year.
3. For RPs with fewer than 500 but more than 125 major MS4 outfalls in the watershed, 100% of major outfalls must be screened once per year.
4. The City of San Diego has 502 outfalls within the City jurisdiction. The City of San Diego, in accordance with Municipal Permit Provision D.2.a(2).(a).(iv), is required to screen 500 sites city-wide once per year. The City is not required to screen 500 sites within each watershed.
5. Port of San Diego includes 12 proxy sites to major outfalls.

3.2 Non-Storm Water MS4 Outfall Monitoring Data Assessments

Assessments of jurisdictional MS4 monitoring programs were conducted individually by the jurisdictions, and watershed-wide. Per Provision D.4 of the Municipal Permit, assessments include the following:

- Progress of IDDE programs toward effectively prohibiting non-storm water and illicit discharges into the MS4 within Copermittees' jurisdictions.
- Identification of known and suspected controllable sources (e.g., facilities, areas, land uses, pollutant-generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the WMA, sources of transient and persistent flows within the Copermittee's jurisdiction in the WMA that have been reduced or eliminated, and modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory.
- Based on the dry weather MS4 outfall discharge field screening monitoring, the following are assessed and reported:
    - For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identification of the known and suspected sources within the Copermittee's jurisdiction in the WMA that may cause or contribute to the NAL exceedances.
    - For each Copermittee, calculations or estimates of the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year.

Each Copermittee is required to conduct field screening to determine which non-storm water MS4 outfall discharges are transient or persistent non-storm water flows. Data collected during dry weather MS4 outfall monitoring are used to prioritize the non-storm water MS4 discharges that will be investigated and eliminated.

3.2.1 Classification of Major MS4 Outfalls Within each ***Copermittee's Jurisdiction***

Each major outfall identified in each Copermittee's jurisdiction was classified (Table 3-2) by the following definitions:

- Persistent flow – having flowing, pooled, or ponded water more than 72 hours after a measurable rainfall event of 0.1 inch or greater during the three consecutive most recent monitoring and/or inspection events;
- Transient flow – having flowing, pooled, or ponded water during at least one but not on all three most recent consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥ 0.1 inch;
- Tidal – having persistent or transient flow with ocean tides as the source;
- Dry – having no flowing, pooled, or ponded water during the last three consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation greater than 0.1 inch; and
- Unknown – the site cannot be evaluated, or has not been visited enough times to determine flow status.

Table 3-2
Classification of Major MS4 Outfalls in Dry Weather

Copermittee	Dry	Persistent Flow	Transient Flow	Tidal	Unknown	Total
San Diego Airport Authority	0	0	0	2	0	2
City of Chula Vista	58	68	50	0	23	179
City of San Diego	45	22	24	0	2	93
City of Coronado	3	1	0	2	1	7
County of San Diego	16	28	13	0	0	57
City of Imperial Beach	0	0	0	7	0	7
City of La Mesa	3	0	0	0	0	3
City of Lemon Grove	3	1	0	0	0	4
City of National City	11	7	3	0	0	21
Port of San Diego	40	0	4	8	0	52

Notes:
Each outfall is assigned to only one outfall category. Designations were made at or prior to the start of the monitoring period.

In the San Diego Bay WMA, 42% of the major outfalls were classified as dry, 22% as transient, and 30% as persistently flowing outfalls. Figure 3-1 presents classifications of major MS4 outfalls in the 2015–2016 monitoring year.

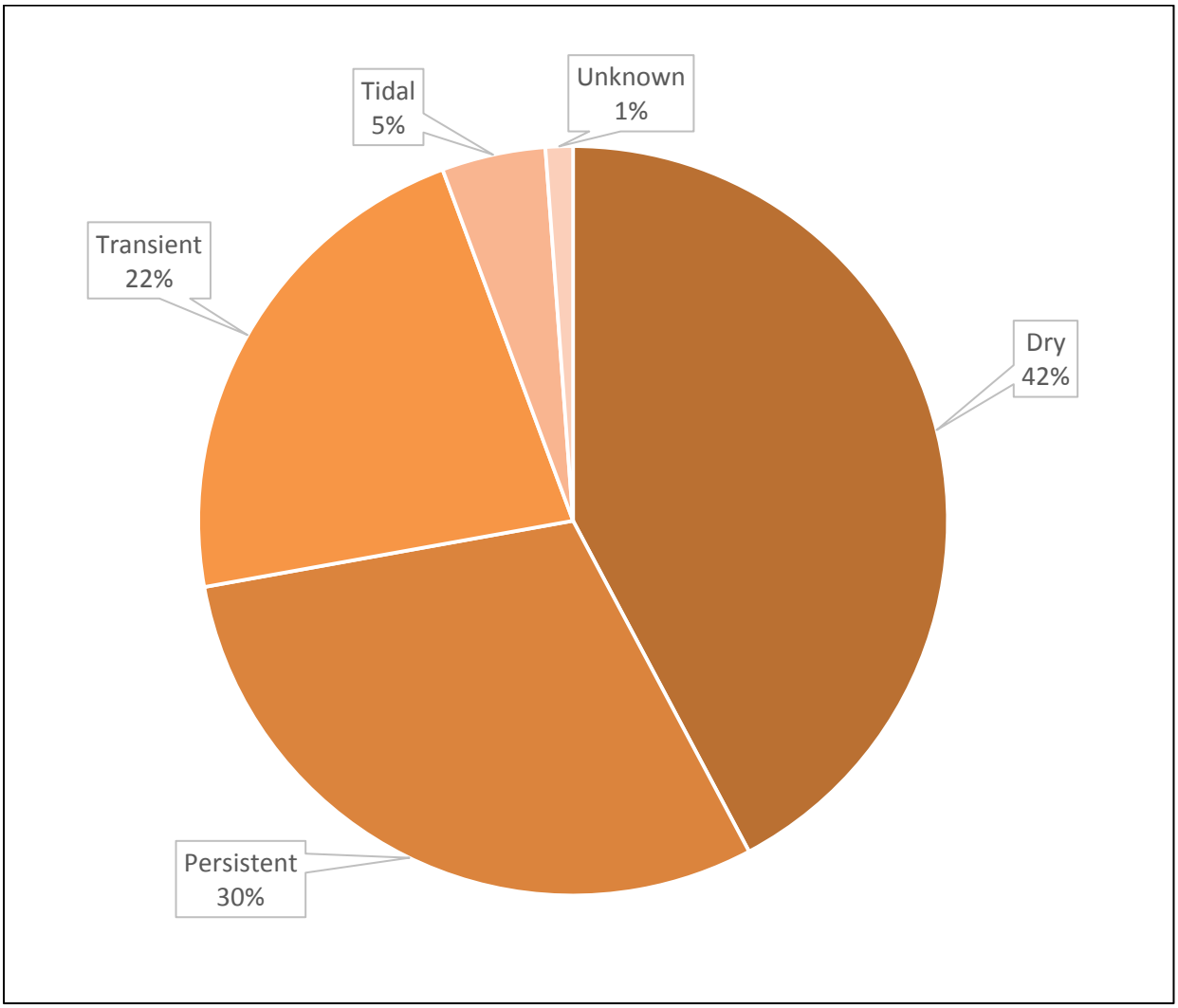

Figure 3-1
Classification of Major Outfalls in San Diego Bay WMA During the 2015-2016 Monitoring Year

3.2.2 Visual Observations at Major MS4 Outfalls

Of 1,252 observations, almost 80% of the visits were observed as dry outfalls. Table 3-3 presents the results of the visual observations at major MS4 outfalls in the San Diego Bay WMA during dry weather in the FY 2016 monitoring year.

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Table 3-3
Number of Dry Weather Visual Observations in 2015–2016 Monitoring Year

Copermittee	Total	Flowing	Ponded	Tidal	Dry	Unknown
San Diego Airport Authority[1]	4	0	0	4	0	0
City of Chula Vista[2]	190	58	40	0	92	0
City of San Diego[3]	77	20	13	1	43	0
City of Coronado[1]	12	2	0	2	8	0
County of San Diego[1]	175	65	49	0	61	0
City of Imperial Beach[1]	8	0	0	0	8	0
City of La Mesa[1]	6	2	2	0	2	0
City of Lemon Grove[1]	8	2	0	0	6	0
City of National City[1]	35	8	10	0	17	0
Port of San Diego[1,4]	111	5	2	31	72	1
Total	626	162	116	38	309	1

Notes:

1. For RPs with fewer than 125 major outfalls in the WMA, 80% of total major outfalls presented in the table must be screened twice per year.
2. For Responsible Parties with fewer than 500 but more than 125 major MS4 outfalls in the watershed, 100% of major outfalls must be screened once per year.
3. The City of San Diego has 502 outfalls within the City jurisdiction. The City of San Diego in accordance with Municipal Permit Provision D.2.a(2).(a).(iv) is required to screen 500 sites city wide once per year. The City is not required to screen 500 sites within each watershed.
4. Visual observation of unknown status was submerged outfall.

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3.2.3 Controllable and Non-Controllable Sources of Flow

The Municipal Permit requires classification of sources of runoff during visual observations that result in flowing or ponded water in dry weather. Known, controllable sources of runoff, such as irrigation runoff and residential washing, were identified during these visual observations. Other suspected sources of runoff were noted and may have included items such as broken pipes. Non-controllable runoff sources were also identified during dry weather visual observations and included mostly groundwater seepage. Finally, unidentified sources of runoff were noted during dry weather observations. Table 3-4 presents results of runoff source observations made in the 2015–2016 monitoring year.

Table 3-4
Sources of Dry Weather Flow in 2015-2016 Monitoring Year

Copermittee	Total Number of Observations Investigating Flow Source	Known Controllable Sources	Suspected Controllable Sources	Uncontrollable Sources	Unidentified Sources
San Diego Airport Authority	No Discharges Observed				
City of Chula Vista	109	57	0	36	23
City of San Diego	41	9	6	3	28
City of Coronado	2	2	0	1	0
County of San Diego	46	1	30	0	13
City of Imperial Beach	No Discharges Observed				
City of La Mesa	7	4	0	2	0
City of Lemon Grove	4	0	2	0	2
City of National City	35	10	0	2	25
Port of San Diego	7	2	3	0	2
Total	251	84	42	44	93

3.2.4 Illicit Discharge Detection and Elimination Program Data and Assessment

Non-storm water discharges (NSWDs) that have been reduced or eliminated during the 2015–2016 monitoring year have also been identified and are shown by Copermittee in Table 3-5. Details of these identifications and eliminations, as well as enforcement actions that are part of the IDDE program, are on each Copermittee' s completed JRMP Annual Report forms in Appendix 2.

Table 3-5
Dry Weather Discharges Eliminated in the 2015-2016 Monitoring Year

Copermittee	Number of Identified Discharges	Number of Eliminated Discharges
San Diego Airport Authority	4	4
City of Chula Vista	114	64
City of San Diego	828	819
City of Coronado	48	48
City of Imperial Beach	53	53
County of San Diego	28	28
City of La Mesa	12	7
City of Lemon Grove	7	7
City of National City	39	39
Port of San Diego	8	8
Total	1,141	1,077

3.3 Non-Storm Water Action Level Comparisons

The data collected as part of the dry weather MS4 outfall discharge monitoring were compared with the NALs per Municipal Permit Provision C.1.a.(3). NALs for the Focused Priority Pollutants listed in Table C-3 of the Municipal Permit were calculated using corresponding hardness measurements according to the calculations in 40 Code of Federal Regulations (CFR) 131.38(b)(2). These comparisons are shown in Tables 3-6 through 3-11.

Of the high priority major MS4 outfalls in the San Diego Bay WMA, four major MS4 outfalls flow to bay, harbor, or lagoon and estuary waters, as defined by the Municipal Permit. Of these four high priority major MS4 outfalls, two were in the Port of San Diego and two were in the City of Coronado. Ten of 71 samples exceeded dry weather NAL's in the 2015–2016 monitoring year: four exceedances of dissolved copper, five exceedances of *Enterococcus*, and three exceedances of fecal coliform. Results of NAL comparisons for bay, harbor, and lagoon and estuary waters are provided in Table 3-6.

Note that Imperial Beach has installed dry weather diversions at its outfalls, and therefore did not observe any flow during dry weather monitoring. The San Diego Airport Authority also did not observe any discharges in dry weather; therefore, NAL comparisons do not apply to either RP. The City of La Mesa did not have any outfalls classified as persistent until after the FY 16 monitoring program was completed. No samples were taken in FY 16 and their outfall inventory will be updated accordingly in FY 17.

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Table 3-6
NAL Comparison for MS4 Outfalls to Bays, Harbors, and Lagoon and Estuary Waters – City of Coronado and Port of San Diego

Analyte	NAL[1]	City of Coronado				Port of San Diego[2]		
		Result						
		CO_36		CO_16		CGeo39		CSD145
		5/3/16	7/6/16	5/4/16	7/6/16	5/12/16	7/7/16	7/7/16
Dissolved Cadmium	16 µg/L	<4.0	NA	0.1	0.2	0.023	<0.01	0.047
Dissolved Chromium III	-	NA	NA	NA	NA	0.45	0.43	0.55
Dissolved Chromium VI	83 µg/L	<10	NA	1.2	1.3	<5	<5	<5
Dissolved Copper	5.8 µg/L	6	NA	4	4	7.719	5.933	16.927
Enterococcus	104 MPN/100 mL[3]	122	NA	31	2420	180	50000	9000
Fecal Coliform	400 MPN/100 mL[4]	2	NA	80	1600	340	14000	1700
Dissolved Lead	14 µg/L	<0.3	NA	0.2	0.08	0.069	0.11	0.277
Dissolved Nickel	14 µg/L	1	NA	0.7	1	1.41	1.32	1.76
pH[5]	6.0-9.0	7.7	7.6	7.4	8	8.43	7.83	8.84
Dissolved Silver	2.2 µg/L	<0.5	NA	<0.1	2	<0.01	<0.01	<0.01
Turbidity[5]	225 NTU	5.91	3.97	0.41	0.27	1.12	14.4	2.33
Dissolved Zinc	95 µg/L	8	NA	5	18	29.21	3.3	15.83

Notes:

Bold = exceedance of NAL; NA = data not available; µg/L = micrograms per liter; mg/L = milligrams per liter; MPN/100mL = most probable number per 100 milliliters; NTU = nephelometric turbidity unit; < = Not Detected below Method Detection Limit

1. NALs for bays, harbors, and lagoons/estuaries (seawater) are as provided in Table C-2 and Table C-3 of Provision C.1.(2) of the Permit.
2. Port of San Diego high priority major MS4 outfalls 1271.1, 2172.1, and 2941.1 were dry upon observation or were tidally influenced, and therefore were not sampled in the 2015-2016 monitoring year.
3. This value has been set to the Basin Plan water quality objective for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with the water contact recreation (REC-1) beneficial use.
4. The NAL is reached if more than 10 percent of total samples exceed 400 MPN per 100 ml during any 30 day period.
5. Field measurement reported as result.

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Of the high priority major MS4 outfalls in the San Diego WMA, 17 had observed flow draining to inland surface waters. The City of Chula Vista monitored a total of five major flowing outfalls, all of which drain to inland surface waters, and one of which was dry upon observation in the 2015-2016 monitoring year. The City of San Diego monitored a total of five major flowing MS4 outfalls that drain to inland surface waters. Two of these outfalls were dry upon observation in the 2015-2016 monitoring year. The County of San Diego monitored five major outfalls during 2015–2016 but collected samples from only four because one of the five County of San Diego highest priority sites, SWT-MS4-021, was dry on all visits. For the 2016–2017 monitoring year, this site will be replaced with the next highest ranking outfall on the County of San Diego's MS4 inventory, MS4-SWT-019. The City of Lemon Grove monitored one major MS4 outfall in the San Diego Bay WMA in the 2015–2016 monitoring year. The City of National City monitored five major flowing outfalls that drain to inland surface waters. A total of 466 of the 582 inland surface water results were below NALs, including 155 non-detect values. NALs were exceeded for concentrations of dissolved copper, *Enterococcus*, fecal coliform, total iron, total manganese, methylene blue active substance (MBAS), pH, total nitrogen, total phosphorous, and turbidity. Some of these analytes are found in groundwater and may be from unidentified groundwater intrusion. Other analytes will be addressed by the strategies developed by the RPs. The San Diego Bay WMA RPs have just begun implementation of the WQIP; they plan to continue implementing the strategies without modification, and will work toward eliminating dry weather flows. Additionally, they have implemented their IDDE programs, as summarized in Section 3.2.4, to identify sources of illicit dry weather discharges.

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Table 3-7
NAL Comparison for MS4 Outfalls to Inland Surface Waters – City of Chula Vista[1]

Analyte	NAL	RH-1		SS-3		SC-2		TC-11	
		Result							
		2/24/16	5/18/16	2/24/16	5/19/16	2/25/16	5/18/16	2/25/16	5/19/16
Dissolved Cadmium	** µg/L	<0.2 (24.4)	0.3 (18.1)	<0.2 (9.5)	<0.2 (7.5)	<0.2 (3.1)	<0.2 (3.1)	<0.4 (14.7)	<0.2 (13.6)
Dissolved Chromium III	** µg/L	0.2 (2550.1)	0.2 (1820.8)	0.5 (887.4)	0.4 (678.2)	<1 (256.2)	0.4 (256.2)	<0.4 (1445.5)	<0.06 (1325.0)
Dissolved Chromium VI	16 µg/L	<2	<2	<2	<2	<2	<2	<2	<2
Dissolved Copper	** µg/L	4 (144.0)	3 (101.3)	4 (47.9)	3 (36.2)	8 (13.1)	1 (13.1)	2 (79.6)	1 (72.7)
Dissolved Oxygen[1]	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	6.52	8.5[2]	6.69	9.2[2]	7.85	6.2[2]	6.4	9.1[3]
Enterococcus	61 MPN/100 mL	>1600	110	900	34	900	50	170	300
Fecal Coliform	400 MPN/100 mL	>1600	50	4	130	900	130	14	240
Total Iron	0.3 mg/L	0.658	0.101	0.095	0.054	0.301	0.052	0.153	0.091
Dissolved Lead	** µg/L	<1 (63.3)	<1 (44.6)	<1 (19.5)	<1 (14.1)	<1 (4.1)	<1 (4.1)	<2 (34.5)	<1 (31.3)
Total Manganese	0.05 mg/L	0.033	0.021	0.004	0.0008	0.02	0.058	0.984	0.943
MBAS	0.5 mg/L	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
Dissolved Nickel	** µg/L	1 (813.4)	1 (574.3)	0.8 (273.4)	0.7 (207.1)	2 (75.8)	1 (75.8)	8 (452.5)	7 (413.6)
pH[2]	6.0-9.0	7.5	7.3	8.3	8.9	8.5	7.3	7.7	7.9
Dissolved Silver	** µg/L	<0.6 (924.3)	<0.6 (455.6)	<0.6 (100.7)	<0.6 (57.3)	<0.6 (7.4)	<0.6 (7.4)	<0.1 (280.6)	<0.6 (233.7)
Total Nitrogen	1.0 mg/L	20	14	5.6	8.6	15.6	124	2.1	2.1
Total Phosphorus	0.1 mg/L	0.1	0.14	0.11	0.1	0.51	<0.02	0.15	0.06
Turbidity[2]	20 NTU	2.08[3]	2.52	1.01[3]	0.57	1.21[3]	1.03	0.56[3]	1.9
Dissolved Zinc	** µg/L	37 (1855.5)	21 (1309.5)	4 (622.6)	8 (471.4)	13 (172.2)	4 (172.2)	3 (1031.3)	3 (942.6)
Hardness value used to calculate NAL	mg/L $CaCO_3$	2580	1710	711	512	156[4]	156	1290	1160

Notes:

Bold = exceedance of NAL; ( ) = Numbers in parentheses adjacent to analytical results are California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent values from 40 Code of Federal Regulations (CFR) 131.38(b)(1) calculated using the receiving water hardness result of the sample (for metals); ** = CTR Freshwater Continuous Concentration Hardness dependent non-storm water action level; µg/L = micrograms per liter; $CaCO_3$ = calcium carbonate; mg/L = milligrams per liter; MPN/100mL = most probable number per 100 milliliters; NAL = non-storm water action level; NTU = nephelometric turbidity unit; < = Not Detected below Method Detection Limit

1. City of Chula Vista high priority major MS4 outfall SW-1 was dry upon observation and therefore was not sampled in the 2015-2016 monitoring year.
2. Field measurement reported as result.
3. Results are from same outfall location on 6/7/16.
4. Hardness value from outfall sample outfall not available. Hardness value from 5/18/16 sample at same outfall location was used to calculate applicable CTR Freshwater Continuous Concentration Hardness dependent values.

Table 3-8
NAL Comparison for MS4 Outfalls to Inland Surface Waters – City of San Diego[1]

Analyte	NAL	DW0120		DW0179		DW0121	
		Result					
		2/25/16	4/26/16	2/25/16	4/26/16	2/25/16	5/23/16
Dissolved Cadmium	** µg/L	<0.2 (8.8)	0.25 (15.6)	<2 (5.0)	<0.14 (20.3)	<2 (5.0)	<2 (23.2)
Dissolved Chromium III	** µg/L	<0.5 (814.1)	1.1 (1545.7)	<0.5 (437.7)	1.9 (2070.0)	<0.5 (437.7)	<0.5 (2403.4)
Dissolved Chromium VI	16 µg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dissolved Copper	** µg/L	<5 (43.8)	2.1 (85.4)	16 (23.0)	5.8 (115.8)	<5 (22.9)	<5 (135.4)
Dissolved Oxygen[2]	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	9.01	9.21	9.06	9.08	8.36	8.61
Enterococcus	61 MPN/100 mL	60	60	<20	40	<20	**6200**
Fecal Coliform	400 MPN/100 mL	<20	<18	<20	<18	<20	<18
Total Iron	0.3 mg/L	0.19	0.058	0.4	0.34	0.18	0.19
Dissolved Lead	** µg/L	<2.5 (17.6)	<1.9 (37.2)	<2.5 (8.1)	<1.9 (51.1)	<2.5 (8.1)	<2.5 (59.6)
Total Manganese	0.05 mg/L	0.027	0.004	2	1.8	0.13	0.6
MBAS	0.5 mg/L	<0.05	0.13	0.39	0.34	0.22	<0.05
Dissolved Nickel	** µg/L	<5 (250.1)	4.4 (484.9)	<5 (131.7)	8.3 (655.7)	<5 (131.7)	<5 (765.1)
pH[2]	6.0-9.0	8.8	8.5	8.4	7.8	8.7	8.6
Dissolved Silver	** µg/L	<5 (84.0)	<0.92 (323.0)	<5 (22.8)	<0.92 (596.5)	<5 (22.8)	<5 (816.2)
Total Nitrogen	1.0 mg/L	**5.7**	**6.4**	**6.4**	**4.3**	**1.1**	**1.4**
Total Phosphorus	0.1 mg/L	0.076	0.042	0.098	<0.025	0.073	0.083
Turbidity[2]	20 NTU	0.87	0.02	2.23	4.34	1.19	0.79
Dissolved Zinc	** µg/L	<10 (569.5)	16 (1105.4)	<10 (299.7)	12 (1495.4)	<10 (299.7)	<15 (1745.2)
Hardness value used to calculate NAL	mg/L $CaCO_3$	640	1400	300[3]	2000	300[3]	2400[4]

Notes:

Bold = exceedance of NAL; ( ) = Numbers in parentheses adjacent to analytical results are California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent values from 40 Code of Federal Regulations (CFR) 131.38(b)(1) calculated using the receiving water hardness result of the sample (for metals); ** = CTR Freshwater Continuous Concentration Hardness dependent non-storm water action level; µg/L = micrograms per liter; $CaCO_3$ = calcium carbonate; mg/L = milligrams per liter; MPN/100mL = most probable number per 100 milliliters; NAL = non-storm water action level; NTU = nephelometric turbidity unit; < = Not Detected below Method Detection Limit

1. High priority major MS4 outfalls DW0203 and DW0225 were dry upon observation and therefore were not sampled in the 2015-2016 monitoring year.
2. Field measurements reported as result.
3. Results are from paired receiving water location on 3/24/16.
4. Hardness value from paired receiving water sample not available. Hardness value from outfall was used to calculate applicable CTR Freshwater Continuous Concentration Hardness dependent values.

Table 3-9
NAL Comparison for MS4 Outfalls to Inland Surface Waters – County of San Diego[1]

Analyte	NAL	MS4-SWT-023		MS4-SWT-030		MS4-SWT-055		MS4-SWT-235	
		Result							
		5/2/16	7/6/16	5/2/16	7/6/16	5/2/16	7/6/16	5/2/16	7/6/16
Dissolved Cadmium	** µg/L	0.1 (5.1)	< 0.07 (4.9)	< 0.07 (5.2)	0.2 (5.8)	0.3 (8.5)	< 0.07 (8.2)	0.1 (11.1)	0.2 (11.1)
Dissolved Chromium III	** µg/L	< 0.06 (442.5)	< 0.06 (426.9)	0.2 (455.6)	0.7 (511.7)	< 0.06 (784.8)	0.09 (750.0)	0.5 (1054.8)	0.3 (1054.8)
Dissolved Chromium VI	16 µg/L	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Copper	** µg/L	0.8 (23.2)	0.8 (22.3)	24 (23.9)	24 (27.0)	2 (42.1)	1 (40.2)	14 (57.3)	15 (57.3)
Dissolved Oxygen[2]	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	10.49	7.32	6.72	5.62	6.26	5.56	8.78	6.02
Enterococcus	61 MPN/100 mL	9	80	1800	1200	5000	700	1100	1400
Fecal Coliform	400 MPN/100 mL	20	500	4000	7000	23000	3000	3000	3700
Total Iron	0.3 mg/L	0.207	0.235	0.081	0.735	0.032	0.049	0.083	0.057
Dissolved Lead	** µg/L	< 0.06 (8.2)	< 0.06 (7.9)	0.3 (8.6)	0.2 (10.0)	0.6 (16.8)	< 0.06 (15.9)	0.2 (24.0)	0.3 (24.0)
Total Manganese	0.05 mg/L	0.014	0.034	0.021	0.289	0.036	0.021	0.022	0.022
MBAS	0.5 mg/L	< 0.1	< 0.1	0.1	0.2	< 0.1	< 0.1	0.1	0.1
Dissolved Nickel	** µg/L	0.8 (133.2)	0.7 (128.4)	2 (137.3)	3 (154.8)	1 (240.8)	1 (229.8)	2 (326.8)	3 (326.8)
pH[2]	6.0-9.0	8.19	7.83	8.06	7.54	7.9	7.76	7.97	7.83
Dissolved Silver	** µg/L	< 0.1 (23.4)	< 0.1 (21.7)	< 0.1 (24.8)	< 0.1 (31.7)	< 0.1 (77.8)	< 0.1 (70.7)	< 0.1 (144.8)	< 0.1 (144.8)
Total Nitrogen	1.0 mg/L	0.6	4.8	3	2.1	5.1	1.1	4.3	6.4
Total Phosphorus	0.1 mg/L	0.02	0.05	0.33	0.77	0.17	0.1	0.42	0.88
Turbidity[2]	20 NTU	1.27[3]	5.25	3.17[3]	18.1	0.22[3]	4.33	1.46[3]	22.3
Dissolved Zinc	** µg/L	15 (303.1)	2 (292.0)	82 (312.3)	10 (352.2)	11 (548.3)	5 (523.1)	19 (744.4)	16 (744.4)
Hardness value used to calculate NAL	mg/L $CaCO_3$	304[4]	291[4]	315[4]	363[4]	612	579	878[5]	878

Notes:

Bold = exceedance of NAL; ( ) = Numbers in parentheses adjacent to analytical results are California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent values from 40 Code of Federal Regulations (CFR) 131.38(b)(1) calculated using the receiving water hardness result of the sample (for metals); ** = CTR Freshwater Continuous Concentration Hardness dependent non-storm water action level; µg/L = micrograms per liter; $CaCO_3$ = calcium carbonate; mg/L = milligrams per liter; MPN/100mL = most probable number per 100 milliliters; NA = data not available; NAL = non-storm water action level; NTU = nephelometric turbidity unit; < = Not Detected below Method Detection Limit

1. High priority major MS4 outfall MS4-SWT-021 was dry upon observation and therefore was not sampled in the 2015-2016 monitoring year.
2. Field measurements reported as result.
3. Results are from lab analysis instead of field meter measurement at outfall.
4. Hardness value from paired receiving water sample not available. Hardness value from outfall was used to calculate applicable CTR Freshwater Continuous Concentration Hardness dependent values.
5. Receiving water hardness not available for 5/2/16. Hardness value from 7/6/16 at same receiving water location was used to calculate applicable CTR Freshwater Continuous Concentration Hardness dependent values.

Table 3-10
NAL Comparison for MS4 Outfalls to Inland Surface Waters – City of Lemon Grove

Analyte	NAL	69	
		Result	
		9/8/16 10:00	9/8/16 13:40
Dissolved Cadmium	** µg/L	0.064 (14.3)	0.16 (16.3)
Dissolved Chromium III	** µg/L	0.4 (1399.4)	0.7 (1617.6)
Dissolved Chromium VI	16 µg/L	<2	<2
Dissolved Copper	** µg/L	2.5 (77.0)	2.5 (89.6)
Dissolved Oxygen[1]	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	9.78	12.02
Enterococcus	61 MPN/100 mL	11	8
Fecal Coliform	400 MPN/100 mL	50	110
Total Iron	0.3 mg/L	0.14	0.15
Dissolved Lead	** µg/L	0.66 (33.3)	0.39 (39.1)
Total Manganese	0.05 mg/L	0.035	0.028
MBAS	0.5 mg/L	0.1	<0.1
Dissolved Nickel	** µg/L	4.3 (437.6)	3.8 (508.3)
pH[1]	6.0-9.0	8	8.4
Dissolved Silver	** µg/L	0.068 (262.1)	<0.062 (355.4)
Total Nitrogen	1.0 mg/L	1.2	1.1
Total Phosphorus	0.1 mg/L	0.13	0.13
Turbidity[1]	20 NTU	2.95	1.45
Dissolved Zinc	** µg/L	30 (997.4)	19 (1158.7)
Hardness value used to calculate NAL	mg/L $CaCO_3$	1240[2]	1480[2]

Notes:

Bold = exceedance of NAL; ( ) = Numbers in parentheses adjacent to analytical results are California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent values from 40 CFR 131.38(b)(1) calculated using the receiving water hardness result of the sample (for metals); ** = CTR Freshwater Continuous Concentration Hardness dependent non-storm water action level; µg/L = micrograms per liter; $CaCO_3$ = calcium carbonate; mg/L = milligrams per liter; MPN = most probable number; NAL = non-storm water action level;

NTU = nephelometric turbidity unit; < = Not Detected below Method Detection Limit

1. Field measurement reported as result.
2. Hardness value from paired receiving water sample not available. Hardness value from outfall was used to calculate applicable CTR Freshwater Continuous Concentration Hardness dependent values.

Table 3-11
NAL Comparison for MS4 Outfalls to Inland Surface Waters – City of National City

Analyte	NAL	32		43B		47A-1		762		433[1]
		Result								
		6/29/16	7/25/16	6/28/16	7/25/16	6/29/16	7/26/16	6/29/16	7/25/16	7/26/16
Dissolved Cadmium	** µg/L	< 0.2 (3.4)	< 0.2 (4.0)	< 0.2 (2.0)	< 0.2 (3.3)	< 2.0 (20.1)	< 1.0 (26.1)	0.4 (5.1)	< 0.2 (3.8)	< 0.2 (18.5)
Dissolved Chromium III	** µg/L	0.2 (282.8)	0.1 (334.5)	0.2 (157.3)	0.4 (277.5)	< 0.06 (2053.1)	0.3 (2750.7)	0.4 (446.1)	0.9 (319.2)	< 0.06 (1864.3)
Dissolved Chromium VI	16 µg/L	NA	< 0.2	NA	< 2	NA	< 2	NA	< 2	< 2
Dissolved Copper	** µg/L	6 (14.5)	7 (17.3)	< 1 (7.9)	2 (14.2)	< 10 (114.8)	5 (155.8)	17 (23.4)	8 (16.5)	0.002 (103.9)
Dissolved Oxygen[2]	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	9.8	9.9	8.8	8.3	8.1	8.3	8	10.1	8.9
Enterococcus	61 MPN/100 mL	1600	17000	< 2	110	110	500	1600	500	14000
Fecal Coliform	400 MPN/100 mL	1600	300000	34	< 20	500	1100	1600	5000	13000
Total Iron	0.3 mg/L	2	0.71	1.42	0.608	0.216	0.231	2.18	0.175	0.225
Dissolved Lead	** µg/L	< 1.0 (4.6)	0.1 (5.8)	< 1 (2.1)	< 0.006 (4.5)	< 10 (50.7)	< 0.3 (68.2)	2 (8.3)	0.4 (5.4)	< 0.06 (45.7)
Total Manganese	0.05 mg/L	0.085	0.036	0.061	0.071	0.029	0.056	0.159	0.005	0.036
MBAS	0.5 mg/L	0.1	0.2	0.7	2.8	0.1	0.1	0.2	0.2	0.1
Dissolved Nickel	** µg/L	2 (83.9)	3 (99.8)	1 (45.8)	3 (82.3)	2 (650.2)	4 (879.6)	3 (134.3)	11 (95.1)	< 0.2 (588.5)
pH[2]	6.0-9.0	8	8.2	7.2	7.4	8.6	6.6	9.6	8.4	7
Dissolved Silver	** µg/L	< 0.6 (9.1)	< 0.1 (13.0)	< 0.6 (2.7)	< 0.1 (8.8)	< 6 (586.3)	< 0.5 (1083.7)	< 0.6 (23.8)	< 0.1 (11.8)	< 0.1 (478.7)
Total Nitrogen	1.0 mg/L	3.2	3.7	1.5	3	3.1	6.9	9.3	6.4	1.3
Total Phosphorus	0.1 mg/L	0.3	0.38	0.36	0.56	0.19	0.29	1.76	0.77	0.1
Turbidity[2]	20 NTU	14.4	15.45	31.47	16.31	1.86	1.87	28.66	1.57	6.06
Dissolved Zinc	** µg/L	10 (190.7)	29 (226.9)	10 (104.0)	9 (187.1)	11 (1482.7)	16 (2006.7)	204 (305.6)	32 (216.1)	6 (1341.9)
Hardness value used to calculate NAL	mg/L $CaCO_3$	176[3]	216[3]	86[3]	172[3]	1980[3]	2830[3]	307[3]	204[3]	1760[3]

Notes:
Bold = exceedance of NAL; ( ) = Numbers in parentheses adjacent to analytical results are California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent values from 40 CFR 131.38(b)(1) calculated using the receiving water hardness result of the sample (for metals);
** = CTR Freshwater Continuous Concentration Hardness dependent non-storm water action level; µg/L = micrograms per liter; $CaCO_3$ = calcium carbonate; mg/L = milligrams per liter; MPN/100mL = most probable number per 100 milliliters; NA = data not available; NAL = non-storm water action level; NTU = nephelometric turbidity unit; < = Not Detected below Method Detection Limit; < = Not Detected below Method Detection Limit

1. Outfall 433 was visited on 6/28/16 and was dry, therefore only one sample was taken in the 2015-2016 monitoring season.
2. Field measurement reported as result.
3. Hardness value from paired receiving water sample not available. Hardness value from outfall was used to calculate applicable CTR Freshwater Continuous Concentration Hardness dependent values.

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3.4 Non-Storm Water Volume and Pollutant Load Assessment

Copermittees must assess the non-storm water volumes and pollutant loads collectively discharged from their jurisdictions in the San Diego Bay WMA, per Municipal Permit Provision D.4.b(1)(c). The methodology used to calculate the non-storm water volumes and loads is provided in Attachment F.3.

3.4.1 Identification of Dry Weather Days

The first step in calculating annual non-storm water volumes and pollutant loads is to determine the number of dry weather days in the monitoring year. The number of dry weather days were determined using County of San Diego ALERT station data (https://sandiego.onerain.com). The Bonita ALERT station was selected to represent rainfall conditions in the San Diego Bay WMA. This representative ALERT station was also utilized in Wet Weather MS4 Outfall Discharge Monitoring Assessments, and is the station closest to a majority of wet weather MS4 outfall discharge monitoring stations.

A wet weather day was defined as any day with at least 0.1 inch of measurable rainfall within a 24-hour period, and the subsequent 72 hours. A dry weather day was defined as all other days during the monitoring year (October 1 through September 30). Table 3-12 presents the number of dry weather days identified in the San Diego Bay WMA during the 2015–2016 monitoring season.

Table 3-12
San Diego Bay WMA Dry Weather Days by Month

Month	Number of Days in the Month	Storm Dates	Number of Storm Days	Number of Storm Days +72 Hours	Number of Dry Days
October 2015	31	October 4–5	2	3	26
November 2015	30	November 3	3	9	18
		November 10			
		November 27			
December 2015	31	December 11	4	9	18
		December 13			
		December 22			
		December 25			
January 2016	31	January 4–7	5	3	23
		January 31			
February 2016	29	NA	0	3	26
March 2016	31	March 6–7	4	8	19
		March 11			
		March 29			
April 2016	30	April 7	2	5	23
		April 9			
May 2016	31	May 5–6	2	3	26
June 2016	30	NA	0	0	30
July 2016	31	NA	0	0	31
August 2016	31	NA	0	0	31
September 2016	30	September 20	1	3	26

Notes:
NA = not applicable, no storms recorded

3.4.2 Non-Storm Water Volume Assessment

An estimated annual non-storm water volume was calculated for each persistently flowing major MS4 outfall in each Copermittee's jurisdiction, as is presented in Table 3-13. Calculations of volume were dependent on the availability of flow data for each site. Details of these calculation methods are presented in the Dry Weather Assessment Methodology in Attachment F.3. The methods are summarized as follows:

- Scenario A: If a major MS4 outfall station was visited once during the monitoring year, and a single discrete flow rate was measured, and this flow rate was applied across all dry weather days within the year.
- Scenario B: If a major MS4 outfall station was visited more than once during the monitoring year, and more than one discrete flow rate was measured, monthly dry weather flow volumes were calculated. The monthly flow volume calculation method varied on the basis of whether a flow measurement was logged at the outfall during that month. For calendar months in which the outfall was visited one or more times, the mean of the measured flow rates was applied to all dry weather days within the month. For calendar months in which the outfall was not visited, the mean of all flow rates observed at that site during the calendar year was applied.
- Scenario C: If a major MS4 outfall station was monitored continuously for a period of time longer than a day, a measured daily flow volume was calculated for each monitored day. The mean of these daily flow volumes was applied to all non-monitored dry days.
- Scenario D: If a major MS4 outfall station was not visited during the monitoring year, the mean of annual outfall flow volumes for all monitored stations in the jurisdiction in the WMA was applied. This scenario was not encountered during the 2015–2016 monitoring season.

Within all these scenarios, observations of ponding (i.e., evidence of non-storm water in the MS4, with no connectivity to the receiving water) were assigned a flow rate of zero. If a station was observed to be flowing, but no flow rate was recorded, the average non-zero flow rate for that station was applied to that observation.

The methodology above assumes that a persistently flowing major MS4 outfall is flowing on 100% of dry weather days. This assumption is highly conservative. Additional information is provided in Section 3.4.6.

Table 3-13
2015–2016 Dry Weather Persistent Flow Volumes Collectively Discharged from the MS4 by Jurisdiction

Jurisdiction	Annual Non-Storm Water Volume Estimate (cf)
San Diego Airport Authority	0
City of Chula Vista	5,142,683
City of San Diego	9,302,068
City of Coronado	918,613
City of Imperial Beach	0
County of San Diego	4,800,298
City of La Mesa	3,821[1]
City of Lemon Grove	857,590
City of National City	190,613
Port of San Diego	24,399

Notes:
cf = cubic feet
1. City of La Mesa outfalls discharged the calculated volume, but outfalls were not classified as persistent until after the 2015–2016 monitoring program had ended. La Mesa's dry weather outfall inventory will be updated accordingly in FY 17.

3.4.3 Non-Storm Water Load Assessment

The Copermittees estimated the annual non-storm water pollutant loads collectively discharged from their persistently flowing major MS4 outfalls to receiving waters in the MS4.

A load was calculated for each pollutant required to be analyzed at each high-priority outfall, based on the arithmetic mean of the analytical results from the two dry weather outfall monitoring events at that outfall during the monitoring year. For each non-high-priority persistently flowing outfall in a Copermittee's jurisdiction in the WMA, the mean of that Copermittee's monitored outfall results for each pollutant was applied. For any pollutants not detected at the MDL, a concentration of MDL/2 was applied in calculating the loads. The non-storm water pollutant loads are presented by outfall in Attachment F.4 and by Copermittee in Attachment F.5.

3.4.4 Percent Contribution from Known Sources

Table 3-14 summarizes the estimated percentage of non-storm water volume and load contributions from known sources. This value was calculated by dividing the observed

flow rate for each known source by the estimated annual outfall flow volume presented in Section 3.4.2. It was assumed for ease of calculation that the known source was flowing for the entire day on which the source was observed. Additionally, it was assumed that the percent load contribution is equal to the percent flow contribution for each known source.

Table 3-14
Estimated Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
San Diego Airport Authority	No known sources observed.						
City of Chula Vista	C-1	2/15/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	C-1	5/17/2016		< 0.002	172.8		0.60%
	J-3	5/14/2016	Irrigation Runoff	0	0	0	0%
	LC-1	5/13/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	LC-3	5/13/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	LC-4	5/12/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	OLR-5	5/13/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	ORW-3	2/8/2016	Irrigation Runoff	< 0.002	172.8	0	0%
	PC-7	2/10/2016	Irrigation Runoff	0	0	0	0%
	PC-9	2/12/2016	Irrigation Runoff	0	0	0	0%
	PC-12	2/12/2016	Groundwater Seepage	< 0.002	172.8	28,586	0.60%
	PC-16	2/16/2016	Groundwater Seepage	< 0.002	172.8	0	0%
	PC-20	5/24/2016	Irrigation Runoff	0	0	0	0%
	PC-21	5/24/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	PC-22	5/24/2016	Irrigation Runoff	0	0	0	0%

Table 3-14 (continued)
Estimated Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
City of Chula Vista (continued)	PC-25	5/23/2016	Irrigation Runoff	0	0	0	0%
	PC-27	2/16/2016	Irrigation Runoff	0	0	0	0%
	PR-5	2/10/2016	Irrigation Runoff	0.008	691.2	194,387	0.36%
	RC-5	5/16/2016	Groundwater Seepage	0	0	0	0%
	RH-1	2/24/2016	Irrigation Runoff	0.004	345.6	171,518	0.20%
	RH-2	2/24/2016	Irrigation Runoff	0	0	0	0%
	SC-3	2/16/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	SC-9	5/11/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	SC-10	5/16/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	SC-13	5/11/2016	Groundwater Seepage	0	0	0	0%
			Irrigation Runoff	0	0	0	0%
	SC-14	5/16/2016	Irrigation Runoff	0	0	0	0%
	SC-15	5/11/2016	Irrigation Runoff	0	0	0	0%
	SC-16	5/11/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	SC-18	5/10/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	SC-19	5/10/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	SC-24	5/10/2016	Irrigation Runoff	0.004	345.6	0	0%
	SR-6	2/17/2016	Irrigation Runoff	0.008	691.2	194,387	0.36%
	SS-1	5/13/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%

Table 3-14 (continued)
Estimated Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
City of Chula Vista (continued)	SS-2	2/23/2016	Irrigation Runoff	0.004	345.6	114,345	0.30%
	SS-3	5/19/2016	Irrigation Runoff	< 0.002	172.8	80,042	0.22%
	SS-5	2/23/2016	Irrigation Runoff	0.011	950.4	285,863	0.33%
	SS-7	2/11/2016	Irrigation Runoff	0	0	0	0%
	SS-8	2/11/2016	Irrigation Runoff	0.015	1296	383,057	0.34%
	SS-9	2/11/2016	Irrigation Runoff	0.010	864	245,843	0.35%
	SS-10	2/11/2016	Irrigation Runoff	0.011	950.4	285,863	0.33%
	SV-1	2/17/2016	Irrigation Runoff	0	0	0	0%
	SV-1	5/25/2016	Irrigation Runoff	0	0	0	0%
	TC-8	5/20/2016	Groundwater Seepage	0	0	0	0%
	TC-11	2/25/2016	Groundwater Seepage	0.014	1209.6	197,246	0.61%
	TC-11	5/19/2016	Groundwater Seepage	< 0.002	172.8	197,246	0.09%
	TC-12	5/23/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	TC-13	5/20/2016	Irrigation Runoff	< 0.002	172.8	0	0%
	TC-14	5/20/2016	Irrigation Runoff	0.004	345.6	114,345	0.30%
	TC-17	5/20/2016	Irrigation Runoff	0	0	0	0%
	TC-19	5/20/2016	Irrigation Runoff	0	0	0	0%
	TC-20	5/18/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%

Table 3-14 (continued)
Estimated Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
City of Chula Vista (continued)	TC-21	2/11/2016	Irrigation Runoff	0.014	1209.6	360,188	0.34%
	TC-22	2/11/2016	Groundwater Seepage	0.009	777.6	228,691	0.34%
	TC-23	2/11/2016	Irrigation Runoff	0.004	345.6	114,345	0.30%
	TC-26	5/23/2016	Irrigation Runoff	0.004	345.6	114,345	0.30%
	TC-29	2/11/2016	Residential Washing	0.003	259.2	85,759	0.30%
	TC-36	5/23/2016	Irrigation Runoff	< 0.002	172.8	0	0%
City of San Diego	DW0120-A	6/9/2016	Residential Impervious Surface Washing	0	0	54,128	0%
	DW0121-A	6/2/2016	Water Line Break	0.004	345.6	0	0%
	DW0179-E	8/18/2016	Rising Groundwater	0	0	60,517	0%
	DW0182U P02-G	12/18/2015	Water Line Break	0.001	86.4	31,788	0.27%
	DW0182U P02-H	12/3/2016	Residential Washing	0	0	31,788	0%
	DW0183-F	12/3/2016	Cooking Oil	0	0	0	0%
	DW0534	3/17/2016	Tidal	0	0	0	0%
	DW0891-A	1/21/2016	Weephole Discharge	0	0	0	0%
	DW0966	6/9/2016	Tidal	0.075	6480	0	0%
City of Coronado	CO_16	5/4/2016	Groundwater Seepage	0.027	2332.8	918,613	0.25%
	CO_36	5/3/2016	Discharges from Potable Water Sources	0.011	950.4	0	0%

Table 3-14 (continued)
Estimated Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
City of Imperial Beach	No known sources observed.						
County of San Diego	MS4-SWT-023G	7/26/2016	Discharge from nearby pump station	0.0027	233.3	266,382	0.09%
City of La Mesa	OF-UNI-2	7/15/2016	Irrigation Runoff	0	0	0	0%
		7/18/2016		0	0		0%
	OF-UNI-3	7/15/2016	Irrigation Runoff	< 0.002	172.8	3,821	4.5%
		7/18/2016		< 0.002	172.8		4.5%
City of Lemon Grove	No known sources observed.						
City of National City	32	7/25/2016	Irrigation Runoff	< 0.002	172.8	28,586	0.60%
	47A-1	6/29/2016	Irrigation Runoff	0	0	0	0%
		7/26/2016	Irrigation Runoff	0	0		0%
	433	7/26/2016	Irrigation Runoff	0	0	0	0%
	752	7/26/2016	Rising Groundwater	< 0.002	172.8	14,293	1.2%
		7/27/2016		0	0		0%
	761	7/26/2016	Irrigation Runoff	< 0.002	172.8	0	0%
	762	6/29/2016	Air Conditioning Condensation	< 0.002	172.8	119,147	0.15%
		7/25/2016		< 0.002	172.8		0.15%
		8/3/2016		0.012	1,037		0.87%

Table 3-14 (continued)
Estimated Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
Port of San Diego	1277.1	6/23/2016	Irrigation Runoff	0.000022	1.90	0	0%
	SI1-1.1	8/5/2016	Irrigation Runoff Leaking Pipe	0.00029	25.1	0	0%

Notes:
% = percent; cf = cubic feet; cfs = cubic feet per second

3.4.5 Percent Contribution from Sources Not Subject to Copermittee Legal Authority

Copermittees did not identify sources not subject to their legal authority within the San Diego Bay WMA during dry weather monitoring.

3.4.6 Dry Weather Assessment Methodology Assumptions and Limitations

Calculation of the Municipal Permit-required assessments necessitates a number of assumptions to translate the monitoring data into conclusions regarding flow volume and load for the entire WMA. These assumptions may introduce potential sources of error, while propagating potential errors inherent to the monitoring data. These assumptions and sources of error are summarized as follows:

- Monitoring Error—Annual non-storm water volumes and pollutants loads are based on the results from dry weather visual observations and dry weather outfall monitoring events. Error in the monitoring data could have the effect of propagating error in all subsequent calculations. Potential sources of error in the monitoring data include the following:
    - Monitored Flow Selection—The pollutant loading estimations rely on monitoring data from one or more non-storm water visual observations per major MS4 outfall per year. The 2015–2016 monitoring year is the first year of dry weather flow volume and load calculation, and this period generally has represented drought conditions, which can affect the type and volume of non-storm water sources such as irrigation and groundwater. The potential for inter-annual variability is a source of error in both the flow and chemistry data.

- Flow Measurement Method—The MS4 Outfall Monitoring Plan provides different options to determine the non-storm water volume: (1) field-based estimation methods (e.g., "float method" or "bucket and stopwatch method") and (2) equipment-based flow measurements. The method chosen varies among outfalls and Copermittees, introducing inter-site variability in volume estimations. Field-based estimation methods introduce potential human error in using stopwatches and error in determining volume amounts in non-graduated buckets. The consistent equipment-based flow monitoring approach is more accurate and precise compared with field-based estimation methods. However, this approach introduces variability because of the flow measurement device and sensor type used to account for site-specific conditions, and it can also be cost and time prohibitive across the number of outfalls monitored. Each measurement device and sensor type has an inherent accuracy range (e.g., ±2% accuracy for sub area-velocity [sub-AV] probes). Each flow measurement device and sensor type can also produce slightly different values for the same event, adding a layer of inter-site variability.
- Rainfall Measurement—The accuracy of determining the number of dry days relies on the accuracy of the rainfall measurements representing that outfall. Rainfall measurements were based on the County of San Diego ALERT rain gauge closest to the majority of wet weather outfalls in each WMA, and not site-specific rainfall data. Rainfall totals across the San Diego area can vary widely within a given storm.
- Chemistry Results—An attempt was made to maintain regional consistency in reporting limits (RLs) and MDLs. However, differences in laboratory capabilities can sometimes lead to different RLs and MDLs. This variability can introduce error if constituent concentrations are near or below the MDL for one monitoring event or Copermittee, and the MDL differs for another monitoring event or Copermittee. For the assessment calculations, an attempt was made to account for this type of error by assigning a value of MDL/2 to constituents that were not detected.

- Assessment Methodology Error—The assessments require a series of assumptions and extrapolations regarding the determination of annual volumes and pollutant loadings. Each assumption carries the possibility of error, including the following:
  - Annual Volume Estimation Representativeness—Regardless of the flow measurement method utilized, error is introduced when utilizing the median of more than one field measurement to determine an annual volume estimation. It is assumed that these field measurements are representative of "typical" non-storm water conditions because persistently flowing non-storm water flows are relatively consistent throughout the year. However, this may not be the case, and error could be introduced into these estimations. For example, groundwater base flows can increase during the wet season, increasing dry weather flow rates. Or, alternatively, irrigation and irrigation runoff may increase during the dry season, increasing dry weather flow rates. Unless flow

observations are made throughout the year under a variety of conditions, this seasonal variation may not be captured.

- Annual Volume Estimation Confidence—Based on availability of data, multiple calculation methods are used to estimate annual flow volume. The confidence associated with each estimate varies because different sample sizes are used for each estimate. That is to say, volumes calculated on the basis of continuous flow data are associated with a higher confidence than volumes based on one or two instantaneous flow measurements.
- Annual Pollutant Load Estimations—The annual volume estimation error introduced previously disseminates into the annual pollutant load estimations through calculations discussed in Section 3.4.3. Although persistent non-storm water flows are relatively consistent throughout the year, collecting two grab samples in one year provides a very brief snapshot in time of the pollutant concentration at an outfall, which may not be indicative of typical conditions or pollutant loadings. Additionally, using an arithmetic mean as a “typical” value of pollutant concentrations to estimate pollutant loads can introduce error if the sample size of the mean is too small, as means are sensitive to sample size.

4 Storm Water Discharge Monitoring Data

The purpose of this program is to identify pollutants in storm water discharges from the MS4s, guide pollutant source identification efforts, and track progress in achieving the WQIP goals. The RPs' locations for the wet weather MS4 outfall discharge monitoring component are chosen to be representative of the residential, commercial, industrial, and mixed-use land uses within the San Diego Bay WMA. These locations are monitored during one storm event annually. The wet weather MS4 outfall discharge monitoring is designed to answer the following questions:

- Do wet weather discharge concentrations at MS4 outfalls meet Municipal Permit action levels?
- What is the relative contribution of MS4 outfalls to priority water quality conditions during wet weather?
- How do representative MS4 outfalls discharge concentrations, loads, and flows change over time?

During the 2015–2016 monitoring season, the RPs implemented the first year of the WQIP wet weather outfall discharge monitoring in accordance with Provision D.2.c of the Municipal Permit. The goals of wet weather outfall monitoring are the following:

- Identify pollutants in storm water discharges from the MS4;
- Guide pollutant source identification efforts; and
- Determine compliance with the water quality-based effluent limits (WQBELs) associated with the applicable TMDLs presented in Attachment E of the Municipal Permit.

This monitoring was instated following completion and acceptance of the San Diego Bay WMA WQIP, and built upon the transitional wet weather outfall discharge monitoring completed during the 2013–2014 and 2014–2015 monitoring seasons. Details of the monitoring methodology are provided in the San Diego Bay WMA MS4 Outfall Monitoring Plan, available on the Project Clean Water website (www.projectcleanwater.org).The following subsections present the results of wet weather discharge monitoring in the San Diego Bay WMA, as well as the results of the required Storm water Pollutant Discharge Reduction Assessments.

4.1 Wet Weather Outfall Monitoring Locations

The RPs selected wet weather MS4 outfall discharge monitoring locations from the inventories developed pursuant to Provision D.2.a.(3)(a)(i) of the Municipal Permit for the San Diego Bay WMA:

- At least five wet weather MS4 outfall discharge monitoring locations that are representative of storm water discharges from areas consisting primarily of residential, commercial, industrial, and typical mixed-use land uses present within the San Diego Bay WMA; and

- At least one wet weather MS4 outfall discharge monitoring location for each RP within the San Diego Bay WMA.

The 10 stations monitored during the 2015–2016 monitoring season are presented in Table 4-1. The outfall monitoring locations and their associated drainage area delineations are shown by red circles in Figure 4-1. Each RP monitored its wet weather MS4 outfall discharge monitoring location in the San Diego Bay WMA once during the 2015–2016 monitoring season. Frequencies of monitoring of each MS4 outfall during the past three monitoring season are as follows:

- 2013–2014 (first transitional monitoring season) – 8 outfall stations
- 2014–2015 (second transitional monitoring season) – 9 outfall stations
- 2015–2016 (first WQIP monitoring season) – 10 outfall stations

One outfall, MS4-SDB-6 in Lemon Grove, changed from the 2013–2014 to 2014–2015 transitional year, and outfall MS4-SDB-9 in the Port of San Diego jurisdiction changed from the transitional period 2014–2015 and the WQIP monitoring year 2015–2016.

Table 4-1
2015–2016 San Diego Bay WMA Wet Weather Outfall Monitoring Locations

Monitoring Location	Responsible Party	Jurisdictional Identifier	Latitude/ Longitude	HSA Name	HSA Number
MS4-SDB-1	City of San Diego	DW797	32.69541/ -117.05776	Pueblo	908.32
MS4- SDB-2	City of Chula Vista	SC19	32.651985/ -116.948903	Otay	910.20
MS4- SDB-3	City of Coronado	SITE5960	32.68661/ -117.193424	Otay	910.10
MS4- SDB-4	City of Imperial Beach	K2	32.58832/ -117.10747	Otay	910.20
MS4- SDB-5	City of La Mesa	908UNIMASS	32.754663/ -117.043269	Pueblo	908.22
MS4- SDB-6[1]	City of Lemon Grove	SITE69	32.73470/ -117.05626	Pueblo	908.22
MS4- SDB-7	City of National City	44B	32.66974/ -117.10247	Pueblo	908.32
MS4- SDB-8	County of San Diego	SDB01	32.667388/ -117.021871	Sweetwater	909.12
MS4- SDB-9[2]	Port of San Diego	CV1	32.629627/ -117.108012	Sweetwater	909.12
MS4- SDB-10	San Diego Airport Authority	OUTFALL12	32.73635/ -117.207699	Pueblo	908.21

Notes:

HSA = hydrologic subarea

1. Monitoring location MS4-SDB-6 was relocated between the 2013–2014 and 2014–2016 monitoring years. The Jurisdictional Identifier of the previous monitoring location is 5.
2. Monitoring location MS4-SDB-9 was relocated between the Transitional Monitoring Period and the WQIP Monitoring year 2015–2016. The Jurisdictional Identifier of the previous monitoring location is CV1-1.

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Figure 4-1
San Diego Bay WMA 2015–2016 Wet Weather Outfall Monitoring Locations

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4.2 Wet Weather Outfall Monitoring Event Field Observations

The San Diego Bay WMA wet weather outfall monitoring locations were monitored once each during the wet season (October 1 2015, through April 30, 2016), during three storm events on January 31, 2016, March 6, 2016, and April 7, 2016. Each location was monitored once, as shown in Table 4-2. Details of the monitoring events, including date and duration of the storm events sampled, rainfall estimates of the storm events, and duration between the storm events sampled and the end of the previous measurable storm event, are also presented in Table 4-2. Hydrographs for each monitored event, displaying event flows and rainfall amounts, are presented in Attachment G.1.

During the wet weather monitoring event, narrative descriptions and field observations were recorded on field data sheets at each wet weather MS4 outfall discharge monitoring location, per the Monitoring and Assessment Program included in the WQIP. Flow was measured using a Hach Sigma 920 flow meter with a sub-AV probe, or similar type device, in accordance with the USEPA Storm Water Sampling Guidance Document (EPA-833-B-92-001), as described in the San Diego Bay WMA MS4 Outfall Monitoring Plan. Rainfall statistics for each monitored event were based on a nearby San Diego County Flood Control District ALERT station, where the closest ALERT station to each monitoring location was selected. If the closest ALERT station did not have storm event data available, the next closest ALERT station was used.

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Table 4-2
2015–2016 San Diego Bay WMA Wet Weather Outfall Monitoring Event Field Observations

Monitoring Location	Storm Event Date	ALERT Station	Storm Duration (hours)	Rainfall Depth (inches)	Rainfall Intensity (inches/ hour)	Antecedent Dry Days	Flow Volume (cubic feet)
MS4-SDB-1 (City of San Diego)	4/7/2016	Bonita	24.8	0.21	0.00847	9	1,132.8
MS4- SDB -2 (City of Chula Vista)	3/6/2016	Bonita	24.0	0.20	0.00833	33	94,507.2
MS4- SDB -3 (City of Coronado)	3/6/2016	Point Loma	45.1	0.36	0.00799	34	91,599.0
MS4- SDB -4 (City of Imperial Beach)	3/6/2016	Tijuana Estuary	12.7	0.28	0.02208	35	18,034.8
MS4- SDB -5 (City of La Mesa)	4/7/2016	Lake Murray	22.3	0.24	0.01079	8	4,062.0
MS4- SDB -61 (City of Lemon Grove)	4/7/2016	Lake Murray	23.5	0.28	0.01191	8	295,134.0
MS4- SDB -7 (City of National City)	4/7/2016	Bonita	29.5	0.15	0.00508	9	18,062.4
MS4- SDB -8 (County of San Diego)	1/31/2016	Bonita	7.1	0.52	0.07324	23	27,598.8
MS4- SDB -92 (Port of San Diego)	1/31/2016	Bonita	7.1	0.52	0.07324	23	7,542.0
MS4- SDB -10 (San Diego Airport Authority)	4/7/2016	Fashion Valley	15.6	0.12	0.00770	31	11,532.8

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4.3 Wet Weather Outfall Monitoring Event Analytical Methods

During each wet weather monitoring event, samples were collected according to the procedures described in the San Diego Bay WMA MAP's MS4 Outfall Monitoring Plan.

Grab samples were collected for bacterial indicators and receiving water hardness. A time-weighted composite sample was collected for all other analytes. All samples were collected in accordance with SWAMP protocols and following the quality assurance and quality control procedures in the San Diego Bay WMA MS4 Outfall Monitoring Plan.

In situ turbidity measurements were collected using a YSI 6600 or similar field meter. Automated samples for chemistry were collected using a Sigma 900MAX autosampler with Teflon-lined tubing.

The required analyses were based upon the following four groupings of constituents, per Provision D.2.c(5)(f) of the Municipal Permit:

- Constituents contributing to the Highest Priority Condition identified in the San Diego Bay WMA WQIP;
- Constituents listed as a cause for impairment of receiving waters in the San Diego Bay WMA, as listed on the Clean Water Act (CWA) Section 303(d) list of water quality impaired segments (303(d) List);
- Constituents for implementation plans or load reduction plans (e.g., Bacteria Load Reduction Plans, Comprehensive Load Reduction Plans) developed for the San Diego Bay WMA where the RPs are listed as responsible parties under the TMDLs in Attachment E of the Municipal Permit; and
- Applicable SAL constituents listed in Provision C.2 of the Municipal Permit.

For each wet weather outfall station discharging to a fresh water receiving water, receiving water hardness grab samples were also collected. The receiving water hardness results were used to evaluate compliance with the USEPA one-hour maximum concentration criteria for metals, in the case of any SAL exceedances. Section 4.6 discusses SAL exceedances. Receiving water hardness samples were not collected for wet weather outfalls discharging to an ocean receiving water, or to a bay or estuary.

The 2015–2016 wet weather outfall analytical results are presented in Attachment G.2.

4.4 Storm Water MS4 Outfall Monitoring Data Assessment

Per Provision D.4.b.(2)(b)(i) of the Municipal Permit, the RPs are required to use a watershed model or other method to calculate the following:

- The average storm water runoff coefficient for each land use type within the San Diego Bay WMA;
- The volume of storm water and pollutant loads discharged from the monitored MS4 outfalls in the jurisdictions of each RP to receiving waters within the San Diego Bay WMA for each storm event with measurable rainfall greater than 0.1 inch;

- The total flow volume and pollutant loadings discharged from the jurisdictions of each RP within the San Diego Bay WMA over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and
- The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each HSA with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the jurisdictions of each RP within the San Diego Bay WMA for each storm event with measurable rainfall greater than 0.1 inch.

The methodology followed that of the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego County Regional Copermittees, 2015), with the changes listed below. The complete methodology is presented in Attachment G.3. Tables presenting storm water volumes and pollutant loads are included in Attachment G.4. The following subsections present the results of these required assessments.

The calculation of these required assessments comes with a number of assumptions and potential sources of both variability and systematic error. Variability is inherent in environmental monitoring. When using monitoring data within a model, variability can be mitigated by increasing the sample size to decrease the distance between the modeled results and the true value. Systematic error is non-random error caused by biases in either the monitoring or modeling approach. Variability and systematic error both contribute to the overall statistical error of a result. Potential sources of statistical error in this assessment are provided below. The sources of error are subdivided into monitoring error and assessment methodology assumptions, and are listed in order of the errors and assumptions with most potential to impact the results of the assessment to the least impactful errors and assumptions. The potential sources of statistical error include:

- Monitoring Error—Runoff coefficients and pollutant loads are based on the results of wet weather outfall monitoring events. Variability and error in the monitoring data could have the effect of propagating error in all subsequent calculations. Potential sources of variability and error in the monitoring data include the following:
    - *Monitored Storm Selection*—The calculation relies on monitoring data from one storm event per year. Although a range of storm conditions have been targeted over the period of monitoring (2013–2016), this period generally has represented drought conditions. The potential for inter-annual variability is a source of error in both the flow and chemistry data. An additional storm event is added to the historical data set each year, increasing the sample size and leading to greater accuracy of the average over time.
    - *Drainage Area Delineation*—The accuracy of the observed outfall runoff coefficient calculation relies on the accuracy of the drainage area delineation for that outfall. Drainage area delineations were based on the most recent jurisdictional delineation.
    - *Flow Measurement Method*—A consistent flow monitoring approach is described in the San Diego Bay WMA MS4 Outfall Monitoring Plan. However, this approach allows for variability in the flow measurement device and sensor

type used to account for site-specific conditions. Each measurement device and sensor type has an inherent accuracy range (e.g., ±2% accuracy for sub-AV probes). Additionally, each flow measurement device and sensor type can produce slightly different values for the same event, adding a layer of inter-site variability.

- *Rainfall Measurement*—The accuracy of the observed outfall runoff coefficient calculation relies on the accuracy of the rainfall measurement for that event at that outfall. Rainfall measurements were based on the nearest County of San Diego ALERT station rain gauge to each outfall and not site-specific rainfall data. Rainfall totals across the San Diego area can vary widely within a given storm. This error can be mitigated by utilizing onsite rain gauges where feasible.
- *Chemistry Results*—An attempt was made to maintain consistent RLs and MDLs across the monitoring seasons. However, differences in laboratory capabilities can sometimes lead to different RLs and MDLs. This variability can introduce error if constituent concentrations are near or below the MDL one monitoring year, and the MDL changes. For the assessment calculations, an attempt was made to account for this type of error by assigning a value of MDL/2 to constituents that were not detected.

- Assessment Methodology Assumptions—The assessments require a series of assumptions and extrapolations regarding land-use-based runoff coefficients and pollutant concentrations. Each assumption carries the possibility of error, including the following:
  - *Outfall Drainage Area Land Use Representativeness*—While an attempt has been made to select outfall monitoring locations with drainage areas of one primary land use type, the reality of storm water drainage systems in urban and suburban areas is that most monitoring locations are a mixture of multiple land use categories. To calculate the runoff coefficient from each land use category, the observed runoff coefficient is compared with standard values calculated using the San Diego County Hydrology Manual (County of San Diego, 2003). A correction factor based on the ratio of the observed runoff coefficient to the calculated runoff coefficient is then applied to each land use category to derive land use runoff coefficients.
  - *WMA Land Use Representativeness*—Not all land use categories within the WMA are represented in the monitored outfall drainage areas. Therefore, the pollutant concentration and runoff coefficient for one land use are sometimes substituted for another land use. For example, open space pollutant concentrations and runoff coefficients may be used as a proxy for agriculture land use values, in the absence of monitoring data from agricultural land uses. These proxies are summarized in Table 4-5.

- *Land Use Event Mean Concentration (EMC) Assumptions*—Apportioning pollutant loads to each land use type requires an assumption of pollutant concentration in each land use. To calculate a pollutant concentration from each land use category, the observed pollutant concentrations are compared with typical (arithmetic mean) values calculated on the basis of land use studies in the Los Angeles and San Diego areas. A correction factor based on the ratio of the observed pollutant concentration to the calculated typical pollutant concentration is then applied to each land use category to derive land use concentrations. However, literature values did not exist for all pollutants analyzed, and therefore the assumption is made that similar pollutants have similar land use-based concentrations For example, it is assumed that ratios of other dissolved metals concentrations from the analyzed land use categories follow the ratios of dissolved copper concentrations from those land use categories. Additionally, using an arithmetic mean as a "typical" value can introduce error if the sample size of the mean is too small, as means are sensitive to sample size.
- *Observed Outfall Runoff Coefficient Calculation*—Rainfall total, rather than rainfall intensity, of a monitored storm event is considered in these calculations. Storms of higher intensity generally produce more runoff for a given rainfall amount than do storms of lower intensity. Therefore, storms of higher intensity would be expected to exhibit a higher runoff coefficient.

- *Variability of Standard Runoff Coefficient and Pollutant Concentration Values*—The standard runoff coefficients and pollutant concentrations referenced represent a mean. There is, in reality, a range associated with the real-world land use runoff conditions for both runoff coefficient and pollutant concentrations. For example, land use runoff pollutant concentrations can vary on the basis of socioeconomic factors across a single land use category. The 2015 City of San Diego trash study found that median income in the drainage area is a driver for trash conditions at the outfall. It is possible that a similar pattern could be seen in other pollutants (City of San Diego, 2015a).

4.4.1 Land Use Storm Water Runoff Coefficient (D.4.b.(2)(b)(i)[a])

The average storm water runoff coefficient (Runoff "C") was calculated for each land use type in the WMA, based on data collected through three seasons of wet weather MS4 outfall monitoring (2013–2014, 2014–2015, and 2015–2016). This calculation is based on the measured flow and rainfall values for each monitored outfall (Table 4-2), along with the outfall drainage area characteristics. The monitored outfall drainage areas and associated land uses are shown in Figure 4-2, as well as the outfalls indicated by red circles. The quantity (area and percentage) of each land use type by outfall drainage area is presented in Table 4-3.

Table 4-3
2015–2016 San Diego Bay WMA Wet Weather Outfall Monitoring Stations – Drainage Area Land Use

Land Use Category	San Diego Bay WMA																			
	MS4-SDB-1		MS4-SDB-2		MS4-SDB-3		MS4-SDB-4		MS4-SDB-5		MS4-SDB-6		MS4-SDB-7		MS4-SDB-8		MS4-SDB-9		MS4-SDB-10	
	City of San Diego		City of Chula Vista		City of Coronado		City of Imperial Beach		City of La Mesa		City of Lemon Grove		City of National City		County of San Diego		Port of San Diego		San Diego Airport Authority	
	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%
Agriculture-A	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Agriculture-B	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Agriculture-C	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Agriculture-D	0	0%	0	0%	0.08	0%	0	0%	0	0%	0	0%	1.61	2%	0	0%	0	0%	0	0%
Commercial	0	0%	0	0%	0	0%	11.66	10%	0.05	0%	145.75	19%	6.87	10%	0	0%	0	0%	0	0%
Educational	0	0%	24.21	31%	6.89	4%	4.40	4%	0	0%	17.15	2%	12.60	18%	0	0%	0	0%	0	0%
Industrial	0	0%	0	0%	0	0%	1.43	1%	0	0%	68.62	9%	0	0%	0.22	1%	0.16	1%	57.93	99%
Mixed Use	0	0%	0	0%	0	0%	0	0%	0	0%	0.95	0%	0	0%	0	0%	0	0%	0	0%
Open Space-A	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Open Space-B	0	0%	0	0%	1.67	1%	0	0%	0	0%	0	0%	0	0%	0.66	2%	0	0%	0	0%
Open Space-C	8.13	13%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Open Space-D	7.92	13%	3.43	4%	0.06	0%	1.63	1%	2.14	10%	30.19	4%	0	0%	0	0%	14.82	85%	0.32	1%
Residential: Multi Family	0	0%	0	0%	1.37	1%	13.23	11%	0	0%	60.18	8%	12.35	18%	0	0%	0	0%	0	0%
Residential: Rural	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Residential: Single Family	32.87	53%	37.10	48%	106.17	65%	46.82	39%	14.60	69%	275.95	37%	16.76	24%	35.50	83%	0	0%	0	0%
Transportation	12.91	21%	12.53	16%	46.59	29%	41.23	34%	4.45	21%	155.45	21%	18.48	27%	6.42	15%	2.40	14%	0	0%
Water[1]	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
TOTAL	61.84	100%	77.27	100%	162.82	100%	120.40	100%	21.23	100%	754.24	100%	68.67	100%	42.81	100%	17.39	100%	58.25	100%

Notes:
% = percent; WMA = Watershed Management Area
1. Water land use excluded from MS4 outfall assessments. Water land use assumed to be a sink for runoff storage.

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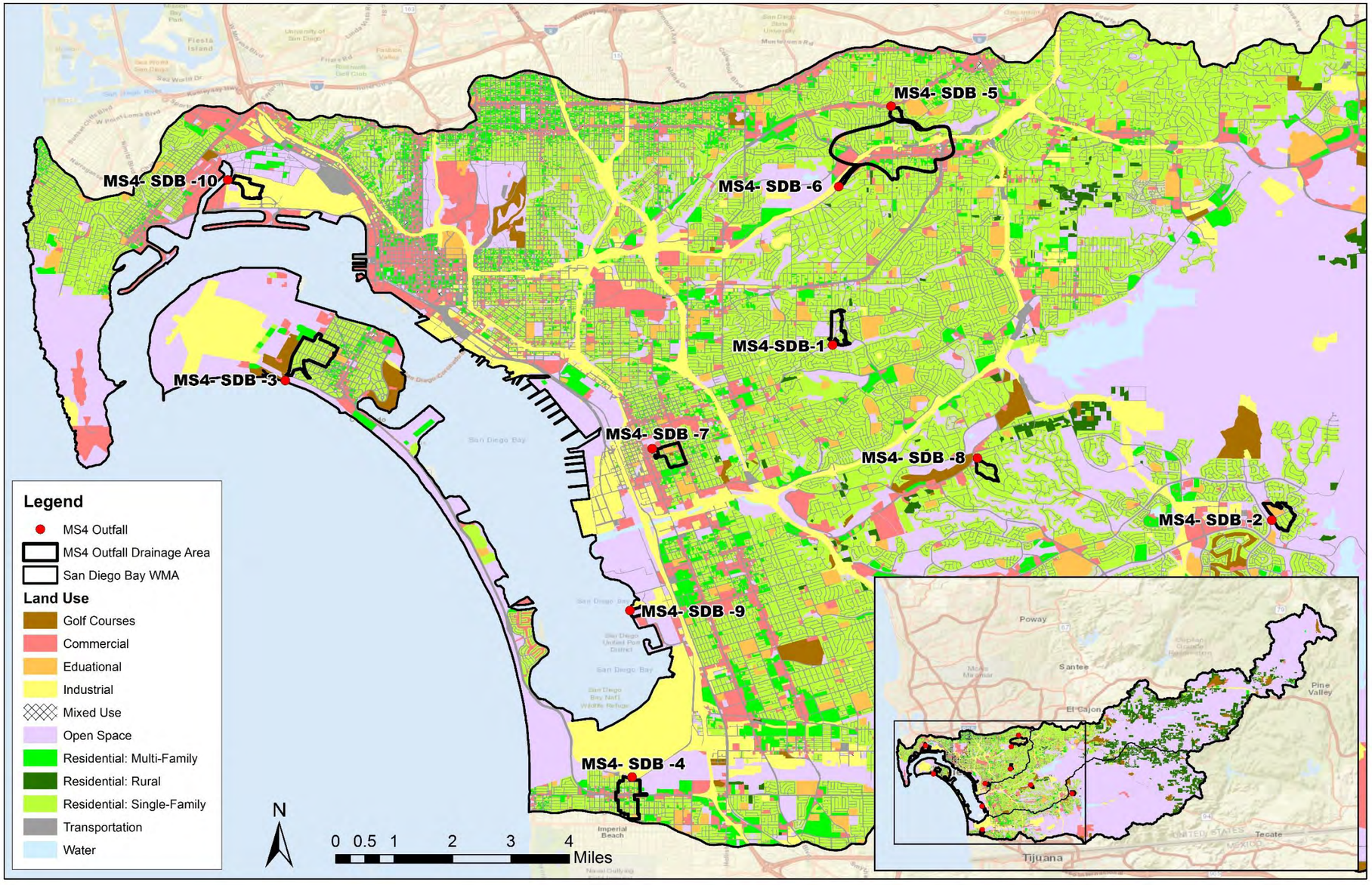

Figure 4-2
San Diego Bay WMA Monitored Outfall Drainage Areas and Associated Land Uses

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The observed Runoff "C" value was calculated for each outfall, based on the monitored event characteristics (event flow, event rainfall, and outfall drainage area). For outfalls that were monitored in previous years, the observed Runoff "C" value was averaged across all years of monitoring. This value was compared with the expected Runoff "C" value for each outfall, based on runoff coefficients listed in the San Diego County Hydrology Manual (County of San Diego, 2003). The 2015–2016 observed Runoff "C" value for each outfall, as well as the expected Runoff "C" for each outfall, is presented in Table 4-4.

Table 4-4
2015–2016 San Diego Bay WMA Observed Versus Expected Outfall Runoff Coefficients

Monitoring Location	**Observed Runoff "C"**	Hydrology Manual Runoff **"C"** (Expected)
MS4-SDB-1 (City of San Diego)	0.12	0.49
MS4- SDB -2 (City of Chula Vista)	0.67	0.55
MS4- SDB -3 (City of Coronado)	0.38	0.56
MS4- SDB -4 (City of Imperial Beach)	0.34	0.62
MS4- SDB -5 (City of La Mesa)	0.27	0.52
MS4- SDB -6 (City of Lemon Grove)	0.30	0.64
MS4- SDB -7 (City of National City)	0.24	0.62
MS4- SDB -8 (County of San Diego)	0.31	0.52
MS4- SDB -9 (Port of San Diego)	0.22	0.40
MS4- SDB -10 (San Diego Airport Authority)	0.35	0.87

The WMA Runoff "C" value for each land use was calculated using an area-weighted average of all monitored event Runoff "C" values for the monitored wet weather outfalls. To improve the accuracy of the calculation over time, historical (2013–2015) and current (2015–2016) Runoff "C" values were included in the calculation. The historical and 2015–2016 WMA Runoff "C" values for each land use are presented in Table 4-5.

Table 4-5
2015–2016 and Historical San Diego Bay WMA Calculated Land Use Runoff Coefficients

Land Use Category	2013–2014 Runoff "C"	2014–2015 **Runoff "C"**	2015–2016 **Runoff "C"**
Agriculture-A[1,2]	0.128	0.184	0.475
Agriculture-B[1,2]	0.128	0.184	0.475
Agriculture-C[1,2]	0.121	0.080	0.475
Agriculture-D[1]	0.093	0.640	0.475
Commercial	0.409	0.337	0.354
Educational	0.178	0.250	0.315
Industrial	0.381	0.329	0.347
Mixed Use	0.326	0.276	0.298
Open Space-A[1,3]	0.128	0.184	0.178
Open Space-B[1]	0.128	0.184	0.178
Open Space-C[1]	0.121	0.080	0.077
Open Space-D[1]	0.179	0.140	0.152
Residential: Multi Family	0.295	0.231	0.250
Residential: Rural[4]	0.206	0.192	0.203
Residential: Single Family	0.232	0.244	0.255
Transportation	0.346	0.332	0.349

Notes:

1. Agriculture and open space land use types were divided into subgroups based on hydrologic soil type. See http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ny/soils/?cid=nrcs144p2_027279 for more information on hydrologic soil types.
2. Because of limited WMA monitoring data for Agriculture Soil Group A, B, and C land use, Runoff "C" and EMC values based on San Diego Bay WMA monitored outfalls data for Agriculture Soil Group D.
3. Because of limited WMA monitoring data for Open Space Soil Group A land use, Runoff "C" and EMC values based on San Diego Bay WMA monitored outfalls data for Open Space Soil Group B.
4. Runoff "C" and EMC values based on San Diego Bay WMA monitored outfalls data for Open Space-D and Single-Family Residential land use types (averaged).

4.4.2 Monitored MS4 Outfall Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[b])

The volumes of storm water and pollutant loads discharged from the monitored MS4 outfalls to receiving waters in the jurisdictions of RPs within the WMA were calculated for each storm event with measurable rainfall greater than 0.1 inch. The wet season rainfall data for the ALERT station rain gauge closest to each monitoring location were used to calculate the qualifying measured rainfall for each site. Table 4-6 presents the estimated annual wet season storm water volume and pollutant load discharged from each monitored outfall.

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Table 4-6
2015–2016 San Diego Bay WMA Wet Season Estimated Flow Volume and Pollutant Loads from Monitored Outfalls

Analyte	Units	MS4-SDB-1	MS4-SDB-2	MS4-SDB-3	MS4-SDB-4	MS4-SDB-5	MS4-SDB-6	MS4-SDB-7	MS4-SDB-8	MS4-SDB-9	MS4-SDB-10
		City of San Diego	City of Chula Vista	City of Coronado	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	County of San Diego	Port of San Diego	San Diego Airport Authority
Qualifying Measured Rainfall	in	7.13	7.13	4.66	5.20	8.16	8.16	7.13	7.13	7.13	5.2
Wet Season Flow Volume	cf	188,341	1,337,714	1,055,343	765,737	171,416	6,758,054	433,706	347,366	99,590	382,097
Indicator Bacteria											
Enterococcus	MPN/100mL	1.29E+13	9.17E+13	7.23E+13	5.25E+13	1.17E+13	4.63E+14	2.97E+13	2.38E+13	6.82E+12	7.68E+10
Fecal Coliform	MPN/100mL	1.28E+14	1.89E+14	4.78E+13	3.47E+14	1.07E+12	1.72E+15	1.11E+13	7.87E+11	2.54E+13	8.66E+10
Total Coliform	MPN/100mL	1.28E+14	1.89E+14	4.78E+13	3.47E+14	1.16E+13	4.59E+15	2.95E+14	2.36E+13	4.51E+13	8.66E+10
Total Metals											
Cadmium	lb	5.88E-04	4.18E-03	3.29E-03	9.56E-03	5.35E-04	2.53E-01	2.98E-02	1.08E-03	1.24E-03	2.62E-02
Copper	lb	2.59E-01	3.59E+00	3.36E-01	1.72E+00	3.53E-01	7.59E+00	7.85E-01	3.47E-01	1.18E+00	1.22E+00
Iron	lb	9.11E+00	6.53E+00	3.24E+01	8.89E+01	1.04E+01	6.41E+02	1.90E+02	NS	NS	3.53E+00
Lead	lb	2.00E-02	2.51E-02	5.27E-02	4.25E-01	5.78E-02	4.22E+00	3.25E-01	4.34E-02	2.49E-02	2.62E-02
Manganese	lb	6.58E-01	5.26E-01	1.32E+01	3.06E+00	3.21E-01	3.21E+01	3.79E+00	4.34E-01	2.42E-01	1.46E-01
Mercury	lb	1.18E-01	NS	NS	NS	1.07E-01	4.22E+00	2.71E-01	NS	NS	2.39E-01
Selenium	lb	NS	NS	NS	NS	NS	NS	NS	1.95E-02	5.60E-03	NS
Zinc	lb	1.29E+00	6.51E+00	9.88E-01	9.56E+00	1.39E+00	5.06E+01	2.63E+00	8.67E-01	9.95E-01	1.91E+00
Dissolved Metals											
Cadmium	lb	5.88E-04	4.18E-03	3.29E-03	2.39E-03	5.35E-04	2.11E-02	1.35E-03	1.08E-03	3.11E-04	2.15E-02
Copper	lb	2.35E-01	2.25E+00	2.31E-01	9.08E-01	2.35E-01	4.13E+00	1.65E-01	2.10E-01	7.46E-01	8.59E-01
Iron	lb	4.61E-01	2.54E+00	4.28E-01	1.88E+00	7.78E-01	2.86E+01	5.04E+00	NS	NS	1.55E-01
Lead	lb	1.18E-03	8.35E-03	6.59E-03	1.43E-02	1.07E-03	3.38E-01	1.62E-02	2.17E-03	1.24E-03	2.39E-03
Manganese	lb	8.58E-02	5.01E-02	4.61E-01	6.21E-01	3.21E-02	4.01E+00	1.35E+00	1.95E-02	6.84E-02	1.00E-01
Mercury	lb	1.18E-01	NS	NS	NS	1.07E-01	4.22E+00	2.71E-01	NS	NS	2.39E-01
Selenium	lb	NS	NS	NS	NS	NS	NS	NS	1.95E-02	5.60E-03	NS
Zinc	lb	6.70E-01	5.43E+00	7.25E-01	4.64E+00	1.28E+00	4.22E+01	2.33E+00	2.82E-01	5.47E-01	1.91E+00
Nutrients											
Ammonia	lb	1.76E+00	4.84E+01	2.24E+01	2.34E+01	4.17E+00	7.59E+01	9.21E+00	4.77E+00	1.74E+00	4.53E+00
Nitrate as N	lb	4.47E+00	1.07E+02	3.23E+01	3.87E+01	1.05E+01	3.46E+02	2.60E+01	1.21E+01	2.18E+00	3.86E+01
Nitrite as N	lb	2.94E-01	7.52E+00	1.65E+00	2.87E+00	5.35E-01	2.53E+01	1.90E+00	5.42E-01	1.55E-01	3.63E+01

Table 4-6 (continued)
2015–2016 San Diego Bay WMA Wet Season Flow Volume and Pollutant Loads from Monitored Outfalls

Analyte	Units	MS4-SDB-1	MS4-SDB-2	MS4-SDB-3	MS4-SDB-4	MS4-SDB-5	MS4-SDB-6	MS4-SDB-7	MS4-SDB-8	MS4-SDB-9	MS4-SDB-10
		City of San Diego	City of Chula Vista	City of Coronado	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	County of San Diego	Port of San Diego	San Diego Airport Authority
TKN	lb	3.29E+01	1.83E+02	6.46E+01	1.37E+02	2.05E+01	7.05E+02	7.15E+01	2.80E+01	8.39E+00	4.56E+01
Total Nitrogen	lb	3.74E+01	2.97E+02	9.68E+01	1.79E+02	3.16E+01	1.08E+03	9.96E+01	4.01E+01	1.06E+01	1.20E+02
Total Phosphorus as P	lb	5.76E+00	2.67E+01	1.32E+01	1.96E+01	3.42E+00	9.70E+01	1.54E+01	5.42E+00	1.18E+00	1.17E+01
PAHs											
Acenaphthene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Acenaphthylene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Anthracene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
benz(a)anthracene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Benzo(a)pyrene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Benzo(b)fluoranthene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Benzo(g,h,i)perylene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Benzo(k)fluoranthene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Chrysene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
dibenz(a,h)anthracene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Fluoranthene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Fluorene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Naphthalene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Phenanthrene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Pyrene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Total PAHs	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
PCBs											
PCB Araclor 1016	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
PCB Araclor 1221	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
PCB Araclor 1232	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
PCB Araclor 1242	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
PCB Araclor 1248	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
PCB Araclor 1254	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
PCB Araclor 1260	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Chlordane	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND

Table 4-6 (continued)
2015–2016 San Diego Bay WMA Wet Season Flow Volume and Pollutant Loads from Monitored Outfalls

Analyte	Units	MS4-SDB-1	MS4-SDB-2	MS4-SDB-3	MS4-SDB-4	MS4-SDB-5	MS4-SDB-6	MS4-SDB-7	MS4-SDB-8	MS4-SDB-9	MS4-SDB-10
		City of San Diego	City of Chula Vista	City of Coronado	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	County of San Diego	Port of San Diego	San Diego Airport Authority
ddt(o,p')	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Diazinon	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Endrin	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
indeno(1,2,3-c,d)pyrene	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND
Solid Parameters											
TDS	lb	ND	NS	NS	NS	ND	ND	ND	NS	NS	ND

Notes:
cf = cubic feet; in = inches; lb = pounds; MPN = most probable number; mL = milliliter; ND = not detected; NS = not sampled; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; PAH = polycyclic aromatic hydrocarbon; PCB = polychlorinated biphenyl;

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4.4.3 Jurisdictional Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[c])

The volumes of storm water and pollutant loads discharged from the jurisdictions of RPs within the WMA over the course of the wet season were calculated for each storm event with measurable rainfall greater than 0.1 inch. The wet season data for the closest ALERT station rain gauge to the outfalls that most represented the WMA were used to report rainfall. Because the San Diego Bay WMA contains more than one ALERT station rain gauge, data from the Bonita rain gauge were used, because this station was closest to a majority of wet season MS4 outfall monitoring stations. Table 4-7 presents the estimated annual wet season storm water volumes and pollutant loads discharged from the jurisdictions of RPs in the San Diego Bay WMA.

Note that jurisdictional pollutant loads were calculated on the basis of the average EMC for constituents across all years of monitoring (2013–2016). Additionally, pollutant loads for constituents that were not monitored in all subwatersheds were based on the land area only within the subwatershed in which the constituent was monitored. These constituents include the following:

- Total and Dissolved Iron: Loads based on land area in Pueblo and Otay subwatersheds only
- Total and Dissolved Mercury: Loads based on land area in Pueblo subwatershed only
- Total and Dissolved Selenium: Loads based on land area in Sweetwater subwatershed only
- Polychlorinated Biphenyls (PCBs): Loads based on land area in Pueblo subwatershed only
- Polycyclic Aromatic Hydrocarbons (PAHs): Loads based on land area in Pueblo subwatershed only

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Table 4-7
2015–2016 San Diego Bay WMA Estimated Wet Season Flow Volume and Pollutant Loads

Analyte	Units	MS4-SDB-1	MS4-SDB-2	MS4-SDB-3	MS4-SDB-4	MS4-SDB-5	MS4-SDB-6	MS4-SDB-7	MS4-SDB-8	MS4-SDB-9	MS4-SDB-10
		City of San Diego	City of Chula Vista	City of Coronado	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	County of San Diego	Port of San Diego	San Diego Airport Authority
Qualifying Measured Rainfall	in	7.13	7.13	7.13	7.13	7.13	7.13	7.13	7.13	7.13	7.13
Wet Season Flow Volume	cf	224,392,938	190,153,348	11,483,159	4,970,328	18,121,645	17,065,938	27,756,405	560,379,037	19,519,689	5,739,778
Indicator Bacteria											
Enterococcus	MPN/100mL	1.58E+17	1.47E+17	7.42E+15	3.19E+15	1.31E+16	1.29E+16	2.02E+16	4.96E+17	1.86E+16	3.29E+15
Fecal Coliform	MPN/100mL	1.50E+17	1.23E+17	7.18E+15	3.07E+15	1.20E+16	1.29E+16	2.23E+16	2.83E+17	2.50E+16	4.47E+15
Total Coliform	MPN/100mL	8.94E+17	6.80E+17	4.24E+16	1.89E+16	7.18E+16	7.63E+16	1.32E+17	1.31E+18	1.37E+17	2.75E+16
Total Metals											
Cadmium	lb	4.12E+00	3.75E+00	2.13E-01	8.46E-02	3.15E-01	3.21E-01	5.64E-01	1.05E+01	6.17E-01	2.14E-01
Copper	lb	4.24E+02	3.65E+02	2.46E+01	9.46E+00	3.06E+01	3.05E+01	5.55E+01	1.02E+03	4.93E+01	1.50E+01
Iron[1]	lb	2.56E+04	9.78E+03	1.12E+03	5.18E+02	1.49E+03	1.92E+03	2.48E+03	1.38E+04	1.42E+03	6.84E+02
Lead	lb	1.02E+02	8.71E+01	5.49E+00	2.22E+00	8.18E+00	8.18E+00	1.35E+01	2.40E+02	1.25E+01	3.17E+00
Manganese	lb	1.28E+03	1.06E+03	6.95E+01	2.88E+01	1.09E+02	1.06E+02	1.64E+02	2.94E+03	1.31E+02	3.40E+01
Mercury[2]	lb	3.43E+01	NS	NS	NS	2.30E+00	3.01E+00	4.00E+00	2.50E-01	2.23E+00	1.52E+00
Selenium[3]	lb	6.87E-01	4.39E+00	NS	NS	3.16E-01	1.11E-01	3.76E-01	1.34E+01	1.33E-01	NS
Zinc	lb	1.94E+03	1.47E+03	1.09E+02	4.39E+01	1.35E+02	1.42E+02	2.76E+02	2.71E+03	2.64E+02	8.57E+01
Dissolved Metals											
Cadmium	lb	1.19E+00	9.17E-01	6.74E-02	2.71E-02	8.13E-02	8.35E-02	1.68E-01	1.51E+00	1.68E-01	9.38E-02
Copper	lb	2.17E+02	1.60E+02	1.33E+01	5.25E+00	1.59E+01	1.57E+01	2.86E+01	2.89E+02	2.16E+01	9.15E+00
Iron[1]	lb	1.13E+03	3.38E+02	5.88E+01	2.46E+01	6.13E+01	8.00E+01	1.22E+02	2.35E+02	6.54E+01	3.39E+01
Lead	lb	8.81E+00	6.23E+00	5.49E-01	2.18E-01	6.53E-01	6.52E-01	1.18E+00	1.04E+01	8.51E-01	2.65E-01
Manganese	lb	4.51E+02	3.16E+02	2.86E+01	1.13E+01	3.46E+01	3.38E+01	5.86E+01	5.49E+02	3.72E+01	1.13E+01
Mercury[2]	lb	3.74E+01	NS	NS	NS	2.27E+00	2.98E+00	4.54E+00	2.10E-01	2.30E+00	1.45E+00
Selenium[3]	lb	6.43E-01	3.82E+00	NS	NS	2.72E-01	8.83E-02	3.17E-01	7.92E+00	8.81E-02	NS
Zinc	lb	1.09E+03	8.03E+02	6.33E+01	2.53E+01	7.17E+01	7.57E+01	1.56E+02	1.30E+03	1.46E+02	5.17E+01

Table 4-7 (continued)
2015–2016 San Diego Bay WMA Wet Season Flow Volume and Pollutant Loads

Analyte	Units	MS4-SDB-1	MS4-SDB-2	MS4-SDB-3	MS4-SDB-4	MS4-SDB-5	MS4-SDB-6	MS4-SDB-7	MS4-SDB-8	MS4-SDB-9	MS4-SDB-10
		City of San Diego	City of Chula Vista	City of Coronado	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	County of San Diego	Port of San Diego	San Diego Airport Authority
Nutrients											
Ammonia	lb	5.96E+03	4.88E+03	3.16E+02	1.31E+02	4.92E+02	4.92E+02	7.99E+02	1.24E+04	6.88E+02	1.04E+02
Nitrate as N	lb	1.78E+04	2.53E+04	1.12E+03	2.98E+02	1.15E+03	1.12E+03	2.08E+03	1.15E+05	3.01E+03	3.45E+02
Nitrite as N	lb	1.77E+03	2.64E+03	1.08E+02	2.63E+01	9.86E+01	1.03E+02	2.21E+02	1.16E+04	3.86E+02	9.00E+01
TKN	lb	3.19E+04	2.78E+04	1.69E+03	6.94E+02	2.63E+03	2.57E+03	4.12E+03	8.06E+04	3.50E+03	7.42E+02
Total Nitrogen	lb	5.48E+04	6.52E+04	3.22E+03	1.03E+03	3.96E+03	3.88E+03	6.67E+03	2.63E+05	7.94E+03	1.15E+03
Total Phosphorus as P	lb	6.23E+03	5.78E+03	3.79E+02	1.38E+02	4.77E+02	4.61E+02	7.75E+02	1.79E+04	6.59E+02	1.51E+02
PAHs[2,4]											
Acenaphthene	lb	0	NS	NS	NS	0	0	0	0	0	0
Acenaphthylene	lb	0	NS	NS	NS	0	0	0	0	0	0
Anthracene	lb	0	NS	NS	NS	0	0	0	0	0	0
benz(a)anthracene	lb	0	NS	NS	NS	0	0	0	0	0	0
Benzo(a)pyrene	lb	0	NS	NS	NS	0	0	0	0	0	0
Benzo(b)fluoranthene	lb	1.55E-02	NS	NS	NS	1.15E-03	1.36E-03	1.37E-03	1.53E-05	2.81E-04	6.90E-05
Benzo(g,h,i)perylene	lb	0	NS	NS	NS	0	0	0	0	0	0
Benzo(k)fluoranthene	lb	0	NS	NS	NS	0	0	0	0	0	0
Chrysene	lb	0	NS	NS	NS	0	0	0	0	0	0
dibenz(a,h)anthracene	lb	0	NS	NS	NS	0	0	0	0	0	0
Fluoranthene	lb	3.13E-02	NS	NS	NS	1.17E-04	1.73E-03	1.06E-02	1.13E-06	2.24E-02	2.53E-02
Fluorene	lb	1.66E-02	NS	NS	NS	6.14E-05	9.18E-04	5.64E-03	5.67E-07	1.19E-02	1.34E-02
Naphthalene	lb	1.76E-01	NS	NS	NS	2.38E-03	1.01E-02	5.16E-02	2.94E-05	1.05E-01	1.18E-01
Phenanthrene	lb	8.92E-03	NS	NS	NS	3.34E-05	4.94E-04	3.03E-03	3.24E-07	6.39E-03	7.22E-03
Pyrene	lb	2.17E-02	NS	NS	NS	8.19E-05	1.20E-03	7.40E-03	8.11E-07	1.56E-02	1.76E-02
Total PAHs	lb	1.16E+00	NS	NS	NS	2.16E-02	6.81E-02	3.13E-01	2.72E-04	6.16E-01	6.91E-01
PCBs[2,4]											
PCB Araclor 1016	lb	0	NS	NS	NS	0	0	0	0	0	0
PCB Araclor 1221	lb	0	NS	NS	NS	0	0	0	0	0	0

Table 4-7 (continued)
2015–2016 San Diego Bay WMA Wet Season Flow Volume and Pollutant Loads

Analyte	Units	MS4-SDB-1	MS4-SDB-2	MS4-SDB-3	MS4-SDB-4	MS4-SDB-5	MS4-SDB-6	MS4-SDB-7	MS4-SDB-8	MS4-SDB-9	MS4-SDB-10
		City of San Diego	City of Chula Vista	City of Coronado	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	County of San Diego	Port of San Diego	San Diego Airport Authority
PCB Araclor 1232	lb	0	NS	NS	NS	0	0	0	0	0	0
PCB Araclor 1242	lb	0	NS	NS	NS	0	0	0	0	0	0
PCB Araclor 1248	lb	0	NS	NS	NS	0	0	0	0	0	0
PCB Araclor 1254	lb	0	NS	NS	NS	0	0	0	0	0	0
PCB Araclor 1260	lb	0	NS	NS	NS	0	0	0	0	0	0
Chlordane	lb	0	NS	NS	NS	0	0	0	0	0	0
ddt(o,p')	lb	0	NS	NS	NS	0	0	0	0	0	0
Diazinon	lb	0	NS	NS	NS	0	0	0	0	0	0
Endrin	lb	0	NS	NS	NS	0	0	0	0	0	0
indeno(1,2,3-c,d)pyrene	lb	0	NS	NS	NS	0	0	0	0	0	0
Solid Parameters											
TDS	lb	28,871,477	37,977,693	1,900,624	540,256	2,211,822	2,102,548	3,268,931	169,595,159	3,903,355	225,704

Notes:
cf = cubic feet; in = inches; lb = pounds; MPN = most probable number; mL = milliliter; ND = not detected; NS = not sampled; PAH = polycyclic aromatic hydrocarbon; PCB = polychlorinated biphenyl; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen;

1. Load values modeled based on the jurisdictional land area within Pueblo and Otay subwatersheds only.
2. Load values modeled based on the jurisdictional land area within Pueblo subwatershed only.
3. Load values modeled based on the jurisdictional land area within Sweetwater subwatershed only.
4. No PCBs or PAHs were detected during the 2015–2016 monitoring year. Load values based on an average event mean concentration (EMC) from all years of monitoring.

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4.4.4 Land Use Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[d])

For each RP within the San Diego Bay WMA, the percent contributions of storm water and pollutant loads discharged from each land use type, within each HSA containing at least one major MS4 outfall, were calculated. As in the jurisdictional load calculations described in Section 4.4.3, the Bonita ALERT station was used to calculate the qualifying measured rainfall for the WMA. The percentages of wet season storm water volume discharged from each HSA with a major outfall in the San Diego Bay WMA are presented by RP jurisdiction in Tables 4-8 through 4-17. The percentages of the wet season storm water volume and pollutant loads discharged from each land use type within each HSA with a major outfall in the San Diego Bay WMA, by RP, are presented in Attachment G.4.

Table 4-8
City of San Diego Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 908.10	20,345,206	9%
Jurisdictional HSA 908.22	115,071,820	51%
Jurisdictional HSA 908.31	7,311,727	3%
Jurisdictional HSA 908.32	11,073,759	5%
Jurisdictional HSA 909.12	13,964,136	6%
Jurisdictional HSA 910.20	60,877,018	14%
Jurisdictional HSAs with No Major Outfall[1]	25,749,272	11%
Jurisdictional WMA	224,392,938	100%

Notes:

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

1. The City of San Diego has jurisdictional land area within HSAs 908.21, 910.10, 910.31, and 910.32 but has no major MS4 outfalls within these HSAs.

Table 4-9
City of Chula Vista Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 909.11	36,539,738	19%
Jurisdictional HSA 909.12	52,495,887	28%
Jurisdictional HSA 910.20	92,844,497	49%
Jurisdictional HSA 910.32	5,708,147	3%
Jurisdictional HSAs with No Major Outfall[1]	2,565,078	1%
Jurisdictional WMA	190,153,348	100%

Notes:
% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area
1. The City of Chula Vista has jurisdictional land area within HSA 910.31 but has no major MS4 outfalls within these HSAs.

Table 4-10
City of Coronado Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 910.10	11,141,398	97%
Jurisdictional HSAs with No Major Outfall[1]	341,761	3%
Jurisdictional WMA	11,483,159	100%

Notes:
% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area
1. The City of Coronado has jurisdictional land area within HSA 910.20 but has no major MS4 outfalls within the HSA.

Table 4-11
City of Imperial Beach Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 910.20	3,827,525	77%
Jurisdictional HSAs with No Major Outfall[1]	1,142,803	23%
Jurisdictional WMA	4,970,328	100%

Notes:
% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area
1. The City of Imperial Beach has jurisdictional land area within HSA 910.20 but has no major MS4 outfalls within this HSA.

Table 4-12
City of La Mesa Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 908.22	12,054,775	67%
Jurisdictional HSAs with No Major Outfall[1]	6,066,870	33%
Jurisdictional WMA	18,121,645	100%

Notes:
% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area
1. The City of La Mesa has jurisdictional land area within HSA 909.12 but has no major MS4 outfalls within this HSA.

Table 4-13
City of Lemon Grove Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 908.22	14,981,145	88%
Jurisdictional HSAs with No Major Outfall[1]	2,084,793	12%
Jurisdictional WMA	17,065,938	100%

Notes:
% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area
1. The City of Lemon Grove has jurisdictional land area within HSA 909.12 but has no major MS4 outfalls within this HSA.

Table 4-14
City of National City Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 908.31	3,863,732	14%
Jurisdictional HSA 908.32	16,485,158	59%
Jurisdictional HSA 909.12	7,407,489	27%
Jurisdictional HSAs with No Major Outfall	NA	0%
Jurisdictional WMA	27,756,405	100%

Notes:
% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

Table 4-15
County of San Diego Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 909.12	67,294,441	12%
Jurisdictional HSA 909.21	148,981,047	27%
Jurisdictional HSA 909.22	9,415,100	2%
Jurisdictional HSA 909.24	6,184,254	1%
Jurisdictional HSA 909.34	27,806,233	5%
Jurisdictional HSAs with No Major Outfall[1]	300,697,961	54%
Jurisdictional WMA	560,379,037	100%

Notes:

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

1. The County of San Diego has jurisdictional land area within HSAs 908.22, 909.23, 909.25, 909.26, 909.31, 909.32, 909.33, 909.35, 910.20, 910.31, 910.32, 910.33, 910.34, 910.35, 910.36, and 910.37, but has no major MS4 outfalls within these HSAs.

Table 4-16
Port of San Diego Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 908.10	1,000,851	5%
Jurisdictional HSA 908.21	3,623,919	19%
Jurisdictional HSA 908.22	2,157,189	11%
Jurisdictional HSA 908.32	2,665,841	14%
Jurisdictional HSA 909.11	924,711	5%
Jurisdictional HSA 909.12	1,263,224	6%
Jurisdictional HSA 910.10	1,936,586	10%
Jurisdictional HSAs with No Major Outfall	5,947,369[1]	30%
Jurisdictional WMA	19,519,689	100%

Notes:

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

1. The Port of San Diego has jurisdictional land area within HSAs 910.20 and 912.00, but has no major MS4 outfalls within these HSAs.

Table 4-17
San Diego Airport Authority Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 908.21	5,739,778	100%
Jurisdictional HSAs with No Major Outfall	NA	0%
Jurisdictional WMA	5,739,778	100%

Notes:
% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

4.5 Evaluation of Monitoring Locations

Provision D.4.b.(2)(b)(ii) of the Municipal Permit allows the RPs to modify the wet weather MS4 outfall discharge monitoring locations and frequencies to better identify pollutants in storm water discharges from the MS4s in the WMA.

An analysis of wet weather MS4 outfall monitoring locations was performed in the 2014–2015 Transitional Monitoring and Assessment Report for the San Diego Bay WMA (TMAR) (San Diego County Municipal Copermittees, 2016). The purpose of the recommendations was to improve the effectiveness of MS4 monitoring in meeting the intended Municipal Permit goal (namely to accurately quantify the storm water volume and loads from the various land uses in the WMA). A comparison of the WMA land use with the monitored outfall drainage area land uses was made as part of the evaluation of monitoring locations in the TMAR. The results of this comparison are provided in Table 4-18.

Table 4-18
Land Use Comparison, WMA and Monitored Drainage Areas

Land Use	WMA Area (acres)[1]	WMA Area (%)[1]	Outfalls Area (acres)	Outfalls Area (%)	Percent Difference
Agricultural (Combined)	4,881	3.4%	2	0.3%	-3.1%
Commercial	3,025	2.1%	96	16.3%	14.2%
Educational	1,463	1.0%	9	1.5%	0.5%
Industrial	6,110	4.3%	13	2.2%	-2.1%
Mixed Use	4	0%	0	0%	0%
Open Space (Combined)	79,423	55.7%	71	12.0%	-43.7%
Residential: Multi-Family	1,861	1.3%	58	9.8%	8.5%
Residential: Rural	3,003	2.1%	27	4.6%	2.5%
Residential: Single-Family	12,222	8.6%	211	35.9%	27.3%
Transportation	6,032	4.2%	63	10.7%	6.5%
Total	118,024	–	550	–	–

Notes:
% = percent; WMA = Watershed Management Area
1. Acreage excludes state, federal, and tribal lands

The following conclusions can be drawn from the comparison:

- Overall, the wet weather MS4 outfall monitoring locations are representative of land uses in the WMA.
- Agricultural, industrial, and open space land uses are under-represented in the monitored outfall drainage areas; however, because the intention of monitoring is to characterize drainage from the MS4 (i.e., developed land uses). Drainages from both of these land uses may not be controllable by the RPs. Industrial drainage areas may be recommended for future monitoring.
- Single-family residential and commercial land uses are well represented in the monitored outfall drainage areas.

- It may be beneficial for the MS4 outfall assessments to target outfalls with a single primary land use. However, the nature of storm drain network service areas, particularly in suburban areas, may not facilitate targeting outfalls that represent only one land use.

The evaluation of monitoring frequency includes a comparison of monitored event rainfall conditions with annual rainfall conditions. During the 2015–2016 wet season (October 2015 through April 2016), rainfall totals at ALERT station gauges within the San Diego Bay WMA ranged from 7.99 inches at the Point Loma rain gauge to 24.74 inches at the Descanso CRS rain gauge. All ALERT station rain gauges within the WMA registered more rainfall during the wet season than the official National Weather Service (NWS) rain gauge at San Diego International Airport–Lindbergh Field (7.42 inches). The storms that occurred generally had totals of less than 1 inch of rainfall, although one very large storm, beginning January 4, 2016, produced more than 2 inches of rainfall throughout the WMA. The average wet season storm event rainfall total at the Bonita ALERT station is 0.55 inch. The rainfall totals for all outfall monitoring events were less than this average, although the monitoring events at outfalls MS4-SDB-8 and MS4-SDB-9 on January 31, 2016, approached the average with a rainfall total of 0.52 inch.

It was recommended in the TMAR to target additional monitoring events during average (greater than 0.5 inch) and large (greater than 1 inch) storms. The 2015–2016 sampling targeted two smaller (less than 0.5 inch) and one average storm. It is recommended to continue targeting storm events of various sizes during future wet seasons, to capture a range of data for Runoff “C” calculations, and particularly focus on capturing large rain events.

4.6 Storm Water Action Level Comparisons

The data collected as part of the wet weather MS4 outfall discharge monitoring were compared with the SALs and Highest Priority Condition WQBELs per Municipal Permit Provision D.4.b.(2)(c)(ii). Tables 4-19 and 4-20 summarize SAL and WQBEL exceedances, respectively. Details of these comparisons are shown in Tables 4-21 and Table 4-22, respectively. Three storm water action limit exceedances were recorded for all wet weather MS4 outfall discharge monitoring locations within the San Diego Bay WMA.

Table 4-19
Exceedances of SALs in the 2015–2016 Monitoring Year

Jurisdiction	Monitoring Location	Analyte Exceeding SAL
National City	SDB-7	Turbidity
Port of San Diego	SDB-9	Total Copper
San Diego Airport Authority	SDB-10	Nitrate + Nitrite

At SDB-7 in National City's jurisdiction, the concentration of turbidity exceeded the SALs. At SDB-9 in the Port of San Diego's jurisdiction, concentrations of total copper exceeded the SALs. At SDB-10 in the San Diego Airport Authority's jurisdiction, Nitrate + Nitrite as N concentrations exceeded the SALs. The aforementioned RPs began implementing their WQIP strategies that have primary and secondary pollutant reduction benefits during the 2015–2016 monitoring year. Implementation of the strategies without modification may potentially lead to pollutant reduction benefits related to respective pollutant conditions.

Table 4-20
Exceedances of Bacteria WQBELs in the Chollas Creek Drainage Area in the 2015–2016 Monitoring Year

Jurisdiction	Monitoring Location	Analyte Exceeding SAL
City of La Mesa	SDB-5	*Enterococcus*
City of Lemon Grove	SDB-6	*Enterococcus*; Total Coliforms; Fecal Coliforms

Four Bacteria TMDL WQBEL exceedances were recorded for the wet weather MS4 outfall discharge monitoring locations within the Chollas Creek drainage area in the San Diego Bay WMA. At SDB-5, the concentration of *Enterococcus* exceeded the WQBEL. At SDB-6, the concentrations of *Enterococcus*, total coliforms, and fecal coliforms exceeded the WQBELs. The aforementioned RPs began implementing their WQIP strategies that have primary and secondary pollutant reduction benefits for bacteria during the 2015–2016 monitoring year. RPs plan to continue implementing strategies without modification to realize the rewards of these pollutant reduction benefits and will work toward meeting the goals related to the Highest Priority Condition.

Table 4-21
MS4 Outfall Storm Water Action Level Comparison

Analyte	SAL	Monitoring Location									
		MS4-SDB-1	MS4-SDB-2	MS4-SDB-3	MS4-SDB-4	MS4-SDB-5	MS4-SDB-6	MS4-SDB-7	MS4-SDB-8	MS4-SDB-9	MS4-SDB-10
		City of San Diego	City of Chula Vista	City of Coronado	City of Imperial Beach	City of La Mesa	City of Lemon Grove	City of National City	County of San Diego	Port of San Diego	San Diego Airport Authority
Turbidity	126 NTU	17.4	2.7	4.4	22.2	32.3	39.2	197	10.8	42.3	10.5
Total Cadmium	3 µg/L	<0.1	<0.1	<0.1	0.2	<0.1	0.6	1.1	<0.1	0.2	1.1
Total Copper	127 µg/L	22	5.1	43	36	33	18	29	16	190	51
Total Lead	250 µg/L	1.7	0.8	0.3	8.9	5.4	10	12	2	4	1.1
Total Zinc	976 µg/L	110	15	78	200	130	120	97	40	160	80
Nitrate + Nitrite as N	2.6 mg/L	0.38	0.49	1.37	0.87	1.03	0.88	1.03	0.56	0.35	3.14
Total Phosphorous	1.46 mg/L	0.49	0.2	0.32	0.41	0.32	0.23	0.57	0.25	0.19	0.49

Notes:
Bold = exceedance of SAL
µg/L = micrograms per liter; J = estimate; mg/L = milligrams per liter; ND = not detected; NTU = nephelometric turbidity unit

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Table 4-22
Chollas Creek Drainage Area MS4 Outfall Water Quality-Based Effluent Limits Comparison

Analyte	WQBEL	Monitoring Location	
		MS4-SDB-5	MS4-SDB-6
		City of La Mesa	City of Lemon Grove
Enterococcus	61 (104[1]) MPN/100mL	>2,419.6	>2,419.6
Total Coliforms	10,000 MPN/100mL	2,400	24,000
Fecal Coliforms	400 MPN/100mL	220	9,000

Notes

> = greater than; MPN/100mL = most probable number per 100 milliliters

Bold = exceedance of WQBEL

1. A single sample maximum of 104 MPN/100mL may be applied as a receiving water limitation for creeks designated as "moderately or lightly used" or less frequent usage in the Basin Plan.

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5 Physical Aesthetics Focused Priority Condition Monitoring

The RPs initiated data collection for the Physical Aesthetics Focused Priority Condition in November 2015 following completion of the final WQIP. The Physical Aesthetics monitoring program was implemented in Sweetwater and Otay HU to assess trash conditions, as detailed in Appendix K of the San Diego Bay WMA WQIP. Physical aesthetics monitoring was a collaborative effort by the Port of San Diego, City of Chula Vista, and City of Imperial Beach. To conduct the monitoring for the 2015–2016 season, the RPs collaborated on development of a field monitoring sheet, a calibration training, and coordination of field monitoring efforts by each jurisdiction.

5.1 Monitoring and Methods for Physical Aesthetics

The physical aesthetic monitoring program consists of two main components: dry weather MS4 outfall monitoring and paired MS4 outfall and receiving water monitoring. The monitoring locations for both the MS4 outfall and paired MS4 outfall and receiving water monitoring are presented in Figure 5-1. MS4 inspections and predetermined transect lines will also be inspected for trash to characterize the habitat conditions and determine the impact of trash on the MS4.

The RPs continued to conduct dry weather MS4 outfall monitoring under their JRMP programs per the requirements of Provision D.2 of the Municipal Permit. The dry weather MS4 outfall monitoring program includes an assessment of trash at MS4 outfalls during dry weather conditions. Locations are classified as one of five categories, as shown in Table 5-1, based on the amount of trash visually observed at the site. An “optimal” rating indicates that the site has little to no trash. Using this process, the RPs assessed MS4 outfalls within the Focused Priority Condition area to identify the percentage of MS4 outfalls that receive optimal trash assessment scores during each assessment period. Using historical trash assessment data as a baseline, the RPs’ goal is to incrementally increase the percentage of sites consistently meeting the criteria for optimal conditions.

Table 5-1
Scoring System for Trash Assessments during Site Visits

Rating	Description of Rating
Optimal	On first glance, no trash visible. Little or no trash (<10 pieces) evident when evaluated area is closely examined for litter and debris.
Suboptimal	On first glance, little or no trash visible. After close inspection small levels of trash (~10–50 pieces) evident in evaluated area.
Marginal	Trash is evident in low to medium levels (~51–100 pieces) on first glance. Evaluated area contains litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, or clothing present.
Submarginal	Trash distracts the eye on first glance. Evaluated area contains substantial levels of litter and debris (>100–400). Evidence of site being used frequently by people: many cans, bottles, food wrappers, blankets, or clothing present.
Poor	Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping. Evaluated area contains substantial levels of litter and debris (>400 pieces).

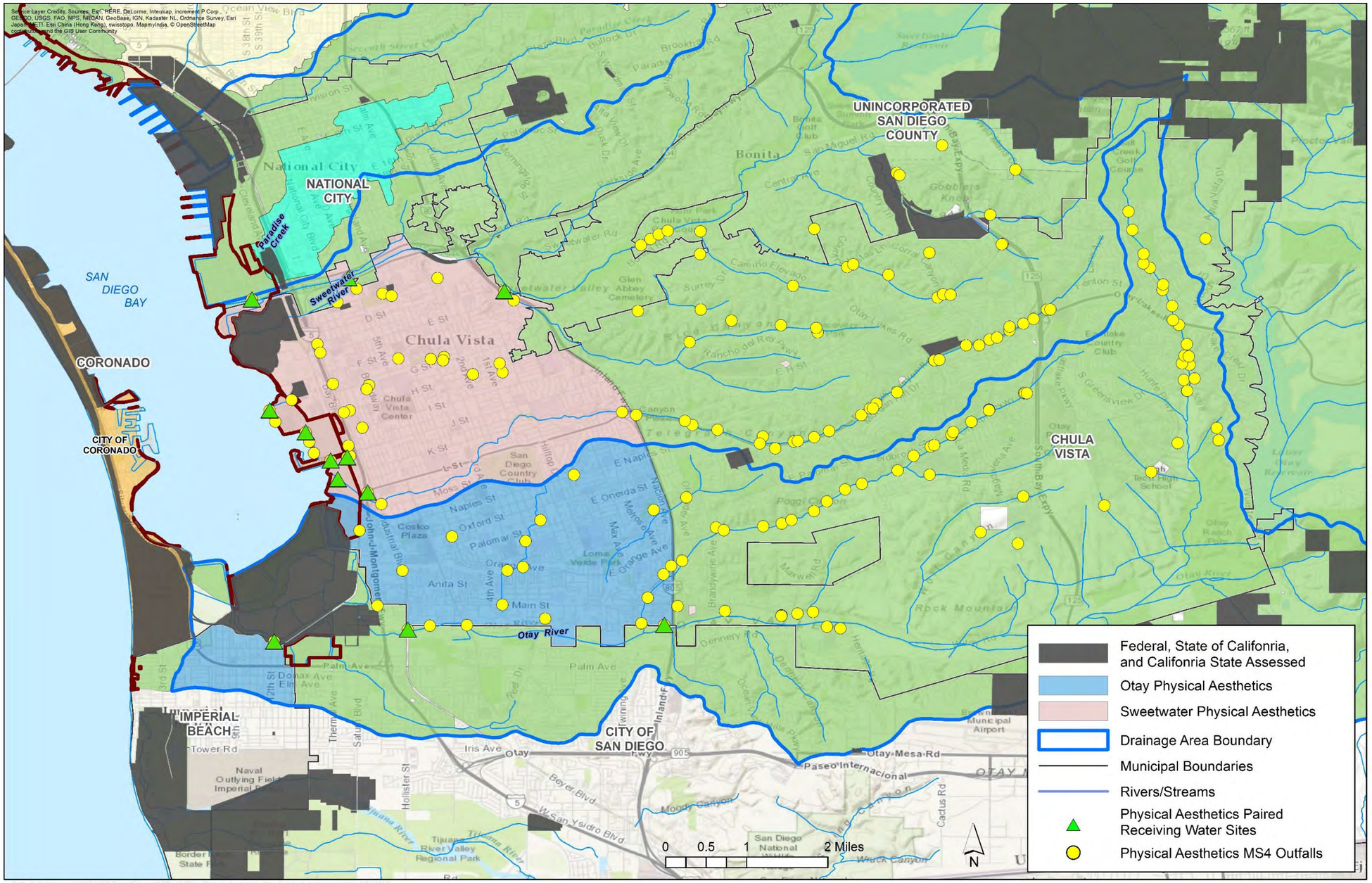

Figure 5-1
Physical Aesthetics Dry Weather MS4 Outfall and Paired Receiving Water Monitoring Locations

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In FY 2016, the RPs also began a paired monitoring approach at 12 MS4 outfalls. The RPs selected nine sites in the Sweetwater HU and three sites in the Otay HU to assess trash in the receiving water adjacent to the major MS4 outfall. Paired monitoring was conducted during two dry weather events (one dry season [May to September] and one wet season [October to April]) and one wet weather event (event within three days following a storm event with at least 0.2 inch of precipitation) annually. To avoid duplicating the efforts of the dry weather MS4 outfall monitoring program, the RPs conducted the paired dry weather events with outfall monitoring. The RPs coordinated and conducted paired monitoring events as feasible.

Trash assessments are conducted visually using standardized field sheets. The Trash Assessment Form (Attachment H) was designed by the RPs to provide an extensive description of the trash conditions for both dry and wet events for the paired monitoring efforts. A calibration field training session was conducted by the participating RPs on November 12, 2015, to standardize the monitoring and observational procedures completed by each RP for all events.

During site visits, teams used the field form to describe the site characteristics, including primary and secondary land use, public transportation nearby, or the presence of homeless encampments. Descriptions and types of receiving water were also noted on the field forms. If trash was present, field teams were to extensively describe the amount and extent of trash.

Trash type was labeled under 14 different categories, ranging from automotive to fabric/clothing to yard waste. The types of trash present in the evaluated area were to be ranked by volume 1 through 14 (1 is most prevalent – 14 is least prevalent). The route and the source by which the trash got to the site was to be recorded, if known.

5.2 Results of the Physical Aesthetics Monitoring

The RPs completed 86 dry weather visits to 64 MS4 outfall locations during the 2015–2016 monitoring year. Table 5-2 outlines the number of outfalls in each jurisdiction with the Physical Aesthetics Focused Priority Condition area and the number of times the outfall was monitored during dry weather.

Table 5-2
Number of Outfall Locations and Visits in Physical Aesthetics Site Visits

Jurisdiction	Number of Outfalls	Total Number of Outfall Visits
Chula Vista	55	68
Imperial Beach	1	2
Port of San Diego	8	16
Total	64	86

Table 5-3 provides the percentages of each rating for the 86 visits to major outfalls. The complete list of site visits and monitoring results, including trash types, potential trash sources, and routes, is provided in Attachment F.2.

Table 5-3
Percentage of Trash Ratings Observed During Physical Aesthetics Site Visits

Trash Rating[1]	Number of Major MS4 Outfall Visits	Percentage of Outfall Visits
None (0 pieces)	32	37%
Optimal (<10 pieces)	31	36%
Suboptimal (10-50 pieces)	13	15%
Marginal (51-100 pieces)	7	8%
Submarginal (>100 pieces)	3	3%
Poor (>400 pieces)	0	0%
Total	86	100%

Notes:
1. 76% of 58 outfall visits in 909.1 had optimal or better trash ratings; 68% of 28 outfall visits in 910.2 had optimal trash ratings or better. Trash ratings in both HAs were above the baseline of 60%.

More than 73% of the 86 visits of major MS4 outfall locations had “optimal” levels or no trash, defined as less than 10 pieces of trash per the monitoring methodology. Paired monitoring, initiated in FY 2016, noted that the most common trash type found at the MS4 sites was categorized as general packaging or plastic bags, with potential source identifications (IDs) noted as littering or household waste. As stated in the WQIP, trash will be evaluated for each assessment term in FY 2016 and FY 2017 for comparison with the interim FY 2018 goal.

At the receiving water sites, the most prevalent trash was categorized as general packaging with source IDs as transient, household waste, dumping, or littering. Although the RPs are monitoring the receiving water, other non-MS4 sources could contribute to trash in the receiving water. RPs are monitoring the receiving water to potentially demonstrate performance as it relates to strategies to address MS4 discharges. This information will not be used to assess progress towards meeting the focused priority goals.

6 Swimmable Waters Focused Priority Condition Monitoring

The RPs initiated data collection for the Swimmable Waters Focused Priority Condition in November 2015 following completion and submittal to the Regional Board of the final WQIP. The Swimmable Waters monitoring program was implemented in Coronado HA, as detailed in Appendix K of the San Diego Bay WMA WQIP. Data collection for bacterial indicators has proceeded as planned and includes year-round (wet and dry weather) sampling to augment existing data sets, such as the dry weather data collected by the County of San Diego Department of Environmental Health (DEH) for the California Assembly Bill 411 (AB 411) program. The data collected during this reporting period, when combined with data planned for FY 2017, will allow the RPs to begin assessing water quality and progress toward meeting the Swimmable Waters goals.

The monitoring data collected will be evaluated in support of any future BMP decisions and assess effectiveness, should they be necessary, to meet the interim and final goals.

6.1 Monitoring and Methods for Swimmable Waters

Table 6-1 presents the RPs' monitoring approach, frequency, and timing of Swimmable Waters receiving water monitoring for the Coronado HA of the San Diego Bay WMA.

Table 6-1
Swimmable Waters Monitoring Summary

Type	Receiving Water Wet Weather Monitoring	Receiving Water Dry Season, Dry Weather Monitoring	Receiving Water Wet weather season, Dry Weather Monitoring	MS4 Monitoring
Monitoring Approach	Monitor at Tidelands Park and North Beach sites	• Tidelands Park[1]: Current San Diego County Department of Environmental Health (DEH) sites. (No additional monitoring to be done by RPs at these sites during this period) • North Beach: Past DEH site and City of Coronado's current transitional wet and dry monitoring location and dry weather MS4 major outfall monitoring location	• Build upon DEH's dry weather monitoring. Add monitoring during the wet weather season. • Monitoring at Tidelands Park and North Beach sites[2]	• Paired Sampling: Perform MS4 monitoring at all beach sites at same time as monitoring receiving water quality • Sample three wet weather events during wet season at Tidelands Park in conjunction with receiving water, if feasible
Frequency (Number of Monitoring Events)	Annually sample three wet weather events during wet season at Tidelands Park and North Beach sites	• Tidelands Park site: Weekly • North Beach: Past DEH site and City of Coronado's current transitional wet and dry monitoring location and dry weather MS4 major outfall monitoring location	• Monthly at Tidelands Park and North Beach sites[2] (November 1–March 31)	Inspect MS4 monthly, year round
Timing of Monitoring	Sample within 72 hours of a storm (consistent with Bacteria TMDL[3])	During dry weather season (April 1–October 31)	During dry periods, 72 hours or more after storm event	Take sample at MS4 if there is flow/discharge

[3]Regional Board. 2010. *Revised TMDL for Indicator Bacteria, Project I—Twenty Beaches and Creeks in the San Diego Region (including Tecolote Creek)*. Resolution No. R9-2010-0001. Approved February 10, 2010.

Table 6-1 (continued)
Swimmable Waters Monitoring Summary

Notes:

1. The Pacific shoreline of the Coronado HA 910.1 already has an established monitoring plan to assess the receiving water conditions through the South Bay Ocean Outfall Waste Discharge Requirements in Order R9-2014-0071 for the City of San Diego and Order R9-2014-0009 for the International Boundary and Water Commission. These permits establish a joint receiving water monitoring program for the South Bay Ocean Outfall and include weekly surf zone bacteria monitoring at 3 locations along the Coronado HA 910.1. These locations include S12 Carnation Ave (Camp Surf), S8 Silver Strand State Beach, and S9 Avenida del Sol (Hotel del Coronado). In addition, the County of San Diego Department of Environmental Health performs AB411 beach water quality monitoring throughout the year for public health along the Pacific shoreline of the Coronado HA 910.1. The existing beach water quality monitoring is sufficient to assess swimmable waters along the Pacific shoreline of the Coronado HA 910.1 and the San Diego Bay WMA Copermittees are to utilize these data for the Water Quality Improvement Plan Monitoring and Assessment Annual Report.
2. South Bay Ocean Outfall Sites: Weekly surf zone bacteria monitoring at three locations along the Coronado HSA 910.1. These locations include S12 Carnation Ave (Camp Surf), S8 Silver Strand State Beach, and S9 Avenida del Sol (Hotel del Coronado).

Site visits were conducted at the MS4 outfalls selected for Swimmable Water listed in Table 6-2 in FY 2016.

Table 6-2
Sampling Locations for Swimmable Waters (November 2015–September 2016)

Site ID	Type	Location	Jurisdiction	Latitude	Longitude
EH-070[1]	RW	Tidelands Park	Port	32.689930	-117.164190
1203.1	MS4	Tidelands Park	Port	32.690395	-117.164465
1206.1	MS4	Tidelands Park	Port	32.690791	-117.164465
1219.1	MS4	Tidelands Park	Port	32.691713	-117.164085
EH-060[2]	RW/MS4	North Beach	Coronado	32.686650	-117.19340

Notes:

RW = receiving water; MS4 = MS4 Outfall

1. Receiving water monitoring station sampled by the San Diego County DEH for the AB 411 program.
2. Site was historically sampled by the DEH.

http://www.waterboards.ca.gov/sandiego/water_issues/programs/ tmdls/docs/bacteria/updates_022410/2010-0210_BactiI_Resolution&BPA_FINAL.pdf.

6.2 Swimmable Waters Monitoring Overview

The RPs evaluated sampling conditions for the receiving water and/or MS4 outfalls. Each location was visited on 14 occasions from November 2015 through September 2016, as noted in Tables 6-3 and 6-4. The RPs initiated wet weather sampling at two beach locations (EH-070 and EH-060) in the Coronado HA in FY 2016 and three storm events were sampled at each of the two locations. The storms events occurred on November 4, 2015, November 9, 2015[4], January 5, 2016, and March 8, 2016. The complete set of monitoring data collected during this reporting year is presented in Attachment F.2.

At North Beach in Coronado, site visits were conducted to inspect the MS4 outfall and evaluate conditions for sampling on 14 occasions from November 2015 through September 2016. As summarized in Table 6-3, the site visits by the City of Coronado resulted in the following number of samples during the reporting period.

Table 6-3
Summary of City of Coronado Sampling at North Beach
(November 2015 – September 2016)

Type	Number of Site Visits	Receiving Water (Ocean) Samples	MS4 Outfall[1] Samples	Total Samples
Wet Season/Wet Weather	3	3	3	6
Wet Season /Dry Weather	5	5	2	7
Dry Season /Dry Weather	6	6	1	7
Dry Season /Wet Weather	0	0	0	0
Total	14	14	6	20

Notes:
MS4 = municipal separate storm sewer system
1. Per established procedures, outfall is sampled when flowing or ponded water is present.

At Tidelands Park, site visits were also conducted to inspect the MS4 outfall and evaluate conditions for sampling on 14 occasions from November 2015 through September 2016. The number of site visits and sampling events by the Port of San Diego during the reporting period are summarized in Table 6-4.

[4] The first storm event sampling took place by the Port on Nov. 4, 2015 and by the City of Coronado on Nov. 9, 2015.

Table 6-4
Summary of Port of San Diego Sampling at Tidelands Park
(November 2015 – September 2016)

Type	Number of Site Visits	Receiving Water Samples[1]	MS4 Outfall Samples[2]	Total Samples
Wet Season /Wet Weather[3]	3	3	6	9
Wet Season /Dry Weather	5	5	0	5
Dry Season /Dry Weather[1]	6	27	1	28
Dry Season /Wet Weather	0	0	0	0
Total	14	35	7	42

Notes:
MS4 = municipal separate storm sewer system
1. Receiving water monitoring: 26 dry season, dry weather samples were collected by San Diego County Department of Environmental Health (DEH) for the AB 411 program. The Port of San Diego visited the site six times during dry season, dry weather conditions and collected one receiving water sample during one visit.
2. Per established procedures, the outfall is sampled when flowing or ponded water is present. Three outfalls are monitored at Tidelands Park.
3. Samples were collected at all three outfalls on two of the wet weather monitoring events.

6.3 Receiving Water Monitoring and Historical Data Review

Receiving water monitoring related to the Swimmable Waters Focused Priority Condition includes bacterial indicators at two sites, one on the Pacific Ocean at North Beach in the City of Coronado and one on San Diego Bay at Tidelands Park managed by the Port of San Diego. Receiving water monitoring for wet season was initiated at both locations in November 2015. Both dry and wet weather monitoring are slated to continue in the coming reporting year.

A total of 35 receiving water samples were collected during dry and wet seasons at Tidelands Park. Of the 35 receiving water samples collected at Tidelands Park, five samples exceeded Water Quality Objective (WQO) for *Enterococcus*. Of the five (5) ocean samples above the WQO, four (4) were collected during dry weather/dry season conditions and one (1) was collected during a wet season/wet weather event (on November 4, 2015). The number of dry weather receiving water samples exceeding the single sample WQO was below the allowable number of exceedances for 303(d) de-listing consideration based on sample size. For a sample size of 32, the allowable exceedance is five. Four (4), or 12.5%, of the 32 dry weather samples at Tidelands Park beach exceeded *Enterococcus* WQO. For the wet season/wet weather single sample monitoring, *Enterococcus* exceeded WQO during one of the three rain events.

Receiving water monitoring at North Beach was initiated in FY 2016 and is being conducted year-round. For North Beach, there are limited receiving waters (beach/ocean) monitoring data points for the site in the previous few years, because the site is no longer monitored by the County of San Diego DEH under the AB 411 program.

Of the 14 receiving water sampling events in the North Beach Pacific Ocean surf, ten (10) ocean samples were below the *Enterococcus* single sample WQO of 104 MPN/100ml. Of the four (4) ocean samples above the WQO, three (3) were collected during the wet weather period (November 1 through March 31) and one (1) was collected during the dry weather period. Of the four (4) *Enterococcus* samples above the WQO, only one (1) sample was collected during a rain event that included discharge from the MS4 paired with an MS4 outfall sample. The remaining three (3) *Enterococcus* results above the WQO do not appear to be correlated to MS4 outfall discharges.

The wet weather receiving water monitoring data set is limited at both locations because this was the first year in which the monitoring was conducted. As planned, receiving water samples will continue to be collected during dry and wet weather over the next two years so that the RPs can obtain a more robust dataset to adequately assess the interim 2018 goals at Tidelands Park and North Beach.

A delisting feasibility study for Tidelands Park in Coronado (PO-40 optional, COR-39.2) was completed in FY 2016. The study assessed available historical DEH AB 411 monitoring data to determine the number of exceedances of *Enterococcus* WQOs (104 most probable number per 100 milliliters [MPN/100mL]) that have occurred at the receiving water site EH-070 (Tidelands Park) since 1999. Limited receiving waters (beach/ocean) monitoring data are available for the North Beach site, because the site is not currently monitored by the County of San Diego DEH under the AB 411 program.

The purpose of the study was to identify whether the results warrant consideration of removal of the water body from the 303(d) List. Based on the cumulative data from 1999–2014, the site was found to be below allowable exceedances for dry season/dry weather for single-sample, rolling 30-day geometric mean, and monthly geometric mean. These results indicate that the beach segment of Tidelands Park on the 303(d) List could potentially be eligible for delisting in dry weather for *Enterococcus* indicator bacteria. However, limited wet weather monitoring data existed prior to FY 2016. Because of this finding, the RPs will focus on collecting data to demonstrate the current dry weather exceedance rate can be sustained, and collecting additional data to evaluate the exceedance rate during wet weather.

Tidelands Park was given an A grade for the summer dry season, dry weather in the 2015–2016 Heal the Bay report, using data collected in 2014–2015. North Beach was not evaluated by Heal the Bay since no data was available during that time period. Additional data were collected at both sites starting in November 2015 and these data will help track progress toward the goals related to water quality and future report cards (i.e., Heal the Bay) assessments.

http://www.healthebay.org/sites/default/files/BRC_2016_final.pdf.

6.4 MS4 Monitoring

A Tidelands Park MS4 outfall sampling

MS4 outfall monitoring related to swimmable waters includes bacterial indicators at two locations, at North Beach (City of Coronado) and one at Tidelands Park (Port of San Diego). MS4 outfall monitoring is performed when flow or standing water is detected at the outfall. The MS4 monitoring related to the Focused Priority Monitoring was initiated in November 2015 and is slated to continue in the coming reporting year. Storm drain monitoring was performed at the three storm drains in the vicinity of Tidelands Park beach (Table 6-2) during dry weather to detect potential non-storm water discharges. Port of San Diego staff visited the MS4 outfalls at Tidelands Park six times during the dry season (once a month), but found discharge during only one site visit. Port of San Diego staff also visited the sites during wet season/dry weather five times, but no discharges were observed. However, samples were collected at all three outfalls on two of the wet weather monitoring events. The third wet season, wet weather event could not be sampled because of an insufficient amount of effluent.

At North Beach, storm drain monitoring was performed at one storm drain (Table 6-2) during dry weather to detect potential non-storm water discharges. City of Coronado staff visited the MS4 outfalls at North Beach six times during the dry season, but found discharge during only one site visit. The MS4 outfall had ponded water, possibly from storm surge or tidal influence, on two occasions during the five site visits during wet season, dry weather.

North Beach MS4 outfall sampling location

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7 Special Study and Additional Program Results and Assessments

Special studies for the San Diego Bay WMA have been selected to further investigate the Highest Priority Conditions and Focused Priority Conditions, including water quality monitoring specifically addressing bacteria and dissolved metals, riparian area habitat quality, and physical aesthetics due to trash. The special studies have been conducted or are on-going, and are summarized below. Studies included the San Diego Regional Streams and Beaches Studies, San Diego Bay Debris Special Study, Creek Refuse Assessment Program in the Pueblo HU, Chollas Jurisdictional Bounty Study for Metals and Bacteria, and the Riparian Area Selenium Study.

7.1 San Diego Regional Reference Streams and Beaches Studies

The San Diego Regional Reference Streams and Beach Studies (SCCWRP, 2015 and SCCWRP, 2016) sought to establish the bacterial concentrations from natural streams and beaches that are minimally disturbed by anthropogenic activities and therefore can be characterized as “reference” conditions. The study also collected nutrients, metals, and toxicity data as secondary constituents. The data generated by this study may be used by the Regional Board in the Bacteria TMDL Reopener to derive reasonable and accurate numeric targets for bacteria on the basis of a reference system approach.

7.1.1 San Diego Regional Reference Streams Study

The goal of the San Diego Regional Reference Stream Study was to characterize the natural background concentrations of bacteria, nutrients, heavy metals, and conventional constituents in undeveloped watershed catchments during wet and dry weather. The goal of this study was to categorize the exceedance frequencies of FIB WQOs by geomorphologic, hydrologic, biotic, and abiotic factors. This summary focuses on presenting the findings for FIB, specifically *Escherichia coli (E. coli)*, *Enterococcus*, and total and fecal coliforms (SCCWRP, 2015).

The study was conducted from January 2012 through May 2015 in San Diego, Orange, and Ventura Counties’ watersheds. Sites were selected to target minimally disturbed streams (reference conditions defined as greater than 93% undeveloped catchment areas with no wildfires in the last three years). Additionally, the sites chosen represented a mix of watershed size and geologic composition (such as sedimentary versus igneous/metamorphic geology). Analysis of human genetic markers was used to eliminate sites or samples with potential human fecal contamination and therefore not representative of reference conditions. Wet weather monitoring consisted of FIB pollutograph sampling during eight storm events at five sites, for a total of 118 samples. During weekly dry weather sampling, 427 FIB samples were collected from 10 intermittent stream sites and were analyzed for bacteria. Samples were also collected biweekly and analyzed for nutrients, trace metals, and other conventional constituents. FIB concentrations and fluctuations were compared with data from previous studies in the region.

The San Diego Reference Stream Study had five major findings:

(1) FIB levels in natural streams likely result from a combination of natural inputs, such as wildlife, birds, and soil erosion and instream bacterial growth facilitated by high summer temperatures, availability of nutrients, and presence of decaying organic matter.

(2) Storm event mean concentration exceedances were low except for *Enterococcus*. Based on seven storms, exceedances of single-sample WQOs were 0% for *E. coli*, fecal coliform, and total coliform. The exceedance frequency for *Enterococcus* on the day of the storm was 87%, compared with 37% for the following three days after the end of the storm. The exceedance frequency increased for both *E. coli* and total coliform to 29% if the pollutograph maximum was used. The number of storm events captured was not sufficient to investigate the effect of geology or watershed size on storm event mean concentrations.

(3) FIB exceedances occurred in natural sites and were highest in summer dry weather (April through August). No exceedances of fecal coliform single-sample WQOs were observed; however, single-sample WQO exceedances of *Enterococcus* were as high as 30%. Annual 30-day geomean exceedance frequencies were 0% for both *E. coli* and fecal coliform, but were 48% and 30% for *Enterococcus* and total coliform, respectively. Exceedance frequencies were highest in the summer, particularly for *Enterococcus*, spiking up to 40% and 68% for single-sample and 30-day geometric mean WQOs, respectively. Using a rolling 30-day geometric mean rather than a monthly mean to calculate exceedance frequencies increased the exceedance frequencies for *Enterococcus* and total coliform as much as 20%.

(4) Temperature, and to a lesser extent, nutrients and organic carbon, was the major factor associated with elevated summer dry weather FIB concentrations and exceedance frequencies. No significant relationships were found between FIB concentrations and watershed size or geology during dry weather. Water column FIB concentrations could not be attributed directly to instream benthic algal biomass as a measure of stream trophic status, which was low and showed no distinct seasonal variation. In contrast, FIB, temperature, organic carbon, and nitrogen measurements spiked at the end of the season, coinciding with the end of stream flow. This cycle occurs naturally; organic carbon and nutrients are increasingly recycled from organic matter as flow diminishes and temperature increases, conditions that coincide with increased FIB concentrations.

(5) Event mean concentration fluctuations during wet weather were found to be 2 to 3 times greater than dry weather FIB fluctuations. Wet and dry weather fluctuations were comparable to those documented in previous southern California regional studies.

7.1.2 San Diego Regional Reference Beaches Study

The goal of the San Diego Regional Reference Beach Study was to characterize natural background concentrations of FIB and determine WQO exceedance frequencies in two "reference" recreational beaches and their adjoining estuary or mixing zone. Two beaches in southern California, San Onofre Creek in San Diego County and Deer Creek in Ventura County, were selected for the Reference Beach Study for dry and wet weather assessments of *Enterococcus*, fecal and total coliforms, and *E. coli*. These locations were selected because the watershed discharging to the beach was determined to be greater than 93% undeveloped and has not been subject to a fire within the last three years. Additionally, both beaches are openly exposed with breaking waves and contain freshwater inputs. Analysis of human genetic markers was used to eliminate sites or samples with potential human contamination and therefore not representative of a reference condition (SCCWRP, 2016).

The San Diego Regional Reference Beach Study was initiated in October 2014 and continued through April 2016. Sampling was conducted in the ocean immediately in front of the inlet or estuary, in the inlet mouth just upstream of the mixing zone, and in the freshwater flowing creek, for a total of three locations at each reference site. Dry weather monitoring was conducted on dry weather days during both wet and dry seasons to characterize baseline conditions throughout the year. Bacteria samples were collected weekly, such that five samples were collected in each 30-day period, to calculate a 30-day dry weather geometric mean. In creeks, dry weather sampling occurred when there was measureable flow at a site. During wet weather, sampling criteria included an antecedent dry period of three or more days and a forecast minimum of 0.20 inch of rainfall. Samples were taken during the day of the storm (defined as within 24 hours of the end of recorded rainfall), and then in days following the day of the storm event. A special study was also conducted to quantify FIB concentrations in the San Onofre estuary. When the estuary was open to tidal exchange, monitoring was extended to collect samples at high and low tides at all sites.

The San Diego Regional Reference Beach Study began during an extended period of drought in the southern California region, which limited the number of samples collected from creeks and during storms, as well as the overall volume of freshwater input to beaches. Dry weather beach sampling achieved the prescribed frequency, but samples from freshwater input sources were limited by extreme drought. From the onset of sampling, San Onofre Creek did not flow during the study period because of the extended drought. Deer Creek began flowing at the end of December 2014 and ceased in early May 2015; Deer Creek did not flow during the 2015–2016 winter dry weather period. In a similar effect, wet weather sampling was limited to only one storm during this study period because of the drought conditions. However human genetic markers were detected and so the results were excluded from the exceedance frequency analysis. The estuary special study was not completed because the San Onofre estuary berm remained closed throughout the study period for all but one storm event, which coincided with a tide in excess of 7 feet. The sampling locations were deemed inaccessible during that event, and so the estuary data collected only characterize concentrations during conditions with a closed estuary mouth.

Although major drought conditions limited the conditions in which data were collected, the Reference Beach Study had several key findings:

(1) The ranges of annual dry weather FIB concentrations at both beaches were considered low. The ranges are comparable to results from previous FIB beach bacteria reference studies that had estuaries closed to tidal exchange (i.e., San Onofre Creek) or flow to the beach without an estuary (i.e., Deer Creek), with WQO exceedance frequencies in the range of 0% to 3.5%. Prolonged drought conditions resulted in intermittent dry weather flow at Deer Creek and no dry weather flow at San Onofre Creek, which provides important context to interpret data on exceedance frequencies.

(2) Concentrations of FIB in the estuary or freshwater mixing zone of both San Onofre and Deer Creeks were typically 1 to 3 orders of magnitude higher compared with their respective beaches, with the highest WQO exceedance frequencies found in San Onofre Creek, and suggesting that dry weather exceedance frequencies may have been greater had the mouth of the estuary been open to tidal exchange and dispersal to the surf zone.

(3) In the San Onofre Creek estuary, the dry weather geometric mean exceedance frequency during summer was 72% for fecal coliform; the dry weather geometric exceedance frequency during summer was 100% for both *Enterococcus* and *E. coli*. Dry weather geometric mean exceedances during wet season months ranged from roughly 55% (for total coliform) to 100% (for *Enterococcus*). The higher WQO exceedance frequencies of San Onofre Creek estuary relative to the mixing zone of Deer Creek could be expected, given the abundance of labile organic matter to support microbial growth as well as the presence of water birds typically found in estuaries.

(4) At both beaches, no significant relationship was found with water temperature, salinity, or antecedent dry days. In contrast to San Onofre Beach, where FIB concentrations declined with the increasing duration of dry weather, the range and mean FIB concentrations in San Onofre Creek estuary increased with increasing antecedent dry days and salinity, suggesting that freshwater input from the ephemeral channel tended to dilute concentrations, rather than serve a source of bacteria to the beach. The slight increase of FIB concentrations as a function of temperature and the lack of surface freshwater input in San Onofre Creek estuary suggest that regrowth may be a factor, which is credible given the organic rich environment of the San Onofre Creek estuary.

7.1.3 Special Study Assessment

Per the Municipal Permit (Provision D.4.c), data resulting from special studies should be used to (1) assess their relevance to the RPs' characterization of receiving water conditions, (2) understand sources of pollutants and/or stressors, and (3) control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters. The San Diego Regional Stream and Beach Reference Studies provide more information on the natural "reference" conditions in streams and beaches.

The key findings of the San Diego Regional Stream Study with regard to the highest priority water quality condition is as follows:

- During dry weather conditions:
  - There are exceedances of FIB WQOs at natural sites for *Enterococcu*s and total coliform (single sample and annual 30-day geomean).
  - These are highest during summer months (April to August).
  - There were no exceedances of the fecal coliform single sample WQOs along with a 0% exceedance frequency of the annual 30-day geomean.
  - *E. coli* also had a 0% exceedance frequency of the annual 30-day geomean.
- During wet weather conditions:
  - Storm event mean concentration exceedances of single sample WQOs were 0% for *E. coli*, fecal coliform, and total coliform, but if the storm maximum pollutograph was included, there were exceedances for *E. coli* and total coliform.
  - For the storm event mean concentration exceedances of single-sample WQOs for *Enterococcus,* the exceedance frequency on the day of the storm was 87%, compared with 37% for the following three days after the end of the storm.
- In summary:
  - *Enterococcus* concentrations can often exceed the WQO in both dry and wet weather conditions in streams with no anthropogenic impacts.
  - Total coliform may also be present in streams, although in lower amounts than *Enterococcus,* in natural conditions at levels high enough to cause exceedances.
  - *E. coli* concentrations exceeded the WQO only during wet weather conditions in the reference watershed streams when the storm peak was incorporated into the event mean concentration.
  - Fecal coliform concentrations did not exceed WQO in dry and wet weather conditions in any reference watershed streams.

The key findings of the San Diego Regional Beaches Study with regard to the Highest Priority Condition were affected by prolonged drought conditions. Despite the fact that no storm water samples were collected, some inferences about bacteria concentrations during dry weather conditions can be made. The ranges of annual dry weather FIB concentrations at both reference beaches were considered low, although this condition has to be considered in the context of intermittent dry weather flow at Deer Creek and no dry weather flow at San Onofre Creek. Concentrations of FIB were one to three times higher in estuary or freshwater mixings zones than at the beaches, meaning that dry weather exceedance frequencies may have been greater had the mouth of the estuary been open to tidal exchange and dispersal to the surf zone. The study provided some insight into the exceedance frequency in estuaries as follows:

- The *Enterococcu*s dry weather annual 30-day geomean exceedance frequency was 100% for the whole year in the San Onofre Creek estuary.
- The total coliform dry weather annual 30-day geomean exceedance frequency was 55% during winter months in the San Onofre Creek estuary.
- The *E. coli* dry weather annual 30-day geomean exceedance frequency was 100% during summer months (April to August) in the San Onofre Creek estuary.
- The fecal coliform dry weather annual 30-day geomean exceedance frequency was 72% during the summer months in the San Onofre Creek estuary.

For reference beaches with both streams and estuaries closed from tidal exchange, *Enterococcus* concentrations exceeded WQOs. Total coliform, *E. coli*, and fecal coliform concentrations exceeding WQOs varied for seasons and waterbody types. Additionally, the variability in dry weather FIB concentrations is less than the variability in wet weather FIB event mean concentrations, confirming the findings of previous studies.

7.2 Addressing Trash, Debris, and Floating Material in Chollas and Paleta Creeks

Pursuant to Section A.4 of the Municipal Storm Water Permit (Regional Board, Order No. R9-2013-0001, as amended by order nos. R9-2015-0001 and R9-2015-0100) and letter from Mr. John H. Robertus dated December 18, 2002 (Regional Board, 2002), requiring technical reports pursuant to California Water Sections 13267, 13225, and 13383 regarding exceedances of Water Quality Objectives for trash, debris, and other floating material in Chollas and Paleta Creeks, the City of San Diego was required to report twice a year on existing and planned BMPs intended to prevent or reduce trash, debris, and floating materials in Chollas and Paleta Creeks. As addressed in the WQIP, the City of San Diego agreed to incorporate the technical report addressing trash, debris, and floating material in Chollas and Paleta Creeks (annual technical report) into the January 2017 WQIP Annual Report. This change in reporting frequency was formally agreed to by the Regional Board in a letter from Mr. David W. Gibson dated February 5, 2014 (Regional Board, 2014). The annual technical report covers the activities conducted during FY 2016 (July 1, 2015, through June 30, 2016) and includes the information summarized in the semi-annual report covering the activities conducted during the first half of FY 2016

(July 1, 2015, through December 31, 2015) that was submitted to the Regional Board on March 15, 2016. The final annual technical report is in Attachment I.

7.3 Trash – San Diego Bay Debris Special Study

The San Diego Bay Debris Study is a special study component under the Southern California Bight 2013 Regional Monitoring Program (Section 2.2). In 2014, the Bight Program began the first-ever comprehensive marine debris survey, which included, for the first time, a coastal embayment special study to assess the connection between land-based sources of debris and transport to the coastal ocean. In southern California, and particularly along the San Diego County coastline, coastal wetlands and bays provide an important connection between upland rivers and the coastal ocean, and the coastal embayments may be a key environmental sink for upland land-based debris. The Study Report covers three projects conducted in San Diego Bay and the contributing watersheds between fall 2014 and spring 2015.

The intent of the San Diego Bay Debris Study is to quantify the abundance and amount of plastic debris in a variety of bay habitats. Study areas include open water areas throughout San Diego Bay, enclosed area such as ports and marinas, intertidal areas (mudflats, salt marshes, sandy beaches, and protective rip-rap shoring), and upland areas in the contributing riverine habitats. Results of this study could be used as a baseline for future studies and for management of efforts to control trash, specifically plastic-based items.

The primary data analyses are intended to answer the following study questions:

- How do the quantities and types of debris in different habitats vary during dry and wet season?
- What are the quantities and types of debris found in San Diego Bay habitats?
- What are the quantities and types of debris found in watersheds flowing to San Diego Bay?
- How do the quantities and types of trash in different San Diego Bay habitats vary by summer and winter dry season?
- What are the quantities and types of trash in San Diego Bay following the first storms of the wet season?
- What types of riverine debris do wet weather flows transport to the bay?
- What species caught in the bay has ingested plastic pieces?

7.4 Trash – Pueblo HU: Creek Refuse Assessment Program Special Study

In 2007, the City of San Diego implemented the Creek Refuse Assessment Program (Refuse Program) to evaluate and record the types and volumes of trash at approximately 800 sites across the City. The Refuse Program was developed to assess trash conditions and provide long-term monitoring data to support watershed planning and monitor trash reduction efforts.

The recent adoption of the Trash Amendments by the State of California necessitated re-evaluating the City's trash monitoring data to identify high trash-accumulation areas and work toward solving the remaining trash issues. The goal of the following evaluations was to help the City reprioritize ongoing trash assessment programs to focus management actions on the high trash-accumulation areas and to provide a summary of the historical data against which future assessment data can be compared. To provide a technical foundation for the trash assessment, persistent trash types were identified in areas of recurring high trash accumulation, as well as common sources, disposal methods, entry routes of trash, and trends in trash volumes over time (City of San Diego, 2015a).

Key findings of the evaluation included the following:

- Of the 12 types of trash in the Refuse Program assessments, the most frequently observed types were food packaging, household items, and plastic bags.
- Trash issues were not evenly distributed across the City. Four hydrologic areas, including the Tijuana Valley, San Diego Mesa, Miramar Reservoir, and Lower San Diego River, were the areas with the highest average trash volumes. The San Diego Mesa Hydrologic Areas could be considered the City's highest priority area for future trash management efforts.
- In addition to land use as a factor to consider regarding trash-accumulating areas, trash volumes tended to be disproportionately large in areas where median incomes are lower in the surrounding communities.
- Open, Industrial, and Park land uses (Parks Open, Industrial Open, Commercial Parks, and Open Industrial), and Transient sources were associated with the highest average trash volumes per site.
- Open, Industrial, Park, and a limited number of Residential (Open Industrial, Open, Commercial Parks, Residential Parks, and Residential) land uses have shown a significant decrease in average volumes over time, suggesting that trash management strategies are working in these areas.
- Residential Industrial, Parks Open, Industrial Open, Commercial Open, Commercial, and Open Parks land uses showed no significant decreases in trash volumes over time, and should be prioritized for future monitoring and assessments.

The final report for the Pueblo HU Creek Refuse Assessment Program Special Study is in Attachment J.

7.5 Chollas – Jurisdictional Boundary Study for Metals

This Jurisdictional Boundary Special Study is a voluntary study completed by the City of San Diego; other jurisdictions in the Chollas Creek hydrologic subarea are not involved in the study. Wet weather monitoring results presented in the Jurisdictional Boundary Special Study monitoring report are above and beyond the compliance monitoring requirements of the Diazinon and Dissolved Metals TMDL in Order No. R9-2004-0277 and State Board Resolution 2008-00054. The purpose of this study is to collect wet weather water quality data at jurisdictional boundary locations to fill data gaps in understanding priority receiving water quality pollutants in the upper watershed in Chollas Creek. Monitoring was conducted during the 2015–2016 wet season in the upper Chollas Creek HSA at the jurisdictional boundaries of the Cities of San Diego and La Mesa, and of the Cities of San Diego and Lemon Grove.

Special Study Monitoring Results

Jurisdictional boundary monitoring was conducted during two wet weather events, October 4, 2015, and March 5, 2016, coinciding with the Diazinon and Dissolved Metals TMDL compliance monitoring program. Sites LG-1 and LM-1 are not compliance sites. LG-1 is located on the South Fork of Chollas Creek; LM-1 is located on the North Fork of Chollas Creek. Water quality samples were analyzed for the TMDL analytes (diazinon, total and dissolved metals [copper, lead, and zinc], and toxicity). Additional analytes (organophosphorus pesticides, organochlorine pesticides, PAHs, PCBs, chloride, sulfate, and general chemistry) as well as the analytes on the 303(d) List (nitrogen, phosphorus, total suspended solids, and particle size distribution) were also analyzed during the monitoring. Analytical results were compared with applicable water quality criteria, including those set forth in the approved TMDLs for the Chollas Creek HSA, pesticide criteria of the CDFW (CDFW 1998, 2000), the USEPA OPP Aquatic Life Benchmarks, and the USEPA National Recommended Aquatic Life Criteria for freshwater.

The data collected during the 2015–2016 wet weather season are summarized below. The results for the 2015–2016 monitoring season are summarized below, including the constituents not detected (Table 7-1), the constituents detected but above the WQOs (Table 7-2), and the detected constituents (Table 7-3).

Table 7-1
Constituents Not Detected in the 2015–2016 Monitoring Year

Site	Constituent
LG-1	Diazinon Methyl-parathion Organochlorine pesticides PAHs (1 of 2 events)
LM-1	TMDL Constituents Diazinon

Notes:
PAH = polycyclic aromatic hydrocarbon; TMDL = total maximum daily load

Table 7-2
Constituents Detected but Below WQOs in the 2015–2016 Monitoring Year

Site	Constituent
LG-1	Dissolved copper, lead, and zinc Acute or chronic toxicity to Ceriodaphnia dubia (C. dubia) Malathion 5 PAHs (1 of 2 events) PCBs Chloride (chronic) Sulfate Dissolved organic carbon
LM-1	Dissolved copper (acute), lead, and zinc Acute or chronic toxicity to *Ceriodaphnia dubia (C. dubia)* Malathion (chronic 1 of 2 events) Methyl-parathion alpha-chlordane gamma-chlordane 7-10 PAHs PCBs Chloride Sulfate Dissolved organic carbon

Notes:
PAH = polycyclic aromatic hydrocarbon; PCB = polychlorinated biphenyl

Table 7-3
Constituents Detected Above WQOs in the 2015–2016 Monitoring Year

Site	Constituent
LG-1	Chloride (acute) Total Nitrogen Total Phosphorus Dichlorvos (acute, 1 of 2; chronic 2 of 2)
LM-1	Dissolved copper (chronic) Malathion (chronic 1 of 2 events) Total Nitrogen Total Phosphorus Dichlorvos (acute, 2 of 2; chronic 1 of 2)

Statistical Relationship Between the Boundary Locations and Compliance Sites

The study included a statistical comparison of historical water quality conditions at the boundary locations (LG-1 and LM-1) related to the downstream compliance monitoring locations. Based on the results of the historical comparative analyses, three statistical significant findings, summarized as follows:

- The dissolved metals comparison showed that dissolved lead and zinc concentrations were significantly greater at LG-1 on the South Fork than at the respective compliance MLS. Also note that dissolved lead and zinc concentrations at LG-1 have consistently been below their respective WQOs, including for both storms in FY 2016.
- The dissolved metals comparison showed no statistically significant difference in median concentrations of dissolved copper, lead, and zinc between LM-1 on the North Fork and the respective compliance MLS.
- Historically, chloride concentrations exceeded the WQO only at the South Fork monitoring location, LG-1. The source of the concentrations of chloride at this location seem to be naturally occurring salt deposits presents in the tertiary marine sedimentary soils located in this area of the watershed. Chloride concentrations were below the USEPA Aquatic Life criteria maximum concentrations (CMC) and criteria continuous concentrations (CCC) for freshwater during both wet weather events at LM-1.
- Overall, the South Chollas Creek monitoring locations appear to have relatively greater concentrations of general chemistry analytes compared with concentrations measured at the North Chollas Creek locations. This relationship is important to note for total hardness, where lower total hardness values yield lower WQOs for dissolved metals. Note that the difference in hardness values between the two branches of Chollas Creek results in different WQOs for hardness-based trace metals.

The final reports for the Jurisdictional Boundary Metals and Bacteria studies are in Attachments K.1 and K.2, respectively.

7.6 California Assembly Bill 411 (AB 411) Data

The San Diego County DEH implements the Beach and Bay Water Quality Monitoring Program to support the statewide program funded by AB 411. This program is commonly referred to as AB 411 monitoring. The AB 411 monitoring program is not required by the Municipal Permit. However, dry weather season receiving water data from two AB 411 beach monitoring stations are used by the RPs to augment their monitoring programs and help assess water quality issues in the San Diego Bay WMA. One of the stations is in the Swimmable Waters Focused Priority Condition area, and one is in the Shelter Island Shoreline Park Bacteria TMDL area. The number of samples taken between October 1, 2015, and September 30, 2016, is presented in Table 7-4.

Table 7-4
San Diego Bay WMA AB411 Data Summary for 2015–2016 Monitoring Year

Site ID	Location	Latitude/ Longitude	Number of Samples per FIB Indicator	Total Number of Samples Oct 2015 to Sept 2016
EH-070	Tidelands Park – Coronado Bayside	32.690/ -117.164	9	27
EH-200	Shelter Island Shoreline Park – San Diego Bay	32.715/ -117.224	10	30

Notes:
FIB = fecal indicator bacteria

The resulting concentrations for *Enterococcus*, fecal coliform, and total coliform samples are discussed in Sections and 2.7 and 6. These data will be reviewed during the Receiving water Assessment completed in the Regional Monitoring and Assessment Report.

7.7 Riparian Area Selenium Study

The objective of the Paradise Creek Selenium Special Study was to collect additional selenium data in the portion of Paradise Creek within Kimball Park to submit a data set to the State Board to support efforts to remove the selenium impairment. In addition, one of National City's WQIP goals is to implement strategies that will lead to the removal of the creek from the 303(d) List.

Total selenium concentrations were below the water quality objective of 5.0 micrograms per liter (µg/L) for all 50 samples collected. This result provides a substantial basis for removing the selenium 303(d) Listing and National City has achieved the current Municipal Permit term WQIP goals of collecting and analyzing 48 samples for selenium, with zero exceedances of the water quality objectives.

The final report for the Riparian Area Selenium Study is in Attachment L.

7.8 Water Quality Objectives

WQOs, or benchmarks, were used to assess monitoring results in the San Diego Bay WMA. The WQOs are derived from several regulatory documents, including the Water Quality Control Plan for the Basin Plan, the CTR, and Title 22 regulations, as applicable. The WQOs may differ depending on condition (i.e., dry weather WQOs may be different from wet weather WQOs). Details of the WQOs used for the assessments in the San Diego Bay WMA are in Attachment M.

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8 Publicly Available Data

The Municipal Permit requires the RPs to provide monitoring data and assessment results to the public. The following sections provide the locations where the public may obtain applicable information.

8.1 California Environmental Data Exchange Network (CEDEN) Upload and Retrieval

Provision F.4.a.(6) of the Municipal Permit requires monitoring data collected as part of the San Diego Bay WMA MAP to be uploaded to CEDEN. Data upload confirmations from CEDEN, as required, are included in Attachment N.

CEDEN is a central location for finding and sharing information about California's water bodies and aggregates water quality, aquatic habitat, and wildlife health data. The data are accessible in downloadable forms at www.ceden.org.

Data collected under the San Diego Bay WMA MAP for the October 2015–September 2016 monitoring year will be available in 2017. Data in CEDEN are searchable by date and by location, project, station, or parameter. Data collected as part of the programs described in this Monitoring Results and Assessment Appendix of the San Diego Bay WMA Water Quality Improvement Plan Annual Report can be retrieved using the project names listed in Table 8-1.

Table 8-1
Project Names for CEDEN Data Retrieval

Monitoring Program	CEDEN Project Name **Field Name "ProjectCode"**
Chollas Creek Metals and Bacteria TMDL	Chollas_BacteriaTMDL
Shelter Island Yacht Basin Metals TMDL	ShelterIsland_CuTMDL_MS4
Shelter Island Shoreline Park Bacteria TMDL	SISP_TMDL
MS4 Outfall (Wet and Dry Weather)	MS4_WW_OFM MS4_DW_OFSM
Chollas Jurisdictional Boundary Study (Metals and Bacteria)	Chollas_SpecialStudy
Riparian Area Selenium Study	CWA303d_PCSe_NC

Notes:
CEDEN = California Environmental Data Exchange Network; TMDL = Total Maximum Daily Load

8.2 Regional Clearinghouse

For the 2015–2016 monitoring year, the RPs are providing the following data and documentation on the Project Clean Water website (www.projectcleanwater.org), which can be accessed by the general public:

- 2015–2016 Annual Report, including all appendices and associated attachments, including:
  - JRMP Annual Report for each RP within the WMA
  - Monitoring Results and Assessment Appendix
  - SMC Bioassessment Summary
  - Shelter Island Yacht Basin TMDL Report
  - Shelter Island Shoreline Park TMDL Report
  - Reports from special studies conducted in the WMA not previously submitted (San Diego Regional Reference Streams and Beaches Study, San Diego Bay Debris Study, Pueblo Creek Refuse Assessment Program, Chollas Jurisdictional Boundary Study for Metals and Bacteria, AB 411 Study, Riparian Area Selenium Study)
  - Monitoring data uploaded to CEDEN, with links to the uploaded data
- BMP Design Manual for each Responsible Party within the WMA and all updated versions with date of update
- Available geographic information system (GIS) data, layers, and/or shapefiles used to develop the maps to support the WQIP, Annual Reports, and JRMPs

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APPENDIX 5

ADAPTIVE MANAGEMENT/MODIFICATIONS

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1 Adaptive Management – Changes to Water Quality Improvement Plan Elements

- A select number of jurisdictions have made minor modifications to their strategies or schedules. A full list of updates is provided in Appendix 2.
- The Airport Authority has proposed a modification to their performance goal for airside street sweeping. For a detailed explanation, see Section 5.1.
- Lemon Grove has added strategy LG-47 to potentially trigger green streets, as seen in Appendix 2.
- National City has added strategy NC-40 to address green infrastructure, as seen in Appendix 2.
- Modifications to the San Diego Bay Watershed Management Area Analysis (WMAA) have been made to designate the portion of the Otay River between Lower Otay Reservoir Dam and I-805 as an exempt river reach, based on technical studies submitted to the watershed group and discussed at a previous Consultation Panel meeting. Revisions were made to Section 4.1.1 (Exempt River Reaches) and Attachment B.2 of the WMAA (Hydromodification Management Exemption Mapping), and technical studies prepared in support of the changes were added as a new Attachment to the WMAA (Attachment B.3). The revised WMAA, showing track changes, and Attachments B.2 and B.3 are provided in Attachment A.

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Attachment A – Watershed Management Area Analysis

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San Diego Bay Watershed Management Area Analysis

Lake Henshaw

April 2015

Prepared for:
San Diego County Copermittees

Prepared by:

Geosyntec consultants
engineers | scientists | innovators

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ATTACHMENT C ELECTRONIC FILES

ATTACHMENT D REGIONAL MS4 PERMIT CROSSWALK

ACRONYMS AND ABBREVIATIONS

%	percent
>	greater than
<	less than
BMP	Best Management Practice
CB	Coarse Bedrock
CEG	Certified Engineering Geologist
CIP	Capital Improvement Project
CLRP	Comprehensive Load Reduction Plan
CSI	Coarse Sedimentary Impermeable
CSP	Coarse Sedimentary Permeable
E_P	Erosion Potential
ET	Evapotranspiration
FB	Fine Bedrock
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
FSI	Fine Sedimentary Impermeable
FSP	Fine Sedimentary Permeable
GIS	Geographic Information System
GLU	Geomorphic Landscape Unit
HA	Hydrologic Area
HCP	Hydromodification Control Plan
HMP	Hydromodification Management Plan
HRU	Hydrologic Response Unit
HSA	Hydrologic Sub Area
HSG	Hydrologic Soil Group
IRWM	Integrated Regional Water Management
JURMP	Jurisdictional Urban Runoff Management Plan
LDW	Land Development Workgroup
LID	Low Impact Development
MAP	Mean Annual Precipitation

ACRONYMS AND ABBREVIATIONS continued

MHPA	Multiple Habitat Planning Area
MS4	Municipal Separate Storm Sewer System
MSCP	Multiple Species Conservation Program
NED	National Elevation Dataset
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
PDP	Priority Development Project
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
SCAMP	Southern California Aerial Mapping Project
SCCWRP	Southern California Coastal Water Research Project
SD	San Diego
SDRWQCB	San Diego Regional Water Quality Control Board
S_P	Sediment Supply Potential
SSURGO	Soil Survey Geographic Database
TMDL	Total Maximum Daily Load
USGS	United States Geological Survey
WMA	Watershed Management Area
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan
WURMP	Watershed Urban Runoff Management Plan

1. Introduction

1.1. Background

On May 8, 2013 the California Regional Water Quality Control Board, San Diego Region adopted Order No. R9-2013-0001; NPDES No. CAS 0109266, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region (Regional MS4 Permit). The Regional MS4 Permit, which became effective on June 27, 2013, replaces the previous MS4 Permits that covered portions of the Counties of San Diego, Orange, and Riverside within the San Diego Region. There were two main goals for the Regional MS4 Permit:

1. To have more consistent implementation, as well as improve inter-agency communication (particularly in the case of watersheds that cross jurisdictional boundaries), and minimize resources spent on the permit renewal process.
2. To establish requirements that focused on the achievement of water quality improvement goals and outcomes rather than completing specific actions, thereby giving the Copermittees more control over how their water quality programs are implemented.

To achieve the second goal, the Regional MS4 Permit requires that Water Quality Improvement Plans (WQIPs) be developed for each Watershed Management Area (WMA) within the San Diego Region. As part of the development of WQIPs, the Regional MS4 Permit provides Copermittees an option to perform a Watershed Management Area Analysis (WMAA) through which watershed-specific requirements for structural BMP implementation for Priority Development Projects can be developed for each WMA. This report presents the Copermittees' approach and results for the regional elements of the WMAA developed for the San Diego County area.

1.2. Watershed Management Area Analysis (WMAA)

The Regional MS4 Permit, through inclusion of the WMAA, provides an optional pathway for Copermittees to develop an integrated approach for their land development programs by promoting evaluation of multiple strategies for water quality improvement and development of watershed-scale solutions for improving overall water quality in the watershed. The WMAA comprises the following three components as indicated in the Regional MS4 Permit:

1. Perform analysis and develop Geographic Information System (GIS) layers (maps) by gathering information pertaining to the physical characteristics of the WMA (referred to herein as WMA Characterization). This includes, for example, identifying potential areas of coarse sediment supply, present and anticipated future land uses, and locations of physical structures within receiving streams and upland areas that affect the watershed hydrology (such as bridges, culverts, and flood management basins).
2. Using the WMA Characterization results, compile a list of candidate projects that could potentially be used as alternative compliance options for Priority Development Projects. Such projects may include, for example, opportunities for stream or riparian area rehabilitation, opportunities for retrofitting existing infrastructure to incorporate storm

water retention or treatment, or opportunities for regional BMPs, among others. Prior to implementing these candidate projects the Copermittees must demonstrate that implementing such a candidate project would provide greater overall benefit to the watershed than requiring implementation of the onsite structural BMPs. Note, compilation or evaluation of potential projects was not performed as part of this regional effort. Identification and listing of candidate projects will be performed for each WMA through the WQIP process for WMAs that elect to submit the optional WMAA as part of the WQIP.

3. Additionally, using the WMA Characterization maps, identify areas within the watershed management area where it is appropriate to allow for exemptions from hydromodification management requirements that are in addition to those already allowed by the Regional MS4 Permit for Priority Development Projects. The Copermittees shall identify such cases on a watershed basis and include them in the WMAA with supporting rationale to support claims for exemptions.

1.3.Scope of Work for Regional WMAA

In July 2013, the Copermittees elected to fund a regional effort to develop elements of the regional WMAA for the 9 San Diego-area WMAs within the County of San Diego that are currently subject to the Regional MS4 Permit, which include:

- Santa Margarita River (for portion in San Diego County)
- San Luis Rey River
- Carlsbad
- San Dieguito River
- Los Peñasquitos
- Mission Bay & La Jolla Watershed
- San Diego River
- San Diego Bay
- Tijuana River (for portion in San Diego County)

The regional-level information developed through this effort is intended to provide consistency across WMAs and serve as the foundation for developing watershed-specific information for each WMA to be developed through the WQIP process. The regional effort scope of work included:

1. Development of GIS map layers that characterize the WMAs using data previously collected, readily available, and provided by the Copermittees, including:
    a. Description of dominant hydrologic processes, such as areas where infiltration or overland flow likely dominates;
    b. Description of existing streams in the watershed, including bed material and composition, and if they are perennial or ephemeral;
    c. Current and anticipated future land uses;
    d. Potential coarse sediment yield areas; and

   e. Locations of existing flood control structures and channel structures, such as stream armoring, constrictions, grade control structures, and hydromodification or flood management basins.

2. Development of a Microsoft® Excel (Excel) template for use by Copermittees to compile lists of candidate projects for an optional alternative compliance program.
3. Development of additional criteria and analyses to support reinstating the following proposed exemptions that were originally developed in the approved 2011 Final Hydromodification Management Plan but not included in the Regional MS4 Permit unless provided by the Copermittees in the WMAA. In addition, development of the associated Hydromodification Applicability/Exemption Mapping.
   a. Exempt River Reaches including:
      i. San Diego River;
      ii. Otay River;
      iii. San Dieguito River;
      iv. San Luis Rey River; and
      v. Sweetwater River
   b. Stabilized Conveyance Systems Draining to Exempt Water Bodies
   c. Highly Impervious/Highly Urbanized Watersheds and Urban Infill, and
   d. Tidally Influenced Lagoons (where data/study provided)

The scope of work for the regional effort excluded performing analysis within the following areas unless data was readily available, as Copermittees do not have jurisdiction over these areas:

1. State Lands;
2. U.S. Departments of Defense land;
3. U.S. National Forest land;
4. U.S. Department of Interior land and
5. Tribal land

Additional description of excluded areas, for the purposes of the Regional WMAA, is indicated in Section 2.3 Land Uses.

1.4.Project Process

The process for developing the Regional WMAA included close coordination with the Land Development Workgroup (LDW) at key points during the project. The LDW is composed of the 21 San Diego-area Copermittees and serves to develop and implement regional land development plans and programs necessary to support the requirements of the Regional MS4 Permit. The consultant team (Geosyntec Consultants and Rick Engineering Company) presented preliminary project assumptions and methodologies proposed to be used to develop the Regional WMAA to meet the requirements of the Regional MS4 Permit in December 2013. The consultant team incorporated workgroup feedback from this meeting and subsequently presented the preliminary

Regional WMAA project results to the LDW in March 2014, again to receive direction and incorporate input on the preliminary results. Subsequently, the draft report was released to the public in July 2014, by a public workshop that included Consultation Panel members from each of the WMAs on July 29, 2014. This version of the report including all of the input described above is being issued for optional inclusion into the respective WQIP Provision B.3 submittals to the SDRWQCB in December 2014.

1.5. Report Organization

This report is organized as follows:

- Chapter 1 provides the project background and purpose;
- Chapter 2 describes the technical basis for characterizing the WMA;
- Chapter 3 describes the template that can be used by Copermittees to compile the list of candidate projects;
- Chapter 4 summarizes the analyses performed to support reinstating select exemptions from hydromodification control requirements for PDPs;
- Chapter 5 presents the WMAA conclusions;
- Chapter 6 presents the references used for the WMAA;
- Attachment A presents the exhibits and additional supporting information for watershed management area characterization;
- Attachment B presents the exhibits and additional supporting information for hydromodification management applicability/exemptions;
- Attachment C expands on the structure of the geodatabase that hosts the GIS data developed by the WMAA; and
- Attachment D provides a crosswalk between the Regional MS4 Permit requirements for WMAA and this report.

1.6.Terms of Reference

The work described in this report was conducted by Geosyntec Consultants (Geosyntec) and Rick Engineering Company (RICK) on behalf of the County of San Diego and the regional Copermittees.

2. Watershed Management Area Characterization

Watershed health and function are strongly influenced by hydrological and geomorphological processes occurring in the watershed. Both hydrological response and geomorphological response of the watershed are dependent on a variety of physical characteristics of the watershed. To this end, the Regional MS4 Permit specifies a set of data that is required to adequately characterize overall watershed processes as a foundation to enhancing integration and effectiveness of watershed management and water quality programs. The following GIS map layers were developed to characterize the hydrological and geomorphological processes within the San Diego Bay WMA:

- Dominant Hydrologic Processes: A description of dominant hydrologic processes, such as areas where infiltration or overland flow likely dominates;
- Stream Characterization: A description of existing streams in the watershed, including bed material and composition, and if they are perennial or ephemeral;
- Land Uses: Current and anticipated future land uses;
- Potential Critical Coarse Sediment Yield Areas; and
- Physical Structures: Locations of existing flood control structures and channel structures, such as stream armoring, constrictions, grade control structures, and hydromodification or flood management basins.

These GIS layers can be used to:

- Identify the nature and distribution of key macro-scale watershed processes;
- Identify potential opportunities and constraints for regional and sub-regional storm water management facilities that can play a critical role in meeting water quality, hydromodification, water supply, and/or habitat goals within the watershed;
- Assist with determining the most appropriate management actions for specific portions of the watershed; and
- Suggest where further study is appropriate.

2.1.Dominant Hydrologic Processes

The Regional MS4 Permit identifies in the provisions related to the WMAA that a description of dominant hydrologic processes within the watershed must be developed, with GIS layers (maps) as output. The Permit specifically calls for processes "*such as areas where infiltration or overland flow likely dominates*." These particular aspects of the hydrological mechanics of watersheds are particularly important when attempting to understand the macro-scale opportunities for locating projects that take advantage of either capturing overland flow for treatment or for infiltration.

Investigation of the dominant hydrologic processes in the San Diego-area watersheds indicates that evapotranspiration (ET) is the most dominant hydrologic process for the region based on review of a published study (Sanford and Selnick, 2013). ET is the sum of evaporation and plant transpiration in the hydrologic cycle that transports water from land surfaces to the atmosphere. This is conclusion is supported by comparing the 30-year average annual rainfall for the study area (San Diego County east of the peninsular divide) of between 15 and 18 inches per year (San Diego County, 2005) to the average annual ET rates. According to the California Irrigation Management Information System (CIMIS) Reference Evapotranspiration Map (CIMIS, 1999), the study area (within Zones 4, 6, and 9) experiences annual reference ET of 46.6, 49.7 and 59.9 inches, respectively. Therefore, theoretically, if all of the annual precipitation for the San Diego-area watersheds remained stationary where it fell and did not either infiltrate or runoff to local waterbodies where it would be conveyed downstream ultimately to the ocean, it all would be consumed by ET. As such, the effect of ET on the overall hydrologic processes within the San Diego watersheds is a function of the temporal scale over which it acts. Precipitation events often produce runoff in these watersheds, particularly in the urbanized portions, based on the topography and land cover that tend to accelerate the conveyance of runoff downstream rather than collecting, storing, or spreading out that then would maximize the effect of ET.

Because this study is focused on developing information and mapping for the portion of the hydrologic process that informs watershed management decisions, i.e., locating beneficial projects in areas of greatest opportunity, the next tier of dominant hydrologic processes are studied and mapped by this project. As such, the study area was characterized, based on the methodology described in the following section, according to the predicted fate of runoff within the watersheds being either overland flow or infiltration after considering the effects of ET (as well as an intermediate category of interflow). Areas that were mapped as overland flow do not necessarily preclude infiltration but rather indicate the dominant expected process that runoff would experience if not intercepted for the express purpose of infiltrating storm water runoff. The Model BMP Design Manual will provide more detailed guidance and procedures for determining the potential for infiltrating captured storm water at the project level irrespective of the mapping produced in the WMAA. To reiterate, the WMAA mapping is to provide macro-scale processes for high-level analysis and to inform decisions affecting regional scales. Furthermore, the Model BMP Design Manual will indicate the degree to which site-scale BMPs can expect to benefit from ET or how ET is considered in the sizing of BMPs. In brief, typical storm water BMPs only store water for a few days and therefore are not really capable of significant volume disposal through ET. However, pervious area dispersion (i.e., directing storm water runoff to flat areas for spreading and infiltration) has appreciable benefits with regard to ET and is a practice promoted in the BMP Design Manual.

The processes of interest are further defined as follows:

Overland flow: This process can be thought of as the inverse of infiltration; precipitation reaching the ground surface that does not immediately soak in must run over the land surface (thus, "overland" flow). It reflects the relative rates of rainfall intensity and the soil's infiltration capacity: wherever and whenever the rainfall intensity exceeds the soil's infiltration capacity, some overland flow will occur. Most uncompacted, vegetated soils have infiltration capacities of one to several inches per hour at the ground surface, which exceeds the rainfall intensity of even unusually intense storms. In contrast, pavement and hard surfaces reduce the effective infiltration capacity of the ground surface to zero, ensuring overland flow regardless of the meteorological attributes of a storm, together with a much faster rate of runoff relative to vegetated surfaces.

Infiltration and groundwater recharge: These closely linked hydrologic processes are most apparent near ephemeral and perennial conveyances in the San Diego region. Their widespread occurrence is expressed by the common absence of surface-water channels on even steep (undisturbed) hillslopes. Thus, on virtually any geologic material on all but the steepest slopes (or bare rock), infiltration of rainfall into the soil is inferred to be widespread, if not ubiquitous. With urbanization, changes to the process of infiltration are also quite simple to characterize: some (typically large) fraction of that once infiltrating water is now converted to overland flow.

Interflow: Interflow takes place following storm events as shallow subsurface flow (usually within 3 to 6 feet of the surface) occurring in a more permeable soil layer above a less permeable substrate. In the storm response of a stream, interflow provides a transition between the rapid response from surface runoff and much slower stream discharge from deeper groundwater. In some geologic settings, the distinction between "interflow" and "deep groundwater" is artificial and largely meaningless; in others, however, there is a strong physical discrimination between "shallow" and "deep" groundwater movement. Development reduces infiltration and thus interflow as discussed previously, as well as reducing the footprint of the area supporting interflow volume.

The datasets used, methodology for creating the dominant hydrologic processes maps, and the results are described in the sections below.

2.1.1. Datasets Used for identifying dominant hydrologic processes

The following datasets were used in the analysis:

Dataset	Source	Year	Description
Elevation	USGS	2013	1/3rd Arc Second (~10 meter cells) digital elevation model for San Diego County
Soils Data	SanGIS	2013	NRCS (SSURGO) Database for San Diego County downloaded from SanGIS
Land Cover	SanGIS	2013	Ecology-Vegetation layer for San Diego County downloaded from SanGIS
Geology	Kennedy, M.P., and Tan, S.S.	2002	Geologic Map of the Oceanside 30'x60' Quadrangle, California, California Geological Survey, Regional Geologic Map No. 2, 1:100,000 scale.

Dataset	Source	Year	Description
	Kennedy, M.P., and Tan, S.S.	2008	Geologic Map of the San Diego 30'x60' Quadrangle, California, California Geological Survey, Regional Geologic Map No. 3, 1:100,000 scale.
	Todd, V.R.	2004	Preliminary Geologic Map of the El Cajon 30'x60' Quadrangle, Southern California, United States Geological Survey, Southern California Aerial Mapping Project (SCAMP), Open File Report 2004-1361, 1:100,000 scale.
	Jennings et al.	2010	"Geologic Map of California," California Geological Survey, Map No. 2 – Geologic Map of California, 1:750,000 scale
Groundwater Basins	SanGIS	2013	Groundwater Basins in San Diego County downloaded from SanGIS

2.1.2. Methodology/Assumptions/Criteria for identifying dominant hydrologic processes

The methodology used to describe dominant hydrologic processes is based on recommendations included in the Southern California Coastal Water Research Project's (SCCWRP) Technical Report 605 titled "Hydromodification Screening Tools: GIS-Based Catchment Analyses of Potential Changes in Runoff and Sediment Discharge" (SCCWRP, 2010). The foundation for this analysis was to incorporate the Report's concept of grouping common hydrologic attributes into Hydrologic Response Units (HRUs). The report states the following:

> *"Grouping common hydrologic attributes across a watershed into a tractable number of Hydrologic Response Units (HRUs: a term first used by England and Holtan 1969) has become a well-established approach for condensing the near-infinite variability of a natural watershed into a tractable number of different elements. The normal procedure for developing HRUs is to identify presumptively similar rainfall–runoff characteristics across a watershed by combining spatially distributed climate, geology, soils, land use, and topographic data into areas that are approximately homogeneous in their hydrologic properties (Green and Cruise 1995, Becker and Braun 1999, Beven 2001, Haverkamp et al. 2005). As noted by Beighley et al (2005), this process of merging the landscape into discrete HRUs is a common and effective method for reducing model complexity and data requirements. Using watershed characteristics to predict runoff is the explicit task of hydrologic models, and there is a host of such models available for application to hydromodification evaluation. For purposes of "screening," however, the goal is simplicity and ease of application even if the precision of the resulting analysis is crude."*

The following process describes the methodology used to define Hydrologic Response Units (HRUs) and then relate the HRUs to the dominant hydrologic processes (i.e., overland flow, interflow, and groundwater recharge) in the San Diego Bay WMA.

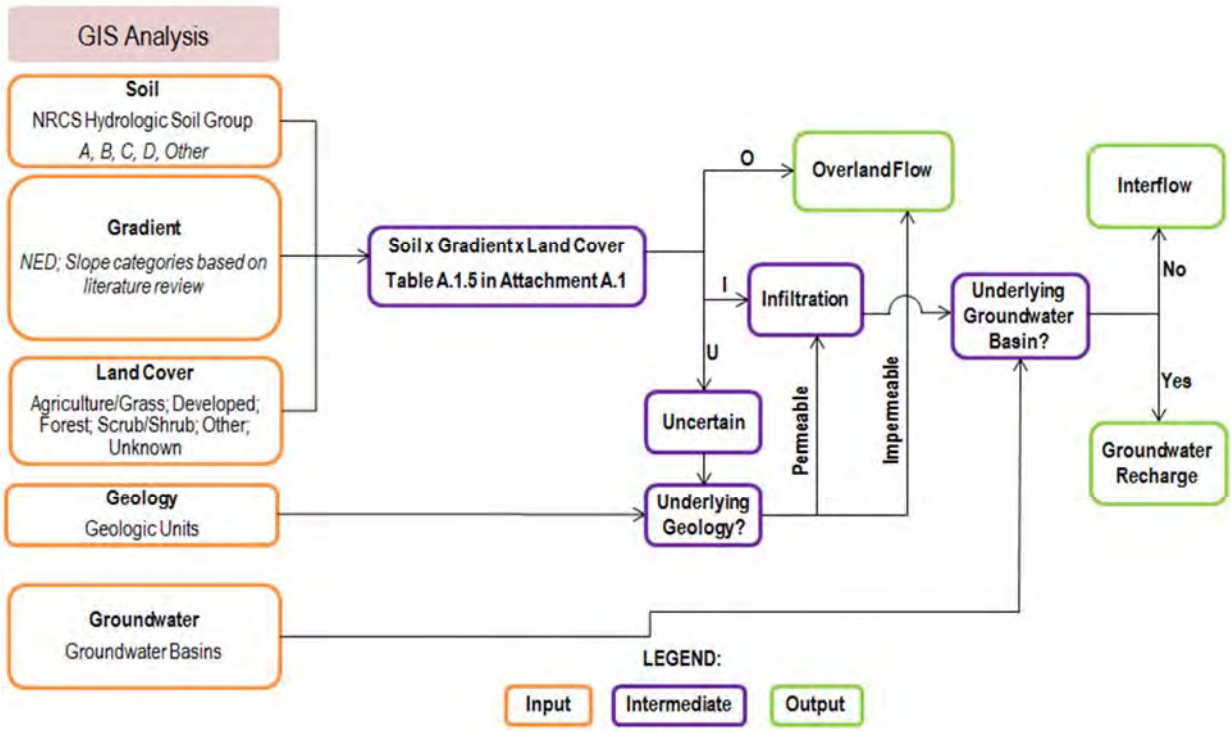

The first step is to define the HRUs. Once these are defined, the remaining steps determine the dominant hydrologic process.

1. **Integrate data sets used to determine HRU**: Categories for soil type, gradient, and land cover were defined based on readily available GIS datasets for the region and classifications found in relevant literature, as indicated below. The different combinations of these three categories comprise the distinct HRUs.

    - **Soil Categories**: based on National Resource Conservation Service (NRCS) Hydrologic Soil Group (HSG) classifications, which are commonly used to describe runoff/infiltration potential of soils on a regional scale. These categories include: A, B, C, and D. HSG A soils have the lowest runoff potential, while HSG D soils have the highest runoff potential.

    - **Gradient Categories**: based on slope ranges found in a review of relevant literature identified in Chapter 6. The spatial processing of the slope categories utilized the United States Geologic Survey (USGS) National Elevation Dataset (NED). Slopes were grouped (bins) into the following ranges: 0% to 2%; 2% to 6%; 6% to 10%; and greater than 10%. The 2% and 6% slope thresholds were based on slope ranges included in Table A.1.1 (McCuen, 2005) presented in Attachment A.1. This table provides runoff coefficients as a function of slope, soil group, land cover, and return period and was used for subsequent steps in the mapping effort. The 10% slope threshold was used in SCCWRP's Technical Report 605 (SCCWRP, 2010) and is

a logical cutoff since slopes steeper than 10% are assumed to be dominated by overland flow.

- **Land Cover Categories**: were defined using the Ecology Vegetation GIS map layer developed by the City of San Diego, the County of San Diego and SANDAG and downloaded from SanGIS (2013). The vegetation categories in the GIS layer were grouped (Table A.1.2 in Attachment A.1) to match the following categories used in SCCWRP's Technical Report 605 (SCCWRP, 2010): Agriculture/Grass; Developed; Forest; Scrub/Shrub, Other (Water), and Unknown.

2. **Evaluate Land Cover**: Land cover categories for Agriculture/Grass, Forest, Scrub/Shrub and Other were related to land use categories defined in Table A.1.1 as shown in Table A.1.3 in Attachment A.1. Relating a land use category for the Developed land cover category was not necessary because all Developed cover was assumed to have overland flow as its dominant hydrologic process.

3. **Determine Hydrology Characteristics for Land Covers**: For each of the land cover/land use categories listed in Table A.1.3, the ratio of precipitation lost to evapotranspiration (i.e. an evapotranspiration coefficient) was estimated using Table A.1.1 using the process described below. Since precipitation is considered to be the sum of the resulting runoff, infiltration, and evapotranspiration, the coefficients for these three hydrologic pathways sum to one, as indicated below.

   Runoff Coefficient + Infiltration Coefficient + Evapotranspiration Coefficient = 1

   i) **Estimate Evapotranspiration**: To estimate the evapotranspiration (ET) coefficient for each land cover, first the runoff coefficient was identified in Table A.1.1 for the highest runoff potential (i.e., Group D soil and 6%+ slope) and most common storm conditions (i.e., storm recurrence intervals less than 25 years). The infiltration for these high runoff conditions was assumed to be negligible, resulting in an infiltration coefficient of zero. Since the sum of the three coefficients should sum to one, the ET coefficient was assumed to be the remaining difference (i.e., ET Coefficient = 1 – Runoff Coefficient). The ET coefficient calculated for the highest runoff potential was then applied to all soil types and slopes within that land use category. The calculated ET coefficient for each applicable HRU is provided in Table A.1.4 in Attachment A.1. The ET coefficient for HRUs that have a Developed land cover or a gradient greater than 10% were not calculated since these HRUs were assumed to have overland flow as the dominant hydrologic process.

   ii) **Estimate Infiltration**: The infiltration coefficient for each applicable HRU (i.e., combination of soil, gradient, and land cover) was estimated by subtracting both the runoff coefficient, provided in Table A.1.1, and the ET coefficient, calculated in step 3(i), from one (i.e., Infiltration Coefficient = 1 – Runoff Coefficient – ET Coefficient). The calculated infiltration coefficient for each applicable HRU is provided in Table A.1.4 in Attachment A.1.

   iii) **Estimate Runoff**: For each applicable HRU, the runoff coefficient was divided by the infiltration coefficient to obtain a ratio representing the potential for runoff or

infiltration. The higher the ratio, the greater the potential for runoff to be a more dominant hydrologic process than infiltration. Similarly, the lower the ratio, the greater the potential for infiltration to be a more dominant hydrologic process than runoff. The calculated runoff to infiltration ratios are provided in Table A.1.4 in Attachment A.1.

4. **Associate Runoff and Infiltration to HRUs**: The following designations were assigned to each applicable HRU based on the runoff to infiltration ratio (i.e., runoff coefficient/infiltration coefficient). These designations were based on best engineering judgment with the underlying assumption that if a runoff or infiltration coefficient is more than 50% greater than its counterpart, then the prevailing process is considered dominant.

   - HRUs with runoff to infiltration ratios greater than 1.5 (3:2 ratio) were assumed to have relatively high runoff and overland flow was considered its dominant hydrologic process. These HRUs are designated by the letter "O" (Overland flow is dominant process) in Tables A.1.4 and A.1.5 in Attachment A.1.
   - HRUs with runoff to infiltration ratios less than 0.67 (2:3 ratio) were assumed to have relatively high infiltration and its dominant hydrologic process was either interflow or groundwater recharge, based on analysis described in subsequent steps. These HRUs are designated by the letter "I" (Interflow is dominant process) in Tables A.1.4 and A.1.5.
   - For HRUs with runoff to infiltration ratios between, and including, 1.5 and 0.67 it was uncertain whether it was dominated by overland flow or infiltration. These HRUs are designated by the letter "U" (Dominant process is uncertain) in Tables A.1.4 and A.1.5.
   - For HRUs that have a Developed land cover or a gradient greater than 10%, the runoff to infiltration ratios were not calculated because these HRUs were assumed to have overland flow as the dominant hydrologic process. These HRUs are designated by the letter "O" (Overland flow is dominant process) in Table A.1.5.

5. **Uncertain HRUs Assignment**: For HRUs with an uncertain designation ("U") in Table A.1.5 in Attachment A.1, the underlying regional geology (Kennedy and Tan, 2002 & 2008; Todd, 2004 and Jennings et al., 2010) was used to evaluate whether overland flow or infiltration were dominant. If the underlying geology was considered impermeable, then these uncertain areas were considered to have overland flow as its dominant hydrologic process. If the underlying geology was considered permeable, then these uncertain areas were considered to be dominated by infiltration. The determination of whether a geologic unit is impermeable or permeable was based on desktop evaluation and the best professional judgment of a Certified Engineering Geologist (CEG). This analysis was performed in GIS and is illustrated in the flowchart above.

6. **Associate Infiltration HRUs with Known Groundwater Basins**: For HRUs with relatively high infiltration and have a designation of "I" in Table A.1.5 in Attachment A.1,

the presence or absence of a regional groundwater basin (SanGIS, 2013) underlying these areas determined whether the dominant hydrologic process was designated as interflow or groundwater recharge. The groundwater recharge hydrologic process was assigned as dominant for those applicable areas which had an underlying groundwater basin. The interflow hydrologic process was assigned as dominant for those applicable areas which did not have an underlying groundwater basin directly below it. This analysis was performed in GIS and is illustrated in the flowchart above.

7. **Resulting HRU Data:** The resulting GIS map of dominant hydrologic processes was reviewed by engineering professionals familiar with the hydrology in the County of San Diego to confirm that the mapping is consistent with their experience working in the region.

2.1.3. Results for identifying dominant hydrologic processes

The resulting GIS map showing the spatial distribution of dominant hydrologic processes (i.e., overland flow, interflow, and groundwater recharge) within the San Diego Bay WMA is provided in Attachment A.1. An ArcMap document file which presents the results from each step of the methodology is included in Attachment C, as well as a Google Earth KMZ file. Based on this analysis, overland flow is the predominant hydrologic process in all this WMA, which is consistent with the experience of engineering professionals familiar with the hydrology of the County of San Diego.

Summary of Deliverables for Dominant Hydrologic Processes

Format	Item	Description	Location
Report	Figure	"Dominant Hydrologic Processes"	Attachment A.1
GIS	Map Group Title	Hydrologic Processes	Attachment C.1
	Map Layer Title	Soil Land Cover Slope Hydrologic Response Unit Initial Rating Permeability Groundwater Basin Dominant Hydrologic Processes	
	Geodatabase Feature Dataset	HydrologicProcesses	
	Geodatabase Feature Class	HRUAnalysis	
	Geodatabase Geometry Type	Polygon	
KMZ [1]	KMZ File Name	Dominant Hydrologic Processes	Attachment C.2

[1] To enhance the utilization of this data, the Dominant Hydrological Processes map is provided in both traditional GIS file format (ESRI software license purchase required) and as a Google Earth KMZ (Keyhole Markup Language/Zipped) file that can be viewed with the free download version of Google Earth (http://www.google.com/earth/).

2.1.4. Limitations for identifying dominant hydrologic processes

The resulting GIS map layer only lists the dominant hydrological process (i.e., an HRU assigned a dominant process of overland flow can also experience small amounts of infiltration) and provides a useful, rapid framework to perform screening-level analysis that is appropriate for watershed-scale planning studies. When more precise estimates are required for a particular site and subarea it is recommended that this analysis be augmented with site-specific analysis.

2.2.Stream Characterization

For the purpose of WMAA, the Regional MS4 Permit requires a description of existing streams in the watershed, including bed material and composition, and if they are perennial or ephemeral. Under the Regional WMAA, this analysis was prepared for 27 streams throughout the San Diego Region agreed upon by the consultant team and Copermittees. Within the San Diego Bay WMA, stream characterization and detailed mapping is provided for Chollas Creek, Sweetwater River – Reach 1 (San Diego Bay to Sweetwater Reservoir), Sweetwater River – Reach 2 (Sweetwater Reservoir to Loveland Reservoir), Otay River, and Jamul / Dulzura Creek as shown on the exhibit titled "Watershed Management Area Streams" located in Attachment A.2.

2.2.1. Datasets Used for stream characterization

The following data were referenced for the purpose of stream characterization:

- USGS National Hydrography Dataset, downloaded from USGS November 2013
- USGS 7.5-minute quadrangles, compiled image of quadrangles covering San Diego County, various dates
- Floodplains: "National Flood Hazard Layer," provided by Federal Emergency Management Agency October 2012
- Various datasets provided by Copermittees depicting existing storm water conveyance infrastructure within their jurisdictions.
- Aerial photography by Digital Globe dated 2012

2.2.2. Methodology/Assumptions/Criteria for stream characterization

The analysis was prepared by digitizing each of the 27 streams based on review of data listed above. Within the pre-existing datasets depicting streams, floodplains, or infrastructure, no single dataset included a complete, accurate alignment of each stream. Digitizing the streams based on review of all of the data listed above allowed creation of GIS linework with a continuous corrected alignment for each stream. The following data were recorded as GIS attributes for each stream as the stream was digitized:

- River name
- Reach type (engineered or natural, constrained or un-constrained)
- Bed material
- Bank material
- Hydrographic category (perennial or intermittent)

The attributes listed above were collected manually based on interpretation of the reference data. Assumptions used in making the interpretations are listed below. The ***Hydrographic Category*** section below will provide the rationale as to why perennial and intermittent were the hydrographic categories chosen for this WMAA and not perennial and ephemeral.

Note that stream classification was not prepared within areas of Federal/State/Indian lands unless data was readily available. Stream lines were prepared within these areas for continuity, but some data fields were not populated within these areas.

Reach Type

Streams were classified as either engineered or natural, and either constrained or un-constrained. See the exhibit titled, "Watershed Management Area Streams by Reach Type" in Attachment A.2. The purpose of this exercise was to identify whether the stream has been modified by human activity within the stream itself, which may include addition of crossing structures, stabilization of banks, dredging, or any other human activity. This aids the identification of physical structures including stream armoring, constrictions, grade control, and other modifications as required by the Regional MS4 Permit.

Classification of the streams as either "**engineered"** or **"natural"** was based on the following criteria:

Engineered

- A classification of "engineered" was assigned where the stream itself has been modified by human activity.
- All culvert/bridge/pipe crossings either provided in the Copermittes' storm water conveyance system data or clearly visible on the aerial photo have been assigned as engineered within the limits of the crossing.
- If the Copermittees did not provide storm water conveyance system data for the dirt road crossings/dip sections the streams have been assigned as engineered within the limits of the crossing. These crossings may or may not have culverts.
- If the Copermittees' storm water conveyance system data stated the facility is a detention or desilting basin, they were assigned as engineered.
- Golf courses have been assigned as engineered.
- If aerial photography showed large water bodies (lake, pond, irrigation pond, etc.) they were assigned as engineered.
- If the storm water conveyance system data provided by the Copermittees has identified the stream as "rockbs", the assumption has been made that these streams have rocks on their bottom and the sides ("bs"), and have been assigned as engineered.
- Sand mining operations have been assigned as engineered. Sand mining is an operation that is in continuous flux and does not typically result in a discrete, engineered geometry in any given channel cross section until restoration is implemented at the conclusion of the sand mining operation. It is assigned as engineered to acknowledge human alteration of the stream.

Natural

- Streams that have no apparent alteration within the stream itself by human activity have been assigned as natural.

Classification of the streams as either **"constrained"** or **"un-constrained"** was based on the following criteria:

Constrained

- All culvers/bridge/pipe crossings either provided in the Copermittes' storm water conveyance system data or clearly visible on the aerial photo have been assigned as constrained.
- If the Copermittees did not provide storm water conveyance system data for the dirt road crossings/dip sections the streams have been assigned as constrained. These crossings may or may not have culverts.
- If the Copermittees' storm water conveyance system data stated the facility is a detention or desilting basin, they were assigned as constrained.
- Golf courses have been assigned as constrained if located within the Federal Emergency Management Agency (FEMA) floodway based on the "National Flood Hazard Layer" data.
- The USGS National Hydrographic Dataset in their hydrographic category had assigned some reaches as artificial paths. In these situations and if the aerial photography shows large water bodies (lake, pond, irrigation pond, etc.) these streams have been assigned as constrained.
- Sand mining operations located within the FEMA floodway based on the "National Flood Hazard Layer" have been assigned as constrained.

Un-constrained

- Golf courses have been assigned as un-constrained if not located within the FEMA floodway based on the "National Flood Hazard Layer" data.
- Sand mining operations not located within the FEMA floodway based on the "National Flood Hazard Layer" data have been assigned un-constrained.
- If the stream is located within the FEMA floodway based on the "National Flood Hazard Layer" and there is available land in the floodway fringe (the area between the floodway and the 100-yeaer floodplain) the area has been assigned un-constrained. Note that there may be only one side or both sides of the stream with available land in the floodway fringe therefore a note was added as to which side of the stream is constrained and un-constrained.
- If the stream is located within a FEMA 100-year floodplain based on the "National Flood Hazard Layer" data with no floodway and the FEMA floodplain width is not within an existing development or bordered by roads have been assigned as un-constrained.

Bed Material and Bank Material

The following bed and bank materials were identified:

- Concrete
- Riprap
- Pipe / culvert
- Earth

The assumptions made to identify the streams bed and bank materials were based on the following criteria:

- If the data provided by the Copermittees provided information about the stream bed and bank material, the provided data was used for the bed and bank material.
- Generally the data provided by the Copermittees did not identify the crossing type (pipe, box culvert, bridge with or without piers, etc.) or the material (RCP, RCB, earth, riprap, concrete, etc.). In that case, all culvert/bridge/pipe crossings were assigned as pipe/culvert for the bed and bank material.
- If the Copermittees did not provide data for the dirt road crossings/dip sections the bed and bank material have been assigned as pipe/culvert. These crossings may or may not have culverts.
- If the Copermittees' storm water conveyance system data stated the facility is a detention or desilting basin, the bed and bank material have been assigned as earth.
- If aerial photography showed large water bodies (lake, pond, irrigation pond, etc.) they were assigned as earth bed and bank material. The USGS National Hydrographic Dataset in their hydrographic category had assigned some of these types of reaches as artificial paths.
- Sand mining operations within the stream have been assigned as earth for bed and bank material.
- If the Copermittees did not provide data for the stream material the bed and bank material have been assigned based on the aerial photography.

See exhibits titled, "Watershed Management Area Streams by Bed Material" in Attachment A.2.

After stream bed and bank material was classified, earthen reaches were further classified by geologic group. This was accomplished by intersecting the streams with the geologic group layer that had been prepared for use in the dominant hydrologic process and potential coarse sediment yield analyses. The result is displayed in exhibits titled, "Watershed Management Area Streams by Geologic Group" in Attachment A.2.

Hydrographic Category

Streams were classified as "perennial" or "intermittent." See exhibits titled, "Watershed Management Area Streams by Hydrographic Category" in Attachment A.2. Classification was obtained from the USGS National Hydrography Dataset (NHD). The definitions of these categories in the USGS National Hydrography Dataset are:

- **Perennial**: Contains water throughout the year, except for infrequent periods of severe drought.
- **Intermittent**: Contains water for only part of the year, but more than just after rainstorms and at snowmelt.

While the specific Regional MS4 Permit language requested classification of perennial or ephemeral, rather than perennial or intermittent, the data that was referenced in order to classify streams did not include "ephemeral" streams. For reference, the USGS National Hydrography

Dataset definition of "ephemeral" is: "contains water only during or after a local rainstorm or heavy snowmelt." None of the stream reaches in the study were classified as ephemeral in the NHD dataset, therefore none are classified as ephemeral in the WMAA product. The City of San Diego provided a map titled “City of San Diego Stream Survey” dated April 3, 2013 prepared by AMEC that shows streams that are “dry” and streams that are “flowing”. This information in conjunction with the other parameters listed in this section was used to determine if a stream was perennial or intermittent.

USGS NHD includes hydrographic category classification for many of the streams. However data was not available for all reaches of all streams. In order to classify reaches of streams that did not already contain this data in NHD, these assumptions were made:

- The USGS NHD information for the stream hydrographic category has been used when available.
- When USGS NHD has “artificial paths” for portions of the stream, the hydrographic category of the upstream portion of the stream have been assigned to the stream unless other assumptions took precedence.
- If aerial photography shows large waterbody (lake, pond, irrigation pond, etc.) perennial has been assumed for the hydrographic category.
- For ponded areas shown on the aerial photography and if the USGS 7.5-minute quadrangles shows cross hatching for the area, intermittent has been assigned unless the upstream portion of the stream was assigned as perennial pursuant to the USGS National Hydrography Dataset then assigned perennial for the ponded area.
- USGS has a dashed line for intermittent streams. USGS has a solid line for perennial streams. In some situations this information was used to assist in the determination of assigning perennial or intermittent to a stream.

2.2.3. Results for stream characterization

The 27 streams and data are contained in a GIS file titled "SD_Regional_WMAA_Streams" located in Attachment C. The streams are shown in watershed maps included in Attachment A.2.

Summary of Deliverables for Stream Characterization

Format	Item	Description	Location
Report	Title of Figures	• "Watershed Management Area Streams" • "Watershed Management Area Streams by Hydrographic Category" • "Watershed Management Area Streams by Bed Material" • "Watershed Management Area Streams by Geologic Group" • "Watershed Management Area Streams by Reach Type"	Attachment A.2
GIS	Map Group Title	Not Grouped	Attachment C.1
	Map Layer Title	SD_Regional_WMAA_Streams	

Format	Item	Description	Location
	Geodatabase Feature Dataset	Streams	
	Geodatabase Feature Class	SD_Regional_WMAA_Streams	
	Geodatabase Geometry Type	Line	
KMZ [1]	KMZ File Name	SD_Regional_WMAA_Streams	Attachment C.2

[1] To enhance the utilization of this data, the Stream Characterization map is provided in both traditional GIS file format (ESRI software license purchase required) and as a Google Earth KMZ (Keyhole Markup Language/Zipped) file that can be viewed with the free download version of Google Earth (http://www.google.com/earth/).

In addition to the 27 streams that were subject of detailed analysis, NHD streams have been included on maps and within the geodatabase for reference. The NHD stream alignments have not been corrected and in some cases may be inconsistent with the existing infrastructure. The NHD streams are contained in a GIS file titled, "SD_NHD_Streams."

2.2.4. Limitations for stream characterization

- Only a desktop analysis was performed and no field verification was conducted.
- Infrastructure is only based on storm water conveyance system data provided by Copermittees or clearly visible on aerial photography. If the Copermittee used a numbering or lettering system for describing bed and bank material for example, since the metadata was not provided the bed and bank material could not be verified.
- In some instances concrete channels cannot be identified on aerial photography if it is filled with sediment and/ or vegetation.

2.3.Land Uses

For the purpose of the WMAA, the Regional MS4 Permit requires a description of current and anticipated future land uses. This is presented in the final GIS deliverable as "Land Use Planning" and includes the following representations of land uses in the watersheds: existing land uses, planned land uses, developable lands, redevelopment and infill areas, floodplains, Multiple Species Conservation Program (MSCP) designated areas, and areas not within the Copermittees' jurisdictions (tribal lands, state lands, and federal lands).

2.3.1. Datasets Used for land uses

The following existing regional datasets were referenced to meet this requirement:

- Municipal boundaries: "Municipal_Boundaries" dated August 2012, available from SanGIS/SANDAG
- Ownership: "Parcels" dated December 2013, available from SanGIS/SANDAG
- Existing land use: "SANGIS.LANDUSE_CURRENT" dated December 2012, available from SanGIS/SANDAG (existing land use)
- Planned land use: "PLANLU" (Planned Land Use for the Series 12 Regional Growth Forecast (2050)), dated December 2010, available from SanGIS/SANDAG
- Developable land: "DEVABLE" (Land available for potential development for the Series 12 Regional Growth Forecast), dated December 2010, available from SanGIS/SANDAG
- Redevelopment and infill areas: "REDEVINF" (Redevelopment and infill areas for the Series 12 Regional Growth Forecast), dated December 2010, available from SanGIS/SANDAG
- Floodplains: "National Flood Hazard Layer" provided by Federal Emergency Management Agency October 2012
- Multiple Species Conservation Program (MSCP), total of four datasets available from SanGIS/SANDAG: "MHPA_SD," dated 2012, (Multiple Habitat Planning Areas for City of San Diego); "MSCP_CN," dated 2009 (designations of the County of San Diego's Multiple Species Conservation Program South County Subregional Plan); "MSCP_EAST_DRAFT_CN," dated 2009 (draft East County MSCP Plan); and "Draft_North_County_MSCP_Version_8.0_Categories," dated 2008 (draft North County MSCP Plan)

2.3.2. Methodology/Assumptions/Criteria for land uses

The existing regional datasets for existing land use, planned land use, developable land, redevelopment and infill areas, floodplains, and MSCP designated areas were referenced with no modifications. Areas not within the Copermittees' jurisdictions (tribal lands, state lands, and federal lands) were compiled from SanGIS parcel data (December 2013) based on the "ownership" value. The owners listed below were excluded from the Copermittees jurisdictions and represent the "Federal/State/Indian" layer, which is displayed on various maps included in Attachment A.2.

- Bureau of Land Management
- California Department of Fish and Game
- Indian Reservations
- Military Reservations
- Other Federal

- State
- State of California Land Commission
- State Parks
- U.S. Fish and Wildlife Service
- U.S. Forest Service

When available, relevant data from these areas was included in analyses (e.g., developable land areas within Federal/State/Indian areas). Stream lines were prepared within these areas for continuity. However, stream classification (e.g., bed and bank material) was not prepared within these areas unless data was readily available (e.g., hydrographic category data available from NHD)

2.3.3. Results for land uses

The existing regional datasets are compiled into the Geodatabase in a group titled, "Land Use Planning." Current and anticipated future land uses are depicted in watershed maps included in Attachment C. Federal/State/Indian Lands are also referenced on all other map exhibits included in Attachment A.2.

Summary of Deliverables for Land Uses

Format	Item	Description	Location
Report	Title of Figures	• "Existing Land Use" • "Planned Land Use" • "Developable Land" • "Redevelopment and Infill Areas"	Attachment A.3
GIS	Map Group Title	Land Use Planning	Attachment C.1
	Map Layer Title	Municipal Boundaries Federal/State/Indian Lands SanGIS_ExistingLandUse SanGIS_PlannedLandUse SanGIS_DevelopableLand SanGIS_RedevelopmentandInfill FEMA Floodplain MHPA_SD MSCP_CN MSCP_EAST_DRAFT_CN Draft_North_County_MSCP_Version_8_Categories	
	Geodatabase Feature Dataset	LandUsePlanning	
	Geodatabase Feature Class	SanGIS_MunicipalBoundaries Federal_State_Indian_Lands SanGIS_ExistingLandUse SanGIS_PlannedLandUse SanGIS_DevelopableLand	

Format	Item	Description	Location
		SanGIS_RedevelopmentandInfill FEMA_NFHL SanGIS_MHPA_SD SanGIS_MSCP_CN SanGIS_MSCP_EAST_DRAFT_CN SanGIS_Draft_North_County_MSCP_Version_8_Categories	
	Geodatabase Geometry Type	Polygon	
KMZ [1]	KMZ File Name	Municipal Boundaries Federal/State/Indian Lands Floodplains Due to file size limitations, SanGIS land use datasets were not converted to KMZ.	Attachment C.2
[1] To enhance the utilization of this data, the Land Uses map is provided in both traditional GIS file format (ESRI software license purchase required) and as a Google Earth KMZ (Keyhole Markup Language/Zipped) file that can be viewed with the free download version of Google Earth (http://www.google.com/earth/).			

2.3.4. Limitations

Some jurisdictions may have compiled GIS land use layers that include more detailed or more current information than the regional datasets available from SanGIS. SanGIS layers were selected for the Regional WMAA to provide consistent land use characterization region-wide, and to provide for repeatability of GIS analyses when a land use layer is required for input data. The definition of non-Copermittee areas identified in this document as "Federal/State/Indian Lands" is for the Regional WMAA. Some WQIPs may define non-Copermittee areas differently.

2.4.Potential Critical Coarse Sediment Yield Areas

The Regional MS4 Permit identifies in the provisions related to the WMAA that potential coarse sediment yield areas within the watershed be identified, with GIS layers (maps) as output. With regard to the function and importance of coarse sediment, SCCWRP Technical Report 667 titled "Hydromodification Assessment and Management in California" states the following:

"Coarse sediment functions to naturally armor the stream bed and reduce the erosive forces associated with high flows. Absence of coarse sediment often results in erosion of in-channel substrate during high flows. In addition, coarse sediment contributes to formation of in-channel habitats necessary to support native flora and fauna."

This report identifies the potential critical coarse sediment yield areas for the San Diego Bay WMA in compliance with this permit provision. The applied datasets and methodologies for identifying the coarse sediment yield areas, along with their respective results, are described in the sections below.

2.4.1. Datasets Used for identifying potential critical coarse sediment yield areas

The following datasets were used in the analysis

Dataset	Source	Year	Description
Elevation	USGS	2013	1/3rd Arc Second (~10 meter cells) digital elevation model for San Diego County
Land Cover	SanGIS	2013	Ecology-Vegetation layer for San Diego County downloaded from SanGIS
Geology	Kennedy, M.P., and Tan, S.S.	2002	Geologic Map of the Oceanside 30'x60' Quadrangle, California, California Geological Survey, Regional Geologic Map No. 2, 1:100,000 scale.
	Kennedy, M.P., and Tan, S.S.	2008	Geologic Map of the San Diego 30'x60' Quadrangle, California, California Geological Survey, Regional Geologic Map No. 3, 1:100,000 scale.
	Todd, V.R.	2004	Preliminary Geologic Map of the El Cajon 30'x60' Quadrangle, Southern California, United States Geological Survey, Southern California Areal Mapping Project (SCAMP), Open File Report 2004-1361, 1:100,000 scale.
	Jennings et al.	2010	"Geologic Map of California," California Geological Survey, Map No. 2 – Geologic Map of California, 1:750,000 scale

2.4.2. Methodology/Assumptions/Criteria for identifying potential critical coarse sediment yield areas

The methodology used to identify coarse sediment yield areas is based on Geomorphic Landscape

Unit (GLU) methodology presented in the SCCWRP Technical Report 605 titled "Hydromodification Screening Tools: GIS-Based Catchment Analyses of Potential Changes in Runoff and Sediment Discharge" (SCCWRP, 2010). Geomorphic Landscape Units characterize the magnitude of sediment production from areas through three factors judged to exert the greatest influence on the variability on sediment-production rates: geology types, hillslope gradient, and land cover. The GLU approach provides a useful, rapid framework to identify sediment-delivery attributes of the watershed. The process to integrate these factors into GLUs is indicated in the flow chart below.

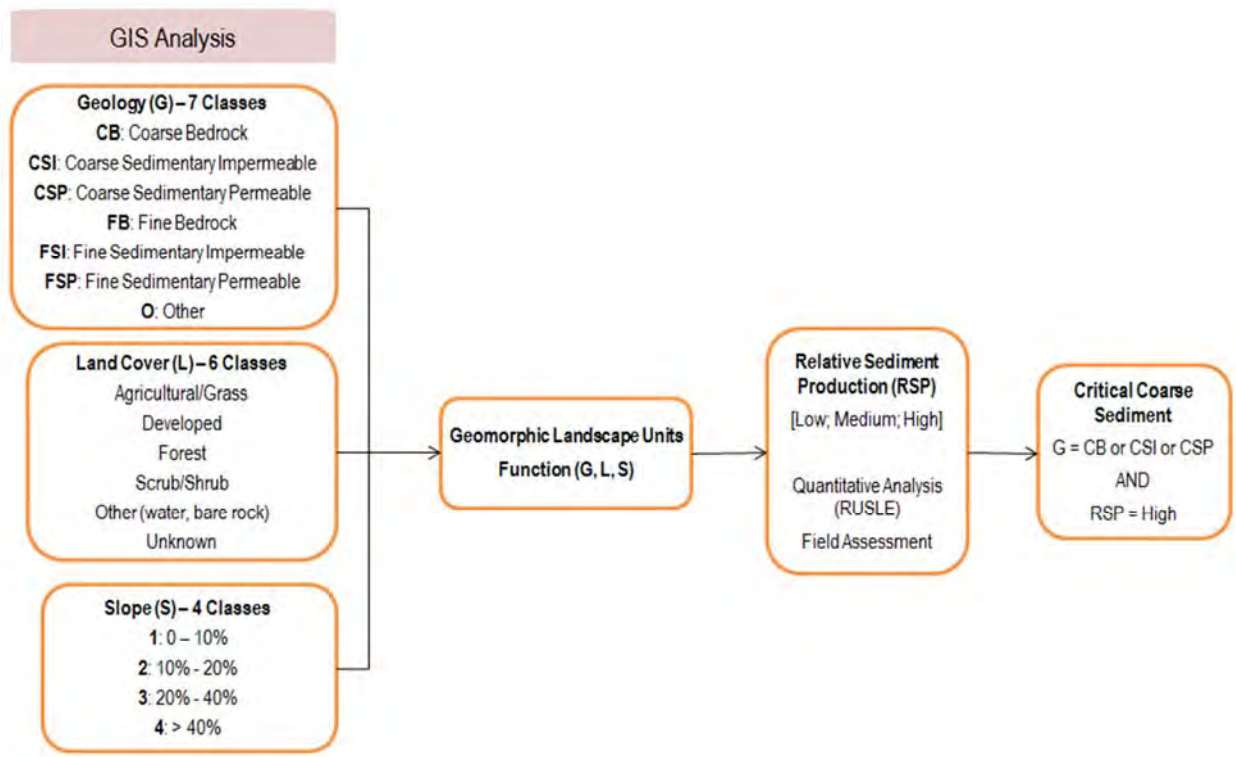

The following steps were used to define Geomorphic Landscape Units (GLUs), which were then related to the coarse sediment and critical coarse sediment yield areas in the San Diego Bay WMA.

1. **Integrate data sets used to determine GLU:** Categories for geology, gradient, and land cover were defined based on readily available GIS datasets for the region and classifications found in relevant literature listed in Chapter 6. The different combinations of these categories make up distinct GLUs.

   - **Geologic Categories**: based on methodology listed in Attachment A.4.1 of Attachment A.4. Resulting geologic categories from this analysis are: Coarse Bedrock (CB), Coarse Sedimentary Impermeable (CSI), Coarse Sedimentary Permeable (CSP), Fine Bedrock (FB), Fine Sedimentary Impermeable (FSI), Fine Sedimentary Permeable (FSP), and Other (O). An exhibit showing the regional geology groupings is presented in Attachment A.4.

   - **Land cover categories**: defined using the Ecology Vegetation GIS map layer developed by the City of San Diego, the County of San Diego and SANDAG which

were downloaded from SanGIS (2013). The vegetation categories in the GIS layer were grouped (Table A.1.2 in Attachment A.1) to match the following categories used in SCCWRP's Technical Report 605 (SCCWRP, 2010): Agriculture/Grass; Developed; Forest; Scrub/Shrub, Other (Water) and Unknown.

- **Gradient Categories**: based on slope ranges found in a review of relevant literature (GLU methodology applied in California) listed in Chapter 6. The spatial processing of the slope categories utilized the USGS National Elevation Dataset (NED). Slope ranges used include: 0% to 10%, 10% to 20%, 20% to 40%, and greater than 40%.

2. **GLU Union Results**: GIS mapping exercise for the study area resulted in 166 GLUs within the 9 WMAs in San Diego County. Table A.4.2 in Attachment A.4 provides the list of the 166 GLUs.

For implementing hydromodification management performance standards in the Regional MS4 Permit, the Copermittees need to identify Critical Coarse Sediment Yield areas in the study region. To provide information on the identification of Critical Coarse Sediment yield, the study assumed that critical coarse sediment would be generated from GLUs that are composed of geologic units likely to generate coarse sediment (based on the methodology listed in Step 3) and have the potential for high relative sediment production (as estimated using the methodology listed in Step 4).

3. **Define Pertinent Geologic groups**: the geologic groups (Attachment A.4.1) considered in this study to have the potential to generate coarse sediment are Coarse Bedrock (CB), Coarse Sedimentary Impermeable (CSI), and Coarse Sedimentary Permeable (CSP). An exhibit showing the regional geologic grouping is presented in Attachment A.4.

4. **Relate GLU to Sediment Production**: For assigning GLUs with a relative sediment production, the following methodology was utilized:

    - Conducted quantitative analysis to assign relative sediment production. Analysis was performed based on the assumption that sediment production from an area is proportional to the soil loss from the area, as evaluated using standard soil loss equation. Detailed analysis steps are documented in Attachment A.4.2;

    - To validate the quantitative assignment above, a qualitative field assessment was conducted for 40 sites. Site selection and findings from the field assessment is documented in Attachment A.4.3.

    - The result of the field assessment indicated a 65% match between field conditions and the quantitative assignments. The mismatches are attributed to differences in percent land cover as assumed for the quantitative analysis and those observed in the field. As such, the quantitative assignments were considered to be valid for the purposes of assigning relative sediment production.

2.4.3. Results for identifying potential critical coarse sediment yield areas

The resulting GIS maps showing the spatial distribution of geologic grouping and critical coarse sediment yield areas within the San Diego Bay WMA are provided in Attachment A.4. An ArcMap document which presents the results from each step of the methodology is included in Attachment C. Based on this analysis it was estimated that 9.9 % of the study area is a potential critical coarse sediment yield area.

As a result of the regional-scale datasets, and commensurate data resolution, used to map the potential critical coarse sediment yield areas, some areas may have been mapped that in reality do not produce critical coarse sediment as they are existing developed areas. As such, an opportunity for jurisdictions to incorporate more refined data into the preliminary WMAA GIS dataset based on local knowledge and review of current aerial images was provided. The City of National and the County of San Diego provided augmented data in the San Diego Bay WMA for their respective jurisdictional areas.

Summary of Deliverables for Potential Critical Coarse Sediment Yield Areas

Format	Item	Description	Location
Report	Figures	"Geologic Grouping" "Potential Critical Coarse Sediment Yield Areas"	Attachment A.4
GIS	Map Group Layer Name	Potential Coarse Sediment Yield	Attachment C.1
	Map Layer Title	Geologic Grouping Land Cover Slope Category Geomorphic Landscape Unit Potential Coarse Sediment Yield Area Relative Sediment Production Potential Critical Coarse Sediment Yield Area	
	Geodatabase Feature Dataset	PotentialCoarseSedimentYield	
	Geodatabase Feature Class	GLUAnalysis PotentialCoarseSedimentYieldAreas PotentialCriticalCoarseSedimentYieldAreas	
	Geodatabase Geometry Type	Polygon	
KMZ [1]	KMZ File Name	Potential Critical Coarse Sediment Yield Areas	Attachment C.2

[1] To enhance the utilization of this data, the Geomorphic Landscape Unit Analysis is provided in both traditional GIS file format (ESRI software license purchase required) and as a Google Earth KMZ (Keyhole Markup Language/Zipped) file that can be viewed with the free download version of Google Earth (http://www.google.com/earth/).

2.4.4. Limitations for identifying potential critical coarse sediment yield areas

The resulting GIS layers were developed using regional datasets and provide a useful, rapid framework to perform screening-level analysis that is appropriate for watershed-scale planning studies. The methodology used to identify potential coarse sediment yield areas does not account for instream sediment supply and sediment production from mass failures like landslides which are difficult to estimate on a regional scale without performing extensive field investigation. This

data set also does not account for potential existing impediments that may hinder delivery of coarse sediment to receiving waters or downstream locations within the watershed as this was beyond the scope of a regional study. Where more precise estimates are required for a particular site or subarea it is recommended that this analysis be augmented with site-specific analysis. It is also recognized that this regional data set is a function of the inherent data resolution and therefore may not conform to all site conditions, or does not reflect changes to particular areas that have occurred since the underlying data was developed. As such, the WMAA data for the potential critical coarse sediment yield areas should be verified in the field according to the procedures outlined in the Model BMP Design Manual and/or jurisdiction specific BMP Design Manual.

2.5.Physical Structures

The Regional MS4 Permit requires the Copermittees to identify information regarding locations of existing flood control structures and channel structures, such as stream armoring, constrictions, grade control structures, and hydromodification or flood management basins with GIS layers (maps) as output, for each WMA being analyzed for the purpose of developing watershed-specific requirements for structural BMP implementation. This study identified the physical structures using a desktop-level analysis for the stream(s) identified in Section 2.2 in compliance with this permit provision.

2.5.1. Approach for identifying physical structures

The intent of this portion of the WMAA project was to provide an initial assessment of the structures of interest for the stream(s) identified in Section 2.2. This desktop-level analysis was conducted primarily as a visual survey of aerial imagery and FEMA flood insurance study (FIS) profiles where available. The collected information was entered into a GIS layer for inclusion into the overall WMAA geodatabase containing the characterization layers required by the Regional MS4 Permit. To support overall WMA characterization, the information derived in this task provides insight into water and sediment movement through the watershed (SCCWRP, 2012), the opportunities and limitations for infrastructure retrofits and also informs efforts to identify appropriate locations for habitat or riparian area rehabilitation in relation to proximate infrastructure. Specific information regarding how the survey was performed and the attributes of the generated data is presented in Attachment A.5. Note that concrete channels, pipes/culverts, riprap or other artificial stream armoring, and basins have also been identified in the linework generated for the streams (see Section 2.2).

2.5.2. Results for identifying physical structures

The resulting GIS mapping provided in Attachment A.5 shows the spatial locations of the physical structures within the mapped stream(s).

Summary of Deliverables for Physical Structures

Format	Item	Description	Location
Report	Figure	Watershed Management Area Streams by Reach Type with Channel Structures	Attachment A.5
GIS	Map Group Layer Name	Channel Structures	Attachment C.1
	Map Layer Title	Channel Structures	
	Geodatabase Feature Dataset	ChannelStructures	
	Geodatabase Feature Class	ChannelStructures	
	Geodatabase Geometry Type	Point	
KMZ [1]	Kmz File Name	ChannelStructures	Attachment C.2

[1] To enhance the utilization of this data, the Physical Structures map is provided in both traditional GIS file format (ESRI software license purchase required) and as a Google Earth KMZ (Keyhole Markup Language/Zipped) file that can be viewed with the free download version of Google Earth (http://www.google.com/earth/).

3. Template for Candidate Project List

The Regional MS4 Permit requires each WMA to use the results from the WMA characterization to compile a list of candidate projects that could potentially be used as alternative compliance options for Priority Development Projects should an agency or jurisdiction opt to develop an alternative compliance program. Copermittees must first conclude that implementing such a candidate project would provide greater overall benefit to the watershed than requiring implementation of structural BMPs onsite prior to implementing these candidate projects as alternative compliance projects.

The Copermittees elected to identify potential candidate projects as a separate effort from this regional project, and therefore the process for identifying candidate projects is not documented in this report. Instead, this project only developed a template, in a spreadsheet format, for use by the Copermittees to compile lists of potential candidate projects. The template is intended to enhance regional consistency of the information that is gathered for candidate projects. The template spreadsheet file was distributed to the Copermittees on January 28, 2014. A table of the template components is indicated below:

Column	Primary Heading	Secondary Heading	Guidance for Completing the Project List
A	Project Identifier	-	Unique identifier for the project.
B	Watershed Management Area	-	Dropdown menu to select the watershed management area the project is located in
C	Hydrologic Area (HA)	-	Dropdown menu to select the hydrologic area the project is located in Select a WMA in column B for HA (Column C) dropdown menu to activate.
D	Hydrologic Subarea (HSA)	-	Dropdown menu to select the hydrologic subarea the project is located in. Select a HA in column C for HSA (Column D) dropdown menu to activate.
E	Jurisdiction	-	Dropdown menu to select the jurisdiction the project is located in. Select a HSA in column D for Jurisdiction (Column E) dropdown menu to activate.
F	Project Name	-	Indicate the name of the project.
G	Ownership	Type	Dropdown menu to select if the project is a public project, private project, or public-private partnership.
H	Ownership	Ownership Information	List the details for the owner.
I	Project Location	Address	List the address of the project site.
J	Project Location	APN	List the APN of the parcel.
K	Project Location	Latitude	List the latitude of the project site.
L	Project Location	Longitude	List the longitude of the project site.
M	Project Origination/ Originator	Name	List the name of the report/organization/individual that provided the idea for the project. Potential origination sources: WQIP, WMAA, JURMPs, WURMPs, CLRPs, IRWM, MSCP, MHPA, Other.

Column	Primary Heading	Secondary Heading	Guidance for Completing the Project List
N	Project Origination/ Originator	Contact Information	Link or report title if the proposed project is from a report [or] contact information if from an organization/individual.
O	Project Category	-	Drop Down menu to select the project category; In addition to the 6 project categories explicitly listed in the Regional MS4 Permit, the drop down menu also has a category "Other project types allowed by the MS4 Permit". Example for “Other” project types are agency CIP programs such as Green Streets, LID conversions (medians, parks), agency filter installation, etc.
P	Specific Project Type	-	List the subcategory of the project; for example, list Regional BMP type (i.e. infiltration basin, wetland, etc.).
Q	Potential Pollutant	-	Identify the potential pollutant(s) that can be treated by the proposed project.
R	Project Size & Parameters	Contributing Drainage Area (acres)	List the contributing drainage area to the project.
S	Project Size & Parameters	Parcel Size (acres)	List the size of the parcel the project is located on.
T	Project Size & Parameters	Project Footprint (acres)	List the size of the project footprint.
U	Project Size & Parameters	Parameters (with units as necessary)	Parameters needed to quantify benefits from the project; i.e. for an infiltration basin, list the water quality volume, long-term infiltration rate, depth of the basin, etc.
V	Regulatory Requirement	-	Indicate if the project is proposed to meet particular regulatory requirement such as TMDL, etc.
W	Project Timeline	-	Indicate if a project must be implemented by certain date to meet a grant deadline or other time commitment.
X	Other Notes	-	List any other relevant notes; for example, when retrofitting existing infrastructure project category is selected, input parameters needed to quantify benefits from existing infrastructure into this column as these will be needed to estimate additional benefits that can be used for alternative compliance. If N/A is selected in any dropdown menus, add additional explanation in here

4. Hydromodification Management Applicability/Exemptions

Hydromodification, which is caused by both altered storm water flow and altered sediment flow regimes, is largely responsible for degradation of creeks, streams, and associated habitats in the San Diego Region. The purpose of the hydromodification management requirements in the Regional MS4 Permit is to maintain or restore more natural hydrologic flow regimes to prevent accelerated, unnatural erosion in downstream receiving waters.

In some cases, priority development projects may be exempt from hydromodification management requirements if the project site discharges runoff to receiving waters that are not susceptible to erosion (e.g., a lake, bay, or the Pacific Ocean) either directly or via hardened systems including concrete-lined channels or existing underground storm drain systems.

The March 2011 Final Hydromodification Management Plan (HMP) identified certain exemptions from hydromodification management requirements by presenting "HMP applicability criteria." The Regional MS4 Permit maintains some of these HMP applicability criteria. However, some of the applicability criteria are not included under the Regional MS4 Permit unless the area or receiving water is mapped in the WMAA. The intent of this Section is to provide mapping of areas exempt from hydromodification management requirements, and provide supporting technical analyses for exemptions that are recommended by the WMAA.

4.1.Additional Analysis for Hydromodification Management Exemptions

This section documents additional analysis performed to further evaluate the following exemptions that were already approved by the San Diego Regional Board with the 2011 Final HMP. This study only provides additional analysis, data, and rationale for supporting or eliminating the following existing exemptions and does not propose or study any new exemptions.

- Exempt River Reaches
- Stabilized Conveyance Systems Draining to Exempt Water Bodies
- Highly Impervious Watersheds and Urban Infill and
- Tidally Influenced Lagoons

4.1.1. Exempt River Reaches

4.1.1.1. History

The March 2011 Final HMP, approved by the SDRWQCB under the 2007 MS4 Permit, provided a potential exemption from hydromodification management requirements for projects discharging runoff directly to certain major river reaches, including a reach of the Otay River and a reach of the Sweetwater River, provided that the outlet elevation of the project's outfall(s) to an identified exempt river reach are between the river bottom elevation and the 100-year floodplain elevation, and properly sized energy dissipation is provided at the outfall(s).

Exempt river systems/reaches from the 2011 Final HMP:

River	Downstream Limit	Upstream Limit
Otay River	Outfall to San Diego Bay	Lower Otay Reservoir Dam
Sweetwater River	Outfall to San Diego Bay	Sweetwater Reservoir Dam

Exemptions related to runoff discharging directly to the above river reaches were based on the flow duration analysis performed for the San Diego River in the Final HMP and the Technical Advisory Committee (formed to provide input on the development of the Final HMP) members' opinion (based on field observations and years of historical perspective) that the above river reaches have very low gradients, were depositional (aggrading), have very wide floodplain areas when in the natural condition and that the effects of cumulative watershed impacts to these reaches is minimal provided that properly sized energy dissipation is provided at outfalls to the rivers.

4.1.1.2. Status under 2013 Regional MS4 Permit

Under the Regional MS4 Permit, exempt river reaches would not qualify for exemption from hydromodification management controls unless the optional WMAA is developed with additional rationale/analyses to support reinstating exemptions to these river reaches. Additional analysis performed as part of the WMAA to evaluate hydromodification management control exemptions to the previously exempt reaches is presented below.

4.1.1.3. Research, Approach and Results

Hydromodification impacts can be caused due to increase in flows, changes in sediment transport capacity and changes in sediment supply to the streams (SCCWRP, 2012). In order to evaluate the cumulative impacts due to development and determine if hydromodification management exemptions can be reinstated for the river reaches that were exempt in the previous permit term erosion potential (Ep) analysis was used to evaluate the increase in flows and changes in sediment transport capacity. In addition, sediment supply potential (Sp) analysis was used to evaluate the changes in sediment supply in this study. In regards to Ep analysis SCCWRP Technical Report 667 "Hydromodification Assessment and Management in California" states:

> *"The underlying premise of the erosion potential approach advances the concept of flow duration control by addressing in-stream processes related to sediment transport. An erosion potential calculation combines flow parameters with stream geometry to assess long term (decadal) changes in the sediment transport capacity. The cumulative distribution of shear stress, specific stream power and sediment transport capacity across*

the entire range of relevant flows can be calculated and expressed using an erosion potential metric, Ep (e.g., Bledsoe, 2002)."

The approach used in this study is explained in detail in Attachment B.1.1.1. The following WMA characterization maps developed in Section 2 were used to select inputs for the exempt river reach analysis:

- Planning land use layers from Section 2.3 were used to estimate the existing impervious area and identify the developable parcels in each watershed. A GIS exercise was performed to identify the developable parcels in each watershed that will be exempt from hydromodification management requirements if the exemption is granted.
- Stream type classification analysis from Section 2.2 was used to select a conservative cross section (segments that are assigned naturally constrained) to be used in analysis for each watershed
- GLU analysis and its associated quantitative analysis described in Section 2.4 were used to determine Sp metric for each watershed. In this study coarse sediment supply changes were limited to changes in hill slope erosion between existing condition and future condition (for parcels that are proposed to be exempt from hydromodification management) of the watershed. It was assumed that the changes in instream sediment supply between existing and future condition for these large depositional river systems are very minimal.

Selection of inputs for the analysis is explained in detail in Attachment B.1.1.2 and results from the analysis are presented in Attachment B.1.1.3 in tabular format. The Ep analysis performed in this study does not account for the following Regional MS4 permit requirements as a conservative assumption. If accounted for, it will result in a smaller Ep than what is currently reported in Attachment B.1.1.3:

- New development priority development projects including projects that are proposed to be exempt from hydromodification management requirements through this WMAA study must implement retention BMPs to the extent feasible if alternative compliance option is not selected or not available.
- Redevelopment priority development projects must mitigate to the pre-developed condition

4.1.1.4. Recommendation

Based on the results from this study reported in Attachment B.1.1.3, the flow duration analysis performed in the Final HMP, and the Technical Advisory Committee (TAC) recommendations provided during the Final HMP development, it is recommended that hydromodification management exemption be reinstated for projects discharging runoff directly to ~~the following~~ two exempt river reaches.

Additionally, subsequent to the publication of the final WMAA for San Diego Bay, a technical study, including hydrologic modeling and an erosion potential analysis supporting a proposed hydromodification management requirements exemption for a portion of the Otay River, was prepared and submitted to the RPs on behalf of developers. The specific portion of the Otay River that the study considered is between the Lower Otay Reservoir Dam and I-805; the RPs with

jurisdictional area that drains to this reach are the cities of Chula Vista and San Diego and the County of San Diego. These three agencies commissioned a third-party review of the submitted study, which indicated that the study appeared to meet the relevant Municipal Permit requirements for a hydromodification management exemption. The study prepared by developers and the third-party review of the study were provided to the San Diego Bay Consultation Panel for review and comment. A public Consultation Panel meeting was also held on August 23, 2016 to discuss comments on the study. No comments objecting to the proposed exemption from hydromodification requirements were submitted by the Consultation Panel. Accordingly, the exemption for the Otay River between Lower Otay Reservoir Dam and I-805 has been incorporated into the San Diego Bay WMAA, subject to final approval by the San Diego Regional Water Quality Control Board. The technical study submitted in support of the exemption is included as Attachment B.3.

Exempt river reaches in the San Diego Bay WMA are listed below.:

River	Downstream Limit	Upstream Limit	Basis
Otay River	Outfall to San Diego Bay	Interstate 805	Original WMAA Analysis
Otay River	Interstate 805	Lower Otay Reservoir Dam	Additional Analysis (See Attachment B.3)
Sweetwater River	Outfall to San Diego Bay	Sweetwater Reservoir Dam	Original WMAA Analysis

Each municipality must define/approve "direct discharge" based on the project site conditions. To qualify for the potential exemption, the outlet elevation must be between the river bottom elevation and the 100-year floodplain elevation and properly designed energy dissipation must be provided. Mapping of these exempt river reaches is presented in Attachment B.2.

~~Additional studies to establish a site-specific allowable Ep metric for the Otay River from East of Interstate 805 to Lower Otay Reservoir Dam, more closely representing actual measured and observed characteristics of this river system, may result in allowing hydromodification management exemptions not currently supported by this desktop assessment which was based on an allowable Ep metric from literature. However, a~~Any future proposed HMP exemptions would need to be approved through the WQIP Annual Update process (Regional MS4 Permit Section F.1.2.c.).

4.1.1.5. Limitations

The analysis and associated recommendations as presented above were based on instream erosion as the primary consideration to support reinstatement of exemptions from hydromodification management controls for discharges directly to these river reaches. While it is recognized that other factors contribute to adverse impacts (e.g., salinity imbalance, pollutants) to instream habitat and resulting biotic integrity, hydromodification management control has traditionally been considered an "umbrella process" that encompasses most of the highest risk stressors (percent sands and fines present, channel alteration, and riparian disturbance) to physical habitat. Beyond demonstrating that instream erosion is not anticipated as a result of reinstating hydromodification management control exemptions for discharges to these river reaches, a focused method for

correlating physical and biotic integrity to modified hydrological conditions has not been performed in this analysis, as an assessment method has not yet been developed.

The current assessment methods may yield inconclusive results when attempting to identify causal relationships between degraded instream habitat solely due to increased flows and erosive force from hydromodification. A causal assessment recently conducted in the lower reaches of the San Diego River, conducted as a partnership between the Southern California Coastal Water Research Project (SCCWRP), the City of San Diego, the County of San Diego, and the San Diego RWQCB, focused on stressors potentially responsible for known biological impairment of the river. Once the data of the causal assessment become available, it may be useful in classifying the potential stressors such as altered physical habitat as likely, unlikely, or an uncertain cause to biological impairment.

With respect to adverse impacts to habitat as a result of pollutants entrained in storm water discharges, these areas will still be subject over time to the pollutant control requirements of the Regional MS4 Permit as areas develop or redevelop. The current requirements obligate development to maximize retention of the design storm volume which will mitigate a portion of the volume that would otherwise be controlled with hydromodification management BMPs. In some cases, this offsetting of volume reduction through pollutant control BMPs may exceed the HMP volumes. In addition, the development that occurs within the exempted watershed areas is still required to provide any applicable flood control measures. Risk of flooding as a result of exemption from hydromodification controls is unlikely as the control thresholds are significantly lower (order of magnitude) than flood control requirements implemented to protect life and property.

4.1.2. Stabilized Conveyance Systems Draining to Exempt Water Bodies

There are no stabilized conveyance systems currently recommended for exemption from hydromodification management requirements in the San Diego Bay WMA. If engineered conveyance systems that are stabilized with materials other than concrete, such as riprap, turf reinforcement mat, or vegetation, including rehabilitated stream systems, are identified as potential candidates for exemption, they may be studied and may be recommended exempt if they meet specific criteria presented in the Regional WMAA for this exemption. Refer to the Regional WMAA for the criteria and an example study that was prepared for Forester Creek in the San Diego River WMA. However, any future proposed HMP exemptions would need to be approved through the WQIP Annual Update process (Regional MS4 Permit Section F.1.2.c.).

4.1.3. Highly Impervious/Highly Urbanized Watersheds and Urban Infill

Based on evaluation of the highly impervious/highly urbanized watershed and urban infill exemptions presented in the March 2011 Final HMP, and comparison with more recent research prepared for the Ventura County Hydromodification Control Plan (Ventura County HCP) (Final Draft dated September 2013), resurrection of these exemptions from the March 2011 Final HMP was not recommended by the Regional WMAA. The research prepared in support of the Ventura County HCP determined lower thresholds of additional impervious area (ranging from 0.44% to 1.65%) than the limit presented in the San Diego County Final HMP dated March 2011 (3%). No areas within the San Diego Bay WMA are currently recommended for highly impervious/highly urbanized watershed or urban infill exemption.

4.1.4. Tidally Influenced Lagoons

There are no tidally influenced lagoons recommended for exemption from hydromodification management requirements in the San Diego Bay WMA. Refer to the Regional WMAA for further information regarding this exemption.

5. Conclusions

5.1. Watershed Management Area Characterization

The WMA Characterization data was developed using available regional data to further understand the macro-scale watershed characteristics and processes in the San Diego Bay WMA. The Regional MS4 Permit allows for flexibility in complying with land development requirements when using the information developed in the WMAA to improve water quality planning and implementation associated with land development. This dataset will assist with identifying the opportunities and constraints for projects and management decisions based on a watershed-scale (rather than piecemeal project identification without context within the watershed) and provides Copermittees the ability to exercise the option to create an alternative compliance program that offers the opportunity to develop watershed-specific alternatives to universal onsite structural BMP implementation. The characterization data includes:

Characterization Data	Utilization Potential
Dominant Hydrologic Process: • Overland flow • Infiltration • Interflow	• Identify areas for enhanced infiltration or collection of storm water for treatment • Implement management measures that correspond to pre-development conditions – promotes long-term channel stability and health • Increases understanding of the natural functioning of the watershed and what has been (or is at risk of being) altered by urbanization.
Stream Characterization: • Reach type • Bed material • Bank material • Hydrographic category • Channel Structures	• Preliminary dataset that can be used to conduct stream power evaluations • Identify channel systems for preservation or restoration • Identification of appropriate space for channel processes to occur (e.g., flood plain connectivity) • Insight to sensitivity of receiving stream reach • Indicates the features within channels that affect water and sediment movement through the watershed

Characterization Data	Utilization Potential
Land Use: • Existing • Future	• Foresight (identifies relative risks, opportunities, or constraints) in comparing future to existing land uses, i.e., areas that may be more/less vulnerable to adverse impacts to changes in storm water runoff associated with development • Encourage infill development
Potential Critical Coarse Sediment Yield Areas	• Preservation of areas or function that contributes critical sediment within the watershed to stream armoring/stability • Assist with identifying potentially susceptible stream reaches that require uninterrupted coarse sediment supplies to remain stable • Dual goal of open space conservation

Regarding the identification of the potential critical coarse sediment yield areas in the WMAA using readily available regional datasets, it is anticipated that when more precise estimates for potential critical coarse sediment yield areas are required for a particular site or subarea that this regional study will be augmented with site-specific analysis. Development projects must avoid critical sediment yield areas or implement measures that allow critical coarse sediment to be discharged to receiving waters, such that there is no net impact to the receiving water to meet the requirements of the Regional MS4 permit. As such, projects should consult the Model BMP Design Manual and/or jurisdiction specific BMP Design manual for options to meet the Regional MS4 Permit requirements. It is anticipated that the data will not be static but will be enhanced over time through future studies or field assessments that will refine what is currently a macro-level data set.

5.2.Template for Candidate Project List

It is anticipated the Copermittees that elect to develop alternative compliance programs will conduct a separate exercise to nominate potential candidate projects for inclusion into the WQIPs using the template developed for this project.

5.3.Hydromodification Management Exemptions

Attachment B.2 presents hydromodification management applicability/exemption mapping for the San Diego Bay WMA. The mapping includes receiving waters that are exempt based on the Regional MS4 Permit or recommended exempt based on studies.

Receiving waters that are **exempt** based on the Regional MS4 Permit include:

- The Pacific Ocean
- San Diego Bay
- Lakes and Reservoirs
- Existing underground storm drains or concrete-lined channels draining directly to San Diego Bay or the ocean

Receiving waters or conveyance systems that are **recommended exempt** in the San Diego Bay WMA based on studies that were prepared as part of the Regional WMAA or prepared by others and provided for this purpose include:

- Otay River from Outfall at San Diego Bay to Interstate 805
- Sweetwater River from San Diego Bay to Sweetwater Reservoir Dam
- Existing underground storm drains or concrete-lined channels discharging directly to the above receiving waters. These systems were identified based on MS4 data provided by the Copermittees via the data call. These systems may not represent all discharges to the above receiving waters. Additional systems may be considered exempt if there is no evidence of erosion at the outfall of the conveyance system, and any other criteria determined by the local jurisdiction.

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ATTACHMENT B.2

HYDROMODIFICATION MANAGEMENT EXEMPTION MAPPING

DRAFT

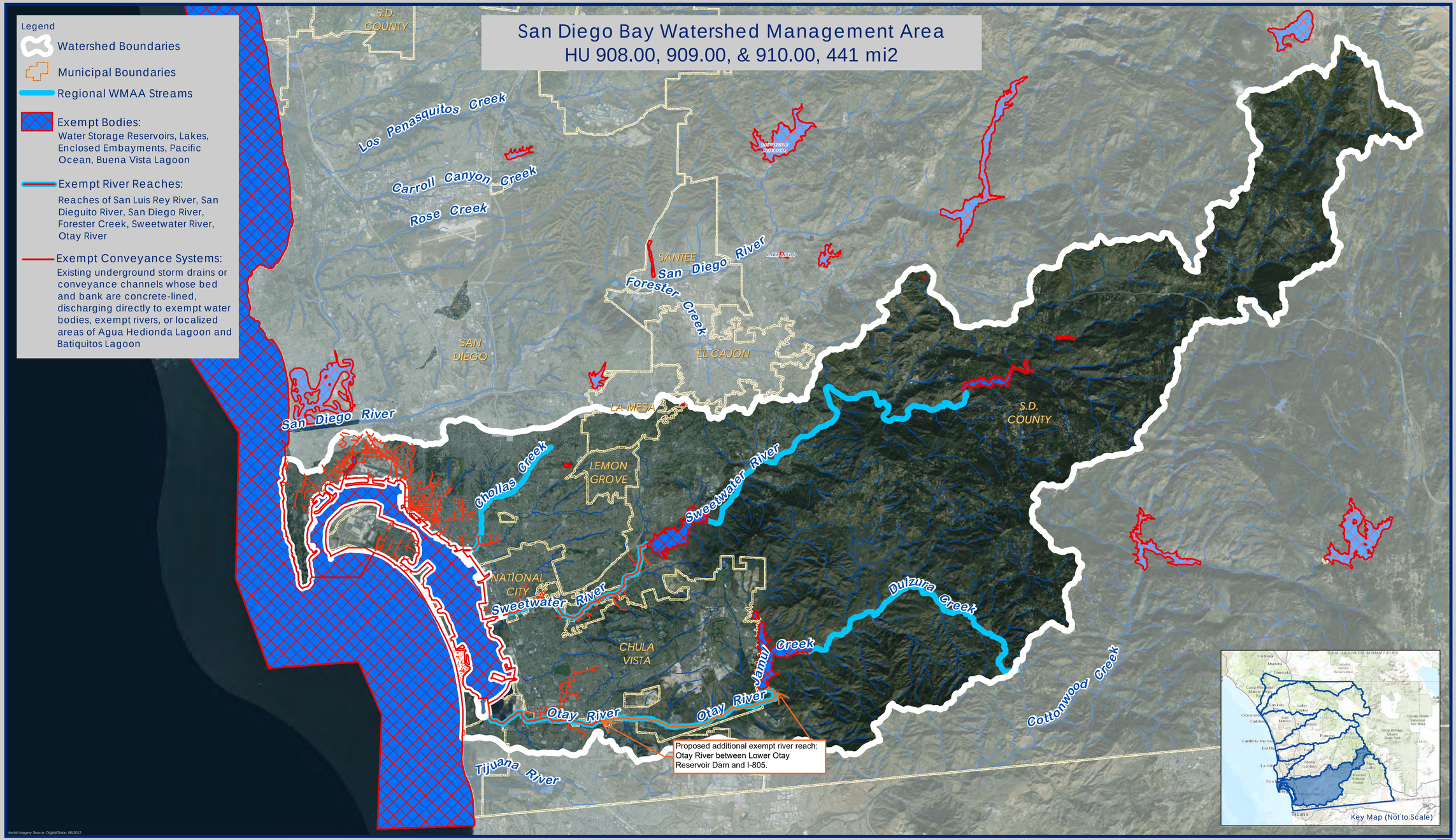

Receiving Waters and Conveyance Systems Exempt from Hydromodification Management Requirements

Exhibit Date: Sept. 8, 2014

Geosyntec consultants

RICK ENGINEERING COMPANY

ATTACHMENT B.3

TECHNICAL STUDIES OF THE OTAY RIVER BETWEEN LOWER OTAY RESERVOIR DAM AND I-805

ATTACHMENT B.3.1

TORY R. WALKER ENGINEERING OTAY RIVER EROSION POTENTIAL ANALYSIS (TRWE STUDY)

TORY R. WALKER ENGINEERING
RELIABLE SOLUTIONS IN WATER RESOURCES

December 18, 2015

Boushra Salem
Storm Water Management Section
City of Chula Vista
1800 Maxwell Road
Chula Vista, CA 91911

SUBJECT: OTAY RIVER EROSION POTENTIAL ANALYSIS

Dear Boushra:

Tory R. Walker Engineering (TRWE) has thoroughly analyzed the Erosion Potential (Ep) methodology used to support the proposed hydromodification management exemption for projects directly discharging to the Otay River from west of Interstate 805 (I-805) to San Diego Bay. Results of that study are presented in Appendix J of the September 2015 Revised Water Quality Improvement Plan for the San Diego Bay Watershed Management Area (San Diego Bay WQIP). This methodology, and its results (herein referred to as the WMAA Ep Analysis), did not include reinstatement of an exemption for the river reach upstream of I-805 to Lower Otay Reservoir.

TRWE conducted a more detailed Ep analysis that uses watershed-specific hydrologic modeling, historical imagery review, and field investigation of existing channel conditions to either invalidate, support, or build upon the WMAA Ep Analysis. Our collective efforts (herein referred to as the Otay Ep Analysis) sought to provide a clearer picture of the potential morphological impacts that may or may not result from granting hydromodification exemptions to projects directly discharging to the Otay River when analyzed more scrupulously. We tested the hypothesis that the effects of Savage Dam and the 1916 dam failure have a more profound impact on river morphology than any proposed directly discharging development downstream of Lower Otay Reservoir—an approach that has not yet been taken by any study. We also revised the WMAA Ep Analysis to account for the natural resiliency of the system due to the re-establishment of vegetation over the past 100 years. The Otay Ep Analysis considered the entire Otay River, from the Lower Otay Reservoir to San Diego Bay, and made the following major conclusions:

1. **The Otay River flow duration curve (FDC) demonstrates that the river will not experience significant erosion for the range of storms considered to be geomorphically significant if exemptions are granted for projects directly discharging into the river system;**

2. **Aerial imagery from 1928, 1953, and 2015 demonstrate that the Otay River has remained stable (i.e., in a steady state of dynamic equilibrium) throughout the rapid urbanization of Otay Valley over the past 87 years and has become progressively more stable through the re-establishment of heavy vegetation throughout the system;**

3. **The revised WMAA Ep Analysis demonstrates that no significant erosion occurs within the range of storms considered to be geomorphically significant when critical shear stress values representative of the in-stream conditions are considered.**

Based upon these findings, we recommend that hydromodification exemptions be reinstated for projects directly discharging to the Otay River, from the Lower Otay Reservoir to San Diego Bay. We propose that this study be included as an attachment to the San Diego Bay WMAA, revising the San Diego Bay WQIP.

This recommendation carefully considers the unique nature of the Otay River and directly deals with the erosion potential for the range of storms considered to be geomorphically significant, as is consistent with the both the mission and the desire of the San Diego Regional Water Quality Control Board (Walsh, 2015). We appreciate your time in reviewing our study, and trust you will find that our methods and conclusions are presented in a clear, concise, and understandable fashion.

Sincerely,

Tory R. Walker, PE, CFM, LEED GA
Principal

[1]Walsh, L. (2015, August 5). General Comments on Final Water Quality Improvement Plans and Notice of Noncompliance.

Natural Watershed versus Developed Watershed with Exemptions

The WMAA Ep Analysis is based on one type of model, and as with all hydrologic models, is most appropriately used in conjunction with field verification and comparison to a watershed-specific hydrologic model. It is further understood that the methodology behind the WMAA Ep Analysis sought to establish a clear and repeatable desktop-based process to analyze the potential of erosion for the range of storms considered to be geomorphically significant. From our review of the WMAA Ep Analysis, we determined that the methodology can indeed be a useful initial screening tool to conservatively assess the possibility of accelerated river channel erosion; it is not, however, a standalone metric for assessing the large, highly urbanized, impounded Otay River system—especially since the WMAA Ep methodology was not developed using data from impounded watersheds (Hawley, Bledsoe, & Stein, 2011). Savage Dam has had, and continues to have, a major influence on the Otay River morphology, yet no accepted exemption analysis has yet fully considered the extent of its effect, nor of its historic failure in 1916. Therefore, TRWE tested the first hypothesis: the *presence* of Savage Dam has a more profound impact on river morphology than any proposed, directly-discharging development downstream of Lower Otay Reservoir.

In order for the San Diego Regional Water Quality Control Board (San Diego Water Board) to accept a conclusion that a conveyance system can be exempt from hydromodification management BMP requirements, the report must include an analysis demonstrating that the natural channel under review would not experience erosion for the range of storms considered to be geomorphically significant (Walsh, 2015), as presented in Attachment 5. It is also the belief of the San Diego Water Board that using a hydrologic baseline that approximates an undeveloped, natural watershed is the only way to facilitate the return of more natural hydrologic conditions to already built-out watersheds, and ultimately improve stream health (San Diego Regional Water Quality Control Board, 2015). Therefore, TRWE used the United States Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) to model the Otay Hydrologic Unit under two unique scenarios: the first scenario approximated the hydrology of the impounded, fully built out Otay Valley watershed (drainage area downstream of Savage Dam) with hydromodification exemptions in place for proposed development areas directly discharging to the Otay River (herein referred to as the Exemption Scenario); the second scenario approximated the hydrology of the *natural, unimpounded* Otay hydrologic unit (herein referred to as the Natural Scenario). The study areas are presented in Figure 1.

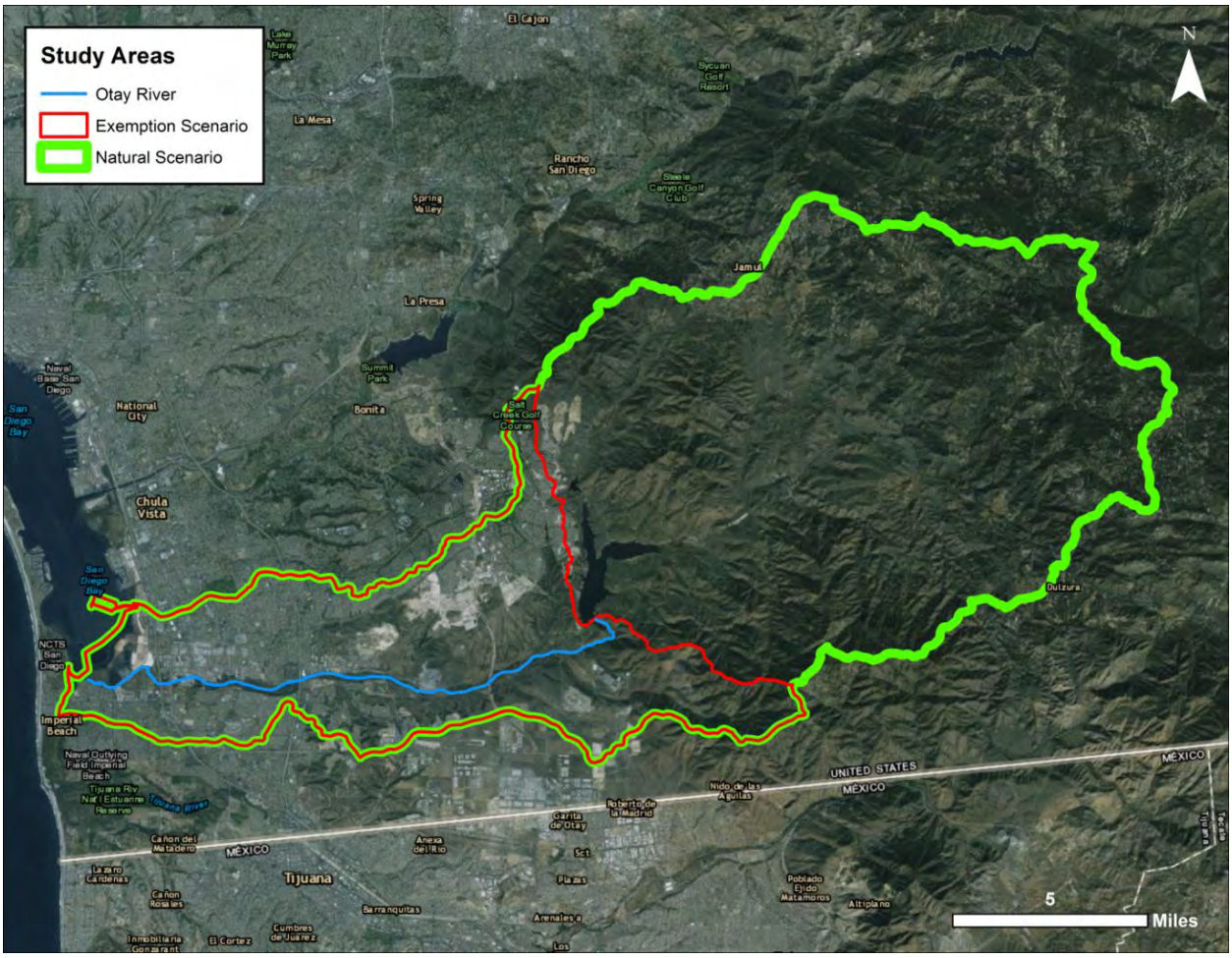

Figure 1: SWMM Study Areas

The Natural Scenario was used as the baseline condition and compared to the Exemption Scenario in order to determine if the latter would produce peak flows and durations that exceed the approximated natural hydrology by more than 10 percent for the range of flows considered to be geomorphically significant (from 10% of Q_2 to Q_{10}), as prescribed by Provision E.3.c.(2)(a) of the 2013 Regional MS4 Permit for all Priority Development Projects (San Diego Regional Water Quality Control Board, 2015). If the model demonstrated that the proposed exemptions would produce neither peak flows nor durations that exceed those of the approximated natural range of geomorphically significant flows by more than 10 percent, then the proposed exemption would meet the Permit's hydromodification management requirements on a watershed-wide scale. If the proposed exemption satisfies the Permit's hydromodification management requirements, then the flows may be considered as non-erosive and therefore warrant exemption as presented by the data.

To generate our model scenarios, we used a combination of geographic information system (GIS) data from the San Diego Geographic Information Source (SanGIS) Regional Data Warehouse (sangis.org), the United States Geological Survey (USGS) National Elevation Dataset (NED) (ned.usgs.gov), and the National Resource Conservation Service (NRCS) Web Soil Survey (WSS) (websoilsurvey.nrcs.usda.gov). First, the drainage areas downstream of Savage Dam were developed for the Exemption Scenario. With Savage Dam in place, areas upstream of Lower Otay Reservoir were neglected in the Exemption Scenario

because, for the geomorphically significant range, they do not and will not contribute flows to the Otay River. Areas were first classified as either "Exempt," "Non Exempt," or "Developed" for modeling purposes. Exempt and Non Exempt areas are subsets of currently undeveloped areas having planned land uses (SanGIS "Developable_Land" layer) that either directly (Exempt) or indirectly (Non Exempt) discharge into the Otay River. These areas were projected to directly or indirectly discharge based upon a plan set review conducted by the WMAA consultant team. The remaining area that did not classify as either Exempt or Non Exempt was classified as Developed. These three classifications were finally subdivided into lumped hydrologic soil groups to produce the SWMM subcatchment areas, each having area-weighted parameter inputs for percent impervious and slope based upon planned land use (SanGIS "LANDUSE_PLANNED" layer), County of San Diego imperviousness coefficients (County of San Diego, 2010), and USGS 10-meter Digital Elevation Models (DEMs). The width parameter was used as a calibration parameter equal to roughly 18% of the area-to-length ratio using the methodology presented by Smith et al., (2015), provided in Attachment 3. The remaining subcatchment parameters were assigned in accordance with Appendix G of the San Diego Region Model BMP Design Manual (Geosyntec Consultants & Rick Engineering, 2015). For the Natural Scenario, an additional "Impounded" classification was added to the Exempt, Non Exempt, and Developed classifications. Impounded areas are the areas upstream of the dam, subdivided only by hydrologic soil group. Full model parameters are provided in Attachment A.

To simulate the effect of hydromodification management control, we performed research within the San Diego Region in the work documented by Smith et al. (2015). This research determined that geomorphically significant peak flows (Q_2 to Q_{10}), on average, are reduced 43% from the post-developed unmitigated condition to post-developed mitigated condition when hydromodification management controls are implemented. Therefore, in order to simulate hydromodification controls within the model, flows were reduced by 43% where appropriate. In the Exemption Scenario, flow reduction was only applied to the Non Exempt drainage areas in order to allow Exempt areas to produce unmitigated post-developed runoff. In the Natural Scenario, flow reduction was applied to all drainage areas in order to approximate the pre-development flows as would be achieved by implementation of designed hydromodification management control systems. Given that the San Diego Water Board understands that the pre-development hydrology of an area cannot be precisely known, nor do they expect modelers to estimate historical conditions (San Diego Regional Water Quality Control Board, 2015), our approach in approximating the watershed's pre-development hydrology by using the best available data (projected land use and regional peak flow reductions) is an appropriate methodology that holds the regulatory standard as the baseline condition.

The resulting FDC (Figure 2) illustrates that, for the range of storms considered to be geomorphically significant, flow rates are larger in magnitude and duration for the approximated natural, undeveloped watershed condition than those produced for the impounded, developed watershed condition, even when the hydromodification exemptions are in place for all developable areas directly discharging to the Otay River. It should be noted that these results are conservative in nature due to the fact that the 1916 breach of Savage Dam significantly altered the Otay River morphology, as large segments of the river were scoured to bedrock (Patterson, 1970)—our Natural scenario does not account for flows nor durations that contend with those produced during this catastrophic event. The results demonstrate

that Savage Dam has a more significant effect on Otay River's morphology than any proposed development downstream of the reservoir. Therefore, our FDC serves as quantifiable evidence to validate the same conclusion made by the well-versed Technical Advisory Committee (TAC), whom was tasked with providing technical input to the scientific approach and interpretation of results integral to the establishment of numerical flow control standards for the 2011 Hydromodification Management Plan (HMP) (Brown and Caldwell, 2011). The peak flow comparison is provided in Table 1. The flow duration data summary is provided in Attachment A.

Table 1: SWMM Otay River Peak Flow Rate Comparison for the Natural and Exemption Scenarios

Return Period (years)	Natural Scenario Q (cfs)	Exemption Scenario Q (cfs)	Difference (cfs)
10	2567	2272	294
9	2470	2167	303
8	2356	2139	217
7	2239	2008	231
6	2118	1914	204
5	2074	1847	227
4	2021	1730	291
3	1918	1590	328
2	1691	1409	283

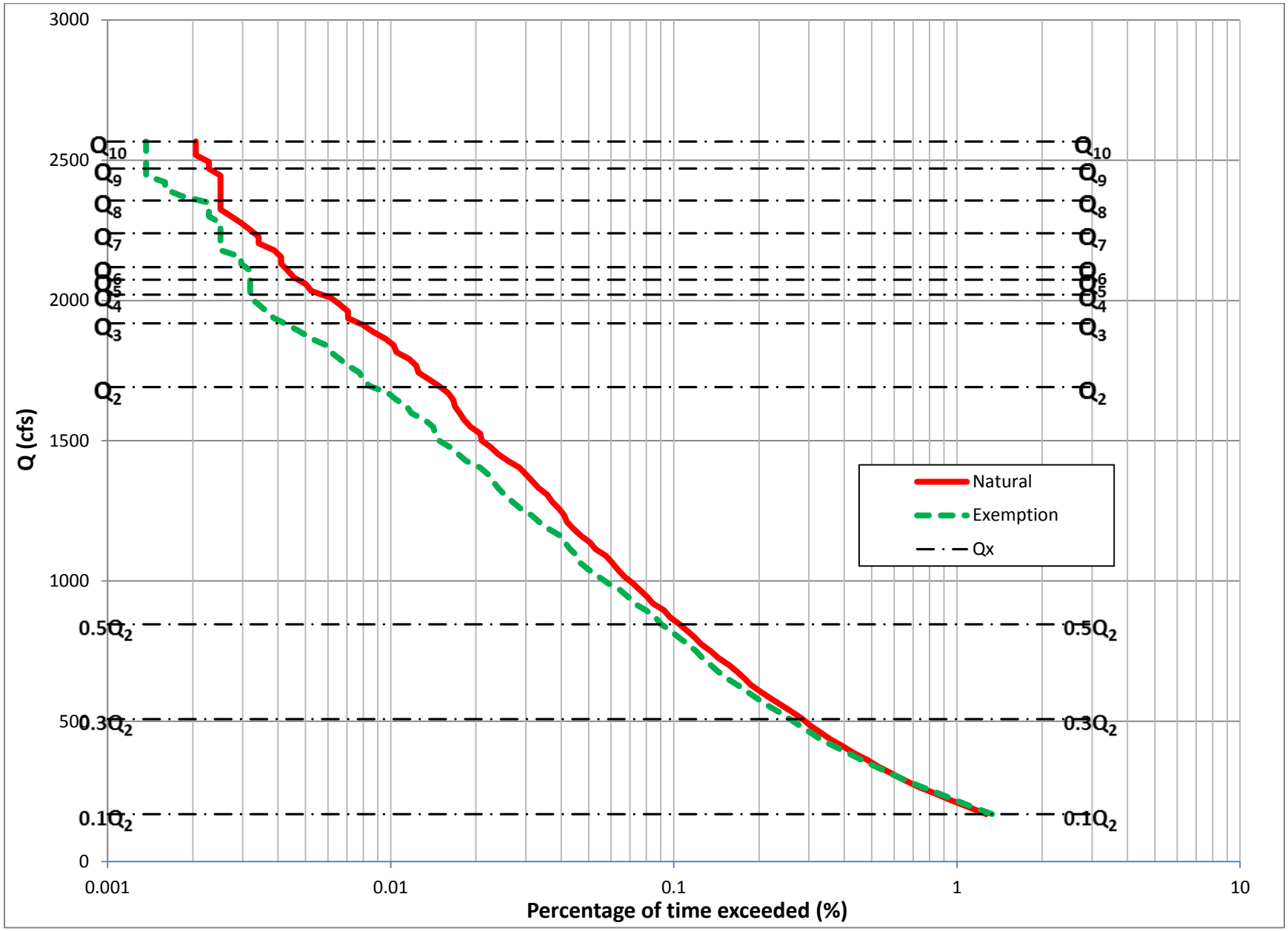

Figure 2: SWMM Otay River Flow Duration Curves for the Natural and Exemption Scenarios

1916 Savage Dam Failure and Historical Photographic Comparisons

We sought to establish multiple lines of evidence to either validate or invalidate our findings. In order to more accurately assess the exemption, we considered not only the *presence* of Savage Dam, but the *effect of its catastrophic failure* in 1916. Therefore, we tested the next hypothesis: the *historic failure* of Savage Dam has a more profound impact on river morphology than any proposed, directly-discharging development downstream of Lower Otay Reservoir. In order to do so, we conducted a historical image review to observe the relationship between urbanization and river morphology dating back to the earliest available aerial imagery (1928) provided by the County of San Diego Department of Public Works. We were also able to obtain stereoscope photographs taken in 1953 from the University of California, Santa Barbara's Aerial Imagery Research Service and a high-resolution 2015 image from Esri. We hypothesized that, due to the 1916 dam failure, the Otay River was extremely hydromodified and therefore has become significantly desensitized to changes in land use. If the photos demonstrate that the river has remained in a steady state of dynamic equilibrium during the course of Otay Valley's urbanization over the past 87 years, then it would be reasonable to acknowledge the river's proper equilibrium state and its resiliency to post-dam failure land use alterations.

The Savage Dam failure is a well-documented catastrophe. The flood of January 27, 1916 caused the rock-fill dam to fail, discharging over 1.7 billion cubic feet into Otay Valley over the course of 2.5 hours. An account of the events leading up to the dam breach and the aftermath in Otay Valley is given by Roy A. Silent (1916):

> Prior to January 15 [1916] the water surface in the Otay reservoir was 96.5 feet above zero contour. From Jan. 16 to 21 at 7 a.m. it had risen 11.8 ft. to a height of 122 ft. 8 in. At this time, water began to run over the spillway. ***From Jan. 21 on, the level continued to rise in spite of the discharge through the spillway. On the morning of Jan. 27 the reservoir was at 124 ft. 9 in., and the spillway was probably discharging in the neighborhood of 1,500*** [cfs] [emphasis added].
>
> The rain on Jan. 27 was extremely heavy, and by noon the water had risen so high that Mr. Weuste, in charge at the dam, deemed it advisable to open the outlet gate. This failed to check the rise, and it was realized that the dam would probably be overtopped before evening. Men were accordingly dispatched to warn residents in the valley to move to higher ground. Word to this effect was also sent out from the telephone exchange at National City. Most of the inhabitants took advantage of this warning.
>
> At 4:45 p.m. the water had reached the top of the dam and had seeped through and filled the boxes that were sunk in the top to allow an examination of the steel core. Water began running down the lower face on the east side of the dam at approximately 4:50 p.m. About this time several spouts or small streams of water appeared on the lower face of the dam, in one instance loosening a large boulder which rolled down to the bottom. From this time on, the destruction was very rapid. The lower face of the fill quickly melted away, thus removing the support from the core wall. At 5:05 p.m. the tension was so great that the steel diaphragm tore from the top at the center, and the

dam opened outward like a pair of gates. The released water rushed through and filled the canyon to a point approximately 20 feet below the top of the dam. The draw-down area extended possibly 200 ft. behind the dam. ***It required 2 ½ hr. for the reservoir to empty*** [emphasis added].

A huge wall of water, variously described as from 6 to 20 ft. high, rushed down the valley, covering the distance from the damsite to Palm City [located just upstream of San Diego Bay]***, about 10 mi., in 48 min., carrying all before it*** [emphasis added]. The total loss of life has amounted to 14 at the present writing (Feb. 8), but there are still several persons missing. The property damage is estimated at $250,000.

A thorough examination of the damsite was made on Jan. 31 and Feb. 1. Practically all the fill was washed completely away. The steel core was deposited in varying-sized sections along the valley, a large part ***being found at Palm City, 10 mi. below the dam*** [emphasis added]. The core wall had torn itself loose from both of the side walls, the foundations remaining intact. An examination of the bottom was impossible, as water to a depth of 8 feet was flowing through a constricted channel in the bottom of the cañon.

Three-quarters of a mile below where the dam had stood a piece of the diaphragm was observed, to which the angle iron forming the bottom of the steel plate was riveted, showing that the extreme bottom had been torn loose. On the west side, behind the remaining core wall, was a small part of the fill, composed of rock of small sizes, none of which was over 1 ½ ft. in diameter and grading from that size to coarse gravel. If this may be considered a fair example of the remainder of the fill, it is easy to understand its melting away as rapidly as described.

The cañon below the dam, prior to the failure, was considerably restricted and filled with large boulders. The action of the water removed all the loose rock and thoroughly stripped to bedrock both sides of the canyon as high as the water reached, the line of demarcation being clearly defined. The stripping was done in a most thorough manner, no particle of soil remaining in any of the niches or crevasses. This area was heavily wooded with brush [emphasis added].

An interesting feature was observed in that for half a mile below the dam in practically every pocket or niche in the rock was to be found a rivet head. An examination of the remaining parts of the steel core showed it to be in a perfect state of preservation, no rust or corrosion being noticeable. The destruction of the plate had taken place for the most part along the riveted seams, though one or two cases in which the sheets had torn were observed.

The reservoir above the dam showed a deposit of silt to a depth of from 5 to 6 ft. in most places, through which the present flow of the river is cutting a channel. The amount of silt deposited cannot be taken as a fair average for reservoirs in this section

> of the country, as much of the water passing into the reservoir was carried by a conduit and was comparatively clear. (Silent, 335-336)

A photograph accommodating Mr. Silent's original narrative is provided in Figure 3.

Figure 3: Canyon Immediately Below Dam, Showing Stripping Action of Water (Silent, 1916)

In addition to Mr. Silent's account, the former Assistant City Manager of San Diego, John L. Bacon, on February 1, 1916 (Baker, 1916):

> The heaviest rainstorm ever recorded in this part of California caused the destruction of the Lower Otay dam at about 5 p.m. on Jan. 27. The rain began on Jan. 14 and continued for six days, with an average precipitation of 1 in. daily. Upon the ground thus thoroughly saturated a second and much heavier rainstorm fell on Jan. 25. The rain gages were inadequate to measure this storm, and the actual rainfall record at the dam is not available. The precipitation on Jan. 27, however, is estimated at about 5 in., a cloudburst occurring about 4 p.m.
>
> The level of the water in the reservoir rose 9 ½ ft. from 7 a.m. to 5 p.m., at which time the dam overflowed. It began to give way about 5 min. later. The destruction was completed in 15 min., the dam being washed away to its foundations all around. The failure evidently started by the water overflowing the crest, washing out the backing of the central core. The break started near the center of the dam, the plates holding back for a time against the sides. Part of the plate was crumpled up and washed down the valley for several miles.

> The floor of the spillway was at an elevation of 124 ft. above the original stream bed, and the elevation of the top of the dam was 134 ft. The spillway was 38 ft. wide at the bottom and 45 ft. wide at the elevation of the dam crest. ***The estimated flow through the spillway when the dam overflowed was 2,000,000,000 gal. daily*** [emphasis added]. The spillway was not blocked in any way. The ¼-in. steel plate core in the dam, with 12 in. of concrete on each side, stopped 2 ft. below the dam crest. The length of the dam crest was 560 ft. and the width of the top 16 ft. The thickness of the dam at the bottom was 400 ft. ***The valley below the dam was swept clear of soil to bedrock, and the banks of the valley show that a wave about 50 ft. high passed down*** [emphasis added]. About 30 lives were lost in the flood.
>
> It is estimated that to replace the dam will cost about half a million dollars. There is ample water for the city's supply stored behind several other dams. Part of the Sweetwater dam was washed out. The Upper Otay dam, an arched concrete structure of horseshoe shape, had a depth of 3 ft. of water flowing over its crest on Thursday, but is safe. The City of San Diego has been cut off from the outside world except by water. No telegraph, telephone or railway lines were in operation. All bridges were washed out, and roads were impassable. (239)

As conveyed by these first-hand accounts, the magnitude of the dam failure was not limited to only areas immediately downstream of the breach but all the way to the mouth. The USGS documented the impacts of the 1916 flood across Southern California and reported the following damages incurred by businesses within Otay Valley (McGlashan & Ebert, 1918):

> *San Diego Consolidated Gas & Electric Co.*—The transmission lines and distribution system along San Diego River were washed out from El Monte to False Bay. There were also ***extensive washouts*** along Sweetwater River at Jamacho and from Sweetwater dam to San Diego Bay, ***on Otay River from Otay dam to San Diego Bay***, and along Tia Juana River from Tia Juana to the Pacific Ocean [emphasis added]. The principal damage was the loss of wood pole lines, copper wire, transformers, and miscellaneous electric-line material. The service in San Diego and immediate vicinity was not seriously interrupted. The lines to the more important towns were reestablished within two weeks, but some of the remote farming districts were without electric service for six weeks or more. The total damage to the gas and electric departments, corrected for value of salvaged material, was $70,527.
>
> *Western Salt Co.*—The losses consisted of ***170 acres of salt ground (which was covered with a deep deposit of silt), 2,500 tons of salt, a large quantity of brine in the ponds***, and injury to machinery [emphasis added]. The total damage was given as $85,500.
>
> *Fenton-Sumpton-Barnes Co.*—The company operates a gravel-washing plant ***in Otay Valley, about a mile from San Diego Bay. This plant was a complete loss, for after the flood there was not an indication on the surface to show its location*** [emphasis added]. The value of this equipment was $35,000. ***In addition, the soil was entirely removed***

> ***from 100 acres of bottom land*** which had been purchased for about $450 per acres [emphasis added]. The business loss was complete from January 27 to May 1. (34)

To put the magnitude of the dam breach into perspective with regard to the geomorphically significant range of flows, we look to the data provided by Silent, Baker, and USGS. In the five days leading up to the dam breach (starting on January 22 to 7 a.m. on January 27, 1916) flows ranging up to approximately 1,600 cfs were *constantly* released through the spillway—a rate that is 33% greater than the FEMA-published instantaneous Q_{10} value for the Otay River at Otay Valley Road (Federal Emergency Management Agency, 2012). Then, for ten straight hours up until the moment the dam breached, flowrates rapidly increased up to 4,700 cfs. Based upon the defined geomorphically significant flow range of Q_2 to Q_{10}, these *pre*-breach spillway flows and durations alone had enough energy to alter the river's morphology in an unnatural way (and likely did so). The morphological impacts caused by these pre-breach spillway flows were unquestionably eclipsed by the 20-50 foot high wall of water caused by the dam failure. When the dam breached at 5:05 p.m. on January 27, 1916, 1.7 billion cubic feet of water were released in 2.5 hours. The mere average flowrate during this 2.5 hour period equates to over 193,000 cfs—a rate that is nearly four times the 500-year FEMA flowrate for the aforementioned location (Federal Emergency Management Agency, 2012). The unnatural force exerted on the river system by these massive flows was devastating to all within the river system, as presented by the firsthand accounts and now confirmed by the hydrologic context. The USGS post-breach photograph is provided in Figure 4.

For additional context, the USGS report also documents that just before failure, the flows entering the reservoir through Jamul Creek reached 18,100 cfs. They describe the 150 foot wide creek as being composed of sand, gravel, and boulders before the flood and rendered "practically clean" afterwards (McGlashan & Ebert, 1918). A photograph of Jamul Creek's devastating scour is provided in Figure 5.

Without question, the 1916 Savage Dam breach had a profound impact on the Otay River, from the reservoir to San Diego Bay. The extent to which the system remains impaired by this catastrophic event is best evidenced through the historic aerial photograph review. Photographs from 1928, 1953, and 2014 are provided in Figure 6, Figure 7, and Figure 8, respectively. These photos are best viewed by scrolling between single page displays in Adobe Acrobat Reader (View → Page Display → Single Page View).

Figure 4: View Downstream at Site of Lower Otay Dam, After Failure (McGlashan & Ebert, 1918)

Figure 5: View Upstream on Jamul Creek after Flood of January 1916 (McGlashan & Ebert, 1918)

Figure 6: 1928 Aerial Photograph of the Otay River (Upstream of I-805) (County of San Diego)

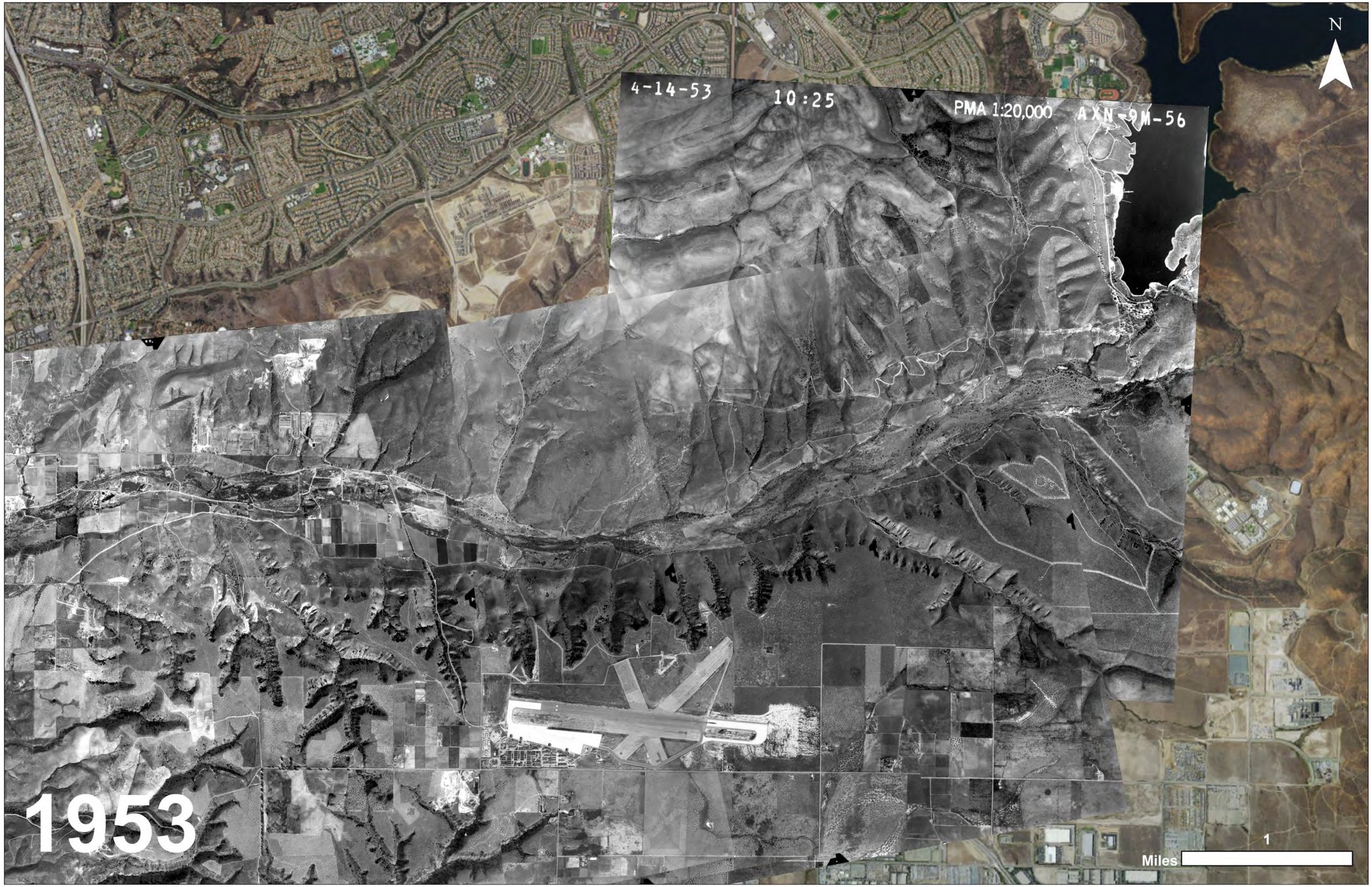

Figure 7: 1953 Aerial Photograph of the Otay River (Upstream of I-805) (University of California, Santa Barbara)

Figure 8: 2015 Aerial Photograph of the Otay River (Upstream of I-805) (Esri)

The aerial image comparison provides valuable insights into the post-failure river morphology. In 1928 (12 years after the breach), the effects of the dam failure are clearly seen: an incised, barren river mostly devoid of vegetation. In the absence of field data, it is reasonable to gather that the old Savage Dam fill material (rocks ranging in size up to 1.5 feet and some boulders) cover the channel bed, with some light re-establishing of brush toward the bank and thalweg. In 1953, the re-establishment of vegetation continues to be clearly seen, as most of the river reach has become covered. Vegetation has migrated from the thalweg toward the floodplain in many areas.

The hydrologic activity occurring between these two instances in time provides several pieces of notable data. First, during the 25 years from 1928 to 1953, San Diego experienced two of its wettest seven years on record: 1940-41 (24.74 inches) and 1951-52 (18.16 inches) to date (San Diego Union-Tribune, 2005). Second, the Lower Otay Reservoir hourly precipitation data from the National Oceanic and Atmospheric Administration (NOAA) recorded hourly rainfall depths of 1.24 inches in 1951 and 1.08 inches in 1952, which are totals equal to the estimated 200 and 100 year hourly rainfall depth for that station, respectively (National Oceanic and Atmospheric Administration, 2014). Lastly, Jamul Creek (the closest available stream station data during this time) discharged a peak of 4,000 cfs in December 1947, which is its second highest peak on record to date (United States Geological Survey, 2015). The fact that the river system did not widen, meander, or scour during that time would suggest that it would take greater than the wettest conditions on record to impact the river channel morphology or degrade the in-stream habitat—conditions certainly outside the Q_2 to Q_{10} flow range.

When these two historic photographs are compared with the modern-day condition, it is evident that the same trend has continued for 87 years: the channel remains stable, while vegetation continues to populate through the riverbed. While the Lower Otay Reservoir hourly precipitation data shows that the area continued to experience wet years from 1953 to 2015 (hourly precipitation depths equal to the 200, 50, and 25 year frequency in 1963, 1964, and 1955, respectively), the channel demonstrates no morphologic changes over the 62 year span. The 1928 river perfectly aligns with the 2015 river at stream bed angle points, ridgelines, boulders, and other geologic features; constricted areas have remained constricted, wide areas have remained wide, and no meandering or incising is evident. Furthermore, contrasting the most recent San Diego County land use data with the earliest available data from 1986, we find that the watershed in these photos (upstream of I-805 to Lower Otay Reservoir) has increased from 11% to 20% impervious cover over the past 30 years. Despite the extreme rainfall events and rapid urbanization, the Otay River has remained in a steady state of dynamic equilibrium and continues to reinforce its bed and bank material *and* support beneficial uses through the re-emergence of vegetation. Therefore, it would be reasonable to presume that the overall river health would benefit from the continued inflows of clean water. We conclude that the dam breach altered the channel in such a way that the more typical range of geomorphic flows has not adversely affected the river morphology, nor degraded the system's beneficial uses, as evidenced by the unwavering channel alignment and progressive re-habitation of natural vegetative species.

Field Investigation and Revised WMAA Ep Analysis

Thus far, the two working hypotheses have been tested and found to be correct: the *presence* and *historic failure* of Savage Dam have had, and continue to have, a more profound impact on river morphology than any proposed directly discharging development downstream of Lower Otay Reservoir. Through the testing of the second hypothesis, we observed the re-establishment of the river's vegetation. As previously stated, hydrologic models are most appropriately used in conjunction with field verification to either validate or invalidate their findings. Therefore, as a final measure, we sought to assess our findings by conducting a field investigation. Field conditions were documented and used to revise the clear and repeatable WMAA Ep Analysis with *field-specific* inputs.

The WMAA Ep Analysis conservatively assumed a highly sensitive relationship between watershed imperviousness and in-channel shear stress. The methodology behind the analysis assumes that accelerated erosion ensues and thus the river system will begin to unravel if the cumulative work performed on any given channel section in the watershed's post-developed condition exceeds the pre-developed condition by more than 5% (Erosion Potential, or Ep > 1.05). This sensitive relationship is likely attributable to the fact that the WMAA Ep methodology was not developed using data from impounded watersheds, and the data that was used did not come from urbanized (>25%) impervious watersheds, but rather from urbanizing (0 to 25% impervious) watersheds. Due to these factors, the erosion potential analysis is implicitly conservative for an impounded system and depends heavily on the watershed imperviousness and the selection of a threshold value at which particle motion occurs at any point along the channel boundary, known as the critical shear stress (τ_c). In the WMAA Ep Analysis, the critical shear stress was conservatively assumed to occur at a flow rate equal to 50% of the 2-year peak flow (Q_2). This "low flow threshold" critical shear stress, which equates to the in-channel shear produced at a flow of $0.5Q_2$, is based upon an assumption of the river channel having "low susceptibility" to accelerated erosion. This very conservative approach assumes a degree of susceptibility to hydromodification within the range of geomorphically significant flows *before* any consideration is given to the river's physical properties, such as soil cohesion, vegetation, or other factors that are to be evaluated in the proper determination of the critical shear stress value (Fischenich, 2001). As a macro-level initial screening of a major river system, the WMAA Ep Analysis includes this implicit factor of safety to an already conservative analysis. The field investigation also sought to investigate this assumption, in addition to testing our initial findings.

On October 21, 2015, the TRWE team investigated the Otay River from just downstream of 27th Street (approximately ¾ mile upstream of Interstate 5) to the confluence with Salt Creek (approximately 2 miles downstream of Savage Dam), with special attention given to three critical cross sections along the reach. These three sections were identified as areas of concern by the WMAA consultant team due to their narrow geometry. We documented the channel boundary conditions at each location. These cross sections (1, 2, and 3) are presented in Figure 9:

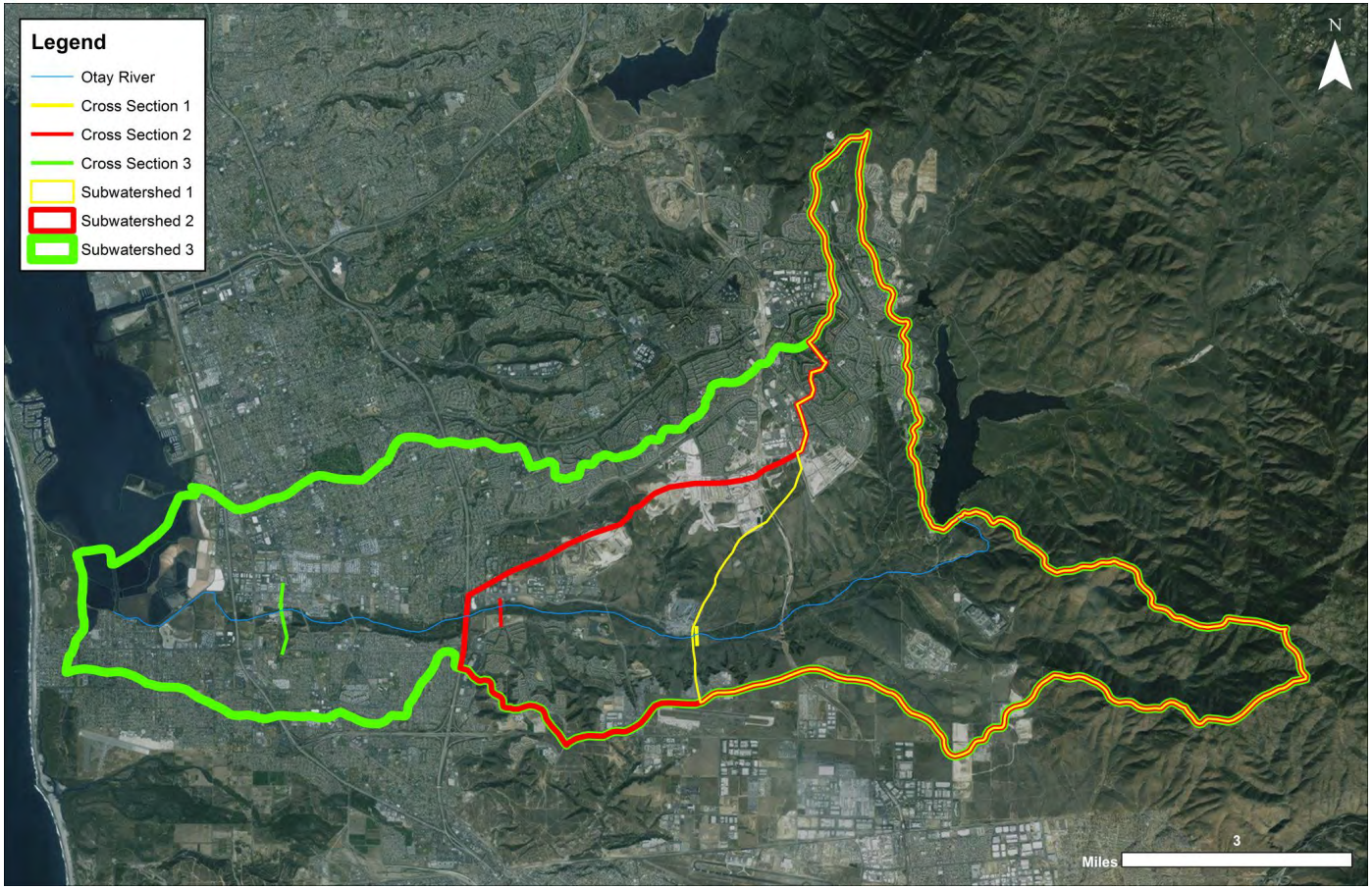

Figure 9: Locations of Cross Sections 1, 2, and 3, Including Upstream Subwatershed Areas

We investigated the boundary conditions at all three cross sections, including additional review at sections in between. We found at all three cross sections, and the areas in between, the river was heavily vegetated with grassland, scrub, meadow, and marsh. Some areas remain scoured to bedrock and still do not support vegetation 100 years after the dam failure, as was the case with Cross Section 1. In all cases, we found no evidence of active scour. Field photos are provided in Figures 10 through 18.

Many of the modern critical shear stress values for uniform, noncohesive channel boundary materials were estimated in 1936 through a series of laboratory flume experiments by A. Shields in his development of what is now known as the Shields criterion. While Shields' estimates are useful for predominantly alluvial or nonvegetated river systems, these theoretical values have little value in assessing the stability of vegetated systems. According to Dr. Craig Fischenich of the U.S. Army Corps Engineer Research and Development Center (ERDC) (2001):

> The presence of vegetation does not render underlying soils immune from erosion, but the critical condition for erosion of a vegetated bank is usually the threshold of failure of the plant stands by snapping, stem scour, or uprooting, rather than for detachment and entrainment of the soils themselves; vegetation failure usually occurs at much higher levels of flow intensity than for soil erosion. (4)

It is well documented that when vegetation establishes itself in a channel, then that channel is capable of handling flow velocities far in excess of that handled by the soil lining alone (1992). A number of recent research efforts have suggested that root systems physically and chemically bind bank soils in place, increasing the critical shear stress (Wynn, 2004). As the research continues, river and stream restoration efforts have produced valuable insight into a wide range of critical shear stress values for different channel materials, including vegetated channels. A prominent study by Dr. Fischenich documents how to assess a channel's stability and also provides a range of critical shear stress values for vegetation-lined channels such as the Otay River (included in Attachment 4). Critical shear stress values of 0.67 pounds per square foot (psf) (shales and hardpan), 0.35 psf (average reeds), and 0.70 psf (short native and bunch grass) are more appropriate assignments for the Otay River based upon the field conditions (Fischenich, 2001); the WMAA Ep Analysis assumed a very conservative critical shear stress value of 0.135 psf not based on the actual boundary conditions. The revised critical shear stress estimates are still fairly conservative, considering that low to average values were selected within the published range.

The MS4 Permit speaks to the significance of a proper critical shear stress assignment in Provision E.3.c.(2)(a)(i) where it states that the channel's low-flow threshold "*must* correspond with the critical channel flow that produces the critical shear stress" (San Diego Regional Water Quality Control Board, 2015). Therefore, we conclude that the revised critical shear stress estimates meet the Permit criteria, as they are appropriate for a wide, vegetated Otay River segment. The revised WMAA Ep Analysis shows that no work occurs at any of the three cross sections for the range of geomorphically significant flows, which is consistent with our observations, the watershed-specific hydrologic modeling and the historical imagery review. The revised WMAA Ep Analysis spreadsheets are provided in Attachment 2.

Figure 10: Cross Section 1 (view south)

Figure 11: Cross Section 1 – Scoured to Bedrock

Figure 12: Cross Section 1 – Immediately Downstream (view south)

Figure 13: Cross Section 2 (view south)

Figure 14: Cross Section 2 (in channel; north bank; view south)

Figure 15: Cross Section 2 (in channel; north bank; view southwest)

Figure 16: Cross Section 3 – Just Upstream (view west)

Figure 17: Cross Section 3 (in channel; view south; north bank)

Figure 18: Cross Section 3 (in channel; view southeast; north bank)

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Attachment 1

SWMM Model Inputs and Outputs

Otay Watershed SWMM Parameters

Table 2: Exempt Subcatchments

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	10.44	1	5.94%	80%	0.012	0.15	0.05	0.10	25%
B	0.00								
C	299.03	24	6.60%	61%	0.012	0.15	0.05	0.10	25%
D	1001.41	80	7.73%	60%	0.012	0.15	0.05	0.10	25%

Table 3: Non Exempt Subcatchments

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	4.08	0.3	6.09%	71%	0.012	0.15	0.05	0.10	25%
B	0.00								
C	143.79	12	6.37%	64%	0.012	0.15	0.05	0.10	25%
D	2851.20	228	6.75%	64%	0.012	0.15	0.05	0.10	25%

Table 4: Developed Subcatchments

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	1024.99	82	19.46%	29%	0.012	0.15	0.05	0.10	25%
B	162.69	13	24.86%	13%	0.012	0.15	0.05	0.10	25%
C	2143.79	172	17.87%	32%	0.012	0.15	0.05	0.10	25%
D	20882.06	1673	16.41%	34%	0.012	0.15	0.05	0.10	25%

Table 5: Impounded Subcatchments

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	2993.07	240	16.47%	9%	0.012	0.15	0.05	0.10	25%
B	3016.93	242	21.43%	8%	0.012	0.15	0.05	0.10	25%
C	8658.65	694	20.59%	10%	0.012	0.15	0.05	0.10	25%
D	48588.71	3892	22.59%	8%	0.012	0.15	0.05	0.10	25%

Flow Duration Curve Data for Otay River Natural versus Exemption Scenarios

Q2 =	1691.48	cfs	Fraction	10	%
Q10 =	2566.55	cfs			
Step =	24.2161	cfs			
Count =	438959	hours			
	50.08	years			

Interval	Natural Scenario			Exemption Scenario			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	169.148	5566	1.27E+00	5835	1.33E+00	105%	Pass
2	193.364	4863	1.11E+00	5019	1.14E+00	103%	Pass
3	217.580	4209	9.59E-01	4374	9.96E-01	104%	Pass
4	241.796	3691	8.41E-01	3806	8.67E-01	103%	Pass
5	266.012	3216	7.33E-01	3302	7.52E-01	103%	Pass
6	290.228	2865	6.53E-01	2873	6.55E-01	100%	Pass
7	314.444	2575	5.87E-01	2555	5.82E-01	99%	Pass
8	338.661	2318	5.28E-01	2268	5.17E-01	98%	Pass
9	362.877	2115	4.82E-01	2017	4.59E-01	95%	Pass
10	387.093	1895	4.32E-01	1804	4.11E-01	95%	Pass
11	411.309	1736	3.95E-01	1621	3.69E-01	93%	Pass
12	435.525	1570	3.58E-01	1448	3.30E-01	92%	Pass
13	459.741	1449	3.30E-01	1334	3.04E-01	92%	Pass
14	483.957	1336	3.04E-01	1225	2.79E-01	92%	Pass
15	508.174	1250	2.85E-01	1127	2.57E-01	90%	Pass
16	532.390	1151	2.62E-01	1033	2.35E-01	90%	Pass
17	556.606	1058	2.41E-01	943	2.15E-01	89%	Pass
18	580.822	969	2.21E-01	866	1.97E-01	89%	Pass
19	605.038	890	2.03E-01	799	1.82E-01	90%	Pass
20	629.254	823	1.87E-01	738	1.68E-01	90%	Pass
21	653.471	779	1.77E-01	675	1.54E-01	87%	Pass
22	677.687	732	1.67E-01	628	1.43E-01	86%	Pass
23	701.903	685	1.56E-01	591	1.35E-01	86%	Pass
24	726.119	630	1.44E-01	554	1.26E-01	88%	Pass
25	750.335	592	1.35E-01	526	1.20E-01	89%	Pass
26	774.551	549	1.25E-01	493	1.12E-01	90%	Pass
27	798.767	520	1.18E-01	457	1.04E-01	88%	Pass
28	822.984	488	1.11E-01	427	9.73E-02	88%	Pass
29	847.200	458	1.04E-01	395	9.00E-02	86%	Pass
30	871.416	425	9.68E-02	377	8.59E-02	89%	Pass
31	895.632	405	9.23E-02	350	7.97E-02	86%	Pass
32	919.848	371	8.45E-02	319	7.27E-02	86%	Pass
33	944.064	353	8.04E-02	302	6.88E-02	86%	Pass
34	968.280	333	7.59E-02	283	6.45E-02	85%	Pass

Flow Duration Curve Data for Otay River Natural versus Exemption Scenarios

Q2 =	1691.48	cfs	Fraction	10	%
Q10 =	2566.55	cfs			
Step =	24.2161	cfs			
Count =	438959	hours			
	50.08	years			

Interval	Natural Scenario			Exemption Scenario			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
35	992.497	314	7.15E-02	257	5.85E-02	82%	Pass
36	1016.713	293	6.67E-02	237	5.40E-02	81%	Pass
37	1040.929	278	6.33E-02	219	4.99E-02	79%	Pass
38	1065.145	266	6.06E-02	205	4.67E-02	77%	Pass
39	1089.361	253	5.76E-02	200	4.56E-02	79%	Pass
40	1113.577	232	5.29E-02	189	4.31E-02	81%	Pass
41	1137.793	222	5.06E-02	181	4.12E-02	82%	Pass
42	1162.010	206	4.69E-02	174	3.96E-02	84%	Pass
43	1186.226	194	4.42E-02	158	3.60E-02	81%	Pass
44	1210.442	184	4.19E-02	147	3.35E-02	80%	Pass
45	1234.658	180	4.10E-02	138	3.14E-02	77%	Pass
46	1258.874	172	3.92E-02	126	2.87E-02	73%	Pass
47	1283.090	163	3.71E-02	118	2.69E-02	72%	Pass
48	1307.306	157	3.58E-02	111	2.53E-02	71%	Pass
49	1331.523	146	3.33E-02	105	2.39E-02	72%	Pass
50	1355.739	139	3.17E-02	101	2.30E-02	73%	Pass
51	1379.955	132	3.01E-02	97	2.21E-02	73%	Pass
52	1404.171	125	2.85E-02	91	2.07E-02	73%	Pass
53	1428.387	114	2.60E-02	81	1.85E-02	71%	Pass
54	1452.603	105	2.39E-02	76	1.73E-02	72%	Pass
55	1476.819	99	2.26E-02	71	1.62E-02	72%	Pass
56	1501.036	92	2.10E-02	65	1.48E-02	71%	Pass
57	1525.252	91	2.07E-02	63	1.44E-02	69%	Pass
58	1549.468	84	1.91E-02	62	1.41E-02	74%	Pass
59	1573.684	80	1.82E-02	58	1.32E-02	73%	Pass
60	1597.900	77	1.75E-02	52	1.18E-02	68%	Pass
61	1622.116	74	1.69E-02	50	1.14E-02	68%	Pass
62	1646.333	73	1.66E-02	46	1.05E-02	63%	Pass
63	1670.549	70	1.59E-02	43	9.80E-03	61%	Pass
64	1694.765	65	1.48E-02	37	8.43E-03	57%	Pass
65	1718.981	60	1.37E-02	35	7.97E-03	58%	Pass
66	1743.197	55	1.25E-02	34	7.75E-03	62%	Pass
67	1767.413	54	1.23E-02	31	7.06E-03	57%	Pass

Flow Duration Curve Data for Otay River Natural versus Exemption Scenarios

Q2 =	1691.48	cfs	Fraction	10	%
Q10 =	2566.55	cfs			
Step =	24.2161	cfs			
Count =	438959	hours			
	50.08	years			

Interval	Natural Scenario			Exemption Scenario			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
68	1791.629	51	1.16E-02	29	6.61E-03	57%	Pass
69	1815.846	46	1.05E-02	27	6.15E-03	59%	Pass
70	1840.062	45	1.03E-02	26	5.92E-03	58%	Pass
71	1864.278	42	9.57E-03	23	5.24E-03	55%	Pass
72	1888.494	38	8.66E-03	21	4.78E-03	55%	Pass
73	1912.710	35	7.97E-03	19	4.33E-03	54%	Pass
74	1936.926	31	7.06E-03	17	3.87E-03	55%	Pass
75	1961.142	31	7.06E-03	16	3.64E-03	52%	Pass
76	1985.359	29	6.61E-03	15	3.42E-03	52%	Pass
77	2009.575	27	6.15E-03	14	3.19E-03	52%	Pass
78	2033.791	23	5.24E-03	14	3.19E-03	61%	Pass
79	2058.007	22	5.01E-03	14	3.19E-03	64%	Pass
80	2082.223	20	4.56E-03	14	3.19E-03	70%	Pass
81	2106.439	19	4.33E-03	14	3.19E-03	74%	Pass
82	2130.655	18	4.10E-03	13	2.96E-03	72%	Pass
83	2154.872	18	4.10E-03	13	2.96E-03	72%	Pass
84	2179.088	17	3.87E-03	11	2.51E-03	65%	Pass
85	2203.304	15	3.42E-03	11	2.51E-03	73%	Pass
86	2227.520	15	3.42E-03	11	2.51E-03	73%	Pass
87	2251.736	14	3.19E-03	11	2.51E-03	79%	Pass
88	2275.952	13	2.96E-03	11	2.51E-03	85%	Pass
89	2300.168	12	2.73E-03	10	2.28E-03	83%	Pass
90	2324.385	11	2.51E-03	10	2.28E-03	91%	Pass
91	2348.601	11	2.51E-03	10	2.28E-03	91%	Pass
92	2372.817	11	2.51E-03	8	1.82E-03	73%	Pass
93	2397.033	11	2.51E-03	7	1.59E-03	64%	Pass
94	2421.249	11	2.51E-03	7	1.59E-03	64%	Pass
95	2445.465	11	2.51E-03	6	1.37E-03	55%	Pass
96	2469.681	10	2.28E-03	6	1.37E-03	60%	Pass
97	2493.898	10	2.28E-03	6	1.37E-03	60%	Pass
98	2518.114	9	2.05E-03	6	1.37E-03	67%	Pass
99	2542.330	9	2.05E-03	6	1.37E-03	67%	Pass
100	2566.546	9	2.05E-03	6	1.37E-03	67%	Pass

Otay River Exemption Analysis - Exemption Scenario

```
[TITLE]
Otay River Exemption Analysis - Exemption Scenario

[OPTIONS]
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           02/01/1965
START_TIME           00:00:00
REPORT_START_DATE    02/01/1965
REPORT_START_TIME    00:00:00
END_DATE             02/28/2015
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             01:00:00
DRY_STEP             01:00:00
ROUTING_STEP         0:01:00
ALLOW_PONDING        NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
NORMAL_FLOW_LIMITED  BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION  H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0

[EVAPORATION]
;;Type       Parameters
;;---------- ----------
MONTHLY      .041   .076   .118   .192   .237   .318   .308   .286   .217   .14    .067   .041
DRY_ONLY     NO

[RAINGAGES]
;;               Rain      Time   Snow   Data
;;Name           Type      Intrvl Catch  Source
;;-------------- --------- ------ ------ ----------
Bonita+SWRes     INTENSITY 1:00   1.0    TIMESERIES OTAY

[SUBCATCHMENTS]
;;                                                   Total    Pcnt.             Pcnt.    Curb     Snow
;;Name           Raingage         Outlet           Area     Imperv   Width    Slope    Length   Pack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- --------
EX-A             Bonita+SWRes     EXEMPT           10.44    80       1        5.94     0
EX-C             Bonita+SWRes     EXEMPT           299.03   61       24       6.6      0
EX-D             Bonita+SWRes     EXEMPT           1001.41  60       80       7.73     0
DEV-A            Bonita+SWRes     DEVELOPED        1024.99  29       82       19.46    0
DEV-B            Bonita+SWRes     DEVELOPED        162.69   13       13       24.86    0
DEV-C            Bonita+SWRes     DEVELOPED        2143.79  32       172      17.87    0
DEV-D            Bonita+SWRes     DEVELOPED        20882.06 34       1673     16.41    0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
EX-A             .012       .15        .05        .1         25         OUTLET
EX-C             .012       .15        .05        .1         25         OUTLET
EX-D             .012       .15        .05        .1         25         OUTLET
DEV-A            .012       .15        .05        .1         25         OUTLET
DEV-B            .012       .15        .05        .1         25         OUTLET
DEV-C            .012       .15        .05        .1         25         OUTLET
DEV-D            .012       .15        .05        .1         25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    HydCon     IMDmax
;;-------------- ---------- ---------- ----------
EX-A             1.5        .225       .33
EX-C             6          .075       .31
```

```
EX-D             9          .01875     .3
DEV-A            1.5        .225       .33
DEV-B            3          .15        .32
DEV-C            6          .075       .31
DEV-D            9          .01875     .3

[JUNCTIONS]
;;               Invert     Max.       Init.      Surcharge  Ponded
;;Name           Elev.      Depth      Depth      Depth      Area
;;-------------- ---------- ---------- ---------- ---------- ----------
EXEMPT           0          0          0          0          0
NOT_EXEMPT       0          0          0          0          0
DEVELOPED        0          0          0          0          0

[OUTFALLS]
;;               Invert     Outfall    Stage/Table      Tide
;;Name           Elev.      Type       Time Series      Gate
;;-------------- ---------- ---------- ---------------- ----
RIVER_OUTFALL    0          FREE                        NO

[CONDUITS]
;;               Inlet            Outlet                      Manning    Inlet      Outlet     Init.      Max.
;;Name           Node             Node             Length     N          Offset     Offset     Flow       Flow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ----------
PE               EXEMPT           RIVER_OUTFALL    400        0.01       0          0          0          0
NE               NOT_EXEMPT       RIVER_OUTFALL    400        0.01       0          0          0          0
NOTDEV           DEVELOPED        RIVER_OUTFALL    400        0.01       0          0          0          0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels
;;-------------- ------------ ---------------- ---------- ---------- ---------- ----------
PE               DUMMY        0                0          0          0          1
NE               DUMMY        0                0          0          0          1
NOTDEV           DUMMY        0                0          0          0          1

[LOSSES]
;;Link           Inlet      Outlet     Average    Flap Gate
;;-------------- ---------- ---------- ---------- ----------

[INFLOWS]
;;                                                Param    Units    Scale    Baseline Baseline
;;Node           Parameter        Time Series      Type     Factor   Factor   Value    Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
NOT_EXEMPT       FLOW             NotExempt        FLOW     1.0      .57

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
OTAY             FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\Precip\Otay.txt"

NotExempt        FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\NotExempt.txt"

[REPORT]
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EXEMPT           3627.451           4537.815
NOT_EXEMPT       5042.017           5084.034
DEVELOPED        6750.700           4523.810
```

```
RIVER_OUTFALL    5056.022           3613.445

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EX-A             2871.148           5672.269
EX-C             3291.317           5434.174
EX-D             3697.479           5126.050
DEV-A            6526.611           6036.415
DEV-B            6848.739           5798.319
DEV-C            7156.863           5532.213
DEV-D            7422.969           5322.129

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Bonita+SWRes     5126.050           7016.807
```

Otay River Exemption Analysis - Exemption Scenario

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)
--------------------------------------------------------------

Otay River Exemption Analysis - Exemption Scenario

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... GREEN_AMPT
Flow Routing Method ...... KINWAVE
Starting Date ............ FEB-01-1965 00:00:00
Ending Date .............. FEB-28-2015 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Wet Time Step ............ 01:00:00
Dry Time Step ............ 01:00:00
Routing Time Step ........ 60.00 sec


WARNING 04: minimum elevation drop used for Conduit PE

WARNING 04: minimum elevation drop used for Conduit NE

WARNING 04: minimum elevation drop used for Conduit NOTDEV

**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation ......   1072329.228       504.143
Evaporation Loss .........    155292.347        73.009
Infiltration Loss ........    659843.766       310.218
Surface Runoff ...........    261955.114       123.155
Final Surface Storage ....         5.545         0.003
Continuity Error (%) .....        -0.445


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......    261955.108     85361.985
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........     28077.362      9149.428
External Outflow .........    290032.470     94511.413
Internal Outflow .........         0.000         0.000
Storage Losses ...........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.
```

Otay River Exemption Analysis - Exemption Scenario

```
*************************
Routing Time Step Summary
*************************
Minimum Time Step           :    60.00 sec
Average Time Step           :    60.00 sec
Maximum Time Step           :    60.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
```

```
***************************
Subcatchment Runoff Summary
***************************
```

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
EX-A	504.14	0.00	165.69	100.74	238.17	67.52	2.60	0.472
EX-C	504.14	0.00	124.76	194.87	185.38	1505.24	64.61	0.368
EX-D	504.14	0.00	128.74	188.46	188.48	5125.13	234.25	0.374
DEV-A	504.14	0.00	46.70	357.70	100.55	2798.49	265.16	0.199
DEV-B	504.14	0.00	19.16	437.76	48.38	213.74	35.50	0.096
DEV-C	504.14	0.00	55.63	339.81	110.17	6413.17	549.69	0.219
DEV-D	504.14	0.00	73.04	311.45	122.10	69232.37	5326.65	0.242

```
******************
Node Depth Summary
******************
```

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min
EXEMPT	JUNCTION	0.00	0.00	0.00	0 00:00
NOT_EXEMPT	JUNCTION	0.00	0.00	0.00	0 00:00
DEVELOPED	JUNCTION	0.00	0.00	0.00	0 00:00
RIVER_OUTFALL	OUTFALL	0.00	0.00	0.00	0 00:00

```
*******************
Node Inflow Summary
*******************
```

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal
EXEMPT	JUNCTION	301.47	301.47	6768 19:00	6697.879	6697.879
NOT_EXEMPT	JUNCTION	384.40	384.40	6768 19:00	9148.748	9148.748
DEVELOPED	JUNCTION	6177.00	6177.00	6768 18:00	78657.767	78657.767
RIVER_OUTFALL	OUTFALL	0.00	6741.68	6768 18:00	0.000	94504.394

```
**********************
Node Surcharge Summary
**********************
```

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet

Otay River Exemption Analysis - Exemption Scenario

```
EXEMPT               JUNCTION   438959.02          0.000        0.000
NOT_EXEMPT           JUNCTION   438959.02          0.000        0.000
DEVELOPED            JUNCTION   438959.02          0.000        0.000


*********************
Node Flooding Summary
*********************

No nodes were flooded.


***********************
Outfall Loading Summary
***********************

-------------------------------------------------------------
                      Flow       Avg.      Max.       Total
                      Freq.      Flow      Flow      Volume
Outfall Node          Pcnt.       CFS       CFS    10^6 gal
-------------------------------------------------------------
RIVER_OUTFALL         12.76     62.64   6741.68   94504.394
-------------------------------------------------------------
System                12.76     62.64   6741.68   94504.394


********************
Link Flow Summary
********************

-------------------------------------------------------------------------------
                                Maximum  Time of Max   Maximum    Max/    Max/
                                 |Flow|   Occurrence   |Veloc|    Full    Full
Link                 Type          CFS  days hr:min    ft/sec    Flow   Depth
-------------------------------------------------------------------------------
PE                   DUMMY      301.47  6768  19:00
NE                   DUMMY      384.40  6768  19:00
NOTDEV               DUMMY     6177.00  6768  18:00


*************************
Conduit Surcharge Summary
*************************

-------------------------------------------------------------------------------
                                                          Hours        Hours
                       --------- Hours Full --------   Above Full   Capacity
Conduit                Both Ends  Upstream  Dnstream   Normal Flow   Limited
-------------------------------------------------------------------------------
PE                          0.01      0.01      0.01  438959.02         0.01
NE                          0.01      0.01      0.01  438959.02         0.01
NOTDEV                      0.01      0.01      0.01  438959.02         0.01


Analysis begun on:  Fri Dec 18 16:42:35 2015
Analysis ended on:  Fri Dec 18 16:43:30 2015
Total elapsed time: 00:00:55
```

Otay River Exemption Analysis - Natural Scenario

```
[TITLE]
Otay River Exemption Analysis - Natural Scenario

[OPTIONS]
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           02/01/1965
START_TIME           00:00:00
REPORT_START_DATE    02/01/1965
REPORT_START_TIME    00:00:00
END_DATE             02/28/2015
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             01:00:00
DRY_STEP             01:00:00
ROUTING_STEP         0:01:00
ALLOW_PONDING        NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
NORMAL_FLOW_LIMITED  BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION  H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0

[EVAPORATION]
;;Type       Parameters
;;---------- ----------
MONTHLY      .041   .076   .118   .192   .237   .318   .308   .286   .217   .14    .067   .041
DRY_ONLY     NO

[RAINGAGES]
;;               Rain      Time   Snow   Data
;;Name           Type      Intrvl Catch  Source
;;-------------- --------- ------ ------ ----------
Bonita+SWRes     INTENSITY 1:00   1.0    TIMESERIES OTAY

[JUNCTIONS]
;;               Invert     Max.       Init.      Surcharge  Ponded
;;Name           Elev.      Depth      Depth      Depth      Area
;;-------------- ---------- ---------- ---------- ---------- ----------
EXEMPT           0          0          0          0          0
NOT_EXEMPT       0          0          0          0          0
DEVELOPED        0          0          0          0          0
DAM              0          0          0          0          0

[OUTFALLS]
;;               Invert     Outfall    Stage/Table      Tide
;;Name           Elev.      Type       Time Series      Gate
;;-------------- ---------- ---------- ---------------- ----
RIVER_OUTFALL    0          FREE                        NO

[CONDUITS]
;;               Inlet            Outlet                      Manning    Inlet      Outlet     Init.      Max.
;;Name           Node             Node             Length     N          Offset     Offset     Flow       Flow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ----------
PE               EXEMPT           RIVER_OUTFALL    400        0.01       0          0          0          0
NE               NOT_EXEMPT       RIVER_OUTFALL    400        0.01       0          0          0          0
NOTDEV           DEVELOPED        RIVER_OUTFALL    400        0.01       0          0          0          0
4                DAM              RIVER_OUTFALL    400        0.01       0          0          0          0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels
;;-------------- ------------ ---------------- ---------- ---------- ---------- ----------
PE               DUMMY        0                0          0          0          1
```

Otay River Exemption Analysis - Natural Scenario

```
NE                DUMMY        0                0          0          0          1
NOTDEV            DUMMY        0                0          0          0          1
4                 DUMMY        0                0          0          0          1

[LOSSES]
;;Link            Inlet      Outlet     Average    Flap Gate
;;-------------- ---------- ---------- ---------- ----------

[INFLOWS]
;;                                                Param    Units    Scale    Baseline Baseline
;;Node            Parameter        Time Series      Type     Factor   Factor   Value    Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
EXEMPT            FLOW             Exempt           FLOW     1.0      0.57
NOT_EXEMPT        FLOW             NotExempt        FLOW     1.0      0.57
DEVELOPED         FLOW             Developed        FLOW     1.0      0.57
DAM               FLOW             Impounded        FLOW     1.0      0.57

[TIMESERIES]
;;Name            Date       Time       Value
;;-------------- ---------- ---------- ----------
OTAY              FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\Precip\Otay.txt"

Exempt            FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\Exempt.txt"

NotExempt         FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\NotExempt.txt"

Developed         FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\Developed.txt"

Impounded         FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\Impounded.txt"

[REPORT]
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node            X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EXEMPT            3492.063           6507.937
NOT_EXEMPT        4790.765           7012.987
DEVELOPED         5945.166           6883.117
DAM               6652.237           6392.496
RIVER_OUTFALL     5098.039           5392.157

[VERTICES]
;;Link            X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[SYMBOLS]
;;Gage            X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Bonita+SWRes      5382.395           8903.319
```

Otay River Exemption Analysis - Natural Scenario

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)
--------------------------------------------------------------

Otay River Exemption Analysis - Natural Scenario (via HMP applied to built-out watershed, including impounded drainage

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Flow Routing Method ...... KINWAVE
Starting Date ............ FEB-01-1965 00:00:00
Ending Date .............. FEB-28-2015 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Routing Time Step ........ 60.00 sec


WARNING 04: minimum elevation drop used for Conduit PE

WARNING 04: minimum elevation drop used for Conduit NE

WARNING 04: minimum elevation drop used for Conduit NOTDEV

WARNING 04: minimum elevation drop used for Conduit 4

**************************        Volume         Volume
Flow Routing Continuity        acre-feet       10^6 gal
**************************     ---------      ---------
Dry Weather Inflow .......         0.000          0.000
Wet Weather Inflow .......         0.000          0.000
Groundwater Inflow .......         0.000          0.000
RDII Inflow ..............         0.000          0.000
External Inflow ..........    284576.467      92733.493
External Outflow .........    284576.467      92733.493
Internal Outflow .........         0.000          0.000
Storage Losses ...........         0.000          0.000
Initial Stored Volume ....         0.000          0.000
Final Stored Volume ......         0.000          0.000
Continuity Error (%) .....         0.000


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :    60.00 sec
Average Time Step           :    60.00 sec
Maximum Time Step           :    60.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
```

Otay River Exemption Analysis - Natural Scenario

```
******************
Node Depth Summary
******************

-----------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max
                                  Depth    Depth      HGL   Occurrence
Node                 Type         Feet     Feet     Feet  days hr:min
-----------------------------------------------------------------------
EXEMPT               JUNCTION     0.00     0.00     0.00     0  00:00
NOT_EXEMPT           JUNCTION     0.00     0.00     0.00     0  00:00
DEVELOPED            JUNCTION     0.00     0.00     0.00     0  00:00
DAM                  JUNCTION     0.00     0.00     0.00     0  00:00
RIVER_OUTFALL        OUTFALL      0.00     0.00     0.00     0  00:00


******************
Node Inflow Summary
******************

-------------------------------------------------------------------------------------
                                 Maximum  Maximum                    Lateral       Total
                                 Lateral    Total  Time of Max       Inflow      Inflow
                                  Inflow   Inflow   Occurrence       Volume      Volume
Node                 Type            CFS      CFS  days hr:min     10^6 gal    10^6 gal
-------------------------------------------------------------------------------------
EXEMPT               JUNCTION     171.84   171.84  6768  19:00     3817.791    3817.791
NOT_EXEMPT           JUNCTION     384.40   384.40  6768  19:00     9148.748    9148.748
DEVELOPED            JUNCTION    3520.89  3520.89  6768  18:00    44834.927   44834.927
DAM                  JUNCTION    6285.41  6285.41  6768  18:00    34925.140   34925.140
RIVER_OUTFALL        OUTFALL        0.00 10263.22  6768  18:00        0.000   92726.606


**********************
Node Surcharge Summary
**********************

Surcharging occurs when water rises above the top of the highest conduit.
-----------------------------------------------------------------------
                                            Max. Height   Min. Depth
                                 Hours      Above Crown    Below Rim
Node                 Type      Surcharged          Feet         Feet
-----------------------------------------------------------------------
EXEMPT               JUNCTION  438959.02         0.000        0.000
NOT_EXEMPT           JUNCTION  438959.02         0.000        0.000
DEVELOPED            JUNCTION  438959.02         0.000        0.000
DAM                  JUNCTION  438959.02         0.000        0.000


*********************
Node Flooding Summary
*********************

No nodes were flooded.


***********************
Outfall Loading Summary
***********************

-------------------------------------------------------------
                      Flow       Avg.      Max.       Total
                      Freq.      Flow      Flow      Volume
Outfall Node          Pcnt.       CFS       CFS    10^6 gal
-------------------------------------------------------------
RIVER_OUTFALL         12.75     61.51  10263.22   92726.606
-------------------------------------------------------------
System                12.75     61.51  10263.22   92726.606


********************
```

Otay River Exemption Analysis - Natural Scenario

```
Link Flow Summary
********************

-------------------------------------------------------------------------------
                                Maximum  Time of Max   Maximum    Max/    Max/
                                 |Flow|   Occurrence   |Veloc|    Full    Full
Link                 Type          CFS  days hr:min    ft/sec    Flow   Depth
-------------------------------------------------------------------------------
PE                   DUMMY      171.84  6768  19:00
NE                   DUMMY      384.40  6768  19:00
NOTDEV               DUMMY     3520.89  6768  18:00
4                    DUMMY     6285.41  6768  18:00


*************************
Conduit Surcharge Summary
*************************

-------------------------------------------------------------------------------
                                                          Hours        Hours
                       --------- Hours Full --------   Above Full   Capacity
Conduit                Both Ends  Upstream  Dnstream   Normal Flow   Limited
-------------------------------------------------------------------------------
PE                          0.01      0.01      0.01  438959.02         0.01
NE                          0.01      0.01      0.01  438959.02         0.01
NOTDEV                      0.01      0.01      0.01  438959.02         0.01
4                           0.01      0.01      0.01  438959.02         0.01


Analysis begun on:  Fri Dec 18 16:53:03 2015
Analysis ended on:  Fri Dec 18 16:54:25 2015
Total elapsed time: 00:01:22
```

Attachment 2

Revised WMAA Ep Analysis

Erosion Potential Analysis for Otay River - Cross Section 1

*Erosion Potential (Ep)	**#DIV/0!**

Channel Slope	0.0053	ft/ft
Critical Shear	0.670	lb/sq. ft
γ	62.4	lb/ft^3

			Existing Condition	**Future Condition**
Tributary Area	*A*	sq mi	19	19
Mean Annual Precip	*MAP*	in/yr	12.0	12.0
Length of Daily Flow Record	*Yr*	yr	30	30
Imperviousness	*Impav*	mi^2/mi^2	0.17598	0.21312
Maximum Flow of Record	*Qmax*	cfs	529.9	529.9
Minimum Flow of Record	*Qmin*	cfs	0.01	0.01
10-year peak flow	*Q10*	cfs	1605.8	1605.8
Coefficient of DDF	*day1*	days & cfs	1147.68	1916.11
Exponent of DDF	*day2*	days & cfs	-0.78	-0.83
Number of Bins	N_B	--	25	25
Bin Size	$H_{B\text{-}log}$	--	0.453	0.453

Bin Number	Lower Bound of Bin Number	Upper Bound of Bin Number	Flow	Hydraulic Radius	Flow Velocity	Shear Stress	Work	Duration	Cumulative Work	Duration	Cumulative Work
B	$B_{lwr\text{-}log\ (cfs)}$	$B_{upr\text{-}log\ (cfs)}$	*Q (cfs)*	*R (ft)*	*v (ft/s)*	τ (psf)	*W*		*W*duration*		*W*duration*
1	0.006	0.010	0.01	0.01	0.13	0.003	0.000	49104	0.00	101283	0.00
2	0.010	0.016	0.01	0.01	0.13	0.003	0.000	34458	0.00	69670	0.00
3	0.016	0.025	0.02	0.01	0.16	0.003	0.000	24180	0.00	47924	0.00
4	0.025	0.039	0.03	0.02	0.18	0.007	0.000	16968	0.00	32966	0.00
5	0.039	0.061	0.05	0.02	0.20	0.007	0.000	11907	0.00	22676	0.00
6	0.061	0.096	0.08	0.02	0.23	0.007	0.000	8355	0.00	15598	0.00
7	0.096	0.152	0.12	0.03	0.25	0.010	0.000	5863	0.00	10730	0.00
8	0.152	0.239	0.20	0.03	0.29	0.010	0.000	4114	0.00	7381	0.00
9	0.239	0.376	0.31	0.04	0.32	0.013	0.000	2887	0.00	5077	0.00
10	0.376	0.591	0.48	0.05	0.36	0.017	0.000	2026	0.00	3492	0.00
11	0.591	0.930	0.76	0.06	0.40	0.020	0.000	1422	0.00	2402	0.00
12	0.930	1.463	1.20	0.07	0.47	0.023	0.000	998	0.00	1652	0.00
13	1.463	2.302	1.88	0.09	0.55	0.030	0.000	700	0.00	1137	0.00
14	2.302	3.622	2.96	0.12	0.65	0.040	0.000	491	0.00	782	0.00
15	3.622	5.698	4.66	0.15	0.76	0.050	0.000	345	0.00	538	0.00
16	5.698	8.966	7.33	0.19	0.89	0.063	0.000	242	0.00	370	0.00
17	8.966	14.107	11.54	0.24	1.04	0.079	0.000	170	0.00	254	0.00
18	14.107	22.196	18.15	0.30	1.21	0.099	0.000	119	0.00	175	0.00
19	22.196	34.924	28.56	0.37	1.39	0.122	0.000	84	0.00	120	0.00
20	34.924	54.949	44.94	0.45	1.60	0.149	0.000	59	0.00	83	0.00
21	54.949	86.457	70.70	0.55	1.82	0.182	0.000	41	0.00	57	0.00
22	86.457	136.031	111.24	0.70	2.12	0.232	0.000	29	0.00	39	0.00
23	136.031	214.032	175.03	0.87	2.47	0.288	0.000	20	0.00	27	0.00
24	214.032	336.758	275.39	1.08	2.85	0.357	0.000	14	0.00	19	0.00
25	336.758	529.856	433.31	1.33	3.27	0.440	0.000	10	0.00	13	0.00
									0.00		0.00

***(No work occurs in existing of future condition for the range of geomorphically significant flows)** **Ep** **#DIV/0!**

Erosion Potential Analysis for Otay River - Cross Section 2

*Erosion Potential (Ep)	**#DIV/0!**

Channel Slope	0.0033	ft/ft
Critical Shear	0.350	lb/sq. ft
γ	62.4	lb/ft^3

			Existing Condition	**Future Condition**
Tributary Area	*A*	sq mi	28	28
Mean Annual Precip	*MAP*	in/yr	12.0	12.0
Length of Daily Flow Record	*Yr*	yr	30	30
Imperviousness	*Impav*	mi^2/mi^2	0.20473	0.24473
Maximum Flow of Record	*Qmax*	cfs	744.3	744.3
Minimum Flow of Record	*Qmin*	cfs	0.01	0.01
10-year peak flow	*Q10*	cfs	2170.4	2170.4
Coefficient of DDF	*day1*	days & cfs	2157.91	3747.65
Exponent of DDF	*day2*	days & cfs	-0.80	-0.85
Number of Bins	N_B	--	25	25
Bin Size	$H_{B\text{-}log}$	--	0.467	0.467

Bin Number	Lower Bound of Bin Number	Upper Bound of Bin Number	Flow	Hydraulic Radius	Flow Velocity	Shear Stress	Work	Duration	Cumulative Work	Duration	Cumulative Work
B	$B_{lwr\text{-}log\ (cfs)}$	$B_{upr\text{-}log\ (cfs)}$	*Q (cfs)*	*R (ft)*	*v (ft/s)*	τ (psf)	*W*		*W*duration*		*W*duration*
1	0.006	0.010	0.01	0.01	0.11	0.002	0.000	100346	0.00	218891	0.00
2	0.010	0.016	0.01	0.01	0.11	0.002	0.000	69108	0.00	147449	0.00
3	0.016	0.025	0.02	0.02	0.13	0.004	0.000	47595	0.00	99324	0.00
4	0.025	0.041	0.03	0.02	0.15	0.004	0.000	32779	0.00	66906	0.00
5	0.041	0.065	0.05	0.02	0.17	0.004	0.000	22575	0.00	45069	0.00
6	0.065	0.104	0.08	0.03	0.19	0.006	0.000	15547	0.00	30359	0.00
7	0.104	0.165	0.13	0.03	0.21	0.006	0.000	10707	0.00	20450	0.00
8	0.165	0.264	0.21	0.04	0.24	0.008	0.000	7374	0.00	13776	0.00
9	0.264	0.421	0.34	0.04	0.27	0.008	0.000	5078	0.00	9280	0.00
10	0.421	0.671	0.55	0.05	0.30	0.010	0.000	3498	0.00	6251	0.00
11	0.671	1.071	0.87	0.07	0.35	0.014	0.000	2409	0.00	4211	0.00
12	1.071	1.710	1.39	0.09	0.42	0.019	0.000	1659	0.00	2836	0.00
13	1.710	2.728	2.22	0.11	0.49	0.023	0.000	1142	0.00	1911	0.00
14	2.728	4.354	3.54	0.14	0.58	0.029	0.000	787	0.00	1287	0.00
15	4.354	6.948	5.65	0.18	0.68	0.037	0.000	542	0.00	867	0.00
16	6.948	11.087	9.02	0.23	0.80	0.047	0.000	373	0.00	584	0.00
17	11.087	17.694	14.39	0.29	0.93	0.060	0.000	257	0.00	393	0.00
18	17.694	28.236	22.97	0.35	1.07	0.072	0.000	177	0.00	265	0.00
19	28.236	45.061	36.65	0.44	1.23	0.091	0.000	122	0.00	179	0.00
20	45.061	71.909	58.49	0.41	1.19	0.084	0.000	84	0.00	120	0.00
21	71.909	114.756	93.33	0.48	1.31	0.099	0.000	58	0.00	81	0.00
22	114.756	183.132	148.94	0.51	1.36	0.105	0.000	40	0.00	55	0.00
23	183.132	292.248	237.69	0.64	1.58	0.132	0.000	27	0.00	37	0.00
24	292.248	466.381	379.31	0.80	1.83	0.165	0.000	19	0.00	25	0.00
25	466.381	744.268	605.32	1.00	2.14	0.206	0.000	13	0.00	17	0.00
									0.00		0.00

***(No work occurs in existing of future condition for the range of geomorphically significant flows)** **Ep** **#DIV/0!**

Erosion Potential Analysis for Otay River - Cross Section 3

*Erosion Potential (Ep)	**#DIV/0!**

Channel Slope	0.0026	ft/ft
Critical Shear	0.700	lb/sq. ft
γ	62.4	lb/ft^3

			Existing Condition	**Future Condition**
Tributary Area	*A*	sq mi	46	46
Mean Annual Precip	*MAP*	in/yr	12.0	12.0
Length of Daily Flow Record	*Yr*	yr	30	30
Imperviousness	*Impav*	mi^2/mi^2	0.3188	0.3441
Maximum Flow of Record	*Qmax*	cfs	1236.9	1236.9
Minimum Flow of Record	*Qmin*	cfs	0.01	0.01
10-year peak flow	*Q10*	cfs	3405.1	3405.1
Coefficient of DDF	*day1*	days & cfs	14796.19	20982.62
Exponent of DDF	*day2*	days & cfs	-0.91	-0.94
Number of Bins	N_B	--	25	25
Bin Size	$H_{B\text{-}log}$	--	0.489	0.489

Bin Number	Lower Bound of Bin Number	Upper Bound of Bin Number	Flow	Hydraulic Radius	Flow Velocity	Shear Stress	Work	Duration	Cumulative Work	Duration	Cumulative Work
B	$B_{lwr\text{-}log\ (cfs)}$	$B_{upr\text{-}log\ (cfs)}$	*Q (cfs)*	*R (ft)*	*v (ft/s)*	τ (psf)	*W*		*W*duration*		*W*duration*
1	0.006	0.010	0.01	0.03	0.18	0.005	0.000	1169806	0.00	1916824	0.00
2	0.010	0.016	0.01	0.03	0.18	0.005	0.000	751154	0.00	1212931	0.00
3	0.016	0.027	0.02	0.04	0.22	0.006	0.000	482330	0.00	767520	0.00
4	0.027	0.043	0.03	0.05	0.24	0.008	0.000	309713	0.00	485672	0.00
5	0.043	0.071	0.06	0.06	0.29	0.010	0.000	198872	0.00	307324	0.00
6	0.071	0.115	0.09	0.07	0.32	0.011	0.000	127699	0.00	194469	0.00
7	0.115	0.188	0.15	0.08	0.36	0.013	0.000	81998	0.00	123056	0.00
8	0.188	0.306	0.25	0.10	0.41	0.016	0.000	52653	0.00	77868	0.00
9	0.306	0.498	0.40	0.12	0.46	0.019	0.000	33809	0.00	49273	0.00
10	0.498	0.812	0.66	0.14	0.52	0.023	0.000	21709	0.00	31179	0.00
11	0.812	1.324	1.07	0.17	0.59	0.028	0.000	13940	0.00	19730	0.00
12	1.324	2.158	1.74	0.21	0.67	0.034	0.000	8951	0.00	12485	0.00
13	2.158	3.517	2.84	0.25	0.75	0.041	0.000	5748	0.00	7900	0.00
14	3.517	5.733	4.62	0.30	0.85	0.049	0.000	3691	0.00	4999	0.00
15	5.733	9.344	7.54	0.36	0.96	0.058	0.000	2370	0.00	3163	0.00
16	9.344	15.230	12.29	0.43	1.08	0.070	0.000	1522	0.00	2002	0.00
17	15.230	24.825	20.03	0.52	1.22	0.084	0.000	977	0.00	1267	0.00
18	24.825	40.465	32.64	0.62	1.38	0.101	0.000	627	0.00	801	0.00
19	40.465	65.956	53.21	0.75	1.56	0.122	0.000	403	0.00	507	0.00
20	65.956	107.507	86.73	0.94	1.82	0.153	0.000	259	0.00	321	0.00
21	107.507	175.233	141.37	1.18	2.11	0.191	0.000	166	0.00	203	0.00
22	175.233	285.626	230.43	1.46	2.44	0.237	0.000	107	0.00	129	0.00
23	285.626	465.563	375.59	1.80	2.81	0.292	0.000	68	0.00	81	0.00
24	465.563	758.856	612.21	2.15	3.16	0.349	0.000	44	0.00	51	0.00
25	758.856	1236.916	997.89	2.57	3.56	0.417	0.000	28	0.00	33	0.00
									0.00		0.00

***(No work occurs in existing of future condition for the range of geomorphically significant flows)** **Ep** **#DIV/0!**

Attachment 3

Hydrologic Review and Analysis of San Diego County Hydromodification Exemption for Five River Reaches

Smith et al. (2015)

Hydrologic Review and Analysis of San Diego County Hydromodification Exemption for Five River Reaches

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Date:

July 22, 2015

Executive Summary

The purpose of this study is to use a strict hydrologic assessment to either justify or invalidate the renewal of the current hydromodification exemption for projects draining directly to five river reaches (Otay River, San Diego River, San Dieguito River, San Luis Rey River, and Sweetwater River). These reaches have been exempted by the San Diego County Hydromodification Management Plan (HMP) (San Diego County, 2011), based on the wide-spread perception that existing large upstream reservoirs reduce river discharge and erosion potential to a larger extent than potential increases attributed to downstream land developments. In 2013, the San Diego Regional Water Quality Control Board (SDRWQCB) issued a new Permit that now requires justification of exemptions with further hydrologic analysis.

Accordingly, this study evaluates the hydrology of these five watersheds to determine if the continuance of the exemptions may be justified. A rigorous two-step approach is used to describe the effects of either renewing or revoking the 2011 HMP Exemptions through: (1) Statistical Peak Flow Analysis and (2) US Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) Peak Flow Analysis. The Statistical Peak Flow Analysis uses a combination of observed streamflow measurements and USGS Linear Regression Equations to estimate the 2-year, 5-year, and 10-year peak flows at the mouth of each exempt river reach and describe the influence of the upstream impoundments for “dam-in-place” and theoretical “no dam” conditions. The Statistical Peak Flow Analysis characterizes flow reductions as a result of upstream impoundments and serves as a preface for more detailed peak flow simulations. EPA SWMM is used to determine the relative numerical influence of storm water runoff from project development on peak flows and durations, using continuous rainfall-runoff simulation to estimate the 2-year, 5-year, and 10-year peak flows at the mouth of each exempt river reach. Hydromodification flow controls are simulated for all non-directly discharging developable lands and are conditionally simulated for directly discharging developable lands in order to assess the impact of the hydromodification exemptions on the watershed-wide peak flows. The simulated hydromodification controls are modeled both with and without the presence of the dams to assess the influence of impoundment versus land development.

Both analyses resolve that the upstream impoundment is a very significant factor in peak flow alteration for each watershed. The Statistical Peak Flow Analysis results suggest a 29 to 65% peak flow reduction for each watershed due to upstream impoundment. The SWMM Peak Flow Analysis results suggest that peak flows for each watershed, if exemptions are granted, will remain 22 to 79% less than peak flows corresponding to an undammed watershed condition. These pre- to post-dam ratios are consistent with flow impoundment behavior found in other semi-arid, Mediterranean systems. The SWMM results further suggest that the areas directly discharging to exempt river reaches are less than significant, as evidenced by the near-0% peak flow increase granted by the proposed HMP exemption. Therefore, it is recommended that the exemptions be reinstated along all five river reaches for projects directly discharging to the rivers, due to confirmation of significant impoundment effects and the negligible peak flow increase attributable to those directly discharging developable lands.

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
DEM	Digital Elevation Model
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
GIS	Geographic Information System
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
JURMP	Jurisdictional Urban Runoff Management Plan
MS4	Municipal Separate Storm Sewer System
NED	National Elevation Dataset
OTAY	Otay River
PDP	Priority Development Project
PRISM	Parameter-elevation Regressions on Independent Slopes Model Monthly Climate Data for the Continental United States
SDCFCD	San Diego County Flood Control District
SDGTO	San Dieguito River
SDR	San Diego River
SLR	San Luis Rey River
SW	Sweetwater River
SWMM	Storm Water Management Model
TAC	Technical Advisory Committee
USGS	United States Geological Survey
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan
WY	Water Year (October 1st to September 30th)

1. BACKGROUND & CONTEXT FOR STUDY

A watershed's natural hydrologic state may become severely altered due to land use changes. Hydrologic alterations may include fluctuations to natural stream discharge rates, durations and sediment transport behavior. A stream's physical response to changes in watershed runoff and sediment yield is collectively referred to as hydromodification. The confidence that most hydromodification is highly attributable to changes in land surface—namely urbanization and other development—has recently led to more focused efforts in an attempt to understand and manage these processes.

Hydromodification is occurring in many Southern California creeks and waterways and has become a key element of most stormwater programs in California (Southern California Coastal Water Research Project, 2010). In San Diego, Orange, and Riverside counties, recent storm water regulations have imposed discharge flow and duration control requirements on certain new development and redevelopment projects. As evidenced in 2007 by the San Diego Regional Water Quality Control Board Order No. R9-2007-0001 (the "2007 Municipal Separate Storm Sewer System (MS4) Permit"), the Municipal Copermittees were required to implement a Hydromodification Management Plan (HMP) "...to manage increases in runoff discharge rates and durations from all Priority Development Projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force" (San Diego Regional Water Quality Control Board, 2007). Consequently, in 2007 the Copermittees began to prepare the San Diego County HMP (Brown and Caldwell, 2011). The San Diego County HMP effort continued over the span of two years, consisted of a 14 member Technical Advisory Committee (TAC), and received input from a gamut of private and public stakeholders. The total HMP development effort exceeded one million dollars. The Final 2011 HMP was adopted by the San Diego Regional Water Quality Control Board (San Diego Water Board) on July 14, 2010 through Resolution No. R9-2010-0066 (San Diego Regional Water Quality Control Board, 2010).

The 2011 HMP provides San Diego Copermittees with guidance on hydromodification methods, technical approach, requirements, standards, best management practice (BMP) selection and implementation, monitoring, and exemptions. One such HMP applicability requirement provided exemption rationale for Priority Development Projects (PDPs) directly discharging to five large river reaches in San Diego County (developable lands that directly discharge to the exempt river reaches are herein referred to as Project Lands). The Project Lands within each watershed equate to a considerably small fraction of the total watershed area (less than 5%, as

summarized in Table 1). The exempt river reaches are summarized in Table 2 and are shown in Figure 1.

Table 1: Watershed Land Use Distribution (Downstream of Dam)

Reach	Total (ac)	[1]Developable (ac)	[2]Project Lands (ac)	% Developable	%Project Lands
Otay	29,571	4,310	1,412	15%	5%
San Diego	111,014	13,667	1,196	12%	1%
San Dieguito	28,710	4,653	1,055	16%	4%
San Luis Rey	118,846	77,180	4,151	65%	3%
Sweetwater	25,135	1,332	255	5%	1%

[1]Acreages were determined using "Developable Land" GIS data from the SanGIS Regional Data Warehouse.
[2]Acreages were determined through desktop analysis using available MS4 GIS data provided by Copermittees.

Table 2: Summary of Exempt River Reaches as Defined by the 2011 HMP

River	Downstream Limit	Upstream Limit
Otay River	Outfall to San Diego Bay	Lower Otay Reservoir Dam
San Diego River	Outfall to Pacific Ocean	Confluence with San Vicente Creek
San Dieguito River	Outfall to Pacific Ocean	Lake Hodges Dam
San Luis Rey River	Outfall to Pacific Ocean	Upstream river limit of Basin Plan subwatershed 903.1 upstream of Bonsall and near Interstate 15
Sweetwater River	Outfall to San Diego Bay	Sweetwater Reservoir Dam

For all proposed exempt river reaches supported by the 2011 HMP, each has:

- a drainage area in excess of 100 square miles;
- a 100-year flow in excess of 20,000 cubic feet per second;
- significant upstream reservoir flow regulation;
- predominantly wide floodplains and/or stabilized channel areas, and;
- low gradients (less than 1 %)

These factors concurred with field observations and were backed by years of historical perspective and practice from the TAC members (Bowling, Grey, Parra, Walker, & Weeden, 2013). There was a conditional requirement for the river reach exemption: a properly-sized energy dissipation feature must be existing or installed at the respective outfall location. Using the exemption rationale provided within the 2011 HMP, Copermittees were permitted to exempt PDPs from the hydromodification management BMP performance requirements prescribed by the 2007 MS4 Permit (herein referred to as the 2011 HMP Exemptions) so long as said PDPs were listed in the Development Planning section of the Copermittees' Jurisdictional Urban Runoff Management Program Annual Report (JURMP).

The current and succeeding municipal storm water permit, the 2013 MS4 Permit, was adopted on May 8, 2013. Similar to the preceding 2007 MS4 Permit, the 2013 MS4 Permit presents a list of criteria that must all be satisfied in order to grant hydromodification management BMP performance requirement exemptions. However, the 2013 MS4 Permit revised the hydromodification management BMP performance requirement exemption language from the 2007 MS4 Permit as follows:

- The project would discharge into channels that are significantly hardened (e.g., with rip-rap, sackcrete, etc.) downstream to their outfall in bays or the ocean;
- The project would discharge to a channel where the watershed areas below the project's discharge points are highly impervious (e.g. >70%).

The 2013 MS4 Permit conditionally excludes the five exempt river reaches justified by the 2011 HMP—exemptions that were based on prior studies of these rivers, the consensus of the TAC, an extensive public review process, and were approved by the San Diego Regional Board. However, the adopted language within the 2013 MS4 Permit does provide an opportunity to grant hydromodification management BMP performance requirement exemptions. A PDP may be exempt from hydromodification management BMP performance requirements when the project discharges storm water runoff to an area identified by the Copermittees as appropriate for an exemption by the optional Watershed Management Area Analysis (WMAA) incorporated into the Water Quality Improvement Plan (WQIP) pursuant to Provision B.3.b.(4).

This language was included to allow further evaluation of these previously exempt channels, rivers, or highly impervious watershed areas for continued exemption under a WQIP. Thus, a complete new analysis is required under the Watershed Management Area Analysis (Bowling, Grey, Parra, Walker, & Weeden, 2013). The Copermittees have since elected to perform the optional Watershed Management Area Analysis, represented by the County of San Diego (Geosyntec Consultants & Rick Engineering, 2015). The April 2015 San Diego County Regional WMAA uses a geomorphic assessment to evaluate the relationship between Erosion Potential (Ep) and Sediment Supply Potential (Sp). Based upon the instream erosion assessment, the Draft Regional WMAA recommends hydromodification management BMP performance requirement exemptions for PDPs directly discharging to the following river reaches:

Table 3: Summary of Exempt River Reaches as Proposed by the Regional WMAA

River	Downstream Limit	Upstream Limit
Otay River	Outfall to San Diego Bay	Interstate 805*
San Diego River	Outfall to Pacific Ocean	Confluence with San Vicente Creek
San Dieguito River	Upstream edge of the railroad crossing*	Lake Hodges Dam
San Luis Rey River	Outfall to Pacific Ocean	Upstream river limit of Basin Plan subwatershed 903.1 upstream of Bonsall and near Interstate 15
Sweetwater River	Outfall to San Diego Bay	Sweetwater Reservoir Dam

*limit changed from 2011 HMP recommendation

The Copermittees will now be able to grant hydromodification management BMP performance requirement exemptions offered by the 2013 MS4 Permit so long as the exemptions are approved via the WMAA and are incorporated into the WQIP—both of which are subject to the vetted public review and San Diego Water Board approval process.

1.1 Impoundment Characteristics

It is well understood that a river is in dynamic equilibrium with its geomorphic components: quantity of sediment, particle size, water discharge, and slope (Lane, 1955). This relationship, known as the Lane relation, is commonly expressed as:

$$Q_s d_s \propto Q_w S_o$$

Where Q_s is the quantity of sediment, d_s is the sediment particle diameter, Q_w is the water discharge, and S_o is the stream bed slope. This relationship is used to describe the qualitative balance between stream power and the discharge of bed material sediment and not intended to be used as an equation (Bowling, Grey, Parra, Walker, & Weeden, 2013).

Generally, long-term channel forms are naturally defined by frequent bankfull floods, approximately 1 to 2-year events in many cases (Wolman & Miller, 1960; Andrews, 1980). However, anthropogenic disturbances in natural systems invalidate assumptions of stationarity (Milly, et al., 2008). An alteration to one or more of the river equilibrium components will usually result in a feedback response to re-establish river equilibrium. A considerable amount of time may be required to achieve a new equilibrium condition; therefore, the effects of hydromodification may not be immediately observable (Trimble, 1997). In the context of all five exempt river reaches, the common denominators are sediment and flow sequestration due to upstream impoundments. The exact rate of sediment and flow sequestration accomplished by the upstream reservoirs is not well known at the desired temporal resolution. Sedimentation processes in a reservoir are quite complex because of the wide variation in many of the influencing factors (United States Bureau of Reclamation, 1987). Nonetheless, a significant

reduction in sediment quantity and water discharge is reasonably assumed due to the steep and elevated nature of the impounded watershed drainage areas.

The exempt river reach impoundment summary is summarized as follows:

Table 4: Exempt River Reach Impoundment Summary

River	Major Impoundment[1]	Constructed	Owner	Miles from Mouth	Capacity (acre-ft)	Impounded Area (mi^2)	Percent Impounded[2]
Otay River	Lower Otay Reservoir	1919[a]	City of San Diego	13.1	49,849	100	70%
San Diego River	El Capitan Reservoir	1935	City of San Diego	28.0	112,807	185	61%
	San Vicente Reservoir	1943	City of San Diego	24.6	242,000[b]	75[b]	
San Dieguito River	Hodges Reservoir	1918	City of San Diego	11.0	30,251	245	89%
	Sutherland Reservoir	1954	City of San Diego	22.0	29,508	55	
San Luis Rey River	Lake Henshaw	1923	Vista Irrigation District	53.6	53,160	205	39%
Sweetwater River[3]	Sweetwater Reservoir	1888	Sweetwater Authority	8.2	28,079	85	82%
	Loveland Reservoir	1945	Sweetwater Authority	28.4	25,387	95	

[1] This study defines a Major Impoundment as a reservoir having storage capacity in excess of 25,000 acre feet and able to spill to the river reach
[2] percentage of total area impounded above downstream-most dam
[3] linear reservoir sequence
[a] originally constructed in 1897; reconstructed in 1919 after 1916 dam breach
[b] project recently completed to double reservoir capacity; overflows through tributary to main reach

1.2 Study Objectives

The objective of this study is to perform a rigorous hydrologic analysis to either justify or invalidate the renewal of the 2011 HMP Exemptions for PDPs on Project Lands using highly relevant and available tools, methods, and data. Due to the strict hydrologic focus of this study, sediment transport is not evaluated. This study used a two-step approach to describe the effects of either renewing or revoking the 2011 HMP Exemptions through: (1) Statistical Peak Flow Analysis, and (2) US Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) Peak Flow Analysis. The analyses are summarized below.

1.2.1 Statistical Peak Flow Analysis

The Statistical Peak Flow Analysis seeks to provide a frame of reference for the SWMM Peak Flow Analysis and to describe the general influence of the upstream impoundments on peak flows by using measured flow gage discharge, peak flow estimation, and reservoir overflow data, where possible, to estimate the 2-year, 5-year, and 10-year peak flows at the mouth of the exempt river reach during:

- the ”dam-in-place” condition, which includes the existence of the upstream reservoir(s);
- the hypothetical “no dam” condition, which seeks to remove the significant impoundment effects induced by the upstream reservoir(s)

1.2.2 SWMM Peak Flow Analysis

As hydromodification is a complex phenomenon established in a large scale range, two possible outcomes can occur: (1) the combined effect of the impoundment and potential development may be more similar to the hypothetical and natural peak flow than simply including hydromodification control for an area already modified by a dam, or (2) the combined effect of the impoundment and potential development could improve the situation in a portion of the range of analysis, but be detrimental in another portion of the range of analysis, in which case an exemption to hydromodification is not recommended. The Statistical Peak Flow Analysis serves as a preface to the more detailed SWMM Peak Flow Analysis and seeks to provide a general agreement between impoundment and peak flow behavior on a watershed-by-watershed basis.

The SWMM Peak Flow Analysis seeks to reinforce the Statistical Peak Flow Analysis. The SWMM Analysis will determine the relative change in peak flows from PDPs on Project Lands using EPA SWMM continuous simulation modeling to estimate the 2-year, 5-year, and 10-year peak flows at the mouth of the exempt river reach during:

- the dam-in-place HMP exemption scenario, which accounts for river impoundment and subjects only non-directly discharging developable lands to hydromodification management BMP performance requirements;
- the dam-in-place full HMP scenario, which accounts for river impoundment and subjects all directly and non-directly discharging developable lands to hydromodification management BMP performance requirements;
- the hypothetical “no dam” HMP exemption scenario, which removes the effect of river impoundment and subjects only non-directly discharging developable lands to hydromodification management BMP performance requirements;

- the hypothetical "no dam" full HMP scenario, which removes the effect of river impoundment and subjects all directly and non-directly discharging developable lands to hydromodification management BMP performance requirements.

If the SWMM Peak Flow Analysis demonstrates that the flows and durations of those flows contributed by the exempt Project Lands are insignificant, then the exemptions are justifiable. Contrarily, if the SWMM Peak Flow Analysis demonstrates that the flows and durations of those flows contributed by the exempt Project Lands are significant, then the exemptions are not justifiable and should be revoked.

2. METHODOLOGIES

2.1 Statistical Peak Flow Analysis

The United States Geological Survey (USGS) records and maintains stream station data for locations along each of the exempt river reaches. The period, quality, and availability of data vary significantly depending upon the river. Instantaneous stream flow measurements are desired in order to most accurately assess the true peak flows occurring within the river channel. Often, reliable flow data recorded prior to impounded flow conditions are not available. Therefore, the best available local USGS instantaneous stream stations were selected to represent earlier conditions.

Typical peak flow estimates (2-, 5-, and 10-year) are derived from annual maximum series data. Accurate peak flow assessment requires knowledge of the river's behavior throughout the water year and over a sufficient period of record, with consideration to the prevailing climate. Southern California's semi-arid Mediterranean climate is characterized by a unique seasonal precipitation, with wet winters and warm, dry summers that can produce multiple low-frequency events within the same year, or none at all. Due to this phenomenon, peak flow analyses developed upon single peak annual events will inevitably omit flows that have a significant influence on Mediterranean river morphology. The ultimate result of using the annual maximum series to determine peak flows for high-frequency events (the 2 and 5-year peaks) in a Mediterranean climate is a gross underestimation of the more probable peak flow frequency. This underestimation is likely more pronounced for the higher frequency events (i.e., the 2 and 5-year peak flows (Brown and Caldwell, 2011)). Therefore, a partial-duration series analysis is used to estimate the 2 and 5-year peak flows in this Statistical Peak Flow Analysis. A partial duration series contains "N" values from "N" years of data. For the 10-year peak flow, the annual maximum series will be used, unless the instantaneous data is found to be erroneous, in which case the partial duration will be used.

The USGS began to record instantaneous (15 minute) flow data in water year (WY) 1988 to present. The present-day instantaneous flow data are used to quantify the peak flow events for each reach by partial duration and annual series analyses. A set of peak flow regression equations are applied to the same drainage area recorded by the USGS stream station to develop a ratio of the measured post-dam peak flow to the peak flow estimation equation value; this ratio is named the flood peak ratio (FPR) in this study.

With the flood peak ratio (FPR) established, the 2-, 5-, and 10-year pre-dam peak flow events are estimated by multiplying the FPR by the regression peak flow estimate derived for the entire watershed-wide area. The process is repeated for each watershed to produce impoundment-free 2-, 5-, and 10-year peak flow estimates. For validation, the impoundment-free peak flows are compared with the measured peak flows for those watersheds with USGS stream stations located at or near the river mouth. For additional reference, the impoundment-free 10-year peak flow is compared to the 10-year peak flow estimates published by the 2012 Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) to roughly quantify the relative impact of the upstream impoundments.

USGS regional flood-frequency equations, originally introduced by Waananen and Crippen (1977), are used to estimate flood frequencies in six regions in California (Table 5). These equations relate flood magnitudes of selected frequency to drainage area, precipitation, and altitude (Waananen & Crippen, 1977). These equations (herein referred to as the 1977 USGS Equations) were regressed using available annual peak flow data from 778 USGS stream stations throughout California, 148 of which are located within the South Coast Region concerned with San Diego County. The 1977 USGS Equations are not applicable to sites where the usable storage within the basin exceeds 103 acre feet per square mile, to sites just downstream from large reservoirs, or to streams in urban areas affected substantially by urban development. The relations are primarily used to determine peak discharge values for flow under natural conditions (Waananen & Crippen, 1977). It is noted by a 2004 USGS study of Northern California watersheds that the 1977 USGS Regression equations produce the greatest errors at lower recurrence intervals (2-, 5-, and 10-year) peak flows, which is likely attributable to the lack of more than two decades of peak-flow data at the time of the study (Mann, Rizzardo, & Satkowski, 2004). It is expected that the underestimation would be even more pronounced for southern California's Mediterranean semi-arid climate for the reasons previously discussed.

The 1977 USGS Regression Equations were revised by Gotvald, Barth, Veilleux, & Parrett (2012). These equations (herein referred to as the 2012 USGS Equations) incorporated 30 years of additional annual peak flow data, among other improvements (Gotvald, Barth, Veilleux, & Parrett, 2012). Similarly, the 2012 USGS Regression Equations are specific to one of six

hydrologic regions in California. San Diego County is located in the South Coast hydrologic region (Region 5), which was used for the 2-, 5-, and 10-year flood peak analysis. A comparison between the 1977 and 2012 USGS Equations are summarized in Table 5 as follows:

Table 5. 1977 and 2012 USGS Regression Equations for Region 5

Peak Flow	1977 USGS Equation	2012 USGS Equation
2-year	$0.14(DRNAREA)^{0.72}(PRECIP)^{1.62}$	$3.60(DRNAREA)^{0.672}(PRECIP)^{0.753}$
5-year	$0.40(DRNAREA)^{0.77}(PRECIP)^{1.69}$	$7.43(DRNAREA)^{0.739}(PRECIP)^{0.872}$
10-year	$0.63(DRNAREA)^{0.79}(PRECIP)^{1.75}$	$6.56(DRNAREA)^{0.783}(PRECIP)^{1.07}$

DRNAREA, drainage area, in square miles; *PRECIP*, mean annual precipitation, in inches

Drainage area values are estimated with USGS Digital Elevation Map (DEM) analysis using Esri ArcMap. Mean annual precipitation values were estimated using the Parameter-elevation Regressions on Independent Slopes Model Monthly Climate Data for the Continental United States (PRISM) areal statistics for water years 1988-2013 (October 1, 1987 to September 30, 2013) (Daly, 1994, 1997, 2001). PRISM provides an estimation of mean annual precipitation and is noted to have some bias at the monthly scale; however, this product is continuously updated to incorporate point data, a digital elevation model, and expert knowledge of complex climatic extremes, including rain shadows, coastal effects, and temperature inversions. Conterminous U.S. precipitation products can be downloaded from the PRISM Climate Group (http://www.prism.oregonstate.edu/); this study extracted and averaged monthly 4 km pixels for each watershed domain.

The USGS instantaneous stream station data are analyzed to identify individual peak flow events. Individual peak flow events are distinguished by satisfying the following criteria (United States Geological Survey, 1982):

1. Events must be separated by at least five days plus the natural logarithm of the square miles of the drainage area, and;
2. Intermediate flows must drop below 75 percent of the lower of the two separate maximum flows.

For any given time period where a recorded reservoir spill occurred and would have likely influenced the corresponding stream station flow measurement, the potential impacted data is omitted from the instantaneous stream flow record and analysis.

Two of the five river reaches (namely, the San Diego and San Luis Rey rivers) have instantaneous stream gage flow data near the mouth to the Pacific Ocean, where the Statistical Peak Flow Analysis provides an empirical relationship between the urbanized watershed-

specific drainage area and partial duration peak flow events downstream of the impoundments. For the three remaining river reaches (namely, the Otay, San Dieguito, and Sweetwater rivers), the USGS stream stations are located upstream of the major impoundments, where the Statistical Peak Flow Analysis provides an empirical relationship between the sparsely developed, watershed-specific drainage area and partial duration peak flow events upstream of the impoundments. For both cases then, the watershed-wide drainage areas are not entirely represented, due to the impoundment in all cases, and due to the absence of a stream station near the mouth in three cases. Hence, these empirical relationships are used in combination with the 2012 USGS regional flood-frequency equations for rural ungaged streams in California to develop a relationship between the empirical and regression estimates on a watershed-wide scale; thus, a methodology is developed for estimating the peak flows at or near the river mouth. This simplified relationship is therefore used to scale the estimated regional flood-frequencies to the watershed-wide extent for each river by developing flood peak ratios (FPRs), defined as:

$$FPR = \frac{Q_{PDS}}{Q_{USGS}} \tag{1}$$

Where:

Q_{PDS} is the partial duration series T-year peak flow, as determined from the stream station instantaneous data record;

Q_{USGS} is the T-year peak flow, as determined by application of the T-year 2012 USGS regression equation to the equivalent stream station drainage area

Assuming a linear watershed-wide relationship between the stream station drainage area peak flows and 2012 USGS Regression peak flows:

$$\frac{Q_{PDS}}{Q_{USGS}} = \frac{Q_{ND}}{Q_{WS}} \tag{2}$$

Where:

Q_{ND} is the T-year estimated “no dam” statistical series peak at the river mouth

Q_{WS} is the 2012 USGS T-year annual peak applied to the entire watershed area

Therefore, the estimated “no dam” peak flow at the river mouth is:

$$Q_{ND} = FPR \times Q_{WS} \tag{3}$$

Figure 1 and Table 6 summarize the information pertinent to this methodology.

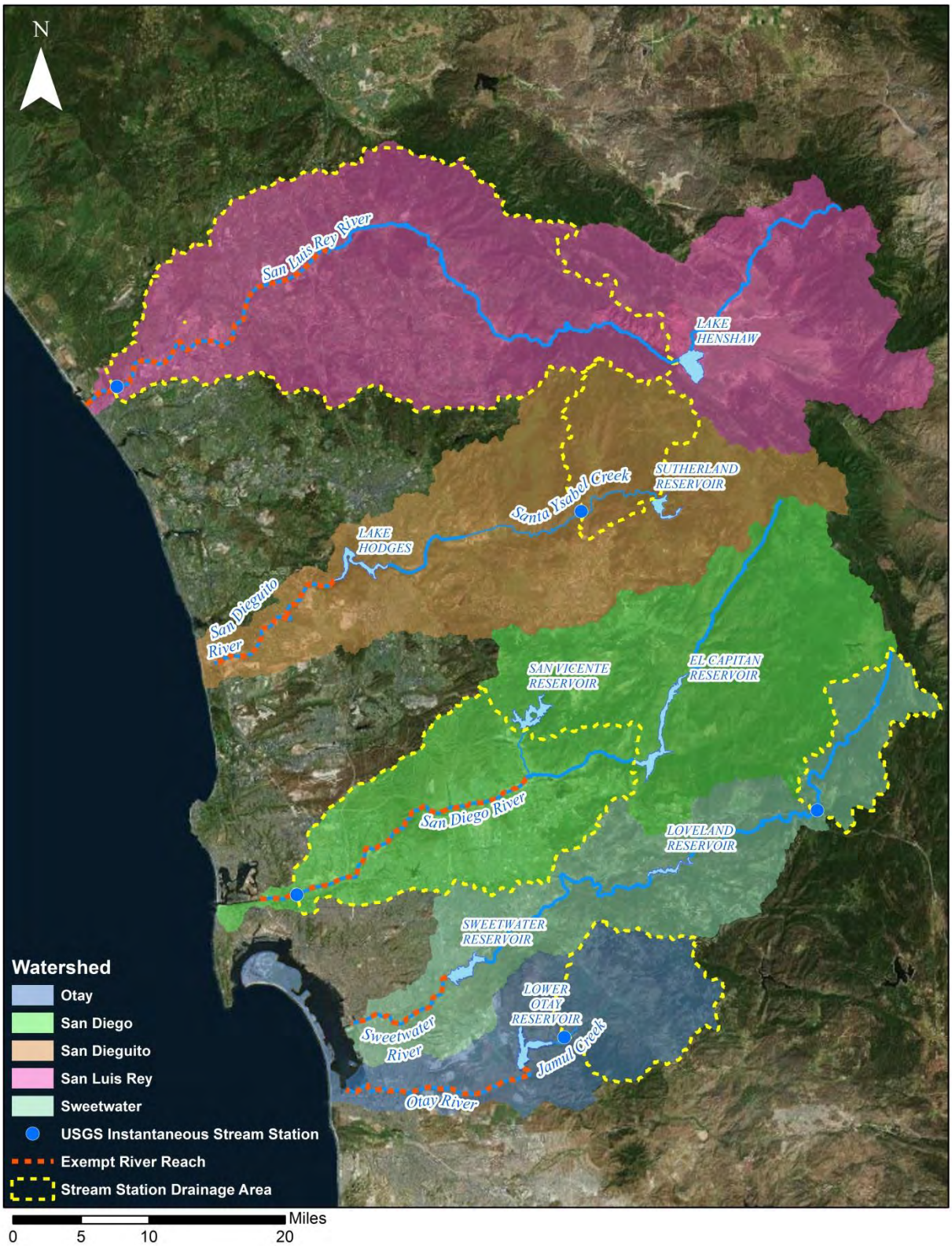

Figure 1. USGS Instantaneous Stream Stations

Table 6: USGS Instantaneous Stream Station Data Summary

River	Stream Station	Date Range (WY)	Month(s) Missing from Flow Record	Spill(s) During Flow Record
Otay River (OTAY)	USGS 11014000 JAMUL C NR JAMUL CA	1988-2014	Dec 1990 Mar 2002	Jan-Mar 1993* Feb-Apr 1994* Feb-Mar 2005* Sep 2005*
San Diego River (SDR)	USGS 11023000 SAN DIEGO R A FASHION VALLEY AT SAN DIEGO CA	1988-2014	-	Feb-Apr 1993 Mar-May 1995
San Dieguito River (SDGTO)	USGS 11025500 SANTA YSABEL C NR RAMONA CA	1988-2014	Dec 1992 Apr 1993 Jul 1994	Feb-Apr 1993 Mar-May 1995
San Luis Rey River (SLR)	USGS 11042000 SAN LUIS REY R A OCEANSIDE CA	1988-2014	Jul-Dec 1992 Jan-Jul 1993 Aug-Dec 1997 Jan-Mar 1998 Oct-Dec 2001 Jan-Dec 2002 Jan-Sep 2003	Feb-Apr 1993
Sweetwater River (SWTR)	USGS 11015000 SWEETWATER R NR DESCANSO CA	1988-2014	-	Jan 1993* Apr 1995* May 1998*

*spills have no influence on USGS stream station

2.2 SWMM Peak Flow Analysis

The SWMM Peak Flow Analysis is used to assess the contribution of storm water runoff discharging from Project Lands to the exempt river reaches. Using available USGS and SanGIS land use data, SWMM models the rainfall-runoff relationship for each watershed under a set of different scenarios. The watersheds were modeled under the planned land use (PLU) condition in order to analyze the developed hydrology. Each watershed is modeled to evaluate the direct runoff from Project Lands, both with and without hydromodification management BMP performance requirements in place, and also without the effect of upstream impoundment.

As stated earlier, only PDPs on land directly discharging to the exempt river reaches (Project Lands) could qualify for the 2011 HMP Exemption. Using the "LANDUSE_PLANNED" SanGIS shapefile, developable lands were classified as such if they were geographically contained within the present-day "Developable_Land" SanGIS shapefile. These developable lands were then sub-classified as either directly-discharging (Project Lands) or non-directly discharging (non-exempt developable). Drainage behavior was assessed based upon available storm drain infrastructure databases and best professional judgment. In all likelihood, not all areas classified as Project Lands by this study would be named as such due to site-specific post development hydrology, jurisdictional requirements, and other related factors. When the effect of the dam was to be considered, the total watershed area upstream of the lower-most impoundment was introduced into the model. Areas upstream of the dam were conservatively assumed to be in a fully built-out condition and subject to hydromodification flow control. Since hydromodification management BMPs, when properly designed, effectively maintain the pre-development hydrology, this conservative assumption effectively models the impounded area as having a "natural" overland flow behavior. For all lumped land classification groups, the area was further divided into four sub-areas based upon hydrologic soil group (HSG) as A, B, C, or D.

To simulate the effects of hydromodification management BMPs, we averaged the percent flow reduction achieved by 25 separate hydromodification design projects performed by TRWE for our clients throughout San Diego County. The 25 projects all met the hydromodification management BMP volume and time-based performance requirements, as prescribed in the 2013 MS4 Permit. The average percent flow reduction for the 2-year to the 10-year peak flow was 43%. In nearly all cases, a hydromodification design project will not perfectly match the pre-development flow duration curve. It would not be practical to produce such a finely-tuned design. In order to safely meet hydromodification BMP performance requirements, the final design will typically produce less runoff than the pre-development hydrologic condition. Therefore, a 43% flow reduction is a conservative expectation for the unmitigated to mitigated post-development scenario. Furthermore, given that the 43% flow reduction estimate was developed from projects that met the hydromodification flow duration requirement, the 43%

flow reduction, when applied, can be assumed to satisfy the post-development flow duration component as well.

In order to simulate the effect of hydromodification on a given land use group, the 43% flow reduction was applied via the inflow scale factor for the respective junction node in SWMM. A conceptual SWMM model schematic is provided in Figure 2.

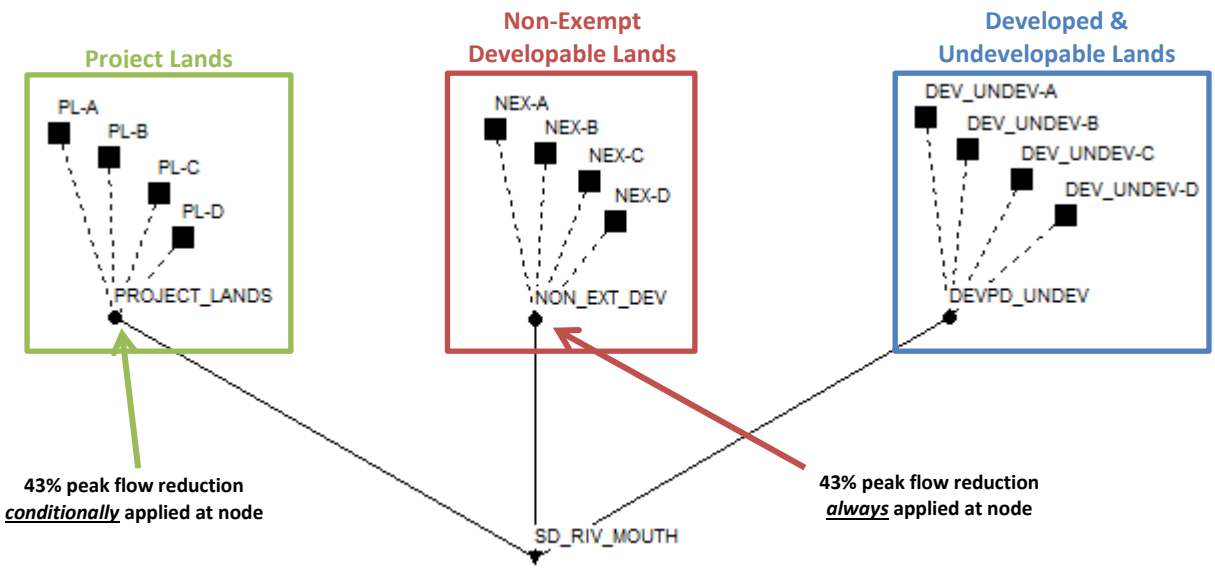

Figure 2: SWMM Model Conceptual Schematic for the San Diego River "Dam-In-Place" Scenario

The rainfall time series provided by the County of San Diego as a work product of the 2011 Final HMP have been analyzed for their accuracy in other studies. It was found that the disaggregation process artificially increases the frequency of the high intensity values (Parra-Rosales, Walker, & Ponce, 2012). Of the 19 rainfall stations produced by the Final 2011 HMP, Parra et al. found Lindbergh and Oceanside to be the most acceptable stations due to the completeness of the original data and quality of data from external stations used to fill data gaps. Therefore, this study used the Oceanside rainfall data for the San Luis Rey Watershed and the Lindbergh rainfall data for the San Diego Watershed. For all other watersheds, an alternate rainfall data source was used, as described below.

Available rainfall data was obtained through coordination with Rand Allan of the San Diego County Flood Control District (SDCFCD). Rainfall stations were selected based on their time format (hourly or finer) and proximity to the study watersheds. Collocated historical hourly and ALERT event-based rainfall stations were combined to make a continuous 50 year record. Natural variability in hourly and daily data exists between stations. Thus, annual values provide a reliable means to estimate precipitation patterns between nearby gages and gages with similar elevation and climatological attributes. To develop continuous precipitation records, a

linear regression between SDCFCD stations was used to estimate missing precipitation values and validated on a separate subset of data, where available data exists for both gages. The correlation value (R^2) indicates the ability of the independent variable to predict the dependent variable and ranges from 0 to 1. Only correlations greater than 0.7 were used to guide interpolation of precipitation data. Table 7 summarizes the developed regression equations, the correlation coefficient, and values estimated at each station:

Table 7: Rainfall Station Regression Equations Used for Data Gaps

Independent Station (x)	Dependent Station (y)	Regression Equation[a-h]	Correlation
Kearny Mesa	La Mesa	[1]y = 0.9813x	R^2 = 0.8815
Poway	Kearny Mesa	[2]y = 0.9371x	R^2 = 0.7993
Encinitas	San Marcos	[3]y = 1.0574x	R^2 = 0.7260
Bonita	Sweetwater	[4]y = 1.0942x	R^2 = 0.8734
Kearny Mesa	Sweetwater	[5]y = 0.9007x	R^2 = 0.7520
Encinitas	Escondido	[6]y = 1.3275x	R^2 = 0.7720

a. Kearny Mesa data was used to estimate missing values in **La Mesa**[1] for the period of record for 8/10/1969-3/1/2015. A total of 9447 values (hourly time step) were filled. Note that La Mesa ALERT tipping bucket record begins 9/15/1982, which may account for the number of values filled.
b. Available data from Kearny Mesa was used to estimate missing values in **Poway**[2] for 1/23/1964-2/28/2015. A total of 3278 values (hourly time step) were filled. Note that Poway ALERT tipping bucket record begins 7/19/1982, which may account for the number of values filled. Now, a complete record is available for Poway from 11/1/1962-2/28/2015.
c. Poway data was used to estimate missing values in **Kearny Mesa**[2] for the period of record for 1/22/1964-2/28/2015. A total of 36 values (hourly time step) were filled.
d. Available data from Encinitas was used to estimate missing values in **San Marcos**[3] for 7/1/1963-2/28/2015. A total of 17 values (hourly time step) were filled during this time period. Note that San Marcos ALERT tipping bucket record begins 5/28/1981-3/3/2006 during which, there was 217135 missing values (hourly time step). These values were filled with data from Encinitas. Now, a complete record is available for San Marcos from 11/16/1962-2/28/2015.
e. Kearny Mesa data was used to estimate missing values in **Sweetwater**[5] for the period of record for 2/1/1965-10/30/1992. A total of 765 values (hourly time step) were filled.
f. Available data from Escondido was used to estimate missing values in **Encinitas**[6] for 11/19/1964-2/28/2015. A total of 1862 values (hourly time step) were filled. Now, a complete record is available for Encinitas from 7/1/1963-2/28/2015.
g. Encinitas data was used to estimate missing values in **Escondido**[6] for the period of record for 11/19/1964-2/28/2015. A total of 7761 values (hourly time step) were filled. Note that Encinitas ALERT tipping bucket record begins 7/1/1984, which may account for the number of values filled.

Rainfall data assignment and sources for each watershed are shown in Table 8

Table 8: Select Rainfall Stations for SWMM Peak Flow Analysis

Watershed	Rainfall Station	Record	Elevation (ft)	Source
Otay[1]	Bonita	1975-2015	139	SDCFCD
	Sweetwater[2]	1965-1992	310	SDCFCD
San Diego	Lindbergh[3]	1948-2005	15	Project Clean Water
San Dieguito[1]	Encinitas	1963-2015	250	SDCFCD
	Escondido	1964-2015	660	SDCFCD
	San Marcos	1962-2015	580	SDCFCD
San Luis Rey	Oceanside[3]	1951-2008	30	Project Clean Water
Sweetwater[1]	Bonita	1975-2015	139	SDCFCD
	Sweetwater	1965-1992	310	SDCFCD

[1]Rainfall station rainfall intensity was averaged between rainfall stations and applied uniformly to the entire modeled watershed
[2]No collocated ALERT station
[3]Data downloaded directly from Project Clean Water (http://www.projectcleanwater.org)

The spatial distribution of TRWE sample HMP projects and SDCFCD rainfall stations are illustrated in Figure 3.

2.2.1 Parameters

Physical watershed parameters were estimated using available land use geographic information system (GIS) data from SanGIS. Planned land use classifications were used for all SWMM peak flow analyses, including areas upstream of the dams, which were conservatively assumed to reflect the pre-development hydrology through application of hydromodification flow reduction to the outlet node. Percent imperviousness was determined by using area-weighted averages based upon those values presented in a 2010 County of San Diego imperviousness study. Percent slope was determined by using area-weighted averages based upon relationships between SanGIS land use and the latest USGS National Elevation Dataset (NED) 1/3 arc-second DEM for greater Southern California. The width parameter served as a general calibration parameter for the model using the best available USGS instantaneous stream flow data. Using the relationship between watershed area and river length, a factor was applied to this ratio to match the 5-year peak flow value. The San Diego River station was used to develop this factored relationship due to the completeness of the dataset, the least number of upstream dam overflow events, and location near the river mouth. The remaining SWMM parameters were taken from the San Diego Model BMP Design Manual. General watershed parameters are outlined in Table 9. Specific watershed parameters are provided in Appendix A.

Table 9: SWMM Parameters Used in SWMM Peak Flow Analysis

SWMM Parameter	Description[1]	Value				Source
Area (ac)	Area of the subcatchment.	Watershed-specific				GIS analysis
Width (ft)	Characteristic width of the overland flow path for sheet flow runoff.	Calibrated by factoring the ratio of entire river length to full watershed area to match the PDS-derived San Diego River 5-year peak flow, taken as: $$W_{HSG} = 0.184\frac{A_{HSG}}{L_R}$$ where: W_{HSG} is the width of the given HSG subcatchment; A_{HSG} is the area of the given HSG subcatchment; L_R is the length of the entire river reach				TRWE
% Slope	Average percent slope of the subcatchment.	Area-weighted average of percent slope by land use				USGS NED 1/3 arc-second DEM
% Imperv	Percent of the land area which is impervious.	Area-weighted average of percent imperviousness by land use				County of San Diego, 2010
N-Imperv	Manning's n for overland flow over the impervious portion of the subcatchment.	0.012				SD Model BMP Design Manual
N-Perv	Manning's n for overland flow over the pervious portion of the subcatchment.	0.15				SD Model BMP Design Manual
D store-Imperv (in)	Depth of depression storage on the impervious portion of the subcatchment.	0.05				SD Model BMP Design Manual
D store-Perv (in)	Depth of depression storage on the pervious portion of the subcatchment.	0.10				SD Model BMP Design Manual
% Zero-Imperv	Percent of the impervious are with no depression storage.	25%				SD Model BMP Design Manual
Subarea Routing	Choice of internal routing of runoff between pervious and impervious areas	OUTLET				SD Model BMP Design Manual
Percent Routed	Percent of runoff routed between subareas.	100%				SD Model BMP Design Manual
Infiltration	Infiltration parameters for the subcatchment.	GREEN_AMPT				SD Model BMP Design Manual
		HSG A	HSG B	HSG C	HSG D	
	GREEN_AMPT: Suction Head (in)	1.5	3.0	6.0	9.0	SD Model BMP Design Manual
	GREEN_AMPT: Initial Deficit (in/hr)	0.33	0.32	0.31	0.30	SD Model BMP Design Manual
	GREEN_AMPT: Developed Conductivity (in/hr)	0.225	0.15	0.075	0.01875	SD Model BMP Design Manual

[1]Defined by the SWMM User Manual
D/S = downstream; U/S/ = upstream

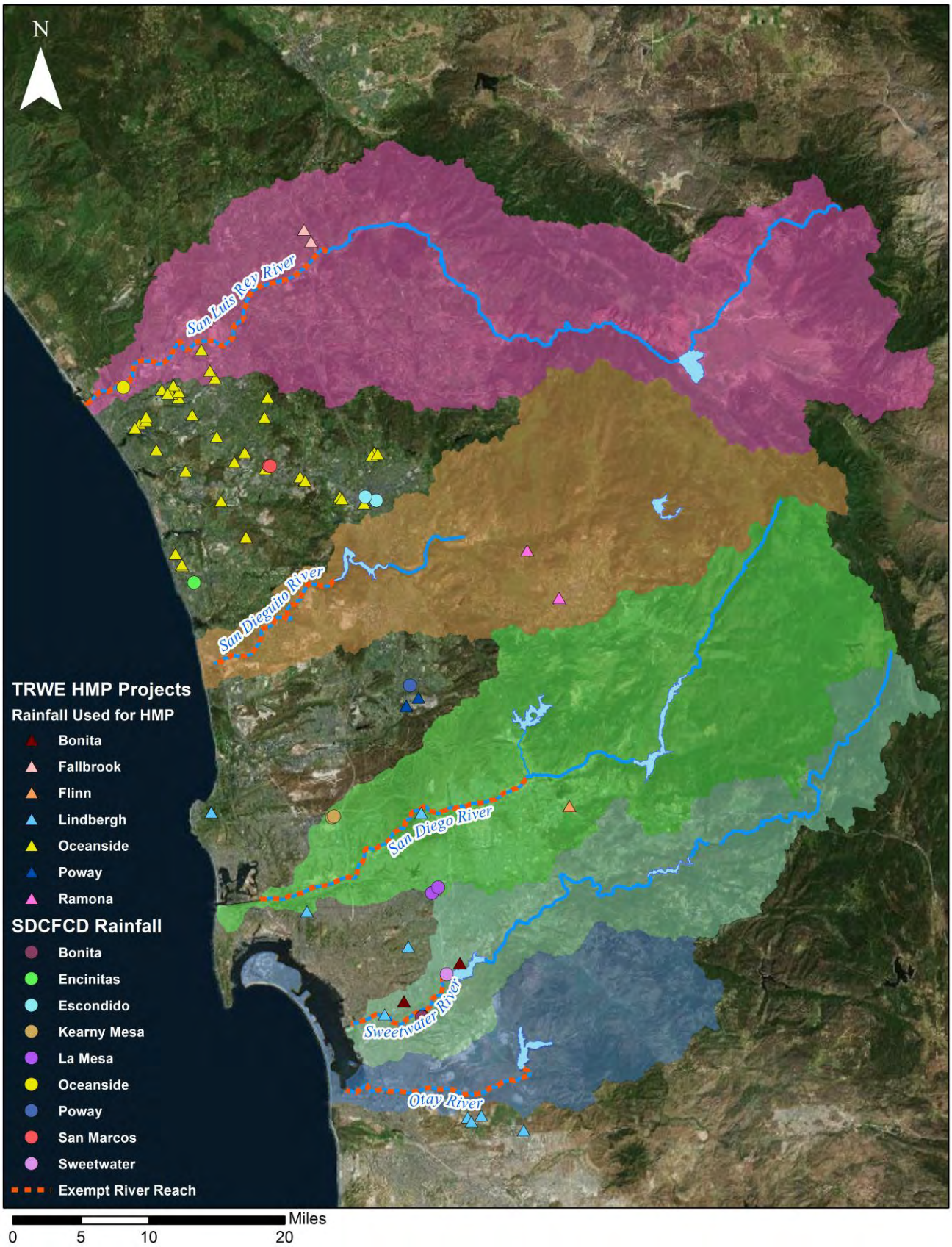

Figure 3. TRWE HMP Project and SDCFCD Rainfall Station Distribution

3. RESULTS

3.1 Statistical Peak Flow Results

Results provided herein are not intended to be used for design purposes, or serve as an exact measurement. The results are solely intended to provide a relative change in peak flow and demonstrate the impact of the upstream impoundment on the peak flow events in each river. The Statistical Peak Flow Analysis results are summarized in Table 10. For those rivers with stream stations located at or near the mouth, the statistical peak flow is compared with the "no dam" peak flows (Table 10, column "Peak[1]"). For those rivers without stream stations located at or near the mouth, the downstream-most available FEMA FIS 10-year peak flows are compared with the "no dam" peak flows. The percent difference or the reduction between the "no dam" and FEMA FIS 10-year peak flows are provided in Table 11. The flow reduction estimates are approximate in nature and are only shown to illustrate significant effects of impoundment on the peak flow events. In developing peak flows for the FIS, FEMA uses an annual series analysis, so it is expected that the percent reductions may be overestimated when used for comparison with a partial duration series analysis.

Table 10: Statistical Peak Flow Results Summary for "No Dam" Peak Flows

River	T-year	Peak[1] (cfs)	A* (mi^2)	P* (in)	Q_{USGS}[b] (cfs)	FPR	A** (mi^2)	P** (in)	Q_{WS}[c] (cfs)	Q_{ND}[d] (cfs)
OTAY	2	850	70	15.0	481	1.8	144	13.4	717	**1,267**
	5	2,265			1,822	1.2			2,811	**3,494**
	10	3,890[a]			3,315	1.2			5,163	**6,059**
SDR	2	2,693	168	12.6	759	3.6	429	16.9	1,778	**6,307**
	5	4,187			2,985	1.4			7,711	**10,813**
	10	7,980			5,454	1.5			15,558	**22,763**
SDGTO	2	930	58	20.5	533	1.7	336	16.6	1,488	**2,594**
	5	2,042			2,069	1.0			6,337	**6,255**
	10	4,434			3,971	1.1			12,605	**14,076**
SLR	2	1,040	350	16.4	1,516	0.7	557	17.2	2,147	**1,473**
	5	5,293			6,462	0.8			9,496	**7,777**
	10	11,461			12,847	0.9			19,450	**17,351**
SWTR	2	669	46	24.9	527	1.3	222	16.4	1,116	**1,417**
	5	2,544			2,059	1.2			4,616	**5,702**
	10	3,296			4,065	0.8			8,995	**7,293**

[1] partial duration series (PDS) value selected for 2-year and 5-year peak; annual maximum series selected for 10-year (unless otherwise specified)
[a] partial duration series value used due to unreasonably low 10-year peak flow; data "affected to unknown degree by Regulation or Diversion"
[b] equivalent drainage area peak flow; 2012 USGS Regression Equation calculation using drainage area parameters from A* (stream station drainage area) and P* (stream station drainage area mean annual precipitation)
[c] watershed-wide peak flow; 2012 USGS Regression Equation calculation using watershed parameters from A** (watershed-wide drainage area) and P** (watershed-wide mean annual precipitation)
[d] "no dam" watershed-wide peak flow estimate

Table 11: Comparison of "No Dam" Peak Flows with Available "Dam-in-Place" Peak Flows

River	T-year	Q_{ND} (cfs)	Peak[1] (cfs)	Reduction	FIS Peak[2] (cfs)	FIS Reduction
OTAY	2	**1,267**	-	-	-	-
	5	**3,494**	-		-	-
	10	**6,059**	-		1,200	80%
SDR	2	**6,307**	2,693	57%	-	-
	5	**10,813**	4,187	61%	-	-
	10	**22,763**	7,980	65%	3,100	86%
SDGTO	2	**2,594**	-	-	-	-
	5	**6,255**	-		-	-
	10	**14,076**	-		5,900	58%
SLR	2	**1,473**	1,040	29%	-	-
	5	**7,777**	5,293	32%	-	-
	10	**17,351**	11,461	34%	6,600	62%
SWTR	2	**1,417**	-	-	-	-
	5	**5,702**	-		-	-
	10	**7,293**	-		1,200	84%

[1]partial duration series value selected for 2-year and 5-year peak; annual maximum series selected for 10-year
[2] (Federal Emergency Management Agency, 2012)

The Statistical Peak Flow Analysis provides reasonable estimation of river impoundment peak flow reduction. For comparison, a 2005 study focused on the hydrological effects of dams on the Sacramento and San Joaquin Rivers in Northern California found that the 2-year peak flow declined anywhere between 35 to 95% of pre-dam values, while the 10-year peak flow was reduced from 2 to 78% (Kondolf & Batalla, 2005). For further comparison, a 2005 study of the hydrological effects of dams in semi-arid portions of north-eastern Spain (also a Mediterranean climate) found that 22 of 23 rivers showed reductions in 2 and 10-year peak flow by 31 and 33%, respectively, with effects more pronounced in the low-rainfall southern Mediterranean tributaries (Batalla, Gomez, & Kondolf, 2003). Therefore, the results (~29-65% reduction) provided in this study are consistent with flow impoundment behavior found in other semi-arid, Mediterranean systems and supports the assumption of significant flow sequestration in the five river reaches.

3.2 SWMM Peak Flow Results

Results from the SWMM Peak Flow Analysis are provided in Table 12 through Table 16 for the "dam-in-place" condition and Table 17 through Table 21 for the "no dam" condition. The results are estimates of peak flows and relative change for the exempt reaches using a simplified continuous modeling approach. These results are not intended to be used for design purposes.

The 2-, 5-, and 10-year flow rates are conservative estimates due to a number of underlying assumptions. First, the assumption of uniform rainfall over a large watershed may produce higher flows than what would actually be realized in each river. However, baseflow was not considered in peak flow determination. Also, the simple rainfall-runoff model is kinematic in nature, not accounting for complex overland flow behaviors such as runoff diffusion. Finally, the overland flow model does not consider channel routing and subsequent longitudinal spreading of the wave base for more mildly-sloped areas within the watershed, which ultimately produces a lower peak flow due to the attenuation and translation of the outflow hydrograph over space and time. Given these assumptions, it is important to note that the main objectives of this study do not require obtaining precise peak flow values. Instead, this study is focused on the relative change of discharges from Project Lands with and without hydromodification management BMP performance requirements.

Table 12: Otay River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	1,481	1,378	1,409	4.9%	**2.0%**	31
5-year	1,950	1,803	1,847	5.3%	**2.3%**	44
10-year	2,378	2,226	2,272	4.5%	**2.0%**	47

Table 13: San Diego River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	3,380	3,225	3,243	4.1%	**0.5%**	18
5-year	4,184	3,993	4,013	4.1%	**0.5%**	20
10-year	4,787	4,564	4,584	4.2%	**0.4%**	21

Table 14: San Dieguito River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	1,265	1,170	1,182	6.6%	**0.9%**	11
5-year	1,754	1,625	1,642	6.4%	**1.0%**	17
10-year	1,950	1,811	1,833	6.0%	**1.1%**	22

Table 15: San Luis Rey River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	6,441	5,731	5,781	10.3%	**0.8%**	50
5-year	8,652	7,630	7,697	11.0%	**0.8%**	67
10-year	10,135	9,031	9,111	10.1%	**0.8%**	80

Table 16: Sweetwater River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	751	739	741	1.3%	**0.4%**	3
5-year	1,092	1,073	1,077	1.4%	**0.4%**	4
10-year	1,273	1,251	1,256	1.3%	**0.4%**	5

Table 17: Otay River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	2,274	2,212	2,234	1.8%	**1.0%**	22
5-year	2,876	2,732	2,772	3.6%	**1.4%**	40
10-year	3,658	3,487	3,539	3.2%	**1.4%**	52

Table 18: San Diego River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	5,270	5,123	5,137	2.5%	**0.3%**	13
5-year	6,579	6,386	6,407	2.6%	**0.3%**	21
10-year	7,572	7,356	7,380	2.5%	**0.3%**	24

Table 19: San Dieguito River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	5,601	5,518	5,531	1.3%	**0.2%**	13
5-year	7,570	7,439	7,457	1.5%	**0.2%**	17
10-year	9,044	8,918	8,940	1.2%	**0.3%**	23

Table 20: San Luis Rey River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	8,199	7,488	7,538	8.1%	**0.6%**	50
5-year	11,159	10,151	10,218	8.4%	**0.6%**	67
10-year	12,856	11,746	11,824	8.0%	**0.6%**	78

Table 21: Sweetwater River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	2,050	2,039	2,041	0.4%	**0.1%**	2
5-year	2,735	2,718	2,722	0.5%	**0.1%**	4
10-year	3,283	3,265	3,269	0.4%	**0.1%**	4

The SWMM Peak Flow Analysis found that if the HMP exemptions were granted (as opposed to "Full HMP"—no exemptions granted), it would increase the 2-, 5-, and 10-year peak flow events by no more than 1.1% in all rivers except Otay, where at most, a 2.3% increase is predicted. It should be noted, in the case of Otay that, though minor, this additional flow has the potential to aid the many river restoration efforts identified in the 2006 Otay River Watershed Management Plan (Aspen Environmental Group, 2006). With the HMP exemptions in place, the SWMM Peak Flow Analysis applied hydromodification flow reduction to all non-directly discharging developable land to produce peak flow reductions ranging between 1.3 to 11% (as opposed to "No HMP"—no hydromodification flow control). This percent reduction is the peak flow "benefit" achieved through application of peak flow control. When modeled without the influence of the dam, the effects of Project Lands are further diminished—the primary reason for the original exemption. It is worth noting that both the modeled dam-in-place and no-dam peak flows produce reasonable matches with those peak flows presented in the Statistical Peak Flow Analysis.

The most notable comparisons are between the "dam-in-place" peak flows with the HMP exemption ("Dam-in-Place" HMP Exemption) versus the "no dam" peak flows with no HMP exemptions ("No Dam" Full HMP) presented in Table 22 through Table 26. These comparisons were made in order to simulate the impact of the proposed exemptions on peak flows versus the impact of the river impoundment on peak flows. These SWMM Peak Flow comparisons suggest that if, in their current impounded state, only Project Lands were exempt from hydromodification management BMP performance requirements, the resulting peak flows would be far less than the unimpounded, pre-development peak flows. The "No Dam" Full HMP scenario was considered to be the best representation of a pre-development watershed (in the absence of pre-Columbian watershed parameters) because the very nature of hydromodification management is to simulate the pre-development hydrologic condition. In other words, if the entire developed portion of a watershed is subject to hydromodification flow and duration control, then it is assumed to simulate the pre-development hydrologic condition.

Due to the conservative modeling approach, in actuality the "Dam-in-Place" HMP Exemption peak flows would likely be even less than those modeled herein due to strict interpretations on what constitutes a directly discharging developable land. An even greater difference between the HMP exemption peak flows and the pre-development peak flows would result. Therefore, the SWMM Peak Flow Analysis confirms that the major river impoundments are the primary source of peak flow reduction and clearly demonstrates that peak flows discharging from exempted Project Lands would remain considerably less than the natural, pre-development peak flows.

Table 22: Otay River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	1,409	2,212	804	**36%**
5-year	1,847	2,732	885	**32%**
10-year	2,272	3,487	1,215	**35%**

Table 23: San Diego River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	3,243	5,123	1,880	**37%**
5-year	4,013	6,386	2,373	**37%**
10-year	4,584	7,356	2,772	**38%**

Table 24: San Dieguito River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	1,182	5,518	4,336	**79%**
5-year	1,642	7,439	5,797	**78%**
10-year	1,833	8,918	7,085	**79%**

Table 25: San Luis Rey River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	5,781	7,488	1,707	**23%**
5-year	7,697	10,151	2,454	**24%**
10-year	9,111	11,746	2,635	**22%**

Table 26: Sweetwater River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	741	2,039	1,298	**64%**
5-year	1,077	2,718	1,641	**60%**
10-year	1,256	3,265	2,009	**62%**

4. CONCLUSIONS

All five exempt river reaches are subjected to significant upstream impoundment and are rigorously analyzed with two hydrologic methods. The Statistical Peak Flow Analysis found that the major impoundments reduce peak flows anywhere from 29% to 65% of the unimpounded condition. Similarly, the SWMM Peak Flow Analysis found that the major impoundments reduce peak flows approximately 22% to 79%, depending on the reach and peak flow event. The original assumption of significant flow sequestration in the exempt river reaches made by the 2011 HMP is validated by both the Statistical Peak Flow Analysis and the SWMM Peak Flow Analysis in this study.

The benefit of proper hydromodification management BMP implementation is evidenced by comparison between various HMP scenarios. For all watersheds with more than 1,200 acres of Project Lands, HMP flow controls applied to only non-directly discharging developable lands are projected to achieve peak flow reductions of at least 4%. Furthermore, the projected "cost" of allowing the hydromodification exemptions to stand would increase peak flows by an extremely narrow margin in all reaches. It should be noted that the peak flow reduction estimates presented herein are conservative in nature since all non-directly discharging developed lands will be subject to hydromodification management BMPs in the event any re-development within these areas were to occur, further decreasing any peak flow influence from Project Lands. In reality, the percent peak flow reduction is expected to be even greater.

The results from this analysis suggest that the peak flows from areas directly discharging to exempt river reaches (Otay, San Diego, San Dieguito, San Luis Rey, and Sweetwater River) pose no threat to the erosion potential of the exempt river reaches. If these reaches undergo significant changes (i.e. removal of impoundments), it is recommended that a new hydrologic assessment should be made to determine the resulting implications and continual eligibility for exemption. However, under the current conditions defined in this study, it is clearly demonstrated that the existence of upstream impoundment is the principle factor in peak flow alteration—not developed Project Lands. Changes in peak flows from Project Lands are found to be less than significant. Therefore, it is recommended that the 2011 HMP Exemptions be reinstated for all developable lands directly discharging to the exempt river reaches, so long as the project provides properly designed energy dissipation controls at the outfalls. It is also recommended that hydromodification BMPs be required for non-Project Lands, as these areas account for the majority of the developable land within each watershed and will likely produce the greatest influence on peak flows on these rivers in their current impounded state.

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APPENDIX A

Otay Watershed SWMM Parameters

Table A-1: Otay River Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	10.44	1	5.94%	80%	0.012	0.15	0.05	0.10	25%
B	0.00								
C	299.03	24	6.60%	61%	0.012	0.15	0.05	0.10	25%
D	1001.41	80	7.73%	60%	0.012	0.15	0.05	0.10	25%

Table A-2: Otay River Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	4.08	0.3	6.09%	71%	0.012	0.15	0.05	0.10	25%
B	0.00								
C	143.79	12	6.37%	64%	0.012	0.15	0.05	0.10	25%
D	2851.20	228	6.75%	64%	0.012	0.15	0.05	0.10	25%

Table A-3: Otay River Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	1024.99	82	19.46%	29%	0.012	0.15	0.05	0.10	25%
B	162.69	13	24.86%	13%	0.012	0.15	0.05	0.10	25%
C	2143.79	172	17.87%	32%	0.012	0.15	0.05	0.10	25%
D	20882.06	1673	16.41%	34%	0.012	0.15	0.05	0.10	25%

Table A-4: Otay River Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	2993.07	240	16.47%	9%	0.012	0.15	0.05	0.10	25%
B	3016.93	242	21.43%	8%	0.012	0.15	0.05	0.10	25%
C	8658.65	694	20.59%	10%	0.012	0.15	0.05	0.10	25%
D	48588.71	3892	22.59%	8%	0.012	0.15	0.05	0.10	25%

San Diego Watershed SWMM Parameters

Table A-5: San Diego River Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	340.90	11	7.2%	68%	0.012	0.15	0.05	0.10	25%
B	111.56	4	8.7%	53%	0.012	0.15	0.05	0.10	25%
C	166.56	5	7.4%	63%	0.012	0.15	0.05	0.10	25%
D	675.39	21	8.1%	59%	0.012	0.15	0.05	0.10	25%

Table A-6: San Diego River Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	892.75	28	13.9%	25%	0.012	0.15	0.05	0.10	25%
B	1180.34	37	12.7%	21%	0.012	0.15	0.05	0.10	25%
C	1095.09	34	12.4%	23%	0.012	0.15	0.05	0.10	25%
D	9021.30	284	12.9%	22%	0.012	0.15	0.05	0.10	25%

Table A-7: San Diego River Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	9226.19	291	13.2%	35%	0.012	0.15	0.05	0.10	25%
B	6856.56	216	13.3%	38%	0.012	0.15	0.05	0.10	25%
C	9565.50	301	12.8%	39%	0.012	0.15	0.05	0.10	25%
D	67079.47	2113	17.0%	33%	0.012	0.15	0.05	0.10	25%

Table A-8: San Diego River Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	23826.07	751	16.7%	14%	0.012	0.15	0.05	0.10	25%
B	7266.39	229	16.9%	16%	0.012	0.15	0.05	0.10	25%
C	42292.04	1332	19.5%	13%	0.012	0.15	0.05	0.10	25%
D	94561.45	2979	19.8%	15%	0.012	0.15	0.05	0.10	25%

San Dieguito Watershed SWMM Parameters

Table A-9: San Dieguito River Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	304.92	30	16.35%	10%	0.012	0.15	0.05	0.10	25%
B	74.03	7	16.40%	10%	0.012	0.15	0.05	0.10	25%
C	5.41	1	16.50%	10%	0.012	0.15	0.05	0.10	25%
D	533.66	52	16.07%	11%	0.012	0.15	0.05	0.10	25%

Table A-10: San Dieguito River Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	32.72	3	11.90%	22%	0.012	0.15	0.05	0.10	25%
B	4.85	0.5	3.27%	42%	0.012	0.15	0.05	0.10	25%
C	257.06	25	9.39%	31%	0.012	0.15	0.05	0.10	25%
D	3247.43	315	9.16%	30%	0.012	0.15	0.05	0.10	25%

Table A-11: San Dieguito River Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	1640.99	159	14.67%	19%	0.012	0.15	0.05	0.10	25%
B	538.60	52	12.43%	21%	0.012	0.15	0.05	0.10	25%
C	1200.70	116	17.09%	25%	0.012	0.15	0.05	0.10	25%
D	16223.04	1571	17.49%	24%	0.012	0.15	0.05	0.10	25%

Table A-12: San Dieguito River Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	22792.85	2208	16.00%	16%	0.012	0.15	0.05	0.10	25%
B	12916.07	1251	14.50%	16%	0.012	0.15	0.05	0.10	25%
C	70226.09	6802	17.95%	15%	0.012	0.15	0.05	0.10	25%
D	86888.08	8416	26.80%	13%	0.012	0.15	0.05	0.10	25%

San Luis Rey Watershed SWMM Parameters

Table A-13: San Luis Rey River Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	882.77	19	13.01%	24%	0.012	0.15	0.05	0.10	25%
B	630.17	14	13.37%	24%	0.012	0.15	0.05	0.10	25%
C	801.92	17	14.55%	20%	0.012	0.15	0.05	0.10	25%
D	1831.81	40	13.74%	20%	0.012	0.15	0.05	0.10	25%

Table A-14: San Luis Rey River Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	11583.70	251	15.84%	12%	0.012	0.15	0.05	0.10	25%
B	3901.74	84	15.08%	14%	0.012	0.15	0.05	0.10	25%
C	22677.02	491	15.75%	13%	0.012	0.15	0.05	0.10	25%
D	34871.15	755	16.03%	12%	0.012	0.15	0.05	0.10	25%

Table A-15: San Luis Rey River Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	26968.00	584	15.40%	26%	0.012	0.15	0.05	0.10	25%
B	8036.86	174	15.21%	28%	0.012	0.15	0.05	0.10	25%
C	45902.52	993	15.58%	24%	0.012	0.15	0.05	0.10	25%
D	66408.60	1437	14.87%	29%	0.012	0.15	0.05	0.10	25%

Table A-16: San Luis Rey River Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	45012.92	974	19.29%	15%	0.012	0.15	0.05	0.10	25%
B	440.52	10	18.73%	12%	0.012	0.15	0.05	0.10	25%
C	20690.04	448	24.13%	8%	0.012	0.15	0.05	0.10	25%
D	65878.92	1426	20.82%	15%	0.012	0.15	0.05	0.10	25%

Sweetwater Watershed SWMM Parameters

Table A-17: Sweetwater Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	10.91	0.33	3.6%	48%	0.012	0.15	0.05	0.10	25%
B	0.25	0.01	3.3%	42%	0.012	0.15	0.05	0.10	25%
C	133.69	4	5.8%	45%	0.012	0.15	0.05	0.10	25%
D	109.99	3	5.2%	47%	0.012	0.15	0.05	0.10	25%

Table A-18: Sweetwater Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	4.60	0.1	3.6%	45%	0.012	0.15	0.05	0.10	25%
B	58.00	2	3.9%	40%	0.012	0.15	0.05	0.10	25%
C	141.55	4	5.6%	37%	0.012	0.15	0.05	0.10	25%
D	735.80	22	4.5%	42%	0.012	0.15	0.05	0.10	25%

Table A-19: Sweetwater Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	850.76	26	13.6%	29%	0.012	0.15	0.05	0.10	25%
B	748.45	23	10.1%	44%	0.012	0.15	0.05	0.10	25%
C	4827.23	147	13.0%	40%	0.012	0.15	0.05	0.10	25%
D	16715.79	511	12.1%	42%	0.012	0.15	0.05	0.10	25%

Table A-20: Sweetwater Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	10871.62	332	15.7%	16%	0.012	0.15	0.05	0.10	25%
B	9974.55	305	16.6%	16%	0.012	0.15	0.05	0.10	25%
C	24732.95	756	18.7%	14%	0.012	0.15	0.05	0.10	25%
D	70655.14	2160	21.5%	11%	0.012	0.15	0.05	0.10	25%

Attachment 4

Stability Thresholds for Stream Restoration Materials

Fischenich (2001)

Stability Thresholds for Stream Restoration Materials

by Craig Fischenich[1]

May 2001

Complexity

Low Moderate High

Value as a Planning Tool

Low Moderate High

Cost

Low Moderate High

OVERVIEW

Stream restoration projects usually involve some modification to the channel or the banks. Designers of stabilization or restoration projects must ensure that the materials placed within the channel or on the banks will be stable for the full range of conditions expected during the design life of the project. Unfortunately, techniques to characterize stability thresholds are limited. Theoretical approaches do not exist and empirical data mainly consist of velocity limits, which are of limited value.

Empirical data for shear stress or stream power are generally lacking, but the existing body of information is summarized in this technical note. Whereas shear thresholds for soils found in channel beds and banks are quite low (generally < 0.25 lb/sf), those for vegetated soils (0.5 – 4 lb/sf), erosion control materials and bioengineering techniques (0.5 – 8 lb/sf), and hard armoring (< 13 lb/sf) offer options to provide stability.

STABILITY CRITERIA

The stability of a stream refers to how it accommodates itself to the inflowing water and sediment load. In general, stable streams may adjust their boundaries but do not exhibit trends in changes to their geometric character. One form of instability occurs when a stream is unable to transport its sediment load (i.e., sediments deposited within the channel), leading to the condition referred to as aggradation.

When the ability of the stream to transport sediment exceeds the availability of sediments within the incoming flow, and stability thresholds for the material forming the boundary of the channel are exceeded, erosion occurs. This technical note deals with the latter case of instability and distinguishes the presence or absence of erosion (threshold condition) from the magnitude of erosion (volume).

Erosion occurs when the hydraulic forces in the flow exceed the resisting forces of the channel boundary. The amount of erosion is a function of the relative magnitude of these forces and the time over which they are applied. The interaction of flow with the boundary of open channels is only imperfectly understood. Adequate analytical expressions describing this interaction have not yet been developed for conditions associated with natural channels. Thus, means of characterizing erosion potential must rely heavily upon empiricism.

Traditional approaches for characterizing erosion potential can be placed in one of two categories: maximum permissible velocity, and tractive force (or critical shear stress). The former approach is advantageous in that velocity is a parameter that can be measured within the flow. Shear stress cannot be directly measured – it must be computed from other flow parameters. Shear stress is a better measure of the fluid force on the channel boundary than is velocity. Moreover, conventional guidelines, including ASTM standards, rely upon the shear stress as a

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means of assessing the stability of erosion control materials. Both approaches are presented in this paper.

Incipient Motion (Threshold Condition)

As flow over the bed and banks of a stream increases, a condition referred to as the threshold state is reached when the forces tending to move materials on the channel boundary are in balance with those resisting motion. The forces acting on a noncohesive soil particle lying on the bed of a flowing stream include hydrodynamic lift, hydrodynamic drag, submerged weight ($F_w - F_b$), and a resisting force F_r. as seen in Figure 1. The drag is in the direction of the flow and the lift and weight are normal to the flow. The resisting force depends on the geometry of the particles. At the threshold of movement, the resultant of the forces in each direction is zero. Two approaches for defining the threshold state are discussed herein, initial movement being specified in terms of either a critical velocity (v_{cr}) or a critical shear stress (τ_{cr}).

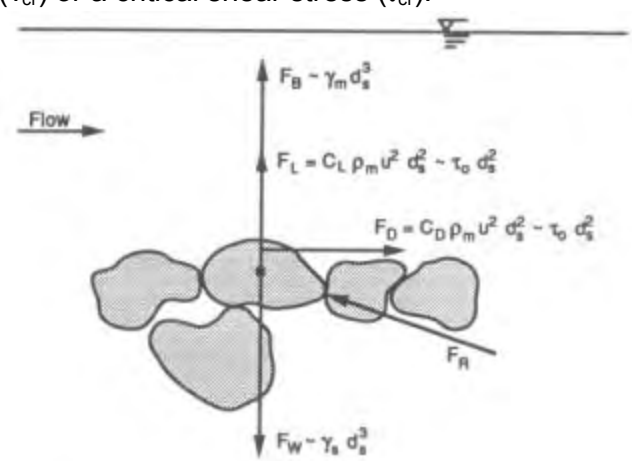

Figure 1. Forces acting on the boundary of a channel (adapted from Julien (1995)).

Critical Velocity

Figure 1 shows that both the lift and the drag force are directly related to the velocity squared. Thus, small changes in the velocity could result in large changes in these forces. The permissible velocity is defined as the maximum velocity of the channel that will not cause erosion of the channel boundary. It is often called the critical velocity because it refers to the condition for the initiation of motion. Early works in canal design and in evaluating the stability of waterways relied upon this method. Considerable empirical data exist relating maximum velocities to various soil and vegetation conditions.

However, this simple method for design does not consider the channel shape or flow depth. At the same mean velocity, channels of different shapes or depths may have quite different forces acting on the boundaries. Critical velocity is depth-dependent, and a correction factor for depth must be applied in this application. Despite these limitations, maximum permissible velocity can be a useful tool in evaluating the stability of various waterways. It is most frequently applied as a cursory analysis when screening alternatives.

Critical Shear Stress

The forces shown in Figure 1 can also be expressed in terms of the shear stress. Shear stress is the force per unit area in the flow direction. Its distribution in steady, uniform, two-dimensional flow in the channel can be reasonably described. An estimate of the average boundary shear stress (τ_o) exerted by the fluid on the bed is:

$$\tau_o = \gamma D S_f \qquad (1)$$

where γ is the specific weight of water, D is the flow depth (~ hydraulic radius), and S_f is the friction slope. Derived from consideration of the conservation of linear momentum, this quantity is a spatial average and may not provide a good estimate of bed shear at a point.

Critical shear stress (τ_{cr}) can be defined by equating the applied forces to the resisting forces. Shields (1936) determined the threshold condition by measuring sediment transport for values of shear at least twice the critical value and then extrapolating to the point vanishing sediment transport. His laboratory experiments have since served as a basis for defining critical shear stress. For soil grains of diameter d and angle of repose ϕ on a flat bed, the following relations can approximate the critical shear for various sizes of sediment:

$$t_{cr} = 0.5(l_s - l_w) d \, Tan f \quad \text{For clays} \qquad (2)$$

$$t_{cr} = 0.25 d_*^{-0.6} (l_s - l_w) d \, Tan f \quad \text{For silts and sands} \qquad (3)$$

$$\tau_{cr} = 0.06(\gamma_s - \gamma_w) d \, Tan\, \phi \quad \text{For gravels and cobbles} \qquad (4)$$

Where

$$d_* = d\left[\frac{(G-1)g}{\nu^2}\right]^{1/3} \qquad (5)$$

γ_s = the unit weight of the sediment
γ_w = the unit weight of the water/sediment mixture
G = the specific gravity of the sediment
G = gravitational acceleration
ν = the kinematic viscosity of the water/sediment mixture

The angle of repose ϕ for noncohesive sediments is presented in Table 1 (Julien 1995), as are values for critical shear stress. The critical condition can be defined in terms of shear velocity rather than shear stress (note that shear velocity and channel velocity are different). Table 1 also provides limiting shear velocity as a function of sediment size. The V_{*c} term is the critical shear velocity and is equal to

$$V_{*c} = \sqrt{gR_hS_f} \qquad (6)$$

Table 1. Limiting Shear Stress and Ve locity for Uniform Noncohesive Sediments

Class name	*d_s (in)*	*ϕ (deg)*	*τ_{*c}*	*τ_{cr} (lb/sf)*	*V_{*c} (ft/s)*
Boulder					
Very large	>80	42	0.054	37.4	4.36
Large	>40	42	0.054	18.7	3.08
Medium	>20	42	0.054	9.3	2.20
Small	>10	42	0.054	4.7	1.54
Cobble					
Large	>5	42	0.054	2.3	1.08
Small	>2.5	41	0.052	1.1	0.75
Gravel					
Very coarse	>1.3	40	0.050	0.54	0.52
Coarse	>0.6	38	0.047	0.25	0.36
Medium	>0.3	36	0.044	0.12	0.24
Fine	>0.16	35	0.042	0.06	0.17
Very fine	>0.08	33	0.039	0.03	0.12
Sands					
Very coarse	>0.04	32	0.029	0.01	0.070
Coarse	>0.02	31	0.033	0.006	0.055
Medium	>0.01	30	0.048	0.004	0.045
Fine	>0.005	30	0.072	0.003	0.040
Very fine	>0.003	30	0.109	0.002	0.035
Silts					
Coarse	>0.002	30	0.165	0.001	0.030
Medium	>0.001	30	0.25	0.001	0.025

Table 1 provides limits best applied when evaluating idealized conditions, or the stability of sediments in the bed. Mixtures of sediments tend to behave differently from uniform sediments. Within a mixture, coarse sediments are generally entrained at lower shear stress values than presented in Table 1. Conversely, larger shear stresses than those presented in the table are required to entrain finer sediments within a mixture.

Cohesive soils, vegetation, and other armor materials can be similarly evaluated to determine empirical shear stress thresholds. Cohesive soils are usually eroded by the detachment and entrainment of soil aggregates. Motivating forces are the same as those for noncohesive banks; however, the resisting forces are primarily the result of cohesive bonds between particles. The bonding strength, and hence the soil erosion resistance, depends on the physio-chemical properties of the soil and the chemistry of the

fluids. Field and laboratory experiments show that intact, undisturbed cohesive soils are much less susceptible to flow erosion than are non-cohesive soils.

Vegetation, which has a profound effect on the stability of both cohesive and noncohesive soils, serves as an effective buffer between the water and the underlying soil. It increases the effective roughness height of the boundary, increasing flow resistance and displacing the velocity upwards away from the soil, which has the effect of reducing the forces of drag and lift acting on the soil surface. As the boundary shear stress is proportional to the square of the near-bank velocity, a reduction in this velocity produces a much greater reduction in the forces responsible for erosion.

Vegetation armors the soil surface, but the roots and rhizomes of plants also bind the soil and introduce extra cohesion over and above any intrinsic cohesion that the bank material may have. The presence of vegetation does not render underlying soils immune from erosion, but the critical condition for erosion of a vegetated bank is usually the threshold of failure of the plant stands by snapping, stem scour, or uprooting, rather than for detachment and entrainment of the soils themselves. Vegetation failure usually occurs at much higher levels of flow intensity than for soil erosion.

Both rigid and flexible armor systems can be used in waterways to protect the channel bed from erosion and to stabilize side slopes. A wide array of differing armor materials are available to accomplish this. Many manufactured products have been evaluated to determine their failure threshold. Products are frequently selected using design graphs that present the flow depth on one axis and the slope of the channel on the other axis. Thus, the design is based on the depth/slope product (i.e., the shear stress). In other cases, the thresholds are expressed explicitly in terms of shear stress. Notable among the latter group are the field performance testing results of erosion control products conducted by the TXDOT/TTI Hydraulics and Erosion Control Laboratory (TXDOT 1999).

Table 2 presents limiting values for shear stress and velocity for a number of different channel lining materials. Included are soils, various types of vegetation, and number of different commonly applied stabilization techniques. Information presented in the table was derived from a number of different sources. Ranges of values presented in the table reflect various measures presented within the literature. In the case of manufactured products, the designer should consult the manufacturer's guidelines to determine thresholds for a specific product.

Uncertainty and Variability

The values presented in Table 2 generally relate to average values of shear stress or velocity. Velocity and shear stress are neither uniform nor steady in natural channels. Short-term pulses in the flow can give rise to instantaneous velocities or stresses of two to three times the average; thus, erosion may occur at stresses much lower than predicted. Because limits presented in Table 2 were developed empirically, they implicitly include some off this variability. However, natural channels typically exhibit much more variability than the flumes from which these data were developed.

Sediment load can also profoundly influence the ability of flow to erode underlying soils. Sediments in suspension have the effect of damping turbulence within the flow. Turbulence is an important factor in entraining materials from the channel boundaries. Thus, velocity and shear stress thresholds are 1.5 to 3 times that presented in the table for flows carrying high sediment loads.

In addition to variability of flow conditions, variation in the channel lining characteristics can influence erosion predictions. Natural bed material is neither spherical nor of uniform size. Larger particles may shield smaller ones from direct impact so that the latter fail to move until higher stresses are attained. For a given grain size, the true threshold criterion may vary by nearly an order of magnitude depending on the bed gradation. Variation in the installation of erosion control measures can reduce the threshold necessary to cause erosion.

Table 2. Permissible Shear and Velocity for Selected Lining Materials[1]

Boundary Category	Boundary Type	Permissible Shear Stress (lb/sq ft)	Permissible Velocity (ft/sec)	Citation(s)
Soils	Fine colloidal sand	0.02 - 0.03	1.5	A
	Sandy loam (noncolloidal)	0.03 - 0.04	1.75	A
	Alluvial silt (noncolloidal)	0.045 - 0.05	2	A
	Silty loam (noncolloidal)	0.045 - 0.05	1.75 – 2.25	A
	Firm loam	0.075	2.5	A
	Fine gravels	0.075	2.5	A
	Stiff clay	0.26	3 – 4.5	A, F
	Alluvial silt (colloidal)	0.26	3.75	A
	Graded loam to cobbles	0.38	3.75	A
	Graded silts to cobbles	0.43	4	A
	Shales and hardpan	0.67	6	A
Gravel/Cobble	1-in.	0.33	2.5 – 5	A
	2-in.	0.67	3 – 6	A
	6-in.	2.0	4 – 7.5	A
	12-in.	4.0	5.5 – 12	A
Vegetation	Class A turf	3.7	6 – 8	E, N
	Class B turf	2.1	4 - 7	E, N
	Class C turf	1.0	3.5	E, N
	Long native grasses	1.2 – 1.7	4 – 6	G, H, L, N
	Short native and bunch grass	0.7 - 0.95	3 – 4	G, H, L, N
	Reed plantings	0.1-0.6	N/A	E, N
	Hardwood tree plantings	0.41-2.5	N/A	E, N
Temporary Degradable RECPs	Jute net	0.45	1 – 2.5	E, H, M
	Straw with net	1.5 – 1.65	1 – 3	E, H, M
	Coconut fiber with net	2.25	3 – 4	E, M
	Fiberglass roving	2.00	2.5 – 7	E, H, M
Non-Degradable RECPs	Unvegetated	3.00	5 – 7	E, G, M
	Partially established	4.0-6.0	7.5 – 15	E, G, M
	Fully vegetated	8.00	8 – 21	F, L, M
Riprap	6 – in. d_{50}	2.5	5 – 10	H
	9 – in. d_{50}	3.8	7 – 11	H
	12 – in. d_{50}	5.1	10 – 13	H
	18 – in. d_{50}	7.6	12 – 16	H
	24 – in. d_{50}	10.1	14 – 18	E
Soil Bioengineering	Wattles	0.2 – 1.0	3	C, I, J, N
	Reed fascine	0.6-1.25	5	E
	Coir roll	3 - 5	8	E, M, N
	Vegetated coir mat	4 - 8	9.5	E, M, N
	Live brush mattress (initial)	0.4 – 4.1	4	B, E, I
	Live brush mattress (grown)	3.90-8.2	12	B, C, E, I, N
	Brush layering (initial/grown)	0.4 – 6.25	12	E, I, N
	Live fascine	1.25-3.10	6 – 8	C, E, I, J
	Live willow stakes	2.10-3.10	3 – 10	E, N, O
Hard Surfacing	Gabions	10	14 – 19	D
	Concrete	12.5	>18	H

[1] Ranges of values generally reflect multiple sources of data or different testing conditions.

A. Chang, H.H. (1988).
B. Florineth. (1982)
C. Gerstgraser, C. (1998).
D. Goff, K. (1999).
E. Gray, D.H., and Sotir, R.B. (1996).
F. Julien, P.Y. (1995).
G. Kouwen, N.; Li, R. M.; and Simons, D.B., (1980).
H. Norman, J. N. (1975).
I. Schiechtl, H. M. and R. Stern. (1996).
J. Schoklitsch, A. (1937).
K. Sprague, C.J. (1999).
L. Temple, D.M. (1980).
M. TXDOT (1999)
N. Data from Author (2001)
O. USACE (1997).

cal and instantaneous values for
ters. Guidance for making these
s presented in the section titled
below.

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g discussion dealt with the
bsence of erosion, but did not
xtent to which erosion might
ven flow. If the thresholds
Table 2 are exceeded, erosion
pected to occur. In reality, even
resholds are not exceeded, some
ew select locations may occur.
which this minor erosion could
nificant concern depends in large
he duration of the flow, and upon
he stream to transport those
ents.

n

stated, limits regarding erosion
shed by manufacturers for
cts are typically developed from
short flow durations. They do not
ential for severe erosion damage
t from moderate flow events over
. Studies have shown that
w reduces erosion resistance of
f erosion control products, as
res 2 - 4. A factor of safety
plied when flow duration exceeds
ours.

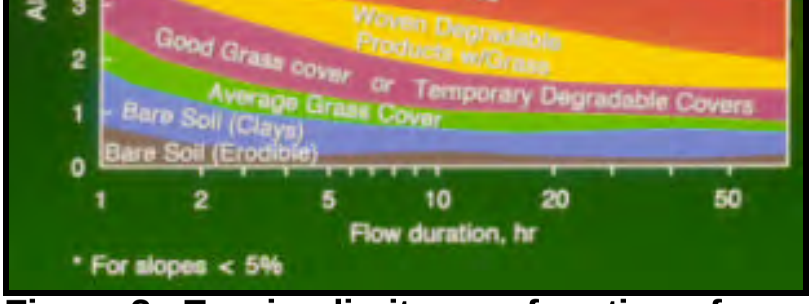

Figure 2. Erosion limits as a function of flow duration (from Fischenich and Allen (2000)).

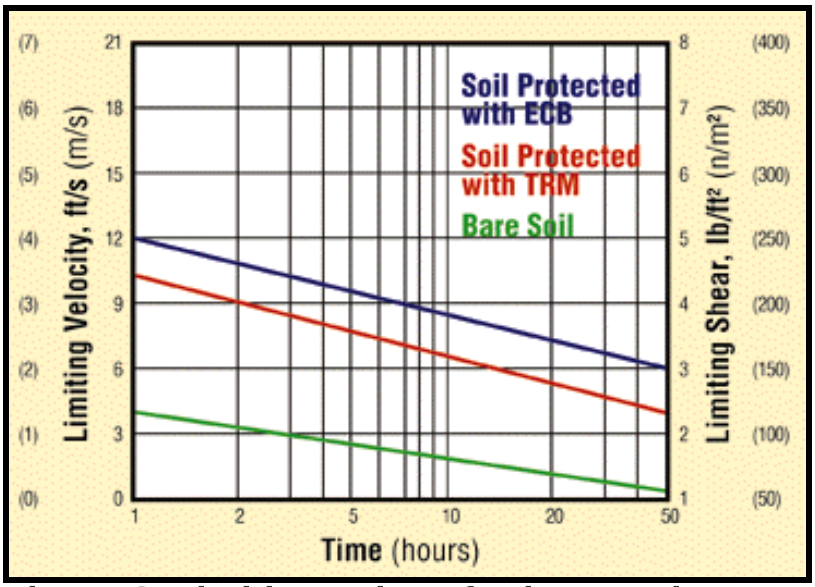

Figure 3. Limiting values for bare and TRM protected soils (from Sprague (1999))

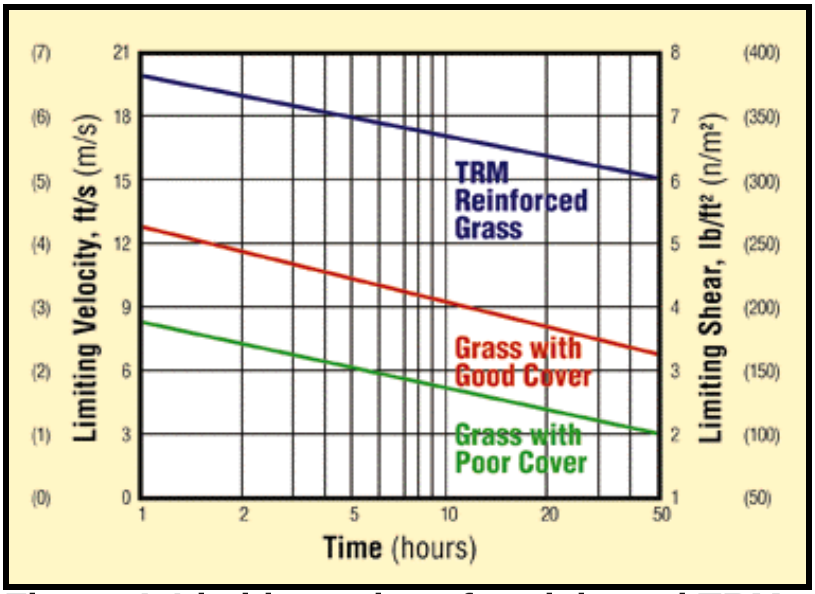

Figure 4. Limiting values for plain and TRM reinforced grass (from Sprague (1999))

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Correlations between flow volume and amount of erosion tend to be poor. Multi-peaked flows may be more effective than single flows of comparable or greater magnitude because of the increased incidence of wetting. Flows with long durations often have a more significant effect on erosion than short-lived flows of higher magnitude. Sediment transport analysis can be used to gauge the magnitude of erosion potential in the channel design, but predictive capability is limited.

Sediment Transport

A number of flow measures can be used to assess the ability of a stream to transport sediment. The unit stream power (P_m) is one common approach, and is related to the earlier discussion in that stream power includes both velocity and shear stress as components. Sediment transport (Q_s) increases when the unit stream power (P_m) increases. Unit stream power in turn is controlled by both tractive stress and flow velocity:

$$P_m = v \cdot \tau = v \cdot \gamma_w \cdot D \cdot S_f \qquad (7)$$

The total power (P_t) is the product of the unit power times the channel width (W):

$$P_t = P_m \cdot W = v \cdot W \cdot D \cdot \gamma_w \cdot S_f = v \cdot A \cdot \gamma_w \cdot S_f = Q_w \cdot \gamma_w \cdot S_f \qquad (8)$$

Stream power assessments can be useful in evaluating sediment discharge within a stream channel and the deposition or erosion of sediments from the streambed. However, their utility for evaluating the stability of measures applied to prevent erosion is limited because of the lack of empirical data relating stream power to stability. The analysis of general streambank erosion is not a simple extension of the noncohesive bed case with an added downslope gravity component. Complication is added by other influencing variables, such as vegetation, whose root system can reinforce bank material and increase erosion resistance. Factors influencing bank erosion are summarized in Table 3.

Table 3. Factors Influencing Erosion

actor	*elevant characteristics*
low properties	lagnitude, frequency and variability of stream discharge; Magnitude and distribution of elocity and shear stress; Degree of turbulence
ediment composition	ediment size, gradation, cohesion and stratification
limate	ainfall amount, intensity and duration; Frequency and duration of freezing
ubsurface conditions	eepage forces; Piping; Soil moisture levels
hannel geometry	idth and depth of channel; Height and angle of bank; Bend curvature
iology	egetation type, density and root character; Burrows
nthropogenic factors	rbanization, flood control, boating, irrigation

APPLICATION

The stability of a waterway or the suitability of various channel linings can be determined by first calculating both the mean velocity and tractive stress (by the previous equations). These values can then be compared with allowable velocity and tractive stress for a particular ground cover or lining system under consideration (e.g., existing vegetation cover, an erosion control blanket, or bioengineering treatment). Allowable tractive stresses for various types of soil, linings, ground covers, and stabilization measures including soil bioengineering treatments, are listed in Table 2. Additionally, manufacturers' product literature can provide allowable tractive stresses or velocities for various types of erosion control products.

An iterative procedure may be required when evaluating channel stability because various linings will affect the resistance coefficient,

which in turn may change the estimated flow conditions. A general procedure for the application of information presented in this paper is outlined in the following paragraphs.

Step 1-Estimate Mean Hydraulic Conditions.
Flow of water in a channel is governed by the discharge, hydraulic gradient, channel geometry, and roughness coefficient. This functional relationship is most frequently evaluated using normal depth or backwater computations that take into account principles of conservation of linear momentum. The latter is preferable because it accounts for variations in momentum slope, which is directly related to shear stress. Several models are available to aid the hydraulic engineer in assessing hydraulic conditions. Notable examples include HEC-2, HEC-RAS, and WSP2. Channel cross sections, slopes, and Manning's coefficients should be determined based upon surveyed data and observed or predicted channel boundary conditions. Output from the model should be used to compute main channel velocity and shear stress at each cross section.

Step 2- Estimate Local/Instantaneous Flow Conditions.
The computed values for velocity and shear stress may be adjusted to account for local variability and instantaneous values higher than mean. A number of procedures exist for this purpose. Most commonly applied are empirical methods based upon channel form and irregularity. Several references at the end of this paper present procedures to make these adjustments. Chang (1988) is a good example. For straight channels, the local maximum shear stress can be assumed from the following simple equation:

$$\tau_{max} = 1.5\tau \qquad (9)$$

for sinuous channels, the maximum shear stress should be determined as a function of the planform characteristics using Equation 10:

$$\tau_{max} = 2.65\,\tau \left(\frac{R_c}{W}\right)^{-0.5} \qquad (10)$$

where R_c is the radius of curvature and W is the top width of the channel. Equations 9 and 10 adjust for the spatial distribution of shear stress; however, temporal maximums in turbulent flows can be 10 – 20 percent higher, so an adjustment to account for instantaneous maximums should be added as well. A factor of 1.15 is usually applied.

Step 3- Determine Existing Stability.
Existing stability should be assessed by comparing estimates of local and instantaneous shear and velocity to values presented in Table 2. Both the underlying soil and the soil/vegetation condition should be assessed. If the existing conditions are deemed stable and are in consonance with other project objectives, then no further action is required. Otherwise, proceed to step 4.

Step 4- Select Channel Lining Material.
If existing conditions are unstable, or if a different material is needed along the channel perimeter to meet project objectives, a lining material or stabilization measure should be selected from Table 2, using the threshold values as a guideline in the selection. Only material with a threshold exceeding the predicted value should be selected. The other project objectives can also be used at this point to help select from among the available alternatives. Fischenich and Allen (2000) characterize attributes of various protection measures to help in the selection.

Step 5- Recompute Flow Values.
Resistance values in the hydraulic computations should be adjusted to reflect the selected channel lining, and hydraulic condition should be recalculated for the channel. At this point, reach- or section-averaged hydraulic conditions should be adjusted to account for local and instantaneous extremes.
Table 4 presents velocity limits for various channel boundaries conditions. This table is useful in screening alternatives, or as an alternative to the shear stress analysis presented in the preceding sections.

Table 4. Stability of Channel Linings for Given Velocity Ranges

Lining	0 – 2 fps	2 – 4 fps	4 – 6 fps	6 – 8 fps	> 8 fps
Sandy Soils					
Firm Loam					
Mixed Gravel and Cobbles					
Average Turf					
Degradable RECPs					
Stabilizing Bioengineering					
Good Turf					
Permanent RECPs					
Armoring Bioengineering					
CCMs & Gabions					
Riprap					
Concrete					

Key:

	Appropriate
	Use Caution
	Not Appropriate

Step 6– Confirm Lining Stability.

The stability of the proposed lining should be assessed by comparing the threshold values in Table 2 to the newly computed hydraulic conditions. These values can be adjusted to account for flow duration using Figures 2-4 as a guide. If computed values exceed thresholds, step 4 should be repeated. If the threshold is not exceeded, a factor of safety for the project should be determined from the following equations:

$$FS = \frac{t_{max}}{t_{est}} \quad or \quad FS = \frac{V_{max}}{V_{est}} \qquad (11)$$

In general, factors of safety in excess of 1.2 or 1.3 should be acceptable. The preceding five steps should be conducted for every cross section used in the analysis for the project. In the event that computed hydraulic values exceed thresholds for any desirable lining or stabilization technique, measures must be undertaken to reduce the energy within the flow. Such measures might include the installation of low-head drop structures or other energy-dissipating devices along the channel. Alternatively, measures implemented within the watershed to reduce total discharge could be employed.

APPLICABILITY AND LIMITATIONS

Techniques described in this technical note are generally applicable to stream restoration projects that include revegetation of the riparian zone or bioengineering treatments.

ACKNOWLEDGEMENTS

Research presented in this technical note was developed under the U.S. Army Corps of Engineers Ecosystem Management and Restoration Research Program. Technical reviews were provided by Messrs. E.A. (Tony) Dardeau, Jr., (Ret.), and Jerry L. Miller, both of the Environmental Laboratory.

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USACE TR EL 97-8

Attachment 5

General Comments on Final Water Quality Improvement Plans and Notice of Noncompliance

Walsh (2015)

August 5, 2015 **Via Email Only**

San Diego County Principal Watershed Copermittees

In reply refer to / attn:
PIN :786088:LWalsh

Subject: General Comments on Final Water Quality Improvement Plans and Notice of Noncompliance

San Diego County Principal Watershed Copermittees:

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) received the Water Quality Improvement Plans (Plans) from the San Diego County Copermittees (Copermittees) on or before June 26, 2015, as required pursuant to Provision F.1.b.(1) of Order No. R9-2013-0001, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region* (Order).

The Plans are the product of more than two years of concentrated Plan development efforts by the Copermittees. These Plans were prepared in phases and the Copermittees received regular input from the San Diego Water Board, industry professionals, non-governmental environmental organizations, and community members as part of feedback from the Water Quality Improvement Consultation Panel groups and the public at large during multiple public workshops. While the San Diego Water Board recognizes this is the first time the Copermittees have prepared such Plans and acknowledges their efforts to comply with the requirements of the Order, some of the Plans did a better job of meeting the requirements of the Order than others.

The San Diego Water Board is confident that once the Plans are in compliance with the requirements of the Order and accepted by the San Diego Water Board, the Copermittees' jurisdictional runoff management programs (JRMPs) will have the greatest potential to achieve significant reductions in pollutant loads in MS4 discharges and improvements in receiving water quality to the level supportive of beneficial uses within the shortest possible time.

In addition to reviewing the Plans for compliance with the requirements of the Order, the San Diego Water Board reviewed the acceptability of the Plans. The Order allows the Copermittees to develop Plans that prioritize the water quality conditions to address

sooner rather than later, and to set numeric goals and schedules to address the highest priorities. However, not all proposed priorities, goals, and schedules will be determined acceptable, especially if the San Diego Water Board determines that a Plan will not achieve water quality improvements within a reasonable period of time. While the elements of a Plan may meet the requirements of the Order, those elements must also meet the intent of the Order which is instrumental to achieving the goals of the San Diego Water Board's Practical Vision.

The San Diego Water Board has not yet completed a detailed review of each Plan. At this time, the San Diego Water Board is providing general comments for all the Plans because there are several issues of concern already identified that make the Plans unacceptable, as well as noncompliant with the requirements of the Order. When the detailed reviews are completed the San Diego Water Board staff will schedule a time to meet with the Copermittees for each Watershed Management Area, as soon as practicable and anticipated to be before the end of August 2015, to discuss specific issues that need to be addressed in each Plan. At the meetings, the San Diego Water Board may have Plan-specific comments in addition to the issues identified below.

Until then, the issues identified below must be adequately addressed for the Plans to be considered acceptable by the San Diego Water Board, and to be in compliance with the requirements of Order. Not all of the following comments and areas of noncompliance are applicable to every Plan or to every Copermittee, so the San Diego County Copermittees should review the Plans to determine where the following issues are applicable to their watershed and their jurisdiction.

PRIORITY WATER QUALITY CONDITIONS

1. Identification of Priority Water Quality Conditions

Requirements: Provisions B.2.a through B.2.c of the Order require the Copermittees to identify the priority water quality conditions that will be evaluated to determine which of those conditions will be the highest priorities to be addressed by the Plan. Provisions B.2.a through B.2.c require the Copermittees to consider several sources of data and information to identify priority water quality conditions within the Watershed Management Area, and whether there is a potential that MS4 discharges may be causing or contributing to those conditions.

Issues of Concern: Each Plan includes a description of the process to review different sources of data and information, including input from the public, to identify priority water quality conditions. The San Diego Water Board, however, has found the following general issues of concern:

a) In several Plans, the San Diego Water Board did not find a fully inclusive list of all priority water quality conditions (i.e. pollutants, stressors, receiving water conditions) that should have been identified in data and information that were required to be considered pursuant to Provisions B.2.a and B.2.b. Pursuant to

Provision B.2.c.(1), a fully inclusive list was required to be evaluated to identify which of those conditions were the highest threat to receiving water quality, or most adversely affect the quality of receiving waters.

b) In at least one Plan, there was not enough description or information that allowed the San Diego Water Board to determine if all the factors under Provisions B.2.a and B.2.b were adequately considered or not.

c) A few Plans have identified bacteria as a highest priority water quality condition based on the Revised Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Project I – Twenty Beaches and Creek in the San Diego Region (Beaches and Creeks Bacteria TMDLs), but the segment which the highest priority water quality condition is based on is no longer identified as impaired on the Clean Water Act Section 303(d) List (303(d) List).

Noncompliant Priority Water Quality Conditions: In several Plans, there was a notable absence of one or more pollutants or conditions of concern known to the San Diego Water Board (e.g. trash, hydromodification, benthic alteration, stream or riparian habitat degradation) that were also identified in reports, plans, and data cited and reviewed by the Copermittees (e.g. 2011 Long Term Effectiveness Assessment). In a few Plans, there was also a notable absence of pollutants or conditions of concern identified by the public at workshops or Water Quality Improvement Plan Consultation Panel meetings, and in written comments from stakeholders and the public. The lists developed pursuant to Provision B.2.c.(1) that do not acknowledge and include these notably absent pollutants and conditions of concern are not in compliance with the requirements of Provisions B.2.a-c.

Unacceptable Priority Water Quality Conditions: A few Plans have bacteria as a highest priority water quality condition only because of the Beaches and Creeks Bacteria TMDLs, but there is no longer an impairment identified on the 303(d) List. If there are no strategies proposed to be implemented other than the requirements of Provisions E.2 through E.7 to address bacteria, or there are no load reductions quantified for other pollutants in addition to bacteria, or both, the Plans are not acceptable to the San Diego Water Board.

WATER QUALITY IMPROVEMENT GOALS

2. Final Numeric Goals

Requirements: Provision B.3.a.(1)(a) of the Order requires the Copermittees to include final numeric goals in the Plan to address the highest priority water quality conditions. Each final numeric goal must either demonstrate the discharges from the Copermittees' MS4s will not cause or contribute to exceedances of water quality standards in receiving waters, or the receiving waters are protected from the Copermittees' MS4 discharges, or both (see Provisions B.3.a.(1)(a)(i)-(iii)).

Issues of Concern: Each Plan includes final numeric goals for the highest priority water quality conditions. The San Diego Water Board, however, has found the following general issues of concern:

a) Several Plans include proposed final numeric goals expressed in a manner that is difficult for the San Diego Water Board to determine the final numeric goal is a criterion or indicator capable of demonstrating one or more of the criteria given in Provisions B.3.a.(1)(a)(i)-(iii). In addition, the San Diego Water Board questions how some of these proposed final numeric goals could be measured by the Copermittees.

b) Several proposed final numeric goals appear to be in conflict with the prohibitions and limitations in Provision A of the Order. For example, there are Plans with proposed final numeric goals associated with reducing non-storm water discharges from the MS4s, but the San Diego Water Board cannot determine how achievement of the proposed final numeric goal is in compliance with the requirement to effectively prohibit non-storm water discharges to the MS4 (Provision A.1.b).

c) There are proposed final numeric goals that are difficult for the San Diego Water Board to establish a link between achieving the final numeric goal and addressing the highest priority water quality condition. For example, there are Plans with proposed final numeric goals associated with reducing non-storm water discharges from the MS4s to achieve reductions of pollutants in MS4 discharges (e.g. bacteria) during wet weather and dry weather conditions; however, the MS4 discharge reduction metric (e.g. flow) does not quantify the pollutant reduction that will be achieved during wet weather or dry weather conditions.

d) Some proposed final numeric goals did not meet the criteria of Provision B.3.a.(1)(a), but could be acceptable interim numeric goals.

Noncompliant Final Numeric Goals: Final numeric goals that are not numeric, AND measureable, AND capable of demonstrating the Copermittees' MS4s will not cause or contribute to exceedances of receiving water limitations, or the receiving waters are protected from the Copermittees' MS4 discharges, or both, are not in compliance with the requirements of Provision B.3.a.(1)(a).

Unacceptable Final Numeric Goals: The following proposed final numeric goals are not acceptable to the San Diego Water Board:

a) Final numeric goals that are not consistent or do not demonstrate compliance with the prohibitions and limitations of the Provision A.

b) Final numeric goals with a metric that is unclear about how it will be measured, and lacks any description of, or reference to the data that will be collected to measure the metric.

c) Final numeric goals that do not clearly demonstrate achievement of the final numeric goal will result in MS4 discharges that do not cause or contribute to exceedances of water quality standards in receiving waters, or the receiving waters are protected from the Copermittees' MS4 discharges, or both.

d) Final numeric goals that do not have a metric that clearly demonstrates a link to addressing the highest priority water quality conditions.

3. Interim Numeric Goals

Requirements: Provision B.3.a.(1)(b) of the Order requires the Copermittees to include interim numeric goals in the Plan for each final numeric goal. The Copermittees are allowed to propose as many interim numeric goals for each final numeric goal as they determine appropriate (Provision B.3.a.(b)(i)), but must include at least one interim numeric goal that is expressed as a reasonable increment of the final numeric goal. This interim numeric goal is expected to be in the same or a similar metric as the final numeric goal (Provision B.3.a.(b)(ii)). At least one interim numeric goal is required to be established during each 5 year period between the acceptance of the Plan and the achievement of the final numeric goal (Provision B.3.a.(b)(iii)).

Issues of Concern: In at least one Plan, the San Diego Water Board has found proposed final numeric goals that do not have interim numeric goals that are expressed in the same or similar metric as the final numeric goals.

Noncompliant Interim Numeric Goals: Final numeric goals that do not have at least one interim numeric goal expressed as a reasonable increment in the same or similar metric as the final numeric goal are not in compliance with Provision B.3.a.(1)(b)(ii).

WATER QUALITY IMPROVEMENT STRATEGIES

4. Identification of Potential Water Quality Improvement Strategies

Requirements: Provision B.2.e of the Order requires the Copermittees to identify potential strategies that can result in improvements to water quality. Provision F.1.a.(2)(f) requires the Copermittees consider revisions to potential water quality improvement strategies they propose in the Plan based on public comments.

Issues of Concern: Most Plans include lists of water quality improvement strategies that may be implemented by the Copermittees. The San Diego Water Board, however, has found the following general issues of concern:

a) In at least one Plan, the San Diego Water Board was not able to locate the list of potential water quality improvement strategies developed during the public participation process in the Plan.

b) In at least one Plan, the San Diego Water Board could not find all the potential water quality improvement strategies suggested or recommended in public comments.

Noncompliant Potential Water Quality Improvement Strategies: Plans that do not identify all potential strategies that were considered for implementation to improve water quality are not in compliance with the requirements of Provision B.2.e. Plans that did not consider all the potential water quality improvement strategies submitted in public comments are also not in compliance with the requirements of Provision B.2.e.

5. Optional Jurisdictional Strategies

Requirements: Provision B.3.b.(1)(b) of the Order requires each Copermittee to identify the optional jurisdictional strategies that will be implemented within its jurisdiction, as necessary, to achieve final numeric goals. Each Copermittee is required to identify water quality improvement strategies that are in addition to the best management practice (BMP) implementation, inspection, enforcement, and education activities that are already required by Provisions E.2 through E.7 (Provision B.3.b.(1)(b)(i)). Optional jurisdictional strategies to encourage or implement retrofit projects and channel and habitat rehabilitation projects are also required to be provided (Provisions B.3.b.(1)(b)(ii) and (iii)). For each optional jurisdictional strategy that a Copermittee includes in the Plan, descriptions of the funds and/or resources needed, and the circumstances needed to trigger implementation of the strategy are also required (Provisions B.3.b.(1)(b)(iv) and (v), respectively).

Issues of Concern: All the Plans lacked enough information for the San Diego Water Board to make a determination that all the requirements of Provision B.3.b.(1)(b) have been met. The San Diego Water Board has found the following general issues of concern:

a) Several Copermittees did not include any proposed optional jurisdictional strategies to be implemented within their jurisdictions, as necessary, to effectively prohibit non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the maximum extent practicable (MEP), protect beneficial uses of receiving waters from MS4 discharges, or achieve proposed interim and final numeric goals.

b) Most Copermittees did not include an incentive or program to encourage or implement projects to retrofit areas of existing development within its jurisdiction.

Pursuant to Provision E.5.e.(1)(a), every Copermittee is required to identify areas of existing development within its jurisdiction as candidates for retrofitting. Therefore, every Copermittee should have some incentive or program to encourage implementation of retrofit projects in the areas of existing development identified in its JRMP document pursuant to Provision E.5.e.(1)(a), unless there is an acceptable rationale in the Plan describing why it is infeasible to encourage or implement such retrofit projects.

c) Most Copermittees did not include an incentive or program to encourage or implement projects that will rehabilitate the conditions of channels or habitats within its jurisdiction. Pursuant to Provision E.5.e.(2)(a), every Copermittee is required to identify streams, channels, and/or habitats in areas of existing development within its jurisdiction as candidates for rehabilitation. Therefore, every Copermittee should have some incentive or program to encourage implementation of projects to rehabilitate the conditions of channels or habitats within its jurisdiction identified in JRMP document pursuant to Provision E.5.e.(2)(a), unless there is an acceptable rationale in the Plan describing why it is infeasible to encourage or implement such rehabilitation projects.

d) Of the Copermittees that did include proposed optional jurisdictional strategies, adequate information about the funds and/or resources needed to implement the strategy (e.g. plans to be developed, studies to be conducted, data to be collected, personnel needed, equipment needed, administrative structures required, contracts needed, land to be acquired, etc.) was not provided.

e) Of the Copermittees that did include proposed optional jurisdictional strategies, adequate information about the circumstances necessary to trigger implementation of the strategy (e.g. funding availability, obtain approval from city councils, findings from assessments or studies, etc.) was not provided.

f) Many proposed optional jurisdictional strategies did not appear to be a BMP, an incentive, or a program that could be implemented to effectively prohibit non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the MEP, protect beneficial uses of receiving waters from MS4 discharges, or achieve proposed interim and final numeric goals. Implementation of an optional jurisdictional strategy is expected to result in an improvement of water quality.

Noncompliant Optional Jurisdictional Strategies: The San Diego Water Board found that the proposed optional jurisdictional strategies in the Plans do not comply with the requirements of Provision B.3.b.(1)(b) as follows:

a) A Copermittee that did not propose any optional jurisdictional strategies to be implemented within its jurisdiction, as necessary, to effectively prohibit non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the MEP, protect beneficial uses of receiving waters from MS4

discharges, or achieve proposed interim and final numeric goals, in addition to the BMP implementation, inspection, enforcement, and education activities that are already required by Provisions E.2 through E.7 is not in compliance with the requirements of Provision B.3.b.(1)(b)(i).

b) Unless acceptable data or rationale are provided in the Plan, a Copermittee that did not propose any incentives or programs to encourage or implement projects to retrofit areas of existing development within its jurisdiction as optional jurisdictional strategies is not in compliance with the requirements of Provision B.3.b.(1)(b)(ii). A Copermittee that has not identified areas of existing development within its jurisdiction as candidates for retrofitting in its JRMP document also is not in compliance with Provision E.5.e.(1)(a), unless acceptable data or rationale is provided.

c) Unless acceptable data or rationale are provided in the Plan, a Copermittee that did not propose any incentives or programs to encourage or implement projects to rehabilitate channels or habitats within its jurisdiction as optional jurisdictional strategies is not in compliance with the requirements of Provision B.3.b.(1)(b)(iii). A Copermittee that has not identified projects to rehabilitate the conditions of channels or habitats within its jurisdiction in its JRMP document also is not in compliance with Provision E.5.e.(2)(a), unless acceptable data or rationale are provided.

d) A Copermittee that does not have any optional jurisdictional strategies in the Plan or has proposed an optional jurisdictional strategy without an adequate description of the funds and/or resources needed to implement the strategy is not in compliance with the requirements of Provision B.3.b.(1)(b)(iv).

e) A Copermittee that does not have any optional jurisdictional strategies in the Plan or has proposed an optional jurisdictional strategy without an adequate description of the circumstances needed to trigger implementation of the strategy is not in compliance with the requirements of Provision B.3.b.(1)(b)(v).

Unacceptable Optional Jurisdictional Strategies: The following proposed optional jurisdictional strategies are not acceptable to the San Diego Water Board:

a) Many proposed optional jurisdictional strategies are described using terms such as “consider”, “evaluate”, “investigate”, or “develop” a BMP, incentive, or program. These terms indicate to the San Diego Water Board that the Copermittee is only preparing for the implementation of a BMP, incentive, or program. Provision B.3.b.(1)(b) requires each Copermittee identify that optional jurisdictional strategies that ***will be*** implemented. Preparation for a strategy does not meet the requirement of a strategy that will be implemented.

b) Many proposed optional jurisdictional strategies describe development of a plan, conducting a special study or an assessment, or collecting data. Plans, special

studies, assessments, and data collection are necessary steps to implement a strategy, but are not in and of themselves a strategy that will result in the effective prohibition of non-storm water discharges to the MS4, reduction of pollutants in storm water discharges from the MS4 to the MEP, protection of beneficial uses of receiving waters from MS4 discharges, or achievement of proposed interim and final numeric goals.

c) Several proposed optional jurisdictional strategies appear to be BMP implementation, inspection, enforcement, and education activities that are already being implemented or required to be implemented by the Copermittee pursuant to Provisions E.2 through E.7. Optional jurisdictional strategies are required in addition to the requirements of Provisions E.2 through E.7.

6. Watershed Management Area Strategies

Requirements: Provision B.3.b.(2) of the Order requires the Copermittees to identify Watershed Management Area strategies that will be implemented, as necessary, to achieve final numeric goals. The Copermittees are required to identify regional or multi-jurisdictional scale water quality improvement strategies (Provision B.3.b.(2)(a)). Watershed Management Area strategies to encourage or implement retrofit projects and channel and habitat rehabilitation projects are also required to be provided in the Plan (Provisions B.3.b.(2)(b) and (c)). For each Watershed Management Area strategy that the Copermittees includes in the Plan, descriptions of the funds and/or resources needed, and the circumstances needed to trigger implementation of the strategy are also required (Provisions B.3.b.(2)(d) and (e), respectively).

Issues of Concern: All the Plans lacked enough information about Watershed Management Area strategies to meet the requirements of Provision B.3.b.(2).

Noncompliant Watershed Management Area Strategies: The San Diego Water Board found that the Watershed Management Area strategies in the Plans do not comply with the requirements of Provision B.3.b.(2) as follows:

a) A Plan that did not propose any Watershed Management Area strategies to be implemented on a regional or multi-jurisdictional scale, as necessary, to effectively prohibit non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the MEP, protect beneficial uses of receiving waters from MS4 discharges, or achieve proposed interim and final numeric goals is not in compliance with the requirements of Provision B.3.b.(2)(a).

b) Unless acceptable data or rationale are provided in the Plan, a Plan that did not propose any incentives or programs to encourage or implement projects to retrofit areas of existing development as a Watershed Management Area strategy is not in compliance with the requirements of Provision B.3.b.(2)(b).

c) Unless acceptable data or rationale are provided in the Plan, a Plan that did not propose any incentives or programs to encourage or implement projects to rehabilitate channels, streams, or habitats as a Watershed Management Area strategy is not in compliance with the requirements of Provision B.3.b.(2)(c).

d) A Plan without Watershed Management Area strategies or a Plan that has a proposed Watershed Management Area strategy without information about the funds and/or resources needed to implement a Watershed Management Area strategy is not in compliance with the requirements of Provision B.3.b.(2)(d).

e) A Plan without Watershed Management Area strategies or a Plan that has a proposed Watershed Management Area strategy without a description of the circumstances needed to trigger implementation of Watershed Management Area strategy is not in compliance with the requirements of Provision B.3.b.(2)(e).

WATER QUALITY IMPROVEMENT SCHEDULES

7. Schedules for Achieving Numeric Goals

Requirement: Provision B.3.a.(2) of the Order requires the Copermittees to develop and incorporate schedules for achieving interim and final numeric goals. Provision B.3.a.(2) requires the schedules to incorporate TMDL compliance dates, incorporate ASBS compliance schedules, and be designed to achieve the interim and final numeric goals in the shortest time practicable taking into account the time required to implement water quality improvement strategies.

Issues of Concern: Each Plan includes schedules to achieve interim and final numeric goals. The San Diego Water Board, however, has found the following general issues of concern:

a) For Plans where the Beaches and Creeks Bacteria TMDLs are applicable and bacteria is the only highest priority water quality condition identified, and only final numeric goals are established for bacteria, the Plan is a Bacteria Load Reduction Plan (BLRP) not a Comprehensive Load Reduction Plan (CLRP). According to the Beaches and Creeks Bacteria TMDLs, the wet weather and dry weather dates for compliance with the final wasteload allocations (WLAs) must be no later than 10 years after the effective date of the TMDLs, which is April 4, 2021. For the Copermittees to have until April 4, 2031 (i.e. 20 years after the effective date of the TMDLs) to achieve the Beaches and Creeks Bacteria TMDLs WLAs, the Plan needs to be a CLRP and incorporate load reduction programs with quantified load reductions for other pollutants of concern in addition to bacteria.

b) Several Plans propose more than 20 years from the date the Plan was submitted to achieve final numeric goals if there are no applicable TMDL compliance dates. Schedules proposing to achieve final numeric goals in more than 20 years appear to be relying primarily on BMP implementation, inspection, enforcement, and education activities that are required to be implemented by the Copermittees pursuant to Provisions E.2 through E.7, with few, if any, commitments to implement optional jurisdictional strategies within the first 10 or more years.

Noncompliant Schedules for Achieving Numeric Goals: There are several Plans that have a proposed date to achieve compliance with the Beaches and Creeks Bacteria TMDLs by April 4, 2031. Unless the Plan includes quantified load reductions for pollutants in addition to bacteria, the April 4, 2031 date to achieve the final numeric goals for bacteria is not in compliance with the requirement to incorporate CLRPs into the Plan pursuant to Attachment E, Specific Provision 6.b.(2)(c)(i).

Unacceptable Schedules for Achieving Numeric Goals: The following proposed schedules to achieve numeric goals are not acceptable to the San Diego Water Board:

a) Schedules of 10 years or more to address only one highest priority water quality condition are not acceptable, unless there is information provided that allows the San Diego Water Board to make a determination that the schedules are clearly based on the time reasonably required to implement proposed optional jurisdictional strategies.

b) Schedules of 10 years or more to achieve final numeric goals without optional jurisdictional strategies proposed to be implemented within the next 5 years are not acceptable.

c) Schedules of 5 years or more to achieve final numeric goals for only addressing one highest priority water quality condition by eliminating unauthorized non-storm water discharges to and from the MS4 without optional jurisdictional strategies proposed to be implemented within the next 5 years are not acceptable.

8. Schedules for Implementing Strategies

Requirements: Provision B.3.b.(3) of the Order requires the Copermittees to develop reasonable schedules for implementing the jurisdictional, optional jurisdictional, and Watershed Management Area strategies to achieve interim and final numeric goals. Provision B.3.b.(3) requires the schedules for implementing strategies to describe: 1) when jurisdictional strategies required pursuant to Provisions E.2 through E.7 will be implemented (Provision B.3.b.(3)(a)(i) and (ii)), 2) the shortest practicable time to secure funds and procure resources to initiate implementation of each optional jurisdictional strategy (Provision B.3.b.(3)(a)(iii)), and the shortest practicable time to secure funds and procure resources to initiate

implementation of each Watershed Management Area strategy (Provision B.3.b.(3)(b)(i)). The schedules are also required to provide information about whether a strategy is expected to be a continuously implemented strategy (Provisions B.3.b.(3)(a)(iv) and B.3.b.(3)(b)(ii)) or strategy to be completed within a schedule (Provisions B.3.b.(3)(a)(v) and B.3.b.(3)(b)(iii)).

Issues of Concern: Each Plan includes schedules to implement strategies. The San Diego Water Board, however, has found the following general issues of concern:

a) In most Plans there were several proposed strategies that did not have any schedules associated with them, other than "to be determined."

b) Most Plans lacked enough information about the shortest practicable time to secure funds and procure resources of initiate implementation of optional jurisdictional strategies and Watershed Management Area strategies.

c) For several strategies that appeared to be limited timeframe or structural projects, they lacked the information about the anticipated time to complete the project based on a realistic assessment of the shortest practicable time required.

Noncompliant Schedules for Implementing Strategies: The San Diego Water Board found that the schedules in the Plans for implementing strategies do not comply with the requirements of Provision B.3.b.(3) as follows:

a) Strategies that do not have a schedule are not in compliance with the requirements of Provision B.3.b.(3).

b) A Copermittee that does not have any optional jurisdictional strategies or has proposed an optional jurisdictional strategy without a description of the shortest practicable time to secure funds and procure resources to initiate implementation of the optional jurisdictional strategy is not in compliance with the requirements of Provision B.3.b.(3)(a)(iii).

c) A Plan without Watershed Management Area strategies or has a proposed Watershed Management Area strategy without a description of the shortest practicable time to secure funds and procure resources to initiate implementation of the optional jurisdictional strategy is not in compliance with the requirements of Provision B.3.b.(3)(b)(i).

d) Strategies that are expected to be completed within a limited timeframe without information about the anticipated time to complete the project based on a realistic assessment of the shortest practicable time required are not in compliance with the requirements of Provision B.3.b.(3)(a)(v) or B.3.b.(3)(b)(iii).

OTHER ISSUES

9. Hydromodification Management Exemptions

Requirements: Provision E.3.c.(2)(d) of the Order describes situations where the Copermittees have the discretion to exempt Priority Development Projects from the hydromodification management BMP performance requirements. Exemptions may be granted to projects that discharge to 1) existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean, or 2) conveyance channels whose bed and bank are concrete lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean. The Copermittees may also propose additional exemptions via the optional Watershed Management Area Analysis.

Issues of Concern: Most Plans proposed additional exemptions via the optional Watershed Management Area Analysis. The San Diego Water Board, however, has found issues of concern with proposed exemptions in Plans for two different Watershed Management Areas:

a) As part of the Watershed Management Area Analysis, the City of Carlsbad included a report entitled "*Hydromodification Exemption Analysis for Select Carlsbad Watersheds*" (Report). Based on the Report, the Copermittees in the Carlsbad Watershed Management Area proposed to add drainage areas upstream of the Buena Vista, Agua Hedionda, and Batiquitos Lagoons as exempt from hydromodification management BMP requirements. Instead of evaluating the drainage areas leading to the lagoons using an erosion potential (or equivalent) analysis, the Report studies the lagoons using the criteria for exemptions outlined in the Hydromodification Management Plan for the San Diego Region (HMP) that was approved by the San Diego Water Board in July, 2010. However, the HMP is predicated on requirements of the previous MS4 permit. When the Order was adopted in 2013, the only exemptions retained were those cited in Provision E.3.c.(2)(d), meaning exemptions are essentially limited to concrete-lined or underground drainage channels. Any additional exemptions, including "non-erodible drainage networks" as described in the Report, must be evaluated from an erosion potential (or equivalent) point of view and included in the optional Watershed Management Area Analysis.

   The Report describes rationale for exempting areas draining to Agua Hedionda and Batiquitos Lagoon, and different rationale for exemptions for areas draining to Buena Vista Lagoon. The discussions regarding the areas draining to Agua Hedionda and Batiquitos Lagoons indicate that these areas may meet the Order's requirement of being concrete lined all the way from the point of discharge to an enclosed embayment (lagoon). However, whether or not drainage conveyances from these areas act like "concrete lined channels" is unclear because the discussion is centered on criteria applicable to the HMP and not the Order.

For Buena Vista Lagoon, the Report states that: "*As long as a project discharges into a non-erodible drainage network that is continuous to a lagoon outlet, it is potentially eligible for a hydromodification exemption*." The Report continues to explain that in drainage areas upstream of Buena Vista Lagoon, "… *the intervening ground is densely vegetated and or naturally armored. The City Engineer found no evidence of erosion at or near the water's edge of the lagoon. Consequently, this area is identified as exempt*…."

In order for the San Diego Water Board to accept a conclusion that a conveyance system can be exempt from hydromodification management BMP requirements, the Report must include an analysis demonstrating that the natural area under review would not experience erosion for the range of storms considered to be geomorphically significant. Although these areas are presented as "naturally armored," because they are not concrete-lined, the systems must be evaluated from an erosion potential (or equivalent) point of view to determine if an exemption is appropriate.

b) In the San Diego River Water Quality Improvement Plan, the Watershed Management Area Analysis includes a proposed methodology for demonstrating that hydromodification management BMPs are not needed upstream of Forrester Creek, a channel stabilized with materials other than concrete. The proposed methodology includes a process for classifying additional channels as "stabilized," and thus allowing exemptions for areas upstream of these channels. The San Diego Water Board is supportive of allowing exemptions for such stabilized channels, provided that the exemptions are supported and the proposed process is clear and repeatable.

   The Watershed Management Area Analysis includes a discussion of erosion potential in Forrester Creek under several different flow rates, all of which suggest that Forrester Creek would not experience erosion caused by land development occurring in the upstream watershed, even in a fully built-out condition. The discussion includes analyses using various methods to verify the assertion that the channel is stable in the range of flows considered to be geomorphically significant. Because the discussion includes several lines of evidence, the San Diego Water Board agrees that Forrester Creek can be considered stable and therefore the proposed exemption is appropriate.

   The Watershed Management Area Analysis appears to rationalize a more succinct and less rigorous analysis for including exemptions for future proposed channel segments. Absent a similar, thorough, and multiple lines of evidence approach analysis as was included for Forrester Creek, the San Diego Water Board disagrees and cannot support the less rigorous analysis. The San Diego Water Board supports the concept of introducing additional stabilized channel reaches that are exempt from hydromodification management BMP requirements, but only if an erosion potential analysis using continuous simulation modeling demonstrates that the channel segment would not erode in the range of flows determined to be geomorphically significant. Additionally, the analysis would need to include flows expected from a fully-built out watershed

condition, and would have to consider erosion potential at the channel's most susceptible location(s). Finally, the criteria and process to qualify for an exemption should be clear so that future proposals for exemptions for additional channel segments include all the required elements.

Unacceptable Hydromodification Management Exemptions: The following proposed exemptions are not acceptable to the San Diego Water Board:

a) Without an appropriate and acceptable analysis of the potential of erosion for the range of storms considered to be geomorphically significant, the additional exemptions proposed for Agua Hedionda Lagoon, Batiquitos Lagoon, and Buena Vista Lagoon are not acceptable.

b) Without an erosion potential analysis using continuous simulation modeling that shows a channel will not erode in the range of geomorphically significant flows for the fully built out condition of the drainage area at the most sensitive channel segment(s) included in the Watershed Management Area Analysis, future proposals for exemptions from the hydromodification management BMP requirements will not be acceptable.

10. Loma Alta Slough Resolution Implementation Requirements

Requirements: Provision A.1.b of the Order requires the Copermittees to effectively prohibit non-storm water discharges into the MS4. Provision B.3.a requires the Copermittees to develop interim and final numeric goals and schedules to achieve those goals for the highest priority water quality conditions. Resolution No. R9-2014-0020, a *Resolution of Commitment to an Alternative Process for Achieving Water Quality Objectives for Biostimulatory Substances in Loma Alta Slough* (Resolution), was adopted by the San Diego Water Board on June 26, 2014. The Resolution includes numeric targets, a compliance schedule, and monitoring which are expected to be implemented through the Carlsbad Watershed Management Area Water Quality Improvement Plan (Carlsbad WMA Plan).

Issues of Concern: A number of items in the Carlsbad WMA Plan are not consistent with the Resolution. The San Diego Water Board chose to adopt the Resolution as a practical, measureable, and timely approach for directing actions to remedy the Slough through a productive collaboration with the community to address an important water quality challenge. The Copermittees must implement the elements of the Resolution, or the San Diego Water Board will reinitiate the process of considering adoption of the Phosphorus TMDL for Loma Alta Slough. The San Diego Water Board has found the following issues of concern:

a) The Resolution includes numeric targets for both surface water macroalgal biomass and surface water macroalgal cover, which represent attainment of the biostimulatory water quality objective for Loma Alta Slough. These numeric targets were developed through a multi-year stakeholder process, and were

based on special studies specific to the Slough and water quality modeling. The numeric targets are to be achieved by 2023.

According to the source and linkage analysis for which the numeric targets are based, the primary sources of the impairment in Loma Alta Slough are dry-weather discharges from irrigation runoff and other illicit dry weather discharges conveyed by the MS4 to Loma Alta Slough. Nutrient loading, specifically phosphorus, into the Slough from dry weather flows results in excessive algal growth. Further, modeling results cited in the staff report (which served as the technical basis for the Resolution) suggests that reductions of dry weather flows in excess of 96 percent are needed to achieve the targeted reductions in phosphorus loading. As such, the Resolution relies on the Order, specifically the prohibitions of dry weather non-storm water discharges, and development and implementation of a Plan that includes the Loma Alta Creek watershed, to achieve the necessary reductions in phosphorus loading and restore the beneficial uses.

In contrast to the approach for which the Resolution is based, the Carlsbad WMA Plan proposes interim numeric goals that fall short of achieving the prohibitions on dry weather discharges. The Carlsbad WMA Plan describes the interim goals as:

- 50 percent reduction in anthropogenic persistent dry weather flows at the three outfalls addressed through 2018, and
- 25 percent reduction in additional (other outfalls in watershed) anthropogenic persistent flows identified during dry weather monitoring program implemented in 2015 and in subsequent years.

The interim goals as expressed in the Carlsbad WMA Plan are not consistent with the Resolution because there is no mention in the Resolution that the City of Oceanside would only first reduce flows by 50 percent, followed by an additional 25 percent in subsequent years, and no explicit attempt to comply with the requirement to effectively eliminate non-storm water discharges into the MS4. Additionally, Finding 20 of the Resolution states that the City of Oceanside, in a comment letter dated May 5, 2014 committed to:

- Using the numeric targets, developed through the stakeholder process as numeric goals in the Water Quality Improvement Plan for the Loma Alta Creek watershed, and
- Develop and implement a Water Quality Improvement Plan to effectively prohibit the City's non-storm water discharges into the MS4 system.

The San Diego Water Board expects the City of Oceanside to honor its commitment as stated in the letter dated May 5, 2014, and therefore expected the interim and final numeric goals in the Carlsbad WMA Plan to incorporate the prohibition of dry weather non-storm water discharges into the MS4 for reducing phosphorus loading to Loma Alta Slough. Further, there must also be interim

numeric goals expressed as an increment toward achieving the final numeric goals.

b) The Carlsbad WMA Plan does not include the required Loma Alta Slough Monitoring Plan. Table 2 of Resolution No. R9-2014-0022 describes the City of Oceanside's *Tentative Proposed Schedule to Address the Eutrophication Impairment in Loma Alta Slough*. According to this Table, in 2015, "*the City was to submit a Water Quality Improvement Plan, including the Loma Alta Slough Monitoring Plan, to the San Diego Water Board.*"

   Section 3.1.4 of the Carlsbad WMA Plan describes a special study whose objectives are "*to develop a water quality monitoring program for the Loma Alta Slough (Slough Monitoring Plan) that will allow the City of Oceanside to track progress toward reducing nutrient discharges into the Slough and eliminate the eutrophication impairment*." The monitoring is to occur every summer from 2016 to 2022.

   In a letter dated May 5, 2014, the City of Oceanside indicated that it would incorporate the slough monitoring requirements proposed in Tentative Investigative Order No. R9-2014-0022 into the Carlsbad WMA Plan[1]. The San Diego Water Board's expectation was that the Slough Monitoring Plan would be fully developed and included in the Carlsbad WMA Plan, as stated in the City's letter and described in Table 2 of the Resolution. The City of Oceanside has not submitted any correspondence to the San Diego Water Board suggesting a need to amend the schedule described in Table 2 since Resolution No. R9-2014-0020 was adopted on June 26, 2014.

Noncompliant Loma Alta Slough Resolution Implementation Requirements: The San Diego Water Board found that the Carlsbad WMA Plan does not comply with the requirements of Provisions A.1.b and B.3.a.(1) as follows:

a) The interim numeric goals as expressed are not consistent with the Resolution and not in compliance with the requirements of Provisions A.1.b and B.3.a.(1)(b).

b) Each final numeric goal that does not have an interim numeric goal expressed as a reasonable increment in the same or similar metric as the final numeric goal is not in compliance with Provision B.3.a.(1)(b)(ii).

Unacceptable Loma Alta Slough Resolution Implementation Requirements: The City of Oceanside committed to incorporating slough monitoring requirements proposed in Tentative Investigative Order No. R9-2014-0022 into the Carlsbad WMA Plan. Without the slough monitoring requirements proposed in Tentative Investigative Order No. R9-2014-0022 in the monitoring and assessment program for the Carlsbad Watershed Management Area, the Carlsbad WMA Plan is not acceptable to the San Diego Water Board.

[1] Tentative Investigative Order No. R9-2014-0022 was replaced by Resolution No. R9-2014-0020.

11. ***Items of Additional Concern***

Pursuant to Provision F.1.b.(2), the Copermittees are required to consider revisions to the Plans based on written comments received by the close of the public comment period. Pursuant to Provision F.1.b.(3), the Copermittees are required to submit any revisions to the Plans no later than 60 days after the close of the comment period, or by September 29, 2015.

Pursuant to Provisions E and F.2.a.(2) of the Order each Copermittee was required to update its JRMP document to incorporate the requirements of Provision E concurrently with the submittal of the Plans. Pursuant to Provisions E.3.d and F.2.b.(1) of the Order each Copermittee was also required to update its BMP Design Manual to incorporate the requirements of Provisions E.3.a-d. Each Copermittee's JRMP document updated with the requirements of Provision E became effective with the submittal of the Plans. In addition, each Copermittee must begin implementing its updated BMP Design Manual within 180 days of submittal of the Plans, unless directed otherwise by the San Diego Water Board.

Until the Plans are accepted by the San Diego Water Board, any exemptions to the hydromodification management BMP requirements of Provisions E.3.c.(2)(a)-(c), proposed in the Plans pursuant to Provision B.3.b.(4)(c), are not authorized to be applied to any Priority Development Projects within a Copermittee's jurisdiction. Likewise, a Copermittee is not authorized to implement an Alternative Compliance Program (pursuant to Provision E.3.c.(3)) for any Priority Development Project within its jurisdiction until the optional Watershed Management Area Analysis developed pursuant to Provision B.3.b.(4) has been accepted as part of the Plans.

12. ***Potential Future Enforcement Options***

The areas of noncompliance identified herein began on the due date to submit the Plans (June 26, 2015) and may be subject to additional future enforcement by the San Diego Water Board or State Water Resources Control Board, including a potential civil liability assessment of up to $10,000 per day of violation (Water Code section 13385) until the violations are corrected and/or pursue any of the following enforcement actions:

Other Potential Enforcement Options	**Applicable Water Code Sections**
Technical or Investigative Order	Sections 13267 or 13383
Cleanup and Abatement Order	Section 13304
Cease and Desist Order	Sections 13301-13303
Time Schedule Order	Sections 13300, 13308

In addition, the San Diego Water Board may consider revising or rescinding applicable waste discharge requirements, if any, referring the matter to other resource agencies, or referring the matter to the State Attorney General for injunctive relief, as applicable.

The San Diego Water Board is available to assist the Copermittees with refining the Plans to become acceptable, and to be in compliance with the requirements of the Order. In the subject line of any response, please include the information located in the heading of this letter: "in reply refer to." Please contact Wayne Chiu at (619) 521-3354 or Wayne.Chiu@waterboards.ca.gov., or Christina Arias at (619) 521-3351 or Christina.Arias@waterboards.ca.gov with any questions or concerns.

Respectfully,

Laurie Walsh, P.E.
Senior Water Resource Control Engineer
Storm Water Management Unit

Tech Staff Info & Use	
Order No.	R9-2013-0001
Party (CIWQS) ID	536787
NPDES No.	CAS0109266
Reg. Measure ID	387335
PIN ID	786088

ATTACHMENT B.3.2

THIRD PARTY REVIEW OF TRWE STUDY

June 29, 2016

City of Chula Vista, Storm Water Management Section
1800 Maxwell Road
Chula Vista, CA 91911

Attention: Boushra Salem

Subject: Review of TRW Otay River Erosion Potential Analysis Technical Memo
For the City of Chula Vista, City of San Diego, and County of San Diego

Dear Boushra:

Amec Foster Wheeler has completed a review of the Otay River Erosion Potential Analysis technical memorandum (Otay EP Analysis) that was produced by Tory R. Walker Engineering (TRWE). The Otay EP Analysis, dated December 18, 2015 (included as Attachment A), was supplemented by a clarification e-mail dated June 6, 2016 (Attachment B) and a letter dated May 25, 2016 (Attachment C). The Otay EP Analysis supports a proposed hydromodification management exemption for development projects discharging to the Otay River. The review consisted of the following functions:

1. Review and verify the methodology used for flow analysis and validate the proposed peak flows for pre and post development scenarios;
2. Perform a spot check on GIS data and maps and verify the validity of the data;
3. Review the EPA-Storm Water Management (SWM) Model setup, check the input files and perform a test run for the model. Review the model output files and verify that the output results match the report information; and,
4. Compare the Otay EP Analysis to the San Diego Bay WQIP Watershed Management Area Analysis (WMAA) requirement for an additional study "to establish a site-specific allowable EP metric for the Otay River from East of Interstate 805 to Lower Otay Reservoir Dam, more closely representing actual measured and observed characteristics of this river system".

In addition to the Otay EP Analysis document, the following backup files were obtained for review:

- Digital GIS files used in the document;
- The electronic input and output files for the EPA-SWMM model runs; and
- Electronic copies of spreadsheets for statistical flow analysis, or inputs and outputs for flow data.

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The review was conducted by Amec Foster Wheeler Principal Water Resource Engineers: Seth Jelen, P.E. (OR), CFM and Habib Matin, Ph.D, P.E. (OR) and reviewed by Yvana Hrovat, P.E. (CA).

METHODOLOGY, DATA AND SWMM REVIEW

The methodology used for the Otay EP Analysis was reviewed and found to be valid. GIS data and calculated areas, including watershed basin delineations upstream and downstream of Savage Dam, and other attributes were appropriate for the values checked. Subcatchment areas within the watershed were appropriately classified for the SWM models according to the runoff pathway for discharges to the Otay River. Calculations for peak flows were performed on the data and the results agreed with values used in the analysis.

The Otay EP Analysis methodology for flow analysis using the SWM model was in accordance with standard practices. The hydrology of the watershed was modeled under two scenarios: fully developed under the proposed exemption ("exempt condition model"), and pre-development, prior to construction of the Savage Dam ("natural condition model"). Assumptions for the two modeling scenarios were consistent with U.S. EPA guidance and local studies and historical practices.

The exempt condition model used the exempt, non-exempt, and developed subcatchments to model the peak flows from below the Savage Dam to the San Diego Bay under the assumption that exempt areas would not incorporate hydromodification mitigation. The natural condition model used the same subcatchments and added the Otay Reservoir drainage basin (without effects of Savage Dam) as a runoff source.

The models incorporated approximately 50 years of continuous precipitation data to assess runoff flows from each of the specified subcatchment areas. A constant reduction in runoff relative to developed areas of 43 percent (%) was used for all non-exempt and natural subcatchment areas.

On June 6, 2016, TRWE provided clarification of the Otay EP Analysis (Attachment B). According to this clarification, the 43% reduction is the average percent reduction for the Q_2, Q_5, and Q_{10} flow rates, when comparing the post-developed, mitigated (i.e., with hydromodification control) flow rate to the post-developed, unmitigated flow rate observed in actual hydromodification management projects throughout San Diego County. Low-flow (Q_2) and high-flow (Q_{10}) rates at or near 110% were observed during hydromodification management facility design, and these rates constrained the design. High and low flow values near 100% will cause the flow duration curve (FDC) to sag below the pre-developed FDC. The June 6 clarification states, "Since, from a practical design standpoint, the normal behavior of the FDC does not usually allow for the post-developed FDC to mirror the pre-developed FDC closely (due to the unique hydraulics of outflow

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passing through the outlet structure, causing a "sag" appearance between low and high flow thresholds), it is unlikely that the 110% threshold along the entire curve would change [the design approach.]" To verify that 43% represents a conservative estimate, the SWM model was also run (by TRWE but not verified for this review) using a 20% reduction for non-exempt and natural subcatchments. According to the June 6 clarification, this test run indicated the same conclusions (described below) as the 43% estimate.

The GIS data used to populate the SWM model were reviewed for accuracy. The delineations of the Otay River centerline and Otay Reservoir were validated by comparison to a combination of satellite and aerial imagery included as a part of a 2016 ESRI World Imagery basemap. The watershed delineation was validated by comparison to a topographic baselayer. Land uses provided by the City of San Diego (e.g., schools, residential, Olympic training facility, golf courses, etc.) were checked against aerial imagery in approximately 50 cases.

Exempt, non-exempt, and developed subcatchment delineations were also validated by comparison to the 2016 ESRI World Imagery basemap of satellite and aerial imagery. Exempt parcels were generally located adjacent to the river and did not appear to be fully developed. Non-exempt areas were typically undeveloped and located further from the river, as would be expected for areas that do not directly discharge directly to the river (in contrast to exempt areas). The remaining area was classified as developed. The sum of the subcatchment areas was equal to the total Otay River drainage boundary area.

The Otay EP Analysis included spreadsheets as the input and output files for the SWM model. The input files were appropriately formatted, and were spot-checked for accuracy against the GIS data. For this review, both the natural and exempt condition SWM models were executed using the original input files. The results were compared to the original output files, and were found to be in agreement. The output files for both the Otay EP Analysis and the validation models are included in Attachment D.

As described in the Otay EP Analysis, the SWM models indicated that peak flows under a pre-development scenario (i.e., the natural condition model) were greater than peak flows under an exempt, post-development scenario. Consequently, the analysis indicates that development under the hydromodification exemption would not subject the Otay River to erosion greater than pre-development conditions.

WMAA REQUIREMENTS

The WMAA included in the San Diego Bay WQIP states (Section 4.1.1.4):

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"Additional studies to establish a site-specific allowable Ep metric for the Otay River from East of Interstate 805 to Lower Otay Reservoir Dam, more closely representing actual measured and observed characteristics of this river system, may result in allowing hydromodification management exemptions…"

The Otay EP Analysis asserts that the construction of the Savage Dam, and its failure in 1916, permanently altered the hydrology of the Otay River. Evidence presented in the analysis includes: (1) historical photos and accounts of the dam failure, and (2) an erosion potential analysis based on a field investigation and following the methodology described in the WMAA. The evidence indicates that since the 1916 dam failure, the Otay River has adapted to a different morphology and has remained stable despite more than 55 years of development.

The MS4 Permit states (E.3.c.(2)(a)(i)), *"In evaluating the range of flows that results in increased potential for erosion of natural (non-hardened) channels, the lower boundary must correspond with the critical channel flow that produces the critical shear stress that initiates channel bed movement or that erodes the toe of channel banks."* Critical shear stress is the measure of the minimum stress required to move sediment. Hydraulic shear stress is a measure of the shear stress imparted upon the sediment bed by the flow within the channel, and is related to the velocity, turbulence and other hydraulic factors. If the hydraulic shear stress imparted by the flow of the river does not exceed the critical shear stress, then erosion will not occur. The WMAA (WMAA Attachment B.1.1) methodology used a critical shear stress value of 0.135 pounds per square foot (psf) in its evaluation of Otay River west of I-805. Critical shear stress is based on the Reynold's number and characteristics of the sediment properties. Values are presented in a Shield's diagram and typically range from 0.03 to 0.15 (Sedimentation Engineering, Figure 2.46, Manuals and Reports on Sedimentation Engineering Practice- NO 54, American Society of Civil Engineers, 1977). Shield's research was based solely on sediment particles movement, and did not account for the stabilizing effect of vegetation.

The Otay EP Analysis includes spreadsheets that detail the EP analysis following the format of the WMAA. The spreadsheets summarize critical shear stress values, estimated flow rates, durations, watershed acreage, imperviousness, and annual average rainfall depth. The Otay EP Analysis varies from the WMAA analysis by revising the critical shear stress used to evaluate the cross-sections. The Otay EP Analysis conducted a field investigation of three critical cross-sections to determine critical shear stress values that are more applicable to the in-stream condition, and also includes a 2001 "Stability Thresholds for Stream Restoration Materials" publication by Craig Fischenich, which presents ranges of critical shear stresses for given boundary conditions (e.g., vegetation, etc.). The Otay EP Analysis states, "Critical shear stress

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values of 0.67 pounds per square foot (psf) (shales and hardpan), 0.35 psf (average reeds), and 0.70 psf (short native and bunch grass) are more appropriate assignments for the Otay River based upon the field conditions (Fischenich, 2001)." The analysis concluded that the critical shear stress values are consistent with referenced methodology and literature values, and appear to be appropriate for the vegetated conditions in the existing Otay River. Thus, the Otay EP Analysis demonstrates that a hydromodification exemption is not expected to result in significant erosion within the geomorphically significant range of storms.

In a supplemental letter dated May 25, 2016, TRWE provided the results of a Sediment Supply Potential (Sp) Analysis for the Otay River. An Sp analysis evaluates the quantity of sediment that is potentially available to the river under existing conditions and compares that loading rate to a proposed scenario where exempt parcels would contribute sediment to a lesser degree. The letter describes methodology that matches the WMAA, and provides results in the same format. The Sp Analysis reduced the soil loss estimate under an exemption ("post" soil loss) from 24,364 tons/year to 22,288 tons/year due to an increase in exempt acreage. The Sp number provided in the letter, Sp = 0.91, meets the criteria established in, "Hydromodification Screening Tools: GIS-based Catchment Analyses of Potential Changes in Runoff and Sediment Discharge (SCCWRP Technical Report 605, 2010). The Sp Analysis appears to have been appropriately performed following the WMAA guidelines, however, Amec Foster Wheeler did not verify the calculations because no data were provided with the letter.

Table 1 below summarizes the steps for the exempt river reach analysis in the WMAA. The table briefly describes the requirements for each step, identifies the input data and assumptions, the methodology used in the Otay EP Analysis, and the results of the Amec Foster Wheeler's review.

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Table 1 - Exempt River Reach Analysis Review

Exemption Analysis Step	WMAA Requirements	Key Input Data / Assumptions	Tory R. Walker Engineering Analysis	Amec Foster Wheeler Review
1 – Hydrologic Analysis	Develop flow histogram for existing and future conditions.	Flow duration curve, land use cover & classification, channel slope, and mean annual precipitation.	Hydrologic analysis conducted using SWMM and GIS data, as described in report.	TRWE completed statistical analysis and SWMM modeling to obtain peak flows. Hydrologic evaluation conducted appropriately and in accordance with engineering standards.
2 – Hydraulic Analysis	Critical flow rate of 50% of Q2 for critical shear stress.	Selected critical cross-sections and reach type classification.	Critical shear stress was determined for three cross-sections based on field visits and 2001 "Stability Thresholds for Stream Restoration Materials" (Fischenich, 2001).	TRWE conducted field investigation of the critical cross-sections and provided evidence of the vegetated cover. Cross-section selection and rationale for increased critical shear stress based on vegetated conditions and 2001 Fischenich publication was appropriate.
3 – Work Analysis	Use simplified effective Work equation.	Critical shear stress, effective shear stress, flow velocity, max flow of record, and channel geometry.	Calculated shear stress within each bin was smaller than cross-section critical shear stress; therefore no Work was done in any flow bins.	Calculations verified for specified critical shear stresses. Methodology matched process presented in WMAA report.
4 – Cumulative Work Analysis	Cumulative value of bin analysis for total Work.	Discharge magnitude, range of flows, and flow duration curve.	As describe in Step #3, cumulative work is zero because no Work is done in any individual bin.	Calculations verified for specified critical shear stresses. Methodology matched process presented in WMAA report.
5 – EP Analysis	EP post- / pre-development < 1.05.	Cumulative Work analysis for pre- and post-development conditions.	Determined no change in Erosion Potential between natural and exempt conditions based on results from Step 4.	Concur that no significant erosion would occur within the range of storms considered to be geomorphically significant based on WMAA methodology.
6 – SP Analysis	SP post- / pre-development > 0.90.	RUSLE equation, GLU analysis, and the use of WMAA results for Section 2.4.	SP analysis results in a ratio of 0.91; a value greater than the minimum criteria of 0.90.	Amec Foster Wheeler was unable to verify the input data, but based on the description provided, the SP analysis meets the requirements of the WMAA.

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CONCLUSIONS

The Otay EP Analysis was prepared in accordance with accepted engineering practices and appears to comply with the requirements of the WMAA. The data used in the analysis appeared to be valid, and the SWMM assumptions and output were verified. The historical research and field verification performed for the analysis demonstrate the permanent changes to the Otay River since the 1916 failure of the Savage Dam. The Otay EP Analysis demonstrates that a hydromodification exemption is not expected to result in significant erosion within the geomorphically significant range of storms. The supplemental Sp Analysis appears to have been appropriately performed, however, Amec Foster Wheeler was unable to verify the calculations. Thus, the Otay EP Analysis and supplemental documents demonstrate that the Otay River meets the requirements for a hydromodification exemption.

We appreciate the opportunity to contribute to this research, and look forward to providing you continued assistance as you address the water quality issues in the San Diego Bay.

Sincerely,

Amec Foster Wheeler
Environment & Infrastructure, Inc.

Matt Rich
Project Manager

Yvana Hrovat, P.E.
Senior Engineer

Cc: Jim Harry, City of San Diego
Ruth De La Rosa, County of San Diego

Attachments

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Appendix A

Otay River Erosion Potential Analysis Technical Memorandum

TORY R. WALKER ENGINEERING
RELIABLE SOLUTIONS IN WATER RESOURCES

December 18, 2015

Boushra Salem
Storm Water Management Section
City of Chula Vista
1800 Maxwell Road
Chula Vista, CA 91911

SUBJECT: OTAY RIVER EROSION POTENTIAL ANALYSIS

Dear Boushra:

Tory R. Walker Engineering (TRWE) has thoroughly analyzed the Erosion Potential (Ep) methodology used to support the proposed hydromodification management exemption for projects directly discharging to the Otay River from west of Interstate 805 (I-805) to San Diego Bay. Results of that study are presented in Appendix J of the September 2015 Revised Water Quality Improvement Plan for the San Diego Bay Watershed Management Area (San Diego Bay WQIP). This methodology, and its results (herein referred to as the WMAA Ep Analysis), did not include reinstatement of an exemption for the river reach upstream of I-805 to Lower Otay Reservoir.

TRWE conducted a more detailed Ep analysis that uses watershed-specific hydrologic modeling, historical imagery review, and field investigation of existing channel conditions to either invalidate, support, or build upon the WMAA Ep Analysis. Our collective efforts (herein referred to as the Otay Ep Analysis) sought to provide a clearer picture of the potential morphological impacts that may or may not result from granting hydromodification exemptions to projects directly discharging to the Otay River when analyzed more scrupulously. We tested the hypothesis that the effects of Savage Dam and the 1916 dam failure have a more profound impact on river morphology than any proposed directly discharging development downstream of Lower Otay Reservoir—an approach that has not yet been taken by any study. We also revised the WMAA Ep Analysis to account for the natural resiliency of the system due to the re-establishment of vegetation over the past 100 years. The Otay Ep Analysis considered the entire Otay River, from the Lower Otay Reservoir to San Diego Bay, and made the following major conclusions:

1. **The Otay River flow duration curve (FDC) demonstrates that the river will not experience significant erosion for the range of storms considered to be geomorphically significant if exemptions are granted for projects directly discharging into the river system;**

2. **Aerial imagery from 1928, 1953, and 2015 demonstrate that the Otay River has remained stable (i.e., in a steady state of dynamic equilibrium) throughout the rapid urbanization of Otay Valley over the past 87 years and has become progressively more stable through the re-establishment of heavy vegetation throughout the system;**

3. **The revised WMAA Ep Analysis demonstrates that no significant erosion occurs within the range of storms considered to be geomorphically significant when critical shear stress values representative of the in-stream conditions are considered.**

Based upon these findings, we recommend that hydromodification exemptions be reinstated for projects directly discharging to the Otay River, from the Lower Otay Reservoir to San Diego Bay. We propose that this study be included as an attachment to the San Diego Bay WMAA, revising the San Diego Bay WQIP.

This recommendation carefully considers the unique nature of the Otay River and directly deals with the erosion potential for the range of storms considered to be geomorphically significant, as is consistent with the both the mission and the desire of the San Diego Regional Water Quality Control Board (Walsh, 2015). We appreciate your time in reviewing our study, and trust you will find that our methods and conclusions are presented in a clear, concise, and understandable fashion.

Sincerely,

Tory R. Walker, PE, CFM, LEED GA
Principal

[1]Walsh, L. (2015, August 5). General Comments on Final Water Quality Improvement Plans and Notice of Noncompliance.

Natural Watershed versus Developed Watershed with Exemptions

The WMAA Ep Analysis is based on one type of model, and as with all hydrologic models, is most appropriately used in conjunction with field verification and comparison to a watershed-specific hydrologic model. It is further understood that the methodology behind the WMAA Ep Analysis sought to establish a clear and repeatable desktop-based process to analyze the potential of erosion for the range of storms considered to be geomorphically significant. From our review of the WMAA Ep Analysis, we determined that the methodology can indeed be a useful initial screening tool to conservatively assess the possibility of accelerated river channel erosion; it is not, however, a standalone metric for assessing the large, highly urbanized, impounded Otay River system—especially since the WMAA Ep methodology was not developed using data from impounded watersheds (Hawley, Bledsoe, & Stein, 2011). Savage Dam has had, and continues to have, a major influence on the Otay River morphology, yet no accepted exemption analysis has yet fully considered the extent of its effect, nor of its historic failure in 1916. Therefore, TRWE tested the first hypothesis: the *presence* of Savage Dam has a more profound impact on river morphology than any proposed, directly-discharging development downstream of Lower Otay Reservoir.

In order for the San Diego Regional Water Quality Control Board (San Diego Water Board) to accept a conclusion that a conveyance system can be exempt from hydromodification management BMP requirements, the report must include an analysis demonstrating that the natural channel under review would not experience erosion for the range of storms considered to be geomorphically significant (Walsh, 2015), as presented in Attachment 5. It is also the belief of the San Diego Water Board that using a hydrologic baseline that approximates an undeveloped, natural watershed is the only way to facilitate the return of more natural hydrologic conditions to already built-out watersheds, and ultimately improve stream health (San Diego Regional Water Quality Control Board, 2015). Therefore, TRWE used the United States Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) to model the Otay Hydrologic Unit under two unique scenarios: the first scenario approximated the hydrology of the impounded, fully built out Otay Valley watershed (drainage area downstream of Savage Dam) with hydromodification exemptions in place for proposed development areas directly discharging to the Otay River (herein referred to as the Exemption Scenario); the second scenario approximated the hydrology of the *natural, unimpounded* Otay hydrologic unit (herein referred to as the Natural Scenario). The study areas are presented in Figure 1.

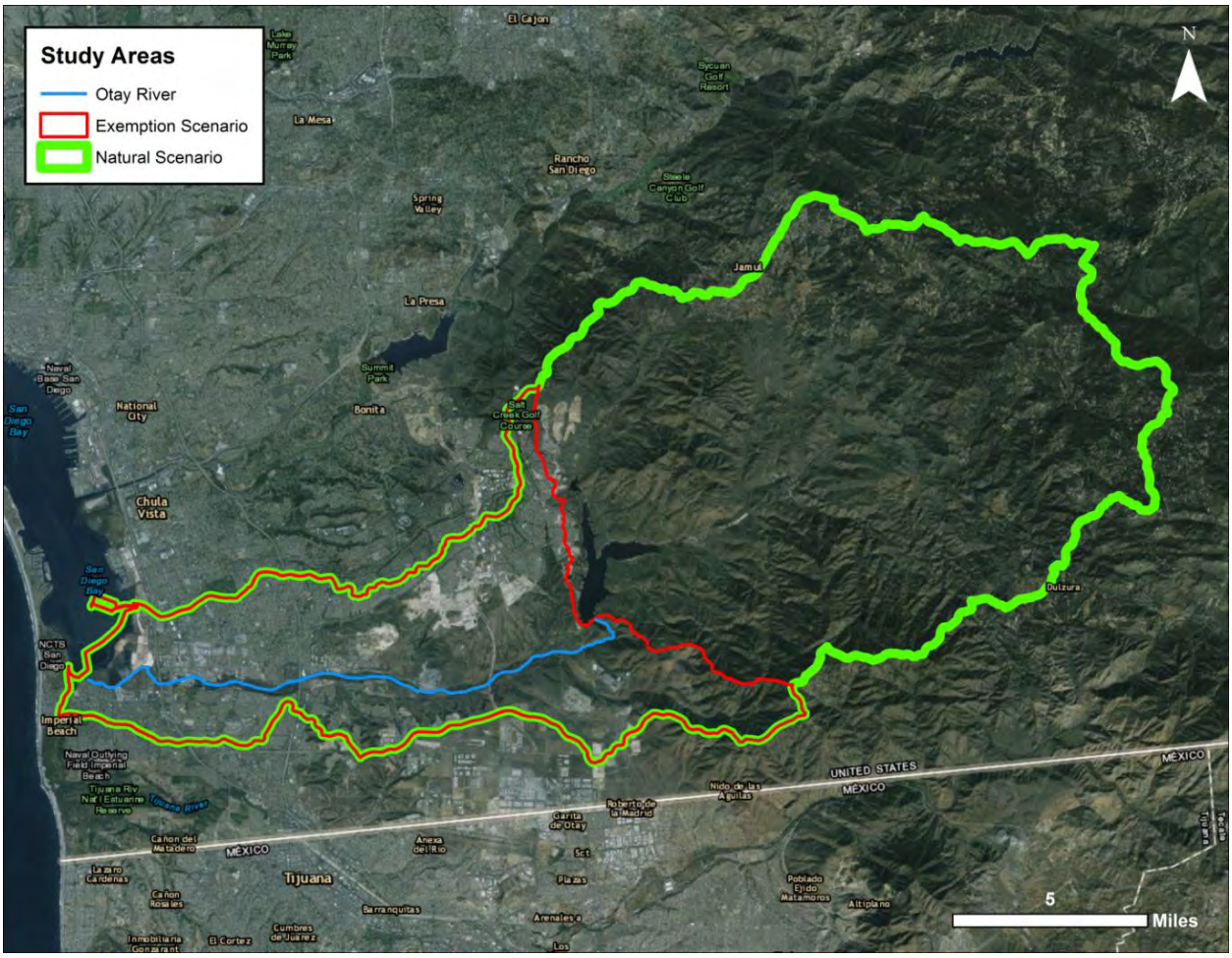

Figure 1: SWMM Study Areas

The Natural Scenario was used as the baseline condition and compared to the Exemption Scenario in order to determine if the latter would produce peak flows and durations that exceed the approximated natural hydrology by more than 10 percent for the range of flows considered to be geomorphically significant (from 10% of Q_2 to Q_{10}), as prescribed by Provision E.3.c.(2)(a) of the 2013 Regional MS4 Permit for all Priority Development Projects (San Diego Regional Water Quality Control Board, 2015). If the model demonstrated that the proposed exemptions would produce neither peak flows nor durations that exceed those of the approximated natural range of geomorphically significant flows by more than 10 percent, then the proposed exemption would meet the Permit's hydromodification management requirements on a watershed-wide scale. If the proposed exemption satisfies the Permit's hydromodification management requirements, then the flows may be considered as non-erosive and therefore warrant exemption as presented by the data.

To generate our model scenarios, we used a combination of geographic information system (GIS) data from the San Diego Geographic Information Source (SanGIS) Regional Data Warehouse (sangis.org), the United States Geological Survey (USGS) National Elevation Dataset (NED) (ned.usgs.gov), and the National Resource Conservation Service (NRCS) Web Soil Survey (WSS) (websoilsurvey.nrcs.usda.gov). First, the drainage areas downstream of Savage Dam were developed for the Exemption Scenario. With Savage Dam in place, areas upstream of Lower Otay Reservoir were neglected in the Exemption Scenario

because, for the geomorphically significant range, they do not and will not contribute flows to the Otay River. Areas were first classified as either "Exempt," "Non Exempt," or "Developed" for modeling purposes. Exempt and Non Exempt areas are subsets of currently undeveloped areas having planned land uses (SanGIS "Developable_Land" layer) that either directly (Exempt) or indirectly (Non Exempt) discharge into the Otay River. These areas were projected to directly or indirectly discharge based upon a plan set review conducted by the WMAA consultant team. The remaining area that did not classify as either Exempt or Non Exempt was classified as Developed. These three classifications were finally subdivided into lumped hydrologic soil groups to produce the SWMM subcatchment areas, each having area-weighted parameter inputs for percent impervious and slope based upon planned land use (SanGIS "LANDUSE_PLANNED" layer), County of San Diego imperviousness coefficients (County of San Diego, 2010), and USGS 10-meter Digital Elevation Models (DEMs). The width parameter was used as a calibration parameter equal to roughly 18% of the area-to-length ratio using the methodology presented by Smith et al., (2015), provided in Attachment 3. The remaining subcatchment parameters were assigned in accordance with Appendix G of the San Diego Region Model BMP Design Manual (Geosyntec Consultants & Rick Engineering, 2015). For the Natural Scenario, an additional "Impounded" classification was added to the Exempt, Non Exempt, and Developed classifications. Impounded areas are the areas upstream of the dam, subdivided only by hydrologic soil group. Full model parameters are provided in Attachment A.

To simulate the effect of hydromodification management control, we performed research within the San Diego Region in the work documented by Smith et al. (2015). This research determined that geomorphically significant peak flows (Q_2 to Q_{10}), on average, are reduced 43% from the post-developed unmitigated condition to post-developed mitigated condition when hydromodification management controls are implemented. Therefore, in order to simulate hydromodification controls within the model, flows were reduced by 43% where appropriate. In the Exemption Scenario, flow reduction was only applied to the Non Exempt drainage areas in order to allow Exempt areas to produce unmitigated post-developed runoff. In the Natural Scenario, flow reduction was applied to all drainage areas in order to approximate the pre-development flows as would be achieved by implementation of designed hydromodification management control systems. Given that the San Diego Water Board understands that the pre-development hydrology of an area cannot be precisely known, nor do they expect modelers to estimate historical conditions (San Diego Regional Water Quality Control Board, 2015), our approach in approximating the watershed's pre-development hydrology by using the best available data (projected land use and regional peak flow reductions) is an appropriate methodology that holds the regulatory standard as the baseline condition.

The resulting FDC (Figure 2) illustrates that, for the range of storms considered to be geomorphically significant, flow rates are larger in magnitude and duration for the approximated natural, undeveloped watershed condition than those produced for the impounded, developed watershed condition, even when the hydromodification exemptions are in place for all developable areas directly discharging to the Otay River. It should be noted that these results are conservative in nature due to the fact that the 1916 breach of Savage Dam significantly altered the Otay River morphology, as large segments of the river were scoured to bedrock (Patterson, 1970)—our Natural scenario does not account for flows nor durations that contend with those produced during this catastrophic event. The results demonstrate

that Savage Dam has a more significant effect on Otay River's morphology than any proposed development downstream of the reservoir. Therefore, our FDC serves as quantifiable evidence to validate the same conclusion made by the well-versed Technical Advisory Committee (TAC), whom was tasked with providing technical input to the scientific approach and interpretation of results integral to the establishment of numerical flow control standards for the 2011 Hydromodification Management Plan (HMP) (Brown and Caldwell, 2011). The peak flow comparison is provided in Table 1. The flow duration data summary is provided in Attachment A.

Table 1: SWMM Otay River Peak Flow Rate Comparison for the Natural and Exemption Scenarios

Return Period (years)	Natural Scenario Q (cfs)	Exemption Scenario Q (cfs)	Difference (cfs)
10	2567	2272	294
9	2470	2167	303
8	2356	2139	217
7	2239	2008	231
6	2118	1914	204
5	2074	1847	227
4	2021	1730	291
3	1918	1590	328
2	1691	1409	283

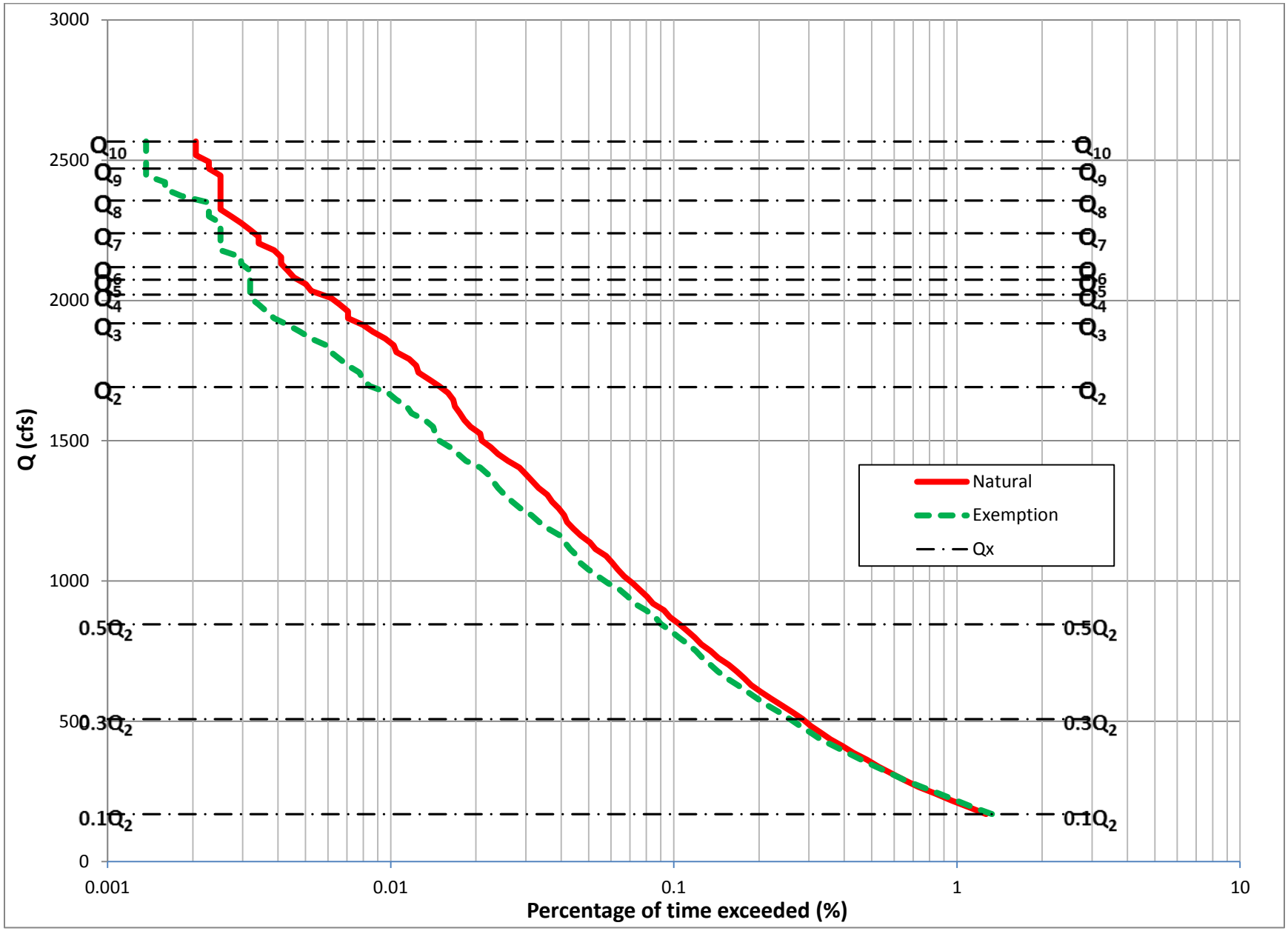

Figure 2: SWMM Otay River Flow Duration Curves for the Natural and Exemption Scenarios

1916 Savage Dam Failure and Historical Photographic Comparisons

We sought to establish multiple lines of evidence to either validate or invalidate our findings. In order to more accurately assess the exemption, we considered not only the *presence* of Savage Dam, but the *effect of its catastrophic failure* in 1916. Therefore, we tested the next hypothesis: the *historic failure* of Savage Dam has a more profound impact on river morphology than any proposed, directly-discharging development downstream of Lower Otay Reservoir. In order to do so, we conducted a historical image review to observe the relationship between urbanization and river morphology dating back to the earliest available aerial imagery (1928) provided by the County of San Diego Department of Public Works. We were also able to obtain stereoscope photographs taken in 1953 from the University of California, Santa Barbara's Aerial Imagery Research Service and a high-resolution 2015 image from Esri. We hypothesized that, due to the 1916 dam failure, the Otay River was extremely hydromodified and therefore has become significantly desensitized to changes in land use. If the photos demonstrate that the river has remained in a steady state of dynamic equilibrium during the course of Otay Valley's urbanization over the past 87 years, then it would be reasonable to acknowledge the river's proper equilibrium state and its resiliency to post-dam failure land use alterations.

The Savage Dam failure is a well-documented catastrophe. The flood of January 27, 1916 caused the rock-fill dam to fail, discharging over 1.7 billion cubic feet into Otay Valley over the course of 2.5 hours. An account of the events leading up to the dam breach and the aftermath in Otay Valley is given by Roy A. Silent (1916):

> Prior to January 15 [1916] the water surface in the Otay reservoir was 96.5 feet above zero contour. From Jan. 16 to 21 at 7 a.m. it had risen 11.8 ft. to a height of 122 ft. 8 in. At this time, water began to run over the spillway. ***From Jan. 21 on, the level continued to rise in spite of the discharge through the spillway. On the morning of Jan. 27 the reservoir was at 124 ft. 9 in., and the spillway was probably discharging in the neighborhood of 1,500*** [cfs] [emphasis added].
>
> The rain on Jan. 27 was extremely heavy, and by noon the water had risen so high that Mr. Weuste, in charge at the dam, deemed it advisable to open the outlet gate. This failed to check the rise, and it was realized that the dam would probably be overtopped before evening. Men were accordingly dispatched to warn residents in the valley to move to higher ground. Word to this effect was also sent out from the telephone exchange at National City. Most of the inhabitants took advantage of this warning.
>
> At 4:45 p.m. the water had reached the top of the dam and had seeped through and filled the boxes that were sunk in the top to allow an examination of the steel core. Water began running down the lower face on the east side of the dam at approximately 4:50 p.m. About this time several spouts or small streams of water appeared on the lower face of the dam, in one instance loosening a large boulder which rolled down to the bottom. From this time on, the destruction was very rapid. The lower face of the fill quickly melted away, thus removing the support from the core wall. At 5:05 p.m. the tension was so great that the steel diaphragm tore from the top at the center, and the

dam opened outward like a pair of gates. The released water rushed through and filled the canyon to a point approximately 20 feet below the top of the dam. The draw-down area extended possibly 200 ft. behind the dam. ***It required 2 ½ hr. for the reservoir to empty*** [emphasis added].

A huge wall of water, variously described as from 6 to 20 ft. high, rushed down the valley, covering the distance from the damsite to Palm City [located just upstream of San Diego Bay]***, about 10 mi., in 48 min., carrying all before it*** [emphasis added]. The total loss of life has amounted to 14 at the present writing (Feb. 8), but there are still several persons missing. The property damage is estimated at $250,000.

A thorough examination of the damsite was made on Jan. 31 and Feb. 1. Practically all the fill was washed completely away. The steel core was deposited in varying-sized sections along the valley, a large part ***being found at Palm City, 10 mi. below the dam*** [emphasis added]. The core wall had torn itself loose from both of the side walls, the foundations remaining intact. An examination of the bottom was impossible, as water to a depth of 8 feet was flowing through a constricted channel in the bottom of the cañon.

Three-quarters of a mile below where the dam had stood a piece of the diaphragm was observed, to which the angle iron forming the bottom of the steel plate was riveted, showing that the extreme bottom had been torn loose. On the west side, behind the remaining core wall, was a small part of the fill, composed of rock of small sizes, none of which was over 1 ½ ft. in diameter and grading from that size to coarse gravel. If this may be considered a fair example of the remainder of the fill, it is easy to understand its melting away as rapidly as described.

The cañon below the dam, prior to the failure, was considerably restricted and filled with large boulders. The action of the water removed all the loose rock and thoroughly stripped to bedrock both sides of the canyon as high as the water reached, the line of demarcation being clearly defined. The stripping was done in a most thorough manner, no particle of soil remaining in any of the niches or crevasses. This area was heavily wooded with brush [emphasis added].

An interesting feature was observed in that for half a mile below the dam in practically every pocket or niche in the rock was to be found a rivet head. An examination of the remaining parts of the steel core showed it to be in a perfect state of preservation, no rust or corrosion being noticeable. The destruction of the plate had taken place for the most part along the riveted seams, though one or two cases in which the sheets had torn were observed.

The reservoir above the dam showed a deposit of silt to a depth of from 5 to 6 ft. in most places, through which the present flow of the river is cutting a channel. The amount of silt deposited cannot be taken as a fair average for reservoirs in this section

> of the country, as much of the water passing into the reservoir was carried by a conduit and was comparatively clear. (Silent, 335-336)

A photograph accommodating Mr. Silent's original narrative is provided in Figure 3.

Figure 3: Canyon Immediately Below Dam, Showing Stripping Action of Water (Silent, 1916)

In addition to Mr. Silent's account, the former Assistant City Manager of San Diego, John L. Bacon, on February 1, 1916 (Baker, 1916):

> The heaviest rainstorm ever recorded in this part of California caused the destruction of the Lower Otay dam at about 5 p.m. on Jan. 27. The rain began on Jan. 14 and continued for six days, with an average precipitation of 1 in. daily. Upon the ground thus thoroughly saturated a second and much heavier rainstorm fell on Jan. 25. The rain gages were inadequate to measure this storm, and the actual rainfall record at the dam is not available. The precipitation on Jan. 27, however, is estimated at about 5 in., a cloudburst occurring about 4 p.m.
>
> The level of the water in the reservoir rose 9 ½ ft. from 7 a.m. to 5 p.m., at which time the dam overflowed. It began to give way about 5 min. later. The destruction was completed in 15 min., the dam being washed away to its foundations all around. The failure evidently started by the water overflowing the crest, washing out the backing of the central core. The break started near the center of the dam, the plates holding back for a time against the sides. Part of the plate was crumpled up and washed down the valley for several miles.

> The floor of the spillway was at an elevation of 124 ft. above the original stream bed, and the elevation of the top of the dam was 134 ft. The spillway was 38 ft. wide at the bottom and 45 ft. wide at the elevation of the dam crest. ***The estimated flow through the spillway when the dam overflowed was 2,000,000,000 gal. daily*** [emphasis added]. The spillway was not blocked in any way. The ¼-in. steel plate core in the dam, with 12 in. of concrete on each side, stopped 2 ft. below the dam crest. The length of the dam crest was 560 ft. and the width of the top 16 ft. The thickness of the dam at the bottom was 400 ft. ***The valley below the dam was swept clear of soil to bedrock, and the banks of the valley show that a wave about 50 ft. high passed down*** [emphasis added]. About 30 lives were lost in the flood.
>
> It is estimated that to replace the dam will cost about half a million dollars. There is ample water for the city's supply stored behind several other dams. Part of the Sweetwater dam was washed out. The Upper Otay dam, an arched concrete structure of horseshoe shape, had a depth of 3 ft. of water flowing over its crest on Thursday, but is safe. The City of San Diego has been cut off from the outside world except by water. No telegraph, telephone or railway lines were in operation. All bridges were washed out, and roads were impassable. (239)

As conveyed by these first-hand accounts, the magnitude of the dam failure was not limited to only areas immediately downstream of the breach but all the way to the mouth. The USGS documented the impacts of the 1916 flood across Southern California and reported the following damages incurred by businesses within Otay Valley (McGlashan & Ebert, 1918):

> *San Diego Consolidated Gas & Electric Co.*—The transmission lines and distribution system along San Diego River were washed out from El Monte to False Bay. There were also ***extensive washouts*** along Sweetwater River at Jamacho and from Sweetwater dam to San Diego Bay, ***on Otay River from Otay dam to San Diego Bay***, and along Tia Juana River from Tia Juana to the Pacific Ocean [emphasis added]. The principal damage was the loss of wood pole lines, copper wire, transformers, and miscellaneous electric-line material. The service in San Diego and immediate vicinity was not seriously interrupted. The lines to the more important towns were reestablished within two weeks, but some of the remote farming districts were without electric service for six weeks or more. The total damage to the gas and electric departments, corrected for value of salvaged material, was $70,527.
>
> *Western Salt Co.*—The losses consisted of ***170 acres of salt ground (which was covered with a deep deposit of silt), 2,500 tons of salt, a large quantity of brine in the ponds***, and injury to machinery [emphasis added]. The total damage was given as $85,500.
>
> *Fenton-Sumpton-Barnes Co.*—The company operates a gravel-washing plant ***in Otay Valley, about a mile from San Diego Bay. This plant was a complete loss, for after the flood there was not an indication on the surface to show its location*** [emphasis added]. The value of this equipment was $35,000. ***In addition, the soil was entirely removed***

> ***from 100 acres of bottom land*** which had been purchased for about $450 per acres [emphasis added]. The business loss was complete from January 27 to May 1. (34)

To put the magnitude of the dam breach into perspective with regard to the geomorphically significant range of flows, we look to the data provided by Silent, Baker, and USGS. In the five days leading up to the dam breach (starting on January 22 to 7 a.m. on January 27, 1916) flows ranging up to approximately 1,600 cfs were *constantly* released through the spillway—a rate that is 33% greater than the FEMA-published instantaneous Q_{10} value for the Otay River at Otay Valley Road (Federal Emergency Management Agency, 2012). Then, for ten straight hours up until the moment the dam breached, flowrates rapidly increased up to 4,700 cfs. Based upon the defined geomorphically significant flow range of Q_2 to Q_{10}, these *pre*-breach spillway flows and durations alone had enough energy to alter the river's morphology in an unnatural way (and likely did so). The morphological impacts caused by these pre-breach spillway flows were unquestionably eclipsed by the 20-50 foot high wall of water caused by the dam failure. When the dam breached at 5:05 p.m. on January 27, 1916, 1.7 billion cubic feet of water were released in 2.5 hours. The mere average flowrate during this 2.5 hour period equates to over 193,000 cfs—a rate that is nearly four times the 500-year FEMA flowrate for the aforementioned location (Federal Emergency Management Agency, 2012). The unnatural force exerted on the river system by these massive flows was devastating to all within the river system, as presented by the firsthand accounts and now confirmed by the hydrologic context. The USGS post-breach photograph is provided in Figure 4.

For additional context, the USGS report also documents that just before failure, the flows entering the reservoir through Jamul Creek reached 18,100 cfs. They describe the 150 foot wide creek as being composed of sand, gravel, and boulders before the flood and rendered "practically clean" afterwards (McGlashan & Ebert, 1918). A photograph of Jamul Creek's devastating scour is provided in Figure 5.

Without question, the 1916 Savage Dam breach had a profound impact on the Otay River, from the reservoir to San Diego Bay. The extent to which the system remains impaired by this catastrophic event is best evidenced through the historic aerial photograph review. Photographs from 1928, 1953, and 2014 are provided in Figure 6, Figure 7, and Figure 8, respectively. These photos are best viewed by scrolling between single page displays in Adobe Acrobat Reader (View → Page Display → Single Page View).

Figure 4: View Downstream at Site of Lower Otay Dam, After Failure (McGlashan & Ebert, 1918)

Figure 5: View Upstream on Jamul Creek after Flood of January 1916 (McGlashan & Ebert, 1918)

Figure 6: 1928 Aerial Photograph of the Otay River (Upstream of I-805) (County of San Diego)

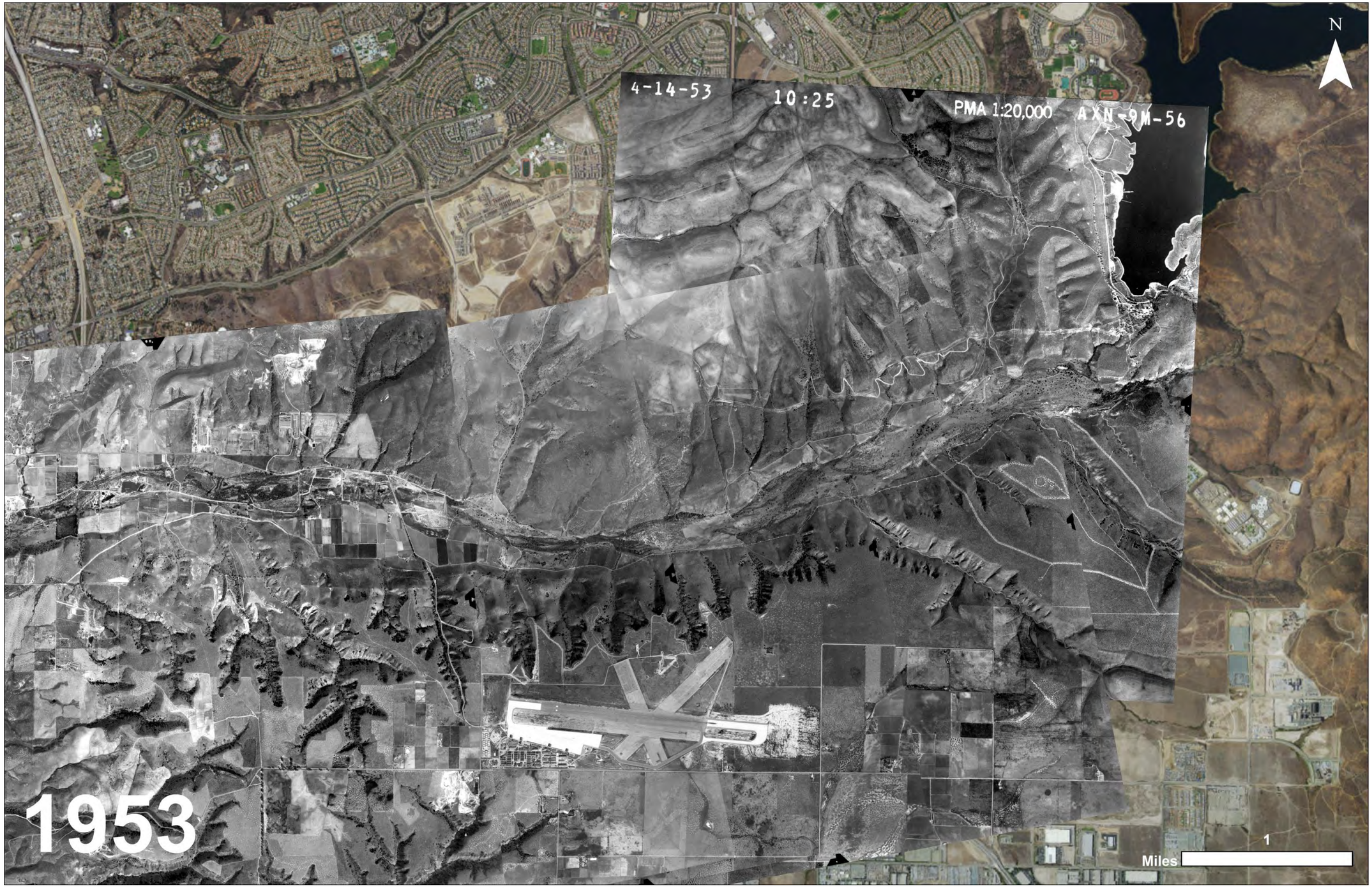

Figure 7: 1953 Aerial Photograph of the Otay River (Upstream of I-805) (University of California, Santa Barbara)

Figure 8: 2015 Aerial Photograph of the Otay River (Upstream of I-805) (Esri)

The aerial image comparison provides valuable insights into the post-failure river morphology. In 1928 (12 years after the breach), the effects of the dam failure are clearly seen: an incised, barren river mostly devoid of vegetation. In the absence of field data, it is reasonable to gather that the old Savage Dam fill material (rocks ranging in size up to 1.5 feet and some boulders) cover the channel bed, with some light re-establishing of brush toward the bank and thalweg. In 1953, the re-establishment of vegetation continues to be clearly seen, as most of the river reach has become covered. Vegetation has migrated from the thalweg toward the floodplain in many areas.

The hydrologic activity occurring between these two instances in time provides several pieces of notable data. First, during the 25 years from 1928 to 1953, San Diego experienced two of its wettest seven years on record: 1940-41 (24.74 inches) and 1951-52 (18.16 inches) to date (San Diego Union-Tribune, 2005). Second, the Lower Otay Reservoir hourly precipitation data from the National Oceanic and Atmospheric Administration (NOAA) recorded hourly rainfall depths of 1.24 inches in 1951 and 1.08 inches in 1952, which are totals equal to the estimated 200 and 100 year hourly rainfall depth for that station, respectively (National Oceanic and Atmospheric Administration, 2014). Lastly, Jamul Creek (the closest available stream station data during this time) discharged a peak of 4,000 cfs in December 1947, which is its second highest peak on record to date (United States Geological Survey, 2015). The fact that the river system did not widen, meander, or scour during that time would suggest that it would take greater than the wettest conditions on record to impact the river channel morphology or degrade the in-stream habitat—conditions certainly outside the Q_2 to Q_{10} flow range.

When these two historic photographs are compared with the modern-day condition, it is evident that the same trend has continued for 87 years: the channel remains stable, while vegetation continues to populate through the riverbed. While the Lower Otay Reservoir hourly precipitation data shows that the area continued to experience wet years from 1953 to 2015 (hourly precipitation depths equal to the 200, 50, and 25 year frequency in 1963, 1964, and 1955, respectively), the channel demonstrates no morphologic changes over the 62 year span. The 1928 river perfectly aligns with the 2015 river at stream bed angle points, ridgelines, boulders, and other geologic features; constricted areas have remained constricted, wide areas have remained wide, and no meandering or incising is evident. Furthermore, contrasting the most recent San Diego County land use data with the earliest available data from 1986, we find that the watershed in these photos (upstream of I-805 to Lower Otay Reservoir) has increased from 11% to 20% impervious cover over the past 30 years. Despite the extreme rainfall events and rapid urbanization, the Otay River has remained in a steady state of dynamic equilibrium and continues to reinforce its bed and bank material *and* support beneficial uses through the re-emergence of vegetation. Therefore, it would be reasonable to presume that the overall river health would benefit from the continued inflows of clean water. We conclude that the dam breach altered the channel in such a way that the more typical range of geomorphic flows has not adversely affected the river morphology, nor degraded the system's beneficial uses, as evidenced by the unwavering channel alignment and progressive re-habitation of natural vegetative species.

Field Investigation and Revised WMAA Ep Analysis

Thus far, the two working hypotheses have been tested and found to be correct: the *presence* and *historic failure* of Savage Dam have had, and continue to have, a more profound impact on river morphology than any proposed directly discharging development downstream of Lower Otay Reservoir. Through the testing of the second hypothesis, we observed the re-establishment of the river's vegetation. As previously stated, hydrologic models are most appropriately used in conjunction with field verification to either validate or invalidate their findings. Therefore, as a final measure, we sought to assess our findings by conducting a field investigation. Field conditions were documented and used to revise the clear and repeatable WMAA Ep Analysis with *field-specific* inputs.

The WMAA Ep Analysis conservatively assumed a highly sensitive relationship between watershed imperviousness and in-channel shear stress. The methodology behind the analysis assumes that accelerated erosion ensues and thus the river system will begin to unravel if the cumulative work performed on any given channel section in the watershed's post-developed condition exceeds the pre-developed condition by more than 5% (Erosion Potential, or Ep > 1.05). This sensitive relationship is likely attributable to the fact that the WMAA Ep methodology was not developed using data from impounded watersheds, and the data that was used did not come from urbanized (>25%) impervious watersheds, but rather from urbanizing (0 to 25% impervious) watersheds. Due to these factors, the erosion potential analysis is implicitly conservative for an impounded system and depends heavily on the watershed imperviousness and the selection of a threshold value at which particle motion occurs at any point along the channel boundary, known as the critical shear stress (τ_c). In the WMAA Ep Analysis, the critical shear stress was conservatively assumed to occur at a flow rate equal to 50% of the 2-year peak flow (Q_2). This "low flow threshold" critical shear stress, which equates to the in-channel shear produced at a flow of $0.5Q_2$, is based upon an assumption of the river channel having "low susceptibility" to accelerated erosion. This very conservative approach assumes a degree of susceptibility to hydromodification within the range of geomorphically significant flows *before* any consideration is given to the river's physical properties, such as soil cohesion, vegetation, or other factors that are to be evaluated in the proper determination of the critical shear stress value (Fischenich, 2001). As a macro-level initial screening of a major river system, the WMAA Ep Analysis includes this implicit factor of safety to an already conservative analysis. The field investigation also sought to investigate this assumption, in addition to testing our initial findings.

On October 21, 2015, the TRWE team investigated the Otay River from just downstream of 27th Street (approximately ¾ mile upstream of Interstate 5) to the confluence with Salt Creek (approximately 2 miles downstream of Savage Dam), with special attention given to three critical cross sections along the reach. These three sections were identified as areas of concern by the WMAA consultant team due to their narrow geometry. We documented the channel boundary conditions at each location. These cross sections (1, 2, and 3) are presented in Figure 9:

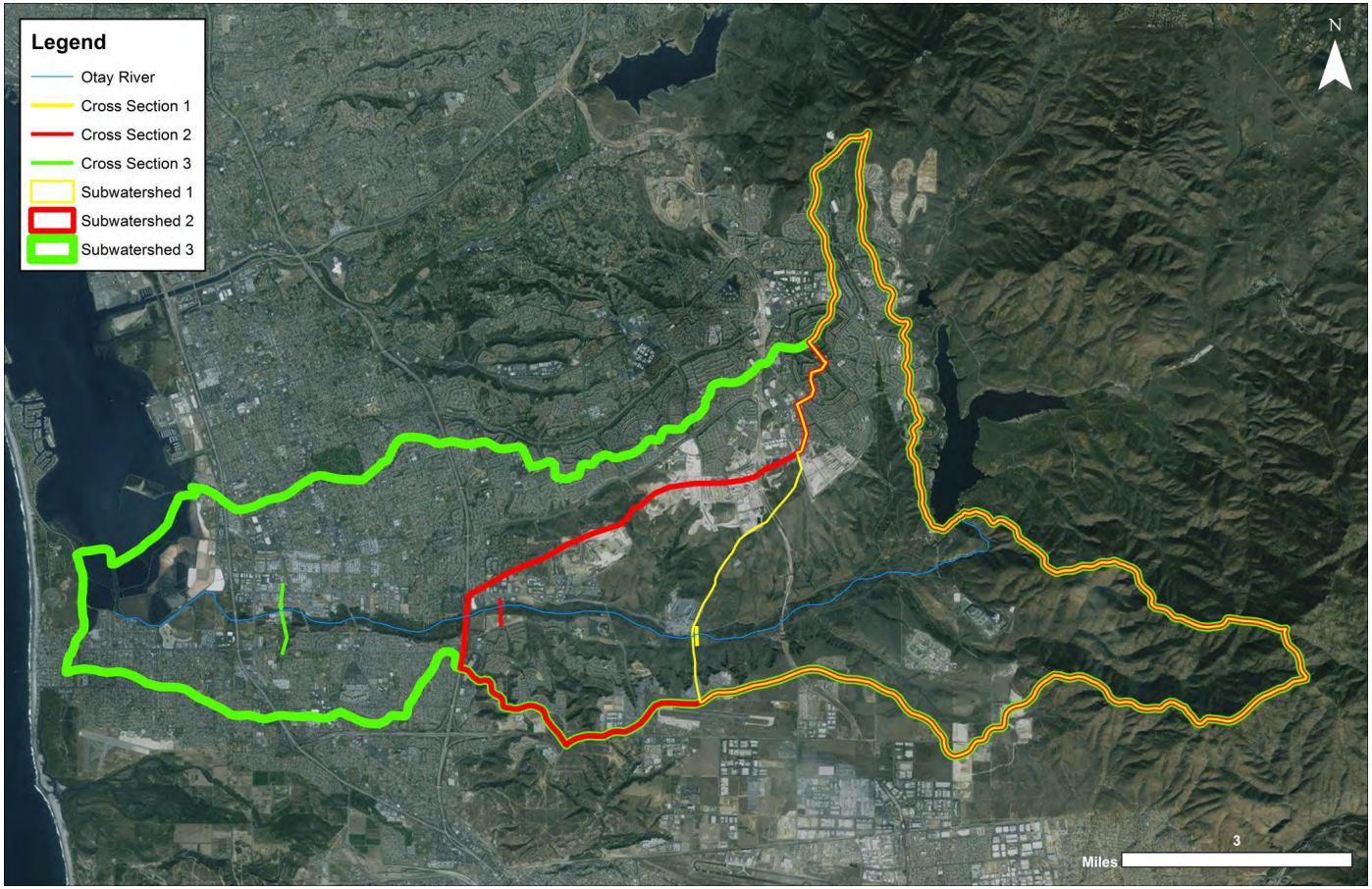

Figure 9: Locations of Cross Sections 1, 2, and 3, Including Upstream Subwatershed Areas

We investigated the boundary conditions at all three cross sections, including additional review at sections in between. We found at all three cross sections, and the areas in between, the river was heavily vegetated with grassland, scrub, meadow, and marsh. Some areas remain scoured to bedrock and still do not support vegetation 100 years after the dam failure, as was the case with Cross Section 1. In all cases, we found no evidence of active scour. Field photos are provided in Figures 10 through 18.

Many of the modern critical shear stress values for uniform, noncohesive channel boundary materials were estimated in 1936 through a series of laboratory flume experiments by A. Shields in his development of what is now known as the Shields criterion. While Shields' estimates are useful for predominantly alluvial or nonvegetated river systems, these theoretical values have little value in assessing the stability of vegetated systems. According to Dr. Craig Fischenich of the U.S. Army Corps Engineer Research and Development Center (ERDC) (2001):

> The presence of vegetation does not render underlying soils immune from erosion, but the critical condition for erosion of a vegetated bank is usually the threshold of failure of the plant stands by snapping, stem scour, or uprooting, rather than for detachment and entrainment of the soils themselves; vegetation failure usually occurs at much higher levels of flow intensity than for soil erosion. (4)

It is well documented that when vegetation establishes itself in a channel, then that channel is capable of handling flow velocities far in excess of that handled by the soil lining alone (1992). A number of recent research efforts have suggested that root systems physically and chemically bind bank soils in place, increasing the critical shear stress (Wynn, 2004). As the research continues, river and stream restoration efforts have produced valuable insight into a wide range of critical shear stress values for different channel materials, including vegetated channels. A prominent study by Dr. Fischenich documents how to assess a channel's stability and also provides a range of critical shear stress values for vegetation-lined channels such as the Otay River (included in Attachment 4). Critical shear stress values of 0.67 pounds per square foot (psf) (shales and hardpan), 0.35 psf (average reeds), and 0.70 psf (short native and bunch grass) are more appropriate assignments for the Otay River based upon the field conditions (Fischenich, 2001); the WMAA Ep Analysis assumed a very conservative critical shear stress value of 0.135 psf not based on the actual boundary conditions. The revised critical shear stress estimates are still fairly conservative, considering that low to average values were selected within the published range.

The MS4 Permit speaks to the significance of a proper critical shear stress assignment in Provision E.3.c.(2)(a)(i) where it states that the channel's low-flow threshold "*must* correspond with the critical channel flow that produces the critical shear stress" (San Diego Regional Water Quality Control Board, 2015). Therefore, we conclude that the revised critical shear stress estimates meet the Permit criteria, as they are appropriate for a wide, vegetated Otay River segment. The revised WMAA Ep Analysis shows that no work occurs at any of the three cross sections for the range of geomorphically significant flows, which is consistent with our observations, the watershed-specific hydrologic modeling and the historical imagery review. The revised WMAA Ep Analysis spreadsheets are provided in Attachment 2.

Figure 10: Cross Section 1 (view south)

Figure 11: Cross Section 1 – Scoured to Bedrock

Figure 12: Cross Section 1 – Immediately Downstream (view south)

Figure 13: Cross Section 2 (view south)

Figure 14: Cross Section 2 (in channel; north bank; view south)

Figure 15: Cross Section 2 (in channel; north bank; view southwest)

Figure 16: Cross Section 3 – Just Upstream (view west)

Figure 17: Cross Section 3 (in channel; view south; north bank)

Figure 18: Cross Section 3 (in channel; view southeast; north bank)

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Attachment 1

SWMM Model Inputs and Outputs

Otay Watershed SWMM Parameters

Table 2: Exempt Subcatchments

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	10.44	1	5.94%	80%	0.012	0.15	0.05	0.10	25%
B	0.00								
C	299.03	24	6.60%	61%	0.012	0.15	0.05	0.10	25%
D	1001.41	80	7.73%	60%	0.012	0.15	0.05	0.10	25%

Table 3: Non Exempt Subcatchments

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	4.08	0.3	6.09%	71%	0.012	0.15	0.05	0.10	25%
B	0.00								
C	143.79	12	6.37%	64%	0.012	0.15	0.05	0.10	25%
D	2851.20	228	6.75%	64%	0.012	0.15	0.05	0.10	25%

Table 4: Developed Subcatchments

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	1024.99	82	19.46%	29%	0.012	0.15	0.05	0.10	25%
B	162.69	13	24.86%	13%	0.012	0.15	0.05	0.10	25%
C	2143.79	172	17.87%	32%	0.012	0.15	0.05	0.10	25%
D	20882.06	1673	16.41%	34%	0.012	0.15	0.05	0.10	25%

Table 5: Impounded Subcatchments

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	2993.07	240	16.47%	9%	0.012	0.15	0.05	0.10	25%
B	3016.93	242	21.43%	8%	0.012	0.15	0.05	0.10	25%
C	8658.65	694	20.59%	10%	0.012	0.15	0.05	0.10	25%
D	48588.71	3892	22.59%	8%	0.012	0.15	0.05	0.10	25%

Flow Duration Curve Data for Otay River Natural versus Exemption Scenarios

Q2 =	1691.48	cfs	Fraction	10	%
Q10 =	2566.55	cfs			
Step =	24.2161	cfs			
Count =	438959	hours			
	50.08	years			

Interval	Natural Scenario			Exemption Scenario			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	169.148	5566	1.27E+00	5835	1.33E+00	105%	Pass
2	193.364	4863	1.11E+00	5019	1.14E+00	103%	Pass
3	217.580	4209	9.59E-01	4374	9.96E-01	104%	Pass
4	241.796	3691	8.41E-01	3806	8.67E-01	103%	Pass
5	266.012	3216	7.33E-01	3302	7.52E-01	103%	Pass
6	290.228	2865	6.53E-01	2873	6.55E-01	100%	Pass
7	314.444	2575	5.87E-01	2555	5.82E-01	99%	Pass
8	338.661	2318	5.28E-01	2268	5.17E-01	98%	Pass
9	362.877	2115	4.82E-01	2017	4.59E-01	95%	Pass
10	387.093	1895	4.32E-01	1804	4.11E-01	95%	Pass
11	411.309	1736	3.95E-01	1621	3.69E-01	93%	Pass
12	435.525	1570	3.58E-01	1448	3.30E-01	92%	Pass
13	459.741	1449	3.30E-01	1334	3.04E-01	92%	Pass
14	483.957	1336	3.04E-01	1225	2.79E-01	92%	Pass
15	508.174	1250	2.85E-01	1127	2.57E-01	90%	Pass
16	532.390	1151	2.62E-01	1033	2.35E-01	90%	Pass
17	556.606	1058	2.41E-01	943	2.15E-01	89%	Pass
18	580.822	969	2.21E-01	866	1.97E-01	89%	Pass
19	605.038	890	2.03E-01	799	1.82E-01	90%	Pass
20	629.254	823	1.87E-01	738	1.68E-01	90%	Pass
21	653.471	779	1.77E-01	675	1.54E-01	87%	Pass
22	677.687	732	1.67E-01	628	1.43E-01	86%	Pass
23	701.903	685	1.56E-01	591	1.35E-01	86%	Pass
24	726.119	630	1.44E-01	554	1.26E-01	88%	Pass
25	750.335	592	1.35E-01	526	1.20E-01	89%	Pass
26	774.551	549	1.25E-01	493	1.12E-01	90%	Pass
27	798.767	520	1.18E-01	457	1.04E-01	88%	Pass
28	822.984	488	1.11E-01	427	9.73E-02	88%	Pass
29	847.200	458	1.04E-01	395	9.00E-02	86%	Pass
30	871.416	425	9.68E-02	377	8.59E-02	89%	Pass
31	895.632	405	9.23E-02	350	7.97E-02	86%	Pass
32	919.848	371	8.45E-02	319	7.27E-02	86%	Pass
33	944.064	353	8.04E-02	302	6.88E-02	86%	Pass
34	968.280	333	7.59E-02	283	6.45E-02	85%	Pass

Flow Duration Curve Data for Otay River Natural versus Exemption Scenarios

Q2 =	1691.48	cfs	Fraction	10	%
Q10 =	2566.55	cfs			
Step =	24.2161	cfs			
Count =	438959	hours			
	50.08	years			

Interval	Natural Scenario			Exemption Scenario			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
35	992.497	314	7.15E-02	257	5.85E-02	82%	Pass
36	1016.713	293	6.67E-02	237	5.40E-02	81%	Pass
37	1040.929	278	6.33E-02	219	4.99E-02	79%	Pass
38	1065.145	266	6.06E-02	205	4.67E-02	77%	Pass
39	1089.361	253	5.76E-02	200	4.56E-02	79%	Pass
40	1113.577	232	5.29E-02	189	4.31E-02	81%	Pass
41	1137.793	222	5.06E-02	181	4.12E-02	82%	Pass
42	1162.010	206	4.69E-02	174	3.96E-02	84%	Pass
43	1186.226	194	4.42E-02	158	3.60E-02	81%	Pass
44	1210.442	184	4.19E-02	147	3.35E-02	80%	Pass
45	1234.658	180	4.10E-02	138	3.14E-02	77%	Pass
46	1258.874	172	3.92E-02	126	2.87E-02	73%	Pass
47	1283.090	163	3.71E-02	118	2.69E-02	72%	Pass
48	1307.306	157	3.58E-02	111	2.53E-02	71%	Pass
49	1331.523	146	3.33E-02	105	2.39E-02	72%	Pass
50	1355.739	139	3.17E-02	101	2.30E-02	73%	Pass
51	1379.955	132	3.01E-02	97	2.21E-02	73%	Pass
52	1404.171	125	2.85E-02	91	2.07E-02	73%	Pass
53	1428.387	114	2.60E-02	81	1.85E-02	71%	Pass
54	1452.603	105	2.39E-02	76	1.73E-02	72%	Pass
55	1476.819	99	2.26E-02	71	1.62E-02	72%	Pass
56	1501.036	92	2.10E-02	65	1.48E-02	71%	Pass
57	1525.252	91	2.07E-02	63	1.44E-02	69%	Pass
58	1549.468	84	1.91E-02	62	1.41E-02	74%	Pass
59	1573.684	80	1.82E-02	58	1.32E-02	73%	Pass
60	1597.900	77	1.75E-02	52	1.18E-02	68%	Pass
61	1622.116	74	1.69E-02	50	1.14E-02	68%	Pass
62	1646.333	73	1.66E-02	46	1.05E-02	63%	Pass
63	1670.549	70	1.59E-02	43	9.80E-03	61%	Pass
64	1694.765	65	1.48E-02	37	8.43E-03	57%	Pass
65	1718.981	60	1.37E-02	35	7.97E-03	58%	Pass
66	1743.197	55	1.25E-02	34	7.75E-03	62%	Pass
67	1767.413	54	1.23E-02	31	7.06E-03	57%	Pass

Flow Duration Curve Data for Otay River Natural versus Exemption Scenarios

Q2 =	1691.48	cfs	Fraction	10	%
Q10 =	2566.55	cfs			
Step =	24.2161	cfs			
Count =	438959	hours			
	50.08	years			

Interval	Natural Scenario			Exemption Scenario			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
68	1791.629	51	1.16E-02	29	6.61E-03	57%	Pass
69	1815.846	46	1.05E-02	27	6.15E-03	59%	Pass
70	1840.062	45	1.03E-02	26	5.92E-03	58%	Pass
71	1864.278	42	9.57E-03	23	5.24E-03	55%	Pass
72	1888.494	38	8.66E-03	21	4.78E-03	55%	Pass
73	1912.710	35	7.97E-03	19	4.33E-03	54%	Pass
74	1936.926	31	7.06E-03	17	3.87E-03	55%	Pass
75	1961.142	31	7.06E-03	16	3.64E-03	52%	Pass
76	1985.359	29	6.61E-03	15	3.42E-03	52%	Pass
77	2009.575	27	6.15E-03	14	3.19E-03	52%	Pass
78	2033.791	23	5.24E-03	14	3.19E-03	61%	Pass
79	2058.007	22	5.01E-03	14	3.19E-03	64%	Pass
80	2082.223	20	4.56E-03	14	3.19E-03	70%	Pass
81	2106.439	19	4.33E-03	14	3.19E-03	74%	Pass
82	2130.655	18	4.10E-03	13	2.96E-03	72%	Pass
83	2154.872	18	4.10E-03	13	2.96E-03	72%	Pass
84	2179.088	17	3.87E-03	11	2.51E-03	65%	Pass
85	2203.304	15	3.42E-03	11	2.51E-03	73%	Pass
86	2227.520	15	3.42E-03	11	2.51E-03	73%	Pass
87	2251.736	14	3.19E-03	11	2.51E-03	79%	Pass
88	2275.952	13	2.96E-03	11	2.51E-03	85%	Pass
89	2300.168	12	2.73E-03	10	2.28E-03	83%	Pass
90	2324.385	11	2.51E-03	10	2.28E-03	91%	Pass
91	2348.601	11	2.51E-03	10	2.28E-03	91%	Pass
92	2372.817	11	2.51E-03	8	1.82E-03	73%	Pass
93	2397.033	11	2.51E-03	7	1.59E-03	64%	Pass
94	2421.249	11	2.51E-03	7	1.59E-03	64%	Pass
95	2445.465	11	2.51E-03	6	1.37E-03	55%	Pass
96	2469.681	10	2.28E-03	6	1.37E-03	60%	Pass
97	2493.898	10	2.28E-03	6	1.37E-03	60%	Pass
98	2518.114	9	2.05E-03	6	1.37E-03	67%	Pass
99	2542.330	9	2.05E-03	6	1.37E-03	67%	Pass
100	2566.546	9	2.05E-03	6	1.37E-03	67%	Pass

Otay River Exemption Analysis - Exemption Scenario

```
[TITLE]
Otay River Exemption Analysis - Exemption Scenario

[OPTIONS]
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           02/01/1965
START_TIME           00:00:00
REPORT_START_DATE    02/01/1965
REPORT_START_TIME    00:00:00
END_DATE             02/28/2015
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             01:00:00
DRY_STEP             01:00:00
ROUTING_STEP         0:01:00
ALLOW_PONDING        NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
NORMAL_FLOW_LIMITED  BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION  H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0

[EVAPORATION]
;;Type       Parameters
;;---------- ----------
MONTHLY      .041   .076   .118   .192   .237   .318   .308   .286   .217   .14    .067   .041
DRY_ONLY     NO

[RAINGAGES]
;;               Rain      Time   Snow   Data
;;Name           Type      Intrvl Catch  Source
;;-------------- --------- ------ ------ ----------
Bonita+SWRes     INTENSITY 1:00   1.0    TIMESERIES OTAY

[SUBCATCHMENTS]
;;                                                   Total    Pcnt.             Pcnt.    Curb     Snow
;;Name           Raingage         Outlet           Area     Imperv   Width    Slope    Length   Pack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- --------
EX-A             Bonita+SWRes     EXEMPT           10.44    80       1        5.94     0
EX-C             Bonita+SWRes     EXEMPT           299.03   61       24       6.6      0
EX-D             Bonita+SWRes     EXEMPT           1001.41  60       80       7.73     0
DEV-A            Bonita+SWRes     DEVELOPED        1024.99  29       82       19.46    0
DEV-B            Bonita+SWRes     DEVELOPED        162.69   13       13       24.86    0
DEV-C            Bonita+SWRes     DEVELOPED        2143.79  32       172      17.87    0
DEV-D            Bonita+SWRes     DEVELOPED        20882.06 34       1673     16.41    0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
EX-A             .012       .15        .05        .1         25         OUTLET
EX-C             .012       .15        .05        .1         25         OUTLET
EX-D             .012       .15        .05        .1         25         OUTLET
DEV-A            .012       .15        .05        .1         25         OUTLET
DEV-B            .012       .15        .05        .1         25         OUTLET
DEV-C            .012       .15        .05        .1         25         OUTLET
DEV-D            .012       .15        .05        .1         25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    HydCon     IMDmax
;;-------------- ---------- ---------- ----------
EX-A             1.5        .225       .33
EX-C             6          .075       .31
```

Otay River Exemption Analysis - Exemption Scenario

```
EX-D             9          .01875     .3
DEV-A            1.5        .225       .33
DEV-B            3          .15        .32
DEV-C            6          .075       .31
DEV-D            9          .01875     .3

[JUNCTIONS]
;;               Invert     Max.       Init.      Surcharge  Ponded
;;Name           Elev.      Depth      Depth      Depth      Area
;;-------------- ---------- ---------- ---------- ---------- ----------
EXEMPT           0          0          0          0          0
NOT_EXEMPT       0          0          0          0          0
DEVELOPED        0          0          0          0          0

[OUTFALLS]
;;               Invert     Outfall    Stage/Table      Tide
;;Name           Elev.      Type       Time Series      Gate
;;-------------- ---------- ---------- ---------------- ----
RIVER_OUTFALL    0          FREE                        NO

[CONDUITS]
;;               Inlet            Outlet                      Manning    Inlet      Outlet     Init.      Max.
;;Name           Node             Node             Length     N          Offset     Offset     Flow       Flow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ----------
PE               EXEMPT           RIVER_OUTFALL    400        0.01       0          0          0          0
NE               NOT_EXEMPT       RIVER_OUTFALL    400        0.01       0          0          0          0
NOTDEV           DEVELOPED        RIVER_OUTFALL    400        0.01       0          0          0          0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels
;;-------------- ------------ ---------------- ---------- ---------- ---------- ----------
PE               DUMMY        0                0          0          0          1
NE               DUMMY        0                0          0          0          1
NOTDEV           DUMMY        0                0          0          0          1

[LOSSES]
;;Link           Inlet      Outlet     Average    Flap Gate
;;-------------- ---------- ---------- ---------- ----------

[INFLOWS]
;;                                                Param    Units    Scale    Baseline Baseline
;;Node           Parameter        Time Series      Type     Factor   Factor   Value    Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
NOT_EXEMPT       FLOW             NotExempt        FLOW     1.0      .57

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
OTAY             FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\Precip\Otay.txt"

NotExempt        FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\NotExempt.txt"

[REPORT]
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EXEMPT           3627.451           4537.815
NOT_EXEMPT       5042.017           5084.034
DEVELOPED        6750.700           4523.810
```

```
RIVER_OUTFALL    5056.022           3613.445

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EX-A             2871.148           5672.269
EX-C             3291.317           5434.174
EX-D             3697.479           5126.050
DEV-A            6526.611           6036.415
DEV-B            6848.739           5798.319
DEV-C            7156.863           5532.213
DEV-D            7422.969           5322.129

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Bonita+SWRes     5126.050           7016.807
```

Otay River Exemption Analysis - Exemption Scenario

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)
--------------------------------------------------------------

Otay River Exemption Analysis - Exemption Scenario

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... GREEN_AMPT
Flow Routing Method ...... KINWAVE
Starting Date ............ FEB-01-1965 00:00:00
Ending Date .............. FEB-28-2015 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Wet Time Step ............ 01:00:00
Dry Time Step ............ 01:00:00
Routing Time Step ........ 60.00 sec


WARNING 04: minimum elevation drop used for Conduit PE

WARNING 04: minimum elevation drop used for Conduit NE

WARNING 04: minimum elevation drop used for Conduit NOTDEV

**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation ......   1072329.228       504.143
Evaporation Loss .........    155292.347        73.009
Infiltration Loss ........    659843.766       310.218
Surface Runoff ...........    261955.114       123.155
Final Surface Storage ....         5.545         0.003
Continuity Error (%) .....        -0.445


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......    261955.108     85361.985
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........     28077.362      9149.428
External Outflow .........    290032.470     94511.413
Internal Outflow .........         0.000         0.000
Storage Losses ...........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.
```

Otay River Exemption Analysis - Exemption Scenario

```
*************************
Routing Time Step Summary
*************************
Minimum Time Step           :    60.00 sec
Average Time Step           :    60.00 sec
Maximum Time Step           :    60.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
```

```
***************************
Subcatchment Runoff Summary
***************************
```

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
EX-A	504.14	0.00	165.69	100.74	238.17	67.52	2.60	0.472
EX-C	504.14	0.00	124.76	194.87	185.38	1505.24	64.61	0.368
EX-D	504.14	0.00	128.74	188.46	188.48	5125.13	234.25	0.374
DEV-A	504.14	0.00	46.70	357.70	100.55	2798.49	265.16	0.199
DEV-B	504.14	0.00	19.16	437.76	48.38	213.74	35.50	0.096
DEV-C	504.14	0.00	55.63	339.81	110.17	6413.17	549.69	0.219
DEV-D	504.14	0.00	73.04	311.45	122.10	69232.37	5326.65	0.242

```
******************
Node Depth Summary
******************
```

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min
EXEMPT	JUNCTION	0.00	0.00	0.00	0 00:00
NOT_EXEMPT	JUNCTION	0.00	0.00	0.00	0 00:00
DEVELOPED	JUNCTION	0.00	0.00	0.00	0 00:00
RIVER_OUTFALL	OUTFALL	0.00	0.00	0.00	0 00:00

```
*******************
Node Inflow Summary
*******************
```

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal
EXEMPT	JUNCTION	301.47	301.47	6768 19:00	6697.879	6697.879
NOT_EXEMPT	JUNCTION	384.40	384.40	6768 19:00	9148.748	9148.748
DEVELOPED	JUNCTION	6177.00	6177.00	6768 18:00	78657.767	78657.767
RIVER_OUTFALL	OUTFALL	0.00	6741.68	6768 18:00	0.000	94504.394

```
**********************
Node Surcharge Summary
**********************
```

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet

Otay River Exemption Analysis - Exemption Scenario

```
EXEMPT               JUNCTION   438959.02          0.000        0.000
NOT_EXEMPT           JUNCTION   438959.02          0.000        0.000
DEVELOPED            JUNCTION   438959.02          0.000        0.000


*********************
Node Flooding Summary
*********************

No nodes were flooded.


***********************
Outfall Loading Summary
***********************

-------------------------------------------------------------
                      Flow       Avg.      Max.       Total
                      Freq.      Flow      Flow      Volume
Outfall Node          Pcnt.       CFS       CFS    10^6 gal
-------------------------------------------------------------
RIVER_OUTFALL         12.76     62.64   6741.68   94504.394
-------------------------------------------------------------
System                12.76     62.64   6741.68   94504.394


********************
Link Flow Summary
********************

-------------------------------------------------------------------------------
                                Maximum  Time of Max   Maximum    Max/    Max/
                                 |Flow|   Occurrence   |Veloc|    Full    Full
Link                 Type          CFS  days hr:min    ft/sec    Flow   Depth
-------------------------------------------------------------------------------
PE                   DUMMY      301.47  6768  19:00
NE                   DUMMY      384.40  6768  19:00
NOTDEV               DUMMY     6177.00  6768  18:00


*************************
Conduit Surcharge Summary
*************************

-------------------------------------------------------------------------------
                                                          Hours        Hours
                       --------- Hours Full --------   Above Full   Capacity
Conduit                Both Ends  Upstream  Dnstream   Normal Flow   Limited
-------------------------------------------------------------------------------
PE                          0.01      0.01      0.01  438959.02         0.01
NE                          0.01      0.01      0.01  438959.02         0.01
NOTDEV                      0.01      0.01      0.01  438959.02         0.01


Analysis begun on:  Fri Dec 18 16:42:35 2015
Analysis ended on:  Fri Dec 18 16:43:30 2015
Total elapsed time: 00:00:55
```

Otay River Exemption Analysis - Natural Scenario

```
[TITLE]
Otay River Exemption Analysis - Natural Scenario

[OPTIONS]
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           02/01/1965
START_TIME           00:00:00
REPORT_START_DATE    02/01/1965
REPORT_START_TIME    00:00:00
END_DATE             02/28/2015
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             01:00:00
DRY_STEP             01:00:00
ROUTING_STEP         0:01:00
ALLOW_PONDING        NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
NORMAL_FLOW_LIMITED  BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION  H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0

[EVAPORATION]
;;Type       Parameters
;;---------- ----------
MONTHLY      .041   .076   .118   .192   .237   .318   .308   .286   .217   .14    .067   .041
DRY_ONLY     NO

[RAINGAGES]
;;               Rain      Time   Snow   Data
;;Name           Type      Intrvl Catch  Source
;;-------------- --------- ------ ------ ----------
Bonita+SWRes     INTENSITY 1:00   1.0    TIMESERIES OTAY

[JUNCTIONS]
;;               Invert     Max.       Init.      Surcharge  Ponded
;;Name           Elev.      Depth      Depth      Depth      Area
;;-------------- ---------- ---------- ---------- ---------- ----------
EXEMPT           0          0          0          0          0
NOT_EXEMPT       0          0          0          0          0
DEVELOPED        0          0          0          0          0
DAM              0          0          0          0          0

[OUTFALLS]
;;               Invert     Outfall    Stage/Table      Tide
;;Name           Elev.      Type       Time Series      Gate
;;-------------- ---------- ---------- ---------------- ----
RIVER_OUTFALL    0          FREE                        NO

[CONDUITS]
;;               Inlet            Outlet                      Manning    Inlet      Outlet     Init.      Max.
;;Name           Node             Node             Length     N          Offset     Offset     Flow       Flow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ----------
PE               EXEMPT           RIVER_OUTFALL    400        0.01       0          0          0          0
NE               NOT_EXEMPT       RIVER_OUTFALL    400        0.01       0          0          0          0
NOTDEV           DEVELOPED        RIVER_OUTFALL    400        0.01       0          0          0          0
4                DAM              RIVER_OUTFALL    400        0.01       0          0          0          0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels
;;-------------- ------------ ---------------- ---------- ---------- ---------- ----------
PE               DUMMY        0                0          0          0          1
```

Otay River Exemption Analysis - Natural Scenario

```
NE                DUMMY        0                0          0          0          1
NOTDEV            DUMMY        0                0          0          0          1
4                 DUMMY        0                0          0          0          1

[LOSSES]
;;Link            Inlet      Outlet     Average    Flap Gate
;;-------------- ---------- ---------- ---------- ----------

[INFLOWS]
;;                                                Param    Units    Scale    Baseline Baseline
;;Node            Parameter        Time Series      Type     Factor   Factor   Value    Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
EXEMPT            FLOW             Exempt           FLOW     1.0      0.57
NOT_EXEMPT        FLOW             NotExempt        FLOW     1.0      0.57
DEVELOPED         FLOW             Developed        FLOW     1.0      0.57
DAM               FLOW             Impounded        FLOW     1.0      0.57

[TIMESERIES]
;;Name            Date       Time       Value
;;-------------- ---------- ---------- ----------
OTAY              FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\Precip\Otay.txt"

Exempt            FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\Exempt.txt"

NotExempt         FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\NotExempt.txt"

Developed         FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\Developed.txt"

Impounded         FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME SERIES\Impounded.txt"

[REPORT]
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node            X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EXEMPT            3492.063           6507.937
NOT_EXEMPT        4790.765           7012.987
DEVELOPED         5945.166           6883.117
DAM               6652.237           6392.496
RIVER_OUTFALL     5098.039           5392.157

[VERTICES]
;;Link            X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[SYMBOLS]
;;Gage            X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Bonita+SWRes      5382.395           8903.319
```

Otay River Exemption Analysis - Natural Scenario

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)
--------------------------------------------------------------

Otay River Exemption Analysis - Natural Scenario (via HMP applied to built-out watershed, including impounded drainage

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Flow Routing Method ...... KINWAVE
Starting Date ............ FEB-01-1965 00:00:00
Ending Date .............. FEB-28-2015 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Routing Time Step ........ 60.00 sec


WARNING 04: minimum elevation drop used for Conduit PE

WARNING 04: minimum elevation drop used for Conduit NE

WARNING 04: minimum elevation drop used for Conduit NOTDEV

WARNING 04: minimum elevation drop used for Conduit 4

**************************        Volume         Volume
Flow Routing Continuity        acre-feet       10^6 gal
**************************     ---------      ---------
Dry Weather Inflow .......         0.000          0.000
Wet Weather Inflow .......         0.000          0.000
Groundwater Inflow .......         0.000          0.000
RDII Inflow ..............         0.000          0.000
External Inflow ..........    284576.467      92733.493
External Outflow .........    284576.467      92733.493
Internal Outflow .........         0.000          0.000
Storage Losses ...........         0.000          0.000
Initial Stored Volume ....         0.000          0.000
Final Stored Volume ......         0.000          0.000
Continuity Error (%) .....         0.000


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :    60.00 sec
Average Time Step           :    60.00 sec
Maximum Time Step           :    60.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
```

Otay River Exemption Analysis - Natural Scenario

```
******************
Node Depth Summary
******************

-----------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max
                                  Depth    Depth      HGL   Occurrence
Node                 Type         Feet     Feet     Feet  days hr:min
-----------------------------------------------------------------------
EXEMPT               JUNCTION     0.00     0.00     0.00     0  00:00
NOT_EXEMPT           JUNCTION     0.00     0.00     0.00     0  00:00
DEVELOPED            JUNCTION     0.00     0.00     0.00     0  00:00
DAM                  JUNCTION     0.00     0.00     0.00     0  00:00
RIVER_OUTFALL        OUTFALL      0.00     0.00     0.00     0  00:00


*******************
Node Inflow Summary
*******************

-------------------------------------------------------------------------------------
                                 Maximum  Maximum                    Lateral       Total
                                 Lateral    Total  Time of Max       Inflow      Inflow
                                  Inflow   Inflow   Occurrence       Volume      Volume
Node                 Type           CFS      CFS  days hr:min     10^6 gal    10^6 gal
-------------------------------------------------------------------------------------
EXEMPT               JUNCTION    171.84   171.84  6768  19:00     3817.791    3817.791
NOT_EXEMPT           JUNCTION    384.40   384.40  6768  19:00     9148.748    9148.748
DEVELOPED            JUNCTION   3520.89  3520.89  6768  18:00    44834.927   44834.927
DAM                  JUNCTION   6285.41  6285.41  6768  18:00    34925.140   34925.140
RIVER_OUTFALL        OUTFALL       0.00 10263.22  6768  18:00        0.000   92726.606


**********************
Node Surcharge Summary
**********************

Surcharging occurs when water rises above the top of the highest conduit.
-----------------------------------------------------------------------
                                            Max. Height   Min. Depth
                                 Hours      Above Crown    Below Rim
Node                 Type      Surcharged          Feet         Feet
-----------------------------------------------------------------------
EXEMPT               JUNCTION   438959.02         0.000        0.000
NOT_EXEMPT           JUNCTION   438959.02         0.000        0.000
DEVELOPED            JUNCTION   438959.02         0.000        0.000
DAM                  JUNCTION   438959.02         0.000        0.000


*********************
Node Flooding Summary
*********************

No nodes were flooded.


**********************
Outfall Loading Summary
**********************

-------------------------------------------------------------
                      Flow       Avg.      Max.       Total
                      Freq.      Flow      Flow      Volume
Outfall Node          Pcnt.       CFS       CFS    10^6 gal
-------------------------------------------------------------
RIVER_OUTFALL         12.75     61.51  10263.22   92726.606
-------------------------------------------------------------
System                12.75     61.51  10263.22   92726.606


********************
```

Otay River Exemption Analysis - Natural Scenario

Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
PE	DUMMY	171.84	6768 19:00			
NE	DUMMY	384.40	6768 19:00			
NOTDEV	DUMMY	3520.89	6768 18:00			
4	DUMMY	6285.41	6768 18:00			

****
Conduit Surcharge Summary
****

Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
PE	0.01	0.01	0.01	438959.02	0.01
NE	0.01	0.01	0.01	438959.02	0.01
NOTDEV	0.01	0.01	0.01	438959.02	0.01
4	0.01	0.01	0.01	438959.02	0.01

Analysis begun on: Fri Dec 18 16:53:03 2015
Analysis ended on: Fri Dec 18 16:54:25 2015
Total elapsed time: 00:01:22

Attachment 2

Revised WMAA Ep Analysis

Erosion Potential Analysis for Otay River - Cross Section 1

*Erosion Potential (Ep)	**#DIV/0!**

Channel Slope	0.0053	ft/ft
Critical Shear	0.670	lb/sq. ft
γ	62.4	lb/ft^3

			Existing Condition	**Future Condition**
Tributary Area	*A*	sq mi	19	19
Mean Annual Precip	*MAP*	in/yr	12.0	12.0
Length of Daily Flow Record	*Yr*	yr	30	30
Imperviousness	*Impav*	mi^2/mi^2	0.17598	0.21312
Maximum Flow of Record	*Qmax*	cfs	529.9	529.9
Minimum Flow of Record	*Qmin*	cfs	0.01	0.01
10-year peak flow	*Q10*	cfs	1605.8	1605.8
Coefficient of DDF	*day1*	days & cfs	1147.68	1916.11
Exponent of DDF	*day2*	days & cfs	-0.78	-0.83
Number of Bins	N_B	--	25	25
Bin Size	$H_{B\text{-}log}$	--	0.453	0.453

Bin Number	Lower Bound of Bin Number	Upper Bound of Bin Number	Flow	Hydraulic Radius	Flow Velocity	Shear Stress	Work	Duration	Cumulative Work	Duration	Cumulative Work
B	$B_{lwr\text{-}log\ (cfs)}$	$B_{upr\text{-}log\ (cfs)}$	*Q (cfs)*	*R (ft)*	*v (ft/s)*	τ (psf)	*W*		*W*duration*		*W*duration*
1	0.006	0.010	0.01	0.01	0.13	0.003	0.000	49104	0.00	101283	0.00
2	0.010	0.016	0.01	0.01	0.13	0.003	0.000	34458	0.00	69670	0.00
3	0.016	0.025	0.02	0.01	0.16	0.003	0.000	24180	0.00	47924	0.00
4	0.025	0.039	0.03	0.02	0.18	0.007	0.000	16968	0.00	32966	0.00
5	0.039	0.061	0.05	0.02	0.20	0.007	0.000	11907	0.00	22676	0.00
6	0.061	0.096	0.08	0.02	0.23	0.007	0.000	8355	0.00	15598	0.00
7	0.096	0.152	0.12	0.03	0.25	0.010	0.000	5863	0.00	10730	0.00
8	0.152	0.239	0.20	0.03	0.29	0.010	0.000	4114	0.00	7381	0.00
9	0.239	0.376	0.31	0.04	0.32	0.013	0.000	2887	0.00	5077	0.00
10	0.376	0.591	0.48	0.05	0.36	0.017	0.000	2026	0.00	3492	0.00
11	0.591	0.930	0.76	0.06	0.40	0.020	0.000	1422	0.00	2402	0.00
12	0.930	1.463	1.20	0.07	0.47	0.023	0.000	998	0.00	1652	0.00
13	1.463	2.302	1.88	0.09	0.55	0.030	0.000	700	0.00	1137	0.00
14	2.302	3.622	2.96	0.12	0.65	0.040	0.000	491	0.00	782	0.00
15	3.622	5.698	4.66	0.15	0.76	0.050	0.000	345	0.00	538	0.00
16	5.698	8.966	7.33	0.19	0.89	0.063	0.000	242	0.00	370	0.00
17	8.966	14.107	11.54	0.24	1.04	0.079	0.000	170	0.00	254	0.00
18	14.107	22.196	18.15	0.30	1.21	0.099	0.000	119	0.00	175	0.00
19	22.196	34.924	28.56	0.37	1.39	0.122	0.000	84	0.00	120	0.00
20	34.924	54.949	44.94	0.45	1.60	0.149	0.000	59	0.00	83	0.00
21	54.949	86.457	70.70	0.55	1.82	0.182	0.000	41	0.00	57	0.00
22	86.457	136.031	111.24	0.70	2.12	0.232	0.000	29	0.00	39	0.00
23	136.031	214.032	175.03	0.87	2.47	0.288	0.000	20	0.00	27	0.00
24	214.032	336.758	275.39	1.08	2.85	0.357	0.000	14	0.00	19	0.00
25	336.758	529.856	433.31	1.33	3.27	0.440	0.000	10	0.00	13	0.00
									0.00		0.00

***(No work occurs in existing of future condition for the range of geomorphically significant flows)** **Ep** **#DIV/0!**

Erosion Potential Analysis for Otay River - Cross Section 2

*Erosion Potential (Ep)	**#DIV/0!**

Channel Slope	0.0033	ft/ft
Critical Shear	0.350	lb/sq. ft
γ	62.4	lb/ft^3

			Existing Condition	**Future Condition**
Tributary Area	*A*	sq mi	28	28
Mean Annual Precip	*MAP*	in/yr	12.0	12.0
Length of Daily Flow Record	*Yr*	yr	30	30
Imperviousness	*Impav*	mi^2/mi^2	0.20473	0.24473
Maximum Flow of Record	*Qmax*	cfs	744.3	744.3
Minimum Flow of Record	*Qmin*	cfs	0.01	0.01
10-year peak flow	*Q10*	cfs	2170.4	2170.4
Coefficient of DDF	*day1*	days & cfs	2157.91	3747.65
Exponent of DDF	*day2*	days & cfs	-0.80	-0.85
Number of Bins	N_B	--	25	25
Bin Size	$H_{B\text{-}log}$	--	0.467	0.467

Bin Number	Lower Bound of Bin Number	Upper Bound of Bin Number	Flow	Hydraulic Radius	Flow Velocity	Shear Stress	Work	Duration	Cumulative Work	Duration	Cumulative Work
B	$B_{lwr\text{-}log\ (cfs)}$	$B_{upr\text{-}log\ (cfs)}$	*Q (cfs)*	*R (ft)*	*v (ft/s)*	τ (psf)	*W*		*W*duration*		*W*duration*
1	0.006	0.010	0.01	0.01	0.11	0.002	0.000	100346	0.00	218891	0.00
2	0.010	0.016	0.01	0.01	0.11	0.002	0.000	69108	0.00	147449	0.00
3	0.016	0.025	0.02	0.02	0.13	0.004	0.000	47595	0.00	99324	0.00
4	0.025	0.041	0.03	0.02	0.15	0.004	0.000	32779	0.00	66906	0.00
5	0.041	0.065	0.05	0.02	0.17	0.004	0.000	22575	0.00	45069	0.00
6	0.065	0.104	0.08	0.03	0.19	0.006	0.000	15547	0.00	30359	0.00
7	0.104	0.165	0.13	0.03	0.21	0.006	0.000	10707	0.00	20450	0.00
8	0.165	0.264	0.21	0.04	0.24	0.008	0.000	7374	0.00	13776	0.00
9	0.264	0.421	0.34	0.04	0.27	0.008	0.000	5078	0.00	9280	0.00
10	0.421	0.671	0.55	0.05	0.30	0.010	0.000	3498	0.00	6251	0.00
11	0.671	1.071	0.87	0.07	0.35	0.014	0.000	2409	0.00	4211	0.00
12	1.071	1.710	1.39	0.09	0.42	0.019	0.000	1659	0.00	2836	0.00
13	1.710	2.728	2.22	0.11	0.49	0.023	0.000	1142	0.00	1911	0.00
14	2.728	4.354	3.54	0.14	0.58	0.029	0.000	787	0.00	1287	0.00
15	4.354	6.948	5.65	0.18	0.68	0.037	0.000	542	0.00	867	0.00
16	6.948	11.087	9.02	0.23	0.80	0.047	0.000	373	0.00	584	0.00
17	11.087	17.694	14.39	0.29	0.93	0.060	0.000	257	0.00	393	0.00
18	17.694	28.236	22.97	0.35	1.07	0.072	0.000	177	0.00	265	0.00
19	28.236	45.061	36.65	0.44	1.23	0.091	0.000	122	0.00	179	0.00
20	45.061	71.909	58.49	0.41	1.19	0.084	0.000	84	0.00	120	0.00
21	71.909	114.756	93.33	0.48	1.31	0.099	0.000	58	0.00	81	0.00
22	114.756	183.132	148.94	0.51	1.36	0.105	0.000	40	0.00	55	0.00
23	183.132	292.248	237.69	0.64	1.58	0.132	0.000	27	0.00	37	0.00
24	292.248	466.381	379.31	0.80	1.83	0.165	0.000	19	0.00	25	0.00
25	466.381	744.268	605.32	1.00	2.14	0.206	0.000	13	0.00	17	0.00
									0.00		0.00

***(No work occurs in existing of future condition for the range of geomorphically significant flows)** **Ep** **#DIV/0!**

Erosion Potential Analysis for Otay River - Cross Section 3

*Erosion Potential (Ep)	**#DIV/0!**

Channel Slope	0.0026	ft/ft
Critical Shear	0.700	lb/sq. ft
γ	62.4	lb/ft^3

			Existing Condition	**Future Condition**
Tributary Area	*A*	sq mi	46	46
Mean Annual Precip	*MAP*	in/yr	12.0	12.0
Length of Daily Flow Record	*Yr*	yr	30	30
Imperviousness	*Impav*	mi^2/mi^2	0.3188	0.3441
Maximum Flow of Record	*Qmax*	cfs	1236.9	1236.9
Minimum Flow of Record	*Qmin*	cfs	0.01	0.01
10-year peak flow	*Q10*	cfs	3405.1	3405.1
Coefficient of DDF	*day1*	days & cfs	14796.19	20982.62
Exponent of DDF	*day2*	days & cfs	-0.91	-0.94
Number of Bins	N_B	--	25	25
Bin Size	$H_{B\text{-}log}$	--	0.489	0.489

Bin Number	Lower Bound of Bin Number	Upper Bound of Bin Number	Flow	Hydraulic Radius	Flow Velocity	Shear Stress	Work	Duration	Cumulative Work	Duration	Cumulative Work
B	$B_{lwr\text{-}log\ (cfs)}$	$B_{upr\text{-}log\ (cfs)}$	*Q (cfs)*	*R (ft)*	*v (ft/s)*	τ (psf)	*W*		*W*duration*		*W*duration*
1	0.006	0.010	0.01	0.03	0.18	0.005	0.000	1169806	0.00	1916824	0.00
2	0.010	0.016	0.01	0.03	0.18	0.005	0.000	751154	0.00	1212931	0.00
3	0.016	0.027	0.02	0.04	0.22	0.006	0.000	482330	0.00	767520	0.00
4	0.027	0.043	0.03	0.05	0.24	0.008	0.000	309713	0.00	485672	0.00
5	0.043	0.071	0.06	0.06	0.29	0.010	0.000	198872	0.00	307324	0.00
6	0.071	0.115	0.09	0.07	0.32	0.011	0.000	127699	0.00	194469	0.00
7	0.115	0.188	0.15	0.08	0.36	0.013	0.000	81998	0.00	123056	0.00
8	0.188	0.306	0.25	0.10	0.41	0.016	0.000	52653	0.00	77868	0.00
9	0.306	0.498	0.40	0.12	0.46	0.019	0.000	33809	0.00	49273	0.00
10	0.498	0.812	0.66	0.14	0.52	0.023	0.000	21709	0.00	31179	0.00
11	0.812	1.324	1.07	0.17	0.59	0.028	0.000	13940	0.00	19730	0.00
12	1.324	2.158	1.74	0.21	0.67	0.034	0.000	8951	0.00	12485	0.00
13	2.158	3.517	2.84	0.25	0.75	0.041	0.000	5748	0.00	7900	0.00
14	3.517	5.733	4.62	0.30	0.85	0.049	0.000	3691	0.00	4999	0.00
15	5.733	9.344	7.54	0.36	0.96	0.058	0.000	2370	0.00	3163	0.00
16	9.344	15.230	12.29	0.43	1.08	0.070	0.000	1522	0.00	2002	0.00
17	15.230	24.825	20.03	0.52	1.22	0.084	0.000	977	0.00	1267	0.00
18	24.825	40.465	32.64	0.62	1.38	0.101	0.000	627	0.00	801	0.00
19	40.465	65.956	53.21	0.75	1.56	0.122	0.000	403	0.00	507	0.00
20	65.956	107.507	86.73	0.94	1.82	0.153	0.000	259	0.00	321	0.00
21	107.507	175.233	141.37	1.18	2.11	0.191	0.000	166	0.00	203	0.00
22	175.233	285.626	230.43	1.46	2.44	0.237	0.000	107	0.00	129	0.00
23	285.626	465.563	375.59	1.80	2.81	0.292	0.000	68	0.00	81	0.00
24	465.563	758.856	612.21	2.15	3.16	0.349	0.000	44	0.00	51	0.00
25	758.856	1236.916	997.89	2.57	3.56	0.417	0.000	28	0.00	33	0.00
									0.00		0.00

***(No work occurs in existing of future condition for the range of geomorphically significant flows)** **Ep** **#DIV/0!**

Attachment 3

Hydrologic Review and Analysis of San Diego County Hydromodification Exemption for Five River Reaches

Smith et al. (2015)

Hydrologic Review and Analysis of San Diego County Hydromodification Exemption for Five River Reaches

Prepared by:

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Date:

July 22, 2015

Executive Summary

The purpose of this study is to use a strict hydrologic assessment to either justify or invalidate the renewal of the current hydromodification exemption for projects draining directly to five river reaches (Otay River, San Diego River, San Dieguito River, San Luis Rey River, and Sweetwater River). These reaches have been exempted by the San Diego County Hydromodification Management Plan (HMP) (San Diego County, 2011), based on the wide-spread perception that existing large upstream reservoirs reduce river discharge and erosion potential to a larger extent than potential increases attributed to downstream land developments. In 2013, the San Diego Regional Water Quality Control Board (SDRWQCB) issued a new Permit that now requires justification of exemptions with further hydrologic analysis.

Accordingly, this study evaluates the hydrology of these five watersheds to determine if the continuance of the exemptions may be justified. A rigorous two-step approach is used to describe the effects of either renewing or revoking the 2011 HMP Exemptions through: (1) Statistical Peak Flow Analysis and (2) US Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) Peak Flow Analysis. The Statistical Peak Flow Analysis uses a combination of observed streamflow measurements and USGS Linear Regression Equations to estimate the 2-year, 5-year, and 10-year peak flows at the mouth of each exempt river reach and describe the influence of the upstream impoundments for “dam-in-place” and theoretical “no dam” conditions. The Statistical Peak Flow Analysis characterizes flow reductions as a result of upstream impoundments and serves as a preface for more detailed peak flow simulations. EPA SWMM is used to determine the relative numerical influence of storm water runoff from project development on peak flows and durations, using continuous rainfall-runoff simulation to estimate the 2-year, 5-year, and 10-year peak flows at the mouth of each exempt river reach. Hydromodification flow controls are simulated for all non-directly discharging developable lands and are conditionally simulated for directly discharging developable lands in order to assess the impact of the hydromodification exemptions on the watershed-wide peak flows. The simulated hydromodification controls are modeled both with and without the presence of the dams to assess the influence of impoundment versus land development.

Both analyses resolve that the upstream impoundment is a very significant factor in peak flow alteration for each watershed. The Statistical Peak Flow Analysis results suggest a 29 to 65% peak flow reduction for each watershed due to upstream impoundment. The SWMM Peak Flow Analysis results suggest that peak flows for each watershed, if exemptions are granted, will remain 22 to 79% less than peak flows corresponding to an undammed watershed condition. These pre- to post-dam ratios are consistent with flow impoundment behavior found in other semi-arid, Mediterranean systems. The SWMM results further suggest that the areas directly discharging to exempt river reaches are less than significant, as evidenced by the near-0% peak flow increase granted by the proposed HMP exemption. Therefore, it is recommended that the exemptions be reinstated along all five river reaches for projects directly discharging to the rivers, due to confirmation of significant impoundment effects and the negligible peak flow increase attributable to those directly discharging developable lands.

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
DEM	Digital Elevation Model
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
GIS	Geographic Information System
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
JURMP	Jurisdictional Urban Runoff Management Plan
MS4	Municipal Separate Storm Sewer System
NED	National Elevation Dataset
OTAY	Otay River
PDP	Priority Development Project
PRISM	Parameter-elevation Regressions on Independent Slopes Model Monthly Climate Data for the Continental United States
SDCFCD	San Diego County Flood Control District
SDGTO	San Dieguito River
SDR	San Diego River
SLR	San Luis Rey River
SW	Sweetwater River
SWMM	Storm Water Management Model
TAC	Technical Advisory Committee
USGS	United States Geological Survey
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan
WY	Water Year (October 1st to September 30th)

1. BACKGROUND & CONTEXT FOR STUDY

A watershed's natural hydrologic state may become severely altered due to land use changes. Hydrologic alterations may include fluctuations to natural stream discharge rates, durations and sediment transport behavior. A stream's physical response to changes in watershed runoff and sediment yield is collectively referred to as hydromodification. The confidence that most hydromodification is highly attributable to changes in land surface—namely urbanization and other development—has recently led to more focused efforts in an attempt to understand and manage these processes.

Hydromodification is occurring in many Southern California creeks and waterways and has become a key element of most stormwater programs in California (Southern California Coastal Water Research Project, 2010). In San Diego, Orange, and Riverside counties, recent storm water regulations have imposed discharge flow and duration control requirements on certain new development and redevelopment projects. As evidenced in 2007 by the San Diego Regional Water Quality Control Board Order No. R9-2007-0001 (the "2007 Municipal Separate Storm Sewer System (MS4) Permit"), the Municipal Copermittees were required to implement a Hydromodification Management Plan (HMP) "...to manage increases in runoff discharge rates and durations from all Priority Development Projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force" (San Diego Regional Water Quality Control Board, 2007). Consequently, in 2007 the Copermittees began to prepare the San Diego County HMP (Brown and Caldwell, 2011). The San Diego County HMP effort continued over the span of two years, consisted of a 14 member Technical Advisory Committee (TAC), and received input from a gamut of private and public stakeholders. The total HMP development effort exceeded one million dollars. The Final 2011 HMP was adopted by the San Diego Regional Water Quality Control Board (San Diego Water Board) on July 14, 2010 through Resolution No. R9-2010-0066 (San Diego Regional Water Quality Control Board, 2010).

The 2011 HMP provides San Diego Copermittees with guidance on hydromodification methods, technical approach, requirements, standards, best management practice (BMP) selection and implementation, monitoring, and exemptions. One such HMP applicability requirement provided exemption rationale for Priority Development Projects (PDPs) directly discharging to five large river reaches in San Diego County (developable lands that directly discharge to the exempt river reaches are herein referred to as Project Lands). The Project Lands within each watershed equate to a considerably small fraction of the total watershed area (less than 5%, as

summarized in Table 1). The exempt river reaches are summarized in Table 2 and are shown in Figure 1.

Table 1: Watershed Land Use Distribution (Downstream of Dam)

Reach	Total (ac)	[1]Developable (ac)	[2]Project Lands (ac)	% Developable	%Project Lands
Otay	29,571	4,310	1,412	15%	5%
San Diego	111,014	13,667	1,196	12%	1%
San Dieguito	28,710	4,653	1,055	16%	4%
San Luis Rey	118,846	77,180	4,151	65%	3%
Sweetwater	25,135	1,332	255	5%	1%

[1]Acreages were determined using "Developable Land" GIS data from the SanGIS Regional Data Warehouse.
[2]Acreages were determined through desktop analysis using available MS4 GIS data provided by Copermittees.

Table 2: Summary of Exempt River Reaches as Defined by the 2011 HMP

River	Downstream Limit	Upstream Limit
Otay River	Outfall to San Diego Bay	Lower Otay Reservoir Dam
San Diego River	Outfall to Pacific Ocean	Confluence with San Vicente Creek
San Dieguito River	Outfall to Pacific Ocean	Lake Hodges Dam
San Luis Rey River	Outfall to Pacific Ocean	Upstream river limit of Basin Plan subwatershed 903.1 upstream of Bonsall and near Interstate 15
Sweetwater River	Outfall to San Diego Bay	Sweetwater Reservoir Dam

For all proposed exempt river reaches supported by the 2011 HMP, each has:

- a drainage area in excess of 100 square miles;
- a 100-year flow in excess of 20,000 cubic feet per second;
- significant upstream reservoir flow regulation;
- predominantly wide floodplains and/or stabilized channel areas, and;
- low gradients (less than 1 %)

These factors concurred with field observations and were backed by years of historical perspective and practice from the TAC members (Bowling, Grey, Parra, Walker, & Weeden, 2013). There was a conditional requirement for the river reach exemption: a properly-sized energy dissipation feature must be existing or installed at the respective outfall location. Using the exemption rationale provided within the 2011 HMP, Copermittees were permitted to exempt PDPs from the hydromodification management BMP performance requirements prescribed by the 2007 MS4 Permit (herein referred to as the 2011 HMP Exemptions) so long as said PDPs were listed in the Development Planning section of the Copermittees' Jurisdictional Urban Runoff Management Program Annual Report (JURMP).

The current and succeeding municipal storm water permit, the 2013 MS4 Permit, was adopted on May 8, 2013. Similar to the preceding 2007 MS4 Permit, the 2013 MS4 Permit presents a list of criteria that must all be satisfied in order to grant hydromodification management BMP performance requirement exemptions. However, the 2013 MS4 Permit revised the hydromodification management BMP performance requirement exemption language from the 2007 MS4 Permit as follows:

- The project would discharge into channels that are significantly hardened (e.g., with rip-rap, sackcrete, etc.) downstream to their outfall in bays or the ocean;
- The project would discharge to a channel where the watershed areas below the project's discharge points are highly impervious (e.g. >70%).

The 2013 MS4 Permit conditionally excludes the five exempt river reaches justified by the 2011 HMP—exemptions that were based on prior studies of these rivers, the consensus of the TAC, an extensive public review process, and were approved by the San Diego Regional Board. However, the adopted language within the 2013 MS4 Permit does provide an opportunity to grant hydromodification management BMP performance requirement exemptions. A PDP may be exempt from hydromodification management BMP performance requirements when the project discharges storm water runoff to an area identified by the Copermittees as appropriate for an exemption by the optional Watershed Management Area Analysis (WMAA) incorporated into the Water Quality Improvement Plan (WQIP) pursuant to Provision B.3.b.(4).

This language was included to allow further evaluation of these previously exempt channels, rivers, or highly impervious watershed areas for continued exemption under a WQIP. Thus, a complete new analysis is required under the Watershed Management Area Analysis (Bowling, Grey, Parra, Walker, & Weeden, 2013). The Copermittees have since elected to perform the optional Watershed Management Area Analysis, represented by the County of San Diego (Geosyntec Consultants & Rick Engineering, 2015). The April 2015 San Diego County Regional WMAA uses a geomorphic assessment to evaluate the relationship between Erosion Potential (Ep) and Sediment Supply Potential (Sp). Based upon the instream erosion assessment, the Draft Regional WMAA recommends hydromodification management BMP performance requirement exemptions for PDPs directly discharging to the following river reaches:

Table 3: Summary of Exempt River Reaches as Proposed by the Regional WMAA

River	Downstream Limit	Upstream Limit
Otay River	Outfall to San Diego Bay	Interstate 805*
San Diego River	Outfall to Pacific Ocean	Confluence with San Vicente Creek
San Dieguito River	Upstream edge of the railroad crossing*	Lake Hodges Dam
San Luis Rey River	Outfall to Pacific Ocean	Upstream river limit of Basin Plan subwatershed 903.1 upstream of Bonsall and near Interstate 15
Sweetwater River	Outfall to San Diego Bay	Sweetwater Reservoir Dam

*limit changed from 2011 HMP recommendation

The Copermittees will now be able to grant hydromodification management BMP performance requirement exemptions offered by the 2013 MS4 Permit so long as the exemptions are approved via the WMAA and are incorporated into the WQIP—both of which are subject to the vetted public review and San Diego Water Board approval process.

1.1 Impoundment Characteristics

It is well understood that a river is in dynamic equilibrium with its geomorphic components: quantity of sediment, particle size, water discharge, and slope (Lane, 1955). This relationship, known as the Lane relation, is commonly expressed as:

$$Q_s d_s \propto Q_w S_o$$

Where Q_s is the quantity of sediment, d_s is the sediment particle diameter, Q_w is the water discharge, and S_o is the stream bed slope. This relationship is used to describe the qualitative balance between stream power and the discharge of bed material sediment and not intended to be used as an equation (Bowling, Grey, Parra, Walker, & Weeden, 2013).

Generally, long-term channel forms are naturally defined by frequent bankfull floods, approximately 1 to 2-year events in many cases (Wolman & Miller, 1960; Andrews, 1980). However, anthropogenic disturbances in natural systems invalidate assumptions of stationarity (Milly, et al., 2008). An alteration to one or more of the river equilibrium components will usually result in a feedback response to re-establish river equilibrium. A considerable amount of time may be required to achieve a new equilibrium condition; therefore, the effects of hydromodification may not be immediately observable (Trimble, 1997). In the context of all five exempt river reaches, the common denominators are sediment and flow sequestration due to upstream impoundments. The exact rate of sediment and flow sequestration accomplished by the upstream reservoirs is not well known at the desired temporal resolution. Sedimentation processes in a reservoir are quite complex because of the wide variation in many of the influencing factors (United States Bureau of Reclamation, 1987). Nonetheless, a significant

reduction in sediment quantity and water discharge is reasonably assumed due to the steep and elevated nature of the impounded watershed drainage areas.

The exempt river reach impoundment summary is summarized as follows:

Table 4: Exempt River Reach Impoundment Summary

River	Major Impoundment[1]	Constructed	Owner	Miles from Mouth	Capacity (acre-ft)	Impounded Area (mi^2)	Percent Impounded[2]
Otay River	Lower Otay Reservoir	1919[a]	City of San Diego	13.1	49,849	100	70%
San Diego River	El Capitan Reservoir	1935	City of San Diego	28.0	112,807	185	61%
	San Vicente Reservoir	1943	City of San Diego	24.6	242,000[b]	75[b]	
San Dieguito River	Hodges Reservoir	1918	City of San Diego	11.0	30,251	245	89%
	Sutherland Reservoir	1954	City of San Diego	22.0	29,508	55	
San Luis Rey River	Lake Henshaw	1923	Vista Irrigation District	53.6	53,160	205	39%
Sweetwater River[3]	Sweetwater Reservoir	1888	Sweetwater Authority	8.2	28,079	85	82%
	Loveland Reservoir	1945	Sweetwater Authority	28.4	25,387	95	

[1] This study defines a Major Impoundment as a reservoir having storage capacity in excess of 25,000 acre feet and able to spill to the river reach
[2] percentage of total area impounded above downstream-most dam
[3] linear reservoir sequence
[a] originally constructed in 1897; reconstructed in 1919 after 1916 dam breach
[b] project recently completed to double reservoir capacity; overflows through tributary to main reach

1.2 Study Objectives

The objective of this study is to perform a rigorous hydrologic analysis to either justify or invalidate the renewal of the 2011 HMP Exemptions for PDPs on Project Lands using highly relevant and available tools, methods, and data. Due to the strict hydrologic focus of this study, sediment transport is not evaluated. This study used a two-step approach to describe the effects of either renewing or revoking the 2011 HMP Exemptions through: (1) Statistical Peak Flow Analysis, and (2) US Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) Peak Flow Analysis. The analyses are summarized below.

1.2.1 Statistical Peak Flow Analysis

The Statistical Peak Flow Analysis seeks to provide a frame of reference for the SWMM Peak Flow Analysis and to describe the general influence of the upstream impoundments on peak flows by using measured flow gage discharge, peak flow estimation, and reservoir overflow data, where possible, to estimate the 2-year, 5-year, and 10-year peak flows at the mouth of the exempt river reach during:

- the ”dam-in-place” condition, which includes the existence of the upstream reservoir(s);
- the hypothetical “no dam” condition, which seeks to remove the significant impoundment effects induced by the upstream reservoir(s)

1.2.2 SWMM Peak Flow Analysis

As hydromodification is a complex phenomenon established in a large scale range, two possible outcomes can occur: (1) the combined effect of the impoundment and potential development may be more similar to the hypothetical and natural peak flow than simply including hydromodification control for an area already modified by a dam, or (2) the combined effect of the impoundment and potential development could improve the situation in a portion of the range of analysis, but be detrimental in another portion of the range of analysis, in which case an exemption to hydromodification is not recommended. The Statistical Peak Flow Analysis serves as a preface to the more detailed SWMM Peak Flow Analysis and seeks to provide a general agreement between impoundment and peak flow behavior on a watershed-by-watershed basis.

The SWMM Peak Flow Analysis seeks to reinforce the Statistical Peak Flow Analysis. The SWMM Analysis will determine the relative change in peak flows from PDPs on Project Lands using EPA SWMM continuous simulation modeling to estimate the 2-year, 5-year, and 10-year peak flows at the mouth of the exempt river reach during:

- the dam-in-place HMP exemption scenario, which accounts for river impoundment and subjects only non-directly discharging developable lands to hydromodification management BMP performance requirements;
- the dam-in-place full HMP scenario, which accounts for river impoundment and subjects all directly and non-directly discharging developable lands to hydromodification management BMP performance requirements;
- the hypothetical “no dam” HMP exemption scenario, which removes the effect of river impoundment and subjects only non-directly discharging developable lands to hydromodification management BMP performance requirements;

- the hypothetical "no dam" full HMP scenario, which removes the effect of river impoundment and subjects all directly and non-directly discharging developable lands to hydromodification management BMP performance requirements.

If the SWMM Peak Flow Analysis demonstrates that the flows and durations of those flows contributed by the exempt Project Lands are insignificant, then the exemptions are justifiable. Contrarily, if the SWMM Peak Flow Analysis demonstrates that the flows and durations of those flows contributed by the exempt Project Lands are significant, then the exemptions are not justifiable and should be revoked.

2. METHODOLOGIES

2.1 Statistical Peak Flow Analysis

The United States Geological Survey (USGS) records and maintains stream station data for locations along each of the exempt river reaches. The period, quality, and availability of data vary significantly depending upon the river. Instantaneous stream flow measurements are desired in order to most accurately assess the true peak flows occurring within the river channel. Often, reliable flow data recorded prior to impounded flow conditions are not available. Therefore, the best available local USGS instantaneous stream stations were selected to represent earlier conditions.

Typical peak flow estimates (2-, 5-, and 10-year) are derived from annual maximum series data. Accurate peak flow assessment requires knowledge of the river's behavior throughout the water year and over a sufficient period of record, with consideration to the prevailing climate. Southern California's semi-arid Mediterranean climate is characterized by a unique seasonal precipitation, with wet winters and warm, dry summers that can produce multiple low-frequency events within the same year, or none at all. Due to this phenomenon, peak flow analyses developed upon single peak annual events will inevitably omit flows that have a significant influence on Mediterranean river morphology. The ultimate result of using the annual maximum series to determine peak flows for high-frequency events (the 2 and 5-year peaks) in a Mediterranean climate is a gross underestimation of the more probable peak flow frequency. This underestimation is likely more pronounced for the higher frequency events (i.e., the 2 and 5-year peak flows (Brown and Caldwell, 2011)). Therefore, a partial-duration series analysis is used to estimate the 2 and 5-year peak flows in this Statistical Peak Flow Analysis. A partial duration series contains "N" values from "N" years of data. For the 10-year peak flow, the annual maximum series will be used, unless the instantaneous data is found to be erroneous, in which case the partial duration will be used.

The USGS began to record instantaneous (15 minute) flow data in water year (WY) 1988 to present. The present-day instantaneous flow data are used to quantify the peak flow events for each reach by partial duration and annual series analyses. A set of peak flow regression equations are applied to the same drainage area recorded by the USGS stream station to develop a ratio of the measured post-dam peak flow to the peak flow estimation equation value; this ratio is named the flood peak ratio (FPR) in this study.

With the flood peak ratio (FPR) established, the 2-, 5-, and 10-year pre-dam peak flow events are estimated by multiplying the FPR by the regression peak flow estimate derived for the entire watershed-wide area. The process is repeated for each watershed to produce impoundment-free 2-, 5-, and 10-year peak flow estimates. For validation, the impoundment-free peak flows are compared with the measured peak flows for those watersheds with USGS stream stations located at or near the river mouth. For additional reference, the impoundment-free 10-year peak flow is compared to the 10-year peak flow estimates published by the 2012 Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) to roughly quantify the relative impact of the upstream impoundments.

USGS regional flood-frequency equations, originally introduced by Waananen and Crippen (1977), are used to estimate flood frequencies in six regions in California (Table 5). These equations relate flood magnitudes of selected frequency to drainage area, precipitation, and altitude (Waananen & Crippen, 1977). These equations (herein referred to as the 1977 USGS Equations) were regressed using available annual peak flow data from 778 USGS stream stations throughout California, 148 of which are located within the South Coast Region concerned with San Diego County. The 1977 USGS Equations are not applicable to sites where the usable storage within the basin exceeds 103 acre feet per square mile, to sites just downstream from large reservoirs, or to streams in urban areas affected substantially by urban development. The relations are primarily used to determine peak discharge values for flow under natural conditions (Waananen & Crippen, 1977). It is noted by a 2004 USGS study of Northern California watersheds that the 1977 USGS Regression equations produce the greatest errors at lower recurrence intervals (2-, 5-, and 10-year) peak flows, which is likely attributable to the lack of more than two decades of peak-flow data at the time of the study (Mann, Rizzardo, & Satkowski, 2004). It is expected that the underestimation would be even more pronounced for southern California's Mediterranean semi-arid climate for the reasons previously discussed.

The 1977 USGS Regression Equations were revised by Gotvald, Barth, Veilleux, & Parrett (2012). These equations (herein referred to as the 2012 USGS Equations) incorporated 30 years of additional annual peak flow data, among other improvements (Gotvald, Barth, Veilleux, & Parrett, 2012). Similarly, the 2012 USGS Regression Equations are specific to one of six

hydrologic regions in California. San Diego County is located in the South Coast hydrologic region (Region 5), which was used for the 2-, 5-, and 10-year flood peak analysis. A comparison between the 1977 and 2012 USGS Equations are summarized in Table 5 as follows:

Table 5. 1977 and 2012 USGS Regression Equations for Region 5

Peak Flow	1977 USGS Equation	2012 USGS Equation
2-year	$0.14(DRNAREA)^{0.72}(PRECIP)^{1.62}$	$3.60(DRNAREA)^{0.672}(PRECIP)^{0.753}$
5-year	$0.40(DRNAREA)^{0.77}(PRECIP)^{1.69}$	$7.43(DRNAREA)^{0.739}(PRECIP)^{0.872}$
10-year	$0.63(DRNAREA)^{0.79}(PRECIP)^{1.75}$	$6.56(DRNAREA)^{0.783}(PRECIP)^{1.07}$

DRNAREA, drainage area, in square miles; *PRECIP*, mean annual precipitation, in inches

Drainage area values are estimated with USGS Digital Elevation Map (DEM) analysis using Esri ArcMap. Mean annual precipitation values were estimated using the Parameter-elevation Regressions on Independent Slopes Model Monthly Climate Data for the Continental United States (PRISM) areal statistics for water years 1988-2013 (October 1, 1987 to September 30, 2013) (Daly, 1994, 1997, 2001). PRISM provides an estimation of mean annual precipitation and is noted to have some bias at the monthly scale; however, this product is continuously updated to incorporate point data, a digital elevation model, and expert knowledge of complex climatic extremes, including rain shadows, coastal effects, and temperature inversions. Conterminous U.S. precipitation products can be downloaded from the PRISM Climate Group (http://www.prism.oregonstate.edu/); this study extracted and averaged monthly 4 km pixels for each watershed domain.

The USGS instantaneous stream station data are analyzed to identify individual peak flow events. Individual peak flow events are distinguished by satisfying the following criteria (United States Geological Survey, 1982):

1. Events must be separated by at least five days plus the natural logarithm of the square miles of the drainage area, and;
2. Intermediate flows must drop below 75 percent of the lower of the two separate maximum flows.

For any given time period where a recorded reservoir spill occurred and would have likely influenced the corresponding stream station flow measurement, the potential impacted data is omitted from the instantaneous stream flow record and analysis.

Two of the five river reaches (namely, the San Diego and San Luis Rey rivers) have instantaneous stream gage flow data near the mouth to the Pacific Ocean, where the Statistical Peak Flow Analysis provides an empirical relationship between the urbanized watershed-

specific drainage area and partial duration peak flow events downstream of the impoundments. For the three remaining river reaches (namely, the Otay, San Dieguito, and Sweetwater rivers), the USGS stream stations are located upstream of the major impoundments, where the Statistical Peak Flow Analysis provides an empirical relationship between the sparsely developed, watershed-specific drainage area and partial duration peak flow events upstream of the impoundments. For both cases then, the watershed-wide drainage areas are not entirely represented, due to the impoundment in all cases, and due to the absence of a stream station near the mouth in three cases. Hence, these empirical relationships are used in combination with the 2012 USGS regional flood-frequency equations for rural ungaged streams in California to develop a relationship between the empirical and regression estimates on a watershed-wide scale; thus, a methodology is developed for estimating the peak flows at or near the river mouth. This simplified relationship is therefore used to scale the estimated regional flood-frequencies to the watershed-wide extent for each river by developing flood peak ratios (FPRs), defined as:

$$FPR = \frac{Q_{PDS}}{Q_{USGS}} \tag{1}$$

Where:

Q_{PDS} is the partial duration series T-year peak flow, as determined from the stream station instantaneous data record;

Q_{USGS} is the T-year peak flow, as determined by application of the T-year 2012 USGS regression equation to the equivalent stream station drainage area

Assuming a linear watershed-wide relationship between the stream station drainage area peak flows and 2012 USGS Regression peak flows:

$$\frac{Q_{PDS}}{Q_{USGS}} = \frac{Q_{ND}}{Q_{WS}} \tag{2}$$

Where:

Q_{ND} is the T-year estimated “no dam” statistical series peak at the river mouth

Q_{WS} is the 2012 USGS T-year annual peak applied to the entire watershed area

Therefore, the estimated “no dam” peak flow at the river mouth is:

$$Q_{ND} = FPR \times Q_{WS} \tag{3}$$

Figure 1 and Table 6 summarize the information pertinent to this methodology.

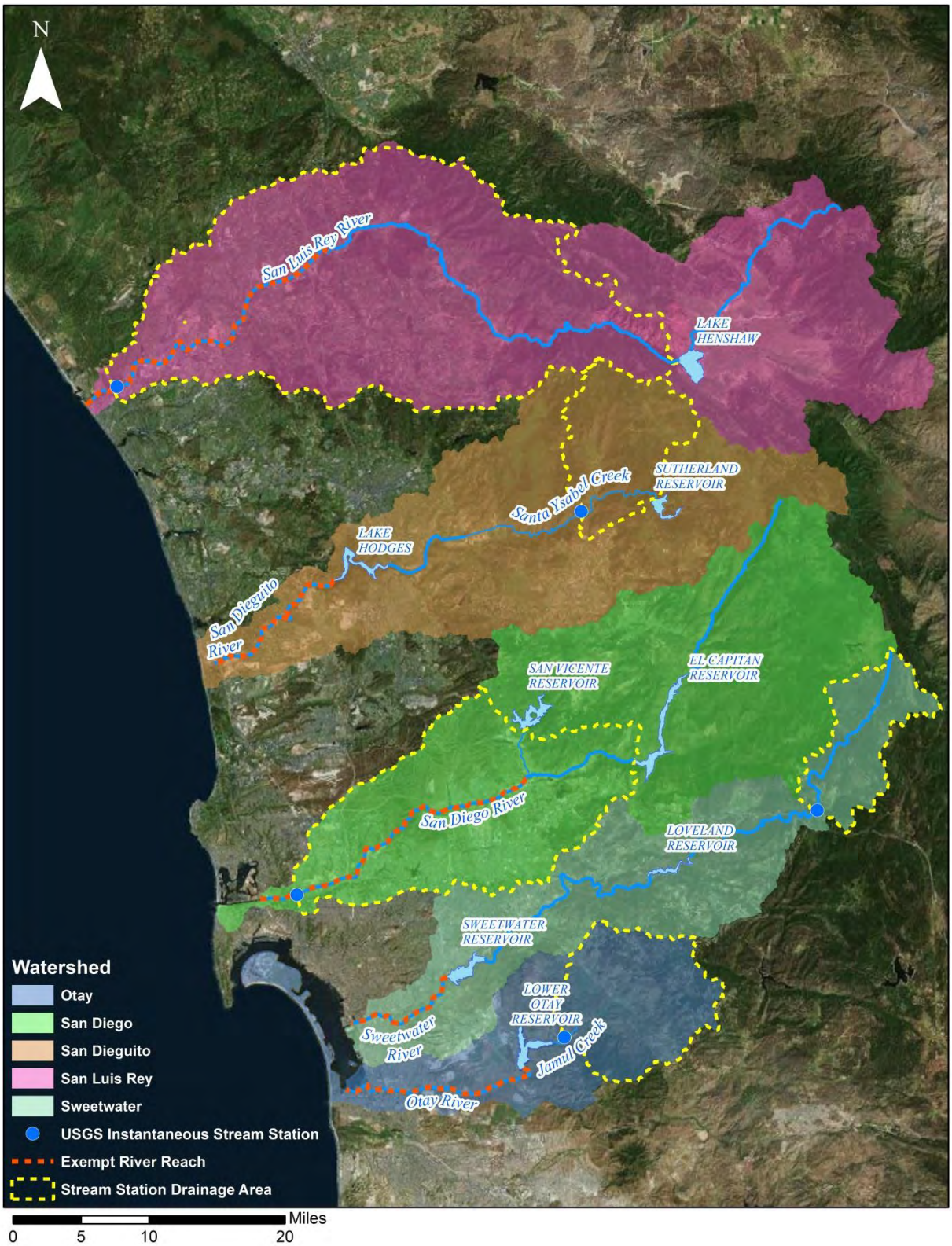

Figure 1. USGS Instantaneous Stream Stations

Table 6: USGS Instantaneous Stream Station Data Summary

River	Stream Station	Date Range (WY)	Month(s) Missing from Flow Record	Spill(s) During Flow Record
Otay River (OTAY)	USGS 11014000 JAMUL C NR JAMUL CA	1988-2014	Dec 1990 Mar 2002	Jan-Mar 1993* Feb-Apr 1994* Feb-Mar 2005* Sep 2005*
San Diego River (SDR)	USGS 11023000 SAN DIEGO R A FASHION VALLEY AT SAN DIEGO CA	1988-2014	-	Feb-Apr 1993 Mar-May 1995
San Dieguito River (SDGTO)	USGS 11025500 SANTA YSABEL C NR RAMONA CA	1988-2014	Dec 1992 Apr 1993 Jul 1994	Feb-Apr 1993 Mar-May 1995
San Luis Rey River (SLR)	USGS 11042000 SAN LUIS REY R A OCEANSIDE CA	1988-2014	Jul-Dec 1992 Jan-Jul 1993 Aug-Dec 1997 Jan-Mar 1998 Oct-Dec 2001 Jan-Dec 2002 Jan-Sep 2003	Feb-Apr 1993
Sweetwater River (SWTR)	USGS 11015000 SWEETWATER R NR DESCANSO CA	1988-2014	-	Jan 1993* Apr 1995* May 1998*

*spills have no influence on USGS stream station

2.2 SWMM Peak Flow Analysis

The SWMM Peak Flow Analysis is used to assess the contribution of storm water runoff discharging from Project Lands to the exempt river reaches. Using available USGS and SanGIS land use data, SWMM models the rainfall-runoff relationship for each watershed under a set of different scenarios. The watersheds were modeled under the planned land use (PLU) condition in order to analyze the developed hydrology. Each watershed is modeled to evaluate the direct runoff from Project Lands, both with and without hydromodification management BMP performance requirements in place, and also without the effect of upstream impoundment.

As stated earlier, only PDPs on land directly discharging to the exempt river reaches (Project Lands) could qualify for the 2011 HMP Exemption. Using the "LANDUSE_PLANNED" SanGIS shapefile, developable lands were classified as such if they were geographically contained within the present-day "Developable_Land" SanGIS shapefile. These developable lands were then sub-classified as either directly-discharging (Project Lands) or non-directly discharging (non-exempt developable). Drainage behavior was assessed based upon available storm drain infrastructure databases and best professional judgment. In all likelihood, not all areas classified as Project Lands by this study would be named as such due to site-specific post development hydrology, jurisdictional requirements, and other related factors. When the effect of the dam was to be considered, the total watershed area upstream of the lower-most impoundment was introduced into the model. Areas upstream of the dam were conservatively assumed to be in a fully built-out condition and subject to hydromodification flow control. Since hydromodification management BMPs, when properly designed, effectively maintain the pre-development hydrology, this conservative assumption effectively models the impounded area as having a "natural" overland flow behavior. For all lumped land classification groups, the area was further divided into four sub-areas based upon hydrologic soil group (HSG) as A, B, C, or D.

To simulate the effects of hydromodification management BMPs, we averaged the percent flow reduction achieved by 25 separate hydromodification design projects performed by TRWE for our clients throughout San Diego County. The 25 projects all met the hydromodification management BMP volume and time-based performance requirements, as prescribed in the 2013 MS4 Permit. The average percent flow reduction for the 2-year to the 10-year peak flow was 43%. In nearly all cases, a hydromodification design project will not perfectly match the pre-development flow duration curve. It would not be practical to produce such a finely-tuned design. In order to safely meet hydromodification BMP performance requirements, the final design will typically produce less runoff than the pre-development hydrologic condition. Therefore, a 43% flow reduction is a conservative expectation for the unmitigated to mitigated post-development scenario. Furthermore, given that the 43% flow reduction estimate was developed from projects that met the hydromodification flow duration requirement, the 43%

flow reduction, when applied, can be assumed to satisfy the post-development flow duration component as well.

In order to simulate the effect of hydromodification on a given land use group, the 43% flow reduction was applied via the inflow scale factor for the respective junction node in SWMM. A conceptual SWMM model schematic is provided in Figure 2.

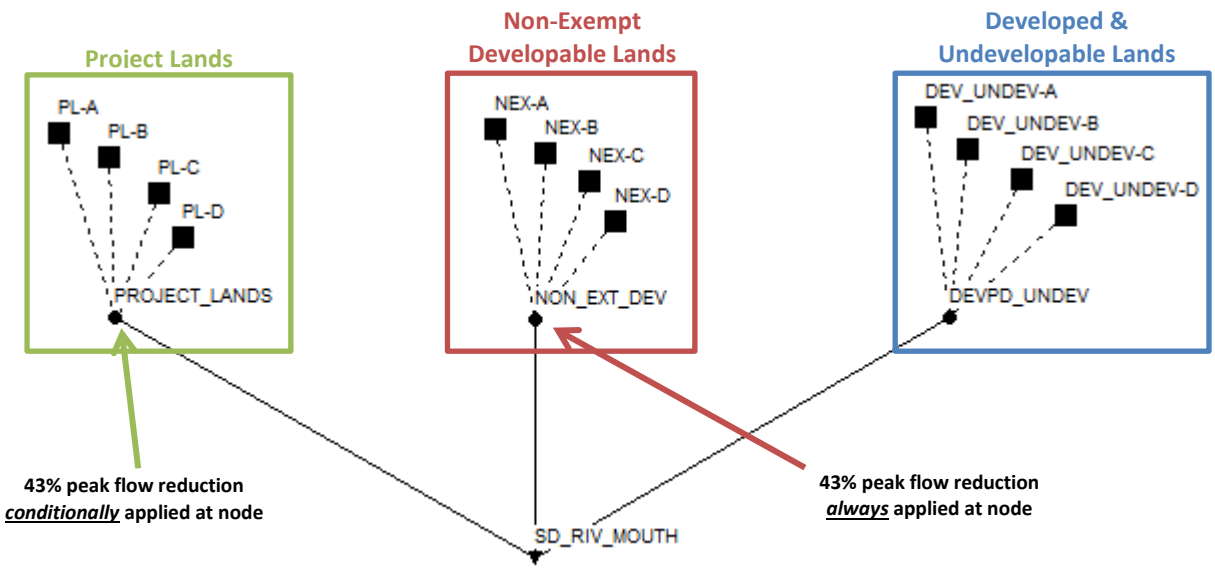

Figure 2: SWMM Model Conceptual Schematic for the San Diego River "Dam-In-Place" Scenario

The rainfall time series provided by the County of San Diego as a work product of the 2011 Final HMP have been analyzed for their accuracy in other studies. It was found that the disaggregation process artificially increases the frequency of the high intensity values (Parra-Rosales, Walker, & Ponce, 2012). Of the 19 rainfall stations produced by the Final 2011 HMP, Parra et al. found Lindbergh and Oceanside to be the most acceptable stations due to the completeness of the original data and quality of data from external stations used to fill data gaps. Therefore, this study used the Oceanside rainfall data for the San Luis Rey Watershed and the Lindbergh rainfall data for the San Diego Watershed. For all other watersheds, an alternate rainfall data source was used, as described below.

Available rainfall data was obtained through coordination with Rand Allan of the San Diego County Flood Control District (SDCFCD). Rainfall stations were selected based on their time format (hourly or finer) and proximity to the study watersheds. Collocated historical hourly and ALERT event-based rainfall stations were combined to make a continuous 50 year record. Natural variability in hourly and daily data exists between stations. Thus, annual values provide a reliable means to estimate precipitation patterns between nearby gages and gages with similar elevation and climatological attributes. To develop continuous precipitation records, a

linear regression between SDCFCD stations was used to estimate missing precipitation values and validated on a separate subset of data, where available data exists for both gages. The correlation value (R^2) indicates the ability of the independent variable to predict the dependent variable and ranges from 0 to 1. Only correlations greater than 0.7 were used to guide interpolation of precipitation data. Table 7 summarizes the developed regression equations, the correlation coefficient, and values estimated at each station:

Table 7: Rainfall Station Regression Equations Used for Data Gaps

Independent Station (x)	Dependent Station (y)	Regression Equation[a-h]	Correlation
Kearny Mesa	La Mesa	[1]y = 0.9813x	R^2 = 0.8815
Poway	Kearny Mesa	[2]y = 0.9371x	R^2 = 0.7993
Encinitas	San Marcos	[3]y = 1.0574x	R^2 = 0.7260
Bonita	Sweetwater	[4]y = 1.0942x	R^2 = 0.8734
Kearny Mesa	Sweetwater	[5]y = 0.9007x	R^2 = 0.7520
Encinitas	Escondido	[6]y = 1.3275x	R^2 = 0.7720

a. Kearny Mesa data was used to estimate missing values in **La Mesa**[1] for the period of record for 8/10/1969-3/1/2015. A total of 9447 values (hourly time step) were filled. Note that La Mesa ALERT tipping bucket record begins 9/15/1982, which may account for the number of values filled.
b. Available data from Kearny Mesa was used to estimate missing values in **Poway**[2] for 1/23/1964-2/28/2015. A total of 3278 values (hourly time step) were filled. Note that Poway ALERT tipping bucket record begins 7/19/1982, which may account for the number of values filled. Now, a complete record is available for Poway from 11/1/1962-2/28/2015.
c. Poway data was used to estimate missing values in **Kearny Mesa**[2] for the period of record for 1/22/1964-2/28/2015. A total of 36 values (hourly time step) were filled.
d. Available data from Encinitas was used to estimate missing values in **San Marcos**[3] for 7/1/1963-2/28/2015. A total of 17 values (hourly time step) were filled during this time period. Note that San Marcos ALERT tipping bucket record begins 5/28/1981-3/3/2006 during which, there was 217135 missing values (hourly time step). These values were filled with data from Encinitas. Now, a complete record is available for San Marcos from 11/16/1962-2/28/2015.
e. Kearny Mesa data was used to estimate missing values in **Sweetwater**[5] for the period of record for 2/1/1965-10/30/1992. A total of 765 values (hourly time step) were filled.
f. Available data from Escondido was used to estimate missing values in **Encinitas**[6] for 11/19/1964-2/28/2015. A total of 1862 values (hourly time step) were filled. Now, a complete record is available for Encinitas from 7/1/1963-2/28/2015.
g. Encinitas data was used to estimate missing values in **Escondido**[6] for the period of record for 11/19/1964-2/28/2015. A total of 7761 values (hourly time step) were filled. Note that Encinitas ALERT tipping bucket record begins 7/1/1984, which may account for the number of values filled.

Rainfall data assignment and sources for each watershed are shown in Table 8

Table 8: Select Rainfall Stations for SWMM Peak Flow Analysis

Watershed	Rainfall Station	Record	Elevation (ft)	Source
Otay[1]	Bonita	1975-2015	139	SDCFCD
	Sweetwater[2]	1965-1992	310	SDCFCD
San Diego	Lindbergh[3]	1948-2005	15	Project Clean Water
San Dieguito[1]	Encinitas	1963-2015	250	SDCFCD
	Escondido	1964-2015	660	SDCFCD
	San Marcos	1962-2015	580	SDCFCD
San Luis Rey	Oceanside[3]	1951-2008	30	Project Clean Water
Sweetwater[1]	Bonita	1975-2015	139	SDCFCD
	Sweetwater	1965-1992	310	SDCFCD

[1]Rainfall station rainfall intensity was averaged between rainfall stations and applied uniformly to the entire modeled watershed
[2]No collocated ALERT station
[3]Data downloaded directly from Project Clean Water (http://www.projectcleanwater.org)

The spatial distribution of TRWE sample HMP projects and SDCFCD rainfall stations are illustrated in Figure 3.

2.2.1 Parameters

Physical watershed parameters were estimated using available land use geographic information system (GIS) data from SanGIS. Planned land use classifications were used for all SWMM peak flow analyses, including areas upstream of the dams, which were conservatively assumed to reflect the pre-development hydrology through application of hydromodification flow reduction to the outlet node. Percent imperviousness was determined by using area-weighted averages based upon those values presented in a 2010 County of San Diego imperviousness study. Percent slope was determined by using area-weighted averages based upon relationships between SanGIS land use and the latest USGS National Elevation Dataset (NED) 1/3 arc-second DEM for greater Southern California. The width parameter served as a general calibration parameter for the model using the best available USGS instantaneous stream flow data. Using the relationship between watershed area and river length, a factor was applied to this ratio to match the 5-year peak flow value. The San Diego River station was used to develop this factored relationship due to the completeness of the dataset, the least number of upstream dam overflow events, and location near the river mouth. The remaining SWMM parameters were taken from the San Diego Model BMP Design Manual. General watershed parameters are outlined in Table 9. Specific watershed parameters are provided in Appendix A.

Table 9: SWMM Parameters Used in SWMM Peak Flow Analysis

SWMM Parameter	Description[1]	Value				Source
Area (ac)	Area of the subcatchment.	Watershed-specific				GIS analysis
Width (ft)	Characteristic width of the overland flow path for sheet flow runoff.	Calibrated by factoring the ratio of entire river length to full watershed area to match the PDS-derived San Diego River 5-year peak flow, taken as: $$W_{HSG} = 0.184\frac{A_{HSG}}{L_R}$$ where: W_{HSG} is the width of the given HSG subcatchment; A_{HSG} is the area of the given HSG subcatchment; L_R is the length of the entire river reach				TRWE
% Slope	Average percent slope of the subcatchment.	Area-weighted average of percent slope by land use				USGS NED 1/3 arc-second DEM
% Imperv	Percent of the land area which is impervious.	Area-weighted average of percent imperviousness by land use				County of San Diego, 2010
N-Imperv	Manning's n for overland flow over the impervious portion of the subcatchment.	0.012				SD Model BMP Design Manual
N-Perv	Manning's n for overland flow over the pervious portion of the subcatchment.	0.15				SD Model BMP Design Manual
D store-Imperv (in)	Depth of depression storage on the impervious portion of the subcatchment.	0.05				SD Model BMP Design Manual
D store-Perv (in)	Depth of depression storage on the pervious portion of the subcatchment.	0.10				SD Model BMP Design Manual
% Zero-Imperv	Percent of the impervious are with no depression storage.	25%				SD Model BMP Design Manual
Subarea Routing	Choice of internal routing of runoff between pervious and impervious areas	OUTLET				SD Model BMP Design Manual
Percent Routed	Percent of runoff routed between subareas.	100%				SD Model BMP Design Manual
Infiltration	Infiltration parameters for the subcatchment.	GREEN_AMPT				SD Model BMP Design Manual
		HSG A	HSG B	HSG C	HSG D	
	GREEN_AMPT: Suction Head (in)	1.5	3.0	6.0	9.0	SD Model BMP Design Manual
	GREEN_AMPT: Initial Deficit (in/hr)	0.33	0.32	0.31	0.30	SD Model BMP Design Manual
	GREEN_AMPT: Developed Conductivity (in/hr)	0.225	0.15	0.075	0.01875	SD Model BMP Design Manual

[1]Defined by the SWMM User Manual
D/S = downstream; U/S/ = upstream

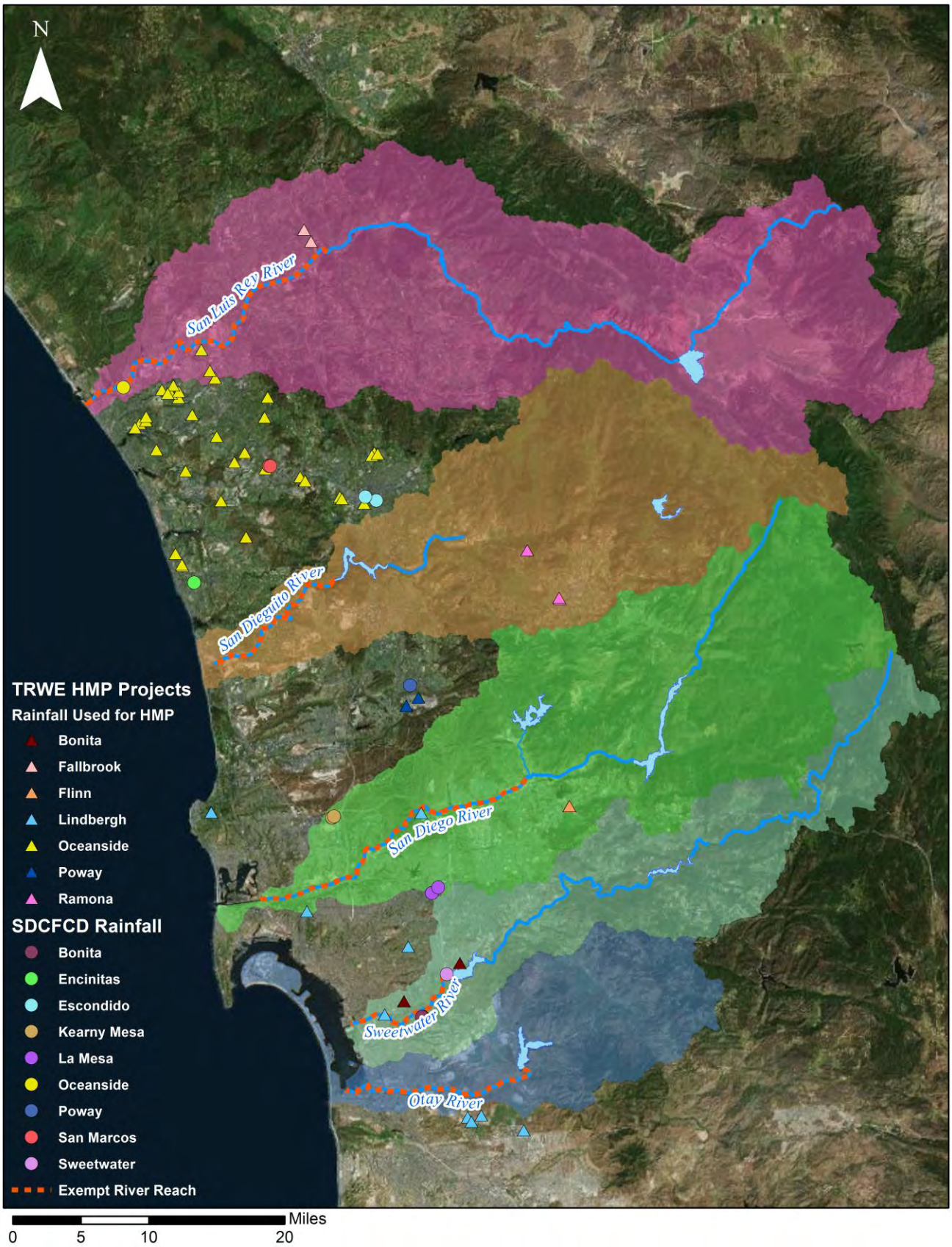

Figure 3. TRWE HMP Project and SDCFCD Rainfall Station Distribution

3. RESULTS

3.1 Statistical Peak Flow Results

Results provided herein are not intended to be used for design purposes, or serve as an exact measurement. The results are solely intended to provide a relative change in peak flow and demonstrate the impact of the upstream impoundment on the peak flow events in each river. The Statistical Peak Flow Analysis results are summarized in Table 10. For those rivers with stream stations located at or near the mouth, the statistical peak flow is compared with the "no dam" peak flows (Table 10, column "Peak[1]"). For those rivers without stream stations located at or near the mouth, the downstream-most available FEMA FIS 10-year peak flows are compared with the "no dam" peak flows. The percent difference or the reduction between the "no dam" and FEMA FIS 10-year peak flows are provided in Table 11. The flow reduction estimates are approximate in nature and are only shown to illustrate significant effects of impoundment on the peak flow events. In developing peak flows for the FIS, FEMA uses an annual series analysis, so it is expected that the percent reductions may be overestimated when used for comparison with a partial duration series analysis.

Table 10: Statistical Peak Flow Results Summary for "No Dam" Peak Flows

River	T-year	Peak[1] (cfs)	A* (mi^2)	P* (in)	Q_{USGS}[b] (cfs)	FPR	A** (mi^2)	P** (in)	Q_{WS}[c] (cfs)	Q_{ND}[d] (cfs)
OTAY	2	850	70	15.0	481	1.8	144	13.4	717	**1,267**
	5	2,265			1,822	1.2			2,811	**3,494**
	10	3,890[a]			3,315	1.2			5,163	**6,059**
SDR	2	2,693	168	12.6	759	3.6	429	16.9	1,778	**6,307**
	5	4,187			2,985	1.4			7,711	**10,813**
	10	7,980			5,454	1.5			15,558	**22,763**
SDGTO	2	930	58	20.5	533	1.7	336	16.6	1,488	**2,594**
	5	2,042			2,069	1.0			6,337	**6,255**
	10	4,434			3,971	1.1			12,605	**14,076**
SLR	2	1,040	350	16.4	1,516	0.7	557	17.2	2,147	**1,473**
	5	5,293			6,462	0.8			9,496	**7,777**
	10	11,461			12,847	0.9			19,450	**17,351**
SWTR	2	669	46	24.9	527	1.3	222	16.4	1,116	**1,417**
	5	2,544			2,059	1.2			4,616	**5,702**
	10	3,296			4,065	0.8			8,995	**7,293**

[1] partial duration series (PDS) value selected for 2-year and 5-year peak; annual maximum series selected for 10-year (unless otherwise specified)
[a] partial duration series value used due to unreasonably low 10-year peak flow; data "affected to unknown degree by Regulation or Diversion"
[b] equivalent drainage area peak flow; 2012 USGS Regression Equation calculation using drainage area parameters from A* (stream station drainage area) and P* (stream station drainage area mean annual precipitation)
[c] watershed-wide peak flow; 2012 USGS Regression Equation calculation using watershed parameters from A** (watershed-wide drainage area) and P** (watershed-wide mean annual precipitation)
[d] "no dam" watershed-wide peak flow estimate

Table 11: Comparison of "No Dam" Peak Flows with Available "Dam-in-Place" Peak Flows

River	T-year	Q_{ND} (cfs)	Peak[1] (cfs)	Reduction	FIS Peak[2] (cfs)	FIS Reduction
OTAY	2	**1,267**	-	-	-	-
	5	**3,494**	-		-	-
	10	**6,059**	-		1,200	80%
SDR	2	**6,307**	2,693	57%	-	-
	5	**10,813**	4,187	61%	-	-
	10	**22,763**	7,980	65%	3,100	86%
SDGTO	2	**2,594**	-	-	-	-
	5	**6,255**	-		-	-
	10	**14,076**	-		5,900	58%
SLR	2	**1,473**	1,040	29%	-	-
	5	**7,777**	5,293	32%	-	-
	10	**17,351**	11,461	34%	6,600	62%
SWTR	2	**1,417**	-	-	-	-
	5	**5,702**	-		-	-
	10	**7,293**	-		1,200	84%

[1]partial duration series value selected for 2-year and 5-year peak; annual maximum series selected for 10-year
[2] (Federal Emergency Management Agency, 2012)

The Statistical Peak Flow Analysis provides reasonable estimation of river impoundment peak flow reduction. For comparison, a 2005 study focused on the hydrological effects of dams on the Sacramento and San Joaquin Rivers in Northern California found that the 2-year peak flow declined anywhere between 35 to 95% of pre-dam values, while the 10-year peak flow was reduced from 2 to 78% (Kondolf & Batalla, 2005). For further comparison, a 2005 study of the hydrological effects of dams in semi-arid portions of north-eastern Spain (also a Mediterranean climate) found that 22 of 23 rivers showed reductions in 2 and 10-year peak flow by 31 and 33%, respectively, with effects more pronounced in the low-rainfall southern Mediterranean tributaries (Batalla, Gomez, & Kondolf, 2003). Therefore, the results (~29-65% reduction) provided in this study are consistent with flow impoundment behavior found in other semi-arid, Mediterranean systems and supports the assumption of significant flow sequestration in the five river reaches.

3.2 SWMM Peak Flow Results

Results from the SWMM Peak Flow Analysis are provided in Table 12 through Table 16 for the "dam-in-place" condition and Table 17 through Table 21 for the "no dam" condition. The results are estimates of peak flows and relative change for the exempt reaches using a simplified continuous modeling approach. These results are not intended to be used for design purposes.

The 2-, 5-, and 10-year flow rates are conservative estimates due to a number of underlying assumptions. First, the assumption of uniform rainfall over a large watershed may produce higher flows than what would actually be realized in each river. However, baseflow was not considered in peak flow determination. Also, the simple rainfall-runoff model is kinematic in nature, not accounting for complex overland flow behaviors such as runoff diffusion. Finally, the overland flow model does not consider channel routing and subsequent longitudinal spreading of the wave base for more mildly-sloped areas within the watershed, which ultimately produces a lower peak flow due to the attenuation and translation of the outflow hydrograph over space and time. Given these assumptions, it is important to note that the main objectives of this study do not require obtaining precise peak flow values. Instead, this study is focused on the relative change of discharges from Project Lands with and without hydromodification management BMP performance requirements.

Table 12: Otay River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	1,481	1,378	1,409	4.9%	**2.0%**	31
5-year	1,950	1,803	1,847	5.3%	**2.3%**	44
10-year	2,378	2,226	2,272	4.5%	**2.0%**	47

Table 13: San Diego River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	3,380	3,225	3,243	4.1%	**0.5%**	18
5-year	4,184	3,993	4,013	4.1%	**0.5%**	20
10-year	4,787	4,564	4,584	4.2%	**0.4%**	21

Table 14: San Dieguito River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	1,265	1,170	1,182	6.6%	**0.9%**	11
5-year	1,754	1,625	1,642	6.4%	**1.0%**	17
10-year	1,950	1,811	1,833	6.0%	**1.1%**	22

Table 15: San Luis Rey River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	6,441	5,731	5,781	10.3%	**0.8%**	50
5-year	8,652	7,630	7,697	11.0%	**0.8%**	67
10-year	10,135	9,031	9,111	10.1%	**0.8%**	80

Table 16: Sweetwater River SWMM Peak Flows: "Dam-in-Place" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	751	739	741	1.3%	**0.4%**	3
5-year	1,092	1,073	1,077	1.4%	**0.4%**	4
10-year	1,273	1,251	1,256	1.3%	**0.4%**	5

Table 17: Otay River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	2,274	2,212	2,234	1.8%	**1.0%**	22
5-year	2,876	2,732	2,772	3.6%	**1.4%**	40
10-year	3,658	3,487	3,539	3.2%	**1.4%**	52

Table 18: San Diego River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	5,270	5,123	5,137	2.5%	**0.3%**	13
5-year	6,579	6,386	6,407	2.6%	**0.3%**	21
10-year	7,572	7,356	7,380	2.5%	**0.3%**	24

Table 19: San Dieguito River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	5,601	5,518	5,531	1.3%	**0.2%**	13
5-year	7,570	7,439	7,457	1.5%	**0.2%**	17
10-year	9,044	8,918	8,940	1.2%	**0.3%**	23

Table 20: San Luis Rey River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	8,199	7,488	7,538	8.1%	**0.6%**	50
5-year	11,159	10,151	10,218	8.4%	**0.6%**	67
10-year	12,856	11,746	11,824	8.0%	**0.6%**	78

Table 21: Sweetwater River SWMM Peak Flows: "No Dam" Condition

Peak	No HMP BMPs (cfs)	Full HMP (cfs)	HMP Exemption (cfs)	Peak Reduction w/ HMP Exemption	Peak Flow Increase Due to Exemption	Exemption Peak Flow Increase (cfs)
2-year	2,050	2,039	2,041	0.4%	**0.1%**	2
5-year	2,735	2,718	2,722	0.5%	**0.1%**	4
10-year	3,283	3,265	3,269	0.4%	**0.1%**	4

The SWMM Peak Flow Analysis found that if the HMP exemptions were granted (as opposed to "Full HMP"—no exemptions granted), it would increase the 2-, 5-, and 10-year peak flow events by no more than 1.1% in all rivers except Otay, where at most, a 2.3% increase is predicted. It should be noted, in the case of Otay that, though minor, this additional flow has the potential to aid the many river restoration efforts identified in the 2006 Otay River Watershed Management Plan (Aspen Environmental Group, 2006). With the HMP exemptions in place, the SWMM Peak Flow Analysis applied hydromodification flow reduction to all non-directly discharging developable land to produce peak flow reductions ranging between 1.3 to 11% (as opposed to "No HMP"—no hydromodification flow control). This percent reduction is the peak flow "benefit" achieved through application of peak flow control. When modeled without the influence of the dam, the effects of Project Lands are further diminished—the primary reason for the original exemption. It is worth noting that both the modeled dam-in-place and no-dam peak flows produce reasonable matches with those peak flows presented in the Statistical Peak Flow Analysis.

The most notable comparisons are between the "dam-in-place" peak flows with the HMP exemption ("Dam-in-Place" HMP Exemption) versus the "no dam" peak flows with no HMP exemptions ("No Dam" Full HMP) presented in Table 22 through Table 26. These comparisons were made in order to simulate the impact of the proposed exemptions on peak flows versus the impact of the river impoundment on peak flows. These SWMM Peak Flow comparisons suggest that if, in their current impounded state, only Project Lands were exempt from hydromodification management BMP performance requirements, the resulting peak flows would be far less than the unimpounded, pre-development peak flows. The "No Dam" Full HMP scenario was considered to be the best representation of a pre-development watershed (in the absence of pre-Columbian watershed parameters) because the very nature of hydromodification management is to simulate the pre-development hydrologic condition. In other words, if the entire developed portion of a watershed is subject to hydromodification flow and duration control, then it is assumed to simulate the pre-development hydrologic condition.

Due to the conservative modeling approach, in actuality the "Dam-in-Place" HMP Exemption peak flows would likely be even less than those modeled herein due to strict interpretations on what constitutes a directly discharging developable land. An even greater difference between the HMP exemption peak flows and the pre-development peak flows would result. Therefore, the SWMM Peak Flow Analysis confirms that the major river impoundments are the primary source of peak flow reduction and clearly demonstrates that peak flows discharging from exempted Project Lands would remain considerably less than the natural, pre-development peak flows.

Table 22: Otay River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	1,409	2,212	804	**36%**
5-year	1,847	2,732	885	**32%**
10-year	2,272	3,487	1,215	**35%**

Table 23: San Diego River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	3,243	5,123	1,880	**37%**
5-year	4,013	6,386	2,373	**37%**
10-year	4,584	7,356	2,772	**38%**

Table 24: San Dieguito River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	1,182	5,518	4,336	**79%**
5-year	1,642	7,439	5,797	**78%**
10-year	1,833	8,918	7,085	**79%**

Table 25: San Luis Rey River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	5,781	7,488	1,707	**23%**
5-year	7,697	10,151	2,454	**24%**
10-year	9,111	11,746	2,635	**22%**

Table 26: Sweetwater River SWMM Scenario Comparison

Peak	"Dam-in-Place" HMP Exemption (cfs)	"No Dam" Full HMP (cfs)	Difference (cfs)	% Less Than
2-year	741	2,039	1,298	**64%**
5-year	1,077	2,718	1,641	**60%**
10-year	1,256	3,265	2,009	**62%**

4. CONCLUSIONS

All five exempt river reaches are subjected to significant upstream impoundment and are rigorously analyzed with two hydrologic methods. The Statistical Peak Flow Analysis found that the major impoundments reduce peak flows anywhere from 29% to 65% of the unimpounded condition. Similarly, the SWMM Peak Flow Analysis found that the major impoundments reduce peak flows approximately 22% to 79%, depending on the reach and peak flow event. The original assumption of significant flow sequestration in the exempt river reaches made by the 2011 HMP is validated by both the Statistical Peak Flow Analysis and the SWMM Peak Flow Analysis in this study.

The benefit of proper hydromodification management BMP implementation is evidenced by comparison between various HMP scenarios. For all watersheds with more than 1,200 acres of Project Lands, HMP flow controls applied to only non-directly discharging developable lands are projected to achieve peak flow reductions of at least 4%. Furthermore, the projected "cost" of allowing the hydromodification exemptions to stand would increase peak flows by an extremely narrow margin in all reaches. It should be noted that the peak flow reduction estimates presented herein are conservative in nature since all non-directly discharging developed lands will be subject to hydromodification management BMPs in the event any re-development within these areas were to occur, further decreasing any peak flow influence from Project Lands. In reality, the percent peak flow reduction is expected to be even greater.

The results from this analysis suggest that the peak flows from areas directly discharging to exempt river reaches (Otay, San Diego, San Dieguito, San Luis Rey, and Sweetwater River) pose no threat to the erosion potential of the exempt river reaches. If these reaches undergo significant changes (i.e. removal of impoundments), it is recommended that a new hydrologic assessment should be made to determine the resulting implications and continual eligibility for exemption. However, under the current conditions defined in this study, it is clearly demonstrated that the existence of upstream impoundment is the principle factor in peak flow alteration—not developed Project Lands. Changes in peak flows from Project Lands are found to be less than significant. Therefore, it is recommended that the 2011 HMP Exemptions be reinstated for all developable lands directly discharging to the exempt river reaches, so long as the project provides properly designed energy dissipation controls at the outfalls. It is also recommended that hydromodification BMPs be required for non-Project Lands, as these areas account for the majority of the developable land within each watershed and will likely produce the greatest influence on peak flows on these rivers in their current impounded state.

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APPENDIX A

Otay Watershed SWMM Parameters

Table A-1: Otay River Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	10.44	1	5.94%	80%	0.012	0.15	0.05	0.10	25%
B	0.00								
C	299.03	24	6.60%	61%	0.012	0.15	0.05	0.10	25%
D	1001.41	80	7.73%	60%	0.012	0.15	0.05	0.10	25%

Table A-2: Otay River Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	4.08	0.3	6.09%	71%	0.012	0.15	0.05	0.10	25%
B	0.00								
C	143.79	12	6.37%	64%	0.012	0.15	0.05	0.10	25%
D	2851.20	228	6.75%	64%	0.012	0.15	0.05	0.10	25%

Table A-3: Otay River Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	1024.99	82	19.46%	29%	0.012	0.15	0.05	0.10	25%
B	162.69	13	24.86%	13%	0.012	0.15	0.05	0.10	25%
C	2143.79	172	17.87%	32%	0.012	0.15	0.05	0.10	25%
D	20882.06	1673	16.41%	34%	0.012	0.15	0.05	0.10	25%

Table A-4: Otay River Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	2993.07	240	16.47%	9%	0.012	0.15	0.05	0.10	25%
B	3016.93	242	21.43%	8%	0.012	0.15	0.05	0.10	25%
C	8658.65	694	20.59%	10%	0.012	0.15	0.05	0.10	25%
D	48588.71	3892	22.59%	8%	0.012	0.15	0.05	0.10	25%

San Diego Watershed SWMM Parameters

Table A-5: San Diego River Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	340.90	11	7.2%	68%	0.012	0.15	0.05	0.10	25%
B	111.56	4	8.7%	53%	0.012	0.15	0.05	0.10	25%
C	166.56	5	7.4%	63%	0.012	0.15	0.05	0.10	25%
D	675.39	21	8.1%	59%	0.012	0.15	0.05	0.10	25%

Table A-6: San Diego River Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	892.75	28	13.9%	25%	0.012	0.15	0.05	0.10	25%
B	1180.34	37	12.7%	21%	0.012	0.15	0.05	0.10	25%
C	1095.09	34	12.4%	23%	0.012	0.15	0.05	0.10	25%
D	9021.30	284	12.9%	22%	0.012	0.15	0.05	0.10	25%

Table A-7: San Diego River Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	9226.19	291	13.2%	35%	0.012	0.15	0.05	0.10	25%
B	6856.56	216	13.3%	38%	0.012	0.15	0.05	0.10	25%
C	9565.50	301	12.8%	39%	0.012	0.15	0.05	0.10	25%
D	67079.47	2113	17.0%	33%	0.012	0.15	0.05	0.10	25%

Table A-8: San Diego River Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	23826.07	751	16.7%	14%	0.012	0.15	0.05	0.10	25%
B	7266.39	229	16.9%	16%	0.012	0.15	0.05	0.10	25%
C	42292.04	1332	19.5%	13%	0.012	0.15	0.05	0.10	25%
D	94561.45	2979	19.8%	15%	0.012	0.15	0.05	0.10	25%

San Dieguito Watershed SWMM Parameters

Table A-9: San Dieguito River Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	304.92	30	16.35%	10%	0.012	0.15	0.05	0.10	25%
B	74.03	7	16.40%	10%	0.012	0.15	0.05	0.10	25%
C	5.41	1	16.50%	10%	0.012	0.15	0.05	0.10	25%
D	533.66	52	16.07%	11%	0.012	0.15	0.05	0.10	25%

Table A-10: San Dieguito River Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	32.72	3	11.90%	22%	0.012	0.15	0.05	0.10	25%
B	4.85	0.5	3.27%	42%	0.012	0.15	0.05	0.10	25%
C	257.06	25	9.39%	31%	0.012	0.15	0.05	0.10	25%
D	3247.43	315	9.16%	30%	0.012	0.15	0.05	0.10	25%

Table A-11: San Dieguito River Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	1640.99	159	14.67%	19%	0.012	0.15	0.05	0.10	25%
B	538.60	52	12.43%	21%	0.012	0.15	0.05	0.10	25%
C	1200.70	116	17.09%	25%	0.012	0.15	0.05	0.10	25%
D	16223.04	1571	17.49%	24%	0.012	0.15	0.05	0.10	25%

Table A-12: San Dieguito River Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	22792.85	2208	16.00%	16%	0.012	0.15	0.05	0.10	25%
B	12916.07	1251	14.50%	16%	0.012	0.15	0.05	0.10	25%
C	70226.09	6802	17.95%	15%	0.012	0.15	0.05	0.10	25%
D	86888.08	8416	26.80%	13%	0.012	0.15	0.05	0.10	25%

San Luis Rey Watershed SWMM Parameters

Table A-13: San Luis Rey River Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	882.77	19	13.01%	24%	0.012	0.15	0.05	0.10	25%
B	630.17	14	13.37%	24%	0.012	0.15	0.05	0.10	25%
C	801.92	17	14.55%	20%	0.012	0.15	0.05	0.10	25%
D	1831.81	40	13.74%	20%	0.012	0.15	0.05	0.10	25%

Table A-14: San Luis Rey River Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	11583.70	251	15.84%	12%	0.012	0.15	0.05	0.10	25%
B	3901.74	84	15.08%	14%	0.012	0.15	0.05	0.10	25%
C	22677.02	491	15.75%	13%	0.012	0.15	0.05	0.10	25%
D	34871.15	755	16.03%	12%	0.012	0.15	0.05	0.10	25%

Table A-15: San Luis Rey River Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	26968.00	584	15.40%	26%	0.012	0.15	0.05	0.10	25%
B	8036.86	174	15.21%	28%	0.012	0.15	0.05	0.10	25%
C	45902.52	993	15.58%	24%	0.012	0.15	0.05	0.10	25%
D	66408.60	1437	14.87%	29%	0.012	0.15	0.05	0.10	25%

Table A-16: San Luis Rey River Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	45012.92	974	19.29%	15%	0.012	0.15	0.05	0.10	25%
B	440.52	10	18.73%	12%	0.012	0.15	0.05	0.10	25%
C	20690.04	448	24.13%	8%	0.012	0.15	0.05	0.10	25%
D	65878.92	1426	20.82%	15%	0.012	0.15	0.05	0.10	25%

Sweetwater Watershed SWMM Parameters

Table A-17: Sweetwater Project Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	10.91	0.33	3.6%	48%	0.012	0.15	0.05	0.10	25%
B	0.25	0.01	3.3%	42%	0.012	0.15	0.05	0.10	25%
C	133.69	4	5.8%	45%	0.012	0.15	0.05	0.10	25%
D	109.99	3	5.2%	47%	0.012	0.15	0.05	0.10	25%

Table A-18: Sweetwater Non-Exempt Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	4.60	0.1	3.6%	45%	0.012	0.15	0.05	0.10	25%
B	58.00	2	3.9%	40%	0.012	0.15	0.05	0.10	25%
C	141.55	4	5.6%	37%	0.012	0.15	0.05	0.10	25%
D	735.80	22	4.5%	42%	0.012	0.15	0.05	0.10	25%

Table A-19: Sweetwater Developed & Non-Developable Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	850.76	26	13.6%	29%	0.012	0.15	0.05	0.10	25%
B	748.45	23	10.1%	44%	0.012	0.15	0.05	0.10	25%
C	4827.23	147	13.0%	40%	0.012	0.15	0.05	0.10	25%
D	16715.79	511	12.1%	42%	0.012	0.15	0.05	0.10	25%

Table A-20: Sweetwater Dammed Lands.

HSG	Area (ac)	Width (ft)	Slope	% Imperv	N-IMP	N-Perv	D store-Imperv (in)	D store-Perv (in)	%Zero-Imperv
A	10871.62	332	15.7%	16%	0.012	0.15	0.05	0.10	25%
B	9974.55	305	16.6%	16%	0.012	0.15	0.05	0.10	25%
C	24732.95	756	18.7%	14%	0.012	0.15	0.05	0.10	25%
D	70655.14	2160	21.5%	11%	0.012	0.15	0.05	0.10	25%

Attachment 4

Stability Thresholds for Stream Restoration Materials

Fischenich (2001)

Stability Thresholds for Stream Restoration Materials

by Craig Fischenich[1]

May 2001

Complexity

Low Moderate High

Value as a Planning Tool

Low Moderate High

Cost

Low Moderate High

OVERVIEW

Stream restoration projects usually involve some modification to the channel or the banks. Designers of stabilization or restoration projects must ensure that the materials placed within the channel or on the banks will be stable for the full range of conditions expected during the design life of the project. Unfortunately, techniques to characterize stability thresholds are limited. Theoretical approaches do not exist and empirical data mainly consist of velocity limits, which are of limited value.

Empirical data for shear stress or stream power are generally lacking, but the existing body of information is summarized in this technical note. Whereas shear thresholds for soils found in channel beds and banks are quite low (generally < 0.25 lb/sf), those for vegetated soils (0.5 – 4 lb/sf), erosion control materials and bioengineering techniques (0.5 – 8 lb/sf), and hard armoring (< 13 lb/sf) offer options to provide stability.

STABILITY CRITERIA

The stability of a stream refers to how it accommodates itself to the inflowing water and sediment load. In general, stable streams may adjust their boundaries but do not exhibit trends in changes to their geometric character. One form of instability occurs when a stream is unable to transport its sediment load (i.e., sediments deposited within the channel), leading to the condition referred to as aggradation.

When the ability of the stream to transport sediment exceeds the availability of sediments within the incoming flow, and stability thresholds for the material forming the boundary of the channel are exceeded, erosion occurs. This technical note deals with the latter case of instability and distinguishes the presence or absence of erosion (threshold condition) from the magnitude of erosion (volume).

Erosion occurs when the hydraulic forces in the flow exceed the resisting forces of the channel boundary. The amount of erosion is a function of the relative magnitude of these forces and the time over which they are applied. The interaction of flow with the boundary of open channels is only imperfectly understood. Adequate analytical expressions describing this interaction have not yet been developed for conditions associated with natural channels. Thus, means of characterizing erosion potential must rely heavily upon empiricism.

Traditional approaches for characterizing erosion potential can be placed in one of two categories: maximum permissible velocity, and tractive force (or critical shear stress). The former approach is advantageous in that velocity is a parameter that can be measured within the flow. Shear stress cannot be directly measured – it must be computed from other flow parameters. Shear stress is a better measure of the fluid force on the channel boundary than is velocity. Moreover, conventional guidelines, including ASTM standards, rely upon the shear stress as a

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means of assessing the stability of erosion control materials. Both approaches are presented in this paper.

Incipient Motion (Threshold Condition)

As flow over the bed and banks of a stream increases, a condition referred to as the threshold state is reached when the forces tending to move materials on the channel boundary are in balance with those resisting motion. The forces acting on a noncohesive soil particle lying on the bed of a flowing stream include hydrodynamic lift, hydrodynamic drag, submerged weight ($F_w - F_b$), and a resisting force F_r. as seen in Figure 1. The drag is in the direction of the flow and the lift and weight are normal to the flow. The resisting force depends on the geometry of the particles. At the threshold of movement, the resultant of the forces in each direction is zero. Two approaches for defining the threshold state are discussed herein, initial movement being specified in terms of either a critical velocity (v_{cr}) or a critical shear stress (τ_{cr}).

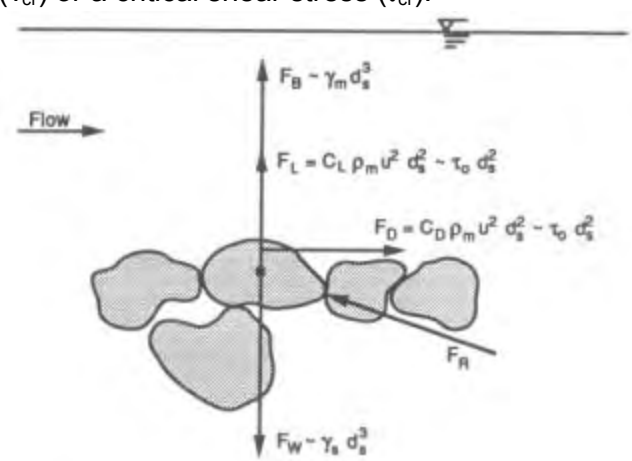

Figure 1. Forces acting on the boundary of a channel (adapted from Julien (1995)).

Critical Velocity

Figure 1 shows that both the lift and the drag force are directly related to the velocity squared. Thus, small changes in the velocity could result in large changes in these forces. The permissible velocity is defined as the maximum velocity of the channel that will not cause erosion of the channel boundary. It is often called the critical velocity because it refers to the condition for the initiation of motion. Early works in canal design and in evaluating the stability of waterways relied upon this method. Considerable empirical data exist relating maximum velocities to various soil and vegetation conditions.

However, this simple method for design does not consider the channel shape or flow depth. At the same mean velocity, channels of different shapes or depths may have quite different forces acting on the boundaries. Critical velocity is depth-dependent, and a correction factor for depth must be applied in this application. Despite these limitations, maximum permissible velocity can be a useful tool in evaluating the stability of various waterways. It is most frequently applied as a cursory analysis when screening alternatives.

Critical Shear Stress

The forces shown in Figure 1 can also be expressed in terms of the shear stress. Shear stress is the force per unit area in the flow direction. Its distribution in steady, uniform, two-dimensional flow in the channel can be reasonably described. An estimate of the average boundary shear stress (τ_o) exerted by the fluid on the bed is:

$$\tau_o = \gamma D S_f \qquad (1)$$

where γ is the specific weight of water, D is the flow depth (~ hydraulic radius), and S_f is the friction slope. Derived from consideration of the conservation of linear momentum, this quantity is a spatial average and may not provide a good estimate of bed shear at a point.

Critical shear stress (τ_{cr}) can be defined by equating the applied forces to the resisting forces. Shields (1936) determined the threshold condition by measuring sediment transport for values of shear at least twice the critical value and then extrapolating to the point vanishing sediment transport. His laboratory experiments have since served as a basis for defining critical shear stress. For soil grains of diameter d and angle of repose ϕ on a flat bed, the following relations can approximate the critical shear for various sizes of sediment:

$$t_{cr} = 0.5(l_s - l_w) d \, Tan f \quad \text{For clays} \qquad (2)$$

$$t_{cr} = 0.25 d_*^{-0.6} (l_s - l_w) d \, Tan f \quad \text{For silts and sands} \qquad (3)$$

$$\tau_{cr} = 0.06(\gamma_s - \gamma_w) d \, Tan\, \phi \quad \text{For gravels and cobbles} \qquad (4)$$

Where

$$d_* = d\left[\frac{(G-1)g}{\nu^2}\right]^{1/3} \qquad (5)$$

γ_s = the unit weight of the sediment
γ_w = the unit weight of the water/sediment mixture
G = the specific gravity of the sediment
G = gravitational acceleration
ν = the kinematic viscosity of the water/sediment mixture

The angle of repose ϕ for noncohesive sediments is presented in Table 1 (Julien 1995), as are values for critical shear stress. The critical condition can be defined in terms of shear velocity rather than shear stress (note that shear velocity and channel velocity are different). Table 1 also provides limiting shear velocity as a function of sediment size. The V_{*c} term is the critical shear velocity and is equal to

$$V_{*c} = \sqrt{gR_h S_f} \qquad (6)$$

Table 1. Limiting Shear Stress and Ve locity for Uniform Noncohesive Sediments

Class name	*d_s (in)*	*ϕ (deg)*	*τ_{*c}*	*τ_{cr} (lb/sf)*	*V_{*c} (ft/s)*
Boulder					
Very large	>80	42	0.054	37.4	4.36
Large	>40	42	0.054	18.7	3.08
Medium	>20	42	0.054	9.3	2.20
Small	>10	42	0.054	4.7	1.54
Cobble					
Large	>5	42	0.054	2.3	1.08
Small	>2.5	41	0.052	1.1	0.75
Gravel					
Very coarse	>1.3	40	0.050	0.54	0.52
Coarse	>0.6	38	0.047	0.25	0.36
Medium	>0.3	36	0.044	0.12	0.24
Fine	>0.16	35	0.042	0.06	0.17
Very fine	>0.08	33	0.039	0.03	0.12
Sands					
Very coarse	>0.04	32	0.029	0.01	0.070
Coarse	>0.02	31	0.033	0.006	0.055
Medium	>0.01	30	0.048	0.004	0.045
Fine	>0.005	30	0.072	0.003	0.040
Very fine	>0.003	30	0.109	0.002	0.035
Silts					
Coarse	>0.002	30	0.165	0.001	0.030
Medium	>0.001	30	0.25	0.001	0.025

Table 1 provides limits best applied when evaluating idealized conditions, or the stability of sediments in the bed. Mixtures of sediments tend to behave differently from uniform sediments. Within a mixture, coarse sediments are generally entrained at lower shear stress values than presented in Table 1. Conversely, larger shear stresses than those presented in the table are required to entrain finer sediments within a mixture.

Cohesive soils, vegetation, and other armor materials can be similarly evaluated to determine empirical shear stress thresholds. Cohesive soils are usually eroded by the detachment and entrainment of soil aggregates. Motivating forces are the same as those for noncohesive banks; however, the resisting forces are primarily the result of cohesive bonds between particles. The bonding strength, and hence the soil erosion resistance, depends on the physio-chemical properties of the soil and the chemistry of the

fluids. Field and laboratory experiments show that intact, undisturbed cohesive soils are much less susceptible to flow erosion than are non-cohesive soils.

Vegetation, which has a profound effect on the stability of both cohesive and noncohesive soils, serves as an effective buffer between the water and the underlying soil. It increases the effective roughness height of the boundary, increasing flow resistance and displacing the velocity upwards away from the soil, which has the effect of reducing the forces of drag and lift acting on the soil surface. As the boundary shear stress is proportional to the square of the near-bank velocity, a reduction in this velocity produces a much greater reduction in the forces responsible for erosion.

Vegetation armors the soil surface, but the roots and rhizomes of plants also bind the soil and introduce extra cohesion over and above any intrinsic cohesion that the bank material may have. The presence of vegetation does not render underlying soils immune from erosion, but the critical condition for erosion of a vegetated bank is usually the threshold of failure of the plant stands by snapping, stem scour, or uprooting, rather than for detachment and entrainment of the soils themselves. Vegetation failure usually occurs at much higher levels of flow intensity than for soil erosion.

Both rigid and flexible armor systems can be used in waterways to protect the channel bed from erosion and to stabilize side slopes. A wide array of differing armor materials are available to accomplish this. Many manufactured products have been evaluated to determine their failure threshold. Products are frequently selected using design graphs that present the flow depth on one axis and the slope of the channel on the other axis. Thus, the design is based on the depth/slope product (i.e., the shear stress). In other cases, the thresholds are expressed explicitly in terms of shear stress. Notable among the latter group are the field performance testing results of erosion control products conducted by the TXDOT/TTI Hydraulics and Erosion Control Laboratory (TXDOT 1999).

Table 2 presents limiting values for shear stress and velocity for a number of different channel lining materials. Included are soils, various types of vegetation, and number of different commonly applied stabilization techniques. Information presented in the table was derived from a number of different sources. Ranges of values presented in the table reflect various measures presented within the literature. In the case of manufactured products, the designer should consult the manufacturer's guidelines to determine thresholds for a specific product.

Uncertainty and Variability

The values presented in Table 2 generally relate to average values of shear stress or velocity. Velocity and shear stress are neither uniform nor steady in natural channels. Short-term pulses in the flow can give rise to instantaneous velocities or stresses of two to three times the average; thus, erosion may occur at stresses much lower than predicted. Because limits presented in Table 2 were developed empirically, they implicitly include some off this variability. However, natural channels typically exhibit much more variability than the flumes from which these data were developed.

Sediment load can also profoundly influence the ability of flow to erode underlying soils. Sediments in suspension have the effect of damping turbulence within the flow. Turbulence is an important factor in entraining materials from the channel boundaries. Thus, velocity and shear stress thresholds are 1.5 to 3 times that presented in the table for flows carrying high sediment loads.

In addition to variability of flow conditions, variation in the channel lining characteristics can influence erosion predictions. Natural bed material is neither spherical nor of uniform size. Larger particles may shield smaller ones from direct impact so that the latter fail to move until higher stresses are attained. For a given grain size, the true threshold criterion may vary by nearly an order of magnitude depending on the bed gradation. Variation in the installation of erosion control measures can reduce the threshold necessary to cause erosion.

Table 2. Permissible Shear and Velocity for Selected Lining Materials[1]

Boundary Category	Boundary Type	Permissible Shear Stress (lb/sq ft)	Permissible Velocity (ft/sec)	Citation(s)
Soils	Fine colloidal sand	0.02 - 0.03	1.5	A
	Sandy loam (noncolloidal)	0.03 - 0.04	1.75	A
	Alluvial silt (noncolloidal)	0.045 - 0.05	2	A
	Silty loam (noncolloidal)	0.045 - 0.05	1.75 – 2.25	A
	Firm loam	0.075	2.5	A
	Fine gravels	0.075	2.5	A
	Stiff clay	0.26	3 – 4.5	A, F
	Alluvial silt (colloidal)	0.26	3.75	A
	Graded loam to cobbles	0.38	3.75	A
	Graded silts to cobbles	0.43	4	A
	Shales and hardpan	0.67	6	A
Gravel/Cobble	1-in.	0.33	2.5 – 5	A
	2-in.	0.67	3 – 6	A
	6-in.	2.0	4 – 7.5	A
	12-in.	4.0	5.5 – 12	A
Vegetation	Class A turf	3.7	6 – 8	E, N
	Class B turf	2.1	4 - 7	E, N
	Class C turf	1.0	3.5	E, N
	Long native grasses	1.2 – 1.7	4 – 6	G, H, L, N
	Short native and bunch grass	0.7 - 0.95	3 – 4	G, H, L, N
	Reed plantings	0.1-0.6	N/A	E, N
	Hardwood tree plantings	0.41-2.5	N/A	E, N
Temporary Degradable RECPs	Jute net	0.45	1 – 2.5	E, H, M
	Straw with net	1.5 – 1.65	1 – 3	E, H, M
	Coconut fiber with net	2.25	3 – 4	E, M
	Fiberglass roving	2.00	2.5 – 7	E, H, M
Non-Degradable RECPs	Unvegetated	3.00	5 – 7	E, G, M
	Partially established	4.0-6.0	7.5 – 15	E, G, M
	Fully vegetated	8.00	8 – 21	F, L, M
Riprap	6 – in. d_{50}	2.5	5 – 10	H
	9 – in. d_{50}	3.8	7 – 11	H
	12 – in. d_{50}	5.1	10 – 13	H
	18 – in. d_{50}	7.6	12 – 16	H
	24 – in. d_{50}	10.1	14 – 18	E
Soil Bioengineering	Wattles	0.2 – 1.0	3	C, I, J, N
	Reed fascine	0.6-1.25	5	E
	Coir roll	3 - 5	8	E, M, N
	Vegetated coir mat	4 - 8	9.5	E, M, N
	Live brush mattress (initial)	0.4 – 4.1	4	B, E, I
	Live brush mattress (grown)	3.90-8.2	12	B, C, E, I, N
	Brush layering (initial/grown)	0.4 – 6.25	12	E, I, N
	Live fascine	1.25-3.10	6 – 8	C, E, I, J
	Live willow stakes	2.10-3.10	3 – 10	E, N, O
Hard Surfacing	Gabions	10	14 – 19	D
	Concrete	12.5	>18	H

[1] Ranges of values generally reflect multiple sources of data or different testing conditions.

A. Chang, H.H. (1988).
B. Florineth. (1982)
C. Gerstgraser, C. (1998).
D. Goff, K. (1999).
E. Gray, D.H., and Sotir, R.B. (1996).
F. Julien, P.Y. (1995).
G. Kouwen, N.; Li, R. M.; and Simons, D.B., (1980).
H. Norman, J. N. (1975).
I. Schiechtl, H. M. and R. Stern. (1996).
J. Schoklitsch, A. (1937).
K. Sprague, C.J. (1999).
L. Temple, D.M. (1980).
M. TXDOT (1999)
N. Data from Author (2001)
O. USACE (1997).

cal and instantaneous values for
ters. Guidance for making these
s presented in the section titled
below.

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g discussion dealt with the
bsence of erosion, but did not
xtent to which erosion might
ven flow. If the thresholds
Table 2 are exceeded, erosion
pected to occur. In reality, even
resholds are not exceeded, some
ew select locations may occur.
which this minor erosion could
nificant concern depends in large
he duration of the flow, and upon
he stream to transport those
ents.

n

stated, limits regarding erosion
shed by manufacturers for
cts are typically developed from
short flow durations. They do not
ential for severe erosion damage
t from moderate flow events over
. Studies have shown that
w reduces erosion resistance of
f erosion control products, as
res 2 - 4. A factor of safety
plied when flow duration exceeds
urs.

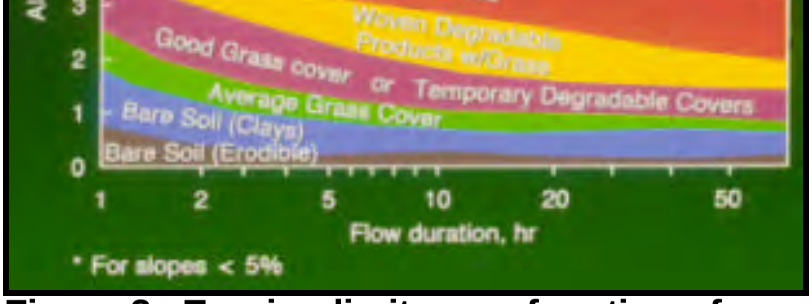

Figure 2. Erosion limits as a function of flow duration (from Fischenich and Allen (2000)).

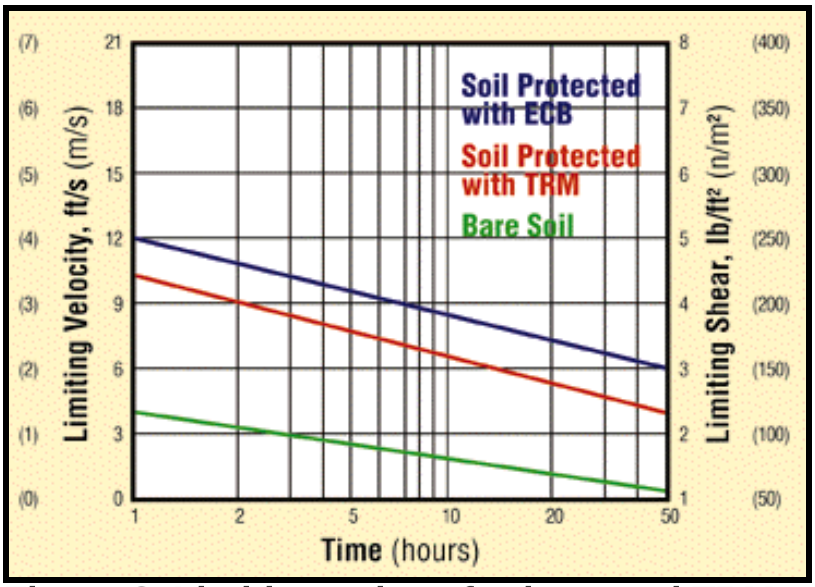

Figure 3. Limiting values for bare and TRM protected soils (from Sprague (1999))

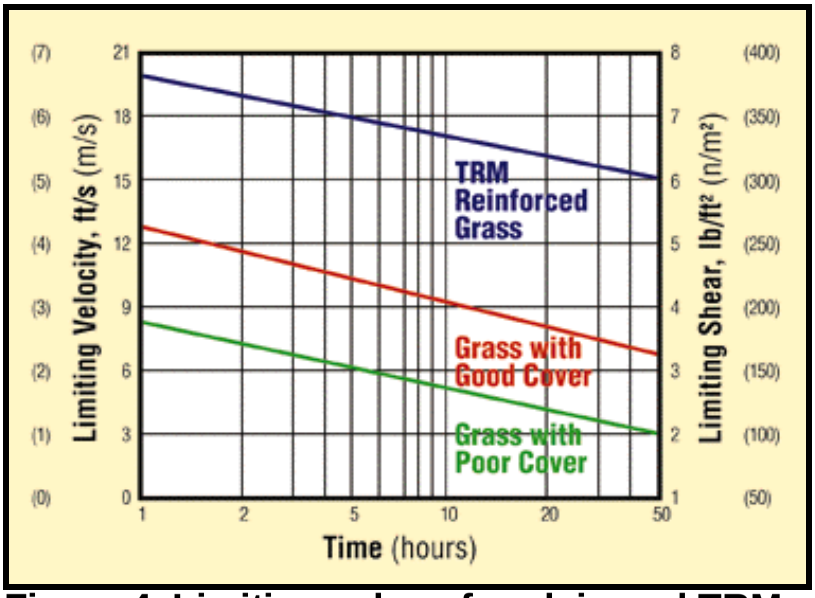

Figure 4. Limiting values for plain and TRM reinforced grass (from Sprague (1999))

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Correlations between flow volume and amount of erosion tend to be poor. Multi-peaked flows may be more effective than single flows of comparable or greater magnitude because of the increased incidence of wetting. Flows with long durations often have a more significant effect on erosion than short-lived flows of higher magnitude. Sediment transport analysis can be used to gauge the magnitude of erosion potential in the channel design, but predictive capability is limited.

Sediment Transport

A number of flow measures can be used to assess the ability of a stream to transport sediment. The unit stream power (P_m) is one common approach, and is related to the earlier discussion in that stream power includes both velocity and shear stress as components. Sediment transport (Q_s) increases when the unit stream power (P_m) increases. Unit stream power in turn is controlled by both tractive stress and flow velocity:

$$P_m = v \cdot \tau = v \cdot \gamma_w \cdot D \cdot S_f \qquad (7)$$

The total power (P_t) is the product of the unit power times the channel width (W):

$$P_t = P_m \cdot W = v \cdot W \cdot D \cdot \gamma_w \cdot S_f = v \cdot A \cdot \gamma_w \cdot S_f = Q_w \cdot \gamma_w \cdot S_f \qquad (8)$$

Stream power assessments can be useful in evaluating sediment discharge within a stream channel and the deposition or erosion of sediments from the streambed. However, their utility for evaluating the stability of measures applied to prevent erosion is limited because of the lack of empirical data relating stream power to stability. The analysis of general streambank erosion is not a simple extension of the noncohesive bed case with an added downslope gravity component. Complication is added by other influencing variables, such as vegetation, whose root system can reinforce bank material and increase erosion resistance. Factors influencing bank erosion are summarized in Table 3.

Table 3. Factors Influencing Erosion

actor	*elevant characteristics*
low properties	lagnitude, frequency and variability of stream discharge; Magnitude and distribution of elocity and shear stress; Degree of turbulence
ediment composition	ediment size, gradation, cohesion and stratification
limate	ainfall amount, intensity and duration; Frequency and duration of freezing
ubsurface conditions	eepage forces; Piping; Soil moisture levels
hannel geometry	idth and depth of channel; Height and angle of bank; Bend curvature
iology	egetation type, density and root character; Burrows
nthropogenic factors	rbanization, flood control, boating, irrigation

APPLICATION

The stability of a waterway or the suitability of various channel linings can be determined by first calculating both the mean velocity and tractive stress (by the previous equations). These values can then be compared with allowable velocity and tractive stress for a particular ground cover or lining system under consideration (e.g., existing vegetation cover, an erosion control blanket, or bioengineering treatment). Allowable tractive stresses for various types of soil, linings, ground covers, and stabilization measures including soil bioengineering treatments, are listed in Table 2. Additionally, manufacturers' product literature can provide allowable tractive stresses or velocities for various types of erosion control products.

An iterative procedure may be required when evaluating channel stability because various linings will affect the resistance coefficient,

which in turn may change the estimated flow conditions. A general procedure for the application of information presented in this paper is outlined in the following paragraphs.

Step 1-Estimate Mean Hydraulic Conditions.
Flow of water in a channel is governed by the discharge, hydraulic gradient, channel geometry, and roughness coefficient. This functional relationship is most frequently evaluated using normal depth or backwater computations that take into account principles of conservation of linear momentum. The latter is preferable because it accounts for variations in momentum slope, which is directly related to shear stress. Several models are available to aid the hydraulic engineer in assessing hydraulic conditions. Notable examples include HEC-2, HEC-RAS, and WSP2. Channel cross sections, slopes, and Manning's coefficients should be determined based upon surveyed data and observed or predicted channel boundary conditions. Output from the model should be used to compute main channel velocity and shear stress at each cross section.

Step 2- Estimate Local/Instantaneous Flow Conditions.
The computed values for velocity and shear stress may be adjusted to account for local variability and instantaneous values higher than mean. A number of procedures exist for this purpose. Most commonly applied are empirical methods based upon channel form and irregularity. Several references at the end of this paper present procedures to make these adjustments. Chang (1988) is a good example. For straight channels, the local maximum shear stress can be assumed from the following simple equation:

$$\tau_{max} = 1.5\tau \qquad (9)$$

for sinuous channels, the maximum shear stress should be determined as a function of the planform characteristics using Equation 10:

$$\tau_{max} = 2.65\,\tau\left(\frac{R_c}{W}\right)^{-0.5} \qquad (10)$$

where R_c is the radius of curvature and W is the top width of the channel. Equations 9 and 10 adjust for the spatial distribution of shear stress; however, temporal maximums in turbulent flows can be 10 – 20 percent higher, so an adjustment to account for instantaneous maximums should be added as well. A factor of 1.15 is usually applied.

Step 3- Determine Existing Stability.
Existing stability should be assessed by comparing estimates of local and instantaneous shear and velocity to values presented in Table 2. Both the underlying soil and the soil/vegetation condition should be assessed. If the existing conditions are deemed stable and are in consonance with other project objectives, then no further action is required. Otherwise, proceed to step 4.

Step 4- Select Channel Lining Material.
If existing conditions are unstable, or if a different material is needed along the channel perimeter to meet project objectives, a lining material or stabilization measure should be selected from Table 2, using the threshold values as a guideline in the selection. Only material with a threshold exceeding the predicted value should be selected. The other project objectives can also be used at this point to help select from among the available alternatives. Fischenich and Allen (2000) characterize attributes of various protection measures to help in the selection.

Step 5- Recompute Flow Values.
Resistance values in the hydraulic computations should be adjusted to reflect the selected channel lining, and hydraulic condition should be recalculated for the channel. At this point, reach- or section-averaged hydraulic conditions should be adjusted to account for local and instantaneous extremes.
Table 4 presents velocity limits for various channel boundaries conditions. This table is useful in screening alternatives, or as an alternative to the shear stress analysis presented in the preceding sections.

Table 4. Stability of Channel Linings for Given Velocity Ranges

Lining	0 – 2 fps	2 – 4 fps	4 – 6 fps	6 – 8 fps	> 8 fps
Sandy Soils					
Firm Loam					
Mixed Gravel and Cobbles					
Average Turf					
Degradable RECPs					
Stabilizing Bioengineering					
Good Turf					
Permanent RECPs					
Armoring Bioengineering					
CCMs & Gabions					
Riprap					
Concrete					

Key:

	Appropriate
	Use Caution
	Not Appropriate

Step 6– Confirm Lining Stability.

The stability of the proposed lining should be assessed by comparing the threshold values in Table 2 to the newly computed hydraulic conditions. These values can be adjusted to account for flow duration using Figures 2-4 as a guide. If computed values exceed thresholds, step 4 should be repeated. If the threshold is not exceeded, a factor of safety for the project should be determined from the following equations:

$$FS = \frac{t_{max}}{t_{est}} \quad or \quad FS = \frac{V_{max}}{V_{est}} \qquad (11)$$

In general, factors of safety in excess of 1.2 or 1.3 should be acceptable. The preceding five steps should be conducted for every cross section used in the analysis for the project. In the event that computed hydraulic values exceed thresholds for any desirable lining or stabilization technique, measures must be undertaken to reduce the energy within the flow. Such measures might include the installation of low-head drop structures or other energy-dissipating devices along the channel. Alternatively, measures implemented within the watershed to reduce total discharge could be employed.

APPLICABILITY AND LIMITATIONS

Techniques described in this technical note are generally applicable to stream restoration projects that include revegetation of the riparian zone or bioengineering treatments.

ACKNOWLEDGEMENTS

Research presented in this technical note was developed under the U.S. Army Corps of Engineers Ecosystem Management and Restoration Research Program. Technical reviews were provided by Messrs. E.A. (Tony) Dardeau, Jr., (Ret.), and Jerry L. Miller, both of the Environmental Laboratory.

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USACE TR EL 97-8

Attachment 5

General Comments on Final Water Quality Improvement Plans and Notice of Noncompliance

Walsh (2015)

August 5, 2015 **Via Email Only**

San Diego County Principal Watershed Copermittees

In reply refer to / attn:
PIN :786088:LWalsh

Subject: General Comments on Final Water Quality Improvement Plans and Notice of Noncompliance

San Diego County Principal Watershed Copermittees:

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) received the Water Quality Improvement Plans (Plans) from the San Diego County Copermittees (Copermittees) on or before June 26, 2015, as required pursuant to Provision F.1.b.(1) of Order No. R9-2013-0001, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region* (Order).

The Plans are the product of more than two years of concentrated Plan development efforts by the Copermittees. These Plans were prepared in phases and the Copermittees received regular input from the San Diego Water Board, industry professionals, non-governmental environmental organizations, and community members as part of feedback from the Water Quality Improvement Consultation Panel groups and the public at large during multiple public workshops. While the San Diego Water Board recognizes this is the first time the Copermittees have prepared such Plans and acknowledges their efforts to comply with the requirements of the Order, some of the Plans did a better job of meeting the requirements of the Order than others.

The San Diego Water Board is confident that once the Plans are in compliance with the requirements of the Order and accepted by the San Diego Water Board, the Copermittees' jurisdictional runoff management programs (JRMPs) will have the greatest potential to achieve significant reductions in pollutant loads in MS4 discharges and improvements in receiving water quality to the level supportive of beneficial uses within the shortest possible time.

In addition to reviewing the Plans for compliance with the requirements of the Order, the San Diego Water Board reviewed the acceptability of the Plans. The Order allows the Copermittees to develop Plans that prioritize the water quality conditions to address

sooner rather than later, and to set numeric goals and schedules to address the highest priorities. However, not all proposed priorities, goals, and schedules will be determined acceptable, especially if the San Diego Water Board determines that a Plan will not achieve water quality improvements within a reasonable period of time. While the elements of a Plan may meet the requirements of the Order, those elements must also meet the intent of the Order which is instrumental to achieving the goals of the San Diego Water Board's Practical Vision.

The San Diego Water Board has not yet completed a detailed review of each Plan. At this time, the San Diego Water Board is providing general comments for all the Plans because there are several issues of concern already identified that make the Plans unacceptable, as well as noncompliant with the requirements of the Order. When the detailed reviews are completed the San Diego Water Board staff will schedule a time to meet with the Copermittees for each Watershed Management Area, as soon as practicable and anticipated to be before the end of August 2015, to discuss specific issues that need to be addressed in each Plan. At the meetings, the San Diego Water Board may have Plan-specific comments in addition to the issues identified below.

Until then, the issues identified below must be adequately addressed for the Plans to be considered acceptable by the San Diego Water Board, and to be in compliance with the requirements of Order. Not all of the following comments and areas of noncompliance are applicable to every Plan or to every Copermittee, so the San Diego County Copermittees should review the Plans to determine where the following issues are applicable to their watershed and their jurisdiction.

PRIORITY WATER QUALITY CONDITIONS

1. Identification of Priority Water Quality Conditions

Requirements: Provisions B.2.a through B.2.c of the Order require the Copermittees to identify the priority water quality conditions that will be evaluated to determine which of those conditions will be the highest priorities to be addressed by the Plan. Provisions B.2.a through B.2.c require the Copermittees to consider several sources of data and information to identify priority water quality conditions within the Watershed Management Area, and whether there is a potential that MS4 discharges may be causing or contributing to those conditions.

Issues of Concern: Each Plan includes a description of the process to review different sources of data and information, including input from the public, to identify priority water quality conditions. The San Diego Water Board, however, has found the following general issues of concern:

a) In several Plans, the San Diego Water Board did not find a fully inclusive list of all priority water quality conditions (i.e. pollutants, stressors, receiving water conditions) that should have been identified in data and information that were required to be considered pursuant to Provisions B.2.a and B.2.b. Pursuant to

Provision B.2.c.(1), a fully inclusive list was required to be evaluated to identify which of those conditions were the highest threat to receiving water quality, or most adversely affect the quality of receiving waters.

b) In at least one Plan, there was not enough description or information that allowed the San Diego Water Board to determine if all the factors under Provisions B.2.a and B.2.b were adequately considered or not.

c) A few Plans have identified bacteria as a highest priority water quality condition based on the Revised Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Project I – Twenty Beaches and Creek in the San Diego Region (Beaches and Creeks Bacteria TMDLs), but the segment which the highest priority water quality condition is based on is no longer identified as impaired on the Clean Water Act Section 303(d) List (303(d) List).

Noncompliant Priority Water Quality Conditions: In several Plans, there was a notable absence of one or more pollutants or conditions of concern known to the San Diego Water Board (e.g. trash, hydromodification, benthic alteration, stream or riparian habitat degradation) that were also identified in reports, plans, and data cited and reviewed by the Copermittees (e.g. 2011 Long Term Effectiveness Assessment). In a few Plans, there was also a notable absence of pollutants or conditions of concern identified by the public at workshops or Water Quality Improvement Plan Consultation Panel meetings, and in written comments from stakeholders and the public. The lists developed pursuant to Provision B.2.c.(1) that do not acknowledge and include these notably absent pollutants and conditions of concern are not in compliance with the requirements of Provisions B.2.a-c.

Unacceptable Priority Water Quality Conditions: A few Plans have bacteria as a highest priority water quality condition only because of the Beaches and Creeks Bacteria TMDLs, but there is no longer an impairment identified on the 303(d) List. If there are no strategies proposed to be implemented other than the requirements of Provisions E.2 through E.7 to address bacteria, or there are no load reductions quantified for other pollutants in addition to bacteria, or both, the Plans are not acceptable to the San Diego Water Board.

WATER QUALITY IMPROVEMENT GOALS

2. Final Numeric Goals

Requirements: Provision B.3.a.(1)(a) of the Order requires the Copermittees to include final numeric goals in the Plan to address the highest priority water quality conditions. Each final numeric goal must either demonstrate the discharges from the Copermittees' MS4s will not cause or contribute to exceedances of water quality standards in receiving waters, or the receiving waters are protected from the Copermittees' MS4 discharges, or both (see Provisions B.3.a.(1)(a)(i)-(iii)).

Issues of Concern: Each Plan includes final numeric goals for the highest priority water quality conditions. The San Diego Water Board, however, has found the following general issues of concern:

a) Several Plans include proposed final numeric goals expressed in a manner that is difficult for the San Diego Water Board to determine the final numeric goal is a criterion or indicator capable of demonstrating one or more of the criteria given in Provisions B.3.a.(1)(a)(i)-(iii). In addition, the San Diego Water Board questions how some of these proposed final numeric goals could be measured by the Copermittees.

b) Several proposed final numeric goals appear to be in conflict with the prohibitions and limitations in Provision A of the Order. For example, there are Plans with proposed final numeric goals associated with reducing non-storm water discharges from the MS4s, but the San Diego Water Board cannot determine how achievement of the proposed final numeric goal is in compliance with the requirement to effectively prohibit non-storm water discharges to the MS4 (Provision A.1.b).

c) There are proposed final numeric goals that are difficult for the San Diego Water Board to establish a link between achieving the final numeric goal and addressing the highest priority water quality condition. For example, there are Plans with proposed final numeric goals associated with reducing non-storm water discharges from the MS4s to achieve reductions of pollutants in MS4 discharges (e.g. bacteria) during wet weather and dry weather conditions; however, the MS4 discharge reduction metric (e.g. flow) does not quantify the pollutant reduction that will be achieved during wet weather or dry weather conditions.

d) Some proposed final numeric goals did not meet the criteria of Provision B.3.a.(1)(a), but could be acceptable interim numeric goals.

Noncompliant Final Numeric Goals: Final numeric goals that are not numeric, AND measureable, AND capable of demonstrating the Copermittees' MS4s will not cause or contribute to exceedances of receiving water limitations, or the receiving waters are protected from the Copermittees' MS4 discharges, or both, are not in compliance with the requirements of Provision B.3.a.(1)(a).

Unacceptable Final Numeric Goals: The following proposed final numeric goals are not acceptable to the San Diego Water Board:

a) Final numeric goals that are not consistent or do not demonstrate compliance with the prohibitions and limitations of the Provision A.

b) Final numeric goals with a metric that is unclear about how it will be measured, and lacks any description of, or reference to the data that will be collected to measure the metric.

c) Final numeric goals that do not clearly demonstrate achievement of the final numeric goal will result in MS4 discharges that do not cause or contribute to exceedances of water quality standards in receiving waters, or the receiving waters are protected from the Copermittees' MS4 discharges, or both.

d) Final numeric goals that do not have a metric that clearly demonstrates a link to addressing the highest priority water quality conditions.

3. Interim Numeric Goals

Requirements: Provision B.3.a.(1)(b) of the Order requires the Copermittees to include interim numeric goals in the Plan for each final numeric goal. The Copermittees are allowed to propose as many interim numeric goals for each final numeric goal as they determine appropriate (Provision B.3.a.(b)(i)), but must include at least one interim numeric goal that is expressed as a reasonable increment of the final numeric goal. This interim numeric goal is expected to be in the same or a similar metric as the final numeric goal (Provision B.3.a.(b)(ii)). At least one interim numeric goal is required to be established during each 5 year period between the acceptance of the Plan and the achievement of the final numeric goal (Provision B.3.a.(b)(iii)).

Issues of Concern: In at least one Plan, the San Diego Water Board has found proposed final numeric goals that do not have interim numeric goals that are expressed in the same or similar metric as the final numeric goals.

Noncompliant Interim Numeric Goals: Final numeric goals that do not have at least one interim numeric goal expressed as a reasonable increment in the same or similar metric as the final numeric goal are not in compliance with Provision B.3.a.(1)(b)(ii).

WATER QUALITY IMPROVEMENT STRATEGIES

4. Identification of Potential Water Quality Improvement Strategies

Requirements: Provision B.2.e of the Order requires the Copermittees to identify potential strategies that can result in improvements to water quality. Provision F.1.a.(2)(f) requires the Copermittees consider revisions to potential water quality improvement strategies they propose in the Plan based on public comments.

Issues of Concern: Most Plans include lists of water quality improvement strategies that may be implemented by the Copermittees. The San Diego Water Board, however, has found the following general issues of concern:

a) In at least one Plan, the San Diego Water Board was not able to locate the list of potential water quality improvement strategies developed during the public participation process in the Plan.

b) In at least one Plan, the San Diego Water Board could not find all the potential water quality improvement strategies suggested or recommended in public comments.

Noncompliant Potential Water Quality Improvement Strategies: Plans that do not identify all potential strategies that were considered for implementation to improve water quality are not in compliance with the requirements of Provision B.2.e. Plans that did not consider all the potential water quality improvement strategies submitted in public comments are also not in compliance with the requirements of Provision B.2.e.

5. Optional Jurisdictional Strategies

Requirements: Provision B.3.b.(1)(b) of the Order requires each Copermittee to identify the optional jurisdictional strategies that will be implemented within its jurisdiction, as necessary, to achieve final numeric goals. Each Copermittee is required to identify water quality improvement strategies that are in addition to the best management practice (BMP) implementation, inspection, enforcement, and education activities that are already required by Provisions E.2 through E.7 (Provision B.3.b.(1)(b)(i)). Optional jurisdictional strategies to encourage or implement retrofit projects and channel and habitat rehabilitation projects are also required to be provided (Provisions B.3.b.(1)(b)(ii) and (iii)). For each optional jurisdictional strategy that a Copermittee includes in the Plan, descriptions of the funds and/or resources needed, and the circumstances needed to trigger implementation of the strategy are also required (Provisions B.3.b.(1)(b)(iv) and (v), respectively).

Issues of Concern: All the Plans lacked enough information for the San Diego Water Board to make a determination that all the requirements of Provision B.3.b.(1)(b) have been met. The San Diego Water Board has found the following general issues of concern:

a) Several Copermittees did not include any proposed optional jurisdictional strategies to be implemented within their jurisdictions, as necessary, to effectively prohibit non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the maximum extent practicable (MEP), protect beneficial uses of receiving waters from MS4 discharges, or achieve proposed interim and final numeric goals.

b) Most Copermittees did not include an incentive or program to encourage or implement projects to retrofit areas of existing development within its jurisdiction.

Pursuant to Provision E.5.e.(1)(a), every Copermittee is required to identify areas of existing development within its jurisdiction as candidates for retrofitting. Therefore, every Copermittee should have some incentive or program to encourage implementation of retrofit projects in the areas of existing development identified in its JRMP document pursuant to Provision E.5.e.(1)(a), unless there is an acceptable rationale in the Plan describing why it is infeasible to encourage or implement such retrofit projects.

c) Most Copermittees did not include an incentive or program to encourage or implement projects that will rehabilitate the conditions of channels or habitats within its jurisdiction. Pursuant to Provision E.5.e.(2)(a), every Copermittee is required to identify streams, channels, and/or habitats in areas of existing development within its jurisdiction as candidates for rehabilitation. Therefore, every Copermittee should have some incentive or program to encourage implementation of projects to rehabilitate the conditions of channels or habitats within its jurisdiction identified in JRMP document pursuant to Provision E.5.e.(2)(a), unless there is an acceptable rationale in the Plan describing why it is infeasible to encourage or implement such rehabilitation projects.

d) Of the Copermittees that did include proposed optional jurisdictional strategies, adequate information about the funds and/or resources needed to implement the strategy (e.g. plans to be developed, studies to be conducted, data to be collected, personnel needed, equipment needed, administrative structures required, contracts needed, land to be acquired, etc.) was not provided.

e) Of the Copermittees that did include proposed optional jurisdictional strategies, adequate information about the circumstances necessary to trigger implementation of the strategy (e.g. funding availability, obtain approval from city councils, findings from assessments or studies, etc.) was not provided.

f) Many proposed optional jurisdictional strategies did not appear to be a BMP, an incentive, or a program that could be implemented to effectively prohibit non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the MEP, protect beneficial uses of receiving waters from MS4 discharges, or achieve proposed interim and final numeric goals. Implementation of an optional jurisdictional strategy is expected to result in an improvement of water quality.

Noncompliant Optional Jurisdictional Strategies: The San Diego Water Board found that the proposed optional jurisdictional strategies in the Plans do not comply with the requirements of Provision B.3.b.(1)(b) as follows:

a) A Copermittee that did not propose any optional jurisdictional strategies to be implemented within its jurisdiction, as necessary, to effectively prohibit non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the MEP, protect beneficial uses of receiving waters from MS4

discharges, or achieve proposed interim and final numeric goals, in addition to the BMP implementation, inspection, enforcement, and education activities that are already required by Provisions E.2 through E.7 is not in compliance with the requirements of Provision B.3.b.(1)(b)(i).

b) Unless acceptable data or rationale are provided in the Plan, a Copermittee that did not propose any incentives or programs to encourage or implement projects to retrofit areas of existing development within its jurisdiction as optional jurisdictional strategies is not in compliance with the requirements of Provision B.3.b.(1)(b)(ii). A Copermittee that has not identified areas of existing development within its jurisdiction as candidates for retrofitting in its JRMP document also is not in compliance with Provision E.5.e.(1)(a), unless acceptable data or rationale is provided.

c) Unless acceptable data or rationale are provided in the Plan, a Copermittee that did not propose any incentives or programs to encourage or implement projects to rehabilitate channels or habitats within its jurisdiction as optional jurisdictional strategies is not in compliance with the requirements of Provision B.3.b.(1)(b)(iii). A Copermittee that has not identified projects to rehabilitate the conditions of channels or habitats within its jurisdiction in its JRMP document also is not in compliance with Provision E.5.e.(2)(a), unless acceptable data or rationale are provided.

d) A Copermittee that does not have any optional jurisdictional strategies in the Plan or has proposed an optional jurisdictional strategy without an adequate description of the funds and/or resources needed to implement the strategy is not in compliance with the requirements of Provision B.3.b.(1)(b)(iv).

e) A Copermittee that does not have any optional jurisdictional strategies in the Plan or has proposed an optional jurisdictional strategy without an adequate description of the circumstances needed to trigger implementation of the strategy is not in compliance with the requirements of Provision B.3.b.(1)(b)(v).

Unacceptable Optional Jurisdictional Strategies: The following proposed optional jurisdictional strategies are not acceptable to the San Diego Water Board:

a) Many proposed optional jurisdictional strategies are described using terms such as “consider”, “evaluate”, “investigate”, or “develop” a BMP, incentive, or program. These terms indicate to the San Diego Water Board that the Copermittee is only preparing for the implementation of a BMP, incentive, or program. Provision B.3.b.(1)(b) requires each Copermittee identify that optional jurisdictional strategies that ***will be*** implemented. Preparation for a strategy does not meet the requirement of a strategy that will be implemented.

b) Many proposed optional jurisdictional strategies describe development of a plan, conducting a special study or an assessment, or collecting data. Plans, special

studies, assessments, and data collection are necessary steps to implement a strategy, but are not in and of themselves a strategy that will result in the effective prohibition of non-storm water discharges to the MS4, reduction of pollutants in storm water discharges from the MS4 to the MEP, protection of beneficial uses of receiving waters from MS4 discharges, or achievement of proposed interim and final numeric goals.

c) Several proposed optional jurisdictional strategies appear to be BMP implementation, inspection, enforcement, and education activities that are already being implemented or required to be implemented by the Copermittee pursuant to Provisions E.2 through E.7. Optional jurisdictional strategies are required in addition to the requirements of Provisions E.2 through E.7.

6. Watershed Management Area Strategies

Requirements: Provision B.3.b.(2) of the Order requires the Copermittees to identify Watershed Management Area strategies that will be implemented, as necessary, to achieve final numeric goals. The Copermittees are required to identify regional or multi-jurisdictional scale water quality improvement strategies (Provision B.3.b.(2)(a)). Watershed Management Area strategies to encourage or implement retrofit projects and channel and habitat rehabilitation projects are also required to be provided in the Plan (Provisions B.3.b.(2)(b) and (c)). For each Watershed Management Area strategy that the Copermittees includes in the Plan, descriptions of the funds and/or resources needed, and the circumstances needed to trigger implementation of the strategy are also required (Provisions B.3.b.(2)(d) and (e), respectively).

Issues of Concern: All the Plans lacked enough information about Watershed Management Area strategies to meet the requirements of Provision B.3.b.(2).

Noncompliant Watershed Management Area Strategies: The San Diego Water Board found that the Watershed Management Area strategies in the Plans do not comply with the requirements of Provision B.3.b.(2) as follows:

a) A Plan that did not propose any Watershed Management Area strategies to be implemented on a regional or multi-jurisdictional scale, as necessary, to effectively prohibit non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the MEP, protect beneficial uses of receiving waters from MS4 discharges, or achieve proposed interim and final numeric goals is not in compliance with the requirements of Provision B.3.b.(2)(a).

b) Unless acceptable data or rationale are provided in the Plan, a Plan that did not propose any incentives or programs to encourage or implement projects to retrofit areas of existing development as a Watershed Management Area strategy is not in compliance with the requirements of Provision B.3.b.(2)(b).

c) Unless acceptable data or rationale are provided in the Plan, a Plan that did not propose any incentives or programs to encourage or implement projects to rehabilitate channels, streams, or habitats as a Watershed Management Area strategy is not in compliance with the requirements of Provision B.3.b.(2)(c).

d) A Plan without Watershed Management Area strategies or a Plan that has a proposed Watershed Management Area strategy without information about the funds and/or resources needed to implement a Watershed Management Area strategy is not in compliance with the requirements of Provision B.3.b.(2)(d).

e) A Plan without Watershed Management Area strategies or a Plan that has a proposed Watershed Management Area strategy without a description of the circumstances needed to trigger implementation of Watershed Management Area strategy is not in compliance with the requirements of Provision B.3.b.(2)(e).

WATER QUALITY IMPROVEMENT SCHEDULES

7. Schedules for Achieving Numeric Goals

Requirement: Provision B.3.a.(2) of the Order requires the Copermittees to develop and incorporate schedules for achieving interim and final numeric goals. Provision B.3.a.(2) requires the schedules to incorporate TMDL compliance dates, incorporate ASBS compliance schedules, and be designed to achieve the interim and final numeric goals in the shortest time practicable taking into account the time required to implement water quality improvement strategies.

Issues of Concern: Each Plan includes schedules to achieve interim and final numeric goals. The San Diego Water Board, however, has found the following general issues of concern:

a) For Plans where the Beaches and Creeks Bacteria TMDLs are applicable and bacteria is the only highest priority water quality condition identified, and only final numeric goals are established for bacteria, the Plan is a Bacteria Load Reduction Plan (BLRP) not a Comprehensive Load Reduction Plan (CLRP). According to the Beaches and Creeks Bacteria TMDLs, the wet weather and dry weather dates for compliance with the final wasteload allocations (WLAs) must be no later than 10 years after the effective date of the TMDLs, which is April 4, 2021. For the Copermittees to have until April 4, 2031 (i.e. 20 years after the effective date of the TMDLs) to achieve the Beaches and Creeks Bacteria TMDLs WLAs, the Plan needs to be a CLRP and incorporate load reduction programs with quantified load reductions for other pollutants of concern in addition to bacteria.

b) Several Plans propose more than 20 years from the date the Plan was submitted to achieve final numeric goals if there are no applicable TMDL compliance dates. Schedules proposing to achieve final numeric goals in more than 20 years appear to be relying primarily on BMP implementation, inspection, enforcement, and education activities that are required to be implemented by the Copermittees pursuant to Provisions E.2 through E.7, with few, if any, commitments to implement optional jurisdictional strategies within the first 10 or more years.

Noncompliant Schedules for Achieving Numeric Goals: There are several Plans that have a proposed date to achieve compliance with the Beaches and Creeks Bacteria TMDLs by April 4, 2031. Unless the Plan includes quantified load reductions for pollutants in addition to bacteria, the April 4, 2031 date to achieve the final numeric goals for bacteria is not in compliance with the requirement to incorporate CLRPs into the Plan pursuant to Attachment E, Specific Provision 6.b.(2)(c)(i).

Unacceptable Schedules for Achieving Numeric Goals: The following proposed schedules to achieve numeric goals are not acceptable to the San Diego Water Board:

a) Schedules of 10 years or more to address only one highest priority water quality condition are not acceptable, unless there is information provided that allows the San Diego Water Board to make a determination that the schedules are clearly based on the time reasonably required to implement proposed optional jurisdictional strategies.

b) Schedules of 10 years or more to achieve final numeric goals without optional jurisdictional strategies proposed to be implemented within the next 5 years are not acceptable.

c) Schedules of 5 years or more to achieve final numeric goals for only addressing one highest priority water quality condition by eliminating unauthorized non-storm water discharges to and from the MS4 without optional jurisdictional strategies proposed to be implemented within the next 5 years are not acceptable.

8. Schedules for Implementing Strategies

Requirements: Provision B.3.b.(3) of the Order requires the Copermittees to develop reasonable schedules for implementing the jurisdictional, optional jurisdictional, and Watershed Management Area strategies to achieve interim and final numeric goals. Provision B.3.b.(3) requires the schedules for implementing strategies to describe: 1) when jurisdictional strategies required pursuant to Provisions E.2 through E.7 will be implemented (Provision B.3.b.(3)(a)(i) and (ii)), 2) the shortest practicable time to secure funds and procure resources to initiate implementation of each optional jurisdictional strategy (Provision B.3.b.(3)(a)(iii)), and the shortest practicable time to secure funds and procure resources to initiate

implementation of each Watershed Management Area strategy (Provision B.3.b.(3)(b)(i)). The schedules are also required to provide information about whether a strategy is expected to be a continuously implemented strategy (Provisions B.3.b.(3)(a)(iv) and B.3.b.(3)(b)(ii)) or strategy to be completed within a schedule (Provisions B.3.b.(3)(a)(v) and B.3.b.(3)(b)(iii)).

Issues of Concern: Each Plan includes schedules to implement strategies. The San Diego Water Board, however, has found the following general issues of concern:

a) In most Plans there were several proposed strategies that did not have any schedules associated with them, other than "to be determined."

b) Most Plans lacked enough information about the shortest practicable time to secure funds and procure resources of initiate implementation of optional jurisdictional strategies and Watershed Management Area strategies.

c) For several strategies that appeared to be limited timeframe or structural projects, they lacked the information about the anticipated time to complete the project based on a realistic assessment of the shortest practicable time required.

Noncompliant Schedules for Implementing Strategies: The San Diego Water Board found that the schedules in the Plans for implementing strategies do not comply with the requirements of Provision B.3.b.(3) as follows:

a) Strategies that do not have a schedule are not in compliance with the requirements of Provision B.3.b.(3).

b) A Copermittee that does not have any optional jurisdictional strategies or has proposed an optional jurisdictional strategy without a description of the shortest practicable time to secure funds and procure resources to initiate implementation of the optional jurisdictional strategy is not in compliance with the requirements of Provision B.3.b.(3)(a)(iii).

c) A Plan without Watershed Management Area strategies or has a proposed Watershed Management Area strategy without a description of the shortest practicable time to secure funds and procure resources to initiate implementation of the optional jurisdictional strategy is not in compliance with the requirements of Provision B.3.b.(3)(b)(i).

d) Strategies that are expected to be completed within a limited timeframe without information about the anticipated time to complete the project based on a realistic assessment of the shortest practicable time required are not in compliance with the requirements of Provision B.3.b.(3)(a)(v) or B.3.b.(3)(b)(iii).

OTHER ISSUES

9. Hydromodification Management Exemptions

Requirements: Provision E.3.c.(2)(d) of the Order describes situations where the Copermittees have the discretion to exempt Priority Development Projects from the hydromodification management BMP performance requirements. Exemptions may be granted to projects that discharge to 1) existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean, or 2) conveyance channels whose bed and bank are concrete lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean. The Copermittees may also propose additional exemptions via the optional Watershed Management Area Analysis.

Issues of Concern: Most Plans proposed additional exemptions via the optional Watershed Management Area Analysis. The San Diego Water Board, however, has found issues of concern with proposed exemptions in Plans for two different Watershed Management Areas:

a) As part of the Watershed Management Area Analysis, the City of Carlsbad included a report entitled "*Hydromodification Exemption Analysis for Select Carlsbad Watersheds*" (Report). Based on the Report, the Copermittees in the Carlsbad Watershed Management Area proposed to add drainage areas upstream of the Buena Vista, Agua Hedionda, and Batiquitos Lagoons as exempt from hydromodification management BMP requirements. Instead of evaluating the drainage areas leading to the lagoons using an erosion potential (or equivalent) analysis, the Report studies the lagoons using the criteria for exemptions outlined in the Hydromodification Management Plan for the San Diego Region (HMP) that was approved by the San Diego Water Board in July, 2010. However, the HMP is predicated on requirements of the previous MS4 permit. When the Order was adopted in 2013, the only exemptions retained were those cited in Provision E.3.c.(2)(d), meaning exemptions are essentially limited to concrete-lined or underground drainage channels. Any additional exemptions, including "non-erodible drainage networks" as described in the Report, must be evaluated from an erosion potential (or equivalent) point of view and included in the optional Watershed Management Area Analysis.

   The Report describes rationale for exempting areas draining to Agua Hedionda and Batiquitos Lagoon, and different rationale for exemptions for areas draining to Buena Vista Lagoon. The discussions regarding the areas draining to Agua Hedionda and Batiquitos Lagoons indicate that these areas may meet the Order's requirement of being concrete lined all the way from the point of discharge to an enclosed embayment (lagoon). However, whether or not drainage conveyances from these areas act like "concrete lined channels" is unclear because the discussion is centered on criteria applicable to the HMP and not the Order.

For Buena Vista Lagoon, the Report states that: "*As long as a project discharges into a non-erodible drainage network that is continuous to a lagoon outlet, it is potentially eligible for a hydromodification exemption*." The Report continues to explain that in drainage areas upstream of Buena Vista Lagoon, "… *the intervening ground is densely vegetated and or naturally armored. The City Engineer found no evidence of erosion at or near the water's edge of the lagoon. Consequently, this area is identified as exempt*…."

In order for the San Diego Water Board to accept a conclusion that a conveyance system can be exempt from hydromodification management BMP requirements, the Report must include an analysis demonstrating that the natural area under review would not experience erosion for the range of storms considered to be geomorphically significant. Although these areas are presented as "naturally armored," because they are not concrete-lined, the systems must be evaluated from an erosion potential (or equivalent) point of view to determine if an exemption is appropriate.

b) In the San Diego River Water Quality Improvement Plan, the Watershed Management Area Analysis includes a proposed methodology for demonstrating that hydromodification management BMPs are not needed upstream of Forrester Creek, a channel stabilized with materials other than concrete. The proposed methodology includes a process for classifying additional channels as "stabilized," and thus allowing exemptions for areas upstream of these channels. The San Diego Water Board is supportive of allowing exemptions for such stabilized channels, provided that the exemptions are supported and the proposed process is clear and repeatable.

   The Watershed Management Area Analysis includes a discussion of erosion potential in Forrester Creek under several different flow rates, all of which suggest that Forrester Creek would not experience erosion caused by land development occurring in the upstream watershed, even in a fully built-out condition. The discussion includes analyses using various methods to verify the assertion that the channel is stable in the range of flows considered to be geomorphically significant. Because the discussion includes several lines of evidence, the San Diego Water Board agrees that Forrester Creek can be considered stable and therefore the proposed exemption is appropriate.

   The Watershed Management Area Analysis appears to rationalize a more succinct and less rigorous analysis for including exemptions for future proposed channel segments. Absent a similar, thorough, and multiple lines of evidence approach analysis as was included for Forrester Creek, the San Diego Water Board disagrees and cannot support the less rigorous analysis. The San Diego Water Board supports the concept of introducing additional stabilized channel reaches that are exempt from hydromodification management BMP requirements, but only if an erosion potential analysis using continuous simulation modeling demonstrates that the channel segment would not erode in the range of flows determined to be geomorphically significant. Additionally, the analysis would need to include flows expected from a fully-built out watershed

condition, and would have to consider erosion potential at the channel's most susceptible location(s). Finally, the criteria and process to qualify for an exemption should be clear so that future proposals for exemptions for additional channel segments include all the required elements.

Unacceptable Hydromodification Management Exemptions: The following proposed exemptions are not acceptable to the San Diego Water Board:

a) Without an appropriate and acceptable analysis of the potential of erosion for the range of storms considered to be geomorphically significant, the additional exemptions proposed for Agua Hedionda Lagoon, Batiquitos Lagoon, and Buena Vista Lagoon are not acceptable.

b) Without an erosion potential analysis using continuous simulation modeling that shows a channel will not erode in the range of geomorphically significant flows for the fully built out condition of the drainage area at the most sensitive channel segment(s) included in the Watershed Management Area Analysis, future proposals for exemptions from the hydromodification management BMP requirements will not be acceptable.

10. Loma Alta Slough Resolution Implementation Requirements

Requirements: Provision A.1.b of the Order requires the Copermittees to effectively prohibit non-storm water discharges into the MS4. Provision B.3.a requires the Copermittees to develop interim and final numeric goals and schedules to achieve those goals for the highest priority water quality conditions. Resolution No. R9-2014-0020, a *Resolution of Commitment to an Alternative Process for Achieving Water Quality Objectives for Biostimulatory Substances in Loma Alta Slough* (Resolution), was adopted by the San Diego Water Board on June 26, 2014. The Resolution includes numeric targets, a compliance schedule, and monitoring which are expected to be implemented through the Carlsbad Watershed Management Area Water Quality Improvement Plan (Carlsbad WMA Plan).

Issues of Concern: A number of items in the Carlsbad WMA Plan are not consistent with the Resolution. The San Diego Water Board chose to adopt the Resolution as a practical, measureable, and timely approach for directing actions to remedy the Slough through a productive collaboration with the community to address an important water quality challenge. The Copermittees must implement the elements of the Resolution, or the San Diego Water Board will reinitiate the process of considering adoption of the Phosphorus TMDL for Loma Alta Slough. The San Diego Water Board has found the following issues of concern:

a) The Resolution includes numeric targets for both surface water macroalgal biomass and surface water macroalgal cover, which represent attainment of the biostimulatory water quality objective for Loma Alta Slough. These numeric targets were developed through a multi-year stakeholder process, and were

based on special studies specific to the Slough and water quality modeling. The numeric targets are to be achieved by 2023.

According to the source and linkage analysis for which the numeric targets are based, the primary sources of the impairment in Loma Alta Slough are dry-weather discharges from irrigation runoff and other illicit dry weather discharges conveyed by the MS4 to Loma Alta Slough. Nutrient loading, specifically phosphorus, into the Slough from dry weather flows results in excessive algal growth. Further, modeling results cited in the staff report (which served as the technical basis for the Resolution) suggests that reductions of dry weather flows in excess of 96 percent are needed to achieve the targeted reductions in phosphorus loading. As such, the Resolution relies on the Order, specifically the prohibitions of dry weather non-storm water discharges, and development and implementation of a Plan that includes the Loma Alta Creek watershed, to achieve the necessary reductions in phosphorus loading and restore the beneficial uses.

In contrast to the approach for which the Resolution is based, the Carlsbad WMA Plan proposes interim numeric goals that fall short of achieving the prohibitions on dry weather discharges. The Carlsbad WMA Plan describes the interim goals as:

- 50 percent reduction in anthropogenic persistent dry weather flows at the three outfalls addressed through 2018, and
- 25 percent reduction in additional (other outfalls in watershed) anthropogenic persistent flows identified during dry weather monitoring program implemented in 2015 and in subsequent years.

The interim goals as expressed in the Carlsbad WMA Plan are not consistent with the Resolution because there is no mention in the Resolution that the City of Oceanside would only first reduce flows by 50 percent, followed by an additional 25 percent in subsequent years, and no explicit attempt to comply with the requirement to effectively eliminate non-storm water discharges into the MS4. Additionally, Finding 20 of the Resolution states that the City of Oceanside, in a comment letter dated May 5, 2014 committed to:

- Using the numeric targets, developed through the stakeholder process as numeric goals in the Water Quality Improvement Plan for the Loma Alta Creek watershed, and
- Develop and implement a Water Quality Improvement Plan to effectively prohibit the City's non-storm water discharges into the MS4 system.

The San Diego Water Board expects the City of Oceanside to honor its commitment as stated in the letter dated May 5, 2014, and therefore expected the interim and final numeric goals in the Carlsbad WMA Plan to incorporate the prohibition of dry weather non-storm water discharges into the MS4 for reducing phosphorus loading to Loma Alta Slough. Further, there must also be interim

numeric goals expressed as an increment toward achieving the final numeric goals.

b) The Carlsbad WMA Plan does not include the required Loma Alta Slough Monitoring Plan. Table 2 of Resolution No. R9-2014-0022 describes the City of Oceanside's *Tentative Proposed Schedule to Address the Eutrophication Impairment in Loma Alta Slough*. According to this Table, in 2015, "*the City was to submit a Water Quality Improvement Plan, including the Loma Alta Slough Monitoring Plan, to the San Diego Water Board.*"

   Section 3.1.4 of the Carlsbad WMA Plan describes a special study whose objectives are "*to develop a water quality monitoring program for the Loma Alta Slough (Slough Monitoring Plan) that will allow the City of Oceanside to track progress toward reducing nutrient discharges into the Slough and eliminate the eutrophication impairment*." The monitoring is to occur every summer from 2016 to 2022.

   In a letter dated May 5, 2014, the City of Oceanside indicated that it would incorporate the slough monitoring requirements proposed in Tentative Investigative Order No. R9-2014-0022 into the Carlsbad WMA Plan[1]. The San Diego Water Board's expectation was that the Slough Monitoring Plan would be fully developed and included in the Carlsbad WMA Plan, as stated in the City's letter and described in Table 2 of the Resolution. The City of Oceanside has not submitted any correspondence to the San Diego Water Board suggesting a need to amend the schedule described in Table 2 since Resolution No. R9-2014-0020 was adopted on June 26, 2014.

Noncompliant Loma Alta Slough Resolution Implementation Requirements: The San Diego Water Board found that the Carlsbad WMA Plan does not comply with the requirements of Provisions A.1.b and B.3.a.(1) as follows:

a) The interim numeric goals as expressed are not consistent with the Resolution and not in compliance with the requirements of Provisions A.1.b and B.3.a.(1)(b).

b) Each final numeric goal that does not have an interim numeric goal expressed as a reasonable increment in the same or similar metric as the final numeric goal is not in compliance with Provision B.3.a.(1)(b)(ii).

Unacceptable Loma Alta Slough Resolution Implementation Requirements: The City of Oceanside committed to incorporating slough monitoring requirements proposed in Tentative Investigative Order No. R9-2014-0022 into the Carlsbad WMA Plan. Without the slough monitoring requirements proposed in Tentative Investigative Order No. R9-2014-0022 in the monitoring and assessment program for the Carlsbad Watershed Management Area, the Carlsbad WMA Plan is not acceptable to the San Diego Water Board.

[1] Tentative Investigative Order No. R9-2014-0022 was replaced by Resolution No. R9-2014-0020.

11. ***Items of Additional Concern***

Pursuant to Provision F.1.b.(2), the Copermittees are required to consider revisions to the Plans based on written comments received by the close of the public comment period. Pursuant to Provision F.1.b.(3), the Copermittees are required to submit any revisions to the Plans no later than 60 days after the close of the comment period, or by September 29, 2015.

Pursuant to Provisions E and F.2.a.(2) of the Order each Copermittee was required to update its JRMP document to incorporate the requirements of Provision E concurrently with the submittal of the Plans. Pursuant to Provisions E.3.d and F.2.b.(1) of the Order each Copermittee was also required to update its BMP Design Manual to incorporate the requirements of Provisions E.3.a-d. Each Copermittee's JRMP document updated with the requirements of Provision E became effective with the submittal of the Plans. In addition, each Copermittee must begin implementing its updated BMP Design Manual within 180 days of submittal of the Plans, unless directed otherwise by the San Diego Water Board.

Until the Plans are accepted by the San Diego Water Board, any exemptions to the hydromodification management BMP requirements of Provisions E.3.c.(2)(a)-(c), proposed in the Plans pursuant to Provision B.3.b.(4)(c), are not authorized to be applied to any Priority Development Projects within a Copermittee's jurisdiction. Likewise, a Copermittee is not authorized to implement an Alternative Compliance Program (pursuant to Provision E.3.c.(3)) for any Priority Development Project within its jurisdiction until the optional Watershed Management Area Analysis developed pursuant to Provision B.3.b.(4) has been accepted as part of the Plans.

12. ***Potential Future Enforcement Options***

The areas of noncompliance identified herein began on the due date to submit the Plans (June 26, 2015) and may be subject to additional future enforcement by the San Diego Water Board or State Water Resources Control Board, including a potential civil liability assessment of up to $10,000 per day of violation (Water Code section 13385) until the violations are corrected and/or pursue any of the following enforcement actions:

Other Potential Enforcement Options	**Applicable Water Code Sections**
Technical or Investigative Order	Sections 13267 or 13383
Cleanup and Abatement Order	Section 13304
Cease and Desist Order	Sections 13301-13303
Time Schedule Order	Sections 13300, 13308

In addition, the San Diego Water Board may consider revising or rescinding applicable waste discharge requirements, if any, referring the matter to other resource agencies, or referring the matter to the State Attorney General for injunctive relief, as applicable.

The San Diego Water Board is available to assist the Copermittees with refining the Plans to become acceptable, and to be in compliance with the requirements of the Order. In the subject line of any response, please include the information located in the heading of this letter: "in reply refer to." Please contact Wayne Chiu at (619) 521-3354 or Wayne.Chiu@waterboards.ca.gov., or Christina Arias at (619) 521-3351 or Christina.Arias@waterboards.ca.gov with any questions or concerns.

Respectfully,

Laurie Walsh, P.E.
Senior Water Resource Control Engineer
Storm Water Management Unit

Tech Staff Info & Use	
Order No.	R9-2013-0001
Party (CIWQS) ID	536787
NPDES No.	CAS0109266
Reg. Measure ID	387335
PIN ID	786088

Appendix B

June 6, 2016 Clarification Email from TRWE

From: Tory Walker <tory@trwengineering.com>
Sent: Monday, June 06, 2016 11:17 AM
To: Mosolgo, Eric
Cc: McPherson, Sheri; Boushra Salem; Charles Mohrlock (Charles.Mohrlock@sdcounty.ca.gov); Alex Smith
Subject: RE: Otay River Report - Clarifications
Attachments: 271-02_Sp_TechMemo_052415 FINAL.PDF

Eric,

It occurred to me that we did not send the attached Sp technical memorandum without the watermark removed.

Tory Walker, PE, CFM, LEED GA

TORY R. WALKER ENGINEERING
Reliable Solutions in Water Resources
122 Civic Center Dr. #206, Vista, CA 92084
P: 760-414-9212 W: TRWEngineering.com

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From: Tory Walker
Sent: Monday, June 6, 2016 9:39 AM
To: 'Mosolgo, Eric' <EMosolgo@sandiego.gov>
Cc: McPherson, Sheri <Sheri.McPherson@sdcounty.ca.gov>; bsalem@chulavistaca.gov; Charles Mohrlock (Charles.Mohrlock@sdcounty.ca.gov) <Charles.Mohrlock@sdcounty.ca.gov>; Alex Smith <alex@trwengineering.com>
Subject: RE: Otay River Report - Clarifications

Good Morning Eric,

We have provided clarifications to your questions below (in red):

1. Please direct us to the portion of the report in which the Ep and Sp analysis results are summarized. There was some uncertainty regarding the conclusions of the Ep and Sp analysis. We would like to see a summary of the final Ep thresholds at various locations along the river reach seeking an exemption. The Ep analysis is summarized in the Attachment 2 spreadsheets—exactly the same way the Copermittees presented the original WMAA Ep results in WMAA Attachment B.1.1. The spreadsheets summarize the Ep value (0), as well as critical shear stress values, estimated flow rates, durations, watershed acreage, imperviousness, and annual average rainfall depth. Sp results are summarized in the memo we sent to you on 5/25, which demonstrates the exemptions meet the 0.9 Sp threshold approved by the Copermittees
2. With regard to the Ep and Sp analysis, outline what methodology was the same of the WMAA analysis and what methodology changed. Please outline any changes to the WMAA methodology. Our report uses the exact same methodology for Ep as was used in the WMAA. The only difference between the WMAA Ep analysis and our "Revised" Ep analysis was the critical shear stress value at each cross section. We assigned critical shear stress values that are more descriptive of the in-stream condition, determined as a result of the field investigation

(critical shear stress values referenced from Fischenich publication, Table 2, which we provide in Attachment 4; our field investigation summary and photos are in the report, pages 17-23). Our Sp memo also used the exact same methodology as the WMAA. The only difference was a change to the "post" soil loss estimate, reduced from 24,364 tons/year to 22,288 tons/year (calculated using original source WMAA GIS data), due to an increase in "exempt" acreage.

3. Please summarize assumptions used to estimate critical shear stress and other key parameters in the Ep analysis. A clear summary of the values used for various vegetation and soils conditions would be appreciated. Estimates are provided on page 19 of the report where we state: "Critical shear stress values of 0.67 pounds per square foot (psf) (shales and hardpan), 0.35 psf (average reeds), and 0.70 psf (short native and bunch grass) are more appropriate assignments for the Otay River based upon the field conditions (Fischenich, 2001)." The Fischenich report is provided in Attachment 4, complete with technical details.
4. Is the Sp parameter defined as part of the updated analysis? It was not clear upon initial review. Since the Sp parameter was a key part of the WMAA analysis, exclusion of the parameter would seem to complicate the methodology if a replication of the WMAA methodology was desired to prove a major river reach exemption. See Sp memo dated 5/24/16. Due to the explicit MS4 Permit language, as reinforced by the SD Water Board's General Comments on Final WQIPs and Notice of Noncompliance dated 8/5/15 (provided in Attachment 5), we focused on the potential for erosion (Ep). We now (in a supplemental GIS analysis) analyzed the sediment supply potential (Sp) and demonstrated the exemptions meet the 0.9 threshold approved by the Copermittees.
5. The constant runoff reduction factor (43%) referenced in the report would be consistent with the old 2007 Permit conditions. Since the 2013 Permit now allows 10% increases of flows and durations across the flow threshold range, it does not appear that the 43% factor would be applicable to the new Permit. That said, please briefly describe what effect, if any, this would have on the updated analysis and conclusions. Design practices prove that this is not a concern. Our 43% reduction is the average % reduction for the Q_2, Q_5, and Q_{10} flow rates, when comparing the post-developed-**mitigated** (hydromod control) flow rate to the post-developed-**unmitigated** flow rate for **actual** hydromodification management projects throughout the County. What we (and other experts) observe during hydromodification management facility design is that the low-flow (X% Q_2) and high-flow (Q_{10}) flow rates are often at or near 110%, controlling the entire design. Since the high and low flow values are already at or near 110% the flow rates/durations between these two points along the curve will sag well below the pre-developed FDC. Since, from a practical design standpoint, the normal behavior of the FDC does not usually allow for the post-developed FDC to mirror the pre-developed FDC closely (due to the unique hydraulics of outflow passing through the outlet structure, causing a "sag" appearance between low and high flow thresholds), it is very unlikely that the 110% threshold along the entire curve would change the engineer's approach to design.

   Furthermore, we tested the % flow reduction in SWMM, and found that even with a mere 20% reduction, the FDC still passes the existing pre-to-post developed (mitigated) criteria. Therefore, the 43% peak flow reduction remains a valid—and conservative—estimate.

Please let us know if you have any questions on the above.

Regards,

Tory Walker, PE, CFM, LEED GA

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From: Mosolgo, Eric [mailto:EMosolgo@sandiego.gov]
Sent: Thursday, June 2, 2016 5:08 PM
To: Tory Walker <tory@trwengineering.com>
Cc: McPherson, Sheri <Sheri.McPherson@sdcounty.ca.gov>; bsalem@chulavistaca.gov; Charles Mohrlock (Charles.Mohrlock@sdcounty.ca.gov) <Charles.Mohrlock@sdcounty.ca.gov>
Subject: Otay River Report - Clarifications

Tory – thanks for speaking with us last week regarding the Otay River report.

We request the following clarifications:

1. Please direct us to the portion of the report in which the Ep and Sp analysis results are summarized. There was some uncertainty regarding the conclusions of the Ep and Sp analysis. We would like to see a summary of the final Ep thresholds at various locations along the river reach seeking an exemption.
2. With regard to the Ep and Sp analysis, outline what methodology was the same of the WMAA analysis and what methodology changed. Please outline any changes to the WMAA methodology.
3. Please summarize assumptions used to estimate critical shear stress and other key parameters in the Ep analysis. A clear summary of the values used for various vegetation and soils conditions would be appreciated.
4. Is the Sp parameter defined as part of the updated analysis? It was not clear upon initial review. Since the Sp parameter was a key part of the WMAA analysis, exclusion of the parameter would seem to complicate the methodology if a replication of the WMAA methodology was desired to prove a major river reach exemption.
5. The constant runoff reduction factor (43%) referenced in the report would be consistent with the old 2007 Permit conditions. Since the 2013 Permit now allows 10% increases of flows and durations across the flow threshold range, it does not appear that the 43% factor would be applicable to the new Permit. That said, please briefly describe what effect, if any, this would have on the updated analysis and conclusions.

Thank you for providing this information.

Eric Mosolgo, PE
Senior Civil Engineer
City of San Diego
Transportation and Storm Water Department
Storm Water Division

T (858) 541-4337
C (858) 336-6644
sandiego.gov

Appendix C

May 25, 2016 Supplemental Letter from TRWE
Sediment Supply Potential Analysis

TORY R. WALKER ENGINEERING
RELIABLE SOLUTIONS IN WATER RESOURCES

May 25, 2016

Boushra Salem
Storm Water Management Section
City of Chula Vista
1800 Maxwell Road
Chula Vista, CA 91911

SUBJECT: OTAY RIVER SEDIMENT SUPPLY POTENTIAL ANALYSIS

Dear Boushra:

In reply to the comments made by the sub-committee of the San Diego Bay WQIP Copermittee group, Tory R. Walker Engineering (TRWE) has completed the Sediment Supply Potential (Sp) analysis to support the proposed hydromodification management exemption for projects directly discharging to the Otay River from west of Interstate 805 (I-805) to San Diego Bay. TRWE found that the proposed exemptions result in an Sp value that meets the criteria recommended by the Southern California Coastal Watershed Research Project[1] (SCCWRP). The final soil loss estimates were executed in GIS and are presented in the following table:

Exempt River Reach	Soil Loss (tons/yr.)			Sp (Post/Pre) [Criteria>0.90]
	Pre	Exempt Parcels	Post [Pre – Exempt Parcels]	
Otay River	24,402	2,114	22,288	0.91

The Sp analysis demonstrates that the proposed reduction in bed sediment supply is not expected to have significant effects on stream stability. Therefore, together with the findings from our December 2015 Erosion Potential (Ep) study, the reinstatement of hydromodification exemptions for the Otay River has been justified by the quantitative Ep and Sp criteria adopted by both the Copermittees and the San Diego Regional Water Quality Control Board.

We appreciate your time in reviewing our findings. Please contact us with any questions you may have.

Sincerely,

Tory R. Walker, PE, CFM, LEED GA
Principal

[1]SCCWRP, 2010. Hydromodification Screening Tools: GIS-based Catchment analyses of Potential Changes in Runoff and Sediment Discharge. Technical Report 605.

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122 CIVIC CENTER DRIVE, SUITE 206, VISTA CA 92084 · 760-414-9212 · TRWENGINEERING.COM

Appendix D

SWMM Results

```
[TITLE]
Otay River Exemption Analysis - Exemption Scenario


[OPTIONS]
;;Options            Value
;;------------------ ------------
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           02/01/1965
START_TIME           00:00:00
REPORT_START_DATE    02/01/1965
REPORT_START_TIME    00:00:00
END_DATE             02/28/2015
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             01:00:00
DRY_STEP             01:00:00
ROUTING_STEP         60
ALLOW_PONDING        NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
NORMAL_FLOW_LIMITED  BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION  H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
MAX_TRIALS           0
HEAD_TOLERANCE       0
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5

[EVAPORATION]
;;Type          Parameters
;;------------- ----------
MONTHLY      .041   .076   .118   .192   .237   .318   .308   .286   .217   .14    .067   .041
DRY_ONLY     NO

[RAINGAGES]
;;               Rain      Time   Snow   Data
;;Name           Type      Intrvl Catch  Source
;;-------------- --------- ------ ------ ----------
Bonita+SWRes     INTENSITY 1:00   1.0    TIMESERIES OTAY

[SUBCATCHMENTS]
;;                                                   Total    Pcnt.             Pcnt.    Curb     Snow
;;Name           Raingage         Outlet           Area     Imperv   Width    Slope    Length   Pack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- --------
DEV-A            Bonita+SWRes     DEVELOPED        1024.99  29       82       19.46    0
DEV-B            Bonita+SWRes     DEVELOPED        162.69   13       13       24.86    0
DEV-C            Bonita+SWRes     DEVELOPED        2143.79  32       172      17.87    0
DEV-D            Bonita+SWRes     DEVELOPED        20882.06 34       1673     16.41    0
EX-A             Bonita+SWRes     EXEMPT           10.44    80       1        5.94     0
EX-C             Bonita+SWRes     EXEMPT           299.03   61       24       6.6      0
EX-D             Bonita+SWRes     EXEMPT           1001.41  60       80       7.73     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
DEV-A            .012       .15        .05        .1         25         OUTLET
DEV-B            .012       .15        .05        .1         25         OUTLET
DEV-C            .012       .15        .05        .1         25         OUTLET
DEV-D            .012       .15        .05        .1         25         OUTLET
EX-A             .012       .15        .05        .1         25         OUTLET
```

```
EX-C             .012       .15        .05        .1         25         OUTLET
EX-D             .012       .15        .05        .1         25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    HydCon     IMDmax
;;-------------- ---------- ---------- ----------
DEV-A            1.5        .225       .33
DEV-B            3          .15        .32
DEV-C            6          .075       .31
DEV-D            9          .01875     .3
EX-A             1.5        .225       .33
EX-C             6          .075       .31
EX-D             9          .01875     .3

[JUNCTIONS]
;;               Invert     Max.       Init.      Surcharge  Ponded
;;Name           Elev.      Depth      Depth      Depth      Area
;;-------------- ---------- ---------- ---------- ---------- ----------
DEVELOPED        0          0          0          0          0
EXEMPT           0          0          0          0          0
NOT_EXEMPT       0          0          0          0          0

[OUTFALLS]
;;               Invert     Outfall      Stage/Table      Tide
;;Name           Elev.      Type         Time Series      Gate
;;-------------- ---------- ------------ ---------------- ----
RIVER_OUTFALL    0          FREE                          NO

[CONDUITS]
;;               Inlet            Outlet                      Manning    Inlet      Outlet     Init.
;;Name           Node             Node             Length     N          Offset     Offset     Flow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ----------
NE               NOT_EXEMPT       RIVER_OUTFALL    400        0.01       0          0          0
NOTDEV           DEVELOPED        RIVER_OUTFALL    400        0.01       0          0          0
PE               EXEMPT           RIVER_OUTFALL    400        0.01       0          0          0

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels
;;-------------- ------------ ---------------- ---------- ---------- ---------- ----------
NE               DUMMY        0                0          0          0          1
NOTDEV           DUMMY        0                0          0          0          1
PE               DUMMY        0                0          0          0          1

[LOSSES]
;;Link           Inlet      Outlet     Average    Flap Gate  SeepageRate
;;-------------- ---------- ---------- ---------- ---------- ----------

[INFLOWS]
;;                                                Param    Units    Scale    Baseline Baseline
;;Node           Parameter        Time Series      Type     Factor   Factor   Value    Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
NOT_EXEMPT       FLOW             NotExempt        FLOW     1.0      .57

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
NotExempt        FILE "K:\AMEC US OFFICES\SanDiego\Otay\Download\SWMM\SWMM\Inflow Time Series\NotExempt.t

OTAY             FILE "K:\AMEC US OFFICES\SanDiego\Otay\Download\SWMM\SWMM\Otay.txt"

[REPORT]
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
```

```
DIMENSIONS       3465.126086      3539.91555       6913.024914      5157.56345
UNITS            None

[COORDINATES]
;;Node           X-Coord          Y-Coord
;;-------------- ---------------- ----------------
DEVELOPED        6750.7           4523.81
EXEMPT           3627.451         4537.815
NOT_EXEMPT       5042.017         5084.034
RIVER_OUTFALL    5056.022         3613.445

[VERTICES]
;;Link           X-Coord          Y-Coord
;;-------------- ---------------- ----------------

[POLYGONS]
;;Subcatchment   X-Coord          Y-Coord
;;-------------- ---------------- ----------------
DEV-A            6750.7           4523.81
DEV-A            6745.098         4529.412
DEV-A            6745.098         4540.617
DEV-A            6756.302         4540.617
DEV-A            6756.302         4529.412
DEV-A            6750.7           4523.81
DEV-B            6750.7           4523.81
DEV-B            6745.098         4529.412
DEV-B            6745.098         4540.617
DEV-B            6756.302         4540.617
DEV-B            6756.302         4529.412
DEV-B            6750.7           4523.81
DEV-C            6750.7           4523.81
DEV-C            6745.098         4529.412
DEV-C            6745.098         4540.617
DEV-C            6756.302         4540.617
DEV-C            6756.302         4529.412
DEV-C            6750.7           4523.81
DEV-D            6750.7           4523.81
DEV-D            6745.098         4529.412
DEV-D            6745.098         4540.617
DEV-D            6756.302         4540.617
DEV-D            6756.302         4529.412
DEV-D            6750.7           4523.81
EX-A             3627.451         4537.815
EX-A             3621.849         4543.417
EX-A             3621.849         4554.622
EX-A             3633.053         4554.622
EX-A             3633.053         4543.417
EX-A             3627.451         4537.815
EX-C             3627.451         4537.815
EX-C             3621.849         4543.417
EX-C             3621.849         4554.622
EX-C             3633.053         4554.622
EX-C             3633.053         4543.417
EX-C             3627.451         4537.815
EX-D             3627.451         4537.815
EX-D             3621.849         4543.417
EX-D             3621.849         4554.622
EX-D             3633.053         4554.622
EX-D             3633.053         4543.417
EX-D             3627.451         4537.815

[SYMBOLS]
;;Gage           X-Coord          Y-Coord
;;-------------- ---------------- ----------------
Bonita+SWRes     5126.05          7016.807
```

```
[TITLE]
;;Project Title/Notes
Otay River Exemption Analysis - Exemption Scenario

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           02/01/1965
START_TIME           00:00:00
REPORT_START_DATE    02/01/1965
REPORT_START_TIME    00:00:00
END_DATE             02/28/2015
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             01:00:00
DRY_STEP             01:00:00
ROUTING_STEP         0:01:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           0
HEAD_TOLERANCE       0
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          .041   .076   .118   .192   .237   .318   .308   .286   .217   .14    .067   .041
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
Bonita+SWRes     INTENSITY 1:00     1.0      TIMESERIES OTAY

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
EX-A             Bonita+SWRes     EXEMPT           10.44    80       1        5.94     0
EX-C             Bonita+SWRes     EXEMPT           299.03   61       24       6.6      0
EX-D             Bonita+SWRes     EXEMPT           1001.41  60       80       7.73     0
DEV-A            Bonita+SWRes     DEVELOPED        1024.99  29       82       19.46    0
DEV-B            Bonita+SWRes     DEVELOPED        162.69   13       13       24.86    0
DEV-C            Bonita+SWRes     DEVELOPED        2143.79  32       172      17.87    0
DEV-D            Bonita+SWRes     DEVELOPED        20882.06 34       1673     16.41    0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
EX-A             .012       .15        .05        .1         25         OUTLET
EX-C             .012       .15        .05        .1         25         OUTLET
EX-D             .012       .15        .05        .1         25         OUTLET
DEV-A            .012       .15        .05        .1         25         OUTLET
DEV-B            .012       .15        .05        .1         25         OUTLET
DEV-C            .012       .15        .05        .1         25         OUTLET
DEV-D            .012       .15        .05        .1         25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    Ksat       IMD
;;-------------- ---------- ---------- ----------
EX-A             1.5        .225       .33
EX-C             6          .075       .31
EX-D             9          .01875     .3
DEV-A            1.5        .225       .33
DEV-B            3          .15        .32
DEV-C            6          .075       .31
DEV-D            9          .01875     .3

[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
EXEMPT           0          0          0          0          0
NOT_EXEMPT       0          0          0          0          0
```

```
DEVELOPED        0          0          0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
RIVER_OUTFALL    0          FREE                        NO

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow
MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ----------
----------
PE               EXEMPT           RIVER_OUTFALL    400        0.01       0          0          0          0

NE               NOT_EXEMPT       RIVER_OUTFALL    400        0.01       0          0          0          0

NOTDEV           DEVELOPED        RIVER_OUTFALL    400        0.01       0          0          0          0


[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
PE               DUMMY        0                0          0          0          1
NE               DUMMY        0                0          0          0          1
NOTDEV           DUMMY        0                0          0          0          1

[INFLOWS]
;;Node           Constituent      Time Series      Type     Mfactor  Sfactor  Baseline Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
NOT_EXEMPT       FLOW             NotExempt        FLOW     1.0      .57

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
OTAY             FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\Precip\Otay.txt"
;
NotExempt        FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\SWMM\OT\New\FINAL\TIME
SERIES\NotExempt.txt"

[REPORT]
;;Reporting Options
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EXEMPT           3627.451           4537.815
NOT_EXEMPT       5042.017           5084.034
DEVELOPED        6750.700           4523.810
RIVER_OUTFALL    5056.022           3613.445

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EX-A             2871.148           5672.269
EX-C             3291.317           5434.174
EX-D             3697.479           5126.050
DEV-A            6526.611           6036.415
DEV-B            6848.739           5798.319
DEV-C            7156.863           5532.213
DEV-D            7422.969           5322.129

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Bonita+SWRes     5126.050           7016.807
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.007)
--------------------------------------------------------------

Otay River Exemption Analysis - Exemption Scenario
WARNING 04: minimum elevation drop used for Conduit NE
WARNING 04: minimum elevation drop used for Conduit NOTDEV
WARNING 04: minimum elevation drop used for Conduit PE

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... GREEN_AMPT
Flow Routing Method ...... KINWAVE
Starting Date ............ FEB-01-1965 00:00:00
Ending Date .............. FEB-28-2015 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Wet Time Step ............ 01:00:00
Dry Time Step ............ 01:00:00
Routing Time Step ........ 60.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation ......   1072329.228       504.143
Evaporation Loss .........    156272.392        73.470
Infiltration Loss ........    658333.211       309.508
Surface Runoff ...........    262571.882       123.445
Final Surface Storage ....         5.545         0.003
Continuity Error (%) .....        -0.453


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......    262571.876     85562.969
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........     28077.362      9149.428
External Outflow .........    290649.238     94712.397
Internal Outflow .........         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


********************************
Highest Flow Instability Indexes
********************************
All links are stable.
```

```
*************************
Routing Time Step Summary
*************************
Minimum Time Step           :    60.00 sec
Average Time Step           :    60.00 sec
Maximum Time Step           :    60.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00


***************************
Subcatchment Runoff Summary
***************************

-----------------------------------------------------------------------------------------------------------
                          Total      Total      Total      Total      Total       Total     Peak  Runof
                         Precip      Runon       Evap      Infil     Runoff      Runoff   Runoff   Coef
Subcatchment                 in         in         in         in         in    10^6 gal      CFS
-----------------------------------------------------------------------------------------------------------
DEV-A                    504.14       0.00      46.70     357.70     100.55     2798.49   265.16   0.19
DEV-B                    504.14       0.00      19.16     437.76      48.39      213.75    35.50   0.09
DEV-C                    504.14       0.00      55.68     339.78     110.17     6413.25   549.69   0.21
DEV-D                    504.14       0.00      73.59     310.61     122.44    69427.53  5327.00   0.24
EX-A                     504.14       0.00     165.69     100.74     238.17       67.52     2.60   0.47
EX-C                     504.14       0.00     124.79     194.86     185.38     1505.24    64.61   0.36
EX-D                     504.14       0.00     129.08     187.96     188.69     5130.84   234.27   0.37


******************
Node Depth Summary
******************

-----------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max
                                  Depth    Depth      HGL   Occurrence
Node                 Type          Feet     Feet     Feet  days hr:min
-----------------------------------------------------------------------
DEVELOPED            JUNCTION      0.00     0.00     0.00     0  00:00
EXEMPT               JUNCTION      0.00     0.00     0.00     0  00:00
NOT_EXEMPT           JUNCTION      0.00     0.00     0.00     0  00:00
RIVER_OUTFALL        OUTFALL       0.00     0.00     0.00     0  00:00


*******************
Node Inflow Summary
*******************

-------------------------------------------------------------------------------------------------------
                                Maximum  Maximum                    Lateral       Total        Flow
                                Lateral    Total  Time of Max       Inflow      Inflow     Balance
                                 Inflow   Inflow   Occurrence       Volume      Volume       Error
Node                 Type           CFS      CFS  days hr:min    10^6 gal    10^6 gal     Percent
-------------------------------------------------------------------------------------------------------
DEVELOPED            JUNCTION   6177.35  6177.35  6768  18:00   7.89e+004   7.89e+004       0.000
EXEMPT               JUNCTION    301.48   301.48  6768  19:00    6.7e+003    6.7e+003       0.000
NOT_EXEMPT           JUNCTION    384.40   384.40  6768  19:00   9.15e+003   9.15e+003       0.000
RIVER_OUTFALL        OUTFALL       0.00  6742.04  6768  18:00           0   9.47e+004       0.000


**********************
Node Surcharge Summary
**********************

Surcharging occurs when water rises above the top of the highest conduit.
-----------------------------------------------------------------------
                                            Max. Height   Min. Depth
                                 Hours      Above Crown    Below Rim
```

Node	Type	Surcharged	Feet	Feet
DEVELOPED	JUNCTION	438959.02	0.000	0.000
EXEMPT	JUNCTION	438959.02	0.000	0.000
NOT_EXEMPT	JUNCTION	438959.02	0.000	0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
RIVER_OUTFALL	12.76	62.77	6742.04	94705.363
System	12.76	62.77	6742.04	94705.363

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
NE	DUMMY	384.40	6768 19:00			
NOTDEV	DUMMY	6177.35	6768 18:00			
PE	DUMMY	301.48	6768 19:00			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Jun 23 13:07:25 2016
Analysis ended on: Thu Jun 23 13:08:21 2016
Total elapsed time: 00:00:56

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.010)
--------------------------------------------------------------

Otay River Exemption Analysis - Exemption Scenario
WARNING 04: minimum elevation drop used for Conduit PE
WARNING 04: minimum elevation drop used for Conduit NE
WARNING 04: minimum elevation drop used for Conduit NOTDEV

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... GREEN_AMPT
Flow Routing Method ...... KINWAVE
Starting Date ............ FEB-01-1965 00:00:00
Ending Date .............. FEB-28-2015 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Wet Time Step ............ 01:00:00
Dry Time Step ............ 01:00:00
Routing Time Step ........ 60.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation ......   1072329.228       504.143
Evaporation Loss .........    156270.046        73.469
Infiltration Loss ........    658333.211       309.508
Surface Runoff ...........    262571.880       123.445
Final Storage ............         7.896         0.004
Continuity Error (%) .....        -0.453


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......    262571.876     85562.969
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........     28077.362      9149.428
External Outflow .........    290649.238     94712.396
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


*******************************
Highest Flow Instability Indexes
*******************************
All links are stable.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :    60.00 sec
Average Time Step           :    60.00 sec
Maximum Time Step           :    60.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00


***************************
Subcatchment Runoff Summary
***************************

-----------------------------------------------------------------------------------------------------------
                          Total      Total      Total      Total      Total       Total     Peak  Runoff
                         Precip      Runon       Evap      Infil     Runoff      Runoff   Runoff   Coeff
```

Subcatchment	in	in	in	in	in	10^6 gal	CFS	
EX-A	504.14	0.00	165.68	100.74	238.17	67.52	2.60	0.472
EX-C	504.14	0.00	124.78	194.86	185.38	1505.24	64.61	0.368
EX-D	504.14	0.00	129.07	187.96	188.69	5130.84	234.27	0.374
DEV-A	504.14	0.00	46.70	357.70	100.55	2798.49	265.16	0.199
DEV-B	504.14	0.00	19.16	437.76	48.39	213.75	35.50	0.096
DEV-C	504.14	0.00	55.68	339.78	110.17	6413.25	549.69	0.219
DEV-D	504.14	0.00	73.58	310.61	122.44	69427.53	5327.00	0.243

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
EXEMPT	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
NOT_EXEMPT	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
DEVELOPED	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
RIVER_OUTFALL	OUTFALL	0.00	0.00	0.00	0 00:00	0.00

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
EXEMPT	JUNCTION	301.48	301.48	6768 19:01	6.7e+003	6.7e+003	0.000
NOT_EXEMPT	JUNCTION	384.40	384.40	6768 19:01	9.15e+003	9.15e+003	0.000
DEVELOPED	JUNCTION	6177.35	6177.35	6768 18:01	7.89e+004	7.89e+004	0.000
RIVER_OUTFALL	OUTFALL	0.00	6742.04	6768 18:01	0	9.47e+004	0.000

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet
EXEMPT	JUNCTION	438959.00	0.000	0.000
NOT_EXEMPT	JUNCTION	438959.00	0.000	0.000
DEVELOPED	JUNCTION	438959.00	0.000	0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
RIVER_OUTFALL	12.76	62.77	6742.04	94705.363
System	12.76	62.77	6742.04	94705.363

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
PE	DUMMY	301.48	6768 19:01			
NE	DUMMY	384.40	6768 19:01			
NOTDEV	DUMMY	6177.35	6768 18:01			

```
*************************
Conduit Surcharge Summary
*************************

No conduits were surcharged.


Analysis begun on:  Thu Apr 14 11:13:52 2016
Analysis ended on:  Thu Apr 14 11:15:04 2016
Total elapsed time: 00:01:12
```

```
[TITLE]
Otay River Exemption Analysis - Natural Scenario (via HMP applied to built-out watershed, including impou


[OPTIONS]
;;Options            Value
;;------------------ ------------
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           02/01/1965
START_TIME           00:00:00
REPORT_START_DATE    02/01/1965
REPORT_START_TIME    00:00:00
END_DATE             02/28/2015
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             01:00:00
DRY_STEP             01:00:00
ROUTING_STEP         60
ALLOW_PONDING        NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
NORMAL_FLOW_LIMITED  BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION  H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
MAX_TRIALS           0
HEAD_TOLERANCE       0
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5

[EVAPORATION]
;;Type          Parameters
;;------------- ----------
MONTHLY      .041   .076   .118   .192   .237   .318   .308   .286   .217   .14    .067   .041
DRY_ONLY     NO

[RAINGAGES]
;;               Rain      Time   Snow   Data
;;Name           Type      Intrvl Catch  Source
;;-------------- --------- ------ ------ ----------
Bonita+SWRes     INTENSITY 1:00   1.0    TIMESERIES OTAY

[JUNCTIONS]
;;               Invert     Max.       Init.      Surcharge  Ponded
;;Name           Elev.      Depth      Depth      Depth      Area
;;-------------- ---------- ---------- ---------- ---------- ----------
DAM              0          0          0          0          0
DEVELOPED        0          0          0          0          0
EXEMPT           0          0          0          0          0
NOT_EXEMPT       0          0          0          0          0

[OUTFALLS]
;;               Invert     Outfall      Stage/Table      Tide
;;Name           Elev.      Type         Time Series      Gate
;;-------------- ---------- ------------ ---------------- ----
RIVER_OUTFALL    0          FREE                          NO

[CONDUITS]
;;               Inlet            Outlet                      Manning    Inlet      Outlet     Init.
;;Name           Node             Node             Length     N          Offset     Offset     Flow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ----------
4                DAM              RIVER_OUTFALL    400        0.01       0          0          0
```

```
NE                NOT_EXEMPT       RIVER_OUTFALL    400        0.01       0          0          0
NOTDEV            DEVELOPED        RIVER_OUTFALL    400        0.01       0          0          0
PE                EXEMPT           RIVER_OUTFALL    400        0.01       0          0          0

[XSECTIONS]
;;Link            Shape        Geom1            Geom2      Geom3      Geom4      Barrels
;;-------------- ------------ ---------------- ---------- ---------- ---------- ----------
4                 DUMMY        0                0          0          0          1
NE                DUMMY        0                0          0          0          1
NOTDEV            DUMMY        0                0          0          0          1
PE                DUMMY        0                0          0          0          1

[LOSSES]
;;Link            Inlet      Outlet     Average    Flap Gate  SeepageRate
;;-------------- ---------- ---------- ---------- ---------- ----------

[INFLOWS]
;;                                                Param    Units    Scale    Baseline Baseline
;;Node            Parameter        Time Series      Type     Factor   Factor   Value    Pattern
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
DAM               FLOW             Impounded        FLOW     1.0      0.57
DEVELOPED         FLOW             Developed        FLOW     1.0      0.57
EXEMPT            FLOW             Exempt           FLOW     1.0      0.57
NOT_EXEMPT        FLOW             NotExempt        FLOW     1.0      0.57

[TIMESERIES]
;;Name            Date       Time       Value
;;-------------- ---------- ---------- ----------
Developed         FILE "K:\AMEC US OFFICES\SanDiego\Otay\Download\SWMM\SWMM\Inflow Time Series\Developed.t

Exempt            FILE "K:\AMEC US OFFICES\SanDiego\Otay\Download\SWMM\SWMM\Inflow Time Series\Exempt.txt'

Impounded         FILE "K:\AMEC US OFFICES\SanDiego\Otay\Download\SWMM\SWMM\Inflow Time Series\Impounded.t

NotExempt         FILE "K:\AMEC US OFFICES\SanDiego\Otay\Download\SWMM\SWMM\Inflow Time Series\NotExempt.t

OTAY              FILE "K:\AMEC US OFFICES\SanDiego\Otay\Download\SWMM\SWMM\Otay.txt"

[REPORT]
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS        3334.0543        5311.1155        6810.2457        7094.0285
UNITS             None

[COORDINATES]
;;Node            X-Coord          Y-Coord
;;-------------- ---------------- ----------------
DAM               6652.237         6392.496
DEVELOPED         5945.166         6883.117
EXEMPT            3492.063         6507.937
NOT_EXEMPT        4790.765         7012.987
RIVER_OUTFALL     5098.039         5392.157

[VERTICES]
;;Link            X-Coord          Y-Coord
;;-------------- ---------------- ----------------

[SYMBOLS]
;;Gage            X-Coord          Y-Coord
;;-------------- ---------------- ----------------
Bonita+SWRes      5382.395         8903.319
```

```
[TITLE]
;;Project Title/Notes
Otay River Exemption Analysis - Natural Scenario (via HMP applied to built-out watershed, including impounded
drainage area)

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           02/01/1965
START_TIME           00:00:00
REPORT_START_DATE    02/01/1965
REPORT_START_TIME    00:00:00
END_DATE             02/28/2015
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             01:00:00
DRY_STEP             01:00:00
ROUTING_STEP         0:01:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           0
HEAD_TOLERANCE       0
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          .041   .076   .118   .192   .237   .318   .308   .286   .217   .14    .067   .041
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
Bonita+SWRes     INTENSITY 1:00     1.0      TIMESERIES OTAY

[JUNCTIONS]
;;Name           Elevation  MaxDepth   InitDepth  SurDepth   Aponded
;;-------------- ---------- ---------- ---------- ---------- ----------
EXEMPT           0          0          0          0          0
NOT_EXEMPT       0          0          0          0          0
DEVELOPED        0          0          0          0          0
DAM              0          0          0          0          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
RIVER_OUTFALL    0          FREE                        NO

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow
MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ----------
----------
PE               EXEMPT           RIVER_OUTFALL    400        0.01       0          0          0          0

NE               NOT_EXEMPT       RIVER_OUTFALL    400        0.01       0          0          0          0

NOTDEV           DEVELOPED        RIVER_OUTFALL    400        0.01       0          0          0          0

4                DAM              RIVER_OUTFALL    400        0.01       0          0          0          0


[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
PE               DUMMY        0                0          0          0          1
NE               DUMMY        0                0          0          0          1
NOTDEV           DUMMY        0                0          0          0          1
4                DUMMY        0                0          0          0          1

[INFLOWS]
;;Node           Constituent      Time Series      Type     Mfactor  Sfactor  Baseline Pattern
```

```
;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
EXEMPT           FLOW             Exempt           FLOW     1.0      0.57
NOT_EXEMPT       FLOW             NotExempt        FLOW     1.0      0.57
DEVELOPED        FLOW             Developed        FLOW     1.0      0.57
DAM              FLOW             Impounded        FLOW     1.0      0.57

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
OTAY             FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\Ep\AMEC\SWMM\Otay.txt"
;
Exempt           FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\Ep\AMEC\SWMM\Inflow Time
Series\Exempt.txt"
;
NotExempt        FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\Ep\AMEC\SWMM\Inflow Time
Series\NotExempt.txt"
;
Developed        FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\Ep\AMEC\SWMM\Inflow Time
Series\Developed.txt"
;
Impounded        FILE "Z:\Projects\271 BIA\02 (River Exemptions)\Analysis\Ep\AMEC\SWMM\Inflow Time
Series\Impounded.txt"

[REPORT]
;;Reporting Options
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
EXEMPT           3492.063           6507.937
NOT_EXEMPT       4790.765           7012.987
DEVELOPED        5945.166           6883.117
DAM              6652.237           6392.496
RIVER_OUTFALL    5098.039           5392.157

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Bonita+SWRes     5382.395           8903.319
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.007)
--------------------------------------------------------------

Otay River Exemption Analysis - Natural Scenario (via HMP applied to built-out watershed, including imp
WARNING 04: minimum elevation drop used for Conduit 4
WARNING 04: minimum elevation drop used for Conduit NE
WARNING 04: minimum elevation drop used for Conduit NOTDEV
WARNING 04: minimum elevation drop used for Conduit PE

*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Flow Routing Method ...... KINWAVE
Starting Date ............ FEB-01-1965 00:00:00
Ending Date .............. FEB-28-2015 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Routing Time Step ........ 60.00 sec


**************************        Volume         Volume
Flow Routing Continuity        acre-feet       10^6 gal
**************************     ---------      ---------
Dry Weather Inflow .......         0.000          0.000
Wet Weather Inflow .......         0.000          0.000
Groundwater Inflow .......         0.000          0.000
RDII Inflow ..............         0.000          0.000
External Inflow ..........    284576.467      92733.493
External Outflow .........    284576.467      92733.493
Internal Outflow .........         0.000          0.000
Evaporation Loss .........         0.000          0.000
Exfiltration Loss ........         0.000          0.000
Initial Stored Volume ....         0.000          0.000
Final Stored Volume ......         0.000          0.000
Continuity Error (%) .....         0.000


*********************************
Highest Flow Instability Indexes
*********************************
All links are stable.


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :    60.00 sec
Average Time Step           :    60.00 sec
Maximum Time Step           :    60.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
Percent Not Converging      :     0.00
```

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min
DAM	JUNCTION	0.00	0.00	0.00	0 00:00
DEVELOPED	JUNCTION	0.00	0.00	0.00	0 00:00
EXEMPT	JUNCTION	0.00	0.00	0.00	0 00:00
NOT_EXEMPT	JUNCTION	0.00	0.00	0.00	0 00:00
RIVER_OUTFALL	OUTFALL	0.00	0.00	0.00	0 00:00

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
DAM	JUNCTION	6285.41	6285.41	6768 18:00	3.49e+004	3.49e+004	0.000
DEVELOPED	JUNCTION	3520.89	3520.89	6768 18:00	4.48e+004	4.48e+004	0.000
EXEMPT	JUNCTION	171.84	171.84	6768 19:00	3.82e+003	3.82e+003	0.000
NOT_EXEMPT	JUNCTION	384.40	384.40	6768 19:00	9.15e+003	9.15e+003	0.000
RIVER_OUTFALL	OUTFALL	0.00	10263.22	6768 18:00	0	9.27e+004	0.000

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet
DAM	JUNCTION	438959.02	0.000	0.000
DEVELOPED	JUNCTION	438959.02	0.000	0.000
EXEMPT	JUNCTION	438959.02	0.000	0.000
NOT_EXEMPT	JUNCTION	438959.02	0.000	0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
RIVER_OUTFALL	12.75	61.51	10263.22	92726.606
System	12.75	61.51	10263.22	92726.606

```
********************
Link Flow Summary
********************

-------------------------------------------------------------------------------
                                Maximum  Time of Max   Maximum    Max/    Max/
                                 |Flow|   Occurrence   |Veloc|    Full    Full
Link                 Type           CFS  days hr:min    ft/sec    Flow   Depth
-------------------------------------------------------------------------------
4                    DUMMY      6285.41  6768  18:00
NE                   DUMMY       384.40  6768  19:00
NOTDEV               DUMMY      3520.89  6768  18:00
PE                   DUMMY       171.84  6768  19:00


*************************
Conduit Surcharge Summary
*************************

No conduits were surcharged.


Analysis begun on:  Thu Jun 23 11:27:58 2016
Analysis ended on:  Thu Jun 23 11:29:03 2016
Total elapsed time: 00:01:05
```

```
  EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.010)
  --------------------------------------------------------------

  Otay River Exemption Analysis - Natural Scenario (via HMP applied to built-out watershed, including impounded
drainage area)
  WARNING 04: minimum elevation drop used for Conduit PE
  WARNING 04: minimum elevation drop used for Conduit NE
  WARNING 04: minimum elevation drop used for Conduit NOTDEV
  WARNING 04: minimum elevation drop used for Conduit 4

  *********************************************************
  NOTE: The summary statistics displayed in this report are
  based on results found at every computational time step,
  not just on results from each reporting time step.
  *********************************************************

  ****************
  Analysis Options
  ****************
  Flow Units ............... CFS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ NO
    Water Quality .......... NO
  Flow Routing Method ...... KINWAVE
  Starting Date ............ FEB-01-1965 00:00:00
  Ending Date .............. FEB-28-2015 23:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 01:00:00
  Routing Time Step ........ 60.00 sec


  **************************        Volume         Volume
  Flow Routing Continuity        acre-feet       10^6 gal
  **************************     ---------      ---------
  Dry Weather Inflow .......         0.000          0.000
  Wet Weather Inflow .......         0.000          0.000
  Groundwater Inflow .......         0.000          0.000
  RDII Inflow ..............         0.000          0.000
  External Inflow ..........    284576.467      92733.493
  External Outflow .........    284576.467      92733.493
  Flooding Loss ............         0.000          0.000
  Evaporation Loss .........         0.000          0.000
  Exfiltration Loss ........         0.000          0.000
  Initial Stored Volume ....         0.000          0.000
  Final Stored Volume ......         0.000          0.000
  Continuity Error (%) .....         0.000


  *********************************
  Highest Flow Instability Indexes
  *********************************
  All links are stable.


  *************************
  Routing Time Step Summary
  *************************
  Minimum Time Step           :    60.00 sec
  Average Time Step           :    60.00 sec
  Maximum Time Step           :    60.00 sec
  Percent in Steady State     :     0.00
  Average Iterations per Step :     1.00
  Percent Not Converging      :     0.00


  ******************
  Node Depth Summary
  ******************

  --------------------------------------------------------------------------------
                                  Average  Maximum  Maximum  Time of Max    Reported
                                    Depth    Depth      HGL   Occurrence   Max Depth
  Node                 Type         Feet     Feet     Feet  days hr:min        Feet
  --------------------------------------------------------------------------------
  EXEMPT               JUNCTION     0.00     0.00     0.00     0  00:00        0.00
  NOT_EXEMPT           JUNCTION     0.00     0.00     0.00     0  00:00        0.00
  DEVELOPED            JUNCTION     0.00     0.00     0.00     0  00:00        0.00
  DAM                  JUNCTION     0.00     0.00     0.00     0  00:00        0.00
  RIVER_OUTFALL        OUTFALL      0.00     0.00     0.00     0  00:00        0.00


  *******************
  Node Inflow Summary
  *******************
```

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
EXEMPT	JUNCTION	171.84	171.84	6768 19:01	3.82e+003	3.82e+003	0.000
NOT_EXEMPT	JUNCTION	384.40	384.40	6768 19:01	9.15e+003	9.15e+003	0.000
DEVELOPED	JUNCTION	3520.89	3520.89	6768 18:01	4.48e+004	4.48e+004	0.000
DAM	JUNCTION	6285.41	6285.41	6768 18:01	3.49e+004	3.49e+004	0.000
RIVER_OUTFALL	OUTFALL	0.00	10263.22	6768 18:01	0	9.27e+004	0.000

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet
EXEMPT	JUNCTION	438959.00	0.000	0.000
NOT_EXEMPT	JUNCTION	438959.00	0.000	0.000
DEVELOPED	JUNCTION	438959.00	0.000	0.000
DAM	JUNCTION	438959.00	0.000	0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
RIVER_OUTFALL	12.75	61.51	10263.22	92726.606
System	12.75	61.51	10263.22	92726.606

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
PE	DUMMY	171.84	6768 19:01			
NE	DUMMY	384.40	6768 19:01			
NOTDEV	DUMMY	3520.89	6768 18:01			
4	DUMMY	6285.41	6768 18:01			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Apr 14 12:00:45 2016
Analysis ended on: Thu Apr 14 12:02:23 2016
Total elapsed time: 00:01:38

SAN DIEGO
WATERSHED MANAGEMENT
WATER QUALITY IMPROVEMENT
2015-2016 ANNUAL R

3432

Prepared for the following San Diego River WMA Participating Agencies:

City of El Cajon
City of La Mesa
City of San Diego
City of Santee
County of San Diego
Caltrans

Order No.R9-2013-0001
Amended Order No. R9-2015-00011118 and R9-2015-0100

January 2017

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ABBREVIATIONS AND ACRONYMS

%	percent
µg	microgram
µg/L	micrograms per liter
µS/cm	microSiemens per centimeter
ac	acres
AEP	Association of Environmental Professionals
AFDM	ash-free dry mass
AMAL	average monthly action level
Basin Plan	Water Quality Control Plan for the San Diego Region
Bight	Southern California Bight Regional Monitoring Program
BMI	benthic macroinvertebrate
BMP DM	BMP Design Manual
Caltrans	California Department of Transportation
CCC	criterion continuous concentration
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
cf	cubic feet
CFR	Code of Federal Regulations
cfs	cubic feet per second
CFU/100 mL	colony-forming units per 100 milliliters
CMC	criterion maximum concentration
Copermittees	Municipal Copermittees
CRAM	California Rapid Assessment Method
CSBP	California Stream Bioassessment Procedure
CSCI	California Stream Condition Index
CTR	California Toxics Rule
DROPS	Drought Response Outreach Program for Schools
EMC	event mean concentration
ft	feet

FY	fiscal year
gpm	gallons per minute
HA	hydrologic area
HMP	Hydromodification Management Plan
HOA	home owners' association
HPWQC	highest priority water quality condition(s)
HSA	hydrologic subarea
HU	hydrologic unit
IBI	Index of Biotic Integrity
IC/ID	illegal connection and illicit discharge
IDDE	Illicit Discharge Detection and Elimination
IM	instantaneous maximum
JRMP	Jurisdictional Runoff Management Program
LID	Low Impact Development
LOE	line of evidence
MAP	Monitoring and Assessment Plan
MBAS	methylene blue active substance
MCL	maximum contaminant level
MDAL	maximum daily action level
mg/L	milligram per liter
mL	milliliter
MPN/100 mL	most probable number per 100 milliliters
MS4	municipal separate storm sewer system (storm drain system)
NAL	non-stormwater action level
ND	not detected
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NS	not sampled
NTU	nephelometric turbidity unit
NWS	National Weather Service
O/E	observed to expected
Permit	Regional MS4 Permit
pMMI	predictive multi-metric index

ppt	parts per thousand
PWQC	priority water quality condition(s)
QA	quality assurance
QMRA	quantitative microbial risk assessment
Regional Board (RWQCB)	San Diego Regional Water Quality Control Board
SAL	stormwater action level
SCCWRP	Southern California Coastal Water Research Project
SDSU	San Diego State University
SLP	Sustainable Landscapes Program
SMC	Stormwater Monitoring Coalition
SQO	sediment quality objective
SSM RWL	single sample maximum receiving water limitations
SUSMP	Standard Urban Stormwater Mitigation Plan
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TIE	toxicity identification evaluation
TMDL	total maximum daily load
TRE	toxicity reduction evaluation
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WMA	Watershed Management Area
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan
WQO	water quality objective
WRCC	Western Regional Climate Center
WQBEL	water quality based effluent limitation

Executive Summary

ES.1 INTRODUCTION

This first Water Quality Improvement Plan (WQIP) Annual Report for the San Diego River Watershed Management Area (WMA) (Figure ES-1) was developed in compliance with the Regional municipal separate storm sewer system (MS4) Permit (Permit) (San Diego Regional Water Quality Control Board [Regional Board], 2013). This Annual Report represents the work of the Participating Agencies in the WMA, including the Cities of La Mesa, El Cajon, Santee, and San Diego; the County of San Diego; and the California Department of Transportation (Caltrans). These Participating Agencies implement strategies through their WQIP and Jurisdictional Runoff Management Programs (JRMPs) to achieve improvements in the quality of stormwater (wet weather) and non-stormwater (dry weather) discharges from the MS4 (storm drain system) and, in turn, within the receiving waters by focusing on the highest priority water quality condition (HPWQC) and priority water quality condition(s) (PWQC) within the watershed. Caltrans' participation in the development of the WQIP was voluntary as they are regulated under a separate Permit from the California State Water Resources Control Board. Therefore, while they participated in the WQIP development on certain strategies, they do not participate in the Monitoring and Assessment Programs under the WQIP.

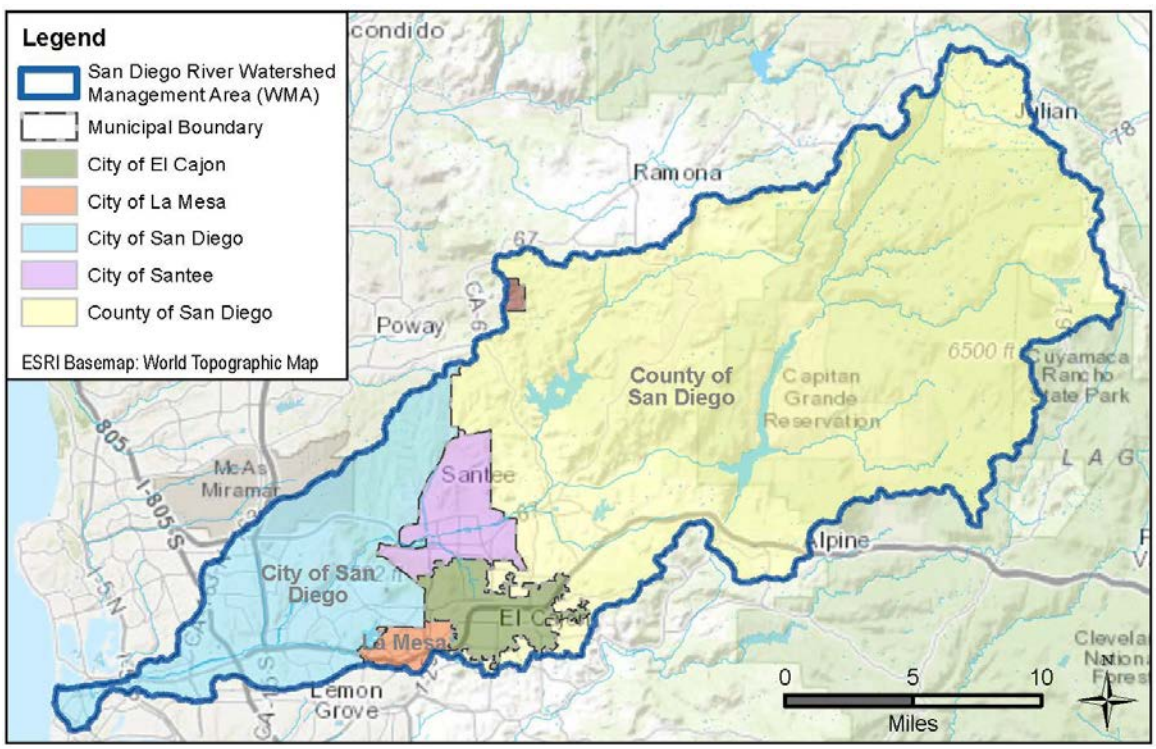

Figure ES-1. The San Diego River Watershed Management Area

The HPWQC and PWQCs for the WMA were identified based on an assessment of receiving water conditions, storm drain outfall discharges and their potential impacts, and the sources of pollutants in the watershed. Using the methodology outlined in the WQIP, bacteria was identified as the HPWQC for the WMA.

HPWQC:
Bacteria (Wet and Dry)

PWQCs:
Eutrophic Conditions, Total Dissolved Solids, Nitrogen, Phosphorus, Index of Biotic Integrity, Total Nitrogen as N (Dry)

ES.2 MONITORING AND ASSESSMENT

The 2015-2016 monitoring year was the first under the Monitoring and Assessment Plan (MAP) of the accepted WQIP that focuses on addressing bacteria. Monitoring results as they relate to bacteria are presented in the following sections, with details provided in the Annual Report. Overall, monitoring results support the selection of bacteria as the HPWQC and provide substantial data to assess progress toward goals.

ES.2.1 Total Maximum Daily Load (TMDL) Monitoring

Bacteria Total Maximum Daily Load (TMDL) sampling was conducted during wet and dry weather at one beach location and four creek locations in accordance with TMDL requirements specified in the Permit. Additional detail is provided in Section 3.1.2.

- Beach location
  - Pacific Ocean Shoreline at Dog Beach **FM-010**
- Creek locations:
  - Forester Creek **SDR-FC1**, **SDR-FC2**
  - Lower San Diego River **SDR-MLS**, **SDR-CDE**

TMDL Monitoring Location SDR-CDE

- Interim and final receiving water limitations (RWLs) for indicator bacteria are being achieved at FM-010 except the dry season geometric mean for *Enterococcus*.
- There were also no exceedances of geometric means for fecal coliform at SDR-CDE during the dry and wet seasons and at SDR-FC2 and SDR-MLS during the wet season. Both interim and final RWLs are being met for these analytes at these locations.
- All other results did not meet the interim or final RWLs.

- Interim numeric targets are not required to be achieved until 2020 for dry weather and 2028 for wet weather; therefore, the exceedances observed during 2015-2016 do not indicate non-compliance at this time.

ES.2.2 Storm Drain Outfall Dry Weather Field Screening

Dry weather field screening is conducted to identify non-stormwater and illicit discharges from the Participating Agencies' major storm drain outfalls, determine which discharges are persistent, and prioritize those discharges that will be investigated and eliminated.

Based on field screening visits and available historical data, the Participating Agencies determined the flow status of each major storm drain outfall as persistent, transient, dry, or undetermined. As defined in the Permit, flow status for a given outfall is "dry" if no flowing or standing water is observed at the outfall over three most recent visits, and "persistent" flow is defined as presence of flowing or standing water upon three most recent visits. Otherwise, the outfall status is classified as "transient." Additional detail is provided in Section 3.2.1.1.

- There was no trash or little trash (less than 50 pieces) during most (95%) of the trash assessments (n = 375) at visited outfalls.
- Outfalls were dry during 49% of routine field screening visits; flowing water was present during 30% of routine visits.
- When flow was observed, the majority (75 of 113) of the flow rates were less than five gallons per minute.

Overall, since the prior monitoring year:

- The number of "dry" outfalls decreased by one.
- Outfalls categorized as "transient" decreased by three.
- Outfalls with "persistent" flow increased by 11.
- The number of "undetermined" outfalls decreased by five.
- No modifications to field screening monitoring locations or frequencies are planned for 2016-2017 in the WMA.

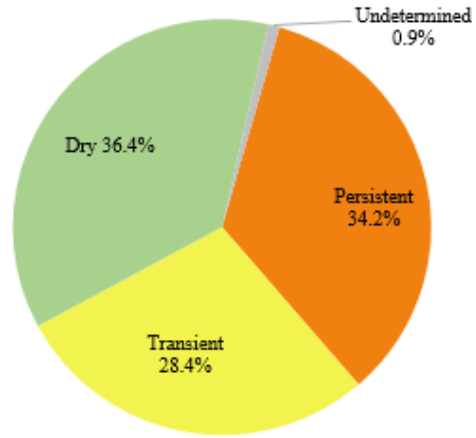

Flow Determinations for Major Storm Drain Outfalls (n=225)

Major storm drain outfalls are prioritized for monitoring by each Participating Agency based on criteria such as persistence of non-stormwater flow, monitoring data results, and the potential threat to receiving water quality. Monitoring was conducted at the highest priority outfalls, which are shown in Figure ES-2. Highest priority storm drain outfall monitoring is described in ES.2.3. These outfalls were also a specific focus for the Illicit Discharge Detection and Elimination (IDDE) investigations by each Participating Agency as described in Section ES.2.5.

ES.2.3 Highest Priority Storm Drain Outfall Dry Weather Monitoring

Analytical monitoring during dry weather was conducted at the highest priority outfalls identified by each Participating Agency. Monitoring locations are shown in Figure ES-2, and results for bacteria in non-stormwater samples at these outfalls are shown in Figure ES-3. Eighty-three % of *Enterococcus* and 71% of fecal coliform results were above non-stormwater action levels (NALs). No re-prioritizations of the highest priority outfalls are planned for 2016-2017 in the WMA. Additional detail is provided in Section 3.2.1.2.

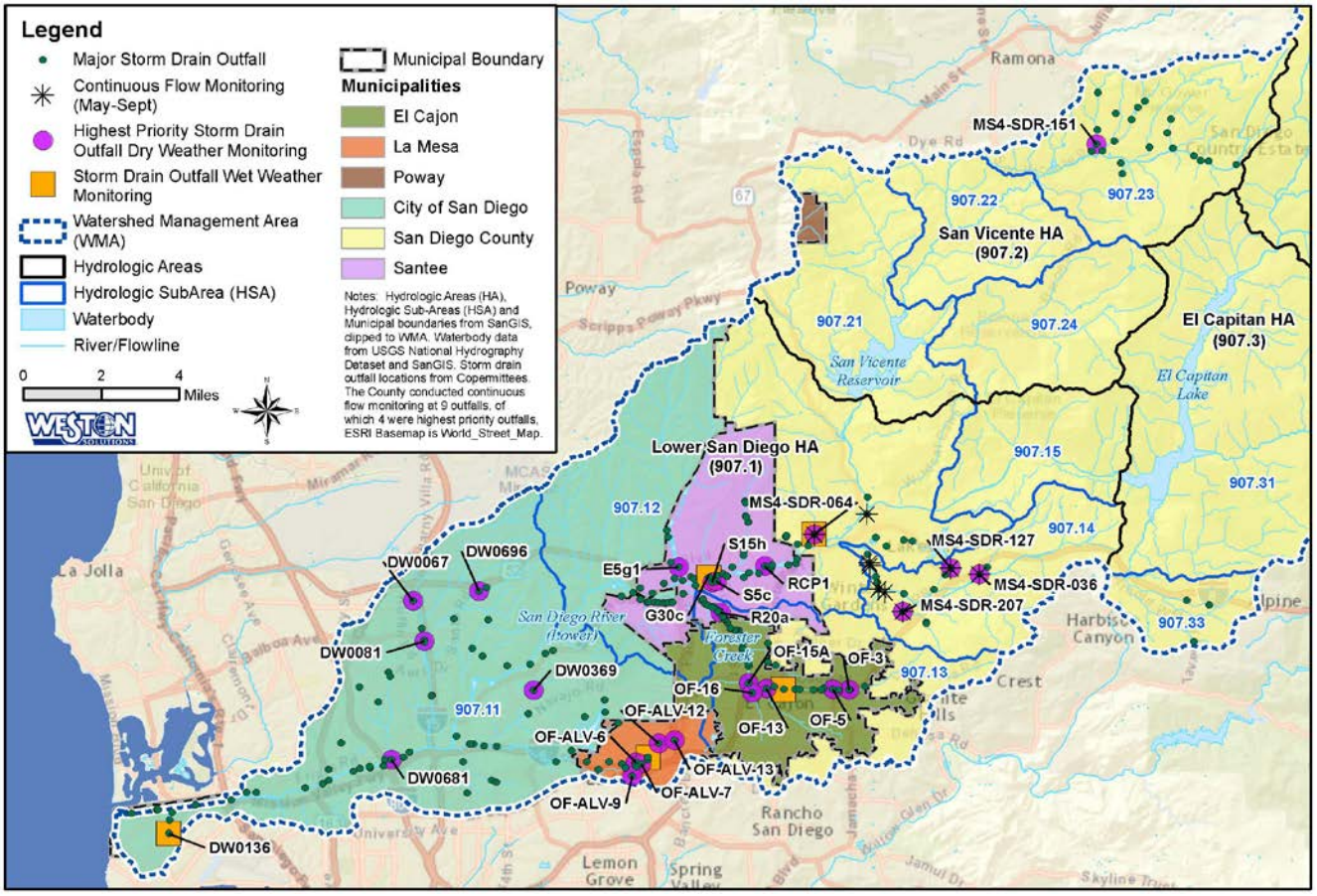

Figure ES-2. 2015-2016 Dry and Wet Weather Storm Drain Outfall Monitoring Locations

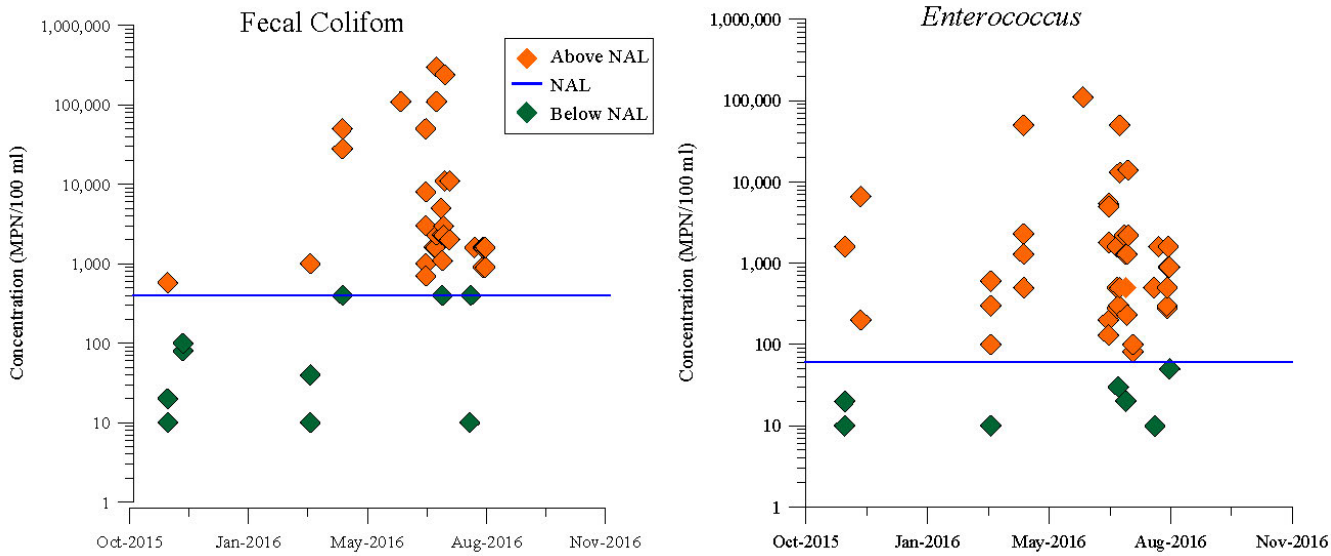

Figure ES-3. Indicator Bacteria Concentrations in Highest Priority Storm Drain Outfall Dry Weather Samples

ES.2.4 Illicit Discharge Detection and Elimination (IDDE) Program

Each Participating Agency's IDDE Program seeks to address and reduce the potential contribution of pollutants from stormwater and non-stormwater discharges through the storm drain system. The highest priority outfalls were a specific focus of IDDE investigations. Additional detail is provided in Section 3.2.1.3.

Flow sources identified through the Participating Agencies' outfall flow investigations included:

- The most common source of non-stormwater flow was irrigation runoff, followed by groundwater.
- Sources were recorded as known or suspected, and identified as controllable or uncontrollable.
- In several cases, the sources of non-stormwater flows investigated were allowable (e.g., groundwater), were reported to enforcement for follow-up actions, or were eliminated.

The City of San Diego and County of San Diego are utilizing flow meters at selected outfalls to assist in source identification.

ES.2.5 Storm Drain Outfall Wet Weather Monitoring

Storm drain outfall wet weather monitoring identifies and quantifies pollutants in stormwater discharges from the storm drain system, guides pollutant source identification efforts, and tracks progress toward achieving wet weather numeric goals set forth in the WQIP. Monitoring locations are shown in Figure ES-2 in Section ES.2.3. Additional detail is provided in Section 3.2.2.

- 100% of *Enterococcus* and fecal coliform concentrations in storm drain outfall wet weather discharges were above the single sample maximum water quality based effluent limitations specified in the Permit for the Bacteria TMDL.

ES.2.6 Special Studies

Special studies conducted in the San Diego River WMA are described in Section 3.3 and included the following:

- Reference Streams and Beaches Studies - provide a scientific basis for updating the "reference" conditions to be considered in evaluating compliance levels in the Bacteria TMDL, and will be useful in the re-evaluation of the Bacteria TMDL.
- Wet Weather Epidemiology Study – demonstrated the applicability of quantitative microbial risk assessment (QMRA) for recreational water risk estimates during wet weather and may facilitate consideration of site-specific water quality criteria.

Wet Weather Epidemiology Study Site – Ocean Beach

ES.3 WATERSHED STRATEGY IMPLEMENTATION AND PROGRESS TOWARD GOALS

The Permit requires the Participating Agencies to select the HPWQC for the WMA and develop strategies and numeric goals to address that HPWQC. Since the acceptance of the WQIP in February 2016, the Participating Agencies have implemented strategies and have begun making progress toward achieving numeric goals for bacteria. Many of the interim goals to be achieved during the current Permit term, which extends to 2018, are expressed in terms of performance measures. Examples of performance measures include the amount of area treated by installation of green infrastructure or percent reduction in dry weather discharge flow rates. Performance measures are helpful as milestones over relatively short timeframes because they are closely linked to reductions in bacteria, and they are subject to less natural variation than water quality monitoring data. Several key strategy types, which address not only bacteria but other PWQC in the watershed, were implemented broadly across the watershed and included the following:

- Preventing wastewater discharges to the storm drain system.
- Trash cleanups.
- Dry and wet weather runoff reduction programs.
- Retrofit and rehabilitation projects.
- Additional monitoring to investigate sources of dry weather flows.

Interim Permit-term goals are applicable to individual jurisdictions, but the collective progress towards achieving these goals also indicates progress on a watershed level. Progress made toward achievement of the interim Permit-term numeric goals is summarized below, with supporting information provided in Table ES-1. Additional detail is provided in Section 4.

Permit Term Numeric Goals for the City of El Cajon:

- Dry Weather Goal: Flow Reduction – **Goal Has Been Achieved**
- Dry Weather Goal: Encampment Removals - **Goal Has Been Achieved**
- Wet Weather Goal: Cleanup Events at Forester Creek – **Goal Has Been Achieved**
- Wet Weather Goal: Pet Waste Management – **On Track to Achieve Goal**

Permit Term Numeric Goals for the County of San Diego:

- Dry Weather Goal: Flow Reduction – **Baseline Estimations are Complete**
- Wet Weather Goal: BMP Implementation – **On Track to Achieve Goals**
- Wet Weather Goal: Distributed BMP Operation and Maintenance – **Goal Has Been Achieved**

Permit Term Numeric Goals for the City of La Mesa:

- Dry and Wet Weather Goal: Alvarado Creek Restoration – **On Track to Achieve Goals**

Permit Term Numeric Goals for the City of Santee:

- Dry and Wet Weather Goal: Bacteria Load Reductions – **On Track to Achieve Goals**

Permit Term Numeric Goals for the City of San Diego:

- Dry and Wet Weather Goal: Green Infrastructure BMPs – **On Track to Achieve Goals**
- Dry Weather Goal: Flow Reduction – **Goal Has Been Achieved**

Table ES-1. Progress Toward Permit Term Numeric Goals in the San Diego River WMA for the 2015-2016 Monitoring Year

City of El Cajon
Dry Weather
• The estimated dry weather flow volume from major outfalls and the percentage of major outfalls with flowing water during dry weather were 58% and 47% lower than the baseline, respectively, during FY 15-16. Both of these numbers represent greater reductions than the Permit-term reduction goal of 10%. • The City performed 18 transient encampment removal events and removed 212.6 cubic yards of trash and debris during FY 15-16. These numbers are greater than the Permit-term goals of five cleanups per year and 25 cubic yards of material removed per year; especially high numbers were achieved in FY 15-16 due to flood prevention cleanups in channels in anticipation of El Niño conditions.
Wet Weather
• The City sponsored two cleanup events at Forester Creek during FY 15-16, in line with the Permit-term goal to complete two per year. Approximately 2,280 lbs. of trash and debris were removed. • The City began planning its expanded pet waste management outreach program during FY 15-16 and is on track to implement it in one focused area or for one homeowners' association by 2018, as required to meet the Permit-term goal.
City of La Mesa
Dry and Wet Weather
• The City started construction of the 900 linear feet of restoration in Alvarado Creek in FY 15-16. The project is scheduled to be completed in FY16-17, which will achieve the City's Permit-term goal.
City of Santee
Dry Weather
• During FY15-16, the City of Santee worked with a local big box business to eliminate a persistent discharge. Regular flow had been observed at an outfall to the San Diego River located close to the Town Center commercial development. Through upstream investigation efforts, the City tracked the flow source to two catch basins and a manhole in the shopping center, which had a total flow rate of about three gallons per minute. Further investigation found that the source of flow to these locations was from swamp coolers in a big box store. The City worked with store management, their corporate office, and legal department to eliminate the flow. Corrections involved the vetting of multiple solutions, with the store deciding on the replacement of the HVAC units, implementing a closed loop plumbing system, and redirecting any excess runoff to the sewer. • The City participated with the sheriff to abate transient encampments, and facilitated the disposal of waste from 22 volunteer based clean up events. The total amount of debris removed from the San Diego River within Santee's jurisdiction was 45.56 cubic yards.
Wet Weather
• The City sent out 1,115 letters to private properties informing them of their responsibility to prevent erosion, and clean out their brow ditches. Public Services staff also prepared for the forecasted El Niño conditions by conducting additional channel maintenance to prevent potential flooding.

Table ES-1. Progress Toward Permit Term Numeric Goals in the San Diego River WMA for the 2015-2016 Monitoring Year

City of San Diego
Dry Weather
• Average dry weather flow was reduced by 46.7% from the calculated baseline average flow, exceeding the Permit-term reduction goal of 10%.
Dry and Wet Weather
• The City implemented green infrastructure projects that treat 43.6 acres of drainage area, which is about 75% of the total of 58.4 acres to be treated by 2018 to meet the FY 18 performance based goal. • In accordance with the requirements of the WQIP, the storm drain discharge baselines to be used for assessing progress toward dry and wet weather jurisdictional numeric goals for bacteria reductions due to be achieved in future permit terms were calculated and are presented in Table A3-9 and Table A3-10 of Appendix 3.
County of San Diego
Dry Weather
• In accordance with the County's commitment in the WQIP, additional dry weather flow data beyond routine major outfall monitoring was collected from storm drain outfalls during the 2015-2016 monitoring year. A baseline was established using that data. In future years, data will be compared to the baseline to assess progress toward the County's flow reduction goal.
Wet Weather
• Planned programmatic (non-structural) BMPs were implemented according to the schedule in the WQIP to reduce bacteria loads. Continued implementation of these non-structural BMPs through FY 17-18 will achieve a Permit-term goal. • BMPs constructed between 2003 and 2009 were operated and maintained to reduce bacteria loads. Continued operation and maintenance of these structural BMPs through FY 17-18 will achieve a Permit-term goal.

ES.4 CONCLUSION

Data collected in the San Diego River WMA during the 2015-2016 monitoring year support the identified priority and highest priority water quality conditions as provided in the WQIP and provide the information necessary to assess progress. Since the acceptance of the WQIP in February 2016, the Participating Agencies have begun implementing their strategies intended to result in achievement of dry and wet weather interim goals for the term of the current Permit, and progress has been demonstrated toward each goal. The strategies implemented by the Participating Agencies and identified in the WQIP focus on reducing bacteria discharges, but also address other pollutants, providing a multi-benefit approach to implementation.

The Participating Agencies will continue to implement these identified strategies, collect additional monitoring and programmatic data, and assess their progress toward goals on an annual basis. New data and information will be utilized as it becomes available to improve the WQIP with updates to priorities, assessments of and adjustments to goals, updates to strategies to achieve the latest goals, and updates to the MAP as necessary through the adaptive management process.

1 Introduction

The San Diego Regional Water Quality Control Board (Regional Board) regulates discharges from municipal separate storm sewer systems (MS4s) (storm drain systems) in the San Diego Region under the Regional MS4 Permit[1] (Permit) (Regional Board, 2013). The Permit covers portions of San Diego County, southern Orange County, and southwestern Riverside County and regulates Phase I municipalities who own and operate storm drain systems, which discharge stormwater (wet weather) runoff and non-stormwater (dry weather) runoff to surface waters throughout the San Diego Region. One of the main goals of the Permit is to focus on water quality improvement outcomes rather than completing specific actions, giving the Participating Agencies more control over how their stormwater programs are implemented.

Within the Permit, the San Diego Region is sub-divided into 10 watershed management areas (WMAs), which cover the major, natural drainages in the region[2]. The Permit requires the development of a Water Quality Improvement Plan (WQIP) for each WMA, which guides the Participating Agencies' Jurisdictional Runoff Management Programs (JRMPs) (their local plans) towards an outcome-based approach and improved water quality. This process is accomplished through an adaptive planning and management method that identifies the highest priority water quality condition(s) (HPWQC) within a watershed and implements strategies through the WQIP and JRMPs to achieve improvements in the quality of discharges from the storm drain system and within the receiving waters.

Participating Agencies within each WMA are required by the Permit to submit an Annual Report to communicate the implementation status and progress of the WQIPs and corresponding JRMPs in meeting the defined numeric goals[3]. This San Diego River WMA Annual Report covers two reporting periods on different schedules. The first is from July 1, 2015 to June 30, 2016 for the JRMPs and WQIP strategy implementation (note that the WQIP was accepted in February 2016), and the second is from October 1, 2015 to September 30, 2016 for monitoring and assessment programs. Progress to achieve goals may be assessed for either reporting period, depending on the goal metric. This Annual Report, the first under the San Diego River WMA's WQIP, addresses the requirements of the Permit. Table 1-1 provides an overview of the Permit requirements that must be addressed by the Annual Report, and where they are discussed within this document. Appendix 1 includes additional detail regarding the specific Permit requirements as well as where they are addressed within the Annual Report[4]. Appendix 2 provides information related to each jurisdiction's JRMP.

[1] Order No. R9-2013-0001, as amended by Order Nos. R9-2015-001 and R9-2015-0100. http://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/docs/2015-1118_AmendedOrder_R9-2013-0001_COMPLETE.pdf

[2] Order No. R9-2013-0001 (as amended), Table B-1 (page 21 of 139)

[3] Order No. R9-2013-0001 (as amended), F.3.b.(3) (page 132-133 of 139)

[4] Order No. R9-2013-0001 (as amended), F.3.b.(3)(f) Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the San Diego Water Board. Any Copermittee monitoring data utilized in developing the Water Quality Improvement Plan Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the Water Quality Improvement Plan Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.

Table 1-1. Regional MS4 Permit WQIP Annual Reporting Provisions and Corresponding Annual Report Sections[5]

Permit Provision	WQIP Annual Report Section						WQIP Appendix			
	Section 1 – Introduction	Section 2 – Priority & Goals	Section 3 – Monitoring	Section 4 – Achieving Goals	Section 5 – Adaptive Mgmt.	Section 6 – Conclusions	Appendix 2 – Jurisdictional Specific Info.	Appendix 3 – Goals	Appendix 4 – Monitoring	Appendix 5 – Adaptive Mgmt.
Provision A										
A.4.a.(2)			X		X		X		X	X
Provision B										
B.5.a.					X				X	X
B.5.b.			X	X	X		X	X	X	X
B.5.c.					X					X
Provision D										
D.1.e.(2)(c)			X						X	
D.2.b.(2)(iv)			X						X	
D.4.b.(1)(a)(ii)			X						X	
D.4.b.(1)(b)			X		X				X	X
D.4.b.(1)(c)			X		X				X	X
D.4.b.(2)(a)					X					X
D.4.b.(2)(b)			X		X				X	X
D.4.b.(2)(c)			X		X				X	X
D.4.b.(2)(d)									X	
D.4.c.			X						X	
D.4.d.					X					X
D.4.d.(1)					X					X
D.4.d.(2)					X					X
D.4.d.(3)					X					X
Provision E										
E.1.b.							X			
E.2.d.(4)			X						X	
E.8.c.	X						X			
Provision F										
F.1.b.(6)					X					X
F.2.a.(2)					X					X
F.2.a.(3)					X					X
F.2.b.(1)					X		X			
F.2.b.(2)					X		X			
F.2.c.(1)(c)					X					X
F.3.b.(3)(a-f)	X		X	X	X		X		X	X
Attachment E										
Attachment E			X						X	

[5]Appendix 1 includes additional detail regarding the specific Permit requirements, as well as where they are addressed within the Annual Report.

This San Diego River WMA Annual Report is structured as follows:

1. **Introduction** – Provides an overview of the Regional MS4 Permit, the WQIP, and the Annual Reporting requirements.

   Appendix 1. Crosswalk of Permit Requirements and Annual Report References

   Appendix 2. Jurisdictional Runoff Management Program Annual Report Certifications and Forms, Strategies, and Changes to the Best Management Practices (BMP) Manual (as applicable)

2. **San Diego River WMA Priorities and Numeric Goals** – Introduces the WMA, the priority water quality conditions (PWQC) and HPWQC for the watershed, and the numeric goals and schedules developed to measure progress in addressing the priority conditions.

   Appendix 3. Water Quality Improvement Plan Numeric Goals

3. **Monitoring and Assessment** – Summarizes the monitoring programs and provides an assessment of the data collected.

   Appendix 4. Monitoring Results and Assessments

4. **Implementation and Progress Towards Achieving Numeric Goals** – Provides a detailed assessment of the progress towards achieving the numeric goals, with a focus on those numeric goals occurring during the Permit term. The section also provides an overview of the strategies implemented to achieve the numeric goals, the status of implementation, and plans for the coming year.

5. **Adaptive Management** – Provides a summary of the elements of the WQIP process that be altered during the course of Permit implementation and any changes that were made as a result of new information realized during the reporting period.

   Appendix 5. Adaptive Management Modifications

6. **Conclusions** – Provides the conclusions that are based on the data collected and assessments conducted during implementation of the WQIP.

7. **References**

2 Overview of San Diego River Watershed

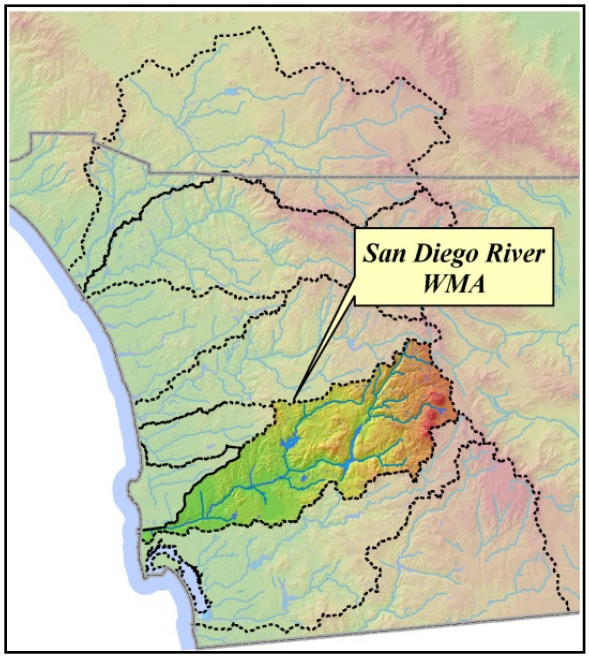

The San Diego River WMA is located in central San Diego County, bordered by the Mission Bay and La Jolla, Peñasquitos, and San Dieguito River WMAs to the north and the San Diego Bay WMA to the south. Major surface water bodies and the municipalities/agencies responsible for stormwater management within the WMA are summarized in Table 2-1. Although the California Department of Transportation (Caltrans) is not a part of the Permit, Caltrans works cooperatively with the Copermittees in accordance with their statewide National Pollutant Discharge Elimination System (NPDES) permit.

The San Diego River WMA (hydrologic unit [HU] 907) encompasses approximately 277,543 acres, or 434 square miles. For the purposes of the San Diego River WMA WQIP, the watershed was separated into upper and lower portions to better focus water quality prioritization JRMP implementation efforts. The upper portion, above the reservoirs, is comprised of the San Vicente (907.2), El Capitan (907.3), and Boulder Creek (907.4) hydrologic areas (HAs), whereas the lower portion, below the reservoirs, is the Lower San Diego (907.1) HA. These HAs are comprised of 14 hydrologic subareas (HSAs).

The San Diego River originates in the Cuyamaca Mountains near Santa Ysabel, over 6,000 feet above sea level along the western border of the Anza Borrego Desert State Park, and extends more than 52 miles across central San Diego County. It ultimately discharges to the Pacific Ocean at Dog Beach in Ocean Beach, a community within the City of San Diego. Additional information is provided in the San Diego River WMA WQIP (Larry Walker Associates et al., 2016). A map of the watershed is shown in Figure 2-1.

Table 2-1. Major Surface Water Bodies and the Municipalities/Agencies Responsible for Stormwater Management within the San Diego River WMA

Hydrologic Unit(s)	Major Surface Water Bodies	Municipalities/Agencies
San Diego River (903.00)	▪ San Diego River ▪ Pacific Ocean	▪ City of El Cajon ▪ City of La Mesa ▪ City of San Diego ▪ City of Santee ▪ County of San Diego ▪ Caltrans[6]

[6]Caltrans is regulated under a separate permit from the State Water Resources Control Board (Order No. 2012-0011 DWQ). However, Caltrans has voluntarily participated in the development of Water Quality Improvement Plans throughout the San Diego Region.

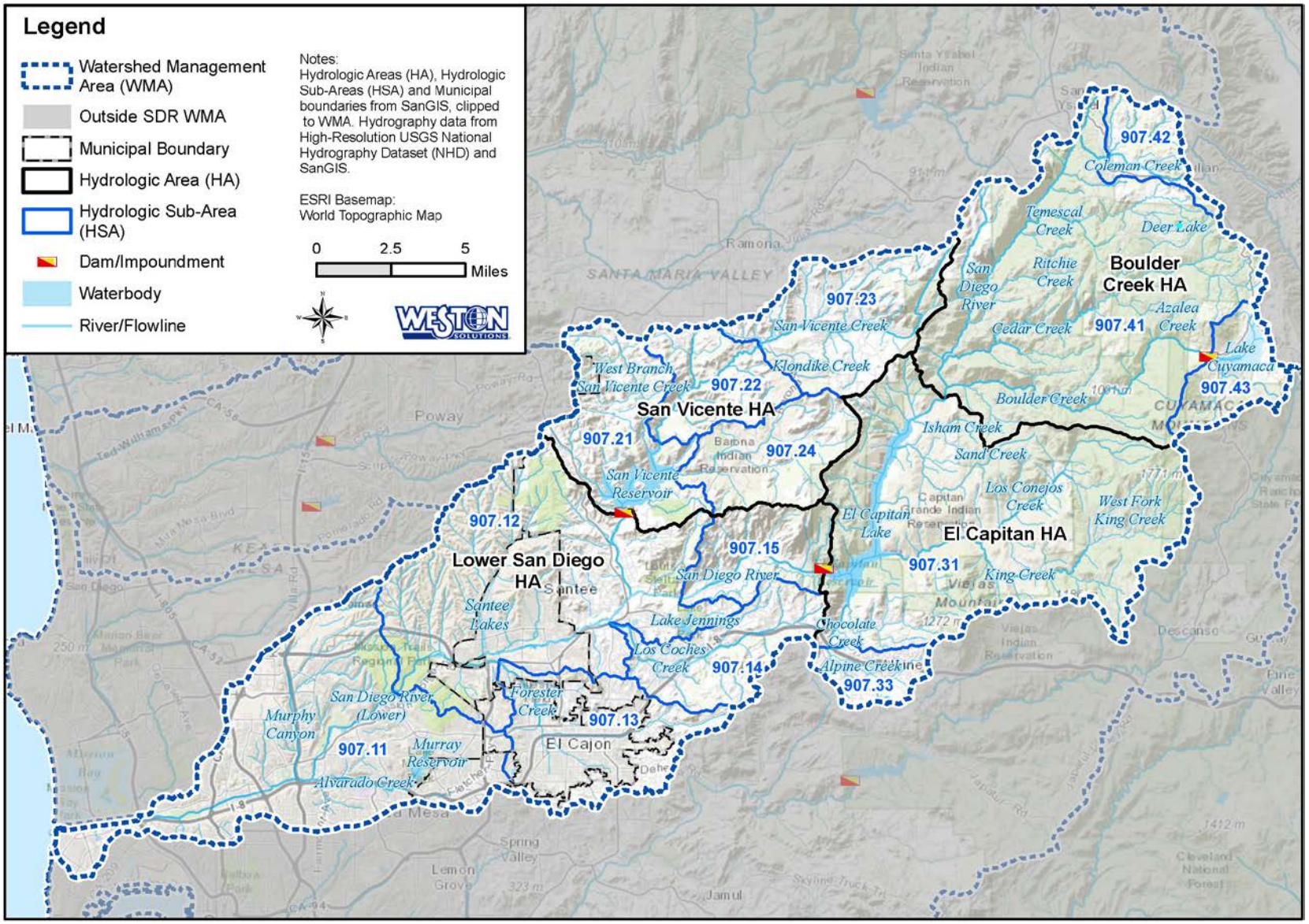

Figure 2-1. San Diego River Watershed Management Area

The total annual rainfall in the San Diego Region during the reporting period (October 2015 through September 2016), as measured at San Diego International Airport-Lindbergh Field, was 8.21 inches. Despite El Niño conditions reported by the National Weather Service (NWS) Climate Prediction Center through the spring of 2016 (National Oceanic and Atmospheric Administration [NOAA], 2016a), this total is below the historical (1939 to 2016) annual mean of 9.85 inches. The majority of the rainfall during the 2015-2016 reporting period fell during November and January, and rainfall was above average for those months (Western Regional Climate Center [WRCC], 2016). Long-term drought conditions persisted in the San Diego region during the 2015-2016 monitoring year, and temperatures were generally above average (NOAA, 2016b).

Annual rainfall at four Alert System Precipitation Gauges (http://sdcfcd.org/whatalert.html) in the San Diego River WMA, all within the Lower San Diego HA, is shown in Figure 2-2. Annual rainfall totals at these stations ranged from 11.87 to 15.63 inches. Precipitation totals at the Alert Stations are provided for the fiscal year (FY) (July 1, 2015 to June 30, 2016) for consistency with the wet weather storm drain outfall assessments presented in Appendix 4. The rainfall total at Lindbergh field for FY 2015-2016 was 10.82 inches (WRCC, 2016).

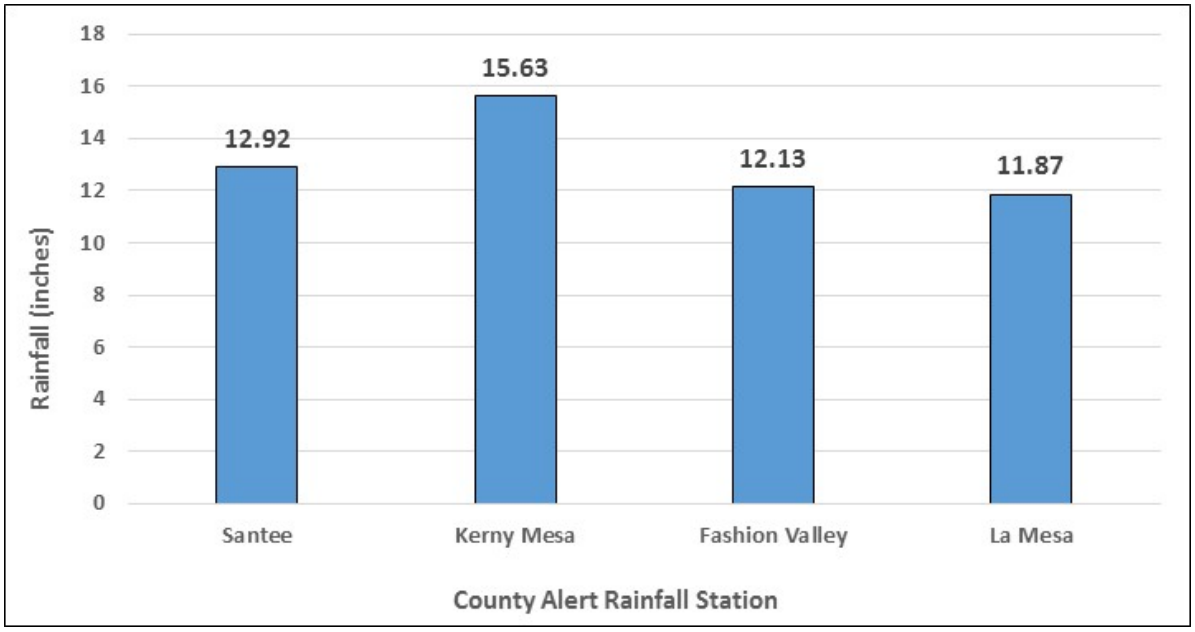

Figure 2-2. Total Precipitation at Four County Alert Weather Stations in the Lower San Diego HA, July 1, 2015 to June 30, 2016

2.1 SAN DIEGO RIVER WATER QUALITY IMPROVEMENT PLAN

The WQIP for the San Diego River WMA identifies strategies that will be implemented through JRMPs to address bacteria in pursuit of measurable numeric goals that will achieve improvements in the quality of storm drain outfall discharges and, in turn, the receiving waters. The WQIP outlines how the Participating Agencies within the watershed are evaluating water quality conditions, prioritizing those water quality conditions, and using these common priorities to guide jurisdictional and watershed scale programs to address the highest priorities.

Figure 2-3 illustrates the general planning, implementation, monitoring, and adaptive management process and the text that follows briefly describes the components of the WQIP.

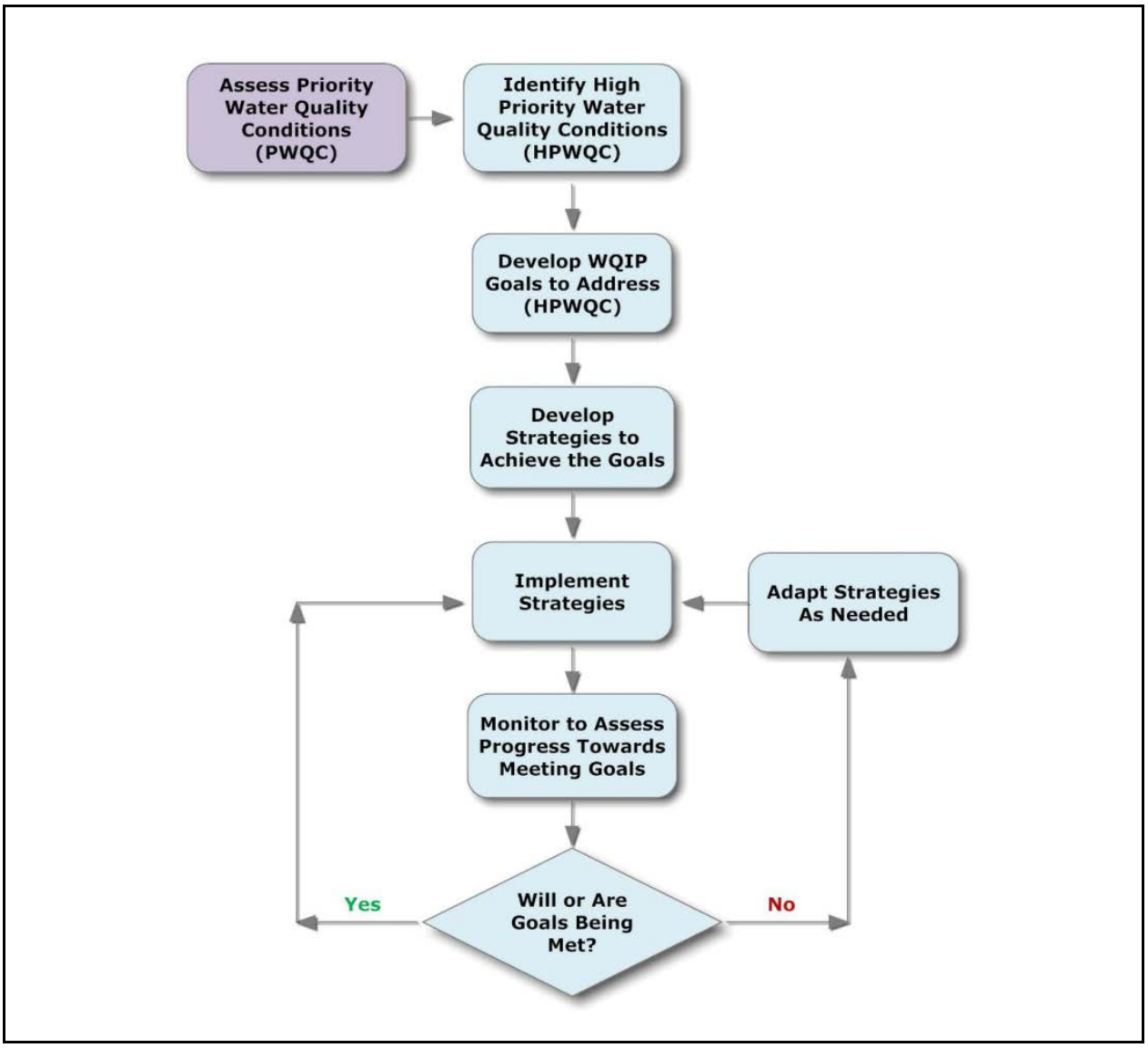

Figure 2-3. Water Quality Improvement Plan Process

The complete WQIP document contains the following components, identified in the 2013 Permit:

- Priority Water Quality Conditions.
- Goals, Strategies, and Schedules.
- Watershed Management Area Analysis (WMAA), which the Permit indicates is optional.

- Monitoring and Assessment Program (MAP), which also documents how the Participating Agencies will comply with the applicable monitoring and assessment portions of the Permit.
- Iterative Approach and Adaptive Management Process.

The complete WQIP was provided to the Regional Board on June 26, 2015. Appropriate revisions were made to address public comments and Regional Board concerns, and a revised WQIP was submitted to the Regional Board for acceptance on September 29, 2015. The Regional Board advised the San Diego River WMA Copermittees on January 7, 2016 that minor deficiencies remained, and provided proposed corrections on January 29, 2016. The Regional Board accepted the revised San Diego River WQIP, with the proposed corrections, on February 12, 2016. WQIP documents can be accessed on the Regional Board website: http://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/wqip.shtml.

2.2 PRIORITY AND HIGH PRIORITY WATER QUALITY CONDITIONS

Using the methodology outlined in the WQIP, bacteria was identified as the HPWQC for the San Diego River WMA. The HPWQC and additional priority water quality conditions (PWQCs) for the WMA are summarized in Table 2-2. Each of the water bodies listed in Table 2-2 are located in the Lower San Diego HA except El Capitan Lake and San Vincente Reservoir, which are located in the El Capitan and San Vincente HAs, respectively. Additional information is provided in Section 2 and Appendix 2D of the WQIP.

Table 2-2. San Diego River WMA Priority Water Quality Conditions

Constituent	Wet	Dry	Beneficial Use*	Geographic Area
Highest Priority Water Quality Condition				
Bacteria	X	X	REC-1 (water contact recreation)	Forester Creek, Pacific Ocean Shoreline at San Diego River Outlet, Lower San Diego River
Priority Water Quality Conditions				
Eutrophic Conditions		X	MAR (marine habitat)	Famosa Slough and Channel
Total Dissolved Solids (TDS)		X	IND (industrial service supply)	Forester Creek
			AGR (agricultural supply)	Lower San Diego River
Nitrogen		X	WARM (warm freshwater habitat)	Murray Reservoir, Lower San Diego River
			MUN (municipal and domestic supply)	El Capitan Lake
Phosphorus		X	WARM (warm freshwater habitat)	Lower San Diego River
Index of Biotic Integrity (IBI)		X	WARM (warm freshwater habitat)	Lower San Diego River
Total Nitrogen as N		X	MUN (municipal and domestic supply)	San Vincente Reservoir

* Source: Water Quality Control Plan for the San Diego Region (Basin Plan) (Regional Board, 1994).

Bacteria are important indicators of water quality for recreational users like surfers, swimmers, and beach waders. Indicator bacteria are used as detection surrogates or proxies for pathogens because they are easier and less costly to measure. Allowable bacteria loads for the watershed are defined by the Bacteria Total Maximum Daily Load (TMDL)[7], which requires the Participating Agencies to improve water quality in local waters during both dry weather and wet weather conditions within a 10- and 20-year compliance timeline, respectively (see Section 2.3).

2.3 WATER QUALITY IMPROVEMENT PLAN NUMERIC GOALS

The Participating Agencies identified and developed specific water quality improvement numeric goals and strategies to address bacteria within the WMA. The numeric goals (interim and final) and corresponding schedules support implementation of the WQIP and measure reasonable progress towards addressing bacteria. In addition, the Participating Agencies' monitoring and assessment programs measure progress towards attaining these goals.

The numeric goals for the San Diego River WMA WQIP are designed to demonstrate progress towards compliance with the Bacteria TMDL, which differentiates between wet and dry conditions. Since wet weather bacteria loads are more challenging to control, the wet and dry TMDL targets and load reductions have different schedules. The targets for dry and wet weather are on a 10- and 20-year timeline, respectively. As a result, the goals extend beyond the timeframe of the current Permit. For this reason, the numeric goals within the WQIP are categorized into three distinct time periods:

1. Interim goals within the five-year Permit term. These goals are specific to each Participating Agency's jurisdiction.
2. Interim goals based on the interim Bacteria TMDL compliance pathways.
3. Final goals based on final Bacteria TMDL compliance options.

Attachment E.6 of the Permit outlines interim dry and wet weather TMDL compliance dates of April 4, 2017 and April 4, 2021, respectively. The Permit allows the Participating Agencies to propose alternative schedules. The Participating Agencies proposed moving the interim TMDL compliance dates for dry and wet weather to April 4, 2020 and April 4, 2028, respectively. These dates were proposed to allow adequate time to investigate and mitigate sources of bacteria and to monitor progress and adjust implementation through the adaptive management process. The detailed numeric goals for the San Diego River WMA are presented by jurisdiction in Appendix 3, and the timeline for achievement of these goals is shown in Figure 2-4.

[7]Revised TMDL for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (including Tecolote Creek). Resolution No. R9-2010-0001. Approved February 10, 2010.

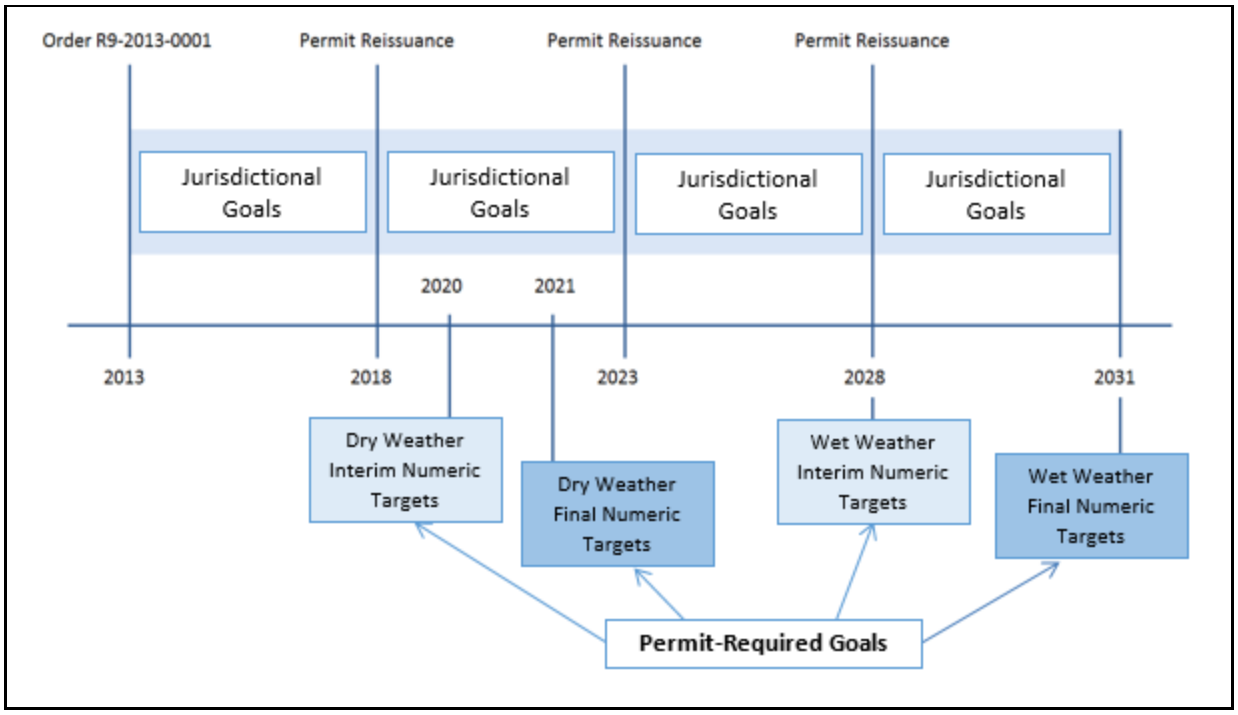

Figure 2-4. Timeline for Achievement of Bacteria TMDL Numeric Targets in the San Diego River WMA

3 Monitoring and Assessment

The Permit requires an outcome-based approach to improve water quality in stormwater and non-stormwater discharges, guided by strategies and goals identified in the WQIP. By conducting multiple types of monitoring activities, the Participating Agencies are collecting data to evaluate progress toward achieving numeric goals, and determine if modifications to stormwater program activities are necessary. Caltrans is not a Participating Agency for the monitoring and assessment program described in this section, as Caltrans is regulated under a separate permit from the State Water Resource Control Board.

This Annual Report assesses the data collected within the San Diego River WMA in combination with the Participating Agencies' management actions to determine what actions are improving the quality of storm water outfall discharges and/or receiving water conditions (Section 4) and where additional actions may be necessary (Section 5).

The Monitoring and Assessment Program includes five major components:

1. Receiving water monitoring that measures the long-term health of the watershed during dry and wet weather conditions;
2. Storm drain outfall discharge monitoring program that investigates illicit non-stormwater flows from outfalls and measures changes in the quality of discharges from the storm drain system during wet weather;
3. Special studies that look further into the sources, pollutants, and/or stressors that contribute to bacteria;
4. Illicit Discharge Detection and Elimination (IDDE) investigations and inspections of potential pollutant sources; and
5. Monitoring to assess progress toward goals and schedules.

This section describes results from the implementation of the MAP for the WMA as they pertain to bacteria. The MAP was developed and implemented to accomplish the following objectives:

1. Measure the progress toward addressing bacteria;
2. Assess the progress toward achieving the numeric goals, strategies, and schedules; and
3. Evaluate each Participating Agency's overall efforts to implement the WQIP.

Because bacteria was identified as the HPWQC for the WMA, monitoring is being conducted to characterize bacteria levels in discharges from storm drain outfalls, to identify potential sources of bacteria, and to assess the effectiveness of strategies designed to address bacteria. Additionally, these programs will generate data to track the PWQCs and the general health and conditions within the watershed.

Monitoring programs where information related to bacteria was collected during the 2015-2016 monitoring year (October 1 – September 30) are shown in Table 3-1. Relevant results from these programs from the 2015-2016 monitoring year are summarized in the sections below, with details

provided in Appendix 4. Monitoring program results not directly related to bacteria, such as the Southern California Stormwater Monitoring Coalition (SMC) regional program, are presented in Appendix 4, including results as they relate to other PWQCs.

Table 3-1. Monitoring Programs Relevant to Bacteria for the San Diego River Watershed

Monitoring Program	Supports HPWQC and Summarized Below	
	Yes	No
Receiving Water Monitoring		
Long Term Monitoring at Mass Loading Station[1]		X[2]
Regional (SMC)		X[3]
Sediment Quality		X[3]
TMDL	X	
Storm Drain Outfall Monitoring		
Field Screening	X	
Dry Weather Monitoring	X	
Wet Weather Monitoring	X	
Illicit Discharge Detection and Elimination	X	
Special Studies	X	
Additional Monitoring to Assess Progress toward Goals and/or Strategies		X

[1]HMP monitoring was also conducted regionally. One reference station was located in the San Diego River WMA. The objectives and results of the program are summarized in Appendix 4.

[2]Long-term receiving water monitoring includes bacteria sampling but was conducted during the 2013-2014 monitoring year. Results can be found in the Transitional Monitoring and Assessment Report (WESTON, 2015a).

[3]No bacteria data are collected for these programs.

3.1 RECEIVING WATER MONITORING

The purpose of the receiving water monitoring program is to characterize trends in the chemical, physical, and biological conditions of a receiving water to determine whether beneficial uses are being protected, maintained, or enhanced. An overview of the receiving water monitoring program activities for the San Diego River WMA for the current Permit term is presented in Table 3-2. A summary of the results from each of these programs for the 2015-2016 monitoring year with respect to bacteria is presented below. Additional details and results for programs not related to bacteria in the WMA are presented in Appendix 4.

The receiving water assessments required by the Permit will be addressed in the Regional Monitoring and Assessment Report (RMAR), which will be submitted to the Regional Board in December 2017 with the Report of Waste Discharge (ROWD).

Table 3-2. Elements of Water Quality Improvement Plan Receiving Water Monitoring

Monitoring Programs		Dry	Wet	Monitoring Element	Permit Schedule[a]				
					2013-2014[b]	2014-2015	2015-2016	2016-2017	2017-2018
Long-Term [b]		X	X	Conventionals, bacteria, nutrients, metals, pesticides, toxicity (chronic), TIE/TREs	●	–	–	–	–
		X		Hydromodification (HMP)	●	–	–	–	–
		X		Bioassessment	●	–	–	–	–
Regional	Bight [c]	X		Chemistry, toxicity, benthic infauna	●	●	–	–	●
	SMC	X		Bioassessment	●	●	●	●	●
	2011 HMP Program		X	Channel assessments; flow monitoring; sediment transport monitoring	●	●	●	–	–
Sediment Quality [c]		X		Chemistry, toxicity, benthic infauna	●	–	–	–	–
Bacteria TMDL[d]		X	X	Bacteria	●	●	●	●	●

SMC = Southern California Stormwater Monitoring Coalition; Bight = Southern California Bight Regional Monitoring Program; TIE=Toxicity Identification Evaluation; TRE=Toxicity Reduction Evaluation

a. The Permit was adopted on May 8, 2013, and became effective on June 27, 2013.

b. Completed under the Transitional Monitoring Program.

c. The 2018 Southern California Bight Regional Monitoring will occur during the summer of 2018 or 2019.

d. Includes Forester Creek, Lower San Diego River, and Dog Beach.

3.1.1 Regional Monitoring Participation

Regional monitoring includes studies that provide information to evaluate various aspects of receiving water health on a regional scale. The Participating Agencies participated in the SMC Regional Monitoring Program during the 2015-2016 monitoring year. Because data collected under this program do not include bacteria, results are not included in this section. Detailed results are presented in Appendix 4 and its attachments, including results related to PWQCs.

3.1.2 Total Maximum Daily Load Monitoring

In February 2010, the Regional Board adopted Resolution No. R9-2010-0001, *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (Bacteria TMDL) (Regional Board, 2010). This TMDL amendment to the Water Quality Control Plan for the San Diego Region (Basin Plan) (Regional Board, 1994) includes three segments within the San Diego River WMA, Forester Creek, the Lower San Diego River, and the Pacific Ocean Shoreline at San Diego River mouth at Dog Beach. The Participating Agencies within the WMA that are named as responsible in the

TMDL are summarized in Table 3-3. The compliance requirements and monitoring and reporting requirements of the TMDL have been incorporated into Attachment E.6 of the Permit.

Table 3-3. Bacteria TMDL Responsible Agencies in the San Diego River WMA

Waterbody Segment	Responsible Agencies
Forester Creek	▪ City of El Cajon ▪ City of Santee ▪ County of San Diego
Lower San Diego River	▪ City of El Cajon ▪ City of La Mesa ▪ City of Santee ▪ City of San Diego ▪ County of San Diego
Pacific Ocean Shoreline at San Diego River mouth at Dog Beach	

The goal of the Bacteria TMDL is to achieve the necessary pollutant load reductions to restore and protect the designated beneficial use of water contact recreation (REC-1), as it is designated within the Basin Plan. The purpose of the TMDL monitoring program is to assess progress toward achieving compliance with the interim and final TMDL numeric targets. The data collected as part of this program can be used to assess the receiving water compliance pathway toward reaching interim and long-term goals in future years. The data generated are used to address the following questions:

- Are TMDL numeric targets for indicators being met at the compliance monitoring locations?
- Are levels of bacteria decreasing at the compliance monitoring locations?

During the monitoring year (October 1, 2015 through September 30, 2016), sampling was conducted during wet and dry weather at five receiving water monitoring locations: one beach location at the Pacific Ocean Shoreline at Dog Beach (FM-010), and four creek locations, two along Forester Creek in the Santee HSA and two along the Lower San Diego River in the Mission San Diego HSA (Figure 3-1, Table 3-4, Table 3-5). This was the third year of monitoring in accordance with the Bacteria TMDL. Samples were analyzed for the indicator bacteria compliance constituents (fecal coliform and *Enterococcus* for creeks; total coliform, fecal coliform, and *Enterococcus* for beaches) in accordance with the requirements of Attachment E.6 of the Permit.

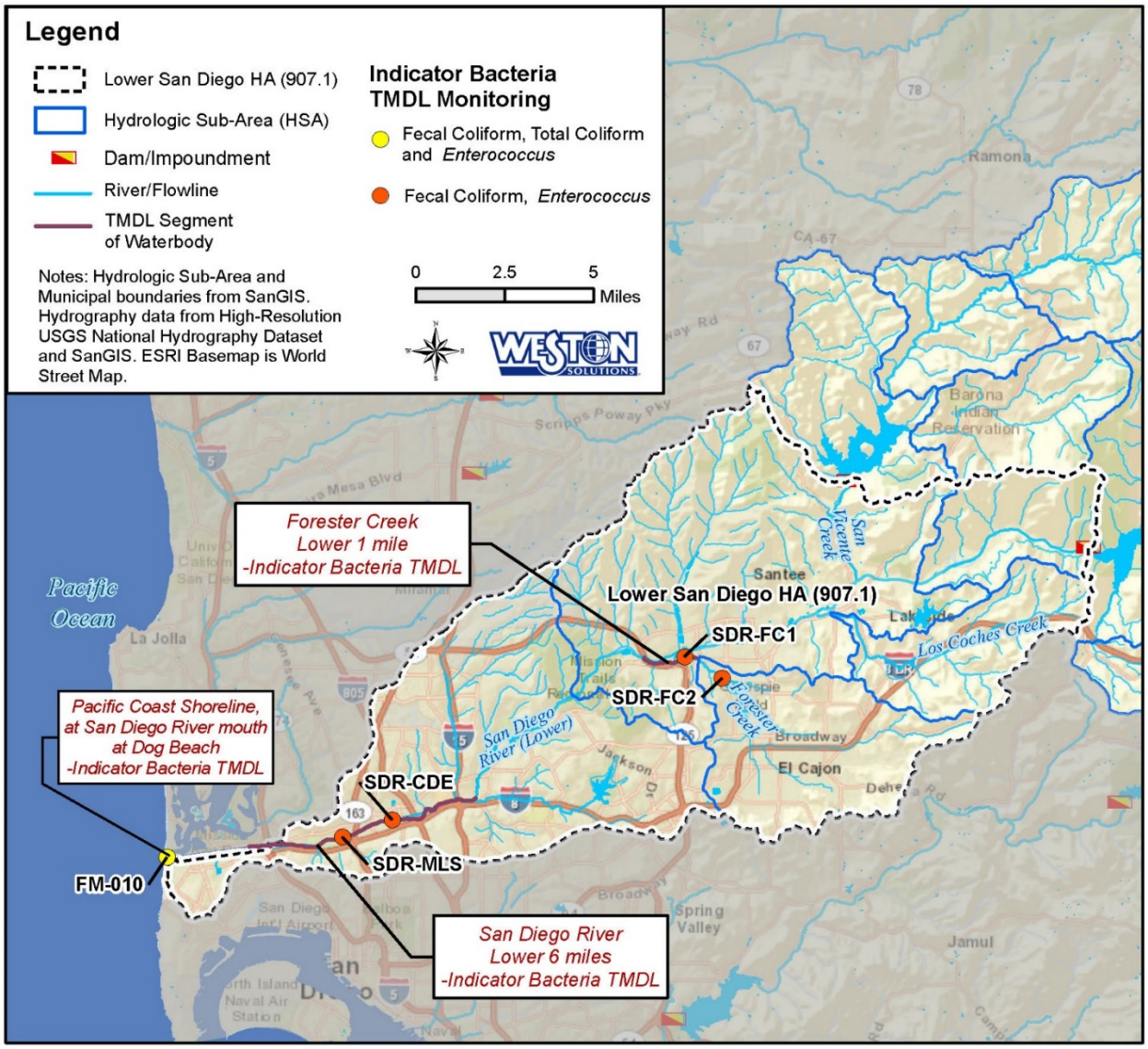

Figure 3-1. Bacteria TMDL Compliance Monitoring Locations in the San Diego River WMA

Table 3-4. 2015-2016 Bacteria TMDL Beach Monitoring Summary for the San Diego River WMA

Season	Date Range	Event Type	Event Frequency	Monitoring Location	Samples Per Site Per Event[a]	Total Number of Samples
2015-2016 Wet Season	10/01/2015-04/30/2015	Wet	Three storm events	FM-010	1	3
	10/01/2015-03/30/2016	Dry	Monthly			6
	04/01/2016-04/30/2016	Dry	Weekly[b]			5
2016 Dry Season	05/01/2016-09/30/2016	Dry	Weekly[b]			25

[a] Quality assurance (QA) or replicate samples not included.
[b] A minimum of 5 samples are collected in a 30-day period.

Table 3-5. 2015-2016 Bacteria TMDL Creek Monitoring Summary for the San Diego River WMA

Season	Date Range	Event Type	Event Frequency	Monitoring Location	Samples Per Site Per Event[a]	Total Number of Samples
2015-2016 Wet Season	10/01/2015-04/30/2015	Wet	Three storm events	SDR-MLS SDR-CDE SDR-FC1 SDR-FC2	1	12
	10/01/2015-03/30/2016	Dry	Monthly			24
	04/01/2016-04/30/2016	Dry	Weekly[b]			20
2016 Dry Season	05/01/2016-09/30/2016	Dry	Weekly[b]			100

[a] Quality assurance (QA) or replicate samples not included.
[b] A minimum of 5 samples are collected in a 30-day period.

Table 3-6 presents the exceedance rates for each indicator bacteria across the five monitored stations within the San Diego River WMA. The exceedances observed during the 2015-2016 monitoring year do not indicate non-compliance with the Permit or the Bacteria TMDL at this time. Progress toward meeting water quality based effluent limitations (WQBELs), in terms of interim and final receiving water limitations, is presented in Table 3-7 for each analyzed constituent at the five monitoring stations. Interim WQBELs are not required to be achieved until 2020 for dry weather and 2028 for wet weather, while final WQBELS must be achieved by 2021 for dry weather and 2031 for wet weather. Based on the sampling data from the 2015-2016 monitoring year, receiving water limitations that have already been achieved are indicated by (●), whereas receiving water limitations that have not yet been achieved are indicated by (X).

In summary, interim and final WQBELs are being met at FM-010 with the exception of the dry season geometric mean for *Enterococcus*. There were also no exceedances of geometric means for fecal coliform at SDR-CDE during the dry and wet seasons, and at SDR-FC2 and SDR-MLS during the wet season. Both interim and final receiving water limitations are being achieved for these analytes at these locations. All other results did not meet the interim or final receiving water limitations, which are not required to be achieved during this Permit term. Additional details are presented in the TMDL report attached to Appendix 4 of this Annual Report.

Table 3-6. 2015–2016 Exceedance Frequency Results: San Diego River WMA

Segment	Monitoring Location	Bacteria TMDL Constituent	2016 Dry Season Geometric Mean (CFU/100 mL)	2015-2016 Wet Season Geometric Mean (CFU/100 mL)	2015-2016 Wet Weather Single-Sample Maximum (CFU/100 mL)
Forester Creek	SDR-FC1	*Enterococcus*	100%	100%	100%
		Fecal Coliform	100%	80%	100%
	SDR-FC2	*Enterococcus*	100%	100%	100%
		Fecal Coliform	52%	0%	100%
San Diego River	SDR-MLS	*Enterococcus*	100%	90%	100%
		Fecal Coliform	33%	0%	93%
	SDR-CDE	*Enterococcus*	52%	90%	100%
		Fecal Coliform	0%	0%	94%
Pacific Ocean Shoreline	FM-010	*Enterococcus*	19%	0%	0%
		Fecal Coliform	0%	0%	0%
		Total Coliform	0%	0%	0%

CFU/100 mL – colony-forming units per 100 milliliters. The Permit identifies WQBELs in most probable number per 100 mL (MPN/100 mL); the laboratory methods provide results in CFU. CFU and MPN units are comparable.

Table 3-7. 2015–2016 General Progress Toward Interim and Final Goals: San Diego River WMA

Monitoring Location	Bacterial TMDL Constituent	2015-2016 Dry Season Geometric Means		2015-2016 Wet Season Geometric Means		2015-2016 Wet Season Single-Sample Maximum	
		Interim	Final	Interim	Final	Interim	Final
SDR-FC1	*Enterococcus*	X	X	X	X	X	X
	Fecal Coliform	X	X	X	X	X	X
SDR-FC2	*Enterococcus*	X	X	X	X	X	X
	Fecal Coliform	X	X	●	●	X	X
SDR-MLS	*Enterococcus*	X	X	X	X	X	X
	Fecal Coliform	X	X	●	●	X	X
SDR-CDE	*Enterococcus*	X	X	X	X	X	X
	Fecal Coliform	●	●	●	●	X	X
FM-010	*Enterococcus*	X	X	●	●	●	●
	Fecal Coliform	●	●	●	●	●	●
	Total Coliform	●	●	●	●	●	●

● = Receiving water limitations are met; X= Receiving water limitations are not met.

3.2 STORM DRAIN OUTFALL MONITORING

The purpose of Storm Drain Outfall Monitoring is to evaluate the potential impacts from storm drain outfall discharges on the beneficial uses of a waterbody during dry and wet weather conditions. In addition, under dry conditions, the program is used to assess the ability of

jurisdictional and watershed programs to effectively eliminate non-stormwater discharges to waterbodies. The data generated are used to identify and quantify pollutants in discharges, guide pollutant source identification efforts, and track progress towards achieving numeric goals set forth in the WQIP.

An overview of the conducted and planned storm drain outfall monitoring activities for the San Diego River watershed for the current Permit term is presented in Table 3-8.

Table 3-8. Elements of Storm Drain Outfall Monitoring During the Current Permit Term

Monitoring Programs	Dry	Wet	Monitoring Element	Permit Schedule[a]				
				2013-2014[b]	2014-2015	2015-2016	2016-2017	2017-2018
Field Screening	X		Visual: flow condition, presence and assessment of trash in and around the station, IC/IDs, descriptions	●	●	●	●	●
Storm Drain Outfall	X		Field parameters, conventionals, bacteria, nutrients, metals	-	-	●	●	●
		X	Field parameters, conventionals, bacteria, nutrients, metals	●	●	●	●	●
Illicit Discharge Detection and Elimination	X		Visual surveys, field parameter testing, analytical testing and follow-up investigations, if warranted	–	–	●	●	●

IC/ID – Illegal connection and illicit discharge
a. The Permit was adopted on May 8, 2013 and became effective on June 27, 2013.
b. Completed under the Transitional Monitoring Program.

The major storm drain outfalls currently included in the storm drain outfall discharge monitoring station inventory for the WMA are shown in Figure A4-3 in Appendix 4.

The number of major outfalls monitored under each element of the Storm Drain Outfall Monitoring Program by each Participating Agency in the WMA is provided in Table 3-9. In accordance with the Permit, Participating Agencies with fewer than 125 major storm drain outfalls in their inventory must conduct field screening at 80% of these major outfalls twice per year. The City of San Diego has more than 500 major storm drain outfalls within its jurisdiction and is required to annually screen 500 of these outfalls city-wide (but not within each watershed) in accordance with the Permit.

Table 3-9. Number of Monitored Major Storm Drain Outfalls per Participating Agency in San Diego River WMA

Participating Agency	Field Screening	Dry Weather Monitoring	Wet Weather Monitoring
County of San Diego	51	5	1
City of El Cajon	33	5	1
City of La Mesa	13	5	1
City of Santee	63	5	1
City of San Diego	65	5	1

3.2.1 Storm Drain Outfall Dry Weather Monitoring

Storm drain outfall dry weather monitoring consisted of dry weather field screening, IDDE investigations, and highest priority storm drain outfall analytical monitoring. These programs are summarized in the following subsections and are described in greater detail in Appendix 4.

3.2.1.1 Dry Weather Field Screening and Outfall Prioritization

Field screening is visual monitoring of major storm drain outfalls as outlined in Table D-5 of the Permit. Field screening observation results included the following:

- Field screening trash assessment results indicated that there was no trash or a low presence of trash during most (95%) of the trash assessments (n = 375) at visited outfalls.
- Flow conditions recorded during routine field screening indicated that 59% of the observations made by the County of San Diego, 60% made by the City of El Cajon, 60% by the City of Santee, 25% made by the City of San Diego, and 8% made by the City of La Mesa indicated dry conditions/no flow. Flow was observed during 30% or less of the visits conducted by each Participating Agency.
- When flow was observed during visual observations, the majority of estimated flow rates were low, with 75 of 113 estimations categorized as less than five gallons per minute.

Based on these field screening visits and historical data as needed and available, the Participating Agencies determined the flow status of each major storm drain outfall as persistent, transient, dry, tidal, or undetermined. The numbers of storm drain outfalls in each category are shown by Participating Agency in Table 3-10. These flow determinations are shown with the locations of the storm drain outfalls in Figure A4-6 in Appendix 4. Overall, since the 2014-2015 monitoring year, the number of undetermined outfalls in the WMA has been reduced from 7 to 2, and the number of outfalls identified as persistent increased by 11 (WESTON, 2016) based on an additional year of field screening. No modifications to field screening monitoring locations or frequencies are planned for the 2016-2017 monitoring year in the San Diego River WMA.

Table 3-10. 2015-2016 Dry Weather Storm Drain Outfall Flow Determinations for the San Diego River WMA

Participating Agency	Persistent	Transient	Dry/ No Flow	Undetermined	Grand Total
County of San Diego	8	17	25	1	51
City of El Cajon	8	7	18	0	33
City of La Mesa	10	2	1	0	13
City of San Diego	35	18	11	1	65
City of Santee	16	20	27	0	63
GRAND TOTAL	**77**	**64**	**82**	**2***	**225**

*One City of San Diego outfall has been tidal on all visits except one when dry, and one County outfall is a new site with only one visit.

The list of prioritized outfalls based on field screening results is maintained and updated as program implementation develops and monitoring occurs. The highest priority outfalls for each jurisdiction in the San Diego River WMA during the 2015-2016 monitoring season are summarized in Table 3-11. These outfalls are also presented in Figure 3-2, which shows the dry and wet weather storm drain outfall monitoring locations in the WMA.

Table 3-11. Highest Priority Outfalls in the San Diego River WMA During the 2015-2016 Monitoring Year

Participating Agency	Station
County of San Diego	MS4-SDR-036, MS4-SDR-064, MS4-SDR-127, MS4-SDR-151, MS4-SDR-207
City of El Cajon	OF-3, OF-5, OF-13, OF-15A, OF-16
City of La Mesa	OF-ALV-6, OF-ALV-7, OF-ALV-9, OF-ALV-12, OF-ALV-13
City of Santee	E5g1, RCP1, R20a, S15h, S5c
City of San Diego	DW0067, DW0081, DW0369, DW0681*, DW0696

*Upstream location sampled.

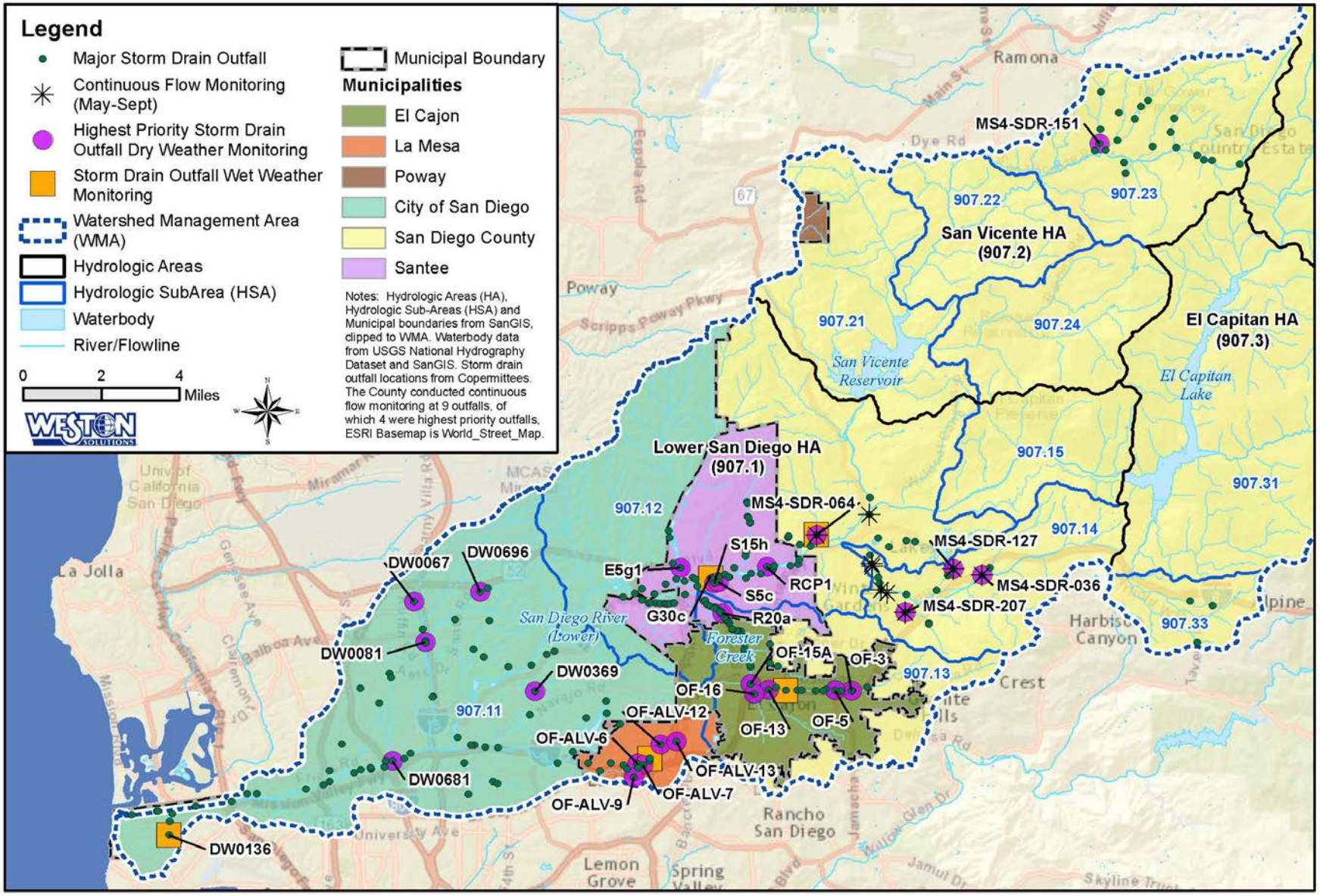

Figure 3-2. 2015-2016 Dry and Wet Weather Storm Drain Outfall Monitoring Locations in the San Diego River WMA

3.2.1.2 Highest Priority Storm Drain Outfall Dry Weather Monitoring

The purpose of the highest priority storm drain outfall dry weather monitoring is to evaluate the potential contribution from storm drain outfall discharges to receiving water quality during dry weather and to assess the ability of programs to effectively eliminate non-stormwater discharges to waterbodies or waterways.

The 2015-2016 monitoring year was the first year of dry weather storm drain outfall analytical sampling under the WQIP MAP, and monitoring was conducted at the highest priority outfalls identified for each Participating Agency in the WMA (Table 3-11). These monitored outfalls are shown in Figure 3-2. Two sampling events were conducted at most outfalls. However, one outfall under the jurisdiction of the County of San Diego and one under the jurisdiction of the City of Santee were sampled only once due to lack of flow. For sampled outfalls, grab samples were collected and analyzed for pH, temperature, conductivity, dissolved oxygen, turbidity, hardness, and indicator bacteria and composite samples were collected and analyzed for constituents contributing to the HPWQC, 303(d) List impairments, constituents with non-stormwater action levels (NALs), and those listed in Table D-7 of the Permit. Observational and hydrologic data were also recorded.

Enterococcus concentrations were above the instantaneous maximum (IM) NAL except in both samples from DW0067 and one of two samples collected at OF-5, OF-16, OF-ALV-7, OF-ALV-9, and DW0081. Fecal coliform concentrations were above the IM except in both samples from MS4-SDR-036, OF-ALV-7, DW0067, DW0081, and DW0369 and one of two samples collected at MS4-SDR-207, OF-3, DW0696, and DW0681UP01. Detailed results are presented in Sections 4.2.2 (data) and 4.2.3 (assessments) of Appendix 4. These highest priority outfalls were a specific focus for IDDE investigations during the 2015-2016 monitoring year (Section 3.2.1.3).

No re-prioritizations of the highest priority outfalls are planned for the 2016-2017 monitoring year in the San Diego River WMA. The highest priority outfalls selected for analytical monitoring in 2015-2016 will continue to be monitored until one of the following conditions outlined in the Permit have been met:

- No flowing or standing water observed over the three most recent consecutive visits.
- No exceedances of NALs.
- Identified as a non-stormwater discharge authorized under a separate NPDES permit.

When an outfall fulfills one of these criteria or the threat to water quality has been reduced (as outlined in the Permit), it will be replaced with the next highest priority outfall on the Participating Agency's list for the WMA.

As required by the Permit, annual discharge volumes and non-stormwater pollutant loads were estimated for the persistently flowing outfalls. Dry weather visual observation and field investigation data related to known and/or suspected sources of non-stormwater discharge were used to estimate the percent contribution from each source, including suspected sources. Results are presented in Section 4.2.3 of Appendix 4. The loads derived from highest priority storm drain outfall dry weather monitoring will ultimately be useful in assessing progress to storm drain outfall load reduction goals; the methodology for this assessment is in development.

3.2.1.3 Illicit Discharge Detection and Elimination (IDDE) Program

Based on the results of the dry weather major storm drain outfall monitoring described above, the Participating Agencies conducted investigations to identify sources of flow or NAL exceedances. Where IC/IDs are identified, additional action to address the source(s) is taken. These investigations and source elimination activities related to outfall monitoring are one part of the larger IDDE programs that each Participating Agency has established. The goals of these IDDE programs are as follows:

- Control the contribution of pollutants to and the discharges from the storm drain system within the Participating Agencies' jurisdictions.
- Effectively prohibit non-stormwater discharges to the storm drain system.
- Reduce the discharge of pollutants in stormwater to the maximum extent practicable.

In addition to outfall monitoring and associated source investigations, the IDDE programs also include the following components to prevent, identify, and eliminate IC/IDs:

- Educating the local community about prohibited discharges and how to prevent them. During the 2015-2016 fiscal year, this outreach program included working closely with water utilities to educate communities about outdoor water conservation, including preventing irrigation runoff.
- Operating a public complaint phone hotline and website and investigating the complaints received.
- Inspecting industrial/commercial and municipal facilities, construction sites, and residential areas. In addition to identifying and eliminating IC/IDs where applicable, inspectors also proactively educate responsible parties about how to avoid IC/IDs, such as cleaning outdoor areas by sweeping instead of hosing them off.
- Maintaining the storm drain system and sewer system, which provide opportunities to identify unpermitted connections to the storm drain system, cross connections, and other potential sources of IC/IDs.

Dry weather storm drain outfall source identifications investigations indicated that irrigation runoff was the most commonly identified known or suspected controllable source within the San Diego River WMA. Copermittees identified groundwater infiltration into the storm drain system as the most common uncontrollable source.

In addition to the field screening completed at all outfalls, samples were also taken for analysis at the five highest priority persistently flowing outfalls (Section 3.2.1.1), as described in Section 3.2.1.2. The highest priority outfalls were a focus for IDDE investigations during fiscal year 2015-2016. Figure 3-3 shows the known or suspected flow source types identified at the highest priority outfalls.

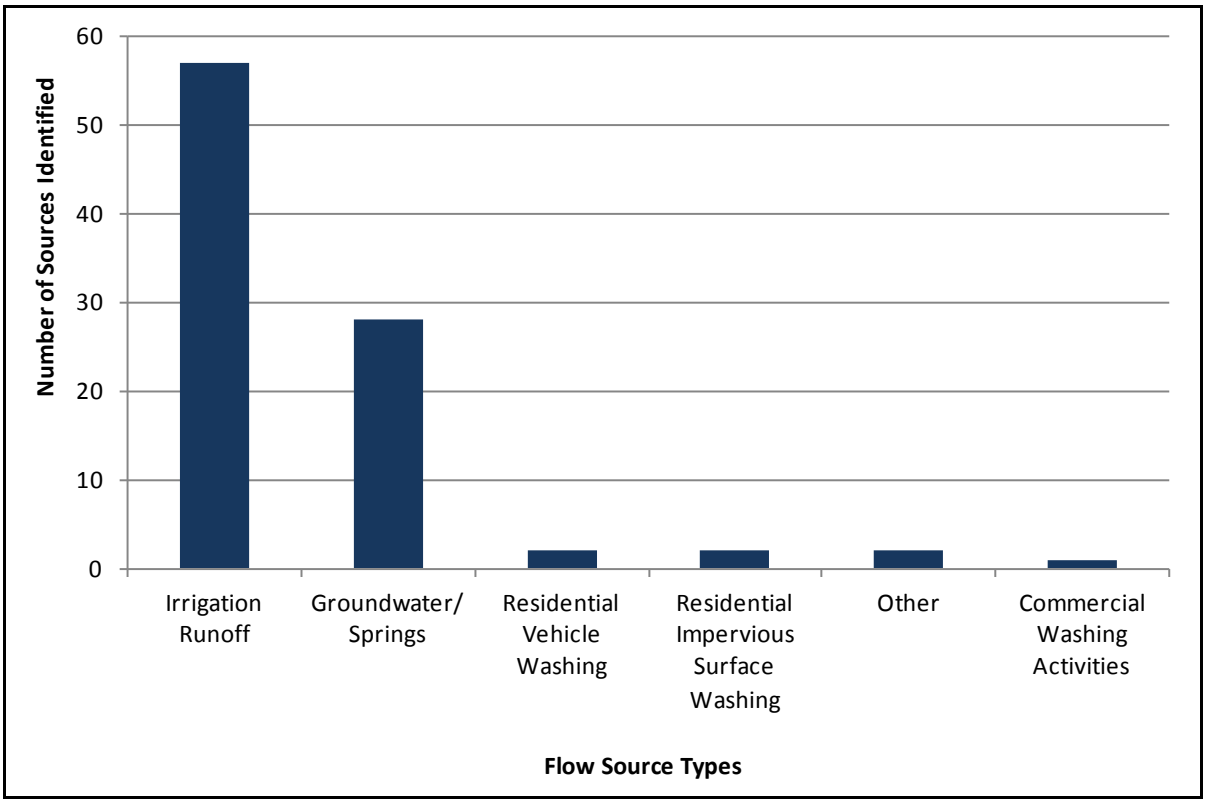

Figure 3-3. Known or Suspected Flow Sources Identified for Highest Priority Storm Drain Outfalls

Additional source investigation activities in the San Diego River WMA include the following:

- The City of San Diego and County of San Diego are utilizing flow meters at selected outfalls in the San Diego River WMA to assist in source identification.
- The Copermittees are investigating potential sources of bacteria from wastewater systems since human sources of bacteria are the highest priority source from a public health perspective.
    - A broken private sewer lateral in the Sports Arena area within the City of San Diego that had been contributing wastewater to the storm drain system was identified and repaired.
    - The City of Santee has been working with Padre Dam Municipal Water District, which is also the owner and operator of the public wastewater conveyance system in Santee, on an investigation of potential exfiltration from the wastewater system to the storm drain system. This investigation focuses in the area around a Bacteria TMDL site in Forester Creek.

The IDDE components listed above are described in more detail in Section 4 and in the jurisdictional strategy tables in Appendix 2. The Copermittees' JRMP Annual Report forms, also included in Appendix 2, list the total numbers of IC/IDs identified and eliminated through all IDDE program activities during the fiscal year. More details about source investigation and elimination specifically related to the storm drain outfall dry weather monitoring component of the IDDE program are described in greater detail in Appendix 4.

3.2.2 Storm Drain Outfall Wet Weather Outfall Monitoring

The purpose of storm drain outfall wet weather monitoring is to identify and quantify pollutants in stormwater discharges from the storm drain system, guide pollutant source identification efforts, and track progress in achieving numeric goals set forth in the WQIP. The Participating Agencies' five monitoring locations were chosen to be representative of the Residential, Commercial, Industrial, and typical Mixed-use land uses within the watershed in accordance with the Permit. Two outfalls were located in the Mission San Diego HSA, two in the Santee HSA, and one in the El Cajon HSA. This is the first year of storm drain outfall wet weather monitoring in accordance with the WQIP MAP. The prior two years of wet weather monitoring were conducted under the transitional monitoring program with a different list of analytical parameters. The storm drain outfall wet weather monitoring stations for the WMA are presented in Table 3-12 with both the station name used in the wet weather monitoring program and the identifier used by the jurisdiction in their storm drain outfall inventory. The monitored outfall locations are shown in Figure 3-2, and the land uses for their drainage areas are shown in Figure A4-8 in Appendix 4. The locations of these outfalls have not been modified since transitional monitoring began during the 2013-2014 monitoring year. Therefore, three years of data have now been collected at all five wet weather storm drain outfall wet weather monitoring locations in the San Diego River WMA.

Table 3-12. Storm Drain Outfall Wet Weather Monitoring Stations in the San Diego River WMA

Storm Drain Outfall Name	Jurisdictional Identifier	Jurisdiction	HSA Name/No.	Latitude	Longitude
MS4-SDR-1	OF-11	City of El Cajon	El Cajon/907.13	32.80256	-116.95808
MS4-SDR-2	OF-ALV-11	City of La Mesa	Mission San Diego/ 907.11	32.77776	-117.01751
MS4-SDR-3	DW0136	City of San Diego	Mission San Diego/ 907.11	32.74773	-117.22927
MS4-SDR-4	G30c	City of Santee	Santee/907.12	32.84501	-116.99122
MS4-SDR-5	MS4-SDR-064	County of San Diego	Santee/907.12	32.86165	-116.94474

Monitoring events were conducted in accordance with the WQIP MAP on December 11, 2015 at MS4-SDR-4; on January 4, 2016 at MS4-SDR-3 and MS4-SDR-5; and on January 31, 2016 at MS4-SDR-1 and MS4-SDR-2. Grab samples were collected and analyzed for pH, temperature, conductivity, dissolved oxygen, turbidity, hardness, and indicator bacteria. Composite samples were collected and analyzed for constituents contributing to the HPWQC, 303(d) List impairments, and for constituents with stormwater action levels (SALs). Observational and hydrologic data were also recorded. A summary of analytical results is provided below in relation to bacteria, and detailed results are presented in Appendix 4 Sections 4.2.5 (data) and 4.2.6 (assessments).

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform indicated that the highest concentrations were measured at MS4-SDR-3 in the Mission San Diego HSA (907.11) for *Enterococcus* and at MS4-SDR-5 in the Santee HSA (907.12) for fecal coliform. Concentrations of *Enterococcus* and fecal coliform in wet weather discharges from all five outfalls were above the single sample maximums specified in the Permit for the Bacteria TMDL (WQBELs discharging

to freshwater creeks with REC-1 beneficial use). Detailed results for all constituents are provided in Appendix 4. The required assessments are also provided in Appendix 4 and its attachments. The loads derived from storm drain outfall wet weather monitoring will ultimately be useful in assessing progress toward storm drain outfall load reduction goals; the methodology for this assessment is in development. The land-use based assessment required by the Permit was completed for the third year in the San Diego River WMA; a more robust data set was developed for the land-use based assessment of wet weather storm drain outfall discharge, and land-use based event mean concentrations (EMCs) were refined based on three years of monitoring.

3.3 SPECIAL STUDIES SUMMARY

Special studies are conducted to "address pollutant and/or stressor data gaps and/or develop information necessary to more effectively address the pollutants and/or stressors that cause or contribute to highest priority water quality conditions identified in the Water Quality Improvement Plan (Regional Board, 2013)." An overview of the conducted and planned special studies for the watershed for the current Permit term is presented in Table 3-13. Descriptions of the studies and results, where applicable to bacteria, are provided below. An assessment of special study results is presented in Appendix 4.

Table 3-13. Special Studies Occurring Within the San Diego River WMA

Monitoring Programs	Dry	Wet	Monitoring Element	Permit Schedule[a]				
				2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
San Diego Regional Reference Streams and Beaches	X		Field parameters, conventionals, bacteria instantaneous flow	2012-2014	●	–	–	–
			Streams only: nutrients, metals, bioassessment, including physical habitat and chlorophyll a		–	–	–	–
		X	Field parameters, conventionals, bacteria		●	–	–	–
			Streams only: nutrients, metals, toxicity, flow and precipitation (duration of storm)		●	–	–	–
San Diego Wet Weather Epidemiology Study		X	Field parameters, bacteria, human genetic markers, viruses, human health data, flow and precipitation	●	●	●	–	–

a. The Permit was adopted on May 8, 2013 and became effective on June 27, 2013.

3.3.1 San Diego Regional Reference Streams and Beaches Studies

From 2014 to 2016, the Copermittees participated in the San Diego Regional Reference Streams (Tiefenthaler et al., 2015) and Beaches (Tiefenthaler et al., 2016) Studies, which measured levels of indicator bacteria that account for natural sources to establish the background concentrations, or "reference conditions," for streams or beaches minimally disturbed by anthropogenic activities. This reference system approach results in allocation of allowable exceedance days based on the frequencies of exceedance at reference sites with natural sources of bacteria. The results of these

studies support the forthcoming re-evaluation of the Bacteria TMDL and numeric target development for future TMDLs. These studies were intended to provide data to support discussions of reasonable, accurate targets for indicator bacteria at Southern California streams and beaches.

3.3.1.1 Reference Streams Study

This study investigated concentrations of indicator bacteria, nutrients, metals, and conventional constituents occurring naturally at reference streams in minimally disturbed watersheds in Southern California during wet and dry weather. Although additional constituents were analyzed, the primary focus of the study was indicator bacteria. The study also sought to categorize exceedance frequencies for indicator bacteria by hydrologic, geomorphologic, biotic, and abiotic factors. Human genetic marker results were used to exclude sites and samples with potential human sources of fecal contamination so that observed exceedance rates were not due to human sources of bacteria. Results are presented in detail in the Technical Report (Tiefenthaler et al., 2015) provided as Attachment 4I to Appendix 4 of this Annual Report.

Findings from the study included the following:

- Indicator bacteria concentrations measured during the study were generally below water quality objectives (WQOs) except for *Enterococcus*, and exceedance frequencies were highest during summer dry weather.
- Wet weather EMC exceedance frequencies were low except for *Enterococcus*. The number of events was not sufficient to determine whether relationships exist between the exceedance frequencies and watershed size and/or geology.
- Temperature was the major factor associated with elevated summer dry weather concentrations of indicator bacteria, although total suspended solids (TSS), nutrients, and organic carbon were also positively correlated. No significant relationships between indicator bacteria concentrations and watershed size or geology were observed during dry weather.
- EMC fluxes (flux was calculated as the ratio of mass loading and watershed area) during wet weather were two to three times greater than during dry weather and were comparable to those described in previous studies.

3.3.1.2 Reference Beaches Study

This study investigated concentrations of indicator bacteria occurring naturally at reference beaches during a period of prolonged drought. Results are presented in detail in the Technical Report (Tiefenthaler et al., 2016) provided as Attachment 4J to Appendix 4 of this Annual Report.

Findings from the study included the following:

- Indicator bacteria concentrations and exceedance frequencies during both winter and summer dry weather were low at both monitored beaches. This is consistent with results from previous studies of beaches with blocked estuary inlets or beaches with flowing creeks and no estuary.
- Indicator bacteria concentrations in the estuary or mixing zone associated with both beaches were one to three orders of magnitude greater than those at the corresponding

beach, and were higher at San Onofre Creek than Deer Creek. Exceedance frequencies were also higher in the estuary associated with San Onofre Creek compared to the mixing zone associated with Deer Creek. This suggests that dry weather exceedance frequencies may have been greater if the estuary had been open to tidal exchange.

- At both study locations, no significant relationships between indicator bacteria and water temperature, salinity, or antecedent dry days were observed, but indicator bacteria concentrations decreased with the number of antecedent dry days at the San Onofre Creek beach and increased with the number of antecedent dry days in the associated estuary. Significant positive correlations were found between total coliform concentrations and water temperature, salinity, and antecedent dry days and between *E. coli* and fecal coliform and salinity in the estuary associated with San Onofre Creek. These correlations indicate that freshwater input from the creek dilutes bacteria concentrations. Regrowth of bacteria may have been a factor at this estuary.
- During the single monitored storm event, indicator bacteria exceedances were common in the San Onofre Beach creek and estuary samples, but exceedances were observed at the beach only on the day of the storm. Since all samples associated with this storm event were positive for human genetic marker, results could not be used to determine natural background exceedance frequencies. However, positive human marker results were rare throughout the study overall, indicating that the study locations may be suitable reference sites.

3.3.2 Wet Weather Epidemiology Study and Quantitative Microbial Risk Assessment

This special study examines the correlation between bacteria levels in stormwater discharges from the San Diego River and the health effects experienced by surfers at Ocean Beach, located near the mouth of the San Diego River. The first phase of the study was performed from January 2014 through March 2015 and included 654 surfers and 10,081 logged surfing sessions. The overall goal of the study was to answer the following four questions:

- Is surfing associated with an increased rate of illness?
- Are illness rates higher when surfing following wet weather compared to dry weather?
- What is the association between water quality and illness following wet weather events?
- What level of water quality corresponds to the same risk of illness as current water quality objectives?

Results indicated that there is an increased risk of illness associated with water contact, and that risk was greater when surfing after a wet weather event compared to during dry weather. The excess risk of illness when entering the ocean in wet weather compared to not entering the ocean was quantified to be 12 surfers per 1,000. An association was established between *Enterococcus* and illness after a wet weather event; however, the risk of illness was found to be lower than that which would be predicted by *Enterococcus* WQOs. An extra 12 illnesses per 1,000 surfers after wet weather ocean exposure was below the most recent water quality guidelines for recreational beaches from the USEPA (2012), which recommends no more than 32 to 36 illnesses per 1,000 swimmers. In addition, a quantitative microbial risk assessment (QMRA) was performed to estimate the risks of gastrointestinal illness from recreational exposure to beaches impacted by storm drain outfall discharges during wet weather. Source tracking work and analysis of pathogen

concentrations were conducted, and modeling results were comparable to epidemiological study results. The study demonstrated the applicability of QMRA for recreational water risk estimates during wet weather and may facilitate consideration of site-specific water quality criteria. Additional details are provided in the Technical Report (Schiff et al., 2016) provided as Attachment 4K to Appendix 4 of this Annual Report.

4 Implementation and Progress Towards Achieving Numeric Goals

The Permit requires the Participating Agencies to develop specific water quality improvement numeric goals and strategies to address their HPWQC, which is identified as bacteria for the San Diego River WMA.

Each year, the Participating Agencies assess specific water quality data and programmatic information in order to gauge progress towards achieving the numeric goals. These assessments provide information to determine whether intended outcomes are being realized or whether adaptations of Participating Agencies' programs are necessary. This section discusses the strategies that have been implemented during the reporting period, the progress towards achieving specific Permit term goals for the watershed, and provides an overview of proposed modifications to goals, strategies, and schedules. Data collected per the JRMP and MAP, along with the schedules developed in conjunction with each goal, were used to assess goals. Note that the selected strategies necessarily target bacteria in the watershed, but also address other pollutants as well, providing a multi-benefit approach to implementation.

4.1 STRATEGIES AND SCHEDULES

The strategies being implemented by the Participating Agencies are the mechanisms that enable improvements in water quality to achieve the numeric goals outlined in Section 2 and detailed in Appendix 3. The chosen strategies have been identified and selected based on their likelihood of achieving one or more of several of the following outcomes:

- Effectively prohibiting non-stormwater discharges to the storm drain system (dry weather);
- Reducing pollutants in stormwater discharges from the storm drain system to the maximum extent practicable (wet weather); and/or
- Protecting the beneficial uses of receiving waters from storm drain outfall discharges.

Achievement of these outcomes and the success of the strategies will ultimately be measured against the interim and final numeric goals.

In general, the Participating Agencies are implementing aggressive non-structural BMPs as part of their JRMPs as the initial methods for achieving dry and wet weather load reduction goals. As implementation continues and progress is evaluated, distributed and regional structural BMPs will be implemented as needed to achieve interim and final goals and as funding is available.

4.1.1 Overall Watershed Strategy Implementation Highlights

During FY 2015-2016, the Participating Agencies implemented a broad range of strategies to target bacteria, as well as other constituents such as nutrients and trash. Table 4-1 through Table 4-4 summarize strategies implemented during FY 2015-2016; jurisdictional strategy highlights are described later in this section, and tables presenting all strategies implemented by Participating

Agency are presented in Appendix 2. Several key strategy types were implemented broadly across the watershed and are highlighted below.

- **Preventing wastewater discharges to the storm drain system**. This strategy addresses human sources of bacteria, which are the highest priority from a public health perspective.
    - The City of San Diego organized an interdepartmental team to investigate and eliminate sources of bacteria in areas where microbial source tracking found markers of human bacteria. This team eliminated a wastewater discharge to the storm drain system from a broken restaurant private sewer lateral in the Sports Arena area within the City of San Diego during FY 2015-2016 and will continue additional investigations in the San Diego River Watershed during FY 2016-2017.
    - The City of Santee is working with its local wastewater utility to complete a forensic investigation of potential wastewater contributions to the storm drain system in the vicinity of a Bacteria TMDL monitoring site in Forester Creek.
    - The City of La Mesa conducts smoke testing to check for defects in its wastewater system and is constructing system upgrade projects as a proactive measure to prevent potential discharges from its wastewater system to the storm drain system.
    - The County of San Diego Department of Environmental Health issues enforcement actions for failing septic systems when effluent could reach the storm drain system. Prompt follow up and mitigation is implemented.

- **Trash cleanups**, including volunteer cleanup events and cleanups of trash associated with transient encampments, which remove trash and also address likely sources of bacteria. Over 134,000 pounds of trash were removed through cleanups along local waterways during FY 2015-2016. Cleanups were accomplished in partnership with I Love a Clean San Diego and the San Diego River Park Foundation.

- **Rebate programs**, which help reduce dry and wet weather runoff. Within the City of San Diego and Helix Water District services areas, rebates[8] were issued for more than 111,000 square feet of grass that were converted to lower water use plants and for more than 2,700 rain barrels. The Sustainable Landscapes Program, which will begin active implementation during FY 2016-2017, includes replacing turf with lower water use plants to reduce dry weather runoff and downspout disconnections and soil quality improvement to capture stormwater. The City of Santee and Padre Dam Municipal Water District encouraged participation, and referred customers to the programs and rebates available through the County Water Authority and Southern California Water Smart. The City also created a water conservation and water quality outreach material, which included the posting of rotating messages on the City's digital clock tower in the town's center.

- **Retrofit and rehabilitation projects**, which address most pollutants and also often provide other benefits, such as aesthetic improvement or habitat enhancement.
    - The City of La Mesa has begun construction on a restoration project in Alvarado Creek, a tributary of San Diego River.

[8]Only rebates within the San Diego River WMA were considered for numbers from the City of San Diego. Helix numbers are total for the entire water district, but most of Helix's service area is within the San Diego River WMA.

- The City of Santee is a finalist for a Proposition 1 grant project through a program administered by the San Diego River Conservancy. The project would install bioretention and trash control BMPs at Mast Park, adjacent to the San Diego River. The BMPs would collectively treat approximately 540 acres.
- During FY 16, approximately 43.6 acres of drainage area were treated in the City of San Diego by green infrastructure features to meet TMDL water quality standards within the San Diego River, and approximately 14.8 additional acres are expected to be treated by FY 18.
- During FY 16, the City of San Diego constructed some of the bioretention facilities planned at the Allied Gardens Recreation Area. In accordance with strategy CSD-GI-07, the bioretention is designed to treat a 4.5-acre drainage area.

- **Additional monitoring to investigate sources of dry weather flows**, which are a transport mechanism for bacteria and other pollutants. The County of San Diego and the City of San Diego are utilizing continuous flow meters at selected outfalls in the watershed to investigate potential flow patterns. The collected data will be analyzed and used to target source investigation and enforcement activities.

Table 4-1. San Diego River Watershed Strategies, Illicit Discharge Detection and Elimination Program

San Diego River Watershed Illicit Discharge Detection and Elimination Program Strategies	Participating Agency						HPWQC	PWQC			
	City of El Cajon	City of La Mesa	City of San Diego	City of Santee	County of San Diego	Caltrans	Bacteria	Nutrients	Eutrophic Conditions	Total Dissolved Solids	Index of Biotic Integrity
Engage the public, jurisdictional staff, and other agency staff to proactively identify and report illicit discharges.	●	●	●	●	●	●	●	●	●	●	●
Develop and implement approaches to address the impacts of septic systems within the watershed.	●	●			●						
Develop and implement approaches to address the impacts of homeless activities within the watershed.	●	●		●			●	●	●		
Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.	●	●	●	●	●	●	●	●	●		
Implement monitoring programs to provide new information to refine the prioritization of drainage areas.	●	●	●	●	●		●	●	●	●	●
Actively educate public on prohibitions related to illicit discharges and connections.	●	●	●	●	●	●	●	●	●	●	●

Table 4-2. San Diego River Watershed Jurisdictional Strategies, Development Planning Program

San Diego River Watershed Development Planning Program Strategies	Participating Agency						HPWQC	PWQC			
	City of El Cajon	City of La Mesa	City of San Diego	City of Santee	County of San Diego	Caltrans	Bacteria	Nutrients	Eutrophic Conditions	Total Dissolved Solids	Index of Biotic Integrity
Provide updated materials, enhanced outreach, and training to convey land development requirements.	●	●	●	●	●	●	●	●	●	●	●
Develop and implement low-impact design (LID) programs to complement standard Permit requirements.	●		●	●			●	●	●		
Implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation and identify a list of candidate projects that could be used as alternative compliance options for Priority Development Projects.	●	●	●	●	●		●	●	●	●	●
Consider development of an alternative compliance program for Priority Development Projects.	●	●	●	●	●		●	●	●	●	●
Implement a post-construction BMP program for development projects to ensure proper construction and maintenance.	●	●	●	●	●	●	●	●	●	●	●
Enforce post-construction requirements related to new and redevelopment.	●	●	●	●	●	●	●	●	●	●	●

Table 4-3. San Diego River Watershed Jurisdictional Strategies, Construction Management Program

San Diego River Watershed Construction Management Program Strategies	Participating Agency						HPWQC	PWQC			
	City of El Cajon	City of La Mesa	City of San Diego	City of Santee	County of San Diego	Caltrans	Bacteria	Nutrients	Eutrophic Conditions	Total Dissolved Solids	Index of Biotic Integrity
Ensure that minimum BMPs are designated and required for construction projects.	●	●	●	●	●	●	●	●	●		
Provide enhanced outreach and coordination to convey construction requirements.	●	●	●	●	●	●	●	●	●		

Table 4-4. San Diego River Watershed Jurisdictional Strategies, Existing Development Management Program

San Diego River Watershed Existing Development Management Program Strategies	Participating Agency						HPWQC	PWQC			
	City of El Cajon	City of La Mesa	City of San Diego	City of Santee	County of San Diego	Caltrans	Bacteria	Nutrients	Eutrophic Conditions	Total Dissolved Solids	Index of Biotic Integrity
Maintain and improve data tracking methods for existing development inventories where necessary.	●	●	●	●	●	●	●	●	●	●	●
Develop and implement approaches to address the impacts of improper water use and irrigation runoff.	●	●	●	●	●		●	●	●	●	
Improve and/or continue existing pet waste programs.	●	●	●	●	●		●	●	●		
Improve trash management strategies within the watershed.	●	●	●	●	●	●	●				
Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.	●	●	●	●	●		●	●	●		
Improve and implement existing outreach programs to target key sources and pollutants.	●	●	●	●	●	●	●	●	●	●	●
Enhance existing stormwater maintenance programs.	●			●		●	●				
Develop and implement targeted programs to address issues in residential areas.	●	●	●	●	●		●	●	●	●	
Improve existing inspection programs to more efficiently target key sources.	●	●	●	●	●	●	●	●	●	●	●
Actively enforce stormwater and urban runoff requirements for existing development.	●	●	●	●	●		●	●	●	●	●
Identify and facilitate retrofit opportunities in areas of existing development.	●	●	●	●	●	●	●	●	●	●	
Perform strategic monitoring to improve understanding of sources and water quality within the watershed.				●	●		●	●	●	●	●
Improve coordination between agencies.	●	●	●	●	●		●	●	●		

4.1.2 City of El Cajon

Since the San Diego River WQIP was accepted in February 2016, the City of El Cajon has implemented a number of new strategies during FY 2015-2016 aiming to reduce dry weather flows, reduce sources of bacteria, and sponsor community trash cleanup events. El Cajon's strategies, such as enhanced inspection protocols, trash cleanups, community outreach, and water conservation public education are discussed below. These strategies seek to reduce sources of priority water quality conditions such as bacteria, trash, nutrients, and non-stormwater flow.

The City of El Cajon works to reduce trash in the watershed, which also can be a source of bacteria, by cleaning transient encampments and supporting cleanup projects by non-profit groups in the Forester Creek area. During FY 2015-2016, the City of El Cajon performed 18 transient encampment removals and cleanups. A total of 212.6 cubic yards of trash and material were removed during these encampment cleanups. The City also partnered with I Love a Clean San Diego on two trash cleanups at Forester Creek during FY 2015-2016. A total of 63 volunteers collected 2,280 pounds of trash (43 cubic yards). In addition to cleanups, during FY 2015-2016, the City of El Cajon installed 20 inlet filters in areas with high trash volumes, for a total of approximately 100 inlet filters installed throughout the City to date.

The City of El Cajon, in partnership with the San Diego River Park Foundation, was awarded a Disadvantaged Community grant to organize community outreach focused in Forester Creek regarding trash, City recreation, and stormwater pollution. The City of El Cajon partnered with the San Diego River Park Foundation to accomplish this grant project, set to be performed in FY 2016-2017 and 2017-2018. This project aims to provide the framework to engage the disadvantaged community of El Cajon in community-based planning to address both trash issues and lack of recreation access.

The project will involve broad outreach and surveys of community members, as well as engage the community in volunteer-based data collection to further define the trash issues and specific strategies for cleanup. A training program will be created to engage community volunteers in on-the-ground source identification assessments. Teams of volunteers will assess quantities and types of trash entering the creek as dumping, stormwater debris, litter, homeless encampment debris, and other categories as needed. Documentation and analysis will take place at seasonal field assessments along the creek, and following major storm flushing events. Sorting and weighing of trash and debris will provide valuable data for planning future trash capture and prevention projects.

Education is a key component for increasing public awareness of stormwater issues and thereby reducing pollution and flow sources. Water conservation articles were included in the bi-annual City of El Cajon newsletter that is distributed to an estimated 35,000 residents. In addition, the City stormwater employees staffed a booth at five outreach events in the City of El Cajon during FY 2015-2016. Informational water conservation pamphlets were updated and distributed at these events. Since the City performed this outreach related to reducing irrigation runoff, the City has received an increase in hotline calls regarding irrigation runoff, which suggests the irrigation outreach was effective.

The City of El Cajon has combined on-site structural treatment BMP checks with industrial and commercial inspections to reduce inspection set-up time, increase efficiency, and increase the

number of inspections. The City's stormwater inspector has been with the program for a number of years and has developed an extensive knowledge base of the City and historical stormwater issues. This consistency allows the City to build on past efforts and minimizes duplicate investigation work. The stormwater inspector has also developed a strong working relationship with businesses in the area while performing industrial and commercial inspections, which allows for better communication and cooperation from businesses.

The City of El Cajon also increased drive-by assessments of residential properties in FY 2015-2016. Particular focus was given to residential neighborhoods close to channels or located in areas with historical stormwater issues. Letters were sent to homeowners in these areas if overwatering, erosion, or other stormwater issues were identified. Once residents are aware that irrigation runoff is not an allowed discharge, they should be more likely to reduce watering times and fix irrigation systems.

4.1.3 City of La Mesa

The City of La Mesa put into practice a number of new strategies during FY 2015-2016, including the Alvarado Creek Restoration project, requiring redevelopment BMPs and increasing residential, commercial, and industrial inspections. La Mesa's programmatic and structural strategies aim to prevent, identify, and eliminate pollutants and non-stormwater flow sources.

In order to restore native habitat, slow and infiltrate flow, and reduce bacteria, the City of La Mesa broke ground on the Alvarado Creek Restoration project in October 2015. Invasive plants such as Mexican fan palm, tamarisk, eucalyptus, and *Arundo* have been removed, after which grading began. The project is scheduled to be completed in December 2016. In total, 900 linear feet of the Alvarado Creek will be restored. Concurrently with the creek restoration work, the City is also replacing a major wastewater line that runs along the creek (Figure 4-1).

Starting next year, the City of La Mesa will replace part of the Alvarado Trunk Sewer, a section of 70-year old sewer pipes near Interstate-8 and the 70th Street Trolley Station. The City does not have any direct indication that there are any leaks from the sewer line that might impact the storm drain system or Alvarado Channel. However, because the pipe is old, replacing the existing pipe is a proactive measure to prevent wastewater leaks from aging infrastructure from reaching the storm drain system or receiving water bodies.

Figure 4-1. Alvarado Creek Restoration

Structural BMPs have also been installed in the City of La Mesa to help reduce stormwater pollutant discharges. An apartment complex near Coleman College with 200 to 300 apartment units installed Silva Cells, impervious pavement, and Filterra units on-site to retain and filter stormwater runoff. In addition, the City partnered with I Love a Clean San Diego to install cigarette ash cans in downtown areas where higher levels of cigarette butt litter had previously been observed, generally around bars and restaurants. The cigarette butt containers are popular with local businesses and their patrons, and there has been a noticeable decrease in cigarette butts along the street and sidewalks.

Industrial and commercial stormwater inspection procedures were updated based on the new City of La Mesa JRMP. The City switched to a property-based inspection approach, which allowed the City to increase the inspection frequency to two to three times per year. As part of the switch to property-based inspections, the City also changed its inspection fee structure. Previously, businesses paid a higher amount, but only in the years they were inspected. The fact that the fee was not consistent each year and was relatively high, in addition to the perception of unfairness when neighboring businesses were not inspected and charged in the same year, created some opposition from the business community. Switching to a property-based inspection approach, in which every business is inspected every year, has allowed for a shift to a lower fee that is the same every year, which has been better received by the business community and has led to a more productive working relationship between businesses and the City's inspector.

The City of La Mesa inspected its entire inventory of residential management areas during FY 2015-2016. The assessment process included driving throughout the residential management areas

and noting instances of illicit discharges, trash, erosion, and similar issues. If issues such as overwatering or erosion were seen associated with a residence, the resident was sent a letter to make them aware of the issue and to suggest solutions.

4.1.4 City of San Diego

During FY 15-16, City of San Diego implemented strategies as described in the WQIP. Highlights of strategies implemented by City of San Diego to address bacteria are shown in Figure 4-2. A complete list of strategies planned for implementation within the WMA and the progress made on each strategy during the reporting period are provided in Appendix 2.

Allied Gardens Recreation Area Bioretention

In FY 16 the City constructed some of the bioretention facilities planned at the Allied Gardens Recreation Area. In accordance with strategy CSD-GI-07, the bioretention is designed to treat a 4.5-acre drainage area.

Structural Controls

In FY 16, 43.6 acres of drainage area were treated by green infrastructure features to meet TMDL water quality standards within the San Diego River, and approximately 14.8 additional acres are expected to be treated by FY 18.

Surfer Epidemiological Study

The City participated in preparation of Surfer Epidemiological Study, which tracked illness in surfers at City beaches and identified potential sources of bacteria within the watershed. Information on human health risk and levels of bacteria in the watershed identified in the study may assist in refining the Bacteria TMDL during the re-opener process.

Trash Removal

The City completed trash removal along 5,750 feet of the San Diego River as part of a larger habitat restoration and trash removal project. In accordance with strategy CSD-STRUCT-02, the restoration project will cover 57 acres and is expected to be completed in FY 22.

Figure 4-2. Highlights of City of San Diego Strategies

Additional strategies being implemented are listed in Table 4-5.

Table 4-5. Summary of Strategies for the San Diego River WMA - City of San Diego

Strategy	Multiple Benefits[1]						
	Bacteria[2]	Nutrients	Metals	Trash	Sediment	Flow[3]	Habitat/Wildlife
Storm Drain Structure Cleaning: 5,485 storm drain structure inspections were conducted, resulting in the cleaning of 1,189 structures and removal of 130 tons of debris in the WMA.	●		●	●	●		
New in FY 16: Enhanced Catch Basin Cleaning Optimization: Enhanced catch basin cleaning is a strategy to address pollutant removal by inspecting catch basins more than the JRMP-required minimum of once per year in the Tijuana River, San Diego Bay, and Los Peñasquitos WMAs to meet specific TMDL pollutant removal requirements. In an effort to further optimize its drain cleaning program, the City analyzed eight years of catch basin cleaning data and assigned priorities to individual basins based on historical debris removal. This enhancement will allow the City to target high priority drains to maximize pollutant removal while maintaining cost efficiencies.	●		●	●	●		
Street Sweeping: Approximately 18,182 curb miles of roads, streets, highways, medians, parking lots, and operations yards were swept in the WMA.	●	●	●	●	●		
New in FY 16: Median Sweeping: 4,315 median miles were swept citywide.	●	●	●	●	●		
New in FY 16: Targeted Aggressive Street Sweeping Pilot: The City completed a pilot study that quantified the effectiveness of posting limited-hour "no parking" signs on typically nonposted routes. The study found that posting routes resulted in an approximate 50% increase in pollutant removal because the sweeper had more access to curbs and gutters. Based on this finding, the City will consider posting additional routes if supported by the community.	●	●	●	●	●		
New in FY 16: MS4 Maintenance: In addition to routine maintenance of the MS4, the City repaired or replaced 12 pump stations and modernized another 14 pump stations, closed-circuit television (CCTV) surveyed 28,000 linear feet of pipe in 62 locations citywide, and began the development of the Waterways Maintenance Plan and Channel Maintenance Prioritization Plan. To help minimize the risk of flooding in a flood-prone drainage area, the City also installed a 2,400-volt automatic transfer switch and generator to a 130,000-gallon-per-minute pump station, allowing for sustained function in the event of a power outage.	●		●	●	●		
Illicit Discharge Dectection and Elmination (IDDE) Program: 683 cases were investigated, including 368 discharges reported by the public, 553 illicit discharges or illicit connections were eliminated, and 553 enforcement actions and 349 escalated enforcement actions were issued in the WMA. **New in FY 16: Launch of the Get It Done App**: This app allows illicit discharges to be reported quickly and accurately via any smartphone. Lastly, the Tiger Team (a proactive escalated monitoring and	●	●	●	●	●	●	●

Table 4-5. Summary of Strategies for the San Diego River WMA - City of San Diego

Strategy	Multiple Benefits[1]						
	Bacteria[2]	Nutrients	Metals	Trash	Sediment	Flow[3]	Habitat/Wildlife
enforcement team that involves multiple City departments and divisions) was developed to identify, locate, and eliminate sources of human specific bacteria in the MS4. Over several months during the reporting year, one problem area within the City was investigated extensively and a source of human-specific bacteria in the MS4 was identified and abated.							
Commercial and Industrial Business Inspections: 2,672 inspections were completed, 198 follow-up inspections were completed, 431 violations were identified, 527 enforcement actions were issued, and 172 escalated enforcement actions were issued in the WMA. In addition, the City conducted property-based inspections that focus on common areas/activities shared among multiple businesses or tenants that generate pollution. A previously conducted pilot study on inspection practices found property-based inspections to be more effective at identifying and resolving water quality issues (e.g., improper trash disposal practices and irrigation runoff, etc.) associated with commercial and industrial businesses.	●	●	●	●	●	●	●
Trash Cleanups: Five cleanup events were sponsored through I Love a Clean San Diego that collected a total of 23,887 pounds of trash and debris in the WMA. An additional 102,215 pounds of trash and debris were removed via a partnership with the San Diego River Park Foundation (see Appendix 2 for a list of specific projects).				●			
Rebates to Reduce Irrigation Runoff: Rebates were issued to convert 68,236 square feet of turf in the WMA and rebates for rain barrels were issued to capture 772,740 gallons of rainwater citywide.	●	●	●	●	●	●	●
New in FY 16: Offsite Alternative Compliance Program: The City implemented Phase I of the Alternative Compliance Program to give development projects that would require onsite structural BMPs the ability to propose offsite alternative compliance projects. The development of Phase II was also initiated and will include the establishment of an in-lieu fee structure and credit system.	●	●	●	●	●	●	●
New in FY 16: Bacteria Regrowth Study: The City completed a study to characterize the magnitude and extent of potential *Enterococcus* loading because pf regrowth within the City's storm drain system. This study quantifies the amount of bacteria in receiving water samples that are harmless to humans and would potentially be used to refine bacteria water quality standards of the Bacteria TMDL as a part of the Reopener process.	●						

1. X – Addresses the water quality conditions.
2. Highest priority water quality condition is highlighted in orange.
3. Flow is defined as storm water and non-storm water discharges to receiving waters, including freshwater inputs.

4.1.5 County of San Diego

The County of San Diego put into practice a number of improvements to existing strategies since the San Diego River WQIP was accepted in February 2016, including a focus on increasing efforts to find and address IC/IDs, since reducing dry weather flows is an important part of the County's approach to reducing bacteria during dry weather conditions.

As part of the effort to find and discontinue IC/IDs, the County of San Diego implemented off hours patrolling to identify discharges. Most off-hours patrols were conducted between 8 am and 8 pm during the weekends, but twice County staff patrolled between 5 am and 9 am to identify sources that occurred during the early morning hours. Staff focused their efforts on residential sources, such as irrigation runoff, and patrolled all residential management areas (RMAs) at least once. Each RMA consists of the residential area under the County's jurisdiction in each HSA in the watershed. In addition to the off-hours program, a new residential inspection program was implemented to identify illicit discharges in residential areas.

As part of the program to reduce residential over irrigation and pollutants, the County conducted a pilot study that tested different messages and door hanger styles (Figure 4-3) to see which were most effective at achieving behavior change. Then the County selected the most effective design to target each type of commonly observed activity (e.g., irrigation runoff, erosion). Additionally, the County developed educational materials for home owners' association (HOA) outreach in FY 2015-2016 and plans to implement an educational pilot project in FY 2016-2017. The pilot project will target certain HOAs in drainage areas with priority outfalls. A preliminary list of HOAs has already been compiled.

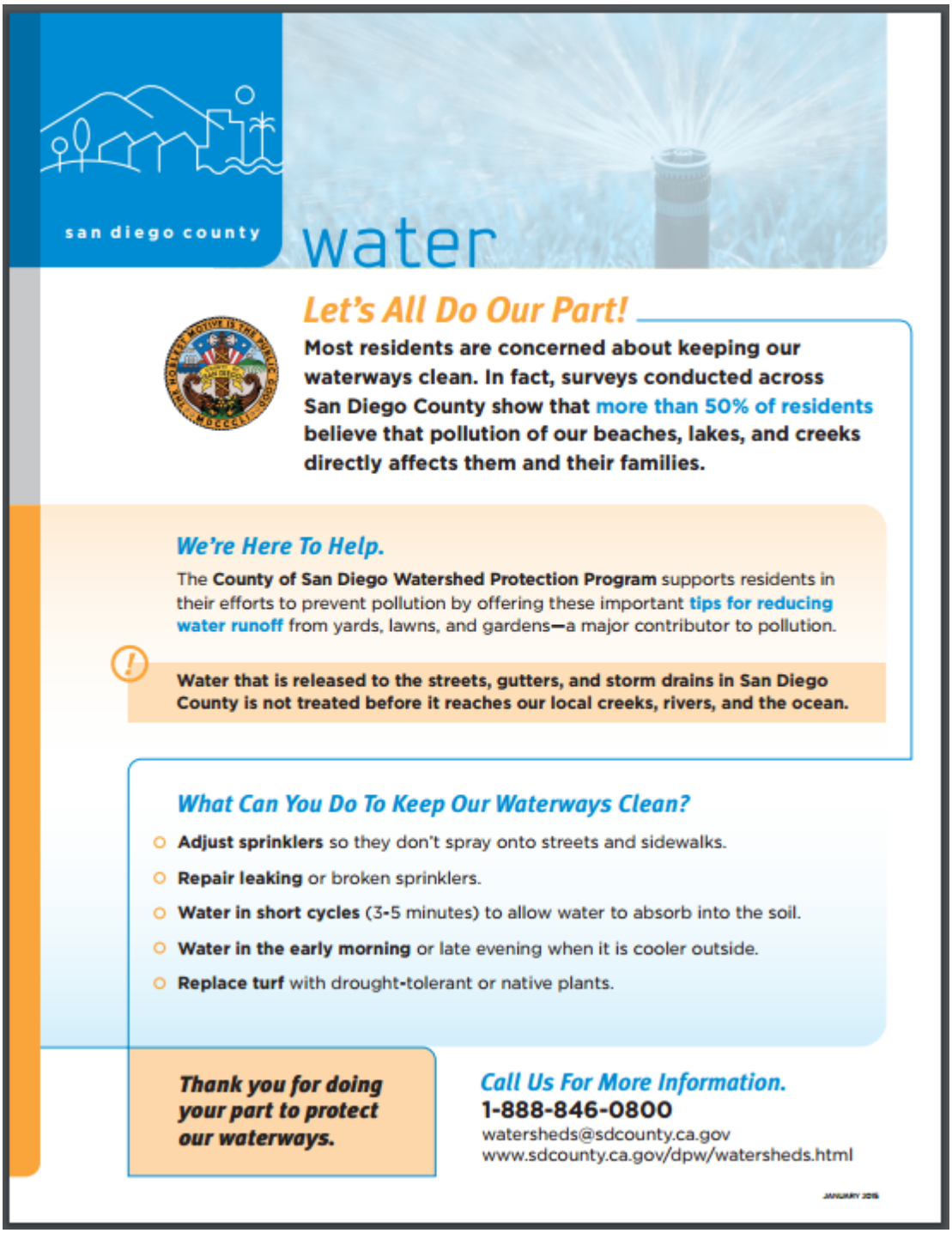

san diego county

water

Let's All Do Our Part!

Most residents are concerned about keeping our waterways clean. In fact, surveys conducted across San Diego County show that more than 50% of residents believe that pollution of our beaches, lakes, and creeks directly affects them and their families.

We're Here To Help.

The **County of San Diego Watershed Protection Program** supports residents in their efforts to prevent pollution by offering these important tips for reducing water runoff from yards, lawns, and gardens—a major contributor to pollution.

Water that is released to the streets, gutters, and storm drains in San Diego County is not treated before it reaches our local creeks, rivers, and the ocean.

What Can You Do To Keep Our Waterways Clean?

- **Adjust sprinklers** so they don't spray onto streets and sidewalks.
- **Repair leaking** or broken sprinklers.
- **Water in short cycles** (3-5 minutes) to allow water to absorb into the soil.
- **Water in the early morning** or late evening when it is cooler outside.
- **Replace turf** with drought-tolerant or native plants.

Thank you for doing your part to protect our waterways.

Call Us For More Information.

1-888-846-0800

watersheds@sdcounty.ca.gov

www.sdcounty.ca.gov/dpw/watersheds.html

Figure 4-3. Residential Educational Outreach Door Hanger

In another effort to track and identify IC/IDs, the County has installed flow meters at nine outfalls in the San Diego River WMA. The flow data from the outfalls will be analyzed to identify trends or patterns that can help target source identification efforts in the upstream areas. If specific trends or patterns indicating potential IC/IDs are observed, patrolling or targeted investigations will be scheduled during the times when those flows typically occur based on data from the meters.

The County monitors more storm drain outfalls, more frequently than is required by the WQIP. During the 2015-2016 monitoring year, all County major storm drain outfalls were inspected for dry weather flows three or more times, while the Permit requires a minimum of only two visits per year at 80% of the outfalls. Overall, the County completed about 50% more field screening monitoring visits to its major outfalls than required by the Permit. During the 2015-2016 monitoring year, the County also visited 111 smaller storm drain outfalls (outfalls with diameter less than 36 inches) that it has inventoried as part of its Microbial Source Tracking Study (published as Appendix L of the *Transitional Monitoring and Assessment Program Report 2012-2014*, and provided in this report Attachment 4C to Appendix 4). These were inspected for non-stormwater flows approximately once every two months over the monitoring year. The data were collected to better inform the program about the County's progress toward achieving its dry weather storm drain outfall flow reduction goals.

To reduce trash and bacterial sources associated with transient activity, the County of San Diego collaborates with a multi-departmental group, including the Sherriff's Department, to remove and clean up homeless encampments. The County has also partnered with I Love a Clean San Diego on cleanup events, and has partnered with other nonprofit groups upstream of the El Capitan reservoir to remove invasive plants.

As a regional leader in water conservation, the County implements several programs and strategies, both independently and in partnership with other agencies, to help conserve local water supplies. During FY 2015-2016, these efforts included the County conducting two rain barrel distribution events in partnership with other agencies which provided 55-gallon water collection drums to qualifying local citizens. The County has also worked in partnership with local water agencies, including the San Diego County Water Authority under its WaterSmart campaign, to provide assistance within its jurisdiction on the distribution of water conservation educational materials. This effort has included the promotion of available water conservation rebates and incentives including water efficiency audits and other tools to help save water.

Through the County's collaboration with a diverse group of partners, the Sustainable Landscapes Program (SLP)[9] was developed to integrate multiple sustainability concepts and resource benefits for residential-scale urban landscapes (Figure 4-4). The program aims to reduce the amount of potable water applied to the landscape, capture and use rainwater as a resource, and reduce pollutant infiltration into local waterways. The comprehensive approach includes the following:

1. the development of landscape guidelines,
2. residential and professional landscape training courses,
3. technical landscaping assistance including planting and irrigation plans,
4. marketing and outreach,
5. financial incentives for turf conversions, and
6. landscape materials provisions, including mulch and compost/compost tea.

During FY 2015-2016, the SLP partners offered free education and training opportunities to over 1,000 homeowners and professionals throughout San Diego County. All training opportunities align with the San Diego Sustainable Landscape Guidelines, which details best practices and

[9] Information on the San Diego Sustainable Landscape Program can be found at http://sustainablelandscapessd.org/

recommendations for a watershed approach to landscaping. Financial incentives for turf conversions and discounts on landscape material are scheduled to commence in late 2016.

Figure 4-4. Sustainable Landscape Planted with Low Water Plants (San Diego Sustainable Landscape Guidelines)

While bacterial pollution is a priority in the San Diego River Watershed, the County has also taken efforts to address other water quality conditions, such as sediment, nutrients, and habitat quality. In response to a complaint in the Winter Gardens area of Lakeside alleging sediment discharge occurring during a heavy El Niño winter storm, the County contracted with a consultant to conduct a community-based social marketing study of the residents in the area and their behaviors related to erosion and sediment control. The study concluded that although most residents did not perceive soil erosion as a serious problem in the area, many had already planted ground cover on their properties and would be interested in additional resources like the SLP. The County held a number of Sustainable Landscapes workshops throughout the year, including one in the Lakeside area in June 2016. Additionally, the County implemented new rock energy dissipaters at the outfalls of Winter Gardens Elementary School to reduce the velocity of storm water that flows onto the road in an effort to reduce sediment transport. The County also inspected the sewer manholes in the area and determined that they were intact and in good structural condition, and did not pose a threat of sewage infiltration into the storm drain system.

In addition, the County has taken a multi-faceted approach to reduce water consumption and limit dry weather flows through collaboration among departments. In response to drought conditions in the region, the County recently implemented a Water Shortage and Drought Response Plan to reduce water use at its facilities. For example, a collaborative effort between the Departments of Parks and Recreation and General Services resulted in installation of synthetic turf at several parks, including Lakeside Baseball Park and Collier Park Soccer Arena in Ramona (Figure 4-5). Since 2009, Parks and Recreation's installation of high-efficiency irrigation heads and smart irrigation controllers was completed in 20 parks county-wide, which has enabled the County to save over 180 millions of gallons of irrigation water. Other measures taken include, but are not limited to, elimination of regularly scheduled exterior window washing at County facilities and identification of parks and facilities with the potential for recycled water connections.

Figure 4-5. Lakeside Baseball Park (Left) and Collier Park Soccer Arena (Right)

The County is committed to improving training and guidance materials for construction contractors, businesses, and internal staff. The 2007 Low Impact Development (LID) Handbook[10] was updated to better align with the County's Standard Urban Stormwater Mitigation Plan (SUSMP) and Hydromodification Management Plan (HMP), and to reflect the most current data on LID approaches and their efficacy. For its distinguished efforts, the County was named the recipient of the 2015 Outstanding Innovation in Green Planning and Design Award by the San Diego Chapter of the California Association of Environmental Professionals (AEP), a non-profit organization established in 1974 and dedicated to enforcing and supporting the California Environmental Quality Act (CEQA). Additionally, the County received a similar award in October 2016 for work done during the fiscal year on development of its Guidance on Green Infrastructure[11], a document outlining tools to uniformly design, install, and maintain LID features in the public right-of-way (Figure 4-6). The County also increased the number of stormwater inspectors with relevant certifications (QSP/QSD/CSSWI) during FY 2015-2016.

[10] http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html
[11] http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html

Figure 4-6. Green Infrastructure in the County of San Diego

4.1.6 City of Santee

The City of Santee put into practice a number of new strategies during FY 2015-2016. These strategies seek to reduce bacteria, as well as other pollutants of concern, such as trash and nutrients. To establish a foundation for implementing these new strategies, the City and environmental engineering students from San Diego State University (SDSU) studied the water quality of both stormwater and non-stormwater runoff flowing into the San Diego River at six locations within the City in a partnership called the SAGE Project.

The six sites were chosen based on the the location of a hotspot and the feasibility of placing a structural BMP at the location. This process included a review of existing land use, environment, soil, hydrology, and infrastructure. Samples were analyzed for 10 constituents, including indicator bacteria and nutrients, and results were compared to WQOs outlined in the WQIP. Results indicated that indicator bacteria concentrations were above WQOs at all locations during dry and wet conditions. Phosphate concentrations were above WQOs at all but one location, whereas nitrate concentrations were generally below the WQO. In addition, students re-evaluated the last five years' monitoring data and plotted it onto a GIS heat map (Figure 4-7). This map identified the City's hot spots for both bacteria and nutrients. Combined, this data served to identify pollutant hot spots, and to identify the locations that would serve as valuable candidate sites where alternative or off-site compliance projects could be implemented.

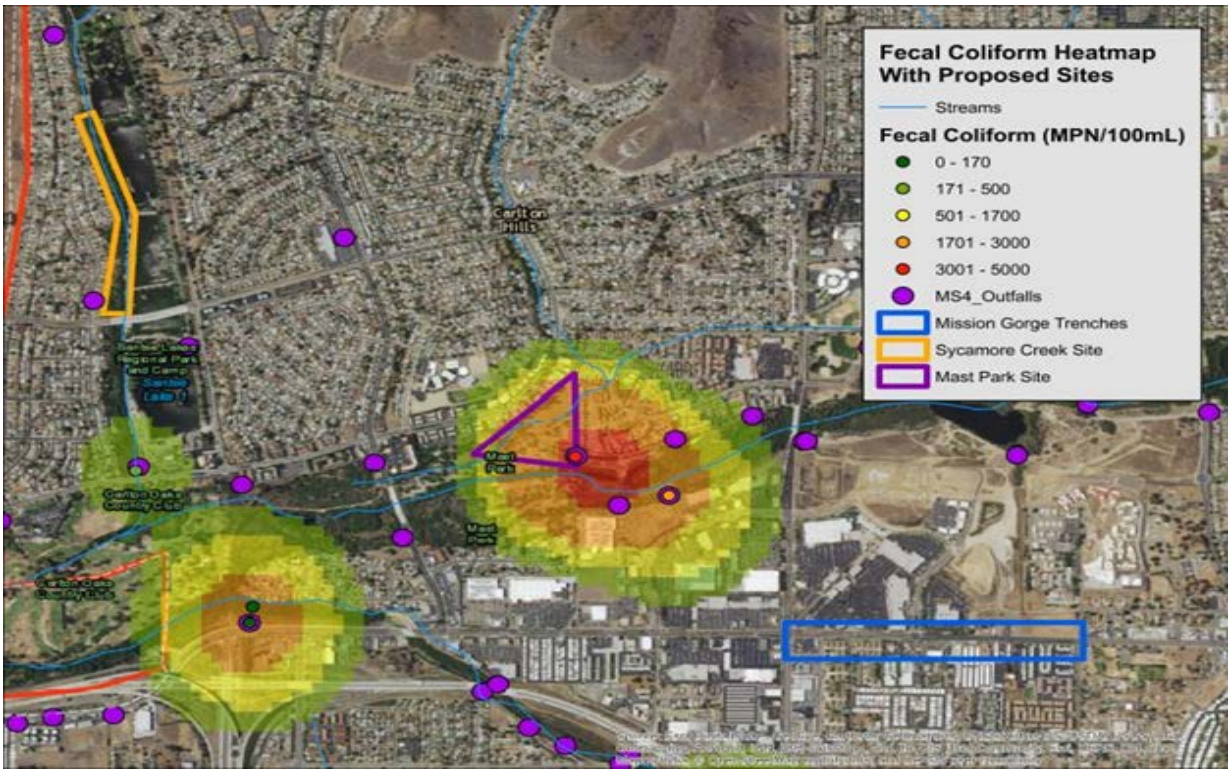

Figure 4-7. GIS Heat Map of SAGE Project Monitoring Data

Based on the review of monitoring data, pollutant hot spots, and upstream investigations, school campuses have been identified as a likely source of nutrients. The City is working with the school districts to establish good housekeeping practices such as landscape maintenance, especially for sports fields. As apart of this effort, the City supported the Santee School Districts successful application to the Drought Response Outreach Program for Schools (DROPS) grant program for a million dollar grant to implement storm water BMPs on school campuses.

The findings from the special studies conducted in partnership with SDSU have served as the foundation for prioritizing and establishing all Storm Water Program efforts. One outcome of theses studies is the implementation of a complete property inspection program. This means that while the City conducts routine inspections of inventoried facilities, the entire property, such as a shopping center/retail strip mall, will also be inspected. This enables the City to look at the big picture concerns at the property and encourages property managers, owners, tenants, and neighbors to work together. For each inspection of a business (tenant), the property manager/owner is notified, a corrective action response is prepared, and all tenants are notified of any concerns identified and best management practice requirements.

Another strategy that has been successfully implemented involves the leveraging of partnerships and resources to achieve water quality improvements. The City of Santee has strengthened relations and formed new partnerships with many community groups and organizations, including the Chamber of Commerce, the YMCA, the Santee School District, various volunteer organizations, and the Padre Dam Municipal Water and Sewer District (Padre Dam). Of note, the City has worked closely with Padre Dam to streamline communication and reporting, leverage resources, and has forged a working relationship on the review of land development projects and

water conservation and wastewater issues. Both agencies worked to streamline their plan of action to identify, discontinue, and clean illicit discharges. In addition, Padre Dam is conducting a forensic investigation of the sewer lines that are co-located with a bacterial hotspot near Forester Creek. Planning and coordination started in FY 2015-2016, and the evaluation will be completed FY 2016-2017.

Trash has been identified as a concern in the City of Santee and is a potential contributing source of bacteria to the storm drain conveyance system. This fiscal year, the City mandated that certain new developments and redevelopments install specialized dumpster enclosures as well as drainage insert or trash screen BMPs in private storm drain inlets (Figure 4-8). Trash enclosures are required to be contained on four sides as well as by a roof, with screens between the top of the enclosure walls and the roof to prevent trash from escaping. These requirements apply to all Priority Development Projects as well as certain redevelopment/tenant improvement projects. The City also requires all construction projects, including tenant improvement projects that only have indoor work, to complete construction BMP plans. This requirement helps ensure proper materials and waste management and disposal for such projects.

The City of Santee also worked to reduce trash through many community partnerships. Santee partners with the San Diego River Park Foundation, SDSU volunteers, and religious organizations, among others, to identify high trash areas and organize regular volunteer trash cleanups. Santee Public Works, in partnership with the Sheriff's Department, conducts river sweeps to identify transient encampments. The encampments are given a 72-hour eviction notice. After 72 hours, the City crews remove trash and old belongings.

A couple of notable acheivements were realized this reporting year. The City of Santee was selected as a finalist for a Proposition 1 grant administered by the San Diego River Conservancy to implement stormwater BMPs at Mast Park. The $1.2 million project would include a bioretention area and trash capture BMPs. The total area treated by all proposed BMPs is approximately 540 acres. In addition, significant progress was made toward the goal of eliminating dry weather runoff. As part of a dry weather monitoring investigation, a three gpm flow was tracked from a persistently flowing outfall to a big box store. The City worked with the business to reduce and redirect their swamp cooler discharge from the storm drain into the sewer and eliminate the flow.

CITY OF SANTEE

NEW AND REDEVELOPMENT PROJECTS MINIMUM STORM WATER REQUIREMENTS

New and Redevelopment Projects

All projects must submit a Project Applicability checklist and implement Low Impact Design (LID) to the maximum extent practicable. At minimum, submittals must also address the following:

Trash Management

1. Each property must provide sufficient trash cans (hooded type) throughout the property. All trash and recycling dumpsters must be stored within a fully contained trash enclosure with solid roofing to prevent rain run-on and runoff as well as wind or animal dispersal to the maximum extent practicable. Required signage includes: "No Dumping", and "Keep Lids Closed."

a. *Statewide regulations have been approved by both the U.S. Environmental Protection Agency (EPA) and the California Office of Administrative Law (OAL) to address trash in the environment and waterways. For more information, visit www.waterboards.ca.gov/water_issues/ under Programs, Trash Control.*

b. As of April 1, 2016 all commercial and industrial businesses that generate at least 8 cubic yards (equivalent to two full 4-yard dumpsters) of organic waste are required to separate organic waste from trash and recycling. Organic waste should be kept in a separate leak proof and covered bin within the trash enclosure. Therefore, the trash enclosure must be sized accordingly. For more information regarding this requirement, reference California Assembly Bill No. 1826, Chapter 727.

Outdoor Storage

Hazardous materials may not be stored outdoors. If outdoor storage (non-hazardous) is permitted per zoning code (i.e. Industrial), then the following is required:

1. Submit an inventory and description of all materials to be stored outside to the City.
2. Describe how the outdoor storage area will be covered and contained with permanent controls.
3. All structures must be permitted by the City, and prevent all rain water run-on and run-off.

Landscaping

1. Utilize San Diego native and drought tolerant plantings to maximum extent and install low water-use irrigation systems.
2. Irrigation systems must be installed to prevent overspray and/or runoff.

CITY OF SANTEE

NEW AND REDEVELOPMENT PROJECTS MINIMUM STORMWATER REQUIREMENTS

New and Redevelopment Projects

Storm Drain Inlets

All development projects must comply with full trash capture requirements.

1. All inlets must be fitted with grates, trash baskets, or equivalent proprietary device.
2. The device must be designed to capture debris 5mm or greater, and prevent flooding potential. All inlets must be labeled with concrete stamp, or equivalent, stating "No Dumping—Drains to River."

Residential Developments (with HOA, or more than 10 units)

1. Dog waste stations must be provided throughout the property.
2. Dog waste stations shall include signage to pick up and properly dispose of pet waste.
3. Stations must provide pet waste bags and a covered trash receptacle.

Property Maintenance and Housekeeping

1. All parking lots and private roads must be cleaned as needed, and at least once per year.
   a. Cleaning shall be sufficient to remove oil, grease, food stains, and debris—all wash water must be captured and contained for disposal to a sanitary sewer.
2. Trash containers shall remain covered at all times, and be emptied when full; dumpsters shall not be allowed to overtop.
3. Routine property inspections should be performed to remove stray debris, clean up residual materials, sweep up sediment, and maintain irrigation systems.

For more information regarding storm water regulations, visit www.santeeh2o.org.

Figure 4-8. New and Redevelopment Projects Minimum Stormwater Requirements

4.1.7 Caltrans

Although Caltrans is not a part of the Permit, Caltrans works cooperatively with the Copermittees in accordance with their statewide NPDES permit. Strategies Caltrans has implemented are presented in tabular format in Appendix 2.

4.1.8 Optional Watershed and Jurisdictional Strategies

In addition to the strategies presented above, the Participating Agencies developed optional jurisdictional and watershed strategies. Implementation of the optional strategies contingent on circumstances supported by the need for the additional effort as determined through the adaptive management process, the cost/benefit as compared to other options and strategies, and the availability of funding. Optional watershed strategies for the San Diego River WMA during FY 2015-2016 are presented in Table 4-6. Jurisdictional optional strategy implementation is described in the Participating Agencies' strategy tables, which are provided in Appendix 2.

Detailed jurisdictional strategies, including optional strategies and whether they have been triggered, are included in Appendix 2. Within the detailed strategies tables, information is presented to indicate whether the strategy was implemented during this reporting period, whether it will continue to be implemented during the next reporting period, or whether the strategy will be modified or eliminated for the coming year(s).

Table 4-6. San Diego River Optional Watershed Strategies Implemented during FY 2015-2016.

San Diego River WMA Optional Watershed Strategies	Implementation Timeframe	Collaborating Entities	HPWQC	PWQC			
			Bacteria	Nutrients	Eutrophic Conditions	Total Dissolved Solids	Index of Biotic Integrity
Implement Sustainable Landscapes Program to encourage landscape retrofits.*	FY 2016-17; Continuous until grant funding and incentives are depleted	Water districts, Copermittees, non-profit organizations	●	●	●	●	●
Implement an invasive species (i.e., *Arundo*) removal program in upstream areas, rivers, or tributaries.	FY 2016-18; Continuous until grant funding depleted	Copermittees, non-profit organizations	●	●	●	●	●
Implement wastewater management program to prevent sewer overflows.	FY 2016-2018; Continuous until grant funding depleted.	Copermittees, wastewater agencies	●	●	●	●	●

Note:

* Guideline development and residential/professional training courses were completed in FY 2015-2016; additional program components will begin in FY 2016-2017. See Section 4.5.1 for additional details.

4.2 GOALS FOR THE SAN DIEGO RIVER WATERSHED

As discussed in Section 2, interim and final numeric goals were established for the watershed as a means of measuring reasonable progress towards addressing bacteria and are focused to achieve compliance with the Bacteria TMDL. These goals are outlined in Chapter 3 of the WQIP and in Appendix 3 of this Annual Report, and include six compliance pathways. Each compliance pathway provides an independent option to demonstrate progress and ultimately compliance with the TMDL. Any one of the compliance pathways may be used for assessment purposes; all pathways do not have to be assessed. Each year, the Participating Agencies assess specific water quality data and programmatic information in order to gauge progress towards achieving the numeric goals. These assessments provide information to determine whether intended outcomes are being realized or if adaptations of Participating Agencies' programs are necessary.

This section focuses on the progress that the Participating Agencies have made towards their interim goals established for the Permit term ending in 2018. Progress towards these numeric goals is measured using the water quality and programmatic data collected during the 2015-2016 monitoring year. Progress is summarized in Table 4-7 (for dry weather) and Table 4-8 (for wet weather) and in the following subsections.

4.2.1 Interim Numeric Goals, Permit Term

The San Diego River WQIP was accepted in February 2016, and none of the goals outlined in the WQIP are due to be achieved by the end of FY 2015-2016. The Participating Agencies are demonstrating progress towards goals in the San Diego River WMA through the WQIP implementation option (Pathway 6), which involves executing the jurisdictional strategies outlined in the WQIP to achieve interim and, eventually, final goals. Progress toward the interim numeric goals for the current Permit term is presented in Table 4-7 (dry weather goals) and Table 4-8 (wet weather goals). The completion of baseline estimates are included in the progress assessment for those Participating Agencies that committed to providing baseline information in the 2015-2016 WQIP Annual Report which had not already given in the WQIP.

4.2.1.1 The City of El Cajon

The City of El Cajon is focusing its efforts during the current Permit term primarily on addressing dry weather urban runoff. Based on cumulative assessment reports and monitoring studies focusing on the San Diego Watershed (San Diego River) and Forester Creek, known sources of bacteria include anthropogenic (human and pet contributions), high density areas and industry (multi-family housing, high use areas such as retail centers, and eateries), irrigation runoff (over irrigation, pavement washing), and natural (wildlife) contributors. Based on the urban runoff monitoring program results, historical data show that bacteria and nutrients exceedances occur at major outfalls within the jurisdiction of El Cajon.

Interim dry weather numeric goals for this Permit term and progress towards those goals are presented in Table 4-7. Progress is also shown in Figure 4-9. During dry weather, the City of El Cajon met its goal of achieving a 10% reduction in flow volume or the in the number of flowing outfalls compared to the baseline calculated from 2013-2014 monitoring year data, and will continue to implement their programs to reduce dry weather flows. A second dry weather goal for the Permit term is to increase the number of cubic yards of debris collected from drainage channels

to reduce the gross pollutants that may contribute to bacteria loads. Progress was measured by comparing the number of annual transient encampment removal events and associated cubic yards removed to the yearly average of five removal events removing 25 cubic yards of trash and debris. The City of El Cajon exceeded this average during the 2015-2016 monitoring year and will continue cleanups in future fiscal years.

During wet weather, interim goals included sponsoring and coordinating with jurisdictions for bi-annual creek cleanup events in one focused management area and expanding pet waste management outreach to one focused management area or to large properties owners. Progress is described in Table 4-8 and shown in Figure 4-9. The City of El Cajon achieved the first goal by removing a greater amount of solid waste than the per-event average of five cubic yards. For the second goal, the City of El Cajon began planning its pet waste management outreach program and is on track to implement the program within the Permit term.

Permit Term Goal	Baseline Estimation Completed	On Track to Achieve Goal	Permit-Term Goal Achieved
Dry Weather Goal #1: Flow Reduction	✓		✓
Dry Weather Goal #2: Encampment Removals			✓
Wet Weather Goal #1: Cleanup Events at Forester Creek			✓
Wet Weather Goal #2: Pet Waste Management		✓	

Figure 4-9. The City of El Cajon's Progress Towards Permit Term Numeric Goals

4.2.1.2 The City of La Mesa

The City of La Mesa is focusing its current Permit term efforts on performing a creek restoration project encompassing a 900 foot segment of Alvarado Creek. Progress is described in Table 4-7 (dry weather) and Table 4-8 (wet weather) and shown in Figure 4-10. The metric used to demonstrate compliance will be linear feet of structural projects, and the City of La Mesa is on track to achieve its goal during the Permit term.

Permit Term Goal	On Track to Achieve Goal	Permit-Term Goal Achieved
Dry and Wet Weather Goal: Alvarado Creek Restoration	✓	

Figure 4-10. The City of La Mesa's Progress Towards Permit Term Numeric Goals

4.2.1.3 The City of Santee

Interim numeric goals for the Permit term are presented in Table 4-7 (dry weather) and Table 4-8 (wet weather) and progress is shown in Figure 4-11. The Permit term goals are to reduce indicator bacteria loads from storm drain outfalls during dry and wet weather. With only a few months of official program implementation since the WQIP was accepted in February 2016, assessment of pollutant load reductions would be premature at this time. However, The City has a robust program in place to achieve bacteria reductions and has made programmatic progress. A comparison of dry weather major storm drain outfall flow data indicates that progress has been made with regard to eliminating non-stormwater flow. The number of major outfalls at which flowing water was observed during at least one visit decreased by 14% from the 2014-2015 monitoring year to the 2015-2016 monitoring year. In addition, the average observed flow rate at major outfalls decreased by more than half over the same time period. This is largely due to the City eliminating illicit discharges observed during 2014-2015, including an illicit discharge from a development project with an estimated flow rate of 18 gallons per minute (gpm) and a swamp cooler at a commercial facility with a flow rate of approximately three gpm.

The City has also partnered with SDSU to perform additional monitoring to further investigate bacteria and nutrient levels in its jurisdiction and has used that data to help prioritize outfalls for additional investigation. The City is also working with Padre Dam Municipal Water District, the local sewer agency, on a study to assess whether wastewater infrastructure may be contributing bacteria to Forester Creek around identified areas with higher bacteria levels or where human markers have been noted. Based on program implementation to date, the City of Santee has made significant accomplishments and is making progress toward meeting its interim goals, which are due by 2018.

Permit Term Goal	On Track to Achieve Goal	Permit-Term Goal Achieved
Dry Weather Goal: Bacteria Load Reductions	✓	
Wet Weather Goal: Bacteria Load Reductions	✓	

Figure 4-11. The City of Santee's Progress Towards Permit Term Numeric Goals

4.2.1.4 The City of San Diego

The City of San Diego's jurisdictional interim goal for wet and dry weather is to develop and implement a policy requiring the inclusion of green infrastructure features on all suitable City projects, including non-SUSMP projects. This policy will be coordinated with ongoing efforts to update City design manuals and LID standards for public LID BMPs. To guide implementation of the new policy, a green infrastructure program will be initiated in parallel. The program will begin with research and recommendations for ideal methods for green infrastructure project siting and prioritization within the City, but will ultimately result in the construction of additional green infrastructure projects.

FY 18 Performance Based goals for the Permit term and progress toward achieving those goals are presented in Table 4-7 (dry weather) and Table 4-8 (wet weather). Progress is also shown in Figure 4-12 for the wet and dry weather FY 18 Performance Based goal to have 58.4 acres of drainage area treated through construction of four green infrastructure BMPs and in Figure 4-13 for the dry weather FY 18 Performance Based goal to reduce prohibited non-stormwater flow from the City of San Diego's persistently flowing outfalls in the watershed by 10% compared to baseline flows. For the green infrastructure BMP goal, the City has begun the process for developing a green infrastructure policy and implemented projects that treat 43.6 acres of drainage area (75% of the total FY 18 Performance Based goal). Projects that make up the 43.6 acres include the Cabrillo Rain Garden (6 acres) and Park Ridge Structural BMP (37.6 acres). The FY 18 Performance Based goal is expected to be achieved by implementing additional projects that treat 14.8 acres of drainage area, for a total of 58.4 acres (Allied Gardens Bioretention - 4.5 acres, Famosa Slough Bioretention - 10.3 acres) treated by 2018. For the flow reduction goal, average dry weather flow in FY 2015-2016 was 62.8 gallons per minute, representing a 46.7% reduction from the baseline average flow. Therefore, this goal has been achieved.

In accordance with the requirements of the WQIP, the storm drain discharge baselines to be used for assessing progress toward dry and wet weather jurisdictional numeric goals for bacteria reductions due to be achieved in future permit terms were calculated and are presented in Table A3-9 and Table A3-10 of Appendix 3.

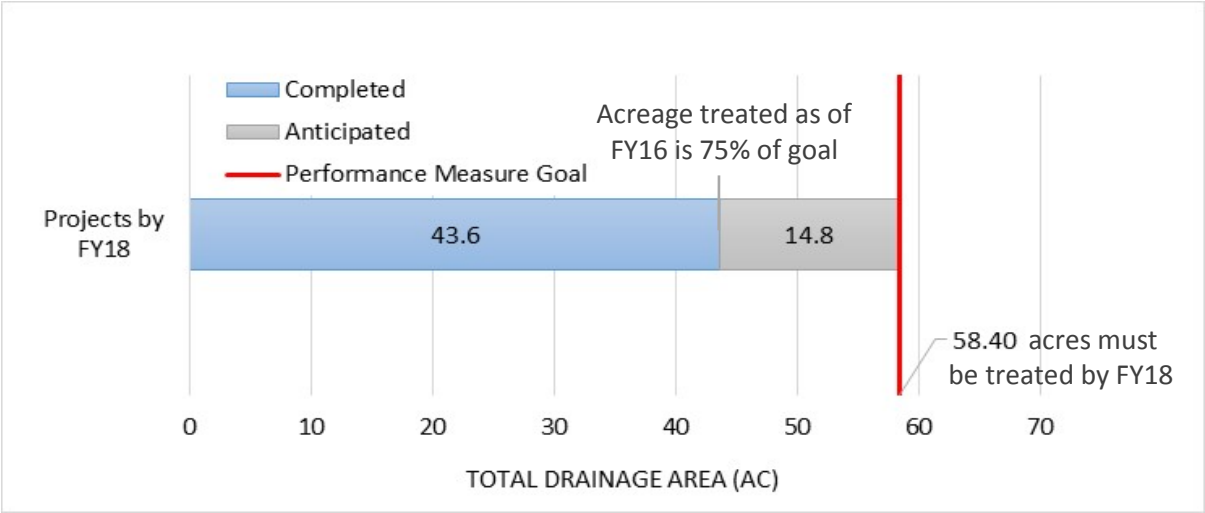

Figure 4-12. The City of San Diego's Progress FY 18 Performance Based Goals – Green Infrastructure BMPs (Wet and Dry Weather)

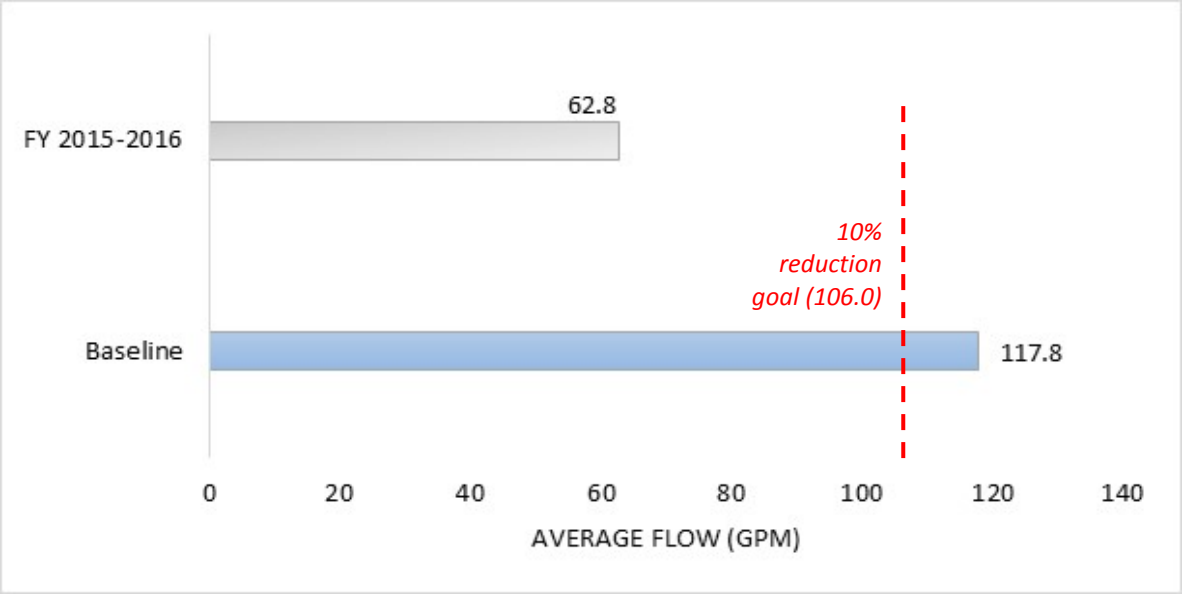

Figure 4-13. The City of San Diego's Progress Towards FY 18 Performance Based Goals – Flow Reduction (Dry Weather)

4.2.1.5 The County of San Diego

The County of San Diego has established dry weather numeric goals for bacteria in the watershed, focusing its efforts on eliminating anthropogenic dry weather discharges from storm drain outfalls to receiving waters through implementation of jurisdictional strategies. The County of San Diego determined the first Permit term will be utilized for planning and feasibility analyses. As such, the County shifted to a more active field program to better locate and abate dry weather flow, and trained staff members to identify and report IC/IDs more effectively. In addition, the County is focusing on reducing flow at persistently flowing storm drain outfalls. The County also has a goal of participating in additional public private partnerships including a small-scale residential incentive program.

Interim numeric goals for the Permit term and progress toward achieving those goals are presented in Table 4-7 (dry weather) and Table 4-8 (wet weather). Progress is also shown in Figure 4-14. The Permit term goal during dry weather is a 20% reduction in aggregate flow volume or in the number of persistently flowing storm drain outfalls. To demonstrate progress toward the goal of reducing and eventually eliminating non-stormwater discharges from the County stormwater conveyance system (see WQIP Table 3-12; Compliance Pathway 6a), dry weather monitoring of outfalls was conducted during 2015-2016 to develop a baseline. To this end, required storm drain outfall monitoring was augmented with additional continuous flow monitoring in a number of outfalls during the dry season to provide a baseline flow metric that accounts for seasonal and daily variations in non-stormwater flows. This detailed flow information will assist in source identification and abatement activities. Furthermore, the County is leveraging these current efforts to meet the Permit requirements to "effectively eliminate" non-stormwater flows in the stormwater conveyance system by 2021. Doing so will allow the County to achieve the Bacteria TMDL goal

of stopping "direct or indirect discharges from the Responsible Copermittee's storm drain systems to the receiving waters" in accordance with the Permit.

During the 2014-2015 and 2015-2016 monitoring years, the County of San Diego conducted dry weather field screening monitoring at all of its 51 major storm drain outfalls in the WMA to document the presence of standing or flowing water. These data were used to determine which outfalls have persistent dry weather flows and should be prioritized for their potential impact on the quality of receiving waters per the Permit. During 2015-2016, five of the eight persistently flowing outfalls were identified as highest priority storm drain outfalls and were targeted for additional bi-annual field and analytical monitoring and focused source reduction activities. The County also installed continuous flow monitoring equipment in nine outfalls with persistent or transient flows that included four of the five highest priority outfalls. These nine outfalls were selected based on presence of persistent and transient flows as well as the feasibility of monitoring with consideration for equipment installation, safety, and access. The resulting data are used to measure dry season baseline flows and to screen for cyclical trends in these flows. This information will assist the County in reducing or eliminating non-stormwater flows.

The 2015-2016 monitoring results show that eight (16%) of the 51 major storm drain outfalls had persistent non-stormwater flows. The mean flow rate as measured at the nine outfalls with continuous flow monitoring equipment equaled 1.80 gpm. These preliminary flows represent a baseline against which the County will measure progress toward achieving the goal of reducing and effectively eliminating anthropogenic dry weather flows from the stormwater conveyance system to the receiving waters.

During wet weather, the interim goal for the current Permit term is to implement non-structural BMPs to achieve source reduction of bacteria loads from the storm drain outfalls or to reduce by 1% the baseline bacteria loads from distributed structural BMPs constructed between 2003 and 2009, which are outlined and mapped in Appendix E to WQIP Chapter 3. Since these BMPs were implemented to mitigate anticipated development, they are considered to contribute to the pollutant load reductions achieved under the WQIP. Progress is described in Table 4-8 and shown in Figure 4-14. The County implemented all planned programmatic BMPs and is on track to achieve the first wet weather goal. The County has achieved the second wet weather goal through continued operation and maintenance of the distributed BMPs.

Permit Term Goal	Baseline Estimations Completed	On Track to Achieve Goal	Permit-Term Goal Achieved
Dry Weather Goal: Flow Reduction	✓		
Wet Weather Goal #1: BMP Implementation		✓	
Wet Weather Goal #2: Distributed BMP Operation and Maintenance			✓

Figure 4-14. The County of San Diego's Progress Towards Permit Term Numeric Goals

Table 4-7. Permit Term Dry Weather Numeric Goals

Goal	Metric	Schedule	Baseline Data	Data Collected/Results	Progress
City of El Cajon					
Reduce the volume of dry weather flows or the number of storm drains with dry weather flows by 10%.	% reduction of dry weather flow volume from major outfalls or number of major outfalls with dry weather flows	Achieve during Permit Term (expires June 27, 2018).	The baseline was calculated based on data from monitoring year 2013-2014, the first year that flow data were collected at the major outfalls in the City. The estimated flow volume from major outfalls was 47.4 million gallons, and 45% of major outfalls had flowing water during at least one visit.[a]	Dry weather flow measurements were collected as part of the City's major MS4 outfall monitoring program. The estimated flow volume in monitoring year 15-16 was 20.1 million gallons, and 24% of major outfalls had flowing water during at least one visit.	Reductions of more than 10% in both the estimated flow volume and the percentage of outfalls with flowing water during 15-16, compared to the baseline, were observed. Relatively small amounts of rainfall and statewide mandatory water conservation programs, in addition to the City's strategies, likely contributed to these reductions. While water agencies' mandatory conservation programs are no longer in effect, the City will continue to implement its programs to reduce dry weather flows.
Increase annual transient encampment removal events to a minimum of eight (8) annual events to increase to 40 cubic yards of trash and debris.	The number of annual transient encampment removal events throughout the City's drainage channels.	Achieve during Permit Term (expires June 27, 2018).	Yearly average of five (5) removal events during R9-2007-0001 Permit cycle to help remove 25 cubic yards of trash and debris.	The City performed 18 transient encampment removal events during FY15-16 and removed 212.6 cubic yards of trash and debris. An especially large number of cleanups were completed in FY 15-16 to prepare for El Niño conditions and reduce flood risk.	The City exceeded the average annual goals for the number of cleanups and the volume of trash and debris removed. The total volume of material removed also exceeds the entire Permit term goal of 120 cubic yards (40 cubic yards/year x 3 fiscal years). The City will continue cleanups of transient encampments in future fiscal years.
City of La Mesa					
Perform 900 linear feet of Alvarado Creek Restoration	Linear feet of structural projects	Achieve during Permit Term (expires June 27, 2018).	Existing channel conditions.	The City has started construction of the 900 linear feet of restoration in Alvarado Creek in FY 15-16. Work will be completed before 2018.	The City is on track to achieve the goal for the Permit term due in 2018.
City of Santee					
Loads are reduced by 18.5% for total coliform; 17.4% for fecal coliform; 23.5% for *Enterococcus* from MS4 outfalls	Load reductions in MS4 discharges	Achieve during Permit Term (expires June 27, 2018).	1,727 x 10^{12} MPN during Water Year 2003 (based on modeling). This baseline may require updating as this baseline is not specific to MS4 discharges from the City of Santee only.	The City has developed more strict development requirements and more aggressive requirements for retrofits, performed IDDE investigations, partnered with SDSU to investigate bacteria levels at creek sites in the City's jurisdiction, and is working with Padre Dan Municipal Water District to assess whether wastewater infrastructure is contributing to bacteria levels and whether human marker is present.	The number of major outfalls at which non-stormwater flow was observed during at least one visit decreased by 14% from the 2014-2015 monitoring year to the 2015-2016 monitoring year. The average observed flow rate at major outfalls decreased by more than half over the same time period.
City of San Diego					
Treat 58.4 acres of drainage area through construction of 4 green infrastructure BMPs.	Acres of drainage area treated	Achieve during Permit Term (expires June 27, 2018).	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL.	The City has begun the process for developing a green infrastructure policy.	The City implemented green infrastructure projects that treat 43.6 acres (Cabrillo Rain Garden- 6 acres, Park Ridge Structural BMP -37.6 acres) of drainage area and is expected to achieve the performance measure by implementing additional projects that treat 14.8 acres (Allied Gardens Bioretention-4.5 acre, Famosa Slough Bioretention-10.3 acres) of drainage area for a total of 58.4 acres treated by 2018.
Reduce prohibited dry weather flow from baseline measured at persistently flowing outfalls in the WMA by 10%.	Interim compliance is implementation of strategies and schedule based on analysis results.	Achieve during Permit Term (expires June 27, 2018).	Average Dry Weather Flow[c]: 117.8 gallons per minute.	Average dry weather flow in FY 16 was 62.8 gallons per minute.	Average dry weather flow was reduced by 46.7% from the baseline average flow.

Table 4-7. Permit Term Dry Weather Numeric Goals

Goal	Metric	Schedule	Baseline Data	Data Collected/Results	Progress
County of San Diego					
Reduce by 20% the aggregate flow volume or the number of persistently flowing outfalls.	% reduction of flow volume or number of outfalls with persistent flows	Achieve during Permit Term (expires June 27, 2018).	Data collected as part of the 2015-2016 Dry Weather MS4 Outfall Monitoring and from 9 outfalls with continuous flow monitoring equipment were used to establish the baseline. Eight (16%) of 51 major MS4 outfalls had persistent non-stormwater flows. Using data from all inventoried outfalls (including those less than 36"), 27 of 164 (also 16%) had persistent non-stormwater flows. The mean flow rate at the 9 outfalls with continuous flow monitoring equipment equaled 1.80 gallons per minute (gpm).	In accordance with the County's commitment in the WQIP, dry weather flow data from major MS4 outfalls were collected during the 15-16 monitoring year to establish a baseline.	Data from the 15-16 monitoring year were used to set a baseline. Future years' data will be compared to that baseline.

a. The City-wide major outfall estimated dry weather flow volume is the sum of the individual outfall flow volumes. The flow volume for each major outfall was estimated by multiplying the average flow rate at each outfall by 330 dry days per year. While the number of dry days each year may change, for the purposes of assessing progress toward this goal, the same number of dry days is used to estimate the flow volume each year for consistency.

b. Geosyntec Consultants, Technical Memorandum, San Diego River Watershed Water Quality Improvement Plan City of La Mesa – Jurisdictional Load Reduction Summary, October 10, 2014.

c. Baseline dry weather flow value calculated using FY 16 outfall data from persistently flowing City of San Diego outfalls in the San Diego River WMA and the average reduction in dry weather flow observed in the Los Peñasquitos, San Dieguito River, Chollas Creek, and Mission Bay WMAs. Calculations are described in Appendix 3.

Table 4-8. Permit Term Wet Weather Numeric Goals

Goal	Metric	Schedule	Baseline Data	Data Collected/Results	Progress
City of El Cajon					
Sponsor, coordinate with jurisdictions creek cleanup events in 1 focused management area, bi-annually; segregate and quantify waste materials.	Number of cleanup events	Achieve during Permit Term (expires June 27, 2018).	The number of cleanup events has varied from year to year. The average amount of material removed has been about 5 cubic yards of solid waste (i.e. trash and debris) per cleanup event.	The City sponsored two removal events at Forester Creek during FY15-16 and removed between 7.6 and 9.12 cubic yards (2,280 lbs.) of trash and debris.[a]	Biannual cleanup events were completed in FY 15-16, and the amounts of material removed exceeded the historical averages for cleanup events in the City. Clean The City will continue cleanup events in the next two fiscal years to achieve the WQIP goal.
Expand pet waste management outreach to 1 focused management area; or to large properties' owners (i.e. apartments, commercial facilities).	Number of focused management areas or large properties' owners to which outreach was completed	Achieve during Permit Term (expires June 27, 2018).	Pet waste program not expanded to any new areas.	The City began planning its pet waste management outreach program during FY 15-16.	The City is on track to implement an expanded pet waste management outreach program by 2018.
City of La Mesa					
Perform 900 linear feet of Alvarado Creek Restoration resulting in a 6.3% reduction in bacteria loading from municipal land use [a]	Linear feet of stream restoration	Achieve during Permit Term (expires June 27, 2018).	Existing channel conditions.	The City has started construction of the 900 linear feet of restoration in Alvarado Creek in FY 15-16. Work will be completed before 2018.	The City is on track to achieve the goal for the Permit term due in 2018.
City of Santee					
Loads are reduced by 4.3% for Total Coliform; 4.3% for Fecal Coliform; 4.3% for *Enterococcus* from MS4 outfalls	Load reductions in MS4 discharges	Achieve during Permit Term (expires June 27, 2018).	1,727 x 10^{12} MPN during Water Year 2003 (based on modeling). This baseline may require updating as this baseline is not specific to MS4 discharges from the City of Santee only.	The City has developed more strict development requirements and more aggressive requirements for retrofits, partnered with SDSU to investigate bacteria levels in its jurisdiction, and is working with Padre Dan Municipal Water District to assess whether wastewater infrastructure is contributing to bacteria levels and whether human marker is present.	Santee has partnered with various organizations for regular volunteer trash cleanups. Santee Public Works, in partnership with the Sheriff's Department, conducts bi-monthly sweeps to identify and remove transient encampments.
City of San Diego					
Treat 58.4 acres of drainage area through construction of 4 green infrastructure BMPs.	Acres of drainage area treated	Achieve during Permit Term (expires June 27, 2018).	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL.	The City has begun the process for developing a green infrastructure policy.	The City implemented green infrastructure projects that treat 43.6 acres (Cabrillo Rain Garden- 6 acres, Park Ridge Structural BMP -37.6 acres) of drainage area and is expected to achieve the performance measure by implementing additional projects that treat 14.8 (Allied Gardens Bioretention-4.5 acre, Famosa Slough Bioretention-10.3 acres) acres of drainage area for a total of 58.4 acres treated by 2018.
County of San Diego					
Implement programmatic (non-structural) BMPs to achieve source reduction of bacteria loads from the storm drain outfalls	% bacterial load reduction. Interim compliance is implementation of strategies in accordance with schedule in WQIP.	Achieve during Permit Term (expires June 27, 2018).	1,727 x 10^{12} MPN during Water Year 2003	During FY 15-16 the County implemented all planned programmatic BMPs according to the schedule in the WQIP	The first year of BMP implementation was completed successfully; and the County is on track to achieve the goal via continued BMP implementation through 2018.
Reduce by 1% the baseline bacteria loads from distributed BMPs constructed between 2003 and 2009 during redevelopment.	Implementation and maintenance of BMPs. % bacterial load reduction is based on quantitative model.	Achieve during Permit Term (expires June 27, 2018).	1,727 x 10^{12} MPN during Water Year 2003	BMPs were constructed between 2003 and 2009 and have continued to be operated and maintained.	The County is on track to achieve the goal via continued BMP operation and maintenance through 2018.

a. A description of weight to volume trash conversion can be found in Appendix 4 Section 1.4 Special Study Results and Assessments.
b. Geosyntec Consultants, Technical Memorandum, *San Diego River Watershed Water Quality Improvement Plan City of La Mesa – Jurisdictional Load Reduction Summary*, October 10, 2014

5 Adaptive Management

This section presents a summary of the potential triggers for adaptation of the WQIP and the results of the adaptive management process for the San Diego River WMA after the 2015-2016 monitoring year, with additional detail provided in Appendix 5.

Adaptive management entails using an iterative approach to re-evaluate the water quality conditions, priorities, numeric goals, strategies, and schedules based on the requirements of the Permit. The adaptive management process details how the Participating Agencies use new data and information to improve the WQIP through updates to priorities, assessments of and adjustments to goals, updates to strategies to achieve the latest goals, and updates to the monitoring and assessment program to provide the necessary data to support the process.

The Permit describes various triggers that may warrant program adaptation, including exceedances of water quality standards in receiving waters, new information, recommendations from the Regional Board, and public participation. Effectiveness assessments of JRMP programs and strategies may also trigger adaptations to the WQIP. The adaptive management process is used in conjunction with water quality and programmatic data to evaluate whether modifications to numeric goals, schedules, and/or strategies are necessary to achieve compliance with the interim and final compliance numeric goals. The timing of the adaptive management requirements is typically either annually or at the end of the Permit term.

5.1 DRIVERS FOR ADAPTATION

The adaptive management process may be triggered when new information becomes available, including results of routine monitoring and special studies, new regulatory drivers, results of program effectiveness assessments and progress towards numeric goals, and recommendations from the public and/or Regional Board. Modifications may be made to the priority water quality conditions, goals, strategies, schedules, and/or the MAP. The potential triggers for adaptation that must be considered annually are summarized in Table 5-1. The assessments related to each of these potential triggers are included in Appendix 5.

Only one year of monitoring data have been collected under the WQIP's MAP and, with the acceptance of the WQIP in February 2016, the Participating Agencies have been officially implementing the WQIP for less than a year. Therefore, it is too early in the implementation process to have significant feedback necessary to drive the adaptive management process. Continued and further implementation of strategies and collection of additional monitoring and programmatic data is necessary for an evaluation that leads to meaningful adaptive management. The elements considered in the adaptive management process are identified in the section to follow; however, no changes to the WQIP based on the adaptive management process are recommended at this early stage of implementation.

Table 5-1. Causes for Adaptive Management within the Water Quality Improvement Plan

Trigger	Frequency for Assessment	Potential Area(s) for Adaptation			
		Priority Water Quality Conditions	Goals and Schedules	Strategies and Schedules	Monitoring and Assessment
Exceedances of Receiving Water Limitations	Annual			X	X
Exceedances of Non-stormwater Action Levels or Stormwater Action Levels	Annual			X	X
Special Studies Results	Annual, as results are available		X	X	X
New Regulatory Actions	Annual, as applicable	X	X	X	X
Regional Board Recommendations	Annual, as applicable	X	X	X	X
Program Effectiveness Assessments/ Progress Towards Goals	Annual			X	X

5.2 WATER QUALITY IMPROVEMENT PLAN ELEMENTS FOR ADAPTATION

The purpose of this section is to summarize changes to components of the WQIP, including priority water quality conditions, numeric goals, strategies, and/or schedules, if applicable, based on analyses and findings in this 2015-2016 Annual Report. Supporting information for these modifications would be detailed in Appendix 5, if applicable. The potential areas for adaptation were presented in Table 5-1, which also shows the information that may trigger adaptation.

In accordance with the Permit, the priority water quality conditions within the watershed *may* be re-evaluated as needed as part of the annual reporting process. In general, priority and highest priority water quality conditions and numeric goals are established based on longer periods of record compared to a monitoring year and their assessment would most appropriately be conducted following the collection of sufficient data to make scientifically-based decisions. At earliest, such consideration may be given during the preparation of the ROWD, due to the Regional Board in December 2017.

The 2015-2016 monitoring year was the first in accordance with the WQIP's MAP. Receiving water and storm drain outfall discharge monitoring results indicated that no modifications to the priority and highest priority water quality conditions identified by the WQIP are necessary at this time. Further, there have been no new regulatory actions or Regional Board recommendations since the acceptance of the WQIP that would warrant reconsideration of priorities for the San Diego River WMA through the annual reporting process.

On an annual schedule, it is more likely that modifications may be made to strategies and implementation schedules. These elements may require updates on a more frequent basis than the priorities to ensure effective implementation and assessment as the WQIP progresses. Evaluation of the current goals, strategies, and schedules is required by the Permit as part of this Annual Report. The information that may be used to modify these elements of the WQIP through adaptive management is summarized in Table 5-2.

No changes to numeric goals or schedules for achieving them as listed in the WQIP are proposed at this time. Minor administrative changes, including clarifications, correction of typos and errors, and edits to WQIP strategies, are proposed, primarily by the City of San Diego. These modifications are identified as markup to the Participating Agencies tables in Appendix 2. While one year of monitoring data have been collected in accordance with the MAP of the WQIP, only a few months of this time period have been under the accepted WQIP and implementation. The Participating Agencies in the San Diego River WMA have begun implementing their jurisdictional strategies intended to result in achievement of dry and wet weather interim goals for the term of the current Permit. These efforts to date have not identified the need for significant changes and, as described in Section 4, the Participating Agencies are demonstrating progress in implementing the existing strategies. Additional evaluation will be conducted and reported in the ROWD.

Table 5-2. Information Used to Modify Strategies and Schedules

Evidence	WQIP AR Sections	2015-2016 Status	Changes Triggered (Y/N)
Receiving water monitoring results.	Section 3, Appendix 4	No new information pertaining to receiving water exceedances not addressed by the WQIP.	N
Storm drain outfall monitoring results.	Section 3, Appendix 4	NAL and SAL exceedances are consistent with WMA priority constituents.	N
Special studies results.	Section 3, Appendix 4	Data from these studies will be useful for the re-evaluation of the Bacteria TMDL and to facilitate consideration of site-specific water quality criteria for bacteria.	N
New or updated regulations.	Section 5	No new regulatory drivers; adaptive management will be required as new TMDLs are approved and as the Trash Amendments are incorporated into the Permit.	N
Program effectiveness assessments.	Section 5	Additional data will be necessary to supplement 2015-2015 data before program effectiveness can be evaluated.	N
Progress towards achieving numeric goals.	Section 4	Initial results related to program effectiveness indicate that the Participating Agencies have made progress towards achieving each of their dry and wet weather interim goals for the current Permit term.	N

Similar to strategies and schedules, updates to the MAP may be necessary more often than priority water quality conditions and numeric goals and schedules. Changes to the MAP may be triggered by several factors including:

- Modifications to other elements of the WQIP, including priority water quality conditions, numeric goals and schedules, and/or strategies and schedules.
- Identification of data gaps through Permit-required assessments.
- Results of special studies.
- Requests/requirements from the Regional Board.

None of these triggers are applicable to the 2015-2016 monitoring year, and adaptive management of the MAP is not required at this time. Additional assessments are planned for the ROWD, including evaluation of the monitoring data and receiving water limitations.

6 Conclusions

Sections 1 through 5 and their associated appendices present the results and assessment findings derived from the 2015-2016 monitoring year in the San Diego River WMA. This was the first year of monitoring under the accepted WQIP and its associated MAP. The monitoring performed during 2015-2016 in the WMA, which was focused on addressing the HPWQC in the WMA (i.e., bacteria), is summarized in Table 6-1. Although the goals and strategies outlined in the WQIP are focused on bacteria, implementation of the chosen strategies will also improve conditions in relation to the PWQCs and other potential contaminants, providing a multi-benefit approach to implementation.

Table 6-1. Monitoring Conducted during the 2015-2016 Monitoring Year in the San Diego River WMA

Monitoring	Related to HPWQC? (Y/N)
Receiving Water Monitoring*	
SMC Regional Monitoring	N
TMDL	Y
Storm Drain Outfall Monitoring	
Dry Weather Field Screening	Y
Dry Weather Monitoring	Y
Wet Weather Monitoring	Y
Illicit Discharge Detection and Elimination	Y
Special Studies	
Reference Streams and Beaches Study	Y
Wet Weather Epidemiology Study	Y

* HMP monitoring was conducted regionally. One reference station was located in the San Diego River WMA. The objectives and results of the program are summarized in Appendix 4.

A summary of major findings and achievements as they pertain to bacteria is presented in Table 6-2. Detailed results and the related assessments required by the Permit are found in the referenced sections of Appendix 4.

The Participating Agencies implemented a broad range of strategies to target bacteria, as well as other constituents such as nutrients and trash during FY 15-16. Several key strategy types are highlighted below, with details provided for each Participating Agency in Section 4.1.1.

- **Preventing wastewater discharges to the storm drain system**. This strategy addresses human sources of bacteria, which are the highest priority from a public health perspective.
- **Trash cleanups**, including volunteer cleanup events and cleanups of trash associated with transient encampments, which remove trash and also address likely sources of bacteria.
- **Dry and wet weather runoff reduction programs**, which include rebates and actions at Participating Agencies' own facilities.

- **Retrofit and rehabilitation projects**, which address most pollutants and also often provide other benefits, such as aesthetic improvement or habitat enhancement.
- **Additional monitoring to investigate sources of dry weather flows**, which are a transport mechanism for bacteria and other pollutants.
- Increased residential, commercial, and industrial inspections.
- **Community outreach programs,** which inform and engage the community about issues such as water conservation, irrigation runoff, and trash disposal.

The WQIP requires implementation of an adaptive management process, used to evaluate whether updates to priorities, assessments of and adjustments to goals, updates to strategies to achieve the latest goals, and/or updates to the MAP are necessary. This process may be triggered when new information becomes available, including results of routine monitoring and special studies, new regulatory drivers, results of program effectiveness assessments and progress towards numeric goals, and recommendations from the public and/or Regional Board. With the acceptance of the WQIP in February 2016, the Copermittees have been officially implementing the WQIP for less than a year. Therefore, it is too early in the implementation process to have significant feedback necessary to drive the adaptive management process. Continued and further implementation of strategies and collection of additional monitoring and programmatic data is necessary for an evaluation that leads to meaningful adaptive management. Therefore, no changes to the WQIP due to the adaptive management process are recommended at this early stage of implementation. Minor administrative modifications to the strategies have been proposed including clarifications, correction of typos and errors, and edits to selected strategies. The proposed administrative changes are documented in Appendix 2.

Table 6-2. Major Findings and Achievements Related to the Highest Priority Water Quality Condition in the San Diego River WMA for the 2015-2016 Monitoring Year

Monitoring Element	Location of Detailed Results	Major Findings and Achievements
Receiving Water Monitoring		
TMDL	Section 3.1.3 Appendix 4 Section 4.1.6	• Interim and final receiving water limitations are being achieved for: o Fecal coliform wet season geometric mean at SDR-FC2 and SDR-MLS. o Fecal coliform dry and wet season geometric means at SDR-CDE. o All fecal coliform and total coliform goals, and *Enterococcus* wet season geometric mean and single-sample maximum at FM-010. • All other results did not meet the interim or final receiving water limitations which are not required to be achieved during this Permit term. However, because the first interim goals are not required to be achieved until April 2020 per the WQIP, the exceedances observed during the 2015-2016 monitoring year do not indicate non-compliance at this time.
Storm Drain Outfall Monitoring		
Dry Weather Field Screening	Section 3.2.1.1 Appendix 4 Section 4.2.1	• There was no trash or a low presence of trash during most (95%) of the trash assessments (n = 375) at visited outfalls. • Visual observations made during routine field screening visits indicated dry/no flow conditions for 59% of visits for the County of San Diego, 60% of visits for the City of El Cajon, 60% of visits for the City of Santee, 25% of visits for the City of San Diego, and 8% of visits for the City of La Mesa. Flowing water was observed during 30% or fewer of the field screening visits conducted by each jurisdiction. • When flow was observed, the majority of estimated flow rates were low, with 75 of 113 estimations categorized as less than five gallons per minute. • Flow determinations indicated that 77 major storm drain outfalls in the WMA had persistent flow; 64 had transient flow; 82 had dry/no flow conditions, and 2 were undetermined. The number of undetermined outfalls has been reduced from 7 to 2, and the number of persistent outfalls has increased by 11 based on the additional dry weather field screening observations made in the 2015-2016 year. • The highest priority outfalls in each jurisdiction were prioritized for dry weather monitoring.
Highest Priority Storm Drain Outfall Dry Weather Monitoring	Section 3.2.1.2 Appendix 4 Section 4.2.2	• Samples collected from most of the monitored outfalls exceeded the single sample maximum water quality objectives for *Enterococcus* and fecal coliform (HPWQCs in the WMA) and NALs for total nitrogen and total phosphorus (PWQCs in the WMA); this indicates that the HPWQC and PWQCs and the highest priority outfalls for the WMA were properly selected. • Data collected during this first monitoring year were used to estimate the non-stormwater volumes and pollutant loads collectively discharged from the major storm drain outfalls with persistent dry weather flows in each Copermittee's jurisdiction.
Storm Drain Outfall Wet Weather Monitoring	Section 3.2.2 Appendix 4 Section 4.2.5	• Samples collected from all five monitored outfalls exceeded the single sample maximum final effluent limitations for *Enterococcus* and fecal coliform. • A more robust data set was developed for the land-use based assessment of wet weather storm drain outfall discharges and land-use based EMCs were refined based on three years of monitoring.
Illicit Discharge Detection and Elimination Program	Section 3.2.1.3 Appendix 4 Section 4.2.4	• The highest priority outfalls with persistent non-stormwater flows were the focus for IDDE investigations. Irrigation runoff was the most common known or suspected source of dry weather flows, followed by groundwater infiltration.

Table 6-2. Major Findings and Achievements Related to the Highest Priority Water Quality Condition in the San Diego River WMA for the 2015-2016 Monitoring Year

Monitoring Element	Location of Detailed Results	Major Findings and Achievements
Special Studies		
Reference Streams and Beaches Studies	Section 3.3.1.1 Appendix 4 Section 4.3.1	• These studies measured concentrations of indicator bacteria that account for natural sources to establish the background concentrations, or "reference conditions", for streams and beaches minimally disturbed by anthropogenic activities. Data will support the forthcoming re-evaluation of the Bacteria TMDL and numeric target development for future TMDLs.
Wet Weather Epidemiology Study	Section 3.3.1.2 Appendix 4 Section 4.3.2	• The excess risk of illness when entering the ocean in wet weather compared to not entering the ocean was quantified to be 12 surfers per 1,000. • An association was established between *Enterococcus* concentrations and illness rates fallowing REC-1 (surfing) activates during wet weather; the risk of illness was lower than what is predicted for *Enterococcus* concentrations exceeding the current water quality objectives. • A QMRA was performed to estimate the risks of gastrointestinal illness from recreational exposure to beaches impacted by wet weather storm drain outfall discharges. The study demonstrated the applicability of QMRA for recreational water risk estimates during wet weather and may facilitate consideration of site-specific water quality criteria.
Jurisdictional Programs		
Vary by Jurisdiction	Section 4 Appendix 2	• Participating Agencies in the San Diego River WMA have begun implementing jurisdictional strategies aimed at achieving their interim dry and wet weather goals for current Permit term and are demonstrating progress. This progress includes: o The City of El Cajon is on track to achieve or has already achieved its Permit-term goals. The City has calculated a dry weather flow baseline, demonstrated dry weather flow reductions, performed transient encampment removal events, sponsored cleanup events at Forester Creek, and began planning its pet waste management outreach program. o The City of La Mesa has started construction of the 900 linear feet of restoration in Alvarado Creek, and is on track to achieve the Permit-term goal. o The City of Santee is developing methodology to assess load reductions based on the monitoring data collected under the WQIP will be assessing progress to goals in subsequent reporting cycles. A comparison of dry weather major storm drain outfall flow data shows that average flow rates during the 2015-2016 monitoring year were less than 50% of the flow rates observed during the 2014-2015 monitoring year. o The City of San Diego is on track to achieve or has already achieved its FY 18 Performance Based goals. The City has reduced average dry weather flow from the calculated baseline average flow and has implemented green infrastructure projects treating about 75% of the acres to be treated by 2018 to achieve the FY 18 Performance Based goal. As required of the 2015-2016 Annual Report per the WQIP, the storm drain discharge baselines to be used for assessing progress toward dry and wet weather jurisdictional numeric goals for bacteria reductions due to be achieved in future permit terms were calculated and are presented in Table A3-9 and Table A3-10 of Appendix 3. o The County of San Diego is making progress toward achieving or has already achieved its Permit-term goals. The County has established a baseline for calculating dry weather flow reductions in subsequent years, has implemented non-structural BMPs according the schedule outlined in the WQIP to reduce wet weather bacteria loads, and has operated and maintained previously-constructed BMPs to reduce wet weather bacteria loads.

7 References

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APPENDIX 1

Crosswalk of Permit Requirements and Annual Report References

Appendix 1 – Crosswalk of Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
Provision A						
A.4.a.(2)	If ***exceedance(s) of water quality standards persist in receiving waters*** notwithstanding implementation of this Order, the Copermittees must comply with the following procedures: (2) Upon a **determination** by either the Copermittees or the San Diego Water Board that discharges from the MS4 are **causing or contributing to a new exceedance** of an applicable water quality standard **not addressed** by the Water Quality Improvement Plan, the Copermittees must submit the following updates to the Water Quality Improvement Plan pursuant to Provision F.2.c ***or as part of the Water Quality Improvement Plan Annual Report*** required under Provision F.3.b, unless the San Diego Water Board directs an earlier submittal:	Section 5.2			X	X
	(a) The water quality improvement ***strategies being implemented that are effective and will continue to be implemented***,	Section 5.2	X			
	(b) ***Water quality improvement strategies (i.e. BMPs, retrofitting projects, stream and/or habitat rehabilitation projects, adjustments to jurisdictional runoff management programs, etc.) that will be implemented*** to reduce or eliminate any pollutants or conditions that are causing or contributing to the exceedance of water quality standards,	Section 5.2				X
	(c) ***Updates to the schedule for implementation*** of the existing and additional water quality improvement strategies, and	Section 5.2				X
	(d) ***Updates to the monitoring and assessment program*** to track progress toward achieving compliance with Provisions A.1.a, A.1.c and A.2.a of this Order;	Section 5.2				X
Provision B						
B.5.a.	a. The **priority water quality conditions** and potential **water quality improvement strategie**s included in the Water Quality Improvement Plan pursuant to Provisions B.2.c and B.2.e ***may be re-evaluated by the Copermittees as needed during the term of this Order as part of the Water Quality Improvement Plan Annual Report***. Re-evaluation and recommendations for modifications to the priority water quality conditions and potential water quality improvement strategies **must be provided in the Report of Waste Discharge**, and must consider the following: (1) Achieving the outcome of improved water quality in MS4 discharges and receiving waters through implementation of the water quality improvement strategies identified in the Water Quality Improvement Plan; (2) New information developed when the requirements of Provisions B.2.a-c have been re-evaluated; (3) Spatial and temporal accuracy of monitoring data collected to inform prioritization of water quality conditions and implementation strategies to address the highest priority water quality conditions; (4) Availability of new information and data from sources other than the jurisdictional runoff management programs within the Watershed Management Area that informs the effectiveness of the actions implemented by the Copermittees; (5) San Diego Water Board recommendations; and (6) Recommendations for modifications solicited through a public participation process.	Section 5.2			X	X
B.5.b.	b. The water quality improvement goals, strategies and schedules, included in the Water Quality Improvement Plan pursuant to Provisions B.3, ***must be reevaluated and adapted as new information becomes available*** to result in more effective and efficient measures to address the highest priority water quality conditions identified pursuant to Provision B.2.c. ***Re-evaluation of and modifications to the water quality improvement goals, strategies and schedules must be provided in the Water Quality Improvement Plan Annual Report***, and must consider the following:	Section 5.2		X		X
	(1) Modifications to the **priority water quality conditions** based on Provision B.5.a;	Section 5.2				X
	(2) Progress toward **achieving interim and final numeric goals** in receiving waters and MS4 discharges for the highest priority water quality conditions in the Watershed Management Area,	Section 4.2				
	(3) Progress toward achieving outcomes according to established schedules;	Section 4.2				
	(4) New policies or regulations that may affect identified numeric goals;					X
	(5) Measurable or demonstrable reductions of non-storm water discharges to and from each Copermittee's MS4;	Section 3.2			X	
	(6) Measurable or demonstrable reductions of pollutants in storm water discharges from each Copermittee's MS4 to the MEP;	Section 3.2			X	
	(7) New information developed when the requirements of Provisions B.2.b and B.2.d have been re-evaluated;	Section 5.1			X	X
	(8) Efficiency in implementing the Water Quality Improvement Plan;	Section 5.1	X			X
	(9) San Diego Water Board recommendations; and	Section 5.1				X
	(10) Recommendations for modifications solicited through a public participation process.	Section 5				X

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
B.5.c.	c. The water quality improvement monitoring and assessment program, included in the Water Quality Improvement Plan pursuant to Provision B.4, ***must be reevaluated and adapted when new information becomes available***. Re-evaluation and recommendations for modifications to the monitoring and assessment program, pursuant to the requirements of Provision D, ***may be provided in the Water Quality Improvement Plan Annual Report***, but must be provided in the Report of Waste Discharge.	Section 5.1 Section 5.2			X	X
Provision D						
D.1.e.(2)(c)	**Sediment Quality Monitoring** (c) The Copermittees must incorporate a ***Sediment Monitoring Report as part of the Water Quality Improvement Plan Annual Report*** in accordance with the schedule contained in the Sediment Monitoring Plan, unless otherwise directed in writing by the San Diego Water Board Executive Officer. The Sediment Monitoring Report must contain the following information: (i) Analysis: An evaluation, interpretation and tabulation of the water and sediment monitoring data, including interpretations and conclusions as to whether applicable Receiving Water Limitations in this Order have been attained at each sample station; (ii) Sample Location Map: The locations, type, and number of samples must be identified and shown on a site map; and (iii) California Environmental Data Exchange Network: A statement certifying that the monitoring data and results have been uploaded into the California Environmental Data Exchange Network (CEDEN).	N/A			X	
D.2.b.(2)(b)(iv)	**Dry Weather MS4 Outfall Discharge Monitoring** (iv) Each Copermittee must document ***removal or re-prioritization of the highest priority persistent flow MS4 outfall monitoring stations identified under Provision D.2.b.(2)(a) in the Water Quality Improvement Plan Annual Report***. Persistent flow MS4 outfall monitoring stations that have been removed must be replaced with the next highest prioritized major MS4 outfall in the Watershed Management Area within its jurisdiction, unless there are no remaining qualifying major MS4 outfalls within the Copermittee's jurisdiction in the Watershed Management Area.	Section 3.2.1			X	
D.4.b.(1)(a)(ii)	**Non-Storm Water Dischargers Reduction Assessments** (a) Each Copermittee must assess and report the ***progress of its illicit discharge detection and elimination program***, required to be implemented pursuant to Provision E.2, toward effectively prohibiting non-storm water and illicit discharges into the MS4 within its jurisdiction as follows: (ii) Based on the data collected pursuant to Provisions D.2.b, the ***assessments required under Provision D.4.b.(1)(c) must be included in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3).***	Section 3.2.1			X	
D.4.b.(1)(b)	(b) Based on the transitional dry weather MS4 outfall discharge field screening monitoring required pursuant to Provision D.2.a.(2), each Copermittee must assess and report the following: (i) Identify the known and suspected controllable sources (e.g. facilities, areas, land uses, pollutant generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area; (ii) Identify sources of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area that have been reduced or eliminated; and (iii) Identify modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.	Section 3.2 Section 5.2			X	X

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
D.4.b.(1)(c)	(c) Based on the **dry weather MS4 outfall discharge field screening monitoring** required pursuant to Provision D.2.b.(1), each Copermittee must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(1)(b); (ii) Based on the data collected and applicable NALs in the Water Quality Improvement Plan, rank the MS4 outfalls in the Copermittee's jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action to update the Water Quality Improvement Plan, with the goal of eliminating persistent flow non-storm water discharges and/or pollutant loads in order of the ranked priority list through targeted programmatic actions and source investigations; (iii) For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identify the known and suspected sources within the Copermittee's jurisdiction in the Watershed Management Area that may cause or contribute to the NAL exceedances; (iv) Each Copermittee must analyze the data collected pursuant to Provision D.2.b, and utilize a model or other method, to calculate or estimate the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually. [a] Each Copermittee must calculate or estimate the annual non-storm water volumes and pollutant loads collectively discharged from the Copermittee's major MS4 outfalls to receiving waters within the Copermittee's jurisdiction, with an estimate of the percent contribution from each known source for each MS4 outfall; [b] Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters.	Section 3.2.1			X	X
	(v) Each Copermittee must review the data collected pursuant to Provision D.2.b and findings from the assessments required pursuant to Provision D.4.b.(1)(c)(i)-(iv) at least once during the term of this Order to: [a] Identify reductions and progress in achieving reductions in non-storm water and illicit discharges to the Copermittee's MS4 in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction, with an estimate, if possible, of the non-storm water volume and/or pollutant load reductions attributable to specific water quality strategies implemented by the Copermittee; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittee in the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction. (vi) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(1)(c)(i)-(v).	Section 3.2.1 Section 5.1 Section 5.2			X	X
D.4.b.(2)(a)	S**torm Water Pollutant Discharge Reduction Assessments** (a) The Copermittees must assess and report the ***progress of the water quality improvement strategies, required to be implemented pursuant to Provisions B and E, toward reducing pollutants in storm water discharges*** from the MS4s within the Watershed Management Area as follows: (ii) Based on the data collected pursuant to Provisions D.2.c, the ***assessments required under <u>Provision D.4.b.(2)(c)</u> must be included in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).	Section 3.2.2 Section 5.1			X	X
D.4.b.(2)(b)	(b) Based on the transitional wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.a.(3) the Copermittees must assess and report the following: (i) The Copermittees must analyze the monitoring data collected pursuant to Provision D.2.a.(3), and utilize a watershed model or other method, to calculate or estimate the following for each monitoring year: [a] The average storm water runoff coefficient for each land use type within the Watershed Management Area; [b] The volume of storm water and pollutant loads discharged from each of the Copermittee's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch; [c] The total flow volume and pollutant loadings discharged from the Copermittee's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and [d] The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch.(ii) Identify modifications to the wet weather MS4 outfall discharge monitoring locations and frequencies necessary to identify pollutants in storm water discharges from the MS4s in the Watershed Management Area pursuant to Provision D.2.c.(1).	Section 3.2.2 Section 5.1			X	X

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
D.4.b.(2)(c)	(c) Based on the wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.c the Copermittees must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(2)(b); (ii) Based on the data collected and applicable SALs in the Water Quality Improvement Plan, analyze and compare the monitoring data to the analyses and assumptions used to develop the Water Quality Improvement Plans, including strategies developed pursuant to Provision B.3, and evaluate whether those analyses and assumptions should be updated as a component of the adaptive management efforts pursuant to Provision B.5 for follow-up action to update the Water Quality Improvement Plan; (iii) The Copermittees must review the data collected pursuant to Provision D.2.c and findings from the assessments required pursuant to Provisions D.4.b.(2)(c)(i)-(ii) at least once during the term of this Order to: [a] Identify reductions or progress in achieving reductions in pollutant concentrations and/or pollutant loads from different land uses and/or drainage areas discharging from the Copermittees' MS4s in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters within the Watershed Management Area to the MEP, with an estimate, if possible, of the pollutant load reductions attributable to specific water quality strategies implemented by the Copermittees; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittees in the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters in the Watershed Management Area to the MEP. (iv) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(2)(c)(i)-(iii).	Section 3.2.2 Section 5.1			X	X
D.4.b.(2)(d)	(d) The Copermittees must evaluate all the data collected pursuant to Provision D.2.c, and incorporate new outfall monitoring data into time series plots for each long-term monitoring constituent for the Watershed Management Area, and perform statistical trends analysis on the cumulative long-term wet weather MS4 outfall discharge water quality data set.	Section 3.2.2			X	
D.4.c.	**Special Studies Assessments** c. The Copermittees must ***annually evaluate the results and findings from the special studies developed and implemented pursuant to Provision D.3***, and assess their relevance to the Copermittees' efforts to characterize receiving water conditions, understand sources of pollutants and/or stressors, and control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters in the Watershed Management Area. The Copermittees must ***report the results of the special studies assessments applicable to the Watershed Management Area, and identify any necessary modifications or updates to the Water Quality Improvement Plan based on the results in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).	Section 3.3			X	X
D.4.d.	Integrated Assessment of Water Quality Improvement Plan d. As part of the ***iterative approach and adaptive management process*** required for the Water Quality Improvement Plan pursuant to Provision B.5, the Copermittees in each Watershed Management Area must integrate the data collected pursuant to Provisions D.1-D.3, the findings from the assessments required pursuant to Provisions D.4.a-c, and information collected during the implementation of the jurisdictional runoff management programs required pursuant to Provision E to assess the effectiveness of, and identify necessary modifications to, the Water Quality Improvement Plan as follows:	Section 5.1 Section 5.2			X	X
D.4.d.(1)	(1) The Copermittees ***must re-evaluate the priority water quality conditions and numeric goals for the Watershed Management Area, as needed, during the term of this Order pursuant to Provision B.5.a.*** The re-evaluation and recommendations for modifications to the priority water quality conditions, and/or numeric goals and corresponding schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The priority water quality conditions and numeric goals for the Watershed Management Area must be reevaluated as follows: (a) Re-evaluate the receiving water conditions in the Watershed Management Area in accordance with Provision B.2.a; (b) Re-evaluate the impacts on receiving waters in the Watershed Management Area from MS4 discharges in accordance with Provision B.2.b; (c) Re-evaluate the identification of MS4 sources of pollutants and/or stressors in accordance with Provision B.2.d; (d) Identify beneficial uses of the receiving waters that are protected in accordance with Provision D.4.a; (e) Evaluate the progress toward achieving the interim and final numeric goals for protecting impacted beneficial uses in the receiving waters.	Section 5.2			X	X

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
D.4.d.(2)	(2) The Copermittees ***must re-evaluate the water quality improvement strategies for the Watershed Management Area during the term of this Order pursuant to Provision B.5.b.*** The re-evaluation and recommendations for modifications to the water quality improvement strategies and schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The water quality improvement strategies for the Watershed Management Area must be re-evaluated as follows: (a) Identify the non-storm water and storm water pollutant loads from the Copermittees' MS4 outfalls in the Watershed Management Area, calculated or estimated pursuant to Provisions D.4.b; (b) Identify the non-storm water and storm water pollutant load reductions, or other improvements to receiving water or water quality conditions, that are necessary to attain the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters; (c) Identify the non-storm water and storm water pollutant load reductions, or other improvements to the quality of MS4 discharges, that are necessary for the Copermittees to demonstrate that non-storm water and storm water discharges from their MS4s are not causing or contributing to exceedances of receiving water limitations; (d) Evaluate the progress of the water quality improvement strategies toward achieving the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters.	Section 5.2	X			X
D.4.d.(3)	(3) The Copermittees ***must re-evaluate and adapt the water quality monitoring and assessment program for the Watershed Management Area when new information becomes available to improve the monitoring and assessment program pursuant to Provision B.5.c.*** The re-evaluation and recommendations for modifications to the monitoring and assessment program ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. Modifications to the water quality monitoring and assessment program must be consistent with the requirements of Provision D.1-D.3. The re-evaluation of the water quality monitoring and assessment program for the Watershed Management Area must consider the data gaps identified by the assessments required pursuant to Provisions D.4.a-b, and results of the special studies implemented pursuant to Provision D.4.c	Section 5.2			X	X
Provision E						
E.1.b.	**b.** With the first ***Water Quality Improvement Plan Annual Report*** *required pursuant to Provision F.3.b.(3),* ***each Copermittee must submit a statement certified by its Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative that the Copermittee has taken the necessary steps to obtain and maintain full legal authority*** within its jurisdiction to implement and enforce each of the requirements contained in this Order.	Cert Statement	X			
E.2.d.(4)	(4) Each Copermittee must submit a ***summary of the non-storm water discharges and illicit discharges and connections investigated and eliminated within its jurisdiction with each Water Quality Improvement Plan Annual Report required under Provision F.3.b.(3)*** of this Order.	Section 3.2.1.3			X	
E.8.c.	**c.** Each Copermittee must submit a ***summary of the annual fiscal analysis with each Water Quality Improvement Plan Annual Report required pursuant to Provision F.3.b.(3)***.		X			
Provision F						
F.1.b.(6)	(6) During implementation of the Water Quality Improvement Plan the Copermittees must ***correct any deficiencies in the Plan identified by the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report*** following a request by the Board to do so.	Section 5.1 Section 5.2				X
F.2.a.(2)	(2) Each Copermittee must update its jurisdictional runoff management program document to incorporate the requirements of Provision E concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the jurisdictional runoff management program document based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;***		X			X
F.2.a.(3)	(3) Each Copermittee must submit ***updates to its jurisdictional runoff management program, with the supporting rationale for the modifications, either in the Water Quality Improvement Plan Annual Report*** required pursuant to Provision F.3.b.(3), or as part of the Report of Waste Discharge required pursuant to Provision F.5.b	Section 5	X			X
F.2.b.(1)	(1) Each Copermittee must update its BMP Design Manual to incorporate the requirements of Provisions E.3.a-d concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the BMP Design Manual based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report****;*	Section 5.1	X			
F.2.b.(2)	(2) Any ***future updates to the BMP Design Manual*** made after it update pursuant to Provision F.2.b.(1) is completed must be consistent with the requirements of Provisions E.3.a-d and ***must be submitted as part of the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b; and		X			

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
F.2.c.(1)(c)	(c) The Copermittees for each Watershed Management Area ***must submit 1) proposed updates to the Water Quality Improvement Plan and supporting rationale, and 2) recommendations received from the public and the Water Quality Improvement Consultation Panel and the rationale for the requested updates, either in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b.	Section 5.2				X
F.3.b.(3)(a-f)	(3) Water Quality Improvement Plan Annual Reports - The Copermittees for each Watershed Management Area must ***submit a Water Quality Improvement Plan Annual Report for each reporting period no later than January 31*** of the following year. The annual reporting period consists of two different periods: 1) July 1 to June 30 of the following year for the jurisdictional runoff management programs, 2) October 1 to September 30 of the following year for the monitoring and assessment programs. The Water Quality Improvement Plan Annual Reports must be made available on the Regional Clearinghouse required pursuant to Provision F.4. Each ***Annual Report must include the following***:	See below				
	(a) The receiving water and MS4 outfall discharge monitoring data collected pursuant to Provisions D.1 and D.2, summarized and presented in tabular and graphical form;	Section 3.1 Section 3.2			X	
	(b) The progress of the special studies required pursuant to Provision D.3, and the findings, interpretations and conclusions of a special study, or each phase of a special study, upon its completion;	Section 3.3			X	
	(c) The findings, interpretations and conclusions from the assessments required pursuant to Provision D.4;	Section 3			X	
	(d) The progress of implementing the Water Quality Improvement Plan, including, but not limited to, the following: (i) The **progress toward achieving the interim and final numeric goals** for the highest water quality priorities for the Watershed Management Area;	Section 4				
	(ii) The water quality improvement **strategies that were implemented and/or no longer implemented by each of the Copermittees during the reporting period and previous reporting periods**;	Section 5.1 Section 5.2	X			X
	(iii) The water quality improvement strategies planned for implementation during the next reporting period;	Section 4.1	X			X
	(iv) Proposed modifications to the water quality improvement strategies, the public comments received and the supporting rationale for the proposed modifications;	Section 5	X			X
	(v) Previous modifications or updates incorporated into the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document and implemented by the Copermittees in the Watershed Management Area; and	Section 5.2	X			X
	(vi) Proposed modifications or updates to the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document;	Section 5.2	X			X
	(e) A completed Jurisdictional Runoff Management Program Annual Report Form (contained in Attachment D to this Order or a revised form accepted by the San Diego Water Board) for each Copermittee in the Watershed Management Area, certified by a Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative; and	Section 1	X			
	(f) Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the San Diego Water Board. Any Copermittee monitoring data utilized in developing the Water Quality Improvement Plan Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the Water Quality Improvement Plan Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.	Section 1			X	
Attachment E						
Attachment E	Specific Monitoring and Assessment Requirements for each TMDL.TMDL monitoring and assessment results must be submitted as part of Water Quality Improvement Plan Annual Reports required under Provision F.3.b	Section 3.1.4			X	

APPENDIX 2

Jurisdictional Runoff Management Program Information

Appendix 2 – Jurisdictional Runoff Management Program Information

1 City of La Mesa

1.1 ANNUAL REPORT CERTIFICATION

CITY OF
LA MESA
JEWEL of the HILLS

PUBLIC WORKS DEPARTMENT

SAN DIEGO RIVER WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the City of La Mesa has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 3rd day of January 2017, at the City of La Mesa.

Leon Firsht
Acting Director of Public Works/City Engineer
City of La Mesa

1/3/17
Date

1.2 ANNUAL REPORT FORM

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016 SAN DIEGO RIVER WATERSHED

I. COPERMITTEE INFORMATION

Copermittee Name: City of La Mesa

Copermittee Primary Contact Name: Joe Kuhn, Storm Water Program Manager

Copermittee Primary Contact Information:
Address: 8130 Allison Ave.
City: La Mesa County: San Diego State: CA Zip: 91942
Telephone: 619.667.1340 Fax: 619.667.1380 Email: jkuhn@ci.la-mesa.ca.us

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	X
	NO	
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	X
	NO	

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	X
	NO	
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	X
	NO	

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	X
	NO	

Number of non-storm water discharges reported by the public	7
Number of non-storm water discharges detected by Copermittee staff or contractors	5
Number of non-storm water discharges investigated by the Copermittee	12
Number of sources of non-storm water discharges identified	5
Number of non-storm water discharges eliminated	4
Number of sources of illicit discharges or connections identified	3
Number of illicit discharges or connections eliminated	3
Number of enforcement actions issued	1
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	X
	NO	
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	X
	NO	
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	X
	NO	

Number of proposed development projects in review	14
Number of Priority Development Projects in review	14
Number of Priority Development Projects approved	3
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	0

Number of completed Priority Development Projects in inventory	15
Number of high priority Priority Development Project structural BMP inspections	15
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued (For not returning form by deadline)	4
Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2014-2015

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]

Number of construction sites in inventory	13
Number of active construction sites in inventory	13
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	5
Number of construction site inspections	50
Number of construction site violations	4
Number of enforcement actions issued	4
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	33	257	16	0
Number of existing development inspections	13	257	16	0
Number of follow-up inspections	0	35	0	0
Number of violations* Includes Corrective Actions	0	12	0	0
Number of enforcement actions issued	0	12	0	0
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	[X]
	NO	[ ]

X. CERTIFICATION

I [ ] Principal Executive Officer [ ] Ranking Elected Official [X] Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Date 10/5/16
Gregory P. Humora	Director of Public Works/City Engineer
Print Name	Title
619.667.1146	ghumora@ci.la-mesa.ca.us
Telephone Number	Email

FISCAL ANALYSIS

The City's Sanitation Fund provides most of the funding for the Storm Water Program. There have not been any changes to this funding mechanism during this reporting period. During 2009/2010, a fiscal analysis reporting template was developed collectively by the Copermittees. The City has used this template to report the 2015/2016 expenditures and funding sources in this JURMP Annual Report.

San Diego County Copermittees Fiscal Analysis Report for Urban Runoff Management Programs

EXPENDITURE SUMMARY

JURISDICTIONAL COMPONENTS	
Administration	$64,159
Development Planning	$14,393
Construction	$30,342
Municipal	$3,892
Industrial and Commercial	$71,155
Residential	$957
IDDE	$45,038
Education/Public Participation	$8,793
Special Investigations	$0
Non-Emergency Firefighting	$0
Jurisdictional Total	**$238,733**

WATERSHED	
Watershed 1 – San Diego River	$52.533
Watershed 2 – San Diego Bay	$49,171
Watershed Total	**$101,705**

REGIONAL	
Annual Permit Fee to Regional Board	$17,171
Copermittee Cost Share of Regional Budget	$29,308
Regional Total	**$46,479**

TOTAL COSTS	$386,917

FUND SUMMARY

FUNDING BY SOURCE	
General Fund	$7,474
Storm Water Fee	$0
Permit Fees	$0
Developer Deposits and Fees	$23,285
Registration and Inspection Fees	$18,550
Flood Control Fees	$0
Franchise Fees	$0
Gas Tax	$0
Utility Tax	$0
Road Fund	$0
Enterprise Funds	$252,308
Trust Funds	$0
Special Assessment Districts	$0
State Appropriated Funds	$0
Grant Funds	$0
Other	$0
Total	**$301,617**

ONE-TIME FUNDING	
Grants	$0
Donations	$0
Total	**$0**

TOTAL FUNDING	$301,617

Watershed Program

	Watershed 1 – San Diego River	Watershed 2 – San Diego Bay
Administration (1)	$4,786	$14,358
Cost Share	$47,947	$34,813
Watershed Activities	$0	$0
Other	$0	$0
TOTAL	**$52,733**	**$49,171**

(1) Administration – includes Watershed strategic planning, management, mapping, assessment, and reporting

Permit Requirements for Fiscal Analysis

1. Identification of the various categories of expenditures necessary to implement the requirements of this Order; including a description of the specific capital, operation and maintenance, and other expenditures items to be accounted for in each category of expenditures.

See page 1 of fiscal analysis. Watershed costs include costs for development of required submittal.

2. The staff resources needed and allocated to meet the requirements of this Order, including any development, implementation, and enforcement activities required.

Staff resources include:

(1) Storm Water Program Manager and (1) Engineering Technician II dedicated to the storm water protection program. These two employees complete the vast majority of the work associated with the Order. The City also has two local consulting firms who specialize in storm water management under As-Needed contract.

The City also has (1) Engineering Project Manager, and (1) Public Works Inspector II who is part time desiccated to storm water protection. Other City staff including (1) Associate Engineers, (1) Engineering Technician II, (1) Code Compliance Officer and several field public works operation staff may be utilized on an as needed basis for storm water tasks.

3. The estimated expenditures for Provisions E.8.b (1) and E.8.b (2) for the current fiscal year,

See expenditure summary on Page 1. Costs are anticipated to increase over the future fiscal years, and funding estimates will coincide with the development of the WQIP for the City's Watersheds, and the development of the City's new JURMP.

4. The sources of funds that are provided to meet the necessary expenditures described in Provisions E.8.b.(1) and E.8.b.(2), including legal restrictions on the use of such funds, for the current fiscal year and next fiscal year.

See funding summary on Page 2. Funding source is projected to remain similar next fiscal year.

1.3 JURISDICTIONAL STRATEGIES

~~Strikeouts~~ are text edits that have been made up to the current date since the WQIP September 2015 submittal.

Table A2-1. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Illicit Discharge Detection and Elimination Program

San Diego River Illicit Discharge Detection and Elimination Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Engage the public, jurisdictional staff, and other agency staff to proactively identify and report illicit discharges.					
Utilize municipal personnel and contractors to identify and report illicit discharges and connections.	●	●	A	N/A	City utilized staff and contractors to facilitate program.
Provide enhanced internal training for field staff related to illicit discharges.	X	X	P	N/A	Not conducted this FY.
Facilitate public reporting of illicit discharges and connections via telephone and email.	●	●	A	N/A	None
Clarify regulations ~~Coordinate~~ with Helix Water District regarding water line flushing and discharges to the MS4	◖	◖	A	Minor wording change to make strategy meaning clearer.	None
~~Coordinate with upstream entities to prevent illicit discharges from upstream sources from entering the MS4.~~				La Mesa's jurisdiction borders the watershed boundary, and there is minimal upstream area under other agencies' jurisdictions. Discharges from other agencies such as MTS or Caltrans have not been observed frequently but are dealt with as they arise via strategies described in Section 6 of this table.	None
2. Develop and implement approaches to address the impacts of septic systems within the watershed.					
Investigate and eliminate illicit discharges and connections.	●	●	A	N/A	None

Table A2-1. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Illicit Discharge Detection and Elimination Program

San Diego River Illicit Discharge Detection and Elimination Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Continue to assist property owners on septic who wish to connect to sewer.	●	●	A	N/A	Residents who wish to connect to sewer are provided the opportunity as permitted.
3. Develop and implement approaches to address the impacts of homeless activities within the watershed.					
Cleanup of encampment sites on public and private lands.	●	●	A	N/A	Public and private cleanup exists through code enforcement and the assistance of the police dept.
Coordination with La Mesa Police Department to perform routine sweeps	●	●	A	N/A	Public and private cleanup exists through code enforcement and the assistance of the police dept.
Perform Channel Restoration on Alvarado Creek.	●	●	A	N/A	In construction.
4. Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.					
Require all Food Service Establishments to install grease removal equipment to prevent fats, oils, and grease from obstructing sewer lines	●	●	A	N/A	Part of the City's FOG Program, which started in 2009.
Increase outreach to facilities and residences generating fats, oils, and grease.	●	●	A	N/A	Outreach is conducted annually through the City's FOG Inspection program.
Implement practices and procedures to prevent/limit infiltration of seepage from sanitary sewers to the MS4.	●	●	A	N/A	The City has several CIP projects in construction which will limit sewer I/I.
Implement practices and procedures to address spills with the potential to enter the MS4 via systematic smoke testing and infiltration studies.	●	●	A	N/A	The City has an I/I program which uses smoke testing to check areas for defects.
Implement sanitary sewer system rehabilitation program (e.g., condition assessments, prioritization, pipe replacement)	●	●	A	N/A	The City currently has a master plan with condition assessments and prioritization schedules.

Table A2-1. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Illicit Discharge Detection and Elimination Program

San Diego River Illicit Discharge Detection and Elimination Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Investigate and eliminate illicit discharges and connections.	●	●	A	N/A	The City does this through smoke testing and flow monitoring.
5. Implement monitoring programs to provide new information to refine the prioritization of drainage areas.					
Conduct transitional MS4 outfall discharge program to identify persistent/transient flows.	●	●	A	N/A	None
Conduct watershed specific MS4 outfall discharge program to identify persistent/transient flows.	●	●	A	N/A	None
6. Actively educate public on prohibitions related to illicit discharges and connections.					
Investigate and eliminate illicit discharges and connections.	●	●	A	N/A	Completed during inspection and monitoring programs.
Enforce legal authority to ensure all illicit discharges and connections that are identified are eliminated.	●	●	A	N/A	Municipal Code is up to date.

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

Table A2-2. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Development Planning

San Diego River Development Planning Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Provide updated materials, enhanced outreach, and training to convey land development requirements.					
Establish criteria designating priority development projects for new development and redevelopment projects.	●	●	A	N/A	The development manual was updated to reflect current regulation.
Update BMP design manual procedures to specify stormwater requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria, and establish alternative compliance options (where implemented).	●	●	A	N/A	The development manual was updated to reflect current regulation.
2. Implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation and identify a list of candidate projects that could be used as alternative compliance options for Priority Development Projects.					
Develop and implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation.	●	●	A	N/A	Developed for the watershed.
3. Implement an alternative compliance program for Priority Development Projects.					
Implement an alternative compliance program to provide off-site alternatives for pollutant control and hydromodification management.	X	◖	P	N/A	Planned for upcoming years.
4. Implement a post construction BMP program for development projects to ensure proper construction and maintenance.					
Implement source control, LID, and on-site structural controls for all priority development projects.	●	●	A	N/A	The development manual was updated to reflect current regulation.
Implement a program that ensures that all structural BMPs are designed, constructed, and maintained on PDPs.	●	●	A	N/A	The development manual was updated to reflect current regulation.

Table A2-2. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Development Planning

San Diego River Development Planning Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Inspect all high priority structural BMPs prior to the rainy season for Copermittees.	●	●	A	N/A	Inspected per JURMP requirements.
5. Enforce post construction requirements related to new and redevelopment.					
Require implementation of source control and low impact development (LID) BMPs for all development projects.	●	●	A	N/A	The development manual was updated to reflect current regulation.
Enforce legal authority to ensure all development projects are in compliance with all post construction requirements.	●	●	A	N/A	The development manual was updated to reflect current regulation.
Update ordinances to reflect new land development requirements.	●	●	A	N/A	The development manual was updated to reflect current regulation.

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

Table A2-3. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Construction Management

San Diego River Construction Management Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Ensure that minimum BMPs are designated and required for construction projects. Prioritize BMPs which address sources of bacteria.					
Require submittal of pollution control plan, construction BMP plan, and/or erosion and sediment control plan for projects requiring local permits involving soil disturbance activities.	●	●	A	N/A	None
Review and confirm that the submitted plan is in compliance.	●	●	A	N/A	None
Maintain, update, and prioritize a watershed based inventory of all projects issued local permits that allow soil disturbing activities.	●	●	A	N/A	List updated monthly.
Implement or require implementation of BMPs that are site specific, seasonally appropriate, and appropriate to the construction phase year round.	●	●	A	N/A	None
Inspect construction sites at an appropriate frequency to require and confirm compliance with local permits and ordinances, as well as the MS4 Permit requirements.	●	●	A	N/A	Sites are inspected based on H/M/L priority; biweekly, monthly, and once per rainy season.
Enforce legal authority to ensure inventoried construction projects are in compliance with all requirements.	●	●	A	N/A	None

Notes:

● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented

A – Actual (active implementation), P – Planned (planning stage)

Table A2-4. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Maintain and improve data tracking methods for existing development inventories where necessary.					
Maintain and update a watershed based inventory of existing development (i.e., commercial, industrial, and municipal facilities and residential areas).	●	●	A	N/A	Contained within the City's JURMP.
2. Develop and implement approaches to address the impacts of improper water use and irrigation runoff.					
Increase outreach regarding over irrigation and the transport of pollutants such as bacteria into the receiving waters.	●	●	A	N/A	Outreach to businesses has occurred during inspections.
Install weather based irrigation controllers in municipal parks.	●	●	A	N/A	IT controllers are active in City Parks.
Coordinate with Helix Water District regarding water conservation programs.	●	●	A	N/A	Related to compliant/violations the City forwards issues to Helix Water, and vice versa.
3. Improve and/or continue existing pet waste programs.					
Continue implementation of pet waste program with Parks, and outreach assistance to HOAs and property managers.	●	●	A	N/A	Pet waste bags are located within City Parks.
Provide focused outreach to residents using kiosks in municipal parks.	●	●	A	N/A	Six kiosks are located within City Parks.
4. Improve trash management strategies within the watershed.					
Coordinate with I Love a Clean San Diego to install cigarette ashcans throughout the downtown area.	●	●	A	N/A	Several ashcans are installed throughout the downtown village area.
Perform trash assessments and outreach targeting multi-family residential land uses.	X	●	P	N/A	Planned for 16-17. Initial work done prior to 2015.
Increase street sweeping frequencies in priority areas.	X	X	P	N/A	Planned.

Table A2-4. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
5. Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.					
Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	●	●	A	N/A	Systematic testing as well as replacement programs are active.
Perform coordinated inspections for stormwater and FOG at food service establishments.	●	●	A	N/A	The coordinated inspections are completed each year.
6. Improve and implement existing outreach programs to target key sources and pollutants.					
Provide enhanced internal training to parks staff.	●	●	A	N/A	Training given to lead workers.
Provide enhanced internal training to street maintenance staff.	●	●	A	N/A	Training given to lead workers.
7. Develop and implement targeted programs to address issues in residential areas.					
Prioritize residential management areas for focused inspections.	●	●	A	N/A	Program started in 2016.
8. Improve existing inspections programs to more efficiently target key sources.					
Perform evaluations of businesses for exposure to stormwater though increased patrols and inspections.	●	●	A	N/A	Performed through inspection program.

Table A2-4. City of La Mesa Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of La Mesa	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
9. Actively enforce stormwater and urban runoff requirements for existing development.					
Increase coordination with City Code Enforcement where properties are out of compliance.	●	●	A	N/A	Storm Water works closely with code enforcement regarding properties in violation.
Increased enforcement as appropriate as a result of increased business inspections.	●	●	A	N/A	Inspection program
10. Identify and facilitate retrofit opportunities in areas of existing development.					
Install weather based irrigation controllers in municipal parks.	●	●	A	N/A	ET controllers are used in City parks.
11. Improve coordination between agencies.					
Coordinate with Helix Water District regarding water conservation programs.	●	●	A	N/A	City works with Helix regarding enforcement and water waste issues.

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

Table A2-5. City of La Mesa Optional Jurisdictional Strategies and Implementation Schedules

San Diego River Optional Jurisdictional Strategies	Implementation Timeframe	FY15-16	FY16-17	Actual / Planned	Comments
Implement Alternative Compliance Program	FY 17-19	N/A, not scheduled for 15-16	If triggered	If triggered	The City participated in the development of Water Quality Equivalency standards and is following regional progress on alternative compliance development to assess how the program may be implemented in its jurisdiction.
Green street retrofits or other small scale retention or infiltration controls (existing development)	FY 17-19	N/A, not scheduled for 15-16	If triggered	If triggered	Evaluated on a case by case basis during design and scoping process for projects.

Notes:
No modifications to optional strategies are proposed.
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

1.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The City of La Mesa BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The City of La Mesa updated its BMP Design Manual in accordance with Municipal Permit requirements in February 2016; the BMP Design Manual replaced the Standard Urban Stormwater Mitigation Plan (SUSMP). No additional changes to the BMP Design Manual have been made since it went into effect in February 2016. The City of La Mesa BMP Design Manual can be accessed at: www.cityoflamesa.com/index.aspx?NID=988

1.5 MODIFICATIONS TO THE JRMP

No changes were made to the City's JRMP during the 2015-2016 fiscal year.

2 City of El Cajon

2.1 ANNUAL REPORT CERTIFICATION

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT

SAN DIEGO RIVER WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the City of El Cajon has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 9 day of January, 2017, at the City of El Cajon.

Douglas Williford
City Manager
City of El Cajon

2.2 ANNUAL REPORT FORM

CITY OF EL CAJON

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FOR FISCAL YEAR 2015—16

FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name: City of El Cajon

Copermittee Primary Contact Name: Jaime Campos

Copermittee Primary Contact Information:
Address: 200 Civic Center Way
City: El Cajon County: San Diego State: CA Zip: 92020
Telephone: (619) 441-1653 Fax: (619) 579-5254 Email: jcampos@cityofelcajon.us

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	75
Number of non-storm water discharges detected by Copermittee staff or contractors*	71 *
Number of non-storm water discharges investigated by the Copermittee	146
Number of sources of non-storm water discharges identified	78
Number of non-storm water discharges eliminated	73
Number of sources of illicit discharges or connections identified	73
Number of illicit discharges or connections eliminated	36
Number of enforcement actions issued	36
Number of escalated enforcement actions issued	17

* 4 were detected to be invalid reports from the onset.

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?.	YES	☒
	NO	☐

Number of proposed development projects in review	261
Number of Priority Development Projects in review	22
Number of Priority Development Projects approved	8
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	3

Number of completed Priority Development Projects in inventory	71
Number of high priority Priority Development Project structural BMP inspections	23
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
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VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	52
Number of active construction sites in inventory	38
Number of inactive construction sites in inventory	14
Number of construction sites closed/completed during reporting period	21
Number of construction site inspections	440
Number of construction site violations	20
Number of enforcement actions issued	20
Number of escalated enforcement actions issued	9

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	34	681	140	4
Number of existing development inspections	21	239	72	78
Number of follow-up inspections	9	135	50	18
Number of violations	0	12	2	5
Number of enforcement actions issued	0	12	0	5
Number of escalated enforcement actions issued	0	6	0	3

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☒ Principal Executive Officer ☐ Ranking Elected Official ☐ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature

Date 10/28/16

DOUGLAS WILLIFORD
Print Name

CITY MANANGER
Title

(619) 441-1718
Telephone Number

DWILLIFO@CITYOFELCAJON.US
Email

ATTACHMENT FISCAL ANALYSIS

FISCAL ANALYSIS SUMMARY 1

1 INTRODUCTION 1

2 GENERAL BUDGET INFORMATION 1

3. FISCAL ANALYSIS RESULTS 2

3.1 EXPENDITURES 2

3.2 FUNDING SOURCES 3

FISCAL ANALYSIS SUMMARY

1 INTRODUCTION

A fiscal analysis of the Jurisdictional Runoff Management Program (JRMP) provides a vital assessment of resources for the current and upcoming Permit Years. This brief summary will incorporate guidance and standards developed collaboratively by the Copermittees and in accordance with the Municipal Permit.

In fiscal year (FY) 2003-04, the City Storm Water staff developed a separate budget from other Public Works wastewater activities sufficient to run the Storm Water Program. The Program continues to be adequately funded through the City's Waste Water Fund.

2 GENERAL BUDGET INFORMATION

The following table shows actual expenditures from fiscal year 2009-10 through 2015-16, and the estimated fiscal year 2016-17 budget for the City's Urban Runoff Management Program.

Item	09-10	10-11	11-12	12-13	13-14	14-15	15-16	Estimated 16-17
Salaries (including benefits)	$781,174	$765,041	$735,187	$703,136	$689,699	$657,779	$621,543	$1,469,342
Materials, Services and Supplies	$421,181	$335,939	$364,750	$393,440	$426,132	$409,816	$506,344	$828,247
Capital Outlay		$10,873	$10,460					
TOTAL	**$1,202,355**	**$1,111,853**	**$1,110,397**	**$1,096,576**	**$1,115,831**	**$1,067,595**	**$1,127,887**	**$2,297,589**

Budgets have increased gradually since the inception of the Storm Water Program in 2001. The steep increase in the estimated fiscal year 2016-17 budget reflects all estimated costs for the City's JRMP, including expenditures to be incurred by the Storm Water Operations Field

Maintenance Division previously budgeted under wastewater collection. A copy of the budget is located in Appendix A.

The City's Jurisdictional Runoff Management Program funding was sufficient to meet the JRMP requirements in FY 2015-16 and is projected to be sufficient to meet requirements in FY 2016-17. The City has met its projected goal of continuously executing plans, procedures, and processes to implement JRMP requirements and assess the effectiveness of its programs.

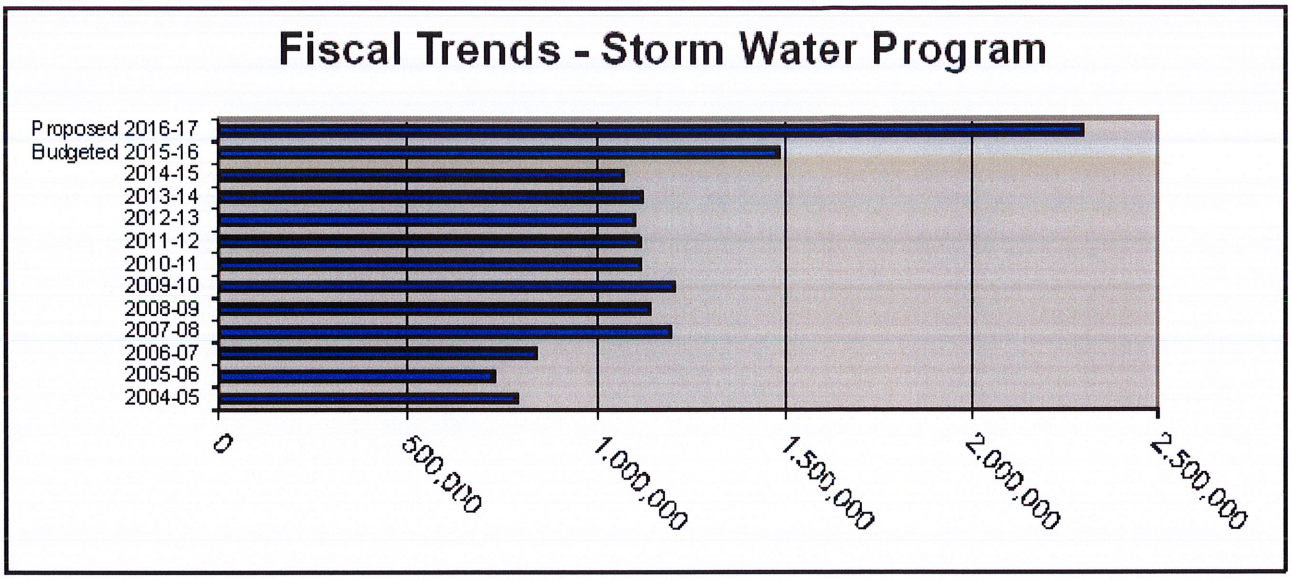

3. Fiscal Analysis Results

3.1 Expenditures

The budget for FY 2015-16 included a Storm Water Program Manager, one Senior Engineering Technician, and one Compliance Officer. The estimated budget for FY 2016-17 includes the following positions:

- 1 Storm Water Program Manager
- 1 Senior Engineering Technician
- 1 Compliance Officer
- 1 Maintenance Supervisor
- 3 Street Sweeper Operators
- 3 Storm Drain and Channel Maintenance Equipment Operators
- 3 Maintenance Workers

The City also had an open contract with two consultants to provide as-needed services to ensure the City meets its JRMP implementation requirements.

3.2 FUNDING SOURCES

The Storm Water Program will continue to be funded to maintain permit compliance related to permit renewals and other requirements related to the Bacteria Total Maximum Daily Loads (TMDLs) and Trash Amendment. For fiscal year 2015-16 the City completed all inspections, monitoring, plan reviews, complaint investigations, and reporting, as well as other requirements under R9-2013-0001, with existing staff complemented by consultants.

Working efficiently is the goal of the JRMP. By consolidating forms to complete onsite inspections, track enforcement actions, and follow up on complaint/referral information has allowed the City to reduce the amount of time and paper to complete significant portions of the Municipal, Industrial, Commercial, Construction, Land Development Planning, and Residential JRMP Components of the Municipal Permit.

The City of El Cajon has, and will continue to be, an active member of the San Diego River Watershed group and work with the other San Diego River Watershed agencies to achieve the goals and objectives that are part of the Water Quality Improvement Plan and Municipal Permit. Working together will continue to eliminate the potential for duplicative efforts and enhance the effect across a wider range of challenges on a similar geographical area.

No regulatory comments were received for the Fiscal Analysis component of the JRMP for the Annual Report for Fiscal Year 2014-15.

Appendix A

Activity: **Public Works - NPDES Compliance** Activity #: 650750

ACCOUNT/ LINE ITEM NUMBER	JUSTIFICATION FOR SUPPLIES AND SERVICES BRIEF STATEMENTS & ESTIMATED AMOUNTS USED IN CALCULATING TOTALS FOR EACH LINE ITEM	FY2015-16 BUDGET AMOUNT	CHANGE REQUESTED	FY2016-17 BUDGET REQUEST
8150	**OFFICE SUPPLIES**	**4,900**	**0**	**4,900**
	a Toner cartridges for printing of reports and map books	4,900	0	4,900
8160	**OPERATING SUPPLIES**	**3,000**	**0**	**3,000**
	a Various materials and supplies needed for various educational and outreach programs	3,000	0	3,000
8345	**LEGAL SERVICES**	**7,500**	**0**	**7,500**
	a City Attorney's Office charges	7,500	0	7,500
8363	**SYSTEM / COMPUTER ANALYST**	**25,000**	**0**	**25,000**
	a GIS Consultant	25,000	0	25,000
8395	**OTHER/PROFESSIONAL/TECHNICAL SERVICES**	**480,000**	**(50,000)**	**430,000**
	a San Diego River Watershed Management and development of Water Quality Improvement Plan	145,000	0	145,000
	b Services to comply with the total maximum daily loads for bacteria	150,000	0	150,000
	c San Diego Regional Co-permittee Memorandum of Understanding Cost	50,000	0	50,000
	d Dry Weather Testing and Extended Dry Weather Testing	75,000	0	75,000
	e As needed on-call engineering services for plan check for SUSMP, Erosion Control Plans and Drainage Studies	10,000	0	10,000
	f Update of Jurisdictional Urban Runoff Management Program (recurs every five years)	0		0
	g Installation of bacteria treatment structural BMPs to conduct pilot study	0		0
	f Update of Jurisdictional Urban Runoff Management Program for compliance with new permit (recurs every five years)	50,000	(50,000)	0
8510	**OVERHEAD REIMBURSEMENT**	**140,079**	**79,898**	**219,977**
	a Provided by Finance	140,079	79,898	219,977
8511	**FLEET/EQUIPMENT MAINTENANCE**	**10,536**	**(5,295)**	**5,241**
	a Provided by Fleet Maintenance	10,536	(5,295)	5,241
8522	**ADVERTISING**	**500**	**0**	**500**
	a Advertising of Pollution Prevention Events	500	0	500
8528	**COMMUNICATIONS**	**1,000**	**0**	**1,000**
	a Telephone and cellular phone service	1,000	0	1,000
8530	**CONTRIBUTIONS**	**750**	**0**	**750**
	a Contribution to the San Diego River Coalition	500	0	500
	b Contribution to I Love A Clean San Diego	250	0	250
8532	**COPIER RENTAL/MAINTENANCE**	**200**	**0**	**200**
	a Color copies	200	0	200
8560	**PERMITS & FEES**	**51,000**	**0**	**51,000**
	a State Water Resources Control Board Fee	50,000	0	50,000
	b Recording fees County of San Diego	1,000	0	1,000
8570	**PRINTING & BINDING**	**8,000**	**0**	**8,000**
	a Utility bill inserts for Pollution Prevention Days	2,200	0	2,200
	b Outreach (Reprints of various storm water outreach materials)	1,700	0	1,700
	c City Newsletter Printing	4,100	0	4,100
8572	**PROMOTIONS**	**8,000**	**0**	**8,000**
	a Promotional items for education and outreach efforts including Pollution Prevention Days	8,000	0	8,000
8576	**REPAIRS & MAINTENANCE**	**3,359**	**0**	**3,359**

Activity: **Public Works - NPDES Compliance** Activity #: 650750

ACCOUNT/ LINE ITEM NUMBER	JUSTIFICATION FOR SUPPLIES AND SERVICES BRIEF STATEMENTS & ESTIMATED AMOUNTS USED IN CALCULATING TOTALS FOR EACH LINE ITEM	FY2015-16 BUDGET AMOUNT	CHANGE REQUESTED	FY2016-17 BUDGET REQUEST
	a Copier, printer, plotter and typewriter maintenance	3,359	0	3,359
8586	**SOFTWARE AGREEMENTS**	**49,820**	**0**	**49,820**
	a Business License Database	4,220	0	4,220
	b Miscellaneous Software Agreements	2,300	0	2,300
	c ESRI Maintenance Agreement - license for City wide license agreement	40,000	0	40,000
	d Permitting Software Maintenance Agreement	3,000	0	3,000
	e Share of QuickBase License	300	0	300
8594	**TRAINING, MEETINGS, & SCHOOLS**	**6,500**	**3,500**	**10,000**
	a Training for Stormwater personnel	2,000	2,000	4,000
	a Training for GIS personnel	4,500	1,500	6,000
	TOTAL MATERIALS, SUPPLIES, & SERVICES	**800,144**	**28,103**	**828,247**

City of El Cajon
Fiscal Year 2016 – 2017 Annual Budget

Acct #	Account Title	FY13-14 Actual	FY14-15 Actual	FY15-16 Budgeted	FY15-16 Estimated	FY16-17 Adopted
650750						**WASTEWATER - NPDES**
7110	SALARIES	446,028	410,422	442,203	383,366	844,688
7120	OVERTIME	-	-	500	-	500
7130	VACATION/SICK CONVERSION	4,443	5,834	9,127	15,008	13,878
7170	STIPEND	-	-	-	1,515	-
7310	PERS (EMPLOYER)	127,172	134,905	146,262	127,843	315,554
7311	OTHER RETIREMENT BENEFIT	-	237	-	-	-
7312	POST RETIREMENT BENEFITS	15,444	14,110	12,993	12,993	35,798
7315	MEDICARE TAX	6,798	6,390	7,518	6,367	14,360
7325	CAFETERIA	67,582	66,115	68,010	60,268	158,055
7330	COMPENSATED ABSENCES	6,882	6,651	-	-	-
7335	WORKERS COMPENSATION	13,005	10,954	15,682	12,233	82,805
7340	LIFE INSURANCE	1,111	959	1,059	866	1,688
7345	LTD INSURANCE	772	829	983	748	1,382
7350	STD INSURANCE	463	373	456	336	634
TOTAL	**SALARY & BENEFITS**	**689,699**	**657,779**	**704,793**	**621,543**	**1,469,342**
8150	OFFICE SUPPLIES	3,529	2,209	4,900	4,000	4,900
8160	OPERATING SUPPLIES	159	1,449	3,000	2,000	3,000
8345	LEGAL SERVICES	-	-	7,500	7,500	7,500
8363	SYSTEM / COMPUTER ANALYS	5,000	-	25,000	20,000	25,000
8395	OTHER PROF/TECH SERVICES	181,919	163,419	480,000	200,000	430,000
8510	OVERHEAD REIMBURSEMENT	133,284	142,821	140,079	140,079	219,977
8511	FLEET/EQUIP REIMBURSEMEN	14,304	14,604	10,536	10,536	5,241
8522	ADVERTISING	-	-	500	500	500
8528	COMMUNICATIONS	715	760	1,000	600	1,000
8530	CONTRIBUTIONS	500	250	750	750	750
8532	COPIER RENT/MAINTENANCE	-	-	200	200	200
8560	PERMITS AND FEES	40,187	36,985	51,000	50,000	51,000
8570	PRINTING AND BINDING	2,364	2,394	8,000	4,000	8,000
8572	PROMOTIONS	4,379	4,420	8,000	5,000	8,000
8576	REPAIRS AND MAINTENANCE	632	380	3,359	3,359	3,359
8586	SOFTWARE AGREEMENTS	39,160	39,200	49,820	49,820	49,820
8594	TRAINING/MEETINGS/SCHOOI	-	925	6,500	8,000	10,000
TOTAL	**MAT'L, SVC & SUPPLIES**	**426,132**	**409,816**	**800,144**	**506,344**	**828,247**
	ACTIVITY TOTAL	**1,115,831**	**1,067,595**	**1,504,937**	**1,127,887**	**2,297,589**

2.3 JURISDICTIONAL STRATEGIES

Table A2-6. City of El Cajon Jurisdictional Strategies and Implementation Schedules for Illicit Discharge Detection and Elimination Program

San Diego River Illicit Discharge Detection and Elimination Program Strategies City of El Cajon	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Engage the public, jurisdictional staff, and other agency staff to proactively identify and report illicit discharges.					
Utilize municipal personnel and contractors to identify and report illicit discharges and connections.	●	●	A	N/A	
Facilitate public reporting of illicit discharges and connections via telephone and email.	●	●	A	N/A	
Coordinate with upstream entities to prevent illicit discharges from upstream sources from entering the MS4. This strategy will need coordination with water agencies.	◖	●	P	N/A	The conversation with water agencies started and it will continue in order to coordinate for better collaboration.
2. Develop and implement approaches to address the impacts of septic systems within the watershed.					
Investigate and eliminate illicit discharges and connections.	●	●	A	N/A	
3. Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.					
Implement practices and procedures to prevent/limit infiltration of seepage from sanitary sewers to the MS4.	●	●	A	N/A	Conducted during continuous maintenance operation program of sanitary sewer system.
Implement practices and procedures to address spills with the potential to enter the MS4.	●	●	A	N/A	
Investigate and eliminate illicit discharges and connections.	●	●	A	N/A	
4. Implement monitoring programs to provide new information to refine the prioritization of drainage areas.					
Conduct transitional MS4 outfall discharge program to identify persistent/transient flows.	●	●	A	N/A	

Table A2-6. City of El Cajon Jurisdictional Strategies and Implementation Schedules for Illicit Discharge Detection and Elimination Program

San Diego River Illicit Discharge Detection and Elimination Program Strategies City of El Cajon	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Conduct watershed specific MS4 outfall discharge program to identify persistent/transient flows.	●	●	A	N/A	
5. Actively educate public on prohibitions related to illicit discharges and connections.					
Investigate and eliminate illicit discharges and connections.	●	●	A	N/A	
Enforce legal authority to ensure all illicit discharges and connections that are identified are eliminated.	●	●	A	N/A	

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

Table A2-7. City of El Cajon Jurisdictional Strategies and Implementation Schedules for Development Planning

San Diego River Development Planning Program Strategies City of El Cajon	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Provide updated materials, enhanced outreach, and training to convey land development requirements.					
Establish criteria designating priority development projects for new development and redevelopment projects.	●	●	A	N/A	
Update BMP design manual procedures to specify stormwater requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria, and establish alternative compliance options (where implemented).	●	●	A	N/A	
2. Develop and implement LID programs to complement standard permit requirements.					
Implement downspout disconnection program for industrial, commercial, and residential projects.	X	◖	P	N/A	This is an optional strategy. The City has partnered with other agencies on their efforts, such as the Sustainable Landscapes program. The City has not yet implemented an incentive program directly funded by the City.
Implement proprietary BMPs where appropriate for industrial, commercial, and residential projects.	●	●	A	N/A	
Implement rainwater harvesting where appropriate for industrial, commercial, and residential projects.	◖	●	P	N/A	The City began to use a development manual that incorporates the implementation of LID BMPs, including rainwater harvesting.

Table A2-7. City of El Cajon Jurisdictional Strategies and Implementation Schedules for Development Planning

San Diego River Development Planning Program Strategies City of El Cajon	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
3. Implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation and identify a list of candidate projects that could be used as alternative compliance options for Priority Development Projects.					
Develop and implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation.	◖	●	P	N/A	
4. Implement a post construction BMP program for development projects to ensure proper construction and maintenance.					
Implement source control, LID, and on-site structural controls for all priority development projects.	●	●	A	N/A	
Implement a program that ensures that all structural BMPs are designed, constructed, and maintained on PDPs.	●	●	A	N/A	
Inspect all high priority structural BMPs prior to the rainy season.	●	●	A	N/A	
5. Enforce post construction requirements related to new and redevelopment.					
Require implementation of source control and low impact development (LID) BMPs for all development projects.	●	●	A	N/A	

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

Table A2-8. City of El Cajon Jurisdictional Strategies and Implementation Schedules for Construction Management

San Diego River Construction Management Program Strategies City of El Cajon	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Ensure that minimum BMPs are designated and required for construction projects. Prioritize BMPs which address sources of bacteria.					
Require submittal of pollution control plan, construction BMP plan, and/or erosion and sediment control plan for projects requiring local permits involving soil disturbance activities.	●	●	A	N/A	
Review and confirm that the submitted plan is in compliance.	●	●	A	N/A	
Implement or require implementation of BMPs that are site specific, seasonally appropriate, and appropriate to the construction phase year round.	●	●	A	N/A	
Inspect construction sites at an appropriate frequency to require and confirm compliance with local permits and ordinances, as well as the MS4 Permit requirements.	●	●	A	N/A	
Enforce legal authority to ensure inventoried construction projects are in compliance with all requirements.	●	●	A	N/A	

Notes:

● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented

A – Actual (active implementation), P – Planned (planning stage)

Table A2-9. City of El Cajon Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of El Cajon	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Maintain and improve data tracking methods for existing development inventories where necessary.					
Maintain and update a watershed based inventory of existing development (i.e., commercial, industrial, and municipal facilities and residential areas).	●	●	A	N/A	
2. Develop and implement approaches to address the impacts of improper water use and irrigation runoff.					
Provide or expand targeted outreach to home owners associations	●	●	A	N/A	Information was provided to Home Owners Associations, outreach efforts are planned to increase.
3. Improve and/or continue existing pet waste programs.					
Continue implementation of pet waste bag dispensers in public parks	●	●	A	N/A	
4. Improve trash management strategies within the watershed.					
Implement a schedule of operation and maintenance for public streets, unpaved roads, paved roads, and paved highways.	●	●	A	N/A	
5. Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.					
Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	●	●	A	N/A	The City has an aggressive sanitary sewer operation maintenance program.
6. Improve and implement existing outreach programs to target key sources and pollutants.					
Provide targeted outreach via printed materials to residential areas	●	●	A	N/A	It includes, at minimum, a total of four Storm Water articles in the City's Fall/Spring newsletters.

Table A2-9. City of El Cajon Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of El Cajon	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
7. Enhance existing MS4 maintenance programs.					
Implement a schedule of operation and maintenance activities for the MS4 and related structures.	●	●	A	N/A	
Implement dry weather flow diversions (dependent on outcome of Watershed Management Area Analysis and feasibility)	X	◖	P	N/A	This is an optional strategy. Will start the feasibility phase of dry weather diversion in FY 16-17.
8. Develop and implement targeted programs to address issues in residential areas.					
Conduct residential management area focused inspections.	●	●	A	N/A	
9. Improve existing inspections programs to more efficiently target key sources.					
Conduct inspections of inventoried existing development to ensure compliance. Each area/activity inspected once every five years minimum, with equivalent of 20% of inventory inspected annually.	●	●	A	N/A	
10. Actively enforce stormwater and urban runoff requirements for existing development.					
Designate and require minimum set of BMPs required for all inventoried existing development.	●	●	A	N/A	
Enforce legal authority to ensure inventoried existing development facilities and/or areas are in compliance with all requirements.	●	●	A	N/A	
11. Identify and facilitate retrofit opportunities in areas of existing development.					
Identify opportunities and facilitate the implementation of retrofit projects in areas of existing development.	●	●	A	N/A	
Implement green streets (dependent on WMAA results)	X	◖	P	N/A	The City considers green street opportunities as they arise. No qualifying projects during FY 15-16.

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

Table A2-10. City of El Cajon Optional Jurisdictional Strategies and Implementation Schedules

San Diego River Optional Jurisdictional Strategies	Implementation Timeframe	FY15-16	FY16-17	Actual / Planned	Comments
Dry weather flow diversion	FY 15-16 through FY 18-19	X	◖	P	Will start the feasibility phase of dry weather diversion in FY 16-17.
Implement roof runoff rebate program for existing developments (residential and commercial) properties to help encourage the installation of roof runoff structural BMP controls to reduce discharge of pollutant and stressors and stormwater flows.	1st Permit Term 2013-2018; continues through 2nd Permit Term (2018-2023) until funding sources expire	X	◖	P	The City has partnered with other agencies on their efforts, such as the Sustainable Landscapes program. The City has not yet implemented an incentive program directly funded by the City.
Flood Control Channel Rehabilitation Projects (e.g., removal of impervious lining in flood control channel and replacement with pervious, earthen, or vegetated surface)	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Not triggered	If triggered	If triggered	While this strategy has not been triggered, the City continues to evaluate opportunities for potential grant-funded rehabilitation projects.

Notes:
No modifications to optional strategies are proposed.
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

2.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The City of El Cajon BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The City of El Cajon updated its BMP Design Manual in accordance with Municipal Permit requirements in February 2016; the BMP Design Manual replaced the Standard Urban Stormwater Mitigation Plan (SUSMP). No additional changes to the BMP Design Manual have been made since it went into effect in February 2016. The City of El Cajon BMP Design Manual can be accessed at: http://www.cityofelcajon.us/i-want-to/view/documents-forms-library/-folder-137 . Stormwater requirements for development projects are also included in Chapter 16.60 of the El Cajon Municipal Code, which can be accessed at http://www.qcode.us/codes/elcajon/ ..

2.5 MODIFICATIONS TO THE JRMP

No changes were made to the City's JRMP during the 2015-2016 fiscal year.

3 County of San Diego

3.1 ANNUAL REPORT CERTIFICATION

County of San Diego

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

LAND USE AND ENVIRONMENT GROUP
1600 PACIFIC HIGHWAY, ROOM 212, SAN DIEGO, CA 92101
(619) 531-6256 • Fax (619) 531-5476
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STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT SAN DIEGO RIVER WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the County of San Diego has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 16th day of January, 2017, at the County of San Diego.

Sarah Aghassi
SARAH E. AGHASSI
Deputy Chief Administrative Officer

Date 1/6/17

3.2 ANNUAL REPORT FORM

ATTACHMENT D

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

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JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

I. COPERMITTEE INFORMATION

I.A Copermittee Name: County of San Diego (PIN 255223)

I.B Copermittee Primary Contact Name: Todd Snyder

I.C Copermittee Primary Contact Information:
Address: 5510 Overland Avenue, Suite 410
City: San Diego County: San Diego State: California Zip: 92123
Telephone: (858) 694-3672 Fax: (858) 495-5623 Email:Todd.Snyder@sdcounty.ca.gov

II. LEGAL AUTHORITY

II.A Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
II.B A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

III.A Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
III.B If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

IV.A Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IV.B.1 Number of non-storm water discharges reported by the public	286
IV.B.2 Number of non-storm water discharges detected by Copermittee staff or contractors	95
IV.B.3 Number of non-storm water discharges investigated by the Copermittee	375
IV.B.4 Number of sources of non-storm water discharges identified	115
IV.B.5 Number of non-storm water discharges eliminated	112
IV.B.6 Number of sources of illicit discharges or connections identified	85
IV.B.7 Number of illicit discharges or connections eliminated	84
IV.B.8 Number of enforcement actions issued	93
IV.B.9 Number of escalated enforcement actions issued	1

V. DEVELOPMENT PLANNING PROGRAM

V.A Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
V.B Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
V.C If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

V.D.1 Number of proposed development projects in review	925
V.D.2 Number of Priority Development Projects in review	237
V.D.3 Number of Priority Development Projects approved	96
V.D.4 Number of approved Priority Development Projects exempt from any BMP requirements	0
V.D.5 Number of approved Priority Development Projects allowed alternative compliance	0
V.D.6 Number of Priority Development Projects granted occupancy	62

V.E.1 Number of completed Priority Development Projects in inventory	410
V.E.2 Number of high priority Priority Development Project structural BMP inspections	691
V.E.3 Number of Priority Development Project structural BMP violations	170
V.E.4 Number of enforcement actions issued	170
V.E.5 Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM	
VI. A Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
VI.B.1 Number of construction sites in inventory	2,748
VI.B.2 Number of active construction sites in inventory	2,684
VI.B.3 Number of inactive construction sites in inventory	0
VI.B.4 Number of construction sites closed/completed during reporting period	1,124
VI.B.5 Number of construction site inspections	18,858
VI.B.6 Number of construction site violations	416
VI.B.7 Number of enforcement actions issued	590
VI.B.8 Number of escalated enforcement actions issued	38

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM	
VII.A Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
VII.B.1 Number of facilities or areas in inventory	a. 263	b. 1,779	c. 150	d.110
VII.B.2 Number of existing development inspections	a. 1,885	b. 974	c. 38	d.468
VII.B.3 Number of follow-up inspections	a. 23	b. 131	c. 12	d.165
VII.B.4 Number of violations	a. 46	b. 279	c. 31	d.346
VII.B.5 Number of enforcement actions issued	a. 28	b. 130	c. 10	d.0
VII.B.6 Number of escalated enforcement actions issued	a.0	b.1	c.0	d.0

VIII. PUBLIC EDUCATION AND PARTICIPATION	
VIII.A Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
VIII.B Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

IX. FISCAL ANALYSIS	
Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature: Sarah Aghassi

Date: 10/26/16

SARAH E. AGHASSI
Print Name

LAND USE AND ENVIRONMENT GROUP
DEPUTY CHIEF ADMINISTRATIVE OFFICER
Title

(619) 531-5451
Telephone Number

SARAH.AGHASSI@SDCOUNTY.CA.GOV
Email

ATTACHMENT D.1

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM BY WATERSHED

JRMP ANNUAL REPORT ATTACHMENT D.1 by WATERSHED

Fiscal Year 2015-2016

			SANTA MARGARITA	SAN LUIS REY	CARLSBAD	SAN DIEGUITO	PENASQUITOS	SAN DIEGO RIVER	SAN DIEGO BAY	TIJUANA RIVER	JURISDICTION TOTALS
			*(902.00)	*(903.00)	*(904.00)	*(905.00)	*(906.00)	*(907.00)	*(908.00, 909.00, 910.00)	*(911.00)	
IV.	**ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM**										
IV.B.1	Number of non-storm water discharges reported by the public		12	46	30	40	2	78	72	6	286
IV.B.2	Number of non-storm water discharges detected by Copermittee staff or contractors		9	11	7	14	1	28	24	1	95
IV.B.3	Number of non-storm water discharges investigated by the Copermittee		15	57	37	51	3	106	99	7	375
IV.B.4	Number of sources of non-storm water discharges identified		4	22	17	11	1	30	28	2	115
IV.B.5	Number of non-storm water discharges eliminated		4	21	16	10	1	30	28	2	112
IV.B.6	Number of sources of illicit discharges or connections identified		4	14	16	8	0	18	23	2	85
IV.B.7	Number of illicit discharges or connections eliminated		4	14	15	8	0	18	23	2	84
IV.B.8	Number of enforcement actions issued		4	21	17	9	1	23	16	2	93
IV.B.9	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	1	1
V.	**DEVELOPMENT PLANNING PROGRAM**										
V.D.1	Number of proposed development projects in review		27	219	109	189	0	158	183	40	925
V.D.2	Number of Priority Development Projects in review		2	53	30	53	0	43	50	6	237
V.D.3	Number of Priority Development Projects approved		4	23	11	21	0	20	11	6	96
V.D.4	Number of approved Priority Development Projects exempt from any BMP requirements		0	0	0	0	0	0	0	0	0
V.D.5	Number of approved Priority Development Projects allowed alternative compliance		0	0	0	0	0	0	0	0	0
V.D.6	Number of Priority Development Projects granted occupancy		2	16	5	8	0	18	12	1	62
V.E.1	Number of completed Priority Development Projects in inventory		12	89	54	85	0	66	93	11	410
V.E.2	Number of high priority Priority Development Project structural BMP inspections		1	100	70	273	0	110	82	55	691
V.E.3	Number of Priority Development Project structural BMP violations		1	43	31	53	0	24	8	10	170
V.E.4	Number of enforcement actions issued		1	43	31	53	0	24	8	10	170
V.E.5	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	0	0
VI.	**CONSTRUCTION MANAGEMENT PROGRAM**										
VI.B.1	Number of construction sites in inventory		63	637	397	636	2	438	513	62	2748
VI.B.2	Number of active construction sites in inventory		60	622	393	627	2	424	496	60	2684
VI.B.3	Number of inactive construction sites in inventory		0	0	0	0	0	0	0	0	0
VI.B.4	Number of construction sites closed/completed during reporting period		20	314	137	235	1	175	219	23	1124
VI.B.5	Number of construction site inspections		245	3655	4473	3934	3	2868	3361	319	18858
VI.B.6	Number of construction site violations		1	50	55	38	0	64	205	3	416
VI.B.7	Number of enforcement actions issued		1	66	64	66	0	104	286	3	590
VI.B.8	Number of escalated enforcement actions issued		1	6	8	9	0	3	9	2	38
VII.	**EXISTING DEVELOPMENT MANAGEMENT PROGRAM**										
VII.B.1	Number of facilities or areas in inventory	a. Municipal	8	23	27	34	4	63	82	22	263
		b. Commercial	154	315	196	210	2	466	410	26	1779
		c. Industrial	15	4	5	22	0	67	36	1	150
		d. Residential	12	11	11	22	1	15	21	17	110
VII.B.2	Number of existing development inspections	a. Municipal	48	181	239	244	41	421	561	150	1885
		b. Commercial	106	155	115	102	0	180	309	7	974
		c. Industrial	1	5	5	12	0	2	13	0	38
		d. Residential	17	55	67	107	2	109	77	34	468
VII.B.3	Number of follow-up inspections	a. Municipal	0	3	0	0	0	2	14	4	23
		b. Commercial	7	10	10	13	0	22	65	4	131
		c. Industrial	1	3	0	2	0	0	6	0	12
		d. Residential	3	22	30	43	0	34	24	9	165
VII.B.4	Number of violations	a. Municipal	0	7	0	1	0	5	26	7	46
		b. Commercial	15	21	25	16	0	51	140	11	279
		c. Industrial	0	7	0	4	0	0	20	0	31
		d. Residential	4	47	59	85	0	70	50	31	346
VII.B.5	Number of enforcement actions issued	a. Municipal	0	2	0	0	0	3	19	4	28
		b. Commercial	10	13	11	7	0	21	65	3	130
		c. Industrial	0	2	0	2	0	0	6	0	10
		d. Residential	0	0	0	0	0	0	0	0	0
VII.B.6	Number of escalated enforcement actions issued	a. Municipal	0	0	0	0	0	0	0	0	0
		b. Commercial	0	0	0	0	0	0	0	1	1
		c. Industrial	0	0	0	0	0	0	0	0	0
		d. Residential	0	0	0	0	0	0	0	0	0

ATTACHMENT D.2

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FISCAL ANALYSIS

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FISCAL ANALYSIS COMPONENT

1.1. Introduction

This section presents an estimated annual budget for the County's runoff management programs for FY 2015-16.

1.2. Fiscal Analysis Methods

This section continues to utilize the methodologies and standards established in *Fiscal Analysis Method* submitted by the Copermittees in January 2009.

1.3. Fiscal Analysis Results

As shown the County estimated its total FY 2015-16 expenditures at $27,414,216. This fiscal analysis addresses each of the County's Runoff Management Program elements (jurisdictional, watershed, and regional activities) for the current reporting period (FY 2015-16). Expenditures are described by department and major program area. They represent an estimate of the expenditures that the County incurred in meeting its compliance obligations for FY 2015-16. They should not be interpreted as either budgeted or actual expenditures. Because stormwater program expenditures are distributed throughout a considerable number of County programs, a single consolidated "budget" does not exist for the program as a whole. As such, these figures should be considered best estimates of stormwater-related expenditures.

1.3.1 Expenditures

1.3.1.1. Jurisdictional

Table 1.1 presents the County's estimated jurisdictional expenditures for FY 2015-16.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
1	**ADMINISTRATION**	**$6,840,583**	These costs correspond to the DPW WPP development, administrative oversight, and assessment of the County's stormwater programs. The WPP is responsible for the development of new and augmented County stormwater programs, regulatory reporting, and program assessment. Some administrative costs are associated with other specific functions shown below, but are included here because they could not be separated out.
2	**DEVELOPMENT PLANNING**	**$1,109,654**	
A	**Land Use Planning**	$0	Expenditures not reported for FY 2015-16; included in other elements.
B	**Environmental Review**	$0	Expenditures not reported for FY 2015-16; included in other elements.
C	**Development Project Approval and Verification**	**$1,109,654**	
C1	**Public Projects (CIP)**	$824,219	
	Project Planning and Engineering	$570,229	Costs include: preparing and reviewing plans and specifications for stormwater BMPs, and SWPPP/WPCP review. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$15,000	
	BMP Implementation	$238,990	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
C2	**Private Projects**	$285,435	
	Permitting and Licensing	$285,435	This cost covers PDS plan reviews at permitted sites. Total costs are estimated as fixed percentages of annual plan-checking fees.
3	**CONSTRUCTION**	**$4,500,593**	
A	**Public Projects (CIP)**	$2,886,893	Costs include: BMP compliance inspections during construction, and implementation of construction phase BMPs. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$1,613,880	
	BMP Implementation	$1,273,013	
B	**Private Projects**	$1,613,700	
	Compliance Inspection and Enforcement	$1,613,700	This cost primarily covers DPW and PDS construction inspections at permitted sites. Total costs are estimated as fixed percentages of inspection program fees.
4	**MUNICIPAL**	**$7,572,297**	
A	**Administration**	$267,805	Expenditures associated with the administrative oversight of the stormwater programs, regulatory reporting, and program assessment of municipal facilities by the DPW - Watershed Protection Program.
B	**Streets, Roads, and Highways Element**	$2,256,091	
	Administration	$291,160	Founded road operations activities include: culvert inspections and cleaning;

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
	Maintenance Inspections	$1,890,813	increased culvert waste disposal costs, street sweeping, installation and maintenance of BMPs and road structures, and the placement of additional controls. 10% of the Maintenance and Inspections and BMP Implementation is reported as Administration cost.
	BMP Implementation	$74,118	
	Other	$0	
C	**MS4 Element**	$1,530,000	
	Administration	$191,000	The combined costs shown here apply across (1) DPW Flood Control -- conversion of existing concrete lined channels to natural bottom channels, updating flood control master plans, increased maintenance of flood control systems, and construction and maintenance of regional treatment BMPs; and (2) DPW Flood Control MS4 Operation & Maintenance -- maintenance on flood control facilities throughout the unincorporated areas of the County, exclusive of facilities within road rights-of-way (included in 4.B above). Other includes the cost of disposal of debris removed from MS4.
	Maintenance Inspections	$1,046,900	
	BMP Implementation	$290,500	
	Other	$2,500	
D	**Solid Waste Facilities Element**	$406,618	
	Administration	$35,047	Costs include Regional Board stormwater permit fees, consultant costs associated with stormwater upgrade and repair projects, and office staff time.
	Maintenance Inspections	$16,922	Costs include staff time to perform site inspections.
	BMP Implementation	$79,149	Costs include stormwater consultant site inspections, sampling/testing and BMP materials.
	Other (construction)	$275,500	Drainage improvement projects and BMP site maintenance projects.
E	**Wastewater Facilities Element**	$187,000	
	Administration	$10,000	This includes costs associated with JRMP report, the sanitary sewer system and facilities including: pump stations, sewage treatment plants and Spring Valley Operations facility. Also includes the cost of BMP design, acquisition,
	Maintenance Inspections	$127,000	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$50,000	maintenance and monitoring, for wastewater Capital Improvement Projects, and Major maintenance projects, and at various wastewater facilities.
	Other	$0	
F	**Road Stations Element**	$919,867	
	Administration	$83,624	This includes DPW road station operations related to Permit compliance. The Administration cost is determined as 10% of the total costs of maintenance and Inspections and BMP Implementation as reported by the DPW Roads Divisions.
	Maintenance Inspections	$799,414	
	BMP Implementation	$36,829	
	Other	$0	
G	**Fleet Maintenance Element**	$11,722	
	Administration	$1,036	This includes costs associated with operation of the County's fleet maintenance and fueling facilities.
	Maintenance Inspections	$7,392	
	BMP Implementation	$3,294	
	Other	$0	
H	**Municipal Airfields Element**	$338,110	These costs involve site inspections, annual reporting, and maintenance of BMPs at airports, including oversight of tenant operations. The BMP implementation item includes Palomar asphalt cap repairs.
	Administration	$12,737	
	Maintenance Inspections	$0	
	Compliance Inspection and Enforcement	$0	
	BMP Implementation	$300,623	
	Other (sampling and analysis)	$24,750	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
I	**Parks & Recreational Facilities Element**	$1,214,562	
	Administration	$121,362	This includes: coordinating all training requirements, preparing and reviewing reports, and overseeing the overall implementation of the stormwater program for DPR.
	BMP Implementation	$991,603	This includes costs associated with implementation of BMPs at County parks.
	Compliance Inspection and Enforcement	$101,597	Costs are for DPR enforcement of stormwater requirements at County parks.
	Other	$0	
J	**Office Buildings & Other Municipal Facilities Element**	$297,867	
	Administration	$0	DGS conducts a variety of storm water activities including: inspections and clean-up of County-owned, occupied, and leased facilities and vacant lands; maintenance and signage of storm drain inlet inserts and trash dumpsters; placement of inlet filters; maintenance of coverage and containment improvements for on-site supplies and materials; parking lot sweeping and controlled parking lot power washing; and application of erosion and sediment control measures. These costs are exclusive of fleet maintenance and fueling operations.
	Maintenance Inspections	$99,808	
	BMP Implementation	$198,059	
	Other	$0	
	Management of Pesticides, Herbicides, & Fertilizers	$142,656	
	Administration	$142,656	Integrated Pest Control Program within the Department of Agriculture, Weights and Measures (AWM) performs eradication and control of invasive weeds. This program also provides weed control on roadsides, airports, flood control channels,
	Maintenance Inspections	$0	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$0	sewage treatment plants and inactive landfills. It also provides structural pest control to facilities owned and operated by the county.
	Other	$0	
5	**INDUSTRIAL and COMMERCIAL**	**$1,575,635**	
	Administration	$253,047	DPW and AWM conduct inspections of a variety of businesses in the unincorporated County, provide regulatory oversight of mobile businesses, and conduct follow-up and enforcement of stormwater violations.
	Compliance Inspection and Enforcement	$1,245,279	
	Educational Outreach	$77,309	
	Other expenditures	$0	
6	**RESIDENTIAL**	**$1,205,386**	
	Compliance Inspection and Enforcement	$688,453	DPW conducts complaint investigations for residential sources in the unincorporated County, and conduct follow-up and enforcement of stormwater violations. DPW also operates a regional hotline.
	Educational Outreach	$516,933	Several County departments coordinate and provide outreach to the residential sector and schoolchildren in support of Permit Section D.5 requirements. Costs reported here correspond to DPW only. Funded activities include developing pollution prevention content and providing direct outreach to various target audiences within the general residential and schoolchildren target audiences.
7	**IDDE**	**$321,523**	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
		$321,523	DPW conducts monitoring programs, assesses scientific data, and provides technical and scientific support to other County program staff. They also provide support for all technical and scientific aspects of JRMP development and implementation. These costs are exclusive of the regional monitoring program which is addressed separately under regional costs.
8	**EDUCATION**	**$0**	Education costs are included in other sections as applicable.
9	**PUBLIC PARTICIPATION**	**$0**	Public participation costs are included in other sections as applicable.
10	**SPECIAL INVESTIGATIONS**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.
11	**NON-EMERGENCY FIREFIGHTING**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.

$23,125,671

1.3.1.2 Watershed

Table 1.2 presents the County's estimated watershed expenditures for FY 2015-16.

Table 1.2 – Estimated Watershed Expenditures for FY 2015-16

	Santa Margarita WMA	San Luis Rey WMA	Carlsbad WMA	San Dieguito WMA	Peñasquitos WMA	San Diego River WMA	San Diego Bay WMA	Tijuana WMA
Administration	$37,583	$201,492	$82,653	$113,035	$75,309	$105,117	$37,583	$75,309
Cost Share Contribution	$0	$62,494	$46,204	$8,885	$1,062	$68,970	$6,659	$2,346
Watershed Activities	$626,917	$119,390	$14,860	$171,640	$26,423	$125,705	$111,491	$80,300
Other	$0	$0	$0	$0	$0	$0	$0	$0
Total Estimated Watershed Costs	**$664,500**	**$383,376**	**$143,717**	**$293,560**	**$102,794**	**$299,792**	**$155,733**	**$157,955**

1.3.1.3 Regional

Table 1.3 presents the County's estimated regional expenditures for FY 2015-16. This includes only those expenditures associated with the Copermittees' adopted Regional Budget and Work Plan. Other costs associated with regional participation (meeting attendance, etc.) are included within the jurisdictional expenditures presented above.

Table 1.3 – Estimated Regional Expenditures for FY 2015-16

Regional Programs	County Costs
Administration	$0
Cost Share Contribution	$2,087,118
Regional Activities	$0
Other	$0
Total Estimated Regional Costs	**$2,087,118**

1.3.1.4 Total Expenditures

Table 1.4 presents the County's total estimated expenditures for FY 2015-16 (jurisdictional, watershed, and regional).

Table 1.4 – Total Estimated County Expenditures for FY 2015-16

Component / Sub-component	Estimated Expenditures
Jurisdictional	
Administration	$6,840,583
Development Planning	$1,109,654
Construction	$4,500,593
Municipal	$7,572,297
Industrial And Commercial	$1,575,635
Residential	$1,205,386
IDDE	$321,523
Education	$0
Public Participation	$0
Special Investigations	$0
Non-emergency Firefighting	$0
Jurisdictional Total	**$23,125,671**
Watershed	
Santa Margarita WMA	$664,500
San Luis Rey WMA	$383,376
Carlsbad WMA	$143,717
San Dieguito WMA	$293,560
Peñasquitos WMA	$102,794
San Diego River WMA	$299,792
San Diego Bay WMA	$155,733
Tijuana WMA	$157,955
Watershed Total	**$2,201,427**
Regional	**$2,087,118**
Total Estimated County Costs	***$27,414,216***

1.3.2 Funding Source

Table 1.5 shows the major sources of funding for the County's urban runoff management programs in FY 2015-16, and describes the legal restrictions applicable to the use of each.

Table 1.5 – Legal Restrictions on the Use of Program Funding

Funding Source	Legal Restrictions
General Fund	There are no restrictions on the use of general fund for County water quality programs and activities except that they must be used only for the purposes for which they are budgeted and allocated by the County Board of Supervisors.
Flood Control District Fees	Revenue generated from these fees must be expended for activities related to flood and storm management.
Developer Deposits / Permit Fees	Deposits / fees may be used only to fund activities related to the work for which the permits are issued.
Gas Tax	Gas Tax is collected by the state and allocated to local government for transportation-related work including maintenance of existing transportation systems and construction of new transportation facilities. These funds may not be used for other purposes.
Sanitary District Fees	Sanitary District Fees are used for work related to the maintenance of sewer lines, pump stations, force mains, and several treatment plants that serve the unincorporated areas. They may be used only for such maintenance-related purposes within the respective sewer district for which they are collected.
Other Funding Sources	Other funding sources collectively account for a relatively small portion of ongoing expenditures. However, all funding for the County's stormwater compliance programs is expended within applicable legal restrictions and limitations.

1.4. Conclusions and Recommendations

The figures presented here are an estimate of the expenditures that the County incurred to meet its compliance obligations for FY 2015-16. For the reasons explained above, they should be considered only best estimates of stormwater-related expenditures.

3.3 JURISDICTIONAL STRATEGIES

Table A2-11. County of San Diego Jurisdictional Strategies and Implementation Information

	Strategies Implemented by Jurisdictions	Implemented in FY16? *(Fully/Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(If None, N/A)*	Planned Implementation into next FY *(Y/N)*
Illicit Discharge, Detection, and Elimination (IDDE) Program						
1	Maintain stormwater conveyance system map to facilitate IDDE program	●	Updated as needed	N	N/A	Y
2	Utilize municipal personnel and contractors to identify and report Illicit Connections and Discharges	●	IDDE Program	N	N/A	Y
3	Updated focused training for County field staff	●	Updated training for BMP Design Manual and Stormwater Implementers	N	N/A	Y
4	Collect effluent on the ground (EOG), sanitary sewer overflow (SSO) data	●	Approximately 87 EOG complaints related to septic systems and 14 SSO events recorded and responded to throughout the County's jurisdiction.	N	N/A	Y
5	Address septic system failures where observed	●	Suspected septic discharges are reported to DEH HIRT Response line when they occur after hours and DEH Land and Water Quality Division during normal hours. All complaints resolved during 15-16.	N	N/A	Y
6	Facilitate public reporting of ICID via telephone and email	●	Bilingual hotline, dedicated e-mail address, and multiple online reporting tools	N	N/A	Y
7	Refer homeless issue complaints to Sheriff or appropriate jurisdictions	●	Collaborate with multi-departmental group to address homeless encampments	N	N/A	Y
8	Bilingual hotline answered by a live operator (I Love a Clean San Diego) to provide better customer service	●	Bilingual hotline operated by ILACSD	N	N/A	Y
9	Implement practices and procedures to address spills with the potential to enter the storm drain system	●	NOV issued by DEH for failing septic systems when effluent could reach the storm drain. Prompt follow up and mitigation is implemented. Such cases are rare; <5 in 15-16 throughout the County's jurisdiction.	N	N/A	Y
10	Coordinate spill response with responsible sewer agencies	●	Major DEH role is to inform the public of risks associated with sewer spills, conducting sampling, reporting, posting signs, etc.	N	N/A	Y
11	Implement practices and procedures to prevent/limit infiltration of seepage from sanitary sewers	●	If illicit connections are identified as part of an IDDE investigation, investigations are conducted to define and eliminate the source.	N	N/A	Y
12	Coordinate with upstream entities to prevent illicit discharges from upstream sources entering into the storm drain system	●	If illicit connections are identified as part of an IDDE investigation, investigations are conducted to define and eliminate the source. If determined to be from an upstream entity coordination will occur.	N	N/A	Y
13	Utilize municipal personnel and Contractors to monitor stormwater outfalls for discharges of potential ICIDs	●	This is part of the IDDE Program	N	N/A	Y

Table A2-11. County of San Diego Jurisdictional Strategies and Implementation Information

	Strategies Implemented by Jurisdictions	Implemented in FY16? *(Fully/Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(If None, N/A)*	Planned Implementation into next FY *(Y/N)*
14	Develop and implement a strategy for investigating and addressing ICIDs.	●	Focused, collaborative investigations with Planning and Science staff of high priority outfalls.	N	N/A	Y
	Development Planning					
15	Require implementation of source control and Low Impact Development (LID) BMPs for all development projects.	●	The County BMP Design Manual (DM) requires all projects regardless of size and location to implement source control (SC) and SD BMPs. These requirements are captured in the Watershed Protection Ordinance (WPO) and County's BMP DM.	N	N/A	Y
16	Priority Development Projects (PDP): In addition to requirement for all development projects, implement or require implementation of onsite structural BMPs to control pollutants and manage hydromodification for PDPs.	●	The County BMP DM requires all PDPs to implement pollutant control and hydromodification management BMPs. These requirements are captured in the WPO and County's BMP DM.	N	N/A	Y
17	Update BMP Design Manual procedures to specify stormwater requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria, and establish where implemented alternative compliance options.	●	Updated County BMP DM to reflect the Regional Model BMP DM with additional changes to incorporate County implementation practices. BMP DM became effective on February 26, 2015.	N	N/A	N
18	Conduct internal (staff) training on the updated BMP Manual	●	The County conducts internal training every fiscal year and after release of new guidance documents	N	N/A	N
19	Hold external land development workshops targeting the development community	●	The County conducts external training regularly and after release of new guidance documents	N	N/A	N
20	Implement a program that ensures that all structural and Low Impact Development (LID) BMPs are designed, constructed and maintained on Priority Development and Redevelopment Projects.	●	Structural BMPs and LID BMPs are designed and constructed per the BMP Design Manual. In addition, Structural BMPs and LID BMPs at PDPs are tracked for maintenance through inspections and self verification letters.	N	N/A	Y
21	Impose legal authority to ensure all development and redevelopment projects are in compliance with all post construction requirements.	●	The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated Permit and the inclusion of applicant-implement offsite alternative compliance.	N	N/A	Y
22	Update County codes, ordinances, and stormwater design standards consistent with the permit and the updated BMP Manual	●	The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated Permit and the inclusion of applicant-implement offsite alternative compliance. WPO update became effective on February 26, 2016.	N	N/A	N
	Construction Management					
23	Maintain, update and prioritize a watershed based inventory of all projects issued local permits that allow soil disturbing activities.	●	Projects that are issued local permits that allow soil disturbance activities are part of the inventory that is watershed-based.	N	N/A	Y

Table A2-11. County of San Diego Jurisdictional Strategies and Implementation Information

	Strategies Implemented by Jurisdictions	Implemented in FY16? *(Fully/Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(If None, N/A)*	Planned Implementation into next FY *(Y/N)*
24	Require implementation of BMPs that are site specific, seasonally appropriate and appropriate to the construction phase, year round.	●	Every project requires implementation of site specific construction BMPs, seasonally appropriate and appropriate to the construction phase.	N	N/A	Y
25	Impose legal authority to ensure inventoried construction projects are in compliance with all requirements.	●	The Watershed Protection Ordinance is the current legal authority to ensure inventoried construction projects are in compliance with all requirements.	N	N/A	Y
26	Make updates to County ordinances related to construction; reference to existing grading ordinance	●	County ordinances are updated with subsequent Construction General Permit updates; the Watershed Protection Ordinance will be updated as necessary as a result of the future Grading Ordinance Update.	N	N/A	N
27	Provide internal staff training related to construction storm water management.	●	The County conducts construction stormwater training annually, and it targets construction inspectors in DPW-PDCI, PDS-Building, and CIP Inspectors in DPW and DGS.	N	N/A	Y
	Existing Development					
28	Maintain and update a watershed-based inventory of existing development (i.e. commercial, industrial, municipal and residential areas).	●	Inventory is tracked in Accela Automation. Database is continually updated to increase accuracy and efficiency.	N	N/A	Y
29	Improve the tracking of watershed based inventories via consolidated database	●	See the comments for Strategy 28 above.	N	N/A	Y
30	Designate a minimum set of BMPs required for all existing development inventories, including special event venues. The designated minimum BMPs must be specific to facility or area types and pollutant generating activities, as appropriate.	●	The JRMP establishes minimum BMPs for all existing development land use types.	N	N/A	Y
31	Create an Equestrian BMP Handbook	X	Handbook created in FY2014-15. Handbook will be revised in FY2016-17 to encompass additional BMPs and be more user-friendly.	N	N/A	Y
32	Require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types and pollutant generating activities, as appropriate.	●	See the comments for Strategy 30 above.	N	N/A	Y
33	Pet waste management and outreach in County Parks.	●	Mutt-mitt dispensers are installed and maintained in many County parks, providing people who are walking their dogs with waste disposal bags to use to pick up after their pets.	N	N/A	Y

Table A2-11. County of San Diego Jurisdictional Strategies and Implementation Information

	Strategies Implemented by Jurisdictions	Implemented in FY16? *(Fully/Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(If None, N/A)*	Planned Implementation into next FY *(Y/N)*
34	Implement a schedule or operation and maintenance activities for the stormwater conveyance system and related structures.	●	Stormwater maintenance is referred to appropriate departments when needed.	N	N/A	Y
35	Implement a schedule of operation and maintenance for County paved and unpaved roads.	●	County Road Crews employ a schedule for maintenance of County Roads.	N	N/A	Y
36	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	●	1. 450 Facilities throughout the County's jurisdiction received the Agricultural Water Quality Best Management Practices for Pesticides through annual registration notifications. 2. Inspections were conducted at 83 Commercial Ag Facilities throughout the County's jurisdiction.	N	N/A	Y
37	Promote and encourage implementation of designated BMPs in residential areas.	●	Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas. All Residential Management Areas were inspected in FY15-16	N	N/A	Y
38	Conduct inspections of inventoried existing development to ensure compliance	●	Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas.	N	N/A	Y
39	Conduct focused residential inspections based on strategic assessments.	●	Focused, collaborative investigations with Planning and Science staff of high priority outfalls.	N	N/A	Y
40	Develop a residential inspections tracking program via mobile platform - miles, violations, etc.	●	In pilot testing phase. Modifications are being made based on pilot testing phase to increase effectiveness.	N	N/A	Y
41	Improve inspections data tracking through mobile phone applications	●	See comments for Strategy 40 above.	N	N/A	Y
42	Enforce legal authority established for all inventoried existing development to achieve compliance	●	The Watershed Protection Ordinance provides legal authority; see JRMP for additional details.	N	N/A	Y
43	Update county ordinance related to existing development; reference to existing guidance documents	●	Watershed Protection Ordinance was updated; see JRMP for additional details.	N	N/A	N
44	Promote incentive program for BMP retrofits (e.g. water smart irrigation controllers, turf replacements programs, residential landscape evaluation program).	●	The County continues to collaborate with and promote the efforts of partner agencies' incentive programs.	N	N/A	N
45	Collaborate with partner agencies and groups to promote non-County sponsored incentive programs for BMP retrofits, including rain barrels, smart controllers, soil sensors, turf replacement, etc.	●	The County continues to collaborate with and promote the efforts of partner agencies' incentive programs.	N	N/A	Y
46	Identify candidate areas of existing development for stream, channel, and/or habitat rehabilitation projects and facilitate implementation of such projects.	●	N/A	N	N/A	N

Table A2-11. County of San Diego Jurisdictional Strategies and Implementation Information

	Strategies Implemented by Jurisdictions	Implemented in FY16? *(Fully/Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(If None, N/A)*	Planned Implementation into next FY *(Y/N)*
	Outreach and Public Participation					
47	Develop, improve, distribute outreach materials.	●	Improved outreach materials through a focused Community-based Social Marketing approach. Continual improvement of existing materials, including translation into Spanish.	N	N/A	Y
48	Give outreach presentations to elementary, middle, and high school students	●	Offer presentations to elementary, middle, and high schools serving unincorporated communities.	N	N/A	Y
49	Outreach to mobile landscaping service providers	●	Pesticide Regulation Program collaboration with the California Department of Pesticide Regulation on a pilot program to offer workshops for maintenance gardeners. Two workshops were held where attendees were provided training materials and concluded with a pesticide certification exam. Attendees at both workshops had high success rates for the exam.	N	N/A	Y
50	Conduct large residential property pet waste management outreach	X	Unable to implement due to lack of community service organization partners	N	N/A	N
51	Conduct over irrigation outreach pilot study	●	Community-based Social Marketing pilot study on the effectiveness of irrigation runoff prevention materials.	N	N/A	Y
52	Conduct Homeowners Associations Outreach and Coordination Pilot Study	◖	HOA Outreach materials in draft format. Additional development will take place in FY2016-17.	N	N/A	Y
53	Expand Homeowners Associations Outreach and Coordination based on the pilot project within San Luis Rey, San Dieguito, or San Diego River as needed and as funding is identified	X	Additional development may occur based on pilot study in FY2016-17	N	N/A	N
54	Collaborate with watershed partners to develop consistent messaging to targeted audiences such as commercial, residents to conserve water and reduce dry weather flows	●	Collaboration between the Regional Education Workgroup and Think Blue San Diego Region to develop and distribute educational materials such as the "Be the Solution to Pollution" booklet which includes irrigation and runoff reduction measures. Other items developed under this included posters, calendars and coloring books	N	N/A	Y
55	Sponsor Trash Collection Events through public outreach and participation	●	The County sponsors ILACSD to establish cleanup sites at the Coastal Cleanup Day and Creek to Bay events.	N	N/A	Y
56	Educational Workshops on Integrated Pest Management, manure management and others as needed	●	Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.	N	N/A	Y

Table A2-11. County of San Diego Jurisdictional Strategies and Implementation Information

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57	Partner with Master Gardeners Programs to provide education opportunities on water use and practices for gardening	●	Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.	N	N/A	Y
58	Conduct Effectiveness Surveys on Education & Outreach programs	●	Surveys to determine the efficacy of watershed education to unincorporated elementary, middle, and high schools serving unincorporated communities	N	N/A	Y
	Enforcement Response Plan					
59	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	●	County implemented the Enforcement Response Plan (ERP) as described in the JRMP.	N	N/A	Y
60	Notify the SDWB by email (RB9_Nonfilers@waterboards.ca.gov) within five (5) calendar days of issuing escalated enforcement to a construction site that poses a significant threat to water quality as a result of violations or other noncompliance	●	County implemented the ERP as described in the JRMP.	N	N/A	Y
61	Notify the SDWB by email (RB9_Nonfilers@waterboards.ca.gov) any persons required to obtain coverage under the statewide Industrial General Permit and Construction General Permit and failing to do so, within five (5) calendar days from the time the Copermittee become aware of the circumstances.	●	County implemented the ERP as described in the JRMP.	N	N/A	Y
	Public Education and Participation					
62	Implement a public education and participation program to promote and encourage development of programs, management practices and behaviors that reduce the discharge of pollutants in storm water prioritized by high risk behaviors, pollutants of concern, and target audiences.	●	The County completes numerous education and public participation programs for diverse target audiences. See JRMP.	N	N/A	Y

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented

Table A2-12. County of San Diego Optional Jurisdictional Strategies and Implementation Information

	Optional Strategies Implemented by Jurisdictions	Implementation Timeframe	Triggers	Resources	Triggered *(Y/N)*	Implemented in FY16 *(Fully/ Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY *(Y/N)*
Provision B.3.b.(1)(b)(i) - BMPs, incentives, or programs that may be implemented that are in addition to requirements of Provision B.3.b.(1)(a)										
1	Implement Sustainable Landscapes Program to encourage landscape retrofits.	FY 2016-17; Continuous until grant funding and incentives are depleted	Implementation of this strategy may be triggered if (1) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (2) all of the necessary resources have been secured. Continue implementation when the funding and incentives items are secured.	Staff resources, Grant funding, Incentive items, Partnerships	No	◖	Not triggered or scheduled to be implemented in FY 15-16, but guideline development and some initial outreach was completed. This work is considered partial implementation. Expanded program implementation is planned in FY 16-17.	N	N/A	Y
2	Implement an incentive program for BMP Retrofits (Public-Private Partnerships - a County sponsored program to offer incentives for rain barrel installation, downspout disconnects from the stormwater system, etc.)	FY 2015-16 Continuous, as resources allow	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Incentive items, Partnerships	No	◖	Not triggered in FY 15-16, but partially implemented. Partner agencies (water districts) offer rebates for rain barrels, and the Sustainable Landscapes program design now includes BMP retrofit components such as downspout disconnection. Free classes in landscape "makeovers" are also an incentive; a professional landscaper will assist with the development of plans, and the guidebook is grant funded (free to residents).	N	N/A	Y
3	Implement a program that provides rebates or incentives for pumping septic systems, with a focus in high risk areas adjacent to waterways (within 600 feet).	Once triggered, Pilot program 1 -2 years, as needed thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Incentive items	No	X	Funding source not identified. All 4 triggers have not been met.	N	N/A	No
4	Identify where sewer and stormwater infrastructure are in close proximity and subsequently, confirm the absence of flow at nearby stormwater MS4 outfall during dry weather.	Once triggered, 2-3 years; one-time	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	N/A, Not Triggered	N/A, Not Triggered	N		

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	Optional Strategies Implemented by Jurisdictions	Implementation Timeframe	Triggers	Resources	Triggered *(Y/N)*	Implemented in FY16 *(Fully/ Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY *(Y/N)*
5	Implement a program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.	Once triggered, 2-3 years	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) septic systems have been determined to be a pollutant sources to the MS4; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	◖	Under the Local Area Management Plan (LAMP) for onsite wastewater treatment systems the treatment systems with supplemental treatment are required to be permitted annually. The annual operating permit will define the monitoring and maintenance requirements as specified by the manufacturer and/or qualified professional who designed the system. The LAMP ordinance can be found at: http://www.sandiegocounty.gov/content/dam/sdc/deh/lwqd/RWQCB%20Approved%20LAMP%20Final%202-24-15.pdf	N	N/A	Y
6	Divert persistent dry weather flows from storm drains to sewer	Once triggered, 3-6 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) permission is granted from sewer agency; and (4) ground water or permitted discharges have been ruled out; and (5) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Engineering design, Environmental review, Permits, Ongoing funding for operation/maintenance	No	N/A, Not Triggered	Diversions are a last resort strategy and will be reviewed for outfalls that are persistently flowing after all other implementation strategies have been exhausted.	N	N/A	N
Provision B.3.b.(1)(b)(ii) - Incentives or programs that may be implemented to encourage or implement projects to retrofit areas of existing development										
7	Implement trash capture program (e.g., retrofit storm drain intakes with trash capture devices)	Baseline study 2-3 years; FY 15-16 implementation as needed and as resources allow	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) baseline study completion and success; and (4) focus areas identification; and (5) detailed inlet inventory of focus areas; and (6) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Equipment, Permits, Ongoing funding for operation/maintenance	No	◖	The County of San Diego is in process of conducting several studies to develop Baseline Trash Generation Rates.	N	N/A	Y

Table A2-12. County of San Diego Optional Jurisdictional Strategies and Implementation Information

Optional Strategies Implemented by Jurisdictions		Implementation Timeframe	Triggers	Resources	Triggered *(Y/N)*	Implemented in FY16 *(Fully/ Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY *(Y/N)*
8	Implement a Green Streets Retrofits Program	Once triggered, 3-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered on a project-by-project basis if (1) a specified interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Each green street retrofit project is preliminary estimated to cost an average of $5,500,000 per linear mile of retrofit for construction. Resources include: Staff resources, Grant funding or alternative source, Contractor funding, Engineering or landscaping design, Permits, Environmental review, Right of way acquisition, Ongoing funding for operation/maintenance	No	◖	Design standards and specifications have been developed. Green streets are now being used to meet compliance for all retrofit and/or redeveloped road projects that in the Capital Improvement Projects plan. Pursuing Grant Funding	N	N/A	Y
9	Construct Treatment Control BMPs (retrofits projects)	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Engineering or landscaping design, Permits, Environmental review, Ongoing funding for operation/maintenance	No	N/A, Not Triggered	N/A, Not Triggered	N	N/A	N

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Optional Strategies Implemented by Jurisdictions		Implementation Timeframe	Triggers	Resources	Triggered *(Y/N)*	Implemented in FY16 *(Fully/ Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY *(Y/N)*
10	Implement an alternative compliance program to enable "offsite" compliance for new and redevelopment projects.	Once triggered, 3-6 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design , Permits, Environmental review, Right of way acquisition (if needed), Ongoing funding for operation/maintenance	No	◖	Currently applicant implemented offsite alternative compliance is available for use by the development community. The Water Quality Equivalency (WQE) provides the currency for structural BMPs and some natural system management practices (NSMPs). Additional work on the WQE will be conducted during FY17. The County is not currently pursuing a credit system but is participating as a stakeholder on the City of San Diego TAC and as a member of the Western Riverside Coalition of Governments (WRCOG) discussion on offsite alternative compliance.	N	N/A	Y
Provision B.3.b.(1)(b)(iii) - Incentives or programs that may be implemented to encourage or implement projects that will rehabilitate the conditions of channels or habitats										
11	Flood Control Channel Rehabilitation Projects (e.g., removal of impervious lining in flood control channel and replacement with earthen or vegetated surface)	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (4) engineering design, monitoring, and outreach plans are approved; and (5) all of the necessary resources have been secured.	Project costs vary by size and complexity. Resources include: Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design, Permits, Environmental review, Right of way acquisition (if needed), Ongoing funding for operation/maintenance	No	◖	One project has been identified in SDR for retrofit/rehabilitation. Project planning, design and environmental review will begin in FY17.	N	N/A	Y

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Optional Strategies Implemented by Jurisdictions		Implementation Timeframe	Triggers	Resources	Triggered *(Y/N)*	Implemented in FY16 *(Fully/ Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY *(Y/N)*
12	Implement a program to remove invasive non-native plants (i.e. *Arundo*) upstream areas rivers or tributaries.	Once triggered, 1-2 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) community support and partnerships established; and (4) it has been determined that invasive plants have been found to have an impact on water quality; and (5) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	N/A, Not Triggered	N/A, Not Triggered			N
13	Habitat Restoration and rehabilitation projects in County Parks	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Restoration / Rehabilitation Designs Approved, Environmental Permits issued, CEQA / NEPA Environmental review, Ongoing funding for maintenance and monitoring	No	N/A, Not Triggered	N/A, Not Triggered	N	N/A	Y
Structural BMPs Identified in WQIPs										
14	Construct structural BMPs to reduce bacteria and other priority pollutants, as needed	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Each structural BMP project will require the following resources: Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design, Permits, Environmental review, Right of way acquisition (if needed),	No	N/A, Not Triggered	N/A, Not Triggered	N	N/A	N
21*	SDR WQIP - SDCo-R-01, wet pond/subsurface flow wetland				No	N/A, Not Triggered	N/A, Not Triggered	N	N/A	N
22	SDR WQIP - SDCo-R-02, infiltration basin				No	N/A, Not Triggered	N/A, Not Triggered	N	N/A	N
23	SDR WQIP - SDCo-R-03, enhanced constructed wetland				No	N/A, Not Triggered	N/A, Not Triggered	N	N/A	N

Table A2-12. County of San Diego Optional Jurisdictional Strategies and Implementation Information

	Optional Strategies Implemented by Jurisdictions	Implementation Timeframe	Triggers	Resources	Triggered *(Y/N)*	Implemented in FY16 *(Fully/ Partially/No)*	Comments on Implementation	Proposed Modifications *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY *(Y/N)*
24	SDR WQIP - MJ-R-01, gross solids and trash removal			Ongoing funding for operation/maintenance	No	N/A, Not Triggered	N/A, Not Triggered	N	N/A	N
25	SDR WQIP - MJ-R-02, infiltration basin				No	N/A, Not Triggered	N/A, Not Triggered	N	N/A	N

Notes:

* Optional strategies 15-20 do not apply to the San Diego River WMA and therefore are not included in this table.

● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented

3.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The County of San Diego BMP Design Manual (BMP DM) provides guidance for land development and public improvement projects to comply with the 2013 Municipal Separate Storm Sewer System (MS4) Permit (Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100). This Manual replaces County of San Diego Standard Urban Stormwater Mitigation Plan (SUSMP). It is focused on project design requirements and related post-construction requirements, not on the construction process itself. No modifications to the BMP DM have been made since its publication on February 2016. The BMP DM is available online on the County of San Diego's website:

http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html.

3.5 MODIFICATIONS TO THE JRMP

The County's Jurisdictional Runoff Management Program (JRMP) was prepared in response to new regulatory requirements adopted by the Regional Water Quality Control Board. The purpose of the JRMP document is to guide implementation of programs and strategies to reduce pollutants discharged from the County's storm drain system to receiving waters. No modifications were made to the JRMP during the 2015-2016 fiscal year. The JRMP is accessible from the Project Clean Water website at: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=105:jurmp-plan&catid=34

4 City of Santee

4.1 ANNUAL REPORT CERTIFICATION

CITY OF SANTEE

MAYOR
John W. Minto

CITY COUNCIL
Ronn Hall
Stephen Houlahan
Rob McNelis
Vacant

STATEMENT OF CERTIFICATION

SAN DIEGO RIVER WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

Executed on the 19th day of January, 2017 at the City of Santee.

Marlene D. Best

MARLENE BEST
CITY MANAGER
CITY OF SANTEE

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Rebecca Andrews
(619) 525-1392
rebecca.andrews@bbklaw.com
File No. 60139.00001

June 26, 2015

VIA U.S. MAIL

David W. Gibson
Executive Officer
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Re: Statement of Legal Authority in Compliance with San Diego Regional Water Quality Control Board Order No. R9-2013-0001

Dear Mr. Gibson:

The City of Santee ("City") hereby submits this statement in its capacity as a Co-Permittee in accordance with Provision E.1 of San Diego Regional Water Quality Control Board Order No. R9-2013-0001, National Pollution Discharge Elimination System ("NPDES") Permit and Waste Discharge Requirements for the Municipal Separate Storm Sewer Systems ("MS4") Draining the Watersheds Within the San Diego Region ("Permit").

STATEMENT OF LEGAL AUTHORITY

The undersigned attorney for the City does hereby state that the City has obtained adequate legal authority to comply with the legal requirements imposed on the City under the Permit, consistent with the requirements set forth in the regulations to the Clean Water Act, 40 CFR [Code of Federal Regulations] 122.26(d)(2)(i)(A-F), and to the extent permitted by State and Federal law and subject to the limitations on municipal action under the California and United States Constitutions. Subject to those limitations, this includes the authority to:

- Prohibit and eliminate all illicit discharges and illicit connections to its MS4 (Santee Municipal Code ("SMC"), § 13.42.060(A) [prohibition and requirement to eliminate].)

- Control the contribution of pollutants in discharges of runoff associated with industrial and construction activity to its MS4 and control the quality of runoff from industrial and construction sites, including industrial and construction sites which have coverage under the statewide General Permit for Discharges of Storm

Water Associated with Industrial Activities (Industrial General Permit) or General Permit for Discharges of Storm Water Associated with Construction Activities (Construction General Permit), as well as to those sites which do not. (SMC, §§ 13.42.095 [industrial], 13.42.090 [construction].)

- Control the discharge of spills, dumping, or disposal of materials other than storm water into its MS4. (SMC, §§ 13.42.060 [prohibition of discharge of pollutants and non-storm water], 13.42.120 [notification of spills].)

- Control through interagency agreements among Copermittees the contribution of pollutants from one portion of the MS4 to another portion of the MS4. (Gov. Code, §§ 37350, 37355 [authority to control city property by contract].)

- Control, by coordinating and cooperating with other owners of the MS4 such as Caltrans, the U.S. federal government, or sovereign Native American Tribes through interagency agreements, where possible, the contribution of pollutants from their portion of the MS4 to the portion of the MS4 within the Copermittee's jurisdiction. (Gov. Code, §§ 37350, 37355 [authority to control city property by contract].)

- Require compliance with conditions in its statutes, ordinances, permits, contracts or orders, or similar means to hold dischargers to its MS4 accountable for their contributions of pollutants and flows. (SMC, §§ 13.42.070 [discharge in violation of permit], 13.42.150 [violations constituting misdemeanors], 13.42.160 [penalties for violation], 13.42.170 [continuing violations], 13.42.200 [administrative enforcement powers].)

- Require the use of BMPs to prevent or reduce the discharge of pollutants in storm water from its MS4 to the MEP. (SMC, § 13.42.080 [BMPs required to reduce discharge of pollutants].)

- Require documentation on the effectiveness of BMPs implemented to prevent or reduce the discharge of pollutants in storm water from its MS4 to the MEP. (SMC, §§ 13.42.080 [requiring implementation and maintenance], 13.42.130 [requiring monitoring and documentation].)

- Utilize enforcement mechanisms to require compliance with its statutes, ordinances, permits, contracts, orders, or similar means. (SMC, §§ 13.42.150 [violations constituting misdemeanors], 13.42.160 [penalties for violation], 13.42.200 [administrative enforcement powers].)

- Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with its statutes, ordinances, permits, contracts, orders, or similar means and with the requirements of this Order, including the prohibition of illicit discharges and connections to its MS4; the Copermittee must also have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from industrial facilities, including construction sites, discharging into its MS4. (SMC, §§ 13.42.100 [authorizing City to inspect] 13.42.130 [authorizing City to require testing, monitoring and reporting], 13.42.140 [authorizing City to enter and inspect].)

CONCLUSION

Thank you for your attention to this matter. Please do not hesitate to contact the undersigned if you have any questions or need any additional information.

Sincerely,

Rebecca Andrews
for BEST BEST & KRIEGER LLP

60139.00001\11737911.1

4.2 ANNUAL REPORT FORM

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM FY 15/16

I. COPERMITTEE INFORMATION

Copermittee Name: City of Santee

Copermittee Primary Contact Name: Cecilia Tipton

Copermittee Primary Contact Information:
Address: 10601 Magnolia Avenue
City: Santee County: San Diego State: CA Zip: 92071
Telephone: 619-258-4100, x. 177 Fax: 619-562-9376 Email: ctipton@cityofsanteeca.gov

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	46
Number of non-storm water discharges detected by Copermittee staff or contractors	84
Number of non-storm water discharges investigated by the Copermittee	84
Number of sources of non-storm water discharges identified	129
Number of non-storm water discharges eliminated	129
Number of sources of illicit discharges or connections identified	82
Number of illicit discharges or connections eliminated	82
Number of enforcement actions issued	23
Number of escalated enforcement actions issued	7

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board? N/A	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

Number of proposed development projects in review	13
Number of Priority Development Projects in review	11
Number of Priority Development Projects approved	13
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	5

Number of completed Priority Development Projects in inventory	48
Number of high priority Priority Development Project structural BMP inspections	6
Number of Priority Development Project structural BMP violations	4
Number of enforcement actions issued	13
Number of escalated enforcement actions issued	12

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM FY 15/16

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	26
Number of active construction sites in inventory	21
Number of inactive construction sites in inventory	5
Number of construction sites closed/completed during reporting period	12
Number of construction site inspections	55
Number of construction site violations	148
Number of enforcement actions issued	18
Number of escalated enforcement actions issued	7

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	17	460	167	0
Number of existing development inspections	3	48	0	
Number of follow-up inspections	5	27		
Number of violations	0	28		
Number of enforcement actions issued	0	21		
Number of escalated enforcement actions issued	0	10		

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Cecilia Tipton	1/19/17
Signature	Date
CECILIA TIPTON	STORM WATER PROGRAM MANAGER
Print Name	Title
619-258-4100, 177	CTIPTON@CITYOFSANTEECA.GOV
Telephone Number	Email

FISCAL ANALYSIS 2015/2016

As requested in Municipal Permit (Order No. R9-2013-0001), the City of Santee has prepared the following Fiscal Analysis per section E.8.

A. In response to Permit Section E.8.b.(1): This section reports on the total expenditures in the categories of capital, operation and maintenance, and other expenditure items. Most costs are devoted to operation and maintenance (O&M) expenses, both done by City staff and through outside contracts. See Table 1 for a breakdown summary of budget and expenditures.

1. Estimated expenditures in this category (Capital, O&M, other) for the current fiscal year are: $516,645.
2. The source of funds for the current fiscal year and next fiscal year are primarily General Fund, Flood Control, and Gas Tax.

B. In response to Permit Section E.8.b.(2): This section reports on the staffing resources and expenditures required to meet the requirements of this Order. See Table 1 for a breakdown summary of budget and expenditures.

1. Estimated expenditures in this category (staffing/labor) for the current fiscal year are: $336,213.
2. The source of funds for the current fiscal year and next fiscal year are primarily General Fund, but also include other sources as identified in Table 2.

Regional programs include Copermittee shared costs for monitoring, education, and other regional expenses, as well as the Water Quality Improvement Plan.

The City anticipates using the same funding sources as shown in Table 2, along with Grant Funds received through Prop 84 and Prop 1 for 2016/17.

Table 1: 2015/2016 Estimated Expenditure Summary

Jurisdictional Components	Total
Permit Fee	$17,171
Staff Time/Labor: Development Services	$160,158
Staff Time/Labor: Public Services	$176,055
Dog Station Maintenance	$7,500
Street Sweeping (includes contractor and disposal costs)	$191,412
Storm Drain and Channel Maintenance	$213,600
Specialized Equipment (Public Services)	$3,000
Waste Disposal (volunteer river cleanups)	$6,500
Legal Expenses	$10,500
Miscellaneous Expenses (Supplies, Printing, Postage, apparel, rainy season sand bags, etc.)	$12,261
Monitoring	$49,533
Professional Development	$5,168
Jurisdictional Program Total	**$852,858**

Regional Programs Total (Santee Share)	**$98,460**

Total Program Implementation Costs **Grand Total**	**$951,318**

Table 2: 2015/2016 Funding Source Summary

Funding by Source	Amount
General Fund	$341,972*
Storm Water Business License Fee	$5,141
Administrative Citations	$14,000
Flood Control	$290,016
Gas Tax	$174,264
Total Funding	**$825,393**

** Does not include funding which is secured through developer deposits and fees.*

4.3 JURISDICTIONAL STRATEGIES

~~Strikeouts~~ and blue text are text edits that have been made up to the current date since the WQIP September 2015 submittal.

Table A2-13. City of Santee Jurisdictional Strategies and Implementation Schedules for Illicit Discharge Detection and Elimination Program

San Diego River Illicit Discharge Detection and Elimination Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Engage the public, jurisdictional staff, and other agency staff to proactively identify and report illicit discharges.					
Facilitate public reporting of illicit discharges and connections via telephone and email.	●	●	A		The City created a storm water / water quality general awareness post card and mailed it out to all postal customers in the City.
Coordination with Padre Dam Municipal Water District regarding sanitary sewer overflow notifications and cleanup.	●	●	A		
Coordinate with upstream entities to prevent illicit discharges from upstream sources from entering the MS4.	●	●	A		
Utilize municipal personnel and contractors to identify and report illicit discharges and connections.	●	●	A		Two ICID trainings were conducted which has resulted in an increase in ICID reporting by internal customers.
2. Develop and implement approaches to address the impacts of septic systems within the watershed.					
Routinely conduct river "sweeps" to address homeless encampments ~~twice per month~~.	●	●	A	The City cannot commit resources to achieve the twice per month goal.	The sheriff routinely targets and 'sweeps' problem areas and notifies the City of the timeframe in which the debris can be removed. Due to limited resources, the City is unable to meet the 2 x per month commitment. Instead, the City relies on public reporting, local volunteer groups, and the sheriff to help identify problem areas and more effectively utilize resources for encampment debris removal.

Table A2-13. City of Santee Jurisdictional Strategies and Implementation Schedules for Illicit Discharge Detection and Elimination Program

San Diego River Illicit Discharge Detection and Elimination Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Weekly patrols of known encampment areas.	●	●	A	The City cannot commit resources to achieve the weekly goal.	The sheriff routinely targets and 'sweeps' problem areas and notifies the City of the timeframe in which the debris can be removed. Due to limited resources, the City is unable to meet the 2 x per month commitment. Instead, the City relies on public reporting, local volunteer groups, and the sheriff to help identify problem areas and more effectively utilize resources for encampment debris removal.
Implement Bicycle Patrol Team in conjunction with San Diego County Sherriff's Department.	●	●	A		During this reporting cycle, the Sherriff Department acquired bicycles, trained and assigned staff, and started routine patrols.
Improved coordination between Public Works staff and San Diego County Sherriff's Department.	●	●	A		Both Departments now utilize GPS devices to share and report information.
Provide waste stations for homeless encampments (e.g., portable toilets, trash receptacles)	●	●	P		The City is evaluating viable locations for a pilot program.
Continue coordination of Enforcement Team including the Fire Marshall, Code Enforcement, Storm Water Program Manager, City Attorney, and Sherriff's Department.	●	●	A		The City initiated quarterly meetings for all parties to discuss concerns, review compliance cases, and collaborate on solutions.
3. Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.					
Coordination with Padre Dam Municipal Water District regarding sanitary sewer overflow notifications and cleanup.	●	●	A		
Revise fact sheet for sewer maintenance and coordinate distribution with Padre Dam MWD.	●	●	A		

Table A2-13. City of Santee Jurisdictional Strategies and Implementation Schedules for Illicit Discharge Detection and Elimination Program

San Diego River Illicit Discharge Detection and Elimination Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Implement practices and procedures to prevent/limit infiltration of seepage from sanitary sewers to the MS4.	●	●	P		
Implement practices and procedures to address spills with the potential to enter the MS4.	●	●	A		The City is working to improve this process through outreach, training, and through enhanced coordination with Heartland Fire and the Department of Environmental Health.
In addition to standard JRMP IDDE requirements, proactively investigate and eliminate illicit discharges and connections.	●	●	A		Increased awareness of how to identify and report IC/ID, has resulted in an increase in City staff, contractor, and partner agency reports. As a result, discharges from pools and irrigation are more frequently identified and eliminated.
4. Implement monitoring programs to provide new information to refine the prioritization of drainage areas.					
Conduct transitional MS4 outfall discharge program to identify persistent/transient flows.	●	●	A		
Conduct watershed specific MS4 outfall discharge program to identify persistent/transient flows.	●	●	A		
5. Actively educate public on prohibitions related to illicit discharges and connections.					
Investigate and eliminate illicit discharges and connections.	●	●	A		
Enforce legal authority to ensure all illicit discharges and connections that are identified are eliminated.	●	●	A		The City has and will continue to utilize its Enforcement Response Plan to escalate enforcement actions to achieve compliance in a timely manner.

Table A2-14. City of Santee Jurisdictional Strategies and Implementation Schedules for Development Planning

San Diego River Development Planning Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Provide updated materials, enhanced outreach, and training to convey land development requirements.					
Establish criteria designating priority development projects for new development and redevelopment projects.	●	●	A		
Update BMP design manual procedures to specify storm water requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria, and establish alternative compliance options (where implemented).	●	●	P		
2. Develop and implement LID programs to complement standard permit requirements.					
Require full enclosures for trash areas.	●	●	A		All new and significant redevelopment projects are now required to either retrofit existing, or install new, fully enclosed trash enclosures, with all openings / gaps screened to prevent wind dispersal. Poor waste management and repeat violations also trigger this requirement for existing development.
3. Implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation and identify a list of candidate projects that could be used as alternative compliance options for Priority Development Projects.					
Develop and implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation.	●	●	A		Developed collaboratively through a regional effort with other Copermittees.

Table A2-14. City of Santee Jurisdictional Strategies and Implementation Schedules for Development Planning

San Diego River Development Planning Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
4. Implement an alternative compliance program for Priority Development Projects.					
Implementation of an alternative compliance program will provide off-site alternatives to restore, retrofit, and rehabilitate. Prioritize areas through "hotspot" identification and those sites that are ideal for retrofit/rehabilitation.	●	●	A		The City partnered with SDSU through the SAGE program to have three separate but complimentary studies completed. One of the identified priority locations was recently submitted and awarded as a grant project.
5. Implement a post construction BMP program for development projects to ensure proper construction and maintenance.					
Implement source control, LID, and on-site structural controls for all priority development projects.	●	●	A		This strategy has been enhanced to include all development (priority and standard).
Implement a program that ensures that all structural BMPs are designed, constructed, and maintained on PDPs.	●	●	A		The City now requires the engineer of record to certify installation of all structural BMPs. This includes a signed and stamped form, along with supporting documentation (receipts, photos) demonstrating installation per specification. This also includes the final landscaping of the feature, not just the structural design and sizing.
Inspect all high priority structural BMPs prior to the rainy season.	●	●	A		

Table A2-14. City of Santee Jurisdictional Strategies and Implementation Schedules for Development Planning

San Diego River Development Planning Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
6. Enforce post construction requirements related to new and redevelopment.					
Require implementation of source control and low impact development (LID) BMPs for all development projects.	●	●	A		At a minimum, all projects, regardless of size, must disconnect impervious surfaces by routing runoff to landscape, eliminate all non-storm water runoff sources, utilize native and drought tolerant plantings, mulch, and irrigation systems, and install full trash enclosures.
Enforce legal authority to ensure all development projects are in compliance with all post construction requirements.	●	●	A		The City has and will continue to enforce the routine maintenance and upkeep of all source and structural BMPs to ensure they remain effective and operating as intended. This includes escalating enforcement actions and utilizing administrative citations to achieve compliance.

Table A2-15. City of Santee Jurisdictional Strategies and Implementation Schedules for Construction Management

San Diego River Construction Management Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Ensure that minimum BMPs are designated and required for construction projects.					
Require submittal of pollution control plan, construction BMP plan, and/or erosion and sediment control plan for projects requiring local permits involving soil disturbance activities.	●	●	A		
Review and confirm that the submitted plan is in compliance.	●	●	A		The City ensures that all projects, including interior remodel projects, demonstrate on their site plan all minimum BMPs required for the activity to be performed.
Maintain, update, and prioritize a watershed based inventory of all projects issued local permits that allow soil disturbing activities.	●	●	A		All projects disturbing soil, whether they qualify for a CGP permit or not, are now included on the City's Construction Site Inventory.
Implement or require implementation of BMPs that are site specific, seasonally appropriate, and appropriate to the construction phase year round.	●	●	A		All projects involving grading are required to attend a pre-grade meeting at City Hall. At this meeting, each project representative and contractor is provided a BMP packet, and a presentation is given highlighting key concepts such as minimum BMPs required at all times, erosion and sediment control, and the inspection – corrective action response process.
Inspect construction sites at an appropriate frequency to require and confirm compliance with local permits and ordinances, as well as the MS4 Permit requirements.	●	●	A		

San Diego River Construction Management Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Enforce legal authority to ensure inventoried construction projects are in compliance with all requirements.	●	●	A		The City has and will continue to utilize its Enforcement Response Plan to escalate enforcement actions to achieve compliance in a timely manner.
Target construction sites with increased enforcement as appropriate, especially related to trash management.	●	●	A		
2. Provide enhanced outreach and coordination to convey construction requirements.					
Provide internal staff training related to construction storm water management.	●	●	A		One construction site compliance training was held for all City Engineers.
Provide public education and outreach targeting the construction industry.	●	●	A		The City routinely emails reminders and updates to all inventoried construction sites throughout the year. The City also provides materials and verbal guidance at each pre-grade meeting. The City's web page and fact sheets have all been updated with construction outreach materials, and the City is working on creating a mock site plan with BMPs for a typical construction site.
Coordination with engineering and building inspection divisions to address SSOs caused by debris in sanitary sewer lines following new construction; review sign off procedures to ensure that debris in lines is avoided.	●	●	P		

Table A2-16. City of Santee Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Maintain and improve data tracking methods for existing development inventories where necessary.					
Maintain and update a watershed based inventory of existing development (i.e., commercial, industrial, and municipal facilities and residential areas).	●	●	P		Staff have started conducting a thorough review and cross-verification of all inventories. This includes a review of current Business Licenses.
2. Develop and implement approaches to address the impacts of improper water use and irrigation runoff.					
Coordinate with Padre Dam Municipal Water District to encourage proper enforcement of water conservation requirements.	●	●	A		Coordination has led to increased reporting/cross reporting of issues, the development of cross messaged material, and dual (combined agency) enforcement actions.
Coordinate with Padre Dam Municipal Water District to provide joint outreach to residents and businesses regarding irrigation practices.	●	●	A		New fact sheets have been created which highlight the cross benefit of water conservation, reduction of water waste, water runoff, and water quality.
Coordinate with Padre Dam Municipal Water District to increase incentive programs	●	●	A		Padre Dam shared some of their regional supplies such as the County Water Authority buckets for cross outreach. Both agencies cross promote the County Water Authority and SoCalWaterSmart for incentive programs.
Coordinate with County of San Diego to promote Sustainable Landscapes Program.	●	●	P		The City hopes to bring workshops to east county by offering City Hall as a venue for classes, coordinating with Padre Dam, and assisting with field trips.

Table A2-16. City of Santee Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Coordinate with Santee School District to improve operations and maintenance of irrigation systems at school facilities	●	●	A		The City supported the successful application for a DROPS grant for Santee Schools. The grant program involves the implementation of rain gardens, bioswales, disconnecting impervious surfaces, and rainwater harvesting. An education and outreach component is included which will teach the students about the projects and how they can be replicated at home. Additionally, through Dry Weather Monitoring, it was identified that discolored runoff was originating from one of the school track and fields. The City worked with the school district to rectify the issue.
Develop education and outreach to reduce over-irrigation.	●	●	A		
Revisions to landscape ordinance	●	●	A		Revisions to the City's Landscape Ordinance were completed this reporting year in conjunction with the drought and water conservation regulations that went into effect. The City utilized this opportunity to reinforce storm water and water quality requirements.
3. Improve and/or continue existing pet waste programs.					
Pet Waste Bag Dispenser Stations in City Parks and Residential Areas	●	●	A		The City operates and maintains over 40 dog stations. Combined, approximately 20,000 bags are dispensed each month.
4. Improve trash management strategies within the watershed.					
Develop and distribute "Keep Lids Closed" stickers for dumpsters.	●	●	P		

Table A2-16. City of Santee Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Target commercial centers for increased enforcement, especially related to trash management.	●	●	A		Several problem areas have been identified through the City's Complete Property Inspection Program. These areas have been addressed through mandatory outreach to tenants, retrofits to trash enclosures, requiring the development and submittal of a Facilities Operations and Maintenance Plan, and escalating enforcement actions.
Coordination with Santee School District for trash management.	●	●	A		
Implement a schedule of operation and maintenance for public streets, unpaved roads, paved roads, and paved highways.	●	●	P		The City will reevaluate and reprioritize its roadway maintenance program in FY17-18. The City plans include a routine assessment and maintenance plan for both private and unpaved roads.
Require sweeping and maintenance of private roads in targeted areas.	●	●	A		New developments with proposed private roads are now required to include routine street and storm drain maintenance as part of their Storm Water Quality Management Operation and Maintenance Plans. In addition, as RMA inspections are completed, should road maintenance deficiencies be identified, the City requires the community/property owner to clean their roadways and implement a routine maintenance plan.
Continue reporting and evaluating volumes of trash removed from illegal dumping activities	●	●	A		The City facilitated the removal of approximately 65,415 pounds of trash.

Table A2-16. City of Santee Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Develop outreach program similar to the "Don't Trash California" campaign, including updates to existing outreach materials.	●	●	P		
Enhance and expand trash cleanups through community-based organizations involving target audiences.	●	●	A		The City supports volunteer organizations by providing clean up materials and tools, and providing waste hauling and disposal services.
5. Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.					
Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	●	●	A		Many of the City's underground storm drain systems have been and are being relined to improve integrity.
Develop a strategy to identify and provide outreach to gray water system owners	●	●	P		
6. Improve and implement existing outreach programs to target key sources and pollutants.					
Increase seasonal specific outreach related to water use via business journals.	●	●	A		The City has initiated outreach though partnerships with the local Chamber of Commerce, and Business Associations.
Enhanced outreach to pool owners and maintenance companies - due to economic downturn, people have stopped maintaining pools, when flushed, may contain bacteria.	●	●	A		All Santee based pool maintenance providers were provided notification and outreach regarding proper maintenance and disposal practices. Outreach materials have also been provided to HOAs and the local pool supply store.
Golf Course - outreach specific to management of landscaping and water use; bio solids use as fertilizer/storage.	●	●	A		

Table A2-16. City of Santee Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
SDR Trail Expansion (City Parks) - interpretive signage; demonstration project for drought tolerant/native landscaping, permeable surfaces, and other LID.	●	●	P		
Improve consistency and content of websites to highlight enforceable conditions and reporting methods.	●	●	A		All Storm Water Program web pages have been refreshed with new content, more tools and resources.
Enhance school and recreation-based education and outreach.	●	●	A		The City has partnered with several of the Santee schools to provide presentation, provide outreach materials such as calendars and coloring books, and cohosted a 4th grade field trip to the Sand Diego River. In addition, the City requires that permitted use special events complete and submit both pre and post event inspections to ensure that BMPs are put into place, and the site is cleaned to pre-event conditions. The City required this documentation for 7 City events and 3 private events.
7. Enhance existing MS4 maintenance programs.					
Prioritized MS4 cleaning program based on land use density and traffic flows.	●	●	P		The City plans to reevaluate and reprioritize the MS4 maintenance program in FY17-18.
Investigate potential to use ultra-violet lights in the MS4.	●	●	P		The City will research and identify opportunities to implement UV on a pilot project, as funding allows.
Implement invasive species removal projects in coordination with San Diego River Conservancy.	●	●	A		

Table A2-16. City of Santee Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
8. Improve existing inspections programs to more efficiently target key sources.					
Prioritize residential management areas for focused inspections.	●	●	A		RMAs have been prioritized based on their proximity to pollutant hot spots.
Provide or expand targeted outreach to homeowners associations.	●	●	P		
Provide targeted outreach via printed materials to residential areas.	●	●	A		In preparation for an anticipated El Nino rainy season, the City mailed out 1,115 notification letters were sent to private property owners explaining the importance of maintaining their private drainage systems, including brow ditches and swales.
Conduct inspections of inventoried existing development to ensure compliance. Each area/activity inspected once every five years minimum, with equivalent of 20% of inventory inspected annually.	●	●	A		
Complete property inspection program	●	●	A		Complete property inspections have commenced at locations directly tributary to a known pollutant 'Hot Spot'.
9. Actively enforce stormwater and urban runoff requirements for existing development.					
Designate and require minimum set of BMPs required for all inventoried existing development.	●	●	A		This was strategy is complete. A new fact sheet has been created, and minimum conditions of approval have been developed.
Increase identification and enforcement of actionable erosion and slope stabilization issues on private property and require stabilization and repair.	●	●	A		

Table A2-16. City of Santee Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Enforce legal authority to ensure inventoried existing development facilities and/or areas are in compliance with all requirements.	●	●	A		
10. Identify and facilitate retrofit opportunities in areas of existing development.					
Develop a strategy to identify opportunities and facilitate the implementation of retrofit projects in areas of existing development.	●	●	A		This strategy was initiated through the partnership with SDSU. To date, efforts have led to the successful award of a grant project, and the incorporation of water quality improvements into existing (pre-planned) Capital Improvement Projects.
Implement green streets depending on WMAA results.	●	●	P		Although a plan is not currently in place, one pilot project was completed as part of the Prospect Avenue Corridor enhancement project.
Coordinate with Padre Dam Municipal Water District to increase incentive programs	●	●	P		The City looks forward to partnering on a rain barrel incentive program.
Coordinate with County of San Diego to promote Sustainable Landscapes Program.	●	●	P		

Table A2-16. City of Santee Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies City of Santee	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
11. Improve coordination between agencies.					
Increased public outreach through external professional organizations (e.g., APWA, ASCE, Chamber of Commerce) - leveraging groups/contacts/newsletter.	●	●	A		The Storm Water Program has forged relationships with the Santee Chamber of Commerce and the East County Manufacturing Association to participate in events, share materials, and provide news article content.
Coordinate with Padre Dam Municipal Water District to encourage proper enforcement of water conservation requirements.	●	●	A		Although the drought alert level has lowered, the City has worked with Padre Dam to cross post information about water conservation and water quality. Both agencies now cross refer citizen complaints/reports as applicable.
Coordinate with Padre Dam Municipal Water District to provide joint outreach to residents and businesses regarding irrigation practices.	●	●	P		
Coordinate with Padre Dam Municipal Water District to increase incentive programs.	●	●	P		The City is planning to partner with Padre Dam to host a rain barrel sales event.
Coordinate with County of San Diego to promote Sustainable Landscapes Program.	●	●	P		

Table A2-17. City of Santee Optional Jurisdictional Strategies and Implementation Schedules

San Diego River Optional Jurisdictional Strategies	Implementation Timeframe	FY15-16	FY16-17	Actual / Planned	Comments
Maintain MS4 map to facilitate implementation of the IDDE Program; add private drainages	FY 15-16 FY 16-17	◖	◖	A	The City has updated its MS4 map. Through a partnership with SDSU, the City has begun identifying and adding private drainage systems to the City's MS4 map and GIS files. To date, efforts have been focused on collecting data in the city's center, where the heart of development is.
Implement Alternative Compliance Program for Priority Development Projects to encourage rehabilitation.	2017-2020	NA	◖	P	The City has and will continue participating in the development of a regional alternative compliance program in partnership with the region's Copermittees. Through a partnership with SDSU, the City has completed an initial review, evaluation, and prioritization of potential candidate sites for off-site improvement projects.
Implement a Green Streets (aka Complete Streets) Program	2017-2020	NA	X	P	The City has implemented one green street as a part of the planned improvements to Prospect Avenue. The City will begin developing strategies to incorporate green streets to its existing Capital Improvement Program in FY2017-2018.

San Diego River Optional Jurisdictional Strategies	Implementation Timeframe	FY15-16	FY16-17	Actual / Planned	Comments
Update standard Conditions of Approval to require all non-PDP redevelopment sites as well as significant tenant improvements to retrofit the entire property to incorporate minimum trash controls (fully covered/contained trash enclosure, inlet retrofits/trash baskets, etc.) and redirecting runoff to pervious areas.	2016-2018	●	●	A	The City has begun implementing this strategy with successful implementation at more than four locations thus far.

Notes:

● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented, NA – Not Applicable

A – Actual (active implementation), P – Planned (planning stage)

4.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

The City of Santee BMP Design Manual provides guidance for land development and public improvement projects to comply with relevant development planning requirements in the Municipal Permit. The City of Santee updated its BMP Design Manual in accordance with Municipal Permit requirements in February 2016; the BMP Design Manual replaced the Standard Urban Stormwater Mitigation Plan (SUSMP). Over the first year of implementation, the City has found clerical errors, formatting errors, and has updated the forms to combined submittals in a form-fillable format. No content changes to the BMP Design Manual have been made since it went into effect in February 2016. The City of Santee BMP Design Manual can be accessed at: www.SanteeH2o.org via the "Development Planning Can Protect Water Quality" link in the left menu bar or via the "New Development" link at the bottom of the page.

4.5 MODIFICATIONS TO THE JRMP

The City made some minor editorial clarifications to its JRMP during the 2015-2016 fiscal year. A copy of the JRMP can be obtained by calling 619-258-4100, x 177.

5 City of San Diego

5.1 ANNUAL REPORT CERTIFICATION

THE CITY OF SAN DIEGO

STATEMENT OF CERTIFICATION

San Diego River Watershed Management Area Water Quality Improvement Plan

2015-2016 Annual Report

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Drew Kleis
Deputy Director
Transportation & Storm Water Department

1/12/17
Date

Transportation & Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 23[illegible] Fax (858) 541-4350

CITY OF SAN DIEGO

SCOTT CHADWICK
CHIEF OPERATING OFFICER

January 27, 2017

Mr. David W. Gibson, Executive Officer
Regional Water Quality Control Board
San Diego Region
2375 Northside Drive, Suite 100
San Diego, CA 92108

Subject: Certification of Adequate Legal Authority

Dear Mr. Gibson:

Pursuant to San Diego Regional Water Quality Control Board Order No. R9-2013-0001, as amended by Order No. R9-2015-0100 (Municipal Permit or Permit), Provision E.1.b, the City of San Diego, as a Copermittee in the above referenced permit, submits this certification of adequate legal authority with the first Water Quality Improvement Plan Annual Report. The City has adequate legal authority to implement and enforce each requirement contained in 40 C.F.R. section 122.26(d)(2)(i)(A)-(F), and the Municipal Permit (including Provision E.1.a(1)-(10)). The San Diego Municipal Code, including the following provisions, provides the City with adequate legal authority as required by the Municipal Permit:

1. Storm Water Management and Discharge Control, sections 43.0301 through 43.0312. These provisions are being amended, although the current version also complies with the requirements of the Municipal Permit.
2. General Construction Permit Authority and Procedures, sections 129.0101 through 129.0120.
3. Grading Regulations, sections 142.0101 through 142.0150.
4. Storm Water Runoff Control and Drainage Regulations, sections 142.0201 through 142.0230.

The City looks forward to working with you and the Regional Board on storm water management matters. If you have any questions, please contact Senior Planner Jim Harry at (858) 541-4353 or email JHarry@sandiego.gov.

Sincerely,

Scott Chadwick
Chief Operating Officer

AK/jph

202 C Street, MS 9A • San Diego, California 92101 • Tel (619) 236-5587

cc: Mara Elliott, City Attorney, Office of the City Attorney
Stephen Puetz, Chief of Staff, Office of the Mayor
Stacey LoMedico, Assistant Chief Operating Officer
Mike Hansen, Deputy Chief of Staff and Chief of Policy, Office of the Mayor
Paz Gomez, Deputy Chief Operating Officer, Infrastructure/Public Works
Alejandra Gavaldon, Director of Federal Government Affairs & Water Policy, Office of the Mayor
Kris McFadden, Director, Transportation & Storm Water Department
Drew Kleis, Deputy Director, Transportation & Storm Water Department
Davin Widgerow, Deputy City Attorney, Office of the City Attorney
Clem Brown, Program Manager, Transportation & Storm Water Department
Ruth Kolb, Program Manager, Transportation & Storm Water Department
Jim Harry, Senior Planner, Transportation & Storm Water Department

5.2 ANNUAL REPORT FORM

I. COPERMITTEE INFORMATION			
Copermittee Name: **City of San Diego (San Diego River WMA)**			
Copermittee Primary Contact Name: **Drew Kleis, Deputy Director, Storm Water Division, Transportation & Storm Water Department**			
Copermittee Primary Contact Information: Address: **9370 Chesapeake Drive, Suite 100** City: **San Diego**	County: **San Diego**	State: **CA**	Zip: **92123**
Telephone: **858-541-4320**	Fax: **858-541-4350**	Email: **Akleis@sandiego.gov**	

II. LEGAL AUTHORITY		
Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE		
Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES[1]	☒
	NO	☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM[2]		
Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐

Number of non-storm water discharges reported by the public	**368**
Number of non-storm water discharges detected by Copermittee staff or contractors	**314**
Number of non-storm water discharges investigated by the Copermittee	**683**
Number of sources of non-storm water discharges identified	**559**
Number of non-storm water discharges eliminated	**553**
Number of sources of illicit discharges or connections identified	**551**
Number of illicit discharges or connections eliminated	**545[3]**
Number of enforcement actions issued	**553[3]**
Number of escalated enforcement actions issued	**349**

V. DEVELOPMENT PLANNING PROGRAM[2]		
Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES[1]	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES[4]	☒
	NO	☐

Number of proposed development projects in review	**233[5]**
Number of Priority Development Projects in review	**21[6]**
Number of Priority Development Projects approved	**61[7]**
Number of approved Priority Development Projects exempt from any BMP requirements	**0**
Number of approved Priority Development Projects allowed alternative compliance	**0**
Number of Priority Development Projects granted occupancy	**32[8]**

Number of completed Priority Development Projects in inventory	**113[9]**
Number of high priority Priority Development Project structural BMP inspections	**1**
Number of Priority Development Project structural BMP violations	**1[10]**
Number of enforcement actions issued	**3[11]**
Number of escalated enforcement actions issued	**1**

VI. CONSTRUCTION MANAGEMENT PROGRAM[2]

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES[1,12] ☒ NO ☐

Number of construction sites in inventory	1,830
Number of active construction sites in inventory	38
Number of inactive construction sites in inventory	188
Number of construction sites closed/completed during reporting period	258
Number of construction site inspections	8,875
Number of construction site violations	78
Number of enforcement actions issued	51
Number of escalated enforcement actions issued	25

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM[2]

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	121	10,175 (includes mobile)	513	33[13]
Number of existing development inspections	114	2,573	99	5[13]
Number of follow-up inspections	0	193	5	4
Number of violations	10	420	11	481[13]
Number of enforcement actions issued	16	514	13	365[13]
Number of escalated enforcement actions issued	0	172	0	236

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES[1,14] ☒ NO ☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Date: 11/12/17
Drew Kleis Print Name	Deputy Director Title
(858) 541-4320 Telephone Number	Akleis@sandiego.gov Email

[1] The City of San Diego approved an update to the Jurisdictional Runoff Management Plan (JRMP) in FY 16. The update of the JRMP was done in compliance with Order No. R9-2013-0001.
[2] See the JRMP Annual Report FY 2016 Attachment 1 for a citywide summary of this data.
[3] The number of enforcement actions issued does not equal the number of identified illicit discharges or connections because some discharge complaints in the last quarter of FY 2016 were still under investigation at the end of FY 2016.
[4] The Storm Water Standards Manual (Part 1: BMP Design Manual, and Part 2: Construction BMP Standards) was updated in January 2016.
[5] The number of ongoing Standard and Priority Development Projects in review as of 6/30/16. The Development Services Department processes other types of permits, in addition to those included in the JRMP Annual Report, that are not subject to the requirements of the municipal permit.
[6] The number of ongoing Priority Development Projects in review as of 6/30/16. Only a portion of the projects that the Development Services Department processes qualify as a priority development project.
[7] The number of Priority Development Projects approved in FY 2016.
[8] This number includes the City's Priority Development Projects that received final inspection in FY 2016 as well as certain Priority Development buildings and grading projects that did not require a Certificate of Occupancy, that were completed in FY 2016.
[9] Represents the total number of completed Priority Development Projects in the City's inventory as of the end of FY 2016. These projects include projects entered into the inventory as complete in previous years.
[10] The number of Priority Development Project structural BMP violations included Notices of Violation, Notices of Deficient Maintenance, and Administrative Citations issued to public and private entities within the City's jurisdiction in this watershed.
[11] The number of enforcement actions included Notices of Violation and Notices of Deficient Maintenance issued to public and private entities within the City's jurisdiction in this watershed. The City has achieved compliance at 146 of the 150 sites identified in the San Diego RWQCB's Notice of Violation (Order Number R9-2014-0034). The San Diego RWQCB granted the City an extension to achieve compliance at the remaining four sites by May 26, 2017.
During the process of achieving compliance for the aforementioned 150 identified sites, the City has discovered an additional 74 sites which initially appear to be out of compliance due to varying degrees of circumstances. Each of these potential violations consist of post-construction BMP issues. Continuing the same process as outlined in our quarterly reports to the RWQCB, the City is currently researching each case. After initial research to verify non-compliance or not, we will follow our established procedures to have each site be in conformance to the MS4 permit under which it was permitted.
[12] Responses in this report are based on the City's internal data. Potential program deficiencies were identified by the Board in FY 2016, however, the City has taken steps to correct issues identified by the Board as detailed in the JRMP Annual Report FY 2016 Appendix. The City has implemented several improvements that address the Regional Board's concerns. These improvements ranged from procedural changes to creating multi-language brochures for contractors. Several operating and internal procedures have been refined to improve enforcement actions, add clarity to how sites are inspected, and to better define the staff's roles and expectations.
[13] Existing facilities for residential uses are characterized as Residential Management Areas (RMA), which could include hundreds of residences. When all of the residences in an RMA are inspected by City staff that is only counted as one inspection. However, all individual issues noted at each residence during an RMA inspection is counted as a separate violation and/or enforcement action.
[14] See the JRMP Annual Report FY 2016 Appendix for the FY 2016 Fiscal Analysis.

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The City of
SAN DIEGO
Development Services Department
Engineering Division

January 12, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Development Services Department Engineering Division Contributions

Please accept this letter as certification of the City of San Diego Development Services Department Engineering Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Edric Doringo, Program Manager at 619-446-5098 or email edoringo@sandiego.gov.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Development Services Department, Engineering Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

Gregory Hopkins

Gregory Hopkins
Deputy Director, Development Services Department

GH/cmm

Enclosure:
cc: Robert Vacchi, Director, Development Services Department
Drew Kleis, Deputy Director, Transportation and Storm Water Department

1222 First Avenue, M.S. 501
San Diego, CA 92101-4155

T (619) 446-5291

The City of
SAN DIEGO

Development Services Department
Inspection Services Division

January 24, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Development Services Department Inspection Services Division Contributions

Please accept this letter as certification of the City of San Diego Development Services Department Inspection Services Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Senior Inspector Sam Lindsey or Project Manager Xavier Del Valle at (858) 492-5070.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Development Services Department, Inspection Services Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

William Barrañón
Inspection Services Manager

The City of
SAN DIEGO
Public Works Department
Construction Management and Field Services Division

November 3, 2016

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Public Works Department, Construction Management and Field Services Division Contributions

Please accept this letter as certification of the City of San Diego Public Works Department Construction Management and Field Services Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Julie Ballesteros, Senior Civil Engineer, at (858) 573-5012.

I certify under penalty of law that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Public Works Department Field Engineering Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Myrna M. Dayton, PE, QSP, QSD, DCE
Deputy Director

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THE CITY OF SAN DIEGO

January 30, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Public Works Department, Project Implementation Division Contributions

Please accept this letter as certification of the City of San Diego Public Works Department, Project Implementation Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Catherine Dungca, Senior Civil Engineer, at (619) 533-3778.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Public Works Department, Project Implementation Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

Marnell Gibson
Assistant Director
Public Works Department

APPENDIX

1 OPERATIONAL ADAPTIVE MANAGEMENT

In Fiscal Year (FY) 2016 the City of San Diego (City) completed technical and non-technical monitoring, special studies, pilot studies, and various other efforts related to its Storm Water Program. The City gained valuable information that led to effective adaptation of procedures and operations, which ultimately led to more effective implementation of its Storm Water Program and the Jurisdictional Runoff Management Plan (JRMP). The following are operational adaptive management improvements that the City made during FY 2016:

- **Get it Done Application**
  In late FY 2016, the City released the Get it Done Application (App), which provides a modern, efficient method for members of the public to report issues to the City. One of the App's features allows illicit discharges to be reported by taking a photo with a phone that includes Global Positioning System (GPS) coordinates, and uploading it to the App. According to a recent City survey, 83 percent of respondents stated that they did not want to call the City government to report a problem. The new Get It Done App eliminates the need to call the City for various problems, by allowing residents to report issues online, which was the preferred method of 50 percent of survey respondents. The App also allows residents to report problems using their name or anonymously.

- **Phase V Street Sweeping Pilot**
  The City completed the fifth and final pilot study of the Targeted Aggressive Street Sweeping Pilot Program in FY 2016, which tested the effectiveness of posting limited-hour "no parking" signs on traditionally non-posted street sweeping routes. After two years of data collection on two subject routes, the study confirmed the hypothesis that a significant amount of additional debris (48% and 58% over baseline on the subject routes) can be removed from posting no parking signs on traditionally non-posted roadways. Based on this finding, the City will consider posting additional routes if supported by the community.

- **Enhanced Catch Basin Cleaning Optimization**
  Enhanced catch basin cleaning is a strategy to address pollutant removal from the Municipal Separate Storm Sewer System (MS4) in three of the City's six watersheds. While most catch basins are inspected once per year, this strategy involves inspecting catch basins within the specified watersheds between two and four times per year. The optimization study assigned priorities to individual basins and watersheds based on eight years of historic debris removal. This optimization focused efforts by reducing the number of inspections performed per year, while increasing total debris removal from those inspections. This enhancement will allow the City to target high priority drains to maximize pollutant removal while maintaining cost efficiencies. In FY 2016, approximately 2,500 additional catch basin inspections and cleanings (if necessary) were completed in the Chollas Creek area of the San Diego Bay Watershed.

- **Flood Control Pump Stations**
  To help minimize the risk of flooding in flood-prone areas during storm events, the City utilizes a number of pump stations to increase the flow of water through the conveyance network. Considering the pump stations are connected to the electric network, they only

function when power is running. In FY 2016, a 2,400 volt automatic transfer switch and generator were installed at a critical pump station that are capable of pumping 130,000 gallons of water per minute. This significantly decreases the risk of flooding in the related drainage area because the pump station will continue to operate during a storm event. The City also replaced or refurbished 11 other critical pump stations. Additionally, the City modernized operations at 14 pump stations by installing a telemetry system that remotely alerts staff of failures, allowing for a more immediate response.

- **Storm Drain Inspections**
  To help prioritize replacement of corrugated metal piping in the City's conveyance network, the City used closed-circuit televising at 62 locations in FY 2016 to assess pipe conditions. The City assessed the condition of 28,000 linear feet of corrugated metal piping in FY 2016.

- **Property-Based Inspections**
  In FY 2016, the City further committed to implementing property-based inspections to increase the business inspection program's efficiency and effectiveness. A previously conducted pilot study on inspection practices found property-based inspections more effective at identifying and resolving water quality issues (e.g., improper trash disposal practices and irrigation runoff, etc.) associated with commercial and industrial businesses. The inspections are focused on areas and activities associated with businesses that would not otherwise be inspected for storm water compliance. The inspections greatly increase the number of businesses subjected to storm water inspections while focusing on the pollution generating areas and activities without unduly increasing the inspection load of City inspectors. In FY 2016, the City performed 835 property-based inspections that accounted for over 4,700 business inspections.

- **Tiger Team**
  The Tiger Team was established in FY 2016 to identify, locate and eliminate sources of human specific bacteria sources in the MS4. The Transportation & Storm Water Department (TSW) leads this effort in partnership with the Public Utilities Department. After a specific portion of the MS4 with elevated human specific bacteria was identified, the Tiger Team performed escalated enforcement activities through TSW Code Enforcement, MS4 sampling, MS4 sanitary sewer line televising, and MS4 and sanitary sewer cleaning. Over several months during the reporting year, one problem area within the City was investigated extensively and a source of human specific bacteria in the MS4 was identified and abated.

- **Increased Non-Stormwater Discharge Investigations**
  The City received 215 more complaints of non-stormwater discharges in FY 2016. Approximately 81% of the complaints citywide were resolved. A majority of the investigations that were resolved involved irrigation runoff. Cases were unresolved either because the source could not be identified or the source was groundwater.

  The identification and elimination of irrigation efforts in FY 2016 involved the following:
  1) Special irrigation patrols were conducted on a monthly basis. All violating properties were issued notices of violation and/or a citation.
  2) TSW code compliance partnered with the Public Utilities Department. If a complaint of irrigation with runoff was received, a storm water code compliance officer would issue a notice of violation. If the property had multiple complaints,

that property would become part of an irrigation patrol and could result in a citation.

- **Waterways Maintenance Plan**
  The City began development of the Waterways Maintenance Plan in FY 2016, which will replace the Master Storm Water System Maintenance Program, which expires in 2018. The goals of the Plan are to create an overall holistic storm water management strategy with standard mitigation measures and streamlined maintenance approvals. Objectives of the Plan include flood risk reduction, infrastructure sustainability and resource protection and restoration. In addition to technical scoring criteria, the Plan also includes a unique public input metric so that public concerns are given a tangible value. Planning efforts will continue in FY 2017, with implementation beginning in FY 2019.

- **Off-Site Alternative Compliance Program**
  In FY 2016, the City implemented phase I of the Alternative Compliance Program. This gives development projects that would require on-site structural Best Management Practices (BMPs) to comply with pollutant control and hydromodification management the option to propose off-site alternative compliance projects. The development of phase II also began in FY 2016 and includes establishing an in-lieu fee structure and credit system as an alternative to installing on-site stormwater BMPs.

- **Watershed Master Planning**
  To provide the high-resolution data needed to drive systematic and cost-effective implementation of green infrastructure (GI) projects, the City has developed a comprehensive and dynamic Watershed Master Plan (WMP) in the Chollas Creek Watershed that quantifies progress towards water quality goals and incorporates synergies with other municipal programs. The WMP has the capability to dynamically assess the cost-based water quality benefits of specific GI projects against one another and incorporates a robust prioritization logic that realizes the complex nature of implementing retrofit GI facilities within a highly urbanized environment. Ultimately, the output of this project gives the City a project-by-project roadmap that is prioritized to implement high-impact and high-efficiency BMPs first, leaving less desirable projects for later implementation.

- **Bacteria Regrowth Study**
  The bacteria regrowth study currently being completed by the City includes monitoring to characterize the magnitude and extent of potential *Enterococcus* loading due to regrowth within the City's storm drain system. This study will quantify the amount of bacteria in receiving water samples that are harmless to humans and would potentially be used to refine bacteria water quality standards of the Bacteria TMDL as a part of the re-opener process.

- **Los Peñasquitos Lagoon Restoration Project**
  Modeling was completed in FY 2016 to confirm the preferred alternative for the Los Peñasquitos Lagoon Restoration project. The City was identified as the "lead" for the project. The upcoming tasks in FY 2017 include completing the concept design and starting the public outreach process. In coordination with Copermittees, Caltrans and SANDAG completed the environmental and construction phases for various rail and transit, highway, and environmental protection projects.

2 STORMWATER PROGRAM ACCOMPLISHMENTS/NOTABLE UPDATES

The City continued to implement the key elements of the JRMP. The following are stormwater accomplishments and notable updates that occurred during the FY 2016 reporting period.

- **Water Quality Improvement Plans**

  In FY 2016, the San Diego Regional Water Quality Control Board (Regional Board) accepted the six Water Quality Improvement Plans (WQIPs) that included City jurisdiction. The goal of the WQIPs is to protect, preserve, enhance, and restore the water quality of receiving water bodies. These WQIPs identify the adaptive planning and management process necessary to address the highest priority water quality conditions within a watershed. The WQIPs also identify strategies to achieve improvements in the quality of discharges from the Responsible Agencies' storm drain systems. The City is the lead on the WQIP for the San Dieguito, Los Penasquitos, and Mission Bay watersheds. The City is also a participating agency in the San Diego River, San Diego Bay, and Tijuana River watersheds.

- **JRMP Refinements**

  In FY 2016, the City identified refinements to the JRMP. These refinements were incorporated into the JRMP and will be completed in mid FY 2017. Refinements included minor changes to text to update the discussions of WQIP strategies, updates to the fiscal analysis, updates to the minimum BMPs to address pesticide applications, and updated references to the Storm Water Standards Manual that was adopted in FY 2016. The updated JRMP can be viewed at https://www.sandiego.gov/stormwater/plansreports/jrmp.

- **General Plan and Community Plan Amendments**

  Southeastern San Diego and Encanto Neighborhoods Community Plan Updates:

  The recently adopted Southeastern San Diego and Encanto Neighborhoods Community Plans incorporate language, policies and recommendations concerning the reduction of urban runoff and storm water quality. Stormwater quality plays a significant role in both of these communities since Chollas Creek is a significant feature within both plan areas lead directly to the San Diego Bay. A primary recommendation in both community plans is the restoration and enhancement of the creek, consistent with the Chollas Creek Enhancement Program, which includes the reduction of pollutants that enter the storm water system from nearby uses (see respective Conservation Elements). Specific stormwater language and policies have been adopted for the newly updated Southeastern San Diego and Encanto Neighborhoods Community Plans (adopted October 2015 by City Council).

The following policies have been adopted and will be used to implement BMPs for new development projects in Encanto as an example:

- PLU-53:
    - Facilitate urban gardening as a strategy for creating local healthy food systems and fighting chronic obesity related illnesses, contributing to stormwater retention, and fostering community interaction;
    - Figure 3-4 in the Southeastern San Diego and Encanto Neighborhoods Community Plan illustrates stormwater treatment for streets;
    - Images on page 4-15 in the Southeastern San Diego Encanto Neighborhoods Community Plan illustrate stormwater treatment images;

- P-UD-88: Utilize permeable paving, bioswales, green alleys and/or other stormwater design features that will manage rain water and irrigation runoff while supporting the heavy load vehicles that would service the loading docks and refuse containers;

- Upgrade infrastructure for water and sewer facilities and institute a program to clean the storm drain system prior to the rainy season.

- Install infrastructure that includes components to capture, minimize, and/or prevent pollutants in urban runoff from reaching San Diego Bay and Chollas Creek. (See also Urban Runoff Management in the Conservation and Sustainability Element.)

- P-RE-20: Require that all stormwater and urban runoff drainage be filtered or treated before entering into open space lands.

Draft North Park Community Plan: The draft North Park Community Plan, scheduled to be adopted by City Council in October 2016, also contains specific Stormwater and BMP language in the Conservation Element of the Community Plan as well as in the appendices. The draft North Park Community Plan incorporates language, policies and recommendations concerning the reduction of urban runoff and storm water quality specifically in relation to tree planting as well as "Green Streets". Specific policies include:

- PF-1.15 Implement water improvements programs so there are systematic improvements and gradual replacement of water and wastewater facilities throughout the community. Also see General Plan PF-F.6 PF-G.2, PFH. 3, and PF-I.1.
    - Implement Green Infrastructure strategies to address storm water runoff throughout North Park.

- SE-3.17 Encourage property owners to design or retrofit landscaped or impervious areas to better capture stormwater runoff.

Draft Uptown and Golden Hill Community Plans: Public review drafts of the community plans for Uptown and Golden Hill plan updates were made available for public review in June 2016. The Conservation Elements of the draft community plans address conservation of the natural resources in each community, including open space, natural habitats, canyon sewer maintenance, and management of water resources and

urban runoff. The Public Facilities, Services and Safety Elements also address water, sewer and stormwater infrastructure. The discussion and policies related to these topics are intended to guide sustainable development practices that will minimize ecological footprints within each community and preserve natural features and resources. The Draft Programmatic Environmental Impact Reports were released in the summer of 2016. Adoption of the community plans are anticipated at the end of 2016.

San Ysidro Community Plan Update: A comprehensive community plan update started in San Ysidro in June of 2010 and aims to reflect the current conditions, improve mobility, include the pedestrian environment, and address quality of life issues. A Community Plan Update Stakeholders Advisory Committee (Advisory Committee) was established as part of the plan update effort and consists of diverse representation from the residents, property owners, various business interests, local community organizations, and not-for-profit groups, and participating public agencies within the plan update boundary. The San Ysidro Community Planning Group, which provides City decision-makers with input and recommendations regarding land use plans and development proposals within the San Ysidro plan boundary, makes up the majority of the Advisory Committee members. The Plan update effort is informed by technical studies and the City's 2008 General Plan which promotes current storm water, urban runoff, and water conservation policies. A discussion draft of the plan was released in June 2014 and a public review draft was released in April 2015 and 2016. The plan includes a Conservation Element as well as a Public Facilities Services and Safety Element, and contains specific policies related to reducing storm water runoff in the San Ysidro Community planning area. The plan is anticipated to be adopted in fall 2016.

- **Notices of Violation**

Treatment Control BMPs Notice of Violation: The City has achieved compliance at 146 of the 150 sites identified in the Regional Board's Notice of Violation (Order Number R9-2014-0034). The Regional Board granted the City an extension to achieve compliance at the remaining four sites by May 26, 2017.

During the process of achieving compliance for the aforementioned 150 identified sites, the City has discovered an additional 74 sites which initially appear to be out of compliance due to varying degrees of circumstances. Each of these potential violations consist of post-construction BMP issues. The City is continuing the same process outlined in its quarterly reports to the Regional Board, and is researching each case. After initial research to verify non-compliance or not, the City will follow its established procedures to achieve compliance at each site as required by the MS4 permit that it was permitted.

Administrative Civil Liability Complaint: The Regional Board conducted an audit of the City's construction management program during the 2014-2015 rainy season, and issued an Administrative Civil Liability Complaint in July 2016 for several alleged violations involving the City's construction oversight and enforcement practices. The City has worked diligently to address their initial concerns, and will continue to evaluate and implement strategies to ensure long-term success.

Since 2011, there has been a steady increase in the number of construction projects citywide. This surge in activity required the City to respond in a manner that would

enable the staff to keep up with the demand and allow the managers to effectively oversee the growth.

Several substantial improvements have been made, ranging from updating our standard procedures and increasing our outreach efforts to improving the City's escalating enforcement practices and issuing Administrative Citations and Administrative Civil Penalties to repeat offenders. In addition, the City established bi-weekly coordination meetings with the Storm Water teams from Public Works, Development Services and TSW to more effectively share up-to-date project information, discuss various strategies, collaborate on solutions, and coordinate enforcement on a more routine basis so that escalated enforcement is effective.

Another significant improvement involves the development of a unified storm water enforcement database. This will ensure collaboration between Resident Engineers (RE) and storm water inspectors while in the field so they will know the full inspection and enforcement history prior to entering a site. This resource is expected to be available in FY 2017.

Updating the Storm Water Standards Manual is another milestone improvement that was completed during FY 2016. The additional clarity that's now provided in the Construction BMP Standards section (Part 2) gives the responsible party increased guidance to help prevent construction activities from adversely impacting water quality downstream.

The frequency of the citywide storm water training has increased and proven to be a key factor in equipping and empowering our staff to properly address various field challenges and confidently communicate concerns and violations to the responsible parties. Some of the trainings included mandatory annual storm water training for the REs, Inspectors and Code Enforcement Officers, as well as training for our operations staff from the Public Utilities Department and TSW Streets Division.

3 FISCAL ANALYSIS

3.1 GENERAL BUDGET INFORMATION

The Storm Water Division is responsible for reporting annually on the jurisdictional, watershed and regional fiscal analyses to the Regional Board in accordance with the regional Fiscal Analysis Method developed by the Copermittees in response to Regional Board Order No. R9-2007-0001 (2007 Permit). During the reporting period, the Storm Water Division collected and analyzed financial information from 23 City departments/divisions through its "Annual Report Form" questionnaire, as well as from within the Storm Water Division. A summary of the findings is included below.

FY 2016 fell within the transitional period, as defined under Regional Board Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 (Municipal Permit). During the transitional period, most of the jurisdictional portions of the City's program continue to follow the requirements of the 2007 Permit, while the JRMP and WQIPs were being developed in response to the current Municipal Permit. The WQIPs were approved by the Regional Board at the end of FY 2016. The expenditures described for FY 2015 therefore reflect costs to comply with the transitional period stormwater requirements in effect during FY 2015, which are a combination of 2007 Permit and current Municipal Permit standards. Since the WQIPs were approved during FY 2016, partial implementation began, but full implementation will commence in FY 2017.

It is expected that the City will begin full implementation of current Municipal Permit requirements during FY 2017. The City will implement the revised JRMP, which updates the City's jurisdictional stormwater program to follow the current Municipal Permit requirements rather than the 2007 Permit requirements. The City's fiscal analysis reporting structure in turn will change, reporting expenditures, and funding sources in the following three main categories: JRMP (jurisdictional), WQIP (watershed), and flood risk management. That structure is consistent with the framework described in the City's Watershed Asset Management Plan (WAMP), the WQIPs to which the City is a party, and the JRMP. FY 2015 is the last year in which JRMP and flood risk management will be lumped together under the heading of "Jurisdictional Component" rather than reported separately.

3.2 FISCAL ANALYSIS METHODS

While the City used the format and guidelines included in the Fiscal Analysis Method for reporting purposes, a few modifications were necessary to address how the City tracks accounts internally. Modifications to the expenditure categories are described in the relevant sections below. In many cases, estimated percentages were used to allocate expenditures into the appropriate municipal permit component categories, including watershed and regional.

3.2.1 Fiscal Analysis Results

3.2.1.1 Expenditures

The City's FY 2016 Transitional JRMP Regional Program total expenditures ($75,934,083) for implementing the Municipal Permit requirements are summarized in Table 1.

Table 1: FY 2016 Jurisdictional, Watershed, and Regional Expenditures Summary

Jurisdictional Component	
Administration	$11,179,605
Development Planning (including public and private projects)	$1,897,784
Construction (including public and private projects)	$632,646
Municipal (including Non-emergency Fire Fighting expenditures)	$30,146,109
Storm Water Division Capital Improvements Program (CIP)	$7,929,308
Industrial and Commercial	$2,001,544
Residential, Education, and Public Participation	$2,159,991
Illicit Discharge Detection and Elimination (IDDE)	$11,339,120
Jurisdictional Total	**$67,286,108**
Watershed Component[1]	
San Dieguito Watershed	$1,105,348
Los Peñasquitos Watershed	$2,061,071
Mission Bay Watershed	$1,242,769
San Diego River Watershed	$680,843
San Diego Bay Watershed	$2,165,456
Tijuana River Watershed	$686,584
Watershed Total	**$7,942,071**
Regional Component	
Total Copermittee Cost Share for the City of San Diego	$342,001
Additional Regional Costs for education efforts, monitoring, document reviews, regional meeting attendance, and special projects	$363,903
Regional Total	**$705,904**
Total Costs	**$75,934,083**

[1] Watershed Component costs do not include Capital Improvements Program (CIP) costs. CIP costs are only included in the Jurisdictional Component's Storm Water Division Capital Improvements Program Category.

Transitional JRMP Expenditures

The City's FY 2016 Citywide expenditures for implementing the jurisdictional Municipal Permit requirements are depicted in Figure 1. Expenditures were provided as actual costs in most cases, and when the actual costs could not be determined, estimates of actual costs were provided. The Storm Water Division used the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, because of implementation overlap with the City's education, public participation, and residential Municipal Permit components, it is difficult to separate out individual component costs. Therefore, the expenditures for residential, education, and public participation are reported as one expenditure category.

A total of $67,286,108 was expended in FY 2016 to implement JRMP activities citywide. This amount includes costs paid by sewer and water rate payers (which are used for sewer and water-related services) and costs reimbursed by project applicants. An overview of the expenditures reflected in this component is described below.

Administration ($11,179,605)

Activities identified in this section represent personnel and non-personnel expenses for administration and contracts, grant management, citywide management, staff training, reporting, and assessment of the Municipal Permit.

Development Planning ($1,897,784)

Activities identified in this section represent personnel and non-personnel expenses for plan check reviews, incorporating BMPs into project designs, BMP Design Manual development, and General Plan updates. This category includes expenses for private and public projects.

Construction ($632,646)

Activities identified in this section represent personnel and non-personnel expenses for plan check review services, field inspections related to grading permits, public improvements, and building activities. This category includes expenses for private and public projects.

Municipal ($30,146,109)

Activities identified in this section represent personnel and non-personnel expenses for street sweeping, storm drain and channel maintenance, BMP implementation, and municipal facility and activity inspections. Additionally, this section includes the expenditures for Fire Department activities not related to emergency firefighting, such as facility inspections, stormwater BMPs, etc.

Capital Improvement Program ($7,929,308)

Activities identified in this section represent personnel and non-personnel expenses for implementation of new construction and planned improvements to existing facilities for storm water management. Projects may include, but are not limited to, the construction, purchase, or major renovation of buildings, utility systems, and other facilities to achieve storm water requirements. In addition, they may also include land acquisitions and roadway projects to install storm water facilities.

Industrial and Commercial ($2,001,544)

Activities identified in this section represent personnel and non-personnel expenses for inspection of industrial and commercial facilities. This also includes personnel and non-personnel expenses for the stormwater components of Food Establishment Wastewater Discharge Program (FEWD) and Industrial Wastewater Control Program (IWCP) inspections.

Residential, Education, and Public Participation ($2,159,991)

Activities identified in this section represent personnel and non-personnel expenses for educational materials, outreach efforts and events, public service announcements (PSAs), household hazardous waste (HHW) and used oil outreach, and community events.

Illicit Discharge Detection and Elimination ($11,339,120)

Activities identified in this section represent personnel and non-personnel expenses for identification and elimination of illicit discharges, enforcing the City's stormwater ordinance and implementation of the administrative civil penalties and citation process, and the urban runoff monitoring program.

Watershed Expenditures

The City's watershed expenditures during FY 2016 for the implementation of the watershed Municipal Permit requirements were provided as actual costs and when the actual costs could not be determined, estimates of actual costs were provided. The Storm Water Division used the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City expenditures and do not account for any expenditure disbursed by other Copermittees within the watershed(s).

In total, $7,942,071 was expended in FY 2016 for the implementation of citywide watershed activities. This amount includes costs for the implementation of applicable TMDLs along with special studies.

Regional Expenditures

The City's FY 2016 regional expenditures ($705,904) for the implementation of the regional Municipal Permit requirements are primarily the City's share of regional Copermittee stormwater program costs. Additional costs include estimated staff time to attend regional meetings and other related administration costs. The Storm Water Division used the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City expenditures, and do not account for any expenditure disbursed by other Copermittees in the region.

3.2.1.2 Grant Funding for Special Studies

In addition to resources identified for Municipal Permit requirements, the City actively seeks grants, and other funding sources, for special studies and Capital Improvement Projects. For the most part, funding for these projects may be limited to the projects specified and the City may restrict funding reallocation to other projects. Therefore, these resources are currently not incorporated in calculations for total Municipal Permit requirements expenditures detailed in Section 2.2.1.4 above. Table 2 lists projects that were initiated and/or in progress during FY 2016. It is important to note that the projects span multiple years and the amounts listed below are not just representative of FY 2016.

Table 2: Funding for Special Projects

Funding Source	Project	Amount	Matching Fund Amount	Total Amount[2]
San Diego County Water Authority (SDCWA)	Memorial Park Infiltration Basin Construction	$255,651.00	$295,904.00	$551,555.00
State Water Resources Control Board (SWRCB)	43rd & Logan Monitoring & Assessment	$689,300.00	$85,362.00	$774,662.00
SDCWA	Bannock Avenue Infiltration Construction	$630,500.00	$893,300.00	$1,523,800.00
SWRCB	Southcrest Park Infiltration Project	$1,880,070.00	$777,970.00	$2,658,040.00
Total Grant Funding		**$3.5 million**	**$2.0 million**	**$5.5 million**

2 Amounts span multiple years and not just FY 2016

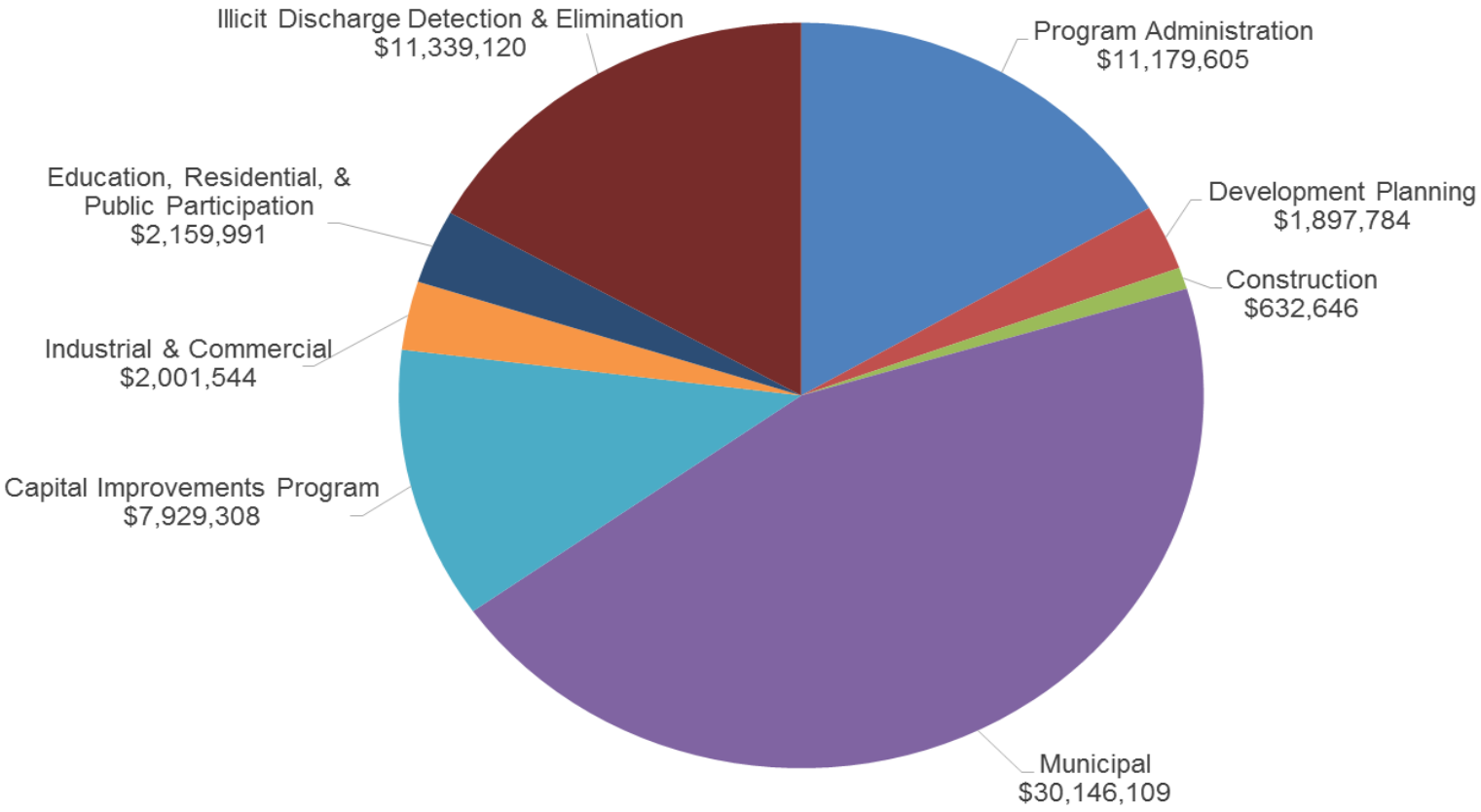

Figure 1: FY 2016 Citywide JRMP Expenditures by Permit Area

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3.2.2 Funding Sources

Citywide implementation of Municipal Permit requirements is funded through four main types of governmental funds: the General Fund, Special Revenue Funds, Enterprise Funds, and Internal Service Funds.

3.2.2.1.1 General Fund

The General Fund is the main fund for the City and is supported by major revenue sources, including property tax, sales tax, transient occupancy tax, and franchise fees. Departments funded by the General Fund provide core community services.

3.2.2.1.2 Special Revenue Funds

Special Revenue Funds account for revenues received for specifically identified purposes. Some of the larger funds that fall under this category include TransNet, Gas Tax, and Special Promotion programs.

3.2.2.1.3 Enterprise Funds

Enterprise Funds are initiated for specific purposes and funded through fees for services. This funding type is designated for the operations, management, maintenance, and development of the department providing the service. For implementation of citywide JRMP activities, activities are funded through the following enterprise funds:

- Airports Fund
- Development Services Enterprise Fund
- Golf Course Enterprise Fund
- Recycling Fund
- Refuse Disposal Fund
- Sewer Revenue Funds
- Water Utility Fund

3.2.2.1.4 Internal Service Funds

Internal Service Funds are comprised of fees for services provided by one City department to another City department or division. For implementation of citywide JRMP activities, activities are funded through the following internal service funds:

- Engineering and Capital Projects Fund
- Equipment Division Funds

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City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 1: Summary of Watershed Specific Data from the IDDE Program

JRMP Annual Report Form – Section IV. Illicit Discharge Detection and Elimination Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of non-storm water discharges reported by the public	119	353	541	368	634	47	**2,062**
Number of non-storm water discharges detected by Copermittee staff or contractors	60	172	317	314	393	50	**1,306**
Number of non-storm water discharges investigated by the Copermittee	171	518	845	683	1,021	97	**3,335**
Number of sources of non-storm water discharges identified	143	442	736	559	828	94	**2,802**
Number of non-storm water discharges eliminated	141	434	697	553	819	92	**2,736**
Number of sources of illicit discharges or connections identified	142	437	715	551	805	94	**2,744**
Number of illicit discharges or connections eliminated	140	429	676	545	796	92	**2,678**
Number of enforcement actions issued	141	436	709	553	819	93	**2,751**
Number of escalated enforcement actions issued	69	197	351	349	445	61	**1,472**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 2: Summary of Watershed Specific Data from the Development Planning Program

JRMP Annual Report Form – Section V. Development Planning Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/ La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of proposed development projects in review	70	241	332	233	561	60	**1,497**
Number of Priority Development Projects in review	5	32	15	21	38	8	**119**
Number of Priority Development Projects approved	88	110	76	61	138	27	**500**
Number of approved Priority Development Projects exempt from any BMP requirements	0	0	0	0	0	0	**0**
Number of approved Priority Development Projects allowed alternative compliance	0	0	0	0	0	0	**0**
Number of Priority Development Projects granted occupancy	75	63	7	30	40	9	**224**
Number of completed Priority Development Projects in inventory	118	178	141	113	213	89	**852**
Number of high priority Priority Development Project structural BMP inspections	1	9	0	1	1	5	**17**
Number of Priority development project structural violations	1	8	0	1	1	5	**16**
Number of enforcement actions issued	1	15	0	3	4	12	**35**
Number of escalated enforcement actions issued	0	3	0	1	1	1	**6**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 3: Summary of Watershed Specific Data from the Construction Managment Program

JRMP Annual Report Form – Section VI. Construction Management Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/ La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of construction sites in inventory	1,364	4,300	2,091	1,830	3,870	448	**13,903**
Number of active construction sites in inventory	26	47	37	38	51	8	**207**
Number of inactive construction sites in inventory	12	112	216	188	425	36	**989**
Number of construction sites closed/completed during reporting period	23	169	276	258	518	44	**1,288**
Number of construction site inspections	10,074	27,037	9,404	8,875	18,737	2,801	**76,928**
Number of construction site violations	169	270	195	78	211	154	**1,077**
Number of enforcement actions issued	114	164	183	51	187	150	**849**
Number of escalated enforcement actions issued	65	91	16	25	32	6	**235**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 4: Summary of Watershed Specific Data from the Existing Development Managment Program

JRMP Annual Report Form – Section VII. Existing Development Management Program	San Dieguito Watershed				Los Peñasquitos Watershed				Mission Bay/La Jolla Watershed				San Diego River Watershed				San Diego Bay Watershed				Tijuana River Watershed				Total Citywide			
	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES
Number of facilities or areas in inventory	23	1,542	81	12	123	8,282	915	27	218	8,911	464	32	121	10,175	513	33	197	14,085	690	70	20	2,075	369	6	702	45,070	3,032	180
Number of existing development inspections	22	308	6	1	117	1,533	140	4	159	4,801	186	5	114	2,573	99	5	195	3,197	102	5	19	233	41	2	626	12,645	574	22
Number of follow-up inspections	0	14	0	0	0	263	13	0	0	166	4	3	0	193	5	4	0	270	44	4	0	31	7	0	0	937	73	11
Number of violations	3	49	0	109	18	388	37	375	34	413	6	424	10	420	11	481	23	511	34	709	1	60	19	69	89	1,841	107	1,819
Number of enforcement actions issued	4	58	0	107	22	490	48	285	46	462	9	407	16	514	13	365	41	623	44	543	1	65	21	62	130	2,212	135	1,790
Number of escalated enforcement actions issued	0	23	0	50	2	148	8	134	0	205	3	182	0	172	0	236	6	217	11	291	0	26	13	36	8	791	35	884

MUN Municipal
COM Commercial
IND Industrial
RES Residential

5.3 JURISDICTIONAL STRATEGIES

Administrative Changes for the San Diego River Water Quality Improvement Plan

The City of San Diego is proposing the following administrative changes to the San Diego River Water Quality Improvement Plan. The proposed administrative changes include clarifications, corrections to errors and typos, and other minor edits that only apply to the City of San Diego.

	WQIP Section	Administrative Changes
1	Section 3.2.10 Alternative BMP Implementation Scenario for Refinement of Water Quality Regulations	Included the following text: "Cost comparison between the Primary and Alternative Scenario presented in this section are a snapshot in time and are based on the best information available at the time they were prepared. As program implementation progresses, updates to estimated funding needs are likely to change. For the most recent estimate of funding needs, refer to the WAMP available at the Storm Water Division website, www.sandiego.gov/stormwater/plansreports.
2	Appendix 3B – Jurisdictional Strategies and Funding Needs	Included the following text: "Funding needs presented in this section are a snapshot in time and are based on the best information available at the time they were prepared. As program implementation progresses, updates to estimated funding needs are likely to change. For the most recent estimate of funding needs, refer to the WAMP available at the Storm Water Division website, www.sandiego.gov/stormwater/plansreports.
3	Appendix 3B – Jurisdictional Strategies and Schedules; Table A-1 City of San Diego Jurisdictional Strategies	Refined the text (shown as track changes in red text in Appendix 2) to provide greater clarity and/or to correct errors and typos.
4	Appendix 3B – Jurisdictional Strategies and Schedules; Table A-1 City of San Diego Jurisdictional Strategies	Changed strategy identification numbering system (See Appendix 2).
5	Appendix 3B – Jurisdictional Strategies and Schedules; Table A-1 City of San Diego Jurisdictional Strategies	Structural Strategies, Priority Development Project (PDP) BMPs: All PDP BMPs have been combined into a single strategy for ease of viewing. A table with an updated list of PDP BMPs is included in the WQIP Annual Report (See Appendix 2).
6	Appendix 3B – Jurisdictional Strategies and Schedules; Table A-1 City of San Diego Jurisdictional Strategies	Structural Strategies, Multi Use Treatment Areas (MUTAs): Planned MUTAs that are not yet built have been combined into a single strategy for ease of viewing. The total sum of drainage area treated (level of commitment) has not changed. A table with all structural strategies (MUTAs, Green Infrastructure, Green Streets, etc.) is included in the WQIP Annual Report (See Appendix 2).

Jurisdictional Strategies Tables

The City of San Diego's strategies are detailed in Tables A2-18 to A2-21. ~~Strikeouts~~ and red text are text edits that have been made up to the current date since the WQIP September 2015 submittal.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Jurisdictional Strategies								
Note: Strategy IDs with an asterisk indicate those strategies that are considered "jurisdictional" in the MS4 Permit, but are considered enhancements to the JRMP to target highest priority water quality conditions.								
JRMP (E.2-E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
CSD-JRMP-01	Establish guidelines and standards for all development projects; provide technical support related to implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area or implement easements to protect water quality, where applicable and feasible le. Includes internal coordination and collaboration between City departments (DSD, PWD, and Engineering) to improve success and long-term benefits of BMPs.	Refer to JRMP Section 4. ~~All high priority projects will be inspected annually prior to the rainy season. 20 percent of all projects will be inspected annually. Maintenance inspections include examination of all structural BMPs at a project to verify that each structural BMP is working, being maintained properly, and is in compliance with all applicable City ordinances and permits.~~ May include providing technical support and consultation for other City departments that review project submittals for compliance with Storm Water Standards Manual requirements. May also include review of City projects for compliance with Storm Water Standards Manual requirements.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Revised Storm Water Standards Manual went into effect on February 16, 2016. FY17 Notes: The Storm Water Standards will be revised to include Critical Coarse Sediment Yield Area mitigation measures that were developed through a TAC process, along with other minor clarifications.
CSD-JRMP-02	Develop Design Standards for Public LID BMPs.	Improve quality of design to ensure efficiency and reliability in public designs.	FY14-FY15	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Draft Green Infrastructure standard drawings and specifications are currently in the review process. FY17 Notes: Plan to develop more standard drawings and specifications for other green infrastructure components.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-03	Outreach to impacted ~~industry~~ commercial, industrial, municipal, and residential development regarding minimum BMP requirement updates.	~~Affects commercial, industrial, and residential development.~~ May include onsite education at the time of inspections, city staff training, and mailers to business owners and prospective business owners.	FY15	Continuous- As needed	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Sent out monthly business Tax License renewal mass mailings, which included information about storm water BMPs. Violation location information from the Residential Patrol Program is used to target outreach.
CSD-JRMP-04*	Train staff on LID regulatory changes and LID practices.	Formal training is required for all staff involved in development plan review to increase knowledge of LID BMPs. Goal of training associated with LID practices and regulations is to promote LID implementation and to avoid adverse conditions such as trees planted within swales, or planned drainage patterns which obstruct or inhibit LID performance.	FY16	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Presented at a PWD training to discuss the revised Storm Water Standards Manual. Provided a plan check training for plan reviewers at DSD and PWD staff in May 2016.
CSD-JRMP-05*	Amend municipal code and ordinances, including zoning ordinances, to facilitate and encourage LID opportunities to support compliance with the MS4 Permit and TMDLs in a reasonable manner. Ensure consistency with the City of San Diego's BMP Design Manual. Update the Storm Water Standards Manual accordingly.	Municipal codes and ordinances will be brought to City Council for consideration to encourage LID implementation (e.g., runoff detention and filtration using natural filters and stormwater retention for reuse). LID stormwater management will be encouraged in proposed codes and ordinances associated with development and redevelopment projects, which are brought to City Council for consideration.	FY15	Continuous- As needed	Yes	No Change	No	None
CSD-JRMP-06	Provide technical education and outreach to the development community on the design and implementation requirements of the MS4 Permit and Water Quality Improvement Plan requirements.	Technical education and outreach to the development community includes outreach on design standards, City design manuals, and the WMAA.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Presented the revised draft Storm Water Standards at two public workshops in September 2016.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Priority Development Projects (PDPs)								
CSD-JRMP-07	For PDPs, administer a program and provide technical support to other City departments to ensure implementation of on-site structural BMPs to control pollutants and manage hydromodification by developing City wide storm water development standards and design guidelines.	Administer a program in coordination with other City departments to promote and confirm a thorough understanding of requirements for implementing structural BMPs that control pollutants and manage hydromodification. Includes requirements to confirm proper design and construction through processes controlled by other City departments. Please see Attachment 1 for details on PDP related BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City enhanced the Storm Water Quality Management Plan (SWQMP) template that was developed as a Copermittee effort for developers to use.
CSD-JRMP-08	Institute a program to verify and enforce maintenance and performance of treatment control BMPs.	Refer to JRMP Section 4.5. The Storm Water Division is responsible for annually verifying that all structural BMPs within its inventory are being properly maintained. The Storm Water Division performs verification through an Annual Maintenance Verification mailing and a direct maintenance inspection program. Parties responsible for maintenance of structural BMPs are required to complete and sign the Annual Maintenance Verification, certifying that the structural BMPs are being properly maintained. Direct maintenance inspections will be performed at all projects for which an Annual Maintenance Verification Form was not completed. All high priority projects will be inspected annually prior to the rainy season. 20 percent of all projects will be inspected annually. Inspect additional BMPs as needed. Medium and low priority projects will not require inspection if they have completed their Annual Maintenance Verification form, unless they are part of the 20 percent of projects that are annually inspected.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY17 Notes: For porous pavement BMPs, staff plan to use an infiltrometer to measure BMP effectiveness.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-09	Update ~~BMP Design Manual procedures~~ Storm Water Standards Manual to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP Section 4. Storm Water Standards Manual will be updated in accordance with the Permit and made available on the City's website.	FY15	Continuous every 5 years/ permit cycle	Yes	Revised to clarify strategy.	Yes	FY17 Notes: The Storm Water Standards will be revised to include Critical Coarse Sediment Yield Area mitigation measures that were developed through a TAC process, along with other minor clarifications.
CSD-JRMP-10*	Amend BMP Design Manual for trash areas. Require full four-sided enclosure, siting away from storm drains and cover. Consider the retrofit requirement.	Amend BMP Design Manual and zoning standards/requirements which address reduction of pollutants for common areas of trash build-up (e.g. restaurants, supermarkets, "big box" retail stores with food, pet stores). Most effective method for source control of bacteria and trash is to employ four-sized trash enclosures with a cover over trash areas.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on trash enclosures (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-11*	Amend BMP Design Manual for animal-related facilities, such as such as animal shelters, "doggie day care" facilities, veterinary clinics, breeding, boarding and training facilities, groomers, and pet care stores.	Amend BMP Design Manual and zoning requirements (including retrofits) to provide supplemental standards for animal facilities (including animal shelters, dog daycares, veterinary clinics, groomers, pet car stores, and breeding, boarding, and training facilities). Supplemental standards may include requiring covered trash enclosures, identification of landscaped relief areas on site plans, ensuring drainage connections and treatment swales for areas that will not drain to the sanitary sewer, as well as inspection of grading, drainage, and landscaping for outdoor exercise areas.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on animal facilities(See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-12*	Amend BMP Design Manual for nurseries and garden centers.	Amend BMP Design Manual to provide supplemental standards for plant nurseries and garden centers. Standards will focus on reducing irrigation runoff, and loading of sediment, pesticides, and nutrients. Measures may include: covered outdoor storage, green waste management BMPs, improved irrigation efficiency to reduce dry-weather runoff, and containment of runoff from impervious areas where plants and materials are stored.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on nurseries (See Part 1, Appendix E of the Storm Water Standards).

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-13*	Amend BMP Design Manual for auto-related uses.	Amend BMP Design Manual to provide supplemental standards for automotive-related uses to reduce loading of metals, oils, grease, and trash. Measures may include: four-sized covered trash enclosures, and careful review of auto-related usage areas (e.g. garage bays at repair shops) for grading, drainage, and drain connections to sanitary sewer systems.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on auto-related facilities (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-14*	~~Develop and administer an alternative compliance program for on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects). Refer to Section 4.2.5.~~ Offsite Alternative Compliance Option	Refer to JRMP Section 4.2.3.1. WMAA and Water Quality Equivalency Study completed in FY15. Phase I, applicant implemented projects, is anticipated to be in effect by the end of FY16 contingent on Regional Board's approval of the WQIPs. Phase II, the expansion of the program to include other alternative compliance options, is expected to begin in FY16.	FY15	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Phase 1 of the Alternative Compliance Program (ACP) went into effect on 2/16/16. Development on Phase 2 of the ACP, including public involvement via Technical Advisory Committee (TAC) meetings, began during FY16. FY17 Notes: Continue developing Phase 2 of ACP. Topics to discuss include: environmental permitting, long-term facility maintenance, legal agreements and credit tracking, maintenance and permitting rules, and credit tracking and legal rules. Public involvement via TAC meetings will continue.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
E.4 Construction Management								
CSD-JRMP-15	Administer a program to oversee implementation of temporary BMPs that control sediment and other pollutants during the construction phase of projects. Includes requirements to inspect at appropriate frequencies and effectively enforce requirements through process controlled by other City departments.	Refer to JRMP Section 5. Inspections performed by the City or City staff provide verification that each site is in conformance with the Construction Storm Water BMP Performance Standards in the Storm Water Standards Manual. Inspections are tracked to ensure that they meet the minimum inspection frequencies. High priority active and inactive sites are inspected bi-weekly during the rainy season. Medium priority sites are inspected monthly during the rainy season. Low priority sites are inspected as-needed during the rainy season. All sites are inspected as-needed during the dry season. Please see Attachment 1 for details on construction BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
CSD-JRMP-17	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP Sections 6, 7, and 8. All industrial and commercial areas are inspected once within ~~the Permit term (~~five years~~)~~. At a minimum, 20 percent of industrial and commercial areas receive onsite inspections every year. Municipal facilities are inspected twice annually, once prior to the rainy season, and once during the rainy season. Residential management areas (RMAs) within the City are to be inspected once within five years ~~the Permit term~~, at a minimum. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: The City began patrols of residential management areas in FY16. See the City's JRMP Annual Report form, also included in Appendix 2, for numbers of inspections, violations, and enforcement actions for all types of existing development.
CSD-JRMP-18	Update minimum BMPs for existing residential, commercial, and industrial development. Specific updates to BMPs include required street sweeping, catch basin cleaning, and maintenance of private roads and parking lots in targeted areas.	Refer to JRMP Appendix IX. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY15	Continuous every 5 years/ permit cycle	Yes	No Change	Completed	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-19	Outreach to property managers and trash haulers to elevate the emphasis of power washing as a pollutant source.	Emphasis will be placed on non-compliant washing as an enforceable violation. Will occur city-wide in residential, commercial, and industrial areas.	FY15	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: City staff utilized a new fact sheet consistent with updated permit conditions to inform non-compliant power-washing operators of BMP requirements. The fact sheet was also provided to the San Diego Downtown Partnership as part of the Division's education and outreach effort for downtown businesses. FY17 Notes: The City anticipates distributing a comprehensive BMP guidebook to businesses and business district leaders in areas with regular power-washing activities.
CSD-JRMP-20	Implement property based inspections.	Property-based inspections increase awareness and responsibility for individual properties to tackle issues associated with trash, landscapes, and parking areas. Expanding beyond the business-level inspections will achieve different and more effective opportunities for education, outreach, inspection, and enforcement to encourage water conservation strategies. Inspection frequency dependent on type of facility. See CSD-9 for inspection frequency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Inventoried properties have been mapped in GIS. The City's inspection data management system has also been set up to track and map the properties inspected each fiscal year and over the Permit cycle.
CSD-JRMP-21	Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	Verify and bring to City Council for consideration an update (as needed) for the City's Municipal Code (43.0301) to meet new permit requirements for swimming pool discharges.	FY15	Continuous- As needed	Yes	No Change	Completed	None

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-22*	Promote and encourage implementation of designated BMPs for residential and non-residential areas.	Landscape-based rebates are a "gateway" for adoption of other beneficial practices and are one of the nonstructural methods which address impacts from single-family residential areas (City of San Diego 2011 program development background study). Residential incentives can include: education and training ~~(neighborhood watershed field days)~~, and aggressive subsidies or rebates for grass replacement and rainwater harvesting. Existing programs will be expanded overall, and ~~also have targeted expansion within specific subwatershed, particularly with highest water quality priority conditions. W~~will occur city-wide in residential, commercial, and industrial areas.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
MS4 Infrastructure								
CSD-JRMP-23	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, channels as allowed by resource agencies, detention basins, pump stations, etc.) for water quality improvement and for flood control risk management.	Refer to JRMP Section 7. Storm drain inlets are inspected ~~at least once per year~~ generally annually, and cleaned when accumulated materials are present. Other MS4 and related structures are inspected as needed.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: 5,485 storm drain inspections were completed in the WMA, and 130 tons of sediment, trash, and debris were removed during storm drain cleaning. In addition to routine maintenance of the MS4, across its entire jurisdiction the City repaired or replaced 12 pump stations and modernized another 14 pump stations, televised 28,000 linear feet of pipe in 62 locations, and began the development of the Waterways Maintenance Plan and Channel Maintenance Prioritization Plan. Removed 2.56 tons of trash from routine open channel trash cleaning and approximately 96 tons each of sediment and trash from channel maintenance activities that required resource agency permits.
CSD-JRMP-28	Proactively repair and replace MS4 components to provide source control from MS4 infrastructure.	In order to limit inflow of pollutants and reduce pollutant loads, proactive measures will be taken to improve, repair, and replace MS4 components. The City of San Diego will start a multi-year program of repairing and replacing storm drain pipes to reduce sediment loading to the MS4. Development of an assessment management program and bond issues will be addressed. Exploration of daylighting pipes will take place where feasible and appropriate.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-29	Replacement of hard assets.	Includes needed replacement of storm drains and structures.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-30	Coordinate with other City departments (PUD) to implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Tiger Team was established in the FY16 as a joint effort between TSW & PUD to identify and eliminate exfiltration sources from the sanitary sewer system to the MS4. Since the team was created, it has successfully eliminated one major source. FY17 Notes: For FY17, the team is focusing on two sites within the City and are identifying more.
CSD-JRMP-31*	Identify sewer leaks and areas for sewer pipe replacement prioritization.	Risk assessment to include identifying targeted areas (age, location, proximity to MS4), coming up with methodology, pilot, desktop exercise/analysis.	FY16	Continuous- As needed	Yes	No Change	Yes	None
Roads, Streets, and Parking Lots								
CSD-JRMP-32	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: 17,094 curb miles were swept in the San Diego River watershed management area.
Pesticides, Herbicides, and Fertilizer BMP Program								
CSD-JRMP-37	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education. ~~permits, and certifications.~~	Refer to JRMP Sections 7, 8, and 9.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Retrofit and Rehabilitation in Areas of Existing Development								
CSD-JRMP-38	Development of a strategy and identification of candidate areas of existing development necessary for implementing retrofit projects and facilitate the implementation of such projects.	Refer to JRMP Appendix XIX. The Offsite Alternative Compliance Program will include methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including proximity to high priority water quality conditions, potential pollutant load removal effectiveness, and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards. Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None
CSD-JRMP-39	Development of a strategy and identification of candidate areas necessary to implement stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Refer to JRMP Appendix XIX. The Offsite Alternative Compliance Program ~~(Section 4.2.5.4 and Appendix P)~~ will include methods for identifying and assessing potential stream, channel, or habitat rehabilitation projects in existing development areas. Rehabilitation project selection will be based upon a variety of factors including existing stream or habitat degradation, potential future cumulative stream or habitat impacts, and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy.	NA, Not scheduled to be implemented in FY17	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
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E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
CSD-JRMP-40	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP Section 3. ~~The City must visually inspect at least 500 identified and prioritized major MS4 outfalls at least annually during dry weather conditions.~~ Inspections of major MS4 outfalls conducted in response to public reports and staff or contractor reports and notifications may count toward the required visual inspections of MS4 outfall discharge monitoring stations. Please see Attachment 1 for details on how the IDDE Program will address sources causing or contributing to the HPWQC.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: 683 cases were investigated, including 368 reported by the public; 553 illicit discharges or illicit connections were eliminated; and 553 enforcement actions and 349 escalated enforcement actions were issued in the WMA. City-wide, the number of discharges investigated has almost tripled since FY14 (1,186 in FY14 to 3,335 in FY16). The increase is believed to be mainly due to increased reports of irrigation runoff discharges from the public and from PUD.
E.7 Public Education and Participation (B.3.b(1)(a)(iii))								
CSD-JRMP-42	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP Section 9.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City continued its extensive education and outreach effort across each of the six watershed areas in the City. This included regular attendance at community events to share education materials and the continuing sponsorship of community clean-up and pollution prevention education events with the City's Non-Governmental Organization partners, including I Love A Clean San Diego and San Diego Coastkeeper.

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CSD-JRMP-43	Continue implementation of a Pet Waste Program.	Pet Waste Program includes outreach on "Scoop the poop", installation of posts for dispensers, distribution of lawn signs, and attendance at dog-related community activities.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Printed and distributed more pet waste signage. FY17 Notes: New bag dispensers will be installed and there will be outreach at community events. More signage will be installed..
CSD-JRMP-44	Promote and encourage implementation of designated BMPs in commercial and industrial areas.	Provide education and outreach on BMPs for commercial businesses and industrial facilities. Will occur city-wide in non-residential areas.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City continued its mandated commercial and industrial facility inspection effort sharing industry specific education materials with business and property owners when BMP deficiencies were discovered. FY17 Notes: The City will continue its inspection and education effort while also introducing alternative compliance strategies for new developments and sharing the updated Storm Water Standards Manual with target audiences
CSD-JRMP-45*	Expand outreach to homeowners' association (HOA) common lands and HOA incentives.	Approaches to consider include: offering incentives to HOAs and maintenance districts to adopt water-conserving/efficiency and stormwater-reduction changes to their landscapes, irrigation, and maintenance; conducting workshops with property managers; providing supplemental standards, inspection, or enforcement for HOA-managed properties.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Finalized updated code compliance fact sheets applicable to common lands activities. Coordinated water conservation pollution prevention incentive programming with PUD

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CSD-JRMP-46*	Develop an outreach and training program for property managers responsible for HOAs and maintenance districts.	Approaches to engage HOAs and property managers include: conducting workshops with property managers, providing supplemental standards, inspections or enforcement around HOA properties, and offering incentives to HOAs and maintenance districts to adopt changes to landscapes, irrigation, or maintenance which promote water conservation or stormwater reduction. Property managers are also a target for enhanced outreach.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-48	Enhance school and recreation-based education and outreach.	Develop curriculum and establish distribution in public schools. Includes education on water conservation.	FY15	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City worked with its NGO partners to expand the number of children reached through school-aged education programs. The Division updated curriculum materials for Project Swell in conjunction with San Diego Coastkeeper and provided printed education materials to leaders with the Ocean Discovery Institute in hope of establishing new partnerships with that organization. FY17 Notes: The Division will be expanding the Blue Brigade Middle and High School program sponsored with I Love A Clean San Diego. The Division will also distribute written education materials through the newly completed Ocean Discovery Institute headquarters.

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CSD-JRMP-49	Develop education and outreach to reduce irrigation runoff.	Example approaches to reduce or eliminate irrigation runoff may include: education and outreach, prohibition, enhanced enforcement of existing prohibitions, and pilot projects such as the City of Del Mar's pilot door hanger project.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Division used communication materials designed to address potential threats from El Nino rains as a new vehicle for educating the public about the need to eliminate irrigation runoff. FY17 Notes: The Division is working with partner agencies and other City operations to develop new education and outreach efforts targeting urban runoff.
CSD-JRMP-50*	Develop and distribute regional training materials for water-using mobile businesses.	Consider development of supplemental standards for mobile businesses including: covered trash enclosures, careful review of washing areas (grading, drainage, landscaping, sanitary sewer system connectivity), and appropriate signage (either through zoning for retrofits or "best fix" approaches, or through BMP Design Manual standards). Businesses may include carpet cleaners, tile installers, plumbers, etc.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: The Division updated its suite of fact sheets related to mobile business activities to bring them up-to-date with current permit requirements.

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CSD-JRMP-51*	Enhance education and outreach based on results of effectiveness survey and changing regulatory requirements.	Use effectiveness surveys to enhance existing education and outreach programs while proactively keeping up with and incorporating changing regulatory requirements.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Division annually conducts thousands of event-based surveys gathering information about public understanding of pollution prevention and about the City's storm water management efforts. The survey effort continued in FY16 and allowed the Division to update its education materials and strategies based on current findings about public awareness. FY17 Notes: The Division will contract with a new public opinion research firm to perform a statistically valid assessment of general public awareness. The finding from that effort will be combined with the discoveries of the ongoing event survey effort to drive future outreach priorities.
CSD-JRMP-52	Continue to promote and encourage implementation of Integrated Pest Management (IPM) for residents and businesses.	The City will continue to provide education on IPM techniques during presentations and on the City's Think Blue website.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None

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CSD-JRMP-53*	Improve consistency and content of websites to highlight enforceable conditions and reporting methods.	Websites will be updated to provide a user-friendly format and clarity for stormwater violations, conditions which citizens can and should report, and how to make such reports. Examples of reports for common incidents will be developed and posted which may vary locally and regionally. Photographs of allowable practices as well as illegal practices should be shown for utmost clarity. Displaying hotline numbers prominently on the website and near the photographs of illegal practices will ensure that those seeking to report will be able to do so easily. Also ensure hotline number and website are searchable and can be retrieved by simple internet searches.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City completely revamped its website improving public access and availability of web-based resources including the storm water management and pollution prevention materials developed and posted by the Division. The Division also brought forward the environmental response documents associated with its channel maintenance efforts. These documents include descriptions of water quality protections undertaken by the City allowing the public to view our agency's watershed protection strategies. FY17 Notes: The Division will review and renew the entire portfolio of education materials available for public downloading from the City's website.
E.6 Enforcement Response Plan								
CSD-JRMP-54	Continue to implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Storm Water Code Enforcement Unit's Standard Operating Procedures (SOPs) - Enforcement Response Plan.	Refer to JRMP Appendix XIII.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None

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CSD-JRMP-55*	~~Increase~~ Focused enforcement of irrigation runoff.	~~Increased~~ Focused enforcement policies against irrigation runoff will be established in tandem with the education and outreach programs on how these actions lead to pollutant loading. By shifting to property-based inspections irrigation runoff can be handled as enforceable violations once the public is well-informed.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Performed irrigation patrols and Residential Management Area Patrols throughout FY16. Also receive referrals from Water Conservation at PUD for over irrigation cases that have runoff entering the curb and gutter.
CSD-JRMP-56*	~~Increase~~ Focused enforcement of water-using mobile businesses.	In addition to education, pollution associated with mobile business sources can be handled through policy, code development, inspections of business practices, and enforcement.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Performed early morning patrols to find mobile sources and over-irrigation to the MS4.
CSD-JRMP-57*	~~Increase~~ Focused enforcement of all minimum BMPs for existing residential, commercial, and industrial development.	~~Increased~~ Focused enforcement of existing development minimum BMPs.	FY16	Continuous- As needed	Yes	Revised to clarify strategy.	Yes	None
CSD-JRMP-58*	~~Increase~~ Focused enforcement associated with property-based inspections.	Shifting inspections from businesses-specific to property-based will increase effectiveness and sense of responsibility and ownership. Education and outreach must be followed up with inspection and enforcement of regulations to encourage proper landscape and water conservation strategies.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-JRMP-59*	~~Increase~~ Focused enforcement of sweeping and maintenance of private roads and parking lots in targeted areas.	Refer to Minimum BMPs in JRMP (Appendix IX).	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

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CSD-JRMP-60*	~~Increase~~ Focused identification and enforcement of actionable erosion and slope stabilization issues on private property and require stabilization and repair.	Eroding and unstable slope areas on private property (excluding construction sites) will be identified as potential sediment loading sources and subject to enforcement. In the short term, this will target enhanced inspection and enforcement programs to ensure inspectors address erosion and slope instability for the purpose of education.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: City staff completed patrols of construction sites that included sediment discharges. They also began the Residential Patrol Program, which notes and addresses sediment discharges in residential areas.
Non-JRMP Strategies (Optional Strategies, B.3.b(1)(b))								
Nonstructural Strategies								
CSD-NS-02	Investigation and research of emerging BMP technology.	Annually the Construction & Development Standards Group identifies new tasks to conduct literature review, communication with researchers outside of the City, physical testing and experimentation of new or emerging technologies, and other research with the goal of updating tools available for reducing pollutant loads from development and redevelopment sites. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Continued monitoring and assessment of the biofiltration basin and curbside filtration units at 43rd and Logan.
CSD-NS-03	Approve and implement a green infrastructure policy.	The City will begin developing a policy in FY16 that will increase the green infrastructure requirements for City CIP projects. This policy will be coordinated with ongoing efforts to update City design manuals and LID design standards for public LID BMPs. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous- As needed	Yes	No Change	Yes	None
CSD-NS-04	Create a manual that outlines right-of-way design standards.	Create a manual that includes flood control performance standards, permanent BMP elements design standards, design standards for green streets and other BMPs, and maintenance access. Provides drainage and streets design standards. Opportunity to merge various existing manuals and provide consistency. Funding and resources were secured for FY2015.	FY15	Completed within schedule	Yes	No Change	Yes	FY17 Notes: Will be published in FY17.

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CSD-NS-05	Create a fund that allows habitat acquisition, protection enhancement, and restoration in conjunction with other cooperating entities including community groups, academic institutions, state county, and federal agencies, etc.	This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired or restored lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. It is anticipated that a minimum of 1 FTE will be needed to implement the program. Once initiated, the time frame for planning to initial implementation is expected to be 3 years. Implementation is in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None
CSD-NS-06	Residential and Commercial BMP: Rain Barrel	The existing PUD rebate program will continue for residential properties and expand for commercial properties for water collection, conservation, and reuse with rain barrels. Will occur city-wide in residential areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates for rain barrels were issued to capture 772,740 gallons of rainwater City-wide.
CSD-NS-07	Residential and Commercial BMP: Grass Replacement	The existing PUD grass replacement cash rebate program will continue and expand for residential and commercial properties. Program encourages a reduction in water use through the conversion of non-artificial grass to water wise plant material, while maintaining a high level of living landscape to benefit the environment. Program does not allow for conversion to artificial turf. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates were issued to convert 68,236 sq. ft. of turf in the WMA.

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CSD-NS-08	Residential and Commercial BMP: Downspout Disconnect	Disconnecting downspouts provide alternate runoff pathways from rooftops, sidewalks, driveways, and roads. Disconnecting downspouts from residential areas to pervious land can allow for depression storage and infiltration. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Completed downspout redirect guidelines in collaboration with PUD.
CSD-NS-09	Residential and Commercial BMP: Microirrigation	The existing PUD micro-irrigation rebate program will continue and increase for residential and commercial properties. Application of microirrigation aims to improve the efficiency of landscape irrigation through the precise application of water. Will occur city-wide in residential areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates were issued for installing microirrigation for 5,876 sq. ft. of landscaping in the WMA.
CSD-NS-10	Provide Onsite Water Conservation Surveys.	Provide free onsite water conservation surveys to commercial and residential customers to reduce overirrigation and to encourage water conservation. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None

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CSD-NS-11	Enhance and expand trash cleanups through community-based organizations involving target audiences.	Increase effectiveness and reach of trash/beach cleanups and community based efforts by engaging community groups to self-define and carry-out trash clean-ups. Longstanding partnerships and sponsorships with I Love A Clean San Diego and others are recommended to be continued and enhanced. To effectively target stream clean-up efforts, focus on partnerships with community organizations which provide strong engagement with target audiences and communities. Cleanups target trash, however a reduction in trash also reduces other pollutants such as bacteria and nutrients that can attach to food waste wrappers and yard waste. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY 16 Notes: The City partnered with I Love a Clean San Diego on five clean-ups, which resulted in the removal of 23,887 pounds of trash and debris in the WMA. Additionally, the City partnered with the SD River Park Partnership to remove 102,215 pounds of trash and debris.
CSD-NS-16	Conduct a Comprehensive Benefits Analysis to identify benefits other than water quality that are applicable to each of the specific WQIP strategies.	The analysis identifies which other benefits apply to each strategy, and documents the assumptions making those linkages. The delineation of other benefits to strategies includes a general description of each benefit, and a listing of the assumptions that were made to link those benefits to strategies. In addition, the other benefits are characterized with respect to who is directly affected: the city, local residents, local businesses, or visitors. This analysis may be used as part of the adaptive management process to modify future strategies. Funding and resources were secured for FY2015.	FY15	Completed within schedule	Yes	No Change	No	None
CSD-NS-17	Address and clean up trash from transient encampments with collaboration from the Environmental Services Department, which consults with the Homeless Outreach Team.	Coordinate with the Environmental Services Department, in conjunction with the Homeless Outreach Team, to respond to transient encampment trash complaints. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

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CSD-NS-18	Continue participating in source reduction initiatives.	Source reduction initiatives are ultimately the most effective measure to remove pollutants from surface waters, where feasible. Bans or progressive phase-outs that may be considered include: leaf blowers, plastic bags, architectural copper (generally a legacy issue), as well as prohibiting or more aggressively regulating vehicle washing. Additional source reduction initiatives to consider include pesticide sales at hardware stores and irrigation supply stores. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City began development of plastic bag ban ordinance. FY17 Notes: Pursuit of City-specific plastic bag ban ordinance will depend on whether Statewide plastic bag ban ballot initiative passes.
CSD-NS-19	Coordinate with Fleet Services to replace City-owned vehicle brake pads with copper-free brake pads as they become commercially available.	Consider legislative mandate and cooperative implementation of copper-free brake pads on city-owned vehicle to reduce pollutant deposition. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None
CSD-NS-22	~~Proactively~~ Coordinate with appropriate City Departments that monitor for erosion, and complete minor repair and slope stabilization on municipal property.	~~Actively~~ Coordinate with Streets Division and other appropriate City Departments that identify and repair eroding slopes that may be contributing to sediment loading. Prepare an inventory and assessment of eroding areas and their risk to surface waters. Follow assessment with a schedule for ongoing inspection and stabilization (potentially based on a number or percentage of sites annually). Consider Caltrans program as a template. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-NS-23	Conduct special studies.	Special studies will be conducted to gather data to identify pollutant sources, appropriate targets, or other information. Includes collaboration with universities. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: San Diego Regional Reference Streams and Beaches, San Diego Wet Weather Epidemiology Study

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CSD-NS-26	Participate in Reference Watershed Study.	The San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Refer to Section 5.1 for further details. Will occur region-wide. Funding and resources were previously secured.	Prior to FY16	Completed within schedule	Yes	No Change	Completed	FY16 Notes: See Section4.3.1.1 in Appendix 4for more information.
CSD-NS-27	Participate in Reference Beach Study.	The San Diego Regional Reference Beach Study (currently being conducted by the Southern California Coastal Water Research Project) will develop numeric targets that account for "natural sources" to establish the concentrations or loads from the beach in a minimally disturbed or "reference" condition. The purpose of this monitoring program is to advise the public of potential health risks that could occur with water contact recreation at local beaches. DEH will post a health advisory notice or close a beach when FIB results are above REC-1 water quality standards. Will occur region-wide in the Los Peñasquitos, San Dieguito River, Mission Bay, and San Diego River WMAs. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	One time	Yes	Revised to clarify strategy.	Completed	FY16 Notes: See Section 4.3.1.2 in Appendix 4for more information.
CSD-NS-32	Conduct a Storm Water Fee Study~~Cost of Service Study~~.	Conduct a Storm Water Fee Study~~Cost of Service Study~~ that will examine the full cost of flood control and storm water strategies needed to comply with storm water regulations for the City of San Diego. The City of San Diego's Watershed Asset Management Plan will be used as the basis for the study. Funding and resources have been secured for FY2016.	FY16	Completed within schedule	Yes	No Change	Yes	FY16 Notes: Significant progress was made on the fee study; it will be finalized and posted on the City website in FY17. FY17 Notes: Study results to be posted in FY17.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-33	Conduct Sustainable Return on Investment (SROI) analysis to estimate strategies' co-benefits and impacts to the public and the private sector on a common scale.	SROI is an economics-based framework for evaluating quantitative and qualitative performance metrics and monetizing them, if possible, along a triple bottom line (i.e. financial, societal, and environmental). This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated one-time cost to implement is $115,000. Once initiated, the analysis is expected to be complete in 1 year.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-34	Collaborate with the County, if a County-led regional social services effort is established, to provide sanitation and trash management for individuals experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	Support a non-profit or consortium to provide sanitation services associated with hygiene as well as trash management for persons experiencing homelessness. Rented or purchased shower/sanitary trailers providing mobile showers may be organized at specifically scheduled locations and times. This provision has been proposed as a method for preventing surface water usage for sanitation and bathing, as well as opportunity for outreach and referral by social service agencies. The trash management services will include providing trash bags, trash collection areas, and shower/sanitary facilities at centers which provide daytime shelter to their clients, or on a mobile-basis for known transit camps. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy includes an initial first year planning cost of $30,000 and implementation is expected to cost $10,000 annually thereafter. Once initiated, development of the program is expected in 1 year. Implementation is in perpetuity as long as funding is available.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-37	Participate in an assessment to determine if implementation of an urban tree canopy (UTC) program would benefit water quality and other City goals, where feasible.	Perform a feasibility study to determine if implementing an UTC program would be beneficial to the City's goals. UTC intercepts rainfall through increased coverage of leaves, branches, and stems and reduces runoff from the storm drainage system. Benefits associated with enhancing an UTC include reducing heat island effects and air pollution in addition to aesthetics and community benefits. Where feasible, native trees will be utilized to prevent invasive trees from migrating to open spaces and to conserve water. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, implementation and assessment is expected in 2 years.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-38	Conduct a feasibility study to test Permeable Friction Course (PFC), a porous asphalt that overlays impermeable asphalt.	Perform an assessment to determine the feasibility of implementing PFC on City streets. PFC, an overlay of porous asphalt, is an innovative roadway material that improves driving conditions in wet weather and water quality. Placed in a layer 25-50mm thick on top of regular impermeable pavement, PFC allows rainfall to drain within the porous layer rather than on top of the pavement. PFC has also been shown to reduce concentrations of pollutants commonly observed in highway runoff. PFC incorporates stormwater treatment into the roadway surface and does not require additional right-of-way. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy is $50,000. Once initiated, implementation and assessment is expected in 2 years.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-39	As opportunities arise and funding sources are identified, protect areas that are functioning naturally by avoiding impervious development and degradation on unpaved open space areas, creating permanent open space protections on undeveloped city-owned land, and accepting privately-owned undeveloped open areas.	This strategy may be implemented if there is interest in participation by the public or private entity with current control of the land. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) identification of partners, if needed (public, private, non-profit), 2) identification of costs and potential sources of funding, 3) final agreement by public or private entity with current control of the land, 4) final agreement by all other participating partners including acceptance by intended land- or asset-owning City department, and 5) funding in place. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The time frame for implementation will vary by project. Implementation is in perpetuity as long as funding is available.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None
CSD-NS-44	Participate in a watershed council or group if one is established.	This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) partners have been identified and formal MOUs have been developed and 2) consensus and community support has been achieved. Resources necessary to implement this strategy include a coordinator or project manager. Projected funding needs may be met through award of a grant, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, development of the program is expected in 2 years. Implementation would be in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-47	Coordinate with Development Services Department to ~~P~~prohibit introduction of invasive plants in new development and redevelopment projects.	Coordinate with the City's Development Services Department to continue to prohibit introduction of invasive species such as *Arundo donax* and *Cortaderia selloana* for new development or redevelopment projects as specified in the City's municipal code for landscape. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-NS-51	Collaboration with the Regional Board.	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit, 2) enforcement of the Ag Waiver, 3) enforcement of other non-MS4 dischargers, and 4) Bacteria TMDL updates, as appropriate for each WMA. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	City-specific version of WMA strategy.	Yes	FY16 Notes: Provided written comments to the Regional Board, State Water Board, and US Environmental Protection Agency (EPA) regarding proposed rules and regulations.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-53	Refinement of Water Quality Regulations	Collaborate with other Responsible Agencies and the Regional Board to refine the accuracy of regulations to ensure that Non-MS4 dischargers are regulated appropriately. The goal of this exercise is to begin a dialog with the Regional Board that may lead to the following outcomes: 1) Removal of Non-MS4 discharges and the associated BMPs needed to treat those discharges from the Responsible Agencies' burden, 2) amendment of current TMDLs and the MS4 Permit to correctly assign responsibilities for Non-MS4 discharges to the appropriate entities, and 3) strengthening of Non-MS4 NPDES permits that are directly tied to the requirements of existing and future TMDLs. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Resources to implement this strategy include staff time and are currently secured.	Prior to FY16	Continuous-Ongoing	Yes	City-specific version of WMA strategy.	Yes	FY16 Notes: City coordinated with the Regional Board to discuss addressing non-MS4 contributions in TMDL and other water quality regulations.
CSD-NS-60	Coordinate with Development Services Department to implement Sustainable Landscapes Program to encourage landscape retrofits.	Collaborate with other San Diego River WMA Responsible Agencies to implement a Sustainable Landscapes Program. Implementation of this strategy may be triggered if (1) an interim goal has not been met, (2) it has been determined though adaptive management that implementation is necessary, and (3) all of the resources have been identified and secured. The following resources must be secured for each fiscal year that this program is implemented: (1) Partners must be identified and each partner must agree to terms of partnership, (2) funding must be identified and secured by each of the partners for their portion of the overall cost, (3) staff resources must be identified and secured, (4) the scope of the program (target location(s), type and value of incentives, etc.) must be identified, and (5) consensus and community support has been achieved.	Must be triggered	Continuous-Ongoing	Not Triggered	City-specific version of WMA strategy.	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-61	Implement wastewater management program to prevent sanitary sewer overflows.	Collaborate with other San Diego River WMA Responsible Agencies to implement wastewater management strategies targeting Fats, Oils, and Grease (FOG) to reduce sanitary sewer overflows (SSOs). Develop and print guidance materials that address septic system maintenance and FOG management. Conduct workshops, training sessions, and other media outreach. This effort will require community support and partnerships to be established. Resources and funding include Grant funding from Proposition 1. Implementation of this strategy may be triggered if (1) an interim goal has not been met, (2) it has been determined though adaptive management that implementation is necessary, and (3) all of the resources have been identified and secured. The following resources must be secured for each fiscal year that this program is implemented: (1) Partners must be identified and each partner must agree to terms of partnership, (2) funding must be identified and secured by each of the partners for their portion of the overall cost, (3) staff resources must be identified and secured, (4) the scope of the program (target location(s), type and value of incentives, etc.) must be identified, and (5) consensus and community support has been achieved.	Must be triggered	Completed within schedule	Not Triggered	City-specific version of WMA strategy.	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Structural Strategies								
CSD-STRUCT-02	San Diego River Restoration and Trash Removal Project: The City of San Diego will implement a project involving restoration of native habitat and trash removal along 5,750 feet of the San Diego River covering approximately 57 acres. Work on this project is scheduled to begin in 2016 and be completed by 2022.	The City of San Diego will implement a project that will restore native habitat and involve trash removal along 5,750 feet of the San Diego River. The City will be completing the project design and obtaining the necessary permits and approval from City Council in FY 16. The following resources, funds, and steps are needed to implement the project by the end of FY 16: 1) Hire design consultant to develop detailed construction plans and construction cost estimates 2) Complete construction contractor bid and award process for construction phase 3) Construct project 4) Operation and maintenance will be in perpetuity. Funds and staff resources for this function will be approved by City Council as part of the City's annual budget	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Received USACOE Nationwide verification letter and CADFW Streambed Alteration Agreement. FY17 Notes: Planned activities in FY 17 include removal of all trash, non-native vegetation, and illegal encampments from the project area. A temporary irrigation system will be installed, along with native container plants and native seed. Prior to the end of FY 17, the goal is to start the 120 Day Plant Establishment Period.
Green Infrastructure								
CSD-GI-07	Bioretention at Allied Gardens Recreation Area.	Bioretention designed for Allied Gardens Recreation Area to treat a drainage area of 4.5 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY17 Notes: Construction finishing in FY17. See Table A2-19 for a current list of completed and planned Structural Projects.
CSD-GI-08	Bioretention at Famosa Slough.	Bioretention designed for Famosa Slough to treat a drainage area of 10.3 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY17	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	Yes	FY17 Notes: Design team will investigate project feasibility.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-GI-09	~~20.1~~ 16 acres of bioretention and 4.1 acres of permeable pavement have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 522.33 acres (total drainage area of 1510 ac) with a total storage volume of 23.97 acre-feet.	To meet the San Diego River WMA numeric goals and schedules presented in Section 3, the City of San Diego will implement the following structural strategies. Staggered construction, operation, and maintenance of ~~20.1~~ 16 acres of bioretention and 4.1 acres of permeable pavement to treat an impervious drainage area of 522.33 acres (total drainage area of 1510 ac) with a total storage volume of 23.97 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY22	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy.	NA, Not scheduled to be implemented in FY17	See Table A2-19 for a current list of completed and planned Structural Projects.
CSD-GI-14	Cabrillo Heights Rain Garden	Rain garden constructed on Kearny Villa Rd. used to treat a drainage area of 6 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY17 Notes: Increase inspection & cleaning to a minimum of 2 annually. See Table A2-19 for a current list of completed and planned Structural Projects.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Green Streets								
CSD-GS-10	43.61 acres of green streets (35.77 acres of bioretention and 7.84 acres of permeable pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 10,715.24 acres with a total storage volume of 88.02 acre-feet.	To meet the San Diego River WMA numeric goals and schedules presented in Section 3, the City of San Diego will implement the following structural strategies. Staggered construction, operation and maintenance of 43.61 acres of green streets (35.77 acres of bioretention and 7.84 acres of permeable pavement) to treat a total drainage area of 10,715.24 acres with a total storage volume of 88.02 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY24	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy.	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table A2-19.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Multiuse Treatment Areas								
Infiltration and Detention Basins								
CSD-MUTA-09	Multiuse Treatment Area BMPs in the San Diego River WMA.	To meet the San Diego River WMA numeric goals and schedules presented in Section 3, the City of San Diego will implement the following structural strategies. Modeled MUTA BMPs with footprints of 4.3 acres (ac) in FY19 (total drainage area of 571 ac), 18.6 ac in FY20 (total drainage area of 1309 ac), 5.3 ac in FY21 (total drainage area of 591 ac), and 2.3 ac in FY22 (total drainage area of 315 ac). These can be wetland, infiltration, retention and/or detentions systems. An updated inventory of MUTA projects will be maintained in the WQIP Annual Report. The following resources, funds, and steps are needed to implement this strategy: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	FY19, FY20, FY21, FY22	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Multiple similar strategies were compiled into this new strategy listing to simplify recordkeeping and reporting.	NA, Not scheduled to be implemented in FY17	None. Future projects will be listed in Table A2-19.

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Stream, Channel and Habitat Rehabilitation Projects (B.3.b.(1)(b)(iii))								
CSD-MUTA-20	If interim load reduction goals are not met and additional stream, channel, and habitat rehabilitation projects are required, implement as needed.	This strategy may be triggered as 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, 4) permits required by regulatory agencies are secured, and 5) recommendations from the community are identified and consensus and community support has been achieved. Will occur in areas identified during feasibility studies. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Water Quality Improvement BMPs								
Priority Development Projects (PDPs)								
CSD-PDP-04	Priority Development Project BMPs in San Diego River WMA.	Per the Storm Water Standards Manual, all non-exempt public PDPs are subject to requirements to construct and maintain permanent BMPs. See WQIP Annual Report for updated PDP BMP Inventory. Funding and resources have been secured for PDPs implemented prior to FY16. Funding for PDP BMPs constructed in future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16, FY17	Continuous-Ongoing	Yes	Multiple similar strategies were compiled into this new strategy listing to simplify recordkeeping and reporting.	Yes	See Table A2-20 for a current list of PDP BMPs.
Proprietary BMPs								
~~(Removed)~~	~~3 Drain Inserts in Complex Street Green Mall.~~	~~3 drainage inserts planned for implementation in Complex Street Green Mall. The following resources, funds, and steps are needed to implement this strategy:~~ ~~1) Identify project locations (3-6 months)~~ ~~2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs)~~ ~~3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May)~~ ~~4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project)~~ ~~5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project)~~ ~~6) Complete construction contractor bid and award process for construction phase (6 months)~~ ~~7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project).~~ ~~8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.~~	~~FY17~~	~~Continuous-Ongoing~~	Cancelled	This project has been cancelled since it is unlikely to provide a significant water quality benefit.	No	This project was originally conceived in 2010. Recent Storm Water Division research has indicated that drainage inserts are not effective at removing pollutants from storm water.

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-WQBMP-03	Park Ridge hydrodynamic separator	A hydrodynamic separator used to treat onsite runoff of 37.6 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY17	Continuous-Ongoing	Yes	No Change	Yes	FY17 Notes: Increase inspection & cleaning to a minimum of 2 annually
Dry Weather Flow Separation and Treatment Projects								
CSD-WQBMP-09	If interim load reduction goals are not met and additional dry weather flow separation and treatment projects are required, implement as needed.	Construction of dry weather flow separation and treatment projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Trash Segregation								
CSD-WQBMP-10	If interim load reduction goals are not met and additional trash segregation projects are required, implement as needed.	Construction of trash segregation (Trash Guards, etc.) projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in high loading areas city-wide. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; approx $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-6	Offsite Alternative Compliance Option ~~(WMAA)~~	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, ~~anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015,~~ which was submitted and approved in FY 2016. Following this approval, jurisdictions can formally implement an optional Alternative Compliance Program by ~~December 2015~~ February 2016 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Phase 1 of the Alternative Compliance Program (ACP) went into effect on 2/16/16. FY17 Notes: Proposed Water Quality Equivalency (WQE) guideline development for stream restoration.
WMA-9	Collaboration with the Regional Board.	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of other non-MS4 dischargers and 2) Bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Working with Regional Board to include non-Phase I MS4s in general permits, waivers, and Waste Discharge Requirements (WDRs).

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-12	Refinement of Water Quality Regulations	The Responsible Agencies will collaborate with the Regional Board to refine the accuracy of regulations to ensure that Non-MS4 dischargers are regulated appropriately. The goal of this exercise is to begin a dialog with the Regional Board that may lead to the following outcomes: 1) Removal of Non-MS4 discharges and the associated BMPs needed to treat those discharges from the Responsible Agencies' burden, 2) amendment of current TMDLs and the MS4 Permit to correctly assign responsibilities for Non-MS4 discharges to the appropriate entities, and 3) strengthening of Non-MS4 NPDES permits that are directly tied to the requirements of existing and future TMDLs. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Resources to implement this strategy include staff time and are currently secured.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: City coordinated with Regional Board to discuss bacteria TMDL addressing non-MS4 contributions.
WMA-21	Coordinate with Development Services Department to implement Sustainable Landscapes Program to encourage landscape retrofits.	Implementation of this strategy may be triggered if (1) an interim goal has not been met, (2) it has been determined though adaptive management that implementation is necessary, and (3) all of the resources have been identified and secured. The following resources must be secured for each fiscal year that this program is implemented: (1) Partners must be identified and each partner must agree to terms of partnership, (2) funding must be identified and secured by each of the partners for their portion of the overall cost, (3) staff resources must be identified and secured, (4) the scope of the program (target location(s), type and value of incentives, etc.) must be identified, and (5) consensus and community support has been achieved.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table A2-18. City of San Diego Jurisdictional Strategies for San Diego River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-22	Implement wastewater management program to prevent sanitary sewer overflows.	Develop and print guidance materials that address septic system maintenance and Fats, Oils, and Grease (FOG) management. Conduct workshops, training sessions, and other media outreach. This effort will require community support and partnerships to be established. Resources and funding include Grant funding from Proposition 1. Implementation of this strategy may be triggered if (1) an interim goal has not been met, (2) it has been determined though adaptive management that implementation is necessary, and (3) all of the resources have been identified and secured. The following resources must be secured for each fiscal year that this program is implemented: (1) Partners must be identified and each partner must agree to terms of partnership, (2) funding must be identified and secured by each of the partners for their portion of the overall cost, (3) staff resources must be identified and secured, (4) the scope of the program (target location(s), type and value of incentives, etc.) must be identified, and (5) consensus and community support has been achieved.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table A2-19. City of San Diego Structural BMP Implementation Status for San Diego River WMA

Strategy Number	Strategy	Implementation Approach	Total Drainage Area (Ac)	Implementation Year*	Status	Permit Term Goal**
Green Infrastructure		Total Acres Treated Required for Green Infrastructure:	1,520.50			
CSD-GI-07	Bioretention at Allied Gardens Recreation Area.	Bioretention designed for Allied Gardens Recreation Area to treat a drainage area of 4.5 acres.	4.5	FY16	Construction	✓
CSD-GI-14	Cabrillo Heights Rain Garden	Rain garden constructed on Kearny Villa Rd. used to treat a drainage area of 6 acres.	6	Prior to FY16	Completed	✓
CSD-GI-09	16 acres of bioretention and 4.1 acres of permeable pavement have been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 522.33 acres (total drainage area of 1510 ac) with a total storage volume of 23.97 acre-feet.	Staggered construction, operation, and maintenance of 16 acres of bioretention and 4.1 acres of permeable pavement to treat an impervious drainage area of 522.33 acres (total drainage area of 1510 ac) with a total storage volume of 23.97 acre-feet. An updated inventory of green infrastructure projects will be maintained in the WQIP Annual Report.	1,510	FY22	Varies, see below	Varies, see below
	Project Name	Project Description	Total Drainage Area (Ac)	Implementation Year	Status	Permit Term Goal
	Serra Mesa GI	Shawn Ave near Bantam Ave, Palace Dr near Bantam Ave, Larabee Pl	22	FY 19	Design	
	Kearny Mesa GI	Murphy Canyon Road north of Clairemont Mesa Boulevard	255	FY 20	Design	
Green Streets		Total Acres Treated Required for Green Streets:	10,715.24			
CSD-GS-10	43.61 acres of green streets (35.77 acres of bioretention and 7.84 acres of permeable pavement) have been identified as potential opportunities for green street projects to treat a total drainage area of 10,715.24 acres with a total storage volume of 88.02 acre-feet.	Staggered construction, operation and maintenance of 43.61 acres of green streets (35.77 acres of bioretention and 7.84 acres of permeable pavement) to treat a total drainage area of 10,715.24 acres with a total storage volume of 88.02 acre-feet. An updated inventory of green streets projects will be maintained in the WQIP Annual Report.	10,715.24	FY24	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
	Project Name	Project Description	Total Drainage Area (Ac)	Implementation Year	Status	Permit Term Goal
	(Projects will be added as they reach the design stage)					
Multiuse Treatment Areas		Total Acres Treated Required for MUTAs:	2,786			
CSD-MUTA-09	Multiuse Treatment Area BMPs in the San Diego River WMA.	Modeled MUTA BMPs with footprints of 4.3 acres (ac) in FY19 (total drainage area of 571 ac), 18.6 ac in FY20 (total drainage area of 1309 ac), 5.3 ac in FY21 (total drainage area of 591 ac), and 2.3 ac in FY22 (total drainage area of 315 ac). These can be wetland, infiltration, retention and/or detentions systems. An updated inventory of MUTA projects will be maintained in the WQIP Annual Report.	571	FY19	*(Overall amounts of projects have been determined through modeling or similar means. Details of specific projects initiated as part of this strategy are entered below once they enter the design stage.)*	
			1,309	FY20		
			591	FY21		
			315	FY22		
	Project Name	Project Description	Total Drainage Area (Ac)	Implementation Year	Status	Permit Term Goal
	(Projects will be added as they reach the design stage)					
Water Quality Improvement BMPs		Total Acres Treated Required for WQI BMPs:	37.6			
CSD-WQBMP-03	Park Ridge hydrodynamic separator	A hydrodynamic separator used to treat onsite runoff of 37.6 acres.	37.6	FY17	Completed	✓

*For additional details, please see the schedule following the City's strategy table in the WQIP.

** Projects with a check in the "Permit Term Goal" column are counted toward the green infrastructure installation goal applicable to the current Permit term. See Table A2-21 for a summary

Table A2-20. City of San Diego Priority Development Project Implementation Status for San Diego River WMA

San Diego River PDP BMP Ledger (CSD-PDP-04)					
Project Name	Project Description	Total Drainage Area (Ac)	Implementation Year	Status	Permit Term Goal
6 Vegetated Swales in Mission Trails Regional Park E. Fortuna Equestrian Staging Area	6 Vegetated Swales planned for Mission Trails Regional Park E. Fortuna Equestrian Staging Area.	unknown	FY17	Completed	
El Capitan Reservoir	3 drainage inserts planned for implementation in El Capitan Reservoir.	unknown	Prior to FY16	Completed	
Murray Reservoir	5 drainage inserts planned for implementation in Murray Reservoir.	unknown	Prior to FY16	Completed	
San Vicente Reservoir	1 drainage insert planned for implementation in San Vicente Reservoir.	unknown	Prior to FY16	Completed	
Serra Mesa/Kearny Mesa Library	A hydrodynamic separator used to treat onsite runoff at Serra Mesa/Kearny Mesa Library.	unknown	Prior to FY16	Completed	

* Projects with a check in the "Permit Term Goal" column are counted toward the green infrastructure installation goal applicable to the current Permit term. See Table A2-21 for a summary.

Table A2-21. Summary of City of San Diego Priority Structural BMP Implementation Status for San Diego River WMA

Permit Term Goal FY2018	Total Drainage Area (Ac)
Structural BMP Total Acres Treated Required by FY 18	58.40 (Required by FY 18)
Total Completed/Planned BMPs	48.10
Total Completed/Planned PDP BMPs	
Remaining to Goal	10.30
Final Goals FY2031*	**Total Drainage Area (Ac)**
Green Infrastructure Total Acres Treated Required	1,520.50
Total Completed/Planned	287.50
Remaining to Final Amount of Acres Treated	1,233.00
Green Streets Total Acres Treated Required	10,715.24
Total Completed/Planned	0.00
Remaining to Final Amount of Acres Treated	10,715.24
MUTA Total Acres Treated Required	2,786.00
Total Completed/Planned	0.00
Remaining to Final Amount of Acres Treated	2,786.00
WQI BMP Total Acres Treated Required	37.60
Total Completed/Planned	37.60
Remaining to Final Amount of Acres Treated	0.00

*Based on the "MS4 Discharges: Implement Accepted WQIP" compliance pathway. Final compliance is implementation of BMPs based on modeling analysis results.

5.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

In FY16 the City, along with other government agencies, professional engineers and members of the local development community, developed a new Regional Best Management Practices (BMP) Design Manual that conforms to the 2013 Municipal Storm Water Permit (Order No. R9-2013-0001, as amended by R9-2015-0001 and R9-2015-0100). The Manual supersedes the San Diego County-wide Model Standard Urban Runoff Storm Water Management Plan (SUSMP) and provides technical guidance and regional standards for pollutant and flow control requirements for new development and significant redevelopment. The City of San Diego's local version of the BMP Design Manual, the Storm Water Standards Manual, became effective on February 16, 2016.

5.5 MODIFICATIONS TO THE JRMP

The City of San Diego is proposing administrative changes to its JRMP. The updated JRMP can be viewed at https://www.sandiego.gov/stormwater/plansreports/jrmp. These changes are summarized below.

	JRMP Section / Appendix	JRMP Update
1	Executive Summary	Strategy categories and definitions were modified to align with the categories and definitions in the Municipal Storm Water Permit and San Diego Water Board's approved Water Quality Improvement Plans (WQIPs).
2	Section 2.3	In accordance with the Municipal Storm Water Permit, Section 2.3 was updated to state that JRMP updates can be proposed/submitted as part of the WQIP Annual Reports.
3	Section 7.3.13-8	Updated BMP #16 to provide greater clarity.
4	Section 7.3.14	Updated section to include new BMPs for herbicide application.
5	Section 10	Strategy categories and definitions were modified to align with the categories and definitions in the Municipal Storm Water Permit and San Diego Water Board's approved WQIPs. Updated tables, graphs, charts, and text to reflect funding needs to meet the goals and schedules identified in the WQIPs. Added language stating "Estimates of funding needs presented were based on the best information available at the time they were prepared."
6	Sections 7.3.1, 7.3.2, and 7.3.4-15	Updated Minimum BMP language to reflect changes to Appendix IX.

	JRMP Section / Appendix	JRMP Update
7	Section 3, Section 4, Section 5, Section 6, Section 7, Section 8, Section 9	Based on updates made to the categories and definitions of strategies noted above, the "JRMP Strategies Identified in the WQIPs" tables and "Additional Public Education and Participation Program WQIP Strategies" tables for these sections have been updated for consistency. The strategy identification numbering system and text was updated to reflect administrative changes included in the WQIP Annual Reports.
8	Appendix VI- Residential Management Areas and Patrol Protocols	Updated the residential management areas maps and included newly developed patrol protocols.
9	Appendix IX - Minimum BMPs for Residential, Industrial, Commercial, and Municipal Sites/Sources	Updated references to ordinance sections, changed the "Think Blue" references to the Storm Water Division, and made minor changes to some BMP and description wording for clarification.
10	Appendix XIV- Certificate of Adequate Legal Authority	Signed Certificate of Adequate Legal Authority was added.
11	Appendix XX- Water Quality Improvement Plan Strategies	Updated strategies to reflect the administrative changes made to strategies in the Fiscal Year 2016 WQIP Annual Reports.
12	Appendix XXII- Storm Water Division Projected Funding Needs, 2016-2035	Updated Appendix XX to reflect the funding needs to meet the goals and schedules identified in the WQIPs.

6 Caltrans

6.1 ANNUAL REPORT CERTIFICATION

DEPARTMENT OF TRANSPORTATION
DISTRICT 11
4050 TAYLOR STREET, M.S. 120
SAN DIEGO, CA 92110
PHONE (619) 688-0100
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TTY 711
www.dot.ca.gov

Serious drought.
Help save water!

January 4, 2017

STATEMENT OF CERTIFICATION

San Diego River Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

BRUCE L. APRIL
Deputy District Director, Environmental

1/6/17
Date

6.2 JURISDICTIONAL STRATEGIES

~~Strikeouts~~ are text edits that have been made up to the current date since the WQIP September 2015 submittal.

Table A2-22. Caltrans Jurisdictional Strategies and Implementation Schedules for Development Planning

San Diego River Development Planning Program Strategies Caltrans	FY15-16	FY16-17	Actual /	Rationale for Modification to the Strategy	Comments
1. Provide updated materials, enhanced outreach, and training to convey land development requirements.					
Stormwater Treatment BMP Technology Report and Stormwater Monitoring and BMP Development Status Report	●	●	A		*Stormwater Monitoring and BMP Development Status Report: Fiscal Year 2015-2016 Update*, September 2015, which provides an update on the status of stormwater treatment technology studies, source control studies (including erosion control studies), and stormwater quality characterization
2. Implement a post construction BMP program for development projects to ensure proper construction and maintenance.					
Implement a program that ensures that all structural BMPs are designed, constructed, and maintained ~~on PDPs~~.	●	●	A	Caltrans implements structural BMPs but does not have Priority Development Projects.	Created a new website application (CT Portal) dedicated for reporting all structural BMPs that were designed, constructed and maintained.
Structural BMPs (which retain water for more than 96 hours) inventory	●	●	A		
Inspect all high priority structural BMPs annually.	●	●	A	Clarified frequency.	
3. Enforce post construction requirements related to new and redevelopment.					
Enforce legal authority to ensure all development projects are in compliance with all post construction requirements.	●	●	A		

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

Table A2-23 Caltrans Jurisdictional Strategies and Implementation Schedules for Construction Management

San Diego River Construction Management Program Strategies Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Ensure that minimum BMPs are designated and required for construction projects.					
Implement or require implementation of BMPs that are site specific, seasonally appropriate, and appropriate to the construction phase year round.	●	●	A		Caltrans continued to track new and/or emerging post-construction stormwater treatment technologies
2. Provide enhanced outreach and coordination to convey construction requirements.					
Provide internal staff training related to construction stormwater management.	●	●	A		During the fiscal year, construction stormwater classes were offered to Construction personnel on stormwater topics.
Provide public education and outreach targeting the construction industry.	●	●	A		
Develop and implement new construction guidance as needed to comply with new Statewide Construction General Permit (CGP)	●	●	A		Full implementation of the CGP occurred in this fiscal year.

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

Table A2-24. Caltrans Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Improve trash management strategies within the watershed.					
Implement "Don't Trash California" campaign.	●	●	A		Caltrans collects trash through several activities that District Maintenance personnel perform on a regular basis. These activities include storm drain maintenance, roadway sweeping, District crew/California Conservation Corps (CCC) trash collection, and the Adopt-A-Highway Program, and public education emphasizing trash and litter prevention.
Implementation of Adopt-A-Highway Statewide Program through coordination with local organizations.	●	●	A		The Caltrans Adopt-A-Highway Program provides an avenue for individuals, organizations, or businesses to help maintain sections of roadside for various activities including litter removal within California's State Highway System.
Report and evaluate trash and litter activities.	●	●	A		
Implement a schedule of operation and maintenance for highways.	●	●	A		The Division of Construction staff continued providing the coordinates of treatment BMPs to facilitate transfer to the Division of Maintenance using a designated handoff form. The Division of Maintenance uses its Integrated Maintenance Management System (IMMS) to track maintenance records of treatment BMPs as provided by the Districts.
Implement highway maintenance activities as required.	●	●	A		

Table A2-24. Caltrans Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
2. Actively educate public on prohibitions related to illicit discharges and connections.					
Implement and annually evaluate public education program.	●	●	A		The Division of Maintenance helps sponsor the California Statewide Litter Collection, Enforcement and Beautification Day event held in the spring on or around Earth Day each year. Caltrans staff volunteers to collect litter and raise public awareness of the issue. Caltrans participates in supporting the California "Keep California Beautiful" campaign with Caltrans' "Protect Every Drop" campaign
Co-sponsor CASQA's Water Quality Newsflash	●	●	A		
Implementation of Statewide Storm Drain Stenciling Program	●	●	A		
Develop and implement Facility Pollution Prevention Plans.	●	●	A		Year- End Performance Report FY 2015-2016, A Summary of Maintenance Activity Storm Water Compliance Reviews, September 2015, which summarizes the stormwater compliance reviews of Maintenance activities. Caltrans is required to develop a Facility Pollution Prevention Plan (FPPP) for each of its maintenance facilities. Each FPPP describes the activities conducted at the facility and the BMPs to reduce or eliminate the discharge of pollutants in stormwater runoff from the facility. All FPPPs will be updated or revised as needed during each year.

Table A2-24. Caltrans Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
Develop and implement guidance to ensure ~~industrial~~ construction activities and facilities are covered by the ~~Industrial~~ Construction General Permit (CGP) as required.	●	●	A	Caltrans does not have facilities subject to the IGP within the watershed, but Caltrans has construction projects subject to the CGP.	Full implementation of the CGP occurred in this fiscal year.
Develop and implement a Municipal Coordination Plan	●	●	A		Caltrans' Municipal Coordination Plan was under development during the reporting period. In the interim, the Districts participated in municipal coordination activities by attending meetings, taking part in special studies, and collaborating with local agencies. District staff attended meetings statewide with municipal stormwater permittees to coordinate public education and outreach, regional planning, and other related activities.
3. Enhance existing maintenance programs.					
Implement a schedule of operation and maintenance activities for related structures.	●	●	A		The Division of Construction staff continued providing the coordinates of treatment BMPs to facilitate transfer to the Division of Maintenance using a designated handoff form. The Division of Maintenance uses its Integrated Maintenance Management System (IMMS) to track maintenance records of treatment BMPs as provided by the Districts.

Table A2-24. Caltrans Jurisdictional Strategies and Implementation Schedules for Existing Development Management

San Diego River Existing Development Program Strategies Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
4. Improve existing inspections programs to more efficiently target key sources.					
Conduct inspections of inventoried existing development to ensure compliance. ~~Each area/activity inspected once every five years minimum, with equivalent of 20% of inventory inspected annually.~~	●	●	A	Frequency stated is from the Phase I municipalities' MS4 Permit. Caltrans conducts inspections in accordance with the requirements of its Permit.	
5. Identify and facilitate retrofit opportunities in areas of existing development.					
Develop a strategy to identify opportunities and facilitate the implementation of retrofit projects in areas of existing development.	●	●	A		

Notes:
● - Fully implemented; ◖ - Partially Implemented, X – Not Implemented
A – Actual (active implementation), P – Planned (planning stage)

APPENDIX 3

Water Quality Improvement Plan Numeric Goals

Appendix 3 Water Quality Improvement Plan Numeric Goals

Compliance with the Bacteria Total Maximum Daily Load (TMDL) may be demonstrated via several methods. Since each compliance pathway provides an independent option to demonstrate progress and ultimately compliance with the TMDL, any one of the following compliance pathways may be used for assessment purposes. The pathways that may be used to demonstrate progress toward the interim and final TMDL goals in the San Diego River Watershed Management Area (WMA or Watershed) are presented below in Table A3-1 and Table A3-2, respectively. These tables, along with additional details regarding these pathways, can be found in Sections 3.1.1 (for interim pathways) and 3.1.2 (for final pathways) of the San Diego River Water Quality Improvement Plan (WQIP). The Participating Agencies have developed individual jurisdictional goals for Pathway 6, which are shown in Tables A3-3 through A3-6, and these numeric goals were used to assess progress in this 2015-2016 WQIP Annual Report.

Table A3-1. Pathways to Achieve Required Interim TMDL Goals

Pathway	Title	Interim Target	Metric	Values to be met		
				Indicator	Dry[c]	Wet
1 OR	Meet bacteria allowable exceedance frequency of receiving water objectives	No exceedances of the interim receiving water limitations;	Exceedance frequencies as measured in receiving waters.	Total Coliform[a]	.28% AEF[d]	46% AEF
				Fecal Coliform	0% AEF	43% AEF
				Enterococcus	1.5% AEF	49%(creeks) 51% (Beaches) AEF
2 OR	No discharge from stormwater drain outfalls	No direct or indirect discharge from the Participating Agencies' storm drain outfalls to the receiving water;	Assessment of presence/absence of flow and connectivity with receiving water.	Flow observations or measurements		
3 OR	Reduce loads at storm drain outfalls	The pollutant load reductions for discharges from the Participating Agencies' outfalls are greater than the required load reduction;	Pollutant load reductions.	Total Coliform	37.02% reduction	17.3% reduction
				Fecal Coliform	34.72% reduction	17.3% reduction
				Enterococcus	46.98% reduction	17.3 % reduction
4 OR	Show Exceedances are from natural sources	Demonstrate that exceedances of final receiving water limitations are due to loads from natural sources	Implement Natural Source Exclusion (NSE) Approach	Monitoring and assessment of receiving water and watershed which supports the NSE approach		
5 OR	No exceedances of final receiving water limitations	There are no exceedances of the final receiving water limitations in the receiving water at, or downstream of Participating Agencies' storm drain outfalls	Assessment of receiving water	Monitoring and assessment of receiving water indicating limitations have not been exceeded		
6	Implement Plan and use adaptive management	The Participating Agencies develop and implement an accepted Plan[b]	Implementation of jurisdictional strategies	Implementation of jurisdictional strategies as developed in accepted Plan and designed to meet interim goals 1, 2 and/or 3.		

a. Receiving water limitations for total coliform only apply to beaches.
b. The Plan must provide reasonable assurance that the interim TMDL compliance requirements in Attachment E of the Permit will be met via implementation, must be accepted by the Regional Board, and must be fully implemented by the Participating Agencies.
c. Dry weather measurements at beaches.
d. AEF - allowable exceedance frequency is the percent of samples that can exceed the single sample maximum of geometric mean and still be in compliance; the AEF is calculated based on the presence of bacteria loading from natural sources.

Table A3-2. Pathways to Achieve Required Final TMDL Goals

Compliance Pathway	Final Target	Final Metric	Measurement					
			Indicator	Dry Weather			Wet Weather	
1 OR	No exceedances of the final receiving water limitations in the receiving water;	Bacteria concentrations (MPN or CFU/100 ml) and exceedance frequencies in receiving waters are less than or equal to allowable values;		SSM[a]	GM[b]	AEF[c]	SSM	AEF
			Total Coliform[d]	10,000	1,000	0%	10,000	22%
			Fecal Coliform	400	200	0%	400	22%
			Enterococcus (beaches)	104	35	0%	104	22%
			Enterococcus (creeks)	61	33		61	
2 OR	No direct or indirect discharge from the Participating Agencies' storm drain outfalls to the receiving water;	Assessment of presence/absence of flow and connectivity with receiving water;	Flow observations or measurements.					
3 OR	There are no exceedances of the final effluent limitations at the Participating Agencies' storm drain outfalls;	Bacteria concentrations (MPN or CFU/100 ml) and exceedance frequencies in discharges;		Dry			Wet	
				SSM	GM	AEF[e]	SSM	AEF[f]
			Total Coliform[g]	10,000	1,000	0%	10,000	22%
			Fecal Coliform	400	200	0%	400	22%
			Enterococcus (beaches)[h]	104	35	0%	104	22%
			Enterococcus (creeks)[i]	61	33		61	
4 OR	The pollutant load reductions for discharges from the Participating Agencies' storm drain outfalls are greater than or equal to the final load reductions;	Load reductions in discharges are greater than or equal to required load reductions. The calculation requires an understanding of the baseline load, which can be used to estimate a target load reduction;		Percent Reduction (Dry)			Percent Reduction (Wet)[j]	
			Total Coliform	74.03%			34.7%	
			Fecal Coliform	69.44%			34.7%	
			Enterococcus	93.96%			34.7%	
5 OR	Exceedances of the final receiving water limitations in the receiving water are due to loads from natural sources and pollutant loads from the Participating Agencies' storm drain outfalls are not causing or contributing to the exceedances;	Microbial source tracking results as measured in the receiving water downstream of stormwater drain outfalls;	Microbial source tracking results show anthropogenic markers are below the limits of reporting in the receiving water at the time of the exceedance in most samples.					
6	The Participating Agencies develop and implement an adopted Water Quality Improvement Plan that includes a watershed model or other watershed analytical tool(s)	Implementation of jurisdictional strategies designed to meet goals. Use an adaptive management approach to improve implementation of jurisdictional strategies to reach goals.	Implementation of jurisdictional strategies as outlined in the Plan, and of the required monitoring and assessment program.					

a. SSM = single sample maximum or the highest allowable concentration of bacteria contained in one discreet sample
b. GM = geometric mean calculated based on multiple samples over a given time frame as defined by the Ocean Plan
c. AEF = allowable exceedance frequency is the percent of samples that can exceed the single sample maximum of geometric mean and still be in compliance; the AEF is calculated based on the presence of bacteria loading from natural sources
d. Receiving water limitations for total coliform only apply to beaches.
e. For dry weather days, the dry weather bacteria densities must be consistent with the single sample maximum REC-1 water quality objectives in the Ocean Plan for discharges to beaches and the Basin Plan for discharges to creeks and creek mouths.
f. The 22% single sample maximum allowable exceedance frequency only applies to wet weather days.
g. Total coliform effluent limitations only apply to storm drain outfalls that discharge to the Pacific Ocean Shorelines and creek mouths listed in Table 6.0 of Attachment E of Order R9-2013-0001.
h. This enterococcus effluent limitation applies to storm drain discharges to segments of areas of the Pacific Ocean Shoreline listed in Table 6.0 of Attachment E of Order R9-2013-0001.
i. This enterococcus effluent limitation applies to storm drain discharges to segments of areas of the creeks or creek mouths listed in Table 6.0 of Attachment E of Order R9-2013-0001.
j. The baseline loads for the lower watershed were determined through modeling, and are presented in Appendix 3C. Wet weather target load reductions (TLRs) for this Plan were taken from the City of San Diego Phase II Comprehensive Load Reduction Plan (Tetra Tech 2013). Fecal coliform was used to represent all bacteria for the purposes of this modeling. Appendix 3C discusses the use of the load reduction estimates in the City of San Diego Phase II Comprehensive Load Reduction Plan (Tetra Tech 2013) and their relationship to this plan.

The jurisdictional goals identified by the Participating Agencies in the San Diego River WMA to demonstrate progress toward compliance with the Bacteria TMDL are presented below in Table A3-3 through Table A3-12, followed by goals developed by Caltrans. These tables, along with additional details regarding these jurisdictional goals, can be found in Section 3.1.3 of the San Diego River WMA WQIP.

3.1 City of El Cajon Jurisdictional Goals

Table A3-3. City of El Cajon Dry Weather Jurisdictional Numeric Goals

Title	Metric	Baseline	Outcome	1st Permit Term Numeric Goals 2013 - 2018	2nd Permit Term Numeric Goals 2018 - 2023	
					TMDL Interim Compliance Date April 4, 2020 [a][b]	TMDL Final Compliance Date April 4, 2021
Reduce controllable dry weather persistent flows	% reduction of flow volume or number of outfalls with flows mitigated from persistently flowing storm drain outfalls.	Baseline will be developed from previous dry weather monitoring data.	Effectively reduce controllable dry weather flow from storm drain outfalls to receiving water.	Reduce the volume of dry weather flows or the number of storm drains with dry weather flows by 10%.	Maintain 10% reduction in flows or the number of storm drains with dry weather flows and expand reduction based on results of previous actions and availability of funds.	Effectively reduce dry weather discharges from storm drain outfalls to the receiving water.
Transient encampment removal events	Increase the number of annual transient encampment removal events throughout the City's drainage channels.	Yearly average of five (5) removal events during R9-2007-0001 Permit cycle to help remove 25 cubic yards of trash and debris.	Increase annual transient encampment removal events to a minimum of eight (8) annual events to increase to 40 cubic yards of trash and debris to help reduce bacterial pollutant loads for total coliform fecal coliform and enterococcus.	Reduce gross pollutants that may contribute to bacteria loads by increasing the number of cubic yards of debris collected from drainage channels.	Continue to conduct a minimum of 8 transient encampment removal events per year and adjust the number of events accordingly to achieve compliance.	Continue to conduct a minimum of 8 transient encampment removal events per year and adjust the number of events accordingly and achieve compliance to achieve compliance with load reduction of 74.03% total coliform, 69.44% fecal coliform and 93.96% enterococcus.

a. Request moving Interim TMDL Compliance Date from April 4, 2018 (per Attachment E, 6.c(1)) to April 4, 2020 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.

b. Percent Load Reductions reported in Table 6.3 (Final) and Table 6.6 (Interim) of Attachment E to Order R9-2013-0001 are compared to pollutant loads from 2001 and 2002 as noted in the table footnotes.

Table A3-4. City of El Cajon Wet Weather Jurisdictional Numeric Goals

Title	Metric	Baseline	Outcome	1st Permit Term 2013 - 2018	2nd Permit Term 2018 - 2023	3rd Permit Term 2023 - 2028	4th Permit Term 2028 - 2033
						Meet TMDL Interim Compliance Date April 4, 2028 [a] [b]	Meet TMDL Final Compliance Date April 4, 2031
Non-structural BMP (Creek Cleanup)	Reduce bacterial loads in Forrester Creek	5 cubic yards of solid waste (i.e. trash and debris) per cleanup event	Reduce trash and debris to help reduce bacteria loads.	Sponsor, coordinate with jurisdictions creek clean-up events in 1 focused management area, bi-annually; segregate and quantify waste materials.	Sponsor, coordinate with jurisdictions creek clean-up events in 1 focused management area, bi-annually; segregate and quantify waste materials.	Sponsor, coordinate with jurisdictions creek clean-up events in 1 focused management area, bi-annually; segregate and quantify waste materials.	Reduce bacteria[c] loads by 34.7% from the storm drain outfalls by continued implementation of programmatic Non-structural BMPs.
Non-structural BMP (Pet Waste Outreach)	Reduce bacterial loads in Forrester Creek	5 cubic yards of solid waste (i.e. trash and debris) per event	Reduce trash and debris to help reduce bacteria loads.	Expand pet waste management outreach to 1 focused management area; or to large properties owners (i.e. apartments, commercial facilities).	Expand pet waste management outreach to 1 focused management area; or to large properties owners (i.e. apartments, commercial facilities).	Expand pet waste management outreach to 1 focused management area; or to large properties owners (i.e. apartments, commercial facilities and educational institutions).	Reduce bacteria[c] loads by 34.7%from the storm drain outfalls by continued implementation of programmatic Non-structural BMPs.

a. Request moving Interim TMDL Compliance Date from April 4, 2021 (per Attachment E, 6.c(1)) to April 4, 2028 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.

b. In accordance with Sections 6.b(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.

c. Final Wet weather load reduction values as indicated in Table 6.3 of Attachment E to Order R9-2013-0001 for Fecal Coliform and Enterococcus were updated, with San Diego Water Board concurrence, to reflect load reduction modeling utilizing Water Year 2003 (considered an average rainfall year for the SDR Watershed) instead of Water Year 1993 as utilized in the 2010 TMDL model. This updated modeling analysis and the results are presented in the City of San Diego – San Diego River Watershed Comprehensive Load Reduction Plan – Phase II (available from the City of San Diego Storm Water Division website, under Plans and Reports tab at: http://www.sandiego.gov/stormwater/pdf/sdrclrpupdate.pdf). This resulted in the required final load reduction for Fecal Coliform, for example, to change from 53.22% (Table 6.3, Att. E of 2013 Permit) to 34.7%.

3.2 CITY OF LA MESA JURISDICTIONAL GOALS

Table A3-5. City of La Mesa Dry Weather Jurisdictional Numeric Goals

Title	Metric	Baseline	Outcome	1st Permit Term Numeric Goals 2013 - 2018	2nd Permit Term Numeric Goals 2018 - 2023	
					TMDL Interim Compliance Date April 4, 2020 [a]	TMDL Final Compliance Date April 4, 2021[b]
Creek Restoration Project	Linear Feet of Structural Projects	Existing Channel Conditions	Structural Project Completion, Increased CRAM channel assessment value. Higher biologic and habitat integrity.	Perform 900 LF of Alvarado Creek Restoration	Conduct Alvarado Trunk Sewer Main Replacement Project which will replace approx. 0.75 miles of trunk sewer. Reduction in infiltration/exfiltration resulting in reduction in bacteria to meet TMDL Interim Compliance Requirements [Attachment E, 6.c.(3)]	Meet TMDL Final Compliance Requirements [Attachment E, 6.b(3)]

a. Request moving Interim TMDL Compliance Date from April 4, 2018 (per Attachment E, 6.c(1)) to April 4, 2020 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.

b. In accordance with Sections 6.b(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.

Table A3-6. City of La Mesa Wet Weather Jurisdictional Numeric Goals

Title	Metric	Baseline	Outcome	1st Permit Term 2013 - 2018	2nd Permit Term 2018 - 2023	3rd Permit Term 2023 - 2028	4th Permit Term 2028 - 2033
						Meet TMDL Interim Compliance Date April 4, 2028 [a] [b]	Meet TMDL Final Compliance Date April 4, 2031
Creek Restoration Project	Linear Feet of Structural Projects	Existing Channel Conditions	Structural Project Completion. Increased CRAM channel assessment value. Higher biologic and habitat integrity.	Perform 900 Linear Feet of Alvarado Creek Restoration resulting in a 6.3% reduction in bacteria loading form municipal land use.[c]	Conduct Alvarado Trunk Sewer Main Replacement Project which will replace .75 miles of trunk sewer. Reduction in infiltration/ exfiltration, reduction in bacteria.	Comply with any of the TMDL Interim Compliance Requirements [Attachment E, 6.c(3)]	Comply with any of the TMDL Final Compliance Requirements [Attachment E, 6.b(3)]

a. Request moving Interim TMDL Compliance Date from April 4, 2021 (per Attachment E, 6.c(1)) to April 4, 2028 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.

b. In accordance with Sections 6.b(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.

c. Geosyntec Consultants, Technical Memorandum, *San Diego River Watershed Water Quality Improvement Plan City of La Mesa – Jurisdictional Load Reduction Summary*, October 10, 2014

3.3 CITY OF SANTEE JURISDICTIONAL GOALS

Table A3-7. City of Santee Dry Weather Jurisdictional Numeric Goals

Title	Metric	Baseline	Outcome	1st Permit Term Numeric Goals 2013 - 2018	2nd Permit Term Numeric Goals 2018 - 2023	
					TMDL Interim Compliance Date April 4, 2020 [a]	TMDL Final Compliance Date April 4, 2021
MS4 Discharge Load Reduction	Load reductions in MS4 discharges	33.6 x 10^{12} MPN during Water Year 2003 (based on TMDL modeling) [b]	Reach mandatory reduction of dry weather bacteria loading from MS4 discharges identified in Attachment E	Loads[c] are reduced by 18.5% for Total Coliform; 17.4% for Fecal Coliform; 23.5% for Enterococcus from MS4 outfalls	Loads[d] are reduced by 37.02% for Total Coliform (TC), 34.72% for Fecal Coliform (FC), 46.98% for *Enterococcus (Ent)* from the MS4 outfalls	Loads[e] are reduced by 74.03% for Total Coliform (TC), 69.44% for Fecal Coliform (FC), 93.96% *for Enterococcus (Ent)* from the MS4 outfalls

a. In accordance with Permit Provisions 6.b.(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.

b. Value from table on page A33 of Attachment A to TMDL Resolution No.R9-2010-0001; monthly value translated in annual load by multiplying by 12, then City of San Diego contribution estimated to be 43% of the overall load (as a proportion of the watershed area) was subtracted.

c. Values calculated as half of the interim goals.

d. Values taken from Table 6.6 of Attachment E to Order R9-2013-0001: Anticipated load reductions for WQIP strategies were modeled using Fecal Coliform (FC) as a surrogate for all Fecal Indicator Bacteria as noted in WQIP Appendices 3C and 3F, therefore target FC load reductions were set according to the largest required indicator bacteria reduction (among TC, FC and *Ent*) to be conservative; *Enterococcus* is the controlling indicator.

e. Values taken from Table 6.3 of Attachment E to Order R9-2013-0001: Anticipated load reductions for WQIP strategies were modeled using Fecal Coliform (FC) as a surrogate for all Fecal Indicator Bacteria as noted in WQIP Appendices 3C and 3F, therefore target FC load reductions were set according to the largest required indicator bacteria reduction (among TC, FC and *Ent*) to be conservative; *Enterococcus* is the controlling indicator.

Table A3-8. City of Santee Wet Weather Jurisdictional Numeric Goals

Title	Metric	Baseline	Outcome	1st Permit Term 2013 - 2018	2nd Permit Term 2018 - 2023	3rd Permit Term 2023 - 2028	4th Permit Term 2028 - 2033
						Meet TMDL Interim Compliance Date April 4, 2028 [a, b]	Meet TMDL Final Compliance Date April 4, 2031
MS4 Discharge Load Reduction	Load reductions in MS4 discharges; or	1,727 x 10^{12} MPN during Water Year 2003 (based on modeling) [c]	Reach mandatory reduction of dry weather bacteria loading from MS4 discharges identified in Attachment E	Loads[d] are reduced by 4.3% for Total Coliform; 4.3% for Fecal Coliform; 4.3% for Enterococcus from MS4 outfalls	Loads[e] are reduced by 8.7% for Total Coliform; 8.7% for Fecal Coliform; 8.7% for Enterococcus from MS4 outfalls	Loads[f] are reduced by 17.3% for Total Coliform; 17.3 for Fecal Coliform; 17.3% for Enterococcus from MS4 outfalls	Loads[g] are reduced by 34.7% for Total Coliform; 34.7% for Fecal Coliform; 34.7% for Enterococcus from MS4 outfalls

a. In accordance with Permit Provisions 6.b.(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.

b. Request moving Interim TMDL Compliance Date from April 4, 2017 (per Attachment E, 6.c(1)) to April 4, 2020 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.

c. Value from modeled baseline load as indicated in Appendix 3C of the WQIP.

d. Values calculated as half of the 2nd Permit Term goals.

e. Values calculated as half of the interim goals

f. Values calculated as half of the final goals

g. Values taken from City of San Diego Phase II CLRP: values deviate from final wet weather load reductions indicated in Table 6.3 of Attachment E to Order R9-2013-0001 because the modeling was updated, with San Diego Water Board concurrence, from Water Year 1993 performed in the 2010 TMDL to Water Year 2003 (considered an average rainfall year for the SDR Watershed) performed in the Phase II CLRP. This resulted in the required final load reduction for Fecal Coliform, for example, to change from 53.22% (Table 6.3, Att. E of 2013 Permit) to 34.7%.

3.4 City of San Diego Jurisdictional Goals

Table A3-9. City of San Diego Dry Weather Jurisdictional Numeric Goals

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term	FY 16-20	FY 21-25
			FY18	FY19[a]	FY21[a]
Receiving Water % Days Exceeding WQO	Fecal coliform	12.6% Days Exceeding WQO (2002[b])	See performance measures	6.3%	0%
	Enterococcus	19% Days Exceeding WQO (2002[b])		9.5%	0%
	Total coliform (shoreline only)	0.65% Days Exceeding WQO (2010[b])		0.33%	0%
Or					
Storm Drain Discharges % Days Exceeding WQO	Fecal coliform	88% Days Exceeding [c]	See performance measures	0%	0%
	Enterococcus	100% Days Exceeding [c]		0%	0%
	Total coliform (shoreline only)	97% Days Exceeding [c]		0%	0%
Or					
Storm Drain Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	49.4%	98.8%
	Enterococcus			49.9%	99.9%
	Total coliform (shoreline only)			49.4%	98.8%
Or					
Storm Drain Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is storm drain discharge % load reduction (above). Interim compliance is implementation of strategies and schedule based on analysis results (Appendix 3F of the WQIP). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 3.2.3 and Appendix 3F for modeling discussion.			

Table A3-9. City of San Diego Dry Weather Jurisdictional Numeric Goals

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term	FY 16-20	FY 21-25
			FY18	FY19[a]	FY21[a]
Or					
Storm Drain Discharges # of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	65 discharges (major MS4 outfalls)	See performance measures	0	0
Or					
% Exceedances of Final Receiving Water WQOs Due to Natural Sources[d]	Fecal coliform	Not available	100%	100%	100%
	Enterococcus		100%	100%	100%
	Total coliform (shoreline only)		100%	100%	100%

Performance Measures		
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	58.4 acres of drainage area treated through construction of 4 green infrastructure BMPs
Implement runoff reduction programs, including targeted education and outreach, enhanced inspections, rebates[e], and increased enforcement	Average Dry Weather Flow:[f] 117.8 gallons per minute	10% reduction in prohibited[g] dry weather flow from baseline measured at persistently flowing outfalls in the watershed

Table A3-9. City of San Diego Dry Weather Jurisdictional Numeric Goals

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year		
		Current Permit Term	FY 16-20	FY 21-25
		FY18	FY19[a]	FY21[a]

a. Denotes total maximum daily load (TMDL) interim and final water quality-based effluent limitation (WQBEL). An alternative interim dry weather compliance date of April 4, 2019 is proposed as allowed per Attachment E.6.c.(1).

b. The existing exceedance frequency was calculated based on available monitoring data between 1996 and 2002 per Permit requirements and presented in more detail in Appendix 3C. The existing exceedance frequency for total coliform was calculated based on available monitoring data between 2004 and 2010 per Permit requirements and presented in more detail in Appendix 3C.

c. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of days in exceedance for the historical 5-year period.

d. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from the stormwater conveyance system are not causing or contributing to exceedances.

e. City of San Diego rebates include grass replacement, rainwater harvesting, downspout disconnect, and micro irrigation.

f. Historic dry weather flow observations in the San Diego River WMA occurred at different outfalls than the FY 15-16 dry weather flow observations. The outfalls observed recently have very different characteristics compared to the outfalls sampled historically, so the average flows for the two time periods are not comparable. To account for this, the baseline dry weather flow for the San Diego River WMA was calculated based on the FY 15-16 outfall data from persistently flowing City of San Diego outfalls in the WMA (average FY 15-16 flow = 62.8 gallons per minute). An average of the reductions in dry weather flow observed for FY 15-16 in the Los Peñasquitos, San Dieguito River, Chollas Creek, and Mission Bay WMAs was calculated (-46.7% change). The same percent change was assumed for the San Diego River WMA, which resulted in a baseline dry weather flow of 117.8 gallons per minute.

g. Does not include allowable discharges as defined in Provision A and Provision E.2.a of the Permit.

% = percent; FY = fiscal year; WQO = Water Quality Objective

Table A3-10. City of San Diego Wet Weather Jurisdictional Numeric Goals

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14-FY18)	FY 16-20	FY 21-25	FY 26-30	FY 31-36
			FY18	FY19	FY21[a]	FY29	FY31[a]
Receiving Water % Days Exceeding WQO	Fecal coliform	72% Days Exceeding WQO (2002 TMDL Model)	See performance measures	72%[b]	43%	35%	22%
	Enterococcus – San Diego River	78% Days Exceeding WQO (2002 TMDL Model)		78%[b]	49%	36%	22%
	Enterococcus – Pacific Ocean Shoreline	81% Days Exceeding WQO (2002 TMDL Model)		81%	51%	37%	22%
Or							
Storm Drain Discharges % Days Exceeding WQO	Fecal coliform	100% Days Exceeding[c]	See performance measures	22%	22%	22%	22%
	Enterococcus	100% Days Exceeding[c]		22%	22%	22%	22%
	Total coliform (Shoreline only)	96% Days Exceeding[c]		22%	22%	22%	22%
Or							
Storm Drain Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures	5.2%	17.3%	23.9%	34.7%
	Enterococcus			4.2%	14.1%	19.5%	28.2%
	Total coliform (Shoreline only)			3.8%	12.6%	17.6%	25.1%
Or							
Storm Drain Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is storm drain discharge % load reduction (above). Interim compliance is implementation of strategies and schedule based on analysis results (WQIP Appendix 3C). Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 3.2.4 and Appendix 3E for modeling results.					
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	65[d]	See performance measures	0	0	0	0
Or							

Table A3-10. City of San Diego Wet Weather Jurisdictional Numeric Goals

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14-FY18)	FY 16-20	FY 21-25	FY 26-30	FY 31-36
			FY18	FY19	FY21[a]	FY29	FY31[a]
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources [e]	Fecal coliform	Not available	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform (Shoreline only)		100%	100%	100%	100%	100%

Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	Baseline	FY18
Develop green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	58.4 acres of drainage area treated through construction of 4 green infrastructure BMPs

a. Denotes total maximum daily load (TMDL) interim and final water quality-based effluent limitation (WQBEL). An alternative interim wet weather compliance data of April 4, 2024 is proposed as allowed per Attachment E.6.c.(1).

b. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Participating Agencies by maintaining the existing wet weather exceedance frequency.]

c. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.

d. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring. Assumed to be all 65 of City's major outfalls in WMA.

e. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from stormwater conveyance systems are not causing or contributing to exceedances.

3.5 COUNTY OF SAN DIEGO JURISDICTIONAL GOALS

Table A3-11. County of San Diego Dry Weather Jurisdictional Numeric Goals

Compliance Pathway	Title	Metric[a]	Baseline	Final Outcome	1st Permit Term 2013 – 2018	2nd Permit Term 2018 – 2023	
						TMDL Interim Compliance Date April 4, 2020[b]	TMDL Final Compliance Date April 4, 2021
1; or	No Discharge from MS4; or	Discharge from MS4 outfalls; or	To be established during FY 15-16 monitoring	Elimination of flow[k] from MS4 discharges	Flow eliminated from 25% of outfalls or cumulative flow from storm drain outfalls reduced by 25%	Flow eliminated from 50% of outfalls or cumulative flow from storm drain outfalls reduced by 50%	Flow eliminated from 100%[c] of outfalls or cumulative flow from storm drain outfalls reduced by 100%[c]
2; or	Meet TMDL Limits in Receiving Water; or	Bacteria concentrations & exceedance percentage in receiving waters; or	Not applicable	Achievement of WQOs or allowed exceedance percentage for bacteria	None	Bacteria concentrations at the compliance point identified in the Monitoring and Assessment Pan are below the applicable WQO (e.g., 400 MPN/100mL single sample maximum for Fecal Coliform)[l] or TMDL allowed exceedance percentage[d] of 0.28% for Total Coliform; 0% for Fecal Coliform; 1.5% for *Enterococcus*	Bacteria concentrations at the compliance point identified in the Monitoring and Assessment Pan are below the applicable WQO or TMDL allowed exceedance percentage[e] of 0% for Total Coliform, Fecal Coliform and *Enterococcus*
3; or	MS4 Discharge Meets TMDL Limits; or	Bacteria concentrations & exceedance percentage in MS4discharges; or					
4; or	MS4 Discharge Load Reduction; or	Load reductions in MS4 discharges; or	14.4×10^{12} MPN during Water Year 2003 (based on TMDL modeling) [f]	Reach mandatory reduction of dry weather bacteria loading from MS4 discharges identified in Attachment E	Loads[g] are reduced by 18.5% for Total Coliform; 17.4% for Fecal Coliform; 23.5% for Enterococcus from MS4 outfalls[k]	Loads[h] are reduced by 37.02% for Total Coliform (TC), 34.72% for Fecal Coliform (FC), 46.98% for *Enterococcus (Ent)* from the MS4 outfalls[k]	Loads[i] are reduced by 74.03% for Total Coliform (TC), 69.44% for Fecal Coliform (FC), 93.96% *for Enterococcus (Ent)* from the MS4 outfalls[k]
5; or	Exceedance due to Natural Sources; or	Exceedances due to natural sources, and MS4 outfall loads not causing or contributing to exceedances; or	To be established during FY 14-15 monitoring	Elimination of human and dog fecal markers from MS4 discharges and MS4 outfall loads not causing or contributing to exceedances	Number of MS4 outfalls with human and dog fecal markers detected are reduced by 25% and MS4 outfall loads not causing or contributing to exceedances	Number of MS4 outfalls with human and dog fecal markers detected are reduced by 50% and MS4 outfall loads not causing or contributing to exceedances	Number of MS4 outfalls with human and dog fecal markers detected are reduced by 100% [j] and MS4 outfall loads not causing or contributing to exceedances
6	Water Quality Improvement Plan (WQIP)	Implement WQIP	Not Applicable	Implementation of the WQIP in accordance with Attachment E of Permit	Implement WQIP supported by a reasonable assurance as accepted by the San Diego Water Board	Submit and fully implement WQIP, accepted by the San Diego Water Board, which provides reasonable assurance that interim TMDL compliance requirements will be achieved by the interim compliance dates	Develop and implement WQIP as follows: (i) incorporate BMPs required under Permit Provision 6.b.(2)(c) in WQIP (ii) Include analysis to demonstrate that implementation of BMPs required by Provision 6.b.(2)(c) achieves compliance with Specific Provisions 6.b.(3)(a), 6.b.(3)(b), 6.b.(3)(c), 6.b.(3)(d), and/or 6.b.(3)(e) (iii) The results analysis must be accepted San Diego Water Boards as part of the WQIP (iv) Responsible Copermittee continue to implement the BMPs in (i), AND (v) Responsible Copermittee continue to perform specific monitoring and assessments from Provision 6.d to demonstrate compliance with Specific Provisions 6.b.(3)(a), 6.b.(3)(b), 6.b.(3)(c), 6.b.(3)(d), 6.b.(3)(e), and/or 6.b.(3)(f)

Table A3-11. County of San Diego Dry Weather Jurisdictional Numeric Goals

Compliance Pathway	Title	Metric[a]	Baseline	Final Outcome	1st Permit Term 2013 – 2018	2nd Permit Term 2018 – 2023	
						TMDL Interim Compliance Date April 4, 2020[b]	TMDL Final Compliance Date April 4, 2021
WQIP Pathway							
6a	Eliminate anthropogenic dry weather flows [l] from storm drain outfalls	% reduction of flow volume or number of outfalls with persistent flows	To be established FY 15-16 using dry weather flow measurements.	Effectively eliminate anthropogenic dry weather flow from storm drain outfalls to receiving water.	Reduce by 20% the aggregate flow volume or the number of persistently flowing outfalls.	Reduce by 75% the aggregate flow volume or the number of persistently flowing outfalls.	Eliminate 100% anthropogenic dry weather discharges and accompanying bacteria loads from storm drain outfalls to the receiving water.

a. In accordance with Permit Provisions 6.b.(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.
b. Request moving Interim TMDL Compliance Date from April 4, 2018 (per Attachment E, 6.c(1)) to April 4, 2020 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.
c. Goal of 100% flow elimination in accordance with Provision 6.b.(3)(a).
d. Interim dry weather Allowable Exceedance Percentages were calculated based on half the value of the existing 30-day Geometric Mean of exceedance percentages based on beach sample data from 2004 through 2010; Annual Bacteria TMDL Monitoring Report is included in Appendix L of the Transitional Monitoring and Assessment Report for the San Diego River Watershed Management Area (2012-2014) (http://www.projectcleanwater.org/images/stories/Docs/San-Diego-River/SDR_TMAR_2015.zip). From this report, the San Diego River watershed compliance reduction milestones/existing and interim and final exceedance frequencies are provided in Table 1 – 2 on page 1 – 8 (specifically, footnote "a" under the table). The interim and existing exceedance frequency calculation methodology is summarized in section 2.4 on page 2 – 9 of the document.
e. Final dry weather Allowable Exceedance Percentages are from Tables 6.2a, 6.2b, and 6.2c of Attachment E to Order No.R9-2013-0001.
f. Value derived from table on page A33 of Attachment A to TMDL Resolution No.R9-2010-0001 for the San Diego River watershed; monthly value translated in annual load for watershed by multiplying by 12. Baseline load for County of San Diego was calculated as a proportion of County land area to that of the overall watershed, i.e. approximately 24%
g. Values calculated as half of the interim goals.
h. Values taken from Table 6.6 of Attachment E to Order R9-2013-0001: Anticipated load reductions for WQIP strategies were modeled using Fecal Coliform (FC) as a surrogate for all Fecal Indicator Bacteria as noted in WQIP Appendices 3C and 3F, therefore target FC load reductions were set according to the largest required indicator bacteria reduction (among TC, FC and *Ent*) to be conservative; *Enterococcus* is the controlling indicator.
i. Values taken from Table 6.3 of Attachment E to Order R9-2013-0001: Anticipated load reductions for WQIP strategies were modeled using Fecal Coliform (FC) as a surrogate for all Fecal Indicator Bacteria as noted in WQIP Appendices 3C and 3F, therefore target FC load reductions were set according to the largest required indicator bacteria reduction (among TC, FC and *Ent*) to be conservative; *Enterococcus* is the controlling indicator.
j. Goal of 100% of exceedances demonstrated to be due to natural sources in accordance with Provision 6.b.(3)(e).
k. There are a total of 5 compliance points in the San Diego River watershed; Total Coliform is only applicable in the ocean.
l. Flow is defined as all dry weather flows excluding groundwater, other exempt or permitted non-stormwater flows, and sanitary sewer overflows.

Table A3-12. County of San Diego Wet Weather Jurisdictional Numeric Goals

Compliance Pathway	Title	Metric[a]	Baseline	Final Outcome	1st Permit Term 2013 – 2018	2nd Permit Term 2018 – 2023	3rd Permit Term 2023 – 2028	4th Permit Term 2028 – 2033
							Meet TMDL Interim Compliance Date April 4, 2028[b]	Meet TMDL Final Compliance Date April 4, 2031
1; or	No Discharge from MS4; or	Discharge from MS4 outfalls; or	To be established during FY 15-16 monitoring	Elimination of flow from MS4 discharges	Flow eliminated from 10% of outfalls or cumulative flow from storm drain outfalls reduced by 10%	Flow eliminated from 25% of outfalls or cumulative flow from storm drain outfalls reduced by 25%	Flow eliminated from 50% of outfalls or cumulative flow from storm drain outfalls reduced by 50%	Flow eliminated from 100%[c] of outfalls or cumulative flow from storm drain outfalls reduced by 100 %[c]
2; or	Meet TMDL Limits in Receiving Water; or	Bacteria concentrations & exceedance percentage in receiving waters; or	Not applicable	Achievement of allowed exceedance percentage for bacteria	None	None	Bacteria concentrations are below the applicable WQO (e.g., 400 MPN/100mL single sample maximum for Fecal Coliform)[n] or TMDL allowed exceedance percentage [d] of 46% for Total Coliform (Beach); 43% for Fecal Coliform; 49%(creeks) & 51%(beaches) for *Enterococcus*	Bacteria concentrations are below the applicable WQO or TMDL allowed exceedance percentage[e] of 22% for Total Coliform, Fecal Coliform and *Enterococcus*
3; or	MS4 Discharge Meets TMDL Limits; or	Bacteria concentrations & exceedance percentage in MS4discharges; or						
4; or	MS4 Discharge Load Reduction; or	Load reductions in MS4 discharges; or	1,727 x 10^{12} MPN during Water Year 2003 (based on modeling) [f]	Reach mandatory reduction of dry weather bacteria loading from MS4 discharges identified in Attachment E	Loads[g] are reduced by 4.3% for Fecal Coliform; 3.5% for *Enterococcus* from MS4 outfalls	Loads[h] are reduced by 8.7% for Fecal Coliform; 7.1% for *Enterococcus* from MS4 outfalls	Loads[i] are reduced by 17.3 for Fecal Coliform; 14.1% for *Enterococcus* from MS4 outfalls	Loads[j] are reduced by 34.7% for Fecal Coliform; 28.2% for Enterococcus from MS4 outfalls
5; or	Exceedance due to Natural Sources; or	Exceedances due to natural sources, and MS4 outfall loads not causing or contributing to exceedances; or	To be established during FY 14-15 monitoring	Elimination of human and dog fecal markers from MS4 discharges and MS4 outfall loads not causing or contributing to exceedances	Number of MS4 outfalls with human and dog fecal markers detected are reduced by 25%	Number of MS4 outfalls with human and dog fecal markers detected are reduced by 50% and MS4 outfall loads not causing or contributing to exceedances	Number of MS4 outfalls with human and dog fecal markers detected are reduced by 75% and MS4 outfall loads not causing or contributing to exceedances	Number of MS4 outfalls with human and dog fecal markers detected are reduced by 100%[k] and MS4 outfall loads not causing or contributing to exceedances
6	Water Quality Improvement Plan (WQIP)[l]	Implement WQIP	Not Applicable	Implementation of the WQIP in accordance with Attachment E of Permit	Implement WQIP supported by a reasonable assurance as accepted by the San Diego Water Board	Implement WQIP supported by a reasonable assurance as accepted by the San Diego Water Board	Submit and fully implement WQIP, accepted by the San Diego Water Board, which provides reasonable assurance that interim TMDL compliance requirements will be achieved by the interim compliance dates	Develop and implement WQIP as follows: (i) incorporate BMPs required under Permit Provision 6.b.(2)(c) in WQIP (ii) Include analysis to demonstrate that implementation of BMPs required by Provision 6.b.(2)(c) achieves compliance with Specific Provisions 6.b.(3)(a), 6.b.(3)(b), 6.b.(3)(c), 6.b.(3)(d), and/or 6.b.(3)(e) (iii) The results analysis must be accepted San Diego Water Boards as part of the WQIP (iv) Responsible Copermittee continue to implement the BMPs in (i), AND (v) Responsible Copermittee continue to perform specific monitoring and assessments from Provision 6.d to demonstrate compliance with Specific Provisions 6.b.(3)(a), 6.b.(3)(b), 6.b.(3)(c), 6.b.(3)(d), 6.b.(3)(e), and/or 6.b.(3)(f)

Table A3-12. County of San Diego Wet Weather Jurisdictional Numeric Goals

Compliance Pathway	Title	Metric[a]	Baseline	Final Outcome	1st Permit Term 2013 – 2018	2nd Permit Term 2018 – 2023	3rd Permit Term 2023 – 2028	4th Permit Term 2028 – 2033
							Meet TMDL Interim Compliance Date April 4, 2028[b]	Meet TMDL Final Compliance Date April 4, 2031
WQIP Pathway								
6a	Implement Plan with focus on programmatic BMPs and use adaptive management to increase effectiveness	% bacterial load reduction	1,727 x 10^{12} MPN during Water Year 2003	Reduce baseline bacteria loads by 10% from storm drain outfalls to meet TMDL required load reductions.	Implement programmatic (non-structural) BMPs to achieve source reduction of bacteria loads from the storm drain outfalls.	Reduce bacteria loads by 2% from the storm drain outfalls through continued implementation of programmatic BMPs and, based on adaptive management, focus and enhance efforts where needed.	Reduce bacteria loads by an additional 4% (total 6%) from the storm drain outfalls by continued implementation of programmatic BMPs.	Reduce bacteria loads by an additional 4% (total 10%) from the storm drain outfalls by continued implementation of programmatic BMPs.
6b	Structural BMPs[m] (as needed and as funding is available)	% bacterial load reduction based on quantitative model	1,727 x 10^{12} MPN during Water Year 2003	Reduce baseline bacteria loads by 24.7% from storm drain outfalls to receiving water to meet TMDL required load reductions.	Reduce by 1% the baseline bacteria loads from distributed BMPs constructed between 2003 and 2009 during redevelopment.	Reduce bacteria loads by an additional 2% (total 3%) through participation in the public private partnership program. Begin planning & design for additional long-term structural BMPs.	Reduce bacteria loads by an additional 8.8% (total 11.8%) through additional participation in the public private partnership program (5.5%) and reduction through BMPs required through redevelopment (3.3 %); Continue planning & permitting for long-term structural BMPs.	Reduce bacteria loads by 12.9% (total 24.7%) from constructed distributed and regional structural BMPs (10.6%), and participation in the public private partnership program (2.3%).

a. In accordance with Permit Provisions 6.b.(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.
b. Request moving Interim TMDL Compliance Date from April 4, 2021 (per Attachment E, 6.c(1)) to April 4, 2028 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.
c. Goal of 100% flow elimination in accordance with Provision 6.b.(3)(a).
d. Interim wet weather Allowable Exceedance Percentages are from Tables 6.5 of Attachment E to Order No.R9-2013-0001.
e. Final wet weather Allowable Exceedance Percentages are from Tables 6.2a, 6.2b, and 6.2c of Attachment E to Order No.R9-2013-0001.
f. Value from modeled baseline load as indicated in Section 3.1.3.5 of the WQIP.
g. Values calculated as half of the 2nd Permit Term goals.
h. Values calculated as half of the interim goals
i. Values calculated as half of the final goals
j. Final Wet weather load reduction values as indicated in Table 6.3 of Attachment E to Order R9-2013-0001 for Fecal Coliform and *Enterococcus* were updated, with San Diego Water Board concurrence, to reflect load reduction modeling utilizing Water Year 2003 (considered an average rainfall year for the SDR Watershed) instead of Water Year 1993 as utilized in the 2010 TMDL model. This updated modeling analysis and the results are presented in the City of San Diego – San Diego River Watershed Comprehensive Load Reduction Plan – Phase II (available from the City of San Diego Storm Water Division website, under Plans and Reports tab at: http://www.sandiego.gov/stormwater/pdf/sdrclrpupdate.pdf). This resulted in the required final load reduction for Fecal Coliform, for example, to change from 53.22% (Table 6.3, Att. E of 2013 Permit) to 34.7%.
k. Goal of 100% of exceedances demonstrated to be due to natural sources in accordance with Provision 6.b.(3)(e).
l. To meet the final wet weather target load reduction of 34.7% for Fecal Coliform, the County through quantitative modeling has demonstrated a 10% reduction from programmatic BMPs and a 24.7% reduction from structural BMPs. Progress will be monitored and adjustments through adaptive management will be used to update the plan.
m. The County of San Diego is concerned that a long-term funding source is not identified for constructing and maintaining structural BMPs, if structural BMPs are needed to meet compliance.

3.6 CALTRANS

Caltrans storm water flows are not included in the Municipal Stormwater Permit; however, Caltrans is subject to similar requirements through its own stormwater permit (State Water Resources Control Board [SWRCB], 2012). Caltrans has voluntarily contributed to the WQIP effort to provide a consistent and subwatershed-wide approach to meeting applicable TMDL requirements. The baseline strategies are continuously implemented and augmented as resources become available. Attachment IV to the Caltrans Stormwater Permit outlines a methodology for prioritizing stream segments included in TMDLs to which Caltrans is subject. The Permit establishes best management practice (BMP) implementation requirements, evaluated in terms of compliance units. Caltrans is expected to achieve 1,650 compliance units per year through the implementation of retrofit BMPs, cooperative implementation, and post-construction treatment beyond Permit requirements.

Impaired reaches throughout the state will be prioritized on the basis of several factors, including, but not limited to, percent reduction needed, Caltrans drainage area contributing to the reach, and proximity to receiving waters. Reaches with metals TMDLs will likely be prioritized. This prioritization list is currently under negotiation between Caltrans Head Quarters and the State Board.

Caltrans' jurisdiction areas include roadways, land adjacent to roadways, and facilities. Caltrans' jurisdictional strategies specifically focus on BMP implementation to reduce known pollutants within these areas. Caltrans' strategies vary from those of other Participating Agencies (in both type and name) to best address freeway characterization discharges from its right-of-way. Strategies include programs developed by Caltrans Headquarters for statewide execution and District 11 implementation. Caltrans' implementation of strategies with the watershed is dependent on legislative approval. For Bacteria TMDLs, Caltrans is expected to eliminate dry weather flows by implementing control measures to ensure effective prohibition (Provision B.2 of the Stormwater Permit). For wet weather flows, Caltrans is expected to implement control measures or BMPs to prevent discharge of bacteria from the right-of-way; this can be source control and preemptive activities such as street sweeping, cleanup of illegal dumping, and public education on littering. Implementation of these controls is per the TMDL prioritization list.

APPENDIX 4

Monitoring and Assessment Results

Appendix 4 Monitoring and Assessment Results

The purpose of this appendix is to provide the monitoring and assessment results for the 2015-2016 monitoring year for the San Diego River Watershed Management Area (WMA or Watershed). Whereas Section 3 of this Annual Report focuses on the highest priority water quality condition (HPWQC) in the WMA (i.e., bacteria), this appendix will present all of the receiving water and storm drain outfall monitoring data collected during the 2015-2016 monitoring year, including monitoring and assessment results for priority water quality conditions (PWQCs). The PWQCs for the watershed include eutrophic conditions, total dissolved solids (TDS), nitrogen, phosphorus, the Index of Biotic Integrity (IBI), and total nitrogen as N during dry conditions. Also described below are monitoring programs required by the Permit for which no data were collected during the 2015-2016 monitoring year because the monitoring requirement has been met or will be met in future years of the Permit term. Caltrans is not a Participating Agency for the monitoring and assessment program described in this section, as Caltrans is regulated under a separate permit from the State Water Resource Control Board (SWRCB).

4.1 Receiving Water Monitoring

For the San Diego River WMA, the long-term receiving water monitoring and sediment monitoring requirements of the Permit were met during the 2013-2014 monitoring year. Detailed results for all analytes evaluated can be found in the *Transitional Monitoring and Assessment Program Report for the San Diego River Watershed Management Area (2012-2014)* (WESTON, 2015a) and the Sediment Monitoring Report (WESTON, 2015b). Receiving water monitoring in the San Diego River WMA during the 2015-2016 monitoring year included participation in the Southern California Stormwater Monitoring Coalition (SMC) and Hydromodification Monitoring Program (HMP) regional monitoring programs. Total maximum daily load (TMDL) monitoring for indicator bacteria was also conducted in receiving waters during 2015-2016. Receiving water results collected under these programs are summarized below.

The receiving water assessments required by Permit Provision D.4.a will be addressed in the Regional Monitoring and Assessment Report (RMAR), which will be submitted to the Regional Board in December 2017 with the Report of Waste Discharge (ROWD) in accordance with Provision D.4.a.1.(b).

4.1.1 Stormwater Monitoring Coalition Regional Monitoring

Since 2001, the Copermittees have partnered with regulated stormwater municipalities in southern California, the Regional Boards of Southern California, and the Southern California Coastal Water Research Project (SCCWRP) to form the SMC. The goal of the SMC is to develop the technical information necessary to better understand stormwater mechanisms and impacts and develop the tools to improve stormwater decision-making (SMC, 2016).

The Copermittees are continuing to participate in the SMC Regional Freshwater Stream Bioassessment Monitoring Program (SMC Regional Bioassessment Program). In 2015, a new five-year SMC program began that extended the initial survey to answer key management questions about the impacts of stormwater on stream conditions. Several modifications were made to the previous surveys to emphasize detection of trends and to address data gaps. Specifically,

monitoring of high-priority stressors (i.e., habitat, nutrients, and ionic composition) was continued, whereas monitoring of low-priority stressors (i.e., water column metals, pyrethroids, and toxicity) was discontinued. Flow regime (hydrologic state checklist derived from Gallart et al. [2010] and water level loggers), vertebrate occurrence, and new stressors of interest (i.e., sediment pyrethroids and toxicity) were added to the list of monitored parameters, although sediment sampling has been deferred until further action by the SMC Executive Committee. In addition, the physical habitat assessment has been enhanced with hydromodification screening (modified from Bledsoe et al., 2010) at unarmored or partially armored condition sites and a channel engineering checklist at all condition sites. The hydromodification screening and channel engineering checklist will also be assessed at trend sites at least once during the five-year study. The trend sites were selected from previously sampled sites under earlier probabilistic surveys in order to estimate changes in regional conditions over time, and the condition sites were selected from a new probabilistic sample draw in order to estimate current regional conditions.

The 2015-2016 monitoring year was the second under the updated 2015-2019 SMC Regional Bioassessment Program. Monitoring was conducted at three condition locations in the San Diego River WMA, 907M23331 in Los Coches Creek in the Coches hydrologic subarea (HSA) (907.14), 907M23327 in Alpine Creek in the Alpine HSA (907.33), and 907M23330 in Cedar Creek in the Inaja HSA (907.41) (Table A4-1, Figure A4-1).

Table A4-1. 2015-2016 Bioassessment Monitoring Locations in the San Diego River WMA

Site ID	Site Type	Land Use	Date Sampled	Latitude	Longitude
907M23327 – Alpine Creek	Condition	Urban	6/8/2016	32.83692	-116.78855
907M23330 – Cedar Creek	Condition	Open	6/9/2016	33.00327	-116.70560
907M23331 – Los Coches Creek	Condition	Urban	6/8/2016	32.83996	-116.90709

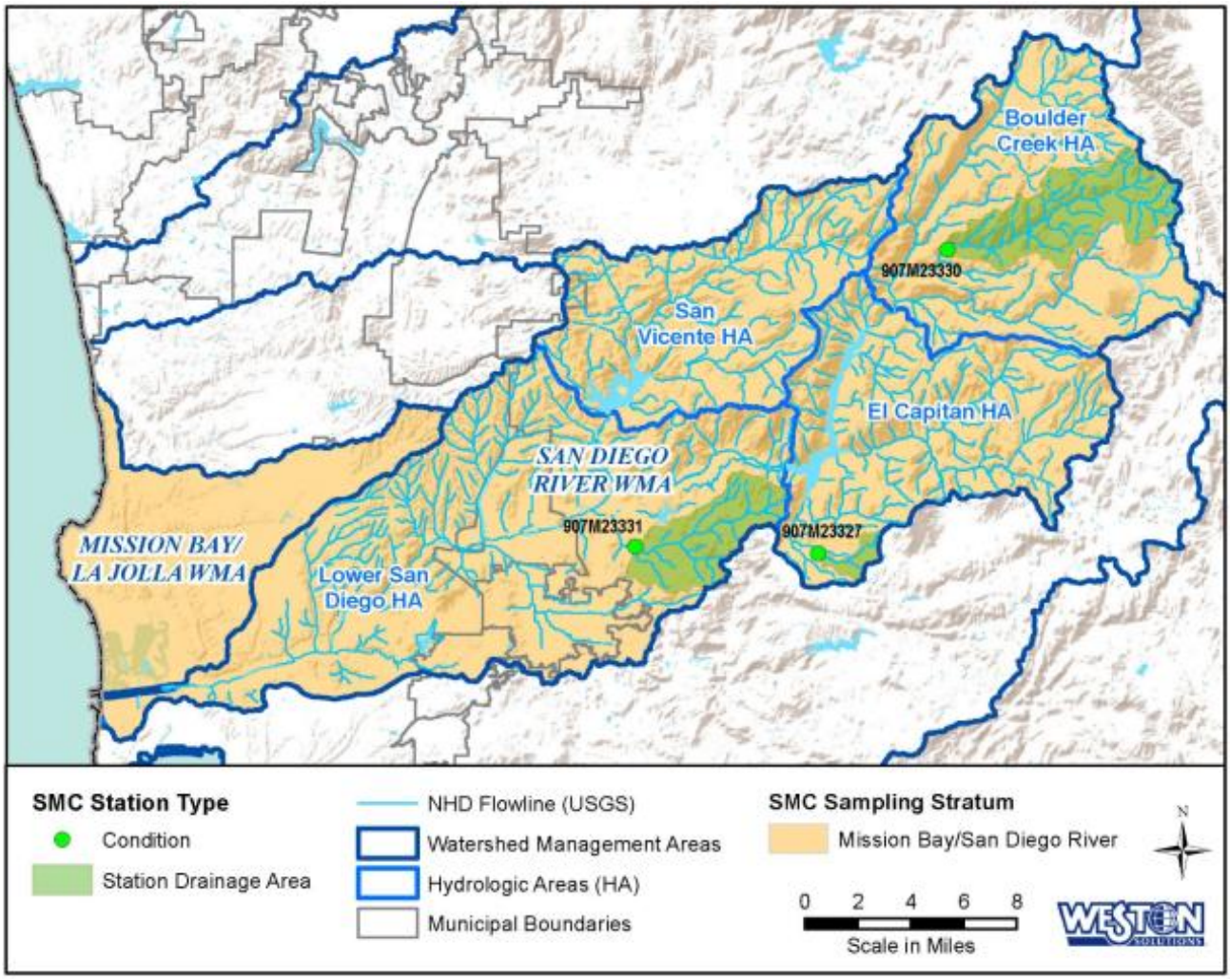

Figure A4-1. 2015-2016 Bioassessment Monitoring Locations in the San Diego River WMA, Mission Bay/San Diego River Stratum

Laboratory analyses included benthic macroinvertebrate (BMI) taxonomy by Ecoanalysts Inc., BMI taxonomic QC analysis by the California Department of Fish and Wildlife (CDFW) Aquatic Bioassessment Laboratory, benthic algae taxonomy by California State University – San Marcos (soft algae and diatoms), and chemistry analyses by Weck Laboratories, Inc. and PHYSIS Environmental Laboratories, Inc. Samples were collected following the protocols outlined in the Bioassessment Survey of the Stormwater Monitoring Coalition (SCCWRP, 2015). BMI data analyses included a taxonomic listing of all BMIs identified in the surveys and calculation of the biological metrics listed in the California Stream Bioassessment Procedure (CSBP). Additionally, the calculation of the California Stream Condition Index (CSCI), an index that rates the overall BMI community quality, was performed. The CSCI is a newly developed analytical tool, finalized in 2013 (Mazor et al., 2016), that is applicable statewide in California and is now being utilized in place of the IBI to assess the health of freshwater streams. The CSCI combines a predictive multi-metric index (pMMI) (a measure of ecological structure) with a predictive observed to expected (O/E) ratio index (a measure of taxonomic completeness), and also incorporates local watershed geology and climate factors. The predictive components of the CSCI scoring tool allow for

comparisons of the site being scored to a subset of other sites in California that the CSCI determines to be most similar. Algal data analyses included a taxonomic listing of all taxa identified and calculation of algal metrics and three algal IBIs (Fetscher et al., 2014 and SCCWRP, 2014). These data are typically available in February of the year following the survey (i.e., February 2017).

Bioassessment monitoring results for the Los Coches Creek, Alpine Creek, and Cedar Creek locations are summarized in Table A4-2 (CSCI scores), Table A4-3 (physical habitat assessment scores), and Table A4-4 (chemistry results). Additional data are provided in Attachment 4A to this appendix, including Taxonomic Listing of Benthic Macroinvertebrates (4A-1), Ranked Abundance of Benthic Macroinvertebrates (4A-2), and CSCI Metrics (4A-3). A Quality Assurance/Quality Control (QA/QC) report is provided as Attachment 4A-4. Results are summarized below, and more detailed results will be available in the interim and final reports developed by the SMC Workgroup. Interim reports are expected every one to two years, and the final report produced under the 2015-2019 Workplan is anticipated in Spring 2021 (SCCWRP, 2015).

Whereas data related to bacteria are not collected under the SMC Regional Bioassessment Program, data are collected for nitrogen and phosphorus, which are PWQCs for the watershed. At least one of these nutrients was above the water quality objectives at the Los Coches Creek and Alpine Creek locations, whereas all measured nutrients were below water quality objectives at the Cedar Creek location in the upper watershed.

4.1.1.1 Los Coches Creek

The CSCI score for the Los Coches Creek location, 907M23331, indicated that the benthic community is likely altered. The score was only two points below the possibly intact range (Table A4-2). Taxa richness was only slightly below the predicted taxonomic richness at this location (Attachment 4A-3). The BMI community was dominated by the mayfly *Fallceon sp.* and the crustacean class *Ostracoda* (34% and 17% of the composition of the sample, respectively) (Attachment 4A-2). The numbers of several types of taxa that tend to decrease in response to impairment were below predicted numbers, although some only slightly (the site-specific predicted numbers are those expected if the site was healthy) (Attachment 4A-3). Physical habitat quality as measured by the California Rapid Assessment Method (CRAM) score was moderate (Table A4-3).

Chemistry data was collected for physical and general chemistry, periphyton (ash-free dry mass [AFDM] and chlorophyll-a), and nutrients. Results indicated that total nitrogen and total phosphorus were slightly above benchmarks. All other parameters met water quality objectives, where applicable, although specific conductivity was elevated (Table A4-4). High specific conductance may have an effect on BMI. Specific conductivity is a measurement of the ability of water to conduct electricity where dissolved ions (i.e., Na+, Ca+2, SO4-2, etc.) serve as the conductor (SWRCB Fact Sheet-3.1.3.0(EC)V2e). Thus, specific conductance is related to TDS content. Although the effect of elevated TDS on BMI is variable among different taxa and not well understood, a number of studies have demonstrated a correlation between changes in conductivity/TDS with both altered BMI (Minshall and Minshall, 1978) and algal communities (Leland and Porter, 2000). Results from the first SMC five-year report suggest that elevated TDS

is a condition common to the entire region, affecting 76% of stream miles in Southern California (Mazor, 2015).

4.1.1.2 Alpine Creek

At the Alpine Creek location, 907M223327, the CSCI score indicated that the benthic community is very likely altered. The score was one point below the likely altered range (Table A4-2). Taxa richness was below the predicted taxonomic richness at this location (Attachment 4A-3), and the BMI community was dominated by the freshwater snail *Physa sp.* and the crustacean class *Ostracoda* (43% and 35% of the composition of the sample, respectively) (Attachment 4A-2). The numbers of several types of taxa that tend to decrease in response to impairment were below predicted numbers (Attachment 4A-3). Physical habitat quality as measured by the CRAM score was moderate (Table A4-3).

Chemistry results indicated that dissolved oxygen did not meet water quality objectives (concentration was below minimum level), and chloride, sulfate, and total nitrogen were above their respective water quality objectives (concentrations exceeded standards). All other parameters met water quality objectives, where applicable, although specific conductivity was elevated (Table A4-4).

4.1.1.3 Cedar Creek

At the Cedar Creek location, 907M23330, the CSCI score indicated that the benthic community is likely intact (Table A4-2). Taxa richness was above the predicted taxonomic richness at this location (Attachment 4A-3). The highest numbers observed in the BMI community were the mayfly *Callibaetis sp.*, the damselfly *Coenagrionidae*, and the freshwater snail *Physa sp.* (18%, 15%, and 14% of the composition of the sample, respectively) (Attachment 4A-2). The numbers of some taxa that tend to decrease in response to impairment were close to or above predicted numbers (Attachment 4A-3). Physical habitat quality as measured by the CRAM score was moderate, one point below the high range (Table A4-3).

Chemistry results for chloride were above the water quality objective. All other parameters met water quality objectives, where applicable (Table A4-4). The specific conductivity value was below the other two stations in the WMA that received comparatively lower bioassessment scores.

Table A4-2. 2016 CSCI Scores for the San Diego River WMA

StationCode	Count	E	Mean_O	OoverE	MMI	CSCI
907M23331 – Los Coches Creek	672	6.98	6.00	0.86	0.70	0.78
907M23327 – Alpine Creek	675	6.81	5.00	0.73	0.50	0.62
907M23330 – Cedar Creek	653	7.61	8.55	1.12	0.99	1.06

Count - the total number of organisms in the sample; E-the sum of all capture probabilities >0.5 at a site (# of common taxa); Mean_O - The number of common taxa observed at a site; OoverE - O/E as calculated; MMI - the pMMI score, a minimum threshold has not been established, but low values should be considered indicative of degradation; CSCI - the CSCI score, calculated as the average of the O/E and the pMMI. CSCI scores indicate benthic communities that are very likely altered (scores of 0.00 to 0.62), likely altered (0.63 to 0.79), possibly intact (0.80 to 0.91), or likely intact (above 0.92).

Table A4-3. 2016 Physical Habitat Assessment Scores for the San Diego River WMA

Physical Habitat Measures	Los Coches Creek	Alpine Creek	Cedar Creek
	907.14	907.33	907.41
	907M23331	907M23327	907M23330
	6/8/2016	6/8/2016	6/9/2016
Elevation (feet)	160	474	551
CRAM Physical Habitat Score*	57	59	75
Canopy Cover (% of reach)	56%	81%	29%
Macroalgal Cover (% of reach)	44%	37%	27%
Substrate Composition			
Fines	4%	0%	0%
Sand	84%	55%	21%
Gravel	5%	3%	9%
Cobble	0%	1%	4%
Boulder	1%	7%	1%
Roots	1%	21%	5%
Wood	0%	2%	0%
Consolidated Sediment	1%	0%	0%
Bedrock	4%	10%	61%
Concrete	1%	1%	0%
Water Quality			
Temperature (C)	22.24	17.23	20.8
pH	8	7.58	7.31
Specific Conductance (µS/cm)	2,359	1,837	803
Salinity (ppt)	1.22	0.94	0.39
Alkalinity (mg/L)**	390	340	240
Dissolved Oxygen (mg/L)	7.86	5.07	6.9
Turbidity (NTU)	1.3	0.2	0

*CRAM score is 25-100; <50 = low, 50-75 = moderate, >75 = high
** May be measured in the field or laboratory. Laboratory result is reported.

Table A4-4. 2016 Chemistry Results for the San Diego River WMA

Analyte	Units	Water Quality Objectives (WQOs)	WQO References	Los Coches Creek	Alpine Creek	Cedar Creek
				907.14	907.33	907.41
				907M23331	907M23327	907M23330
				6/8/2016	6/8/2016	6/9/2016
Physical Chemistry						
Temperature	Celsius			22.24	17.23	20.8
pH	pH units	6.5-9.0	Basin Plan	8	7.58	7.31
Specific Conductance	µS/cm			2,359	1,837	803
Salinity	ppt			1.22	0.94	0.39
Alkalinity	mg/L			390	340	240
Dissolved Oxygen	mg/L	<5.0 / <6.0 (a)	Basin Plan	7.86	**5.07**	6.9
Turbidity	NTU	20	Basin Plan	1.3	0.2	0
Periphyton						
Ash-Free Dry Weight	g/m²			46.0404	45.2399	108.6582
Chlorophyll-a	mg/m²			167.7	212.3	63.4
General Chemistry						
Chloride	mg/L	50-400	Basin Plan	330	**240**	**61**
Sulfate	mg/L	65-500	Basin Plan	420	**230**	58
Total Suspended Solids	mg/L			5	2	1
Total Hardness	mg $CaCO_3$/L			740	681	281
Nutrients						
Ammonia as N	mg/L	(b)	USEPA Freshwater Criteria	<0.048	<0.048	<0.048
Nitrate + Nitrite as N	mg/L	10	Basin Plan	1.4	1.9	0.19
Orthophosphate as P	mg/L	N:P Ratio of 10:1	Basin Plan	0.12	0.038	<0.00083
Total Kjeldahl Nitrogen	mg/L			0.47	0.29	0.33
Total Nitrogen	mg/L	N:P Ratio of 10:1	Basin Plan	**1.9**	**2.2**	0.52
Total Phosphorus	mg/L	0.1 (flowing waters)	Basin Plan	**0.11**	0.021	0.0067J

<-Results less than the method detection limit.

NS - Not sampled.

[a] Water Quality Objective is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective on or before April 4, 2011) and may vary by hydrologic area.

[b] Water Quality Objective is based on the criterion continuous concentration (CCC) using water temperature and pH as described in the U.S. EPA, 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater, EPA-822-R-13-001, April 2013.

J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

Bolded/shaded results do not meet water quality objectives.

4.1.2 Regional Hydromodification Monitoring Program (HMP)

Hydromodification is the potential alteration and erosion of creeks, streams, and natural habitats that may be associated with urbanization of the tributary watershed. A regional Hydromodification Management Plan has been developed to manage increased runoff discharge rates and durations and address impacts to beneficial uses and stream habitat (County of San Diego, 2011). A regional HMP was also developed to evaluate the criteria established in the Hydromodification Management Plan. While only one reference station was located within the San Diego River WMA, the Hydromodification Management Plan criteria will apply to future development in the WMA, and therefore the regional results of this monitoring program are applicable.

The 2011 HMP represents a five-year monitoring program that involved channel sediment transport assessments, and continuous flow monitoring of pre-project, post-project, and reference conditions. An iterative and phased approach was used in implementation of each year of monitoring. The fifth and final year of monitoring was completed in 2015-2016. Results of the HMP are presented in the *Effectiveness Assessment of the San Diego Hydromodification Management Plan,* which is available online at:
http://www.projectcleanwater.org/attachments/article/75/2016_LDW_HMPrpt.pdf.

The results of the HMP indicate that the Hydromodification Management Plan is working as planned. Sediment rating curves were developed based on extensive wet weather monitoring data collected from the 2011-2012 to 2015-2016 wet weather seasons. Analysis of these curves shows that the Plan's channel susceptibility tools appropriately define flow rates that initiate the movement of channel and bank materials (ESA et al., 2016). As shown by monitoring of stream cross sections, no major changes in channel stability were observed to occur within the nine monitored channel sites that were located throughout the San Diego Region. Wet weather data from 2015-2016 indicated that a constructed best management practice (BMP) system worked as designed to prevent hydromodification across a wide range of geomorphically significant conditions. Collectively, this shows that the Plan provides for the protection of the beneficial uses of receiving waters from the effect of hydromodification from new and redevelopment. Based on these findings, the HMP effectiveness assessment monitoring is completed and no additional monitoring is recommended (ESA et al., 2016).

4.1.3 Total Maximum Daily Load Monitoring

In February 2010, the San Diego Regional Water Quality Control Board (Regional Board) adopted Resolution No. R9-2010-0001, *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (Bacteria TMDL) (Regional Board, 2010). This TMDL amendment to the Water Quality Control Plan for the San Diego Region (Basin Plan) (Regional Board, 1994) includes three segments within the San Diego River WMA, Forester Creek, the Lower San Diego River, and the Pacific Ocean Shoreline at San Diego River mouth at Dog Beach. The TMDL was approved by the SWRCB on December 14, 2010; by the Office of Administrative Law on April 4, 2011; and by the United States Environmental Protection Agency (USEPA) on June 22, 2011. The TMDL became effective under state law on April 4, 2011, the date of Office of Administrative Law approval. The responsible Agencies within the San Diego River WMA regulated under the Permit include the cities of El Cajon and Santee and the County of San Diego for Forester Creek and the cities of El

Cajon, La Mesa, San Diego and Santee, and the County of San Diego for the Lower San Diego River and Pacific Ocean Shoreline at San Diego River mouth at Dog Beach. The compliance requirements and monitoring and reporting requirements of the TMDL have been incorporated into Attachment E.6 of the Permit.

The goal of the Bacteria TMDL is to achieve the necessary pollutant load reductions to restore and protect the designated beneficial use of water contact recreation (REC-1), as it is designated within the Basin Plan. The purpose of the TMDL monitoring program is to assess progress toward achieving compliance with interim and final TMDL water quality based effluent limitations (WQBELs). Wet and dry weather sampling is conducted each year at the compliance points. The data generated is used to address the following questions:

- Are TMDL numeric targets for indicators being met at the compliance monitoring locations?
- Are levels of bacteria decreasing at the compliance monitoring locations?

Sampling was conducted for the 2015–2016 compliance monitoring year (October 1, 2015 through September 30, 2016) during wet and dry weather at five receiving water monitoring locations: one beach location, Pacific Ocean Shoreline at Dog Beach (FM-010), and four creek locations, two along Forester Creek in the Santee HSA and two along the Lower San Diego River in the Mission San Diego HSA (Table A4-5, Figure A4-2). This was the third year of monitoring in compliance with Provision 6.d of Attachment E of the Permit. A summary of the monitoring conducted is presented in Table A4-6 for creek locations and Table A4-7 for the beach location. Samples were analyzed for the indicator bacteria compliance constituents (fecal coliform and *Enterococcus* for creeks; total coliform, fecal coliform, and *Enterococcus* for beaches) in accordance with the requirements of Attachment E.6 of the Permit. Additionally, *E. coli* which is not a Bacteria TMDL compliance constituent, was sampled at the creek locations. These data are available in the laboratory reports provided in Attachment 4B to this appendix and will be uploaded to the California Environmental Data Exchange Network (CEDEN) as provided in Attachment L.

Table A4-5. 2015-2016 Bacteria TMDL Beach Monitoring Locations in the San Diego River WMA

Site ID	Site Name	Site Type	Latitude	Longitude
SDR-FC1	Forester Creek at Lower Forester Creek	Freshwater Creek	32.83986	-117.00395
SDR-FC2	Lower Forester Creek at Prospect Ave	Freshwater Creek	32.83130	-116.98572
SDR-CDE	Lower San Diego River at Camino Del Este	Freshwater Creek	32.77255	-117.14456
SDR-MLS	San Diego River MLS at Lower San Diego River	Freshwater Creek	32.76515	-117.16863
FM-010	Dog Beach at San Diego River Mouth	Pacific Ocean Shoreline	32.75527	-117.25358

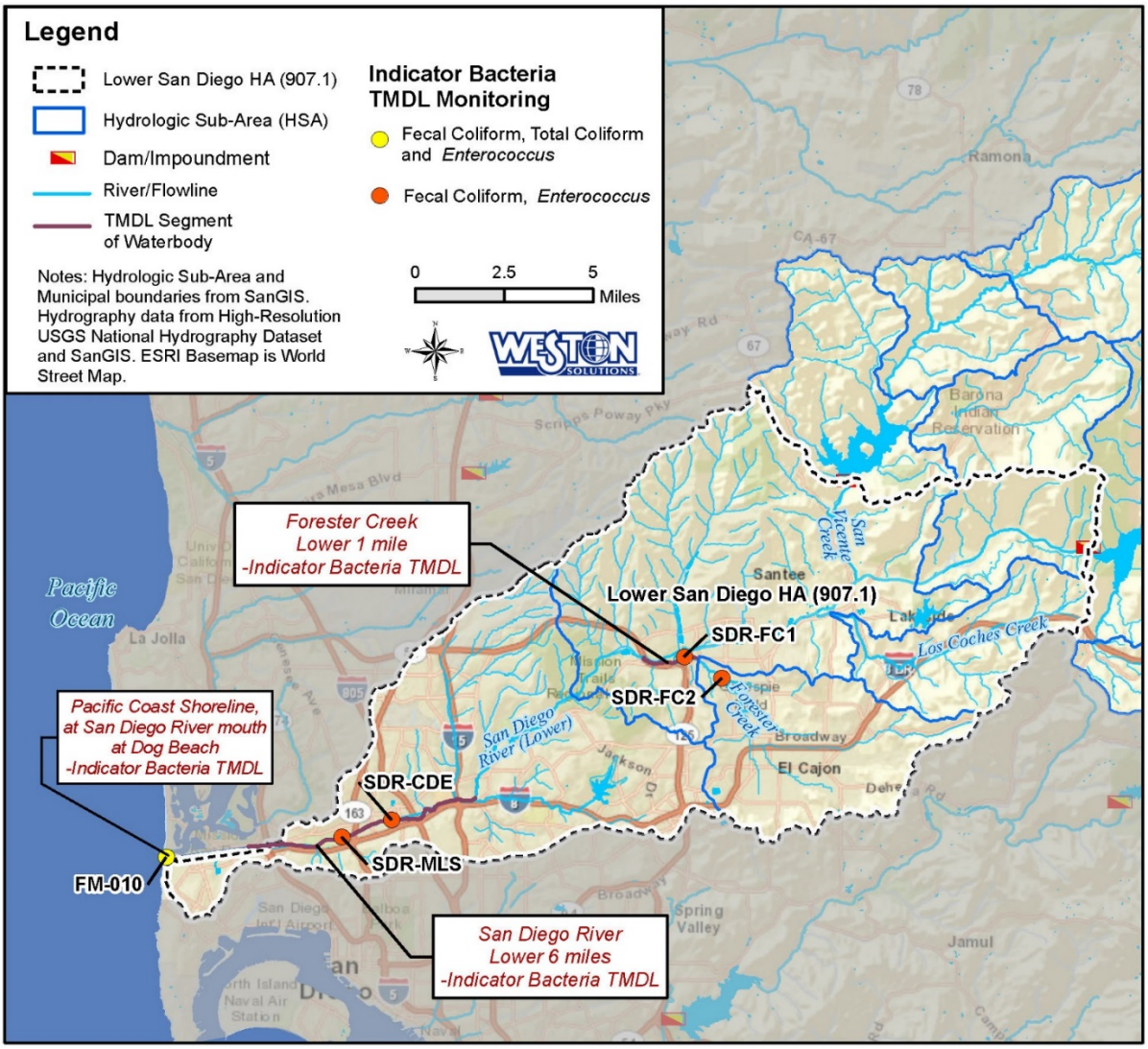

Figure A4-2. Bacteria TMDL Compliance Monitoring Locations in the San Diego River WMA

Table A4-6. 2015-2016 Bacteria TMDL Beach Monitoring Summary for the San Diego River WMA

Season	Date Range	Event Type	Event Frequency	Monitoring Location	Samples Per Site Per Event[a]	Total Number of Samples
2015-2016 Wet Season	10/01/2015-04/30/2015	Wet	Three storm events	FM-010	1	3
	10/01/2015-03/30/2016	Dry	Monthly			6
	04/01/2016-04/30/2016	Dry	Weekly[b]			5
2016 Dry Season	05/01/2016-09/30/2016	Dry	Weekly[b]			25

[a] Quality assurance (QA) or replicate samples are not included in the count.

[b] A minimum of 5 samples are collected in a 30-day period.

Table A4-7. 2015-2016 Bacteria TMDL Creek Monitoring Summary for the San Diego River WMA

Season	Date Range	Event Type	Event Frequency	Monitoring Location	Samples Per Site Per Event[a]	Total Number of Samples
2015-2016 Wet Season	10/01/2015-04/30/2015	Wet	Three storm events	SDR-MLS SDR-CDE SDR-FC1 SDR-FC2	1	12
	10/01/2015-03/30/2016	Dry	Monthly			24
	04/01/2016-04/30/2016	Dry	Weekly[b]			20
2016 Dry Season	05/01/2016-09/30/2016	Dry	Weekly[b]			100

[a] Quality assurance (QA) or replicate samples are not included in the count.

[b] A minimum of 5 samples are collected in a 30-day period.

Table A4-8 presents the exceedance rates for each indicator bacteria across the five monitored stations within the San Diego River WMA. The exceedances observed during the 2015-2016 monitoring year do not indicate non-compliance with the Permit or the Bacteria TMDL at this time. Progress toward meeting WQBELs, in terms of interim and final receiving water limitations, is presented in Table A4-9 for each analyzed constituent at the five monitoring stations. Interim WQBELs are not required to be met until 2020 for dry weather and 2028 for wet weather, while final WQBELS must be met by 2021 for dry weather and 2031 for wet weather. Based on the sampling data from the 2015-2016 monitoring year, receiving water limitations that have already been achieved are indicated by (●), whereas receiving water limitations that have not yet been achieved are indicated by (X).

In summary, interim and final WQBELs are being met at FM-010 with the exception of the dry season geometric mean for *Enterococcus*. There were also no exceedances of geometric means for fecal coliform at SDR-CDE during the dry and wet seasons, and at SDR-FC2 and SDR-MLS during the wet season. Both interim and final receiving water limitations are being achieved for these analytes at these locations. All other results did not achieve the interim or final receiving water limitations. Additional details are presented in the TMDL report provided as Attachment 4B to this appendix, and CEDEN data submittals can be found in Attachment L.

Table A4-8. 2015–2016 Exceedance Frequency Results: San Diego River WMA

Segment	Monitoring Location	Bacteria TMDL Constituent	2016 Dry Season Geometric Mean (CFU/100 mL)	2015-2016 Wet Season Geometric Mean (CFU/100 mL)	2015-2016 Wet Weather Single-Sample Maximum (CFU/100 mL)
Forester Creek	SDR-FC1	*Enterococcus*	100%	100%	100%
		Fecal Coliform	100%	80%	100%
	SDR-FC2	*Enterococcus*	100%	100%	100%
		Fecal Coliform	52%	0%	100%
San Diego River	SDR-MLS	*Enterococcus*	100%	90%	100%
		Fecal Coliform	33%	0%	93%
	SDR-CDE	*Enterococcus*	52%	90%	100%
		Fecal Coliform	0%	0%	94%
Pacific Ocean Shoreline	FM-010	*Enterococcus*	19%	0%	0%
		Fecal Coliform	0%	0%	0%
		Total Coliform	0%	0%	0%

CFU - colony-forming units per 100 milliliters. The Permit identifies WQBELs in most probable number per 100 mL (MPN/100 mL); the laboratory methods provide results in CFU. CFU and MPN units are comparable.

Table A4-9. 2015–2016 General Progress Toward Interim and Final Goals: San Diego River WMA

Monitoring Location	Bacterial TMDL Constituent	2015-2016 Dry Season Geometric Means		2015-2016 Wet Season Geometric Means		2015-2016 Wet Season Single-Sample Maximum	
		Interim	Final	Interim	Final	Interim	Final
SDR-FC1	*Enterococcus*	X	X	X	X	X	X
	Fecal Coliform	X	X	X	X	X	X
SDR-FC2	*Enterococcus*	X	X	X	X	X	X
	Fecal Coliform	X	X	●	●	X	X
SDR-MLS	*Enterococcus*	X	X	X	X	X	X
	Fecal Coliform	X	X	●	●	X	X
SDR-CDE	*Enterococcus*	X	X	X	X	X	X
	Fecal Coliform	●	●	●	●	X	X
FM-010	*Enterococcus*	X	X	●	●	●	●
	Fecal Coliform	●	●	●	●	●	●
	Total Coliform	●	●	●	●	●	●

● = Receiving water limitations are met; X= Receiving water limitations are not met.

4.2 Storm Drain Outfall Monitoring

As part of the WQIP process, the Participating Agencies in the San Diego River WMA have developed a program to monitor discharges from storm drain outfalls during dry and wet weather that meets the requirements of Provisions D.2.b and D.2.c of the Permit. The purpose of storm

drain outfall monitoring is to evaluate the potential impacts from storm drain outfall discharges on the beneficial uses of a waterbody during dry and wet weather conditions. In addition, under dry conditions, the program is used to assess the ability of jurisdictional and watershed programs to effectively eliminate non-stormwater discharges to waterbodies. The data generated are used to identify persistently flowing outfalls, pollutants in discharges, guide pollutant source identification and non-stormwater discharge elimination efforts, and track progress towards achieving numeric goals set forth in the WQIP.

During the 2013-2014 monitoring year, the inventory of major storm drain outfalls discharging directly to a receiving water was developed in accordance with Provision D.2.a.(1) of the Permit, and refinements were made during the 2014-2015 monitoring year. The major storm drain outfalls currently included in the storm drain outfall discharge monitoring station inventory for the San Diego River WMA are shown in Figure A4-3. Storm drain outfall dry weather monitoring locations are also shown in Figure A4-3. Storm drain outfall wet weather monitoring locations and drainage areas are shown on a separate map in Section 4.2.5.

The number of major outfalls monitored under each element of storm drain outfall monitoring by each Participating Agency in the San Diego River WMA is provided in Table A4-10. In accordance with Provision D.2.b.(1) of the Permit, Participating Agencies with fewer than 125 major storm drain outfalls in their inventory must conduct field screening at 80% of these major outfalls twice per year. The City of San Diego has more than 500 major storm drain outfalls within its jurisdiction and is required to annually screen 500 of these outfalls city-wide (but not within each watershed) in accordance with Provision D.2.a.(2)(a)(iv). The number of major outfalls monitored per year is subject to change based on new information, updates to storm drain outfall inventories, changes in transient or persistent flow classifications, and/or changes or updates to the priority water quality conditions over the life of the WQIP.

Table A4-10. Number of Major Storm Drain Outfalls Monitored per Participating Agency

Participating Agency	Field Screening (Provision D.2.b(1))	Dry Weather Monitoring (Provision D.2.b(2))	Wet Weather Monitoring (Provision D.2.c)
County of San Diego	51	5	1
City of El Cajon	33	5	1
City of La Mesa	13	5	1
City of Santee	63	5	1
City of San Diego	65	5	1

Program descriptions, monitoring results, and assessments conducted during the 2015-2016 monitoring year under the Storm Drain Outfall Monitoring Program are presented in the following subsections. Methodology is described in greater detail in the WQIP Monitoring and Assessment Plan (MAP).

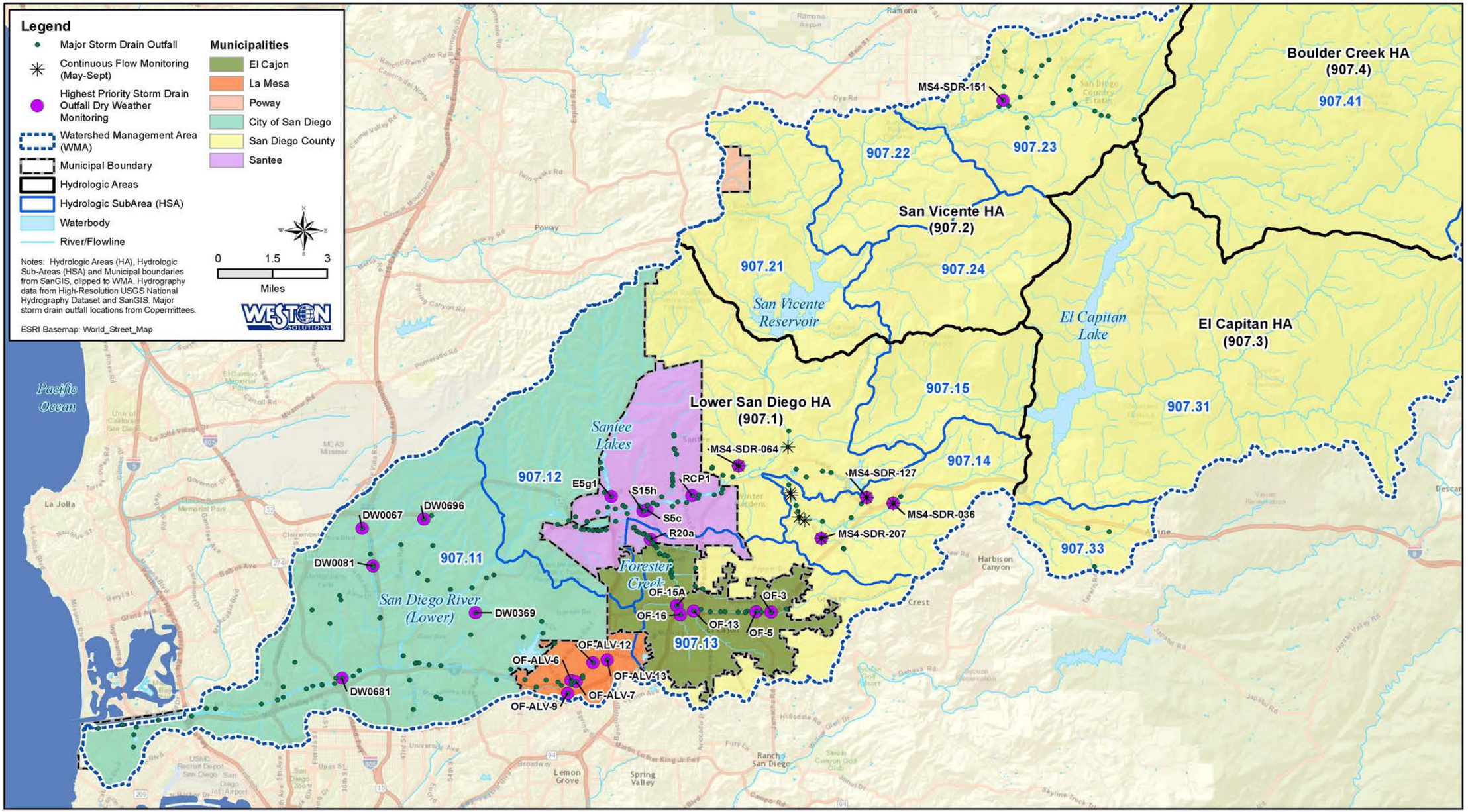

Figure A4-3. Major Storm Drain Outfall Inventory and Highest Priority Storm Drain Outfall Dry Weather Monitoring Station Locations in the San Diego River WMA

4.2.1 Dry Weather Field Screening and Outfall Prioritization

Dry weather field screening is visual monitoring of major storm drain outfalls as outlined in Table D-5 of the Permit. Field screening is conducted to identify non-stormwater and illicit discharges, determine which discharges are transient and which are persistent, and prioritize those discharges that will be investigated and eliminated. This program is designed to assess the effectiveness of jurisdictional programs to effectively prohibit non-stormwater discharges. Each Participating Agency performs field screening of a certain number of outfalls on an annual basis to maintain an up-to-date inventory of persistently flowing outfalls and to initiate follow-up investigations that identify and mitigate the source(s). The data collected during field screening are one of the sources of information for the Participating Agencies' Illicit Discharge Detection and Elimination (IDDE) Program (see Section 4.2.4).

The required frequency of field screening varies from once to twice per year depending on the number of major outfalls within the jurisdiction, in accordance with Provision D.2.a.(2)(a) of the Permit. The number of storm drain outfall stations included in dry weather field screening and the total number of visual observations conducted by each Participating Agency during the 2015-2016 monitoring year in the San Diego River WMA are shown in Table A4-11. Dry weather field screening at upstream proxy locations (e.g., manholes) for inaccessible outfalls may result in more than one location representing an outfall, and these upstream locations are included in the station counts and visits. Some source investigations were performed during routine visits and are included in the routine visits column, while others were conducted as separate follow-up visits and are included in the source investigations column.

During the 2015-2016 monitoring year, all County of San Diego major storm drain outfalls were inspected at least twice and up to eight times for dry weather flows. The County also visited 111 smaller storm drain outfalls (outfalls with diameter less than 36 inches) that had been inventoried as part of its Microbial Source Tracking Study, which is provided as Attachment 4C to this appendix. During the 2015-2016 monitoring year, these outfalls, as well as several major storm drain outfalls, were inspected for non-stormwater flows approximately once every two months over the monitoring year. The data were collected to better inform the program about the County's progress toward achieving its dry weather storm drain outfall flow reduction goals.

Table A4-11. Number of Visual Observations Conducted During the 2015-2016 Monitoring Year

Participating Agency	Number of Major Storm Drain Outfalls or Proxy Locations Visited	Number of Routine Visits	Number of Source Investigations	Number of Additional Visits for Other Programs[3]
County of San Diego[1]	53*	106	74 (6 outfalls)	84 (10 stations)
El Cajon[1]	33	54	1	NA
La Mesa[1]	13	22	3 (3 outfalls)	NA
Santee[1]	63	102	3 (3 outfalls)	NA
City of San Diego[2]	69**	80	76 (21 outfalls)	NA

[1] Copermittee with < 125 major outfalls in WMA; 80% of major outfalls must be screened twice/year.
[2] Copermittee in more than one WMA with more than 500 major outfalls total in jurisdiction; 500 outfalls must be screened annually.
[3] Includes flow data but not all visual observations typically conducted during a routine field screening visit.
*Two locations replaced during the monitoring year.
**Three outfalls had more than one proxy location (upstream manhole) visited.

Participating Agencies recorded numerous visual observations regarding outfall and flow characteristics including flow conditions (flowing, ponded, dry, or tidal), whether or not the flow reached the receiving water, whether or not there was a non-stormwater flow source, potential non-stormwater sources, whether the flow source was eliminated, evidence of obvious illicit connections or illicit discharges (IC/ID), whether trash was present and relative amount, and whether there was evidence of illegal dumping. The complete set of visual observations recorded during dry weather field screening visits are provided in Attachment 4D to this appendix, and CEDEN data submittals can be found in Attachment L. The field screening trash assessment results for the San Diego River WMA are summarized in Table A4-12. These trash assessments included some flow source investigation visits to the outfall as well as the routine visits. There was no trash present during 42% of the visits and a low presence of trash (defined as less than 50 pieces) during 53% of the trash assessments at visited outfalls. Approximately 5% of sites had over 50 pieces of trash.

Table A4-12. Dry Weather Field Screening Trash Assessments for the San Diego River WMA

Participating Agency	HSA	No Trash Present	Trash Present		
			Low (<50 pieces)	Medium (50 to 400 pieces)	High (>400 pieces)
County of San Diego	907.12	3	14	5	0
	907.13	0	5	0	0
	907.14	9	22	2	0
	907.23	17	23	0	0
	907.33	1	3	1	1
SUB-TOTAL		**30**	**67**	**8**	**1**
El Cajon	907.13	35	19	1	0
SUB-TOTAL		**35**	**19**	**1**	**0**
La Mesa	907.11	14	11	0	0
SUB-TOTAL		**14**	**11**	**0**	**0**
Santee	907.12	50	40	2	0
	907.13	3	7	1	2
SUB-TOTAL		**53**	**47**	**3**	**2**
City of San Diego	907.11	27	53	4	0
SUB-TOTAL		**27**	**53**	**4**	**0**
GRAND TOTAL		**159**	**197**	**16**	**3**

A summary of the flow conditions (i.e., flowing, ponded, dry, or tidal) at the outfall stations during the 2015-2016 field visits is shown in Figure A4-4, where the stacked bars represent the number of observations in each flow category by Participating Agency. The observations included in this figure are routine visits and follow-up source identification visits to the outfall, but do not include additional visits for other programs. Because some outfalls are visited more than once, the number of observations is greater than the number of actual storm drain outfalls monitored.

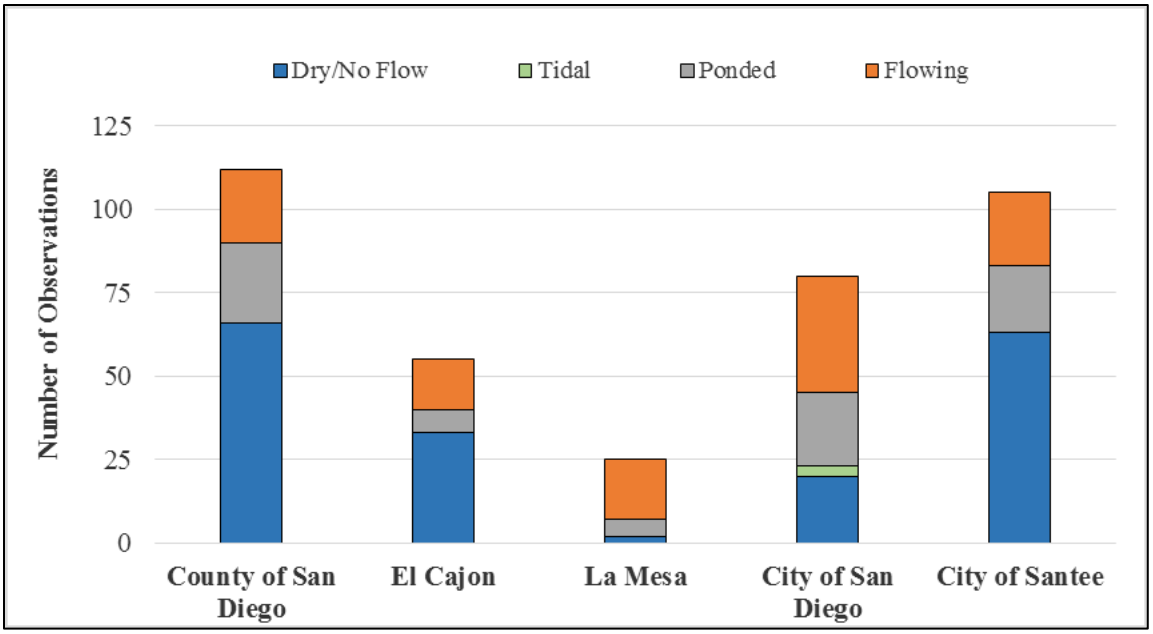

Figure A4-4. Dry Weather Field Screening Flow Observations at Storm Drain Outfall Stations by Participating Agency

During dry weather field screening, Participating Agencies estimated flow rates at stations where flow was present, as required by Table D.5 of the Permit. A compilation of flow estimations recorded by the Participating Agencies in the San Diego River WMA, in gallons per minute (gpm), is presented in Figure A4-5. The majority of flow rates were low, with 75 of 113 estimations categorized as less than five gpm. The observations included in this figure include routine visits and follow-up source identification visits to the outfalls, but do not include additional visits for other programs.

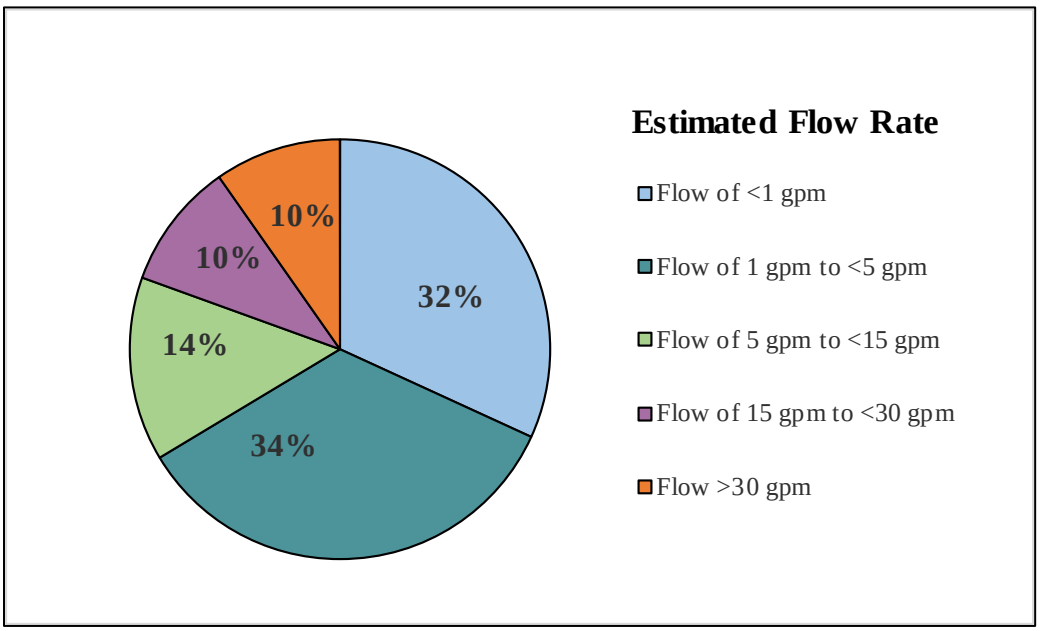

Figure A4-5. Outfall Flow Rate Estimations in the San Diego River WMA

Where an illicit discharge is observed during outfall screening, investigations are performed in an effort to locate the source and eliminate the discharge. In cases where flow sources are known due to historical data, this is listed on the field sheet and the upstream area is briefly checked for additional sources. In cases where discharges are observed, but no obvious illicit discharge was identified as the source, appropriate documentation is recorded, and the locations are prioritized with others for follow-up.

Based on these field screening visits and available historical data, the Participating Agencies determined the flow status of each major storm drain outfall as persistent, transient, dry, tidal, or undetermined. The numbers of storm drain outfalls in each category are shown by Participating Agency and HSA in Table A4-13, and the flow determinations are shown with the locations of the storm drain outfalls in Figure A4-6. As defined in the Permit, flow status for a given outfall is "dry" if no flowing or standing water is observed at the outfall over three most recent visits, and "persistent" flow is defined as presence of flowing or standing water upon three most recent visits. Otherwise, the outfall status is classified as "transient." The undetermined outfall listed for the City of San Diego in Table A4-13 has been tidal on all visits except once when it was dry. Overall, since the prior monitoring year, the number of undetermined outfalls in the San Diego River WMA has been reduced from 7 (WESTON, 2016) to 2, which includes one new site. The number of persistent outfalls has increased by 11 based on the additional dry weather field screening observations made in the 2015-2016 year.

Table A4-13. 2015-2016 Dry Weather Storm Drain Outfall Flow Determinations for the San Diego River WMA

Participating Agency	HSA	Persistent	Transient	Dry/ No Flow	Undetermined	Grand Total
County of San Diego	907.12	2	5	4	0	11
	907.13	0	1	1	1*	3
	907.14	4	6	4	0	14
	907.23	1	5	14	0	20
	907.33	1	0	2	0	3
SUB-TOTAL		**8**	**17**	**25**	**1**	**51**
El Cajon	907.13	8	7	18	0	33
SUB-TOTAL		**8**	**7**	**18**	**0**	**33**
La Mesa	907.11	10	2	1	0	13
SUB-TOTAL		**10**	**2**	**1**	**0**	**13**
City of San Diego	907.11	35	18	11	1**	65
SUB-TOTAL		**35**	**18**	**11**	**1**	**65**
Santee	907.12	14	16	23	0	53
	907.13	2	4	4	0	10
SUB-TOTAL		**16**	**20**	**27**	**0**	**63**
GRAND TOTAL		**77**	**64**	**82**	**2**	**225**

*Undetermined outfall is a new dry weather field screening site.
**Undetermined outfall has been tidal on all visits except one when dry.

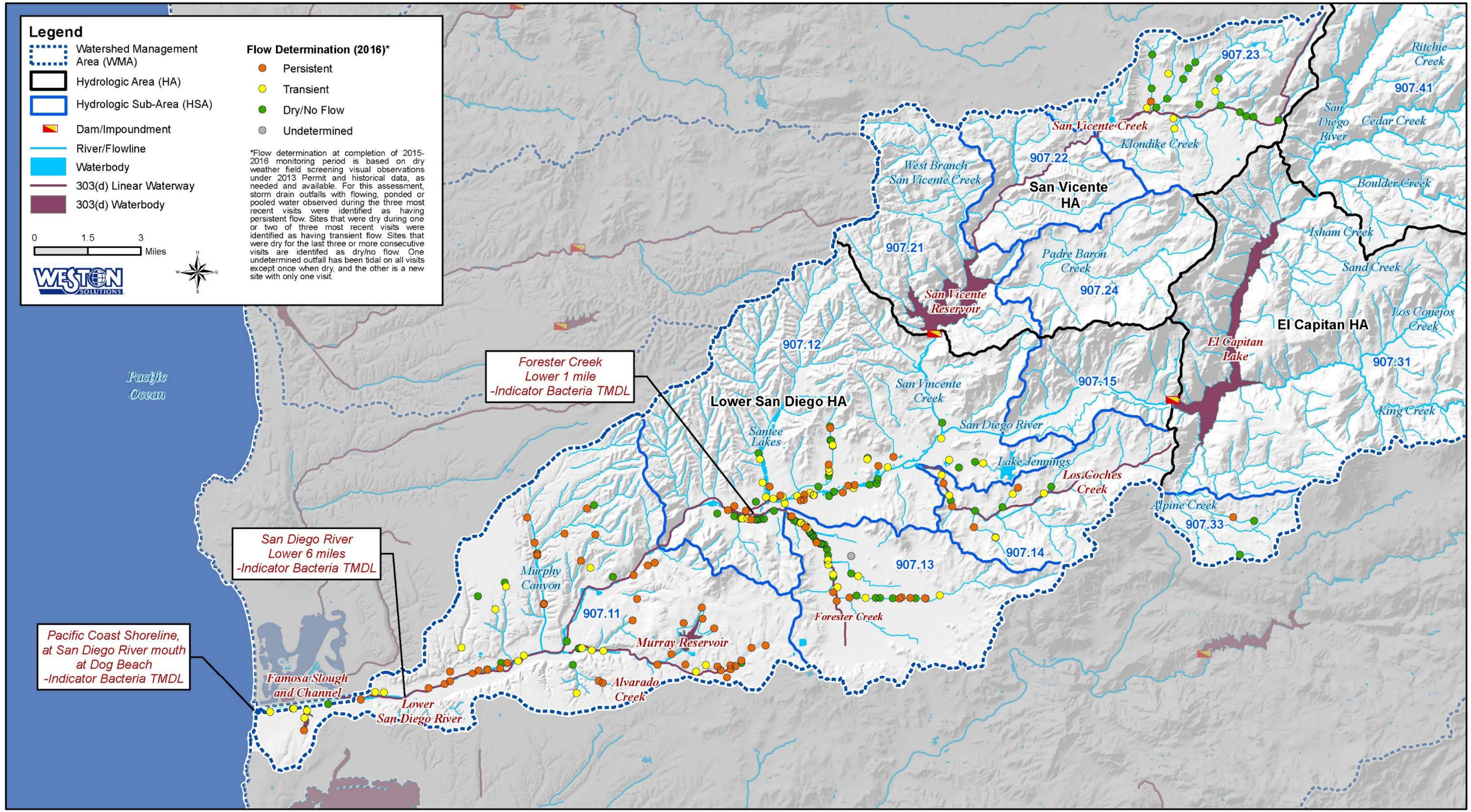

Figure A4-6. 2015-2016 Dry Weather Field Screening Locations with Flow Determinations for the San Diego River WMA

Based on the 2015-2016 field screening monitoring, monitored outfalls that changed to persistent or from persistent status since the 2014-2015 monitoring year are shown below in Table A4-14.

Table A4-14. Dry Weather Storm Drain Outfall Stations that Changed to Persistent or from Persistent Flow Determination since Transitional Monitoring Year 2014-2015

Participating Agency	Station ID	HSA	2015-2016 Persistent Flow Monitored Site	2015-2016 Result	2014-2015 Result
County of San Diego	MS4-SDR-036	907.14	Yes	Transient	Persistent
	MS4-SDR-064	907.12	Yes	Persistent	Transient
	MS4-SDR-097	907.14	Yes	Persistent	Transient
	MS4-SDR-098	907.14	No	Persistent	Transient
	MS4-SDR-139	907.23	No	Transient	Persistent
	MS4-SDR-211	907.12	No	Persistent	Transient
El Cajon	OF-27	907.13	No	Persistent	Transient
City of San Diego	DW0134	907.11	No	Transient	Persistent
	DW0143	907.11	No	Transient	Persistent
	DW0459	907.11	No	Persistent	Transient
	DW0872	907.11	No	Persistent	Undetermined
	DW0873	907.11	No	Persistent	Undetermined
	DW0882	907.11	No	Persistent	Undetermined
	DW0951	907.11	No	Persistent	Undetermined
	DW0953	907.11	No	Transient	Persistent
	DW0954	907.11	No	Persistent	Undetermined
	DW1013	907.11	No	Persistent	Undetermined
	DW1031	907.11	No	Persistent	Undetermined
Santee	396	907.12	No	Persistent	Transient
	1930	907.12	No	Persistent	Transient
	3081	907.12	No	Persistent	Transient
	U5c	907.13	No	Persistent	Transient
	1472	907.12	No	Transient	Persistent

The list of prioritized outfalls based on field screening results is maintained and updated as program implementation develops and monitoring occurs. These prioritized outfalls were originally outlined in the San Diego River Watershed Storm Drain Outfall Monitoring Plan (Storm Drain Outfall Monitoring Plan), Attachment 4A-5 to the WQIP. The Storm Drain Outfall Monitoring Plan, last revised in January 2015, listed three outfalls as the highest priority persistent outfalls for the City of La Mesa (OF-ALV-5, OF-ALV-8, and OF-ALV-11). Since the approval of the WQIP, the City of La Mesa re-prioritized the persistent outfalls under its jurisdiction because groundwater (i.e., springs or rising ground waters) was determined to be the source of flow to all three of these outfalls. Outfalls with groundwater identified as the primary flow source were placed at a lower priority because, in general, groundwater discharges are not considered to pose a high threat to receiving water quality. Outfalls with prohibited discharges identified as the primary flow

source, such as irrigation runoff, or discharges with an unknown flow source, were determined to be high priority sites because these categories of discharges have greater potential to threaten receiving water quality and are more likely to contribute sources of bacteria during dry weather. Of these discharges, the sites with the highest average flow rates are placed at a higher priority.

Except for these changes to the City of La Mesa's highest priority outfalls and the selection of the highest priority outfalls for the City of El Cajon, which had not yet been determined when the Storm Drain Outfall Monitoring Plan was developed, the highest priority outfalls in the San Diego River WMA have not changed. The highest priority outfalls for each jurisdiction in the WMA during 2015-2016 are summarized in Table A4-15. Dry weather field screening records are provided as Attachment 4D to this appendix, and CEDEN data submittals can be found in Attachment L.

Table A4-15. Highest Priority Outfalls during 2015-2016 in the San Diego River WMA during the

Copermittee	HSA	Station	Latitude (NAD83)	Longitude (NAD83)	Dates Sampled	
County of San Diego	907.12	MS4-SDR-064	32.86147	-116.94469	Dry	6/28/2016
	907.14	MS4-SDR-036	32.8469	-116.87153	4/19/2016	6/28/2016
		MS4-SDR-127	32.84911	-116.88414	4/19/2016	6/28/2016
		MS4-SDR-207	32.83278	-116.90529	4/19/2016	6/28/2016
	907.23	MS4-SDR-151	33.00782	-116.82069	4/19/2016	6/28/2016
City of El Cajon	907.13	OF-5	32.80362	-116.936	7/5/2016	7/12/2016
		OF-13	32.80363	-116.96548	7/5/2016	7/12/2016
		OF-15A	32.80576	-116.97344	7/6/2016	7/13/2016
		OF-16	32.80216	-116.97167	7/6/2016	7/13/2016
		OF-3	32.80348	-116.92888	7/5/2016	7/12/2016
City of La Mesa	907.11	OF-ALV-12	32.78299	-117.01286	7/7/2016	7/14/2016
		OF-ALV-13	32.78404	-117.00602	7/11/2016	7/14/2016
		OF-ALV-6	32.77578	-117.02305	7/7/2016	7/18/2016
		OF-ALV-7	32.77532	-117.020651	8/4/2016	8/5/2016
		OF-ALV-9	32.77066	-117.02463	7/7/2016	7/18/2016
City of Santee	907.12	E5g1	32.84885	-117.00471	8/15/2016	8/17/2016
		RCP1	32.84949	-116.96659	8/15/2016	8/17/2016
		S15h	32.84326	-116.98969	8/8/2016	8/16/2016
		S5c	32.84363	-116.98795	8/8/2016	8/16/2016
	907.13	R20a	32.8319	-116.98602	8/15/2016	Dry
City of San Diego	907.11	DW0067	32.83539	-117.12212	11/24/2015	3/23/2016
		DW0081	32.8205	-117.11705	11/24/2015	3/23/2016
		DW0369	32.80243	-117.06845	12/7/2015	3/23/2016
		DW0681*	32.775969	-117.131149	12/7/2015	6/7/2016
		DW0696	32.83938	-117.09311	11/24/2015	3/23/2016

*Upstream location sampled.

4.2.2 Highest Priority Storm Drain Outfall Dry Weather Monitoring

The purpose of the highest priority storm drain outfall dry weather monitoring is to evaluate the potential contribution from storm drain outfall discharges to receiving water quality during dry weather conditions and to assess the ability of programs to effectively eliminate non-stormwater discharges to waterbodies or waterways.

The 2015-2016 monitoring year was the first year of storm drain outfall dry weather analytical sampling under the WQIP MAP. Storm drain outfall dry weather monitoring was conducted at the highest priority outfalls identified for each jurisdiction in the San Diego River WMA (Table A4-15, Figure A4-3). Sampling was conducted between November 24, 2015 and August 17, 2016, and two sampling events were conducted at most outfalls. One outfall each under the jurisdiction of the County of San Diego and the City of Santee was sampled once due to lack of flow. In-situ measurements were made for pH, temperature, conductivity, dissolved oxygen, and turbidity. Grab samples were collected and analyzed for constituents contributing to the HPWQC, 303(d) List impairments, TMDLs, non-stormwater action levels (NALs), and those listed in Table D-7 of the Permit. Grab samples were also collected from receiving waters to which the sampled outfalls were discharging and analyzed for total hardness, a measurement needed to compare concentrations of metals to NALs that are hardness-dependent (see footnote *a* in Table A4-16). Visual observations were also recorded.

Analytical results for samples collected during dry weather at the highest priority outfalls are summarized by Participating Agency in Table A4-16 through Table A4-20. Results are compared to NALs as provided in the Permit. In accordance with Table C-4 of the Permit, indicator bacteria concentrations are compared to instantaneous maximum value (IM) NALs, and the remaining constituent concentrations, including general and physical chemical constituents, nutrients, and total and dissolved metals, are compared to maximum daily action level (MDAL) NALs. Additional details regarding NALs used in this assessment are provided in Table A4-34. Laboratory and field data collected for highest priority storm drain outfall dry weather monitoring will be uploaded to CEDEN, and data submittals are provided in Attachment L to this appendix.

4.2.2.1 County of San Diego

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform (i.e., the HPWQC in the WMA) indicated that the highest concentrations were measured at MS4-SDR-127 in the Coches HSA (907.14) for *Enterococcus*, MS4-SDR-127 in the Coches HSA and MS4-SDR-151 in the Gower HSA (907.23) for fecal coliform, and MS4-SDR-127 in the Coches HSA for total coliform. Indicator bacteria concentrations were above the *Enterococcus* IM in all samples and were above the fecal coliform IM in all samples except one each from outfalls MS4-SDR-036 and MS4-SDR-207 (both in the Coches HSA) (Table A4-16).

The only existing MDALs that relate to PWQC in the WMA are for total nitrogen and total phosphorus, and each of these PWQC concentrations was measured above the MDAL except total nitrogen in one of two samples from MS4-SDR-151 in the Gower HSA (907.23).

Other constituents in exceedance of MDALs are listed below. Unless noted, exceedances occurred in both samples collected at the outfall.

- MS4-SDR-036: turbidity, MBAS (one sample), total iron, total manganese, dissolved copper (one sample), dissolved iron, dissolved manganese, and dissolved zinc (one sample).
- MS4-SDR-064: pH and total iron (only one sample was collected at this location).
- MS4-SDR-127: dissolved iron (one sample).
- MS4-SDR-151: dissolved oxygen (below the MDAL indicates impairment), turbidity (one sample), total iron, total manganese, and dissolved manganese (one sample).
- MS4-SDR-207: total iron (one sample), total manganese, dissolved manganese.

The remaining constituents were below MDALs, where available.

4.2.2.2 City of El Cajon

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform indicated that the highest concentrations were measured at OF-3 for *Enterococcus*, at OF-15A for fecal coliform, and at OF-13 for total coliform. All of these outfalls are located in the El Cajon HSA (907.13). Indicator bacteria concentrations were above the *Enterococcus* IM in all samples except one each from outfalls OF-5 and OF-16 and were above the fecal coliform IM in all samples except one from outfall OF-3 (Table A4-17).

The only existing MDALs that relate to PWQC in the WMA are for total nitrogen and total phosphorus, and each of these PWQC concentrations was measured above the MDAL except total phosphorus in both samples from OF-13 and one of two samples from OF-16.

Other constituents in exceedance of MDALs are listed below. Unless noted, exceedances occurred in both samples collected at the outfall.

- OF-3: no additional constituents above MDALs.
- OF-5: total iron, total manganese (one sample).
- OF-13: pH (one sample).
- OF-15A: turbidity (one sample), total iron, total manganese, dissolved manganese (one sample).
- OF-16: pH.

The remaining constituents were below MDALs, where available.

4.2.2.3 City of La Mesa

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform indicated that the highest concentrations were measured at OF-ALV-12 for *Enterococcus* and fecal coliform and OF-ALV-9 for total coliform. Indicator bacteria concentrations were above the *Enterococcus* IM in all samples except one each from outfalls OF-ALV-7 and OF-ALV-9 and were above the fecal coliform IM in all samples except both from outfall OF-ALV-7 (Table A4-18). All outfalls are located in the Mission San Diego HSA (907.11).

The only existing MDALs that relate to PWQC in the WMA are for total nitrogen and total phosphorus, and each of these PWQC concentrations was measured above the MDAL.

Other constituents in exceedance of MDALs are listed below. Unless noted, exceedances occurred in both samples collected at the outfall.

- OF-ALV-6: total iron, total manganese.
- OF-ALV-7: pH (one sample) (below the MDAL range indicates impairment), turbidity, total iron, total manganese, dissolved iron (one sample), dissolved manganese.
- OF-ALV-9: total iron, total manganese, dissolved manganese (one sample).
- OF-ALV-12: turbidity, total iron, total manganese, dissolved manganese.
- OF-ALV-13: turbidity, total iron, total manganese, dissolved manganese.

The remaining constituents were below MDALs, where available.

4.2.2.4 City of Santee

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform indicated that concentrations were greater than 1,600 MPN/100 mL at several outfalls in the WMA. These results are not quantifiable above this value because all dilutions were positive. Indicator bacteria concentrations were above the *Enterococcus* IM in all samples except one sample from RCP1 and were above the fecal coliform IM in all samples (Table A4-19).

The only existing MDALs that relate to PWQC in the WMA are for total nitrogen and total phosphorus, and each of these PWQC concentrations was measured above the MDAL except total phosphorus in one of two samples from RCP1 in the Santee HSA (907.12).

Other constituents in exceedance of MDALs are listed below. Unless noted, exceedances occurred in both samples collected at the outfall.

- E5g1: total iron (one sample).
- R20a: no additional constituents above MDALs (only one sample was collected at this location).
- RCP1: no additional constituents above MDALs.
- S5c: total iron (one sample), total manganese, dissolved manganese.
- S15h: total iron (one sample), total manganese (one sample).

The remaining constituents were below MDALs, where available.

4.2.2.5 City of San Diego

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform indicated that the highest concentrations were measured at DW0681 for all three constituents. Indicator bacteria concentrations were above the *Enterococcus* IM in all samples except both samples from DW0067 and one sample from outfall DW0081. Fecal coliform concentrations were below the IM in all samples except one sample each from outfalls DW0696 and DW0681 (Table A4-20). All outfalls are located in the Mission San Diego HSA (907.11).

The only existing MDALs that relate to PWQC in the WMA are for total nitrogen and total phosphorus, and each of these PWQC concentrations was measured above the MDAL.

Other constituents in exceedance of MDALs are listed below. Unless noted, exceedances occurred in both samples collected at the outfall.

- DW0067: turbidity (one sample), total iron (one sample), total manganese (one sample), dissolved copper (one sample).
- DW0081: pH (one sample).
- DW0369: no additional constituents above MDALs.
- DW0696: dissolved oxygen (below the MDAL indicates impairment), total iron (one sample), total manganese, dissolved manganese.
- DW0681: turbidity, total iron, total manganese, dissolved copper (one sample), dissolved manganese (one sample), dissolved zinc (one sample).

The remaining constituents were below MDALs, where available.

Table A4-16. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – County of San Diego

Analyte	Units	Maximum Daily Action Level (MDAL)	MS4-SDR-036		MS4-SDR-064	MS4-SDR-127		MS4-SDR-151		MS4-SDR-207	
			4/19/2016	6/28/2016	6/28/2016	4/19/2016	6/28/2016	4/19/2016	6/28/2016	4/19/2016	6/28/2016
Physical Chemistry											
Dissolved Oxygen	mg/L	5	5.06	NA	10.75	8.32	6.63	**0**	**0.47**	9.24	9.39
pH	pH units	6.5-8.5	7.52	6.56	**8.58**	8.23	7.83	7.2	7.47	8.17	8.17
Specific Conductivity	µS/cm		1,560	2,390	1,520	3,130	1,830	324	3,840	1,790	1,840
Temperature	Celsius		18.33	23.31	26.28	19.44	24.25	19.8	23.73	20.48	23.35
Turbidity[1]	NTU	20	**62.5**	**325**	13.2	6.18	5.43	6.76	**321**	16.8	0.65
General Chemistry											
Chloride	mg/L		180	150	140	620	240	20	820	220	220
Color	Color units		NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness as $CaCO_3$	mg/L		523	780	362	561	440	104	1220	509	486
MBAS	mg/L	0.5	**0.6**	0.1	0.1	0.2	0.1	<0.5	<0.5	0.2	<0.5
Sulfate	mg/L		320	NA	NA	380	NA	18	NA	250	NA
Total Dissolved Solids	mg/L		1,040	2,450	867	1,810	1,080	156	2,160	1,030	1,040
Total Suspended Solids	mg/L		31	3510	21.2	2	1.2	7	21	5	<1
Nutrients											
Ammonia as N	mg/L		1.27	8.94	0.58	0.47	0.27	0.18	8.1	0.06	<0.1
Nitrate + Nitrite as N	mg/L		1.06	<0.05	0.38	10.1	2.61	0.06	0.08	3.28	1.95
Nitrate as N	mg/L		0.63	<0.01	0.34	8.78	2.58	0.06	0.02	3.26	1.95
Nitrite as N	mg/L		0.43	<0.05	0.04	1.32	0.03	<0.01	0.06	0.02	<0.01
Total Nitrogen	mg/L	1	**3.9**	**65**	**3.6**	**10.7**	**6.3**	0.6	**12.5**	**3.3**	**2.9**
Total Kjeldahl Nitrogen	mg/L		2.8	65	3.2	0.6	3.7	0.5	12.4	<0.5	0.9
Orthophosphate	mg/L		0.09	4.92	0.22	0.66	0.76	0.25	0.1	0.18	0.18
Dissolved Phosphorus	mg/L		0.83	28.2	0.31	0.7	0.81	0.3	0.15	0.18	0.12
Total Phosphorus	mg/L	0.1	**1.1**	**33.8**	**0.34**	**0.75**	**0.81**	**0.41**	**0.16**	**0.2**	**0.2**
Total Metals											
Cadmium	µg/L		1	22	<1	0.3	0.2	0.4	0.9	0.3	<1
Chromium	µg/L		10	55	1	2	2	1	0.9	1	<1
Chromium III	µg/L		3	55	1	2	2	1	0.9	1	<1
Chromium VI	µg/L	16	5.7	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L		77	564	14	11	9	6	5	4	1
Iron	µg/L	300	**9,360**	**246,000**	**709**	187	122	**666**	**1,010**	**864**	11
Lead	µg/L		7	191	1	0.3	0.5	0.2	0.5	0.4	<1
Manganese	µg/L	50	**1,300**	**3,210**	21	7	15	**135**	**1,400**	**724**	**302**
Nickel	µg/L		24	82	4	6	5	3	4	3	1
Selenium	µg/L		0.9	0.8	2	1	1	0.2	0.5	0.6	0.3
Silver	µg/L		<1	0.4	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L		743	6980	23	21	29	5	16	29	6
Dissolved Metals											
Cadmium	µg/L	(a)(b)	0.5	0.09	0.1	0.2	0.2	<1	<1	0.1	0.3
Chromium	µg/L		6	10	0.4	0.7	2	0.2	<1	0.2	<1
Chromium III	µg/L	(a)(b)	<1	10	0.4	0.7	2	0.2	<1	0.2	<1
Chromium VI	µg/L	16	6.2	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	(a)	**35**	2	8	10	13	3	1	3	1

Table A4-16. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – County of San Diego

Analyte	Units	Maximum Daily Action Level (MDAL)	MS4-SDR-036		MS4-SDR-064	MS4-SDR-127		MS4-SDR-151		MS4-SDR-207	
			4/19/2016	6/28/2016	6/28/2016	4/19/2016	6/28/2016	4/19/2016	6/28/2016	4/19/2016	6/28/2016
Iron	µg/L	300	**3,100**	**89,300**	12	94	**414**	197	21	7	11
Lead	µg/L	(a)	2	2	0.07	5	2	0.3	<1	<1	<1
Manganese	µg/L	50	**1,180**	**2,680**	10	8	16	10	**1,360**	**200**	**281**
Nickel	µg/L	(a)(b)	20	53	2	3	5	0.9	3	1	0.8
Selenium	µg/L		0.6	0.5	2	1	1	<1	0.4	0.5	0.3
Silver	µg/L	(a)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	(a)	**551**	31	7	64	22	11	4	12	4
Fecal Indicator Bacteria											
Enterococcus	MPN/100 mL	61 (c)	**1,300**	**200**	**1,800**	**50,000**	**5,400**	**500**	**5,000**	**2,300**	**130**
Fecal Coliform	MPN/100 mL	400 (c)	400	<2000#	**8,000**	**50,000**	**3,000**	**28,000**	**50,000**	400	**700**
Total Coliform	MPN/100 mL		30,000	<2000	23,000	170,000	13,000	80,000	50,000	30,000	2,100

< - Results are less than the reporting limit.

NA - Not analyzed.

[1]Laboratory analyzed results were used if analyte was not measured in the field.

J - Results are greater than the method detection limit but below the reporting limit. Reported result is estimated.

(a) Water Quality Benchmark for dissolved metal fractions is based on total hardness and is calculated as described by 40 CFR Part 131.38 (May 18, 2000). The CCC was applied to dry weather results with the exception of Silver for which the CMC was applied as there is no CCC.

(b) If calculated CCC values exceeded the Maximum Contaminant Levels (MCLs) as given in the basin plan, concentrations were compared to the MCLs. No MCLs were exceeded for these constituents.

(c) Instantaneous Maximum for storm drain outfall discharges to inland surface waters with REC-1 beneficial use (Table C-4 of 2013 Permit).

- Reporting limit greater than Instantaneous Maximum NAL.

Bolded/shaded results greater than Maximum Daily Action Level or the Instantaneous Maximum for the Fecal Indicator Bacteria.

Table A4-17. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – City of El Cajon

Analyte	Units	Maximum Daily Action Level (MDAL)	OF-3		OF-5		OF-13		OF-15A		OF-16	
			7/5/2016	7/12/2016	7/5/2016	7/12/2016	7/5/2016	7/12/2016	7/6/2016	7/13/2016	7/6/2016	7/13/2016
Physical Chemistry												
Dissolved Oxygen	mg/L	5	13.3	9.3	10.9	11.7	11.6	11	10.6	11	7.3	7.1
pH	pH units	6.5-8.5	7.6	7.4	8.1	8.1	8.5	**8.8**	7.1	7.4	**8.7**	**8.7**
Specific Conductivity	µS/cm		2,210	1,577	2180	2,090	1,360	2,940	6,150	5,830	3,770	3,230
Temperature	Celsius		26.8	24.0	26.6	23.6	30.6	28.2	23.9	24.6	32.6	32.8
Turbidity	NTU	20	0.01	0.26	5.81	7.56	2.12	3.03	**25.33**	7.74	4.88	3.03
General Chemistry												
Chloride	mg/L		300	230	260	260	130	530	1,710	1,690	630	490
Color	Color units		35	44	9	3	9	26	41	38	24	18
Hardness as $CaCO_3$	mg/L		688	539	774	689	304	590	1,550	1,490	646	638
MBAS	mg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1J	0.3J	0.2J	0.2J	<0.5
Sulfate	mg/L		360	347	392	393	222	514	716	622	559	566
Total Dissolved Solids	mg/L		1,470	1,160	1520	1,500	693	1,910	4,030	3,930	2,160	1,920
Total Suspended Solids	mg/L		<20	<20	294	139	3J	10J	242	41	18J	14J
Nutrients												
Ammonia as N	mg/L		<0.1	<0.1	0.05J	0.19	0.52	0.11	0.26	0.06J	0.09J	0.64
Nitrate + Nitrite as N	mg/L		3.6	1.27	7.03	4.48	0.24	0.24	2.07	1.21	0.18	0.16
Total Nitrogen	mg/L	1	**3.9**	**1.3**	**8.3**	**11.1**	**2.2**	**4.2**	**6.4**	**2.2**	**7.8**	**2.8**
Total Kjeldahl Nitrogen	mg/L		0.3J	<0.5	1.3	6.6	2	4	4.3	1	7.6	2.6
Orthophosphate	mg/L		0.27	0.31	0.45	0.56	<0.05	<0.05	0.42	0.31	0.18	0.05
Dissolved Phosphorus	mg/L		0.22	0.33	0.14	0.47	<0.05	0.05	0.55	0.22	0.06	<0.05
Total Phosphorus	mg/L	0.1	**0.28**	**0.35**	**0.5**	**1.09**	0.06	0.07	**0.73**	**0.36**	**0.21**	0.07
Total Metals												
Cadmium	µg/L		<1	<1	<1	0.6J	<1	0.2J	0.8J	0.3J	0.4J	1
Chromium	µg/L		0.6J	0.5J	1J	4J	0.6J	0.5J	7	3J	0.4J	0.4J
Chromium III	µg/L		0.6J	0.5J	1	4	0.6J	0.5J	7	3	0.4J	0.4J
Chromium VI	µg/L	16	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#
Copper	µg/L		5J	5J	6J	31	5J	7J	65	26	5J	5J
Iron	µg/L	300	31J	59	**303**	**3,190**	126	78	**16,400**	**3,430**	76	59
Lead	µg/L		0.1J	0.1J	1J	10	0.4J	0.3J	14	4J	0.5J	0.3J
Manganese	µg/L	50	2J	7	31	**276**	5	5	**152**	**71**	6	4J
Nickel	µg/L		2J	2J	2J	4J	2J	2J	11	9	3J	2J
Selenium	µg/L		2	1	4	4	2	2	4	4	5	4
Silver	µg/L		0.6J	<1	<1	<1	<1	<1	0.8J	0.4J	<1	0.5J
Zinc	µg/L		19J	31	102	520	9J	10J	217	102	11J	7J
Dissolved Metals												
Cadmium	µg/L	(a)(b)	0.2J	<1	0.4J	<1	0.2J	<1	0.4J	0.2J	<1	<1
Chromium	µg/L		0.2J	0.2J	0.4J	0.3J	<5	<5	<5	0.2J	<5	<5
Chromium III	µg/L	(a)(b)	0.2J	0.2J	0.4J	0.3J	<1	0.08J	0.1J	0.2J	0.08J	0.06J
Chromium VI	µg/L	16	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#
Copper	µg/L	(a)	3	4	1J	2	3	6	13	9	4	3
Iron	µg/L	300	11J	19J	6J	5J	4J	4J	40J	54	6J	4J
Lead	µg/L	(a)	<1	<1	<5	0.09J	<1	<1	<1	<1	0.2J	0.09J

Table A4-17. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – City of El Cajon

Analyte	Units	Maximum Daily Action Level (MDAL)	OF-3		OF-5		OF-13		OF-15A		OF-16	
			7/5/2016	7/12/2016	7/5/2016	7/12/2016	7/5/2016	7/12/2016	7/6/2016	7/13/2016	7/6/2016	7/13/2016
Manganese	µg/L	50	2J	2J	8	7	1J	2J	**54**	35	2J	1J
Nickel	µg/L	(a)(b)	1J	1J	1J	0.8J	0.8J	1J	6	5	1J	1J
Selenium	µg/L		2	1	4	4	2	2	5	4	5	4
Silver	µg/L	(a)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	(a)	16J	15J	62	55	2J	4J	57	45	3J	2J
Fecal Indicator Bacteria												
Enterococcus	MPN/100 mL	61 (c)	**>1,600**	**500**	**280**	20	**500**	**1,300**	**300**	**1,300**	30	**230**
Fecal Coliform	MPN/100 mL	400 (c)	**>1,600**	400	**>1,600**	**1,100**	**>1,600**	**2,300**	**>1600**	**3,000**	**>1,600**	**2,300**
Total Coliform	MPN/100 mL		>1,600	7,000	>1,600	17,000	>1,600	23,000	>1,600	8,000	>1,600	8,000

< - Results are less than the reporting limit.

NA - Not analyzed.

J - Results are greater than the method detection limit but below the reporting limit. Reported result is estimated.

(a) Water Quality Benchmark for dissolved metal fractions is based on total hardness and is calculated as described by 40 CFR Part 131.38 (May 18, 2000). The CCC was applied to dry weather results with the exception of Silver for which the CMC was applied as there is no CCC.

(b) If calculated CCC values exceeded the Maximum Contaminant Levels (MCLs) as given in the basin plan, concentrations were compared to the MCLs. No MCLs were exceeded for these constituents.

(c) Instantaneous Maximum for storm drain outfall discharges to inland surface waters with REC-1 beneficial use (Table C-4 of 2013 Permit).

- Reporting limit greater than Maximum Daily Action Level.

Bolded/shaded results greater than Maximum Daily Action Level or the Instantaneous Maximum for the Fecal Indicator Bacteria.

Table A4-18. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – City of La Mesa

Analyte	Units	Maximum Daily Action Level (MDAL)	OF-ALV-6		OF-ALV-7		OF-ALV-9		OF-ALV-12		OF-ALV-13	
			7/7/2016	7/18/2016	8/4/2016	8/5/2016	7/7/2016	7/18/2016	7/7/2016	7/14/2016	7/11/2016	7/14/2016
Physical Chemistry												
Dissolved Oxygen	mg/L	5	9.5	9.1	NA	NA	10.4	10.8	10.8	10.2	10.2	11.2
pH	pH units	6.5-8.5	6.8	6.9	**5.8**	6.6	8.1	6.5	8.2	8.1	7.9	7.8
Specific Conductivity[1]	µS/cm		3,870	3,550	2,550	3,560	1,164	1,204	2,490	2,570	2,780	2,660
Temperature	Celsius		25.7	26.7	26.7	26.4	23.7	23.0	26.4	24.6	20.5	21.1
Turbidity	NTU	20	13.05	8.01	**967**	**997**	18.61	17.41	**90**	**31.3**	9.72	**24.12**
General Chemistry												
Chloride	mg/L		NA	940	790	1050	NA	130	NA	700	820	690
Color	Color units		8	16	10	8	35	44	18	41	12	17
Hardness as $CaCO_3$	mg/L		916	816	669	802	352	380	564	589	789	660
MBAS	mg/L	0.5	<0.5	<0.5	<0.5	<0.5	0.1J	0.1J	<0.5	<0.5	<0.5	<0.5
Sulfate	mg/L		275	314	62.8	59.4	188	204	292	413	235	216
Total Dissolved Solids	mg/L		2,260	2,100	1,410	1,970	788	834	1,440	2,060	1,840	1,850
Total Suspended Solids	mg/L		785	96	1650	510	75	168	323	201	7J	15J
Nutrients												
Ammonia as N	mg/L		0.45J	<0.1	0.85	0.94	1.58	0.25	1.68	0.09J	0.17	0.08J
Nitrate + Nitrite as N	mg/L		0.94	1.13	2.58	2.18	0.38	0.71	0.82	0.3	0.97	0.87
Total Nitrogen	mg/L	1	**4.7**	**4.8**	**8.6**	**7**	**6.2**	**8.4**	**4.6**	**14.5**	**2.7**	**2.9**
Total Kjeldahl Nitrogen	mg/L		3.8	3.7	6	4.8	5.8	7.7	3.8	14.2	1.7	2
Orthophosphate	mg/L		1.22	0.39	0.02J	<0.05	1.09	1.12	0.39	0.39	0.12	0.12
Dissolved Phosphorus	mg/L		0.64	0.34	0.22	1.15	1.3	1.48	0.28	0.54	0.13	0.13
Total Phosphorus	mg/L	0.1	**1.75**	**0.64**	**2.96**	**2.96**	**1.61**	**1.66**	**0.59**	**0.98**	**0.13**	**0.19**
Total Metals												
Cadmium	µg/L		0.7J	1	0.7J	0.4J	1	6	0.5J	0.4J	1	0.6J
Chromium	µg/L		10	3J	16	5	2J	5	3J	3J	0.3J	0.5J
Chromium III	µg/L		0.3J	0.4J	<1	16	0.4J	0.7J	0.08J	0.1J	<1	0.07J
Chromium VI	µg/L	16	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Copper	µg/L		133	44	314	75	28	49	48	48	3J	6J
Iron	µg/L	300	**8,010**	**1,980**	**280,000**	**119,000**	**2,680**	**3,930**	**25,400**	**31,800**	**1,040**	**1,600**
Lead	µg/L		19	5	14	4J	19	33	8	8	0.2J	0.4J
Manganese	µg/L	50	**315**	**88**	**2,700J**	**1,980J**	**293**	**315**	**1,830**	**301**	**501**	**475**
Nickel	µg/L		10	5	36	15	13	12	7	8	4J	3J
Selenium	µg/L		3	2	2	1	1	2	1	5	2	2
Silver	µg/L		0.3J	0.2J	1	0.3J	<1	0.2J	<1	0.2J	<1	<1
Zinc	µg/L		293	130	426	133	308	428	165	125	8J	16J
Dissolved Metals												
Cadmium	µg/L	(a)(b)	0.2J	0.3J	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	µg/L		0.3J	0.4J	<5	<5	0.4J	0.7J	<5	<5	<5	<5
Chromium III	µg/L	(a)(b)	10	3	16	<1	2	5	3J	3	0.3J	0.5J
Chromium VI	µg/L	16	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Copper	µg/L	(a)	7	6	8	6	4	7	4J	10	2J	3J
Iron	µg/L	300	15J	31J	153	**1,270**	227	288	20J	202	12J	10J
Lead	µg/L	(a)	<1	<1	<1	<1	1	2	<1	0.06J	<1	<1

Table A4-18. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – City of La Mesa

Analyte	Units	Maximum Daily Action Level (MDAL)	OF-ALV-6		OF-ALV-7		OF-ALV-9		OF-ALV-12		OF-ALV-13	
			7/7/2016	7/18/2016	8/4/2016	8/5/2016	7/7/2016	7/18/2016	7/7/2016	7/14/2016	7/11/2016	7/14/2016
Manganese	µg/L	50	25	15	**1,330**	**1,690**	**112**	17	**159**	**196**	**499**	**449**
Nickel	µg/L	(a)(b)	3J	3J	5	5	10	8	1J	4J	2J	2J
Selenium	µg/L		2	2	0.6J	0.8	1	2	1	4	2	1
Silver	µg/L	(a)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	(a)	52	62	22	21	127	112	3J	5J	2J	3J
Fecal Indicator Bacteria												
Enterococcus	MPN/100 mL	61 (c)	**500**	**81**	**500**	<20	**13,000**	<200#	**50,000**	**14,000**	**2,200**	**2,200**
Fecal Coliform	MPN/100 mL	400 (c)	**2,300**	**2,000**	<20	400	**110,000**	**11,000**	**300,000**	**240,000**	**5,000**	**11,000**
Total Coliform	MPN/100 mL		23,000	50,000	110,000	11,000	900,000	50,000	300,000	240,000	30,000	80,000

< - Results are less than the reporting limit.

NA - Not analyzed.

[1] Laboratory analyzed results were used if analyte was not measured in the field.

J - Results are greater than the method detection limit but below the reporting limit. Reported result is estimated.

(a) Water Quality Benchmark for dissolved metal fractions is based on total hardness and is calculated as described by 40 CFR Part 131.38 (May 18, 2000). The CCC was applied to dry weather results with the exception of Silver for which the CMC was applied as there is no CCC.

(b) If calculated CCC values exceeded the Maximum Contaminant Levels (MCLs) as given in the basin plan, concentrations were compared to the MCLs. No MCLs were exceeded for these constituents.

(c) Instantaneous Maximum for storm drain outfall discharges to inland surface waters with REC-1 beneficial use (Table C-4 of 2013 Permit).

- Reporting limit greater than Maximum Daily Action Level or Instantaneous Maximum NAL.

Bolded/shaded results greater than Maximum Daily Action Level or the Instantaneous Maximum for the Fecal Indicator Bacteria.

Table A4-19. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – City of Santee

Analyte	Units	Maximum Daily Action Level (MDAL)	E5g1		R20a	RCP1		S5c		S15h	
			8/15/2016	8/17/2016	8/15/2016	8/15/2016	8/17/2016	8/8/2016	8/16/2016	8/8/2016	8/16/2016
Physical Chemistry											
Dissolved Oxygen	mg/L	5	5.36	6.29	6.32	5.68	7.8	5.14	5.52	5.85	5.28
pH	pH units	6.5-8.5	7.8	7.8	7.9	8.3	7.4	6.7	8	6.5	8
Specific Conductivity[1]	µS/cm		2,140	1,980	1,510	1,760	1,900	1,770	1,680	1,100	1,000
Temperature	Celsius		28.8	24.7	25.1	28	21	23.6	29.1	25.2	25.0
Turbidity	NTU	20	2.81	5.32	4.26	0.01	0.74	4.58	4.64	3.08	19.58
General Chemistry											
Chloride	mg/L		400	390	220	240	280	240	240	160	130
Color	Color units		39	32	22	5	5	161	191	55	103
Hardness as $CaCO_3$	mg/L		370	414	494	550	515	459	400	245	240
MBAS	mg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.3J	0.1J	0.1J	0.2J
Sulfate	mg/L		271	262	243	244	256	259	238	151	128
Total Dissolved Solids	mg/L		1,270	1,210	903	1,130	1,200	1,170	1,080	664	566
Total Suspended Solids	mg/L		<20	5J	7J	<20	<20	5J	5J	4J	25
Nutrients											
Ammonia as N	mg/L		0.33	0.37	0.24	<0.1	<0.1	1.4	0.87	0.3	0.47
Nitrate + Nitrite as N	mg/L		1.96	1.84	8.12	15.9	14.3	3.17	4.34	1.4	1.42
Total Nitrogen	mg/L	1	**2.7**	**2.3**	**9.3**	**15.9**	**14.7**	**8.7**	**9**	**2.9**	**2.8**
Total Kjeldahl Nitrogen	mg/L		0.7	0.5	1.2	<0.5	0.4J	5.5	4.7	1.5	1.4
Orthophosphate	mg/L		0.29	0.28	0.24	0.1	0.08	0.44	0.55	0.22	0.31
Dissolved Phosphorus	mg/L		0.21	0.23	0.27	0.11	0.08	<0.05	0.76	0.16	<0.05
Total Phosphorus	mg/L	0.1	**0.36**	**0.31**	**0.28**	**0.12**	0.1	**0.73**	**0.92**	**0.28**	**0.45**
Total Metals											
Cadmium	µg/L		<1	<1	0.2J	<1	<1	0.2J	0.2J	0.4J	<1
Chromium	µg/L		0.2J	0.4J	0.6J	0.6J	0.3J	0.4J	0.7J	0.2J	1J
Chromium III	µg/L		<1	0.4J	0.6J	0.6J	0.3J	0.4J	0.7J	<1	1
Chromium VI	µg/L	16	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#
Copper	µg/L		17	17	13	5J	5J	12	14	8J	14
Iron	µg/L	300	191	**306**	146	25J	16J	209	**677**	164	**1,080**
Lead	µg/L		0.2J	0.4J	3J	0.3J	<5	0.9J	2J	0.8J	2J
Manganese	µg/L	50	24	43	5	2J	1J	**103**	**133**	23	**77**
Nickel	µg/L		4J	4J	3J	2J	1J	6	6	2J	4J
Selenium	µg/L		1	1	1	1	1	0.7J	0.7J	1	0.7J
Silver	µg/L		<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L		19J	25	28	12J	12J	95	119	42	100
Dissolved Metals											
Cadmium	µg/L	(a)(b)	<1	<1	0.2J	<1	<1	<1	<1	<1	<1
Chromium	µg/L		<5	<5	<5	<5	<5	<5	<5	<5	<5
Chromium III	µg/L	(a)(b)	<1	<1	<1	<1	<1	<1	0.09J	<1	<1
Chromium VI	µg/L	16	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#	<20#
Copper	µg/L	(a)	13	13	11	3	3	6	8	5	3
Iron	µg/L	300	37J	44J	2J	<50	<50	110	284	29J	48J
Lead	µg/L	(a)	<1	0.07J	1	<1	<1	0.3J	0.6J	0.1J	0.1J

Table A4-19. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – City of Santee

Analyte	Units	Maximum Daily Action Level (MDAL)	E5g1		R20a	RCP1		S5c		S15h	
			8/15/2016	8/17/2016	8/15/2016	8/15/2016	8/17/2016	8/8/2016	8/16/2016	8/8/2016	8/16/2016
Manganese	µg/L	50	8	13	0.8J	<5	0.2J	**65**	**110**	16	34
Nickel	µg/L	(a)(b)	3J	3J	1J	0.5J	0.4J	5	5	2J	2J
Selenium	µg/L		1	1	1	1	1	0.7J	0.8J	0.9J	0.7J
Silver	µg/L	(a)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	(a)	14J	16J	14J	8J	9J	53	76	26	30
Fecal Indicator Bacteria											
Enterococcus	MPN/100 mL	61 (c)	**280**	**900**	**300**	**500**	50	**>1,600**	**1,600**	**>1,600**	**900**
Fecal Coliform	MPN/100 mL	400 (c)	**900**	**>1,600**	**900**	**1,600**	**900**	**>1,600**	**>1,600**	**>1,600**	**>1,600**
Total Coliform	MPN/100 mL		>1,600	>1,600	>1,600	>1,600	>1,600	>1,600	>1,600	>1,600	1,600

< - Results are less than the reporting limit.

NA - Not analyzed.

[1] Laboratory analyzed results were used if analyte was not measured in the field.

J - Results are greater than the method detection limit but below the reporting limit. Reported result is estimated.

(a) Water Quality Benchmark for dissolved metal fractions is based on total hardness and is calculated as described by 40 CFR Part 131.38 (May 18, 2000). The CCC was applied to dry weather results with the exception of Silver for which the CMC was applied as there is no CCC.

(b) If calculated CCC values exceeded the Maximum Contaminant Levels (MCLs) as given in the basin plan, concentrations were compared to the MCLs. No MCLs were exceeded for these constituents.

(c) Instantaneous Maximum for storm drain outfall discharges to inland surface waters with REC-1 beneficial use (Table C-4 of 2013 Permit).

- Reporting limit greater than Maximum Daily Action Level.

Bolded/shaded results greater than Maximum Daily Action Level or the Instantaneous Maximum for the Fecal Indicator Bacteria.

Table A4-20. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – City of San Diego

Analyte	Units	Maximum Daily Action Level (MDAL)	DW0067		DW0081		DW0369		DW0696		DW0681UP01	
			11/24/2015	3/23/2016	11/24/2015	3/23/2016	12/7/2015	3/23/2016	11/24/2015	3/23/2016	12/7/2015	6/7/2016
Physical Chemistry												
Dissolved Oxygen	mg/L	5	9.49	9.9	9.32	9.4	9.2	9.77	**4.92**	**1.7**	8.05	6.98
pH	pH units	6.5-8.5	8.5	8	**8.7**	8.5	8.4	8.3	7.8	7.7	7.4	8.3
Specific Conductivity	µS/cm		2,710	1,265	1,120	1,085	4,550	4,590	1,175	1,083	1,360	2,470
Temperature	Celsius		18.0	15.5	18.8	18.5	16.8	16.6	16.1	16.1	19.9	20.8
Turbidity	NTU	20	**42.68**	NA	1.43	NA	0.79	NA	5.56	NA	**35.36**	**29.06**
General Chemistry												
Chloride	mg/L		620	170	120	110	1,100	1,000	130	110	150	460
Color	Color units		100	1.5	<1	1.8	15	23	40	100	18	20
Hardness as $CaCO_3$	mg/L		710	320	330	280	1,300	1,300	350	280	320	340
MBAS	mg/L	0.5	<0.1	0.059	<0.1	<0.1	<0.1	0.084	<0.1	0.23	<0.1	0.1
Sulfate	mg/L		310	160	280	170	500	490	290	160	230	200
Total Dissolved Solids	mg/L		1,700	680	750	630	4,100	2,700	730	600	810	1,400
Total Suspended Solids	mg/L		38	14	1.4	1.4	8.9	3.1	16	9.8	1,500	250
Nutrients												
Ammonia as N	mg/L		<0.5	0.5	<0.5	0.2	<0.5	0.22	<0.5	0.24	<0.5	0.26
Nitrate as N	mg/L		1.4	0.62	0.17	0.36	3.7	3.3	0.21	0.083	0.65	2.7
Nitrite as N	mg/L		<0.3	<0.15	<0.15	<0.15	<0.3	<0.75	<0.15	<0.15	<0.15	<0.15
Total Nitrogen	mg/L	1	**5**	**1.1**	0.17	0.54	**4.1**	**3.7**	**1.3**	0.73	**2.5**	**6.3**
Total Kjeldahl Nitrogen	mg/L		3.6	0.52	<0.2	0.18	0.35	0.38	1.1	0.65	1.8	3.6
Orthophosphate	mg/L		<0.32	0.039	<0.16	<0.05	<0.32	0.051	<0.16	0.19	<0.16	1.4
Dissolved Phosphorus	mg/L		<0.05	0.037	<0.05	<0.05	<0.05	0.029	0.13	0.21	NA	10
Total Phosphorus	mg/L	0.1	**0.14**	0.039	<0.05	<0.05	<0.05	<0.05	**0.28**	**0.33**	**0.29**	**6.4**
Total Metals												
Cadmium	µg/L		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chromium	µg/L		<5	<5	<5	<5	<5	<5	<5	<5	6.5	<5
Copper	µg/L		14	180	<10	17	<10	7.5	11	18	49	60
Iron	µg/L	300	**1,900**	150	<40	38	<40	20	160	**320**	**5,000**	**2,100**
Lead	µg/L		9.3	11	<5	5.1	<5	11	<5	8.4	16	3.7
Manganese	µg/L	50	**67**	33	<20	<20	<20	15	**77**	**120**	**360**	**170**
Nickel	µg/L		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Selenium	µg/L		<10	<10	<10	7	<10	11	<10	<10	<10	<10
Silver	µg/L		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	µg/L		41	110	<20	<20	<20	<20	<20	22	400	130
Dissolved Metals												
Cadmium	µg/L	(a)(b)	<5	<5	<5	<5#	<5	<5	<5	<5#	<5	<5
Chromium	µg/L		<5	3.3	<5	<5	<5	<5	18	<5	<5	<5
Chromium III	µg/L	(a)(b)	<1	<1	<1	<1	<1	<1	<1	<1	6.5	<1
Chromium VI	µg/L	16	<1	0.4	<1	<1	<1	<1	<1	<1	<1	<1
Copper	µg/L	(a)	<10	**150**	<10	16	<10	<10	<10	<10	<10	**140**
Iron	µg/L	300	150	34	63	11	<40	11	130	80	<40	82
Lead	µg/L	(a)	<5	5.9	<5	3.2	<5	4.9	<5	5.3	<5	<5
Manganese	µg/L	50	36	22	<20	<20	<20	14	**67**	**97**	22	**240**

Table A4-20. 2015-2016 Storm Drain Outfall Dry Weather Monitoring Analytical Results for Highest Priority Outfalls – City of San Diego

Analyte	Units	Maximum Daily Action Level (MDAL)	DW0067		DW0081		DW0369		DW0696		DW0681UP01	
			11/24/2015	3/23/2016	11/24/2015	3/23/2016	12/7/2015	3/23/2016	11/24/2015	3/23/2016	12/7/2015	6/7/2016
Nickel	µg/L	(a)(b)	<10	<10	<10	<10	<10	<10	16	<10	<10	6.2
Selenium	µg/L		<10	<10	<10	<10	<10	13	<10	<10	<10	<10
Silver	µg/L	(a)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	µg/L	(a)	130	81	<20	12	<20	12	94	17	<20	**450**
Fecal Indicator Bacteria												
Enterococcus	CFU/100 mL	61 (c)	<20	<20	20e	**100e**	**200e**	**300e**	**1,600e**	**600e**	**6,600**	**110,000**
Fecal Coliform	CFU/100 mL	400 (c)	20e	<20	<20	<20	80e	40e	**580**	<2,000#	<200	**110,000**
Total Coliform	CFU/100 mL		600e	<20	40e	480	800e	24,000e	18,000e	<2,000	220,000e	110,000

< - Results are less than the reporting limit.

NA - Not analyzed.

J - Results are greater than the method detection limit but below the reporting limit. Reported result is estimated.

(a) Water Quality Benchmark for dissolved metal fractions is based on total hardness and is calculated as described by 40 CFR Part 131.38 (May 18, 2000). The CCC was applied to dry weather results with the exception of Silver for which the CMC was applied as there is no CCC.

(b) If calculated CCC values exceeded the Maximum Contaminant Levels (MCLs) as given in the basin plan, concentrations were compared to the MCLs. No MCLs were exceeded for these constituents.

(c) Instantaneous Maximum for storm drain outfall discharges to inland surface waters with REC-1 beneficial use (Table C-4 of 2013 Permit).

e - Estimated value, plate count falls outside recommended reporting limits per EPA method guidelines.

- Reporting limit greater than Maximum Daily Action Level or Instantaneous Maximum NAL.

Bolded/shaded results greater than Maximum Daily Action Level or the Instantaneous Maximum for the Fecal Indicator Bacteria.

4.2.3 Storm Drain Outfall Dry Weather Monitoring Data Assessments

Provision D.4.b.(1).(c)(i-vi) of the Permit requires the dry weather storm drain outfall monitoring data assessments summarized in Table A4-21. The information necessary to demonstrate compliance with each Provision is outlined in the following discussion. In instances where compliance has been demonstrated in previous sections of this Annual Report, those sections are referenced.

Table A4-21. Storm Drain Outfall Dry Weather Monitoring Assessments

Assessment	Components	Provision(s)
WQIP Annual Report		
Identify known and suspected controllable sources.	Identify known and suspected controllable sources (e.g., facilities, areas, land uses, pollutant generating activities) of transient and persistent flows.	D.4.b.(1)(b)(i)
Identify sources that have been reduced or eliminated.	Identify sources of transient and persistent flows that have been reduced or eliminated.	D.4.b.(1)(b)(ii)
Identify necessary modifications to monitoring locations and frequencies.	Identify necessary modifications to monitoring locations and frequencies necessary to identify and eliminate sources of persistent flows.	D.4.b.(1)(b)(iii)
Rank and prioritize non-stormwater discharges.	Rank persistently flowing outfalls according to potential threat to receiving water quality.	D.4.c.(1)(c)(ii)
	Produce/update prioritized list of outfalls.	
Identify sources contributing to NAL exceedances.	Identify known and suspected sources that may cause or contribute to exceedances.	D.4.b.(1)(c)(iii)
Estimate volumes and loads of non-stormwater discharges.	Analyze data collected as part of the Permit-required dry weather outfall monitoring. Use a model or other method to calculate and estimate collective persistent non-stormwater discharge volumes and pollutant loads. Specific calculations/estimates include: 1) Annual non-stormwater volumes and loads discharged from the Copermittee's major storm drain outfalls to receiving waters within its jurisdiction, with an estimate of the percent contribution from each known source for each storm drain outfall. 2) Annual identification and quantification (by volume and pollutant load) of sources of discharged non-stormwater not subject to the Copermittee's legal authority.	D.4.b.(1)(c)(iv)
Identify data gaps.	Identify data gaps in the monitoring data necessary to fulfill assessment requirements.	D.4.b.(1)(c)(vi)

Table A4-21. Storm Drain Outfall Dry Weather Monitoring Assessments

Assessment	Components	Provision(s)
Once during Permit Term		
Evaluate progress in achieving non-stormwater volume and load reductions.	Identify reductions and progress in achieving reductions.	D.4.c.(1)(c)(v)
	Assess the effectiveness of WQIP improvement strategies, with estimates of volume and load reductions attributed to specific strategies when possible.	
	Identify modifications necessary to increase the effectiveness of WQIP strategies.	

4.2.3.1 Provision D.4.b.(1)(b)

The dry weather field screening monitoring assessments that were first required by Provision D.4.b.(1)(b)(i-iii) during the transitional monitoring period (2013-2014 and 2014-2015 monitoring years) are required to be continued by Provision D.4.b.(1)(c)(i). The assessments related to (i) and (ii) are described in Section 4.2.4 below. To comply with (iii), the data collected under the dry weather field screening monitoring program (Section 4.2.1) were assessed, and no modifications to field screening monitoring locations or frequencies are planned for the 2016-2017 monitoring year in the San Diego River WMA.

4.2.3.2 Provision D.4.b.(1)(c)(ii)

In addition to continuing the assessments required by Provision D.4.b.(1)(b)(i-iii), the 2015-2016 monitoring year is the first requiring analytical monitoring of storm drain outfall dry weather samples, and the first requiring the assessments of Provision D.4.b.(1)(c)(ii-v).

Provision D.4.b.(1)(c)(ii) requires the prioritization of major storm drain outfalls within each Copermittee's jurisdiction based on the storm drain outfall dry weather monitoring data. These data were presented in Section 4.2.1, and the analytical data collected at the highest priority outfalls for each jurisdiction during the 2015-2016 monitoring year are presented in Table A4-16 through Table A4-20 in Section 4.2.2. After assessing these data, no re-prioritizations are planned for the 2016-2017 monitoring year in the San Diego River WMA. Although the flow determination changed for some outfalls from persistent to transient, high priority outfalls selected for analytical monitoring in 2015-2016 will continue to be monitored until one of the conditions of Provision D.2.b.(2)(b)(ii) have been met (i.e., three consecutive dry visits, no exceedance of NALs, or identified as a discharge authorized under a separate National Pollutant Discharge Elimination System [NPDES] permit). When an outfall fulfills one of these criteria or the threat to water quality has been reduced (per Provision D.2.b.(2)(b)(iii)), it will be replaced with the next highest priority outfall on the Copermittee's list for the WMA. Monitored outfalls that changed from persistent to transient flow determination are shown in Table A4-14. There was one high priority persistent flow monitored outfall that is now identified as having transient flow.

4.2.3.3 Provision D.4.b.(2)(c)(iii)

This Provision requires further investigation into sources at the highest priority outfalls with persistent flows exceeding NALs. The highest priority outfalls are listed for each jurisdiction in Table A4-15, and the analytical results collected at these outfalls are presented in Table A4-16 through Table A4-20.

These highest priority outfalls were a specific focus for IDDE investigations during the 2015-2016 monitoring year. The results from these investigations are presented in Section 4.2.4.2. The most common identified or suspected source of non-stormwater flows was runoff from over-irrigation, which has been acknowledged as a source associated with several types of pollutants including nutrients, bacteria, pesticides, and sediment (Regional Board, 2013). The 2015-2016 highest priority storm drain outfall dry weather monitoring results showed exceedances of NALs for the HPWQC and PWQCs *Enterococcus*, fecal coliform, total nitrogen, and total phosphorus. Concentrations of iron and manganese were also above NALs, and groundwater seepage in addition to over-irrigation were identified or suspected as sources of flows at many of the outfalls. Groundwater can be a natural source of these minerals, and over-irrigation can contribute to rising groundwater and groundwater seepage. There were three exceedances of dissolved copper and two of dissolved zinc NALs at monitored outfalls in the watershed. Investigations identified residential vehicle washing and impervious surface washing as a source of flows at one of these outfalls, and power washing as well as other sources associated with flows at another of these outfalls. Details regarding source investigations are provided in 4.2.4, including a table of sources identified for highest priority outfalls (Table A4-26).

4.2.3.4 Provision D.4.b.(2)(c)(iv)

Persistent dry weather flow was identified by each of the Participating Agencies in the San Diego River WMA. Since persistent flow was observed, the Participating Agencies were required to calculate or estimate the non-stormwater volumes and pollutant loads collectively discharged from these persistently flowing outfalls to receiving waters, and estimate percent contributions from each known source for each outfall. The Participating Agencies are also required to identify and quantify (i.e., volume and pollutant loads) sources of non-stormwater discharge not subject to the Participating Agency's legal authority that are discharged from the major storm drain outfalls, with persistent flow, to downstream receiving waters. Assessment methodology and results are summarized below and are described in greater detail in Attachment 4E. Suspected sources were included in this assessment.

4.2.3.4.1 Discharge Volumes from Persistently Flowing Major Storm Drain Outfalls

For each major storm drain outfall with persistent flow during the 2015-2016 monitoring year, the non-stormwater discharge was modeled by multiplying the total number of dry weather days for the month by a unique instantaneous flow rate for the outfall for that month. The number of dry weather days (i.e., less than 72 hours since rain event of 0.1 inches or more) for each calendar month was determined using rainfall data from the County of San Diego Alert Station 27-La Mesa. For months with field visits, the instantaneous flow measurement recorded for that visit was applied to the month, and if there were multiple field visits within a given month these were averaged and applied to the month (averages included instantaneous flow measurements and zero flow for dry/tidal/ponded conditions). For months where no outfall-specific data was available, the average of all instantaneous flow measurements for the outfall was applied to that month. The

annual non-stormwater discharge for each major storm drain outfall represents the sum of cumulative monthly flows. These non-stormwater discharge volumes should considered rough estimates that are based on limited field observations and measurements. When feasible, instantaneous flow measurements are based on the area-velocity method, which applies measured flow depth, width, and velocity. Velocity is often measured using a float. Although multiple velocity measurements may be collected to overcome inherent variability and a roughness factor may be applied to address friction, the float method represents a rough estimation tool for velocity. Where site conditions limit accurate collection of area-velocity field measurements, non-stormwater discharge may be estimated either using a volumetric flow rate method (e.g., filling a container of known volume in a measured interval of time), or best professional judgement based on field observations.

The County of San Diego collected continuous flow monitoring data at seven major storm drain outfalls, and for these outfalls, the continuous flow data was used rather than the instantaneous flow measurements provided by field visits. The continuous flow datasets were adjusted to exclude wet weather days and the subsequent 72-hour wet period and then used to calculate the cumulative monthly discharge for the period when flow was monitored. For months with no continuous flow data, but available visual observation flow data, the monthly discharge was calculated using the approach described above. For months with no outfall-specific flow data, an average of the daily discharge values using the continuous flow dataset was applied to the days of that month.

Table A4-22 presents the estimated annual non-stormwater volume and the average annual discharge calculated for major storm drain outfalls with persistent flow in the San Diego River WMA, by Participating Agency.

Table A4-22. 2015-2016 Non-stormwater Flow Estimates for Major Storm Drain Outfalls with Persistent Flow

Participating Agency	No. Persistently Flowing Major Storm Drain Outfalls	Annual Non-Storm Water Discharge (cf)	Annual Average Discharge by Outfall (cf/outfall)
County of San Diego	8	1,904,441	238,055
City of El Cajon	8	2,172,555	271,569
City of La Mesa	10	782,160	78,216
City of Santee	16	886,596	55,412
City of San Diego	35	45,570,744	1,302,021

cf – cubic feet

4.2.3.4.2 Pollutant Loads for Persistent Flow Outfalls

Pollutant loads were calculated based on whether analytical monitoring data was available for a major storm drain outfall. Loads were calculated as follows:

- Major Storm Drain Outfalls with Parameter-Specific Monitoring Data (High Priority Outfalls): The annual load represents the product of the outfall-specific annual discharge volume and the mean of the measured pollutant concentrations for the major storm drain outfall if two samples were collected.

- Other Persistent Flow Outfalls: Where site-specific monitoring data were not available for a persistently flowing outfall, the pollutant load was calculated by taking the product of the outfall-specific annual discharge volume and the mean pollutant concentration from all the dry weather monitoring events for the jurisdiction for the parameter.

For each persistently flowing outfall, annual non-stormwater pollutant loads were estimated for each monitored constituent. The pollutant load estimates are presented in tables by Participating Agency in Attachment 4E to this appendix.

Dry weather visual observation and field investigation data regarding known and/or suspected sources of non-stormwater discharge were used to estimate percent contributions from each known or suspected source for each persistent flow outfall in accordance with Provision D.4.b.(1)(c)(iv)(a). These percentages are provided by outfall in Table A4-23, and the stormwater volume and pollutant loads based on this source are provided in Attachment 4E to this appendix.

Table A4-23. 2015-2016 Dry Weather Storm Drain Outfall Assessment of Discharge by Known or Suspected Flow Source for Persistently Flowing Major Storm Drain Outfalls

Participating Agency	Major Storm Drain Outfall	Annual Dry Weather Discharge (cf)	Estimated Percent (%) of Non-Stormwater Discharge from Known or Suspected Flow Sources**					
			Irrigation Source	Groundwater/ Seepage Source*	Leaky Water Pipe	Other ICID Source	Washing Source	Unknown or No Source Data
County of San Diego	MS4-SDR-064	10,769	100%					
	MS4-SDR-097	10,469						X
	MS4-SDR-098	17,336						X
	MS4-SDR-127	20,081	100%					
	MS4-SDR-151	0	100%					
	MS4-SDR-207	1,261,687	49%	49%			2%	
	MS4-SDR-211	12,614						X
	MS4-SDR-240	571,484						X
City of El Cajon	OF-13	835,931	98%				2%	
	OF-15A	57,750		100%				
	OF-16	624,278						X
	OF-27	0						X
	OF-3	105,971						X
	OF-5	0						X
	OF-6A	57,750						X
	OF-7	490,875		100%				
City of La Mesa	OF-ALV-1	57,750		100%				
	OF-ALV-11	115,500		100%				
	OF-ALV-12	115,500		100%				
	OF-ALV-13	0	100%					
	OF-ALV-4	0						X
	OF-ALV-5	251,790		100%				
	OF-ALV-6	57,750	50%	50%				
	OF-ALV-7	57,750		100%				
	OF-ALV-8	86,625		100%				
	OF-ALV-9	39,495						X
City of Santee	1463	28,875						X
	1662	144,375	100%					

Table A4-23. 2015-2016 Dry Weather Storm Drain Outfall Assessment of Discharge by Known or Suspected Flow Source for Persistently Flowing Major Storm Drain Outfalls

Participating Agency	Major Storm Drain Outfall	Annual Dry Weather Discharge (cf)	Estimated Percent (%) of Non-Stormwater Discharge from Known or Suspected Flow Sources**					
			Irrigation Source	Groundwater/ Seepage Source*	Leaky Water Pipe	Other ICID Source	Washing Source	Unknown or No Source Data
	1930	0	100%					
	3081	0						X
	3306	0	100%					
	396	0	100%					
	722	14,438	98%				2%	
	A5c	14,438						X
	E5g1	28,875	100%					
City of Santee	J25c	28,875						X
	P20f	304,819		100%				
	RCP1	69,984		100%				
	RCP3	213,754	100%					
	S15h	9,288						X
	S5c	28,875	98%			2%		
	U5c	0	100%					
City of San Diego	DW0067	11,539,390	100%					
	DW0072	0	100%					
	DW0074	15,256	100%					
	DW0078	0	50%	50%				
	DW0081	707,541		98%		2%		
	DW0096	0						X
	DW0097	0	100%					
	DW0099	7,776,000	100%					
	DW0100	516,326		100%				
	DW0130	0					100%	
	DW0133	1,075,680	100%					
	DW0136	0	100%					
	DW0357	10,368						X
	DW0369	1,860,572		100%				

Table A4-23. 2015-2016 Dry Weather Storm Drain Outfall Assessment of Discharge by Known or Suspected Flow Source for Persistently Flowing Major Storm Drain Outfalls

Participating Agency	Major Storm Drain Outfall	Annual Dry Weather Discharge (cf)	Estimated Percent (%) of Non-Stormwater Discharge from Known or Suspected Flow Sources**					
			Irrigation Source	Groundwater/ Seepage Source*	Leaky Water Pipe	Other ICID Source	Washing Source	Unknown or No Source Data
	DW0459	0	100%					
	DW0673	0						X
	DW0681	698,658	98%				2%	
	DW0696	0	100%					
	DW0784	519,750			100%			
	DW0785	12,908,160						X
	DW0791	28,875	100%					
	DW0849	9,154	100%					
	DW0850	0						X
	DW0858	5,449					100%	
	DW0872	0						X
	DW0873	0						X
	DW0882	0						X
	DW0907	1,376,870						X
	DW0925	1,296,000						X
	DW0951	518,400				100%		
	DW0954*	1,814,400	100%					
	DW0955**	3,814	100%					
	DW1013	777,600	100%					
	DW1031	1,075,680						
	DW1132	1,036,800		100%				

*Groundwater is considered an uncontrollable source
**Additional information can be found in Attachment 4E (Runoff Sources tab).

4.2.3.5 Provision D.4.b.(2)(c)(v)

This Provision requires the Participating Agencies to review the data collected under the storm drain outfall dry weather monitoring program in order to identify pollutant reduction progress, assess water quality improvement strategy effectiveness, and identify modifications necessary to increase effectiveness. This assessment is required once during the Permit term and will be provided in the San Diego River WMA chapter of the RMAR, which is scheduled for submittal to the Regional Board in December 2017.

4.2.3.6 Provision D.4.b.(2)(c)(vi)

No gaps have been identified in the monitoring data. Because the 2015-2016 monitoring year was the first year of monitoring under the WQIP MAP and the first year requiring the assessments outlined in Provision D.4.b.(1)(c)(ii-iv), the collection of additional data may be necessary before the Participating Agencies are able to identify data gaps.

4.2.4 Illicit Discharge Detection and Elimination Program Data and Assessment

Based on the results of the dry weather major storm drain outfall monitoring described above, the Participating Agencies conducted investigations to identify sources of flow or NAL exceedances. Where IC/ID are identified, additional action to address the source(s) is taken. These investigations and source elimination activities related to outfall monitoring are one part of the larger IDDE programs that each Participating Agency has established. The goals of these IDDE programs are as follows:

- Control the contribution of pollutants to and the discharges from the storm drain system within the Participating Agencies' jurisdictions.
- Effectively prohibit non-stormwater discharges to the storm drain system.
- Reduce the discharge of pollutants in stormwater to the maximum extent practicable.

In addition to outfall monitoring and associated source investigations, the IDDE programs also include the following components to prevent, identify, and eliminate IC/IDs:

- Educating the local community about prohibited discharges and how to prevent them. During the 2015-2016 fiscal year, this outreach program included working closely with water utilities to educate communities about outdoor water conservation, including preventing irrigation runoff.
- Operating a public complaint phone hotline and website and investigating the complaints received.
- Inspecting industrial/commercial and municipal facilities, construction sites, and residential areas. In addition to identifying and eliminating IC/IDs where applicable, inspectors also proactively educate responsible parties about how to avoid IC/IDs, such as cleaning outdoor areas by sweeping instead of hosing them off.
- Maintaining the storm drain system and sewer system, which provide opportunities to identify unpermitted connections to the storm drain system, cross connections, and other potential sources of IC/IDs.

The IDDE components listed above are described in more detail in Section 4 of the Annual Report and in the jurisdictional strategy tables in Appendix 2. The Participating Agencies' Jurisdictional Runoff Management Program (JRMP) Annual Report forms, also included in Appendix 2, list the total numbers of IC/IDs identified and eliminated through all IDDE program activities during the fiscal year. More detail about source investigation and elimination specifically related to the storm drain outfall dry weather monitoring component of the IDDE program are presented below.

4.2.4.1 Dry Weather Storm Drain Outfall Source Identification Results

Source investigations associated with storm drain outfall monitoring broadly categorize identified sources as "controllable" and "uncontrollable." Uncontrollable sources include natural sources like groundwater and springs. Controllable and uncontrollable sources are further classified as known and suspected.

Controllable sources, along with information about whether they were eliminated, are presented in Table A4-24. In cases where flow was observed at the outfall, but the source was not directly observed or otherwise definitively identified, Participating Agencies may have identified the sources as "suspected" rather than "known." Suspected sources may require additional investigation to identify them more specifically before they can be reduced or eliminated.

Irrigation runoff was the most commonly identified known or suspected controllable source within the San Diego River WMA. Participating Agencies worked with water districts to address irrigation runoff through water conservation programs, consisting of outreach and enforcement, typically through drought ordinances or other prohibitions of wasting water, where necessary. With the adoption of the new JRMPs toward the end of the 2014-2015 fiscal year, the Participating Agencies also established legal authority to prohibit irrigation runoff as an illicit discharge. Due to these programs and substantial effort from water agencies due to the statewide drought and mandatory conservation requirements, a large number of irrigation runoff incidents were reported to hotlines and investigated. For example, citywide, the City of San Diego stormwater hotline went from receiving about 1,200 calls per year to over 2,800 calls per year; additional reports of irrigation runoff were the main driver of the increase.

The Participating Agencies also identified known or suspected uncontrollable sources of discharge, which are summarized in Table A4-25. As with controllable sources, "known" indicates a higher level of source identification certainty than "suspected." Groundwater infiltration into the storm drain system was the most common uncontrollable source identified.

Table A4-24. Known and Suspected Controllable Sources of Persistent and Transient Flows in the San Diego River WMA

Participating Agency	Known Controllable Sources				Suspected Controllable Sources				
	Commercial Washing Activities	Irrigation Runoff	Vehicle Washing	Other	Irrigation Runoff	Commercial Washing Activities	Residential Vehicle Washing	Residential Impervious Surface Washing	Other
County of San Diego	-	-	-	-	48	-	-	-	1 – Power Washing
City of El Cajon	-	2	1	-	3	1	-	-	-
City of La Mesa	-	7	-	-	-	-	-	-	-
City of Santee	-	17 (4 Eliminated, 1 Reduced)	-	1 – Automotive Activities	-	-	-	-	-
City of San Diego	1 (Eliminated)	8	-	1 – Illicit Connection (Eliminated) 1 – Permit discharge (Eliminated)	21	7 (1 Eliminated)	2	2	1 – Construction related discharges

Table A4-25. Known or Suspected Uncontrollable Sources of Persistent and Transient Flows in the San Diego River WMA

Participating Agency	Known Uncontrollable Source			Suspected Uncontrollable Source		
	Groundwater	Springs	Tidal	Groundwater	Rain Event >72 hours prior	Springs
County of San Diego	-	-	-	13	-	-
City of El Cajon	2[2]	-	-	2	-	-
City of La Mesa	10[2]	-	-	11	-	-
City of Santee	3[2]	-	-	2	-	-
City of San Diego	3	1	5	27[1]	3	1

Notes:

[1] The City of San Diego tested 17 of these locations during the monitoring year and found the water to be uncontaminated (i.e., not exceeding NALs).

[2] Identified as groundwater through additional analytical testing comparing the chemical profile of water in the storm drain system to groundwater, potable water, and, where applicable, recycled water. Depth to groundwater was also investigated and determined to be shallow enough to influence the storm drain system.

4.2.4.2 Source Identification for Highest Priority Outfalls

Each of the Participating Agencies prioritized their outfalls that had persistent flows and identified the five highest priority major outfalls (Section 4.2.1, Table A4-15). In addition to the field screening completed at all outfalls, samples were also taken for analysis at the five highest priority outfalls, as described in Section 4.2.2. The highest priority outfalls were a focus for IDDE investigations during the 2015-2016 monitoring year. Figure A4-7 shows the known or suspected flow source types identified at the highest priority outfalls.

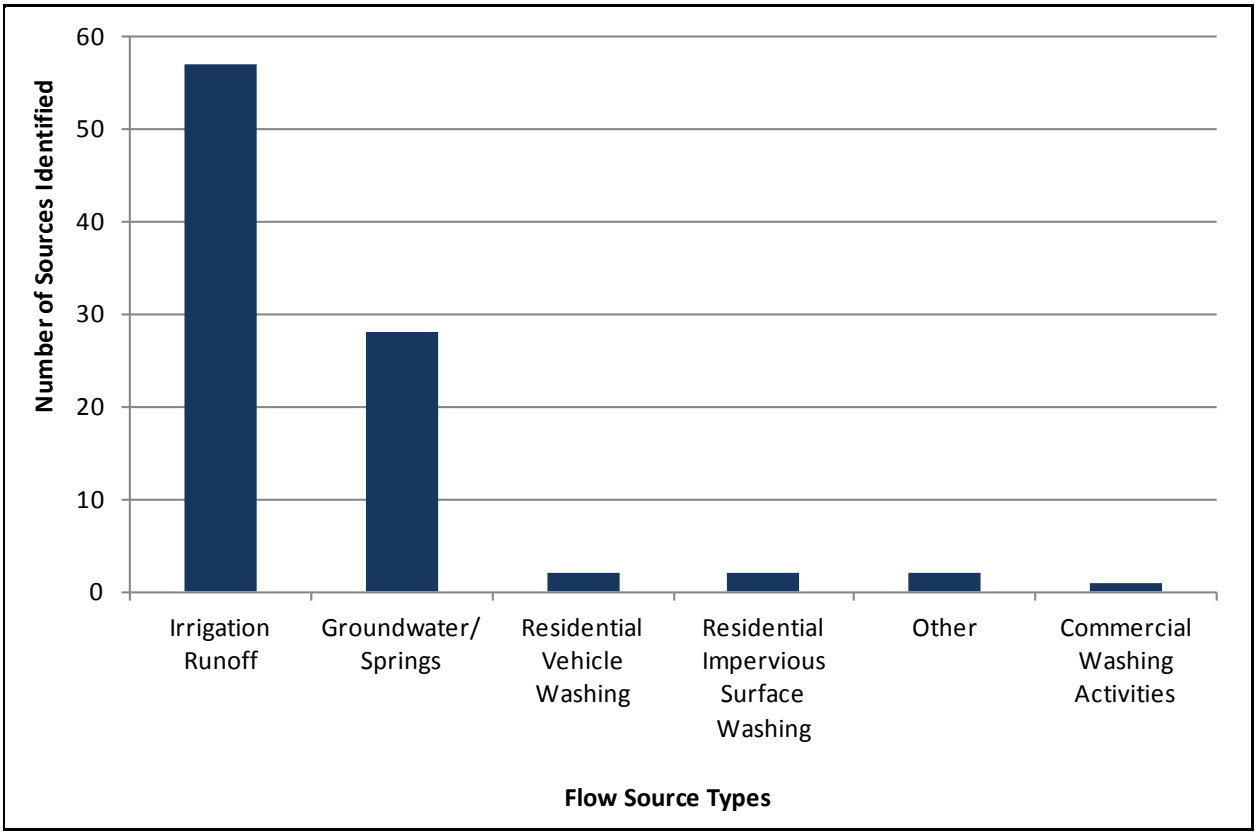

Figure A4-7. Known or Suspected Flow Sources Identified for Highest Priority Storm Drain Outfalls

More details about source investigations and associated source elimination activities at the highest priority outfalls is provided in Table A4-26.

4.2.4.3 Additional Source Investigation Activities

The City of San Diego and County of San Diego are utilizing flow meters at selected outfalls in the San Diego River WMA to assist in source identification. The County has installed flow meters at nine outfalls, and the City plans to install flow meters at four outfalls. The flow meters measure continuous flow at these outfalls, which may allow the Copermittees to target source investigation and elimination activities at particular times when flow rates tend to be higher. For example, irrigation systems are typically turned on at night or in the early morning and can be identified by recurring higher flow rates during this time.

The Copermittees are also investigating potential sources of bacteria from wastewater systems since human sources of bacteria are the highest priority source from a public health perspective. The City of San Diego has formed an interdepartmental team of staff from the Storm Water Division and the Public Utilities Department Wastewater Division to follow up on locations where bacterial source tracking data have indicated potential human sources, which could originate from the sanitary sewer system. To date, efforts have been focused on the San Diego River Watershed. For example, through this team's efforts, a broken private sewer lateral in the Sports Arena area that had been contributing wastewater to the storm drain system was identified and repaired. Similarly, the City of Santee has been working with Padre Dam Municipal Water District (Padre Dam), which is also the owner and operator of the public wastewater conveyance system in Santee, on an investigation of potential exfiltration from the wastewater system to the storm drain system. This investigation focuses in the area around a Bacteria TMDL monitoring site in Forester Creek.

Table A4-26. Highest Priority Persistent Outfall Source Elimination

Jurisdiction	Highest Priority Site ID	Source Investigation Performed?	Type	Runoff Source(s)	Actions Taken or Planned	Status of Elimination/ Identification
City of San Diego	DW0081	Yes	Unpermitted Discharge	Ground water, Other Illicit Discharges or Connections	Codes is working with Navy housing, and Caltrans to get the ultimate flow source found and stopped if possible. Still pending	In Progress
City of San Diego	DW0067	Yes	Unpermitted Discharge	Irrigation Runoff	Sent whole drainage area of DW0067 to residential patrol program RPP-029. Reported to Get it Done website	In Progress
City of San Diego	DW0369	Yes	NPDES Allowable Discharge, Other Permit Discharge, NPDES Allowable Discharge	Uncontaminated infiltration into storm drain system, Rising Groundwater, Springs		In Progress
City of San Diego	DW0681	Yes	Unpermitted Discharge, Other Permit Discharge	Irrigation Runoff, Residential Vehicle Washing, Residential Impervious Surface Washing	Reported to the Water Department and repair was confirmed visually	Eliminated
City of San Diego	DW0696	Yes	Unpermitted Discharge	Irrigation Runoff, Unidentified	Reported to Get it Done website	In Progress
City of La Mesa	OF-ALV-6	Yes	NPDES Allowable Discharge, Unpermitted Discharge	Rising Groundwater, Irrigation Runoff	Additional sampling performed	Identified as groundwater
City of La Mesa	OF-ALV-7	Yes	NPDES Allowable Discharge	Rising Groundwater	Additional sampling performed	Identified as groundwater
City of La Mesa	OF-ALV-9	Yes	Unknown	Unidentified	Continue monitoring and source identification	In Progress
City of La Mesa	OF-ALV-12	Yes	NPDES Allowable Discharge	Rising Groundwater	Analysis of water profile	Identified as groundwater
City of La Mesa	OF-ALV-13	Yes	Unpermitted Discharge, Unknown	Irrigation Runoff, Unidentified	Continue monitoring and source identification	In Progress
City of El Cajon	OF-3	Yes	Unknown	Unidentified		In Progress
City of El Cajon	OF-5	Yes	Unknown	Unidentified	Continue monitoring and source identification	In Progress
City of El Cajon	OF-13	Yes	Unpermitted Discharge	Non-Residential Vehicle Washing, Irrigation Runoff		In Progress
City of El Cajon	OF-15A	Yes	Permitted Discharge	Groundwater	Additional sampling performed	Identified as groundwater
City of El Cajon	OF-16	Yes	Unknown	Unidentified		In Progress
City of Santee	S5c	Yes	Unpermitted Discharge	Irrigation Runoff, Other Illicit Discharges or Connections		In Progress
City of Santee	E5g1	Yes	Unpermitted Discharge	Irrigation Runoff	Educational materials given to apartment complex managers	In Progress
City of Santee	S15h	Yes	Permitted Discharge, Unpermitted Discharge	Rising Groundwater, Other Illicit Discharges or Connections	Additional sampling performed	In Progress
City of Santee	RCP1	Yes	Unpermitted Discharge	Unidentified	Contacted Grossmont Union School District on multiple occasions.	In Progress
City of Santee	R20a	Yes	Unknown	Unidentified	Continue monitoring and source identification	In Progress
County of San Diego	MS4-SDR-064	Yes	Unpermitted Discharge	Over-irrigation		In Progress
County of San Diego	MS4-SDR-127	Yes	Unpermitted Discharge	Irrigation Runoff, Over-irrigation		In Progress
County of San Diego	MS4-SDR-151	Yes	Unpermitted Discharge	Irrigation Runoff, Over-irrigation		In Progress
County of San Diego	MS4-SDR-207	Yes	Unpermitted Discharge	Irrigation Runoff, Over-irrigation, Ground water		In Progress
County of San Diego	MS4-SDR-036	Yes	Unpermitted Discharge	Power Washing, Irrigation Runoff, Over-irrigation		In Progress

4.2.5 Storm Drain Outfall Wet Weather Monitoring

Storm drain outfall wet weather monitoring was conducted at five outfalls in the San Diego River WMA. Five stations representative of storm water discharges from Residential, Commercial, Industrial, and typical Mixed-use land uses were selected from the inventory of major storm drain outfalls, and at least one station was selected for each Participating Agency within the WMA. Two outfalls were located in the Mission San Diego HSA, two in the Santee HSA, and one in the El Cajon HSA. The storm drain outfall wet weather monitoring stations for the San Diego River WMA are presented in Table A4-27 and are shown with corresponding land uses in Figure A4-8. The outfall names for the wet weather monitoring stations differed from the jurisdictional station names in the Participating Agencies' inventories; therefore, both station identifiers are given in Table A4-27. This is the first year of storm drain outfall wet weather monitoring in accordance with the WQIP MAP. The prior two years of wet weather monitoring were under the transitional monitoring program with a different list of analytical parameters. The locations of these outfalls have not been adjusted since transitional monitoring began. Therefore, three years of data have now been collected at all five storm drain outfall wet weather monitoring locations in the San Diego River WMA.

Table A4-27. Storm Drain Outfall Wet Weather Monitoring Stations in the San Diego River WMA

Storm Drain Outfall Name	Jurisdictional Identifier	Jurisdiction	HSA Name/No.	Latitude	Longitude
MS4-SDR-1	OF-11	City of El Cajon	El Cajon/907.13	32.80256	-116.95808
MS4-SDR-2	OF-ALV-11	City of La Mesa	Mission San Diego/ 907.11	32.77776	-117.01751
MS4-SDR-3	DW0136	City of San Diego	Mission San Diego/ 907.11	32.74773	-117.22927
MS4-SDR-4	G30c	City of Santee	Santee/907.12	32.84501	-116.99122
MS4-SDR-5	MS4-SDR-064	County of San Diego	Santee/907.12	32.86165	-116.94474

Sampling at the storm drain outfall wet weather monitoring locations was conducted between December 11, 2015 and January 31, 2016. The rainfall statistics for the monitored event at each outfall, based on nearby Alert station gauges, are presented in Table A4-28. The highest event volumes and peak flow rates were observed during the monitored event at MS4-SDR-2 in the Mission San Diego HSA, and the lowest volumes and flows were observed during the event at MS4-SDR-5 in the Santee HSA. Storm drain outfall wet weather flow data are presented in Attachment 4F to this appendix, and a QA/QC report is provided as Attachment 4G.

Table A4-28. 2015-2016 Rainfall Statistics for Storm Drain Outfall Wet Weather Monitoring Events in the San Diego River WMA

Date	Station Name/ Jurisdictional Identifier	Total Rain (in)	Duration (hours)	Intensity (in/hour)	Antecedent Dry Days	Event Volume (cf)	Peak Flow (cfs)
01/31/2016	MS4-SDR-1/ OF-11	0.51	7.82	0.07	22	42,350	4.61
01/31/2016	MS4-SDR-2/ OF-ALV-11	0.51	7.82	0.07	22	105,153	28.0
01/04/2016	MS4-SDR-3/ DW0136	0.11	7.00	0.02	6	7,866	2.04
12/11/2015	MS4-SDR-4/ G30c	0.36	9.97	0.04	13	32,495	5.33
01/04/2016	MS4-SDR-5/ MS4-SDR-064	0.12	20.4	0.01	6	4,466	0.89

in – inches cf – cubic feet cfs – cubic feet per second

Monitoring was conducted in accordance with the WQIP MAP. Grab samples were collected and analyzed for pH, temperature, conductivity, dissolved oxygen, turbidity, hardness, and indicator bacteria, and composite samples were collected and analyzed for constituents contributing to the HPWQC, 303(d) List impairments, and constituents with stormwater action levels (SALs). A receiving water sample was also collected and analyzed for hardness, where feasible. Observational and hydrologic data were also recorded.

Analytical results for samples collected at the five storm drain outfall wet weather monitoring locations are summarized in Table A4-29. Bacteria concentrations are compared to single sample maximum (SSM) effluent limitations from the Bacteria TMDL, and results for the remaining required constituents, including general and physical chemical constituents, nutrients, and total and dissolved metals, are compared to SALs as provided in the Permit and listed in Table A4-34 of this appendix.

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform (i.e., the HPWQC within the WMA) indicated that the highest concentrations were measured at MS4-SDR-3 in the Mission San Diego HSA (907.11) for *Enterococcus* and total coliform and at MS4-SDR-5 in the Santee HSA (907.12) for fecal coliform. Concentrations of *Enterococcus* and fecal coliform in wet weather discharges from all five outfalls were above the SSMs (WQBELs discharging to freshwater creeks with REC-1 beneficial use). The only existing SALs that relate to PWQC in the WMA are for nitrate/nitrite as N and total phosphorus, and each of these PWQC concentrations was measured below the SALs. No other constituent concentrations were above the corresponding SALs.

Laboratory and field data collected for storm drain outfall wet weather monitoring will be uploaded to CEDEN, and data submittals are provided in Attachment L to this appendix.

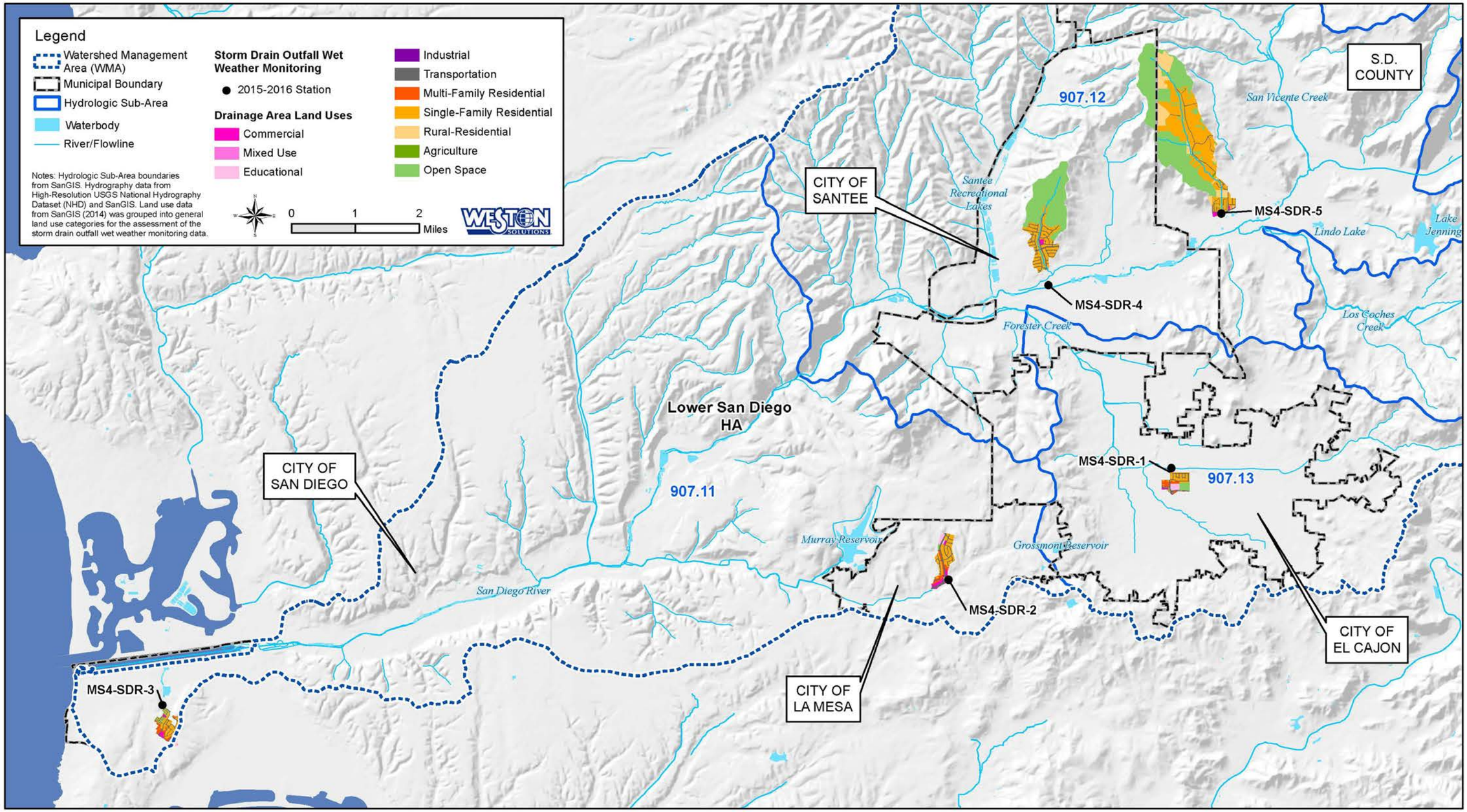

Figure A4-8. 2015-2016 Storm Drain Outfall Wet Weather Monitoring Locations and Drainage Areas in the San Diego River WMA

Table A4-29. 2015-2016 Storm Drain Outfall Wet Weather Monitoring Analytical Results in the San Diego River WMA

Analyte	Units	Single Sample Maximum[1]	Stormwater Action Level (SAL)[2]	MS4-SDR-1/ OF-11 (907.13)	MS4-SDR-2/ OF-ALV-11 (907.11)	MS4-SDR-3/ DW0136 (907.11)	MS4-SDR-4/ G30c (907.12)	MS4-SDR-5/ MS4-SDR-064 (907.12)
				1/31/2016	1/31/2016	1/4/2016	12/11/2015	1/4/2016
Bacteriological								
Enterococcus	MPN/100 mL	61		**11,000**	**2,800**	**500,000**	**1,600**	**170,000**
Fecal Coliform	MPN/100 mL	400		**2,400**	**2,000**	**3,500**	**2,400**	**5,000**
Total Coliform	MPN/100 mL			16,000	13,000	500,000	2,400	35,000
Physical Chemistry								
Color	Color units			25	75	50	60	80
Dissolved Oxygen	mg/L			9.91	10.14	7.49	9.21	9.97
pH	pH units			7.88	8.95	8.17	7.91	8.06
Salinity	PPT			0.03	0.05	0.08	0.13	0.09
Specific Conductivity	µS/cm			64	102	174	269	187
Temperature	Celsius			15.26	14.85	14.34	15.56	15.2
Turbidity	NTU		126	20.1	18.2	5.8	16.8	41.1
General Chemistry								
Ammonia as N	mg/L			<0.10	0.097J	0.092J	0.14	0.43
Chloride	mg/L			5.6	48	10	30	24
Dissolved Phosphorus	mg/L			0.098	0.13	0.14	0.24	0.29
Nitrate/Nitrite as N	mg/L		2.6	0.315	0.948	0.499	0.908	2.182
Nitrate as N	mg/L			0.27	0.91	0.45	0.86	2.1
Nitrite as N	mg/L			0.045J	0.038J	0.049J	0.048J	0.082J
Orthophosphate as P	mg/L			0.11	0.15	0.15	0.28	0.3
Sulfate	mg/L			5.7	30	7.2	14	33
Total Dissolved Solids	mg/L			63	180	79	150	170
Total Hardness	mg/L			30.7	76.5	33.4	59.9	77.8
Total Kjeldahl Nitrogen	mg/L			0.81	1.2	0.79	1.3	2.5
Total Nitrogen (calc)	mg/L			1.13	2.15	1.29	2.21	4.68
Total Phosphorus	mg/L		1.46	0.17	0.23	0.17	0.32	0.38
Total Suspended Solids	mg/L			24	26	8	29	23
Total Metals								
Cadmium	µg/L		3	0.06J	0.084J	<0.1	0.089J	0.079J
Copper	µg/L		127	9.8	16	15	12	15
Lead	µg/L		250	1.6	3.1	0.95	3.5	1.7
Manganese	µg/L			19	110	13	25	28
Selenium	µg/L			0.15J	0.38J	<0.4	0.36J	0.22J
Zinc	µg/L		976	73	93	50	39	40
Dissolved Metals								
Manganese	µg/L			<5	40	7.4	3.4	5.2
Selenium	µg/L			<0.4	0.32J	<0.4	0.28J	0.18J

[1] Single Sample Maximum Final Effluent Limitations from Table 6.2c. Regional Water Quality Control Board Order No. R9-2013-0001, Attachment E.

[2] Storm Water Action Levels for Discharges from Storm Drain Outfalls to Receiving Waters, Table C-5. Regional Water Quality Control Board Order No. R9-2013-0001.

< - Results are less than the reporting limit.

J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

Bold/shaded values do not meet Single Sample Maximum Final Effluent Limitations.

4.2.6 Storm Drain Outfall Wet Weather Monitoring Data Assessments

Provision D.4.b.(2).(c) of the Permit requires the storm drain outfall wet weather monitoring data assessments summarized in Table A4-30. The information necessary to demonstrate compliance with each Provision is outlined below. In instances where compliance has been demonstrated in previous sections of this Annual Report, those sections are referenced.

Table A4-30. Storm Drain Outfall Wet Weather Monitoring Assessments

Assessment	Components	Provision(s)
WQIP Annual Report		
Estimate loads and volumes.	Calculate or estimate the average stormwater runoff coefficient for each land use type.	D.4.b.(2).(b)(i)(a)
	Calculate or estimate the volume of stormwater and pollutant loads discharged from each monitored storm drain outfall for each qualifying storm event.	D.4.b.(2).(b)(i)(b)
	Calculate or estimate the total volume and pollutant load discharged from the Copermittee's jurisdiction over the course of the wet season.	D.4.b.(2).(b)(i)(c)
	Calculate or estimate the percent contribution of stormwater volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major storm drain outfall or each major storm drain outfall for each qualifying storm event.	D.4.b.(2).(b)(i)(d)
	Identify necessary modifications to monitoring locations and frequencies necessary to identify pollutants in stormwater discharges.	D.4.b.(2).(b)(ii)
Evaluate WQIP analysis.	Using data and applicable SALs, evaluate and compare data collected to the analyses and assumptions used to develop the WQIP.	D.4.b.(2).(c)(ii)
	Evaluate whether analyses and assumptions should be updated as a component of the adaptive management efforts.	D.4.b.(2).(c)(ii)
Identify data gaps.	Identify data gaps in the monitoring data necessary to fulfill assessment requirements.	D.4.b.(2).(c)(iv)
Evaluate trends.	Evaluate data collected pursuant to D.2.c, incorporate new data into time-series plots for each long-term monitoring constituent and perform statistical trends analysis on cumulative long-term wet weather data set.	D.4.b.(2)(d)
Once during Permit Term		
Evaluate progress in achieving stormwater pollutant reductions.	Identify reductions and progress in achieving reductions from different land uses and/or drainage areas.	D.4.b.(2).(c)(iii)
	Assess the effectiveness of WQIP improvement strategies, with estimates of volume and load reductions attributed to specific strategies when possible.	
	Identify modifications necessary to increase the effectiveness of WQIP strategies.	

4.2.6.1 Provision D.4.b.(2)(b)

Provision D.4.b.(2)(c)(i) requires that Copermittees continue to conduct the land-use based storm drain outfall wet weather monitoring assessment previously required by the transitional monitoring requirements of Provision D.4.b.(2)(b).

Because the storm drain outfall wet weather monitoring station locations have not been modified, the general approach and land use data and groupings presented in the 2014-2015 monitoring and assessment report (WESTON, 2016) are applicable to the 2015-2016 monitoring year. The technical approach and applicable equations can be found in the Transitional Wet Weather MS4 Monitoring Workplan (WESTON, 2015c). Assessment results are presented in detail by jurisdiction in Attachment 4H to this appendix. As more data are collected and incorporated into the assessment, the results are becoming increasingly representative of the variation in runoff coefficients and constituent concentrations associated with different land uses and wet weather conditions to generate a more robust prediction of jurisdictional loads based on land use.

Data specific to the 2015-2016 monitoring year that were incorporated into this assessment include pollutant volumes and loads at each outfall for the monitored event (Table A4-31) and for the monitoring year (Table A4-32). Updated land use event mean concentration (EMC) summary tables based on three monitoring years of data are included in the detailed assessment results provided as Attachment 4H to this appendix.

In compliance with Provision D.4.b.(2)(b)(ii), the storm drain outfall wet weather monitoring locations and frequencies were evaluated in order to identify modifications that may be considered for implementation in the future. A review of the collective land use data associated with monitored storm drain outfall drainage areas was conducted to determine whether the WMA contains any categories of land use types not represented within the monitored storm drain outfall drainage areas. The results and recommendations were presented in the 2012-2014 transitional monitoring and assessment report (WESTON, 2015a) and remain unchanged for the 2015-2016 monitoring year. The distribution of land use types within the monitored outfall drainage areas closely resembles that of the WMA.

The evaluation of monitoring frequency included a review of the monitoring data to determine how well the data from each monitored storm event represented the wet weather conditions on an annual basis. The total qualifying rainfall characterizing storms greater than 0.1 inch for 2015-2016 was 11.17 inches and 12.13 inches at the La Mesa and Fashion Valley Alert precipitation stations, respectively. These rainfall values are slightly greater than the official regional rainfall average of 10.82 inches (Lindbergh Field). Rainfall patterns varied significantly across the San Diego River WMA, with larger, higher intensity events in the coastal areas. At the Fashion Valley Alert station, three rainfall days had 24-hour totals of greater than one inch (July, September, and November 2015); and in January 2016, over two inches of rainfall was recorded for a 24 hour period. At the La Mesa Alert station, 2015 daily rainfall totals were less than 0.9-inch; and in January 2016, two rainfall days had 24-hour totals of greater than one inch. The storm events monitored in the San Diego River WMA were small to average in size, with rainfall totals of approximately 0.5 inch or less. Moving forward, rainfall intensity as well as storm size will be considered when evaluating forecasted storm events for monitoring, if possible. It has been found that a target of a rainfall intensity of at least 0.05 inch/hour shows a good precipitation response

and higher measured Runoff "C" compared to lower intensity storm events. In general, capturing larger events has been less feasible in recent years due to the patterns of rainfall in the region.

Table A4-31. 2015-2016 Wet Weather Storm Drain Outfall Discharge Pollutant Loads by Station for Monitored Event – San Diego River WMA

Analyte	Units	OF-11	OF-ALV-11	DW0136	G30c	MS4-064
		MS4-SDR-1	MS4-SDR-2	MS4-SDR-3	MS4-SDR-4	MS4-SDR-5
		(907.13)	(907.11)	(907.11)	(907.12)	(907.12)
Area	ac	76.1	114.0	91.4	479.7	1,190.57
Qualifying Measured Rainfall	in	0.51	0.51	0.11	0.36	0.12
Measured Outfall Runoff "C"		0.301	0.498	0.216	0.052	0.009
Event Volume	cf	42,350	105,153	7,866	32,495	4,466
Bacteriological						
Enterococcus	MPN	1.319E+11	8.34E+10	1.11E+12	1.47E+10	2.15E+11
Fecal Coliform	MPN	2.878E+10	5.96E+10	7.80E+09	2.21E+10	6.32E+09
Total Coliform	MPN	1.919E+11	3.87E+11	1.11E+12	2.21E+10	4.43E+10
General Chemistry						
Ammonia as N[1]	lbs	0.1322	0.6367	0.0452	0.2840	0.1199
Chloride	lbs	14.81	315.1	4.9107	60.86	6.691
Dissolved Phosphorus	lbs	0.2591	0.8534	0.0687	0.4869	0.0809
Nitrate as N	lbs	0.7138	5.974	0.2210	1.745	0.5855
Nitrite as N	lbs	0.1190	0.2494	0.0241	0.0974	0.0229
Nitrate/Nitrite as N	lbs	0.8328	6.2231	0.2450	1.842	0.6083
Orthophosphate	lbs	0.2908	0.9847	0.0737	0.5680	0.0836
Sulfate	lbs	15.07	196.9	3.5357	28.40	9.200
Total Dissolved Solids	lbs	166.6	1182	38.79	304.3	47.40
Total Hardness	lbs	81.16	502.2	16.40	121.5	21.69
Total Kjeldahl Nitrogen	lbs	2.141	7.877	0.3879	2.637	0.6970
Total Nitrogen (calculated)	lbs	2.974	14.10	0.6330	4.4791	1.3054
Total Phosphorus	lbs	0.4494	1.510	0.0835	0.6491	0.1059
Total Suspended Solids	lbs	63.45	170.7	3.929	58.83	6.412
Total Metals						
Cadmium[1]	lbs	0.0002	0.0006	0.0002	0.0002	0.00002
Copper	lbs	0.0259	0.1050	0.0074	0.0243	0.0042
Lead	lbs	0.0042	0.0203	0.0005	0.0071	0.0005
Manganese	lbs	0.0502	0.7221	0.0064	0.0507	0.0078
Selenium[1]	lbs	0.0004	0.0025	0.0001	0.0007	0.0001
Zinc	lbs	0.1930	0.6105	0.0246	0.0791	0.0112
Dissolved Metals						
Manganese[1]	lbs	0.0066	0.2626	0.0036	0.0069	0.0014
Selenium[1]	lbs	0.0053	0.0021	0.0001	0.0006	0.0001

ac – acres in – inches cf – cubic feet MPN – most probable number lbs – pounds ND – not detected
Note 1: Where chemistry results were less than the RL, for load calculations purposes half the RL value was used for this constituent.
2015-2016 storm drain outfall wet weather monitoring results are found in Table A4-29.

Table A4-32. 2015-2016 Wet Weather Storm Drain Outfall Discharge Annual Pollutant Loads by Station for the San Diego River WMA

Analyte	Units	OF-11	OF-ALV-11	DW0136	G30c	MS4-064
		MS4-SDR-1	MS4-SDR-2	MS4-SDR-3	MS4-SDR-4	MS4-SDR-5
		(907.13)	(907.11)	(907.11)	(907.12)	(907.12)
Area	ac	76.1	114.0	91.4	479.7	1,190.6
Qualifying Measured Rainfall	in	11.17	11.17	11.56	11.17	11.17
Measured Outfall Runoff "C"		0.154	0.446	0.267	0.117	0.013
Annual Volume	cf	475,188	2,061,577	1,024,052	2,275,702	627,580
Bacteriological						
Enterococcus	MPN	1.480E+12	1.635E+12	1.450E+14	1.031E+12	3.021E+13
Fecal Coliform	MPN	3.229E+11	1.168E+12	1.015E+12	1.547E+12	8.886E+11
Total Coliform	MPN	2.153E+12	7.589E+12	1.450E+14	1.547E+12	6.220E+12
General Chemistry						
Ammonia as N[1]	lbs	1.483	12.48	5.881	19.89	16.85
Chloride	lbs	166.1	6178	639.3	4262	940.3
Dissolved Phosphorus	lbs	2.907	16.73	8.950	34.10	11.36
Nitrate as N	lbs	8.009	117.1157	28.7679	122.2	82.27
Nitrite as N	lbs	1.335	4.891	3.133	6.819	3.213
Nitrate/Nitrite as N	lbs	9.344	122.0	31.90	129.0	85.49
Orthophosphate	lbs	3.263	19.30	9.589	39.78	11.75
Sulfate	lbs	169.1	3861	460.3	1989	1293
Total Dissolved Solids	lbs	1869	23166	5050	21310	6660
Total Hardness	lbs	910.7	9845	2135	8510	3048
Total Kjeldahl Nitrogen	lbs	24.03	154.4	50.50	184.7	97.95
Total Nitrogen (calculated)	lbs	33.37	276.4	82.40	313.7	183.4
Total Phosphorus	lbs	5.043	29.60	10.87	45.46	14.89
Total Suspended Solids	lbs	712.0	3346	511.43	4120	901.1
Total Metals						
Cadmium[1]	lbs	0.0018	0.0108	0.0320	0.0126	0.0031
Copper	lbs	0.2907	2.059	0.9589	1.705	0.5877
Lead	lbs	0.0475	0.3990	0.0607	0.4972	0.0666
Manganese	lbs	0.5636	14.16	0.8311	3.552	1.097
Selenium[1]	lbs	0.0044	0.0489	0.0128	0.0511	0.0086
Zinc	lbs	2.166	11.97	3.196	5.541	1.567
Dissolved Metals						
Manganese[1]	lbs	0.0742	5.1479	0.4731	0.4830	0.2037
Selenium[1]	lbs	0.0593	0.0412	0.0128	0.0398	0.0071

ac – acres in – inches cf – cubic feet MPN – most probable number lbs – pounds ND – not detected

Note 1: Where chemistry results were less than the RL, for load calculations purposes half the RL value was used for this constituent. 2015-2016 storm drain outfall wet weather monitoring results are found in Table A4-29.

4.2.6.2 Provision D.4.b.(2)(c)[ii]

In addition to the land-based assessment presented in Section 4.2.6.1, the 2015-2016 monitoring year is the first requiring the additional assessments of Provision D.4.b.(2)(c)(ii-iv).

Provision D.4.b.(2)(c)(ii) requires the Copermittees to evaluate and compare data collected during the monitoring year to the analyses and assumptions used to develop the WQIP and evaluate whether adaptive management is necessary for updates. The analytical results for samples collected at the five storm drain outfall wet weather monitoring locations in the San Diego River WMA are summarized in Table A4-29 in Section 4.2.5. Results indicated that indicator bacteria concentrations in wet weather discharges from all five monitored outfalls were above the SSMs specified in the Bacteria TMDL. The analyses and assumptions used to develop the WQIP resulted in the selection of bacteria as the HPWQC and in the selection of the five outfalls monitored during wet weather. Because concentrations of indicator bacteria in wet weather discharges from each of these outfalls were above Bacteria TMDL numeric targets, continued monitoring of these outfalls is consistent with the intentions of the WQIP. The Participating Agencies have been officially implementing their strategies to address bacteria under the WQIP for less than one year, and updates through adaptive management are not necessary at this time.

4.2.6.3 Provision D.4.b.(2)(c)[iii]

This Provision requires the Copermittees to review the data collected under the storm drain outfall wet weather monitoring program in order to identify pollutant reduction progress, assess water quality improvement strategy effectiveness, and identify modifications necessary to increase effectiveness. This assessment is required once during the Permit term and will be provided in the RMAR, which is scheduled for submittal to the Regional Board in December 2017.

4.2.6.4 Provision D.4.b.(2)(c)[iv]

No gaps have been identified in the monitoring data. Since the 2015-2016 monitoring year was the first year of monitoring under the WQIP MAP and the first year requiring the assessments outlined in Provision D.4.b.(2)(c)(ii-iii), the collection of additional data will be necessary before the Copermittees are able to identify data gaps.

4.2.6.5 Provision D.4.b.(2)(d)

This provision requires creation of time-series plots for long-term monitoring data collected under Provision D.2.c and a trend analysis on this cumulative long-term storm drain outfall wet weather monitoring data set. This assessment will be addressed when sufficient data (i.e., at least three monitoring years are required for a statistical test) have been collected.

4.3 Special Studies

4.3.1 San Diego Regional Reference Streams and Beaches Studies

The Participating Agencies participated in the San Diego Regional Reference Streams and Beaches Studies from 2014 to 2016, which measured levels of indicator bacteria that account for natural sources to establish the background concentrations, or “reference conditions”, for streams or beaches minimally disturbed by anthropogenic activities. This reference system approach results in allocation of allowable exceedance days based on frequencies of exceedance at reference sites

with natural sources of bacteria. The results of these studies support the forthcoming re-evaluation of the Bacteria TMDL and numeric target development for future TMDLs. These studies were intended to provide data to support discussions of reasonable, accurate targets for indicator bacteria at Southern California streams and beaches.

4.3.1.1 Reference Streams Study

This study investigated concentrations of indicator bacteria, nutrients, metals, and conventional constituents occurring naturally at reference streams in minimally disturbed watersheds in Southern California during wet weather (during a storm and the three days following a storm) and dry weather conditions. Although additional constituents were analyzed, the main focus of the study was indicator bacteria. The study also sought to categorize exceedance frequencies for indicator bacteria by hydrologic, geomorphologic, biotic and abiotic factors. Study questions included the following:

- How does the water quality objective exceedance frequency for indicator bacteria vary between wet weather, summer dry weather and winter dry weather?
- How does indicator bacteria vary by stream landscape and site-specific factors, including:
    - Catchment size and geology?
    - Wet weather parameters such as size, timing of storm, and number of antecedent dry days?
    - Dry weather factors such as flow, stream physiochemical parameters (temperature, conductivity, and turbidity), chemical parameters (nutrients, organic carbon, metals, and conventional constituents) and trophic status, as measured by algal abundance?

The sampling locations selected for this study were chosen to meet reference screening criteria and represent varying watershed size and geology. Samples were collected during eight storm events at five locations, and dry weather samples were collected weekly at 10 intermittent stream locations in 10 watersheds in Southern California. Five locations were in San Diego County, three were in Orange County, and two were in Ventura County. In addition to indicator bacteria analysis, samples were collected biweekly and analyzed for nutrients, metals, and conventional constituents. Samples were also analyzed for the presence of human genetic marker in order to eliminate locations with potential human sources of fecal bacteria. The chosen “reference” streams had drainage areas that were at least 95% undeveloped, were relatively homogenous geologically, had year round flow or at least prolonged dry weather flow, did not include drainage areas affected by wildfires, were not included on the 303(d) list, and had no evidence of anthropogenic effects. Findings from the study included the following:

- Indicator bacteria concentrations measured during the study were generally below water quality objectives except for *Enterococcus*, and exceedance frequencies were highest during summer dry weather.
- Wet weather EMC exceedance frequencies were low except for *Enterococcus*. The number of events sampled was not sufficient to determine whether relationships exist between exceedance frequencies and watershed size and/or geology.

- Temperature was the major factor associated with elevated summer dry weather concentrations of indicator bacteria, although total suspended solids (TSS), nutrients, and organic carbon were also positively correlated. No significant relationships between indicator bacteria concentrations and watershed size or geology were observed during dry weather.
- EMC fluxes (flux was calculated as the ratio of mass loading and watershed area) during wet weather were two to three times greater than during dry weather and were comparable to those described in previous studies.

Results are presented in greater detail in the Technical Report (Tiefenthaler et al., 2015, which is provided as Attachment 4I to this appendix.

4.3.1.2 Reference Beaches Study

The reference beaches study investigated concentrations of indicator bacteria occurring naturally at reference beaches during a period of prolonged drought. The goals of this study included the following:

- Quantify concentrations and exceedance frequencies for indicator bacteria at reference beaches during wet and dry weather (natural, background conditions), while evaluating the presence of human genetic marker to determine whether samples were contaminated by human sources.
- Quantify concentrations and exceedance frequencies for indicator bacteria at the associated, minimally-impacted estuary.

The chosen "reference" beaches had minimal human impact with open beaches and breaking waves, received freshwater runoff from a beach or estuary, and received runoff originating from undeveloped watersheds with over 93% open space. The two sites meeting these criteria were San Onofre Creek in San Diego County, which has an associated bar-built estuary, and Deer Creek in Los Angeles County, which has an associated mixing zone. Weekly dry weather sampling was conducted at both locations, and wet weather sampling was conducted over four days for one event at San Onofre Creek (only one storm event breached the creek mouth). Samples during each event were collected at the beach, creek, and the respective estuary or mixing zone. Findings from the study included the following:

- Indicator bacteria concentrations and exceedance frequencies during both winter and summer dry weather were low at both monitored beaches. This is consistent with results from previous studies of beaches with blocked estuary inlets or beaches with flowing creeks and no estuary.
- Indicator bacteria concentrations in the estuary or mixing zone associated with both beaches were one to three orders of magnitude greater than those at the corresponding beach, and were higher at San Onofre Creek than Deer Creek. Exceedance frequencies were also higher in the estuary associated with San Onofre Creek compared to the mixing zone associated with Deer Creek. This suggests that dry weather exceedance frequencies may have been greater if the estuary had been open to tidal exchange.

- At both study locations, no significant relationships between indicator bacteria and water temperature, salinity, or antecedent dry days were observed, but indicator bacteria concentrations decreased with the number of antecedent dry days at the San Onofre Creek beach and increased with the number of antecedent dry days in the associated estuary. Significant positive correlations were found between total coliform concentrations and water temperature, salinity, and antecedent dry days and between *E. coli* and fecal coliform and salinity in the estuary associated with San Onofre Creek. This indicates that freshwater input from the creek dilutes bacteria concentrations. Regrowth of bacteria may have been a factor at this estuary.
- During the single monitored storm event, indicator bacteria exceedances were common in the San Onofre Beach creek and estuary samples, but exceedances were only observed at the beach on the day of the storm. Because all samples associated with this storm event were positive for human genetic marker, results could not be used to determine natural background exceedance frequencies. However, positive human marker results were rare throughout the study overall, indicating that the study locations may be suitable reference sites.

Results are presented in greater detail in the Technical Report (Tiefenthaler et al., 2016), which is provided as Attachment 4J to this appendix.

4.3.2 Wet Weather Epidemiology Study and Quantitative Microbial Risk Assessment

This special study examined the correlation between bacteria levels in stormwater discharges from the San Diego River and the health effects experienced by surfers at Ocean Beach, located near the mouth of the San Diego River. The first phase of the study was performed from January 2014 through March of 2015 and included 654 surfers and 10,081 logged surfing sessions.

The overall goal of the study was to answer four questions:

- Is surfing associated with an increased rate of illness?
- Are illness rates higher when surfing following wet weather compared to dry weather?
- What is the association between water quality and illness following wet weather events?
- What level of water quality corresponds to the same risk of illness as current water quality objectives?

Results indicated that there is an increased risk of illness associated with water contact, and that risk was greater when surfing after a wet weather event compared to during dry weather. The excess risk of illness when entering the ocean in wet weather compared to not entering the ocean was quantified to be 12 surfers per 1,000. An association was established between *Enterococcus* and illness after a wet weather event; however, the risk of illness was found to be lower than that which would be predicted by *Enterococcus* water quality objectives. An extra 12 illnesses per 1,000 surfers after wet weather ocean exposure was below the most recent water quality guidelines for recreational beaches from the USEPA (2012), which recommends no more than 32 to 36 illnesses per 1,000 swimmers.

In addition, a quantitative microbial risk assessment (QMRA) was performed to estimate the risks of gastrointestinal illness from recreational exposure to beaches impacted by wet weather storm drain outfall discharges. Source tracking work and analysis of pathogen concentrations were conducted, and modeling results were comparable to epidemiological study results. The study demonstrated the applicability of QMRA for recreational water risk estimates during wet weather and may facilitate consideration of site-specific water quality criteria.

Additional details can be found in the technical report (Schiff et al., 2016), which is provided as Attachment 4K to this appendix.

4.3.3 Special Studies Assessments

Provision D.4.c of the Permit requires an annual evaluation of special studies results to assess their relevance to the Participating Agencies' characterization of receiving water conditions, understand sources of pollutants and/or stressors, and control and reduce the discharges of pollutants from the storm drain outfalls to receiving waters. This Provision also requires the Participating Agencies to identify modifications and/or updates to the WQIP that are necessary based on special study results.

Results from the special studies outlined above supplement the bacteria data collected under Provisions D.1 (receiving water) and D.2 (storm drain outfalls). Results from these studies may be used in conjunction with data from other studies in re-assessing numeric targets related to bacteria. The Regional Reference Streams and Beaches Study provides a scientific basis for updating the "reference" conditions to be considered in evaluating compliance levels for bacteria, and will be useful in the re-evaluation of the Bacteria TMDL. The Wet Weather Epidemiology Study may facilitate consideration of site-specific water quality criteria for bacteria. Once these re-evaluations occur, adaptive management may be utilized to modify the WQIP.

4.4 Action Levels

The action levels for storm drain outfall samples utilized to evaluate the data collected in the San Diego River WMA are presented in Table A4-34. Suggested analytical methods and reporting limits are presented in Attachment 4A-5d to the WQIP MAP.

Table A4-33. Action Levels for the San Diego River WMA – Storm Drain Outfalls

Analyte	Benchmark Reference	Units	Action Level(s)				Notes
Non-Stormwater Action Levels for Discharges from Storm Drain Outfalls to Ocean Surf Zone							
			AMAL		IM		
Total coliform	Ocean Plan	MPN/100 mL	1000		10,000/1,000		For IM, total coliform density NAL is 1,000 MPN/100 mL when the fecal/total coliform ratio exceeds 0.1.
Fecal coliform	Ocean Plan	MPN/100 mL	200		400		For AMAL, fecal coliform density NAL is 200 MPN/100 mL during any 30 day period.
Enterococcus	Ocean Plan	MPN/100 mL	35		104		IM value has been set to the Basin Plan water quality objective (WQO) for saltwater "designated beach areas".
Non-Stormwater Action Levels for Discharges from Storm Drain Outfalls to Bays, Harbors, and Lagoons/Estuaries							
			AMAL		IM		
Turbidity	Ocean Plan	NTU	75		225		
pH	Ocean Plan	Units	Within limit of 6.0-9.0 at all times				
Fecal coliform	Basin Plan	MPN/100 mL	200		400		AMAL is based on a minimum of not less than five samples for any 30-day period. For IM, the NAL is reached if more than 10 percent of the total samples exceed 400 MPN/100 ml during any 30 day period.
Enterococcus	Basin Plan	MPN/100 mL	35		104		IM value has been set to the Basin Plan WQO for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with water contact recreation (REC-1) beneficial use.
Non-Stormwater Action Levels for Discharges from Storm Drain Outfalls to Inland Surface Waters							
			AMAL	MDAL	IM		
Dissolved Oxygen	Basin Plan	mg/L	Not less than 5.0 in WARM waters and not less than 6.0 in COLD waters				
Turbidity	Basin Plan	NTU	-	20	See MDAL		
pH	Basin Plan	Units	Within limit of 6.5-8.5 at all times				
Fecal Coliform	Basin Plan	MPN/100 mL	200	-	400		AMAL is based on a minimum of not less than five samples for any 30-day period. For IM, the NAL is reached if more than 10 percent of total samples exceed 400 MPN/100 mL during any 20 day period.
Enterococcus	Basin Plan	MPN/100 mL	33	-	61		IM value has been set to the Basin Plan WQO for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with water contact recreation (REC-1) beneficial use.
Total Nitrogen	Basin Plan	mg/L	-	1	See MDAL		
Total Phosphorus	Basin Plan	mg/L	-	0.1	See MDAL		
MBAS	Basin Plan	mg/L	-	0.5	See MDAL		
Iron	Basin Plan	mg/L	-	0.3	See MDAL		
Manganese	Basin Plan	mg/L	-	0.05	See MDAL		
Non-Stormwater Action Levels for Priority Pollutants							
			Freshwater		Saltwater		
			AMAL	MDAL	AMAL	MDAL	
Cadmium	CTR	µg/L	**	**	8	16	
Copper	CTR	µg/L	*	*	2.9	5.8	See footnote.
Chromium III	CTR	µg/L	**	**	-	-	
Chromium VI	CTR	µg/L	8.1	16	41	83	
Lead	CTR	µg/L	*	*	2.9	14	See footnote.
Nickel	CTR	µg/L	**	**	6.8	14	See footnote.
Silver	CTR	µg/L	*	*	1.1	2.2	See footnote.
Zinc	CTR	µg/L	*	*	47	95	See footnote.

Table A4-33. Action Levels for the San Diego River WMA – Storm Drain Outfalls

Analyte	Benchmark Reference	Units	Action Level(s)	Notes
Stormwater Action Levels				
Turbidity	Order No. R9-2013-0001	NTU	126	
Nitrate & Nitrite (Total)	Order No. R9-2013-0001	mg/L	2.6	
Phosphorus (Total P)	Order No. R9-2013-0001	mg/L	1.46	
Cadmium (Total Cd) †	CTR	µg/L	3	See footnote.
Copper (Total Cu) †	CTR	µg/L	127	See footnote.
Lead (Total Pb) †	CTR	µg/L	250	See footnote.
Zinc (Total Zn) †	CTR	µg/L	976	See footnote.

* Action levels designated on a case by case basis.
** Action levels designated on a case by case basis, but calculated criteria are not to exceed MCLs under the CCR, Title 22, Division 4, Chapter 15, Article 4 Section 64431.
The cadmium, Copper, Chromium (III), Lead, Nickel, Silver, and Zinc NALs for storm drain outfall discharges to freshwater receiving waters will be developed on a case-by-case basis on site-specific water quality data (receiving water hardness). For these priority pollutants, refer to 40 CFR 131.38(b)(2).
† Sampling must include a measure of receiving water hardness at each storm drain outfall. If a total metal concentration exceeds the corresponding metals SAL in the table, that concentration must be compared to the CTR and the USEPA 1-hour maximum concentration for the detected level of RW hardness associated with that sample. If it is determined that the sample's total metal concentration for that specific metal exceeds that SAL, but does not exceed the applicable USEPA 1-hr maximum concentration criterion for the measured level of hardness, then the sample result will not be considered above the SAL for that measurement.

4.5 California Environmental Data Exchange Network Data Upload and Retrieval

Provision F.4.a.(6) of the Permit requires that monitoring data collected pursuant to Provision D (Monitoring and Assessment Program Requirements) must be uploaded to the CEDEN, a central location for finding and sharing information about California's waterbodies. CEDEN aggregates water quality, aquatic habitat, and wildlife health data and makes them accessible in downloadable forms at www.ceden.org.

Data in the CEDEN are searchable by date and by location, project, station, or parameter using the "Find Data" functionality of the CEDEN website. The data from the San Diego Region Copermittee Program can be retrieved by identifying the Program as "National Pollutant Discharge Elimination System (NPDES) Program" and Project as "San Diego Region NPDES", which is the parent Project name. Within this overall retrieval, the specific datasets described in this Annual Report can be identified using the project names listed in Table A4-35. Data are limited to those parameters that are currently storable in CEDEN. SMC data are submitted to the SMC Program.

In accordance with the Permit, data collected during the 2015-2016 monitoring year has been submitted to CEDEN and will become available from CEDEN once loaded by the Regional Data Center into the system during 2017. CEDEN data submittals and receipts are provided as Attachment L to this appendix.

Table A4-34. Project Names for CEDEN Data Retrieval

Project Code	Project Name
AB_LM	Ambient Bay and Lagoon Monitoring
BacteriaTMDL_SDR	San Diego River Bacteria TMDL Monitoring Program
MS4_WW_OFM	Wet Weather MS4 Outfall Monitoring
MS4_DW_OFSM	Dry Weather MS4 Outfall Field Screening and Discharge Monitoring
NPDES_RWM	NPDES Receiving Water Monitoring

Appendix 4 Monitoring and Assessment Results

Attachments: Provided Separately

Attachment A – SMC Regional Monitoring Program Data

Attachment B – Bacteria TMDL Monitoring Report

Attachment C – Microbial Source Tracking

Attachment D – Dry Weather Field Screening Data

Attachment E – Dry Weather Storm Drain Outfall Assessment

Attachment F – Wet Weather Storm Drain Outfall Flow Data

Attachment G – Wet Weather Storm Drain Outfall QA/QC Report

Attachment H – Wet Weather Storm Drain Outfall Assessment

Attachment I – Reference Streams Study

Attachment J – Reference Beaches Study

Attachment K – Wet Weather Epidemiology Study

Attachment L – CEDEN Data Submittals and Receipts

APPENDIX 5

Adaptive Management/Modifications

Appendix 5 Adaptive Management/Modifications

5.1 TRIGGERS FOR ADAPTIVE MANAGEMENT

The adaptive management process may include modifications to the priority water quality conditions, numeric goals, strategies, and schedules, and/or to the monitoring and assessment program outlined in the Water Quality Improvement Plan (WQIP). This appendix contains analyses and information in support of the adaptive management process. With the acceptance of the WQIP in February 2016, the Copermittees have been officially implementing the WQIP for less than a year. Therefore, it is too early in the implementation process to have significant feedback necessary to drive the adaptive management process. Only one year of monitoring data have been collected under the WQIP Monitoring and Assessment Plan (MAP), and additional monitoring years under the Permit term are necessary for feasible evaluation of the effectiveness of jurisdictional strategies. Minor administrative changes, including clarifications, correction of typos and errors, and edits to WQIP strategies, are proposed, primarily by the City of San Diego. These modifications are documented as markup in the Participating Agencies' strategy tables of Appendix 2. No significant modifications to the MAP are warranted based on data collected during the 2015-2016 monitoring year. The results of the Permit-required assessments of these data are presented in Appendix 4.

5.1.1 Routine Monitoring Results

Results from routine monitoring programs may trigger updates to the WQIP, potentially prompting additions or changes to the strategies that are implemented. The evaluation of monitoring results occurs at two levels:

(1) comparison to receiving water limitations and determination of the influence of municipal separate storm sewer system (MS4) (storm drain system) discharges to any persistent exceedances, and

(2) comparison of dry and wet weather storm drain system discharge data to non-stormwater action levels (NALs) and stormwater action levels (SALs).

5.1.1.1 Receiving Water Limitations

The primary focus of this assessment is on conditions within receiving waters and their relationship to storm drain system discharges. An assessment methodology to determine whether discharges from the storm drain system are potentially sources of pollutants "causing or contributing" to "persistent" receiving water exceedances is currently being developed, and the results of the assessment will be presented in the San Diego River Watershed Management Area (WMA) chapter of the Regional Monitoring and Assessment Report (RMAR) to be submitted with the Report of Waste Discharge (ROWD) in December 2017. Therefore, this trigger for adaptive management pertaining to receiving water exceedances that may not be addressed by the WQIP will be addressed in the next report deliverable, prior to the 2016-2017 WQIP Annual Report.

5.1.1.2 Exceedances of NALs and/or SALs

The primary focus of this assessment is on exceedances of NALs or SALs in storm drain outfall discharges during dry and wet weather, respectively. NALs and SALs are incorporated into the WQIP in order to:

(1) support the development and prioritization of water quality improvement strategies,
(2) assess the effectiveness of the water quality improvement strategies, and
(3) support the detection and elimination of non-stormwater and illicit discharges to the storm drain system (NALs only).

Appendix 4 includes the results of the dry and wet weather storm drain outfall discharge monitoring programs and compares the data to applicable NALs or SALs included in Provision C of the Permit. A summary of these results is presented in Table A5-1, and the locations of the storm drain outfall dry weather monitoring locations (highest priority outfalls) and storm drain outfall wet weather monitoring locations are shown in Appendix 4 in Figures A4-3 and A4-8, respectively. Repeated exceedances for constituents that are not currently addressed by the WQIP may indicate that these constituents warrant further consideration. During the 2015-2016 monitoring year, the NALs most often exceeded in the San Diego River WMA were consistent with those identified by the WQIP as priority water quality conditions, with the exception of iron and manganese.

The comparison of the storm drain outfall monitoring results to NALs and SALs may also be used to guide the adaptation of strategies. If the jurisdictional strategies outlined in Section 4 result in reductions in pollutant loads from outfalls with discharges in exceedance of NALs or SALs, an assessment of the effectiveness of these strategies could be made. To date, only one year of monitoring data have been collected in accordance with the MAP, and the Participating Agencies in the San Diego River WMA have just begun to implement their jurisdictional strategies under the accepted WQIP intended to result in achievement of dry and wet weather interim goals for the term of the current Permit (see Section 4). Additional data will be necessary before an assessment of the effectiveness of these strategies can be made.

Table A5-1. Exceedances of NALs and SALs during the 2015-2016 Monitoring Year in the San Diego River WMA

Constituent	Outfalls with NAL Exceedances	Outfalls with SAL Exceedances[3]
Fecal Coliform[1]	MS4-SDR-064, MS4-SDR-127, MS4-SDR-151, MS4-SDR-207, OF-3, OF-5, OF-13, OF-15A, OF-16, OF-ALV-6, OF-ALV-9, OF-ALV-12, OF-ALV-13, E5g1, R20a, RCP1, S5c, S15h, DW0696, DW0681	OF-11, OF-ALV-11, DW0136, G30c, MS4-SDR-064
Enterococcus[1]	MS4-SDR-036, MS4-SDR-064, MS4-SDR-127, MS4-SDR-151, MS4-SDR-207, OF-3, OF-5, OF-13, OF-15A, OF-16, OF-ALV-6, OF-ALV-7, OF-ALV-9, OF-ALV-12, OF-ALV-13, E5g1, R20a, RCP1, S5c, S15h, DW0081, DW0369, DW0696, DW0681	OF-11, OF-ALV-11, DW0136, G30c, MS4-SDR-064
Turbidity[1,2]	MS4-SDR-036, MS4-SDR-151, OF-15A, OF-ALV-7, OF-ALV-12, OF-ALV-13, DW0067, DW0681	None
pH[1]	MS4-SDR-064, OF-13, OF-16, OF-ALV-7, DW0081	N/A
Cadmium[2]	N/A	None
Copper[1,2]	MS4-SDR-036, DW0067, DW0681	None
Chromium VI[1]	None	N/A
Lead[1,2]	None	None
Zinc[1,2]	MS4-SDR-036, DW0681	None
Dissolved Oxygen[1]	MS4-SDR-151, DW0696	N/A
Total Nitrogen[1]	MS4-SDR-036, MS4-SDR-064, MS4-SDR-127, MS4-SDR-151, MS4-SDR-207, OF-3, OF-5, OF-13, OF-15A, OF-16, OF-ALV-6, OF-ALV-7, OF-ALV-9, OF-ALV-12, OF-ALV-13, E5g1, R20a, RCP1, S5c, S15h, DW0067, DW0369, DW0696, DW0681	N/A
Total Phosphorus[1]	MS4-SDR-036, MS4-SDR-064, MS4-SDR-127, MS4-SDR-151, MS4-SDR-207, OF-3, OF-5, OF-15A, OF-16, OF-ALV-6, OF-ALV-7, OF-ALV-9, OF-ALV-12, OF-ALV-13, E5g1, R20a, RCP1, S5c, S15h, DW0067, DW0696, DW0681	N/A
MBAS[1]	MS4-SDR-036	N/A
Iron[1]	MS4-SDR-036, MS4-SDR-064, MS4-SDR-127, MS4-SDR-151, MS4-SDR-207, OF-5, OF-15A, OF-ALV-6, OF-ALV-7, OF-ALV-9, OF-ALV-12, OF-ALV-13, E5g1, S5c, S15h, DW0067, DW0696, DW0681	N/A
Manganese[1]	MS4-SDR-036, MS4-SDR-151, MS4-SDR-207, OF-5, OF-15A, OF-ALV-6, OF-ALV-7, OF-ALV-9, OF-ALV-12, OF-ALV-13, S5c, S15h, DW0067, DW0696, DW0681	N/A
Nitrate + Nitrite (total)[2]	N/A	None
Phosphorus (Total P)[2]	N/A	None

1. Applicable to non-stormwater discharges from MS4s to inland surface waters.
2. Applicable for discharges of stormwater from MS4s to receiving waters.
3. Exceeds Single Sample Maximum Final Effluent Limitations (Attachment E.6 of Permit for Bacteria TMDL).

5.1.1.3 Special Studies Results

As part of the MAP, the Participating Agencies are engaged in special studies related to bacteria, the highest priority water quality condition (HPWQC) for the watershed. Results from the special studies outlined in Section 3.3 and Appendix 4 Section 4.3 supplement the bacteria data collected under Provisions D.1 (receiving water) and D.2 (storm drain outfalls). As relevant data, conclusions, and lessons learned become available from these studies, the numeric goals, strategies, schedules, and the MAP may be impacted and may require modification. Additionally, lessons learned and study results from outside the watershed, especially those related to the bacteria impairments, may also be incorporated into the WQIP.

The Regional Reference Streams and Beaches Study provides a scientific basis for updating the "reference" conditions to be considered in evaluating compliance levels for bacteria, and will be useful in the re-evaluation of the Bacteria Total Maximum Daily Load (TMDL). The Wet Weather Epidemiology Study may facilitate consideration of site-specific water quality criteria for bacteria. Once these re-evaluations occur, adaptive management may be utilized to modify the WQIP.

5.1.2 Regulatory Considerations

The purpose of this section is to summarize changes in the regulatory landscape including:

(1) new regulatory actions at the State or local level, and

(2) Regional Board recommendations that must be considered as part of the adaptive management process.

5.1.2.1 New Regulatory Actions

When new regulations or policies are adopted that impact watershed planning and implementation processes, modifications to the WQIP numeric goals, strategies, schedules, and/or MAP may be warranted, and, in some cases, required. For example, an update to the WQIP must be initiated no later than six months following approval of a TMDL Basin Plan Amendment by the Office of Administrative Law and the United States Environmental Protection Agency (USEPA). The trigger applies to TMDLs containing wasteload allocations assigned to Participating Agencies within the watershed during the term of the Order (see Provision F.2.c.(2)). Other examples of regulatory drivers that may trigger modifications to the WQIP include new state policies or plans (e.g., trash, toxicity, biological objectives, bacteria standards updates) and changes resulting from modifications to existing Permit requirements (e.g., as a result of revising a TMDL).

5.1.2.2 Regional Board Recommendations

In cases where the Regional Board makes recommendations for modifications to the WQIP or Jurisdiction Runoff Management Program (JRMP), these recommendations must be considered as part of the adaptive management process. No such recommendations were made during the 2015-2016 monitoring year.

5.1.3 Program Effectiveness Assessments/Progress Toward Numeric Goals

Strategies developed within the WQIP have been incorporated into Participating Agencies' monitoring programs through implementation of their JRMPs. Each Participating Agency is implementing programs that are focused on addressing bacteria in the watershed. As strategy implementation progresses, periodic refinements to the programs may provide additional focus on the specific water quality issues identified in the WQIP. Participating Agencies utilize various assessment methods to determine which program refinements are effective and which are not. In some cases, the program effectiveness assessment results may provide useful information leading to adaption of elements of the WQIP. Where new information is applicable and available, it may be used to modify numeric goals, strategies, schedules, and the MAP.

At this time, only one year of data have been collected in accordance with the MAP and the Participating Agencies have been implementing their jurisdictional strategies under the WQIP, accepted in February 2016, for less than a year. Initial results related to program effectiveness (Section 4.2) indicate that the Participating Agencies have made progress towards meeting their dry and wet weather interim goals for the current Permit term. In most cases they are on track to meet the identified goals during the Permit term and, in some cases, these goals have already been met. Additional data from subsequent monitoring years will be necessary to supplement this data before evaluations leading to adaptive management actions are feasible and modifications to strategies considered.

5.2 ADAPTIVE MANAGEMENT - CHANGES TO WATER QUALITY IMPROVEMENT PLAN ELEMENTS

The potential triggers that may result in adaptive management of the San Diego River WMA WQIP's numeric goals, strategies, schedules, and/or MAP are outlined in Section 5.1. In general, priority and highest priority water quality conditions and numeric goals are established based on longer periods of record compared to a monitoring year and their assessment would most appropriately be conducted following the collection of sufficient data to make scientifically-based decisions. At earliest, such consideration may be given during the preparation of the ROWD, which is due to the Regional Board in December 2017.

The 2015-2016 monitoring year was the first under the accepted WQIP and MAP. Receiving water and storm drain outfall discharge monitoring results indicated that no modifications to the priority and highest priority water quality conditions identified by the WQIP are necessary at this time.

On an annual schedule, it is more likely that modifications may be made to strategies and implementation schedules. These are elements that may require updates on a more frequent basis to ensure effective implementation and assessment as the WQIP progresses. The information that may be used to modify these elements of the WQIP through adaptive management is summarized in Table A5-2. While one year of monitoring data have been collected in accordance with the MAP of the WQIP, only a few months of this time period have been under the accepted WQIP and implementation. The Participating Agencies in the San Diego River WMA began planning and implementing their jurisdictional strategies intended to result in achievement of dry and wet weather interim goals for the term of the current Permit. Sufficient information is not yet available to warrant adaptive management of the water quality strategies and schedules.

Collection of additional data will be necessary to supplement this data before the combined data set can be evaluated and adaptive management considered. Minor administrative changes, including clarifications, correction of typos and errors, and edits to WQIP strategies, are proposed, primarily by the City of San Diego. These modifications are identified as markup to the Participating Agencies' tables in Appendix 2, and the rationale for the each change is also provided in the tables.

Table A5-2. Information Used to Modify Strategies and Schedules

Evidence	WQIP AR Sections	2015-2016 Status	Adaptive Management Required after 2015-2016? (Y/N)
Receiving water monitoring results.	Section 3, Appendix 4	No new information pertaining to receiving water exceedances not addressed by the WQIP.	N
Storm drain outfall monitoring results.	Section 3, Appendix 4	NAL and SAL exceedances are consistent with WMA priority constituents.	N
Special studies results.	Section 3, Appendix 4	Data from these studies will be useful for the re-evaluation of the Bacteria TMDL and to facilitate consideration of site-specific water quality criteria for bacteria.	N
New or updated regulations.	Section 5	No new regulatory drivers; adaptive management will be required as new TMDLs are approved and as the Trash Amendments are incorporated into the Permit.	N
Program effectiveness assessments.	Section 5	Additional data will be necessary to supplement 2015-2016 data before program effectiveness can be evaluated.	N
Progress towards achieving numeric goals.	Section 4	Initial results related to program effectiveness indicate that the Participating Agencies have made progress towards meeting each of their dry and wet weather interim goals for the current Permit term.	N

In addition to the strategies and schedules, it is also feasible that updates to the MAP may be necessary more often than priority water quality conditions and numeric goals and schedules. Changes to the MAP may be triggered by several factors including:

- Modifications to other elements of the WQIP, including priority water quality conditions, numeric goals and schedules, and/or strategies and schedules.
- Identification of data gap through the required assessments under Provision D.4.
- Results of special studies.
- Requests/requirements from the Regional Board.

None of these triggers are applicable to the 2015-2016 monitoring year, and adaptive management of the MAP is not required at this time. Additional assessments are planned for the ROWD, including evaluation monitoring data and receiving water limitations.

San Dieguito River Watershed Management Area Water Quality Improvement Plan Annual Report

Submitted to the San Diego Regional Water Quality Control Board by:

January 2017

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.

With:

Executive Summary

The Water Quality Improvement Plan (WQIP) provides a comprehensive watershed-based program to improve surface water quality in the San Dieguito River Watershed Management Area (WMA), in receiving waters in the San Dieguito River, and at nearby beaches. The Responsible Agencies tasked with implementing the WQIP in the San Dieguito River WMA are the City of Del Mar, the City of Escondido, the City of Poway, the City of San Diego, the City of Solana Beach, and the County of San Diego.

The San Dieguito River WMA encompasses almost 346 square miles of urban land and undeveloped open space extending from the San Dieguito Lagoon in the west to the Volcan Mountains in the east. The WMA includes Del Mar, Solana Beach, Fairbanks Ranch, Rancho Peñasquitos, Rancho Bernardo, Del Dios, Poway, San Pasqual, Ramona, and Santa Ysabel. Small creeks drain downstream into the San Dieguito River, then into the San Dieguito Lagoon, and finally into the Pacific Ocean.

This Annual Report provides an update on monitoring and assessment completed during the previous reporting period and highlights the strategies implemented and progress toward meeting goals set for the highest priorities. Significant progress has been made in obtaining WQIP goals. The permit term performance based goals have been achieved for dry weather flow reduction by the City of Del Mar and City of San Diego. The County of San Diego has establised a baseline flow for persistently flowing major outfalls. Best management practices (BMPs) have been installed and maintained in the City of Escondido, City of San Diego, City of Solana Beach, and County of San Diego, reducing or preventing pollutants from entering receiving waters.

Water Quality Improvement Plan Process

The WQIP identifies goals and strategies to improve in the quality of urban runoff waters. These improvements to water quality are achieved through the consistent process of evaluation, goal setting, and monitoring and reporting, according to the following process:

With these distinct steps, the WQIP provides a long-term program to measurably improve overall water quality within the San Dieguito River WMA. This Annual Report implements Step (6) of the WQIP Process.

Highest Priority Water Quality Conditions

The WQIP identifies the following conditions/pollutants as highest priorities within the San Dieguito River WMA:

- Indicator bacteria along the Pacific Ocean at the San Dieguito Lagoon Mouth from areas above Lake Hodges when rainfall causes the Lake Hodges dam to overflow.
- Indicator bacteria along the Pacific Ocean at the San Dieguito Lagoon Mouth as measured during both wet and dry weather.

Monitoring and Assessment

The WQIP Monitoring and Assessment Program plays a key role in the Municipal Separate Storm Sewer System (MS4) Permit's new focus on the outcomes of WQIP program implementation to achieve water quality improvement. The long-term receiving water monitoring and MS4 monitoring program provides information on a wide variety of water quality conditions, including the highest priority water quality condition (HPWQC) and the other WMA priority water quality conditions (PWQCs).

Receiving waters were last monitored at the long-term monitoring stations during the October 1, 2014, through September 30, 2015, monitoring year. These historical mass loading stations have been monitored since 2001. This data was present in previous monitoring reports. The Responsible Agencies implemented receiving water monitoring in support of the Bacteria Total Maximum Daily Load (TMDL) at the Pacific Shoreline. Details are provided in Appendix C and highlights are summarized below.

- During wet weather, the receiving waters at the San Dieguito Lagoon Mouth achieved 0 percent (%) single-sample maximum exceedance frequencies for total coliform and fecal coliform. The single-sample maximum for *Enterococcus* was 13.6%. EH-380 is in compliance with interim and final wet weather single-sample maximum receiving water limitations (RWLs) for all three compliance constituents.
- During the wet season, which evaluates a combination of both wet and dry weather samples, EH-380 achieved a 0% geometric mean exceedance frequency for all compliance constituents and is in compliance with interim and final dry weather geometric mean RWLs.
- During the dry season, when recreational activities occur with more regularity, EH-380 achieved a 0% exceedance frequency for all three compliance constituents, and is in compliance with interim and final dry weather geometric mean RWLs.

The MS4 outfall monitoring program provides information on the estimated amount of pollutants coming from monitored MS4 outfalls. Details of this monitoring program are in Appendix C. The results for samples collected during the October 1, 2015, through September 30, 2016, monitoring year were compared with non-storm water action levels and storm water action levels. In dry weather, the non-storm water action levels were met over 75% of the time for multiple consituents. In wet weather, the storm water action levels

were met over 90% of the time for all consituents except total copper, nitrate + nitrite, and bacteria indicators. The Responsbile Agencies plan to continue implementing the WQIP strategies without modification to realize the rewards of these pollutant reduction benefits and will work toward meeting the goals related to the HPWQC.

The Illicit Discharge Dectection and Elmination (IDDE) Program found non-storm water discharges and worked to eliminate them throughout the WMA. This program helps with dry weather runoff reductions and is one mechanism to achieve some of the fiscal year (FY) 18 performance-based goals. Table ES-1 provides more information about the implementation of the IDDE program throughout the WMA.

Table ES-1
IDDE Program Summary in the San Dieguito River WMA

IDDE Program Action	Total Number in WMA
Non-storm water discharges or illicit discharges investigated	341
Sources of non-storm water identified	273
Non-storm water discharges eliminated	261
Sources of illicit discharges or connection identified	231
Illicit discharges or connections eliminated	220
Number of enforcement actions	195[1]

1. The number of enforcement actions issued does not equal the number of identified illicit discharges or connections because some discharge complaints in the last quarter of FY 16 were still under investigation at the end of FY 16.

IDDE = illicit discharge detection and elimination; WMA = Watershed Management Area

In addition to monitoring in the receiving waters and the MS4, the Responsible Agencies conducted special studies. The San Diego Regional Reference Streams and Beaches Study is complete and provided valuable information for the Bacteria TMDL[1] Reopener. The San Dieguito River WMA Bacteria Source Identification and Prioritization Special Study assessed sources of bacteria in selected focus areas using the San Diego Bacteria Source Identification and Prioritization Process developed in 2012 as part of the MS4 Permit Report of Waste Discharge process. It provides a framework for the Responsible Agencies to review bacteria sources at MS4 outfalls where water quality-based effluent limit (WQBEL) exceedances occur without implementing costly source identification studies. The study has provided the Responsible Agency a detailed list of sources to investigate if further exceedances are found at the focus area outfalls. Details on the special study assessments are provided in Appendix C.

Strategies

Strategies implemented throughout the WMA deliver proven benefits for addressing multiple pollutants by eliminating sources or treating pollutants already found in urban

[1] *Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001.

runoff. Responsible Agencies sponsor stream and beach cleanups, provide turf conversion rebates, and work with the public to educate them on the impacts of their actions on the environment. Many of these actions are above and beyond the requirements of the Jurisdictional Runoff Management Program (JRMP) strategies. Figure ES-1 provides a snapshot of the actions that the Responsible Agencies have taken during the previous monitoring year.

Public Outreach and Source Control

- Provide turf conversion rebates
- Engage in enforcement actions for over-irrigation
- Sponsor beach and river cleanup events

Municipal Control Activities

- Sweep streets using new technologies and on a more frequent basis
- Clean debris out of catch basins
- Build and maintain structural best management practices (BMPs)

Figure ES-1
San Dieguito River WMA Strategy Overview

Hodges Reservoir Nutrient Source Study

In FY 16, the Responsible Agencies completed the Hodges Reservoir Nutrients Evaluation Technical Memorandum, which analyzed available receiving water and MS4 data collected. In addition, the San Dieguito River WMA Responsible Agencies are currently coordinating with the City of San Diego's Public Utilities Department to develop a study plan and associated monitoring plans for the Hodges Reservoir Nutrient Source Study. The goal of this study is to characterize all the sources of nutrients in the Hodges Reservoir and watershed draining to the Hodges Reservoir, including development of a comprehensive conceptual model to guide any future monitoring efforts to fill known data gaps.

Progress Toward Meeting Goals

To measure progress toward achieving their goals and addressing the HPWQC, the San Dieguito River WMA Responsible Agencies developed numeric goals and schedules. Numeric goals may take a variety of forms, but all forms can quantify a benefit to water quality so that progress toward and achievement of the goals are measurable. During this MS4 Permit term, the Responsible Agencies have defined goals based on actions they are taking to improve water quality in the WMA. Many of the goals are on track or have been met. Table ES-2 summarizes the progress of Responsible Agencies toward meeting their goals during the previous year.

Table ES-2
San Dieguito River WMA Progress Toward Performance-Based Goals (FY 16)

Responsible Agency	Weather (Dry/Wet)	FY 18 Goal	Progress
City of Del Mar	Dry	10% reduction of anthropogenic surface dry weather flows that originate within Del Mar's jurisdictional boundaries	Achieved to Date
City of Escondido	Wet	4 acres of drainage area treated through restoration of 1 sediment detention basin in a multiuse treatment area at Eagle Scout (formerly Sand) Lake, Kit Carson Park	Achieved
	Dry	10% anthropogenic dry weather flow reduction at one priority outfall (HDG_102)	In Progress
City of Poway	Dry	5% increase from the baseline through turf conversion	In Progress
City of San Diego	Dry and Wet	10.6 acres of drainage area treated through construction of 2 green infrastructure BMPs	In Progress
	Dry	10% reduction in prohibited dry weather flow from baseline measured at persistently flowing outfalls in the WMA	Achieved to Date
City of Solana Beach	Dry and Wet	40.5 acres of low flows directed to the sanitary sewer through construction of one diverter at high priority outfall Seascape Sur	Achieved
	Dry and Wet	8 acres of drainage area treated through curb cuts along Highway 101	Achieved
County of San Diego	Wet	1% bacteria load reduction from the MS4	In Progress
	Dry	20% reduction anthropogenic dry weather flows	In progress

% = percent; BMP = best management practice; FY = fiscal year; MS4 = municipal separate storm sewer system; WMA = Watershed Management Area

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APPENDIX E Adaptive Management/Modifications

Acronyms and Abbreviations

Acronym or Abbreviation	Definition
%	percent
AB 411	California Assembly Bill 411, the Beach Safety Act
AEP	California Association of Environmental Professionals
Bacteria TMDL	*Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001
BMP	best management practice
Caltrans	California Department of Transportation
CCTV	closed-circuit television
CEQA	California Environmental Quality Act
Copermittee	Operator of a municipal separate storm sewer system in San Diego County that is party to the MS4 Permit
DPW	Department of Public Works
FY	fiscal year
HMP	Hydromodification Management Plan
HPWQC	highest priority water quality condition
IDDE	illicit discharge detection and elimination
IPM	integrated pest management
IRWM	Integrated Regional Water Management
JRMP	Jurisdictional Runoff Management Program
LID	low-impact development
MPN	most probable number
MS4	Municipal Separate Storm Sewer System
MS4 Permit	San Diego Regional Water Quality Control Board Order No. R9-2013-0001 (amended by Order No. R9-2015-0001 and by Order No. R9-2015-0100), National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems Draining the Watersheds Within the San Diego Region
MWD	Metropolitan Water District

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
NA	not applicable
NPDES	National Pollutant Discharge Elimination System
PDP	priority development project
PGA	pollutant-generating activity
PWQC	priority water quality condition
QAPP	Quality Assurance Project Plan
REC-1	water contact recreation beneficial use
Regional Board	San Diego Regional Water Quality Control Board
Responsible Agency	Responsible Agencies include parties subject to the Bacteria TMDL and participating in the Water Quality Improvement Plan, specifically the Copermittees in the San Dieguito River WMA
RWL	receiving water limitation
SCCWRP	Southern California Coastal Water Research Project
SOP	standard operating procedure
SUSMP	Standard Urban Storm Water Mitigation Plan
TCBMP	treatment control best management practices
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WDR	Waste Discharge Requirement
WMA	Watershed Management Area
WMAA	Watershed Management Area Analysis
WQBEL	water quality-based effluent limit
WQIP	Water Quality Improvement Plan
WQO	water quality objective

1 Introduction

The San Diego Regional Water Quality Control Board (Regional Board) regulates discharges from municipal separate storm sewer systems (MS4s) in the San Diego Region *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region* (MS4 Permit) under Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100. The MS4 Permit covers portions of San Diego County, southern Orange County, and southwestern Riverside County and regulates Phase I municipalities that own and operate MS4s (i.e., storm drain systems) that discharge storm water (wet weather) runoff and non-storm water (dry weather) runoff to surface waters throughout the San Diego region.

Under the MS4 Permit, the San Diego region is subdivided into 10 watershed management areas (WMAs), which cover the major, natural drainages in the region. The MS4 Permit requires a Water Quality Improvement Plan (WQIP) to be developed for each WMA (San Dieguito River WMA Responsible Agencies, 2015). The San Diego County Copermittees are listed in Table 1a of the MS4 Permit and the Copermittees with jurisdictional areas within the San Dieguito River WMA are as follows:

- City of Del Mar
- City of Escondido
- City of Poway
- City of San Diego
- City of Solana Beach
- County of San Diego

Each Copermittee, referred to as a Responsible Agency in the WQIP, must comply with the MS4 discharge prohibitions and receiving water limitations outlined in the MS4 Permit through timely implementation of control measures, other actions specified in the MS4 Permit, and adherence to the WQIP.

The goal of the WQIP is to guide the Responsible Agencies to implement their individual jurisdictional programs, known as Jurisdictional Runoff Management Programs (JRMPs), toward an outcome-based approach and to improve water quality. To accomplish this goal, an adaptive planning and management process is used to identify the highest priority water quality condition(s) (HPWQC) within the WMA. Responsible Agencies will also implement strategies through the WQIP and JRMPs to achieve improvements in the quality of discharges from storm drain systems to the receiving waters such as creeks, rivers, and beaches. The final WQIP for the San Dieguito River WMA can be found on the Project Clean Water website (www.projectcleanwater.org).

The MS4 Permit also requires the Responsible Agencies within each WMA to submit an Annual Report to demonstrate progress toward implementing the WQIPs and corresponding JRMPs. The Annual Report covers two different reporting periods. The first reporting period is from July 1, 2015, through June 30, 2016, for the JRMPs and WQIP strategy implementation. The second reporting period is from October 1, 2015, through September 30, 2016, for monitoring and assessment programs. Progress toward goals may be assessed in either reporting period, depending on the goal metric. This Annual Report addresses the requirements in Provision F.3.b.(3) and other provisions of the MS4 Permit.

Table 1-1 provides an overview of the MS4 Permit requirements that must be addressed and where they are addressed within the Annual Report. Appendix A provides additional details regarding the specific MS4 Permit requirements and where they are addressed within the Annual Report.

Table 1-1
MS4 Permit WQIP Annual Reporting Provisions and Corresponding Annual Report Sections[1]

MS4 Permit Provision[2]	WQIP Annual Report Section						WQIP Appendix			
	Section 1: Introduction	Section 2: WMA Priorities & Goals	Section 3: Monitoring	Section 4 : Achieving Goals	Section 5: Adaptive Management	Section 6: Conclusions	Appendix B – Goals	Appendix C – Monitoring	Appendix D – Jurisdictional Specific Information	Appendix E – Adaptive Management
Provision A – Prohibitions and Limitations										
A.4.a.(2)			X		X			X	X	X
Provision B – Water Quality Improvement Plans										
B.5.a.					X			X		X
B.5.b.			X	X	X		X	X	X	X
B.5.c.					X					X
Provision D – Monitoring and Assessment Program Requirements										
D.1.e.(2)(c)			X					X		
D.2.b.(iv)			X					X		
D.4.b.(1)(a)(ii)			X					X		
D.4.b.(1)(b)			X		X			X		X
D.4.b.(1)(c)			X		X			X		X
D.4.b.(2)(a)					X			X		X
D.4.b.(2)(b)			X		X			X		X

Table 1-1 (continued)
MS4 Permit WQIP Annual Reporting Provisions and Corresponding Annual Report Sections[1]

MS4 Permit Provision[2]	WQIP Annual Report Section						WQIP Appendix			
	Section 1: Introduction	Section 2: WMA Priorities & Goals	Section 3: Monitoring	Section 4 : Achieving Goals	Section 5: Adaptive Management	Section 6: Conclusions	Appendix B – Goals	Appendix C – Monitoring	Appendix D – Jurisdictional Specific Information	Appendix E – Adaptive Management
D.4.b.(2)(c)			X		X			X		X
D.4.c.			X					X		
D.4.d.					X					X
D.4.d.(1)					X					X
D.4.d.(2)					X					X
D.4.d.(3)					X					X
Provision E – Jurisdictional Runoff Management Programs										
E.1.b.									X	
E.2.d.(4)			X					X		
E.8.c.	X								X	
Provision F – Reporting										
F.1.b.(6)					X					X
F.2.a.(2)					X					X
F.2.a.(3)					X					X
F.2.b.(1)					X				X	
F.2.b.(2)					X				X	
F.2.c.(1)(c)					X					X
F.3.b.(3)(a-f)	X		X	X	X			X	X	X
F.6						X		X		
Attachment E – Specific Provisions for Total Maximum Daily Loads Applicable to Order No. R9-2013-0001										
Attachment E			X	X				X		

1. Appendix A provides additional details regarding the specific MS4 Permit requirements and where they are addressed within the Annual Report.
2. Some MS4 Permit Provisions are addressed in JRMPs.

WQIP = Water Quality Improvement Plan; WMA = watershed management area; MS4 = municipal separate storm sewer system

The San Dieguito River WMA WQIP Annual Report for 2015–2016 is structured as follows:

Section 1, Introduction – This section provides an overview of the MS4 Permit, the WQIP, and the Annual Reporting requirements. Includes references to Appendix A:

Appendix A. Crosswalk of Permit Requirements and Annual Report References

Section 2, Overview of San Dieguito River Watershed Management Area – This section introduces the watershed management area, the priority water quality conditions (PWQCs) and the HPWQCs of the watershed. The numeric goals and schedules developed to measure progress toward addressing the HPWQCs are presented. Includes references to Appendix B:

Appendix B. Water Quality Improvement Plan Numeric Goals

Section 3, Monitoring and Assessment – This section summarizes the monitoring programs and provides an assessment of the data collected relative to this HPWQC. Includes references to Appendix C:

Appendix C. Monitoring Results and Assessments

Section 4, Implementation and Progress Toward Achieving Numeric Goals – The section discusses the assessment of the progress toward meeting the numeric goals, with a focus on those numeric goals occurring during the MS4 Permit term. The section also provides an overview of the strategies implemented to meet the numeric goals, the status of implementation, and plans for the coming year. Includes references to Appendix D:

Appendix D. Jurisdictional Runoff Management Program Annual Report Forms, Fiscal Analysis, Updated BMP Manuals, and Jurisdictional Strategies

Section 5, Adaptive Management – This section summarizes the elements of the WQIP's process, which can be changed during the course of MS4 Permit implementation based on monitoring results and new information gathered during the reporting period. Includes references to Appendix E:

Appendix E. Adaptive Management/Modifications

Section 6, Conclusions and Recommendations – This section provides the conclusions and recommendations that are based on the data collected and assessments conducted during implementation of the WQIP in fiscal year (FY) 2015–2016 (FY 16).

Section 7, References – This section lists the sources used to prepare this Annual Report.

2 Overview of San Dieguito River Watershed Management Area

The San Dieguito River WMA drains a 346-square-mile area in central San Diego County. The headwaters of the San Dieguito River WMA are located at the easternmost extent of the WMA, in the Volcan Mountains, and drain to the Pacific Ocean near Del Mar at its western end. Six jurisdictions and Caltrans are located in the San Dieguito River WMA. The amount of land within each jurisdiction is described in Table 2-1 and shown in Figure 2-1. The California Department of Transportation (Caltrans), along with other non-Phase 1 MS4s dischargers, is regulated under separate permits. However, the Responsible Agencies are responsible for discharges originating from these lands outside of their regulatory control if these discharges enter the MS4 of the particular Responsible Agency. The Responsible Agencies look to collaborate and improve communication with non-municipal sources and the appropriate regulatory agencies to ensure that these discharges are regulated before they enter the Responsible Agencies' MS4s.

Table 2-1
Land Area for the San Dieguito River WMA

Responsible Agency	Land Area (Acres)	Percent (%) of Total
San Diego County	176,644	80.3%
City of San Diego	27,345	12.4%
City of Poway	9,011	4.1%
City of Escondido	4,362	2.0%
City of Solana Beach	1,597	0.7%
City of Del Mar	990	0.5%

For the WQIP, the San Dieguito River WMA was divided into three subwatersheds to focus on different (or several) receiving waters when identifying PWQCs and developing the JRMPs. These subwatersheds include the area below Lake Hodges, the area between Lake Hodges and Sutherland Reservoir, and the area above Sutherland Reservoir.

The subwatershed below Lake Hodges is located southwest of Lake Hodges and drains into the San Dieguito Lagoon, which ultimately discharges into the Pacific Ocean. The subwatershed above Lake Hodges contains Lake Hodges, and extends eastward to Sutherland Reservoir. The subwatershed above Sutherland Reservoir is drained by Santa Ysabel Creek, which feeds into the Sutherland Reservoir.

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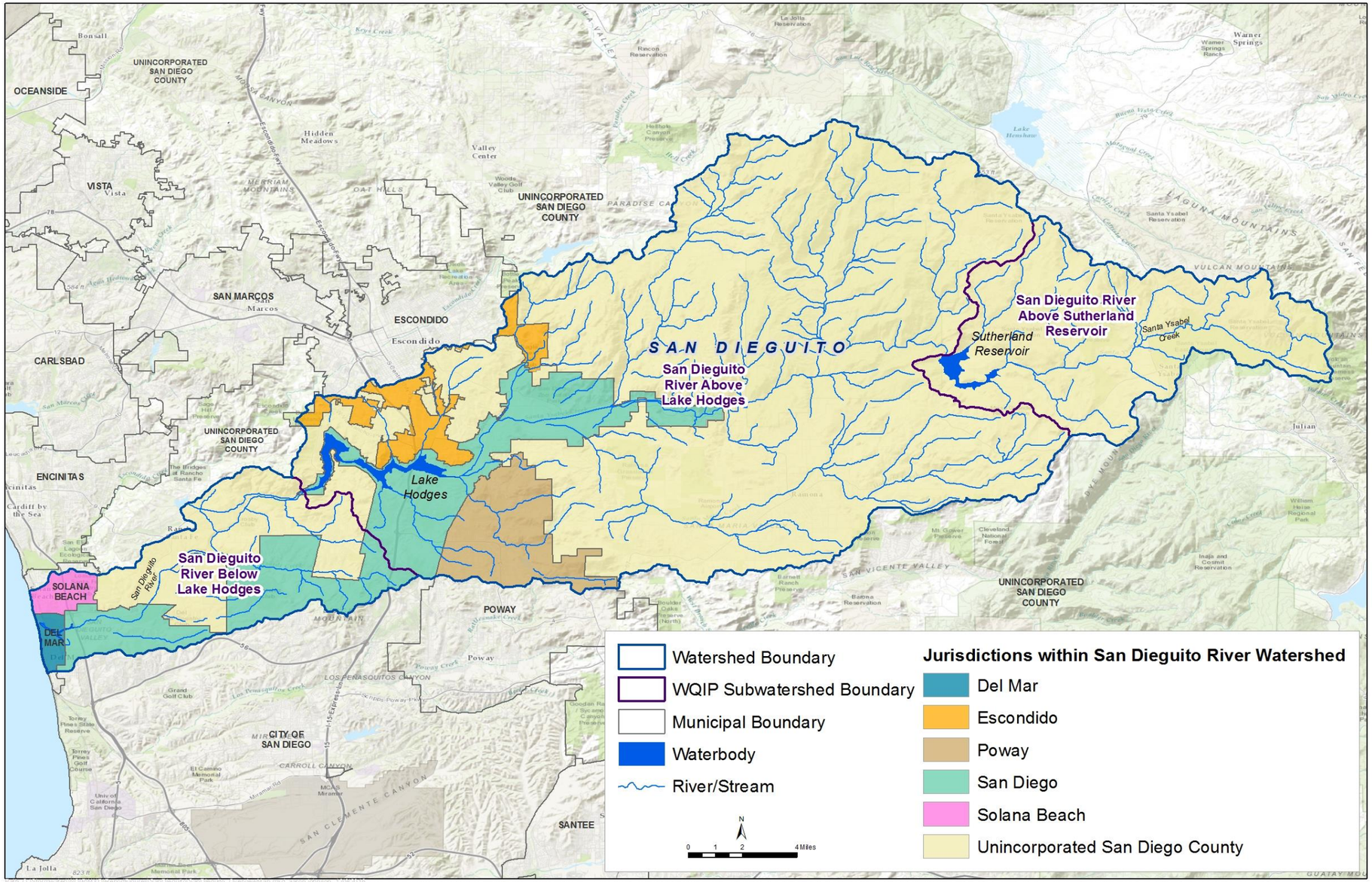

Figure 2-1
San Dieguito River WMA Subwatersheds

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2.1 San Dieguito River WMA WQIP

The overarching goal of the San Dieguito River WMA WQIP is to further the Clean Water Act's objective to protect, preserve, enhance, and restore the water quality and designated beneficial uses of waters of the state. This goal will be accomplished through a planning and adaptive management process that identifies the PWQCs and HPWQCs. The San Dieguito River WMA WQIP identifies strategies (implemented through JRMPs to address priority water quality conditions in the WMA with a particular focus on the HPWQC to achieve measurable numeric goals and to improve the quality of MS4 discharges and, in turn, the receiving waters. The San Dieguito River WMA WQIP outlines how the Responsible Agencies are evaluating water quality conditions, prioritizing those water quality conditions, and using these common priorities to guide jurisdictional and watershed-scale programs to address the HPWQC.

2.2 Priority and Highest Priority Water Quality Conditions

The WQIP identifies the PWQCs on the basis of an assessment of receiving water conditions, MS4 discharges and their potential impacts, and the sources of pollutants in the watershed. The PWQCs for the San Dieguito River WMA are detailed in Appendices A and F of the WQIP, and are summarized by the beneficial use and pollutant category in Figure 2-2.

The HPWQC is the foundation for establishing the WQIP numeric goals and schedules and selecting water quality improvement strategies to achieve the necessary improvements in the quality of MS4 discharges and/or receiving waters. Table 2-2 details the following conditions/pollutants as highest priorities within the San Dieguito River WMA. The HPWQC is highlighted in bold in Figure 2-2.

Table 2-2
Highest Priority Water Quality Condition in the San Dieguito River WMA

Highest Priority Water Quality Condition	Potential Stressor	Temporal Extent		Subwatershed
		Dry	Wet	
Potential impairment of water contact recreation beneficial use (REC-1) at Pacific Ocean Shoreline	Indicator bacteria	–	✓	San Dieguito River Above Lake Hodges
Potential impairment of REC-1 at Pacific Ocean Shoreline	Indicator bacteria	✓	✓	San Dieguito River Below Lake Hodges

REC-1 = water contact recreation beneficial use

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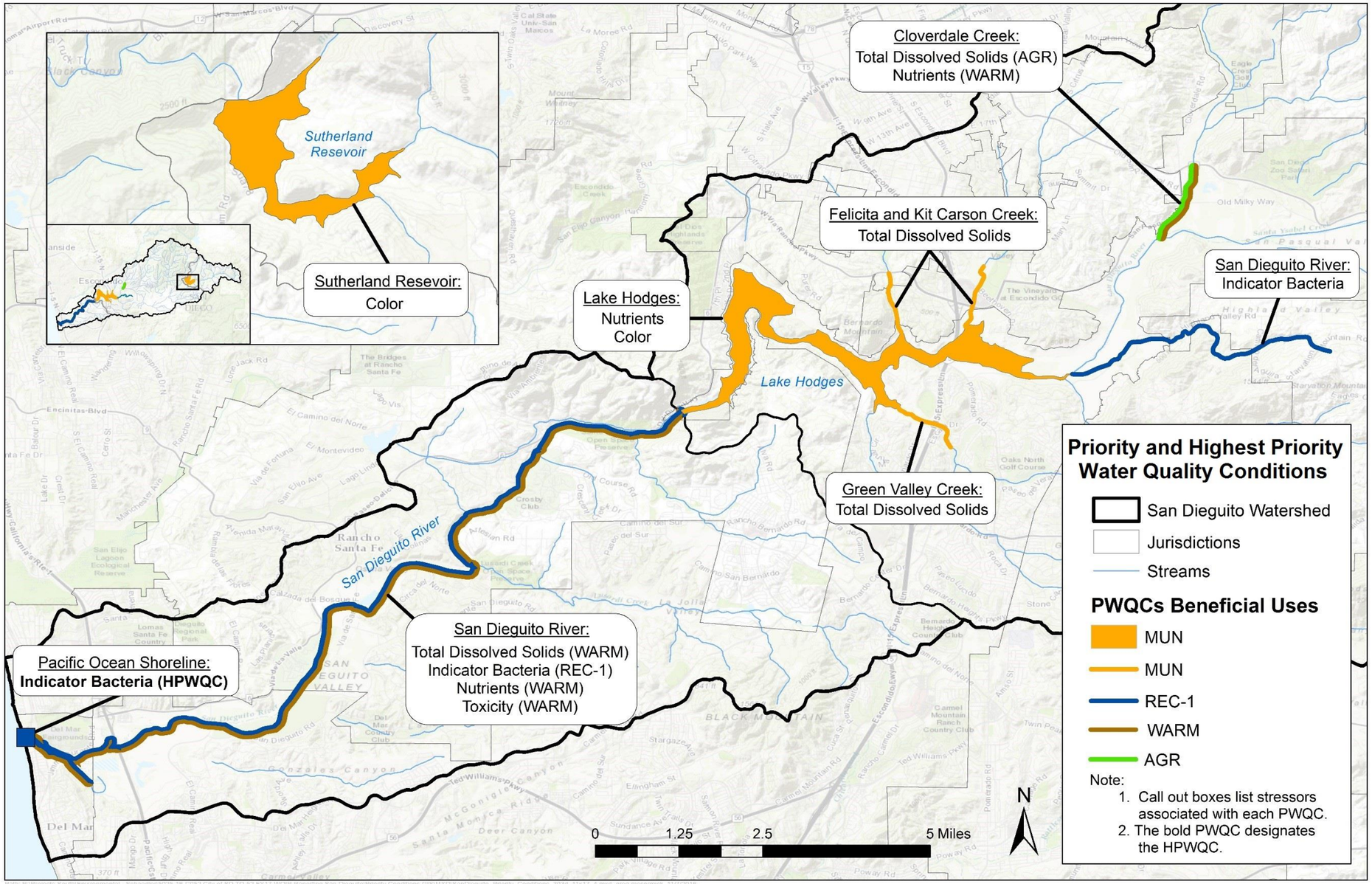

Figure 2-2
San Dieguito River WMA
Priority and Highest Priority Water Quality Conditions

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2.3 WQIP Numeric Goals

In the WQIP, the Responsible Agencies identified and developed specific water quality improvement numeric goals and strategies to address the HPWQC identified within the WMA. The numeric goals (interim and final) and corresponding schedules support implementation of the WQIP and measure reasonable progress toward addressing the HPWQC. In addition, the Responsible Agencies' monitoring and assessment programs measure progress toward attaining these goals. The numeric goals for the San Dieguito River WMA are presented in detail by jurisdiction in Appendix B.

The numeric goals for the San Dieguito River WMA are presented in detail by jurisdiction in Appendix B.

The goals extend beyond the timeframe of the current MS4 Permit. For this reason, the numeric goals within the WQIP are categorized into three distinct time periods:

1. Interim goals within the five-year MS4 Permit term. These goals are typically specific to each Responsible Agency's jurisdiction.
2. Interim goals based on the interim Bacteria TMDL compliance pathways.
3. Final goals based on final Bacteria TMDL compliance options.

The timeline for the San Dieguito River WMA bacteria numeric goals is illustrated in Figure 2-3.

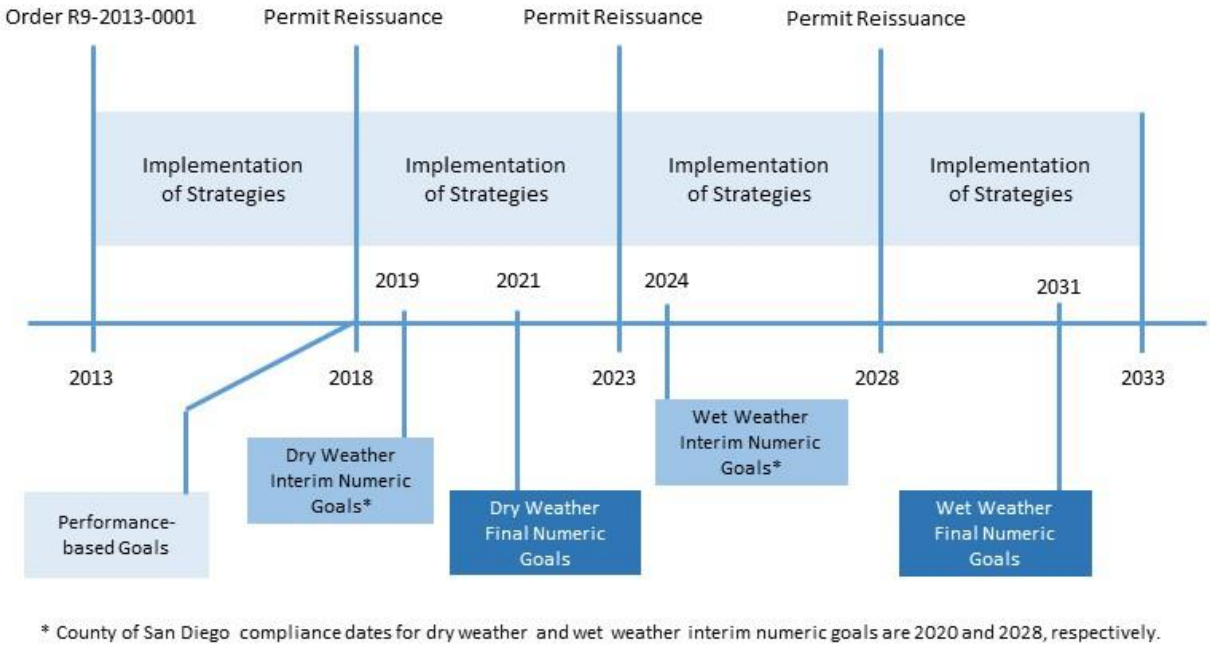

Figure 2-3
Timelines and Relationships for Bacteria TMDL Numeric Goals

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3 Monitoring and Assessment

The Pacific Shoreline near the San Dieguito Lagoon mouth is a stretch of beach in San Diego County that is a popular recreation destination for residents. The HPWQC at this beach is water contact recreation beneficial use (REC-1) related to the bacteria indicators measured during both dry and wet weather. This section discusses the monitoring related to maintaining contact recreation uses at Pacific Ocean Shoreline near the San Dieguito Lagoon mouth. Monitoring related to the 2013–2018 MS4 Permit term and interim/final goals is detailed.

3.1 Monitoring Related to Performance Based Goals

The Responsible Agencies have established dry and wet weather interim goals for the 2013–2018 MS4 Permit term. Tables 3-1 and 3-2 summarize the data collected during the monitoring year, October 1, 2015, through September 31, 2016, to assess progress toward meeting FY 18 goals.

Table 3-1
Dry Weather Monitoring Related to Performance-Based Goals

Jurisdiction	Performance-Based Goal	Monitoring Element
City of Del Mar	Reduce by 10% anthropogenic surface dry weather flows[1] that originate within Del Mar's jurisdictional boundaries.	Collect flow measurements at selected MS4 outfalls. Sampling Days: 2 Field site visits: 15
City of Escondido	Reduce by 10% dry weather[1] flow in priority drainage area with persistent flow.	Collect flow measurements at a priority MS4 outfall (HDG_102). Sampling Days: 2 Implement month-long dry weather flow from 7/6/16 to 8/8/16 to establish baseline flow information.
City of Poway	Achieve a 5% increase in turf conversion from baseline.	Track the implementation of turf conversion, including turf conversion increase.
City of San Diego	Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality from 10.6 acres of drainage area.	Track the acres of drainage area treated by green infrastructure BMPs.
	Reduce by 10% the prohibited[2] dry weather flow from baseline measured at persistently flowing outfalls during dry weather.	Collect flow measurements at persistently flowing outfalls. Sampling Days:18

Table 3-1 (continued)
Dry Weather Monitoring Related to Performance-Based Goals

Jurisdiction	Performance-Based Goal	Monitoring Element
City of Solana Beach	Direct 40.5 acres of low flows to the sanitary sewer through construction of 1 diverter at high priority outfall Seascape Sur.	Detail the completion of the diverter, including acres treated.
	Design and construct curb cuts to treat 8 acres of drainage area along Highway 101.	Detail the completion of curb cuts, including acres treated.
County of San Diego	Reduce by 20% the aggregate dry weather flow[1] volume or the number of persistently flowing outfalls during dry weather.	Establish baseline: 1) Collect continuous flow data at 6 persistently flowing major outfall to determine baseline aggregate flow; 2) Identified total number of persistently flowing major outfalls.

1. The term "dry weather flows" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.
2. Does not include allowable discharges as defined in Provision A and Provision E.2.a of the MS4 Permit.

% = percent; BMP = best management practice; MS4 = municipal separate storm sewer system

Table 3-2
Wet Weather Monitoring Related to Performance Based Goals

Jurisdiction[1]	Performance-Based Goal	Monitoring Element
City of Del Mar	Reduce by 10% anthropogenic surface dry weather flows[2] that originate within Del Mar's jurisdictional boundaries to address bacteria regrowth contributing during wet weather.	Collect flow measurements at selected MS4 outfalls during dry weather. Sampling Days: 2 Field site visits: 15
City of Escondido	Implement and maintain water quality improvement BMPs to target fecal coliform, *Enterococcus*, total coliform, sediment, and nutrients from 4 acres of drainage area.	Confirm the restoration of the BMP, including acres treated by multiuse treatment area.
City of San Diego	Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure 9 BMPs to improve water quality from 10.6 acres of drainage area.	Track the acres of drainage area treated by green infrastructure BMPs.
City of Solana Beach	Direct 40.5 acres of low flows to the sanitary sewer through construction of 1 diverter at high priority outfall Seascape Sur.	Detail the completion of the diverter, including acres treated.
	Design and construct curb cuts to treat 8 acres of drainage area along Highway 101.	Detail the completion of curb cuts, including acres treated.
County of San Diego	Reduce baseline bacteria loads from storm drain outfalls to receiving water by 1%.	Collect bacteria and flow data at MS4 outfalls as part of the wet weather MS4 outfall monitoring program.

1. City of Poway does not have a wet weather performance-based goal.
2. The term "dry weather flows" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.

% = percent; BMP = best management practice; MS4 = municipal separate storm sewer system

3.2 Monitoring Related to Interm and Final Goals

The Responsible Agencies have initiated a Monitoring and Assessment Program, as outlined in Section 5 of the San Dieguito River WMA WQIP. The purpose of the program is to track progress toward meeting long-term WQIP goals. The program includes monitoring of receiving water and at MS4 outfalls. In addition, two designated special studies are to be completed. This section provides an overview of the monitoring conducted to track progress through this reporting period. The full details of the monitoring results are in Appendix C.

Bacteria Total Maximum Daily Load (TMDL) Compliance Monitoring Program

The Bacteria TMDL (Regional Board, 2010) Compliance Monitoring Program monitors bacteria indicators at the historical San Diego County AB 411 (California Assembly Bill [AB] 411) monitoring location at the mouth of San Dieguito Lagoon. The historical AB411 site is located 25 yards down-current of where ocean currents meet river discharge in ankle-to-knee-deep water. The current AB411 site is at the point where ocean currents meet river discharge in ankle-to-knee-deep water. Monitoring occurred as required during both dry and wet weather.

Wet weather monitoring was conducted at the monitoring location during three storm events during the wet season (October 1 through April 30). However, during the recreation season (April 1 through October 31), samples are collected at the monitoring location five times per month, as consistent with AB 411 requirements, and during dry periods of the wet season (November 1 through March 31) on a monthly basis per the Bacteria TMDL requirements. Dry weather samples were collected after an antecedent dry period of 72 hours with less than 0.1 inch of rainfall. Grab samples were collected in a manner consistent with requirements of the AB 411 program. All samples were analyzed for total coliform, fecal coliform, and *Enterococcus*.

Section 2.6 of Appendix C provides more information on the sampling performed in the 2015–2016 monitoring year and Attachment B of Appendix C provides the BacteriaTMDL Compliance Monitoring Report. The data collected as part of this program will be used to assess the receiving water compliance pathway in future years. A summary of the results from the 2015-2016 monitoring year includes the following:

- During wet weather, the receiving waters at the San Dieguito Lagoon Mouth achieved 0 percent (%) single-sample maximum exceedance frequencies for total coliform and fecal coliform. The single-sample maximum for *Enterococcus* was 13.6%. EH-380 is in compliance with interim and final wet weather single-sample maximum receiving water limitations (RWLs) for all three compliance constituents.
- During the wet season, which evaluates a combination of both wet and dry weather samples, EH-380 achieved a 0% geometric mean exceedance frequency for all compliance constituents and is in compliance with interim and final dry weather geometric mean RWLs.

- During the dry season, when recreational activities occur with more regularity, EH-380 achieved a 0% exceedance frequency for all three compliance constituents, and is in compliance with interim and final dry weather geometric mean RWLs.

San Dieguito River WMA MS4 Outfall Monitoring

The Responsible Agencies implemented the dry and wet weather MS4 outfall monitoring program, as detailed in Section 5 of the WQIP. The dry weather MS4 monitoring program is a combination of field screening and collection of samples at persistently flowing major outfalls. Field screening includes visual monitoring of all major MS4 outfalls to identify and eliminate sources of persistently flowing non-storm water discharges. This information is also used to track the progress of some of the 2018 MS4 Permit term goals.

Water quality sample collection provides information on the impact of MS4 outfalls on receiving water quality during dry weather. The goal of the wet weather MS4 monitoring program is to identify pollutants in storm water discharges from the MS4s and to guide pollutant source identification efforts by collecting paired water quality samples and flow data. Annually, the data from the dry weather program is compared with the non-storm water action levels, and data from the wet weather program is compared with the storm water action levels. In dry weather durign the monitoring year, the non-storm water action levels were met over 75% of the time for multiple consituents. In wet weather during the monitoring year, the storm water action levels were met over 90% of the time for all consituents except total copper, nitrate + nitrite, and bacteria indicators.The data collected as part of this program will be used to assess the MS4 outfall compliance pathway toward reaching interim and long-term goals in future years**.** Bacteria indicators are measured during both dry and wet weather MS4 analytical sampling events, and will be used to assess bacteria concentration loads discharging from the MS4 to receiving waters.

Table 3-3 summarizes the number of major outfalls for each Responsible Agency that were sampled during the 2015–2016 monitoring year along with the dates of the analytical monitoring. Sections 3 and 4 of Appendix C provide more information on dry and wet weather MS4 monitoring programs, respectively. Attachments C and D (Dry and Wet Weather Assessments) of Appendix C provide detailed calculations with regard to these monitoring programs. The data collected as part of this program will be used to assess MS4 compliance pathways in future years.

Table 3-3
Number of Major MS4 Outfalls Monitored During the 2015–2016 Monitoring Year

Jurisdiction	Number of Major Outfalls Visited Per Year				
	Field Screening[1]	Dry Weather Monitoring		Wet Weather Monitoring	
		Number of Sites[2]	Dates	Number of Sites[2]	Dates
City of Del Mar	6 (5)[3,4]	3	6/30/16 8/12/16	1	3/5/2016
City of Escondido	3 (3)[3]	1	4/20/2016 8/30/2016	1	3/5/2016
City of Poway	12 (15)[3]	1[5]	7/29//2016 8/2/2016	1	3/6/2016
City of San Diego	42 (42)[6]	5	2/16/2016 2/22/2016 4/5/2016 4/26/2016 6/10/2016	1	1/30/2016
City of Solana Beach	3 (3)[3]	1[7]	6/30/16 8/12/16	1	3/5/2016
County of San Diego	20 (20)[2]	5[8]	3/28/2016 – 4/21/2016 6/30/2016 - 7/7/2016	1	1/31/2016

1. Field screening represents the number of major MS4 outfalls visited in the 2015–2016 monitoring year. Total number of major outfalls within each jurisdiction in the WMA is provided in parentheses.
2. Number of sites represents the number of outfalls with priority persistent flows selected for dry weather water quality sampling.
3. For Responsible Agencies with fewer than 125 major outfalls in the WMA, 80% of major outfalls must be screened twice per year.
4. The City of Del Mar has identified five major outfalls and will also screen an additional non-major outfall.
5. The number of sites has been updated from two sites initially listed in the San Dieguito River WMA WQIP.
6. For Responsible Agencies with portions of their jurisdictions in more than one WMA and more than 500 major MS4 outfalls in their jurisdictions, at least 500 major outfalls must be inspected once per year.
7. City of Solana Beach has a low flow diverter at Fletcher Cove and Seascape Sur. Dry weather sampling is being carried out at Seascape Sur because there is discharge occurring between the diverter at the street and the outfall.
8. The number of sites has been updated from three sites initially listed in the San Dieguito River WMA WQIP.

In addition to the dry weather MS4 field screening and monitoring, the County of San Diego has also installed continuous flow monitoring equipment at four of the five of its highest priority major MS4 outfalls with persistent non-storm water flows and two additional major outfalls with persistent non-storm water flows. The equipment was installed during the dry season (May through September) to more closely monitor dry weather discharge rates from these outfalls for non-storm water flow rates and volumes and to potentially identify cyclical trends or increases in non-storm water flows. This information can be used to help San Diego County reduce or eliminate non-storm water flows to address its 2018 MS4 Permit term goal.

San Diego Regional Reference Streams and Beaches Study

The San Diego Regional Reference Streams and Beach Study (Southern California Coastal Water Research Project [SCCWRP], 2015 and SCCWRP, 2016) characterizes the natural background concentrations of bacteria from natural streams and beaches in a condition minimally disturbed by anthropogenic activities, referred to as a "reference" condition. These data are being used during the Bacteria TMDL Reopener to revisit the Bacteria TMDL numeric targets based on current data and United States Environmental Protection Agency (USEPA) policy, which may lead to revised terms of compliance. The Bacteria TMDL Reopener is in progress and is expected to be completed in 2017. Section 5.1 of Appendix C provides more information on these special studies.

San Dieguito River WMA Bacteria Source Identification and Prioritization Process Special Study

The San Dieguito River Responsible Agencies conducted a Bacteria Source Identification and Prioritization Special Study. This study assessed sources of bacteria in selected focus areas using the San Diego Bacteria Source Identification and Prioritization Process developed in 2012 as part of the MS4 Permit Report of Waste Discharge process. The focus area drainages were selected because of elevated *Enterococcus* concentrations and known dry weather flows. The focus areas also allowed participating Responsible Agencies to identify bacteria sources to target in their jurisdictions.

The study used geospatial data, water quality data, and the prioritization process to determine potential bacteria sources in selected focus areas. This process can serve as a framework for the Responsible Agencies to review bacteria sources at MS4 outfalls where water quality-based effluent limit (WQBEL) exceedances occur without implementing costly source identification studies. It may also lead potentially to modification or enhancement of WQIP strategies in these focus areas.

Each Responsible Agency now has a detailed list of sources to investigate if further exceedances are found at the focus area outfalls. Specific actions include continued frequent city-wide patrols within the City of Del Mar and assessment of data, including determination in whether specific focus areas will need to be established in the future. The City of Escondido will be filling an identified data gap and evaluating the top potential source in the jurisdiction's focus area (septic tanks) to determine the number of registered

septic tanks within city limits. The Responsible Agencies will continue to implement planned WQIP strategies in the focus area. Section 5.2 of Appendix C provides more information on this special study.

4 Implementation and Progress Toward Achieving Numeric Goals

The MS4 Permit requires the Responsible Agencies to develop specific water quality improvement numeric goals and strategies to address the HPWQC identified for the San Dieguito River WMA. Each year, the Responsible Agencies assess specific water quality data and programmatic information to gauge progress toward achieving the numeric goals. These assessments provide information to determine whether intended outcomes are being realized or whether adaptations of the programs are necessary. This section discusses the strategies that have been implemented during the reporting period and the progress toward achieving specific permit term goals for the watershed. Many of the selected strategies necessarily target the WMA HPWQC, but many address other pollutants as well, providing a multi-benefit approach to implementation.

4.1 Strategies and Schedules

The strategies being implemented by the Responsible Agencies are the activities that enable improvements in water quality to achieve the numeric goals outlined in Section 2. The success of the strategies will ultimately be measured against the WQIP interim and final numeric goals.

In general, all Responsible Agencies are collectively implementing both JRMP-required and optional nonstructural best management practices (BMPs) throughout the San Dieguito River WMA to achieve dry and wet weather load reduction goals. As implementation continues and progress is evaluated, distributed and regional structural BMPs will be implemented to meet interim and final goals as needed and as funding becomes available. Figure 4-1 shows the different types of strategies implemented by Responsible Agencies to meet WQIP goals.

JRMP strategies implemented by all Responsible Agencies during the reporting period throughout the San Dieguito River WMA are summarized by program element in Table 4-1. Detailed jurisdictional strategies are included in Appendix D. Within the detailed strategies tables, information is presented to indicate whether the strategy was implemented during this reporting period, whether it will continue to be implemented during the next reporting period, or whether the strategy will be modified or eliminated for the coming year(s).

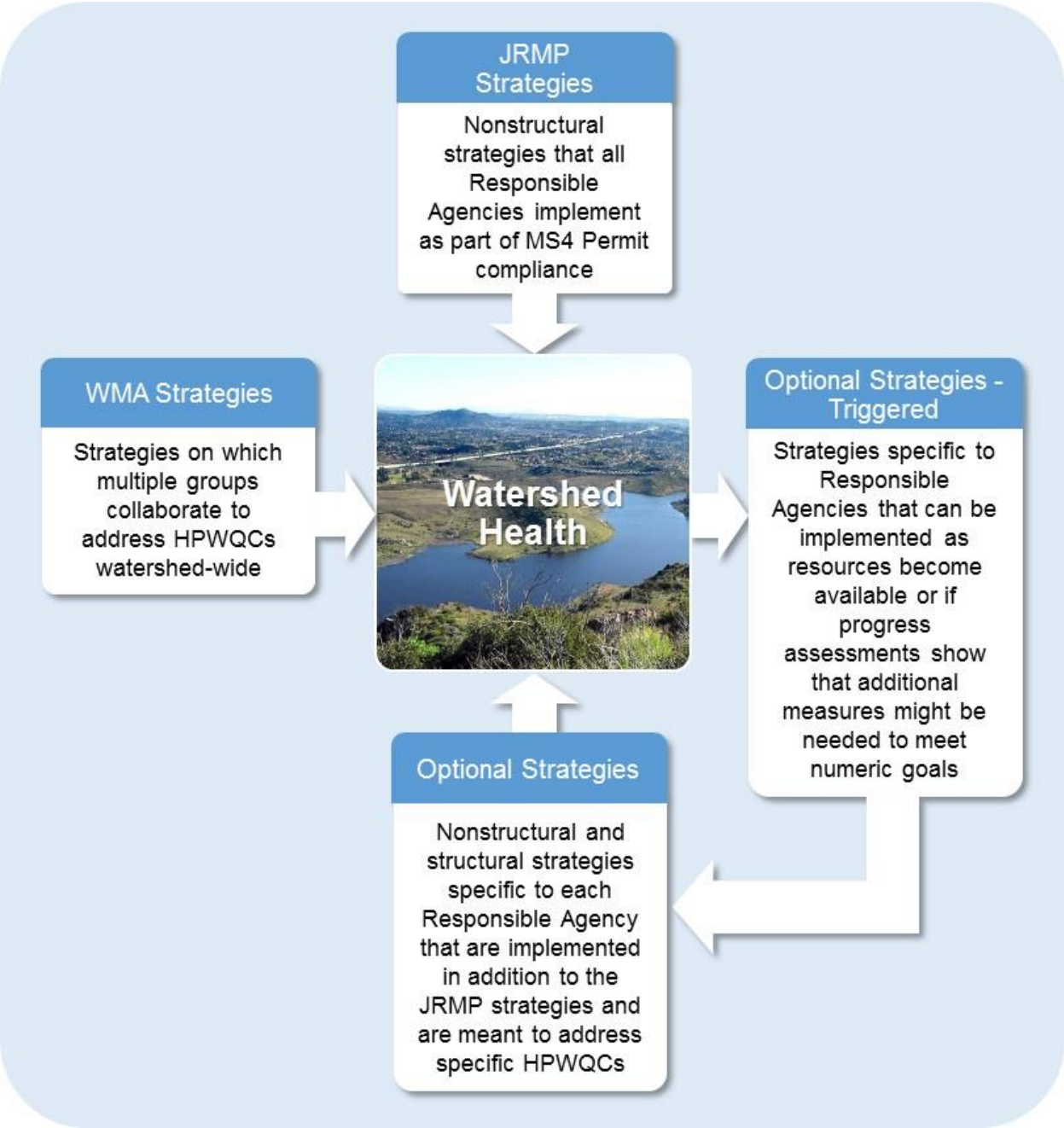

Figure 4-1
Strategies Implemented by Responsible Agencies to Meet WQIP Goals

Table 4-1
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
Jurisdictional Runoff Management Program (JRMP) (E.2-E.7) Strategies							
E.3 Development Planning							
All Development Projects							
Establish guidelines and standards for all development projects and public low-impact development (LID) best management practices (BMPs); provide technical support related to implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area or implement easements to protect water quality, where applicable and feasible. Provide education and outreach to the development community regarding requirements of the Municipal Separate Storm Sewer System (MS4) Permit, Water Quality Improvement Plan (WQIP), and BMP updates.	X	X	X	X	X	X	X
Priority Development Projects (PDPs)							
For PDPs, administer a program and provide technical support to other internal departments to ensure implementation of onsite structural BMPs to control pollutants and manage hydromodification by developing storm water development standards and design guidelines. Includes confirmation of design, construction, and maintenance of PDP structural BMPs. Update the BMP Design Manual to determine the nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	X	X	X	X	X	X	X

Table 4-1 (continued)
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
E.4 Construction Management							
Administer a program to oversee implementation of temporary BMPs that control sediment and other pollutants during the construction phase of projects. Includes requirements to inspect at appropriate frequencies and effectively enforce requirements through process controlled by other internal departments.			X	X	X	X	
E.5 Existing Development							
Commercial, Industrial, Municipal, and Residential Facilities and Areas							
Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and pollutant-generating activities (PGAs), as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods. Require minimum BMPs for existing residential, commercial, and industrial development. Implement policies and procedures to ensure discharges from swimming pools meet permit requirements.	X	X	X	X	X	X	X

Table 4-1 (continued)
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
MS4 Infrastructure							
Implement operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, channels as allowed by resource agencies, detention basins, pump stations, etc.) for water quality improvement and for flood control risk management. Includes inspecting and cleaning catch basins, implementing controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers, and repairing and replacing MS4 components.	X	X	X	X	X		
Roads, Streets, and Parking Lots							
Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways. Implement street sweeping.	X	X	X	X	X		
Pesticides, Herbicides, and Fertilizer BMP Program							
Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education.		X					X
Retrofit and Rehabilitation in Areas of Existing Development							
Develop a strategy and identification of candidate areas of existing development necessary for implementing retrofit projects and facilitate the implementation of such projects.	X	X	X	X	X	X	X
Develop a strategy and identify candidate areas necessary to implement stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	X	X	X	X	X	X	X

Table 4-1 (continued)
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program							
Implement the Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	X	X	X	X	X	X	X
E.7 Public Education and Participation (B.3.b(1)(a)(iii))							
Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences. Enhanced school and recreation-based education and outreach, of which may include irrigation reduction issues, integrated pest management (IPM) for residents and businesses, and implementation and education of pet waste program. Promote and encourage implementation of designated BMPs in commercial and industrial areas.	X	X	X	X	X	X	X

Table 4-1 (continued)
Jurisdictional Runoff Management Program Strategies Implemented in 2015–2016 by All Responsible Agencies

Strategy	Pollutants Addressed						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
E.6 Enforcement Response Plan							
Continue to implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Storm Water Code Enforcement Unit's Standard Operating Procedures (SOPs) – Enforcement Response Plan.	X	X	X				

1. Highest priority water quality condition is highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

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Nonstructural strategies reduce pollutant loading to the MS4 by reducing pollutant generation at the source and/or by reducing mobilization of pollutants to the MS4, and either directly or ultimately to receiving waters. Programs designed to diminish the impacts of irrigation runoff, landscaping practices, and pet waste on receiving water quality are primary examples of nonstructural approaches that Responsible Agencies in the San Dieguito River WMA have employed during this permit term. The key strategies for each Responsible Agency are presented in Sections 4.1.1 through 4.1.6, and WMA strategies are presented in Section 4.1.7.

4.1.1 City of Del Mar

During FY 16, Del Mar implemented the strategies described in the WQIP. Highlights of strategies implemented by Del Mar to address bacteria are shown in Figure 4-2. The full list of strategies implemented is in Appendix D. Additional strategies being implemented are listed in Table 4-2.

Septic System Maintenance

Septic systems have the potential to be a source of bacteria if not properly operated and maintained. During FY 16, the City of Del Mar reviewed data to determine which properties have septic systems (onsite wastewater treatment system). In June 2016, letters were sent to the identified properties along with an educational information sheet explaining how to protect and maintain septic systems.

Storm Runoff

The City of Del Mar operates two storm runoff pumps in the northern coastal portion of the City: 27th Street and 29th Street. The 27th and 29th Street pumps collect and pump storm water to the sanitary sewer for the first 30 minutes of a wet weather event reducing the amount of potential pollutants reaching the receiving water.

Patrols to Eliminate Potential Pollutant Sources

The City of Del Mar implements a proactive patrol of the entire city at least six times per year. City staff patrol municipal, commercial, residential, and construction areas and locations to identify any potential illicit discharges and improper BMP implementation. In addition, treatment control best management practices (TCBMPs) and all minor and major MS4 outfalls are inspected during patrols. For FY 16, Del Mar conducted 11 city-wide patrols (~monthly) and were able to enforce proper BMP implementation throughout the city.

Figure 4-2
Highlights of Del Mar Strategies

Table 4-2
Summary of Strategies for the San Dieguito River Watershed Management Area—City of Del Mar

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
Promoted and collaborated with water agencies and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	X	X	X	X	X	X	X
Continued participating in source reduction initiatives.	X	X	X	X	X	X	X
Implemented a program to require septic system maintenance practices.	X	X		X			X
Participated in the San Diego Regional Reference Streams and Beaches Study (see Section 3.2 for study details).		X					
Participated in the San Dieguito River WMA Bacteria Source Identification and Prioritization Process Special Study (see Section 3.2 for study details).		X					
Visually inspected all major and minor MS4 outfalls.	X	X	X	X	X	X	X
Operated and maintained infiltration pits and low-flow diverters in the northern coastal portion of Del Mar.	X	X	X	X	X		

1. Highest priority water quality condition is highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

MS4 = municipal separate storm sewer system; WMA = watershed management area

4.1.2 City of Escondido

During FY 16, Escondido implemented the strategies described in the WQIP. Highlights of strategies implemented by Escondido to address bacteria are shown in Figure 4-3. The full list of strategies implemented is in Appendix D. Additional strategies being implemented are listed in Table 4-3.

- Implemented the mitigation plan for the Regional General Permit 94 for channel maintenance throughout Escondido. The 4.44-acre project in Kit Carson Park resulted in removing 67 exotic trees and other invasive vegetation, and planting 742 native riparian container trees and applying 22 pounds of cottonwood-willow woodland seed mix.
- Conducted a comprehensive review of inventoried structural BMPs associated with Priority Development Projects.
- Transitioned storm water program existing developments inspections, to the City's asset management program (Cityworks) for improved scheduling, tracking, and reporting.

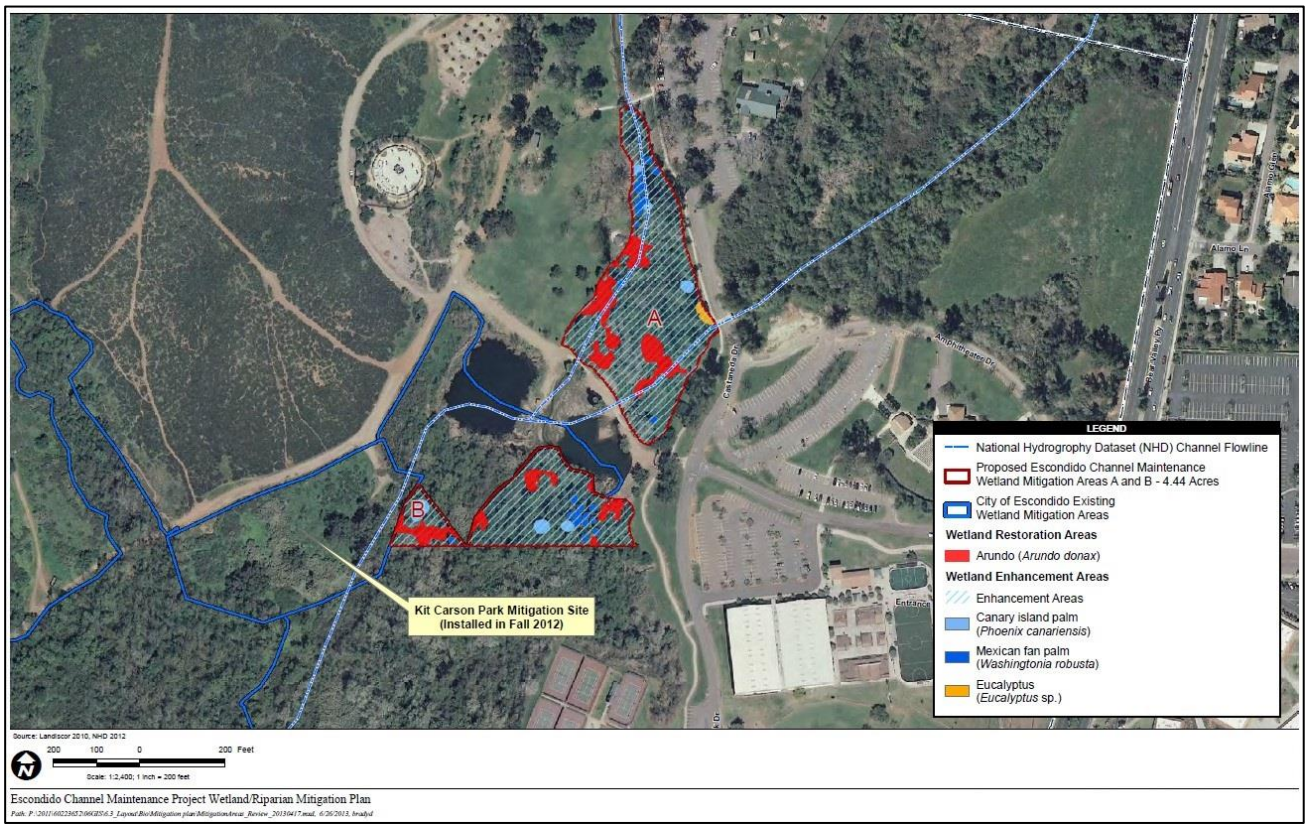

Figure 4-3
Highlights of Escondido Strategies

Table 4-3
Summary of Strategies for the San Dieguito River Watershed Management Area—City of Escondido

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
Participated in the San Diego Regional Reference Streams and Beaches Study (see Section 3.2 for study details).	X	X	X	X	X	X	X
Participated in the San Dieguito River WMA Bacteria Source Identification and Prioritization Process Special Study (see Section 3.2 for study details).	X	X	X	X	X	X	X
The City conducted a City-wide hydraulic study to identify potential retrofit projects that could be used in an alternative compliance program.	X	X	X	X	X	X	X

1. Highest priority water quality condition is highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

WMA = watershed management area

4.1.3 City of Poway

During FY 16, Poway implemented the strategies described in the WQIP. Highlights of strategies implemented by Poway to address bacteria are shown in Table 4-4. The full list of strategies implemented is in Appendix D.

Table 4-4
Summary of Strategies for the San Dieguito River Watershed Management Area—City of Poway

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
Required implementation of low-impact development (LID) best management practices (BMPs) with all new construction.	X	X	X	X	X	X	X
Promoted Metropolitan Water District of Southern California (MWD) and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	X	X	X	X	X	X	X
Proactively repaired and replaced corrugated metal pipe municipal separate storm sewer system (MS4) components to provide source control from MS4 infrastructure.	X	X	X		X		
Targeted human behavior in parks and other public areas, including trash reduction or other high-impact behaviors that affect habitat, wildlife, and water quality.	X	X		X			X
Participated in the San Diego Regional Reference Streams and Beaches Study (see Section 3.2 for study details).	X	X			X		
Reconfigured the Department of Public Works (DPW) waste yard to reduce pollutants/runoff.	X		X	X			X

1. Highest priority water quality condition is highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

4.1.4 City of San Diego

During FY 16, City of San Diego implemented the strategies described in the WQIP. Highlights of strategies implemented by City of San Diego are described below. The full list of strategies implemented is in Appendix D. Additional strategies being implemented are listed in Table 4-5.

- **Special Study (New in FY16):** The City of San Diego and other Responsible Agencies in the WMA completed the San Dieguito River WMA Bacteria Source Identification and Prioritization Special Study to assess sources of bacteria in the watershed. The study allowed the Responsible Agencies to prioritize potential sources of bacteria in unique focus areas using existing monitoring and geospatial data. In addition, the study may be used by the Responsible Agencies to tailor and modify strategies in these focus areas.

- **Hodges Reservoir Efforts (New in FY16):** The City of San Diego's Public Utilities Department secured $2.9 million in Proposition 84 funding for the Lake Hodges Natural Treatment System Project. This project is designed to create a biofiltration wetland at Hodges Reservoir to improve water quality. The wetland will also provide habitat and species conservation benefits, in addition to recreational opportunities.

  Also, the City of San Diego's Public Utilities Department and other Responsible Agencies completed the Lake Hodges Nutrients Evaluation Tech Memo, which summarizes the results of an analysis of receiving water and MS4 data collected. Because the analysis was inconclusive, the Responsible Agencies have begun developing a conceptual model of nutrient sources in the subwatershed surrounding Hodges Reservoir, and a Study Plan, Monitoring Plan, and Quality Assurance and Project Plan (QAPP) for the Hodges Reservoir Nutrient Source Study. When implemented, the study will be able to quantify the Responsible Agencies' nutrients load in the Above Lake Hodges subwatershed to better inform their water quality strategies.

- **Structural Strategies:** 0.8 acre of drainage area was treated by green infrastructure features, and approximately 9.86 additional acres are expected to be treated by FY 18 in the WMA.

Table 4-5
Summary of Strategies for the San Dieguito River Watershed Management Area—City of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
Storm Drain Structure Cleaning: 2,438 storm drain structure inspections were conducted, resulting in the cleaning of 286 structures and removal of 125.2 tons of debris in the WMA.	X		X	X	X		
New in FY 16: Catch Basin Cleaning Optimization: In an effort to further optimize its drain cleaning program, the City of San Diego (City) analyzed eight years of catch basin cleaning data and assigned priorities to individual basins based on historical debris removal. This enhancement will allow the City to target high priority drains to maximize pollutant removal while maintaining cost efficiencies.	X		X	X	X		
Street Sweeping: Approximately 2,878 curb miles of roads, streets, highways, medians, parking lots, and operations yards were swept in the WMA.	X	X	X	X	X		
New in FY 16: Median Sweeping: 4,315 median miles were swept citywide.	X	X	X	X	X		
New in FY 16: Targeted Aggressive Street Sweeping Pilot: The City completed a pilot study that quantified the effectiveness of posting limited-hour "no parking" signs on typically nonposted routes. The study found that posting routes resulted in an approximate 50% increase in pollutant removal because the sweeper had more access to curbs and gutters. Based on this finding, the City will consider posting additional routes if supported by the community.	X	X	X	X	X		
New in FY 16: MS4 Maintenance: In addition to routine maintenance of the MS4, the City repaired or replaced 12 pump stations and modernized another 14 pump stations, CCTV surveyed 28,000 linear feet of pipe in 62 locations citywide, and began the development of the Waterways Maintenance Plan and Channel **Maintenance Prioritization Plan**. To help minimize the risk of flooding in a flood-prone drainage area, the City also installed a 2,400-volt automatic transfer switch and generator to a 130,000 gallon-per-minute pump station, allowing for sustained function in the event of a power outage.	X		X	X	X		

Table 4-5 (continued)
Summary of Strategies for the San Dieguito River Watershed Management Area—City of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
IDDE Program: 119 discharges were reported by the public, 171 cases were investigated, 140 discharges or illicit connections were eliminated, 141 enforcement actions were issued, and 69 escalated enforcement actions were issued in the WMA. **New in FY 16: Launch of the Get It Done App**: This app allows illicit discharges to be reported quickly via any smartphone. Lastly, the Tiger Team (a proactive escalated monitoring and enforcement team that involves multiple City departments and divisions) was developed to identify, locate, and eliminate sources of human specific bacteria in the MS4. Over several months during the reporting year, one problem area within the City was investigated extensively and a source of human-specific bacteria in the MS4 was identified and abated.	X	X	X	X	X	X	X
Commercial and Industrial Business Inspections: 314 inspections were completed, 14 follow-up inspections were completed, 49 violations were issued, 58 enforcement actions were issued, and 23 escalated enforcement actions were issued in the WMA. In addition, the City conducted property-based inspections that focus on common areas/activities shared among multiple businesses or tenants that generate pollution. A previously conducted pilot study on inspection practices found property-based inspections to be more effective in identifying and resolving water quality issues (e.g., improper trash disposal practices and irrigation runoff, etc.) associated with commercial and industrial businesses.	X	X	X	X	X	X	X
Trash Clean Ups: 4 cleanup events were sponsored through community-based organizations and 24,674 pounds of trash and debris were collected in the WMA (see Appendix D for a list of specific projects).				X			
Rebates to Reduce Irrigation Runoff: Rebates were issued to convert 61,032 square feet of turf in the WMA and rebates for rain barrels were issued to capture 772,740 gallons of rainwater citywide.	X	X	X	X	X	X	X

Table 4-5 (continued)
Summary of Strategies for the San Dieguito River Watershed Management Area—City of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
New in FY 16: Offsite Alternative Compliance Program: The City implemented Phase I of the Alternative Compliance Program to give development projects that would require onsite structural BMPs the ability to propose offsite alternative compliance projects. The development of Phase II was also initiated and will include the establishment of an in-lieu fee structure and credit system.	X	X	X	X	X	X	X
New in FY 16: Bacteria Regrowth Study: The City completed a study to characterize the magnitude and extent of potential *Enterococcus* loading because of regrowth within the City's storm drain system. This study quantifies the amount of bacteria in receiving water samples that are harmless to humans and could potentially be used to refine bacteria water quality standards of the Bacteria TMDL as a part of the Reopener process.	X						

1. Highest priority water quality condition is highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

% = percent; BMP = best management practice; CCTV = closed-circuit television; FY = fiscal year; IDDE = illicit discharge detection and elimination; MS4 = municipal separate storm sewer system; TMDL = total maximum daily load; WMA = watershed management area

4.1.5 City of Solana Beach

During FY 16, Solana Beach implemented the strategies described in the WQIP. The full list of strategies implemented is in Appendix D.

The City of Solana Beach worked diligently during the reporting period to implement planned strategies to address the San Dieguito River WMA's HPWQC of indicator bacteria along with other associated pollutants. Many of these strategies were effective in identifying and managing potential sources of pollutants and will continue to be carried out during the next reporting period, as described in Figure 4-4. Additional strategies being implemented are listed in Table 4-6.

Progress Toward Numeric Goals

During FY 16, the City of Solana Beach completed both jurisdictional water quality improvement numeric goals ahead of schedule. Solana Beach installed a low-flow diverter at Seascape Sur (an identified persistently flowing outfall), diverting 2.5 million gallons of discharge since October 2014. Solana Beach also completed installation of curb cuts along Highway 101, which treats 8.62 acres of the drainage area.

Patrols to Eliminate Pollutant Sources

Solana Beach conducted patrols of the entire City, including all residential areas, commercial and industrial facilities, and treatment control BMPs. Solana Beach actively managed potential sources of pollutants, working directly with property owners to effectively address 18 issues of discharge. Solana Beach has deemed this approach to be effective in eliminating pollutant sources and will continue implementation during the next reporting period on a bimonthly basis.

Outfall Inspections

Solana Beach inspected all outfalls throughout the City, both minor and major, to identify any persistently flowing outfalls. Solana Beach has only one persistently flowing outfall, and will continue to inspect all outfalls on a bimonthly basis to identity any new sources of discharge that could contribute to bacteria pollution in receiving waters.

Prioritizing Sewer Line Replacement Projects

Solana Beach continued implementation of an aggressive sewer infrastructure replacement program and CCTV surveyed 20% of the sewer infrastructure during the reporting period. The results led to a prioritized list of sewer line replacement projects. Solana Beach invests approximately $500,000 in sewer replacement projects per year in an effort to reduce any seepage of bacteria from leaky sewer lines into groundwater or potentially the MS4.

Figure 4-4
Highlights of City of Solana Beach Strategies

Table 4-6
Summary of Strategies for the San Dieguito River Watershed Management Area—City of Solana Beach

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
Promoted and encouraged implementation of designated best management practices (BMPs) at residential areas.	X	X	X	X	X	X	X
Promoted and encouraged implementation of designated BMPs in commercial areas.	X	X	X	X	X	X	X
Continued participating in source reduction initiatives.	X			X			
Began program development and analysis for capturing trash and debris, to minimize its impact on receiving waters.	X			X	X		
Participated in the San Diego Regional Reference Streams and Beaches Study (see Section 3.2 for study details).	X						
Participated in the San Dieguito River Watershed Management Area (WMA) Bacteria Source Identification and Prioritization Process Special Study (see Section 3.2 for study details).	X						
Implemented other projects, including several green infrastructure, water quality improvement BMP, and dry weather flow separation and treatment projects (see Appendix D for a list of specific projects).	X	X	X	X	X	X	X

1. Highest priority water quality condition is highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

4.1.6 County of San Diego

During FY 16, County of San Diego (County) implemented the strategies described in the WQIP. Highlights of strategies implemented by the County of San Diego to address sediment, bacteria, and freshwater input are shown below. The full list of strategies implemented is in Appendix D.

- **Residential Area BMPs:** The County encourages BMPs in residential areas. All residential management areas were inspected in FY 16.
- **Water Conservation:** The County collaborates with and promotes the efforts of partner agencies for incentive programs such as rain barrels, water smart irrigation controllers, soil sensors, turf replacement programs, and residential landscape evaluation programs.
- **Green Streets:** The County developed green street retrofit design standards and specifications. Green streets are now being used to meet compliance for all retrofit and redeveloped road projects in the Capital Improvement Projects plan.
- **Public Education:** The County collaborates with the Regional Education Workgroup and Think Blue San Diego Region to develop and distribute educational materials.
- **Trash Generation Studies:** The County is collaborating with the Responsible Agencies to develop baseline trash generation rates.
- **Offsite Alternative Compliance:** The County supports applicant-implemented offsite alternative compliance. The Water Quality Equivalency provides the currency for structural BMPs and some natural system management practices.
- **Irrigation Runoff Prevention Study:** The County undertook a community-based social marketing pilot study on the effectiveness of irrigation runoff prevention materials.
- **Sustainable Landscapes:** The County is implementing a program to encourage landscape retrofits that replace water-intensive turf grass with landscaping that provides several environmental benefits.
- **Rain Barrel Incentives:** The County offers incentives for rain barrel installation by offering discounts on rain barrel purchases as well as rebates for rain barrel installation.

Additionally, the County recently undertook efforts to update its 2007 Low-Impact Development (LID) Handbook[2] to better align with the County's Standard Urban Storm Water Mitigation Plan (SUSMP) and Hydromodification Management Plan (HMP), and to reflect the most current data on LID approaches and their efficacy. For its distinguished efforts, the County was named the recipient of the 2015 Outstanding Innovation in Green Planning and Design Award by the San Diego Chapter of the California Association of Environmental Professionals (AEP), a non-profit organization established in 1974, and dedicated to enforcing and supporting the California Environmental Quality Act (CEQA). Additionally, the County of San Diego received a similar award in October 2016 for work done during the fiscal year on development of its Guidance on Green Infrastructure, a document outlining tools to uniformly design, install, and maintain LID features in the public right-of-way (Figure 4-5). Additional strategies being implemented are listed in Table 4-7.

Figure 4-5
LID Incorporated into a Roadway Median

Table 4-7
Summary of Strategies for the San Dieguito River Watershed Management Area—County of San Diego

Strategy	Multiple Benefits						
	Bacteria[1]	Nutrients	Metals	Trash	Sediment	Flow[2]	Habitat/Wildlife
Began implementing the Sustainable Landscapes Program to encourage landscape retrofits.	X	X	X		X	X	X
Began implementing an incentive program for best management practice (BMP) retrofits (Public-Private Partnerships – a County-sponsored program to offer incentives for rain barrel installation, downspout disconnects from the storm water system, etc.).	X	X	X	X	X	X	

1. Highest priority water quality condition is highlighted in orange.
2. Flow is defined as storm water and non-storm water discharges to receiving waters.

[2] http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html

4.1.7 Optional WMA Strategies

In addition to implementing strategies on a jurisdictional basis, Responsible Agencies are collaboratively implementing projects within the WMA that improve water quality, as described in Table 4-8.

Table 4-8
Optional WMA Strategies

WMA Strategy	Implementation Status Update
WMA-4: Collaborative Approach to Irrigation Reduction	Responsible Agencies collaborated with water agencies to continue to implementing turf replacement and rain barrel rebate programs. Additionally, various Responsible Agencies implemented reduction programs to help achieve the State-mandated reduction in water consumption.
WMA-6: Offsite Alternative Compliance Option (Watershed Management Area Analysis [WMAA])	Responsible Agencies implemented Phase I of the Alternative Compliance Program to give development projects that would require onsite structural best management practices (BMPs) the ability to propose offsite alternative compliance projects.
WMA-7: Collaboration with the Regional Board	Collaborated with the Regional Board to include non-Phase I municipal separate storm sewer systems (MS4s) in general permits, waivers, and Waste Discharge Requirements (WDRs).
WMA-14: Participation as a Stakeholder in the San Diego Integrated Regional Water Management (IRWM) Program as Appropriate	Hodges Reservoir Natural Treatment System was awarded $2.9 million in grant funding. This project will create a biofiltration wetland at Hodges Reservoir to improve water quality. The wetland also will provide habitat and species conservation benefits, in addition to recreational opportunities. – More information on IRWM efforts is available at http://www.sdcwa.org/more-31-million-awarded-water-projects-san-diego-region#sthash.5sYifWjP.dpuf.

4.2 Calculating Baseline Values for Assessment of Progress Toward Achieving Numeric Goals

Section 4 of the San Dieguito River WMA WQIP included several placeholders for baseline values to help Responsible Agencies determine progress in achieving numeric goals. These baseline values were calculated for this annual report and are summarized in Table 4-9.

Table 4-9
Baseline Values for Numeric Goals for Pacific Ocean Shoreline Recreation (Bacteria)

Compliance Pathway	Metric	Agency	Baseline
Wet Weather Bacteria			
MS4 Discharges % Days Exceeding WQO	Fecal coliform	All Responsible Agencies	98%[1]
	Enterococcus		100% [1]
	Total coliform		100% [1]
# of Direct or Indirect MS4 Discharges[2] to Receiving Water	Discharges[2]	City of Del Mar	6 discharges[2]
		City of Escondido	3 discharges[2]
		City of Poway	15 discharges[2]
		City of San Diego	42 discharges[2]
		City of Solana Beach	3 discharges[2]
		County of San Diego	20 discharges[2]
Reduce anthropogenic surface dry weather flows to address bacteria regrowth contributing during wet weather		City of Del Mar	Average Annual Flow: 0.81 gallons per minute Maximum Flow: 1.5 gallons per minute
Design and install diverters at high priority outfalls to treat first flush and low flows		City of Solana Beach	0 acres of low flow diverted to the sanitary sewer
Design and construct curb cuts to redirect water from traditional drainage areas to permeable surfaces		City of Solana Beach	0 acres of drainage area treated

Table 4-9 (continued)
Baseline Values for Numeric Goals for Pacific Ocean Shoreline Recreation (Bacteria)

Compliance Pathway	Metric	Agency	Baseline
Dry Weather Bacteria			
MS4 Discharges % Days Exceeding WQO	Fecal coliform	City of Del Mar	82%[3]
	Enterococcus	City of San Diego	100% [3]
	Total coliform	City of Solana Beach	100% [3]
# of Direct or Indirect MS4 Discharges[4] to Receiving Water	Discharges[4]	City of Del Mar	6 discharges[4]
		City of San Diego	42 discharges[4]
		City of Solana Beach	3 discharges[4]
Reduce anthropogenic surface dry weather flows		City of Del Mar	Average Annual Flow: 0.81 gallons per minute Maximum Flow: 1.5 gallons per minute
Reduce anthropogenic dry weather flow in priority drainage area with persistent flow by performing special strategies, including property-based inspections for residents and commercial areas		City of Escondido	Average Flow: 6.2 gallons per minute Maximum Flow: 37 gallons per minute
Turf conversion		City of Poway	0 square feet of turf converted
Implement runoff reduction programs such as education and outreach, enhanced inspections, rebates, and increased enforcement		City of San Diego	Average Annual Flow[5]: 38.6 gallons per minute Maximum Flow[5]: 224.4 gallons per minute
Design and install diverters at high priority outfalls to treat first flush and low flows		City of Solana Beach	0 acres of low flow diverted to the sanitary sewer
Design and construct curb cuts to redirect water from traditional drainage areas to permeable surfaces		City of Solana Beach	0 acres of drainage area treated

Table 4-9 (continued)
Baseline Values for Numeric Goals for Pacific Ocean Shoreline Recreation (Bacteria)

Compliance Pathway	Metric	Agency	Baseline
Dry Weather Bacteria			
MS4 Discharges % Days Exceeding WQO	Fecal coliform	County of San Diego	82%[2]
	Enterococcus	County of San Diego	100% [2]
	Total coliform	County of San Diego	100% [2]
# Direct or Indirect MS4 Discharges[2] to Receiving Water	Discharges[2]	County of San Diego	20 discharges[5]
Eliminate anthropogenic dry weather flows from storm drain outfalls either by aggregate flow volume or the number of persistently flowing outfalls during dry weather		County of San Diego	10 of 20 major MS4 outfalls have persistent dry weather flows; average flow rate as measured with continuous flow monitoring equipment = 8.614 gallons per minute

1. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008, through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.
2. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008, through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the fifth sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Calculated using historical dry weather MS4 outfall data from 2009–2012.

% = percent; MS4 = municipal separate storm sewer system; WQO = water quality objective; # = number

4.3 Progress Toward Achieving Goals for the San Dieguito River WMA

As discussed in Section 2, interim and final numeric goals were established for the watershed as a means of measuring reasonable progress toward addressing the HPWQC; the goals are included in Appendix B. Performance-based goals are included to measure short-term jurisdictional progress toward achieving these goals, given that sustained water quality improvement is typically demonstrated over a longer timeframe. Performance-based goals are intended to measure an outcome from a strategy or suite of strategies, and to provide an interim link to demonstrate reasonable incremental progress in the quality of MS4 discharges and receiving waters by FY 18. The strategies or suite of strategies presented have been selected as goals because they are measurable and provide a direct water quality benefit in the near term. Table 4-10 summarizes progress in FY 16 toward meeting these performance-based goals.

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Table 4-10
Progress Toward Performance-Based Goals to Address Pacific Ocean Shoreline Recreation (Bacteria)

Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY18 Goal	Progress
City of Del Mar	Reduce anthropogenic surface dry weather water flows	Dry	Average Annual Flow: 0.81 gallon per minute Maximum Flow: 1.5 gallons per minute	Reduce anthropogenic surface dry weather flows[5] that originate within Del Mar's jurisdictional boundaries by 10%	Achieved to date. Average dry weather flow in FY 16 was 0.3 gallon per minute, representing an 80% reduction from the baseline average flow.
City of Escondido	Implement and maintain water quality improvement BMPs to target fecal coliform, *Enterococcus*, total coliform, sediment, and nutrients	Wet	N/A	Treat 4 acres of drainage area through restoration of 1 sediment detention basin in a multiuse treatment area at Eagle Scout (formerly Sand) Lake, Kit Carson Park	Achieved. Project implemented in January 2014. Observational monitoring and minor maintenance conducted in FY 16.
	Reduce anthropogenic dry weather flow in priority drainage area with persistent flow by performing special strategies, including property-based inspections for residents and commercial areas	Dry	Average Flow: 6.2 gallons per minute Maximum Flow: 37 gallons per minute	Reduce anthropogenic dry weather flow at one priority outfall (HDG_102)by 10%	In progress. Performed study to determine baseline flow.

Table 4-10 (continued)
Progress Toward Performance-Based Goals to Address Pacific Ocean Shoreline Recreation (Bacteria)

Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY18 Goal	Progress
City of Poway	Implement turf conversion	Dry	0 square feet of turf converted	Increase the baseline through turf conversion rate by 5%	In progress. There were no turf conversion projects in the WMA in FY 16.
City of San Diego	Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	Wet and Dry	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	Treat 10.6 acres of drainage area through construction of 2 green infrastructure BMPs[2]	In progress. The City has begun the process for developing a green infrastructure policy. The City implemented green infrastructure that treats 0.8 acre of drainage area (Del Mar Heights Rd Median) and is expected to exceed the performance-based goal by implementing additional projects that treat 9.86 acres of drainage area (Callado Road Green Street) for a total of 10.66 acres treated by 2018.

Table 4-10 (continued)
Progress Toward Performance-Based Goals to Address Pacific Ocean Shoreline Recreation (Bacteria)

Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY18 Goal	Progress
City of San Diego (continued)	Implement runoff reduction programs, including targeted education and outreach, enhanced inspections, rebates, and increased enforcement	Dry	Average Dry Weather Flow[1]: 38.6 gallons per minute Maximum Dry Weather Flow[1]: 224.4 gallons per minute	Reduce prohibited dry weather flow from baseline measured at persistently flowing outfalls in the WMA by 10%	Achieved to date: Average dry weather flow in FY 16 was 13.8 gallons per minute, representing a 64.2% reduction from the baseline average flow.
City of Solana Beach	Design and install diverters at high priority outfalls to treat first flush and low flows	Wet and Dry	0 acres of low flow diverted to the sanitary sewer	Direct 40.5 acres of low flows to the sanitary sewer through construction of one diverter at high priority outfall Seascape Sur	Achieved. Since installation in October 2014, 2.5 million gallons of water have been diverted to the sanitary sewer. Diverter diverts low flows as well as first flushes.
	Design and construct curb cuts to redirect water from traditional drainage areas to permeable surfaces	Wet and Dry	0 acres of drainage area treated	Treat 8 acres of drainage area through curb cuts along Highway 101	Achieved. 8.627 acres of drainage area treated through Highway 101 project.

Table 4-10 (continued)
Progress Toward Performance-Based Goals to Address Pacific Ocean Shoreline Recreation (Bacteria)

Agency	Performance-Based Goal	Weather (Wet/Dry)	Baseline	FY18 Goal	Progress
County of San Diego	Reduce baseline bacteria loads from storm drain outfalls to receiving water	Wet	*Enterococcus* Load for MS4-SDC-6 = $1.25E+10^{13}$ MPN/year	Reduce bacteria load from the MS4 by 1%	In progress. Currently $3.38E+10^{14}$(3)
	Eliminate anthropogenic dry weather flows from storm drain outfalls either by aggregate flow volume or the number of persistently flowing outfalls during dry weather	Dry	50% of major outfalls have persistent dry weather flows; average flow rate as measured at outfalls with continuous flow monitoring equipment is 8.614 gallons per minute	Reduce by 20%	In progress. Baseline was established during 2015–2016 monitoring year.

1. Calculated using historical dry weather MS4 outfall data from 2009-2012. Calculations are described in Appendix D.
2. Taken from Table 5-29 of the Transitional Monitoring and Assessment Program Report for the San Dieguito River Watershed Management Area (2012-2014) (San Dieguito River WMA Copermittees, 2015)
3. The total flow volume during the 2015-2016 monitoring year was approximately 2 times larger than total flow during the baseline year. This may contribute to an increased annual load at MS4-SDC-6.

% = percent; BMP = best management practice; FY = fiscal year; MPN = most probable number; MS4 = municipal separate storm sewer system; N/A = not applicable; TMDL = total maximum daily load; WMA = Watershed Management Area

5 Adaptive Management

This section summarizes the potential triggers for adaptation of the WQIP and the results of the MS4 Permit adaptive management process for the San Dieguito River WMA during the first year of implementation. The adaptive management approach uses an iterative approach to re-evaluate major components of the WQIP, based on the requirements of the MS4 Permit. It details how the Responsible Agencies use new data and information to improve the WQIP through updates to priorities, assessments of and adjustments to goals, updates to strategies to meet the latest goals, and updates to the monitoring and assessment program to provide the necessary data to support the process. Responsible Agencies are continually evaluating and assessing the implementation of the WQIP and making minimal modifications to streamline and optimize execution outside the MS4 Permit adaptive management process.

The MS4 Permit describes various triggers that may warrant program adaptation, including exceedances of water quality standards in receiving waters, new information, Regional Board recommendations, and input from the public. Effectiveness assessments of JRMP programs and strategies may also trigger adaptations to the WQIP.

The adaptive management process is used in conjunction with water quality and program data to evaluate whether modifications to numeric goals, schedules, and/or strategies are necessary to achieve compliance with the interim and final compliance numeric goals. MS4 Permit adaptive management triggers are typically implemented either annually or at the end of the MS4 Permit term.

5.1 Potential Triggers for Adaptation

The adaptive management process may be triggered when new information becomes available. New information to be considered includes results of routine monitoring and special studies, new regulatory drivers, results of program effectiveness assessments and progress toward numeric goals, and recommendations from the public and/or Regional Board. Modifications may be made to the PWQCs, goals, strategies, schedules, and/or the Monitoring and Assessment Program (Appendix E). The potential triggers for adaptation to be considered annually in the Annual Report are summarized in Table 5-1.

Table 5-1
Triggers for Adaptive Management Within the WQIP

Trigger[1]	Frequency for Assessment	Potential Area(s) for Adaptation			
		Priority Water Quality Conditions	Goals and Schedules	Strategies and Schedules	Monitoring and Assessment
Exceedances of Non-Storm Water Action Levels or Storm Water Action Levels	Annual			X	X
Special Studies Results	Annual, as results are available		X	X	X
New Regulatory Actions	Annual, as applicable	X	X	X	X
Regional Board Recommendations	Annual, as applicable	X	X	X	X
Program Effectiveness Assessments/ Progress Toward Goals	Annual			X	X

1. The trigger related to the review of receiving water limitations exceedances will now be assessed on a permit term basis in the Regional Monitoring and Assessment Report. Section 6.2 and Appendix E provide more detail.

5.2 WQIP Elements for Adaptation

The San Dieguito River WMA WQIP was approved by the Regional Board in February 2016. The Responsible Agencies have just begun to implement the WQIP strategies. Therefore, there have been no adaptations made to the PWQCs, goals, strategies, or schedules, as summarized in Table 5-2. There have been changes to timing of the receiving water limitation exceedance assessment put forth by Provision A.4 and administrative changes to the City of San Diego's strategies. These changes are summarized in Table 5-2 and additional information is provided in Appendix E.

Table 5-2
2015–2016 WQIP Annual Report Adaptations

Elements for Adaptation	2015–2016 Annual Report Adaptation
Priority Water Quality Conditions	There are no adaptations at to the priority water quality conditions at this time. No new regulations, policies, or recommendations from the Regional Board have triggered adaption of this WQIP Element.
Goals and Schedules	The Responsible Agencies are on track to meet their 2018 WQIP goals and do not plan any adaptations to their goals or the related schedules at this time.
Strategies and Schedules	The Responsible Agencies have just begun implementation of their WQIP strategies that have pollutant reduction benefits. They plan to continue implementing the strategies without modification to realize the rewards of these pollutant reduction benefits. Escondido's JRMP is being updated and re-submitted concurrent with this WQIP Annual Report. The changes to the JRMP are mostly related to changes in the final approved WQIP for the Carlsbad Watershed Management Area. In the process of reviewing the JRMP for resubmittal, several clarifications, corrections, and updates were made, but no notable changes were made to strategies presented in this WQIP. A summary table of the changes is included in Appendix D. The City of San Diego has identified some administrative changes that are reflected in Appendix D and some operational adaptive management efforts in it JRMP included in Appendix D.
Monitoring and Assessment	The adaptive management process was to review receiving water limitation exceedances once per permit term, as allowed by the MS4 Permit, and not annually, as outlined in the WQIP.

JRMP = Jurisdictional Runoff Management Program; WQIP = Water Quality Improvement Plan

5.3 Summary of Previous Adaptation and Implementation

The 2015–2016 San Dieguito River WMA WQIP Annual Report is the first annual report submitted by the Responsible Agencies. No prior adaptations or updates to either the WQIP or each Responsible Agency's JRMP exist.

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6 Conclusions and Recommendations

The Responsbile Agencies have successfully implemented the 2015–2016 program set forth in the WQIP. Progress toward performance-based goals has been achieved. Wet and dry weather water quality monitoring provided an initial data set for assessing and adapting goals and strategies. The conclusions described below highlight the success of the WQIP.

Monitoring and Assessment: The Responsible Agencies successfully completed wet and dry weather MS4 outfall monitoring in 2015–2016 in accordance with Provision D of the MS4 Permit. Monitoring was also conducted for the HPWQC. The monitoring program and results for 2015–2016 are described in Section 3 and Appendix C. Monitoring and assessment highlights include:

- Monitoring for the HPWQC: The first year of Bacteria TMDL monitoring at the at the historical San Diego County AB 411 monitoring location at the mouth of the San Dieguito Lagoon (EH-380) was completed for wet and dry weather. Results are as follows:
  - During wet weather, the receiving waters at the San Dieguito Lagoon Mouth achieved 0% single-sample maximum exceedance frequencies for total coliform and fecal coliform. The single-sample maximum for *Enterococcus* was 13.6%. EH-380 is in compliance with interim and final wet weather single-sample maximum RWLs for all three compliance constituents.
  - During the wet season, which evaluates a combination of both wet and dry weather samples, EH-380 achieved a 0% geometric mean exceedance frequency for all compliance constituents and is in compliance with interim and final dry weather geometric mean RWLs.
  - During the dry season, when recreational activities occur with more regularity, EH-380 achieved a 0% exceedance frequency for all three compliance constituents, and is in compliance with interim and final dry weather geometric mean RWLs.
- MS4 Monitoring: Data collected as part of the MS4 monitoring program were compared to the permit action levels as detailed below:
  - In dry weather, the non-storm water action levels were met over 75% of the time for multiple consituents.
  - In wet weather, the storm water action levels were met over 90% of the time for all consituents except total copper, nitrate + nitrite, and bacteria indicators.
- Special Studies: The San Diego Regional Reference Streams and Beaches Study provided valuable information for the Bacteria TMDL Reopener. The San Dieguito River WMA Bacteria Identification and Prioritization Process Special Study provides a framework for the Responsible Agencies to review bacteria sources at MS4 outfalls where WQBEL exceedances occur without implementing costly source

identification studies. Each Responsible Agency now has a detailed list of sources to investigate if further exceedances are found at the focus area outfalls.

- Hodges Reservoir: The Responsible Agencies are coordinating with the City of San Diego's Public Utilities Department to develop a study plan and associated monitoring plans for the Hodges Reservoir Nutrient Source Study. The goal of this study is to characterize all the sources of nutrients in the Hodges Reservoir and watershed draining to the Hodges Reservoir. The study will include development of a comprehensive conceptual model to guide any future monitoring efforts to fill known data gaps.

Strategy Implementation: Strategies have been implemented as planned in the WQIP during 2015–2016. Strategies for the HPWQC are described in Section 4. The following examples highlight efforts by the Responsbile Agencies to improve water quality:

- City of Del Mar: The City of Del Mar proactively implemented its City-wide patrol approach to identify issues or potential issues and ensure proper BMP implementation. The City of Del Mar also operated two pumps to divert storm runoff to the sanitary sewer during the first 30 minutes of a wet weather event.
- City of Escondido: The City of Escondido implemented the mitigation plan for the Regional General Permit 94 for channel maintenance throughout the city. The 4.44-acre project in Kit Carson Park removed 67 exotic trees and invasive vegetation, planted 742 native riparian container trees, and applied 22 pounds of cottonwood-willow woodland seed mix.
- City of Poway: The City of Poway now requires the implementation of LID BMPs with all new construction within the City. They also have proactively repaired and replaced corrugated metal pipe MS4 components to provide source control from MS4 infrastructure.
- City of San Diego: The City of San Diego has substantially increased its enforcement activities to reduce irrigation runoff. It launched the Get It Done App which allows illicit discharges to be reported quickly and accurately via any smartphone. In addition, the Tiger Team (a proactive escalated monitoring and enforcement team that involves multiple City departments and divisions) was developed to identify, locate, and eliminate sources of human specific bacteria in the MS4. To help address nutrients in the Hodges Reservoir, the City of San Diego's Public Utilities Department secured $2.9 million in Proposition 84 funding for the Lake Hodges Natural Treatment System Project. This project is designed to create a biofiltration wetland at the Hodges Reservoir to improve water quality. The wetland will also provide habitat and species conservation benefits, in addition to recreational opportunities.
- City of Solana Beach: The City of Solana Beach implemented an aggressive sewer infrastructure replacement program. As part of this program, approximately 20% of the City's sewer infrastructure is surveyed during the reporting period using CCTV technology. The results led to a prioritized list of sewer line replacement projects.

Solana Beach invests approximately $500,000 in sewer replacement projects per year in an effort to reduce any seepage of bacteria from leaky sewer lines into groundwater or potentially the MS4.

- County of San Diego: The County of San Diego collaborates with and promotes the partner agencies' incentive programs such as rain barrels, water smart irrigation controllers, soil sensors, turf replacement programs, and residential landscape evaluation programs. The County also undertook a community-based social marketing pilot study on the effectiveness of irrigation runoff prevention materials.

Progress Toward Goals

The Responsible Agencies have either met, surpassed, demonstrated progress toward achieving, or have plans to achieve the performance-based goals for the current MS4 Permit term. Performance-based goals achieved include the following:

- BMPs have been installed and maintained in the City of Escondido, City of San Diego, City of Solana Beach, and County of San Diego, reducing or preventing pollutants from entering receiving waters.
- Dry weather flow reduction goals have been surpassed in the City of Del Mar and the City of San Diego.
- The County of San Diego established the baseline number of persistently flowing major outfalls and has established the baseline flow of these outfalls.

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7 References

San Diego Regional Water Quality Control Board. 2010. *Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, Resolution No. R9-2010-0001.

San Dieguito River WMA Copermittees. 2015. *Transitional Monitoring and Assessment Program Report for the San Dieguito River Watershed Management Area (2012-2014)*. Developed by Weston Solutions. January.

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San Dieguito River WMA Responsible Agencies. 2015. *San Dieguito River WMA Water Quality Improvement Plan.* Developed by Amec Foster Wheeler Environment and Infrastructure, Inc. September.

Southern California Coastal Water Research Project (SCCWRP), 2015. *Wet and Dry Weather Natural Background Concentrations of Fecal Indicator Bacteria in San Diego, Orange, and Ventura County, California Streams.* SCCWRP Technical Report 862. June 2015.

Southern California Coastal Water Research Project (SCCWRP), 2016. *Microbiological Water Quality at Reference Beaches and an Adjoining Estuary in Southern California during a Prolonged Drought.* SCCWRP Technical Report 936. July 2016.

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Appendix A: Crosswalk of MS4 Permit Requirements and Annual Report References

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Table A-1
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP Annual Report Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
Provision A						
A.4.a.(2)	If ***exceedance(s) of water quality standards persist in receiving waters*** notwithstanding implementation of this Order, the Copermittees must comply with the following procedures: (2) Upon a **determination** by either the Copermittees or the San Diego Water Board that discharges from the MS4 are **causing or contributing to a new exceedance** of an applicable water quality standard **not addressed** by the Water Quality Improvement Plan, the Copermittees must submit the following updates to the Water Quality Improvement Plan pursuant to Provision F.2.c ***or as part of the Water Quality Improvement Plan Annual Report*** required under Provision F.3.b, unless the San Diego Water Board directs an earlier submittal:	Section 5		X		X
	(a) The water quality improvement ***strategies being implemented that are effective and will continue to be implemented***,	Section 5.2			X	
	(b) ***Water quality improvement strategies (i.e. BMPs, retrofitting projects, stream and/or habitat rehabilitation projects, adjustments to jurisdictional runoff management programs, etc.) that will be implemented*** to reduce or eliminate any pollutants or conditions that are causing or contributing to the exceedance of water quality standards,	Section 5.2				X
	(c) ***Updates to the schedule for implementation*** of the existing and additional water quality improvement strategies, and	Section 5.2				X
	(d) ***Updates to the monitoring and assessment program*** to track progress toward achieving compliance with Provisions A.1.a, A.1.c and A.2.a of this Order;	Section 5.2				X
Provision B						
B.5.a.	a. The **priority water quality conditions** and potential **water quality improvement strategie**s included in the Water Quality Improvement Plan pursuant to Provisions B.2.c and B.2.e ***may be re-evaluated by the Copermittees as needed during the term of this Order as part of the Water Quality Improvement Plan Annual Report***. Re-evaluation and recommendations for modifications to the priority water quality conditions and potential water quality improvement strategies **must be provided in the Report of Waste Discharge**, and must consider the following: (1) Achieving the outcome of improved water quality in MS4 discharges and receiving waters through implementation of the water quality improvement strategies identified in the Water Quality Improvement Plan; (2) New information developed when the requirements of Provisions B.2.a-c have been re-evaluated; (3) Spatial and temporal accuracy of monitoring data collected to inform prioritization of water quality conditions and implementation strategies to address the highest priority water quality conditions; (4) Availability of new information and data from sources other than the jurisdictional runoff management programs within the Watershed Management Area that informs the effectiveness of the actions implemented by the Copermittees; (5) San Diego Water Board recommendations; and (6) Recommendations for modifications solicited through a public participation process.	Section 5		X		X
B.5.b.	b. The water quality improvement goals, strategies and schedules, included in the Water Quality Improvement Plan pursuant to Provisions B.3, ***must be reevaluated and adapted as new information becomes available*** to result in more effective and efficient measures to address the highest priority water quality conditions identified pursuant to Provision B.2.c. ***Re-evaluation of and modifications to the water quality improvement goals, strategies and schedules must be provided in the Water Quality Improvement Plan Annual Report***, and must consider the following:	Section 5	X			X
	(1) Modifications to the **priority water quality conditions** based on Provision B.5.a;	Section 5				X
	(2) Progress toward **achieving interim and final numeric goals** in receiving waters and MS4 discharges for the highest priority water quality conditions in the Watershed Management Area,	Section 4.3				
	(3) Progress toward achieving outcomes according to established schedules;	Section 4.3				
	(4) New policies or regulations that may affect identified numeric goals;					X
	(5) Measurable or demonstrable reductions of non-storm water discharges to and from each Copermittee's MS4;			X		

Table A-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP Annual Report Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
	(6) Measurable or demonstrable reductions of pollutants in storm water discharges from each Copermittee's MS4 to the MEP;			X		
B.5.b. (continued)	(7) New information developed when the requirements of Provisions B.2.b and B.2.d have been re-evaluated;	Section 5		X		X
	(8) Efficiency in implementing the Water Quality Improvement Plan;	Section 5			X	X
	(9) San Diego Water Board recommendations; and	Section 5				X
	(10) Recommendations for modifications solicited through a public participation process.	Section 5				X
B.5.c.	c. The water quality improvement monitoring and assessment program, included in the Water Quality Improvement Plan pursuant to Provision B.4, ***must be reevaluated and adapted when new information becomes available***. Re-evaluation and recommendations for modifications to the monitoring and assessment program, pursuant to the requirements of Provision D, ***may be provided in the Water Quality Improvement Plan Annual Report***, but must be provided in the Report of Waste Discharge.	Section 5		X		X
Provision D						
D.1.e.(2)(c)	**Sediment Quality Monitoring** (c) The Copermittees must incorporate a ***Sediment Monitoring Report as part of the Water Quality Improvement Plan Annual Report*** in accordance with the schedule contained in the Sediment Monitoring Plan, unless otherwise directed in writing by the San Diego Water Board Executive Officer. The Sediment Monitoring Report must contain the following information: (i) Analysis: An evaluation, interpretation and tabulation of the water and sediment monitoring data, including interpretations and conclusions as to whether applicable Receiving Water Limitations in this Order have been attained at each sample station; (ii) Sample Location Map: The locations, type, and number of samples must be identified and shown on a site map; and (iii) California Environmental Data Exchange Network: A statement certifying that the monitoring data and results have been uploaded into the California Environmental Data Exchange Network (CEDEN).			X		
D.2.b.(iv)	**Dry Weather MS4 Outfall Discharge Monitoring** (iv) Each Copermittee must document ***removal or re-prioritization of the highest priority persistent flow MS4 outfall monitoring stations identified under Provision D.2.b.(2)(a) in the Water Quality Improvement Plan Annual Report***. Persistent flow MS4 outfall monitoring stations that have been removed must be replaced with the next highest prioritized major MS4 outfall in the Watershed Management Area within its jurisdiction, unless there are no remaining qualifying major MS4 outfalls within the Copermittee's jurisdiction in the Watershed Management Area.			X		
D.4.b.(1)(a)(ii)	**Non-Storm Water Dischargers Reduction Assessments** (a) Each Copermittee must assess and report the ***progress of its illicit discharge detection and elimination program***, required to be implemented pursuant to Provision E.2, toward effectively prohibiting non-storm water and illicit discharges into the MS4 within its jurisdiction as follows: (ii) Based on the data collected pursuant to Provisions D.2.b, the ***assessments required under Provision D.4.b.(1)(c) must be included in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3).***			X		
D.4.b.(1)(b)	(b) Based on the transitional dry weather MS4 outfall discharge field screening monitoring required pursuant to Provision D.2.a.(2), each Copermittee must assess and report the following: (i) Identify the known and suspected controllable sources (e.g. facilities, areas, land uses, pollutant generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area; (ii) Identify sources of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area that have been reduced or eliminated; and (iii) Identify modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.			X		X

Table A-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP Annual Report Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
D.4.b.(1)(c)	(c) Based on the **dry weather MS4 outfall discharge field screening monitoring** required pursuant to Provision D.2.b.(1), each Copermittee must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(1)(b); (ii) Based on the data collected and applicable NALs in the Water Quality Improvement Plan, rank the MS4 outfalls in the Copermittee's jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action to update the Water Quality Improvement Plan, with the goal of eliminating persistent flow non-storm water discharges and/or pollutant loads in order of the ranked priority list through targeted programmatic actions and source investigations; (iii) For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identify the known and suspected sources within the Copermittee's jurisdiction in the Watershed Management Area that may cause or contribute to the NAL exceedances; (iv) Each Copermittee must analyze the data collected pursuant to Provision D.2.b, and utilize a model or other method, to calculate or estimate the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually. [a] Each Copermittee must calculate or estimate the annual non-storm water volumes and pollutant loads collectively discharged from the Copermittee's major MS4 outfalls to receiving waters within the Copermittee's jurisdiction, with an estimate of the percent contribution from each known source for each MS4 outfall; [b] Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters.			X		
	(v) Each Copermittee must review the data collected pursuant to Provision D.2.b and findings from the assessments required pursuant to Provision D.4.b.(1)(c)(i)-(iv) at least once during the term of this Order to: [a] Identify reductions and progress in achieving reductions in non-storm water and illicit discharges to the Copermittee's MS4 in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction, with an estimate, if possible, of the non-storm water volume and/or pollutant load reductions attributable to specific water quality strategies implemented by the Copermittee; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittee in the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction. (vi) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(1)(c)(i)-(v).			X		
D.4.b.(2)(a)	**Storm Water Pollutant Discharge Reduction Assessments** (a) The Copermittees must assess and report the ***progress of the water quality improvement strategies, required to be implemented pursuant to Provisions B and E, toward reducing pollutants in storm water discharges*** from the MS4s within the Watershed Management Area as follows: (ii) Based on the data collected pursuant to Provisions D.2.c, the ***assessments required under Provision D.4.b.(2)(c) must be included in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).			X		

Table A-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP Annual Report Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
D.4.b.(2)(b)	(b) Based on the transitional wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.a.(3) the Copermittees must assess and report the following: (i) The Copermittees must analyze the monitoring data collected pursuant to Provision D.2.a.(3), and utilize a watershed model or other method, to calculate or estimate the following for each monitoring year: [a] The average storm water runoff coefficient for each land use type within the Watershed Management Area; [b] The volume of storm water and pollutant loads discharged from each of the Copermittee's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch; [c] The total flow volume and pollutant loadings discharged from the Copermittee's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and [d] The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch.(ii) Identify modifications to the wet weather MS4 outfall discharge monitoring locations and frequencies necessary to identify pollutants in storm water discharges from the MS4s in the Watershed Management Area pursuant to Provision D.2.c.(1).			X		
D.4.b.(2)(c)	(c) Based on the wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.c the Copermittees must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(2)(b); (ii) Based on the data collected and applicable SALs in the Water Quality Improvement Plan, analyze and compare the monitoring data to the analyses and assumptions used to develop the Water Quality Improvement Plans, including strategies developed pursuant to Provision B.3, and evaluate whether those analyses and assumptions should be updated as a component of the adaptive management efforts pursuant to Provision B.5 for follow-up action to update the Water Quality Improvement Plan; (iii) The Copermittees must review the data collected pursuant to Provision D.2.c and findings from the assessments required pursuant to Provisions D.4.b.(2)(c)(i)-(ii) at least once during the term of this Order to: [a] Identify reductions or progress in achieving reductions in pollutant concentrations and/or pollutant loads from different land uses and/or drainage areas discharging from the Copermittees' MS4s in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters within the Watershed Management Area to the MEP, with an estimate, if possible, of the pollutant load reductions attributable to specific water quality strategies implemented by the Copermittees; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittees in the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters in the Watershed Management Area to the MEP. (iv) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(2)(c)(i)-(iii).			X		
D.4.c.	**Special Studies Assessments** c. The Copermittees must ***annually evaluate the results and findings from the special studies developed and implemented pursuant to Provision D.3***, and assess their relevance to the Copermittees' efforts to characterize receiving water conditions, understand sources of pollutants and/or stressors, and control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters in the Watershed Management Area. The Copermittees must ***report the results of the special studies assessments applicable to the Watershed Management Area, and identify any necessary modifications or updates to the Water Quality Improvement Plan based on the results in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).	Section 3.2		X		X
D.4.d.	Integrated Assessment of Water Quality Improvement Plan d. As part of the ***iterative approach and adaptive management process*** required for the Water Quality Improvement Plan pursuant to Provision B.5, the Copermittees in each Watershed Management Area must integrate the data collected pursuant to Provisions D.1-D.3, the findings from the assessments required pursuant to Provisions D.4.a-c, and information collected during the implementation of the jurisdictional runoff management programs required pursuant to Provision E to assess the effectiveness of, and identify necessary modifications to, the Water Quality Improvement Plan as follows:	Section 5.2		X		X

Table A-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP Annual Report Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
D.4.d.(1)	(1) The Copermittees ***must re-evaluate the priority water quality conditions and numeric goals for the Watershed Management Area, as needed, during the term of this Order pursuant to Provision B.5.a.*** The re-evaluation and recommendations for modifications to the priority water quality conditions, and/or numeric goals and corresponding schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The priority water quality conditions and numeric goals for the Watershed Management Area must be reevaluated as follows: (a) Re-evaluate the receiving water conditions in the Watershed Management Area in accordance with Provision B.2.a; (b) Re-evaluate the impacts on receiving waters in the Watershed Management Area from MS4 discharges in accordance with Provision B.2.b; (c) Re-evaluate the identification of MS4 sources of pollutants and/or stressors in accordance with Provision B.2.d; (d) Identify beneficial uses of the receiving waters that are protected in accordance with Provision D.4.a; (e) Evaluate the progress toward achieving the interim and final numeric goals for protecting impacted beneficial uses in the receiving waters.	Section 5.2		X		X
D.4.d.(2)	(2) The Copermittees ***must re-evaluate the water quality improvement strategies for the Watershed Management Area during the term of this Order pursuant to Provision B.5.b.*** The re-evaluation and recommendations for modifications to the water quality improvement strategies and schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The water quality improvement strategies for the Watershed Management Area must be re-evaluated as follows: (a) Identify the non-storm water and storm water pollutant loads from the Copermittees' MS4 outfalls in the Watershed Management Area, calculated or estimated pursuant to Provisions D.4.b; (b) Identify the non-storm water and storm water pollutant load reductions, or other improvements to receiving water or water quality conditions, that are necessary to attain the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters; (c) Identify the non-storm water and storm water pollutant load reductions, or other improvements to the quality of MS4 discharges, that are necessary for the Copermittees to demonstrate that non-storm water and storm water discharges from their MS4s are not causing or contributing to exceedances of receiving water limitations; (d) Evaluate the progress of the water quality improvement strategies toward achieving the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters.	Section 5.2			X	X
D.4.d.(3)	(3) The Copermittees ***must re-evaluate and adapt the water quality monitoring and assessment program for the Watershed Management Area when new information becomes available to improve the monitoring and assessment program pursuant to Provision B.5.c.*** The re-evaluation and recommendations for modifications to the monitoring and assessment program ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. Modifications to the water quality monitoring and assessment program must be consistent with the requirements of Provision D.1-D.3. The re-evaluation of the water quality monitoring and assessment program for the Watershed Management Area must consider the data gaps identified by the assessments required pursuant to Provisions D.4.a-b, and results of the special studies implemented pursuant to Provision D.4.c	Section 5.2		X		X
Provision E						
E.1.b.	**b.** With the first ***Water Quality Improvement Plan Annual Report*** *required pursuant to Provision F.3.b.(3),* ***each Copermittee must submit a statement certified by its Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative that the Copermittee has taken the necessary steps to obtain and maintain full legal authority*** within its jurisdiction to implement and enforce each of the requirements contained in this Order.	Cert Statement			X	
E.2.d.(4)	(4) Each Copermittee must submit a ***summary of the non-storm water discharges and illicit discharges and connections investigated and eliminated within its jurisdiction with each Water Quality Improvement Plan Annual Report required under Provision F.3.b.(3)*** of this Order.			X		

Table A-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP Annual Report Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
E.8.c.	**c.** Each Copermittee must submit a ***summary of the annual fiscal analysis with each Water Quality Improvement Plan Annual Report required pursuant to Provision F.3.b.(3)***.				X	
Provision F						
F.1.b.(6)	(6) During implementation of the Water Quality Improvement Plan the Copermittees must ***correct any deficiencies in the Plan identified by the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report*** following a request by the Board to do so.	Section 5.2				X
F.2.a.(2)	(2) Each Copermittee must update its jurisdictional runoff management program document to incorporate the requirements of Provision E concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the jurisdictional runoff management program document based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;***				X	X
F.2.a.(3)	(3) Each Copermittee must submit ***updates to its jurisdictional runoff management program, with the supporting rationale for the modifications, either in the Water Quality Improvement Plan Annual Report*** required pursuant to Provision F.3.b.(3), or as part of the Report of Waste Discharge required pursuant to Provision F.5.b	Section 5			X	X
F.2.b.(1)	(1) Each Copermittee must update its BMP Design Manual to incorporate the requirements of Provisions E.3.a-d concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the BMP Design Manual based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;***	Section 5.2			X	
F.2.b.(2)	(2) Any ***future updates to the BMP Design Manual*** made after it update pursuant to Provision F.2.b.(1) is completed must be consistent with the requirements of Provisions E.3.a-d and ***must be submitted as part of the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b; and				X	
F.2.c.(1)(c)	(c) The Copermittees for each Watershed Management Area ***must submit 1) proposed updates to the Water Quality Improvement Plan and supporting rationale, and 2) recommendations received from the public and the Water Quality Improvement Consultation Panel and the rationale for the requested updates, either in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b.	Section 5.2				X
F.3.b.(3)(a-f)	(3) Water Quality Improvement Plan Annual Reports - The Copermittees for each Watershed Management Area must ***submit a Water Quality Improvement Plan Annual Report for each reporting period no later than January 31*** of the following year. The annual reporting period consists of two different periods: 1) July 1 to June 30 of the following year for the jurisdictional runoff management programs, 2) October 1 to September 30 of the following year for the monitoring and assessment programs. The Water Quality Improvement Plan Annual Reports must be made available on the Regional Clearinghouse required pursuant to Provision F.4. Each ***Annual Report must include the following***:	See below				
	(a) The receiving water and MS4 outfall discharge monitoring data collected pursuant to Provisions D.1 and D.2, summarized and presented in tabular and graphical form;	Section 3.2		X		
	(b) The progress of the special studies required pursuant to Provision D.3, and the findings, interpretations and conclusions of a special study, or each phase of a special study, upon its completion;	Section 3.2		X		
	(c) The findings, interpretations and conclusions from the assessments required pursuant to Provision D.4;			X		
	(d) The progress of implementing the Water Quality Improvement Plan, including, but not limited to, the following: (i) The **progress toward achieving the interim and final numeric goals** for the highest water quality priorities for the Watershed Management Area;	Section 4.3				

Table A-1 (continued)
Crosswalk of MS4 Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP Annual Report Section	WQIP Appendix			
			Appendix B Numeric Goals	Appendix C Monitoring	Appendix D Jurisdictional Information	Appendix E Adaptive Management
	(ii) The water quality improvement **strategies that were implemented and/or no longer implemented by each of the Copermittees during the reporting period and previous reporting periods**;				X	X
	(iii) The water quality improvement strategies planned for implementation during the next reporting period;				X	X
F.3.b.(3)(a-f) (continued)	(iv) Proposed modifications to the water quality improvement strategies, the public comments received and the supporting rationale for the proposed modifications;	Section 5			X	X
	(v) Previous modifications or updates incorporated into the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document and implemented by the Copermittees in the Watershed Management Area; and	Section 5.3			X	X
	(vi) Proposed modifications or updates to the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document;	Section 5.2			X	X
	(e) A completed Jurisdictional Runoff Management Program Annual Report Form (contained in Attachment D to this Order or a revised form accepted by the San Diego Water Board) for each Copermittee in the Watershed Management Area, certified by a Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative; and				X	
	(f) Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the San Diego Water Board. Any Copermittee monitoring data utilized in developing the Water Quality Improvement Plan Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the Water Quality Improvement Plan Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.			X		
F.6	Each Copermittee must comply with all the reporting and recordkeeping provisions of the Standard Permit Provisions and General Provisions contained in Attachment B to this Order.	Section 6		X		
Attachment E						
Attachment E	Specific Monitoring and Assessment Requirements for each TMDL.TMDL monitoring and assessment results must be submitted as part of Water Quality Improvement Plan Annual Reports required under Provision F.3.b	Section 3.2		X		

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Appendix B: Water Quality Improvement Plan Numeric Goals

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The following sections present final and interim numeric goals by jurisdiction.

B.1 City of Del Mar Goals

Del Mar's Water Quality Improvement Plan interim and final goals for wet and dry weather are presented in Tables B-1 and B-2, respectively.

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Table B-1
Wet Weather Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	43% Days Exceeding WQO (2002 TMDL Model)	See performance measures.	43%[2]	33%	25%	22%
	Enterococcus	49% Days Exceeding WQO (2002 TMDL Model)		49%[2]	36%	26%	22%
	Total coliform	43% Days Exceeding WQO (2002 TMDL Model)		43%[2]	33%	25%	22%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 98%[3]	See performance measures.	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	0.5%	0.7%	1.0%	1.5%
	Enterococcus			2.5%	3.9%	6.0%	7.7%
	Total coliform			1.2%	2.2%	3.2%	4.3%

Table B-1 (continued)
Wet Weather Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 1 discharge[4]	See performance measures.	0	0	0	0
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule (presented in WQIP Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 4.3.2 for compliance analysis results.					

Table B-1 (continued)
Wet Weather Numeric Goals for the City of Del Mar

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14—FY18)
Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Reduce anthropogenic surface dry weather flows[6] to address bacteria regrowth contributing during wet weather	**New:** Average Dry Weather Flow: 0.81 gallons per minute Maximum Dry Weather Flow: 1.5 gallons per minute	10% reduction in anthropogenic surface dry weather flows[6] that originate within the City's jurisdictional boundaries

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceedance frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.
4. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
5. Demonstration of exceedances due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. The term "dry weather flows" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-2
Dry Weather Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14–FY18)	FY 16–20	FY 21–25
			FY18	FY19[1]	FY21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	11% Days Exceeding WQO (2002[2])	See performance measures.	5.5%	0%
	Enterococcus	17% Days Exceeding WQO (2002[2])		8.5%	0%
	Total coliform	6% Days Exceeding WQO (2002[2])		3%	0%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 82%[3]	See performance measures.	0%	0%
	Enterococcus	**New:** 100%[3]		0%	0%
	Total coliform	**New:** 100%[3]		0%	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	10.4%	20.7%
	Enterococcus			41.7%	83.5%
	Total coliform			7.2%	14.4%
Or					
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 1 discharge[4]	See performance measures.	0	0

Table B-2 (continued)
Dry Weather Numeric Goals for the City of Del Mar

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14–FY18)	FY 16–20	FY 21–25
			FY18	FY19[1]	FY21[1]
Or					
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%
	Enterococcus		100%	100%	100%
	Total coliform		100%	100%	100%
Or					
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule (presented in WQIP Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 4.3.2 for compliance analysis results.			

Table B-2 (continued)
Dry Weather Numeric Goals for the City of Del Mar

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Reduce anthropogenic surface dry weather flows[6]	**New:** Average Dry Weather Flow: 0.81 gallons per minute Maximum Dry Weather Flow: 1.5 gallons per minute	Reduce anthropogenic surface dry weather water flows[6] that originate within the City's jurisdictional boundaries by 10%

1. Denotes TMDL interim and final target.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per MS4 Permit requirements and presented in more detail in Appendix H.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. The term "dry weather flows" excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

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B.2 City of Escondido Goals

The City of Escondido's Water Quality Improvement Plan interim and final goals for wet and dry weather are presented in Tables B-3 and B-4, respectively.

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Table B-3
Wet Weather Numeric Goals for the City of Escondido

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	43% Days Exceeding WQO (2002 TMDL Model)	See performance measures.	43%[2]	33%	25%	22%
	Enterococcus	49% Days Exceeding WQO (2002 TMDL Model)		49%[2]	36%	26%	22%
	Total coliform	43% Days Exceeding WQO (2002 TMDL Model)		43%[2]	33%	25%	22%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 98%[3]	See performance measures.	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	0.5%	0.7%	1.0%	1.5%
	Enterococcus			2.5%	3.9%	6.0%	7.7%
	Total coliform			1.2%	2.2%	3.2%	4.3%

Table B-3 (continued)
Wet Weather Numeric Goals for the City of Escondido

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 1 discharge[4]	See performance measures.	0	0	0	0
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule (presented in WQIP Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 4.3.2 for compliance analysis results.					

Table B-3 (continued)
Wet Weather Numeric Goals for the City of Escondido

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Implement and maintain water quality improvement BMPs to target fecal coliform, *Enterococcus*, total coliform, sediment, and nutrients	0 acres of drainage area treated	4 acres of drainage area treated through restoration of 1 sediment detention basin in a multiuse treatment area at Eagle Scout (formerly Sand) Lake, Kit Carson Park

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceedance frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period.
4. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
5. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-4
Dry Weather Numeric Goals for the City of Escondido

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Reduce anthropogenic dry weather flow[1] in priority drainage area with persistent flow by performing special strategies, including property-based inspections for residents and commercial areas	**New:** Average Flow: 6.2 gallons per minute Maximum Flow: 37 gallons per minute	10% anthropogenic dry weather flow[1] reduction at priority outfall (HDG_102)

1. Here and throughout this table, the term "dry weather flows" excludes groundwater and other exempt or permitted non-storm water flows.

% = percent; FY = fiscal year

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B.3 City of Poway Goals

The City of Poway's Water Quality Improvement Plan interim and final goals for wet and dry weather are presented in Tables B-5 and B-6, respectively.

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Table B-5
Wet Weather Numeric Goals for the City of Poway

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	43% Days Exceeding WQO (2002 TMDL Model)	See performance measures.	43%[2]	33%	25%	22%
	Enterococcus	49% Days Exceeding WQO (2002 TMDL Model)		49%[2]	36%	26%	22%
	Total coliform	43% Days Exceeding WQO (2002 TMDL Model)		43%[2]	33%	25%	22%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 98%[3]	See performance measures.	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	0.5%	0.7%	1.0%	1.5%
	Enterococcus			2.5%	3.9%	6.0%	7.7%
	Total coliform			1.2%	2.2%	3.2%	4.3%
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 1 discharge[4]	See performance measures.	0	0	0	0

Table B-5 (continued)
Wet Weather Numeric Goals for the City of Poway

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule (presented in WQIP Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 4.3.2 for compliance analysis results.					

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceedance frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period
4. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
5. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

Table B-6
Dry Weather Numeric Goals for the City of Poway

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Turf conversion	**New:** 0 square feet of turf converted	5% increase from the baseline through turf conversion

% = percent; FY = fiscal year

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B.4 City of San Diego Goals

The City of San Diego Water Quality Improvement Plan interim and final goals for wet and dry weather are presented in Tables B-7 and B-8, respectively.

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Table B-7
Wet Weather Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	43% Days Exceeding WQO (2002 TMDL Model)	See performance measures.	43%[2]	33%	25%	22%
	Enterococcus	49% Days Exceeding WQO (2002 TMDL Model)		49%[2]	36%	26%	22%
	Total coliform	43% Days Exceeding WQO (2002 TMDL Model)		43%[2]	33%	25%	22%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 98%[3]	See performance measures.	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	0.5%	0.7%	1.0%	1.5%
	Enterococcus			2.5%	3.9%	6.0%	7.7%
	Total coliform			1.2%	2.2%	3.2%	4.3%
Or							
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule (presented in WQIP Appendix I) based on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 4.3.2 for compliance analysis results.					

Table B-7 (continued)
Wet Weather Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 1 discharge[4]	See performance measures.	0	0	0	0
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%

Table B-7 (continued)
Wet Weather Numeric Goals for the City of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	10.6 acres of drainage area treated through construction of 2 green infrastructure BMPs[6]

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceedance frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period
4. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
5. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. The 10.6 acres of drainage area treated are associated with 2 green infrastructure projects that will be completed by FY18.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-8
Dry Weather Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25
			FY18	FY19[1]	FY21[1]
Bacteria TMDL Goals (Applicable Below Lake Hodges)					
Receiving Water % Days Exceeding WQO	Fecal coliform	11% Days Exceeding WQO (2002[2])	See performance measures.	5.5%	0%
	Enterococcus	17% Days Exceeding WQO (2002[2])		8.5%	0%
	Total coliform	6% Days Exceeding WQO (2002[2])		3%	0%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 82%[3]	See performance measures.	0%	0%
	Enterococcus	**New:** 100%[3]		0%	0%
	Total coliform	**New:** 100%[3]		0%	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	10.4%	20.7%
	Enterococcus			41.7%	83.5%
	Total coliform			7.2%	14.4%

Table B-8 (continued)
Wet Weather Numeric Goals for the City of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25
			FY18	FY19[1]	FY21[1]
Bacteria TMDL Goals (Applicable Below Lake Hodges)					
Or					
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge % load reduction (above). Compliance is based on implementation of strategies listed in WQIP Appendix I. See WQIP Section 4.3.2 for analysis results.			
Or					
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 10 discharges[4]	See performance measures.	0	0
Or					
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%
	Enterococcus		100%	100%	100%
	Total coliform		100%	100%	100%

Table B-8 (continued)
Wet Weather Numeric Goals for the City of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures (Applicable Below and Above Lake Hodges)		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Develop a green infrastructure policy, attain City Council approval, and construct green infrastructure BMPs to improve water quality during wet and dry weather	0 acres treated in 2002, the year used as baseline in the Bacteria TMDL	10.6 acres of drainage area treated through construction of 2 green infrastructure BMPs[6]
Implement runoff reduction programs such as education and outreach, enhanced inspections, rebates[7], and increased enforcement	**New:** Average Dry Weather Flow[8]: 38.6 gallons per minute Maximum Dry Weather Flow[8]: 224.4 gallons per minute	10% reduction in prohibited[9] dry weather flow from baseline measured at persistently flowing outfalls in the WMA

Table B-8 (continued)
Wet Weather Numeric Goals for the City of San Diego

1. Denotes TMDL interim and target.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per MS4 Permit requirements and presented in more detail in Appendix H.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. The 10.6 acres of drainage area treated are associated with 2 green infrastructure projects that will be completed by FY18.
7. City of San Diego rebates include grass replacement, rainwater harvesting, downspout disconnect, and micro-irrigation.
8. Dry weather flow baseline calculations were based on Targeted Dry Weather Flow Outfall Monitoring data from 2009 to 2012. Data are only from outfalls with "persistent flow," defined as: “the presence of flowing, pooled, or ponded water more than 72 hours after a measureable rainfall event of 0.1 inch or greater during three consecutive monitoring and/or inspection events. All other flowing, pooled, or ponded water is considered transient.” Persistently flowing annual averages were computed, and an overall average was computed using all data points in this time period and used for comparison. Note, reported flow values of 0 were present and included in the calculations.
9. Does not include allowable discharges as defined in Provision A and Provision E.2.a of the MS4 Permit.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

B.5 City of Solana Beach Goals

City of Solana Beach's Water Quality Improvement Plan interim and final goals for wet and dry weather are presented in Tables B-9 and B-10, respectively.

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Table B-9
Wet Weather Numeric Goals for the City of Solana Beach

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	43% Days Exceeding WQO (2002 TMDL Model)	See performance measures.	43%[2]	33%	25%	22%
	Enterococcus	49% Days Exceeding WQO (2002 TMDL Model)		49%[2]	36%	26%	22%
	Total coliform	43% Days Exceeding WQO (2002 TMDL Model)		43%[2]	33%	25%	22%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 98%[3]	See performance measures.	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	0.5%	0.7%	1.0%	1.5%
	Enterococcus			2.5%	3.9%	6.0%	7.7%
	Total coliform			1.2%	2.2%	3.2%	4.3%
Or							
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 1 discharge[4]	See performance measures.	0	0	0	0

Table B-9 (continued)
Wet Weather Numeric Goals for the City of Solana Beach

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24[1]	FY29	FY31[1]
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implement Accepted Water Quality Improvement Plan		Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule based (presented in WQIP Appendix I) on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 4.3.2 for compliance analysis results.					

Table B-9 (continued)
Wet Weather Numeric Goals for the City of Solana Beach

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Design and install diverters at high priority outfalls to treat first flush and low flows	**New:** 0 acres of low flow diverted to the sanitary sewer	40.5 acres of low flows directed to sanitary sewer through construction of 1 diverter at high priority outfall Seascape Sur
Design and construct curb cuts to redirect water from traditional drainage areas to permeable surfaces	**New:** 0 acres of drainage area treated	8 acres of drainage area treated through curb cuts along Highway 101

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceedance frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period
4. Discharges are defined as the number of flowing major MS4 outfalls during wet weather monitoring.
5. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

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Table B-10
Dry Weather Numeric Goals for the City of Solana Beach

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25
			FY18	FY19[1]	FY21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	11% Days Exceeding WQO (2002[2])	See performance measures.	5.5%	0%
	Enterococcus	17% Days Exceeding WQO (2002[2])		8.5%	0%
	Total coliform	6% Days Exceeding WQO (2002[2])		3%	0%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 82%[3]	See performance measures.	0%	0%
	Enterococcus	**New:** 100%[3]		0%	0%
	Total coliform	**New:** 100%[3]		0%	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	10.4%	20.7%
	Enterococcus			41.7%	83.5%
	Total coliform			7.2%	14.4%

Table B-10 (continued)
Dry Weather Numeric Goals for the City of Solana Beach

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25
			FY18	FY19[1]	FY21[1]
Or					
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 0 discharges[4]	See performance measures.	0	0
Or					
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%
	Enterococcus		100%	100%	100%
	Total coliform		100%	100%	100%

Table B-10 (continued)
Dry Weather Numeric Goals for the City of Solana Beach

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures		
Suite of Strategies to Measure Performance During First Permit Term	**Baseline**	**FY18**
Design and install diverters at high priority outfalls to treat first flush and low flows	**New:** 0 acres of low flow diverted to the sanitary sewer	40.5 acres of low flows directed to sanitary sewer through construction of 1 diverter at high priority outfall Seascape Sur
Design and construct curb cuts to redirect water from traditional drainage areas to permeable surfaces	**New:** 0 acres of drainage area treated	8 acres of drainage area treated through curb cuts along Highway 101

1. Denotes TMDL interim and final target.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per MS4 Permit requirements and presented in more detail in Appendix H.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

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B.6 County of San Diego WMA Goals

The County of San Diego's Water Quality Improvement Plan interim and final goals for wet and dry weather are presented in Tables B-11 and B-12, respectively.

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Table B-11
Wet Weather Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24	FY28[1]	FY31[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	43% Days Exceeding WQO (2002 TMDL Model)	See performance measures.	43%[2]	40%	33%	22%
	Enterococcus	49% Days Exceeding WQO (2002 TMDL Model)		49%[2]	45%	36%	22%
	Total coliform	43% Days Exceeding WQO (2002 TMDL Model)		43%[2]	40%	33%	22%
Or							
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 98%[3]	See performance measures.	22%	22%	22%	22%
	Enterococcus	**New:** 100%[3]		22%	22%	22%	22%
	Total coliform	**New:** 100%[3]		22%	22%	22%	22%
Or							
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	0.5%	0.6%	0.7%	1.5%
	Enterococcus			2.5%	3.0%	3.9%	7.7%
	Total coliform			1.2%	1.5%	2.2%	4.3%
Or							

Table B-11 (continued)
Wet Weather Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year				
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25	FY 26–30	FY 31–36
			FY18	FY19	FY24	FY28[1]	FY31[1]
~~# of Direct or Indirect MS4 Discharges to Receiving Water~~	~~Discharges~~	~~Number of flowing major MS4 outfalls during wet weather monitoring (Section 5.1 of this Water Quality Improvement Plan)~~	~~See performance measures.~~	~~0~~	~~0~~	~~0~~	~~0~~
Or							
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[4]	Fecal coliform	Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%	100%	100%
	Enterococcus		100%	100%	100%	100%	100%
	Total coliform		100%	100%	100%	100%	100%
Or							
MS4 Discharges Implement Accepted Water Quality Improvement Plan.		Metric for compliance analysis is MS4 discharge % load reduction (above). Interim compliance is implementation of strategies and schedule based (presented in WQIP Appendix I) on analysis results. Final compliance is implementation of BMPs based on analysis results and demonstration of compliance with any of the compliance pathways through monitoring and assessment. See WQIP Section 4.3.2 for compliance analysis results.					

Table B-11 (continued)
Wet Weather Numeric Goals for the County of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year
		Current Permit Term (FY14–FY18)
Performance Measures		
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**
Reduce baseline bacteria loads from storm drain outfalls to receiving water	Enterococcus Load for MS4-SDC-6 = 1.25E+13 MPN/year (Transitional Monitoring Program FY14)	1% bacteria load reduction from the MS4

1. Denotes TMDL interim and final target.
2. Denotes existing wet weather frequency as modeled in the Bacteria TMDL. With limited baseline monitoring data available, this goal reflects a reasonable estimate considering the difficulty in demonstrating progress within the receiving water during wet weather in a short amount of time. Furthermore, development and redevelopment of the urban environment has occurred since the Bacteria TMDL baseline loads were calculated in 2001. As such, this goal demonstrates that progress has been made by the Responsible Agencies by maintaining the existing wet weather exceedance frequency.
3. Wet weather baseline exceedance rate calculated using targeted and random MS4 wet weather monitoring data from October 1, 2008 through September 30, 2013. Monitoring data were assessed similar to the method outlined in Attachment E.6 of the 2013 MS4 Permit for each monitoring year. The observed wet weather days in exceedance were summed and divided by the total wet weather days in exceedance for the historical 5-year period
4. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.

% = percent; FY = fiscal year; WQO = water quality objective

All numeric goals are cumulative from the baseline assessment for each fiscal year.

Table B-12
Dry Weather Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25
			FY18	FY19[1]	FY21[1]
Receiving Water % Days Exceeding WQO	Fecal coliform	11% Days Exceeding WQO (2002[2])	See performance measures.	5.5%	0%
	Enterococcus	17% Days Exceeding WQO (2002[2])		8.5%	0%
	Total coliform	6% Days Exceeding WQO (2002[2])		3%	0%
Or					
MS4 Discharges % Days Exceeding WQO	Fecal coliform	**New:** 82%[3]	See performance measures.	0%	0%
	Enterococcus	**New:** 100%[3]		0%	0%
	Total coliform	**New:** 100%[3]		0%	0%
Or					
MS4 Discharges % Load Reduction	Fecal coliform	0% Load Reduction (2002 TMDL Model)	See performance measures.	10.4%	20.7%
	Enterococcus			41.7%	83.5%
	Total coliform			7.2%	14.4%

Table B-12 (continued)
Dry Weather Numeric Goals for the County of San Diego

Compliance Pathways		Baseline	Goals by Assessment Period and Fiscal Year		
			Current Permit Term (FY14—FY18)	FY 16–20	FY 21–25
			FY18	FY19[1]	FY21[1]
Or					
# of Direct or Indirect MS4 Discharges to Receiving Water	Discharges	**New:** 3 discharges[4]	See performance measures.	0	0
Or					
% of Exceedances of Final Receiving Water WQOs Due to Natural Sources[5]	Fecal coliform	**New:** Unknown at this time. A detailed source study that differentiates between human and non-human sources would be needed to establish the baseline.	100%	100%	100%
	Enterococcus		100%	100%	100%
	Total coliform		100%	100%	100%

Table B-12 (continued)
Dry Weather Numeric Goals for the County of San Diego

Compliance Pathways	Baseline	Goals by Assessment Period and Fiscal Year		
		Current Permit Term (FY14–FY18)	FY 16–20	FY 21–25
Performance Measures				
Suite of Strategies To Measure Performance During First Permit Term	**Baseline**	**FY18**	**FY20**	**FY21**
Eliminate anthropogenic dry weather flows[6] from storm drain outfalls either by aggregate flow volume or the number of persistently flowing outfalls during dry weather	10 of 20 major MS4 outfalls have persistent dry weather flows; average flow rate as measured with continuous flow monitoring equipment = 8.614 gallons per minute	Reduce by 20%	Reduce by 75%	Reduce by 100% anthropogenic dry weather discharges from storm drain outfalls to the receiving water or meet the WQOs in the storm drain discharge.

1. Denotes TMDL interim and final target. Request moving Interim TMDL Compliance Date from April 4, 2016 (per MS4 Permit Attachment E, 6.c(1)) to April 4, 2020, to allow adequate time to investigate and mitigate dry weather flows through the adaptive management process of the Water Quality Improvement Plan.
2. The existing exceedance frequency was calculated on the basis of available monitoring data between 1996 and 2002 per MS4 Permit requirements and presented in more detail in Appendix H.
3. Dry weather baseline exceedance rate calculated using targeted and random MS4 dry weather monitoring data from October 1, 2008 through September 30, 2013. Rolling 5-sample-date geometric means were calculated, beginning with the 5th sample date of each monitoring year. Geometric mean WQOs were applied and the exceedance frequency extrapolated to determine baseline percent of dry weather days in exceedance for the historical 5-year period.
4. Discharges are defined as observed dry weather flows from persistently flowing MS4 outfalls.
5. Demonstration of exceedances of final receiving water limitations due to natural sources includes demonstration that pollutant loads from MS4s are not causing or contributing to exceedances.
6. Here and throughout this table, the term “dry weather flows” excludes groundwater, other exempt or permitted non-storm water flows, and sanitary sewer overflows.

% = percent; FY = fiscal year; WQO = water quality objective
All numeric goals are cumulative from the baseline assessment for each fiscal year.

Appendix C: Monitoring Results and Assessments

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Attachment G CEDEN Certification Statements

Acronyms and Abbreviations

Acronym or Abbreviation	Definition
°C	degrees Celsius
≥	greater than or equal to
<	less than
≤	less than or equal to
µg/L	micrograms per liter
µS/cm	micro-Siemens per centimeter
%	percent
303(d) List	Clean Water Act Section 303(d) List of Water Quality Limited Segments
AB 411	California Assembly Bill 411, the Beach Safety Act
Bight ’13	Southern California Bight 2013 Regional Monitoring Survey
BMI	benthic macroinvertebrates
BMP	best management practice
$CaCO_3$	calcium carbonate
CEDEN	California Environmental Data Exchange Network
cf	cubic feet
CFR	Code of Federal Regulations
cfs	cubic feet per second
cm	centimeters
Copermittee	Operator of a municipal separate storm sewer system in San Diego County that is party to the MS4 Permit
County	County of San Diego
CPOM	coarse particulate organic matter
CRAM	California Rapid Assessment Method
CSCI	California Stream Condition Index
CTR	California Toxics Rule
CWA	Clean Water Act
DEH	San Diego County Department of Environmental Health
DO	dissolved oxygen
Dup	duplicate
E. coli	*Escherichia coli*

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
EMC	event mean concentration
EPA	United States Environmental Protection Agency Method
EPT	Ephemeroptera, Plecoptera, and Trichoptera taxa
FIB	fecal indicator bacteria
ft^3/sec	cubic feet per second
FY	fiscal year
GIS	geographic information system
HMP	Hydromodification Monitoring Program
HPWQC	highest priority water quality condition
HSA	hydrologic subarea
HU	hydrologic unit
IBI	Index of Biotic Integrity
IC/ID	illicit connection and/or illicit discharge
ID	identification
IDDE	illicit discharge detection and elimination
in	inches
J	Analytical flag for 'Analyte detected above the method detection limit but below the reporting limit'
JRMP	Jurisdictional Runoff Management Program
lb	pounds
LTMS	long-term monitoring station
m	meters
MAP	Monitoring and Assessment Program
MBAS	methylene blue active substance
MDL	method detection limit
mg/L	milligrams per liter
MMI	multi-metric index of biological integrity
MPN	most probable number
MPN/100mL	most probable number per 100 milliliters

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
MS4	Municipal Separate Storm Sewer System
MS4 Permit	San Diego Regional Water Quality Control Board Order No. R9-2013-0001 (amended by Order No. R9-2015-0001 and R9-2015-0100), National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems Draining the Watersheds Within the San Diego Region
N	nitrogen
NA	not analyzed
NA	not applicable
NAL	non-storm water action level
ND	not detected
NPDES	National Pollutant Discharge Elimination System
NSWD	non-storm water discharge
NTU	nephelometric turbidity unit
NWS	National Weather Service
O/E	ratio of observed taxa to expected taxa
P	phosphorus
pMMI	predictive multi-metric index of biotic integrity
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RL	reporting limit
Regional Board	San Diego Regional Water Quality Control Board
Responsible Agency	Responsible Agencies include parties subject to the Bacteria TMDL and participating in this Water Quality Improvement Plan, specifically the Copermittees in the San Dieguito River WMA
RWL	receiving water limitations
SAFIT	Southwest Association of Freshwater Invertebrate Taxonomists

Acronyms and Abbreviations (continued)

Acronym or Abbreviation	Definition
SAL	storm water action level
SCCWRP	Southern California Coastal Water Research Project
SM	Standard Method
SMC	Southern California Storm Water Monitoring Coalition
sub-AV	sub area-velocity
SWAMP	Surface Water Ambient Monitoring Program
SWMP	Storm Water Management Plan
SWRCB	California State Water Resources Control Board
TBD	to be determined
TDS	total dissolved solids
TIE	toxicity identification evaluation
TKN	total Kjeldahl nitrogen
TMAR	Transitional Monitoring and Assessment Report
TMDL	Total Maximum Daily Load
TRE	toxicity reduction evaluation
TSS	total suspended solids
TV	tolerance value
USEPA	United States Environmental Protection Agency
WMA	Watershed Management Area
WQBEL	water quality-based effluent limitation
WQIP	Water Quality Improvement Plan
WQO	water quality objective

1 Monitoring and Assessment Program

The Monitoring and Assessment Program (MAP) for the San Dieguito River Watershed Management Area (WMA) is Section 5 of the Water Quality Improvement Plan (WQIP). The MAP incorporates requirements of Provision B and Provision D of the Municipal Separate Storm Sewer System (MS4) Permit (San Diego Regional Water Quality Control Board, 2013) along with the specific monitoring and assessment requirements for the Bacteria Total Maximum Daily Load (TMDL) in Attachment E of the MS4 Permit.

The Monitoring Program includes three major components: (1) the receiving water monitoring program that measures the long-term health of the watershed; (2) the MS4 outfall monitoring program that documents non-storm water flows and measures outfall water quality at selected sites during dry and wet conditions; and (3) special studies that further investigate the highest priority water quality conditions (HPWQCs). Table 1-1 provides an overview of the monitoring that is planned as part of the San Dieguito River WMA MAP and Figure 1-1 shows the locations for the 2015–2016 monitoring year.

This appendix summarizes monitoring data collected during the 2015–2016 monitoring year (October 1, 2015, and September 30, 2016), and data that were not summarized in the 2013–2014 and 2014–2015 Transitional Monitoring and Assessment Program Reports for the San Dieguito River WMA. Data include both receiving water and MS4 outfall monitoring data. Monitoring methodologies were summarized in Section 5 of the San Dieguito River WMA WQIP and were specified in the associated component Monitoring Plans (Project Clean Water, 2016). These documents provide detailed information regarding monitoring locations, monitoring techniques, constituents sampled, and quality assurance/quality control (QA/QC) requirements.

The Assessment Program for the 2015–2016 monitoring year includes only an annual analysis of the monitoring data collected for the 2015–2016 monitoring year. This appendix describes the MS4 Outfall Discharge Assessments (Provision D.4.b), which evaluate both the dry weather data associated with the illicit discharge detection and elimination (IDDE) program collected as part of the Jurisdictional Runoff Management Program (JRMP) program, along with the dry and wet weather MS4 monitoring data collected by the Responsible Agencies. The results of the special studies are also assessed in this appendix. The Receiving Water Assessment (Provision D.4.a) and the Integrated Assessments (D.4.b), as well as assessments of wet weather MS4 outfall discharge temporal trends, will be summarized in the Regional Monitoring and Assessment Report to be submitted with the Report of Waste Discharge in December 2017.

Table 1-1
Water Quality Improvement Plan Monitoring Overview

Monitoring Program			Monitoring Element	Program Schedule[1]				
				2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
Monitoring to Assess Goals and Schedules		Dry/ Wet	Varies by goal and jurisdiction	–	–	●	●	●
Receiving Water Monitoring	Long-Term Receiving Water Monitoring	Dry	Conventionals[2], FIB, nutrients, metals, pesticides, toxicity (chronic), possible TIE/TREs, visual observations, field measurements	–	●[3]	–	–	–
			Hydromodification (channel conditions, discharge points, habitat integrity, evidence and estimate of erosion and habitat impacts)	–	●[3]	–	–	–
			Bioassessment (BMI taxonomy, algae taxonomy, physical habitat characteristics)	–	●[3]	–	–	–
		Wet	Conventionals[2], FIB, nutrients, metals, pesticides, toxicity (chronic), field measurements	–	●[3]	–	–	–

Table 1-1 (continued)
Water Quality Improvement Plan Monitoring Overview

Monitoring Program				Monitoring Element	Program Schedule[1]				
					2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
Receiving Water Monitoring (continued)	Regional Monitoring Participation	Bight	Dry	Chemistry, toxicity, benthic infauna	●	–	–	–	●[4]
		SMC	Dry	Bioassessment	●	●	●	●	●
		2011 HMP	Wet	Channel assessments; flow monitoring; sediment transport monitoring	●	●	●	–	–
		AB 411[5]	Dry	FIB	●	●	●	●	●
	Sediment Quality Monitoring	Sediment Quality Monitoring	Dry	Chemistry, toxicity, benthic infauna	●[6]	●	–	–	–
	Bacteria TMDL Monitoring	Bacteria Monitoring Pacific Ocean Shoreline at San Dieguito Lagoon Mouth	Dry	FIB, visual observations, optional field measurements	–	–	●	●	●
			Wet	FIB, visual observations, optional field measurements	–	–	●	●	●

Table 1-1 (continued)
Water Quality Improvement Plan Monitoring Overview

Monitoring Program			Monitoring Element	Program Schedule[1]				
				2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
MS4 Monitoring	MS4 Field Screening	Dry	Visual: flow condition, presence and assessment of trash in and around the station, IC/IDs, descriptions	●[7]	●[7]	●	●	●
MS4 Monitoring	MS4 Outfall	Dry	Field parameters, conventionals[2], nutrients, metals, FIB	–	–	●	●	●
MS4 Monitoring	MS4 Outfall	Wet	Field parameters, conventionals[2], nutrients, metals, FIB	●[7]	●[7]	●	●	●
Special Studies	San Diego Regional Reference Streams and Beaches	Dry	Field parameters, conventionals[1], FIB, instantaneous flow	2012–2014	●[8]	–	–	–
Special Studies	San Diego Regional Reference Streams and Beaches	Dry	Streams only: nutrients, metals, bioassessment (including physical habitat and chlorophyll a)	2012–2014	–	–	–	–
Special Studies	San Diego Regional Reference Streams and Beaches	Wet	Field parameters, conventionals[1], FIB	2012–2014	●	–	–	–
Special Studies	San Diego Regional Reference Streams and Beaches	Wet	Streams only: nutrients, metals, toxicity, flow, and precipitation (duration of storm)	2012–2014	●	–	–	–

Table 1-1 (continued)
Water Quality Improvement Plan Monitoring Overview

Monitoring Program			Monitoring Element	Program Schedule[1]				
				2013–2014	2014–2015	2015–2016	2016–2017	2017–2018
Special Studies (continued)	San Dieguito River WMA Bacteria Source Identification and Prioritization Process Special Study	NA	GIS analysis, literature review, data gap analysis	–	–	●	–	–
	Proposed Nutrient Load Characterization for Lake Hodges led by the City of San Diego's Public Utilities Department	TBD	The schedule and program elements of this study are currently under development and elements are described in Section 5.3.	–	–	–	–	●

AB 411 = California Assembly Bill 411; BMI = benthic macroinvertebrates; FIB = fecal indicator bacteria; GIS = geographic information system; HMP = Hydromodification Monitoring Program; IC/ID = illicit connection and/or illicit discharge; ID = identification; MS4 = Municipal Separate Storm Sewer System; NA = not applicable; SMC = Southern California Storm water Monitoring Coalition; TBD = to be determined; TIE = toxicity identification evaluation; TMDL = Total Maximum Daily Load; TRE = toxicity reduction evaluation; WMA = Watershed Management Area

The highlighted cells represent the monitoring that occurred during the October 2015 to September 2016 monitoring year.

1. The MS4 Permit was adopted on May 8, 2013; the MS4 Permit became effective on June 27, 2013. Note that implementation of the programs began when the WQIP was approved in September 2015.
2. Definition of conventionals (conventional parameters) is based on Storm Water Management Plan (SWMP) guidelines.
3. Completed under the Transitional Monitoring Program in accordance with MS4 Permit Provisions D.1.a and D.2.a.
4. The 2018 Southern California Bight Regional Monitoring will occur during the summer of 2018 or 2019.
5. The AB 411 program is not required by the MS4 Permit. Responsible Agencies are using the data to track beach water quality conditions related to the highest priority water quality condition for the WMA.
6. Sediment Quality Monitoring was completed under the 2013 Southern California Bight Regional Monitoring Program.
7. Completed under the Transitional Monitoring Program according to MS4 Permit Provisions D.1.a and D.2.a.
8. Dry weather monitoring at reference streams was completed in spring 2014. Dry weather monitoring at reference beaches began in fall 2014.

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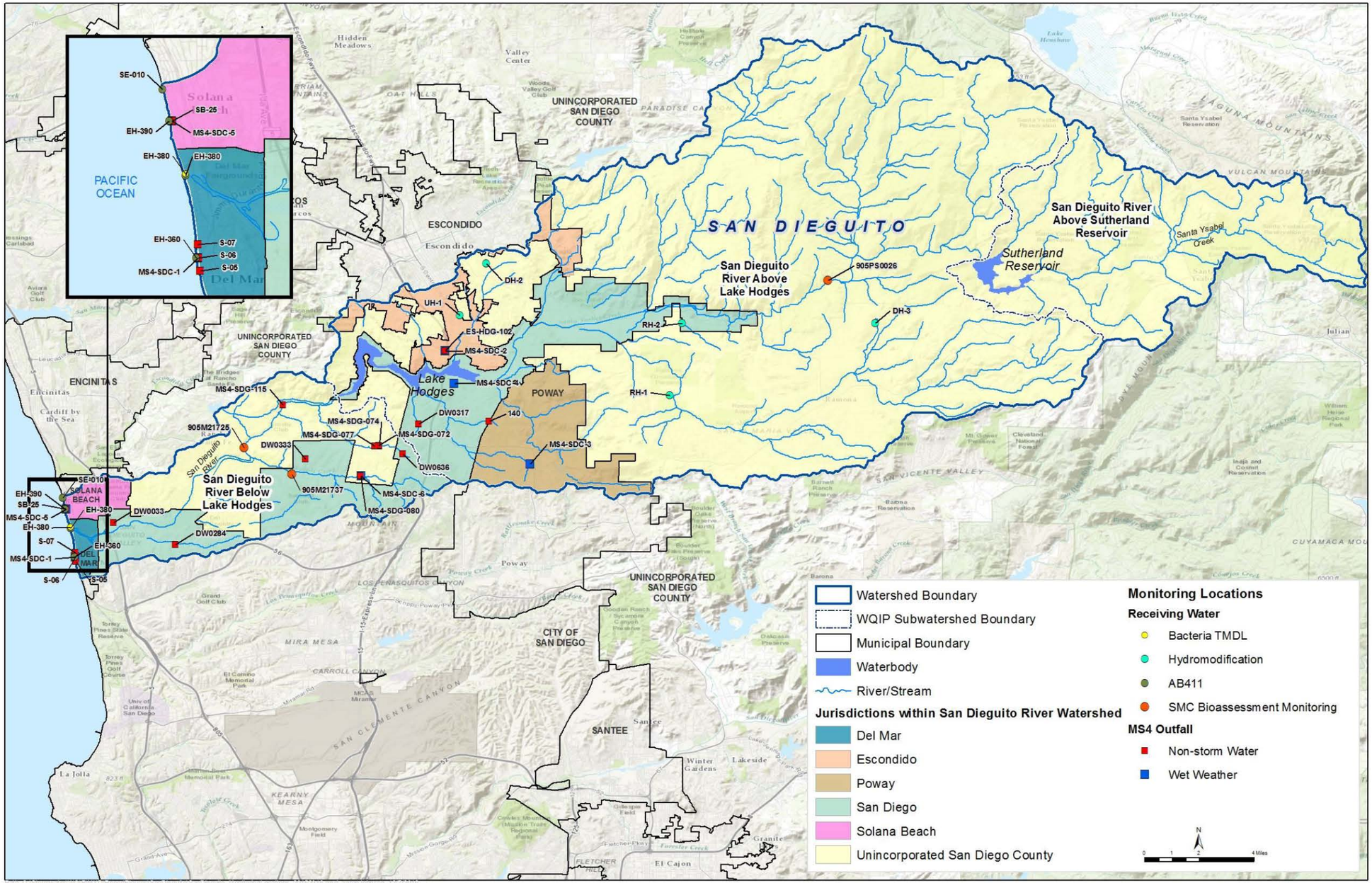

Figure 1-1
2015- 2016 MAP Monitoring Locations for the San Dieguito River WMA

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1.1 2015–2016 Regional Rainfall Summary

Precipitation during the 2015–2016 monitoring year measured at the National Weather Service Lindbergh Field station (GHCND:USW00023188) was compared with average precipitation from 1939–2015. The 2015–2016 observed total of 8.18 inches was slightly less than the average annual total of 9.90 inches. Greater than average rainfall amounts were observed in November 2015, January 2016, May 2016, and September 2016. All other months saw less than average rainfall amounts, including February 2016, which saw much less than the average February (0.05 inch vs. 1.8 inches). Figure 1-2 shows the October 2015 through September 2016 monthly rainfall measured at Lindbergh Field, compared with the average monthly and annual rainfall.

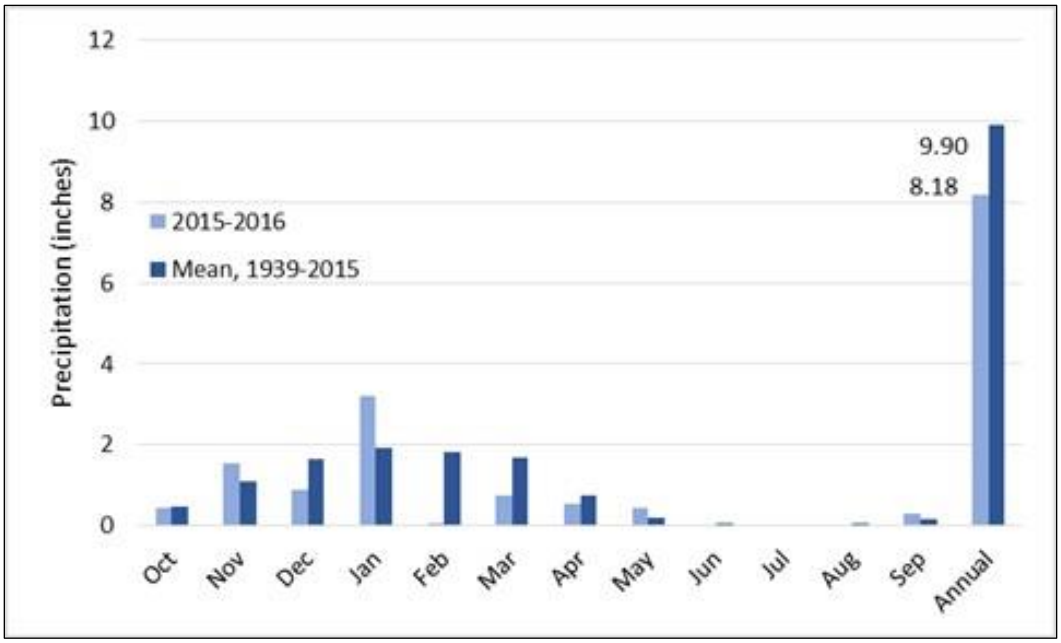

Figure 1-2
2015–2016 Monthly Rainfall vs. Average Monthly Rainfall (Lindbergh Field)

Eighty-four County of San Diego (County) ALERT rain gauges were used to measure rainfall throughout the region during the monitoring year (October 2015 through September 2016). Because the Transitional Monitoring Annual Reports presented rainfall data based on a July through June monitoring year, the July 2015 through September 2015 measured rainfall is also presented to fill the gap between the end of reporting under the transitional program and the beginning of reporting under the WQIP. Going forward, WQIP Annual Reports will present data based on the October through September monitoring year.

July 2015 through September 2015 regional rainfall totals ranged from less than 0.25 inch in the inland deserts to over 5 inches in the mountains. Totals at the coast ranged from approximately 1 inch near the international border with Mexico to over 3 inches in the Mission Bay area. Rainfall in the San Dieguito River WMA ranged from 1.73 inches at the Sutherland Reservoir ALERT station to 5.10 inches at the Ramona ALERT station. Figure 1-3 presents regional rainfall totals from July 2015 through September 2015.

October 2015 through September 2016 regional rainfall totals ranged from less than 1 inch in the inland deserts to over 30 inches in the mountains. Totals at the coast ranged from approximately 7 inches near the international border with Mexico to approximately 12 inches in the northern section of the county. Rainfall in the San Dieguito River WMA ranged from 12.05 inches at the Rancho Bernardo ALERT station to 18.17 inches at the Witch Creek ALERT station. Figure 1-4 presents regional rainfall totals from October 2015 through September 2016.

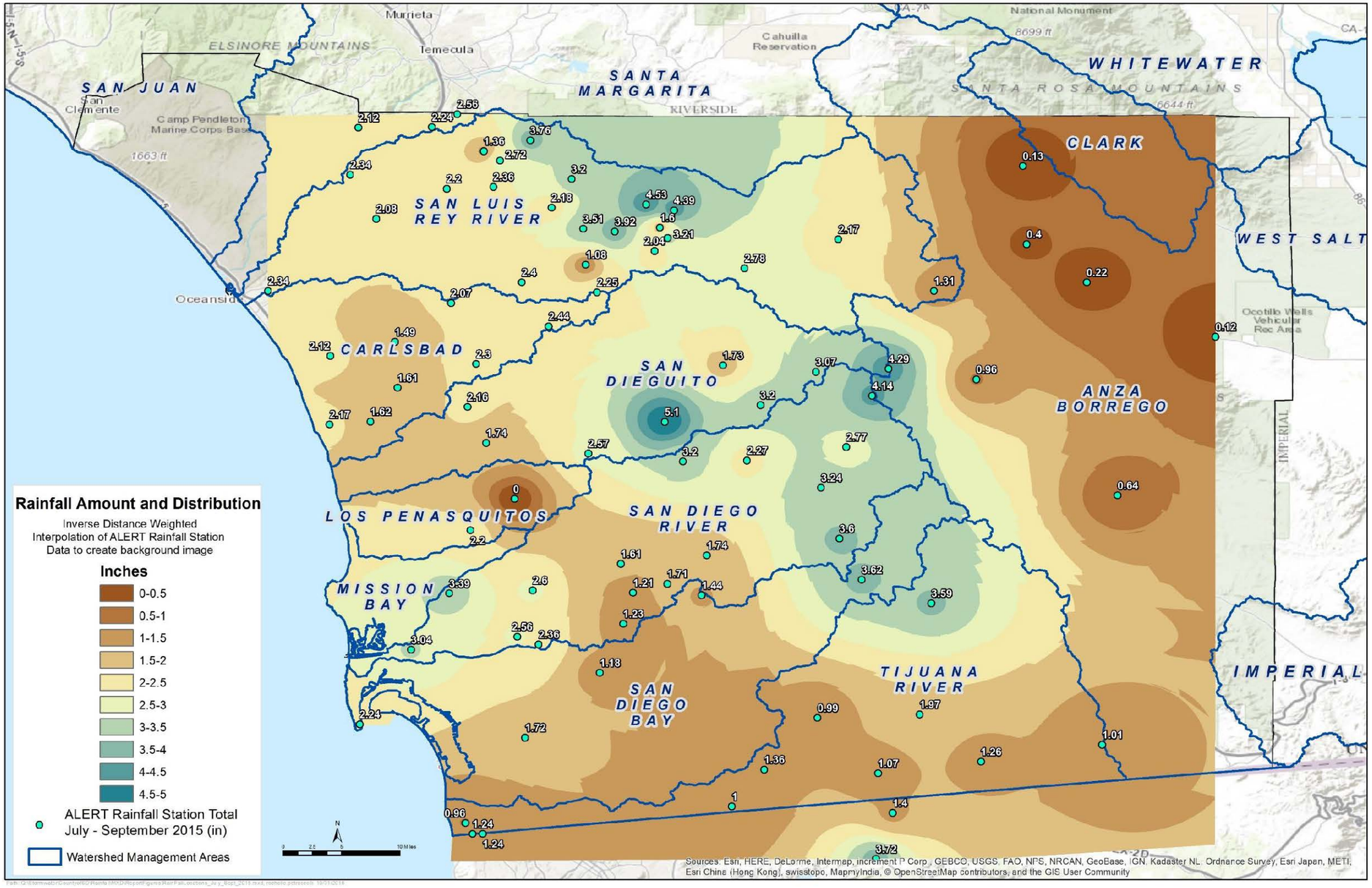

Figure 1-3
July 2015 through September 2015 ALERT Station Rainfall Totals

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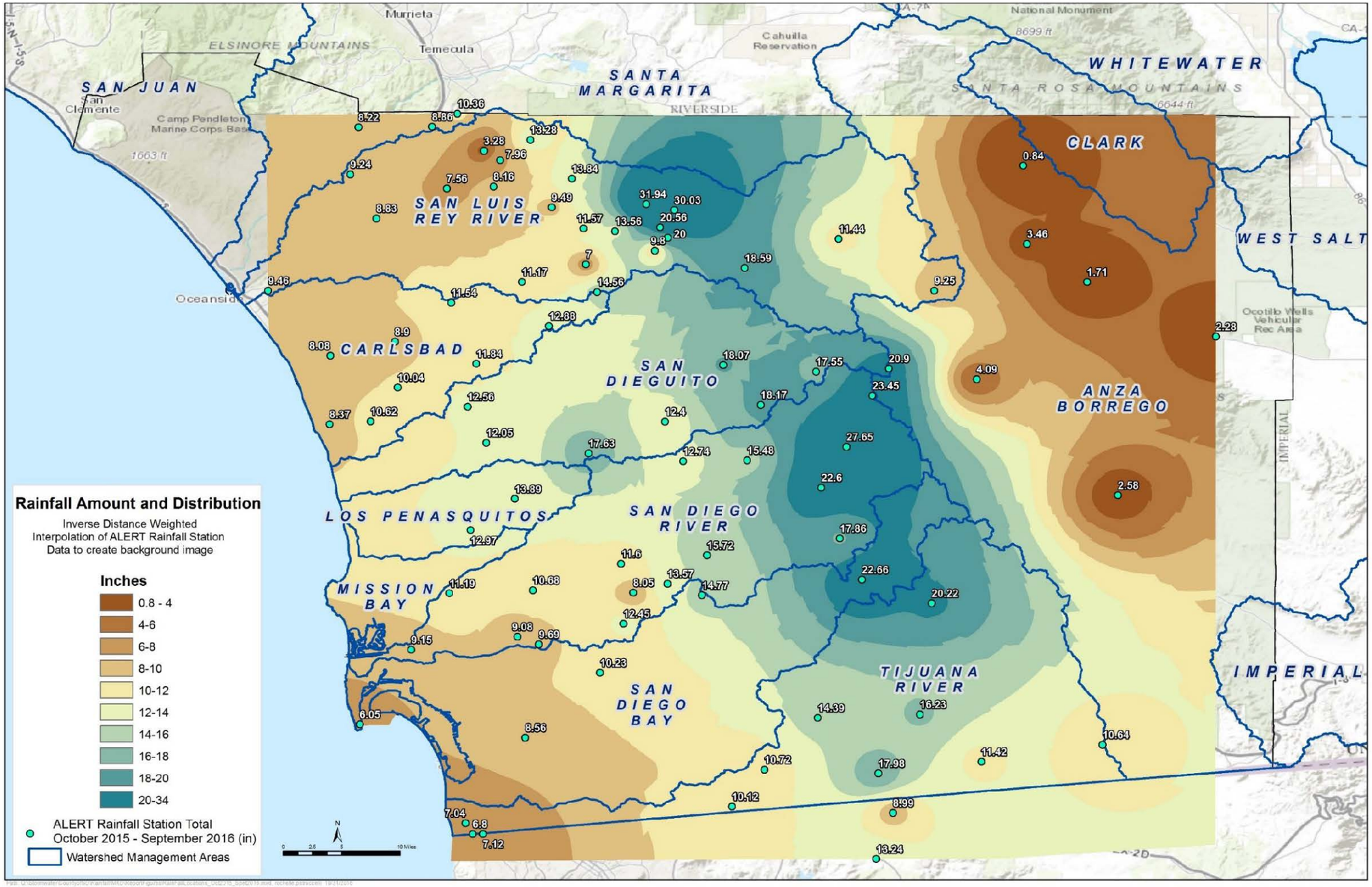

Figure 1-4
October 2015 through September 2016
ALERT Station Rainfall Totals

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1.2 Monitoring Results and Assessments Appendix Organization

This appendix includes the monitoring results and assessments for the San Dieguito River WMA WQIP Annual Report and is organized as follows:

Section 1, Monitoring and Assessment Program—This section provides an overview of the MAP, the monitoring performed during the October 2015 through September 2016 monitoring year, annual rainfall summary, and the assessments included in this appendix.

Section 2, Receiving Water Data Summary—This section describes the monitoring data collected as part of the Receiving Water Monitoring program. Data from various sources were compiled and summarized. Some data were collected during the October 2015 through September 2016 monitoring year, while other data were collected previously but not included in the San Dieguito River WMA Transitional Monitoring Assessment Report submitted in January 2016.

Section 3, Dry Weather Outfall Assessments and Illicit Discharges—This section summarizes the dry weather MS4 Outfall Discharge Assessments (MS4 Permit Provision B.4.b). It includes a comparison with non-storm water action levels (NALs) and assessments required by the MS4 Permit.

Section 4, Wet Weather Outfall Assessments—This section summarizes the wet weather MS4 Outfall Discharge Assessments (MS4 Permit Provision B.4.b). It includes a comparison with storm water action levels (SALs) and assessments required by the MS4 Permit.

Section 5, Special Study Assessments—This section provides an overview of the three special studies completed or in progress in the San Dieguito River WMA, including the San Diego Regional Reference Streams and Beaches Studies, the San Dieguito River WMA Bacteria Source Identification and Prioritization Process Special Study, and the Proposed Nutrient Load Characterization for Lake Hodges Study.

Section 6, California Environmental Data Exchange Network (CEDEN) Certification Statement Summary—This section provides a summary of the CEDEN data submittal certifications for the October 2015 through September 2016 monitoring year.

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2 Receiving Water Monitoring Data Summary

Section 2 of the Monitoring Results and Assessments Appendix highlights receiving water data collected as part of the San Dieguito River WMA MAP. Because this is the first Annual Report to be submitted under the San Dieguito River WMA WQIP, data collected since the acceptance of the MS4 Permit in 2013 will be (1) referenced if they have been previously submitted to the Regional Board, (2) summarized if sampling was conducted prior to the October 2015 through September 2016 monitoring year and the data have not been previously submitted to the Regional Board, or (3) summarized in graphical and tabular form as part of this Monitoring Results and Assessments Appendix. As discussed in Section 1, the MS4 Permit Provision D.4.a.(b) requires Receiving Water Assessments to be completed as part of the Report of Waste Discharge in December 2017. The data presented in this appendix will be used to complete those assessments as well as the Integrated Assessment detailed in the MAP.

2.1 Long-Term Receiving Water and Sediment Quality Monitoring Data

The Transitional Receiving Water Monitoring Program completed during the October 2014 through September 2015 monitoring year fulfilled a number of the requirements for long-term monitoring outlined in the MAP. The results of this monitoring were presented in the Transitional Monitoring and Assessment Program Report for the San Dieguito River WMA (2014–2015) (San Diego County Municipal Copermittees, 2016). Results presented included water quality monitoring during dry and wet weather, trash assessments, hydromodification monitoring, and bioassessment at the long-term monitoring stations (LTMS).

As stated in the San Dieguito River WMA WQIP, the Southern California Bight 2013 Regional Monitoring Survey (Bight ’13) Monitoring Program satisfied the initial monitoring requirements of the state's Sediment Control Plan. Up to three sites were monitored in the San Dieguito Lagoon in 2013 for the initial screening of sediment quality. Follow-up monitoring was conducted in summer 2014 to further characterize one site that was possibly impacted. Based on the monitoring and assessment completed, sediment conditions in San Dieguito Lagoon are generally protective of the beneficial uses and are typical of a tidally influenced shallow lagoon (San Diego County Municipal Copermittees, 2014). The Sediment Monitoring Report was provided in the 2015 Transitional Monitoring and Assessment Report in accordance with the MS4 Permit reporting requirements.

2.2 Bight ’13 Regional Monitoring Data

Sediment quality monitoring was conducted during summer 2013 at 22 sites in nine estuaries and lagoons in the San Diego region under Bight ’13 (San Dieguito Responsible Agencies, 2015a). The sediment quality monitoring included sediment chemistry and toxicity. Bight ’13 was used to fulfill the initial monitoring requirements for the Sediment Quality Monitoring requirement of the MS4 Permit that is summarized in Section 2.1.

2.3 Southern California Storm Water Monitoring Coalition (SMC) Monitoring Data

The SMC was formed in 2001 by cooperative agreement of the Phase I municipal storm water National Pollutant Discharge Elimination System (NPDES) lead permittees, the NPDES regulatory agencies in southern California, and the Southern California Coastal Water Research Project (SCCWRP). The purpose of the SMC was to develop the technical information necessary to better understand storm water mechanisms and impacts, and then develop the tools that will effectively and efficiently improve storm water decision making. One area of interest for the SMC was in developing a regional coordinated bioassessment monitoring program for wadeable streams that brought together the various disparate bioassessment programs being performed in southern California. Up until this point, efforts were minimally coordinated and provided only limited information about the health of streams in the region as a result of an emphasis on end-of-watershed monitoring.

To attain a more holistic understanding of the biological health region's watersheds, the SMC initiated a regional bioassessment monitoring program in 2009 using multiple indicators of ecological health, including benthic macroinvertebrates, benthic algae, riparian wetland condition, water chemistry, water column toxicity, and physical habitat.

The SMC bioassessment monitoring program was designed to address three main questions:

1. What is the biological condition of perennial streams in the region?
2. What stressors are associated with poor condition?
3. Are conditions changing over time?

Participation in regional monitoring programs as required under Provision D.1.e.(1) of the MS4 Permit was accomplished through reallocation of permit-required monitoring efforts, and allowed the SMC to develop a cooperative sampling program that was efficient and cost-effective for participants.

Many participants are currently involved in the SMC program:

- County of Los Angeles Department of Public Works
- County of Orange Public Works
- County of San Diego Copermittees
- Riverside County Flood Control and Water Conservation District
- San Bernardino County Flood Control District
- Ventura County Watershed Protection District
- San Gabriel River Regional Monitoring Program
- California Department of Fish and Wildlife
- California Regional Water Quality Control Board, Santa Ana Region

- California Regional Water Quality Control Board, Los Angeles Region
- California Regional Water Quality Control Board, San Diego Region
- State Water Resources Control Board

2.3.1 Stream Bioassessment Methods

Three monitoring reaches were assessed for the SMC Regional Monitoring Program in the San Dieguito River WMA in the 2015–2016 monitoring year (Table 2-1). They include two SMC "Condition" sites identified as 905M21725 in the main stem of the San Dieguito River and 905M21737 in Lusardi Creek, a tributary to the San Dieguito River. Condition sites are those that are randomly selected from the SMC sample draw list each year and are sampled only once during the current five year cycle (2015–2019) to discern an overall condition estimate of the health of streams in the region. The third SMC site, identified as 905PS0026 in upper Santa Ysabel Creek, was considered a “Trend” site and had been previously sampled during the preceding five-year SMC cycle (2009–2013), as well as in 2015. Trend sites are those that have been randomly selected from the preceding five-year SMC cycle (2009–2013) list, and are being sampled each year of the current five year cycle (2015–2019) to evaluate any overall trends in the health of streams in the region. Data from these sites will also be submitted to the SMC program and will be analyzed within the context of the South Coast Region of California.

Table 2-1
San Dieguito River WMA Storm water Monitoring Coalition Regional Monitoring Program Bioassessment Sites for 2015–2016

SMC Region (WMA)	Stream: Location	Site Type	Station Code[1]	Date Sampled	Latitude/ Longitude
Central San Diego (San Dieguito)	Santa Ysabel Creek: In Pamo Valley	Trend (Open)	905PS0026	May 5, 2016	33.10706/ -116.86739
	San Dieguito River: Near the end of Artesian Road	Condition	905M21725	May 17, 2016	33.01796/ -117.17811
	Lusardi Creek: Downstream of Camino del Sur	Condition	905M21737	May 17, 2016	33.00405/ -117.15264

1. Locations can also be found on Figure 1-1.
SMC = Southern California Storm Water Monitoring Coalition; WMA = Watershed Management Area

All bioassessments were performed between May 5 and May 17, 2016, during the appropriate index period for the SMC (May 1 through July 30). Biological condition and physical habitat quality were assessed in the field using the bioassessment protocol

adopted by the Surface Water Ambient Monitoring Program (SWAMP) of the California State Water Resources Control Board (SWRCB): *Standard Operating Procedures for the Collection of Field Data for Bioassessments of California Wadeable Streams: Benthic Macroinvertebrates, Algae, and Physical Habitat* (Ode, et al., 2016) and the SMC 2015–2019 Work Plan (Mazor, 2015a). The California Rapid Assessment Method (CRAM) scoring followed procedures outlined in *California Rapid Assessment Method for Wetlands, Riverine Wetlands Field Book* (CRAM, 2013).

2.3.1.1 Benthic Community Sampling and Analysis

The sampling team delineated a 150-meter stream "reach" from which samples were collected. The sampling reach was divided into 11 main transects (A, B, C…K) spaced at 15-meter intervals. Transects were established perpendicular to the direction of stream flow (labeled A through K from downstream to upstream), and marked with flags along the stream bank. Inter-transects were established between the 11 main transects (AB, BC, CD…JK), equidistant from the adjacent down and upstream transects and also flagged along the stream bank. Beginning at the downstream end of the sampling reach and progressing upstream, macroinvertebrate and algae samples were collected at each main transect.

Benthic biological community data analysis followed standardized assessment tools adopted by SWAMP. Benthic macroinvertebrates (BMI) were identified according to Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT) Level 2 requirements. These data were then analyzed to produce various biological metrics and two different multi-metric indices (MMI) of overall BMI health: (1) Southern California Index of Biotic Integrity (IBI) (Ode et al., 2005), and (2) the California Stream Condition Index (CSCI) (Mazor et al., 2015c).

The recently developed CSCI is included in this appendix to provide a comparative assessment of the BMI communities of the monitoring stations. The CSCI combines two indices of biological condition: (1) a predictive multi-metric index of biotic integrity (pMMI), and (2) a ratio of observed taxa at a site to the expected taxa at a site (O/E); it is calculated as a mean of individual pMMI and O/E scores. This combination improves the accuracy over using the two individually, because both have limitations when assessing unusual BMI assemblages or sites with unique natural conditions.

2.3.1.2 Physical Habitat Data Collection

Measurements of physical habitat characteristics were performed to document local conditions that may affect the stream environment. At each main transect, three measurements of stream size are collected, including wetted width, bankfull width, and bankfull height (each to the nearest centimeter). Wetted width is defined as the width of streambed that is inundated with water at the time of sampling, while bankfull width is defined as the distance between the apparent limits of the stream banks under normal 1- to 2-year storm-flow conditions. Bankfull height is measured from the water level to the height of the bank at bankfull dimensions.

Once these stream size measurements were collected, particle size was recorded at five points along each transect and inter-transect. A measure of overhead canopy cover was taken from the center of each main transect with a handheld densiometer. Riparian vegetation on each bank, human influence, and instream habitat complexity were all recorded using a categorical scoring system.

Following physical habitat observations at each transect, a series of reach-wide characteristics were recorded, including stream sinuosity, gradient, and flow. Sinuosity is a measure of how much a stream meanders, and is expressed as the ratio of actual channel length to straight line reach length. Stream gradient (i.e., slope) was determined across the sampling reach with a hand level and stadia rod using standard surveying practices.

The final habitat characterization task included scoring each station for three parameters: epifaunal cover, sediment deposition, and channel alteration. Stations were scored from 0 to 20 for each of these parameters, with 0 indicating poor conditions and 20 indicating optimal conditions.

2.3.1.3 Water Quality Sample Collection

Prior to entering the stream, the field team collected both water quality (i.e., pH, dissolved oxygen, specific conductivity, temperature, and turbidity) and analytical chemistry samples at the downstream end of the sampling reach. Water quality was assessed using YSI® handheld field meters that had been precalibrated prior to use in the field.

Analytical samples were collected in precleaned bottles provided by the analytical laboratory. When the analytical methods did not require a chemical preservative, the sample bottle was used directly to collect the sample. If the analytical method required preservation, a precleaned bottle was used as a secondary container to collect the sample, which was then transferred to the laboratory-provided analytical container.

Manual grab samples were collected by inserting the precleaned bottle upsidedown into the channel and then inverting at the approximate midway point in the water column with the container opening facing upstream.

2.3.1.4 CRAM Wetland Condition Data Collection

CRAM analysis requires evaluation of the assessment reach in terms of four attributes: buffer and landscape context, hydrology, physical structure, and biotic structure. Each of these attributes is further described as follows:

- Buffer and landscape context – Assesses a riverine system in terms of the continuity of the buffer within 500 meters upstream and downstream and the quality of the buffer immediately surrounding the assessment reach. This attribute measures the ability of wildlife to enter the riparian corridor buffer and easily move within it along the wetland area within 500 meters of the assessment reach. Buffer is defined as an area in a natural or seminatural state that is not currently dedicated to anthropogenic uses that would detract from its ability to protect the assessment reach from stress or disturbance.

- Hydrology – Assesses the water source and quality, as well as the channel stability and its connection to the surrounding flood plain.
- Physical structure – Assesses the availability of various habitat patch types and topographical complexity of the channel that indicate the capacity of the riverine system to support characteristic flora and fauna.
- Biotic structure – Assesses horizontal and vertical plant structure, which measures the number of distinct plant zones in plan-view and the amount of vertical overlap of plant canopy layers. In addition, the species dominance and composition of the plant community within the assessment reach are assessed.

While an overall CRAM numerical score is produced, there is no official threshold or categorical condition rating system for wetland health (i.e., high, medium, low wetland health) based on the overall CRAM score. However, the overall CRAM score can be compared with the distribution of scores from the regional or statewide dataset of ambient surveys for the specific type of wetland being assessed (i.e., riverine nonconfined in this case). The overall condition of a specific wetland can therefore be assessed within the context of a regional distribution as a percentile of such scores collected during similar ambient surveys.

2.3.2 Stream Bioassessment Results

Table 2-2 summarizes IBI and CSCI index scores for the benthic community health and riverine wetland condition scores (i.e., CRAM). More detailed results and additional information on the IBI, CSCI, and CRAM are presented in Attachment A. Tables 2-3 and 2-4 summarize physical habitat and analytical chemistry results, respectively.

Table 2-2
Summary of San Dieguito River WMA Bioassessment Monitoring Site Index Scores, 2016

Stream Name	Station Code	IBI Score	IBI Condition Category	CSCI Score	CSCI Condition Category	Overall CRAM Score	CRAM Score Percentile[1]
Santa Ysabel Creek	905PS0026	44	Fair	0.75	Likely Altered	86	85.2
San Dieguito River	905M21725	13	Very Poor	0.62	Very Likely Altered	75	30.0
Lusardi Creek	905M21737	24	Poor	0.59	Very Likely Altered	82	67.2
	905M21737 Dup	21	Poor	0.67	Likely Altered		

1. Expressed as the percent of all currently available San Diego County ambient survey nonconfined riverine CRAM sites (n=62) with a lower overall CRAM score (Data Source: www.cramwetlands.org)

CRAM = California Rapid Assessment Method; CSCI = California Stream Condition Index; Dup = duplicate; IBI = Index of Biological Integrity

Table 2-3
Summary of San Dieguito River WMA Physical Habitat Measures of SMC Monitoring, 2016

Physical Habitat Measure	Santa Ysabel Creek 905PS0026	San Dieguito River 905M21725	Lusardi Creek 905M21737
Elevation (feet above sea level)	860	48	180
Gradient (% of slope)	0.8%	0.4%	1.7%
Sinuosity Index[1]	1.01	1.03	1.33
Flow Volume (cfs, ft^3/sec)	<0.01	0.3	0.3
Mean Depth (cm)	11.4	11.9	26.7
Mean Wetted Width (m)	1.6	4.5	2.1
Mean Bankfull Width (m)	2.8	24.5	8.0
Epifaunal substrate cover (0–20 scale)[2]	10	7	16
Sediment deposition (0–20 scale)[2]	17	10	18
Channel alteration (0–20 scale)[2]	20	20	20
Bank stability-left bank	Vulnerable/Stable	Vulnerable	Vulnerable/Stable
Bank stability-right bank	Vulnerable/Stable	Vulnerable	Vulnerable/Stable
Average canopy cover (% of reach)	62%	60%	17%
Macroalgal cover (% of reach)	31%	0%	27%
Aquatic macrophyte cover (% of reach)	46%	62%	43%
CPOM presence: (% of reach)	51%	95%	64%
Flow Habitats (% of Reach)			
Riffle habitat	1%	3%	23%
Glide habitat	69%	97%	75%
Pool habitat	14%	0%	2%
Dry substrate	17%	0%	0%
Substrate Composition (% of Reach)			
Roots	0%	33%	25%
Fines	10%	41%	18%
Sand	66%	0%	16%
Gravel	5%	5%	10%
Cobble	18%	20%	6%
Boulder	1%	1%	5%
Bedrock	0%	0%	20%

1. 1.0 = strait path, >1.0 to 1.1 = low sinuosity, >1.1 to 1.2 = moderate sinuosity, >1.2 to 1.5 = high sinuosity.
2. 0-20 scale, where 0 represents poor conditions and 20 represents optimal conditions.

< = less than; % = percent; cfs = cubic feet per second; cm = centimeters; CPOM = coarse particulate organic matter; ft^3/sec = cubic feet per second; m = meters

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Table 2-4
Summary of San Dieguito River WMA Analytical Chemistry Results for SMC Monitoring, 2016

Constituent	Method	Units	WQO[1]	MDL	RL	Sample Type	San Dieguito River 905M21725	Lusardi Creek 905M21737	Lusardi Creek 905M21737 Dup	Santa Ysabel Creek 905PS0026
Water Temperature	NA	°C	NA	–	–	Point	17.3	16.9	NA	16.7
pH	NA	units	6.5-9.0	–	–	Point	7.61	8.03	NA	8.98
Dissolved Oxygen	NA	mg/L	<6.0	–	–	Point	2.7	6.8	NA	3.6
Specific Conductance	NA	µS/cm	NA	–	–	Point	1,059	3,668	NA	1,370
Turbidity	NA	NTU	20	–	–	Point	5.8	2.2	NA	2.4
Alkalinity as CaCO3	SM 2320 B	mg/L	NA	0.56	10	Grab	270	280	280	330
Ammonia as N	EPA 350.1	mg/L	NA	0.048	0.10	Grab	ND	ND	ND	ND
Calcium	EPA 200.7	mg/L		0.0160	0.100	Grab	202	213	212	85.2
Chloride	EPA 300.0	mg/L	250	1.0-2.5	10-12	Grab	780	810	810	270
Hardness as CaCO3	EPA 200.7	mg/L	250	0.0894	0.662	Grab	932	952	945	398
Magnesium	EPA 200.7	mg/L	0.05	0.0120	0.100	Grab	104	102	101	45.1
Nitrate + Nitrite as N	EPA 353.2	µg/L	NA	10	100	Grab	23J	40J	ND	ND
Nitrate as N	EPA 353.2	mg/L	10	0.041	0.10	Grab	ND	ND	ND	ND
Nitrite as N	EPA 353.2	µg/L	1	10	100	Grab	ND	ND	ND	ND
Nitrogen, Total	Calculation	mg/L	1	0.060	0.20	Grab	1.1	0.96	0.85	0.65
Nitrogen, Total Kjeldahl	EPA 351.2	mg/L	NA	0.050	0.10	Grab	1.1	0.92	0.85	0.65
Orthophosphate as P	EPA 365.3	mg/L	NA	0.00083	0.010	Grab	0.090	0.15	0.14	0.021
Phosphorus as P	EPA 365.3	mg/L	0.1	0.00083	0.010	Grab	0.085	0.086	0.12	0.079

Table 2-4 (continued)
Summary of San Dieguito River WMA Analytical Chemistry Results for SMC Monitoring, 2016

Constituent	Method	Units	WQO[1]	MDL	RL	Sample Type	San Dieguito River 905M21725	Lusardi Creek 905M21737	Lusardi Creek 905M21737 Dup	Santa Ysabel Creek 905PS0026
Sulfate	EPA 300.0	mg/L	250	1.0-2.5	5.0-12	Grab	380	400	390	63
Total Suspended Solids	SM 2540 D	mg/L	58	0.5	5	Grab	20	1J	1J	23

1. San Diego Region Basin Plan (Regional Board, 1994)

°C = degrees Celsius; µS/cm = micro-Siemens per centimeter; $CaCO_3$ = calcium carbonate; Dup = duplicate; EPA = United States Environmental Protection Agency Method; J = estimate; MDL = method detection limit; mg/L = milligrams per liter; N = nitrogen; NA = not applicable field measurement; ND = not detected; NTU = nephelometric turbidity unit; P = phosphorus; RL = reporting limit; SM = Standard Method

Santa Ysabel Creek in Pamo Valley (905PS0026)

Santa Ysabel Creek (905PS0026) had an IBI score of 44 (Fair) and a CSCI score of 0.75 (Likely Altered). The IBI rating indicated an unimpaired BMI community (an IBI score of less than or equal to [≤] 39 is considered impaired), while the CSCI score indicated slightly lower quality biotic conditions (a CSCI score of less than [<] 0.79 is considered impaired). Individual metrics of the BMI community were variable, with some aspects of the community indicating high quality conditions (e.g., a high diversity of beetles) while others did not (e.g., a high percent of tolerant taxa and a low number of Ephemeroptera, Plecoptera, and Trichoptera EPT) taxa). The site did support some sensitive BMI, albeit in low abundance.

Figure 2-1
Santa Ysabel Creek (905PS0026) Transect F Looking Downstream

The riverine wetland condition of Santa Ysabel Creek, shown in Figure 2-1, was of good quality according to the CRAM analysis, with an overall CRAM score of 86 of a possible 100 points. Every CRAM attribute metric scored an A or B, the two highest rating categories. The CRAM score at Santa Ysabel Creek fell into the 85th percentile of the ambient survey distribution within the County, indicating that this site scored better than 85 percent of all nonconfined riverine sites that have been assessed within the County during ambient monitoring surveys.

Stream flow at the time of sampling was low and some short segments of the monitoring reach were dry. The streambed and riparian corridor were mostly undisturbed, with some evidence of cattle grazing upstream of the monitoring reach and an unpaved forest service road approximately 50 meters south of the streambed. The banks were predicted to be stable under normal stormflows, but some areas would be vulnerable to erosion under high flows. The vegetation was dominated by native species, with good coverage in all vegetative layers, and a reach-wide overhead canopy cover of 62 percent (%).

Macroalgal and aquatic macrophyte coverage were moderate, with a substantial amount of coarse particulate organic matter (CPOM) (a food source for BMI) in the streambed. The substrate was dominated by sand (66%) and cobble (18%). Flow habitats primarily consisted of glides (shallow, slow) and pools (deep, slow).

The results of the physical water quality and analytical chemistry are presented in Table 2-8. None of the measured parameters were at levels that would limit BMI colonization, with the possible exception of dissolved oxygen (DO), which had a value of 3.6 milligrams per liter (mg/L). Specific conductance was slightly elevated relative to most reference streams, with a value of 1,370 micro-Siemens per centimeter (µS/cm).

San Dieguito River at Artesian Road (905M21725)

The San Dieguito River site had IBI and CSCI scores that indicated a degraded BMI community. The site had an IBI score of 13 (Very Poor) and a CSCI score of 0.62 (Very Likely Altered). All metrics of the BMI community consistently indicated poor biotic integrity. The community was dominated by Dipteran taxa (true flies), which composed 67% of the taxa; a single EPT taxon was collected (*Baetis adonis*) and no beetles. There were no sensitive BMI collected, although many taxa had moderate tolerance values (TV = 4-6) which indicated that the site was likely not exposed to severe chemical pollutants.

The riverine wetland condition of the San Dieguito River monitoring reach was moderate, as shown in Figure 2-2, with a CRAM score of 75 of 100 possible points. The site was rated high for buffer and most vegetation characteristics (slightly elevated percent invasive species), but was rated lower for water source and diversity of habitat types (i.e., structural patch richness and topographic complexity). The CRAM score at the San Dieguito River site fell into the 30th percentile of the ambient survey distribution within the County, indicating that this site scored better than 30 percent of all non-confined riverine sites that have been assessed within the County during ambient monitoring surveys.

The reach was in a low gradient segment of the river, and flow was dominated by glide habitat (97%) with a flow volume of 0.3 cubic feet per second (cfs). The banks were predicted to be stable under normal 1- to 2-year storm events, but many areas would be vulnerable to erosion under high flows, and it is possible that in a year with heavy rainfall, some of the aquatic macrophyte growth could be scoured from the streambed to expose more cobble substrate. Overhead canopy exhibited 60% coverage across the reach and macrolagal cover was nearly absent. Aquatic macrophytes were very abundant within the streambed, sometimes forming dense stands with a mix of cattails, sedges, and watercress. CPOM was detected at 95% of the transect points assessed. Substrate was composed primarily of fine sediments and roots of the aquatic macrophytes, with some small sections of cobble.

Figure 2-2
San Dieguito River (905M21725) Transect K Looking Upstream

The results of the physical water quality and analytical chemistry indicated that chloride and sulfate concentrations were slightly elevated above that typically observed in reference streams of southern California, at 780 mg/L and 380 mg/L, respectively. These two analytes were identified in the SMC Regional Monitoring Program report to be high priority regional stressors to BMI (Mazor, 2015b), with the potential to limit BMI colonization. The concentration of dissolved oxygen was also relatively low, with a value of 2.7 mg/L.

Lusardi Creek Downstream of Camino del Sur (905M21737)

The Lusardi Creek site was sampled in duplicate for BMI, as required under the SMC Regional Monitoring Program. The site exhibited IBI and CSCI scores that indicated a moderately degraded BMI community for both duplicate samples. The site had IBI scores of 24 and 21 (Poor) and CSCI scores of 0.59 and 0.67 (Very Likely Altered and Likely Altered, respectively). BMI metrics indicated that some aspects of the community were in moderate condition, with a total of four EPT taxa that included the sensitive caddisfly, *Tinodes* sp. The community also had relatively high IBI metric scores for the percent of non-insect taxa, plus an overall low abundance of non-insect individuals, further indicating relatively good biotic conditions relative to typical urban influenced streams.

The riverine wetland condition of the Lusardi Creek monitoring reach was good, shown in Figure 2-3, with an overall CRAM score of 82 of 100 possible points. The site was in an undeveloped open space preserve with a natural streambed and bank and a limited-access, unpaved road just south of the stream. The reach was rated low for three CRAM attributes, including water source (typical in an urbanized setting), a low hydrologic

connectivity to the active floodplain, and limited vertical biotic structure (overlap of plant canopy layers). The CRAM score at the Lusardi Creek site fell into the 67th percentile of the ambient survey distribution within the County, indicating that this site scored better than 67% of all nonconfined riverine sites that have been assessed within the County during ambient monitoring surveys.

Figure 2-3
Lusardi Creek (905M21737) Transect F Looking Upstream

The banks showed evidence of a relatively recent fire, but were otherwise dominated by native vegetation. Flow volume was 0.3 cfs, and the 1.7% stream gradient made riffle habitat abundant (23% of the flow habitat within the reach). The rocky geology of the reach created mostly stable banks, but likely inhibited the establishment of tall riparian vegetation, with canopy cover directly over the stream comprising only 17% of the reach. Macroalgal and aquatic macrophyte reach-wide coverage was 27% and 43%, respectively, and CPOM was observed at 64% of the transect points. With five of the seven general substrate types exceeding 10% coverage, substrate types were diverse; however, the dominant types were roots (25%) and bedrock (20%).

The results of the physical water quality and chemistry analysis indicated that chloride and sulfate concentrations were slightly elevated above those typically observed in reference streams of southern California, at 810 mg/L and 400 mg/L, respectively, and could potentially limit BMI colonization. A specific conductance of 3,668 µS/cm was also measured, which is above the known tolerance of many sensitive BMI. The DO concentration was higher at this stream (6.8 mg/L) than at the other two streams monitored, likely a result of the increased riffle flow habitat.

2.4 California Assembly Bill 411 (AB 411) Data

San Diego County Department of Environmental Health (DEH) implements the Beach and Bay Water Quality Monitoring Program to support the statewide program funded by the Beach Safety Act (AB 411). This program is commonly referred to as AB 411 monitoring. There are three AB 411 beach monitoring stations in the San Dieguito River WMA. The AB 411 monitoring program is not required by the MS4 Permit. Responsible Agencies are using the AB 411 data to track dry weather beach water quality conditions related to the HPWQC for the watershed (San Dieguito Responsible Agencies, 2015a).

The number of samples for the period between October 1, 2015, and July 31, 2015, collected for each fecal indicator bacteria (FIB) indicator (E*nterococcus*, fecal coliform, and total coliform) is presented in Table 2-5.

Table 2-5
San Dieguito River WMA AB411 Data Summary

Site ID	Location[1]	Total Number of Samples		
		Enterococcus	Fecal Coliform	Total Coliform
EH-360	15th Street near outlet	48	47	47
EH-380	San Dieguito River outlet	116	115	115
EH-390	Seascape near outlet	28	28	28

1. Figure 1-1 shows the locations of the AB 411 Monitoring Locations.
ID = identification

The concentrations for the FIB indicators are shown in Figures 2-4 through 2-12. These data will be reviewed during the Receiving Water Assessment completed in the Regional Monitoring and Assessment Report.

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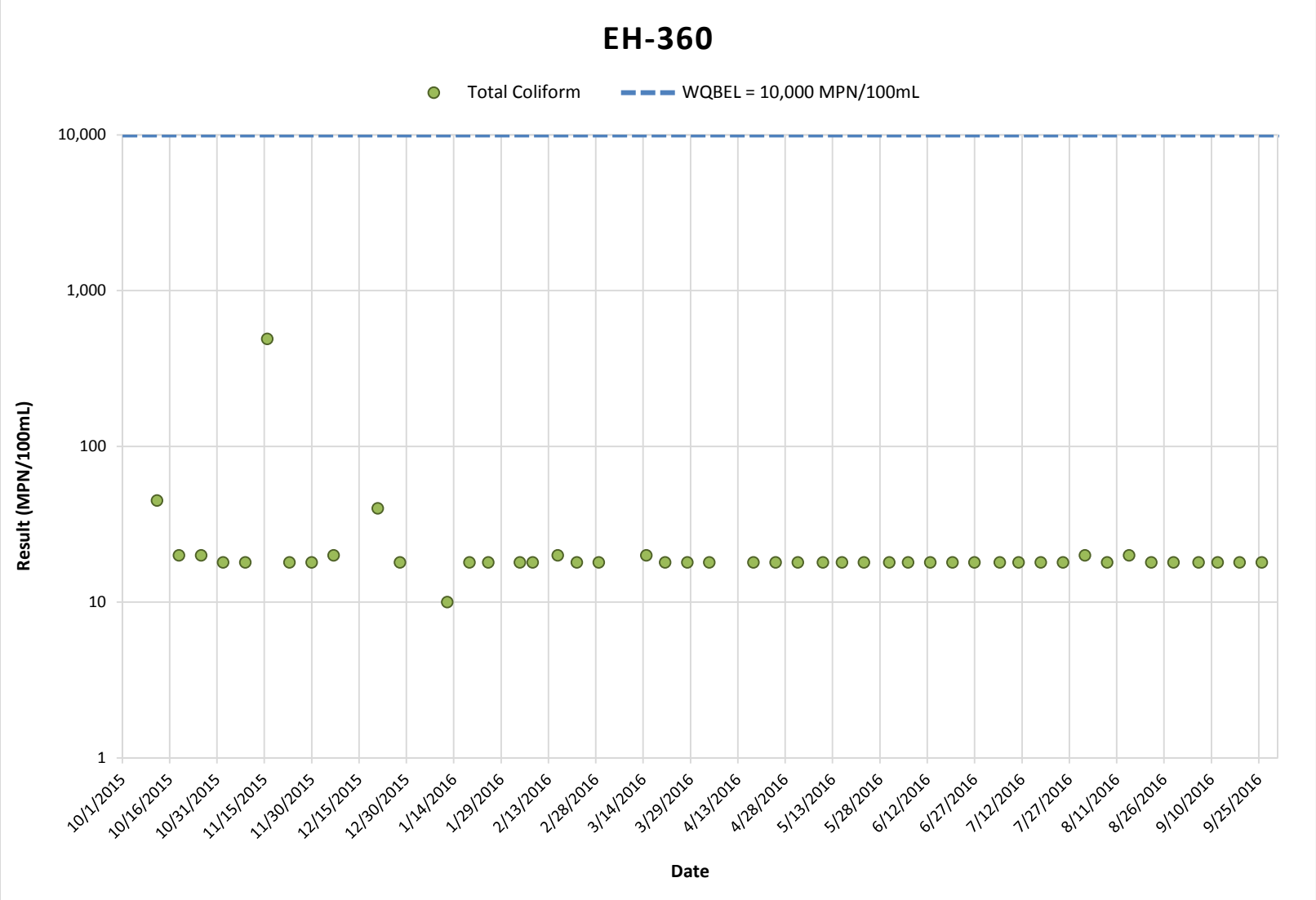

Figure 2-4
Total Coliform Concentrations at AB 411 Site EH-360

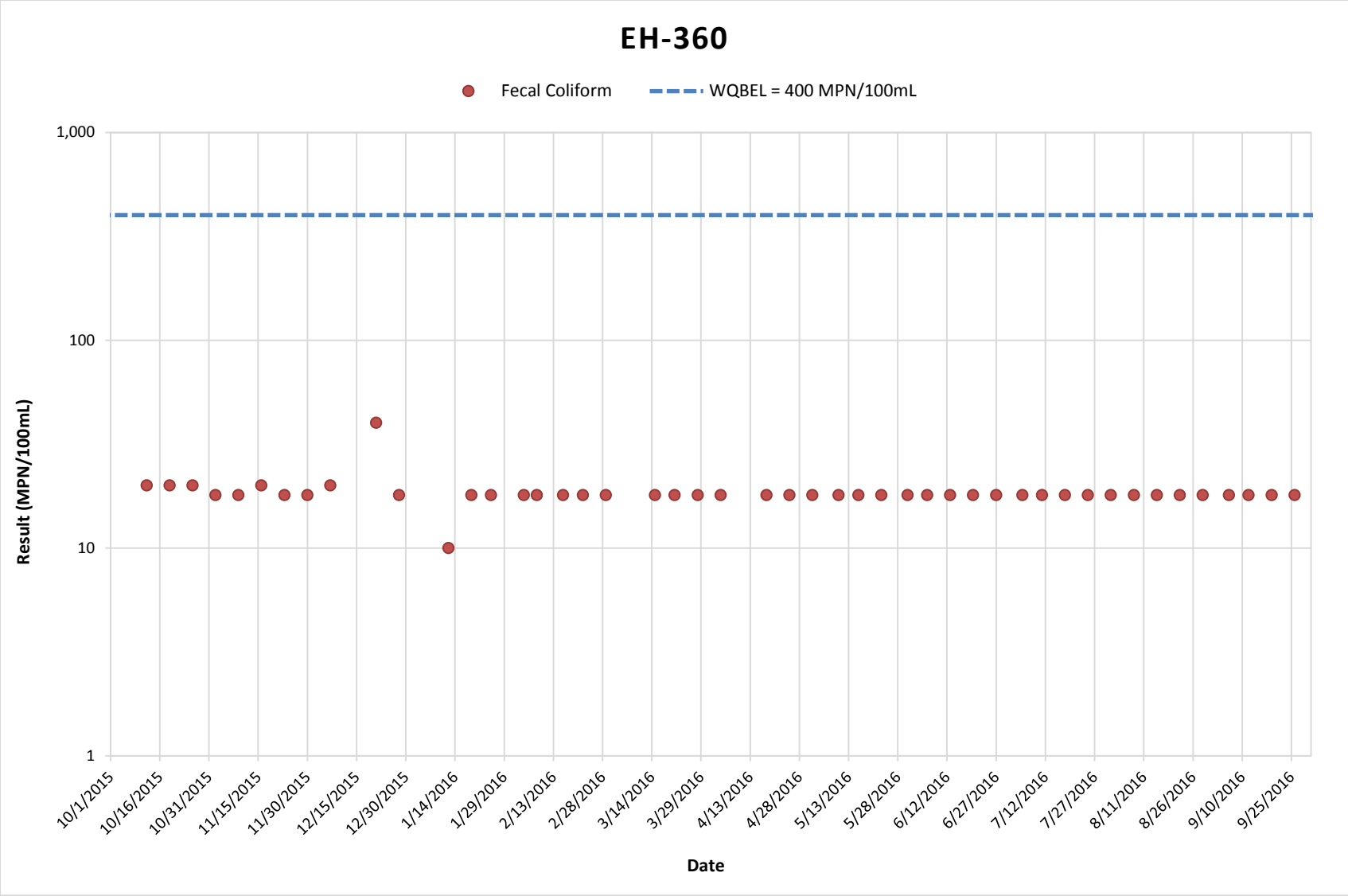

Figure 2-5
Fecal Coliform Concentrations at AB 411 Site EH-360

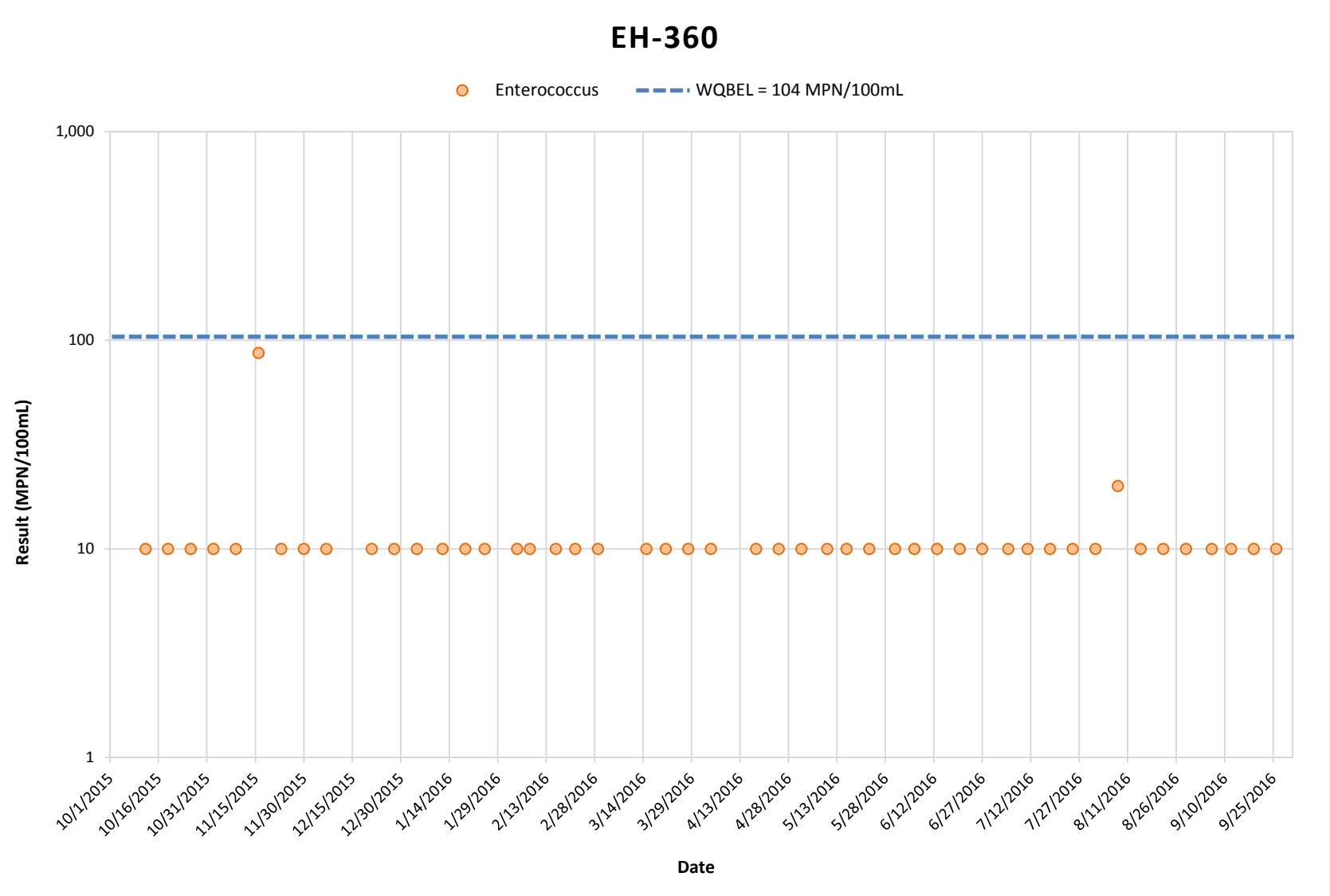

Figure 2-6
***Enterococcus* Concentrations at AB 411 Site EH-360**

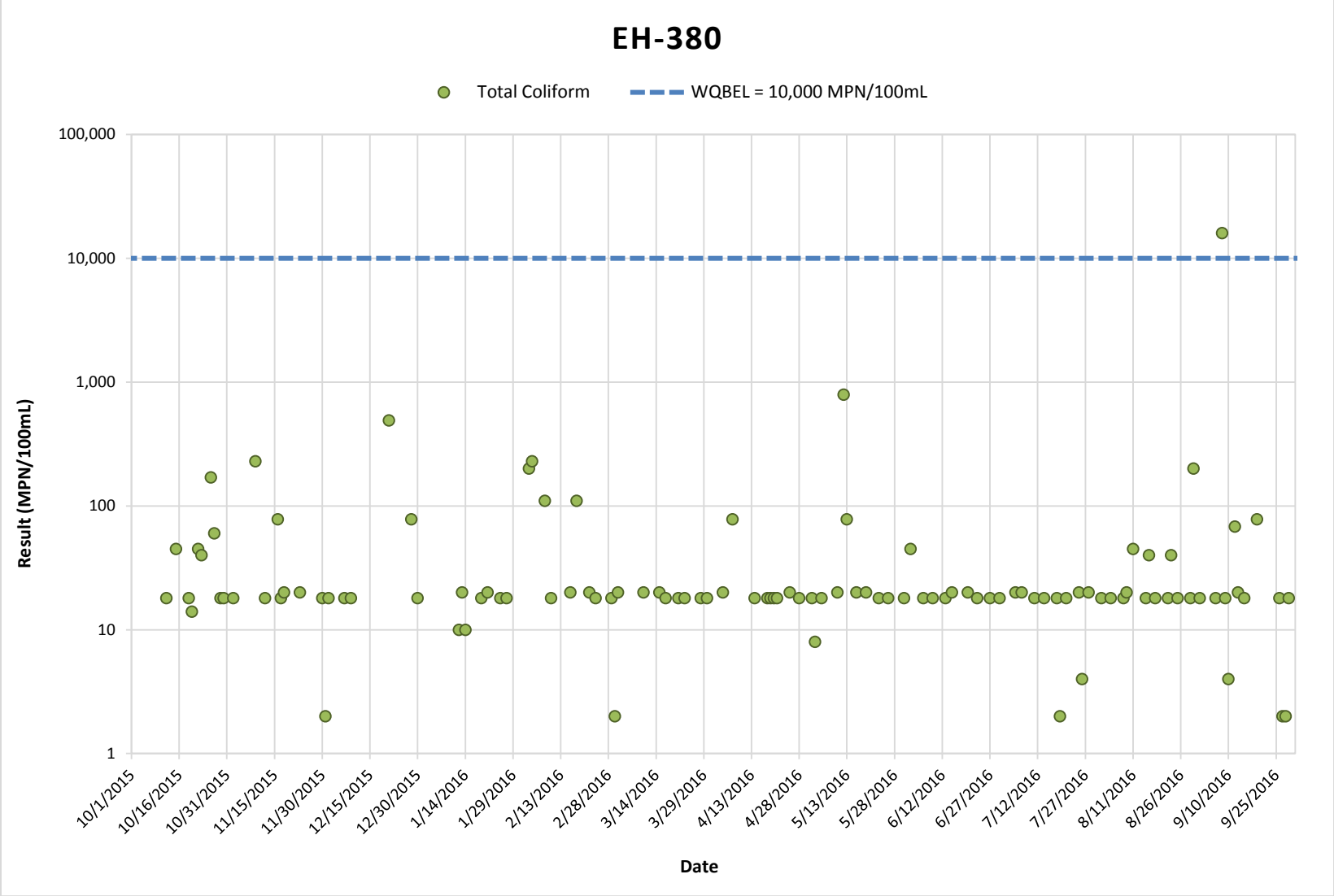

Figure 2-7
Total Coliform Concentrations at AB 411 Site EH-380

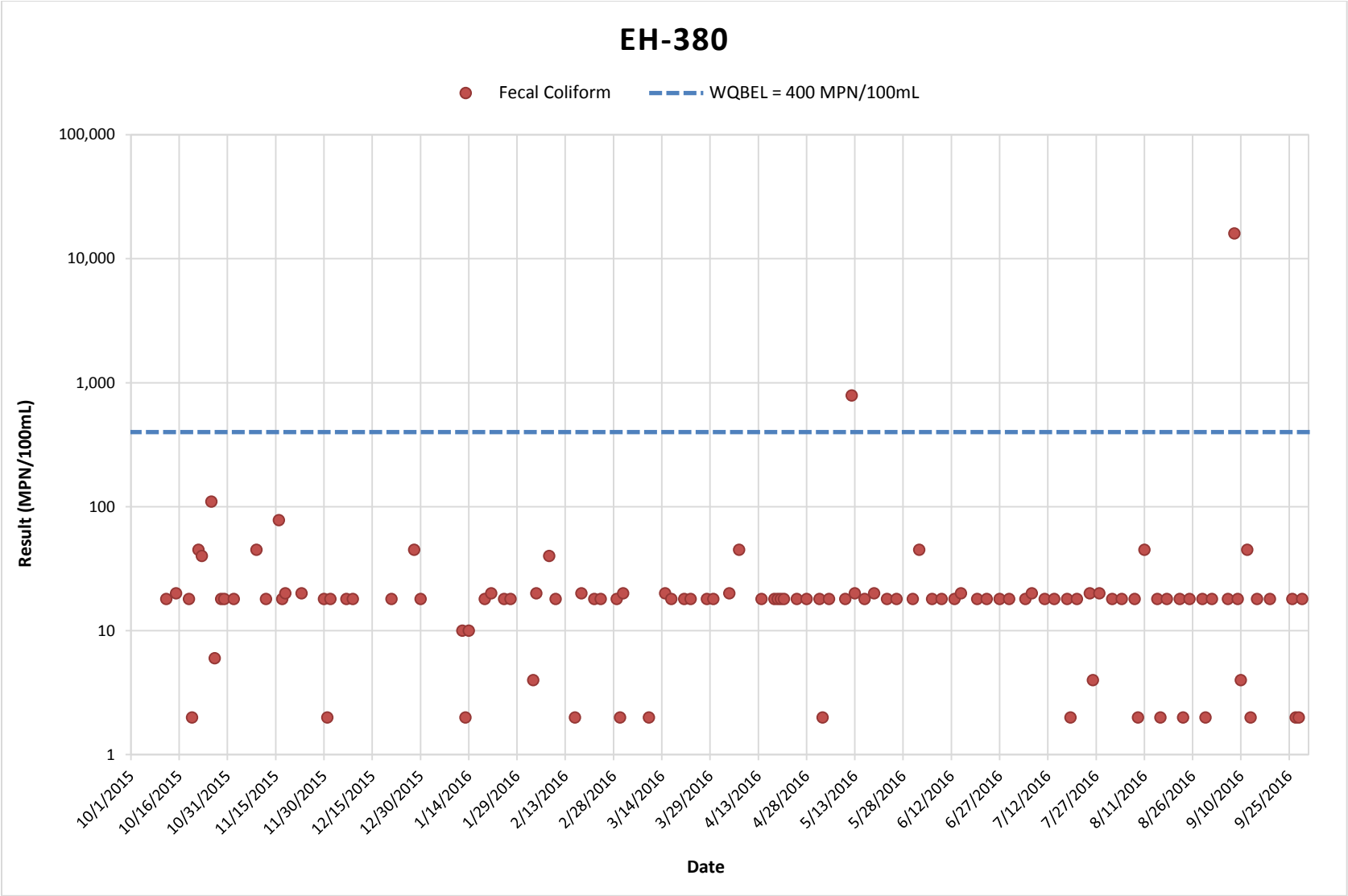

Figure 2-8
Fecal Coliform Concentrations at AB 411 Site EH-380

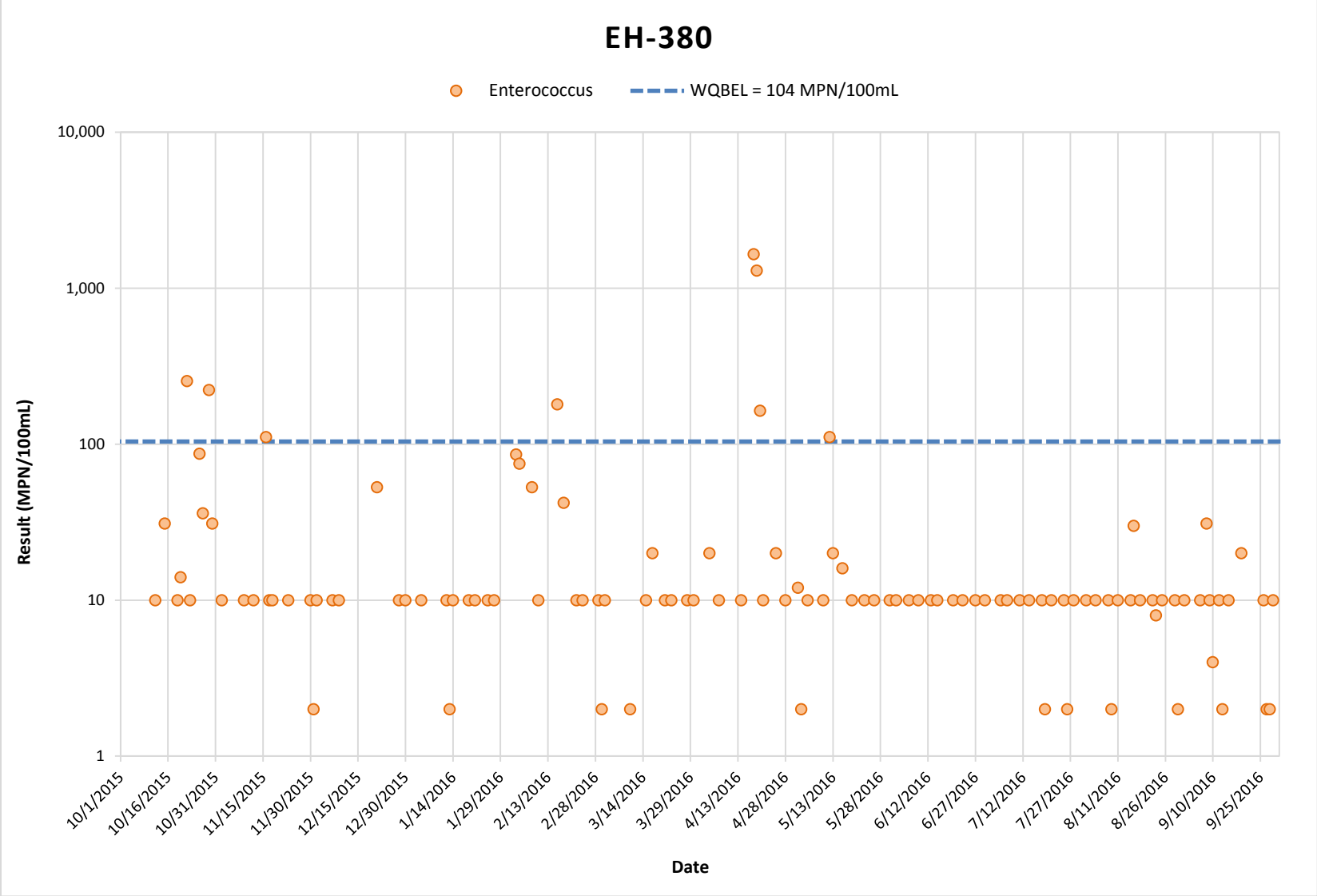

Figure 2-9
***Enterococcus* Concentrations at AB 411 Site EH-380**

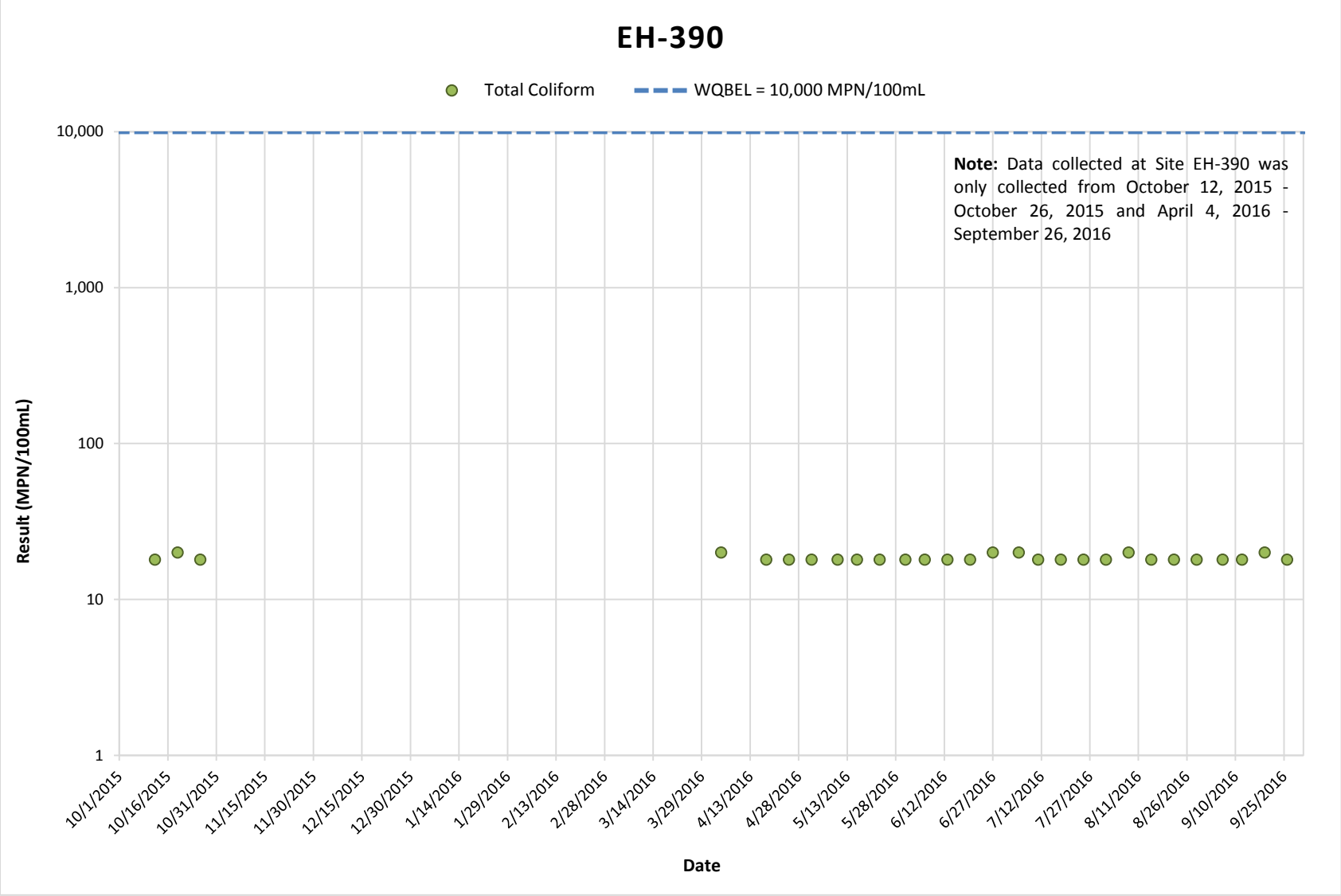

Figure 2-10
Total Coliform Concentrations at AB 411 Site EH-390

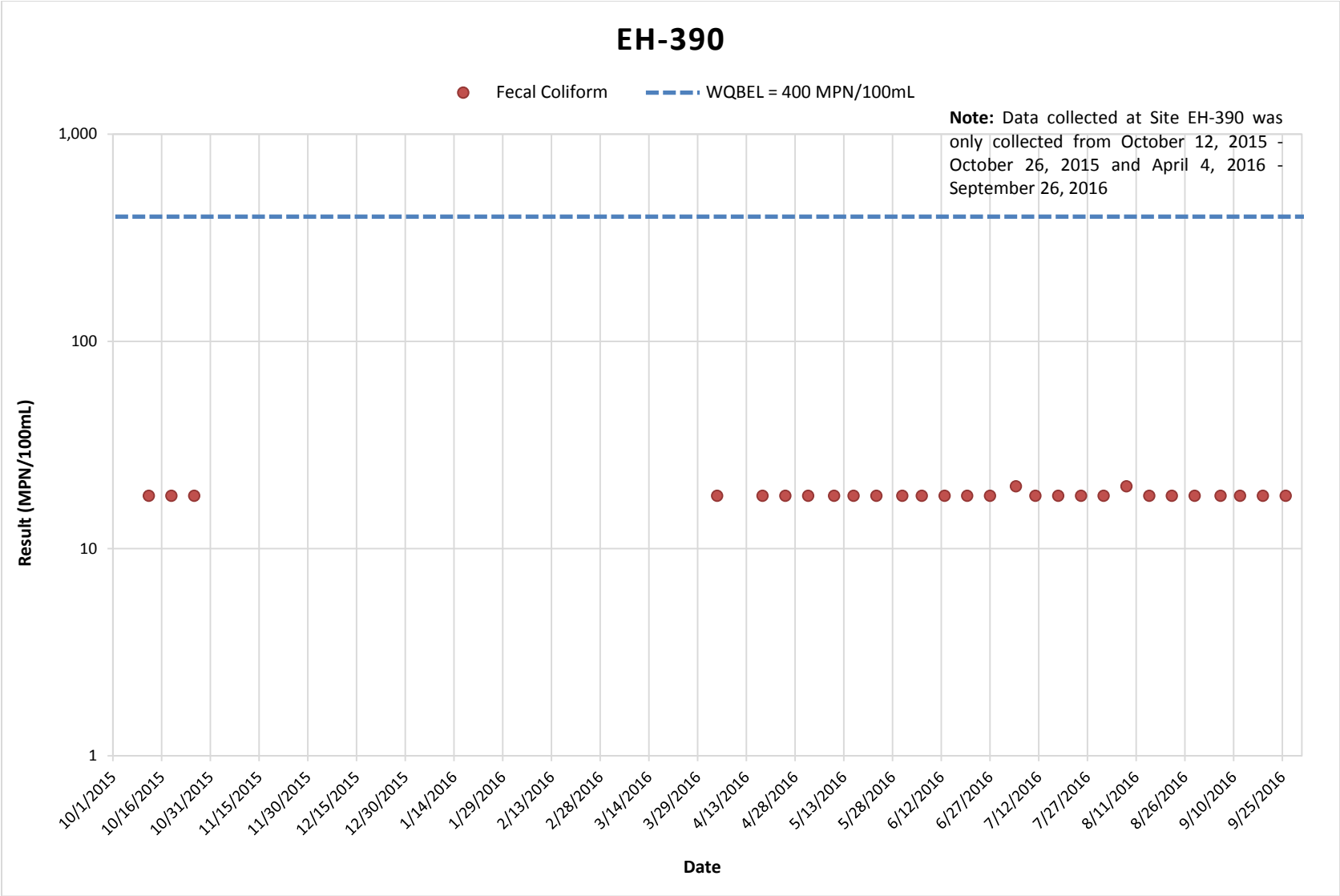

Figure 2-11
Fecal Coliform Concentrations at AB 411 Site EH-390

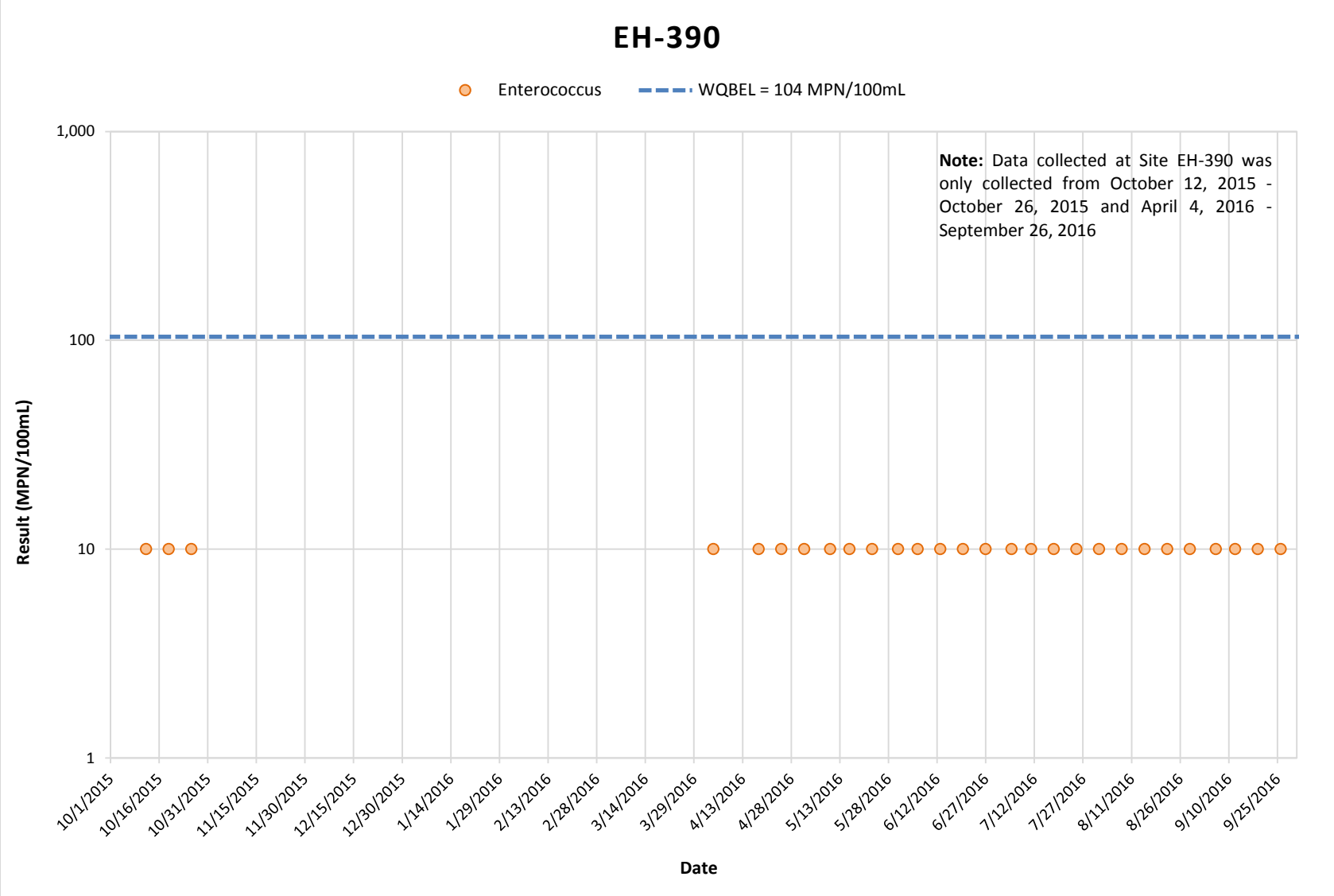

Figure 2-12
***Enterococcus* Concentrations at AB 411 Site EH-390**

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2.5 Hydromodification Monitoring Program

The Hydromodification Monitoring Program (HMP) was initially developed in response to the requirements of the 2007 MS4 Permit. The Monitoring Plan is defined in Chapter 8 of the HMP, and was updated by the San Diego County Regional Copermittees and accepted by the Regional Board in February 2014. The Effectiveness Assessment of the San Diego HMP Report was submitted to the Regional Board in December 2016.

The Effectiveness Assessment of the San Diego HMP attempts to determine whether the requirements were fully met in the checklist in Chapter 8 of the HMP. Monitoring results and program evaluations indicate that the HMP elements are protecting stream physical integrity (Regional Board, 2016). Additionally, the report provides answers regionally to three questions:

1. Do field observations confirm that the HMP appropriately defines the flow rate (expressed as a function of the 2-year runoff event) that initiates the movement of channel bed and bank material? The Effectiveness Assessment determined that the HMP does appropriately define the flow rate that initiates movement of channel bed and bank materials (Regional Board, 2016).
2. Are hydromodification mitigation facilities adequately meeting flow duration design criteria outlined in the HMP? The initial plan for this phase of the assessment was to couple BMP monitoring and channel monitoring. The slow pace of development during the economic recession in the first few years of the project did not allow for this to happen. The study plan was changed and one best management practice (BMP) location was monitored during the 2015–2016 wet season for flow. Analysis for this one location over the year showed that significant peak flow attenuation occurred and, during the monitored events, the BMP performed as designed to prevent hydromodification (Regional Board, 2016).
3. What is the effect of development on receiving water channel cross-section stability downstream of urban development? The Effectiveness Assessment found that there were no major changes in channel stability within the nine monitored sites during the monitoring period, which included a relatively dry period due to drought conditions (Regional Board, 2016).

The report provided details of the small changes in channel geomorphology for the five sites located in the San Dieguito WMA, as summarized in Table 2-6.

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Table 2-6
San Dieguito River WMA HMP Monitoring Site Summary

Site Name and Number	HMP Monitoring Type	Evidence of Erosion/ Deposition?	Repeat Assessment?	Susceptibility Class Changed?	Notes and interpretation. Is change (if observed) indicative of instability in channel or watershed?
Ramona RH-1	Reference	2–4 inches of deposition in long profile, no change in cross-section	Yes	No	Fine sediment from watershed has formed a thin layer on the channel bed over original bed (also sand). Appears to be cyclical deposition, potentially sheet wash from the surrounding former floodplain terrace, likely to be washed out in subsequent years. Site appears stable.
Schoolhouse RH-2	Reference	9–18 inches of fine sediment deposition in channel	Yes	No	No significant fine sediment from watershed (potential fire effects). Deposition is pronounced enough to potentially cause channel infilling/avulsion and lateral migration within the valley floor. Potentially unstable site in medium term.
Bear Valley DH-2	Development	Up to 9 inches of erosion over a short reach	Yes	No	Local scour set against overall influx of fine sediment (potentially from development upstream). Possible migration of outside bend and infilling/avulsion of downstream channel.

Table 2-6 (continued)
San Dieguito River WMA HMP Monitoring Site Summary

Site Name and Number	HMP Monitoring Type	Evidence of Erosion/ Deposition?	Repeat Assessment?	Susceptibility Class Changed?	Notes and interpretation. Is change (if observed) indicative of instability in channel or watershed?
MDS DH-3	Development	Development 6-12 inches of upstream erosion, 6-12 inches of deposition downstream	Yes	No	Upstream sections of channel have eroded due to watershed runoff, depositing sediment in culvert backwater. Incision and channel widening occurring between two grade controls. Site appears moderately unstable in medium term.
Saratoga UH-1	Urban	Upstream headcut migration and downstream deposition	Yes	No	Headcut migrating through reach causing upstream incision and downstream deposition. Headcut likely to proceed until arrested by grade control. Site appears unstable.

HMP = Hydromodification Monitoring Program; Source: (Regional Board, 2016)

2.6 Bacteria TMDL Monitoring

The 2015–2016 San Dieguito River Hydrologic Unit (HU) Bacteria Total Maximum Daily Load (Bacteria TMDL) compliance monitoring program was designed to meet the requirements of the MS4 Permit. The Bacteria TMDL monitoring program assesses the conditions of the receiving waters and has the following objectives:

- Characterize levels of bacteria concentrations at compliance monitoring locations.
- Track progress toward meeting the Bacteria TMDL numeric targets.

FIB sampling was completed for the compliance monitoring season (October 2015 through September 2016). Wet weather samples were collected between October 1, 2015, and April 30, 2016, within the first 72 hours of the end of rainfall for three wet weather events. Dry weather samples were collected at least weekly in October 2015 and from April 2016 through September 2016, and at least monthly on dry weather days from November 1, 2015, through March 31, 2016. Compliance monitoring location information is presented in Table 2-7. The Bacteria TMDL Compliance Monitoring Report is provided in Attachment B.

Annual Compliance Reports summarize FIB concentrations and key hydrologic data by season. Compliance is assessed by comparing analytical results for *Enterococcus*, fecal coliform, and total coliform with applicable receiving water limitations (RWLs), in accordance with the Bacteria TMDL requirements in Attachment E of the MS4 Permit. The RWLs are a combination of numeric targets for bacteria density and allowable exceedance frequencies. The single-sample maximum numeric targets are required to be achieved only during wet weather with a 22% final allowable exceedance frequency. For dry weather days, the 30-day geometric mean numeric targets must be achieved with a 0% exceedance frequency. The compliance schedule includes interim milestones that must be achieved to demonstrate progress prior to attaining full compliance with the TMDL. Wet weather samples were collected for three wet weather events.

Table 2-7
TMDL Monitoring Station

Monitoring Location	Monitoring Identification	Latitude	Longitude
San Dieguito Lagoon Mouth	EH-380	32.975	–117.271

Summary of Results for 2015–2016

Analytical results for total coliform, fecal coliform, and *Enterococcus* at San Dieguito Lagoon Mouth were compared with numeric targets established in the Bacteria TMDL and MS4 Permit. Results are as follows:

- During wet weather, total coliform and fecal coliform did not exceed their corresponding single-sample limits (exceedance frequency = 0% for both constituents); *Enterococcus* exceeded its single sample limit of 104 most probable

number per 100 milliliters (MPN/100 mL) at a rate of 13.6%. Therefore, EH-380 is in compliance with interim and final wet weather single-sample maximum RWLs for all three constituents.

- During the wet season, which evaluates a combination of both wet and dry weather samples, EH-380 achieved a 0% geometric mean exceedance frequency for all compliance constituents and is in compliance with interim and final dry weather geometric mean RWLs.
- During the dry season, when recreational activities occur with more regularity, EH-380 achieved a 0% exceedance frequency for all three compliance constituents, and is in compliance with interim and final dry weather geometric mean RWLs.

3 Dry Weather Outfall Assessments and Illicit Discharges

The purpose of this program is to identify non-storm water and illicit discharges within each Responsible Agency's jurisdiction, determine which discharges are transient flows and which are persistent flows, and prioritize the dry weather MS4 discharges that will be investigated and eliminated. The dry weather MS4 outfall monitoring component involves the following types of data collection activities for the San Dieguito River WMA:

- Dry Weather MS4 Outfall Field Screening: inspecting major outfalls during dry weather conditions to identify and prioritize persistently flowing outfalls.
- Dry Weather Persistent MS4 Outfall Discharge Monitoring: testing the discharge for various pollutants and comparing the results to the NALs.

3.1 Non-Storm Water MS4 Outfall Monitoring Data

During the 2015–2016 monitoring season (October 2015 through September 2016), the Responsible Agencies implemented the first year of dry weather outfall discharge monitoring in accordance with Provision D.2.b of the MS4 Permit. The goals of dry weather outfall monitoring are to:

- Identify non-storm water and illicit discharges within each Responsible Agency's jurisdiction.
- Prioritize dry weather MS4 discharges that will be investigated and eliminated.
- Assess effectiveness of JRMPs toward effectively prohibiting non-storm water discharges into the MS4.

Dry weather outfall data are provided in Attachment C.1. Attachment D includes a QA/QC summary of the dry weather outfall data collected. Details of the monitoring methodology are provided in the San Dieguito River WMA MS4 Outfall Monitoring Plan, available on the Project Clean Water website (Project Clean Water, 2016). The following subsections present the results of dry weather discharge monitoring in the San Dieguito River WMA.

3.2 Non-Storm Water Action Level Comparisons

Data collected as part of the dry weather MS4 outfall discharge monitoring were compared with NALs per the MS4 Permit. The results are summarized in Tables 3-1 through 3-5.

The MS4 Permit NALs vary according to the receiving water of the MS4 discharge (i.e., there are separate NALs for discharges to ocean surf zone, lagoons/harbors/bays/estuaries, and inland surface waters). As summarized in Table 3-1, three dry weather MS4 outfall discharge monitoring locations flow to ocean surf zone receiving waters. In three of the four samples collected, the total coliform and fecal coliform concentrations did not exceed the NALs, and concentrations of *Enterococcus* in all samples exceeded the NAL. Note that sites within the City of Del Mar's jurisdiction were dry during at least one monitoring event and no sample was collected. For the site within the City of Solana Beach's jurisdiction, a low flow diverter has been installed.

However, persistent flows at the outfall are still being originated from a small area downstream of the low flow diverter. Further studies are planned to determine the source of flow.

Table 3-1
NAL Comparison for MS4 Outfalls to Ocean Surf Zone

Analyte	NAL	Monitoring Location			
		City of Del Mar[1]		City of Solana Beach	
		S-05[2,3]	S-07[4]	S-25	
		8/12/2016	6/30/2016	8/12/2016	6/30/2016
Total Coliform	10000/1000* MPN/100 mL	30	**1600**	1600	8000
Fecal Coliform	400 MPN/100 mL	4	**1600**	23	40
Enterococcus	104 MPN/100 mL	**1400**	**500**	**280**	**5000**

*The NAL is 1,000 MPN/100mL when the fecal/total coliform ratio exceeds 0.1.

1. The City of Del Mar originally identified stations S-06 and S-07 as its highest priority persistently flowing outfalls in the San Dieguito River WMA WQIP. However, S-06 was dry during site visits on both 6/30/16 and 8/12/16 and no sample could be collected.
2. Site S-05 is not classified as a major MS4 outfall. Outfall diameter is less than 36 inches.
3. Site S-05 was classified as a persistently flowing outfall and sampled beginning 8/12/16. As the outfall does not qualify as a major MS4 outfall, this sampling is voluntary.
4. Site S-07 was dry during the second outfall monitoring event on 8/12/16. No sample was collected.

Bold = exceedance of NAL
µg/L = micrograms per liter; MPN/100 mL = most probable number per 100 milliliters; NAL = non-storm water action level

One major MS4 outfall, DW0033, flows to the San Dieguito Lagoon. This outfall is within the jurisdiction of the City of San Diego (City). As summarized in Table 3-2, two samples were collected from DW0033. With the exception of *Enterococcus* and dissolved copper, all results were detected below the appropriate NALs. The City has just begun implementation of its WQIP strategies, focused primarily on bacteria and low flow reduction, during the 2015–2016 monitoring year. The City plans to continue implementing the strategies without modification and work towards eliminating dry weather flows.

Table 3-2
NAL Comparison for MS4 Outfalls to Lagoon and Estuary Waters

Analyte	NAL	Monitoring Location	
		DW0033	
		City of San Diego	
		2/16/2016	4/5/2016
Dissolved Cadmium	16 µg/L	ND	ND
Dissolved Chromium VI	83 µg/L	ND	ND
Dissolved Copper	5.8 µg/L	**7**	**6**
Enterococcus	104 MPN/100 mL	**740**	**340**
Fecal Coliform	400 MPN/100 mL	120	230
Dissolved Lead	14 µg/L	ND	ND
Dissolved Nickel	14 µg/L	2.6	ND
pH	6.0-9.0	8.3	7.9
Dissolved Silver	2.2 µg/L	ND	ND
Turbidity	225 NTU	1.73	3.46
Dissolved Zinc	95 µg/L	11	26

Bold = exceedance of NALµg/L = micrograms per liter; MPN/100 mL = most probable number per 100 milliliters; NTU = nephelometric turbidity unit; ND = not detected

Eleven major MS4 outfalls that flow into inland surface waters were monitored (Tables 3-3 through 3-5): one outfall each in the City of Escondido and the City of Poway (Table 3-3), four outfalls in the City of San Diego (Table 3-4), and five major outfalls in the County (Table 3-5). A total of 293 of the 396 results were below appropriate NALs (including 160 non-detects). The NALs were exceeded for dissolved oxygen, copper, *Enterococcus*, fecal coliform, iron, manganese, methylene blue active substance (MBAS), total nitrogen, total phosphorous, and turbidity collectively within these outfalls. Some of these analytes are found in groundwater and may be from unidentified groundwater intrusion. Other analytes will be addressed by the strategies developed by the Responsible Agencies. The San Dieguito River WMA Responsible Agencies have just begun implementation of the WQIP; they plan to continue implementing the strategies without modification, and work toward eliminating dry weather flows. Additionally, they have implemented their IDDE programs, as summarized in Section 3.3.1, to identify sources of illicit dry weather discharges.

Table 3-3
NAL Comparison for MS4 Outfalls to Inland Surface Waters – City of Escondido and City of Poway

Analyte	NAL	Monitoring Location			
		City of Escondido		City of Poway	
		HDG_102[1]		140[2]	
		4/20/2016	8/30/2016	7/29/2016	8/2/2016
Dissolved Cadmium	** µg/L	ND (11.28)	ND (11.31)	ND (6.5)	0.2 (8.9)
Dissolved Chromium III	** µg/L	ND (1075.38)	ND (1078.32)	0.1 (581.09)	ND (825.57)
Dissolved Chromium VI	16 µg/L	ND	0.32	ND	ND
Dissolved Copper	** µg/L	13 (58.49)	2.8 (58.66)	4 (30.77)	**95 (44.39)**
DO	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	6	6.67	8.9	10.8
Enterococcus	61 MPN/100 mL	**280**	**1400**	**11000**	**5000**
Fecal Coliform	400 MPN/100 mL	**900**	**800**	**17000**	**70000**
Total Iron	0.3 mg/L	0.031	0.04	**0.464**	0.167
Dissolved Lead	** µg/L	ND (24.54)	ND (24.61)	0.1 (11.62)	0.08 (17.89)
Total Manganese	0.05 mg/L	0.014	0.0093	**0.126**	**0.078**
MBAS	0.5 mg/L	ND	ND	ND	ND
Dissolved Nickel	** µg/L	0.51 (333.38)	0.71 (334.32)	2 (176.53)	4 (253.72)
pH	Not in the range of 6.5-8.5	8.11	8.23	7.5	7.4
Dissolved Silver	** µg/L	ND (150.76)	ND (151.63)	ND (41.39)	4 (86.53)
Total Nitrogen	1.0 mg/L	**5.88**	**6.82**	**4.2**	**6.7**
Total Phosphorus	0.1 mg/L	**0.11**	**0.19**	**0.52**	**1.28**
Turbidity	20 NTU	2.9	1.6	5.95	7.12
Dissolved Zinc	** µg/L	18 (759.48)	6 (761.62)	10 (401.75)	51 (577.75)

Bold = exceedance of NAL

** = California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent non-storm water action level

µg/L = micrograms per liter; mg/L = milligrams per liter; MPN/100 mL = most probable number per 100 milliliters;
NTU = nephelometric turbidity unit; ND = not detected; NA = not analyzed; - = missing data; ( ) = Numbers in parentheses adjacent to analytical results are CTR Freshwater Continuous Concentration Hardness dependent values from 40 Code of Federal Regulations (CFR) 131.38(b)(1) calculated using the hardness result of the receiving water for each designated monitoring location: [1]HDG_102RW and [2]140-MS4

Table 3-4
NAL Comparison for MS4 Outfalls to Inland Surface Waters – City of San Diego

Analyte	NAL	Monitoring Location							
		City of San Diego							
		DW0284[1]		DW0317[2]		DW0333[1]		DW0636[1]	
		2/16/2016	4/5/2016	2/16/2016	4/5/2016	2/16/2016	4/5/2016	2/16/2016	4/5/2016
Dissolved Cadmium	** µg/L	ND (11.11)	ND (12.11)	ND (8.18)	ND (8.38)	ND (11.11)	ND (12.11)	ND (11.11)	ND (12.11)
Dissolved Chromium III	** µg/L	ND (1056.73)	ND (1163.74)	ND (751.07)	ND (772.21)	0.79 (1056.73)	ND (1163.74)	ND (1056.73)	ND (1163.74)
Dissolved Chromium VI	16 µg/L	0.63	ND	ND	ND	4.4	3	ND	ND
Dissolved Copper	** µg/L	**160 (57.43)**	14 (63.51)	2.8 (40.22)	ND (41.4)	33 (57.43)	5.9 (63.51)	5.2 (57.43)	5.7 (63.51)
DO	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	8.2	8.43	7.27	7.42	7.51	NA	8.53	8.41
Enterococcus	61 MPN/100 mL	**660**	**7200**	**200**	**160**	**560**	**1800**	**80**	**180**
Fecal Coliform	400 MPN/100 mL	ND	**7900**	40	ND	60	**2300**	ND	45
Total Iron	0.3 mg/L	**0.79**	0.19	0.044	0.035	0.13	0.049	**0.78**	**3.8**
Dissolved Lead	** µg/L	ND (24.04)	ND (26.91)	ND (15.95)	3.7 (16.5)	ND (24.04)	3.7 (26.91)	ND (24.04)	4.8 (26.91)
Total Manganese	0.05 mg/L	**0.061**	0.044	**0.11**	**0.1**	0.013	ND	**0.38**	**0.94**
MBAS	0.5 mg/L	0.16	0.091	0.063	ND	0.11	0.085	0.11	0.06
Dissolved Nickel	** µg/L	3.8 (327.41)	ND (361.71)	2.9 (230.1)	ND (236.8)	4.9 (327.41)	ND (361.71)	3.6 (327.41)	ND (361.71)
pH	Not in the range of 6.5-8.5	7.8	7.8	8.1	8	7.9	7.8	8.1	8.5
Dissolved Silver	** µg/L	ND (145.32)	ND (177.96)	ND (70.94)	ND (75.2)	ND (145.32)	ND (177.96)	ND (145.32)	ND (177.96)
Total Nitrogen	1.0 mg/L	**78**	**5.8**	**3.5**	**3.2**	**5.5**	**6.4**	**4.1**	**2.9**
Total Phosphorus	0.1 mg/L	**9.4**	**0.49**	0.033	0.037	**0.27**	**0.5**	0.087	**0.69**
Turbidity	20 NTU	**31.33**	**21.52**	2.81	0.13	0.42	NA	4.72	9.08
Dissolved Zinc	** µg/L	38 (745.85)	24 (824.13)	ND (523.9)	11 (539.16)	20 (745.85)	73 (824.13)	18 (745.85)	13 (824.13)

Bold = exceedance of NAL

** = California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent non-storm water action level; µg/L = micrograms per liter; mg/L = milligrams per liter; MPN/100 mL = most probable number per 100 milliliters;

NTU = nephelometric turbidity unit; ND = not detected; NA = not analyzed; - = missing data; ( ) = Numbers in parentheses adjacent to analytical results are CTR Freshwater Continuous Concentration Hardness dependent values from 40 Code of Federal Regulations (CFR) 131.38(b)(1) calculated using the hardness result of the receiving water for each designated monitoring location: [1]SDCMLS and [2]SDCTWAS-1

Table 3-5
NAL Comparison for MS4 Outfalls to Inland Surface Waters – County of San Diego

Analyte	Non-Storm water Action Level (Maximum Daily Action Level)	Monitoring Location									
		County of San Diego									
		MS4-SDG-072[1]		MS4-SDG-074[1]		MS4-SDG-077[1]		MS4-SDG-080[2]		MS4-SDG-115[3]	
		3/28/2016	6/30/2016	3/28/2016	6/30/2016	3/28/2016	6/30/2016	3/28/2016	6/30/2016	3/29/2016	7/7/2016
Dissolved Cadmium	** µg/L	ND (11.88)	0.2 (14.96)	0.2 (11.88)	0.8 (14.96)	ND (11.88)	3 (14.96)	0.09 (7.28)	0.2 (8.2)	ND (7.84)	ND (10.15)
Dissolved Chromium III	** µg/L	0.1 (1138.65)	0.06 (1472.93)	0.4 (1138.65)	0.06 (1472.93)	0.2 (1138.65)	0.3 (1472.93)	0.08 (659.65)	ND (753.19)	ND (716.96)	ND (955.31)
Dissolved Chromium VI	16 µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Copper	** µg/L	6 (62.09)	2 (81.21)	22 (62.09)	3 (81.21)	10 (62.09)	3 (81.21)	9 (35.13)	2 (40.34)	2 (38.32)	0.6 (51.69)
DO	< 5 mg/L (WARM Water) < 6 mg/L (COLD Water)	**5.74**	9.35	**2.48**	6.34	**0.49**	9.85	6.63	6.3	8.1	6.68
Enterococcus	61 MPN/100 mL	**800**	**80**	**340**	**17000**	**3000**	**1400**	**70**	**900**	ND	2
Fecal Coliform	400 MPN/100 mL	**500**	300	**700**	**5000**	**700**	**2000**	ND	**70000**	ND	ND
Total Iron	0.3 mg/L	**0.546**	**0.305**	0.179	**0.802**	**0.356**	0.103	0.017	0.056	0.042	0.022
Dissolved Lead	** µg/L	0.08 (26.24)	ND (35.25)	0.1 (26.24)	ND (35.25)	0.07 (26.24)	0.06 (35.25)	ND (13.6)	ND (16)	ND (15.07)	ND (21.32)
Total Manganese	0.05 mg/L	**0.165**	**0.304**	**0.195**	**0.384**	**0.265**	**0.089**	0.029	0.045	**0.075**	**0.059**
MBAS	0.5 mg/L	**0.8**	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Nickel	** µg/L	2 (353.66)	2 (461.39)	4 (353.66)	5 (461.39)	2 (353.66)	2 (461.39)	3 (201.23)	4 (230.77)	0.7 (219.31)	0.4 (295)
pH	Not in the range of 6.5-8.5	7.05	6.8	6.69	6.76	7.22	7.34	7.93	7.47	7.35	7.15
Dissolved Silver	** µg/L	ND (169.99)	ND (291.88)	ND (169.99)	ND (291.88)	ND (169.99)	ND (291.88)	ND (54.02)	ND (71.37)	ND (64.35)	ND (117.57)
Total Nitrogen	1.0 mg/L	0.6	**2.2**	**7.9**	**2.3**	**5.5**	**3**	**2.7**	**1.5**	**12.1**	**5.9**
Total Phosphorus	0.1 mg/L	**0.26**	**0.43**	**0.2**	**0.32**	**0.33**	**0.92**	**0.16**	**0.2**	0.02	0.02 J
Turbidity	20 NTU	5.14	8.11	3.98	0.99	**65.6**	9.18	0.18	3.07	0.15	0
Dissolved Zinc	** µg/L	17 (805.75)	12 (1051.61)	**1290 (805.75)**	13 (1051.61)	42 (805.75)	6 (1051.61)	14 (458.07)	4 (525.43)	11 (499.3)	0.3 (671.92)

Bold = exceedance of NAL

** = California Toxics Rule (CTR) Freshwater Continuous Concentration Hardness dependent non-storm water action level; µg/L = micrograms per liter; mg/L = milligrams per liter; MPN/100 mL = most probable number per 100 milliliters; NTU = nephelometric turbidity unit;

ND = not detected; NA = not analyzed; - = missing data; ( ) =Numbers in parentheses adjacent to analytical results are CTR Freshwater Continuous Concentration Hardness dependent values from 40 Code of Federal Regulations (CFR) 131.38(b)(1) calculated using the hardness result of the receiving water for each designated monitoring location: [1]MS4-SDG-072RW; [2]MS4-SDG-080RW; and [3]MS4-SDG-115RW

3.3 Non-Storm Water MS4 Outfall Monitoring Data Assessments

Assessments of jurisdictional MS4 monitoring programs were conducted individually by the jurisdictions, and watershed-wide. Per Provision D.4. of the MS4 Permit, assessments include the following:

- Progress of IDDE programs toward effectively prohibiting non-storm water and illicit discharges into the MS4 within Copermittees' jurisdictions.
- Identification of known and suspected controllable sources (e.g., facilities, areas, land uses, pollutant-generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the WMA, sources of transient and persistent flows within the Copermittee's jurisdiction in the WMA that have been reduced or eliminated, and modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in Copermittee inventories.
- Based on the dry weather MS4 outfall discharge field screening monitoring, assessment and reporting of the following:
  - For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identification of the known and suspected sources within the Copermittee's jurisdiction in the WMA that may cause or contribute to the NAL exceedances.
  - Calculations or estimates of the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in the Copermittee's jurisdiction identified as having persistent dry weather flows during the monitoring year.

Each Copermittee is required to conduct field screening to determine which non-storm water MS4 outfall discharges are transient or persistent non-storm water flows. Data collected during dry weather MS4 outfall monitoring are used to prioritize the non-storm water MS4 discharges that will be investigated and eliminated.

3.3.1 Illicit Discharge Detection and Elimination Program Data and Assessment

The San Dieguito River WMA Responsible Agencies implemented IDDE program activities in effort to detect and eliminate illicit discharges and improper disposal of wastes into the MS4. The Responsible Agencies initiated 341 IDDE inspections, during which 273 non-storm water discharges were discovered. 231 of these non-storm water discharges were classified as illicit discharges or connections. Illicit discharge investigations included visual observations, additional site visits, field sampling, photo documentation, and follow-up/enforcement activities, as appropriate.

In the course of investigating these non-storm water and illicit discharges, 261 non-storm water discharges, or 96 percent, were eliminated, as shown in Table 3-6. The most common source of illicit discharges is generally irrigation runoff. Other significant sources include groundwater seepages, commercial washing activities, chlorinated pool discharges, and illicit discharges/connections.

Table 3-6
Dry Weather Discharge Investigations and Discharges Eliminated in the 2015–2016 Monitoring Year

Copermittee	Number of IDDE Investigations Initiated	Number of Sources of Non-Storm Water Discharges Identified	Number of Non-Storm Water Discharges Eliminated	Number of Sources of Illicit Discharges or Connections Identified	Number of Illicit Discharges or Connections Eliminated
City of San Diego	171	143	141	142	140
City of Del Mar	40	40	40	8	8
City of Escondido	40	40	40	40	40
City of Poway	11	11	3	11	3
City of Solana Beach	28	28	27[1]	22	21[1]
County of San Diego	51	11	10	8	8
Total	**341**	**273**	**261**	**231**	**220**

1. City of Solana Beach is working with property manager to determine source if illicit discharge. Solana Beach will continue to investigate to see that the issue is resolved.

IDDE = illicit discharge detection and elimination

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3.3.2 Classification of Major MS4 Outfalls Within each Copermittee's Jurisdiction

To address the MS4 Permit requirements, the Responsible Agencies determined the number of major MS4 outfalls within their jurisdictions within the WMA. Table 3-7 lists the number of major outfalls for each Responsible Agency within the San Dieguito River WMA. Each major outfall was classified as follows:

- Persistent – having flowing, pooled, or ponded water more than 72 hours after a measurable rainfall event of 0.1 inch or greater during the three most recent consecutive monitoring and/or inspection events;
- Transient – having flowing, pooled, or ponded water during at least one but not on all three most recent consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥0.1 inch;
- Tidal – having persistent or transient flow with ocean tides as the source;
- Dry – having no flowing, pooled, or ponded water during the previous three consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥0.1 inch; and
- Unknown – site cannot be evaluated, or has not been visited enough times to determine flow status.

In the San Dieguito River WMA, 47% of the major outfalls were classified as persistently flowing outfalls. Table 3-8 and Figure 3-1 present percentages of all classifications of major outfalls in the 2015–2016 monitoring year. No outfalls were classified as tidal during the monitoring period.

Table 3-7
Number of Major Outfalls in San Dieguito River WMA

Copermittee	Total Number of Major Outfalls	Number of Major Outfall Stations Visited	Number of Major Outfall Visual Observations	Subwatershed	HSA	Number of Major Outfalls per HSA
City of San Diego[1]	43	43[2]	61	San Dieguito River Below Lake Hodges	905.11	15
					905.12	12
				San Dieguito River Above Lake Hodges	905.21	6
					905.22	8
					905.31	1
					905.32	1
City of Del Mar[3]	6[4]	6[4]	80[5]	San Dieguito River Below Lake Hodges	905.11	6[4]
City of Escondido[3]	3	3	6	San Dieguito River Above Lake Hodges	905.21	3
City of Poway[3]	14	14	23	San Dieguito River Above Lake Hodges	905.22	14
City of Solana Beach[3]	3	3	11	San Dieguito River Below Lake Hodges	905.11	3
County of San Diego[3]	20	20	45	San Dieguito River Below Lake Hodges	905.11	8
					905.12	2
				San Dieguito River Above Lake Hodges	905.21	5
					905.23	1
					905.32	1
					905.41	3
Total	**89**	**89**	**233**			

1. The City of San Diego has 502 outfalls within the City jurisdiction. The City of San Diego, in accordance with Provision D.2.a(2).(a).(iv) of the MS4 Permit, is required to screen 500 sites City-wide once per year. The City is not required to screen 500 sites within each watershed.
2. Includes visits to one or more upstream proxy sites for 16 outfalls. Proxy sites were visited when outfall was inaccessible to field crews.
3. For Responsible Agencies with fewer than 125 major outfalls in the WMA, 80% of total major outfalls presented in the table must be screened twice per year.
4. Total includes five major outfalls as well as one non-major outfall (S-05) that is monitored voluntarily.
5. 66 observations were made at major outfalls within the WMA, plus an additional 14 observations at non-major outfall S-05.

HSA = hydrologic subarea

Table 3-8
Flow Classification of Major Outfalls in San Dieguito River WMA

Copermittee	Sub-Watershed	HSA	Persistent	Transient	Dry	Unknown
City of San Diego	San Dieguito River Below Lake Hodges	905.11	8	2	4	1
		905.12	8	4	0	0
	San Dieguito River Above Lake Hodges	905.21	5	1	0	0
		905.22	7	0	1	0
		905.31	0	0	1	0
		905.32	0	0	1	0
	Jurisdictional Total		28	7	7	1
City of Del Mar	San Dieguito River Below Lake Hodges	905.11	1	2	3	0
City of Escondido	San Dieguito River Above Lake Hodges	905.21	1	1	1	0
City of Poway	San Dieguito River Above Lake Hodges	905.22	1	2	11	0
City of Solana Beach	San Dieguito River Below Lake Hodges	905.11	1	1	1	0
County of San Diego	San Dieguito River Below Lake Hodges	905.11	8	0	0	0
		905.12	1	0	1	0
	San Dieguito River Above Lake Hodges	905.21	1	2	2	0
		905.23	0	0	1	0
		905.32	0	0	1	0
		905.41	0	0	3	0
	Jurisdictional Total		10	2	8	0
WMA Total			**42**	**15**	**31**	**1**

HSA = hydrologic subarea

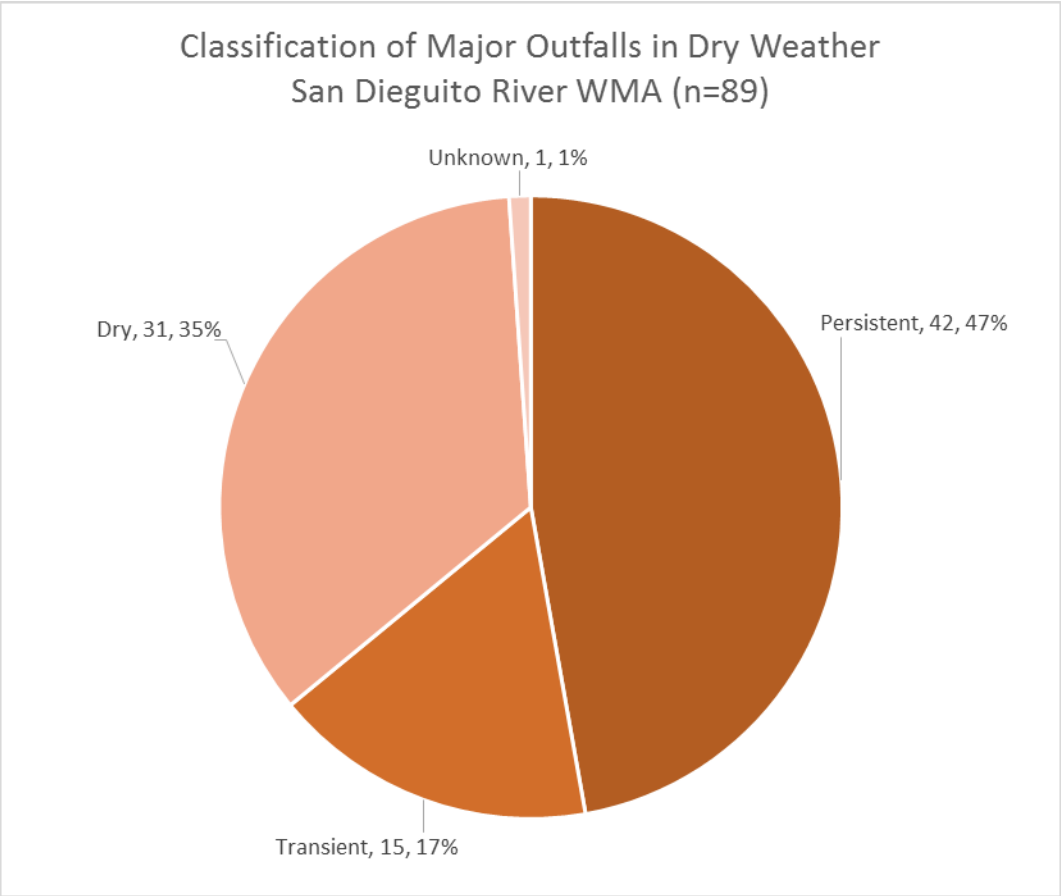

Figure 3-1
Classification of Major Dry Weather MS4 Outfalls in San Dieguito River WMA

3.3.3 Visual Observations at Major MS4 Outfalls

MS4 outfall visual assessments were performed as required by Table D-5 of the MS4 Permit. Table 3-9 presents the results of visual assessments relating to trash, including whether trash was observed during each visual observation event, and, if so, the approximate number of pieces of trash. During the 2015-2016 monitoring year, greater than 99% of visual observations indicated no or low (<50 pieces) presence of trash. Additional visual observations are provided in Attachment C.2.

Table 3-9
Trash Assessment Visual Observations in the 2015–2016 Monitoring Year

Copermittee	HSA	Number of Major Outfall Visual Observations with Trash Assessments[1]	Number of Observations with No Trash Present	Number of Observations with Trash Present		
				Low (<50 pieces)	Medium (50 to 400 pieces)	High (>400 pieces)
City of San Diego[2]	905.11	28	14	14	0	0
	905.12	17	9	8	0	0
	905.21	10	5	5	0	0
	905.22	12	7	5	0	0
	905.31	1	1	0	0	0
	905.32	1	1	0	0	0
Subtotal		**69**	**37**	**32**	**0**	**0**
City of Del Mar	905.11	80	61	19	0	0
Subtotal		**80**	**61**	**19**	**0**	**0**
City of Escondido	905.21	6	3	3	0	0
Subtotal		**6**	**3**	**3**	**0**	**0**
City of Poway	905.22	23	14	9	0	0
Subtotal		**23**	**14**	**9**	**0**	**0**
City of Solana Beach	905.11	11	11	0	0	0
Subtotal		**11**	**11**	**0**	**0**	**0**
County of San Diego	905.11	20	2	14	0	0
	905.12	5	2	2	0	0
	905.21	10	4	5	1	0
	905.23	2	0	2	0	0
	905.32	2	1	1	0	0
	905.41	6	1	4	1	0
Subtotal		**45**	**10**	**28**	**2**	**0**
Total		**234**	**136**	**91**	**2**	**0**

1. Trash assessments not conducted for all visual observations. Values in this column may not match total numbers of visual observations in Table 3-7.
2. Visual observations sometimes included more than one upstream proxy site for a given outfall on a single site visit. All observations counted here.

> = greater than; < = less than; HSA = hydrologic subarea

3.3.4 Controllable and Non-Controllable Sources of Flow

MS4 Permit requirements call for the classification of sources of observed flowing or ponded water in dry weather. Known, controllable sources, such as irrigation runoff and residential washing, were identified by observation. Other suspected sources of flow were noted and may have included items such as broken pipes. Non-controllable sources were also identified during dry weather visual observations and included mostly groundwater seepage. Unidentified sources of flow were also noted during dry weather visual observations. Tables 3-10 and 3-11 present results of visual observation identifications of controllable and non-controllable sources, respectively, made in the 2015–2016 monitoring year.

Table 3-10
Controllable Sources of Flow Observed in the 2015-2016 Monitoring Year

Copermittee	Number of Flowing or Ponded Observations at Major Outfall[1]	Known Controllable Sources		Suspected Controllable Sources	
		Irrigation Runoff	Other Discharges	Irrigation Runoff	Other Discharges
City of San Diego	51	2	3[2]	15	3[3]
City of Del Mar	19	Source information collected in IDDE program.			
City of Escondido	3	0	0	1	0
City of Poway	3	3	0	0	0
City of Solana Beach	6	Source information collected in IDDE program.			
County of San Diego	26	3	0	57	10[4]
Total	**108**	**8**	**3**	**73**	**13**

1. Note that the number of flowing or ponded observations may not be the same as the number of Persistent or Transient outfalls presented in Table 3-8. Some outfall stations were visited more than once.
2. One pool/spa chlorination discharge, one construction-related discharge, one backflow leak of water utility line discharge.
3. One pumped ground water (uncontaminated) discharge, two water line break underground discharges.
4. One residential washing discharge, three other illicit discharges, six commercial washing activity discharges.

Table 3-11
Non-Controllable Sources of Flow Observed in the 2015–2016 Monitoring Year

Copermittee	Known Uncontrollable Sources	Suspected Uncontrollable Sources
	Groundwater Seepage	Groundwater Seepage
City of San Diego	1	5
City of Del Mar	Source information collected in IDDE program.	
City of Escondido	0	1
City of Poway	0	0
City of Solana Beach	Source information collected in IDDE program.	
County of San Diego	0	11
Total	**1**	**17**

Non-storm water discharges (NSWDs) that have been reduced or eliminated during the 2015–2016 monitoring year have also been identified during the visual observations that were conducted by each Copermittee. Table 3-12 presents the number of discharges eliminated through visual outfall monitoring, including the identified sources of eliminated discharges. Additional runoff sources were eliminated through inspection and enforcement action under the Copermittees' IDDE program, as noted in Section 3.3.1.

Table 3-12
Dry Weather Discharges Eliminated in the 2015–2016 Monitoring Year

Copermittee	Number of Eliminated Discharges	Types of Eliminated Discharges
City of San Diego	1	Water Department Backflow Leak
City of Del Mar	40	Residential and Commercial
City of Escondido	0	NA
City of Poway	0	NA
City of Solana Beach	27	Residential and Commercial
County of San Diego	0	NA
Total	**68**	NA

NA = not applicable

Per MS4 Permit requirements, Responsible Agencies must identify modifications to the field screening monitoring locations and frequencies for the major MS4 outfalls in their inventories. Table 3-13 summarizes these modifications, based on the findings of visual observations during the 2015–2016 monitoring year.

Table 3-13
Modifications to Dry Weather Field Screening Locations and Frequencies

Copermittee	Number of Outfalls Added to Priority Persistent Flow Outfall List	Number of Outfalls Removed from Priority Persistent Flow Outfall List	Number of Outfalls Added to MS4 Inventory	Number of Outfalls Removed from MS4 Inventory
City of San Diego	5	0	1	0
City of Del Mar	0	0	0	0
City of Escondido	0	0	0	1[1]
City of Poway	0	0	0	1[2]
City of Solana Beach	1	0	0	0
County of San Diego	0	0	0	0
Total	**6**	**0**	**1**	**2**

1. Station HDG_101 found to not be an outfall.
2. Station 54 removed from inventory. Found to be upstream of another outfall.

MS4 = municipal separate storm sewer system

3.4 Non-Storm Water Volume and Pollutant Load Assessment

Copermittees must assess the non-storm water volumes and pollutant loads collectively discharged from their jurisdictions in the San Dieguito River WMA, per MS4 Permit Provision D.4.b(1)(c). The methodology used to calculate the non-storm water volumes and loads is provided in Attachment C.3.

3.4.1 Identification of Dry Weather Days

The first step in calculating annual non-storm water volumes and pollutant loads is to determine the number of dry weather days in the monitoring year. The number of dry weather days was determined using County of San Diego ALERT station data (https://sandiego.onerain.com). The Rancho Bernardo ALERT station was selected to represent rainfall conditions in the San Dieguito River WMA. This representative ALERT station was also utilized in Wet Weather MS4 Outfall Discharge Monitoring Assessments, and is the station closest to a majority of wet weather MS4 outfall discharge monitoring stations.

A wet weather day was defined as any day with at least 0.1 inch of measurable rainfall within a 24-hour period, and the subsequent 72 hours. Dry weather days were defined as all other days during the monitoring year (October 1 through September 30). Table 3-14 presents the number of dry weather days identified in the San Dieguito River WMA during the 2015–2016 monitoring season.

Table 3-14
San Dieguito River WMA Dry Weather Days by Month

Month	Number of Days	Storm Dates	Number of Storm Days	Number of Storm Days +72 Hours	Number of Dry Days
October 2015	31	October 4-5, 2015	2	5	26
November 2015	30	November 2-3, 2015	5	15	15
		November 15, 2015			
		November 25, 2015			
		November 27, 2015			
December 2015	31	December 11, 2015	4	13	18
		December 13, 2015			
		December 19, 2015			
		December 22, 2015			
January 2016	31	January 5-7, 2016	4	7	24
		January 31, 2016			
February 2016	29	NA	0	3	26
March 2016	31	March 6-7, 2016	3	9	22
		March 11, 2016			
April 2016	30	April 7, 2016	3	7	23
		April 9-10, 2016			
May 2016	31	May 5-6, 2016	2	5	26
June 2016	30	NA	0	0	30
July 2016	31	NA	0	0	31
August 2016	31	NA	0	0	31
September 2016	30	September 20-21, 2016	2	5	25

NA = not applicable, no storms recorded

3.4.2 Non-Storm Water Volume Assessment

An annual non-storm water volume was calculated for each persistently flowing major MS4 outfall in each Copermittee's jurisdiction. The calculation methods used differed, depending on the availability of flow data for each site. Details of each calculation method are presented in the Dry Weather Assessment Methodology in Attachment C.3. The methods are summarized as follows:

- Scenario A: If a major MS4 outfall station was visited once during the monitoring year, and a single discrete flow rate was measured, this flow rate was applied across all dry weather days within the year.
- Scenario B: If a major MS4 outfall station was visited more than once during the monitoring year, and more than one discrete flow rate was measured, monthly dry weather flow volumes were calculated. The monthly flow volume calculation method varied based on whether a flow measurement was logged at the outfall during that month. For calendar months in which the outfall was visited one or more times, the mean of the measured flow rates was applied to all dry weather days within the month. For calendar months in which the outfall was not visited, the mean of all flow rates observed at that site during the calendar year was applied.
- Scenario C: If a major MS4 outfall station was monitored continuously for a period of time longer than a day, a measured daily flow volume was calculated for each monitored day. The mean of these daily flow volumes was applied to all non-monitored dry days.
- Scenario D: If a major MS4 outfall station was not visited during the monitoring year, the mean of annual outfall flow volumes for all monitored stations in the jurisdiction in the WMA was applied. This scenario was not encountered during the 2015–2016 monitoring season.

Within all these scenarios, observations of ponding (i.e., evidence of non-storm water in the MS4, with no connectivity to the receiving water) were assigned a flow rate of zero. If a station was observed to be flowing, but no flow rate was recorded, the average non-zero flow rate for that station was applied to that observation.

This methodology assumes that a persistently flowing major MS4 outfall is flowing on 100% of dry weather days. This assumption is highly conservative. Additional limitations to the methodology are listed in Section 3.4.6. Major limitations include assuming that rates of dry weather discharge equal the measured values throughout the entire month or year (depending on the calculation scenario used), as well as assuming that pollutant concentrations can be represented by samples collected just twice per year at five or fewer outfalls per jurisdiction.

Tables 3-15 through 3-20 present the outfalls that were identified by each Copermittee as persistently flowing. The number of visual observations made at these locations during the 2015–2016 monitoring year is also presented, and the number of flowing, ponded, and dry observations from these site visits is summarized. Finally, the annual dry weather flow volume modeled from each site is presented, as well as the total dry weather flow volume collectively discharged from persistently flowing sites within each Copermittee's jurisdiction in the WMA.

Table 3-15
City of Del Mar 2015–2016 Dry Weather Persistent Flow Volume

Station ID[1]	Number of Visual Observations in 2015–2016	Continuous Flow Monitoring Conducted?	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
S-05[2]	14	N	7	0	7	225,220
Total						**225,220**

1. Del Mar outfall S-07 was classified as highest priority, but was re-classified as transient following the 2015-2016 monitoring season. No dry weather flows volumes or loads are presented. Analytical results for this outfall are included in Attachment C.1.
2. Outfall S-05 is less than 36 inches in diameter and not classified as a major MS4 outfall. It is monitored voluntarily.

cf = cubic feet

Highest priority persistently flowing outfalls indicated in **bold**.

Table 3-16
City of Escondido 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Continuous Flow Monitoring Conducted?	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
ES_HDG_102	2	Y	2	0	0	252,480
Total						**252,480**

cf = cubic feet

Highest priority persistently flowing outfalls indicated in **bold**.

Table 3-17
City of Poway 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Continuous Flow Monitoring Conducted?	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
140	2	N	0	2	0	0
Total						**0**

cf = cubic feet
Highest priority persistently flowing outfalls indicated in **bold**.

Table 3-18
City of Solana Beach 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Continuous Flow Monitoring Conducted?	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
SB-25	5	N	5	0	0	6,004
Total						**6,004**

cf = cubic feet
Highest priority persistently flowing outfalls indicated in **bold**.

Table 3-19
City of San Diego 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Continuous Flow Monitoring Conducted?	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
DW0001	1	N	0	1	0	0
DW0005	1	N	0	1	0	0
DW0033	5	N	1	4	0	49,550
DW0284	6	N	1	5	0	78,252
DW0317	4	N	1	3	0	1,602,783
DW0332	1	N	0	1	0	0
DW0333	3	N	0	3	0	0
DW0619	1	N	0	1	0	0
DW0636	4	N	4	0	0	211,644
DW0689	1	N	1	0	0	45,317

Table 3-19 (continued)
City of San Diego 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016	Continuous Flow Monitoring Conducted?	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
DW0759	1	N	1	0	0	3,066,535
DW0889	1	N	1	0	0	20,444
DW0892	1	N	1	0	0	1,529,292
DW0913	1	N	1	0	0	509,953
DW0914	1	N	1	0	0	338,455
DW0949	1	N	1	0	0	509,953
DW0956	1	N	1	0	0	20,444
DW1019	1	N	1	0	0	1,147,111
DW1099	1	N	0	1	0	0
DW1100	1	N	1	0	0	85,182
DW1109	1	N	1	0	0	2,669,021
DW1110	1	N	1	0	0	1,019,339
DW1117	1	N	1	0	0	0
DW1118	1	N	1	0	0	0
DW1119	1	N	1	0	0	32,369
DW1120	1	N	1	0	0	2,044,357
DW1121	1	N	0	1	0	0
DW1138	1	N	1	0	0	1,272,044
Total						**16,252,045**

cf = cubic feet

Highest priority persistently flowing outfalls indicated in **bold**.

Table 3-20
County of San Diego 2015–2016 Dry Weather Persistent Flow Volume

Station ID	Number of Visual Observations in 2015–2016[1]	Continuous Flow Monitoring Conducted?	Number of Flowing Observations	Number of Ponded Observations	Number of Dry Observations	Annual Non-Storm Water Volume (cf)
MS4-SDG-072[1]	11	Y	11	0	0	76,711
MS4-SDG-074	3	N	3	0	0	540,534
MS4-SDG-075	2	N	0	2	0	0
MS4-SDG-077[1]	11	Y	0	10	1	36,395
MS4-SDG-080[1]	12	Y	11	0	1	2,086,703
MS4-SDG-084[1]	11	Y	11	0	0	92,295
MS4-SDG-085[1]	11	Y	11	0	0	910,340
MS4-SDG-115[1]	11	Y	11	0	0	1,891,296
MS4-SDG-144	2	N	2	0	0	48,346
MS4-SDG-171	2	N	0	2	0	0
Total						**5,682,620**

3. Sites with continuous flow equipment installed were visited up to twice per month from December 2015 through April 2016 to gather baseline flow data. Continuous flow monitoring conducted from the period of May 2016 through September 2016.

cf = cubic feet

Highest priority persistently flowing outfalls indicated in **bold**.

3.4.3 Non-Storm Water Load Assessment

The Copermittees estimated the annual non-storm water pollutant loads collectively discharged from their persistently flowing major MS4 outfalls to receiving waters in the MS4.

A load was calculated for each pollutant required to be analyzed at each high priority outfall, based on the arithmetic mean of the analytical results from the two dry weather outfall monitoring events at that outfall during the monitoring year. For each non-high priority persistently flowing outfall in a Copermittee's jurisdiction in the WMA, the mean of that Copermittee's monitored outfall results for each pollutant was applied. For any pollutants not detected at the method detection limit (MDL), a concentration of MDL/2 was applied in calculating the loads. The annual non-storm water pollutant loads collectively discharged from each jurisdiction are presented in Table 3-21. The non-storm water pollutant loads for each persistently flowing major MS4 outfall are presented in Attachment C.4.

Table 3-21
Persistent Flow Non-Storm Water Pollutant Loads by Jurisdiction

Analyte	Units	Jurisdiction					
Jurisdiction	-	City of Del Mar	City of Escondido	City of Poway	City of San Diego	City of Solana Beach	County of San Diego
Annual Dry Weather Flow Volume	cf	225,220	252,480	0	16,252,044	6,004	5,682,620
Conventional Parameters							
Chloride	lb	7,959	2,829	0	501,471	82.46	223,903
Hardness (Total)	lb	7,950	8,338	0	784,795	147.1	342,122
MBAS	lb	0.7238	0.6305	0	136.28	0.0562	24.455
Indicator Bacteria							
Enterococcus	MPN	9.02E+12	6.01E+12	0	5.01E+14	4.49E+11	2.35E+14
Fecal Coliform	MPN	3.27E+11	6.08E+12	0	4.45E+14	5.36E+09	2.35E+15
Total Coliform	MPN	4.93E+11	3.65E+13	0	9.72E+15	8.16E+11	3.03E+16
Total Metals							
Aluminum	lb	0.2497	0.4886	0	121.74	0.0219	17.627
Cadmium	lb	0.0014	0.0020	0	0.5914	3.75E-05	0.1685
Chromium	lb	NR[1]	0.0808	0	1.8132	NR[1]	0.1819
Chromium (III)	lb	NR[1]	0.0808	0	NR[2]	NR[1]	0.1819
Chromium (VI)	lb	NR[1]	0.0065	0		NR[1]	0.1774
Copper	lb	1.157	0.1497	0	43.861	0.0054	3.6064
Iron	lb	0.4271	0.5595	0	636.32	0.0292	43.57
Lead	lb	0.0043	0.0024	0	1.8099	9.37E-05	0.0587
Manganese	lb	0.1452	0.1836	0	194.78	0.0067	34.588
Mercury	lb	0.0006	0.0079	0	0.0507	1.50E-05	0.0142
Nickel	lb	NR[1]	0.0102	0	2.8860	NR[1]	1.3361
Silver	lb	NR[1]	0.0039	0	1.3951	NR[1]	0.0355
Zinc	lb	0.1621	0.1970	0	33.099	0.0081	35.820
Dissolved Metals							
Aluminum	lb	0.0732	0.1253	0	16.877	0.0111	1.7648
Cadmium	lb	0.0009	0.0020	0	0.5707	3.56E-05	0.0743
Chromium	lb	NR[1]	0.0808	0	1.3735	NR[1]	0.0279
Chromium (III)	lb	NR[1]	0.0808	0	0.3019	NR[1]	0.0279
Chromium (VI)	lb	NR[1]	0.0065	0	0.8119	NR[1]	0.1774
Copper	lb	1.0711	0.1245	0	22.096	0.0034	1.7167
Iron	lb	0.0898	0.1340	0	83.986	0.0135	5.469
Lead	lb	0.0004	0.0024	0	1.6618	2.44E-05	0.0112
Manganese	lb	0.1137	0.1222	0	133.90	0.0021	30.275
Mercury	lb	0.0029	0.0079	0	0.0507	4.50E-05	NA
Nickel	lb	NR[1]	0.0096	0	3.0405	NR[1]	0.8515
Silver	lb	NR[1]	0.0039	0	1.3951	NR[1]	0.0177
Zinc	lb	0.1290	0.1891	0	22.042	0.0041	34.844

Table 3-21 (continued)
Persistent Flow Non-Storm Water Pollutant Loads by Jurisdiction

Analyte	Units	Jurisdiction					
Jurisdiction	-	City of Del Mar	City of Escondido	City of Poway	City of San Diego	City of Solana Beach	County of San Diego
Annual Dry Weather Flow Volume	cf	225,220	252,480	0	16,252,044	6,004	5,682,620
Nutrients							
Ammonia N	lb	0.2445	3.704	0	3,915	0.2305	64.46
Nitrite as N[3]	lb	0.0507	2.086	0	690.87	0.1387	2.4253
Nitrate as N[3]	lb	31.10	86.38	0	2,802.9	0.3205	1,587.2
Nitrate/Nitrite N[3]	lb	31.10	NR	0	NR	0.4592	1,610.0
Total Nitrogen	lb	40.28	100.1	0	11,322	1.668	1,811.4
TKN	lb	11.067	13.63	0	8,445	1.199	218.54
Phosphate, Dissolved P	lb	0.4097	NA	0	1,098	0.1106	40.11
Phosphorus, Total	lb	1.473	2.364	0	1,184	0.1631	56.42
Orthophosphate as P	lb	1.166	2.601	0	331.63	0.0937	47.95
Sulfate as SO4	lb	5,206	NA	0	407,157	106.6	141,668
Solid Parameters							
TDS	lb	25,369	18,237	0	1,828,083	348.4	701,954
TSS	lb	47.58	45.95	0	14,919	2.436	805.6
Synthetic Organics							
Pentachlorophenol	lb	0.0080	0.0079	0	5.0461	0.0002	0.1969

1. NAL analyte not required for Ocean Receiving Waters
2. Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
3. Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NA = not analyzed; NR = not required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; TSS = total suspended solids

3.4.4 Percent Contribution from Known Sources

Table 3-22 summarizes the percentage of non-storm water volume and load contributions from known sources. This value was calculated by dividing the observed flow rate for each known source by the estimated annual outfall flow volume presented in Section 3.4.2. It was assumed that the known source was flowing for the entire day on which the source was observed. Additionally, it was assumed that the percent load contribution is equal to the percent flow contribution for each known source.

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Table 3-22
Percent Contribution from Known Sources

Copermittee	Station ID	Observation Date	Known Source	Known Source Flow Rate (cfs)	Known Source Daily Flow Volume (cf)	Annual Outfall Non-Storm Water Flow Volume (cf)	Percent Contribution from Known Source (%)
City of San Diego	DW0033	9/16/2016	Irrigation Runoff	0	0	49,550	0%
	DW0284	9/16/2016	Pool/Spa Chlorinated	0	0	78,252	0%
		9/16/2016	Irrigation Runoff	0	0		0%
	DW1109	2/8/2016	Uncontaminated Infiltration into MS4	0.10	8,640	2,669,021	0.32%
	DW1120	2/9/2016	Backflow Leak	0.02	1,728	2,044,357	0.09%
City of Del Mar	No known sources observed.						
City of Escondido	No known sources observed.						
City of Poway	140	7/29/2016	Irrigation Runoff	0	0	0	0%
		8/2/2016	Irrigation Runoff	0	0	0	0%
City of Solana Beach	No known sources observed.						
County of San Diego	MS4-SDG-115	8/19/2016	Irrigation Runoff	0	0	1,891,296	0%

cf = cubic feet; cfs = cubic feet per second; ID = identification

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3.4.5 Percent Contribution from Sources Not Subject to Copermittee Legal Authority

Copermittees did not identify sources not subject to their legal authority within the San Dieguito River WMA during dry weather monitoring.

3.4.6 Dry Weather Assessment Methodology Assumptions and Limitations

Calculation of the MS4 Permit-required assessments necessitates a number of assumptions to translate the monitoring data into conclusions regarding flow volume and load for the entire WMA. These assumptions may introduce potential sources of error, while propagating potential errors inherent to the monitoring data. These assumptions and sources of error are summarized as follows:

- Monitoring Error—Annual non-storm water volumes and pollutants loads are based on the results from dry weather visual observations and dry weather outfall monitoring events. Error in the monitoring data could have the effect of propagating error in all subsequent calculations. Potential sources of error in the monitoring data include the following:
  - Monitored Flow Selection—The pollutant loading estimations rely on monitoring data from one or more non-storm water visual observations per major MS4 outfall per year. The 2015–2016 monitoring year is the first year of dry weather flow volume and load calculation, and this period generally has represented a drought condition, which can affect the type and volume of non-storm water sources such as irrigation and groundwater. The potential for inter-annual variability is a source of error in both the flow and chemistry data.
  - Flow Measurement Method—The MS4 Outfall Monitoring Plan provides different options to determine the non-storm water volume: (1) field-based estimation methods (e.g., “float method” or “bucket and stopwatch method”), and (2) equipment-based flow measurements. The method chosen varies among outfalls and Copermittees, introducing inter-site variability in volume estimations. The field-based estimation methods introduce potential human error in using stopwatches and error in determining volume amounts in non-graduated buckets. The consistent equipment-based flow monitoring approach is more accurate and precise compared with the field-based estimation methods. However, this approach introduces variability through the flow measurement device and sensor type used to account for site-specific conditions, and can also be cost and time prohibitive across the number of outfalls monitored. Each measurement device and sensor type has an inherent accuracy range (e.g., ±2% accuracy for sub area-velocity [sub-AV] probes). Additionally, each flow measurement device and sensor type can produce slightly different values for the same event, adding inter-site variability.
  - Rainfall Measurement—Accuracy in determining the number of dry days relies on the accuracy of the rainfall measurements representing that outfall. Rainfall

measurements were based on the County of San Diego ALERT rain gauge closest to the majority of wet weather outfalls in each WMA, and not site-specific rainfall data. Rainfall totals across the San Diego area can vary widely within a given storm.

- Chemistry Results—An attempt to maintain regional consistency in reporting limits (RLs) and MDLs was made. However, differences in lab capabilities can sometimes lead to different RLs and MDLs. This variability can introduce error if constituent concentrations are near or below the MDL for one monitoring event or Copermittee, and the MDL differs for another monitoring event or Copermittee. An attempt was made to account for this type of error by assigning constituents that were not detected a value of MDL/2 for the purposes of the assessment calculations.

- Assessment Methodology Error—The assessments require a series of assumptions and extrapolations regarding the determination of annual volumes and pollutant loadings. Each assumption carries the possibility of error, including the following:

  - Annual Volume Estimation Representativeness—Regardless of the flow measurement method utilized, error is introduced when utilizing the median of more than one field measurement to determine an annual volume estimation. It is assumed that these field measurements are representative of "typical" non-storm water conditions because persistently flowing non-storm water flows are relatively consistent through the year. However, this may not be the case, and error could be introduced into these estimations. For example, groundwater base flows can increase during the wet season, increasing dry weather flow rates. Or, alternatively, irrigation and irrigation runoff may increase during the dry season, increasing dry weather flow rates. Unless flow observations are made throughout the year under a variety of conditions, this seasonal variation may not be captured.

  - Annual Volume Estimation Confidence—Based on availability of data, multiple calculation methods are used to estimate annual flow volume. The confidence associated with each estimate varies because different sample sizes are used for each estimate. That is to say, volumes calculated on the basis of continuous flow data are associated with a higher confidence than volumes based on one or two instantaneous flow measurements.

  - Annual Pollutant Load Estimations—The annual volume estimation error introduced previously disseminates into the annual pollutant load estimations through calculations discussed in Section 3.4.3. Although persistent non-storm water flows are relatively consistent throughout the year, collecting two grab samples in one year provides a very brief snapshot in time of the pollutant concentration at an outfall, which may not be indicative of typical conditions or pollutant loadings. Additionally, using an arithmetic mean as a "typical" value of pollutant concentrations to estimate pollutant loads can introduce error if the sample size of the mean is too small, as means are sensitive to sample size.

4 Wet Weather Outfall Data and Assessments

During the 2015–2016 monitoring season, the first year of wet weather outfall discharge monitoring was conducted in accordance with Provision D.2.c of the MS4 Permit. The goals of wet weather outfall monitoring are the following:

- Identify pollutants in storm water discharges from the MS4;
- Guide pollutant source identification efforts; and
- Determine compliance with the water quality-based effluent limitations (WQBELs) associated with the applicable TMDLs presented in Attachment E of the MS4 Permit.

Wet weather outfall monitoring was initiated following completion and acceptance of the San Dieguito River WMA WQIP. This program built upon the transitional wet weather outfall discharge monitoring completed during the 2013–2014 and 2014–2015 monitoring seasons. Details of the monitoring methodology are provided in the San Dieguito River WMA MS4 Outfall Monitoring Plan, available on the Project Clean Water website (Project Clean Water, 2016).

This section presents the results of wet weather discharge monitoring in the San Dieguito River WMA, as well as the results of the required Storm Water Pollutant Discharge Reduction Assessments.

4.1 Storm Water Action Level Comparisons

The data collected as part of the wet weather MS4 outfall discharge monitoring were compared with the SALs and HPWQC WQBELs per MS4 Permit Provision D.4.b.(2)(c)(ii). These comparisons are shown in Table 4-1 and Table 4-2, respectively.

Three storm water action level exceedances were recorded for all wet weather MS4 outfall discharge monitoring locations within the San Dieguito River WMA. Two of these exceedances were for nitrate + nitrite as N at SDC-1 in the City of Del Mar, and one at SDC-2 in the City of Escondido. In addition, the total copper concentration slightly exceeded the storm water action level at SDC-1. During the 2015–2016 monitoring year, the City of Del Mar and City of Escondido have just begun implementation of their WQIP strategies that have primary and secondary pollutant reduction benefits for metals and nutrients. They plan to continue implementing the strategies without modification to realize the rewards of these pollutant reduction benefits. Previous monitoring efforts indicated sources of elevated copper may include copper roofing and rain gutters, copper pipes, and brake dust from transportation corridors through copper brake pad wear.

Table 4-1
MS4 Outfall Storm Water Action Level Comparison

Analyte	SAL	Monitoring Location					
		SDC-1	SDC-2	SDC-3	SDC-4	SDC-5	SDC-6
		City of Del Mar	City of Escondido	City of Poway	City of San Diego	City of Solana Beach	County of San Diego
Total Cadmium	3 µg/L	0.32	ND	ND	0.073 J	0.20	ND
Total Copper	127 µg/L	**130**	22	8.2	31	44	10
Total Lead	250 µg/L	11	0.71	0.46	3.9	2.9	0.29
Nitrate + Nitrite as N	2,600 µg/L	**2,700**	**4,900**	470	830	1,000	1,600
Total Phosphorous	1.46 mg/L	1.0	0.25	0.16	0.31	0.44	0.43
Total Zinc	976 µg/L	490	33	15	63	220	33
Turbidity	126 NTU	41.1	5.27	5.55	24.5	51.6	29.3

Bold = exceedance of SAL
µg/L = micrograms per liter; J = estimate; mg/L = milligrams per liter; MS4 = municipal separate storm sewer system; N = nitrogen; ND = not detected; NTU = nephelometric turbidity unit; SAL = storm water action level

There were numerous exceedances of the Bacteria TMDL WQBELs during the 2015–2016 monitoring year for the wet weather MS4 outfall discharge monitoring locations in the San Dieguito River WMA. For *Enterococcus,* concentrations for all samples exceeded the WQBEL. In four of the six total coliform samples and five of the six fecal coliform samples, concentrations exceeded the respective WQBELs. During the 2015–2016 monitoring year, the Responsible Agencies have just begun to implement their WQIP strategies that have primary and secondary pollutant reduction benefits for bacteria. They plan to continue implementing the strategies without modification to realize the rewards of these pollutant reduction benefits and will work toward meeting the goals related to the HPWQC. Additionally, results for the first year of Bacteria TMDL monitoring indicate that the receiving water is in compliance with both interim and final wet weather receiving water limitations.

Table 4-2
MS4 Outfall Water Quality-Based Effluent Limitations Comparison

Analyte	WQBEL	Monitoring Location					
		SDC-1	SDC-2	SDC-3	SDC-4	SDC-5	SDC-6
		City of Del Mar	City of Escondido	City of Poway	City of San Diego	City of Solana Beach	County of San Diego
Enterococcus	61 (104[1]) MPN/100mL	**6,131**	**1,607**	**7,701**	**6,800**	**9,208**	**6,800**
Total Coliforms	10,000 MPN/100mL	**70,000**	**28,000**	**220,000**	3,400	**1,600,000**	10,000
Fecal Coliforms	400 MPN/100mL	**7,900**	**28,000**	**3,300**	**520**	**31,000**	280

1. A single sample maximum of 104 MPN/100mL may be applied as a receiving water limitation for creeks designated as "moderately or lightly used" or less frequent usage in the Basin Plan.

Bold = exceedance of WQBEL

MPN/100mL = most probable number per 100 milliliters; MS4 = municipal separate storm sewer system;

WQBEL = water quality-based effluent limitation

4.2 Wet Weather Outfall Monitoring

4.2.1 Wet Weather Outfall Monitoring Locations

Each Responsible Agency selected wet weather MS4 outfall discharge monitoring locations from their inventories developed pursuant to Provision D.2.a.(3)(a)(i) of the MS4 Permit for the San Dieguito River WMA. These locations were compliant with the MS4 Permit requirements for wet weather outfall site selection:

- At least five wet weather MS4 outfall discharge monitoring locations that are representative of storm water discharges from areas consisting primarily of residential, commercial, industrial, and typical mixed-use land uses present within the San Dieguito River WMA; and
- At least one wet weather MS4 outfall discharge monitoring location for each Responsible Agency within the San Dieguito River WMA.

The six stations monitored during the 2015–2016 monitoring season are presented in Table 4-3. Each wet weather MS4 outfall discharge monitoring location in the San Dieguito River WMA was sampled once during the 2015–2016 monitoring season. All six stations were also monitored during the 2014–2015 monitoring season (second transitional monitoring season). Five of the six stations were also monitored during the 2013–2014 monitoring season (first transitional monitoring season). The MS4 outfall station that changed from the first to second transitional year was MS4-SDC-3 in the City of Poway. The outfall monitoring locations and their associated drainage areas are shown

in Figure 4-1. Land use types within the outfall drainage area for each location are described in Table 4-5.

Table 4-3
2015–2016 San Dieguito River WMA Wet Weather Outfall Monitoring Locations

Monitoring Location	Responsible Agency	Jurisdictional Identifier	Latitude	Longitude	HSA Name	HSA Number
MS4-SDC-1	City of Del Mar	S-06	32.95995	-117.26826	Rancho Santa Fe	905.11
MS4-SDC-2	City of Escondido	HDG_102	33.06951	-117.07136	Del Dios	905.21
MS4-SDC-3[1]	City of Poway	306-1761, 1	33.00932	-117.02583	Green	905.22
MS4-SDC-4	City of San Diego	DW001	33.05223	-117.06648	Del Dios	905.21
MS4-SDC-5	City of Solana Beach	Seascape Sur	32.98544	-117.27306	Rancho Santa Fe	905.11
MS4-SDC-6	County of San Diego	COSD MS4 SDG01	33.00303	-117.11602	La Jolla	905.12

1. Monitoring location MS4-SDC-3 was relocated between the 2013–2014 and 2014–2015 monitoring years. The Jurisdictional Identifier of the previous monitoring location is 306-1749.1.

HSA = hydrologic subarea

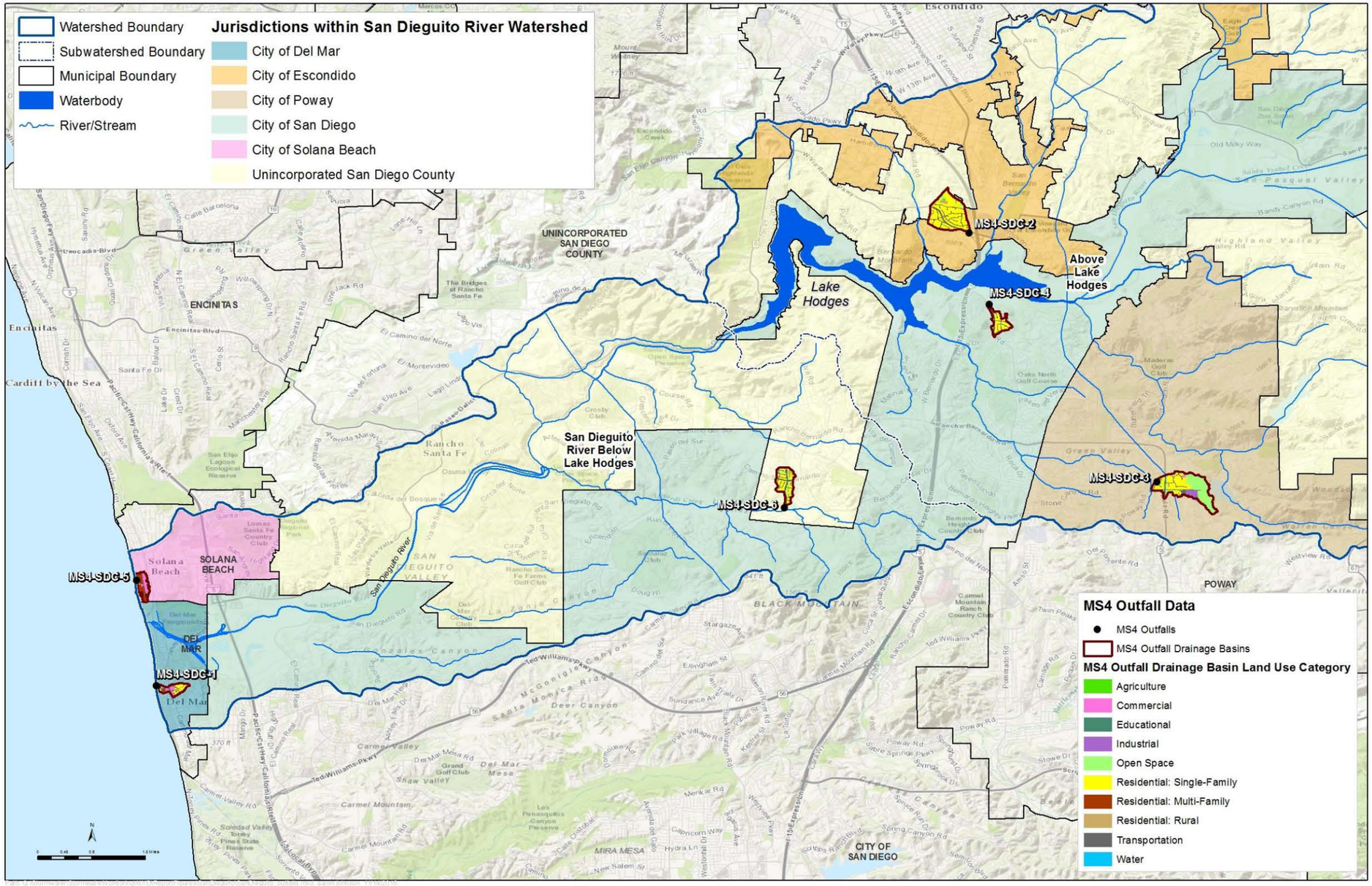

Figure 4-1
San Dieguito River WMA Wet Weather Outfall Monitoring Locations

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4.2.2 Wet Weather Outfall Monitoring Event Field Observations

The San Dieguito River WMA wet weather outfall locations were monitored during the wet season (i.e., October 1, 2015, through April 30, 2016), across two storm events on January 31, 2016, and March 6, 2016. Each location was monitored once.

During the wet weather monitoring event, narrative descriptions and field observations were recorded at each MS4 outfall discharge monitoring location. Flow was measured using a Hach Sigma 950 flow meter with sub-AV probe in accordance with the United States Environmental Protection Agency (USEPA) Storm Water Sampling Guidance Document (EPA-833-B-92-001), as described in the San Dieguito WMA MS4 Outfall Monitoring Plan. Rainfall statistics for each monitored event were based on a nearby San Diego County Flood Control District ALERT station. The closest ALERT station to each monitoring location was selected.

Details, including date and duration of the storm events sampled, rainfall estimates of the storm event, and duration between the storm event sampled and the end of the previous measurable storm event with over 0.1 inch of rainfall, are presented in Table 4-4. Hydrographs for each monitored event, displaying event flows and rainfall amounts, are presented in Attachment E.1.

Table 4-4
2015–2016 San Dieguito River WMA Wet Weather Outfall Monitoring Event Field Observations

Monitoring Location	Storm Event Date	ALERT Station	Storm Duration (hours)	Rainfall Depth (inches)	Rainfall Intensity (inches/ hour)	Antecedent Dry Days	Flow Volume (cf)
MS4-SDC-1	3/5/2016	Encinitas	12	0.27	0.0225	16	2,714
MS4-SDC-2	3/5/2016	Escondido	10.13	0.34	0.0336	16	21,745
MS4-SDC-3	3/6/2016	Rancho Bernardo	10.75	0.25	0.0232	34	5,599
MS4-SDC-4	1/30/2016	Rancho Bernardo	22.92	1.03	0.0449	23	11,482
MS4-SDC-5	3/5/2016	Encinitas	12	0.27	0.0225	16	4,317
MS4-SDC-6	1/31/2016	Rancho Bernardo	22.92	1.03	0.0449	23	125,596

cf=cubic feet

4.2.3 Wet Weather Outfall Monitoring Event Analytical Results

During each wet weather event, samples were collected according to the procedures described in the San Dieguito River WMA MS4 Outfall Monitoring Plan.

Grab samples were collected for bacterial indicators and receiving water hardness. The grab samples were collected after the second hour of storm water runoff and before the sixth hour of storm water runoff. If the storm duration was less than two hours, the grab samples were collected as close to the peak flow as possible. A time-weighted composite sample was collected for all other analytes. All samples were collected in accordance with SWAMP protocols and following the QA and QC procedures outlined in the San Dieguito River WMA MS4 Outfall Monitoring Plan.

In situ turbidity measurements were collected using a LaMotte 2020 Portable Turbidity Meter. All other field measurements were collected using YSI Pro Plus Quatro field meter.

The required analyses were based upon the following four groupings of constituents, per Provision D.2.c(5)(f) of the MS4 Permit:

- Constituents contributing to the HPWQC identified in the San Dieguito River WMA WQIP;
- Constituents listed as a cause for impairment of receiving waters in the San Dieguito River WMA, as listed on the 2010 Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments (303(d) List);
- Constituents for implementation plans or load reduction plans (e.g., Bacteria Load Reduction Plans, Comprehensive Load Reduction Plans) developed for the San Dieguito River WMA where the Responsible Agencies are listed as responsible parties under the TMDLs in Attachment E of the MS4 Permit; and
- Applicable SAL constituents listed in Provision C.2 of the MS4 Permit.

Receiving water hardness samples were collected for each wet weather outfall station discharging to a fresh water receiving water. The receiving water hardness results were used to evaluate compliance with the USEPA one-hour maximum concentration criteria for metals, in the case of any SAL exceedances. Receiving water hardness samples were not collected for wet weather outfalls discharging to an ocean receiving water, or to a bay or estuary.

The 2015–2016 monitoring year wet weather outfall analytical results for the San Dieguito River WMA are presented in tabular form in Attachment E.2. Attachment D includes a QA/QC summary of the wet weather outfall data collected.

4.3 Volumes and Loads of Storm Water Discharges

Per Provision D.4.b.(2)(b)(i) of the MS4 Permit, the Responsible Agencies are required to use a watershed model or other method to calculate the following:

1. The average storm water runoff coefficient for each land use type within the WMA;

2. The volume of storm water and pollutant loads discharged from the monitored MS4 outfalls in the jurisdiction of each Responsible Agency to receiving waters within the WMA for each storm event with measurable rainfall greater than 0.1 inch;
3. The total flow volume and pollutant loadings discharged from the jurisdiction of each Responsible Agency within the WMA over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and
4. The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea to receiving waters or within each jurisdiction of within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the WMA for each storm event with measurable rainfall greater than 0.1 inch.

The following sections present the results of these assessments. The methodology used follows the methodology presented in the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego County Regional Copermittees, 2015). Changes from the transitional methodology are noted below. The methodology is presented in Attachment E.3. Complete tables of storm water volumes and pollutant loads can be found in Attachment E.4.

The calculation of the MS4 Permit-required assessments necessitates a number of assumptions to extrapolate the available monitoring data into watershed-wide estimates of discharge volumes and pollutant loads. These extrapolations introduce potential sources of error in addition to error sources inherent to the monitoring data. A summary of these assumptions and sources of error follows:

- Potential Sources of Error Inherent to Monitoring—Runoff coefficients and pollutant loads are based on the results from wet weather outfall monitoring events. Error in the monitoring data could have the effect of propagating error in all subsequent calculations. Potential sources of error in the monitoring data include the following:
  - Monitored Storm Selection—The calculation relies on monitoring data from one storm event per year. Although a range of storm conditions have been targeted over the period of monitoring (2013–2016), this period generally has represented drought conditions. Inter-annual variability in storm duration, intensity, and rainfall depth, in can be a source of error in both the flow and chemistry data.
  - Drainage Area Delineation—The accuracy of the observed outfall runoff coefficient calculation relies on the accuracy of the drainage area delineation for that outfall. Drainage area delineations were based on the most recent jurisdictional delineation, some of which were based on desktop analysis of GIS data layers. The accuracy of this delineation depends upon the accuracy of the underlying data layers.

- Flow Measurement Method—A consistent flow monitoring approach is described in the Monitoring Plan. However, this approach allows for variability in the flow measurement device and sensor type used to account for site-specific conditions. Each measurement device and sensor type has an inherent accuracy range (e.g., ±2% accuracy for sub-AV probes). Additionally, each flow measurement device and sensor type can produce slightly different values for the same event, adding a layer of inter-site variability.
- Rainfall Measurement—The accuracy of the observed outfall runoff coefficient calculation relies on the accuracy of the rainfall measurement for that event at that outfall. Rainfall measurements were based on the nearest County of San Diego ALERT rain gauge to each outfall and not site specific rain data. Rainfall totals across the San Diego area can vary widely within a given storm.
- Chemistry Results—An attempt to maintain consistent RLs and MDLs across the monitoring seasons was made. However, differences in lab capabilities can sometimes lead to different RLs and MDLs. This variability can introduce error if constituent concentrations are near or below the MDL one monitoring year, and the MDL changes. For the assessment calculations, an attempt was made to account for this type of error by assigning a value of MDL/2 to constituents that were not detected.

- Potential Sources of Error Inherent to the Assessment Methodology—The assessments require that a series of assumptions and extrapolations be made regarding land use based runoff coefficients and pollutant concentrations. Each assumption carries the possibility of error, including the following:
  - Observed Outfall Runoff Coefficient Calculation—Total rainfall of a monitored storm event, not accounting for rainfall intensity or duration, is considered in these calculations. Storms of higher intensity generally produce more runoff for a given rainfall amount than storms of lower intensity. Therefore, a storm with an equal total rainfall but a higher intensity than another storm would be expected to exhibit a higher runoff volume or flow rate.
  - Outfall Drainage Area Land Use Representativeness—While an attempt has been made to select outfall monitoring locations with drainage areas of one primary land use type, the reality of storm water drainage systems in urban and suburban areas is that most monitoring locations are a mixture of multiple land use categories. To calculate the runoff coefficient from each land use category, the observed runoff coefficient is compared to standard values calculated using the San Diego County Hydrology Manual (County of San Diego, 2003). A correction factor based on the ratio of the observed runoff coefficient to the calculated runoff coefficient is then applied to each land use category to derive land use runoff coefficients.

- WMA Land Use Representativeness—Not all land use categories within the WMA are represented by the monitored drainage areas. Therefore, the pollutant concentration and runoff coefficient for one land use are sometimes substituted for another land use. For example, Open Space pollutant event mean concentrations (EMCs) and runoff coefficients may be used as a proxy for agriculture land use values, in the absence of monitoring data from agricultural land uses. These proxies are summarized in Table 4-5.
- Land Use EMC Assumptions—Apportioning pollutant loads to each land use type requires an assumption of pollutant concentrations that are "typical" of each land use category. To calculate a pollutant concentration from each land use category, the observed pollutant concentrations are compared with typical (arithmetic mean) values calculated on the basis of land use studies in the Los Angeles and San Diego areas (see Attachment E.3). A correction factor based on the ratio of the observed pollutant concentration to the calculated typical pollutant concentration is then applied to each land use category to derive land use concentrations. Using an arithmetic mean as a "typical" value can introduce error if the sample size of the mean is too small, because means are sensitive to sample size. However, literature values did not exist for all pollutants analyzed, and therefore an additional assumption is made that similar pollutants have similar land-use-based concentrations For example, it is assumed that ratios of other dissolved metals concentrations from the analyzed land use categories follow the ratios of dissolved copper concentrations from those land use categories. This assumes that all dissolved metals behave similarly to dissolved copper, which is not necessarily the case. The full list of assumptions is provided in Attachment E.3.

- Variability of Standard Runoff Coefficient and Pollutant Concentration Values—The mean standard runoff coefficients and pollutant concentrations are used in the assessments. In reality, there is a range associated with the real-world land use runoff conditions for both runoff coefficients and pollutant concentrations. For example, land use runoff pollutant concentrations can vary based on socio-economic factors across a single land use category. The 2015 City of San Diego trash study found that median income of people living in a given drainage area affected trash assessment results at the corresponding outfall. It is possible a similar pattern could be seen for other pollutants (City of San Diego, 2015).

4.3.1 Land Use Storm water Runoff Coefficient (D.4.b.(2)(b)(i)[a])

The average storm water runoff coefficient ("C") was calculated for each land use type in the WMA, based on data collected through three seasons of wet weather MS4 outfall monitoring (2013–2014, 2014–2015, and 2015–2016). This calculation is based on the measured flow and rainfall values for each monitored outfall (Table 4-2), along with the outfall drainage area characteristics. The quantity (area and percentage) of each land use type by outfall drainage area is presented in Table 4-5. Agriculture and Open Space land uses are subdivided by hydrologic soil group (A, B, C, or D).

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Table 4-5
2015–2016 San Dieguito River WMA Wet Weather Outfall Monitoring Stations – Drainage Area Land Use

Land Use Category[1]	San Dieguito River WMA											
	MS4-SDC-1		MS4-SDC-2		MS4-SDC-3		MS4-SDC-4		MS4-SDC-5		MS4-SDC-6	
	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	%
Agriculture-A	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Agriculture-B	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Agriculture-C	0	0%	0.95	1%	0	0%	0	0%	0	0%	0	0%
Agriculture-D	0	0%	0.09	0%	0	0%	0	0%	0	0%	0	0%
Commercial	7.2	20%	0	0%	1.4	1%	0	0%	14.0	35%	0	0%
Educational	0	0%	0	0%	0	0%	0	0%	0	0%	0.74	1%
Industrial	0	0%	0.02	0%	11.3	6%	0	0%	0	0%	0	0%
Mixed Use	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Open Space-A	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Open Space-B	1.7	5%	1.9	1%	35.6	19%	0.19	0%	0.15	0%	0	0%
Open Space-C	0	0%	2.6	2%	33.0	17%	3.0	6%	0	0%	0	0%
Open Space-D	0	0%	2.2	1%	18.1	9%	0.04	0%	0	0%	10.3	14%
Residential: Multi Family	1.2	3%	0	0%	0	0%	0	0%	22.0	54%	0	0%
Residential: Rural	0	0%	2.9	2%	0.16	0%	0	0%	0	0%	0	0%
Residential: Single Family	15.5	43%	129.2	74%	70.8	37%	30.0	63%	0	0%	38.8	53%
Transportation	10.6	29%	33.9	20%	20.8	11%	14.6	31%	4.3	11%	23.5	32%
Water[1]	0	0%	0	0%	0	0%	0	0%	0	0%	0.12	0%
TOTAL	36.2	100%	173.9	100%	191.2	100%	47.8	100%	40.5	100%	73.4	100%

1. Water land use excluded from MS4 outfall assessments. Water land use assumed to be a sink for runoff storage.

% = percent; WMA = Watershed Management Area

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The observed "C" was calculated for each outfall, based on the monitored event characteristics (event flow, event rainfall, and outfall drainage area). For outfalls that were monitored for more than one monitoring season, the "C" is averaged across all years of monitoring at that outfall. This value was compared with the expected "C" for each outfall, based on runoff coefficients listed in the San Diego County Hydrology Manual (County of San Diego, 2003) The current observed "C" value for each outfall, as well as the expected "C" for each outfall, is presented in Table 4-6.

Table 4-6
2015–2016 San Dieguito River WMA Observed vs. Expected Outfall Runoff Coefficients

Monitoring Location	Observed "C"	Hydrology Manual "C"
MS4-SDC-1	0.23	0.61
MS4-SDC-2	0.17	0.52
MS4-SDC-3	0.03	0.45
MS4-SDC-4	0.28	0.54
MS4-SDC-5	0.14	0.69
MS4-SDC-6	0.59	0.54

The WMA "C" for each land use was calculated using an area-weighted average of all monitored event "C" values for the monitored wet weather outfalls. To improve the accuracy of the calculation over time, historical (2013–2015) and current (2015–2016) "C" values were included in the calculation. The historical and 2015–2016 WMA area-weighted average "C" values for each land use are presented in Table 4-7.

Table 4-7
Current and Historical San Dieguito River WMA Calculated Land Use Runoff Coefficients

Land Use Category	2013–2014 Land Use "C"	2014–2015 Land Use "C"	2015–2016 Land Use "C"
Agriculture-A[1,2]	0.06	0.03	0.03
Agriculture-B[1,2]	0.06	0.03	0.03
Agriculture-C[1,2]	0.04	0.04	0.04
Agriculture-D[1,2]	0.38	0.17	0.16
Commercial	0.23	0.28	0.26
Educational	0.73	0.49	0.54
Industrial	0.34	0.04	0.05
Mixed Use[3]	0.17	0.23	0.21
Open Space-A[2,4]	0.06	0.03	0.03
Open Space-B[2]	0.06	0.03	0.03
Open Space-C[2]	0.04	0.04	0.04
Open Space-D[2]	0.38	0.17	0.16
Residential: Multi Family	0.11	0.18	0.16
Residential: Rural	0.03	0.04	0.04
Residential: Single Family	0.23	0.22	0.21
Transportation	0.43	0.37	0.36

1. Because of limited WMA monitoring data for agriculture land use, "C" and event mean concentrations (EMC) values are based on San Dieguito River WMA monitored outfalls data for Open Space with corresponding soil type land use type.
2. Agriculture and Open Space land use types were divided into subgroups based on hydrologic soil type. See http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ny/soils/?cid=nrcs144p2_027279 for more information on hydrologic soil types.
3. "C" and EMC values are based on San Dieguito River WMA monitored outfalls data for Commercial and Multi-Family Residential land use types (averaged).
4. Open Space-A land use, Runoff "C," and EMC values are based on San Dieguito River WMA monitored outfalls data for Open Space-B land use type.

4.3.2 Monitored MS4 Outfall Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[b])

The volume of storm water and pollutant loads discharged from the MS4 outfalls to receiving waters in the jurisdictions within the WMA was calculated for each storm event with measurable rainfall greater than 0.1 inch. The wet season rainfall data for the ALERT rain gauge closest to each monitoring location were used to calculate the qualifying measured rainfall for each site. Table 4-8 presents the annual wet season storm water volume and pollutant load discharged from each outfall.

Table 4-8
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads by Drainage Area 2015–2016

Analyte	Units	MS4-SDC-1	MS4-SDC-2	MS4-SDC-3	MS4-SDC-4	MS4-SDC-5	MS4-SDC-6
Qualifying Measured Rainfall	in	6.92	10.52	10.81	10.81	6.92	10.81
Wet Season Flow Volume	cf	206,634	1,140,896	223,829	518,989	145,242	1,704,671
Conventional Parameters							
Chloride	lb	3,225	13,533	615	2,560	1,360	20,220
Sulfate	lb	864	17,806	1,160	2,916	517	15,963
Indicator Bacteria							
Enterococcus	MPN	3.59E+13	5.19E+13	4.88E+13	9.99E+13	3.79E+13	3.28E+14
Fecal Coliform	MPN	4.62E+13	9.05E+14	2.09E+13	7.64E+12	1.27E+14	1.35E+13
Total Coliform	MPN	4.10E+14	9.05E+14	1.39E+15	5.00E+13	6.58E+15	4.83E+14
Total Metals							
Aluminum	lb	33.5	34.2	4.47	242	5.44	27.7
Cadmium	lb	0.0041	0.0015	0.0003	0.0024	0.0018	0.0022
Copper	lb	1.68	1.57	0.1146	1.00	0.3990	1.06
Iron	lb	46.4	59.8	7.96	278	7.62	31.9
Lead	lb	0.1419	0.0506	0.0064	0.1264	0.0263	0.0309
Manganese	lb	2.45	2.78	0.3493	6.48	0.3355	2.23
Mercury	lb	0.0002	0.0001	2.72E-05	0.0005	1.77E-05	0.0032
Zinc	lb	6.32	2.35	0.2096	2.04	1.99	3.51

Table 4-8 (continued)
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads by Drainage Area 2015–2016

Analyte	Units	MS4-SDC-1	MS4-SDC-2	MS4-SDC-3	MS4-SDC-4	MS4-SDC-5	MS4-SDC-6
Dissolved Metals							
Aluminum	lb	0.7740	0.7122	0.5589	1.10	0.3355	1.81
Iron	lb	1.2900	0.0392	1.22	1.20	0.5984	1.60
Manganese	lb	1.6770	0.5342	0.2096	0.1782	0.1269	0.7130
Mercury	lb	2.52E-05	0.0001	2.72E-05	0.0001	1.77E-05	0.0016
Nutrients							
Nitrate as N	lb	32.2	349	6.43	24.6	8.80	160
Nitrite as N	lb	2.32	3.63	0.1677	2.43	0.4443	5.64
TKN	lb	94.2	114	12.2	81.0	25.4	138
Total Nitrogen	lb	129	463	18.2	107	34.5	309
Dissolved Phosphorus as P	lb	5.42	11.4	1.31	3.89	2.18	36.2
Total Phosphorus as P	lb	12.9	17.8	2.24	10.0	3.99	45.8
Solid Parameters							
TDS	lb	8,643	66,239	3,633	10,692	3,718	72,365
Synthetic Organics							
Pentachlorophenol	lb	0.0075	0.0271	0.0053	ND	0.0034	ND

cf = cubic feet; in = inches; lb = pounds; MPN = most probable number; N = nitrogen; ND = not detected; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen

4.3.3 Jurisdictional Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[c])

The volume of storm water and pollutant loads discharged from the jurisdictions of Responsible Agencies within the WMA over the course of the wet season was calculated for each storm event with measurable rainfall greater than 0.1 inch. The wet season rainfall data for the closest ALERT rain gauge that most represented the WMA were used. Because the San Dieguito River WMA contains more than one ALERT rain gauge, data from the Rancho Bernardo rain gauge were used, because this station was closest to a majority of wet season MS4 outfall monitoring stations. Table 4-9 presents the annual wet season storm water volume and pollutant load discharged from the jurisdictions of Responsible Agencies in the San Dieguito River WMA.

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Table 4-9
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads by Jurisdictional Area 2015–2016

Analyte	Units	City of Del Mar	City of Escondido	City of Poway	City of San Diego	City of Solana Beach	County of San Diego
Qualifying Measured Rainfall	in	10.81[1]	10.81[1]	10.81	10.81	10.81[1]	10.81
Wet Season Flow Volume	cf	1,835,989	36,842,409	39,682,516	142,516,362	11,689,825	396,564,132
Conventional Parameters							
Chloride	lb	13,384	295,886	282,254	1,087,159	104,289	2,210,514
Sulfate	lb	13,233	276,247	328,500	1,138,400	76,027	3,324,819
Indicator Bacteria							
Enterococcus	MPN	7.03E+14	1.90E+16	1.71E+16	5.36E+16	6.96E+15	9.71E+16
Fecal Coliform	MPN	4.18E+14	1.08E+16	1.01E+16	3.24E+16	3.92E+15	6.13E+16
Total Coliform	MPN	3.11E+15	9.93E+16	5.68E+16	4.93E+17	4.86E+16	4.41E+17
Total Metals							
Aluminum	lb	77.5	1,551	1,518	5,053	562	12,040
Cadmium	lb	0.0076	0.1631	0.1439	0.6314	0.0640	1.18
Copper	lb	2.73	46.5	35.3	204	19.3	291
Iron	lb	119	2,379	2,387	7,692	844	19,184
Lead	lb	0.1559	3.41	2.80	13.6	1.38	22.0
Manganese	lb	6.02	120	130	391	41.6	1,180
Mercury	lb	0.0017	0.0337	0.0338	0.1058	0.0118	0.2541
Zinc	lb	8.96	163	112	752	73.4	924

Table 4-9 (continued)
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads by Jurisdictional Area 2015–2016

Analyte	Units	City of Del Mar	City of Escondido	City of Poway	City of San Diego	City of Solana Beach	County of San Diego
Dissolved Metals							
Aluminum	lb	2.58	36.6	31.8	137	14.9	248
Iron	lb	12.7	166	299	461	50.7	4,008
Manganese	lb	2.06	29.2	29.1	111	11.5	283
Mercury	lb	0.0017	0.0215	0.0192	0.0729	0.0083	0.1282
Nutrients							
Nitrate as N	lb	181	3,787	4,519	14,294	1,095	45,601
Nitrite as N	lb	6.90	147	159	563	46.6	1,590
TKN	lb	181	3,919	3,702	14,675	1,461	32,064
Total Nitrogen	lb	432	9,442	10,265	32,319	3,061	90,467
Dissolved Phosphorus as P	lb	27.5	472	416	1,557	175	2,525
Total Phosphorus as P	lb	44.6	742	743	2,469	270	6,188
Solid Parameters							
TDS	lb	61,697	1,282,737	1,496,008	5,357,896	362,836	14,940,030
Synthetic Organics							
Pentachlorophenol	lb	0.0593	1.05	2.00	4.40	0.2517	29.4

1. The qualifying measured rainfall amount used to calculate monitored outfall flow volumes and pollutant loads for the City of Del Mar, City of Escondido, and City of Solana Beach outfall monitoring stations (MS4-SDC-1, MS4-SDC-2, and MS4-SDC-5, respectively) was less than the rainfall amount used to calculate jurisdictional flow volumes and pollutant loads for these jurisdictions. The rainfall gauge that most represented the WMA as whole was used for WMA and jurisdictional calculations, while the rainfall gauge that most represented each outfall was used for outfall calculations.

cf = cubic feet; in = inches; lb = pounds; MPN = most probable number; N = nitrogen; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen

4.3.4 Land Use Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[d])

The percent contribution of storm water and pollutant loads discharged from each land use type within each HSA with a major MS4 outfall in the jurisdiction of each Responsible Agency within the San Dieguito River WMA was calculated. The wet season rainfall data for the ALERT rain gauge closest that most represented the WMA were used. As in the jurisdictional load calculations described in Section 4.3.3, the Rancho Bernardo ALERT station data were used to calculate the qualifying measured rainfall for the WMA. Tables 4-10 through 4-15 present, by Responsible Agency jurisdiction, the percentage of the wet season storm water volume discharged from each HSA with a major outfall in the San Dieguito River WMA. The percentage of the wet season storm water volume and pollutant loads discharged from each land use type within each HSA with a major outfall in the San Dieguito River WMA, by Responsible Agency, is presented in Attachment E.4.

Table 4-10
City of Del Mar Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 905.11 – Rancho Santa Fe	1,835,989	100%
Jurisdictional HSAs with No Major Outfall	NA	0%
Jurisdictional WMA	**1,835,989**	**100%**

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

Table 4-11
City of Escondido Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 905.21 – Del Dios	22,662,379	62%
Jurisdictional HSA 905.23 - Felicita	6,657,258	18%
Jurisdictional HSAs with No Major Outfall[1]	7,522,771	20%
Jurisdictional WMA	**36,842,409**	**100%**

1. The City of Escondido has jurisdictional land area in HSAs 905.24 and 905.32, but has no major outfalls in those HSAs.

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

Table 4-12
City of Poway Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 905.22 - Green	21,970,127	55%
Jurisdictional HSAs with No Major Outfall[1]	17,712,389	45%
Jurisdictional WMA	**39,682,516**	**100%**

1. The City of Poway has jurisdictional land area in HSAs 905.21 and 905.31, but has no major outfalls in those HSAs.

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

Table 4-13
City of San Diego Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 905.11 – Rancho Santa Fe	44,441,677	31%
Jurisdictional HSA 905.12 – La Jolla	31,354,835	22%
Jurisdictional HSA 905.21 – Del Dios	22,206,526	15%
Jurisdictional HSA 905.22 – Green	22,066,683	15%
Jurisdictional HSA 905.31 - Highland	670,656	0.47%
Jurisdictional HSA 905.32 – Las Lomas Muertas	21,293,120	15%
Jurisdictional HSAs with No Major Outfall[1]	482,864	0.33%
Jurisdictional WMA	**142,516,362**	**100%**

1. The City of San Diego has jurisdictional land area in HSAs 905.23 and 905.51, but has no major outfalls in those HSAs.

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

Table 4-14
City of Solana Beach Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 905.11 – Rancho Santa Fe	11,689,825	100%
Jurisdictional HSAs with No Major Outfall	NA	0%
Jurisdictional WMA	**11,689,825**	**100%**

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

Table 4-15
County of San Diego Percent Contribution of Storm Water Volume, by HSA

HSA	Wet Season Flow Volume (cf)	% Contribution
Jurisdictional HSA 905.11 – Rancho Santa Fe	76,990,655	19%
Jurisdictional HSA 905.12 – La Jolla	10,842,710	3%
Jurisdictional HSA 905.21 – Del Dios	31,063,275	8%
Jurisdictional HSA 905.23 - Felicita	6,075,408	2%
Jurisdictional HSA 905.32 – Las Lomas Muertas	31,444,619	8%
Jurisdictional HSA 905.41 - Ramona	81,840,245	21%
Jurisdictional HSAs with No Major Outfall[1]	158,307,220	40%
Jurisdictional WMA	**396,564,132**	**100%**

1. The County of San Diego has jurisdictional land area in HSAs 905.24, 905.31, 905.33, 905.34, 905.35, 905.36, 905.42, 905.43, 905.44, 905.45, 905.46, 905.47, 905.51, 905.52, 905.53, and 905.54, but has no major outfalls in those HSAs.

% = percent; cf = cubic feet; HSA = hydrologic subarea; NA = not applicable; WMA = Watershed Management Area

4.4 Evaluation of Monitoring Locations and Frequencies

Provision D.4.b.(2)(b)(ii) of the MS4 Permit allows the Responsible Agencies to modify the wet weather MS4 outfall discharge monitoring locations and frequencies to better identify pollutants in storm water discharges from the MS4s in the WMA.

An analysis of wet weather MS4 outfall monitoring locations was performed in the 2014–2015 Transitional Monitoring and Assessment Report for the San Dieguito River WMA (TMAR) (San Diego County Municipal Copermittees, 2016). The purpose of the recommendations provided was to accurately quantify the storm water volume and loads from the various land uses in the WMA to improve the effectiveness of MS4 monitoring in meeting the intended MS4 Permit goal. As part of the evaluation of monitoring locations, a comparison of the WMA land use with the monitored outfall drainage area land uses was performed. The results of this comparison are provided in Table 4-16.

Table 4-16
Land Use Comparison, WMA and Monitored Drainage Areas

Land Use	WMA Area (acres)[1]	WMA Area (%)[1]	Outfalls Area (acres)	Outfalls Area (%)	(% Difference)
Agricultural (Combined)	31,871	17.5%	1	0.2	-17.5
Commercial	3,059	2.1%	23	4.0	2.3
Educational	673	0.4%	1	0.1	-0.2
Industrial	1,419	0.8%	11	2.0	1.2
Mixed Use	0	0.0%	0	0.0	0.0
Open Space (Combined)	92,779	51.4%	109	19.3	-32.3
Residential: Multi-Family	923	0.5%	23	4.1	3.6
Residential: Rural	28,655	15.6%	3	0.5	-15.4
Residential: Single-Family	15,027	8.3%	284	50.5	42.2
Transportation	5,367	3.3%	108	19.1	16.1
Total	**179,776**	**–**	**563**	**–**	**–**

1. Acreage excludes state, federal, tribal, and Phase II lands

% = percent; WMA = Watershed Management Area

Because the wet weather outfall monitoring locations did not change between the 2014–2015 and 2015–2016 monitoring seasons, the conclusions reached in the TMAR remain valid:

- The wet weather MS4 outfall monitoring locations are, overall, representative of land uses in the WMA.
- Agricultural and open space land uses are under-represented in the monitored outfall drainage areas; however, the intention of monitoring is to characterize drainage from the MS4 (i.e., developed land uses).
- Single-family residential and transportation land uses are well represented in the monitored outfall drainage areas.

The evaluation of monitoring frequency includes a comparison of monitored event rainfall conditions with annual rainfall conditions. During the 2015–2016 wet season (October through April), rainfall totals at ALERT system gauges within the San Dieguito River WMA ranged from 11.22 inches at the Rancho Bernardo rain gauge to 16.66 inches at the Mt. Woodson rain gauge. All ALERT gauges within the WMA registered more rainfall during the wet season than the official National Weather Service (NWS) gauge at Lindbergh Field (7.42 inches). The storms that occurred generally had totals of less than

1 inch of rainfall, although one very large storm beginning January 4, 2016, produced more than 3 inches of rainfall throughout the WMA. The average wet season storm event rainfall total at the Rancho Bernardo ALERT gauge is 0.83 inch. The rainfall total for the outfall monitoring event that took place on March 5, 2016, was less than this average. The rainfall total for the outfall monitoring event that took place on January 30, 2016, was greater than this average.

It was recommended in the TMAR to target more monitoring events during average (greater than 0.5 inch) and large (greater than 1 inch) storms. The 2015–2016 sampling targeted one smaller (less than 0.5 inch) and one large storm. It is recommended to continue targeting storm events of various sizes during future wet seasons, to capture a range of data for “C” calculations.

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5 Special Study Assessments

Special studies for the San Dieguito River WMA have been selected to further investigate the HPWQC: impairment of contact recreation due to bacteria indicator at the Pacific Shoreline. The special studies have been conducted and are summarized and assessed in this section. Studies included the San Diego Regional Streams and Beaches Studies, the San Dieguito Bacteria Source Identification Study, and the Proposed Nutrient Load Characterization for Lake Hodges Study led by the City of San Diego's Public Utilities Department.

5.1 San Diego Regional Reference Streams and Beaches Studies

The San Diego Regional Reference Stream and Beach Studies (SCCWRP, 2015 and SCCWRP, 2016) were designed to measure FIB concentrations and loads at streams and beaches that are minimally disturbed by anthropogenic activities, representing "reference" conditions. Nutrients, metals, and toxicity data were also collected. The resulting data may be used by the Regional Board in the Bacteria TMDL Reopener to derive reasonable and accurate numeric targets for bacteria on the basis of a reference system approach.

5.1.1 San Diego Regional Reference Streams Study

The goal of the San Diego Regional Reference Stream Study was to characterize the natural background concentrations of bacteria, nutrients, heavy metals, and conventional constituents in undeveloped watershed catchments during wet and dry weather. To meet the goal, the study was designed to categorize the exceedance frequencies of FIB water quality objectives (WQOs) by geomorphologic, hydrologic, biotic, and abiotic factors. The human-associated microbial source marker was used to exclude sites and samples with potential human fecal contamination, ensuring that the documented exceedance rates are attributable to nonhuman sources. This summary focuses on presenting the findings for FIB, specifically *Escherichia coli (E. coli)*, *Enterococcus*, and total and fecal coliforms.

The San Diego Reference Stream Study had seven major findings:

1. FIB levels in natural streams likely result from a combination of natural inputs, such as wildlife, birds, and soil erosion and instream bacterial growth facilitated by high summer temperatures, availability of nutrients, and presence of decaying organic matter.
2. Storm event mean concentration exceedances were low except for *Enterococcus*. Based on seven storms, exceedances of single-sample WQOs were 0% for *E. coli*, fecal coliform, and total coliform. The exceedance frequency for *Enterococcus* on the day of the storm was 87%, compared with 37% for the following three days after the end of the storm. The exceedance frequency increased for both *E. coli* and total coliform to 29% if the pollutograph maximum was used. The number of storm events captured was not sufficient to investigate the effect of geology or watershed size on storm event mean concentrations.

3. FIB exceedances occurred in natural sites and were highest in summer dry weather (April through August). No exceedances of fecal coliform single sample WQOs were observed; however, single sample WQO exceedances of *Enterococcus* were as high as 30%. Annual 30-day geomean exceedance frequencies were 0% for both *E. coli* and fecal coliform, but were 48% and 30% for *Enterococcus* and total coliform, respectively. Exceedance frequencies were highest in the summer, particularly for *Enterococcus*, spiking up to 40% and 68% for single sample and 30-day geometric mean WQOs, respectively. Using a rolling 30-day geometric mean rather than a monthly mean to calculate exceedance frequencies increased the exceedance frequencies for *Enterococcus* and total coliform as much as 20%.
4. Temperature, and to a lesser extent, nutrients and organic carbon, was the major factor associated with elevated summer dry weather FIB concentrations and exceedance frequencies.
5. No significant relationships were found between FIB concentrations and watershed size or geology during dry weather.
6. Water column FIB concentrations could not be attributed directly to instream benthic algal biomass as a measure of stream trophic status, which was low and showed no distinct seasonal variation. In contrast, FIB, temperature, organic carbon, and nitrogen measurements spiked at the end of the season, coinciding with the end of stream flow. This cycle occurs naturally; organic carbon and nutrients are increasingly recycled from organic matter as flow diminishes and temperature increases, conditions that coincide with increased FIB concentrations.
7. Event mean concentration fluctuations during wet weather were found to be 2 to 3 times greater than dry weather FIB fluctuations. Wet and dry weather fluctuations were comparable to those documented in previous southern California regional studies.

5.1.2 San Diego Regional Reference Beaches Study

The goal of the San Diego Regional Reference Beach Study was to characterize natural background concentrations of FIB and determine WQO exceedance frequencies at two “reference” recreational beaches and their adjoining estuary or mixing zones. Two beaches in southern California, San Onofre Creek in San Diego County and Deer Creek in Ventura County, were selected for the Reference Beach Study for dry and wet weather assessments of *Enterococcus*, fecal and total coliforms, and *E. coli*. These locations were selected because watersheds discharging to the beaches were more than 93% undeveloped and had not been subject to fires within the last three years. Additionally, both beaches are openly exposed with breaking waves and contain freshwater inputs. Analysis of human genetic markers was used to eliminate sites or samples with potential human contamination and therefore not representative of reference conditions.

The San Diego Regional Reference Beach Study was initiated in October 2014 and continued through April 2016. Sampling was conducted in the ocean immediately in front

of the inlet or estuary, in the inlet mouth just upstream of the mixing zone, and in the freshwater flowing creek, for a total of three locations at each reference site. Dry weather monitoring was conducted during both wet and dry seasons to characterize baseline conditions throughout the year. Bacteria samples were collected weekly, such that five samples were collected in each 30-day period, to calculate a 30-day dry weather geometric mean. In creeks, dry weather sampling occurred when there was measurable flow at a site. During wet weather, samples were collected during and after the storm. A special study was also conducted to quantify FIB concentrations in the San Onofre estuary. When the estuary was open to tidal exchange, monitoring was extended to collect samples at high and low tides at all sites.

The San Diego Regional Reference Beach Study began during an extended period of drought in the southern California region, which limited the number of samples collected from creeks and during storms, as well as the overall volume of freshwater input to beaches. Dry weather beach sampling achieved the prescribed frequency, but samples from freshwater input sources were limited by extreme drought. From the onset of sampling, San Onofre Creek did not flow during the study period because of the extended drought. Deer Creek began flowing at the end of December 2014 and ceased in early May 2015; Deer Creek did not flow during the 2015–2016 winter dry weather period. In a similar effect, wet weather sampling was limited to only one storm during this study period because of the drought conditions. However human genetic markers were detected and so the results were excluded from the exceedance frequency analysis. The estuary special study was not completed because the San Onofre estuary berm remained closed throughout the study period for all but one storm event, which coincided with a tide in excess of 7 feet. The sampling locations were deemed inaccessible during that event, and so the estuary data collected only characterize concentrations during conditions with a closed estuary mouth.

Although drought conditions limited the conditions in which data were collected, the Reference Beach Study had several key findings:

1. The ranges of annual dry weather FIB concentrations at both beaches were considered low. The ranges are comparable to results from previous FIB beach bacteria reference studies that had estuaries closed to tidal exchange (i.e., San Onofre Creek) or flow to the beach without an estuary (i.e., Deer Creek), with WQO exceedance frequencies in the range of 0% to 3.5%. Prolonged drought conditions resulted in intermittent dry weather flow at Deer Creek and no dry weather flow at San Onofre Creek, which provides important context to interpret data on exceedance frequencies.

2. Concentrations of FIB in the estuary or freshwater mixing zone of both San Onofre and Deer Creeks were typically one to three orders of magnitude higher than their respective beaches, with the highest WQO exceedance frequencies found in San Onofre Creek.

3. In the San Onofre Creek estuary, the dry weather geometric mean exceedance frequency during summer was 72% for fecal coliform; the dry weather geometric exceedance frequency during summer was 100% for both *Enterococcus* and *E. coli*. Dry weather geometric mean exceedances during wet season months ranged from roughly 55% (for total coliform) to 100% (for *Enterococcus*). The higher WQO exceedance frequencies of San Onofre Creek estuary relative to the mixing zone of Deer Creek could be expected, given the abundance of labile organic matter to support microbial growth as well as the presence of water birds typically found in estuaries.

4. At both beaches, no significant relationship was found with water temperature, salinity, or antecedent dry days. In contrast to San Onofre Beach, where FIB concentrations declined with the increasing duration of dry weather, the range and mean FIB concentrations in San Onofre Creek estuary increased with increasing antecedent dry days and salinity, suggesting that freshwater input from the ephemeral channel tended to dilute concentrations, rather than be a source of bacteria to the beach. The slight increase of FIB concentrations as a function of temperature and the lack of surface freshwater input in San Onofre Creek estuary suggests that regrowth may be a factor, which is credible given the organic rich environment of the San Onofre Creek estuary.

5.1.3 Conclusions and Recommendations

Per the MS4 Permit (Provision D.4.c) data resulting from special studies should be used to (1) assess their relevance to the Responsible Agencies' characterization of receiving water conditions, (2) understand sources of pollutants and/or stressors, and (3) control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters. The San Diego Regional Stream and Beach Reference Studies characterized FIB levels in reference waterbodies and contributed to the understanding of non-anthropogenic sources of FIB. The data generated by the study are intended to be used by the Regional Board in the Bacteria TMDL Reopener to derive reasonable and accurate numeric targets for bacteria that account for contributions from natural sources as characterized by the study.

- The San Diego Regional Stream Study is directly related to the highest priority water quality condition. The adaptive management process may use the following key findings to inform the Bacteria TMDL Reopener:
- During dry weather conditions (streams):
  - There are exceedances of FIB WQOs at natural sites for *Enterococcus* and total coliform (single sample and annual 30-day geomean).
  - These are highest during summer months (April to August).
  - There were no exceedances of the fecal coliform single sample WQOs along with a 0% exceedance frequency of the annual 30-day geomean.
  - *E. coli* also had a 0% exceedance frequency of the annual 30-day geomean.

- During wet weather conditions (streams):
  - Storm event mean concentration exceedances of single sample WQOs were 0% for *E. coli*, fecal coliform, and total coliform, but if the storm maximum pollutograph was included, there were exceedances for *E. coli* and total coliform.
  - For the storm event mean concentration exceedances of single sample WQOs for *Enterococcus*, the exceedance frequency on the day of the storm was 87%, compared with 37% for the following three days after the end of the storm.
- In summary for reference streams:
  - *Enterococcus* concentrations can often exceed the WQO in both dry and wet weather conditions in streams with no anthropogenic impacts.
  - Total coliform concentrations exceeded the WQO only during wet weather conditions in the reference watershed streams when the storm peak was incorporated into the event mean concentration.
  - *E. coli* concentrations exceeded the WQO only during wet weather conditions in the reference watershed streams when the storm peak was incorporated into the event mean concentration.
  - Fecal coliform concentrations did not exceed WQO in dry and wet weather conditions in any reference watershed streams.
- During dry weather conditions (beaches):
  - The Enterococcus dry weather annual 30-day geomean exceedance frequency was 100% for the whole year in the San Onofre Creek estuary.
  - The *Enterococcus* dry weather annual 30-day geomean exceedance frequency was 100% for the whole year in the San Onofre Creek estuary.
  - The total coliform dry weather annual 30-day geomean exceedance frequency was 55% during winter months (October to March) in the San Onofre Creek estuary.
  - The *E. coli* dry weather annual 30-day geomean exceedance frequency was 100% during summer months (April to August) in the San Onofre Creek estuary.
  - The fecal coliform dry weather annual 30-day geomean exceedance frequency was 72% during the summer months in the San Onofre Creek estuary.
- During wet weather conditions (beaches):
  - No wet weather reference samples were analyzed for the beach study because human genetic markers were found in the samples during the one wet weather sampling event..

- In summary for reference beaches:
  - *Enterococcus* dry weather 30-day geomeans were exceeded during the whole year.
  - Total coliform dry weather 30-day geomeans were exceeded during the winter months (October to March).
  - *E. coli* and fecal coliform dry weather 30-day geomeans were exceeded during the summer months.

Concentrations of FIB were one to three times higher in estuary or freshwater mixings zones than at the beaches. For reference beaches with both streams and estuaries closed from tidal exchange, *Enterococcus* exceeded WQOs. Total coliform, *E. coli*, and fecal coliform concentrations exceeding WQOs varied for seasons and waterbody types. Additionally, the variability in dry weather FIB concentrations is less than the variability in wet weather FIB event mean concentrations, confirming the findings of previous studies.

5.2 San Dieguito River WMA Bacteria Source Identification and Prioritization Process Special Study

The San Dieguito River WMA Bacteria Source Identification and Prioritization Special Study looked to assess sources of bacteria in the watershed using the San Diego Bacteria Source Identification and Prioritization Process developed in 2012 as part of the MS4 Permit Report of Waste Discharge process (San Dieguito Responsible Agencies, 2015b) (Attachment E). The original focus was on the beach and lagoon area of the lower San Dieguito River WMA, with inputs from the upper watershed were also considered where relevant and necessary to identify sources of bacteria to the beach and lagoon. After reviewing the historical water quality data, it was determined that certain areas in the WMA exhibited higher bacteria concentrations than others. This finding led to a modification in the special study design, where the bacteria source identification would be focused on the specific areas in the WMA exhibiting higher concentrations of bacteria, rather than broadly assessing the whole WMA. The Responsible Agencies examined individual focus areas within their jurisdictions to be able to modify or tailor efforts in those specific areas.

The focus area drainages were selected because of elevated *Enterococcus* concentrations and known persistent dry weather flows. *Enterococcus* was selected for its qualification as an indicator of human health risk and to remain consistent with the USEPA's 2012 Recreational Water Quality Criteria, which recommends criteria for *E.coli* and *Enterococcus* and has removed criteria for fecal coliform. The focus areas also allowed each participating Responsible Agency to identify bacteria sources to target in their jurisdictions. The study used geospatial data, water quality data, and the prioritization process to determine potential bacteria sources in selected focus areas.

Water quality samples collected during dry weather for *Enterococcus* were the primary source of information used to determine the focus areas within the San Dieguito WMA. After filtering the region-wide bacteria dataset for these conditions, a total of 38 MS4 outfall sampling locations were identified, representing 340 individual data points. After

calculating the geomean for each MS4 outfall location, and evaluating the location of the outfall within the WMA, the dry weather flow at the outfall, and the land use draining to the outfall, the focus area selection process identified six focus areas, as shown in Figure 5-1.

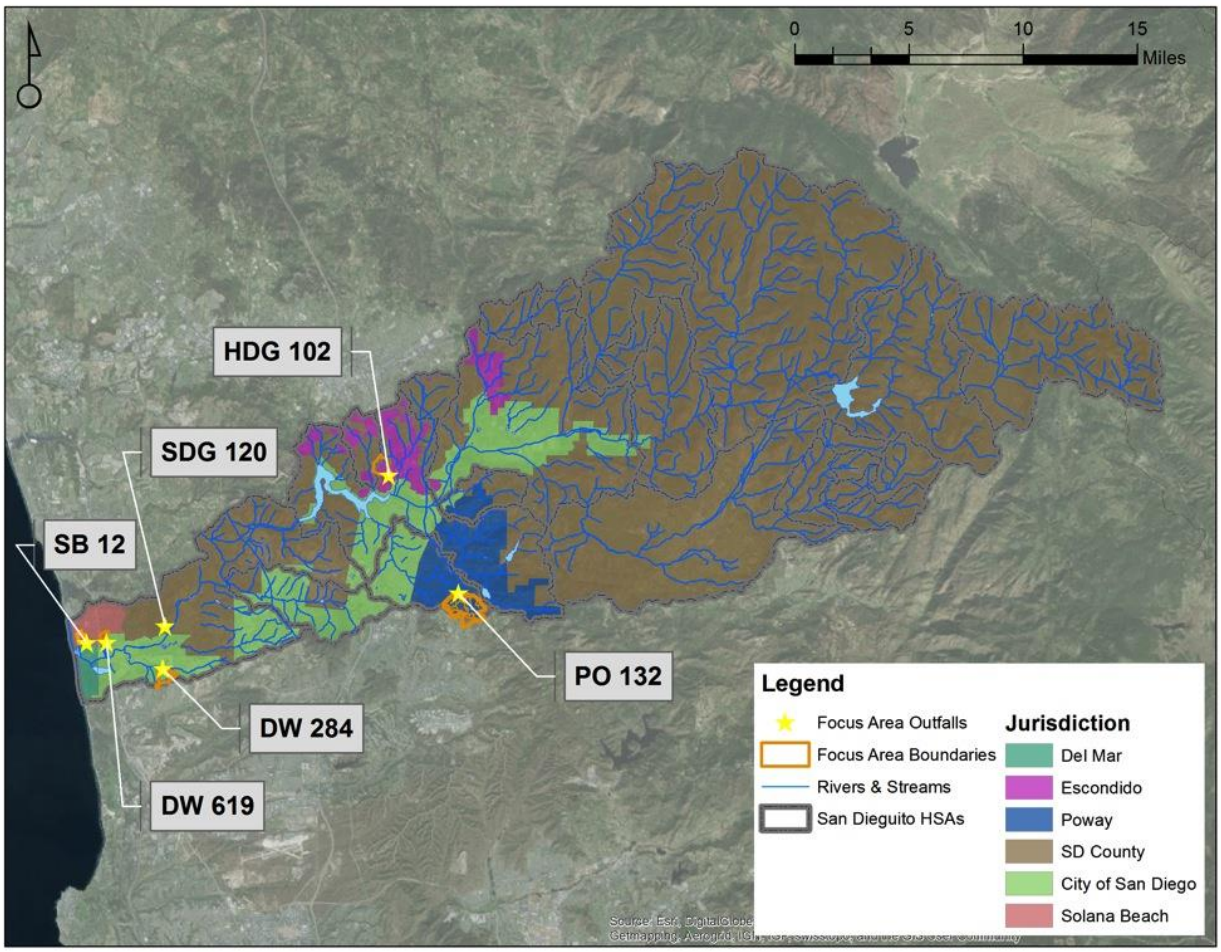

Figure 5-1
Bacteria Source Identification Special Study Focus Areas

Focus areas were selected for all Responsible Agencies other than the City of Del Mar. The City of Del Mar actively tracks and manages geospatial inventory data and conducts monthly patrols to identify any potential issues and sources related to pollutants and urban runoff. Through the analysis of bacteria concentrations (geomeans of *Enterococcus* concentrations), MS4 outfall locations within the jurisdiction, and dry weather flow observations and information, the City of Del Mar does not currently have a focus area identified. The City of Del Mar does not have any persistently flowing major MS4 outfalls that drain to the San Dieguito River or Lagoon. Based on the currently available data, no bacteria exceedances have been recorded for these locations. In addition, since 2013, the City of Del Mar has performed visual outfall monitoring at every outfall, minor or major, on a monthly basis, and the monitored outfalls identified above have never flowed persistently. An analysis of the monthly data from 2013 to the present shows six of the

seven MS4 outfalls are consistently dry and one outfall has had minor flow observed twice. The City of Del Mar will continue to conduct frequent city-wide patrols and assessment of data to determine whether specific focus areas will need to be established in the future. Any changes will be documented in applicable WQIP Annual Reports or updates.

The other Responsible Agencies evaluated 50 potential bacteria sources within each focus area, and considered dry and wet weather conditions separately. Of the 50 sources of bacteria, those that were identified as present within the focus area were then prioritized. The potential bacteria sources were grouped into three categories on the basis of bacterial origin: human waste, anthropogenic nonhuman sources, and non-anthropogenic sources. Within these categories, characteristics of the potential sources are evaluated and scored on the basis of five key prioritization metrics:

- **Human health risk** refers to the nature and probability of adverse health effects for those who may be exposed to bacteria produced by a source. The level of human health risk associated with various sources is given a relative score ranging from very low risk and to an exceptionally high risk. Research indicates that the origin of the bacteria may affect the human health risk associated with recreational waters.
- **Magnitude** refers to the concentration or load of bacteria produced by a source. As part of the bacteria source prioritization process, the magnitude associated with various sources is given a relative score ranging very low concentration or load to an exceptionally high concentration or load. Elevated concentrations, even with low flow, can result in high loads, potentially causing increased bacteria concentrations in receiving waters.
- **Transport feasibility** refers to the likelihood of storm water or urban runoff containing bacteria from specific sources of reaching receiving waters. Sources with a lower probability of reaching and influencing water quality in receiving waters are assigned a low score, while sources with a higher likelihood receive a higher score. Transport feasibility is largely affected by weather conditions (i.e., wet weather versus dry weather). The presence of structural BMPs should also be considered when evaluating transport feasibility.
- The **frequency** of a source refers to its presence or absence in the WMA. Where there are relatively lower numbers of a particular source, a lower score is assigned; where there are many numbers of a particular source in the WMA, a higher score is assigned accordingly.
- The **controllability** of a source refers to the ability of the Responsible Agency to control the source with respect to its influence on bacterial water quality. Low scores are deemed difficult to control, whereas higher scores are given to sources that are considered readily controllable.

For each potential source, the Responsible Agencies ranked the five prioritization metrics using a scoring scale of 1 to 10 to evaluate human health risk, magnitude, and frequency, and a scale of 1 to 5 for transport feasibility and controllability. Scores were determined

not only based on the results of the source analysis and literature review, but also on each Responsible Agency's local knowledge of the focus area. As a result of the prioritization process, each Responsible Agency ranked 50 potential bacteria sources included in the San Diego Bacteria Source Identification and Prioritization Process for its focus area. The top two bacteria sources for wet and dry weather conditions for each focus areas are presented in Table 5-1.

Table 5-1
Top Two Potential Bacteria Sources for Wet and Dry Weather in Each Focus Area

Outfall ID/Focus Area	Wet Weather Potential Bacteria Source[1]	Dry Weather Potential Bacteria Source[1]
DW-284	1. Pets (Anthropogenic Nonhuman/Domestic Animals) 2. Manure/Compost (Anthropogenic/Landscaping)	1. Pets (Anthropogenic Nonhuman/Domestic Animals) 2. Manure/Compost (Anthropogenic/Landscaping)
SDG-210	1. Illegal Discharges (Human Waste/Other Wastewater) 2. Illicit Connections (Human Waste/Other Wastewater)	1. Illegal Discharges (Human Waste/Other Wastewater) 2. Portable Toilets (Human Waste/Other Wastewater)
HDG_102	1. Leaking Failing Septic Systems (Human Waste/Sewage Infrastructure) 2. Sanitary Sewer Overflows (Human Waste/Sewage Infrastructure)	1. Leaking Failing Septic Systems (Human Waste/Sewage Infrastructure) 2. Sanitary Sewer Overflows (Human Waste/Sewage Infrastructure)
PO-132	1. Wildlife (Birds and Others) (Nonanthropogenic/Wildlife [Birds and Others]) 2. Manure/Compost (Anthropogenic/Landscaping)	1. Wildlife (Birds and Others) (Nonanthropogenic/Wildlife [Birds and Others]) 2. Sanitary Sewer Overflows (Human Waste/Sewage Infrastructure)
SB-12	1. Pets (Anthropogenic Nonhuman/Domestic Animals) 2. Manure/Compost (Anthropogenic/Landscaping)	1. Pets (Anthropogenic Nonhuman/Domestic Animals) 2. Manure/Compost (Anthropogenic/Landscaping)
DW-619	1. Leaking Sewer Pipes (Exfiltration) (Human Waste/Sewage Infrastructure) 2. Sanitary Sewer Overflows (Human Waste/Sewage Infrastructure)	1. Leaking Sewer Pipes (Exfiltration) (Human Waste/Sewage Infrastructure) 2. Sanitary Sewer Overflows (Human Waste/Sewage Infrastructure)

1. Source information presented as Source (Category/Subcategory).

5.2.1 Conclusions and Recommendations

Per the MS4 Permit (Provision D.4.c), data resulting from special studies should be used (1) assess their relevance to the Responsible Agencies' characterization of receiving water conditions, (2) understand sources of pollutants and/or stressors, and (3) control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters. The San Dieguito River WMA Bacteria Source Identification and Prioritization Special Study allowed the Responsible Agencies to prioritize potential sources of bacteria in unique focus areas using existing monitoring and geospatial data. This process can serve as a framework for the Responsible Agencies to review bacteria sources at MS4 outfalls where WQBEL exceedances occur without implementing costly source identification studies and to potentially modify or enhance WQIP strategies in these focus areas.

Each Responsible Agency now has a detailed list of sources to investigate if further exceedances are found at the focus area outfalls. Specific actions by Responsible Agencies include continued frequent city-wide patrols and assessment of data by the City of Del Mar, including determining whether specific focus areas will need to be established in the future. The City of Escondido will fill an identified data gap and conduct a source evaluation to determine the number of registered septic tanks within city limits.

5.3 Proposed Nutrient Load Characterization for Hodges Reservoir

Both the Regional Board and members of the public have requested that the Responsible Agencies further evaluate Hodges Reservoir nutrient impairments as a potential HPWQC. In the WQIP acceptance letter dated February 17, 2016, the Regional Board stated that a nutrient impairment in Hodges Reservoir is "significantly impacting the use of Lake Hodges waters for municipal water supply, restricting water supply blending opportunities, and increasing treatment costs for downstream water supply agencies" (Regional Board, 2016). Maintaining the quality of local potable water supplies is of particular importance as California experiences its fifth consecutive year of drought conditions; as of April 2016, Hodges Reservoir was operating at 40% of capacity (San Diego County Water Authority, 2016).

In fiscal year (FY) 16, the Responsible Agencies completed the Lake Hodges Nutrients Evaluation Technical Memorandum to analyze the receiving water and MS4 data collected. In addition, the Responsible Agencies and the City of San Diego Public Utilities Department (Public Utilities) are currently developing a Study Plan, Monitoring Plan, and Quality Assurance Project Plan (QAPP) for what is now called the Hodges Reservoir Nutrient Source Study.

The goals of the Hodges Reservoir Nutrient Source Study are as follows:

- Develop a conceptual model that incorporates applicable information from existing models and other available information from Public Utilities, and MS4 inputs within the subwatershed above Hodges Reservoir (subwatershed) to characterize all sources of nutrients in Hodges Reservoir and the subwatershed.
- Provide data recommendations to refine existing watershed models developed by Public Utilities.

- Develop a study plan to fully characterize the sources detailed in the nutrient conceptual model and available information on identified sources from previous and ongoing studies. The study plan will incorporate pertinent findings from data already collected and ongoing reservoir monitoring projects conducted by Public Utilities, and identify any data gaps. It will include recommended future data collection to refine the conceptual model, as well as the data needed to refine existing models. The monitoring plan and QAPP will provide framework for future monitoring efforts.

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6 Publicly Available Data

The MS4 Permit requires the Responsible Agencies to provide monitoring data and assessment results to the public. The following sections provide the locations where the public may obtain this information.

6.1 California Environmental Data Exchange Network Upload and Retrieval

Provision F.4.a.(6) of the MS4 Permit requires monitoring data collected as part of the San Dieguito River WMA MAP to be uploaded to CEDEN. Certifications from CEDEN confirming data upload as required will be included in Attachment G.

CEDEN is a central location for finding and sharing information about California's waterbodies and aggregates water quality, aquatic habitat, and wildlife health data. The data are accessible in downloadable forms at www.ceden.org.

Data collected under the San Dieguito River WMA MAP for the October 2015–September 2016 monitoring year will be available in 2017. Data in the CEDEN are searchable by date and by location, project, station, or parameter. Data collected as part of the programs described in this Monitoring Results and Assessment Appendix of the San Dieguito River WQIP Annual Report can be retrieved using the project names listed in Table 6-1.

Table 6-1
Project Names for CEDEN Data Retrieval

Monitoring Program	CEDEN Project Name Field Name "ProjectCode"
MS4 Outfall (Wet and Dry Weather)	MS4_WW_OFM MS4_DW_OFSM
Bacteria TMDL	SanDieguito_BacteriaTMDL

CEDEN = California Environmental Data Exchange Network; MS4 = Municipal Separate Storm Sewer System;
TBD = to be determined; TMDL = Total Maximum Daily Load

6.2 Regional Clearing House

For the 2015–2016 monitoring year, the Responsible Agencies are providing the following data and documentation on the Project Clean Water website (Project Clean Water, 2016), which can be accessed by the general public:

- 2015–2016 Annual Report, including all appendices and associated attachments, including:
  - JRMP Annual Report for each Responsible Agency within the WMA
  - Monitoring Results and Assessment Appendix

- SMC Bioassessment Summary
- Bacteria TMDL Compliance Report
- Reports from special studies conducted in the WMA not previously submitted (San Dieguito River WMA Bacteria Source Identification and Prioritization Process Special Study)

- BMP Design Manual for each Responsible Agency within the WMA and all updated versions with date of update
- Monitoring data uploaded to the CEDEN with links to the uploaded data
- Available geographic information system (GIS) data, layers, and/or shapefiles used to develop the maps to support the WQIP, Annual Reports, and JRMPs

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Attachment A – SMC Bioassessment Summary Tables

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Table A-1
Index of Biotic Integrity Scores for the San Dieguito and Los Peñasquitos Watershed Bioassessment Monitoring Sites. May, 2016.

Monitoring Site	Standard IBI Score (0-100 Scale)	IBI Rating	% CF+CG		% Non-Insect Taxa		% Tolerant Taxa		Number Coleoptera Taxa		Number Predator Taxa		% Intolerant Individuals		Number EPT Taxa	
			Metric value	IBI score	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score	Metric value	IBI score
Santa Ysabel Creek 905PS0026	44	Fair	84%	4	22%	6	44%	0	6	10	16	10	2%	1	1	0
San Dieguito River 905M21725	13	Very Poor	88%	3	25%	6	38%	0	0	0	3	0	0%	0	1	0
Lusardi Creek 905M21737	24	Poor	86%	3	14%	8	39%	0	0	0	6	3	1%	1	4	2
Lusardi Creek 905M21737 Duplicate	21	Poor	90%	2	19%	7	38%	0	0	0	8	5	0%	0	3	1

Notes:
CF+CG = Collector-Filterer + Collector-Gatherer Functional Feeding Groups
EPT = Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies)

Table A-2
Summary of CSCI Supplemental Scores for the San Dieguito and Los Peñasquitos Watershed Bioassessment Monitoring Sites. May, 2016

Station Code	% Ambiguous Individuals	% Ambiguous Taxa	Expected Taxa (E)	Mean Observed Taxa (O)	O/E	O/E Percentile[1]	MMI Score	MMI Percentile[1]	CSCI Score	CSCI Percentile[1]
905PS0026	2.207131	13.63636	6.232188	4.85	0.778218	0.12	0.726188	0.06	0.752203	0.06
905M21725	2.469136	4.166667	7.68677	6.0	0.780562	0.12	0.463377	0.00	0.621969	0.01
905M21737	0.00	0.00	7.790641	5.0	0.641796	0.03	0.533502	0.00	0.587649	0.01
905M21737 Dup	0.176056	3.333333	7.790641	6.5	0.834334	0.19	0.499327	0.00	0.666831	0.02

Notes:
1. Proportion of sites within the statewide reference pool that the test site scored better than

Table A-3
Taxonomic Listing of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Table A-3
Taxonomic Listing of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026	905M21725	905M21737	905M21737 Duplicate
			Santa Ysabel Creek	San Dieguito River	Lusardi Creek	Lusardi Creek
PHYLUM ARTHROPODA						
Insecta						
Ephemeroptera (mayflies)						
Baetidae	4	cg				
Baetis	5	cg		4	63	86
Baetis adonis	5	cg			15	7
Callibaetis sp	9	cg	150			
Fallceon sp	4	cg			60	49
Odonata (dragonflies, damselflies)						
Coenagrionidae	9	p	4			
Argia sp	7	p			2	9
Ischnura sp	9	p			2	
Libellulidae			3			
Brechmorhoga mendax	9	p			1	1
Libellula sp	9	p	2			
Pachydiplax longipennis	9	p	1			

Table A-3
Taxonomic Listing of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026	905M21725	905M21737	905M21737 Duplicate
			Santa Ysabel Creek	San Dieguito River	Lusardi Creek	Lusardi Creek
Trichoptera (caddisflies)						
Hydroptilidae	4	ph				
Hydroptila sp	6	ph			35	11
Psychomyiidae						
Tinodes sp	2	sc			1	
Hemiptera (true bugs)						
Corixidae	8	p	1			1
Coleoptera (beetles)						
Dryopidae						
Postelichus productus	5	sh	9			
Dytiscidae						
Colymbetinae	5	p	2			
Hydroporinae	5	p	2			
Agabus	5	p	2			
Hydroporus sp	5	p	2			
Sanfillipodytes sp	5	p	1			
Stictotarsus	5	p	2			
Stictotarsus striatellus	5	p	1			
Gyrinidae						
Gyrinus sp	5	p	6			
Hydrophilidae						

Table A-3
Taxonomic Listing of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026	905M21725	905M21737	905M21737 Duplicate
			Santa Ysabel Creek	San Dieguito River	Lusardi Creek	Lusardi Creek
Tropisternus sp	5	p	1			
Diptera (true flies)						
Brachycera				4		
Ceratopogonidae	6	p				
Bezzia/Palpomyia	6	p				2
Culicoides	6	p		3		
Forcipomyia sp	6	cg	1			
Chironomidae	6	cg				
Ablabesmyia sp	8	cg	13			1
Alotanypus sp	7	p	6			
Apedilum sp	6	cg	2	1		
Chironomus sp	10	cg	9			
Corynoneura sp	7	cg	13	4	4	4
Cricotopus sp	7	cg	1	8		
Cricotopus Bicinctus group	7	cg		10		
Eukiefferiella sp	8	om		1	8	15
Limnophyes sp	8	cg	5	11	3	1
Micropsectra sp	7	cg	11	6	10	7
Microtendipes sp	6	cf	1			
Parametriocnemus sp	5	cg		18	11	12
Paramerina sp	6	p	15			

Table A-3
Taxonomic Listing of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026	905M21725	905M21737	905M21737 Duplicate
			Santa Ysabel Creek	San Dieguito River	Lusardi Creek	Lusardi Creek
Paraphaenocladius sp	4	cg		2	3	
Pentaneura sp	6	p			8	6
Procladius sp	9	p	2			
Pseudosmittia sp		cg		1		
Rheocricotopus sp	6	om			7	5
Rheotanytarsus sp	6	om			3	
Tanypus sp	10	p		5		
Tanytarsus sp	6	cf	52	8	2	4
Culicidae			11			
Anopheles sp	8	cg	27		1	
Culex sp	8	cg	189			
Dixidae						
Dixella sp	2	cg	9			
Empididae	6	p				
Hemerodromia sp	6	p			3	1
Ephydridae						
Muscidae	6	p				1
Psychodidae		cg				
Pericoma/Telmatoscopus sp	4	cg		1	1	1
Simuliidae						

Table A-3
Taxonomic Listing of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026	905M21725	905M21737	905M21737 Duplicate
			Santa Ysabel Creek	San Dieguito River	Lusardi Creek	Lusardi Creek
Simulium sp	6	cf		8	241	288
Stratiomyidae						
Caloparyphus/Euparyphus sp	8	cg			1	
Euparyphus sp	8	cg				1
Myxosargus sp	8	cg			1	
Tipulidae	4					
Tipula sp	4	om		1	1	
Malacostraca						
Amphipoda (scuds)						
Hyalellidae						
Hyalella sp	8	cg		30	63	46
Decapoda (crayfish)						
Cambaridae	8	sh		2		
Ostracoda (seed shrimp)	8	cg	10		3	5
PHYLUM CHELICERATA						
Arachnida						
Acari (mites)						
Hygrobatidae						
Atractides sp	8	p	1			
Lebertiidae						

Table A-3
Taxonomic Listing of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026	905M21725	905M21737	905M21737 Duplicate
			Santa Ysabel Creek	San Dieguito River	Lusardi Creek	Lusardi Creek
Lebertia sp	8	p	2			
PHYLUM PLATYHELMINTHES						
Turbelleria (flatworms)	4	p	1			
PHYLUM NEMERTEA						
Enopla (tongueworms)						
Hoplonemertea						
Tetrastemmatidae						
Prostoma sp	8	p		3	3	1
PHYLUM ANNELIDA						
Hirudinea (leeches)			1			
Oligochaeta (earthworms)	5	cg	2	28		1
PHYLUM MOLLUSCA						
Gastropoda (snails)						
Pulmonata						
Physidae						
Physa sp	8	sc	14	1	5	3
Bivalvia (clams)						
Veneroida						
Corbiculidae						
Corbicula sp	10	cf		2		
Speaeriidae						

Table A-3
Taxonomic Listing of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026	905M21725	905M21737	905M21737 Duplicate
			Santa Ysabel Creek	San Dieguito River	Lusardi Creek	Lusardi Creek
Pisidium sp	8	cf	2			
		Total	**589**	**162**	**561**	**569**

Notes:
TV=Tolerance Value: range is 0-10; 0 is intolerant to impairment. FFG=Functional Feeding Group; cg=collector gatherer, cf=collector filterer, om=omnivore, p=predator, ph=piercer herbivore, sc=scraper, sh=shredder

Table A-4
Ranked Abundance of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016.

Taxon	TV	FFG	905PS0026		905M21725		905M21737		905M21737 Duplicate		Total
			Santa Ysabel Creek		San Dieguito River		Lusardi Creek		Lusardi Creek		
			Abundance	% Composition	Abundance	% Composition	Abundance	% Composition	Abundance	% Composition	
Simulium sp	6	cf			8	4.9%	241	43.0%	288	50.6%	537
Culex sp	8	cg	189	32.1%							189
Baetis	5	cg			4	2.5%	63	11.2%	86	15.1%	153
Callibaetis sp	9	cg	150	25.5%							150
Hyalella sp	8	cg			30	18.5%	63	11.2%	46	8.1%	139
Fallceon sp							60	10.7%	49	8.6%	109
Tanytarsus sp			52	8.8%	8	4.9%	2	0.4%	4	0.7%	66
Hydroptila sp	6	ph					35	6.2%	11	1.9%	46
Parametriocnemus sp	5	cg			18	11.1%	11	2.0%	12	2.1%	41
Micropsectra sp			11	1.9%	6	3.7%	10	1.8%	7	1.2%	34
Oligochaeta (earthworms)	5	cg	2	0.3%	28	17.3%			1	0.2%	31
Anopheles sp	8	cg	27	4.6%			1	0.2%			28
Corynoneura sp			13	2.2%	4	2.5%	4	0.7%	4	0.7%	25
Eukiefferiella sp					1	0.6%	8	1.4%	15	2.6%	24
Physa sp	8	sc	14	2.4%	1	0.6%	5	0.9%	3	0.5%	23
Baetis adonis	5	cg					15	2.7%	7	1.2%	22
Limnophyes sp			5	0.8%	11	6.8%	3	0.5%	1	0.2%	20
Ostracoda (seed shrimp)	8	cg	10	1.7%			3	0.5%	5	0.9%	18
Paramerina sp			15	2.5%							15
Ablabesmyia sp			13	2.2%					1	0.2%	14
Pentaneura sp	6	p					8	1.4%	6	1.1%	14
Rheocricotopus sp	6	om					7	1.2%	5	0.9%	12
Argia sp	7	p					2	0.4%	9	1.6%	11
Culicidae			11	1.9%							11
Cricotopus Bicinctus group					10	6.2%					10
Postelichus productus	5	sh	9	1.5%							9
Chironomus sp			9	1.5%							9
Cricotopus sp			1	0.2%	8	4.9%					9
Dixella sp	2	cg	9	1.5%							9
Prostoma sp	8	p			3	1.9%	3	0.5%	1	0.2%	7
Gyrinus sp	5	p	6	1.0%							6
Alotanypus sp			6	1.0%							6
Paraphaenocladius sp	4	cg			2	1.2%	3	0.5%			5
Tanypus sp	10	p			5	3.1%					5

Table A-4 (continued)
Ranked Abundance of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026		905M21725		905M21737		905M21737 Duplicate		Total
			Santa Ysabel Creek		San Dieguito River		Lusardi Creek		Lusardi Creek		
			Abundance	% Composition	Abundance	% Composition	Abundance	% Composition	Abundance	% Composition	
Coenagrionidae	9	p	4	0.7%							4
Brachycera					4	2.5%					4
Hemerodromia sp	6	p					3	0.5%	1	0.2%	4
Libellulidae			3	0.5%							3
Culicoides	6	p			3	1.9%					3
Apedilum sp			2	0.3%	1	0.6%					3
Rheotanytarsus sp	6	om					3	0.5%			3
Pericoma/Telmatoscopus sp	4	cg			1	0.6%	1	0.2%	1	0.2%	3
Ischnura sp	9	p					2	0.4%			2
Brechmorhoga mendax	9	p					1	0.2%	1	0.2%	2
Libellula sp	9	p	2	0.3%							2
Corixidae	8	p	1	0.2%					1	0.2%	2
Colymbetinae			2	0.3%							2
Hydroporinae			2	0.3%							2
Agabus	5	p	2	0.3%							2
Hydropours sp	5	p	2	0.3%							2
Stictotarsus	5	p	2	0.3%							2
Bezzia/Palpomyia	6	p							2	0.4%	2
Procladius sp			2	0.3%							2
Tipula sp	4	om			1	0.6%	1	0.2%			2
Cambaridae	8	sh			2	1.2%					2
Lebertia sp	8	p	2	0.3%							2
Corbicula sp	10	cf			2	1.2%					2
Pisidium sp	8	cf	2	0.3%							2
Pachydiplax longipennis	9	p	1	0.2%							1
Tinodes sp	2	sc					1	0.2%			1
Sanfillipodytes sp	5	p	1	0.2%							1
Stictotarsus striatellus	5	p	1	0.2%							1
Tropisternus sp	5	p	1	0.2%							1
Forcipomyia sp	6	cg	1	0.2%							1
Microtendipes sp			1	0.2%							1
Pseudosmittia sp		cg			1	0.6%					1
Muscidae	6	p							1	0.2%	1
Caloparyphus/Euparyphus sp	8	cg					1	0.2%			1

Table A-4 (continued)
Ranked Abundance of Benthic Macroinvertebrates Collected from the Los Peñasquitos/San Dieguito WMA Bioassessment Monitoring. May, 2016

Taxon	TV	FFG	905PS0026		905M21725		905M21737		905M21737 Duplicate		Total
			Santa Ysabel Creek		San Dieguito River		Lusardi Creek		Lusardi Creek		
			Abundance	% Composition	Abundance	% Composition	Abundance	% Composition	Abundance	% Composition	
Euparyphus sp	8	cg							1	0.2%	1
Myxosargus sp	8	cg					1	0.2%			1
Atractides sp	8	p	1	0.2%							1
Turbelleria (flatworms)	4	p	1	0.2%							1
Hirudinea (leeches)			1	0.2%							1
		Total	**589**	**100.0%**	**162**	**100%**	**561**	**100%**	**569**	**100%**	**1881**

Notes:
TV=Tolerance Value: range is 0-10; 0 is intolerant to impairment. FFG=Functional Feeding Group; cg=collector gatherer, cf=collector filterer, om=omnivore, p=predator, ph=piercer herbivore, sc=scraper, sh=shredder

Table A-5
Summary of Los Penasquitos/San Dieguito WMA Bioassessment Monitoring CRAM Attribute Scores. May, 2016

Metrics		Site		
		San Dieguito River (905M21725)	**Lusardi Creek (905M21737)**	**Santa Ysabel Creek (905PS0026)**
Approx. Length (m)		150	150	150
Average Bankfull Width (m)		4.5	10.0	18.0
Wetland Sub-type		Non-confined	Non-confined	Non-confined
Buffer Coverage (%)		100	100	100
Average Buffer Width (m)		189	244	250
CRAM Riverine Wetlands Scoring				
Landscape and Buffer Context	Stream Corridor Continuity	A	A	A
	Percent of AA with Buffer	A	A	A
	Average Buffer Width	B	A	A
	Buffer Condition	B	A	A
	Final Attribute Score	**90.3**	**100**	**100**
Hydrology	Water Source	C	C	B
	Channel Stability	B	A	A
	Hydrologic Connectivity	A	C	A
	Final Attribute Score	**75.0**	**66.7**	**91.7**
Physical Structure	Structural Patch Richness	C	A	B
	Topographic Complexity	C	B	B
	Final Attribute Score	**50.0**	**87.5**	**75.0**
Biotic Structure	Number of Plant Layers	A	A	A
	Number of Co-dominant Species	A	B	B
	Percent Invasion	C	A	B
	Horizontal Interspersion	B	B	B
	Vertical Biotic Structure	A	C	B
	Final Attribute Score	**86.1**	**72.2**	**77.8**
Overall AA Score		**75.0**	**82.0**	**86.0**

Attachment B – Bacteria TMDL Compliance Report

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SAN DIEGUITO RIVER WATERSHED MANAGEMENT AREA

BACTERIA TOTAL MAXIMUM DAILY LOAD

2015–2016 COMPLIANCE MONITORING REPORT

Submitted to the San Diego Regional Water Quality Control Board by:

Prepared by:

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January 2017

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ACRONYMS AND ABBREVIATIONS

%	percent
AB 411	(California) Assembly Bill 411, the Beach Safety Act
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
Bacteria TMDL	*A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek),* 2010
Bight ’08	Southern California Bight 2008 Regional Monitoring Program
CFU	colony-forming unit
Compliance Monitoring Plan	*San Dieguito River WMA Bacteria TMDL Compliance Monitoring Plan* (June 2015)
CWA	Clean Water Act
DW	dry weather
EH-380	San Dieguito Lagoon Mouth compliance monitoring location
EM&TS	(City of San Diego) Environmental Monitoring & Technical Services Laboratory
FIB	fecal indicator bacteria
FY	fiscal year
ID	identification
MDL	method detection limit
MNAS	Miramar Naval Air Station
Miramar	Marine Corps Air Station Miramar
mL	milliliters
MNAS	Miramar Naval Air Station
MPN	most probable number
MS4	municipal separate storm sewer system
MS4 Permit	*National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region,* Order Number R9 2013-0001, 2013
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NWS	National Weather Service
Ocean Plan	*California Ocean Plan,* SWRCB Resolution No. 2012-0056, 2012
RA	Responsible Agency
REC-1	water contact recreation beneficial use (beneficial use)
Regional Board	San Diego Regional Water Quality Control Board
RL	reporting limit
RWL	receiving water limitation
SANDAG	San Diego Association of Governments
SCCWRP	Southern California Coastal Water Research Project

ACRONYMS AND ABBREVIATIONS (CONTINUED)

SM	USEPA Standard Method
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load
USEPA	United States Environmental Protection Agency
WMA	watershed management area
WQBELs	water quality-based effluent limitations
WW	wet weather

EXECUTIVE SUMMARY

This report presents the 2015–2016 compliance monitoring data required by the Bacteria Total Maximum Daily Load (TMDL)[1] for the San Dieguito River Watershed Management Area (WMA), as incorporated into the Municipal Separate Storm Sewer System (MS4) Permit[2] (San Diego Regional Water Quality Control Board [Regional Board], 2010 and 2013, respectively).

The Bacteria TMDL Compliance Monitoring Program is designed to assess the conditions of the receiving waters and has the following objectives:

- Characterize levels of bacteria concentrations at compliance monitoring locations.
- Track progress toward meeting the Bacteria TMDL numeric targets.

Fecal indicator bacteria[3] (FIB) sampling for the compliance monitoring period (October 2015 through September 2016) was conducted at the following beach compliance monitoring location:

- **San Dieguito Lagoon Mouth–EH-380:** The Pacific Ocean Shoreline at the San Dieguito Lagoon Mouth.

Wet weather samples were collected between October 1, 2015, and April 30, 2016, within 72 hours of the end of rainfall for three wet weather events. Dry weather samples were collected at least weekly in October 2015 and from April 2016 through September 2016, and at least monthly on dry weather days from November 1, 2015, through March 31, 2016. Weekly monitoring was scheduled so that at least five samples were collected in each calendar month. Samples were analyzed for the FIB compliance constituents: total coliform, fecal coliform, and *Enterococcus*.

This report summarizes FIB concentrations and key hydrologic data at the compliance monitoring location by season. Compliance was assessed by comparing analytical results for total coliform, fecal coliform, and *Enterococcus* with the applicable receiving water limitations (RWLs), in accordance with the Bacteria TMDL requirements in Attachment E of the MS4 Permit. The RWLs are a combination of numeric targets for bacteria density and allowable exceedance frequencies. The MS4 Permit clarifies the final RWLs (in terms of the most probable number [MPN]) for total coliform, fecal coliform, and *Enterococcus*. The single-sample maximum numeric targets are required to be achieved only during wet weather, with an allowable exceedance frequency of 22 percent (%). For dry weather days, the 30-day geometric mean numeric targets must be achieved, with a 0% exceedance frequency. Table ES-1 lists the numeric targets for beaches.

[1] *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) To Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek),* Resolution No. R9-2010-0001, Regional Board, February 10, 2010 (Bacteria TMDL).

[2] *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region,* Order Number R9-2013-0001, Regional Board, May 14, 2013 (MS4 Permit).

[3] Fecal indicator bacteria (FIB) include total coliform, fecal coliform, and *Enterococcus*.

Table ES-1.
Final Receiving Water Limitations for Beaches

(Maximum Bacteria Densities and Allowable Exceedance Frequencies)

Constituent	Wet Weather Days [a] Single-Sample Maximum		Dry Weather Days [b] 30-Day Geometric Mean	
	Numeric Target [c] (MPN/100mL)	Final Allowable Exceedance Frequency [d]	Numeric Target [e] (MPN/100mL)	Final Allowable Exceedance Frequency
Total Coliform	10,000	22%	1,000	0%
Fecal Coliform	400	22%	200	0%
Enterococcus	104	22%	35	0%

Notes:
% = percent; mL = milliliters; MPN = most probable number
Source (including footnotes): Bacteria TMDL, Regional Board, Order No. R9-2010-0001, 2010.

a. Wet weather days are defined as days with rainfall events of 0.2 inch or greater, plus the following 72 hours.
b. Dry weather days are defined as days with less than 0.2 inch of rainfall observed on each of the previous 3 days.
c. Wet weather numeric objectives are based on the single-sample maximum (or equivalent) water quality objectives in the *California Ocean Plan* (State Water Resources Control Board [SWRCB], 2012). Compliance with the wet weather TMDLs in the receiving water is based on the frequency of the wet weather days in any given year exceeding the wet weather numeric objective, but the 30-day geometric mean must also be met.
d. The wet weather allowable exceedance frequency is set at 22%. In the calculation of the wet weather TMDLs, the Regional Board chose to apply the 22% allowable exceedance frequency as determined for Leo Carrillo Beach in Los Angeles County. At the time the wet weather watershed model was developed, this 22% exceedance frequency was the only reference beach exceedance frequency that was available. The 22% allowable exceedance frequency that is used to calculate the wet weather TMDLs is justified because the San Diego region watersheds' exceedance frequencies will likely be close to the value calculated for Leo Carrillo Beach, and are consistent with the exceedance frequency that was applied by the Los Angeles Regional Board.
e. Dry weather numeric objectives are based on the 30-day geometric mean (or equivalent) water quality objectives in the California Ocean Plan (SWRCB, 2012). Compliance with the dry weather TMDLs in the receiving water is based on the frequency of the dry weather geometric mean exceeding the dry weather numeric objective.

Monitoring Results and Compliance Discussion

In accordance with the monitoring and assessment requirements in the MS4 Permit, three separate weather-based evaluations were used to address the program objectives: wet weather, wet season, and dry season. Table ES-2 summarizes the 2015–2016 exceedance frequency results and compares them with interim and final allowable exceedance frequencies.

Table ES-2.
2015–2016 Bacteria TMDL Exceedance Frequency Results for San Dieguito River WMA

Site ID	Bacteria TMDL Constituent	Wet Weather [a] Single-Sample Maximum (CFU/100mL)			Wet Season [a, c] 5-Sample Geometric Mean (CFU/100mL)			Dry Season [b] 30-Day Geometric Mean (CFU/100mL)		
		2015–2016 [d] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency	2015–2016 [e] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency	2015–2016 [e] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency
EH-380	Total Coliform	0%	33%	22%	0%	3.0%	0%	0%	3.0%	0%
	Fecal Coliform	0%	33%	22%	0%	5.5%	0%	0%	5.5%	0%
	Enterococcus	13.3%	36%	22%	0%	8.5%	0%	0%	8.5%	0%

Notes:
% = percent; CFU = colony-forming unit; EH-380 = San Dieguito Lagoon Mouth; mL = milliliters; TMDL = total maximum daily load
Green shaded cells show the 2015-2016 observed exceedance frequency.
a. October 1, 2015–April 30, 2016
b. May 1, 2016–September 30, 2016
c. In accordance with the MS4 Permit, wet and dry weather FIB data were combined to calculate geometric means for the wet season and compared to the dry weather RWLs as shown in Table ES-1.
d. The exceedance frequency was derived by dividing the total number of wet weather days (days with 0.2 inch of rainfall or greater plus the following 72 hours) that exceeded the single-sample maximum numeric target divided by the total number of wet weather days during the wet season. To determine exceedances for non-sampled wet weather days, the geometric mean of the analytical results from three monitored storm events was applied to the remaining observed wet weather days that were not sampled. The results from the total number of wet weather days, with either assigned averages or analyzed result values, were then compared with single-sample maximum numeric targets.
e. The exceedance frequency was derived by dividing the total number of geometric exceedances by the total number of geometric means calculated during the season.

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Wet Weather Single-Sample Maximum Exceedance Frequencies

The wet weather exceedance rate applies only to wet weather days (days with 0.2 inch of rainfall or more, plus the following 72 hours) between October 1 and April 30 of each year. Wet weather exceedance rates for total coliform, fecal coliform, and *Enterococcus* were derived by calculating the average result of wet weather samples and applying that average to the remaining (not sampled) observed wet weather days. Sampling results and the assigned averages were compared with single-sample maximum numeric targets, as established in the Bacteria TMDL. A total of three storm events were sampled during the 2015–2016 wet weather season, at the following location:

- **EH-380:** During wet weather, the receiving waters at the San Dieguito Lagoon Mouth achieved 0% single-sample maximum exceedance frequencies for compliance constituents total coliform and fecal coliform. The single-sample maximum exceedance frequency for *Enterococcus* was 13.3%.

Wet Season Geometric Mean Exceedance Frequencies

The wet season is from October 1 through April 30 of each year. Wet season exceedance rates for total coliform, fecal coliform, and *Enterococcus* are derived by calculating a rolling geometric mean using results from the last five sampling results (combined dry weather and wet weather):

- **EH-380:** During the wet season, the receiving waters at the San Dieguito Lagoon Mouth achieved a 0% exceedance frequency for compliance constituents total coliform, fecal coliform, and *Enterococcus.*

Dry Season Geometric Mean Exceedance Frequencies

The dry season is May 1 through September 30 of each year. Dry season exceedance rates for total coliform, fecal coliform, and *Enterococcus* are derived by calculating a rolling 30-day geometric mean using the last five sampling results, as described in the *California Ocean Plan* (Ocean Plan) (SWRCB, 2012), at the compliance monitoring location:

- **EH-380:** During the dry season, the receiving waters at the San Dieguito Lagoon Mouth achieved a 0% exceedance frequency for compliance constituents total coliform, fecal coliform, and *Enterococcus.*

Summary

Wet and dry weather data collected during the 2015–2016 wet season and the 2016 dry season were used to evaluate compliance on the basis of current conditions. Overall, the San Dieguito Lagoon Mouth compliance monitoring location achieved full compliance with dry and wet weather RWLs for the 2015–2016 monitoring year.

During the wet season, which evaluates a combination of both wet and dry weather samples, *Enterococcus* (during wet weather) was the only constituent detected in concentrations that exceeded the wet weather single-sample maximum. However, the *Enterococcus* exceedance frequency was not above the interim allowable exceedance frequency and, therefore, the San Dieguito Lagoon Mouth compliance monitoring location achieved full compliance with the RWL

during wet weather. The San Dieguito Lagoon Mouth compliance monitoring location also achieved full compliance with the RWL during the wet season for all three FIB constituents.

During the dry season, when recreational activities occur with more regularity, the San Dieguito Lagoon Mouth location achieved 0% exceedance frequencies for compliance constituents total coliform, fecal coliform, and *Enterococcus*.

Collectively, the datasets suggest that, during the monitoring year, bacteria densities support water contact recreation beneficial use (REC-1) conditions in the San Dieguito River WMA.

Ongoing Efforts

Certain studies and activities of the San Dieguito River WMA RAs may provide additional data that could be used in subsequent Bacteria TMDL compliance assessments:

- The City and County of San Diego are participating in data assessments and coordination meetings with the Regional Board and other RAs to determine potential modifications to be considered in the Bacteria TMDL Reopener. During the Bacteria TMDL Reopener, the Regional Board may update the TMDL based on current data and United States Environmental Protection Agency (USEPA) policy, which may lead to revised terms of compliance. The Bacteria TMDL Reopener is in progress and is expected to be completed in 2018.
- The RAs have completed the San Diego Regional Reference Stream and San Diego Regional Reference Beaches Studies. The data are being used in the Bacteria TMDL Reopener to evaluate natural sources of bacteria in reference streams and at beaches and these data are being utilized in the Bacteria TMDL Reopener to update numeric targets (Southern California Coastal Water Research Project [SCCWRP], 2015, 2016).
- The RAs completed a bacteria source identification study specific to the San Dieguito River WMA. Additional information regarding bacteria densities and sources in the San Dieguito River WMA may be included in the Water Quality Improvement Plan Annual Report.
- RAs will continue to monitor for the Bacteria TMDL Compliance Monitoring Program for fiscal year (FY)17.

1.0 INTRODUCTION

This report presents the 2015–2016 San Dieguito River Watershed Management Area (WMA) Bacteria Total Maximum Daily Load (TMDL)[4] (San Diego Regional Water Quality Control Board [Regional Board], 2010) compliance monitoring data, in accordance with Attachment E.6 of the Municipal Separate Storm Sewer System (MS4) Permit[5]. The San Dieguito River WMA Bacteria TMDL Compliance Monitoring Plan (Compliance Monitoring Plan) was developed to meet the Bacteria TMDL requirements of the MS4 Permit and to generate data to support the San Dieguito River WMA Water Quality Improvement Plan (San Dieguito River WMA Responsible Agencies [RAs] 2015, 2016). Supporting information for this Compliance Monitoring Report is in the Compliance Monitoring Plan and San Dieguito River WMA Water Quality Improvement Plan located on the Project Clean Water website (www.projectcleanwater.org).

The Bacteria TMDL Compliance Monitoring Program is designed to assess the conditions of the receiving waters and has the following objectives:

- Characterize levels of bacteria concentrations at the compliance monitoring locations.
- Track progress toward meeting the Bacteria TMDL numeric targets.

In accordance with the Compliance Monitoring Plan, the San Dieguito River WMA RAs monitored the Pacific Ocean Shoreline at the San Dieguito Lagoon Mouth (San Dieguito Lagoon Mouth compliance monitoring location, EH-380). Table 1-1 provides the location name and coordinates for the compliance monitoring location, and Figure 1-1 presents a map of the compliance monitoring location within the watershed. Indicator bacteria sampling for the 2015–2016 compliance monitoring season was conducted during wet and dry weather at the San Dieguito Lagoon Mouth compliance monitoring location and samples were analyzed for three fecal indicator bacteria (FIB) compliance constituents: total coliform, fecal coliform, and *Enterococcus.*

Table 1-1.
Bacteria TMDL Compliance Monitoring Location

Site ID	Site Name	Site Type	Latitude	Longitude
EH-380 [a]	San Dieguito Lagoon Mouth	Pacific Ocean Shoreline	32.975	-117.271

Notes:
ID = identification
a. Approximately 25 meters north of the river outlet.

[4] *Resolution No. R9-2010-0001, A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (San Diego Regional Water Quality Control Board [Regional Board], 2010).

[5] *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region,* Order Number R9-2013-0001, Regional Board, May 14, 2013 (MS4 Permit).

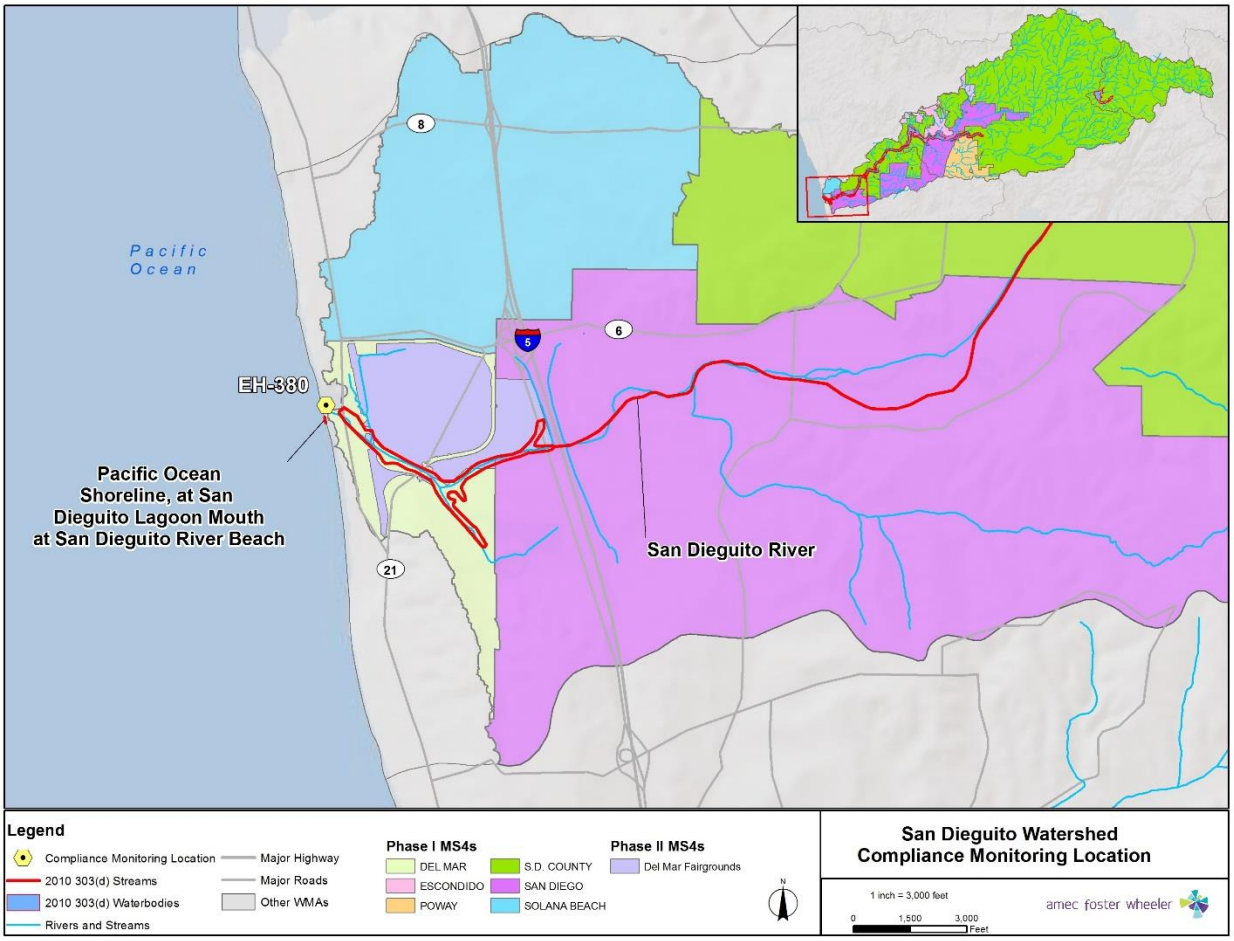

Figure 1-1.
San Dieguito River WMA Compliance Monitoring Location, EH-380

1.1 Document Overview

This report has five sections that contain the following information:

- **Section 1—Introduction:** Information on purpose of report, the Bacteria TMDL, compliance monitoring location, numeric targets, and schedule.
- **Section 2—Monitoring Results Summary:** Overview of the compliance monitoring conducted during the reporting period, including any changes to monitoring or analytical methods, hydrology summaries, event data and observations, and FIB concentration in wet and dry weather during 2015–2016, along with an evaluation of seasonal patterns in FIB concentrations.
- **Section 3— Compliance Evaluation:** Evaluation of current receiving water conditions and a comparison with the Bacteria TMDL receiving water limitations (RWLs) based on 2015–2016 data.

- **Section 4—Summary:** Program objectives and ongoing efforts.
- **Section 5— References:** Sources used to prepare this report.

1.2 Compliance Requirements for Bacteria Total Maximum Daily Load

As described in the San Dieguito River WMA Water Quality Improvement Plan, the basis for Bacteria TMDL compliance is demonstrated through interim and final water quality-based effluent limitations (WQBELs). The WQBELs include RWLs for the San Dieguito Lagoon Mouth compliance monitoring location and are provided in Table 1-2.

Table 1-2.
Final Receiving Water Limitations for Beaches

(Maximum Bacteria Densities and Allowable Exceedance Frequencies)

Constituent	Wet Weather Days [a]		Dry Weather Days [b]	
	Single-Sample Maximum (MPN/100mL) [c]	Single-Sample Maximum Allowable Exceedance Frequency [d]	30-Day Geometric Mean (MPN/100mL) [e]	30-Day Geometric Mean Allowable Exceedance Frequency
Total Coliform	10,000	22%	1,000	0%
Fecal Coliform	400	22%	200	0%
Enterococcus	104	22%	35	0%

Notes:
% = percent; mL = milliliters; MPN = most probable number
Source (including footnotes): Bacteria TMDL, Regional Board, Order No. R9-2010-0001, 2010.

a. Wet weather days are defined as days with rainfall events of 0.2 inch or greater, plus the following 72 hours.

b. Dry weather days are defined as days with less than 0.2 inch of rainfall observed on each of the previous 3 days.

c. Wet weather numeric objectives are based on the single-sample maximum (or equivalent) water quality objectives in the *California Ocean Plan* (State Water Resources Control Board [SWRCB], 2012). Compliance with the wet weather TMDLs in the receiving water is based on the frequency of the wet weather days in any given year exceeding the wet weather numeric objective, but the 30-day geometric mean must also be met.

d. The wet weather allowable exceedance frequency is set at 22%. In the calculation of the wet weather TMDLs, the Regional Board chose to apply the 22% allowable exceedance frequency as determined for Leo Carrillo Beach in Los Angeles County. At the time the wet weather watershed model was developed, this 22% exceedance frequency was the only reference beach exceedance frequency that was available. The 22% allowable exceedance frequency that is used to calculate the wet weather TMDLs is justified because the San Diego region watersheds' exceedance frequencies will likely be close to the value calculated for Leo Carrillo Beach, and are consistent with the exceedance frequency that was applied by the Los Angeles Regional Board.

e. Dry weather numeric objectives are based on the 30-day geometric mean (or equivalent) water quality objectives in the *California Ocean Plan* (SWRCB, 2012). Compliance with the dry weather TMDLs in the receiving water is based on the frequency of the dry weather geometric mean exceeding the dry weather numeric objective.

The San Dieguito River WMA Water Quality Improvement Plan provides the compliance timeline for the Bacteria TMDL, and outlines the interim and final reduction milestones for both dry and wet weather. Per Attachment E.6.c(1) of the MS4 Permit, interim compliance dates may be modified by an accepted Water Quality Improvement Plan. Full dry weather compliance requires a 0 percent (%) exceedance frequency for all dry weather periods by 2021, and full wet weather compliance requires a 22% allowable exceedance frequency during wet weather periods by 2031.

The "existing" or historical exceedance frequency is used to calculate 50% interim milestones for both wet and dry weather. Progress toward achieving dry weather and wet weather milestones is demonstrated through comparison with interim and final allowable exceedance frequencies. Table 1-3 presents dry weather existing, interim, and final allowable exceedance frequencies. Per the San Dieguito River WMA Water Quality Improvement Plan, the 50% reduction milestone is to be met in 2019 for the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach and in 2020 for the County of San Diego, with a 100% reduction milestone in 2021 for all RAs.

Table 1-3.
San Dieguito River WMA Bacteria TMDL Compliance Reduction Milestones—Dry Weather

Constituent	Receiving Water Exceedance Frequency		
	"Existing" Exceedance Frequency [a,b]	2019 [c] or 2020 [d] Interim Milestone	2021 [e] Final Compliance
Total Coliform	6%	3%	0%
Fecal Coliform	11%	5.5%	0%
Enterococcus	17%	8.5%	0%

Notes:
% = percent; ID = identification
a. Percentage fractions are rounded to the nearest whole number.
b. "Existing" dry weather exceedance frequency is determined using the historical data from January 1, 1996, to December 31, 2002, comparing the total number of historical geometric means with TMDL numeric targets. The existing dry weather exceedance frequency was derived using available California Assembly Bill 411 (AB 411) data from 1996 through 2002.
c. Interim milestone for the Cities of Escondido, Del Mar, Poway, San Diego, and Solana Beach.
d. Interim milestone for the County of San Diego.
e. The final milestone is a 100% reduction from the existing exceedance frequency to the allowable exceedance frequency

Table 1-4 presents wet weather existing, interim, and final allowable exceedance frequencies. Per the San Dieguito River WMA Water Quality Improvement Plan, the 50% reduction milestone is to be met in 2024 for the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach and 2028 for the County of San Diego, with a 100% reduction milestone in 2031 for all RAs.

Table 1-4.
San Dieguito River WMA Bacteria TMDL Compliance Reduction Milestones—Wet Weather

Constituent	Receiving Water Exceedance Frequency		
	"Existing" Exceedance Frequency [a]	2024[b] or 2028[c] Interim Milestone	2031[d] Final Compliance
Total Coliform	44%	33%	22%
Fecal Coliform	43%	33%	22%
Enterococcus	49%	36%	22%

Notes:
% = percent; ID = identification
a. Source: Bacteria TMDL
b. Interim milestone for the Cities of Escondido, Del Mar, Poway, San Diego, and Solana Beach.
c. Interim milestone for the County of San Diego.
d. The final milestone is a 100% reduction from the existing frequency to the allowable exceedance frequency.

1.3 Monitoring and Analytical Methods

The Pacific Ocean Shoreline at San Dieguito Lagoon Mouth segment named in the Bacteria TMDL was removed from the Clean Water Act 303(d)-List for REC-1 impairment in 2010 and is considered de-listed. Per Attachment E of the MS4 Permit, because of the de-listed status of their segment, the San Dieguito River WMA RAs have the flexibility to propose alternative monitoring procedures (such as reduced monitoring) for Bacteria TMDL compliance monitoring as part of the Water Quality Improvement Plan and its updates. For their first year of implementation, the RAs elected to monitor more frequently than the minimum monitoring requirements described in Attachment E of the MS4 Permit.

The Compliance Monitoring Plan describes the monitoring and analytical methods (Sections 3 and 4) and data management methods (Section 5.1). Compliance monitoring was performed in accordance with the Compliance Monitoring Plan, except as noted in Sections 1.3.1 and 1.3.2 and the Quality Assurance Quality Control Summary (Appendix A).

1.3.1 Dry Weather Monitoring

Per the Compliance Monitoring Plan, weekly dry weather monitoring was scheduled for the months of April through October so that five samples were collected in each calendar month. However, in May 2016 and September 2016, only four samples were collected in each of these months because of wet weather interference.

1.3.2 Precipitation Data

Per the Compliance Monitoring Plan, precipitation data from the National Weather Service (NWS) Del Mar rain gauge were to be used to track the total number of wet weather days as defined in the MS4 Permit. However, the NWS Del Mar rain gauge was relocated in September 2015, and was also missing data for a portion of the 2015–2016 monitoring year. To provide a more complete dataset, the NWS Miramar Naval Air Station (MNAS) gauge was used in its place. Because MNAS officially became Marine Corps Air Station Miramar (Miramar) in 1999, this gauge is referred to as the Miramar gauge in this document (Shettle, 2001). The Miramar gauge is technically within the Mission Bay WMA; however, it is the nearest gauge that is representative of rainfall in the middle of the San Dieguito River WMA. Historical daily rainfall amounts generated by the NWS will be used to assess the annual rainfall and historical average for San Diego County.

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2.0 MONITORING RESULTS SUMMARY

This section outlines hydrology summaries, event data and observations, and FIB concentrations for both wet and dry weather conditions.

Precipitation data from the NWS Miramar rain gauge were used to track the total number of wet weather days as defined in the MS4 Permit. Historical daily rainfall amounts generated by the NWS at the Miramar rain gauge were used to compare the annual rainfall and historical averages for San Diego County.

A summary of quality assurance and quality control data is provided in Appendix A. Field measurements and analytical results for wet weather are presented in Appendix B. Field measurements and analytical results for dry weather are presented in Appendix C.

2.1 Wet Weather Compliance Monitoring

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) conducted wet weather monitoring at the San Dieguito Lagoon Mouth compliance monitoring location, EH-380. Three storm events were monitored during the 2015–2016 wet season, as summarized in Section 2.1.1. The RAs elected to monitor during wet weather at a higher frequency than required by the Compliance Monitoring Plan to provide additional baseline data. Storms resulting in greater than 0.2 inch of precipitation were targeted for analysis. One grab sample was collected per storm event along with *in situ* field measurements within 72 hours of the end of precipitation. Event field data, including atmospheric conditions, sample characteristics, sampling times, field measurements, and other notable observations, were documented. Bacteria grab samples were submitted to Weck Laboratories Inc. or the City of San Diego's Environmental and Technical Services (EM&TS) Laboratory for analysis.

2.1.1 Wet Weather Hydrology Summary

Precipitation data from the Miramar gauge were used to track the total number of wet weather days. Measured rainfall is also compared with the historical average measured at Miramar from 1981 to 2010. This comparison will support future evaluations of annual precipitation and potential effects on FIB concentrations or the assessment of exceedances. The rainfall data were accessed through the National Oceanic and Atmospheric Agency (NOAA) National Centers for Environmental Information website (http://www.ncdc.noaa.gov/cdo-web/).

Total precipitation recorded at Miramar for the 2015–2016 wet season was 10.74 inches, which was below the historical average of 10.97 inches. The season began with above-average rainfall in October 2015; below-average rainfall was recorded in November and December 2015, and February and March 2016; above-average rainfall was recorded in January and April 2016.

Table 2-1 summarizes wet weather monthly precipitation data for the Miramar gauge for this wet season, along with the historical data for comparison.

Table 2-1.
Wet Weather Monthly Rainfall Summary

Month	Miramar Rainfall (inches)	
	2015–2016 Monitoring Season	1981–2010 Historical Average
October	0.53	0.36
November	0.47	1.19
December	1.3	1.86
January	6.0	2.18
February	0.06	2.60
March	1.29	2.07
April	1.09	0.71
Total Rainfall	**10.74**	**10.97**

Source: NOAA National Centers for Environmental Information website (http://www.ncdc.noaa.gov/cdo-web/)

Three storm events were successfully monitored at the San Dieguito Lagoon Mouth compliance monitoring location. The monitored storms represent storms of various sizes, as recorded at the Miramar gauge. Wet Weather Event 1 was a large storm with 5.39 inches of rainfall, and Wet Weather Event 2 was a smaller storm with 0.59 inch of rainfall. Wet Weather Event 3 was a medium storm with 0.85 inch of rainfall. Table 2-2 presents the precipitation as measured at the Miramar gauge for the three monitored wet weather events. Each monitored storm event is described in detail in the following sections.

These storms depict the usual range of events that may occur during the wet season. The watershed response varies throughout the wet season, based on factors such as antecedent soil moisture conditions, impervious area, rainfall amount, and rainfall intensity. During larger storms, runoff from pervious surfaces can increase after soils are completely saturated. Earlier in the wet season, soil conditions throughout the watershed are drier and increased infiltration results in less runoff. Later in the wet season, the ground is more saturated, resulting in greater volumes discharged to ocean receiving waters.

Table 2-2.
Total Rainfall for 2015–2016 Monitored Events

Event	Event Start Date	Event End Date	Sampling Date	Rainfall Miramar (inches)
Wet Weather Event 1	1/4/2016	1/11/2016	1/9/2016	5.39
Wet Weather Event 2	1/30/2016	2/3/2016	2/3/2016	0.59
Wet Weather Event 3	3/5/2016	3/11/2016	3/10/2016	0.85

2.1.1.1 Wet Weather Event 1 – January 9, 2016

A qualifying wet weather event (greater than or equal to 0.2 inch of rainfall preceded by at least 72 hours of less than 0.1 inch of rainfall) began on January 4, 2016. This event was the largest storm event of the 2015–2016 wet season, with a total of 5.39 inches of rainfall. The greatest amount of rainfall occurred on January 6 (2.03 inches), followed by January 5, 2016 (1.87 inches) and January 7, 2016 (1.26 inches), with lesser amounts recorded on January 4, 8, and 9, 2016 (0.08 inch, 0.14 inch, and 0.01 inch, respectively).

Wet weather samples were collected within 72 hours after the end of a storm event. Bacteria grab samples were collected at the San Dieguito Lagoon Mouth compliance monitoring location at 12:12pm on January 9, 2016, approximately 34 hours after the end of precipitation. Grab samples were submitted to Weck Laboratories Inc. for analysis within the prescribed holding times. In addition, *in situ* field measurements and field observations were collected and recorded for the location.

2.1.1.2 Wet Weather Event 2 – February 3, 2016

The second monitored storm event began on January 30, 2016. On January 30, 2016, 0.02 inch of rainfall was measured, followed by 0.57 inch on January 31, 2016, as recorded at the Miramar gauge. Precipitation totals exceeded 0.2 inch at the Miramar gauge (0.59 inch). Bacteria grab samples were collected at the San Dieguito Lagoon Mouth compliance monitoring location at 10:35am on February 3, 2016, approximately 68 hours after the end of precipitation. Grab samples were submitted to Weck Laboratories Inc. for analysis within the prescribed holding times. In addition, *in situ* field measurements and field observations were collected and recorded for the location.

2.1.1.3 Wet Weather Event 3 – March 10, 2016

The third monitored event for the 2015–2016 wet season began on March 5, 2016. Showers continued through March 7, 2016. Precipitation totals exceeded 0.2 inch, with the Miramar gauge recording 0.85 inch of rainfall.

A wet weather sample was collected at the San Dieguito Lagoon Mouth compliance monitoring location approximately 57 hours after the end of precipitation. Bacteria grab samples were collected at the compliance monitoring location at 8:40am on March 10, 2016. Grab samples were submitted to Weck Laboratories Inc. for analysis within the prescribed holding times. In addition, *in situ* field measurements and field observations were collected and recorded for the location.

2.1.2 Wet Weather FIB Concentrations

Elevated FIB concentrations were observed only during one of the three monitoring events, for one of the three compliance constituents. For Wet Weather Event 1, which was the largest monitored storm with 5.39 inches of rainfall, *Enterococcus* concentrations were elevated above the numeric target; fecal and total coliform concentrations, however, were not elevated. Wet Weather Events 2 and 3 did not have elevated concentrations of any of the three compliance

constituents. Table 2-3 presents 2015–2016 wet weather analytical results for compliance constituents. Figure 2-1 illustrates 2015–2016 wet weather bacteria densities as compared with the single-sample maximum numeric targets. Additional wet weather monitoring data or information are included in the following appendices:

- Appendix B: Optional field measurements for 2015–2016 wet weather monitoring;
- Appendix D: 2015–2016 wet weather laboratory reports; and
- Appendix E: 2015–2016 wet weather field data sheets.

Table 2-3.
Wet Weather Analytical Results for San Dieguito River WMA

Analyte	Unit	Numeric Target	Method	MDL[a]	RL[a]	Analytical Results – Site ID EH-380		
						Wet Weather Event 1 1/9/2016 [c]	Wet Weather Event 2 2/3/2016 [c]	Wet Weather Event 3 3/10/2016 [c]
Total Coliform	CFU/100mL	10,000	SM 9222B	2	2 (20 [b])	2,600	200	<20
Fecal Coliform	CFU/100mL	400	SM 9222D	2	2	270	4	2
Enterococcus	CFU/100mL	104	USEPA 1600	1	2 (10 [b])	**290**	86	<2

Notes:
% = percent; CFU = colony-forming unit; EH-380 = San Dieguito Lagoon Mouth; ID = identification; mL = milliliters; TMDL = total maximum daily load; MDL = method detection limit; RL = reporting limit; SM = USEPA Standard Method; USEPA = United States Environmental Protection Agency;
Bolded value = concentration exceeds the single-sample maximum numeric target.
a. MDL/RL values vary with the dilutions used to generate plates within the countable range.
b. Reporting limit used for Wet Weather Event 1.
c. Date sample was collected.

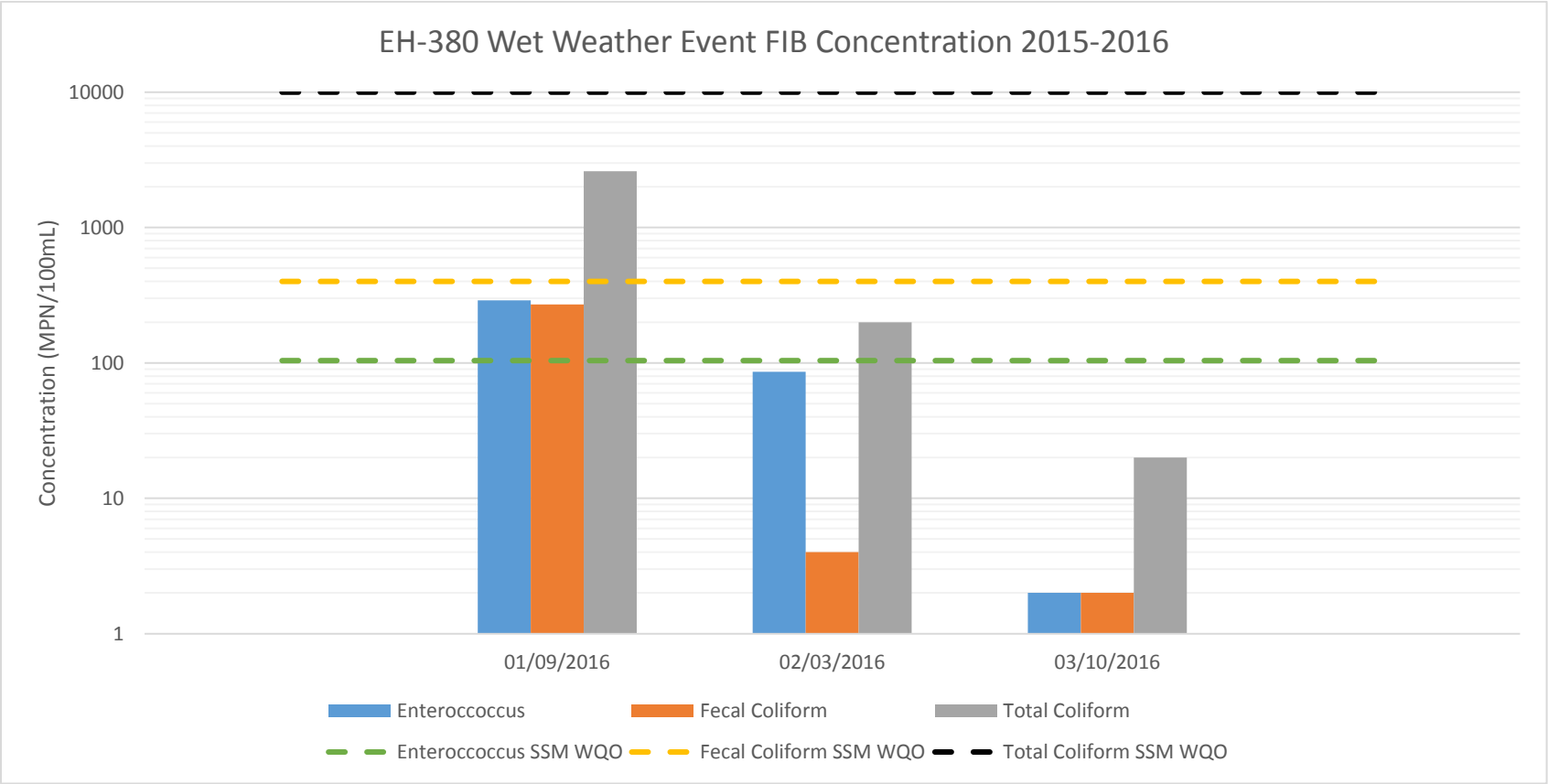

Figure 2-1.
2015–2016 Wet Weather Fecal Indicator Bacteria Concentrations – EH-380

2.2 Dry Weather Compliance Monitoring

Dry weather monitoring was performed during both the wet season (October 1, 2015, through April 30, 2016) and the dry season (May 1, 2016, through September 30, 2016). As specified in the Compliance Monitoring Plan, the following sampling was conducted:

- Weekly dry weather monitoring in October 2015 and from April 2016 through September 2016.
  - RAs elected to perform weekly monitoring during October 2015 and from April 2016 through September 2016 to capture potential conditions with more recreational activities, consistent with the recreational monitoring season of the California Assembly Bill 411 (the Beach Safety Act, or AB 411) program. Weekly dry weather sampling is also above and beyond the requirements of Attachment E of the MS4 Permit: only monthly sampling is required.
  - At least five samples were collected in each calendar month, except during May 2016 and September 2016, when only four samples were collected because of wet weather interference.
- Monthly dry weather monitoring from November 2015 through March 2016.

Dry weather events, as defined by Attachment E of the MS4 Permit, may occur on dry weather days with an antecedent dry period of 72 hours with less than 0.1 inch of rainfall. All dry weather samples were collected by the City of Del Mar's Clean Water Program on behalf of the RAs. Bacteria samples were submitted to the City of San Diego's EM&TS Laboratory for analysis.

2.2.1 Dry Weather Monitoring Summary

During each successful dry weather event, water grab samples were collected in the receiving waters at the San Dieguito Lagoon Mouth compliance monitoring location. Tables presenting dry weather FIB concentrations and field measurements for the 2015–2016 monitoring year are provided in Appendix C.

The field scientists noted visual observations during each dry weather sampling event. In general, field observations such as the presence of algae or trash occurred only during a few sampling events. Table 2-4 presents sampling event information (approximate tidal stage and total antecedent dry weather days before each event), with wet season dry weather sampling dates highlighted in blue.

During the wet season (October through April), a total of 15 dry weather sampling events were conducted at the San Dieguito Lagoon Mouth compliance monitoring location.

During the dry season (May through September), a total of 25 dry weather sampling events were scheduled at the San Dieguito Lagoon Mouth compliance monitoring location. In both May and September 2016, one planned sampling event was canceled because of rainfall. Therefore, the total sample count for San Dieguito Lagoon Mouth was 23 for the dry season.

Table 2-4.
Dry Weather Sampling Summary and Antecedent Dry Days

Date Visited	Tide Height [a] (feet)	Antecedent Dry Days [b]	
		<0.1 inch	<0.2 inch
10/12/2015	3	6	6
10/13/2015	5	7	7
10/19/2015	5	13	13
10/20/2015	5	14	14
10/27/2015	2	21	21
11/19/2015	2.6	16	16
12/1/2015	4.4	28	28
1/13/2016	5	5	6
2/16/2016	2	16	16
3/1/2016	2	30	30
4/5/2016	3	25	25
4/13/2016	3.5	3 [c]	3 [c]
4/19/2016	5	9	9
4/20/2016	5.2	10	10
4/26/2016	2.3	16	16
5/2/2016	2	22	22
5/3/2016	1.5	23	23
5/16/2016	4	10	10
5/31/2016	4	25	25
6/6/2016	2	31	31
6/9/2016	3	34	34
6/13/2016	3	38	38
6/20/2016	5	45	45
6/30/2016	2.5	55	55
7/5/2016	4	60	60
7/7/2016	4	62	62
7/11/2016	3.5	66	66
7/19/2016	5.3	74	74
7/26/2016	1	81	81
8/1/2016	4	87	87
8/9/2016	2	95	95
8/16/2016	4	102	102
8/23/2016	2	109	109
8/30/2016	3	116	116
9/6/2016	4	123	123
9/13/2016	4	130	130
9/27/2016	3	6	7
9/28/2016	4	7	8

Notes:
Source = National Oceanographic and Atmospheric Administration (NOAA)
DW = dry weather
Blue-shading indicates dry weather events during the wet season.

a. Tide height is approximate and pertains to all sampled sites.
b. National Weather Service (NWS) archived rain gauge data for Miramar were used to determine antecedent dry days, unless otherwise noted.
c. 4/13/16 was defined as a wet weather day based on precipitation >0.2 inch on 4/10/16. However, hourly weather observations at the Miramar gauge place the end of measureable precipitation on 4/10/16 at 04:55 PDT, before the first sampling time. Thus, samples collected on 4/13/16 were collected >72 hours after the end of precipitation and are considered dry weather samples.

Although total measured rainfall during the wet season was below average, above average rainfall was recorded throughout the 2016 dry season. From May 1, 2016, through September 30, 2016, a total of 0.95 inch of precipitation was measured at the Miramar station. Table 2-5 summarizes total monthly rainfall for the 2016 dry season.

Table 2-5.
Dry Season Monthly Rainfall Summary

Month	Miramar Rainfall (inches)	
	2015–2016 Monitoring Season	1981–2010 Historical Average
May	0.59	0.16
June	0	0.06
July	0	0.06
August	0	0.02
September	0.36	0.19
Total Rainfall	**0.95**	**0.49**

2.2.2 Dry Weather FIB Concentrations

Dry weather samples were collected during the 2015–2016 wet season and the 2016 dry season, as noted in Section 2.2. Dry weather samples collected during the 2016 dry season consistently displayed lower bacteria concentrations than dry weather samples collected during the wet season.

During the dry weather conditions in the dry season, no elevated FIB concentrations at the San Dieguito Lagoon Mouth compliance monitoring location were observed, which is typically when beach visitation and recreation use are at the highest levels. During dry weather conditions in the wet season, fecal and total coliform concentrations were not observed to be elevated; however, *Enterococcus* concentrations exceeded the single-sample maximum for two events: one in October 2015 and one in February 2016. Based on current monitoring, the sources of elevated FIB concentrations are not known; potential sources include land areas draining directly to the San Dieguito Lagoon Mouth and Pacific Ocean and natural sources (regrowth and marine life). Marine mammals, birds, and seaweed are potential natural sources of bacteria. According to the Southern California Bight 2008 Regional Monitoring Program (Bight ’08) Shoreline Microbiology Study conducted by the Southern California Coastal Water Research Project (SCCWRP) at Southern California beaches (SCCWRP, 2012), resident bird populations are natural sources of FIB; FIB regrowth on beach wrack and beach sand is a potential source of increased FIB densities.

Figure 2-2 depicts FIB concentrations for each dry weather monitored event between October 1, 2015, and September 30, 2016. The blue-shaded area indicates dry weather results generated during the wet season, when elevated FIB densities are more likely to occur.

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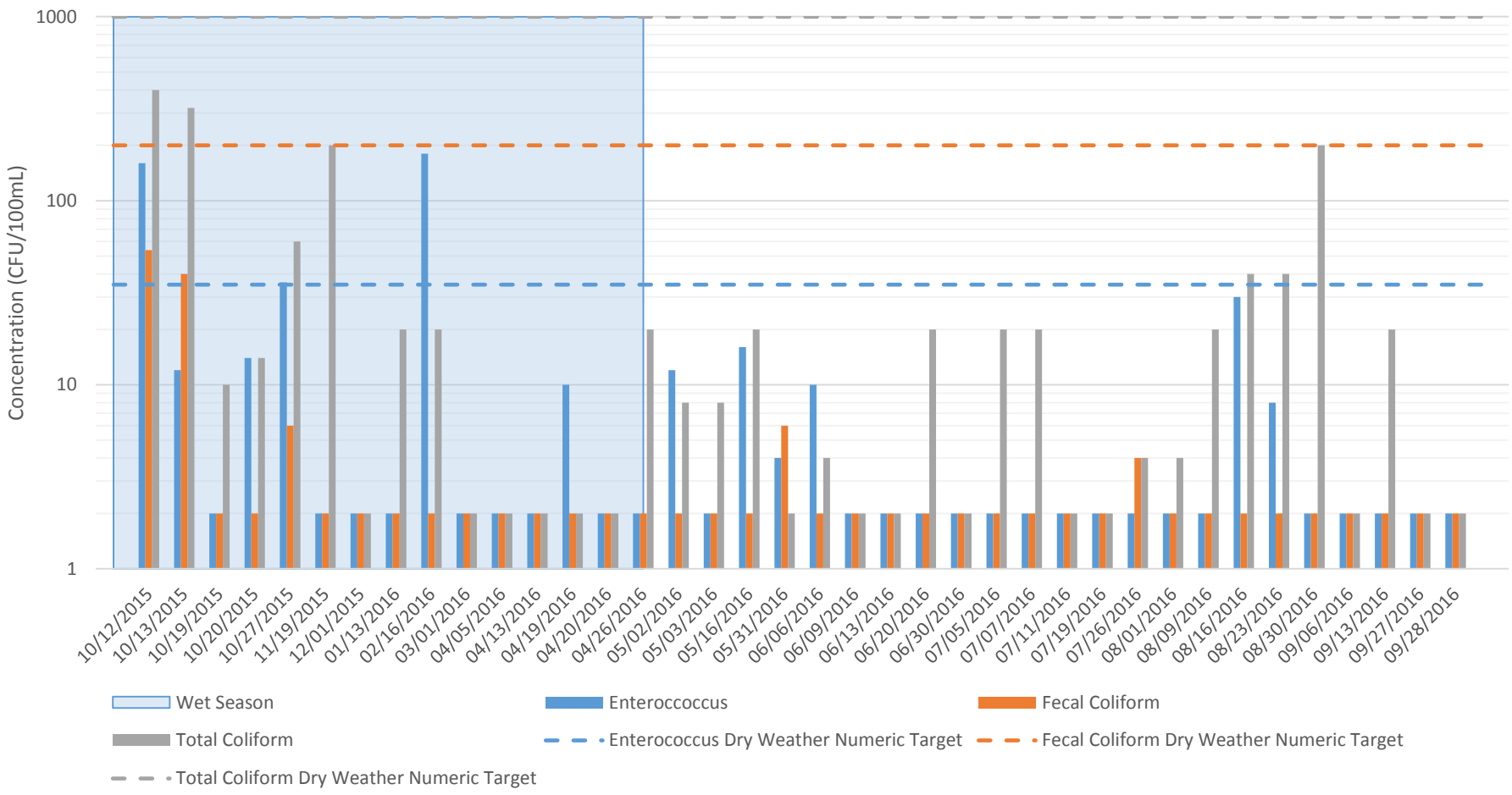

Figure 2-2
2015–2016 Dry Weather Fecal Indicator Bacteria Concentrations – EH-380

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3.0 COMPLIANCE EVALUATION

This section presents the results of the compliance evaluation for dry and wet seasons in accordance with the assessment requirements of Attachment E of the MS4 Permit.

3.1 Compliance Evaluation Methods

Separate evaluations were completed using geometric means for dry season dry weather and wet season combined all weather, and single-sample maximums for wet weather results as described in this report. FIB data collected between October 2015 and September 2016 in accordance with the Compliance Monitoring Plan were used in the compliance assessments.

Several inconsistencies were identified in Attachment E.6.6 of the MS4 Permit that may affect the interpretation of compliance; these inconsistencies are explained in detail in Appendix F.

3.1.1 Wet Weather Single-Sample Maximum Exceedance Frequency

Wet weather exceedances are based on a comparison of the rate of exceedances of the single-sample maximum numeric target with the allowable 22% exceedance frequency. Wet weather events include the storm day(s) (0.2 inch of rainfall or greater) and the following 72 hours, resulting in a minimum wet weather event duration of 4 days. Per of Attachment E of the MS4 Permit, for monitored storm events, the highest reported result from a storm event is applied to each day for the duration of that event. An inferred exceedance rate must be calculated to account for non-monitored storm events.

For the remaining wet weather days that are not associated with a monitored event, the average (geometric mean) of the highest reported results from each of the three monitored wet weather events is assigned to the remaining wet weather days in the wet season:

$$\text{Geometric Mean} = \quad n^{th} \text{ root of } (X_1)(X_2)\ldots X_n$$

where: $X_1, X_2, etc.$ is the highest reported concentrations of the monitored event
n is the number of monitored storm events

The wet weather exceedance frequency is then determined by dividing the number of wet weather days that exceeded the single-sample maximum numeric target by the total number of wet weather days observed during the 2015–2016 wet season. A list of observed wet weather days for the 2015–2016 wet season, both monitored and observed, is provided in Appendix B.

$$\text{Wet Weather Exceedance Frequency (\%)} = 100 * \frac{\Sigma(\text{WWD} > \text{Wet Weather RWL})}{\Sigma\text{WWD}}$$

where: ΣWWD is the sum of wet weather days (0.2 inch of rainfall or more) and the following 72 hours

3.1.2 Wet Season Geometric Mean and Exceedance Frequency

Per of Attachment E of the MS4 Permit, a wet season exceedance frequency was calculated using the combined wet and dry weather results between October 1 and April 30 and compared with dry weather RWLs. During the wet season, the amount of time summarized by each geometric mean varies. Dry weather sampling was conducted weekly during the wet season in October 2015 and April 2016, and monthly from November 2015 through March 2016. In addition, three wet weather events were monitored during the wet season; one sample was collected for each wet weather event. A rolling geometric mean calculation was calculated from the five most recent wet season samples. With each subsequent sample collected, the first sample from the preceding five-sample geometric mean was dropped. The wet season geometric mean is calculated as follows:

$$\text{5-Sample Geometric Mean} = \sqrt[n]{(X_1)(X_2)(X_3)(X_4)(X_5)}$$

where: n is the number of individual results used in the calculation
X_n is sample *n* result (e.g., X_1 = November result, X_2 = Wet Weather 1 Result)

A wet season exceedance occurs when a geometric mean exceeds the dry weather numeric target. The first geometric mean was calculated after the fifth sample in October. To determine the wet season exceedance frequency, the number of wet season geometric means that exceed the dry weather numeric target was divided by the total number of calculated wet season geometric means, as expressed below.

$$\text{Wet Season Exceedance Frequency (\%)} = 100 * \frac{\text{Wet Season } G_n > \text{DW NT}}{\text{Wet Season } G_n}$$

where: Wet Season G_n is the number of wet season geometric means
DW NT is the dry weather numeric target

3.1.3 Dry Season Geometric Mean and Exceedance Frequency

Per Attachment E of the MS4 Permit, the geometric mean calculation should be consistent with that in the Ocean Plan (SWRCB, 2012). A 30-day rolling geometric mean calculation was based on a minimum of five samples for any 30-day period. Geometric means were calculated as follows:

$$\text{30-Day Geometric Mean} = \sqrt[n]{(X_1)(X_2)(X_3)(X_4)(X_5)}$$

where: n is the number of individual results used in the calculation
X_n is week *n* result (e.g., X_1 = week 1 result)

Dry weather monitoring began in early May 2016; the first geometric mean was calculated after the fifth sample. With each subsequent sample collected, the first sample from the preceding five-sample geometric mean was dropped outside of a 30-day window. Samples collected between May 1 and September 30 are used in this calculation.

A dry weather exceedance occurs when the geometric mean exceeds the dry weather numeric target. The first exceedance rate was calculated after the first geometric mean calculation. The

number of geometric means that exceed the dry weather numeric target is divided by the total number of calculated dry season geometric means to determine the dry season exceedance frequency, as expressed below:

$$\text{Dry Season Exceedance Frequency (\%)} = 100 * \frac{\text{Dry Season } G_n > \text{DW NT}}{\text{Dry Season } G_n}$$

where: Dry Season G_n is the number of dry season geometric means
DW NT is the dry weather numeric target

3.2 Wet Weather Exceedance Rates and Compliance Evaluation

During the 2015–2016 wet season, 45 wet weather days were observed, as recorded by the Miramar gauge, and are presented in Appendix B. For the compliance monitoring location, this assessment applies the average of the three wet weather sampling results to each non-sampled wet weather day. A total of 15 of the 45 wet weather days were associated with sampled storm events (three storm events plus the following 72 hours per event) and the average of the results was assigned to each of the remaining 30 wet days.

Based on current monitoring, the San Dieguito River WMA is meeting interim and final RWLs for total coliform, fecal coliform, and *Enterococcus.* The San Dieguito River WMA achieved 0% wet weather exceedance frequencies for total and fecal coliforms. There was one wet weather exceedance for *Enterococcus*, and the geometric mean of the three wet weather results did not exceed the single-sample maximum numeric target. Based on the compliance requirements, the single *Enterococcus* exceedance was applied to all six wet weather days for the wet weather event. As a result, the wet weather exceedance frequency for *Enterococcus* in the San Dieguito River WMA is 13.3% (6 wet weather day exceedances divided by 45 wet weather day results). The 13.3% exceedance frequency is below the allowable interim and final Bacteria TMDL wet weather exceedance frequencies.

Table 3-1 presents wet weather single-sample maximum exceedance frequencies for the San Dieguito Lagoon Mouth compliance monitoring location. The geometric means are presented in the table to illustrate the averages (means) derived from the three sampled events applied to the remaining non-sampled wet weather days, as compared with the numeric target.

Table 3-2 compares 2015–2016 exceedance frequencies with historical exceedance rates, and interim and final RWLs.

Table 3-1.
2015–2016 Wet Weather Single-Sample Maximum Exceedance Rates

Site ID	Analyte	Single-Sample Maximum (CFU/100mL)		Number of Results	Number of Exceedances	2015–2016 Wet Weather Exceedance Rate
		Numeric Target	Geometric Mean			
EH-380	Total Coliform	10,000	218.3	44	0	0%
	Fecal Coliform	400	12.9	44	0	0%
	Enterococcus	104	36.8	44	6	13.3%

Notes:
% = percent; ID = identification; CFU = colony-forming unit; mL = milliliters
Site IDs: EH-380 = San Dieguito Lagoon Mouth
Bolded values = Geometric mean or exceedance rate is greater than the final allowable limit established in the Bacteria TMDL.

Table 3-2.
2015–2016 Wet Weather Exceedance Rates and Compliance Reduction Milestones

Site ID	Analyte	Existing Exceedance Rate [a]	2015–2016 Exceedance Rate	50% Reduction Milestone	50% Reduction Achieved?	Final Allowable RWLs	100% Reduction Achieved?
EH-380	Total Coliform	44%	0%	33%	Yes	22%	Yes
	Fecal Coliform	43%	0%	33%	Yes	22%	Yes
	Enterococcus	49%	13.3%	36%	Yes	22%	Yes

Notes:
% = percent; ID = identification; RWL = receiving water limitation
Site IDs: EH-380 = San Dieguito Lagoon Mouth.
Bolded values = Current rate exceeds final Bacteria TMDL RWLs.
a. Existing exceedance rate for wet season is a modeled estimate established in the Bacteria TMDL.

3.3 Wet Season Geometric Mean Exceedance Rates

The overall wet season evaluation combines bacteria results during both dry weather and wet weather events. Higher exceedance rates are expected during the wet season, with the inclusion of storm samples that reflect high-flow conditions. However, based on the 2015–2016 monitoring, the San Dieguito River WMA is currently meeting interim and final goals for total coliform, fecal coliform, and *Enterococcus* with 0% wet season exceedance frequencies for all FIB.

Table 3-3 presents the wet season geometric mean exceedance rates for the San Dieguito Lagoon Mouth compliance monitoring location, based on the available data, including the number of geometric means calculated from the results, the number of geometric means that exceeded the numeric target, and the maximum geometric mean.

Table 3-4 compares current wet season geometric exceedance frequencies with the existing dry weather exceedance rates and the status of progress as compared with interim and final RWLs.

Table 3-3.
2015–2016 Wet Season Geometric Mean Exceedance Rates

Site ID	Analyte	5-Sample Geometric Mean (CFU/100mL)		Number of Geomeans	Number of Exceedances	2015–2016 Wet Season Exceedance Rate
		Numeric Target	Maximum Geomean			
EH-380	Total Coliform	1,000	83.9	14	0	0%
	Fecal Coliform	200	8.8	14	0	0%
	Enterococcus	35	28.2	14	0	0%

Notes:
% = percent; CFU = colony forming unit; ID = identification; mL = milliliters
Site IDs: EH-380 = San Dieguito Lagoon Mouth.

Table 3-4.
2015–2016 Wet Season Exceedance Rates and Compliance Reduction Milestones

Site ID	Analyte	Existing Exceedance Rate [a]	Exceedance Rate	50% Reduction Milestone	50% Reduction Achieved?	Final Allowable RWLs	100% Reduction Achieved?
EH-380	Total Coliform	6%	0%	3.0%	Yes	0%	Yes
	Fecal Coliform	11%	0%	5.5%	Yes	0%	Yes
	Enterococcus	17%	0%	8.5%	Yes	0%	Yes

Notes:
% = percent; ID = identification; RWL = receiving water limitation
Site IDs: EH-380 = San Dieguito Lagoon Mouth.
RWL = receiving water limit; TMDL = total maximum daily load
a. Existing exceedance rate is based on available 1996–2002 historical data.

3.4 Dry Season Exceedance Rates

The overall dry season evaluation combines bacteria results during dry weather events from May 1 through September 30, 2016. Lower exceedance rates are typically expected during the dry season, which do not include the influence of wet weather events that reflect high-flow conditions. FIB compliance constituent concentrations were below the numeric objects and the interim and final RWLs were met at the San Dieguito Lagoon Mouth during the 2016 dry season with zero exceedances.

Dry season monitoring occurred weekly, and exceedances were based on a 30-day geometric mean composed of the preceding five samples. Of the 23 monitored events during the dry season at the San Dieguito Lagoon Mouth compliance monitoring location, there were zero exceedances of total and fecal coliform and *Enterococcus*. In addition, the San Dieguito Lagoon Mouth geometric mean did not exceed dry weather numeric objectives during the dry season for the FIB compliance constituents.

Table 3-5 presents the dry season geometric mean exceedance rates for the San Dieguito Lagoon Mouth, including the number of geometric means calculated from the results, the number of geometric means that exceeded the numeric target, and the maximum geometric mean.

Table 3-6 compares current dry season geometric exceedance frequencies with the existing dry weather exceedance rates, and provides the status of progress as compared with interim and final RWLs.

Table 3-5.
2016 Dry Season Geometric Mean Exceedance Rates

Site ID	Analyte	30-Day Geometric Mean (CFU/100mL)		Number of Geomeans	2016 Number of Exceedances	2016 Dry Season Exceedance Rate
		Dry Numeric Target	Maximum Geomean			
EH-380	Total Coliform	1,000	30.3	16	0	0%
	Fecal Coliform	200	2.49	16	0	0%
	Enterococcus	35	4.8	16	0	0%

Notes:
% = percent; CFU = colony-forming units; ID = identification; mL = milliliters;
Site IDs: EH-380 = San Dieguito Lagoon Mouth.

Table 3-6.
Dry Season Exceedance Rates and Compliance Reduction Milestones

Site ID	Analyte	Existing Exceedance Rate [a]	2016 Exceedance Rate	50% Reduction Milestone	50% Reduction Achieved?	100% Reduction Final RWLs	100% Reduction Achieved?
EH-380	Total Coliform	6%	0%	3.0%	Yes	0%	Yes
	Fecal Coliform	11%	0%	5.5%	Yes	0%	Yes
	Enterococcus	17%	0%	8.5%	Yes	0%	Yes

Notes:
% = percent; ID = identification; RWL = receiving water limitation
Site IDs: EH-380 = San Dieguito Lagoon Mouth.
a. Existing exceedance rate was calculated based on available 1996 - 2002 historical data.

3.5 Wet and Dry Season Overview

Figures 3-1 through 3-3 present the 2015–2016 rolling geometric means throughout the wet and dry season from October 1, 2015, through September 30, 2016. Wet season geometric means are illustrated using a yellow line with yellow markers throughout the blue areas (wet season), which reflects the rolling geometric mean using the last five samples. Wet weather numeric targets are illustrated with a blue dashed line. FIB concentrations in dry and wet weather are indicated with gold circles and blue circles, respectively. The gray line with gray markers illustrates the rolling 30-day geometric means throughout the dry season (May through September). Dry weather Bacteria TMDL numeric targets are illustrated with an orange dashed line.

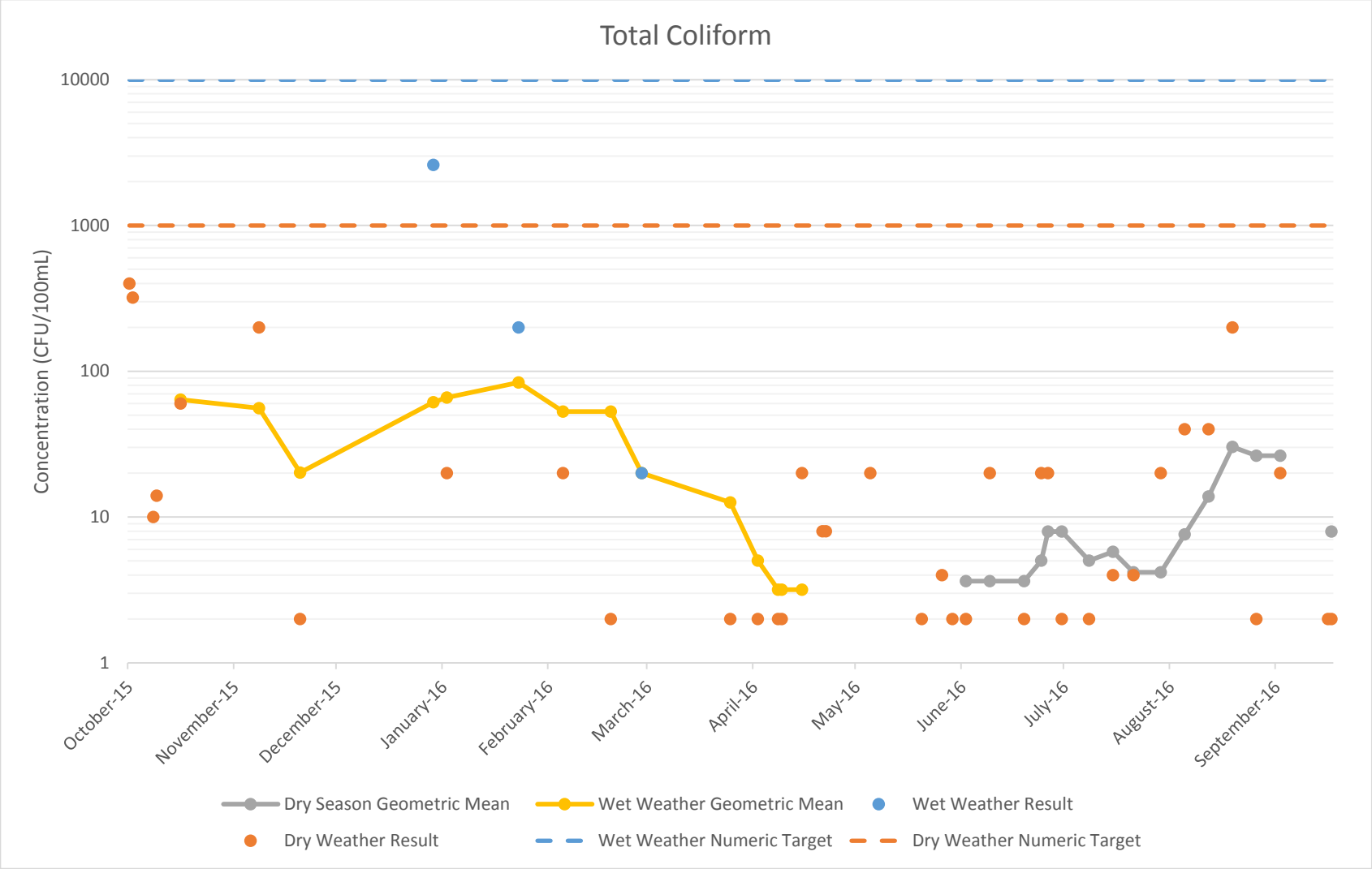

Figure 3-1.
Total Coliform Densities and Geometric Means, 2015–2016 Wet and Dry Season – EH-380

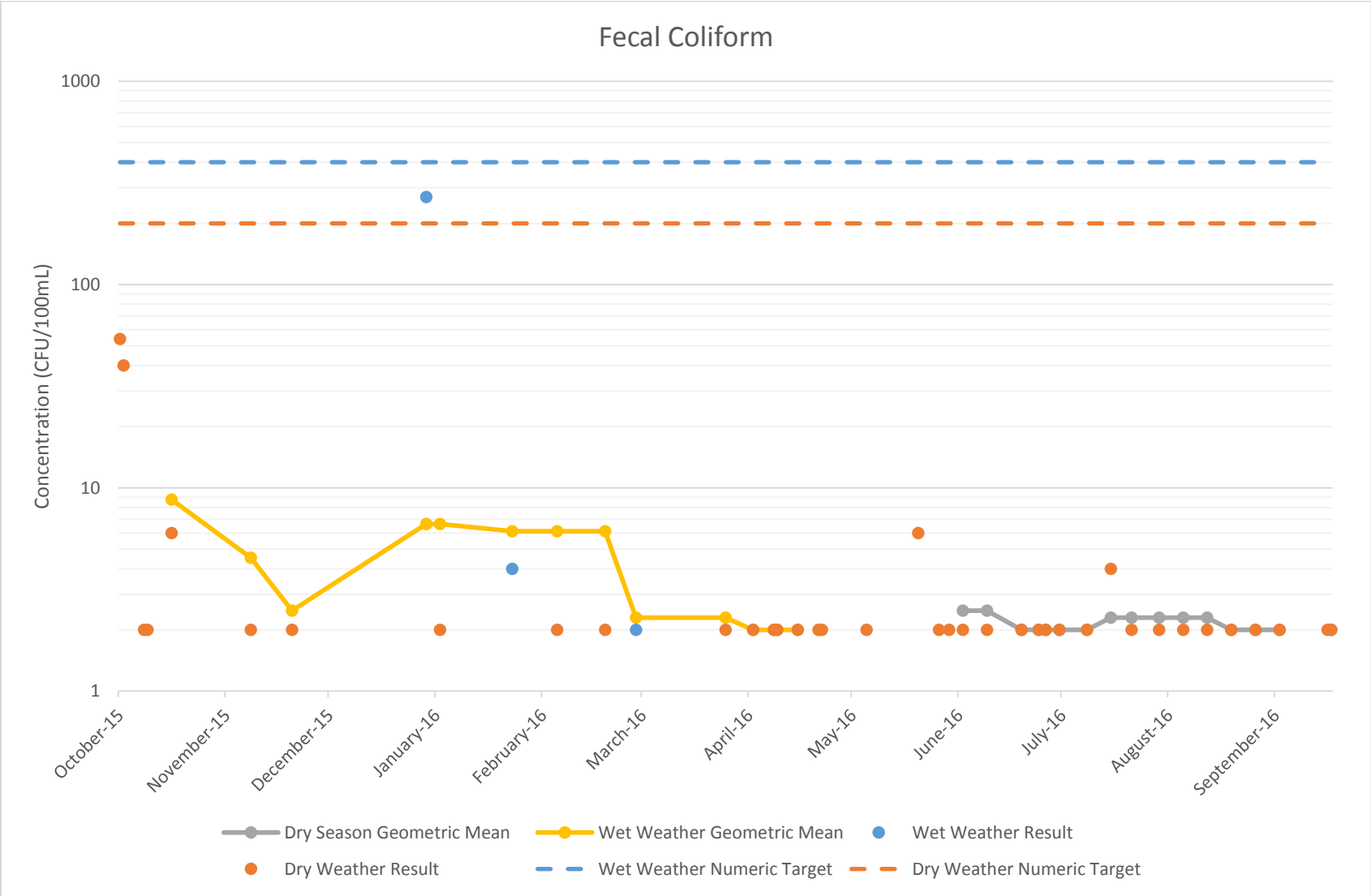

Figure 3-2.
Fecal Coliform Densities and Geometric Means, 2015–2016 Wet and Dry Season – EH-380

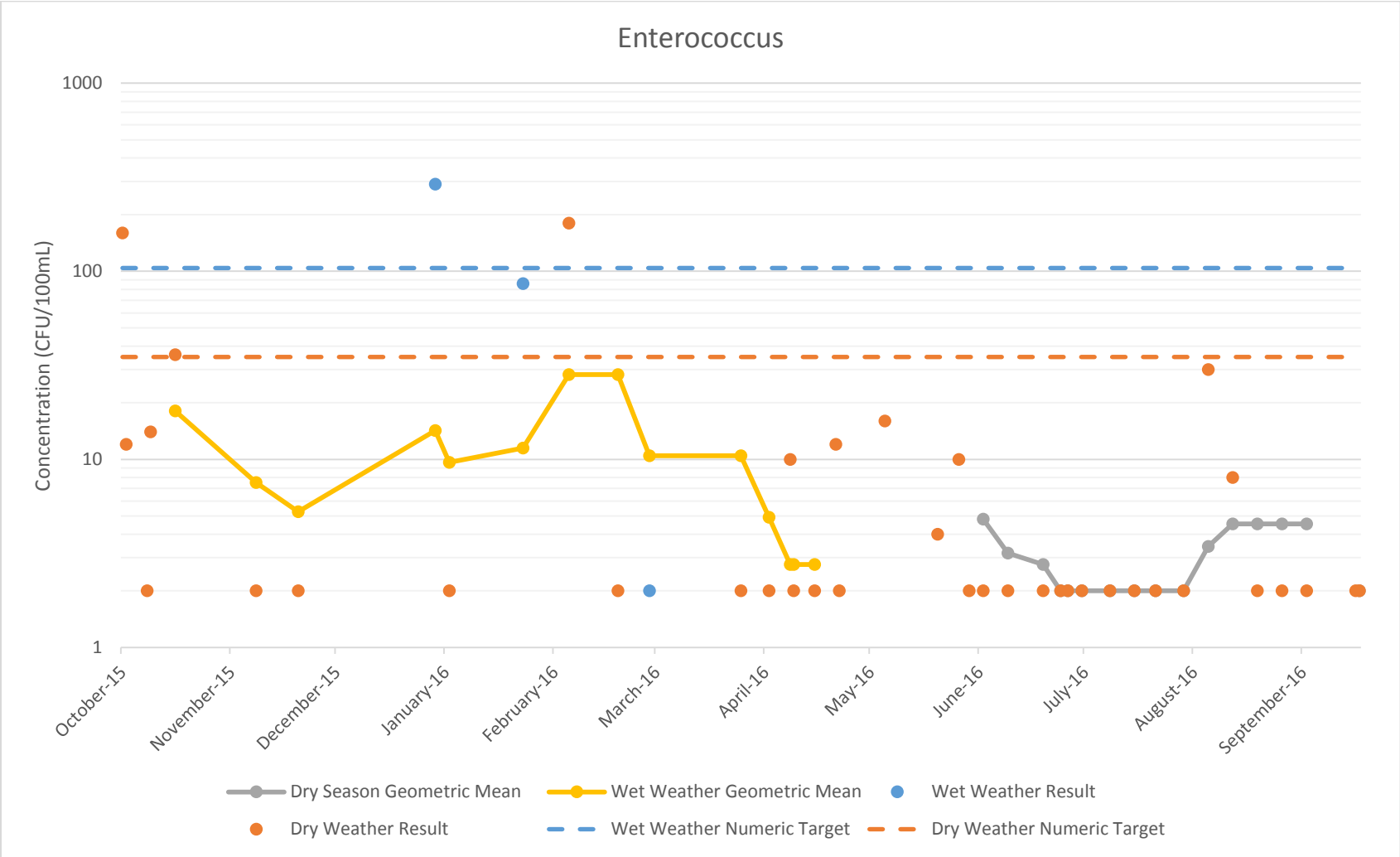

Figure 3-3.
***Enterococcus* Densities and Geometric Means, 2015–2016 Wet and Dry Season – EH-380**

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3.6 Progress Toward Attaining Interim and Final Receiving Water Limitations

Table 3-7 depicts the general progress toward meeting interim and final numeric targets by season for the San Dieguito Lagoon Mouth compliance monitoring location. This table indicates whether targets for collective FIB have been met (●), have been partially met (O), or have not yet been met (**X**). A partially met goal means that at least one of the FIB constituents is meeting the RWL.

Table 3-7.
General Progress Toward Interim and Final Targets for San Dieguito River WMA, 2015–2016

Monitoring Location	2015–2016 Wet Weather Single-Sample Maximum		2015–2016 Wet Season Geomeans		2016 Dry Season Geomeans	
	Interim	Final	Interim	Final	Interim	Final
EH-380	●	●	●	●	●	●

Note:
Site IDS: EH-380 = San Dieguito Lagoon Mouth
● = Currently, interim or final receiving water limitations (RWLs) have been fully achieved.
O = Currently, interim or final RWLs have been partially achieved, but not all compliance constituents have attained the RWL.
X = Currently, no fecal indicator bacteria (FIB) constituents meet Bacteria Total Maximum Daily Load (TMDL) RWL.

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4.0 SUMMARY

This section describes current receiving water conditions in the San Dieguito River WMA related to the project goals. Dry and wet weather data collected during the 2015–2016 wet season, and dry weather data from the 2016 dry season were used to evaluate compliance on the basis of current conditions.

4.1 Characterization of Current FIB Concentrations

Overall, the San Dieguito Lagoon Mouth achieved full compliance with wet weather, wet season, and dry season interim and final RWLs for the 2015–2016 monitoring season.

During the wet weather, the San Dieguito River WMA compliance monitoring location achieved a 0% exceedance frequency for both total coliform and fecal coliform and a 13.3% exceedance frequency for *Enterococcus.* The final allowable exceedance frequency for wet weather is 22%.

During the wet season, which evaluates a combination of both wet and dry weather samples using dry weather geometric mean RWLs, 0% exceedance frequencies were achieved for all compliance constituents. Full compliance with both interim and final dry weather RWLs was achieved for the 2015–2016 wet season.

During the dry season, when recreational activities occur with more regularity, the San Dieguito River WMA compliance monitoring location achieved 0% exceedance frequencies for compliance constituents total coliform, fecal coliform, and *Enterococcus*. Collectively, these datasets suggest that, for most of the year, bacteria densities support REC-1 conditions in the San Dieguito River WMA.

The 2015–2016 monitoring results are summarized below.

Wet Weather Single-Sample Maximum Comparison

- An exceedance of *Enterococcus* was detected during one wet weather event at the San Dieguito Lagoon Mouth.
- The compliance monitoring location is achieving interim and final wet weather RWLs for all three compliance constituents.

Wet Season Geometric Mean Comparison

- The compliance monitoring location is achieving interim and final dry weather RWLs for all three compliance constituents for combined wet and dry samples during the wet season.

Dry Season Geometric Mean Comparison

- The compliance monitoring location is achieving interim and final dry weather RWLs for all three compliance constituents during the dry season.

Table 4-1 presents the 2015–2016 exceedance frequency results by season in the San Dieguito River WMA.

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Table 4-1.
2015–2016 Bacteria TMDL Exceedance Frequency Results for San Dieguito River WMA

Site ID	Bacteria TMDL Constituent	Wet Weather [a] Single-Sample Maximum (CFU/100mL)			Wet Season [a, c] 5-Sample Geometric Mean (CFU/100mL)			Dry Season [b] 30-Day Geometric Mean (CFU/100mL)		
		2015–2016 [d] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency	2015–2016 [e] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency	2015–2016 [e] Exceedance Frequency	Interim Allowable Frequency	Final Allowable Frequency
EH-380	Total Coliform	0%	33%	22%	0%	3%	0%	0%	3%	0%
	Fecal Coliform	0%	33%	22%	0%	5.5%	0%	0%	5.5%	0%
	Enterococcus	13.3%	36%	22%	0%	8.5%	0%	0%	8.5%	0%

Notes:
% = percent; CFU = colony-forming unit; EH-380 = San Dieguito Lagoon Mouth; ID = identification; mL = milliliters; TMDL = total maximum daily load
Green shaded cells show the 2015-2016 observed exceedance frequency.
a. October 1, 2015–April 30, 2016
b. May 1, 2016–September 30, 2016
c. In accordance with the MS4 Permit, wet and dry weather FIB data were combined to calculate geometric means for the wet season and compared to dry weather RWLs as shown in Table ES-1.
d. The exceedance frequency was derived by dividing the total number of wet weather days (days with 0.2 inch of rainfall or greater plus the following 72 hours) that exceeded the single-sample maximum numeric target divided by the total number of wet weather days during the wet season. To determine exceedances for non-sampled wet weather days, the geometric mean of the analytical results from three monitored storm events was applied to the remaining observed wet weather days that were not sampled. The results from the total number of wet weather days, with either assigned averages or analyzed result values, were then compared with single-sample maximum numeric targets.
e. The exceedance frequency was derived by dividing the total number of geometric exceedances by the total number of geometric means calculated during the season.

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APPENDIX A

QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

A.1 Quality Assurance/Quality Control Summary

Quality assurance and quality control (QA/QC) activities from both field sampling and laboratory analyses have been assessed to ensure that they to conform sampling techniques to Surface Water Ambient Monitoring Program (SWAMP) protocol. Additionally, deviations from the Compliance Monitoring Plan are discussed herein. The field quality control (QC) samples are used to measure potential contamination and sampling error introduced before the submittal of samples to the laboratory. Laboratory QA/QC activities provide information needed to evaluate laboratory contamination, analytical precision, and analytical accuracy.

Deviations from the Compliance Monitoring Plan

Optional Field Measurements - Dissolved oxygen was added as an optional field measurement for dry weather monitoring during the 2015-2016 monitoring year. It was not measured during wet weather monitoring. Additionally, minor adjustments were made to the detection ranges as noted in Table A-1 to reflect the actual meters used.

Table A-1.
Optional In-Situ Field Measurements and Detection Ranges

Parameter	Method	Range	Units
Conductivity [a,b]	Field Meter	0 to 200	mS/cm
pH [a,b]	Field Meter	0 to 14	pH units
Temperature [a,b]	Field Meter	-5 to 55	°C
Dissolved Oxygen [a,b]	Field Meter	0 to 50	mg/L
Turbidity [a,c]	Field Meter	0 to 1,000	NTU

Notes:
a. Wet weather field measurements were collected with a Horiba U-52. Dissolved oxygen was not measured during wet weather.
b. Dry weather field measurements were collected with a Hanna HI 98194 from 10/20/2015 onward. The samples taken before these dates were collected with a PC Tester 35 Multi-Parameter.
c. Dry Weather field measurement was collected with a Hanna HI 93414.

µS/cm = microSiemens per centimeter; °C = degree Celsius; NTU = Nephelometric Turbidity Unit

Dry Weather Monitoring – Per the Compliance Monitoring Plan, weekly dry weather monitoring was scheduled so that five samples were collected in each calendar month. However, in May 2016 and September 2016, only four samples were collected in each of these months because of wet weather interference.

Precipitation Data - Per the Compliance Monitoring Plan, precipitation data from the National Weather Service (NWS) Del Mar rain gauge were to be used to track the total number of wet weather days as defined in the MS4 Permit. However, the NWS Del Mar rain gauge was relocated in September 2015, and was also missing data for a portion of the 2015–2016 monitoring year. To provide a more complete dataset, the NWS Miramar Naval Air Station (MNAS) gauge was used in its place. Because the MNAS officially became the Marine Corps Air Station Miramar (Miramar) in 1999, this gauge is referred to as the Miramar gauge herein (Shettle 2001). The

Miramar gauge is technically within the Mission Bay WMA; however, it is the nearest gauge that is representative of rainfall in the middle of the San Dieguito River watershed. Historical daily rainfall amounts generated by the NWS will be used to assess the annual rainfall and historical average for San Diego County.

Field Quality Control

The number and frequency of field QC samples collected are presented in Table A-2. Field grab QC samples were submitted blind to the analytical laboratory. For laboratory replicates, additional samples were collected and clearly identified on the chain of custody (COC) form. Field blanks are samples of reagent-grade, analyte-free, deionized water collected in the field to verify the field conditions and air deposition are non-contaminating during field sampling activities. Field blanks were analyzed for the same suite of analyses as regular samples. The project frequency for field blanks is 5 percent of the total sample count. Concentrations of field blanks should be below the reporting limit (RL) for each analyte. Duplicate samples consist of two distinct samples (an original and a duplicate) of the same matrix collected at the same time and location using the same sampling technique. Field duplicate samples were collected by filling two grab sample containers at the same time, or in rapid sequence. The purpose of field duplicates is to measure the consistency of field sampling; project frequency for field duplicates is 5 percent of samples. The result for each field duplicate is compared with the sample result to estimate a relative percent difference between the two sample results.

Table A-2.
Field Quality Control Parameters

Field QC	Frequency	Acceptance Limit
Field Blank	≥ 5% of all project samples	Concentrations should be below the RL
Field Duplicate	≥ 5% of all project samples	$R(log) \leq 3.27\bar{R}$

Notes:
RL = reporting limit; $R_{(log)}$ = range of logarithms for each pair of duplicates; $\bar{R}$ = mean of $R_{(log)}$ for duplicates analyzed

Of the three wet weather field samples, one field blank and one duplicate were collected to assess QA/QC. The frequency for both field blanks and duplicates is 33.3 percent, which is above the required frequency of 5 percent of all project samples. The field blank sample concentrations were not detected at or above the reporting limit of 2 colony-forming units per 100 milliliters (CFU/100mL) for fecal coliform and total coliform, and were within the acceptance limits. The *Enterococcus* concentration was also not detected at or above the reporting limit of 1 CFU/100mL, and was within the acceptance limits.

The one set of wet weather field duplicate results were within the acceptance criteria. The differences of the logarithms were less than the mean logarithmic difference multiplied by 3.27. Values for field duplicate differences were calculated between 0.15 and 0.95, below the $3.27\bar{R}$ value of 1.52; thus, duplicate values were within the acceptance limits.

Of the 38 dry weather field samples, field blanks were collected for 7 samples and duplicates for 9 samples. Both are above the required frequency of 5 percent for all project samples, with a frequency of 18.4 percent for field blanks and 23.7 percent for duplicates. The field blank sample concentration on March 1, 2016, for *Enterococcus* was reported as 2 CFU/100mL, which was above the reporting limit of 1 CFU/100mL. Therefore, this result was not within acceptance limits. All other field blank sample concentrations were less than the reporting limit of 1 CFU/100mL, and within acceptance limits.

The range of logarithms for dry weather field duplicate results on March 1, 2016, for total coliform was 1.2, which is more than $3.27\bar{R}$ = 0.86, the mean logarithmic difference multiplied by 3.27. Therefore, this result was not within acceptance limits. The remaining wet weather field duplicate results were all less than 0.86, and were within the acceptance limits.

Laboratory Quality Control

Laboratory QC samples include laboratory duplicates, and the positive and negative controls described in Table A-3. Laboratory QC sampling results were provided in a laboratory report and SWAMP compatible electronic data deliverable (EDD) with a batch identification (ID) number to correlate with the corresponding environmental sample data set. The table below describes the frequency and types of quality control samples for each constituent category.

Laboratory Replicate – For a laboratory replicate, a sample is prepared and analyzed twice to assess the repeatability (precision). The results are evaluated by calculating the relative percent difference (RPD) between the two sets of results. This serves as a measure of the reproducibility, or precision, of the sampling analysis. A minimum of one laboratory replicate is analyzed per batch.

Positive and Negative Controls – A negative control is created as a separate plate count after the buffered rinse water is filtered and incubated the same way as a sample. There should be no bacteria growth on the filter after incubation. It is used to detect laboratory bacterial contamination of the sample. A positive control is created as a separate plate count after a water sample known to contain bacteria (such as wastewater treatment plant influent) is filtered and incubated the same way as a sample. There should be bacteria growth on the filter after incubation. It is used to detect procedural errors or the presence of contaminants in the laboratory analysis that might inhibit bacteria growth.

Table A-3.
Laboratory Quality Control Parameters

Laboratory QC	Frequency	Acceptance Limit
Laboratory Replicate	One per 20 samples or analytical batch, whichever is more frequent	$R(log) \leq 3.27\bar{R}$
Positive and Negative Controls	Per new lot or batch	Positive Control = Growth on filter Negative Control = No growth on filter

Notes:
RL = reporting limit; $R_{(log)}$ = range of logarithms for each pair of duplicates; $\bar{R}$ = mean of $R_{(log)}$ for duplicates analyzed

Data qualifiers are used to clarify and define each concentration result. The data qualifiers for wet weather concentrations include:

- “e” for estimated value;
- “<” for less than;
- “=” for equal to;
- “ND” for non-detect; and
- “None” for no qualifier.

For the data qualifiers for wet weather samples including field blanks and duplicates, “e” occurs in 20 percent of the samples, “<” occurs in 13 percent of the samples, “=” occurs in 40 percent of the samples, “ND” occurs in 20 percent of the samples, and “None” occurs in 7% of the samples.

The data qualifiers for dry weather concentrations include:

- “e” for estimated value;
- “<” for less than; and
- “None” for no qualifier.

For the data qualifiers for dry weather samples, including field blanks and duplicates, “e” occurs in 34.5 percent of the samples, “<” occurs in 63.5 percent of the samples, and “None” occurs in 2 percent of the samples.

APPENDIX B

2015–2016 WET WEATHER ANALYTICAL RESULTS

Table B-1
2015–2016 Wet Weather Field Results

Station ID	Date	Time	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)	pH
EH-380-RW	1/9/2016	12:10	16.98	43.4	27.9	8.06
EH-380-RW	2/3/2016	10:35	17.19	40.2	12.2	8.1
EH-380-RW	3/10/2016	8:39	18.22	38.1	20.6	7.93

Notes:
°C = degree Celsius; ID = identification; mS/cm = microSiemens per centimeter; NTU = nephelometric turbidity units

Table B-2
2015–2016 Wet Weather Analytical Results

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	1516-W1-EH-380-G-01	1/9/2016	12:12	Fecal Coliform	SM 9222 D	=	270	CFU/100 mL	2	WECK
EH-380-RW	1516-W1-EH-380-G-01	1/9/2016	12:12	Total Coliform	SM 9222 B	=	2600	CFU/100 mL	20	WECK
EH-380-RW	1516-W1-EH-380-G-01	1/9/2016	12:12	*Enterococcus*	USEPA 1600	=	290	CFU/100 mL	10	WECK
EH-380-RW-DUP	1516-W1-EH-380-G-02	1/9/2016	12:12	Fecal Coliform	SM 9222 D	=	2400	CFU/100 mL	20	WECK
EH-380-RW-DUP	1516-W1-EH-380-G-02	1/9/2016	12:12	Total Coliform	SM 9222 B	=	5100	CFU/100 mL	20	WECK
EH-380-RW-DUP	1516-W1-EH-380-G-02	1/9/2016	12:12	*Enterococcus*	USEPA 1600	=	410	CFU/100 mL	10	WECK
FIELD BLANK	1516-W1-EH-380-G-03	1/9/2016	12:12	Fecal Coliform	SM 9222 D	ND[a]	2	CFU/100 mL	2	WECK
FIELD BLANK	1516-W1-EH-380-G-03	1/9/2016	12:12	Total Coliform	SM 9222 B	ND[a]	2	CFU/100 mL	2	WECK
FIELD BLANK	1516-W1-EH-380-G-03	1/9/2016	12:12	*Enterococcus*	USEPA 1600	ND[a]	1	CFU/100 mL	1	WECK
EH-380-RW	EH-380-RW-G-01-160203	2/3/2016	10:35	Total Coliform	MF, SM 9222B	e	200	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160203	2/3/2016	10:35	Fecal Coliform	MF, 9222D	e	4	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160203	2/3/2016	10:35	*Enterococcus*	MF, EPA 1600	None	86	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160310	3/10/2016	8:40	Total Coliform	SM 9222 B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160310	3/10/2016	8:40	Fecal Coliform	SM 9222 D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160310	3/10/2016	8:40	*Enterococcus*	USEPA 1600	<	2	CFU/100 mL	2	MML

Notes:
CFU/100 mL = colony-forming units per 100 milliliters; ID = identification;MF-Membrane Filtration, MML-City of San Diego EM&TS laboratory, ND = non-detect; NTU = nephelometric turbidity units; SM = Standard Method; USEPA = United States Environmental Protection Agency

a. The qualifier ND denotes non-detect. Weck Laboratories uses this qualifier in conjunction with the detection limit to represent a non-detect. The City of San Diego EM&TS laboratory reports non-detects with a less-than (<) qualifier in conjunction with the detection limit.

Table B-3.
2015-2016 Wet Weather Days

Wet Weather Day No.	2015-2016 Wet Weather Days	
	Date	Rainfall (inches)
1	10/4/2015	0.25
2	10/5/2015	0.25
3	10/6/2015	0
4	10/7/2015	0
5	10/8/2015	0
6	11/3/2015	0.27
7	11/4/2015	0.01
8	11/5/2015	0
9	11/6/2015	0
10	12/11/2015	0.28
11	12/12/2015	0
12	12/13/2015	0.24
13	12/14/2015	0
14	12/15/2015	0
15	12/16/2015	0
16	12/22/2015	0.48
17	12/23/2015	0.05
18	12/24/2015	0
19	12/25/2015	0.01
20	1/5/2016	1.87
21	1/6/2016	2.03
22	1/7/2016	1.26
23	1/8/2016	0.14
24	1/9/2016	0.01
25	1/10/2016	0
26	1/31/2016	0.57
27	2/1/2016	0
28	2/2/2016	0
29	2/3/2016	0
30	3/6/2016	0.26
31	3/7/2016	0.56
32	3/8/2016	0
33	3/9/2016	0
34	3/10/2016	0
35	3/11/2016	0.24
36	3/12/2016	0
37	3/13/2016	0.04
38	3/14/2016	0.02
39	4/7/2016	0.41
40	4/8/2016	0.12
41	4/9/2016	0
42	4/10/2016	0.49

Table B-2. (cont.)
2015-2016 Wet Weather Days

Wet Weather Day No.	2015-2016 Wet Weather Days	
	Date	Rainfall (inches)
43	4/11/2016	0
44	4/12/2016	0
45	4/13/2016	0

Notes: Blue shaded = Sampled wet weather events.
Non-shaded = Non-sampled wet weather days.
Actual sampling dates: 01/09/2016; 02/03/2016; 3/10/2016.
Wet Weather day is defined as precipitation ≥0.2” + 72 hours

APPENDIX C

2015–2016 DRY WEATHER ANALYTICAL RESULTS

Table C-1
2015–2016 Dry Weather Field Results

Station ID	Date	Time	Temp (°C)	Dissolved Oxygen	Conductivity (mS/cm)	Turbidity (NTU)	pH
EH-380-RW	10/12/2015	11:45	23.7	7.12	55.2	5.06	8.1
EH-380-RW	10/13/2015	12:25	27.6	6.95	52.5	6.66	8.1
EH-380-RW	10/19/2015	11:11	23.30	7.33	59.50	1.52	8.30
EH-380-RW	10/20/2015	11:11	23.00	-	25.97	1.56	8.12
EH-380-RW	10/27/2015	12:30	21.40	7.62	50.20	5.50	8.10
EH-380-RW	11/19/2015	11:35	20.06	-	45.39	1.60	7.88
EH-380-RW	12/1/2015	1:00	18.70	5.15	45.44	0.90	7.63
EH-380-RW	1/13/2016	12:30	15.99	6.3	44.6	2.54	7.75
EH-380-RW	2/16/2016	11:00	18.56	6.3	45.62	2.6	7.28
EH-380-RW	3/1/2016	10:48	18.19	5.08	45.13	2.65	8.56
EH-380-RW	4/5/2016	10:30	17.65	5.7	45.6	1.54	7.83
EH-380-RW	4/13/2016	10:45	18.84	6.95	-	1.14	8.23
EH-380-RW	4/19/2016	10:39	19.46	6.3	45.28	2.65	8.14
EH-380-RW	4/20/2016	10:40	19.07	7.31	22.80	1.29	8.39
EH-380-RW	4/26/2016	10:45	18.61	6.13	45.07	1.7	8.11
EH-380-RW	5/2/2016	11:00	20.06	6.02	45.45	2.62	8.67
EH-380-RW	5/3/2016	10:50	20.68	6.07	45.85	1.6	8.46
EH-380-RW	5/16/2016	10:24	20.30	-	45.50	0.98	7.78
EH-380-RW	5/31/2016	10:20	18.32	7.07	45.8	1.07	8.23
EH-380-RW	6/6/2016	10:40	17.47	6.80	45.55	0.90	8.26
EH-380-RW	6/9/2016	10:21	17.57	6.24	45.59	1.39	6.24
EH-380-RW	6/13/2016	10:30	18.31	6.43	45.97	0.70	7.47
EH-380-RW	6/20/2016	10:40	19.71	6.69	46.28	1.15	8.02
EH-380-RW	6/30/2016	10:30	22.62	5.68	45.48	0.76	8.10
EH-380-RW	7/5/2016	10:40	22.18	5.98	45.82	1.32	7.85

Table C-1 (continued)
2015–2016 Dry Weather Field Results

Station ID	Date	Time	Temp (°C)	Dissolved Oxygen	Conductivity (mS/cm)	Turbidity (NTU)	pH
EH-380-RW	7/7/2016	10:25	22.55	5.33	45.63	1.65	8.09
EH-380-RW	7/11/2016	10:05	21.02	5.94	22.9	1.17	8.42
EH-380-RW	7/19/2016	10:30	23.38	5.05	22.67	1.30	7.98
EH-380-RW	7/26/2016	10:35	24.45	4.85	45.81	1.14	8.12
EH-380-RW	8/1/2016	10:40	24.75	4.62	45.9	0.7	7.92
EH-380-RW	8/9/2016	10:30	22.45	4.65	44.89	1.47	7.9
EH-380-RW	8/16/2016	10:30	20.25	8.63	45.34	1.2	7.56
EH-380-RW	8/23/2016	8:45	21.55	5.84	22.45	1.92	8.03
EH-380-RW	8/30/2016	10:30	21.35	5.11	45.87	0.84	8.21
EH-380-RW	9/6/2016	10:36	21.55	5.84	22.45	1.92	8.03
EH-380-RW	9/13/2016	10:15	20.62	4.45	85	-	7.97
EH-380-RW	9/27/2016	10:35	20.29	4.58	84.65	1.92	8.03
EH-380-RW	9/28/2016	10:10	19.62	4.84	84.87	1.41	8.28

Notes:
°C = degree Celsius; ID = identification; mS/cm = microSiemens per centimeter; NTU = nephelometric turbidity units

Table C-2
Dry Weather Analytical Results

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	EH-380-RW-G-01-151012	10/12/2015	11:45 AM	Total Coliform	MF, SM 9222B	e	400	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151012	10/12/2015	11:45 AM	Fecal Coliform	MF, 9222D	None	54	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151012	10/12/2015	11:45 AM	*Enterococcus*	MF, USEPA 1600	e	160	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-151012	10/12/2015	11:45 AM	Total Coliform	MF, SM 9222B	None	600	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-151012	10/12/2015	11:45 AM	Fecal Coliform	MF, 9222D	None	48	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-151012	10/12/2015	11:45 AM	*Enterococcus*	MF, USEPA 1600	e	260	CFU/100 mL	2	MML
FIELD BLANK	FIELD BLANK-151012	10/12/2015	12:20 PM	Total Coliform	MF, SM 9222B	<	1	CFU/100 mL	1	MML
FIELD BLANK	FIELD BLANK-151012	10/12/2015	12:20 PM	Fecal Coliform	MF, 9222D	<	1	CFU/100 mL	1	MML
FIELD BLANK	FIELD BLANK-151012	10/12/2015	12:20 PM	*Enterococcus*	MF, USEPA 1600	<	1	CFU/100 mL	1	MML
EH-380-RW	EH-380-RW-G-01-151013	10/13/2015	12:25 PM	Total Coliform	MF, SM 9222B	e	320	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151013	10/13/2015	12:25 PM	Fecal Coliform	MF, 9222D	e	40	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151013	10/13/2015	12:25 PM	*Enterococcus*	MF, USEPA 1600	e	12	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151019	10/19/2015	11:11 AM	Total Coliform	MF, SM 9222B	e	10	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151019	10/19/2015	11:11 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151019	10/19/2015	11:11 AM	*Enterococcus*	MF, USEPA 1600	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151020	10/20/2015	1:10 PM	Total Coliform	MF, SM 9222B	e	14	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151020	10/20/2015	1:10 PM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151020	10/20/2015	1:10 PM	*Enterococcus*	MF, USEPA 1600	e	14	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151027	10/27/2015	12:30 PM	Total Coliform	MF, SM 9222B	e	60	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151027	10/27/2015	12:30 PM	Fecal Coliform	MF, 9222D	e	6	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151027	10/27/2015	12:30 PM	*Enterococcus*	MF, USEPA 1600	e	36	CFU/100 mL	2	MML

Table C-2 (continued)
Dry Weather Analytical Results (continued)

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	EH-380-RW-G-01-151119	11/19/2015	11:35 AM	Total Coliform	MF, SM 9222B	<	200	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151119	11/19/2015	11:35 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151119	11/19/2015	11:35 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151201	12/01/2015	1:30 PM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151201	12/01/2015	1:30 PM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-151201	12/01/2015	1:30 PM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160113	01/13/2016	12:30 PM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160113	01/13/2016	12:30 PM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160113	01/13/2016	12:30 PM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160216	02/16/2016	11:00 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160216	02/16/2016	11:00 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160216	02/16/2016	11:00 AM	*Enterococcus*	MF, USEPA 1600	e	180	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160301	03/01/2016	10:48 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160301	03/01/2016	10:48 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160301	03/01/2016	10:48 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160301	03/01/2016	10:48 AM	Total Coliform	MF, SM 9222B	e	32	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160301	03/01/2016	10:48 AM	Fecal Coliform	MF, 9222D	e	6	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160301	03/01/2016	10:48 AM	*Enterococcus*	MF, USEPA 1600	e	2	CFU/100 mL	2	MML
FIELD BLANK	FIELD BLANK-160301	03/01/2016	9:50 AM	Total Coliform	MF, SM 9222B	<	1	CFU/100 mL	1	MML
FIELD BLANK	FIELD BLANK-160301	03/01/2016	9:50 AM	Fecal Coliform	MF, 9222D	<	1	CFU/100 mL	1	MML
FIELD BLANK	FIELD BLANK-160301	03/01/2016	9:50 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	1	MML

Table C-2 (continued)
Dry Weather Analytical Results (continued)

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	EH-380-RW-G-01-160405	04/05/2016	10:30 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160405	04/05/2016	10:30 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160405	04/05/2016	10:30 AM	*Enterococcus*	MF, USEPA 1600	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01	04/13/2016	10:45 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01	04/13/2016	10:45 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01	04/13/2016	10:45 AM	*Enterococcus*	MF, USEPA 1600	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160419	04/19/2016	10:39 AM	Total Coliform	MF, SM 9222B	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160419	04/19/2016	10:39 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160419	04/19/2016	10:39 AM	*Enterococcus*	MF, USEPA 1600	e	10	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160419	04/19/2016	10:39 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160419	04/19/2016	10:39 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
FIELD BLANK	EH-380-RW-G-03-160419	04/19/2016	10:39 AM	Total Coliforms	MF, SM 9222B	<	1	CFU/100 mL	1	MML
FIELD BLANK	EH-380-RW-G-03-160419	04/19/2016	10:39 AM	Fecal Coliforms	MF, 9222D	<	1	CFU/100 mL	1	MML
FIELD BLANK	EH-380-RW-G-03-160419	04/19/2016	10:39 AM	Enterococcus	MF, EPA 1600	<	1	CFU/100 mL	1	MML
EH-380-RW-DUP	EH-380-RW-G-03-160419	04/19/2016	10:39 AM	*Enterococcus*	MF, USEPA 1600	None		CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160420	04/20/2016	10:40 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160420	04/20/2016	10:40 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160420	04/20/2016	10:40 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160426	04/26/2016	10:45 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160426	04/26/2016	10:45 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160426	04/26/2016	10:45 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML

Table C-2 (continued)
Dry Weather Analytical Results (continued)

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	EH-380-RW-G-01-160502	05/02/2016	11:00 AM	Total Coliform	MF, SM 9222B	e	8	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160502	05/02/2016	11:00 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160502	05/02/2016	11:00 AM	*Enterococcus*	MF, USEPA 1600	e	12	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160503	05/03/2016	10:50 AM	Total Coliform	MF, SM 9222B	e	8	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160503	05/03/2016	10:50 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160503	05/03/2016	10:50 AM	*Enterococcus*	MF, USEPA 1600	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160516	05/16/2016	10:24 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160516	05/16/2016	10:24 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160516	05/16/2016	10:24 AM	*Enterococcus*	MF, USEPA 1600	e	16	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160531	05/31/2016	10:20 AM	Total Coliform	MF, SM 9222B	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160531	05/31/2016	10:20 AM	Fecal Coliform	MF, 9222D	e	6	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160531	05/31/2016	10:20 AM	*Enterococcus*	MF, USEPA 1600	e	4	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160531	05/31/2016	10:20 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160531	05/31/2016	10:20 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160531	05/31/2016	10:20 AM	*Enterococcus*	MF, USEPA 1600	e	12	CFU/100 mL	2	MML
FIELD BLANK	EH-380-RW-G-03-160531	05/31/2016	10:20 AM	Total Coliform	MF, SM 9222B	<	1	CFU/100 mL	1	MML
FIELD BLANK	EH-380-RW-G-03-160531	05/31/2016	10:20 AM	Fecal Coliform	MF, 9222D	<	1	CFU/100 mL	1	MML
FIELD BLANK	EH-380-RW-G-03-160531	05/31/2016	10:20 AM	*Enterococcus*	MF, USEPA 1600	<	1	CFU/100 mL	1	MML
EH-380-RW	EH-380-RW-G-01-160606	06/06/2016	10:40 AM	Total Coliform	MF, SM 9222B	e	4	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160606	06/06/2016	10:40 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160606	06/06/2016	10:40 AM	*Enterococcus*	MF, USEPA 1600	e	10	CFU/100 mL	2	MML

Table C-2 (continued)
Dry Weather Analytical Results (continued)

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	EH-380-RW-G-01-160609	06/09/2016	10:21 AM	Total Coliform	MF, SM 9222B	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160609	06/09/2016	10:21 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160609	06/09/2016	10:21 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160613	06/13/2016	10:30 AM	Total Coliform	MF, SM 9222B	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160613	06/13/2016	10:30 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160613	06/13/2016	10:30 AM	Enterococcus	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160620	06/20/2016	10:40 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160620	06/20/2016	10:40 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160620	06/20/2016	10:40 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160630	06/30/2016	10:30 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160630	06/30/2016	10:30 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160630	06/30/2016	10:30 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160630	06/30/2016	10:30 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160630	06/30/2016	10:30 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160630	06/30/2016	10:30 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
FIELD BLANK	FIELD BLANK-160630	06/30/2016	10:30 AM	Total Coliform	MF, SM 9222B	<	1	CFU/100 mL	1	MML
FIELD BLANK	FIELD BLANK-160630	06/30/2016	10:30 AM	Fecal Coliform	MF, 9222D	<	1	CFU/100 mL	1	MML
FIELD BLANK	FIELD BLANK-160630	06/30/2016	10:30 AM	*Enterococcus*	MF, USEPA 1600	<	1	CFU/100 mL	1	MML
EH-380-RW	EH-380-RW-G-01-160705	07/05/2016	10:55 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160705	07/05/2016	10:55 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160705	07/05/2016	10:55 AM	Enterococcus	MF, USEPA 1600	<	2	CFU/100 mL	2	MML

Table C-2 (continued)
Dry Weather Analytical Results (continued)

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	EH-380-RW-G-01-160707	07/07/2016	10:25 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160707	07/07/2016	10:25 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160707	07/07/2016	10:25 AM	*Enterococcus*	MF, USEPA 1600	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160711	07/11/2016	10:05 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160711	07/11/2016	10:05 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160711	07/11/2016	10:05 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160719	07/19/2016	10:30 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160719	07/19/2016	10:30 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160719	07/19/2016	10:30 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160726	07/26/2016	10:35 AM	Total Coliform	MF, SM 9222B	e	4	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160726	07/26/2016	10:35 AM	Fecal Coliform	MF, 9222D	e	4	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160726	07/26/2016	10:35 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160801	08/01/2016	10:40 AM	Total Coliform	MF, SM 9222B	e	4	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160801	08/01/2016	10:40 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160801	08/01/2016	10:40 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160809	08/09/2016	10:30 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160809	08/09/2016	10:30 AM	Fecal Coliform	MF, 9222D	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160809	08/09/2016	10:30 AM	*Enterococcus*	MF, USEPA 1600	e	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160816	08/16/2016	8:27 AM	Total Coliform	MF, SM 9222B	e	40	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160816	08/16/2016	8:27 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160816	08/16/2016	8:27 AM	*Enterococcus*	MF, USEPA 1600	e	30	CFU/100 mL	2	MML

Table C-2 (continued)
Dry Weather Analytical Results (continued)

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	EH-380-RW-G-01-160823	08/23/2016	8:45 AM	Total Coliform	MF, SM 9222B	e	40	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160823	08/23/2016	8:45 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160823	08/23/2016	8:45 AM	*Enterococcus*	MF, USEPA 1600	e	8	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160830	08/30/2016	10:36 AM	Total Coliform	MF, SM 9222B	<	200	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160830	08/30/2016	10:36 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160830	08/30/2016	10:36 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160830	08/30/2016	10:36 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160830	08/30/2016	10:36 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160830	08/30/2016	10:36 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
FIELD BLANK	EH-380-RW-G-03-160830	08/30/2016	10:36 AM	Total Coliform	MF, SM 9222B	<	1	CFU/100 mL	1	MML
FIELD BLANK	EH-380-RW-G-03-160830	08/30/2016	10:36 AM	Fecal Coliform	MF, 9222D	<	1	CFU/100 mL	1	MML
FIELD BLANK	EH-380-RW-G-03-160830	08/30/2016	10:36 AM	*Enterococcus*	MF, USEPA 1600	<	1	CFU/100 mL	1	MML
EH-380-RW	EH-380-RW-G-01-160906	09/06/2016	10:36 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160906	09/06/2016	10:36 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160906	09/06/2016	10:36 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160913	09/13/2016	10:45 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160913	09/13/2016	10:45 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160913	09/13/2016	10:45 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160913	09/13/2016	10:45 AM	Total Coliform	MF, SM 9222B	<	20	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160913	09/13/2016	10:45 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160913	09/13/2016	10:45 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML

Table C-2 (continued)
Dry Weather Analytical Results (continued)

Site ID	Sample ID	Sample Date	Time	Analyte	Method	Qualifier	Result	Reporting Units	Reporting Limit	Lab
EH-380-RW	EH-380-RW-G-01-160927	09/27/2016	10:35 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160927	09/27/2016	10:35 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160927	09/27/2016	10:35 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160927	09/27/2016	10:35 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160927	09/27/2016	10:35 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW-DUP	EH-380-RW-G-02-160927	09/27/2016	10:35 AM	*Enterococcus*	MF, USEPA 1600	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160928	09/28/2016	10:10 AM	Total Coliform	MF, SM 9222B	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160928	09/28/2016	10:10 AM	Fecal Coliform	MF, 9222D	<	2	CFU/100 mL	2	MML
EH-380-RW	EH-380-RW-G-01-160928	09/28/2016	10:10 AM	*Enterococcus*	MF, USEPA 1600	e	2	CFU/100 mL	2	MML

Notes:
CFU/100 mL = colony-forming units per 100 milliliters; ID = identification; MF= membrane filtration, MML= City of San Diego E&MTS Laboratory, mS/cm = microSiemens per centimeter; ND = non-detect; NTU = nephelometric turbidity units; SM = Standard Method; USUSEPA = United States Environmental Protection Agency

APPENDIX D

WET WEATHER ANALYTICAL LABORATORY REPORTS

Project Name: San Dieguito Bacteria TMDL
Project Number: 5025-15-1110

Analysis Request and Chain of Custody

6A11004

AMEC Environment & Infrastructure,
Attn: Roshan Sirimanne / Darcy Ebentier
9177 Sky Park Court San Diego, CA 92123
Office: (858) 514-6475 Cell: (760) 525-5809
Fax: (858) 278-5300

Weck Laboratories, Inc.
Attn: Hai Van Nguyen
14859 East Clark Avenue, City of Industry, CA 91745
Office: (626) 336-2139 x 102 Fax: (626) 336-2634
After Hours: 626-926-4105 / 626-926-4256

Sample ID	Date	Time	Analyses Required	Matrix	Size	Preservative	Bottle Count
1516- W 1 -EH-380-G- 01	1/9/16	1212	Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	120mL	Na2S2O3	3
1516- W 1 -EH-380-G- 02	↓	1212	Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	120mL	Na2S2O3	3
1516- W 1 -EH-380-G- 03	↓	1212	Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	120mL	Na2S2O3	3

Relinquished By:	Print: Paige Sinclair	Date: 1/9/16	Received By:	Print:	Date:
Org: SDCS	Sign:	Time:	Org:	Sign:	Time:
Relinquished By:	Print:	Date:	Received By:	Print:	Date:
Org: AMEC	Sign:	Time:	Org:	Sign:	Time:
Relinquished By:	Print: Paige Sinclair	Date: 1/9/16	Received By:	Print: ALICE LEE	Date: 1/9/16
Org: AMEC	Sign:	Time: 16:58	Org:	Sign:	Time: 16:58

Notes/Comments:
MTF methods (SM9221) may be used for turbid samples for fecal coliform and total coliform only. Please notify AMEC project manager immediately of any holding time issues or laboratory accidents that may require resampling.

3.8°C

Sampler's Initials: PS DG

Page: 1 of 1

Project Name: San Dieguito Bacteria TMDL
Project Number: 5025-15-1110

Analysis Request and Chain of Custody

AMEC Environment & Infrastructure,
Attn: Roshan Sirimanne / Darcy Ebentier
9177 Sky Park Court San Diego, CA 92123
Office: (858) 514-6475 Cell: (760) 525-5809
Fax: (858) 278-5300

City of San Diego EMTS Laboratory
Attn: Laila Othman
2392 Kincaid Road San Diego, CA 92101
Phone: 619-758-2312 Fax: 619-758-2309

Sample ID	Date	Time	Analyses Required	Matrix	Size	Preservative	Bottle Count
1516- W 2 -EH-380-G 01	2/3/16	10:35	Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	1000mL	None	1
1516- W____-EH-380-G-____			Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	1000mL	None	
1516- W____-EH-380-G-____			Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	1000mL	None	

Relinquished By:	Print: Brian Samblanet	Date: 2/3/16	Received By:	Print: L. Asato	Date: 2-3-16
Org: AMEC	Sign: [signature]	Time: 2:20	Org:	Sign: [signature]	Time: 1430
Relinquished By:	Print:	Date:	Received By:	Print:	Date:
Org:	Sign:	Time:	Org:	Sign:	Time:
Relinquished By:	Print:	Date:	Received By:	Print:	Date:
Org:	Sign:	Time:	Org:	Sign:	Time:

Notes/Comments:
MTF methods (SM9221) may be used for turbid samples for fecal coliform and total coliform only. Please notify AMEC project manager immediately of any holding time issues or laboratory accidents that may require resampling.

Sampler's Initials: _____ *Page:* ___ *of* ___

Project Name: San Dieguito Bacteria TMDL
Project Number: 5025-15-1110

Analysis Request and Chain of Custody

AMEC Environment & Infrastructure,
Attn: Roshan Sirimanne / Darcy Ebentier
9177 Sky Park Court San Diego, CA 92123
Office: (858) 514-6475 Cell: (760) 525-5809
Fax: (858) 278-5300

WET EVENT

City of San Diego EMTS Laboratory
Attn: Laila Othman
2392 Kincaid Road San Diego, CA 92101
Phone: 619-758-2312 Fax: 619-758-2309

Sample ID	Date	Time	Analyses Required	Matrix	Size	Preservative	Bottle Count
1516- W 3 -EH-380-G- 01	3/10/16	0840	Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	1000mL	None	1
1516- W____-EH-380-G-____			Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	1000mL	None	
1516- W____-EH-380-G-____			Enterococcus (EPA 1600) Fecal Coliform (SM 9222 D) Total Coliform (SM 9222 B)	Saltwater	1000mL	None	

NPS

Relinquished By:	Print: Sarah Seifert	Date: Amec	Received By:	Print: Joseph [illegible]	Date: 3.10.16
Org: 3/10/16	Sign: [illegible]	Time: 0933	Org:	Sign: [illegible]	Time: 0935
Relinquished By:	Print:	Date:	Received By:	Print:	Date:
Org:	Sign:	Time:	Org:	Sign:	Time:
Relinquished By:	Print:	Date:	Received By:	Print:	Date:
Org:	Sign:	Time:	Org:	Sign:	Time:

Notes/Comments:
MTF methods (SM9221) may be used for turbid samples for fecal coliform and total coliform only. Please notify AMEC project manager immediately of any holding time issues or laboratory accidents that may require resampling.

Sampler's Initials: _____ *Page:* ___ *of* ___

AMEC Environment & Infrastructure
9177 Sky Park Court, Ste A
San Diego CA, 92123

Date Received: 01/09/16 16:58
Date Reported: 03/18/16 16:59

6A11004-01 **1516-W1-EH-380-G-01**

Sampled: 01/09/16 12:12 **Sampled By:** PS,DE **Matrix:** Water

Microbiological Parameters by Standard Methods

Method: EPA 1600 Batch: W6B0039 Prepared: 01/09/16 20:00 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Enterococcus	**290**	10	10	CFU/100 ml	10	01/10/16 20:00	

Method: SM 9222B/D Batch: W6B0019 Prepared: 01/09/16 19:20 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Total Coliform	**2600**	20	20	CFU/100 ml	20	01/10/16 19:00	

Method: SM 9222B/D Batch: W6B0029 Prepared: 01/09/16 18:25 Analyst: _wcm

Analyte	Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Fecal Coliform	**270**	2.0	2.0	CFU/100 ml	2	01/10/16 19:00	

Weck Laboratories, Inc 14859 East Clark Avenue, City of Industry, California 91745-1396 (626) 336-2139 FAX (626) 336-2634

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety

Environmental Monitoring and Technical Services
2392 Kincaid Rd. MS 45A, San Diego, CA 92101
Tel (619) 758-2361 Fax (619) 758-2309

TMDL Bacteriological Results

11/01/2016

Source			Total Coliforms	Fecal Coliforms	Enterococcus
Sample Date	Station	Time	CFU/100 mL	CFU/100 mL	CFU/100 mL
02/03/2016	**EH-380-RW-G-01**	1035	200e	4e	86

e, estimated value, plate count falls outside recommended reporting limits per EPA method guidelines.
ND, No data; the total number of bacterial colonies, coliforms plus non-coliform exceed 200 colonies per plate

Environmental Monitoring and Technical Services
2392 Kincaid Rd. MS 45A, San Diego, CA 92101
Tel (619) 758-2361 Fax (619) 758-2309

TMDL Bacteriological Results

11/01/2016

Source			Total Coliforms	Fecal Coliforms	Enterococcus
Sample Date	Station	Time	CFU/100 mL	CFU/100 mL	CFU/100 mL
03/10/2016	**EH-380-RW-G-01**	840	<20	2e	<2

e, estimated value, plate count falls outside recommended reporting limits per EPA method guidelines.
ND, No data; the total number of bacterial colonies, coliforms plus non-coliform exceed 200 colonies per plate

APPENDIX E

WET WEATHER
FIELD DATA FORMS

Bacteria TMDL Monitoring
FIELD DATA SHEET

Site ID: EH-380 Date: 1/9/16 Time: 12:10

Watershed: ~~Sweetwater~~ San Dieguito [ ] Receiving Water [ ] Storm Drain

Field Crew: DE PS Photos Collected? [X] Yes [ ] No Photo Count#: 3

Observed Land Use: [X] Residential [X] Commercial [ ] Industrial [ ] Agricultural [X] Parks [ ] Open

ATMOSPHERIC CONDITIONS

PS

Weather [ ] Partly Cloudy [ ] Sunny [X] Overcast [ ] Fog [ ] Rain [ ] Drizzle

Tide [ ] N/A [ ] Low [ ] Incoming [ ] High [X] Outgoing Tide Height: 1.8 ft.

Last Rain [X] > 72 hours [ ] < 72 hours

Rainfall [ ] None [ ] < 0 .1" [X] > 0 .1"

BEACH CHARACTERISTICS

Biology [ ] None [ ] Insects [X] Algae [X] Mollusk [ ] Snails [ ] Crustacean [X] Other dogs

Deposits [ ] None [X] Sediment/Gravel [ ] Oily Deposits [ ] Stains [ ] Fine Particulates [X] Other Sand

Vegetation [ ] None [ ] Limited [ ] Excessive [X] Normal [ ] Other

RUNOFF CHARACTERISTICS

Composition: [X] Sandy [X] Rocky [ ] Grass

Floatables [X] None [ ] Trash [ ] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Beach Odor [X] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Beach Color [X] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Beach Clarity [X] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

ACTIVITIES/INDICATORS

[ ] Evidence Reclaimed Water Usage [ ] Ag/Livestock Facility [ ] Encampments #

[ ] Waste Water Discharge [ ] Leaking Trashcan [X] Dom. Animals # 25 dogs

[ ] Sewer Overflow [ ] Food Waste/scraps [ ] Birds #

[ ] Trash Accumulation [ ] Seaweed Accumulation [ ] Wildlife #

[ ] Organic Matter [ ] Children (Diapers) # [ ] Other

FLOW CONDITIONS

Outfall Reaches Receiving Waters? [ ] Yes [ ] No [X] N/A [ ] Dry [ ] Ponded [ ] Trickle [X] Tidal

Flow Estimation:

~~Width | Diameter ft. | in. Depth ft. | in. Velocity ft/sec. Flow cfs | gpm~~ NA

FIELD MEASUREMENTS

pH: 8.06 Temp(°C): 16.58 Turbidity (NTU): 27.9 Sp Conductivity (~~µS~~ mS/cm): 43.4 ⇒ 43400 µS/cm

SAMPLE COLLECTION

[ ] Visited, Not Sampled

Grab Sample Collected? [X] Yes [ ] No

Sample ID: 2015-W1-EH-380-G01

Date: 1/9/16 Time: 12:12

QAQC Sample Collected? [X] Yes [ ] No QAQC Type: [X] DUP [X] FB

Sample ID: 2015-W1-EH-380-G02, G03

Date: 1/9/16 Time: 12:12

SAMPLE CHARACTERISTICS

[ ] N/A

Floatables [X] None [ ] Trash [ ] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Sample Odor [X] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Sample Color [X] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Sample Clarity [X] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

COMMENTS:

~~Trash Assessment on Reverse Side of this Field Sheet~~ N/A

Bacteria TMDL Monitoring
FIELD DATA SHEET

Site ID: EH-380 Date: 2/3/2016 Time: 10:35

Watershed: 6D6 [X] Receiving Water [ ] Storm Drain

Field Crew: PS + DA Photos Collected? [X] Yes [ ] No Photo Count#: 3

Observed Land Use: [ ] Residential [ ] Commercial [ ] Industrial [ ] Agricultural [X] Parks [ ] Open

ATMOSPHERIC CONDITIONS

Weather [ ] Partly Cloudy [X] Sunny [ ] Overcast [ ] Fog [ ] Rain [ ] Drizzle

Tide [ ] N/A [X] Low [ ] Incoming [ ] High [X] Outgoing Tide Height: 1 ft.

Last Rain [X] > 72 hours [X] < 72 hours

Rainfall [X] None [ ] < 0.1" [X] > 0.1"

BEACH CHARACTERISTICS

Biology [X] None [ ] Insects [ ] Algae [ ] Mollusk [ ] Snails [ ] Crustacean [ ] Other

Deposits [X] None [ ] Sediment/Gravel [ ] Oily Deposits [ ] Stains [ ] Fine Particulates [ ] Other

Vegetation [ ] None [ ] Limited [ ] Excessive [X] Normal [ ] Other

RUNOFF CHARACTERISTICS N/A

Composition: [ ] Sandy [ ] Rocky [ ] Grass

Floatables [ ] None [ ] Trash [ ] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Beach Odor [ ] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Beach Color [ ] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Beach Clarity [ ] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

ACTIVITIES/INDICATORS

[ ] Evidence Reclaimed Water Usage [ ] Ag/Livestock Facility [ ] Encampments #

[ ] Waste Water Discharge [ ] Leaking Trashcan [X] Dom. Animals # 20 dogs

[ ] Sewer Overflow [ ] Food Waste/scraps [X] Birds # 5

[ ] Trash Accumulation [X] Seaweed Accumulation [ ] Wildlife #

[ ] Organic Matter [ ] Children (Diapers) # [ ] Other

FLOW CONDITIONS

Outfall Reaches Receiving Waters? [X] Yes [ ] No [ ] N/A [ ] Dry [ ] Ponded [ ] Trickle [ ] Tidal

Flow Estimation:

Width | Diameter N/A ft. | in. Depth ft. | in. Velocity ft/sec. Flow cfs | gpm

FIELD MEASUREMENTS

pH: 8.50 Temp(°C): 17.19 Turbidity (NTU): 12.2 Sp Conductivity (µS/cm): 40,200

SAMPLE COLLECTION

[ ] Visited, Not Sampled

Grab Sample Collected? [X] Yes [ ] No

Sample ID: 1516-W2-EH380-G-01

Date: Time:

QAQC Sample Collected? [ ] Yes [X] No

Sample ID:

Date: Time:

QAQC Type: [ ] DUP [ ] FB

SAMPLE CHARACTERISTICS

[ ] N/A

Floatables [X] None [ ] Trash [ ] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Sample Odor [X] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Sample Color [X] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Sample Clarity [X] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

COMMENTS:

~~Trash Assessment on Reverse Side of this Field Sheet~~ N/A

Bacteria TMDL Monitoring
FIELD DATA SHEET

Site ID: EH380 Date: 3/10/16 Time: 0839

Watershed: SDG [X] Receiving Water [ ] Storm Drain

Field Crew: DArthur, S Seifert Photos Collected? [X] Yes [ ] No Photo Count#: 3

Observed Land Use: [ ] Residential [ ] Commercial [ ] Industrial [ ] Agricultural [X] Park Beach [ ] Open

ATMOSPHERIC CONDITIONS

Weather [ ] Partly Cloudy [X] Sunny [ ] Overcast [ ] Fog [ ] Rain [ ] Drizzle

Tide [ ] N/A [ ] Low [X] Incoming [X] High PS [ ] Outgoing Tide Height: 4.7 ft.

Last Rain [X] ~~> 72 hours~~ DE [X] < 72 hours

Rainfall [X] ~~None~~ DE [ ] < 0.1" [X] > 0.1"

BEACH CHARACTERISTICS

Biology [ ] None [ ] Insects [X] Algae seaweed [ ] Mollusk [ ] Snails [ ] Crustacean [ ] Other

Deposits [X] None [ ] Sediment/Gravel [ ] Oily Deposits [ ] Stains [ ] Fine Particulates [ ] Other

Vegetation [ ] None [X] Limited [ ] Excessive [ ] Normal [ ] Other

RUNOFF CHARACTERISTICS

Composition: [X] Sandy [ ] Rocky [ ] Grass

Floatables [ ] None [ ] Trash [X] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Beach Odor [X] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Beach Color [X] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Beach Clarity [X] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

ACTIVITIES/INDICATORS

[ ] Evidence Reclaimed Water Usage [ ] Ag/Livestock Facility [ ] Encampments #

[ ] Waste Water Discharge [ ] Leaking Trashcan [ ] Dom. Animals #

[ ] Sewer Overflow [ ] Food Waste/scraps [X] Birds # 2-3

[ ] Trash Accumulation [X] Seaweed Accumulation [ ] Wildlife #

[X] Organic Matter dog beach [ ] Children (Diapers) # [ ] Other

FLOW CONDITIONS

Outfall Reaches Receiving Waters? [ ] Yes [ ] No [ ] N/A [ ] Dry [ ] Ponded [ ] Trickle [ ] Tidal

Flow Estimation:

~~Width | Diameter~~ ft. | in. ~~Depth~~ ft. | in. ~~Velocity~~ ft/sec. Flow cfs | gpm NA

FIELD MEASUREMENTS

pH: 7.93 Temp(°C): 18.22 Turbidity (NTU): 20.6 Sp Conductivity (µS/cm): 38,100

SAMPLE COLLECTION

[ ] Visited, Not Sampled

Grab Sample Collected? [X] Yes [ ] No

Sample ID: 1516-W3-EH-380-G-01

Date: 3/10/16 Time: 08:40

QAQC Sample Collected? [ ] Yes [X] No

Sample ID:

Date: Time:

QAQC Type: [ ] DUP [ ] FB

SAMPLE CHARACTERISTICS

[ ] N/A

Floatables [X] None [ ] Trash [ ] Bubbles/Foam [ ] Sheen [ ] Fecal Matter [ ] Other

Sample Odor [X] None [ ] Musty [ ] Rotten Eggs [ ] Chemical [ ] Sewage [ ] Other

Sample Color [X] None [ ] Yellow [ ] Brown [ ] White [ ] Gray [ ] Other

Sample Clarity [X] Clear [ ] Slightly Cloudy [ ] Opaque [ ] Other

COMMENTS:

high tide - sample taken 75 ft upstream/into ocean from mixing zone

~~Trash Assessment on Reverse Side of this Field Sheet~~ N/A

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APPENDIX F

BACTERIA TMDL AND MS4 PERMIT DISCREPANCIES

F.1 Inconsistencies in Bacteria Total Maximum Daily Load (TMDL) Requirements (Attachment E.6)

The Bacteria TMDL Compliance Monitoring Program and this compliance monitoring report are designed to address the monitoring and assessment requirements defined in Attachment E.6.6 of the MS4 Permit. A number of inconsistencies were identified that may affect the interpretation of compliance.

MS4 Permit Monitoring and Assessment:

This report includes three compliance evaluations outlined in Sections 2.7 through 2.9, based on the MS4 Permit assessment requirements *(*San Diego Regional Water Quality Control Board [Regional Board], 2013*,* page E-49).

There is discrepancy between Table 6.2b–*Final Receiving Water Limitations Expressed as Bacteria Densities and Allowable Exceedance Frequencies for Creeks (Regional Board, 2013,* page E-32) and Table 6.5–*Interim Wet Weather Receiving Water Limitations Expressed as Interim Wet Weather Allowable Exceedance Frequencies (Regional Board, 2013,* page E-44).

As a clarification to the TMDLs, Table 6.2b in the MS4 Permit clarifies the final receiving water limitations (RWLs) for fecal coliform and *Enterococcus* and removes total coliform as a numeric target for creeks. However, Table 6.5 still includes a 41 percent interim wet weather allowable exceedance frequency for total coliform.

There is discrepancy between the monitoring procedures and assessment requirements. The sampling frequency defined in the monitoring procedures would provide insufficient data to complete the dry season geometric mean assessment requirement. The following are summaries of the MS4 Permit requirements and how the monitoring program addressed the discrepancies:

- The monitoring procedures of MS4 Permit Attachment E.6 require dry weather samples at creeks to be consistent with those of receiving monitoring stations in accordance with Provision D of the MS4 Permit as stated in Provision E.6.d(2)b.(i) (Regional Board, 2013, page E-50). Provision D of the MS4 Permit requires three dry weather monitoring events at receiving water stations.
- The assessment requirements for dry weather geometric mean exceedance frequencies state that the method and number of samples must be consistent with the requirements of the Basin Plan, which requires 5 samples per 30 days (Regional Board, 2010). The wet season geometric mean evaluation requirements do not stipulate that the Basin Plan methodology be applied.
- The Bacteria TMDL Monitoring Program was designed to generate the data needed to complete the assessment requirements. Dry weather monitoring was conducted at a higher frequency than required by the Bacteria TMDL monitoring procedures. Dry weather monitoring was conducted weekly during the dry season and monthly during the wet season to compare results with the dry weather geometric mean numeric targets.

There is an inconsistency between RWLs and assessment requirements that is traced back to inconsistencies between written requirements and tables in the Bacteria TMDL. The assessment section does not require a calculation of single-sample maximum (SSM) exceedances for dry weather. The following are summaries of the MS4 Permit requirements and how the monitoring program addressed the discrepancies:

- The assessment section requires exceedance frequencies to be calculated for dry season geometric means, wet season geometric means, and wet weather SSMs. The assessment requirements of the MS4 Permit are reinforced by the table of RWLs for creeks and the discussion of numeric targets, as presented in the Bacteria TMDL (Regional Board, 2010, pages A52 and A13, respectively).
- The footnotes of Table 6.2b of the MS4 Permit state that for "*dry weather days, the single sample maximum and 30-day geometric mean receiving water limitations are required to be achieved" and "wet weather days, only the single sample maximum receiving water limitations are required to be achieved" (*Regional Board, 2013*,* page E-32). These are not consistent with the footnotes for the same table presented in the Bacteria TMDL. The footnotes in the MS4 Permit are reinforced by the discussion of compliance with dry weather TMDLs described in the Bacteria TMDL, which states that, "*In addition to geometric means, the bacteria densities must be consistent with the SSM REC-1 WQOs in the Basin Plan for creeks.*"
- The Bacteria TMDL Compliance Monitoring Program was designed to generate the data needed to complete the assessment requirements.

The MS4 Permit assessment section clearly defines an evaluation of wet season geometric means that includes wet weather sampling results and dry weather sampling results. This assessment applies the dry weather numeric target to a data set that includes storm samples.

Attachment C – Dry Weather Outfall Information

Attachment C.1 – MS4 Outfall Dry Weather Monitoring Data
Attachment C.2 – MS4 Outfall Dry Weather Visual Observations Data
Attachment C.3 – Dry Weather Assessment Methodology
Attachment C.4 – Dry Weather Volumes and Pollutant Loads

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Attachment C.1 – Dry Weather Outfall Analytical Results

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Table C.1-1
2015-2016 San Dieguito River WMA Dry Weather Outfall Monitoring Analytical Results: City of San Diego

Analyte	Units	City of San Diego									
Location		DW033		DW0284		DW0317		DW0333		DW0636	
Date		2/16/16	4/5/16	2/16/16	4/5/16	2/16/16	4/5/16	2/16/16	4/5/16	2/16/16	4/5/16
Conventional Parameters											
Chloride	mg/L	240	160	240	300	580	600	600	600	730	770
Color	Color	15	110	88	50	< 5.0	10	25	50	25	50
DO	mg/L	4.82	5.33	8.2	8.43	7.27	7.42	7.51	NA	8.53	8.41
Outfall Hardness (Total)	mg $CaCO_3$/L	370	400	600	530	980	820	910	760	1200	1000
MBAS	mg/L	0.18	0.56	0.16	0.091	0.063 J	< 0.05	0.11	0.085 J	0.11	0.060 J
pH	pH units	8.3	7.9	7.8	7.8	8.1	8.0	7.9	7.8	8.1	8.5
Specific Conductivity	mS/cm	1.545	1.569	2.64	1.955	3.38	3.33	3.46	3.58	3.81	3.51
Temperature	°C	17.4	15.4	18.9	16.4	18.9	18.4	20.7	15.6	19.6	16.1
Turbidity	NTU	1.73	3.46	31.33	21.52	2.81	0.13	0.42	NA	4.72	9.08
Receiving Water Hardness (Total)	mg $CaCO_3$/L	370	440	880	990	580	660	880	990	880	990
Receiving Water Station		DW033		SDCMLS		SDCTWAS-1		SDCMLS		SDCMLS	
Indicator Bacteria											
Enterococcus	MPN/ 100mL	740*	340 e	660*	7,200*	200* e	160* e	560*	1,800* e	80* e	180* e
Fecal Coliform	MPN/ 100mL	120* e	230	< 20*	7,900	40* e	< 18	60* e	2,300	< 20*	45
Total Coliform	MPN/ 100mL	60,000* e	1,700	6,000* e	79,000	6,000* e	460	60,000* e	17,000	1,600* e	940
Total Metals											
Aluminum	µg/L	250	160	590	150	8.9 J	< 25	100	28 J	9.9 J	< 25
Cadmium	µg/L	< 0.25	< 2.0	0.35 J	< 2.0	< 0.25	< 2.0	< 0.25	< 2.0	< 0.25	< 2.0
Chromium	µg/L	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	5.2	3.4	< 2.5	< 2.5
Chromium (III)**	µg/L	See Dissolved Chromium (III) and Dissolved Chromium (VI)**									
Chromium (VI)**	µg/L										
Copper	µg/L	10	21	360	27	4.2	< 5.0	21	5.6 J	4.1	19
Iron	µg/L	410	470	790	190	44	35 J	130	49	780	3800
Lead	µg/L	0.76 J	< 2.5	1	2.6 J	< 0.50	2.9 J	< 0.50	3.5 J	< 0.50	5.2
Manganese	µg/L	94	210	61	44	110	100	13	< 10	380	940
Mercury	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	µg/L	2.6	< 5.0	3.9	< 5.0	2.1	< 5.0	4.1	< 5.0	3.8	< 5.0
Silver	µg/L	< 0.50	< 5.0	< 0.50	< 5.0	< 0.50	< 5.0	< 0.50	< 5.0	< 0.50	< 5.0
Zinc	µg/L	34	27	91	61	4.6 J	29	11 J	18 J	14 J	52

Table C.1-1
2015-2016 San Dieguito River WMA Dry Weather Outfall Monitoring Analytical Results: City of San Diego (continued)

Analyte	Units	City of San Diego									
Location		DW033		DW0284		DW0317		DW0333		DW0636	
Date		2/16/16	4/5/16	2/16/16	4/5/16	2/16/16	4/5/16	2/16/16	4/5/16	2/16/16	4/5/16
	Dissolved Metals										
Aluminum	µg/L	9.3 J	< 25	13	27 J	22	28 J	< 5.0	< 25	< 5.0	30 J
Cadmium	µg/L	< 0.25	< 2.0	< 0.25	< 2.0	< 0.25	< 2.0	< 0.25	< 2.0	< 0.25	< 2.0
Chromium	µg/L	< 0.50	< 2.5	0.89 J	< 2.5	< 0.50	< 2.5	4.6	3.1 J	< 0.50	< 2.5
Chromium (III)**	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.79 J	<0.5	< 0.5	< 0.5
Chromium (VI)**	µg/L	< 0.25	< 0.25	0.63 J	< 0.25	< 0.25	< 0.25	4.4	3	< 0.25	< 0.25
Copper	µg/L	7	6 J	160	14	2.8	< 5.0	33	5.9 J	5.2	5.7 J
Iron	µg/L	49	75	290	11 J	34	14 J	34	20 J	140	210
Lead	µg/L	< 0.50	< 2.5	< 0.50	< 2.5	< 0.50	3.7 J	< 0.50	3.7 J	< 0.50	4.8 J
Manganese	µg/L	20	170	45	22	72	110	2.8	< 10	310	570
Mercury	µg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	µg/L	2.6	< 5.0	3.8	< 5.0	2.9	< 5.0	4.9	< 5.0	3.6	< 5.0
Silver	µg/L	< 0.50	< 5.0	< 0.50	< 5.0	< 0.50	< 5.0	< 0.50	< 5.0	< 0.50	< 5.0
Zinc	µg/L	11 J	26	38	24	< 2.5	11 J	20	73	18 J	13 J
	Nutrients										
Ammonia N	mg/L	2.3	1.1	37	0.50	< 0.10	0.16 J	0.11 J	0.52	0.23	0.6
Nitrite as N***	mg/L	0.66	0.37	< 0.070	< 0.070	< 3.5	< 0.14	< 3.5	< 0.14	< 3.5	< 0.14
Nitrate as N***	mg/L	1.4	1.5	1.2	2	3.2	2.9	4.4	5.1	3.5	2.2
Nitrate/Nitrite N***	mg/L	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total Nitrogen	mg/L	6.3	4.3	78	5.8	3.5	3.2	5.5	6.4	4.1	2.9
TKN	mg/L	4.2	2.4	77	3.8	0.34	0.29	1.1	1.3	0.61	0.72
Phosphate, Dissolved P	mg/L	0.45	0.76	9.9	0.32	0.045 J	< 0.025	0.16	0.25	0.05	< 0.025
Phosphorus, Total	mg/L	0.51	0.85	9.4	0.49	0.033 J	0.037 J	0.27	0.5	0.087	0.69
Orthophosphate as P	mg/L	0.41	0.76	1.4	0.30	< 0.080	0.052	< 0.080	0.49	< 0.080	0.055
Sulfate as SO4	mg/L	240	310	660	340	390	400	460	430	360	430
	Solid Parameters										
TDS	mg/L	850	960	1300	1300	2100	2000	2300	2100	2600	2200
TSS	mg/L	19	38	41	40	< 0.83	1.3	14	2.9	1.7	4.1
	Synthetic Organics										
Pentachlorophenol	µg/L	< 9.9	< 9.6	< 10	< 10	< 11	< 9.6	< 10	< 9.6	< 10	< 9.7

Notes:
< = Analyte not detected at method detection limit shown; J = Analyte detected above the method detection limit but below the reporting limit; e = CFU/100mL, estimated value, plate count falls outside recommended reporting limits per EPA method guidelines; NA = Not Analyzed; NR = Not Required, * = CFU/100mL; ** = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal; *** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table C.1-2
2015-2016 San Dieguito River WMA Dry Weather Outfall Monitoring Analytical Results: Cities of Del Mar, Solana Beach, Escondido, Poway, and County of San Diego

Analyte	Units	City of Del Mar		City of Solana Beach		City of Escondido		City of Poway		County of San Diego									
Location		S-5	S-7	SB-25		HDG_102		140		SDG-072		SDG-074		SDG-077		SDG-080		SDG-115	
Date		8/12/16	6/30/16	6/30/16	8/12/16	4/20/16	8/30/16	7/29/16	8/2/16	3/28/16	6/30/16	3/28/16	6/30/16	3/28/16	6/30/16	3/28/16	6/30/16	3/29/16	7/7/16
Conventional Parameters																			
Chloride	mg/L	530	1,220	190	250	176	183	190	230	350	520	410	1230	150	220	850	820	420	420
Color	Color	5	35	24	25	NA	11	50	60	34	20	13	16	50	97	8	15	1	2
DO	mg/L	5.80	7.60	7.83	6.91	6.00	6.67	8.9	10.8	5.74	9.35	2.48	6.34	0.49	9.85	6.63	6.3	8.1	6.68
Outfall Hardness (Total)	mg $CaCO_3$/L	545	692	383	402	485	573	424	651	566	736	403	1190	379	470	1240	1310	824	758
MBAS	mg/L	< 0.1	< 0.1	0.2	0.1	< 0.08	< 0.08	< 0.1	< 0.1	0.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
pH	pH units	8.27	8.59	8.4	8.2	8.11	8.23	7.5	7.4	7.05	6.8	6.69	6.76	7.22	7.34	7.93	7.47	7.35	7.15
Specific Conductivity	mS/cm	2.387	4.919	923	1483	1.58	1.62	1340	1710	2.37	3.02	4.23	5.08	1.36	1.75	4.2	3.92	3.12	2.78
Temperature	°C	28.50	21.59	21.13	21.71	18.97	23.24	23.7	24.7	17.94	20.76	17.33	20.57	16.11	22.08	19.26	22.38	20.44	21.67
Turbidity	NTU	0.85	2.06	6.05	2.01	2.9	1.6	5.95	7.12	5.14	8.11	3.98	0.99	65.6	9.18	0.18	3.07	0.15	0
Receiving Water Hardness (Total)	mg $CaCO_3$/L	Not Applicable. CTR not used for NAL determination		Not Applicable. CTR not used for NAL determination		899	902	424	651	964	1320	964	1320	964	1320	495	582	548	778
Receiving Water Station						HDG_102-RW		140		MS4-SDG-072RW		MS4-SDG-072RW		MS4-SDG-072RW		MS4-SDG-080RW		MS4-SDG-115RW	
Indicator Bacteria																			
Enterococcus	MPN/ 100mL	1,400	500	280	5,000	280	1,400	11,000	5,000	800	80	340	17,000	3,000	1,400	70	900	< 2	2
Fecal Coliform	MPN/ 100mL	4	1,600	23	40	900	800	17,000	70,000	500	300	700	5,000	700	2,000	<200	70,000	< 2	< 20
Total Coliform	MPN/ 100mL	30	1,600	1,600	8,000	8,000	2,200	240,000	900,000	23,000	2,200	9,000	50,000	5,000	50,000	2,800	900,000	40	130
Total Metals																			
Aluminum	µg/L	13	161	61	56	32	30	163	333	121	251	166	48	209	54	23	59	15	6 J
Cadmium	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	<0.25	< 0.25	< 0.2	0.2 J	0.2 J	0.2 J	1	< 0.2	0.3 J	< 0.2	0.6 J	0.2 J	1	0.2 J
Chromium	µg/L	NR****	NR****	NR****	NR****	< 20	< 0.50	1 J	0.2 J	1	0.7 J	1	0.6 J	0.7 J	0.8 J	0.4 J	0.6 J	0.4 J	0.3 J
Chromium (III)	µg/L	NR****	NR****	NR****	NR****	< 20	< 0.50	1	< 0.3	1	0.7 J	1	0.6 J	0.7 J	0.8 J	0.4 J	0.6 J	0.4 J	0.3 J
Chromium (VI)	µg/L	NR****	NR****	NR****	NR****	< 1.0	0.32 J	< 2	< 2	< 1	NA	< 1	NA	< 1	NA	< 1	NA	< 1	< 1
Copper	µg/L	82	9	15	14	15	4.0	6 J	111	11	7	34	6	22	6	17	5	10	0.9 J
Iron	µg/L	26	148	82	74	31	40	464	167	546	305	179	802	356	103	17	56	42	22
Lead	µg/L	0.3	0.3	0.4	< 0.2	< 0.11	< 0.50	0.5 J	0.5 J	0.3 J	0.4 J	0.6 J	0.3 J	0.3 J	0.2 J	< 0.2	< 0.2	< 0.2	< 0.2
Manganese	µg/L	10	11	29	7	14	9.3 J	126	78	165	304	195	384	265	89	29	45	75	59
Mercury	µg/L	< 0.08	0.2	< 0.08	< 0.08	<1.0	< 1.0	0.1	0.08 J	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Nickel	µg/L	NR****	NR****	NR****	NR****	0.52	0.77 J	3 J	5	3	4	5	8	2	6	4	6	0.9 J	2
Silver	µg/L	NR****	NR****	NR****	NR****	< 0.50	< 0.50	< 0.2	7	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Zinc	µg/L	11	18	25	18	19	6.0 J	16 J	63	22	22	1390	25	16	18	9	8	6	6

Table C.1-2
2015-2016 San Dieguito River WMA Dry Weather Outfall Monitoring Analytical Results: Cities of Del Mar, Solana Beach, Escondido, Poway, and County of San Diego (continued)

Analyte	Units	City of Del Mar		City of Solana Beach		City of Escondido		City of Poway		County of San Diego									
Location		S-5	S-7	SB-25		HDG_102		140		SDG-072		SDG-074		SDG-077		SDG-080		SDG-115	
Date		8/12/16	6/30/16	6/30/16	8/12/16	4/20/16	8/30/16	7/29/16	8/2/16	3/28/16	6/30/16	3/28/16	6/30/16	3/28/16	6/30/16	3/28/16	6/30/16	3/29/16	7/7/16
Dissolved Metals																			
Aluminum	µg/L	5	7	32	27	10	5.9	36	117	6 J	4 J	37	2 J	9 J	14	4 J	2 J	2 J	< 0.7
Cadmium	µg/L	< 0.07	0.9	0.1	0.09	< 0.25	< 0.25	< 0.2	0.2 J	< 0.07	0.2 J	0.2 J	0.8 J	< 0.07	3	0.09 J	0.2 J	< 0.07	< 0.07
Chromium	µg/L	NR****	NR****	NR****	NR****	< 20	< 0.50	< 0.2	< 0.2	0.1 J	0.06 J	0.4 J	0.06 J	0.2 J	0.3 J	0.08 J	< 0.06	< 0.06	< 0.06
Chromium (III)	µg/L	NR****	NR****	NR****	NR****	< 20	< 0.50	0.1 J	< 0.06	0.1 J	0.06 J	0.4 J	0.06 J	0.2 J	0.3 J	0.08 J	< 0.06	< 0.06	< 0.06
Chromium (VI)	µg/L	NR****	NR****	NR****	NR****	< 1.0	0.32 J	< 2	< 2	< 1	NA	< 1	NA	< 1	NA	< 1	NA	< 1	< 1
Copper	µg/L	76	6	8	10	13	2.8	4	95	6	2	22	3	10	3	9	2	2	0.6 J
Iron	µg/L	6	13	27	45	13	< 8.0	19 J	16 J	232	51	11	11	88	41	< 4	6 J	4 J	9 J
Lead	µg/L	< 0.06	< 0.06	0.1	< 0.06	< 0.11	< 0.50	0.1 J	0.08 J	0.08 J	< 0.06	0.01 J	< 0.06	0.07 J	0.06 J	< 0.06	< 0.06	< 0.06	< 0.06
Manganese	µg/L	8	3	6	5	10	5.5	31	74	120	256	164	361	235	81	18	42	65	55
Mercury	µg/L	0.2	0.2	0.2	< 0.08	< 1.0	< 1.0	< 0.08	< 0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	µg/L	NR****	NR****	NR****	NR****	0.51	0.71	2 J	4 J	2	2	4	5	2	2	3	4	0.7 J	0.4 J
Silver	µg/L	NR****	NR****	NR****	NR****	< 0.50	< 0.50	< 0.1	4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Zinc	µg/L	9	6	10	12	18	6.0	10 J	51	17	12	1290	13	42	6	14	4 J	11	0.3 J
Nutrients																			
Ammonia N	mg/L	< 0.02	0.25	0.45	0.78	0.15	0.32	0.86	1.05	0.17	0.43	1.26	0.15	0.1	0.7	0.09 J	0.16	0.02 J	< 0.02
Nitrite as N**	mg/L	< 0.007	< 0.007	0.26	0.48	< 0.5	0.0147	NR	NR	< 0.007	< 0.007	0.02	< 0.007	0.02	0.03	< 0.007	0.01	< 0.007	< 0.007
Nitrate as N**	mg/L	2.21	0.06	0.39	1.32	5.03	5.93	NR	NR	0.21	0.02	6.08	0.81	0.06	0.05	2.45	1.11	11.9	5.9
Nitrate/Nitrite N**	mg/L	2.21	0.07	0.65	1.8	NR	NR	1.59	2.28	0.21	0.02 J	6.1	0.81	0.08	0.08	2.45	1.12	11.9	5.9
Total Nitrogen	mg/L	2.2	22.5	5.0	3.9	5.88	6.82	4.2	6.7	0.6	2.2	7.9	2.3	5.5	3	2.7	1.5	12.1	5.9
TKN	mg/L	< 0.3	22.4	4.3	2.1	0.85	0.88	2.6	4.4	0.4	2.2	1.8	1.5	5.4	2.9	< 0.3	0.4 J	< 0.3	< 0.3
Phosphate, Dissolved P	mg/L	< 0.05	0.14	0.25	0.34	NA	NA	0.5	0.9	0.23	0.21	0.15	0.3	0.29	0.89	0.16	< 0.05	< 0.05	< 0.05
Phosphorus, Total	mg/L	0.10	0.16	0.51	0.36	0.11	0.19	0.52	1.28	0.26	0.43	0.2	0.32	0.33	0.92	0.16	0.2	0.02 J	0.02 J
Orthophosphate as P	mg/L	0.08	0.10	0.20	0.30	0.13	0.20	0.42	1.03	0.18	0.42	0.14	0.24	0.23	0.9	0.13	0.2	0.01	0.01
Sulfate as SO4	mg/L	348	754	264	305	NA	NA	279	310	310	NA	210	NA	220	NA	520	NA	360	370
Solid Parameters																			
TDS	mg/L	1700	3530	869	990	1089	1225	905	1130	1280	1770	923	2920	765	1040	2450	2390	1690	1720
TSS	mg/L	3.0	13.0	12.0	1.0	4.0	1.83	4 J	5 J	7	6.6	3	4.3	18	4.7	< 1	3.3	< 1	< 1
Synthetic Organics																			
Pentachlorophenol	µg/L	< 1.11	< 1.11	< 1.11	< 1.11	< 1.0	< 1.0	< 1.11	< 1.11	< 1.11	< 1.11	< 1.11	< 1.11	< 1.11	< 1.11	< 1.11	< 1.11	< 1.11	< 1.11

Notes:
< = Analyte not detected at method detection limit shown; J = Analyte detected above the method detection limit but below the reporting limit; e = CFU/100mL, estimated value, plate count falls outside recommended reporting limits per EPA method guidelines; NA = Not Analyzed; NR = Not Required, * = CFU/100mL; ** = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal; *** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit), ****= NAL analyte not required for Ocean Receiving Waters.

Attachment C.2 – Major MS4 Outfall Dry Weather Visual Observation Data

(Electronic Submittal)

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Major MS4 Outfall Dry Weather Monitoring Data Files

The following dry weather MS4 outfall data files are included in this attachment:

- County of San Diego Major MS4 Outfall Dry Weather Visual Observation Data
- City of Del Mar Major MS4 Outfall Dry Weather Visual Observation Data
- City of Escondido Major MS4 Outfall Dry Weather Visual Observation Data
- City of Poway Major MS4 Outfall Dry Weather Visual Observation Data
- City of Solana Beach Major MS4 Outfall Dry Weather Visual Observation Data
- City of San Diego Major MS4 Outfall Dry Weather Visual Observation Data

All data files are referenced in the Monitoring Results and Assessment Appendix C.

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Attachment C.3 – Dry Weather Assessment Methodology

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1 Assessment of Dry Weather Outfall Monitoring Results

In 2013 the San Diego Regional Water Quality Control Board (Regional Board) issued *Order No. R9-2013-0001 (amended by Order Nos. R9-2015-0001 and R9-2015-0100), National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*, herein referred to as the MS4 Permit, regulating MS4 discharges throughout the San Diego Region. The MS4 Permit requires a series of dry weather MS4 outfall assessments be performed annually to assess and report the progress of each Copermittee toward effectively prohibiting non-storm water and illicit discharges into the MS4 within its jurisdiction. This Attachment describes the methodology used to perform these required assessments.

Dry weather monitoring requirements are not discussed here, and can be found in the MS4 outfall monitoring plan for each Watershed Management Area (WMA). MS4 outfall monitoring plans are available through Project Clean Water (www.projectcleanwater.org).

Per MS4 Permit Provision D.4.b(1)(b), Copermittees will annually assess and/or report the following, beginning in the Transitional Monitoring Annual Reports and continuing in the Water Quality Improvement Plan Annual Reports:

(i) The known and suspected controllable sources (e.g. facilities, areas, land uses, pollutant generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area;

(ii) Sources of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area that have been reduced or eliminated; and

(iii) Modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.

The following additional assessments, listed in Permit Provision D.4.b(1)(c), are required in the Water Quality Improvement Plan Annual Reports:

(i) The assessments listed in Provision D.4.b.(1)(b);

(ii) Based on the data collected and applicable NALs [non-storm water action levels] in the Water Quality Improvement Plan, rank the MS4 outfalls in the Copermittee's jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action to update the Water Quality Improvement Plan, with the goal of eliminating persistent flow non-storm water discharges and/or pollutant loads in order of the ranked priority list through targeted programmatic actions and source investigations;

(iii) For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identify the known and suspected sources within the Copermittee's jurisdiction in the Watershed Management Area that may cause or contribute to the NAL exceedances;

(iv) Each Copermittee must analyze the data collected pursuant to Provision D.2.b, and utilize a model or other method, to calculate or estimate the non-storm water

volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually.

[a] Each Copermittee must calculate or estimate the annual non-storm water volumes and pollutant loads collectively discharged from the Copermittee's major MS4 outfalls to receiving waters within the Copermittee's jurisdiction, with an estimate of the percent contribution from each known source for each MS4 outfall; and

[b] Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters.

The sections that follow describe the assessments in greater detail. Within each section are references to the data sources used in each assessment; these are suggestions for regional consistency, and additional supporting data may be used as necessary. Data sources are provided [within brackets] and include the following:

- Jurisdictional MS4 outfall inventory;
- Jurisdictional Illicit Discharge Detection and Elimination (IDDE) investigation results and follow-up actions;
- Jurisdictional Runoff Management Program (JRMP) Annual Report Forms; and
- Dry Weather MS4 Data Sharing Template (Data Sharing Template) results.

2 Provision D.4.b.(1)(b) Assessments

2.1 Persistent Flow Classification

As part of the MS4 Outfall Discharge Monitoring Station Inventory required by Permit Provision D.2.a(1), each Copermittee must identify all major outfalls that discharge directly to receiving waters within its jurisdiction in the WMA. Each Copermittee must maintain the following information for each major MS4 outfall:

- Latitude and longitude of MS4 outfall point of discharge;
- Watershed Management Area;
- Hydrologic subarea;
- Outlet size;
- Accessibility (i.e. safety and without disturbance of critical habitat);
- Approximate drainage area; and
- Classification of whether the MS4 outfall is known to have persistent dry weather flows, transient dry weather flows, no dry weather flows, or unknown dry weather flows.

Copermittees regularly update this information and include the geo-located outfalls on an MS4 map as part of their JRMP. The accuracy of the MS4 map must be confirmed during field screening monitoring. The frequency with which each Copermittee must field screen the MS4 outfalls in its inventory varies according to the number of major MS4 outfalls discharging from a Copermittee's jurisdiction to receiving waters within the region and within each WMA. The frequency of required field screening is outlined in MS4 Permit Provision D.2.a.(2)(a).

A summary of the updated persistent flow classification will also be reported in the Water Quality Improvement Plan Annual Report. This information will include the number of persistent, transient, dry, and unknown dry weather flow sites for each jurisdiction [Data Sharing Template, "Station Information" tab, "Current Flow Classification" column]. These flow classifications can be defined as the following:

- Persistent - having flowing, pooled, or ponded water more than 72 hours after a measurable rainfall event of 0.1 inch or greater during the three consecutive most recent monitoring and/or inspection events;
- Transient - having flowing, pooled, or ponded water during at least one but not on all three most recent consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥ 0.1 inch;
- Tidal - persistent or transient flow with ocean tides as the source;
- Dry - having no flowing, pooled, or ponded water during the last three consecutive monitoring and/or inspection events conducted more than 72 hours after rainfall with daily precipitation ≥ 0.1 inch; and
- Unknown - site cannot be evaluated, or has not been visited enough times to determine flow status.

2.2 Known and Controllable Source Categorization

As described in Provision E.2 of the MS4 Permit, each Copermittee must seek to identify the source(s) of non-storm water discharge from their MS4, where there is evidence of non-storm water having been discharged into or from the MS4 [i.e., ponding or flow, in the absence of wet weather]. In the Water Quality Improvement Plan Annual Reports, the Copermittees will categorize the known and suspected controllable sources of transient and persistent flows within their jurisdiction in the WMA. As part of this categorization, each Copermittee will report the number of major outfalls within its jurisdiction in the WMA, the number of dry weather visual inspections performed in the monitoring year (October 1 through September 30), and the following additional information:

1) The number of sites with flowing or ponded observations in the monitoring year [Data Sharing Template, “Visual Observation” tab, “Flow Status” column];
2) Whether the sources of flow at the identified flowing and/or ponded sites are known or suspected [Data Sharing Template, “Runoff Sources” tab, “Runoff Sources Suspected or Known?” column];
3) If the source of flow is known or suspected, whether it is:
    a. Authorized by a separate NPDES Permit [Data Sharing Template, “Runoff Sources” tab, “NPDES Allowable Discharge”/ column];
    b. Identified as a category of non-storm water discharge that must be addressed as an illicit discharge, based on Provision E.2.a of the MS4 Permit [Data Sharing Template, “Runoff Sources” tab, “Unpermitted Discharge” column]; or
    c. Identified as a category of non-storm water discharge that is not controllable by the Copermittee (e.g., ground water seepage) [Data Sharing Template, “Runoff Sources” tab, “Unpermitted Discharge” column].

It should be noted that a site with flowing or ponded observations may have multiple known or suspected sources of flow. For example, a site may be impacted by both irrigation runoff and groundwater seepage.

2.3 Dry Weather Flow Elimination Assessment

As described in their Jurisdictional Runoff Management Plans (JRMPs), each Copermittee must initiate the implementation of procedures, in a timely manner, to eliminate all detected and identified illicit discharges and connections within its jurisdiction. If the Copermittee identifies the source of illicit discharge or connection as controllable, the Copermittee must implement its Enforcement Response Plan as described in its JRMP. Copermittees will submit a summary of the non-storm water discharges and illicit discharges and connections eliminated within its jurisdiction in the previous monitoring year as part of the JRMP Annual Report Form (Permit Attachment D, Section IV). Specific investigations initiated through monitoring are compiled [Data Sharing Template, “Runoff Sources” tab, “Was Flow Source Eliminated” column; Jurisdictional IDDE investigation forms (optional)] and summarized in the Water Quality Improvement Plan Annual Report Monitoring and Assessment Appendix.

2.4 Field Screening Modifications

Copermittees will identify modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.

Modifications to the field screening monitoring locations will be reported in the Water Quality Improvement Plan Annual Reports [Data Sharing Template, “Station Information” tab, “Modifications to Locations and Frequencies Necessary to Identify and Eliminate Sources of Flow D.4.b.(1).(b).(iii)” column].

3 Provision D.4.b.(1)(c) Assessments

3.1 Dry Weather MS4 Outfall Prioritization

Based on the data collected and applicable NALs in the Water Quality Improvement Plan, each Copermittee will rank the MS4 outfalls in the their jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action. The prioritization will be conducted annually by each Copermittee and will include at least five highest priority major MS4 outfalls with non-storm water persistent flows, per WMA, that will be monitored in the subsequent monitoring year. If a Copermittee has fewer than five major MS4 outfalls with non-storm water persistent flows in the WMA, all the Copermittee's persistently flowing sites in the WMA will be monitored. For Copermittee's identified as responsible parties to a TMDL in Attachment E of the MS4 Permit, additional highest priority outfall monitoring locations may be selected if five sites are not sufficient to determine compliance with the TMDL.

Each Copermittee's prioritization methodology may differ. Data that will be used in the prioritization may include but are not limited to:

- Persistent flow status (defined as evidence of flow in each of the 3 most recent visual inspections) [Data Sharing Template, "Station Information" tab, "Current Flow Classification" column];
- Receiving water connectivity [Data Sharing Template, "Visual Observations" tab, "Flow Reaches Receiving Water" column];
- Potential to contribute to Highest Priority Water Quality Condition [Data Sharing Template, "Laboratory Data" tab];
- NAL exceedance [Data Sharing Template, "Laboratory Data" tab];
- Historical data; and
- Data not collected by the Copermittees.

The updated prioritization will be included in the Water Quality Improvement Plan Annual Reports, with explanations for any sites that have been added or removed from the Copermittee's list of highest priority outfalls. Once a site has been identified as highest priority, it may only be removed from the prioritization for one of the following reasons identified in Provision D.2.B.(2).(b).(ii) of the MS4 Permit:

- The non-storm water discharges have been effectively eliminated (i.e. no flowing, pooled, or ponded water) for three consecutive dry weather monitoring events; or
- The source(s) of the persistent flows has been identified as a category of non-storm water discharges that does not require an NPDES permit and does not have to be addressed as an illicit discharge because it was not identified as a source of pollutants (i.e. constituents in non-storm water discharge do not exceed NALs), and the persistent flow can be re-prioritized to a lower priority; or
- The constituents in the persistent flow non-storm water discharge do not exceed NALs, and the persistent flow can be re-prioritized to a lower priority; or

- The source(s) of the persistent flows has been identified as a non-storm water discharge authorized by a separate NPDES permit.

If a site has been removed from the list of five highest priority outfalls, it will be replaced with the Copermittee's next highest priority major MS4 outfall in the WMA, unless there are fewer than five persistently flowing major MS4 outfalls remaining.

3.2 Analysis of NAL Exceedance

Each major MS4 outfall identified as a highest priority persistently flowing outfall will be monitored under dry conditions at least semi-annually. The semi-annual monitoring event includes field observations, field monitoring, and analytical monitoring, including monitoring of NAL constituents. NALs are based on the receiving water type, and different NALs will be applicable to different outfalls in each WMA, depending on whether the outfall discharges to ocean receiving waters, bays, harbors, lagoons, estuaries, or inland streams and rivers. The NALs are presented in tables in the MS4 Permit by receiving water type, as follows:

- Ocean Surf Zone:
  - Table C-1: total coliform, fecal coliform, and *Enterococcus*.
- Bays, Harbors, and Lagoons/Estuaries:
  - Table C-2: turbidity, pH, fecal coliform, *Enterococcus*, and priority pollutants from Table C-3 (cadmium, copper, chromium III, chromium VI, lead, nickel, silver, and zinc).
- Inland Surface Waters:
  - MS4 Permit Table C-4: dissolved oxygen, turbidity, pH, fecal coliform, *Enterococcus*, total nitrogen, total phosphorus, methylene blue active substance (MBAS), iron, manganese, and priority pollutants from Table C-3 (cadmium, copper, chromium III, chromium VI, lead, nickel, silver, and zinc).

The NALs from the MS4 Permit tables are replicated in Tables 3-1 through 3-4. The Water Quality Improvement Plans may include additional WMA-specific NALs related to the highest priority water quality conditions in that WMA, or any applicable TMDLs in Attachment E of the MS4 Permit.

Table C.2-1
Non-Storm Water Action Levels for Discharges from MS4s to Ocean Surf Zone

Parameter	Units	AMAL	MDAL	Instantaneous Maximum	Basis
Total Coliform	MPN/100mL	1,000	–	10,000/1,000[1]	OP
Fecal Coliform	MPN/100mL	200[2]	–	400	OP
Enterococcus	MPN/100mL	35	–	104[3]	OP

AMAL = average monthly action level; MDAL = maximum daily action level; OP = Ocean Plan water quality objective; MPN/100mL = most probable number per 100 milliliters

1. Total coliform density NAL is 1,000 MPN/100 mL when the fecal/total coliform ratio exceeds 0.1.
2. Fecal coliform density NAL is 200 MPN/100mL during any 30 day period.
3. This value has been set to the Basin Plan water quality objective for saltwater "designated beach areas."

Table C.2-2
Non-Storm Water Action Levels for Discharges from MS4s to Bays, Harbors, and Lagoons/Estuaries

Parameter	Units	AMAL	MDAL	Instantaneous Maximum	Basis
Turbidity	NTU	75	–	225	OP
pH	Units	Within limit of 6.0 to 9.0 at all times.			OP
Fecal Coliform	MPN/100mL	200[1]	–	400[2]	BP
Enterococcus	MPN/100mL	35	–	104[3]	BP
Priority Pollutants	µg/L	See Table 3-4			

BP = Basin Plan water quality objective; µg/L = microgram per liter.

1. Based on a minimum of not less than five samples for any 30-day period.
2. The NAL is reached if more than 10 percent of total samples exceed 400 MPN/100mL during any 30 day period.
3. This value has been set to the Basin Plan water quality objective for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with the water contact recreation (REC-1) beneficial use.

Table C.2-3
Non-Storm Water Action Levels for Discharges from MS4s to Inland Surface Waters

Parameter	Units	AMAL	MDAL	Instantaneous Maximum	Basis
Dissolved Oxygen	mg/L	Not less than 5.0 in WARM waters and not less than 6.0 in COLD waters.			BP
Turbidity	NTU	–	20	See MDAL	BP
pH	Units	Within limit of 6.5 to 8.5 at all times.			BP
Fecal Coliform	MPN/100mL	200[1]	–	400[2]	BP
Enterococcus	MPN/100mL	33	–	61[3]	BP
Total Nitrogen	mg/L	–	1.0	See MDAL	BP
Total Phosphorus	mg/L	–	0.1	See MDAL	BP
MBAS	mg/L	–	0.5	See MDAL	BP
Iron	mg/L	–	0.3	See MDAL	BP
Manganese	mg/L	–	0.05	See MDAL	BP
Priority Pollutants	µg/L	See Table 3-4			

WARM = warm freshwater habitat beneficial use; COLD = cold freshwater habitat beneficial use;
MBAS = Methylene Blue Active Substance

1. Based on a minimum of not less than five samples for any 30-day period.
2. The NAL is reached if more than 10 percent of total samples exceed 400 MPN/100mL during any 30 day period.
3. This value has been set to the Basin Plan water quality objective for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with the water contact recreation (REC-1) beneficial use.

Table C.2-4
Non-Storm Water Action Levels for Priority Pollutants

Parameter	Units	Freshwater (CTR)		Saltwater (CTR)	
		MDAL	AMAL	MDAL	AMAL
Cadmium	µg/L	**	**	16	8
Copper	µg/L	*	*	5.8	2.9
Chromium III	µg/L	**	**	–	–
Chromium VI	µg/L	16	8.1	83	41
Lead	µg/L	*	*	14	2.9
Nickel	µg/L	**	**	14	6.8
Silver	µg/L	*	*	2.2	1.1
Zinc	µg/L	*	*	95	47

CTR = California Toxics Rule

* Action levels developed on a case-by-case basis (see below).

** Action levels developed on a case-by-case basis (see below), but calculated criteria are not to exceed Maximum Contaminant Levels (MCLs) under the California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64431.

The Cadmium, Copper, Chromium (III), Lead, Nickel, Silver, and Zinc NALs for MS4 discharges to freshwater receiving waters will be developed on a case-by-case basis based on site-specific water quality data (receiving water hardness). For these priority pollutants, refer to 40 CFR 131.38(b)(2).

For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, Copermittees will identify the known and suspected sources within the Copermittee's jurisdiction in the WMA that may cause or contribute to the NAL exceedances [Data Sharing Template, "Runoff Sources" tab; Jurisdictional IDDE forms].

3.3 Non-Storm Water Volume and Pollutant Load Assessment

Each Copermittee must analyze the data collected under the Dry Weather MS4 Outfall Discharge Monitoring program, and utilize a model or other method to calculate or estimate the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually.

3.3.1 Identification of Dry Weather Days

The first step in calculating annual non-storm water volumes and pollutant loads is to determine the number of dry weather days in the monitoring year. The number of dry weather days will be determined using County of San Diego ALERT Station Data (https://sandiego.onerain.com). A single ALERT Station will be selected to represent rainfall conditions in each WMA. This representative ALERT Station will be the same station utilized in Wet Weather MS4 Outfall Discharge Monitoring Assessments, and will

be the station that is closest to a majority of wet weather MS4 outfall discharge monitoring stations. This station may vary each year, depending on the wet weather MS4 outfall discharge stations monitored and the availability of ALERT Station data.

A wet weather day is defined as any day with at least 0.1 inches of measurable rainfall within a 24-hour period, and the subsequent 72 hours. A dry weather day will be defined as all other days during the monitoring year (October 1-September 30).

3.3.2 Non-Storm Water Volume Assessment

An annual non-storm water volume will be assigned to each persistently flowing major MS4 outfall station in the Copermittee's jurisdiction in the WMA. This annual non-storm water volume will be calculated by summing a daily flow volume for each persistently flowing major MS4 outfall station across each dry weather day. The following guidelines will be applied:

- Scenario A: If a major MS4 outfall station was visited once during the monitoring year, and a single discrete flow rate was measured, this flow rate will be applied across all dry weather days within the year. In Scenario A, the following equations will be applied.

$$V_{Daily} = Q \times 86{,}400$$

$$V_{Annual_Outfall} = V_{Daily} \times (\#Dry\ Days)$$

Where:

V_{Daily} = Daily flow volume from MS4 Outfall (cubic feet)

Q = Monitored outfall flow rate (cfs)

86,400 = Conversion Factor, seconds per day

$V_{Annual_Outfall}$ = Annual flow volume from MS4 Outfall (cubic feet)

$\#Dry\ Days$ = Number of dry weather days as assessed at the applicable County ALERT Station

- Scenario B: If a major MS4 outfall station was visited more than once during the monitoring year, and more than one discrete flow rate was measured, monthly dry weather flow volumes will be calculated. The monthly flow volume calculation method will vary based on whether a flow measurement was logged at the outfall during that month. For calendar months in which the outfall was visited one or more times, the mean of the measured flow rates will be applied to all dry weather days within the month. For calendar months in which the outfall was not visited, the mean of all flow rates observed at that site during the calendar year will be applied. In Scenario B, the following equations will be applied.

For each month in the monitoring year with at least one site visit and corresponding instantaneous flow estimate:

$$V_{Month_Mon} = \frac{\sum Q_{n_Month}}{n_{Month}} \times 86{,}400 \times (\#Dry\ Days/month)$$

For each month in the monitoring year with no site visits or instantaneous flow estimates:

$$V_{Month_NonMon} = \frac{\sum Q_{n_Year}}{n_{Year}} \times 86{,}400 \times (\#Dry\ Days/month)$$

To calculate an annual dry weather flow volume:

$$V_{Annual_Outfall} = \sum V_{Month_Mon} + \sum V_{Month_NonMon}$$

Where:

V_{Month_Mon}= Monthly flow volume from MS4 Outfall during month when outfall was visited one or more times (cubic feet)

Q_{n_Month} = Monitored outfall flow rate during visual observation event "n", during month when outfall was visited one or more times (cfs)

n_{Month} = Number of site visits with instantaneous flow measurements during month when outfall was visited one or more times

86,400 = Conversion Factor, seconds per day

#Dry Days = Number of dry weather days as assessed at the applicable County ALERT Station

V_{Month_NonMon}= Monthly flow volume from MS4 Outfall during month when outfall was not visited (cubic feet)

Q_{n_Year} = Monitored outfall flow rate during visual observation event "n", during monitoring year (cfs)

n_{Year}= Number of site visits with instantaneous flow measurements during monitoring year

$V_{Annual_Outfall}$ = Annual flow volume from MS4 Outfall (cubic feet)

- Scenario C: If a major MS4 outfall station was monitored continuously for a period of time longer than a day, a measured daily flow volume will be calculated for each monitored day. The mean of these daily flow volumes will be applied to all non-monitored dry days. In Scenario C, the following equations will be applied.

$$V_{Daily_n} = Measured\ Daily\ Flow\ Volume$$

$$V_{Daily_Mean} = \frac{\sum V_{Daily_n}}{n}$$

$$V_{Annual_Outfall} = \sum V_{Daily_n} + V_{Daily_Mean} \times (\#Dry\ Days - n)$$

Where:

V_{Daily_n} = Daily flow volume from MS4 Outfall during dry weather day with a continuous flow monitoring event (cubic feet)

V_{Daily_Mean} = Mean of measured daily outfall flow volumes (cubic feet)

n = number of dry days of continuous flow data at the outfall

$V_{Annual_Outfall}$ = Annual flow volume from MS4 Outfall (cubic feet)

#Dry Days = Number of dry weather days as assessed at the applicable County ALERT Station

- Scenario D: If a major MS4 outfall station was not visited during the monitoring year, the mean of annual outfall flow volumes for all monitored stations in the jurisdiction in the WMA will be applied.

When the annual dry weather flow volume has been calculated for each persistently flowing major MS4 outfall within the jurisdiction within the WMA, a Copermittee's annual non-storm water volume will be calculated by summing the annual dry weather flow volume for each persistently flowing outfall.

Within all the above scenarios, observations of ponding (i.e., evidence of non-storm water in the MS4, with no connectivity to the receiving water) will be assigned a flow rate of zero.

The methodology above assumes that a persistently flowing major MS4 outfall is flowing on 100% of dry weather days. This assumption is highly conservative.

3.3.3 Non-Storm Water Pollutant Load Assessment

The Copermittees will estimate the annual non-storm water pollutant loads collectively discharged from their persistently flowing major MS4 outfalls to receiving waters in the MS4. A load will be calculated for each pollutant analyzed at each high priority outfall, based on the arithmetic mean of the analytical results from the two dry weather outfall monitoring events at that outfall during the monitoring year. The following equation will be applied:

$$Pollutant\ Load_{Annual} = \left(V_{Annual} \times \frac{Pollutant\ Concentration_{Event1} + Pollutant\ Concentration_{Event2}}{2}\right) \times \mathrm{UC}$$

Where:
$Pollutant\ Load_{Annual}$ = Annual dry weather pollutant load from monitored outfall (lb or MPN)
V_{Annual} = Annual flow volume from MS4 outfall (cubic feet)
$Pollutant\ Concentration_{Event1}$ = Pollutant concentration measured at the outfall during dry weather monitoring event 1 (units vary)
$Pollutant\ Concentration_{Event2}$ = Pollutant concentration measured at the outfall during dry weather monitoring event 2 (units vary)
UC = Unit Conversion. Varies according to units used to express pollutant concentration, but common conversions are:

a. mg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\,g}{1000mg}\right)\left(\frac{1\,lb}{453.592\,g}\right)$
b. µg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\,g}{1\times10^6\mu g}\right)\left(\frac{1\,lb}{453.592\,g}\right)$
c. MPN/100mL: $UC = \left(\frac{100mL}{0.1L}\right)\left(\frac{28.317L}{1ft^3}\right)$

For each non-high priority persistently flowing outfall in a Copermittee's jurisdiction in the WMA, the mean of that Copermittee's monitored outfall results for each pollutant will be applied. It should be noted that only analytical data for outfalls that were identified as

persistently flowing during the monitoring year will be included in the mean. In this case, the following equation will be applied:

$$Pollutant\ Load_{Annual} = \left(V_{Annual} \times Pollutant\ Concentration_{Mean}\right) \times \mathrm{UC}$$

Where:
$Pollutant\ Load_{Annual}$ = Annual dry weather pollutant load from non-monitored outfall (lb or MPN)
V_{Annual} = Annual flow volume from MS4 outfall (cubic feet)
$Pollutant\ Concentration_{Mean}$ = Mean pollutant concentration measured across high priority persistently flowing outfalls within the Copermittee's jurisdiction in the WMA during the monitoring year (units vary)
UC = Unit Conversion. Varies according to units used to express pollutant concentration, but common conversions are:

a. mg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\ g}{1000mg}\right)\left(\frac{1\ lb}{453.592\ g}\right)$
b. µg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\ g}{1\times10^6\mu g}\right)\left(\frac{1\ lb}{453.592\ g}\right)$
c. MPN/100mL: $UC = \left(\frac{100mL}{0.1L}\right)\left(\frac{28.317L}{1ft^3}\right)$

For any pollutants not detected at the method detection limit (MDL), a concentration of MDL/2 will be applied in calculating loads.

3.4 Non-Storm Loads Not Subject to Copermittee's Legal Authority

Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters. If a Copermittee has identified a source of non-storm water not subject to their jurisdiction during field screening events or IDDE inspections, the volumes and loads for this source will be quantified according to the methodology outlined in Section 3.3.

4 Dry Weather Assessment Methodology Assumptions and Limitations

The calculation of the MS4 Permit required assessments necessitates a number of assumptions be made to translate the monitoring data into conclusions regarding flow volume and load for the entire WMA. This may introduce potential sources of error, while propagating potential errors inherent to the monitoring data. A summary of these assumptions and sources of error follows:

- Monitoring Error—Annual non-storm water volumes and pollutants loads are based on the results from dry weather visual observations and dry weather outfall monitoring events. Error in the monitoring data could have the effect of propagating error in all subsequent calculations. Potential sources of error in the monitoring data include the following:
  - *Monitored Flow Selection*—The pollutant loading estimations rely on monitoring data from one or more non-storm water visual observations per major MS4 outfall per year. The 2015-2016 monitoring year is the first year of dry weather flow volume and load calculation, and this period generally has represented a drought condition. This can affect the type and volume of non-storm water sources such as irrigation and ground water. The potential for inter-annual variability is a source of error in both the flow and chemistry data.
  - *Flow Measurement Method*—The MS4 Outfall Monitoring Plans provides different options to determine the non-storm water volume: (1) field-based estimation methods (e.g., “float method” or “bucket and stopwatch method”) and (2) equipment-based flow measurements. The method chosen varies among outfalls and Copermittees, introducing inter-site variability in volume estimations. The field-based estimation methods introduce various amounts of human error with the use of stopwatches and error in determining volume amounts in non-graduated buckets. Consistent equipment-based flow monitoring approach is more accurate and precise compared to the field-based estimation methods. However, this approach introduces variability through the flow measurement device and sensor type used to account for site-specific conditions, and can also be cost and time prohibitive across the number of outfalls monitored. Each measurement device and sensor type has an inherent accuracy range (e.g., ±2% accuracy for sub-AV probes). Additionally, each flow measurement device and sensor type can produce slightly different values for the same event, adding a layer of inter-site variability.
  - *Rainfall Measurement*—The accuracy of determining the number of dry days relies on the accuracy of the rainfall measurements representing that outfall. Rainfall measurements were based on the County of San Diego ALERT rain gauge closest to the majority of wet weather outfalls in each WMA, and not site specific rain data. Rainfall totals across the San Diego area can vary widely within a given storm.

- *Chemistry Results*—An attempt to maintain regional consistency in reporting limits (RLs) and method detection limits (MDLs) was made. However, differences in lab capabilities can sometimes lead to different RLs and MDLs. This can introduce error if constituent concentrations are near or below the MDL for one monitoring event or Copermittee, and the MDL differs for another monitoring event or Copermittee. An attempt was made to account for this type of error by assigning constituents that were not detected a value of MDL/2 for the purposes of the assessment calculations.

❖ Assessment Methodology Error—The assessments require a series of assumptions and extrapolations be made regarding the determination of annual volumes and pollutant loadings. Each assumption carries the possibility of error, including the following:

- *Annual Volume Estimation Representativeness*—Regardless of the flow measurement method utilized, error is introduced when utilizing the median of more than one field measurement to determine an annual volume estimation. It is assumed these field measurements are representative of "typical" non-storm water conditions since persistently flowing non-storm water flows are relatively consistent through the year. However, this may not be the case, and error could be introduced into these estimations. For example, groundwater base flows can increase during the wet season, increasing dry weather flow rates. Or, alternatively, irrigation and irrigation runoff may increase during the dry season, increasing dry weather flow rates. Unless flow observations are made throughout the year under a variety of conditions, this seasonal variation may not be captured.

- *Annual Volume Estimation Confidence*—Based on availability of data, multiple calculation methods are used to estimate annual flow volume. The confidence associated with each estimate varies because differing amounts of data go into each estimate. That is to say, volumes calculated based on continuous flow data are associated with a higher confidence than volumes based on one or two instantaneous flow measurements.

- *Annual Pollutant Load Estimations*—The annual volume estimation error introduced previously disseminates into the annual pollutant load estimations through calculations discussed in Section 3.3.3. Although persistent non-storm water flows are relatively consistent throughout the year, collecting two grab samples in one year provides a very brief snapshot in time of the pollutant concentration at an outfall, which may not be indicative of typical conditions or pollutant loadings. Additionally, using an arithmetic mean as a "typical" value of pollutant concentrations to estimate pollutant loads can introduce error if the sample size of the mean is too small, as means are sensitive to sample size.

Attachment C.4 – Dry Weather Volumes and Pollutant Loads

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Table C.4-1
San Dieguito River WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part I

Analyte	Units	City of San Diego													
Site ID		DW0001	DW0005	DW0033	DW0284	DW0317	DW0332	DW0333	DW0619	DW0636	DW0689	DW0759	DW0889	DW0892	DW0913
Highest Priority Outfall		N	N	Y	Y	Y	N	Y	N	Y	N	N	N	N	N
Annual Flow Volume	cf	0	0	49,550	78,252	1,602,783	0	0	0	211,644	45,317	3,066,535	20,444	1,529,292	509,953
Conventional Parameters															
Chloride	lb	0	0	618.7	1319	59035	0	0	0	9909	1364	92273	615.2	46017	15345
Hardness (Total)	lb	0	0	1191	2760	90053	0	0	0	14534	2142	144919	966.1	72272	24100
MBAS	lb	0	0	1.145	0.6131	4.403	0	0	0	1.123	0.4085	27.64	0.1843	13.79	4.597
Indicator Bacteria															
Enterococcus	MPN	0	0	7.58E+11	8.71E+12	8.17E+12	0	0	0	7.79E+11	1.53E+12	1.04E+14	6.90E+11	5.16E+13	1.72E+13
Fecal Coliform	MPN	0	0	2.46E+11	8.76E+12	1.11E+12	0	0	0	1.65E+11	1.38E+12	9.31E+13	6.21E+11	4.64E+13	1.55E+13
Total Coliform	MPN	0	0	4.33E+13	9.42E+13	1.47E+14	0	0	0	7.61E+12	2.99E+13	2.02E+15	1.35E+13	1.01E+15	3.36E+14
Total Metals															
Aluminum	lb	0	0	0.6341	1.807	1.071	0	0	0	0.1480	0.3739	25.30	0.1687	12.62	4.208
Cadmium	lb	0	0	0.0017	0.0033	0.0563	0	0	0	0.0074	0.0017	0.1120	7.47E-04	0.0559	0.0186
Chromium	lb	0	0	0.0039	0.0061	0.1251	0	0	0	0.0165	0.0053	0.3561	0.0024	0.1776	0.0592
Chromium (III)*	lb	See Dissolved Chromium (III) and Dissolved Chromium (VI)*													
Chromium (VI)*	lb														
Copper	lb	0	0	0.0479	0.9453	0.3352	0	0	0	0.1526	0.1342	9.082	0.0605	4.529	1.510
Iron	lb	0	0	1.3611	2.394	3.952	0	0	0	30.26	1.8949	128.2	0.8548	63.95	21.32
Lead	lb	0	0	0.0031	0.0088	0.1576	0	0	0	0.0360	0.0051	0.3438	0.0023	0.1715	0.0572
Manganese	lb	0	0	0.4702	0.2565	10.51	0	0	0	8.720	0.5536	37.46	0.2498	18.68	6.230
Mercury	lb	0	0	1.55E-04	2.44E-04	5.00E-03	0	0	0	6.61E-04	1.41E-04	0.0096	6.38E-05	0.0048	0.0016
Nickel	lb	0	0	0.0079	0.0156	0.2301	0	0	0	0.0416	0.0082	0.5552	0.0037	0.2769	0.092
Silver	lb	0	0	0.0043	0.0067	0.1376	0	0	0	0.0182	0.0039	0.2632	0.0018	0.1313	0.044
Zinc	lb	0	0	0.0943	0.3713	1.681	0	0	0	0.4360	0.0966	6.540	0.0436	3.261	1.088
Dissolved Metals															
Aluminum	lb	0	0	0.0337	0.0977	2.501	0	0	0	0.2147	0.0444	3.007	0.0200	1.499	0.5000
Cadmium	lb	0	0	0.0017	0.0027	0.0563	0	0	0	0.0074	0.0016	0.1077	0.0007	0.0537	0.0179
Chromium	lb	0	0	0.0023	0.0052	0.0750	0	0	0	0.0099	0.0041	0.2745	0.0018	0.1369	0.0457
Chromium (III)*	lb	0	0	7.73E-04	0.0012	0.0250	0	0	0	0.0033	8.60E-04	0.0582	3.88E-04	0.0290	0.0097
Chromium (VI)*	lb	0	0	3.87E-04	0.0018	0.0125	0	0	0	0.0017	0.0025	0.1705	0.0011	0.0850	0.0283
Copper	lb	0	0	0.0201	0.4250	0.1526	0	0	0	0.0720	0.0679	4.592	0.0306	2.290	0.7636
Iron	lb	0	0	0.1918	0.7352	2.401	0	0	0	2.312	0.2481	16.79	0.1119	8.373	2.7920
Lead	lb	0	0	0.0023	0.0037	0.1976	0	0	0	0.0334	0.0045	0.3053	0.0020	0.1523	0.0508
Manganese	lb	0	0	0.2939	0.1637	9.105	0	0	0	5.814	0.3754	25.40	0.1693	12.67	4.224
Mercury	lb	0	0	1.55E-04	2.44E-04	0.0050	0	0	0	6.61E-04	1.41E-04	0.0096	6.38E-05	0.0048	0.0016
Nickel	lb	0	0	0.0079	0.0154	0.2702	0	0	0	0.0403	0.0086	0.5801	0.0039	0.2893	0.0965
Silver	lb	0	0	0.0043	0.0067	0.1376	0	0	0	0.0182	0.0039	0.2632	0.0018	0.1313	0.0438
Zinc	lb	0	0	0.0572	0.1514	0.6129	0	0	0	0.2048	0.0666	4.504	0.0300	2.246	0.7489

Table C.4-1
San Dieguito WMA River Dry Season Flow Volume and Pollutant Loads: City of San Diego Part I (continued)

Analyte	Units	City of San Diego													
Site ID		DW0001	DW0005	DW0033	DW0284	DW0317	DW0332	DW0333	DW0619	DW0636	DW0689	DW0759	DW0889	DW0892	DW0913
Highest Priority Outfall		N	N	Y	Y	Y	N	Y	N	Y	N	N	N	N	N
Annual Flow Volume	cf	0	0	49,550	78,252	1,602,783	0	0	0	211,644	45,317	3,066,535	20,444	1,529,292	509,953
Nutrients															
Ammonia N	lb	0	0	5.259	91.60	10.51	0	0	0	5.483	12.04	815.0	5.433	406.4	135.5
Nitrite as N**	lb	0	0	1.593	0.1710	91.05	0	0	0	12.02	1.856	125.6	0.8372	62.63	20.88
Nitrate as N**	lb	0	0	4.485	7.816	305.2	0	0	0	37.66	7.752	524.5	3.497	261.6	87.23
Nitrate/Nitrite N**	lb	0	0	NR	NR	NR	0	0	0	NR	NR	NR	NR	NR	NR
Total Nitrogen	lb	0	0	16.39	204.7	335.2	0	0	0	46.24	33.95	2297	15.32	1146	382.0
TKN	lb	0	0	10.21	197.4	31.52	0	0	0	8.786	25.96	1757	11.71	876.0	292.1
Phosphate, Dissolved P	lb	0	0	1.871	24.96	2.877	0	0	0	0.4129	3.384	229.0	1.526	114.2	38.08
Phosphorus, Total	lb	0	0	2.103	24.16	3.502	0	0	0	5.133	3.640	246.3	1.642	122.8	40.96
Orthophosphate as P	lb	0	0	1.810	4.152	4.603	0	0	0	0.6276	1.015	68.67	0.4578	34.25	11.42
Sulfate as SO4	lb	0	0	850.7	2443	39523	0	0	0	5219	1137	76958	513.1	38379	12798
Solid Parameters															
TDS	lb	0	0	2799	6351	205121	0	0	0	31710	5010	339038	2260	169080	56381
TSS	lb	0	0	88.16	197.8	85.80	0	0	0	38.32	45.95	3109	20.73	1551	517.1
Synthetic Organics															
Pentachlorophenol	lb	0	0	0.0148	0.0244	0.5153	0	0	0	0.0651	0.0140	0.9486	0.0063	0.4731	0.1577

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table C.4-2
San Dieguito River WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part II

Analyte	Units	City of San Diego														
Site ID		DW0914	DW0949	DW0956	DW1019	DW1099	DW1100	DW1109	DW1110	DW1117	DW1118	DW1119	DW1120	DW1121	DW1138	**Jurisdictional Total**
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	N	N	N	**NA**
Annual Flow Volume	cf	338,455	509,953	20,444	1,147,111	0	85,182	2,669,021	1,019,339	0	0	32,369	2,044,357	0	1,272,044	**16,252,044**
Conventional Parameters																
Chloride	lb	10184	15345	615.2	34517	0	2563	80312	30672	0	0	974.0	61516	0	38276	**501,471**
Hardness (Total)	lb	15995	24100	966.1	54210	0	4026	126133	48172	0	0	1530	96613	0	60115	**784,795**
MBAS	lb	3.051	4.597	0.1843	10.34	0	0.7679	24.06	9.189	0	0	0.2918	18.43	0	11.47	**136.28**
Indicator Bacteria																
Enterococcus	MPN	1.14E+13	1.72E+13	6.90E+11	3.87E+13	0	2.88E+12	9.01E+13	3.44E+13	0	0	1.09E+12	6.90E+13	0	4.29E+13	**5.01E+14**
Fecal Coliform	MPN	1.03E+13	1.55E+13	6.21E+11	3.48E+13	0	2.59E+12	8.11E+13	3.10E+13	0	0	9.83E+11	6.21E+13	0	3.86E+13	**4.45E+14**
Total Coliform	MPN	2.23E+14	3.36E+14	1.35E+13	7.56E+14	0	5.61E+13	1.76E+15	6.72E+14	0	0	2.13E+13	1.35E+15	0	8.38E+14	**9.72E+15**
Total Metals																
Aluminum	lb	2.793	4.208	0.1687	9.466	0	0.7029	22.02	8.411	0	0	0.2671	16.87	0	10.50	**121.74**
Cadmium	lb	0.0124	0.0186	7.47E-04	0.0419	0	0.0031	0.0975	0.0372	0	0	0.0012	0.0747	0	0.0465	**0.5914**
Chromium	lb	0.0393	0.0592	0.0024	0.1332	0	0.0099	0.3099	0.1184	0	0	0.0038	0.2374	0	0.1477	**1.8132**
Chromium (III)*	lb	See Dissolved Chromium (III) and Dissolved Chromium (VI)*														
Chromium (VI)*	lb															
Copper	lb	1.002	1.510	0.0605	3.397	0	0.2523	7.905	3.019	0	0	0.0959	6.055	0	3.767	**43.861**
Iron	lb	14.15	21.32	0.8548	47.97	0	3.562	111.6	42.62	0	0	1.353	85.48	0	53.19	**636.32**
Lead	lb	0.0379	0.0572	0.0023	0.1286	0	0.0096	0.2993	0.1143	0	0	0.0036	0.2292	0	0.1426	**1.8099**
Manganese	lb	4.135	6.230	0.2498	14.01	0	1.041	32.61	12.45	0	0	0.3955	24.98	0	15.54	**194.78**
Mercury	lb	0.0011	0.0016	6.38E-05	0.0036	0	2.66E-04	0.0083	0.0032	0	0	1.01E-04	0.0064	0	0.0040	**0.0507**
Nickel	lb	0.0613	0.0923	0.0037	0.2077	0	0.0154	0.4832	0.1845	0	0	0.0059	0.3701	0	0.2303	**2.8860**
Silver	lb	0.0291	0.0438	0.0018	0.0985	0	0.0073	0.2291	0.0875	0	0	0.0028	0.1755	0	0.1092	**1.3951**
Zinc	lb	0.7218	1.088	0.0436	2.446	0	0.1817	5.692	2.174	0	0	0.0690	4.360	0	2.713	**33.099**
Dissolved Metals																
Aluminum	lb	0.3318	0.5000	0.0200	1.125	0	0.0835	2.617	0.9994	0	0	0.0317	2.004	0	1.247	**16.877**
Cadmium	lb	0.0119	0.0179	7.18E-04	0.0403	0	0.0030	0.0937	0.0358	0	0	0.0011	0.0718	0	0.0447	**0.5707**
Chromium	lb	0.0303	0.0457	0.0018	0.1027	0	0.0076	0.2389	0.0913	0	0	0.0029	0.1830	0	0.1139	**1.3735**
Chromium (III)*	lb	0.0064	0.0097	3.88E-04	0.0218	0	0.0016	0.0507	0.0193	0	0	0.0006	0.0388	0	0.0241	**0.3019**
Chromium (VI)*	lb	0.0188	0.0283	0.0011	0.0638	0	0.0047	0.1484	0.0567	0	0	0.0018	0.1137	0	0.0707	**0.8119**
Copper	lb	0.5068	0.7636	0.0306	1.718	0	0.1275	3.996	1.526	0	0	0.0485	3.061	0	1.905	**22.096**
Iron	lb	1.853	2.792	0.1119	6.280	0	0.4664	14.61	5.581	0	0	0.1772	11.19	0	6.964	**83.986**
Lead	lb	0.0337	0.0508	0.0020	0.1142	0	0.0085	0.2658	0.1015	0	0	0.0032	0.2036	0	0.1267	**1.6618**
Manganese	lb	2.803	4.224	0.1693	9.502	0	0.7056	22.11	8.443	0	0	0.2681	16.93	0	10.54	**133.90**
Mercury	lb	0.0011	0.0016	6.38E-05	0.0036	0	2.66E-04	0.0083	0.0032	0	0	1.01E-04	0.0064	0	0.0040	**0.0507**
Nickel	lb	0.0640	0.0965	0.0039	0.2170	0	0.0161	0.5049	0.1928	0	0	0.0061	0.3867	0	0.2406	**3.0405**
Silver	lb	0.0291	0.0438	0.0018	0.0985	0	0.0073	0.2291	0.0875	0	0	0.0028	0.1755	0	0.1092	**1.3951**
Zinc	lb	0.4971	0.7489	0.0300	1.685	0	0.1251	3.920	1.497	0	0	0.0475	3.002	0	1.868	**22.042**

Table C.4-2
San Dieguito River WMA Dry Season Flow Volume and Pollutant Loads: City of San Diego Part II (continued)

Analyte	Units	City of San Diego														
Site ID		DW0914	DW0949	DW0956	DW1019	DW1099	DW1100	DW1109	DW1110	DW1117	DW1118	DW1119	DW1120	DW1121	DW1138	**Jurisdictional Total**
Highest Priority Outfall		N	N	N	N	N	N	N	N	N	N	N	N	N	N	NA
Annual Flow Volume	cf	338,455	509,953	20,444	1,147,111	0	85,182	2,669,021	1,019,339	0	0	32,369	2,044,357	0	1,272,044	**16,252,044**
Nutrients																
Ammonia N	lb	89.95	135.52	5.433	304.9	0	22.64	709.3	270.9	0	0	8.602	543.3	0	338.1	**3,915.8**
Nitrite as N**	lb	13.86	20.88	0.8372	46.98	0	3.488	109.3	41.74	0	0	1.326	83.72	0	52.09	**690.87**
Nitrate as N**	lb	57.89	87.23	3.497	196.2	0	14.57	456.5	174.4	0	0	5.537	349.7	0	217.6	**2,802.9**
Nitrate/Nitrite N**	lb	NR	NR	NR	NR	0	NR	NR	NR	0	0	NR	NR	0	NR	**NR**
Total Nitrogen	lb	253.5	382.0	15.32	859.3	0	63.81	1999	763.6	0	0	24.25	1532	0	952.9	**11,322.6**
TKN	lb	193.9	292.1	11.71	657.1	0	48.80	1529	583.9	0	0	18.54	1171	0	728.7	**8,445.1**
Phosphate, Dissolved P	lb	25.27	38.08	1.526	85.65	0	6.360	199.3	76.11	0	0	2.417	152.6	0	94.98	**1,098.56**
Phosphorus, Total	lb	27.19	40.96	1.642	92.14	0	6.842	214.4	81.88	0	0	2.600	164.2	0	102.2	**1,184.4**
Orthophosphate as P	lb	7.58	11.42	0.4578	25.69	0	1.907	59.77	22.83	0	0	0.7248	45.78	0	28.48	**331.63**
Sulfate as SO4	lb	8494	12798	513.1	28788	0	2138	66982	25582	0	0	812.3	51306	0	31923	**407,157**
Solid Parameters																
TDS	lb	37420	56381	2260	126825	0	9418	295089	112699	0	0	3579	226025	0	140638	**1,828,083**
TSS	lb	343.2	517.1	20.73	1163	0	86.37	2706	1034	0	0	32.82	2073	0	1290	**14,919**
Synthetic Organics																
Pentachlorophenol	lb	0.1047	0.1577	0.0063	0.3548	0	0.0263	0.8256	0.3153	0	0	0.0100	0.6324	0	0.3935	**5.0461**

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Table C.4-3
San Dieguito WMA River Dry Season Flow Volume and Pollutant Loads: Cities of Del Mar, Solana Beach, Escondido, and Poway

Analyte	Units	City of Del Mar[1]		City of Solana Beach		City of Escondido		City of Poway	
Site ID		S-05[2]	**Jurisdictional Total**	SB-25	**Jurisdictional Total**	ES_HDG_102	**Jurisdictional Total**	140	**Jurisdictional Total**
Highest Priority Outfall		Y	**NA**	Y	**NA**	Y	**NA**	Y	**NA**
Annual Flow Volume	cf	225,220	**225,220**	6,004	**6,004**	252,480	**252,480**	0	**0**
Conventional Parameters									
Chloride	lb	7452	**7452**	82.46	**82.46**	2829	**2829**	0	**0**
Hardness (Total)	lb	7663	**7663**	147.1	**147.1**	8338	**8338**	0	**0**
MBAS	lb	0.7030	**0.7030**	0.0562	**0.0562**	0.6305	**0.6305**	0	**0**
Indicator Bacteria									
Enterococcus	MPN	8.93E+12	**8.93E+12**	4.49E+11	**4.49E+11**	6.01E+12	**6.01E+12**	0	**0**
Fecal Coliform	MPN	2.55E+10	**2.55E+10**	5.36E+09	**5.36E+09**	6.08E+12	**6.08E+12**	0	**0**
Total Coliform	MPN	1.91E+11	**1.91E+11**	8.16E+11	**8.16E+11**	3.65E+13	**3.65E+13**	0	**0**
Total Metals									
Aluminum	lb	0.1828	**0.1828**	0.0219	**0.0219**	0.4886	**0.4886**	0	**0**
Cadmium	lb	0.0014	**0.0014**	3.75E-05	**3.75E-05**	0.0020	**0.0020**	0	**0**
Chromium	lb	NR***	**NR*** **	NR***	**NR*** **	0.0808	**0.0808**	0	**0**
Chromium (III)	lb	NR***	**NR*** **	NR***	**NR*** **	0.0808	**0.0808**	0	**0**
Chromium (VI)	lb	NR***	**NR*** **	NR***	**NR*** **	0.0065	**0.0065**	0	**0**
Copper	lb	1.153	**1.153**	0.0054	**0.0054**	0.1497	**0.1497**	0	**0**
Iron	lb	0.3656	**0.3656**	0.0292	**0.0292**	0.5595	**0.5595**	0	**0**
Lead	lb	0.0042	**0.0042**	9.37E-05	**9.37E-05**	0.0024	**0.0024**	0	**0**
Manganese	lb	0.1406	**0.1406**	0.0067	**0.0067**	0.1836	**0.1836**	0	**0**
Mercury	lb	5.62E-04	**5.62E-04**	1.50E-05	**1.50E-05**	0.0079	**0.0079**	0	**0**
Nickel	lb	NR***	**NR*** **	NR***	**NR*** **	0.0102	**0.0102**	0	**0**
Silver	lb	NR***	**NR*** **	NR***	**NR*** **	0.0039	**0.0039**	0	**0**
Zinc	lb	0.1547	**0.1547**	0.0081	**0.0081**	0.1970	**0.1970**	0	**0**
Dissolved Metals									
Aluminum	lb	0.0703	**0.0703**	0.0111	**0.0111**	0.1253	**0.1253**	0	**0**
Cadmium	lb	4.92E-04	**4.92E-04**	3.56E-05	**3.56E-05**	0.0020	**0.0020**	0	**0**
Chromium	lb	NR***	**NR*** **	NR***	**NR*** **	0.0808	**0.0808**	0	**0**
Chromium (III)	lb	NR***	**NR*** **	NR***	**NR*** **	0.0808	**0.0808**	0	**0**
Chromium (VI)	lb	NR***	**NR*** **	NR***	**NR*** **	0.0065	**0.0065**	0	**0**
Copper	lb	1.0686	**1.0686**	0.0034	**0.0034**	0.1245	**0.1245**	0	**0**
Iron	lb	0.0844	**0.0844**	0.0135	**0.0135**	0.1340	**0.1340**	0	**0**
Lead	lb	4.22E-04	**4.22E-04**	2.44E-05	**2.44E-05**	0.0024	**0.0024**	0	**0**
Manganese	lb	0.1125	**0.1125**	0.0021	**0.0021**	0.1222	**0.1222**	0	**0**
Mercury	lb	0.0028	**0.0028**	4.50E-05	**4.50E-05**	0.0079	**0.0079**	0	**0**
Nickel	lb	NR***	**NR*** **	NR***	**NR*** **	0.0096	**0.0096**	0	**0**
Silver	lb	NR***	**NR*** **	NR***	**NR*** **	0.0039	**0.0039**	0	**0**
Zinc	lb	0.1265	**0.1265**	0.0041	**0.0041**	0.1891	**0.1891**	0	**0**

Table C.4-3
San Dieguito River WMA Dry Season Flow Volume and Pollutant Loads: Cities of Del Mar, Solana Beach, Escondido, and Poway (continued)

Analyte	Units	City of Del Mar[1]		City of Solana Beach		City of Escondido		City of Poway	
Site ID		S-05[2]	**Jurisdictional Total**	SB-25	**Jurisdictional Total**	ES_HDG_102	**Jurisdictional Total**	140	**Jurisdictional Total**
Highest Priority Outfall		Y	**NA**	Y	**NA**	Y	**NA**	Y	**NA**
Annual Flow Volume	cf	225,220	**225,220**	6,004	**6,004**	252,480	**252,480**	0	**0**
Nutrients									
Ammonia N	lb	0.1406	**0.1406**	0.2305	**0.2305**	3.704	**3.704**	0	**0**
Nitrite as N**	lb	0.0492	**0.0492**	0.1387	**0.1387**	2.086	**2.086**	0	**0**
Nitrate as N**	lb	31.07	**31.07**	0.3205	**0.3205**	86.38	**86.38**	0	**0**
Nitrate/Nitrite N**	lb	31.07	**31.07**	0.4592	**0.4592**	NR	**NR**	0	**0**
Total Nitrogen	lb	30.93	**30.93**	1.668	**1.668**	100.1	**100.1**	0	**0**
TKN	lb	1.758	**1.758**	1.199	**1.199**	13.63	**13.63**	0	**0**
Phosphate, Dissolved P	lb	0.3515	**0.3515**	0.1106	**0.1106**	NA	**NA**	0	**0**
Phosphorus, Total	lb	1.406	**1.406**	0.1631	**0.1631**	2.364	**2.364**	0	**0**
Orthophosphate as P	lb	1.125	**1.125**	0.0937	**0.0937**	2.601	**2.601**	0	**0**
Sulfate as SO4	lb	4893	**4893**	106.6	**106.6**	NA	**NA**	0	**0**
Solid Parameters									
TDS	lb	23902	**23902**	348.4	**348.4**	18237	**18237**	0	**0**
TSS	lb	42.18	**42.18**	2.436	**2.436**	45.95	**45.95**	0	**0**
Synthetic Organics									
Pentachlorophenol	lb	0.0078	**0.0078**	2.08E-04	**2.08E-04**	0.0079	**0.0079**	0	**0**

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen

1. Del Mar outfall S-07 was classified as a highest priority persistently flowing outfall in the WQIP, but was re-classified as transient following the 2015-2016 monitoring season. No dry weather flows volumes or loads are presented. Analytical results for this outfall are included in Attachment C.1.
2. Outfall S-05 is less than 36 inches in diameter and not classified as a major MS4 outfall. It is monitored voluntarily.

* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit), ***NAL analyte not required for Ocean Receiving Waters

Table C.4-4
San Dieguito WMA River Dry Season Flow Volume and Pollutant Loads: County of San Diego

Analyte	Units	County of San Diego										
Site ID		MS4-SDG-072	MS4-SDG-074	MS4-SDG-075	MS4-SDG-077	MS4-SDG-080	MS4-SDG-084	MS4-SDG-085	MS4-SDG-115	MS4-SDG-144	MS4-SDG-171	**Jurisdictional Total**
Highest Priority Outfall		Y	Y	N	Y	Y	N	N	Y	N	N	**NA**
Annual Flow Volume	cf	76,711	540,534	0	36,395	2,086,703	92,295	910,340	1,891,296	48,346	0	**5,682,620**
Conventional Parameters												
Chloride	lb	2083	27671	0	420.3	108775	3106	30632	49590	1627	0	**223,903**
Hardness (Total)	lb	3118	26878	0	964.5	166094	4538	44760	93394	2377	0	**342,122**
MBAS	lb	2.035	1.687	0	0.1136	6.513	0.7202	7.104	5.904	0.3773	0	**24.455**
Indicator Bacteria												
Enterococcus	MPN	9.56E+11	1.33E+14	0	2.27E+12	2.87E+13	6.17E+12	6.08E+13	8.03E+10	3.23E+12	0	**2.35E+14**
Fecal Coliform	MPN	8.69E+11	4.36E+13	0	1.39E+12	2.07E+15	2.07E+13	2.04E+14	2.95E+11	1.09E+13	0	**2.35E+15**
Total Coliform	MPN	2.74E+13	4.52E+14	0	2.83E+13	2.67E+16	2.72E+14	2.69E+15	4.55E+12	1.43E+14	0	**3.03E+16**
Total Metals												
Aluminum	lb	0.8907	3.611	0	0.2988	5.341	0.5485	5.410	1.240	0.2873	0	**17.627**
Cadmium	lb	0.0010	0.0186	0	4.54E-04	0.0521	0.0022	0.0222	0.0708	0.0012	0	**0.1685**
Chromium	lb	0.0041	0.0270	0	0.0017	0.0651	0.0037	0.0369	0.0413	0.0020	0	**0.1819**
Chromium (III)	lb	0.0041	0.0270	0	0.0017	0.0651	0.0037	0.0369	0.0413	0.0020	0	**0.1819**
Chromium (VI)	lb	0.0024	0.0169	0	0.0011	0.0651	0.0029	0.0284	0.0590	0.0015	0	**0.1774**
Copper	lb	0.0431	0.6749	0	0.0318	1.433	0.0685	0.6757	0.6435	0.0359	0	**3.6064**
Iron	lb	2.0377	16.55	0	0.5214	4.755	1.399	13.80	3.778	0.7328	0	**43.57**
Lead	lb	0.0017	0.0152	0	5.68E-04	0.0130	0.0014	0.0142	0.0118	7.55E-04	0	**0.0587**
Manganese	lb	1.123	9.769	0	0.4022	4.820	0.9277	9.150	7.911	0.4859	0	**34.588**
Mercury	lb	1.92E-04	0.0013	0	9.09E-05	0.0052	2.30E-04	0.0023	0.0047	1.21E-04	0	**0.0142**
Nickel	lb	0.0168	0.2193	0	0.0091	0.6513	0.0236	0.2324	0.1712	0.0123	0	**1.3361**
Silver	lb	4.79E-04	0.0034	0	2.27E-04	0.0130	5.76E-04	0.0057	0.0118	3.02E-04	0	**0.0355**
Zinc	lb	0.1054	23.87	0	0.0386	1.107	0.8769	8.650	0.7084	0.4594	0	**35.820**
Dissolved Metals												
Aluminum	lb	0.0239	0.6580	0	0.0261	0.3908	0.0463	0.4566	0.1387	0.0243	0	**1.7648**
Cadmium	lb	5.63E-04	0.0169	0	0.0034	0.0189	0.0027	0.0263	0.0041	0.0014	0	**0.0743**
Chromium	lb	3.83E-04	0.0078	0	5.68E-04	0.0072	7.43E-04	0.0073	0.0035	3.89E-04	0	**0.0279**
Chromium (III)	lb	3.83E-04	0.0078	0	5.68E-04	0.0072	7.43E-04	0.0073	0.0035	3.89E-04	0	**0.0279**
Chromium (VI)	lb	0.0024	0.0169	0	0.0011	0.0651	0.0029	0.0284	0.0590	0.0015	0	**0.1774**
Copper	lb	0.0192	0.4218	0	0.0148	0.7165	0.0343	0.3387	0.1535	0.0180	0	**1.7167**
Iron	lb	0.6776	0.3712	0	0.1465	0.5211	0.2622	2.586	0.7675	0.1373	0	**5.469**
Lead	lb	2.63E-04	6.75E-04	0	1.48E-04	0.0039	2.30E-04	0.0023	0.0035	1.21E-04	0	**0.0112**
Manganese	lb	0.9003	8.858	0	0.3590	3.908	0.8049	7.939	7.084	0.4216	0	**30.275**
Mercury	lb	NA	NA	0	NA	NA	NA	NA	NA	NA	0	**NA**
Nickel	lb	0.0096	0.1519	0	0.0045	0.4559	0.0145	0.1426	0.0649	0.0076	0	**0.8515**
Silver	lb	2.39E-04	0.0017	0	1.14E-04	0.0065	2.88E-04	0.0028	0.0059	1.51E-04	0	**0.0177**
Zinc	lb	0.0694	21.98	0	0.0545	1.824	0.8997	8.874	0.6671	0.4253	0	**34.844**

Table C.4-4
San Dieguito River WMA Dry Season Flow Volume and Pollutant Loads: County of San Diego (continued)

Analyte	Units	County of San Diego										
Site ID		MS4-SDG-072	MS4-SDG-074	MS4-SDG-075	MS4-SDG-077	MS4-SDG-080	MS4-SDG-084	MS4-SDG-085	MS4-SDG-115	MS4-SDG-144	MS4-SDG-171	**Jurisdictional Total**
Highest Priority Outfall		Y	Y	N	Y	Y	N	N	Y	N	N	**NA**
Annual Flow Volume	cf	76,711	540,534	0	36,395	2,086,703	92,295	910,340	1,891,296	48,346	0	**5,682,620**
Nutrients												
Ammonia N	lb	1.437	23.79	0	0.9088	16.28	1.780	17.56	1.771	0.9326	0	**64.46**
Nitrite as N**	lb	0.0168	0.3965	0	0.0568	0.8793	0.0582	0.5740	0.4132	0.0305	0	**2.4253**
Nitrate as N**	lb	0.5507	116.3	0	0.1250	231.9	16.47	162.5	1051	8.629	0	**1,587.2**
Nitrate/Nitrite N**	lb	1.0057	116.6	0	0.1818	232.5	18.34	180.9	1051	9.608	0	**1,610.0**
Total Nitrogen	lb	6.704	172.1	0	9.656	273.6	25.18	248.4	1063	13.19	0	**1,811.4**
TKN	lb	6.226	55.68	0	9.429	34.20	8.628	85.10	14.76	4.520	0	**218.54**
Phosphate, Dissolved P	lb	1.054	7.593	0	1.341	12.05	1.328	13.10	2.952	0.6957	0	**40.11**
Phosphorus, Total	lb	1.652	8.774	0	1.420	23.45	1.648	16.25	2.361	0.8632	0	**56.42**
Orthophosphate as P	lb	1.437	6.411	0	1.284	21.49	1.417	13.98	1.181	0.7425	0	**47.95**
Sulfate as SO4	lb	1485	7086	0	499.9	67740	1911	18849	43096	1001	0	**141,668**
Solid Parameters												
TDS	lb	7303	64840	0	2051	315252	9765	96317	201310	5115	0	**701,954**
TSS	lb	32.56	123.2	0	25.79	247.5	27.89	275.1	59.04	14.61	0	**805.6**
Synthetic Organics												
Pentachlorophenol	lb	0.0027	0.0187	0	0.0013	0.0723	0.0032	0.0315	0.0655	0.0017	0	**0.1969**

cf = cubic feet; lb = pounds; MPN = most probable number; N = nitrogen; NR = Not Required; P = phosphorus; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen
* = Laboratory methods for Chromium (III) and Chromium (VI) require filtering the sample; therefore, the dissolved and total fractions of Chromium (III) and Chromium (VI) are equal
** = Nitrite and nitrate can be analyzed separately or together (Table D-7, MS4 Permit)

Attachment D – Data Quality Objectives and Quality Control

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1 Data Quality Objectives

This attachment addresses Quality Assurance/Quality Control (QA/QC) activities associated with the San Dieguito River Watershed Management Area Monitoring Program for both Dry Weather Persistent MS4 Outfall Discharge Monitoring and Wet Weather MS4 Outfall Monitoring, and the relevant data quality objectives (DQOs). The QA/QC program included both field and laboratory procedures.

DQOs are quantitative and qualitative statements that define project objectives and specify the acceptable ranges of field sampling and laboratory performance. Results that did not meet data quality objectives were qualified and may be considered estimates. Data quality objectives for this project included the following:

- Precision
- Frequency

Precision describes how well repeated measurements agree. The evaluation of precision described here relates to repeated measurements/samples collected in the field (field duplicates). Precision measurements were determined by comparing results from field duplicates to the precision objectives. Relative percent differences (RPDs) were calculated to determine the precision between duplicate samples. This calculation is shown below:

$$RPD = \frac{abs[x_1 - x_2]}{0.5 * (x_1 + x_2)}$$

Where:

abs is the absolute value.

x_1 is measurement 1 (e.g., Sample).

x_2 is measurement 2 (e.g., Duplicate).

Frequency is the rate at which a required analysis is performed. The frequency of field QC samples and laboratory QC samples is verified with stated DQOs. The field QC frequency DQOs were five percent. Laboratory frequency DQOs were dependent upon the QC sample type.

DQO results for precision and frequency are presented in the following sections.

2 Field Quality Assurance/Quality Control

This section addresses QA/QC activities associated with field sampling. The field QA/QC samples were used to evaluate potential contamination and sampling errors applicable to field sampling introduced prior to submittal of the samples to the analytical laboratory. Field QA/QC procedures utilized field blanks and field duplicates. A brief summary of each measurement type is described below, followed by a summary of their respective DQOs, and frequencies in Table D-1:

- **Field Blank** – Field blanks were collected to check for cross-contamination. A field blank sample was prepared during a non-storm water monitoring event and for each type of grab sample collected as part of a storm water monitoring event. A field blank was not conducted for composite samples during the storm water monitoring event per the Monitoring Plan. The field blanks were created by pouring laboratory-grade distilled, deionized water into laboratory supplied bottles at one of the monitoring locations.

- **Field Duplicates** – Field duplicates were collected to check the reproducibility of both laboratory procedures and field collection procedures. Field duplicate samples were collected during non-storm water events and for each type of grab sample collected as part of a storm water monitoring event. A field duplicate was not collected for composite samples during the storm water monitoring event. A field duplicate of in-situ parameters was not performed per the Monitoring Plan.

Table D-1
Field Quality Control Samples

Constituent Category	Measurement Quality Objectives		Frequency of Analysis
	Field Blank	Field Duplicate	
Conventionals	<RL for target analyte	RPD < 25%[(a)]	5% of total project sample count
Indicator Bacteria	<RL for target analyte	RPD < 25%[(b)]	5% of total project sample count
Metals	<RL for target analyte	RPD < 25%[(a)]	5% of total project sample count
Nutrients	<RL for target analyte	RPD < 25%[(a)]	5% of total project sample count
Solid Parameters	<RL for target analyte	RPD < 25%[(a)]	5% of total project sample count
Organics	<RL for target analyte	Per method	5% of total project sample count

Notes: NA= Not applicable; RL = reporting limit; RPD = relative percent difference.
(a) NA if native concentration of either sample <RL.
(b) Field duplicates are not a current SWAMP requirement for indicator bacteria. However, the collection and analysis of a field duplicate is recommended.

Analytical results from the field QA/QC sampling program are summarized below.

2.1 Wet Weather Results

A field blank was collected at MS4-SDC-2 during Wet Weather Event 2 for fecal indicator bacteria analytes. No analytes were detected above their reporting limits. Table D-2 presents the reported results of the field blanks below.

Table D-2
Wet Weather Field Blank Results

Analyte	Units	Reporting Limit	MS4-SDC-2
			3/6/16
Enterococcus	MPN/100 mL	1	< 1
Fecal Coliform	MPN/100 mL	18	< 18
Total Coliform	MPN/100 mL	18	< 18

A precision goal of less than twenty-five percent RPD was assessed using results obtained from a field duplicate sample taken at RW-SDC-6 during Wet Weather Event 1. Because microbiological constituents have an exponential growth curve, their RPDs are typically higher than chemical constituents. To give an accurate representation, their results are log transformed prior to calculating the RPD value. Parameters met this DQO for the analyzed parameters total hardness, total calcium, total magnesium, and fecal indicator bacteria. Relative percent difference values calculated from field duplicate data are provided in Table D-3 below.

Table D-3
Wet Weather Field Duplicate Results

Relative Percent Difference					
Analyte	**Units**	**RW-SDC-6-01**	**RW-SDC-6-02**	**1/31/2016**	**DQO**
Parameters					
Calcium	mg/L	96	95.1	0.9%	< 25%
Hardness as CaCO3	mg/L	431	428	0.7%	< 25%
Magnesium	mg/L	46.4	46.3	0.2%	< 25%
Indicator Bacteria					
Enterococcus	log(MPN/100mL)	3.8	3.7	3%	< 25%
Fecal Coliform	log(MPN/100mL)	2.4	2.6	8%	< 25%
Total Coliform	log(MPN/100mL)	4.0	4.6	14%	< 25%

2.2 Dry Weather Results

Of the 28 dry weather samples taken within 5 jurisdictions, only one field blank collected, which was from Poway Outfall 140 on 7/29/16. No analytes were detected above their reporting limits in this field blank, as shown in Table D-4 below.

Table D-4
Dry Weather Field Blank Results

Analyte	Units	Reporting Limit	140
			7/29/2016
Conventional Parameters			
Chloride	mg/L	0.05	< 0.05
Color, True	Color Units	1	< 1
Hardness as CaCO3	mg/L	10	< 10
MBAS	mg/L	0.5	< 0.5
Indicator Bacteria			
Enterococcus	MPN/100 mL	20	< 20
Coliform, Fecal	MPN/100 mL	20	20
Coliform, Total	MPN/100 mL	20	20
Total Metals			
Aluminum	ug/L	10	7
Cadmium	ug/L	1	< 1
Chromium	ug/L	5	0.7
Chromium (III)	ug/L	1	0.7
Chromium VI	ug/L	20	< 20
Copper	ug/L	10	1
Iron	ug/L	50	49
Lead	ug/L	5	0.1
Manganese	ug/L	5	0.9
Mercury	ug/L	0.1	< 0.1
Nickel	ug/L	5	2
Selenium	ug/L	1	< 1
Silver	ug/L	1	< 1
Zinc	ug/L	20	7
Dissolved Metals			
Aluminum	ug/L	10	< 10
Cadmium	ug/L	1	< 1
Chromium	ug/L	5	0.3
Chromium (III)	ug/L	1	0.3
Chromium VI	ug/L	20	< 20
Copper	ug/L	1	0.09
Iron	ug/L	50	< 50
Lead	ug/L	1	< 1
Manganese	ug/L	5	< 5
Mercury	ug/L	0.1	< 0.1
Nickel	ug/L	5	0.3
Selenium	ug/L	1	< 1
Silver	ug/L	1	< 1
Zinc	ug/L	20	< 20

Table D-4
Dry Weather Field Blank Results (continued)

Analyte	Units	Reporting Limit	140
			7/29/2016
Nutrients			
Ammonia as N	mg/L	0.1	< 0.1
Nitrate + Nitrite as N	mg/L	0.05	0.02
Nitrogen, Total	mg/L	0.5	< 0.5
Nitrogen, Total Kjeldahl	mg/L	0.5	< 0.5
Dissolved Phosphorus	mg/L	0.05	< 0.05
Total Phosphorus as P	mg/L	0.05	< 0.05
OrthoPhosphate as P	mg/L	0.05	< 0.05
Sulfate	mg/L	5	1.6
Solid Parameters			
Total Dissolved Solids	mg/L	20	< 20
Total Suspended Solids	mg/L	20	< 20
Synthetic Organics			
Pentachlorophenol	ug/L	5	< 5

A precision goal of less than twenty-five percent RPD was assessed using results obtained from field duplicate samples taken at six locations during non-storm events. Again, the fecal indicator bacteria was log transformed prior to RPD calculation. Relative percent difference values calculated from field duplicate data are provided in Table D-5 below.

Table D-5
Dry Weather Field Duplicate Results

Relative Percent Difference						
Analyte	**S-5**	**SB-25**	**SB-25**	**140**	**SDG-072**	**SDG-074**
	8/12/2016	**6/30/2016**	**8/12/2016**	**7/29/2016**	**6/30/2016**	**3/28/2016**
Conventional Parameters						
Chloride	1.9%	0.0%	11.3%	0.0%	1.9%	0.0%
Color	22.2%	4.1%	3.9%	2.0%	0.0%	7.4%
Hardness (Total)	0.2%	5.8%	1.8%	0.0%	0.7%	2.8%
MBAS	NA	NA	0.0%	NA	NA	NA
Indicator Bacteria						
Enterococcus	**26.3%**	9.8%	10.1%	1.0%	**26.2%**	4.7%
Fecal Coliform	0.0%	0.0%	**32.8%**	5.7%	8.6%	13.8%
Total Coliform	**32.1%**	0.0%	5.3%	2.8%	4.0%	4.0%
Total Metals						
Aluminum	7.4%	5.0%	**103.0%**	0.6%	**28.1%**	**44.9%**
Cadmium	NA	NA	NA	NA	NA	**107.7%**
Chromium	NA	NA	NA	22.2%	13.3%	0.0%
Chromium (III)	NA	NA	NA	22.2%	13.3%	0.0%
Chromium (VI)	NA	NA	NA	NA	NA	NA
Copper	5.0%	0.0%	**30.3%**	0.0%	0.0%	12.5%
Iron	20.7%	7.6%	**96.5%**	**53.9%**	15.7%	**52.7%**
Lead	NA	**28.6%**	NA	**33.3%**	0.0%	**28.6%**
Manganese	10.5%	23.1%	**103.4%**	**103.6%**	4.5%	4.5%
Mercury	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	0.0%	22.2%	0.0%
Silver	NA	NA	NA	NA	NA	NA
Zinc	9.5%	**27.3%**	**53.1%**	6.1%	8.7%	0.7%

Table D-5
Field Duplicate Results (continued)

Relative Percent Difference						
Analyte	**S-5**	**SB-25**	**SB-25**	**140**	**SDG-072**	**SDG-074**
	8/12/2016	**6/30/2016**	**8/12/2016**	**7/29/2016**	**6/30/2016**	**3/28/2016**
Dissolved Metals						
Aluminum	**50.0%**	6.5%	16.9%	14.9%	22.2%	11.4%
Cadmium	NA	NA	25.0%	NA	NA	0.0%
Chromium	NA	NA	NA	NA	15.4%	0.0%
Chromium (III)	NA	NA	NA	0.0%	15.4%	0.0%
Chromium (VI)	NA	NA	NA	NA	NA	NA
Copper	1.3%	0.0%	10.5%	**28.6%**	**100.0%**	16.7%
Iron	**40.0%**	10.5%	**57.1%**	14.6%	19.4%	9.5%
Lead	NA	0.0%	NA	**66.7%**	NA	0.0%
Manganese	0.0%	**40.0%**	**94.7%**	3.3%	3.8%	8.7%
Mercury	0.0%	**175.0%**	NA	NA	NA	NA
Nickel	NA	NA	NA	0.0%	0.0%	0.0%
Silver	NA	NA	NA	NA	NA	NA
Zinc	12%	0.0%	8.7%	0.0%	8.0%	9.8%
Nutrients						
Ammonia N	NA	**46.2%**	**29.5%**	1.2%	4.8%	0.8%
Nitrate as N	7.8%	5.0%	**85.4%**	NA	**176.5%**	2.8%
Nitrite as N	NA	0.0%	2.1%	NA	NA	**40.0%**
Nitrate+Nitrite N	7.8%	3.0%	**55.3%**	9.9%	**177.8%**	2.9%
Nitrogen, Total	**37.0%**	**27.3%**	**30.4%**	15.4%	12.8%	2.5%
TKN	NA	**32.4%**	**68.8%**	16.7%	0.0%	0.0%
Phosphorus, Dissolved	NA	18.2%	6.1%	0.0%	4.9%	0.0%
Phosphorus, Total	**50.0%**	9.3%	0.0%	0.0%	2.3%	0.0%
Orthophosphate as P	**28.6%**	9.5%	6.5%	2.4%	0.0%	0.0%
Sulfate	0.3%	1.9%	3.7%	2.9%	NA	4.7%
Solid Parameters						
TDS	2.4%	1.9%	2.0%	1.2%	2.3%	5.7%
TSS	NA	8.0%	NA	22.2%	**81.1%**	6.5%
Synthetic Organics						
Pentachlorophenol	NA	NA	NA	NA	NA	NA

3 Laboratory Analyses Holding Times

All wet weather samples were analyzed within the required holding time limits.

Fecal Indicator Bacteria exceeded the 8-hour hold time for the dry weather samples. Nitrate, Nitrite, and Orthophosphate exceeded the 48-hour hold time for samples taken on 2/16/16. Nitrate, Nitrite, and Total Dissolved Solids exceeded the 7 day hold time for dry weather samples taken on 3/28/16, 6/30/16, 7/29/16, and 8/12/16. All other samples were analyzed within the required holding time, as shown in Table D-6 below. The results were within the historical range, and thus are considered valid. Details of hold time exceedances are shown in Table D-7. The laboratory reports are included in Appendix C.

Table D-6
Dry Weather Holding Time Results

Analyte	Holding Time Limits	QA/QC Results
Conventional Parameters		
Chloride	28 days	Samples analyzed within holding time.
Color	48 hours	
Hardness (Total)	6 months	
MBAS	7 days until extraction; 40 days after extraction	
Indicator Bacteria		
Enterococcus	8 hours	**Dry Weather samples exceeded hold time.**
Fecal Coliform	8 hours	
Total Coliform	8 hours	
Total Metals		
Aluminum	6 months at room temp following acidification	Samples analyzed within holding time.
Cadmium	6 months at room temp following acidification	
Chromium	6 months at room temp following acidification	
Chromium (III)	6 months at room temp following acidification	
Chromium (VI)	28 days at 6°C; 24 hours without preservation	
Copper	6 months at room temp following acidification	
Iron	6 months at room temp following acidification	
Lead	6 months at room temp following acidification	
Manganese	6 months at room temp following acidification	
Mercury	90 days at room temp following acidification	
Nickel	6 months at room temp following acidification	
Silver	6 months at room temp following acidification	
Zinc	6 months at room temp following acidification	

Table D-6
Dry Weather Holding Time Result (continued)

Analyte	Holding Time Limits	QA/QC Results
Dissolved Metals		
Aluminum	6 months at room temp following acidification	Samples analyzed within holding time.
Cadmium	6 months at room temp following acidification	
Chromium	6 months at room temp following acidification	
Chromium (III)	6 months at room temp following acidification	
Chromium (VI)	28 days at 6°C; 24 hours without preservation	
Copper	6 months at room temp following acidification	
Iron	6 months at room temp following acidification	
Lead	6 months at room temp following acidification	
Manganese	6 months at room temp following acidification	
Mercury	90 days at room temp following acidification	
Nickel	6 months at room temp following acidification	
Silver	6 months at room temp following acidification	
Zinc	6 months at room temp following acidification	
Nutrients		
Ammonia N	48 hours; 28 days if acidified	Samples analyzed within holding time.
Nitrate as N	48 hours	**Dry Weather samples exceeded hold time.**
Nitrite as N	48 hours	**Dry Weather samples exceeded hold time.**
Nitrogen, Total	28 days	Samples analyzed within holding time.
TKN	7 days; 28 days if acidified	Samples analyzed within holding time.
Phosphorus, Dissolved	28 days	Samples analyzed within holding time.
Phosphorus, Total	28 days	Samples analyzed within holding time.
Orthophosphate as P	48 hours	**Dry Weather samples exceeded hold time.**
Sulfate	28 days	Samples analyzed within holding time.
Solid Parameters		
TDS	7 days	**Dry Weather samples exceeded hold time.**
TSS	7 days	Samples analyzed within holding time.
Synthetic Organics		
Pentachlorophenol	7 days until extraction; 40 days after extraction	Samples analyzed within holding time.

Table D-7
Dry Weather Holding Time Exceedances

Analyte	Station ID	Sample Date	Analyses Date	Holding Days	Holding Time Limit
Indicator Bacteria					
Enterococcus	140	7/29/2016	8/2/2016	4.0	8 hours
	140	8/2/2016	8/6/2016	4.0	
	ES_HDG_102	4/20/2016	4/21/2016	1.0	
	ES_HDG_102	8/30/2016	8/31/2016	1.0	
	MS4-SDG-072	3/28/2016	4/1/2016	4.0	
	MS4-SDG-072	6/30/2016	7/4/2016	4.0	
	MS4-SDG-074	3/28/2016	4/1/2016	4.0	
	MS4-SDG-074	6/30/2016	7/4/2016	4.0	
	MS4-SDG-077	3/28/2016	4/1/2016	4.0	
	MS4-SDG-077	6/30/2016	7/4/2016	4.0	
	MS4-SDG-080	3/28/2016	4/1/2016	4.0	
	MS4-SDG-080	6/30/2016	7/4/2016	4.0	
	MS4-SDG-115	3/29/2016	4/2/2016	4.0	
	MS4-SDG-115	7/7/2016	7/11/2016	4.0	
	S-5	8/12/2016	8/16/2016	4.0	
	S-5	8/12/2016	8/16/2016	4.0	
	S-7	6/30/2016	7/4/2016	4.0	
	SB-25	6/30/2016	7/4/2016	4.0	
	SB-25	8/12/2016	8/16/2016	4.0	
Fecal Coliforms	140	7/29/2016	8/1/2016	3.0	8 hours
	140	8/2/2016	8/5/2016	3.0	
	ES_HDG_102	4/20/2016	4/24/2016	4.0	
	ES_HDG_102	8/30/2016	9/2/2016	3.0	
	MS4-SDG-072	3/28/2016	3/31/2016	3.0	
	MS4-SDG-072	6/30/2016	7/3/2016	3.0	
	MS4-SDG-074	3/28/2016	3/31/2016	3.0	
	MS4-SDG-074	6/30/2016	7/3/2016	3.0	
	MS4-SDG-077	3/28/2016	3/31/2016	3.0	
	MS4-SDG-077	6/30/2016	7/3/2016	3.0	
	MS4-SDG-080	3/28/2016	3/31/2016	3.0	
	MS4-SDG-080	6/30/2016	7/3/2016	3.0	
	MS4-SDG-115	3/29/2016	4/1/2016	3.0	
	MS4-SDG-115	7/7/2016	7/10/2016	3.0	
	S-5	8/12/2016	8/15/2016	3.0	
	S-5	8/12/2016	8/15/2016	3.0	
	S-7	6/30/2016	7/3/2016	3.0	
	SB-25	6/30/2016	7/3/2016	3.0	
	SB-25	8/12/2016	8/15/2016	3.0	

Table D-7
Dry Weather Holding Time Exceedances (continued)

Analyte	Station ID	Sample Date	Analyses Date	Holding Days	Holding Time Limit
Indicator Bacteria					
Total Coliforms	140	7/29/2016	8/2/2016	4.0	8 hours
	140	8/2/2016	8/6/2016	4.0	
	ES_HDG_102	4/20/2016	4/24/2016	4.0	
	ES_HDG_102	8/30/2016	9/2/2016	3.0	
	MS4-SDG-072	3/28/2016	4/1/2016	4.0	
	MS4-SDG-072	6/30/2016	7/4/2016	4.0	
	MS4-SDG-074	3/28/2016	4/1/2016	4.0	
	MS4-SDG-074	6/30/2016	7/4/2016	4.0	
	MS4-SDG-077	3/28/2016	4/1/2016	4.0	
	MS4-SDG-077	6/30/2016	7/4/2016	4.0	
	MS4-SDG-080	3/28/2016	4/1/2016	4.0	
	MS4-SDG-080	6/30/2016	7/4/2016	4.0	
	MS4-SDG-115	3/29/2016	4/2/2016	4.0	
	MS4-SDG-115	7/7/2016	7/11/2016	4.0	
	S-5	8/12/2016	8/16/2016	4.0	
	S-5	8/12/2016	8/16/2016	4.0	
	S-7	6/30/2016	7/4/2016	4.0	
	SB-25	6/30/2016	7/4/2016	4.0	
	SB-25	8/12/2016	8/16/2016	4.0	
Nutrients					
Nitrate as N	DW0033	2/16/2016	2/18/2016	2.2	48 hours
	DW0284	2/16/2016	2/18/2016	2.2	
	DW0317	2/16/2016	2/18/2016	2.2	
	DW0333	2/16/2016	2/18/2016	2.1	
	DW0636	2/16/2016	2/18/2016	2.2	
	MS4-SDG-072	6/30/2016	7/8/2016	8.0	
	MS4-SDG-074	6/30/2016	7/8/2016	8.0	
	MS4-SDG-077	6/30/2016	7/8/2016	8.0	
	MS4-SDG-080	4/21/2016	4/26/2016	5.0	
	MS4-SDG-080	6/30/2016	7/8/2016	8.0	
	MS4-SDG-115	3/29/2016	4/5/2016	7.0	
	MS4-SDG-115	7/7/2016	7/12/2016	5.0	
	S-5	8/12/2016	8/17/2016	5.0	
	S-5	8/12/2016	8/17/2016	5.0	
	SB-25	6/30/2016	7/7/2016	7.0	
	SB-25	8/12/2016	8/17/2016	5.0	

Table D-7
Dry Weather Holding Time Exceedances (continued)

Analyte	Station ID	Sample Date	Analyses Date	Holding Days	Holding Time Limit
Nutrients					
Nitrite as N	DW0033	2/16/2016	2/18/2016	2.2	48 hours
	DW0284	2/16/2016	2/18/2016	2.2	
	DW0317	2/16/2016	2/18/2016	2.3	
	DW0333	2/16/2016	2/18/2016	2.1	
	DW0636	2/16/2016	2/18/2016	2.2	
Orthophosphate as P	DW0284	2/16/2016	2/18/2016	2.2	48 hours
	DW0317	2/16/2016	2/18/2016	2.2	
	DW0333	2/16/2016	2/18/2016	2.2	
	DW0333	2/16/2016	2/18/2016	2.1	
	DW0636	2/16/2016	2/18/2016	2.2	
Solid Parameters					
Total Dissolved Solids	140	7/29/2016	8/8/2016	10.0	7 days
	140	8/2/2016	8/10/2016	8.0	
	MS4-SDG-072	3/28/2016	4/5/2016	8.0	
	MS4-SDG-072	6/30/2016	7/11/2016	11.0	
	MS4-SDG-074	3/28/2016	4/5/2016	8.0	
	MS4-SDG-074	6/30/2016	7/11/2016	11.0	
	MS4-SDG-077	3/28/2016	4/5/2016	8.0	
	MS4-SDG-077	6/30/2016	7/11/2016	11.0	
	MS4-SDG-080	3/28/2016	4/5/2016	8.0	
	MS4-SDG-080	6/30/2016	7/11/2016	11.0	
	S-5	8/12/2016	8/22/2016	10.0	
	SB-25	6/30/2016	7/11/2016	11.0	
	SB-25	8/12/2016	8/22/2016	10.0	

Attachment E – Wet Weather Outfall Information

Attachment E.1 – Wet Weather Outfall Hydrographs
Attachment E.2 – Wet Weather Outfall Analytical Results
Attachment E.3 – Wet Weather Assessment Methodology
Attachment E.4 – Wet Weather HSA Storm Water Volumes and Pollutant Loads

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Attachment E.1 – Wet Weather Outfall Hydrographs

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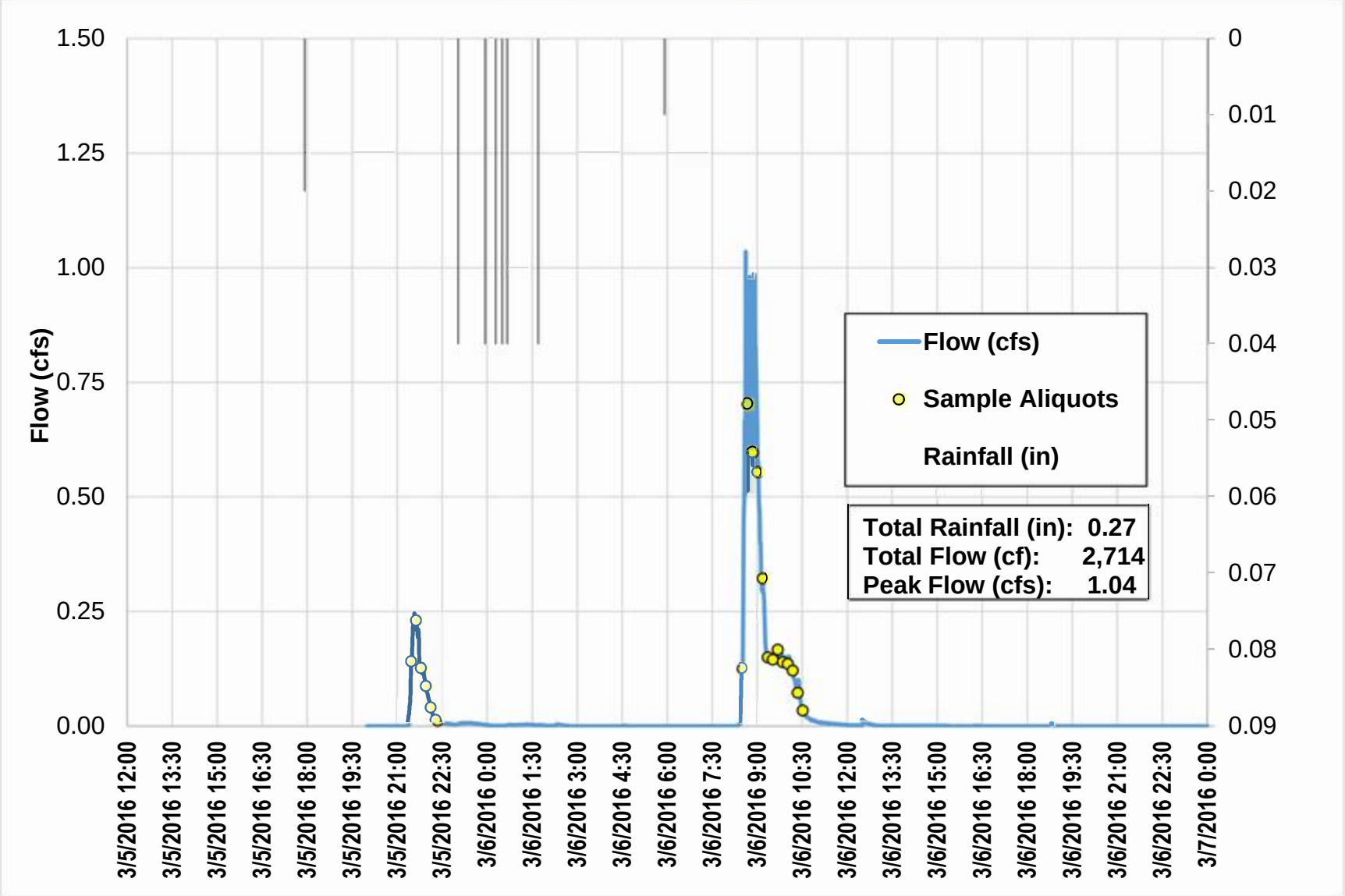

Figure E.1-1: MS4-SDC-01 Event Hydrograph

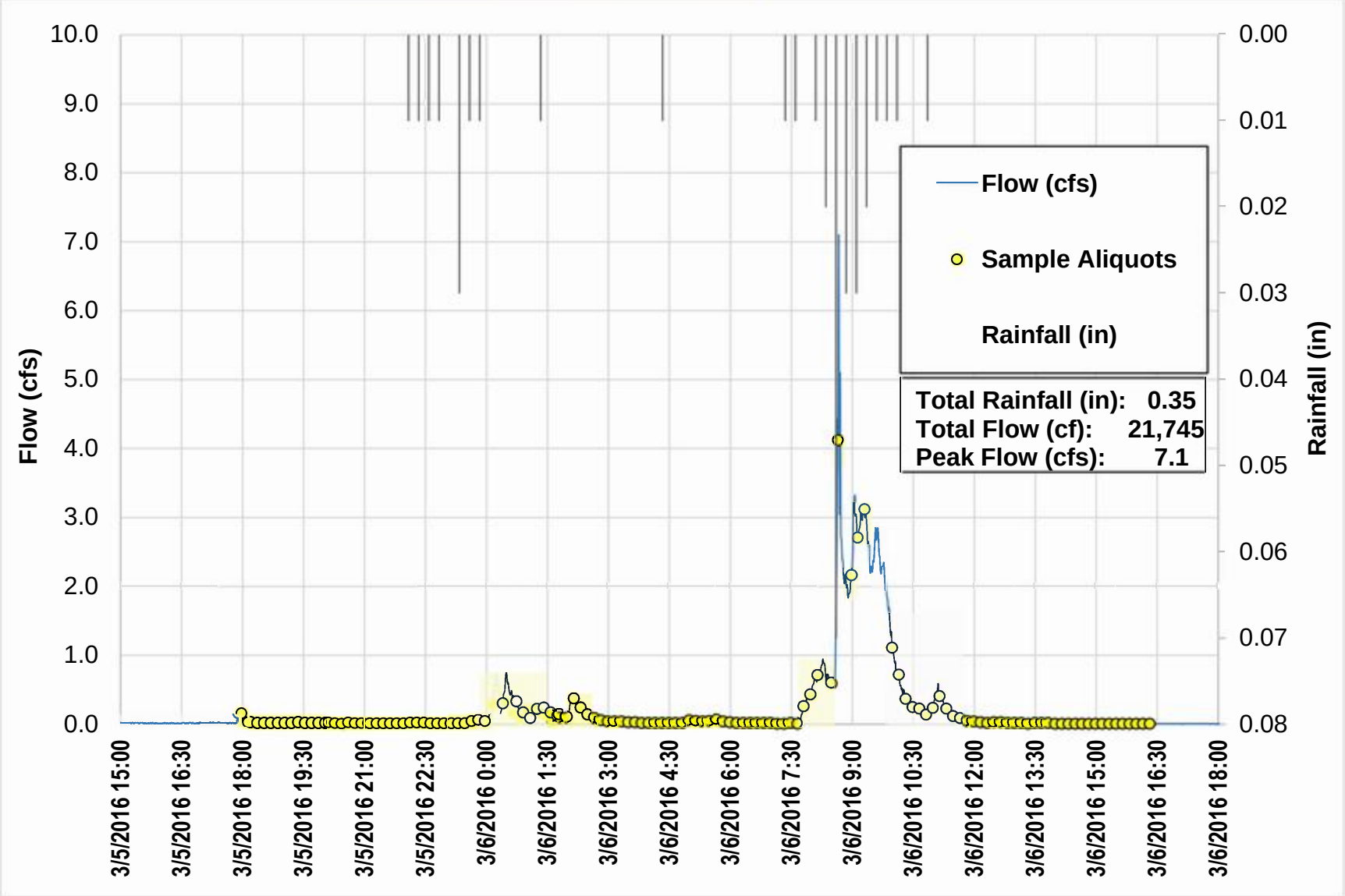

Figure E.1-2: MS4-SDC-02 Event Hydrograph

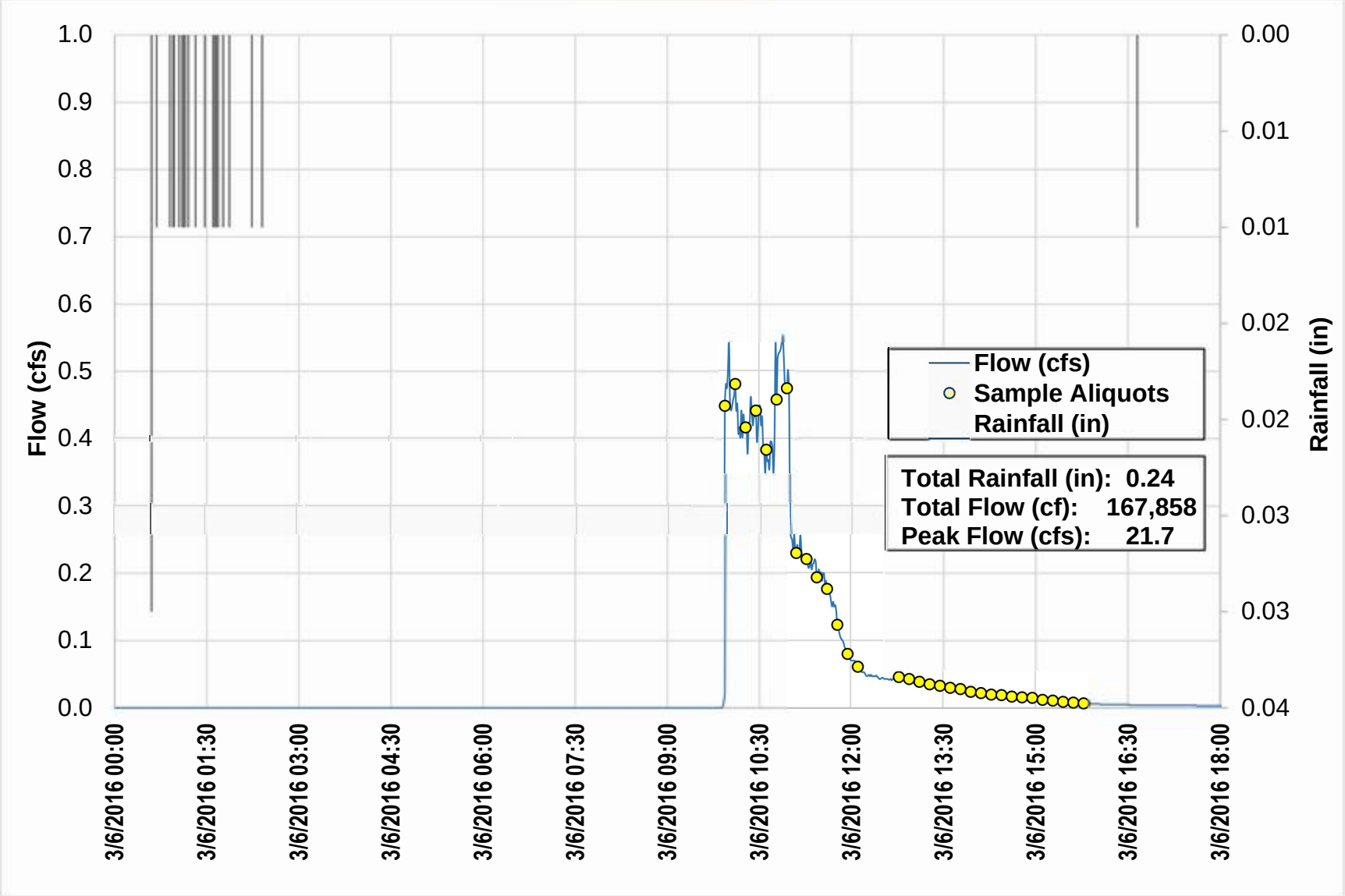

Figure E.1-3: MS4-SDC-03 Event Hydrograph

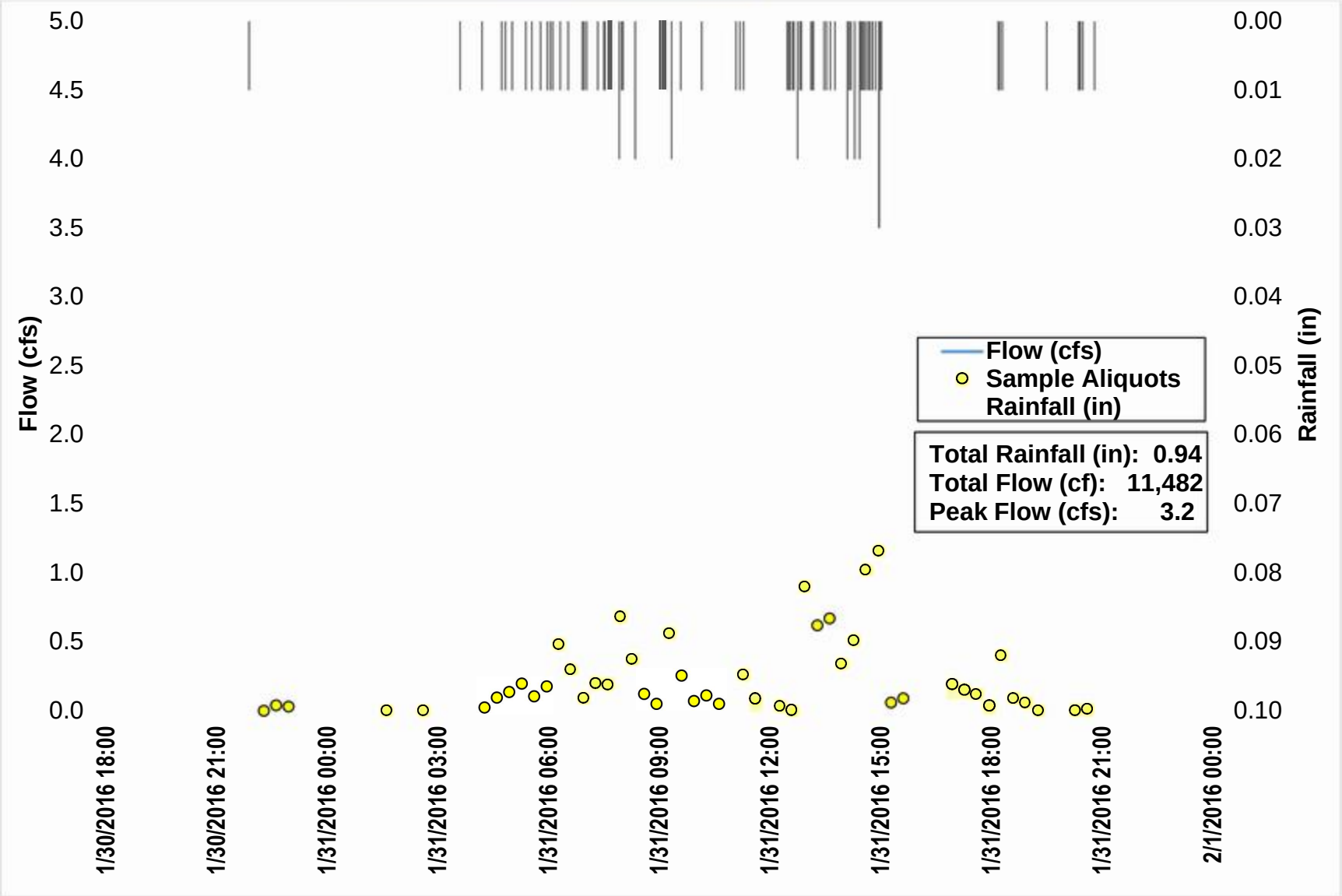

Figure E.1-4: MS4-SDC-04 Event Hydrograph

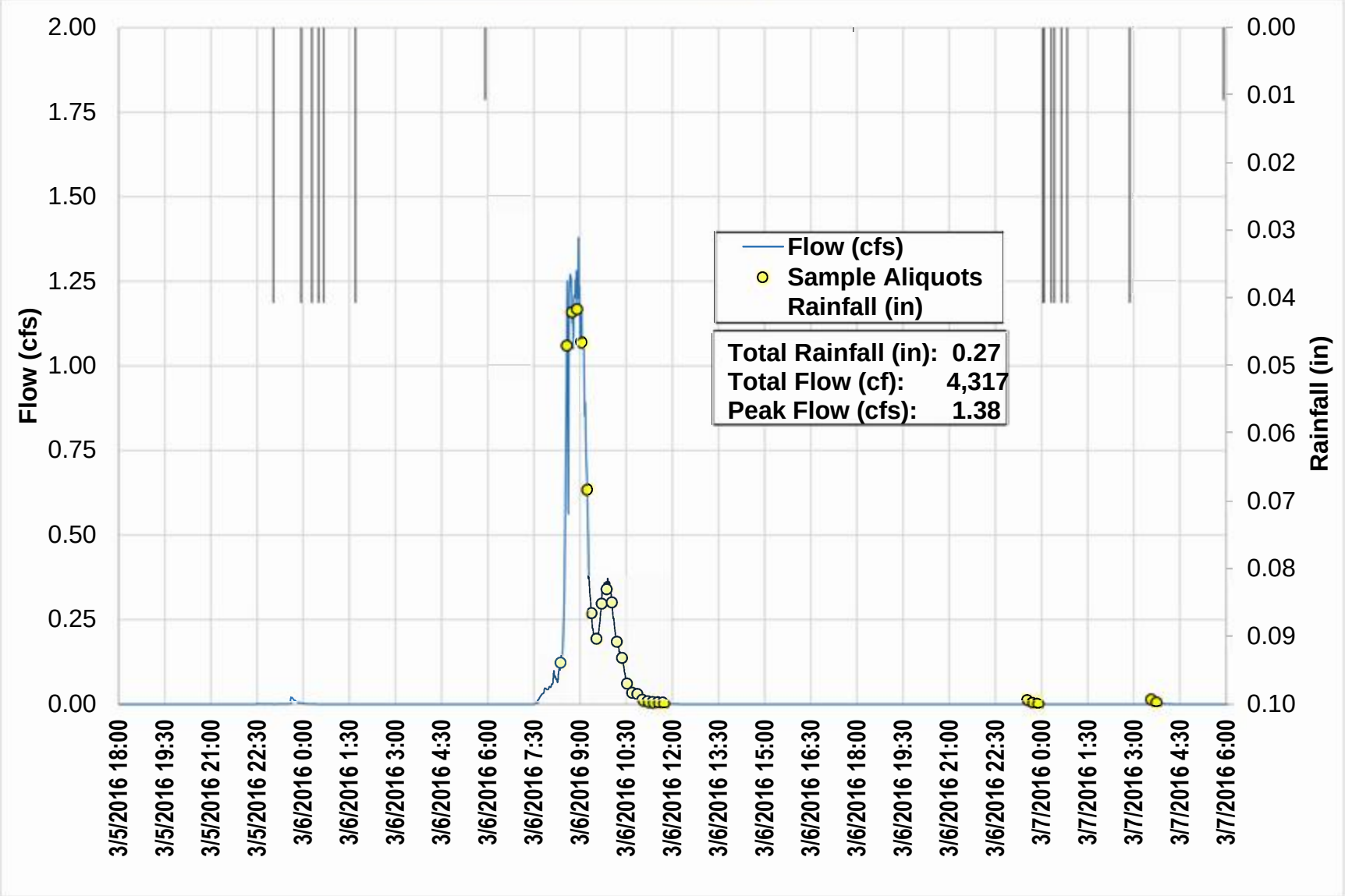

Figure E.1-5: MS4-SDC-05 Event Hydrograph

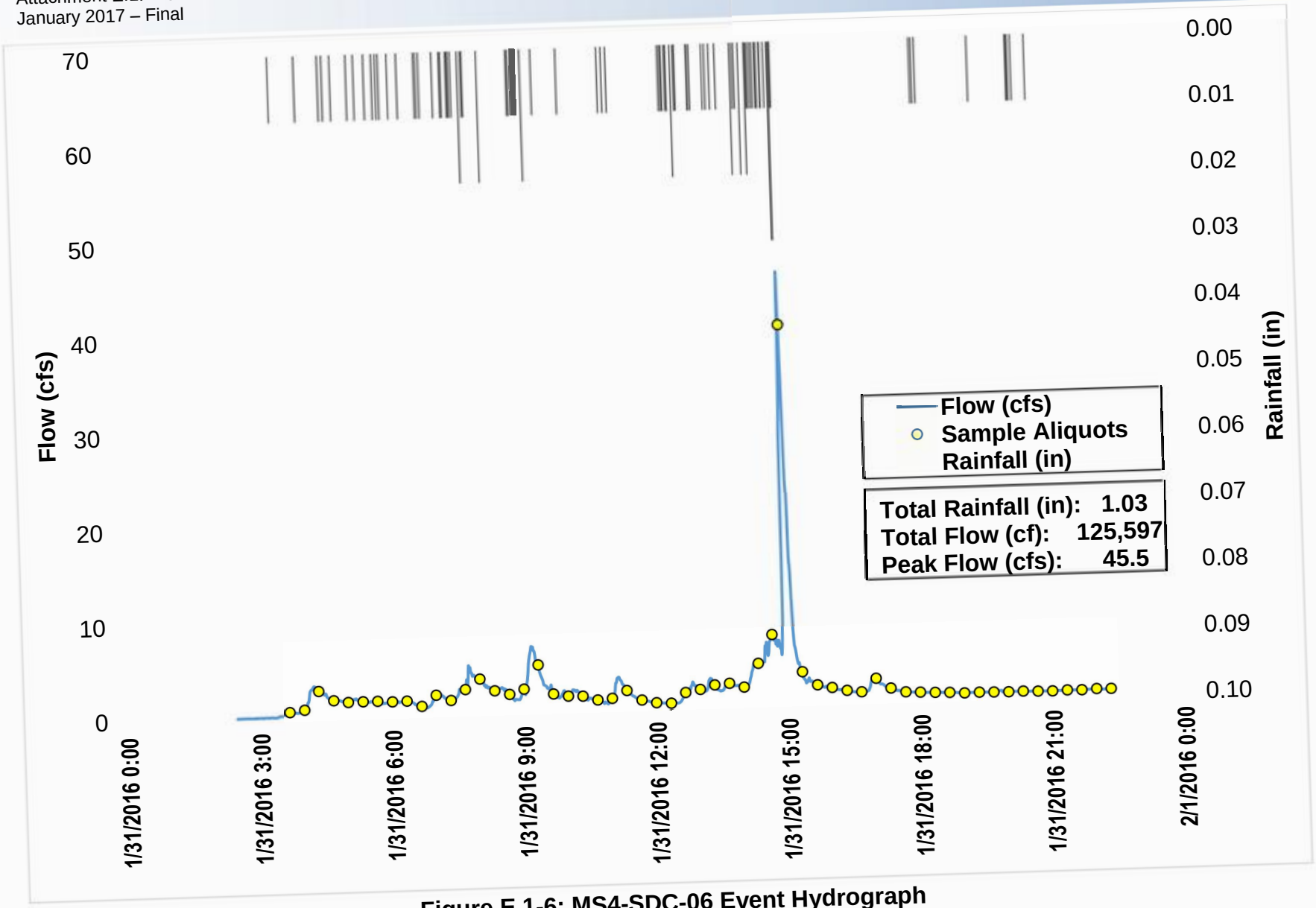

Figure E.1-6: MS4-SDC-06 Event Hydrograph

Attachment E.2 – Wet Weather Outfall Analytical Results

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Table E.2-1
2015-2016 San Dieguito River WMA Wet Weather Outfall Monitoring Analytical Results

Analyte	Units	MS4-SDC-1	MS4-SDC-2	MS4-SDC-3	MS4-SDC-4	MS4-SDC-5	MS4-SDC-6
Conventional Parameters							
Dissolved Oxygen	mg/L	7.52	7.92	6.93	7.54	10.4	10.9
Chloride	mg/L	250	190	44	79	150	190
Color (Dissolved)	color units	120	25	50	75	50	150
Color (Total)	color units	120	25	50	75	50	150
pH	pH units	8.00	8.24	8.16	7.87	8.04	7.66
Specific Conductivity	µS/cm	450	93	428	650	59	438
Sulfates	mg/L	67	250	83	90	57	150
Temperature	°C	18.6	18.6	16.8	19.2	15.7	16.2
Turbidity	NTU	41.1	5.27	5.55	51.6	24.5	29.3
Indicator Bacteria							
Enterococcus	MPN/100mL	6131	1607	7701	6800 J	9208	6800
Fecal Coliform	MPN/100mL	7900	28000	3300	520	31000	280 J
Total Coliform	MPN/100mL	70000	28000	220000	3400	1600000	10000
Total Metals							
Aluminum	µg/L	2600	480	320	7500	600	260
Cadmium	µg/L	0.32	< 0.041	< 0.041	0.073 J	0.2	< 0.041
Copper	µg/L	130	22	8.2	31	44	10
Iron	µg/L	3600	840	570	8600	840	300
Lead	µg/L	11	0.71	0.46	3.9	2.9	0.29
Manganese	µg/L	190	39	25	200	37	21
Mercury	µg/L	0.014 J	< 0.0039	< 0.0039	0.015 J	< 0.0039	0.03 J
Zinc	µg/L	490	33	15	63	220	33
Dissolved Metals							
Aluminum	µg/L	60	10	40	34	37	17
Iron	µg/L	100	< 1.1	87	37	66	15
Manganese	µg/L	130	7.5	15	5.5	14	6.7
Mercury	µg/L	< 0.0039	< 0.0039	< 0.0039	< 0.0039	< 0.0039	0.015 J

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Table E.2-1 (continued)
2015-2016 San Dieguito River WMA Wet Weather Outfall Monitoring Analytical Results

Analyte	Units	MS4-SDC-1	MS4-SDC-2	MS4-SDC-3	MS4-SDC-4	MS4-SDC-5	MS4-SDC-6
Nutrients							
Nitrate as N	mg/L	2.5	4.9	0.46	0.76	0.97	1.5
Nitrite as N	mg/L	0.180	0.051 J	0.012 J	0.075 J	0.049 J	0.053 J
TKN	mg/L	7.3	1.6	0.87	2.5	2.8	1.3
Total Nitrogen	mg/L	10	6.5	1.3	3.3	3.8	2.9
Dissolved Phosphorus as P	mg/L	0.42	0.16	0.094	0.12	0.24	0.34
Total Phosphorus as P	mg/L	1	0.25	0.16	0.31	0.44	0.43
Solid Parameters							
TDS	mg/L	670	930	260	330	410	680
Synthetic Organics							
Pentachlorophenol	µg/L	0.58 J	0.38 J	0.38 J	< 0.19	0.38 J	< 0.19

Notes:
< = Analyte not detected at method detection limit shown.
J = Analyte detected above the method detection limit but below the reporting limit.

Attachment E.3 – Wet Weather Assessment Methodology

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1 Assessment of Wet Weather Outfall Results

In 2013 the San Diego Regional Water Quality Control Board (Regional Board) issued *Order No. R9-2013-0001 (amended by Order Nos. R9-2015-0001 and R9-2015-0100), National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*, herein referred to as the MS4 Permit, regulating MS4 discharges throughout the San Diego Region. The MS4 Permit requires a series of wet weather MS4 outfall assessments be performed annually to assess and report the progress of water quality improvement strategies toward reducing pollutants in storm water discharges from the MS4. This Attachment describes the methodology used to perform these required assessments. The methodology outlined here is largely based on the transitional methodology described in the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego Regional Copermitees, 2015). Areas where the methodology differs from the transitional methodology are described in the relevant section, and also summarized in Section 5.0

Per MS4 Permit Provision D.4.b.(2)(b), Copermittees will annually assess and report the following:

- The average storm water runoff coefficient for each land use type within the Watershed Management Area (WMA);
- The volume of storm water and pollutant loads discharged from each of the Copermittee's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch;
- The total flow volume and pollutant loadings discharged from the Copermittee's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls;
- The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch; and
- Modifications to the wet weather MS4 outfall discharge monitoring locations and frequencies necessary to identify pollutants in storm water discharges from the MS4s in the Watershed Management Area.

Following acceptance of the Water Quality Improvement Plans and completion of the first year of Water Quality Improvement Plan Wet Weather MS4 Outfall Discharge Monitoring (2015-2016), annual assessments will also include comparison to applicable storm water action levels (SALs) in each Watershed Management Area as required by MS4 Permit Provision D.4.b.(2)(c). Compliance with applicable SALs will be used to evaluate whether the analyses and assumptions used to develop the Water Quality Improvement Plan should be updated as a component of the adaptive management process (MS4 Permit Provision B.5).

Table 1-1 provides the equations used in this methodology and lists the input and output variables for each equation. The sections that follow describe the application of these equations in greater detail.

Table 1-1
MS4 Wet Weather Outfall Assessment Equations

Permit Provision	Equation Reference	Equation	Inputs	Outputs
D.4.b.(2)(b)(1)[a]	A.1	$C_{Outfall_Actual} = \frac{V_{Outfall_Event}}{A_{Outfall} \times d_{Outfall_Event}} \times \frac{12in}{1ft} \times \frac{1acre}{43{,}560\ ft^2}$	$V_{Outfall_Event}$ (cf) $A_{Outfall}$ (acre) $d_{Outfall_Event}$ (in)	$C_{Outfall_Actual}$ (dimensionless)
	A.1a (Optional) [1]	$C_{Outfall_His} = \frac{\sum_{Yr=1}^{n} C_{Outfall_Actual_Yr}}{n}$	$C_{Outfall_Actual_Yr}$ (dimensionless) n (year)	$C_{Outfall_His}$ (dimensionless)
	A.2	$C_{Outfall_HM} = \frac{\sum(A_{Outfall_LU} \times C_{HM_LU})}{\sum A_{Outfall_LU}}$	$A_{Outfall_LU}$ (acre) C_{HM_LU} (dimensionless)	$C_{Outfall_HM}$ (dimensionless)
	A.3	$CF_{Outfall_C} = \frac{C_{Outfall_Actual}}{C_{Outfall_HM}}$	$C_{Outfall_Actual}$ (dimensionless) $C_{Outfall_HM}$ (dimensionless)	$CF_{Outfall_C}$ (dimensionless)
	A.4	$C_{Outfall_LU} = CF_{Outfall_C} \times C_{HM_LU}$	$CF_{Outfall_C}$ (dimensionless) C_{HM_LU} (dimensionless)	$C_{Outfall_LU}$ (dimensionless)
	A.5[2]	$C_{WMA_LU} = \frac{\sum(A_{Outfall_LU} \times C_{Outfall_LU})}{\sum A_{Outfall_LU}}$	$A_{Outfall_LU}$ (acre) $C_{Outfall_LU}$ (dimensionless)	C_{WMA_LU} (dimensionless)
D.4.b.(2)(b)(1)[b]	B.1	$V_{Outfall_Annual} = (A_{Outfall} \times C_{Outfall_Actual}) \times \sum d_{Outfall_Annual} \times \frac{1ft}{12in} \times \frac{43{,}560ft^2}{1acre}$	$C_{Outfall_Actual}$ (dimensionless) $A_{Outfall}$ (acre) $d_{Outfall_Annual}$ (inches)	$V_{Outfall_Annual}$ (cf)
	B.2[3]	$Pollutant\ Load_{Outfall} = (V_{Outfall_Annual} \times Pollutant\ Concentration_{Outfall}) \times \mathrm{UC}$	$V_{Outfall_Annual}$ (cf) Pollutant Concentration$_{Outfall}$ (units vary)	Pollutant Load$_{Outfall}$ (lb or MPN)
D.4.b.(2)(b)(1)[c]	C.1	$V_{WMA_Juris_LU} = (A_{WMA_Juris_LU} \times C_{WMA_LU}) \times \sum d_{Outfall_Annual} \times \frac{1ft}{12in} \times \frac{43{,}560ft^2}{1acre}$	C_{WMA_LU} (dimensionless) $A_{WMA_Juris_LU}$ (acre) $d_{Outfall_Annual}$ (inches)	$V_{WMA_Juris_LU}$ (cf)
	C.2	$V_{WMA_Juris} = \sum V_{WMA_Juris_LU}$	$V_{WMA_Juris_LU}$ (cf)	V_{WMA_Juris} (cf)
	C.3	$EMC_{Outfall_Actual} = Pollutant\ Concentration_{Outfall}$	Pollutant Concentration$_{Outfall}$ (units vary)	$EMC_{Outfall_Actual}$ (units vary)
	C.4	$EMC_{Outfall_Calculated} = \frac{\sum(A_{Outfall_LU} \times C_{Outfall_LU} \times EMC_{Typical_LU})}{\sum(A_{Outfall_LU} \times C_{Outfall_LU})}$	$A_{Outfall_LU}$ (acre) $C_{Outfall_LU}$ (dimensionless) $EMC_{Typical_LU}$ (units vary)	$EMC_{Outfall_Calculated}$ (units vary)
	C.5	$CF_{Outfall_EMC} = \frac{EMC_{Outfall_Actual}}{EMC_{Outfall_Calculated}}$	$EMC_{Outfall_Actual}$ (units vary) $EMC_{Outfall_Calculated}$ (units vary)	$CF_{Outfall_EMC}$ (units vary)
	C.6	$EMC_{Outfall_LU} = CF_{Outfall_EMC} \times EMC_{Typical_LU}$	$CF_{Outfall_EMC}$ (units vary) $EMC_{Typical_LU}$ (units vary)	$EMC_{Outfall_LU}$ (units vary)
	C.7	$EMC_{WMA_LU} = \frac{\sum(A_{Outfall_LU} \times C_{Outfall_LU} \times EMC_{Outfall_LU})}{\sum(A_{Outfall_LU} \times C_{Outfall_LU})}$	$C_{Outfall_LU}$ (dimensionless) $A_{Outfall_LU}$ (acre) $EMC_{Outfall_LU}$ (units vary)	EMC_{WMA_LU} (units vary)

Permit Provision	Equation Reference	Equation	Inputs	Outputs
	C.8[4]	$EMC_{WMA_LU_HIS} = \frac{\sum_{Yr=1}^{n} \sum (EMC_{WMA_LU_Yr})}{n}$	$EMC_{WMA_LU_Yr}$ (units vary) n (years)	$EMC_{WMA_LU_HIS}$ (units vary)
	C.9[3]	$Pollutant\ Load_{WMA_Juris} = \sum (V_{WMA_Juris_LU} \times EMC_{WMA_LU_HIS} \times \mathrm{UC})$	$V_{WMA_Juris_LU}$ (cf) $EMC_{WMA_LU_HIS}$ (units vary)	Pollutant $Load_{WMA_Juris}$ (lb or MPN)
D.4.b.(2)(b)(1)[d]	D.1	$V_{HSA_Juris_LU} = (A_{HSA_Juris_LU} \times C_{WMA_LU}) \times \sum d_{Outfall_Annual} \times \frac{1ft}{12in} \times \frac{43{,}560ft^2}{1acre}$	C_{WMA_LU} (dimensionless) $d_{Outfall_Annual}$ (inches) $A_{HSA_Juris_LU}$ (acre)	$V_{HSA_Juris_LU}$ (cf)
	D.2	$V_{HSA_Juris} = \sum V_{HSA_Juris_LU}$	$V_{HSA_Juris_LU}$ (cf)	V_{HSA_Juris} (cf)
	D.3	$\%V_{HSA_Juris} = \frac{V_{HSA_Juris}}{V_{WMA_Juris}} \times 100$	V_{HSA_Juris} (cf) V_{WMA_Juris} (cf)	$\%V_{HSA_Juris}$ (dimensionless)
	D.4[3]	$Pollutant\ Load_{HSA_Juris} = \sum (V_{HSA_Juris_LU} \times EMC_{WMA_LU_HIS} \times \mathrm{UC})$	$V_{HSA_Juris_LU}$ (cf) $EMC_{WMA_LU_HIS}$ (units vary)	Pollutant $Load_{HSA_Juris}$ (lb or MPN)
	D.5	$\%Pollutant\ Load_{HSA_Juris} = \frac{Pollutant\ Load_{HSA_Juris}}{Pollutant\ Load_{WMA_Juris}} \times 100$	Pollutant $Load_{HSA_Juris}$ (lb or MPN) Pollutant $Load_{WMA_Juris}$ (lb or MPN)	%Pollutant $Load_{HSA_Juris}$ (lb or MPN)

Notes:

1) For those outfalls monitored for more than one monitoring year, the outfall runoff "C" ($C_{outfall_Actual}$) will be averaged across all years of monitoring. This average value ($C_{outfall_His}$) is to be substituted for the calculated outfall runoff "C" ($C_{outfall_Actual}$) in all subsequent calculations.
2) Historical data are included in this calculation. The WMA land use runoff "C" (C_{WMA_LU}) is calculated based on the area-weighted average of all years of outfall monitoring data.
3) Unit conversion (UC) varies by units used to express pollutant concentration. Common unit conversions include:
   a. mg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\,g}{1000mg}\right)\left(\frac{1\,lb}{453.592\,g}\right)$
   b. µg/L: $UC = \left(\frac{28.317L}{1ft^3}\right)\left(\frac{1\,g}{1\times10^6\mu g}\right)\left(\frac{1\,lb}{453.592\,g}\right)$
   c. MPN/100mL: $UC = \left(\frac{100mL}{0.1L}\right)\left(\frac{28.317L}{1ft^3}\right)$
4) The WMA land use EMC is averaged across all years of monitoring. This average EMC (EMCWMA_LU_HIS) is included in all subsequent calculations.

V=Runoff Volume; A=Area; d=depth; C=Runoff Coefficient
HM=County of San Diego Hydrology Manual; LU=Land Use; CF=Correction Factor; WMA=Watershed Management Area; EMC=Event Mean Concentration; HSA=Hydrologic SubArea; Juris=Jurisdictional; UC=Unit Conversion
in = inches; cf=cubic feet; lb=pounds

2 Land Use Analysis

2.1 Land Use Categorization

The process of calculating average storm water runoff coefficients for land use types first requires defining land use types within the WMA and locating the boundaries of each type. Geographic Information Systems (GIS) can be used to locate the boundaries and measure the area of each land use type. Grouping specific land use types into larger categories simplifies the calculation of average storm water runoff coefficients within the WMA. The categorizations used are based on the updated land use categorizations in the Transitional Monitoring and Assessment Program Report for the San Diego River WMA (2014-2015) (San Diego County MS4 Copermittees, 2016). These categories differ slightly from the categories presented in the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego Regional Copermitees, 2015).

Table 2-1 lists each San Diego Geographic Information Source (SanGIS) land use type and the corresponding land use category used in the wet weather MS4 assessments. The latest SanGIS land use GIS data layer can be downloaded from the SanGIS website (www.sangis.org).

Table 2-1
Land Use Types and Categories for Wet Weather MS4 Outfall Assessments

Land Use Category	SanGIS Land Use Type	SanGIS Land Use Code
Agriculture	Golf course	7204
	Orchard and Vineyard	8001
	Intensive Agriculture	8002
	Field Crops	8003
Commercial	Jail/Prison	1401
	Hotel/Motel (Low-Rise)	1501
	Hotel/Motel (High-Rise)	1502
	Resort	1503
	Rail Station/Transit Station	4111
	Parking Lot - Surface	4114
	Parking Lot - Structure	4115
	Park and Ride Lot	4116
	Wholesale Trade	5001
	Regional Shopping Center	5002
	Community Shopping Center	5003
	Neighborhood Shopping Center	5004
	Specialty Commercial	5005

Land Use Category	SanGIS Land Use Type	SanGIS Land Use Code
	Automobile Dealership	5006
	Arterial Commercial	5007
	Service Station	5008
	Other Retail Trade and Strip Commercial	5009
	Office (High-Rise)	6001
	Office (Low-Rise)	6002
	Government Office/Civic Center	6003
	Cemetery	6101
	Religious Facility	6102
	Library	6103
	Post Office	6104
	Fire/Police Station	6105
	Mission	6108
	Other Public Services	6109
	UCSD/VA Hospital/Balboa Hospital	6501
	Hospital - General	6502
	Other Health Care	6509
	Tourist Attraction	7201
	Stadium/Arena	7202
	Racetrack	7203
	Golf Course Clubhouse	7205
	Convention Center	7206
	Marina	7207
	Casino	7209
	Residential Under Construction	9501
	Commercial Under Construction	9502
	Office Under Construction	9504
	Olympic Training Center	7208
	Other Recreation - High	7210
	Residential Recreation	7607
Educational	SDSU/CSU San Marcos/UCSD	6801
	Other University or College	6802
	Junior College	6803
	Senior High School	6804

Land Use Category	SanGIS Land Use Type	SanGIS Land Use Code
	Junior High School or Middle School	6805
	Elementary School	6806
	School District Office	6807
	Other School	6809
	School Under Construction	9505
Industrial	Heavy Industry	2001
	Industrial Park	2101
	Light Industry - General	2103
	Warehousing	2104
	Public Storage	2105
	Extractive Industry	2201
	Junkyard/Dump/Landfill	2301
	Commercial Airport	4101
	Military Airport	4102
	General Aviation Airport	4103
	Airstrip	4104
	Communications and Utilities	4113
	Marine Terminal	4120
	Industrial Under Construction	9503
	Freeway	4112
Mixed Use	Mixed Use	9700
Residential: Multi-Family	Multi-Family Residential	1200
	Single Room Occupancy Units (SRO's)	1280
	Multi-Family Residential Without Units	1290
	Mobile Home Park	1300
	Dormitory	1402
	Military Barracks	1403
	Monastery	1404
	Other Group Quarters Facility	1409
Residential: Rural	Spaced Rural Residential	1000
Residential: Single-Family	Single Family Residential	1100
	Single Family Detached	1110

Land Use Category	SanGIS Land Use Type	SanGIS Land Use Code
	Single Family Multiple-Units	1120
	Single Family Residential Without Units	1190
Open Space	Military Use	6701
	Military Training	6702
	Weapons Facility	6703
	Other Recreation - Low	7211
	Park - Active	7601
	Open Space Park or Preserve	7603
	Beach - Active	7604
	Beach - Passive	7605
	Landscape Open Space	7606
	Undevelopable Natural Area	7609
	Vacant and Undeveloped Land	9101
Transportation	Freeway Under Construction	9507
	Railroad Right of Way	4117
	Road Right of Way	4118
	Other Transportation	4119
	Road Under Construction	9506
Water[1]	Water	9200
	Bay or Lagoon	9201
	Lake/Reservoir/Large Pond	9202

Source: San Diego County MS4 Copermittees, 2016
Notes:
1) Water land uses excluded from MS4 outfall assessments. Water land uses assumed to be a sink for runoff storage.

The Agriculture and Open Space land use categories were further subdivided based on hydrologic soil group (i.e., Soil Group A, B, C, or D). Any Agriculture or Open Space areas with an undefined soil group were classified as belonging to Soil Group D.

Federal, State, and Indian Reservation land uses were excluded from the load calculations. MS4 Permit Copermittees have limited jurisdiction over these land uses. Categorization of these land uses was based on the SanGIS LAND_OWNERSHIP_SG shape file. The following categories were excluded:

- Bureau of Land Management
- California Department of Fish and Game
- Indian Reservations

- Military Reservations
- Other Federal
- State
- State (Caltrans)
- State Parks
- U.S. Fish & Wildlife Service
- U.S. Forest Service

2.2 Expected Runoff Coefficients

Each land use category was assigned an expected runoff coefficient (Runoff "C") based on values listed in the San Diego County Hydrology Manual (County of San Diego, 2003). The Runoff "C" is a unitless coefficient representing fraction of rainfall that runs off a given land area rather than infiltrating. A larger Runoff "C" (approaching one) corresponds to a higher fraction of runoff, and typically corresponds to areas of low permeability (e.g., parking lots). A smaller Runoff "C" is often associated with undeveloped areas or other areas of high permeability.

Table 2-2 lists the expected runoff coefficients for each land use category (San Diego Regional Copermitees, 2015).

Table 2-2
Expected Runoff "C" Values by Land Use Category

Land Use Category	Runoff Coefficient
Agriculture[1]	0.2, 0.25, 0.3, OR 0.35
Commercial	0.82
Educational	0.58
Industrial	0.87
Mixed Use	0.66
Residential: Multi-Family	0.6
Residential: Rural	0.41
Residential: Single-Family	0.49
Open Space[1]	0.2, 0.25, 0.3, OR 0.35
Transportation	0.71

Notes:
1) Runoff coefficient varies by hydrologic soil group. Values presented are for soil groups A, B, C, and D, respectively.
Source: County of San Diego, 2003

2.3 Volumes and Loads of Storm Water Discharges

2.3.1 Land Use Storm Water Runoff Coefficient (D.4.b.(2)(b)(i)[a])

MS4 Permit Provision D.4.b.(2)(b)(i) requires calculation of the average storm water runoff coefficient (Runoff "C") for each land use type within the WMA. This calculation is based on the measured flow and rainfall values for each monitored outfall, along with the outfall drainage area characteristics.

The average Runoff "C" is calculated according to the following steps. The corresponding equation or equations for each step, as listed in Table 1-1, are provided in brackets.

1) Calculate the observed (actual) runoff coefficient for each monitored outfall. The observed runoff coefficient for each outfall ($C_{Outfall_Actual}$) is calculated based on the observed runoff volume, size of the outfall drainage area, and depth of observed rainfall for the monitored storm. Rainfall data for each event is obtained from the County of San Diego Automatic Local Evaluation in Real Time (ALERT) System rain gauge closest to each monitoring station. [Equation A.1]. This is repeated for each monitored outfall in the WMA. For those outfalls monitored during more than one monitoring year (e.g., during 2014-2015 and 2015-2016), the observed runoff coefficient is averaged across all years of monitoring. This new value ($C_{Outfall_His)}$ is used in place of $C_{Outfall_Actual}$ in all subsequent calculations [Equation A.1.a].

2) Calculate the expected Runoff "C" for each monitored outfall. The expected Runoff "C" ($C_{Outfall_HM}$) for each outfall is calculated based on the areas of each land use category in the outfall drainage area and the expected Runoff "C" for each land use category from the San Diego County Hydrology Manual, as listed in Table 1-2. [Equation A.2]. This is repeated for each monitored outfall in the WMA.

3) Calculate a Runoff "C" correction factor ($CF_{Outfall_C}$) for each monitored outfall. The Runoff "C" Correction Factor is calculated by dividing the observed runoff coefficient ($C_{Outfall_Actual}$) by the expected runoff coefficient ($C_{Outfall_HM}$) [Equation A.3]. This is repeated for each monitored outfall in the WMA.

4) Calculate a land use Runoff "C" for each land use represented in the drainage area of each monitored outfall. A unique Runoff "C" ($C_{Outfall_LU}$) is calculated for each land use category represented in each outfall drainage area [Equation A.4]. This is repeated for each land use category in each monitored outfall drainage area.

5) Calculate a WMA Runoff "C" for each land use category in the WMA. The WMA Runoff "C" (C_{WMA_LU}) is calculated as the area-weighted average of the outfall land use Runoff "C" values calculated in Step 4. In order to improve the accuracy of the resulting WMA Runoff "C" over time, results from each year of MS4 Outfall Monitoring are incorporated into the average [Equation A.5]. This equation is repeated for each land uses category in the WMA.

2.3.2 Monitored MS4 Outfall Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[b])

MS4 Permit Provision D.4.b.(2)(b)(i)[b] requires calculation of the storm water volume and pollutant loads discharged from each of the Responsible Agency's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area, for each storm event with measurable rainfall greater than 0.1 inch. This calculation is based on the actual Runoff "C" values, the size of each outfall drainage area, ALERT rain data for the rain gauge closest to each outfall, and the observed chemistry data.

The wet season storm water volume and pollutant loads are calculated according to the following steps. The corresponding equation or equations for each step, as listed in Table 1-1, are provided in brackets.

1) <u>Calculate the annual storm water volume from each outfall.</u> The storm water volume ($V_{Outfall_Annual}$) is calculated using the actual runoff coefficient for each outfall ($C_{Outfall_Actual}$ from Equation A.1) and the area of each outfall, multiplied by the total rainfall for the wet season. Total rainfall is calculated as the sum of rainfall from qualifying wet season rain events, based on the closest ALERT system gauge for each outfall. A qualifying storm event is defined as a wet season storm event with measureable rainfall greater than 0.1 inch. [Equation B.1]. This equation is repeated for each monitored outfall.

2) <u>Calculate annual pollutant loads for each pollutant at each monitored outfall.</u> The monitored event analytical result for each pollutant at each outfall is used to calculate an annual pollutant load ($PollutantLoad_{Outfall}$). [Equation B.2]. This equation is repeated for each pollutant at each monitored outfall.

2.3.3 Jurisdictional Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[c])

MS4 Permit Provision D.4.b.(2)(b)(i)[c] requires calculation of the total flow volume and pollutant loadings discharged from each Responsible Agency's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls. The WMA Runoff "C" values, calculated as described in Section 3.1, will be used in combination with land use area data and ALERT rainfall data to calculate a total flow volume for each jurisdiction. The annual volumes will be applied to pollutant event mean concentrations (EMCs) to calculate annual jurisdictional pollutant loadings.

The jurisdictional flow volume and pollutant loads are calculated according to the following steps. The corresponding equation or equations for each step, as listed in Table 1-1, are provided in brackets.

1) Calculate the wet season flow volume from each land use area in each jurisdiction in the WMA. An annual flow volume for each land use type in each jurisdiction ($V_{WMA_Jurisd_LU}$) is calculated using the land use Runoff "C" (C_{WMA_LU}), calculated as described in Section 3.1, the area of each land use type in each jurisdiction within the WMA, and the total qualifying wet season rainfall. The total qualifying wet season rainfall (sum of rainfall from events with rainfall totals exceeding >0.1inch) is calculated using a representative ALERT station from each WMA. If more than one ALERT station is present in a WMA, the station closest to the majority of monitoring locations will be used. [Equation C-1]. This equation is repeated for each land use type for each Responsible Agency.

2) Calculate the wet season flow volume from each jurisdiction in the WMA. The wet season flow volume from each land use in a jurisdiction will be summed to generate the wet season jurisdictional flow volume (V_{WMA_Juris}). [Equation C.2]. This equation is repeated for each Responsible Agency in the WMA.

3) Define the event mean concentration (EMC) for each monitored event. The event mean concentration (EMC) for each constituent ($EMC_{Outfall_Actual}$) for each monitored outfall is defined as the measured constituent concentration for the outfall [Equation C.3].

4) Calculate the expected (calculated) EMC for each pollutant at each monitored outfall. An expected (calculated) EMC ($EMC_{Outfall_Calculated}$) for each constituent at a monitored outfall will be calculated as the area-weighted average of literature EMC values for each land use type represented by the monitored outfall drainage area. The literature EMC values, based on literature EMCs provided in the San Diego River WMA Water Quality Improvement Plan (LWA & Amec Foster Wheeler, 2016) are provided in Table 2-3. [Equation C.4]. This equation is repeated for each pollutant at each monitored outfall.

5) Calculate an EMC correction factor for each pollutant measured from each monitored outfall. A ratio, or correction factor for the Estimated Mean Concentration ($CF_{Outfall_EMC}$), is calculated using the actual EMC and the expected (calculated) EMC for each constituent at each outfall [Equation C.5]. This equation is repeated for each pollutant at each monitored outfall.

6) Calculate a land use EMC for each land use represented in the drainage area of each monitored outfall. The EMC correction factor is multiplied by the expected EMC (Table 2-3) for each constituent at each monitored outfall [Equation C.6], resulting in a corrected EMC for each constituent for each outfall ($EMC_{Outfall_LU}$). This equation is repeated for each pollutant and each land use at each outfall.

7) Calculate a WMA EMC for each pollutant and each land use category. An EMC for each monitored constituent in the WMA by each land use type (EMC_{WMA_LU}) is then calculated as the area-weighted average of the outfall land use EMC [Equation C.7]. This equation is repeated for each pollutant and each land use in the WMA.

8) Calculate the historical average WMA EMC for each pollutant and each land use category. Each EMC calculated using Equation C.7 is averaged with the historical EMCs for that constituent and land use, to derive the historical average WMA EMC ($EMC_{WMA_LU_HIS}$) [Equation C.8]. This equation is repeated for each pollutant and each land use in the WMA.

9) Calculate the annual pollutant load for each pollutant from each Responsible Agency in the WMA. Wet season jurisdictional pollutant loads (Pollutant $Load_{WMA_Juris}$) are calculated for each constituent by summing the load from each land use in the jurisdiction [Equation C.9]. This equation is repeated for each pollutant and each Responsible Agency.

Table 2-3
Literature EMCs by Land Use Type

Constituent	Agriculture (Row Crop)[6]	Orchard[6]	Commercial[7]	Educational	Industrial	Vacant/ Open Space	Residential: Multi-Family[7]	Residential: Rural	Residential: Single Family	Transportation
Dissolved Oxygen	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Color[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Dissolved Color[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
pH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Specific Conductivity[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Sulfates[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Temperature	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Hardness[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Turbidity[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Enterococcus[1]	60300	1344	51600	2148	26703	484	11800	6684	35557	1680
Fecal Coliform	60300	1344	51600	2148	26703	484	11800	6684	35557	1680
Total Coliform[1]	60300	1344	51600	2148	26703	484	11800	6684	35557	1680
Aluminum (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Aluminum (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Beryllium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Beryllium (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Cadmium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Cadmium(Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Copper (Dissolved)	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Copper (Total)	100.1	100.1	54.84	12.02	53.54	10.6	12.1	8.36	25.96	52.2
Iron (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Iron (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Lead (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Lead (Total)	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Manganese (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Manganese (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Mercury (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Mercury (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Molybdenum (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Molybdenum (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Nickel (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Nickel (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Selenium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Selenium (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Silver (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Silver (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Thallium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4
Thallium (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Titanium (Dissolved)[4]	22.5	22.5	16.62	5.58	21.35	0.6	7.4	4.2	11.42	32.4

Constituent	Agriculture (Row Crop)[6]	Orchard[6]	Commercial[7]	Educational	Industrial	Vacant/ Open Space	Residential: Multi-Family[7]	Residential: Rural	Residential: Single Family	Transportation
Titanium (Total)[3]	30.2	30.2	14.4	7.43	20.52	3	4.5	21.38	13.03	9.2
Zinc (Dissolved)	40.1	40.1	224.4	73.13	214.58	28.1	77.5	14.99	50.02	222
Zinc (Total)	274.8	274.8	483.7	174.1	428.39	26.3	125.1	39.19	153.29	292.9
Ammonia	1.65	0.04	1.21	0.4	0.6	0.11	0.5	0.11	0.49	0.37
Nitrate	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Nitrite[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Total Orthophosphate[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
TKN	7.32	2.31	3.44	1.71	2.87	0.96	1.8	2.65	2.51	1.84
Total Nitrogen2	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
Dissolved Phosphorus	1.41	0.13	0.29	0.26	0.26	0.09	0.2	0.12	0.45	0.56
Total Phosphorus	3.34	0.36	0.32	0.46	0.45	0.12	0.23	1.59	0.49	0.68
TDS[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
TSS	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
SSC[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Trash	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DDT[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
PCP[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Chlordane[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Diazanon[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
MBAS[2]	34.4	26.11	0.55	0.61	0.87	1.17	1.51	1.5	1.58	0.74
PAHs[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
PCBs[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Organophosphorus Pesticides[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Pesticides/PCBs[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Pyrethroid Pesticides[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
Nitrogen Pesticides[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
di(2-ethylhexyl) adipate[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
di(2-ethylhexyl phthalate[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
hexachlorobenzene[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
hexachlorocyclopentadiene (HEX)[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8
2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)[5]	999.2	252.64	127.68	132.11	125.18	216.6	39.9	2523.76	123.41	77.8

Notes:
NA=Not applicable. EMCs not provided because annual load not calculated for these constituents.
1. Distribution of constituent EMCs based on values listed for fecal coliform
2. Distribution of constituent EMCs based on values listed for nitrate as N
3. Distribution of constituent EMCs based on values listed for total lead
4. Distribution of constituent EMCs based on values listed for dissolved copper.
5. Distribution of constituent EMCs based on values listed for total suspended solids.
6. Values for Agricultural land use based on average of Agriculture (Row Crop) and Orchard values.
7. Values for Mixed Use land use based on average of Commercial and Residential: Multi-Family values.

2.3.4 Land Use Flow Volume and Pollutant Loadings (D.4.b.(2)(b)(i)[d])

MS4 Permit Provision D.4.b.(2)(b)(i)[d] requires calculating the percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea (HSA) with a major MS4 outfall to receiving waters, or within each major MS4 outfall to receiving waters, in the Responsible Agency's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch. The methods used to perform these calculations are similar to those used to calculate the WMA jurisdictional storm water volumes and pollutant loads described in Section 2.4.3, except HSAs without a major outfall are excluded.

The HSA flow volume and pollutant loads are calculated according to the following steps. The corresponding equation or equations for each step, as listed in Table 1-1, are provided in brackets.

1) <u>Calculate the wet season flow volume from each land use area in each HSA with a major outfall in the WMA.</u> An annual flow volume for each land use type in each HSA ($V_{HSA_Juris_LU}$) is calculated using the land use Runoff "C" (C_{WMA_LU}), calculated as described in Section 2.4.1, the area of each land use type in each HSA in each jurisdiction within the WMA, and the total qualifying wet season rainfall. [Equation D.1]. This equation is repeated for each land use type in each HSA for each jurisdiction in the WMA.
2) <u>Calculate the wet season flow volume from each jurisdiction in each HSA with a major outfall in the WMA.</u> The wet season flow volume from each land use in the HSA (by jurisdiction) is added to calculate the total storm water volume by HSA (V_{HSA_Juris}) for the jurisdiction [Equation D.2]. This equation is repeated for each Responsible Agency.
3) <u>Calculate the percent of storm water volume discharged from each HSA, by jurisdiction.</u> A percent volume for each jurisdiction ($\%V_{HSA_Juris}$) can be calculated by dividing the wet season flow volume from the HSA by the total jurisdictional runoff volume in the WMA [Equation D.3]. This equation is repeated for each Responsible Agency.
4) <u>Calculate the annual pollutant load for each pollutant from each Responsible Agency in the WMA, by HSA.</u> Pollutant loads by HSA by jurisdiction (Pollutant $Load_{HSA_Juris}$) are calculated for each constituent by summing the load from each land use area in the HSA [Equation D.4]. This equation is repeated for each pollutant, each Responsible Agency, and each HSA in which that Responsible Agency has a major outfall.
5) <u>Calculate the percent pollutant load contribution for each pollutant from each HSA.</u> The percent contribution of pollutant load for each jurisdiction (%Pollutant $Load_{HSA_Juris}$) can be calculated by dividing the HSA pollutant load for each jurisdiction by the WMA pollutant load for that jurisdiction [Equation D.5]. This equation is repeated for each pollutant, each Responsible Agency, and each HSA in which that Responsible Agency has a major outfall.

3 Storm Water Action Level Comparison

Per MS4 Permit Provision D.4.b.(2)(c), Responsible Agencies must compare pollutant concentrations from monitored wet weather outfalls to applicable Storm Water Action Levels (SALs). The Responsible Agencies will include this comparison in each Water Quality Improvement Plan Annual Report. The SALs listed in Provision C.2 of the MS4 Permit are provided in Table 3-1. Additional SALs may apply, on a WMA-specific basis, for pollutants that cause or contribute to a receiving water condition associated with the highest priority water quality condition. These SALs will be provided in the applicable Water Quality Improvement Plan Annual Report.

Table 3-1
Storm Water Action Levels (SALs) for Discharges from MS4s to Receiving Waters

Parameter	Units	Action Level
Turbidity	NTU	126
Nitrate & Nitrite (Total)	mg/L	2.6
Phosphorus (Total P)	mg/L	1.46
Cadmium (Total Cd)[1]	µg/L	3.0
Copper (Total Cu)[1]	µg/L	127
Lead (Total Pb)[1]	µg/L	250
Zinc (Total Zn)[1]	µg/L	976

Notes:
NTU= Nephelometric Turbidity Units; mg/L = milligrams per liter; µg/L = micrograms per liter

1) If a total metals concentration exceeds the listed action level, the concentration must be compared to the California Toxics Rule criteria and the USEPA 1-hour maximum concentration for the detected level of receiving water hardness associated with that sample. If the sample does not exceed the USEPA 1-hr maximum concentration criterion for the measured level of hardness, the sample results will not be considered above the SAL.

4 Summary of Changes from Transitional Methodology

The methodology presented is largely identical to the transitional methodology outlined in the Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan (San Diego Regional Copermitees, 2015). Differences from the transitional work plan include the following:

- Land use categorization, presented in Table 2-1, is based on the revised categorization presented in the San Diego River Transitional Monitoring Annual Report.
- For the purposes of calculating land use areas, agricultural and open space land uses of an undefined soil group are classified as soil group D.
- Literature EMCs are based on values listed in the San Diego River WMA Water Quality Improvement Plan (LWA & Amec Foster Wheeler, 2016). Literature EMCs for constituents not described in that document are estimated as described in Table 2-3.
- For outfalls monitored during more than one monitoring season, the outfall runoff coefficient (Runoff “C”) is averaged based on all years of monitoring.
- The WMA land use Runoff “C” is an area-weighted average across all years of monitoring.
- The land use EMC values are based on an average of the land use EMC values for all years of monitoring.
- The assessment excludes State, Federal, and Indian Reservation lands from the WMA and HSA load calculations. The transitional monitoring and assessment program excluded Federal and Indian Reservation lands only. These land uses are often outside the jurisdiction of the Copermittees.

5 References

County of San Diego. 2003. San Diego County Hydrology Manual. Prepared by the County of San Diego Department of Public Works Flood Control Section. June 2003.

Larry Walker and Associates (LWA) & Amec Foster Wheeler. 2016. San Diego River Watershed Management Area Water Quality Improvement Plan. January 2016.

San Diego County MS4 Copermittes. 2016. Transitional Monitoring and Assessment Program Report for the San Diego River WMA (2014-2015) Prepared by Weston Solutions. January 2016.

San Diego County Regional Copermittees. 2015. 2013-2014 and 2014-2015 Transitional Wet Weather MS4 Outfall Discharge Monitoring Work Plan. Prepared by Weston Solutions. January 2015.

Attachment E.4 – Wet Weather HSA Storm Water Volumes and Pollutant Loads

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Table E.4-1
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of Del Mar HSA 905.11

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	0	0	2,389,254	116,372	11,766	0	28,131	23,092	2,144	447,061	73,236	62,769	2,225,942	2,499,742	7,879,510
% Contribution	%	0%	0%	0%	0%	30%	1%	0%	0%	0%	0%	0%	6%	1%	1%	28%	32%	100%
Conventional Parameters																		
Chloride	lb	0	0	0	0	792.3	0	32.87	0	32.22	7.997	4.112	1768	162.6	295.1	4844	5445	13384
Sulfate	lb	0	0	0	0	150.8	0	30.94	0	71.52	17.75	9.836	3674	84.34	424.7	4329	4440	13233
Indicator Bacteria																		
Enterococcus	MPN	0	0	0	0	2.89E+13	0	1.37E+12	0	4.82E+11	1.20E+11	9.80E+10	5.16E+13	3.14E+12	1.26E+13	3.63E+14	2.42E+14	7.03E+14
Fecal Coliform	MPN	0	0	0	0	3.50E+13	0	3.44E+11	0	3.96E+11	9.82E+10	1.17E+11	5.11E+12	5.32E+12	2.27E+13	2.69E+14	8.06E+13	4.18E+14
Total Coliform	MPN	0	0	0	0	1.14E+15	0	1.84E+13	0	2.78E+12	6.91E+11	3.92E+11	8.74E+13	1.81E+14	6.03E+13	1.04E+15	5.73E+14	3.11E+15
Total Metals																		
Aluminum	lb	0	0	0	0	5.190	0	0.1088	0	0.1284	0.0319	0.0595	0.6977	0.6358	4.653	31.3052	34.6778	77.4886
Cadmium	lb	0	0	0	0	0.001	0	0.0000	0	0.0000	4.17E-06	3.08E-06	2.87E-04	1.18E-04	0.0004	0.0026	0.0032	0.0076
Copper	lb	0	0	0	0	0.3153	0	0.0041	0	0.0068	0.0017	0.0009	0.0627	0.0227	0.0446	0.4789	1.79	2.729
Iron	lb	0	0	0	0	6.901	0	0.2922	0	0.2022	0.0502	0.0817	2.909	0.7743	7.5146	47.33	53.00	119.1
Lead	lb	0	0	0	0	0.0220	0	0.0002	0	0.0004	9.57E-05	6.34E-05	3.10E-03	0.0024	0.0066	0.0543	0.0667	0.1559
Manganese	lb	0	0	0	0	0.3498	0	0.0121	0	0.0120	0.0030	0.0041	0.2192	0.0305	0.6042	2.279	2.506	6.020
Mercury	lb	0	0	0	0	0.0001	0	0.0000	0	0.0000	5.87E-07	8.63E-07	5.90E-05	1.35E-05	0.0001	6.94E-04	7.35E-04	0.0017
Zinc	lb	0	0	0	0	1.397	0	0.0119	0	0.0088	0.0022	0.0019	0.1099	0.1492	0.2007	1.373	5.706	8.960
Dissolved Metals																		
Aluminum	lb	0	0	0	0	0.1496	0	0.0148	0	0.0009	0.0002	0.0002	0.0053	0.0371	0.1010	0.4427	1.828	2.580
Iron	lb	0	0	0	0	0.2636	0	0.0832	0	0.0088	0.0022	0.0059	0.0161	0.0482	3.825	2.249	6.230	12.73
Manganese	lb	0	0	0	0	0.1434	0	0.0053	0	0.0009	0.0002	0.0003	0.0041	0.0118	0.1845	0.3127	1.393	2.056
Mercury	lb	0	0	0	0	4.88E-05	0	2.76E-06	0	1.71E-08	4.24E-09	3.33E-09	2.58E-06	1.12E-05	4.39E-05	2.78E-04	1.29E-03	0.0017
Nutrients																		
Nitrate as N	lb	0	0	0	0	2.736	0	0.1962	0	0.9341	0.2319	0.1833	37.83	2.119	10.20	66.72	59.51	180.7
Nitrite as N	lb	0	0	0	0	0.2585	0	0.0051	0	0.0626	0.0155	0.0078	1.065	0.1317	0.2471	2.545	2.563	6.901
TKN	lb	0	0	0	0	17.07	0	0.3458	0	0.5417	0.1345	0.1098	11.47	2.649	10.25	64.82	74.11	181.5
Total Nitrogen	lb	0	0	0	0	12.62	0	0.3400	0	2.355	0.5846	0.3456	53.65	10.26	21.73	195.7	134.36	432.0
Dissolved Phosphorus as P	lb	0	0	0	0	0.9189	0	0.0258	0	0.0233	0.0058	0.0033	1.136	0.2810	0.1331	7.913	17.01	27.45
Total Phosphorus as P	lb	0	0	0	0	1.57	0	0.0440	0	0.0583	0.0145	0.0140	1.837	0.4349	2.455	10.94	27.20	44.56
Solid Parameters																		
TDS	lb	0	0	0	0	993.4	0	88.75	0	315.8	78.38	37.68	17122	616.8	1714	19592	21138	61697
Synthetic Organics																		
Pentachlorophenol	lb	0	0	0	0	0.0022	0	0.0001	0	0.0002	4.12E-05	6.45E-05	0.0144	3.05E-04	0.0212	0.0097	0.0110	0.0593

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-2
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of Del Mar HSA 905.11

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	0	0	2,389,254	116,372	11,766	0	28,131	23,092	2,144	447,061	73,236	62,769	2,225,942	2,499,742	7,879,510
% Contribution	%	0%	0%	0%	0%	30%	1%	0%	0%	0%	0%	0%	6%	1%	1%	28%	32%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	0%	20%	1%	0%	0%	0%	0%	0%	7%	1%	1%	44%	25%	100%
Sulfate	%	0%	0%	0%	0%	9%	1%	0%	0%	0%	0%	0%	7%	1%	2%	53%	27%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	61%	0%	0%	0%	0%	0%	0%	0%	0%	0%	36%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	78%	0%	0%	0%	0%	0%	0%	0%	1%	0%	20%	1%	100%
Total Coliform	%	0%	0%	0%	0%	97%	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	48%	0%	0%	0%	0%	0%	0%	0%	0%	1%	28%	22%	100%
Cadmium	%	0%	0%	0%	0%	91%	0%	0%	0%	0%	0%	0%	0%	1%	0%	4%	5%	100%
Copper	%	0%	0%	0%	0%	70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	20%	100%
Iron	%	0%	0%	0%	0%	51%	0%	0%	0%	0%	0%	0%	0%	0%	1%	27%	21%	100%
Lead	%	0%	0%	0%	0%	78%	0%	0%	0%	0%	0%	0%	0%	1%	0%	11%	10%	100%
Manganese	%	0%	0%	0%	0%	56%	0%	0%	0%	0%	0%	0%	1%	0%	1%	23%	19%	100%
Mercury	%	0%	0%	0%	0%	10%	2%	0%	0%	0%	0%	0%	3%	0%	0%	43%	42%	100%
Zinc	%	0%	0%	0%	0%	82%	0%	0%	0%	0%	0%	0%	0%	1%	0%	5%	12%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	48%	0%	0%	0%	0%	0%	0%	0%	1%	0%	12%	39%	100%
Iron	%	0%	0%	0%	0%	60%	0%	1%	0%	0%	0%	0%	0%	1%	0%	9%	30%	100%
Manganese	%	0%	0%	0%	0%	60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	30%	100%
Mercury	%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	20%	79%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	0%	14%	1%	0%	0%	0%	0%	0%	5%	1%	3%	52%	24%	100%
Nitrite as N	%	0%	0%	0%	0%	28%	1%	0%	0%	0%	0%	0%	6%	2%	1%	40%	23%	100%
TKN	%	0%	0%	0%	0%	62%	1%	0%	0%	0%	0%	0%	1%	1%	1%	19%	16%	100%
Total Nitrogen	%	0%	0%	0%	0%	27%	1%	0%	0%	0%	0%	0%	5%	2%	2%	43%	21%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	29%	1%	0%	0%	0%	0%	0%	1%	1%	0%	27%	42%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	35%	1%	0%	0%	0%	0%	0%	1%	1%	1%	22%	39%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	0%	15%	1%	0%	0%	0%	0%	0%	7%	1%	1%	48%	25%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	0%	0%	0%	61%	0%	0%	0%	1%	1%	0%	1%	1%	17%	12%	6%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-3
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of Escondido HSA 905.21

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	135,398	23,970	36,399	1,867,240	2,185,171	178,027	0	762	356,187	530,700	1,544,812	389,565	166,142	10,044,252	4,222,799	21,681,422
% Contribution	%	0%	1%	0%	0%	9%	10%	1%	0%	0%	2%	2%	7%	2%	1%	46%	19%	100%
Conventional Parameters																		
Chloride	lb	0	436.8	49.78	209.0	29209	24258	429.7	0	2.460	1149	1089	8869	2619	968.4	95128	28674	193092
Sulfate	lb	0	969.8	119.1	434.3	5559	14716	404.5	0	5.461	2551	2605	18431	1358	1394	85011	23382	156940
Indicator Bacteria																		
Enterococcus	MPN	0	6.54E+12	1.19E+12	6.10E+12	1.07E+15	3.26E+15	1.79E+13	0	3.68E+10	1.72E+13	2.59E+13	2.59E+14	5.06E+13	4.14E+13	7.13E+15	1.27E+15	1.32E+16
Fecal Coliform	MPN	0	5.36E+12	1.42E+12	6.04E+11	1.29E+15	1.54E+14	4.50E+12	0	3.02E+10	1.41E+13	3.11E+13	2.56E+13	8.56E+13	7.44E+13	5.27E+15	4.24E+14	7.39E+15
Total Coliform	MPN	0	3.78E+13	4.74E+12	1.03E+13	4.21E+16	5.27E+15	2.40E+14	0	2.13E+11	9.93E+13	1.04E+14	4.38E+14	2.92E+15	1.98E+14	2.05E+16	3.02E+15	7.49E+16
Total Metals																		
Aluminum	lb	0	1.740	0.7210	0.0825	191.3	8.152	1.423	0	0.0098	4.578	15.77	3.500	10.24	15.27	614.8	182.6	1050
Cadmium	lb	0	2.28E-04	3.73E-05	3.39E-05	0.0329	0.0042	0.0004	0	1.28E-06	6.00E-04	8.16E-04	0.0014	0.0019	0.0013	0.0518	0.0169	0.1125
Copper	lb	0	0.0916	0.0105	0.0074	11.63	0.5995	0.0540	0	5.16E-04	0.2409	0.2296	0.3147	0.3657	0.1465	9.404	9.435	32.52
Iron	lb	0	2.742	0.9891	0.3439	254.4	43.51	3.821	0	0.0154	7.214	21.64	14.60	12.47	24.66	929.5	279.1	1595
Lead	lb	0	5.23E-03	7.67E-04	3.66E-04	0.8125	0.0444	0.0024	0	2.94E-05	0.0137	0.0168	0.0155	0.0385	0.0216	1.066	0.3515	2.389
Manganese	lb	0	0.1628	0.0497	0.0259	12.90	3.146	0.1585	0	9.17E-04	0.4283	1.088	1.099	0.4914	1.983	44.76	13.20	79.49
Mercury	lb	0	3.21E-05	1.04E-05	6.97E-06	2.82E-03	9.41E-04	6.84E-05	0	1.80E-07	8.43E-05	2.28E-04	2.96E-04	2.18E-04	2.97E-04	0.0136	0.0039	0.0225
Zinc	lb	0	0.1196	0.0232	0.0130	51.50	4.765	0.1562	0	6.74E-04	0.3147	0.5083	0.5512	2.403	0.6589	26.96	30.05	118.0
Dissolved Metals																		
Aluminum	lb	0	0.0120	0.0030	0.0006	5.513	0.2181	0.1932	0	6.75E-05	0.0315	0.0661	0.0264	0.5979	0.3315	8.693	9.626	25.31
Iron	lb	0	0.1187	0.0711	0.0019	9.719	0.7482	1.088	0	6.69E-04	0.3123	1.555	0.0806	0.7764	12.55	44.17	32.81	104.0
Manganese	lb	0	0.0125	0.0036	0.0005	5.287	0.2271	0.0698	0	7.04E-05	0.0329	0.0793	0.0206	0.1899	0.6056	6.140	7.336	20.00
Mercury	lb	0	2.32E-07	4.04E-08	3.05E-07	1.80E-03	1.92E-04	3.61E-05	0	1.30E-09	6.09E-07	8.83E-07	1.29E-05	1.81E-04	1.44E-04	0.0055	0.0068	0.0146
Nutrients																		
Nitrate as N	lb	0	12.67	2.219	4.472	100.9	147.9	2.565	0	0.0713	33.319	48.54	189.8	34.13	33.48	1310	313.4	2234
Nitrite as N	lb	0	0.8492	0.0946	0.1259	9.529	4.208	0.0669	0	0.0048	2.234	2.068	5.343	2.121	0.8110	49.98	13.50	90.93
TKN	lb	0	7.345	1.329	1.356	629.2	151.4	4.521	0	0.0414	19.32	29.08	57.55	42.67	33.63	1273	390.3	2641
Total Nitrogen	lb	0	31.93	4.184	6.342	465.1	198.4	4.445	0	0.1798	84.00	91.52	269.1	165.31	71.31	3843	707.6	5943
Dissolved Phosphorus as P	lb	0	0.3165	0.0401	0.1342	33.87	25.34	0.3377	0	0.0018	0.8327	0.8773	5.697	4.526	0.4369	155.4	89.58	317.4
Total Phosphorus as P	lb	0	0.7900	0.1699	0.2172	57.70	46.81	0.5747	0	0.0044	2.078	3.717	9.217	7.005	8.057	214.9	143.2	494.4
Solid Parameters																		
TDS	lb	0	4282	456.2	2024	36621	69793	1160	0	24.11	11264	9980	85897	9935	5626	384756	111314	733133
Synthetic Organics																		
Pentachlorophenol	lb	0	0.0022	7.80E-04	0.0017	0.0818	0.0524	0.0015	0	1.27E-05	0.0059	0.0171	0.0725	0.0049	0.0697	0.1914	0.0579	0.5598

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-4
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of Escondido HSA 905.21

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	135,398	23,970	36,399	1,867,240	2,185,171	178,027	0	762	356,187	530,700	1,544,812	389,565	166,142	10,044,252	4,222,799	21,681,422
% Contribution	%	0%	1%	0%	0%	9%	10%	1%	0%	0%	2%	2%	7%	2%	1%	46%	19%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	0%	5%	6%	0%	0%	0%	1%	1%	7%	2%	1%	63%	13%	100%
Sulfate	%	0%	0%	0%	0%	2%	5%	0%	0%	0%	1%	2%	7%	1%	1%	67%	13%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	21%	1%	1%	0%	0%	0%	0%	0%	1%	0%	73%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	38%	0%	0%	0%	0%	0%	0%	0%	2%	1%	58%	1%	100%
Total Coliform	%	0%	0%	0%	0%	82%	0%	1%	0%	0%	0%	0%	0%	5%	0%	11%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	18%	2%	1%	0%	0%	0%	1%	1%	1%	1%	58%	17%	100%
Cadmium	%	0%	0%	0%	0%	71%	0%	0%	0%	0%	0%	0%	0%	4%	0%	16%	8%	100%
Copper	%	0%	0%	0%	0%	40%	2%	1%	0%	0%	0%	1%	1%	1%	0%	29%	24%	100%
Iron	%	0%	0%	0%	0%	19%	2%	1%	0%	0%	0%	1%	1%	1%	1%	57%	17%	100%
Lead	%	0%	0%	0%	0%	45%	2%	1%	0%	0%	0%	0%	0%	2%	1%	36%	12%	100%
Manganese	%	0%	0%	0%	0%	22%	4%	1%	0%	0%	0%	1%	1%	1%	1%	53%	16%	100%
Mercury	%	0%	0%	0%	0%	2%	13%	0%	0%	0%	0%	0%	3%	0%	0%	60%	22%	100%
Zinc	%	0%	0%	0%	0%	55%	4%	0%	0%	0%	0%	0%	0%	2%	0%	20%	18%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	22%	3%	3%	0%	0%	0%	0%	0%	2%	0%	31%	38%	100%
Iron	%	0%	0%	0%	0%	30%	2%	5%	0%	0%	0%	0%	0%	3%	0%	26%	33%	100%
Manganese	%	0%	0%	0%	0%	32%	2%	2%	0%	0%	0%	0%	0%	1%	0%	27%	35%	100%
Mercury	%	0%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%	0%	37%	55%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	0%	3%	4%	0%	0%	0%	1%	1%	5%	1%	2%	69%	12%	100%
Nitrite as N	%	0%	0%	0%	0%	8%	5%	0%	0%	0%	1%	1%	7%	3%	1%	61%	13%	100%
TKN	%	0%	0%	0%	0%	26%	6%	1%	0%	0%	1%	1%	2%	2%	1%	46%	15%	100%
Total Nitrogen	%	0%	0%	0%	0%	7%	4%	0%	0%	0%	1%	1%	5%	3%	1%	64%	12%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	9%	8%	0%	0%	0%	0%	0%	2%	1%	0%	49%	29%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	12%	10%	0%	0%	0%	0%	0%	2%	2%	2%	43%	28%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	0%	4%	6%	0%	0%	0%	1%	1%	7%	2%	1%	65%	13%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	2%	0%	0%	25%	0%	1%	0%	0%	5%	6%	3%	2%	23%	29%	6%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-5
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of Escondido HSA 905.23

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	1,774	3,059	323,122	404,573	127,657	0	7,025	51,304	93,402	779,233	28,328	35,226	3,481,006	1,114,991	6,450,699
% Contribution	%	0%	0%	0%	0%	5%	6%	2%	0%	0%	1%	1%	12%	0%	1%	54%	17%	100%
Conventional Parameters																		
Chloride	lb	0	0	3.684	17.56	4913	4491	95.15	0	22.66	163.0	192.8	4474	190.4	204.7	32892	7672	55332
Sulfate	lb	0	0	8.812	36.50	935.1	2725	89.57	0	50.31	361.8	461.3	9297	98.78	294.6	29393	6256	50008
Indicator Bacteria																		
Enterococcus	MPN	0	0	8.78E+10	5.13E+11	1.79E+14	6.04E+14	3.97E+12	0	3.39E+11	2.44E+12	4.59E+12	1.31E+14	3.68E+12	8.74E+12	2.46E+15	3.41E+14	3.74E+15
Fecal Coliform	MPN	0	0	1.05E+11	5.07E+10	2.17E+14	2.85E+13	9.96E+11	0	2.78E+11	2.00E+12	5.50E+12	1.29E+13	6.23E+12	1.57E+13	1.82E+15	1.14E+14	2.23E+15
Total Coliform	MPN	0	0	3.51E+11	8.68E+11	7.07E+15	9.75E+14	5.31E+13	0	1.96E+12	1.41E+13	1.84E+13	2.21E+14	2.12E+14	4.18E+13	7.08E+15	8.08E+14	1.65E+16
Total Metals																		
Aluminum	lb	0	0	0.0534	0.0069	32.19	1.509	0.3151	0	0.0903	0.6494	2.793	1.766	0.7447	3.228	212.6	48.86	304.8
Cadmium	lb	0	0	2.76E-06	2.85E-06	0.0055	7.72E-04	8.31E-05	0	1.18E-05	8.51E-05	1.44E-04	7.26E-04	1.38E-04	2.83E-04	0.0179	0.0045	0.0302
Copper	lb	0	0	7.77E-04	6.23E-04	1.955	0.1110	0.0120	0	0.0048	0.0342	0.0407	0.1587	0.0266	0.0310	3.252	2.524	8.152
Iron	lb	0	0	0.0732	0.0289	42.79	8.056	0.8460	0	0.1423	1.023	3.831	7.362	0.9069	5.213	321.4	74.68	466.3
Lead	lb	0	0	5.68E-05	3.08E-05	0.1367	0.0082	5.24E-04	0	2.71E-04	0.0019	0.0030	0.0078	0.0028	0.0046	0.3685	0.0941	0.6285
Manganese	lb	0	0	0.0037	0.0022	2.169	0.5825	0.0351	0	0.0084	0.0607	0.1927	0.5546	0.0357	0.4191	15.48	3.531	23.07
Mercury	lb	0	0	7.73E-07	5.86E-07	4.74E-04	1.74E-04	1.51E-05	0	1.66E-06	1.20E-05	4.05E-05	1.49E-04	1.59E-05	6.27E-05	0.0047	0.0010	0.0067
Zinc	lb	0	0	0.0017	0.0011	8.663	0.8823	0.0346	0	0.0062	0.0446	0.0900	0.2780	0.1748	0.1393	9.321	8.039	27.68
Dissolved Metals																		
Aluminum	lb	0	0	2.23E-04	5.24E-05	0.9274	0.0404	0.0428	0	6.21E-04	0.0045	0.0117	0.0133	0.0435	0.0701	3.006	2.576	6.736
Iron	lb	0	0	0.0053	1.60E-04	1.635	0.1385	0.2409	0	0.0062	0.0443	0.2753	0.0407	0.0565	2.654	15.27	8.779	29.15
Manganese	lb	0	0	2.68E-04	4.08E-05	0.8893	0.0420	0.0155	0	6.49E-04	0.0047	0.0140	0.0104	0.0138	0.1280	2.123	1.963	5.205
Mercury	lb	0	0	2.99E-09	2.56E-08	3.02E-04	3.56E-05	8.00E-06	0	1.20E-08	8.64E-08	1.56E-07	6.52E-06	1.31E-05	3.04E-05	0.0019	0.0018	0.0041
Nutrients																		
Nitrate as N	lb	0	0	0.1642	0.3759	16.97	27.38	0.5680	0	0.6571	4.726	8.594	95.74	2.481	7.077	453.1	83.85	701.6
Nitrite as N	lb	0	0	0.0070	0.0106	1.603	0.7792	0.0148	0	0.0441	0.3168	0.3662	2.695	0.1542	0.1714	17.28	3.612	27.05
TKN	lb	0	0	0.0984	0.1140	105.8	28.03	1.001	0	0.3811	2.740	5.149	29.03	3.103	7.108	440.2	104.4	727.2
Total Nitrogen	lb	0	0	0.3096	0.5330	78.23	36.74	0.9842	0	1.657	11.91	16.21	135.8	12.02	15.07	1329	189.3	1828
Dissolved Phosphorus as P	lb	0	0	0.0030	0.0113	5.698	4.692	0.0748	0	0.0164	0.1181	0.1553	2.874	0.3291	0.0923	53.73	23.97	91.76
Total Phosphorus as P	lb	0	0	0.0126	0.0183	9.706	8.667	0.1272	0	0.0410	0.2947	0.6581	4.649	0.5094	1.703	74.29	38.32	139.0
Solid Parameters																		
TDS	lb	0	0	33.76	170.1	6160	12922	256.9	0	222.1	1598	1767	43328	722.4	1189	133034	29784	231187
Synthetic Organics																		
Pentachlorophenol	lb	0	0	5.78E-05	1.44E-04	0.0138	0.0097	3.40E-04	0	1.17E-04	8.39E-04	0.0030	0.0366	3.57E-04	0.0147	0.0662	0.0155	0.1613

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-6
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of Escondido HSA 905.23

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	1,774	3,059	323,122	404,573	127,657	0	7,025	51,304	93,402	779,233	28,328	35,226	3,481,006	1,114,991	6,450,699
% Contribution	%	0%	0%	0%	0%	5%	6%	2%	0%	0%	1%	1%	12%	0%	1%	54%	17%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	0%	3%	4%	0%	0%	0%	0%	1%	12%	1%	1%	69%	11%	100%
Sulfate	%	0%	0%	0%	0%	1%	3%	1%	0%	0%	0%	1%	11%	0%	1%	71%	10%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	12%	1%	3%	0%	0%	0%	0%	0%	0%	0%	82%	1%	100%
Fecal Coliform	%	0%	0%	0%	0%	24%	0%	1%	0%	0%	0%	0%	0%	1%	0%	73%	1%	100%
Total Coliform	%	0%	0%	0%	0%	73%	0%	4%	0%	0%	0%	0%	0%	2%	0%	20%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	10%	2%	2%	0%	0%	0%	1%	1%	0%	1%	68%	15%	100%
Cadmium	%	0%	0%	0%	0%	60%	0%	0%	0%	0%	0%	0%	0%	2%	0%	28%	10%	100%
Copper	%	0%	0%	0%	0%	28%	1%	2%	0%	0%	0%	0%	2%	0%	0%	40%	26%	100%
Iron	%	0%	0%	0%	0%	11%	1%	2%	0%	0%	0%	1%	1%	0%	1%	67%	15%	100%
Lead	%	0%	0%	0%	0%	31%	1%	2%	0%	0%	0%	0%	1%	1%	1%	50%	13%	100%
Manganese	%	0%	0%	0%	0%	13%	2%	2%	0%	0%	0%	0%	2%	0%	1%	64%	14%	100%
Mercury	%	0%	0%	0%	0%	1%	8%	0%	0%	0%	0%	0%	5%	0%	0%	67%	19%	100%
Zinc	%	0%	0%	0%	0%	42%	3%	1%	0%	0%	0%	0%	1%	1%	0%	30%	21%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	14%	2%	8%	0%	0%	0%	0%	0%	1%	0%	39%	36%	100%
Iron	%	0%	0%	0%	0%	19%	1%	13%	0%	0%	0%	0%	0%	1%	0%	33%	32%	100%
Manganese	%	0%	0%	0%	0%	21%	1%	5%	0%	0%	0%	0%	0%	0%	0%	36%	35%	100%
Mercury	%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	1%	0%	0%	44%	50%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	0%	2%	2%	0%	0%	0%	0%	1%	8%	0%	1%	75%	10%	100%
Nitrite as N	%	0%	0%	0%	0%	4%	3%	0%	0%	0%	0%	1%	11%	1%	1%	68%	11%	100%
TKN	%	0%	0%	0%	0%	16%	4%	1%	0%	0%	0%	0%	4%	1%	1%	58%	14%	100%
Total Nitrogen	%	0%	0%	0%	0%	4%	2%	0%	0%	0%	0%	1%	9%	1%	1%	71%	10%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	5%	5%	1%	0%	0%	0%	0%	3%	0%	0%	59%	26%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	7%	7%	1%	0%	0%	0%	0%	3%	0%	1%	53%	27%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	0%	2%	3%	1%	0%	0%	0%	1%	11%	0%	1%	70%	10%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	0%	0%	0%	17%	0%	4%	0%	0%	3%	4%	5%	0%	20%	40%	6%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-7
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of Poway HSA 905.22

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	57,262	17,554	158,487	374,436	1,590,995	28,453	0	0	107,805	197,354	492,532	14,609	513,170	13,034,995	3,975,645	20,563,298
% Contribution	%	0%	0%	0%	1%	2%	8%	0%	0%	0%	1%	1%	2%	0%	2%	63%	19%	100%
Conventional Parameters																		
Chloride	lb	0	184.7	36.46	909.9	5944	17662	144.7	0	0	347.8	409.9	2828	98.19	3028	124299	27909	183802
Sulfate	lb	0	410.1	87.21	1891	1131	10714	136.2	0	0	772.1	980.5	5876	50.94	4359	111079	22758	160245
Indicator Bacteria																		
Enterococcus	MPN	0	2.77E+12	8.69E+11	2.66E+13	2.17E+14	2.37E+15	6.03E+12	0	0	5.21E+12	9.77E+12	8.25E+13	1.90E+12	1.29E+14	9.31E+15	1.24E+15	1.34E+16
Fecal Coliform	MPN	0	2.27E+12	1.04E+12	2.63E+12	2.63E+14	1.12E+14	1.52E+12	0	0	4.27E+12	1.17E+13	8.17E+12	3.21E+12	2.33E+14	6.89E+15	4.13E+14	7.95E+15
Total Coliform	MPN	0	1.60E+13	3.47E+12	4.50E+13	8.56E+15	3.83E+15	8.08E+13	0	0	3.01E+13	3.90E+13	1.40E+14	1.09E+14	6.19E+14	2.68E+16	2.94E+15	4.32E+16
Total Metals																		
Aluminum	lb	0	0.7360	0.5280	0.3591	38.94	5.935	0.4792	0	0	1.386	5.936	1.116	0.3840	47.76	803.3	177.7	1085
Cadmium	lb	0	9.64E-05	2.73E-05	1.48E-04	0.0067	0.0030	1.26E-04	0	0	1.82E-04	3.07E-04	4.59E-04	7.13E-05	0.0042	0.0677	0.0164	0.0994
Copper	lb	0	0.0387	0.0077	0.0323	2.366	0.4365	0.0182	0	0	0.0729	0.0864	0.1003	0.0137	0.4582	12.29	9.183	25.10
Iron	lb	0	1.160	0.7244	1.497	51.77	31.68	1.287	0	0	2.183	8.144	4.653	0.4677	77.13	1215	271.6	1667
Lead	lb	0	0.0022	5.62E-04	0.0016	0.1653	0.0323	7.97E-04	0	0	0.0042	0.0063	0.0050	0.0014	0.0674	1.393	0.3421	2.022
Manganese	lb	0	0.0689	0.0364	0.1128	2.624	2.291	0.0534	0	0	0.1296	0.4096	0.3505	0.0184	6.201	58.48	12.85	83.62
Mercury	lb	0	1.36E-05	7.65E-06	3.03E-05	5.73E-04	6.85E-04	2.30E-05	0	0	2.55E-05	8.60E-05	9.43E-05	8.18E-06	9.28E-04	0.0178	0.0038	0.0240
Zinc	lb	0	0.0506	0.0170	0.0565	10.48	3.469	0.0526	0	0	0.0953	0.1913	0.1757	0.0901	2.060	35.22	29.24	81.21
Dissolved Metals																		
Aluminum	lb	0	0.0051	0.0022	0.0027	1.122	0.1588	0.0651	0	0	0.0095	0.0249	0.0084	0.0224	1.037	11.36	9.369	23.19
Iron	lb	0	0.0502	0.0520	0.0083	1.978	0.5447	0.3664	0	0	0.0945	0.5851	0.0257	0.0291	39.26	57.72	31.93	132.6
Manganese	lb	0	0.0053	0.0027	0.0021	1.076	0.1653	0.0235	0	0	0.0100	0.0298	0.0066	0.0071	1.894	8.023	7.140	18.39
Mercury	lb	0	9.80E-08	2.96E-08	1.33E-06	3.66E-04	1.40E-04	1.22E-05	0	0	1.84E-07	3.32E-07	4.12E-06	6.78E-06	4.50E-04	0.0071	0.0066	0.0147
Nutrients																		
Nitrate as N	lb	0	5.356	1.625	19.47	20.53	107.7	0.8639	0	0	10.08	18.27	60.51	1.280	104.7	1712	305.0	2368
Nitrite as N	lb	0	0.3591	0.0692	0.5482	1.939	3.064	0.0225	0	0	0.6761	0.7785	1.704	0.0795	2.536	65.30	13.14	90.21
TKN	lb	0	3.106	0.9735	5.905	128.0	110.2	1.522	0	0	5.848	10.95	18.35	1.600	105.2	1663	379.8	2435
Total Nitrogen	lb	0	13.50	3.064	27.61	94.64	144.5	1.497	0	0	25.42	34.45	85.81	6.199	223.0	5022	688.7	6370
Dissolved Phosphorus as P	lb	0	0.1339	0.0294	0.5845	6.893	18.45	0.1137	0	0	0.2520	0.3302	1.816	0.1697	1.366	203.0	87.19	320.4
Total Phosphorus as P	lb	0	0.3341	0.1244	0.9456	11.74	34.08	0.1935	0	0	0.6289	1.399	2.939	0.2627	25.19	280.8	139.4	498.0
Solid Parameters																		
TDS	lb	0	1811	334.1	8812	7452	50815	390.7	0	0	3409	3756	27387	372.5	17594	502741	108343	733218
Synthetic Organics																		
Pentachlorophenol	lb	0	0.0010	5.72E-04	0.0074	0.0166	0.0381	5.17E-04	0	0	0.0018	0.0064	0.0231	1.84E-04	0.2180	0.2501	0.0564	0.6202

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-8
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of Poway HSA 905.22

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	57,262	17,554	158,487	374,436	1,590,995	28,453	0	0	107,805	197,354	492,532	14,609	513,170	13,034,995	3,975,645	20,563,298
% Contribution	%	0%	0%	0%	1%	2%	8%	0%	0%	0%	1%	1%	2%	0%	2%	63%	19%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	1%	1%	4%	0%	0%	0%	0%	0%	2%	0%	3%	77%	12%	100%
Sulfate	%	0%	0%	0%	1%	0%	4%	0%	0%	0%	0%	1%	2%	0%	4%	78%	11%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	93%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	9%	0%	0%	0%	0%	0%	0%	0%	0%	2%	88%	1%	100%
Total Coliform	%	0%	0%	0%	0%	52%	0%	1%	0%	0%	0%	0%	0%	1%	0%	46%	1%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	4%	2%	0%	0%	0%	0%	0%	0%	0%	3%	75%	16%	100%
Cadmium	%	0%	0%	0%	0%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	49%	17%	100%
Copper	%	0%	0%	0%	0%	11%	2%	0%	0%	0%	0%	0%	0%	0%	1%	53%	32%	100%
Iron	%	0%	0%	0%	0%	4%	2%	0%	0%	0%	0%	0%	0%	0%	4%	74%	16%	100%
Lead	%	0%	0%	0%	0%	13%	2%	0%	0%	0%	0%	0%	0%	0%	3%	66%	16%	100%
Manganese	%	0%	0%	0%	0%	5%	3%	0%	0%	0%	0%	0%	0%	0%	4%	72%	16%	100%
Mercury	%	0%	0%	0%	0%	0%	8%	0%	0%	0%	0%	0%	1%	0%	0%	71%	19%	100%
Zinc	%	0%	0%	0%	0%	19%	5%	0%	0%	0%	0%	0%	0%	0%	0%	45%	30%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	5%	2%	1%	0%	0%	0%	0%	0%	0%	0%	48%	43%	100%
Iron	%	0%	0%	0%	0%	8%	2%	1%	0%	0%	0%	0%	0%	0%	0%	46%	42%	100%
Manganese	%	0%	0%	0%	0%	8%	2%	0%	0%	0%	0%	0%	0%	0%	1%	46%	43%	100%
Mercury	%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	46%	49%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	0%	1%	3%	0%	0%	0%	0%	0%	2%	0%	5%	79%	10%	100%
Nitrite as N	%	0%	0%	0%	1%	1%	4%	0%	0%	0%	0%	0%	2%	0%	2%	77%	12%	100%
TKN	%	0%	0%	0%	0%	6%	5%	0%	0%	0%	0%	0%	1%	0%	3%	68%	16%	100%
Total Nitrogen	%	0%	0%	0%	1%	1%	3%	0%	0%	0%	0%	0%	2%	0%	4%	78%	11%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	2%	6%	0%	0%	0%	0%	0%	1%	0%	0%	64%	27%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	2%	8%	0%	0%	0%	0%	0%	1%	0%	5%	57%	27%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	1%	1%	4%	0%	0%	0%	0%	0%	2%	0%	3%	77%	11%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	1%	0%	0%	4%	0%	0%	0%	0%	1%	2%	1%	0%	57%	30%	4%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-9
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of San Diego HSA 905.11

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	154,704	184,381	0	2,148,198	4,029,946	1,192,349	939,300	0	698,952	302,786	60,622	16,119,434	434,007	128,260	10,217,603	7,850,098	44,460,640
% Contribution	%	0%	0%	0%	5%	9%	3%	2%	0%	2%	1%	0%	36%	1%	0%	23%	18%	100%
Conventional Parameters																		
Chloride	lb	404.8	520.1	0	12318	56868	13237	3095	0	2162	868.2	124.7	91854	2917	756.9	95631	53996	334752
Sulfate	lb	898.6	1154.6	0	25598	10824	8030	2913	0	4800	1927	298.4	190891	1513	1089	85460	44029	379426
Indicator Bacteria																		
Enterococcus	MPN	6.06E+12	7.79E+12	0	3.59E+14	2.07E+15	1.78E+15	1.29E+14	0	3.24E+13	1.30E+13	2.97E+12	2.68E+15	5.63E+13	3.23E+13	7.16E+15	2.40E+15	1.67E+16
Fecal Coliform	MPN	4.97E+12	6.39E+12	0	3.56E+13	2.51E+15	8.40E+13	3.24E+13	0	2.65E+13	1.07E+13	3.56E+12	2.65E+14	9.54E+13	5.81E+13	5.30E+15	7.99E+14	9.24E+15
Total Coliform	MPN	3.50E+13	4.50E+13	0	6.09E+14	8.19E+16	2.87E+15	1.73E+15	0	1.87E+14	7.51E+13	1.19E+13	4.54E+15	3.25E+15	1.55E+14	2.06E+16	5.69E+15	1.22E+17
Total Metals																		
Aluminum	lb	1.613	2.072	0	4.861	372.5	4.448	10.25	0	8.613	3.459	1.806	36.25	11.41	11.94	618.0	343.9	1431
Cadmium	lb	2.11E-04	2.71E-04	0	0.0020	0.0641	0.0023	0.0027	0	0.0011	4.53E-04	9.34E-05	0.0149	0.0021	0.0010	0.0521	0.0317	0.1751
Copper	lb	0.0848	0.1090	0	0.4371	22.63	0.3271	0.3889	0	0.4532	0.1820	0.0263	3.259	0.4074	0.1145	9.454	17.77	55.64
Iron	lb	2.541	3.265	0	20.27	495.3	23.74	27.52	0	13.57	5.450	2.478	151.2	13.89	19.28	934.4	525.5	2238
Lead	lb	0.0048	0.0062	0	0.0216	1.582	0.0242	0.0170	0	0.0259	0.0104	0.0019	0.1608	0.0429	0.0169	1.072	0.6619	3.648
Manganese	lb	0.1509	0.1938	0	1.527	25.11	1.717	1.141	0	0.8057	0.3236	0.1246	11.39	0.5475	1.550	44.99	24.85	114.4
Mercury	lb	2.97E-05	3.82E-05	0	4.11E-04	0.0055	5.13E-04	4.93E-04	0	1.59E-04	6.37E-05	2.62E-05	0.0031	2.43E-04	2.32E-04	0.0137	0.0073	0.0317
Zinc	lb	0.1109	0.1424	0	0.7655	100.3	2.600	1.125	0	0.5921	0.2378	0.0582	5.708	2.677	0.5150	27.10	56.58	198.5
Dissolved Metals																		
Aluminum	lb	0.0111	0.0143	0	0.0367	10.73	0.1190	1.392	0	0.0593	0.0238	0.0076	0.2739	0.6661	0.2591	8.739	18.13	40.46
Iron	lb	0.1100	0.1413	0	0.1120	18.92	0.4082	7.837	0	0.5876	0.2360	0.1781	0.8349	0.8649	9.813	44.41	61.78	146.2
Manganese	lb	0.0116	0.0149	0	0.0286	10.29	0.1239	0.5029	0	0.0619	0.0248	0.0091	0.2134	0.2115	0.4733	6.172	13.81	31.96
Mercury	lb	2.15E-07	2.76E-07	0	1.80E-05	0.0035	1.05E-04	2.60E-04	0	1.15E-06	4.60E-07	1.01E-07	1.34E-04	2.01E-04	1.13E-04	0.0055	0.0128	0.0226
Nutrients																		
Nitrate as N	lb	11.74	15.08	0	263.6	196.4	80.69	18.47	0	62.68	25.17	5.559	1966	38.02	26.17	1317	590.1	4617
Nitrite as N	lb	0.7869	1.011	0	7.421	18.55	2.296	0.4820	0	4.203	1.688	0.2369	55.34	2.363	0.6338	50.24	25.42	170.7
TKN	lb	6.806	8.744	0	79.93	1225	82.60	32.56	0	36.35	14.60	3.331	596.1	47.54	26.28	1280	734.9	4174
Total Nitrogen	lb	29.59	38.02	0	373.8	905.49	108.3	32.01	0	158.0	63.46	10.48	2788	184.2	55.74	3864	1332	9943
Dissolved Phosphorus as P	lb	0.2933	0.3768	0	7.912	65.95	13.83	2.432	0	1.567	0.6291	0.1005	59.00	5.042	0.3415	156.2	168.7	482.4
Total Phosphorus as P	lb	0.7320	0.9405	0	12.80	112.3	25.54	4.138	0	3.909	1.570	0.4257	95.46	7.805	6.297	216.0	269.7	757.7
Solid Parameters																		
TDS	lb	3967	5097	0	119302	71299	38083	8356	0	21190	8510	1143	889649	11068	4397	386789	209612	1778464
Synthetic Organics																		
Pentachlorophenol	lb	0.0021	0.0027	0	0.1007	0.1592	0.0286	0.0111	0	0.0111	0.0045	0.0020	0.7507	0.0055	0.0545	0.1924	0.1091	1.4339

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-10
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of San Diego HSA 905.11

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	154,704	184,381	0	2,148,198	4,029,946	1,192,349	939,300	0	698,952	302,786	60,622	16,119,434	434,007	128,260	10,217,603	7,850,098	44,460,640
% Contribution	%	0%	0%	0%	5%	9%	3%	2%	0%	2%	1%	0%	36%	1%	0%	23%	18%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	5%	5%	2%	0%	0%	1%	0%	0%	40%	1%	0%	32%	12%	100%
Sulfate	%	0%	0%	0%	5%	2%	2%	1%	0%	1%	0%	0%	39%	1%	1%	36%	12%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	34%	1%	5%	0%	0%	0%	0%	2%	1%	0%	55%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	56%	0%	1%	0%	0%	0%	0%	0%	2%	0%	40%	1%	100%
Total Coliform	%	0%	0%	0%	0%	88%	0%	3%	0%	0%	0%	0%	0%	3%	0%	6%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	1%	26%	1%	2%	0%	0%	0%	0%	5%	1%	0%	40%	22%	100%
Cadmium	%	0%	0%	0%	0%	80%	0%	0%	0%	0%	0%	0%	0%	3%	0%	9%	8%	100%
Copper	%	0%	0%	0%	1%	48%	0%	2%	0%	0%	0%	0%	6%	1%	0%	16%	25%	100%
Iron	%	0%	0%	0%	1%	28%	1%	3%	0%	1%	0%	0%	5%	1%	1%	39%	21%	100%
Lead	%	0%	0%	0%	0%	57%	0%	2%	0%	0%	0%	0%	3%	1%	0%	22%	13%	100%
Manganese	%	0%	0%	0%	1%	31%	1%	3%	0%	1%	0%	0%	7%	1%	1%	35%	19%	100%
Mercury	%	0%	0%	0%	3%	4%	5%	0%	0%	0%	0%	0%	22%	0%	0%	40%	27%	100%
Zinc	%	0%	0%	0%	0%	65%	1%	1%	0%	0%	0%	0%	2%	1%	0%	11%	18%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	27%	1%	9%	0%	0%	0%	0%	2%	1%	0%	18%	41%	100%
Iron	%	0%	0%	0%	0%	35%	1%	14%	0%	0%	0%	0%	1%	2%	0%	14%	32%	100%
Manganese	%	0%	0%	0%	0%	40%	1%	5%	0%	0%	0%	0%	1%	1%	0%	16%	37%	100%
Mercury	%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	3%	0%	0%	25%	68%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	4%	4%	1%	0%	0%	1%	0%	0%	33%	1%	1%	41%	13%	100%
Nitrite as N	%	0%	0%	0%	5%	8%	2%	0%	0%	1%	0%	0%	36%	2%	0%	33%	13%	100%
TKN	%	0%	0%	0%	2%	33%	2%	2%	0%	1%	0%	0%	14%	1%	0%	28%	16%	100%
Total Nitrogen	%	0%	0%	0%	4%	8%	1%	1%	0%	1%	1%	0%	32%	2%	1%	36%	12%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	2%	13%	3%	1%	0%	0%	0%	0%	12%	1%	0%	33%	35%	100%
Total Phosphorus as P	%	0%	0%	0%	2%	16%	4%	1%	0%	0%	0%	0%	12%	1%	1%	28%	34%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	5%	4%	2%	1%	0%	1%	0%	0%	39%	1%	0%	34%	12%	100%
Synthetic Organics																		
Pentachlorophenol	%	1%	1%	0%	2%	32%	0%	4%	0%	5%	2%	0%	16%	1%	11%	17%	6%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-11
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of San Diego HSA 905.12

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	13,651	342,623	2,988,313	1,647,463	247,120	0	0	74,766	126,953	15,743,572	634,188	0	4,541,223	4,438,939	30,798,811
% Contribution	%	0%	0%	0%	1%	10%	5%	1%	0%	0%	0%	0%	51%	2%	0%	15%	14%	100%
Conventional Parameters																		
Chloride	lb	0	0	28.35	1967	47436	18289	757.7	0	0	241.2	263.7	90383	4263	0	43304	31162	238094
Sulfate	lb	0	0	67.82	4088	9028	11095	713.2	0	0	535.5	630.7	187833	2211	0	38698	25410	280311
Indicator Bacteria																		
Enterococcus	MPN	0	0	6.76E+11	5.74E+13	1.73E+15	2.46E+15	3.16E+13	0	0	3.61E+12	6.28E+12	2.64E+15	8.23E+13	0	3.24E+15	1.38E+15	1.16E+16
Fecal Coliform	MPN	0	0	8.08E+11	5.68E+12	2.10E+15	1.16E+14	7.93E+12	0	0	2.96E+12	7.52E+12	2.61E+14	1.39E+14	0	2.40E+15	4.61E+14	5.50E+15
Total Coliform	MPN	0	0	2.70E+12	9.72E+13	6.83E+16	3.97E+15	4.23E+14	0	0	2.09E+13	2.51E+13	4.47E+15	4.75E+15	0	9.33E+15	3.28E+15	9.47E+16
Total Metals																		
Aluminum	lb	0	0	0.4106	0.7763	310.7	6.146	2.509	0	0	0.9610	3.819	35.67	16.67	0	279.9	198.5	856.0
Cadmium	lb	0	0	2.12E-05	3.19E-04	0.0535	0.0031	6.62E-04	0	0	1.26E-04	1.98E-04	0.0147	0.0031	0	0.0236	0.0183	0.1176
Copper	lb	0	0	0.0060	0.0698	18.88	0.4520	0.0952	0	0	0.0506	0.0556	3.207	0.5953	0	4.281	10.25	37.94
Iron	lb	0	0	0.5633	3.237	413.2	32.80	6.736	0	0	1.514	5.239	148.7	20.30	0	423.1	303.3	1359
Lead	lb	0	0	4.37E-04	0.0034	1.320	0.0335	0.0042	0	0	0.0029	0.0041	0.1582	0.0628	0	0.4852	0.3820	2.456
Manganese	lb	0	0	0.0283	0.2438	20.94	2.372	0.2794	0	0	0.0899	0.2635	11.20	0.8000	0	20.37	14.34	70.94
Mercury	lb	0	0	5.95E-06	6.56E-05	0.0046	7.09E-04	1.21E-04	0	0	1.77E-05	5.53E-05	0.0030	3.55E-04	0	0.0062	0.0042	0.0193
Zinc	lb	0	0	0.0132	0.1222	83.63	3.593	0.2754	0	0	0.0661	0.1231	5.617	3.912	0	12.27	32.65	142.3
Dissolved Metals																		
Aluminum	lb	0	0	0.0017	0.0059	8.954	0.1644	0.3407	0	0	0.0066	0.0160	0.2695	0.9733	0	3.957	10.46	25.15
Iron	lb	0	0	0.0405	0.0179	15.78	0.5641	1.919	0	0	0.0656	0.3764	0.8215	1.264	0	20.11	35.65	76.61
Manganese	lb	0	0	0.0021	0.0046	8.586	0.1712	0.1231	0	0	0.0069	0.0192	0.2100	0.3091	0	2.795	7.972	20.20
Mercury	lb	0	0	2.30E-08	2.87E-06	0.0029	1.45E-04	6.37E-05	0	0	1.28E-07	2.14E-07	1.32E-04	2.94E-04	0	0.0025	0.0074	0.0134
Nutrients																		
Nitrate as N	lb	0	0	1.264	42.10	163.8	111.5	4.523	0	0	6.994	11.75	1934	55.55	0	596.5	340.6	3269
Nitrite as N	lb	0	0	0.0539	1.185	15.47	3.173	0.1180	0	0	0.4689	0.5008	54.45	3.453	0	22.7	14.67	116.3
TKN	lb	0	0	0.7571	12.76	1022	114.1	7.971	0	0	4.056	7.041	586.5	69.46	0	579.5	424.1	2828
Total Nitrogen	lb	0	0	2.383	59.69	755.3	149.6	7.837	0	0	17.63	22.16	2743	269.1	0	1750	768.9	6545
Dissolved Phosphorus as P	lb	0	0	0.0228	1.263	55.01	19.11	0.5954	0	0	0.1748	0.2124	58.06	7.368	0	70.74	97.35	309.9
Total Phosphorus as P	lb	0	0	0.0968	2.044	93.71	35.29	1.013	0	0	0.4362	0.8999	93.93	11.40	0	97.81	155.7	492.3
Solid Parameters																		
TDS	lb	0	0	259.8	19051	59473	52619	2046	0	0	2364	2416	875400	16173	0	175148	120969	1325920
Synthetic Organics																		
Pentachlorophenol	lb	0	0	4.44E-04	0.0161	0.1328	0.0395	0.0027	0	0	0.0012	0.0041	0.7386	0.0080	0	0.0871	0.0630	1.094

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-12
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of San Diego HSA 905.12

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	13,651	342,623	2,988,313	1,647,463	247,120	0	0	74,766	126,953	15,743,572	634,188	0	4,541,223	4,438,939	30,798,811
% Contribution	%	0%	0%	0%	1%	10%	5%	1%	0%	0%	0%	0%	51%	2%	0%	15%	14%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	1%	6%	3%	0%	0%	0%	0%	0%	56%	3%	0%	21%	10%	100%
Sulfate	%	0%	0%	0%	1%	2%	3%	0%	0%	0%	0%	0%	57%	1%	0%	24%	10%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	45%	1%	3%	0%	0%	0%	0%	3%	2%	0%	43%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	66%	0%	1%	0%	0%	0%	0%	0%	4%	0%	28%	1%	100%
Total Coliform	%	0%	0%	0%	0%	89%	0%	1%	0%	0%	0%	0%	0%	6%	0%	3%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	33%	2%	1%	0%	0%	0%	0%	9%	1%	0%	31%	22%	100%
Cadmium	%	0%	0%	0%	0%	83%	0%	0%	0%	0%	0%	0%	0%	5%	0%	5%	6%	100%
Copper	%	0%	0%	0%	0%	54%	1%	1%	0%	0%	0%	0%	9%	2%	0%	11%	22%	100%
Iron	%	0%	0%	0%	0%	35%	2%	2%	0%	0%	0%	0%	8%	2%	0%	30%	20%	100%
Lead	%	0%	0%	0%	0%	64%	1%	1%	0%	0%	0%	0%	4%	3%	0%	15%	11%	100%
Manganese	%	0%	0%	0%	0%	38%	3%	1%	0%	0%	0%	0%	12%	2%	0%	26%	18%	100%
Mercury	%	0%	0%	0%	1%	4%	10%	0%	0%	0%	0%	0%	33%	0%	0%	28%	24%	100%
Zinc	%	0%	0%	0%	0%	69%	2%	0%	0%	0%	0%	0%	3%	3%	0%	7%	15%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	35%	2%	4%	0%	0%	0%	0%	3%	3%	0%	14%	40%	100%
Iron	%	0%	0%	0%	0%	44%	1%	6%	0%	0%	0%	0%	2%	4%	0%	11%	31%	100%
Manganese	%	0%	0%	0%	0%	48%	1%	2%	0%	0%	0%	0%	2%	2%	0%	11%	34%	100%
Mercury	%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	6%	0%	0%	20%	68%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	1%	5%	3%	0%	0%	0%	0%	0%	49%	2%	0%	28%	11%	100%
Nitrite as N	%	0%	0%	0%	1%	9%	3%	0%	0%	0%	0%	0%	51%	3%	0%	21%	11%	100%
TKN	%	0%	0%	0%	0%	38%	4%	1%	0%	0%	0%	0%	21%	3%	0%	19%	14%	100%
Total Nitrogen	%	0%	0%	0%	1%	9%	3%	0%	0%	0%	0%	0%	47%	4%	0%	24%	11%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	15%	6%	0%	0%	0%	0%	0%	19%	2%	0%	23%	32%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	19%	8%	1%	0%	0%	0%	0%	19%	3%	0%	20%	30%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	1%	4%	3%	0%	0%	0%	0%	0%	56%	2%	0%	22%	10%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	0%	0%	1%	43%	0%	2%	0%	0%	1%	1%	28%	3%	0%	14%	6%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-13
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of San Diego HSA 905.21

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	19,782	354,940	32,800	191,852	1,367,834	257,938	613,826	0	23,962	605,518	545,280	5,795,402	557,499	0	7,436,484	3,792,178	21,595,296
% Contribution	%	0%	2%	0%	1%	6%	1%	3%	0%	0%	3%	3%	27%	3%	0%	34%	18%	100%
Conventional Parameters																		
Chloride	lb	63.82	1145	68.13	1101	21713	2863	1278	0	77.31	1954	1133	33271	3747	0	70913	26616	165943
Sulfate	lb	141.7	2542	163.0	2289	4133	1737	1203	0	171.6	4337	2709	69143	1944	0	63371	21703	175587
Indicator Bacteria																		
Enterococcus	MPN	9.56E+11	1.71E+13	1.62E+12	3.21E+13	7.92E+14	3.85E+14	5.33E+13	0	1.16E+12	2.93E+13	2.70E+13	9.71E+14	7.24E+13	0	5.31E+15	1.18E+15	8.88E+15
Fecal Coliform	MPN	7.84E+11	1.41E+13	1.94E+12	3.18E+12	9.60E+14	1.82E+13	1.34E+13	0	9.49E+11	2.40E+13	3.23E+13	9.61E+13	1.23E+14	0	3.93E+15	3.94E+14	5.61E+15
Total Coliform	MPN	5.52E+12	9.90E+13	6.49E+12	5.44E+13	3.13E+16	6.22E+14	7.14E+14	0	6.68E+12	1.69E+14	1.08E+14	1.64E+15	4.18E+15	0	1.53E+16	2.80E+15	5.69E+16
Total Metals																		
Aluminum	lb	0.2543	4.562	0.9866	0.4347	142.2	0.9622	4.231	0	0.3080	7.783	16.40	13.13	14.66	0	458.3	169.5	833.7
Cadmium	lb	3.33E-05	5.98E-04	5.10E-05	1.79E-04	0.0245	4.92E-04	0.0011	0	4.03E-05	0.0010	8.48E-04	0.0054	0.0027	0	0.0386	0.0156	0.0912
Copper	lb	0.0134	0.2401	0.0144	0.0391	8.642	0.0708	0.1605	0	0.0162	0.4095	0.2388	1.181	0.5233	0	7.010	8.757	27.32
Iron	lb	0.4007	7.189	1.353	1.813	189.1	5.136	11.36	0	0.4853	12.26	22.50	54.75	17.85	0	692.9	259.1	1276
Lead	lb	0.0008	0.0137	0.0010	0.0019	0.6040	0.0052	0.0070	0	0.0009	0.0234	0.0174	0.0583	0.0552	0	0.7946	0.3263	1.910
Manganese	lb	0.0238	0.4268	0.0681	0.1365	9.587	0.3714	0.4712	0	0.0288	0.7281	1.132	4.125	0.7033	0	33.36	12.25	63.41
Mercury	lb	4.68E-06	8.40E-05	1.43E-05	3.67E-05	0.0021	1.11E-04	2.03E-04	0	5.67E-06	1.43E-04	2.38E-04	0.0011	3.12E-04	0	0.0102	0.0036	0.0181
Zinc	lb	0.0175	0.3136	0.0318	0.0684	38.28	0.5625	0.4645	0	0.0212	0.5351	0.5286	2.068	3.439	0	20.09	27.89	94.32
Dissolved Metals																		
Aluminum	lb	0.0018	0.0314	0.0041	0.0033	4.098	0.0257	0.5745	0	0.0021	0.0536	0.0687	0.0992	0.8556	0	6.480	8.935	21.23
Iron	lb	0.0173	0.3112	0.0972	0.0100	7.225	0.0883	3.236	0	0.0210	0.5310	1.617	0.3024	1.111	0	32.93	30.45	77.95
Manganese	lb	0.0018	0.0328	0.0050	0.0026	3.930	0.0268	0.2076	0	0.0022	0.0559	0.0824	0.0773	0.2717	0	4.577	6.810	16.08
Mercury	lb	3.38E-08	6.07E-07	5.53E-08	1.61E-06	0.0013	2.27E-05	1.07E-04	0	4.10E-08	1.04E-06	9.19E-07	4.85E-05	2.59E-04	0	0.0041	0.0063	0.0122
Nutrients																		
Nitrate as N	lb	1.850	33.20	3.036	23.57	74.98	17.46	7.628	0	2.241	56.64	50.47	712.0	48.84	0	976.8	290.9	2300
Nitrite as N	lb	0.1241	2.226	0.1294	0.6636	7.083	0.4968	0.1990	0	0.1503	3.798	2.151	20.05	3.035	0	37.25	12.53	89.88
TKN	lb	1.073	19.25	1.819	7.148	467.7	17.87	13.44	0	1.300	32.85	30.24	215.9	61.06	0	949.0	362.2	2181
Total Nitrogen	lb	4.665	83.71	5.725	33.43	345.7	23.42	13.22	0	5.651	142.8	95.17	1010	236.6	0	2865	656.8	5522
Dissolved Phosphorus as P	lb	0.0462	0.8298	0.0549	0.7075	25.18	2.992	1.004	0	0.0560	1.416	0.9123	21.37	6.477	0	115.8	83.15	260.0
Total Phosphorus as P	lb	0.1154	2.071	0.2325	1.145	42.89	5.525	1.709	0	0.1398	3.533	3.865	34.58	10.03	0	160.2	132.9	398.9
Solid Parameters																		
TDS	lb	625.6	11224	624.3	10668	27223	8238	3450	0	757.8	19149	10379	322244	14217	0	286814	103323	818937
Synthetic Organics																		
Pentachlorophenol	lb	3.29E-04	0.0059	0.0011	0.0090	0.0608	0.0062	0.0046	0	3.98E-04	0.0101	0.0178	0.2719	0.0070	0	0.1427	0.0538	0.5914

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-14
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of San Diego HSA 905.21

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	19,782	354,940	32,800	191,852	1,367,834	257,938	613,826	0	23,962	605,518	545,280	5,795,402	557,499	0	7,436,484	3,792,178	21,595,296
% Contribution	%	0%	2%	0%	1%	6%	1%	3%	0%	0%	3%	3%	27%	3%	0%	34%	18%	100%
Conventional Parameters																		
Chloride	%	0%	1%	0%	1%	4%	1%	1%	0%	0%	1%	1%	28%	4%	0%	47%	12%	100%
Sulfate	%	0%	1%	0%	1%	1%	1%	1%	0%	0%	2%	2%	27%	2%	0%	51%	12%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	20%	0%	6%	0%	0%	0%	0%	1%	2%	0%	68%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	37%	0%	2%	0%	0%	0%	0%	0%	4%	0%	56%	1%	100%
Total Coliform	%	0%	0%	0%	0%	75%	0%	5%	0%	0%	0%	0%	0%	9%	0%	10%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	16%	0%	3%	0%	0%	1%	1%	3%	1%	0%	54%	19%	100%
Cadmium	%	0%	0%	0%	0%	66%	0%	0%	0%	0%	1%	0%	0%	8%	0%	15%	9%	100%
Copper	%	0%	1%	0%	0%	35%	0%	2%	0%	0%	1%	1%	5%	2%	0%	26%	26%	100%
Iron	%	0%	0%	0%	0%	17%	0%	4%	0%	0%	1%	1%	3%	1%	0%	52%	18%	100%
Lead	%	0%	0%	0%	0%	41%	0%	2%	0%	0%	1%	1%	2%	4%	0%	34%	14%	100%
Manganese	%	0%	1%	0%	0%	20%	1%	4%	0%	0%	1%	1%	5%	2%	0%	49%	18%	100%
Mercury	%	0%	0%	0%	0%	2%	2%	0%	0%	0%	0%	0%	15%	0%	0%	56%	25%	100%
Zinc	%	0%	0%	0%	0%	52%	1%	2%	0%	0%	0%	0%	2%	4%	0%	19%	21%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	18%	0%	12%	0%	0%	0%	0%	1%	3%	0%	26%	39%	100%
Iron	%	0%	0%	0%	0%	24%	0%	18%	0%	0%	0%	0%	1%	4%	0%	20%	31%	100%
Manganese	%	0%	0%	0%	0%	28%	0%	7%	0%	0%	0%	0%	1%	2%	0%	24%	37%	100%
Mercury	%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	2%	0%	0%	35%	62%	100%
Nutrients																		
Nitrate as N	%	0%	1%	0%	1%	3%	1%	1%	0%	0%	2%	1%	22%	2%	0%	56%	11%	100%
Nitrite as N	%	0%	1%	0%	1%	6%	1%	0%	0%	0%	2%	1%	25%	4%	0%	47%	12%	100%
TKN	%	0%	1%	0%	0%	23%	1%	2%	0%	0%	1%	1%	10%	4%	0%	41%	16%	100%
Total Nitrogen	%	0%	1%	0%	1%	5%	1%	1%	0%	0%	2%	2%	22%	4%	0%	50%	11%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	8%	1%	1%	0%	0%	0%	0%	8%	2%	0%	45%	32%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	11%	2%	2%	0%	0%	1%	0%	8%	3%	0%	41%	32%	100%
Solid Parameters																		
TDS	%	0%	1%	0%	1%	3%	1%	1%	0%	0%	2%	1%	28%	3%	0%	49%	12%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	6%	0%	0%	23%	0%	5%	0%	0%	10%	7%	12%	3%	0%	27%	6%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-15
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of San Diego HSA 905.22

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	225,691	38,876	1,159,340	2,374,764	0	184,166	0	0	14,752	13,745	804,392	537,401	0	9,423,396	6,018,834	20,795,356
% Contribution	%	0%	1%	0%	6%	11%	0%	1%	0%	0%	0%	0%	4%	3%	0%	45%	29%	100%
Conventional Parameters																		
Chloride	lb	0	728.2	80.74	6656	37233	0	64.88	0	0	47.60	28.55	4618	3612	0	89860	42100	185029
Sulfate	lb	0	1617	193.1	13832	7087	0	61.07	0	0	105.7	68.29	9597	1874	0	80302	34329	149066
Indicator Bacteria																		
Enterococcus	MPN	0	1.09E+13	1.92E+12	1.94E+14	1.36E+15	0	2.71E+12	0	0	7.13E+11	6.80E+11	1.35E+14	6.97E+13	0	6.73E+15	1.87E+15	1.04E+16
Fecal Coliform	MPN	0	8.94E+12	2.30E+12	1.92E+13	1.65E+15	0	6.79E+11	0	0	5.84E+11	8.14E+11	1.33E+13	1.18E+14	0	4.98E+15	6.23E+14	7.41E+15
Total Coliform	MPN	0	6.29E+13	7.69E+12	3.29E+14	5.36E+16	0	3.62E+13	0	0	4.11E+12	2.72E+12	2.28E+14	4.03E+15	0	1.94E+16	4.43E+15	8.21E+16
Total Metals																		
Aluminum	lb	0	2.901	1.169	2.627	243.9	0	0.2149	0	0	0.1896	0.4134	1.823	14.13	0	580.7	268.1	1116
Cadmium	lb	0	3.80E-04	6.05E-05	0.0011	0.0420	0	5.67E-05	0	0	2.48E-05	2.14E-05	7.50E-04	0.0026	0	0.0489	0.0247	0.1206
Copper	lb	0	0.1526	0.0170	0.2362	14.82	0	0.0082	0	0	0.0100	0.0060	0.1639	0.5045	0	8.883	13.85	38.65
Iron	lb	0	4.571	1.604	10.95	324.3	0	0.5769	0	0	0.2988	0.5672	7.600	17.20	0	878.0	409.8	1655
Lead	lb	0	0.0087	0.0012	0.0117	1.036	0	3.57E-04	0	0	5.69E-04	4.40E-04	0.0081	0.0532	0	1.007	0.5161	2.643
Manganese	lb	0	0.2714	0.0807	0.8251	16.44	0	0.0239	0	0	0.0177	0.0285	0.5725	0.6779	0	42.28	19.38	80.59
Mercury	lb	0	5.34E-05	1.69E-05	2.22E-04	0.0036	0	1.03E-05	0	0	3.49E-06	5.99E-06	1.54E-04	3.01E-04	0	0.0129	0.0057	0.0229
Zinc	lb	0	0.1994	0.0377	0.4136	65.65	0	0.0236	0	0	0.0130	0.0133	0.2870	3.315	0	25.46	44.11	139.5
Dissolved Metals																		
Aluminum	lb	0	0.0200	0.0049	0.0198	7.028	0	0.0292	0	0	0.0013	0.0017	0.0138	0.8247	0	8.212	14.13	30.29
Iron	lb	0	0.1979	0.1153	0.0605	12.39	0	0.1643	0	0	0.0129	0.0407	0.0420	1.071	0	41.73	48.17	104.0
Manganese	lb	0	0.0208	0.0059	0.0155	6.739	0	0.0105	0	0	0.0014	0.0021	0.0107	0.2619	0	5.800	10.77	23.64
Mercury	lb	0	3.86E-07	6.55E-08	9.70E-06	0.0023	0	5.46E-06	0	0	2.52E-08	2.32E-08	6.73E-06	2.49E-04	0	0.0052	0.0100	0.0177
Nutrients																		
Nitrate as N	lb	0	21.11	3.599	142.4	128.6	0	0.3873	0	0	1.380	1.272	98.83	47.08	0	1238	460.1	2143
Nitrite as N	lb	0	1.416	0.1534	4.010	12.15	0	0.0101	0	0	0.0925	0.0542	2.782	2.926	0	47.21	19.82	90.61
TKN	lb	0	12.24	2.156	43.19	802.0	0	0.6826	0	0	0.8002	0.7623	30.0	58.86	0	1203	573.0	2726
Total Nitrogen	lb	0	53.23	6.785	202.0	592.8	0	0.6711	0	0	3.479	2.399	140.15	228.0	0	3631	1039	5899
Dissolved Phosphorus as P	lb	0	0.5276	0.0650	4.275	43.18	0	0.0510	0	0	0.0345	0.0230	2.966	6.243	0	146.8	131.5	335.7
Total Phosphorus as P	lb	0	1.317	0.2756	6.917	73.55	0	0.0868	0	0	0.0861	0.0974	4.799	9.664	0	203.0	210.3	510.1
Solid Parameters																		
TDS	lb	0	7137	740.0	64464	46682	0	175.2	0	0	466.5	261.6	44727	13705	0	363447	163432	705236
Synthetic Organics																		
Pentachlorophenol	lb	0	0.0038	0.0013	0.0544	0.1042	0	2.32E-04	0	0	2.45E-04	4.48E-04	0.0377	0.0068	0	0.1808	0.0851	0.4749

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-16
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of San Diego HSA 905.22

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	225,691	38,876	1,159,340	2,374,764	0	184,166	0	0	14,752	13,745	804,392	537,401	0	9,423,396	6,018,834	20,795,356
% Contribution	%	0%	1%	0%	6%	11%	0%	1%	0%	0%	0%	0%	4%	3%	0%	45%	29%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	6%	6%	0%	0%	0%	0%	0%	0%	4%	4%	0%	60%	19%	100%
Sulfate	%	0%	1%	0%	6%	3%	0%	0%	0%	0%	0%	0%	4%	2%	0%	66%	19%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	27%	0%	1%	0%	0%	0%	0%	0%	2%	0%	67%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	45%	0%	0%	0%	0%	0%	0%	0%	3%	0%	50%	1%	100%
Total Coliform	%	0%	0%	0%	0%	84%	0%	1%	0%	0%	0%	0%	0%	6%	0%	8%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	1%	21%	0%	1%	0%	0%	0%	0%	0%	1%	0%	52%	24%	100%
Cadmium	%	0%	0%	0%	0%	73%	0%	0%	0%	0%	0%	0%	0%	5%	0%	13%	9%	100%
Copper	%	0%	0%	0%	1%	43%	0%	1%	0%	0%	0%	0%	0%	2%	0%	23%	30%	100%
Iron	%	0%	0%	0%	1%	23%	0%	1%	0%	0%	0%	0%	0%	1%	0%	51%	23%	100%
Lead	%	0%	0%	0%	0%	51%	0%	1%	0%	0%	0%	0%	0%	3%	0%	30%	15%	100%
Manganese	%	0%	0%	0%	1%	27%	0%	1%	0%	0%	0%	0%	1%	1%	0%	48%	22%	100%
Mercury	%	0%	0%	0%	2%	3%	0%	0%	0%	0%	0%	0%	2%	0%	0%	59%	33%	100%
Zinc	%	0%	0%	0%	0%	59%	0%	0%	0%	0%	0%	0%	0%	3%	0%	16%	22%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	24%	0%	3%	0%	0%	0%	0%	0%	2%	0%	25%	46%	100%
Iron	%	0%	0%	0%	0%	32%	0%	4%	0%	0%	0%	0%	0%	3%	0%	21%	39%	100%
Manganese	%	0%	0%	0%	0%	34%	0%	2%	0%	0%	0%	0%	0%	2%	0%	21%	41%	100%
Mercury	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	31%	69%	100%
Nutrients																		
Nitrate as N	%	0%	1%	0%	4%	4%	0%	0%	0%	0%	0%	0%	3%	2%	0%	68%	17%	100%
Nitrite as N	%	0%	1%	0%	5%	10%	0%	0%	0%	0%	0%	0%	3%	4%	0%	58%	19%	100%
TKN	%	0%	0%	0%	2%	32%	0%	1%	0%	0%	0%	0%	1%	3%	0%	41%	20%	100%
Total Nitrogen	%	0%	1%	0%	4%	9%	0%	0%	0%	0%	0%	0%	3%	4%	0%	61%	17%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	1%	11%	0%	0%	0%	0%	0%	0%	1%	2%	0%	45%	40%	100%
Total Phosphorus as P	%	0%	0%	0%	1%	15%	0%	0%	0%	0%	0%	0%	1%	2%	0%	40%	40%	100%
Solid Parameters																		
TDS	%	0%	1%	0%	6%	5%	0%	0%	0%	0%	0%	0%	4%	3%	0%	63%	19%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	4%	1%	2%	41%	0%	2%	0%	0%	0%	0%	2%	3%	0%	35%	10%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-17
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of San Diego HSA 905.31

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	11,554	77,393	8,702	217,502	0	0	94,769	0	22,133	36,010	16,556	196,489	0	0	0	5,103	686,212
% Contribution	%	2%	11%	1%	32%	0%	0%	14%	0%	3%	5%	2%	29%	0%	0%	0%	1%	100%
Conventional Parameters																		
Chloride	lb	37.28	249.7	18.07	1249	0	0	482.0	0	71.41	116.2	34.39	1128	0	0	0	35.83	3422
Sulfate	lb	82.76	554.3	43.23	2595	0	0	453.7	0	158.5	257.9	82.25	2344	0	0	0	29.21	6601
Indicator Bacteria																		
Enterococcus	MPN	5.58E+11	3.74E+12	4.31E+11	3.64E+13	0	0	2.01E+13	0	1.07E+12	1.74E+12	8.19E+11	3.29E+13	0	0	0	1.59E+12	9.94E+13
Fecal Coliform	MPN	4.58E+11	3.07E+12	5.15E+11	3.61E+12	0	0	5.05E+12	0	8.77E+11	1.43E+12	9.80E+11	3.26E+12	0	0	0	5.30E+11	1.98E+13
Total Coliform	MPN	3.22E+12	2.16E+13	1.72E+12	6.17E+13	0	0	2.69E+14	0	6.17E+12	1.00E+13	3.28E+12	5.57E+13	0	0	0	3.77E+12	4.36E+14
Total Metals																		
Aluminum	lb	0.1485	0.9948	0.2618	0.4928	0	0	1.596	0	0.2845	0.4629	0.4980	0.4452	0	0	0	0.2282	5.413
Cadmium	lb	1.95E-05	1.30E-04	1.35E-05	2.03E-04	0	0	4.21E-04	0	3.73E-05	6.06E-05	2.58E-05	1.83E-04	0	0	0	2.11E-05	0.0011
Copper	lb	0.0078	0.0523	0.0038	0.0443	0	0	0.0606	0	0.0150	0.0244	0.0073	0.0400	0	0	0	0.0118	0.2672
Iron	lb	0.2340	1.568	0.3591	2.055	0	0	4.285	0	0.4483	0.7293	0.6832	1.856	0	0	0	0.3487	12.57
Lead	lb	4.46E-04	0.0030	2.78E-04	0.0022	0	0	0.0027	0	8.54E-04	0.0014	5.30E-04	0.0020	0	0	0	4.39E-04	0.0137
Manganese	lb	0.0139	0.0931	0.0181	0.1548	0	0	0.1778	0	0.0266	0.0433	0.0344	0.1398	0	0	0	0.0165	0.7182
Mercury	lb	2.74E-06	1.83E-05	3.79E-06	4.16E-05	0	0	7.67E-05	0	5.24E-06	8.52E-06	7.21E-06	3.76E-05	0	0	0	4.83E-06	2.07E-04
Zinc	lb	0.0102	0.0684	0.0084	0.0776	0	0	0.1752	0	0.0196	0.0318	0.0161	0.0701	0	0	0	0.0375	0.5149
Dissolved Metals																		
Aluminum	lb	0.0010	0.0068	0.0011	0.0037	0	0	0.2167	0	0.0020	0.0032	0.0021	0.0034	0	0	0	0.0120	0.2520
Iron	lb	0.0101	0.0679	0.0258	0.0113	0	0	1.220	0	0.0194	0.0316	0.0491	0.0103	0	0	0	0.0410	1.487
Manganese	lb	0.0011	0.0071	0.0013	0.0029	0	0	0.0783	0	0.0020	0.0033	0.0025	0.0026	0	0	0	0.0092	0.1104
Mercury	lb	1.98E-08	1.32E-07	1.47E-08	1.82E-06	0	0	4.05E-05	0	3.79E-08	6.16E-08	2.79E-08	1.64E-06	0	0	0	8.48E-06	5.28E-05
Nutrients																		
Nitrate as N	lb	1.081	7.240	0.8056	26.72	0	0	2.877	0	2.070	3.368	1.533	24.14	0	0	0	0.3916	70.23
Nitrite as N	lb	0.0725	0.4854	0.0343	0.7523	0	0	0.0751	0	0.1388	0.2259	0.0653	0.6796	0	0	0	0.0169	2.5460
TKN	lb	0.6268	4.198	0.4826	8.103	0	0	5.071	0	1.201	1.953	0.9182	7.320	0	0	0	0.4876	30.36
Total Nitrogen	lb	2.725	18.25	1.519	37.89	0	0	4.986	0	5.220	8.492	2.890	34.23	0	0	0	0.8840	117.1
Dissolved Phosphorus as P	lb	0.0270	0.1809	0.0146	0.8021	0	0	0.3788	0	0.0517	0.0842	0.0277	0.7246	0	0	0	0.1119	2.403
Total Phosphorus as P	lb	0.0674	0.4515	0.0617	1.298	0	0	0.6445	0	0.1291	0.2101	0.1174	1.172	0	0	0	0.1790	4.331
Solid Parameters																		
TDS	lb	365.4	2447	165.6	12094	0	0	1301	0	699.9	1139	315.1	10926	0	0	0	139.1	29592
Synthetic Organics																		
Pentachlorophenol	lb	1.92E-04	0.0013	2.83E-04	0.0102	0	0	0.0017	0	3.68E-04	5.98E-04	5.39E-04	0.0092	0	0	0	7.24E-05	0.0245

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-18
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of San Diego HSA 905.31

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	11,554	77,393	8,702	217,502	0	0	94,769	0	22,133	36,010	16,556	196,489	0	0	0	5,103	686,212
% Contribution	%	2%	11%	1%	32%	0%	0%	14%	0%	3%	5%	2%	29%	0%	0%	0%	1%	100%
Conventional Parameters																		
Chloride	%	1%	6%	1%	43%	0%	0%	3%	0%	2%	3%	1%	39%	0%	0%	0%	1%	100%
Sulfate	%	1%	9%	1%	38%	0%	0%	7%	0%	3%	4%	2%	35%	0%	0%	0%	1%	100%
Indicator Bacteria																		
Enterococcus	%	0%	1%	0%	3%	0%	0%	91%	0%	0%	1%	0%	3%	0%	0%	0%	0%	100%
Fecal Coliform	%	0%	2%	0%	1%	0%	0%	92%	0%	1%	1%	0%	1%	0%	0%	0%	0%	100%
Total Coliform	%	0%	1%	0%	1%	0%	0%	96%	0%	0%	1%	0%	1%	0%	0%	0%	0%	100%
Total Metals																		
Aluminum	%	1%	9%	2%	13%	0%	0%	47%	0%	3%	4%	5%	12%	0%	0%	0%	3%	100%
Cadmium	%	7%	45%	2%	0%	0%	0%	0%	0%	13%	21%	4%	0%	0%	0%	0%	8%	100%
Copper	%	2%	11%	1%	18%	0%	0%	38%	0%	3%	5%	2%	16%	0%	0%	0%	4%	100%
Iron	%	1%	9%	2%	11%	0%	0%	54%	0%	3%	4%	4%	10%	0%	0%	0%	2%	100%
Lead	%	2%	14%	1%	11%	0%	0%	47%	0%	4%	6%	2%	10%	0%	0%	0%	2%	100%
Manganese	%	1%	9%	1%	15%	0%	0%	50%	0%	2%	4%	2%	13%	0%	0%	0%	2%	100%
Mercury	%	0%	1%	0%	50%	0%	0%	0%	0%	0%	0%	0%	45%	0%	0%	0%	3%	100%
Zinc	%	1%	6%	0%	14%	0%	0%	54%	0%	2%	3%	1%	13%	0%	0%	0%	6%	100%
Dissolved Metals																		
Aluminum	%	0%	2%	0%	2%	0%	0%	89%	0%	1%	1%	0%	2%	0%	0%	0%	3%	100%
Iron	%	0%	2%	0%	1%	0%	0%	92%	0%	1%	1%	0%	1%	0%	0%	0%	1%	100%
Manganese	%	0%	2%	0%	2%	0%	0%	87%	0%	1%	1%	0%	2%	0%	0%	0%	4%	100%
Mercury	%	0%	0%	0%	34%	0%	0%	0%	0%	0%	0%	0%	31%	0%	0%	0%	35%	100%
Nutrients																		
Nitrate as N	%	1%	9%	1%	39%	0%	0%	4%	0%	3%	4%	2%	35%	0%	0%	0%	1%	100%
Nitrite as N	%	1%	8%	1%	41%	0%	0%	3%	0%	2%	4%	2%	37%	0%	0%	0%	1%	100%
TKN	%	1%	10%	1%	27%	0%	0%	25%	0%	3%	5%	2%	24%	0%	0%	0%	1%	100%
Total Nitrogen	%	2%	11%	1%	37%	0%	0%	5%	0%	3%	5%	2%	33%	0%	0%	0%	1%	100%
Dissolved Phosphorus as P	%	1%	6%	1%	34%	0%	0%	18%	0%	2%	3%	1%	31%	0%	0%	0%	5%	100%
Total Phosphorus as P	%	1%	7%	1%	29%	0%	0%	25%	0%	2%	3%	1%	26%	0%	0%	0%	4%	100%
Solid Parameters																		
TDS	%	1%	8%	1%	41%	0%	0%	5%	0%	2%	4%	2%	37%	0%	0%	0%	1%	100%
Synthetic Organics																		
Pentachlorophenol	%	4%	28%	3%	10%	0%	0%	19%	0%	8%	13%	5%	9%	0%	0%	0%	0%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-19
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of San Diego HSA 905.32

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	482,853	2,101,682	659,289	609,830	5,772,100	571,984	14,107	0	400,557	688,501	2,739,090	5,638,085	29,885	46,094	0	1,829,215	21,583,274
% Contribution	%	2%	10%	3%	3%	27%	3%	0%	0%	2%	3%	13%	26%	0%	0%	0%	8%	100%
Conventional Parameters																		
Chloride	lb	1558	6780	1369	3501	91625	6350	72	0	1292	2217	5684	32368	200.9	272.0	0	4834	158123
Sulfate	lb	3459	15052	3275	7276	17439	3852	68	0	2869	4922	13596	67267	104.2	391.5	0	3942	143512
Indicator Bacteria																		
Enterococcus	MPN	2.33E+13	1.02E+14	3.26E+13	1.02E+14	3.34E+15	8.54E+14	2.99E+12	0	1.94E+13	3.32E+13	1.35E+14	9.45E+14	3.88E+12	1.16E+13	0	2.15E+14	5.82E+15
Fecal Coliform	MPN	1.91E+13	8.32E+13	3.90E+13	1.01E+13	4.05E+15	4.03E+13	7.51E+11	0	1.59E+13	2.72E+13	1.62E+14	9.35E+13	6.57E+12	2.09E+13	0	7.16E+13	4.64E+15
Total Coliform	MPN	1.35E+14	5.86E+14	1.30E+14	1.73E+14	1.32E+17	1.38E+15	4.01E+13	0	1.12E+14	1.92E+14	5.41E+14	1.60E+15	2.24E+14	5.56E+13	0	5.09E+14	1.38E+17
Total Metals																		
Aluminum	lb	6.2066	27.01	19.83	1.382	600.2	2.134	0.2376	0	5.149	8.833	82.32	12.77	0.7856	4.290	0	30.78	802.0
Cadmium	lb	8.13E-04	0.0035	0.0010	5.68E-04	0.1033	0.0011	6.27E-05	0	6.74E-04	0.0012	0.0043	0.0053	1.46E-04	3.76E-04	0	0.0028	0.1251
Copper	lb	0.3266	1.421	0.2887	0.1242	36.47	0.1569	0.0090	0	0.2709	0.4647	1.199	1.148	0.0281	0.0412	0	1.590	43.54
Iron	lb	9.780	42.56	27.20	5.762	798.0	11.39	0.6379	0	8.113	13.92	112.9	53.27	0.9567	6.928	0	47.05	1139
Lead	lb	0.0186	0.0811	0.0211	0.0061	2.549	0.0116	3.95E-04	0	0.0155	0.0265	0.0876	0.0567	0.0030	0.0061	0	0.0593	2.942
Manganese	lb	0.5806	2.527	1.368	0.4340	40.45	0.8235	0.0265	0	0.4816	0.8263	5.679	4.013	0.0377	0.5570	0	2.2247	60.03
Mercury	lb	1.14E-04	4.97E-04	2.87E-04	1.17E-04	0.0088	2.46E-04	1.14E-05	0	9.48E-05	1.63E-04	0.0012	0.0011	1.67E-05	8.34E-05	0	6.52E-04	0.0134
Zinc	lb	0.4267	1.857	0.6392	0.2176	161.5	1.247	0.0261	0	0.3540	0.6072	2.653	2.012	0.1844	0.1851	0	5.065	177.0
Dissolved Metals																		
Aluminum	lb	0.0427	0.1859	0.0831	0.0104	17.29	0.0571	0.0323	0	0.0354	0.0608	0.3448	0.0965	0.0459	0.0931	0	1.623	20.00
Iron	lb	0.4234	1.843	1.955	0.0318	30.49	0.1958	0.1817	0	0.3512	0.6025	8.114	0.2942	0.0596	3.527	0	5.531	53.60
Manganese	lb	0.0446	0.1940	0.0997	0.0081	16.58	0.0594	0.0117	0	0.0370	0.0634	0.4137	0.0752	0.0146	0.1701	0	1.237	19.01
Mercury	lb	8.26E-07	3.60E-06	1.11E-06	5.10E-06	0.0056	5.04E-05	6.03E-06	0	6.85E-07	1.18E-06	4.61E-06	4.72E-05	1.39E-05	4.04E-05	0	0.0011	0.0070
Nutrients																		
Nitrate as N	lb	45.17	196.6	61.03	74.92	316.4	38.71	0.4283	0	37.47	64.28	253.3	692.7	2.618	9.405	0	52.83	1846
Nitrite as N	lb	3.028	13.18	2.601	2.109	29.89	1.102	0.0112	0	2.512	4.310	10.80	19.50	0.1627	0.2278	0	2.275	91.7
TKN	lb	26.19	114.0	36.56	22.72	1974	39.62	0.7548	0	21.73	37.28	151.8	210.1	3.273	9.446	0	65.79	2713
Total Nitrogen	lb	113.9	495.6	115.1	106.2	1459	51.95	0.7421	0	94.47	162.1	477.7	982.3	12.68	20.03	0	119.3	4211
Dissolved Phosphorus as P	lb	1.129	4.913	1.103	2.249	106.3	6.634	0.0564	0	0.936	1.606	4.579	20.79	0.3472	0.1227	0	15.10	165.8
Total Phosphorus as P	lb	2.817	12.26	4.673	3.638	181.0	12.25	0.0959	0	2.337	4.009	19.40	33.64	0.5374	2.263	0	24.14	303.1
Solid Parameters																		
TDS	lb	15269	66457	12549	33909	114876	18269	193.7	0	12667	21731	52090	313498	762.1	1580	0	18765	682616
Synthetic Organics																		
Pentachlorophenol	lb	0.0080	0.0349	0.0215	0.0286	0.2565	0.0137	2.56E-04	0	0.0067	0.0114	0.0891	0.2645	3.77E-04	0.0196	0	0.0098	0.7649

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-20
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of San Diego HSA 905.32

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	482,853	2,101,682	659,289	609,830	5,772,100	571,984	14,107	0	400,557	688,501	2,739,090	5,638,085	29,885	46,094	0	1,829,215	21,583,274
% Contribution	%	2%	10%	3%	3%	27%	3%	0%	0%	2%	3%	13%	26%	0%	0%	0%	8%	100%
Conventional Parameters																		
Chloride	%	1%	6%	2%	4%	23%	2%	0%	0%	1%	2%	7%	41%	0%	0%	0%	9%	100%
Sulfate	%	2%	10%	3%	4%	9%	2%	0%	0%	2%	3%	13%	41%	0%	1%	0%	9%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	96%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	100%
Fecal Coliform	%	0%	0%	0%	0%	99%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Total Coliform	%	0%	0%	0%	0%	99%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Total Metals																		
Aluminum	%	1%	2%	2%	0%	71%	1%	0%	0%	0%	1%	8%	4%	0%	0%	0%	10%	100%
Cadmium	%	0%	1%	0%	0%	97%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	100%
Copper	%	0%	2%	0%	0%	84%	0%	0%	0%	0%	1%	2%	3%	0%	0%	0%	7%	100%
Iron	%	1%	3%	2%	0%	72%	1%	0%	0%	1%	1%	7%	3%	0%	0%	0%	9%	100%
Lead	%	0%	2%	0%	0%	90%	0%	0%	0%	0%	0%	2%	1%	0%	0%	0%	3%	100%
Manganese	%	1%	3%	1%	0%	75%	1%	0%	0%	1%	1%	5%	4%	0%	0%	0%	8%	100%
Mercury	%	0%	0%	0%	4%	22%	10%	0%	0%	0%	0%	1%	34%	0%	0%	0%	28%	100%
Zinc	%	0%	0%	0%	0%	93%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	4%	100%
Dissolved Metals																		
Aluminum	%	0%	1%	0%	0%	76%	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	18%	100%
Iron	%	0%	1%	0%	0%	82%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	12%	100%
Manganese	%	0%	1%	0%	0%	84%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	13%	100%
Mercury	%	0%	0%	0%	1%	0%	7%	0%	0%	0%	0%	0%	6%	0%	0%	0%	86%	100%
Nutrients																		
Nitrate as N	%	2%	9%	3%	4%	19%	2%	0%	0%	2%	3%	11%	36%	0%	1%	0%	9%	100%
Nitrite as N	%	2%	7%	2%	4%	32%	2%	0%	0%	1%	2%	8%	33%	0%	0%	0%	8%	100%
TKN	%	1%	3%	1%	1%	74%	1%	0%	0%	1%	1%	3%	8%	0%	0%	0%	6%	100%
Total Nitrogen	%	2%	9%	2%	3%	31%	2%	0%	0%	2%	3%	10%	28%	0%	1%	0%	7%	100%
Dissolved Phosphorus as P	%	1%	2%	1%	1%	52%	4%	0%	0%	0%	1%	2%	12%	0%	0%	0%	23%	100%
Total Phosphorus as P	%	1%	3%	1%	1%	57%	4%	0%	0%	0%	1%	3%	10%	0%	1%	0%	19%	100%
Solid Parameters																		
TDS	%	2%	8%	2%	4%	17%	2%	0%	0%	2%	3%	10%	41%	0%	0%	0%	9%	100%
Synthetic Organics																		
Pentachlorophenol	%	%	3%	15%	4%	1%	43%	0%	0%	0%	3%	5%	16%	5%	0%	4%	0%	1%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-21
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: City of Solana Beach HSA 905.11

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	69,516	0	1,307	355,319	1,693,542	1,244,947	195,430	0	17,916	19,340	8,778	195,052	824,393	11,018	5,127,660	3,165,624	12,929,841
% Contribution	%	1%	0%	0%	3%	13%	10%	2%	0%	0%	0%	0%	2%	6%	0%	40%	24%	100%
Conventional Parameters																		
Chloride	lb	221.0	0	2.715	1883	20480	13806	265.9	0	57.80	30.12	17.48	1018	3733	65.02	45735	16974	104289
Sulfate	lb	490.6	0	6.495	3913	3898	8375	250.3	0	128.3	66.86	41.80	2116	1936	93.58	40871	13841	76027
Indicator Bacteria																		
Enterococcus	MPN	3.31E+12	0	6.47E+10	5.49E+13	7.47E+14	1.86E+15	1.11E+13	0	8.66E+11	4.51E+11	4.16E+11	2.97E+13	7.21E+13	2.78E+12	3.43E+15	7.54E+14	6.96E+15
Fecal Coliform	MPN	2.71E+12	0	7.74E+10	5.44E+12	9.05E+14	8.76E+13	2.78E+12	0	7.10E+11	3.70E+11	4.98E+11	2.94E+12	1.22E+14	4.99E+12	2.54E+15	2.51E+14	3.92E+15
Total Coliform	MPN	1.91E+13	0	2.59E+11	9.30E+13	2.95E+16	3.00E+15	1.48E+14	0	5.00E+12	2.60E+12	1.66E+12	5.03E+13	4.16E+15	1.33E+13	9.85E+15	1.79E+15	4.86E+16
Total Metals																		
Aluminum	lb	0.8804	0	0.0393	0.7430	134.2	4.639	0.8806	0	0.2303	0.1200	0.2531	0.4018	14.60	1.025	295.6	108.1	561.6
Cadmium	lb	1.15E-04	0	2.03E-06	3.06E-04	0.0231	0.0024	2.32E-04	0	3.02E-05	1.57E-05	1.31E-05	1.65E-04	0.0027	8.99E-05	0.0249	0.0100	0.0640
Copper	lb	0.0463	0	5.73E-04	0.0668	8.151	0.3412	0.0334	0	0.0121	0.0063	0.0037	0.0361	0.5213	0.0098	4.521	5.585	19.33
Iron	lb	1.387	0	0.0539	3.098	178.4	24.76	2.364	0	0.3629	0.1891	0.3472	1.675	17.78	1.656	446.9	165.2	844.1
Lead	lb	0.0026	0	4.18E-05	0.0033	0.5697	0.0253	0.0015	0	6.91E-04	3.60E-04	2.69E-04	0.0018	0.0549	0.0014	0.5124	0.2081	1.382
Manganese	lb	0.0824	0	0.0027	0.2334	9.042	1.791	0.0981	0	0.0215	0.0112	0.0175	0.1262	0.7005	0.1331	21.52	7.812	41.59
Mercury	lb	1.62E-05	0	5.70E-07	6.28E-05	0.0020	5.35E-04	4.23E-05	0	4.24E-06	2.21E-06	3.67E-06	3.39E-05	3.11E-04	1.99E-05	0.0066	0.0023	0.0118
Zinc	lb	0.0605	0	0.0013	0.1170	36.11	2.712	0.0967	0	0.0158	0.0082	0.0082	0.0633	3.426	0.0442	12.96	17.79	73.41
Dissolved Metals																		
Aluminum	lb	0.0061	0	1.65E-04	0.0056	3.866	0.1241	0.1196	0	0.0016	0.0008	0.0011	0.0030	0.8522	0.0223	4.180	5.698	14.88
Iron	lb	0.0601	0	0.0039	0.0171	6.815	0.4258	0.6734	0	0.0157	0.0082	0.0249	0.0093	1.107	0.8429	21.24	19.42	50.66
Manganese	lb	0.0063	0	1.98E-04	0.0044	3.707	0.1292	0.0432	0	0.0017	8.62E-04	0.0013	0.0024	0.2707	0.0407	2.952	4.343	11.50
Mercury	lb	1.17E-07	0	2.20E-09	2.74E-06	0.0013	1.09E-04	2.24E-05	0	3.07E-08	1.60E-08	1.42E-08	1.48E-06	2.58E-04	9.67E-06	0.0026	0.0040	0.0083
Nutrients																		
Nitrate as N	lb	6.407	0	0.1210	40.29	70.72	84.16	1.587	0	1.676	0.8732	0.7789	21.79	48.65	2.248	630.0	185.5	1095
Nitrite as N	lb	0.4296	0	0.0052	1.134	6.681	2.395	0.0414	0	0.1124	0.0585	0.0332	0.6133	3.023	0.0544	24.03	7.990	46.60
TKN	lb	3.715	0	0.0725	12.22	441.2	86.15	2.798	0	0.9719	0.5064	0.4666	6.606	60.82	2.258	612.0	231.0	1461
Total Nitrogen	lb	16.15	0	0.2282	57.14	326.1	112.9	2.751	0	4.225	2.201	1.469	30.90	235.6	4.788	1848	418.8	3061
Dissolved Phosphorus as P	lb	0.1601	0	0.0022	1.209	23.75	14.42	0.2090	0	0.0419	0.0218	0.0141	0.6539	6.452	0.0293	74.71	53.03	174.7
Total Phosphorus as P	lb	0.3996	0	0.0093	1.957	40.46	26.64	0.3556	0	0.1045	0.0545	0.0596	1.058	9.986	0.5409	103.3	84.79	269.7
Solid Parameters																		
TDS	lb	2166	0	24.88	18235	25677	39721	718.0	0	566.6	295.2	160.1	9860	14162	377.7	184980	65892	362836
Synthetic Organics																		
Pentachlorophenol	lb	0.0011	0	4.26E-05	0.0154	0.0573	0.0298	9.50E-04	0	2.98E-04	1.55E-04	2.74E-04	0.0083	0.0070	0.0047	0.0920	0.0343	0.2517

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-22
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: City of Solana Beach HSA 905.11

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	69,516	0	1,307	355,319	1,693,542	1,244,947	195,430	0	17,916	19,340	8,778	195,052	824,393	11,018	5,127,660	3,165,624	12,929,841
% Contribution	%	1%	0%	0%	3%	13%	10%	2%	0%	0%	0%	0%	2%	6%	0%	40%	24%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	3%	8%	6%	0%	0%	0%	0%	0%	2%	9%	0%	55%	17%	100%
Sulfate	%	0%	0%	0%	3%	3%	6%	1%	0%	0%	0%	0%	2%	4%	0%	63%	17%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	31%	1%	2%	0%	0%	0%	0%	0%	4%	0%	59%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	50%	0%	1%	0%	0%	0%	0%	0%	7%	0%	42%	1%	100%
Total Coliform	%	0%	0%	0%	0%	80%	0%	1%	0%	0%	0%	0%	0%	12%	0%	6%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	25%	2%	1%	0%	0%	0%	0%	0%	3%	0%	47%	21%	100%
Cadmium	%	0%	0%	0%	0%	73%	0%	0%	0%	0%	0%	0%	0%	11%	0%	10%	7%	100%
Copper	%	0%	0%	0%	0%	49%	1%	1%	0%	0%	0%	0%	0%	4%	0%	20%	24%	100%
Iron	%	0%	0%	0%	0%	27%	2%	2%	0%	0%	0%	0%	0%	3%	0%	46%	20%	100%
Lead	%	0%	0%	0%	0%	55%	1%	1%	0%	0%	0%	0%	0%	6%	0%	25%	12%	100%
Manganese	%	0%	0%	0%	0%	31%	3%	2%	0%	0%	0%	0%	0%	3%	0%	42%	18%	100%
Mercury	%	0%	0%	0%	1%	4%	12%	0%	0%	0%	0%	0%	1%	0%	0%	53%	29%	100%
Zinc	%	0%	0%	0%	0%	62%	3%	1%	0%	0%	0%	0%	0%	6%	0%	12%	17%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	27%	2%	4%	0%	0%	0%	0%	0%	6%	0%	22%	39%	100%
Iron	%	0%	0%	0%	0%	35%	1%	7%	0%	0%	0%	0%	0%	7%	0%	17%	31%	100%
Manganese	%	0%	0%	0%	0%	39%	1%	3%	0%	0%	0%	0%	0%	4%	0%	18%	35%	100%
Mercury	%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	29%	64%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	2%	5%	4%	0%	0%	0%	0%	0%	1%	5%	0%	64%	16%	100%
Nitrite as N	%	0%	0%	0%	3%	11%	5%	0%	0%	0%	0%	0%	1%	10%	0%	53%	16%	100%
TKN	%	0%	0%	0%	1%	35%	5%	1%	0%	0%	0%	0%	0%	7%	0%	35%	16%	100%
Total Nitrogen	%	0%	0%	0%	2%	11%	4%	0%	0%	0%	0%	0%	1%	11%	0%	55%	15%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	1%	13%	7%	0%	0%	0%	0%	0%	0%	4%	0%	40%	34%	100%
Total Phosphorus as P	%	0%	0%	0%	1%	16%	9%	1%	0%	0%	0%	0%	0%	5%	0%	34%	33%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	3%	6%	6%	0%	0%	0%	0%	0%	2%	7%	0%	59%	17%	100%
Synthetic Organics																		
Pentachlorophenol	%	2%	0%	0%	1%	45%	0%	3%	0%	0%	1%	0%	1%	7%	3%	29%	8%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-23
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: County of San Diego HSA 905.11

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	520,240	78,055	5,813	4,335,434	3,985,414	1,068,818	526,543	0	193,206	107,710	176,205	24,221,026	544,229	4,369,283	23,446,002	11,717,554	75,295,531
% Contribution	%	1%	0%	0%	6%	5%	1%	1%	0%	0%	0%	0%	32%	1%	6%	31%	16%	100%
Conventional Parameters																		
Chloride	lb	1678	251.8	12.07	24805	63069	11865	2678	0	537.5	347.5	331.0	136242	3658	24432	223240	80649	573797
Sulfate	lb	3726	559.1	28.88	51550	12004	7198	2520	0	1193	771.5	791.7	283137	1898	35164	199497	65763	665802
Indicator Bacteria																		
Enterococcus	MPN	2.51E+13	3.77E+12	2.88E+11	7.24E+14	2.30E+15	1.60E+15	1.12E+14	0	8.05E+12	5.20E+12	7.89E+12	3.98E+15	7.06E+13	1.04E+15	1.67E+16	3.58E+15	3.02E+16
Fecal Coliform	MPN	2.06E+13	3.09E+12	3.44E+11	7.17E+13	2.79E+15	7.53E+13	2.80E+13	0	6.60E+12	4.27E+12	9.44E+12	3.94E+14	1.20E+14	1.88E+15	1.24E+16	1.19E+15	1.90E+16
Total Coliform	MPN	1.45E+14	2.18E+13	1.15E+12	1.23E+15	9.08E+16	2.58E+15	1.50E+15	0	4.65E+13	3.00E+13	3.15E+13	6.73E+15	4.08E+15	4.99E+15	4.81E+16	8.49E+15	1.69E+17
Total Metals																		
Aluminum	lb	6.6871	1.003	0.1749	9.790	413.2	3.987	8.867	0	2.141	1.384	4.793	53.77	14.31	385.3	1443	513.6	2862
Cadmium	lb	8.76E-04	1.31E-04	9.04E-06	0.0040	0.0711	0.0020	0.0023	0	2.81E-04	1.81E-04	2.48E-04	0.0221	0.0027	0.0338	0.1216	0.0474	0.3088
Copper	lb	0.3518	0.0528	0.0025	0.8801	25.10	0.2932	0.3364	0	0.1127	0.0728	0.0698	4.834	0.5108	3.697	22.07	26.54	84.92
Iron	lb	10.54	1.581	0.2399	40.82	549.3	21.28	23.81	0	3.374	2.182	6.575	224.2	17.42	622.2	2181	785.0	4490
Lead	lb	0.0201	0.0030	1.86E-04	0.0434	1.754	0.0217	0.0147	0	0.0064	0.0042	0.0051	0.2385	0.0538	0.5441	2.501	0.9886	6.200
Manganese	lb	0.6256	0.0939	0.0121	3.075	27.85	1.539	0.9875	0	0.2003	0.1295	0.3307	16.89	0.6865	50.03	105.0	37.12	244.6
Mercury	lb	1.23E-04	1.85E-05	2.53E-06	8.27E-04	0.0061	4.60E-04	4.26E-04	0	3.94E-05	2.55E-05	6.94E-05	0.0045	3.05E-04	0.0075	0.0320	0.0109	0.0633
Zinc	lb	0.4597	0.0690	0.0056	1.542	111.2	2.331	0.9733	0	0.1472	0.0952	0.1545	8.467	3.357	16.62	63.26	84.51	293.2
Dissolved Metals																		
Aluminum	lb	0.0460	0.0069	7.32E-04	0.0740	11.90	0.1067	1.204	0	0.0147	0.0095	0.0201	0.4062	0.8352	8.363	20.40	27.07	70.47
Iron	lb	0.4562	0.0684	0.0172	0.2255	20.99	0.3659	6.780	0	0.1461	0.0944	0.4724	1.238	1.085	316.8	103.7	92.28	544.6
Manganese	lb	0.0480	0.0072	8.79E-04	0.0576	11.42	0.1111	0.4351	0	0.0154	0.0099	0.0241	0.3166	0.2652	15.28	14.41	20.63	63.03
Mercury	lb	8.90E-07	1.34E-07	9.79E-09	3.62E-05	0.0039	9.41E-05	2.25E-04	0	2.85E-07	1.84E-07	2.68E-07	1.99E-04	2.53E-04	0.0036	0.0128	0.0191	0.0402
Nutrients																		
Nitrate as N	lb	48.66	7.301	0.5381	530.9	217.8	72.33	15.98	0	15.58	10.08	14.75	2916	47.67	844.8	3075	881.5	8698
Nitrite as N	lb	3.263	0.4896	0.0229	14.94	20.57	2.058	0.4170	0	1.045	0.6755	0.6286	82.08	2.963	20.46	117.3	37.96	304.9
TKN	lb	28.22	4.234	0.3224	161.0	1359	74.04	28.17	0	9.037	5.843	8.837	884.1	59.60	848.4	2987	1098	7556
Total Nitrogen	lb	122.7	18.41	1.015	752.8	1004	97.07	27.70	0	39.29	25.40	27.81	4135	230.9	1799	9020	1990	19291
Dissolved Phosphorus as P	lb	1.216	0.1825	0.0097	15.93	73.14	12.40	2.104	0	0.3895	0.2518	0.2666	87.52	6.322	11.02	364.7	251.9	827.4
Total Phosphorus as P	lb	3.035	0.4554	0.0412	25.78	124.6	22.90	3.581	0	0.9720	0.6284	1.130	141.6	9.786	203.3	504.2	402.8	1445
Solid Parameters																		
TDS	lb	16452	2468	110.6	240250	79074	34137	7230	0	5268	3406	3033	1319567	13878	141944	902919	313079	3082816
Synthetic Organics																		
Pentachlorophenol	lb	0.0086	0.0013	1.89E-04	0.2027	0.1765	0.0256	0.0096	0	0.0028	0.0018	0.0052	1.113	0.0069	1.758	0.4492	0.1630	3.925

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-24
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: County of San Diego HSA 905.11

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	520,240	78,055	5,813	4,335,434	3,985,414	1,068,818	526,543	0	193,206	107,710	176,205	24,221,026	544,229	4,369,283	23,446,002	11,717,554	75,295,531
% Contribution	%	1%	0%	0%	6%	5%	1%	1%	0%	0%	0%	0%	32%	1%	6%	31%	16%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	6%	3%	1%	0%	0%	0%	0%	0%	32%	1%	7%	40%	10%	100%
Sulfate	%	0%	0%	0%	5%	1%	1%	0%	0%	0%	0%	0%	30%	0%	10%	42%	9%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	20%	0%	2%	0%	0%	0%	0%	1%	1%	1%	73%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	34%	0%	0%	0%	0%	0%	0%	0%	1%	6%	57%	1%	100%
Total Coliform	%	0%	0%	0%	0%	82%	0%	2%	0%	0%	0%	0%	0%	3%	0%	12%	0%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	1%	14%	0%	1%	0%	0%	0%	0%	4%	0%	9%	52%	18%	100%
Cadmium	%	0%	0%	0%	0%	69%	0%	0%	0%	0%	0%	0%	0%	3%	0%	18%	10%	100%
Copper	%	0%	0%	0%	1%	34%	0%	1%	0%	0%	0%	0%	7%	1%	2%	27%	27%	100%
Iron	%	0%	0%	0%	1%	15%	0%	1%	0%	0%	0%	0%	4%	0%	11%	49%	17%	100%
Lead	%	0%	0%	0%	1%	39%	0%	1%	0%	0%	0%	0%	3%	1%	8%	34%	14%	100%
Manganese	%	0%	0%	0%	1%	17%	1%	1%	0%	0%	0%	0%	6%	0%	12%	45%	16%	100%
Mercury	%	0%	0%	0%	3%	2%	2%	0%	0%	0%	0%	0%	18%	0%	0%	52%	23%	100%
Zinc	%	0%	0%	0%	0%	51%	1%	1%	0%	0%	0%	0%	3%	1%	1%	20%	22%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	19%	1%	4%	0%	0%	0%	0%	2%	1%	1%	29%	43%	100%
Iron	%	0%	0%	0%	0%	27%	0%	6%	0%	0%	0%	0%	2%	2%	0%	25%	38%	100%
Manganese	%	0%	0%	0%	0%	28%	0%	2%	0%	0%	0%	0%	1%	1%	1%	26%	40%	100%
Mercury	%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	34%	61%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	4%	2%	1%	0%	0%	0%	0%	0%	23%	1%	14%	45%	9%	100%
Nitrite as N	%	0%	0%	0%	5%	5%	1%	0%	0%	0%	0%	0%	30%	1%	6%	41%	11%	100%
TKN	%	0%	0%	0%	2%	20%	1%	1%	0%	0%	0%	0%	13%	1%	7%	39%	15%	100%
Total Nitrogen	%	0%	0%	0%	4%	4%	1%	0%	0%	0%	0%	0%	25%	1%	11%	43%	10%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	2%	8%	2%	0%	0%	0%	0%	0%	11%	1%	1%	44%	31%	100%
Total Phosphorus as P	%	0%	0%	0%	2%	9%	2%	0%	0%	0%	0%	0%	10%	1%	14%	35%	27%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	6%	2%	1%	0%	0%	0%	0%	0%	31%	1%	8%	41%	10%	100%
Synthetic Organics																		
Pentachlorophenol	%	1%	0%	0%	1%	6%	0%	0%	0%	0%	0%	0%	5%	0%	75%	8%	2%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-25
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: County of San Diego HSA 905.12

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	0	118,397	22,439	1,108,180	19,833	0	16,972	18,151	55,443	5,188,533	26,395	181,507	2,234,690	1,688,145	10,678,685
% Contribution	%	0%	0%	0%	1%	0%	10%	0%	0%	0%	0%	1%	49%	0%	2%	21%	16%	100%
Conventional Parameters																		
Chloride	lb	0	0	0	679.7	356.2	12302	100.9	0	54.8	58.6	115.2	29787	177.4	1071	21310	11851	77864
Sulfate	lb	0	0	0	1413	67.79	7463	95.0	0	121.6	130.0	275.4	61903	92.04	1542	19043	9663	101809
Indicator Bacteria																		
Enterococcus	MPN	0	0	0	1.98E+13	1.30E+13	1.65E+15	4.21E+12	0	8.20E+11	8.77E+11	2.74E+12	8.69E+14	3.43E+12	4.58E+13	1.60E+15	5.27E+14	4.74E+15
Fecal Coliform	MPN	0	0	0	1.96E+12	1.57E+13	7.81E+13	1.06E+12	0	6.72E+11	7.19E+11	3.28E+12	8.61E+13	5.80E+12	8.22E+13	1.18E+15	1.75E+14	1.63E+15
Total Coliform	MPN	0	0	0	3.36E+13	5.13E+14	2.67E+15	5.63E+13	0	4.73E+12	5.06E+12	1.10E+13	1.47E+15	1.98E+14	2.19E+14	4.59E+15	1.25E+15	1.10E+16
Total Metals																		
Aluminum	lb	0	0	0	0.2683	2.333	4.134	0.3340	0	0.2182	0.2333	1.668	11.76	0.6939	16.89	137.7	75.47	251.7
Cadmium	lb	0	0	0	1.10E-04	4.02E-04	0.0021	8.81E-05	0	2.86E-05	3.06E-05	8.63E-05	0.0048	1.29E-04	0.0015	0.0116	0.0070	0.0279
Copper	lb	0	0	0	0.0241	0.1418	0.3040	0.0127	0	0.0115	0.0123	0.0243	1.057	0.0248	0.1621	2.107	3.899	7.780
Iron	lb	0	0	0	1.119	3.102	22.07	0.8968	0	0.3437	0.3676	2.288	49.02	0.8450	27.28	208.2	115.3	430.9
Lead	lb	0	0	0	0.0012	0.0099	0.0225	5.55E-04	0	6.55E-04	7.00E-04	0.0018	0.0522	0.0026	0.0239	0.2388	0.1453	0.4999
Manganese	lb	0	0	0	0.0843	0.1573	1.596	0.0372	0	0.0204	0.0218	0.1151	3.693	0.0333	2.193	10.03	5.454	23.43
Mercury	lb	0	0	0	2.27E-05	3.43E-05	4.77E-04	1.61E-05	0	4.02E-06	4.30E-06	2.42E-05	0.0010	1.48E-05	3.28E-04	0.0031	0.0016	0.0066
Zinc	lb	0	0	0	0.0422	0.6280	2.417	0.0367	0	0.0150	0.0160	0.0538	1.851	0.1628	0.7287	6.039	12.42	24.41
Dissolved Metals																		
Aluminum	lb	0	0	0	0.0020	0.0672	0.1106	0.0454	0	0.0015	0.0016	0.0070	0.0888	0.0405	0.3666	1.947	3.978	6.657
Iron	lb	0	0	0	0.0062	0.1185	0.3794	0.2554	0	0.0149	0.0159	0.1644	0.2707	0.0526	13.89	9.895	13.56	38.62
Manganese	lb	0	0	0	0.0016	0.0645	0.1152	0.0164	0	0.0016	0.0017	0.0084	0.0692	0.0129	0.6698	1.375	3.032	5.369
Mercury	lb	0	0	0	9.91E-07	2.19E-05	9.76E-05	8.48E-06	0	2.90E-08	3.11E-08	9.34E-08	4.34E-05	1.22E-05	1.59E-04	0.0012	0.0028	0.0044
Nutrients																		
Nitrate as N	lb	0	0	0	14.55	1.230	75.00	0.6022	0	1.588	1.698	5.132	637.5	2.312	37.03	293.5	129.5	1200
Nitrite as N	lb	0	0	0	0.4095	0.1162	2.134	0.0157	0	0.1064	0.1138	0.2187	17.95	0.1437	0.8970	11.19	5.578	38.87
TKN	lb	0	0	0	4.411	7.673	76.77	1.061	0	0.9206	0.9846	3.075	193.3	2.891	37.19	285.2	161.3	774.7
Total Nitrogen	lb	0	0	0	20.63	5.671	100.6	1.043	0	4.003	4.281	9.677	904.0	11.20	78.87	861.0	292.4	2293
Dissolved Phosphorus as P	lb	0	0	0	0.4366	0.4131	12.85	0.0793	0	0.0397	0.0424	0.0928	19.13	0.3067	0.4833	34.81	37.02	105.7
Total Phosphorus as P	lb	0	0	0	0.7064	0.7036	23.74	0.1349	0	0.0990	0.1059	0.3930	30.96	0.4747	8.911	48.13	59.20	173.6
Solid Parameters																		
TDS	lb	0	0	0	6583	446.6	35395	272.4	0	536.7	574.0	1055	288502	673.1	6223	86189	46005	472454
Synthetic Organics																		
Pentachlorophenol	lb	0	0	0	0.0056	0.0010	0.0266	3.60E-04	0	2.82E-04	3.02E-04	0.0018	0.2434	3.33E-04	0.0771	0.0429	0.0239	0.4235

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-26
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: County of San Diego HSA 905.12

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	0	0	118,397	22,439	1,108,180	19,833	0	16,972	18,151	55,443	5,188,533	26,395	181,507	2,234,690	1,688,145	10,678,685
% Contribution	%	0%	0%	0%	1%	0%	10%	0%	0%	0%	0%	1%	49%	0%	2%	21%	16%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	1%	0%	6%	0%	0%	0%	0%	0%	51%	0%	2%	28%	11%	100%
Sulfate	%	0%	0%	0%	1%	0%	6%	0%	0%	0%	0%	0%	49%	0%	3%	30%	10%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	1%	3%	1%	0%	0%	0%	0%	4%	0%	0%	86%	4%	100%
Fecal Coliform	%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	1%	1%	4%	89%	2%	100%
Total Coliform	%	0%	0%	0%	0%	23%	1%	3%	0%	0%	0%	0%	2%	8%	1%	59%	3%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	1%	5%	0%	0%	0%	0%	0%	10%	0%	4%	52%	28%	100%
Cadmium	%	0%	0%	0%	0%	11%	0%	0%	0%	0%	0%	0%	0%	4%	0%	45%	40%	100%
Copper	%	0%	0%	0%	0%	2%	4%	0%	0%	0%	0%	0%	17%	0%	1%	30%	45%	100%
Iron	%	0%	0%	0%	0%	1%	4%	0%	0%	0%	0%	0%	10%	0%	5%	52%	27%	100%
Lead	%	0%	0%	0%	0%	3%	5%	0%	0%	0%	0%	0%	10%	1%	5%	48%	28%	100%
Manganese	%	0%	0%	0%	0%	1%	7%	0%	0%	0%	0%	0%	14%	0%	5%	46%	25%	100%
Mercury	%	0%	0%	0%	1%	0%	16%	0%	0%	0%	0%	0%	27%	0%	0%	34%	22%	100%
Zinc	%	0%	0%	0%	0%	4%	12%	0%	0%	0%	0%	0%	8%	1%	0%	28%	45%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	1%	6%	1%	0%	0%	0%	0%	3%	1%	1%	27%	60%	100%
Iron	%	0%	0%	0%	0%	2%	4%	3%	0%	0%	0%	0%	4%	1%	0%	26%	60%	100%
Manganese	%	0%	0%	0%	0%	2%	4%	1%	0%	0%	0%	0%	2%	0%	1%	27%	62%	100%
Mercury	%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	4%	0%	0%	23%	62%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	1%	0%	5%	0%	0%	0%	0%	0%	42%	0%	5%	36%	11%	100%
Nitrite as N	%	0%	0%	0%	1%	0%	6%	0%	0%	0%	0%	0%	48%	0%	2%	30%	12%	100%
TKN	%	0%	0%	0%	1%	1%	11%	0%	0%	0%	0%	0%	27%	1%	3%	36%	21%	100%
Total Nitrogen	%	0%	0%	0%	1%	0%	5%	0%	0%	0%	0%	0%	44%	0%	4%	34%	11%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	0%	12%	0%	0%	0%	0%	0%	18%	0%	0%	33%	35%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%	0%	17%	0%	5%	28%	33%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	1%	0%	6%	0%	0%	0%	0%	0%	50%	0%	3%	30%	10%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	1%	19%	0%	57%	14%	5%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-27
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: County of San Diego HSA 905.21

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	131,515	701,673	304,637	335,572	0	144,484	0	11,674	172,664	2,013,537	15,300,697	0	2,951,468	5,754,342	2,994,462	30,816,725
% Contribution	%	0%	0%	2%	1%	1%	0%	0%	0%	0%	1%	7%	50%	0%	10%	19%	10%	100%
Conventional Parameters																		
Chloride	lb	0	424.3	1457	1749	5137	0	82.66	0	37.66	556.9	3959	87306	0	17340	54821	20659	193530
Sulfate	lb	0	942.0	3486	3635	977.8	0	77.80	0	83.62	1236	9470	181437	0	24958	48990	16846	292140
Indicator Bacteria																		
Enterococcus	MPN	0	6.35E+12	3.47E+13	5.10E+13	1.87E+14	0	3.45E+12	0	5.64E+11	8.34E+12	9.43E+13	2.55E+15	0	7.41E+14	4.11E+15	9.18E+14	8.70E+15
Fecal Coliform	MPN	0	5.21E+12	4.16E+13	5.05E+12	2.27E+14	0	8.66E+11	0	4.62E+11	6.84E+12	1.13E+14	2.52E+14	0	1.33E+15	3.04E+15	3.06E+14	5.33E+15
Total Coliform	MPN	0	3.67E+13	1.39E+14	8.64E+13	7.40E+15	0	4.62E+13	0	3.26E+12	4.81E+13	3.77E+14	4.31E+15	0	3.54E+15	1.18E+16	2.18E+15	3.00E+16
Total Metals																		
Aluminum	lb	0	1.6905	21.11	0.6902	33.65	0	0.2737	0	0.1501	2.219	57.34	34.46	0	273.5	354.3	131.6	910.9
Cadmium	lb	0	2.21E-04	0.0011	2.84E-04	0.0058	0	7.22E-05	0	1.97E-05	2.91E-04	0.0030	0.0142	0	0.0240	0.0299	0.0121	0.0909
Copper	lb	0	0.0889	0.3073	0.0621	2.045	0	0.0104	0	0.0079	0.1167	0.8349	3.098	0	2.624	5.419	6.797	21.41
Iron	lb	0	2.664	28.95	2.878	44.74	0	0.7349	0	0.2364	3.496	78.66	143.7	0	441.6	535.6	201.1	1484
Lead	lb	0	0.0051	0.0225	0.0031	0.1429	0	4.55E-04	0	4.51E-04	0.0067	0.0610	0.1529	0	0.3862	0.6143	0.2533	1.649
Manganese	lb	0	0.1581	1.456	0.2168	2.268	0	0.0305	0	0.0140	0.2075	3.956	10.82	0	35.51	25.79	9.508	89.94
Mercury	lb	0	3.11E-05	3.06E-04	5.83E-05	4.95E-04	0	1.32E-05	0	2.76E-06	4.09E-05	8.31E-04	0.0029	0	0.0053	0.0079	0.0028	0.0206
Zinc	lb	0	0.1162	0.6803	0.1087	9.057	0	0.0300	0	0.0103	0.1525	1.848	5.426	0	11.80	15.53	21.65	66.41
Dissolved Metals																		
Aluminum	lb	0	0.0116	0.0884	0.0052	0.9696	0	0.0372	0	0.0010	0.0153	0.2401	0.2603	0	5.936	5.010	6.935	19.51
Iron	lb	0	0.1153	2.080	0.0159	1.709	0	0.2093	0	0.0102	0.1513	5.652	0.7935	0	224.8	25.46	23.64	284.6
Manganese	lb	0	0.0121	0.1061	0.0041	0.9298	0	0.0134	0	0.0011	0.0159	0.2882	0.2029	0	10.84	3.538	5.286	21.24
Mercury	lb	0	2.25E-07	1.18E-06	2.55E-06	3.16E-04	0	6.95E-06	0	2.00E-08	2.95E-07	3.21E-06	1.27E-04	0	0.0026	0.0031	0.0049	0.0111
Nutrients																		
Nitrate as N	lb	0	12.30	64.95	37.43	17.74	0	0.4934	0	1.092	16.15	176.5	1868	0	599.6	755.1	225.8	3775
Nitrite as N	lb	0	0.8248	2.768	1.054	1.676	0	0.0129	0	0.0732	1.083	7.520	52.60	0	14.52	28.80	9.725	120.7
TKN	lb	0	7.134	38.91	11.35	110.7	0	0.8696	0	0.6333	9.363	105.7	566.6	0	602.1	733.6	281.2	2468
Total Nitrogen	lb	0	31.02	122.5	53.08	81.80	0	0.8550	0	2.753	40.71	332.7	2650	0	1277	2215	509.8	7317
Dissolved Phosphorus as P	lb	0	0.3075	1.174	1.123	5.958	0	0.0650	0	0.0273	0.4035	3.189	56.08	0	7.824	89.55	64.54	230.2
Total Phosphorus as P	lb	0	0.7673	4.974	1.818	10.15	0	0.1105	0	0.0681	1.007	13.51	90.73	0	144.3	123.8	103.2	494.4
Solid Parameters																		
TDS	lb	0	4159	13356	16939	6441	0	223.2	0	369.2	5458	36283	845592	0	100743	221730	80200	1331493
Synthetic Organics																		
Pentachlorophenol	lb	0	0.0022	0.0228	0.0143	0.0144	0	2.95E-04	0	1.94E-04	0.0029	0.0621	0.7135	0	1.248	0.1103	0.0417	2.233

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-28
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: County of San Diego HSA 905.21

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	131,515	701,673	304,637	335,572	0	144,484	0	11,674	172,664	2,013,537	15,300,697	0	2,951,468	5,754,342	2,994,462	30,816,725
% Contribution	%	0%	0%	2%	1%	1%	0%	0%	0%	0%	1%	7%	50%	0%	10%	19%	10%	100%
Conventional Parameters																		
Chloride	%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	2%	52%	0%	11%	25%	6%	100%
Sulfate	%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	4%	46%	0%	16%	25%	6%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	8%	0%	2%	0%	0%	0%	0%	4%	0%	2%	81%	2%	100%
Fecal Coliform	%	0%	0%	0%	0%	14%	0%	1%	0%	0%	0%	0%	0%	0%	19%	65%	1%	100%
Total Coliform	%	0%	0%	0%	0%	63%	0%	4%	0%	0%	0%	1%	1%	0%	2%	27%	1%	100%
Total Metals																		
Aluminum	%	0%	0%	2%	0%	4%	0%	1%	0%	0%	0%	6%	9%	0%	19%	43%	16%	100%
Cadmium	%	0%	0%	1%	0%	44%	0%	0%	0%	0%	0%	2%	0%	0%	0%	33%	20%	100%
Copper	%	0%	0%	1%	0%	12%	0%	1%	0%	0%	0%	3%	18%	0%	6%	28%	29%	100%
Iron	%	0%	0%	2%	0%	4%	0%	1%	0%	0%	0%	5%	9%	0%	25%	40%	14%	100%
Lead	%	0%	0%	1%	0%	14%	0%	1%	0%	0%	0%	3%	8%	0%	22%	36%	15%	100%
Manganese	%	0%	0%	1%	0%	5%	0%	1%	0%	0%	0%	4%	13%	0%	27%	36%	13%	100%
Mercury	%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	37%	0%	0%	42%	19%	100%
Zinc	%	0%	0%	0%	0%	25%	0%	1%	0%	0%	0%	1%	10%	0%	3%	28%	32%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	7%	0%	4%	0%	0%	0%	1%	5%	0%	4%	31%	47%	100%
Iron	%	0%	0%	1%	0%	10%	0%	8%	0%	0%	0%	2%	5%	0%	1%	28%	44%	100%
Manganese	%	0%	0%	0%	0%	11%	0%	3%	0%	0%	0%	1%	3%	0%	4%	30%	47%	100%
Mercury	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	33%	60%	100%
Nutrients																		
Nitrate as N	%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	3%	37%	0%	24%	27%	6%	100%
Nitrite as N	%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	3%	49%	0%	10%	27%	7%	100%
TKN	%	0%	0%	1%	1%	6%	0%	1%	0%	0%	0%	3%	27%	0%	16%	32%	13%	100%
Total Nitrogen	%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	4%	40%	0%	18%	27%	6%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	1%	25%	0%	3%	39%	28%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	1%	19%	0%	29%	26%	21%	100%
Solid Parameters																		
TDS	%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	3%	48%	0%	14%	25%	6%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	4%	5%	0%	83%	3%	1%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-29
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: County of San Diego HSA 905.23

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	9,086	5,367	78,173	11,098	0	59,170	0	0	79,047	18,000	130,658	0	111,726	4,431,129	795,482	5,728,936
% Contribution	%	0%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%	2%	0%	2%	77%	14%	100%
Conventional Parameters																		
Chloride	lb	0	29.32	11.15	448.8	176.2	0	0	0	0	255.0	37.38	750.1	0	658.7	42177	5431	49975
Sulfate	lb	0	65.08	26.67	932.7	33.53	0	0	0	0	566.2	89.42	1559	0	948.0	37691	4428	46340
Indicator Bacteria																		
Enterococcus	MPN	0	4.39E+11	2.66E+11	1.31E+13	6.42E+12	0	0	0	0	3.82E+12	8.91E+11	2.19E+13	0	2.81E+13	3.16E+15	2.41E+14	3.48E+15
Fecal Coliform	MPN	0	3.60E+11	3.18E+11	1.30E+12	7.79E+12	0	0	0	0	3.13E+12	1.07E+12	2.17E+12	0	5.06E+13	2.34E+15	8.04E+13	2.49E+15
Total Coliform	MPN	0	2.53E+12	1.06E+12	2.22E+13	2.54E+14	0	0	0	0	2.20E+13	3.56E+12	3.71E+13	0	1.35E+14	9.08E+15	5.72E+14	1.01E+16
Total Metals																		
Aluminum	lb	0	0.1168	0.1614	0.1771	1.154	0	0	0	0	1.016	0.5414	0.2960	0	10.39	272.6	34.59	321.0
Cadmium	lb	0	1.53E-05	8.35E-06	7.29E-05	1.99E-04	0	0	0	0	1.33E-04	2.80E-05	1.22E-04	0	9.11E-04	0.0230	0.0032	0.0276
Copper	lb	0	0.0061	0.0024	0.0159	0.0701	0	0	0	0	0.0535	0.0079	0.0266	0	0.0997	4.169	1.787	6.238
Iron	lb	0	0.1840	0.2215	0.7386	1.534	0	0	0	0	1.601	0.7427	1.234	0	16.78	412.1	52.86	488.0
Lead	lb	0	3.51E-04	1.72E-04	7.86E-04	0.0049	0	0	0	0	0.0031	5.76E-04	0.0013	0	0.0147	0.4726	0.0666	0.5650
Manganese	lb	0	0.0109	0.0111	0.0556	0.0778	0	0	0	0	0.0950	0.0374	0.0930	0	1.349	19.84	2.500	24.07
Mercury	lb	0	2.15E-06	2.34E-06	1.50E-05	1.70E-05	0	0	0	0	1.87E-05	7.84E-06	2.50E-05	0	2.02E-04	0.0060	7.33E-04	0.0071
Zinc	lb	0	0.0080	0.0052	0.0279	0.3106	0	0	0	0	0.0699	0.0175	0.0466	0	0.4481	11.95	5.691	18.58
Dissolved Metals																		
Aluminum	lb	0	8.04E-04	6.76E-04	0.0013	0.0333	0	0	0	0	0.0070	0.0023	0.0022	0	0.2255	3.854	1.823	5.95
Iron	lb	0	0.0080	0.0159	0.0041	0.0586	0	0	0	0	0.0693	0.0534	0.0068	0	8.540	19.58	6.214	34.55
Manganese	lb	0	8.39E-04	8.11E-04	0.0010	0.0319	0	0	0	0	0.0073	0.0027	0.0017	0	0.4119	2.722	1.389	4.570
Mercury	lb	0	1.55E-08	9.04E-09	6.54E-07	1.08E-05	0	0	0	0	1.35E-07	3.03E-08	1.09E-06	0	9.79E-05	0.0024	0.0013	0.0038
Nutrients																		
Nitrate as N	lb	0	0.8499	0.4968	9.604	0.6083	0	0	0	0	7.394	1.666	16.05	0	22.77	581.0	59.36	699.8
Nitrite as N	lb	0	0.0570	0.0212	0.2704	0.0575	0	0	0	0	0.4958	0.0710	0.4519	0	0.5516	22.16	2.556	26.69
TKN	lb	0	0.4929	0.2977	2.912	3.795	0	0	0	0	4.288	0.9982	4.868	0	22.87	564.4	73.91	678.9
Total Nitrogen	lb	0	2.143	0.9368	13.62	2.805	0	0	0	0	18.64	3.142	22.76	0	48.50	1704	134.0	1951
Dissolved Phosphorus as P	lb	0	0.0212	0.0090	0.2883	0.2043	0	0	0	0	0.1848	0.0301	0.4818	0	0.2972	68.90	16.97	87.38
Total Phosphorus as P	lb	0	0.0530	0.0380	0.4664	0.3480	0	0	0	0	0.4612	0.1276	0.7795	0	5.480	95.26	27.13	130.1
Solid Parameters																		
TDS	lb	0	287.3	102.2	4347	220.9	0	0	0	0	2500	342.6	7265	0	3827	170590	21083	210564
Synthetic Organics																		
Pentachlorophenol	lb	0	1.51E-04	1.75E-04	0.0037	4.93E-04	0	0	0	0	0.0013	5.86E-04	0.0061	0	0.0474	0.0849	0.0110	0.1558

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-30
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: County of San Diego HSA 905.23

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	0	9,086	5,367	78,173	11,098	0	59,170	0	0	79,047	18,000	130,658	0	111,726	4,431,129	795,482	5,728,936
% Contribution	%	0%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%	2%	0%	2%	77%	14%	100%
Conventional Parameters																		
Chloride	%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	86%	8%	100%
Sulfate	%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	2%	0%	3%	86%	7%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	97%	1%	100%
Fecal Coliform	%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	97%	1%	100%
Total Coliform	%	0%	0%	0%	0%	8%	0%	6%	0%	0%	0%	0%	0%	0%	0%	84%	1%	100%
Total Metals																		
Aluminum	%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	2%	85%	11%	100%
Cadmium	%	0%	0%	0%	0%	5%	0%	0%	0%	0%	1%	0%	0%	0%	0%	78%	16%	100%
Copper	%	0%	0%	0%	0%	1%	0%	1%	0%	0%	1%	0%	0%	0%	1%	70%	25%	100%
Iron	%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	3%	85%	10%	100%
Lead	%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	2%	82%	12%	100%
Manganese	%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	3%	84%	11%	100%
Mercury	%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	85%	13%	100%
Zinc	%	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%	0%	0%	69%	27%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	0%	1%	0%	4%	0%	0%	0%	0%	0%	0%	0%	62%	32%	100%
Iron	%	0%	0%	0%	0%	1%	0%	9%	0%	0%	0%	0%	0%	0%	0%	59%	31%	100%
Manganese	%	0%	0%	0%	0%	1%	0%	3%	0%	0%	0%	0%	0%	0%	0%	62%	34%	100%
Mercury	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	61%	39%	100%
Nutrients																		
Nitrate as N	%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	1%	0%	4%	87%	6%	100%
Nitrite as N	%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	2%	0%	2%	87%	8%	100%
TKN	%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	1%	0%	2%	83%	11%	100%
Total Nitrogen	%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	1%	0%	3%	87%	7%	100%
Dissolved Phosphorus as P	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	78%	20%	100%
Total Phosphorus as P	%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	4%	74%	20%	100%
Solid Parameters																		
TDS	%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	2%	0%	2%	86%	7%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%	1%	1%	0%	49%	40%	3%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-31
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: County of San Diego HSA 905.32

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	69,782	804,447	1,576,329	1,687,188	32,768	0	36,638	0	77,802	1,036,236	10,500,111	8,638,037	323,398	4,192,513	633,537	1,572,425	31,181,211
% Contribution	%	0%	3%	5%	5%	0%	0%	0%	0%	0%	3%	34%	28%	1%	13%	2%	5%	100%
Conventional Parameters																		
Chloride	lb	225.1	2595	3274	9686	520.2	0	186.3	0	251.0	3343	21442	49562	2174	24740	6041	8075	132114
Sulfate	lb	499.8	5761	7831	20130	99.00	0	175.4	0	557.3	7422	51289	102999	1128	35608	5399	6584	245481
Indicator Bacteria																		
Enterococcus	MPN	3.37E+12	3.89E+13	7.80E+13	2.83E+14	1.90E+13	0	7.77E+12	0	3.76E+12	5.01E+13	5.11E+14	1.45E+15	4.20E+13	1.06E+15	4.53E+14	3.59E+14	4.35E+15
Fecal Coliform	MPN	2.76E+12	3.19E+13	9.34E+13	2.80E+13	2.30E+13	0	1.95E+12	0	3.08E+12	4.10E+13	6.11E+14	1.43E+14	7.11E+13	1.90E+15	3.35E+14	1.20E+14	3.40E+15
Total Coliform	MPN	1.95E+13	2.24E+14	3.12E+14	4.79E+14	7.49E+14	0	1.04E+14	0	2.17E+13	2.89E+14	2.04E+15	2.45E+15	2.42E+15	5.06E+15	1.30E+15	8.50E+14	1.63E+16
Total Metals																		
Aluminum	lb	0.8970	10.34	47.41	3.823	3.408	0	0.6170	0	1.000	13.32	310.5	19.56	8.501	390.1	39.04	51.42	900.0
Cadmium	lb	1.17E-04	0.0014	0.0025	0.0016	5.86E-04	0	1.63E-04	0	1.31E-04	0.0017	0.0161	0.0080	0.0016	0.0342	0.0033	0.0047	0.0761
Copper	lb	0.0472	0.5440	0.6903	0.3437	0.2070	0	0.0234	0	0.0526	0.7008	4.521	1.759	0.3036	3.743	0.5972	2.657	16.19
Iron	lb	1.413	16.29	65.04	15.94	4.530	0	1.657	0	1.576	20.99	426.0	81.56	10.35	630.1	59.03	78.59	1413
Lead	lb	0.0027	0.0310	0.0504	0.0170	0.0145	0	0.0010	0	0.0030	0.0400	0.3304	0.0868	0.0320	0.5510	0.0677	0.0990	1.326
Manganese	lb	0.0839	0.9672	3.271	1.201	0.2297	0	0.0687	0	0.0936	1.246	21.42	6.144	0.4080	50.66	2.842	3.716	92.36
Mercury	lb	1.65E-05	1.90E-04	6.87E-04	3.23E-04	5.02E-05	0	2.97E-05	0	1.84E-05	2.45E-04	0.0045	0.0017	1.81E-04	0.0076	8.66E-04	0.0011	0.0174
Zinc	lb	0.0617	0.7108	1.528	0.6020	0.9171	0	0.0677	0	0.0688	0.9157	10.01	3.080	1.995	16.83	1.712	8.461	46.96
Dissolved Metals																		
Aluminum	lb	0.0062	0.0712	0.1986	0.0289	0.0982	0	0.0838	0	0.0069	0.0917	1.301	0.1478	0.4963	8.469	0.5521	2.711	14.26
Iron	lb	0.0612	0.7053	4.673	0.0880	0.1731	0	0.4718	0	0.0682	0.9086	30.61	0.4505	0.6445	320.7	2.805	9.239	371.6
Manganese	lb	0.0064	0.0743	0.2383	0.0225	0.0941	0	0.0303	0	0.0072	0.0957	1.561	0.1152	0.1576	15.47	0.3899	2.066	20.33
Mercury	lb	1.19E-07	1.38E-06	2.66E-06	1.41E-05	3.20E-05	0	1.57E-05	0	1.33E-07	1.77E-06	1.74E-05	7.22E-05	1.50E-04	0.0037	0.0003	0.0019	0.0062
Nutrients																		
Nitrate as N	lb	6.528	75.24	145.9	207.3	1.796	0	1.112	0	7.278	96.93	955.6	1061	28.33	855.4	83.21	88.25	3614
Nitrite as N	lb	0.4377	5.045	6.218	5.836	0.1697	0	0.0290	0	0.4880	6.499	40.72	29.86	1.761	20.72	3.174	3.801	124.8
TKN	lb	3.785	43.63	87.42	62.86	11.20	0	1.960	0	4.220	56.21	572.5	321.6	35.42	859.1	80.85	109.9	2251
Total Nitrogen	lb	16.46	189.7	275.1	294.0	8.282	0	1.927	0	18.35	244.4	1802	1504	137.2	1822	244.1	199.2	6757
Dissolved Phosphorus as P	lb	0.1631	1.880	2.637	6.222	0.6032	0	0.1464	0	0.1819	2.423	17.27	31.84	3.757	11.16	9.868	25.22	113.4
Total Phosphorus as P	lb	0.4071	4.693	11.17	10.07	1.028	0	0.2492	0	0.4539	6.046	73.18	51.51	5.816	205.8	13.65	40.33	424.4
Solid Parameters																		
TDS	lb	2207	25436	30002	93814	652.2	0	503.1	0	2460	32769	196497	480029	8247	143733	24435	31345	1072130
Synthetic Organics																		
Pentachlorophenol	lb	0.0012	0.0134	0.0513	0.0792	0.0015	0	6.65E-04	0	0.0013	0.0172	0.3361	0.4050	0.0041	1.781	0.0122	0.0163	2.720

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-32
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: County of San Diego HSA 905.32

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	69,782	804,447	1,576,329	1,687,188	32,768	0	36,638	0	77,802	1,036,236	10,500,111	8,638,037	323,398	4,192,513	633,537	1,572,425	31,181,211
% Contribution	%	0%	3%	5%	5%	0%	0%	0%	0%	0%	3%	34%	28%	1%	13%	2%	5%	100%
Conventional Parameters																		
Chloride	%	0%	1%	3%	8%	0%	0%	0%	0%	0%	2%	17%	38%	2%	21%	4%	4%	100%
Sulfate	%	0%	2%	4%	6%	0%	0%	0%	0%	0%	2%	24%	29%	1%	25%	3%	3%	100%
Indicator Bacteria																		
Enterococcus	%	0%	1%	2%	2%	3%	0%	3%	0%	0%	1%	11%	10%	8%	13%	41%	5%	100%
Fecal Coliform	%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	3%	1%	9%	64%	17%	1%	100%
Total Coliform	%	0%	1%	2%	0%	16%	0%	3%	0%	0%	1%	10%	2%	48%	8%	8%	1%	100%
Total Metals																		
Aluminum	%	0%	1%	5%	1%	0%	0%	0%	0%	0%	1%	34%	6%	1%	33%	6%	10%	100%
Cadmium	%	0%	4%	3%	0%	9%	0%	0%	0%	0%	5%	23%	0%	27%	0%	7%	21%	100%
Copper	%	0%	2%	4%	3%	2%	0%	0%	0%	0%	3%	26%	15%	3%	13%	5%	23%	100%
Iron	%	0%	1%	5%	1%	0%	0%	0%	0%	0%	2%	31%	5%	1%	40%	5%	8%	100%
Lead	%	0%	2%	3%	1%	2%	0%	0%	0%	0%	3%	22%	6%	4%	41%	5%	10%	100%
Manganese	%	0%	1%	3%	2%	1%	0%	0%	0%	0%	2%	23%	8%	1%	45%	5%	8%	100%
Mercury	%	0%	0%	1%	10%	0%	0%	0%	0%	0%	0%	4%	50%	0%	0%	11%	24%	100%
Zinc	%	0%	1%	2%	2%	5%	0%	0%	0%	0%	2%	12%	12%	11%	10%	7%	36%	100%
Dissolved Metals																		
Aluminum	%	0%	1%	2%	1%	1%	0%	2%	0%	0%	2%	14%	5%	6%	10%	7%	49%	100%
Iron	%	0%	2%	3%	1%	2%	0%	4%	0%	0%	3%	22%	5%	8%	2%	6%	42%	100%
Manganese	%	0%	1%	1%	1%	2%	0%	1%	0%	0%	1%	10%	4%	5%	13%	7%	53%	100%
Mercury	%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	9%	79%	100%
Nutrients																		
Nitrate as N	%	0%	1%	3%	5%	0%	0%	0%	0%	0%	2%	19%	23%	1%	39%	3%	3%	100%
Nitrite as N	%	0%	2%	3%	7%	0%	0%	0%	0%	0%	2%	21%	35%	2%	18%	4%	5%	100%
TKN	%	0%	2%	3%	4%	1%	0%	0%	0%	0%	2%	22%	20%	3%	30%	4%	8%	100%
Total Nitrogen	%	0%	2%	3%	5%	0%	0%	0%	0%	0%	3%	23%	25%	2%	29%	3%	4%	100%
Dissolved Phosphorus as P	%	0%	1%	2%	5%	0%	0%	0%	0%	0%	2%	14%	27%	3%	9%	8%	29%	100%
Total Phosphorus as P	%	0%	1%	1%	3%	0%	0%	0%	0%	0%	1%	9%	13%	2%	52%	4%	14%	100%
Solid Parameters																		
TDS	%	0%	2%	3%	6%	0%	0%	0%	0%	0%	2%	21%	33%	1%	24%	3%	4%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	1%	2%	0%	0%	0%	0%	0%	0%	2%	14%	2%	0%	77%	0%	0%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-33
San Dieguito River WMA Wet Season Flow Volume and Pollutant Loads: County of San Diego HSA 905.41

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	68,546	2,329,972	1,213,866	11,143,666	2,825,077	3,368,701	1,057,335	0	72,387	2,620,101	2,227,554	23,448,501	854,343	16,395,385	6,657,410	10,929,649	85,212,492
% Contribution	%	0%	3%	1%	13%	3%	4%	1%	0%	0%	3%	3%	28%	1%	19%	8%	13%	100%
Conventional Parameters																		
Chloride	lb	221.2	7509	2520	63874	42814	37397	5377	0	233.5	8425	4371	121040	5574	95820	63484	61992	520652
Sulfate	lb	491.0	16671	6029	132743	8149	22686	5062	0	518.5	18703	10455	251545	2892	137912	56732	50549	721136
Indicator Bacteria																		
Enterococcus	MPN	3.31E+12	1.12E+14	6.00E+13	1.86E+15	1.56E+15	5.03E+15	2.24E+14	0	3.50E+12	1.26E+14	1.04E+14	3.53E+15	1.08E+14	4.09E+15	4.76E+15	2.75E+15	2.43E+16
Fecal Coliform	MPN	2.72E+12	9.22E+13	7.19E+13	1.85E+14	1.89E+15	2.37E+14	5.63E+13	0	2.87E+12	1.03E+14	1.25E+14	3.50E+14	1.82E+14	7.36E+15	3.52E+15	9.18E+14	1.51E+16
Total Coliform	MPN	1.91E+13	6.49E+14	2.40E+14	3.16E+15	6.16E+16	8.12E+15	3.00E+15	0	2.02E+13	7.28E+14	4.16E+14	5.98E+15	6.21E+15	1.96E+16	1.37E+16	6.53E+15	1.30E+17
Total Metals																		
Aluminum	lb	0.8811	29.92	36.50	25.21	280.5	12.57	17.81	0	0.9305	33.56	63.30	47.77	21.80	1511	410.3	394.8	2886.9
Cadmium	lb	1.15E-04	0.0039	0.0019	0.0104	0.0483	0.0064	0.0047	0	1.22E-04	0.0044	0.0033	0.0197	0.0040	0.1325	0.0346	0.0364	0.3107
Copper	lb	0.0464	1.574	0.5315	2.266	17.04	0.9242	0.6757	0	0.0490	1.766	0.9217	4.295	0.7785	14.50	6.276	20.40	72.04
Iron	lb	1.388	47.14	50.07	105.1	372.9	67.08	47.81	0	1.466	52.89	86.84	199.2	26.55	2440.4	620.3	603.4	4722
Lead	lb	0.0026	0.0898	0.0388	0.1118	1.191	0.0684	0.0296	0	0.0028	0.1008	0.0673	0.2119	0.0821	2.134	0.7113	0.7599	5.602
Manganese	lb	0.0824	2.799	2.518	7.919	18.90	4.850	1.983	0	0.0870	3.140	4.367	15.01	1.046	196.2	29.87	28.53	317.3
Mercury	lb	1.62E-05	5.51E-04	5.29E-04	0.0021	0.0041	0.0015	8.56E-04	0	1.71E-05	6.18E-04	9.17E-04	0.0040	4.64E-04	0.0294	0.0091	0.0084	0.0625
Zinc	lb	0.0606	2.0567	1.176	3.970	75.49	7.346	1.955	0	0.0640	2.307	2.040	7.522	5.116	65.19	17.99	64.96	257.2
Dissolved Metals																		
Aluminum	lb	0.0061	0.2059	0.1529	0.1904	8.081	0.3362	2.418	0	0.0064	0.2310	0.2651	0.3609	1.273	32.80	5.801	20.81	72.94
Iron	lb	0.0601	2.041	3.598	0.5806	14.25	1.153	13.62	0	0.0635	2.290	6.239	1.100	1.653	1242.3	29.48	70.93	1389
Manganese	lb	0.0063	0.2149	0.1834	0.1484	7.749	0.3501	0.8738	0	0.0067	0.2411	0.3181	0.2813	0.4042	59.92	4.098	15.86	90.66
Mercury	lb	1.17E-07	3.98E-06	2.04E-06	9.31E-05	0.0026	2.97E-04	4.52E-04	0	1.24E-07	4.47E-06	3.54E-06	1.76E-04	3.85E-04	0.0142	0.0036	0.0147	0.0366
Nutrients																		
Nitrate as N	lb	6.412	217.7	112.3	1367	147.8	228.0	32.10	0	6.771	244.3	194.8	2590	72.64	3313	874.4	677.5	10085
Nitrite as N	lb	0.4299	14.60	4.787	38.48	13.97	6.488	0.8375	0	0.4540	16.38	8.301	72.92	4.515	80.24	33.35	29.18	324.9
TKN	lb	3.718	126.3	67.30	414.5	922.3	233.4	56.58	0	3.927	141.6	116.7	785.5	90.83	3327	849.6	843.7	7983
Total Nitrogen	lb	16.17	548.9	211.8	1938	681.7	305.9	55.62	0	17.07	615.8	367.3	3673	351.9	7056	2565	1530	19935
Dissolved Phosphorus as P	lb	0.1602	5.441	2.030	41.03	49.65	39.07	4.226	0	0.1692	6.104	3.521	77.75	9.634	43.23	103.7	193.7	579.4
Total Phosphorus as P	lb	0.3999	13.58	8.602	66.38	84.58	72.16	7.191	0	0.4223	15.23	14.92	125.8	14.91	797.2	143.4	309.7	1674
Solid Parameters																		
TDS	lb	2168	73602	23097	618650	53679	107594	14520	0	2289	82575	40055	1172328	21148	556697	256767	240652	3265820
Synthetic Organics																		
Pentachlorophenol	lb	0.0011	0.0387	0.0395	0.5220	0.1198	0.0808	0.0192	0	0.0012	0.0434	0.0685	0.9892	0.0105	6.8963	0.1277	0.1253	9.083

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Table E.4-34
San Dieguito River WMA Wet Season Flow Volume and Percent Pollutant Loads: County of San Diego HSA 905.41

Analyte	Units	Ag-A	Ag-B	Ag-C	Ag-D	Com	Edu	Ind	Mix Use	Open-A	Open-B	Open-C	Open-D	Res-MF	Res-Rur	Res-SF	Trans	Total
Wet Season Flow Volume	cf	68,546	2,329,972	1,213,866	11,143,666	2,825,077	3,368,701	1,057,335	0	72,387	2,620,101	2,227,554	23,448,501	854,343	16,395,385	6,657,410	10,929,649	85,212,492
% Contribution	%	0%	3%	1%	13%	3%	4%	1%	0%	0%	3%	3%	28%	1%	19%	8%	13%	100%
Conventional Parameters																		
Chloride	%	0%	1%	1%	15%	2%	3%	0%	0%	0%	1%	1%	31%	1%	24%	11%	9%	100%
Sulfate	%	0%	2%	1%	12%	1%	2%	0%	0%	0%	2%	2%	26%	1%	33%	11%	8%	100%
Indicator Bacteria																		
Enterococcus	%	0%	0%	0%	1%	30%	2%	8%	0%	0%	0%	0%	3%	2%	5%	44%	4%	100%
Fecal Coliform	%	0%	0%	0%	0%	36%	0%	1%	0%	0%	0%	0%	0%	3%	34%	24%	1%	100%
Total Coliform	%	0%	0%	0%	0%	80%	0%	4%	0%	0%	0%	0%	0%	8%	2%	5%	1%	100%
Total Metals																		
Aluminum	%	0%	1%	1%	2%	11%	2%	2%	0%	0%	1%	2%	5%	1%	36%	17%	19%	100%
Cadmium	%	0%	1%	0%	0%	70%	0%	0%	0%	0%	1%	0%	0%	6%	0%	7%	13%	100%
Copper	%	0%	1%	1%	4%	29%	1%	2%	0%	0%	2%	1%	8%	2%	10%	9%	31%	100%
Iron	%	0%	1%	1%	2%	11%	1%	2%	0%	0%	1%	2%	4%	1%	43%	14%	16%	100%
Lead	%	0%	1%	0%	2%	30%	1%	1%	0%	0%	1%	1%	3%	2%	32%	11%	14%	100%
Manganese	%	0%	1%	1%	3%	12%	2%	2%	0%	0%	1%	1%	6%	1%	44%	13%	15%	100%
Mercury	%	0%	0%	0%	12%	2%	10%	0%	0%	0%	0%	0%	25%	0%	0%	21%	30%	100%
Zinc	%	0%	0%	0%	2%	48%	3%	1%	0%	0%	0%	0%	3%	3%	4%	8%	27%	100%
Dissolved Metals																		
Aluminum	%	0%	0%	0%	1%	17%	2%	9%	0%	0%	1%	0%	2%	2%	6%	10%	49%	100%
Iron	%	0%	1%	0%	1%	23%	1%	15%	0%	0%	1%	1%	2%	3%	1%	9%	42%	100%
Manganese	%	0%	0%	0%	1%	25%	1%	5%	0%	0%	0%	0%	1%	2%	7%	9%	47%	100%
Mercury	%	0%	0%	0%	2%	0%	6%	0%	0%	0%	0%	0%	4%	0%	0%	13%	76%	100%
Nutrients																		
Nitrate as N	%	0%	1%	1%	9%	1%	1%	0%	0%	0%	1%	1%	19%	1%	46%	11%	7%	100%
Nitrite as N	%	0%	2%	1%	14%	3%	2%	0%	0%	0%	2%	1%	29%	2%	22%	12%	10%	100%
TKN	%	0%	1%	1%	6%	15%	3%	1%	0%	0%	2%	1%	13%	2%	29%	12%	14%	100%
Total Nitrogen	%	0%	2%	1%	10%	3%	2%	0%	0%	0%	2%	2%	22%	2%	36%	11%	8%	100%
Dissolved Phosphorus as P	%	0%	1%	0%	7%	7%	6%	1%	0%	0%	1%	1%	14%	1%	7%	17%	38%	100%
Total Phosphorus as P	%	0%	1%	0%	4%	5%	5%	1%	0%	0%	1%	0%	8%	1%	45%	8%	22%	100%
Solid Parameters																		
TDS	%	0%	1%	1%	13%	1%	2%	0%	0%	0%	2%	1%	28%	1%	29%	11%	8%	100%
Synthetic Organics																		
Pentachlorophenol	%	0%	1%	1%	1%	1%	0%	0%	0%	0%	1%	1%	2%	0%	91%	1%	1%	100%

Ag = Agriculture; Com = Commercial; cf = cubic feet; Edu = Education; in = inches; Ind = Industrial; lb = pounds; MF = Multi-Family; MPN = most probable number; N = nitrogen; Open = Open Space; P = phosphorus; Res = Residential; Rur = Rural; SF = Single Family; TDS = total dissolved solids; TKN = total Kjeldahl nitrogen; Trans = Transportation

Attachment F – Special Study Tech Memo

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DRAFT Memorandum

DATE:	September 23, 2016
TO:	San Dieguito Watershed Management Area Responsible Agencies
Cc:	Kristina Hysler, AMEC Foster Wheeler Chris Minton, Larry Walker Associates Dustin Bambic, Paradigm Environmental
FROM:	Paul Hartman, Larry Walker Associates
SUBJECT:	San Dieguito Special Study Technical Memorandum #2 Summary of Bacteria Source Identification Methods, Results, and Prioritization

Primary Author

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Introduction

BACKGROUND

The San Diego Regional Municipal Separate Storm Sewer System (MS4) Permit (Order R9-2013-0001 as amended by Order Nos. R9-2015-0001 and R9-2015-0100) requires the San Dieguito Watershed Management Area (WMA) to perform two special studies. These special studies are designed to address pollutant data gaps and to develop the information necessary to more effectively address the highest priority water quality conditions within the WMA as identified in the Water Quality Improvement Plan. Through the development and acceptance of the recent Water Quality Improvement Plan, the highest priority water quality conditions for the San Dieguito WMA were identified as:

- Potential impairment of contact water recreation beneficial use at the Pacific Ocean at the San Dieguito Lagoon Mouth due to indicator bacteria from the sub-watershed above Lake Hodges during wet weather when rainfall causes the Lake Hodges Dam to overflow, and

- Potential impairment of contact water recreation beneficial use at the Pacific Ocean at the San Dieguito Lagoon Mouth due to indicator bacteria during both wet and dry weather conditions.

The San Dieguito Water Quality Improvement Plan included development of a Bacteria Source Identification Special Study Plan (Study Plan) to identify data gaps with respect to five key metrics used to identify and prioritize bacteria sources within the WMA: human health risk, magnitude of the bacteria source, transport feasibility of the source, frequency of occurrence, and controllability of the source. The San Dieguito Special Study Technical Memorandum #1 Summary of Updated Literature Review, Geographic Information System (GIS) Data Call, and Data Gaps, included as **Appendix A**, provides an enhanced literature review to fill these data gaps.

PURPOSE

Based on the updated literature review and GIS data collection efforts, the goals of the source identification portion of the special study are to:

- Identify focus areas for intensive source identification efforts using water quality data collected from 2007–2015;
- Use GIS and other available data to perform an in-depth source identification exercise within each focus area; and
- Prioritize the identified sources within each focus area using the prioritization methods and matrix developed as part of a previous Regional Study. The prioritization process will be informed by the outcomes of the GIS work and the updated findings of the literature review.

The purpose of this technical memorandum is to provide the updated source identification methodology, the results of the prioritization exercise, and a prioritized list of bacteria sources for each focus area within the San Dieguito WMA. The prioritized list of bacteria sources will allow Responsible Agencies to review their WQIP strategies to determine whether existing practices address these sources or whether updates to these strategies are needed. Updates could include targeting public outreach efforts, working with other agencies to address bacteria sources, or reviewing stormwater inspection programs.

SOURCE INFORMATION

During the development of the Study Plan, a number of geospatial and water quality data gaps were noted. The first phase of the Study Plan implementation included gathering information to fill those data gaps and pull together the information into a concise database related to bacteria sources in the WMA. Data needed for the bacteria source identification that were collected as part of the Study Plan development and further refined during the study data call are presented in **Table 1**.

Table 1. Summary of Information Obtained from the Data Call

Data Type	GIS[1] Data Gaps	CSD[2]	CoSD[3]	DM[4]	ESC[5]	POW[6]	SB[7]
MS4	MS4 inventory from all jurisdictions in the WMA	a	a		a	a	a
MS4	Stormwater best management practices (BMPs)	a	-		a	a	a
Sewer	Sanitary sewer system inventory from all jurisdictions and special districts in the WMA	b	x		a	a	a
Sewer	Sanitary sewer condition assessments for each jurisdiction as available (2007-2015)	-	-		a	-	a
Sewer	Sanitary sewer overflows with locations, volumes, and whether flow reached receiving waters (2007-2015)	c	a		a	c	c
Sewer	Onsite Wastewater Treatment Systems (OWTS)	-	-		c	a	a
Inventory	Illicit connection/illicit discharge (ICID) data (2007-2015)	a	a		a	-	a
Inventory	Commercial inventories	a	a		a	b	b
Inventory	Industrial inventories	a	a		a	b	a
Inventory	Municipal inventories	a	a		a	-	a
Inventory	Homeless encampments	-	a		x	-	a
Recycled Water	Recycled water	-	x		a	a	a

[1] Geospatial data were analyzed in ArcGIS v. 10.2 in North American Datum 1983 (NAD 1983) with a projection in NAD 1983 California State Plane VI FIPS (US Feet). Water quality data was analyzed using Microsoft Excel.
[2] City of San Diego (CSD)
[3] County of San Diego (CoSD)
[4] The City of Del Mar (DM) conducted a separate data analysis and provided jurisdiction-specific information for this special study.
[5] City of Escondido (ESC)
[6] City of Poway (POW)
[2] City of Solana Beach (SB)
a) Denotes data that were obtained from or updated by the Responsible Agency
b) Denotes preexisting data from the Study Plan
c) Denotes data created from publicly available data
x) Denotes known unavailable data
-) Denotes data that were not provided or available

The data call was successful and able to complete or nearly complete inventories of the MS4, sanitary sewer system, and commercial, municipal, and industrial sites. Additionally, information regarding bacteria monitoring locations and general administrative boundaries of the study region were obtained in the data call. However, gaps in data continue for a few potential sources of bacteria for some jurisdictions, including the locations of Onsite Wastewater Treatment Systems (OWTS), homeless encampments, and recycled water systems.

The City of Del Mar conducted an individual jurisdictional data analysis for the special study. The City of Del Mar actively tracks and manages geospatial inventory data and conducts monthly patrols identify any potential issues and sources related to pollutants and urban runoff.

Through these methods in combination with other jurisdictional data sources, the City of Del Mar does not currently have identified data gaps for potential sources of bacteria.

Methods

WATER QUALITY DATA ANALYSIS AND IDENTIFICATION OF FOCUS AREAS

After the data call was completed, the existing bacteria-related water quality data within the San Dieguito WMA were compiled. Monitoring data containing the concentrations of total coliform, *Enterococcus*, and fecal coliform were gathered from several monitoring datasets:

- ***Responsible Agencies Dry Weather Monitoring Data* –** Includes data collected at various points within the MS4 or at MS4 outfalls as part of the Dry Weather Monitoring Programs developed to comply with Orders R9-2001-01 and R9-2007-0001. The data set spans approximately 2007-2013 and includes 110 sampling locations.
- ***MS4 Outfall Monitoring Data* –** Includes data collected at MS4 outfalls discharging to receiving waters within Responsible Agencies' jurisdictions. These data were collected under the targeted and random MS4 outfall programs developed to meeting permit requirements under Order R9-2007-0001. The data set spans approximately 2008–2012 and includes 81 sampling locations.
- ***Mass Loading Stations (MLSs)/Temporary Watershed Assessment Stations (TWASs)* –** Includes data collected in receiving waters at MLSs and TWASs. The MLS is located near the bottom of the WMA on the San Dieguito River upstream of the San Dieguito Lagoon Mouth. TWASs are located in receiving waters higher up in the watershed. The MLS data set spans approximately 2002–2012 at the single MLS. The two TWASs were monitored from 2007–2012.
- ***California Assembly Bill (AB) 411* –** Includes data collected in the Pacific Ocean as part of the County of San Diego's Beach Water Quality Monitoring Program mandated under AB 411. Data collected at this location span 2007–2012 and three locations 75 feet north and south of the San Dieguito Lagoon Mouth and directly in front of the lagoon. The City of Del Mar also used Coastal Storm Drain Monitoring data, spanning 2008–2012.

A total of 2,362 analyses were conducted for the three bacteria types across 187 sampling locations. Review of these data determined that certain areas in the WMA exhibited higher bacteria concentrations than others. This finding led to a modification in the special study design, where the bacteria source identification would be focused on the specific areas in the WMA exhibiting higher concentration of bacteria, rather than broadly assessing the whole WMA. The Responsible Agencies examined individual focus areas within their jurisdictions to be able to target future management efforts in those specific areas.

Partitioning of the water quality monitoring data was based on the season of data collection and the bacteria species. For the purposes of the special study, only dry weather samples for *Enterococcus* were used to identify focus areas. This combination of characteristics is assumed to identify the highest bacterial risk to the beneficial uses of the receiving waters. Dry weather flows can potentially generate high concentrations of bacteria when recreational beneficial uses are most likely to occur. Additionally *enterococcus* was selected for its qualification as an indicator of human health risk, as well as to retain consistency with the EPA's 2012 Recreational Water Quality Criteria, which recommends criteria for *E.coli* and *enterococci* and has removed criteria for fecal coliform.

The focus area for each Responsible Agency was determined on the basis of several considerations, as follows:

- ***Bacteria Concentration***s – Outfall monitoring locations with the highest geometric mean (geomean) concentration and with at least three samples were selected first. Geomeans of the *Enterococcus* concentrations were calculated for each unique monitoring location. For some monitoring locations where three samples were not taken, the best available data were used to determine outfalls with high concentrations of *Enterococcus*.
- ***WMA Location*** – Focus areas were chosen on the basis of their location within the San Dieguito WMA. An emphasis on outfalls and their catchments downstream of Lake Hodges were selected to correspond with the extent of the high priority condition for the San Dieguito WMA during dry weather.
- ***Dry Weather Flows*** – Outfall monitoring locations with known persistent dry weather flows were then prioritized.
- ***Land Use*** – The land use break down was also considered; catchments that contained a greater number of land use classifications were prioritized. .

After appropriate outfalls were identified through the water quality data analysis considerations, the boundaries of each focus area were delineated and assessed through a geospatial exercise:

1. MS4 drainage area boundaries were obtained for each outfall.
2. Sewer infrastructure conduits were overlaid on the MS4 drainage area.
3. The MS4 drainage area boundary layer was expanded to include continuous portions of the sewer infrastructure than fell outside the boundary of the MS4 drainage area.
4. Topographic characteristics of the landscape were considered throughout the delineation process to ensure that assessment area boundaries followed hydrologic flow.
5. A final assessment area, known as a focus area, was developed for each outfall based on the delineation process, and all additional geospatial analyses were conducted within the boundaries of the final assessment area.

DESKTOP ANALYSIS OF SOURCES

Once geographic focus areas and their boundaries were identified, the source identification exercise detailed in the Study Plan was conducted. Only potential sources within the boundaries of the focus area were considered in the assessment. The geospatial information provided was used to develop an inventory of potential sources for the focus area. Using data collected through the initial Data Gaps/Literature Review analysis, spatial layers associated with potential bacteria sources were geospatially clipped to the boundaries of each focus area, examined, and cataloged, as follows:

- ***MS4 Infrastructure*** – Geospatial data for MS4 infrastructure varied for each Responsible Agency, but generally consisted of MS4 structures, such as catch basins, curb inlets, and manholes, best management practices (BMPs), and MS4 conduits, such as pipelines, and open or natural channels. Types of structures, lengths of pipeline (in miles), and composition of pipe within each focus area were recorded when available.
- ***Wastewater Infrastructure, Septic Systems, and Sanitary Sewer Overflows*** – Similar to the MS4 infrastructure data, available geospatial data for wastewater infrastructure varied among Responsible Agencies. In general, the layers consisted of wastewater structures, such as manholes and junctions, and wastewater conduits, such as force mains, gravity

mains, and lateral lines. The length and composition of pipeline within each focus area were examined and recorded when available. Wastewater infrastructure inspection records were available for the City of Solana Beach. Septic systems were assumed to be used in areas with no known or mapped wastewater infrastructure, unless otherwise determined by the Responsible Agency. Data regarding regional sanitary sewer overflows (SSOs) and private lateral sewer discharge (PLSDs) were obtained from the publically available State Water Resources Control Board database (California Integrated Water Quality System (CIWQS)) for incidents between 2007 and 2015.

- ***Land Use*** – The composition of land uses for each focus area was examined using the regional geospatial land use data set obtained from San Diego Association of Governments (SANDAG)[1]. The spatial data were clipped to the boundaries of the focus area. The area of each land use category was calculated, and based on the land use definition, the land uses were reclassified as residential, commercial, open space, roads, public land, crops, and utilities. The area of each land use was also calculated as a percentage of the entire focus area.
- ***Existing Development*** – Commercial properties and other existing developments were examined using the San Dieguito WMA business inventories developed during the Study Plan design, and updated commercial business inventories were provided by the Responsible Agencies, if available. The number and type of commercial establishments were tabulated for each focus area.
- ***Illicit Discharge Data –*** The availability of illicit discharge data varied for each Responsible Agency. For some focus areas, illicit discharge data were unavailable, or there were no incidents recorded within the focus area. The number of illicit discharges was recorded for each focus area, and the type of illicit discharge was recorded when available.

PRIORITIZATION OF POTENTIAL BACTERIA SOURCES

For this source identification project, the San Diego County Bacteria Source Prioritization Process (San Diego County MS4 Responsible Agencies, 2012) was adapted for use in the San Dieguito WMA. The prioritization process was originally developed by a workgroup of San Diego County Stormwater Responsible Agencies and was to be used for a WMA scale assessment. Based on conceptual models for the San Dieguito WMA developed as part of the source identification efforts, 50 potential bacteria sources were evaluated for each focus area and were included in a prioritization scoring sheet. During the scoring process, each potential source is considered separately in dry and wet weather conditions. Evaluation and scoring of the characteristics of the potential sources are based on the five key prioritization metrics:

- ***Human health risk*** refers to the nature and probability of adverse health effects for those who may be exposed to bacteria produced by a source. As part of the bacteria source prioritization process, the level of human health risk associated with various sources is given a relative score from 1 to 10, with 1 being a very low risk and 10 being an exceptionally high risk. As noted in the literature review in the Summary of Updated Literature Review, GIS Data Call, and Data Gaps located in **Appendix A**, research

[1] Land use data were obtained from the LANDUSE_CURRENT dataset located at the public data portal SANDAG/SANGIS Regional GIS Data Warehouse (www.sandag.org).

indicates that the origin of bacteria may affect the human health risk associated with recreational waters.

- ***Magnitude*** refers to the concentration or load of bacteria produced by a source. As part of the bacteria source prioritization process, the magnitude associated with various sources is given a relative score from 1 to 10, with 1 being a very low concentration or load and 10 being an exceptionally high concentration or load. Elevated concentrations, even with low flow, can result in high loads, potentially causing increased bacteria concentrations in receiving waters.
- ***Transport feasibility*** refers to the likelihood of stormwater or urban runoff containing bacteria from specific sources reaching receiving waters. Sources with a lower probability of reaching and influencing water quality in receiving waters are assigned a low score, while sources with a higher likelihood receive a higher score. Transport feasibility is largely affected by weather conditions (i.e., wet weather versus dry weather). The presence of structural BMPs should also be considered when evaluating transport feasibility.
- The ***frequency*** of a source refers to its presence or absence in the WMA. Where there are relatively lower numbers of a particular source, a lower score is assigned; where there are many numbers of a particular source in the WMA, a higher score is assigned accordingly.
- The ***controllability*** of a source refers to the ability of the Responsible Agency to control the source with respect to its influence on bacterial water quality. Low scores are deemed difficult to control, whereas higher scores are given to sources that are considered readily controllable.

With enhanced knowledge of potential bacteria sources within each focus area, a modified scoring system was designed for these smaller assessment areas. The prioritization scoring sheet was tailored for each Responsible Agency on the basis of the results of the source analysis. Potential sources that were listed in the original scoring sheet but were not present in the focus area analysis were removed. For example, landfills were not found in any of the focus areas, and thus were removed as a potential source. In addition, the range of scoring values attributed to the factor, “Frequency,” was expanded from 1 to 5 points to 1 to 10 points, to clearly differentiate between the varied numbers of sources within the focus area locations.

The stormwater managers from the Responsible Agencies performed the prioritization assessment for potential bacteria sources in a collaborative workshop setting, as well as in internal consultations. For each focus area, the Responsible Agencies prioritized the potential bacteria sources using source information categorized and identified through the geospatial desktop analysis. For potential source characteristics where data were absent, such as the magnitude of leaky sewer pipes, the Responsible Agencies considered the information gathered through the literature review to help inform their decisions.

For each potential source, the Responsible Agencies ranked the five factors of human health risk, magnitude, frequency, transport feasibility, and controllability of each source of bacteria. The Responsible Agencies used a scoring system from 1 to 10 to evaluate human health risk, magnitude, and frequency, and ranked transport feasibility and controllability on a scale of 1 to 5. Scores were based not only on the results of the source analysis and literature review, but also on each Responsible Agency’s local knowledge of the focus area. After evaluating each of the five factors, the scores were summed for each potential bacteria source, and then the sources were automatically ranked from highest to lowest based on the scoring spreadsheet. The

prioritization assessment generated a unique, prioritized list of bacteria sources for each focus area and Responsible Agency.

Results

This section summarizes the results of the focus area selection, the desktop evaluation of potential sources, and the prioritization of the sources. Information is provided for each focus area.

FOCUS AREA SELECTION

Water quality samples collected during dry weather for *Enterococcus* analysis were the primary source of information used to determine the focus areas within the San Dieguito WMA. After filtering the region-wide bacteria data set for these conditions, a total of 38 MS4 outfall sampling locations were identified, representing 340 individual data points. After calculating the geomean for each MS4 outfall location and evaluating the location of the outfall within the WMA, the dry weather flow at the outfall, and the land use draining to the outfall, the focus area selection process identified six focus areas. A summary of the characteristics for each focus area outfall is in **Table 2**. A single, unique focus area was identified for the each participating Responsible Agency within the San Dieguito WMA, except for the City of Del Mar, and these are shown in **Figure 1**. One outfall, DW-619, drained a catchment that crossed the boundary between the jurisdictions of the City of Solana Beach and the City of San Diego. These two Responsible Agencies decided to evaluate potential bacteria sources in the shared focus area draining to DW-619.

Table 2. Summary Characteristics of Individual Focus Areas: *Enterococcus* Geomeans and Area

Responsible Agency	Outfall ID/Focus Area	Area of Focus Area (acres)	Geomean (MPN/100mL)	Sample Number (n)	Rationale
City of San Diego	DW-284	156	30,728	3	Elevated *Enterococcus* concentrations Lower watershed Persistent flow
County of San Diego	SDG-210	17	24,000	1	Elevated *Enterococcus* concentrations Lower watershed Persistent flow
City of Escondido	HDG-102	188	845	6	Elevated *Enterococcus* concentrations Existing high priority catchment Persistent flow
City of Poway	PO-132	723	1,709	3	Elevated *Enterococcus* concentration
City of Solana Beach	SB-12	74	10,197	2	Elevated *Enterococcus* concentrations Existing high priority catchment and source identification efforts Persistent flow
City of San Diego / Solana Beach	DW-619	60.42	38,620	3	Elevated *Enterococcus* concentrations Consistent flow Diverse land uses

ID = identification; MPN/100mL = most probable number per 100 milliliters

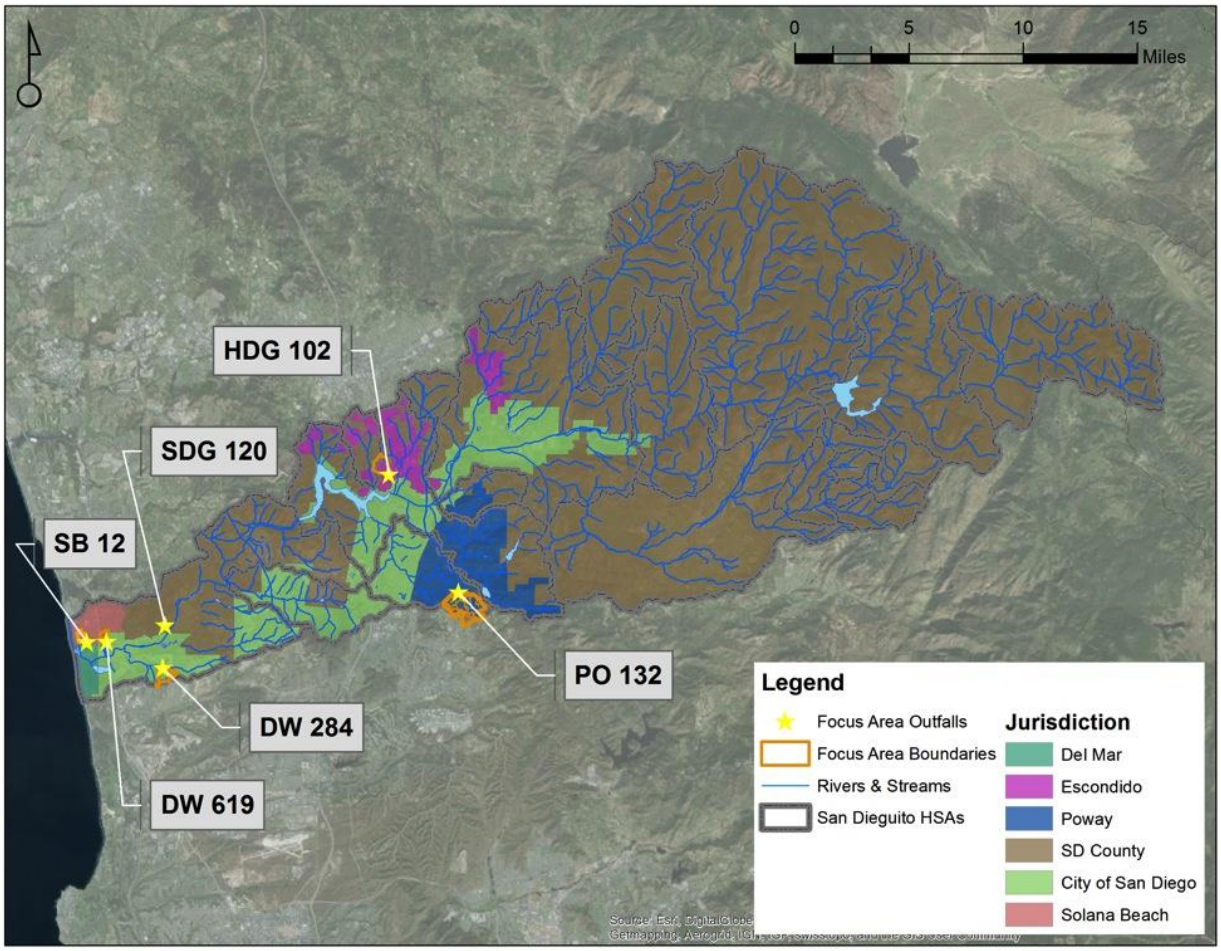

Figure 1. Locations of Focus Areas for the Bacteria Special Study Source Identification

Through the analysis of bacteria concentrations (geomeans of *Enterococcus* concentrations), MS4 outfall locations within the jurisdiction, and dry weather flow observations and information, the City of Del Mar does not currently have a focus area identified. The City of Del Mar does not have any persistently flowing major MS4 outfalls that drain to the San Dieguito River or Lagoon[2]. The City of Del Mar has one major MS4 outfall (S-14) and six minor MS4 outfalls (S-09, S-10, S-11, S-13, S-14, S-16, and S-21) that flow into the San Dieguito River or Lagoon (**Figure 2**). Based on the currently available data, no bacteria exceedances are recorded for these locations. In addition, since 2013, the City of Del Mar has performed visual outfall monitoring at every outfall, minor or major, on a monthly basis, and the seven MS4 outfalls identified above have never persistently flowed. An analysis of the monthly data from 2013 to present day shows that six of the seven MS4 outfalls are consistently dry and one outfall has had minor flow observed twice. The City of Del Mar will continue to conduct frequent City-wide patrols and assessment of data, and will determine whether specific focus areas will need to be established in the future. Any changes will be documented in applicable WQIP Annual Reports or updates.

[2] The City of Del Mar has only one persistently flowing major MS4 outfall, S-07, which drains to the Pacific Ocean south of the San Dieguito Lagoon mouth. 2008–2012 Coastal Storm Drain Monitoring Program data was used to calculate the geomean for this location (geomean = 92.08 MPN/100mL with a sample number of 69).

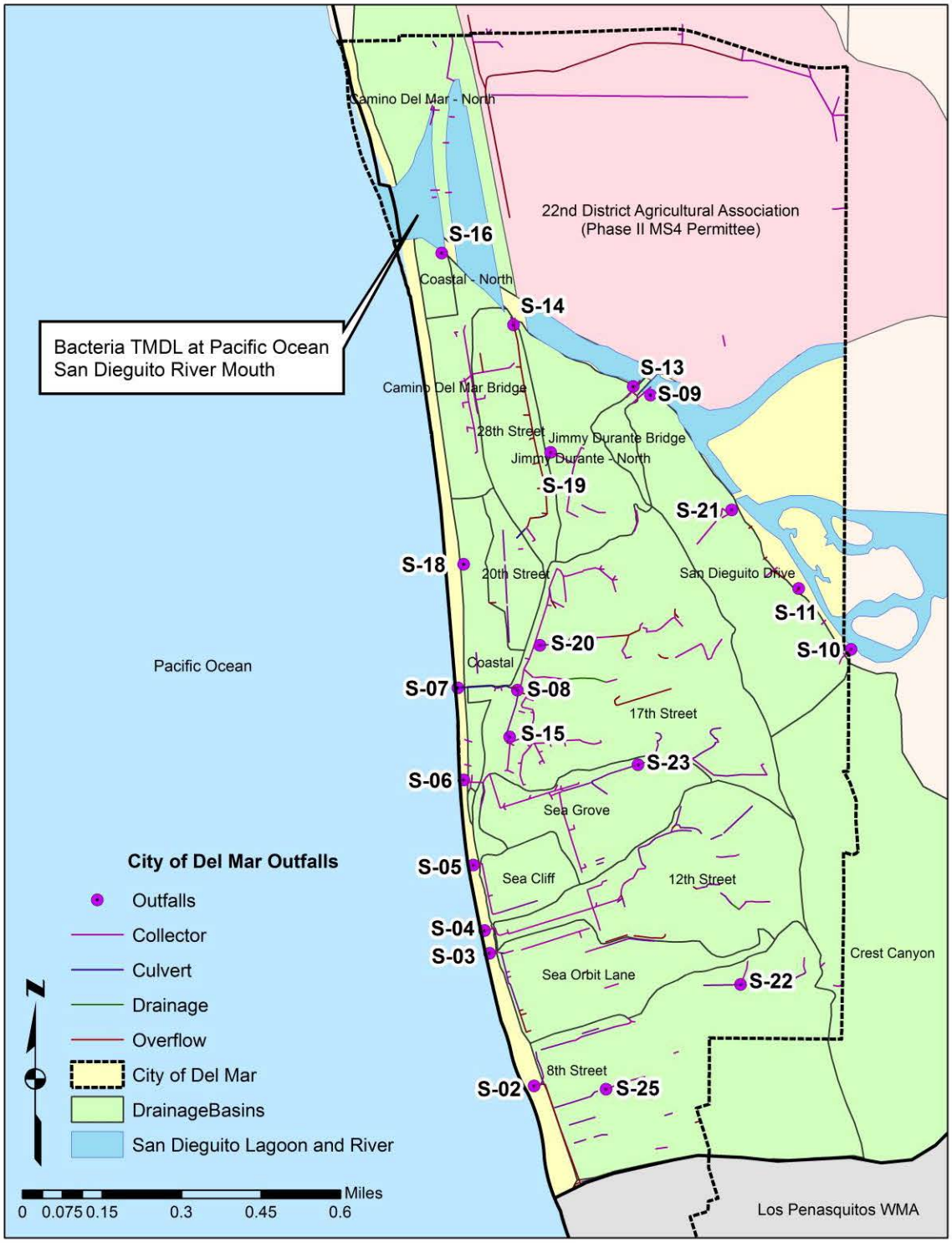

Figure 2. Minor and Major MS4 Outfall Locations in the City of Del Mar

POTENTIAL SOURCES

Potential sources of bacteria were initially identified in Section 3.0 of the San Dieguito WMA Water Quality Improvement Plan. Further desktop analyses characterized the potential sources and developed a catalog of detailed source information for each of focus areas described above. Based on information from the Responsible Agencies, sanitary sewer infrastructure was added to the list of potential sources in the Water Quality Improvement Plan. The enhanced literature search performed as part of the study, detailed in **Appendix A**, found that sanitary sewer infrastructure has the potential to impact bacteria concentrations in the MS4, particularly when SSOs occur and at locations of older infrastructure.

Based on the spatial analysis of sources in the focus area, Responsible Agencies were able to identify key sources of bacteria. They also were able to exclude sources not present within their focus areas. Each jurisdiction and focus area contained a unique catalog of potential sources. A summary of potential sources assessed within each focus area is described in **Table 3**, and a full characterization of these potential sources and their complete rankings is in **Appendix B**.

Table 3. Summary of Potential Bacteria Sources in Focus Areas Within the San Dieguito Watershed Management Area[3]

		ESC	POW	CSD	SB	CoSD	CSD/SB
Source[1]	**Priority[1]**	**HDG-102**	**PO-132**	**DW-284**	**SB-12**	**SDG-210**	**DW-619**
Residential Areas	High	✓	✓	✓	✓	✓	✓
Sanitary Sewer Overflows	High		✓		✓		✓
Sanitary Sewer Infrastructure	High	✓	✓	✓	✓	✓	✓
Septic Systems	High	✓	*	*	*	*	*
Animal Facilities	Medium						✓
Eating/Drinking Establishments	Medium	✓					✓
Nurseries/Greenhouses	Medium						✓
Agriculture	Medium	✓					
Roads/Streets/Parking	Medium	✓	✓	✓	✓	✓	✓
Mobile Landscaping	Medium	✓	✓	✓	✓	✓	✓

[3]The City of Del Mar maintains a City-wide geospatial inventory of potential sources.

Source[1]	Priority[1]	ESC	POW	CSD	SB	CoSD	CSD/SB
		HDG-102	PO-132	DW-284	SB-12	SDG-210	DW-619
Wildlife (Secondary)	Medium	✓					
Transient Encampments	Low	*	*	*		*	*
Wildlife	Low	✓	✓	✓	✓	✓	✓
Bacteria Regrowth/Biofilms	Low	✓	✓	✓	✓	✓	✓

[1] Source and Priority Information based on Water Quality Improvement Plan Source Information
* Indicates data were not available
Blank cells indicate that sources are not present in the focus area

PRIORITIZATION RESULTS BY FOCUS AREA

The Responsible Agencies evaluated 50 potential bacteria sources within each focus area, and considered dry and wet weather conditions separately. Of the 50 sources, those that were identified as present within the focus area were then prioritized. The potential bacteria sources were grouped into three categories on the basis of bacterial origin: human waste, anthropogenic non-human sources, and non-anthropogenic sources. Within these three general categories, sources and subcategories are further identified.

Detailed results for the potential bacteria sources within each focus area are in **Appendix B**. In the tables below, the highest priority sources for each focus area are presented for dry and wet weather. These results consist of the highest potential bacteria sources based on the highest scores across the three bacteria origin categories. In some instances, the scores generated several ties, and results presented below include potential sources with the same score.

City of San Diego (DW-284)

The City of San Diego's primary focus area drains to the outfall site, DW-284, shown in **Figure 3**. The total area assessed is 156 acres, and consists of 49 percent (%) residential land uses, 34% open space, 16% road infrastructure, and 1% institutional land uses. With single family residential land uses and open space comprising over 80% of this focus area, the top two potential bacteria sources in both dry and wet weather are pets and manure/compost. Although six businesses are located within the focus area, none of the commercial businesses are food or eating and drinking establishments. The other potential sources are most highly associated with infrastructure and land use.

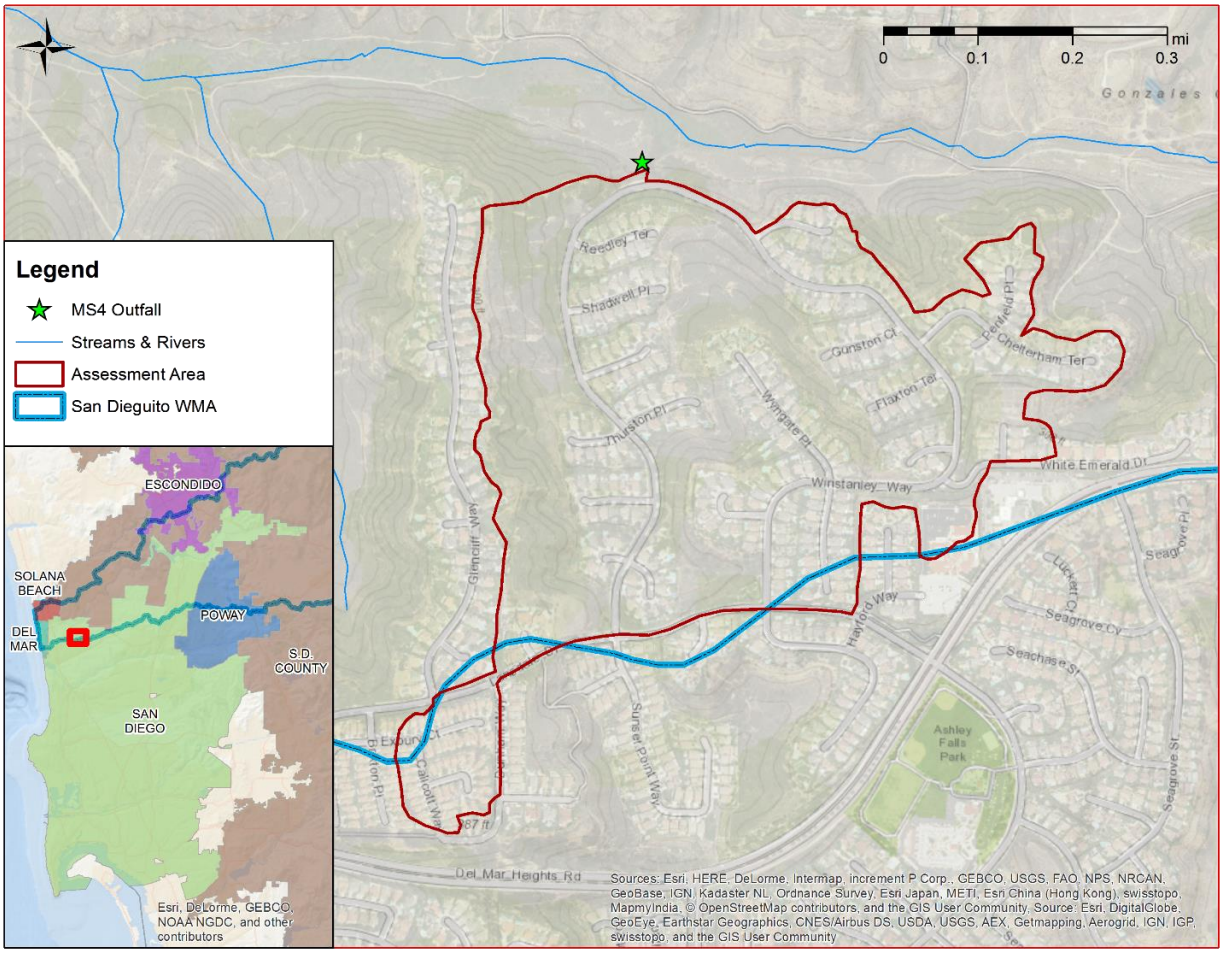

Figure 3. Focus Area for the City of San Diego: Outfall DW-284

The potential bacteria sources within the City of San Diego's focus area comprise a mixture of anthropogenic non-human and human waste bacteria origins. A summary of the top 10 sources is in **Table 4**, while the full list of prioritized sources is in **Appendix B.**

Table 4. Top 10 Potential Bacteria Sources within City of San Diego Focus Area: DW-284

Condition	Category	Source	Subcategory	Rank
Dry	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	4
	Human Waste	Illicit Connections	Other Wastewater	5
	Human Waste	RVs (Mobile)	Mobile Sources	6
	Human Waste	Illegal Discharges	Other Wastewater	7
	Human Waste	Porta-Potties	Other Wastewater	8
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	9
	Human Waste	Homeless Encampments	Mobile Sources	10
Wet	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	4
	Human Waste	RVs (Mobile)	Mobile Sources	5
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	6
	Human Waste	Illicit Connections	Other Wastewater	7
	Human Waste	Trash Cans	Sources related to Garbage	8
	Human Waste	Homeless Encampments	Mobile Sources	9
	Human Waste	Porta-Potties	Other Wastewater	10

County of San Diego (SDG-210)

The County of San Diego's primary focus area drains to the outfall site, SDG-210, shown in **Figure 4**. The total area assessed is 17 acres, and consists of 63% residential land uses, 18% open space, and 19% road infrastructure. The land uses are mainly single-family residential with associated open space. One of the residential areas has an active homeowners association and the focus area borders a golf course. Information regarding the sanitary sewer infrastructure for this focus area was unavailable. The potential bacteria sources in this focus area are associated with residential land uses, human activities, and any potential sources associated with open space and wildlife.

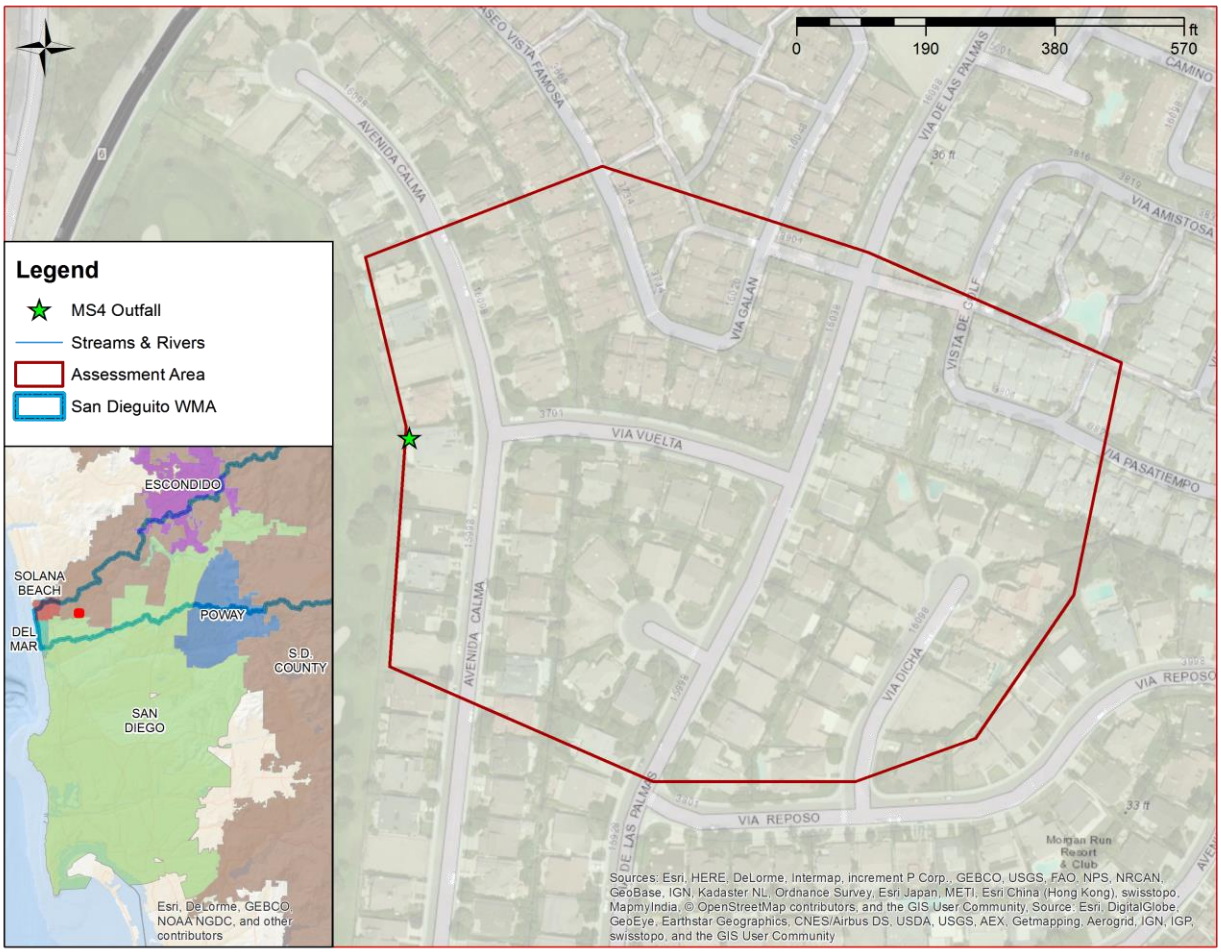

Figure 4. Focus Area for the County of San Diego: Outfall SDG-210

The potential bacteria sources within the County of San Diego's focus area comprise a mixture of anthropogenic non-human and bacteria related to human waste. A summary of the top 10 sources are in **Table 5**, and the complete prioritization results are in **Appendix B**.

Table 5. Top 10 Potential Bacteria Sources within County of San Diego Focus Area: SDG-210

Condition	Category	Source	Subcategory	Rank
Dry	Human Waste	Illegal Discharges	Other Wastewater	1
	Human Waste	Porta-Potties	Other Wastewater	2
	Anthropogenic Non-Human	Small Mammals (Mice, Rats, and Rabbits)	Secondary Wildlife	3
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	4
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	5
	Human Waste	Illicit Connections	Other Wastewater	6
	Human Waste	Trash Cans	Sources related to Garbage	7
	Human Waste	Pools	Non-Stormwater Discharges	8
	Anthropogenic Non-Human	Pets	Domestic Animals	9
	Anthropogenic Non-Human	Trash Cans	Solid/Liquid Waste	10
Wet	Human Waste	Illegal Discharges	Other Wastewater	1
	Human Waste	Illicit Connections	Other Wastewater	2
	Human Waste	Porta-Potties	Other Wastewater	3
	Human Waste	Dumpsters	Sources related to Garbage	4
	Anthropogenic Non-Human	Rodents (Mice, Rats, and Rabbits)	Secondary Wildlife	5
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	6
	Anthropogenic Non-Human	Trash Cans	Solid/Liquid Waste	7
	Human Waste	Pools	Non-Stormwater Discharges	8
	Anthropogenic Non-Human	Pets	Domestic Animals	9
	Anthropogenic Non-Human	Vectors	Solid/Liquid Waste	10

City of Escondido (HDG-102)

The City of Escondido's primary focus area drains to the outfall site, HDG-102, shown in **Figure 5**. This outfall was previously identified by the City of Escondido as an outfall of interest for additional investigation because it is the only major MS4 outfall with persistent flow, based on transitional MS4 visual outfall monitoring. The total area is 188 acres, and consists of 73% residential land uses, 5% open space, 1% commercial land uses, and 20% road infrastructure. Despite the fact that the focus area is mostly composed of residential land uses, the commercial inventory provided by the City of Escondido shows a neighborhood shopping center with several food service establishments in the southeastern portion of the assessment area. A total of 10 food service establishments are within the assessment area. The potential bacteria sources within this focus area represent residential and commercial activities associated with human waste, existing infrastructure, and other anthropogenic and non-human sources of bacteria.

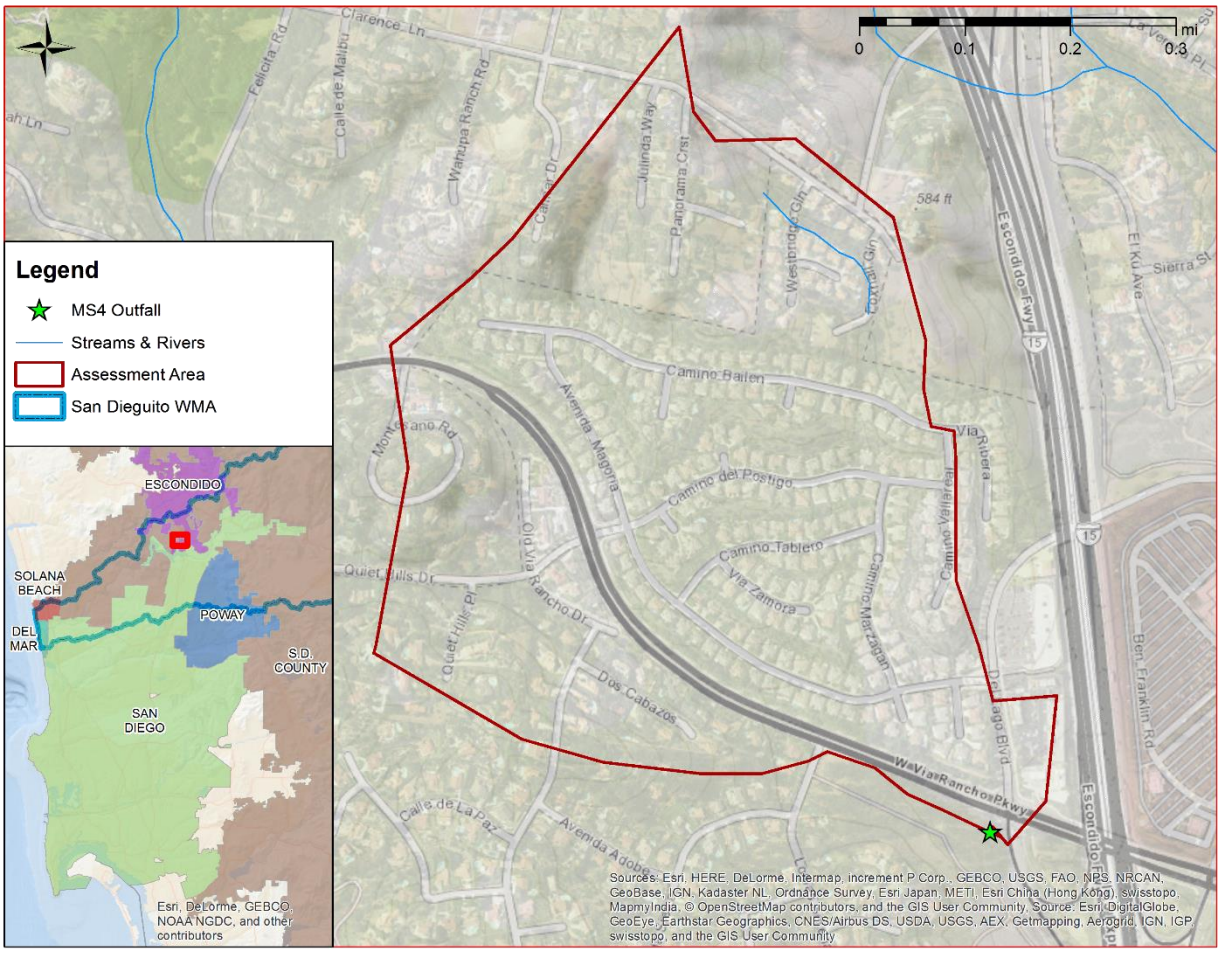

Figure 5. Focus Area for the City of Escondido: Outfall HDG-102

The potential bacteria sources within the City of Escondido's focus area comprise a mixture of anthropogenic non-human related to commercial activities and human waste bacteria origins. The potential bacteria sources related to human waste received higher ranking because of an evaluation of the human health risk in this focus area. Although sewer overflows and leaky sewer pipes received a high ranking as a potential bacteria source, the data used in this special study did

not identify any SSOs. The sanitary sewer in the focus area is composed of polyvinyl chloride (PVC) pipes, which are not as likely as other pipe materials (such as vitrified clay pipe [VCP]) to leak. Additionally, the City of Escondido has a sewer system management plan to prevent SSOs and the City inspects all food service establishments one to two times per year (stormwater inspections are included in this inspection). A summary of the top 10 sources is in **Table 6**, and the complete prioritization results are in **Appendix B**.

Table 6. Top 10 Potential Bacteria Sources within City of Escondido Focus Area: HDG-102

Condition	Category	Source	Subcategory	Rank
Dry	Human Waste	Leaky Failing Septic Systems	Sewage Infrastructure	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Illegal Discharges	Other Wastewater	4
	Human Waste	Illicit Connections	Other Wastewater	4
	Human Waste	Porta-Potties	Other Wastewater	6
	Anthropogenic Non-Human	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	7
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	7
	Human Waste	RVs (Mobile)	Mobile Sources	9
	Anthropogenic Non-Human	Vectors	Solid/Liquid Waste	9
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	9
Wet	Human Waste	Leaky Failing Septic Systems	Sewage Infrastructure	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Illegal Discharges	Other Wastewater	4
	Human Waste	Illicit Connections	Other Wastewater	4
	Human Waste	Porta-Potties	Other Wastewater	4
	Anthropogenic Non-Human	Rodents (Mice, Rats, and Rabbits)	Secondary Wildlife	7
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	7
	Human Waste	RVs (mobile)	Mobile Sources	9
	Anthropogenic Non-Human	Washwater	Solid/Liquid Waste	9
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	9

City of Poway (PO-132)

The City of Poway's primary focus area drains to the outfall site, PO-132, shown in **Figure 6**. The total area is 723 acres, and consists of 74% residential land uses, 9% open space, 7% public land, and 1% crops, and 9% road infrastructure. The City of Poway's focus area comprises over 80% single-family residential and open space land uses. The area includes a high school and a few in-home businesses. The bacteria source priorities are mainly associated with wildlife (both non-anthropogenic and anthropogenic). Other potential sources include leaky infrastructure, sources related to garbage, and other wastewater sources.

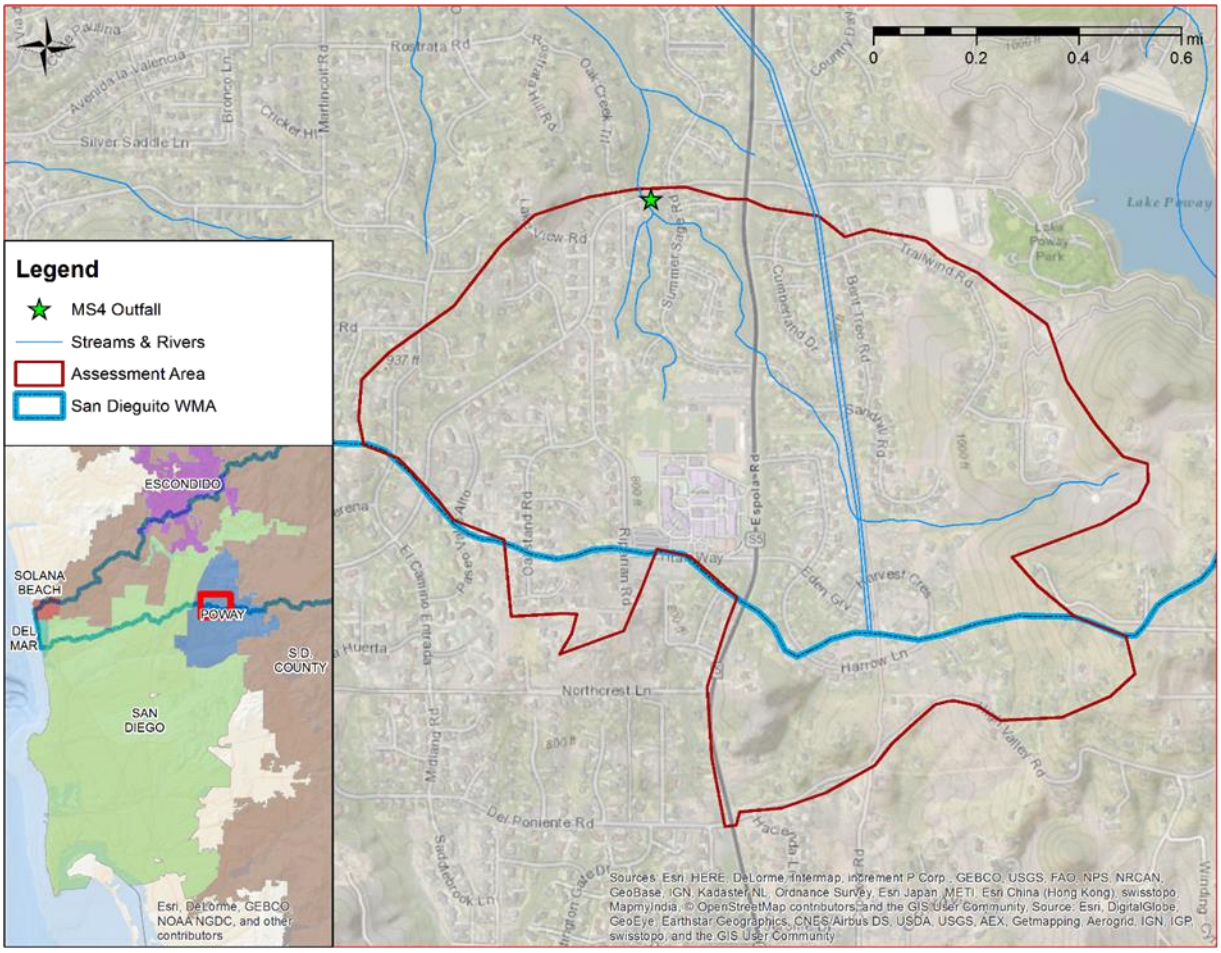

Figure 6. Focus Area for the City of Poway: Outfall PO-132

The potential bacteria sources within the City of Poway's focus area comprise a mixture of non-anthropogenic, anthropogenic non-human, and human waste bacteria origins. A summary of the top 10 sources is in **Table 7**, and the complete prioritization results are in **Appendix B**.

Table 7. Top 10 Potential Bacteria Sources within City of Poway Focus Area: PO-132

Condition	Category	Source	Subcategory	Rank
Dry	Non-Anthropogenic	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	3
	Anthropogenic Non-Human	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	4
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	5
	Human Waste	Trash Cans	Sources Related to Garbage	6
	Human Waste	Illegal Discharges	Other Wastewater	7
	Anthropogenic Non-Human	Pets	Domestic Animals	8
	Anthropogenic Non-Human	Manure/Compost	Landscaping	9
	Non-Anthropogenic	Soil	Soil	10
Wet	Non-Anthropogenic	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	3
	Anthropogenic Non-Human	Rodents (Mice, Rats, and Rabbits)	Secondary Wildlife	4
	Non-Anthropogenic	Soil	Soil	5
	Non-Anthropogenic	Plants	Plants	6
	Non-Anthropogenic	Algae	Algae	7
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	8
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	9
	Human Waste	Illegal Discharges	Other Wastewater	10

City of Solana Beach (SB-12)

The City of Solana Beach's primary focus area drains to the outfall site, SB-12, shown in **Figure 7**. The total area is 74 acres, and consists of 72% residential land uses, 7% open space, 1% institutional land use, and 20% road infrastructure. In addition, the majority of the residential parcels contain multi-family residential units. While commercial businesses are rare within the boundaries of the focus area, multi-family residential units may have similar features that are commonly associated with business activities, such as large dumpsters. The potential bacteria sources within this focus area represent both residential and commercial activities associated with human waste, as well as some infrastructure. This focus area was previously identified as an area of interest for the City of Solana Beach because it drains to the San Dieguito River and ultimately the San Dieguito Lagoon Mouth.

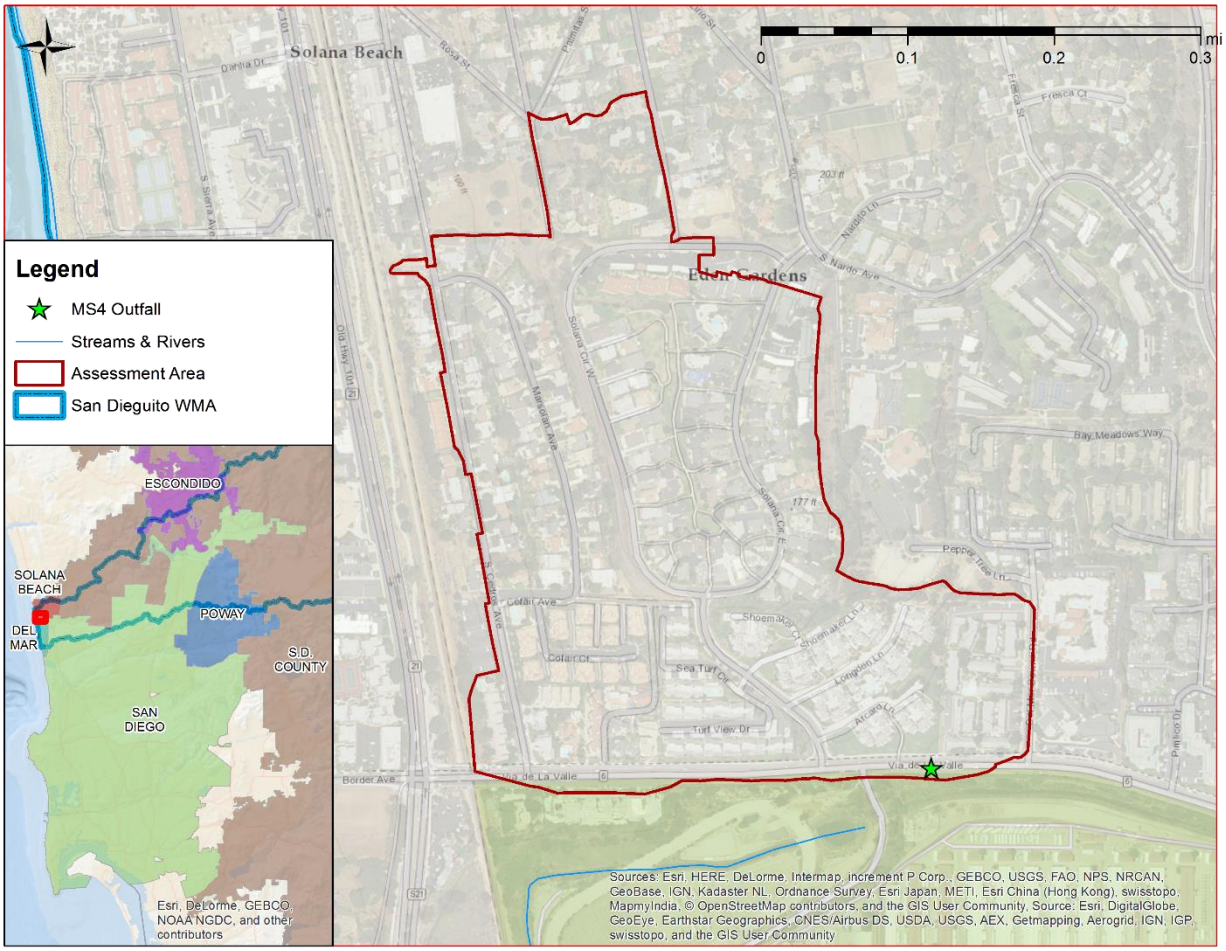

Figure 7. Focus Area for the City of Solana Beach: Outfall SB-12

The potential bacteria sources within the City of Solana Beach's focus area comprise a mixture of anthropogenic non-human and human waste bacteria origins. A summary of the top 10 sources is in **Table 8**, and the complete prioritization results are in **Appendix B**.

Table 8. Top 10 Potential Bacteria Sources within City of Solana Beach Focus Area: SB-12

Condition	Category	Source	Subcategory	Rank
Dry	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Illegal Discharges	Other Wastewater	4
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	5
	Human Waste	Porta-Potties	Other Wastewater	6
	Human Waste	RVs (Mobile)	Mobile Sources	7
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	8
	Human Waste	Illicit Connections	Other Wastewater	9
	Anthropogenic Non-Human	Litter	Solid/Liquid Waste	10
Wet	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Illegal Discharges	Other Wastewater	4
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	5
	Human Waste	Porta-Potties	Other Wastewater	6
	Human Waste	RVs (Mobile)	Mobile Sources	7
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	8
	Human Waste	Illicit Connections	Other Wastewater	9
	Anthropogenic Non-Human	Litter	Solid/Liquid Waste	10

City of San Diego/City of Solana Beach – Shared Focus Area (DW-619)

The Cities of San Diego and Solana Beach assessed and prioritized bacteria sources within a focus area that drains through an outfall in the City of San Diego's jurisdiction but includes drainage areas serving both the Cities of San Diego and Solana Beach, shown in **Figure 8**. In this focus area, identified by outfall DW-619, the total area is 60.42 acres, with 17.91 acres in the City of San Diego and 42.51 acres in the City of Solana Beach. For the area within the City of San Diego, 46% of the land use consists of commercial parcels, while the remaining portions are composed mostly of roads and rights of way. In particular, the City of San Diego's infrastructure drains a large neighborhood shopping center. The potential bacteria sources within this focus area represent these land uses and activities, including the potential for secondary wildlife associated with these activities.

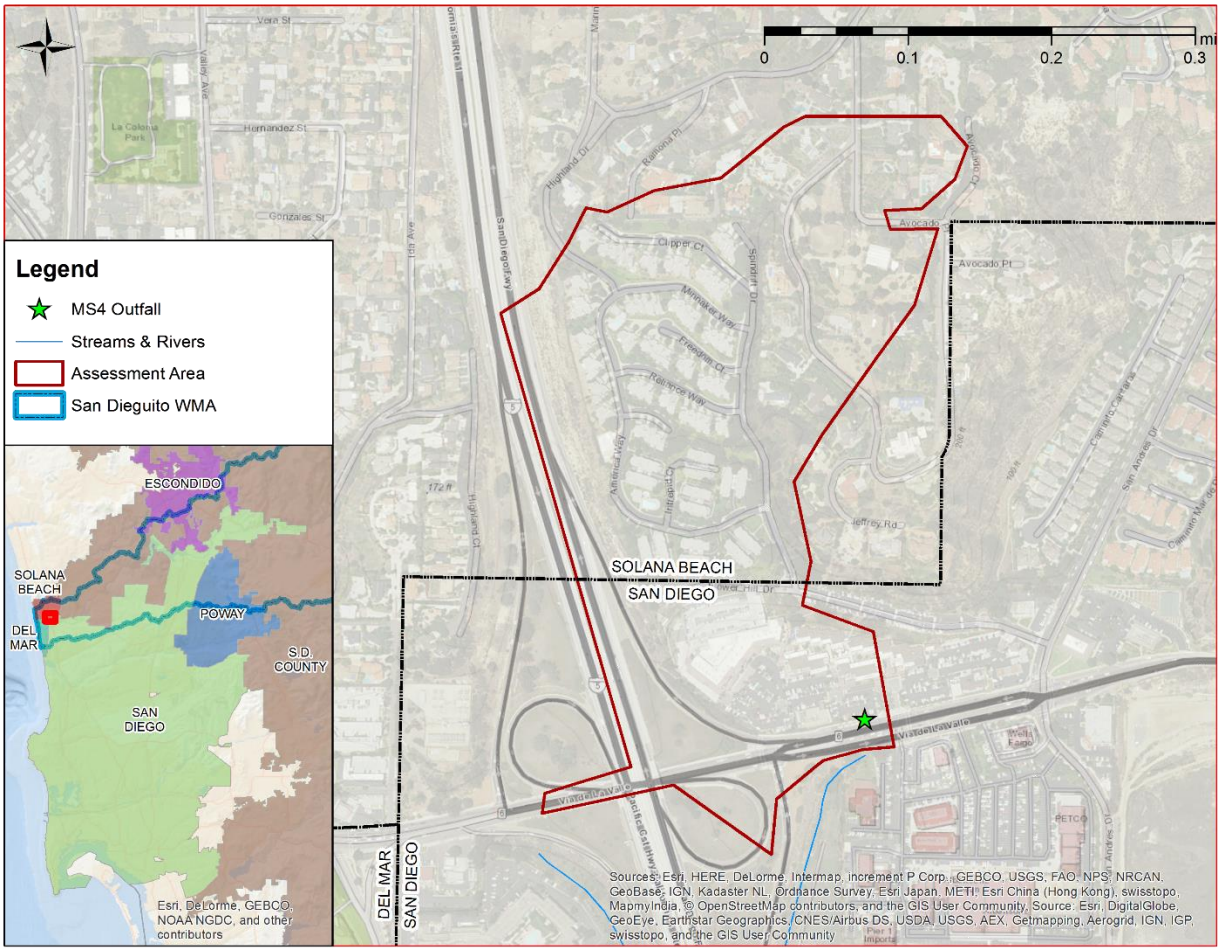

Figure 8. Focus Area within the Cities of Solana Beach and San Diego: Outfall DW619

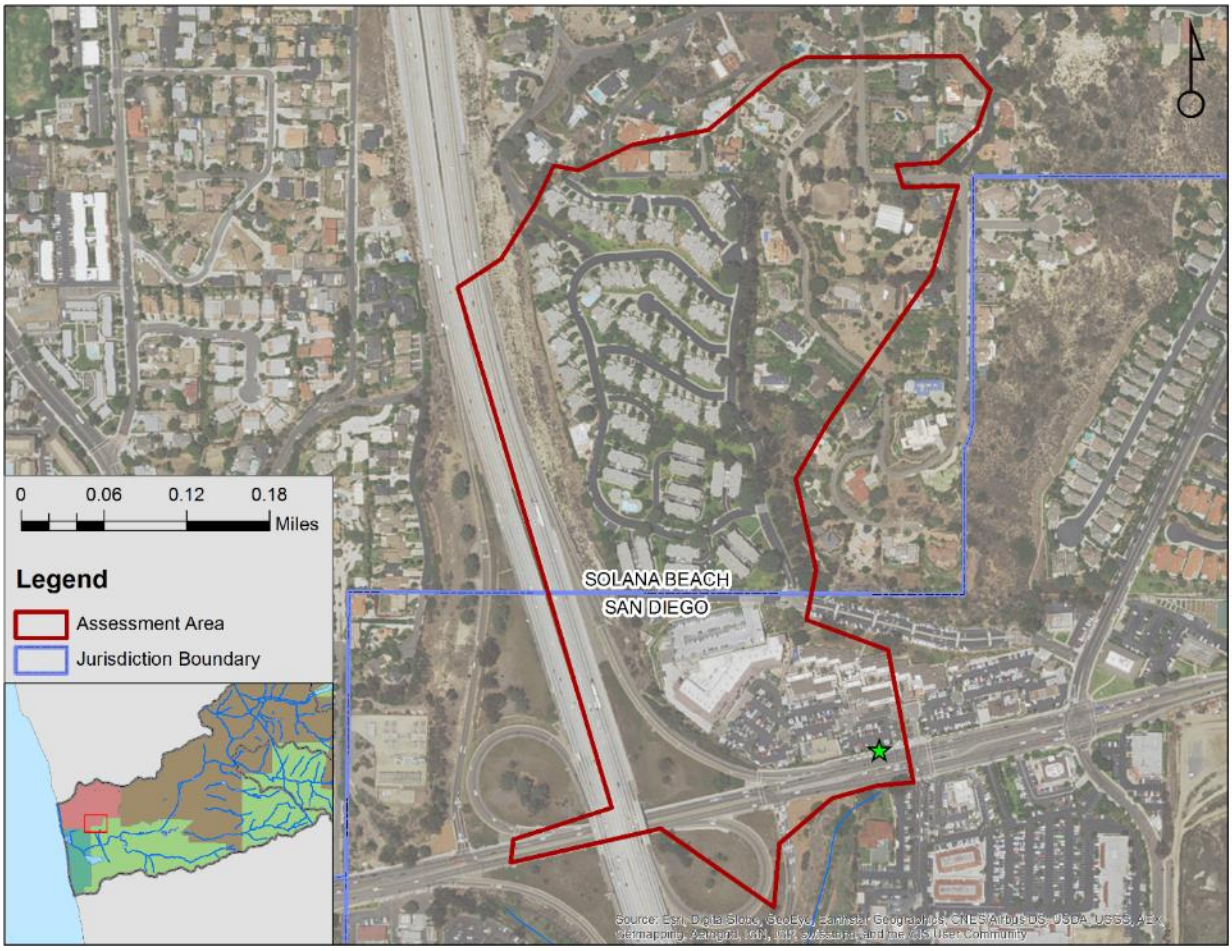

Figure 8. Focus Area Within the Cities of Solana Beach and San Diego: Outfall DW-619

The potential bacteria sources within the City of San Diego's portion of the focus area comprise a mixture of human waste and anthropogenic non-human bacteria origins. A summary of the top 10 sources is in **Table 9**, and the complete prioritization results are in **Appendix B**.

Table 9. Top 10 Potential Bacteria Sources within City of San Diego's Shared Focus Area With Solana Beach: DW-619

Condition	Category	Source	Subcategory	Rank
Dry	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Human Waste	Illicit Connections	Other Wastewater	3
	Anthropogenic Non-Human	Pets	Domestic Animals	4
	Anthropogenic Non-Human	Manure/Compost	Landscaping	5
	Human Waste	Illegal Discharges	Other Wastewater	6
	Anthropogenic Non-Human	Washwater	Solid/Liquid Waste	7
	Human Waste	RVs (Mobile)	Mobile Sources	8
	Human Waste	Porta-Potties	Other Wastewater	9
	Human Waste	Dumpsters	Sources related to Garbage	10
Wet	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Anthropogenic Non-Human	Pets	Domestic Animals	3
	Anthropogenic Non-Human	Manure/Compost	Landscaping	4
	Human Waste	Illicit Connections	Other Wastewater	5
	Human Waste	Porta-Potties	Other Wastewater	6
	Human Waste	RVs (Mobile)	Mobile Sources	7
	Human Waste	Dumpsters	Sources related to Garbage	8
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	9
	Anthropogenic Non-Human	Dumpsters	Solid/Liquid Waste	10

The land uses within the City of Solana Beach's jurisdiction comprise 83% multi-family and single-family residential homes. The remaining portion of land use consists of road infrastructure. The potential bacteria sources within this focus area represent the activities and sources more commonly associated with residential land use. The residential parcels are split between single-family residential and multi-family residential land uses. The potential bacteria sources within the City of Solana Beach's portion of the focus area comprise a mixture of human waste and anthropogenic non-human bacteria origins. A summary of the top ten sources is in **Table 10**, and the complete prioritization results are in **Appendix B**.

Table 10. Top 10 Potential Bacteria Sources Within City of Solana Beach's Shared Focus Area With the City of San Diego: DW-619

Condition	Category	Source	Subcategory	Rank
Dry	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	4
	Human Waste	Illegal Discharges	Other Wastewater	5
	Human Waste	Porta-Potties	Other Wastewater	6
	Human Waste	RVs (mobile)	Mobile Sources	7
	Human Waste	Illicit Connections	Other Wastewater	8
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	9
	Anthropogenic Non-Human	Litter	Solid/Liquid Waste	10
Wet	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	4
	Human Waste	Porta-Potties	Other Wastewater	5
	Human Waste	Illegal Discharges	Other Wastewater	6
	Human Waste	RVs (mobile)	Mobile Sources	7
	Anthropogenic Non-Human	MS4 Infrastructure – Biofilm/Regrowth	MS4 Infrastructure – Biofilm/Regrowth	8
	Human Waste	Illicit Connections	Other Wastewater	9
	Anthropogenic Non-Human	Litter	Solid/Liquid Waste	10

COMMON SOURCES IN SAN DIEGUITO FOCUS AREAS

The bacteria source prioritization results for the San Dieguito WMA focus areas show many similarities across the region, summarized in

Table 11. The table illustrates the number of times a particular source was prioritized in the top 10 results for each Responsible Agency and drainage area analyzed, separated by the frequency of occurrence in the top five ranked results versus bottom five ranked results. Prioritized sources were occasionally ranked within the top 10 potential sources for all seven combinations of Responsible Agencies and focus areas, such as SSOs during dry weather. However, given the variation in each focus area's source analysis, potential sources and their prioritizations vary from one focus area to the next, as well as between wet and dry weather conditions. Although SSOs were ranked as one of the top five potential sources in all Responsible Agency and focus area combinations during dry weather conditions, in wet weather conditions, the potential source was ranked in the top 10 for only 6 of the 7 possible combinations of Responsible Agency and focus area: five Responsible Agencies ranked SSOs in the top 5 of 10 sources, one Responsible Agency ranked SSOs in the bottom 5 of 10 sources, while another Responsible Agency did not have SSOs ranked within the top 10 potential bacteria sources during wet weather conditions. Results are presented for wet and dry weather. The results often corroborated several of the key findings of the literature review.

Table 11. Frequency of Prioritized Source Occurrences in Dry and Wet Weather Conditions for All Focus Areas

			Dry Weather Frequency[1]		***Wet Weather Frequency[1]***	
Source	***Category***	***Subcategory***	Top 5	Bottom 5	Top 5	Bottom 5
Pets	Anthropogenic Non-Human	Domestic Animals	4	2	4	1
Leaky Sewer Pipes (Exfiltration)	Human Waste	Sewage Infrastructure	6	0	5	1
Sanitary Sewer Overflows	Human Waste	Sewage Infrastructure	7	0	5	1
Illegal Discharges	Human Waste	Other Wastewater	4	3	3	2
Illicit Connections	Human Waste	Other Wastewater	3	3	3	3
Porta-Potties	Human Waste	Other Wastewater	1	5	3	3
Manure/Compost	Anthropogenic Non-Human	Landscaping	4	1	5	--
MS4 Infrastructure – Biofilm/Regrowth	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	--	4	--	5
RVs (Mobile)	Human Waste	Mobile Sources	--	5	1	4
Birds (Gulls, Pigeons, etc.)	Anthropogenic Non-Human	Secondary Wildlife	2	1	1	2
Rodents (Mice, Rats, and Rabbits)	Anthropogenic Non-Human	Secondary Wildlife	2	1	2	1
Dumpsters	Human Waste	Sources related to Garbage	--	1	1	2
Trash Cans	Human Waste	Sources related to Garbage	--	1	--	--
Vectors	Anthropogenic Non-Human	Solid/Liquid Waste	--	1	--	1
Litter	Anthropogenic Non-Human	Solid/Liquid Waste	--	2	--	3
Dumpsters	Anthropogenic Non-Human	Solid/Liquid Waste	--	1	--	1
Pools	Human Waste	Non-Stormwater Discharges	--	1	--	--
Wildlife (Birds and Others)	Non-Anthropogenic	Wildlife (Birds and Others)	1	--	1	--
Washwater	Anthropogenic Non-Human	Solid/Liquid Waste	--	1	--	1
Plants	Non-Anthropogenic	Plants	--	--	--	1
Algae	Non-Anthropogenic	Algae	--	--	--	1
Soil	Non-Anthropogenic	Soil	--	1	1	--
Homeless Encampments	Human Waste	Mobile Sources	1	1	1	1

1. *The number of times a particular source was prioritized in the top 10 results for each agency and drainage area analyzed, separated by the frequency of occurrence in the top 5 versus e bottom 5 ranked results.*

For the majority of the focus areas, the land use characteristics were a key factor driving the prioritization and prevalence of bacteria sources. The focus areas were predominantly characterized by residential land uses, and the bacteria sources identified were most often associated with residential activities. Pet waste, compost, manure, irrigation runoff, and porta-potties associated with construction were common potential bacteria sources associated with residential land uses throughout the region. Over-irrigation has the potential to be a key transport mechanism for bacteria. It is also considered an illegal discharge. Over-irrigation occurs mainly in residential areas, but can occur in commercial and industrial land uses as well. The correlation between residential land uses in areas with discharges containing relatively high geomeans of *Enterococcus* is corroborated by findings in the literature review. In particular, Reeves et al. (2004) found that the concentration of fecal indicator bacteria is extraordinarily high in sources of urban runoff, particularly residential runoff.

The sanitary sewer infrastructure was also identified as a potential priority bacteria source across the six focus areas. In the literature review, the sanitary sewer/wastewater has been shown to be a prevalent source of human-derived bacteria from storm drainage systems, particularly during dry weather flows (Field et al., 1994; Sauer et al., 2011; Sercu et al., 2009, 2011). Sercu et al. (2011) determined that sewage can be transmitted directly from leaking sanitary sewers to storm drains, suggesting that chronic sanitary sewer leakage can contribute to downstream fecal contamination of coastal beaches. Marsalek and Rochfort (2004) noted that levels of *E. coli* in urban runoff greater than 10^5/100 milliliters (mL) suggest the presence of cross-connections with sanitary sewers. In addition to cross-connections, leaking sanitary sewers can contribute bacteria to groundwater (Paul et al., 2004), which can then infiltrate into the MS4 system or impact surface waters directly. Wastewater exfiltration and subsequent infiltration was quantified by Guérineaua et al. (2014) to be 0.6-15.7 cubic meters per day per kilometer (m^3/d per km) in dry weather and 1.1 to 19.5 m^3/d per km in wet weather. The geomeans measured during dry weather at outfalls in the San Dieguito WMA were not as high as the value in the literature. It is possible that exfiltration from the sanitary sewer may influence bacteria concentrations within several of the focus areas in the study, but its true impact cannot be known without field investigations. Based on data from CIWQS, sanitary sewer overflows and private lateral sewer discharges appear to be relatively rare occurrences in the San Dieguito WMA focus areas.

The literature review suggests that natural bacteria sources likely contributed high numbers of *Enterococci*, including regrowth on the walls of the MS4 system (Weston Solutions, 2010). The high flows generated during wet weather were found to cause significant biofilm sloughing, potentially impacting wet weather loads. Sediments and biofilms the Tecolote Creek and MS4 system were found to be significant reservoirs (Weston Solutions, 2010). While biofilm within the MS4 infrastructure may be a priority bacteria source in some of the focus areas, these sources are very difficult for managers to control.

The Responsible Agencies also identified and prioritized dumpsters/trash-related activities as a potential bacteria source within their focus areas. This conclusion is supported by the literature review, particularly regarding trash bacteria sources in commercial land uses. Urban areas may contain bacteria from leaking trash dumpsters or restaurants that hose food waste into storm drains. Stormwater system inspections in Dyes Inlet, Washington identified 7 of 207 properties (dumpster, restaurant cleaning areas, and food compactor areas) that discharged food waste to the storm drain system (Kitsap County Public Works, 2009). Secondary bacteria sources, such

urban wildlife, may also contribute bacteria to the stormwater system as the animals are in search of food waste associated with dumpsters and trash.

WET/DRY WEATHER CONSIDERATIONS

For the purposes of this study, focus areas were identified and developed from an initial water quality monitoring data set for three bacteria types: total coliform, fecal coliform, and *Enterococcus.* The Responsible Agencies decided that the approach for determining focus areas should utilize *Enterococcus* monitoring data from MS4 outfalls during dry weather conditions. It was determined that the set of dry weather monitoring data was more robust than the available wet weather monitoring data set, and that dry weather conditions are more directly related to recreational beneficial use within the San Dieguito WMA.

The prioritization process then examined all potential sources within each focus area, irrespective of wet or dry weather conditions, and prioritized those sources under each condition. The findings appear to show similarities in potential bacteria sources between wet and dry weather conditions. Based on these similarities, if the Responsible Agencies were to develop programs to address the priority bacteria sources, they would likely see benefits to water quality under both conditions.

However, the differences between wet weather and dry weather may not be adequately investigated in this study, as the underlying assumption for identifying bacteria sources was predicated on the designation of a focus area by a geomean of dry weather sampling results. As more wet weather MS4 data are collected, Responsible Agencies may build upon the results of this study by examining geomeans of bacteria concentrations during wet weather, and developing an additional source identification prioritization effort for focus areas identified for wet weather conditions.

Conclusions

The Bacteria Special Study in the San Dieguito WMA was successful in identifying and prioritizing potential bacteria sources for each Responsible Agency in the watershed. The methodology applied in this study provides the Responsible Agencies with several tools with which to focus efforts to reduce bacteria loadings to the lower San Dieguito River. The highest potential bacteria sources ranged from residential sources (pet waste, compost, manure, irrigation runoff, and porta-potties associated with construction) to sources related to sewage infrastructure (leaking sewage infrastructure and sanitary sewer overflows). This process can serve as a framework for the Responsible Agencies to review bacteria sources at MS4 outfalls where water quality-based effluent limitation (WQBEL) exceedances occur without implementing costly source identification studies, and to potentially modify or enhance WQIP strategies in these focus areas.

The City of Del Mar used the Bacteria Special Study as a mechanism to analyze information and determine whether program implementation revisions were needed to effectively address the sources that cause or contribute to indicator bacteria, which is the highest priority water quality condition identified for the City of Del Mar in the San Dieguito WMA WQIP. Through jurisdiction-specific data analysis and review of the results of the Bacteria Special Study, the City of Del Mar determined that no program implementation revisions are needed at this time. Because a high priority focus area was not identified for the City of Del Mar, the City of Del Mar will continue to conduct frequent City-wide patrols as an effective method to identify and address potential bacteria sources.

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Appendix A

San Dieguito WMA Special Study

Technical Memorandum #1 (Draft)

Draft Memorandum

DATE:	February 5, 2016
TO:	San Dieguito Watershed Management Area Responsible Agencies
CC:	Kristina Hysler, AMEC Foster Wheeler Chris Minton, Larry Walker Associates Dustin Bambic, Paradigm Environmental
SUBJECT:	San Dieguito Special Study Technical Memorandum #1 Summary of Updated Literature Review, GIS Data Call, and Data Gaps

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1 Introduction

BACKGROUND

The San Diego Regional MS4 Permit (Order R9-2013-0001 as amended by Order Nos. R9-2015-0001 and R9-2015-0100) requires each watershed management area (WMA) to perform two special studies within the permit term to address pollutant and/or stressor data gaps and/or develop information necessary to more effectively address the pollutants and/or stressors that cause or contribute to the highest priority water quality conditions (HPWQC) within the WMA as identified within the Water Quality Improvement Plan (WQIP).[1] The San Dieguito WQIP identified bacteria as the HPWQC for the WMA and included the development of a Bacteria Source Identification Special Study Plan (Study Plan) outlining one of the special studies to be implemented within the WMA to satisfy permit requirements. The Study Plan identified data gaps with respect to information that would be helpful in the identification and prioritization of bacteria sources within the watershed. The data gaps were focused on five key metrics used to identify and prioritize bacteria sources in the WMA: human health risk, magnitude, transport feasibility, frequency, and controllability.

[1] Provision D.3, Order R9-2013-0001 as amended by Order Nos. R9-2015-0001 and R9-2015-0100

PURPOSE

To address these data gaps, an expanded literature review was performed to better understand the latest science related to bacteria sources and source tracking. In addition, an in depth data call was issued to the Responsible Agencies in the watershed to collected the necessary GIS information to further support the prioritization of bacteria sources within the WMA. The purpose of this technical memorandum is to summarize the results of the literature review and data collection process and identifies any remaining data gaps. The literature review and GIS information collected to date will provide the foundation for the remainder of the Special Study.

2 Updated Literature review

2.1 BACKGROUND

The San Dieguito River Watershed Management Area Bacteria Source Identification Special Study Plan (Study Plan) included a literature review to provide an overview of the methods used in microbial source tracking (MST) studies to identify the host origin of fecal indicator bacteria (FIB), as well as a summary of the pertinent studies involving bacteria source identification and the application of MST methods within urban areas. To inform the source prioritization process, studies were reviewed that characterized relative loadings and contributions from specific host sources to the extent that relevant information was available. The relative human health risk from different pathogen sources is also important for prioritization, and studies related to health risk were also summarized.

The Study Plan (Section 4.6 Summary of Data Gaps) identified data gaps from the literature review, which are summarized in **Table 1**. The Study Plan identified data gaps associated with sources from human origins as the highest priority, followed by anthropogenic non-human, and non-anthropogenic. However, considering the availability of data, local knowledge, and other factors such as the frequency of predominant sources, the Copermittees' priorities for filling the data gaps will vary by source type.

Table 1. Study Plan Data Gap Summary

Bacterial Origin	Data Gap Identified in Study Plan
Human Origin	Magnitude: Data related to the magnitude (i.e., concentration or loads) associated with FIB from human origins could be accessed through an expanded literature review and/or contacting local POTWs.
Anthropogenic Non-human Origin	Human health risk: Most of the data collected in source tracking studies to date provides insight into the potential sources of bacteria, but does not provide information related to health risk. The majority of the epidemiology studies performed focus on health effects related to human sources of FIB. Magnitude: Data related to the magnitude of bacteria concentrations associated with anthropogenic non-human sources is also lacking.
Non-anthropogenic Origin	Data gaps related to bacteria influenced by non-anthropogenic activities are primarily focused on frequency and there were no data gaps identified to be addressed through the literature review. Non-anthropogenic sources of bacteria have been identified through various studies and appear to be ubiquitous in the environment. However, additional data could be compiled if

	new or expanded information is found through the update to the literature review.

2.2 LITERATURE REVIEW

The updated literature review is focused on filling in the data gaps identified in the Study Plan, and on providing a more comprehensive review of studies identifying bacterial sources within urban watersheds, along with the human health risks associated with human and non-human sources. An expanded literature search was performed to inform the updated literature review, focusing on recently published studies and on filling data gaps. The additional literature utilized in this updated review are listed, along with a brief summary of key findings, in **Attachment A**. A list of literature sources that are specific to sanitary sewer and septic systems as sources of bacteria is provided in **Attachment B**. The sections below build upon the literature review provided in the Study Plan, with additional information included from the expanded literature search.

Traditional source identification studies have been performed in a number of urban areas, but quantitative data on specific watershed sources (activities, locations, or areas) is sparse. MST studies have predominantly focused on species-level bacteria identification using analytical methods to characterize the host organisms as human or other non-human species, from which indicator the bacteria likely originated. At this time, there has been very little bacteria source identification research that has focused on tracing the specific physical origin of bacteria to determine the relative magnitude of source contributions within a watershed.

2.2.1 Microbial Source Tracking Methods

Recent research on MST has focused on species-specific techniques that target bacteria of the order *Bacteroidales*, which are anaerobic bacteria that are highly abundant in feces, animal rumen, and other cavities of humans and animals (Paster et al., 1994), often in greater abundance than traditionally-used coliform bacteria (Menaia et al., 1998). Their anaerobic nature is desirable because they are only contributed to the environment from feces, and are likely unable to grow or survive for long periods outside of the original host. Their environmental persistence is thought to be much less than aerobic microbes (e.g., fecal coliform) which can persist for months or years, and perhaps even re-grow in the environment. *Bacteroidales* were shown to be the most reliable human marker in comparison studies of microbial source tracking methods by the Southern California Coastal Waters Research Program (SCCWRP; Griffith et al., 2003; SCCWRP, 2013). In addition, USEPA utilized *Bacteroidales* during epidemiological studies (Wade et al., 2006), and found a positive correlation between *Bacteroidales* concentrations and gastrointestinal illness in swimmers.

The basis of *Bacteroidales* source tracking methods is the fact that *Bacteroidales* in different hosts (humans, horses, birds, etc.) often contain unique DNA sequences due to differences in animals' diets and lifestyles, which can be detected and used to target fecal pollution from that host. *Bacteroidales* were first proposed as an indicator of fecal pollution over two decades ago (Allsop and Stickler, 1985; Fiksdal et al., 1985). A decade later, PCR-based assays were used to detect *Bacteroidales* species and thereby monitor human fecal pollution in water (Kreader, 1995). The work of Kate Field and colleagues at Oregon State University has since led to the popularization of *Bacteroidales* as a source tracking tool, and fostered development of assays to detect general fecal pollution (from all warm blooded animals, called "universal"; Dick and

Field, 2004), humans (Bernhard and Field, 2000), pigs and horses (Dick et al., 2005), dogs (Kildare et al., 2007), cows (Layton et al., 2006), and elk (Dick et al., 2005).

Bacteroidales marker assays have been used in many applications both in the United States and globally. There has been much recent interest in the practical applications of microbial source tracking. However, while *Bacteroidales* methods represent the latest state of the science with respect to the microbial source tracking (Santo Domingo et al., 2007; Stewart et al., 2013), they are still non-standard and subject to continued refinement and testing.

2.2.2 Applications of Source Identification and Tracking

There have been numerous studies conducted in recent years to apply source identification and microbial source tracking techniques to investigate sources of bacteria in California waterbodies. An extensive literature search conducted to inform the San Dieguito Watershed Management Area Source Prioritization process identified many studies that characterized the relative contribution of bacteria from different host species, with most studies focusing on ambient water or storm drain characterizations. While the studies did not point toward specific relative contributions from source types (e.g., dumpsters, livestock operations, parks), some studies did identify host-specific contributions that can be linked to land use. The most relevant studies are briefly summarized below, organized by major finding.

2.2.2.1 Regrowth and non-human sources potentially contribute to high bacteria concentrations in storm drain systems and street gutters.

The contribution of non-human sources of bacteria was quantified at coastal reference beaches in southern California that receive runoff from undeveloped (>97% open space) watersheds. Results suggested that natural non-human sources were predominant, resulting in bacterial concentrations exceeding water quality objectives (Schiff et al., 2005). A dry weather monitoring study conducted in San Diego County found that enterococci in storm drain systems came from predominantly natural sources and include strains that are capable of growing on drain pipe surfaces (Griffith and Ferguson, 2011). Regrowth in street gutters was found to be the likely source of bacteria in residential sidewalk wash-off in another study conducted in Orange County (Skinner et al., 2010).

2.2.2.2 Indicator bacteria loading during wet weather may be attributed to erosion of contaminated sediments.

A study by Rowney and Stewart (2012) indicated that seasonal dry-weather loading patterns were dwarfed by storm event loading. This study indicated that FIB do not follow loading profiles of a first flush model, but appear to uniformly partition into runoff over the course of storm events, suggesting influence by environmental reservoirs of FIB.

Sercu et al. (2011) found that increased fecal indicator bacteria numbers during wet weather were likely associated with terrestrial sources, instead of human waste sources that dominated during dry weather flow. During wet weather flow, FIB numbers increased and were more similar across locations and between watersheds. Association with terrestrial bacteria suggests that “naturalized” sources may be important. Wet weather non-point sources in this study may be considered less threatening to public health compared to the dry weather point sources containing human waste.

Similarly, Reeves et al. (2004) found that FIB loads scale as a power law of runoff volume, consistent with a theoretical model that assumes FIB in storm runoff originate from erosion of contaminated sediments. Erosion of sediments containing FIB may drive loading of FIB from urban watersheds to beaches.

2.2.2.3 Human sources may be prevalent in urban areas.

Dry weather monitoring in urbanized Santa Barbara indicated that human sources were prevalent in storm drains. Human waste markers were present and relatively concentrated throughout each of three storm drain systems, and were entering the creeks from storm drains discharging flow continuously during dry weather (Sercu et al., 2009).

The sanitary sewer/wastewater has been shown to be a prevalent source of human-derived bacteria from storm drainage systems, particularly during dry weather flows (Field et al. 1994; Sauer et al., 2011; Sercu et al. 2009, 2011). Sercu et al. (2011) determined that sewage is transmitted directly from leaking sanitary sewers to storm drains, suggesting that chronic sanitary sewer leakage contributes to downstream fecal contamination of coastal beaches. Marsalek and Rochfort (2004) noted that levels of *E. coli* in urban runoff greater than 10^5/100 mL suggest the presence of cross-connections with sanitary sewers. In addition to cross-connections, leaking sanitary sewers can contribute bacteria to groundwater (Paul et al., 2004), which can then infiltrate into the MS4 system or impact surface waters directly. Wastewater exfiltration and subsequent infiltration was quantified by Guérineaua et al. (2014) to be 0.6-15.7 m^3/d per km in dry weather; 1.1-19.5 m^3/d per km in wet weather.

Homeless encampments are recognized as a potential source of human-derived bacteria to urban waterways. The City of Los Angeles (1997) has measured concentrations of 10^6 MPN/100 mL E. coli in storm drains that discharge to the Los Angeles River, resulting from defecation of homeless encampments. A study in Santa Barbara attributed FIB in urban streams to multiple sources, including contamination from a transient homeless population (Izbicki et al., 2009). Another study in Santa Barbara examined sources of human fecal contamination to Arroyo Burro Beach, and found a homeless encampment along a creek was a source of elevated human-associated markers (Ervin et al., 2013). The researchers noted that, in the upper Arroyo Burro watershed, it will be necessary to continuously and vigilantly monitor and remove homeless encampments near the creeks as fecal inputs from only a few individuals can have a large impact on creek water quality.

2.2.2.4 Land usage and management practices can inform the potential for bacteria loading.

A study in Tecolote Creek watershed indicated that wet weather bacteria loads did not differ substantially between different land uses, but that higher loads may be attributable to transportation corridors, commercial areas, and industrial land uses. Dry weather loads were higher in residential and commercial areas with specific activities identified as including poorly maintained dumpsters leaking high concentrations of indicator bacteria. A key transport mechanism found especially in commercial and industrial areas was over-irrigation. Natural bacteria sources likely contributed high numbers of enterococci, including regrowth on the walls of the MS4 system. The high flows generated during wet weather were found to cause significant biofilm sloughing, impacting wet weather loads. Sediments and biofilms within the creek and MS4 system were found to be significant reservoirs (Weston Solutions, 2010).

Commercial sites were identified as sources of bacteria in several studies (Malin et al., 2016; Kitsap County Public Works, 2009; Griffith et al., 2013). Urban areas may contain bacteria from leaking trash dumpsters or restaurants that hose food waste into storm drains. Stormwater system inspections in Dyes Inlet, WA identified that 7 of 207 properties (dumpster, restaurant cleaning areas and food compactor areas) discharged food waste to the storm drain system (Kitsap County Public Works, 2009). Food waste is a potential bacteria source from urban wildlife concentrated around stormwater systems.

A study of 10 coastal dairies and ranches evaluated fecal coliform concentration and loading to surface water during storm events from manure management systems, gutters, storm drains, pastures, and corrals and lots. Fecal coliform loads from management units of concentrated animals and manure were significantly higher than units such as pastures, though storm flow amounts were significantly lower (Lewis et al., 2005).

A study by Rowney and Stewart (2012) showed that more developed watersheds were associated with higher concentrations of FIB.

Reeves et al. (2004) found that the concentration of fecal indicator bacteria is extraordinarily high in sources of urban runoff, particularly residential runoff.

Numerous studies indicated that septic tanks or onsite wastewater treatment systems (OWTS) in rural areas may contribute indicator bacteria of human origin to surface waters (Graves et al., 2001; Carroll et al., 2005; Sokolova et al., 2012, 2013; Virani, 2014). Bacteria from septic systems can migrate to groundwater (Hagedorn, 1984; Kneirim, 2015; Yates, 1995) and potentially travel greater than 400m through groundwater, with impacts to surface waters or MS4 pipes (Hagedorn, 1984). Septic tank density can impact water quality (Anderson, 2010). Verhougstraetea et al. (2015) found a direct and significant correlation between estimated number of septic systems and a human-specific marker (*Bacteroides thetaiotaomicron; B. theta*) in water. In particular, watersheds with more than 1,621 septic systems had significantly higher *B. theta* concentrations.

2.2.3 Source Tracking Guidance

SCCWRP recently released a guidance document for conducting microbial source tracking at beaches, which presents a six-tiered approach combining traditional (i.e., smoke and dye testing) and *Bacteroidales* methods (SCCWRP, 2013). The six steps include:

1. Characterize the watershed using maps, interviewing relevant local experts, and conducting physical inspections to identify potential sources.
2. Examine monitoring data to identify conditions resulting in with high concentrations of indicator bacteria, and examine linkages to the greatest potential sources.
3. Investigate potential leakages from sanitary systems using traditional tools such as smoke testing, dye testing, or camera inspection.
4. Where human sources are a potential contributor, test ambient waters using human source-specific genetic markers. Place a high priority on identifying human sources.

5. Where human sources have been accounted for and the relative human loadings are better understood, and/or a likely animal fecal pollution source has been identified, test ambient waters using animal source-specific genetic markers.
6. Consider testing ambient waters using genetic community analysis methods if specific genetic markers have not been developed for the potential sources. This approach can be used in combination with traditional chemical testing methods.

The Special Study effectively incorporates steps 1–3 above from the SCCWRP MST guidance document.

2.2.4 Health Risks from Human versus Non-human Sources

The EPA considered differential health risks from human versus nonhuman sources in developing its 2012 Recreational Water Quality Criteria. Research indicates that the source of contamination may affect the human health risk associated with recreational waters, and that the potential health risks due to human and nonhuman sources can vary considerably. The health risk associated with a particular indicator density from human sources may be variable. Studies of the risk associated with various human sources have shown that the risk levels for a particular *enterococci* density can vary, depending on the indicator source and assay method used to detect *enterococci* (Schoen et al., 2011). For example, *enterococci* assayed by culture was contributed mostly by untreated sewage or non-pathogenic fecal indicator sources. Whereas, *enterococci* estimated by qPCR were contributed by secondary-treated disinfected municipal wastewater effluent or non-pathogenic fecal indicator sources.

The differences in health risks between human versus non-human sources are complex, and may be due to differing infectious agents present in human and nonhuman fecal contamination. For instance, many studies have indicated that viruses are likely the cause of illnesses resulting from exposure to wastewater treatment plant effluent (Soller et al., 2010a; WERF, 2011), and human viruses are less likely to occur in animal feces.

However, other human pathogens are present in animal fecal matter, and research on the relative risk of animal sources relative to human sources suggests that certain non-human sources may have lower risk to human health than human sources, while other sources have similar risk. Studies indicate that certain nonhuman sources, such as cattle, potentially have similar risks as human sources (Soller et al., 2010b, USEPA, 2010). The study by Soller et al. (2010b) considered cases of direct contamination to surface waters (feces deposited directly to surface waters, rather than transported over land through storm runoff). In the case of direct contamination, the risks from cattle-impacted waters appeared clearly higher than those from pig or chicken-impacted waters. Similarly, a study by McBride et al. (1998) compared human-impacted waters in New Zealand with waters impacted by animal wastes (cattle and sheep in rural areas), and reported similar potential for illness risks, with both higher than non-impacted waters.

Other studies indicated a lower potential health risk due to other nonhuman sources (WERF, 2011; Schoen and Ashbolt, 2010; Soller et al., 2010b). The study by Soller et al. (2010b), in particular, noted substantially lower risks associated with gull, chicken, and pig fecal sources. Due to the mixed findings of epidemiological studies, and the potential for comparable risks, the EPA did not develop separate national criteria for waterbodies with primarily nonhuman sources.

In developing the 2012 Criteria, the EPA convened a workgroup of experts in 2011 to evaluate the human health risks due to avian and wildlife sources of fecal pollution. The workgroup considered results from quantitative microbial risk assessment (QMRA) studies of recreation in poultry, livestock, and waterfowl-impacted water, where different pathogen composition within fecal material from different sources accounted for the risk variation among sources. For instance, cow feces contained numerous different types of pathogens, while avian feces had fewer different types of pathogens (USEPA, 2011).

A recent study by Soller et al. (2015) examined the risk levels of agricultural animal sources of fecal material transported indirectly to surface waters (manure mobilized by rainfall events), and determined that the risks associated were at least an order of magnitude lower than the 2012 recreational water quality criteria benchmarks based on contamination from human sewage sources. However, if human sources are present along with non-human sources, there can still be a substantial human health risk. Soller et al. (2014) found that human health risks are influenced by the nature and magnitude of the fecal contamination sources. Risks for mixtures with moderate or higher human source proportions are not substantially reduced, despite the contribution of non-human sources to the total indicator bacteria concentration. Risks from mixed sources are driven predominantly by the proportion of the contamination source with the greatest ability to cause human infection (potency), not necessarily the greatest source(s) of FIB.

In summary, research suggests that it makes sense to prioritize human sources as the highest priorities, but that cow sources may pose a comparable health threat and also should be prioritized highly. Epidemiological and QMRA research support a lower prioritization for other nonhuman sources such as birds or pigs, based on a lower human health risk.

2.2.5 Magnitude of Impacts

The updated literature search identified several references containing data for the magnitude of indicator bacteria from various sources. Reported data for concentrations, or relative amounts, of indicator bacteria for human and non-human sources are summarized in **Table 2**.

Table 2. Concentrations or Relative Magnitude of FIB for Human and Non-human Sources

Bacterial Origin	Source	Concentration (Fecal coliform density/gm) or Relative Magnitude	Unit Discharge (lbs/day)	Reference
Human Origin	Human	1.3×10^7	0.35	CWP, 1999
	Raw sewage	6.4×10^6 MPN/100 mL		CWP, 1999
	Failed septic system	10^4-10^6 MPN/100 mL		CWP, 1999
	Homeless encampments	10^6 MPN/100 mL *E. coli*		City of Los Angeles, 1997
	Human bathers	6.0×10^5 CFU/100 mL enterococci		Elmir et al., 2007
Anthropogenic Non-human Origin	Cattle	Each cow contributes a waste output equivalent to seven humans.		McBride et al. 1998
	Cattle	2.3×10^5	15.4	CWP, 1999
	Cats	7.9×10^6	0.15	CWP, 1999
	Dogs	2.3×10^7	0.32	CWP, 1999
	Rats	1.6×10^5	0.08	CWP, 1999
Non-anthropogenic Origin	Ducks	3.3×10^7	0.15	CWP, 1999
	Waterfowl	3.3×10^7	0.18-0.35	CWP, 1999
	Forest runoff	10^1-10^2 MPN/100 mL		CWP, 1999

2.3 DATA GAPS ANALYSIS

A summary of the data gaps identified within the Study Plan and the results of the literature review are provided in **Table 3**.

Table 3. Data Gaps after Literature Review

Bacterial Origin	Data Gap Identified in Study Plan	Addressed in Expanded Literature Review?
Human Origin	Magnitude: Data related to the magnitude (i.e., concentration or loads) associated with FIB from human origins could be accessed through an expanded literature review and/or contacting local POTWs.	Yes
Anthropogenic Non-human Origin	Human health risk: Most of the data collected in source tracking studies to date provides insight into the potential sources of bacteria, but does not provide information related to health risk. The majority of the epidemiology studies performed focus on health effects related to human sources of FIB.	Yes
	Magnitude: Data related to the magnitude of bacteria concentrations associated with anthropogenic non-human sources is also lacking.	Magnitudes associated with anthropogenic animal sources were identified. Magnitude for commercial contributions is a remaining data gap.
Non-anthropogenic Origin	Data gaps related to bacteria influenced by non-anthropogenic activities are primarily focused on frequency, and there were no data gaps identified to be addressed through the literature review.	Additional information was added, but there were no data gaps to address.

3 GIS Data Gaps Update

The San Dieguito watershed consists of six (6) different jurisdictions. In assessing the 2014 Study Plan and current Bacteria Special Study needs, current and available GIS data was reviewed, assessed, and updated. GIS Layers previous compiled or created as part of the Study Plan were reassessed for relevance to the Bacteria Special Study. Some layers were removed due to jurisdictional irrelevance, while other layers were completely updated. Table 1 shows which of the original GIS data were omitted, retained, or updated during the 2015 Bacteria study reopener.

Table 4. 2014 GIS Layers Compiled or Created: Updated and Reassessed in 2015

File Name	Info Type	Data Type	2015 Data Gaps Analysis
hil30m_v1.sid	Hillshade	Background	Omitted
ortho_1-1_1n_s_ca073_2012_1.sid	Aerial imagery	Background	Omitted
San_Dieguito_Business_Sites	Business sites from SANDAG	Business Sites	Retained
SanDieguito_Waste_Facilities	Location of waste facilities	Business Sites	Retained
SanDieguito_MunBoundry	Jurisdictional boundaries	Jurisdictional Boundary	Retained
NPDES_PhaseII_Permit_sws	NPDES Phase II permit holders	Land Ownership	Omitted
SG_landownership_sws	Federal/State owned land and indian reservations	Land Ownership	Retained
Caltrans_row_sws	Caltrans right-of-way	Land Use	Omitted
Land Use Types	Land use types (ag, com., ind., res., open, etc)	Land Use	Retained
Land Use Types – Ag_Ind	Agricultural and industrial land use areas	Land Use	Updated
Land Use Types – MS4_Non-MS4	MS4 and non-MS4 designated areas	Land Use	Updated
nlcd2006_sd	Percent impervious	Land Use	Updated
SANDAG_landuse_MS4	MS4 Urban, MS4 open space, Vacant/undeveloped land use	Land Use	Omitted
Vegetation Types	Types of vegetation cover (bog/marsh, dune, forest, grassland, scrub/chaparral, etc)	Land Use	Updated
Receiving Water Stations	MLS/TWAS Sites	Monitoring Site	Retained

File Name	Info Type	Data Type	2015 Data Gaps Analysis
San_Dieguito_Data_Sites	Sites where water quality data were compiled under Task 1 (AB 411, MLS/TWAS, Cst Keeper, MS4/Copermittee)	Monitoring Site	Retained
CityofSanDiego_Outfalls_AllWatersheds	City of San Diego outfalls	MS4	Updated
Del_Mar_StormwaterJunctions_LP_SD	City of Del Mar outfalls	MS4	Omitted
Escondido_ChannelOutfalls_SanDieguito	City of Escondido outfalls	MS4	Updated
Outfalls	County of San Diego outfalls	MS4	Updated
persistent_flow_sites_WQIP	City of San Diego outfalls with peristent flow	MS4	Updated
Poway_Outfalls_SanDieguito	City of Poway outfalls	MS4	Updated
SanDieguito_DrnConveyance	City of San Diego MS4 conveyances	MS4	Retained
SanDieguito_DrnStrctre	City of San Diego MS4 structures (inlets, outlets, cleanouts, headwall, etc)	MS4	Retained
SDG_MS4_FC_Channels_DRAFT	County of San Diego channels and culverts	MS4	Retained
SDG_MS4_FC_Lines_DRAFT	Portions of MS4 system	MS4	Retained
SDG_MS4_RF_Channels_DRAFT	MS4 channels	MS4	Retained
SDG_MS4_RF_Culverts_DRAFT	Culverts of the MS4 system	MS4	Retained
SolanaBeach_Outfalls	City of Solana Beach outfalls	MS4	Updated
SanDieguito_Sewer_Main_SD	Sewer system for City of San Diego	Sewer	Retained
SanDieguito_Sewer_Manhole_SD	Manhole locations for City of San Diego sewer system	Sewer	Retained
WQIP__Waterbodies	Water bodies	Waterbodies	Retained
WQIP_303d_Streams	303(d) listed streams	Waterbodies	Retained
WQIP_303d_Waterbodies	303(d) listed water bodies	Waterbodies	Retained
WQIP_NHD_Streams	Streams/rivers	Waterbodies	Retained

File Name	Info Type	Data Type	2015 Data Gaps Analysis
Hodges HA	HA boundary	Watersheds	Retained
San Pasqual HA	HA boundary	Watersheds	Retained
SanDieguito_HSA	HSA boundaries	Watersheds	Retained
Santa Maria Valley HA	HA boundary	Watersheds	Retained
Santa Ysabel HA	HA boundary	Watersheds	Retained
Solana Beach HA	HA boundary	Watersheds	Retained
WQIP_subwatersheds	WQIP subwatersheds (above Lake Hodges, above Sutherland Res., below Lake Hodges)	Watersheds	Retained
WQIP_Watersheds	San Dieguito River WMA	Watersheds	Retained

In addition to reviewing and assessing current available GIS data, a significant data call was performed to update and obtain and include GIS data previously described as a data gap. A data call was put out for the following information:

- A complete MS4 inventory from all jurisdictions in the watershed.
    - Data pertaining to flow at MS4 outfalls (i.e., persistent, transient, none).
    - Locations of permanent BMPs within the watershed (e.g., dry weather diversions, retention/detention basins).
- A complete Sanitary Sewer System inventory from all jurisdictions in the watershed.
    - Sanitary sewer condition assessments for each jurisdiction as available.
    - Sanitary sewer overflows with locations, volumes, and whether flow reached receiving waters.
    - Locations of known OWTS.
- Commercial, industrial, municipal inventories containing latitude and longitude coordinates for all jurisdictions in the watershed.
- Locations of known homeless encampments.
- ICID data with locations of incidents and pollutants discharged.
- Locations of recycled water distribution systems and users within the watershed.

All six jurisdictions were asked to participate in the data gaps data call. Five jurisdictions, including the City of San Diego (CSD), the County of San Diego (CoSD), Escondido (ESC), Poway (POW), and Solana Beach (SB) participated in the data gaps data call by updating and providing GIS information. Del Mar was the only jurisdiction to opt out of the Bacteria Special

Study, and did not provide any additional GIS data for the data call. A summary of the information obtained from or updated in the data gaps data call can be found in the table below.

Table 5 Summary of Data Gaps Data Call

Data Type	GIS Data Gaps	City of San Diego	County of San Diego	Del Mar	Escon-dido	Poway	Solana Beach
MS4	MS4 inventory from all jurisdictions in the watershed.	a	a		a	a	a
MS4	Stormwater BMPS	a	-		a	a	-
MS4	Dry Weather Flow Data	a	a		a	-	-
Sewer	Sanitary Sewer System inventory from all jurisdictions and special districts in the watershed.	b	x		a	a	a
Sewer	Sanitary sewer condition assessments for each jurisdiction as available. (2007-2015)	-	-		a	-	-
Sewer	Sanitary sewer overflows with locations, volumes, and whether flow reached receiving waters. (2007-2015)	c	a		a	c	c
Sewer	Onsite Wastewater Treatment Systems (OWTS)	-	-		x	a	-
Inventory	ICID data (2007-2015)	a	a		a	-	-
Inventory	Commercial inventories	a	a		a	-	-
Inventory	Industrial inventories	a	a		a	-	-
Inventory	Municipal inventories	a	a		a	-	-
Inventory	Homeless encampments	-	a		x	-	-
Recycled Water	Recycled Water	-	x		a	a	-

a) denotes data that was obtained from or updated by the Copermittee
b) denotes preexisting data from the Study Plan
c) denotes data created from publicly available data
x) denotes known unavailable data

A few data types were easier to update and obtain than others. From both previous data and updated information provided by the jurisdictions, a full MS4 inventory was gathered from the five participating jurisdictions. A complete MS4 inventory consisted of many different layers of data, including not only gravity mains and lateral lines, but also MS4 structures, junctions, and outfalls. Drainage areas were only available for the City of San Diego, County of San Diego, and Solana Beach. Although stormwater BMPs are an important part of the MS4 inventory, GIS data was provided by three of the five jurisdictions: City of San Diego, Escondido, and Poway.

A full sanitary sewer system inventory was also updated and acquired in the data gaps data call. The complete inventory included gravity mains, lateral lines, as well as fittings, structures, and wastewater treatment plans. While the structural inventory was complete, Escondido was the only jurisdiction able to provide a sanitary sewer condition assessment for the Study. Sanitary

Sewer Overflows (SSOs) were provided directly by Escondido, and the County of San Diego. However, public records of SSO were obtained and digitized from the State Board's CIWQS reporting system for the San Dieguito Watershed.

The location of Onsite Wastewater Treatment Systems remains a critical and continued data gap. Although Poway was able to provide the locations of known OWTS, and Escondido does not have any known OWTS within the San Dieguito Watershed, there is very little information regarding the locations of OWTS in other jurisdictions. Obtaining this type of data is critical for the Bacteria Study, as OWTS have the potential to be a significant source of bacteria in the watershed.

The data gaps data call was successful in receiving ICID data and commercial, municipal, and industrial inventory and inspections from the City of San Diego, the County of San Diego, and Escondido. However, ICID and inventory data for Poway and Solana Beach are still outstanding.

Recycled water data, including the locations of recycled water distribution systems and users within the watershed, as well as the location of known homeless encampments are two types of data that were much more difficult to obtain. Only two jurisdictions, Escondido and Poway, were able to provide information regarding recycled water. The County of San Diego was the only copermittee that provided the location of known homeless encampments, while Escondido determined that none of its known homeless encampments were within the San Dieguito Watershed. Recycled water and homeless encampments continue to have the potential to be bacteria sources, and the lack of data makes it difficult to determine their relative contributions to the watershed.

Overall, the data gaps data call was successful in obtaining complete or near complete inventories of the MS4, sanitary sewer system, and commercial, municipal, and industrial sites. However, there remain some significant gaps in data for a few potential sources of bacteria. The locations of OWTS and known homeless encampments have the potential to be significant sources of bacteria, and remain areas of uncertainty in the Bacteria Special Study.

4 Conclusions and Recommendations

Based on the updated literature review and GIS data collection efforts, the next steps of the study are recommended as follows:

- Use water quality data collected from 2007-2015 to identify focus areas for further source identification.
- Upon selection of focus areas, GIS data will be used to perform an in depth source identification within those areas.
- The identified sources will then be prioritized within the focus areas using the prioritization methods and matrix developed as part of the previous Regional Study. The prioritization will rely on the outcomes of the GIS work combined with the updated findings of the literature review.
- Once sources have been prioritized, the Copermittees may use the prioritization to examine existing strategies or to develop new strategies to address the highest priority sources within the focus areas if appropriate.
- Using these strategies and identified focus areas, the monitoring program will then be evaluated as part of the Special Study Assessment in the Annual WQIP Report to determine if that the monitoring program may need to be adjusted to assess related information for key strategies and focus areas.

5 References

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Attachment A: Expanded Literature Review on Sources of Indicator Bacteria

Reference	Key Points
Sercu, B., Van De Werfhorst, L., Murray, J., Holden P. 2011. Storm Drains are Sources of Fecal Pollution during Dry Weather in Three Urban Southern California Watersheds. Environ Sci. Technol. 43:293-298	• Increased fecal indicator bacteria numbers during wet weather were likely associated with terrestrial sources, instead of human waste sources that dominated during dry weather flow. • During wet weather flow, FIB numbers increased and were more similar across locations and between watersheds. Association with terrestrial bacteria suggests that "naturalized" sources may be important. Wet weather non-point sources in this study may be considered less threatening to public health compared to the dry weather point sources containing human waste.
Rowny, J. and Stewart, J. 2012. Characterization of nonpoint source microbial contamination in an urbanizing watershed serving as a municipal water supply. Water Research 46: 6143-6153	• More developed watersheds were associated with higher concentrations of FIB. • Seasonal dry-weather loading patterns were dwarfed by storm event loading. • FIB do not follow loading profiles of a first flush model. FIB appear to uniformly partition into runoff over the course of storm events, consistent with a mud-puddle hypothesis that suggests influence by environmental reservoirs of FIB. FIB do not follow loading profiles of a first flush model.
Reeves, R., Grant, S., Mrse, R., Copil Oancea, C. Sanders, B., Boehm, A. 2004. Scaling and Management of Fecal Indicator Bacteria in Runoff from a Coastal Urban Watershed in Southern California.Environ. Sci. Technol. 38: 2637–2648	• The concentration of fecal indicator bacteria is extraordinarily high in sources of urban runoff, particularly residential runoff. • FIB loads scale as a power law of runoff volume, consistent with a theoretical model that assumes FIB in storm runoff originate from erosion of contaminated sediments. Erosion of sediments containing FIB may be driving the loading of FIB from urban watersheds to beaches.
Lee, D., Lee, H., Trevors, J., Weir, S., Thomas, J., Habash, M. 2014. Characterization of sources and loadings of fecal pollutants using microbial source tracking assays in urban and rural areas of the Grand River Watershed, Southwestern Ontario. Water Research 53: 123-131.	• Found continuous inputs of human-originated fecal pollution from point sources (WWTP effluent) in the Grand River, Ontario, Canada, with no pattern of wet weather loading.

Reference	Key Points
Risk from Non-human Sources	
Soller, J., Bartrand, T., Ravenscroft, J., Molina, M. Whelan, G., Schoen, M. and Ashbolt, N. 2015. Estimated human health risks from recreational exposures to stormwater runoff containing animal faecal material. Environmental Modeling & Softwater 72: 21-32.	• Used QMRA to determine that risks associated with agricultural animal fecal sources would be at least an order of magnitude lower than the benchmark level of public health protection associated with current US recreational water quality criteria, which are based on contamination from human sewage sources. • This study considered indirect contamination, where FIB and pathogens from animal manure-applied land are mobilized into surface water via a rainfall event. • In cases of indirect contamination, risks from cattle-impacted water are similar to pig or chicken-impacted water.
Soller, J., Schoen, M., Varghese, A., Ichida, A., Boehm, A., Eftim, S., Ashbolt, N., Ravenscroft, J. 2014. Human health risk implications of multiple sources of faecal indicator bacteria in a recreational waterbody. Water Research 66:254-264.	• Human health risks are influenced by the nature and magnitude of the fecal contamination sources. This study examined fresh gull feces, fresh pig manure, fresh chicken manure, and aged pig manure as sources. • Alternative recreational water quality standards can be justified for some non-human sources. • Risks for mixtures with moderate or higher human source proportions are not substantially reduced. Risks from mixed sources are driven predominantly by the proportion of the contamination source with the greatest ability to cause human infection (potency), not necessarily the greatest source(s) of FIB.
McBride, G., Salmond, C., Bandaranayake, D., Turner, S., Lewis, G., Till, D. 1998. Health effects of marine bathing in New Zealand. Int. J. Environ. Health Res. 8: 173-189.	• Compared human-impacted waters in New Zealand with waters impacted by animal wastes, and reported similar potential for illness risks, with both higher than non-impacted waters.
Variable Risk from Human Sources	
Schoen, M., Soller, J., Ashbolt, N. 2011. Evaluating the importance of faecal sources in human-impacted waters. Water Research 45: 2670-2680	• Ingestion of human-impacted water with a faecal indicator density at the recreational water quality limit resulted in a range of GI risk using QMRA. • When GI risk was set at 0.03, secondary-treated disinfected municipal wastewater effluent was the major waterbody contaminant by volume. • Enterococci assayed by culture was contributed mostly by untreated sewage or non-pathogenic faecal indicator sources. Whereas, enterococci estimated by qPCR was contributed by secondary-treated disinfected municipal wastewater effluent or non-pathogenic faecal indicator sources. • *Norovirus* genome density and GI risk were contributed by a combination of untreated sewage and secondary-treated disinfected municipal wastewater effluent.

Reference	Key Points
Anthropogenic Non-Human	
Ervin, J., Van De Werfhorst, L., Murray, J., Holden, P. 2014. Microbial Source Tracking in a Coastal California Watershed Reveals Canines as Controllable Sources of Fecal Contamination. Environ. Sci Technol. 48: 9043-9052	• Microbial source tracking study in the Arroyo Burro watershed in Santa Barbara, CA. Fecal sources into the lagoon included upstream human sources and coastal birds, but canine sources were the most important. • Canine sources input from upstream creek water decreased after creek-side residences were educated about proper pet waste disposal. This study found that canine waste was an influential, yet controllable, fecal source to suburban coastal beaches. • 24 g/d of fresh dog feces would be enough to cause the elevated FIB levels observed in the creek.
Commercial Sites	
Malin, M., Turner, M., McIver, M., Toothman, B., Freeman, H. 2016. Significant Reduction of Fecal Bacteria and Suspended Solids Loading by Coastal Best Management Practices. Journal of Coastal Research, In press.	• The set of stormwater volume reduction and treatment BMPs in the municipal area caused fecal coliform bacteria and Enterococcus concentration reductions of 57% and 71%, respectively, 50% stormwater discharge reduction, 28–55% fecal bacteria load reductions, and 99% TSS load reduction. • The pollutant concentration and load decreases in the municipal area of Wrightsville Beach are particularly striking because the BMPs only capture about 50% of the runoff from the drainage area that enters the outfall into Lee's Cut.
Kitsap County Public Works. (2009?) Bacterial Pollution Reduction in an Urban Watershed. Kitsap County Public Works, Surface and Stormwater Management. Port Orchard, WA.	• Stormwater system inspections in Dyes Inlet, WA identified that 7 of 207 properties (dumpster, restaurant cleaning areas and food compactor areas) discharged food waste to the storm drain system. Food waste is a potential bacteria source from urban wildlife concentrated around stormwater systems.
Griffith, J., Layton, B., Boehm, A., Holden, P., Jay, J., Hagedorn, C., McGee, C., Weisberg, S. 2013. The California Microbial Source Identification Manual: A Tiered Approach to Identifying Fecal Pollution Sources in Beaches. Southern California Coastal Water Research Project, Technical Report 804, December 2013.	• Urban areas may contain bacteria from leaking trash dumpsters or restaurants that hose food waste into storm drains.

Reference	Key Points
Homeless Encampment Sources	
City of Los Angeles. 1997. A study of pollutants entering storm drains from street and sidewalk washing operations in Los Angeles, CA. City of Los Angeles, Stormwater Management Division. Los Angeles, CA.	• City of LA has measured concentrations of 10^6 MPN/100 mL E. coli in storm drains that discharge to the Los Angeles River, resulting from defecation of homeless encampments.
Izbicki, J., Swarzenski, P., Reich, C., Rollins, C., Holden, P. 2009. Sources of Fecal Indicator Bacteria in Urban Streams and Ocean Beaches, Santa Barbara, California. Annals of Environmental Science 3: 139-178.	• During low flow, FIB were associated with point-source discharges. • During wet weather, FIB sources to near shore ocean water include surface discharges from urban streams, fecal material from sand birds, and beachfront kelp. • Groundwater discharge and leakage from a sewer line buried in the sand were not large sources of FIB contamination to near-shore waters. • FIB in urban streams may come from leaking sewer lines and laterals, discharges from urban baseflow, stormwater runoff, and contamination from a transient homeless population.
Elmir, S., Wright ME, Abdelzaher A, Solo-Gabriele HM, Fleming LE, Miller G, Rybolowik M, Peter Shih MT, Pillai SP, Cooper JA, Quaye EA. 2007. Quantitative evaluation of bacteria released by bathers in a marine water. Water Res. 41:3–10.	• Potential contributors to enterococci in recreational waters may include beach visitors themselves or as carriers of sand- borne bacteria during recreational activities • An individual bather might contribute as many as 6.0 x 10^5 CFU of enterococci through bathing, and that the enterococci contribution from sand particles adhered to the skin was minimal compared to the amount shed directly from the bodies of bathers.
Ervin, J., Van De Werfhorst, L., Holden, P. Arroyo Burro Beach Microbial Source Tracking Study. (2013?) Conducted by the University of California Santa Barbara (UCSB) as part of the Source Identification Protocol Project (SIPP).	• A source of human fecal contamination from a homeless encampment was discovered in upper Las Positas Creek. Quantifiable levels of both human-associated markers were detected at a site downstream of a homeless encampment, but markers did not persist at downstream sampling locations due to low creek flow. • For the upper AB watershed, it will be necessary to continuously and vigilantly monitor and remove homeless encampments near the creeks. Fecal inputs from only a few individuals can have a large impact on creek water quality • Improper management of pet waste from domestic dogs living along creeks upstream of the lagoon can be solved by homeowner education. Further, dog waste at the beach and lagoon can be controlled by increasing education of beachgoers regarding pet waste pickup. • Septic-served homes near the sampling were not a source of human markers to the surf zone.

Reference	Key Points
Sanitary Sewer Sources	
Field, R., Pitt, R., Lalor, M., Brown, M., Vilkelis, W., Phackston, E. 1994. Investigation of dry weather pollutant entries into storm drainage systems. J. Environ. Eng. 120, 1044–1066.	• The sanitary sewer/wastewater is one of the most significant sources of pollutant loadings from dry weather flows from storm-drainage systems.
Guérineaua, H., Dornerb, S. Carrièrea, A. McQuaida, N., Sauvéc, S., Aboulfadlc, K., Hajj-Mohamada, M, Prévosta, M. 2014 Source tracking of leaky sewers: A novel approach combining fecal indicators in water and sediments. Water Research, 58: 50–61.	• Sewage exfiltration from leaky sanitary sewer pipes contributes wastewater to an urban canal during wet and dry weather. • Identified and quantified wastewater exfiltration and subsequent infiltration (0.6-15.7 m^3/d per km in dry weather; 1.1-19.5 m^3/d per km in wet weather). Paired *E. coli* monitoring with detection of wastewater micropollutants (WWMPs) to measure gradients in water and sediment along an engineered canal in an urban area of Canada.
Marsalek, J., Rochfort, Q. 2004. Urban wet-weather flows: sources of fecal contamination impacting on recreational waters and threatening drinking-water sources. Journal of Toxicology and Environmental Health, Part A: Current Issues 67: 1765-1777	• Levels of E. coli greater than 10^5/100mL suggest presence of cross-connections with sanitary sewers. • Levels of E. coli in combined sewer overflows (CSOs) can be as high as 10^6/100mL.
Paul, M.; Wolf, L.; Fund, K.; Held, I.; Winter, J.; Elswirth, M.; Gallert, C.; Hotzl, H. 2004. Microbiological condition of urban groundwater in the vicinity of leaky sewer systems. Acta Hydrochim. Hydrobiol. 32, 351–360.	• Leaky sewer systems elevate fecal indicator concentrations in groundwater with associated potential health risk where such waters are used for potable water supply.
Sauer, E., VandeWalle, J., Bootsma, M., McLellan, S. 2011. Detection of the human specific Bacteroides genetic marker provides evidence of widespread sewage contamination of stormwater in the urban environment. Water Research 45: 4081-4091.	• Found urban stormwater systems that collect and convey runoff from impervious surfaces act as a conduit for sewage originating from breeches in sanitary sewer infrastructure.
Sercu et al. 2009. Storm drains are sources of human fecal pollution during dry weather in three urban Southern California watersheds. Environ. Sci. Technol. 43, 293–298.	• Exfiltrating sanitary sewers a possible source of human waste in storm drains. • Quantified human-specific *Bacteroides* marker in three urbanized watersheds in Santa Barbara over two summers, in creeks, urban storm drains that discharged to creeks, creek outlets to lagoons, and ocean.

Reference	Key Points
Sercu et al. 2011. Sewage Exfiltration As a Source of Storm Drain Contamination during Dry Weather in Urban Watersheds. Environ. Sci. Technol., 45 (17): 7151–7157.	• Determined that sewage is transmitted directly from leaking sanitary sewers to storm drains, suggesting that chronic sanitary sewer leakage contributes to downstream fecal contamination of coastal beaches. • Performed field experiments in three watersheds in Santa Barbara: Identified high risk areas, added dye pulses to sanitary sewers and tracked dye to storm drains, and confirmed sewage contamination using *Bacteroidales* markers.
Septic Tank/ Onsite Treatment System Sources	
Anderson, J. 2010. The Effects of High Density Septic Systems on Surface Water Quality in Gwinnett County, Georgia. Thesis, Georgia State University.	• Found that septic tank density impacted surface water (stream) quality in GA, with rainfall causing increases in fecal coliform, BOD, temperature, and metals.
Carroll, S. Hargreaves, M., Goonetilleke, A. 2005. Sourcing Fecal Pollution from Onsite Wastewater Treatment Systems in Surface Waters Using Antibiotic Resistance Analysis. Journal of Applied Microbiology 99(3): 471-482.	• Linked fecal contamination in surface waters in the Gold Coast region of Australia to presence of OWTS. • Contamination of ground and surface water resources by effluent discharged from OWTS is of critical concern due to health risks, and the degradation of recreational and drinking water resources due to nutrient inputs
Graves, A., Hagedorn, C., Teetor, A., Mahal, M., Booth, A., Reneau, R. 2001. Antibiotic Resistance Profiles to Determine Sources of Fecal Contamination in a Rural Virginia Watershed. Journal of Environmental Quality 31: 1300-1308.	• Found enterococci of human origin in a stream passing through a rural non-sewered community in VA, where stream samples exceed recreational standards for fecal coliform. There were no human isolates upstream of the community, and the number of human isolates declined downstream.
Hagedorn, C. 1984. Microbiological aspects of groundwater pollution due to septic tanks. In G. Bitton & C. Gerba (Eds.), *Groundwater pollution microbiology.* Brisbane: John Wiley and Sons, 191-195.	• Reported that bacteria from septic systems have travelled greater than 400m in aquifers.
Knierim, K., Hays, P., Bowman, D. 2015. Quantifying the variability in *Escherichia coli* (*E. coli*) throughout storm events at a karst spring in northwestern Arkansas, United States. Environmental Earth Sciences, 74: 4607-4623.	• Septic-tank effluent may be degrading the water quality of the karst spring based on the dominance of on-site septic tank usage in the recharge area, unsuitable topography and soil type for septic tank absorption fields, increased nitrate and chloride concentrations concomitant with increased urbanization, and increase of *E. coli* following storm events.

Reference	Key Points
Sokolova, E., Pettersson, T., Bergstedt, O., Hermansson, M. 2013. Hydrodynamic modelling of the microbial water quality in a drinking water source as input for risk reduction management. Journal of Hydrology 497: 15-23.	• Modeled *E. coli* source inputs to a drinking water intake in Lake Radasjon in Sweden, and found that discharges from on-site sewers were one of the main sources of fecal contamination at the water intake.
Sokolova, E., Pettersson, T., Bergstedt, O., Hermansson, M. 2012. Estimation of pathogen concentrations in a drinking water source using hydrodynamic modelling and microbial source tracking. Journal of Water and Health 10(3): 358-370.	• On-site sewers were the source that contributed the most norovirus to the water intake (at Lake Radasjon in Sweden). • A cattle grazing area was the main contributor to *Cryptosporidium* concentrations.
Verhougstraetea, M., Martin, S., Kendall, A., Hyndman, D., and Rose, J. 2015. Linking fecal bacteria in rivers to landscape, geochemical, and hydrologic factors and sources at the basin scale. PNAS 112: 10419–10424.	• Found a direct and significant correlation between estimated number of septic systems and the human-specific marker *B. theta* in water. • Sampled 64 rivers that drain 84% of Michigan's lower peninsula under base flow conditions for *E. coli, Bacteroides thetaiotaomicron* (*B. theta*). Particularly, watersheds with more than 1,621 septic systems had significantly higher B. theta concentrations.
Virani, A. 2014. Estimation of E. coli Concentrations from Failing On-Site Wastewater Treatment Facilities (OWTS) Using GIS. Thesis, Texas A&M University.	• Poorly designed and maintained OWTS are major contributors of bacteria to surface waters (streams) in the Dickinson Bayou watershed in TX.
Yates, M. 1985. Septic Tank Density and Ground-Water Contamination. Groundwater 23: 586-591.	• Septic tanks are the leading contributor of total volume of wastewater discharged directly to groundwater.

Reference	Key Points
Center for Watershed Protection (CWP). 1999. Microbes and Urban Watersheds: Concentrations, Sources, & Pathways. Watershed Protection Techniques 3(1): 554-565.	• Review summarizing sources and concentrations of indicator bacteria. • Raw sewage typically is about two to three orders of magnitude "stronger" than stormwater runoff in terms of coliform production, and is four to five orders of magnitude "stronger" than forest runoff that is influenced only by wildlife sources. As a general rule, human sources of sewage should be suspected when fecal coliform concentrations are consistently above 10^5

Table 5: Comparison of Bacterial Densities in Different Waste Streams (MPN/100 ml) (Pitt, 1998; Lim and Oliveri, 1982; Smith *et al.*, 1992, Horsely & Witten, Inc., 1995)

Waste stream	Total coliform	Fecal coliform	Fecal streptococci
Raw sewage	2.3×10^7	6.4×10^6	1.2×10^6
Combined sewer overflow	$10^4 - 10^7$	$10^4 - 10^6$	10^5
Failed septic systems	$10^4 - 10^7$	$10^4 - 10^6$	10^5
Urban stormwater runoff	$10^4 - 10^5$	2.0×10^4	$10^4 - 10^5$
Forest runoff	$10^2 - 10^3$	$10^1 - 10^2$	$10^2 - 10^3$

Table 6: Failure Rate for Septic Systems

Geographic location	Source	Failure rate (%)
Frederick County, MD	Tuthill, 1998	30+
Detroit, MI	Johnson, 1998	20
Wayne County, MI	Johnson, 1998	21
Oakland County, MI	Johnson, 1998	39
Florida	Hunter, 1998	5
Mason County, WA	Glasoe and Tompkins, 1996	12
Puget Sound, WA	Smayda et al., 1996	10 to 25

Reference	Key Points

Table 7: Bacterial Densities in Warm-Blooded Animals Feces (Pitt, 1998; Godfrey, 1992; Geldrich *et al.*, 1962)

Waste stream	Fecal coliform *(Density/gm)*	Fecal streptococci	Unit discharge *(lbs/day)*
Human	1.3×10^7	3.0×10^6	0.35
Cats	7.9×10^6	2.7×10^7	0.15
Dogs	2.3×10^7	9.8×10^8	0.32
Rats	1.6×10^5	4.6×10^7	0.08
Cows	2.3×10^5	1.3×10^7	15.4
Ducks	3.3×10^7	5.4×10^7	0.15
Waterfowl	3.3×10^7	-	0.18 - 0.35

Attachment B: References specific to Sanitary Sewer and Onsite Wastewater Treatment System Information

Sanitary Sewer

Field, R., Pitt, R., Lalor, M., Brown, M., Vilkelis, W., Phackston, E. 1994. Investigation of dry weather pollutant entries into storm drainage systems. J. Environ. Eng. 120, 1044–1066.

Guérineaua, H., Dornerb, S. Carrièrea, A. McQuaida, N., Sauvéc, S., Aboulfadlc, K., Hajj-Mohamada, M, Prévosta, M. 2014 Source tracking of leaky sewers: A novel approach combining fecal indicators in water and sediments. Water Research, 58: 50–61.

Paul, M.; Wolf, L.; Fund, K.; Held, I.; Winter, J.; Elswirth, M.; Gallert, C.; Hotzl, H. 2004. Microbiological condition of urban groundwater in the vicinity of leaky sewer systems. Acta Hydrochim. Hydrobiol. 32, 351–360.

Sauer, E., VandeWalle, J., Bootsma, M., McLellan, S. 2011. Detection of the human specific Bacteroides genetic marker provides evidence of widespread sewage contamination of stormwater in the urban environment. Water Research 45: 4081-4091.

Sercu et al. 2009. Storm drains are sources of human fecal pollution during dry weather in three urban Southern California watersheds. Environ. Sci. Technol. 43, 293–298.

Sercu et al. 2011. Sewage Exfiltration As a Source of Storm Drain Contamination during Dry Weather in Urban Watersheds. Environ. Sci. Technol., 45 (17): 7151–7157.

Onsite Wastewater Treatment Systems

Anderson, J. 2010. The Effects of High Density Septic Systems on Surface Water Quality in Gwinnett County, Georgia. Thesis, Georgia State University.

Carroll, S. Hargreaves, M., Goonetilleke, A. 2005. Sourcing Fecal Pollution from Onsite Wastewater Treatment Systems in Surface Waters Using Antibiotic Resistance Analysis. Journal of Applied Microbiology 99(3): 471-482.

Graves, A., Hagedorn, C., Teetor, A., Mahal, M., Booth, A., Reneau, R. 2001. Antibiotic Resistance Profiles to Determine Sources of Fecal Contamination in a Rural Virginia Watershed. Journal of Environmental Quality 31: 1300-1308.

Hagedorn, C. 1984. Microbiological aspects of groundwater pollution due to septic tanks. In G. Bitton & C. Gerba (Eds.), *Groundwater pollution microbiology.* Brisbane: John Wiley and Sons, 191-195.

Knierim, K., Hays, P., Bowman, D. 2015. Quantifying the variability in *Escherichia coli* (*E. coli*) throughout storm events at a karst spring in northwestern Arkansas, United States. Environmental Earth Sciences, 74: 4607-4623.

Verhougstraetea, M., Martin, S., Kendall, A., Hyndman, D., and Rose, J. 2015.

Linking fecal bacteria in rivers to landscape, geochemical, and hydrologic factors and sources at the basin scale. PNAS 112: 10419–10424.

Virani, A. 2014. Estimation of E. coli Concentrations from Failing On-Site Wastewater Treatment Facilities (OWTS) Using GIS. Thesis, Texas A&M University.

Yates, M. 1985. Septic Tank Density and Ground-Water Contamination. Groundwater 23: 586-591.

Appendix B

San Dieguito WMA Special Study

Detailed Focus Area Prioritization Results

Appendix B. Potential Sources & Full Prioritization Results by Focus Area

PURPOSE

The purpose of this appendix is to document the characteristics and inventory of potential sources found within each focus area. The methods for determining the focus areas presented in **Figure 1** are discussed in detail in the Technical Memorandum accompanying this document. Potential bacteria sources in the watershed were drawn from the San Dieguito WMA Water Quality Improvement Plan and are summarized in **Table 1**. These and other sources were assessed based on five key metrics used to identify and prioritize bacteria sources within the WMA. These metrics include the human health risk, magnitude of the bacteria source, transport feasibility of the source, frequency of occurrence, and controllability of the source. This appendix presents a summary of the characteristics and potential bacteria sources of each focus area, along with the full list of prioritized potential sources and their rankings.

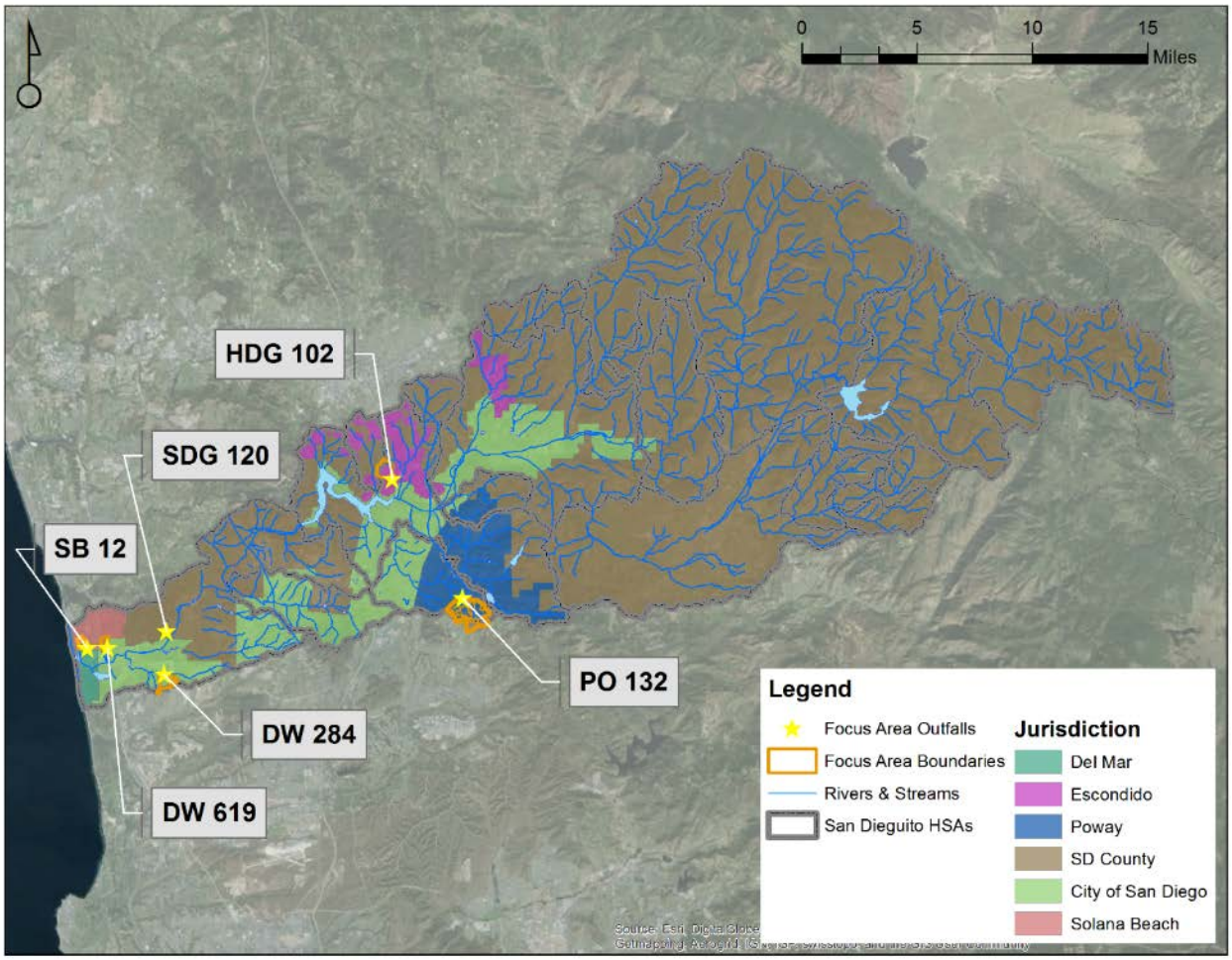

Figure 1. Locations of Focus Areas for the Bacteria Special Study Source Identification.

Table 1. Summary of Potential Bacteria Sources in Focus Areas within the San Dieguito Watershed Management Area

		ESC	POW	CSD	SB	COSD	CSD/SB
Source[1]	**Priority[1]**	**HDG-102**	**PO-132**	**DW-284**	**SB-12**	**SDG-210**	**DW-619**
Residential Areas	High	✓	✓	✓	✓	✓	✓
Sanitary Sewer Overflows	High		✓		✓		✓
Sanitary Sewer Infrastructure	High	✓	✓	✓	✓	✓	✓
Septic Systems	High	✓	*	*	*	*	*
Animal Facilities	Medium						✓
Eating/Drinking Establishments	Medium	✓					✓
Nurseries/Greenhouses	Medium						✓
Agriculture	Medium	✓					
Roads/Streets/Parking	Medium	✓	✓	✓	✓	✓	✓
Mobile Landscaping	Medium	✓	✓	✓	✓	✓	✓
Wildlife (Secondary)	Medium	✓					
Transient Encampments	Low	*	*	*	*	*	*
Wildlife	Low	✓	✓	✓	✓	✓	✓
Bacteria Regrowth/Biofilms	Low	✓	✓	✓	✓	✓	✓

[1] Source and priority information presented within the Water Quality Improvement Plan was used as a starting point for this Study.
* Indicates data was not available
Blank cells indicate potential sources not found in the focus area.

PRIORITIZATION RESULTS BY FOCUS AREA

City of San Diego

The City of San Diego's primary focus area drains to the outfall site: DW-284, shown in **Figure 2**. The total area assessed is 156 acres, and consists of 49% residential land uses, 34% open space, 16% road infrastructure, and 1% institutional land uses. With single family residential land uses and open space comprising of over 80% of this focus area, the top two potential bacteria sources in both dry and wet weather are pets and manure/compost. Although 6 businesses are found to be located within the focus area, none of the commercial businesses re food or eating and drinking establishments. The potential sources are most highly associated with infrastructure and land use.

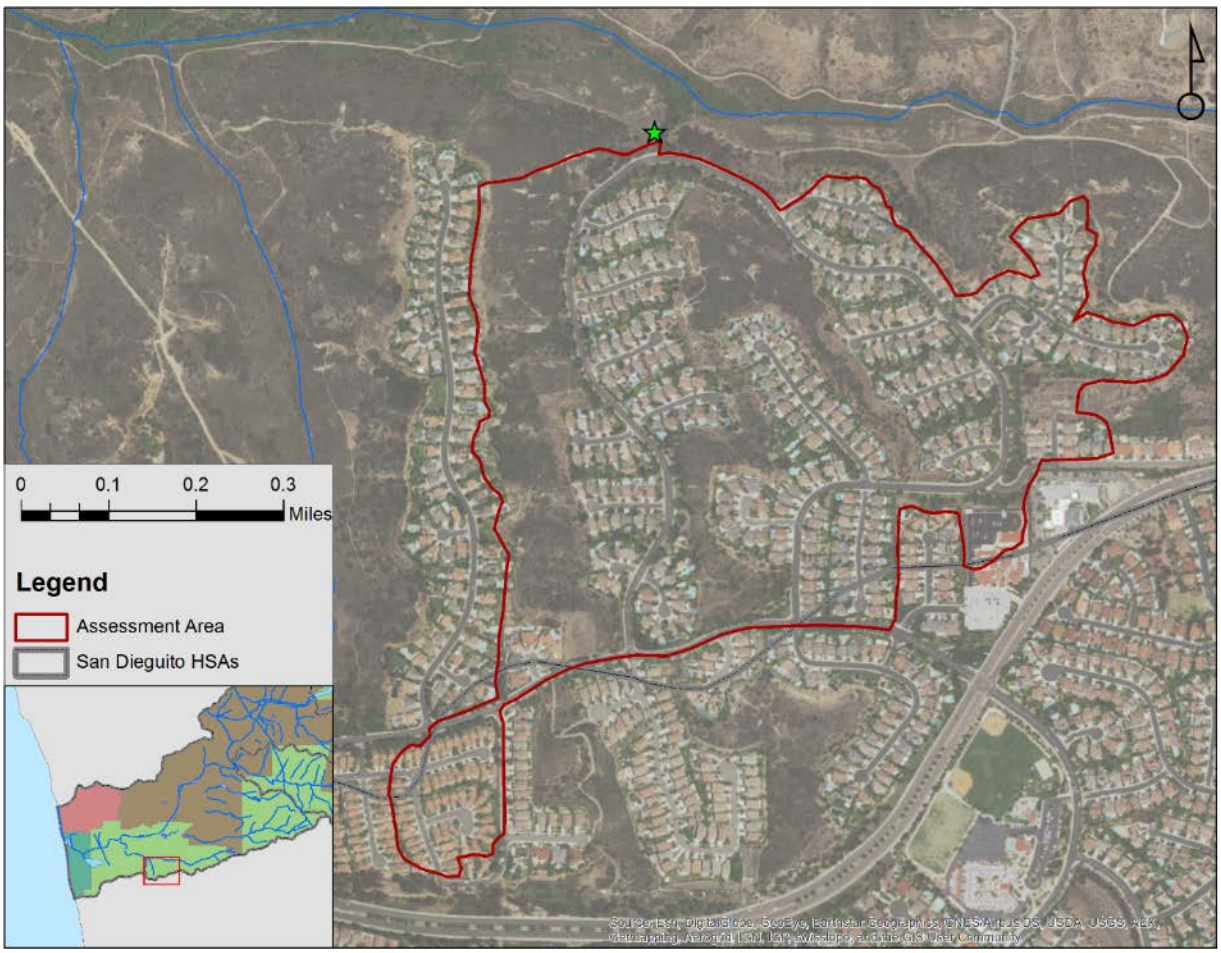

Figure 2. Focus area for the City of San Diego: Outfall DW-284

Table 2. Summary of Potential Bacteria Source Characteristics within DW-284

Source	Human Health Risk	Magnitude	Transport Feasibility	Frequency	Controllable?
Residential	Med	Med/High	Irrigation	48% (75 ac)	Yes
Sanitary Sewer Infrastructure	High	High	Low (PVC)	3 miles (100% PVC)	Yes
Roads/Streets/Parking	Med	Med	Irrigation	16% (26 ac)	Yes
Mobile Landscaping	Med	Med	Irrigation Washing	Residential/ Commercial	Yes
Wildlife	Low/Med	Med	None	Open space (34%, 53 ac)	No
Bacteria Regrowth/Biofilms	Low	Med	Irrigation	3.5 mi MS4 mostly RCP	Yes

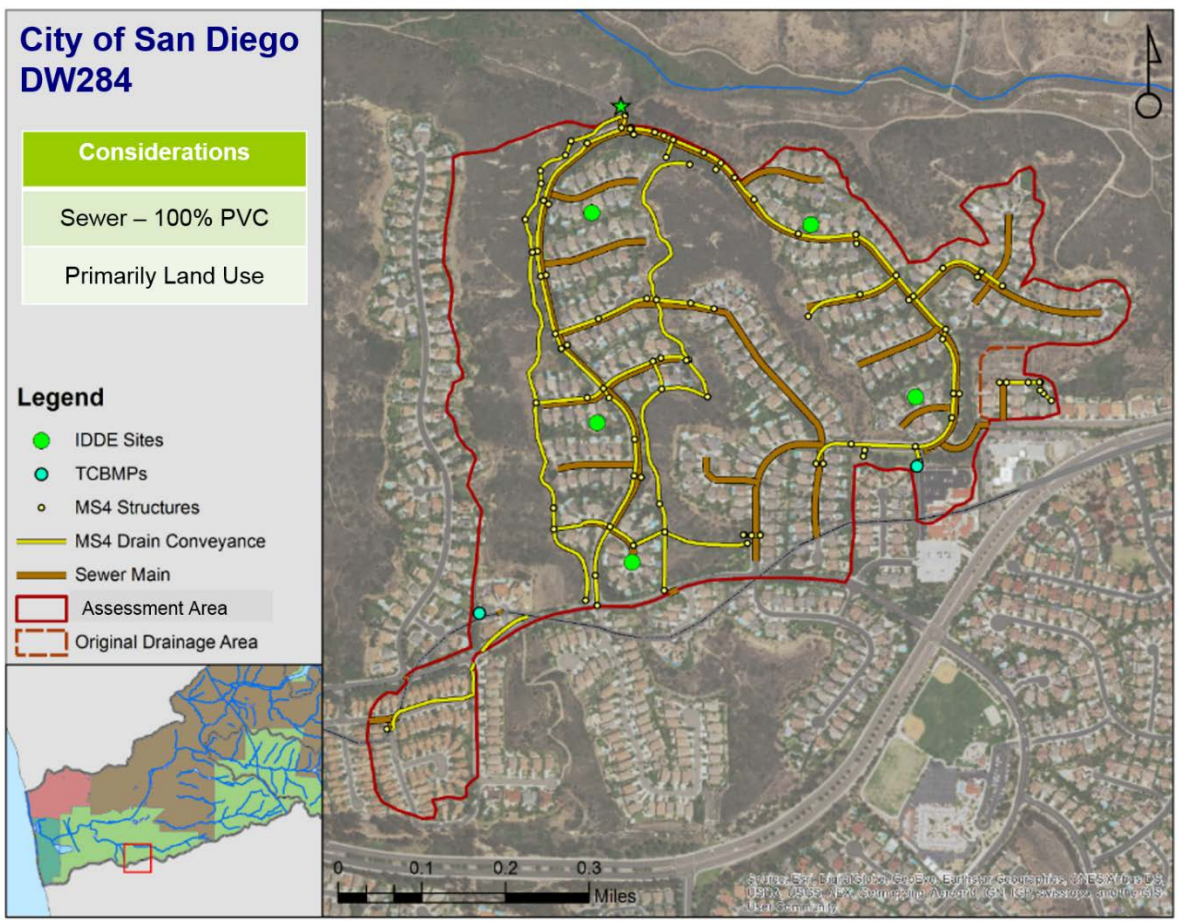

Figure 3. MS4 and Sanitary Sewer Infrastructure within the City of City of San Diego Focus Area: Outfall DW-284

The potential bacteria sources within the City of San Diego's focus area include of a mixture of anthropogenic non-human, as well as human waste bacteria origins. A summary of the top ten sources is presented in **Table 3** and the full list of prioritized sources is located in **Table 4**.

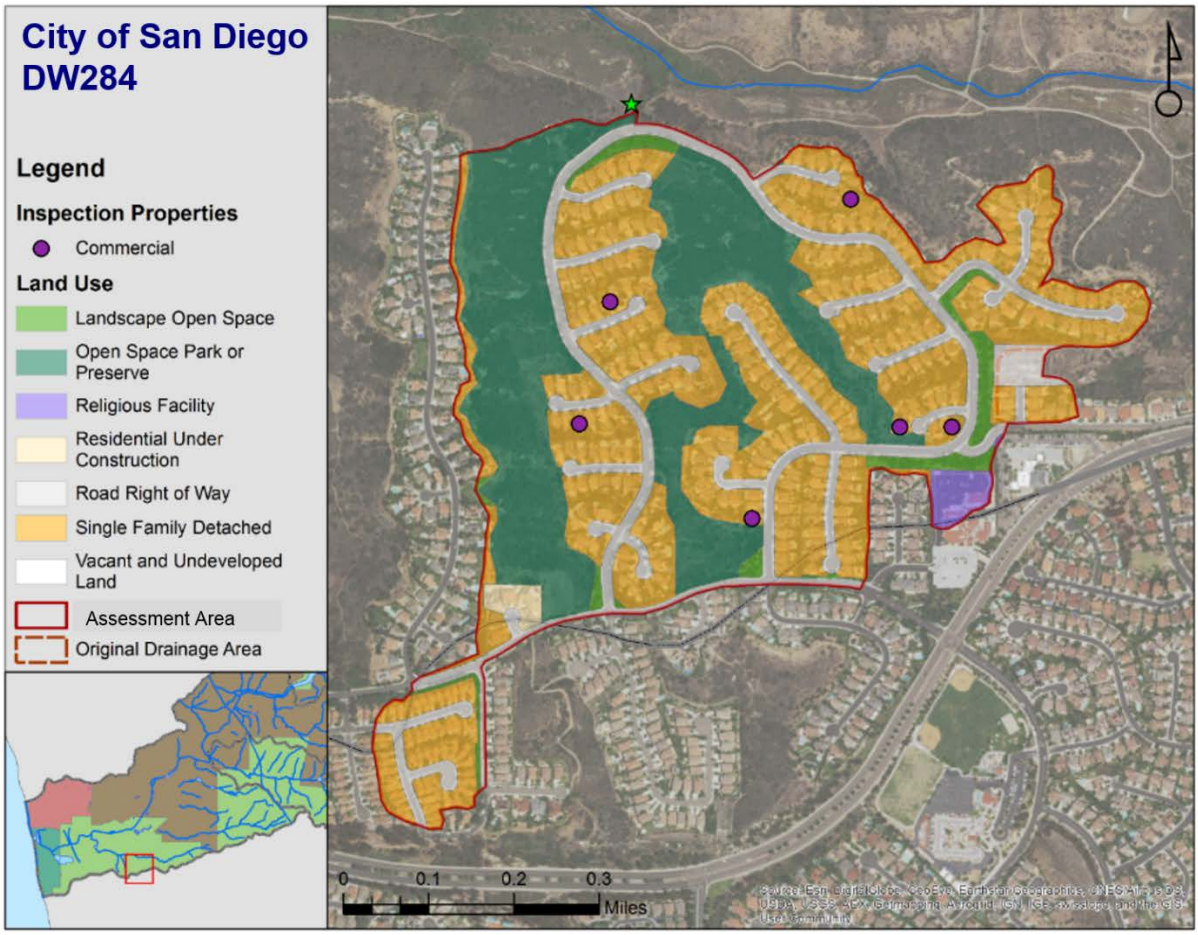

Figure 4. Land Use and Businesses within the City of City of San Diego Focus Area: Outfall DW-284

Table 3. Top Ten Potential Bacteria Sources within City of San Diego Focus Area: DW-284

Condition	Category	Source	Subcategory	Rank
Dry	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	4
	Human Waste	Illicit Connections	Other Wastewater	5
	Human Waste	RVs (mobile)	Mobile Sources	6
	Human Waste	Illegal Discharges	Other Wastewater	7
	Human Waste	Porta-Potties	Other Wastewater	8
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	9
	Human Waste	Homeless Encampments	Mobile Sources	10
Wet	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	4
	Human Waste	RVs (mobile)	Mobile Sources	5
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	6
	Human Waste	Illicit Connections	Other Wastewater	7
	Human Waste	Trash cans	Sources related to Garbage	8
	Human Waste	Homeless Encampments	Mobile Sources	9
	Human Waste	Porta-Potties	Other Wastewater	10

Table 4. Prioritization Rankings of Potential Bacteria Sources within DW-284

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
HUMAN WASTE			HUMAN WASTE		
1	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	1	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure
2	Sanitary Sewer Overflows	Sewage Infrastructure	2	Sanitary Sewer Overflows	Sewage Infrastructure
3	Illicit Connections	Other Wastewater	3	RVs (mobile)	Mobile Sources
4	RVs (mobile)	Mobile Sources	4	Illicit Connections	Other Wastewater
5	Illegal Discharges	Other Wastewater	5	Trash cans	Sources related to Garbage
6	Porta-Potties	Other Wastewater	6	Homeless Encampments	Mobile Sources
7	Homeless Encampments	Mobile Sources	7	Porta-Potties	Other Wastewater
8	Trash cans	Sources related to Garbage	8	Garbage trucks	Sources related to Garbage
9	Pools	Non-stormwater Discharges	9	Dumpsters	Sources related to Garbage
10	Garbage trucks	Sources related to Garbage	10	Illegal Discharges	Other Wastewater
11	Dumpsters	Sources related to Garbage	11	Pools	Non-stormwater Discharges
12	Hot Tubs	Non-stormwater Discharges	12	Illegal Dumping	Sources related to Garbage
13	Illegal Dumping	Sources related to Garbage	13	Hot Tubs	Non-stormwater Discharges
ANTHROPOGENIC NON-HUMAN			ANTHROPOGENIC NON-HUMAN		
1	Pets	Domestic Animals	1	Pets	Domestic Animals
2	Manure/Compost	Landscaping	2	Manure/Compost	Landscaping
3	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	3	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth
4	Vectors	Solid/Liquid Waste	4	Trash Cans	Solid/Liquid Waste
5	Washwater	Solid/Liquid Waste	5	Garbage Trucks	Solid/Liquid Waste
6	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	6	Dumpsters	Solid/Liquid Waste
7	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	7	Washwater	Solid/Liquid Waste
8	Trash Cans	Solid/Liquid Waste	8	Vectors	Solid/Liquid Waste
9	Garbage Trucks	Solid/Liquid Waste	9	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
10	Litter	Solid/Liquid Waste	10	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife
11	Dumpsters	Solid/Liquid Waste	11	Litter	Solid/Liquid Waste
12	Green Waste	Landscaping	12	Green Waste	Landscaping
13	Soil	Landscaping	13	Soil	Landscaping
NON-ANTHROPOGENIC			NON-ANTHROPOGENIC		
1	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1	Plants	Plants
2	Plants	Plants	2	Soil	Soil
3	Algae	Algae	3	Wildlife (Birds and Others)	Wildlife (Birds and Others)
4	Soil	Soil	4	Algae	Algae

* Ranks are shown within each category (Human, Anthropogenic Non-Human, Non-Anthropogenic)

County of San Diego

The County of San Diego's primary focus area featured the outfall site, SDG-210, shown in **Figure 5**. The total area assessed is 17 acres, and consists of 63% residential land uses, 18% open space, and 19% road infrastructure. The land uses are mainly single family residential with associated open space. One of the residential areas has an active homeowners association and the focus area borders a golf course. The potential bacteria sources in this focus area are associated with residential land uses, human activities, and any potential sources associated with open space and wildlife.

Figure 5. Focus area for the County of San Diego: Outfall SDG-210

Although informative source information was available for this focus area, information regarding the sanitary sewer infrastructure was unavailable. A summary of available source data is provided in **Table 5**. The potential bacteria sources within the County of San Diego's focus area include of a mixture of anthropogenic non-human and human waste bacteria origins. A summary of the top ten sources is presented in **Table 6**, and the complete prioritization results are located in **Table 7**.

Table 5. Summary of Potential Bacteria Source Characteristics within SDG-210

Source	Human Health Risk	Magnitude	Transport Feasibility	Frequency	Controllable?
Residential	Med	Med/High	Irrigation	63% (11 ac)	Yes
Sanitary Sewer Infrastructure	High	High	Unknown	Unknown	Yes
Roads/Streets/Parking	Med	Med	Irrigation	19% (3 ac)	Yes
Mobile Landscaping	Med	Med	Irrigation Washing	Residential	Yes
Wildlife	Med/Low	Med	None	Open space (18%, 3 ac)	No
Bacteria Regrowth/Biofilms	Low	Med	Irrigation	0.25 mi	Yes

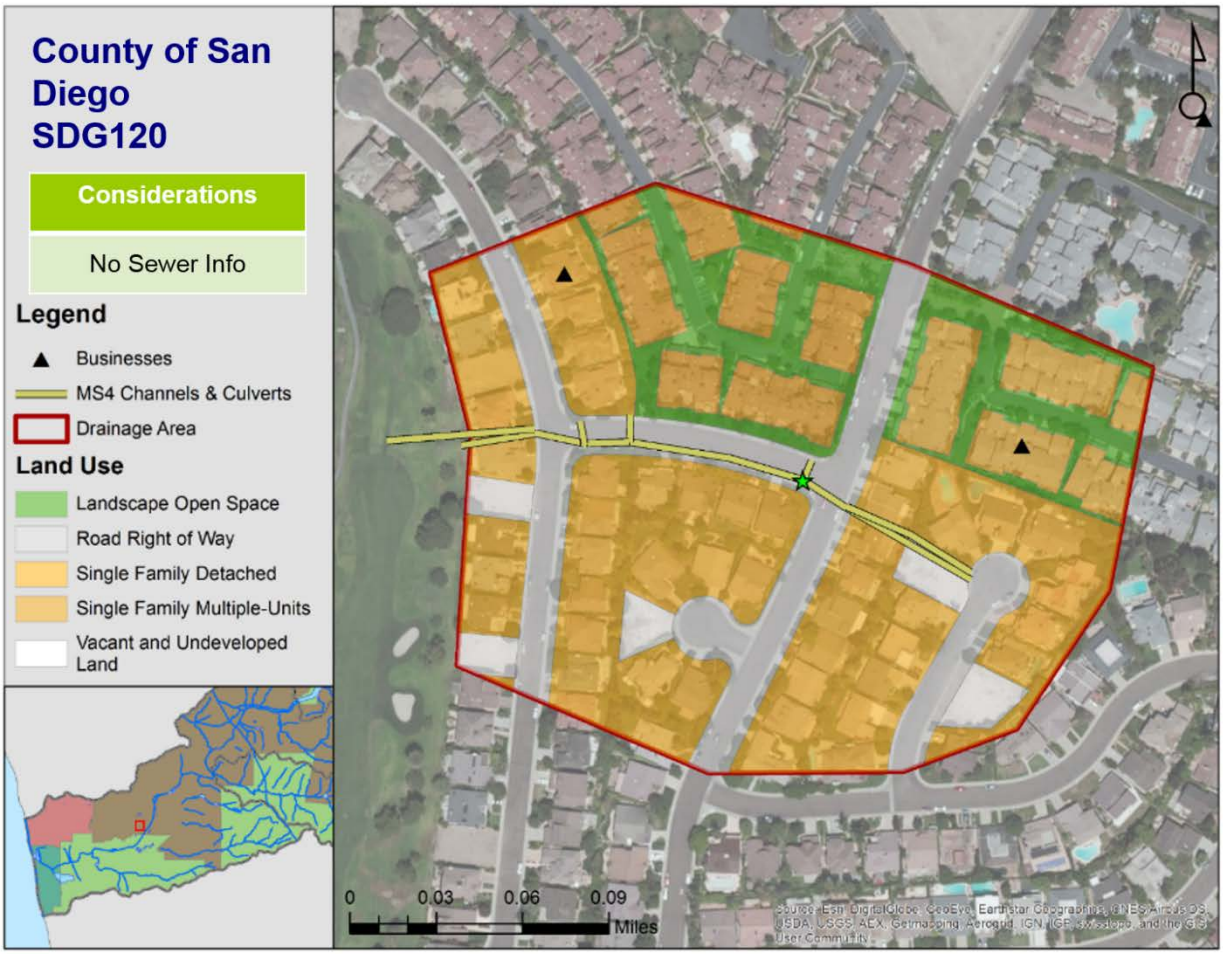

Figure 6. MS4 Infrastructure, Land Use, and Businesses in the County of San Diego's Focus Area: Outfall SDG-120

Table 6. Top Ten Potential Bacteria Sources within County of San Diego Focus Area: SDG-210

Condition	*Category*	*Source*	*Subcategory*	*Rank*
Dry	Human Waste	Illegal Discharges	Other Wastewater	1
	Human Waste	Porta-Potties	Other Wastewater	2
	Anthropogenic Non-Human	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	3
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	4
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	5
	Human Waste	Illicit Connections	Other Wastewater	6
	Human Waste	Trash cans	Sources related to Garbage	7
	Human Waste	Pools	Non-stormwater Discharges	8
	Anthropogenic Non-Human	Pets	Domestic Animals	9
	Anthropogenic Non-Human	Trash Cans	Solid/Liquid Waste	10
Wet	Human Waste	Illegal Discharges	Other Wastewater	1
	Human Waste	Illicit Connections	Other Wastewater	2
	Human Waste	Porta-Potties	Other Wastewater	3
	Human Waste	Dumpsters	Sources related to Garbage	4
	Anthropogenic Non-Human	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	5
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	6
	Anthropogenic Non-Human	Trash Cans	Solid/Liquid Waste	7
	Human Waste	Pools	Non-stormwater Discharges	8
	Anthropogenic Non-Human	Pets	Domestic Animals	9
	Anthropogenic Non-Human	Vectors	Solid/Liquid Waste	10

Table 7. Complete Prioritization Rankings of Potential Bacteria Sources within SDG-210

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
HUMAN WASTE			HUMAN WASTE		
1	Illegal Discharges	Other Wastewater	1	Illegal Discharges	Other Wastewater
2	Porta-Potties	Other Wastewater	2	Illicit Connections	Other Wastewater
3	Sanitary Sewer Overflows	Sewage Infrastructure	3	Porta-Potties	Other Wastewater
4	Illicit Connections	Other Wastewater	4	Sanitary Sewer Overflows	Sewage Infrastructure
5	Trash cans	Sources related to Garbage	5	Trash cans	Sources related to Garbage
6	Pools	Non-stormwater Discharges	6	Dumpsters	Sources related to Garbage
7	Dumpsters	Sources related to Garbage	7	Pools	Non-stormwater Discharges
8	Hot Tubs	Non-stormwater Discharges	8	Garbage trucks	Sources related to Garbage
9	Garbage trucks	Sources related to Garbage	9	Hot Tubs	Non-stormwater Discharges
10	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	10	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure
11	Illegal Dumping	Sources related to Garbage	11	Illegal Dumping	Sources related to Garbage
ANTHROPOGENIC NON-HUMAN			ANTHROPOGENIC NON-HUMAN		
1	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	1	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife
2	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	2	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife
3	Pets	Domestic Animals	3	Trash Cans	Solid/Liquid Waste
4	Trash Cans	Solid/Liquid Waste	4	Pets	Domestic Animals
5	Vectors	Solid/Liquid Waste	5	Vectors	Solid/Liquid Waste
6	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	6	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth
7	Dumpsters	Solid/Liquid Waste	7	Dumpsters	Solid/Liquid Waste
8	Garbage Trucks	Solid/Liquid Waste	8	Garbage Trucks	Solid/Liquid Waste
9	Litter	Solid/Liquid Waste	9	Litter	Solid/Liquid Waste
10	Manure/Compost	Landscaping	10	Manure/Compost	Landscaping

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
11	Green Waste	Landscaping	11	Green Waste	Landscaping
12	Soil	Landscaping	12	Soil	Landscaping
NON-ANTHROPOGENIC			NON-ANTHROPOGENIC		
1	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1	Wildlife (Birds and Others)	Wildlife (Birds and Others)
2	Plants	Plants	2	Plants	Plants
3	Algae	Algae	3	Algae	Algae
4	Soil	Soil	4	Soil	Soil

* Ranks are shown within each category (Human, Anthropogenic Non-Human, Non-Anthropogenic)

City of Escondido

The City of Escondido's primary focus area drains to the outfall site, HDG-102, shown in **Figure 7**. This outfall was previously identified by the City as an outfall of interest for additional investigation because it drains to the San Dieguito River. The total area is 188 acres and consists of 73% residential land uses, 5% open space, 1% commercial land uses, and 20% road infrastructure. Despite the fact that the focus area is comprised by a majority of residential land uses, the commercial inventory provided by the City shows a neighborhood shopping center with several food service establishments located in the southeast portion of the assessment area. There are a total of ten food service establishments within the assessment area. The potential bacteria sources within this focus area represent residential and commercial activities associated with human waste, existing infrastructure, and other anthropogenic and non-human sources of bacteria.

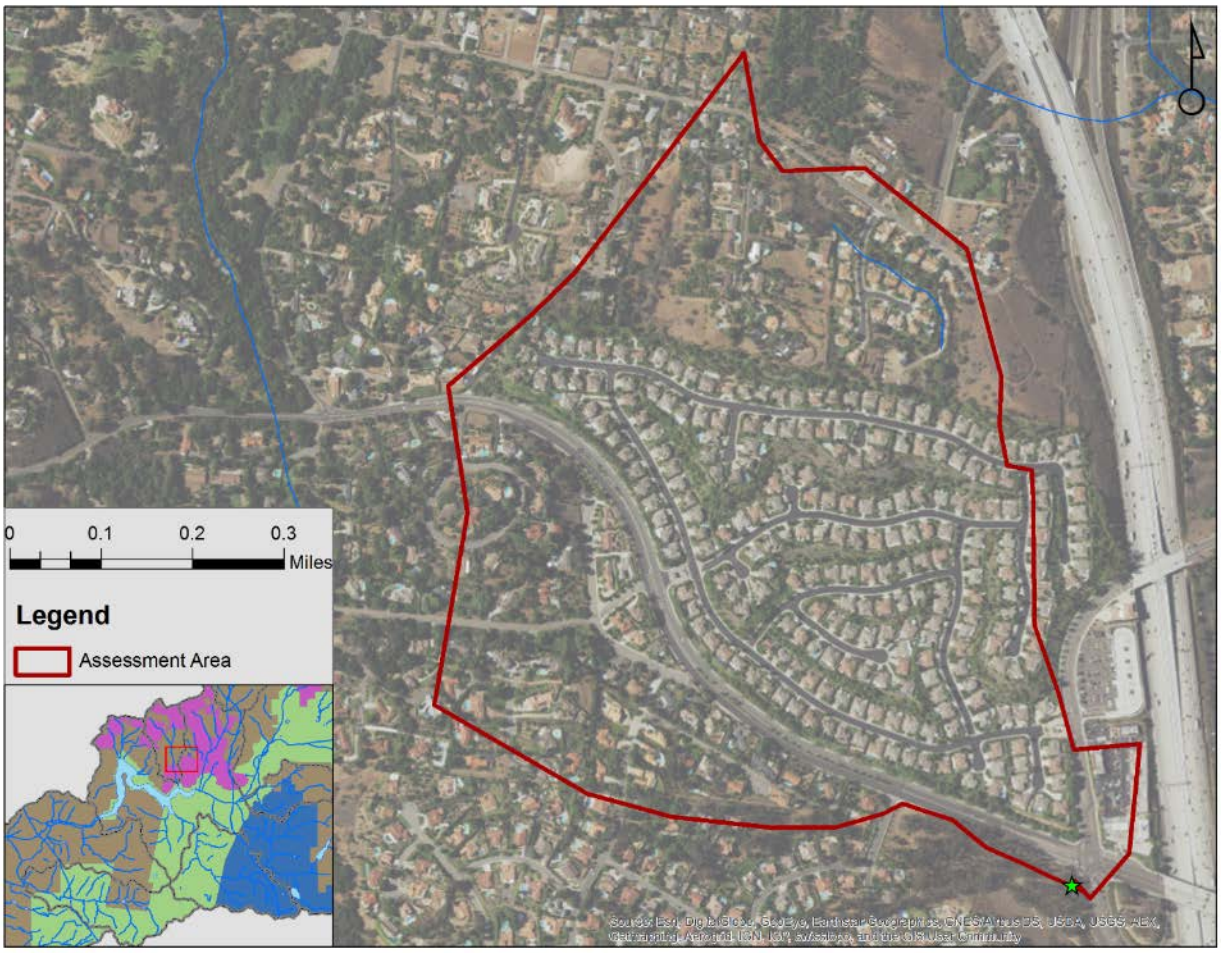

Figure 7. Focus Area for the City of Escondido: Outfall HDG-102

Table 8. Summary of Potential Bacteria Sources Characteristics within HDG-102

Source	Human Health Risk	Magnitude	Transport Feasibility	Frequency	Controllable?
Residential	Med	Med/High	Irrigation	73% (137 ac)	Yes
Sanitary Sewer Infrastructure	High	High	Low (PVC)	4.4 mi Mostly PVC	Yes
Septic Systems	High	High	Low	Some	Yes
Eating/Drinking Establishments	Med	Med/High	Irrigation Washing	10	Yes
Agriculture	Med	Med	Irrigation	0.06% (1 ac)	Yes
Roads/Streets/Parking	Med	Med	Irrigation	20% (38 ac)	Yes
Mobile Landscaping	Med	Med	Irrigation Washing	Residential/ Commercial	Yes
Wildlife (secondary)	Med	Med	Irrigation Washing	Commercial (1%, 2 ac)	Yes
Wildlife	Low/Med	Med	None	Open space (5%, 9 ac)	No
Bacteria Regrowth/Biofilms	Low	Med	Irrigation	2.7 mi of MS4 (RCP/CIPP)	Yes

The potential bacteria sources within the City of Escondido's focus area include a mixture of anthropogenic non-human and human waste bacteria origins. A summary of the top ten sources is presented in **Table 9**, and the complete prioritization results are located in **Table 10**.

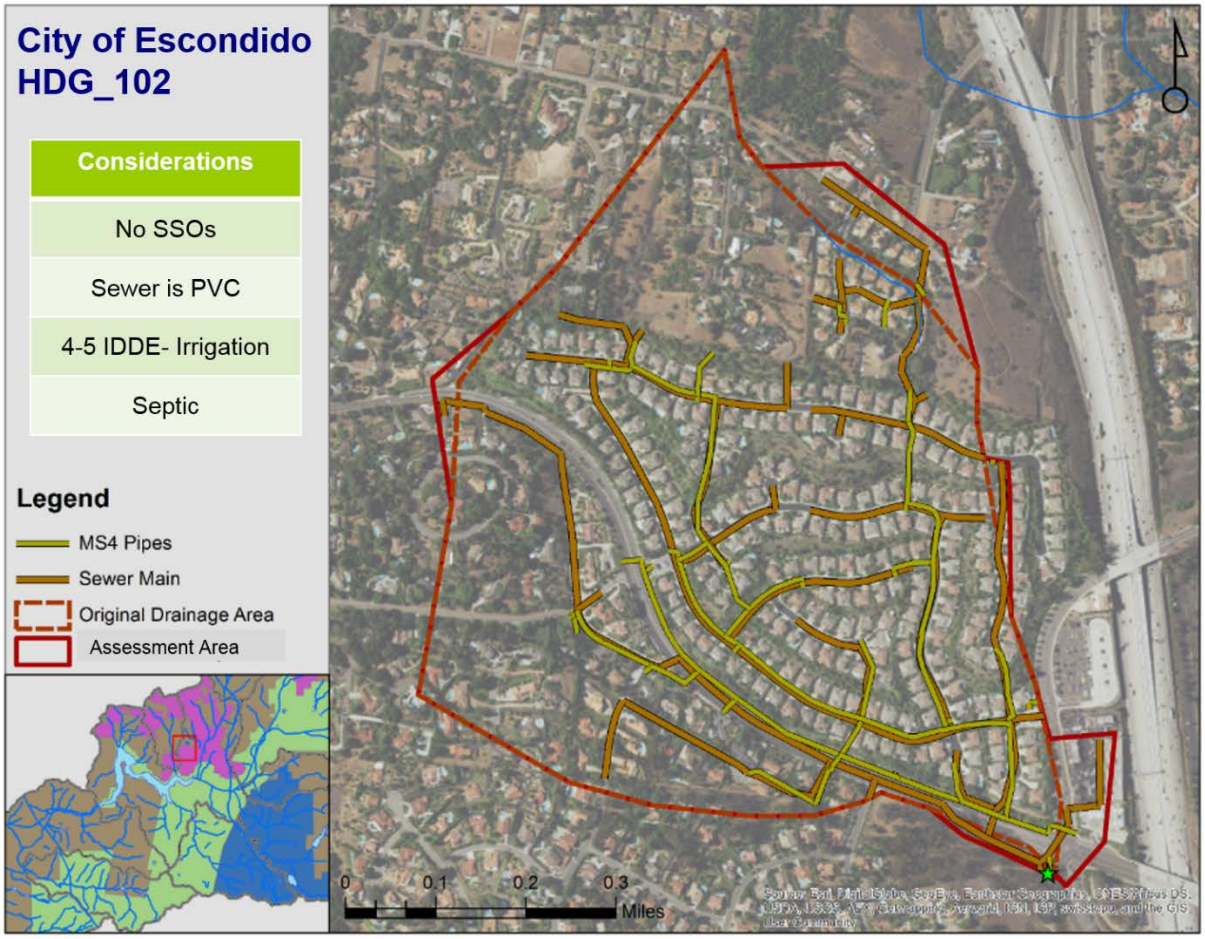

Figure 8. MS4 and Sanitary Sewer Infrastructure within the City of Escondido Focus Area: Outfall-HDG102

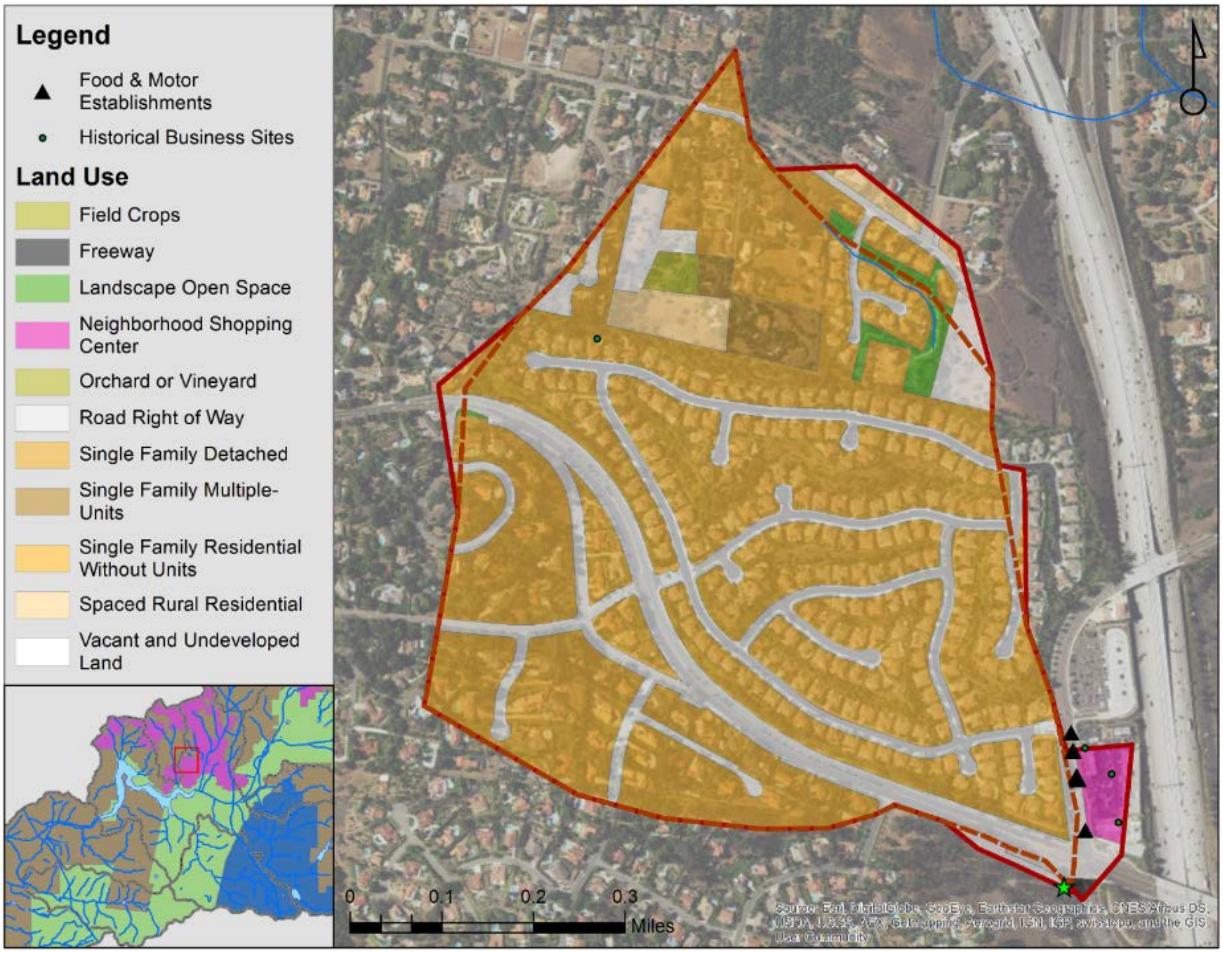

Figure 9. Land Use and Businesses within the City of Escondido Focus Area: Outfall HDG-102

Table 9. Top Ten Potential Bacteria Sources within City of Escondido Focus Area: HDG-102

Condition	*Category*	*Source*	*Subcategory*	*Rank*
Dry	Human Waste	Leaky Failing Septic Systems	Sewage Infrastructure	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Illegal Discharges	Other Wastewater	4
	Human Waste	Illicit Connections	Other Wastewater	4
	Human Waste	Porta-Potties	Other Wastewater	6
	Anthropogenic Non-Human	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	7
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	7
	Human Waste	RVs (mobile)	Mobile Sources	9
	Anthropogenic Non-Human	Vectors	Solid/Liquid Waste	9
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	9
Wet	Human Waste	Leaky Failing Septic Systems	Sewage Infrastructure	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Illegal Discharges	Other Wastewater	4
	Human Waste	Illicit Connections	Other Wastewater	4
	Human Waste	Porta-Potties	Other Wastewater	4
	Anthropogenic Non-Human	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	7
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	7
	Human Waste	RVs (mobile)	Mobile Sources	9
	Anthropogenic Non-Human	Washwater	Solid/Liquid Waste	9
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	9

Table 10. Complete Prioritization Rankings of Potential Bacteria Sources within HDG102

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank***	**Source**	**Subcategory**
HUMAN WASTE			HUMAN WASTE		
1	Leaky Failing Septic Systems	Sewage Infrastructure	1	Leaky Failing Septic Systems	Sewage Infrastructure
2	Sanitary Sewer Overflows	Sewage Infrastructure	2	Sanitary Sewer Overflows	Sewage Infrastructure
3	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure
4	Illegal Discharges	Other Wastewater	4	Illegal Discharges	Other Wastewater
5	Illicit Connections	Other Wastewater	5	Illicit Connections	Other Wastewater
6	Porta-Potties	Other Wastewater	6	Porta-Potties	Other Wastewater
7	RVs (mobile)	Mobile Sources	7	RVs (mobile)	Mobile Sources
8	Garbage trucks	Sources related to Garbage	8	Dumpsters	Sources related to Garbage
9	Dumpsters	Sources related to Garbage	9	Garbage trucks	Sources related to Garbage
10	Trash cans	Sources related to Garbage	10	Trash cans	Sources related to Garbage
11	Illegal Dumping	Sources related to Garbage	11	Illegal Dumping	Sources related to Garbage
12	Pools	Non-stormwater Discharges	12	Pools	Non-stormwater Discharges
13	Hot Tubs	Non-stormwater Discharges	13	Hot Tubs	Non-stormwater Discharges
ANTHROPOGENIC NON-HUMAN			ANTHROPOGENIC NON-HUMAN		
1	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	1	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife
2	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	2	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife
3	Vectors	Solid/Liquid Waste	3	Washwater	Solid/Liquid Waste
4	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	4	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth
5	Pets	Domestic Animals	5	Vectors	Solid/Liquid Waste
6	Washwater	Solid/Liquid Waste	6	Pets	Domestic Animals
7	Outdoor Dining/ Fast Food	Commercial/ Industrial	7	Outdoor Dining/ Fast Food	Commercial/ Industrial
8	Garbage Trucks	Solid/Liquid Waste	8	Garbage Trucks	Solid/Liquid Waste
9	Trash Cans	Solid/Liquid Waste	9	Litter	Solid/Liquid Waste
10	Grease Bins	Solid/Liquid Waste	10	Grease Bins	Solid/Liquid Waste

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank***	**Source**	**Subcategory**
11	Litter	Solid/Liquid Waste	11	Trash Cans	Solid/Liquid Waste
12	Dumpsters	Solid/Liquid Waste	12	Dumpsters	Solid/Liquid Waste
13	Manure/Compost	Landscaping	13	Manure/Compost	Landscaping
14	Green Waste	Landscaping	14	Soil	Landscaping
15	Soil	Landscaping	15	Green Waste	Landscaping
NON-ANTHROPOGENIC			NON-ANTHROPOGENIC		
1	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1	Soil	Soil
2	Plants	Plants	2	Wildlife (Birds and Others)	Wildlife (Birds and Others)
3	Algae	Algae	3	Plants	Plants
4	Soil	Soil	4	Algae	Algae

* Ranks are shown within each category (Human, Anthropogenic Non-Human, Non-Anthropogenic)

City of Poway

The City of Poway's primary focus area drains to the outfall site: POW132, illustrated in **Figure 10**. The total area is 723 acres, and consists of 74% residential land uses, 9% open space, 7% public land, and 1% crops, and 9% road infrastructure. As a result, the City of Poway's focus area is over 80% single family residential and open space land uses. The focus area includes a high school and a few in-home businesses. The bacteria source priorities are mainly associated with wild life (both non-anthropogenic and anthropogenic). Other potential sources include leaky infrastructure, sources related to garbage, and other waste water sources.

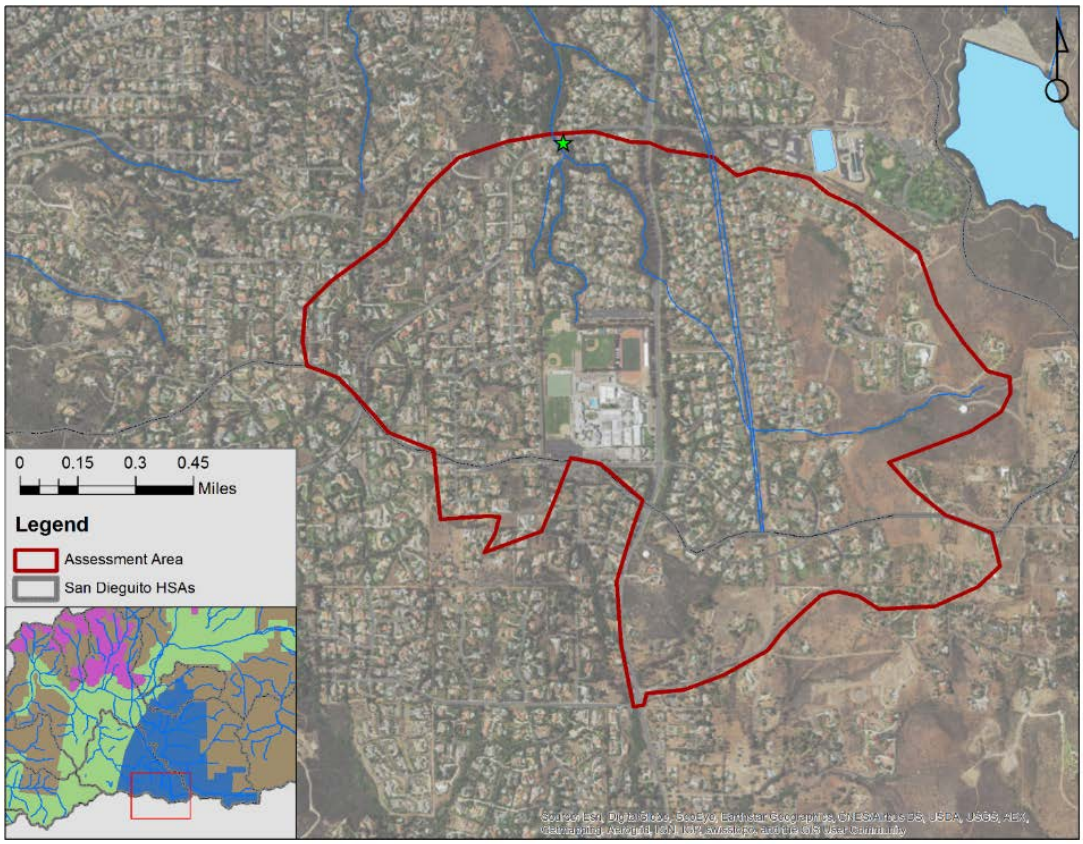

Figure 10. Focus Area for the City of Poway: Outfall POW-132

Table 11. Summary of Potential Bacteria Source Characteristics within the Focus Area POW-132

Source	Human Health Risk	Magnitude	Transport Feasibility	Frequency	Controllable?
Residential	Med	Med/High	Irrigation	74% (533 ac)	Yes
Sanitary Sewer Overflows	High	High	Overflow volume	1 SSO 1 PLSD	Yes
Sanitary Sewer Infrastructure	High	High	25% VCP	8.4 mi 25% VCP 75% PVC	Yes
Roads/Streets/Parking	Med	Med	Irrigation	8% (61 ac)	Yes
Mobile Landscaping	Med	Med	Irrigation Washing	Residential	Yes
Wildlife	Low/Med	Med	None	Open space (9%, 67 ac)	No
Bacteria Regrowth/Biofilms	Low	Med	Irrigation	3.5 mi MS4 2 mi open channel	Yes

The potential bacteria sources within the City of Poway's focus area include of a mixture of non-anthropogenic, anthropogenic non-human, and human waste bacteria origins. A summary of the top ten sources is presented in **Table 12**, and the complete prioritization results are located in **Table 13**.

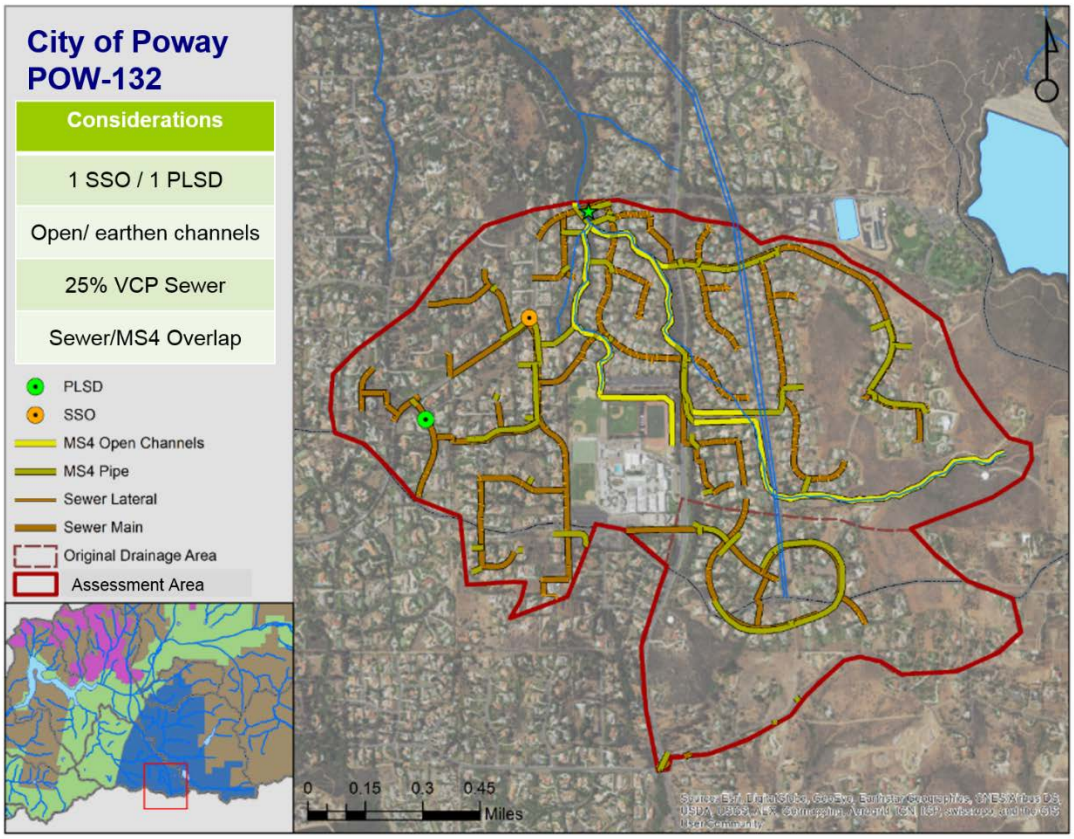

Figure 11. MS4 and Sanitary Sewer Infrastructure within the City of Poway Focus Area: Outfall POW-132

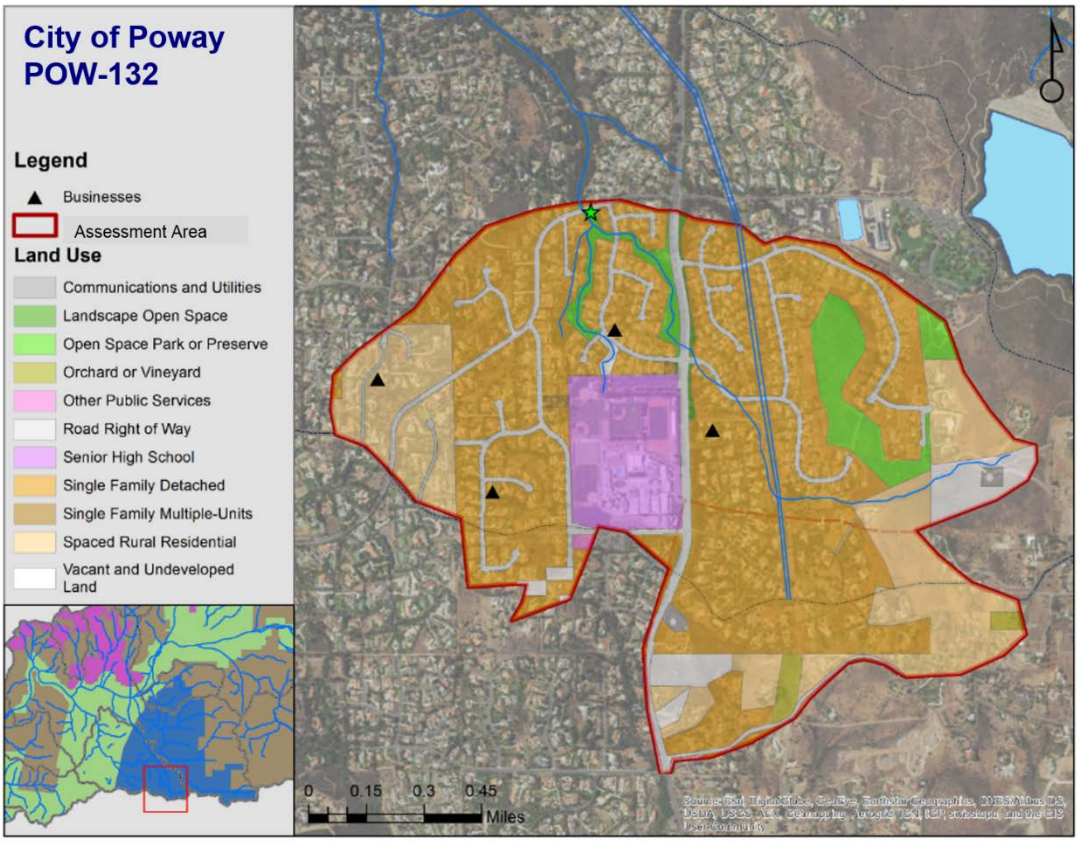

Figure 12. Land Use and Businesses within the City of Poway Focus Area: Outfall POW-132

Table 12. Top Ten Potential Bacteria Sources within City of Poway Focus Area: POW-132

Condition	*Category*	*Source*	*Subcategory*	*Rank*
Dry	Non-Anthropogenic	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	3
	Anthropogenic Non-Human	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	4
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	5
	Human Waste	Trash cans	Sources related to Garbage	6
	Human Waste	Illegal Discharges	Other Wastewater	7
	Anthropogenic Non-Human	Pets	Domestic Animals	8
	Anthropogenic Non-Human	Manure/Compost	Landscaping	9
	Non-Anthropogenic	Soil	Soil	10
Wet	Non-Anthropogenic	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Anthropogenic Non-Human	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	3
	Anthropogenic Non-Human	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	4
	Non-Anthropogenic	Soil	Soil	5
	Non-Anthropogenic	Plants	Plants	6
	Non-Anthropogenic	Algae	Algae	7
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	8
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	9
	Human Waste	Illegal Discharges	Other Wastewater	10

Table 13. Complete Prioritization Rankings of Potential Bacteria Sources within POW-132

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
HUMAN WASTE			HUMAN WASTE		
1	Sanitary Sewer Overflows	Sewage Infrastructure	1	Sanitary Sewer Overflows	Sewage Infrastructure
2	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	2	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure
3	Trash cans	Sources related to Garbage	3	Illegal Discharges	Other Wastewater
4	Illegal Discharges	Other Wastewater	4	Dumpsters	Sources related to Garbage
5	Dumpsters	Sources related to Garbage	5	Trash cans	Sources related to Garbage
6	Illicit Connections	Other Wastewater	6	Porta-Potties	Other Wastewater
7	Porta-Potties	Other Wastewater	7	RVs (mobile)	Mobile Sources
8	RVs (mobile)	Mobile Sources	8	Illicit Connections	Other Wastewater
9	Garbage trucks	Sources related to Garbage	9	Garbage trucks	Sources related to Garbage
10	Illegal Dumping	Sources related to Garbage	10	Homeless Encampments	Mobile Sources
11	Homeless Encampments	Mobile Sources	11	Illegal Dumping	Sources related to Garbage
12	Hot Tubs	Non-stormwater Discharges	12	Hot Tubs	Non-stormwater Discharges
13	Pools	Non-stormwater Discharges	13	Pools	Non-stormwater Discharges
ANTHROPOGENIC NON-HUMAN			ANTHROPOGENIC NON-HUMAN		
1	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	1	Manure/Compost	Landscaping
2	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	2	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife
3	Pets	Domestic Animals	3	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife
4	Manure/Compost	Landscaping	4	Dumpsters	Solid/Liquid Waste
5	Vectors	Solid/Liquid Waste	5	Pets	Domestic Animals
6	Garbage Trucks	Solid/Liquid Waste	6	Soil	Landscaping
7	Trash Cans	Solid/Liquid Waste	7	Trash Cans	Solid/Liquid Waste
8	Litter	Solid/Liquid Waste	8	Garbage Trucks	Solid/Liquid Waste

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
9	Dumpsters	Solid/Liquid Waste	9	Vectors	Solid/Liquid Waste
10	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	10	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth
11	Green Waste	Landscaping	11	Green Waste	Landscaping
12	Soil	Landscaping	12	Litter	Solid/Liquid Waste
NON-ANTHROPOGENIC			NON-ANTHROPOGENIC		
1	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1	Wildlife (Birds and Others)	Wildlife (Birds and Others)
2	Soil	Soil	2	Soil	Soil
3	Plants	Plants	3	Plants	Plants
4	Algae	Algae	4	Algae	Algae

* Ranks are shown within each category (Human, Anthropogenic Non-Human, Non-Anthropogenic)

City of Solana Beach

The City of Solana Beach's primary focus area drains to the outfall site: SB12, illustrated in **Figure 13**. The total area is 74 acres, and consists of 72% residential land uses, 7% open space, 1% institutional land use and 20% road infrastructure. In addition, the majority of the residential parcels contain multi-family residential units. While commercial businesses are rare within the boundaries of the focus area, multi-family residential units contain similar features that are commonly associated with business activities, such as large dumpsters. The potential bacteria sources within this focus area represent both residential and commercial activities associated with human waste, as well as some infrastructure. This focus area was previously identified as an area of interest for the City of Solana Beach.

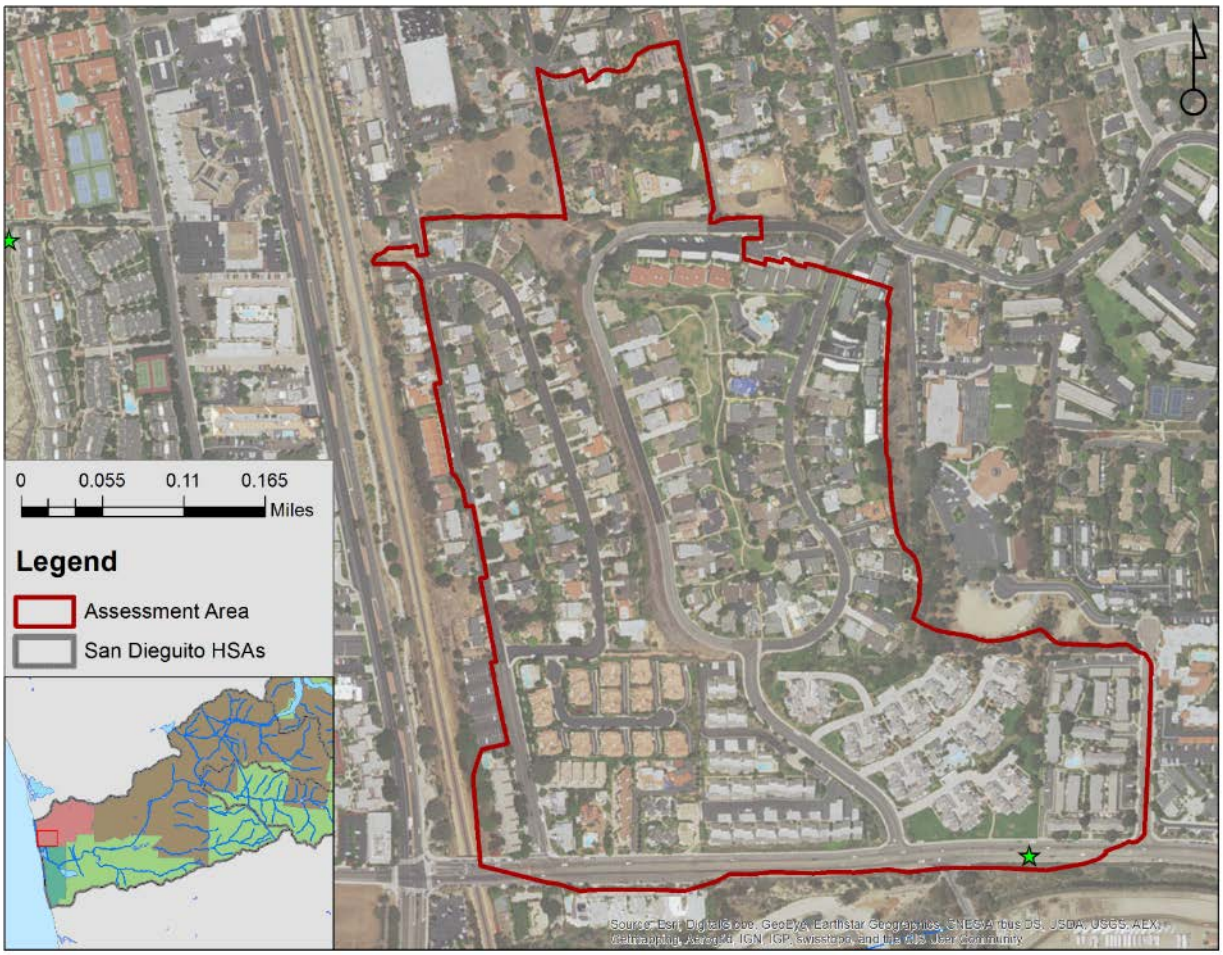

Figure 13. Focus area for the City of Solana Beach at Outfall SB-12

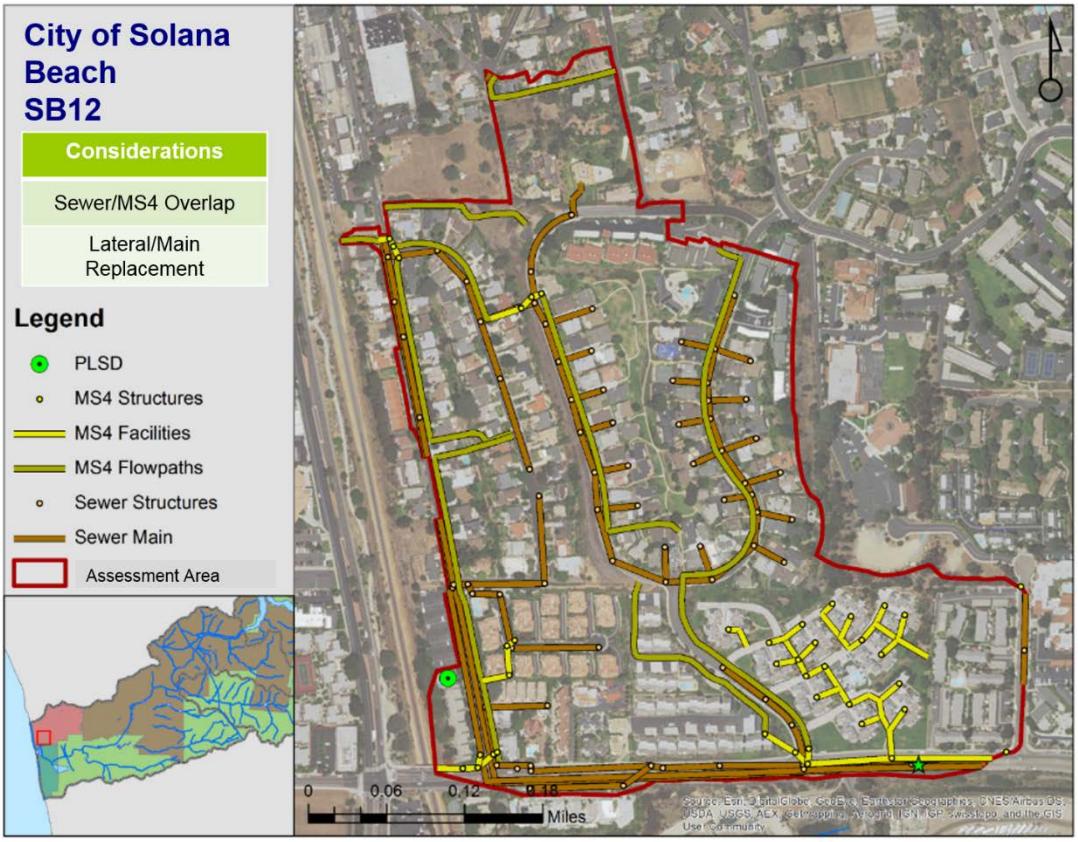

Figure 14. MS4 and Sanitary Sewer Infrastructure within the City of Solana Beach Focus Area: Outfall SB-12

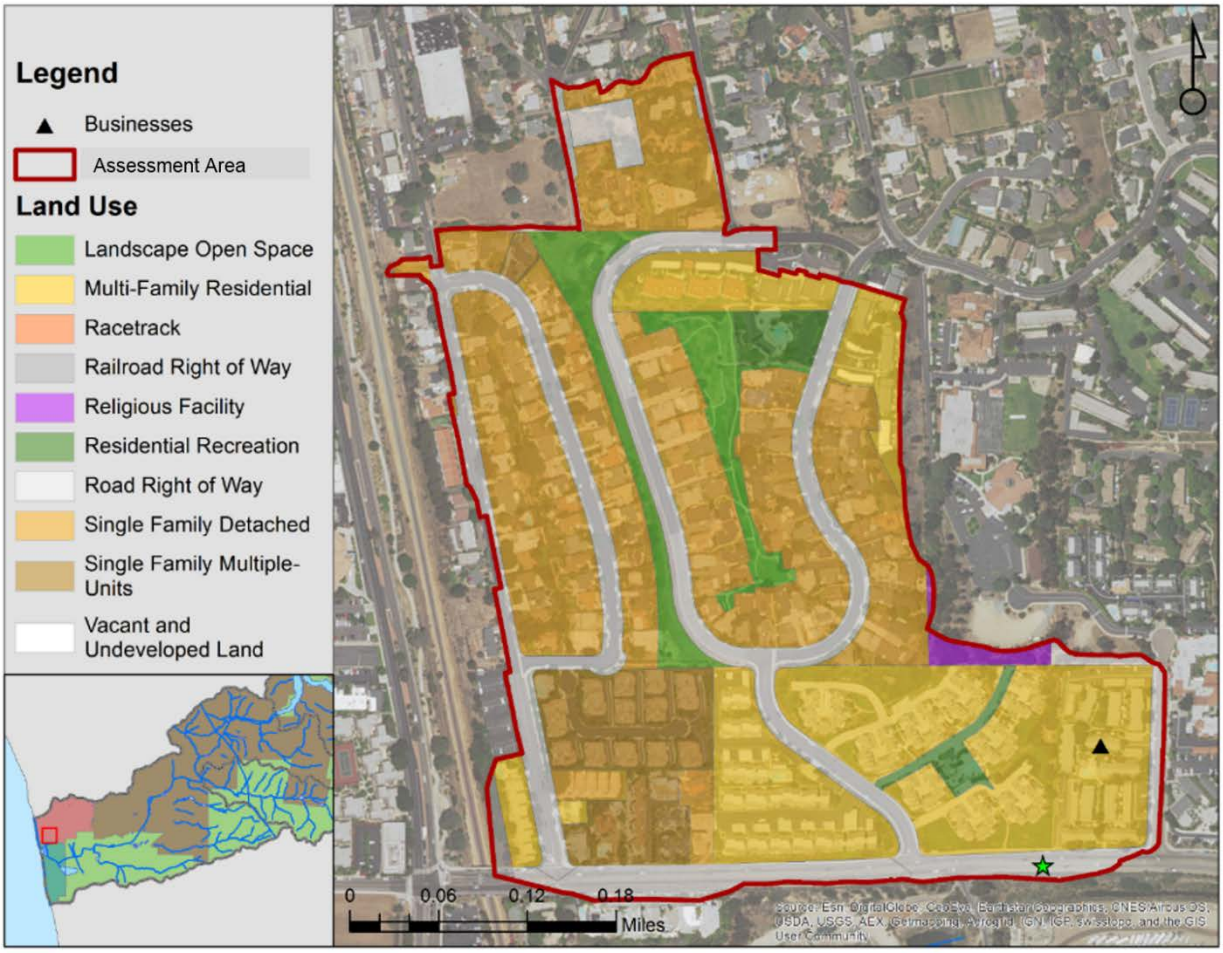

Figure 15. Land Use and Businesses within the City of Solana Beach Focus Area: Outfall SB-12

Table 14. Summary of Potential Bacteria Source Characteristics within SB-12

Source	Human Health Risk	Magnitude	Transport Feasibility	Frequency	Controllable?
Residential	Med	Med/High	Irrigation	70% (52 ac)	Yes
Sanitary Sewer Overflows	High	High	Overflow volume	1 PLSD	Yes
Sanitary Sewer Infrastructure	High	High	High (condition assessment)	3.3 mi	Yes
Roads/Streets/Parking	Med	Med	Irrigation	19% (14 ac)	Yes
Mobile Landscaping	Med	Med	Irrigation Washing	Residential	Yes
Wildlife	Low/Med	Med	None	Open space (7%, 5 ac)	No
Bacteria Regrowth/Biofilms	Low	Med	Irrigation	2.2 mi MS4	Yes

The potential bacteria sources within the City of Solana Beach's focus area include of a mixture of anthropogenic non-human and human waste bacteria origins. A summary of the top ten sources is presented in **Table 15** and the complete prioritization results are located in **Table 16**.

Table 15. Top Ten Potential Bacteria Sources within City of Solana Beach Focus Area: SB-12

Condition	*Category*	*Source*	*Subcategory*	*Rank*
Dry	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Illegal Discharges	Other Wastewater	4
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	5
	Human Waste	Porta-Potties	Other Wastewater	6
	Human Waste	RVs (mobile)	Mobile Sources	7
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	8
	Human Waste	Illicit Connections	Other Wastewater	9
	Anthropogenic Non-Human	Litter	Solid/Liquid Waste	10
Wet	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Illegal Discharges	Other Wastewater	4
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	5
	Human Waste	Porta-Potties	Other Wastewater	6
	Human Waste	RVs (mobile)	Mobile Sources	7
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	8
	Human Waste	Illicit Connections	Other Wastewater	9
	Anthropogenic Non-Human	Litter	Solid/Liquid Waste	10

Table 16. Complete Prioritization Rankings of Potential Bacteria Sources within SB-12

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
HUMAN WASTE			**HUMAN WASTE**		
1	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	1	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure
2	Illegal Discharges	Other Wastewater	2	Illegal Discharges	Other Wastewater
3	Sanitary Sewer Overflows	Sewage Infrastructure	3	Sanitary Sewer Overflows	Sewage Infrastructure
4	Porta-Potties	Other Wastewater	4	Porta-Potties	Other Wastewater
5	RVs (mobile)	Mobile Sources	5	RVs (mobile)	Mobile Sources
6	Illicit Connections	Other Wastewater	6	Illicit Connections	Other Wastewater
7	Dumpsters	Sources related to Garbage	7	Dumpsters	Sources related to Garbage
8	Trash cans	Sources related to Garbage	8	Trash cans	Sources related to Garbage
9	Garbage trucks	Sources related to Garbage	9	Garbage trucks	Sources related to Garbage
10	Illegal Dumping	Sources related to Garbage	10	Illegal Dumping	Sources related to Garbage
11	Pools	Non-stormwater Discharges	11	Pools	Non-stormwater Discharges
12	Hot Tubs	Non-stormwater Discharges	12	Hot Tubs	Non-stormwater Discharges
ANTHROPOGENIC NON-HUMAN			**ANTHROPOGENIC NON-HUMAN**		
1	Pets	Domestic Animals	1	Pets	Domestic Animals
2	Manure/Compost	Landscaping	2	Manure/Compost	Landscaping
3	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	3	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth
4	Litter	Solid/Liquid Waste	4	Litter	Solid/Liquid Waste
5	Dumpsters	Solid/Liquid Waste	5	Green Waste	Landscaping
6	Trash Cans	Solid/Liquid Waste	6	Dumpsters	Solid/Liquid Waste
7	Green Waste	Landscaping	7	Trash Cans	Solid/Liquid Waste
8	Garbage Trucks	Solid/Liquid Waste	8	Garbage Trucks	Solid/Liquid Waste
9	Vectors	Solid/Liquid Waste	9	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife
10	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	10	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife
11	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	11	Soil	Landscaping

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
12	Soil	Landscaping	12	Vectors	Solid/Liquid Waste
NON-ANTHROPOGENIC			**NON-ANTHROPOGENIC**		
1	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1	Wildlife (Birds and Others)	Wildlife (Birds and Others)
2	Plants	Plants	2	Plants	Plants
3	Algae	Algae	3	Algae	Algae
4	Soil	Soil	4	Soil	Soil

* Ranks are shown within each category (Human, Anthropogenic Non-Human, Non-Anthropogenic)

City of San Diego/City of Solana Beach – Shared Focus Area (DW-619)

The Cities of San Diego and Solana Beach assessed and prioritized bacteria sources within a focus area that drain through an outfall within the City of San Diego's jurisdiction but included areas draining the City of Solana Beach, shown in **Figure 16**. In this focus area, identified by outfall DW-619, the total area is 60.42 acres, with 17.91 acres within the City of San Diego and 42.51 acres within the City of Solana Beach. For the area within the City of San Diego, 46% of the land use consists of commercial parcels, while the remaining portion are comprised of mostly commercial land uses. In particular, the City's infrastructure drains a large neighborhood shopping center. The potential bacteria sources within this focus area represent these land uses and activities, including the potential for secondary wildlife associated with these activities.

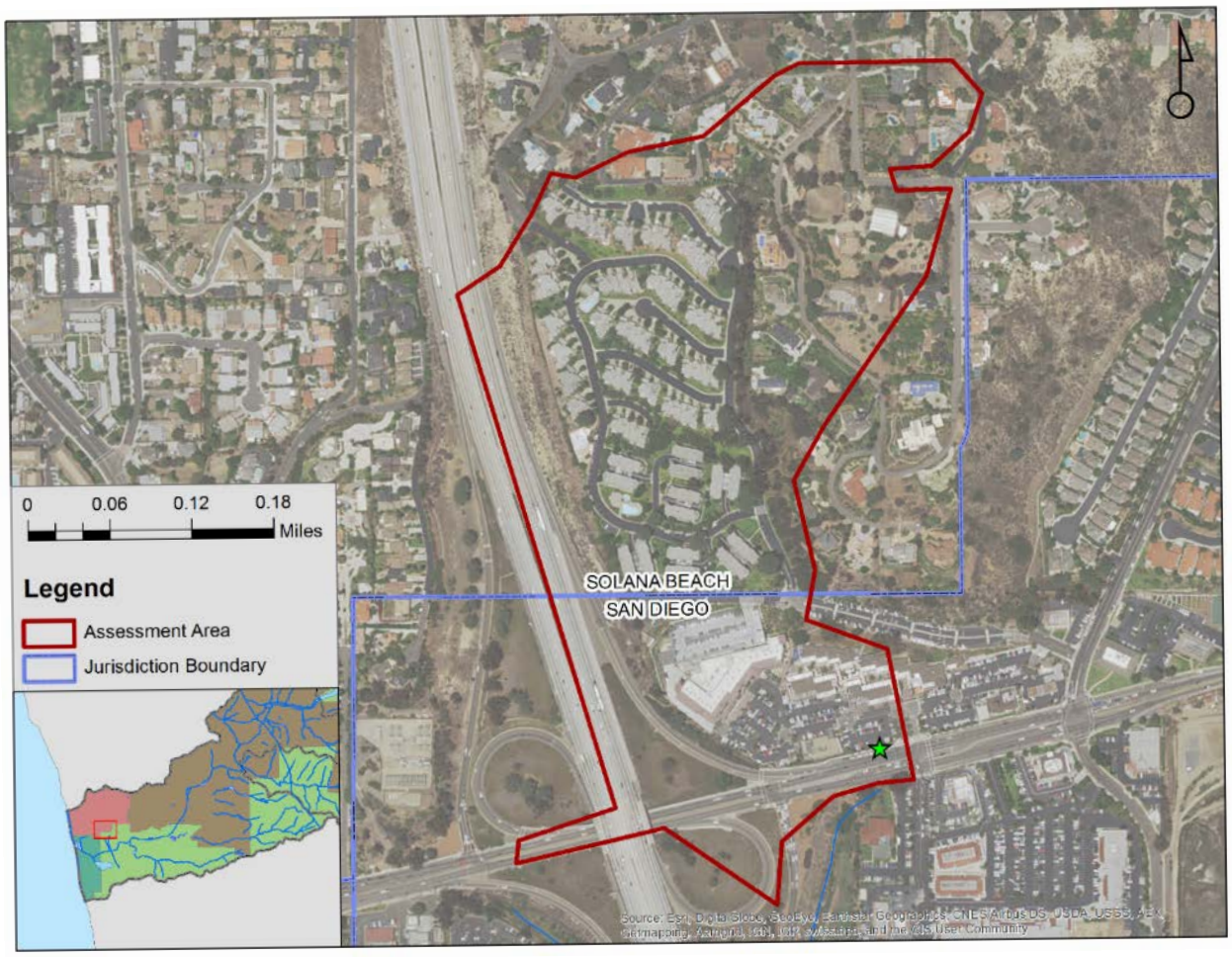

Figure 16. Shared Focus Area, Cities of Solana Beach and San Diego: Outfall DW-619

Table 17. Summary of Potential Bacteria Source Characteristics within the City of San Diego's portion of DW-619

Source	Human Health Risk	Magnitude	Transport Feasibility	Frequency	Controllable?
Residential	Med	Med/High	Irrigation	58% (35.36 acres)	Yes
Sanitary Sewer Infrastructure	High	High	Medium	0.10 mi (73%) VCP	Yes
Eating/Drinking Establishments	Med	Med/High	Irrigation Washing	10	Yes
Roads/Streets/Parking	Med	Med	Irrigation	28% (16.7 ac)	Yes
Mobile Landscaping	Med	Med	Irrigation Washing	Residential/ Commercial	Yes
Wildlife (secondary)	Med	Low/Med	Irrigation Washing	Commercial (14%, 8 ac)	Yes
Bacteria Regrowth/Biofilms	Low	Low	Irrigation	.20 mi of MS4 (RCP/CMP)	Yes

The potential bacteria sources within the City of San Diego's portion of the focus area include a mixture of human waste, and anthropogenic non-human bacteria origins. A summary of the top ten sources is presented in **Table 18**, and the complete prioritization results are located in **Table 19**.

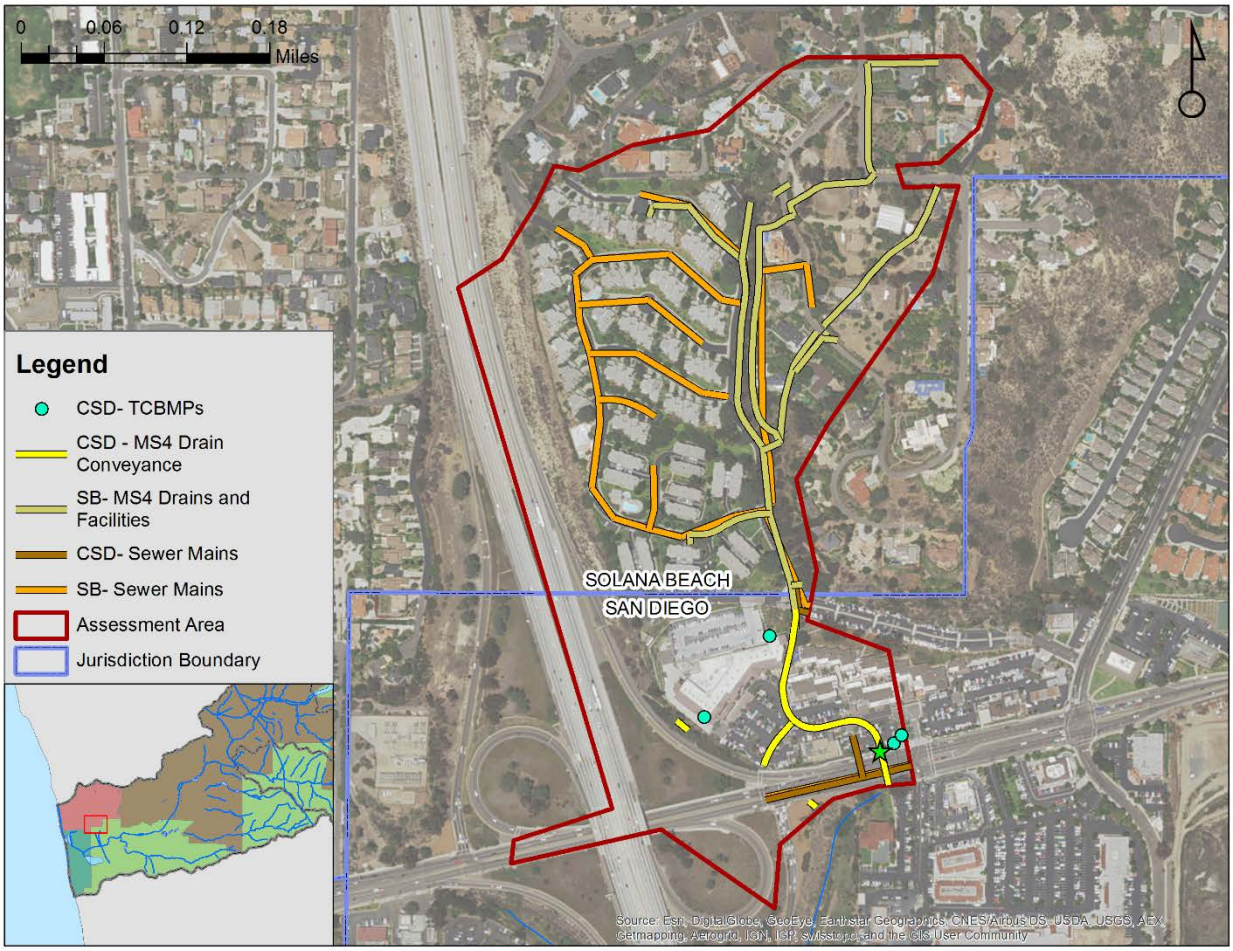

Figure 17. MS4 and Sewer System Infrastructure in the Shared Focus Area: Outfall DW-619

Table 18. Top Ten Potential Bacteria Sources within City of San Diego's Shared Focus Area with Solana Beach: Outfall DW-619

Condition	Category	Source	Subcategory	Rank
Dry	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Human Waste	Illicit Connections	Other Wastewater	3
	Anthropogenic Non-Human	Pets	Domestic Animals	4
	Anthropogenic Non-Human	Manure/Compost	Landscaping	5
	Human Waste	Illegal Discharges	Other Wastewater	6
	Anthropogenic Non-Human	Washwater	Solid/Liquid Waste	7
	Human Waste	RVs (mobile)	Mobile Sources	8
	Human Waste	Porta-Potties	Other Wastewater	9
	Human Waste	Dumpsters	Sources related to Garbage	10
Wet	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	1
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	2
	Anthropogenic Non-Human	Pets	Domestic Animals	3
	Anthropogenic Non-Human	Manure/Compost	Landscaping	4
	Human Waste	Illicit Connections	Other Wastewater	5
	Human Waste	Porta-Potties	Other Wastewater	6
	Human Waste	RVs (mobile)	Mobile Sources	7
	Human Waste	Dumpsters	Sources related to Garbage	8
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	9
	Anthropogenic Non-Human	Dumpsters	Solid/Liquid Waste	10

Table 19. Complete Prioritization Rankings of Potential Bacteria Sources within the City of San Diego's portion of DW-619

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
HUMAN WASTE			HUMAN WASTE		
1	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	1	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure
2	Sanitary Sewer Overflows	Sewage Infrastructure	2	Sanitary Sewer Overflows	Sewage Infrastructure
3	Illicit Connections	Other Wastewater	3	Illicit Connections	Other Wastewater
4	Illegal Discharges	Other Wastewater	4	Porta-Potties	Other Wastewater
5	RVs (mobile)	Mobile Sources	5	RVs (mobile)	Mobile Sources
6	Porta-Potties	Other Wastewater	6	Dumpsters	Sources related to Garbage
7	Dumpsters	Sources related to Garbage	7	Garbage trucks	Sources related to Garbage
8	Garbage trucks	Sources related to Garbage	8	Illegal Discharges	Other Wastewater
9	Trash cans	Sources related to Garbage	9	Trash cans	Sources related to Garbage
10	Illegal Dumping	Sources related to Garbage	10	Illegal Dumping	Sources related to Garbage
ANTHROPOGENIC NON-HUMAN			ANTHROPOGENIC NON-HUMAN		
1	Pets	Domestic Animals	1	Pets	Domestic Animals
2	Manure/Compost	Landscaping	2	Manure/Compost	Landscaping
3	Washwater	Solid/Liquid Waste	3	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth
4	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	4	Dumpsters	Solid/Liquid Waste
5	Dumpsters	Solid/Liquid Waste	5	Garbage Trucks	Solid/Liquid Waste
6	Litter	Solid/Liquid Waste	6	Washwater	Solid/Liquid Waste
7	Vectors	Solid/Liquid Waste	7	Litter	Solid/Liquid Waste
8	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	8	Vectors	Solid/Liquid Waste
9	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	9	Trash Cans	Solid/Liquid Waste
10	Garbage Trucks	Solid/Liquid Waste	10	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife
11	Grease Bins	Solid/Liquid Waste	11	Grease Bins	Solid/Liquid Waste
12	Trash Cans	Solid/Liquid Waste	12	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Wet Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
13	Outdoor Dining/ Fast Food	Commercial/ Industrial	13	Outdoor Dining/ Fast Food	Commercial/ Industrial
14	Green Waste	Landscaping	14	Green Waste	Landscaping
15	Soil	Landscaping	15	Soil	Landscaping
NON-ANTHROPOGENIC			NON-ANTHROPOGENIC		
1	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1	Wildlife (Birds and Others)	Wildlife (Birds and Others)
2	Plants	Plants	2	Plants	Plants
3	Algae	Algae	3	Algae	Algae
4	Soil	Soil	4	Soil	Soil

* Ranks are shown within each category (Human, Anthropogenic Non-Human, Non-Anthropogenic)

The land uses within the City of Solana Beach's jurisdiction are comprised of 83% multi-family and single-family residential homes. The remaining portion of land use consists of road infrastructure. The potential bacteria sources within this focus area represent the activities and sources more commonly associated with residential land use. These residential parcels were split between single family residential and multi-unit residential land uses.

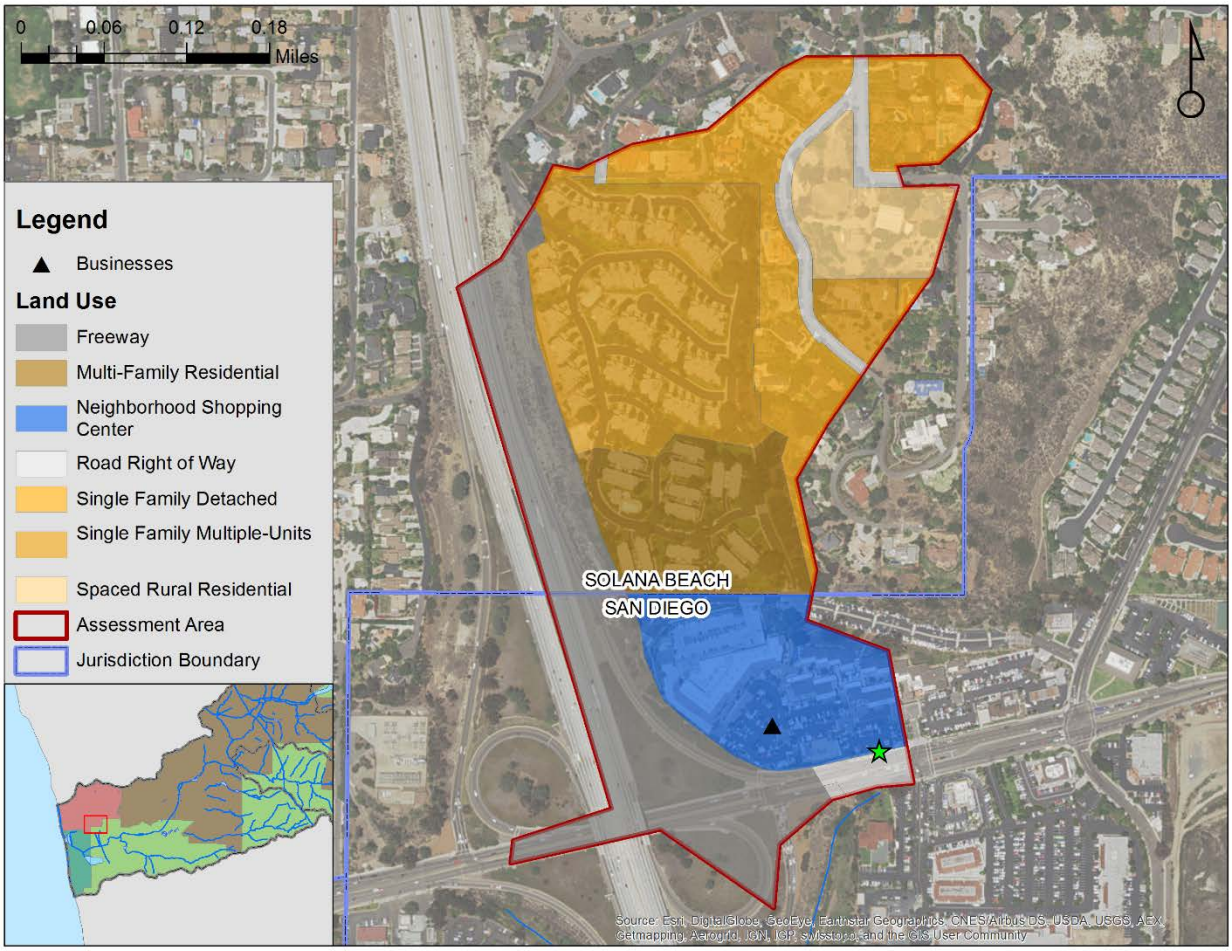

Figure 18. Land Use and Businesses in the City of Solana Beach's Portion of the Shared Focus Area: Outfall DW-619

Table 20. Summary of Potential Bacteria Source Characteristics for the City of Solana Beach's portion of DW-619

Source	Human Health Risk	Magnitude	Transport Feasibility	Frequency	Controllable?
Residential	Med	Med/High	Irrigation	58% (35.36 acres)	Yes
Sanitary Sewer Infrastructure	High	High	Medium	1.18 mi (100%) VCP	Yes
Roads/Streets/Parking	Med	Med	Irrigation	28% (16.7 ac)	Yes
Mobile Landscaping	Med	Med	Irrigation Washing	Residential/ Commercial	Yes
Bacteria Regrowth/Biofilms	Low	Low	Irrigation	1 mi of MS4 (RCP/CMP)	Yes

The potential bacteria sources within the City of Solana Beach's portion of the focus area include a mixture of human waste and anthropogenic non-human bacteria origins. A summary of the top ten sources is presented in **Table 21** and the complete prioritization results are located in **Table 22**.

Table 21. Top Ten Potential Bacteria Sources within City of Solana Beach's Portion of the Shared Focus Area: DW-619

Condition	*Category*	*Source*	*Subcategory*	*Rank*
Dry	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	4
	Human Waste	Illegal Discharges	Other Wastewater	5
	Human Waste	Porta-Potties	Other Wastewater	6
	Human Waste	RVs (mobile)	Mobile Sources	7
	Human Waste	Illicit Connections	Other Wastewater	8
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	9
	Anthropogenic Non-Human	Litter	Solid/Liquid Waste	10
Wet	Anthropogenic Non-Human	Pets	Domestic Animals	1
	Anthropogenic Non-Human	Manure/Compost	Landscaping	2
	Human Waste	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	3
	Human Waste	Sanitary Sewer Overflows	Sewage Infrastructure	4
	Human Waste	Porta-Potties	Other Wastewater	5
	Human Waste	Illegal Discharges	Other Wastewater	6
	Human Waste	RVs (mobile)	Mobile Sources	7
	Anthropogenic Non-Human	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	8
	Human Waste	Illicit Connections	Other Wastewater	9
	Anthropogenic Non-Human	Litter	Solid/Liquid Waste	10

Table 22. Complete Prioritization Rankings of Potential Bacteria Sources within City of Solana Beach's Portion of DW-619

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Dry Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
HUMAN WASTE			HUMAN WASTE		
1	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure	1	Leaky Sewer Pipes (Exfiltration)	Sewage Infrastructure
2	Sanitary Sewer Overflows	Sewage Infrastructure	2	Sanitary Sewer Overflows	Sewage Infrastructure
3	Illegal Discharges	Other Wastewater	3	Porta-Potties	Other Wastewater
4	Porta-Potties	Other Wastewater	4	Illegal Discharges	Other Wastewater
5	RVs (mobile)	Mobile Sources	5	RVs (mobile)	Mobile Sources
6	Illicit Connections	Other Wastewater	6	Illicit Connections	Other Wastewater
7	Dumpsters	Sources related to Garbage	7	Dumpsters	Sources related to Garbage
8	Garbage trucks	Sources related to Garbage	8	Garbage trucks	Sources related to Garbage
9	Trash cans	Sources related to Garbage	9	Trash cans	Sources related to Garbage
10	Illegal Dumping	Sources related to Garbage	10	Illegal Dumping	Sources related to Garbage
11	Pools	Non-stormwater Discharges	11	Pools	Non-stormwater Discharges
12	Hot Tubs	Non-stormwater Discharges	12	Hot Tubs	Non-stormwater Discharges
ANTHROPOGENIC NON-HUMAN			ANTHROPOGENIC NON-HUMAN		
1	Pets	Domestic Animals	1	Pets	Domestic Animals
2	Manure/Compost	Landscaping	2	Manure/Compost	Landscaping
3	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth	3	MS4 Infrastructure - Biofilm/Regrowth	MS4 Infrastructure - Biofilm/Regrowth
4	Litter	Solid/Liquid Waste	4	Litter	Solid/Liquid Waste
5	Green Waste	Landscaping	5	Green Waste	Landscaping
6	Dumpsters	Solid/Liquid Waste	6	Dumpsters	Solid/Liquid Waste
7	Trash Cans	Solid/Liquid Waste	7	Trash Cans	Solid/Liquid Waste
8	Garbage Trucks	Solid/Liquid Waste	8	Garbage Trucks	Solid/Liquid Waste
9	Vectors	Solid/Liquid Waste	9	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife
10	Rodents (Mice, Rats and Rabbits)	Secondary Wildlife	10	Soil	Landscaping
11	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife	11	Vectors	Solid/Liquid Waste

Rankings of Source Scores – Dry Weather			Rankings of Source Scores – Dry Weather		
Rank *	**Source**	**Subcategory**	**Rank ***	**Source**	**Subcategory**
12	Soil	Landscaping	12	Birds (Gulls, Pigeons, etc.)	Secondary Wildlife
NON-ANTHROPOGENIC			NON-ANTHROPOGENIC		
1	Wildlife (Birds and Others)	Wildlife (Birds and Others)	1	Wildlife (Birds and Others)	Wildlife (Birds and Others)
2	Plants	Plants	2	Plants	Plants
3	Algae	Algae	3	Algae	Algae
4	Soil	Soil	4	Soil	Soil

* Ranks are shown within each category (Human, Anthropogenic Non-Human, Non-Anthropogenic)

Attachment G –CEDEN Certification Statements

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The files listed in Table G-1 were uploaded to CEDEN. Confirmation emails are included on the following pages.

Table G-1
San Dieguito River WMA CEDEN Files and Upload Dates

Monitoring Program	Copermittee	Results Type	File Name(s)	CEDEN Project Name Field Name "ProjectCode"	CEDEN Upload Date	Confirmation Email Attached?
Wet Weather MS4 Outfall	Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach	Chemistry Results	SanDieguito_WW_MS4_2015-2016-CHEM1.xls SanDieguito_WW_MS4_2015-2016-CHEM2.xls	MS4_WW_OFM	Data provided to State Water Resources Control Board. Upload pending.	Confirmation to be provided to Regional Board in separate correspondence.
	County of San Diego	Chemistry Results	County_SDG_WW_MS4_2015-2016.xls	MS4_WW_OFM	1/27/2017	Yes
	Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach; County of San Diego	Bacteria Results	SanDieguito_LosPen_WW_2015-2016-BACT.xls	MS4_WW_OFM	1/27/2017	Yes
	Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach; County of San Diego	Field Results	MS4-SDR-2016-FIELD SMJ.xls	MS4_WW_OFM	1/25/2017	Yes
Dry Weather MS4 Outfall	City of Del Mar	Chemistry Results	SDG_DelMar_CEDEN_Chem_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	SDG_DelMar_CEDEN_Field_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
	City of Escondido	Chemistry Results	SDG_Escondido_CEDEN_Chem_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	SDG_Escondido_CEDEN_Field_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
	City of Poway	Chemistry Results	SDG_Poway_CEDEN_Chem_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	SDG_Poway_CEDEN_Field_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
	City of San Diego	Chemistry Results	SDG CEDEN CSD Chem DW Template.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	SDG CEDEN CSD Field DW Template.xls	MS4_DW_OFSM	1/25/2017	Yes
	City of Solana Beach	Chemistry Results	SDG_SolanaBeach_CEDEN_Chem_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	SDG_SolanaBeach_CEDEN_Field_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
	County of San Diego	Chemistry Results	SDG_CountySD_CEDEN_Chem_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
		Field Results	SDG_CountySD_CEDEN_Field_Final.xls	MS4_DW_OFSM	1/25/2017	Yes
Bacteria TMDL	Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach; County of San Diego	Chemistry Results	CEDEN EDD_2015-16_ChemResults_SanDieguito.xlsx	SanDieguito_BacteriaTMDL	1/9/2017	Yes
		Field Results	CEDEN EDD_2015-16_FieldResults_SanDieguito.xlsx	SanDieguito_BacteriaTMDL	1/9/2017	Yes

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Hysler, Kristina

From: Bennett, Jarma@Waterboards <Jarma.Bennett@waterboards.ca.gov>
Sent: Monday, January 30, 2017 11:33 AM
To: Mitchell, Roger@Waterboards; Arias, Christina@Waterboards
Cc: Arthur, Thomas M; Hysler, Kristina
Subject: WQIP Annual Report Data Submittal to CEDEN

Hello Roger and Christina,

As the Water Boards' program manager for the California Environmental Data Exchange Network (CEDEN), I'm been working with Amec Foster Wheeler on submitting WQIP Annual Report data to the CEDEN database. They have been able to successfully submit many files to CEDEN, however, there are 16 files, listed below, for which certificates of submittal cannot be obtained at this time due to new vocabulary values (requested by Amec Foster Wheeler) that are not yet fully incorporated into the CEDEN database. Adding new controlled vocabulary to CEDEN requires a number of steps and some of the values requested got hung-up because of issues within the CEDEN process. I have accepted these files outside of the data checker process and as soon as the vocabulary request is active, we will upload the files and deliver the certificates to the Regional Board.

The affected files are:
Tijuana River WMA
–TJ MS4_CSD_DW_ChemResults_2015-2016
–TJ MS4 WW1_ChemResults_2015-2016
–TJ MS4 WW2_ChemResults_2015-2016
–TJ MS4 WW3_ChemResults_2015-2016
–TJ MS4 WW4_ChemResults_2015-2016
–TJ MS4 WW5_ChemResults_2015-2016
–TJ MS4 WW6_ChemResults_2015-2016

San Diego Bay WMA
–ChollasTMDL_CEDEN EDD_Chem Results_2015-16_TMDL_SS
–ChollasTMDL_CEDEN EDD_ToxResults_2015-16_TMDL_SS
–ChollasTMDL_CEDEN EDD_FieldResults_2015-16_TMDL_SS
–ShelterIsland_TMDL_ChemResults_2015-2016
–ShelterIsland_TMDL_FieldResults_2015-2016
–43rdLogan_ChemResults
–43rdLogan_FieldResults

San Dieguito WMA
–SanDieguito_WW_MS4_2015-2016-CHEM1
–SanDieguito_WW_MS4_2015-2016-CHEM2

Please let me know if you have any questions or if you would like to discuss the CEDEN process.

Thank you,

Jarma Bennett
CEDEN Program Manager
Office of Information Management and Analysis

State Water Resources Control Board
916-341-5532

Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Friday, January 27, 2017 3:29 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file County_SDG_WW_MS4_2015-2016.xls.

You have successfully submitted file County_SDG_WW_MS4_2015-2016.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema Amec Foster Wheeler
8585147756

Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Friday, January 27, 2017 3:42 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file SanDieguito_LosPen_WW_2015-2016-BACT.xls.

You have successfully submitted file SanDieguito_LosPen_WW_2015-2016-BACT.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema Amec Foster Wheeler
8585147756

Jeltema, Stephen

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 2:40 PM
To: Jeltema, Stephen
Subject: Submittal confirmation for file MS4-SDR-2016-FIELD SMJ.xls.

You have successfully submitted file MS4-SDR-2016-FIELD SMJ.xls to the WATER RDC for uploading into the CEDEN Database.

You supplied the following comment: Stephen Jeltema Amec Foster Wheeler
8585147756

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:08 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG_DelMar_CEDEN_Chem_Final.xls.

You have successfully submitted file SDG_DelMar_CEDEN_Chem_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:11 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG_DelMar_CEDEN_Field_Final.xls.

You have successfully submitted file SDG_DelMar_CEDEN_Field_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:14 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG_Escondido_CEDEN_Chem_Final.xls.

You have successfully submitted file SDG_Escondido_CEDEN_Chem_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:14 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG_Escondido_CEDEN_Field_Final.xls.

You have successfully submitted file SDG_Escondido_CEDEN_Field_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:28 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG_Poway_CEDEN_Chem_Final.xls.

You have successfully submitted file SDG_Poway_CEDEN_Chem_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:30 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG_Poway_CEDEN_Field_Final.xls.

You have successfully submitted file SDG_Poway_CEDEN_Field_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:01 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG CEDEN CSD Chem DW Template.xls.

You have successfully submitted file SDG CEDEN CSD Chem DW Template.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:04 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG CEDEN CSD Field DW Template.xls.

You have successfully submitted file SDG CEDEN CSD Field DW Template.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:18 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG_SolanaBeach_CEDEN_Chem_Final.xls.

You have successfully submitted file SDG_SolanaBeach_CEDEN_Chem_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 1:19 PM
To: DeLaTorre, Luis
Subject: Submittal confirmation for file SDG_SolanaBeach_CEDEN_Field_Final.xls.

You have successfully submitted file SDG_SolanaBeach_CEDEN_Field_Final.xls to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Luis De La Torre Technical Professional Amec Foster Wheeler Direct +1 (858) 514 7752 Mobile +1 (626) 940 6935 Luis.DeLaTorre@amecfw.com

Arthur, Thomas M

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Wednesday, January 25, 2017 9:38 AM
To: Arthur, Thomas M
Subject: Submittal confirmation for file SDG_County_CEDEN_ChemResults_2015-16_Final.xlsx.

You have successfully submitted file SDG_County_CEDEN_ChemResults_2015-16_Final.xlsx to the WATER RDC for uploading into the CEDEN Database.

Arthur, Thomas M

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Friday, January 13, 2017 5:31 PM
To: Arthur, Thomas M
Subject: Submittal confirmation for file SDG_County_CEDEN_FieldResults_2015-16_Final.xlsx.

You have successfully submitted file SDG_County_CEDEN_FieldResults_2015-16_Final.xlsx to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Uploaded by:
Thomas Arthur
Senior Scientist, Water Resources
Amec Foster Wheeler, Environment & Infrastructure, Inc.
9177 Sky Park Court, San Diego, CA 92123, USA D 858.514.7793 M 619.804.1422

Johnson, Claire (EI West US)

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Monday, January 09, 2017 2:31 PM
To: Ebentier, Darcy
Subject: Submittal confirmation for file CEDEN EDD_2015-16_ChemResults_SanDieguito.xlsx.

You have successfully submitted file CEDEN EDD_2015-16_ChemResults_SanDieguito.xlsx to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Darcy Ebentier darcy.ebentier@amecfw.com

Johnson, Claire (EI West US)

From: CEDEN Checker <ceden@waterboards.ca.gov>
Sent: Monday, January 09, 2017 2:35 PM
To: Ebentier, Darcy
Subject: Submittal confirmation for file CEDEN EDD_2015-16_FieldResults_SanDieguito.xlsx.

You have successfully submitted file CEDEN EDD_2015-16_FieldResults_SanDieguito.xlsx to the WATER RDC for uploading into the CEDEN Database.
You supplied the following comment: Darcy Ebentier darcy.ebentier@amecfw.com

Appendix D: Jurisdictional Runoff Management Program (JRMP) Annual Report Forms, Fiscal Analysis, Certifications, Updates to JRMPs, WQIP, and BMP Design Manuals (if applicable), and Jurisdictional Strategies

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Jurisdictional strategies are required as part of the Water Quality Improvement Plan (WQIP), under Provision B of the San Diego Regional Water Quality Control Board (Regional Board) National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (MS4) Draining the Watersheds Within the San Diego Region, Order Number R9-2013-0001 (MS4 Permit). The Responsible Agencies (RAs) identified water quality improvement strategies outlined in the WQIP and implemented those strategies in fiscal year (FY) 16, the first year of WQIP implementation, to address the highest priority water quality conditions (HPWQCs). The strategies were selected on the basis of their ability to effectively and efficiently eliminate non-storm water discharges to the MS4, reduce pollutants in storm water discharges from the MS4 to the maximum extent practicable, and achieve the interim and final numeric goals identified in the San Dieguito River Watershed Management Area (WMA) WQIP.

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D.1 City of Del Mar

D.1.1 Annual Report Certifications

The City of Del Mar's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.1.2 Annual Report Form

Del Mar's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

City of Del Mar

STATEMENT OF CERTIFICATION

San Dieguito Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report

And

Legal Authority Establishment and Enforcement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (40 C.F.R. 122.22(d)).

Further, I certify under penalty of law that the City of Del Mar has taken necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements contained in section E.1 of the San Diego Regional Water Quality Control Board Order No. R9-2013-0001 as amended by Order No. R9-2015-0100 (Municipal Permit). The Del Mar Municipal Code (DMMC), including the following provisions, provides the City with full legal authority as required by the Municipal Permit as well as authorizes judicial and administrative enforcement procedures to mandate compliance:

1. Stormwater Management and Discharge Control, DMMC Section 11.30
2. Clean Water Storm Drain Program – General, DMMC Section 11.32

Scott Huth
City Manager

1/13/2017
Date

1050 Camino Del Mar, Del Mar, California 92014-2698. Telephone: (858) 755-9313 Fax: (858) 755-2794
www.delmar.ca.us

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
CITY OF DEL MAR – ANNUAL REPORT FORM
FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name: **City of Del Mar – San Dieguito WMA**

Copermittee Primary Contact Name: **Mikhail Ogawa**

Copermittee Primary Contact Information:
Address: **1050 Camino Del Mar**
City: **Del Mar** County: **San Diego** State: **CA** Zip: **92014**
Telephone: **(858) 755-9313** Fax: **(858) 755-2794** Email: **Mikhail@mogawaeng.com**

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES NO	☒ ☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES[1] NO	☒ ☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES NO	☒ ☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES[2] NO	☒ ☐

Number of non-storm water discharges reported by the public	18
Number of non-storm water discharges detected by Copermittee staff or contractors	22
Number of non-storm water discharges investigated by the Copermittee	40
Number of sources of non-storm water discharges identified	40
Number of non-storm water discharges eliminated	40
Number of sources of illicit discharges or connections identified	8
Number of illicit discharges or connections eliminated	8
Number of enforcement actions issued	6
Number of escalated enforcement actions issued	3

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES NO	☒ ☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES NO	☒ ☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES NO	☒ ☐

Number of proposed development projects in review	101
Number of Priority Development Projects in review	2
Number of Priority Development Projects approved	1
Number of approved Priority Development Projects exempt from any BMP requirements	1
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	0

Number of completed Priority Development Projects in inventory	2
Number of high priority Priority Development Project structural BMP inspections	22
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

Number of construction sites in inventory	52
Number of active construction sites in inventory	41
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	11
Number of construction site inspections	408
Number of construction site violations	22
Number of enforcement actions issued	22
Number of escalated enforcement actions issued	1

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	24	81	0	37
Number of existing development inspections	264	891	0	407
Number of follow-up inspections	0	0	0	0
Number of violations	1	61	0	3
Number of enforcement actions issued	1	61	0	3
Number of escalated enforcement actions issued	0	2	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

X. CERTIFICATION

I ☒ Principal Executive Officer ☐ Ranking Elected Official ☐ Duly Authorized Representative certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	Date 1/9/2017
Scott Huth Print Name	City Manager Title
858-755-9313 Telephone Number	SHUTH@DELMAR.CA.US Email

[1] The City of Del Mar was required to submit an updated JRMP with the WQIP and post it to the Regional Clearinghouse portal.
[2] The timeframe used for the Illicit Discharge Detection and Elimination component of this JRMP Annual Report matches the timeframe used in the WQIP Annual Report (10/1/15-9/30/16).

1. FISCAL ANALYSIS

1.1 JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM IMPLEMENTATION

This section of the Jurisdictional Runoff Management Program (JRMP) Annual Report provides a fiscal analysis of the City's stormwater management programs. On May 8, 2013 the RWQCB adopted a revised Municipal Permit, Order No. R9-2013-0001, however, during this transitional period the City of Del Mar continued to develop its fiscal analysis according to Section G of the previous Municipal Permit, Order No. R9-2007-0001.

On January 29, 2009, the San Diego Municipal Copermittees adopted the "Standardized Fiscal Method and Format" which provides a model for the City of Del Mar and other Copermittees to perform the review and annual reporting as required in Order R9-2007-0001, Section G. This methodology and reporting format proved to be an effective model for reporting on City expenditures, and for consistency, the City of Del Mar will continue to use the format for this reporting period FY 2015-2016. The City, however, recognizes the additional elements required to be included in the fiscal analysis as specified in Order No. R9-2013-001 Section E.8, and has included those components in the year's report.

1.1.1 Clean Water Program Budget

The City of Del Mar's Clean Water Program is a multi-departmental program, funded as an enterprise fund in the City's Annual Budget. Enterprise funds account for operations that are financed and operated in a manner similar to private businesses, with the costs of providing the services recovered largely through user fees. Fund 55 ("The Clean Water Fund"), is one of three (3) enterprise funds in the City's budget, and was added to the City's budget in Fiscal Year 2004 to account for the mandated costs of the City's responsibilities in order to comply with the Municipal Permit. The budget for the City of Del Mar has the appropriate funds allocated to meet the requirements of Permit 2013-0001, including any development, implementation, and enforcement activities required.

The City of Del Mar Operating and Capital Improvement Budgets for Fiscal Years 2015-2016 and 2016-2017 were presented to the Del Mar City Council on June 1, 2015. The budget was formally adopted during the same meeting.

For the Fiscal Year 2015-2016 reporting period, the final amended budget for Fund 55 totaled $550,670. **Table 1-1** below provides a breakdown of program budget by major budget category for Fiscal Year 2015-2016.

Table 1-1: Budget Summary – Clean Water Fund 55

Fund Account		Adopted Budget Fiscal Year 2015-2016	Description/Comments
55-5530	Clean Water Planning	45,700	Active enforcement of clean water regulations including project plan review, permitting, construction monitoring and plan review of BMPs.
55-5536	Clean Water Code Enforcement	24,830	Active in-field enforcement of clean water regulations, including response to resident complaints.
55-5539	Clean Water Program Management	268,000	All clean water program management and reporting activities, fees to agencies, and interaction with regional and watershed Copermittee groups.
55-5840	Public Works (General)	212,140	Provides for administration and general support for all clean water programs for property and facilities, including supervision of maintenance staff.
Total Clean Water Program Budget – Fund 55		**$550,670**	–

1.1.2 Fiscal Analysis Methods

The City of Del Mar used the format and guidelines included in the Fiscal Analysis Method for reporting purposes; however, given the City's financial accounting methods, a few modifications were necessary. These adjustments are described below.

1.1.3 Fiscal Analysis Results

The City's Fiscal Year 2015-2016 jurisdictional, watershed, and regional projected expenditures for the implementation of the Municipal Permit requirements are summarized in **Table 1-2** below.

Table 1-2: Fiscal Year 2015-2016 Expenditure Summary by Program Component

Component Description	Fiscal Year 2015-2016 Projected Expenditures
Jurisdictional Component	
Administration	60,883
Development Planning	42,690
Construction	29,376
Municipal (Including Non-Emergency Fire Flows)	195,510
Industrial and Commercial	10,700
Residential, Education, and Public Participation	51,278
IDDE	37,066
Jurisdictional Total	**$427,503**
Watershed Component	
San Dieguito Watershed	47,975
Los Peñasquitos Watershed	37,275
Watershed Total	**$85,250**
Regional Component	
Total Copermittee Cost Share for Del Mar	37,918
Total Costs	**$550,670**

1.1.4 JRMP Expenditures

The City of Del Mar used the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, due to the implementation overlap of some of the City's municipal permit components; it is difficult to separate out individual component costs. As a result, the expenditures for residential, education, and public participation are reported as one expenditure category. Additionally, since the City does not explicitly track expenditures by permit component for its budgeting purposes, in many cases estimated percentages were utilized to allocate expenditures into the appropriate municipal permit component categories.

A total of $550,670 was projected to be expended in Fiscal Year 2015-2016 for the implementation of JRMP activities. An overview of the expenditures reflected in JRMP activity component is described below.

Administration
Activities identified in this component represent labor and non-labor expenditures for materials, supplies, equipment, or tools that are not otherwise incorporated into other expenditure categories, general administrative functions (e.g., program planning, budgeting, staff supervision), and program assessment and reporting.

Development Planning
Activities identified in this component represent labor and non-labor expenditures related to issuance or oversight of permits or of plans (e.g., permit counter support, plan checks, permit or application processing), project planning and engineering (e.g. project design specifications, capital improvement projects).

Construction
Activities identified in this component represent labor and non-labor expenditures related to construction site inspections and enforcement.

Municipal
Activities identified in this component represent labor and non-labor expenditures related to maintenance inspections of streets, roads, catch basins and inlets, open channels, and the MS4, municipal facility inspections, street and parking lot sweeping, catch basins and inlets, open channels, and MS4 cleaning, and municipal BMP implementation. Since the City of Del Mar conducts all fire-fighting training outside of the City, and no non-emergency fire-fighting flows occurred during the reporting period, the City does not currently track expenditures relating to non-emergency fire-fighting flows. Any costs associated with preparing for these flows are included in the municipal component.

Industrial and Commercial
Activities identified in this component represent labor and non-labor expenditures related to evaluation and enforcement of program requirements at industrial and commercial sites or sources (e.g. routine inspections and complaint investigations).

Residential, Education, and Public Participation
Activities identified in these components represent labor and non-labor expenditures related to investigation and enforcement of residential areas or activities, staffing outreach events, development and production of outreach materials, and any expenditures associated with waste collection and recycling (e.g. household hazardous waste, used oil).

Illicit Discharge Detection and Elimination
Activities identified in this component represent labor and non-labor expenditures related to the identification and elimination of illicit discharges or connections, enforcing the City of Del Mar's storm water ordinance, and any expenditures related to monitoring programs (e.g. dry weather monitoring, coastal storm drain monitoring, special investigations, field or sampling equipment, materials and supplies).

1.1.5 Watershed Expenditures

The City of Del Mar used the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City of Del Mar expenditures and do not account for any expenditure disbursed by other Copermittees included in the watershed(s).

A total of $85,250 was projected to be expended in Fiscal Year 2015-2016 for the implementation of planned strategies for the San Dieguito and Los Peñasquitos Watersheds.

1.1.6 Regional Expenditures

The City of Del Mar utilized the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City of Del Mar expenditures and do not account for any expenditure disbursed by other Copermittees in the region. A total of $37,918 was projected to be expended in Fiscal Year 2015-2016 for the implementation of regional activities and coordination.

1.1.7 Funding Sources

To ensure adequate funding for the Clean Water Program, the City uses a combination of user fees and general fund monies.

The City of Del Mar City Council created and adopted a user fee, called the Clean Water Fund Service Charge to offset the costs of the program. Initially, the rate was adopted to collect $100,000 of the estimated $300,000 for the program, with an escalator to achieve full cost recovery by 2009. Mid-way through the five-year schedule, on July 24, 2006, the California Supreme Court published a decision in the case of Bighorn-Desert View Water Agency v. Verjil (2006) 39 Cal. 4th 205, which held that consumption-based rates such as water and sewer rates are subject to the notice and hearing requirements of California Constitution, Article XIIID, Section 6 (commonly known as "Proposition 218"). Therefore, on January 22, 2007, and February 5, 2007, the Del Mar City Council held public hearings to receive written protests to comply with Proposition 218. No majority protest was received, and the Council ratified the previously approved five-year rate schedule, including the City's Clean Water Service Charge. However, the adopted rate increases did not account for the actual increases in the costs associated program requirements.

As an additional measure to obtain voter approval of the five-year rate schedule for the City's Clean Water Service Charge, the Council directed staff on April 2, 2007, to start the process to perform a mail ballot election procedure. During the process of researching the mail ballot election procedures and the current rates, it became apparent that the process would immediately need to be repeated to set the Fiscal Year 2010 rates and charges, since the current five-year rate schedule was due to expire in June of 2009. Due to the additional costs incurred in complying with the new requirements of the 2007 Permit, increases to the Clean Water Service Charge were proposed, including an annual rate escalator. All monies appropriated as part of the Clean Water Service Charge are directly identified for the Clean Water Program, and pursuant to law, may not be used by the City for any other purpose.

During the Fiscal Year 2009 reporting period, in compliance with Proposition 218, both the majority protest hearing and mail ballot process were conducted for the proposed increases. Both the ratification of the existing rate structure (required by Proposition 218), and the new rates, including the rate escalator, passed by more than 62%. As a result of the passage of the Clean Water Service Charge, the City will continue to have a secure funding source for the Clean Water Program, outside of general fund monies.

Based on current water allocations for the City of Del Mar, the projected revenues from the Clean Water Service Fee will be $482,700 (page 88 of city budget) for Fiscal Year 2015-2016.

D.1.3 City of Del Mar Strategies

City of Del Mar's strategies are detailed in Table D-1.

Table D-1
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
JRMP (E.2 – E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
DM-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	Refer to JRMP Section 5. As commercial/residential patrol inspections are conducted (see JRMP Section 7 – Existing Development), staff will both inspect and verify 100% of the structural BMPs within the City. These inspections occur a minimum of six times per year.	FY16	Continuous-Ongoing	Y	N	Y	Construction of the Del Mar Civic Center is currently ongoing. Project provides opportunity for LID and structural benefits
DM-2	Train staff on LID regulatory changes during annual storm water training.	Formal staff training implemented annually during storm water training.	FY16	Continuous – Ongoing	Y	N	Y	-
DM-3	Maintain existing floor area ratio requirements to limit impervious surface areas.	Incorporate into planning phase of Land Development program implementation.	FY16	Continuous – Ongoing	Y	N	Y	-
DM-4	Continue retention of native vegetation - New or redevelopment projects within the Lagoon Overlay Zone shall include the retention of the maximum amount of native vegetation on the site. Revegetation or landscaping of sites within the Lagoon Overlay Zone shall include the use of non-invasive, drought tolerant species native to the San Diego coastal region and which are compatible with adjacent wetland habitat species.	Retention of native vegetation is a requirement in the City's Municipal Code.	FY16	Continuous – Ongoing	Y	N	Y	-
Priority Development Projects (PDPs)								
DM-5	For PDPs, administer a program requiring implementation of on-site structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Refer to JRMP Section 5.	FY16	Continuous – Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-6	Update BMP Design Manual procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP Section 5.	FY15	Continuous – Ongoing	Y	N	Y	-
Construction Management								
DM-7	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Refer to JRMP Section 6; Construction site inventory updated monthly and inspections of prioritized sites are conducted biweekly year round.	FY16	Continuous-Ongoing	Y	N	Y	-
Existing Development								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
DM-8	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP Section 7. All industrial, commercial, residential, and municipal areas are inspected at least once every two months. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-8.1	Update minimum BMPs for commercial, industrial, and municipal existing development and enforce. Includes BMPs for water-using mobile businesses.	Refer to JRMP Appendix A and Attachment 1 of this WQIP for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing; Updated as needed	Y	N	Y	-
DM-8.2	Provide BMP factsheet to water-using mobile businesses when business license is granted.	To ensure implementation of minimum BMPs for water -using mobile businesses, when a business license is granted for a water-using mobile business, a BMP factsheet is provided.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-8.3	Conduct property-based commercial, industrial, municipal, and residential inspections. Includes identification and addressing unmitigated incidents of power washing discharges.	Refer to JRMP Section 7. Inspections of commercial, industrial, municipal, and multifamily residential areas conducted a minimum of six times per year.	FY16	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-8.4	Update municipal swimming pool discharge ordinance to ensure discharges from swimming pools meet permit requirements.	Municipal Code updated; Refer to JRMP Section 3.	FY15	Continuous-Ongoing	Y	N	Y	-
DM-9	Implement pet waste program.	Implement education and prevention program. Pet waste bag dispensers and trash bins provided in public areas. Pet waste removal occurs as part of Dog Beach maintenance.	FY15	Continuous-Ongoing	Y	N	Y	-
DM-10	Promote and encourage implementation of designated BMPs at residential areas.	Implement education and prevention program. Utilize over-irrigation door hangers for education and prevention.	FY15	Continuous-Ongoing	Y	N	Y	-
DM-11	Promote and encourage implementation of designated BMPs in commercial areas.	Implement education and prevention program through patrol-based program and contact with commercial area owners, tenants etc.	FY15	Continuous-Ongoing	Y	N	Y	-
MS4 Infrastructure								
DM-12	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.).	Refer to JRMP Section 7. The MS4 inventory is inspected by Public Works staff at least once per year. Based on the findings of the inspections, the City performs required cleanings and proper disposal of collected material. Removal of the collected trash and debris prevents the materials from being pushed through the system and into the receiving waters from runoff.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-12.1	Perform catch basin cleaning.	Inspect and clean catch basins annually.	FY16	Continuous-Ongoing	Y	N	Y	Approximately 101.5 cubic yards of material is removed as a result of catch basin cleaning in the City of Del Mar
DM-12.2	Repair and replace MS4 components as needed to provide source control from MS4 infrastructure.	In order to limit inflow of pollutants and reduce pollutant loads, the City will take proactive measures to improve, repair, and replace MS4 components.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-13	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers and identify sewer leaks and areas for sewer pipe replacement.	Refer to JRMP Section 4.7 and the City's Sanitary Sewer Management Plan. The conducts a variety of activities to effectively operate, maintain, repair and replace sewer mains, manholes, and pump stations.	FY15	Continuous - Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Roads, Street, and Parking Lots								
DM-14	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP Section 7. The City implements the street sweeping schedule as follows: • Twice per month o Primary roads o Business district o Collection and bike lanes o Medians o Parking facilities • Twice per year o Residential areas	FY16	Continuous-Ongoing	Y	N	Y	882.92 total miles of streets are swept in the City of Del Mar on an annual basis
DM-14.1	Enhanced street sweeping by use of regenerative air vacuum sweepers.	Enhanced sweeping implemented by using regenerative air vacuum sweepers. Residential areas are swept 2x per year; primary roads (Camino Del Mar) and business district are swept 2x per month. Collection and bike lanes and medians are swept 2x per month.	FY16	Continuous-Ongoing	Y	N	Y	882.92 total miles of streets are swept in the City of Del Mar on an annual basis
DM-14.2	Perform sweeping of medians on high-volume arterial roadways.	Primary roads and business district medians are swept 2x per month.	FY16	Continuous-Ongoing	Y	N	Y	882.92 total miles of streets are swept in the City of Del Mar on an annual basis
Pesticide, Herbicides, and Fertilizer BMP Program								
DM-15	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Refer to JRMP Section 7. The City of Del Mar is committed to the application of Integrated Pest Management (IPM) procedures and the use of updated BMPs to prevent or reduce the use of pesticides, fertilizers, and subsequently their discharge into the MS4.	FY16	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Retrofit and Rehabilitation in Areas of Existing Development								
DM-16	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	Refer to JRMP Section 8. The process for identifying retrofits will evaluate the following considerations: • Water Quality Improvement Plan (WQIP) Priority and Highest Priority Water Quality Conditions • Likely sources of pollutants generating pollutants related to WQIP conditions • Focus areas identified in WQIP • Vintage of geographic areas of the City – time period existing development was constructed • Public retrofit opportunities through Capital Improvement Program (CIP) projects • Areas of persistent discharges • Inspection/Illicit Discharge Detection and Elimination program findings • Identified areas of hydromodification or other stream impacts Using the considerations above, the City will identify areas where opportunities could provide water quality improvement benefits. Evaluation will include layering of the findings to determine where compounding factors overlap. The City will consider the locations where overlapping occurs and significance of the factors to prioritize areas suited for retrofits and rehabilitation projects. Once specific areas within the City have been identified and prioritized for retrofits and/or rehabilitation projects, the City will perform field verifications on an as-needed basis to substantiate the: • need for retrofits or rehabilitation projects • locations of potential retrofits or rehabilitation projects • appropriate type(s) of retrofit or rehabilitation project • appropriate responsible party to implement the retrofits or rehabilitation projects Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	Y	N	Y	Project was slated to be implemented in FY18. However, project was implemented in FY16 and is ongoing

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-17	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Refer to JRMP Section 8. The process for identifying retrofits will evaluate the following considerations: • Water Quality Improvement Plan (WQIP) Priority and Highest Priority Water Quality Conditions • Likely sources of pollutants generating pollutants related to WQIP conditions • Focus areas identified in WQIP • Vintage of geographic areas of the City – time period existing development was constructed • Public retrofit opportunities through Capital Improvement Program (CIP) projects • Areas of persistent discharges • Inspection/Illicit Discharge Detection and Elimination program findings • Identified areas of hydromodification or other stream impacts Using the considerations above, the City will identify areas where opportunities could provide water quality improvement benefits. Evaluation will include layering of the findings to determine where compounding factors overlap. The City will consider the locations where overlapping occurs and significance of the factors to prioritize areas suited for retrofits and rehabilitation projects. Once specific areas within the City have been identified and prioritized for retrofits and/or rehabilitation projects, the City will perform field verifications on an as-needed basis to substantiate the: • need for retrofits or rehabilitation projects • locations of potential retrofits or rehabilitation projects • appropriate type(s) of retrofit or rehabilitation project appropriate responsible party to implement the retrofits or rehabilitation projects	FY18	Continuous-Ongoing	Y	N	Y	Project was slated to be implemented in FY18. However, project was implemented in FY16 and is ongoing

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Illicit Discharge, Detection, and Elimination (IDDE) Program								
DM-18	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP Section 3.	FY16	Continuous-Ongoing	Y	N	Y	-
Public Education and Participation								
DM-19	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP Section 10 and 11.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
DM-19.1	Continue outreach to property managers responsible for HOAs and Maintenance Districts.	As part of the patrol-based program for the residential existing development inventory, provide frequent education and contact to HOAs and maintenance districts targeting outdoor activities and trash areas.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
DM-19.2	Continue education and outreach to reduce over-irrigation through patrol program.	Once per year outside of business hours, patrol jurisdiction for incidents of over-irrigation and leave door-hangers identifying problem areas and appropriate corrective actions.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-19.3	Conduct trash cleanups through community-based organizations involving target audiences.	In partnership with I Love a Clean San Diego, host a site in Del Mar during two beach clean-ups per year.	FY16	Continuous-Ongoing	N	N	Y	1st clean up to take place 9/17/16
DM-19.4	Review City storm water website and identify and implement required updates to reflect WQIP and JRMP revisions.	Update City Clean Water Program website with WQIP and JRMP information and highlight what the community can do for water quality.	FY16	Continuous-Ongoing	Y	N	Y	Currently being updated
DM-19.5	Collaborate with regional education and outreach efforts.	Participate in Regional Think Blue campaign and collaborate with other regional efforts to provide consistent message or efficiency in training for targeted audiences.	FY16	Continuous-Ongoing	Y	N	Y	Participated in various outreach events

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Enforcement Response Plan								
DM-20	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Refer to JRMP Section 9.	FY16	Continuous-Ongoing	Y	N	Y	-
Non-JRMP Strategies (Optional Strategies, B.3.b(1)(b))								
Additional Nonstructural Strategies								
DM-21	Promote and collaborate with water agencies and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	Collaborate with MWD and promote their SoCal Water$mart rebates and products such as weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal. Collaborate with San Diego County Water Authority (SDCWA) and promote their Water Smart irrigation system checkups and turf replacement incentives.	FY16	Continuous – Ongoing	Y	N	Y	Information regarding rebate opportunities are listed on the City's webpage
DM-22	Continue program to address and capture trash and debris.	Properly maintain trash guards.	FY15	Continuous - Ongoing	Y	N	Y	-
DM-23	Continue participating in source reduction initiatives.	Continue implementation of cigarette ban on beaches, parks and in commercial areas.	FY15	Continuous - Ongoing	Y	N	Y	-
DM-24	Proactively monitor for erosion and complete minor repair and slope stabilization as needed.	Post-storm monitoring is conducted to identify slope and bluff erosion in priority areas. As-needed, repairs and slop stabilization are completed.	FY15	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-25	Protect areas that are functioning naturally.	As feasible opportunities arise, the City will protect areas that are functioning naturally. This may include avoiding hardscape development and degradation in unpaved open space areas and creating permanent open space protections to undeveloped city-owned land. This strategy will be triggered on a case by case basis. The following resources, funds, and steps are needed to implement this strategy 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants if necessary (2 -18 months) 3) Obtain City Council approval	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered
DM-26	Collaborate with the 22nd District Agricultural Association (Del Mar Fairgrounds) on water quality-related issues.	The City will collaborate with the 22nd DAA on water-related issues as appropriate. The DAA is a Phase II NPDES discharger and is regulated under a separate stormwater permit. The 22nd DAA discharges directly to Steven's Creek and San Dieguito Lagoon and River.	Must be Triggered	As needed	N/A	N/A	N/A	Not triggered
DM-27	Implement a program to require septic system maintenance practices.	Require maintenance practices and provide education.	FY16	Continuous-Ongoing	Y	N	Y	-
DM-28	Conduct special studies	San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for “natural sources” to establish the concentrations or loads from streams in a minimally disturbed or “reference” condition. Refer to Section 5.1 for further details.	FY15	One Time	Y	N	Y	-
DM-29	Reference watershed study	Assess sources of bacteria in the watersheds using the San Diego Bacteria Source Identification and Prioritization Process developed in 2012 as part of the MS4 Permit Report of Waste Discharge process. Focus is on the beach/lagoon area of the San Dieguito River WMA, with inputs from the upper watershed also considered where relevant and necessary to identify sources of bacteria to the beach/lagoon. Refer to Section 5.1 for further details.	Optional	One Time	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
DM-30	Visually inspect all major and minor MS4 outfalls.	All major and minor MS4 outfalls are inspected a minimum of six times per year to assist in the identification of any illegal discharges, persistently flowing outfalls or any other issues that may be identified.	FY15	Continuous – Ongoing	Y	N	Y	-
Structural Strategies								
Green Infrastructure								
DM-31	If interim load reduction goals are not met, potential opportunities for green infrastructure will be considered.	Adaptive management process.	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered
Multiuse Treatment Areas								
Stream, Channel and Habitat Rehabilitation Projects								
DM-32	San Dieguito Wetland Restoration Project is a project that is already underway and near completion. This regional project with multi-jurisdictional involvement is discussed further in Section 4.2.5.	San Dieguito Wetland Restoration Project is a project that is already underway and near completion. This regional project with multi-jurisdictional involvement is discussed further in Section 4.2.5.	FY15	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Dry Weather Flow Separation and Treatment Projects								
DM-33	If interim load reduction goals are not met, dry weather flow separation and treatment projects may be considered.	Construction of dry weather flow separation and treatment projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants (2 -18 months) 3) Obtain City Council approval 4) Initiate preliminary engineering, design and develop construction plans and cost estimates (6 months -2 Years) 5) Bid and Award process for construction phase (6 months) 6) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project). 7) Operation and maintenance will be in perpetuity.	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered
DM-34	Operate and maintain infiltration pits and low flow diverters in the northern coastal portion of the City.	The northern coastal portion of the City is relatively flat and nuisance ponding can occur easily. To address non-storm water nuisance ponding the City has installed infiltration pits which are intended to infiltrate waters into the sand beneath the streets, thereby preventing discharge to receiving waters. In another effort to address the relatively flat areas of the northern portion of the City, a low flow diverter was installed that pumps nuisance non-storm water discharges that are collected in a street basin to the sanitary sewer system for treatment and disposal.	FY15	Continuous – Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-1	San Dieguito Wetland Restoration Project	The Cities of San Diego and Del Mar are collaborating organizers of the San Dieguito River Park (SDRP) to restore the San Dieguito coastal wetlands and lagoon system. The 150-acre wetland restoration work has been primarily accomplished by Southern California Edison (SCE) and partner owners of the San Onofre Nuclear Generating Station (SONGS), including San Diego Gas & Electric (SDG&E), City of Riverside, and City of Anaheim. Construction began in fall 2006 and the $90-million Restoration Project was officially dedicated in 2011. The Restoration Project has enhanced southern California's unique coastal and marine environment as the restoration has provided adequate tidal flushing and circulation to support biologically diverse habitats. Beyond protecting endangered species and providing habitat to hundreds of bird species and fish, the restoration project has also added a coastal segment to the Coast to Crest Trail, allowing public enjoyment of the wetlands area while protecting sensitive habitat and vegetation. Funding for monitoring and managing the wetlands is ongoing.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
WMA-2	Collaborative Approach to Irrigation Reduction	Responsible Agencies are collaborating with water agencies to encourage implementation of water conservation efforts. Water conservation that attempts to reduce irrigation and minimize storm water runoff can also improve water quality of receiving waterbodies. MWD's SoCal Water$mart Program supports conservation efforts by offering incentives in the form of rebates for rain barrels, rotating sprinkler nozzles, weather-based irrigation controllers, soil moisture sensor systems, and turf replacement. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council or appropriate legislative body (i.e. Board).	Prior to FY16	Continuous-Ongoing	Y	N	Y	Information regarding rebate opportunities are listed on the City's webpage

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
WMA-3	Offsite Alternative Compliance Option (WMAA)	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015, jurisdictions can formally implement an optional Alternative Compliance Program by December 2015 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
WMA-4	Collaboration with the Regional Board.	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit, 2) enforcement of other non-MS4 dischargers, and 3) Bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-

Table D-1 (continued)
City of Del Mar Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
WMA-5	Participation in Watershed Council	If a Watershed Council is re-established, the City of San Diego, County of San Diego and potentially other Responsible Agencies will participate. Watershed Councils are typically locally organized, voluntary, non-governmental organizations, and are intended to broadly represent various stakeholders in the WMA. Goals of Watershed Councils may vary, but they generally promote protecting the watershed and sustaining natural resources. This coordination could assist in selecting WMA projects, identifying potential funding opportunities, and promoting communication among community groups and regulated agencies. Resources necessary to implement this strategy include participating jurisdictional staff to coordinate with the regional effort and the development of an agreement (e.g. MOU, JPA) among participating entities. Projected funding needs may be met through grant funding, support from community groups or other institutions, or jurisdictional General Funds. General Funds are contingent on approval of the annual budget by City Council or appropriate legislative body. Participation is dependent on funding availability.	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered

D.1.4 Modifications to the BMP Design Manual

No modifications to the BMP Design Manual have been made since the WQIP was approved in fall 2015. The current Del Mar BMP Design Manual is posted on the Del Mar's website, and the link to this page is listed on Project Clean Water.

D.1.5 Modifications to the Jurisdictional Runoff Management Plan

No modifications to the Del Mar's JRMP have been made since the WQIP was approved in fall 2015. The current Del Mar JRMP is posted on the Del Mar's website, and the link to this page is listed on Project Clean Water.

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D.2 City of Escondido

D.2.1 Annual Report Certifications

The City of Escondido's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.2.2 Annual Report Form

Escondido's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

ESCONDIDO
City of Choice

STATEMENT OF CERTIFICATION

San Dieguito Watershed Management Area Water Quality Improvement Plan

2015-2016 Annual Report

and

Legal Authority Establishment and Enforcement

I certify that this Water Quality Improvement Plan Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I also certify that the City of Escondido has taken necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements contained in section E.1 of San Diego Regional Water Quality Control Board Order No. R9-2013-0001 as amended by Order No. R9-2015-0100. This includes entering into contracts, updating and enforcing the Escondido Municipal Code, and regularly reviewing and updating the policies and procedures described in the Jurisdictional Runoff Management Program and Water Quality Improvement Plans.

Christopher W. McKinney

Christopher W. McKinney
Director
Utilities Department

January 18, 2017
Date

Sam Abed, Mayor Michael Morasco, Deputy Mayor Olga Diaz Ed Gallo John Masson

FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name: City of Escondido – SAN DIEGUITO WATERSHED

Copermittee Primary Contact Name: Helen Davies

Copermittee Primary Contact Information:
Address: 201 North Broadway
City: Escondido County: San Diego State: CA Zip: 92025
Telephone: 760-839-6315 Fax: 760-839-4597 Email: hdavies@escondido.org

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	36
Number of non-storm water discharges detected by Copermittee staff or contractors	4
Number of non-storm water discharges investigated by the Copermittee	40
Number of sources of non-storm water discharges identified	40
Number of non-storm water discharges eliminated	40
Number of sources of illicit discharges or connections identified	40
Number of illicit discharges or connections eliminated	40
Number of enforcement actions issued	5
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

Number of proposed development projects in review	1
Number of Priority Development Projects in review	1
Number of Priority Development Projects approved	1
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	1

Number of completed Priority Development Projects in inventory	14
Number of high priority Priority Development Project structural BMP inspections	7
Number of Priority Development Project structural BMP violations	10
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

FY 2015-16

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	7
Number of active construction sites in inventory	3
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	4
Number of construction site inspections	50
Number of construction site violations	15
Number of enforcement actions issued	2
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal#	Commercial	Industrial	Residential#
Number of facilities or areas in inventory	14	115	0	8
Number of existing development inspections	6	139	0	8
Number of follow-up inspections	5	68	0	0
Number of violations	2	71	0	4
Number of enforcement actions issued	2	57	0	0
Number of escalated enforcement actions issued	0	8	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Christopher W. McKinney
Signature

12.15.2016
Date

Christopher W. McKinney
Print Name

DIRECTOR OF UTILITIES
Title

(760) 839 - 4090
Telephone Number

cmckinney@Escondido.org
Email

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL FISCAL ANALYSIS
FY 2015-16
CITY OF ESCONDIDO
SAN DIEGUITO WATERSHED

Categories	Sub Categories	Costs
CAPITAL COSTS	None	$0
OPERATIONS AND MAINTENANCE	None	$295,241
OTHER EXPENDITURES	MONITORING PROGRAM	$7,886
	WATERSHED PROGRAM	$52,038
	REGIONAL PROGRAM	$20,349
STAFF RESOURCES	PROGRAM DEVELOPMENT	$11,934
	PROGRAM IMPLEMENTATION	$181,609
	ENFORCEMENT	$17,563
	Total	**$586,620**

Staff Resources

Necessary staff resources needed were allocated to meet municipal permit (R9-2013-0001)(Municipal Permit) requirements. Many of the permit requirements specific to various City departments (such as street sweeping, the responsibility of Public Works) continue to be implemented by the relevant staff with input, as needed, from Environmental Programs (Stormwater) personnel.

Funding Sources

Funds allocated through the City's Wastewater Fund provides funding for Municipal Permit compliance. The legal restrictions on the use of these funds are those associated with a municipal utility fee. Sufficient funds were made available for compliance with the Municipal Permit during fiscal year 2015-16 and sufficient funds have been budgeted for fiscal year 2016-17.

D.2.3 City of Escondido Strategies

City of Escondido's strategies are detailed in Table D-2.

Table D-2
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
JRMP (E.2 – E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
ES-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, per BMP Manual requirements.	Refer to JRMP Chapter 4 and BMP Manual. All high priority development projects are inspected annually prior to the rainy season. 20% of all priority development projects are inspected annually. Maintenance inspections of PDPs include examination of structural BMPs to verify proper maintenance and function as designed, and compliance with applicable City ordinances and permits.	Prior to FY16	Continuous - Ongoing	Y	No	Y	All inventoried projects were inspected this year. The inventory was reviewed and updated to be consistent with JRMP prioritization criteria.
ES-1.1	Weekly meetings to facilitate communication and assess compliance across divisions/departments, including stormwater, for all development projects.	EP Div meets weekly with Engineering Land Development Dept. to discuss project compliance on project submittals. Separate weekly meeting with Planning, Fire, and Engineering for co-compliance for all development during the planning stage.	FY16	Continuous - Ongoing	Y	No	Y	Storm Water staff with relevant background (planning/engineering) typically attend.
ES-2	Amend municipal code and ordinances, including zoning ordinances, as needed to meet BMP Design Manual requirements and facilitate and encourage LID opportunities.	Implemented as needed. Update occurred FY14-15 for permit compliance. All updates to the municipal code and ordinances must be brought to City Council for consideration.	Prior to FY16	Continuous - As needed	Y	No	Y	No updates needed during the fiscal year.
ES-3	Train staff on BMP regulatory changes and BMP Design Manual.	Formal staff training implemented as needed based on changes, such as the revision of the BMP Design Manual or staff turnover. Informal training or assistance occurs continuously with communication between Environmental Programs staff and land development staff on a regular basis.	FY16	Continuous - As needed	Y	No	Y	Formal in house training; regional training as part of BMP Manual update.
Priority Development Projects (PDPs)								
ES-4	For PDPs, administer a program requiring implementation of on-site structural BMPs to control pollutants and manage hydromodification.	Refer to JRMP Chapter 4. Includes confirmation of design, construction, and maintenance of PDP structural BMPs. Follow-up inspections conducted on some properties. Enforcement as required.	FY16	Continuous - Ongoing	Y	No	Y	The City has undertaken a comprehensive review of this program and is transitioning it to an asset management program.

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
ES-4.1	Administer self-certification verification and enforcement program for treatment control BMP maintenance compliance.	BMP maintenance agreements required on all PDPs. Letters sent annually to remind property managers to self-certify. Follow-up inspections conducted on some properties. Enforcement as required.	FY16	Continuous - Ongoing	Y	No	Y	–
ES-5	Update BMP Design Manual procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP Chapter 4. County Model BMP Design Manual was used and adapted for the City.	FY16	Continuous - As needed	Y	No	Y	The BMP Design Manual was updated per amended permit requirements.
E.4 Construction Management								
ES-6	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Refer to JRMP Chapter 5; Currently the inspection rate is dependent on time of year (dry versus wet season) and priority of site (based on threat to water quality). Most frequent inspection (high priority, wet weather) is once every 2 weeks, lowest is "as-needed." Per 2007 permit requirements.	FY16	Continuous - Ongoing	Y	No	Y	The coordinator for Environmental Programs now joins the engineering field inspectors during their weekly staff meetings.
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
ES-7	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP Chapter 7; Highest priority inspection of food establishments is performed at a frequency of at least once a year with expectations to reach twice per year by FY2018. Others inspected per permit requirements. Please see Attachment 1 for details on PDP related BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16 with full implementation by FY18	Continuous - Ongoing	Y	No	Y	A project transitioning inspections to an asset management system was completed during this fiscal year.
ES-7.1	Update minimum BMPs for existing residential, commercial, and industrial development and enforce them.	Refer to JRMP Chapter 7; minimum BMPs updated as part of JRMP update. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	As needed	Y	No	Y	Completed as part of program update during FY14-15.

Table D-2 (continued)
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ES-7.2	Design, implement, and enforce property- based inspections in high priority focus areas	This inspection program involved annual drive-by inspections of focus drainage areas where major MS4 outfalls have persistent flows. At the time of WQIP development, only one MS4 outfall in this WMA has persistent flow, HDG_102. That drainage area includes mostly residential properties. Follow up and enforcement will be pursued as necessary to ensure compliance. Inspections will cover all visible outdoor areas and compliance with Stormwater Ordinance requirements. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous - Ongoing	Y	No	Y	_
ES-7.3	Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	Completed. Refer to BMP Manual and Escondido Municipal Ordinance Chapter 22.	FY16	Continuous - Ongoing	Y	No	Y	Completed as part of program update during FY14-15.
ES-7.4	Implement program to require retrofit of trash enclosures for certain permit applications.	All applicants seeking approval for a tenant improvement, improvements to buildings, or redevelopment, are assessed for their potential to generate pollutants through their trash enclosure. If the applicant has a pollutant-generating activity on-site, a retrofit of their trash enclosure to include a roof is required. For example, a restaurant would trigger this requirement. Costs are considered when determining if the applicant is required to implement the retrofit. The retrofit is generally not required if the improvement is less than the cost of the retrofit. Determination is made on a case-by-case basis. This measure is expected to reduce trash and associated pollutants, including bacteria, from leaving the enclosure site. See JRMP Chapter 7.	FY16	Continuous - Ongoing	Y	No	Y	_

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

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ES-7.5	Water-using mobile business inspection and permitting.	Implement permitting program to ensure that water-using mobile businesses are using appropriate BMPs to prevent discharges to the storm drain drains. A permit is required for water-using mobile businesses including power-washers, mobile detailing, and organizations holding charity car washes. As part of the permit process, the applicant must schedule an inspection. The inspection requires applicants to set up their equipment and demonstrate how they will do the work. A permit is not issued until they have demonstrated that they have appropriate BMPs to manage the discharge.	FY16	Continuous - Ongoing	Y	No	Y	–
ES-7.6	Update and Implement Water Efficient Landscape Ordinance.	Refer to JRMP. Updates to landscape regulations encourage a reduction in the use of water for irrigation and reduce water waste in the form of runoff.	FY16	Continuous - Ongoing	Y	No	Y	–
ES-8	Promote and encourage implementation of designated BMPs at residential areas through residential inspection program.	Refer to JRMP Chapter 8 (Table 8-1). Also see Attachment 1 for details on residential BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous - Ongoing	Y	No	Y	–
ES-8.1	Promote and collaborate with water agencies and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water.	The City of Escondido collaborates with MWD and promotes their SoCal WaterSmart rebates. Rebates include; weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal. The City also collaborates with the San Diego County Water Authority (SDCWA) to promote their WaterSmart Checkups and turf replacement incentives. City of Escondido provides funding for the WaterSmart Checkups.	FY16	Continuous - Ongoing	Y	No	Y	–
ES-9	Promote and encourage implementation of designated BMPs, including water conservation BMPs, in commercial, agricultural, residential, and industrial areas.	Collaborate with MWD and promote their SoCal Water$mart rebates and products such as weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and/or turf removal.	FY16	Continuous - Ongoing	Y	No	Y	–

Table D-2 (continued)
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MS4 Infrastructure								
ES-10	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.).	Refer to JRMP; Catch basins inspected annually and cleaned as needed based on observations. City is developing system for inspection and cleaning prioritization based on previous cleaning data.	FY16	Continuous - Ongoing	Y	No	Y	Review and reprioritization is underway.
ES-10.1	Implement open-channel cleaning and maintenance to reduce pollutant loads.	Implement annual channel cleaning based on priority locations and highest maintenance needs. Sites to be addressed each year will be established annually and may be prioritized based on potential for pollution reduction; implementation schedule subject to change pending prioritization. Some sites must have a biological monitor if maintained within the bird nesting season, which may limit certain work to September – January each year. BMPs are implemented as needed to reduce potential for discharge and in accordance with regulatory permits.	FY16	Continuous - Ongoing	Y	No	Y	Resource Agency permits to implement this work (401, 404, 1600) obtained August 2015. Implemented in accordance with requirements.
ES-11	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	Sewer infrastructure is cleaned annually. Televising of sewer infrastructure is completed to identify and prioritize areas in need of upgrade or slip lining. As areas for maintenance are identified, corrective action is taken. Refer to JRMP Chapter 6.	FY16	Continuous - Ongoing	Y	No	Y	-
Roads, Street, and Parking Lots								
ES-12	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways	Refer to JRMP Chapter 6.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-12.1	Perform street sweeping.	Refer to JRMP Chapter 6; High priority areas swept twice per month. Medium priority areas swept once per month. Low priority areas swept as needed.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-12.2	Perform sweeping of medians on high-volume arterial roadways.	Refer to JRMP Chapter 6; Medians swept according to priority area frequency. Medians in high priority areas swept twice per month; medium priority areas swept once per month; and in low priority areas swept as needed.	FY16	Continuous - Ongoing	Y	No	Y	-

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

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Pesticide, Herbicides, and Fertilizer BMP Program								
ES-13	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Refer to JRMP. City does not have authority over application of pesticides, but will implement BMPs. Water conservation activities encourage residential and commercial area BMPs. Industrial and commercial inspections cover requirement. Parks and Recreation implement the municipal program.	FY16	Continuous - Ongoing	Y	No	Y	-
Retrofit and Rehabilitation in Areas of Existing Development								
ES-14	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	Refer to JRMP Chapter 9. City currently conducting study to identify potential projects.	FY16	Continuous - Ongoing	Y	No	Y	Completed a hydraulic study in February 2016 that identifies potential locations for retrofit.
ES-15	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Refer to JRMP Chapter 9. City currently conducting study to identify potential projects.	FY16	Continuous - Ongoing	Y	No	Y	A 4.44-acre habitat restoration project was completed in Kit Carson Park during FY16.
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
ES-16	Administer, implement, and enforce Illicit Discharge, Detection, and Elimination (IDDE) Program.	Refer to JRMP Chapter 3.Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-16.1	Implement "We Care" Program for employee reporting of potential illicit discharges.	Continue supporting the city-wide "We Care" program which encourages employees to report problems that they observe throughout the City. Reports of irrigation issues are currently included. In FY16, updates to specifically include and encourage reporting of other storm water related issues will be complete.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-16.2	Support "Report It" smartphone application to encourage residents to report potential illicit discharges or other storm water violations.	Continue supporting the city-wide "Report It" smart phone application which encourages the public to report problems that they observe throughout the City, including potential illicit discharges and other storm water related violations.	FY16	Continuous - Ongoing	Y	No	Y	-

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

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E.7 Public Education and Participation (B.3.b.(1)(a)(iii))								
ES-17	Implement pet waste education program.	Implement education and prevention program. Pet waste bag dispensers and supplies provided for neighborhood groups, dog parks, and other municipal parks.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-18	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP Chapter 10.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-18.1	Expand outreach, training, and incentive programs to homeowners' associations (HOAs).	Investigate expansion of municipal outreach programs and collaboration with MWD and SDCWA to expand incentive programs targeting landscape practices and turf replacement programs.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-18.2	Conduct trash cleanups through community-based organizations involving target audiences.	Continue implementation of "We Clean Escondido" program targeting litter removal. "We Clean Escondido" programs encourage groups to adopt their neighborhood and conduct weekly litter removal events. Continue collaboration with "I Love a Clean San Diego" to host two Creek to Bay Cleanups at Dixon Lake, or other locations in Escondido. Litter removal reduces one source of bacteria to the MS4.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-18.3	Review City storm water website and identify and implement required updates to reflect WQIP and JRMP revisions.	Review City storm water website and identify and implement required updates to reflect WQIP and JRMP revisions.	FY16	Continuous - Ongoing	Y	No	Y	-

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

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ES-18.4	Continue partnership with MWD to provide rebates for water efficient products to large businesses and agricultural customers.	Continue partnership with MWD to provide rebates for water efficient products to large businesses and agricultural customers. Continue Water Savings Incentive Program and Conservation Programs through support for rebates such as rotating irrigation nozzles, residential smart controllers, rain barrels, soil moisture sensor systems and incentives such as turf replacement program, SoCal water smart turf removal program, WaterSmart checkups, California friendly landscape training classes, WaterSmart landscape makeover workshops, and garden friendly plant fairs.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-18.5	Continue school and recreation-based education and outreach	Partner with organizations such as the Escondido History Center, Humane Society, the Chamber of Commerce, and the Downtown Business Association to host education events targeting adults and children through the year. Continue with robust school outreach and summer camp education program. Program targets 6-12 yr olds.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-18.6	Collaborate with regional education and outreach efforts.	Participate in Regional Think Blue campaign and collaborate with other regional efforts to provide consistent message or efficiency in training for targeted audiences.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-19	Municipal staff training	Conduct mandatory training for all new City employees. Engage new employees with storm water jeopardy game reinforcing training on watersheds, the MS4, and MS4 permit requirements.	FY16	Continuous - Ongoing	Y	No	Y	-
ES-20	Provide technical education and outreach to the development community on the design and implementation requirements of the MS4 Permit and Water Quality Improvement Plan requirements.	Provide outreach materials to the development community on the City's website, written material and in person education at the City's Development Services counter.	FY16	Continuous - Ongoing	Y	No	Y	-

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E.6 Enforcement Response Plan								
ES-21	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Refer to JRMP Chapter 2, Escondido Municipal Code Chapter 22, and Enforcement Response Plan.	FY16	Continuous - Ongoing	Y	No	Y	-
Non-JRMP Strategies (Optional Strategies, B.3.b.(1)(b))								
Nonstructural Strategies								
ES-22	Administer an alternative compliance program to on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects). Refer to Section 4.2.5. and Appendix N for further details.	Refer to JRMP Chapter 4. The City of Escondido will develop a draft water quality credit system option consistent with Provision E.3(d) to place water quality improvement projects throughout Escondido, including Focus Areas. The resources required to complete this optional strategy include: staff time allocation, administrative plan and procedures for the program consistent with regional standards, and approval by the City Council and the Regional Water Quality Control Board. Furthermore, candidate projects must be identified, permitted, and funded. The cost for developing and implementing this program during the permit cycle is unknown, but funds have been secured for FY2016 for program development. The trigger for implementation of Alternative Compliance Program is: when resources have been secured and leadership consensus and community support has been achieved. Expected length of time for program development is two to five years.	Triggered	Continuous - Ongoing	Not applicable	Not applicable	Not applicable	City staff have participated in the development of water quality equivalency guidelines and will continue participating in other regional efforts. The City completed a hydraulic study in February 2016 to evaluate potential alternative compliance projects.
ES-23	Participated in Reference Watershed Study.	San Diego Regional Reference Stream Study (conducted by the Southern California Coastal Water Research Project). The study developed numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Refer to Section 5.1 for further details. Occurred region-wide.	FY16	One time	Y	No	N	Study completed FY15-16.

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

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ES-23.1	Participate in San Dieguito River WMA Bacteria Source Identification and Prioritization Process.	Assess sources of bacteria in the watersheds using the San Diego Bacteria Source Identification and Prioritization Process developed in 2012 as part of the MS4 Permit Report of Waste Discharge process. Focus is on the beach/lagoon area of the San Dieguito River WMA, with inputs from the upper watershed also considered where relevant and necessary to identify sources of bacteria to the beach/lagoon. Refer to Section 5.1 for further details. Funding and resources have been secured for FY2016. The study is not expected to extend beyond this year; if needed, future funding would need to be approved by City Council during the annual budget meeting.	FY16	One time	Y	No	Y	Study completed FY15-16.
ES-25	Assessment of agricultural operations within City jurisdiction and active engagement with growers as needed to attain water quality objectives.	If agricultural properties within the City of Escondido are determined to be a potential source of bacteria, and interim load reduction goals are not met, this strategy will be triggered and the City will take action to more actively engage with agricultural operations within our jurisdiction. This may include: Prepare and maintain a figure of the locations of agricultural operations in Escondido; identifying agricultural land close to receiving waters and/or MS4 system; conducting a site reconnaissance to assess if discharges are likely to occur; developing a series of follow-up actions specific to those risks. Sites of concern will be referred to the Irrigated Lands Group at the RWQCB. The resources required for this strategy include: staff time and budget to administer the program, administrative procedures developed and enacted, and (potentially) outreach materials developed directed at this specific audience. The estimated cost of implementation of this strategy is unknown at this time, and it would be an ongoing strategy with approximately 6-12 months to develop the program.	Triggered	Continuous - Ongoing	Not applicable	Not applicable	Not applicable	City staff has participated in the development of waste discharge requirements for agricultural operations. Any complaints relating to agricultural facilities have been addressed through our IDDE program.

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City of Escondido Jurisdictional Strategies for San Dieguito River WMA

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ES-24	If invasive plant removal is necessary in key locations, collaborate with and/or support volunteer groups as needed to encourage invasive plant removal and habitat restoration.	This strategy will be triggered if invasive species removal is determined to be a high priority in sections of the WMA within City of Escondido jurisdiction, and all necessary resources are secured to support such projects. The City will participate in opportunities for collaboration with qualified volunteer groups for the removal of invasives at key locations, as needed and as possible with available resources. The resources required for this strategy include: identifying potential volunteer group partners to manage the work, identifying key locations within the WMA in need of invasive species removal, securing necessary permits from resource agencies and/or permission from landowners to perform the work, and staff or equipment resources as needed to complete each volunteer event. The estimated cost of this strategy is unknown at this time, and dependent on the size of the area, the number of volunteers, and the leadership capacity of volunteer organizations. This would be an ongoing strategy on an as-needed basis, with approximately 3-6 months needed to plan a single invasive plant removal event; more time would be needed if resource agency permits are required.	Triggered	Continuous - As needed	Not applicable	Not applicable	Not applicable	While this optional strategy was not triggered, the City implemented a mitigation plan for 4.44 acres of wetland habitat in Kit Carson Park as part of the channel maintenance program. The City also monitors and maintains another 2.60 acre mitigation project within Kit Carson Park (for RGP87). Both projects incorporate the removal of invasive species.
ES-25	Participate in a Felicita Creek Subwatershed Group	Should citizens choose to pursue organizing a forum dedicated to addressing issues specific to Felicita Creek, this strategy will be triggered and the City will participate in said group, as it relates to addressing MS4 sources, habitat restoration. The City will consider providing staff or equipment resources to address issues which can be addressed through group collaboration (e.g. invasive species removal). The resources required to implement this strategy include: staff time allocation for participation in the group. Resources such as equipment or resource agency permits may need to be secured for activities outside the scope of group participation, and the City's commitment to providing such resources will be considered on a case-by case basis and must be approved by City Council in the annual budget hearing. This strategy would be ongoing and would require approximately 3-9 months to contact representative stakeholders and plan the initial meeting(s).	Triggered	As needed	Not applicable	Not applicable	Not applicable	No group has convened.

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Structural Strategies								
Multiuse Treatment Areas								
Infiltration and Detention Basins								
ES-26	Eagle Scout (formerly Sand) Lake Project	Eagle Scout Lake (formerly Sand Lake) is an existing multiuse treatment area and sediment detention basin in the City of Escondido. A major restoration project in early 2014 improved water flow, water quality issues (providing capacity for sediment settlement) and health and safety issues (vector control). The project drains the water from Kit Carson Creek and an adjacent ephemeral stream an area of approximately 4 acres. It is anticipated to be regularly maintained as needed, current estimates are once every five years, but will be determined on visual evaluation. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	As needed, likely once every five years	Y	No	Y	Restoration was completed in 2014. Ongoing observational monitoring and minor maintenance conducted during FY15-16.

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Stream, Channel and Habitat Rehabilitation Projects (B.3.b.(1)(b)(iii))								
ES-27	If interim load reduction goals are not met and additional stream, channel, and habitat rehabilitation projects are required, implement as needed.	This strategy may be triggered if interim load reduction goals are not met, funding and staff resources are identified and secured, partners have been identified and agreed upon, permits required by regulatory agencies are secured, and recommendations from the community are identified and support has been achieved. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs; up to$500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project) 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function will be by approval by City Council as part of the City's annual budget, or through an alternative funding source	Triggered	Continuous - Ongoing	Not applicable	Not applicable	Not applicable	-

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Green Infrastructure								
ES-28	If interim load reduction goals are not met and additional green infrastructure is required, approximately 26.15 acres of available space have been identified as potential opportunities for green infrastructure implementation on public parcels.	If monitoring data suggests that it is unlikely that goals will be met using the strategies identified for implementation through FY20, construction, operation and maintenance of potential green infrastructure projects on public parcels will be investigated by initiating planning and assessing feasibility for 25% of the total parcel acreage identified. If feasibility study supports that this is beneficial then initiation of securing funding this strategy will be triggered. The resources required to complete this strategy include: securing of grant funding, City Council approval of seeking grant funding and using funds for this purpose, staff resources secured, and contracts secured to complete designs and permitting. The estimated cost of this strategy is unknown at this time, and depends largely on the size and scope of projects and grant funding available. A source of funding for maintenance will also need to be secured.	Triggered	Continuous - Ongoing	Not applicable	Not applicable	Not applicable	-
ES-29	Evaluate additional green infrastructure opportunities, including green streets, as needed to achieve final goals.	This strategy will be triggered if interim load reduction goals are not met and additional green infrastructure is required. The strategy includes application of green street design principles to planned Capital Improvement Projects, and the construction, operation and maintenance of such streets, if and where feasible and as funding allows. Resources necessary to implement this strategy include: staff time allocation, approval of such projects as part of the Capital Improvement Project list by City Council (annual), securing adequate funding through City Council approval of annual budget and/or securing grants with Council approval, selecting and contracting with firms for both the design and the construction of such projects. The estimated cost of this strategy is unknown and depends on the size of each individual project, the timeframe in which it will be accomplished, and any grant funding secured to support said projects. A funding source for maintenance will also need to be secured.	Triggered	Continuous - Ongoing	Not applicable	Not applicable	Not applicable	Green streets are being incorporated as requirements for offsite developer improvements. This year no developments required green street improvements in this watershed.

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-1	Collaborative Approach to Irrigation Reduction	Collaborate with jurisdictional water agencies to encourage implementation of water conservation efforts. Water conservation that attempts to reduce irrigation and minimize storm water runoff can also improve water quality of receiving waterbodies. MWD's SoCal Water$mart Program supports conservation efforts by offering incentives in the form of rebates for rain barrels, rotating sprinkler nozzles, weather-based irrigation controllers, soil moisture sensor systems, and turf replacement. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous - Ongoing	Y	No	Y	-
WMA-2	Offsite Alternative Compliance Option (WMAA)	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015, jurisdictions can formally implement an optional Alternative Compliance Program by December 2015 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.		Continuous - Ongoing	-	-	-	-

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-3	Collaboration with the Regional Board	Collaborate with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Ag Waiver, 2) enforcement of other non-MS4 dischargers, and 3) Bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Resources to implement this strategy include staff time and are currently secured for FY16. Funding for future fiscal years is contingent on annual budget approval by Council.	Prior to FY16	Continuous - Ongoing	Y	No	Y	-
WMA-4	Participation in Watershed Council	If a Watershed Council is re-established, the City of Escondido will participate. Watershed Councils are typically locally organized, voluntary, non-governmental organizations, and are intended to broadly represent various stakeholders in the WMA. Goals of Watershed Councils may vary, but they generally promote protecting the watershed and sustaining natural resources. This coordination could assist in selecting WMA projects, identifying potential funding opportunities, and promoting communication among community groups and regulated agencies. Resources necessary to implement this strategy include participating jurisdictional staff to coordinate with the regional effort and the development of an agreement (e.g. MOU, JPA) among participating entities, which may take up to one year to coordinate. Projected funding needs may be met through grant funding, support from community groups or other institutions, or jurisdictional General Funds. Participation is dependent on funding availability and continued benefit to the watershed.	Triggered	Continuous - Ongoing	Not applicable	Not applicable	Not applicable	No group has convened.

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-5	Participation as a stakeholder in the San Diego Integrated Regional Water Management Program as appropriate	Escondido participates as a stakeholder in the San Diego IRWM program as appropriate and necessary, and provides matching funding for a project in the San Dieguito WMA. The City of San Diego, County of San Diego, and San Diego County Water Authority form the Regional Water Management Group (RWMG) and administer and implement the San Diego IRWM Program. The Regional Advisory Committee (RAC) include rotating members from various functional areas related to water management. In San Dieguito River WMA, two integrated projects, funded through Proposition 50 and 84, target water quality in Lake Hodges: 1) San Dieguito Watershed Management Plan Implementation – Lake Hodges Natural Treatment System Conceptual Design and 2) Lake Hodges Water Quality and Quagga Mitigation Measures. Along with grant funding, the City of San Diego Public Utilities Department, City of Escondido, San Dieguito River Valley Conservancy, Santa Fe Irrigation District, and the San Diego County Water Authority are providing local match or in-kind funding. All General Funds are secured on an annual basis and are contingent upon annual budget approval by each participating Responsible Agency.	Prior to FY16	Continuous - Ongoing	Y	No	Y	The City provided documentation of expenses for City projects relating to project grant applications for Lake Hodges to be counted as a project match.
Other Identified Strategies to be considered in future WQIP updates. Insufficient information available at this point to commit to these strategies.								
ES-30	Collaborate with the City of San Diego Lake Hodges source investigations effort	The City of San Diego's Public Utilities Department will conduct studies that can characterize the nutrient budget or "loading rate" for Lake Hodges. Escondido will participate in collaborative watershed efforts as they relate to the MS4.	TBD	TBD	-	-	-	-
ES-31	Proactively repair and replace corrugated metal pipe (CMP) MS4 components to provide source control from MS4 infrastructure	This strategy is unfunded and there is no firm timeframe for development. The timeframe for this strategy will be updated in future WQIP updates, as funding becomes available. Need funding and council approval to use funding for that purpose.	TBD	TBD	-	-	-	-

Table D-2 (continued)
City of Escondido Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
ES-32	If a regional social services effort is established, support workgroup to provide sanitation and trash management for persons experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals	If a regional effort is established, participate in workgroup and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	TBD	TBD	-	-	-	-

D.2.4 Modifications to the BMP Design Manual

No modifications to the BMP Design Manual have been made since the WQIP was approved in fall 2015. The current Escondido BMP Design Manual is posted on the Escondido's website, and the link to this page is listed on Project Clean Water.

D.2.5 Modifications to the Jurisdictional Runoff Management Plan

Escondido's JRMP is being updated and re-submitted concurrent with this WQIP Annual Report. The changes to the JRMP are mostly related to changes in the final approved WQIP for the Carlsbad Watershed Management Area. In the process of reviewing the JRMP for resubmittal, several clarifications, corrections, and updates were made, but no notable changes were made to strategies presented in this WQIP. A summary table of the changes is included below. The current Escondido JRMP is posted on Escondido's website, and the link to this page is listed on Project Clean Water.

Section	Description of Change
Executive Summary; Chapters 1, 3, 5, 6, 7, 8, 9, and 10	Revised references to the applicable highest priority water quality conditions (HPWQCs) for the City of Escondido based on the changes made to the HPWQCs and associated goals in the final, accepted Carlsbad Watershed Management Area Water Quality Improvement Plan (November 2016). When the City's Jurisdictional Runoff Management Program (JRMP) document was finalized in June 2015, the applicable HPWQC listed in the Carlsbad WMA WQIP was indicator bacteria; however, the final HPWQCs that are applicable to the City of Escondido are riparian habitat degradation for the Escondido Creek hydrologic subarea (HSA) and nutrients for the San Marcos Creek HSA. San Dieguito River WQIP HPWQC of indicator bacteria remains the same.
Chapters 3, 7, 8, and 9	Revised references to City's goals, strategies, and schedules related to the HPWQCs listed in the final, accepted Carlsbad WMA WQIP. Removed references to dry weather flow reduction goals in Carlsbad WMA Focus Areas. Edited Chapter 9 (Retrofit and Stream Rehabilitation Programs) and other sections as necessary to highlight the Spruce Street Channel Improvement Project as the City's goal in the Carlsbad WMA WQIP. Added text to Chapter 9 regarding WQIP strategies in Upper San Marcos Creek HSA. Removed reference to rehabilitation at Escondido Creek at Harmony Grove due to focus on Spruce Street Channel Improvement Project in Escondido Creek HSA and other projects.

Section	Description of Change
Chapter 3, Appendix C-3a	Added text to provide clarification on how the City determines if a non-storm water discharge is considered a threat to human health or the environment. Added information regarding spill response through existing and updated City programs. Updated Major MS4 Outfall Inventory and associated text.
Chapter 3	Updated the criteria used to prioritize non-storm water discharges for investigation to better represent the City's IDDE program and the criteria provided by the MS4 Permit.
Chapter 3	Removed Table 3-5 and references, and replaced with reference to analyte list and monitoring plans in WQIPs.
Chapter 6, Appendix C-6A	Updated the municipal inventory, including the removal of nine facilities and the addition of eight facilities. The removed facilities have been sold or are not operated by the City and are addressed by other inspection programs (i.e., through industrial and commercial facility inspections or through residential area inspections).
Chapter 7	Clarified language related to the food service establishment facilities inspections; only high priority Food Service Establishments are inspected twice annually.
Chapter 8	Updated the residential management area inventory, map, and text to correct alignment with water district.
Chapters 4, 9	Updated language describing the City's Hydraulic Analysis, as it has now been completed, and grant funding sought in Storm Water Resource Plans. Described implementation progress and process for updating retrofit and rehabilitation programs.
Appendix C-7a	Appendix C-7a was removed since it must be updated annually and is not required to be included in the City's JRMP document. Industrial facilities are included in the City's Industrial/Commercial inventory and available upon request.
All chapters	Administrative updates were made to the document including updating page numbers, terminology, and organizational updates since JRMP submittal in 2015.

D.3 City of Poway

D.3.1 Annual Report Certifications

The City of Poway's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.3.2 Annual Report Form

Poway's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

STEVE VAUS, Mayor
BARRY LEONARD, Deputy Mayor
JIM CUNNINGHAM, Councilmember
DAVE GROSCH, Councilmember
JOHN MULLIN, Councilmember

CITY OF POWAY

STATEMENT OF CERTIFICATION

San Dieguito River Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report and JRMP Certificate of Legal Authority

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

I also certify that the City of Poway has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 9th day of January, 2017, at the City of Poway.

Robert J. Manis

Date 1/9/17

Robert J. Manis
Director
Development Services Department

City Hall Located at 13325 Civic Center Drive
Mailing Address: P.O. Box 789, Poway, California 92074-0789
www.poway.org

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015/2016

I. COPERMITTEE INFORMATION			
Copermittee Name: City of Poway (San Dieguito Watershed)			
Copermittee Primary Contact Name: Steven Strapac			
Copermittee Primary Contact Information:			
Address: 13325 Civic Center Drive			
City: Poway, CA	County: San Diego	State: CA	Zip: 92064
Telephone: (858) 668-4653	Fax:	Email: sstrapac@poway.org	

II. LEGAL AUTHORITY		
Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE		
Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM		
Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	2
Number of non-storm water discharges detected by Copermittee staff or contractors	9
Number of non-storm water discharges investigated by the Copermittee	11
Number of sources of non-storm water discharges identified	11
Number of non-storm water discharges eliminated	3
Number of sources of illicit discharges or connections identified	11
Number of illicit discharges or connections eliminated	3
Number of enforcement actions issued	11
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM		
Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

Number of proposed development projects in review	10
Number of Priority Development Projects in review	3
Number of Priority Development Projects approved	0
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	0

Number of completed Priority Development Projects in inventory	16
Number of high priority Priority Development Project structural BMP inspections	0
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015/2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	30
Number of active construction sites in inventory	30
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	10
Number of construction site inspections	49
Number of construction site violations	5
Number of enforcement actions issued	5
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	42	7	2	23
Number of existing development inspections	15	4	0	23
Number of follow-up inspections	0	2	0	0
Number of violations	0	2	0	1
Number of enforcement actions issued	0	2	0	1
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Steven E Strapac	10/17/16
Signature	Date
STEVEN E. STRAPAC	SENIOR CIVIL ENGINEER
Print Name	Title
858.668.4653	SSTRAPAC@POWAY.ORG
Telephone Number	Email

FISCAL ANALYSIS

Fiscal information for 2015/2016 is reported in the tables on the following page. The tables are based largely on the standard templates used by the Copermittees in previous fiscal years, but with a distinction between labor costs and other expenses (materials, contracts, etc.) as requested in the Municipal Permit (San Diego Regional Water Quality Control Board, Order No. R9-2013-0001 as amended by Order No. R9-2015-001 and Order No. R9-2015-0100).

Regional programs include Copermittee shared costs for education and other regional expenses, as well as City staff time to participate in regional meetings. Watershed costs include meeting participation, monitoring, and the City's portion of watershed cost shares.

The City anticipates using the same funding sources as shown in Table 2 for 2015/2016 program funding needs. Developer fees are contingent on the number of development projects in the City, and the fees are only used for reviews and similar services provided for those development projects.

Table 1: 2015/2016 Expenditure Summary

Jurisdictional Components	Labor	Expenses	Total
Administration and Permit Fee	$192,655	$24,220	$216,875
Development Planning	$12,120	$0	$12,120
Construction	$22,372	$0	$22,372
Municipal	$703,942	$355,244	$1,059,186
Industrial and Commercial	$27,325	$31,760	$59,085
Residential	$14,375	$176,075	$190,450
IDDE	$0	$48,500	$48,500
Education	$0	$1,000	$1,000
Public Participation	$0	$0	$0
Jurisdictional Total	**$972,789**	**$636,799**	**$1,609,588**
Watershed Programs			
Los Peñasquitos	$14,256	$145,360	$159,616
San Dieguito	$14,256	$27,301	$41,557
Watershed Programs Total	**$28,512**	**$172,660**	**$201,172**
Regional Programs	**$12,217**	**$20,500**	**$32,717**
Total Costs	**$1,013,517**	**$829,960**	**$1,843,477**

Table 2: 2015/2016 Funding Source Summary

Funding by Source	Amount
General Fund	$1,674,987
Storm Water Fee	$0
Developer Deposits and Fees	$21,000
Registration and Inspection Fees	$4,752
Grant Funds	$13,903
Other	$175,075
Total Funding	**$1,889,717**

D.3.3 City of Poway Strategies

City of Poway's strategies are detailed in Table D-3.

Table D-3
City of Poway Jurisdictional Strategies for San Dieguito River WMA

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JRMP (E.2 – E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
PW-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	Refer to JRMP. All high priority projects are inspected annually prior to the rainy season. 20% of all projects are inspected annually.	FY16	Continuous-Ongoing	Y	None	Y	None
Priority Development Projects (PDPs)								
PW-2	For PDPs, administer a program requiring implementation of on-site structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Refer to JRMP. For structural BMPs, all high priority projects will be inspected prior to the start of the rainy season. Any projects that do not provide sufficient documentation to verify that appropriate maintenance work has been performed through the annual maintenance verification program will also be inspected before the end of the fiscal year.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-3	Update BMP Design Manual procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP.	FY16	Continuous- As needed	Y	None	Y	None
PW-3.1	Amend BMP Design Manual for trash areas. Require full four-sided enclosure, siting away from storm drains and cover.	Implemented through the Minor Development Review process and the plan check process.	FY16	Continuous- As needed	Y	None	Y	None
PW-4	Administer an alternative compliance program to on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects). Refer to Section 4.2.5. And Appendix N for further details.	Refer to JRMP.	FY16	Continuous- As needed	Y	None	Y	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

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E.4 Construction Management								
PW-5	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Refer to JRMP; Perform daily inspections during construction. During the wet season, high priority construction sites are inspected every two weeks, medium priority are inspected monthly, and low priority sites are inspected as needed. During the dry season, all construction sites are inspected as needed.	FY16	Continuous-Ongoing	Y	None	Y	None
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
PW-6	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP; Commercial/industrial/municipal are inspected annually, with municipal receiving more frequent inspections by staff.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-6.1	Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	Annually review policies and procedures.	Prior to FY16	Continuous- As needed (Annually)	Y	None	Y	None
PW-6.2	Track stationary and mobile businesses through communication with Business Licensing Division.	Maintain through the City's Commercial/Industrial program.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-7	Promote and encourage implementation of designated BMPs in commercial areas.	Collaborate with MWD and promote their SoCal Water$mart rebates and products such as weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal.	FY16	Continuous-Ongoing	Y	None	Y	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-8	Implement program to investigate illegal grading on private property.	Program to investigate reports of illegal grading. Maintain records of reported illegal gradings and immediately investigate. If activity violates grading or stormwater regulation, issued a "Stop Work" notice and must obtain grading permit and correct stormwater violations. Reports are tracked in "Trackit" software as a code violation and bi-monthly meetings to discuss the status of reports. Grading cases are subject to a strict timeline of action, and enforcement is upped until either compliance, or a Notice of Violation is filed against the property. If it is a stormwater issue, the City's on-call stormwater contractor corrects the issue and City liens the property for payment.	FY16	Continuous-Ongoing	Y	None	Y	None
MS4 Infrastructure								
PW-9	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.).	Refer to JRMP.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-9.1	Perform catch basin cleaning.	Inspect and clean catch basins annually.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-9.2	Clean open-channels to reduce pollutant loads and invasive plants and animals.	Inspect and clean open channels annually.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-10	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers and identify sewer leaks and areas for sewer pipe replacement.	Program implemented through sewer maintenance and inspection program.	FY16	Continuous-Ongoing	Y	None	Y	None
Roads, Street, and Parking Lots								
PW-11	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP; the City of Poway is divided into 8 zones for road operation and maintenance activities; rotational cycle: one zone inspected each year.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-11.1	Implement street sweeping.	Refer to JRMP; all areas swept twice per month.	FY16	Continuous-Ongoing	Y	None	Y	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-11.2	Continue maintenance on access roads and trails by proactively monitoring for erosion and completing minor repair and slope stabilization.	Actively identify and repair eroding slopes that may be contributing to sediment loading. Prepare an inventory and assessment of eroding areas and their risk to surface waters. Follow assessment with a schedule for ongoing inspection and stabilization (potentially based on a number or percentage of sites annually). Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None
Pesticide, Herbicides, and Fertilizer BMP Program								
PW-12	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Refer to JRMP.	FY16	Continuous-Ongoing	Y	None	Y	None
Retrofit and Rehabilitation in Areas of Existing Development								
PW-13	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	The Offsite Alternative Compliance Program will include methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including proximity to high priority water quality conditions, potential pollutant load removal effectiveness, and feasibility of implementation. The development of such program is contingent on the completion of a current water quality equivalency study and development of a crediting system across multiple Responsible Agencies. Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	Y	None	Y	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-14	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	The Offsite Alternative Compliance Program will include methods for identifying and assessing potential stream, channel, or habitat rehabilitation projects in existing development areas. Rehabilitation project selection will be based upon a variety of factors including existing stream or habitat degradation, potential future cumulative stream or habitat impacts, and feasibility of implementation. The development of such program is contingent on the completion of a current water quality equivalency study and development of a crediting system across multiple Responsible Agencies.	FY18	Continuous-Ongoing	Y	None	Y	None
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
PW-15	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP. The City must visually inspect at least 80% of their outfalls two times per year during dry weather conditions.	FY16	Continuous-Ongoing	Y	None	Y	None
E.7 Public Education and Participation (B.3.b.(1)(a)(iii))								
PW-16	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-16.1	Target school-based education and outreach.	Through "I Love a Clean San Diego," give school presentations to fourth-graders eight times per year.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-16.2	Conduct education through community-based organizations.	Through "I Love a Clean San Diego," staff street fair booths twice per year. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-16.3	Review City storm water website and identify and implement required updates to reflect WQIP and JRMP revisions.	Review City storm water website, identify and implement required updates to reflect WQIP and JRMP revisions.	Prior to FY16	Continuous- As needed	Y	None	Y	None
PW-16.4	Collaborate with regional education and outreach efforts.	Participate in Regional Think Blue campaign and collaborate with other regional efforts to provide consistent message or efficiency in training for targeted audiences.	FY16	Continuous-Ongoing	Y	None	Y	None
E.6 Enforcement Response Plan								
PW-17	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Refer to JRMP.	FY16	Continuous-Ongoing	Y	None	Y	None
Non-JRMP Strategies (Optional Strategies, B.3.b.(1)(b))								
Nonstructural Strategies								
PW-18	Require implementation of low impact development BMPs with all new construction.	The City requires LID at all sites, with an emphasis on an effective combination of both erosion control BMPs and sediment control BMPs to reduce discharges of sediment. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-19	Promote MWD and other groups to encourage implementation of water conservation programs that improve water quality by reducing over-irrigation with smart products or turf replacement and capturing rain water in residential areas.	Collaborate with MWD to promote their SoCal Water$mart rebates and products such as weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal. Collaborate with San Diego County Water Authority (SDCWA) to promote their Water Smart irrigation system checkups and turf replacement incentives. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	The City also partnered with the San Diego County Water Authority to promote their artificial turf rebate program.

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-20	Proactively repair and replace corrugated metal pipe (CMP) MS4 components to provide source control from MS4 infrastructure.	Implement CMP replacement program with an emphasis on pipes in open canyons.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-21	Target human behavior in parks and other public areas including trash reduction or other high impact behavior to habitat, wildlife, and water quality.	Implement trash reduction programs by increasing the number of trash and recycling bins during high-traffic public events and in public parks. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None
PW-22	Participate in Reference Watershed Study.	The San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Refer to Section 5.1 for further details. Will occur region-wide. Funding and resources were previously secured.	Prior to FY16	One Time, With Continuous O&M	Y	None	Y	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-23	As opportunities arise and funding sources are identified, protect areas that are functioning naturally by avoiding impervious development and degradation on unpaved open space areas, creating permanent open space protections on undeveloped city-owned land, and acquiring privately-owned undeveloped open areas.	As opportunities arise, where feasible, avoid hardscape development and degradation in unpaved open space areas, create permanent open space protections to undeveloped city-owned land, and acquire privately owned undeveloped parcels of land. This strategy may be implemented if there is interest in participation by the public or private entity with current control of the land. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) identification of partners, if needed (public, private, non-profit), 2) identification of costs and potential sources of funding, 3) final agreement by public or private entity with current control of the land, 4) final agreement by all other participating partners including acceptance by intended land- or asset-owning City department, and 5) funding in place. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The time frame for implementation will vary by project. Implementation is in perpetuity as long as funding is available.	Triggered	Continuous as funding allows	Strategy not triggered in FY16	None	If triggered	None
Structural Strategies								
PW-24	Reconfiguring DPW waste yard to reduce pollutants/runoff.	Follow the site's SWPPP and perform annual monitoring. Relocate activities to limit exposure to reduce pollutants and runoff. Monitoring will continue. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Y	None	Y	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Green Infrastructure								
PW-25	If interim load reduction goals are not met and additional green infrastructure is required, 0.26 acre has been identified as potential opportunities for green infrastructure implementation on public parcels to treat an impervious drainage area of 74.58 acres with a total storage volume of 3.64 acre-feet.	Construction, operation and maintenance of 0.26 acre of potential green infrastructure projects on public parcels to treat an impervious drainage area of 74.58 acres with a total storage volume of 3.64 acre-feet. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project) 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Triggered	Continuous-Ongoing	Strategy not triggered in FY16	None	If triggered	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Multiuse Treatment Areas								
Infiltration and Detention Basins								
PW-26	If interim load reduction goals are not met and additional multiuse treatment areas are required, an infiltration basin can be implemented near Chaparral Elementary School.	There are 4.4 acres available to construct an infiltration basin to treat 45.5 acres of primarily single-family residential areas. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months;) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project) 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Triggered	Continuous-Ongoing	Strategy not triggered in FY16	None	If triggered	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
PW-27	If interim load reduction goals are not met and additional multiuse treatment areas are required, a subsurface detention basin can be implemented on the grounds of Painted Rock Elementary School.	Painted Rock Elementary has about 2.2 acres available for a subsurface detention basin that could potentially treat 164 acres of residential areas. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project) 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Triggered	Continuous-Ongoing	Strategy not triggered in FY16	None	If triggered	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-1	Collaborative Approach to Irrigation Reduction	Responsible Agencies are collaborating with water agencies to encourage implementation of water conservation efforts. Water conservation that attempts to reduce irrigation and minimize storm water runoff can also improve water quality of receiving waterbodies. MWD's SoCal Water$mart Program supports conservation efforts by offering incentives in the form of rebates for rain barrels, rotating sprinkler nozzles, weather-based irrigation controllers, soil moisture sensor systems, and turf replacement. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous - Ongoing	Y	None	Y	None
WMA-2	Offsite Alternative Compliance Option (WMAA)	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015, jurisdictions can formally implement an optional Alternative Compliance Program by December 2015 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous - Ongoing	Y	None	Y	None

Table D-3 (continued)
City of Poway Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-3	Collaboration with the Regional Board	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Ag Waiver, 2) enforcement of other non-MS4 dischargers, and 3) Bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous - Ongoing	Y	None	Y	None
WMA-4	Participation in Watershed Council	If a Watershed Council is re-established, the City of San Diego, County of San Diego and potentially other Responsible Agencies will participate. Watershed Councils are typically locally organized, voluntary, non-governmental organizations, and are intended to broadly represent various stakeholders in the WMA. Goals of Watershed Councils may vary, but they generally promote protecting the watershed and sustaining natural resources. This coordination could assist in selecting WMA projects, identifying potential funding opportunities, and promoting communication among community groups and regulated agencies. Resources necessary to implement this strategy include participating jurisdictional staff to coordinate with the regional effort and the development of an agreement (e.g. MOU, JPA) among participating entities. Projected funding needs may be met through grant funding, support from community groups or other institutions, or jurisdictional General Funds. Participation is dependent on funding availability.	Triggered	Continuous as funding allows	Strategy not triggered in FY16	None	If triggered	None

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D.3.4 Modifications to the BMP Design Manual

No modifications to the BMP Design Manual have been made since the WQIP was approved in fall 2015. The current Poway's BMP Design Manual is posted on the Poway's website, and the link to this page is listed on Project Clean Water.

D.3.5 Modifications to the Jurisdictional Runoff Management Plan

No modifications to the Poway's JRMP have been made since the WQIP was approved in fall 2015. The current Poway JRMP is posted on the Poway's website, and the link to this page is listed on Project Clean Water.

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D.4 City of San Diego

The City of San Diego is proposing the administrative changes in the table below to the San Dieguito River Water Quality Improvement Plan. The proposed administrative changes include clarifications, corrections to errors and typos, and other minor edits that only apply to the City of San Diego.

WQIP Section		Administrative Changes
1	Appendix I – Jurisdictional Strategies and Schedules; Section I.4.2 Funding Needs for the City of San Diego	Included the following text: "Funding needs presented in this section are a snapshot in time and are based on the best information available at the time they were prepared. As program implementation progresses, updates to estimated funding needs are likely to change. For the most recent estimate of funding needs, refer to the WAMP available at the Storm Water Division website, www.sandiego.gov/stormwater/plansreports.
2	Appendix I – Jurisdictional Strategies and Schedules; Table I-5 City of San Diego Jurisdictional Strategies	Refined the text (shown as track changes in red text in Appendix D) to provide greater clarity and/or to correct errors and typos.
3	Appendix I – Jurisdictional Strategies and Schedules; Table I-5 City of San Diego Jurisdictional Strategies	Changed strategy identification numbering system (See Appendix D).
4	Appendix I – Jurisdictional Strategies and Schedules; Table I-5 City of San Diego Jurisdictional Strategies	Structural Strategies, Priority Development Project (PDP) BMPs: All PDP BMPs have been combined into a single strategy for ease of viewing. A table with an updated list of PDP BMPs is included in the WQIP Annual Report (See Appendix D).
5	Appendix I – Jurisdictional Strategies and Schedules; Table I-5 City of San Diego Jurisdictional Strategies	Structural Strategies, Multi Use Treatment Areas (MUTAs): Planned MUTAs that are not yet built have been combined into a single strategy for ease of viewing. The total sum of drainage area treated (level of commitment) has not changed. A table with all structural strategies (MUTAs, Green Infrastructure, Green Streets, etc.) is included in the WQIP Annual Report (See Appendix D).

D.4.1 Annual Report Certifications

The City of San Diego's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.4.2 Annual Report Form

City of San Diego's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

D.4.3 City of San Diego Strategies

City of San Diego's strategies and project implementation status are detailed in Tables D-4 through D-7.

THE CITY OF SAN DIEGO

STATEMENT OF CERTIFICATION

San Dieguito River Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Drew Kleis
Deputy Director
Transportation & Storm Water Department

1/12/17
Date

Transportation & Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 • Fax (858) 541-4350

CITY OF SAN DIEGO

SCOTT CHADWICK
CHIEF OPERATING OFFICER

January 27, 2017

Mr. David W. Gibson, Executive Officer
Regional Water Quality Control Board
San Diego Region
2375 Northside Drive, Suite 100
San Diego, CA 92108

Subject: Certification of Adequate Legal Authority

Dear Mr. Gibson:

Pursuant to San Diego Regional Water Quality Control Board Order No. R9-2013-0001, as amended by Order No. R9-2015-0100 (Municipal Permit or Permit), Provision E.1.b, the City of San Diego, as a Copermittee in the above referenced permit, submits this certification of adequate legal authority with the first Water Quality Improvement Plan Annual Report. The City has adequate legal authority to implement and enforce each requirement contained in 40 C.F.R. section 122.26(d)(2)(i)(A)-(F), and the Municipal Permit (including Provision E.1.a(1)-(10)). The San Diego Municipal Code, including the following provisions, provides the City with adequate legal authority as required by the Municipal Permit:

1. Storm Water Management and Discharge Control, sections 43.0301 through 43.0312. These provisions are being amended, although the current version also complies with the requirements of the Municipal Permit.
2. General Construction Permit Authority and Procedures, sections 129.0101 through 129.0120.
3. Grading Regulations, sections 142.0101 through 142.0150.
4. Storm Water Runoff Control and Drainage Regulations, sections 142.0201 through 142.0230.

The City looks forward to working with you and the Regional Board on storm water management matters. If you have any questions, please contact Senior Planner Jim Harry at (858) 541-4353 or email JHarry@sandiego.gov.

Sincerely,

Scott Chadwick
Chief Operating Officer

AK/jph

202 C Street, MS 9A • San Diego, California 92101 • Tel (619) 236-5587

cc: Mara Elliott, City Attorney, Office of the City Attorney
Stephen Puetz, Chief of Staff, Office of the Mayor
Stacey LoMedico, Assistant Chief Operating Officer
Mike Hansen, Deputy Chief of Staff and Chief of Policy, Office of the Mayor
Paz Gomez, Deputy Chief Operating Officer, Infrastructure/Public Works
Alejandra Gavaldon, Director of Federal Government Affairs & Water Policy, Office of the Mayor
Kris McFadden, Director, Transportation & Storm Water Department
Drew Kleis, Deputy Director, Transportation & Storm Water Department
Davin Widgerow, Deputy City Attorney, Office of the City Attorney
Clem Brown, Program Manager, Transportation & Storm Water Department
Ruth Kolb, Program Manager, Transportation & Storm Water Department
Jim Harry, Senior Planner, Transportation & Storm Water Department

I. COPERMITTEE INFORMATION			
Copermittee Name: **City of San Diego (San Dieguito WMA)**			
Copermittee Primary Contact Name: **Drew Kleis, Deputy Director, Storm Water Division, Transportation & Storm Water Department**			
Copermittee Primary Contact Information: Address: **9370 Chesapeake Drive, Suite 100** City: **San Diego**	County: **San Diego**	State: **CA**	Zip: **92123**
Telephone: **858-541-4320**	Fax: **858-541-4350**	Email: **Akleis@sandiego.gov**	

II. LEGAL AUTHORITY	
Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES ☒ NO ☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE	
Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES[1] ☒ NO ☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES ☒ NO ☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM[2]	
Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐
Number of non-storm water discharges reported by the public	**119**
Number of non-storm water discharges detected by Copermittee staff or contractors	**60**
Number of non-storm water discharges investigated by the Copermittee	**171**
Number of sources of non-storm water discharges identified	**143**
Number of non-storm water discharges eliminated	**141**
Number of sources of illicit discharges or connections identified	**142**
Number of illicit discharges or connections eliminated	**140[3]**
Number of enforcement actions issued	**141[3]**
Number of escalated enforcement actions issued	**69**

V. DEVELOPMENT PLANNING PROGRAM[2]	
Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES ☒ NO ☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES[4] ☒ NO ☐
Number of proposed development projects in review	**70[5]**
Number of Priority Development Projects in review	**5[6]**
Number of Priority Development Projects approved	**88[7]**
Number of approved Priority Development Projects exempt from any BMP requirements	**0**
Number of approved Priority Development Projects allowed alternative compliance	**0**
Number of Priority Development Projects granted occupancy	**76[8]**
Number of completed Priority Development Projects in inventory	**118[9]**
Number of high priority Priority Development Project structural BMP inspections	**1**
Number of Priority Development Project structural BMP violations	**1[10]**
Number of enforcement actions issued	**1[11]**
Number of escalated enforcement actions issued	**0**

VI. CONSTRUCTION MANAGEMENT PROGRAM[2]

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES[1,12] ☒ NO ☐

Number of construction sites in inventory	1,364
Number of active construction sites in inventory	26
Number of inactive construction sites in inventory	12
Number of construction sites closed/completed during reporting period	23
Number of construction site inspections	10,074
Number of construction site violations	169
Number of enforcement actions issued	114
Number of escalated enforcement actions issued	65

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM[2]

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	23	1,542 (includes mobile)	81	12[13]
Number of existing development inspections	22	308	6	1[13]
Number of follow-up inspections	0	14	0	0
Number of violations	3	49	0	109[13]
Number of enforcement actions issued	4	58	0	107[13]
Number of escalated enforcement actions issued	0	23	0	50

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES[1] ☒ NO ☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES[1,14] ☒ NO ☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature	1/12/17 Date
Drew Kleis Print Name	Deputy Director Title
(858) 541-4320 Telephone Number	Akleis@sandiego.gov Email

[1] The City of San Diego approved an update to the Jurisdictional Runoff Management Plan (JRMP) in FY 16. The update of the JRMP was done in compliance with Order No. R9-2013-0001.
[2] See the JRMP Annual Report FY 2016 Attachment 1 for a citywide summary of this data.
[3] The number of enforcement actions issued does not equal the number of identified illicit discharges or connections because some discharge complaints in the last quarter of FY 2016 were still under investigation at the end of FY 2016.
[4] The Storm Water Standards Manual (Part 1: BMP Design Manual, and Part 2: Construction BMP Standards) was updated in January 2016.
[5] The number of ongoing Standard and Priority Development Projects in review as of 6/30/16. The Development Services Department processes other types of permits, in addition to those included in the JRMP Annual Report, that are not subject to the requirements of the municipal permit.
[6] The number of ongoing Priority Development Projects in review as of 6/30/16. Only a portion of the projects that the Development Services Department processes qualify as a priority development project.
[7] The number of Priority Development Projects approved in FY 2016.
[8] This number includes the City's Priority Development Projects that received final inspection in FY 2016 as well as certain Priority Development buildings and grading projects that did not require a Certificate of Occupancy, that were completed in FY 2016.
[9] Represents the total number of completed Priority Development Projects in the City's inventory as of the end of FY 2016. These projects include projects entered into the inventory as complete in previous years.
[10] The number of Priority Development Project structural BMP violations included Notices of Violation, Notices of Deficient Maintenance, and Administrative Citations issued to public and private entities within the City's jurisdiction in this watershed.
[11] The number of enforcement actions included Notices of Violation and Notices of Deficient Maintenance issued to public and private entities within the City's jurisdiction in this watershed. The City has achieved compliance at 146 of the 150 sites identified in the San Diego RWQCB's Notice of Violation (Order Number R9-2014-0034). The San Diego RWQCB granted the City an extension to achieve compliance at the remaining four sites by May 26, 2017.
During the process of achieving compliance for the aforementioned 150 identified sites, the City has discovered an additional 74 sites which initially appear to be out of compliance due to varying degrees of circumstances. Each of these potential violations consist of post-construction BMP issues. Continuing the same process as outlined in our quarterly reports to the RWQCB, the City is currently researching each case. After initial research to verify non-compliance or not, we will follow our established procedures to have each site be in conformance to the MS4 permit under which it was permitted.
[12] Responses in this report are based on the City's internal data. Potential program deficiencies were identified by the Board in FY 2016, however, the City has taken steps to correct issues identified by the Board as detailed in the JRMP Annual Report FY 2016 Appendix. The City has implemented several improvements that address the Regional Board's concerns. These improvements ranged from procedural changes to creating multi-language brochures for contractors. Several operating and internal procedures have been refined to improve enforcement actions, add clarity to how sites are inspected, and to better define the staff's roles and expectations.
[13] Existing facilities for residential uses are characterized as Residential Management Areas (RMA), which could include hundreds of residences. When all of the residences in an RMA are inspected by City staff that is only counted as one inspection. However, all individual issues noted at each residence during an RMA inspection is counted as a separate violation and/or enforcement action.
[14] See the JRMP Annual Report FY 2016 Appendix for the FY 2016 Fiscal Analysis.

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The City of
SAN DIEGO
Development Services Department
Engineering Division

January 12, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Development Services Department Engineering Division Contributions

Please accept this letter as certification of the City of San Diego Development Services Department Engineering Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Edric Doringo, Program Manager at 619-446-5098 or email edoringo@sandiego.gov.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Development Services Department, Engineering Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

Gregory Hopkins

Gregory Hopkins
Deputy Director, Development Services Department

GH/cmm

Enclosure:
cc: Robert Vacchi, Director, Development Services Department
Drew Kleis, Deputy Director, Transportation and Storm Water Department

1222 First Avenue, M.S. 501
San Diego, CA 92101-4155

T (619) 446-5291

The City of
SAN DIEGO

Development Services Department
Inspection Services Division

January 24, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Development Services Department Inspection Services Division Contributions

Please accept this letter as certification of the City of San Diego Development Services Department Inspection Services Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Senior Inspector Sam Lindsey or Project Manager Xavier Del Valle at (858) 492-5070.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Development Services Department, Inspection Services Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

William Barrañón
Inspection Services Manager

The City of
SAN DIEGO
Public Works Department
Construction Management and Field Services Division

November 3, 2016

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Public Works Department, Construction Management and Field Services Division Contributions

Please accept this letter as certification of the City of San Diego Public Works Department Construction Management and Field Services Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Julie Ballesteros, Senior Civil Engineer, at (858) 573-5012.

I certify under penalty of law that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Public Works Department Field Engineering Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Myrna M. Dayton, PE, QSP, QSD, DCE
Deputy Director

9485 Aero Drive, Mail Station 18
San Diego, CA 92123
engineering@sandiego.gov

T (858) 627-3200
sandiego.gov

THE CITY OF SAN DIEGO

January 30, 2017

Christina Arias
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Ms. Arias:

Subject: City of San Diego Jurisdictional Runoff Management Plan (JRMP) FY 2016 Annual Report, Public Works Department, Project Implementation Division Contributions

Please accept this letter as certification of the City of San Diego Public Works Department, Project Implementation Division's contributions to the City of San Diego's JRMP Fiscal Year 2016 Annual Report, and associated Appendices.

If you have any questions, please contact Catherine Dungca, Senior Civil Engineer, at (619) 533-3778.

I certify, under penalty of law, that this Jurisdictional Runoff Management Plan Fiscal Year 2016 Annual Report and attachments (associated with the Public Works Department, Project Implementation Division) were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sincerely,

Marnell Gibson
Assistant Director
Public Works Department

APPENDIX

1 OPERATIONAL ADAPTIVE MANAGEMENT

In Fiscal Year (FY) 2016 the City of San Diego (City) completed technical and non-technical monitoring, special studies, pilot studies, and various other efforts related to its Storm Water Program. The City gained valuable information that led to effective adaptation of procedures and operations, which ultimately led to more effective implementation of its Storm Water Program and the Jurisdictional Runoff Management Plan (JRMP). The following are operational adaptive management improvements that the City made during FY 2016:

- **Get it Done Application**
  In late FY 2016, the City released the Get it Done Application (App), which provides a modern, efficient method for members of the public to report issues to the City. One of the App's features allows illicit discharges to be reported by taking a photo with a phone that includes Global Positioning System (GPS) coordinates, and uploading it to the App. According to a recent City survey, 83 percent of respondents stated that they did not want to call the City government to report a problem. The new Get It Done App eliminates the need to call the City for various problems, by allowing residents to report issues online, which was the preferred method of 50 percent of survey respondents. The App also allows residents to report problems using their name or anonymously.

- **Phase V Street Sweeping Pilot**
  The City completed the fifth and final pilot study of the Targeted Aggressive Street Sweeping Pilot Program in FY 2016, which tested the effectiveness of posting limited-hour "no parking" signs on traditionally non-posted street sweeping routes. After two years of data collection on two subject routes, the study confirmed the hypothesis that a significant amount of additional debris (48% and 58% over baseline on the subject routes) can be removed from posting no parking signs on traditionally non-posted roadways. Based on this finding, the City will consider posting additional routes if supported by the community.

- **Enhanced Catch Basin Cleaning Optimization**
  Enhanced catch basin cleaning is a strategy to address pollutant removal from the Municipal Separate Storm Sewer System (MS4) in three of the City's six watersheds. While most catch basins are inspected once per year, this strategy involves inspecting catch basins within the specified watersheds between two and four times per year. The optimization study assigned priorities to individual basins and watersheds based on eight years of historic debris removal. This optimization focused efforts by reducing the number of inspections performed per year, while increasing total debris removal from those inspections. This enhancement will allow the City to target high priority drains to maximize pollutant removal while maintaining cost efficiencies. In FY 2016, approximately 2,500 additional catch basin inspections and cleanings (if necessary) were completed in the Chollas Creek area of the San Diego Bay Watershed.

- **Flood Control Pump Stations**
  To help minimize the risk of flooding in flood-prone areas during storm events, the City utilizes a number of pump stations to increase the flow of water through the conveyance network. Considering the pump stations are connected to the electric network, they only

function when power is running. In FY 2016, a 2,400 volt automatic transfer switch and generator were installed at a critical pump station that are capable of pumping 130,000 gallons of water per minute. This significantly decreases the risk of flooding in the related drainage area because the pump station will continue to operate during a storm event. The City also replaced or refurbished 11 other critical pump stations. Additionally, the City modernized operations at 14 pump stations by installing a telemetry system that remotely alerts staff of failures, allowing for a more immediate response.

- **Storm Drain Inspections**
  To help prioritize replacement of corrugated metal piping in the City's conveyance network, the City used closed-circuit televising at 62 locations in FY 2016 to assess pipe conditions. The City assessed the condition of 28,000 linear feet of corrugated metal piping in FY 2016.

- **Property-Based Inspections**
  In FY 2016, the City further committed to implementing property-based inspections to increase the business inspection program's efficiency and effectiveness. A previously conducted pilot study on inspection practices found property-based inspections more effective at identifying and resolving water quality issues (e.g., improper trash disposal practices and irrigation runoff, etc.) associated with commercial and industrial businesses. The inspections are focused on areas and activities associated with businesses that would not otherwise be inspected for storm water compliance. The inspections greatly increase the number of businesses subjected to storm water inspections while focusing on the pollution generating areas and activities without unduly increasing the inspection load of City inspectors. In FY 2016, the City performed 835 property-based inspections that accounted for over 4,700 business inspections.

- **Tiger Team**
  The Tiger Team was established in FY 2016 to identify, locate and eliminate sources of human specific bacteria sources in the MS4. The Transportation & Storm Water Department (TSW) leads this effort in partnership with the Public Utilities Department. After a specific portion of the MS4 with elevated human specific bacteria was identified, the Tiger Team performed escalated enforcement activities through TSW Code Enforcement, MS4 sampling, MS4 sanitary sewer line televising, and MS4 and sanitary sewer cleaning. Over several months during the reporting year, one problem area within the City was investigated extensively and a source of human specific bacteria in the MS4 was identified and abated.

- **Increased Non-Stormwater Discharge Investigations**
  The City received 215 more complaints of non-stormwater discharges in FY 2016. Approximately 81% of the complaints citywide were resolved. A majority of the investigations that were resolved involved irrigation runoff. Cases were unresolved either because the source could not be identified or the source was groundwater.

  The identification and elimination of irrigation efforts in FY 2016 involved the following:
  1) Special irrigation patrols were conducted on a monthly basis. All violating properties were issued notices of violation and/or a citation.
  2) TSW code compliance partnered with the Public Utilities Department. If a complaint of irrigation with runoff was received, a storm water code compliance officer would issue a notice of violation. If the property had multiple complaints,

that property would become part of an irrigation patrol and could result in a citation.

- **Waterways Maintenance Plan**
  The City began development of the Waterways Maintenance Plan in FY 2016, which will replace the Master Storm Water System Maintenance Program, which expires in 2018. The goals of the Plan are to create an overall holistic storm water management strategy with standard mitigation measures and streamlined maintenance approvals. Objectives of the Plan include flood risk reduction, infrastructure sustainability and resource protection and restoration. In addition to technical scoring criteria, the Plan also includes a unique public input metric so that public concerns are given a tangible value. Planning efforts will continue in FY 2017, with implementation beginning in FY 2019.

- **Off-Site Alternative Compliance Program**
  In FY 2016, the City implemented phase I of the Alternative Compliance Program. This gives development projects that would require on-site structural Best Management Practices (BMPs) to comply with pollutant control and hydromodification management the option to propose off-site alternative compliance projects. The development of phase II also began in FY 2016 and includes establishing an in-lieu fee structure and credit system as an alternative to installing on-site stormwater BMPs.

- **Watershed Master Planning**
  To provide the high-resolution data needed to drive systematic and cost-effective implementation of green infrastructure (GI) projects, the City has developed a comprehensive and dynamic Watershed Master Plan (WMP) in the Chollas Creek Watershed that quantifies progress towards water quality goals and incorporates synergies with other municipal programs. The WMP has the capability to dynamically assess the cost-based water quality benefits of specific GI projects against one another and incorporates a robust prioritization logic that realizes the complex nature of implementing retrofit GI facilities within a highly urbanized environment. Ultimately, the output of this project gives the City a project-by-project roadmap that is prioritized to implement high-impact and high-efficiency BMPs first, leaving less desirable projects for later implementation.

- **Bacteria Regrowth Study**
  The bacteria regrowth study currently being completed by the City includes monitoring to characterize the magnitude and extent of potential *Enterococcus* loading due to regrowth within the City's storm drain system. This study will quantify the amount of bacteria in receiving water samples that are harmless to humans and would potentially be used to refine bacteria water quality standards of the Bacteria TMDL as a part of the re-opener process.

- **Los Peñasquitos Lagoon Restoration Project**
  Modeling was completed in FY 2016 to confirm the preferred alternative for the Los Peñasquitos Lagoon Restoration project. The City was identified as the "lead" for the project. The upcoming tasks in FY 2017 include completing the concept design and starting the public outreach process. In coordination with Copermittees, Caltrans and SANDAG completed the environmental and construction phases for various rail and transit, highway, and environmental protection projects.

2 STORMWATER PROGRAM ACCOMPLISHMENTS/NOTABLE UPDATES

The City continued to implement the key elements of the JRMP. The following are stormwater accomplishments and notable updates that occurred during the FY 2016 reporting period.

- **Water Quality Improvement Plans**

  In FY 2016, the San Diego Regional Water Quality Control Board (Regional Board) accepted the six Water Quality Improvement Plans (WQIPs) that included City jurisdiction. The goal of the WQIPs is to protect, preserve, enhance, and restore the water quality of receiving water bodies. These WQIPs identify the adaptive planning and management process necessary to address the highest priority water quality conditions within a watershed. The WQIPs also identify strategies to achieve improvements in the quality of discharges from the Responsible Agencies' storm drain systems. The City is the lead on the WQIP for the San Dieguito, Los Penasquitos, and Mission Bay watersheds. The City is also a participating agency in the San Diego River, San Diego Bay, and Tijuana River watersheds.

- **JRMP Refinements**

  In FY 2016, the City identified refinements to the JRMP. These refinements were incorporated into the JRMP and will be completed in mid FY 2017. Refinements included minor changes to text to update the discussions of WQIP strategies, updates to the fiscal analysis, updates to the minimum BMPs to address pesticide applications, and updated references to the Storm Water Standards Manual that was adopted in FY 2016. The updated JRMP can be viewed at https://www.sandiego.gov/stormwater/plansreports/jrmp.

- **General Plan and Community Plan Amendments**

  Southeastern San Diego and Encanto Neighborhoods Community Plan Updates:

  The recently adopted Southeastern San Diego and Encanto Neighborhoods Community Plans incorporate language, policies and recommendations concerning the reduction of urban runoff and storm water quality. Stormwater quality plays a significant role in both of these communities since Chollas Creek is a significant feature within both plan areas lead directly to the San Diego Bay. A primary recommendation in both community plans is the restoration and enhancement of the creek, consistent with the Chollas Creek Enhancement Program, which includes the reduction of pollutants that enter the storm water system from nearby uses (see respective Conservation Elements). Specific stormwater language and policies have been adopted for the newly updated Southeastern San Diego and Encanto Neighborhoods Community Plans (adopted October 2015 by City Council).

The following policies have been adopted and will be used to implement BMPs for new development projects in Encanto as an example:

- PLU-53:
    - Facilitate urban gardening as a strategy for creating local healthy food systems and fighting chronic obesity related illnesses, contributing to stormwater retention, and fostering community interaction;
    - Figure 3-4 in the Southeastern San Diego and Encanto Neighborhoods Community Plan illustrates stormwater treatment for streets;
    - Images on page 4-15 in the Southeastern San Diego Encanto Neighborhoods Community Plan illustrate stormwater treatment images;

- P-UD-88: Utilize permeable paving, bioswales, green alleys and/or other stormwater design features that will manage rain water and irrigation runoff while supporting the heavy load vehicles that would service the loading docks and refuse containers;

- Upgrade infrastructure for water and sewer facilities and institute a program to clean the storm drain system prior to the rainy season.

- Install infrastructure that includes components to capture, minimize, and/or prevent pollutants in urban runoff from reaching San Diego Bay and Chollas Creek. (See also Urban Runoff Management in the Conservation and Sustainability Element.)

- P-RE-20: Require that all stormwater and urban runoff drainage be filtered or treated before entering into open space lands.

Draft North Park Community Plan: The draft North Park Community Plan, scheduled to be adopted by City Council in October 2016, also contains specific Stormwater and BMP language in the Conservation Element of the Community Plan as well as in the appendices. The draft North Park Community Plan incorporates language, policies and recommendations concerning the reduction of urban runoff and storm water quality specifically in relation to tree planting as well as "Green Streets". Specific policies include:

- PF-1.15 Implement water improvements programs so there are systematic improvements and gradual replacement of water and wastewater facilities throughout the community. Also see General Plan PF-F.6 PF-G.2, PFH. 3, and PF-I.1.
    - Implement Green Infrastructure strategies to address storm water runoff throughout North Park.

- SE-3.17 Encourage property owners to design or retrofit landscaped or impervious areas to better capture stormwater runoff.

Draft Uptown and Golden Hill Community Plans: Public review drafts of the community plans for Uptown and Golden Hill plan updates were made available for public review in June 2016. The Conservation Elements of the draft community plans address conservation of the natural resources in each community, including open space, natural habitats, canyon sewer maintenance, and management of water resources and

urban runoff. The Public Facilities, Services and Safety Elements also address water, sewer and stormwater infrastructure. The discussion and policies related to these topics are intended to guide sustainable development practices that will minimize ecological footprints within each community and preserve natural features and resources. The Draft Programmatic Environmental Impact Reports were released in the summer of 2016. Adoption of the community plans are anticipated at the end of 2016.

San Ysidro Community Plan Update: A comprehensive community plan update started in San Ysidro in June of 2010 and aims to reflect the current conditions, improve mobility, include the pedestrian environment, and address quality of life issues. A Community Plan Update Stakeholders Advisory Committee (Advisory Committee) was established as part of the plan update effort and consists of diverse representation from the residents, property owners, various business interests, local community organizations, and not-for-profit groups, and participating public agencies within the plan update boundary. The San Ysidro Community Planning Group, which provides City decision-makers with input and recommendations regarding land use plans and development proposals within the San Ysidro plan boundary, makes up the majority of the Advisory Committee members. The Plan update effort is informed by technical studies and the City's 2008 General Plan which promotes current storm water, urban runoff, and water conservation policies. A discussion draft of the plan was released in June 2014 and a public review draft was released in April 2015 and 2016. The plan includes a Conservation Element as well as a Public Facilities Services and Safety Element, and contains specific policies related to reducing storm water runoff in the San Ysidro Community planning area. The plan is anticipated to be adopted in fall 2016.

- **Notices of Violation**

Treatment Control BMPs Notice of Violation: The City has achieved compliance at 146 of the 150 sites identified in the Regional Board's Notice of Violation (Order Number R9-2014-0034). The Regional Board granted the City an extension to achieve compliance at the remaining four sites by May 26, 2017.

During the process of achieving compliance for the aforementioned 150 identified sites, the City has discovered an additional 74 sites which initially appear to be out of compliance due to varying degrees of circumstances. Each of these potential violations consist of post-construction BMP issues. The City is continuing the same process outlined in its quarterly reports to the Regional Board, and is researching each case. After initial research to verify non-compliance or not, the City will follow its established procedures to achieve compliance at each site as required by the MS4 permit that it was permitted.

Administrative Civil Liability Complaint: The Regional Board conducted an audit of the City's construction management program during the 2014-2015 rainy season, and issued an Administrative Civil Liability Complaint in July 2016 for several alleged violations involving the City's construction oversight and enforcement practices. The City has worked diligently to address their initial concerns, and will continue to evaluate and implement strategies to ensure long-term success.

Since 2011, there has been a steady increase in the number of construction projects citywide. This surge in activity required the City to respond in a manner that would

enable the staff to keep up with the demand and allow the managers to effectively oversee the growth.

Several substantial improvements have been made, ranging from updating our standard procedures and increasing our outreach efforts to improving the City's escalating enforcement practices and issuing Administrative Citations and Administrative Civil Penalties to repeat offenders. In addition, the City established bi-weekly coordination meetings with the Storm Water teams from Public Works, Development Services and TSW to more effectively share up-to-date project information, discuss various strategies, collaborate on solutions, and coordinate enforcement on a more routine basis so that escalated enforcement is effective.

Another significant improvement involves the development of a unified storm water enforcement database. This will ensure collaboration between Resident Engineers (RE) and storm water inspectors while in the field so they will know the full inspection and enforcement history prior to entering a site. This resource is expected to be available in FY 2017.

Updating the Storm Water Standards Manual is another milestone improvement that was completed during FY 2016. The additional clarity that's now provided in the Construction BMP Standards section (Part 2) gives the responsible party increased guidance to help prevent construction activities from adversely impacting water quality downstream.

The frequency of the citywide storm water training has increased and proven to be a key factor in equipping and empowering our staff to properly address various field challenges and confidently communicate concerns and violations to the responsible parties. Some of the trainings included mandatory annual storm water training for the REs, Inspectors and Code Enforcement Officers, as well as training for our operations staff from the Public Utilities Department and TSW Streets Division.

3 FISCAL ANALYSIS

3.1 GENERAL BUDGET INFORMATION

The Storm Water Division is responsible for reporting annually on the jurisdictional, watershed and regional fiscal analyses to the Regional Board in accordance with the regional Fiscal Analysis Method developed by the Copermittees in response to Regional Board Order No. R9-2007-0001 (2007 Permit). During the reporting period, the Storm Water Division collected and analyzed financial information from 23 City departments/divisions through its "Annual Report Form" questionnaire, as well as from within the Storm Water Division. A summary of the findings is included below.

FY 2016 fell within the transitional period, as defined under Regional Board Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 (Municipal Permit). During the transitional period, most of the jurisdictional portions of the City's program continue to follow the requirements of the 2007 Permit, while the JRMP and WQIPs were being developed in response to the current Municipal Permit. The WQIPs were approved by the Regional Board at the end of FY 2016. The expenditures described for FY 2015 therefore reflect costs to comply with the transitional period stormwater requirements in effect during FY 2015, which are a combination of 2007 Permit and current Municipal Permit standards. Since the WQIPs were approved during FY 2016, partial implementation began, but full implementation will commence in FY 2017.

It is expected that the City will begin full implementation of current Municipal Permit requirements during FY 2017. The City will implement the revised JRMP, which updates the City's jurisdictional stormwater program to follow the current Municipal Permit requirements rather than the 2007 Permit requirements. The City's fiscal analysis reporting structure in turn will change, reporting expenditures, and funding sources in the following three main categories: JRMP (jurisdictional), WQIP (watershed), and flood risk management. That structure is consistent with the framework described in the City's Watershed Asset Management Plan (WAMP), the WQIPs to which the City is a party, and the JRMP. FY 2015 is the last year in which JRMP and flood risk management will be lumped together under the heading of "Jurisdictional Component" rather than reported separately.

3.2 FISCAL ANALYSIS METHODS

While the City used the format and guidelines included in the Fiscal Analysis Method for reporting purposes, a few modifications were necessary to address how the City tracks accounts internally. Modifications to the expenditure categories are described in the relevant sections below. In many cases, estimated percentages were used to allocate expenditures into the appropriate municipal permit component categories, including watershed and regional.

3.2.1 Fiscal Analysis Results

3.2.1.1 Expenditures

The City's FY 2016 Transitional JRMP Regional Program total expenditures ($75,934,083) for implementing the Municipal Permit requirements are summarized in Table 1.

Table 1: FY 2016 Jurisdictional, Watershed, and Regional Expenditures Summary

Jurisdictional Component	
Administration	$11,179,605
Development Planning (including public and private projects)	$1,897,784
Construction (including public and private projects)	$632,646
Municipal (including Non-emergency Fire Fighting expenditures)	$30,146,109
Storm Water Division Capital Improvements Program (CIP)	$7,929,308
Industrial and Commercial	$2,001,544
Residential, Education, and Public Participation	$2,159,991
Illicit Discharge Detection and Elimination (IDDE)	$11,339,120
Jurisdictional Total	**$67,286,108**
Watershed Component[1]	
San Dieguito Watershed	$1,105,348
Los Peñasquitos Watershed	$2,061,071
Mission Bay Watershed	$1,242,769
San Diego River Watershed	$680,843
San Diego Bay Watershed	$2,165,456
Tijuana River Watershed	$686,584
Watershed Total	**$7,942,071**
Regional Component	
Total Copermittee Cost Share for the City of San Diego	$342,001
Additional Regional Costs for education efforts, monitoring, document reviews, regional meeting attendance, and special projects	$363,903
Regional Total	**$705,904**
Total Costs	**$75,934,083**

[1] Watershed Component costs do not include Capital Improvements Program (CIP) costs. CIP costs are only included in the Jurisdictional Component's Storm Water Division Capital Improvements Program Category.

Transitional JRMP Expenditures

The City's FY 2016 Citywide expenditures for implementing the jurisdictional Municipal Permit requirements are depicted in Figure 1. Expenditures were provided as actual costs in most cases, and when the actual costs could not be determined, estimates of actual costs were provided. The Storm Water Division used the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, because of implementation overlap with the City's education, public participation, and residential Municipal Permit components, it is difficult to separate out individual component costs. Therefore, the expenditures for residential, education, and public participation are reported as one expenditure category.

A total of $67,286,108 was expended in FY 2016 to implement JRMP activities citywide. This amount includes costs paid by sewer and water rate payers (which are used for sewer and water-related services) and costs reimbursed by project applicants. An overview of the expenditures reflected in this component is described below.

Administration ($11,179,605)

Activities identified in this section represent personnel and non-personnel expenses for administration and contracts, grant management, citywide management, staff training, reporting, and assessment of the Municipal Permit.

Development Planning ($1,897,784)

Activities identified in this section represent personnel and non-personnel expenses for plan check reviews, incorporating BMPs into project designs, BMP Design Manual development, and General Plan updates. This category includes expenses for private and public projects.

Construction ($632,646)

Activities identified in this section represent personnel and non-personnel expenses for plan check review services, field inspections related to grading permits, public improvements, and building activities. This category includes expenses for private and public projects.

Municipal ($30,146,109)

Activities identified in this section represent personnel and non-personnel expenses for street sweeping, storm drain and channel maintenance, BMP implementation, and municipal facility and activity inspections. Additionally, this section includes the expenditures for Fire Department activities not related to emergency firefighting, such as facility inspections, stormwater BMPs, etc.

Capital Improvement Program ($7,929,308)

Activities identified in this section represent personnel and non-personnel expenses for implementation of new construction and planned improvements to existing facilities for storm water management. Projects may include, but are not limited to, the construction, purchase, or major renovation of buildings, utility systems, and other facilities to achieve storm water requirements. In addition, they may also include land acquisitions and roadway projects to install storm water facilities.

Industrial and Commercial ($2,001,544)

Activities identified in this section represent personnel and non-personnel expenses for inspection of industrial and commercial facilities. This also includes personnel and non-personnel expenses for the stormwater components of Food Establishment Wastewater Discharge Program (FEWD) and Industrial Wastewater Control Program (IWCP) inspections.

Residential, Education, and Public Participation ($2,159,991)

Activities identified in this section represent personnel and non-personnel expenses for educational materials, outreach efforts and events, public service announcements (PSAs), household hazardous waste (HHW) and used oil outreach, and community events.

Illicit Discharge Detection and Elimination ($11,339,120)

Activities identified in this section represent personnel and non-personnel expenses for identification and elimination of illicit discharges, enforcing the City's stormwater ordinance and implementation of the administrative civil penalties and citation process, and the urban runoff monitoring program.

Watershed Expenditures

The City's watershed expenditures during FY 2016 for the implementation of the watershed Municipal Permit requirements were provided as actual costs and when the actual costs could not be determined, estimates of actual costs were provided. The Storm Water Division used the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City expenditures and do not account for any expenditure disbursed by other Copermittees within the watershed(s).

In total, $7,942,071 was expended in FY 2016 for the implementation of citywide watershed activities. This amount includes costs for the implementation of applicable TMDLs along with special studies.

Regional Expenditures

The City's FY 2016 regional expenditures ($705,904) for the implementation of the regional Municipal Permit requirements are primarily the City's share of regional Copermittee stormwater program costs. Additional costs include estimated staff time to attend regional meetings and other related administration costs. The Storm Water Division used the expenditure categories (administration, cost share contribution, regional activities, and other) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture City expenditures, and do not account for any expenditure disbursed by other Copermittees in the region.

3.2.1.2 Grant Funding for Special Studies

In addition to resources identified for Municipal Permit requirements, the City actively seeks grants, and other funding sources, for special studies and Capital Improvement Projects. For the most part, funding for these projects may be limited to the projects specified and the City may restrict funding reallocation to other projects. Therefore, these resources are currently not incorporated in calculations for total Municipal Permit requirements expenditures detailed in Section 2.2.1.4 above. Table 2 lists projects that were initiated and/or in progress during FY 2016. It is important to note that the projects span multiple years and the amounts listed below are not just representative of FY 2016.

Table 2: Funding for Special Projects

Funding Source	Project	Amount	Matching Fund Amount	Total Amount[2]
San Diego County Water Authority (SDCWA)	Memorial Park Infiltration Basin Construction	$255,651.00	$295,904.00	$551,555.00
State Water Resources Control Board (SWRCB)	43rd & Logan Monitoring & Assessment	$689,300.00	$85,362.00	$774,662.00
SDCWA	Bannock Avenue Infiltration Construction	$630,500.00	$893,300.00	$1,523,800.00
SWRCB	Southcrest Park Infiltration Project	$1,880,070.00	$777,970.00	$2,658,040.00
Total Grant Funding		**$3.5 million**	**$2.0 million**	**$5.5 million**

2 Amounts span multiple years and not just FY 2016

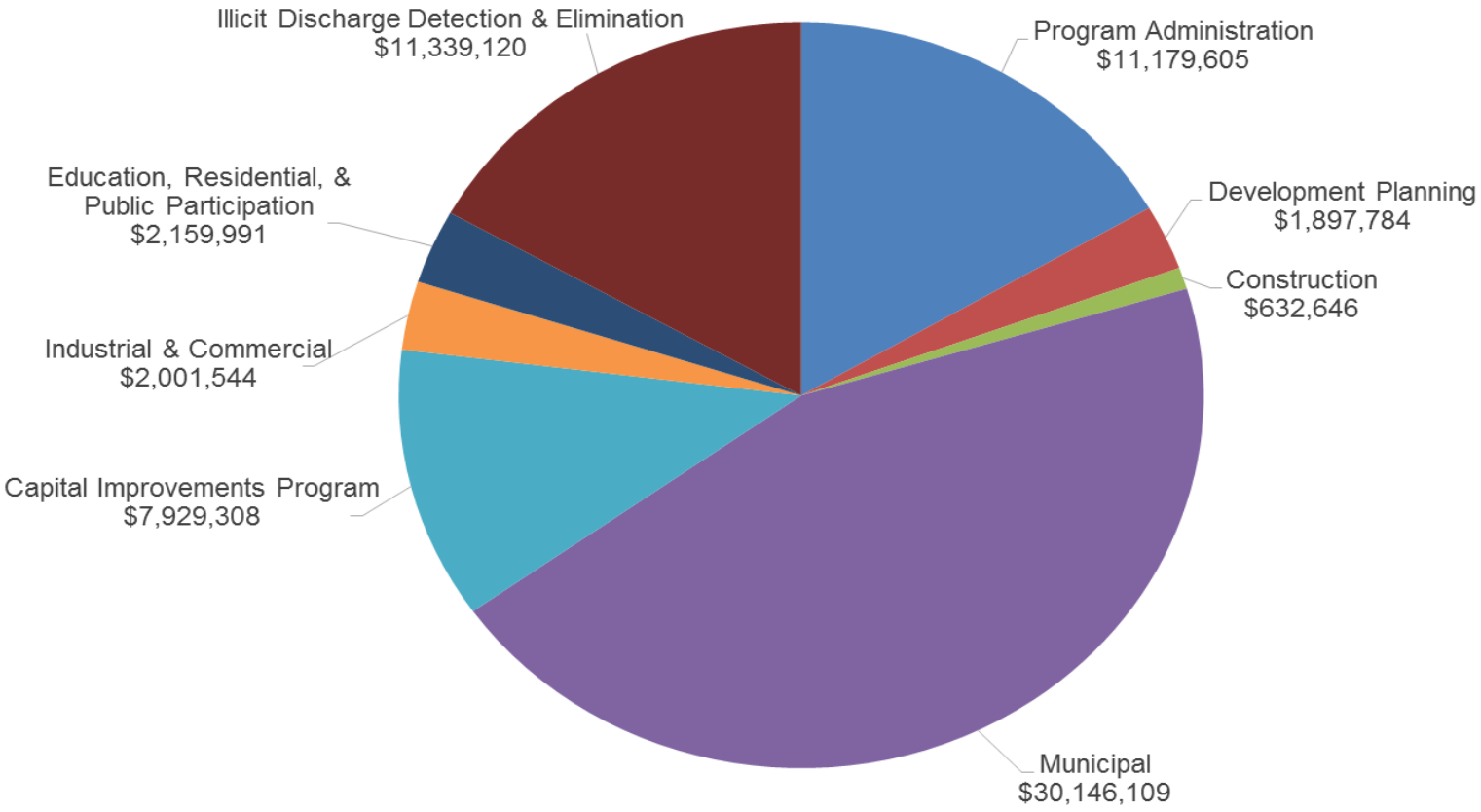

Figure 1: FY 2016 Citywide JRMP Expenditures by Permit Area

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3.2.2 Funding Sources

Citywide implementation of Municipal Permit requirements is funded through four main types of governmental funds: the General Fund, Special Revenue Funds, Enterprise Funds, and Internal Service Funds.

3.2.2.1.1 General Fund

The General Fund is the main fund for the City and is supported by major revenue sources, including property tax, sales tax, transient occupancy tax, and franchise fees. Departments funded by the General Fund provide core community services.

3.2.2.1.2 Special Revenue Funds

Special Revenue Funds account for revenues received for specifically identified purposes. Some of the larger funds that fall under this category include TransNet, Gas Tax, and Special Promotion programs.

3.2.2.1.3 Enterprise Funds

Enterprise Funds are initiated for specific purposes and funded through fees for services. This funding type is designated for the operations, management, maintenance, and development of the department providing the service. For implementation of citywide JRMP activities, activities are funded through the following enterprise funds:

- Airports Fund
- Development Services Enterprise Fund
- Golf Course Enterprise Fund
- Recycling Fund
- Refuse Disposal Fund
- Sewer Revenue Funds
- Water Utility Fund

3.2.2.1.4 Internal Service Funds

Internal Service Funds are comprised of fees for services provided by one City department to another City department or division. For implementation of citywide JRMP activities, activities are funded through the following internal service funds:

- Engineering and Capital Projects Fund
- Equipment Division Funds

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City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 1: Summary of Watershed Specific Data from the IDDE Program

JRMP Annual Report Form – Section IV. Illicit Discharge Detection and Elimination Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of non-storm water discharges reported by the public	119	353	541	368	634	47	**2,062**
Number of non-storm water discharges detected by Copermittee staff or contractors	60	172	317	314	393	50	**1,306**
Number of non-storm water discharges investigated by the Copermittee	171	518	845	683	1,021	97	**3,335**
Number of sources of non-storm water discharges identified	143	442	736	559	828	94	**2,802**
Number of non-storm water discharges eliminated	141	434	697	553	819	92	**2,736**
Number of sources of illicit discharges or connections identified	142	437	715	551	805	94	**2,744**
Number of illicit discharges or connections eliminated	140	429	676	545	796	92	**2,678**
Number of enforcement actions issued	141	436	709	553	819	93	**2,751**
Number of escalated enforcement actions issued	69	197	351	349	445	61	**1,472**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 2: Summary of Watershed Specific Data from the Development Planning Program

JRMP Annual Report Form – Section V. Development Planning Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/ La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of proposed development projects in review	70	241	332	233	561	60	**1,497**
Number of Priority Development Projects in review	5	32	15	21	38	8	**119**
Number of Priority Development Projects approved	88	110	76	61	138	27	**500**
Number of approved Priority Development Projects exempt from any BMP requirements	0	0	0	0	0	0	**0**
Number of approved Priority Development Projects allowed alternative compliance	0	0	0	0	0	0	**0**
Number of Priority Development Projects granted occupancy	75	63	7	30	40	9	**224**
Number of completed Priority Development Projects in inventory	118	178	141	113	213	89	**852**
Number of high priority Priority Development Project structural BMP inspections	1	9	0	1	1	5	**17**
Number of Priority development project structural violations	1	8	0	1	1	5	**16**
Number of enforcement actions issued	1	15	0	3	4	12	**35**
Number of escalated enforcement actions issued	0	3	0	1	1	1	**6**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 3: Summary of Watershed Specific Data from the Construction Managment Program

JRMP Annual Report Form – Section VI. Construction Management Program	San Dieguito Watershed	Los Peñasquitos Watershed	Mission Bay/ La Jolla Watershed	San Diego River Watershed	San Diego Bay Watershed	Tijuana River Watershed	Total Citywide
Number of construction sites in inventory	1,364	4,300	2,091	1,830	3,870	448	**13,903**
Number of active construction sites in inventory	26	47	37	38	51	8	**207**
Number of inactive construction sites in inventory	12	112	216	188	425	36	**989**
Number of construction sites closed/completed during reporting period	23	169	276	258	518	44	**1,288**
Number of construction site inspections	10,074	27,037	9,404	8,875	18,737	2,801	**76,928**
Number of construction site violations	169	270	195	78	211	154	**1,077**
Number of enforcement actions issued	114	164	183	51	187	150	**849**
Number of escalated enforcement actions issued	65	91	16	25	32	6	**235**

City of San Diego FY 2015 JRMP Annual Report
Attachment 1
Table 4: Summary of Watershed Specific Data from the Existing Development Managment Program

JRMP Annual Report Form – Section VII. Existing Development Management Program	San Dieguito Watershed				Los Peñasquitos Watershed				Mission Bay/La Jolla Watershed				San Diego River Watershed				San Diego Bay Watershed				Tijuana River Watershed				Total Citywide			
	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES	MUN	COM	IND	RES
Number of facilities or areas in inventory	23	1,542	81	12	123	8,282	915	27	218	8,911	464	32	121	10,175	513	33	197	14,085	690	70	20	2,075	369	6	702	45,070	3,032	180
Number of existing development inspections	22	308	6	1	117	1,533	140	4	159	4,801	186	5	114	2,573	99	5	195	3,197	102	5	19	233	41	2	626	12,645	574	22
Number of follow-up inspections	0	14	0	0	0	263	13	0	0	166	4	3	0	193	5	4	0	270	44	4	0	31	7	0	0	937	73	11
Number of violations	3	49	0	109	18	388	37	375	34	413	6	424	10	420	11	481	23	511	34	709	1	60	19	69	89	1,841	107	1,819
Number of enforcement actions issued	4	58	0	107	22	490	48	285	46	462	9	407	16	514	13	365	41	623	44	543	1	65	21	62	130	2,212	135	1,790
Number of escalated enforcement actions issued	0	23	0	50	2	148	8	134	0	205	3	182	0	172	0	236	6	217	11	291	0	26	13	36	8	791	35	884

MUN Municipal
COM Commercial
IND Industrial
RES Residential

Table D-4
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

~~Strikeouts~~ and red text are text edits that have been made up to the current date since the WQIP September 2015 submittal.

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Jurisdictional Strategies								
Note: Strategy IDs with an asterisk indicate those strategies that are considered "jurisdictional" in the MS4 Permit, but are considered enhancements to the JRMP to target highest priority water quality conditions.								
JRMP (E.2-E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
CSD-JRMP-01	Establish guidelines and standards for all development projects; provide technical support related to implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area or implement easements to protect water quality, where applicable and feasible. Includes internal coordination and collaboration between City departments (DSD, PWD, and Engineering) to improve success and long-term benefits of BMPs.	Refer to JRMP Section 4. ~~All high priority projects will be inspected annually prior to the rainy season. 20 percent of all projects will be inspected annually. Maintenance inspections include examination of all structural BMPs at a project to verify that each structural BMP is working, being maintained properly, and is in compliance with all applicable City ordinances and permits.~~ May include providing technical support and consultation for other City departments that review project submittals for compliance with Storm Water Standards Manual requirements. May also include review of City projects for compliance with Storm Water Standards Manual requirements.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Revised Storm Water Standards Manual went into effect on February 16, 2016. FY17 Notes: The Storm Water Standards will be revised to include Critical Coarse Sediment Yield Area mitigation measures that were developed through a TAC process, along with other minor clarifications.
CSD-JRMP-02	Develop Design Standards for Public LID BMPs.	Improve quality of design to ensure efficiency and reliability in public designs.	FY14-FY15	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Draft Green Infrastructure standard drawings and specifications are currently in the review process. FY17 Notes: Plan to develop more standard drawings and specifications for other green infrastructure components.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-03	Outreach to impacted ~~industry~~ commercial, industrial, municipal, and residential development regarding minimum BMP requirement updates.	~~Affects commercial, industrial, and residential development.~~ May include onsite education at the time of inspections, city staff training, and mailers to business owners and prospective business owners.	FY15	Continuous- As needed	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Sent out monthly business Tax License renewal mass mailings, which included information about storm water BMPs. Violation location information from the Residential Patrol Program is used to target outreach.
CSD-JRMP-04*	Train staff on LID regulatory changes and LID practices.	Formal training is required for all staff involved in development plan review to increase knowledge of LID BMPs. Goal of training associated with LID practices and regulations is to promote LID implementation and to avoid adverse conditions such as trees planted within swales, or planned drainage patterns which obstruct or inhibit LID performance.	FY16	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Presented at a PWD training to discuss the revised Storm Water Standards Manual. Provided a plan check training for plan reviewers at DSD and PWD staff in May 2016.
CSD-JRMP-05*	Amend municipal code and ordinances, including zoning ordinances, to facilitate and encourage LID opportunities to support compliance with the MS4 Permit and TMDLs in a reasonable manner. Ensure consistency with the City of San Diego's BMP Design Manual. Update the Storm Water Standards Manual accordingly.	Municipal codes and ordinances will be brought to City Council for consideration to encourage LID implementation (e.g., runoff detention and filtration using natural filters and stormwater retention for reuse). LID stormwater management will be encouraged in proposed codes and ordinances associated with development and redevelopment projects, which are brought to City Council for consideration.	FY15	Continuous- As needed	Yes	No Change	No	None
CSD-JRMP-06	Provide technical education and outreach to the development community on the design and implementation requirements of the MS4 Permit and Water Quality Improvement Plan requirements.	Technical education and outreach to the development community includes outreach on design standards, City design manuals, and the WMAA.	Prior to FY16	Continuous- Ongoing	Yes	No Change	Yes	FY16 Notes: Presented the revised draft Storm Water Standards at two public workshops in September 2016.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Priority Development Projects (PDPs)								
CSD-JRMP-07	For PDPs, administer a program and provide technical support to other City departments to ensure implementation of on-site structural BMPs to control pollutants and manage hydromodification by developing City wide storm water development standards and design guidelines.	Administer a program in coordination with other City departments to promote and confirm a thorough understanding of requirements for implementing structural BMPs that control pollutants and manage hydromodification. Includes requirements to confirm proper design and construction through processes controlled by other City departments. Please see Attachment 1 for details on PDP related BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City enhanced the Storm Water Quality Management Plan (SWQMP) template that was developed as a Copermittee effort for developers to use.
CSD-JRMP-08	Institute a program to verify and enforce maintenance and performance of treatment control BMPs.	Refer to JRMP Section 4.5. The Storm Water Division is responsible for annually verifying that all structural BMPs within its inventory are being properly maintained. The Storm Water Division performs verification through an Annual Maintenance Verification mailing and a direct maintenance inspection program. Parties responsible for maintenance of structural BMPs are required to complete and sign the Annual Maintenance Verification, certifying that the structural BMPs are being properly maintained. Direct maintenance inspections will be performed at all projects for which an Annual Maintenance Verification Form was not completed. All high priority projects will be inspected annually prior to the rainy season. 20 percent of all projects will be inspected annually. Inspect additional BMPs as needed. Medium and low priority projects will not require inspection if they have completed their Annual Maintenance Verification form, unless they are part of the 20 percent of projects that are annually inspected.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY17 Notes: For porous pavement BMPs, staff plan to use an infiltrometer to measure BMP effectiveness.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-09	Update ~~BMP Design Manual procedures~~ Storm Water Standards Manual to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP Section 4. Storm Water Standards Manual will be updated in accordance with the Permit and made available on the City's website.	FY15	Continuous every 5 years/ permit cycle	Yes	Revised to clarify strategy.	Yes	FY17 Notes: The Storm Water Standards will be revised to include Critical Coarse Sediment Yield Area mitigation measures that were developed through a TAC process, along with other minor clarifications.
CSD-JRMP-10*	Amend BMP Design Manual for trash areas. Require full four-sided enclosure, siting away from storm drains and cover. Consider the retrofit requirement.	Amend BMP Design Manual and zoning standards/requirements which address reduction of pollutants for common areas of trash build-up (e.g. restaurants, supermarkets, "big box" retail stores with food, pet stores). Most effective method for source control of bacteria and trash is to employ four-sized trash enclosures with a cover over trash areas.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on trash enclosures (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-11*	Amend BMP Design Manual for animal-related facilities, such as such as animal shelters, "doggie day care" facilities, veterinary clinics, breeding, boarding, and training facilities, groomers, and pet care stores.	Amend BMP Design Manual and zoning requirements (including retrofits) to provide supplemental standards for animal facilities (including animal shelters, dog daycares, veterinary clinics, groomers, pet car stores, and breeding, boarding, and training facilities). Supplemental standards may include requiring covered trash enclosures, identification of landscaped relief areas on site plans, ensuring drainage connections and treatment swales for areas that will not drain to the sanitary sewer, as well as inspection of grading, drainage, and landscaping for outdoor exercise areas.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on animal facilities(See Part 1, Appendix E of the Storm Water Standards).

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-12*	Amend BMP Design Manual for nurseries and garden centers.	Amend BMP Design Manual to provide supplemental standards for plant nurseries and garden centers. Standards will focus on reducing irrigation runoff, and loading of sediment, pesticides, and nutrients. Measures may include: covered outdoor storage, green waste management BMPs, improved irrigation efficiency to reduce dry-weather runoff, and containment of runoff from impervious areas where plants and materials are stored.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on nurseries (See Part 1, Appendix E of the Storm Water Standards).
CSD-JRMP-13*	Amend BMP Design Manual for auto-related uses.	Amend BMP Design Manual to provide supplemental standards for automotive-related uses to reduce loading of metals, oils, grease, and trash. Measures may include: four-sized covered trash enclosures, and careful review of auto-related usage areas (e.g. garage bays at repair shops) for grading, drainage, and drain connections to sanitary sewer systems.	FY15	Completed within schedule	Yes	No Change	Completed	FY16 Notes: Developed a fact sheet on auto-related facilities (See Part 1, Appendix E of the Storm Water Standards).

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-14*	~~Develop and administer an alternative compliance program for on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects). Refer to Section 4.2.5.~~ Offsite Alternative Compliance Option	Refer to JRMP Section 4.2.3.1. WMAA and Water Quality Equivalency Study completed in FY15. Phase I, applicant implemented projects, is anticipated to be in effect by the end of FY16 contingent on Regional Board's approval of the WQIPs. Phase II, the expansion of the program to include other alternative compliance options, is expected to begin in FY16.	FY15	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Phase 1 of the Alternative Compliance Program (ACP) went into effect on 2/16/16. Development on Phase 2 of the ACP, including public involvement via Technical Advisory Committee (TAC) meetings, began during FY16. FY17 Notes: Continue developing Phase 2 of ACP. Topics to discuss include: environmental permitting, long-term facility maintenance, legal agreements and credit tracking, maintenance and permitting rules, and credit tracking and legal rules. Public involvement via TAC meetings will continue.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
E.4 Construction Management								
CSD-JRMP-15	Administer a program to oversee implementation of temporary BMPs that control sediment and other pollutants during the construction phase of projects. Includes requirements to inspect at appropriate frequencies and effectively enforce requirements through process controlled by other City departments.	Refer to JRMP Section 5. Inspections performed by the City or City staff provide verification that each site is in conformance with the Construction Storm Water BMP Performance Standards in the Storm Water Standards Manual. Inspections are tracked to ensure that they meet the minimum inspection frequencies. High priority active and inactive sites are inspected bi-weekly during the rainy season. Medium priority sites are inspected monthly during the rainy season. Low priority sites are inspected as-needed during the rainy season. All sites are inspected as-needed during the dry season. Please see Attachment 1 for details on construction BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilities and Areas								
CSD-JRMP-17	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP Sections 6, 7, and 8. All industrial and commercial areas are inspected once within ~~the Permit term (~~five years~~)~~. At a minimum, 20 percent of industrial and commercial areas receive onsite inspections every year. Municipal facilities are inspected twice annually, once prior to the rainy season, and once during the rainy season. Residential management areas (RMAs) within the City are to be inspected once within five years ~~the Permit term~~, at a minimum. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: The City began patrols of residential management areas in FY16. See the City's JRMP Annual Report form, also included in Appendix 2, for numbers of inspections, violations, and enforcement actions for all types of existing development.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-18	Update minimum BMPs for existing residential, commercial, and industrial development. Specific updates to BMPs include required street sweeping, catch basin cleaning, and maintenance of private roads and parking lots in targeted areas.	Refer to JRMP Appendix IX. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY15	Continuous every 5 years/ permit cycle	Yes	No Change	Completed	None
CSD-JRMP-19	Outreach to property managers and trash haulers to elevate the emphasis of power washing as a pollutant source.	Emphasis will be placed on non-compliant washing as an enforceable violation. Will occur city-wide in residential, commercial, and industrial areas.	FY15	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: City staff utilized a new fact sheet consistent with updated permit conditions to inform non-compliant power-washing operators of BMP requirements. The fact sheet was also provided to the San Diego Downtown Partnership as part of the City's education and outreach effort for downtown businesses. FY17 Notes: The City anticipates distributing a comprehensive BMP guidebook to businesses and business district leaders in areas with regular power-washing activities.
CSD-JRMP-20	Implement property based inspections.	Property-based inspections increase awareness and responsibility for individual properties to tackle issues associated with trash, landscapes, and parking areas. Expanding beyond the business-level inspections will achieve different and more effective opportunities for education, outreach, inspection, and enforcement to encourage water conservation strategies. Inspection frequency dependent on type of facility. See CSD-9 for inspection frequency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Inventoried properties have been mapped in GIS. The City's inspection data management system has also been set up to track and map the properties inspected each fiscal year and over the Permit cycle.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-21	Review policies and procedures to ensure discharges from swimming pools meet permit requirements.	Verify and bring to City Council for consideration an update (as needed) for the City's Municipal Code (43.0301) to meet new permit requirements for swimming pool discharges.	FY15	Continuous- As needed	Yes	No Change	Completed	None
CSD-JRMP-22*	Promote and encourage implementation of designated BMPs for residential and non-residential areas.	Landscape-based rebates are a "gateway" for adoption of other beneficial practices and are one of the nonstructural methods which address impacts from single-family residential areas (City of San Diego 2011 program development background study). Residential incentives can include: education and training ~~(neighborhood watershed field days)~~, and aggressive subsidies or rebates for grass replacement and rainwater harvesting. Existing programs will be expanded overall, and ~~also have targeted expansion within specific subwatershed, particularly with highest water quality priority conditions. W~~will occur city-wide in residential, commercial, and industrial areas.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
MS4 Infrastructure								
CSD-JRMP-23	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, channels as allowed by resource agencies, detention basins, pump stations, etc.) for water quality improvement and for flood control risk management.	Refer to JRMP Section 7. Storm drain inlets are inspected ~~at least once per year~~ generally annually, and cleaned when accumulated materials are present. Other MS4 and related structures are inspected as needed.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: 2,438 storm drain inspections were completed in the WMA, and 125.2 tons of sediment, trash, and debris were removed during storm drain cleaning. In addition to routine maintenance of the MS4 across its entire jurisdiction the City repaired or replaced 12 pump stations and modernized another 14 pump stations, televised 28,000 linear feet of pipe in 62 locations, and began the development of the Waterways Maintenance Plan and Channel Maintenance Prioritization Plan. Removed 0.06 tons of trash from routine open channel trash cleaning in the WMA.
CSD-JRMP-28	Proactively repair and replace MS4 components to provide source control from MS4 infrastructure.	In order to limit inflow of pollutants and reduce pollutant loads, proactive measures will be taken to improve, repair, and replace MS4 components. The City of San Diego will start a multi-year program of repairing and replacing storm drain pipes to reduce sediment loading to the MS4. Development of an assessment management program and bond issues will be addressed. Exploration of daylighting pipes will take place where feasible and appropriate.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-29	Replacement of hard assets.	Includes needed replacement of storm drains and structures.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-30	Coordinate with other City departments (PUD) to implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The Tiger Team was established in the in FY16 as a joint effort between TSW & PUD to identify and eliminate exfiltration sources from the sanitary sewer system to the MS4. Since the team was created, it has successfully eliminated one major source. FY17 Notes: For FY17, the team is focusing on two sites within the City and are identifying more.
CSD-JRMP-31*	Identify sewer leaks and areas for sewer pipe replacement prioritization.	Risk assessment to include identifying targeted areas (age, location, proximity to MS4), coming up with methodology, pilot, desktop exercise/analysis.	FY16	Continuous- As needed	Yes	No Change	Yes	None
Roads, Streets, and Parking Lots								
CSD-JRMP-32	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: 2,878 curb miles of roads, streets and highways were swept in the WMA.
CSD-JRMP-35*	Initiate sweeping of medians on high-volume arterial roadways.	Medians of roadways are also a potential source of pollutants. Consider implementing or increasing sweeping of medians. Consider mechanical and hand sweeping techniques.	FY17	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Median sweeping began in FY16. A total of 4,315 median miles were swept in FY16 City-wide.
Pesticides, Herbicides, and Fertilizer BMP Program								
CSD-JRMP-37	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education. ~~permits, and certifications.~~	Refer to JRMP Sections 7, 8, and 9.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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Retrofit and Rehabilitation in Areas of Existing Development								
CSD-JRMP-38	Development of a strategy and identification of candidate areas of existing development necessary for implementing retrofit projects and facilitate the implementation of such projects.	Refer to JRMP Appendix XIX. The Offsite Alternative Compliance Program will include methods for identifying and assessing potential retrofit projects in existing development areas. Retrofit project selection will be based upon a variety of factors including proximity to high priority water quality conditions, potential pollutant load removal effectiveness, and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards. Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None
CSD-JRMP-39	Development of a strategy and identification of candidate areas necessary to implement stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Refer to JRMP Appendix XIX. The Offsite Alternative Compliance Program ~~(Section 4.2.5.3 and Appendix N)~~ will include methods for identifying and assessing potential stream, channel, or habitat rehabilitation projects in existing development areas. Rehabilitation project selection will be based upon a variety of factors including existing stream or habitat degradation, potential future cumulative stream or habitat impacts, and feasibility of implementation. The program will include protocols related to funding mechanisms for project construction and long-term maintenance, payment and credit structures, and water quality equivalency standards.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	Revised to clarify strategy.	NA, Not scheduled to be implemented in FY17	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
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E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
CSD-JRMP-40	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP Section 3. ~~The City must visually inspect at least 500 identified and prioritized major MS4 outfalls at least annually during dry weather conditions.~~ Inspections of major MS4 outfalls conducted in response to public reports and staff or contractor reports and notifications may count toward the required visual inspections of MS4 outfall discharge monitoring stations. Please see Attachment 1 for details on how the IDDE Program will address sources causing or contributing to the HPWQC.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: 171 cases were investigated, including 119 reported by the public; 140 illicit discharges or illicit connections were eliminated; and 141 enforcement actions and 69 escalated enforcement actions were issued in the WMA. City-wide, the number of discharges investigated has almost tripled since FY14 (1,186 in FY14 to 3,335 in FY16). The increase is believed to be mainly due to increased reports of irrigation runoff discharges from the public and from PUD.
E.7 Public Education and Participation (B.3.b(1)(a)(iii))								
CSD-JRMP-42	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP Section 9.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City continued its extensive education and outreach effort across each of the six watershed areas in the City. This included regular attendance at community events in order to share education materials and the continuing sponsorship of community clean-up and pollution prevention education events with the City's Non-Governmental Organization partners, including I Love A Clean San Diego and San Diego Coastkeeper.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-43	Continue implementation of a Pet Waste Program.	Pet Waste Program includes outreach on "Scoop the poop", installation of posts for dispensers, distribution of lawn signs, and attendance at dog-related community activities.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Printed and distributed more pet waste signage. FY17 Notes: New bag dispensers will be installed and there will be outreach at community events. More signage will be installed.
CSD-JRMP-44	Promote and encourage implementation of designated BMPs in commercial and industrial areas.	Provide education and outreach on BMPs for commercial businesses and industrial facilities. Will occur city-wide in non-residential areas.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City continued its mandated commercial and industrial facility inspection effort sharing industry specific education materials with business and property owners when BMP deficiencies were discovered. FY17 Notes: The City will continue its inspection and education effort while also introducing alternative compliance strategies for new developments and sharing the updated Storm Water Standards Manual with target audiences.
CSD-JRMP-45*	Expand outreach to homeowners' association (HOA) common lands and HOA incentives.	Approaches to consider include: offering incentives to HOAs and maintenance districts to adopt water-conserving/efficiency and stormwater-reduction changes to their landscapes, irrigation, and maintenance; conducting workshops with property managers; providing supplemental standards, inspection, or enforcement for HOA-managed properties.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Finalized updated code compliance fact sheets applicable to common lands activities. Coordinated water conservation pollution prevention incentive programming with PUD.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-46*	Develop an outreach and training program for property managers responsible for HOAs and maintenance districts.	Approaches to engage HOAs and property managers include: conducting workshops with property managers, providing supplemental standards, inspections or enforcement around HOA properties, and offering incentives to HOAs and maintenance districts to adopt changes to landscapes, irrigation, or maintenance which promote water conservation or stormwater reduction. Property managers are also a target for enhanced outreach.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-47	Develop a targeted education and outreach program for homeowners with orchards or other agricultural land uses on their property.	Educate residents on practices of small-scale or on-site composting to protect local water quality. May include targeted education of owners of chickens to address bacteria. Outreach can be coordinated through the San Diego County Agriculture, Weights, and Measures division.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-48	Enhance school and recreation-based education and outreach.	Develop curriculum and establish distribution in public schools. Includes education on water conservation.	FY15	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City worked with its NGO partners to expand the number of children reached through school-aged education programs. The City updated curriculum materials for Project Swell in conjunction with San Diego Coastkeeper and provided printed education materials to leaders with the Ocean Discovery Institute in hope of establishing new partnerships with that organization. FY17 Notes: The City will be expanding the Blue Brigade Middle and High School program sponsored with I Love A Clean San Diego. The City will also distribute written education materials through the newly completed Ocean Discovery Institute headquarters.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-49	Develop education and outreach to reduce irrigation runoff.	Example approaches to reduce or eliminate irrigation runoff may include: education and outreach, prohibition, enhanced enforcement of existing prohibitions, and pilot projects such as the City of Del Mar's pilot door hanger project.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City used communication materials designed to address potential threats from El Nino rains as a new vehicle for educating the public about the need to eliminate irrigation runoff. FY17 Notes: The City is working with partner agencies and other City operations to develop new education and outreach efforts targeting urban runoff.
CSD-JRMP-50*	Develop and distribute regional training materials for water-using mobile businesses.	Consider development of supplemental standards for mobile businesses including: covered trash enclosures, careful review of washing areas (grading, drainage, landscaping, sanitary sewer system connectivity), and appropriate signage (either through zoning for retrofits or "best fix" approaches, or through BMP Design Manual standards). Businesses may include carpet cleaners, tile installers, plumbers, etc.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: The City updated its suite of fact sheets related to mobile business activities to bring them up-to-date with current permit requirements.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-51*	Enhance education and outreach based on results of effectiveness survey and changing regulatory requirements.	Use effectiveness surveys to enhance existing education and outreach programs while proactively keeping up with and incorporating changing regulatory requirements.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City annually conducts thousands of event-based surveys gathering information about public understanding of pollution prevention and about the City's storm water management efforts. The survey effort continued in FY16 and allowed the City to update its education materials and strategies based on current findings about public awareness. FY17 Notes: The City will contract with a new public opinion research firm to perform a statistically valid assessment of general public awareness. The finding from that effort will be combined with the discoveries of the ongoing event survey effort to drive future outreach priorities.
CSD-JRMP-52	Continue to promote and encourage implementation of Integrated Pest Management (IPM) for residents and businesses.	The City will continue to provide education on IPM techniques during presentations and on the City's Think Blue website.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-JRMP-53*	Improve consistency and content of websites to highlight enforceable conditions and reporting methods.	Websites will be updated to provide a user-friendly format and clarity for stormwater violations, conditions which citizens can and should report, and how to make such reports. Examples of reports for common incidents will be developed and posted which may vary locally and regionally. Photographs of allowable practices as well as illegal practices should be shown for utmost clarity. Displaying hotline numbers prominently on the website and near the photographs of illegal practices will ensure that those seeking to report will be able to do so easily. Also ensure hotline number and website are searchable and can be retrieved by simple internet searches.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City completely revamped its website improving public access and availability of web-based resources including the storm water management and pollution prevention materials developed and posted by the City. The City also brought forward the environmental response documents associated with its channel maintenance efforts. These documents include descriptions of water quality protections undertaken by the City allowing the public to view our agency's watershed protection strategies. FY17 Notes: The Storm Water City will review and renew the entire portfolio of education materials available for public downloading from the City's website.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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E.6 Enforcement Response Plan								
CSD-JRMP-54	Continue to implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Storm Water Code Enforcement Unit's Standard Operating Procedures (SOPs) - Enforcement Response Plan.	Refer to JRMP Appendix XIII.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-JRMP-55*	~~Increase~~ Focused enforcement of irrigation runoff.	~~Increased~~ Focused enforcement policies against irrigation runoff will be established in tandem with the education and outreach programs on how these actions lead to pollutant loading. By shifting to property-based inspections irrigation runoff can be handled as enforceable violations once the public is well-informed.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Performed irrigation patrols and one Residential Management Area Patrol within the WMA throughout FY16. Also receive referrals from Water Conservation at PUD for over irrigation cases that have runoff entering the curb and gutter.
CSD-JRMP-56*	~~Increase~~ Focused enforcement of water-using mobile businesses.	In addition to education, pollution associated with mobile business sources can be handled through policy, code development, inspections of business practices, and enforcement.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Performed early morning patrols to find mobile sources and over-irrigation to the MS4.
CSD-JRMP-57*	~~Increase~~ Focused enforcement of all minimum BMPs for existing residential, commercial, and industrial development.	~~Increased~~ Focused enforcement of existing development minimum BMPs.	FY16	Continuous- As needed	Yes	Revised to clarify strategy.	Yes	None
CSD-JRMP-58*	~~Increase~~ Focused enforcement associated with property-based inspections.	Shifting inspections from businesses-specific to property-based will increase effectiveness and sense of responsibility and ownership. Education and outreach must be followed up with inspection and enforcement of regulations to encourage proper landscape and water conservation strategies.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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CSD-JRMP-59*	~~Increase~~ Focused enforcement of sweeping and maintenance of private roads and parking lots in targeted areas.	Refer to Minimum BMPs in JRMP (Appendix IX).	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-JRMP-60*	~~Increase~~ Focused identification and enforcement of actionable erosion and slope stabilization issues on private property and require stabilization and repair.	Eroding and unstable slope areas on private property (excluding construction sites) will be identified as potential sediment loading sources and subject to enforcement. In the short term, this will target enhanced inspection and enforcement programs to ensure inspectors address erosion and slope instability for the purpose of education.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: City staff completed patrols of construction sites that included sediment discharges. They also began the Residential Patrol Program, which notes and addresses sediment discharges in residential areas.
Non-JRMP Strategies (Optional Strategies, B.3.b(1)(b))								
Nonstructural Strategies								
CSD-NS-02	Investigation and research of emerging BMP technology.	Annually the Construction & Development Standards Group identifies new tasks to conduct literature review, communication with researchers outside of the City, physical testing and experimentation of new or emerging technologies, and other research with the goal of updating tools available for reducing pollutant loads from development and redevelopment sites. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous- As needed	Yes	No Change	Yes	FY16 Notes: Continued monitoring and assessment of the biofiltration basin and curbside filtration units at 43rd and Logan.
CSD-NS-03	Approve and implement a green infrastructure policy.	The City will begin developing a policy in FY16 that will increase the green infrastructure requirements for City CIP projects. This policy will be coordinated with ongoing efforts to update City design manuals and LID design standards for public LID BMPs. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous- As needed	Yes	No Change	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-04	Create a manual that outlines right-of-way design standards.	Create a manual that includes flood control performance standards, permanent BMP elements design standards, design standards for green streets and other BMPs, and maintenance access. Provides drainage and streets design standards. Opportunity to merge various existing manuals and provide consistency. Funding and resources were secured for FY2015.	FY15	Completed within schedule	Yes	No Change	Yes	FY17 Notes: Will be published in FY17.
CSD-NS-05	Create a fund that allows habitat acquisition, protection enhancement, and restoration in conjunction with other cooperating entities including community groups, academic institutions, state county, and federal agencies, etc.	This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired or restored lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. It is anticipated that a minimum of 1 FTE will be needed to implement the program. Once initiated, the time frame for planning to initial implementation is expected to be 3 years. Implementation is in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-06	Residential and Commercial BMP: Rain Barrel	The existing PUD rebate program will continue for residential properties and expand for commercial properties for water collection, conservation, and reuse with rain barrels. Will occur city-wide in residential areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates for rain barrels were issued to capture 772,740 gallons of rainwater City-wide.
CSD-NS-07	Residential and Commercial BMP: Grass Replacement	The existing PUD grass replacement cash rebate program will continue and expand for residential and commercial properties. Program encourages a reduction in water use through the conversion of non-artificial grass to water wise plant material, while maintaining a high level of living landscape to benefit the environment. Program does not allow for conversion to artificial turf. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates were issued to convert 61,032 sq. ft. of turf in the WMA.
CSD-NS-08	Residential and Commercial BMP: Downspout Disconnect	Disconnecting downspouts provide alternate runoff pathways from rooftops, sidewalks, driveways, and roads. Disconnecting downspouts from residential areas to pervious land can allow for depression storage and infiltration. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Completed downspout redirect guidelines in collaboration with PUD.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-09	Residential and Commercial BMP: Microirrigation	The existing PUD micro-irrigation rebate program will continue and increase for residential and commercial properties. Application of microirrigation aims to improve the efficiency of landscape irrigation through the precise application of water. Will occur city-wide in residential areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Rebates were issued for installing microirrigation for 10,657 sq. ft. of landscaping in the WMA.
CSD-NS-10	Provide Onsite Water Conservation Surveys.	Provide free onsite water conservation surveys to commercial and residential customers to reduce overirrigation and to encourage water conservation. Will occur city-wide in residential and commercial areas. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None
CSD-NS-11	Enhance and expand trash cleanups through community-based organizations involving target audiences.	Increase effectiveness and reach of trash/beach cleanups and community based efforts by engaging community groups to self-define and carry-out trash clean-ups. Longstanding partnerships and sponsorships with I Love A Clean San Diego and others are recommended to be continued and enhanced. To effectively target stream clean-up efforts, focus on partnerships with community organizations which provide strong engagement with target audiences and communities. Cleanups target trash, however a reduction in trash also reduces other pollutants such as bacteria and nutrients that can attach to food waste wrappers and yard waste. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY 16 Notes: The City partnered with I Love a Clean San Diego on four clean-ups, which resulted in the removal of 24,674 pounds of trash and debris in the WMA.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-16	Conduct a Comprehensive Benefits Analysis to identify benefits other than water quality that are applicable to each of the specific WQIP strategies.	The analysis identifies which other benefits apply to each strategy, and documents the assumptions making those linkages. The delineation of other benefits to strategies includes a general description of each benefit, and a listing of the assumptions that were made to link those benefits to strategies. In addition, the other benefits are characterized with respect to who is directly affected: the city, local residents, local businesses, or visitors. This analysis may be used as part of the adaptive management process to modify future strategies. Funding and resources were secured for FY2015.	FY15	Completed within schedule	Yes	No Change	No	None
CSD-NS-17	Address and clean up trash from transient encampments with collaboration from the Environmental Services Department, which consults with the Homeless Outreach Team.	Coordinate with the Environmental Services Department, in conjunction with the Homeless Outreach Team, to respond to transient encampment trash complaints. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-NS-18	Continue participating in source reduction initiatives.	Source reduction initiatives are ultimately the most effective measure to remove pollutants from surface waters, where feasible. Bans or progressive phase-outs that may be considered include: leaf blowers, plastic bags, architectural copper (generally a legacy issue), as well as prohibiting or more aggressively regulating vehicle washing. Additional source reduction initiatives to consider include pesticide sales at hardware stores and irrigation supply stores. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: The City began development of plastic bag ban ordinance. FY17 Notes: Pursuit of City-specific plastic bag ban ordinance will depend on whether Statewide plastic bag ban ballot initiative passes.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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CSD-NS-19	Coordinate with Fleet Services to replace City-owned vehicle brake pads with copper-free brake pads as they become commercially available.	Consider legislative mandate and cooperative implementation of copper-free brake pads on city-owned vehicle to reduce pollutant deposition. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	FY18	Continuous-Ongoing	NA, Not scheduled to be implemented in FY16	No Change	NA, Not scheduled to be implemented in FY17	None
CSD-NS-22	~~Proactively~~ Coordinate with appropriate City Departments that monitor for erosion, and complete minor repair and slope stabilization on municipal property.	~~Actively~~ Coordinate with Streets Division and other appropriate City Departments that identify and repair eroding slopes that may be contributing to sediment loading. Prepare an inventory and assessment of eroding areas and their risk to surface waters. Follow assessment with a schedule for ongoing inspection and stabilization (potentially based on a number or percentage of sites annually). Consider Caltrans program as a template. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None
CSD-NS-23	Conduct special studies.	Special studies will be conducted to gather data to identify pollutant sources, appropriate targets, or other information. Includes collaboration with universities. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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CSD-NS-26	Participate in Reference Watershed Study.	The San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Refer to Section 5.1 for further details. Will occur region-wide. Funding and resources were previously secured.	Prior to FY16	Completed within schedule	Yes	No Change	Completed	FY16 Notes: See Section 5.2 in Appendix C for more information.
CSD-NS-27	Participate in Reference Beach Study.	The San Diego Regional Reference Beach Study (currently being conducted by the Southern California Coastal Water Research Project) will develop numeric targets that account for "natural sources" to establish the concentrations or loads from the beach in a minimally disturbed or "reference" condition. The purpose of this monitoring program is to advise the public of potential health risks that could occur with water contact recreation at local beaches. DEH will post a health advisory notice or close a beach when FIB results are above REC-1 water quality standards. Will occur region-wide in the Los Peñasquitos, San Dieguito River, Mission Bay, and San Diego River WMAs. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	One time	Yes	Revised to clarify strategy.	Completed	FY16 Notes: See Section 5.1 in Appendix C for more information.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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CSD-NS-29	San Dieguito Source Identification and Prioritization Process	Assess sources of bacteria in the watersheds using the San Diego Bacteria Source Identification and Prioritization Process developed in 2012 as part of the MS4 Permit Report of Waste Discharge process. Focus is on the beach/lagoon area of the San Dieguito River WMA, with inputs from the upper watershed also considered where relevant and necessary to identify sources of bacteria to the beach/lagoon. Refer to Section 5.1 for further details. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	One time	Yes	No Change	Completed	None
CSD-NS-30	Collaborate with City of San Diego PUD and other watershed stakeholders in the Lake Hodges Water Quality Concentration Study. Study will characterize conditions and identify sources.	The City of San Diego's Public Utilities Department will conduct studies that can characterize the nutrient budget or "loading rate" for Lake Hodges. The proper characterization of nutrient loads to Lake Hodges include two components: (1) Uninterrupted sampling during storm events or high water flow to Lake Hodges; and (2) Independent characterizations of nitrogen and phosphorus loads to the reservoir. This strategy will include collaboration with other watershed stakeholders. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	FY17	Completed within schedule in 2 yrs.	NA, Not scheduled to be implemented in FY16	No Change	Yes	FY 16 Notes: The Responsible Agencies completed the Lake Hodges Nutrients Evaluation Tech Memo to analyze the receiving water and MS4 data collected. FY17 Notes: RAs plan work with PUD on development of a draft work plan for a conceptual model of nutrient sources in the subwatershed surrounding Hodges Reservoir; and, a Study Plan, Monitoring Plan, and Quality Assurance and Project Plan (QAPP) for the Hodges Reservoir Nutrient Source Study.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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CSD-NS-31	Using adaptive management, delist the beach segment from the TMDL and Attachment E of the MS4 Permit.	Using the adaptive management process outlined in Section 6, remove 303(d) delisted beach segments from the Bacteria TMDL and Attachment E of the MS4 Permit. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Working with the Regional Board on re-evaluating the bacteria TMDL.
CSD-NS-32	Conduct a Storm Water Fee ~~Cost of Service~~ Study.	Conduct a Storm Water Fee ~~Cost of Service~~ Study that will examine the full cost of flood control and storm water strategies needed to comply with storm water regulations for the City of San Diego. The City of San Diego's Watershed Asset Management Plan will be used as the basis for the study. Funding and resources have been secured for FY2016.	FY16	Completed within schedule	Yes	No Change	Yes	FY16 Notes: Significant progress was made on the fee study; it will be finalized and posted on the City website in FY17. FY17 Notes: Study results to be posted in FY17.

Table D-4 (continued)
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CSD-NS-33	Conduct Sustainable Return on Investment (SROI) analysis to estimate strategies' co-benefits and impacts to the public and the private sector on a common scale.	SROI is an economics-based framework for evaluating quantitative and qualitative performance metrics and monetizing them, if possible, along a triple bottom line (i.e. financial, societal, and environmental). This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated one-time cost to implement is $115,000. Once initiated, the analysis is expected to be complete in 1 year.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-34	Collaborate with the County, if a County-led regional social services effort is established, to provide sanitation and trash management for individuals experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	Support a non-profit or consortium to provide sanitation services associated with hygiene as well as trash management for persons experiencing homelessness. Rented or purchased shower/sanitary trailers providing mobile showers may be organized at specifically scheduled locations and times. This provision has been proposed as a method for preventing surface water usage for sanitation and bathing, as well as opportunity for outreach and referral by social service agencies. The trash management services will include providing trash bags, trash collection areas, and shower/sanitary facilities at centers which provide daytime shelter to their clients, or on a mobile-basis for known transit camps. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, and 4) consensus and community support has been achieved. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund.	Must be triggered	Continuous as funding allows	Not Triggered	Revised to clarify strategy.	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-34 (continued)	Collaborate with the County, if a County-led regional social services effort is established, to provide sanitation and trash management for individuals experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy includes an initial first year planning cost of $30,000 and implementation is expected to cost $10,000 annually thereafter. Once initiated, development of the program is expected in 1 year. Implementation is in perpetuity as long as funding is available.	Must be triggered	Continuous as funding allows	Not Triggered	Revised to clarify strategy.	If Triggered	None
CSD-NS-35	Identify strategy, resources, and funding to support mapping and assessment of agricultural operations.	Prepare and maintain an inventory of the locations of agricultural operations. Identify agricultural land close to receiving waters and/or MS4 system and conducting a site reconnaissance to assess if discharges are likely to occur and develop a series of follow-up actions specific to those risks. Coordinate with other City of San Diego departments that own and lease land for agricultural uses. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include a coordinator or project manager. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, development of the program is expected in 2 years.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-36	Coordinate with County of San Diego and identify resources and funding to implement a program to target on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.	Coordinate with County of San Diego program. The extent, age, and location of on-site systems are generally not well documented. Recommended first step is to inventory and map all of the on-site systems. Techniques involve cross-referencing addresses for customers of central sewer provides with addresses of properties on the associated tax assessor's list, and identifying those addresses without a sewer account. Once on-site systems have been identified, the following parameters can be estimated or analyzed for risk assessment: location on the property, system age (from permit or property tax records), soil and slope conditions, development densities, and proximity to surface and groundwater resources. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include a coordinator or project manager. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, development of the program is expected in 2 years.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
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CSD-NS-37	Participate in an assessment to determine if implementation of an urban tree canopy (UTC) program would benefit water quality and other City goals, where feasible.	Perform a feasibility study to determine if implementing an UTC program would be beneficial to the City's goals. UTC intercepts rainfall through increased coverage of leaves, branches, and stems and reduces runoff from the storm drainage system. Benefits associated with enhancing an UTC include reducing heat island effects and air pollution in addition to aesthetics and community benefits. Where feasible, native trees will be utilized to prevent invasive trees from migrating to open spaces and to conserve water. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, implementation and assessment is expected in 2 years.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
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CSD-NS-38	Conduct a feasibility study to test Permeable Friction Course (PFC), a porous asphalt that overlays impermeable asphalt.	Perform an assessment to determine the feasibility of implementing PFC on City streets. PFC, an overlay of porous asphalt, is an innovative roadway material that improves driving conditions in wet weather and water quality. Placed in a layer 25-50mm thick on top of regular impermeable pavement, PFC allows rainfall to drain within the porous layer rather than on top of the pavement. PFC has also been shown to reduce concentrations of pollutants commonly observed in highway runoff. PFC incorporates stormwater treatment into the roadway surface and does not require additional right-of-way. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) funding to address MS4 discharges is identified and secured and 2) staff resources are identified and secured. Resources necessary to implement this strategy include City staff or consulting team. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The anticipated cost to implement the strategy is $50,000. Once initiated, implementation and assessment is expected in 2 years.	Must be triggered	Completed within schedule	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
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CSD-NS-39	As opportunities arise and funding sources are identified, protect areas that are functioning naturally by avoiding impervious development and degradation on unpaved open space areas, creating permanent open space protections on undeveloped city-owned land, and accepting privately-owned undeveloped open areas.	This strategy may be implemented if there is interest in participation by the public or private entity with current control of the land. This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) identification of partners, if needed (public, private, non-profit), 2) identification of costs and potential sources of funding, 3) final agreement by public or private entity with current control of the land, 4) final agreement by all other participating partners including acceptance by intended land- or asset-owning City department, and 5) funding in place. Resources necessary to implement this strategy include a coordinator or manager and maintenance for acquired lands. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. The time frame for implementation will vary by project. Implementation is in perpetuity as long as funding is available.	Must be triggered	Continuous as funding allows	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

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						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-43	Lake Hodges Natural Treatment System Project	This strategy may be implemented at any time at the City's discretion. This strategy will coordinate with watershed stakeholders on Integrated Regional Water Management (IRWM) Proposition 84 funding grant project to model the Lake Hodges watershed (hydrology and water quality loading) to assist in siting locations for nutrient reducing BMPs. Recommendations include using the 85th percentile event for sizing multiuse treatment area BMPs, locating and defining baseflow within key reaches. Resources necessary to implement this strategy include City staff time for coordination with the collaborative effort. Projected funding needs may be met through award of a grant, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Proposition 84 grant application has been submitted. Grantees will be identified in FY2016.	Must be triggered	Continuous as funding allows	Yes	No Change	Yes	FY16 Notes: The City of San Diego's Public Utilities Department secured $2.9M in Prop 84 funding. FY17 Notes: Complete the preliminary design and permitting phase.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-44	Participate in a watershed council or group if one is established.	This strategy may be implemented at any time at the City's discretion if the following triggers are met: 1) partners have been identified and formal MOUs have been developed and 2) consensus and community support has been achieved. Resources necessary to implement this strategy include a coordinator or project manager. Projected funding needs may be met through award of a grant, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council. Once initiated, development of the program is expected in 2 years. Implementation would be in perpetuity as long as funding is retained.	Must be triggered	Continuous as funding allows	Not Triggered	City-specific version of WMA strategy.	If Triggered	None
CSD-NS-47	Coordinate with Development Services Department to ~~P~~prohibit introduction of invasive plants in new development and redevelopment projects.	Coordinate with the City's Development Services Department to continue to prohibit introduction of invasive species such as Arundo donax and Cortaderia selloana for new development or redevelopment projects as specified in the City's municipal code for landscape. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
CSD-NS-50	San Dieguito Wetland Restoration Project	Collaborate with Copermittees and organizers of the San Dieguito River Park (SDRP) to restore the San Dieguito coastal wetlands and lagoon system. The 150-acre wetland restoration work has been primarily accomplished by Southern California Edison (SCE) and partner owners of the San Onofre Nuclear Generating Station (SONGS), including San Diego Gas & Electric (SDG&E), City of Riverside, and City of Anaheim. Construction began in fall 2006 and the $90-million Restoration Project was officially dedicated in 2011. Funding for monitoring and managing the wetlands is ongoing. Resources necessary to implement this strategy include City staff to coordinate with the regional effort. Projected funding needs may be met through grant funding, support from community groups or other institutions, or the City's General Fund. All General Funds are secured on an annual basis and are contingent upon annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	City-specific version of WMA strategy.	Completed	None
CSD-NS-51	Collaboration with the Regional Board.	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Industrial General Permit, 2) enforcement of the Ag Waiver, 3) enforcement of other non-MS4 dischargers, and 4) Bacteria TMDL updates, as appropriate for each WMA. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	City-specific version of WMA strategy.	Yes	FY16 Notes: Provided written comments to the Regional Board, State Water Board, and US Environmental Protection Agency (EPA) regarding proposed rules and regulations.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Structural Strategies								
Green Infrastructure								
CSD-GI-15	If interim load reduction goals are not met and additional green infrastructure is required, additional publicly-owned parcels have been identified as potential opportunities for green infrastructure implementation.	Construction, operation, and maintenance of bioretention and permeable pavement on prioritized public parcels. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs.) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs.; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr.; project construction costs are TBD and are based on size of the project). 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Green Streets								
CSD-GS-03	Callado Road	Construction, operation and maintenance of a green street project at Callado Road and Pastoral Street to treat a drainage area of 9.86 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	FY16	Completed within schedule in FY18	Yes	No Change		See Table D-6 for an updated list of completed and planned Structural Projects.
CSD-GS-11	If interim load reduction goals are not met and additional green infrastructure is required, the additional acreage of bioretention and permeable pavement may be implemented through green streets if potential opportunities for green infrastructure implementation on public parcels are not available.	This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs.) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs.; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr.; project construction costs are TBD and are based on size of the project) 8) Operation&M will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Multiuse Treatment Areas								
Infiltration and Detention Basins								
CSD-MUTA-10	If interim load reduction goals are not met and additional multiuse treatment areas are required, an infiltration basin may be implemented on open space across from San Pasqual Union Elementary School can be implemented upon detailed site assessment.	Construction, operation and maintenance of an Infiltration basin that would treat a total drainage area of 5,818 acres on 19 acres of available space. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured.	Must be triggered	Continuous-Ongoing	Not Triggered	No Changes	If Triggered	None
CSD-MUTA-11	If interim load reduction goals are not met and additional multiuse treatment areas are required, an infiltration basin may be implemented on open space between I-15 and West Bernardo Drive.	Construction, operation and maintenance of an infiltration basin that would treat a total drainage are of 146 acres on 6.0 acres of available space. The site is centrally located in the San Dieguito WMA, between I-15 and West Bernardo Drive (south of the Ed Brown Center). This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None
CSD-MUTA-12	If interim load reduction goals are not met and additional multiuse treatment areas are required, an infiltration basin(s) may be considered on publicly owned open spaces in canyon areas on a case-by-case basis when no other opportunities for load reductions exist.	Construction, operation, and maintenance of infiltration basin(s) in canyon areas. 9 potential canyon sites, owned by the City of San Diego or CSD Open Space Parks, have been identified in San Dieguito WMA that provide up to 1,406 acres of available space (1,885 total parcel acreage). This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, and 3) staff resources are identified and secured.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Stream, Channel and Habitat Rehabilitation Projects (B.3.b.(1)(b)(iii))								
CSD-MUTA-20	If interim load reduction goals are not met and additional stream, channel, and habitat rehabilitation projects are required, implement as needed.	This strategy may be triggered as 1) funding to address MS4 discharges is identified and secured, 2) staff resources are identified and secured, 3) partners have been identified and formal MOUs have been developed, 4) permits required by regulatory agencies are secured, and 5) recommendations from the community are identified and consensus and community support has been achieved. Will occur in areas identified during feasibility studies.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None
Water Quality Improvement BMPs								
Priority Development Projects (PDPs)								
CSD-PDP-05	Priority Development Project BMPs in San Dieguito River WMA.	Per the Storm Water Standards Manual, all non-exempt public PDPs are subject to requirements to construct and maintain permanent BMPs. See WQIP Annual Report for updated PDP BMP Inventory. Funding and resources have been secured for PDPs implemented prior to FY16. Funding for PDP BMPs constructed in future fiscal years is contingent on annual budget approval by City Council.	Prior to FY16	Continuous-Ongoing	Yes	Multiple similar strategies were compiled into this new strategy listing to simplify recordkeeping and reporting.	Yes	See Table D-7 for a current list of PDP BMPs.

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Dry Weather Flow Separation and Treatment Projects								
CSD-WQBMP-09	If interim load reduction goals are not met and additional dry weather flow separation and treatment projects are required, implement as needed.	Construction of dry weather flow separation and treatment projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3-6 months) 2) Secure funds in the form of general funds, bonds, or grants (6 months-2 yrs.) 3) Obtain City Council approval of Capital Improvement Projects budget (occurs annually in May) 4) Initiate preliminary engineering to narrow project scope (6 months; approx. $30K per CIP project) 5) Hire design consultant to develop detailed construction plans and construction cost estimates (2 yrs.; approx. $500K per CIP project) 6) Complete construction contractor bid and award process for construction phase (6 months) 7) Construct project (4 months- 1 yr.; project construction costs are TBD and are based on size of the project) 8) Operation and maintenance will be in perpetuity. Funds and staff resources for this function must be approved by City Council as part of the City's annual budget.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
Trash Segregation								
CSD-WQBMP-10	If interim load reduction goals are not met and additional trash segregation projects are required, implement as needed.	Construction of trash segregation (Trash Guards, etc.) projects, where identified. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in high loading areas city-wide.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-3	San Dieguito Wetland Restoration Project	The Cities of San Diego and Del Mar are collaborating organizers of the San Dieguito River Park (SDRP) to restore the San Dieguito coastal wetlands and lagoon system. The 150-acre wetland restoration work has been primarily accomplished by Southern California Edison (SCE) and partner owners of the San Onofre Nuclear Generating Station (SONGS), including San Diego Gas & Electric (SDG&E), City of Riverside, and City of Anaheim. Construction began in fall 2006 and the $90-million Restoration Project was officially dedicated in 2011. The Restoration Project has enhanced southern California's unique coastal and marine environment as the restoration has provided adequate tidal flushing and circulation to support biologically diverse habitats. Beyond protecting endangered species and providing habitat to hundreds of bird species and fish, the restoration project has also added a coastal segment to the Coast to Crest Trail, allowing public enjoyment of the wetlands area while protecting sensitive habitat and vegetation. Funding for monitoring and managing the wetlands is ongoing.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Completed	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-4	Collaborative Approach to Irrigation Reduction	Responsible Agencies are collaborating with water agencies to encourage implementation of water conservation efforts. Water conservation that attempts to reduce irrigation and minimize storm water runoff can also improve water quality of receiving waterbodies. MWD's SoCal Water$mart Program supports conservation efforts by offering incentives in the form of rebates for rain barrels, rotating sprinkler nozzles, weather-based irrigation controllers, soil moisture sensor systems, and turf replacement. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council or appropriate legislative body (i.e. the Board).	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-6	Offsite Alternative Compliance Option ~~(WMAA)~~	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, ~~anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015,~~ which was submitted and approved in FY 2016. Following this approval, jurisdictions can formally implement an optional Alternative Compliance Program by ~~December 2015~~ February 2016 (time coincident with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous-Ongoing	Yes	Revised to clarify strategy.	Yes	FY16 Notes: Phase 1 of the Alternative Compliance Program (ACP) went into effect on 2/16/16. FY17 Notes: Proposed Water Quality Equivalency (WQE) guideline development for stream restoration.
WMA-7	Collaboration with the Regional Board	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Ag Waiver, 2) enforcement of other non-MS4 dischargers, and 3) bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	FY16 Notes: Working with Regional Board to include non-Phase I MS4s in general permits, waivers, and Waste Discharge Requirements (WDRs).

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-13	Participation in Watershed Council	If a Watershed Council is re-established, the City of San Diego, County of San Diego and potentially other Responsible Agencies will participate. Watershed Councils are typically locally organized, voluntary, non-governmental organizations, and are intended to broadly represent various stakeholders in the WMA. Goals of Watershed Councils may vary, but they generally promote protecting the watershed and sustaining natural resources. This coordination could assist in selecting WMA projects, identifying potential funding opportunities, and promoting communication among community groups and regulated agencies. Resources necessary to implement this strategy include participating jurisdictional staff to coordinate with the regional effort and the development of an agreement (e.g. MOU, JPA) among participating entities, which may take up to one year to coordinate. Projected funding needs may be met through grant funding, support from community groups or other institutions, or jurisdictional General Funds. General Funds are contingent on approval of the annual budget by City Council or appropriate legislative body. Participation is dependent on funding availability and continued benefit to watershed.	Must be triggered	Continuous-Ongoing	Not Triggered	No Change	If Triggered	None

Table D-4 (continued)
City of San Diego Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Proposed Modifications		Notes
						Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	
WMA-14	Participation in San Diego Integrated Regional Water Management Program	The City of San Diego, County of San Diego, and San Diego County Water Authority form the Regional Water Management Group (RWMG) and administer and implement the San Diego IRWM Program. The Regional Advisory Committee (RAC) includes rotating members from various functional areas related to water management. In San Dieguito River WMA, two integrated projects, funded through Proposition 50 and 84, target water quality in Lake Hodges: 1) San Dieguito Watershed Management Plan Implementation – Lake Hodges Natural Treatment System Conceptual Design and 2) Lake Hodges Water Quality and Quagga Mitigation Measures. Along with grant funding, the City of San Diego Public Utilities Department, City of Escondido, San Dieguito River Valley Conservancy, Santa Fe Irrigation District, and the San Diego County Water Authority are providing local match or in-kind services. All General Funds are secured on an annual basis and are contingent upon annual budget approval by each participating Responsible Agency.	Prior to FY16	Continuous-Ongoing	Yes	No Change	Yes	Hodges Reservoir Natural Treatment System was awarded $2.9 million in grant funding. This project will create a biofiltration wetland at Hodges Reservoir to improve water quality. The wetland also will provide habitat and species conservation benefits, in addition to recreational opportunities. – More information on IRWM efforts is available at http://www.sdcwa.org/more-31-million-awarded-water-projects-san-diego-region#sthash.5sYifWjP.dpuf.

* Strategy IDs with an asterisk indicate those strategies that are considered "jurisdictional" in the MS4 Permit, but are considered enhancements to the JRMP to target highest priority water quality conditions.

Table D-5
City of San Diego Structural BMP Implementation Status for San Dieguito WMA

Strategy Number	Strategy	Implementation Approach	Total Drainage Area (Ac)	Implementation Year*	Status	Permit Term Goal**
Green Streets		**Total Acres Treated Required for Green Streets:**	**9.86**			
CSD-GS-03	Callado Road	Construction, operation and maintenance of a green street project at Callado Road and Pastoral Street to treat a drainage area of 9.86 acres. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	9.86	FY16	Design	✓

*For additional details, please see the schedule following the City's strategy table in the WQIP.
** Projects with a check in the "Permit Term Goal" column are counted toward the green infrastructure installation goal applicable to the current Permit term. See Table D-8 for a summary

Table D-6
City of San Diego Priority Development Project Implementation Status for San Dieguito WMA

San Dieguito River PDP BMP Ledger (CSD-PDP-05)					
Project Name	**Project Description**	**Total Drainage Area (Ac)**	**Implementation Year**	**Status**	**Permit Term Goal**
Del Mar Heights Rd Median (Project ID 1018)	A grassed/vegetated swale or grassed/vegetated strip has been proposed for the Del Mar Heights Road median about 350 feet west of the Del Mar Heights and Carmel Valley Road intersection to treat a drainage area of 0.8 acre. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	0.8	Prior to FY16	Completed	✓
Black Mountain Ranch - Northern Areas, Project ID 1386	Existing project - constructed BMPs include 4 drainage inserts, 2 filtration systems and 10 hydrodynamic separation systems. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY16	Completed	
Black Mtn. Ranch Community Park (discretionary) - Project ID 1006	A hydrodynamic separation system and 3 drainage inserts were installed at Black Mountain Ranch Community Park under the west corner of the property, behind the baseball fields and near an existing concrete swale. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY16	Completed	
Camino Del Sur and Maranatha Dr. - Project ID 139	A hydrodynamic separation system was installed along the north side of Camino Del Sur, just west of Maranatha Drive. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY16	Completed	
Fire Station #46 Santaluz - Project ID 991	Installed 4 drainage inserts at Fire Station #46 near the entrance of parking lot off of Lazanja Drive. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY16	Completed	
Rancho Bernardo Community Park Dog Off-Leash Area - Project ID 865	A drainage insert was installed at Rancho Bernardo Community Park near the Dog Off-Leash Area. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council.	unknown	Prior to FY16	Completed	
(Additional PDPs will be added after they are completed.)					

* Projects with a check in the "Permit Term Goal" column are counted toward the green infrastructure installation goal applicable to the current Permit term. See Table D-7 for a summary.

Table D-7
Summary of City of San Diego Priority Structural BMP Implementation Status for San Dieguito WMA

Permit Term Goal FY2018	Total Drainage Area (Ac)
Structural BMP Total Acres Treated Required by FY 18	**10.60 (Required by FY 18)**
Total Completed/Planned BMPs	9.86
Total Completed/Planned PDP BMPs	0.80
Remaining to Goal	-0.06 **(Goal Met/Exceeded)**

D.4.4 Modifications to the BMP Design Manual

In FY16 the City, along with other government agencies, professional engineers and members of the local development community, developed a new Regional Best Management Practices (BMP) Design Manual that conforms to the 2013 Municipal Storm Water Permit (Order No. R9-2013-0001, as amended by R9-2015-0001 and R9-2015-0100). The Manual supersedes the San Diego County-wide Model Standard Urban Runoff Storm Water Management Plan (SUSMP) and provides technical guidance and regional standards for pollutant and flow control requirements for new development and significant redevelopment. The City of San Diego's local version of the BMP Design Manual, the Storm Water Standards Manual, became effective on February 16, 2016.

D.4.5 Modifications to the Jurisdictional Runoff Management Program

The City of San Diego is proposing the following administrative changes to its JRMP. The updated JRMP can be viewed at https://www.sandiego.gov/stormwater/plansreports/jrmp.

	JRMP Section/ Appendix	JRMP Update
1	Executive Summary	Strategy categories and definitions were modified to align with the categories and definitions in the Municipal Storm Water Permit and San Diego Water Board's approved Water Quality Improvement Plans (WQIPs).
2	Section 2.3	In accordance with the Municipal Storm Water Permit, Section 2.3 was updated to state that JRMP updates can be proposed/submitted as part of the WQIP Annual Reports.
3	Section 7.3.13-8	Updated BMP #16 to provide greater clarity.
4	Section 7.3.14	Updated section to include new BMPs for herbicide application.
5	Section 10	Strategy categories and definitions were modified to align with the categories and definitions in the Municipal Storm Water Permit and San Diego Water Board's approved WQIPs. Updated tables, graphs, charts, and text to reflect funding needs to meet the goals and schedules identified in the WQIPs. Added language stating "Estimates of funding needs presented were based on the best information available at the time they were prepared."
6	Sections 7.3.1, 7.3.2, and 7.3.4-15	Updated Minimum BMP language to reflect changes to Appendix IX.

	JRMP Section/ Appendix	JRMP Update
7	Section 3, Section 4, Section 5, Section 6, Section 7, Section 8, Section 9	Based on updates made to the categories and definitions of strategies noted above, the "JRMP Strategies Identified in the WQIPs" tables and "Additional Public Education and Participation Program WQIP Strategies" tables for these sections have been updated for consistency. The strategy identification numbering system and text was updated to reflect administrative changes included in the WQIP Annual Reports.
8	Appendix VI-Residential Management Areas and Patrol Protocols	Updated the residential management areas maps and included newly developed patrol protocols.
9	Appendix IX - Minimum BMPs for Residential, Industrial, Commercial, and Municipal Sites/Sources	Updated references to ordinance sections, changed the "Think Blue" references to the Storm Water Division, and made minor changes to some BMP and description wording for clarification.
10	Appendix XIV-Certificate of Adequate Legal Authority	Signed Certificate of Adequate Legal Authority was added.
11	Appendix XX-Water Quality Improvement Plan Strategies	Updated strategies to reflect the administrative changes made to strategies in the Fiscal Year 2016 WQIP Annual Reports.
12	Appendix XXII-Storm Water Division Projected Funding Needs, 2016-2035	Updated Appendix XX to reflect the funding needs to meet the goals and schedules identified in the WQIPs.

D.5 City of Solana Beach

D.5.1 Annual Report Certifications

The City of Solana Beach's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.5.2 Annual Report Form

Solana Beach's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

CITY OF SOLANA BEACH www.cityofsolanabeach.org
635 SOUTH HIGHWAY 101 • SOLANA BEACH, CA 92075 • (858) 720-2400 • Fax (858) 720-2455

January 3, 2017

STATEMENT OF CERTIFICATION

SAN DIEGUITO WATERSHED MANAGEMENT AREA
WATER QUALITY IMPROVEMENT PLAN 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (40 C.F.R. 122.22(d)).

M. Sammak

Mohammad Sammak
City of Solana Beach
City Engineer / Public Works Director

1/3/17
Date

CITY OF SOLANA BEACH www.cityofsolanabeach.org
635 SOUTH HIGHWAY 101 • SOLANA BEACH, CA 92075 • (858) 720-2400 • Fax (858) 720-2455

January 25, 2017

STATEMENT OF CERTIFICATION

SAN DIEGUITO WATERSHED MANAGEMENT AREA 2015-2016 JRMP ANNUAL REPORT LEGAL AUTHORITY ESTABLISHMENT AND ENFORCEMENT

I certify under penalty of law that the City of Solana Beach has taken necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements contained in section E.1 of the San Diego Regional Water Quality Control Board Order No. R9-2013-0001 as amended by Order No. R9-2015-0100 (Municipal Permit). The Solana Beach Municipal Code (SBMC), including the following provision, provides the City with full legal authority as required by the Municipal Permit as well as authorizes judicial and administrative enforcement procedures to mandate compliance:

1. Storm Water Management, SBMC Section 13.10
2. Excavation and Grading, SBMC Section 15.54

Johanna N. Canlas
City Attorney

1/25/17
Date

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
CITY OF SOLANA BEACH – ANNUAL REPORT FORM
FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name: City of Solana Beach – San Dieguito HU

Copermittee Primary Contact Name: Ron Borromeo

Copermittee Primary Contact Information:
Address: 635 South Highway 101
City: Solana Beach County: San Diego State: CA Zip: 92075
Telephone: 858-720-2474 Fax: Email: rborromeo@cosb.org

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?[1]	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM[2]

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	10
Number of non-storm water discharges detected by Copermittee staff or contractors	18
Number of non-storm water discharges investigated by the Copermittee	28
Number of sources of non-storm water discharges identified	28
Number of non-storm water discharges eliminated	27[3]
Number of sources of illicit discharges or connections identified	22
Number of illicit discharges or connections eliminated	21[3]
Number of enforcement actions issued	28
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

Number of proposed development projects in review	47
Number of Priority Development Projects in review	4
Number of Priority Development Projects approved	4
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	0

Number of completed Priority Development Projects in inventory	10
Number of high priority Priority Development Project structural BMP inspections	10
Number of Priority Development Project structural BMP violations	0
Number of enforcement actions issued	0
Number of escalated enforcement actions issued	0

[1] The City of Solana Beach submitted an update to the JRMP with the San Dieguito WQIP. The document has been posted to the regional clearinghouse
[2] Illicit Discharge Detection and Elimination data was reported based on the monitoring year as presented in the WQIP annual report versus the FY15-16. The IDDE data presented in this report is for the time period 10/1/2015-9/30/2016.
[3] One issue is currently an open investigation; the City of Solana Beach is actively working with the property owner to close out this issue.

FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

Number of construction sites in inventory	27
Number of active construction sites in inventory	24
Number of inactive construction sites in inventory	3
Number of construction sites closed/completed during reporting period	30
Number of construction site inspections	400
Number of construction site violations	22
Number of enforcement actions issued	22
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

	Municipal	Commercial	Industrial	Residential[4]
Number of facilities or areas in inventory	15	69	1	2
Number of existing development inspections	15	138	1	4
Number of follow-up inspections	0	21	0	0
Number of violations	0	37	0	1
Number of enforcement actions issued	0	37	0	1
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

X. CERTIFICATION

I ☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

M. Sammak	1/3/17
Signature	Date
MOHAMMAD SAMMAK	City Engineer
Print Name	Title
858-720-2470	Msammak@cosb.org
Telephone Number	Email

[4] The City of Solana Beach has two designated Residential Management Areas fully encapsulated within the San Dieguito Watershed.

1. FISCAL ANALYSIS

1.1 JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM IMPLEMENTATION

This section of the Jurisdictional Runoff Management Program (JRMP) Annual Report provides a fiscal analysis of the City's stormwater management programs. On May 8, 2013 the RWQCB adopted a revised Municipal Permit, Order No. R9-2013-0001 requiring Copermittees to conduct an annual fiscal analysis of its jurisdictional runoff program in line with the requirements specified in Section E.8 Fiscal Analysis.

On January 29, 2009, the San Diego Municipal Copermittees adopted the "Standardized Fiscal Method and Format" which provides a model for the City of Solana Beach and other Copermittees to perform the review and annual reporting as required in Order R9-2007-0001, Section G. This methodology and reporting format proved to be an effective model for reporting on City expenditures, and for consistency the City of Solana Beach will continue to use the format for this reporting period FY 2015-2016. The City however, recognizes the additional elements required to be included in the fiscal analysis as specified in Order No. R9-2013-001 Section E.8, and has included those components in this year's report.

1.1.1 General Budget Information

The City of Solana Beach's Budget for FY 2015-2016 was presented to the Solana Beach City Council and approved at a public hearing held on June 10, 2015. The City's NPDES program is primarily implemented by the Public Works Department's Environmental Services. Environmental Services is responsible for the coordination of all storm water related tasks. Therefore, the majority of the reported projected expenditures included in this section are part of the Environmental Services Program's FY 2015-16 budget, which is approximately 6% of the total FY 2015-2016 Public Works Department budget. The budget for the City of Solana Beach has the appropriate funds allocated to meet the requirements of Permit 2013-0001, including any development, implementation, and enforcement activities required.

1.1.2 Fiscal Analysis Methods

The City of Solana Beach used the format and guidelines included in the Fiscal Analysis Method for reporting purposes; however, given the City's financial accounting methods, a few modifications were necessary. These adjustments are described below.

1.1.3 Fiscal Analysis Results

The City's Fiscal Year 2015-2016 jurisdictional (JRMP), watershed and regional projected expenditures for the implementation of the Municipal Permit requirements are summarized in **Table 1-1**.

Table 1-1: Fiscal Year 2015-2016 Expenditure Summary by Program Component

Component Description	Fiscal Year 2015-2016 Projected Expenditures
Jurisdictional Component	
Administration	62,331
Development Planning	22,290
Construction	24,870
Municipal (Including Non-Emergency Fire Flows)	147,385
Industrial and Commercial	14,930
Residential, Education, and Public Participation	23,630
IDDE	57,230
Jurisdictional Total	**$352,666**
Watershed Component	
Carlsbad Watershed	26,287
San Dieguito Watershed	33,787
Watershed Total	**$60,074**
Regional Component	
Total Copermittee Cost Share for Solana Beach	**23,350**
Total Costs	**$436,090**

1.1.4 JRMP Expenditures

The City of Solana Beach used the expenditure categories detailed in the Fiscal Analysis Method for jurisdictional reporting. However, due to the implementation overlap of some of the City's municipal permit components; it is difficult to separate out individual component costs. As a result, the expenditures for residential, education, and public participation are reported as one expenditure category. Additionally, since the City does not explicitly track expenditures by permit component for its budgeting purposes, in many cases estimated percentages were utilized to allocate expenditures into the appropriate municipal permit component categories.

A total of $436,090 was projected to be expended in Fiscal Year 2015-2016 for the implementation of JRMP activities. An overview of the expenditures reflected in JRMP activity components is described below.

Administration
Activities identified in this component represent labor and non-labor expenditures for materials, supplies, equipment, or tools that are not otherwise incorporated into other expenditure categories, general administrative functions (e.g., program planning, budgeting, staff supervision), and program assessment and reporting.

Development Planning
Activities identified in this component represent labor and non-labor expenditures related to issuance or oversight of permits or of plans (e.g., permit counter support, plan checks, permit or application processing), project planning and engineering (e.g. project design specifications, capital improvement projects).

Construction
Activities identified in this component represent labor and non-labor expenditures related to construction site inspections and enforcement.

Municipal
Activities identified in this component represent labor and non-labor expenditures related to maintenance inspections of streets, roads, catch basins and inlets, open channels, and the MS4, municipal facility inspections, street and parking lot sweeping, catch basins and inlets, open channels, and MS4 cleaning, and municipal BMP implementation. Any costs associated with preparing for non-emergency fire-fighting flows are included in the municipal component.

Industrial and Commercial
Activities identified in this component represent labor and non-labor expenditures related to evaluation and enforcement of program requirements at industrial and commercial sites or sources (e.g. routine inspections and complaint investigations).

Residential, Education, and Public Participation
Activities identified in these components represent labor and non-labor expenditures related to investigation and enforcement of residential areas or activities, staffing outreach events, development and production of outreach materials, and any expenditures associated with waste collection and recycling (e.g. household hazardous waste, used oil).

Illicit Discharge Detection and Elimination (IDDE)
Activities identified in this component represent labor and non-labor expenditures related to the identification and elimination of illicit discharges or connections, enforcing the City of Solana Beach's storm water ordinance, and any expenditures related to monitoring programs (e.g. dry weather monitoring, coastal storm drain monitoring, special investigations, field or sampling equipment, materials and supplies).

1.1.5 Watershed Expenditures

The City of Solana Beach used the expenditure categories (administration, watershed activities, cost share contribution, and other) detailed in the Fiscal Analysis Method for watershed reporting. The watershed expenditures included in this report only capture City of Solana Beach's expenditures and do not account for any expenditure disbursed by other Copermittees included in the watershed(s).

A total of $60,074 was projected to be expended in Fiscal Year 2015-2016 for the implementation of watershed activities, which primarily included the development of Water Quality Improvement

Plans (WQIP) for the Carlsbad Watershed and the implementation of planned strategies in the San Dieguito Watersheds.

1.1.6 Regional Expenditures

The City of Solana Beach used the expenditure categories (administration, cost share contribution, regional activities, and others) detailed in the Fiscal Analysis Method for regional reporting. The regional expenditures included in this report only capture the City of Solana Beach's expenditures and do not account for any expenditure disbursed by other Copermittees in the region. A total of $23,350 was projected to be expended in Fiscal Year 2015-2016 for the implementation of regional activities and coordination.

1.1.7 Funding Sources

The City primarily finances its Storm Water Management Department via revenues from an NPDES solid waste fee that was initiated in 2004. The City went through a long, arduous process to establish a long-term funding source to ensure the program would be sufficiently financed from 2004 through 2007. The City was sued by the Howard Jarvis Taxpayer's Association (HJTA), and the fee was put to a vote of the community. In September 2007, property owners in Solana Beach voted in favor of the fee which ultimately results in the City having a funding source to maintain, enhance, and ensure the long-term future of the NPDES program at the City. The NPDES Fee is to be used exclusively for the mandated NPDES Permit programs. For more information on the City's NPDES Solid Waste Fee, please see the City's website at http://www.cityofsolanabeach.org

The City also utilizes the General Fund to assist in supporting some elements of the City's NPDES program. The General Fund is supported by major revenue sources that include property tax, the local portion of the sales tax and use tax, and transient occupancy tax.

D.5.3 City of Solana Beach Strategies

City of Solana Beach's strategies are detailed in Table D-8.

Table D-8
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
JRMP (E.2 – E.7) Strategies (E.3.b.(1)(a))								
E.3 Development Planning								
All Development Projects								
SB-1	For all development projects, administer a program to ensure implementation of source control BMPs to minimize pollutant generation at each project and implement LID BMPs to maintain or restore hydrology of the area, where applicable and feasible.	Refer to JRMP Section 5.	FY16	Continuous-Ongoing	Y	N	Y	Guidelines specified in BMP Design Manual. City has a construction verification process to ensure post construction BMPS are installed.
SB-2	Municipal code and ordinances will be amended as necessary to encourage LID opportunities.	Refer to JRMP Section 5.	FY16	Continuous – Ongoing	In progress	N	Y	Planning staff emphasizes LID incorporation in conceptual design process.
SB-3	Development Planning staff will review LID regulatory changes and ensure compliance with BMP Design Manual.	The City, due to its small size, has one staff member overseeing implementation of the development planning MS4 Permit requirements and ensures compliance with new requirements.	FY16	As required or needed by permit	Y	N	Y	BMP Design Manual has been updated.
SB-4	Provide technical education and outreach to the development community on the design and implementation requirements of the MS4 Permit and WQIP requirements.	At the initial plan review, a Stormwater Checklist is provided which lists the minimum standards required. One-on-one education is available at that time and throughout the development planning process.	FY16	Continuous – Ongoing	Y	N	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Priority Development Projects (PDPs)								
SB-5	For PDPs, administer a program requiring implementation of on-site structural BMPs to control pollutants and manage hydromodification. Includes confirmation of design, construction, and maintenance of PDP structural BMPs.	Refer to JRMP Section 5.	FY16	Continuous – Ongoing	Y	N	Y	Annual inspection and verification program.
SB-6	Update BMP Design Manual procedures to determine nature and extent of storm water requirements applicable to development projects and to identify conditions of concern for selecting, designing, and maintaining appropriate structural BMPs.	Refer to JRMP Section 5. County BMP Design Manual will be used and adapted for the City.	FY16	As needed or required by permit	Y	N	Y	BMP Design Manual has been updated.
SB-7	Expanded requirement for on-site treatment if impervious area is planned to increase by more than 500 square feet, a detention basin is required.	With increased impervious area of greater than 500 sq. ft., the City requires a detention basin to treat stormwater runoff. An agreement to maintain the detention basin is also required. This encourages LID and the protection of open space.	Prior to FY16	As needed or required by permit	Y	N	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
SB-8	Institute a program to verify and enforce maintenance and performance of treatment control BMPs.	Refer to JRMP Section 5. The City has an annual verification of effective operation and maintenance of constructed structural BMPs. The City's structural BMP verification program utilizes the following steps to verify the effective operation and maintenance of each structural BMP constructed under the City's processes: 1) Utilize the structural BMP inventory to create a list of sites, responsible parties, addresses and the associated BMPs. 2) Annually mail out a verification form to be returned to the City. The form will include the following information: a. BMPs to verified b. Description of maintenance taken during previous year c. Requirement to supply information to demonstrate maintenance and/or operating status (vendor invoices, photos etc.) d. Certification from the responsible party that the BMP(s) were maintained and are operating In the event that a responsible party does not respond the City may use its available enforcement measures to obtain compliance.	FY15	Continuous – Ongoing	Yes, the City of Solana Beach has completed visual inspections of all TCBMPS, but has not yet sent out letters.	Letters to be sent out in FY17	Y	-
E.4 Construction Management								
SB-9	Administer a program to oversee implementation of BMPs during the construction phase of land development. Includes inspections at an appropriate frequency and enforcement of requirements.	Refer to JRMP Section 6. BMPs are inspected once a month and before known rain events. Inventory is updated weekly.	FY16	Continuous-Ongoing	Y	N	Y	City has a construction verification process to ensure BMPs are appropriately installed and annual inspection thereafter.
SB-10	Maintain and update a watershed-based inventory of all construction projects issued a local permit that allows ground disturbance or soil disturbing activities.	Create a watershed-based inventory to track all construction projects issued a permit that allow ground disturbance or soil disturbing activities. Track the frequency and results of inspections.	FY16	Continuous-Ongoing	Y	N	Y	Construction database in place.

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
SB-11	Implement or require implementation of BMPs that are site specific, seasonally appropriate and construction phase appropriate. Includes inspections at an appropriate frequency and enforcement of requirements.	Ensure that erosion control plans and BMP plans are appropriately designed at the permit and plan review phase. Perform and document BMP inspections per the Permit.	FY16	Continuous-Ongoing	Y	N	Y	-
E.5 Existing Development								
Commercial, Industrial, Municipal, and Residential Facilitates and Areas								
SB-12	Administer a program to require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types, and PGAs, as appropriate. Includes inspection of existing development at appropriate frequencies and using appropriate methods.	Refer to JRMP Sections 7, 8, & 9. . All existing commercial and industrial facilities are inspected annually. All existing municipal facilities are inspected monthly. Please see Attachment 1 for details on updated minimum BMPs that will be implemented to address sources causing or contributing to the HPWQC.	FY16	Continuous-Ongoing	Y	N	Y	Low flow diverters are vacuumed out monthly.
SB-12.1	Inspection of all commercial and industrial facilities annually	All commercial and industrial facilities are inspected annually.	FY16	Continuous-Ongoing	Y	N	Y	-
SB-12.2	Require minimum BMPs for mobile businesses.	Water-using mobile businesses require minimum BMPs including recovery and removal of waste water.	FY16	Continuous-Ongoing	Y	N	Y	-
SB-12.3	Review policies and procedures to ensure discharges from swimming pools are meeting current permit requirements.	Refer to JRMP.	FY16	Continuous-Ongoing	Y	N	Y	Policies meet permit requirements.
SB-13	Implement pet waste program. May include installation and maintenance of pet waste bag dispensers and trash bins, signage and education, physical removal of pet waste, and enforcement.	Implement education and prevention program. Pet waste bag dispensers and trash bins provided in public areas.	Prior to FY16	Continuous-Ongoing	Y	N	Y	2,000 bags used up every 3 months.

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
MS4 Infrastructure								
SB-14	Implementation of operation and maintenance activities (inspection and cleaning) for MS4 and related structures (catch basins, storm drain inlets, detention basins, etc.).	Refer to JRMP Section 7. The City inspects all MS4 facilities that receive or collect high volumes of trash and debris between May 1st and September 30th once per year. These locations are assessed periodically to determine if inspection frequency revisions are necessary. All remaining MS4 facilities are inspected at any time during the year.	FY16	Continuous-Ongoing	Y	N	Y	-
SB-14.1	Perform catch basin inspection and cleaning	All catch basins inspected annually. Catch basins with excess trash and debris are cleaned annually.	FY16	Continuous-Ongoing	Y	N	Y	More than 300 catch basins Citywide inspected and 18 catch basins cleaned totaling 1.25 cubic yards of debris removed.
SB-14.2	Inspect open-channels and repair scour ponds to reduce pollutant loads and invasive plants and animals as needed.	Stevens Creek Channel is inspected annually. Maintenance is conducted as-needed.	FY16	Continuous-Ongoing	Y	Corrected to Stevens Creek Channel	Y	On May 9, 2016 500 ft of Stevens Creek channel was inspected.
SB-14.3	Repair and replace MS4 components to provide source control from MS4 infrastructure.	Refer to JRMP Section 7. The City proactively repairs and replaces corrugated metal pipe throughout the MS4 in order to control and prevent pollutant sources from within the MS4 infrastructure.	Prior to FY16	Continuous - Ongoing	Y	N	Y	-
SB-15	Implement controls to prevent infiltration of sewage into the MS4 from leaking sanitary sewers and identify sewer leaks and areas for sewer pipe replacement.	The City will continue to implement an aggressive sewer infrastructure replacement program. The City CCTVs a quarter of the sewer infrastructure each year. The results lead to a prioritized list of sewer line replacement projects. The City invests approximately $500,000 in sewer replacement projects per year.	Prior to FY16	Continuous - Ongoing	Y	20% annually	Y	-
Roads, Streets, and Parking Lots								
SB-16	Implement operation and maintenance activities for public streets, unpaved roads, paved roads, and paved highways.	Refer to JRMP Section 7.	FY16	Continuous-Ongoing	Y	N	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
SB-16.1	Implement street sweeping on roads and in parking lots	Refer to JRMP Section 7. High priority streets are swept twice per month. Medium priority streets, including all residential streets, are swept once per month. Low priority streets, including 12 parking lots, are cleaned once per month.	FY16	Continuous-Ongoing	Y	N	Y	718,491 total miles swept in FY16.
SB-16.2	Perform sweeping of medians on high-volume arterial roadways.	Refer to JRMP Section 7. Medians on Highway 101 and Lomas Santa Fe are swept once per month.	FY16	Continuous-Ongoing	Y	N	Y	Swept twice per month.
Pesticides, Herbicides, and Fertilizer BMP Program								
SB-17	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Refer to JRMP Section 7. City does not have authority over application of pesticides, but will implement BMPs. Industrial and commercial inspections cover requirement.	FY16	Continuous-Ongoing	Y	N	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Retrofit and Rehabilitation in Areas of Existing Development								
SB-18	Develop and implement a strategy to identify candidate areas of existing development appropriate for retrofitting projects and facilitate the implementation of such projects.	Refer to JRMP Section 8. The process for identifying retrofits will evaluate the following considerations: • Water Quality Improvement Plan (WQIP) Priority and Highest Priority Water Quality Conditions • Likely sources of pollutants generating pollutants related to WQIP conditions • Focus areas identified in WQIP • Vintage of geographic areas of the City – time period existing development was constructed • Public retrofit opportunities through Capital Improvement Program (CIP) projects • Areas of persistent discharges • Inspection/Illicit Discharge Detection and Elimination program findings • Identified areas of hydromodification/other stream impacts Using the considerations above, the City will identify areas where opportunities could provide water quality improvement benefits. Evaluation will include layering of the findings to determine where compounding factors overlap. The City will consider the locations where overlapping occurs and significance of the factors to prioritize areas suited for retrofits and rehabilitation projects. Once specific areas within the City have been identified and prioritized for retrofits and/or rehabilitation projects, the City will perform field verifications on an as-needed basis to substantiate the: • need for retrofits or rehabilitation projects • locations of potential retrofits or rehabilitation projects • appropriate type(s) of retrofit or rehabilitation project • appropriate responsible party to implement the retrofits or rehabilitation projects Specific retrofit projects are included in the Non-JRMP, Structural Strategies categories.	FY18	Continuous-Ongoing	N/A	N/A	N/A	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
SB-19	Develop and implement a strategy to identify candidate areas of existing development for stream, channel, or habitat rehabilitation projects and facilitate implementation of such projects.	Refer to JRMP Section 8. The process for identifying retrofits will evaluate the following considerations: • Water Quality Improvement Plan (WQIP) Priority and Highest Priority Water Quality Conditions • Likely sources of pollutants generating pollutants related to WQIP conditions • Focus areas identified in WQIP • Vintage of geographic areas of the City – time period existing development was constructed • Public retrofit opportunities through Capital Improvement Program (CIP) projects • Areas of persistent discharges • Inspection/Illicit Discharge Detection and Elimination program findings • Identified areas of hydromodification or other stream impacts Using the considerations above, the City will identify areas where opportunities could provide water quality improvement benefits. Evaluation will include layering of the findings to determine where compounding factors overlap. The City will consider the locations where overlapping occurs and significance of the factors to prioritize areas suited for retrofits and rehabilitation projects. Once specific areas within the City have been identified and prioritized for retrofits and/or rehabilitation projects, the City will perform field verifications on an as-needed basis to substantiate the: • need for retrofits or rehabilitation projects • locations of potential retrofits or rehabilitation projects • appropriate type(s) of retrofit or rehabilitation project appropriate responsible party to implement the retrofits or rehabilitation projects	FY18	Continuous-Ongoing	N/A	N/A	N/A	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
E.2 Illicit Discharge, Detection, and Elimination (IDDE) Program								
SB-20	Implement Illicit Discharge, Detection, and Elimination (IDDE) Program per the JRMP. Requirements include: maintaining an MS4 map, using municipal personnel and contractors to identify and report illicit discharges, maintaining a hotline for public reporting of illicit discharges, monitoring MS4 outfalls, and investigating and addressing any illicit discharges.	Refer to JRMP Section 3.	FY16	Continuous-Ongoing	Y	N	Y	Online reporting system, staff training and IDDE follow-up investigations completed.
E.7 Public Education and Participation (B.3.b.(1)(a)(iii))								
SB-21	Implement a public education and participation program to promote and encourage development of programs, management practices, and behaviors that reduce the discharge of pollutants in storm water prioritized by high-risk behaviors, pollutants of concern, and target audiences.	Refer to JRMP Section 12 and 13.	FY16	Continuous-Ongoing	Y	N	Y	City supports community based organizations and partnerships and conducts trash and beach cleanups.
SB-21.1	Expand outreach, training, and incentive programs to homeowners' associations (HOAs).	Refer to JRMP Section 12 and 13.	FY16	Continuous-Ongoing	N	Strategy shifted from FY16 to FY17 due to scheduling delays and limited resources	Y	-
SB-21.2	Develop outreach and training program for property managers responsible for HOAs and Maintenance Districts.	Refer to JRMP Section 12 and 13.	FY16	Continuous-Ongoing	N	Strategy shifted from FY16 to FY17 due to scheduling delays and limited resources	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
SB-21.3	Conduct trash cleanups through community-based organizations involving target audiences.	In partnership with I Love a Clean San Diego, host a site in Solana Beach during two beach clean-ups per year.	FY16	Continuous-Ongoing	Y	N	Y	600 pounds of trash collected from sites in Solana Beach over three different cleanup events.
SB-21.4	Target school-based education and outreach.	Collaborate with Solana Center to present relevant watershed and storm water pollution prevention information to school groups once a year.	FY16	Continuous-Ongoing	Y	N	Y	City of Solana Beach provides funding to the Solana Center for stormwater presentations.
SB-21.5	Develop education and outreach to reduce over-irrigation.	Work with SFID to educate residents about reducing over irrigation. Municipal code will be modified to address over irrigation issues.	FY16	Continuous-Ongoing	Yes, Solana Beach works with the SFID. Municipal code modifications forthcoming	N	Y	-
SB-21.6	Continue to support the Clean and Green Committee; a committee of local residents and business owners working to preserve Solana Beach's environment.	Encourage public participation by supporting the Clean and Green Committee. The Clean and Green Committee addresses issues pertaining to water quality, air quality, and climate change. The City Council has also formed a Council Ad-Hoc subcommittee on Environmental Sustainability to work closely with the Clean and Green committee and provide direction to City staff on sustainability programs.	FY16	Continuous-Ongoing	Y	N	Y	-
SB-21.7	Collaborate with regional education and outreach efforts.	Participate in Regional Think Blue campaign and collaborate with other regional efforts to provide consistent message or efficiency in training for targeted audiences.	FY16	Continuous-Ongoing	Y	N	Y	Participates in regional meetings.

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
E.6 Enforcement Response Plan								
SB-22	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Refer to JRMP Section 11.	FY16	Continuous-Ongoing	Y	N	Y	-
SB--23	Increase enforcement of over-irrigation. Enforcement of power-washing included here.	Refer to JRMP Section 11.	FY16	Continuous-Ongoing	Y	N	Y	Online reporting system and patrol implemented.
Non-JRMP Strategies (Optional Strategies, B.3.b.(1)(b))								
Nonstructural Strategies								
SB-24	Promote and encourage implementation of designated BMPs at residential areas.	Collaborate with Santa Fe Irrigation District (SFID) to promote runoff reduction products and services and provide education to residential customers. Includes residential landscape evaluations and links to MWD and SDCWA rebates and incentives including weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal.	FY16	Continuous – Ongoing	Y	N	Y	-
SB-25	Promote and encourage implementation of designated BMPs in commercial areas.	Collaborate with SFID to promote MWD's SoCal Water$mart rebates and products such as weather based irrigation controllers, rotating sprinkler nozzles, soil moisture sensor system, rain barrels, and turf removal to commercial facilities.	FY16	Continuous – Ongoing	Y	N	Y	-
SB-26	Continue to apply NPDES pollution management fee to residential and commercial waste and recycling to secure funding for implementation of water quality related programs.	To ensure continued implementation of water quality improvement efforts, the City has secured funding through a NPDES pollution management fee.	FY16	Continuous - Ongoing	Y	N	Y	-
SB-27	Continue participating in source reduction initiatives.	The City was the first to ban non-reusable plastic bags within the region in 2012.	Prior to FY16	Continuous - Ongoing	Y	N	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
SB-28	Develop a program to address and capture trash and debris.	Continue to maintain catch basin inserts to collect trash and prevent from flowing into the MS4 and subsequently the receiving water. Two catch basin inserts are installed within the jurisdiction in the San Dieguito River WMA	FY16	Continuous-Ongoing	Y	N	Y	-
SB-29	Conduct special studies.	San Diego Regional Reference Stream Study (currently being conducted by the Southern California Coastal Water Research Project). The study will develop numeric targets that account for "natural sources" to establish the concentrations or loads from streams in a minimally disturbed or "reference" condition. Refer to Section 5.1 for further details.	FY15	One Time	Y	N	N	Completed
SB-30	Reference watershed study.	Assess sources of bacteria in the watersheds using the San Diego Bacteria Source Identification and Prioritization Process developed in 2012 as part of the MS4 Permit Report of Waste Discharge process. Focus is on the beach/lagoon area of the San Dieguito River WMA, with inputs from the upper watershed also considered where relevant and necessary to identify sources of bacteria to the beach/lagoon. Refer to Section 5.1 for further details.	FY15	One Time	Y	N	N	Completed
SB-31	If projects are unable to meet structural BMP design standards or hydromodification management criteria, administer an alternative compliance program for on-site structural BMP implementation (includes identifying Watershed Management Area Analysis [WMAA] candidate projects). Refer to Section 4.2.5 and Appendix N for further details.	This strategy may be triggered if the City decides to administer an alternative compliance program for development and redevelopment	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
SB-32	If a regional social services effort is established, support workgroup to provide sanitation and trash management for persons experiencing homelessness and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	This strategy may be triggered if a regional effort is established. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) a City staff member to participate in workgroup and determine if the program is suitable and appropriate for jurisdictional needs to meet goals.	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered
SB-33	As opportunities arise and funding sources are identified, protect areas that are functioning naturally by avoiding impervious development and degradation on unpaved open space areas, creating permanent open space protections on undeveloped city-owned land, and acquiring privately-owned undeveloped open areas.	As feasible opportunities arise, the City will protect areas that are functioning naturally. This may include avoiding hardscape development and degradation in unpaved open space areas and creating permanent open space protections to undeveloped city-owned land. This strategy will be triggered on a case by case basis. The following resources, funds, and steps are needed to implement this strategy 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants if necessary (2 -18 months) 3) Obtain City Council approval	Must be Triggered	Continuous – Ongoing	N/A	N/A	N/A	Not triggered
Structural Strategies								
Green Infrastructure								
SB-34	Highway 101 curb cuts	Curb cuts were installed along Hwy 101 in 2014 and will continue to be maintained.	Prior to 2014	Continuous-Ongoing	Y	N	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
SB-35	If interim load reduction goals are not met and additional green infrastructure is required, 8.9 ac of available space have been identified as potential opportunities for green infrastructure implementation on public parcels.	Will utilize the adaptive management process to determine if green infrastructure is necessary to achieve goals. City will assess opportunities and implement as applicable. This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants (2 -18 months) 3) Obtain City Council approval 4) Initiate preliminary engineering, design and develop construction plans and cost estimates (6 months -2 Years)	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
Green Streets								
SB-36	If interim load reduction goals are not met and additional green infrastructure is required, the additional acreage required can be implemented through green streets if potential opportunities for green infrastructure implementation on public parcels are not available.	City will assess opportunities and implement as applicable This strategy may be triggered as 1) interim goals are not met, 2) funding to address MS4 discharges is identified and secured, 3) staff resources are identified and secured, and 4) permits required by regulatory agencies are secured. Will occur in downstream reaches where persistent dry weather flows have been observed. The following resources, funds, and steps are needed to implement this strategy if the above triggers are met or at the City's discretion: 1) Identify project locations (3 months) 2) Secure funds in the form of general funds, bonds, or grants (2 -18 months) 3) Obtain City Council approval 4) Initiate preliminary engineering, design and develop construction plans and cost estimates (6 months -2 Years) 5) Bid and Award process for construction phase (6 months) 6) Construct project (4 months- 1 yr; project construction costs are TBD and are based on size of the project) 7) Operation and maintenance will be in perpetuity.	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered
Water Quality Improvement BMPs								
Proprietary BMPs								
SB-37	CDS treatment unit	Installation of a CDS treatment unit at the north end of N. Cedros in 2004. (CG-3064)	2004	Continuous-Ongoing	Y	N	Y	Installed and maintained
SB-38	CDS treatment unit	Installation of a CDS unit in Fletcher Cove Park in 2007. Drainage area is 2.5 acres. (PF-004)	2007	Continuous – Ongoing	Y	N	Y	Installed and maintained
SB-39	Biofilter	Installation of a biofilter at La Colonia Park in 2002. (CG-3069)	2002	Continuous – Ongoing	Y	N	Y	Installed and maintained

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

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Dry Weather Flow Separation and Treatment Projects								
SB-40	Seascape Sur Outfall Storm Water Diversion Structure Project	Proposed Seascape Sur Outfall Storm Water Diversion Structure Project. Approximate drainage area is 40.5 acres. Plan to start construction September 2014. Funded by Proposition 84 IRWM grant. Estimated cost is between $79,000 and $105,000. (Latitude 32.985441 Longitude 117.273058). Partner agency is San Elijo Joint Powers Authority.	Prior to FY16	Continuous-Ongoing	Y	N	Y	Installed and maintained
WMA Strategies (Optional Strategies, B.3.b.(2))								
WMA-1	Collaborative Approach to Irrigation Reduction	Responsible Agencies are collaborating with water agencies to encourage implementation of water conservation efforts. Water conservation that attempts to reduce irrigation and minimize storm water runoff can also improve water quality of receiving waterbodies. MWD's SoCal Water$mart Program supports conservation efforts by offering incentives in the form of rebates for rain barrels, rotating sprinkler nozzles, weather-based irrigation controllers, soil moisture sensor systems, and turf replacement. Funding and resources have been secured for FY2016. Funding for future fiscal years is contingent on annual budget approval by City Council or appropriate legislative body (i.e. Board).	Prior to FY16	Continuous-Ongoing	Y	N	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
WMA-2	Offsite Alternative Compliance Option (WMAA)	The WMAA provides alternative compliance methods in lieu of meeting structural BMP design standards and/or hydromodification management criteria on the project site. The San Diego County Copermittees have collectively funded and provided guidance for development of a regional WMAA. Copermittees compiled a list of candidate projects that consider the numeric goals of the WMAs as well as projects previously identified in JRMPs and other regulatory documents. Next steps include submittal of the water quality equivalency standards final document, anticipated in September 2015. Following a public review and Executive Officer approval, anticipated by November 2015, jurisdictions can formally implement an optional Alternative Compliance Program by December 2015 (time coincides with implementation of standards set forth in the regional BMP Design Manual and local Storm Water Standards Manuals).	Prior to FY16	Continuous-Ongoing	Y	N	Y	-
WMA-3	Collaboration with the Regional Board	The Responsible Agencies will work with the Regional Board to identify solutions and address sources of potential water quality impairments. Priorities include 1) enforcement of the Ag Waiver, 2) enforcement of other non-MS4 dischargers, and 3) Bacteria TMDL updates. Discussions with the Regional Board were initiated in FY15. Collaboration will continue in FY16 to identify an appropriate path forward, including a more detailed time line. Funding and resources have been secured for FY16. Funding for future fiscal years is contingent on annual budget approval by each Responsible Agency.	Prior to FY16	Continuous-Ongoing	Y	N	Y	-

Table D-8 (continued)
City of Solana Beach Jurisdictional Strategies for San Dieguito River WMA

ID	Strategy	Implementation Approach	Implementation or Construction Year	Implementation Schedule	Implemented as planned in current FY (FY16)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(ii)	Modification for FY17 (If modified or canceled, provide rationale) MS4 Permit Section: F.3.b.(3)(d)(iv))	Plan to implement into next FY (FY17)? (Y/N) MS4 Permit Section: F.3.b.(3)(d)(iii))	Notes
WMA-4	Participation in Watershed Council	If a Watershed Council is re-established, the City of San Diego, County of San Diego and potentially other Responsible Agencies will participate. Watershed Councils are typically locally organized, voluntary, non-governmental organizations, and are intended to broadly represent various stakeholders in the WMA. Goals of Watershed Councils may vary, but they generally promote protecting the watershed and sustaining natural resources. This coordination could assist in selecting WMA projects, identifying potential funding opportunities, and promoting communication among community groups and regulated agencies. Resources necessary to implement this strategy include participating jurisdictional staff to coordinate with the regional effort and the development of an agreement (e.g. MOU, JPA) among participating entities. Projected funding needs may be met through grant funding, support from community groups or other institutions, or jurisdictional General Funds. General Funds are contingent on approval of the annual budget by City Council or appropriate legislative body. Participation is dependent on funding availability.	Must be Triggered	Continuous-Ongoing	N/A	N/A	N/A	Not triggered

D.5.4 Modifications to the BMP Design Manual

The BMP Design Manual was modified since the WQIP was approved in fall 2015. The current Solana Beach's BMP Design Manual is posted on the City of Solana Beach website, and the link to this page is listed on Project Clean Water.

D.5.5 Modifications to the Jurisdictional Runoff Management Plan

The City of Solana Beach's JRMP is being updated and re-submitted concurrent with this WQIP Annual Report. The changes to the JRMP are mostly related to changes in the final approved WQIP for the Carlsbad Watershed Management Area. The updated Solana Beach JRMP will be posted on Solana Beach's website, and the link to this page is listed on Project Clean Water.

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D.6 County of San Diego

D.6.1 Annual Report Certifications

The County of San Diego's required certifications regarding the preparation of the Water Quality Improvement Plan Annual Report, as well as the legal authorities required by the MS4 Permit are included on the following pages.

D.6.2 Annual Report Form

County of San Diego's completed JRMP Annual Report form and fiscal analysis for FY16 are included on the following pages.

County of San Diego

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

LAND USE AND ENVIRONMENT GROUP
1600 PACIFIC HIGHWAY, ROOM 212, SAN DIEGO, CA 92101
(619) 531-6256 • Fax (619) 531-5476
www.sdcounty.ca.gov/lueg

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT SAN DIEGUITO RIVER WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the County of San Diego has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 6th day of January, 2017, at the County of San Diego.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer

Date 1/6/17

ATTACHMENT D

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

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JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

I. COPERMITTEE INFORMATION

I.A Copermittee Name: County of San Diego (PIN 255223)

I.B Copermittee Primary Contact Name: Todd Snyder

I.C Copermittee Primary Contact Information:
Address: 5510 Overland Avenue, Suite 410
City: San Diego County: San Diego State: California Zip: 92123
Telephone: (858) 694-3672 Fax: (858) 495-5623 Email:Todd.Snyder@sdcounty.ca.gov

II. LEGAL AUTHORITY

II.A Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
II.B A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

III.A Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
III.B If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

IV.A Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IV.B.1 Number of non-storm water discharges reported by the public	286
IV.B.2 Number of non-storm water discharges detected by Copermittee staff or contractors	95
IV.B.3 Number of non-storm water discharges investigated by the Copermittee	375
IV.B.4 Number of sources of non-storm water discharges identified	115
IV.B.5 Number of non-storm water discharges eliminated	112
IV.B.6 Number of sources of illicit discharges or connections identified	85
IV.B.7 Number of illicit discharges or connections eliminated	84
IV.B.8 Number of enforcement actions issued	93
IV.B.9 Number of escalated enforcement actions issued	1

V. DEVELOPMENT PLANNING PROGRAM

V.A Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
V.B Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
V.C If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

V.D.1 Number of proposed development projects in review	925
V.D.2 Number of Priority Development Projects in review	237
V.D.3 Number of Priority Development Projects approved	96
V.D.4 Number of approved Priority Development Projects exempt from any BMP requirements	0
V.D.5 Number of approved Priority Development Projects allowed alternative compliance	0
V.D.6 Number of Priority Development Projects granted occupancy	62

V.E.1 Number of completed Priority Development Projects in inventory	410
V.E.2 Number of high priority Priority Development Project structural BMP inspections	691
V.E.3 Number of Priority Development Project structural BMP violations	170
V.E.4 Number of enforcement actions issued	170
V.E.5 Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM	
VI. A Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
VI.B.1 Number of construction sites in inventory	2,748
VI.B.2 Number of active construction sites in inventory	2,684
VI.B.3 Number of inactive construction sites in inventory	0
VI.B.4 Number of construction sites closed/completed during reporting period	1,124
VI.B.5 Number of construction site inspections	18,858
VI.B.6 Number of construction site violations	416
VI.B.7 Number of enforcement actions issued	590
VI.B.8 Number of escalated enforcement actions issued	38

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM	
VII.A Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
VII.B.1 Number of facilities or areas in inventory	a. 263	b. 1,779	c. 150	d.110
VII.B.2 Number of existing development inspections	a. 1,885	b. 974	c. 38	d.468
VII.B.3 Number of follow-up inspections	a. 23	b. 131	c. 12	d.165
VII.B.4 Number of violations	a. 46	b. 279	c. 31	d.346
VII.B.5 Number of enforcement actions issued	a. 28	b. 130	c. 10	d.0
VII.B.6 Number of escalated enforcement actions issued	a.0	b.1	c.0	d.0

VIII. PUBLIC EDUCATION AND PARTICIPATION	
VIII.A Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
VIII.B Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

IX. FISCAL ANALYSIS	
Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Sarah Aghassi
Signature

10/26/16
Date

SARAH E. AGHASSI
Print Name

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ATTACHMENT D.1

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM BY WATERSHED

JRMP ANNUAL REPORT ATTACHMENT D.1 by WATERSHED

Fiscal Year 2015-2016

			SANTA MARGARITA	SAN LUIS REY	CARLSBAD	SAN DIEGUITO	PENASQUITOS	SAN DIEGO RIVER	SAN DIEGO BAY	TIJUANA RIVER	JURISDICTION TOTALS
			*(902.00)	*(903.00)	*(904.00)	*(905.00)	*(906.00)	*(907.00)	*(908.00, 909.00, 910.00)	*(911.00)	
IV.	**ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM**										
IV.B.1	Number of non-storm water discharges reported by the public		12	46	30	40	2	78	72	6	286
IV.B.2	Number of non-storm water discharges detected by Copermittee staff or contractors		9	11	7	14	1	28	24	1	95
IV.B.3	Number of non-storm water discharges investigated by the Copermittee		15	57	37	51	3	106	99	7	375
IV.B.4	Number of sources of non-storm water discharges identified		4	22	17	11	1	30	28	2	115
IV.B.5	Number of non-storm water discharges eliminated		4	21	16	10	1	30	28	2	112
IV.B.6	Number of sources of illicit discharges or connections identified		4	14	16	8	0	18	23	2	85
IV.B.7	Number of illicit discharges or connections eliminated		4	14	15	8	0	18	23	2	84
IV.B.8	Number of enforcement actions issued		4	21	17	9	1	23	16	2	93
IV.B.9	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	1	1
V.	**DEVELOPMENT PLANNING PROGRAM**										
V.D.1	Number of proposed development projects in review		27	219	109	189	0	158	183	40	925
V.D.2	Number of Priority Development Projects in review		2	53	30	53	0	43	50	6	237
V.D.3	Number of Priority Development Projects approved		4	23	11	21	0	20	11	6	96
V.D.4	Number of approved Priority Development Projects exempt from any BMP requirements		0	0	0	0	0	0	0	0	0
V.D.5	Number of approved Priority Development Projects allowed alternative compliance		0	0	0	0	0	0	0	0	0
V.D.6	Number of Priority Development Projects granted occupancy		2	16	5	8	0	18	12	1	62
V.E.1	Number of completed Priority Development Projects in inventory		12	89	54	85	0	66	93	11	410
V.E.2	Number of high priority Priority Development Project structural BMP inspections		1	100	70	273	0	110	82	55	691
V.E.3	Number of Priority Development Project structural BMP violations		1	43	31	53	0	24	8	10	170
V.E.4	Number of enforcement actions issued		1	43	31	53	0	24	8	10	170
V.E.5	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	0	0
VI.	**CONSTRUCTION MANAGEMENT PROGRAM**										
VI.B.1	Number of construction sites in inventory		63	637	397	636	2	438	513	62	2748
VI.B.2	Number of active construction sites in inventory		60	622	393	627	2	424	496	60	2684
VI.B.3	Number of inactive construction sites in inventory		0	0	0	0	0	0	0	0	0
VI.B.4	Number of construction sites closed/completed during reporting period		20	314	137	235	1	175	219	23	1124
VI.B.5	Number of construction site inspections		245	3655	4473	3934	3	2868	3361	319	18858
VI.B.6	Number of construction site violations		1	50	55	38	0	64	205	3	416
VI.B.7	Number of enforcement actions issued		1	66	64	66	0	104	286	3	590
VI.B.8	Number of escalated enforcement actions issued		1	6	8	9	0	3	9	2	38
VII.	**EXISTING DEVELOPMENT MANAGEMENT PROGRAM**										
VII.B.1	Number of facilities or areas in inventory	a. Municipal	8	23	27	34	4	63	82	22	263
		b. Commercial	154	315	196	210	2	466	410	26	1779
		c. Industrial	15	4	5	22	0	67	36	1	150
		d. Residential	12	11	11	22	1	15	21	17	110
VII.B.2	Number of existing development inspections	a. Municipal	48	181	239	244	41	421	561	150	1885
		b. Commercial	106	155	115	102	0	180	309	7	974
		c. Industrial	1	5	5	12	0	2	13	0	38
		d. Residential	17	55	67	107	2	109	77	34	468
VII.B.3	Number of follow-up inspections	a. Municipal	0	3	0	0	0	2	14	4	23
		b. Commercial	7	10	10	13	0	22	65	4	131
		c. Industrial	1	3	0	2	0	0	6	0	12
		d. Residential	3	22	30	43	0	34	24	9	165
VII.B.4	Number of violations	a. Municipal	0	7	0	1	0	5	26	7	46
		b. Commercial	15	21	25	16	0	51	140	11	279
		c. Industrial	0	7	0	4	0	0	20	0	31
		d. Residential	4	47	59	85	0	70	50	31	346
VII.B.5	Number of enforcement actions issued	a. Municipal	0	2	0	0	0	3	19	4	28
		b. Commercial	10	13	11	7	0	21	65	3	130
		c. Industrial	0	2	0	2	0	0	6	0	10
		d. Residential	0	0	0	0	0	0	0	0	0
VII.B.6	Number of escalated enforcement actions issued	a. Municipal	0	0	0	0	0	0	0	0	0
		b. Commercial	0	0	0	0	0	0	0	1	1
		c. Industrial	0	0	0	0	0	0	0	0	0
		d. Residential	0	0	0	0	0	0	0	0	0

ATTACHMENT D.2

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FISCAL ANALYSIS

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FISCAL ANALYSIS COMPONENT

1.1. Introduction

This section presents an estimated annual budget for the County's runoff management programs for FY 2015-16.

1.2. Fiscal Analysis Methods

This section continues to utilize the methodologies and standards established in *Fiscal Analysis Method* submitted by the Copermittees in January 2009.

1.3. Fiscal Analysis Results

As shown the County estimated its total FY 2015-16 expenditures at $27,414,216. This fiscal analysis addresses each of the County's Runoff Management Program elements (jurisdictional, watershed, and regional activities) for the current reporting period (FY 2015-16). Expenditures are described by department and major program area. They represent an estimate of the expenditures that the County incurred in meeting its compliance obligations for FY 2015-16. They should not be interpreted as either budgeted or actual expenditures. Because stormwater program expenditures are distributed throughout a considerable number of County programs, a single consolidated "budget" does not exist for the program as a whole. As such, these figures should be considered best estimates of stormwater-related expenditures.

1.3.1 Expenditures

1.3.1.1. Jurisdictional

Table 1.1 presents the County's estimated jurisdictional expenditures for FY 2015-16.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
1	**ADMINISTRATION**	**$6,840,583**	These costs correspond to the DPW WPP development, administrative oversight, and assessment of the County's stormwater programs. The WPP is responsible for the development of new and augmented County stormwater programs, regulatory reporting, and program assessment. Some administrative costs are associated with other specific functions shown below, but are included here because they could not be separated out.
2	**DEVELOPMENT PLANNING**	**$1,109,654**	
A	**Land Use Planning**	$0	Expenditures not reported for FY 2015-16; included in other elements.
B	**Environmental Review**	$0	Expenditures not reported for FY 2015-16; included in other elements.
C	**Development Project Approval and Verification**	**$1,109,654**	
C1	**Public Projects (CIP)**	$824,219	
	Project Planning and Engineering	$570,229	Costs include: preparing and reviewing plans and specifications for stormwater BMPs, and SWPPP/WPCP review. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$15,000	
	BMP Implementation	$238,990	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
C2	**Private Projects**	$285,435	
	Permitting and Licensing	$285,435	This cost covers PDS plan reviews at permitted sites. Total costs are estimated as fixed percentages of annual plan-checking fees.
3	**CONSTRUCTION**	**$4,500,593**	
A	**Public Projects (CIP)**	$2,886,893	Costs include: BMP compliance inspections during construction, and implementation of construction phase BMPs. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$1,613,880	
	BMP Implementation	$1,273,013	
B	**Private Projects**	$1,613,700	
	Compliance Inspection and Enforcement	$1,613,700	This cost primarily covers DPW and PDS construction inspections at permitted sites. Total costs are estimated as fixed percentages of inspection program fees.
4	**MUNICIPAL**	**$7,572,297**	
A	**Administration**	$267,805	Expenditures associated with the administrative oversight of the stormwater programs, regulatory reporting, and program assessment of municipal facilities by the DPW - Watershed Protection Program.
B	**Streets, Roads, and Highways Element**	$2,256,091	
	Administration	$291,160	Founded road operations activities include: culvert inspections and cleaning;

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
	Maintenance Inspections	$1,890,813	increased culvert waste disposal costs, street sweeping, installation and maintenance of BMPs and road structures, and the placement of additional controls. 10% of the Maintenance and Inspections and BMP Implementation is reported as Administration cost.
	BMP Implementation	$74,118	
	Other	$0	
C	**MS4 Element**	$1,530,000	
	Administration	$191,000	The combined costs shown here apply across (1) DPW Flood Control -- conversion of existing concrete lined channels to natural bottom channels, updating flood control master plans, increased maintenance of flood control systems, and construction and maintenance of regional treatment BMPs; and (2) DPW Flood Control MS4 Operation & Maintenance -- maintenance on flood control facilities throughout the unincorporated areas of the County, exclusive of facilities within road rights-of-way (included in 4.B above). Other includes the cost of disposal of debris removed from MS4.
	Maintenance Inspections	$1,046,900	
	BMP Implementation	$290,500	
	Other	$2,500	
D	**Solid Waste Facilities Element**	$406,618	
	Administration	$35,047	Costs include Regional Board stormwater permit fees, consultant costs associated with stormwater upgrade and repair projects, and office staff time.
	Maintenance Inspections	$16,922	Costs include staff time to perform site inspections.
	BMP Implementation	$79,149	Costs include stormwater consultant site inspections, sampling/testing and BMP materials.
	Other (construction)	$275,500	Drainage improvement projects and BMP site maintenance projects.
E	**Wastewater Facilities Element**	$187,000	
	Administration	$10,000	This includes costs associated with JRMP report, the sanitary sewer system and facilities including: pump stations, sewage treatment plants and Spring Valley Operations facility. Also includes the cost of BMP design, acquisition,
	Maintenance Inspections	$127,000	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$50,000	maintenance and monitoring, for wastewater Capital Improvement Projects, and Major maintenance projects, and at various wastewater facilities.
	Other	$0	
F	**Road Stations Element**	$919,867	
	Administration	$83,624	This includes DPW road station operations related to Permit compliance. The Administration cost is determined as 10% of the total costs of maintenance and Inspections and BMP Implementation as reported by the DPW Roads Divisions.
	Maintenance Inspections	$799,414	
	BMP Implementation	$36,829	
	Other	$0	
G	**Fleet Maintenance Element**	$11,722	
	Administration	$1,036	This includes costs associated with operation of the County's fleet maintenance and fueling facilities.
	Maintenance Inspections	$7,392	
	BMP Implementation	$3,294	
	Other	$0	
H	**Municipal Airfields Element**	$338,110	These costs involve site inspections, annual reporting, and maintenance of BMPs at airports, including oversight of tenant operations. The BMP implementation item includes Palomar asphalt cap repairs.
	Administration	$12,737	
	Maintenance Inspections	$0	
	Compliance Inspection and Enforcement	$0	
	BMP Implementation	$300,623	
	Other (sampling and analysis)	$24,750	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
I	**Parks & Recreational Facilities Element**	$1,214,562	
	Administration	$121,362	This includes: coordinating all training requirements, preparing and reviewing reports, and overseeing the overall implementation of the stormwater program for DPR.
	BMP Implementation	$991,603	This includes costs associated with implementation of BMPs at County parks.
	Compliance Inspection and Enforcement	$101,597	Costs are for DPR enforcement of stormwater requirements at County parks.
	Other	$0	
J	**Office Buildings & Other Municipal Facilities Element**	$297,867	
	Administration	$0	DGS conducts a variety of storm water activities including: inspections and clean-up of County-owned, occupied, and leased facilities and vacant lands; maintenance and signage of storm drain inlet inserts and trash dumpsters; placement of inlet filters; maintenance of coverage and containment improvements for on-site supplies and materials; parking lot sweeping and controlled parking lot power washing; and application of erosion and sediment control measures. These costs are exclusive of fleet maintenance and fueling operations.
	Maintenance Inspections	$99,808	
	BMP Implementation	$198,059	
	Other	$0	
	Management of Pesticides, Herbicides, & Fertilizers	$142,656	
	Administration	$142,656	Integrated Pest Control Program within the Department of Agriculture, Weights and Measures (AWM) performs eradication and control of invasive weeds. This program also provides weed control on roadsides, airports, flood control channels,
	Maintenance Inspections	$0	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$0	sewage treatment plants and inactive landfills. It also provides structural pest control to facilities owned and operated by the county.
	Other	$0	
5	**INDUSTRIAL and COMMERCIAL**	**$1,575,635**	
	Administration	$253,047	DPW and AWM conduct inspections of a variety of businesses in the unincorporated County, provide regulatory oversight of mobile businesses, and conduct follow-up and enforcement of stormwater violations.
	Compliance Inspection and Enforcement	$1,245,279	
	Educational Outreach	$77,309	
	Other expenditures	$0	
6	**RESIDENTIAL**	**$1,205,386**	
	Compliance Inspection and Enforcement	$688,453	DPW conducts complaint investigations for residential sources in the unincorporated County, and conduct follow-up and enforcement of stormwater violations. DPW also operates a regional hotline.
	Educational Outreach	$516,933	Several County departments coordinate and provide outreach to the residential sector and schoolchildren in support of Permit Section D.5 requirements. Costs reported here correspond to DPW only. Funded activities include developing pollution prevention content and providing direct outreach to various target audiences within the general residential and schoolchildren target audiences.
7	**IDDE**	**$321,523**	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
		$321,523	DPW conducts monitoring programs, assesses scientific data, and provides technical and scientific support to other County program staff. They also provide support for all technical and scientific aspects of JRMP development and implementation. These costs are exclusive of the regional monitoring program which is addressed separately under regional costs.
8	**EDUCATION**	**$0**	Education costs are included in other sections as applicable.
9	**PUBLIC PARTICIPATION**	**$0**	Public participation costs are included in other sections as applicable.
10	**SPECIAL INVESTIGATIONS**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.
11	**NON-EMERGENCY FIREFIGHTING**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.

$23,125,671

1.3.1.2 Watershed

Table 1.2 presents the County's estimated watershed expenditures for FY 2015-16.

Table 1.2 – Estimated Watershed Expenditures for FY 2015-16

	Santa Margarita WMA	San Luis Rey WMA	Carlsbad WMA	San Dieguito WMA	Peñasquitos WMA	San Diego River WMA	San Diego Bay WMA	Tijuana WMA
Administration	$37,583	$201,492	$82,653	$113,035	$75,309	$105,117	$37,583	$75,309
Cost Share Contribution	$0	$62,494	$46,204	$8,885	$1,062	$68,970	$6,659	$2,346
Watershed Activities	$626,917	$119,390	$14,860	$171,640	$26,423	$125,705	$111,491	$80,300
Other	$0	$0	$0	$0	$0	$0	$0	$0
Total Estimated Watershed Costs	**$664,500**	**$383,376**	**$143,717**	**$293,560**	**$102,794**	**$299,792**	**$155,733**	**$157,955**

1.3.1.3 Regional

Table 1.3 presents the County's estimated regional expenditures for FY 2015-16. This includes only those expenditures associated with the Copermittees' adopted Regional Budget and Work Plan. Other costs associated with regional participation (meeting attendance, etc.) are included within the jurisdictional expenditures presented above.

Table 1.3 – Estimated Regional Expenditures for FY 2015-16

Regional Programs	County Costs
Administration	$0
Cost Share Contribution	$2,087,118
Regional Activities	$0
Other	$0
Total Estimated Regional Costs	**$2,087,118**

1.3.1.4 Total Expenditures

Table 1.4 presents the County's total estimated expenditures for FY 2015-16 (jurisdictional, watershed, and regional).

Table 1.4 – Total Estimated County Expenditures for FY 2015-16

Component / Sub-component	Estimated Expenditures
Jurisdictional	
Administration	$6,840,583
Development Planning	$1,109,654
Construction	$4,500,593
Municipal	$7,572,297
Industrial And Commercial	$1,575,635
Residential	$1,205,386
IDDE	$321,523
Education	$0
Public Participation	$0
Special Investigations	$0
Non-emergency Firefighting	$0
Jurisdictional Total	**$23,125,671**
Watershed	
Santa Margarita WMA	$664,500
San Luis Rey WMA	$383,376
Carlsbad WMA	$143,717
San Dieguito WMA	$293,560
Peñasquitos WMA	$102,794
San Diego River WMA	$299,792
San Diego Bay WMA	$155,733
Tijuana WMA	$157,955
Watershed Total	**$2,201,427**
Regional	**$2,087,118**
Total Estimated County Costs	***$27,414,216***

1.3.2 Funding Source

Table 1.5 shows the major sources of funding for the County's urban runoff management programs in FY 2015-16, and describes the legal restrictions applicable to the use of each.

Table 1.5 – Legal Restrictions on the Use of Program Funding

Funding Source	Legal Restrictions
General Fund	There are no restrictions on the use of general fund for County water quality programs and activities except that they must be used only for the purposes for which they are budgeted and allocated by the County Board of Supervisors.
Flood Control District Fees	Revenue generated from these fees must be expended for activities related to flood and storm management.
Developer Deposits / Permit Fees	Deposits / fees may be used only to fund activities related to the work for which the permits are issued.
Gas Tax	Gas Tax is collected by the state and allocated to local government for transportation-related work including maintenance of existing transportation systems and construction of new transportation facilities. These funds may not be used for other purposes.
Sanitary District Fees	Sanitary District Fees are used for work related to the maintenance of sewer lines, pump stations, force mains, and several treatment plants that serve the unincorporated areas. They may be used only for such maintenance-related purposes within the respective sewer district for which they are collected.
Other Funding Sources	Other funding sources collectively account for a relatively small portion of ongoing expenditures. However, all funding for the County's stormwater compliance programs is expended within applicable legal restrictions and limitations.

1.4. Conclusions and Recommendations

The figures presented here are an estimate of the expenditures that the County incurred to meet its compliance obligations for FY 2015-16. For the reasons explained above, they should be considered only best estimates of stormwater-related expenditures.

D.6.3 County of San Diego Strategies

County of San Diego's strategies are detailed in Tables D-9 and D-10.

Table D-9
County of San Diego Jurisdictional Strategies for San Dieguito River WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
Illicit Discharge, Detection, and Elimination (IDDE) Program						
1	Maintain stormwater conveyance system map to facilitate IDDE program	Yes	Updated as needed	N	N/A	Y
2	Utilize municipal personnel and contractors to identify and report Illicit Connections and Discharges	Yes	IDDE Program	N	N/A	Y
3	*Updated focused training for County field staff*	Yes	Updated training for BMP Design Manual and Stormwater Implementers	N	N/A	Y
4	Collect effluent on the ground (EOG), sanitary sewer overflow (SSO) data	Yes, fully	Approximately 87 EOG complaints related to septic systems and 14 SSO events recorded and responded to.	N	N/A	Y
5	*Address septic system failures where observed*	Yes, fully	Suspected septic discharges are reported to DEH HIRT Response line when they occur after hours and DEH Land and Water Quality Division during normal hours. All complaints resolved during 15-16.	N	N/A	Y
6	Facilitate public reporting of ICID via telephone and email	Yes	Bilingual hotline, dedicated e-mail address, and multiple online reporting tools	N	N/A	Y
7	*Refer homeless issue complaints to Sheriff or appropriate jurisdictions*	Yes	Collaborate with multi-departmental group to address homeless encampments	N	N/A	Y
8	*Bilingual hotline answered by a live operator (I Love a Clean San Diego) to provide better customer service*	Yes	Bilingual hotline operated by ILACSD	N	N/A	Y
9	Implement practices and procedures to address spills with the potential to enter the storm drain system	Yes	NOV issued by DEH for failing septic systems when effluent could reach the storm drain. Prompt follow up and mitigation is implemented. Such cases are rare; <5 in 15-16	N	N/A	Y
10	*Coordinate spill response with responsible sewer agencies*	Yes	Major DEH role is to inform the public of risks associated with sewer spills, conducting sampling, reporting, posting signs, etc.	N	N/A	Y
11	Implement practices and procedures to prevent/limit infiltration of seepage from sanitary sewers	Yes	If illicit connections are identified as part of an IDDE investigation, investigation will be conducted to define and eliminate the source.	N	N/A	Y
12	Coordinate with upstream entities to prevent illicit discharges from upstream sources entering into the storm drain system	Yes	If illicit connections are identified as part of an IDDE investigation, investigation will be conducted to define and eliminate the source. If determined to be from an upstream entity, coordination will occur.	N	N/A	Y
13	Utilize municipal personnel and Contractors to monitor stormwater outfalls for discharges of potential ICIDs	Yes	This is part of the IDDE Program	N	N/A	Y
14	Develop and implement a strategy for investigating and addressing ICIDs.	Yes	Focused, collaborative investigations with Planning and Science staff of high priority outfalls.	N	N/A	Y

Table D-9 (continued)
County of San Diego Jurisdictional Strategies for San Dieguito River WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
Development Planning						
15	Require implementation of source control and Low Impact Development (LID) BMPs for all development projects.	Fully	The County BMP DM requires all projects regardless of size and location to implement SC and SD BMPs. These requirements are captured in the WPO and County's BMP DM.	N	N/A	Y
16	Priority Development Projects: In addition to requirement for all development projects, implement or require implementation of onsite structural BMPs to control pollutants and manage hydromodification for PDPs.	Fully	The County BMP DM requires all PDPs to implement PC and HMP BMPs. These requirements are captured in the WPO and County's BMP DM.	N	N/A	Y
17	Update BMP Design Manual procedures to specify stormwater requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria, and establish where implemented alternative compliance options.	Partially	Updated to reflect the Regional Model BMP DM with additional changes to incorporate County implementation practices. BMP DM became effective on February 26, 2015. Rene can provide details on the differences between CoSD BMP DM and Model BMP DM.	N	N/A	N
18	*Conduct internal (staff) training on the updated BMP Manual.*	Fully	The JRMP requires the County to conduct internal training every fiscal year and after release of new guidance documents.	N	N/A	N
19	*Hold external land development workshops targeting the development community.*	Fully	The County conducts external training regularly and after release of new guidance documents.	N	N/A	N
20	Implement a program that ensures that all structural and Low Impact Development (LID) BMPs are designed, constructed and maintained on Priority Development and Redevelopment Projects.	Fully	Structural BMPs and LID BMPs are designed and constructed per the BMP Design Manual. In addition, Structural BMPs are tracked for maintenance through inspections and self verification letters. LID BMPs that are installed as a result of implementation of the BMP Design Manual are proposed to be inspected.	N	N/A	Y
21	Impose legal authority to ensure all development and redevelopment projects are in compliance with all post construction requirements.	Fully	The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated permit and the inclusion of applicant-implement offsite alternative compliance.	N	N/A	Y
22	*Update County codes, ordinances, and stormwater design standards consistent with the permit and the updated BMP Manual.*	Fully	The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated permit and the inclusion of applicant-implement offsite alternative compliance. WPO update became effective on February 26, 2016.	N	N/A	N
Construction Management						
23	Maintain, update, and prioritize a watershed based inventory of all projects issued local permits that allow soil disturbing activities.	Yes	Projects that are issued local permits that allow soil disturbance activities are part of the inventory that is watershed-based.	N	N/A	Y

Table D-9 (continued)
County of San Diego Jurisdictional Strategies for San Dieguito River WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
24	Require implementation of BMPs that are site specific, seasonally appropriate, and appropriate to the construction phase, year round.	Yes	Every project requires implementation of site specific construction BMPs, seasonably appropriate and appropriate to the construction phase.	N	N/A	Y
25	Impose legal authority to ensure inventoried construction projects are in compliance with all requirements.	Yes	The Watershed Protection Ordinance is the current legal authority to insure inventoried construction projects are in compliance with all requirements.	N	N/A	Y
26	*Make updates to County ordinances related to construction; reference to existing grading ordinance.*	Yes	County ordinances are updated with subsequent Construction General Permit updates; the Watershed Protection Ordinance will be updated as necessary as a result of the future Grading Ordinance Update.	N	N/A	N
27	Provide internal staff training related to construction storm water management.	Yes	The County conducts construction stormwater training annually and it targets construction inspectors in DPW-PDCI, PDS-Building, and CIP Inspectors in DPW and DGS.	N	N/A	Y
Existing Development						
28	Maintain and update a watershed-based inventory of existing development (i.e. commercial, industrial, municipal, and residential areas).	Yes	Inventory is tracked in Accela Automation.	Y	Database is continually updated to increase accuracy and efficiency	Y
29	*Improve the tracking of watershed based inventories via consolidated database.*	Yes	see 28	Y	see 28	Y
30	Designate a minimum set of BMPs required for all existing development inventories, including special event venues. The designated minimum BMPs must be specific to facility or area types and pollutant generating activities, as appropriate.	Yes	JRMP establishes minimum BMPs for all land use types.	N	N/A	Y
31	*Create an Equestrian BMP Handbook.*	No	Handbook created in FY2014-15	Y	Handbook will be revised in FY2016-17 to encompass additional BMPs and be more user friendly.	Y
32	Require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types and pollutant generating activities, as appropriate.	Yes	See 30	N	N/A	Y
33	*Pet waste management and outreach in County Parks.*	Yes	Mutt-mitt dispensers are installed and maintained in many County parks, providing people who are walking their dogs with waste disposal bags to use to pick up after their pets.	N	N/A	Y

Table D-9 (continued)
County of San Diego Jurisdictional Strategies for San Dieguito River WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
34	Implement a schedule or operation and maintenance activities for the stormwater conveyance system and related structures.	Yes	Stormwater maintenance is referred to appropriate departments when needed.	N	N/A	Y
35	Implement a schedule of operation and maintenance for County paved and unpaved roads.	Yes	County Road Crews employ a schedule for maintenance of County Roads.	N	N/A	Y
36	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	Yes	1. 450 Facilities received the Agricultural Water Quality Best Management Practices for Pesticides through annual registration notifications. 2. Inspections were conducted at 83 Commercial Ag Facilities	N	N/A	Y
37	Promote and encourage implementation of designated BMPs in residential areas.	Yes	Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas. All Residential Management Areas were inspected in FY15-16	N	N/A	Y
38	Conduct inspections of inventoried existing development to ensure compliance.	Yes	Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas.	N	N/A	Y
39	*Conduct focused residential inspections based on strategic assessments.*	Yes	Focused, collaborative investigations with Planning and Science staff of high priority outfalls.	N	N/A	Y
40	*Develop a residential inspections tracking program via mobile platform - miles, violations, etc.*	Yes	In pilot testing phase	Y	Modifications based on pilot testing phase to increase effectiveness	Y
41	*Improve inspections data tracking through mobile phone applications.*	Yes	See 40	Y	see 40	Y
42	Enforce legal authority established for all inventoried existing development to achieve compliance.	Yes	see JRMP	N	N/A	Y
43	*Update county ordinance related to existing development; reference to existing guidance documents.*	Yes	Watershed Protection Ordinance and BMP Design Manuals were updated.	N	N/A	N
44	Promote incentive program for BMP retrofits (e.g. water smart irrigation controllers, turf replacements programs, residential landscape evaluation program).	Yes	The County continues to collaborate with and promote the efforts of partner agencies incentive programs.	N	N/A	N
45	Collaborate with partner agencies and groups to promote non-County sponsored incentive programs for BMP retrofits, including rain barrels, smart controllers, soil sensors, turf replacement, etc.	Yes	The County continues to collaborate with and promote the efforts of partner agencies incentive programs.	N	N/A	Y

Table D-9 (continued)
County of San Diego Jurisdictional Strategies for San Dieguito River WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
46	Identify candidate areas of existing development for stream, channel, and/or habitat rehabilitation projects and facilitate implementation of such projects.	No	N/A	N	N/A	N
Outreach and Public Participation						
47	*Develop, improve, and distribute outreach materials*	Yes	Improved outreach materials through a focused Community-based Social Marketing approach.	Y	Continual improvement of existing materials, including translation into Spanish	Y
48	*Give outreach presentations to elementary, middle, and high school students*	Yes	Offer presentations to elementary, middle, and high schools serving unincorporated communities.	N	N/A	Y
49	*Outreach to mobile landscaping service providers*	Yes	Pesticide Regulation Program collaboration with the California Department of Pesticide Regulation on a pilot program to offer workshops for maintenance gardeners. Two workshops were held where attendees were provided training materials and concluded with a pesticide certification exam. Attendees at both workshops had high success rates for the exam.	N	N/A	Y
50	*Conduct large residential property pet waste management outreach*	No	Unable to implement due to lack of community service organization partners.	N	N/A	N
51	*Conduct over irrigation outreach pilot study*	Yes	Community-based Social Marketing pilot study on the effectiveness of irrigation runoff prevention materials.	Y	N/A	Y
52	*Conduct Homeowners Associations Outreach and Coordination Pilot Study*	Partial	HOA Outreach materials in draft format. Additional development will take place in FY2016-17.	Y	N/A	Y
53	*Expand Homeowners Associations Outreach and Coordination based on the pilot project within San Luis Rey, San Dieguito, or San Diego River as needed and as funding is identified*	No	Additional development may occur based on pilot study in FY2016-17.	N	N/A	N
54	Collaborate with watershed partners to develop consistent messaging to targeted audiences such as commercial, residents to conserve water and reduce dry weather flows	Yes	Collaboration between the Regional Education Workgroup and Think Blue San Diego Region to develop and distribute educational materials such as the "Be the Solution to Pollution" booklet which includes irrigation and runoff reduction measures. Other items developed under this included posters, calendars and coloring books.	N	N/A	y
55	*Sponsor Trash Collection Events through public outreach and participation*	Yes	The County sponsors ILACSD to establish cleanup sites at the Coastal Cleanup Day and Creek to Bay events.	N	N/A	Y
56	*Educational Workshops on Integrated Pest Management, manure management and others as needed*	Yes	Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.	N		Y

Table D-9 (continued)
County of San Diego Jurisdictional Strategies for San Dieguito River WMA

Jurisdictional Runoff Management Programs (JRMP) Strategies		Implemented in FY16? *(No/Partially/Fully)*	Comments on Implementation (#events, #attendees, miles swept etc.)	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
57	Partner with Master Gardeners Programs to provide education opportunities on water use and practices for gardening	Yes	Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.	N	N/A	Y
58	*Conduct Effectiveness Survey's on Education & Outreach programs*	Yes	Surveys to determine the efficacy of watershed education to unincorporated elementary, middle, and high schools serving unincorporated communities.	N	N/A	Y
Enforcement Response Plan						
59	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	Yes	County implemented the ERP as described in the JRMP.	N	N/A	Y
60	Notify the SDWB by email (Nonfilers_R9waterboards.ca.gov) within five (5) calendar days of issuing escalated enforcement to a construction site that poses a significant threat to water quality as a result of violations or other noncompliance	Yes	County implemented the ERP as described in the JRMP.	N	N/A	Y
61	Notify the SDWB by email (Nonfilers_R9waterboards.ca.gov) any persons required to obtain coverage under the statewide Industrial General Permit and Construction General Permit and failing to do so, within five (5) calendar days from the time the Copermittee become aware of the circumstances.	Yes	County implemented the ERP as described in the JRMP.	N	N/A	Y
Public Education and Participation						
62	Implement a public education and participation program to promote and encourage development of programs, management practices and behaviors that reduce the discharge of pollutants in storm water prioritized by high risk behaviors, pollutants of concern, and target audiences.	Yes	The County completes numerous education and public participation programs for a diverse target audiences. See JRMP.	N	N/A	Y

Table D-10
County of San Diego Optional Strategies for San Dieguito River WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/ Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
Provision B.3.b.(1)(b)(i) - BMPs, incentives, or programs that may be implemented that are in addition to requirements of Provision B.3.b.(1)(a)										
1	Implement Sustainable Landscapes Program to encourage landscape retrofits.	FY 2016-17; Continuous until grant funding and incentives are depleted	Implementation of this strategy may be triggered if (1) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (2) all of the necessary resources have been secured. Continue implementation when the funding and incentives items are secured.	Staff resources, Grant funding, Incentive items, Partnerships	No	Partially	N/A	N	N/A	Y
2	Implement an incentive program for BMP Retrofits (Public-Private Partnerships - a County sponsored program to offer incentives for rain barrel installation, downspout disconnects from the stormwater system, etc.).	FY 2015-16; Continuous, as resources allow	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Incentive items, Partnerships	No	Partially	N/A	N	N/A	Y
3	Implement a program that provides rebates or incentives for pumping septic systems, with a focus in high risk areas adjacent to waterways (within 600 feet).	Once triggered, Pilot program 1 -2 years, as needed thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Incentive items	No	No	Funding source not identified. All 4 triggers have not been met.	No	N/A	N

Table D-10 (continued)
County of San Diego Optional Strategies for San Dieguito River WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/ Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implemen-tation into next FY? *(Y/N)*
4	Identify where sewer and stormwater infrastructure are in close proximity and subsequently, confirm the absence of flow at nearby stormwater MS4 outfall during dry weather.	Once triggered, 2-3 years; one-time	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	No	N/A	No	N/A	N
5	Implement a program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.	Once triggered, 2-3 years	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) septic systems have been determined to be a pollutant sources to the MS4; and (4) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	Partially	Under the Local Area Management Plan (LAMP) for onsite wastewater treatment systems the treatment systems with supplemental treatment are required to be permitted annually. The annual operating permit will define the monitoring and maintenance requirements as specified by the manufacturer and/or qualified professional who designed the system. The LAMP ordinance can be found at: http://www.sandiegocounty.gov/content/dam/sdc/deh/lwqd/RWQCB%20Approved%20LAMP%20Final%202-24-15.pdf	N	N/A	Y

Table D-10 (continued)
County of San Diego Optional Strategies for San Dieguito River WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/ Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
6	Divert persistent dry weather flows from storm drains to sewer.	Once triggered, 3-6 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) permission is granted from sewer agency; and (4) ground water or permitted discharges have been ruled out; and (5) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Engineering design, Environmental review, Permits, Ongoing funding for operation/maintenance	No	No	Diversions are a last resort strategy and will be reviewed for outfalls that are persistently flowing after all other implementation strategies have been exhausted.	N	N/A	N
Provision B.3.b.(1)(b)(ii) - Incentives or programs that may be implemented to encourage or implement projects to retrofit areas of existing development										
7	Implement trash capture program (e.g., retrofit storm drain intakes with trash capture devices).	Baseline study 2-3 years; FY 15-16 implementation as needed and as resources allow	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) baseline study completion and success; and (4) focus areas identification; and (5) detailed inlet inventory of focus areas; and (6) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Equipment, Permits, Ongoing funding for operation/maintenance	No	Partially	The County of San Diego is in process of conducting several studies to develop Baseline Trash Generation Rates.	N	N/A	Y

Table D-10 (continued)
County of San Diego Optional Strategies for San Dieguito River WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/ Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implemen-tation into next FY? *(Y/N)*
8	Implement a Green Streets Retrofits Program.	Once triggered, 3-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered on a project-by-project basis if (1) a specified interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) pilot program success; and (4) all of the necessary resources have been secured.	Each green street retrofit project is preliminary estimated to cost an average of $5,500,000 per linear mile of retrofit for construction. Resources include: Staff resources, Grant funding or alternative source, Contractor funding, Engineering or landscaping design, Permits, Environmental review, Right of way acquisition, Ongoing funding for operation/maintenance	No	Partially	Design standards and specifications have been developed. Green streets are now being used to meet compliance for all retrofit and/or redeveloped road projects that in the Capital Improvement Projects plan. Pursuing Grant Funding	N	N/A	Y
9	Construct Treatment Control BMPs (retrofits projects).	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Engineering or landscaping design, Permits, Environmental review, Ongoing funding for operation/maintenance	No	No	N/A	N	N/A	N

Table D-10 (continued)
County of San Diego Optional Strategies for San Dieguito River WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/ Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implemen-tation into next FY? *(Y/N)*
10	Implement an alternative compliance program to enable "offsite" compliance for new and redevelopment projects.	Once triggered, 3-6 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design , Permits, Environmental review, Right of way acquisition (if needed), Ongoing funding for operation/maintenance	No	Partially	Currently applicant implemented offsite alternative compliance is available for use by the development community. The Water Quality Equivalency (WQE) provides the currency for structural BMPs and some natural system management practices (NSMPs). Additional work on the WQE will be conducted during FY17. The County is not currently pursuing a credit system but is participating as a stakeholder on the City of San Diego TAC and as a member of the Western Riverside Coalition of Governments (WRCOG) discussion on offsite alternative compliance.	N	N/A	Y

Table D-10 (continued)
County of San Diego Optional Strategies for San Dieguito River WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/ Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implemen-tation into next FY? *(Y/N)*
Provision B.3.b.(1)(b)(iii) - Incentives or programs that may be implemented to encourage or implement projects that will rehabilitate the conditions of channels or habitats										
11	Flood Control Channel Rehabilitation Projects (e.g., removal of impervious lining in flood control channel and replacement with earthen or vegetated surface)	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (4) engineering design, monitoring, and outreach plans are approved; and (5) all of the necessary resources have been secured.	Project costs vary by size and complexity. Resources include: Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Engineering design, Permits, Environmental review, Right of way acquisition (if needed), Ongoing funding for operation/maintenance	No	Partially	One project has been identified in SDR for retrofit/rehabilitation. Project planning, design and environmental review will begin in FY17	N	N/A	Y
12	Implement a program to remove invasive non-native plants (i.e. Arundo) upstream areas rivers or tributaries.	Once triggered, 1-2 years per project	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) community support and partnerships established; and (4) it has been determined that invasive plants have been found to have an impact on water quality; and (5) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships	No	No	The County has developed several Habitat Restoration Plans and Non-Native Plant Removal Guidelines including for the Otay Valley Regional Park. Implementation of projects resulting from these guidelines requires acquisition of land and funding. No projects were completed during this reporting period.	N	N/A	N

Table D-10 (continued)
County of San Diego Optional Strategies for San Dieguito River WMA

Optional Jurisdictional Runoff Management Programs (JRMP) Strategies		Implementation Timeframe	Triggers	Resources	Triggered? *(Y/N)*	Implemented in FY16? *(No/Partially/ Fully)*	Comments on Implementation	Proposed Modifications? *(Y/N)*	Modification Type & Rationale *(if none, N/A)*	Planned Implementation into next FY? *(Y/N)*
13	Habitat Restoration and rehabilitation projects in County Parks	Once triggered, 4-7 years per project; ongoing operation & maintenance thereafter	Implementation of this strategy may be triggered if (1) an interim goal has not been met; and (2) it has been determined by the County of San Diego through adaptive management that implementation is necessary; and (3) all of the necessary resources have been secured.	Staff resources, Grant funding or alternative source, Contractor funding, Partnerships, Restoration / Rehabilitation Designs Approved, Environmental Permits issued, CEQA / NEPA Environmental review, Ongoing funding for maintenance and monitoring	No	Partially	Habitat restoration and rehabilitation has occurred in the Tijuana River Valley Regional Park and will continue for an additional 3-5 years. Additionally habitat restoration and rehabilitation has been initiated for the Sweetwater Loop Trail Phase I and Phase III however additional funding is necessary to complete Phase I. Phase III will begin in Fall 2016.	N	N/A	Y

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D.6.4 Modifications to the BMP Design Manual

No modifications to the BMP Design Manual have been made since the WQIP was approved in fall 2015. The current County of San Diego's BMP Design Manual is posted on the County of San Diego's website, and the link to this page is listed on Project Clean Water.

D.6.5 Modifications to the Jurisdictional Runoff Management Plan

No modifications to the County of San Diego's JRMP have been made since the WQIP was approved in fall 2015. The current County of San Diego's JRMP is posted on County of San Diego's website, and the link to this page is listed on Project Clean Water.

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Appendix E: Adaptive Management

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Adaptive Management – Changes to Water Quality Improvement Plan Elements

1. The assessment of Provision A.4 will now be considered once per MS4 Permit term during the development of the Regional Monitoring and Assessment Report.
2. A number of Responsible Agencies have made adminstrative changes to their strategies. Updates are described in Appendix D.

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County of San Diego

RICHARD E. CROMPTON
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January 30, 2017

Mr. David W. Gibson
San Diego Regional Water Quality Control Board
Storm Water Management Unit
2375 Northside Drive, Suite 100
San Diego, CA 92108-2700

Dear Mr. Gibson:

COUNTY OF SAN DIEGO, PERMIT R9-2013-001, PIN 255223 – SAN LUIS REY RIVER WATERSHED MANAGEMENT AREA WATER QUALITY IMPROVEMENT PLAN 2015-2016 ANNUAL REPORT, PIN NO. 794836: ERYAN

On behalf of the Cities of Oceanside, Vista, and the California Department of Transportation, the County of San Diego is pleased to submit the San Luis Rey River Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report (Report) in accordance with requirements set forth in Provisions F.3.b(3) of Order No. R9-2013-0001, as amended by Orders No. R9-2015-0001 and No. R9-2015-0100, the *National Pollution Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Dischargers form the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*, NPDES No. CAS0109266 (Permit).

Appendix 2 of the Report contains the following Jurisdictional Runoff Management Program Information from each agency, as applicable:

- Certification Statements for the 2015-2016 Water Quality Improvement Plan Annual Report pursuant to 40 C.F.R Section 122.41(k);
- Certification Statements for the legal authority within their jurisdictions to implement and enforce each of the requirements contained in the Municipal Permit pursuant to Provision E.1.b;
- Completed Jurisdictional Runoff Management Program Annual Report Forms pursuant to Provision F.3.b.(3)(e);
- Updates to jurisdictional runoff management programs pursuant to Provision F.3.b.(2)(a)(3);
- Updates to the BMP Design Manual pursuant to Provision F.3.b.(2)(b)(2); and
- Proposed administrative changes to the Water Quality Improvement Plan.

If you have any questions or comments, please feel free to contact me at (858) 694-3672 or e-mail at Todd.Synder@sdcounty.ca.gov.

Sincerely,

TODD E. SNYDER, Manager
Watershed Protection Program

Attachment: San Luis Rey River Watershed Management Area Water Quality Improvement Plan 2015-2016 Annual Report

cc: Mo Lahsaiezadeh, City of Oceanside, PIN 245793
Greg Mayer, City of Vista, PIN 270704
Bruce L. April, California Department of Transportation, PIN 212814

SAN LUIS REY RIVER WATERSHED MANAGEMENT AREA WATER QUALITY IMPROVEMENT PLAN 2015-2016 ANNUAL REPORT

Final

Prepared for the following San Luis Rey River WMA Participating Agencies:

City of Oceanside
County of San Diego
City of Vista
Caltrans

Order No.R9-2013-0001
Amended Order No. R9-2015-0001 and R9-2015-0100

January 2017

Prepared By:

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ABBREVIATIONS AND ACRONYMS

%	percent
µg	microgram
µg/L	micrograms per liter
µS/cm	microSiemens per centimeter
ac	acres
AEP	Association of Environmental Professionals
AFDM	ash-free dry mass
AMAL	average monthly action level
Basin Plan	Water Quality Control Plan for the San Diego Region
Bight	Southern California Bight Regional Monitoring Program
BMI	benthic macroinvertebrate
BMP	best management practice
BMP DM	BMP Design Manual
Caltrans	California Department of Transportation
CCC	criterion continuous concentration
CCR	California Code of Regulations
CCTV	closed circuit television
CDFW	California Department of Fish and Wildlife
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
cf	cubic feet
CFR	Code of Federal Regulations
cfs	cubic feet per second
CFU/100 mL	colony-forming units per 100 milliliters
CIPP	cured in place pipe
CMC	criterion maximum concentration
Copermittees	Municipal Copermittees
CRAM	California Rapid Assessment Method
CSBP	California Stream Bioassessment Procedure
CSCI	California Stream Condition Index
CTR	California Toxics Rule
EMC	event mean concentration
ft	feet
FY	fiscal year
gpm	gallons per minute
HA	hydrologic area

HM	hydrology manual
HMP	Hydromodification Monitoring Program
HPWQC	highest priority water quality condition(s)
HSA	hydrologic subarea
HU	hydrologic unit
IBI	Index of Biotic Integrity
IC/ID	illegal connection and illicit discharge
IDDE	Illicit Discharge Detection and Elimination
ILACSD	I Love a Clean San Diego
IM	instantaneous maximum
JRMP	Jurisdictional Runoff Management Program
LID	Low Impact Development
LOE	line of evidence
LTMS	long term monitoring station
MAP	Monitoring and Assessment Plan
MBAS	methylene blue active substance
MRCD	Mission Resources Conservation District
MCL	maximum contaminant level
MDAL	maximum daily action level
mg/L	milligram per liter
mL	milliliter
MPN/100 mL	most probable number per 100 milliliters
MS4	municipal separate storm sewer system (storm drain system)
MST	microbial source tracking
NAL	non-stormwater action level
ND	not detected
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NS	not sampled
NTU	nephelometric turbidity unit
NWS	National Weather Service
O/E	observed to expected
Permit	Regional MS4 Permit
pMMI	predictive multi-metric index
ppt	parts per thousand
PWQC	priority water quality condition(s)
QA	quality assurance
QMRA	quantitative microbial risk assessment

Regional Board (RWQCB)	San Diego Regional Water Quality Control Board
RMA	Residential Management Area
SAL	stormwater action level
SCCWRP	Southern California Coastal Water Research Project
SLRWC	San Luis Rey Watershed Council
SMC	Stormwater Monitoring Coalition
SQO	sediment quality objective
SSM RWL	single sample maximum receiving water limitations
SSO	sanitary sewer overflow
SUSMP	Standard Urban Stormwater Mitigation Plan
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TIE	toxicity identification evaluation
TMDL	total maximum daily load
TRE	toxicity reduction evaluation
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VCP	vitrified clay pipes
WMA	Watershed Management Area
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan
WQO	water quality objective
WRCC	Western Regional Climate Center

Executive Summary

ES.1 INTRODUCTION

This first Water Quality Improvement Plan (WQIP) Annual Report for the San Luis Rey River Watershed Management Area (WMA) was developed in compliance with the Regional municipal separate storm sewer system (MS4) Permit (Permit) (San Diego Regional Water Quality Control Board [Regional Board], 2013). This Annual Report represents the work of the Participating Agencies in the WMA, including the Cities of Oceanside and Vista, the County of San Diego, and the California Department of Transportation (Caltrans). These Participating Agencies implement strategies through their WQIP and Jurisdictional Runoff Management Programs (JRMPs) to achieve improvements in the quality of stormwater (wet weather) and non-stormwater (dry weather) discharges from the MS4 (storm drain system) and, in turn, within the receiving waters by focusing on the highest priority water quality condition (HPWQC) and priority water quality condition(s) (PWQC) within the watershed. Caltrans' participation in the development of the WQIP was voluntary as they are regulated under a separate Permit from the California State Water Resources Control Board. Therefore, while they participated in the WQIP development on certain strategies, they do not participate in the Monitoring and Assessment Programs under the WQIP.

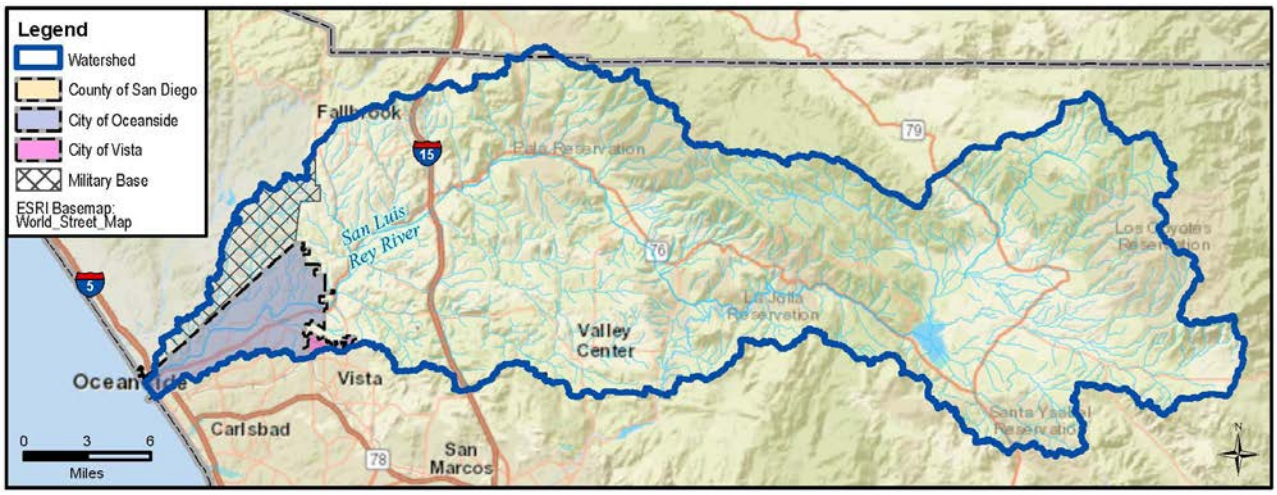

The HPWQC and PWQCs for the WMA were identified based on an assessment of receiving water conditions, storm drain outfall discharges and their potential impacts, and the sources of pollutants in the watershed. Using the methodology outlined in the WQIP, bacteria was identified as the HPWQC for the WMA.

HPWQC:
Bacteria (Wet and Dry)

PWQCs:
Nitrogen, Phosphorus, Total Dissolved Solids, Toxicity (Wet and Dry)
Eutrophic Conditions, Chloride, Index of Biotic Integrity (Dry)

ES.2 MONITORING AND ASSESSMENT

The 2015-2016 monitoring year was the first under the Monitoring and Assessment Plan (MAP) of the accepted WQIP that focuses on addressing bacteria. Monitoring results as they relate to bacteria are presented in the following discussion, with details provided in the AR. Overall,

monitoring results support the selection of bacteria as the HPWQC and provide substantial data to assess progress toward goals.

ES.2.1 Total Maximum Daily Load (TMDL) Monitoring

Bacteria Total Maximum Daily Load (TMDL) sampling was conducted during wet and dry weather at one receiving water monitoring location, Oceanside City Beach at the mouth of the San Luis Rey River (OC-100), in accordance with TMDL requirements specified in the Permit. Additional detail is provided in Section 3.1.2.

Oceanside City Beach in vicinity of TMDL Compliance Monitoring Location (OC-100)

- The only exceedance measured at OC-100 was the wet weather single-sample maximum (SSM) for *Enterococcus* for one of three monitored wet weather events.
- The arithmetic mean of the three wet weather events was only one unit above the SSM, but this resulted in a 75% frequency of exceedance when this mean was used to represent the unmonitored wet weather days.
- All other interim and final receiving water limitations (RWL) are currently being met.

- Interim numeric targets are not required to be achieved until 2020 for dry weather and 2028 for wet weather; therefore, the exceedances observed during 2015-2016 do not indicate non-compliance at this time.

ES.2.2 Lower San Luis Rey River Goal Monitoring

In addition to TMDL monitoring, receiving water monitoring to measure bacteria concentrations in the lower San Luis Rey River was conducted at Olive Hill Rd (SLR25). The downstream site at Benet Bridge was visited but was dry and therefore not sampled during 2015-2016. Bacteria sampling is conducted to evaluate the progress of strategies toward achieving the dry weather and wet weather goals for the lower river as presented in the WQIP. These goals are focused on bacteria load reductions in storm drain discharges (wet weather) and elimination of dry weather flows to the lower river. Monitoring in both the lower river and at storm drain outfalls (ES.2.6) support the assessment of strategies implemented towards achieving these goals. Additional detail is provided in Section 3.1.3.

Olive Hill Rd (SLR25) Monitoring Location

- All eight dry weather samples (taken monthly from February to September 2016) were above the SSM for *Enterococcus*, and one was above the SSM for fecal coliform.
- During the single wet weather event on February 1, 2016, the *Enterococcus* concentration was above the SSM, while the fecal coliform was below the limit.

ES.2.3 Storm Drain Outfall Dry Weather Field Screening

Field screening is conducted to identify non-stormwater and illicit discharges from the Participating Agencies' major storm drain outfalls, determine which discharges are persistent, and prioritize those discharges that will be investigated and eliminated.

- There was no trash or little trash (less than 50 pieces) during the majority (83%) of the trash assessments (n = 129) at visited outfalls.
- Outfalls were dry during 65% of routine field screening visits; flowing water was present during 20% of routine visits.
- When flow was observed, more than half (14 of 26) of the flow rates were less than five gallons per minute.

Based on field screening visits and available historical data, the Participating Agencies determined the flow status of each major storm drain outfall as persistent, transient, or dry. As defined in the Permit, flow status for a given outfall is "dry" if no flowing or standing water is observed at the outfall over three most recent visits, and "persistent" flow is defined as presence of flowing or standing water upon three most recent visits. Otherwise, the outfall status is classified as "transient." Additional detail is provided in Section 3.2.1.1.

Overall, since the prior monitoring year:

- The number of "dry" outfalls increased by four,
- Outfalls categorized as "transient" decreased by six,
- Outfalls with "persistent" flow increased by four,
- All outfalls have been visits three or more times and therefore none have a flow classification of "undetermined."
- No modifications to field screening monitoring locations or frequencies are planned for 2016-2017 in the WMA.

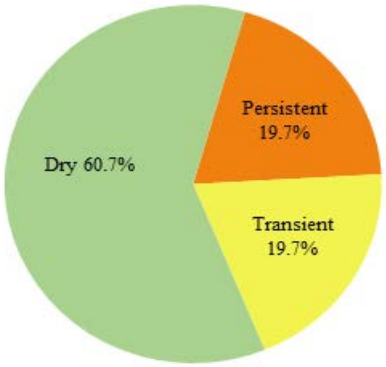

Flow Determinations for Major Storm Drain Outfalls (n=61)

Major storm drain outfalls are prioritized for monitoring by each Participating Agency based on criteria such as persistence of non-stormwater flow, monitoring data results, and the potential threat to receiving water quality. The highest priority outfalls shown in Figure ES-1 were monitored under the Highest Priority Storm Drain Outfall Monitoring described in ES.2.4. These outfalls were also a specific focus for the Illicit Discharge Detection and Elimination (IDDE) investigations by each Participating Agency as described in Section ES.2.5.

ES.2.4 Highest Priority Storm Drain Outfall Dry Weather Monitoring

Analytical monitoring during dry weather was conducted at the highest priority outfalls identified by each Participating Agency. Monitoring locations are shown in Figure ES-1, and results for fecal coliform in non-stormwater samples at these outfalls are shown in Figure ES-2. Additional detail is provided in Section 3.2.1.2.

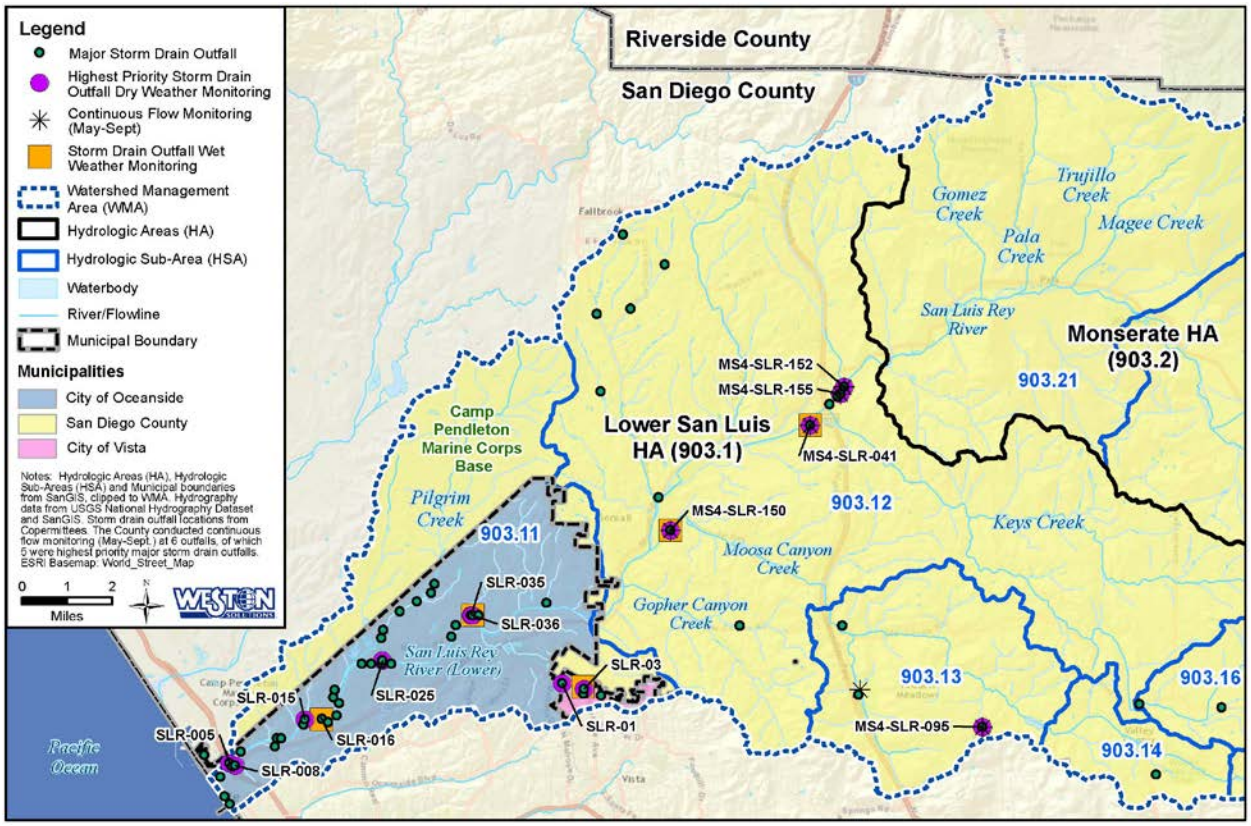

Figure ES-1. 2015-2016 Dry and Wet Weather Storm Drain Outfall Monitoring Locations

- 75% of *Enterococcus* and 50% of fecal coliform results were above non-stormwater action levels (NALs).
- No re-prioritizations of the highest priority outfalls are planned for 2016-2017 by the City of Vista or County of San Diego.
- The City of Oceanside is updating its outfall priorities. Two outfalls that were dry for three consecutive visits will be replaced with the next two high priority outfalls.

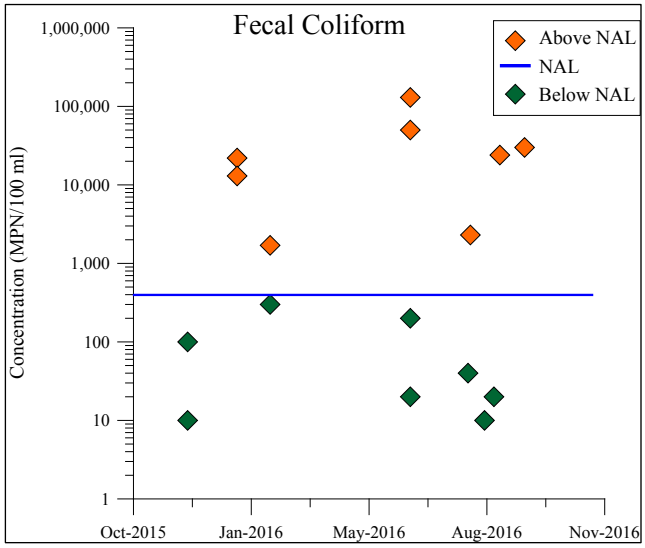

Figure ES-2. Fecal Coliform Concentrations at the Highest Priority Outfalls

ES.2.5 Illicit Discharge Detection and Elimination (IDDE) Program

Each Participating Agency's IDDE Program seeks to address and reduce the potential contribution of pollutants from stormwater and non-stormwater discharges through the storm drain system. The highest priority outfalls were a specific focus of IDDE investigations conducted during the 2015-2106 monitoring year. Additional detail is provided in Section 3.2.1.3.

Flow sources identified through the Participating Agencies' outfall flow investigations included:

- The most common source of non-stormwater flow was irrigation runoff, followed by groundwater. Irrigation runoff includes over-watering of residential and commercial landscaping.
- In several cases, the sources of non-stormwater flows investigated were allowable (e.g., groundwater), were reported to enforcement for follow-up actions, or were partially eliminated (e.g., irrigation runoff at SLR-025). Agricultural runoff, which is separately regulated and not under the Participating Agencies' legal authority, was identified as a source during investigations at two highest priority outfalls.
- The majority of sources were categorized as suspected while three were listed as known.

ES.2.6 Storm Drain Outfall Wet Weather Monitoring

Storm drain outfall wet weather monitoring identifies and quantifies pollutants in stormwater discharges from the storm drain system, guides pollutant source identification efforts, and tracks progress toward achieving wet weather numeric goals set forth in the WQIP. Monitoring locations are shown in Figure ES-1 in Section ES.2.4. Additional detail is provided in Section 3.2.2.

- 100% of *Enterococcus* and fecal coliform concentrations in storm drain outfall wet weather discharges were above the SSM water quality based effluent limitations specified in the Bacteria TMDL.

ES.2.7 Special Studies

Special studies conducted in the San Luis Rey River WMA are described in Section 3.3 and included the following:

- Reference Streams (Tiefenthaler et al., 2015) and Beaches (Tiefenthaler et al., 2016) Studies - provide a scientific basis for updating the "reference" conditions to be considered in evaluating compliance levels in the Bacteria TMDL, and will be useful in the re-evaluation of the Bacteria TMDL.
- San Luis Rey River Microbial Source Tracking (MST) Study (Geosyntec Consultants, 2015) - will be used to support Permit compliance and Bacteria TMDL implementation planning, and may potentially serve as the first step in future Natural Source Exclusion and/or Quantitative Microbial Risk Assessment (QMRA) work.

ES.3 WATERSHED STRATEGY IMPLEMENTATION AND PROGRESS TOWARD GOALS

The Permit requires the Participating Agencies to select the HPWQC for the WMA and develop strategies and numeric goals to address that HPWQC. Since the acceptance of the WQIP in February 2016, the Participating Agencies have implemented strategies and have begun making progress toward achieving numeric goals for bacteria. Strategies focusing on reducing bacteria

from both human and non-human sources were implemented across the watershed and included the following:

- Preventing discharges of bacteria from human sources to the storm drain system by addressing sanitary sewer overflows, leaky sewer pipes, homeless encampments, and failing septic systems.
- Preventing discharges of other, non-human, bacteria sources to the storm drain system through public outreach programs related to pet waste management, discharge of wash water, and livestock.

Strategies implemented by the Participating Agencies were also focused on reduction and elimination of non-stormwater flow and address not only bacteria but other PWQC in the watershed, including nutrients. These strategies included irrigation runoff identification and control, additional source investigations and flow monitoring, inspections, and outreach (e.g., water conservation, trash control).

Progress made toward achievement of the interim Permit-term watershed numeric goals is measured using water quality and program activity data collected during 2015-2016. Progress is summarized below, with additional detail and a discussion of the strategies and progress specific to each Participating Agency provided in Section 4.

Permit Term Bacteria TMDL Numeric Goals for the San Luis Rey River Mouth:

- Dry Weather Goal: Flow Reduction – **Baseline Estimations are Complete**
- Wet Weather Goal: Programmatic BMP Implementation – **On Track to Achieve Goal**
- Wet Weather Goal: Distributed BMP Operation and Maintenance – **Goal Has Been Achieved**

Permit Term Numeric Goals for the Lower San Luis Rey River:

- Dry Weather Goal: Flow Reduction – **Baseline Estimations are Complete**
- Wet Weather Goal: Bacteria Load Reduction from Storm Drain Outfalls – **On Track to Achieve Goal**
- Wet Weather Goal: Meet Bacteria Goals in Lower River – **On Track to Achieve Goal**

ES.4 CONCLUSIONS

Data collected in the San Luis Rey River WMA during the 2015-2016 monitoring year support the identified priority and highest priority water quality conditions as provided in the WQIP and provide the information necessary to assess progress. Since the acceptance of the WQIP in February 2016, the Participating Agencies have begun implementing their strategies intended to result in achievement of dry and wet weather interim goals for the term of the current Permit, and progress has been demonstrated toward each goal. The strategies implemented by the Participating Agencies and identified in the WQIP focus on reducing bacteria discharges, but also address other pollutants, providing a multi-benefit approach to implementation.

The Participating Agencies will continue to implement these identified strategies, collect additional monitoring and programmatic data, and assess their progress toward goals on an annual basis. New data and information will be utilized as it becomes available to improve the WQIP with updates to priorities, assessments of and adjustments to goals, updates to strategies to meet the latest goals, and updates to the MAP as necessary through the adaptive management process.

1 Introduction

The San Diego Regional Water Quality Control Board (Regional Board) regulates discharges from municipal separate storm sewer systems (MS4s) (storm drain systems) in the San Diego Region under the Regional MS4 Permit[1] (Permit) (Regional Board, 2013). The Permit covers portions of San Diego County, southern Orange County, and southwestern Riverside County and regulates Phase I municipalities who own and operate storm drain systems, which discharge stormwater (wet weather) runoff and non-stormwater (dry weather) runoff to surface waters throughout the San Diego Region. One of the main goals of the Permit is to focus on water quality improvement outcomes rather than completing specific actions, giving the Participating Agencies more control over how their stormwater programs are implemented.

Within the Permit, the San Diego Region is sub-divided into 10 watershed management areas (WMAs), which cover the major, natural drainages in the region[2]. The Permit requires the development of a Water Quality Improvement Plan (WQIP) for each WMA, which guides the Participating Agencies' Jurisdictional Runoff Management Programs (JRMPs) (their local plans) towards an outcome-based approach and improved water quality. This process is accomplished through an adaptive planning and management method that identifies the highest priority water quality condition(s) (HPWQC) within a watershed and implements strategies through the WQIP and JRMPs to achieve improvements in the quality of discharges from the storm drain system and within the receiving waters.

Participating Agencies within each WMA are required by the Permit to submit an Annual Report to communicate the implementation status and progress of the WQIPs and corresponding JRMPs in meeting the defined numeric goals[3]. This San Luis Rey River WMA Annual Report covers two reporting periods on different schedules. The first is from July 1, 2015 to June 30, 2016 for the JRMPs and WQIP strategy implementation (note that the WQIP was accepted in February 2016), and the second is from October 1, 2015 to September 30, 2016 for monitoring and assessment programs. Progress to achieve goals may be assessed for either reporting period, depending on the goal metric. This Annual Report, the first under the San Luis Rey River WMA's WQIP, addresses the requirements of the Permit. Table 1-1 provides a summary of the Permit requirements that must be addressed by the Annual Report, and where they are discussed within this document. Appendix 1 includes additional detail regarding the specific Permit requirements as well as where they are addressed within the Annual Report[4]. Appendix 2 provides information related to each Participating Agency's JRMP.

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[1] Order No. R9-2013-0001, as amended by Order Nos. R9-2015-001 and R9-2015-0100. http://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/docs/2015-1118_AmendedOrder_R9-2013-0001_COMPLETE.pdf

[2] Order No. R9-2013-0001 (as amended), Table B-1 (page 21 of 139)

[3] Order No. R9-2013-0001 (as amended), F.3.b.(3) (page 132-133 of 139)

[4] Order No. R9-2013-0001 (as amended), F.3.b.(3)(f) Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the San Diego Water Board. Any Copermittee monitoring data utilized in developing the Water Quality Improvement Plan Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the Water Quality Improvement Plan Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.

Table 1-1. Permit WQIP Annual Reporting Provisions and Corresponding Annual Report Sections[5]

Permit Provision	WQIP Annual Report Section						WQIP Appendix			
	Section 1 – Introduction	Section 2 – Priority & Goals	Section 3 – Monitoring	Section 4 – Achieving Goals	Section 5 – Adaptive Mgmt.	Section 6 – Conclusions	Appendix 2 – Jurisdictional Specific Info.	Appendix 3 – Goals	Appendix 4 – Monitoring	Appendix 5 – Adaptive Mgmt.
Provision A										
A.4.a.(2)			X		X		X		X	X
Provision B										
B.5.a.					X				X	X
B.5.b.			X	X	X		X	X	X	X
B.5.c.					X					X
Provision D										
D.1.e.(2)(c)			X						X	
D.2.b.(2)(iv)			X						X	
D.4.b.(1)(a)(ii)			X						X	
D.4.b.(1)(b)			X		X				X	X
D.4.b.(1)(c)			X		X				X	X
D.4.b.(2)(a)					X					X
D.4.b.(2)(b)			X		X				X	X
D.4.b.(2)(c)			X		X				X	X
D.4.b.(2)(d)									X	
D.4.c.			X						X	
D.4.d.					X					X
D.4.d.(1)					X					X
D.4.d.(2)					X					X
D.4.d.(3)					X					X
Provision E										
E.1.b.							X			
E.2.d.(4)			X						X	
E.8.c.	X						X			
Provision F										
F.1.b.(6)					X					X
F.2.a.(2)					X					X
F.2.a.(3)					X					X
F.2.b.(1)					X		X			
F.2.b.(2)					X		X			
F.2.c.(1)(c)					X					X
F.3.b.(3)(a-f)	X		X	X	X		X		X	X
Attachment E										
Attachment E			X						X	

[5]Appendix 1 includes additional detail regarding the specific Permit requirements as well as where they are addressed within the Annual Report.

This San Luis Rey River WMA Annual Report is structured as follows:

Section 1. Introduction – Provides an overview of the Permit, the WQIP, and the Annual Reporting requirements.

Appendix 1. Crosswalk of Permit Requirements and Annual Report References

Appendix 2. Jurisdictional Runoff Management Program Annual Report Certifications and Forms, Strategies, and Changes to the Best Management Practices (BMP) Manual (as applicable)

Section 2. San Luis Rey River WMA Priorities and Numeric Goals – Introduces the WMA, the priority water quality conditions of the watershed, and the numeric goals and schedules developed to measure progress in addressing the priority conditions.

Appendix 3. Water Quality Improvement Plan Numeric Goals

Section 3. Monitoring and Assessment – Summarizes the monitoring programs and provides an assessment of the data collected.

Appendix 4. Monitoring Results and Assessments

Section 4. Implementation and Progress toward Achieving Numeric Goals – Provides a detailed assessment of the progress towards meeting the numeric goals, with a focus on those numeric goals occurring during the Permit term. The section also provides an overview of the strategies implemented to meet the numeric goals, the status of implementation, and plans for the coming year.

Section 5. Adaptive Management – Provides a summary of the elements of the WQIP process which can be altered during the course of Permit implementation and any changes that were made as a result of new information realized during the reporting period.

Appendix 5. Adaptive Management Modifications

Section 6. Conclusions and Recommendations – Provides the conclusions and recommendations that are based on the data collected and assessments conducted during implementation of the WQIP.

Section 7. References

2 Overview of San Luis Rey River Watershed

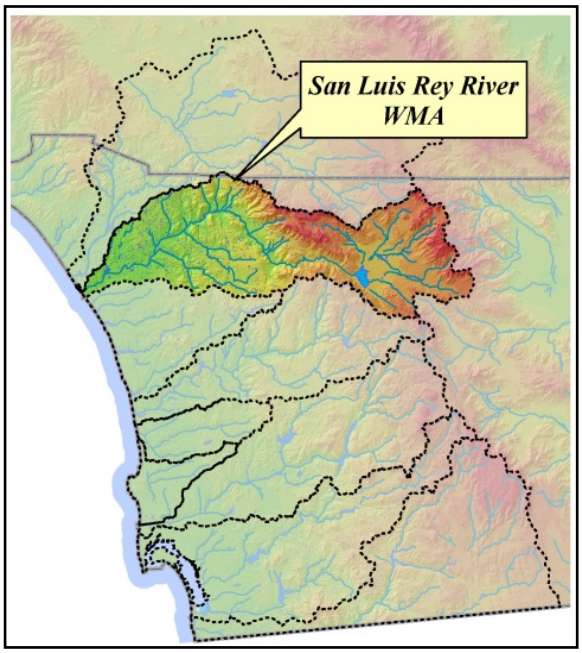

The San Luis Rey River WMA is located in northern San Diego County, bordered by the Santa Margarita River WMA to the north and the Carlsbad and San Dieguito River WMAs to the south. Major surface water bodies and the municipalities/agencies responsible for stormwater management within the WMA are summarized in Table 2-1. Although Caltrans is not a part of the Permit, Caltrans works cooperatively with the other Participating Agencies in accordance with their statewide National Pollutant Discharge Elimination System (NPDES) permit.

The WMA encompasses 360,000 acres or 562 square miles, and is the largest WMA located entirely within San Diego County. The WMA (hydrologic unit [HU] 903) consists of three hydrologic areas (HAs): Lower San Luis Rey (903.1), Monserate (903.2), and Warner Valley (903.3). These HAs are comprised of 11 hydrologic subareas (HSAs). The San Luis Rey River extends over 55 miles across northern San Diego County and discharges to the Pacific Ocean within the City of Oceanside. Lake Henshaw is the main reservoir for the San Luis Rey watershed and is the third largest reservoir in San Diego County. Henshaw Dam controls 36 percent (%) of the watershed drainage and is the dividing point between the Monserate HA and Warner Valley HA. One-third of the WMA is located above the dam and two-thirds is located below the dam. The principal aquifers in the watershed are the Warner, Pauma, Pala, Bonsall, Moosa, and Mission Basins. Additional information is provided in the San Luis Rey River WMA WQIP (Larry Walker Associates et al., 2016). A map of the watershed is shown in Figure 2-1. The area surrounding Oceanside Harbor within the City of Oceanside's jurisdiction has been assigned to the San Luis Rey River WMA for reporting and assessment under the 2013 Permit. Therefore, all acreages and outfalls for the area surrounding the Oceanside Harbor within the City of Oceanside's jurisdiction will be included in the San Luis Rey River WMA assessments. The Hydrologic Basin boundaries from SanGIS have not been modified on maps to reflect this assignment.

Table 2-1. Major Surface Water Bodies and the Municipalities/Agencies Responsible for Stormwater Management within the San Luis Rey River WMA

Hydrologic Unit	Major Surface Water Bodies	Municipalities/Agencies
San Luis Rey (903.00)	▪ San Luis Rey River ▪ San Luis Rey Estuary ▪ Pacific Ocean	▪ City of Oceanside ▪ City of Vista ▪ County of San Diego ▪ Caltrans[6]

[6]Caltrans is regulated under a separate permit from the State Water Resource Control Board (Order No. 2012-0011 DWQ). However, Caltrans has voluntarily participated in the development of Water Quality Improvement Plans throughout the San Diego Region.

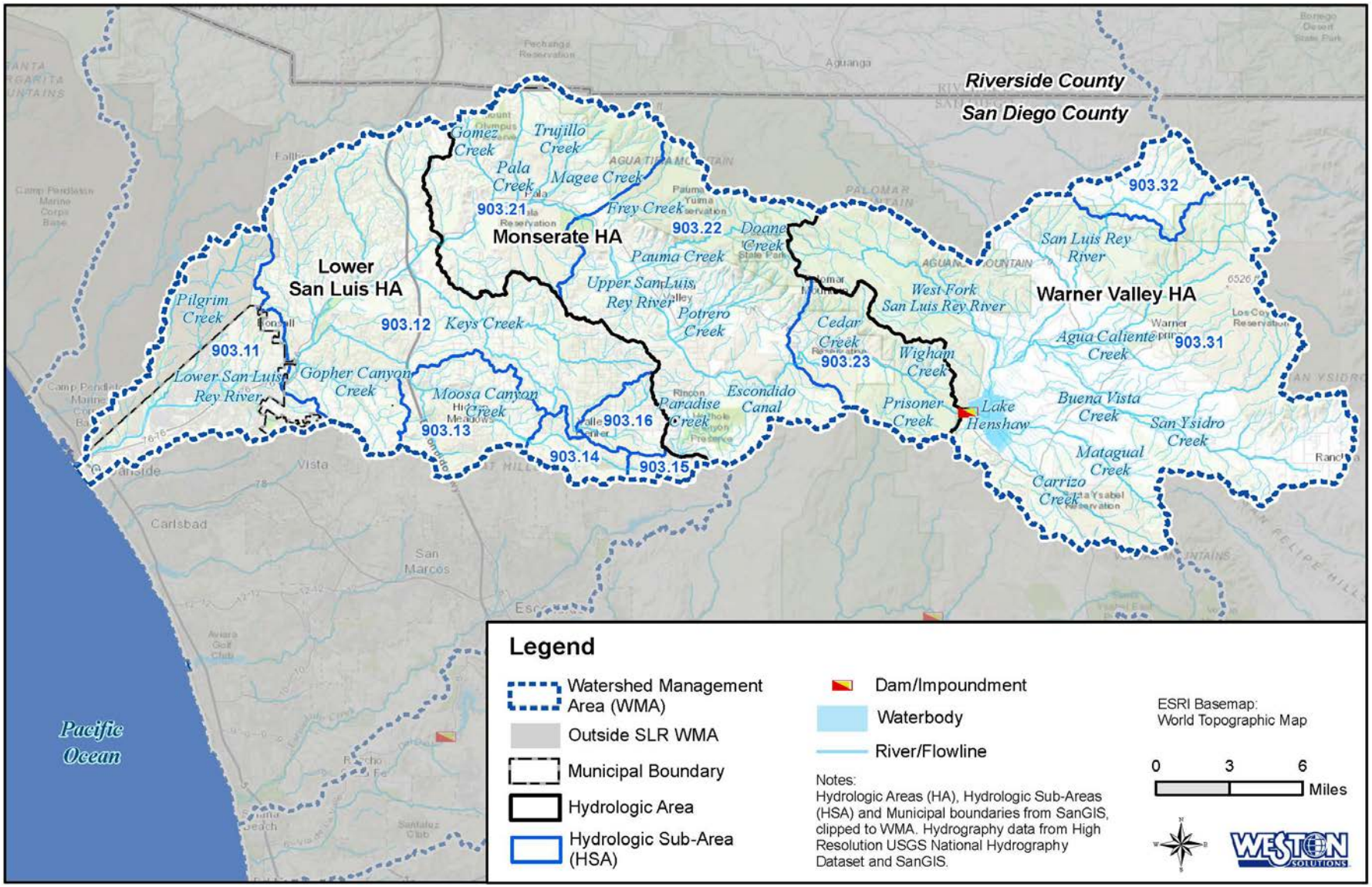

Figure 2-1. San Luis Rey River Watershed Management Area

The total annual rainfall in the region during the reporting period (October 2015 through September 2016), as measured at Oceanside Harbor, was 5.69 inches. Despite El Niño conditions reported by the National Weather Service (NWS) Climate Prediction Center through the spring of 2016 (National Oceanic and Atmospheric Administration [NOAA], 2016a), this total is below the historical (1909 to 2016) annual mean of 9.87 inches (Western Regional Climate Prediction Center [WRCC], 2016). Long-term drought conditions persisted in the San Diego region during the 2015-2016 monitoring year, and temperatures were generally above average (NOAA, 2016b).

Shown in Figure 2-2 are annual rainfall totals at four Alert System Precipitation Gauges (http://sdcfcd.org/whatalert.html) in the northern San Diego County, including two stations in the San Luis Rey River WMA, Oceanside (903.11) and Fallbrook (903.12). Annual rainfall totals at these stations ranged from 9.92 to 13.6 inches. Precipitation totals at the Alert Stations is provided for the fiscal year (FY) (July 1, 2015 to June 30, 2016) for consistency with the wet weather storm drain outfall assessments provided in Appendix 4. The rainfall total at Oceanside Harbor for FY 2015-2016 was lower at 7.51 inches (WRCC, 2016) than the inland Oceanside Alert station.

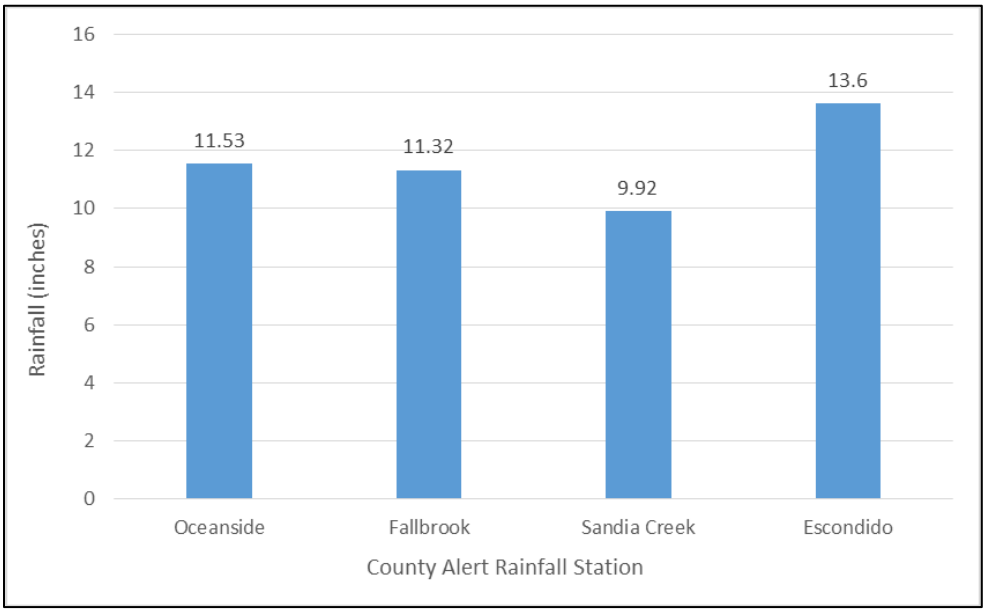

Figure 2-2. Rainfall Amounts for 2015-2016 Fiscal Year at Four County Alert Stations

2.1 SAN LUIS REY RIVER WATER QUALITY IMPROVEMENT PLAN

The WQIP for the San Luis Rey River WMA identifies strategies that will be implemented through JRMPs to address bacteria in pursuit of measurable numeric goals that will achieve improvements in the quality of storm drain outfall discharges and, in turn, the receiving waters. The WQIP outlines how the Participating Agencies within the watershed are evaluating water quality conditions, prioritizing those water quality conditions, and using these common priorities to guide jurisdictional and watershed scale programs to address the highest priorities. Figure 2-3 illustrates the general planning, implementation, monitoring, and adaptive management process and the text that follows briefly describes the components of the WQIP.

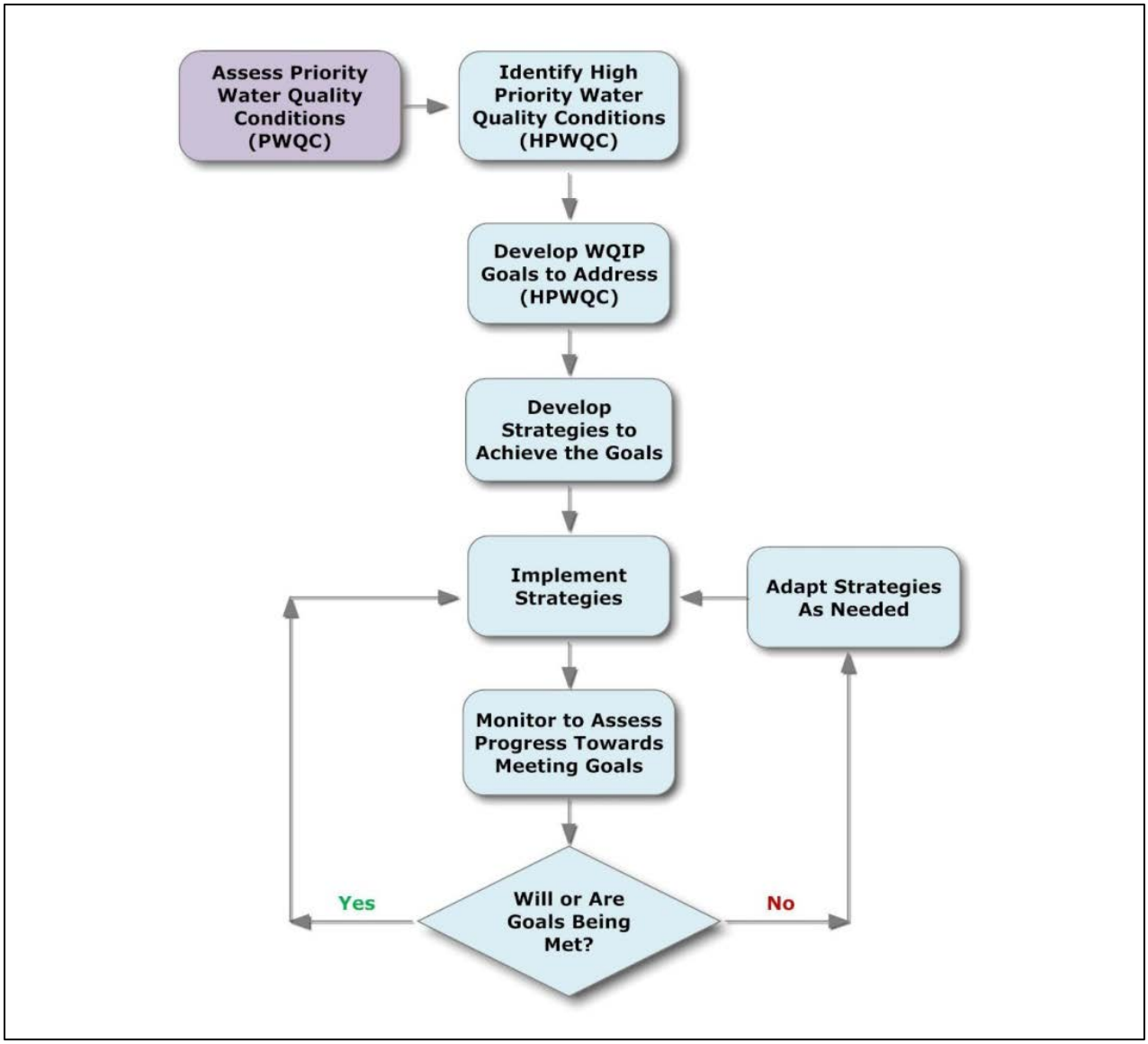

Figure 2-3. Water Quality Improvement Plan Process

The complete WQIP document contains the following components identified in the 2013 Permit:

- Priority Water Quality Conditions.
- Goals, Strategies and Schedules.
- Watershed Management Area Analysis (WMAA), which the Permit indicates is optional.
- Monitoring and Assessment Program (MAP), which also documents how the Participating Agencies will comply with the applicable monitoring and assessment portions of the Permit.
- Iterative Approach and Adaptive Management Process.

The complete WQIP was provided to the Regional Board on June 27, 2015. Comments from the Regional Board and from the public were received in August and September 2015. Appropriate revisions were made to address public comments and Regional Board concerns, and a revised WQIP was submitted to the Regional Board for acceptance on September 29, 2015. The Regional Board advised the WMA Participating Agencies on January 6, 2016 that minor deficiencies remained, and the Participating Agencies provided proposed corrections on January 29, 2016. The Regional Board accepted the revised WQIP, with the proposed corrections, on February 12, 2016. WQIP documents can be accessed on the Regional Board website: http://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/wqip.shtml.

2.2 PRIORITY AND HIGHEST PRIORITY WATER QUALITY CONDITIONS

Using the methodology outlined in the WQIP, bacteria was identified as the HPWQC for the San Luis Rey River WMA. The HPWQC and additional priority water quality conditions (PWQCs) for the WMA are summarized in Table 2-2. Each of the waterbodies listed in Table 2-2 are located in the Lower San Luis HA except the Upper San Luis Rey River, which is located in the Lower San Luis and Monserate HAs. Additional information is provided in Section 2 and Appendix 2D of the WQIP.

Table 2-2. San Luis Rey River WMA Priority Water Quality Conditions

Constituent	Wet	Dry	Beneficial Use*	Geographic Area
Highest Priority Water Quality Condition				
Bacteria	X	X	REC-1 (water contact recreation)	Pacific Ocean Shoreline at San Luis Rey River Mouth, Lower San Luis Rey River
Priority Water Quality Conditions				
Eutrophic Conditions		X	WARM (warm freshwater habitat)	Guajome Lake
Chloride		X	MUN (municipal and domestic supply)	Lower San Luis Rey River
Nitrogen	X	X	WARM (warm freshwater habitat)	Lower San Luis Rey River, Upper San Luis Rey River
Phosphorus	X	X	WARM (warm freshwater habitat)	Lower San Luis Rey River
Total Dissolved Solids (TDS)	X	X	AGR (agricultural supply)	Lower San Luis Rey River
Toxicity	X	X	WARM (warm freshwater habitat)	Lower San Luis Rey River
Index of Biotic Integrity (IBI)		X	WARM (warm freshwater habitat)	Lower San Luis Rey River

* Source: Water Quality Control Plan for the San Diego Region (Basin Plan) (Regional Board, 1994).

Bacteria are important indicators of water quality for recreational users like surfers, swimmers, and beach waders. Indicator bacteria are used as detection surrogates or proxies for pathogens because they are easier and less costly to measure. Allowable bacteria loads for the watershed are

defined by the Bacteria TMDL[7], which requires the Participating Agencies to improve water quality in local waters during both dry weather and wet weather conditions within a 10- and 20-year compliance timeline, respectively (see Section 2.3).

2.3 WATER QUALITY IMPROVEMENT PLAN NUMERIC GOALS

The Participating Agencies identified and developed specific water quality improvement numeric goals and strategies to address bacteria within the WMA. The numeric goals (interim and final) and corresponding schedules support implementation of the WQIP and measure reasonable progress towards addressing bacteria. In addition, the Participating Agencies' monitoring and assessment programs measure progress towards attaining these goals.

The numeric goals for the San Luis Rey River WMA WQIP are designed to demonstrate progress towards compliance with the Bacteria TMDL, which differentiates between wet and dry conditions. Since wet weather bacteria loads are more challenging to control, the wet and dry TMDL targets and load reductions have different schedules. The targets for dry and wet weather are on a 10- and 20-year timeline, respectively. As a result, some of the goals extend beyond the timeframe of the current Permit. For this reason, the numeric goals within the WQIP are categorized into three distinct time periods:

1. Interim goals within the five-year Permit term.
2. Interim goals based on interim Bacteria TMDL compliance pathways.
3. Final goals based on final Bacteria TMDL compliance options.

Attachment E.6 of the Permit outlines interim dry and wet weather TMDL compliance dates of April 4, 2017 and April 4, 2021, respectively. The Permit allows the Participating Agencies to propose alternative schedules. The Participating Agencies proposed moving the interim TMDL compliance dates for dry and wet weather to April 4, 2020 and April 4, 2028, respectively, to allow adequate time to investigate and mitigate sources of bacteria and to monitor progress and adjust implementation through the adaptive management process. The detailed numeric goals for the WMA are presented in Appendix 3, and the timeline for achievement of these goals is illustrated in Figure 2-4.

[7]Revised TMDL for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (including Tecolote Creek). Resolution No. R9-2010-0001. Approved February 10, 2010.

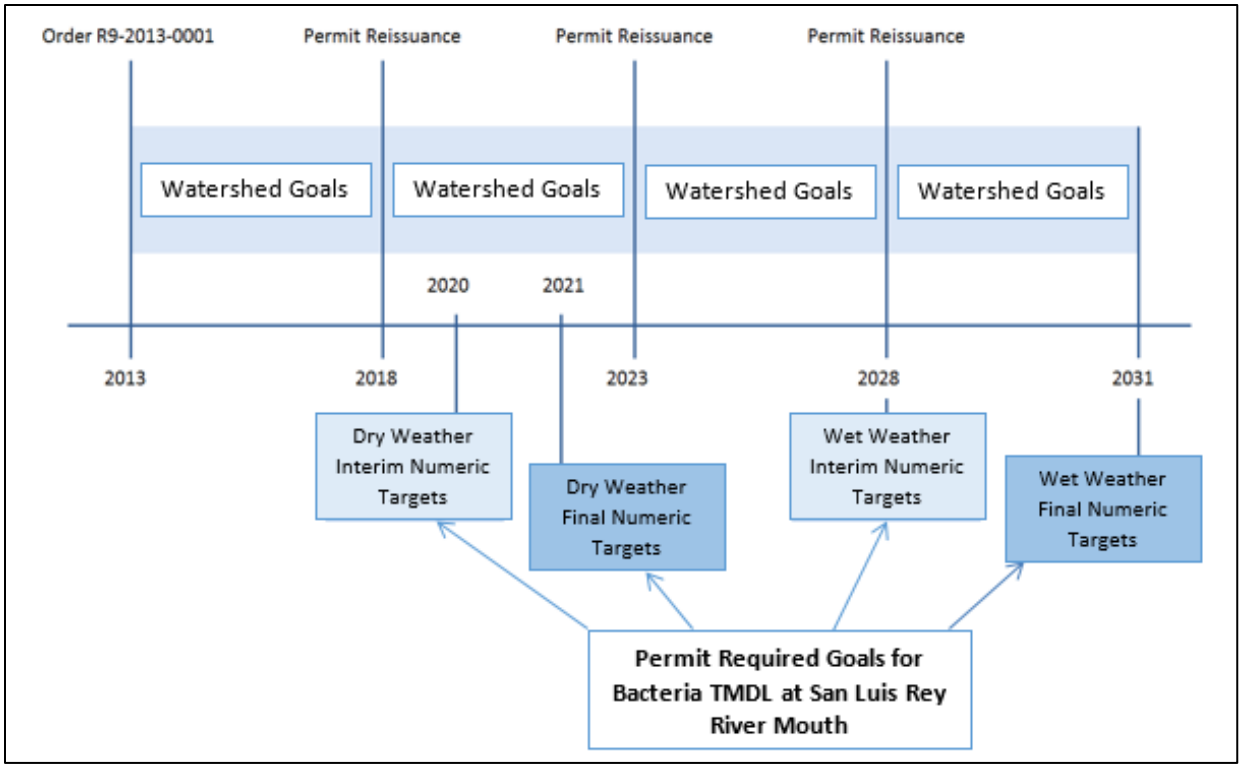

Figure 2-4. Timelines and Relationships between Bacteria TMDL Numeric Targets

3 Monitoring and Assessment

The Permit requires an outcome-based approach to improve water quality in stormwater and non-stormwater discharges, guided by strategies and goals identified in the WQIP. By conducting multiple types of monitoring activities, the Participating Agencies are collecting data to evaluate progress toward achieving numeric goals, and determine if modifications to stormwater program activities are necessary. Caltrans is not a Participating Agency for the monitoring and assessment program described in this section, as Caltrans is regulated under a separate permit from the State Water Resource Control Board.

This Annual Report assesses the data collected within the San Luis Rey River WMA in combination with the Participating Agencies' management actions to determine what actions are improving the quality of storm drain outfall discharges and/or receiving water conditions (Section 4) and where additional actions may be necessary (Section 5).

The Monitoring and Assessment Program includes five major components:

1. Receiving water monitoring that measures the long-term health of the watershed during dry and wet weather conditions;
2. Storm drain outfall discharge monitoring that investigates illicit non-stormwater flows from outfalls and measures changes in quality of the discharges from the storm drain system during wet weather;
3. Special studies that look further into the sources, pollutants, and/or stressors that contribute to bacteria;
4. Illicit Discharge Detection and Elimination (IDDE) investigations and inspections of potential pollutant sources; and
5. Monitoring to assess progress toward goals and schedules.

This section describes results from implementation of the MAP for the WMA as they pertain to bacteria. The MAP was developed and implemented to:

1. Measure the progress toward addressing bacteria;
2. Assess the progress toward achieving the numeric goals, strategies, and schedules; and
3. Evaluate each Participating Agency's overall efforts to implement the WQIP.

Because bacteria in the lower San Luis Rey River watershed was identified as the HPWQC for the WMA, monitoring is being conducted to identify sources of non-stormwater flow and assess the effectiveness of strategies to address non-stormwater flows that transport bacteria. Monitoring and IDDE program activities are also focused on identifying and eliminating non-stormwater flows that may discharge bacteria and other PWQC pollutants in urban runoff. Additionally, these programs will generate data to track the trends related to the PWQCs and the general water quality conditions within the watershed.

Monitoring programs where information related to bacteria was collected during the 2015-2016 monitoring year (October 1 - September 30) are shown in Table 3-1. Relevant results of these programs are summarized in the sections below, with details provided in Appendix 4. Monitoring program results not directly related to bacteria, such as those from the Bight and Southern California Stormwater Monitoring Coalition (SMC) regional programs, are also presented in Appendix 4.

Table 3-1. Monitoring Programs relevant to Bacteria for the San Luis Rey River WMA

Monitoring Program	Supports HPWQC and Summarized Below	
	Yes	No
Receiving Water Monitoring[1]		
Long Term Monitoring at Mass Loading Station		X[2]
Regional (SMC)		X[3]
Sediment Quality		X[3]
TMDL	X	
Storm Drain Outfall Monitoring		
Field Screening	X	
Dry Weather Monitoring	X	
Wet Weather Monitoring	X	
Illicit Discharge Detection and Elimination	X	
Special Studies	X	
Additional Monitoring to Assess Progress toward Goals and/or Strategies	X	

[1]HMP monitoring was conducted regionally but no sites were located in the San Luis Rey River WMA. The objectives and results of the program are summarized in Appendix 4.

[2]Long-term receiving water monitoring includes bacteria sampling but has not yet been conducted in the San Luis Rey River WMA due to lack of flow. Monitoring will be conducted during the 2016-2017 monitoring year, or when sufficient flow occurs.

[3]No bacteria data are collected for these programs.

3.1 RECEIVING WATER MONITORING

The purpose of receiving water monitoring is to characterize trends in the chemical, physical, and biological conditions of a receiving water to determine whether beneficial uses are being protected, maintained, or enhanced. An overview of receiving water monitoring activities for the WMA for the current Permit term is presented in Table 3-2. A summary of the results from each of these programs for the 2015-2016 monitoring year with respect to bacteria is presented below. Additional details and results for programs not related to bacteria in the WMA are presented in Appendix 4.

The receiving water assessments required by the Permit will be addressed in the Regional Monitoring and Assessment Report (RMAR) submitted to the Regional Board in December 2017 with the Report of Waste Discharge (ROWD).

Table 3-2. Elements of Water Quality Improvement Plan Receiving Water Monitoring

Monitoring Programs		Dry	Wet	Monitoring Element	Permit Schedule[a]				
					2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Long-Term [b]		X	X	Conventionals, bacteria, nutrients, metals, pesticides, toxicity (chronic), TIE/TREs	–	–	–	●	–
		X		Hydromodification (HMP)	–	–	–	●	–
		X		Bioassessment	–	–	–	●	–
Regional	Bight [c]	X		Chemistry, toxicity, benthic infauna	●	●	–	–	●
	SMC	X		Bioassessment	●	●	●	●	●
	2011 HMP Program		X	Channel assessments; flow monitoring; sediment transport monitoring	●	●	●	–	–
Sediment Quality [c]		X		Chemistry, toxicity, benthic infauna	●	–	–	–	–
Bacteria TMDL[d]		X	X	Bacteria	●	●	●	●	●
Monitoring to Assess Goals and Schedules		X	X	Varies by goal and jurisdiction	–	–	●	●	●

SMC = Southern California Stormwater Monitoring Coalition; Bight = Southern California Bight Regional Monitoring Program; TIE=Toxicity Identification Evaluation; TRE=Toxicity Reduction Evaluation

[a] The Permit was adopted on May 8, 2013 and became effective on June 27, 2013.

[b] Long-term receiving water monitoring has not yet been conducted in the San Luis Rey River WMA due to lack of flow. Monitoring will be conducted during the 2016-2017 monitoring year, or when sufficient flow occurs.

[c] The 2018 Southern California Bight Regional Monitoring will occur during the summer of 2018 or 2019.

[d] Includes the San Luis Rey River Mouth.

3.1.1 Regional Monitoring Participation

Regional monitoring includes several studies that provide information to evaluate various aspects of receiving water health on a regional scale. The Participating Agencies participated in the SMC Regional Monitoring Program during the 2015-2016 monitoring year. Because data collected under this program do not include bacteria, results are not included in this section. Detailed results are presented in Appendix 4, including results related to PWQCs.

3.1.2 Total Maximum Daily Load Monitoring

In February 2010, the Regional Board adopted Resolution No. R9-2010-0001, *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (Bacteria TMDL) (Regional Board, 2010). This TMDL amendment to the Water Quality Control Plan for the San Diego Region (Basin Plan) (Regional Board, 1994) includes one segment within the San Luis Rey River WMA, the Pacific

Ocean Shoreline at the San Luis Rey River Mouth. The Participating Agencies within the WMA that are named as responsible in the TMDL include the Cities of Oceanside and Vista and the County of San Diego. The compliance requirements and monitoring and reporting requirements of the TMDL have been incorporated into Attachment E of the 2013 Permit.

The Bacteria TMDL requires pollutant load reductions to restore and protect the designated beneficial use of water contact recreation (REC-1), as it is designated within the Basin Plan. The purpose of the TMDL monitoring program is to assess progress toward achieving compliance with the interim and final TMDL numeric targets, and is used to address the following questions:

- Are TMDL numeric targets for indicators being met at the compliance monitoring locations?
- Are levels of bacteria decreasing at the compliance monitoring locations?

During the monitoring season (October 1, 2015 through September 30, 2016), sampling was conducted during wet and dry weather at one receiving water monitoring site, OC-100, located at Oceanside City Beach at the mouth of the San Luis Rey River (Table 3-3, Figure 3-1). This was the third year of monitoring in accordance with the Bacteria TMDL. Samples were analyzed for the indicator bacteria compliance constituents (total coliform, fecal coliform, and *Enterococcus*) in accordance with the requirements of Attachment E.6 of the Permit.

Table 3-3. 2015-2016 Bacteria TMDL Beach Monitoring Summary

Season	Date Range	Event Type	Event Frequency	Monitoring Location	Samples Per Site Per Event[a]	Total Number of Samples
2015-2016 Wet Season	10/01/2015-04/30/2015	Wet	Three storm events	OC-100	1	3
	10/01/2015-03/30/2016	Dry	Monthly			6
	04/01/2016-04/30/2016	Dry	Weekly[b]			5
2016 Dry Season	05/01/2016-09/30/2016	Dry	Weekly[b]			25

[a] Quality assurance (QA) or replicate samples are not included in the count.

[b] A minimum of 5 samples are collected in a 30-day period.

Figure 3-1. Bacteria TMDL Compliance Monitoring Location

Table 3-4 presents the exceedance rates for each indicator bacteria at the monitored station within the San Luis Rey River WMA. The exceedances observed during the 2015-2016 monitoring year do not indicate non-compliance at this time. Progress toward meeting water quality based effluent limitations (WQBELs), in terms of interim and final receiving water limitations, is presented in Table 3-5 for each analyzed constituent. Interim WQBELs are not required to be achieved until 2020 for dry weather and 2028 for wet weather, while final WQBELS must be met by 2021 for dry weather and 2031 for wet weather. Based on the sampling data from 2015-2016, receiving water limitations that have already been achieved are indicated by (●), whereas receiving water limitations that have not yet been achieved are indicated by (X).

In summary, the only exceedances observed at OC-100 were for the wet weather single-sample maximum for *Enterococcus*. This outcome was due to a measured concentration of 220 colony-forming units per 100 milliliters (CFU/100 mL) during one monitored wet weather event, resulting in arithmetic mean of 104.67 CFU/100 mL for the three monitored events, which was applied to all of the unmonitored days with qualifying precipitation as required by the Permit. Had the arithmetic mean been lower by just 1 CFU/100 mL, the single-sample wet weather exceedance frequency would have been 10% and would have been in compliance with the single-sample wet weather allowable exceedance frequency. *Enterococcus* concentrations during the remaining two wet weather events were below the receiving water limitation of 104 most probable number (MPN)/100 mL[8]. All other interim and final WQBELs are currently being achieved.

Table 3-4. 2015–2016 Bacteria TMDL Monitoring Exceedance Frequency Results

Segment	Monitoring Location	Bacteria TMDL Constituent	2016 Dry Season Geometric Mean (CFU/100mL)	2015-2016 Wet Season Geometric Mean (CFU/100mL)	2015-2016 Wet Weather Single-Sample Maximum (CFU/100mL)
Pacific Ocean Shoreline	OC-100	*Enterococcus*	0%	0%	75%
		Fecal Coliform	0%	0%	0%
		Total Coliform	0%	0%	0%

CFU - colony-forming units per 100 milliliters. The Permit identifies WQBELs in most probable number per 100 mL (MPN/100 mL); the laboratory methods provide results in CFU. CFU and MPN units are comparable.

Table 3-5. 2015–2016 General Progress Toward Bacteria TMDL Interim and Final WQBELs

Monitoring Location	Bacterial TMDL Constituent	2015-2016 Dry Season Geometric Means		2015-2016 Wet Season Geometric Means		2015-2016 Wet Weather Single-Sample Maximum	
		Interim	Final	Interim	Final	Interim	Final
OC-100	*Enterococcus*	●	●	●	●	X	X
	Fecal Coliform	●	●	●	●	●	●
	Total Coliform	●	●	●	●	●	●

● = Numeric targets are met; X= Numeric targets are not yet met.

Additional information is provided in the 2015-2016 Bacteria TMDL Compliance Monitoring Report provided as Attachment 4B to Appendix 4. This data will also be uploaded to CEDEN (see Attachment K to Appendix 4).

3.1.3 Lower San Luis Rey River Goal Monitoring

To evaluate progress toward achieving goals for the lower San Luis Rey River, receiving water monitoring to measure bacteria concentrations was conducted during the 2015-2016 monitoring year at one in-stream site at Olive Hill Rd (SLR25). A second in-stream site, Benet Bridge (MLS),

[8] The Permit identifies receiving water limitations in MPN/100 mL; the laboratory methods provide results in CFU. CFU and MPN units are comparable.

was visited for monitoring but was dry during the entire year, and therefore was not sampled. Both sites are located along the San Luis Rey River, west of Interstate-15, with Olive Hill Rd (SLR25) located upstream of Benet Bridge. These monitoring locations are shown in Figure 3-2.

The lower San Luis Rey River location at Olive Hill Rd (SLR25) was sampled monthly during dry weather from February through September 2016, and once within 24 hours after a storm event in February 2016. Samples were analyzed for the indicator bacteria compliance constituents (fecal coliform and *Enterococcus*) in accordance with the Lower San Luis Rey River Bacteria Monitoring Plan (Attachment 4A-7 to the WQIP). Samples were also analyzed for *E. coli*, which is not a constituent of the indicator bacteria TDML and is not listed in the Lower San Luis Rey River Bacteria Monitoring Plan. The United States Environmental Protection Agency's (USEPA's) 2012 Recreational Water Quality Criteria recommends using *Enterococcus* and *E. coli* as indicators of fecal contamination for fresh water and *Enterococcus* for marine water (USEPA, 2012). Therefore, collection of *E. coli* data in advance of these anticipated changes provides historical data moving forward under revised recreational water quality standards developed in accordance with the USEPA guidelines. While the *E. coli* results are not presented here, the analytical data can be found in the laboratory reports provided in Attachment 4C to Appendix 4 and will be uploaded to CEDEN (see Attachment K to Appendix 4).

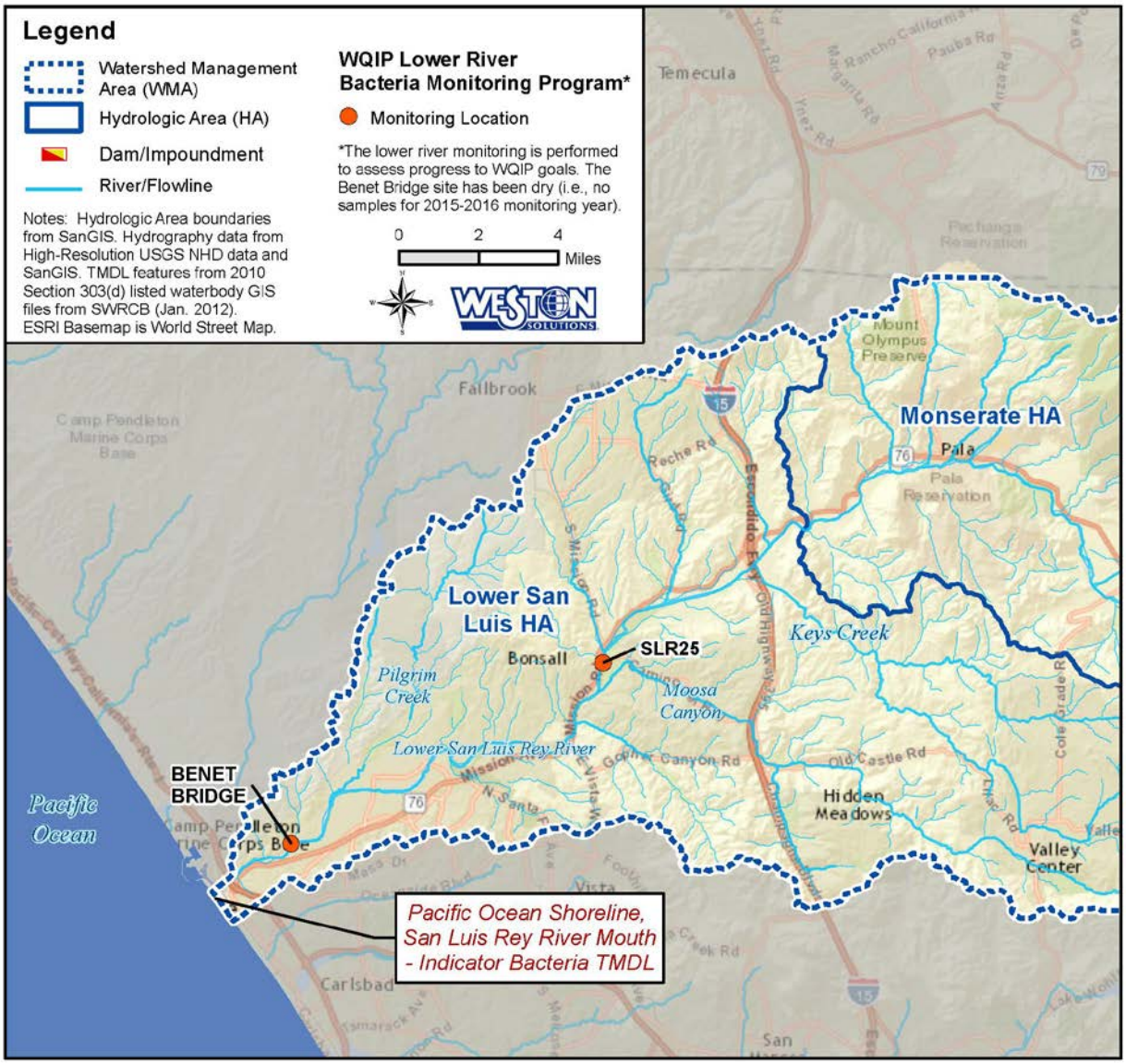

Figure 3-2. Bacteria WQIP Monitoring Locations in the Lower San Luis Rey River WMA (The Benet Bridge Location was Dry for the Entire Monitoring Season)

Individual dry and wet weather event data for *Enterococcus* and fecal coliform indicator bacteria are presented in Table 3-6 and Table 3-7, respectively, and exceedance rates are shown in Table 3-8. *Enterococcus* results from the single wet-weather event were above the freshwater single sample maximum water quality objective (WQO), whereas the fecal coliform concentration was below the WQO. Exceedance frequencies for the eight monitored dry weather events were 100% for *Enterococcus* and 13% (one event) for fecal coliform. These data will be used to inform progress by the Participating Agencies in meeting the lower San Luis Rey River bacteria goals (see Section 4.2). Supporting data are provided in Attachment 4C to Appendix 4.

Table 3-6. 2015-2016 Lower San Luis Rey River Bacteria Dry Weather Monitoring Event Results

Date	*Sample Results (CFU/100 mL)	
	Enterococcus (CFU/100 mL)	Fecal Coliform (CFU/100 mL)
SSM WQO	**61**	**400**
2/11/2016	**70e**	20
3/3/2016	**110e**	8e
4/6/2016	**63**	7e
5/4/2016	**80e**	16e
6/2/2016	**510**	**510**
7/7/2016	**820e**	53
8/4/2016	**600e**	45
9/1/2016	**180e**	20e

*Note: **Bolded/shaded** values indicate exceedances of water quality objectives based on comparison of results with the single sample maximum (SSM) indicator bacteria objective.
CFU - colony-forming units per 100 milliliters
e - estimated value, plate count falls outside recommended reporting limits per USEPA method guidelines.

Table 3-7. 2015-2016 Lower San Luis Rey River Bacteria Wet Weather Monitoring Event Results

Date	*Sample Results (CFU/100 mL)	
	Enterococcus (CFU/100 mL)	Fecal Coliform (CFU/100 mL)
SSM WQO	**61**	**400**
2/1/2016	**5,600**	250

*Note: **Bolded/shaded** values indicate exceedances of water quality objectives based on comparison of results with the single sample maximum (SSM) indicator bacteria objective.
CFU - colony-forming units per 100 milliliters

Table 3-8. 2015-2016 Lower San Luis Rey River Bacteria Results Summary

Analyte		Number of Events	*Enterococcus* (CFU/100 mL)		Fecal Coliform (CFU/100 mL)	
Station	Station		Total Exceedance	Percent Exceedance	Total Exceedance	Percent Exceedance
SSM WQO			**61**		**400**	
SLR25	Dry	8	8	100%	1	13%
	Wet	1	1	100%	0	0%

CFU - colony-forming units per 100 milliliters

3.2 STORM DRAIN OUTFALL MONITORING

The purpose of Storm Drain Outfall Monitoring is to evaluate potential impacts from storm drain outfall discharges on the beneficial uses of a waterbody during dry and wet weather conditions. During dry conditions, the program also facilitates elimination of non-stormwater discharges to waterbodies through follow-up investigations and IDDE program activities. The data generated are used to identify and quantify pollutants in discharges, guide pollutant source identification efforts, and track progress towards achieving numeric goals set forth in the WQIP.

An overview of the conducted and planned storm drain outfall monitoring activities for the current Permit term is presented in Table 3-9.

Table 3-9. Elements of Water Quality Improvement Plan Storm Drain Outfall Monitoring

Monitoring Programs	Dry	Wet	Monitoring Element	Permit Schedule[a]				
				2013-2014[b]	2014-2015	2015-2016	2016-2017	2017-2018
Field Screening	X		Visual: flow condition, presence and assessment of trash in and around the station, IC/IDs, descriptions	●	●	●	●	●
Storm Drain Outfall	X		Field parameters, conventionals, bacteria, nutrients, metals	-	-	●	●	●
		X	Field parameters, conventionals, bacteria, nutrients, metals	●	●	●	●	●
Illicit Discharge Detection and Elimination	X		Visual surveys, field parameter testing, analytical testing and follow-up investigations, if warranted	–	–	●	●	●

IC/ID – Illegal connection and illicit discharge

a. The Permit was adopted on May 8, 2013 and became effective on June 27, 2013.

b. Completed under the Transitional Monitoring Program.

The major storm drain outfalls currently included in the storm drain outfall discharge monitoring station inventory for the WMA are shown in Figure A4-5 in Appendix 4.

The number of major outfalls monitored under each element of the Storm Drain Outfall Monitoring Program by each Participating Agency in the WMA is provided in Table 3-10. In accordance with the Permit, Participating Agencies with fewer than 125 major storm drain outfalls in their inventory must conduct dry weather field screening at 80% of these major outfalls twice per year. The number of major outfalls monitored per year is subject to change based on new information, updates to the Participating Agencies' storm drain outfall inventories, changes in transient or persistent flow classifications, and/or changes or updates to the priority water quality conditions over the life of the WQIP.

Table 3-10. Number of Major Storm Drain Outfalls per Participating Agency in the San Luis Rey River WMA

Participating Agency	Number of Storm Drain Outfalls Monitored Per Year		
	Field Screening	Dry Weather Monitoring	Wet Weather Monitoring
County of San Diego	21	5*	2
City of Oceanside	36	5*	2
City of Vista	4	2	1

*Three outfalls in the City of Oceanside and one County outfall were dry or ponded with insufficient water to sample during monitoring visits; therefore analytical samples were not collected at four outfalls that had been identified for persistent flow storm drain outfall monitoring.

3.2.1 Storm Drain Outfall Dry Weather Monitoring

Storm drain outfall dry weather monitoring consisted of dry weather field screening, IDDE investigations, and highest priority storm drain outfall analytical monitoring. These programs are described in the following subsections.

3.2.1.1 Dry Weather Field Screening and Outfall Prioritization

Field screening is visual monitoring of major storm drain outfalls conducted to identify non-stormwater and illicit discharges, determine which discharges are persistent, and prioritize those discharges that will be investigated and eliminated. This program is designed to assess the effectiveness of jurisdictional programs to effectively prohibit non-stormwater discharges. Each Participating Agency performs field screening of a certain number of outfalls and at a frequency required by the Permit to maintain an up-to-date inventory of persistently flowing outfalls and to initiate follow-up investigations that identify and mitigate the source(s). The data collected during field screening are one of the sources of information for the Participating Agencies' IDDE Programs (see Section 3.2.1.3).

The number of storm drain outfall stations included in the field screening and the total number of visual observations conducted by each Participating Agency in the WMA are presented in Table 3-11. Field screening at upstream proxy locations (e.g., manholes) for inaccessible outfalls may result in more than one location representing an outfall, and these upstream locations are included in the station counts and visits. Some source investigations were performed during routine visits and are included in the routine visits column, while others were conducted as separate follow-up visits and are included in the source investigations column.

Table 3-11. Number of Visual Observations Conducted in the San Luis Rey River WMA During the 2015-2016 Monitoring Period

Participating Agency	Number of Major Storm Drain Outfall Stations Visited	Number of Routine Visits[1]	Number of Separate Source Investigations	Number of Additional Visits for Other Programs[2]
County of San Diego	21	48	41[3] (6 outfalls)	70 visits (16 stations)
Oceanside	36	72	NA[4]	NA
Vista	4	8	NA[4]	NA

[1] Includes persistent flow monitoring events.

[2] Includes flow data but may not include all visual observations typically conducted during a routine field screening visit. Data were used in flow determinations and estimation of annual non-stormwater volumes.

[3] Six source investigations were associated with SLR-045, a storm drain outfall of less than 36 inches in diameter with persistent non-storm water flow.

[4] Source investigations were performed during persistent flow monitoring events.

Participating Agencies recorded numerous visual observations regarding outfall and flow characteristics including flow conditions (flowing, ponded, dry, or tidal), whether or not the flow reached the receiving water, whether or not there was a non-storm water flow source, potential non-storm water sources, if the flow source was eliminated, evidence of obvious illicit connections or illicit discharges (IC/ID), whether trash was present and the relative amount, and whether there was evidence of illegal dumping. The results from these observations are discussed in detail in Appendix 4, and the complete set of visual observations recorded during dry weather field screening visits are provided in Attachment 4D to Appendix 4. Field screening observations included the following:

- Field screening trash assessment results indicated that there was no trash or a low (<50 pieces) presence of trash during the majority (83%) of the trash assessments (n = 129 at visited outfalls.
- Visual observations indicated no flowing water or standing water for 81% of visits conducted by the City of Oceanside, 50% by the City of Vista, and 47% by the County of San Diego. Flow was observed during 6% of the 72 visits conducted by the City of Oceanside, 50% of the 8 visits by the City of Vista, and 34% of the 53 visits by the County of San Diego.
- When flow was observed, more than half (14 of 26) of the flow rates were less than five gallons per minute.

Based on these field screening visits and available historical data, the Participating Agencies determined the flow status of each major storm drain outfall as persistent, transient, or dry. As defined in the Permit, flow status for a given outfall is “dry” if no flowing or standing water is observed at the outfall over three most recent visits, and “persistent” flow is defined as presence of flowing or standing water upon three most recent visits. Otherwise, the outfall status is classified as “transient.” The number of storm drain outfalls in each category are shown by Participating

Agency in Table 3-12. Additional details and a map of these outfall flow determinations can be found in Appendix 4.

Overall, since the prior monitoring year (WESTON, 2016a), the number of dry outfalls increased by four, the number of transient outfalls decreased by six, and the number of persistent outfalls increased by four, two of which were previously classified as undetermined. No modifications to field screening monitoring locations or frequencies are planned for the 2016-2017 monitoring year in the San Luis Rey River WMA.

Table 3-12. 2015-2016 Dry Weather Storm Drain Outfall Flow Determinations for the San Luis Rey River WMA

Participating Agency	Persistent	Transient	Dry/No Flow	Grand Total
County of San Diego	7	4	10	21
City of Oceanside	3	8	25	36
City of Vista	2	0	2	4
GRAND TOTAL	**12**	**12**	**37**	**61**

Major storm drain outfalls are prioritized for monitoring based on criteria such as persistence of non-stormwater flow, monitoring data results, and the potential threat to receiving water quality. The highest priority outfalls for each Participating Agency in the WMA for the 2015-2016 monitoring year are shown in Table 3-13. These outfalls are also presented in Figure 3-3, which shows the dry and wet weather storm drain outfall monitoring locations in the San Luis Rey River WMA. The City of Oceanside began the season with five highest priority outfalls and added a sixth outfall (SLR-025) due to dry conditions at the several of the initial five highest priority outfalls.

Table 3-13. Highest Priority Outfalls in the San Luis Rey River WMA During the 2015-2016 Monitoring Year

Participating Agency	Station
County of San Diego	MS4-SLR-041, MS4-SLR-095, MS4-SLR-150, MS4-SLR-152, MS4-SLR-155
City of Oceanside	SLR-005, SLR-008, SLR-015, SLR-025, SLR-035, SLR-036
City of Vista	SLR-01, SLR-03

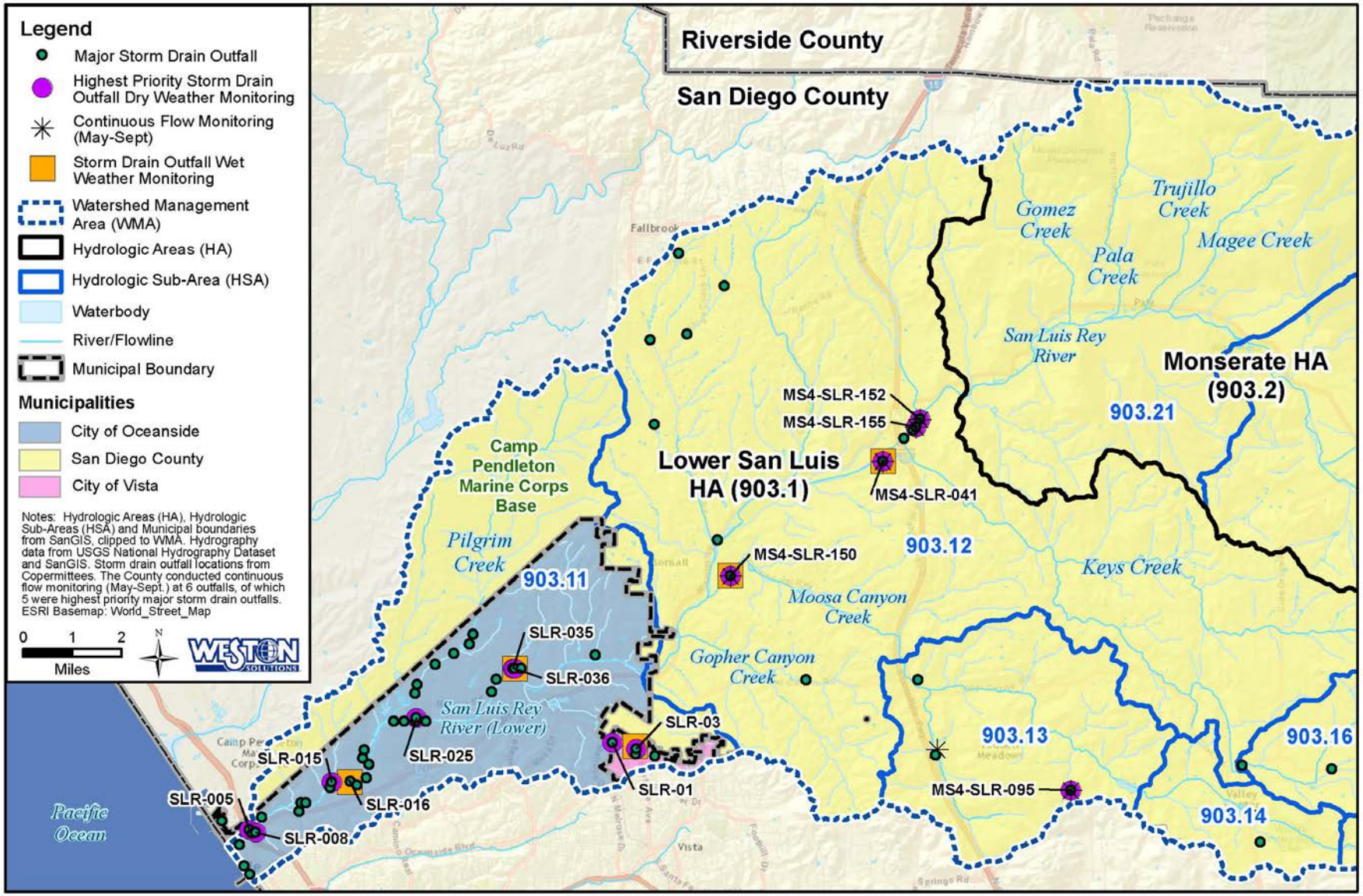

Figure 3-3. 2015-2016 Dry and Wet Weather Storm Drain Outfall Monitoring Locations in the San Luis Rey River WMA

3.2.1.2 Highest Priority Storm Drain Outfall Dry Weather Monitoring

The purpose of highest priority storm drain outfall dry weather monitoring is to evaluate the potential contribution from storm drain outfall discharges to receiving water quality during dry weather and to assess the ability of programs to effectively eliminate non-stormwater discharges to waterbodies or waterways.

The 2015-2016 monitoring year was the first year of dry weather storm drain outfall analytical sampling under the WQIP MAP, and monitoring was conducted at the highest priority outfalls identified for each Participating Agency in the WMA (Table 3-13). These monitored outfalls are shown in Figure 3-3. Two sampling events were conducted at each of the flowing outfalls. Three of the outfalls under the jurisdiction of the City of Oceanside were dry during both visits, and one was dry or ponded during three visits. These outfalls were not sampled due to lack of flow. In addition, one of the outfalls under the jurisdiction of the County of San Diego was dry during the first persistent flow monitoring visit and enough ponded water was available for analytical sampling during the subsequent monitoring visits. Temperature, pH, conductivity, dissolved oxygen, and turbidity were analyzed using field meters. Grab samples were analyzed in the laboratory for constituents contributing to the HPWQC, 303(d) List impairments, TMDLs, stormwater action levels (NALs), and those listed in Table D-7 of the Permit. Visual observations were also recorded.

A summary is provided in Table 3-14 in relation to bacteria in the WMA, and detailed results are presented in Sections 4.2.2 (data) and 4.2.3 (assessments) of Appendix 4. *Enterococcus* concentrations were above the instantaneous maximum (IM) NAL except in both samples from SLR-01 and one of two samples collected at MS4-SLR-095 and MS4-SLR-150. Fecal coliform concentrations were above the IM in approximately half of the samples collected. Both samples from MS4-SLR-095, MS4-SLR-155, and SLR-01 and one of two samples from MS4-SLR-152 and SLR-036 were below the IM. These highest priority outfalls were a specific focus for IDDE investigations (Section 3.2.1.3).

No re-prioritizations of the highest priority outfalls by the City of Vista or County of San Diego are planned for the 2016-2017 monitoring year in the WMA. The highest priority outfalls selected for analytical monitoring in 2015-2016 will continue to be monitored until one of the following conditions outlined in the Permit have been met:

- No flowing or standing water observed over the three most recent consecutive visits.
- No exceedances of NALs.
- Identified as a non-stormwater discharge authorized under a separate NPDES permit.

When an outfall fulfills one of these criteria or the threat to water quality has been reduced (as outlined in the Permit), it will be replaced with the next highest priority outfall on the Participating Agency's list for the WMA. Based on the 2015-2016 monitoring results, the City of Oceanside is updating its outfall prioritization due to changes in outfall flow determinations. SLR-005 and SLR-035, which were dry for three consecutive visits, will be replaced with the next two high priority outfalls, SLR-007 and SLR-025, in the top five high priority outfalls for analytical monitoring in 2016-2017.

Table 3-14. Dry Weather Storm Drain Outfall Discharge Monitoring Analytical Results for Bacteria

Outfall	Date	*Enterococcus* (MPN/100 mL)	Fecal Coliform (MPN/100 mL)	Total Coliform (MPN/100 mL)
NAL – Instantaneous Maximum		**61**	**400**	**NA**
County of San Diego				
MS4-SLR-095	01/19/2016	<2	<20	300
	06/14/2016	**1,700**	<200	30,000
MS4-SLR-150	01/19/2016	<200#	**22,000**	240,000
	06/14/2016	**2,300**	**13,000**	500,000
MS4-SLR-152	12/08/2015	**220**	300	1,300
	06/14/2016	**2,100**	**1,700**	35,000
MS4-SLR-155	12/08/2015	**80**	20	5,000
	06/14/2016	**140**	200	2,400
City of Oceanside				
SLR-025	02/16/2016	**3,200**	**50,000**	110,000
	08/29/2016	**2,020**	**130,000**	>1,600,000
SLR-036	02/16/2016	**75**	40	5,000
	08/02/2016	**19,600**	**2,300**	>1,600,000
City of Vista				
SLR-01	08/04/2016	<10	<20	2,300
	08/16/2016	20	20	7,000
SLR-03	08/24/2016	**2,700**	**24,000**	30,000
	09/19/2016	**>2,420**	**30,000**	160,000

MPN/100 mL – most probable number per 100 milliliters
Bold and shaded results are greater than the Instantaneous Maximum.
< - Results are less than the reporting limit.
#- Reporting limit greater than Instantaneous Maximum benchmark.

Since persistent non-stormwater flows were identified in the storm drain system by each of the Participating Agencies in the WMA, the Participating Agencies are required to calculate or estimate the non-stormwater volumes and pollutant loads collectively discharged from these persistently flowing outfalls to receiving waters, and estimate percent contributions from each known source for each outfall. The Participating Agencies are also required to identify and quantify (i.e., volume and pollutant loads) sources of non-storm water not subject to the Participating Agency's legal authority that are discharged from the major storm drain outfalls, with persistent flow, to downstream receiving waters. Annual discharge volumes and non-stormwater pollutant loads were estimated for the persistently flowing outfalls using instantaneous flow measurements made during field visits and continuous flow data where available. Dry weather visual observation and field investigation data related to known and/or suspected sources of non-stormwater discharge were used to estimate the percent contribution from each source, including suspected sources. The assessment was not limited to known sources given that most of the sources were recorded as suspected.

The estimated annual non-storm water volumes collectively discharged from major storm drain outfalls with persistent non-stormwater flows from each jurisdiction in the San Luis Rey WMA are presented in Table 3-15. Estimated pollutant loads and source percentages are provided in Attachment 4E to Appendix 4.

Table 3-15. 2015-2016 Non-stormwater Flow Estimates for Major Storm Drain Outfalls with Persistent Flow

Participating Agency	No. Persistently Flowing Major Storm Drain Outfalls	Annual Non-Storm Water Discharge (cf)	Annual Average Discharge by Outfall (cf/outfall)
County of San Diego	7	5,945,734	849,391
City of Oceanside	3	322,363	107,454
City of Vista	2	65,122 to 100,061	32,561 to 50,031*

*Range based on SLR-03 discharge for August-September 2016 (56 dry days) since IC/ID discovery, and continuous discharge for the year (298 dry days) to represent the most conservative result, given that the start date of the leak is unknown. Repair work is scheduled. Follow-up assessment is ongoing.

3.2.1.3 Illicit Discharge Detection and Elimination (IDDE) Program

In order to reduce the pollutant loads from the storm drain system to receiving waters, each Participating Agency implements a program to reduce non-stormwater flow into its storm drain system. These programs are designed to meet the requirements of the Permit related to IDDE. Each Participating Agency's IDDE Program is one of the primary programs of their JRMP.

Each Participating Agency's IDDE Program seeks to address and reduce the potential contribution of pollutants from stormwater and non-stormwater discharges. The IDDE Programs seek to achieve the following goals:

- Controlling the contribution of pollutants to and the discharges from the storm drain system within its jurisdiction,
- Effectively prohibiting non-stormwater discharges to the storm drain system, and
- Reducing the discharge of pollutants in stormwater to the maximum extent practicable.

In pursuit of these goals, and in addition to the programmatic elements of the IDDE Programs, the Participating Agencies prioritize outfalls and sources, conduct follow-up investigations, and seek to identify sources of non-stormwater discharges on the basis of the following:

- Field screening visual observations at major storm drain outfalls,
- Non-stormwater monitoring at prioritized outfalls, and
- Reports or notifications of illicit discharges, illicit connections, or other sources of non-stormwater flow (e.g., from hotlines).

In addition to outfall monitoring and associated source investigations, the IDDE programs also include the following components to prevent, identify, and eliminate IC/IDs:

- Educating the local community about prohibited discharges and how to prevent them. During the 2015-2016 fiscal year, this outreach program included working closely with water utilities to educate communities about outdoor water conservation, including preventing irrigation runoff.
- Operating a public complaint phone hotline and website and investigating the complaints received.
- Inspecting industrial/commercial and municipal facilities, construction sites, and residential areas. In addition to identifying and eliminating IC/IDs where applicable, inspectors also proactively educate responsible parties about how to avoid IC/IDs, such as cleaning outdoor areas by sweeping instead of hosing them off.
- Maintaining the storm drain system and sewer system, which provide opportunities to identify unpermitted connections to the storm drain system, cross connections, and other potential sources of IC/IDs.

The IDDE components listed above are described in more detail in Section 4 and in the jurisdictional strategy tables in Appendix 2. The Participating Agencies' JRMP Annual Report forms, also included in Appendix 2, list the total numbers of IC/IDs identified and eliminated through all IDDE program activities during the fiscal year. More details about source investigation and elimination specifically related to the dry weather MS4 outfall monitoring component of the IDDE program are described in greater detail in Appendix 4.

3.2.1.3.1 Dry Weather Storm Drain Outfall Source Identification Results

Source investigations for storm drain outfall monitoring broadly categorize identified sources as "controllable" and "uncontrollable." Uncontrollable sources include natural sources such as groundwater and springs. Controllable and uncontrollable sources are further classified as known and suspected. All but three sources were categorized as suspected; two known sources were groundwater and one was irrigation. The most common source of non-stormwater flow suspected during the Participating Agencies' investigations was irrigation runoff, a controllable source. This flow source includes over-watering of residential and commercial landscaping, and does not include irrigation runoff from agricultural areas, which is regulated by the Regional Board under a separate program and is outside of the jurisdiction of the Participating Agencies. Figure 3-4 shows the known or suspected flow sources identified during the 2015-2016 monitoring year through the Participating Agencies' outfall flow investigations.

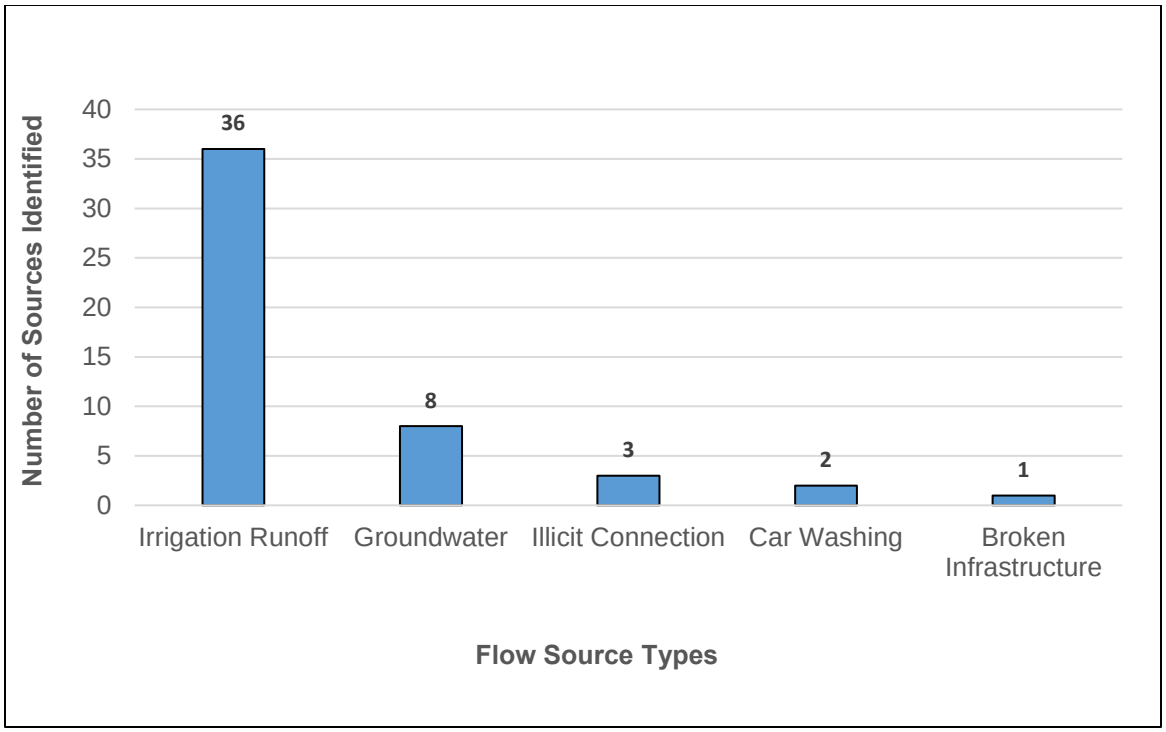

Figure 3-4. Known or Suspected Non-stormwater Flow Sources Identified for Participating Agencies' Outfalls

3.2.1.3.2 Storm Drain Outfall Investigation Details for Participating Agencies

The City of Oceanside conducted five non-stormwater flow source investigations upstream of two priority outfalls and found over irrigation as a known source for flows at one outfall during one visit and rising groundwater as a known source at the other outfall. The City of Vista conducted four non-stormwater flow source investigations upstream of two of its priority outfalls and did not find over irrigation as a source flow; instead, it suspected groundwater seepage, which is an allowable discharge, and a leaking fire hydrant as sources of flow. The County of San Diego conducted 41 non-stormwater flow source investigations upstream of six of its outfalls in the San Luis Rey River WMA, five of which are their highest priority outfalls and one which is not a major storm drain outfall (i.e., less than 36 inches in diameter) but was nonetheless prioritized for an IDDE investigation as it was found to have persistent non-stormwater flow, high concentrations of indicator bacteria in the discharge, and evidence of a potential human source of contamination (see Attachment 4J to Appendix 4). The County found numerous sources of non-stormwater flows draining to these outfalls; over-irrigation was the most common suspected source.

This information is presented in greater detail in Appendix 4, and additional information on these efforts and on other Participating Agencies' activities is provided in Section 4.

3.2.2 Storm Drain Outfall Wet Weather Monitoring

The purpose of storm drain outfall wet weather monitoring is to identify and quantify pollutants in stormwater discharges from the storm drain system, guide pollutant source identification efforts, and track progress in achieving numeric goals set forth in the WQIP. The Participating Agencies' five monitoring locations were chosen to be representative of the Residential, Commercial, Industrial, and typical Mixed-use land uses within the watershed in accordance with the Permit.

Three outfalls were located in the Mission HSA and two were in the Bonsall HSA. This is the first year of storm drain outfall wet weather monitoring in accordance with the WQIP MAP. The prior two years of wet weather monitoring were under the transitional monitoring program with a different list of analytical parameters. The storm drain outfall wet weather monitoring stations for the WMA are presented in Table 3-16 with both the station name used in the wet weather monitoring program and the identifier used by the jurisdiction in their storm drain outfall inventory. The monitored outfalls and their drainage areas are shown in Figure A4-10 in Appendix 4. The locations of outfalls MS4-SLR-1 and MS4-SLR-2 have not been adjusted since the second year of transitional monitoring, and the locations of outfalls MS4-SLR-3, MS4-SLR-4, and MS4-SLR-5 have been unchanged since transitional monitoring began. Therefore, two years of storm drain outfall wet weather monitoring data have now been collected at MS4-SLR-1 and MS4-SLR-2, and three years of data have been collected at MS4-SLR-3, MS4-SLR-4, and MS4-SLR-5.

Table 3-16. Storm Drain Outfall Wet Weather Monitoring Stations

Storm Drain Outfall Name	Jurisdictional Identifier	Participating Agency	HSA Name/No.	Latitude	Longitude
MS4-SLR-1	SLR-036	City of Oceanside	Mission/903.11	33.25583	-117.29243
MS4-SLR-2	SLR-016	City of Oceanside	Mission/903.11	33.22186	-117.34984
MS4-SLR-3	SLR-03	City of Vista	Mission/903.11	33.232546	-117.249591
MS4-SLR-4	MS4-SLR-150	County of San Diego	Bonsall/903.12	33.283702	-117.217033
MS4-SLR-5	MS4-SLR-041	County of San Diego	Bonsall/903.12	33.317871	-117.163833

Monitoring events were conducted in accordance with the WQIP MAP on December 11, 2015 at MS4-SLR-4; on January 5, 2016 at MS4-SLR-1 and MS4-SLR-2; and on January 31, 2016 at MS4-SLR-3 and MS4-SLR-5. Grab samples were collected and analyzed for pH, temperature, conductivity, dissolved oxygen, turbidity, hardness, and indicator bacteria. Composite samples were collected and analyzed for constituents contributing to the HPWQC, 303(d) List impairments, and stormwater action levels (SALs). Observational and hydrologic data were also recorded. The rainfall statistics for these monitored events, based on nearby Alert station gauges, are presented in Table 3-17. The highest event volume was observed at MS4-SLR-5 in the Bonsall HSA, and the highest peak flow was observed at MS4-SLR-2 in the Mission HSA. The lowest event volume and peak flow were observed at MS4-SLR-4 in the Bonsall HSA. Wet weather MS4 flow data are presented in Attachment 4F to Appendix 4.

Table 3-17. 2015-2016 Rainfall Statistics for Storm Drain Outfall Wet Weather Monitoring Events

Date	Outfall Name/ Jurisdictional Identifier	Total Rain (in)	Duration (hours)	Intensity (in/hour)	Antecedent Dry Days	Event Volume (cf)	Peak Flow (cfs)
01/05/2016	MS4-SLR-1/ SLR-036	1.20	7.55	0.16	13	33,644	9.54
01/05/2016	MS4-SLR-2/ SLR-016	1.20	7.55	0.16	13	76,181	14.6
01/31/2016	MS4-SLR-3/ SLR-03	0.55*	7.60*	0.07*	19	30,585*	6.75*
12/11/2015	MS4-SLR-4/ MS4-SLR-150	0.28	3.13	0.09	12	18,516	8.06
01/31/2016	MS4-SLR-5/ MS4-SLR-041	0.68	14.3	0.05	19	84,099	13.4

in – inches cf – cubic feet cfs – cubic feet per second
*Intermittent flow not associated with sampling activities was observed between 02:30 and 04:00 (peak of 0.88 cfs; discharge of 1,520 cf).

A summary is provided below in relation to bacteria, and detailed results are presented in Appendix 4 Section 4.25 (data) and 4.26 (assessments).

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform indicated that the highest concentrations were measured at MS4-SLR-1, located in the Mission HSA (903.11). Concentrations of *Enterococcus* and fecal coliform in stormwater discharges from all five outfalls were above the single sample maximums specified for the Bacteria TMDL (WQBELs discharging to freshwater creeks with REC-1 beneficial use). Results are summarized in Table 3-18. Analytical results for all constituents and the assessments required by the Permit are provided in Appendix 4. The required assessments are also provided in Appendix 4 and its attachments. The land-use based assessment required by the Permit was completed for the third year; a more robust data set was developed for the land-use based assessment of wet weather storm drain outfall discharge, and land-use based event mean concentrations (EMCs) were refined based on three years of monitoring. Details are provided in Appendix 4 and its attachments.

Table 3-18. Storm Drain Outfall Wet Weather Monitoring Analytical Results for Bacteria

Analyte	Single Sample Maximum[1]	MS4-SLR-1 (903.11)	MS4-SLR-2 (903.11)	MS4-SLR-3 (903.11)	MS4-SLR-4 (903.12)	MS4-SLR-5 (903.12)
		SLR-036	SLR-016	SLR-03	MS4-SLR-150	MS4-SLR-041
		1/5/2016	1/5/2016	1/31/2016	12/11/2015	1/31/2016
Enterococcus (MPN/100 mL)	61	**100,000**	**32,000**	**11,000**	**350**	**2,200**
Fecal Coliform (MPN/100 mL)	400	**34,000**	**4,400**	**800**	**500**	**2,400**
Total Coliform (MPN/100 mL)		60,000	60,000	5,400	1,600	2,400

[1] Single Sample Maximum Final Effluent Limitations from Table 6.2c. Regional Water Quality Control Board Order No. R9-2013-0001, Attachment E.
Bold/shaded values do not meet Single Sample Maximum Final Effluent Limitations.
MPN/100 mL – most probable number per 100 milliliters

3.3 SPECIAL STUDIES SUMMARY

Special Studies are conducted to "address pollutant and/or stressor data gaps and/or develop information necessary to more effectively address the pollutants and/or stressors that cause or contribute to highest priority water quality conditions identified in the Water Quality Improvement Plan (Regional Board, 2013)." An overview of the conducted and planned special studies for the watershed for the current Permit term is presented in Table 3-19. Descriptions of the studies and results, where available and applicable to bacteria, are provided below. An assessment of special study results is presented in Appendix 4.

Table 3-19. Special Studies Occurring within the San Luis Rey River Watershed

Monitoring Programs	Dry	Wet	Monitoring Element	Permit Schedule[a]				
				2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
San Diego Regional Reference Streams and Beaches	X		Field parameters, conventionals, bacteria instantaneous flow	2012-2014	●	–	–	–
			Streams only: nutrients, metals, bioassessment, including physical habitat and chlorophyll a		–	–	–	–
		X	Field parameters, conventionals, bacteria		●	–	–	–
			Streams only: nutrients, metals, toxicity, flow and precipitation (duration of storm)		●	–	–	–
San Luis Rey River Microbial Source Tracking Study	X		GIS analysis, visual surveys, flow monitoring, bacteria chemistry, host-specific MST markers, source investigations using CCTV, dye testing, smoke testing	–	–	–	●	●

a. The Permit was adopted on May 8, 2013; the Permit became effective on June 27, 2013.

3.3.1 San Diego Regional Reference Streams and Beaches Studies

From 2014 to 2016, the Participating Agencies participated in the San Diego Regional Reference Streams (Tiefenthaler et al., 2015) and Beaches (Tiefenthaler et al., 2016) Studies, which measured levels of indicator bacteria that account for natural sources to establish the background concentrations, or "reference conditions," for streams or beaches minimally disturbed by anthropogenic activities. This reference system approach results in allocation of allowable exceedance days based on the frequencies of exceedance at reference sites with natural sources of bacteria. The results of these studies support the forthcoming re-evaluation of the Bacteria TMDL and numeric target development for future TMDLs. These studies were intended to provide data to support discussions of reasonable, accurate targets for indicator bacteria at Southern California streams and beaches.

3.3.1.1 Reference Streams Study

This study investigated concentrations of indicator bacteria, nutrients, metals, and conventional constituents occurring naturally at reference streams in minimally disturbed watersheds in

Southern California during wet and dry weather. Although additional constituents were analyzed, the primary focus of the study was indicator bacteria. The study also sought to categorize exceedance frequencies for indicator bacteria by hydrologic, geomorphologic, biotic, and abiotic factors. Human genetic marker results were used to exclude sites and samples with potential human sources of fecal contamination so that observed exceedance rates were not due to human sources of bacteria. Results are presented in detail in the Technical Report (Tiefenthaler et al., 2015) provided as Attachment 4H to Appendix 4 of this Annual Report.

Findings from the study included the following:

- Indicator bacteria concentrations measured during the study were generally below water quality objectives except for *Enterococcus*, and exceedance frequencies were highest during summer dry weather.
- Wet weather EMC exceedance frequencies were low except for *Enterococcus*. The number of events was not sufficient to determine whether relationships exist between the exceedance frequencies and watershed size and/or geology.
- Temperature was the major factor associated with elevated summer dry weather concentrations of indicator bacteria, although total suspended solids (TSS), nutrients, and organic carbon were also positively correlated. No significant relationships between indicator bacteria concentrations and watershed size or geology were observed during dry weather.
- EMC fluxes (flux was calculated as the ratio of mass loading and watershed area) during wet weather were two to three times greater than during dry weather and were comparable to those described in previous studies.

3.3.1.2 Reference Beaches Study

This study investigated concentrations of indicator bacteria occurring naturally at reference beaches during a period of prolonged drought. Results are presented in detail in the Technical Report (Tiefenthaler et al., 2016) provided as Attachment 4I to Appendix 4 of this Annual Report.

Findings from the study included the following:

- Indicator bacteria concentrations and exceedance frequencies during both winter and summer dry weather were low at both monitored beaches. This is consistent with results from previous studies of beaches with blocked estuary inlets or beaches with flowing creeks and no estuary.
- Indicator bacteria concentrations in the estuary or mixing zone associated with both beaches were one to three orders of magnitude greater than those at the corresponding beach, and were higher at San Onofre Creek than Deer Creek. Exceedance frequencies were also higher in the estuary associated with San Onofre Creek compared to the mixing zone associated with Deer Creek. This suggests that dry weather exceedance frequencies may have been greater if the estuary had been open to tidal exchange.
- At both study locations, no significant relationships between indicator bacteria and water temperature, salinity, or antecedent dry days were observed, but indicator bacteria concentrations decreased with the number of antecedent dry days at the San Onofre Creek

beach and increased with the number of antecedent dry days in the associated estuary. Significant positive correlations were found between total coliform concentrations and water temperature, salinity, and antecedent dry days and between *E. coli* and fecal coliform and salinity in the estuary associated with San Onofre Creek. These correlations indicate that freshwater input from the creek dilutes bacteria concentrations. Regrowth of bacteria may have been a factor at this estuary.

- During the single monitored storm event, indicator bacteria exceedances were common in the San Onofre Beach creek and estuary samples, but exceedances were observed at the beach only on the day of the storm. Since all samples associated with this storm event were positive for human genetic marker, results could not be used to determine natural background exceedance frequencies. However, positive human marker results were rare throughout the study overall, indicating that the study locations may be suitable reference sites.

3.3.2 San Luis Rey River Microbial Source Tracking Study

A dry weather microbial source tracking (MST) study was conducted in the San Luis Rey River watershed consisting of a preliminary outfall investigation, a storm drain network investigation, and an evaluation of potential remedial activities. Preliminary findings were reported in the Dry Weather Microbial Source Tracking Study Preliminary Findings Report (December 2015) included in the current report as Attachment 4J to Appendix 4. The findings are summarized below.

The preliminary outfall investigation involved inspections and sampling of storm drain outfalls in the sewered portions of the unincorporated area of San Diego County within the watershed. Of the 130 outfalls investigated, 14 were flowing and were sampled. Human marker was detected at quantifiable levels in samples from three of these 14 flowing outfalls (human marker was detected at a level below the quantification limit at one additional outfall). In addition, dog marker was found in samples from four outfalls, and pig and ruminant markers were found in one sample. Concentrations of fecal coliform and/or *Enterococcus* were above water quality objectives in all but one sample.

The storm drain network investigation involved water sampling for outfalls positive for human marker during the preliminary outfall investigation and visual observations for all outfalls flowing during the preliminary outfall investigation. Indicator bacteria results were elevated in all water samples, but none were positive for genetic markers. Several sources of non-stormwater flow and bacteria were observed, but no potential human sources of bacteria were identified in the vicinity of flowing outfalls. In addition, no illicit connections or leaks were observed during the storm drain network investigation. Irrigation runoff was identified as the most common source of non-stormwater flow, and agriculture discharge was identified as the largest contributor to flow volume.

The evaluation of potential remedial activities resulted in prioritization of several actions to achieve compliance with the Permit during dry weather. These actions included notifying agricultural owners of their pollutant contributing flows and discussing compliance approaches with the Conditional Waiver of Discharges from Agricultural and Nursery Operations, implementing source control measures (e.g., public outreach, ordinance development and enforcement, wildlife access restriction devices, and storm drain cleaning), evaluating the effectiveness of source control measures and identifying remaining flowing outfalls requiring

additional remediation, and eliminating remaining non-stormwater flows using structural best management practices (BMPs) (e.g., wet weather BMPs recommended in the San Luis Rey Comprehensive Load Reduction Plan [CLRP], pervious gutters, catch basin drywells, and green street-type bioretention swales).

Results from this preliminary MST study will be used to support Permit compliance and Bacteria TMDL implementation planning, and may potentially serve as the first step in future Natural Source Exclusion and/or Quantitative Microbial Risk Assessment (QMRA) work. "Next steps" identified in the preliminary MST investigation report include:

- Conduct follow-up outfall investigations.
- Investigate whether recycled water tests positive for human genetic markers, and determine which outfalls may contribute recycled water.
- Conduct the dry weather MST study in the septic served areas of the County of San Diego's jurisdiction in the San Luis Rey watershed.
- Continue to implement special studies that may potentially modify TMDL WQBELs during the TMDL reopener.
- Notify agriculture owners of their pollutant contributing flows and discuss compliance approaches with the Conditional Waiver of Discharges from Agricultural and Nursery Operations.
- Enhance source control measures.
- Develop an ongoing study evaluating the effectiveness of source control measures and monitoring the presence of non-stormwater flows.

4 Implementation and Progress Toward Achieving Numeric Goals

The Permit requires the Participating Agencies to develop specific water quality improvement numeric goals and strategies to address their HPWQC, which is identified as bacteria for the San Luis Rey River WMA.

Each year, the Participating Agencies assess specific water quality data and programmatic information in order to gauge progress towards achieving the numeric goals. These assessments provide information to determine whether intended outcomes are being realized or whether adaptations of Participating Agencies' programs are necessary. This section discusses the strategies that have been implemented during the reporting period, the progress towards achieving specific Permit term goals for the watershed, and provides an overview of proposed modifications to goals, strategies, and schedules. Data collected per the JRMP and MAP, along with the schedules developed in conjunction with each goal, were used to assess goals. Note that the selected strategies necessarily target bacteria in the watershed, but also address other pollutants as well, providing a multi-benefit approach to implementation.

4.1 STRATEGIES AND SCHEDULES

The strategies being implemented by the Participating Agencies are the mechanisms that enable improvements in water quality to achieve the numeric goals outlined in Section 2. The chosen strategies have been identified and selected based on their likelihood of achieving one or more of several of the following outcomes:

- Effectively prohibiting non-stormwater discharges to the storm drain system (dry weather);
- Reducing pollutants in stormwater discharges from the storm drain system to the maximum extent practicable (wet weather); and/or
- Protecting the beneficial uses of receiving waters from storm drain outfall discharges.

Achievement of these outcomes and the success of the strategies will ultimately be measured against the interim and final numeric goals.

4.1.1 Overall Watershed Strategy Implementation Highlights

During FY 2015-2016, the Participating Agencies implemented a broad range of strategies to target bacteria, as well as other constituents such as nutrients and trash. Highlights of some of the strategies being implemented by the Participating Agencies during FY 2015-2016 are described below. Tables presenting all strategies by jurisdiction are presented in Appendix 2.

In the San Luis Rey River WMA, numerous strategies focusing on reducing bacteria from both human and non-human sources were implemented across the watershed and are highlighted below.

- **Preventing discharges of bacteria from human sources to the storm drain system**. Human sources of bacteria are the highest priority from a public health perspective.
  - Sanitary Sewer Overflows (SSOs)
    - Implementation of internal staff training programs to identify and report SSOs to ensure a prompt response.
    - Existing development inspections programs address SSOs through outreach, inspections, and enforcement of ordinances.
  - Leaky Sewer Pipes
    - New monitoring programs focusing on persistent dry weather flows and investigations continue to identify areas where bacteria concentrations are elevated and trigger source investigations.
    - Participating Agencies may prioritize sewer lines repairs with analysis of water quality data.
  - Homeless Encampments
    - Sponsoring periodic trash cleanups along the lower San Luis Rey River, which reduce the impacts of trash and associated bacteria on receiving waters.
    - Coordination with local efforts to curb homeless issues in the region.
  - Failing Septic Systems
    - Residential inspections programs to identify properties with failing septic systems, triggering response and follow up.
    - Coordination with the County Department of Environmental Health for follow-up remediation and enforcement.

- **Preventing discharges of other bacteria sources to the storm drain system**. Non-human sources of bacteria can contribute to overall bacteria loads in our waterways. These sources are important to control as their prevalence makes them an important element of overall bacteria load reduction efforts for the Participating Agencies.
  - Pets
    - Pet waste management and outreach in municipal parks includes posting signs and installation of pet waste bag stations at trailheads. Agency maintained trails often have pet waste stations for use by the public.
  - Wash water
    - Extensive public outreach programs to educate the public about discharge prohibitions and the effect on the environment and to encourage their use of public hotlines to report illegal discharges of wash water.
    - Dry weather monitoring programs designed to focus on unusual flows, investigate their sources, and eliminate the discharge.
  - Livestock
    - The establishment and enforcement of minimum BMPs for existing development where livestock is present.
    - Outreach materials and programs provide information to owners of livestock explaining required BMPs, reasons for their necessity, and ways to implement BMPs properly.

Specific implementation approaches and actions are further described below for each of the Participating Agencies.

4.1.2 City of Oceanside

During FY 2015-2016, the City of Oceanside implemented strategies as described in the WQIP. The full list of strategies implemented is presented in Appendix 2. Notable accomplishments demonstrating progress towards applicable numeric goals related to bacteria during the reporting period are summarized below.

4.1.2.1 Illicit Discharge Strategies - Irrigation Runoff Control (IDDE 1-3, 10, 11)

Based on previously completed field screening of its outfalls in the WMA, the City of Oceanside conducted field reconnaissance in upstream residential areas to identify potential sources of non-stormwater flow into the stormwater system. In order to maximize the ability of City staff to identify these potential sources of non-stormwater flow, the City utilizes meter readers from its Water Department to identify and document runoff from residential irrigation. These staff are working in residential areas for much of their time and have the opportunity to cover large areas of the City's jurisdiction at a pace and level of detail that enables them to observe over-irrigation from residences. During the summer of 2015 the City also hired two part-time code enforcement officers to focus on residential irrigation runoff. The City has enacted drought-related restrictions on landscape irrigation and instances of over-irrigation are documented by the meter readers and followed up on by the City's Code Enforcement Division. During FY 2015-2016, 33 cases of residential irrigation runoff were documented by the meter readers, and 18 of those were in the San Luis Rey River watershed. Properties where irrigation runoff was observed were forwarded to City Code Enforcement so that a notification letter could be sent to the property owner/manager. Code Enforcement used escalated enforcement procedures as necessary for properties with recurrent irrigation runoff.

The City conducted sampling at five priority outfalls during dry weather for the 2015-2016 monitoring year to characterize the non-stormwater discharges flowing into the storm drain system and to further identify potential contributing sources of flow. Based on additional field observations of outfalls identified in the WQIP as persistently flowing, the City changed the classification of four of the five of these outfalls to dry or transient during 2015-2016, and added one new site to the priority list. These changes left the City with two of the five highest priority outfalls in the WMA that are subject to highest priority storm drain outfall dry weather monitoring during 2015-2016. Replacement outfalls with persistent flow will be added to the priority list as needed for the 2016-2017 monitoring year based on outfall field screening data. The monitoring and investigations conducted during 2015-2016 at the two outfalls mentioned above helped determine that irrigation runoff from an upstream apartment complex was a source of flow to one of the outfalls, and rising groundwater was contributing to the other. As groundwater is a natural source of flow that is exempt under the Permit, no further follow up was needed. However, the irrigation runoff case was referred for enforcement and a verbal and written warning were issued which resulted in partial termination of the flow. Subdrainage of irrigation water and other unknown sources may also be contributing flow to this site. The City will continue to monitor the outfall to determine all known and potential sources of non-stormwater discharge.

4.1.2.2 Illicit Discharge Strategies – Sanitary Sewer Line Inspections (IDDE 9, OPT-2)

In an effort to reduce the potential for sewage to leak from the City's sanitary sewer pipes, the City is in the process of using a specially designed 360-degree visualization closed circuit television (CCTV) system to inspect the sanitary sewer system. The City has determined that an effective

strategy under the WQIP to reduce bacteria pollution would be to visually inspect its older vitrified clay pipes (VCP) in the sanitary sewer system which may be prone to leakage, allowing identification of potential problem areas and prioritization of repairs. The City has developed a plan to use a CCTV system to visually inspect 100% of its VCP sanitary sewer lines to look for signs of damage to the pipes where infiltration or exfiltration could occur. During FY 2015-2016, City contractors and staff visually inspected an approximate total of 130 miles of sewer lines across the entire City. Approximately 30 miles of the total footage inspected by CCTV was within the San Luis Rey River watershed. The City of Oceanside's in-house sewer collections crews inspected 98,652 linear feet (18.6 miles) of City-owned sewer lines within the watershed during FY 2015-2016.

4.1.2.3 Illicit Discharge Strategies – Slip Lining Sanitary Sewer Pipes (IDDE 8)

In an effort to minimize the potential for exfiltration from the sanitary sewer system, which could impact surrounding soils, the proximal storm drain system, and/or receiving waters, the City rehabilitated approximately 4,000 feet of sanitary sewer lines with new cured in place pipe (CIPP) liners within its entire jurisdictional area during FY 2015-2016. CIPP provides a new lining of the insides of the sanitary sewer pipes through insertion of a flexible liner pipe into the existing sanitary sewer pipes. The liner is then expanded to fit the old pipe and hardens in place providing a new leak resistant pathway for the sewage to flow. This method of retrofitting old sewer lines extends their service, reduces the potential for exfiltration, reduces sewer pipe replacement costs, and minimizes surface disruption as it requires little if any excavation of the old pipes.

4.1.2.4 Illicit Discharge Strategies – Illicit Discharge/Bacteria Source Control (IDDE 5, 10)

In order to reduce the potential impacts of homeless encampments on water quality, during FY 2015-2016, the City applied for grant funding under the Integrated Regional Water Management Program's Disadvantaged Communities grant programs. If the application is successful, the grant funds will be used to help conduct a survey of homeless citizens to determine what types of incentives could be implemented to assist them in helping to adopt behaviors related to trash and human waste management to help reduce bacteria pollution.

4.1.2.5 Illicit Discharge Strategies – Sanitary Sewer Systems (Strategies IDDE 5, 6, 10)

The City is a member of the San Luis Rey Watershed Council (SLRWC), a non-profit organization of diverse stakeholders who are working together to help restore and maintain the natural resources of the WMA. The SLRWC has been an active group in the watershed for many years and has implemented programs locally which aim to benefit water quality in the watershed. Their efforts have included water use efficiency conservation programs, which seek to help educate citizens about wise use of limited local water supplies. In addition, the SLRWC has provided assistance to homeowners in the Warner Springs community who have experienced problems with their onsite septic systems, which have been identified as potentially significant sources of bacteria if not properly sited and maintained. The SLRWC also installed composting toilets in various locations of the watershed.

4.1.2.6 Existing Development Strategies - Water Conservation Outreach (Strategies ED 1-3, 8)

The City of Oceanside hosted a series of landscaping educational workshops for residential property owners during FY 2015-2016. These workshops focused on helping citizens to

understand watershed concepts which they can mimic on a small scale on their own properties in order to reduce water use and minimize irrigation runoff. The workshops promoted incentives to help homeowners undertake water saving changes such as replacing lawns or inefficient plumbing fixtures and appliances. Turf replacement is an effective tool for reducing residential water consumption, and during FY 2015-2016 more than 31,000 square feet of turf where replaced within the City. Additionally, as part of its irrigation system rebate program, the City provided 36 rebates for water conserving irrigation controllers and 19 rebates for sprinkler retrofits.

4.1.3 City of Vista

During FY 2015-2016, the City of Vista implemented strategies as described in the WQIP. The full list of strategies implemented is presented in Appendix 2. Notable accomplishments by the City in terms of progress towards achieving applicable numeric goals related to bacteria during the reporting period are summarized below.

4.1.3.1 Illicit Discharge Strategies – Identify and report (IDDE 1-7, 10)

In order to help reduce the potential for the discharge of bacteria, the City conducts an extensive program focused on eliminating illegal discharges or connections to its storm drain system. This IDDE program utilizes municipal staff and contractors to identify instances of runoff, spills, or illegal dumping that could pose a threat to water quality. When suspicious discharges are found, the City investigates the nature of the discharge and its potential sources and takes appropriate action to eliminate the discharge. During FY 2015-2016, the City documented five cases of illicit discharges in the WMA. One was a municipal source, one was an unconfirmed residential irrigation discharge, two were residential pool water discharges, and another was a residential sediment discharge. All four discharges that were able to be confirmed were eliminated upon investigation by the City.

4.1.3.2 Illicit Discharge Strategies – Dry weather flow control (IDDE 10)

During the 2015-2016 monitoring year, the City investigated its four major outfalls (SLR-01 through SLR-04) in the WMA in an effort to assess and eliminate non-stormwater flows. SLR-01 was found with persistent non-stormwater flow, and is the subject of an ongoing investigation. The source of its flow appears to be foundation drains discharging groundwater from a local school; however, the City is currently awaiting lab results to help identify the potential source. SLR-02 has been dry during all visits by City staff. SLR-03 has exhibited persistent flow from initially inconclusive sources; numerous field visits with varying degrees of flow have complicated source tracking efforts. However, a concerted effort by City staff suggests the source is a leaking fire hydrant. The hydrant is scheduled for repair, which should eliminate this source of flow. SLR-03 is one of the sites being studied in Vista (Special Study #1), which is intended to characterize persistent flows through the use of continuous flow monitoring equipment and the collection of water quality samples analyzed for the highest priority water quality conditions. Results from the study will be available upon completion. SLR-04 has been dry during investigations under this Permit term.

4.1.3.3 Illicit Discharge Strategies – Sponsor trash collection events (ED5)

During FY 2015-16, the City sponsored a site for the annual Creek to Bay cleanup day (April 23, 2016). City staff supporting the event distributed outreach materials and were available to talk directly with residents about environmental issues. Although the site was within the Carlsbad

WMA, a large number of attendees were members of an organization based within the San Luis Rey WMA. By involving and educating residents from throughout the region, cleanup events like this provide benefits beyond the limits of a particular WMA. Overall, cleanup events provide residents with the inspiration and tools to be stewards of the environment, including any waterways located near their own neighborhoods.

4.1.3.4 Existing Development Strategies - Inspections (ED 1, 12)

Similar to its efforts during FY 2014-2015, the City conducted inspections of industrial and commercial facilities during FY 2015-2016. To facilitate tracking and reporting of BMP compliance at existing development facilities, inspection forms were updated during FY 2015-2016. These revisions also included the addition of trash-related BMPs. The City conducted two municipal facility inspections, two commercial facility inspections, one industrial facility inspection, and five residential inspections in the WMA during FY 2015-2016. One commercial facility violation was found during the inspection, and zero violations were found during the municipal and industrial inspections.

Facilities likely to require a State General Industrial Permit were prioritized for inspection, enabling staff to focus inspections on facilities with an elevated potential to discharge pollutants to stormwater. Following inspections during FY 2014-2015, facilities with violations requiring follow-up were inspected again during FY 2015-2016 (along with additional sites). Although the number of enforcement actions initiated on a citywide basis for industrial and commercial facilities during these two reporting years was similar, the number of violations per site dropped substantially. This demonstrates that focused inspections have proven to be an effective use of City resources. In the upcoming fiscal year, the City plans to initiate an outreach program focused on homeowners associations within Residential Management Areas. The program will target behaviors associated with homeowner maintenance activities that have the potential to generate pollutants, which can impair water quality. This effort will include the distribution and use of bi-lingual outreach materials that were redesigned during FY 2015-2016. These materials include brochures and posters that focus on residential BMPs and the control of fats, oils, and grease (FOG).

4.1.4 County of San Diego

During FY 2015-16, the County of San Diego implemented strategies as described in the WQIP. The full list of strategies implemented is presented in Appendix 2. Notable accomplishments by the County in terms of progress towards achieving applicable numeric goals related to bacteria during the reporting period are summarized below.

4.1.4.1 Illicit Discharge Strategies - Investigation and Elimination (IDDE 1,2,4,5 and 6)

Non-stormwater flow into the storm drain system may be problematic as it can pick up and transport pollutants that have accumulated on land surfaces like roads, driveways, lawns, gutters and sidewalks. These pollutants can include bacteria from sources such as pet waste, illegal dumping, and septic systems, which can wash into the storm drain system, into receiving waters, and ultimately to local beaches. The County has enacted several strategies aimed at the reduction of non-stormwater flows to address bacteria pollution in the San Luis Rey River watershed.

Central to the County's efforts to address bacteria pollution in the WMA are programs designed to investigate and eliminate illicit discharges to the storm drain system, thereby reducing non-stormwater flows. These programs fall under the County's IDDE program, which is one of the primary programs under the JRMP. The IDDE program aims to reduce non-stormwater flow by following a process of steps as follows:

1. Determine where there are non-stormwater flows through the storm drain system by field screening major stormwater outfalls.
2. Prioritize persistently flowing outfalls for further investigation.
3. Investigate which pollutants may be in the flows by sampling the discharged water from the priority outfalls.
4. Identify where the flow is coming from by investigating areas upstream for signs of illicit discharges, like over-irrigation or wash water discharges, or by following up on complaints about illicit flows.
5. Eliminate illicit sources of flow through education, technical assistance, and/or enforcement actions.

Storm drain outfall dry weather monitoring conducted by the County is a key element of the IDDE program. Field screening of outfalls is performed following a standardized County monitoring procedure in which data and observations are recorded using the County's Storm Drain Outfall Visual Observation Field Datasheet. During the 2015-2016 monitoring year, the County conducted dry weather field screening in the WMA at 21 major storm drain outfalls. Storm drain outfall dry weather monitoring including field and analytical water quality sampling was performed at the five highest priority persistent flow outfalls determined through a prioritization/ranking process outlined in the Permit.

In addition to the Permit-required visual screening monitoring of all major storm drain outfalls in the WMA, the County of San Diego conducted visual screening monitoring of non-stormwater flows for all outfalls (including those with diameters less than 36 inches) that have been inventoried. This included all outfalls investigated during the 2015 Microbial Source Tracking Study (provided as Attachment 4J to Appendix 4). During 2015-2016, this screening was conducted approximately once every two months during dry weather. The purpose of this additional effort was to characterize the extent and distribution of non-stormwater discharges from the storm drain outfalls throughout the County of San Diego jurisdictional area subject to the Bacteria TMDL.

Further, the County has performed continuous flow monitoring using level loggers installed at six targeted outfalls during the dry season (May through September). The six outfalls included the five highest priority outfalls (Table 3-13) and one additional outfall (SLR-045) that has been prioritized due to the presence of persistent non-stormwater flow, high concentrations of indicator bacteria, and potential human source of the bacteria as determined during the 2015 Microbial Source Tracking Study (provided as Attachment 4J to Appendix 4). The County is analyzing these data in terms of flow patterns, rates and volumes in an effort to identify potential sources. The County also conducts direct investigations at these outfalls to determine management actions for elimination of non-stormwater flows. These continuous flow data are also used to determine baseline non-stormwater flows for comparison to WQIP pathway 6a goals and to determine non-stormwater flow volumes for assessments required by the Permit.

Supplemental to routine visits, extensive field investigations and discharge reconnaissance for illicit discharges in upstream areas were conducted at the six outfalls (including the County's five highest priority outfalls) to identify and eliminate sources of flow subject to the Participating Agency's legal authority. During 2015-2016, the County performed a total of 35 sources investigations associated with the six sites, making progress towards understanding the sources of these flows. Section 3.2.1.3 and Appendix 4 Section 4.2.4 of this report provide the details of these IDDE investigations, including suspected and known sources and progress made in reducing and eliminating non-stormwater flows. During 2016-2017, the six outfalls will be the subject of focused effort including additional inspections to determine key sources of the flows during the times of peak flow that were detected with the continuous monitoring.

Another program that provided key IDDE-related information during the 2015-2016 monitoring year was Residential Management Area (RMA) inspections conducted in accordance with the Permit within the WMA. RMAs were visited at least once, and investigations were conducted at various times of day to capture different water usage times, including "wee-hours" reconnaissance from 5 to 9 a.m. and 8 a.m. to 8 p.m.

In addition to field reconnaissance looking at surface sources of flow and pollution, the County also worked to find sources within its own stormwater and sewer systems. During FY 2015-2016, the County's Roads Section secured funding for the purchase of new trucks with remote camera systems which can be used to help the IDDE program to investigate conditions inside of underground pipes. These camera systems will be used by County staff to help investigate potential illicit discharges and illicit connections to the storm drain system. Also these camera systems can help locate areas of stormwater and sewer pipes in need of repair that may be leaking water or sewage, and can be sources of both non-stormwater flow and bacteria contamination.

4.1.4.2 Existing Development Strategies - Water Conservation/Partnering (ED 3, 4, 7, and 15, OPT 5)

The County undertakes a number of strategies designed to reduce the contribution of pollutants from existing development within the WMA. In order to track and record many of its efforts related to existing development, the County maintains a database inventory of existing development in the watershed. This database is continually updated with the new information as it becomes available to ensure the accuracy of the County's records and make its use by Staff as efficient and effective as possible.

As a regional leader in water conservation, several of the County's existing development strategies are implemented both independently and in partnership with other agencies to help conserve local water supplies. During FY 2015-2016, these efforts included the County conducting two rain barrel distribution events (Figure 4-1) in partnership with other agencies which provided 55 gallon water collection drums to qualifying local citizens. The County has also worked in partnership with local water agencies, including the San Diego County Water Authority under its WaterSmart campaign, to provide assistance within its jurisdiction on the distribution of water conservation educational materials. This effort has included the promotion of available water conservation rebates and incentives including water efficiency audits and other tools to help save water.

Figure 4-1. Rain Barrel Distribution Event

Through the County's collaboration with a diverse group of partners, the Sustainable Landscapes Program (SLP)[9] was developed to integrate multiple sustainability concepts and resource benefits for residential-scale urban landscapes. The program aims to reduce the amount of potable water applied to the landscape, capture and use rainwater as a resource, and reduce pollutant infiltration into local waterways. The comprehensive approach includes the following:

1. the development of landscape guidelines,
2. residential and professional landscape training courses,
3. technical landscaping assistance including planting and irrigation plans,
4. marketing and outreach
5. financial incentives for turf conversions, and
6. landscape materials provisions, including mulch and compost/compost tea.

During FY 2015-2016, the SLP partners offered free education and training opportunities to over 1,000 homeowners and professionals throughout San Diego County. All training opportunities align with the San Diego SLP Guidelines, which details best practices and recommendations for a watershed approach to landscaping, such as downspout diversion to landscaped areas, Low Impact Development (Site Design BMPs), use of water efficient irrigation equipment, low water use plants and compost and mulch to amend soils for maximum water retention. Financial incentives for turf conversions and discounts on landscape material are scheduled to commence in late 2016.

[9] Information on the San Diego Sustainable Landscapes Program can be found at http://sustainablelandscapessd.org/.

In addition, the County has taken a multi-faceted approach to reduce water consumption and limit non-stormwater flows through collaboration among departments. In response to drought conditions in the region, the County recently implemented a Water Shortage and Drought Response Plan to reduce water use at its facilities. For example, a collaborative effort between the Departments of Parks and Recreation and General Services resulted in installation of synthetic turf at several parks, including Clemmens Lane Park Soccer Field in Fallbrook (Figure 4-2). Since 2009, Parks and Recreation's installation of high-efficiency irrigation heads and smart irrigation controllers was completed in 20 parks county-wide, which has enabled the County to save over 180 millions of gallons of irrigation water. Other measures taken include, but are not limited to, elimination of regularly scheduled exterior window washing at County facilities and identification of parks and facilities with the potential for recycled water connections.

Figure 4-2. Clemmens Lane Park Soccer Field

4.1.4.3 Existing Development Strategies – Outreach/Source Control (ED 6, 7, 8, 10, and 12)

In addition to these water conservation focused efforts, the County has implemented a variety of other programs and strategies which aim to reduce bacteria pollution loads in the San Luis Rey River watershed. This work has included participation in and sponsorship of focused clean up events including the statewide Coastal Cleanup Day and Creek to Bay Cleanup Day. These events both take place at locations throughout the County and focus volunteer trash and debris removal efforts on specific locations. During FY 2015-16, these events, conducted in coordination with I

Love a Clean San Diego (ILACSD), were great successes, removing approximately half a million pounds of debris. These cleanup programs and have been shown to have multiple benefits including:

- removing significant amounts of garbage and debris;
- getting people out into local watersheds to connect with natural places;
- raising awareness about local water quality and the challenges posed to clean water; and
- raising awareness about the County's efforts to keep local waters clean, and the importance of proper disposal of all trash.

Also as part of the ILACSD program, during FY 2015-2016 the County overhauled its outreach presentations for local middle and high schools. These presentations include activities which are engaging and hands-on and help empower students to learn the difference they can make. Topics covered include watershed basics, stormwater pollution, ocean conservation and marine debris, waste reduction and water conservation. The County has also prepared a new outreach effort and materials packet for distribution specifically to homeowners associations, focusing on residential behaviors and pollution sources which will be piloted during FY 2016-2017. The County endeavors to continually update and improve its outreach materials to ensure their accuracy and effectiveness. This includes translating materials into other languages, including Spanish.

Also during FY 2015-2016, the County distributed three water quality related educational door hangers covering the topics of green waste and trash, sediment management, and water conservation (Figure 4-3). All three were designed using principles of community-based social marketing which aims to change selected public behaviors with specific, simple messages.

As the County's websites are also important conduits for the distribution of educational information, outreach materials related to water conservation programs were added to the Project Clean Water and County Department of Public Works websites. These outreach materials were also distributed to the County's water quality list serve of interested citizens who have requested additional information about the County's efforts to protect local waters.

Figure 4-3. Water Conservation Door Hanger

The County is also working to control sources of bacteria before they can enter local waters. One potentially significant source of bacteria is onsite waste treatment systems, including septic systems. If not properly sited or maintained these systems can fail and leak human sewage into the surrounding soils and water bodies. The County is planning to employ new technology that can look for certain kinds of human sewage specific bacteria to help determine the source of bacterial contamination in local water bodies. This process is known as Microbial Source Tracking (MST), and it can help pinpoint failing septic systems or other sources of bacteria loads and may be implemented in the watershed as part of future illicit connection or discharge investigations.

Another potential source of bacteria pollution is poorly managed manure from horses and livestock. In the San Luis Rey River WMA, the County began a program during FY 2014-2015 to conduct evaluations on residential equestrian properties and to provide technical assistance to help reduce the potential for pollution from leaving these properties. Follow up evaluation visits were started during FY 2015-2016, and will likely continue into the next fiscal year. In addition, the County has developed numerous outreach materials designed specifically for horse owners on BMPs that can help reduce bacterial pollution associated with horse ownership. These materials are available for download on the County's website. This type of rural outreach work in the watershed is often done in coordination with the Mission Resources Conservation District (MRCD). MRCD is a state conservation district which is a non-regulatory government agency which provides assistance to local property owners and agencies on effective management of soil and water resources. In the watershed, the MRCD also has conducted removal of giant reed (*Arundo donax*), an invasive weed which takes over creeks and riparian areas, outcompeting native plants such as willows. *Arundo* crowds out native, local plants, destroying wildlife habitat and it consumes large amounts of water which it pulls from the ground as it takes over local creek beds. It is also difficult to remove as it

is very persistent and requires special tools, training and removal techniques which MRCD provides for the benefit of the local environment and local residents.

4.1.4.4 Development Planning Program Strategies – Updated Material/Outreach (DP 1,2,3)

The County is committed to improving training and guidance materials for construction contractors, businesses, and internal staff. The 2007 Low Impact Development (LID) Handbook[10] was updated to better align with the County's Standard Urban Stormwater Mitigation Plan (SUSMP) and Hydromodification Management Plan, and to reflect the most current data on LID approaches and their efficacy. For its distinguished efforts, the County was named the recipient of the 2015 Outstanding Innovation in Green Planning and Design Award by the San Diego Chapter of the California Association of Environmental Professionals (AEP), a non-profit organization established in 1974 and dedicated to enforcing and supporting the California Environmental Quality Act (CEQA). Additionally, the County received a similar award in October 2016 for work done during the fiscal year on development of its Guidance on Green Infrastructure[11], a document outlining tools to uniformly design, install, and maintain LID features in the public right-of-way.

4.2 WATERSHED GOALS

As discussed in Section 2, interim and final numeric goals were established for the watershed as a means of tracking progress in reducing bacteria loads, consistent with Bacteria TMDL and lower San Luis Rey River (WQIP) requirements. These goals are outlined in Chapter 3 of the WQIP and in Appendix 3 of this Annual Report. Each year, the Participating Agencies assess specific water quality data and programmatic information in order to gauge progress towards achieving the numeric goals. These assessments provide information to determine whether intended outcomes are being realized or if adaptations of Participating Agencies' programs are necessary.

Progress toward achieving numeric goals is measured by use of water quality and program activity data collected during the 2015-2016 monitoring year. The WQIP was accepted in February 2016, and none of the outlined goals were scheduled to be achieved during 2015-2016. The Participating Agencies are demonstrating progress towards meeting Bacteria TMDL goals at the San Luis Rey River mouth through the WQIP implementation option presented in Table 3-3 of the WQIP. This option involves the reduction of dry and wet weather bacteria loading from the storm drain system through implementation of non-structural BMPs in order to meet interim, and eventually final, goals. Progress toward meeting bacteria goals for the lower San Luis Rey River is focused on flow elimination at persistently flowing outfalls during dry weather and load reductions in storm drain outfall discharges during wet weather, also through implementation of non-structural BMPs. Tables detailing the Participating Agencies' non-structural BMPs can be found in Appendix 3B of the WQIP. Progress is summarized in Table 4-1 (for the Bacteria TMDL goals) and Table 4-4 (for the lower San Luis Rey River goals) and in the following subsections.

4.2.1 Bacteria TMDL Goals

Interim goals to address the Bacteria TMDL are provided in Tables 3-4 and 3-5 in the San Luis Rey WQIP. A summary of these goals, as applicable to the 2015-2016 monitoring year, is provided in Table 4-1.

[10] http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html
[11] http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html

4.2.1.1 Dry Weather

The final dry weather goal for Compliance Pathway 6a (WQIP implementation) is to eliminate 100% of anthropogenic non-stormwater discharges and accompanying bacteria loads from storm drain outfalls to the receiving water by 2021. The Participating Agencies have established an interim goal for the first Permit term (2013-2018) to reduce by 20% the aggregate flow or the number of persistently flowing outfalls (see WQIP Table 3-4; Compliance Pathway 6a).

The 2015-2016 monitoring year was to be used to establish a baseline for non-stormwater flow. It should be noted that 2015-2016 was similar to other recent monitoring years in that the ongoing drought has resulted in dry conditions in the region. Flow has not been observed at the WMA's mass loading station since 2012-2013. During transitional period and 2015-2016, the Participating Agencies conducted dry weather field screening monitoring at all of their major storm drain outfalls to document the presence of standing or flowing water. These data were used to determine which outfalls have persistent non-stormwater flows and should be prioritized in accordance with the Permit for their potential impact on the quality of receiving waters. These highest priority storm drain outfalls were targeted for additional bi-annual field and analytical monitoring and focused source reduction activities during 2015-2016 in accordance with the Permit. The County also installed continuous flow monitoring equipment in their five highest priority outfalls and in one additional outfall to measure dry season baseline non-stormwater flows and to screen for cyclical trends in these flows. These data were used to determine baseline non-stormwater flows for comparison to WQIP Pathway 6a goals and to determine non-stormwater flow volumes for assessments required pursuant to the Permit. This information will be used to assist the Participating Agencies in reducing or eliminating non-storm water flows through source identification and abatement activities. Additional continuous flow monitoring by other Participating Agencies may be incorporated in the future to further develop the baseline.

Results for the 2015-2016 monitoring year demonstrate that persistent non-stormwater flow was observed at a total of 12 of 61 major storm drain outfalls in the WMA (seven of 21 under the jurisdiction of the County of San Diego, three of 36 under the jurisdiction of the City of Oceanside, and two of four under the jurisdiction of the City of Vista). Therefore, a 20% reduction in the number of persistent outfalls in the WMA would be equivalent to three fewer persistently flowing outfalls by 2018. The mean flow rate as measured at the six outfalls with continuous flow monitoring equipment equaled 15.88 gallons per minute (gpm). These preliminary flows represent a baseline against which progress toward achieving the goal of reducing and effectively eliminating anthropogenic non-stormwater flows from the storm water conveyance system to the receiving waters can be measured. Progress is summarized in Figure 4-4 and Table 4-1.

4.2.1.2 Wet Weather

The wet weather interim goal for the current Permit has two components. In WQIP Pathway 6a, Participating Agencies implement non-structural BMPs to achieve source reduction of bacteria loads from the storm drain outfalls. In WQIP Pathway 6b, the Participating Agencies reduce by 0.3% the baseline bacteria loads from distributed BMPs constructed between 2003 and 2009 during redevelopment (see WQIP Table 3-5; Compliance Pathway 6). These BMPs are outlined and mapped in Appendix E to WQIP Chapter 3. Since these BMPs were implemented to mitigate anticipated development, they are considered as contributing to the pollutant load reductions achieved under the WQIP. The County implemented all planned programmatic BMPs and is on track to achieve the first wet weather goal for the current Permit term. The Participating Agencies

have achieved the second wet weather goal through operation and maintenance of existing distributed BMPs. Progress is summarized in Figure 4-4 and Table 4-1.

Permit Term Goal (2013-2018)	Baseline Estimations Complete	On Track to Meet Goal	Permit-Term Goal Met
Dry Weather Goal: Flow Reduction	✓		
Wet Weather Goal #1: Programmatic BMP Implementation		✓	
Wet Weather Goal #2: Distributed BMP Operation and Maintenance			✓

Figure 4-4. Progress towards Permit Term Bacteria TMDL Numeric Goals at the San Luis Rey River Mouth

Table 4-1. Permit Term Bacteria TMDL Numeric Goals for the San Luis Rey River Mouth (2013-2018)

Permit Term Goal (2013-2018)	Metric	Schedule	Baseline Data	Data Collected/Results	Progress
Dry Weather					
Reduce by 20% the aggregate flow or the number of persistently flowing outfalls.	(1) Reduction of flow volume. OR (2) Number of outfalls with flows mitigated from persistently flowing storm drain outfalls.	Achieve during Permit Term (expires June 27, 2018).	A dry weather flow monitoring study was conducted during 2015-2016 in order to establish the baseline. (1) 11 of total 61 outfalls had persistent non-storm water flows. (2) Mean flow rate at outfalls with continuous flow monitoring equipment was 15.88 gpm.	Dry weather flow data from major storm drain outfalls were collected during the 2015-2016 monitoring year to establish a baseline.	Data from the 2015-2016 monitoring year were used to set a baseline. Future years' data will be compared to that baseline. Baseline may be further refined using additional continuous flow data.
Wet Weather					
Implement programmatic (non-structural) BMPs to achieve source reduction of bacteria loads from the storm drain outfalls.	% bacterial load reduction. Interim compliance is implementation of strategies in accordance with schedule in WQIP.	Achieve during Permit Term (expires June 27, 2018).	$3,835 \times 10^{12}$ MPN during Water Year 1993.	During FY 15-16 the County implemented all planned programmatic BMPs according to the schedule in the WQIP.	The first year of BMP implementation under the WQIP was completed successfully; and the County is on track to achieve the goal via continued BMP implementation through 2018.
Reduce by 0.3% the baseline bacteria loads from distributed BMPs constructed between 2003 and 2009 during redevelopment.	Implementation and maintenance of BMPs. % bacterial load reduction is based on quantitative model.	Achieve during Permit Term (expires June 27, 2018).	$3,835 \times 10^{12}$ MPN during Water Year 1993.	BMPs were constructed between 2003 and 2009 and have continued to be operated and maintained.	The County is on track to achieve the goal via continued BMP operation and maintenance through 2018.

4.2.2 Lower San Luis Rey River Goals

Lower San Luis Rey River goals are focused on improving water quality in storm drain outfall discharges and in the receiving water, with an emphasis on eliminating non-stormwater flows at persistently flowing outfalls. Interim numeric goals for the current Permit term are shown in Table 4-4.

4.2.2.1 Dry Weather

During dry weather, the interim goal identified for the Permit term is a 20% reduction in the number of outfalls with persistent flows or a 20% reduction in aggregate flow from persistently flowing outfalls (see WQIP Table 3-6). Progress will be measured by assessing whether or not flow has been eliminated from 20% of persistently flowing outfalls or by assessing whether flow has been reduced by 20%.

As described in Section 4.2.1.1, to demonstrate progress toward the goal of reducing and eventually eliminating non-stormwater discharges, dry weather monitoring of priority major outfalls was conducted during the 2015-2016 monitoring year to develop a baseline flow rate. Monitoring during 2015-2016 indicated that 12 of 61 major storm drain outfalls in the WMA have persistent non-storm water flows. The mean flow rate at these outfalls, based on continuous flow monitoring equipment, was 15.88 gpm. Progress toward meeting the dry weather interim goal is summarized in Figure 4-6 and Table 4-4.

4.2.2.2 Wet Weather

Lower San Luis Rey River wet weather goals are focused on reducing bacteria loads in storm drain outfall discharges or reducing bacteria concentrations in the receiving water. For wet weather, the final goal to be achieved by 2031 is to reduce bacteria loads cumulatively or at key outfalls by 11.9% or meet the Bacteria water quality objective in the lower San Luis Rey River. The interim goal for the current Permit term is to reduce bacteria loads cumulatively or at key outfalls by 0.3% or to meet bacteria water quality objectives in the lower river (see WQIP Table 3-7). Progress will be measured by comparing bacteria loads per acre to baseline bacteria loads calculated as described below.

4.2.2.2.1 Baseline Calculation

Baseline wet weather bacteria loads were presented in the WQIP as 2.44E+10 MPN/storm/acre for fecal coliform and 1.18E+11 for *Enterococcus.* These baseline loads for San Luis Rey River WMA storm drain outfalls could not be reproduced using the methodology described in Attachment 3K of the WQIP; therefore the baseline values were recalculated to fix the apparent error. The new calculations were made using the same methodology, but with some modifications as described below.

As described in Attachment 3K of the WQIP, the calculations included wet weather data collected at random storm drain outfalls in the WMA during the five years of the 2007 Permit's storm drain outfall monitoring program (WESTON, 2015c). In this program, a grab sample was collected at five randomly-selected storm drain outfall stations within the WMA each year. No continuous flow data were collected during storm events. Therefore, the storm water runoff volume for a standardized storm event (daily precipitation = 0.5 inches) was estimated using hydrology manual

(HM) runoff coefficients based on the land use within the drainage area in order to estimate a pollutant load for the sample. At the completion of the five-year program, there were 27 stations in the WMA with estimated pollutant loads for a 0.5 inch model storm. The load/storm/acre or "flux" was determined by dividing the estimated pollutant load at each station by the drainage area acreage of the station.

The baseline was refined by including only 16 of the 27 stations from the 2007 Permit program in the calculation of average flux. This modification was made due to the difference between the current major storm drain outfall inventory and the original inventory of potential monitoring stations used in the random storm drain outfall program under the 2007 Permit. Some of the stations that were provided on the random list were in fact culverts that are not subsequently included in the major storm drain outfall inventory as advanced under the 2013 Permit. The drainage area sizes of the random program monitored sites varied widely, with some drainage areas appearing to represent large receiving water subwatersheds due to the inclusion of culverts. In an effort to make the monitoring locations more comparable between the 2007 program and 2013 programs, only the stations having drainage areas within the size range of the drainage areas for the current monitoring stations (less than 500 acres) were selected for the baseline estimation. This refinement in the methodology resulted in use of 16 samples from the random study to calculate the baseline, and results are shown below in Table 4-2. The revised baselines are an order of magnitude lower than the WQIP baseline loads of 2.44E+10 MPN/storm/acre for fecal coliform and 1.18E+11 for *Enterococcus*. Therefore, lower flux values will be necessary to demonstrate reductions during the current and future permit terms.

Table 4-2. "Baseline" Calculated Using 16 Storm Drain Outfall Random Program Monitored Stations (Drainage Areas less than 500 acres)

Analyte	Mean (MPN/Storm/Acre)
Fecal Coliform	6.67E+09
Enterococcus	2.02E+10

4.2.2.2.2 Comparison of 2015-2016 Monitoring Data to Baseline

Progress toward reducing storm drain outfall wet weather loads against these new baselines is summarized in Figure 4-6 and Table 4-4. In order to compare the 2015-2016 wet weather monitoring data to the baseline loads, the 2015-2016 monitored concentrations at the five outfalls were multiplied by the estimated runoff for a 0.5 inch storm based on HM coefficients similar to the methods used to estimate storm water volume from the random storm drain outfall stations in the 2007 Permit study. Although flow data were collected as part of the 2015-2016 monitoring program, the storm event loads for comparison to the baseline were calculated for a 0.5 inch storm using HM runoff coefficients rather than the actual monitored amount of rainfall and measured runoff coefficients in order to make the results more comparable to the random program. In general, the HM coefficients are larger than the actual runoff coefficients measured at the five storm drain outfall locations sampled, resulting in estimated storm loads that were generally larger than the actual event loads for a standardized 0.5 inch storm, and making the estimates a lot more conservative when compared to the recalculated baseline loads.

The calculated fecal coliform and *Enterococcus* loads in MPN/storm/acre for each of the five monitored storm drain outfalls is shown in Table 4-3 with a comparison to the arithmetic mean baselines represented as percent difference from baseline. Negative percentages indicate that the 2015-2016 monitoring result was lower than baseline.

Table 4-3. Estimated Loads for 2015-2016 Monitored Storm Drain Outfall Stations Compared to Baseline

Analyte	Station/Jurisdictional Identifier	2015-2016 Load (MPN/Storm/Acre)	Compared to Baseline*
Fecal Coliform	MS4-SLR-1/SLR-036	8.46E+09	27%
	MS4-SLR-2/SLR-016	1.19E+09	-82%
	MS4-SLR-3/ SLR-03	2.17E+08	-97%
	MS4-SLR-4/MS4-SLR-150	1.01E+08	-98%
	MS4-SLR-5/MS4-SLR-041	4.52E+08	-93%
Enterococcus	MS4-SLR-1/SLR-036	2.49E+10	23%
	MS4-SLR-2/SLR-016	8.64E+09	-57%
	MS4-SLR-3/ SLR-03	2.98E+09	-85%
	MS4-SLR-4/MS4-SLR-150	7.08E+07	-100%
	MS4-SLR-5/MS4-SLR-041	4.14E+08	-98%

*Percent change calculated as (2015-2016 Load – Baseline)/Baseline using the arithmetic mean baselines

Given the high variability in bacteria data, the 2015-2016 loads were also compared to the baseline range and distribution, as shown in the box and whisker plot in Figure 4-5. This figure shows the 2015-2016 load/storm/acre results as points for each of the five stations on a box and whisker plot of the random program data used in generating the baseline. This plot shows that the majority of the 2015-2016 samples were below the median load/storm/acre of the storm drain outfall data from the 2007 Permit random wet weather program. MS4-SLR-1 (SLR-036) was the only station with loads above the above the median of the historical data.

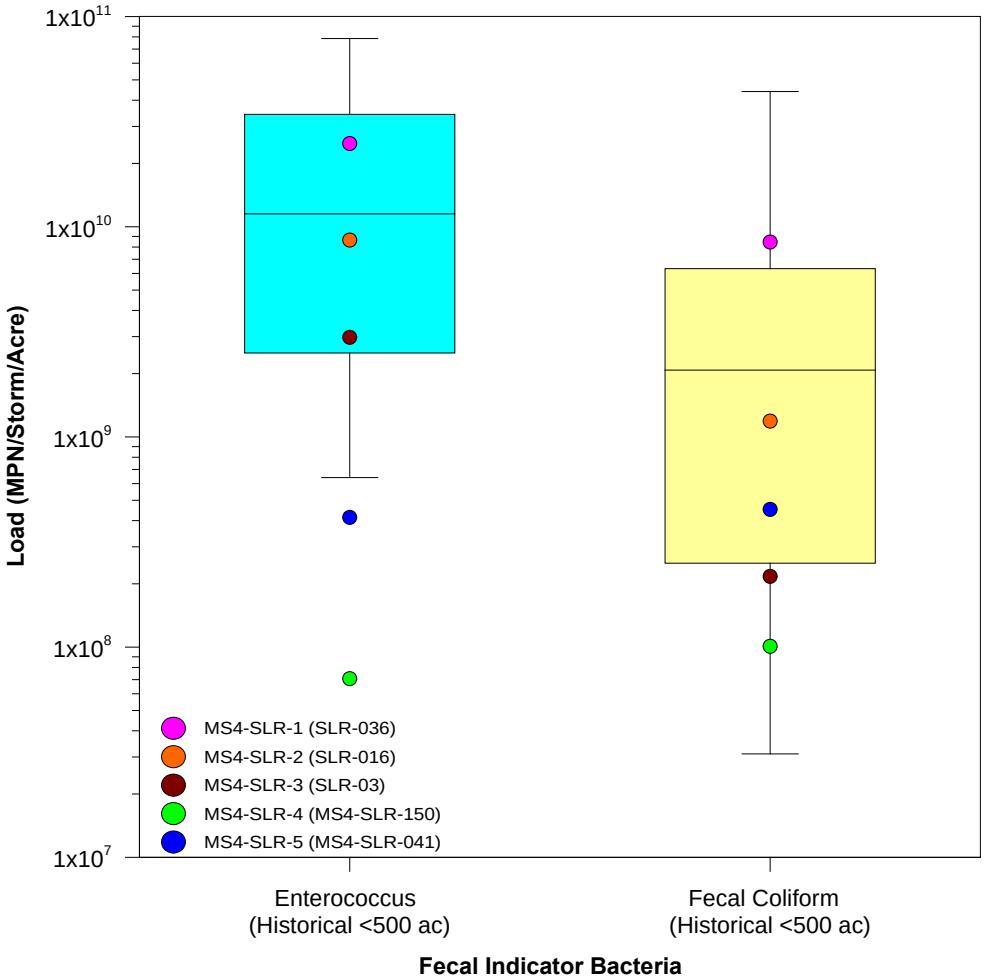

Figure 4-5. Box and Whisker Plot of Baseline Data Compared to 2015-2016 Monitoring Results for Each of the Five Monitored Outfalls

The wet weather goal can also be achieved by meeting the bacteria water quality objectives in the lower San Luis Rey River. Progress was evaluated by comparing bacteria concentrations measured at SLR25 in the lower River to REC-1 water quality objectives. The fecal coliform concentration during the wet weather event achieved the water quality objective, but the *Enterococcus* concentration did not.

Permit Term Goal (2013-2018)	Baseline Estimations Complete	On Track to Meet Goal	Permit-Term Goal Met
Dry Weather Goal: Flow Reduction	✓		
Wet Weather Goal #1: Bacteria Load Reduction from Storm Drain Outfalls		✓	
Wet Weather Goal #2: Meet Bacteria Goals in Lower River		✓	

Figure 4-6. Progress towards Permit Term Lower San Luis Rey River Numeric Goals

Table 4-4. Permit Term Lower San Luis Rey River Numeric Goals for Bacteria (2013-2018)

Permit Term Goal (2013-2018)	Metric	Schedule	Baseline Data	Data Collected/Results	Progress
Dry Weather					
Reduce by 20% the aggregate flow or the number of persistently flowing outfalls.	(1) Presence/absence of dry weather flow at persistent flowing outfalls. OR (2) Dry weather flow measurements at persistently flowing outfalls.	Achieve during Permit Term (expires June 27, 2018).	A dry weather flow monitoring study was conducted during 2015-2016 in order to establish the baseline. (1) 11 of 61 outfalls had persistent non-storm water flows. (2) Mean flow rate at outfalls with continuous flow monitoring equipment was 15.88 gpm.	Dry weather flow data from major storm drain outfalls were collected during the 2015-2016 monitoring year to establish a baseline.	Data from the 2015-2016 monitoring year were used to set a baseline. Future years' data will be compared to that baseline. Continuous flow data are also be analyzed in terms of flow patterns, rates and volumes in an effort to identify potential sources, direct investigations, and determine management actions for elimination of dry weather flows.
Wet Weather					
Reduce bacteria loads cumulatively or at key outfalls (MS4-SLR-1 through MS4-SLR-5 as described in Section 3.2.2) by 0.3%.	Bacteria load reductions per acre at key outfalls (5 wet weather monitoring outfalls) as described in Section 3.2.2).	Achieve during Permit Term (expires June 27, 2018).	Fecal coliform: $2.44*10^{10}$ MPN/storm/acre *Enterococcus*: $1.18*10^{11}$ MPN/storm/acre	Wet weather bacterial loads were calculated from historical data in order to update the baseline. Results indicated: (1) Fecal coliform: $6.67E*10^{9}$ MPN/storm/acre (2) *Enterococcus*: $2.02*10^{10}$ MPN/storm/acre	This goal was partially achieved. See Figure 4-5. Loads from outfalls MS4-SLR-2, MS4-SLR-3, MS4-SLR-4, and MS4-SLR-5 are below the updated baseline loads for both *Enterococcus* and fecal coliform. Loads from MS4-SLR-1 are above the updated baseline loads for both *Enterococcus* and fecal coliform.
OR					
Meet Bacteria water quality objectives in the lower San Luis Rey River.	Bacteria concentrations in the lower San Luis Rey River.	Achieve during Permit Term (expires June 27, 2018).	Water quality objectives for freshwater Single Sample Maxima: Fecal Coliform: 400 MPN/100 mL *Enterococcus*: 61 MPN/100 mL	Compliance with bacteria water quality objectives was evaluated as part of the Monitoring to Assess WQIP Goals, Strategies, and Schedules as described in Section 3.1.4 of this Annual Report. Based on data collected during 2015-2016: (1) The *Enterococcus* result from the single wet-weather event at SLR25 exceeded the objective. (2) The fecal coliform concentration met the objective.	This goal was partially achieved. The fecal coliform water quality objective has been met based on data from the 2015-2016 monitoring year, but the *Enterococcus* water quality objective has not been met.

5 Adaptive Management

This section presents a summary of the potential triggers for adaptation of the WQIP and the results of the adaptive management process for the San Luis Rey River WMA after the 2015-2016 monitoring year, with additional detail provided in Appendix 5.

Adaptive management entails using an iterative approach to re-evaluate the water quality conditions, priorities, numeric goals, strategies, and schedules based on the requirements of the Permit. The adaptive management process details how the Participating Agencies use new data and information to improve the WQIP through updates to priorities, assessments of and adjustments to goals, updates to strategies to meet the latest goals, and updates to the monitoring and assessment program to provide the necessary data to support the process.

Multiple triggers may warrant adaptive management or changes to stormwater program activities, including exceedances of water quality standards in receiving waters, new information, recommendations from the Regional Board, and public participation. Effectiveness assessments of JRMP programs and strategies may also trigger adaptations to the WQIP. The adaptive management process is used in conjunction with water quality and programmatic data to evaluate whether modifications to numeric goals, schedules, and/or strategies are necessary to achieve compliance with the interim and final compliance numeric goals. The timing of the adaptive management requirements is typically either annually or at the end of the Permit term.

5.1 DRIVERS FOR ADAPTIVE MANAGEMENT

The adaptive management process may be triggered when new information becomes available, including results of routine monitoring and special studies, new regulatory drivers, results of program effectiveness assessments and progress towards numeric goals, and recommendations from the public and/or Regional Board. Modifications may be made to the priority water quality conditions, goals, strategies, schedules, and/or the MAP. The potential triggers for adaptation that must be considered annually are summarized in Table 5-1. The assessments related to each of these potential triggers are included in Appendix 5.

With the acceptance of the WQIP in February 2016, the Participating Agencies have been implementing the WQIP for less than a year. Therefore, it is too early in the implementation process to have significant feedback necessary to drive the adaptive management process. Continued and further implementation of strategies and collection of additional monitoring and programmatic data is necessary for an evaluation that leads to meaningful adaptive management. The elements considered in the adaptive management process are identified in the section to follow; however, no changes to the WQIP are recommended at this early stage of implementation.

Table 5-1. Causes for Adaptive Management within the Water Quality Improvement Plan

Trigger	Frequency for Assessment	Potential Area(s) for Adaptation			
		Priority Water Quality Conditions	Goals and Schedules	Strategies and Schedules	Monitoring and Assessment
Exceedances of Receiving Water Limitations	Annual			X	X
Exceedances of Non-stormwater Action Levels or Stormwater Action Levels	Annual			X	X
Special Studies Results	Annual, as results are available		X	X	X
New Regulatory Actions	Annual, as applicable	X	X	X	X
Regional Board Recommendations	Annual, as applicable	X	X	X	X
Program Effectiveness Assessments/ Progress Towards Goals	Annual			X	X

5.2 WATER QUALITY IMPROVEMENT PLAN ADAPTIVE MANAGEMENT

The purpose of this section is to document changes to components of the WQIP, including priority water quality conditions, numeric goals, strategies, and/or schedules, if applicable, based on analyses and findings in this 2015-2016 Annual Report. Supporting information for these modifications are detailed in Appendix 5, if applicable. The potential areas for adaptation were presented in Table 5-1, which also shows the information that may trigger adaptation.

5.2.1 Water Quality Conditions

In accordance with the Permit, the priority water quality conditions within the watershed may be re-evaluated as needed as part of the annual reporting process. PWQCs, HPWQCs, and numeric goals are generally established based on longer periods of record compared to a monitoring year. The assessment of HPWQC would most appropriately be conducted following the collection of sufficient data to make scientifically-based decisions. At earliest, such consideration may be given during the preparation of the ROWD, which is due to the Regional Board in December 2017.

As outlined in Section 5, receiving water and storm drain outfall monitoring results from the 2015-2016 monitoring year supported the identified priority and highest priority water quality conditions as provided in the WQIP, and no modifications are necessary at this time. Further, there have been no new regulatory actions or Regional Board recommendations since the acceptance of the WQIP that would warrant reconsideration of priorities for the WMA through the annual reporting process. The baseline for the wet weather watershed goals for lower San Luis Rey River was revised to both correct the calculation and refine the methodology. This resulted in a lower baseline from which reductions will be measured.

5.2.2 Strategies and Schedules

On an annual schedule, it is more likely that modifications may be made to strategies and implementation schedules. These WQIP components may require updates on a more frequent basis to ensure effective implementation and assessment of progress in reducing pollutant loads and achieving established goals. Evaluation of the current goals, strategies, and schedules is required by the Permit as part of this Annual Report. The information that may be used to modify these elements of the WQIP through adaptive management is summarized in Table 5-2.

No changes to numeric goals or schedules for achieving them as listed in the WQIP are proposed at this time. Minor clarification to the text of two strategies has been proposed and is shown as markup in the jurisdictional strategy tables of Appendix 2. Since the acceptance of the WQIP in early 2016, the Participating Agencies have begun implementing jurisdictional strategies intended to result in achievement of dry and wet weather interim goals for the term of the current Permit. While one year of monitoring data have been collected in accordance with the MAP of the WQIP, only a few months of this time period have been under the accepted WQIP and implementation. These efforts to date have not identified the need for significant changes and, as described in Section 4.1, the Participating Agencies are demonstrating progress in implementing the existing strategies. Additional evaluation will be conducted and reported in the ROWD, due to the Regional Board in December 2017.

Table 5-2. Information Used to Modify Strategies and Schedules

Evidence	WQIP Sections	2015-2016 Status	Changes Triggered (Y/N)
Receiving water monitoring results.	Section 3, Appendix 4	No new information pertaining to receiving water exceedances not addressed by the WQIP.	N
Storm drain outfall monitoring results.	Section 3, Appendix 4	NAL and SAL exceedances are consistent with WMA priority constituents.	N
Special studies results.	Section 3, Appendix 4	Data from these studies will be useful for the re-evaluation of the Bacteria TMDL and to support Permit compliance and Bacteria TMDL implementation planning.	N
New or updated regulations.	Section 5	No new regulatory drivers; adaptive management will be required as new TMDLs are approved and as the Trash Amendments are incorporated into the Permit.	N
Program effectiveness assessments.	Section 5	Additional data will be necessary to supplement 2015-2016 data before program effectiveness can be evaluated.	N
Progress towards achieving numeric goals.	Section 4	Initial results related to program effectiveness indicate that the Participating Agencies have made progress towards meeting each of their dry and wet weather interim goals for the current Permit term.	N

5.2.3 Monitoring and Assessment Plan

Changes to the MAP may be triggered by several factors including:

- Modifications to other elements of the WQIP, including priority water quality conditions, numeric goals and schedules, and/or strategies and schedules.
- Identification of data gaps through the Permit-required assessments.
- Results of special studies.
- Requests/requirements from the Regional Board.

None of these triggers are applicable to the 2015-2016 monitoring year, and adaptive management of the MAP is not required at this time. Modifications not requiring adaptive management include:

- Modifications have been made to the outfall priorities for dry weather monitoring due to highest priority outfalls becoming dry. Further detail is provided in Appendix 5.
- The baseline established to determine progress towards meeting wet weather lower San Luis Rey River bacteria goals was revised (lowered), requiring lower monitored loads to demonstrate load reductions.

Additional assessments are planned for the ROWD, including evaluation of the monitoring data and receiving water limitations.

6 Conclusions

This was the first year of monitoring under the accepted WQIP and its associated MAP. The monitoring performed during 2015-2016 in the San Luis Rey River WMA, which was focused on addressing bacteria as the HPWQC in the WMA, is summarized in Table 6-1. Although the goals and strategies outlined in the WQIP are focused on bacteria, implementation of the chosen strategies are expected to also improve conditions in relation to the PWQCs and other potential contaminants, providing a multi-benefit approach to implementation.

Table 6-1. Monitoring Conducted during 2015-2016 in the San Luis Rey River WMA

Monitoring Element	Related to HPWQC? (Y/N)
Receiving Water Monitoring*	
SMC Regional Monitoring	N
TMDL	Y
Monitoring for Assessment of WQIP Goals and/or Strategies	
Bacteria Monitoring in the Lower San Luis Rey River	Y
Storm Drain Outfall Monitoring	
Field Screening	Y
Dry Weather Monitoring	Y
Wet Weather Monitoring	Y
Illicit Discharge Detection and Elimination	Y
Special Studies	
Reference Streams and Beaches Study	Y
San Luis Rey River Microbial Source Tracking Study	Y

* HMP monitoring was conducted regionally but not in the San Luis Rey River WMA. The objectives and results of the program are summarized in Appendix 4.

A summary of findings and achievements as they pertain to bacteria is presented in Table 6-2. Detailed results and the related assessments required by the Permit are found in the referenced sections of Appendix 4.

Table 6-2. Summary of Findings and Achievements Related to the Highest Priority Water Quality Condition in the San Luis Rey River WMA for the 2015-2016 Monitoring Year

Monitoring Element	Location of Detailed Results	Major Findings and Achievements
Regional Monitoring		
TMDL	Section 3.1.3 Appendix 4 Section 4.1.6	• Interim and final numeric targets are achieved at OC-100 for: o Fecal and total coliform dry and wet season geometric means and wet weather single-sample maximum. o *Enterococcus* dry and wet season geometric means. • Interim and final numeric targets are not being met for the *Enterococcus* wet weather single-sample maximum.
Additional Monitoring for Assessment of Goals and/or Strategies		
Bacteria Monitoring in the Lower San Luis Rey River	Section 3.1.4 Appendix 4 Section 4.1.7	• Based on a single wet-weather event monitored at SLR25, the *Enterococcus* concentration exceeded the bacteria water quality objective, whereas fecal coliform did not. • Based on eight dry weather events monitored, the exceedance frequencies were 100% for *Enterococcus* and 13% (one event) for fecal coliform.
Storm Drain Outfall Monitoring		
Dry Weather Field Screening	Section 3.2.1.1 Appendix 4 Section 4.2.1	• There was no trash or a low presence of trash (less than 50 pieces) during most (83%) of the trash assessments (n = 129) at visited outfalls. • Dry conditions/no flow were observed for 81% of visits conducted by the City of Oceanside, 50% by the City of Vista, and 47% by the County of San Diego. Flow was observed during 6% of the 72 visits conducted by the City of Oceanside, 50% of the 8 visits by the City of Vista, and 34% of the 53 visits by the County of San Diego. • For outfalls with flowing or standing water, more than half (14 of 26 estimations) had flow rates lower than five gallons per minute. • Based on the latest three field visits, the number of dry outfalls increased from 33 to 37, the number of transient outfalls decreased from 18 to 12, and the number of persistent outfalls increased from 8 to 12. • The highest priority outfalls in each jurisdiction were prioritized for dry weather monitoring.
Highest Priority Storm Drain Outfall Dry Weather Monitoring	Section 3.2.1.2 Appendix 4 Section 4.2.2	• Samples collected from most of the monitored outfalls exceeded the NAL (instantaneous maximum) for *Enterococcus* and fecal coliform (HPWQCs in the WMA) and NALs for total nitrogen and total phosphorus (PWQCs in the WMA); this indicates that the HPWQC and PWQCs for the WMA and the highest priority outfalls for the WMA were properly selected. • Data collected during this first monitoring year were used to estimate the non-stormwater volumes and pollutant loads collectively discharged from the major storm drain outfalls with persistent non-stormwater flows in each Participating Agency's jurisdiction.
Storm Drain Outfall Wet Weather Monitoring	Section 3.2.2 Appendix 4 Section 4.2.5	• Samples collected from all five monitored outfalls exceeded the single sample maximum final effluent limitations for *Enterococcus* and fecal coliform. • Building upon the transitional wet weather storm drain outfall program, a more robust data set was developed for the land-use based assessment of wet weather storm drain outfall discharges and land-use based EMCs were refined based on two years of monitoring at MS4-SLR-1 and MS4-SLR-2 and three years of monitoring at MS4-SLR-3, MS4-SLR-4, and MS4-SLR-5.
Illicit Discharge Detection and Elimination Program	Section 3.2.1.3 Appendix 4 Section 4.2.4	• The highest priority outfalls with persistent non-stormwater flow were a focus for IDDE investigations. Irrigation runoff was the most common known or suspected source of non-stormwater flows, followed by groundwater infiltration, an uncontrollable source.
Special Studies		
Reference Streams and Beaches Studies	Section 3.3.1.1 Appendix 4 Section 4.3.1	• These studies measured concentrations of indicator bacteria that account for natural sources to establish the background concentrations, or "reference conditions", for streams and beaches minimally disturbed by anthropogenic activities. Data will support the forthcoming re-evaluation of the Bacteria TMDL and numeric target development for future TMDLs.
San Luis Rey River Microbial Source Tracking Study	Section 3.3.1.2 Appendix 4 Section 4.3.2	• *Enterococcus* concentrations exceeded the water quality objective in all but one of the investigated storm drains. • Genetic indicators of human and/or animal waste were detected in some of the samples collected from the outfalls, but were not confirmed during the network investigations. • No illicit sewer connections or leaks were found. • Results from this preliminary MST study will be used to support Permit compliance and Bacteria TMDL implementation planning, and may potentially serve as the first step in future Natural Source Exclusion and/or Quantitative Microbial Risk Assessment (QMRA) work.
Jurisdictional Programs		
Vary by Jurisdiction	Section 4 Appendix 2	• Participating Agencies in the San Luis Rey River WMA have begun implementing jurisdictional strategies aimed at achieving their interim dry and wet weather goals for the current Permit term and are demonstrating progress. • The Participating Agencies are on track to meet or have already met the Permit-term goals for the watershed.

During FY 2015-2016, the Participating Agencies implemented a broad range of strategies focusing on reducing both human and non-human sources of bacteria across the watershed, as well as other constituents such as nutrients and trash. Human sources of bacteria are the highest priority from a public health perspective, but non-human sources can contribute to overall bacteria loads in waterways and are important to control. Highlights included the following:

- Preventing discharges of bacteria from human sources to the storm drain system by addressing sanitary sewer overflows, leaky sewer pipes, homeless encampments, and failing septic systems.
- Preventing discharges of other, non-human, bacteria sources to the storm drain system through public outreach programs related to pet waste management, discharge of wash water, and livestock.

Strategies implemented by the Participating Agencies were also focused on reduction and elimination of non-stormwater flow, which address not only bacteria but other PWQC in the watershed, including nutrients. These strategies address the final dry weather goal associated with the WQIP Implementation pathway to compliance with the Bacteria TMDL (6a), which is to eliminate 100% of anthropogenic non-stormwater discharges and accompanying bacteria loads from storm drain outfalls to the receiving water by 2021. Strategies by Participating Agency were presented in Section 4.1 and include the following:

- **City of Oceanside**
  - Illicit discharge strategies
    - Irrigation runoff control
    - Sanitary sewer line inspections
    - Slip lining sanitary sewer pipes
    - Illicit discharge/bacteria source control
    - Sanitary sewer systems
  - Existing development strategies
    - Water conservation outreach
- **City of Vista**
  - Illicit discharge strategies
    - Identification and reporting
    - Dry weather flow control
    - Trash collection events
  - Existing development strategies
    - Inspections
- **County of San Diego**
  - Illicit discharge strategies
    - Investigation and elimination
  - Existing development strategies
    - Water conservation/partnering
    - Outreach/source control

Progress made toward achievement of the interim Permit-term watershed numeric goals was measured using water quality and program activity data collected during 2015-2016. The Participating Agencies are making progress toward achieving each of their Permit-term goals.

The WQIP requires implementation of an adaptive management process, used to evaluate whether updates to priorities, assessments of and adjustments to goals, updates to strategies to meet the latest goals, and/or updates to the MAP are necessary. This process may be triggered when new

information becomes available, including results of routine monitoring and special studies, new regulatory drivers, results of program effectiveness assessments and progress towards numeric goals, and recommendations from the public and/or Regional Board. With the acceptance of the WQIP in February 2016, the Participating Agencies have been officially implementing the WQIP for less than a year. Therefore, it is too early in the implementation process to have significant feedback necessary to drive the adaptive management process. Continued and further implementation of strategies and collection of additional monitoring and programmatic data is necessary for an evaluation that leads to meaningful adaptive management. Therefore, no changes to the WQIP are recommended at this early stage of implementation.

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APPENDIX 1

Crosswalk of Permit Requirements and Annual Report References

Appendix 1 – Crosswalk of Permit Requirements and Annual Report References

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
Provision A						
A.4.a.(2)	If ***exceedance(s) of water quality standards persist in receiving waters*** notwithstanding implementation of this Order, the Copermittees must comply with the following procedures: (2) Upon a **determination** by either the Copermittees or the San Diego Water Board that discharges from the MS4 are **causing or contributing to a new exceedance** of an applicable water quality standard **not addressed** by the Water Quality Improvement Plan, the Copermittees must submit the following updates to the Water Quality Improvement Plan pursuant to Provision F.2.c ***or as part of the Water Quality Improvement Plan Annual Report*** required under Provision F.3.b, unless the San Diego Water Board directs an earlier submittal:	Section 5.2			X	X
	(a) The water quality improvement ***strategies being implemented that are effective and will continue to be implemented***,	Section 5.2	X			
	(b) ***Water quality improvement strategies (i.e. BMPs, retrofitting projects, stream and/or habitat rehabilitation projects, adjustments to jurisdictional runoff management programs, etc.) that will be implemented*** to reduce or eliminate any pollutants or conditions that are causing or contributing to the exceedance of water quality standards,	Section 5.2				X
	(c) ***Updates to the schedule for implementation*** of the existing and additional water quality improvement strategies, and	Section 5.2				X
	(d) ***Updates to the monitoring and assessment program*** to track progress toward achieving compliance with Provisions A.1.a, A.1.c and A.2.a of this Order;	Section 5.2				X
Provision B						
B.5.a.	a. The **priority water quality conditions** and potential **water quality improvement strategie**s included in the Water Quality Improvement Plan pursuant to Provisions B.2.c and B.2.e ***may be re-evaluated by the Copermittees as needed during the term of this Order as part of the Water Quality Improvement Plan Annual Report***. Re-evaluation and recommendations for modifications to the priority water quality conditions and potential water quality improvement strategies **must be provided in the Report of Waste Discharge**, and must consider the following: (1) Achieving the outcome of improved water quality in MS4 discharges and receiving waters through implementation of the water quality improvement strategies identified in the Water Quality Improvement Plan; (2) New information developed when the requirements of Provisions B.2.a-c have been re-evaluated; (3) Spatial and temporal accuracy of monitoring data collected to inform prioritization of water quality conditions and implementation strategies to address the highest priority water quality conditions; (4) Availability of new information and data from sources other than the jurisdictional runoff management programs within the Watershed Management Area that informs the effectiveness of the actions implemented by the Copermittees; (5) San Diego Water Board recommendations; and (6) Recommendations for modifications solicited through a public participation process.	Section 5.2			X	X
B.5.b.	b. The water quality improvement goals, strategies and schedules, included in the Water Quality Improvement Plan pursuant to Provisions B.3, ***must be reevaluated and adapted as new information becomes available*** to result in more effective and efficient measures to address the highest priority water quality conditions identified pursuant to Provision B.2.c. ***Re-evaluation of and modifications to the water quality improvement goals, strategies and schedules must be provided in the Water Quality Improvement Plan Annual Report***, and must consider the following:	Section 5.2		X		X
	(1) Modifications to the **priority water quality conditions** based on Provision B.5.a;	Section 5.2				X
	(2) Progress toward **achieving interim and final numeric goals** in receiving waters and MS4 discharges for the highest priority water quality conditions in the Watershed Management Area,	Section 4.2				
	(3) Progress toward achieving outcomes according to established schedules;	Section 4.2				
	(4) New policies or regulations that may affect identified numeric goals;					X
	(5) Measurable or demonstrable reductions of non-storm water discharges to and from each Copermittee's MS4;	Section 3.2			X	
	(6) Measurable or demonstrable reductions of pollutants in storm water discharges from each Copermittee's MS4 to the MEP;	Section 3.2			X	
	(7) New information developed when the requirements of Provisions B.2.b and B.2.d have been re-evaluated;	Section 5.1			X	X
	(8) Efficiency in implementing the Water Quality Improvement Plan;	Section 5.1	X			X
	(9) San Diego Water Board recommendations; and	Section 5.1				X
	(10) Recommendations for modifications solicited through a public participation process.	Section 5				X

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
B.5.c.	c. The water quality improvement monitoring and assessment program, included in the Water Quality Improvement Plan pursuant to Provision B.4, ***must be reevaluated and adapted when new information becomes available***. Re-evaluation and recommendations for modifications to the monitoring and assessment program, pursuant to the requirements of Provision D, ***may be provided in the Water Quality Improvement Plan Annual Report***, but must be provided in the Report of Waste Discharge.	Section 5.1 Section 5.2			X	X
Provision D						
D.1.e.(2)(c)	**Sediment Quality Monitoring** (c) The Copermittees must incorporate a ***Sediment Monitoring Report as part of the Water Quality Improvement Plan Annual Report*** in accordance with the schedule contained in the Sediment Monitoring Plan, unless otherwise directed in writing by the San Diego Water Board Executive Officer. The Sediment Monitoring Report must contain the following information: (i) Analysis: An evaluation, interpretation and tabulation of the water and sediment monitoring data, including interpretations and conclusions as to whether applicable Receiving Water Limitations in this Order have been attained at each sample station; (ii) Sample Location Map: The locations, type, and number of samples must be identified and shown on a site map; and (iii) California Environmental Data Exchange Network: A statement certifying that the monitoring data and results have been uploaded into the California Environmental Data Exchange Network (CEDEN).	N/A			X	
D.2.b.(iv)	**Dry Weather MS4 Outfall Discharge Monitoring** (iv) Each Copermittee must document ***removal or re-prioritization of the highest priority persistent flow MS4 outfall monitoring stations identified under Provision D.2.b.(2)(a) in the Water Quality Improvement Plan Annual Report***. Persistent flow MS4 outfall monitoring stations that have been removed must be replaced with the next highest prioritized major MS4 outfall in the Watershed Management Area within its jurisdiction, unless there are no remaining qualifying major MS4 outfalls within the Copermittee's jurisdiction in the Watershed Management Area.	Section 3.2.1			X	
D.4.b.(1)(a)(ii)	**Non-Storm Water Dischargers Reduction Assessments** (a) Each Copermittee must assess and report the ***progress of its illicit discharge detection and elimination program***, required to be implemented pursuant to Provision E.2, toward effectively prohibiting non-storm water and illicit discharges into the MS4 within its jurisdiction as follows: (ii) Based on the data collected pursuant to Provisions D.2.b, the ***assessments required under Provision D.4.b.(1)(c) must be included in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3).***	Section 3.2.1			X	
D.4.b.(1)(b)	(b) Based on the transitional dry weather MS4 outfall discharge field screening monitoring required pursuant to Provision D.2.a.(2), each Copermittee must assess and report the following: (i) Identify the known and suspected controllable sources (e.g. facilities, areas, land uses, pollutant generating activities) of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area; (ii) Identify sources of transient and persistent flows within the Copermittee's jurisdiction in the Watershed Management Area that have been reduced or eliminated; and (iii) Identify modifications to the field screening monitoring locations and frequencies for the MS4 outfalls in its inventory necessary to identify and eliminate sources of persistent flow non-storm water discharges pursuant to Provision D.2.b.	Section 3.2 Section 5.2			X	X

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
D.4.b.(1)(c)	(c) Based on the **dry weather MS4 outfall discharge field screening monitoring** required pursuant to Provision D.2.b.(1), each Copermittee must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(1)(b); (ii) Based on the data collected and applicable NALs in the Water Quality Improvement Plan, rank the MS4 outfalls in the Copermittee's jurisdiction according to potential threat to receiving water quality, and produce a prioritized list of major MS4 outfalls for follow-up action to update the Water Quality Improvement Plan, with the goal of eliminating persistent flow non-storm water discharges and/or pollutant loads in order of the ranked priority list through targeted programmatic actions and source investigations; (iii) For the highest priority major MS4 outfalls with persistent flows that are in exceedance of NALs, identify the known and suspected sources within the Copermittee's jurisdiction in the Watershed Management Area that may cause or contribute to the NAL exceedances; (iv) Each Copermittee must analyze the data collected pursuant to Provision D.2.b, and utilize a model or other method, to calculate or estimate the non-storm water volumes and pollutant loads collectively discharged from all the major MS4s outfalls in its jurisdiction identified as having persistent dry weather flows during the monitoring year. These calculations or estimates must be updated annually. [a] Each Copermittee must calculate or estimate the annual non-storm water volumes and pollutant loads collectively discharged from the Copermittee's major MS4 outfalls to receiving waters within the Copermittee's jurisdiction, with an estimate of the percent contribution from each known source for each MS4 outfall; [b] Each Copermittee must annually identify and quantify (i.e. volume and pollutant loads) sources of non-storm water not subject to the Copermittee's legal authority that are discharged from the Copermittee's major MS4 outfalls to downstream receiving waters.	Section 3.2.1			X	X
	(v) Each Copermittee must review the data collected pursuant to Provision D.2.b and findings from the assessments required pursuant to Provision D.4.b.(1)(c)(i)-(iv) at least once during the term of this Order to: [a] Identify reductions and progress in achieving reductions in non-storm water and illicit discharges to the Copermittee's MS4 in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction, with an estimate, if possible, of the non-storm water volume and/or pollutant load reductions attributable to specific water quality strategies implemented by the Copermittee; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittee in the Watershed Management Area toward reducing or eliminating non-storm water and pollutant loads discharging from the MS4 to receiving waters within its jurisdiction. (vi) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(1)(c)(i)-(v).	Section 3.2.1 Section 5.1 Section 5.2			X	X
D.4.b.(2)(a)	S**torm Water Pollutant Discharge Reduction Assessments** (a) The Copermittees must assess and report the ***progress of the water quality improvement strategies, required to be implemented pursuant to Provisions B and E, toward reducing pollutants in storm water discharges*** from the MS4s within the Watershed Management Area as follows: (ii) Based on the data collected pursuant to Provisions D.2.c, the ***assessments required under <u>Provision D.4.b.(2)(c)</u> must be included in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).	Section 3.2.2 Section 5.1			X	X
D.4.b.(2)(b)	(b) Based on the transitional wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.a.(3) the Copermittees must assess and report the following: (i) The Copermittees must analyze the monitoring data collected pursuant to Provision D.2.a.(3), and utilize a watershed model or other method, to calculate or estimate the following for each monitoring year: [a] The average storm water runoff coefficient for each land use type within the Watershed Management Area; [b] The volume of storm water and pollutant loads discharged from each of the Copermittee's monitored MS4 outfalls in its jurisdiction to receiving waters within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch; [c] The total flow volume and pollutant loadings discharged from the Copermittee's jurisdiction within the Watershed Management Area over the course of the wet season, extrapolated from the data produced from the monitored MS4 outfalls; and [d] The percent contribution of storm water volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major MS4 outfall to receiving waters or within each major MS4 outfall to receiving waters in the Copermittee's jurisdiction within the Watershed Management Area for each storm event with measurable rainfall greater than 0.1 inch.(ii) Identify modifications to the wet weather MS4 outfall discharge monitoring locations and frequencies necessary to identify pollutants in storm water discharges from the MS4s in the Watershed Management Area pursuant to Provision D.2.c.(1).	Section 3.2.2 Section 5.1			X	X

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
D.4.b.(2)(c)	(c) Based on the wet weather MS4 outfall discharge monitoring required pursuant to Provision D.2.c the Copermittees must assess and report the following: (i) The assessments required pursuant to Provision D.4.b.(2)(b); (ii) Based on the data collected and applicable SALs in the Water Quality Improvement Plan, analyze and compare the monitoring data to the analyses and assumptions used to develop the Water Quality Improvement Plans, including strategies developed pursuant to Provision B.3, and evaluate whether those analyses and assumptions should be updated as a component of the adaptive management efforts pursuant to Provision B.5 for follow-up action to update the Water Quality Improvement Plan; (iii) The Copermittees must review the data collected pursuant to Provision D.2.c and findings from the assessments required pursuant to Provisions D.4.b.(2)(c)(i)-(ii) at least once during the term of this Order to: [a] Identify reductions or progress in achieving reductions in pollutant concentrations and/or pollutant loads from different land uses and/or drainage areas discharging from the Copermittees' MS4s in the Watershed Management Area; [b] Assess the effectiveness of water quality improvement strategies being implemented by the Copermittees within the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters within the Watershed Management Area to the MEP, with an estimate, if possible, of the pollutant load reductions attributable to specific water quality strategies implemented by the Copermittees; and [c] Identify modifications necessary to increase the effectiveness of the water quality improvement strategies implemented by the Copermittees in the Watershed Management Area toward reducing pollutants in storm water discharges from the MS4s to receiving waters in the Watershed Management Area to the MEP. (iv) Identify data gaps in the monitoring data necessary to assess Provisions D.4.b.(2)(c)(i)-(iii).	Section 3.2.2 Section 5.1			X	X
D.4.b.(2)(d)	(d) The Copermittees must evaluate all the data collected pursuant to Provision D.2.c, and incorporate new outfall monitoring data into time series plots for each long-term monitoring constituent for the Watershed Management Area, and perform statistical trends analysis on the cumulative long-term wet weather MS4 outfall discharge water quality data set.	Section 3.2.2			X	
D.4.c.	**Special Studies Assessments** c. The Copermittees must ***annually evaluate the results and findings from the special studies developed and implemented pursuant to Provision D.3***, and assess their relevance to the Copermittees' efforts to characterize receiving water conditions, understand sources of pollutants and/or stressors, and control and reduce the discharges of pollutants from the MS4 outfalls to receiving waters in the Watershed Management Area. The Copermittees must ***report the results of the special studies assessments applicable to the Watershed Management Area, and identify any necessary modifications or updates to the Water Quality Improvement Plan based on the results in the Water Quality Improvement Plan Annual Reports*** required pursuant to Provision F.3.b.(3).	Section 3.3			X	X
D.4.d.	Integrated Assessment of Water Quality Improvement Plan d. As part of the ***iterative approach and adaptive management process*** required for the Water Quality Improvement Plan pursuant to Provision B.5, the Copermittees in each Watershed Management Area must integrate the data collected pursuant to Provisions D.1-D.3, the findings from the assessments required pursuant to Provisions D.4.a-c, and information collected during the implementation of the jurisdictional runoff management programs required pursuant to Provision E to assess the effectiveness of, and identify necessary modifications to, the Water Quality Improvement Plan as follows:	Section 5.1 Section 5.2			X	X
D.4.d.(1)	(1) The Copermittees ***must re-evaluate the priority water quality conditions and numeric goals for the Watershed Management Area, as needed, during the term of this Order pursuant to Provision B.5.a.*** The re-evaluation and recommendations for modifications to the priority water quality conditions, and/or numeric goals and corresponding schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The priority water quality conditions and numeric goals for the Watershed Management Area must be reevaluated as follows: (a) Re-evaluate the receiving water conditions in the Watershed Management Area in accordance with Provision B.2.a; (b) Re-evaluate the impacts on receiving waters in the Watershed Management Area from MS4 discharges in accordance with Provision B.2.b; (c) Re-evaluate the identification of MS4 sources of pollutants and/or stressors in accordance with Provision B.2.d; (d) Identify beneficial uses of the receiving waters that are protected in accordance with Provision D.4.a; (e) Evaluate the progress toward achieving the interim and final numeric goals for protecting impacted beneficial uses in the receiving waters.	Section 5.2			X	X

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
D.4.d.(2)	(2) The Copermittees ***must re-evaluate the water quality improvement strategies for the Watershed Management Area during the term of this Order pursuant to Provision B.5.b.*** The re-evaluation and recommendations for modifications to the water quality improvement strategies and schedules ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. The water quality improvement strategies for the Watershed Management Area must be re-evaluated as follows: (a) Identify the non-storm water and storm water pollutant loads from the Copermittees' MS4 outfalls in the Watershed Management Area, calculated or estimated pursuant to Provisions D.4.b; (b) Identify the non-storm water and storm water pollutant load reductions, or other improvements to receiving water or water quality conditions, that are necessary to attain the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters; (c) Identify the non-storm water and storm water pollutant load reductions, or other improvements to the quality of MS4 discharges, that are necessary for the Copermittees to demonstrate that non-storm water and storm water discharges from their MS4s are not causing or contributing to exceedances of receiving water limitations; (d) Evaluate the progress of the water quality improvement strategies toward achieving the interim and final numeric goals identified in the Water Quality Improvement Plan for protecting beneficial uses in the receiving waters.	Section 5.2	X			X
D.4.d.(3)	(3) The Copermittees ***must re-evaluate and adapt the water quality monitoring and assessment program for the Watershed Management Area when new information becomes available to improve the monitoring and assessment program pursuant to Provision B.5.c.*** The re-evaluation and recommendations for modifications to the monitoring and assessment program ***may be provided in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, but must at least be provided in the Report of Waste Discharge pursuant to Provision F.5.b. Modifications to the water quality monitoring and assessment program must be consistent with the requirements of Provision D.1-D.3. The re-evaluation of the water quality monitoring and assessment program for the Watershed Management Area must consider the data gaps identified by the assessments required pursuant to Provisions D.4.a-b, and results of the special studies implemented pursuant to Provision D.4.c	Section 5.2			X	X
Provision E						
E.1.b.	**b.** With the first ***Water Quality Improvement Plan Annual Report*** *required pursuant to Provision F.3.b.(3),* ***each Copermittee must submit a statement certified by its Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative that the Copermittee has taken the necessary steps to obtain and maintain full legal authority*** within its jurisdiction to implement and enforce each of the requirements contained in this Order.	Cert Statement	X			
E.2.d.(4)	(4) Each Copermittee must submit a ***summary of the non-storm water discharges and illicit discharges and connections investigated and eliminated within its jurisdiction with each Water Quality Improvement Plan Annual Report required under Provision F.3.b.(3)*** of this Order.	Section 3.2.1.3			X	
E.8.c.	**c.** Each Copermittee must submit a ***summary of the annual fiscal analysis with each Water Quality Improvement Plan Annual Report required pursuant to Provision F.3.b.(3)***.		X			
Provision F						
F.1.b.(6)	(6) During implementation of the Water Quality Improvement Plan the Copermittees must ***correct any deficiencies in the Plan identified by the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report*** following a request by the Board to do so.	Section 5.1 Section 5.2				X
F.2.a.(2)	(2) Each Copermittee must update its jurisdictional runoff management program document to incorporate the requirements of Provision E concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the jurisdictional runoff management program document based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report;***		X			X
F.2.a.(3)	(3) Each Copermittee must submit ***updates to its jurisdictional runoff management program, with the supporting rationale for the modifications, either in the Water Quality Improvement Plan Annual Report*** required pursuant to Provision F.3.b.(3), or as part of the Report of Waste Discharge required pursuant to Provision F.5.b	Section 5	X			X
F.2.b.(1)	(1) Each Copermittee must update its BMP Design Manual to incorporate the requirements of Provisions E.3.a-d concurrent with the submittal of the Water Quality Improvement Plan. Each Copermittee must ***correct any deficiencies in the BMP Design Manual based on comments received from the San Diego Water Board in the updates submitted with the Water Quality Improvement Plan Annual Report****;*	Section 5.1	X			
F.2.b.(2)	(2) Any ***future updates to the BMP Design Manual*** made after it update pursuant to Provision F.2.b.(1) is completed must be consistent with the requirements of Provisions E.3.a-d and ***must be submitted as part of the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b; and		X			

Permit Provision	Permit Language	WQIP AR Section	WQIP Appendix			
			Appendix 2 Jurisdictional Information	Appendix 3 Numeric Goals	Appendix 4 Monitoring	Appendix 5 Adaptive Management
F.2.c.(1)(c)	(c) The Copermittees for each Watershed Management Area ***must submit 1) proposed updates to the Water Quality Improvement Plan and supporting rationale, and 2) recommendations received from the public and the Water Quality Improvement Consultation Panel and the rationale for the requested updates, either in the Water Quality Improvement Plan Annual Reports required pursuant to Provision F.3.b.(3)***, or as part of the Report of Waste Discharge required pursuant to Provision F.5.b.	Section 5.2				X
F.3.b.(3)(a-f)	(3) Water Quality Improvement Plan Annual Reports - The Copermittees for each Watershed Management Area must ***submit a Water Quality Improvement Plan Annual Report for each reporting period no later than January 31*** of the following year. The annual reporting period consists of two different periods: 1) July 1 to June 30 of the following year for the jurisdictional runoff management programs, 2) October 1 to September 30 of the following year for the monitoring and assessment programs. The Water Quality Improvement Plan Annual Reports must be made available on the Regional Clearinghouse required pursuant to Provision F.4. Each ***Annual Report must include the following***:	See below				
	(a) The receiving water and MS4 outfall discharge monitoring data collected pursuant to Provisions D.1 and D.2, summarized and presented in tabular and graphical form;	Section 3.1 Section 3.2			X	
	(b) The progress of the special studies required pursuant to Provision D.3, and the findings, interpretations and conclusions of a special study, or each phase of a special study, upon its completion;	Section 3.3			X	
	(c) The findings, interpretations and conclusions from the assessments required pursuant to Provision D.4;	Section 3			X	
	(d) The progress of implementing the Water Quality Improvement Plan, including, but not limited to, the following: (i) The **progress toward achieving the interim and final numeric goals** for the highest water quality priorities for the Watershed Management Area;	Section 4				
	(ii) The water quality improvement **strategies that were implemented and/or no longer implemented by each of the Copermittees during the reporting period and previous reporting periods**;	Section 5.1 Section 5.2	X			X
	(iii) The water quality improvement strategies planned for implementation during the next reporting period;	Section 4.1	X			X
	(iv) Proposed modifications to the water quality improvement strategies, the public comments received and the supporting rationale for the proposed modifications;	Section 5	X			X
	(v) Previous modifications or updates incorporated into the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document and implemented by the Copermittees in the Watershed Management Area; and	Section 5.2	X			X
	(vi) Proposed modifications or updates to the Water Quality Improvement Plan and/or each Copermittee's jurisdictional runoff management program document;	Section 5.2	X			X
	(e) A completed Jurisdictional Runoff Management Program Annual Report Form (contained in Attachment D to this Order or a revised form accepted by the San Diego Water Board) for each Copermittee in the Watershed Management Area, certified by a Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative; and	Section 1	X			
	(f) Each Copermittee must provide any data or documentation utilized in developing the Water Quality Improvement Plan Annual Report upon request by the San Diego Water Board. Any Copermittee monitoring data utilized in developing the Water Quality Improvement Plan Annual Report must be uploaded to the California Environmental Data Exchange Network (CEDEN). Any Copermittee monitoring and assessment data utilized in developing the Water Quality Improvement Plan Annual Report must be available for access on the Regional Clearinghouse required pursuant to Provision F.4.	Section 1			X	
Attachment E						
Attachment E	Specific Monitoring and Assessment Requirements for each TMDL.TMDL monitoring and assessment results must be submitted as part of Water Quality Improvement Plan Annual Reports required under Provision F.3.b	Section 3.1.4			X	

APPENDIX 2

Jurisdictional Runoff Management Program Information

Appendix 2 – Jurisdictional Runoff Management Program Information

The following sections present agency-specific information for the San Luis Rey River Watershed Management Area (WMA), including:

- Annual Report Certifications – included to satisfy the requirements of 40 CFR 122.41(k), which requires that applications, reports, or information submitted to the San Diego Regional Water Quality Control Board (Regional Board), State Water Resources Control Board (SWRCB), or United States Environmental Protection Agency (USEPA) must be signed and certified by a principal executive officer or ranking elected official, or by a duly authorized representative of that person.

- Jurisdictional Runoff Management Program (JRMP) Annual Report Forms – the completed JRMP Annual Report form (Attachment D to the Permit).

- Jurisdictional Strategies – tables present the actual and planned jurisdictional strategies utilized by the Participating Agencies in the San Luis Rey River WMA to address the highest priority water quality condition (HPWQC) (i.e., bacteria). The tables may include strategies currently being implemented and/or planned for implementation, as well as optional jurisdictional strategies. Descriptions of the symbols used are as follows:

  ● = full implementation during the reporting period
  ◖ = partial implementation during the reporting period
  "×" = will not be implemented in the next reporting period

  Modified strategies are designated using "track changes" showing additions (underlined) and removals (strikeouts) of text and an explanation is provided in the "Rationale for Modification to the Strategy" column. New strategies are added as appropriate and are **bold**.

- Modifications to the Best Management Practice (BMP) Design Manual – originally submitted with the Water Quality Improvement Plan (WQIP); deficiencies in the BMP Design Manual noted by the Regional Board are corrected and submitted within this section, if applicable. Future updates will also be included in this section, when applicable.

- Modifications to the JRMP – Itemized in this section or may be provided as an attachment to the JRMP Annual Report Form.

1 County of San Diego

1.1 ANNUAL REPORT CERTIFICATION

County of San Diego

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

LAND USE AND ENVIRONMENT GROUP
1600 PACIFIC HIGHWAY, ROOM 212, SAN DIEGO, CA 92101
(619) 531-6256 • Fax (619) 531-5476
www.sdcounty.ca.gov/lueg

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT SAN LUIS REY RIVER WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the County of San Diego has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 6th day of January, 2017, at the County of San Diego.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer

Date 1/6/17

1.2 ANNUAL REPORT FORM

ATTACHMENT D

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

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JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM

FY 2015-2016

I. COPERMITTEE INFORMATION

I.A Copermittee Name: County of San Diego (PIN 255223)

I.B Copermittee Primary Contact Name: Todd Snyder

I.C Copermittee Primary Contact Information:
Address: 5510 Overland Avenue, Suite 410
City: San Diego County: San Diego State: California Zip: 92123
Telephone: (858) 694-3672 Fax: (858) 495-5623 Email:Todd.Snyder@sdcounty.ca.gov

II. LEGAL AUTHORITY

II.A Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
II.B A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

III.A Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
III.B If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

IV.A Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IV.B.1 Number of non-storm water discharges reported by the public	286
IV.B.2 Number of non-storm water discharges detected by Copermittee staff or contractors	95
IV.B.3 Number of non-storm water discharges investigated by the Copermittee	375
IV.B.4 Number of sources of non-storm water discharges identified	115
IV.B.5 Number of non-storm water discharges eliminated	112
IV.B.6 Number of sources of illicit discharges or connections identified	85
IV.B.7 Number of illicit discharges or connections eliminated	84
IV.B.8 Number of enforcement actions issued	93
IV.B.9 Number of escalated enforcement actions issued	1

V. DEVELOPMENT PLANNING PROGRAM

V.A Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
V.B Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
V.C If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

V.D.1 Number of proposed development projects in review	925
V.D.2 Number of Priority Development Projects in review	237
V.D.3 Number of Priority Development Projects approved	96
V.D.4 Number of approved Priority Development Projects exempt from any BMP requirements	0
V.D.5 Number of approved Priority Development Projects allowed alternative compliance	0
V.D.6 Number of Priority Development Projects granted occupancy	62

V.E.1 Number of completed Priority Development Projects in inventory	410
V.E.2 Number of high priority Priority Development Project structural BMP inspections	691
V.E.3 Number of Priority Development Project structural BMP violations	170
V.E.4 Number of enforcement actions issued	170
V.E.5 Number of escalated enforcement actions issued	0

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016

VI. CONSTRUCTION MANAGEMENT PROGRAM	
VI. A Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
VI.B.1 Number of construction sites in inventory	2,748
VI.B.2 Number of active construction sites in inventory	2,684
VI.B.3 Number of inactive construction sites in inventory	0
VI.B.4 Number of construction sites closed/completed during reporting period	1,124
VI.B.5 Number of construction site inspections	18,858
VI.B.6 Number of construction site violations	416
VI.B.7 Number of enforcement actions issued	590
VI.B.8 Number of escalated enforcement actions issued	38

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM	
VII.A Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
VII.B.1 Number of facilities or areas in inventory	a. 263	b. 1,779	c. 150	d.110
VII.B.2 Number of existing development inspections	a. 1,885	b. 974	c. 38	d.468
VII.B.3 Number of follow-up inspections	a. 23	b. 131	c. 12	d.165
VII.B.4 Number of violations	a. 46	b. 279	c. 31	d.346
VII.B.5 Number of enforcement actions issued	a. 28	b. 130	c. 10	d.0
VII.B.6 Number of escalated enforcement actions issued	a.0	b.1	c.0	d.0

VIII. PUBLIC EDUCATION AND PARTICIPATION	
VIII.A Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
VIII.B Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

IX. FISCAL ANALYSIS	
Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature: Sarah Aghassi

Date: 10/26/16

SARAH E. AGHASSI
Print Name

LAND USE AND ENVIRONMENT GROUP
DEPUTY CHIEF ADMINISTRATIVE OFFICER
Title

(619) 531-5451
Telephone Number

SARAH.AGHASSI@SDCOUNTY.CA.GOV
Email

ATTACHMENT D.1

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FORM BY WATERSHED

JRMP ANNUAL REPORT ATTACHMENT D.1 by WATERSHED

Fiscal Year 2015-2016

			SANTA MARGARITA	SAN LUIS REY	CARLSBAD	SAN DIEGUITO	PENASQUITOS	SAN DIEGO RIVER	SAN DIEGO BAY	TIJUANA RIVER	JURISDICTION TOTALS
			*(902.00)	*(903.00)	*(904.00)	*(905.00)	*(906.00)	*(907.00)	*(908.00, 909.00, 910.00)	*(911.00)	
IV.	**ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM**										
IV.B.1	Number of non-storm water discharges reported by the public		12	46	30	40	2	78	72	6	286
IV.B.2	Number of non-storm water discharges detected by Copermittee staff or contractors		9	11	7	14	1	28	24	1	95
IV.B.3	Number of non-storm water discharges investigated by the Copermittee		15	57	37	51	3	106	99	7	375
IV.B.4	Number of sources of non-storm water discharges identified		4	22	17	11	1	30	28	2	115
IV.B.5	Number of non-storm water discharges eliminated		4	21	16	10	1	30	28	2	112
IV.B.6	Number of sources of illicit discharges or connections identified		4	14	16	8	0	18	23	2	85
IV.B.7	Number of illicit discharges or connections eliminated		4	14	15	8	0	18	23	2	84
IV.B.8	Number of enforcement actions issued		4	21	17	9	1	23	16	2	93
IV.B.9	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	1	1
V.	**DEVELOPMENT PLANNING PROGRAM**										
V.D.1	Number of proposed development projects in review		27	219	109	189	0	158	183	40	925
V.D.2	Number of Priority Development Projects in review		2	53	30	53	0	43	50	6	237
V.D.3	Number of Priority Development Projects approved		4	23	11	21	0	20	11	6	96
V.D.4	Number of approved Priority Development Projects exempt from any BMP requirements		0	0	0	0	0	0	0	0	0
V.D.5	Number of approved Priority Development Projects allowed alternative compliance		0	0	0	0	0	0	0	0	0
V.D.6	Number of Priority Development Projects granted occupancy		2	16	5	8	0	18	12	1	62
V.E.1	Number of completed Priority Development Projects in inventory		12	89	54	85	0	66	93	11	410
V.E.2	Number of high priority Priority Development Project structural BMP inspections		1	100	70	273	0	110	82	55	691
V.E.3	Number of Priority Development Project structural BMP violations		1	43	31	53	0	24	8	10	170
V.E.4	Number of enforcement actions issued		1	43	31	53	0	24	8	10	170
V.E.5	Number of escalated enforcement actions issued		0	0	0	0	0	0	0	0	0
VI.	**CONSTRUCTION MANAGEMENT PROGRAM**										
VI.B.1	Number of construction sites in inventory		63	637	397	636	2	438	513	62	2748
VI.B.2	Number of active construction sites in inventory		60	622	393	627	2	424	496	60	2684
VI.B.3	Number of inactive construction sites in inventory		0	0	0	0	0	0	0	0	0
VI.B.4	Number of construction sites closed/completed during reporting period		20	314	137	235	1	175	219	23	1124
VI.B.5	Number of construction site inspections		245	3655	4473	3934	3	2868	3361	319	18858
VI.B.6	Number of construction site violations		1	50	55	38	0	64	205	3	416
VI.B.7	Number of enforcement actions issued		1	66	64	66	0	104	286	3	590
VI.B.8	Number of escalated enforcement actions issued		1	6	8	9	0	3	9	2	38
VII.	**EXISTING DEVELOPMENT MANAGEMENT PROGRAM**										
VII.B.1	Number of facilities or areas in inventory	a. Municipal	8	23	27	34	4	63	82	22	263
		b. Commercial	154	315	196	210	2	466	410	26	1779
		c. Industrial	15	4	5	22	0	67	36	1	150
		d. Residential	12	11	11	22	1	15	21	17	110
VII.B.2	Number of existing development inspections	a. Municipal	48	181	239	244	41	421	561	150	1885
		b. Commercial	106	155	115	102	0	180	309	7	974
		c. Industrial	1	5	5	12	0	2	13	0	38
		d. Residential	17	55	67	107	2	109	77	34	468
VII.B.3	Number of follow-up inspections	a. Municipal	0	3	0	0	0	2	14	4	23
		b. Commercial	7	10	10	13	0	22	65	4	131
		c. Industrial	1	3	0	2	0	0	6	0	12
		d. Residential	3	22	30	43	0	34	24	9	165
VII.B.4	Number of violations	a. Municipal	0	7	0	1	0	5	26	7	46
		b. Commercial	15	21	25	16	0	51	140	11	279
		c. Industrial	0	7	0	4	0	0	20	0	31
		d. Residential	4	47	59	85	0	70	50	31	346
VII.B.5	Number of enforcement actions issued	a. Municipal	0	2	0	0	0	3	19	4	28
		b. Commercial	10	13	11	7	0	21	65	3	130
		c. Industrial	0	2	0	2	0	0	6	0	10
		d. Residential	0	0	0	0	0	0	0	0	0
VII.B.6	Number of escalated enforcement actions issued	a. Municipal	0	0	0	0	0	0	0	0	0
		b. Commercial	0	0	0	0	0	0	0	1	1
		c. Industrial	0	0	0	0	0	0	0	0	0
		d. Residential	0	0	0	0	0	0	0	0	0

ATTACHMENT D.2

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FISCAL ANALYSIS

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FISCAL ANALYSIS COMPONENT **1**

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FISCAL ANALYSIS COMPONENT

1.1. Introduction

This section presents an estimated annual budget for the County's runoff management programs for FY 2015-16.

1.2. Fiscal Analysis Methods

This section continues to utilize the methodologies and standards established in *Fiscal Analysis Method* submitted by the Copermittees in January 2009.

1.3. Fiscal Analysis Results

As shown the County estimated its total FY 2015-16 expenditures at $27,414,216. This fiscal analysis addresses each of the County's Runoff Management Program elements (jurisdictional, watershed, and regional activities) for the current reporting period (FY 2015-16). Expenditures are described by department and major program area. They represent an estimate of the expenditures that the County incurred in meeting its compliance obligations for FY 2015-16. They should not be interpreted as either budgeted or actual expenditures. Because stormwater program expenditures are distributed throughout a considerable number of County programs, a single consolidated "budget" does not exist for the program as a whole. As such, these figures should be considered best estimates of stormwater-related expenditures.

1.3.1 Expenditures

1.3.1.1. Jurisdictional

Table 1.1 presents the County's estimated jurisdictional expenditures for FY 2015-16.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
1	**ADMINISTRATION**	**$6,840,583**	These costs correspond to the DPW WPP development, administrative oversight, and assessment of the County's stormwater programs. The WPP is responsible for the development of new and augmented County stormwater programs, regulatory reporting, and program assessment. Some administrative costs are associated with other specific functions shown below, but are included here because they could not be separated out.
2	**DEVELOPMENT PLANNING**	**$1,109,654**	
A	**Land Use Planning**	$0	Expenditures not reported for FY 2015-16; included in other elements.
B	**Environmental Review**	$0	Expenditures not reported for FY 2015-16; included in other elements.
C	**Development Project Approval and Verification**	**$1,109,654**	
C1	**Public Projects (CIP)**	$824,219	
	Project Planning and Engineering	$570,229	Costs include: preparing and reviewing plans and specifications for stormwater BMPs, and SWPPP/WPCP review. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$15,000	
	BMP Implementation	$238,990	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
C2	**Private Projects**	$285,435	
	Permitting and Licensing	$285,435	This cost covers PDS plan reviews at permitted sites. Total costs are estimated as fixed percentages of annual plan-checking fees.
3	**CONSTRUCTION**	**$4,500,593**	
A	**Public Projects (CIP)**	$2,886,893	Costs include: BMP compliance inspections during construction, and implementation of construction phase BMPs. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$1,613,880	
	BMP Implementation	$1,273,013	
B	**Private Projects**	$1,613,700	
	Compliance Inspection and Enforcement	$1,613,700	This cost primarily covers DPW and PDS construction inspections at permitted sites. Total costs are estimated as fixed percentages of inspection program fees.
4	**MUNICIPAL**	**$7,572,297**	
A	**Administration**	$267,805	Expenditures associated with the administrative oversight of the stormwater programs, regulatory reporting, and program assessment of municipal facilities by the DPW - Watershed Protection Program.
B	**Streets, Roads, and Highways Element**	$2,256,091	
	Administration	$291,160	Founded road operations activities include: culvert inspections and cleaning;

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
	Maintenance Inspections	$1,890,813	increased culvert waste disposal costs, street sweeping, installation and maintenance of BMPs and road structures, and the placement of additional controls. 10% of the Maintenance and Inspections and BMP Implementation is reported as Administration cost.
	BMP Implementation	$74,118	
	Other	$0	
C	**MS4 Element**	$1,530,000	
	Administration	$191,000	The combined costs shown here apply across (1) DPW Flood Control -- conversion of existing concrete lined channels to natural bottom channels, updating flood control master plans, increased maintenance of flood control systems, and construction and maintenance of regional treatment BMPs; and (2) DPW Flood Control MS4 Operation & Maintenance -- maintenance on flood control facilities throughout the unincorporated areas of the County, exclusive of facilities within road rights-of-way (included in 4.B above). Other includes the cost of disposal of debris removed from MS4.
	Maintenance Inspections	$1,046,900	
	BMP Implementation	$290,500	
	Other	$2,500	
D	**Solid Waste Facilities Element**	$406,618	
	Administration	$35,047	Costs include Regional Board stormwater permit fees, consultant costs associated with stormwater upgrade and repair projects, and office staff time.
	Maintenance Inspections	$16,922	Costs include staff time to perform site inspections.
	BMP Implementation	$79,149	Costs include stormwater consultant site inspections, sampling/testing and BMP materials.
	Other (construction)	$275,500	Drainage improvement projects and BMP site maintenance projects.
E	**Wastewater Facilities Element**	$187,000	
	Administration	$10,000	This includes costs associated with JRMP report, the sanitary sewer system and facilities including: pump stations, sewage treatment plants and Spring Valley Operations facility. Also includes the cost of BMP design, acquisition,
	Maintenance Inspections	$127,000	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$50,000	maintenance and monitoring, for wastewater Capital Improvement Projects, and Major maintenance projects, and at various wastewater facilities.
	Other	$0	
F	**Road Stations Element**	$919,867	
	Administration	$83,624	This includes DPW road station operations related to Permit compliance. The Administration cost is determined as 10% of the total costs of maintenance and Inspections and BMP Implementation as reported by the DPW Roads Divisions.
	Maintenance Inspections	$799,414	
	BMP Implementation	$36,829	
	Other	$0	
G	**Fleet Maintenance Element**	$11,722	
	Administration	$1,036	This includes costs associated with operation of the County's fleet maintenance and fueling facilities.
	Maintenance Inspections	$7,392	
	BMP Implementation	$3,294	
	Other	$0	
H	**Municipal Airfields Element**	$338,110	These costs involve site inspections, annual reporting, and maintenance of BMPs at airports, including oversight of tenant operations. The BMP implementation item includes Palomar asphalt cap repairs.
	Administration	$12,737	
	Maintenance Inspections	$0	
	Compliance Inspection and Enforcement	$0	
	BMP Implementation	$300,623	
	Other (sampling and analysis)	$24,750	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
I	**Parks & Recreational Facilities Element**	$1,214,562	
	Administration	$121,362	This includes: coordinating all training requirements, preparing and reviewing reports, and overseeing the overall implementation of the stormwater program for DPR.
	BMP Implementation	$991,603	This includes costs associated with implementation of BMPs at County parks.
	Compliance Inspection and Enforcement	$101,597	Costs are for DPR enforcement of stormwater requirements at County parks.
	Other	$0	
J	**Office Buildings & Other Municipal Facilities Element**	$297,867	
	Administration	$0	DGS conducts a variety of storm water activities including: inspections and clean-up of County-owned, occupied, and leased facilities and vacant lands; maintenance and signage of storm drain inlet inserts and trash dumpsters; placement of inlet filters; maintenance of coverage and containment improvements for on-site supplies and materials; parking lot sweeping and controlled parking lot power washing; and application of erosion and sediment control measures. These costs are exclusive of fleet maintenance and fueling operations.
	Maintenance Inspections	$99,808	
	BMP Implementation	$198,059	
	Other	$0	
	Management of Pesticides, Herbicides, & Fertilizers	$142,656	
	Administration	$142,656	Integrated Pest Control Program within the Department of Agriculture, Weights and Measures (AWM) performs eradication and control of invasive weeds. This program also provides weed control on roadsides, airports, flood control channels,
	Maintenance Inspections	$0	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

	Jurisdictional Worksheet Component		Explanation/Notes
	BMP Implementation	$0	sewage treatment plants and inactive landfills. It also provides structural pest control to facilities owned and operated by the county.
	Other	$0	
5	**INDUSTRIAL and COMMERCIAL**	**$1,575,635**	
	Administration	$253,047	DPW and AWM conduct inspections of a variety of businesses in the unincorporated County, provide regulatory oversight of mobile businesses, and conduct follow-up and enforcement of stormwater violations.
	Compliance Inspection and Enforcement	$1,245,279	
	Educational Outreach	$77,309	
	Other expenditures	$0	
6	**RESIDENTIAL**	**$1,205,386**	
	Compliance Inspection and Enforcement	$688,453	DPW conducts complaint investigations for residential sources in the unincorporated County, and conduct follow-up and enforcement of stormwater violations. DPW also operates a regional hotline.
	Educational Outreach	$516,933	Several County departments coordinate and provide outreach to the residential sector and schoolchildren in support of Permit Section D.5 requirements. Costs reported here correspond to DPW only. Funded activities include developing pollution prevention content and providing direct outreach to various target audiences within the general residential and schoolchildren target audiences.
7	**IDDE**	**$321,523**	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2015-16

Jurisdictional Worksheet Component			Explanation/Notes
		$321,523	DPW conducts monitoring programs, assesses scientific data, and provides technical and scientific support to other County program staff. They also provide support for all technical and scientific aspects of JRMP development and implementation. These costs are exclusive of the regional monitoring program which is addressed separately under regional costs.
8	**EDUCATION**	**$0**	Education costs are included in other sections as applicable.
9	**PUBLIC PARTICIPATION**	**$0**	Public participation costs are included in other sections as applicable.
10	**SPECIAL INVESTIGATIONS**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.
11	**NON-EMERGENCY FIREFIGHTING**	**$0**	Expenditures not reported for FY 2015-16; included in other elements.

$23,125,671

1.3.1.2 Watershed

Table 1.2 presents the County's estimated watershed expenditures for FY 2015-16.

Table 1.2 – Estimated Watershed Expenditures for FY 2015-16

	Santa Margarita WMA	San Luis Rey WMA	Carlsbad WMA	San Dieguito WMA	Peñasquitos WMA	San Diego River WMA	San Diego Bay WMA	Tijuana WMA
Administration	$37,583	$201,492	$82,653	$113,035	$75,309	$105,117	$37,583	$75,309
Cost Share Contribution	$0	$62,494	$46,204	$8,885	$1,062	$68,970	$6,659	$2,346
Watershed Activities	$626,917	$119,390	$14,860	$171,640	$26,423	$125,705	$111,491	$80,300
Other	$0	$0	$0	$0	$0	$0	$0	$0
Total Estimated Watershed Costs	**$664,500**	**$383,376**	**$143,717**	**$293,560**	**$102,794**	**$299,792**	**$155,733**	**$157,955**

1.3.1.3 Regional

Table 1.3 presents the County's estimated regional expenditures for FY 2015-16. This includes only those expenditures associated with the Copermittees' adopted Regional Budget and Work Plan. Other costs associated with regional participation (meeting attendance, etc.) are included within the jurisdictional expenditures presented above.

Table 1.3 – Estimated Regional Expenditures for FY 2015-16

Regional Programs	County Costs
Administration	$0
Cost Share Contribution	$2,087,118
Regional Activities	$0
Other	$0
Total Estimated Regional Costs	**$2,087,118**

1.3.1.4 Total Expenditures

Table 1.4 presents the County's total estimated expenditures for FY 2015-16 (jurisdictional, watershed, and regional).

Table 1.4 – Total Estimated County Expenditures for FY 2015-16

Component / Sub-component	Estimated Expenditures
Jurisdictional	
Administration	$6,840,583
Development Planning	$1,109,654
Construction	$4,500,593
Municipal	$7,572,297
Industrial And Commercial	$1,575,635
Residential	$1,205,386
IDDE	$321,523
Education	$0
Public Participation	$0
Special Investigations	$0
Non-emergency Firefighting	$0
Jurisdictional Total	**$23,125,671**
Watershed	
Santa Margarita WMA	$664,500
San Luis Rey WMA	$383,376
Carlsbad WMA	$143,717
San Dieguito WMA	$293,560
Peñasquitos WMA	$102,794
San Diego River WMA	$299,792
San Diego Bay WMA	$155,733
Tijuana WMA	$157,955
Watershed Total	**$2,201,427**
Regional	**$2,087,118**
Total Estimated County Costs	***$27,414,216***

1.3.2 Funding Source

Table 1.5 shows the major sources of funding for the County's urban runoff management programs in FY 2015-16, and describes the legal restrictions applicable to the use of each.

Table 1.5 – Legal Restrictions on the Use of Program Funding

Funding Source	Legal Restrictions
General Fund	There are no restrictions on the use of general fund for County water quality programs and activities except that they must be used only for the purposes for which they are budgeted and allocated by the County Board of Supervisors.
Flood Control District Fees	Revenue generated from these fees must be expended for activities related to flood and storm management.
Developer Deposits / Permit Fees	Deposits / fees may be used only to fund activities related to the work for which the permits are issued.
Gas Tax	Gas Tax is collected by the state and allocated to local government for transportation-related work including maintenance of existing transportation systems and construction of new transportation facilities. These funds may not be used for other purposes.
Sanitary District Fees	Sanitary District Fees are used for work related to the maintenance of sewer lines, pump stations, force mains, and several treatment plants that serve the unincorporated areas. They may be used only for such maintenance-related purposes within the respective sewer district for which they are collected.
Other Funding Sources	Other funding sources collectively account for a relatively small portion of ongoing expenditures. However, all funding for the County's stormwater compliance programs is expended within applicable legal restrictions and limitations.

1.4. Conclusions and Recommendations

The figures presented here are an estimate of the expenditures that the County incurred to meet its compliance obligations for FY 2015-16. For the reasons explained above, they should be considered only best estimates of stormwater-related expenditures.

1.3 JURISDICTIONAL STRATEGIES

Table A2-1. County of San Diego, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Engage the public, jurisdictional staff, and other agency staff to proactively identify and report illicit discharges.						
IDDE 1	Utilize municipal personnel and contractors to identify and report illicit discharges and connections.	●	●	A/P		• IDDE Program
IDDE 2	Utilize municipal personnel and Contractors to monitor stormwater outfalls for discharges of potential ICIDs.	●	●	A/P		• Part of the IDDE Program
IDDE 3	Updated focused training for County Field Staff.	●	●	A/P		• Updated training for BMP Design Manual and Stormwater Implementers
IDDE 4	Facilitate public reporting of illicit discharges and connections via Water Quality Hotline (i.e., telephone and email).	●	●	A/P		• Bilingual hotline, dedicated e-mail address, and multiple online reporting tools
IDDE 5	Bilingual hotline answered by a live operator (I Love a Clean San Diego) to provide better customer service.	●	●	A/P		• Bilingual hotline operated by ILACSD
IDDE 6	Coordinate with upstream entities to prevent illicit discharges from upstream sources entering into the storm drain system.	●	●	A/P		• If illicit connections are identified as part of an IDDE investigation, investigation will be conducted to define and eliminate the source. If determined to be from an upstream entity coordination will occur.

Table A2-1. County of San Diego, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
IDDE 7	Refer homeless issue complaints to Sheriff or appropriate jurisdictions.	●	●	A/P		• Collaborate with multi-departmental group to address homeless encampments
2. Develop and implement approaches to address the impacts of septic systems within the watershed.						
IDDE 8	Address septic system failures where observed.	●	●	A/P		• Suspected septic discharges are reported to DEH HIRT Response line when they occur after hours and DEH Land and Water Quality Division during normal hours. All complaints resolved during 15-16.
IDDE 9	Implement practices and procedures to address spills with the potential to enter the MS4.	●	●	A/P		• NOV issued by DEH for failing septic systems when effluent could reach the storm drain. Prompt follow up and mitigation is implemented. Such cases are rare; <5 in 15-16.
IDDE 10	Coordinate spill response with responsible sewer agencies.	●	●	A/P		• Major DEH role is to inform the public of risks associated with sewer spills, conducting sampling, reporting, posting signs, etc.
IDDE 11	Implement practices and procedures to prevent/limit infiltration of seepage from sanitary sewers	●	●	A/P		• If illicit connections are identified as part of an IDDE investigation, investigation will be conducted to define and eliminate the source.
IDDE 12	Collect effluent on the ground (EOG), sanitary sewer overflow (SSO) data	●	●	A/P		• Approximately 87 EOG complaints related to septic systems and 14 SSO events recorded and responded to.

Table A2-1. County of San Diego, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
3. Enforce prohibitions related to illicit discharges and connections.						
IDDE 13	Develop and implement a strategy for investigating and addressing illicit discharges and connections.	●		N/A		• One time. Focused, collaborative investigations with Planning and Science staff of high priority outfalls.
IDDE 14	Impose legal authority to ensure all illicit discharges and connections that are identified are eliminated.	●	●	A/P		• Ongoing.
4. Other Related Programs and Activities						
IDDE 15	Maintain stormwater conveyance map to facilitate implementation of the IDDE program.	●	●	A/P		• Updated as needed.

Table A2-2. County of San Diego, Development Planning Program Strategies

Number	San Luis Rey River Development Planning Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Provide updated materials and enhanced outreach to convey land development requirements.						
DP 1	Update BMP Design Manual procedures to specify stormwater requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria, and establish where implemented alternative compliance options.	◖		A/P		• In Development. Updated to reflect the Regional Model BMP DM with additional changes to incorporate County implementation practices. BMP DM became effective on February 26, 2015.
DP 2	Conduct internal (staff) training on the updated BMP Manual	●		A		• One time. BMP Manual training conducted when required. JRMP required internal training is conducted every fiscal year.
DP 3	Hold external land development workshops targeting the development community	●		A		• One time. The County conducts external training regularly and after release of new guidance documents
DP 4	Update County codes, ordinances, and stormwater design standards consistent with the permit and the updated BMP Manual	●		A		• One time. The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated permit and the inclusion of applicant-implement offsite alternative compliance. WPO update became effective on February 26, 2016.

Table A2-2. County of San Diego, Development Planning Program Strategies

Number	San Luis Rey River Development Planning Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
2. Implement a BMP compliance program to ensure proper design and maintenance planning.						
DP 5	Implement a program that ensures that all structural and Low Impact Development (LID) BMPs are designed, constructed and maintained on Priority Development and Redevelopment Projects.	●	●	A/P		• Structural BMPs and LID BMPs are designed and constructed per the BMP Design Manual. In addition, Structural BMPs are tracked for maintenance through inspections and self-verification letters. LID BMPs that are installed as a result of implementation of the BMP Design Manual are proposed to be inspected
3. Enforce post construction requirements related to new and redevelopment.						
DP 6	In addition to requirement for all development projects, implement or require implementation of onsite structural BMPs to control pollutants and manage hydromodification for PDPs.	●	●	A/P		• The County BMP DM requires all PDPs to implement PC and HMP BMPs. These requirements are captured in the WPO and County's BMP DM.
DP 7	Impose legal authority to ensure all development and redevelopment projects are in compliance with all post construction requirements.	●	●	A/P		• The Watershed Protection Ordinance was updated in FY16 to include modifications necessary as the result of the updated permit and the inclusion of applicant-implement offsite alternative compliance.

Table A2-3. County of San Diego, Construction Management Program Strategies

Number	San Luis Rey River Construction Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Improve data tracking methods for construction inventories and inspections where necessary.						
CM 1	Maintain, update, and prioritize a watershed-based inventory of all projects issued local permits that allow soil disturbing activities.	●	●	A		• Projects that are issued local permits that allow soil disturbance activities are part of the inventory that is watershed-based.
2. Ensure that minimum BMPs are designated and required for construction projects.						
CM 2	Require implementation of BMPs that are site specific, seasonally appropriate and appropriate to the construction phase, year round.	●	●	A/P		• Every project requires implementation of site specific construction BMPs, seasonably appropriate and appropriate to the construction phase.
CM 3	Make updates to County ordinances related to construction; reference to existing grading ordinance	●		A		• One time. County ordinances are updated with subsequent Construction General Permit updates; the Watershed Protection Ordinance will be updated as necessary as a result of the future Grading Ordinance Update.
3. Enforce Construction Management Requirements						
CM 4	Impose legal authority to ensure inventoried construction projects are in compliance with all requirements.	●	●	A/P		• The Watershed Protection Ordinance is the current legal authority to insure inventoried construction projects are in compliance with all requirements.
CM 5	Notify the SDWB by email (Nonfilers_R9waterboards.ca.gov) within five (5) calendar days of issuing escalated enforcement to a construction site that poses a significant threat to water quality as a result of violations or other noncompliance		●	A/P		• County implemented the ERP as described in the JRMP.

Table A2-3. County of San Diego, Construction Management Program Strategies

Number	San Luis Rey River Construction Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
4. Provide enhanced outreach and coordination to convey construction requirements.						
CM 6	Provide internal staff training related to construction storm water management.	●	●	A/P		• The County conducts construction stormwater training annually and it targets construction inspectors in DPW-PDCI, PDS-Building, and CIP Inspectors in DPW and DGS.

Table A2-4. County of San Diego, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Improve data tracking methods for existing development inventories where necessary.						
ED 1	Maintain and update a watershed-based inventory of existing development (i.e., commercial, industrial, and municipal facilities and residential areas).	●	●	A/P		• Database is continually updated to increase accuracy and efficiency.
ED 2	Improve the tracking of watershed based inventories via consolidated database	●				• See ED 1
2. Develop and implement approaches to address the impacts of improper water use and irrigation runoff.						
ED 3	Collaborate with partner agencies and groups to promote non-County sponsored incentive programs for BMP retrofits, including rain barrels, smart controllers, soil sensors, turf replacement, etc.	●	●	A/P		• The County continues to collaborate with and promote the efforts of partner agencies incentive programs.
ED 4	Promote incentive program for BMP retrofits (e.g. water smart irrigation controllers, turf replacements programs, residential landscape evaluation program).	●				• The County continues to collaborate with and promote the efforts of partner agencies incentive programs.
3. Improve and/or continue existing pet waste programs.						
ED 5	Pet waste management and outreach in County Parks.	●	●	A/P		• Mutt-mitt dispensers are installed and maintained in many County parks, providing people who are walking their dogs with waste disposal bags to use to pick up after their pets.

Table A2-4. County of San Diego, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
4. Improve trash management strategies within the watershed.						
ED 6	Sponsor Trash Collection Events (public outreach and participation).	●	●	A/P		• The County sponsors ILACSD to establish cleanup sites at the Coastal Cleanup Day and Creek to Bay events.
5. Improve and implement existing outreach programs to target key sources and pollutants.						
ED 7	Develop, improve, distribute outreach materials.	●	●	A/P		• Improved outreach materials through a focused Community-based Social Marketing approach. Continual improvement of existing materials, including translation into Spanish.
ED 8	Give outreach presentations to elementary, middle, and high school students	●	●	A/P		• Offer presentations to elementary, middle, and high schools serving unincorporated communities.
ED 9	Outreach to mobile landscaping service providers	●	●	A/P		• Pesticide Regulation Program collaboration with the California Department of Pesticide Regulation on a pilot program to offer workshops for maintenance gardeners. Two workshops were held where attendees were provided training materials and concluded with a pesticide certification exam. Attendees at both workshops had high success rates for the exam.
ED 10	Educational Workshops on Integrated Pest Management, manure management and others as needed	●	●	A/P		• Various workshops presented throughout the year by County staff including UCCE, FHA and contractors.
ED 11	Conduct Effectiveness Survey's on Education & Outreach programs	●	●	A/P		• Surveys to determine the efficacy of watershed education to unincorporated elementary, middle, and high schools serving unincorporated communities

Table A2-4. County of San Diego, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
ED 12	Create an Equestrian BMP Handbook		●	A/P		• Handbook created in FY2014-15. Handbook will be revised in FY2016-17 to encompass additional BMPs and be more user friendly.
ED 13	Conduct over irrigation outreach pilot study	●	●	A/P		• Community-based Social Marketing pilot study on the effectiveness of irrigation runoff prevention materials.
ED 14	Conduct Homeowners Associations Outreach and Coordination Pilot Study	◖	◖	A/P		• HOA Outreach materials in draft format. Additional development will take place in FY2016-17.
ED 15	Implement a public education and participation program to promote and encourage development of programs, management practices and behaviors that reduce the discharge of pollutants in storm water prioritized by high risk behaviors, pollutants of concern, and target audiences.	●	●	A/P		• The County completes numerous education and public participation programs for a diverse target audiences. See JRMP.
6. Enhance existing stormwater conveyance system maintenance program.						
ED 16	Implement a schedule or operation and maintenance activities for the stormwater conveyance system and related structures.	●	●	A/P		• Stormwater maintenance is referred to appropriate departments when needed.
7. Develop and implement targeted programs to address issues in residential areas.						
ED 17	Promote and encourage implementation of designated BMPs in residential areas.	●	●	A/P		• Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas. All Residential Management Areas were inspected in FY15-16

Table A2-4. County of San Diego, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
ED 18	Conduct focused residential inspections based on strategic assessments.	◖	◖	A/P		• Focused, collaborative investigations with Planning and Science staff of high priority outfalls. 20% per year, all within 5 years.
ED 19	Implement a schedule of operation and maintenance for County paved and unpaved roads.	●	●	A/P		• County Road Crews employ a schedule for maintenance of County Roads.
ED 20	Conduct inspections of inventoried existing development to ensure compliance	◖	◖	A/P		• Through implementation of strategies described in the JRMP the County encourages the use of BMPs in residential areas. 20% per year, all within 5 years.
ED 21	Improve inspections data tracking through mobile phone applications		●	A/P		• In pilot testing phase, modifications based on pilot testing to increase effectiveness
8. Additional strategies to address Existing Development						
ED 22	Designate a minimum set of BMPs required for all existing development inventories, including special event venues. The designated minimum BMPs must be specific to facility or area types and pollutant generating activities, as appropriate.	●	●	A/P		• JRMP establishes minimum BMPs for all land use types.
ED 23	Require implementation of minimum BMPs for existing development (commercial, industrial, municipal, and residential) that are specific to the facility, area types and pollutant generating activities, as appropriate.	●	●	A/P		• JRMP establishes minimum BMPs for all land use types.

Table A2-4. County of San Diego, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
ED 24	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties. Includes education, permits, and certifications.	●	●	A/P		• 1. 450 Facilities received the Agricultural Water Quality Best Management Practices for Pesticides through annual registration notifications. 2. Inspections were conducted at 83 Commercial Ag Facilities.
ED 25	Enforce legal authority established for all inventoried existing development to achieve compliance	●	●	A/P		• See JRMP for details.
ED 26	Update county ordinance related to existing development; reference to existing guidance documents	●		A		• One time. Watershed Protection Ordinance and BMP Design Manuals were updated.
ED 27	Identify candidate areas of existing development for stream, channel, and/or habitat rehabilitation projects and facilitate implementation of such projects.	●		A		• NA
ED 28	Implement escalating enforcement responses to compel compliance with statutes, ordinances, permits, contracts, orders, and other requirements for IDDE, development planning, construction management, and existing development in the Enforcement Response Plan.	●	●	A/P		• County implemented the ERP as described in the JRMP.

Table A2-4. County of San Diego, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
ED 29	Notify the SDWB by email (Nonfilers_R9waterboards.ca.gov) any persons required to obtain coverage under the statewide Industrial General Permit and Construction General Permit and failing to do so, within five (5) calendar days from the time the Copermittee become aware of the circumstances.	●	●	A/P		• County implemented the ERP as described in the JRMP.

Table A2-5. County of San Diego, Optional Strategies*

Number	San Luis Rey River Existing Development Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
OPT-3	Implement a program for on-site wastewater treatment (septic) systems. May include mapping and risk assessment, inspection, or maintenance practices.	◖				Not triggered. Partially implemented in FY 2016. Under the Local Area Management Plan (LAMP) for onsite wastewater treatment systems the treatment systems with supplemental treatment are required to be permitted annually. The annual operating permit will define the monitoring and maintenance requirements as specified by the manufacturer and/or qualified professional who designed the system. The LAMP ordinance can be found at: http://www.sandiegocounty.gov/content/dam/sdc/deh/lwqd/RWQCB%20Approved%20LAMP%20Final%202-24-15.pdf
OPT-5	Implement Sustainable Landscapes Program to encourage landscape retrofits.	◖				Not triggered. Partially implemented in FY 2016.
OPT-6	Implement an incentive program for BMP Retrofits (Public-Private Partnerships - a County sponsored program to offer incentives for rain barrel installation, downspout disconnects from the stormwater system, etc.)	◖				Not triggered. Partially implemented in FY 2016.
OPT-7	Implement trash capture program (e.g., retrofit storm drain intakes with trash capture devices)	◖				Not triggered. Partially implemented in FY 2016. The County of San Diego is in process of conducting several studies to develop Baseline Trash Generation Rates.

Table A2-5. County of San Diego, Optional Strategies*

Number	San Luis Rey River Existing Development Management Program Strategies - County of San Diego	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
OPT-8	Implement a Green Streets Retrofits Program	◖				Not triggered. Partially implemented in FY 2016. Design standards and specifications have been developed. Green streets are now being used to meet compliance for all retrofit and/or redeveloped road projects that in the Capital Improvement Projects plan. Pursuing Grant Funding
OPT-10	Implement an alternative compliance program to enable "offsite" compliance for new and redevelopment projects.	◖				Not triggered. Partially implemented in FY 2016. Currently applicant implemented offsite alternative compliance is available for use by the development community. The Water Quality Equivalency (WQE) provides the currency for structural BMPs and some natural system management practices (NSMPs). Additional work on the WQE will be conducted during FY17. The County is not currently pursuing a credit system but is participating as a stakeholder on the City of San Diego TAC and as a member of the Western Riverside Coalition of Governments (WRCOG) discussion on offsite alternative compliance.

*Included optional strategies for the SLR watershed are those whose implementation was begun but not triggered. For a full list of optional strategies see the corresponding appendix of strategies in the SLR WQIP.

1.4 MODIFICATIONS TO BMP DESIGN MANUAL

The County of San Diego BMP Design Manual (BMP DM) provides guidance for land development and public improvement projects to comply with the 2013 Municipal Separate Storm Sewer System (MS4) Permit (Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100). This Manual replaces County of San Diego Standard Urban Stormwater Mitigation Plan (SUSMP). It is focused on project design requirements and related post-construction requirements, not on the construction process itself. No modifications to the BMP DM have been made since its publication on February 2016. The BMP DM is available online on the County of San Diego's website:

http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html.

1.5 MODIFICATIONS TO THE JRMP

The County's Jurisdictional Runoff Management Program (JRMP) was prepared in response to new regulatory requirements adopted by the Regional Water Quality Control Board. The purpose of the JRMP document is to guide implementation of programs and strategies to reduce pollutants discharged from the County's storm drain system to receiving waters. No modifications were made to the JRMP during the 2015-2016 fiscal year. The JRMP is accessible from the Project Clean Water website at:

http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=105:jurmp-plan&catid=34

2 City of Oceanside

2.1 ANNUAL REPORT CERTIFICATION

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT

SAN LUIS REY RIVER WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the City of Oceanside has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-0001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 13th day of January, 2017, at the City of Oceanside.

M.A. Lahsaiezadeh

Mo Lahsaiezadeh, Ph.D., REHS
Environmental Officer
City of Oceanside

300 NORTH COAST HIGHWAY • OCEANSIDE, CA 92054 • TELEPHONE 760-435-5800 • FAX 760-435-5821

2.2 ANNUAL REPORT FORM

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM
ANNUAL REPORT FORM
FY 2015-2016

I. COPERMITTEE INFORMATION

Copermittee Name: **City of Oceanside**

Copermittee Primary Contact Name: **Mo Lahsaiezadeh**

Copermittee Primary Contact Information: **ID 245793**
Address: **300 N COAST HWY**
City: **OCEANSIDE** County: **SAN DIEGO** State: **CA** Zip: **92054**
Telephone: **760-435-5803** Fax: **760-435-5821** Email: **mlahsaie@ci.oceanside.ca.us**

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☐
	NO	☒

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	75
Number of non-storm water discharges detected by Copermittee staff or contractors	73
Number of non-storm water discharges investigated by the Copermittee	129
Number of sources of non-storm water discharges identified	58
Number of non-storm water discharges eliminated	51
Number of sources of illicit discharges or connections identified	60
Number of illicit discharges or connections eliminated	57
Number of enforcement actions issued	48
Number of escalated enforcement actions issued	14

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

Number of proposed development projects in review	49
Number of Priority Development Projects in review	36
Number of Priority Development Projects approved	3
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	17

Number of completed Priority Development Projects in inventory	134
Number of high priority Priority Development Project structural BMP inspections	85
Number of Priority Development Project structural BMP violations	39
Number of enforcement actions issued	12
Number of escalated enforcement actions issued	0

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of construction sites in inventory	41
Number of active construction sites in inventory	38
Number of inactive construction sites in inventory	3
Number of construction sites closed/completed during reporting period	11
Number of construction site inspections	1350
Number of construction site violations	140
Number of enforcement actions issued	40
Number of escalated enforcement actions issued	4

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	161	945	71	21
Number of existing development inspections	55	202	28	12
Number of follow-up inspections	0	14	3	0
Number of violations	0	14	3	0
Number of enforcement actions issued	0	1	0	0
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

X. CERTIFICATION

I [☐ Principal Executive Officer ☐ Ranking Elected Official ☒ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

M.A. Lahsaiezadeh
Signature

Oct 31, 2016
Date

MO LAHSAIEZADEH
Print Name

ENVIRONMENTAL OFFICER
Title

760-435-5803
Telephone Number

MLAHSAIE@CI.OCEANSIDE.CA.US
Email

City of Oceanside

Jurisdictional Runoff Management Program

Annual Report Fiscal Year 2015-2016

ID # 245793

Attachment 1

INTRODUCTION

The information included in this Attachment is intended to supplement the data presented in the City of Oceanside's Jurisdictional Runoff Management Program (JRMP) annual report form for the 2015-2016 Fiscal Year (FY15-16). Each section below corresponds to the sections presented in the JRMP report template from Attachment D. of Order No. R9-2013-0001. The information presented herein provides context to the report information, including a brief description of the data sources and data compilation methods where needed.

The City of Oceanside's summary of the required annual Fiscal Analysis can be found on page 4 of this Attachment.

I. COPERMITTE INFORMATION

The required information is presented on page 1 of the report form.

II. LEGAL AUTHORITY

The City of Oceanside established and continued to implement its legal authority within its jurisdiction to control pollutant discharges into and from its MS4 to comply with Order No. R9-2013-0001 during FY15-16. A Duly Authorized Representative has certified that the City of Oceanside maintains adequate legal authority, and a certifying signature is provided in Section X of the report form.

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

During FY15-16, no updates were made to the City's Jurisdictional Runoff Management Program document, nor were updates required by the San Diego Regional Water Quality Control Board (SD-RWQCB). The City's JRMP was last updated and submitted to the SD-RWQCB in June 2015, as required under Provision F.2.a. of Order R9-2013-0001.

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

During FY15-16 the City of Oceanside continued to implement its program to actively detect and eliminate illicit discharges and connections to its MS4 to comply with Order No. R9-2013-0001.

The data presented in Section IV were compiled from various City divisions to accurately reflect the City's cumulative effort to identify and eliminate non-stormwater and illicit discharges throughout FY15-16. The data were summarized from the following sources:

- Discharges reported by the public and the associated response by City Code Enforcement officers.
- Discharges observed by City staff and contractors during compliance inspections performed pursuant to Provisions E.3.e.(3), E.4.d., and E.5.c.
- Discharges identified through the City's Dry Weather MS4 Outfall Discharge Monitoring program, performed pursuant to Provisions D.2.b. and E.2.c-d.
- Discharges of potentially hazardous substances reported by the public and their associated responses by the City of Oceanside Fire Department.

V. DEVELOPMENT PLANNING PROGRAM

During FY15-16 the City of Oceanside continued to implement a development planning program that complies with Order No. R9-2013-0001.

During FY15-16, the SD-RWQCB required the Copermittees to update their BMP Design Manuals pursuant to the timelines specified in Provision F.2.b., to allow for concurrent submittal of the Manual with the Water Quality Improvement Plans. To comply with this Provision, the City of Oceanside made jurisdictional-specific updates to the San Diego Regional Model BMP Design Manual that became effective on February 16, 2016. The City of Oceanside made its updated jurisdictional BMP Design Manual available to the public both on the County's Regional Clearinghouse (Project Clean Water) and the City's website.

The data presented in Section V summarize the City's Priority Development Project (PDP) inventory tracking and BMP inspection program for FY15-16.

VI. CONSTRUCTION MANAGEMENT PROGRAM

The City of Oceanside continued to implement its construction management program in FY15-16 to comply with Order No. R9-2013-0001.

The data presented in Section VI summarize the City's construction site inventory and inspection program activity for FY15-16.

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

The City of Oceanside continued to implement its existing development management program in FY15-16 to comply with Order No. R9-2013-0001.

The data presented in Section VII summarize the City's existing development facility inventory and inspection program activity for FY15-16. The inspection data include both initial and follow-up compliance inspections.

VIII. PUBLIC EDUCATION AND PARTICIPATION

During FY15-16 the City of Oceanside continued to implement its public education and public participation components to comply with Order No. R9-2013-0001.

IX. FISCAL ANALYSIS

A summary of the City's annual Fiscal Analysis performed pursuant to Provision E.8.b-c. can be found on page 4 of this Attachment. The Fiscal Analysis includes the City's expenditures to implement its jurisdictional programs to comply with Order No. R9-2013-0001, and also includes annual costs for cooperative regional and watershed-based programs.

X. CERTIFICATION

The City of Oceanside JRMP Annual Report form has been certified by a Duly Authorized Representative. Please see page 2 of the report form for signature.

Fiscal Analysis

Program Funding

The City of Oceanside secures funding for the implementation of the storm water program through the Water Utilities, Public Works Departments, and Engineering Divisions in the City. To secure adequate funding, the Water Utilities Department collects a Clean Water Program surcharge. The surcharge is based on the customer's water consumption, so the surcharge is also designed as an incentive for individuals to conserve water. During FY15-16, the surcharge was $0.11 per unit of water from July – December 2015, then was increased to $0.12 per unit of water from January to June 2016. Total revenue for FY15-16 generated though the surcharge fee was $1,048,015.93. In addition, the Clean Water Program received $20,500 via a Gas Tax fund. This totals $1,068,515.93 for revenue directly available to the Clean Water Program.

The City Engineering Division as part of the Development Services Department secures funding from development-related programs. The Engineering Division receives funding through fees assessed on developers for grading plan checks and inspections and water quality plan checks and inspections.

Funding for Public Works tasks related to water quality protection, including channel maintenance and storm drain inlet cleaning, are obtained by Flood Control Fees. Enterprise funds are used to fund for Code Enforcement and Solid Waste programs. Street Sweeping is funded by and Enterprise Fund.

Expenditure and Budget Reporting

During FY15-16 approximately $2,447,925 was expended amongst the departments and divisions for the implementation of and tasks that support the Clean Water Program. Table 1 below provides a summary of the City of Oceanside expenditures during FY15-16.

Table 1: City of Oceanside Stormwater Expenditure Summary

Category	Cost
Administration	$187,710
Development Planning	$215,000
Construction	$130,624
Municipal	$1,318,063
Industrial & Commercial	$137,398
Residential, Education & Public Participation	$95,699
IDDE	$57,699
Special Investigations	$104,094
Watershed Participation	$52,555
Regional Participation	$149,083
Total	**$2,447,925**

2.3 JURISDICTIONAL STRATEGIES

Table A2-6. City of Oceanside, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - City of Oceanside	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Engage the public, jurisdictional staff, and other agency staff to proactively identify and report illicit discharges.						
IDDE 1	Utilize municipal personnel to identify and report illicit discharges and connections.	●	●	A		
IDDE 2	Utilize municipal personnel and contractors to monitor stormwater outfalls for discharges of potential illicit discharges and connections.	●	●	A		
IDDE 3	Utilize water department meter readers to document irrigation runoff, with a focus on residential areas.	●		A		Meter readers completed Residential Management Area (neighborhood-based) inspections in response to drought restrictions for landscape irrigation, and documented irrigation runoff for follow-up by Code Enforcement.
IDDE 4	Facilitate public reporting of illicit discharges and connections via telephone, ~~and~~ email and online request portal.	●	●	A	Modification to reflect City's use of online request portal for public ICID reporting.	The City utilizes an online request portal (PublicStuff) to allow the public to create a request and track progress toward completion.
IDDE 5	Educate the public regarding illegal discharges/ dumping.	●	●	A		Educational door hangers used during irrigation runoff response and non-stormwater MS4 outfall investigations.

Table A2-6. City of Oceanside, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - City of Oceanside	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
IDDE 6	Coordinate with upstream entities to prevent illicit discharges from upstream sources from entering the MS4.	●		A		Annual voluntary agricultural area inspections in east Oceanside are completed by City staff to prevent illicit discharges in to the San Luis Rey River.
2. Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.						
IDDE 7	Implement practices and procedures to prevent and address spills with the potential to enter the MS4.	●	●	A		In FY16-17 the City will implement a unified inspection program for FOG, solid waste, recycling, and stormwater
IDDE 8	Slip line sewer pipes to prevent exfiltration from sanitary sewers to the MS4.	●	●	A		Citywide, the City completed approximately 4000 feet of CIPP sewer line rehabilitation in FY 15-16 under its CIP program.
IDDE 9	CCTV 100% of City VCP sewer lines to identify infiltration, exfiltration, and needed pipe repair or replacement.	◖	◖	A		Citywide, during FY 15-16, the City televised approximately 80 miles of sewer lines under its CIP program. And additional 19 mi. were televised by City crews.

Table A2-6. City of Oceanside, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - City of Oceanside	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
3. Actively enforce prohibitions related to illicit discharges and connections.						
IDDE 10	Investigate and eliminate illicit discharges and connections.	●	●	A		Two of the five non-stormwater persistently flowing MS4 outfalls listed in the SLR WQIP are now classified as dry and will be reprioritized. Code Enforcement completed drought response, overwatering and illegal discharge investigations throughout FY 15-16. All complaints go to code enforcement.
IDDE 11	Enforce legal authority to ensure all illicit discharges and connections identified are eliminated within timeframes established in the MS4 Permit.	●	●	A		Tied in with IDDE-10 narrative.

Table A2-7. City of Oceanside, Development Planning Program Strategies

Number	San Luis Rey River Development Planning Program Strategies - City of Oceanside	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
4. Implement a post construction BMP compliance program to ensure proper construction and maintenance.						
DP 1	Implement a program that ensures that all structural BMPs are designed, constructed, and maintained on PDPs.	●	●	A		All high priority TCBMP sites in the City were inspected in FY 15-16, and 17 self-certification forms were sent to TCBMP owners/operators.
DP 2	Inspect all high priority structural BMPs annually (prior to the rainy season).	●	●	A		All 45 high priority structural BMP sites in the City were inspected in FY15-16 prior to the rainy season. (27 inspections across 15 sites in SLR WMA specifically)

Table A2-8. City of Oceanside, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - City of Oceanside	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Develop and implement approaches to address the impacts of improper water use and irrigation runoff.						
ED 1	Promote rain barrel incentive programs.	●	●	A		The City continued to promote and advertise the rain barrel rebate program through the San Diego County Water Authority.
ED 2	Continued enforcement of drought-related restrictions on landscape irrigation frequency	●	N/A	A		May not be applicable moving forward; restrictions have been lifted at this time. The City returned to Level 1 Drought Watch in July 2016.
ED 3	Relay information to residents, businesses and municipal staff regarding water agency-sponsored turf replacement programs	●	●	A		Notification when rebate programs are available. Turf removal rebate programs sponsored by water districts ran out of funding in summer of 2015. Oceanside Municipal Golf Course turf replacement project was completed in FY 15-16.
2. Improve and/or continue existing pet waste programs.						
ED 4	Install and maintain SLR Bike Trail Pet Waste Dispensers.	●	●	A		Pet waste bag dispensers were maintained for public use along the SLR Bike Trail in FY 15-16.
3. Improve trash management strategies within the watershed.						
ED 5	Coordinate Trash Collection Events (public outreach/ participation).	●	●	A		The City coordinates the San Luis Rey River Cleanup Event in March every year. A total of four sites along the river are staffed by City employees for this event.

Table A2-8. City of Oceanside, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - City of Oceanside	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
4. Improve and implement existing outreach programs to target key sources and pollutants.						
ED 6	Distribute watershed based outreach posters.	●	●	A		
ED 7	Provide pollution prevention and water conservation presentations at elementary schools.	●	●	A		Water conservation calendar contests were held across Oceanside schools in FY15-16 to promote conservation education. School presentations on smart water use are planned for FY16-17. Project SWELL curriculum continues to be implemented at Oceanside schools as staff time and resources allow.
ED 8	Educational Workshops (e.g., landscape irrigation and maintenance, agricultural).	●	●	A		Three homeowners landscape workshops are held annually in the City to promote water efficient landscape practices and methods to mimic watershed functions on a local scale.
5. Develop and implement targeted programs to address issues in residential areas.						
ED 9	Implement residential irrigation runoff study.	X	●	P		Phase I of a residential runoff reduction and monitoring study began in the Loma Alta Watershed due to TMDL alternative. Phase I will be implemented in San Luis Rey Watershed in FY16-17 as funding and staff resources are available.
ED 10	Conduct residential management area focused inspections.	●	●	A		Tie back to IDDE-3

Table A2-8. City of Oceanside, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - City of Oceanside	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
ED 11	Conduct inspections of inventoried existing development including residential areas to ensure compliance. Each area/site is inspected once every five years (minimum) and 20% of all industrial, commercial, and municipal sites are inspected on-site annually.	●	●	A		City staff completed 96 inspections of existing development in the City's jurisdiction of the San Luis Rey WMA in FY 15-16.
6. Other BMPs/Activities						
ED 12	Require implementation of BMPs to address application, storage, and disposal of pesticides, herbicides, and fertilizers on commercial, industrial, and municipal properties.	●	●	A		Refer back to ED 11 above – existing development inspections addresses BMP implementation.

Table A2-9. City of Oceanside, Optional Strategies

Number	San Luis Rey River Existing Development Management Program Strategies - City of Oceanside	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
OPT-1	Implement an ozone water treatment system to treat MS4 discharge water.	X				Not triggered.
OPT-2	CCTV of VCP pipe.	●	●	A		Available funding and approval by City Council.
OPT-3	Implement incentive programs…	●	●	A		Staff resources were available and partnership funding provided for incentive items.
OPT-4	Implement alternative compliance program…	X				Not triggered; no activity.
OPT-5	Structural BMPs	X				Not triggered.
OPT-6	Habitat restoration and rehabilitation.	X				Not triggered.

2.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

No modifications to the BMP Design Manual have been made since the WQIP was approved. The current City of Oceanside's BMP Design Manual is posted on the City's website, and the link to this page is listed on Project Clean Water.

2.5 MODIFICATIONS TO THE JRMP

No modifications to the City of Oceanside's JRMP have been made since the WQIP was approved. The current City's JRMP is posted on the City's website, and the link to this page is listed on Project Clean Water.

3 City of Vista

3.1 ANNUAL REPORT CERTIFICATION

CITY OF VISTA
CALIFORNIA

STATEMENT OF CERTIFICATION AND LEGAL AUTHORITY ESTABLISHMENT

SAN LUIS REY RIVER WATERSHED MANAGEMENT AREA, WATER QUALITY IMPROVEMENT PLAN FISCAL YEAR 2015-2016 ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

I also certify that the City of Vista has taken the necessary steps to obtain and maintain full legal authority within its jurisdiction to implement and enforce each of the requirements within Order No. R9-2013-001 as amended by Orders R9-2015-0001 and R9-2015-0100.

Executed on the 11th day of January, 2017 at the City of Vista.

Greg Mayer
City Engineer

P: **760-639-6111** | **cityofvista.com** | F: **760-639-6112**
200 Civic Center Drive, Vista, California 92084-6275

3.2 ANNUAL REPORT FORM

JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM – City of Vista, San Luis Rey WMA
ANNUAL REPORT FORM

FY 2015-16

I. COPERMITTEE INFORMATION

Copermittee Name: City of Vista (Permit No. R9-2013-0001, amended by R9-2015-0001: PIN 270704)

Copermittee Primary Contact Name: Cheryl Filar

Copermittee Primary Contact Information:
Address: 200 Civic Center Drive
City: Vista County: San Diego State: CA Zip: 92084
Telephone: 760-643-5412 Fax: 760-639-6112 Email: cfilar@cityofvista.com

II. LEGAL AUTHORITY

Has the Copermittee established adequate legal authority within its jurisdiction to control pollutant discharges into and from its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
A Principal Executive Officer, Ranking Elected Official, or Duly Authorized Representative has certified that the Copermittee obtained and maintains adequate legal authority?	YES	☒
	NO	☐

III. JURISDICTIONAL RUNOFF MANAGEMENT PROGRAM DOCUMENT UPDATE

Was an update of the jurisdictional runoff management program document required or recommended by the San Diego Water Board?	YES	☐
	NO	☒
If YES to the question above, did the Copermittee update its jurisdictional runoff management program document and make it available on the Regional Clearinghouse?	YES	☐
	NO	☐

IV. ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

Has the Copermittee implemented a program to actively detect and eliminate illicit discharges and connections to its MS4 that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐

Number of non-storm water discharges reported by the public	2
Number of non-storm water discharges detected by Copermittee staff or contractors	3
Number of non-storm water discharges investigated by the Copermittee	5
Number of sources of non-storm water discharges identified	4
Number of non-storm water discharges eliminated	4
Number of sources of illicit discharges or connections identified	4
Number of illicit discharges or connections eliminated	4
Number of enforcement actions issued	5
Number of escalated enforcement actions issued	0

V. DEVELOPMENT PLANNING PROGRAM

Has the Copermittee implemented a development planning program that complies with Order No. R9-2013-0001?	YES	☒
	NO	☐
Was an update to the BMP Design Manual required or recommended by the San Diego Water Board?	YES	☒
	NO	☐
If YES to the question above, did the Copermittee update its BMP Design Manual and make it available on the Regional Clearinghouse?	YES	☒
	NO	☐

Number of proposed development projects in review	3
Number of Priority Development Projects in review	3
Number of Priority Development Projects approved	3
Number of approved Priority Development Projects exempt from any BMP requirements	0
Number of approved Priority Development Projects allowed alternative compliance	0
Number of Priority Development Projects granted occupancy	0

Number of completed Priority Development Projects in inventory	3
Number of high priority Priority Development Project structural BMP inspections	26
Number of Priority Development Project structural BMP violations	3
Number of enforcement actions issued	1
Number of escalated enforcement actions issued	0

FY 2015-16

VI. CONSTRUCTION MANAGEMENT PROGRAM

Has the Copermittee implemented a construction management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

Number of construction sites in inventory	3
Number of active construction sites in inventory	3
Number of inactive construction sites in inventory	0
Number of construction sites closed/completed during reporting period	0
Number of construction site inspections	108
Number of construction site violations	13
Number of enforcement actions issued	11
Number of escalated enforcement actions issued	0

VII. EXISTING DEVELOPMENT MANAGEMENT PROGRAM

Has the Copermittee implemented an existing development management program that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

	Municipal	Commercial	Industrial	Residential
Number of facilities or areas in inventory	2	19	1	n.a.
Number of existing development inspections	2	2	1	5
Number of follow-up inspections	0	0	0	3
Number of violations	0	1	0	5
Number of enforcement actions issued	0	1	0	5
Number of escalated enforcement actions issued	0	0	0	0

VIII. PUBLIC EDUCATION AND PARTICIPATION

Has the Copermittee implemented a public education program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐
Has the Copermittee implemented a public participation program component that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

IX. FISCAL ANALYSIS

Has the Copermittee attached to this form a summary of its fiscal analysis that complies with Order No. R9-2013-0001?	YES ☒ NO ☐

X. CERTIFICATION

I [☒ Principal Executive Officer ☐ Ranking Elected Official ☐ Duly Authorized Representative] certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature: [signature] Date: 11-30-16

Print Name: GREG MAYER Title: CITY ENGINEER

Telephone Number: 760-643-5408 Email: gmayer@cityofvista.com

Attachment A.

Jurisdictional Runoff Management Program Annual Report – San Luis Rey WMA: Support Data and Supplemental Information

Information provided in this attachment is presented in order of program element, as identified in the Annual Report Form.

1 Copermittee Information

The City of Vista's jurisdictional area resides within two watershed management areas (WMAs), the Carlsbad WMA and the San Luis Rey WMA. Approximate land area within each WMA is summarized in Table 1-1. As required by regional stormwater permit (San Diego Region Water Quality Control Board, Order No. 99-2013-0001) the City summarizes annual activities for these WMAs in two separate annual reports.

Table 1-1. City of Vista Jurisdictional Area within Watershed Management Areas

Watershed Management Area	Acres
Carlsbad	10,968
San Luis Rey	700
City of Vista Total	*11,668*

2 Legal Authority

Revisions to Vista Municipal Code (VMC) Chapter 13.18 *Stormwater Management and Discharge Control Program* were completed and adopted by City Council toward the end of the previous reporting period (on June 9, 2015). During Fiscal Year 2015-16, the City of Vista replaced its former Standard Urban Stormwater Mitigation Plan (SUSMP) document with the new *City of Vista BMP Design Manual.* This new manual describes stormwater site design, treatment, and hydromodification management requirements for new and redevelopment projects. The manual became effective February 16, 2016 and is available on the City's Land Development resources website at:

http://www.cityofvista.com/services/city-departments/community-development/building-planning-permits-applications/land-development-autocad-templates/storm-water-forms

The *City of Vista BMP Design Manual* has undergone minor revisions since its implementation, as follows:

Date	Document Section(s)	Summary of Update
June 2016	Section 1.4.3	Added local 'green street' exemption consistent with Order No. R9-2013-0001
	Section 6.3.7	Removed text from title of section; section content unchanged
	Section 7.2	Clarified property owner as responsible party to conduct maintenance
	Section 8.1.1	Updated titles for forms and checklists
	Section 8.2.1	Updated titles for forms and checklists
	Section 8.2.1.1	Clarified use of O&M Plan template
	Section 8.2.2	Clarified requirements for construction plans
February 2016	New document	Replaced 2011 Standard Urban Stormwater Mitigation Plan with BMP Design Manual

3 Jurisdictional Runoff Management Program Document Update

The City completed an update to its Jurisdictional Runoff Management Plan (JRMP) during the previous reporting period, Fiscal Year 2014-15. The San Luis Rey Water Quality Improvement Plan (WQIP) was accepted by the San Diego Regional Water Quality Control Board (RWQCB) on February 12, 2016. However, revisions to the Carlsbad WQIP had not been accepted by the RWQCB, and acceptance is anticipated by the end of calendar year 2016. Following acceptance of the Carlsbad WQIP, the City anticipates initiating minor revisions to its JRMP to reflect strategies and goals identified in the accepted WQIPs.

Sections 4 through 7 discuss inspections related to various program components and are also numerically summarized by component on the Annual Report Form. Please note that multiple violations can be cited on one enforcement action; therefore, the total number of enforcement actions will often not equal the number of violations observed.

4 Illicit Discharge Detection and Elimination Program

Illicit Discharge Detection and Elimination Program activities are summarized in Section IV on the Annual Report Form. The City's jurisdictional area within the San Luis Rey WMA is approximately 700 acres. As a result of this relatively small area, only 5 cases of non-stormwater discharges were reported and investigated. These cases were related to existing development and are summarized in Section 7 of this attachment.

5 Development Planning Program

Three Priority Development Project (PDP) sites were under construction during the reporting year in San Luis Rey WMA. Once granted occupancy, BMPs at these sites will be added to the inspection inventory.

Prior to the rainy season, the City is required to annually inspect all structural BMPs at PDP sites designated as high priority. Criteria considered for designation of high priority sites included the following:

- PDP sites where 'follow-up' inspections were required following initial inspections conducted during the summer of 2014 or 2015
- PDP sites that did not return adequate materials for 2015 annual certification process
- City-owned PDP sites

Two of the three PDP sites within the San Luis Rey WMA were inspected during the reporting period. Of the 26 BMPs inspected at these sites, three violations were observed at one site, resulting in one written warning. PDP sites were inspected throughout the summer season, considered a 'Program Year'. In early Fiscal Year 2016-17, an additional 33 PDP sites throughout the City are anticipated to be inspected. As a result, cumulatively for the Program Year throughout both the San Luis Rey WMA and Carlsbad WMA, an anticipated 57 PDP sites (45 percent of the PDP site inventory) will have structural BMPs inspected.

6 Construction Management Program

City staff continued to implement the construction management program that underwent improvements in previous fiscal years (i.e., updated forms, checklists, and procedures). All construction sites are considered high priority, and therefore are inspected monthly during the dry season and weekly during the rainy season. Attachment B provides a summary of construction site enforcement actions within the San Luis Rey WMA.

Table 6-1. Number of Active and Inactive Construction Sites in San Luis Rey WMA, FY 2015-16

	ACTIVE SITE[1]:Priority Level			INACTIVE SITE[2]: Priority Level			
Watershed	**High**	**Medium**	**Low**	**High**	**Medium**	**Low**	*TOTAL SITES*
San Luis Rey	3	-	-	-	-	-	3

[1]Active Site: Site was actively under construction during reporting period

[2] Inactive Site: Site that ceased conducting construction activities and was incomplete

Table 6-2. Number of Construction Site Inspections Completed by Month in San Luis Rey WMA, FY 2015-16

Month	Inspections Performed at Site by Priority				Total Sites Closed[2] or Completed
	High Priority	Medium Priority	Low Priority	TOTAL INSPECTIONS	
July	4	-	-	4	0
August	3	-	-	3	0
September	4	-	-	4	0
October[1]	12	-	-	12	0
November[1]	14	-	-	14	0
December[1]	13	-	-	13	0
January[1]	12	-	-	12	0
February[1]	11	-	-	11	0
March[1]	16	-	-	16	0
April[1]	13	-	-	13	0
May	3	-	-	3	0
June	3	-	-	3	0
TOTAL	**108**	**0**	**0**	**108**	**0**

[1]Indicates wet season

[2]Closed sites include sites that discontinued construction during the reporting period, were stabilized and no longer inspected

7 Existing Development Management Program

As in the previous reporting period, City staff prioritized existing development inspections on facilities that were likely to require filing a notice of intent for the statewide General Industrial Permit. This allowed City staff to focus inspections on facilities with a potential for pollutant discharges to the storm drain system, while also educating local businesses about the recently updated permit. The San Luis Rey WMA has 22 existing development facilities (industrial, commercial, municipal) in its inventory, of which 5 facilities, or 23 percent of inventory, were inspected (see Section VII of Annual Report Form). During the reporting period, no facilities in the San Luis Rey WMA were referred to the RWQCB regarding General Industrial Permit non-filer status.

City staff conducted IDDE complaint investigations (Table 7-1) and dry weather major outfall inspections to support stormwater pollution prevention in existing residential development areas (Table 7-2). With anticipated approval of the Carlsbad WQIP in late 2016, at that time the City plans to initiate a parcel-based existing development inspection program. A parcel-based program will facilitate efficient and effective inspections of multi-tenant industrial and commercial properties, while also establishing a city-wide inventory of Residential Management Areas (RMAs) to support future inspections.

During the reporting period, City staff were not called to any sanitary sewer spills within the San Luis Rey WMA. The Sanitary Sewer Overflow Response Plan was updated in June 2016, and maintenance activities associated with the sanitary sewer system (repairs, televise lines, etc.) focused on areas outside of the San Luis Rey WMA where sanitary sewer infrastructure is older. Existing development facilities expected to contribute Fats, Oils, and Grease (FOG) were inspected reduced the potential for FOG-related sanitary system overflow events (Table 7-3). Portions of the San Luis Rey WMA are believed to have septic systems instead of direct connection to the sanitary sewer system. Consistent with strategies identified in the San Luis Rey WQIP (strategies ED 6, ED 7, ED 9) during the upcoming reporting period the City will develop an inventory of septic systems within Vista's portion of the San Luis Rey WMA. Outreach and education regarding septic system maintenance is anticipated to follow.

Storm drain inlet maintenance activities are summarized in Table 7-4. Street sweeping frequencies were maintained throughout the City, with high and moderate rated roadways being swept twice a month and low rated roadways being swept monthly. Not specific to the San Luis Rey WMA, the following events supported stormwater pollution prevention at existing development facilities within the City:

- Two Christmas tree collection locations were active between December 26 and January 11. Approximately 31 tons of debris was collected.
- Multiple site-specific trash and debris cleanups were conducted in the City, removing approximately 8.5 tons of debris.
- Through coordination with I Love a Clean San Diego (ILACSD), supported 14 Certified Oil Collection Centers within the City and conducted two oil filter exchange events. ILACSD also updated the Waste Free SD website (www.wastefreesd.org) with sites local to Vista.
- Continued operation of the Household Hazardous Waste facility that serves member cities of Carlsbad, Encinitas, Escondido, Solana Beach, and San Marcos. During the reporting year, approximately 2,600 Vista residents utilized the facility, donating over 259,500 pounds of hazardous waste.

Table 7-1. Summary of All Stormwater Compliance Cases Initiated in San Luis Rey WMA, FY 2015-16

Case Type	Case Count
IDDE	5*
Structural BMPs	2
Total	*7*

*One reported case was unfounded upon investigation

Table 7-2. Summary of Residential-based Stormwater Compliance Cases Initiated in San Luis Rey WMA, FY 2015-16

Residential Pollutant Type	Case Count
Irrigation Water	1
Pool Water	2
Sediment	1
Total	*4*

Table 7-3. Summary of Fats, Oils, and Grease (FOG) Facility Inspections in San Luis Rey WMA, FY 2015-16

Inspection Type	Total
FOG Inspections Conducted	8
Followup Inspections Required	0

Table 7-4. Summary of Storm Drain Inlet Maintenance in San Luis Rey WMA, FY 2015-16

Structure Type	Inventory	Inspected	Cleaned	Debris Removed
Inlets	33	33	7	0.5 cubic yards

8 Public Education and Outreach

Education and outreach activities are typically not differentiated between watersheds that Vista's jurisdictional area contributes to (San Luis Rey WMA and Carlsbad WMA). As such, Tables 8-1 and 8-2 present summaries of all notable education and outreach activities within the City during the reporting period.

Although outside of the San Luis Rey WMA, targeted outreach and education was conducted in association with the Phase 1 of the Paseo Santa Fe Streetscape Improvement Project in the Carlsbad WMA. The project reduced a four-lane roadway to two lanes and also enhanced a pedestrian-friendly environment. The project features stormwater structural BMPs, including pervious pavers, silva cells, and Clearwater inlet BMPs. As a component to Proposition 84 grant funding for this project, outreach materials were distributed, as well as surveys and focused business site inspections were conducted. A technical memorandum will be completed by the end of 2016, summarizing outcomes and 'lessons learned' that may guide future outreach efforts.

Table 8-1. Summary of Outreach Events

Outreach Opportunity	Description	Details
Green Machine	Outdoor education for elementary children, coordinated by San Diego County Office of Education.	Multiple events
Splash Science Lab	Science and chemistry education for children, coordinated by San Diego County Office of Education.	Multiple events
Presentations to schools	I Love a Clean San Diego support for motor oil presentations to automotive classes at Vista High School	5 presentations ~100 students
Presentations to schools	I Love a Clean San Diego support for watershed and stormwater pollution presentations at multiple middle schools and high schools	13 presentations ~360 students
Used Oil Filter Collection Events	Hosted oil waste/recycling and education events at automotive retail store in Vista.	Autozone O'Reilly's Auto Parts
Carlsbad WQIP Public Workshop	Public workshop to present plan development process and highlights.	July 7, 2015
Composting Workshop	Clean Green Vista and City of Vista workshop at Alta Vista Gardens.	July 18, 2015
Industrial General Permit Workshop	Informational workshop hosted by Vista Chamber of Commerce and Tory Walker Engineering. City of Vista promoted and attended event.	July 30, 2015
Vista Summer Fun Fest & Safety Fair	Enviroscape watershed model and interaction with residents.	August 8, 2015
National Prescription Drug Take Back Day	Prescription drug collection event at Walgreens.	September 26, 2015
Rainy Season Informative Letters	Letters sent to owners and developers with open grading permits to inform of preparations for upcoming rainy season.	October 2015
Our Vista Magazine	Advertise Christmas tree recycling program and sites.	Winter 2015
Landscape Workshop	Presented by Vista Irrigation District	November 14, 2015
Creek to Bay Cleanup: Buena Creek Cleanup Event	Support and promote cleanup site for annual Creek to Bay Cleanup event.	April 23, 2016
San Diego County Apartment Association Rental Housing Education Conference	Staff support for region's "Think Blue" campaign booth, educating rental housing staff about water quality and pollution prevention	April, 19, 2016
National Prescription Drug Take Back Day	Prescription drug collection event at Walgreens.	April 30, 2016
Vista Strawberry Festival	I Love a Clean San Diego support for Enviroscape watershed model and interaction with residents	May 29, 2016
Shredding and e-waste Event	Shredding and electronic waste collection event at Civic Center.	June 11, 2016

Table 8-2. Summary of Municipal Education Activities

Workshop/Training	Audience	Attendees	Location	Host	Date (s)
ESRI – GIS User Conference (2 annual events)	Engineering staff GIS users	Multiple staff & days	San Diego	ESRI	July 2015 & June 2016
Workshop: "Stormwater Design Requirements are Changing"	Land Development Staff and Construction Inspection Staff	6	San Diego	Construction Management Association (CMAA)	July 23, 2015
Water Quality Equivalency (WQE) Public Workshop	Stormwater Staff	2	San Diego	County of San Diego	July 28, 2015
Public Works Annual Training	Public Works Staff	60	Vista Corporate Yard Meeting Room	Stormwater Staff, Public Works	October 7, 2015
CASQA Annual Conference	Stormwater Professionals	2	Monterrey	CASQA	October 19-21, 2015
Model BMP Design Manual Workshop	Stormwater and Land Development Staff	7	San Diego	County of San Diego	November 5 and 10, 2015
Stormwater Performance Assessment: Inspection, Testing, and Monitoring	Municipal employees	3	Webcast	Forester University	March 3, 2016
Spotlight on Vista Employee Newsletter	Municipal employees	City-wide	Vista	Stormwater Staff	March/April 2016 issue
Treatment Control BMP Workshop	Stormwater Staff	3	San Diego	City of San Diego and Regional Water Quality Control Board	April 21, 2016
San Diego Hydrology Model (SDHM) Workshop	Land Development Staff	2	San Diego	County of San Diego, American Public Works Association (APWA)	May 3, 2016
Stormwater Permit Compliance Workshop (Industrial General Permit)	Stormwater Staff	2	San Marcos	Filtrexx, Alta Environmental	May 31, 2016
Qualified Industrial Storm Water Practitioner (QISP)	Stormwater Staff	2	Vista	State Water Resources Control Board	June 2016

9 Fiscal Analysis

The Standardized Fiscal Analysis Method and Format (Fiscal Analysis Method) was collaboratively developed and adopted by the Copermittees in January 2009 in accordance with Sections G, J.1.a(3)(k), and J.1.c(1)(d) of NPDES Order No. R9-2007-0001. The Fiscal Analysis Method document was submitted to the San Diego RWQCB on January 31, 2009, as Attachment 1 of the Regional Urban Runoff Management Plan (RURMP) Annual Report for FY 2007-08. In this Annual Report, the Standardized Method for reporting budgets is utilized. The Standardized Method allows for categorization of expenditures by permit component.

The City's Jurisdictional Urban Runoff Management Program is primarily funded by the City's Enterprise Fund, although the City's General Fund and other sources support some elements of it, such as land development. The City continues to pursue and utilize funding from grant sources, such as state grant Prop 84 funds and, more recently, state Prop 1 grant funds to complete phases 2 and 3 of a green street project initiated with Prop 84 funds. The City will also continue to pursue other state funds as part of watershed collaboration efforts.

The City continues to use the fiscal reporting methodology developed by the copermittees in 2009. Moreover, in conformance with the Regional Standards, the individual jurisdictional components are tracked, as well as watershed and regional expenditures. For fiscal year 2015-16, the City performed the analysis according to the Standardized Fiscal Analysis Method, which is consistent with requirements under the 2013/15 municipal discharge permit. Table 10.1 contains results of this analysis.

Although annual reporting is now divided by watershed, Vista is providing a jurisdiction-wide fiscal analysis, because it is difficult to separate various program components by watershed. However, because most of Vista's developed area is located in the Carlsbad WMA, it is estimated that 95 percent, or $4.4 million, of the FY 2015/16 expenditures supported activities undertaken in this area; for the area of Vista located in the San Luis Rey WMA, it is estimated that five percent, or $232,878 was spent.

The majority of the City's Water Quality Protection Program administration and core programs, such as industrial and commercial inspections, as well as infrastructure maintenance and cleaning are funded by enterprise funds. These funds are generated from sewer utilities within the City of Vista and the Buena Sanitation District. Approximately 58 percent of the program is funded by the City of Vista's enterprise fund, 36 percent is supported by the general fund, and six percent is supported by state-appropriated funds, as well as state grant funds (Table 9-2).

Table 9-1. Expenditure Summary

JURISDICTIONAL COMPONENTS		
ADMINISTRATION	$	770,315
DEVELOPMENT PLANNING	$	527,720
CONSTRUCTION	$	1,069,880
MUNICIPAL	$	1,877,770
INDUSTRIAL AND COMMERCIAL	$	67,542
RESIDENTIAL	$	35,858
IDDE	$	52,662
EDUCATION	$	39,938
PUBLIC PARTICIPATION	$	138
SPECIAL INVESTIGATIONS	$	21,002
GRANTS (Green Street Project/Prop 84: $106,487; Cal Recycle Used Oil Payment; $14,202 for education and outreach)	$	120,689
Jurisdictional Total	$ 4,583,514	

WATERSHED		
Carlsbad	$	31,094
San Luis Rey	$	14,325
WQIP Development: Staff Support	$	7,455
Watershed Total	$	52,874

REGIONAL		
Copermitttee Cost Share of Regional Budget	$	32,484
Staff Support	$	2,882
Regional Total	$	35,366

TOTAL COST	***$***	***4,671,754***

Table 9-2. Summary of Funding Sources

FUNDING BY SOURCE		
GENERAL FUND	$	1,686,892
STORMWATER FEE	$	-
PERMIT FEES	$	-
DEVELOPER DEPOSITS AND FEES	$	
REGISTRATION AND INSPECTION FEES	$	-
FLOOD CONTROL FEES	$	-
FRANCHISE FEES	$	-
GAS TAX	$	
UTILITY TAX	$	-
ROAD FUND	$	-
ENTERPRISE FUNDS	$	2,691,231
TRUST FUNDS	$	-
SPECIAL ASSESSMENT DISTRICTS	$	
STATE APPROPRIATED FUNDS	$	172,942
GRANT FUNDS	$	120,689
OTHER	$	-
TOTAL FUNDING		**$4,671,754**

Attachment B.

Summary of Construction Site Enforcement Actions – San Luis Rey WMA:

Date	Project Name	Address	Watershed	Priority	Action	Effectiveness	Calendar days	Com
12/07/15	Adobe Estates	1980 N. Santa Fe Ave	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6	Corrected	Rep fen
10/12/15	Serra Subdivision - Shea Homes - Detached Condos	2025 E. Vista Way	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Clea area
03/01/16	Serra Subdivision - Shea Homes - Detached Condos	2025 E. Vista Way	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Stre
04/29/16	Serra Subdivision - Shea Homes - Detached Condos	2025 E. Vista Way	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Clea trac
07/15/15	Vista Ridge	521 & 535 Bobier Dr.	San Luis Rey	HIGH	Correction Notice	☑ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Clea leal con
08/25/15	Vista Ridge	521 & 535 Bobier Dr.	San Luis Rey	HIGH	Correction Notice	☑ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Sha drip

10/27/15	Vista Ridge	521 & 535 Bobier Dr.	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☐ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Offs
12/08/15	Vista Ridge	521 & 535 Bobier Dr.	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Wa inst
01/04/15	Vista Ridge	521 & 535 Bobier Dr.	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Clea
01/20/16	Vista Ridge	521 & 535 Bobier Dr.	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Stee pall
06/08/16	Vista Ridge	521 & 535 Bobier Dr.	San Luis Rey	HIGH	Correction Notice	☐ BMP Missing/ Ineffective ☑ BMP Maintenance ☐ No REAP/ Documents ☐ Discharge/Tracking (TC 1/2 & NS 6)	Corrected	Rep area inle mai

3.3 JURISDICTIONAL STRATEGIES

Table A2-10. City of Vista, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Engage the public, jurisdictional staff, and other agency staff to proactively identify and report illicit discharges.						
IDDE 1	Utilize municipal personnel and contractors to identify and report illicit discharges and connections.	●	●	A/P		• 5 IDDE cases in SLR for FY 2015-16, including: 1 municipal, 1 residential irrigation unconfirmed, 2 residential pool water discharge, 1 residential sediment
IDDE 2	Coordinate with Vista Irrigation District to identify and report ICIDs (e.g., over-irrigation).	●	●	A/P		• Met with VID on 6/18/2015 to discuss programs and coordination. Focus on water conservation programs and irrigation runoff. • City staff contacts VID on confirmed over-irrigation complaints.
IDDE 3	Facilitate public reporting of illicit discharges and connections via Water Quality Hotline (i.e., telephone and email).	●	●	A/P		• Hotline printed on all outreach materials and freebees distributed at outreach events. • Materials at outreach events: Summer Fun Fest--8/8/2015; Public Works Training--10/7/2015; Employee Spotlight Newsletter-- 02/02/2016.
IDDE 4	Educate the public regarding illegal discharges/ dumping.	●	●	A/P		• April 2016 – New residential BMP brochure and stormwater poster (bi-lingual) distributed. • Promoted Household Hazardous Waste (HHW) collection facility at Summer Fun Fest outreach event (8/8/2015), distributing brochures about proper HHW disposal. • Supported creek cleanup event in Carlsbad WMA for Creek to Bay Cleanup Day (4/23/2016).

Table A2-10. City of Vista, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
IDDE 5	Coordinate with adjacent entities to prevent illicit discharges from upstream sources from entering the MS4.	●	●	A/P		• No applicable discharges or compliance cases to report for this period within SLR WMA. • Within the Carlsbad WMA, city staff coordinate with other agencies (typically County of SD) on compliance cases when discharges are sourced from upstream and outside city jurisdiction.
IDDE 6	Coordinate with neighboring jurisdictions to investigate results of outfall inspections.	●	●	A/P		• No applicable discharges or cases to report for this period. • Vista and Oceanside staff have initiated discussion regarding outfall in Loma Alta (Carlsbad WMA) with persistent flow and runoff from Vista properties. Similarly, worked with County on complaints that bordered limits of each jurisdiction.
2. Develop and implement approaches to address the impacts of septic systems within the watershed.						
IDDE 7	Investigate and eliminate identified sources of illicit discharges and connections.	●	●	A/P		See IDDE 1.
IDDE 8	Develop inventory of septic systems within Vista's portion of the SLR watershed.	X	●	P		• To be initiated in FY 2016-17
IDDE 9	Implement practices and procedures to address spills with the potential to enter the MS4.	●	●	A/P		• Coordinate all private lateral sewer spill responses with Wastewater staff. No spills in SLR this reporting period. • Create compliance cases in Cityworks to track resolution of spill response. See IDDE 1 for summary of cases. • Conduct existing facility inspections to prevent spills and pollutants from impacting stormwater. See ED 20.

Table A2-10. City of Vista, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
IDDE 10	Investigate and eliminate identified sources of illicit discharges and connections.	●	●	A/P		• Of 5 IDDE compliance cases initiated this reporting period, 4 had discharge source eliminated (5th case was unconfirmed irrigation discharge). • 4 major outfalls in SLR (SLR-01, SLR-02, SLR-03, SLR-04): • SLR-01 is a persistent flow site. Upstream investigations and review of development plans suggests this flow ~1gpm is due to perforated foundation drain pipes that discharge groundwater at Guajome Academy. Water quality data and persistent flow monitoring already completed for the 2015-2016 monitoring year. Currently awaiting lab results. • SLR-02 has been observed dry during all site visits. • SLR-03 is a persistent flow site of inconclusive upstream source. Outfall was not flowing during first of two planned sampling efforts. During the second visit, flow was present and sampled. Upstream investigation suggests a leaking fire hydrant may be the source, about which VID was notified to initiate repair. Repair scheduled for September 6, 2016. In addition, a special study has commenced for SLR-03 outfall, which includes continuous flow monitoring and bacteria grab samples. • SLR-04 exhibited flow during one of the transitional flow monitoring visits. Upstream investigation concluded the source was irrigation runoff, which ceased. The site has been dry during all other dry monitoring visits.

Table A2-10. City of Vista, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
IDDE 11	Update Sanitary Sewer Overflow Response Plan (SSORP) and reporting procedures.	●	X	A		• The City's SSORP was updated in June 2016 to be streamlined and easier to use.
IDDE 12	Increase coordination between storm water and sanitary sewer programs.	●	●	A/P		• Private lateral sewer overflow response is coordinated with Stormwater and Wastewater staff. Crews notify Stormwater staff if on scene of spill. • Stormwater staff work with Wastewater engineer to issue appropriate stormwater code (VMC Chapter 13.18) violation notice, wastewater lateral repair notice, and/or citation.
IDDE 13	Implement public sanitary sewer system maintenance consistent with current Sewer System Management Plan.	●	●	A/P		• Completed bi-annual self-audit of SSMP in June 2016. • Zero spills in the SLR basin for FY 2015-16.
3. Implement monitoring programs to provide new information to refine the prioritization of drainage areas.						
IDDE 14	Special Study #1: Conduct assessment of baseline flows at select outfalls with persistent flows[a]	◖	●	A/P		• Initiated contract for study in FY 2015-16; will be conducting monitoring in SLR during end of summer 2016 (currently in place; FY 2016-17)
IDDE 15	Special Study #2: Assess hydraulic connectivity to lower San Luis Rey River.[b]	X	●			• Planned for FY 2016-17

Table A2-10. City of Vista, Illicit Discharge Detection and Elimination Program Strategies

Number	San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
4. Actively enforce prohibitions related to illicit discharges and connections.						
IDDE 16	Investigate and eliminate identified sources of illicit discharges and connections.	●	●	A/P		See IDDE 1
IDDE 17	Implement Enforcement Response Plan to require minimum BMPs to prevent and/or eliminate illicit discharges	●	●	A/P		• Stormwater Standards Manual and VMC Chapter 13.18 are used as basis of requirements, violations, and enforcement actions. All complaints investigated, support data/photos, and enforcement actions are documented in Cityworks as compliance cases. Existing facility inspections also used to proactively confirm minimum BMPs being implemented.
5. Other Related Programs and Activities.						
IDDE 18	Maintain MS4 map to facilitate implementation of the IDDE program.	●	●	A/P		• Cityworks (GIS-based) software used to track all inspections, work orders, investigations, and compliance cases—inclusive of IDDE cases. • Staff are evaluating ability to incorporate outfall monitoring data and visual assessments in Cityworks (FY2016-17).

a. Conduct assessment of baseline flow and bacteria discharges during dry weather at 3 major outfalls with persistent flow. Collect flow and water chemistry data. Outfall sites include: 1) Carlsbad Watershed, Agua Hedionda Focus Area Site #AH-01; 2) Carlsbad Watershed, Buena Vista Focus Area Site #BV-12; 3) San Luis Rey Watershed, Site #SLR-03.

b. Conduct assessment of hydraulic connectivity between Vista's existing development discharges in San Luis Rey. Assess discharges in context of Guajome Lake and adjacent wetlands, and connectivity to Lower San Luis Rey River during both wet and dry weather conditions.

Table A2-11. City of Vista, Development Planning Program Strategies

Number	San Luis Rey River Development Planning Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Provide updated materials and enhanced outreach to convey land development requirements.						
DP 1	Establish criteria designating priority development projects for new and redevelopment consistent with the Permit.	●	●	A		• Vista Municipal Code Chapter 13.18 (Stormwater Management and Discharge Control Program) revised and presented to City Council for adoption on June 9, 2015. • The City of Vista Stormwater Standards Manual was revised in June 2015 to include minimum BMPs for dischargers, enforceable through VMC Chapter 13.18. • The City of Vista BMP Design Manual presents requirements for land development projects and replaced former SUSMP documents in February 2016. Minor revisions to text, checklists, and project submittal forms have occurred since then. • Continued minor updates/revisions to BMP Design Manual forms to facilitate accurate and complete project submittals/evaluations.
DP 2	Update BMP design manual procedures to specify storm water requirements applicable to development and redevelopment projects, identify and design appropriate BMPs, establish maintenance criteria.	●	NA	A		• The City of Vista BMP Design Manual presents requirements for land development projects and replaced former SUSMP documents in February 2016. Minor revisions to text, checklists, and project submittal forms have occurred since then.
DP 3	Internal staff training on updated BMP design manual.	◖	●	A/P		• City staff participated in development meetings, regional workgroup meetings, and public workshops related to preparation and implementation of the BMP Design Manual. • Initiated preparation of staff training presentation of the BMP Design Manual. Training of CIP, Land Development, and inspection staff planned for early FY 2016-17.

Table A2-11. City of Vista, Development Planning Program Strategies

Number	San Luis Rey River Development Planning Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
DP 4	Educate developers /applicants regarding new requirements.	●	●	A/P		• Developers and applicants will be educated regarding the new requirements on an ongoing basis (e.g., through the submittal review process and through pre-construction meetings).
2. Implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation and identify a list of candidate projects that could be used as alternative compliance options for Priority Development Projects.						
DP 5	Develop and implement a Watershed Management Area Analysis to develop watershed specific requirements for structural BMP implementation	●	●	A/P		• WMAA was conducted for SLR WMA and completed in October 2014. The analysis examines the watershed and suggests optional candidate projects that will provide water quality benefits. As the watershed programs evolve, the analysis will be consulted to determine candidate projects on an as-needed basis.
3. Implement a post construction BMP compliance program to ensure proper construction and maintenance.						
DP 6	Implement a program that ensures that all structural BMPs are designed, constructed, and maintained on PDPs.	●	●	A/P		• Land Development staff review project plans for compliance. Contractor reviews SWQMP. • Land Development inspectors oversee project construction, including BMPs. • Stormwater staff and Land Development inspectors conduct joint structural BMP occupancy inspection of sites prior to release of bonds.

Table A2-11. City of Vista, Development Planning Program Strategies

Number	San Luis Rey River Development Planning Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
DP 7	Inspect all high-priority structural BMPs annually prior to the rainy season.	●	●	A/P		• All BMP inspections for summer 2015 were done prior to July 1, 2015 (completed prior to this reporting year). • BMP inspections for Summer 2016 were conducted both before and after July 1, 2016 (in FY 2015-16 and FY 2016-17) • There are three PDP BMP sites (27 structural BMPs) in SLR: o 2 sites (26 BMPs) were inspected during reporting year o Of 26 BMPs inspected, 3 had violations that require staff follow-up.
DP 8	Require implementation of source control, LID, and on-site structural controls for all priority development projects.	●	●	A/P		• Intake forms for standard and PDP SWQMPs provide instructions to address Source Controls, LID, and structural BMPs.
DP 9	Enforce legal authority to ensure all development projects are in compliance with all post construction requirements.	●	●	A/P		• Within the SLR Watershed, 2 cases were initiated for BMP-related investigations. Both cases involved review of project plans at the same site. No violations resulted.
DP 10	Update codes, ordinances, and stormwater design standards consistent with permit and BMP Manual.					See DP1

Table A2-12. City of Vista, Construction Management Program Strategies

Number	San Luis Rey River Construction Management Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Improve data tracking methods for construction inventories and inspections where necessary.						
CM 1	Maintain, update, and prioritize a watershed-based inventory of all projects issued local permits that allow soil disturbing activities.	●	●	A		• Sites issued a grading permit are tracked in the Cityworks system (a GIS-based database). • An Excel spreadsheet is used to track inventoried construction sites, their watershed locations, inspection results, and enforcement actions.
CM 2	Maintain and update a watershed-GIS-based inventory of construction sites and associated site inspection documentation.	X	●	P		• See CM 1. • City staff plan to explore the ability to integrate inspection documents (photos, reports, etc.) with the GIS-based Cityworks system.
2. Ensure that minimum BMPs are designated and required for construction projects.						
CM 3	Require submittal of pollution control plan, construction BMP plan, and/or erosion and sediment control plan for projects requiring local permits involving soil disturbance activities.	●	●	A/P		• Projects requiring local permits for soil disturbing activities are required to submit construction BMP sheets or erosion and sediment control plans. • Construction BMP installation is discussed at pre-construction meetings. • On site inspectors have the authority to require additional BMPs if necessary.
CM 4	Review and confirm that the submitted plan is in compliance.	●	●	A/P		• Staff review BMP sheets and erosion and sediment control plans, provide comments, and confirm corrections are made.
CM 5	Implement or require implementation of BMPs that are site-specific, seasonally appropriate, and appropriate to the construction phase year round.	●	●	A/P		• Site inspection frequency varies by season to ensure site compliance with changing site and seasonal conditions.

Table A2-12. City of Vista, Construction Management Program Strategies

Number	San Luis Rey River Construction Management Program Strategies - City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
CM 6	Inspect construction sites at an appropriate frequency to require and confirm compliance with local permits and ordinances, as well as the MS4 Permit requirements.	●	●	A/P		• All construction sites are considered to be a high threat to water quality. As such, active inventoried sites were inspected weekly during the wet season and monthly during the dry season.
CM 7	Enforce legal authority to ensure inventoried construction projects are in compliance with all requirements.	●	●	A/P		• All enforcement actions are written and city staff continued to exercise its legal authority to ensure sites are in compliance with all requirements.

a. Wet Season = Minimum Weekly, Dry Season = Minimum Monthly

Table A2-13. City of Vista, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
1. Improve data tracking methods for existing development inventories where necessary.						
ED 1	Maintain and update a watershed-based inventory of existing development (i.e., commercial, industrial, and municipal facilities and residential areas).	◖	◖	A/P		• Business sites (Industrial and Commercial facilities) and municipal facilities are inventoried in GIS. Cityworks interfaces with GIS, and is used to document inspections, work orders, and compliance cases associated with those facilities. • The SLR WQIP was not approved until late in the reporting year, and approval of the Carlsbad WQIP is not anticipated until mid-FY 2016-17. The City will establish residential management areas when able to do so with consistency between the two watersheds across the jurisdiction. • During the reporting period, outfall monitoring and complaint case response occurred in the SLR watershed, most of which is predominately residential land uses.
2. Develop and implement approaches to address the impacts of improper water use and irrigation runoff.						
ED 2	Develop and distribute outreach materials targeting over-irrigation.	●	●			• New stormwater brochure (April 2016) developed and targeted for residential pollutant sources includes reference to over-irrigation. • One residential over-irrigation complaint case responded to during reporting period. Response used as opportunity to educate resident about over-irrigation.
ED 3	Promote inter- and/or multi-agency water conservation and incentive programs.					• See IDDE 2 for coordination with VID. • See ED 34 for water conservation-related activities.

Table A2-13. City of Vista, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
3. Improve and/or continue existing pet waste programs.						
ED 4	Expand pet waste program based on municipal and residential area inspections.	X	●	P		• No new stations were installed in SLR WMA during the period. • Parks staff will be replacing old stations throughout the city as needed.
4. Improve trash management strategies within the watershed.						
ED 5	Sponsor Trash Collection Events (public outreach/part).	●	●	A/P		• Creek to Bay Cleanup April 23, 2016 • Distribute Household Hazardous Waste collection site brochure at Summer Fun Fest August 8, 2015
5. Develop and implement approaches to address the impacts of septic systems within the watershed.						
ED 6	Develop and distribute outreach materials targeting septic system maintenance.	X	●	P		• Anticipated in FY 2016-17, consistent with implementation timeline and likely to follow septic system inventory assessment in strategy ED 7.
ED 7	Develop inventory of septic systems within Vista's portion of the SLR Watershed (see also IDDE 8).	X	●	P		• Anticipated in FY 2016-17, consistent with implementation timeline.
ED 8	Develop and distribute outreach materials targeting sewer lateral maintenance.	●	●	A/P		• New FOG brochure and poster developed in April 2016. Distributed during FOG inspections.
ED 9	Undertake next phase of sewer exfiltration study.	X	●	P		• Anticipated in FY 2016-17, consistent with implementation timeline.
ED 10	Continue citywide sanitary sewer rehabilitation and repair programs.	●	●	A/P		• Current sanitary sewer repair programs are focused in portions of the Buena Sanitation District that are outside of the SLR WMA. Last year, approximately 4 miles of pipeline rehabilitation was completed.

Table A2-13. City of Vista, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
ED 11	Conduct FOG inspections to decrease private lateral spills.	●	●	A/P		• 8 FOG inspections were conducted in SLR WMA during reporting period. None required follow-up.
6. Improve and implement existing outreach programs to target key sources and pollutants.						
ED 12	Develop, improve, and distribute outreach materials.	●	●	A/P		• April 2016 – redesigned residential brochure and poster, also redesigned FOG brochure and poster. Distribution will occur as opportunities arise.
ED 13	Implement outreach per JRMP (see Table 10-2)					• Outreach, education, and training events are summarized in the City's Jurisdictional Runoff Management Program Annual Report Form, Attachment A.
ED 14	Educational Workshops (e.g., IPM, manure management).	●	●	A/P		• Industrial General Permit – cooperative with Vista Chamber & Tory Walker (July 30, 2015) • Public works training – operations yard pollution prevention and MS4/JRMP overview (October 7, 2015). • Parks staff with pesticide applicator licenses maintain 20 hours of training every two years for license.
7. Enhance existing MS4 maintenance programs.						
ED 15	Implement a schedule of operation and maintenance activities for the MS4 and related structures.	●	●	A/P		• Public Works regularly maintains the MS4 and related structures in accordance with several variables, including high-impact areas, weather, etc.

Table A2-13. City of Vista, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
8. Develop and implement targeted programs to address issues in residential areas.						
ED 16	Implement an oversight program to promote designated BMPs in residential areas.	●	●	A/P		• Outfall inspections and monitoring contribute to residential area oversight in predominant residential land use: o Sampling is conducted at 2 persistently flowing outfalls, twice per monitoring season. o Visual inspections are conducted at 4 major outfalls, twice per monitoring season. • 4 of the 5 IDDE cases in SLR during the reporting period were related to residential areas. See IDDE 1 for summary. • New residential BMP brochure and poster (bi-lingual) produced and printed for distribution. • Promoted HHW collection facility at Summer Fun Fest outreach event (August 8, 2015), distributing brochures about proper HHW disposal.
ED 17	Develop targeted outreach materials for priority residential issues and BMPs.	●	X	A		• April 2016 – new residential BMP brochure and stormwater poster (bi-lingual)

Table A2-13. City of Vista, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
ED 18	Outreach to and coordination with homeowners associations.	●	●	A/P		• Stormwater staff supported a regional outreach booth at the 42nd annual Rental Housing Education Conference & Expo on 4/19/2016. Emphasis was to educate property owners and managers about stormwater BMPs. • Targeted outreach and coordination with HOAs is anticipated next fiscal year, consistent with the implementation timeline, through designation of residential management areas within the city. Results from outfall monitoring may also contribute to this effort.
9. Improve existing inspections programs to more efficiently target key sources.						
ED 19	Implement a schedule of operation and maintenance for public streets, unpaved roads, paved roads, and paved highways.	●	●	A/P		• Continued to implement street sweeping schedule consistent with past reporting periods.
ED 20	Conduct inspections of inventoried existing development to ensure compliance. Each area/activity inspected once every five years.	●	●	A/P		• Existing Development Inspection Summary for SLR: • Inventory – 2 MUNI, 19 COM, 1 IND, n.a. RES • Inspections – 2 MUNI, 2 COM, 1 IND, 5 RES
10. Actively enforce stormwater and urban runoff requirements for existing development.						
ED 21	Designate and require minimum BMPs for all inventoried existing development.	●	●	A/P		• Established minimum BMPs in City of Vista Stormwater Standards Manual (June 2015).
ED 22	Enforce legal authority to ensure inventoried existing development facilities and/or areas are in compliance with all minimum BMP requirements.	●	●	A/P		• 1 COM inspection found 1 violation • 0 violations found at MUNI and IND inspections • 5 IDDE compliance cases (see IDDE 1)

Table A2-13. City of Vista, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
11. Develop and implement a strategy to identify and facilitate retrofit opportunities in areas of existing development.						
ED 23	As an optional strategy, develop retrofit projects in areas of existing development.	◖	X	P		• The city has budgeted to conduct a soil infiltration feasibility study in FY 2016-17. Results of this effort are anticipated to help guide strategic structural BMP projects and retrofit efforts. • This optional strategy will be implemented if/when triggers identified in the WQIP are met.
ED 33	Evaluate MS4 maintenance program for target areas and potential retrofit opportunities.	◖	●	P		• Soil infiltration feasibility study is budgeted for FY 2016-17 (see ED 23).
ED 34	Investigate incentives for BMP retrofits, such as weather-based irrigation controllers, in partnership with water agency(ies).	●	●	P		• Rather than using traditional turf, artificial turf was installed at the warmup/practice field at Vista Sports Park in May 2015. • Given drought conditions and water use restrictions by VID, irrigation systems throughout city were programmed for limited watering schedules. Activities not in SLR, but within the city include: • Multiple city-owned landscape areas had irrigation systems replaced, including Civic Center property, East Broadway, and Vista Village Drive (Carlsbad WMA). • 1 acre of turf was removed and replaced with drought tolerant plants at Brengle Terrace Park (Carlsbad WMA). Total cost was $149k, with a Metropolitan Water District rebate of $48k awarded for the project. • August 2016, Raintree Park scheduled for replacement of turf with artificial turf (Carlsbad WMA).

Table A2-13. City of Vista, Existing Development Management Program Strategies

Number	San Luis Rey River Existing Development Management Program Strategies City of Vista	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments
12. Improve coordination between agencies. See strategies ED 3, ED5.						
13. Other BMPs/Activities						
ED 24	Develop and distribute outreach materials targeting sediment control.	●	●	A/P		• Sediment and erosion control BMP brochure is handed out with every grading and building permit enquiry at front desk. Typically order ~250 brochures printed per year.

3.4 MODIFICATIONS TO THE BMP DESIGN MANUAL

See 3.2 JRMP Annual Report form – Attachment A.

3.5 MODIFICATIONS TO THE JRMP

See 3.2 JRMP Annual Report form – Attachment A.

4 Caltrans

4.1 ANNUAL REPORT CERTIFICATION

DEPARTMENT OF TRANSPORTATION
DISTRICT 11
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SAN DIEGO, CA 92110
PHONE (619) 688-0100
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Serious drought.
Help save water!

January 4, 2017

STATEMENT OF CERTIFICATION

San Luis Rey River Watershed Management Area Water Quality Improvement Plan
2015-2016 Annual Report

I certify, under penalty of law, that this Water Quality Improvement Plan Annual Report submittal and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

1/6/17

BRUCE L. APRIL
Deputy District Director, Environmental

Date

4.2 JURISDICTIONAL STRATEGIES

Table A2-14. Caltrans, Illicit Discharge Detection and Elimination Program Strategies

San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
1. Engage the public, jurisdictional staff, and other agency staff to proactively identify and report illicit discharges.					
Utilize ~~municipal~~ Caltrans personnel and contractors to identify and report illicit discharges and connections.	●	●	A		The *Illegal Connection, Illicit Discharge (IC/ID) and Illegal Dumping Response Plan* (CTSW-RT-13-999.02) was submitted to the SWRCB in December 2013. The plan describes procedures and BMPs used to protect its MS4 and stormwater quality from potential pollutant loading due to the illicit deposition of solid or liquid materials to Caltrans' right of way. NPDES Permit Section E.2.h.4)b)ii), Page 47.
Facilitate public reporting of illicit discharges and connections via telephone and email.	●	●	A		
Educate the public regarding illegal discharges/dumping.	●	●	A		
Coordinate with upstream entities to prevent illicit discharges from upstream sources from entering the MS4.	●	●	A		
Annual training for appropriate staff on implementation of ICID and Illegal Dumping Response Plan.	●	●	A		

Table A2-14. Caltrans, Illicit Discharge Detection and Elimination Program Strategies

San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
Develop and implement procedures for educating the public with respect to ICIDs and illegal dumping.	●	●	A		
2. Develop and implement approaches to address the impacts of septic systems within the watershed.					
Investigate and eliminate illicit discharges and connections.	●	●	A		
3. Develop and implement approaches to reduce the impacts of public and private sanitary sewer systems within the watershed.					
Implement practices and procedures to address spills with the potential to enter the MS4.	●	●	A		
Investigate and eliminate illicit discharges and connections.	●	●	A		
4. Implement monitoring programs to provide new information to refine the prioritization of drainage areas.					
Develop Comprehensive TMDL Monitoring Plan.	●	●	A		Caltrans submitted the Comprehensive TMDL Monitoring Plan to the State Board on January 1, 2015. State Board staff provided review and comment within the reporting period, and Caltrans submitted a revised plan to State Board staff in June 2016.
TMDL Reach Prioritization	●	●	A		
Perform Tier 1 Monitoring.	●	●	A		Four sites performed monitoring in District 11 during the reporting period at Tier 1 sites.

Table A2-14. Caltrans, Illicit Discharge Detection and Elimination Program Strategies

San Luis Rey River Illicit Discharge Detection and Elimination Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
5. Actively enforce prohibitions related to illicit discharges and connections.					
Investigate and eliminate illicit discharges and connections.	●	●	A		The *Illegal Connection, Illicit Discharge (IC/ID) and Illegal Dumping Response Plan* (CTSW-RT-13-999.02) was submitted to the SWRCB in December 2013. The plan describes procedures and BMPs used to protect its MS4 and stormwater quality from potential pollutant loading due to the illicit deposition of solid or liquid materials to Caltrans' right of way.
6. Other Related Programs and Activities.					
Develop and Implement an ICID and Illegal Dumping Response Plan.	●	●	A		
Develop and implement procedures for investigating, remediating, and eliminating illicit connections and discharges.	●	●	A		
Develop and implement procedures for the prevention of illegal dumping.	●	●	A		

* Information source is Caltrans Annual Report, Fiscal Year 2015-2016

Table A2-15. Caltrans, Development Planning Program Strategies

San Luis Rey River Development Planning Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
1. Implement a post construction BMP compliance program to ensure proper construction and maintenance.					
Implement a program that ensures that all structural BMPs are designed, constructed, and maintained.	●	●	A		Create a new website application (CT Portal) dedicated for reporting all structural BMPs that were designed, constructed and maintained.
Inspect all high priority structural BMPs annually.	●	●	A		
Maintain an inventory of structural BMPs.			A		
Stormwater Treatment BMP Technology Report and Stormwater Monitoring and BMP Development Status Report in Annual Report.	●	●	A		*Stormwater Monitoring and BMP Development Status Report: Fiscal Year 2015-2016 Update*, September 2015, which provides an update on the status of stormwater treatment technology studies, source control studies (including erosion control studies), and stormwater quality characterization
2. Enforce post construction requirements related to new and redevelopment.					
Enforce legal authority to ensure all development projects are in compliance with all post construction requirements.	●	●	A		

* Information source is Caltrans Annual Report, Fiscal Year 2015-2016

Table A2-16. Caltrans, Construction Management Program Strategies

San Luis Rey River Construction Management Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
1. Ensure that minimum BMPs are designated and required for construction projects.					
Implement or require implementation of BMPs that are site specific, seasonally appropriate, and appropriate to the construction phase year round.	●	●	A		Caltrans continued to track new and/or emerging post-construction stormwater treatment technologies
Develop and implement new construction guidance as needed to comply with new Statewide Construction General Permit (CGP).	●	●	A		Full implementation of the CGP occurred in this fiscal year.
2. Provide enhanced outreach and coordination to convey construction requirements.					
Provide internal staff training related to construction storm water management.	●	●	A		During the fiscal year, construction stormwater classes were offered to Construction personnel on stormwater topics.
Provide public education and outreach targeting the construction industry.	●	●	A		

* Information source is Caltrans Annual Report, Fiscal Year 2015-2016

Table A2-17. Caltrans, Existing Development Management Program Strategies

San Luis Rey River Existing Development Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
1. Improve data tracking methods for existing development inventories where necessary.					
2. Improve trash management strategies within the watershed.					
Implement "Don't Trash California" campaign.	●	●	A		Caltrans collects trash through several activities that District Maintenance personnel perform on a regular basis. These activities include storm drain maintenance, roadway sweeping, District crew/California Conservation Corps (CCC) trash collection, and the Adopt-A-Highway Program, and public education emphasizing trash and litter prevention.
Implementation of Adopt-A-Highway Statewide Program through coordination with local organizations.	●	●	A		The Caltrans Adopt-A-Highway Program provides an avenue for individuals, organizations, or businesses to help maintain sections of roadside for various activities including litter removal within California's State Highway System.
Report and evaluate trash and litter activities.	●	●	A		
3. Improve and implement existing outreach programs to target key sources and pollutants.					
Implement and annually evaluate public education program.	●	●	A		The Division of Maintenance helps sponsor the California Statewide Litter Collection, Enforcement and Beautification Day event held in the spring on or around Earth Day each year. Caltrans staff volunteers to collect litter and raise public awareness of the issue. Caltrans participates in supporting the California "Keep California Beautiful" campaign with Caltrans' "Protect Every Drop" campaign.

Table A2-17. Caltrans, Existing Development Management Program Strategies

San Luis Rey River Existing Development Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
Implement "Don't Trash California" campaign.	●	●	A		
Co-sponsor CASQA's Water Quality Newsflash.	●	●	A		
Implementation of Adopt-A-Highway Statewide Program through coordination with local organizations.	●	●	A		Adopt-A-Highway is a cooperative program between organizations with volunteers to collect trash along the highways, and be recognized for their contribution to keeping the environment and highways clean.
Implementation of Statewide Storm Drain Stenciling Program.	●	●	A		
4. Enhance existing maintenance programs.					
Implement a schedule of operation and maintenance activities.	●	●	A		The Division of Construction staff continued providing the coordinates of treatment BMPs to facilitate transfer to the Division of Maintenance using a designated handoff form. The Division of Maintenance uses its Integrated Maintenance Management System (IMMS) to track maintenance records of treatment BMPs as provided by the Districts.
5. Improve existing inspections programs to more efficiently target key sources.					
Implement a schedule of operation and maintenance for highways.	●	●	A		The Division of Construction staff continued providing the coordinates of treatment BMPs to facilitate transfer to the Division of Maintenance using a designated handoff form. The Division of Maintenance uses its Integrated Maintenance Management System (IMMS) to track maintenance records of treatment BMPs as provided by the Districts.

Table A2-17. Caltrans, Existing Development Management Program Strategies

San Luis Rey River Existing Development Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
Implement highway maintenance activities as required.	●	●	A		Year- End Performance Report FY 2015-2016, A Summary of Maintenance Activity Storm Water Compliance Reviews, September 2015 (CTSW-RT-15-321.04.4), which summarizes the stormwater compliance reviews of Maintenance activities.
6. Actively enforce stormwater and urban runoff requirements for existing development.					
Develop and implement Facility Pollution Prevention Plans.	●	●	A		Year- End Performance Report FY 2015-2016, A Summary of Maintenance Activity Storm Water Compliance Reviews, September 2015, which summarizes the stormwater compliance reviews of Maintenance activities. Caltrans is required to develop a Facility Pollution Prevention Plan (FPPP) for each of its maintenance facilities. Each FPPP describes the activities conducted at the facility and the BMPs to reduce or eliminate the discharge of pollutants in stormwater runoff from the facility. All FPPPs will be updated or revised as needed during each year.
7. Develop and implement a strategy to identify and facilitate retrofit opportunities in areas of existing development.					
Develop a strategy to identify opportunities and facilitate the implementation of retrofit projects in areas of existing development.	●	●	A		

Table A2-17. Caltrans, Existing Development Management Program Strategies

San Luis Rey River Existing Development Program Strategies - Caltrans	FY15-16	FY16-17	Actual / Planned	Rationale for Modification to the Strategy	Comments*
8. Improve coordination between agencies.					
Develop and implement a Municipal Coordination Plan.	●	●	A		Caltrans' Municipal Coordination Plan was under development during the reporting period. In the interim, the Districts participated in municipal coordination activities by attending meetings, taking part in special studies, and collaborating with local agencies. District staff attended meetings statewide with municipal stormwater permittees to coordinate public education and outreach, regional planning, and other related activities.
9. Other BMPs/Activities					
Implement and evaluate the Vegetation Controls Program.	●	●	A		

* Information source is Caltrans Annual Report, Fiscal Year 2015-2016

APPENDIX 3

Water Quality Improvement Plan Numeric Goals

Appendix 3 Water Quality Improvement Plan Numeric Goals

Compliance with the Bacteria Total Maximum Daily Load (TMDL) may be demonstrated via several methods. The pathways that may be used to demonstrate progress toward the interim and final TMDL goals in the San Luis Rey River Watershed Management Area (WMA or Watershed) are presented below in Table A3-1 and Table A3-2, respectively. These tables, along with additional details regarding these pathways, can be found in Sections 3.1.1 (for interim pathways) and 3.1.2 (for final pathways) of the San Luis Rey Water Quality Improvement Plan (WQIP).

Table A3-1. Pathways to Achieve Required Interim TMDL Goals

Pathway	Title	Interim Target	Metric	Values to be met		
				Indicator	Dry	Wet
1 OR	Meet bacteria allowable exceedance frequency of receiving water objectives	No exceedances of the interim receiving water limitations;	Exceedance frequencies as measured in receiving waters.	Total Coliform[a]	4.7% AEF[c]	45% AEF
				Fecal Coliform	12.6% AEF	44% AEF
				Enterococcus	16% AEF	47% AEF
2 OR	No discharge from stormwater drain outfalls	No direct or indirect discharge from the Participating Agencies' storm drain outfalls to the receiving water;	Assessment of presence/ absence of flow and connectivity with receiving water.	No discharge from storm drain outfalls to receiving waters.		
3 OR	Reduce loads at storm drain outfalls	The pollutant load reductions for discharges from the Participating Agencies' storm drain outfalls are greater than the required load reduction;	Pollutant load reductions.	Total Coliform	19.07% reduction	2.81% reduction
				Fecal Coliform	19.55% reduction	1.56% reduction
				Enterococcus	43.69% reduction	5.85% reduction
4	Implement WQIP and use adaptive management	The Participating Agencies develop and implement an accepted WQIP.[b]	Implementation of jurisdictional strategies	Implementation of jurisdictional strategies as developed in accepted Plan and designed to meet interim goals 1, 2 and/or 3.		

a. Receiving water limitations for total coliform only apply to beaches.

b. The accepted Plan must provide reasonable assurance that the interim TMDL compliance requirements in Attachment E of the Permit will be met via implementation, must be accepted by the Regional Board, and must be fully implemented by the Participating Agencies.

c. AEF - allowable exceedance frequency is the percent of samples that can exceed the single sample maximum of geometric mean and still be in compliance; the AEF is calculated based on bacteria concentration measurements from a reference beach.

Table A3-2. Pathways to Achieve Required Final TMDL Goals

Compliance Pathway	Final Target	Final Metric	Measurement					
			Indicator	Dry Weather			Wet Weather	
1 OR	No exceedances of the final allowable exceedance frequency in the receiving water;	Bacteria concentrations (MPN or CFU/100 ml) and exceedance frequencies in receiving waters;		SSM[a]	GM[b]	AEF[c]	SSM	AEF
			Total Coliform	10,000	1,000	0%	10,000	22%
			Fecal Coliform	400	200	0%	400	22%
			Enterococcus	104	35	0%	104	22%
2 OR	No direct or indirect discharge from the Participating Agencies' storm drain outfalls to the receiving water;	Assessment of presence/absence of flow and connectivity with receiving water;	Flow observations or measurements.					
3 OR	There are no exceedances of the final allowable exceedance frequencies at the Participating Agencies' storm drain outfalls;	Bacteria concentrations (MPN or CFU/100 ml) and exceedance frequencies in discharges;		Dry			Wet	
				SSM	GM	AEF[d]	SSM	AEF[e]
			Total Coliform[f]	10,000	1,000	0%	10,000	22%
			Fecal Coliform	400	200	0%	400	22%
			Enterococcus	104[g] 61[h]	35	0%	104[g] 61[h]	22%
4 OR	The pollutant load reductions for discharges from the Participating Agencies' storm drain outfalls are greater than or equal to the final required load reductions;	Load reductions in discharges are greater than or equal to required load reductions. The calculation requires an understanding of the baseline load[i], which can be used to estimate a target load reduction[j];		Percent Reduction (Dry)			Percent Reduction (Wet)	
			Total Coliform	38.13%			5.62%	
			Fecal Coliform	39.09%			3.12%	
			Enterococcus	87.38%			11.69%	
5 OR	Exceedances of the final allowable exceedance frequencies in the receiving water are due to loads from natural sources and pollutant loads from the Participating Agencies' storm drain outfalls are not causing or contributing to the exceedances;	Microbial source tracking results as measured in the receiving water downstream of storm drain outfalls;	Microbial source tracking results show anthropogenic markers are below the limits of reporting for most receiving water samples at the time of the bacteria exceedance(s).					
6	The Participating Agencies develop and implement an accepted Water Quality Improvement Plan that includes a watershed model or other watershed analytical tool(s).	Implementation of jurisdictional strategies designed to meet goals. Use an adaptive management approach to improve implementation of jurisdictional strategies to reach goals.	Implementation of jurisdictional strategies as outlined in the Water Quality Improvement Plan, and of the required monitoring and assessment program.					

a. SSM = single sample maximum or the highest allowable concentration of bacteria contained in one discreet sample.
b. GM = geometric mean calculated based on multiple samples over a given time frame as defined by the Ocean Plan.
c. AEF = allowable exceedance frequency is the percent of samples that can exceed the single sample maximum of geometric mean and still be in compliance; the AEF is calculated based on the presence of bacteria loading from natural sources.
d. For dry weather days, the dry weather bacteria densities must be consistent with the single sample maximum REC-1 water quality objectives in the Ocean Plan for discharges to beaches and the Basin Plan for discharges to creeks and creek mouths.
e. The 22% single sample maximum allowable exceedance frequency only applies to wet weather days.
f. Total coliform effluent limitations only apply to storm drain outfalls that discharge to the Pacific Ocean Shorelines and creek mouths listed in Table 6.0 of Attachment E of Order R9-2013-0001.
g. This enterococcus effluent limitation applies to storm drain discharges to segments of areas of the Pacific Ocean Shoreline listed in Table 6.0 of Attachment E of Order R9-2013-0001.
h. This enterococcus effluent limitation applies to storm drain discharges to segments of areas of creeks or creek mouths listed in Table 6.0 of Attachment E of Order R9-2013-0001.
i. The baseline loads for the lower watershed were determined through modeling and are presented in Appendix 3C.
j. The baseline fecal coliform load (1993 water year) equals 6,186 x 10^{12} MPN resulting in a target load reduction of 723 x 10^{12} MPN for wet weather.

The watershed goals identified by the Participating Agencies in the San Luis Rey River WMA to demonstrate progress toward compliance with the Bacteria TMDL at the mouth of the San Luis Rey River are presented below in Table A3-3 (dry weather) and Table A3-4 (wet weather). The goals outlined in these tables are based on TMDL compliance pathways. The Participating Agencies also outlined goals for the Lower San Luis Rey River, which are intended to improve water quality at storm drain outfalls and receiving waters. These goals are presented in Table A3-5 (dry weather) and Table A3-6 (wet weather) below. Each of the following four tables, along with additional details regarding these goals, can be found in Section 3.1.3 of the San Luis Rey River WQIP.

Table A3-3. Watershed Management Area Numeric Dry Weather Goal for Bacteria TMDL – San Luis Rey Hydrologic Unit at the San Luis Rey River Mouth

Compliance Pathway	Title	Metric[a]	Baseline	Final Outcome	1st Permit Term 2013 – 2018	2nd Permit Term 2018 – 2023	
						TMDL Interim Compliance Date April 4, 2020[b]	TMDL Final Compliance Date April 4, 2021
1; or	No Discharge from MS4	Discharge from MS4 outfall	To be established during FY 15-16 monitoring	Elimination of flow from MS4 discharges	Flow eliminated from 25% of outfalls or cumulative flow from storm drain outfalls reduced by 25 %	Flow eliminated from 50% of outfalls or cumulative flow from storm drain outfalls reduced by 50 %	Flow eliminated from 100%[c] of outfalls or cumulative flow from storm drain outfalls reduced by 100 %[c]
2; or	Meet TMDL Limits in Receiving Water	Bacteria concentrations & exceedance percentage in receiving waters	Not applicable	Achievement of WQOs or allowed exceedance percentage for bacteria	None	Bacteria concentrations at the compliance point identified in the Monitoring and Assessment Plan are below the applicable WQO (e.g., 400 mpn/100mL single sample maximum for Fecal Coliform)[j] or TMDL allowed exceedance percentage[d] of 4.7% for Total Coliform; 4% for Fecal Coliform; 16% for *Enterococcus*	Bacteria concentrations at the compliance point identified in the Monitoring and Assessment Plan are below the applicable WQO or TMDL allowed exceedance percentage[e] of 0% for Total Coliform, Fecal Coliform and *Enterococcus*
3; or	MS4 Discharge Meets TMDL Limits	Bacteria concentrations & exceedance percentage in MS4 discharges					
4;	MS4 Discharge Load Reduction	Load reductions in MS4 discharges	10.0 x 10^{12} MPN during Water Year 1993 (based on TMDL modeling) [f]	Reach mandatory reduction of dry weather bacteria loading from MS4 discharges identified in Attachment E	Loads[g] are reduced by 9.5% for Total Coliform; 9.8% for Fecal Coliform; 21.8% for Enterococcus from MS4 outfalls	Loads[h] are reduced by 19.07% for Total Coliform (TC), 19.55% for Fecal Coliform (FC), 43.69% for *Enterococcus (Ent)* from the MS4 outfalls	Loads[i] are reduced by 38.13% for Total Coliform (TC), 39.09% for Fecal Coliform (FC), 87.38% *for Enterococcus (Ent)* from the MS4 outfalls
5; or	Exceedance due to Natural Sources	Exceedances due to natural sources, and MS4 outfall loads not causing or contributing to exceedances	To be established during FY 14-15 monitoring	Elimination of anthropogenic fecal markers from MS4 discharges	Number of MS4 outfalls with human fecal markers detected are reduced by 25%	Number of MS4 outfalls with anthropogenic fecal markers detected are reduced by 50%	Number of MS4 outfalls with anthropogenic fecal markers detected are reduced by 100% and storm drain outfall loads are not causing or contributing to exceedances.
6	Water Quality Improvement Plan (WQIP)	Implement WQIP	Not Applicable	Implementation of the WQIP in accordance with Attachment E of Permit	Implement WQIP supported by a reasonable assurance as accepted by the San Diego Water Board	Submit and fully implement WQIP, accepted by the San Diego Water Board, which provides reasonable assurance that interim TMDL compliance requirements will be achieved by the interim compliance dates	Develop and implement WQIP as follows: (i) incorporate BMPs required under Permit Provision 6.b.(2)(c) in WQIP (ii) Include analysis to demonstrate that implementation of BMPs required by Provision 6.b.(2)(c) achieves compliance with Specific Provisions 6.b.(3)(a), 6.b.(3)(b), 6.b.(3)(c), 6.b.(3)(d), and/or 6.b.(3)(e) (iii) The results analysis must be accepted San Diego Water Boards as part of the WQIP (iv) Responsible Copermittee continue to implement the BMPs in (i), AND (v) Responsible Copermittee continue to perform specific monitoring and assessments from Provision 6.d to demonstrate compliance with Specific Provisions 6.b.(3)(a), 6.b.(3)(b), 6.b.(3)(c), 6.b.(3)(d), 6.b.(3)(e), and/or 6.b.(3)(f)
	a. Eliminate anthropogenic dry weather flows from storm drain outfalls	% reduction of flow or number of outfalls with persistent flows	To be established FY 15-16 using dry weather flow measurements.	Effectively eliminate anthropogenic dry weather flow from storm drain outfalls to receiving water.	Reduce by 20% the aggregate flow or the number of persistently flowing outfalls.	Reduce by 75% the aggregate flow or the number of persistently flowing outfalls.	Eliminate 100% anthropogenic dry weather discharges and accompanying bacteria loads from storm drain outfalls to the receiving water.

a. In accordance with Permit Provisions 6.b.(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.

b. Request moving Interim TMDL Compliance Date from April 4, 2017 (per Attachment E, 6.c(1)) to April 4, 2020 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.

c. Goal of 100% flow elimination in accordance with Provision 6.b.(3)(a).

d. Interim dry weather Allowable Exceedance Percentages were calculated based on half the value of the existing 30-day Geometric Mean of exceedance percentages based on beach sample data from 2004 through 2010: ; Annual Bacteria TMDL Monitoring Report is included in Appendix I of the Transitional Monitoring and Assessment Report for the San Luis Rey River Watershed Management Area (2012-2014). From this report, the San Luis Rey River watershed compliance reduction milestones/existing and interim and final exceedance frequencies are provided in Table 1–2 on page 1 – 8 (specifically, footnote "a" under the table). The interim and existing exceedance frequency calculation methodology is summarized in Section 2.4 on page 2-6 of the document.

e. Final dry weather Allowable Exceedance Percentages are from Tables 6.2a, 6.2b, and 6.2c of Attachment E to Order No.R9-2013-0001.

f. Value derived from table on page A33 of Attachment A to TMDL Resolution No.R9-2010-0001 for the San Luis Rey River watershed; monthly value translated in annual load for watershed by multiplying by 12. Baseline load for County of San Diego was calculated as a proportion of County land area to that of the overall watershed, i.e. approximately 48%Values calculated as half of the interim goals.

g. Values taken from Table 6.6 of Attachment E to Order R9-2013-0001: Anticipated load reductions for WQIP strategies were modeled using Fecal Coliform (FC) as a surrogate for all Fecal Indicator Bacteria as noted in WQIP Appendices 3C and 3F, therefore target FC load reductions were set according to the largest required indicator bacteria reduction (among TC, FC and *Ent*) to be conservative; *Enterococcus* was the highest reduction at 43.69%.

h. Values taken from Table 6.3 of Attachment E to Order R9-2013-0001: Anticipated load reductions for WQIP strategies were modeled using Fecal Coliform (FC) as a surrogate for all Fecal Indicator Bacteria as noted in WQIP Appendices 3C and 3F, therefore target FC load reductions were set according to the largest required indicator bacteria reduction (among TC, FC and *Ent*) to be conservative; *Enterococcus* was the highest reduction at 87.38%.

i. Goal of 100% of exceedances demonstrated to be due to natural sources in accordance with Provision 6.b.(3)(e).

Table A3-4. Watershed Management Area Numeric Wet Weather Goal for Bacteria TMDL – San Luis Rey Hydrologic Unit at San Luis Rey River Mouth

Compliance Pathway	Title	Metric[a]	Baseline	Final Outcome	1st Permit Term 2013 – 2018	2nd Permit Term 2018 – 2023	3rd Permit Term 2023 – 2028	4th Permit Term 2028 – 2033
							Meet TMDL Interim Compliance Date April 4, 2028[b]	Meet TMDL Final Compliance Date April 4, 2031
1; or	No Discharge from MS4	Discharge from MS4 outfalls	To be established during FY 15-16 monitoring	Elimination of flow[l] from MS4 discharges	Flow eliminated from 10% of outfalls or cumulative flow from storm drain outfalls reduced by 10%	Flow eliminated from 25% of outfalls or cumulative flow from storm drain outfalls reduced by 25%	Flow eliminated from 50% of outfalls or cumulative flow from storm drain outfalls reduced by 50%	Flow eliminated from 100%[c] of outfalls or cumulative flow from storm drain outfalls reduced by 100 %[c]
2; or	Meet TMDL Limits in Receiving Water	Bacteria concentrations & exceedance percentage in receiving waters	Not applicable	Achievement of allowed exceedance percentage for bacteria	None	None	Bacteria concentrations are below the applicable WQO (e.g., 400 mpn/100mL single sample maximum for Fecal Coliform)[n] or TMDL allowed exceedance percentage [d] of 45% for Total Coliform; 44% for Fecal Coliform; 47% for *Enterococcus*	Bacteria concentrations are below the applicable WQO or TMDL allowed exceedance percentage[e] of 22% for Total Coliform, Fecal Coliform and *Enterococcus*
3; or	MS4 Discharge Meets TMDL Limits	Bacteria concentrations & exceedance percentage in MS4 discharges						
4; or	MS4 Discharge Load Reduction	Load reductions in MS4 discharges	3,835 x 10^{12} MPN during Water Year 1993 (based on modeling)[f]	Reach mandatory reduction of dry weather bacteria loading from MS4 discharges identified in Attachment E	Loads[g] are reduced by 0.70% for Total Coliform; 0.39% for Fecal Coliform; 1.5% for Enterococcus from MS4 outfalls	Loads[h] are reduced by 1.4% for Total Coliform; 0.78% for Fecal Coliform; 2.9% for Enterococcus from MS4 outfalls	Loads[i] are reduced by 2.81% for Total Coliform; 1.56% for Fecal Coliform; 5.85% for Enterococcus from MS4 outfalls	Loads[j] are reduced by 5.62% for Total Coliform; 3.12% for Fecal Coliform; 11.69% for Enterococcus from MS4 outfalls
5; or	Exceedance due to Natural Sources	Exceedances due to natural sources, and MS4 outfall loads not causing or contributing to exceedances	To be established during FY 14-15 monitoring	Elimination of anthropogenic fecal markers from MS4 discharges	Number of MS4 outfalls with human fecal markers detected are reduced by 10%	Number of MS4 outfalls with human fecal markers detected are reduced by 25%	Number of MS4 outfalls with anthropogenic fecal markers detected are reduced by 50%	Number of MS4 outfalls with anthropogenic fecal markers detected are reduced by 100%[k] and storm drain outfall loads are not causing or contributing to exceedances.

Table A3-4. Watershed Management Area Numeric Wet Weather Goal for Bacteria TMDL – San Luis Rey Hydrologic Unit at San Luis Rey River Mouth

Compliance Pathway	Title	Metric[a]	Baseline	Final Outcome	1st Permit Term 2013 – 2018	2nd Permit Term 2018 – 2023	3rd Permit Term 2023 – 2028	4th Permit Term 2028 – 2033
							Meet TMDL Interim Compliance Date April 4, 2028[b]	Meet TMDL Final Compliance Date April 4, 2031
6	Water Quality Improvement Plan (WQIP)[l]	Implement WQIP	Not Applicable	Implementation of the WQIP in accordance with Attachment E of Permit	Implement WQIP supported by a reasonable assurance as accepted by the San Diego Water Board	Implement WQIP supported by a reasonable assurance as accepted by the San Diego Water Board	Submit and fully implement WQIP, accepted by the San Diego Water Board, which provides reasonable assurance that interim TMDL compliance requirements will be achieved by the interim compliance dates	Develop and implement WQIP as follows: (i) incorporate BMPs required under Permit Provision 6.b.(2)(c) in WQIP (ii) Include analysis to demonstrate that implementation of BMPs required by Provision 6.b.(2)(c) achieves compliance with Specific Provisions 6.b.(3)(a), 6.b.(3)(b), 6.b.(3)(c), 6.b.(3)(d), and/or 6.b.(3)(e) (iii) The results analysis must be accepted San Diego Water Boards as part of the WQIP (iv) Responsible Copermittee continue to implement the BMPs in (i), AND (v) Responsible Copermittee continue to perform specific monitoring and assessments from Provision 6.d to demonstrate compliance with Specific Provisions 6.b.(3)(a), 6.b.(3)(b), 6.b.(3)(c), 6.b.(3)(d), 6.b.(3)(e), and/or 6.b.(3)(f)
	a. Focus on programmatic BMPs and use adaptive management to increase effectiveness	% bacterial load reduction	3,835 x 10^{12} MPN during Water Year 1993	Reduce bacteria loads from baseline by at least 10% from storm drain outfalls to meet TMDL required load reductions.	Implement programmatic (non-structural) BMPs to achieve source reduction of bacteria loads from the storm drain outfalls.	Reduce bacteria loads by 2% from the storm drain outfalls through continued implementation of programmatic BMPs and, based on adaptive management, focus and enhance efforts where needed.	Reduce bacteria loads by an additional 4% (total 6%) from the storm drain outfalls by continued implementation of programmatic BMPs.	Reduce bacteria loads by an additional 4% (at least 10% total) from the storm drain outfalls by continued implementation of programmatic BMPs.
	b. Structural BMPs[m] (as needed and as funding is available)	% bacterial load reduction based on quantitative model	3,835 x 10^{12} MPN during Water Year 1993	Reduce baseline bacteria loads by 1.7% from storm drain outfalls to receiving water to meet TMDL required load reductions.	Reduce by 0.3% the baseline bacteria loads from distributed BMPs constructed between 2003 and 2009 during redevelopment.	Reduce bacteria loads by an additional 0.5% (total 0.8%) through participation in the public private partnership program. Begin planning & design for additional long-term structural BMPs.	Reduce bacteria loads by an additional 0.6% (total 1.4%) through additional participation in the public private partnership program and reduction through BMPs required through redevelopment (3.2 %); Continue planning & permitting for long-term structural BMPs.	Reduce bacteria loads by 0.3% (total 1.7%). Construct distributed and regional structural BMPs if necessary to meet goal.

a. In accordance with Permit Provisions 6.b.(3)(a)-(e) and 6.c.(3)(a)-(g) of Attachment E to Order R9-2013-0001.
b. Request moving Interim TMDL Compliance Date from April 4, 2021 (per Attachment E, 6.c(1)) to April 4, 2028 to allow adequate time to investigate and mitigate bacteria sources, and monitor progress and adjust implementation through the adaptive management process.
c. Goal of 100% flow elimination in accordance with Provision 6.b.(3)(a).
d. Interim wet weather Allowable Exceedance Percentages are from Tables 6.5 of Attachment E to Order No.R9-2013-0001.
e. Final wet weather Allowable Exceedance Percentages are from Tables 6.2a, 6.2b, and 6.2c of Attachment E to Order No.R9-2013-0001.
f. Value from modeled baseline load as indicated in Appendix 3C of the WQIP.
g. Values calculated as half of the 2nd Permit Term goals.
h. Values calculated as half of the interim goals
i. Values taken from Table 6.6 of Attachment E to Order R9-2013-0001: Anticipated load reductions for WQIP strategies were modeled using Fecal Coliform (FC) as a surrogate for all Fecal Indicator Bacteria as noted in WQIP Appendices 3C and 3F, therefore target FC load reductions were set according to the largest required indicator bacteria reduction (among TC, FC and *Ent*) to be conservative; *Enterococcus* is the controlling indicator.
j. Values taken from Table 6.3 of Attachment E to Order R9-2013-0001: Anticipated load reductions for WQIP strategies were modeled using Fecal Coliform (FC) as a surrogate for all Fecal Indicator Bacteria as noted in WQIP Appendices 3C and 3F, therefore target FC load reductions were set according to the largest required indicator bacteria reduction (among TC, FC and *Ent*) to be conservative; *Enterococcus* is the controlling indicator.
k. Goal of 100% of exceedances demonstrated to be due to natural sources in accordance with Provision 6.b.(3)(e).
l. To meet the final wet weather target load reduction of 11.69% for Fecal Coliform, the County through quantitative modeling has demonstrated a 10% reduction from programmatic BMPs and a 1.7% reduction from structural BMPs. Progress will be monitored and adjustments through adaptive management will be used to update the plan.
m. The County of San Diego is concerned that a long-term funding source is not identified for constructing and maintaining structural BMPs, if structural BMPs are needed to meet compliance. The implementation of strategies to achieve goals will depend upon approval of funding in future annual budgets.

Table A3-5. Dry Weather Watershed Goals for Lower San Luis Rey River[a]

Title [b]	Number	Metric	Baseline	Interim Numeric Goals Permit Term 2013 – 2018	Final Numeric Goals Permit Term 2018 – 2023 (April 4, 2021)
Reduce bacteria contributions from persistent dry weather flowing outfalls	1; or	Presence/absence of dry weather flow at persistent flowing outfalls [c]	Establish during transitional monitoring or FY15-16 monitoring and update annually as needed	Effectively eliminate flow from 20% of persistently flowing outfalls	Effectively eliminate anthropogenic flow from 100% of outfalls
	2	Dry weather flow at persistent flowing outfalls [c]	Establish during transitional monitoring or FY15-16 monitoring and update annually as needed	Reduce by 20%, the aggregate flow from persistently flowing outfalls	Reduce by 100%, the aggregate flow from persistently flowing outfalls

a. West of Interstate 15
b. The goals may be adapted as monitoring data is collected and analyzed.
c. Flow is defined as all dry weather flows except groundwater, other exempt, or other permitted non-stormwater flows

Table A3-6. Wet Weather Watershed Goals for Lower San Luis Rey River[a]

Title [b]	Metric	Baseline[c]	Interim Numeric Goals Permit Term 2013 – 2018	Interim Numeric Goals Permit Term 2018 – 2023	Interim Numeric Goals Permit Term 2023 - 2028	Final Numeric Goals Permit Term 2028-2033 (April 4, 2031)
Reduce bacteria contributions from outfalls during wet weather	Bacteria load reductions per acre at key outfalls or bacteria concentration in the lower River	Fecal coliform: $2.44*10^{10}$ MPN/storm/acre Enterococcus: $1.18*10^{11}$ MPN/storm/acre	Reduce bacteria loads cumulatively or at key outfalls[d] by 0.3% or meet Bacteria WQOs in the lower River[f].	Reduce bacteria loads cumulatively or at key outfalls[d] by 1.3% or meet Bacteria WQOs in the lower River[f].	Reduce bacteria loads cumulatively or at key outfalls[d] by 6.0% or meet Bacteria WQOs in the lower River[f].	Reduce bacteria loads cumulatively or at key outfalls[d] by 11.9%[e] or meet Bacteria WQOs in the lower River[f].

a. West of Interstate 15
b. The goals may be adapted as monitoring data is collected and analyzed.
c. Refer to Appendix 3K for baseline determination methodology.
d. The five selected key drainage areas are the wet weather storm drain outfall monitoring locations identified in Table 3-1 and Figure 3-1 of Attachment 4A-5 to the Monitoring and Assessment Plan as MS4-SLR1 through MS4-SLR5. The selected key drainage areas are all typical drainages that are representative of the San Luis Rey Watershed Management Area.
e. This final load reduction goal of 11.9% was arrived at by adding the mean difference between the Enterococcus load reduction requirements to meet the stream freshwater standards and those to meet the ocean standards in Attachment E of the Permit (0.16%), to the required final load reductions for San Luis Rey River at the Pacific Ocean Shoreline (11.69%), see Table 3-8. The modeling was designed to meet the receiving water limits in the river; no dilution was assumed.
f. Meet the water quality objectives for freshwater Single Sample Maxima of 400 MPN/100 mL for Fecal Coliform and 61 MPN/100 mL for *Enterococcus* at the two stream monitoring locations identified in Table 4-5 of the WQIP. Bacteria loads will be measured in the freshwater section of the stream.

Caltrans Numeric Goals

Caltrans storm water flows are not included in the Municipal Stormwater Permit; however, Caltrans is subject to similar requirements through its own stormwater permit (State Water Resources Control Board [SWRCB], 2012). Caltrans has voluntarily contributed to the WQIP effort to provide a consistent and subwatershed-wide approach to meeting applicable TMDL requirements. The baseline strategies are continuously implemented and augmented as resources become available. Attachment IV to the Caltrans Stormwater Permit outlines a methodology for prioritizing stream segments included in TMDLs to which Caltrans is subject. The Permit establishes best management practice (BMP) implementation requirements, evaluated in terms of compliance units. Caltrans is expected to achieve 1,650 compliance units per year through the implementation of retrofit BMPs, cooperative implementation, and post-construction treatment beyond Permit requirements.

Impaired reaches throughout the state will be prioritized on the basis of several factors, including, but not limited to, percent reduction needed, Caltrans drainage area contributing to the reach, and proximity to receiving waters. Reaches with metals TMDLs will likely be prioritized. This prioritization list is currently under negotiation between Caltrans Head Quarters and the State Board.

Areas under Caltrans' jurisdiction include roadways, land adjacent to roadways, and facilities. Caltrans' jurisdictional strategies specifically focus on BMP implementation to reduce known pollutants within these areas. Caltrans' strategies vary from those of other Participating Agencies (in both type and name) to best address freeway characterization discharges from its right-of-way. Strategies include programs developed by Caltrans Headquarters for statewide execution and District 11 implementation. Caltrans' implementation of strategies with the watershed is dependent on legislative approval. For Bacteria TMDLs, Caltrans is expected to eliminate dry weather flows by implementing control measures to ensure effective prohibition (Provision B.2 of the Stormwater Permit). For wet weather flows, Caltrans is expected to implement control measures or BMPs to prevent discharge of bacteria from the right-of-way; this can be source control and preemptive activities such as street sweeping, cleanup of illegal dumping, and public education on littering. Implementation of these controls is per the TMDL prioritization list.

APPENDIX 4

Monitoring and Assessment Results

Appendix 4 Monitoring and Assessment

The purpose of this appendix is to provide the monitoring and assessment results for the 2015-2016 monitoring year for the San Luis Rey River Watershed Management Area (WMA or Watershed). Whereas Section 3 of this Annual Report focuses on the highest priority water quality condition (HPWQC) in the WMA (i.e., bacteria), this appendix will present all of the receiving water and storm drain outfall monitoring data collected during the 2015-2016 monitoring year, including the priority water quality conditions (PWQCs). The PWQCs for the watershed include nitrogen, phosphorus, total dissolved solids (TDS), and toxicity during wet and dry weather and eutrophic conditions, chloride, and the Index of Biotic Integrity (IBI) during dry conditions. Also described below are monitoring programs required by the Permit for which no data were collected during the 2015-2016 monitoring year because the monitoring requirement has been met, or will be met in future years of the Permit term. Caltrans is not a Participating Agency for the monitoring and assessment program described in this section, as Caltrans is regulated under a separate permit from the State Water Resource Control Board (SWRCB).

4.1 Receiving Water Monitoring

Receiving water monitoring in the San Luis Rey River WMA during the 2015-2016 monitoring year was limited to participation in the Southern California Stormwater Monitoring Coalition (SMC) and Hydromodification Management Program (HMP) regional monitoring programs. Total maximum daily load (TMDL) monitoring and lower San Luis Rey River Water Quality Improvement Plan (WQIP) goals monitoring for indicator bacteria was also conducted in receiving waters during 2015-2016. Receiving water results collected under these programs are summarized below.

The receiving water assessments required by Provision D.4.a will be addressed in the Regional Monitoring and Assessment Report (RMAR), which will be submitted to the Regional Board in December 2017 with the Report of Waste Discharge (ROWD) in accordance with Provision D.4.a.1.(b).

4.1.1 *Long Term Receiving Water Monitoring*

Due to dry conditions and lack of flow, long-term monitoring has not yet been conducted at the long-term monitoring station (LTMS), SLR-MLS, which is the historical mass loading station located on the lower San Luis Rey River. The most recent receiving water quality data from SLR-MLS were collected during the 2012-2013 monitoring year. Detailed results for all monitored analytes can be found in the Transitional Monitoring and Assessment Program Report for the San Luis Rey River Watershed Management Area (2012-2014) (WESTON, 2015a). SLR-MLS will be monitored during the 2016-2017 monitoring year or when sufficient flow occurs. A map showing the location of the SLR-MLS is presented in Figure A4-1.

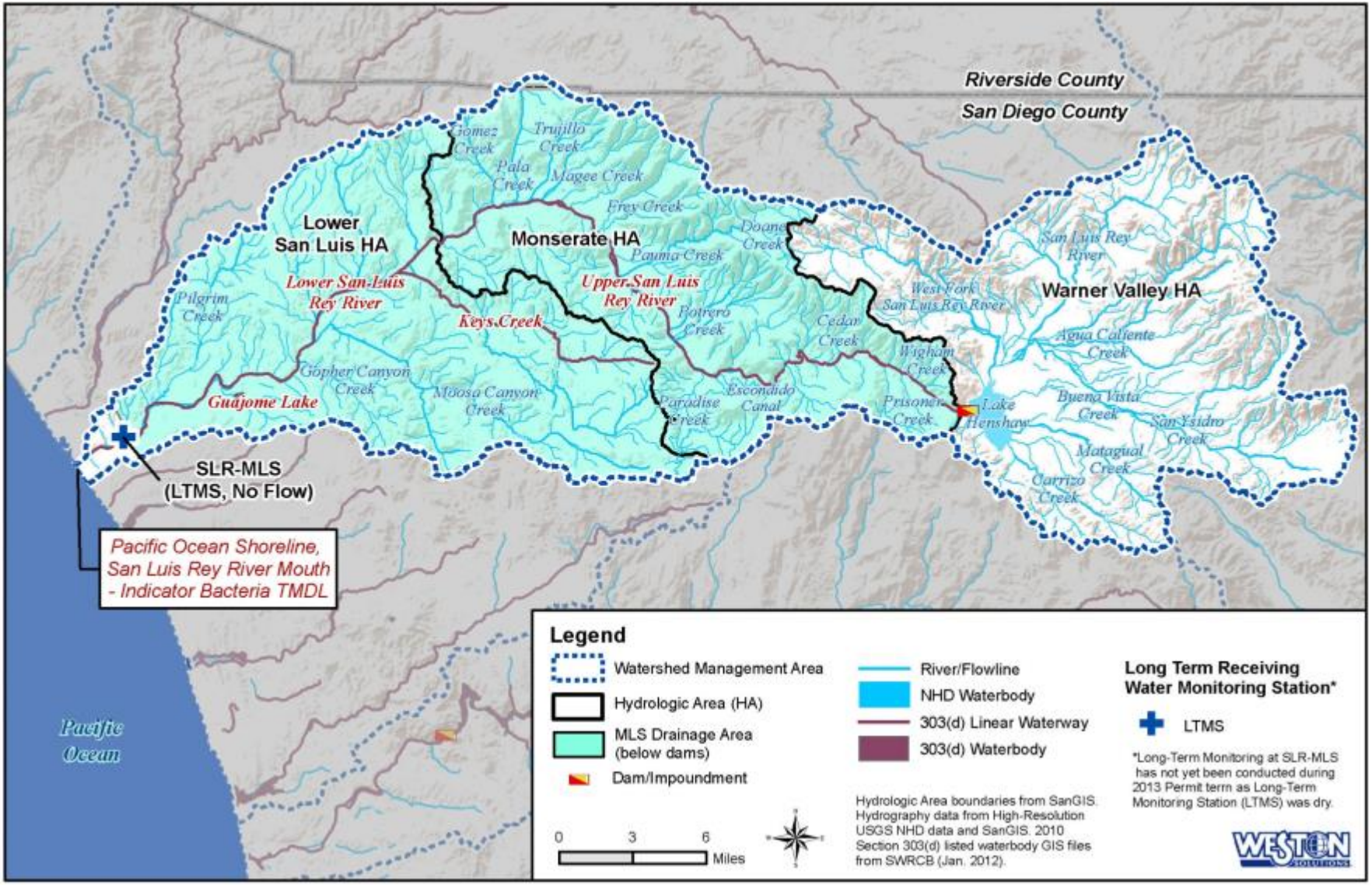

Figure A4-1. Long-Term Receiving Water Monitoring Location in the San Luis Rey River WMA

4.1.2 *Bight Regional Monitoring Program*

The Bight regional monitoring program is a multi-agency collaborative effort to assess the ecological condition of the Southern California Bight (from the Mexican border to Point Conception) from a regional perspective. The core program consists of monitoring of sediment chemistry, sediment toxicity, and benthic infauna.

Sediment quality monitoring was conducted during the summer of 2013 at a total of 22 sites in nine estuaries and lagoons in the San Diego region. San Luis Rey River Estuary has been disconnected from the ocean in recent years due to dry conditions, and therefore does not meet sediment quality objective requirements and was excluded from monitoring under the Bight 2013 Program. During the current Permit term, the Participating Agencies are participating in the planning for the Bight 2018 monitoring program. The Participating Agencies will update the Regional Board of the status of the San Luis Rey River Estuary prior to the California Bight 2018 Study.

4.1.3 *Sediment Quality Monitoring*

Sediment quality monitoring is designed to assess compliance with the sediment quality receiving water limits applicable to enclosed bays and estuaries in accordance with the State Board's Water Quality Control Plan for Enclosed Bays and Estuaries of California–Part I Sediment Quality (Sediment Control Plan) (SWRCB, 2009).

The sediment sampling conducted in the estuaries and lagoons in the San Diego Region as a part of the Bight Program contributes to fulfillment of sediment quality monitoring requirements of the Permit. Follow-up sampling and additional studies are needed for sites not characterized as unimpacted or likely unimpacted.

As mentioned in Section 4.1.2, San Luis Rey River Estuary was excluded from monitoring under the Sediment Control Plan since it does not fit the criteria for sediment quality objective monitoring.

4.1.4 *Stormwater Monitoring Coalition Regional Monitoring*

Since 2001, the Participating Agencies have partnered with regulated stormwater municipalities in southern California, the Regional Boards of Southern California and the Southern California Coastal Water Research Project (SCCWRP) to form the SMC. The goal of the SMC is to develop the technical information necessary to better understand stormwater mechanisms and impacts and develop the tools to improve stormwater quality through programmatic decision-making (SMC, 2016).

The Participating Agencies are continuing to participate in the SMC Regional Freshwater Stream Bioassessment Monitoring Program (SMC Regional Bioassessment Program). In 2015, a new five-year SMC program began that extended the initial survey to answer key management questions about the impacts of stormwater on stream conditions. Several modifications were made to the previous surveys to emphasize detection of trends and to address data gaps. Specifically, monitoring of high-priority stressors (i.e., habitat, nutrients, and ionic composition) was continued, whereas monitoring of low-priority stressors (i.e., water column metals, pyrethroids, and toxicity)

was discontinued. Flow regime (hydrologic state checklist derived from Gallart et al. [2010] and water level loggers), vertebrate occurrence, and new stressors of interest (i.e., sediment pyrethroids and toxicity) were added to the list of monitored parameters, although sediment sampling has been deferred until further action by the SMC Executive Committee. In addition, the physical habitat assessment has been enhanced with hydromodification screening (modified from Bledsoe et al., 2010) at unarmored or partially armored condition sites and a channel engineering checklist at all condition sites. The hydromodification screening and channel engineering checklist will be conducted at trend sites at least once during the five-year study. The trend sites were selected from previously sampled sites under earlier probabilistic surveys in order to estimate changes in regional conditions over time, and the condition sites were selected from a new probabilistic sample draw in order to estimate current regional conditions.

The 2015-2016 monitoring year was the second under the updated 2015-2019 SMC Regional Bioassessment Program. Within the SMC Program, the San Diego Region is divided into several strata, and the San Luis Rey River WMA is in the Northern San Diego stratum along with the Santa Margarita River WMA. In the San Luis Rey River WMA portion of the stratum, two condition sites were monitored during 2016, 903M20165 in Guajome Tributary in the Mission hydrologic subarea (HSA) (903.11) and 903M20166 in Moosa Creek in the Bonsall HSA (903.12) (Table A4-1, Figure A4-2).

Table A4-1. 2016 Bioassessment Monitoring Locations in the San Luis Rey River WMA

Site ID	Site Type	Land Use	Date Sampled	Latitude	Longitude
903M20165 – Guajome Tributary	Condition	Agricultural	6/7/2016	33.27586	-117.18406
903M20166 – Moosa Creek	Condition	Urban	5/2/2016	33.23989	-117.23664

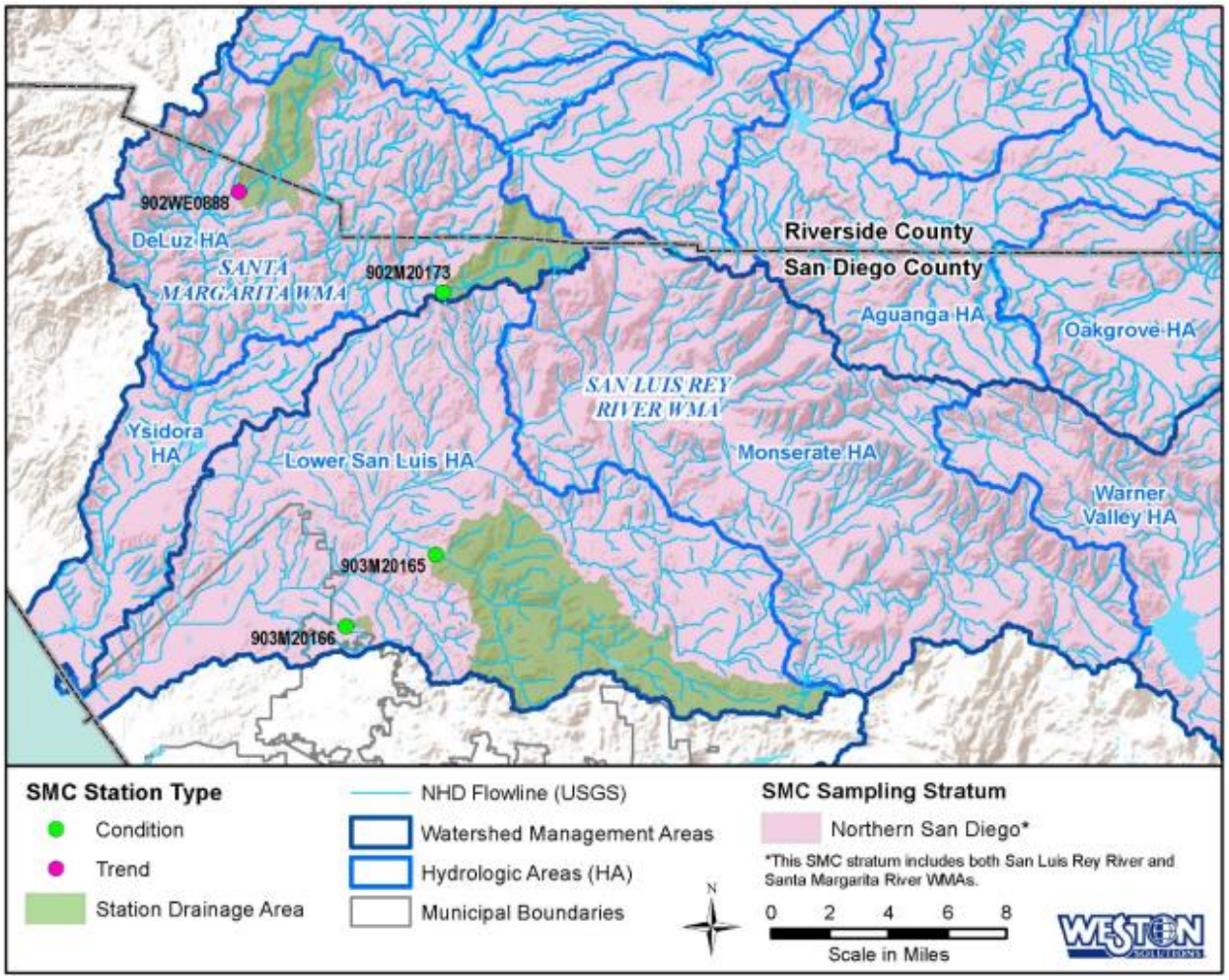

Figure A4-2. SMC Regional Monitoring Program Locations, Northern San Diego Stratum

Laboratory analyses included benthic macroinvertebrate (BMI) taxonomy by Ecoanalysts Inc., BMI taxonomic QC analysis by the California Department of Fish and Wildlife (CDFW) Aquatic Bioassessment Laboratory, benthic algae taxonomy by California State University – San Marcos (soft algae and diatoms), and chemistry analyses by Weck Laboratories, Inc. and PHYSIS Environmental Laboratories, Inc. Samples were collected following the protocols outlined in the Bioassessment Survey of the Stormwater Monitoring Coalition (SCCWRP, 2015). BMI data analyses included a taxonomic listing of all BMIs identified in the surveys and calculation of the biological metrics listed in the California Stream Bioassessment Procedure (CSBP). Additionally, the calculation of the California Stream Condition Index (CSCI), an index that rates the overall BMI community quality, was performed. The CSCI is a newly developed analytical tool, finalized in 2013 (Mazor et al., 2016), that is applicable statewide in California and is now being utilized in place of the IBI to assess the health of freshwater streams. The CSCI combines a predictive multi-metric index (pMMI) (a measure of ecological structure) with a predictive observed to expected (O/E) ratio index (a measure of taxonomic completeness), and also incorporates local watershed geology and climate factors. The predictive components of the CSCI scoring tool allow for comparisons of the site being scored to a subset of other sites in California that the CSCI determines to be most similar. Algal data analyses included a taxonomic listing of all taxa

identified and calculation of algal metrics and three algal IBIs (Fetscher et al., 2014 and SCCWRP, 2014). These data are typically available in February of the year following the survey (i.e., February 2017).

Bioassessment monitoring results for the Guajome Tributary and Moosa Creek locations are presented in Table A4-2 (CSCI scores). Table A4-3 shows the physical habitat assessment scores, and chemistry results are presented in Table A4-4. Additional data are provided in Attachment 4A, including the Taxonomic Listing of Benthic Macroinvertebrates (4A-1), Ranked Abundance of Benthic Macroinvertebrates (4A-2), and CSCI Metrics (4A-3). Results are summarized below, and more detailed results will be available in the interim and final reports developed by the SMC Workgroup. Interim reports are expected every one to two years, and the final report produced under the 2015-2019 Workplan is anticipated in Spring 2021 (SCCWRP, 2015).

Whereas data related to bacteria in the WMA are not collected under the SMC Regional Bioassessment Program, data are collected for chloride, nitrogen, and phosphorus, which are PWQCs for the watershed. Chloride and total phosphorus were above water quality objectives (WQOs) at both locations, and total nitrogen was above the WQO at the Guajome Tributary location.

4.1.4.1 Guajome Tributary

The CSCI score for the Guajome Tributary location, 903M20166, indicated that the benthic community is very likely altered. The score was in the upper portion of the very likely altered range (almost within the likely altered range) (Table A4-2). Taxa richness was below the predicted taxonomic richness at this location (Attachment 4A-3). The BMI community was dominated by chironomid midges *Tanytarsus sp.* and *Micropsectra sp.* and the crustacean class *Ostracoda* (24%, 21%, and 18% of the composition of the sample, respectively) (Attachment 4A-2). The numbers of several types of taxa that tend to decrease in response to impairment were below predicted numbers (the site-specific predicted numbers are those expected if the site was healthy) (Attachment 4A-3). Physical habitat quality as measured by the California Rapid Assessment Method (CRAM) score was moderate (Table A4-3).

Chemistry data was collected for physical and general chemistry, periphyton (ash-free dry mass [AFDM] and chlorophyll-a), and nutrients. Results indicated that chloride, sulfate, total nitrogen, and total phosphorus were above WQOs. The total phosphorus concentration was only slightly above the WQO. All other parameters met WQOs, where applicable, although conductivity (specific conductance) was elevated (Table A4-4). High specific conductance may have an effect on BMI. Specific conductance is a measurement of the ability of water to conduct electricity where dissolved ions (i.e., Na+, Ca+2, SO4-2, etc.) serve as the conductor (SWRCB Fact Sheet-3.1.3.0(EC)V2e) (2004). As such, specific conductance is related to TDS content. Although the effect of elevated TDS on BMI is variable among different taxa and not well understood, a number of studies have demonstrated a correlation between changes in conductivity/TDS with both altered BMI (Minshall and Minshall, 1978) and algal communities (Leland and Porter, 2000). Results from the first SMC five year report suggest that elevated TDS is a condition common to the entire region, affecting 76% of stream miles in Southern California (SMC, 2015).

4.1.4.2 Moosa Creek

At the Moosa Creek location, 903M20165, the CSCI score indicated that the benthic community is very likely altered. The score was in the upper portion of the very likely altered range (almost within the likely altered range) (Table A4-2). Taxa richness was below the predicted taxonomic richness at this location (Attachment 4A-3), and the BMI community was dominated by the crustacean *Hyalella sp.* (52% of the composition of the sample) (Attachment 4A-2). The numbers of several types of taxa that tend to decrease in response to impairment were below predicted numbers (Attachment 4A-3). Physical habitat quality as measured by the CRAM score was in the upper portion of the moderate range (Table A4-3).

Chemistry results indicated that dissolved oxygen was below the WQO (did not meet WQOs) and chloride, sulfate, and total phosphorus were above their respective WQOs. All other parameters met WQOs, where applicable, although specific conductance was elevated (Table A4-4).

Table A4-2. 2016 CSCI Scores for the San Luis Rey River WMA

Station Code	Count	E	Mean_O	OoverE	MMI	CSCI
903M20165 – Guajome Tributary	537	7.62	5.55	0.73	0.45	0.59
903M20166 – Moosa Creek	666	7.61	5.70	0.75	0.35	0.55

Count - the total number of organisms in the sample.
E-the sum of all capture probabilities >0.5 at a site (# of common taxa).
Mean_O - The number of common taxa observed at a site.
OoverE - O/E as calculated.
MMI - the pMMI score, a minimum threshold has not been established, but low values should be considered indicative of degradation.
CSCI - the CSCI score, calculated as the average of the O/E and the pMMI. CSCI scores indicate benthic communities that are very likely altered (scores of 0.00 to 0.62), likely altered (0.63 to 0.79), possibly intact (0.80 to 0.91), or likely intact (above 0.92).

Table A4-3. 2016 Physical Habitat Assessment Scores for the San Luis Rey River WMA

Physical Habitat Measures	Guajome Tributary	Moosa Creek
	903.11	903.12
	903M20166	903M20165
	5/2/2016	6/7/2016
Elevation (feet)	106	70
CRAM Physical Habitat Score*	61	72
Canopy Cover (% of reach)	89%	83%
Macroalgal Cover (% of reach)	2%	3%
Substrate Composition		
Fines	8%	3%
Sand	60%	53%
Gravel	0%	1%
Cobble	1%	0%
Boulder	0%	1%
Roots	20%	32%
Wood	11%	10%
Consolidated Sediment	0%	0%
Bedrock	0%	0%
Concrete	0%	0%
Water Quality		
Temperature (C)	12.24	19.62
pH	7.87	7.49
Specific Conductance (µS/cm)	3,143	2,777
Salinity (ppt)	1.65	1.45
Alkalinity (mg/L)**	370	400
Dissolved Oxygen (mg/L)	8.62	4.29
Turbidity (NTU)	0.2	4.2

*CRAM score is 25-100; <50 = low, 50-75 = moderate, >75 = high
**May be measured in the field or laboratory. Laboratory result is reported.

Table A4-4. 2016 Chemistry Results for the San Luis Rey River WMA

Analyte	Units	Water Quality Objectives (WQOs)	WQO References	Guajome Tributary	Moosa Creek
				903.11	903.12
				903M20166	903M20165
				5/2/2016	6/7/2016
Physical Chemistry					
Temperature	Celsius			12.24	19.62
pH	pH units	6.5-9.0	Basin Plan	7.87	7.49
Specific Conductance	µS/cm			3,143	2,777
Salinity	ppt			1.65	1.45
Alkalinity	mg/L			370	380
Dissolved Oxygen	mg/L	<5.0	Basin Plan	8.62	**4.29**
Turbidity	NTU	20	Basin Plan	0.2	4.2
Periphyton					
Ash-Free Dry Weight	g/m^2			4.329	138.2742
Chlorophyll-a	mg/m^2			<1	56.6
General Chemistry					
Chloride	mg/L	250	Basin Plan	**300**	**350**
Sulfate	mg/L	250	Basin Plan	**830**	**490**
Total Suspended Solids	mg/L			5	12
Total Hardness	mg $CaCO_3$/L			1130	840
Nutrients					
Ammonia as N	mg/L	(a)	USEPA Freshwater Criteria	0.063J	0.052J
Nitrate + Nitrite as N	mg/L	(b)	Basin Plan	46	0.029J
Orthophosphate as P	mg/L			0.098	0.12
Total Kjeldahl Nitrogen	mg/L			<0.05	0.37
Total Nitrogen	mg/L	N:P Ratio of 10:1	Basin Plan	**46**	0.4
Total Phosphorus	mg/L	0.1 (flowing waters)	Basin Plan	**0.11**	**0.31**

<-Results less than the method detection limit.

NS - Not sampled.

(a) Water Quality Benchmark is based on the criterion continuous concentration (CCC) using water temperature and pH as described in the USEPA, 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater, EPA-822-R-13-001, April 2013.

(b) Water Quality Benchmark is based on the MUN beneficial use as described in the Basin Plan, 1994 (with amendments effective on or before April 4, 2011). MUN beneficial use does not apply to these stations (waterbodies listed as exempt).

J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

Bold/shaded values do not meet water quality benchmarks.

4.1.5 *Regional Hydromodification Monitoring Program (HMP)*

Hydromodification is the potential alteration and erosion of creeks, streams, and natural habitats that may be associated with urbanization of the tributary watershed. A regional Hydromodification Management Plan has been developed to manage increased runoff discharge rates and durations and address impacts to beneficial uses and stream habitat (County of San Diego, 2011). A regional HMP was also developed to evaluate the criteria established in the Hydromodification Management Plan. While no monitoring sites were located within the San Luis Rey River WMA, the Hydromodification Management Plan criteria will apply to future development in the WMA, and therefore the results of this monitoring are applicable.

The 2011 HMP represents a five-year monitoring program that involved channel sediment transport assessments, and continuous flow monitoring of pre-project, post-project, and reference conditions. An iterative and phased approach was used in implementation of each year of monitoring. The fifth and final year of monitoring was completed in 2015-2016. Results of the HMP are presented in the *Effectiveness Assessment of the San Diego Hydromodification Management Plan,* which is available online at:
http://www.projectcleanwater.org/attachments/article/75/2016_LDW_HMPrpt.pdf.

The results of the HMP indicate that the Hydromodification Management Plan is working as planned. Sediment rating curves were developed based on extensive wet weather monitoring data collected from the 2011-2012 to 2015-2016 wet weather seasons. Analysis of these curves shows that the Plan's channel susceptibility tools appropriately define flow rates that initiate the movement of channel and bank materials (ESA et al., 2016). As shown by monitoring of stream cross sections, no major changes in channel stability were observed to occur within the nine monitored channel sites that were located throughout the San Diego Region. Wet weather data from 2015-2016 indicated that a constructed best management practice (BMP) system worked as designed to prevent hydromodification across a wide range of geomorphically significant conditions. Collectively, this shows that the Plan provides for the protection of the beneficial uses of receiving waters from the effect of hydromodification from new and redevelopment. Based on these findings, the HMP effectiveness assessment monitoring is completed and no additional monitoring is recommended (ESA et al., 2016).

4.1.6 *Total Maximum Daily Load Monitoring*

In February 2010, the San Diego Regional Water Quality Control Board (Regional Board) adopted Resolution No. R9-2010-0001, *A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (Bacteria TMDL) (Regional Board, 2010). This TMDL amendment to the Water Quality Control Plan for the San Diego Region (Basin Plan) (Regional Board, 1994) includes one segment within the San Luis Rey River WMA, the Pacific Ocean Shoreline at the San Luis Rey River Mouth. The TMDL was approved by the SWRCB in December 2010; by the Office of Administrative Law on April 4, 2011; and by the United States Environmental Protection Agency (USEPA) on June 22, 2011. The TMDL became effective under state law on April 4, 2011, the date of Office of Administrative Law approval. The responsible Agencies within the WMA that are regulated under the Permit include the Cities of Oceanside and Vista and the County of San Diego. The compliance

requirements and monitoring and reporting requirements of the TMDL have been incorporated into Attachment E.6 of the 2013 Permit.

The goal of the Bacteria TMDL is to achieve the pollutant load reductions necessary to restore and protect the designated beneficial use of water contact recreation (REC-1), as it is designated within the Basin Plan. The purpose of the TMDL monitoring program is to assess progress toward achieving compliance with interim and final TMDL water quality based effluent limitations (WQBELs). Wet and dry weather sampling is conducted each year at the compliance point. The data generated is used to address the following questions:

- Are TMDL numeric targets for indicators being met at the compliance monitoring location?
- Are levels of bacteria decreasing at the compliance monitoring location?

Sampling was conducted for the 2015–2016 compliance monitoring year (October 1, 2015 through September 30, 2016) during wet and dry weather at receiving water monitoring site OC-100, located at Oceanside City Beach at the mouth of the San Luis Rey River (Table A4-5, Figure A4-3). This was the third year of monitoring in compliance with Provision 6.d of Attachment E of the Permit. A summary of the monitoring conducted is presented in Table A4-6. Samples were analyzed for the indicator bacteria compliance constituents (total coliform, fecal coliform, and *Enterococcus*) in accordance with the requirements of Attachment E.6 of the Permit.

Table A4-5. 2015-2016 Bacteria TMDL Beach Monitoring Location for the San Luis Rey River WMA

Site ID	Site Name	Site Description	Latitude	Longitude
OC-100	Oceanside City Beach at the mouth of the San Luis Rey River	Pacific Ocean Shoreline	32.20156	-117.39220

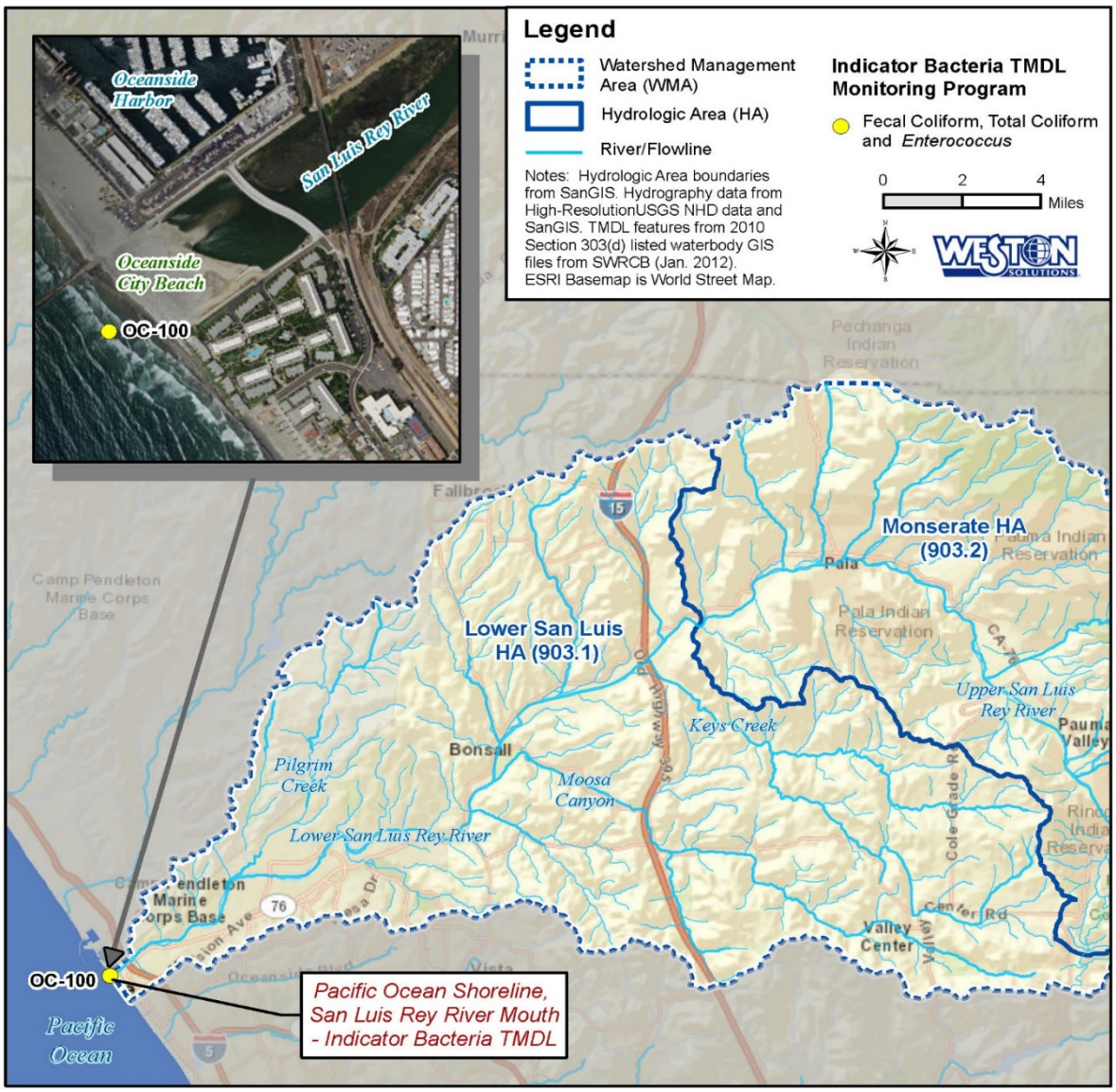

Figure A4-3. Bacteria TMDL Compliance Monitoring Location in the San Luis Rey River WMA

Table A4-6. 2015-2016 Bacteria TMDL Beach Monitoring Summary for the San Luis Rey River WMA

Season	Date Range	Event Type	Event Frequency	Monitoring Location	Samples Per Site Per Event[a]	Total Number of Samples
2015-2016 Wet Season	10/01/2015-04/30/2015	Wet	Three storm events	OC-100	1	3
	10/01/2015-03/30/2016	Dry	Monthly			6
	04/01/2016-04/30/2016	Dry	Weekly[b]			5
2016 Dry Season	05/01/2016-09/30/2016	Dry	Weekly[b]			25

[a] Quality assurance (QA) or replicate samples are not included in the count.
[b] A minimum of 5 samples are collected in a 30-day period.

Table A4-7 presents the exceedance rates for each indicator bacteria at OC-100. Progress toward achieving WQBELs, in terms of interim and final receiving water limitations, are presented in Table A4-8 for each analyzed constituent. Interim WQBELs are not required to be achieved until 2020 for dry weather and 2028 for wet weather, while final WQBELS must be achieved by 2021 for dry weather and 2031 for wet weather. Based on the sampling data from the 2015-2016 monitoring year, receiving water limitations that have been achieved are indicated by (●), whereas goals that have not been achieved are indicated by (X).

In summary, the only exceedances observed at OC-100 were for the wet season single-sample maximum for *Enterococcus*. This outcome was due to a measured concentration of 220 colony-forming units per 100 milliliters (CFU/100 mL) during one monitored wet weather event, resulting in an arithmetic mean of 104.67 CFU/100 mL for the three monitored events, which was applied to all of the unmonitored days with qualifying precipitation (i.e., greater than 0.1 inch within 24 hours). Had the arithmetic mean been lower by just 1 CFU/100 mL, the single-sample wet season exceedance frequency would have been 10% and would have been in compliance with the single-sample wet season allowable exceedance frequency. *Enterococcus* concentrations during the remaining two wet weather events were below the receiving water limitation of 104 most probable number (MPN)/100 mL[1]. All other interim and final WQBELs are currently being met.

Table A4-7. 2015–2016 Bacteria TMDL Monitoring Exceedance Frequency Results

Segment	Monitoring Location	Bacteria TMDL Constituent	2016 Dry Season Geometric Mean (CFU/100mL)	2015-2016 Wet Season Geometric Mean (CFU/100mL)	2015-2016 Wet Season Single-Sample Maximum (CFU/100mL)
Pacific Ocean Shoreline	OC-100	*Enterococcus*	0%	0%	75%
		Fecal Coliform	0%	0%	0%
		Total Coliform	0%	0%	0%

CFU - colony-forming units per 100 milliliters.

Table A4-8. 2015–2016 General Progress Toward Bacteria TMDL Interim and Final WQBELs

Monitoring Location	Bacterial TMDL Constituent	2015-2016 Dry Season Geometric Means		2015-2016 Wet Season Geometric Means		2015-2016 Wet Season Single-Sample Maximum	
		Interim	Final	Interim	Final	Interim	Final
OC-100	*Enterococcus*	●	●	●	●	X	X
	Fecal Coliform	●	●	●	●	●	●
	Total Coliform	●	●	●	●	●	●

● = Numeric targets are met; X= Numeric targets are not yet met.

Additional details are presented in the TMDL report provided as Attachment 4B to this appendix. California Environmental Data Exchange Network (CEDEN) data submittals can be found in Attachment K of this appendix.

[1] The Permit identifies receiving water limitations in MPN/100 mL; the laboratory methods provide results in CFU. CFU and MPN units are comparable.

4.1.7 *Lower San Luis Rey River Goal Monitoring*

To evaluate progress toward achieving goals for the lower San Luis Rey River, receiving water monitoring to measure bacteria concentrations was conducted during the 2015-2016 monitoring year at one in-stream site, SLR25 (Olive Hill). A second in-stream site, Benet Bridge (MLS), was dry and was not sampled for the duration of the monitoring year. Both sites are located along the San Luis Rey River, west of Interstate-15, with SLR25 located upstream of Benet Bridge (Table A4-9, Figure A4-4).

Table A4-9. 2015-2016 Lower San Luis Rey River Bacteria Monitoring Locations

Site ID	Site Name	Jurisdiction	Latitude	Longitude
Benet Bridge* (MLS)	Benet Road Bridge over San Luis Rey River	City of Oceanside	33.22065	-117.35825
SLR25 (Olive Hill)	Camino Del Rey Bridge over San Luis Rey River	County of San Diego	33.28802	-117.22313

*Station was dry throughout the 2015-2016 monitoring year.

The lower San Luis Rey River location SLR25 was sampled monthly during dry weather from February through September 2016, and once within 24 hours after a storm event in February 2016. Samples were analyzed for the indicator bacteria compliance constituents (fecal coliform, *Enterococcus*) in accordance with the Lower San Luis Rey River Bacteria Monitoring Plan (Attachment 4A-7 to the WQIP). Samples were also analyzed for *E. coli*, which is not a constituent of the indicator bacteria TDML and is not listed in the Lower San Luis Rey River Bacteria Monitoring Plan. USEPA's 2012 Recreational Water Quality Criteria recommends using *Enterococcus* and *E. coli* as indicators of fecal contamination for fresh water and *Enterococcus* for marine water (USEPA, 2012). Therefore, collection of *E. coli* data in advance of these anticipated changes provides historical data moving forward under revised recreational water quality standards developed in accordance with the USEPA guidelines. While the *E. coli* results are not presented here, the analytical data can be found in the laboratory reports provided in Attachment 4C to this appendix and will be uploaded to the CEDEN. CEDEN data submittals can be found in Attachment K to this appendix.

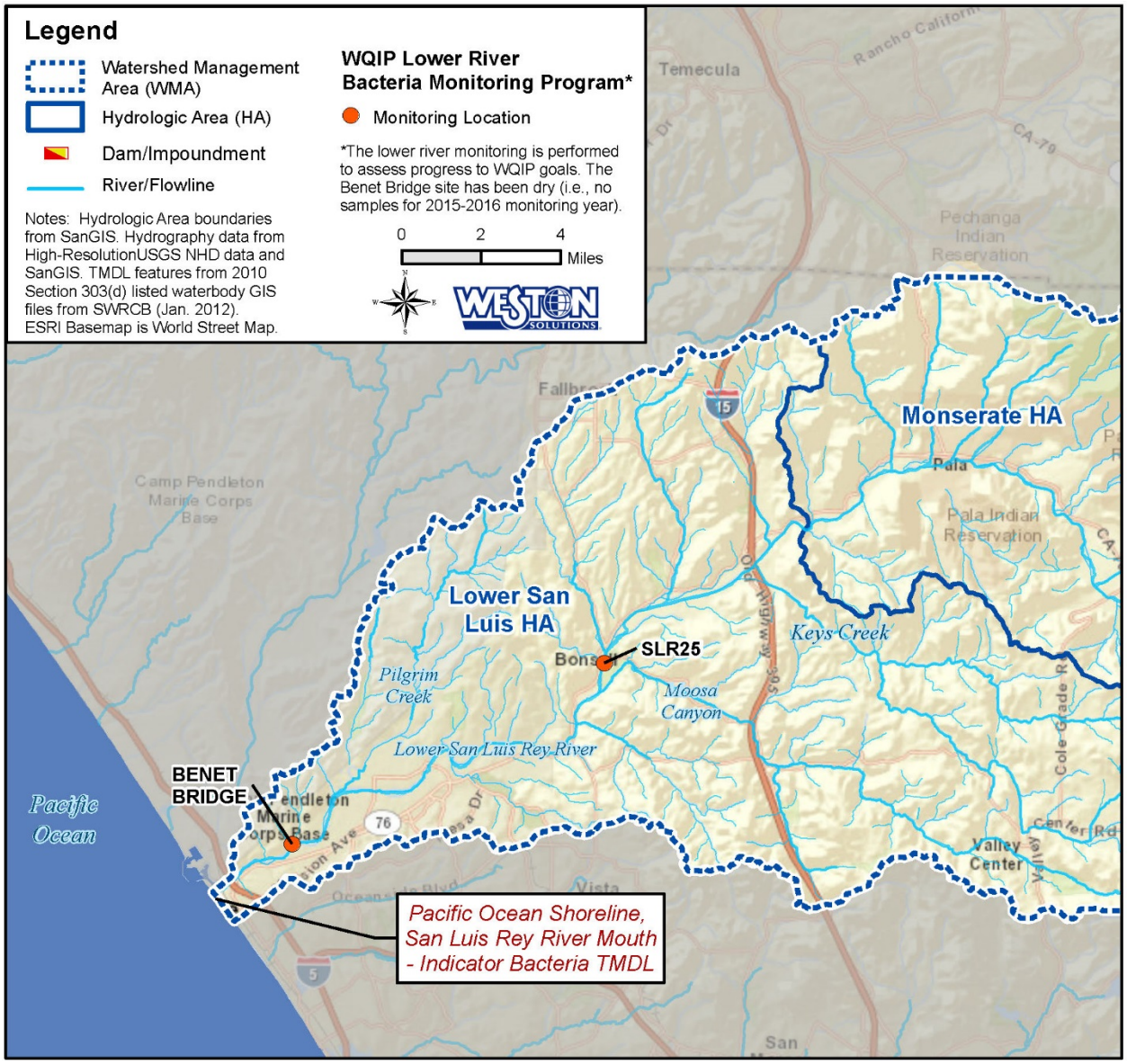

Figure A4-4. Bacteria WQIP Monitoring Locations in the Lower San Luis Rey River WMA

Individual dry and wet weather event data for *Enterococcus* and fecal coliform indicator bacteria are presented in Table A4-10 and Table A4-11, respectively, and exceedance rates are shown in Table A4-12 for results compared to freshwater single sample maximum (SSM) WQOs. *Enterococcus* results from the single wet weather event were above the WQO, whereas the fecal coliform concentration was below the WQO. Exceedance frequencies for the eight monitored dry weather events were 100% for *Enterococcus* and 13% (one event) for fecal coliform. These data will be used to inform progress by the Participating Agencies in achieving the lower San Luis Rey River bacteria goals. Supporting data are provided as Attachment 4C to this appendix.

Table A4-10. 2015-2016 Lower San Luis Rey River Bacteria Dry Weather Monitoring Event Results

Date	*Sample Results (CFU/100 mL)	
	Enterococcus (CFU/100 mL)	Fecal Coliform (CFU/100 mL)
SSM WQO	**61**	**400**
2/11/2016	**70e**	20
3/3/2016	**110e**	8e
4/6/2016	**63**	7e
5/4/2016	**80e**	16e
6/2/2016	**510**	**510**
7/7/2016	**820e**	53
8/4/2016	**600e**	45
9/1/2016	**180e**	20e

*Note: **Bolded/shaded** values indicate exceedances of WQOs based on comparison of results with the single sample maximum (SSM) indicator bacteria objective.
e - Estimated value, plate count falls outside recommended reporting limits per USEPA method guidelines.
CFU - colony-forming units per 100 milliliters

Table A4-11. 2015-2016 Lower San Luis Rey River Bacteria Wet Weather Monitoring Event Results

Date	*Sample Results (CFU/100 mL)	
	Enterococcus (CFU/100 mL)	Fecal Coliform (CFU/100 mL)
SSM WQO	**61**	**400**
2/1/2016	**5,600**	250

*Note: **Bolded/shaded** values indicate exceedances of WQOs based on comparison of results with the single sample maximum (SSM) indicator bacteria objective.
CFU - colony-forming units per 100 milliliters

Table A4-12. 2015-2016 Lower San Luis Rey River Bacteria Results Summary

Analyte		Number of Events	*Enterococcus* (CFU/100 mL)		Fecal Coliform (CFU/100 mL)	
Station	Station		Total Exceedance	Percent Exceedance	Total Exceedance	Percent Exceedance
SSM WQO			**61**		**400**	
SLR25	Dry	8	8	100%	1	13%
	Wet	1	1	100%	0	0%

CFU - colony-forming units per 100 milliliters

4.2 Storm Drain Outfall Monitoring

As part of the WQIP process, the Participating Agencies in the San Luis Rey River WMA have developed a program to monitor discharges from storm drain outfalls during dry and wet weather that meets the requirements of Provisions D.2.b and D.2.c of the Permit. The purpose of storm drain outfall monitoring is to evaluate the potential impacts from storm drain outfall discharges on the beneficial uses of a receiving waterbody during dry and wet weather conditions. In addition, under dry conditions, the program is used to assess the ability of jurisdictional and watershed programs to effectively eliminate non-stormwater discharges to receiving waters. The data generated are used to identify pollutants in discharges, guide pollutant source identification efforts, and track progress towards achieving numeric goals set forth in the WQIP.

During the 2013-2014 monitoring year, the inventory of major storm drain outfalls discharging directly to a receiving water was developed in accordance with Provision D.2.a.(1) of the Permit, and refinements were made during the 2014-2015 monitoring year. The major storm drain outfalls currently included in the storm drain outfall discharge monitoring station inventory for the WMA are shown in Figure A4-5. Dry weather storm drain outfall monitoring locations are also shown in Figure A4-5. Wet weather storm drain outfall monitoring locations are shown on a separate map with their associated drainage areas in Section 4.2.5.

The number of major outfalls monitored under each element of storm drain outfall monitoring by each Participating Agency in the WMA is provided in Table A4-13. In accordance with Provision D.2.b.(1) of the Permit, Participating Agencies with fewer than 125 major storm drain outfalls in their inventory must conduct field screening at 80% of these major outfalls twice per monitoring year (October 1st through September 30th). The number of major outfalls monitored per year is subject to change based on new information, updates to the storm drain outfall inventories, changes in transient or persistent flow classifications, and/or changes or updates to the priority water quality conditions over the life of the WQIP.

Table A4-13. Number of Major Storm Drain Outfalls Monitored per Participating Agency

Participating Agency	Number of Storm Drain Outfalls Monitored Per Year		
	Field Screening (Provision D.2.b(1))	Dry Weather Monitoring (Provision D.2.b(2))	Wet Weather Monitoring (Provision D.2.c)
County of San Diego	21	5*	2
City of Oceanside	36	5*	2
City of Vista	4	2	1

*Three outfalls in the City of Oceanside and one County outfall were dry or ponded with insufficient water for sampling during monitoring visits; therefore, analytical samples were not collected at four outfalls that had been identified for persistent flow storm drain outfall discharge monitoring.

Program descriptions, monitoring results, and assessments conducted during the 2015-2016 monitoring year under the Storm Drain Outfall Monitoring Program are presented in the following subsections. Methodology is described in greater detail in the WQIP Monitoring and Assessment Plan (MAP).

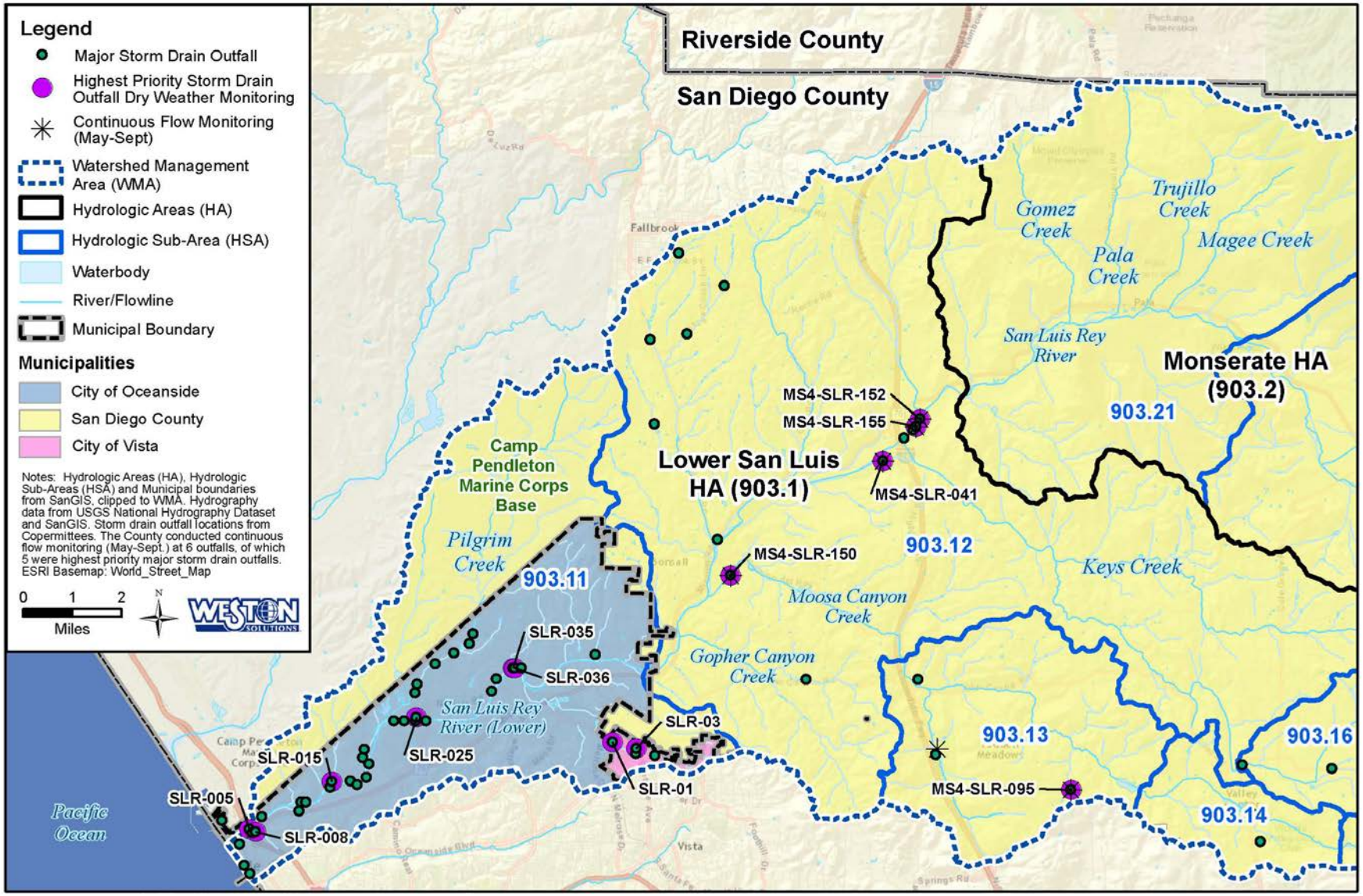

Figure A4-5. Major Storm Drain Outfall Inventory and Dry Weather Analytical Monitoring Station Locations in the San Luis Rey River WMA

4.2.1 *Dry Weather Field Screening and Outfall Prioritization*

Field screening is visual monitoring of major storm drain outfalls as outlined in Table D-5 of the Permit. Field screening is conducted to identify non-stormwater and illicit discharges, determine which discharges are transient and which are persistent, and prioritize those discharges that will be investigated and eliminated. This program is designed to assess the effectiveness of jurisdictional programs to effectively prohibit non-stormwater discharges. Each Participating Agency performs field screening of a certain number of outfalls on an annual basis to maintain an up-to-date inventory of persistently flowing outfalls and to initiate follow-up investigations that identify and mitigate the source(s). The data collected during field screening are one of the sources of information for the Participating Agencies' Illicit Discharge Detection and Elimination (IDDE) Programs (see Section 4.2.4).

The required frequency of field screening varies from once to twice per year depending on the number of major outfalls within the jurisdiction, in accordance with Provision D.2.a.(2)(a) of the Permit. The number of storm drain outfall stations included in dry weather field screening and the total number of visual observations conducted by each Participating Agency during the 2015-2016 monitoring year are shown in Table A4-14. Some source investigations were performed during routine visits and are included in the routine visits column, while others were conducted as separate follow-up visits and are included in the source investigations column.

Table A4-14. Number of Visual Observations Conducted During the 2015-2016 Monitoring Year

Participating Agency	Number of Major Storm Drain Outfall Stations Visited	Number of Routine Visits[1]	Number of Separate Source Investigations	Number of Additional Visits for Other Programs[2]
County of San Diego	21	48	41[3] (6 outfalls)	70 visits (16 stations)
Oceanside	36	72	NA[4]	NA
Vista	4	8	NA[4]	NA

[1] Includes persistent flow monitoring events.

[2] Includes flow data but may not include all visual observations typically conducted during a routine field screening visit.

[3] Six source investigations were associated with SLR-045, a storm drain outfall of less than 36 inches in diameter with persistent non-storm water flow.

[4] Source investigations were performed during persistent flow monitoring events.

Participating Agencies recorded numerous visual observations regarding outfall and flow characteristics including flow conditions (flowing, ponded, dry, or tidal), whether or not the flow reached the receiving water, whether or not there was a non-storm water flow source, potential non-storm water sources, whether the flow source was eliminated, evidence of obvious illicit connections or illicit discharges (IC/IDs), whether trash was present and relative amount, and whether there was evidence of illegal dumping. The complete set of visual observations recorded during dry weather field screening visits are provided in Attachment 4D to this appendix, and CEDEN data submittals can be found in Attachment K. The field screening trash assessment results for the San Luis Rey River WMA are summarized in Table A4-15. There was no trash or a low presence of trash during the majority (83%) of the trash assessments at visited outfalls.

Table A4-15. Dry Weather Field Screening Trash Assessments for the San Luis Rey River WMA

Participating Agency	HSA	No Trash Present	Trash Present		
			Low (<50 pieces)	Medium (50 to 400 pieces)	High (>400 pieces)
County of San Diego	903.12	4	26	2	0
	903.13	2	5	0	0
	903.14	0	6	0	0
	903.16	0	4	0	0
SUB-TOTAL		**6**	**41**	**2**	**0**
City of Oceanside	903.11	9	43	19	1
SUB-TOTAL		**9**	**43**	**19**	**1**
City of Vista	903.11	7	1	0	0
SUB-TOTAL		**7**	**1**	**0**	**0**
GRAND TOTAL		**22**	**85**	**21**	**1**

A summary of the flow conditions (i.e., flowing, ponded, dry, or tidal) at the outfall stations during the 2015-2016 field visits is shown in Figure A4-6, where the stacked bars represent the number of observations in each flow category by jurisdiction. The observations included in this figure are routine visits and follow-up source identification visits to the outfall, but do not include additional visits for other programs. Given that some outfalls were visited more than once, the number of observations is greater than the number of actual storm drain outfalls monitored.

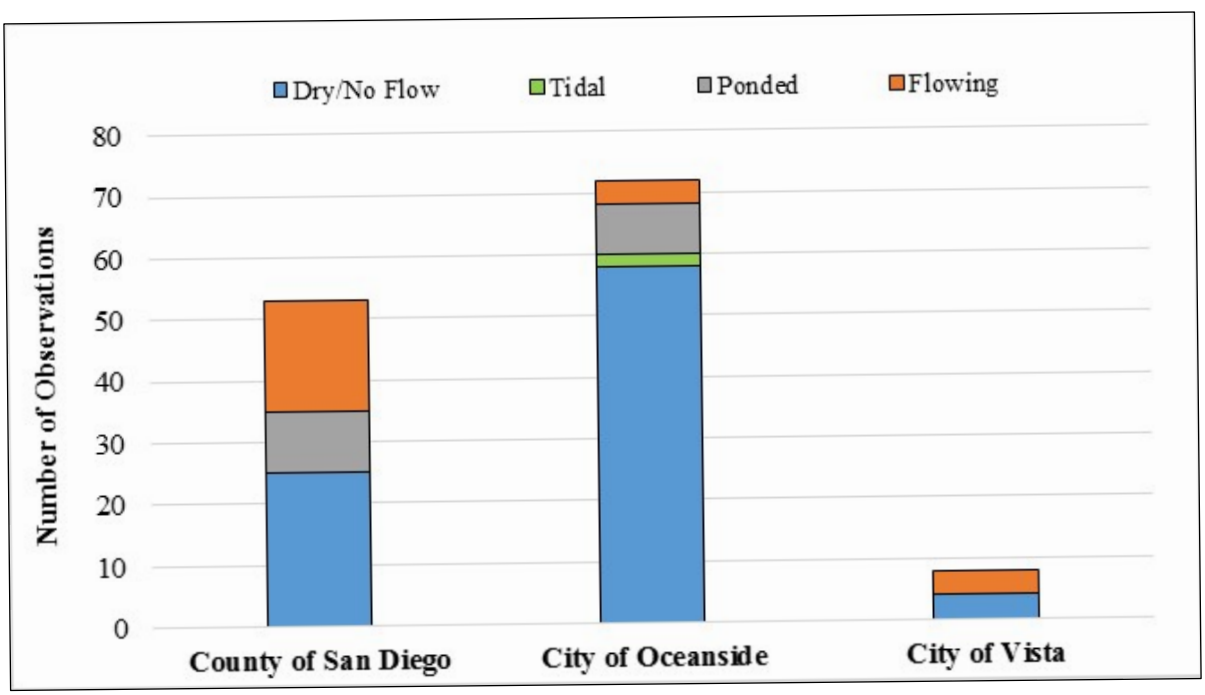

Figure A4-6. Dry Weather Field Screening Flow Observations at Storm Drain Outfall Stations by Participating Agency

During dry weather field screening, Participating Agencies estimated flow at stations where flow was present, as required by Table D-5. Eighty-one % of observations made by the City of Oceanside, 50% made by the City of Vista, and 47% made by the County of San Diego indicated dry conditions. A compilation of flow estimations (n=26) recorded by the Participating Agencies, in gallons per minute (gpm), is presented in Figure A4-7. More than half of the flow rates were low, with 14 of 26 estimations categorized as less than five gpm. The observations included in this figure include routine visits and follow-up source identification visits to the outfalls, but do not include additional visits for other programs.

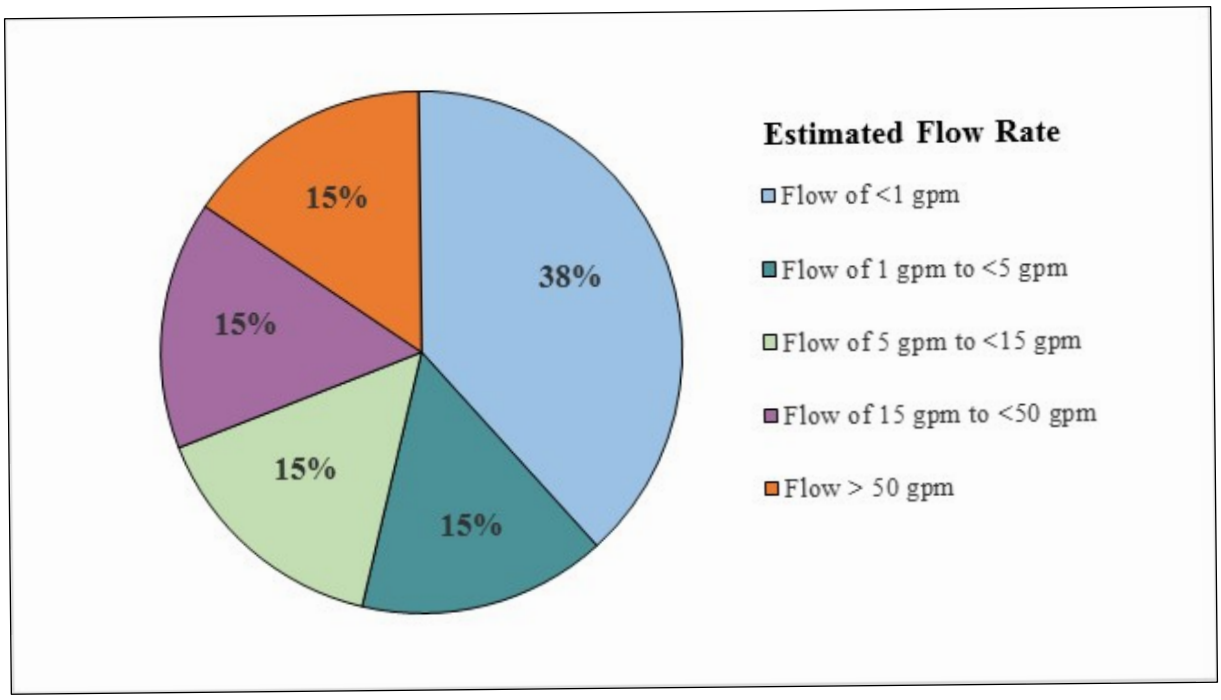

Figure A4-7. Outfall Flow Rate Estimations

Where an illicit discharge is observed during outfall screening, investigations are performed in an effort to locate the source and eliminate the discharge. In cases where flow sources are known due to historical data, this is listed on the field sheet and the upstream area is briefly checked for additional sources. In cases where discharges are observed, but no obvious illicit discharge was identified as the source, appropriate documentation is recorded, and the locations are prioritized with others for follow-up.

Based on these field screening visits and available historical data, the Participating Agencies determined the flow status of each major storm drain outfall as persistent, transient, or dry. As defined in the Permit, flow status for a given outfall is "dry" if no flowing or standing water is observed at the outfall over three most recent visits, and "persistent" flow is defined as presence of flowing or standing water upon three most recent visits. Otherwise, the outfall status is classified as "transient." The numbers of storm drain outfalls in each category are shown by Participating Agency and HSA in Table A4-16, and the flow determinations are shown with the locations of the storm drain outfalls in Figure A4-8. Overall, since the prior monitoring year (WESTON, 2016a), the number of dry/no flow outfalls has increased by four, the number of transient outfalls have

decreased by six, and the number of persistent outfalls has increased by four. The two outfalls previously classified as undetermined are now known to be persistent, and have become highest priority outfalls for 2016-2017 non-stormwater persistent flow monitoring.

Table A4-16. 2015-2016 Dry Weather Storm Drain Outfall Flow Determinations for the San Luis Rey River WMA

Participating Agency	HSA	Persistent	Transient	Dry/No Flow	Grand Total
County of San Diego	903.12	5	4	4	13
	903.13	2	0	1	3
	903.14	0	0	3	3
	903.16	0	0	2	2
SUB-TOTAL		**7**	**4**	**10**	**21**
Oceanside	903.11	3	8	25	36
SUB-TOTAL		**3**	**8**	**25**	**36**
Vista	903.11	2	0	2	4
SUB-TOTAL		**2**	**0**	**2**	**4**
GRAND TOTAL		**12**	**12**	**37**	**61**

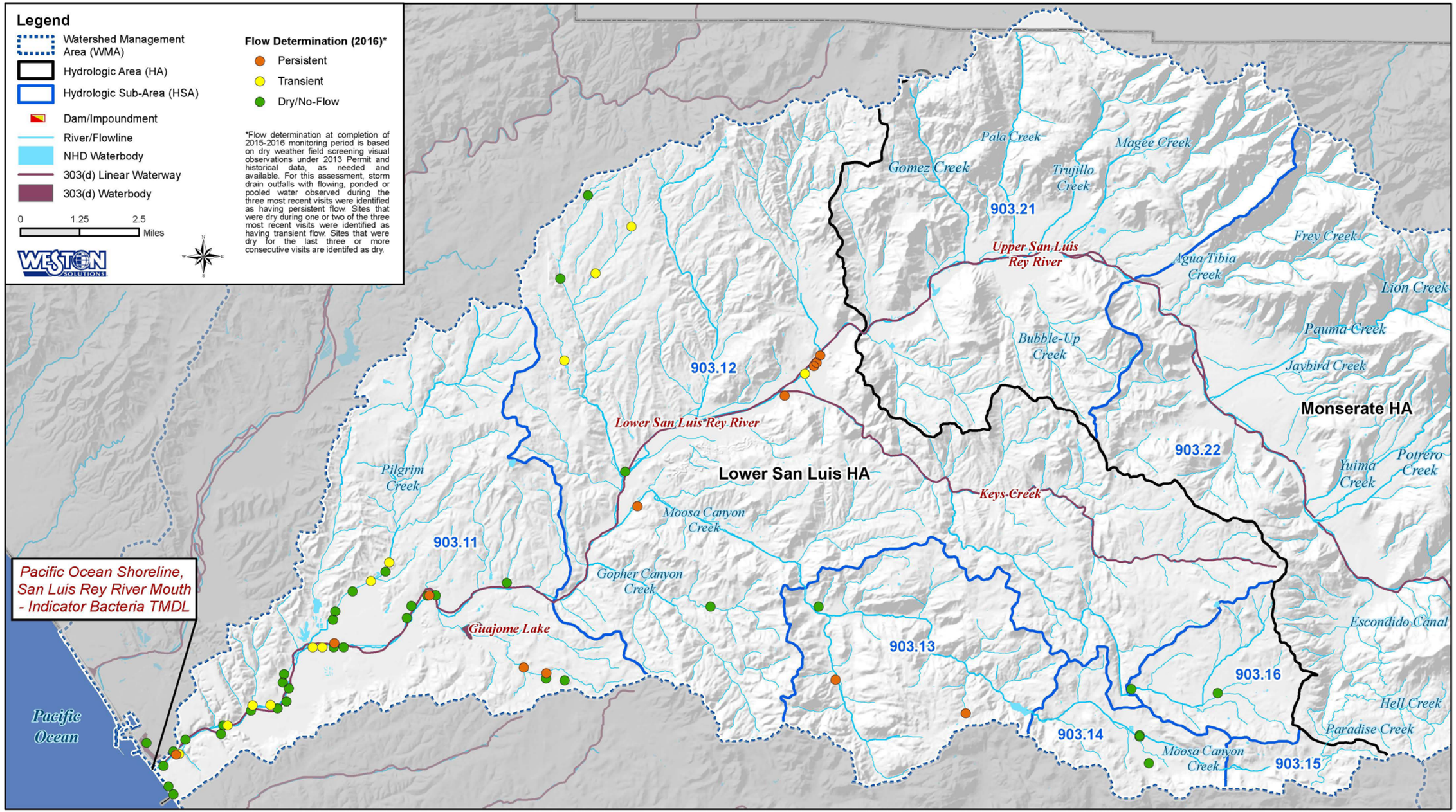

Figure A4-8. 2015-2016 Dry Weather Field Screening Locations with Flow Determinations for the San Luis Rey River WMA

The list of prioritized outfalls based on field screening results is maintained and updated as program implementation develops and monitoring occurs. Prioritization is based on non-stormwater flow status and the potential threat to receiving water quality. These prioritized outfalls were originally outlined in the San Luis Rey River Watershed Storm Drain Outfall Monitoring Plan (Storm Drain Outfall Monitoring Plan), Attachment 4A-5 to the WQIP. The City of Oceanside listed five highest priority outfalls in the Storm Drain Monitoring Plan, two of which were not named. During the 2015-2016 monitoring year, the City of Oceanside added a sixth outfall (SLR-025) due to dry conditions at the several of the initial five highest priority outfalls.

The highest priority outfalls for each jurisdiction during 2015-2016 are summarized in Table A4-17. Section 4.2.3.2 provides changes to the stations planned for 2016-2017 persistent flow monitoring.

Table A4-17. Highest Priority Outfalls during the 2015-2016 Monitoring Year

Participating Agency	HSA	Station	Latitude (NAD83)	Longitude (NAD83)	Dates Sampled	
County of San Diego	903.12	MS4-SLR-041	33.31787	-117.16385	Not Sampled*	
		MS4-SLR-150	33.2837	-117.21707	1/19/2016	6/14/2016
		MS4-SLR-152	33.33031	-117.15101	12/8/2015	6/14/2016
		MS4-SLR-155	33.32802	-117.15234	12/8/2015	6/14/2016
	903.13	MS4-SLR-095	33.22145	-117.09704	1/19/2016	6/14/2016
City of Oceanside	903.11	SLR-005	33.20741	-117.38491	Dry	Dry
		SLR-008	33.20678	-117.38284	Dry	Dry
		SLR-015	33.22183	-117.3563	3 visits - dry or ponded	
		SLR-025	33.24105	-117.32679	2/16/2016	8/29/2016
		SLR-035	33.25572	-117.29312	Dry	Dry
		SLR-036	33.25582	-117.29243	2/16/2016	8/2/2016
City of Vista	903.11	SLR-01	33.23424	-117.25785	8/4/2016	8/16/2016
		SLR-03	33.23253	-117.24958	8/24/2016	9/19/2016

*MS4-SLR-041 was not sampled because it was dry on the first visit and not enough ponded water was available to sample on the second visit. As flowing or ponded water was found at MS4-SLR-041 during additional visits (resulting in persistent flow determination), the outfall will remain a highest priority outfall for the County of San Diego for the 2016-2017 monitoring year. MS4-SLR-156 was substituted for sampling on 01/19/2016 but is not a high priority persistent flow site. These additional sample data can be found in Attachment 4K to this appendix and will be uploaded to CEDEN.

Based on the additional visual observations from 2015-2016 field screening monitoring, the updated status of the 2015-2016 highest priority outfalls are shown in Table A4-18.

Table A4-18. Highest Priority Dry Weather Storm Drain Outfall Station Status after 2015-2016 Monitoring Year

Participating Agency	Station ID	2015-2016 Priority (Y/N)	2015-2016 Results
County of San Diego	MS4-SLR-041	Yes	Persistent
County of San Diego	MS4-SLR-095	Yes	Persistent
County of San Diego	MS4-SLR-150	Yes	Persistent
County of San Diego	MS4-SLR-152	Yes	Persistent
County of San Diego	MS4-SLR-155	Yes	Persistent
City of Oceanside	SLR-005	Yes	Dry/No-Flow
City of Oceanside	SLR-008	Yes	Transient
City of Oceanside	SLR-015	Yes	Transient
City of Oceanside	SLR-025	Yes	Persistent
City of Oceanside	SLR-035	Yes	Dry/No-Flow
City of Oceanside	SLR-036	Yes	Persistent
City of Vista	SLR-01	Yes	Persistent
City of Vista	SLR-03	Yes	Persistent

4.2.2 *Highest Priority Storm Drain Outfall Dry Weather Monitoring*

The purpose of highest priority storm drain outfall dry weather monitoring is to evaluate the potential contribution from storm drain outfall discharges on receiving water quality during dry weather conditions and to assess the ability of programs to effectively eliminate non-stormwater discharges to waterbodies or waterways.

The 2015-2016 monitoring year was the first year of dry weather storm drain outfall analytical sampling under the WQIP MAP. Dry weather storm drain outfall monitoring was conducted at the highest priority outfalls identified for each jurisdiction in the WMA (Table A4-17, Figure A4-5). Sampling was conducted between December 8, 2015 and September 19, 2016, and two sampling events were conducted at each outfall with flowing water or sufficient standing water. Three of the outfalls under the jurisdiction of the City of Oceanside were dry during both visits, and one was dry or ponded during three visits. These outfalls were not sampled. In addition, one of the outfalls under the jurisdiction of the County of San Diego was dry during the first persistent flow monitoring visit and did not have enough ponded water to sample during the subsequent monitoring visit. This outfall was also not sampled. Sampling was conducted in accordance with the procedures described in the WQIP MAP. In-situ measurements were made for pH, temperature, conductivity, dissolved oxygen, and turbidity. Grab samples were collected and analyzed for constituents contributing to the HPWQC, 303(d) List impairments, TMDLs, stormwater action levels (NALs), and those listed in Table D-7 of the Permit. Grab samples were also collected from receiving waters to which the sampled outfalls were discharging and analyzed for total hardness, a measurement needed to compare concentrations of metals to NALs that are hardness-dependent (see footnote *a* in Table A4-19). Visual observations were also recorded.

Analytical results for samples collected during dry weather at the highest priority outfalls are summarized by Participating Agency in Table A4-19 through Table A4-21. Results are compared to NALs, where available. In accordance with Table C-4 of the Permit, indicator bacteria concentrations are compared to instantaneous maximum value (IM) NALs, and the remaining constituent concentrations, including general and physical chemical constituents, nutrients, and total and dissolved metals, are compared to maximum daily action level (MDAL) NALs, where available. Results are presented below by Participating Agency. Laboratory and field data collected for the Highest Priority Storm Drain Outfall Dry Weather Monitoring will be uploaded to CEDEN and data submittals are provided in Attachment K of this appendix.

4.2.2.1 County of San Diego

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform (i.e., the HPWQC in the WMA) indicated that the highest concentrations were measured at MS4-SLR-150 in the Bonsall HSA (903.12) for all three indicator bacteria. *Enterococcus* concentrations were above the IM in all samples except one each from MS4-SLR-095 in the Moosa HSA (903.13) and MS4-SLR-150. Fecal coliform concentrations were above the IM in both samples from MS4-SLR-150 and one sample from MS4-SLR-152, also located in the Bonsall HSA (903.12) (Table A4-19).

The only existing MDALs that relate to PWQC in the WMA are for total nitrogen and total phosphorus, and each of these PWQC concentrations was measured above the MDAL except total nitrogen in one of two samples from MS4-SLR-095 and total phosphorus in one of two samples form MS4-SLR-152.

Other constituents in exceedance of MDALs are listed below. Unless noted, exceedances occurred in both samples collected at the outfall.

- MS4-SLR-095: dissolved oxygen (one sample) (below the MDAL indicates impairment), turbidity (one sample), total iron, total manganese, dissolved manganese.
- MS4-SLR-150: dissolved oxygen (one sample) (below the MDAL indicates impairment), turbidity (one sample), total iron (one sample), total manganese (one sample), dissolved manganese (one sample).
- MS4-SLR-152: total iron (one sample).
- MS4-SLR-155: total manganese (one sample).

The remaining constituents were below applicable MDALs, where available.

4.2.2.2 City of Oceanside

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform indicated that the highest concentrations were measured at SLR-036 for *Enterococcus* and at SLR-025 for fecal coliform. Both outfalls are located in the Mission HSA (903.11). Concentrations were above the *Enterococcus* IM in all samples and were above the fecal coliform IM in all samples except one from outfall SLR-036 (Table A4-20).

The only existing MDALs that relate to PWQC in the WMA are for total nitrogen and total phosphorus, and each of these PWQC concentrations was measured above the MDAL except total phosphorus in one of two samples form SLR-036, which was measured at the MDAL.

Other constituents in exceedance of MDALs are listed below. Unless noted, exceedances occurred in both samples collected at the outfall.

- SLR-025: total manganese (one sample).
- SLR-036: total manganese, dissolved copper (one sample), dissolved manganese (one sample).

The remaining constituents were below applicable MDALs, where available.

4.2.2.3 City of Vista

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform indicated that all concentrations measured at SLR-01 were below IMs and all concentrations measured at SLR-03 were above IMs (Table A4-21). Both outfalls are located in the Mission HSA (903.11).

The only existing MDALs that relate to PWQC in the WMA are for total nitrogen and total phosphorus. At SLR-01, total phosphorus was above the MDAL in one sample. At SLR-03, all samples were above the MDALs for total nitrogen and total phosphorus.

Other constituents in exceedance of MDALs are listed below. Unless noted, exceedances occurred in both samples collected at the outfall.

- SLR-01: total iron, total manganese, dissolved manganese.
- SLR-03: turbidity (one sample), total iron, total manganese, dissolved manganese.

The remaining constituents were below applicable MDALs, where available.

Table A4-19. 2015-2016 Dry Weather Storm Drain Outfall Discharge Monitoring Analytical Results for Highest Priority Outfalls – County of San Diego

Analyte	Units	Maximum Daily Action Level (MDAL)	MS4-SLR-095 (903.13)		MS4-SLR-150 (903.12)		MS4-SLR-152 (903.12)		MS4-SLR-155 (903.12)	
			1/19/2016	6/14/2016	1/19/2016	6/14/2016	12/8/2015	6/14/2016	12/8/2015	6/14/2016
Physical Chemistry										
Dissolved Oxygen	mg/L	5	6.22	**3.9**	**1.33**	7	10.11	6.57	8.91	9.47
pH	pH units	6.5-8.5	7.85	7.61	8.41	7.73	8.37	8.31	8.4	8.3
Specific Conductivity	µS/cm		3,350	3,320	1,860	1,500	2,440	2,290	4,300	4,600
Temperature	Celsius		15.57	18.54	14.55	20.25	16.26	20.48	16.34	19.32
Turbidity	NTU	20	7.8	**26.7**	**47.5**	8.68	5.45	0	4.38	7.9
General Chemistry										
Chloride	mg/L		590	520	180	230	300	270	510	580
Hardness as $CaCO_3$	mg/L		1,450	1,290	395	313	787	739	1,650	1,710
MBAS	mg/L	0.5	<0.5	<0.5	0.4	<0.5	<0.5	<0.5	<0.5	<0.5
Total Dissolved Solids	mg/L		2,090	2,020	860	786	1,520	1,420	2,930	3,220
Total Suspended Solids	mg/L		2.9	2.1	55	3.2	NA	2.6	NA	13.6
Nutrients										
Ammonia as N	mg/L		<0.1	0.12	17	1.12	0.13	0.12	0.17	0.26
Nitrate + Nitrite as N	mg/L		1.84	0.63	0.13	0.63	16.2	7.72	7.02	5.22
Nitrate as N	mg/L		1.84	0.62	0.09	0.53	16.2	7.72	7.02	5.22
Nitrite as N	mg/L		<0.01	0.01	0.04	0.1	<0.01	0.008	<0.01	<0.01
Total Nitrogen	mg/L	1	**4.4**	0.9	**47.9**	**3.9**	**16.2**	**8**	**7.7**	**6.4**
Total Kjeldahl Nitrogen	mg/L		2.6	0.3	47.8	3.3	<0.5	0.3	0.3	1.2
Orthophosphate	mg/L		0.14	0.25	5.7	0.24	0.12	0.07	0.27	0.3
Dissolved Phosphorus	mg/L		0.12	<0.05	5.3	0.2	0.12	0.09	0.44	0.14
Total Phosphorus	mg/L	0.1	**0.17**	**0.26**	**6.8**	**0.27**	**0.12**	0.09	**0.6**	**0.32**
Total Metals										
Cadmium	µg/L		<2	<1	0.2	<1	0.05	<1	0.4	<2
Chromium	µg/L		7	0.4	7	0.6	0.05	0.4	0.2	<2
Chromium III	µg/L		NA	0.4	NA	0.6	<0.22	0.4	<0.22	<1
Chromium VI	µg/L	16	0.32	<1	<0.02	<1	0.052	<1	0.051	<1
Copper	µg/L		5	1	11	12	6	2	4	4
Iron	µg/L	300	**374**	**367**	**929**	102	**531**	41	99	224
Lead	µg/L		<2	0.4	0.8	0.2	0.5	0.5	0.4	<2
Manganese	µg/L	50	**126**	**340**	**179**	27	30	7	28	**51**
Nickel	µg/L		12	2	13	2	2	7	2	5
Selenium	µg/L		0.4	0.2	2	1	1	2	7	13
Silver	µg/L		<2	<1	<1	<1	<1	<1	<1	<2
Zinc	µg/L		10	8	30	18	7	8	4	9
Dissolved Metals										
Cadmium	µg/L	(a)(b)	<2	<1	0.09	<1	0.9	<1	0.1	<2
Chromium	µg/L		0.2	<1	<1	0.2	<1	<1	<1	<2
Chromium III	µg/L	(a)(b)	NA	<1	NA	0.2	<0.22	<1	<0.22	<2
Chromium VI	µg/L	16	0.38	<1	0.056	<1	0.029	<1	0.028	<1
Copper	µg/L	(a)	0.8	0.4	7	7	1	1	6	3
Iron	µg/L	300	12	76	14	33	<10	<10	4	<20
Lead	µg/L	(a)	<2	<1	<1	0.08	<1	<1	0.1	<2

Table A4-19. 2015-2016 Dry Weather Storm Drain Outfall Discharge Monitoring Analytical Results for Highest Priority Outfalls – County of San Diego

Analyte	Units	Maximum Daily Action Level (MDAL)	MS4-SLR-095 (903.13)		MS4-SLR-150 (903.12)		MS4-SLR-152 (903.12)		MS4-SLR-155 (903.12)	
			1/19/2016	6/14/2016	1/19/2016	6/14/2016	12/8/2015	6/14/2016	12/8/2015	6/14/2016
Manganese	µg/L	50	**104**	**323**	**113**	22	2	3	4	6
Nickel	µg/L	(a)(b)	0.6	1	2	0.8	0.4	0.8	3	3
Selenium	µg/L		0.2	0.1	2	1	1	1	7	13
Silver	µg/L	(a)	<2	<1	<1	<1	<1	<1	<1	<2
Zinc	µg/L	(a)	2	2	6	8	3	1	4	2
Fecal Indicator Bacteria										
Enterococcus	MPN/100 mL	61 (c)	<2	**1,700**	<200#	**2,300**	**220**	**2,100**	**80**	**140**
Fecal Coliform	MPN/100 mL	400 (c)	<20	<200	**22,000**	**13,000**	300	**1,700**	20	200
Total Coliform	MPN/100 mL		300	30,000	240,000	500,000	1,300	35,000	5,000	2,400

< - Results are less than the reporting limit.

NA - Not analyzed.

J - Results are greater than the method detection limit but below the reporting limit. Reported result is estimated.

(a) Water Quality Benchmark for dissolved metal fractions is based on total hardness and is calculated as described by 40 CFR Part 131.38 (May 18, 2000). The CCC was applied to dry weather results with the exception of Silver for which the CMC was applied as there is no CCC.

(b) If calculated CCC values exceeded the Maximum Contaminant Levels (MCLs) as given in the basin plan, concentrations were compared to the MCLs. No MCLs were exceeded for these constituents.

(c) Instantaneous Maximum for storm drain outfall discharges to inland surface waters with Rec-1 beneficial use (Table C-4 of 2013 Permit).

- Reporting limit greater than Instantaneous Maximum benchmarks.

Bolded/shaded results greater than Maximum Daily Action Level or the Instantaneous Maximum for the Fecal Indicator Bacteria.

Table A4-20. 2015-2016 Dry Weather Storm Drain Outfall Discharge Monitoring Analytical Results for Highest Priority Outfalls – City of Oceanside

Analyte	Units	Maximum Daily Action Level (MDAL)	SLR-025 (903.11)		SLR-036 (903.11)	
			2/16/2016	8/29/2016	2/16/2016	8/2/2016
Physical Chemistry						
Dissolved Oxygen	mg/L	5	9.21	5.59	9.5	7.46
pH	pH units	6.5-8.5	8.06	8	8.21	7.75
Specific Conductivity	µS/cm		5,809	3,443	4,088	6,377
Temperature	Celsius		18.00	23.64	18.72	25.67
Turbidity	NTU	20	2.53	8.4	1.34	1.71
General Chemistry						
Chloride	mg/L		1,000	500	600	1,500
Hardness as $CaCO_3$	mg/L		1,600	920	1,300	1,900
MBAS	mg/L	0.5	<0.2	0.06	<0.08	<0.05
Total Dissolved Solids	mg/L		3,500	2,000	2,400	5,600
Total Suspended Solids	mg/L		6	9	5	6
Nutrients						
Ammonia as N	mg/L		<0.1	0.079J	<0.1	44
Nitrate as N	mg/L		1.5	1.2	4.5	14
Nitrite as N	mg/L		<0.1	<0.1	<0.1	0.08J
Total Nitrogen	mg/L	1	**4.1**	**2.7**	**5.6**	**250**
Total Kjeldahl Nitrogen	mg/L		2.6	1.5	1.1	230
Orthophosphate	mg/L		0.52	0.56	0.17	0.26
Dissolved Phosphorus	mg/L		0.62	0.66	0.22	0.25
Total Phosphorus	mg/L	0.1	**0.52**	**0.73**	0.1	**0.32**
Total Metals						
Cadmium	µg/L		<2	<0.25	<2	<2
Chromium	µg/L		<20	0.7	<20	<20
Copper	µg/L		25	14	6.4J	64
Iron	µg/L	300	78	290	140	<50
Lead	µg/L		<10	0.3J	<10	<10
Manganese	µg/L	50	5.9J	**55**	**300**	**54**
Nickel	µg/L		7.2J	3.1	5.2J	0.88J
Selenium	µg/L		5.1	2.4	7.3	2.9J
Silver	µg/L		<10	<0.25	<10	<10
Zinc	µg/L		NA	15	NA	6.8J
Dissolved Metals						
Cadmium	µg/L	(a)(b)	<2	<0.25	<2	<2
Chromium	µg/L		<20	<0.5	<20	<20
Chromium III	µg/L	(a)(b)	<20	0.7J	<20	<20
Chromium VI	µg/L	16	<1	<1	<1	0.41J
Copper	µg/L	(a)	23	11	7.1J	**43**
Iron	µg/L	300	<50	<50	<50	<50
Lead	µg/L	(a)	<10	<0.5	<10	<10
Manganese	µg/L	50	2.7J	41	**260**	27
Nickel	µg/L	(a)(b)	6J	2.6	5.2J	<20
Selenium	µg/L		6.5	2.6	8	2.4J

Table A4-20. 2015-2016 Dry Weather Storm Drain Outfall Discharge Monitoring Analytical Results for Highest Priority Outfalls – City of Oceanside

Analyte	Units	Maximum Daily Action Level (MDAL)	SLR-025 (903.11)		SLR-036 (903.11)	
			2/16/2016	8/29/2016	2/16/2016	8/2/2016
Silver	µg/L	(a)	<10	<0.25	<10	<10
Zinc	µg/L	(a)	NA	6.1	NA	4.4J
Fecal Indicator Bacteria						
Enterococcus	MPN/100 mL	61 (c)	**3,200**	**2,020**	**75**	**19,600**
Fecal Coliform	MPN/100 mL	400 (c)	**50,000**	**130,000**	40	**2,300**
Total Coliform	MPN/100 mL		110,000	>1,600,000	5,000	>1,600,000

< - Results are less than the reporting limit.

NA - Not analyzed.

J - Results are greater than the method detection limit but below the reporting limit. Reported result is estimated.

(a) Water Quality Benchmark for dissolved metal fractions is based on total hardness and is calculated as described by 40 CFR Part 131.38 (May 18, 2000). The CCC was applied to dry weather results with the exception of Silver for which the CMC was applied as there is no CCC.

(b) If calculated CCC values exceeded the Maximum Contaminant Levels (MCLs) as given in the basin plan, concentrations were compared to the MCLs. No MCLs were exceeded for these constituents.

(c) Instantaneous Maximum for storm drain outfall discharges to inland surface waters with Rec-1 beneficial use (Table C-4 of 2013 Permit).

Bolded/shaded results greater than Maximum Daily Action Level or the Instantaneous Maximum for the Fecal Indicator Bacteria.

Table A4-21. 2015-2016 Dry Weather Storm Drain Outfall Discharge Monitoring Analytical Results for Highest Priority Outfalls – City of Vista

Analyte	Units	Maximum Daily Action Level (MDAL)	SLR-01 (903.11)		SLR-03 (903.11)	
			8/4/2016	8/16/2016	8/24/2016	9/19/2016
Physical Chemistry						
Dissolved Oxygen	mg/L	5	7.8	6.4	7.5	6.85
pH	pH units	6.5-8.5	7.36	7.31	7.86	8.09
Specific Conductivity	µS/cm		4,016	3,901	1,417	2,350
Temperature	Celsius		23.86	22.22	22.30	20.90
Turbidity	NTU	20	6.72	10.9	18.5	**50**
General Chemistry						
Chloride	mg/L		990	1,000	250	440
Hardness as $CaCO_3$	mg/L		1,050	1,130	402	575
MBAS	mg/L	0.5	<0.05	<0.05	0.16	0.058
Total Dissolved Solids	mg/L		2,700	2,800	1,100	1,300
Total Suspended Solids	mg/L		13	20	200	7
Nutrients						
Ammonia as N	mg/L		<0.1	<0.1	0.17	0.14
Nitrate + Nitrite as N	mg/L		<0.1	<0.1	0.45	0.98
Nitrate as N	mg/L		<0.1	<0.1	0.4	0.94
Nitrite as N	mg/L		<0.1	<0.1	<0.1	<0.1
Total Nitrogen	mg/L	1	0.48	0.76	**1.5**	**1.8**
Total Kjeldahl Nitrogen	mg/L		0.48	0.76	1	0.77
Orthophosphate	mg/L		0.027	0.045	0.22	0.17
Dissolved Phosphorus	mg/L		0.031	0.022	0.23	0.17
Total Phosphorus	mg/L	0.1	0.061	**0.11**	**0.37**	**0.21**
Total Metals						
Cadmium	µg/L		<0.1	<0.1	<0.1	0.15
Chromium	µg/L		0.64	0.35	5.1	5.5
Chromium III	µg/L		0.47	<0.22	5	5.3
Chromium VI	µg/L	16	0.17	0.16	0.11	0.22
Copper	µg/L		1.6	0.72	16	17
Iron	µg/L	300	**580**	**370**	**4,600**	**4,300**
Lead	µg/L		0.21	<0.2	3	5.9
Manganese	µg/L	50	**820**	**590**	**140**	**160**
Nickel	µg/L		7	1.7	4.4	5
Selenium	µg/L		1.2	0.83	2.4	7.2
Silver	µg/L		<0.2	<0.2	<0.2	<0.2
Zinc	µg/L		<5	<5	45	95
Dissolved Metals						
Cadmium	µg/L	(a)(b)	<0.1	<0.1	<0.1	<0.1
Chromium	µg/L		<0.2	<0.2	<0.2	0.22
Chromium III	µg/L	(a)(b)	<0.22	<0.22	<0.22	<0.22
Chromium VI	µg/L	16	0.2	0.12	0.15	0.17
Copper	µg/L	(a)	1.1	<0.5	2.2	2.2
Iron	µg/L	300	<10	<10	17	<10
Lead	µg/L	(a)	<0.2	<0.2	<0.2	<0.2

Table A4-21. 2015-2016 Dry Weather Storm Drain Outfall Discharge Monitoring Analytical Results for Highest Priority Outfalls – City of Vista

Analyte	Units	Maximum Daily Action Level (MDAL)	SLR-01 (903.11)		SLR-03 (903.11)	
			8/4/2016	8/16/2016	8/24/2016	9/19/2016
Manganese	µg/L	50	**97**	**140**	**77**	**29**
Nickel	µg/L	(a)(b)	6.6	1.3	1.6	1.5
Selenium	µg/L		1.2	0.74	2.3	6.7
Silver	µg/L	(a)	<0.2	<0.2	<0.2	<0.2
Zinc	µg/L	(a)	<5	<5	6.6	7.5
Fecal Indicator Bacteria						
Enterococcus	MPN/100 mL	61 (c)	<10	20	**2,700**	**>2,420**
Fecal Coliform	MPN/100 mL	400 (c)	<20	20	**24,000**	**30,000**
Total Coliform	MPN/100 mL		2,300	7,000	30,000	160,000

< - Results are less than the reporting limit.

NA - Not analyzed.

J - Results are greater than the method detection limit but below the reporting limit. Reported result is estimated.

(a) Water Quality Benchmark for dissolved metal fractions is based on total hardness and is calculated as described by 40 CFR Part 131.38 (May 18, 2000). The CCC was applied to dry weather results with the exception of Silver for which the CMC was applied as there is no CCC.

(b) If calculated CCC values exceeded the Maximum Contaminant Levels (MCLs) as given in the basin plan, concentrations were compared to the MCLs. No MCLs were exceeded for these constituents.

(c) Instantaneous Maximum for storm drain outfall discharges to inland surface waters with Rec-1 beneficial use (Table C-4 of 2013 Permit).

Bolded/shaded results greater than Maximum Daily Action Level or the Instantaneous Maximum for the Fecal Indicator Bacteria.

4.2.3 *Storm Drain Outfall Dry Weather Monitoring Data Assessments*

Provision D.4.b.(1).(c)(i-vi) of the Permit requires the storm drain dry weather outfall monitoring data assessments summarized in Table A4-22. The information necessary to demonstrate compliance with each Provision is outlined in the following discussion. In instances where compliance has been demonstrated in previous sections of this Annual Report, those sections are referenced.

Table A4-22. Storm Drain Outfall Dry Weather Monitoring Data Assessments

Assessment	Components	Provision(s)
WQIP Annual Report		
Identify known and suspected controllable sources.	Identify known and suspected controllable sources (e.g., facilities, areas, land uses, pollutant generating activities) of transient and persistent flows.	D.4.b.(1)(b)(i)
Identify sources that have been reduced or eliminated.	Identify sources of transient and persistent flows that have been reduced or eliminated.	D.4.b.(1)(b)(ii)
Identify necessary modifications to monitoring locations and frequencies.	Identify necessary modifications to monitoring locations and frequencies necessary to identify and eliminate sources of persistent flows.	D.4.b.(1)(b)(iii)
Rank and prioritize non-stormwater discharges.	Rank persistently flowing outfalls according to potential threat to receiving water quality.	D.4.c.(1)(c)(ii)
	Produce/update prioritized list of outfalls.	
Identify sources contributing to NAL exceedances.	Identify known and suspected sources that may cause or contribute to exceedances.	D.4.b.(1)(c)(iii)
Estimate volumes and loads of non-stormwater discharges.	Analyze data collected as part of the Permit-required dry weather outfall monitoring. Use a model or other method to calculate and estimate collective persistent non-stormwater discharge volumes and pollutant loads. Specific calculations/estimates include: 1) Annual non-stormwater volumes and loads discharged from the Copermittee's major storm drain outfalls to receiving waters within its jurisdiction, with an estimate of the percent contribution from each known source for each storm drain outfall. 2) Annual identification and quantification (by volume and pollutant load) of sources of discharged non-stormwater not subject to the Copermittee's legal authority.	D.4.b.(1)(c)(iv)
Identify data gaps.	Identify data gaps in the monitoring data necessary to fulfill assessment requirements.	D.4.b.(1)(c)(vi)

Table A4-22. Storm Drain Outfall Dry Weather Monitoring Data Assessments

Assessment	Components	Provision(s)
Once during Permit Term		
Evaluate progress in achieving non-stormwater volume and load reductions.	Identify reductions and progress in achieving reductions.	D.4.c.(1)(c)(v)
	Assess the effectiveness of WQIP improvement strategies, with estimates of volume and load reductions attributed to specific strategies when possible.	
	Identify modifications necessary to increase the effectiveness of WQIP strategies.	

4.2.3.1 Provision D.4.b.(1)(b)

The dry weather storm drain outfall discharge field screening monitoring assessments that were first required by Provision D.4.b.(1)(b)(i-iii) during the transitional monitoring period (2013-2014 and 2014-2015 monitoring years) are required to be continued by Provision D.4.b.(1)(c)(i). The assessments related to (i) and (ii) are described in Section 4.2.4 below. To comply with (iii), the data collected under the dry weather storm drain outfall discharge field screening monitoring program (Sections 4.2.1 and 4.2.2) were assessed, and no modifications to field screening monitoring locations or frequencies are planned for 2016-2017 in the San Luis Rey River WMA.

4.2.3.2 Provision D.4.b.(1)(c)(ii)

In addition to continuing the assessments required by Provision D.4.b.(1)(b)(i-iii), the 2015-2016 monitoring year is the first requiring analytical monitoring of dry weather storm drain outfall discharge samples, and the first requiring the assessments of Provision D.4.b.(1)(c)(ii-v).

Provision D.4.b.(1)(c)(ii) requires the prioritization of major storm drain outfalls within each Copermittee's jurisdiction based on the dry weather storm drain outfall monitoring data. These data were presented in Section 4.2.1, and the analytical data collected at the highest priority outfalls for each jurisdiction during 2015-2016 are presented in Table A4-19 through Table A4-21 in Section 4.2.2. Based on the 2015-2016 monitoring results, the City of Oceanside is updating its outfall prioritization due to changes in outfall flow determinations. SLR-005 and SLR-035, which were dry for three consecutive visits, will be replaced on the list of five highest priority outfalls. SLR-007 will be added to the highest priority outfall list, and SLR-025 which was added during 2015-2016 will serve as the other replacement in the top five for 2016-2017. No re-prioritizations are planned for 2016-2017 by the City of Vista or County of San Diego in the San Luis Rey River WMA. Although the flow determination changed for two outfalls from persistent to transient, these high priority outfalls selected for analytical monitoring in 2015-2016 will continue to be monitored until one of the conditions of Provision D.2.b.(2)(b)(ii) have been met (i.e., three consecutive dry visits, no exceedance of NALs, or identified as a discharge authorized under a separate National Pollutant Discharge Elimination System [NPDES] permit). When an outfall fulfills one of these criteria or the threat to water quality has been reduced (per Provision D.2.b.(2)(b)(iii)), it will be

replaced with the next highest priority outfall on the Copermittee's list for the WMA. Monitored outfalls with updated flow determinations are shown in Table A4-18.

4.2.3.3 Provision D.4.b.(1)(c)(iii)

This Provision requires further investigation into sources at the highest priority outfalls with persistent flows exceeding NALs. The highest priority outfalls are listed for each jurisdiction in Table A4-17, and the analytical results collected at these outfalls are presented in Table A4-19 through Table A4-21.

These highest priority outfalls were a specific focus for IDDE investigations during the 2015-2016 monitoring year. The results from these investigations are presented in Section 4.2.4.2. The majority of the sources were recorded as "suspected", while three were identified as "known". The most common suspected source of non-stormwater flows was runoff from over-irrigation, which has been acknowledged as a source associated with several types of pollutants including nutrients, bacteria, pesticides, and sediment (Regional Board, 2013). The 2015-2016 highest priority storm drain outfall dry weather monitoring results showed exceedances of NALs for the HPWQC and PWQCs *Enterococcus*, fecal coliform, total nitrogen, and total phosphorus. Agricultural runoff was also suspected at two County outfalls with total nitrogen and total phosphorus exceedances. Concentrations of iron and manganese were also above NALs at some outfalls, and groundwater seepage in addition to over-irrigation were suspected as sources of flows at many of the outfalls. Groundwater can be a natural source of these minerals, and over-irrigation can contribute to rising groundwater and groundwater seepage. In cases where groundwater is a suspected source of non-stormwater flow, it is generally not possible to use standard field screening techniques to discern naturally occurring groundwater from other infiltrated water sources. This type of source investigation would require significant time, resources, and effort, and may not result in conclusive delineation of non-stormwater runoff sources. There was one NAL exceedance for dissolved copper at a monitored outfall in the watershed. Non-stormwater flow source at this outfall has been traced to a detention basin outlet on multiple occasions. Groundwater spring influence was discovered during the 2015-2016 monitoring year, which may contribute a substantial portion of the continuing discharge observed. Details regarding source investigations are provided in Section 4.2.4.2, including the sources identified in Table A4-30 through Table A4-32.

4.2.3.4 Provision D.4.b.(1)(c)(iv)

Persistent non-stormwater flow was identified by each of the Participating Agencies in the San Luis Rey River WMA. Since persistent flow was observed, the Participating Agencies are required to calculate or estimate the non-stormwater volumes and pollutant loads collectively discharged from these persistently flowing outfalls to receiving waters, and estimate percent contributions from each known source for each outfall. The Participating Agencies are also required to identify and quantify (i.e., volume and pollutant loads) sources of non-stormwater discharge not subject to the Participating Agency's legal authority that are discharged from the major storm drain outfalls, with persistent flow, to downstream receiving waters. Assessment methodology and results are summarized below and are described in greater detail in Attachment 4E. Suspected sources were included in this assessment.

4.2.3.4.1 Discharge Volumes from Persistently Flowing Major Storm Drain Outfalls

For each major storm drain outfall with persistent flow during the 2015-2016 monitoring year, the non-stormwater discharge was modeled by multiplying the total number of dry weather days for the month by a unique instantaneous flow rate for the outfall for that month. The number of dry weather days (i.e., less than 72 hours since rain event of 0.1 inches or more) for each calendar month was determined using rainfall data from the County of San Diego Alert Station 67-Oceanside. For months with field visits, the instantaneous flow measurement recorded for that visit was applied to the month, and if there were multiple field visits within a given month these were averaged and applied to the month (averages included instantaneous flow measurements and zero flow for dry/tidal/ponded conditions). For months where no outfall-specific data were available, the average of all instantaneous flow measurements for the outfall was applied to that month. The annual non-stormwater discharge for each major storm drain outfall represents the sum of cumulative monthly flows. These non-stormwater discharge volumes should be considered rough estimates that are based on limited field observations and measurements. When feasible, instantaneous flow measurements are based on the area-velocity method, which applies measured flow depth, width, and velocity. Velocity is often measured using a float. Although multiple velocity measurements may be collected to overcome inherent variability and a roughness factor may be applied to address friction, the float method represents a rough estimation tool for velocity. Where site conditions limit accurate collection of area-velocity field measurements, non-stormwater discharge may be estimated either using a volumetric flow rate method (e.g., filling a container of known volume in a measured interval of time), or best professional judgement based on field observations.

The County of San Diego collected continuous flow monitoring data at five major storm drain outfalls, and for these outfalls, the continuous flow data were used rather than the instantaneous flow measurements provided by field visits. The continuous flow datasets were adjusted to exclude wet weather days and the subsequent 72-hour wet periods and then were used to calculate the cumulative monthly discharge for the period when flow was monitored. For months with no continuous flow data, but available visual observation flow data, the monthly discharge was calculated using the approach described above. For months with no outfall-specific flow data, an average of the daily discharge values using the continuous flow dataset was applied to the days of that month.

Table A4-23 presents the estimated annual non-stormwater volume and the average annual discharge calculated for major storm drain outfalls with persistent non-stormwater flows, by Participating Agency.

Table A4-23. 2015-2016 Non-stormwater Flow Estimates for Major Storm Drain Outfalls with Persistent Flow

Participating Agency	No. Persistently Flowing Major Storm Drain Outfalls	Annual Non-Storm Water Discharge (cf)	Annual Average Discharge by Outfall (cf/outfall)
County of San Diego	7	5,945,734	849,391
City of Oceanside	3	322,363	107,454
City of Vista	2	65,122 to 100,061	32,561 to 50,031*

cf – cubic feet

*Range based on SLR-03 discharge for August-September 2016 (56 dry days) since IC/ID discovery, and continuous discharge for the year (298 dry days) to represent the most conservative result, given that the start date of the leak is unknown. Repair work is scheduled. Follow-up assessment is ongoing.

4.2.3.4.2 Pollutant Loads for Persistent Flow Outfalls

Pollutant loads were calculated based on whether analytical monitoring data were available for a major storm drain outfall. Loads were calculated as follows:

- Major Storm Drain Outfalls with Parameter-Specific Monitoring Data (High Priority Outfalls): The annual load represents the product of the outfall-specific annual discharge volume and the mean of the measured pollutant concentrations for the major storm drain outfall if two samples were collected.

- Other Persistent Flow Outfalls: Where site-specific monitoring data were not available for a persistently flowing outfall, the pollutant load was calculated by taking the product of the outfall-specific annual discharge volume and the mean pollutant concentration from all the dry weather monitoring events for the jurisdiction for the parameter.

For each persistently flowing outfall, estimates of annual non-stormwater pollutant loads are provided for each monitored constituent. Table A4-24 provides the pollutant load estimates for the County of San Diego outfalls; City of Oceanside outfalls are presented in Table A4-25, and City of Vista in Table A4-26. Two estimates of pollutant loads are provided for the City of Vista's SLR-03 as it is unknown when the illicit discharge began. These estimates represent the range of potential pollutant loading for the monitoring year based on assuming leak beginning in August 2016 (56 dry days) when it was discovered, or a continuous discharge for the year (298 dry days).

Table A4-24. Estimated Annual Non-Storm Water Pollutant Loads for 2015-2016 Monitoring Year Persistently Flowing Major Storm Drain Outfalls in County of San Diego

Parameter	Unit	MS4-SLR-041	MS4-SLR-095	MS4-SLR-097	MS4-SLR-150	MS4-SLR-152	MS4-SLR-154	MS4-SLR-155
Discharge	*cf*	*6,632*	*50,310*	*0**	*28,994*	*592,655*	*11,590*	*5,255,553*
Analytical Data		*No Sample*	*Two Samples*	*No Sample**	*Two Samples*	*Two Samples*	*No Sample*	*Two Samples*
General Chemistry								
Chloride	kg	74.65	790.67	0.00	168.31	4782.90	130.46	81107.14
MBAS	kg	0.05	0.36	0.00	0.27	4.20	0.09	37.21
Total Dissolved Solids	kg	348.51	2927.62	0.00	675.69	24669.68	609.04	457622.86
Total Suspended Solids	kg	2.49	3.56	0.00	23.89	43.63	4.34	2023.96
Nutrients								
Ammonia as N	kg	0.45	0.12	0.00	7.44	2.10	0.78	32.00
Dissolved Phosphorus	kg	0.15	0.10	0.00	2.26	1.76	0.26	43.16
Nitrate + Nitrite as N	kg	0.92	1.76	0.00	0.31	200.71	1.62	910.78
Nitrate as N	kg	0.92	1.75	0.00	0.25	200.71	1.61	910.78
Nitrite as N	kg	0.00	0.01	0.00	0.06	0.11	0.01	0.74
Orthophosphate	kg	0.17	0.28	0.00	2.44	1.59	0.29	42.41
Total Kjeldahl Nitrogen	kg	1.32	2.07	0.00	20.98	4.62	2.30	111.62
Total Nitrogen	kg	2.24	3.78	0.00	21.26	203.06	3.91	1049.18
Total Phosphorus	kg	0.20	0.31	0.00	2.90	1.76	0.35	68.46
Total Metals								
Cadmium	kg	0.0001	0.0011	0.0000	0.0003	0.0046	0.0002	0.1042
Chromium	kg	0.0004	0.0053	0.0000	0.0031	0.0038	0.0007	0.0893
Chromium III	kg	0.0001	0.0006	0.0000	0.0005	0.0043	0.0001	0.0454
Chromium VI	kg	0.0001	0.0006	0.0000	0.0002	0.0046	0.0001	0.0410
Copper	kg	0.0011	0.0043	0.0000	0.0094	0.0671	0.0018	0.5953
Iron	kg	0.0626	0.5278	0.0000	0.4232	4.7997	0.1094	24.0345
Lead	kg	0.0001	0.0010	0.0000	0.0004	0.0084	0.0002	0.1042
Manganese	kg	0.0185	0.3319	0.0000	0.0846	0.3105	0.0323	5.8784
Nickel	kg	0.0011	0.0100	0.0000	0.0062	0.0755	0.0018	0.5209
Selenium	kg	0.0006	0.0004	0.0000	0.0012	0.0252	0.0011	1.4882
Silver	kg	0.0001	0.0011	0.0000	0.0004	0.0084	0.0002	0.1116
Zinc	kg	0.0022	0.0128	0.0000	0.0197	0.1259	0.0039	0.9673

Table A4-24. Estimated Annual Non-Storm Water Pollutant Loads for 2015-2016 Monitoring Year Persistently Flowing Major Storm Drain Outfalls in County of San Diego

Parameter	Unit	MS4-SLR-041	MS4-SLR-095	MS4-SLR-097	MS4-SLR-150	MS4-SLR-152	MS4-SLR-154	MS4-SLR-155
Discharge	*cf*	*6,632*	*50,310*	*0**	*28,994*	*592,655*	*11,590*	*5,255,553*
Analytical Data		*No Sample*	*Two Samples*	*No Sample**	*Two Samples*	*Two Samples*	*No Sample*	*Two Samples*
Dissolved Metals								
Cadmium	kg	0.0001	0.0011	0.0000	0.0002	0.0117	0.0002	0.0819
Chromium	kg	0.0001	0.0005	0.0000	0.0003	0.0084	0.0002	0.1116
Chromium III	kg	0.0001	0.0007	0.0000	0.0002	0.0051	0.0001	0.0826
Chromium VI	kg	0.0001	0.0006	0.0000	0.0002	0.0044	0.0001	0.0393
Copper	kg	0.0006	0.0009	0.0000	0.0057	0.0168	0.0011	0.6697
Iron	kg	0.0037	0.0627	0.0000	0.0193	0.0839	0.0065	1.0417
Lead	kg	0.0001	0.0011	0.0000	0.0002	0.0084	0.0002	0.0819
Manganese	kg	0.0135	0.3042	0.0000	0.0554	0.0420	0.0237	0.7441
Nickel	kg	0.0003	0.0011	0.0000	0.0011	0.0101	0.0005	0.4465
Selenium	kg	0.0006	0.0002	0.0000	0.0012	0.0168	0.0010	1.4882
Silver	kg	0.0001	0.0011	0.0000	0.0004	0.0084	0.0002	0.1116
Zinc	kg	0.0007	0.0028	0.0000	0.0057	0.0336	0.0011	0.4465
Fecal Indicator Bacteria								
Enterococcus	MPN	1.56E+09	1.21E+10	0.00E+00	9.85E+09	1.95E+11	2.72E+09	1.64E+11
Fecal Coliform	MPN	8.76E+09	7.84E+08	0.00E+00	1.44E+11	1.68E+11	1.53E+10	1.64E+11
Total Coliform	MPN	1.91E+11	2.16E+11	0.00E+00	3.04E+12	3.05E+12	3.34E+11	5.51E+12

cf – cubic feet kg – kilogram MPN – most probable number

*Pollutant load estimates are zero as outfall was ponded during field screening, resulting in stormwater volume estimate of zero for monitoring year.

Table A4-25. Estimated Annual Non-Storm Water Pollutant Loads for 2015-2016 Monitoring Year Persistently Flowing Major Storm Drain Outfalls in City of Oceanside

Parameter	Unit	SLR-007	SLR-025	SLR-036
Discharge	*cf*	*0**	*8,234*	*314,129*
Analytical Data		*No Sample**	*Two Samples*	*Two Samples*
General Chemistry				
Chloride	kg	0.00	174.87	9339.89
MBAS	kg	0.00	0.02	0.29
Total Dissolved Solids	kg	0.00	641.21	35580.54
Total Suspended Solids	kg	0.00	1.75	48.92
Nutrients				
Ammonia as N	kg	0.00	0.02	195.92
Dissolved Phosphorus	kg	0.00	0.15	2.09
Nitrate + Nitrite as N	kg			
Nitrate as N	kg	0.00	0.31	82.28
Nitrite as N	kg	0.00	0.01	0.58
Orthophosphate	kg	0.00	0.13	1.91
Total Kjeldahl Nitrogen	kg	0.00	0.48	1027.83
Total Nitrogen	kg	0.00	0.79	1136.80
Total Phosphorus	kg	0.00	0.15	1.87
Total Metals				
Cadmium	kg	0.0000	0.0001	0.0089
Chromium	kg	0.0000	0.0012	0.0890
Chromium III	kg			
Chromium VI	kg			
Copper	kg	0.0000	0.0045	0.3131
Iron	kg	0.0000	0.0429	0.7338
Lead	kg	0.0000	0.0006	0.0445
Manganese	kg	0.0000	0.0071	1.5744
Nickel	kg	0.0000	0.0012	0.0270
Selenium	kg	0.0000	0.0009	0.0454
Silver	kg	0.0000	0.0006	0.0445
Zinc	kg	0.0000	0.0035	0.0605
Dissolved Metals				
Cadmium	kg	0.0000	0.0001	0.0089
Chromium	kg	0.0000	0.0012	0.0890
Chromium III	kg	0.0000	0.0012	0.0890
Chromium VI	kg	0.0000	0.0001	0.0040
Copper	kg	0.0000	0.0040	0.2228
Iron	kg	0.0000	0.0058	0.2224
Lead	kg	0.0000	0.0006	0.0445
Manganese	kg	0.0000	0.0051	1.2765
Nickel	kg	0.0000	0.0010	0.0676
Selenium	kg	0.0000	0.0011	0.0463
Silver	kg	0.0000	0.0006	0.0445

Table A4-25. Estimated Annual Non-Storm Water Pollutant Loads for 2015-2016 Monitoring Year Persistently Flowing Major Storm Drain Outfalls in City of Oceanside

Parameter	Unit	SLR-007	SLR-025	SLR-036
Discharge	*cf*	*0**	*8,234*	*314,129*
Analytical Data		*No Sample**	*Two Samples*	*Two Samples*
Zinc	kg	0.0000	0.0014	0.0391
Fecal Indicator Bacteria				
Enterococcus	MPN	0.00E+00	6.09E+09	8.75E+11
Fecal Coliform	MPN	0.00E+00	2.10E+11	1.04E+11
Total Coliform	MPN	0.00E+00	1.99E+12	7.14E+13

cf – cubic feet kg – kilogram MPN – most probable number

*Pollutant load estimates are zero as outfall was ponded during field screening resulting in stormwater volume estimate of zero for monitoring year.

Table A4-26. Estimated Annual Non-Storm Water Pollutant Loads for 2015-2016 Monitoring Year Persistently Flowing Major Storm Drain Outfalls in City of Vista

Parameter	Unit	SLR-01	SLR-03 (Two Scenarios)	
Discharge	*cf*	*57,326*	*7,796**	*42,735***
Analytical Data		*Two Samples*	*Two Samples*	*Two Samples*
General Chemistry				
Chloride	kg	1615.17	76.16	417.49
MBAS	kg	0.04	0.02	0.13
Total Dissolved Solids	kg	4464.04	264.91	1452.14
Total Suspended Solids	kg	26.78	22.85	125.25
Nutrients				
Ammonia as N	kg	0.08	0.03	0.19
Dissolved Phosphorus	kg	0.04	0.04	0.24
Nitrate + Nitrite as N	kg	0.08	0.16	0.87
Nitrate as N	kg	0.08	0.15	0.81
Nitrite as N	kg	0.08	0.01	0.06
Orthophosphate	kg	0.06	0.04	0.24
Total Kjeldahl Nitrogen	kg	1.01	0.20	1.07
Total Nitrogen	kg	1.01	0.36	2.00
Total Phosphorus	kg	0.14	0.06	0.35
Total Metals				
Cadmium	kg	0.0001	0.0000	0.0001
Chromium	kg	0.0008	0.0012	0.0064
Chromium III	kg	0.0005	0.0011	0.0062
Chromium VI	kg	0.0003	0.0000	0.0002
Copper	kg	0.0019	0.0036	0.0200
Iron	kg	0.7711	0.9824	5.3850
Lead	kg	0.0003	0.0010	0.0054
Manganese	kg	1.1444	0.0331	0.1815

Table A4-26. Estimated Annual Non-Storm Water Pollutant Loads for 2015-2016 Monitoring Year Persistently Flowing Major Storm Drain Outfalls in City of Vista

Parameter	Unit	SLR-01	SLR-03 (Two Scenarios)	
Discharge	*cf*	*57,326*	*7,796**	*42,735***
Analytical Data		*Two Samples*	*Two Samples*	*Two Samples*
Nickel	kg	0.0071	0.0010	0.0057
Selenium	kg	0.0016	0.0011	0.0058
Silver	kg	0.0002	0.0000	0.0001
Zinc	kg	0.0041	0.0155	0.0847
Dissolved Metals				
Cadmium	kg	0.0001	0.0000	0.0001
Chromium	kg	0.0002	0.0000	0.0002
Chromium III	kg	0.0002	0.0000	0.0001
Chromium VI	kg	0.0003	0.0000	0.0002
Copper	kg	0.0011	0.0005	0.0027
Iron	kg	0.0081	0.0024	0.0133
Lead	kg	0.0002	0.0000	0.0001
Manganese	kg	0.1924	0.0117	0.0641
Nickel	kg	0.0064	0.0003	0.0019
Selenium	kg	0.0016	0.0010	0.0054
Silver	kg	0.0002	0.0000	0.0001
Zinc	kg	0.0041	0.0016	0.0085
Fecal Indicator Bacteria				
Enterococcus	MPN	2.03E+08	5.65E+09	3.10E+10
Fecal Coliform	MPN	2.43E+08	5.96E+10	3.27E+11
Total Coliform	MPN	7.55E+10	2.10E+11	1.15E+12

*Assumes Continuous discharge for August-September 2016 (56 dry days)

**Assumes Continuous discharge for the year (298 dry days)

cf – cubic feet kg – kilogram MPN – most probable number

Dry weather visual observation and field investigation data regarding known and/or suspected sources of non-stormwater discharges were used to estimate percent contributions from each known or suspected source for each persistent flow outfall in accordance with Provision D.4.b.(1)(c)(iv)(a). These results are provided in Table A4-27. During field investigations, agricultural run-off was identified as a primary source of non-stormwater discharges (approximately 90%) for two persistent flow outfalls. Agricultural irrigation runoff is not within the jurisdiction of Participating Agencies. This type of runoff is regulated by a State Agricultural Waiver, which expired in February 2014, and a Waste Discharge Requirement Permit will eventually be issued to replace it. As a source not subject to the Participating Agencies' legal authority, this source is identified and quantified per Provision D.4.b.(1)(c)(iv)(b). The stormwater volume and pollutant loads for the agricultural runoff source is provided in Attachment 4E to this Appendix.

Table A4-27. 2015-2016 Dry Weather Assessment of Discharge by Flow Source for Persistently Flowing Major Storm Drain Outfalls

Participating Agency	Major Storm Drain Outfall	Annual Dry Weather Discharge (cf)	Estimated Percent of Non-Stormwater Discharge from Suspected Flow Sources						Notes
			Non-Jurisdictional: Agricultural Runoff	Source Unknown	Irrigation	Vehicle Washing	Uncontrollable Source: Groundwater/ Springs	Leaking Fire Hydrant	
County of San Diego	MS4-SLR-041	6,632			95%	5%			
	MS4-SLR-095	50,310			50%		50%		
	MS4-SLR-097	0		No Data					
	MS4-SLR-150	28,994			100%				
	MS4-SLR-152	592,655	90%		5%	5%			Non-jurisdictional agricultural runoff was identified (suspected) as the only flow source for several upstream drainages. Near the outfall, other potential non-stormwater flow sources were observed.
	MS4-SLR-154	11,590		No Data					Not a designated highest priority site for 2015-2016 monitoring year.
	MS4-SLR-155	5,255,553	90%		10%				Non-jurisdictional agricultural runoff was identified (suspected) as the only flow source for several upstream drainages.
City of Oceanside	SLR-007	0		No Data					Not a designated highest priority site for 2015-2016 monitoring year. Persistent flow monitoring planned for 2016-2017.
	SLR-025	8,234			100%				
	SLR-036	314,129					100%		Rising groundwater identified as a known source. No other sources were identified during field investigations.
City of Vista	SLR-01	57,326					100%		Source suspected to be groundwater seepage based upon previous investigations.
	SLR-03	7,796 to 42,735						100%	Source is suspected to be from a fire hydrant leak. Repair work is scheduled and follow-up ongoing.

cf – cubic feet

4.2.3.5 Provision D.4.b.(2)(c)(v)

This Provision requires the Participating Agencies to review the data collected under the dry weather storm drain outfall monitoring program in order to identify pollutant reduction progress, assess water quality improvement strategy effectiveness, and identify modifications necessary to increase effectiveness. This assessment is required once during the Permit term and will be provided in the San Luis Rey River WMA chapter of the RMAR, which is scheduled for submittal to the Regional Board in December 2017.

4.2.3.6 Provision D.4.b.(2)(c)(vi)

No gaps have been identified in the monitoring data. Because the 2015-2016 monitoring year was the first year of monitoring under the WQIP MAP and the first year requiring the assessments outlined in Provision D.4.b.(1)(c)(ii-iv), the collection of additional data may be necessary before the Participating Agencies are able to identify data gaps.

4.2.4 *Illicit Discharge Detection and Elimination Program Data and Assessment*

In order to reduce pollutant loading into local receiving waters, each Participating Agency implements a program to reduce non-stormwater flows into its storm drain system. These programs are designed to meet the requirements of the Permit related to IDDE. Each Participating Agency's IDDE Program is one of the primary components of their Jurisdictional Runoff Management Program (JRMP).

Each Participating Agency's IDDE Program seeks to address and reduce the potential contribution of pollutants from stormwater and non-stormwater discharges. The IDDE Programs seek to achieve the following goals:

- Controlling the contribution of pollutants to and the discharges from the storm drain system within its jurisdiction,
- Effectively prohibiting non-stormwater discharges to the storm drain system, and
- Reducing the discharge of pollutants in stormwater to the maximum extent practicable.

In pursuit of these goals, and in addition to the programmatic elements of the IDDE Programs, the Participating Agencies prioritize outfalls and sources, conduct follow-up investigations, and seek to identify sources of non-stormwater discharges on the basis of the following:

- Field screening visual observations at major storm drain outfalls,
- Non-stormwater monitoring at prioritized persistent flow outfalls, and
- Reports or notifications of illicit discharges, illicit connections, or other sources of non-stormwater flow from hotlines or other sources.

In addition to outfall monitoring and associated source investigations, the IDDE programs also include the following components to prevent, identify, and eliminate IC/IDs:

- Educating the local community about prohibited discharges and how to prevent them. During the 2015-2016 fiscal year, this outreach program included working closely with

water utilities to educate communities about outdoor water conservation, including preventing irrigation runoff.

- Operating a public complaint phone hotline and website and investigating the complaints received.
- Inspecting industrial/commercial and municipal facilities, construction sites, and residential areas. In addition to identifying and eliminating IC/IDs where applicable, inspectors also proactively educate responsible parties about how to avoid IC/IDs, such as cleaning outdoor areas by sweeping instead of hosing them off.
- Maintaining the storm drain system and sewer system, which provide opportunities to identify unpermitted connections to the storm drain system, cross connections, and other potential sources of IC/IDs.

Much of the IDDE program information is described in more detail in Section 4 of the Annual Report and is reported in the JRMP Annual Report form provided as Attachment D to the Permit. The form includes a series of questions related to the central elements of the JRMP programs being implemented by each Participating Agency. The IDDE section includes quantification of the activities of the program in the previous reporting year, such as the number of non-stormwater discharges identified or eliminated, per the requirement of Permit Section II.E.2.D.4. The JRMP Annual Report forms for each Participating Agency are provided in Appendix 2.

4.2.4.1 Dry Weather Storm Drain Outfall Source Identification Results

The Participating Agencies prioritized the outfalls under their jurisdictions in the San Luis Rey River Watershed based on these field screening results and analysis of the collected outfall flow data. Extensive field investigations and discharge reconnaissance visits looking for illicit discharges in upstream areas were then conducted to identify and eliminate sources of flow to these priority outfalls. Illicit discharges or connections contributing non-stormwater flow may be subject to enforcement; however, many sources of non-stormwater flow can be terminated with education or technical assistance.

Source investigations for storm drain outfall monitoring broadly categorize identified sources as "controllable" and "uncontrollable." Uncontrollable sources include natural sources such as groundwater and springs. Controllable and uncontrollable sources are further classified as known and suspected. All but three sources were categorized as suspected; two known sources were groundwater and one was irrigation. Table A4-28 summarizes the controllable flow sources investigated by each Participating Agency during the 2015-2016 monitoring year. It is important to note that more than one source may contribute flow to a single outfall. In cases where flow was observed at the outfall, but the source was not directly observed or otherwise definitively identified, Participating Agencies may have identified the sources as "suspected" rather than "known." Suspected sources may require additional investigation to identify them more specifically before they can be reduced or eliminated. Table A4-29 summarizes the uncontrollable flow sources investigated by each Participating Agency during 2015-2016.

Table A4-28. Known and Suspected Controllable Sources of Flows in the San Luis Rey WMA

Participating Agency	Known Controllable Sources				Suspected Controllable Sources				
	Commercial Washing Activities	Irrigation Runoff	Vehicle Washing	Other	Irrigation Runoff	Commercial Washing Activities	Residential Vehicle Washing	Residential Impervious Surface Washing	Other
County of San Diego					34[1]		2		3 (illicit connections)
City of Oceanside		1			1				
City of Vista									1 (leaking hydrant) [2]

Note:
[1] Does not include agricultural irrigation runoff. See notes of Table A4-23 for further detail.
[2] Repair work to be scheduled, follow-up ongoing.

Table A4-29. Known and Suspected Uncontrollable Sources of Flows in the San Luis Rey WMA

Participating Agency	Known Uncontrollable Source			Suspected Uncontrollable Source			
	Groundwater	Springs	Tidal	Groundwater	Agricultural Runoff	Springs	Other
County of San Diego				4	10[1]		
City of Oceanside	2					1	1 (detention basin seepage)
City of Vista				1			

. **Note:**
[1] Agricultural irrigation runoff is not within the jurisdiction of the Participating Agencies, and this type of runoff is regulated by a State Agricultural Waiver which was included in Resolution No. R9-2007-0104, Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Revised Conditional Waivers of Waste Discharge Requirements for Specific Types of Discharge within the San Diego Region. This waiver expired in February 2014 and a Waste Discharge Requirement Permit will replace it.

The most common source of non-stormwater flow found during the Participating Agencies' investigations was irrigation runoff, a controllable source. This flow source includes over-watering of residential and commercial landscaping. The flow category of "irrigation runoff" in Table A4-28 and Table A4-29 and in Figure A4-9 do not include irrigation runoff from agricultural areas, which is regulated by the Regional Board under a separate program and is outside of the jurisdiction of the Participating Agencies. Agricultural runoff was among the suspected sources during 10 investigations involving two outfalls. Figure A4-9 shows the known or suspected flow sources identified during the 2015-2016 monitoring year through the Participating Agencies' outfall flow investigations by monitoring program staff.

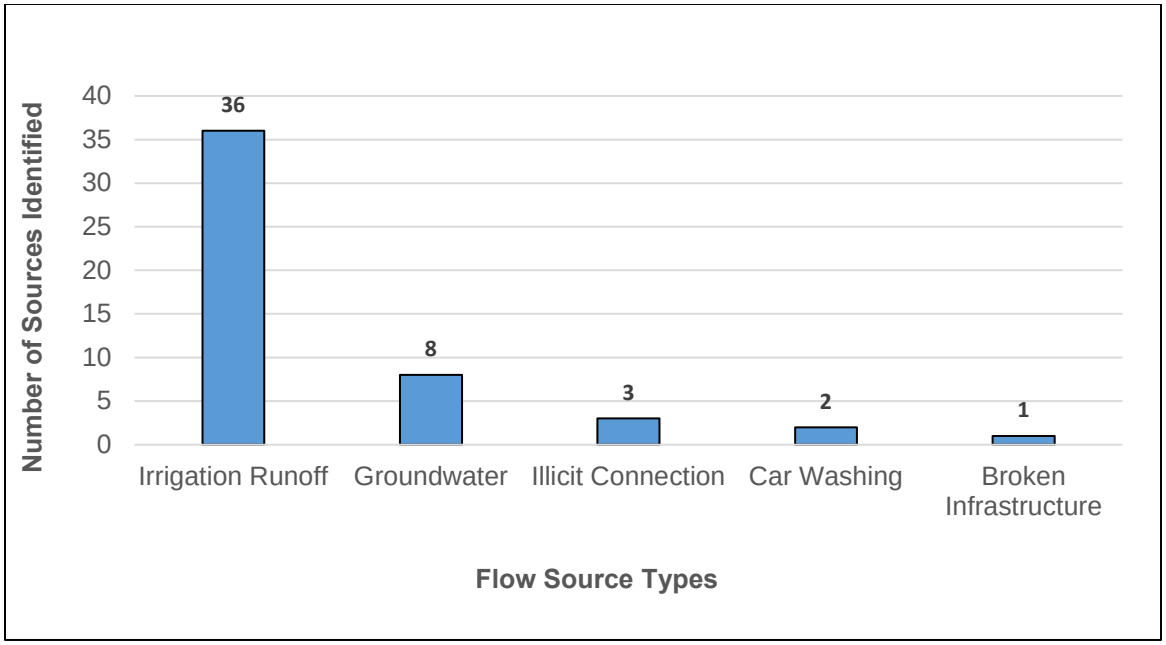

Figure A4-9. Known or Suspected Flow Sources Identified for Participating Agencies' Outfalls

More detail about source investigations and associated source elimination activities at the highest priority outfalls is provided in Appendix 2 and in Table A4-30 through Table A4-32 below.

4.2.4.2 Outfall Investigation Details for Participating Agencies

Within the San Luis Rey WMA, the City of Oceanside conducted five non-stormwater flow source investigations upstream of its two priority outfalls and found over-irrigation as the source for flows at one of the outfalls; see Table A4-30 for further details on their investigations. The City of Vista conducted four non-stormwater flow source investigations upstream of two of its priority outfalls and did not find over-irrigation as a source flow; instead it found groundwater seepage, which is an allowable discharge, and a leaking fire hydrant as sources of flow. See Table A4-31 for further details on the City of Vista's investigations. The County of San Diego conducted 35 non-stormwater flow source investigations upstream of its five highest priority outfalls, and six investigations at a non-major storm drain outfall SLR-045 (less than 36 inches in diameter) with persistent non-stormwater flow and evidence of human indicator bacteria source(s) based on the Microbial Source Tracking study results (see Attachment 4J). The six outfalls have also been fitted with continuous flow monitoring equipment to more precisely track and characterize the non-

stormwater flows at those locations throughout the dry season (May through September). The County found numerous sources of flow into the stormwater system draining to these outfalls, with over-irrigation being the most common source suspected. For further details about the County's investigations, including upstream assessments of flow sources for the six outfalls see Table A4-32.

Table A4-30. City of Oceanside Non-stormwater Flow Source Investigation Summary for FY 2015-2016

Participating Agency	Site	High Priority	# Site Visits	Land Use	Sampled (Y/N)	Type	Source(s)	Action/Notes	Enforcement (Y/N), type	Eliminated (Y/N)
City of Oceanside	SLR-025	Yes	2	Residential	Y	Known, suspected unpermitted discharge	Irrigation Runoff	Upstream flow tracking	Yes, verbal/written warning	Partially
City of Oceanside	SLR-036	Yes	3	Residential	Y	Known allowable discharge	Groundwater seepage	Upstream flow tracking	No	No

Table A4-31. City of Vista Non-stormwater Flow Source Investigation Summary for FY 2015-2016

Participating Agency	Site	High Priority	# Site Visits	Land Use	Sampled (Y/N)	Type	Source(s)	Action/Notes	Enforcement (Y/N), type	Eliminated (Y/N)
City of Vista	SLR-01	Yes	2	Mixed	Y	Suspected allowable	Groundwater seepage	Upstream flow tracking	No	No
City of Vista	SLR-03	Yes	2	Residential	Y	Suspected unpermitted discharge	Leaking fire hydrant	Coordination with Vista Irrigation District to repair hydrant	No	No

Table A4-32. County of San Diego Non-stormwater Flow Source Investigation Summary for FY 2015-2016

Participating Agency	Site	Land Use	Type	Source(s)	Action/Notes	Enforcement (Y/N), type	Eliminated (Y/N)
County of San Diego	MS4-SLR-152	Residential, Agricultural	Suspected unpermitted discharge	Residential Vehicle Washing, Irrigation Runoff, Agricultural Runoff, Over-irrigation	Coordination with Ag and ED staff,	Yes, unknown	No
County of San Diego	MS4-SLR-152A	Agricultural, Residential	Suspected unpermitted discharge	Agricultural runoff	Unknown	Reported to enforcement	No
County of San Diego	MS4-SLR-152B	Agricultural	Suspected unpermitted discharge	Agricultural runoff/Illicit connection	Illicit connection discovered	Reported to enforcement	No
County of San Diego	MS4-SLR-152C	Residential	Suspected unpermitted discharge	Residential runoff	Unknown	Reported to enforcement	No
County of San Diego	MS4-SLR-152D	Residential	Suspected unpermitted discharge	Residential runoff	Ponded water	Reported to enforcement	No
County of San Diego	MS4-SLR-152E	Residential	Suspected unpermitted discharge	Residential runoff	Ponded water	Reported to enforcement	No
County of San Diego	MS4-SLR-152F	Residential	Suspected unpermitted discharge	Residential runoff	Ponded water	Reported to enforcement	No
County of San Diego	MS4-SLR-152G	Residential	Unknown	Residential runoff	Site dry	Unknown	No
County of San Diego	MS4-SLR-152H	Agricultural	Suspected unpermitted discharge	Agricultural runoff/Illicit connection	8” pipe discharging	Reported to enforcement	No
County of San Diego	MS4-SLR-041	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-041A	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-041B	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-041C	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation, car washing	Reported to enforcement	No
County of San Diego	MS4-SLR-041D	Residential	Suspected unpermitted discharge	Residential runoff	Site damp	Reported to enforcement	No
County of San Diego	MS4-SLR-041E	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation, suspected illicit connection	Reported to enforcement	No
County of San Diego	MS4-SLR-095	Residential, gold course	Suspected unknown	Groundwater, over irrigation	Site flowing	Reported to enforcement	No
County of San Diego	MS4-SLR-095A	Residential, golf course	Suspected unknown	Groundwater, over irrigation	Site flowing	Reported to enforcement	No
County of San Diego	MS4-SLR-095B	Residential, golf course	Suspected unknown	Groundwater, over irrigation	Site flowing	Reported to enforcement	No
County of San Diego	MS4-SLR-095C	Residential, golf course	Unknown	Unknown	Site dry	Unknown	No
County of San Diego	MS4-SLR-095D	Residential, golf course	Unknown	Unknown	Site damp	Unknown	No
County of San Diego	MS4-SLR-095E	Residential, golf course	Unknown	Groundwater, over irrigation	Unknown	Reported to enforcement	No
County of San Diego	MS4-SLR-095F	Residential, golf course	Unknown	Unknown	Site dry	Unknown	No
County of San Diego	MS4-SLR-150	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-150A	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-150B	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-150C	Residential	Suspected unpermitted discharge	Residential runoff	Ponded	Reported to enforcement	No
County of San Diego	MS4-SLR-150D	Residential	Suspected unpermitted discharge	Residential runoff	Over irrigation	Reported to enforcement	No

Table A4-32. County of San Diego Non-stormwater Flow Source Investigation Summary for FY 2015-2016

Participating Agency	Site	Land Use	Type	Source(s)	Action/Notes	Enforcement (Y/N), type	Eliminated (Y/N)
County of San Diego	MS4-SLR-155	Residential, agricultural	Suspected unpermitted discharge	Irrigation runoff, agricultural runoff	Flow behind weir	Reported to enforcement	No
County of San Diego	MS4-SLR-155A	Residential, agricultural	Suspected unpermitted discharge	Irrigation runoff, agricultural runoff	Ponded	Reported to enforcement	No
County of San Diego	MS4-SLR-155B	Residential, agricultural	Suspected unpermitted discharge	Agricultural runoff/Illicit connection	Ponded	Reported to enforcement	No
County of San Diego	MS4-SLR-155C	Residential, agricultural	Suspected unpermitted discharge	Irrigation runoff, agricultural runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-155D	Residential, agricultural	Suspected unpermitted discharge	Irrigation runoff, agricultural runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-155E	Residential, agricultural	Suspected unpermitted discharge	Irrigation runoff, agricultural runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-155F	Residential, agricultural	Suspected unpermitted discharge	Irrigation runoff, agricultural runoff	Over irrigation	Reported to enforcement	No
County of San Diego	MS4-SLR-155G	Residential, agricultural	Suspected unpermitted discharge	Agricultural runoff/Illicit connection	8" illicit connection	Reported to enforcement	No
County of San Diego	SLR-045*	Commercial, golf course	Suspected unpermitted discharge	Irrigation runoff	Over irrigation	Reported to enforcement	No
County of San Diego	SLR-045A	Commercial, golf course	Suspected unpermitted discharge	Irrigation runoff	Over irrigation	Reported to enforcement	No
County of San Diego	SLR-045B	Commercial, golf course	Suspected unpermitted discharge	Irrigation runoff	Over irrigation	Reported to enforcement	No
County of San Diego	SLR-045C	Commercial, golf course	Suspected unpermitted discharge	Irrigation runoff	Site dry	Reported to enforcement	No
County of San Diego	SLR-045D	Commercial, golf course	Suspected unpermitted discharge	Irrigation runoff	Over irrigation	Reported to enforcement	No
County of San Diego	SLR-045E	Commercial, golf course	Suspected unpermitted discharge	Irrigation runoff	Over irrigation	Reported to enforcement	No

*SLR-045 is not a major storm drain outfall (less than 36 inches in diameter). The County monitors flows at this persistent outfall to assess progress toward WQIP goals, and the outfall was an IDDE investigation site this monitoring year.

4.2.5 *Storm Drain Outfall Wet Weather Monitoring*

Storm drain outfall wet weather monitoring was conducted at five outfalls in the San Luis Rey River WMA. Five stations representative of storm water discharges from Residential, Commercial, Industrial, and typical Mixed-use land uses were selected from the inventory of major storm drain outfalls, and at least one station was selected for each Participating Agency within the WMA. Three outfalls were located in the Mission HSA, and two in the Bonsall HSA. The storm drain outfall wet weather monitoring stations for the San Luis Rey River WMA are presented in Table A4-33 and are shown with corresponding land uses in Figure A4-10. The outfall names for the wet weather monitoring stations differed from the jurisdictional station names in the Participating Agencies' inventories; therefore, both station identifiers are given in Table A4-33. This is the first year of wet weather storm drain outfall monitoring in accordance with the WQIP MAP. The prior two years of wet weather monitoring were under the transitional monitoring program with a different list of analytical parameters. However, the locations of outfalls MS4-SLR-1 and MS4-SLR-2 have not been adjusted since the second year of transitional monitoring (2014-2015), and the locations of outfalls MS4-SLR-3, MS4-SLR-4, and MS4-SLR-5 have been unchanged since transitional monitoring began (2013-2014). Therefore, two monitoring years of wet weather storm drain outfall monitoring data have now been collected at MS4-SLR-1 and MS4-SLR-2, and three years of data have been collected at MS4-SLR-3, MS4-SLR-4, and MS4-SLR-5.

Table A4-33. Storm Drain Outfall Wet Weather Monitoring Stations in the San Luis Rey River WMA

Storm Drain Outfall Name	Jurisdictional Identifier	Jurisdiction	HSA Name/No.	Latitude	Longitude
MS4-SLR-1	SLR-036	City of Oceanside	Mission/903.11	33.25583	-117.29243
MS4-SLR-2	SLR-016	City of Oceanside	Mission/903.11	33.22186	-117.34984
MS4-SLR-3	SLR-03	City of Vista	Mission/903.11	33.232546	-117.249591
MS4-SLR-4	MS4-SLR-150	County of San Diego	Bonsall/903.12	33.283702	-117.217033
MS4-SLR-5	MS4-SLR-041	County of San Diego	Bonsall/903.12	33.317871	-117.163833

Sampling at the storm drain outfall wet weather monitoring locations in the San Luis Rey River WMA was conducted between December 11, 2015 and January 31, 2016. The rainfall statistics for the monitored event at each outfall, based on nearby Alert station gauges, are presented in Table A4-34. The highest event volume was observed at MS4-SLR-5 in the Bonsall HSA, and the highest peak flow was observed at MS4-SLR-2 in the Mission HSA. The lowest event volume and peak flow were observed at MS4-SLR-4 in the Bonsall HSA. Wet weather storm drain outfall flow data are presented in Attachment 4F to this appendix.

Table A4-34. 2015-2016 Rainfall Statistics for Storm Drain Outfall Wet Weather Monitoring Events in the San Luis Rey River WMA

Date	Outfall Name/ Jurisdictional Identifier	Total Rain (in)	Duration (hours)	Intensity (in/hour)	Antecedent Dry Days	Event Volume (cf)	Peak Flow (cfs)
01/05/2016	MS4-SLR-1/ SLR-036	1.20	7.55	0.16	13	33,644	9.54
01/05/2016	MS4-SLR-2/ SLR-016	1.20	7.55	0.16	13	76,181	14.6
01/31/2016	MS4-SLR-3/ SLR-03	0.55*	7.60*	0.07*	19	30,585*	6.75*
12/11/2015	MS4-SLR-4/ MS4-SLR-150	0.28	3.13	0.09	12	18,516	8.06
01/31/2016	MS4-SLR-5/ MS4-SLR-041	0.68	14.3	0.05	19	84,099	13.4

in – inches cf – cubic feet cfs – cubic feet per second
*Intermittent flow not associated with sampling activities was observed between 02:30 and 04:00 (peak of 0.88 cfs; discharge of 1,520 cf).

Monitoring was conducted in accordance with the WQIP MAP. Grab samples were collected and analyzed for pH, temperature, conductivity, dissolved oxygen, turbidity, hardness, and indicator bacteria. Composite samples were collected and analyzed for constituents contributing to the HPWQC, 303(d) List impairments, TMDLs, and stormwater action levels (SALs). A receiving water sample was also collected and analyzed for hardness, where feasible. Observational and hydrologic data were also recorded.

Analytical results for samples collected at the five wet weather storm drain outfall monitoring locations are summarized in Table A4-35. Bacteria concentrations are compared to SSM effluent limitations from the Bacteria TMDL, and results for the remaining required constituents, including general and physical chemical constituents, nutrients, and total and dissolved metals, are compared to SALs, where available.

Bacteriological results for *Enterococcus*, fecal coliform, and total coliform (i.e., the HPWQC within the WMA) indicated that the highest concentrations were measured at MS4-SLR-1, located in the Mission HSA (903.11). Concentrations of *Enterococcus* and fecal coliform in wet weather discharges from all five outfalls were above the SSMs specified in the Bacteria TMDL (WQBELs discharging to freshwater creeks with REC-1 beneficial use). The only existing SALs that relate to PWQC in the WMA are for nitrate/nitrite as N and total phosphorus, and the only PWQC concentration measured above one of these SALs was total phosphorus at MS4-SLR-5. Turbidity was also above the SAL at this location. No other constituent concentrations were above the corresponding SALs, where available.

It should be noted that the drainage area of MS4-SLR-5 is located almost entirely within the footprint of the Highway Fire, which burned the area in May 2014. Potential effects of wild fires on water quality may include elevated concentrations of constituents associated with sediment transport (e.g., total suspended solids [TSS] and turbidity), organic contaminants, metals, and nutrients. Data collected at MS4-SLR-5 for the 2014-2015 monitoring year, approximately six months following the fire, indicated that the fire affected water quality at this station, as the

turbidity values and concentrations of TSS, total phosphorus, total Kjeldahl nitrogen (TKN), and several metals at this outfall were much higher than those at the other outfalls located in the San Luis Rey River WMA and much higher than those measured at this location during 2013-2014 (WESTON, 2015a). As shown in Table A4-35, concentrations of these constituents remained elevated compared to the other outfalls in the WMA and the concentrations measured prior to the fire, including exceedances of SALs for turbidity and total phosphorus.

Laboratory and field data collected for the Storm Drain Outfall Wet Weather Monitoring will be uploaded to CEDEN and data submittals are provided in Attachment K of this appendix.

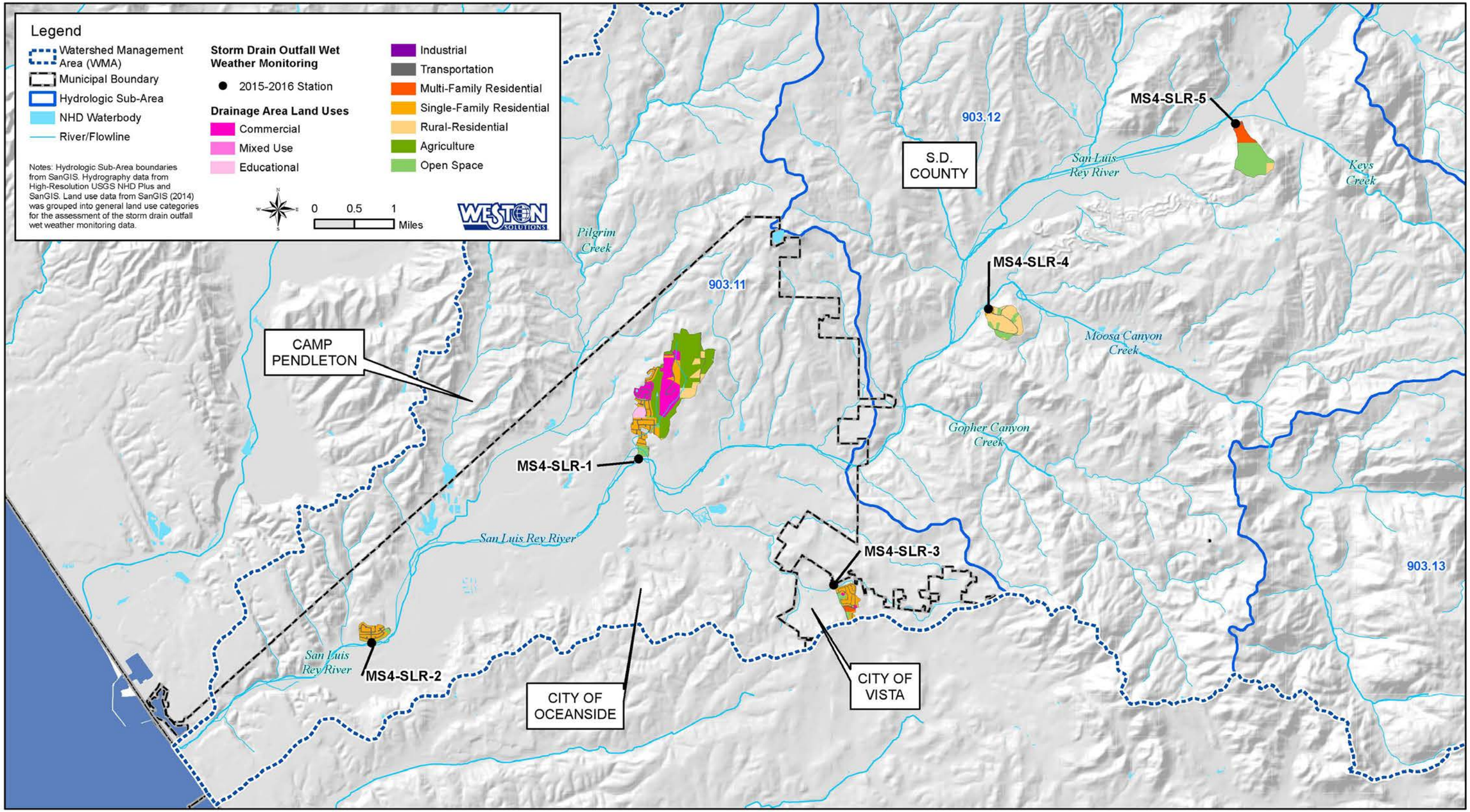

Figure A4-10. 2015-2016 Storm Drain Outfall Wet Weather Monitoring Locations and Drainage Areas in the San Luis Rey River WMA

Table A4-35. 2015-2016 Storm Drain Outfall Wet Weather Monitoring Analytical Results in the San Luis Rey River WMA

Analyte	Units	Single Sample Maximum[1]	Stormwater Action Level (SAL)[2]	MS4-SLR-1 (903.11)	MS4-SLR-2 (903.11)	MS4-SLR-3 (903.11)	MS4-SLR-4 (903.12)	MS4-SLR-5 (903.12)
				SLR-036	SLR-016	SLR-03	MS4-SLR-150	MS4-SLR-041
				1/5/2016	1/5/2016	1/31/2016	12/11/2015	1/31/2016
Bacteriological								
Enterococcus	MPN/100 mL	61		**100,000**	**32,000**	**11,000**	**350**	**2,200**
Fecal Coliform	MPN/100 mL	400		**34,000**	**4,400**	**800**	**500**	**2,400**
Total Coliform	MPN/100 mL			60,000	60,000	5,400	1,600	2,400
Physical Chemistry								
Dissolved Oxygen	mg/L			11.27	10.2	9.64	10.19	10.01
pH	pH units			8.2	9.39	6.79	7.8	8.2
Salinity	PPT			0.04	0.26	0.11	0.05	0.06
Specific Conductivity	µS/cm			94	511	238	105	129
Temperature	Celsius			9.61	13.9	15.81	14.5	15.36
Turbidity	NTU		126	14	15.3	35.5	85.9	**216.9**
General Chemistry								
Ammonia as N	mg/L			0.1	0.41	<0.10	0.36	0.19
Chloride	mg/L			21	26	92	12	15
Dissolved Phosphorus	mg/L			0.21	0.3	0.13	0.35	0.14
Nitrate/Nitrite as N	mg/L		2.6	0.695	1.442	1.021	0.68	2.135
Nitrate as N	mg/L			0.67	1.4	1	0.64	2.1
Nitrite as N	mg/L			0.025J	0.042J	0.021J	0.040J	0.035J
Orthophosphate as P	mg/L			0.23	0.34	0.17	0.39	0.17
Total Dissolved Solids	mg/L			100	120	340	84	170
Total Hardness	mg/L			57	48.8	156	46.8	149
Total Kjeldahl Nitrogen	mg/L			1	1.4	1.5	2.3	11
Total Nitrogen (calc.)	mg/L			1.70	2.84	2.52	2.98	13.14
Total Phosphorus	mg/L		1.46	0.39	0.36	0.28	0.64	**2.2**
Total Suspended Solids	mg/L			60	18	65	78	2,000
Total Metals								
Cadmium	µg/L		3	<0.1	<0.1	0.08J	0.045J	0.85
Copper	µg/L		127	6.3	6	15	25	41
Lead	µg/L		250	1.4	0.98	1.8	3.3	84
Selenium	µg/L			0.14J	0.15J	0.93	1	2.6
Zinc	µg/L		976	37	31	60	61	240
Dissolved Metals								
Cadmium	µg/L			<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	µg/L			<0.4	<0.4	0.96	<0.4	0.15J

[1] Single Sample Maximum Final Effluent Limitations from Table 6.2c. Regional Water Quality Control Board Order No. R9- 2013-0001, Attachment E.

[2] Storm Water Action Levels for Discharges from Storm Drain Outfalls to Receiving Waters, Table C-5. Regional Water Quality Control Board Order No. R9-2013-0001.

< - Results are less than the reporting limit.

J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

Bold/shaded values do not meet Stormwater Action Levels.

4.2.6 *Storm Drain Outfall Wet Weather Monitoring Data Assessments*

Provision D.4.b.(2).(c) of the Permit requires the storm drain outfall wet weather monitoring data assessments summarized in Table A4-36. The information necessary to demonstrate compliance with each Provision is outlined in the following sections. In instances where compliance has been demonstrated in previous sections of this Annual Report, those sections are referenced.

Table A4-36. Storm Drain Outfall Wet Weather Monitoring Data Assessments

Assessment	Components	Provision(s)
WQIP Annual Report		
Estimate loads and volumes.	Calculate or estimate the average stormwater runoff coefficient for each land use type.	D.4.b.(2).(b)(i)(a)
	Calculate or estimate the volume of stormwater and pollutant loads discharged from each monitored storm drain outfall for each qualifying storm event.	D.4.b.(2).(b)(i)(b)
	Calculate or estimate the total volume and pollutant load discharged from the Copermittee's jurisdiction over the course of the wet season.	D.4.b.(2).(b)(i)(c)
	Calculate or estimate the percent contribution of stormwater volumes and pollutant loads discharged from each land use type within each hydrologic subarea with a major storm drain outfall or each major storm drain outfall for each qualifying storm event.	D.4.b.(2).(b)(i)(d)
	Identify necessary modifications to monitoring locations and frequencies necessary to identify pollutants in stormwater discharges.	D.4.b.(2).(b)(ii)
Evaluate WQIP analysis.	Using data and applicable SALs, evaluate and compare data collected to the analyses and assumptions used to develop the WQIP.	D.4.b.(2).(c)(ii)
	Evaluate whether analyses and assumptions should be updated as a component of the adaptive management efforts.	D.4.b.(2).(c)(ii)
Identify data gaps.	Identify data gaps in the monitoring data necessary to fulfill assessment requirements.	D.4.b.(2).(c)(iv)
Evaluate trends.	Evaluate data collected pursuant to D.2.c, incorporate new data into time-series plots for each long-term monitoring constituent and perform statistical trends analysis on cumulative long-term wet weather data set.	D.4.b.(2)(d)
Once during Permit Term		
Evaluate progress in achieving stormwater pollutant reductions.	Identify reductions and progress in achieving reductions from different land uses and/or drainage areas.	D.4.b.(2).(c)(iii)
	Assess the effectiveness of WQIP improvement strategies, with estimates of volume and load reductions attributed to specific strategies when possible.	
	Identify modifications necessary to increase the effectiveness of WQIP strategies.	

4.2.6.1 Provision D.4.b.(2)(b)

Provision D.4.b.(2)(c)(i) requires that the Copermittees continue to conduct the land-use based wet weather storm water outfall discharge monitoring assessment previously required by the transitional monitoring requirements of Provision D.4.b.(2)(b).

Since the wet weather storm drain outfall discharge monitoring station locations have not been modified, the general approach and land use data and groupings presented in the transitional monitoring and assessment report from the 2014-2015 monitoring year (WESTON, 2016a) are applicable to the 2015-2016 monitoring year. The technical approach and applicable equations can be found in the Transitional Wet Weather MS4 Monitoring Workplan (WESTON, 2015b). Assessment results are presented in detail by jurisdiction in Attachment 4G to this appendix. As more data are collected and incorporated into the assessment, the results are becoming increasingly representative of the variation in runoff coefficients and constituent concentrations associated with different land uses and wet weather conditions to generate a more robust prediction of jurisdictional loads based on land use.

Assessment results specific to 2015-2016 include pollutant volumes and loads at each outfall for the monitored event (Table A4-37) and for the monitoring year (Table A4-38). Updated land use event mean concentration (EMC) summary tables based on three monitoring years of data are included in the detailed assessment results provided as Attachment 4G to this Appendix.

In compliance with Provision D.4.b.(2)(b)(ii), the wet weather storm drain outfall discharge monitoring locations and frequencies were evaluated in order to identify recommended modifications that may be considered for implementation in the future. A review of the collective land use data associated with monitored storm drain outfall drainage areas was conducted to determine whether the WMA contains any categories of land use types not represented within the monitored storm drain outfall drainage areas. The results and recommendations were presented in the 2014-2015 Transitional Monitoring and Assessment Report submitted under the Permit (WESTON, 2016a) and remain unchanged since the monitored wet weather storm drain outfalls were the same during the 2014-2015 and 2015-2016 monitoring years.

The evaluation of monitoring frequency included a review of the monitoring data to determine how well the data from the single storm event monitored at each outfall represented the wet weather conditions on an annual basis. The total qualifying rainfall characterizing storms greater than 0.1 inch for 2015-2016 was 11.0 inches and 10.4 inches at the Oceanside and Fallbrook Alert precipitation stations, respectively. These rainfall values are comparable to the official regional rainfall average of 10.82 inches (Lindbergh Field). Wet weather events in the San Luis Rey River WMA were small to average in size, with rainfall totals of approximately 0.5 inch or less in 24 hours. A slightly higher frequency of wet weather days was recorded along the Pacific coastline compared to inland areas. At the Oceanside Alert station, three wet weather days had over one inch of recorded precipitation within 24 hours (September 15, 2015 and January 5-6, 2016); whereas, the Fallbrook Alert station only had two wet weather days (September 15, 2015 and January 5, 2016) with over one inch of recorded precipitation.

Table A4-37. 2015-2016 Wet Weather Storm Drain Outfall Discharge Pollutant Loads by Station for Monitored Event – San Luis Rey River WMA

Analyte	Units	SLR-036	SLR-016	SLR-03	MS4-SLR-150	MS4-SLR-041
		MS4-SLR-1	MS4-SLR-2	MS4-SLR-3	MS4-SLR-4	MS4-SLR-5
		(903.11)	(903.11)	(903.11)	(903.12)	(903.12)
Area	ac	480.79	43.84	57.34	95.15	125.83
Qualifying Measured Rainfall	in	1.2	1.2	0.55	0.28	0.68
Measured Outfall Runoff "C"		0.016	0.399	0.267	0.191	0.271
Event Volume	cf	33,644	76,181	30,585	18,516	84,099
Bacteriological						
Enterococcus	MPN	9.527E+11	6.903E+11	9.527E+10	1.835E+09	5.239E+10
Fecal Coliform	MPN	3.239E+11	9.492E+10	6.929E+09	2.622E+09	5.715E+10
Total Coliform	MPN	5.716E+11	1.294E+12	4.677E+10	8.389E+09	5.715E+10
General Chemistry						
Ammonia as N[1]	lbs	0.2100	1.950	0.0955	0.4161	0.9975
Chloride	lbs	44.11	123.7	175.7	13.87	78.75
Dissolved Phosphorus	lbs	0.4411	1.427	0.2482	0.4046	0.7350
Nitrate as N	lbs	1.407	6.658	1.909	0.7398	11.03
Nitrite as N	lbs	0.0525	0.1997	0.0401	0.0462	0.1838
Nitrate/Nitrite as N	lbs	1.460	6.858	1.949	0.7860	11.21
Orthophosphate	lbs	0.4831	1.6170	0.3246	0.4508	0.8925
Total Dissolved Solids	lbs	210.0	570.7	649.2	97.09	892.5
Total Hardness	lbs	119.7	232.1	297.9	54.10	782.3
Total Kjeldahl Nitrogen	lbs	2.100	6.658	2.864	2.659	57.75
Total Nitrogen (calculated)	lbs	3.560	13.516	4.813	3.445	68.96
Total Phosphorus	lbs	0.8191	1.712	0.5346	0.7398	11.55
Total Suspended Solids	lbs	126.0	85.60	124.1	90.16	10500
Total Metals						
Cadmium[1]	lbs	0.0001	0.0002	0.0002	0.0001	0.0045
Copper	lbs	0.0132	0.0285	0.0286	0.0289	0.2153
Lead	lbs	0.0029	0.0047	0.0034	0.0038	0.4410
Selenium	lbs	0.0003	0.0007	0.0018	0.0012	0.0137
Zinc	lbs	0.0777	0.1474	0.1146	0.0705	1.2600
Dissolved Metals						
Cadmium[1]	lbs	0.0001	0.0002	0.0001	0.0001	0.0003
Selenium[1]	lbs	0.0004	0.0010	0.0018	0.0002	0.0008

ac – acres in – inches cf – cubic feet MPN – most probable number lbs – pounds ND – not detected

Note 1: Where chemistry results were less than the RL, for load calculations purposes half the RL value was used for this constituent. Please refer to the 2015-2016 Wet Weather Storm Drain Outfall Discharge Monitoring Results Table for ND results.

Table A4-38. 2015-2016 Wet Weather Storm Drain Outfall Discharge Annual Pollutant Loads by Station for the San Luis Rey River WMA

Analyte	Units	SLR-036	SLR-016	SLR-03	MS4-SLR-150	MS4-SLR-041
		MS4-SLR-1	MS4-SLR-2	MS4-SLR-3	MS4-SLR-4	MS4-SLR-5
		(903.11)	(903.11)	(903.11)	(903.12)	(903.12)
Area	ac	480.80	43.80	57.30	95.20	125.80
Qualifying Measured Rainfall	in	10.99	10.99	10.44	10.44	10.44
Measured Outfall Runoff "C"		0.015	0.434	0.150	0.141	0.126
Annual Volume	cf	287,713	758,347	325,726	508,702	600,701
Bacteriological						
Enterococcus	MPN	8.147E+12	6.872E+12	1.015E+12	5.042E+10	3.742E+11
Fecal Coliform	MPN	2.770E+12	9.449E+11	7.379E+10	7.202E+10	4.082E+11
Total Coliform	MPN	4.888E+12	1.288E+13	4.981E+11	2.305E+11	4.082E+11
General Chemistry						
Ammonia as N[1]	lbs	1.796	19.41	1.017	11.43	7.125
Chloride	lbs	377.2	1231	1871	381.1	562.5
Dissolved Phosphorus	lbs	3.772	14.20	2.643	11.11	5.250
Nitrate as N	lbs	12.03	66.28	20.33	20.32	78.75
Nitrite as N	lbs	0.4490	1.988	0.4270	1.270	1.313
Nitrate/Nitrite as N	lbs	12.48	68.27	20.76	21.59	80.06
Orthophosphate	lbs	4.131	16.10	3.457	12.385	6.375
Total Dissolved Solids	lbs	1796	5681	6914	2668	6375
Total Hardness	lbs	1024	2310	3172	1486	5588
Total Kjeldahl Nitrogen	lbs	17.96	66.28	30.50	73.04	412.5
Total Nitrogen (calculated)	lbs	30.44	134.5	51.26	94.64	492.6
Total Phosphorus	lbs	7.005	17.04	5.694	20.32	82.50
Total Suspended Solids	lbs	1078	852.1	1322	2477	75000
Total Metals						
Cadmium[1]	lbs	0.0009	0.0024	0.0016	0.0014	0.0319
Copper	lbs	0.1132	0.2840	0.3050	0.7939	1.538
Lead	lbs	0.0251	0.0464	0.0366	0.1048	3.150
Selenium	lbs	0.0025	0.0071	0.0189	0.0318	0.0975
Zinc	lbs	0.6646	1.468	1.220	1.937	9.0000
Dissolved Metals						
Cadmium[1]	lbs	0.0009	0.0024	0.0010	0.0016	0.0019
Selenium[1]	lbs	0.0036	0.0095	0.0195	0.0064	0.0056

ac – acres in – inches cf – cubic feet MPN – most probable number lbs – pounds ND – not detected

Note 1: Where chemistry results were less than the RL, for load calculations purposes half the RL value was used for this constituent. Please refer to the 2015-2016 Wet Weather Storm Drain Outfall Discharge Monitoring Results Table for ND results.

4.2.6.2 Provision D.4.b.(2)(c)[ii]

In addition to the land-based assessment presented in Section 4.2.6.1, the 2015-2016 monitoring year is the first requiring the additional assessments of Provision D.4.b.(2)(c)(ii-iv).

Provision D.4.b.(2)(c)(ii) requires the Copermittees to evaluate and compare data collected during 2015-2016 to the analyses and assumptions used to develop the WQIP and evaluate whether adaptive management is necessary for updates. The analytical results for samples collected at the five storm drain outfall wet weather monitoring locations in the San Luis Rey River WMA are summarized in Table A4-35 in Section 4.2.5. Results showed that indicator bacteria concentrations in wet weather discharges from all five monitored outfalls were above the single sample maximums specified in the Bacteria TMDL. The analyses and assumptions used to develop the WQIP resulted in the selection of bacteria as the HPWQC in the San Luis Rey River WMA and in the selection of the five outfalls monitored during wet weather. Because concentrations of indicator bacteria in wet weather discharges from each of these outfalls were above Bacteria TMDL targets, continued monitoring of these outfalls is consistent with the intentions of the WQIP and adaptive management for updates are not necessary at this time.

4.2.6.3 Provision D.4.b.(2)(c)[iii]

This Provision requires the Copermittees to review the data collected under the storm drain outfall wet weather monitoring program in order to identify pollutant reduction progress, assess water quality improvement strategy effectiveness, and identify modifications necessary to increase effectiveness. This assessment is required once during the Permit term and will be provided in the RMAR, which is scheduled for submittal to the Regional Board in December 2017.

4.2.6.4 Provision D.4.b.(2)(c)[iv]

No gaps have been identified in the monitoring data. Since the 2015-2016 monitoring year was the first year of monitoring under the WQIP MAP and the first year requiring the assessments outlined in Provision D.4.b.(2)(c)(ii-iii), the collection of additional data will be necessary before the Copermittees are able to identify data gaps.

4.2.6.5 Provision D.4.b.(2)(d)

This provision requires creation of time-series plots for long-term monitoring data collected under Provision D.2.c and a trend analysis on this cumulative long-term wet weather storm drain outfall discharge monitoring data set. This assessment will be addressed when sufficient data (i.e., at least three monitoring years are required for a statistical test) have been collected under the WQIP MAP.

4.3 Special Study Results

4.3.1 *San Diego Regional Reference Streams and Beaches Studies*

The Participating Agencies participated in the San Diego Regional Reference Streams and Beaches Studies from 2014 to 2016, which measured levels of indicator bacteria that account for natural sources to establish the background concentrations, or "reference conditions", for streams or beaches minimally disturbed by anthropogenic activities. This reference system approach results in allocation of allowable exceedance days based on frequencies of exceedance at reference sites

with natural sources of bacteria. The results of these studies support the forthcoming re-evaluation of the Bacteria TMDL and numeric target development for future TMDLs. These studies were intended to provide data to support discussions of reasonable, accurate targets for indicator bacteria at Southern California streams and beaches.

4.3.1.1 Reference Streams Study

This study investigated concentrations of indicator bacteria, nutrients, metals, and conventional constituents occurring naturally at reference streams in minimally disturbed watersheds in Southern California during wet weather (during a storm and the three days following a storm) and dry weather conditions. Although additional constituents were analyzed, the main focus of the study was indicator bacteria. The study also sought to categorize exceedance frequencies for indicator bacteria by hydrologic, geomorphologic, biotic, and abiotic factors. Study questions included the following:

- How does the WQO exceedance frequency for indicator bacteria vary between wet weather, summer dry weather, and winter dry weather?
- How does indicator bacteria vary by stream landscape and site-specific factors, including:
    - Catchment size and geology?
    - Wet weather parameters such as size, timing of storm, and number of antecedent dry days?
    - Dry weather factors such as flow, stream physiochemical parameters (temperature, conductivity, and turbidity), chemical parameters (nutrients, organic carbon, metals, and conventional constituents) and trophic status, as measured by algal abundance?

The sampling locations selected for this study were chosen to meet reference screening criteria and represent varying watershed size and geology. Samples were collected during eight storm events at five locations, and dry weather samples were collected weekly at 10 intermittent stream locations in 10 watersheds in Southern California. Five locations were in San Diego County, three were in Orange County, and two were in Ventura County. In addition to indicator bacteria analysis, samples were collected biweekly and analyzed for nutrients, metals, and conventional constituents. Samples were also analyzed for the presence of human genetic marker in order to eliminate locations with potential human sources of fecal bacteria. The chosen "reference" streams had drainage areas that were at least 95% undeveloped, were relatively homogenous geologically, had year round flow or at least prolonged dry weather flow, did not include drainage areas affected by wildfires, were not included on the 303(d) list, and had no evidence of anthropogenic effects. Findings from the study included the following:

- Indicator bacteria concentrations measured during the study were generally below WQOs except for *Enterococcus*, and exceedance frequencies were highest during summer dry weather.
- Wet weather EMC exceedance frequencies were low except for *Enterococcus*. The number of events was not sufficient to determine whether relationships exist between exceedance frequencies and watershed size and/or geology.
- Temperature was the major factor associated with elevated summer dry weather concentrations of indicator bacteria, although TSS, nutrients, and organic carbon were

also positively correlated. No significant relationships between indicator bacteria concentrations and watershed size or geology were observed during dry weather.
- EMC fluxes (flux was calculated as the ratio of mass loading and watershed area) during wet weather were two to three times greater than during dry weather and were comparable to those described in previous studies.

Results are presented in greater detail in the Technical Report (Tiefenthaler et al., 2015, which is provided as Attachment 4H to this appendix.

4.3.1.2 Reference Beaches Study

The reference beaches study investigated concentrations of indicator bacteria occurring naturally at reference beaches during a period of prolonged drought. The goals of this study included the following:

- Quantify concentrations and exceedance frequencies for indicator bacteria at reference beaches during wet and dry weather (natural, background conditions), while evaluating the presence of human genetic marker to determine whether samples were contaminated by human sources.
- Quantify concentrations and exceedance frequencies for indicator bacteria at the associated, minimally-impacted estuary.

The chosen "reference" beaches had minimal human impact with open beaches and breaking waves, received freshwater runoff from a beach or estuary, and received runoff originating from undeveloped watersheds with over 93% open space. The two sites meeting these criteria were San Onofre Creek in San Diego County, which has an associated bar-built estuary, and Deer Creek in Los Angeles County, which has an associated mixing zone. Weekly dry weather sampling was conducted at both locations, and wet weather sampling was conducted over four days for one event at San Onofre Creek (only one storm event breached the creek mouth). Samples during each event were collected at the beach, creek, and the respective estuary or mixing zone. Findings from the study included the following:

- Indicator bacteria concentrations and exceedance frequencies during both winter and summer dry weather were low at both monitored beaches. This is consistent with results from previous studies of beaches with blocked estuary inlets or beaches with flowing creeks and no estuary.
- Indicator bacteria concentrations in the estuary or mixing zone associated with both beaches were one to three orders of magnitude greater than those at the corresponding beach, and were higher at San Onofre Creek than Deer Creek. Exceedance frequencies were also higher in the estuary associated with San Onofre Creek compared to the mixing zone associated with Deer Creek. This suggests that dry weather exceedance frequencies may have been greater if the estuary had been open to tidal exchange.
- At both study locations, no significant relationships between indicator bacteria and water temperature, salinity, or antecedent dry days were observed, but indicator bacteria concentrations decreased with the number of antecedent dry days at the San Onofre Creek beach and increased with the number of antecedent dry days in the associated

estuary. Significant positive correlations were found between total coliform concentrations and water temperature, salinity, and antecedent dry days and between *E. coli* and fecal coliform and salinity in the estuary associated with San Onofre Creek. This indicates that freshwater input from the creek dilutes bacteria concentrations. Regrowth of bacteria may have been a factor at this estuary.

- During the single monitored storm event, indicator bacteria exceedances were common in the San Onofre Beach creek and estuary samples, but exceedances were only observed at the beach on the day of the storm. Because all samples associated with this storm event were positive for human genetic marker, results could not be used to determine natural background exceedance frequencies. However, positive human marker results were rare throughout the study overall, indicating that the study locations may be suitable reference sites.

Results are presented in greater detail in the Technical Report (Tiefenthaler et al., 2016), which is provided as Attachment 4I to this appendix.

4.3.2 *San Luis Rey River Microbial Source Tracking Study*

A dry weather microbial source tracking (MST) study was conducted in the San Luis Rey River Watershed consisting of a preliminary outfall investigation, a storm drain network investigation, and an evaluation of potential remedial activities. Preliminary findings were reported in December 2015. These findings are summarized below and are provided as Attachment 4J to this appendix.

The preliminary outfall investigation involved inspections and sampling of storm drain outfalls in the sewered portions of the unincorporated area of San Diego County within the San Luis Rey River Watershed. Of the 130 outfalls investigated, 14 were flowing and were sampled. Human marker was detected at quantifiable levels in samples from three of these 14 flowing outfalls (human marker was detected at a level below the quantification limit at one additional outfall). In addition, dog marker was found in samples from four outfalls, and pig and ruminant markers were found in one sample. Concentrations of fecal coliform and/or *Enterococcus* were above WQOs in all but one sample.

The storm drain network investigation involved water sampling for outfalls positive for human marker during the preliminary outfall investigation and visual observations for all outfalls flowing during the preliminary outfall investigation. During the storm drain network investigation, indicator bacteria results were elevated in all water samples, but none were positive for genetic markers. Several sources of non-stormwater flow and bacteria were observed, but no potential human sources of bacteria were identified in the vicinity of flowing outfalls. In addition, no illicit connections or leaks were observed during the storm drain network investigation. Irrigation runoff was identified as the most common source of non-stormwater flow, and agriculture discharge was identified as the largest contributor to flow volume.

The evaluation of potential remedial activities resulted in prioritization of several actions to achieve compliance with the Permit during dry weather. These actions included notifying agricultural owners of their pollutant contributing flows and discussing compliance approaches with the Conditional Waiver of Discharges from Agricultural and Nursery Operations, implementing source control measures (e.g., public outreach, ordinance development and

enforcement, wildlife access restriction devices, and storm drain cleaning), evaluating the effectiveness of source control measures and identifying remaining flowing outfalls requiring additional remediation, and eliminating remaining non-stormwater flows using structural BMPs (e.g., wet weather BMPs recommended in the San Luis Rey Comprehensive Load Reduction Plan [CLRP], pervious gutters, catch basin drywells, and green street-type bioretention swales).

Results from this preliminary MST study will be used to support Permit compliance and Bacteria TMDL implementation planning, and may potentially serve as the first step in future Natural Source Exclusion and/or Quantitative Microbial Risk Assessment (QMRA) work. "Next steps" identified in the preliminary MST investigation report include:

- Conduct follow-up outfall investigations.
- Investigate whether recycled water tests positive for human genetic markers, and determine which outfalls may contribute recycled water.
- Conduct the dry weather MST study in the septic served areas of the County of San Diego's jurisdiction in the San Luis Rey watershed.
- Continue to implement special studies that may potentially modify TMDL WQBELs during the TMDL reopener.
- Notify agriculture owners of their pollutant contributing flows and discuss compliance approaches with the Conditional Waiver of Discharges from Agricultural and Nursery Operations.
- Enhance source control measures.
- Develop an ongoing study evaluating the effectiveness of source control measures and monitoring the presence of non-stormwater flows.

The Dry Weather MST Study Preliminary Findings Report, which presents additional detail and presents results specific to each monitored outfall, is provided as Attachment 4J.

4.3.3 *Special Studies Assessments*

Provision D.4.c of the Permit requires an annual evaluation of special studies results to assess their relevance to the Participating Agencies' characterization of receiving water conditions, understand sources of pollutants and/or stressors, and control and reduce the discharges of pollutants from the storm drain outfalls to receiving waters. This Provision also requires the Participating Agencies to identify modifications and/or updates to the WQIP that are necessary based on special study results.

Results from the special studies outlined above supplement the bacteria data collected under Provisions D.1 (receiving water) and D.2 (storm drain outfalls). Results from these studies may be used in conjunction with data from other studies in re-assessing numeric targets related to bacteria. The Regional Reference Streams and Beaches Study provides a scientific basis for updating the "reference" conditions to be considered in evaluating compliance levels in the Bacteria TMDL, and will be useful in the re-evaluation of the Bacteria TMDL. The San Luis Rey River MST study will be used to support Permit compliance and Bacteria TMDL implementation planning, and may potentially serve as the first step in future Natural Source Exclusion and/or QMRA work. Once

these re-evaluations occur, adaptive management may be utilized to modify the priorities of the WQIP.

4.4 Action Levels

The action levels for storm drain outfall samples utilized to evaluate the data collected in the San Luis Rey River WMA are presented in Table A4-39. Suggested analytical methods and reporting limits are presented in Attachment 4A-5d to the WQIP MAP.

Table A4-39. Action Levels for the San Luis Rey River WMA – Storm Drain Outfalls

Analyte	Benchmark Reference	Units	Action Level(s)				Notes
Non-Stormwater Action Levels for Discharges from Storm Drain Outfalls to Ocean Surf Zone							
			AMAL		IM		
Total coliform	Ocean Plan	MPN/100 mL	1000		10,000/1,000		For IM, total coliform density NAL is 1,000 MPN/100 mL when the fecal/total coliform ratio exceeds 0.1.
Fecal coliform	Ocean Plan	MPN/100 mL	200		400		For AMAL, fecal coliform density NAL is 200 MPN/100 mL during any 30 day period.
Enterococcus	Ocean Plan	MPN/100 mL	35		104		IM value has been set to the Basin Plan WQO for saltwater "designated beach areas".
Non-Stormwater Action Levels for Discharges from Storm Drain Outfalls to Bays, Harbors, and Lagoons/Estuaries							
			AMAL		IM		
Turbidity	Ocean Plan	NTU	75		225		
pH	Ocean Plan	Units	Within limit of 6.0-9.0 at all times				
Fecal coliform	Basin Plan	MPN/100 mL	200		400		AMAL is based on a minimum of not less than five samples for any 30-day period. For IM, the NAL is reached if more than 10 percent of the total samples exceed 400 MPN/100 ml during any 30 day period.
Enterococcus	Basin Plan	MPN/100 mL	35		104		IM value has been set to the Basin Plan WQO for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with water contact recreation (REC-1) beneficial use.
Non-Stormwater Action Levels for Discharges from Storm Drain Outfalls to Inland Surface Waters							
			AMAL	MDAL	IM		
Dissolved Oxygen	Basin Plan	mg/L	Not less than 5.0 in WARM waters and not less than 6.0 in COLD waters				
Turbidity	Basin Plan	NTU	-	20	See MDAL		
pH	Basin Plan	Units	Within limit of 6.5-8.5 at all times				
Fecal Coliform	Basin Plan	MPN/100 mL	200	-	400		AMAL is based on a minimum of not less than five samples for any 30-day period. For IM, the NAL is reached if more than 10 percent of total samples exceed 400 MPN/100 mL during any 20 day period.
Enterococcus	Basin Plan	MPN/100 mL	33	-	61		IM value has been set to the Basin Plan WQO for saltwater "designated beach areas" and is not applicable to water bodies that are not designated with water contact recreation (REC-1) beneficial use.
Total Nitrogen	Basin Plan	mg/L	-	1	See MDAL		
Total Phosphorus	Basin Plan	mg/L	-	0.1	See MDAL		
MBAS	Basin Plan	mg/L	-	0.5	See MDAL		
Iron	Basin Plan	mg/L	-	0.3	See MDAL		
Manganese	Basin Plan	mg/L	-	0.05	See MDAL		
Non-Stormwater Action Levels for Priority Pollutants							
			Freshwater		Saltwater		
			AMAL	MDAL	AMAL	MDAL	
Cadmium	CTR	µg/L	**	**	8	16	
Copper	CTR	µg/L	*	*	2.9	5.8	See footnote.
Chromium III	CTR	µg/L	**	**	-	-	
Chromium VI	CTR	µg/L	8.1	16	41	83	
Lead	CTR	µg/L	*	*	2.9	14	See footnote.

Table A4-39. Action Levels for the San Luis Rey River WMA – Storm Drain Outfalls

Analyte	Benchmark Reference	Units	Action Level(s)				Notes
Nickel	CTR	µg/L	**	**	6.8	14	See footnote.
Silver	CTR	µg/L	*	*	1.1	2.2	See footnote.
Zinc	CTR	µg/L	*	*	47	95	See footnote.
Stormwater Action Levels							
Turbidity	Order No. R9-2013-0001	NTU	126				
Nitrate & Nitrite (Total)	Order No. R9-2013-0001	mg/L	2.6				
Phosphorus (Total P)	Order No. R9-2013-0001	mg/L	1.46				
Cadmium (Total Cd) †	CTR	µg/L	3				See footnote.
Copper (Total Cu) †	CTR	µg/L	127				See footnote.
Lead (Total Pb) †	CTR	µg/L	250				See footnote.
Zinc (Total Zn) †	CTR	µg/L	976				See footnote.

* Action levels designated on a case by case basis.

** Action levels designated on a case by case basis, but calculated criteria are not to exceed MCLs under the CCR, Title 22, Division4, Chapter 15, Article 4 Section 64431.

The cadmium, Copper, Chromium (III), Lead, Nickel, Silver, and Zinc NALs for storm drain outfall discharges to freshwater receiving waters will be developed on a case-by-case basis on site-specific water quality data (receiving water hardness). For these priority pollutants, refer to 40 CFR 131.38(b)(2).

† Sampling must include a measure of receiving water hardness at each storm drain outfall. If a total metal concentration exceeds the corresponding metals SAL in the table, that concentration must be compared to the CTR and the USEPA 1-hour maximum concentration for the detected level of RW hardness associated with that sample. If it is determined that the sample's total metal concentration for that specific metal exceeds that SAL, but does not exceed the applicable USEPA 1-hr maximum concentration criterion for the measured level of hardness, then the sample result will not be considered above the SAL for that measurement.

4.5 California Environmental Data Exchange Network Data Upload and Retrieval

Provision F.4.a.(6) of the Permit requires that monitoring data collected pursuant to Provision D (Monitoring and Assessment Program Requirements) must be uploaded to the CEDEN, a central location for finding and sharing information about California's waterbodies. CEDEN aggregates water quality, aquatic habitat, and wildlife health data and makes them accessible in downloadable forms at www.ceden.org.

Data in the CEDEN are searchable by date and by location, project, station, or parameter using the "Find Data" functionality of the CEDEN website. The data from the San Diego Region Copermittee Program can be retrieved by identifying the Program as "National Pollutant Discharge Elimination System (NPDES) Program" and Project as "San Diego Region NPDES", which is the parent Project name. Within this overall retrieval, the specific datasets described in this Annual Report can be identified using the project names listed in Table A4-40. Data are limited to those parameters that are currently storable in CEDEN (CEDEN does not currently accept calculated values, and therefore CSCI values cannot be submitted). SMC data are submitted to the SMC Program.

In accordance with the Permit, data collected during the 2015-2016 monitoring year will be submitted to CEDEN by January 31, 2017, and will become available from CEDEN once loaded by the Regional Data Center into the system during 2017. CEDEN data submittals and receipts are provided as Attachment K to this appendix.

Table A4-40. Project Names for CEDEN Data Retrieval

Project Code	Project Name
BacteriaTMDL_SLR	San Luis Rey River Bacteria TMDL Monitoring Program
MS4_WW_OFM	Wet Weather MS4 Outfall Monitoring
MS4_DW_OFSM	Dry Weather MS4 Outfall Field Screening and Discharge Monitoring
NPDES_RWM	NPDES Receiving Water Monitoring

Appendix 4 Monitoring and Assessment Results

Attachments: Provided Separately

Attachment A – SMC Regional Monitoring Program Data

Attachment B – Bacteria TMDL Monitoring Report

Attachment C – Microbial Source Tracking

Attachment D – Dry Weather Field Screening Data

Attachment E – Dry Weather Storm Drain Outfall Assessment

Attachment F – Wet Weather Storm Drain Outfall Flow Data

Attachment G – Wet Weather Storm Drain Outfall QA/QC Report

Attachment H – Wet Weather Storm Drain Outfall Assessment

Attachment I – Reference Streams Study

Attachment J – Reference Beaches Study

Attachment K – Wet Weather Epidemiology Study

Attachment L – CEDEN Data Submittals and Receipts

APPENDIX 5

Adaptive Management/Modifications

Appendix 5 Adaptive Management/Modifications

5.1 TRIGGERS FOR ADAPTIVE MANAGEMENT

The adaptive management process may include modifications to the priority water quality conditions, numeric goals, strategies, and schedules, and/or to the monitoring and assessment program outlined in the Water Quality Improvement Plan (WQIP). This appendix contains analyses and information in support of the adaptive management process. With the acceptance of the WQIP in February 2016, the Participating Agencies have been officially implementing the WQIP for less than a year. Therefore, it is too early in the implementation process to have significant feedback necessary to drive the adaptive management process. Only one year of monitoring data have been collected under the WQIP Monitoring and Assessment Plan (MAP), and additional monitoring years under the Permit term are necessary for feasible evaluation of the effectiveness of jurisdictional strategies. Minor modifications to the descriptions of strategies and schedules are provided in Appendix 2. No significant modifications to the MAP are warranted based on data collected during the 2015-2016 monitoring year. The results of the Permit-required assessments of these data are presented in Appendix 4.

5.1.1 Routine Monitoring Results

Results from routine monitoring programs may trigger updates to the WQIP, potentially prompting additions or changes to the strategies that are implemented. The evaluation of monitoring results occurs at two levels:

(1) comparison to receiving water limitations and determination of the influence of storm drain outfall discharges to any persistent exceedances, and
(2) comparison of dry and wet weather storm drain outfall discharge data to non-stormwater action levels (NALs) and stormwater action levels (SALs).

5.1.1.1 Receiving Water Limitations

The primary focus of this assessment is on conditions within receiving waters and their relationship to storm drain outfall discharges. An assessment methodology to determine whether discharges from storm drain outfalls are potentially sources of pollutants “causing or contributing” to “persistent” receiving water exceedances is currently being developed, and the results of the assessment will be presented in the San Luis Rey River Watershed Management Area (WMA) chapter of the Regional Monitoring and Assessment Report (RMAR) to be submitted with the Report of Waste Discharge (ROWD) in December 2017. Long-term receiving water monitoring, required once during the Permit cycle, has not yet not been conducted at the Long-term monitoring station in the WMA (SLR-MLS), which has been dry for the past two monitoring years. Therefore, the trigger for adaptive management pertaining to receiving water exceedances would be more appropriately addressed after the collection of the long-term monitoring data, but will be addressed regardless of the availability of new data in the next report deliverable, the RMAR, which is due prior to the 2016-2017 WQIP Annual Report.

5.1.1.2 Exceedances of NALs and/or SALs

The primary focus of this assessment is on exceedances of NALs or SALs in discharges from the storm drain system during dry and wet weather, respectively. NALs and SALs are incorporated into the WQIP in order to:

(1) support the development and prioritization of water quality improvement strategies,
(2) assess the effectiveness of the water quality improvement strategies, and
(3) support the detection and elimination of non-stormwater and illicit discharges to the storm drain system (NALs only).

Appendix 4 includes the results of the dry and wet weather storm drain outfall discharge monitoring programs and compares the data to applicable NALs or SALs included in Provision C of the Permit. A summary of these results is presented in Table A5-1, and the locations of the highest priority storm drain outfall dry weather monitoring locations and storm drain outfall wet weather monitoring locations are shown in Appendix 4 in Figures A4-5 and A4-10, respectively. Repeated exceedances for constituents that are not currently addressed by the WQIP may indicate that these constituents warrant further consideration. During the 2015-2016 monitoring year, the NALs most often exceeded in the San Luis Rey River WMA were consistent with those identified by the WQIP as priority water quality conditions, with the exception of iron and manganese.

The comparison of the storm drain outfall monitoring results to NALs and SALs may also be used to guide the adaptation of strategies. If the jurisdictional strategies outlined in Section 4 result in reductions in pollutant loads from outfalls with discharges in exceedance of NALs or SALs, an assessment of the effectiveness of these strategies could be made. To date, only one year of monitoring data have been collected in accordance with the MAP, and the Participating Agencies in the WMA have just begun to implement their jurisdictional strategies under the accepted WQIP intended to result in achievement of dry and wet weather interim goals for the term of the current Permit (see Annual Report Section 4). Additional data will be necessary before an assessment of the effectiveness of these strategies can be made.

Table A5-1. Exceedances of NALs and SALs during the 2015-2016 Monitoring Year in the San Luis Rey River WMA

Constituent	Outfalls with NAL Exceedances	Outfalls with SAL Exceedances[3,4]
Fecal Coliform[1]	MS4-SLR-150, MS4-SLR-152, SLR-025, SLR-036, SLR-03	MS4-SLR-041, MS4-SLR-150, SLR-016, SLR-036, SLR-03
Enterococcus[1]	MS4-SLR-095, MS4-SLR-150, MS4-SLR-152, MS4-SLR-155, SLR-025, SLR-036, SLR-03	MS4-SLR-041, MS4-SLR-150, SLR-016, SLR-036, SLR-03
Turbidity[1,2]	MS4-SLR-095, MS4-SLR-150, SLR-03	None
pH[1]	None	N/A
Cadmium[1,2]	None	None
Copper[1,2]	SLR-036	None
Chromium VI[1]	None	N/A
Lead[1,2]	None	None
Zinc[1,2]	None	None
Dissolved Oxygen[1]	MS4-SLR-095, MS4-SLR-150	N/A
Total Nitrogen[1]	MS4-SLR-095, MS4-SLR-150, MS4-SLR-152, MS4-SLR-155, SLR-025, SLR-036, SLR-03	N/A
Total Phosphorus[1]	MS4-SLR-095, MS4-SLR-150, MS4-SLR-152, MS4-SLR-155, SLR-025, SLR-036, SLR-01, SLR-03	N/A
MBAS[1]	None	N/A
Iron[1]	MS4-SLR-095, MS4-SLR-150, MS4-SLR-152, SLR-01, SLR-03	N/A
Manganese[1]	MS4-SLR-095, MS4-SLR-150, MS4-SLR-155, SLR-025, SLR-036, SLR-01, SLR-03	N/A
Nitrate + Nitrite (total)[2]	N/A	None
Phosphorus (Total P)[2]	N/A	MS4-SLR-041

N/A = not applicable. No NAL or SAL in Provision C.
1. Applicable to non-stormwater discharges from storm drain outfalls to inland surface waters.
2. Applicable for discharges of stormwater from storm drain outfalls to receiving waters.
3. Exceeds Single Sample Maximum Final Effluent Limitations (Bacteria TMDL).
4. Outfall station names shown are the Jurisdictional ID.

5.1.1.3 Special Studies Results

As part of the MAP, the Participating Agencies are engaged in special studies related to the highest priority water quality condition (HPWQC) for the watershed (i.e., bacteria). Results from the special studies outlined in Annual Report Section 3.3 and Appendix 4 Section 4.3 supplement the bacteria data collected under Provisions D.1 (receiving water) and D.2 (storm drain outfalls). As relevant data, conclusions, and lessons learned become available from these studies, the numeric goals, strategies, schedules, and the MAP may be impacted and may require modification. Additionally, lessons learned and study results from outside the watershed, especially those related to the bacteria impairments, may also be incorporated into the WQIP.

The Regional Reference Streams and Beaches Study provides a scientific basis for updating the "reference" conditions to be considered in evaluating compliance levels in the Bacteria Total Maximum Daily Load (TMDL), and will be useful in the re-evaluation of the Bacteria TMDL. The San Luis Rey River MST study will be used to support Permit compliance and Bacteria TMDL implementation planning, and may potentially serve as the first step in future Natural Source Exclusion and/or QMRA work. Once these re-evaluations occur, adaptive management may be utilized to modify the WQIP.

5.1.2 Regulatory Considerations

The purpose of this section is to summarize changes in the regulatory landscape including:

(1) new regulatory actions at the State or local level, and

(2) Regional Board recommendations that must be considered as part of the adaptive management process.

5.1.2.1 New Regulatory Actions

When new regulations or policies are adopted that impact watershed planning and implementation processes, modifications to the WQIP numeric goals, strategies, schedules, and/or MAP may be warranted, and, in some cases, required. For example, an update to the WQIP must be initiated no later than six months following approval of a TMDL Basin Plan Amendment by the Office of Administrative Law and the United States Environmental Protection Agency (USEPA). The trigger applies to TMDLs containing wasteload allocations assigned to Participating Agencies within the watershed during the term of the Order (see Provision F.2.c.(2)). Other examples of regulatory drivers that may trigger modifications to the WQIP include new state policies or plans (e.g., trash, toxicity, biological objectives, bacteria standards updates) and changes resulting from modifications to existing Permit requirements (e.g., as a result of revising a TMDL).

5.1.2.2 Regional Board Recommendations

In cases where the Regional Board makes recommendations for modifications to the WQIP or Jurisdiction Runoff Management Program (JRMP), these recommendations must be considered as part of the adaptive management process. No such recommendations were made during the 2015-2016 monitoring year.

5.1.3 Program Effectiveness Assessments/Progress Toward Numeric Goals

Strategies developed within the WQIP have been incorporated into Participating Agencies' monitoring programs through implementation of their JRMPs. Each Participating Agency is implementing programs that are focused on addressing bacteria in the watershed. As strategy implementation progresses, periodic refinements to the programs may provide additional focus on the specific water quality issues identified in the WQIP. Participating Agencies utilize various assessment methods to determine which program refinements are effective and which are not. In some cases, the program effectiveness assessment results may provide useful information leading to adaption of elements of the WQIP. Where new information is applicable and available, it may be used to modify numeric goals, strategies, schedules, and the MAP.

At this time, only one year of data have been collected in accordance with the MAP, and strategy implementation under the WQIP, accepted in February 2016, was less than a year. Initial results related to program effectiveness (Annual Report Section 4.2) indicate that the Participating Agencies have made progress towards achieving each of their dry and wet weather interim goals for the current Permit term and, in most cases, they are on track to achieve the identified goals during the Permit term. Additional data from subsequent monitoring years will be necessary to supplement this data before evaluations leading to adaptive management actions are feasible and modifications to strategies considered.

5.2 ADAPTIVE MANAGEMENT - CHANGES TO WATER QUALITY IMPROVEMENT PLAN ELEMENTS

The potential triggers that may result in adaptive management of the San Luis Rey River WMA WQIP's numeric goals, strategies, schedules, and/or MAP are outlined in Section 5.1. In general, priority and highest priority water quality conditions and numeric goals are established based on longer periods of record compared to a monitoring year and their assessment would most appropriately be conducted following the collection of sufficient data to make scientifically-based decisions. At earliest, such consideration may be given during the preparation of the ROWD, which is due to the Regional Board in December 2017.

The 2015-2016 monitoring year was the first under the accepted WQIP and MAP. As outlined in Section 5, receiving water and storm drain outfall discharge monitoring results from 2015-2016 support the identified priority and highest priority water quality conditions as provided in the WQIP, and no modifications are necessary at this time.

On an annual schedule, it is more likely that modifications may be made to strategies and implementation schedules. These are elements that may require updates on a more frequent basis to ensure effective implementation and assessment as the WQIP progresses. The information that may be used to modify these elements of the WQIP through adaptive management is summarized in Table A5-2. While one year of monitoring data have been collected in accordance with the MAP of the WQIP, only a few months of this time period have been under the accepted WQIP and implementation. The Participating Agencies in the WMA began planning and implementing their jurisdictional strategies intended to result in achievement of dry and wet weather interim goals for the term of the current Permit. Sufficient information is not yet available to warrant adaptive management of the water quality strategies and schedules. Collection of additional data will be necessary to supplement this data before the combined data

set can be evaluated and adaptive management considered. Proposed minor clarifications to two strategies are shown in the jurisdictional strategy tables in Appendix 2 as markup.

Table A5-2. Information Used to Modify Strategies and Schedules

Evidence	WQIP Sections	2015-2016 Status	Adaptive Management Required after 2015-2016? (Y/N)
Receiving water monitoring results.	Section 3, Appendix 4	No new information pertaining to receiving water exceedances not addressed by the WQIP.	N
Storm drain outfall monitoring results.	Section 3, Appendix 4	NAL and SAL exceedances are consistent with WMA priority constituents.	N
Special studies results.	Section 3, Appendix 4	Data from these studies will be useful for the re-evaluation of the Bacteria TMDL and to facilitate consideration of site-specific water quality criteria for bacteria.	N
New or updated regulations.	Section 5	No new regulatory drivers; adaptive management will be required as new TMDLs are approved and as the Trash Amendments are incorporated into the Permit.	N
Program effectiveness assessments.	Section 5	Additional data will be necessary to supplement 2015-2015 data before program effectiveness can be evaluated.	N
Progress towards achieving numeric goals.	Section 4	Initial results related to program effectiveness indicate that the Participating Agencies have made progress towards achieving each of their dry and wet weather interim goals for the current Permit term.	N

In addition to the strategies and schedules, it is also feasible that updates to the MAP may be necessary more often than priority water quality conditions and numeric goals and schedules. Changes to the MAP may be triggered by several factors including:

- Modifications to other elements of the WQIP, including priority water quality conditions, numeric goals and schedules, and/or strategies and schedules.
- Identification of data gap through the required assessments under Provision D.4.
- Results of special studies.
- Requests/requirements from the Regional Board.

None of these triggers are applicable to the 2015-2016 monitoring year, and adaptive management of the MAP is not required at this time. Modifications have been made to the outfall priorities for dry weather monitoring due to highest priority outfalls becoming dry. The baseline for the wet weather watershed goals for Lower San Luis Rey River WMA was revised to both correct the calculation and refine the methodology. This resulted in a lower baseline from which reductions will be measured, requiring lower monitored loads to demonstrate load reductions. Additional assessments are planned for the ROWD, including evaluation monitoring data and receiving water limitations.

DECLARATION OF SERVICE BY EMAIL

I, the undersigned, declare as follows:

I am a resident of the County of Sacramento and I am over the age of 18 years, and not a party to the within action. My place of employment is 980 Ninth Street, Suite 300, Sacramento, California 95814.

On March 29, 2024, I served the:

- **Current Mailing List dated March 28, 2024**
- **Notice of Waiver of Procedural Requirements, Extension Request Approval, and Postponement of Hearing issued March 29, 2024**
- **Claimants' Comments on the Draft Proposed Decision and Parameters and Guidelines (Volumes 1-14) filed February 20, 2024**

  San Diego Regional Water Quality Control Board Order No. R9-2007-0001, Permit CAS0108758, Parts D.3.a.(3)(b)(iii), D.5.a.(1), D.5.a.(2), D.5.b.(1)(a), D.5.b.(1)(b)(iii-vi), D.5.b.(1)(c), D.5.b.(1)(d), D.5.b.(2), D.5.b.(3), E.2.f., E.2.g., F.1., F.2., F.3., I.1., I.2., I.5., J.3.a.(3)(c)(iv)-(viii), (x)-(xv), the first sentence of L.1. as it applies to the newly mandated activities, and L.1.a.(3)-(6), 07-TC-09-R County of San Diego, Cites of Carlsbad, Del Mar, Imperial Beach, Lemon Grove, Poway, San Marcos, Santee, Solana Beach, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, San Diego, and Vista, Claimants

by making it available on the Commission's website and providing notice of how to locate it to the email addresses provided on the attached mailing list.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration was executed on March 29, 2024 at Sacramento, California.

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COMMISSION ON STATE MANDATES

Mailing List

Last Updated: 3/28/24

Claim Number: 07-TC-09-R

Matter: San Diego Regional Water Quality Control Board Order No. R9-2007-0001 Permit CAS0108758 Parts D.1.d.(7)-(8), D.1.g., D.3.a.(3), D.3.a.(5), D.5, E.2.f, E.2.g, F.1, F.2, F.3, I.1, I.2, I.5, J.3.a.(3)(c)iv-viii & x-xv, and L.

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City of Santee
City of Solana Beach
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TO ALL PARTIES, INTERESTED PARTIES, AND INTERESTED PERSONS:

Each commission mailing list is continuously updated as requests are received to include or remove any party or person on the mailing list. A current mailing list is provided with commission correspondence, and a copy of the current mailing list is available upon request at any time. Except as provided otherwise by commission rule, when a party or interested party files any written material with the commission concerning a claim, it shall simultaneously serve a copy of the written material on the parties and interested parties to the claim identified on the mailing list provided by the commission. (Cal. Code Regs., tit. 2, § 1181.3.)

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CARLSBAD

WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

MARCH 2008

Carlsbad Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Carlsbad participated in the development of the Carlsbad Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME
Glenn T. Pruim R.E.
Director, Public Works
City of Carlsbad

MARCH 20, 2008
Date

Carlsbad Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Escondido participated in the development of the Carlsbad Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Mary Ann Mann
Utilities Manager
City of Escondido

March 20, 2008

STATEMENT OF CERTIFICATION
Carlsbad Watershed Urban Runoff Management Program

I certify under penalty of law that the County of San Diego participated in the development of the Carlsbad Watershed Urban Runoff Management Program and all attachments. County staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

3-21-08
Date

CERTIFICATION STATEMENT – CARLSBAD WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

I certify under penalty of law that the City of Encinitas participated in the development of the Carlsbad Watershed Urban Runoff Management Program and all attachments. City staffs assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Phil Cotton 3-14-08

Signature Date

Phil Cotton, City Manager

Name, Title

CITY OF SOLANA BEACH
635 SOUTH HIGHWAY 101 • SOLANA BEACH, CALIFORNIA 92075-2215 • (858) 720-2400
www.ci.solana-beach.ca.us FAX (858) 792-6513 / (858) 755-1782

Carlsbad Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Solana Beach participated in the development of the Carlsbad Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Dan Goldberg, P.E.
Interim Director of Engineering/Public Works
City of Solana Beach

3/17/2008
Date

City of Vista

March 19, 2008

RE: Carlsbad Watershed Urban Runoff Management Program Statement of Certification

I certify under penalty of law that the City of Vista participated in the development of the Carlsbad Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita L. Geldert
City Manager
City of Vista

Lawrence D. Pierce
Director of Engineering
City of Vista

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 20, 2008

RE: STATEMENT OF CERTIFICATION
2008 Watershed Urban Runoff Management Program Update for the Carlsbad Watershed

I certify under penalty of law that the 2008 Watershed Urban Runoff Management Program Update for the Carlsbad Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahsaiezadeh

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

300 NORTH COAST HIGHWAY • OCEANSIDE, CA 92054 • TELEPHONE 760-435-5800 • FAX 760-435-5814

1 Civic Center Drive
San Marcos, CA 92069-2918

Telephone
760.744.1050
FAX: 760.744.7543

Carlsbad Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of San Marcos participated in the development of the Carlsbad Watershed Urban Runoff Management Program and all attachments. City staffs assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paul Malone

Paul Malone
City Manager
City of San Marcos

3/20/08
Date

CITY COUNCIL:
Jim Desmond, Mayor Hal Martin, Vice-Mayor Mike Preston Chris Orlando Rebecca Jones

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EXECUTIVE SUMMARY

The goal of the Carlsbad Watershed Urban Runoff Management Program (WURMP) is to reduce the discharges of pollutants from the municipal separate storm sewer system (MS4) to the maximum extent practicable (MEP) and prevent urban runoff discharges from the MS4 from causing or contributing to a violation of water quality standards. The Carlsbad Watershed Urban Runoff Management Program has been prepared by the City of Carlsbad, as lead agency, in collaboration with the Cities of Oceanside, Vista, San Marcos, Escondido, Encinitas, Solana Beach, and the County of San Diego – all local agencies which have jurisdiction within the Carlsbad Watershed Management Area. The Program meets the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit for San Diego Copermittees (Order No. R9-2007-0001, NPDES No. CAS0108758). The Municipal Storm Water Permit requires the development and implementation of Watershed Urban Runoff Management Programs for each of nine watershed areas within San Diego County, including the Carlsbad Watershed Management Area. This document represents the plan the jurisdictions have prepared to implement said Program.

The Carlsbad Watershed Management Area encompasses approximately 211 square miles, and includes six individual Hydrologic Areas: Loma Alta; Buena Vista Creek; Agua Hedionda; Encinas; San Marcos Creek, and; Escondido Creek. The land uses within the Carlsbad Watershed Management Area range from urban to suburban development, from industrial/commercial to agricultural uses, from floriculture to confined animal operations, and from areas preserved for open space to areas designated for a variety of recreational uses.

The Carlsbad WURMP is the continuation of a long-term effort to protect and enhance the water quality of the creeks and lagoons at the watershed level. It is the goal of all participating jurisdictions to work cooperatively with other agencies, non-governmental organizations, and private citizens at the watershed level in order to positively affect the water resources of the region and achieve compliance with the Municipal Permit. It should be noted that this plan has been written with the public in mind as a means to engage San Diego area residents in watershed issues and to facilitate public understanding of challenges related to the protection of our precious water resources.

The Carlsbad WURMP identifies and prioritizes water quality problems within the WMA that can be potentially attributed to discharges from the municipal storm drain systems. Additionally, activities to abate sources of pollution and restore and protect beneficial uses are also identified. During this initial year, the evaluation of watershed conditions and the potential sources of the pollutants were based upon a limited data set. As more data become available, it is important that the Program be evaluated and allowed to evolve. Participating agencies consider this point in time to be the continuation of a long-term process – reducing the pollutant loads that are contributing to the water quality problems identified in the Watershed Management Area. Consistent with the Municipal Permit, Program amendments or revisions will be submitted to the California Regional Water Quality Control Board – San Diego Region for review as part of the annual reporting process.

The Copermittees developed a collective watershed management strategy that is found in Chapter 2. The watershed strategy focuses the program efforts on the water quality problems and potential sources that are unique to the Carlsbad Management Area sub-watersheds. Data analyzed to date suggests that bacteria are a high priority water quality problem in the Loma Alta, Agua Hedionda, and Escondido Creek hydrologic areas. Sediments have been identified to be a high priority water quality problem in the Escondido Creek and Agua Hedionda Hydrologic Areas. Additionally, nutrients are identified as a high priority water quality problem in

the Escondido Creek Hydrologic Area. The water quality assessment is discussed in detail in Chapter 3.

To address water quality problems, this Plan identifies a series of watershed water quality and education activities in Chapter 4, in addition to other ongoing and planned activities identified for Land Use Planning and Public Participation. Having used the collective watershed strategy as the basis for developing the activities, the Copermittees have focused the activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the Carlsbad Watershed Management Area.

The Cities of Oceanside, Vista, Carlsbad, San Marcos, Escondido, Encinitas, Solana Beach, and the County of San Diego share the implementation responsibilities for the Program. Due to the commitments of these agencies, this watershed program is expected to extend beyond the Municipal Permit expiration date of January 24, 2012. Using the watershed approach, the Cities of Oceanside, Vista, Carlsbad, San Marcos, Escondido, Encinitas, Solana Beach, and the County of San Diego aim to protect and enhance aquatic resources in a cost effective, environmentally sensitive, and collaborative manner.

1. INTRODUCTION

Urban and storm water runoff discharged into streams, bays, and oceans from municipal storm drain systems has been identified under local, regional, and national research programs as one of the principal causes of water quality problems in most urbanized regions. Runoff reaching our waterways has the potential to contain a host of pollutants like trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, and metals. These pollutants can adversely affect receiving and coastal waters, associated biota, and public health.

The Carlsbad Watershed Management Area (WMA) is within the boundaries of the Cities of Oceanside, Vista, Carlsbad, San Marcos, Escondido, Encinitas, Solana Beach, and the County of San Diego. These local jurisdictions are committed to finding creative and effective ways to improve the water quality of the receiving waters of the Carlsbad WMA while also complying with the National Pollutant Discharge Elimination System Municipal Storm Water Permit (Order No. R9-2007-0001), hereafter referred to as the Municipal Permit.

While the Cities of Oceanside, Vista, Carlsbad, San Marcos, Escondido, Encinitas, Solana Beach, and the County of San Diego ("Carlsbad WMA Copermittees") are implementing broad water pollution prevention programs within their respective jurisdictions, the Carlsbad Watershed Urban Runoff Management Program focuses specifically on water quality related issues within the Carlsbad WMA that can be potentially attributed (wholly or partially) to discharges from the municipal separate storm sewer system (MS4) and may be addressed through a cross-jurisdictional approach.

The goal of the Carlsbad Watershed Urban Runoff Management Program (WURMP) is to reduce the discharges of pollutants from the MS4 to the maximum extent practicable (MEP) and prevent urban runoff discharges from the MS4 from causing or contributing to a violation of water quality standards.

Why a Watershed?

A watershed is defined as a contiguous area of land that drains to a particular location, usually a water body such as a creek, lake, or ocean (See Figure 1-1). Watersheds come in all shapes and sizes and cross jurisdictional, state and national boundaries[1]. The delineation of a watershed, or drainage area, depends on the scale of reference and small watersheds are combined together to become larger watersheds. Watershed boundaries follow the major ridgelines around river channels and meet where the water flows out of the watershed, usually the mouth of a stream or river.

In San Diego County, all waterways west of the Peninsular Range ultimately reach to the Pacific coast. While watersheds can be large or small, we all live in a watershed as every stream, tributary, or river has an associated watershed.

Because the water moves downstream in a watershed, any activity that affects the water quality, quantity, or rate of movement at one location can affect the watershed and receiving waters at downstream locations. Before reaching a stream, surface runoff accumulates from the highest points in a watershed and flows downhill across lawns, rooftops, parking lots, and roads, picking up many pollutants along the way that have the potential to reach our rivers and beaches. For this reason, everyone living or working within a watershed needs to contribute to ensure the health of the watershed.

[1] U.S. Environmental Protection Agency, 2002.

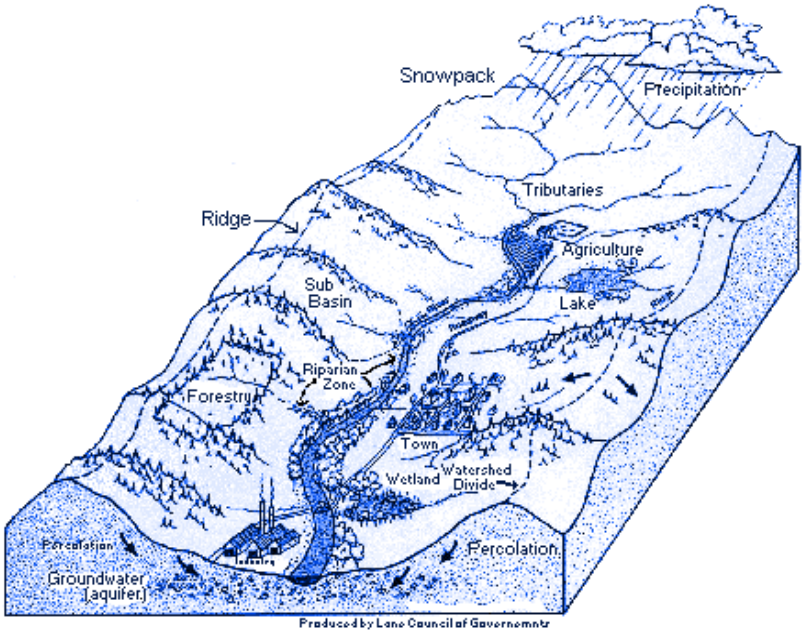

Figure 1-1 Typical watershed. ***Source: U.S. EPA, Office of Wetlands, Oceans & Watersheds***

Most environmental management activities have traditionally been based on the jurisdictional limits of participating institutions including cities, counties, and states. While this may be effective in some instances, it is also important to implement and coordinate activities on a sub-watershed scale. Sub-watersheds often share common water quality problems and sources based on land use and other factors which may provide more effective activity implementation, investigations, or analysis.

San Diego Watersheds

San Diego County encompasses an area of over 4,000 square miles in the southwest corner of California. The northwest to southeast trending Peninsular Range divide two hydrologic regions in the San Diego region. The San Diego Hydrologic Region drains in a westerly direction toward the Pacific Ocean and the Colorado Hydrologic Region drains in an easterly direction toward the Colorado River.

There are a total of 11 major watersheds or *hydrologic units* in the San Diego Hydrologic Region encompassing a land area of nearly 3,000 square miles (See Figure 1-2). Eight major stream systems originate on the western slope of the Peninsular Range and discharge into the Pacific Ocean. From north to south they are San Juan Creek, Santa Margarita, San Luis Rey, Los Peñasquitos, San Diego, Sweetwater, Otay, and Tijuana Rivers. In addition, there are three hydrologic units whose headwaters are located between the Peninsular Range and the Pacific Ocean. These include the Carlsbad, Los Peñasquitos, and Pueblo San Diego units[2].

[2] Project Clean Water, 2002.

Figure 1-2 San Diego Hydrologic Units**.**

In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards ("Regional Boards") have primary responsibility for the protection of water quality. This requires preventing and reducing water pollution in our rivers, streams, lakes, beaches, bays, and groundwater. Within this regulatory context, the San Diego Regional Board determines the appropriate scale to define watersheds in the region. For regulatory purposes, the Regional Board has divided the San Diego region into 11 Watershed Management Areas as illustrated in Figure 1-3.

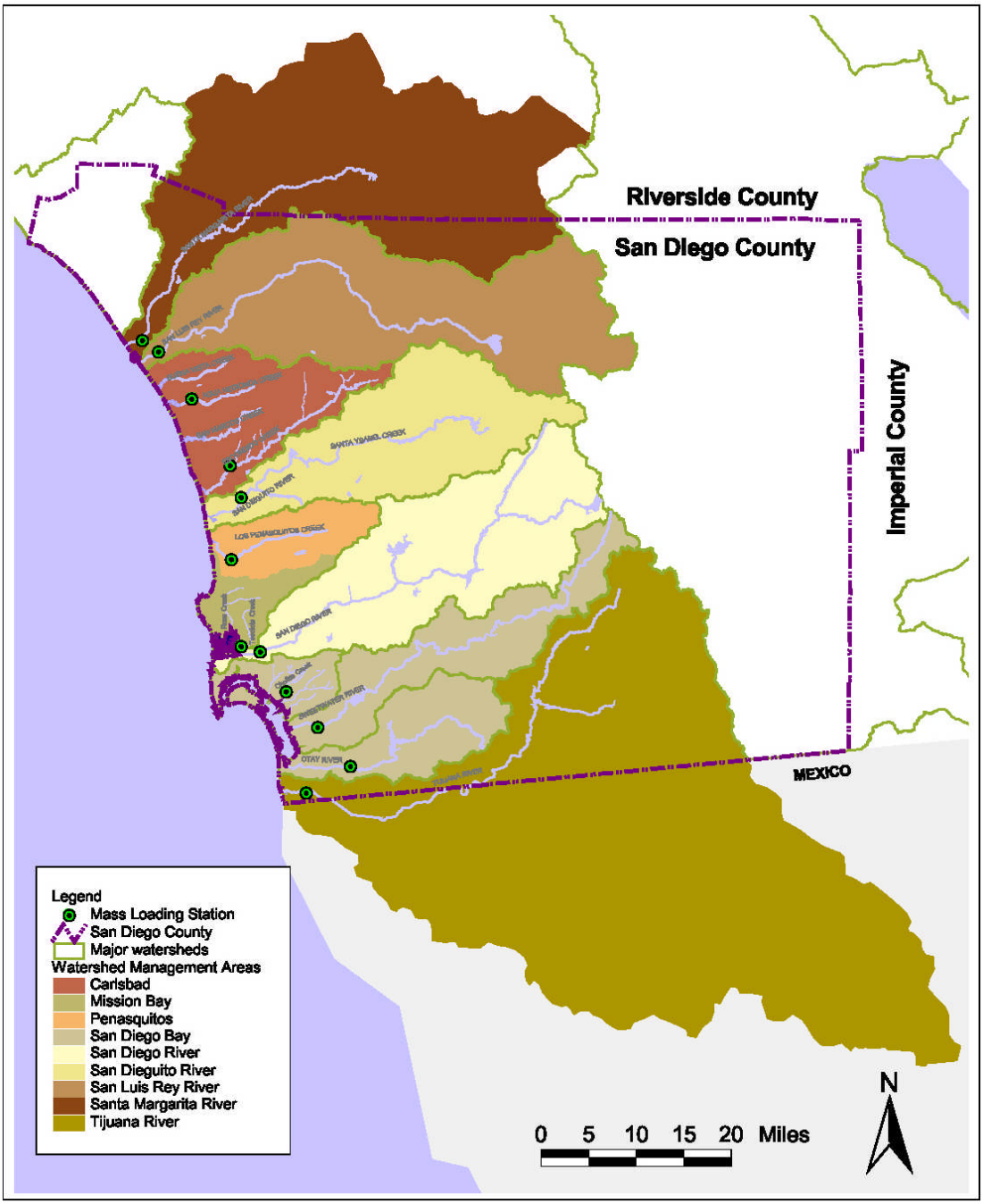

Figure 1-3 San Diego Watershed Management Areas

Background

Pollutant loads associated with urban and storm water runoff is one of the leading causes of water quality impairment in the San Diego region and nationwide. Pollutants carried in urban and storm water runoff, indiscriminate of dry or wet weather conditions, routinely find their way to our creeks, lagoons, bays, and ocean via the municipal storm drain systems. Unlike many

other regions in the country, storm drain systems in San Diego are separate from sanitary sewer systems (Figure 1-4). The Carlsbad WMA storm drain system, like the drainage system throughout San Diego County conveys urban runoff and rainwater from our streets, rooftops, driveways, parking lots, and other impervious areas, directly to the river and Pacific Ocean without receiving any form of treatment.

Figure 1-4. San Diego Sanitary Sewer and Storm Drain Systems.

Urban and storm water runoff potentially contain a host of pollutants like trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals. These contaminants can adversely affect receiving and coastal waters, associated wildlife, and public health. Water pollution associated with runoff is not only a problem during rainy seasons, but also year-round due to many types of water use activities that discharge runoff into the storm drain system.

1.1. Program Framework

Municipal Storm Water Permit

The principal law governing pollution of the nation's surface waters is the Clean Water Act. The Clean Water Act set the goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The federal Clean Water Act was amended in 1987 to address urban and storm water runoff. One requirement of the amendment was that many municipalities throughout the United States were obligated for the first time to obtain National Pollutant Discharge Elimination System (NPDES) permits for discharges from their storm water conveyance system. The National Pollutant Discharge Elimination System (NPDES) is a federal program established under the Clean Water Act to regulate discharges from any point source. A point source, as defined under the Clean Water Act is any "discernible, confined and discrete conveyance from which pollutants are or may be discharged." Discharge of urban and storm water runoff conveyed in the storm drain system is considered a point source. Section 402(p) of the Clean Water Act prohibits municipal storm water discharges without an NPDES permit. Discharge from any point source, except in compliance with an NPDES permit, is considered unlawful.

Residents, businesses and other uses within local jurisdictions contribute to discharges of pollution in storm water and urban runoff from their property into *receiving waters* of the San Diego region via municipal storm drain systems. These municipal storm water discharges are regulated under countywide requirements contained in Regional Board Order No. R9-2007-0001. This Order serves as the NPDES Municipal Storm Water Permit (Municipal Permit) for

the County of San Diego, the San Diego Unified Port District, the San Diego Regional Airport Authority and the 18 incorporated cities of San Diego County, referred to collectively as the *Copermittees*.

The Municipal Permit is granted and administered by the State Water Resources Control Board through the San Diego Regional Water Quality Control Board ("Regional Board"). The State Water Resources Control Board (SWRCB) and its nine Regional Boards have primary responsibility in California for the protection of water quality. This responsibility translates into preventing and reducing water pollution in our rivers, streams, lakes, beaches, and bays.

Municipal Permits seek to ensure that the *beneficial uses* of receiving waters are protected. Beneficial uses are defined as the uses of water necessary for the survival or well being of people, plants, and wildlife. Beneficial uses include surfing at a local beach, fishing in a creek or stream, or just taking a pleasurable walk along a scenic waterfront. Municipal storm water NPDES permits contain requirements to reduce the discharge of pollutants in urban runoff to the MEP in order to achieve water quality objectives to protect beneficial uses. Water quality objectives are defined as pollutant concentrations, levels, or narrative statements, representing a quality of water that supports the most sensitive beneficial uses that have been designated for a water body.

Each Copermittee is required to implement the requirements of the Municipal Permit across two broad levels of responsibility: (1) their jurisdiction and (2) their watershed(s). The Municipal Permit reflects these two broad levels of responsibility, in that it requires implementation of comprehensive urban runoff management programs, memorialized though Urban Runoff Management Programs, at both jurisdictional and watershed levels.

All Carlsbad WMA Copermittees are implementing their Jurisdictional Urban Runoff Management Programs. In general, these programs outline broad implementation actions that each of these agencies will undertake in order to protect and improve the water quality of the Pacific Ocean, as well as rivers, creeks and bays in the region while achieving compliance with the Municipal Permit.

Watershed Urban Runoff Management Programs

The Municipal Permit requires the development and implementation of Watershed Urban Runoff Management Programs (WURMPs) for each of nine watershed management areas within San Diego County.

The City of Carlsbad is the lead Copermittee for the Carlsbad Watershed Urban Runoff Management Program. As such, Carlsbad is responsible for developing the Carlsbad Watershed Urban Runoff Management Program, producing associated documents, and coordinating overall implementation of the program. All Carlsbad Watershed Copermittees are required to collaborate with one another within the watershed to develop and implement a program that "…reduces the discharge of pollutants from the MS4 to the MEP, and prevent urban runoff discharges from the MS4 from causing or contributing to a violation of water quality standards." (Permit Section E.2).

The Carlsbad Watershed Urban Runoff Management Program will be submitted to the Regional Board no later than March 24, 2008. Additionally, annual program reports will also be submitted to the Regional Board. Annual reports will include the following:

1. A comprehensive description of all activities conducted by the watershed Copermittees;
2. Updates to any watershed maps;

3. Updates to assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period;
4. Identification of the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed;
5. Updates to list of potential Watershed Water Quality Activities;
6. Identification and description of the Watershed Water Quality Activities implemented by each Copermittee during the reporting period;
7. Updates to list of potential Watershed Education Activities;
8. Identification and description of the Watershed Education Activities implemented by each Copermittee during the reporting period;
9. Description of the public participation mechanisms used during the reporting period and the parties that were involved;
10. A description of Copermittee collaboration efforts including meeting as the Carlsbad WMA WURMP Workgroup;
11. Description of the efforts implemented to encourage collaborative, watershed-based, land-use planning;
12. When applicable, description of all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. The description shall include:
    a. Any additional source identification information;
    b. The number, type, location, and other relevant information about BMP implementation, including any expanded or better tailored BMPs necessary to meet the Waste Load Allocations (WLAs);
    c. Updates in the best management practices (BMP) implementation prioritization and schedule;
    d. An assessment of the effectiveness of the BMP Implementation Plan, and;
    e. A discussion of the progress to date in meeting the TMDL Numeric Targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.
13. Assessment of the effectiveness of the WURMP.

The first annual report will be submitted to the Regional Board by January 31, 2009. Subsequent annual reports are due every January 31st during the life of the current Municipal Permit.

Water Quality Control Plan for the San Diego Basin

The Water Quality Control Plan for the San Diego Region (more commonly referred to as the Basin Plan) was adopted by the Regional Board in 1994. This document serves to guide and coordinate the management of water quality within the region. According to the Basin Plan, "the most basic goal of the Regional Board is to preserve and enhance the quality of water resources in the San Diego Region for the benefit of present and future generations[3]." Specifically, the Basin Plan: (1) designates beneficial uses for inland surface waters, coastal waters, reservoirs and lakes, and ground water; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses; (3) describes implementation programs to protect the beneficial uses of all waters in the Region; and, (4) describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan.

[3] San Diego Regional Water Quality Control Board (SDRWQCB), 1994.

The Basin Plan incorporates by reference all applicable State and Regional Board plans and policies.

Beneficial uses applicable to the waters of the state of California include contact water recreation (such as swimming and surfing), provision of habitat for freshwater, marine and wildlife species, and water supply.

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) and the Federal Clean Water Act both mandate periodic review of water quality control plans. Section 303 (c)(1) of the Federal Clean Water Act requires, "… the water pollution control agency of such State shall from time to time (but at least once each three year period...) hold public hearings for the purpose of reviewing applicable water quality standards[4] and, as appropriate, modifying and adopting standards." Because the review mandated by the Clean Water Act takes place every three years, it is termed a "Triennial Review".

Clean Water Act Section 303(d) Listed Water Bodies

Section 303(d) of the federal Clean Water Act requires states to periodically identify all surface waters in the state that do not meet *water quality objectives* as described in the Basin Plan. In California, the State Water Resources Control Board works with its Regional Boards to compile a draft list that is submitted to the U.S. Environmental Protection Agency for their review and approval. The list must include a description of the pollutants causing the violation of water quality objectives and a priority ranking of the water quality limited segments for the purpose of development of action plans aimed to improve their water quality. These action plans are referred to as *Total Maximum Daily Loads* (TMDLs).

The most recent 303(d) list for the Carlsbad Watershed is shown in Table 1-1.

[4] *Water Quality Standards* refer to both numeric and narrative water quality objectives and beneficial uses.

Table1-1. 2006 303(d) listings for Carlsbad Watershed

Water Body Name	Hydrologic Area (HSA)	HSA No.	Pollutant/Stressor
Loma Alta Slough	Loma Alta	904.10	Bacterial Indicators, Eutrophic
Pacific Ocean Shoreline	Loma Alta	904.10	Bacterial Indicators
Buena Vista Creek	El Salto	904.21	Sediment toxicity
Buena Vista Lagoon (202 acres)	El Salto	904.21	Bacterial Indicators, Nutrients, Sedimentation/ Siltation
Pacific Ocean Shoreline	El Salto	904.21	Bacterial Indicators
Agua Hedionda Lagoon (7 acres)	Los Monos	904.31	Bacterial Indicators, Sedimentation/Siltation
Agua Hedionda Creek	Los Monos	904.31	TDS, Manganese, Selenium, Sulfates
Buena Creek	Buena	904.32	DDT, Nitrate, Nitrite, Phosphate
Pacific Ocean Shoreline	Batiquitos	904.51	Bacterial Indicators
San Marcos Creek	Batiquitos	904.51	DDE, Phosphorus, Sediment toxicity
San Marcos Lake	Richland	904.52	Ammonia as Nitrogen
San Marcos Lake	Richland	904.52	Nutrients
San Marcos Lake	Richland	904.52	Phosphorous
San Elijo Lagoon	San Elijo	904.61	Bacterial Indicators, Eutrophic, Sedimentation/Siltation
Pacific Ocean Shoreline	San Elijo	904.61	Bacteria Indicators
Escondido Creek	Escondido	904.62	DDT, Manganese, Phosphate, Selenium, Sulfates, TDS

Source: SWRCB, 2006

1.2. Watershed Description & Map

General Description

The Carlsbad Watershed Management Area (WMA) is approximately 211 square miles and is formed by a group of six individual watersheds in northern San Diego County. The WMA is bordered by the San Luis Rey River Watershed to the north and by the San Dieguito River Watershed to the south. It reaches inland nearly 24 miles to just northeast of Lake Wohlford. The maximum elevation of the WMA is approximately 2,400 feet and it extends to sea level at the Pacific Ocean.

The WMA is comprised of six Hydrologic Areas (watersheds): Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos Creek, and Escondido Creek. Cottonwood Creek is another important sub-basin located in the WMA, however, it is not recognized by the Municipal Permit and is not called out separately in the program. The WMA contains four major coastal lagoons: Buena Vista, Agua Hedionda, Batiquitos, and San Elijo as shown on Figure 1-5. The WMA includes the entire Cities of Carlsbad, San Marcos and Encinitas and portions of the cities of Oceanside, Vista, Escondido, Solana Beach, and San Diego County unincorporated areas. The jurisdictional breakdown (by land area) for each of the six Hydrologic Areas (watersheds) is indicated in Table 1-2 and shown in Figure 1-6.

Table 1-2 Jurisdictional Breakdown of Carlsbad Watershed (by area)

WATERSHED	RECEIVING WATERBODY	SIZE (sq.mi.)	PERCENT (%)	Jurisdictional Breakdown (%)							
				CARLSBAD	ENCINITAS	ESCONDIDO	OCEANSIDE	SAN DIEGO CO.	SAN MARCOS	SOLANA BEACH	VISTA
Carlsbad WMA (904)		211.5	100	18	9	13	8	32	11	1	8
Loma Alta (904.10)	Loma Alta Slough	9.8	5				97				3
Buena Vista Creek (904.20)	Buena Vista Lagoon	22.6	11	19			26	11			45
Aqua Hedionda (904.30)	Aqua Hedionda Lagoon	29.4	14	41			6	24	5		24
Encinas (904.40)	Pacific Ocean	5.4	3	100							
San Marcos (904.50)	Batiquitos Lagoon	59.7	28	29	15	5		19	33		
Escondido Creek (904.60)	San Elijo Lagoon	84.6	40		11	29		55	4	1	

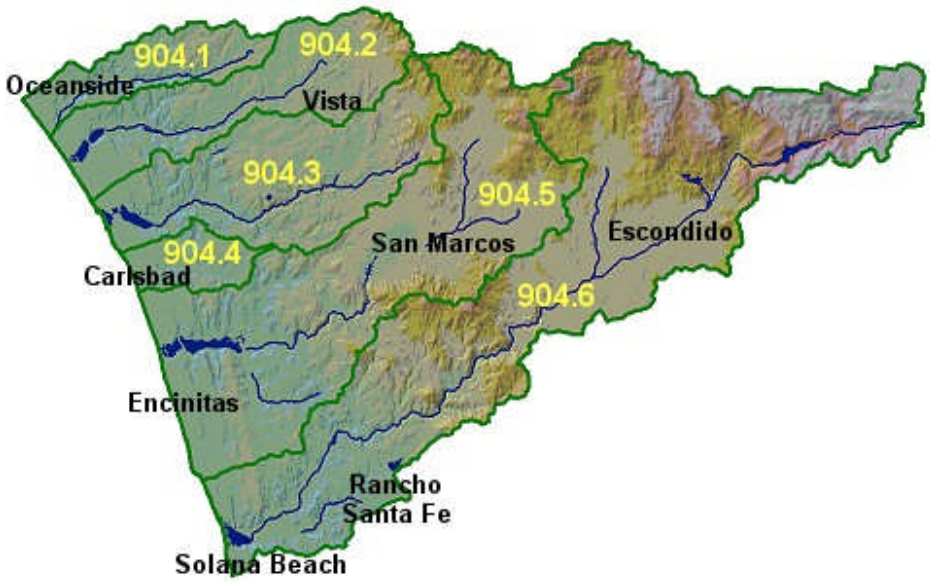

Figure 1-5 Watersheds within the Carlsbad Hydrologic Unit

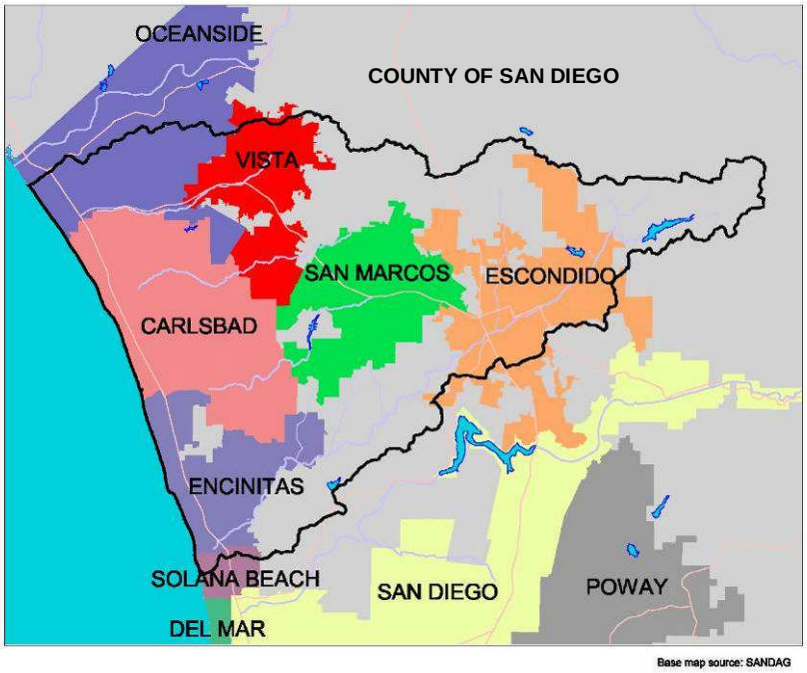

Figure 1-6 Jurisdictions within the Carlsbad Watershed

Land Use

As demonstrated in Table 1-3 below, land uses within the watersheds are diverse, including urban and suburban development, industrial, commercial, intense agriculture, floriculture, confined animal operations, open space, and recreational. Approximately 69% of the Carlsbad WMA is urbanized. The dominant land uses are residential (32%), freeways and roads (10%), agricultural (6%), commercial/industrial (13%), open space (11%), and vacant/underdeveloped (18%). The area is also responsible for the agricultural production of various agricultural crops including avocados, citrus and dairy, but horticultural production is the primary agricultural use.

Table 1-3. Land Use Types in Acres for the Carlsbad WMA

LAND USE DESCRIPTION	ACRES	ACREAGE As Percentage of Watershed
Agriculture	8,984.353	6.08%
Airports	228.982	0.16%
Commercial	15,479.856	10.48%
Golf	2,153.97	1.46%
Industrial	3,994.71	2.71%
Junkyard/Dumps/Landfills	241.391	0.16%
Landscape Open Space	1,935.537	1.31%
Municipal	309.232	0.21%
Office	1,150.91	0.78%
Open Space	16,399.44	11.11%
Parking Lots	46.650	0.03%
Parks	796.358	0.54%
Religious Facility	598.366	0.41%
Rail Transit	593.201	0.40%%
Recreation	450.754	0.31%
Transportation	14,201.23	9.62%
Schools	1,943.589	1.32%
Residential	47,437.43	32.12%
Tourist Attraction	128.324	0.09%
Undeveloped	27,975.6	18.94%
Utilities	670.600	0.45%
Water	1,951.836	1.32%
TOTALS	147,672.32	100%

The principal land uses within the WMA (based on year 2006 data) are illustrated in Figure 1-7 below.

Figure 1-7. Carlsbad Watershed – 2006 Land Uses.

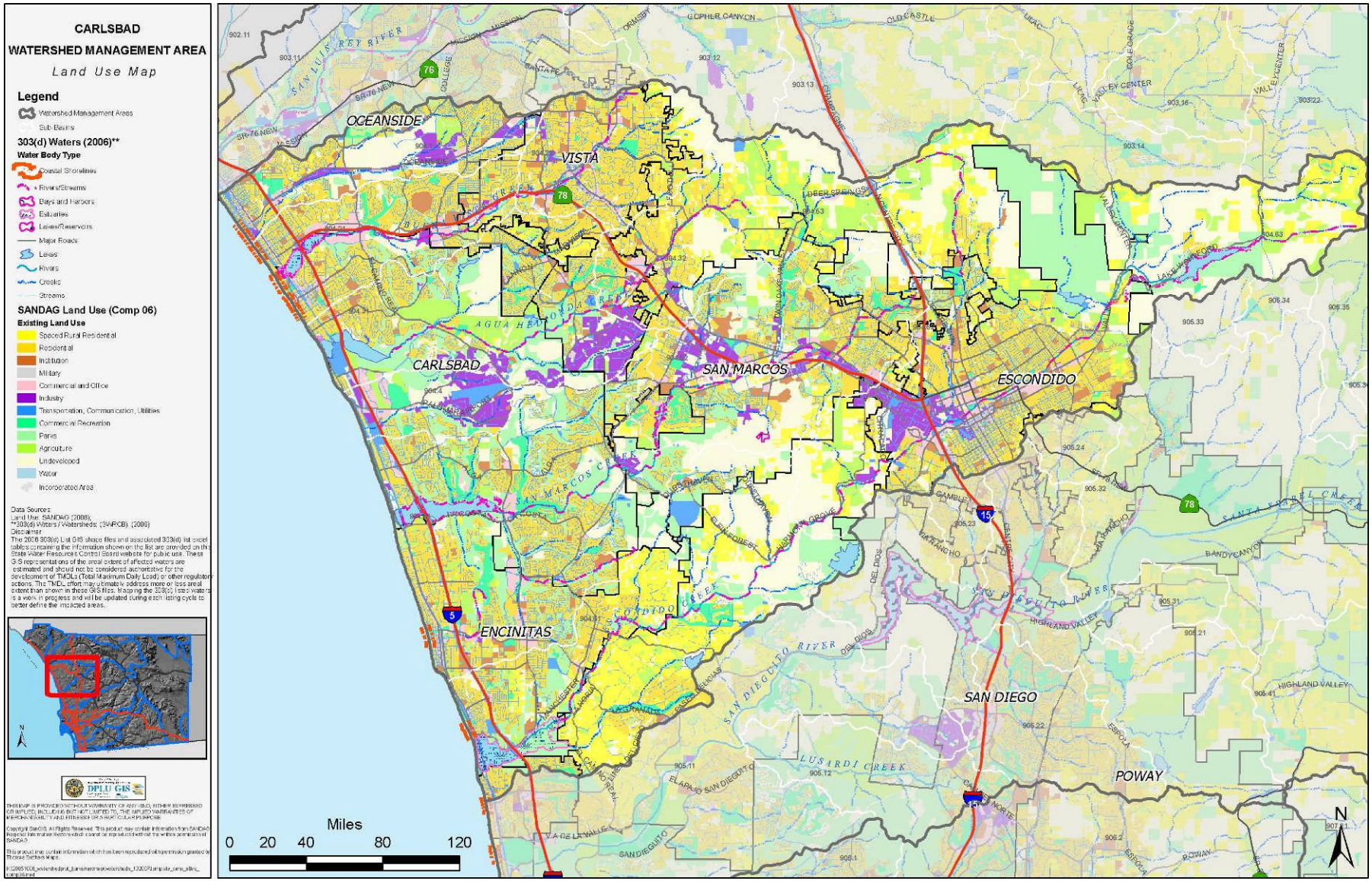

WMA Characteristics

The Carlsbad WMA is comprised of six Hydrologic Areas (HAs): Loma Alta Creek; Buena Vista Creek; Agua Hedionda Creek; Encinas Creek; San Marcos Creek, and; Escondido Creek. Below is a brief description of each of these HAs from north to south.

Loma Alta Creek

The Loma Alta Creek HA is the northernmost of the WMA. It is approximately 6,300 acres in area, comprising 5% of the WMA. The HA extends inland about 7.3 miles and the highest elevation within the drainage area is 460 feet above mean sea level. The primary receiving waters in the HA are Loma Alta Creek which drains into the Loma Alta Slough and the Pacific Ocean. The HA is located almost entirely inside the City of Oceanside with less than 5% in the City of Vista. Within the WMA, only the Encinas watersheds are smaller in area than the Loma Alta Creek HA.

Buena Vista Creek

The Buena Vista Creek HA is the fourth largest system within the WMA. The HA extends approximately 10.6 miles inland from the coast and totals approximately 14,400 acres in area, comprising 11% of the HA. Buena Vista Creek originates on the western slopes of the San Marcos Mountains and discharges into the Pacific Ocean via Buena Vista Lagoon. The primary receiving waters in the HA are Buena Vista Creek, the Buena Vista Lagoon, and the Pacific Ocean. The largest portion of the HA is in the City of Vista (45%), with the remaining in Oceanside, Carlsbad, and San Diego County.

Agua Hedionda Creek

Agua Hedionda Creek HA is the third largest within the WMA. The HA, dominated by Agua Hedionda Creek, extends approximately 10.6 miles inland from the coast and is about 18,800 acres in area, comprising 14% of the WMA. Agua Hedionda Creek originates on the southwestern slopes of the San Marcos Mountains in west central San Diego County and discharges into the Pacific Ocean via Agua Hedionda Lagoon. The primary water bodies in the HA include Aqua Hedionda Creek, Buena Creek, Letterbox Canyon, Agua Hedionda Lagoon and the Pacific Ocean. Most of the HA is in the City of Carlsbad (41%); the remainder is in Vista (24%) and San Diego County (24%) and small amounts in Oceanside and San Marcos.

Encinas Creek

The Encinas Creek HA is 3,400 acres in size, making it the second smallest within the WMA. The HA extends inland from the coast 2.4 miles and the highest elevation within the drainage is approximately 430 feet above mean sea level. The HA begins as a small drainage behind an industrial area where it is immediately channelized. The Encinas Creek continues down through industrial and office parks associated with Palomar Airport until it reaches the lower valley area. It then makes its way to the Pacific Ocean after crossing Interstate 5 and Pacific Coast Highway. The Encinas HA is entirely within the City of Carlsbad and the only significant receiving water body is the Pacific Ocean.

San Marcos Creek

The San Marcos Creek HA is the second largest within the WMA. The HA, dominated by San Marcos Creek, extends approximately 14.1 miles inland from the coast and is about 36,000 acres in area, comprising 28% of the WMA. San Marcos Creek originates on the western slopes of the Merriam Mountains in west central San Diego County and discharges in to the Pacific Ocean via Batiquitos Lagoon. Encinitas Creek is one of the major tributaries in the HA. It originates in the hills southwest of Questhaven Road and parallels El Camino Real before it confluence with San Marcos Creek at the southeastern corner of Batiquitos Lagoon. The

highest elevation within the HA is approximately 1,540 feet above mean sea level. Lake San Marcos is the largest impoundment within the HA. There are also a number of small farm ponds on various tributaries in the lower basin. The major receiving water-bodies within the HA are San Marcos Creek, Encinitas Creek, Batiquitos Lagoon, and the Pacific Ocean. The Cottonwood Creek sub-basin is also located in this HA which drains a portion of Encinitas directly into the Pacific Ocean. The San Marcos Creek HA is primarily located in San Marcos, Carlsbad, Encinitas, and the County of San Diego, with a small portion in Escondido.

Escondido Creek

The Escondido Creek HA is the largest and most complex system within the WMA. The HA extends approximately 24.6 miles inland from the coast and totals 54,100 acres in the area, comprising 40% of the WMA. Escondido Creek watershed originates in Bear Valley in north central San Diego County and discharges into the Pacific Ocean via San Elijo Lagoon. Elevations within the HA range from sea level to 2,420 feet on the ridges above Bear Valley. There are two reservoirs within the watershed: Lake Wohlford and Dixon Lake. Most of the HA is in unincorporated areas of the County (55%). The remaining is in the cities of Escondido and Encinitas, with a small portion in San Marcos and Solana Beach. The primary receiving waters are Escondido Creek, Lake Wohlford, Lake Dixon, Reidy Canyon, San Elijo Lagoon, and the Pacific Ocean.

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2. COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA Copermittees are responsible for developing and implementing a collective watershed strategy to abate the sources and reduce the discharge of pollutants causing the high priority water quality problems of the WMA. The strategy guides WMA Copermittee selection of Watershed Activities so that the Watershed Activities selected and implemented are appropriate for each WMA Copermittee's contribution to the WMA's high priority water quality problems.

In order to meet this responsibility, the WMA Copermittees have developed a collective watershed strategy that includes elements developed by the Regional Copermittees as a part of the Model Watershed Urban Runoff Management Strategy found in the Regional URMP. The model strategy's primary function is to facilitate identification and selection of the most appropriate watershed water quality and education activities for implementation through the Five-Year Strategic Plan described in Section 4.

In the simplest form, the collective watershed strategy uses the existing data and information that is available to the Copermittees related to water quality and known sources of pollutants to identify the most important water quality problems and sources within the WMA. The water quality status is assessed annually as a part of the regional monitoring program. Some baseline source information is available through existing literature, including the Copermittees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA) where Source Loading Potential ratings were developed and used to assess sources' threat-to-water-quality (TTWQ). Additional information related to sources (Source Loading Potential or SLP, BLTEA 2005) is also needed and can be obtained through many of the activities that are proposed to be implemented at the watershed level. The source information is needed to better characterize what and where the high priority threat-to-water-quality (TTWQ) sites are within the watershed. Having a better understanding of the TTWQ of the known sources will help prioritize activities.

This process is consistent with the Copermittee standard process to implement other programs at the jurisdictional and regional levels. The process applied for the recommended watershed activity selection in the model watershed strategy is summarized below.

Part A: Baseline Watershed Evaluation

Step 1: Step 1 requires an evaluation of each Hydrologic Area to determine whether water quality monitoring data are sufficient and adequate to support management decisions. The water quality ratings presented in theCopermittees' Baseline Long-Term Effectiveness Assessment (BLTEA) should serve as the starting point for performing this step. In addition to the BLTEA, Copermittees may consider supplemental information as appropriate to determine the sufficiency of monitoring data.

Step 2: Based on the results of Step 1, the Watershed Copermittees should evaluate the Hydrologic Area with regard to the quantity, location, and potential threat of pollutant sources to determine if the sources have been adequately identified and characterized to support management decisions. The BLTEA's source loading potential (SLP) and threat-to-water quality (TTWQ) ratings should serve as the starting point for performing Step 2. In addition to the SLP and TTWQ ratings, Copermittees may consider supplemental information as appropriate to determine whether pollutant sources are adequately identified and characterized to support management decisions.

Step 3: The third step in the Model Strategy is to identify potential management actions based on the results of Steps 1 and 2.

Part B: Selection of Watershed Activities

Building upon the potential management actions identified in Step 3 of the baseline watershed evaluation, Copermittees must select specific activities for implementation.

Part C: Five-Year Strategic Plans

Watershed activities selected will be combined into a five-year strategic plan for the WMA. The five-year strategic plan identifies and describes in detail the watershed activities planned for implementation during the upcoming year of implementation and also includes plans for activity implementation beyond the upcoming year of implementation where appropriate.

3. WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

The Carlsbad WMA Copermittees will annually assess the water quality of receiving waters in the WMA. The assessment will use applicable water quality data, reports, and analysis generated in accordance with the requirements of the Receiving Waters Monitoring and Reporting Program, as well as applicable information available from other public and private organizations.

The assessment and analysis will annually identify the WMA's water quality problems that are partially or fully attributable to MS4 discharges. Identified water quality problems will include CWA section 303(d) listings, persistent violations of water quality standards, toxicity, impacts to beneficial uses, and other pertinent conditions. From the list of water quality problems, the high priority water quality problems of the WMA will be identified, which shall include those water quality problems which most exceed or impact water quality standards (water quality objectives and beneficial uses).

The assessment will include annual identification of the likely sources of the WMA's high priority water quality problems.

The process for assessment of both water quality problems and potential pollutant sources is described below.

3.1. Water Quality Assessment Approach

3.1.1. Monitoring Program Background

The San Diego Regional Copermittees are covered under a municipal NPDES permit for discharge of urban runoff to waters of the United States. The participating Copermittees share the costs of monitoring required for compliance with this permit. In response to the permit requirements, the Copermittees developed a monitoring framework that includes the following three elements:

Regional Monitoring Programs that provide baseline datasets for comparing information from local monitoring programs. These programs encompass a large spatial area (e.g., the San Diego region, and the entire Southern California Bight), and look at many elements potentially impacted by storm water runoff. This type of monitoring takes a long-term view of the ultimate receiving waters, the coastal bays, lagoons, and the ocean. Regional monitoring is designed to answer questions concerning the ecological health of a large geographic region and encompass numerous components, including water and sediment quality, fish, benthos, etc. An example of regional monitoring is the Southern California Coastal Waters Research Project (SCCWRP) Bight Monitoring Program that is conducted every five years.

Core Monitoring is long-term monitoring with the objective of tracking compliance with regulatory requirements or limits, or to track trends over time. Core monitoring programs typically involve routine sampling at fixed stations through time. Individual monitoring components are designed to evaluate long-term changes in water quality and mass loading from the MS4 to receiving waters. Assessing concentrations of chemical pollutants, toxicity to test organisms, and benthic assemblages provides indications of long-term trends and effects between and within watersheds.

The primary short-term objectives of the Core Receiving Waters Monitoring Program activities are to:

1. Determine the ecological health of receiving waters in the county based on chemical, physical, and biological evidence.
2. Assess compliance with RWQCB order No. R9-2007-0001.

The long-term objectives include:

1. Predict short- and long-term impacts to receiving waters that result from changes in land-use within each watershed, and provide data that can be analyzed to develop pollutant reduction strategies for those impacts.
2. Measure the effectiveness of Urban Runoff Management Programs (URMPs) and other potential pollutant reduction strategies.
3. Develop and implement a program that integrates with other regional programs involved in assessing the overall health of receiving waters in San Diego County and Southern California.

Special Studies supplement both the Core Monitoring and the Regional Monitoring. Special Studies are focused evaluations designed to answer specific questions. These are typically short-term efforts intended to answer specific questions that may be raised during assessment of core monitoring results. Some examples of Special Studies include evaluation of the link between storm water discharges and Toxic Hot Spots, conducting molecular/genetic host tracking for bacterial source identification in a watershed, and source identification studies used for the development of Total Maximum Daily Loads (TMDLs) for 303(d) listed impaired water bodies.

For additional information on the monitoring program, please refer to the San Diego County Municipal Copermittees Urban Runoff Monitoring Program Reports (2001, 2002, 2003, 2004, 2005, 2006, and 2007).

3.1.2. Water Quality Assessment Strategy

As part of the watershed-based water quality assessment information from the Receiving Water Monitoring and Reporting Program is utilized. The following steps are generally taken in the data evaluation and analysis:

1. Identify pollutants of concern which have been found to exceed administrative water quality standards/objectives as well as the frequency, magnitude and duration of such exceedances;
2. Isolate pollutants of concern shown to exceed applicable water quality standards and/or objectives in a persistent and/or recurrent manner;
3. As data permits, evaluate whether there are any potential effects which could be a result of co-mingling and/or bioaccumulation effects of recorded pollutants and pertinent data/analysis related to source identification investigations or related efforts;
4. Examine how any of the pollutants of concern identified in step (2) above, may contribute to water quality degradation which would negatively impact designated beneficial uses; and,
5. The development of a longer historical record over multiple years of monitoring, allows Copermittees to assess pollutant of concern data to see if there are any increasing or decreasing trends through time applying statistical analysis.

The three data sets (storm water chemistry, storm water toxicity and rapid stream bioassessment data) collected under the Core Monitoring program are evaluated using the triad decision matrix. This triad of monitoring data is utilized in a 'weight of evidence' approach. Storm water chemistry and storm water toxicity data provide an indication of the pollutant loads during a storm event and potential aquatic impacts during storm events to organisms, respectively. The stream bioassessment provides information related to the ecological health of the watershed and an indication of stream health effects from urban runoff. Stream bioassessment data not only provide information about the benthic invertebrate community

present in the watershed, but also information about the quality and condition of the physical habitat.

The intention of the triad decision matrix is to direct changes in the monitoring program using a consistent and scientific approach. Copermittees use the triad decision matrix as one step in the process of identifying additional monitoring needs, such as performing a Toxicity Identification and Elimination (TIE) study to identify the pollutants causing toxicity.

Two pollutants of concern not considered in the triad approach are bacteria and total dissolved solids (TDS). The bacteria parameters are not considered in the triad because they are not believed to influence toxicity responses in bioassay test organisms. Human health objectives for water contact recreation or non-water contact recreation are the water quality objectives for bacterial indicators. Total dissolved solids are not considered because, while this parameter may exceed water quality objectives in the Basin Plan, the objectives were set for municipal drinking water supply and not ecological impacts.

The Regional Board considers bacterial indicators and TDS pollutants of concern and assesses these parameters by looking at all applicable factors (303(d) listings, beneficial uses, public health considerations, jurisdictional goals, economic impact, etc.). Bacterial indicators and TDS are then included as appropriate in the prioritized strategy. Bacterial indicators and TDS may not have the benefit of the added evidence of benthic community and toxicity, yet they may lead to watershed activities when considered with all other stressors and pollutants of concern in the watershed and their potential impact on beneficial uses.

Historical Data Trend Assessment

Where longer-term data are obtained from the monitoring program, data can be evaluated for trends over time. The assessment of a long-term data set can be accomplished through two statistical tools, regression and power analyses. Because analytical data sets are inherently variable, determining if concentrations of a potential pollutant of concern are significantly decreasing or increasing in a watershed requires statistical analysis of the data.

Linear regression analysis can be performed after applying appropriate data transformations to the data. This regression analysis determines the slope of the trend line to assess either a decreasing or an increasing trend. Care must be taken to examine each data set for outliers or influential data points that unduly influence the results of the analysis.

In addition to determining whether there are significant trends for each of the potential pollutants of concern, it is also important to know the power of the regression line, or in other words, the confidence one has in the regression results based on the slope of the regression and the number of data points (times) in the analysis. Typically, power estimates of 80% or greater (at an alpha level [error] of 0.05) are desired to be able to make strong statements about statistical results.

The historical data will be used in an overall integrated assessment to determine the overall effectiveness of the WURMP program. This is described in more detail in Section 5.

Data Sources

The following comprehensive reports provided most of the water quality data and related information that was evaluated as part of this watershed assessment:

San Diego Regional Previous Storm Water Monitoring Review and Future Recommendations Report (MEC Draft August 20, 2001): This report contains a summary of significant findings from Copermittee monitoring programs implemented from 1993 to 2000. However, this report contains data and analysis pertinent to the historic monitoring sites (Chollas Creek, Tecolote Creek and Agua Hedionda Creek) and therefore only applies to the San Diego Bay Watershed, Mission Bay Watershed, and Carlsbad Watershed.

Urban Runoff Monitoring Report (MEC, 2002): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2001-2002 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (MEC, 2003): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2002-2003 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (MEC, 2004): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2003-2004 season. (This report applies to all watersheds.)

Baseline Long-Term Effectiveness Assessment (Weston, MOE & LWA, 2005): This document establishes a watershed based priority rating system based on the available monitoring data for each individual hydrologic area within the Watersheds. (This report applied to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2005): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2004-2005 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2006): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2005-2006 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2007): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2006-2007 season. (This report applies to all watersheds.)

Additionally, the October 2006 Clean Water Act Section 303(d) Lists of Water Quality Limited Segments and associated list of pollutants of concern in the watershed were considered as data sources[5].

Over the course of the permit life, new monitoring data will be available for evaluation, including the Temporary Watershed Assessment Station Monitoring, MS4 Outfall Monitoring and Source Identification Monitoring programs. As these programs are developed, the WURMP Annual Reports will include discussions on how the information and data collected from these programs will affect the collective WURMP strategy as well as effectiveness assessment evaluations.

Strategy for Prioritizing Water Quality Issues

Once the Copermittees identify pollutants of concern, the watershed water quality problems are identified using a qualitative process that considers watershed-specific conditions using the weight of the evidence approach as well as best professional judgment to interpret the

[5] SWRCB, 2006.

relationships between exceedances, regulatory mechanisms, and beneficial uses. Factors considered include:

1. Availability of sufficient qualified data (may include detection levels, number of sample(s), spatial and temporal characteristics);
2. Opportunity to protect and preserve healthy water bodies;
3. Need to integrate additional data;
4. Ability to determine conditions at the sub-watershed level;
5. Current related concerns and/or priorities expressed by local jurisdictions;
6. Stakeholder input;
7. Grant funding opportunities; and,
8. Human and ecological health considerations.

3.2. Receiving Waters Condition

The following receiving waters condition information is take from the Urban Runoff Monitoring Report, Weston 2007. The Carlsbad WMA has two Mass Loading Stations (MLS) for the entire WMA. The MLSs are located on Agua Hedionda Creek (AHC) and Escondido Creek (EC). Therefore the discussion of receiving waters condition is limited to these two of the six HAs within the WMA. Figure 3-1 shows the limited tributary areas that are monitored as a part of the Core Monitoring Program within the WMA.

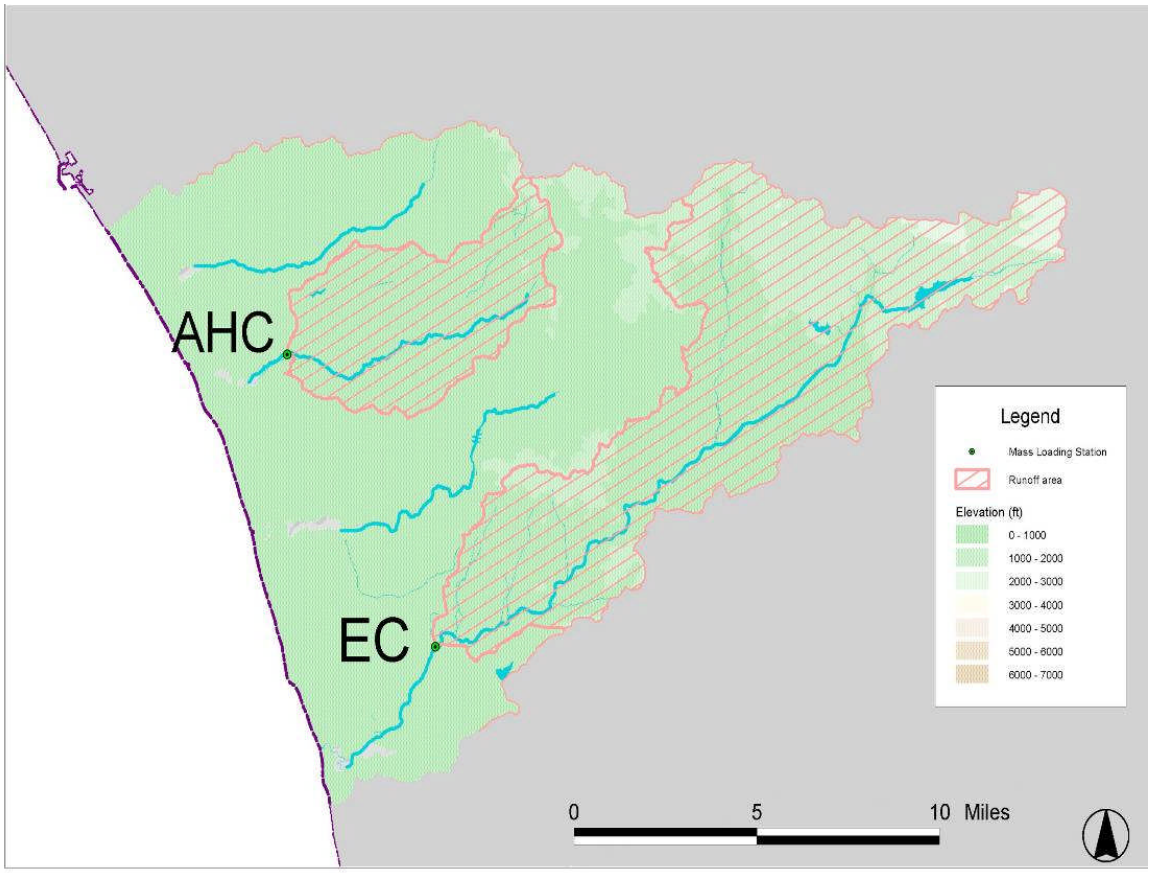

Land use data source: SANDAG

Figure 3-1 Tributary Areas to Agua Hedionda and Escondido Creek MLSs

Agua Hedionda Creek

The Agua Hedionda Creek sub-watershed was assessed utilizing chemistry and toxicity data collected during storm events from the MLS, chemistry data collected from 23 dry weather monitoring sites upstream of the MLS, and stream bioassessment Index of Biotic Integrity (IBI) ratings generated at two bioassessment sites. The WMA assessment methods presented in the Urban Runoff Monitoring Report (Weston, 2007) were applied to these data to determine which pollutants are of concern and to develop a high, medium, or low frequency of occurrence for these pollutants. The results of this assessment are presented in Table 3-1.

Table 3-1 Pollutant exceedances in the Agua Hedionda Creek MLS Area

Constituents With Any Wet Weather (MLS) WQO or Dry Weather Action Level Exceedance	MLS (Wet Weather) Results														Dry Weather Results *		Frequency of Occurrence	Criterion No.
	2001/2002		2002/2003		2003/2004		2004/2005		2005/2006		2006/2007		CUMULATIVE		2006			
	# /3	%	# /3	%	# /3	%	# /3	%	# /3	%	# /3	%	# /18	%	#	%		
Conventional Parameters																		
Conductivity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	-	-
pH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	-	-
Ammonia[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	17	♦	8
BOD	0	0	0	0	1	33	1	33	0	0	1	33	3	17	NA	NA	-	-
COD	0	0	0	0	2	67	1	33	1	33	1	33	5	28	NA	NA	♦	9
Total Dissolved Solids	2	67	2	67	2	67	2	67	3	100	3	100	14	78	NA	NA	♦♦♦	2
Total Suspended Solids	2	67	3	100	2	67	3	100	3	100	3	100	16	89	NA	NA	♦♦♦	1
Turbidity	1	33	3	100	3	100	3	100	3	100	3	100	16	89	12	52	♦♦♦	1
Nutrients																		
Nitrate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	25	♦	8
Ortho-phosphate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	-	-
Total Phosphorus	0	0	0	0	1	33	1	33	0	0	0	0	2	11	NA	NA	-	-
Bacteriological																		
Total Coliform	0	0	3	100	0	0	2	67	3	100	2	67	10	56	4	31	♦♦♦	3
Fecal Coliform	3	100	3	100	3	100	3	100	3	100	3	100	18	100	3	23	♦♦♦	1
Enterococcus	3	100	3	100	1	33	2	67	3	100	1	33	13	72	2	15	♦♦♦	3
Pesticides																		
Chlorpyrifos	0	0	1	33	1	33	0	0	0	0	0	0	2	11	0	0	-	-
Diazinon	3	100	3	100	1	33	1	33	0	0	1	33	9	50	0	0	♦♦	5
Malathion	NA	NA	0	0	0	0	0	0	1	33	1	33	2	11	NA	NA	-	-
Total Metals																		
Copper	0	0	1	33	2	67	1	33	0	0	2	67	6	33	NA	NA	♦	9
Lead	0	0	1	33	0	0	0	0	0	0	0	0	1	6	NA	NA	-	-
Dissolved Metals																		
Copper	0	0	1	33	0	0	0	0	0	0	0	0	1	6	0	0	-	-
Toxicity																	**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 96-hour	0	0	1	33	0	0	0	0	0	0	1	33	2	11	NA	NA	No	
Ceriodaphnia 7-day survival	0	0	3	100	0	0	0	0	0	0	1	33	4	22	NA	NA	No	
Ceriodaphnia 7-day reproduction	0	0	2	67	0	0	0	0	0	0	1	33	3	17	NA	NA	No	
Hyalella 96-hour	1	33	2	67	1	33	1	33	2	67	3	100	10	56	NA	NA	Yes	
Bioassessment	IBI Rating																**EVIDENCE OF BENTHIC ALTERATION?**	
Agua Hedionda Creek, at Melrose Rd.	Very Poor		Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		NA		Yes	
Agua Hedionda Creek, at El Camino Real	Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		NA			

* = Total number of observations varied among constituents.
NA = Not assessed.
[1] Wet weather data is compared to the Basin Plan WQO for un-ionized ammonia, dry weather data is compared to the dry weather action levels.
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.

It is important to note that the data used for the following assessment was collected from a representative portion of the Agua Hedionda Creek HA – not the entire HA. The mass loading station for the Agua Hedionda Creek HA is located in a natural channel adjacent to the El Camino Real Bridge crossing immediately downstream of the confluence of Agua Hedionda Creek and Calavera Creek. The contributing runoff area covers 14,000 acres, which is approximately 10% of the Carlsbad WMA. Land use within the contributing runoff area is primarily residential (38%), undeveloped (23%), and parks (13%). Runoff from the Agua Hedionda Creek Watershed, including Buena Creek, drains through one main artery to Agua Hedionda Lagoon.

Six pollutants were found to have high frequencies of occurrence in the Agua Hedionda Creek HA. Total suspended solids, total dissolved solids, turbidity, total coliform, fecal coliform, and enterococcus all received a three diamond rating. Total dissolved solids exceeded the WQO in 94% of the monitored wet weather MLS events since the 2001/2002 storm monitoring season. For fecal coliform, six of the last consecutive storm samples at the MLS were above the WQO.

Fecal coliform had MLS results above the WQO in 100% of the samples collected over the past six years and TSS and turbidity had results above the WQO in 89% of the samples collected. TDS was assigned three diamonds because six of the last consecutive storm samples at the MLS exceeded WQO. Total coliform and enterococci were assigned three diamonds because less than 80% and greater than or equal to 50% of the MLS samples exceeded WQO and there was at least one DWS exceedance in the past year.

One pollutant, Diazinon, was identified as having a medium frequency of occurrence and was assigned two diamonds because less than 80% and greater than or equal to 50% of the MLS samples exceeded WQO and there were no exceedances or data available for DWS in the past year. Diazinon results were detected above the WQO in 50% of the samples collected throughout the monitoring period.

Four pollutants had a low frequency of occurrence and were given one diamond. These pollutants include: Ammonia; Chemical Oxygen Demand; Nitrate, and Total Copper.

Ammonia and nitrate were each given one diamond because there were DWS exceedances in 10 to 50% of the samples in the past year. COD and total copper were each given one diamond because there were MLS exceedances found in 25% to less than or equal to 50% of the samples and at least one exceedance found in last 2 years at the MLS (with or without DWS exceedances in the past year).

Persistent toxicity is evident when more than 50% of the toxicity tests conducted on any species have a NOEC of less than 100%. There was evidence of persistent toxicity to *Hyalella azteca* in the Agua Hedionda Creek sub-watershed.

The cumulative IBI scores from bioassessment monitoring at both sites in Agua Hedionda Creek were Very Poor, indicating evidence of benthic alteration.

Triad Decision Matrix

The triad decision matrix incorporates the chemistry data from wet and dry weather events with the toxicity and bioassessment results to provide indications of pollutant loading, potential impacts to organisms and the ecological health of the watershed. The triad assessment presents possible conclusions about the watershed and provides possible actions or decisions

for future monitoring and assessment. Table 3-2 summarizes these results and lists possible conclusions and potential actions.

Table 3-2. Triad Decision Matrix Results for the Agua Hedionda Creek HA

Chemistry	Toxicity	Benthic Alteration	Possible Conclusions	Potential Actions or Decisions
Persistent exceedances of water quality objectives (high frequency COC identified)	Evidence of persistent toxicity	Indications of alteration	Evidence of pollution-induced degradation	1) Continue monitoring to gather long-term trend information. 2) Evaluate upstream source identification as a high priority. 3) Toxicity tests at higher dilutions to better quantify toxicity. 4) Consider potential role of physical habitat disturbance. 5) Use TIE to identify contaminants of concern.

*Weston 2007

Escondido Creek

The Escondido Creek Watershed was assessed utilizing chemistry and toxicity data collected during storm events from the MLS, chemistry data collected from 40 dry weather monitoring sites upstream of the MLS, and stream bioassessment IBI ratings generated at two bioassessment sites.. The WMA assessment methods presented in the Urban Runoff Monitoring Report (Weston, 2007) were applied to these data to determine which pollutants are of concern and to develop a high, medium, or low frequency of occurrence for these pollutants. The results of this assessment are presented in Table 3-3.

Table 3-3 Pollutant exceedances in the Escondido Creek MLS Area

Constituents With Any Wet Weather (MLS) WQO or Dry Weather Action Level Exceedance	MLS (Wet Weather) Results														Dry Weather Results *		Frequency of Occurrence	Criterion No.
	2001/2002		2002/2003		2003/2004		2004/2005		2005/2006		2006/2007		CUMULATIVE		2006			
	# /3	%	# /3	%	# /3	%	# /3	%	# /3	%	# /3	%	# /18	%	#	%		
Conventional Parameters																		
Ammonia[1]	0	0	0	0	0	0	1	33	0	0	1	33	2	11	0	0	-	-
BOD	0	0	0	0	1	33	0	0	0	0	1	33	2	11	NA	NA	-	-
COD	0	0	0	0	1	33	0	0	0	0	0	0	1	6	NA	NA	-	-
Total Dissolved Solids	3	100	3	100	3	100	3	100	3	100	3	100	18	100	NA	NA	♦♦♦	1
Total Suspended Solids	0	0	2	67	0	0	1	33	2	67	1	33	6	33	NA	NA	♦	9
Turbidity	2	67	3	100	3	100	1	33	3	100	3	100	15	83	7	18	♦♦♦	1
Nutrients																		
Nitrate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	10	♦	8
Bacteriological																		
Total Coliform	1	33	2	67	2	67	1	33	3	100	2	67	11	61	18	46	♦♦♦	3
Fecal Coliform	3	100	3	100	3	100	3	100	3	100	3	100	18	100	2	5	♦♦♦	1
Enterococcus	1	33	3	100	3	100	1	33	2	67	2	67	12	67	0	0	♦♦	5
Pesticides																		
Chlorpyrifos	0	0	1	33	0	0	0	0	0	0	0	0	1	6	0	0	-	-
Diazinon	3	100	2	67	0	0	0	0	0	0	0	0	5	28	0	0	-	-
Total Metals																		
Copper	0	0	0	0	0	0	0	0	0	0	1	33	1	6	NA	NA	-	-
Cadmium	0	0	0	0	0	0	0	0	1	33	0	0	1	6	NA	NA	-	-
Dissolved Metals																		
Copper	0	0	1	33	0	0	0	0	0	0	0	0	1	6	0	0	-	-
Toxicity																	**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 96-hour	1	33	0	0	0	0	0	0	0	0	0	0	1	6	NA	NA	No	
Ceriodaphnia 7-day survival	2	67	0	0	0	0	0	0	0	0	0	0	2	11	NA	NA	No	
Ceriodaphnia 7-day reproduction	1	33	0	0	0	0	0	0	0	0	0	0	1	6	NA	NA	No	
Bioassessment		IBI Rating															**EVIDENCE OF BENTHIC ALTERATION?**	
Escondido Creek, at Harmony Grove	Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		NA		Yes	
Escondido Creek, at Elfin Forest (DS)	Poor		Poor		Very Poor		Poor		Very Poor		Very Poor		Very Poor		NA			

* = Total number of observations varied among constituents.
NA = Not assessed.
[1] Wet weather data is compared to the Basin Plan WQO for un-ionized ammonia, dry weather data is compared to the dry weather action levels.
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.
DS = Downstream of MLS.

It is important to note that the data used for the following assessment was collected from a representative portion of the Escondido Creek HA – not the entire HA. The mass loading station for the Escondido Creek HA is located in a natural channel in Encinitas, east of Rancho Santa Fe Road, adjacent to the Camino Del Norte Bridge. The contributing runoff area covers nearly 44,000 acres which is approximately 33% of the Carlsbad Watershed. Land use within the contributing runoff area is predominantly undeveloped (32%), residential (29%), and parks (16%). Escondido Creek discharges into San Elijo Lagoon.

Four pollutants were found to have high frequencies of occurrence in the Escondido Creek HA. Total dissolved solids, turbidity, total coliform, and fecal coliform all received a three diamond rating. Total dissolved solids, turbidity and fecal coliform exceeded the WQO in at least 83% of the samples over the past six years. Over the past six years, total coliform had greater than or equal to 50% but less than 80% of the MLS samples exceeding the WQO and at least one DWS exceedance in the past year.

One pollutant, enterococci, was identified as having a medium frequency of occurrence. Enterococci was assigned two diamonds because less than 80% and greater than or equal to 50% of the MLS samples exceeded WQO and there were no exceedances or data available for DWS in the past year.

Two pollutants were identified as having a low frequency of occurrence and were assigned one diamond. These pollutants include total suspended solids and nitrate. Nitrate was given one diamond because there were DWS exceedances in 10-50% of the samples in the past year. TSS was given one diamond because there were MLS exceedances found in 25% to less than or equal to 50% of the samples and at least one exceedances found in last 2 years at the MLS (with or without DWS exceedances in the past year).

Persistent toxicity is evident when more than 50% of the toxicity tests conducted on any species have a NOEC of less than 100%. Toxicity testing in Escondido Creek only showed evidence of toxicity during the 2001-2002 storm season. Therefore, there is no evidence of persistent toxicity.

The IBI scores from bioassessment monitoring in the Escondido Creek Watershed were very poor for both sites, indicating evidence of benthic alteration.

Triad Decision Matrix

The triad decision matrix incorporates the chemistry data from wet and dry weather events with the toxicity and bioassessment results to provide indications of pollutant loading, potential impacts to organisms and the ecological health of the watershed. The triad assessment presents possible conclusions about the watershed and provides possible actions or decisions for future monitoring and assessment. Table 3-4 summarizes these results and lists possible conclusions and potential actions.

Table 3-4. Triad Decision Matrix Results for the Escondido Creek HA

Chemistry	Toxicity	Benthic Alteration	Possible Conclusions	Potential Actions or Decisions
Persistent exceedances of water quality objectives (high frequency COC identified)	No evidence of persistent toxicity	Indications of alteration	Benthic impact due to habitat disturbance, not toxicity. Test organisms not sensitive to problem pollutants.	1) Continue monitoring to gather long-term trend information. 2) Evaluate upstream source identification as a high priority. 3) Consider whether different test organisms should be evaluated. 4) Consider potential role of physical habitat disturbance. 5) TIE would not provide useful information with no evidence of toxicity.

*Weston 2007

3.3. Water Quality Problem(s)

The WMA Copermittees used the process developed in the regional watershed strategy to identify the water quality problems in the Carlsbad WMA at the Hydrologic Area (HA) level.

303(d) Impaired Water Bodies Listings

The following table includes the impaired water bodies within the WMA. There are new listings added as a part of the 2006 listings. These new listings were not considered in the Baseline Water Quality Priority Ratings discussed above and summarized in Table 3-5.

Table3-5. 2006 303(d) listings for Carlsbad Watershed

Water Body Name	Hydrologic Area (HSA)	HSA No.	Pollutant/Stressor
Loma Alta Slough	Loma Alta	904.10	Bacterial Indicators, Eutrophic
Pacific Ocean Shoreline	Loma Alta	904.10	Bacterial Indicators
Buena Vista Creek	El Salto	904.21	Sediment toxicity
Buena Vista Lagoon (202 acres)	El Salto	904.21	Bacterial Indicators, Nutrients, Sedimentation/ Siltation
Pacific Ocean Shoreline	El Salto	904.21	Bacterial Indicators
Agua Hedionda Lagoon (7 acres)	Los Monos	904.31	Bacterial Indicators, Sedimentation/Siltation
Agua Hedionda Creek	Los Monos	904.31	TDS, Manganese, Selenium, Sulfates
Buena Creek	Buena	904.32	DDT, Nitrate, Nitrite, Phosphate
Pacific Ocean Shoreline	Batiquitos	904.51	Bacterial Indicators
San Marcos Creek	Batiquitos	904.51	DDE, Phosphorus, Sediment toxicity
San Marcos Lake	Richland	904.52	Ammonia as Nitrogen
San Marcos Lake	Richland	904.52	Nutrients
San Marcos Lake	Richland	904.52	Phosphorous
San Elijo Lagoon	San Elijo	904.61	Bacterial Indicators, Eutrophic, Sedimentation/Siltation
Pacific Ocean Shoreline	San Elijo	904.61	Bacteria Indicators
Escondido Creek	Escondido	904.62	DDT, Manganese, Phosphate, Selenium, Sulfates, TDS

Source: SWRCB, 2006

2001-2006 Baseline Water Quality Priority Ratings for the Carlsbad WMA

The baseline water quality priority ratings are presented in Table 3-6. These tables are tools that assist managers in prioritizing watershed activities or are used for identifying data gaps. The priority ratings are based on the methodology presented in the Baseline Long Term Effectiveness Assessment (WESTON, MOE, & LWA, 2005).

Table 3-6. 2001-2006 Water Quality Priority Ratings for the Carlsbad WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Pollutant Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacterial/ Pathogens	Benthic Alterations	Toxicity
Carlsbad WMA	**100%**	***D***	***A***	***D***	***D***	***A***	***C***	***A***	***D***	***A***	***B***	***B***
Loma Alta HA (904.10)	5%	*D*	*A*	*D*	*D*	*C*	*B*	*A*	*B*	*A*	*D*	*A*
Buena Vista HA (904.20)	11%	*C*	*A*	*D*	*D*	*A*	*D*	*A*	*C*	*A*	*B*	*B*
Agua Hedionda HA (904.30)	14%	*C*	*A*	*D*	*D*	*A*	*B*	*D*	*C*	*A*	*A*	*A*
Encinas HA (904.40)	3%	*D*	*D*	*D*	*D*	*C*	*D*	*D*	*D*	*B*	*D*	*D*
San Marcos HA (904.50)	28%	*C*	*A*	*D*	*C*	*C*	*C*	*B*	*D*	*A*	*B*	*A*
Escondido Creek HA (904.60)	40%	*D*	*A*	*D*	*D*	*A*	*B*	*A*	*D*	*A*	*C*	*B*
2006-2007 High[1] Frequency of Occurrence Ratings			♦♦♦			♦♦♦				♦♦♦		
Pollutants of Concern			TDS			TSS Turbidity				Total Coliform Fecal Coliform Entero-coccus		

1. High frequency of occurrence ratings are derived from the pollutant exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

303d listing

Pollutant groups and stressor groups are given a ranking from A to D with A being the highest priority rating and D the lowest priority rating. Items ranked with a D indicate that the pollutant group or stressor is a low priority or does not have sufficient data to support a higher ranking. The priority ratings were based on the data record from 2001-2006 from the following programs and will be updated on a 5-year cycle:

1. Storm water Mass Loading Monitoring (MLS) – Wet Weather Data (2000-2006)
2. Copermittee Dry Weather Data Monitoring (2003-2005)
3. Available Third Party Data (SWAMP, 2003)
4. Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring (2003-2005)
5. Urban Stream Bioassessment Monitoring (2000-2006)
6. Triad Assessment – Toxicity Testing of Storm water (2000-2006)
7. 303(d) Listing (2003)

Dissolved minerals, sediments, nutrients, and bacteria were identified as high priority (A) rated pollutants for the overall Carlsbad WMA. Benthic alteration and toxicity were assigned B ratings. All other pollutants were given either a C or D rating.

High frequency of occurrence ratings from the WMA criterion assessments (Tables 3-1 and 3-3) were compared to the water quality priority ratings summary table (Table 3-6). High frequencies of occurrence ratings were determined for TSS, turbidity, TDS, and all three bacterial indicators for the Carlsbad WMA. Similarly, the water quality priority ratings identified high priority (A) ratings for these pollutants.

Several high priority (A) ratings were identified in the Loma Alta, Buena Vista, Agua Hedionda, San Marcos, and Escondido Creek sub-watersheds. These include dissolved minerals, sediments, nutrients, and bacteria, all of which had 303(d) listings or data to support to the

rating. Benthic alteration and toxicity were also high priority (A) rated pollutants in sub-watersheds which was based primarily on the stream bioassessment findings and toxicity testing.

Baseline Watershed Evaluation

Using the Baseline Watershed Evaluation process described in the regional watershed strategy, the WMA Copermittees developed a list of the water quality problems in the Carlsbad WMA. Table 3-7 shows the water quality problems and the corresponding recommended actions.

Table 3-7 Water Quality Problems and Recommended Actions Identified by the BWE Process

HA	Pollutant Category	Water Quality Priority Rating (LTEA)	Frequency of Occurrence	Wet/Dry Problem	Action
904.41 Loma Alta	Bacteria/Pathogens (TMDL)	A*	-	Both	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
904.41 Loma Alta	Nutrients (TMDL)	A*	-	Dry	Consider additional monitoring to confirm water quality prioritization. Consider conducting source identification
904.21 Buena Vista (Lagoon)	Bacteria/Pathogens (TMDL)	A*	-	Both	Consider additional monitoring to confirm water quality prioritization. Consider conducting source identification. In accordance with Investigation Order R9-2006-076, Copermittees will be collecting monitoring data needed to characterize dry weather flow and storm flow influenced water quality to complete the development of a TMDL and load and waste load allocations and reductions.
904.21 Buena Vista (Lagoon)	Nutrients (TMDL)	A*	-	Dry	Consider additional monitoring to confirm water quality prioritization. Consider conducting source identification. In accordance with Investigation Order R9-2006-076, Copermittees will be collecting monitoring data needed to characterize dry weather flow and storm flow influenced water quality to complete the development of a TMDL and load and waste load allocations and reductions.
904.21 Buena Vista (Lagoon)	Sediment/TSS (TMDL)	A*	-	Wet	Consider additional monitoring to confirm water quality prioritization. Consider conducting source identification. In accordance with Investigation Order R9-2006-076, Copermittees will be collecting monitoring data needed to characterize dry weather flow and storm flow influenced water quality to complete the development of a TMDL and load and waste load allocations and reductions.
904.31 Agua Hedionda	Bacteria/Pathogens (TMDL)	A*	♦♦♦	Both	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
904.31 Agua Hedionda	Sediment/TSS (TMDL)	A*	♦♦♦	Wet	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
904.31 Agua Hedionda	TDS (TMDL)	A*	♦♦	Both	Consider additional monitoring to confirm water quality prioritization.
904.31 Agua Hedionda	Dissolved Minerals (Selenium; Manganese; Sulfates)	303(d)	-		Consider additional monitoring to confirm water quality prioritization.
904.32 Buena Creek	DDT	303(d)			Consider additional monitoring to confirm water quality prioritization.

HA	Pollutant Category	Water Quality Priority Rating (LTEA)	Frequency of Occurrence	Wet/Dry Problem	Action
904.32 Buena Creek	Nutrients	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.4 Encinas	Bacteria/Pathogens	B	-	Both	Consider additional monitoring to confirm water quality prioritization.
904.4 Encinas	Sediment/TSS	C	-	Wet	Consider additional monitoring to confirm water quality prioritization.
904.51 San Marcos (Batiquitos Lagoon)	Bacteria	A	-	Both	Consider additional monitoring to confirm water quality prioritization.
904.51 San Marcos	Nutrients Phosphorous 2006 303(d)	B	-	Dry	Consider additional monitoring to confirm water quality prioritization.
904.51 San Marcos Creek	DDE	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.51 San Marcos Creek	Phosphorus	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.51 Cottonwood Creek	DDT	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.52 San Marcos Lake	Ammonia as Nitrogen	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.52 San Marcos Lake	Nutrients	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.52 San Marcos Lake	Phosphorus	303(d)	-		Consider additional monitoring to confirm water quality prioritization.
904.61 Escondido Creek (San Elijo Lagoon)	Bacteria/Pathogens (TMDL)	A*	♦♦♦	Both	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
904.61 Escondido Creek (San Elijo Lagoon)	Nutrients (TMDL)	A*	♦	Dry	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
904.61 Escondido Creek (San Elijo Lagoon)	Sediment/TSS (TMDL)	A*	♦♦♦	Wet	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
904.61 Escondido Creek	TDS	A	♦♦♦	Both	Consider additional monitoring to confirm water quality prioritization.
904.62 Escondido Creek	DDT	303(d)	-		Consider additional monitoring to confirm water quality prioritization.
904.62 Escondido Creek	Dissolved Minerals (Selenium; Manganese; Sulfates)	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.62 Escondido Creek	TDS	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.62 Escondido Creek	Phosphate	303(d)			Consider additional monitoring to confirm water quality prioritization.
904.62 Reidy Creek	Phosphorus	303(d)			Consider additional monitoring to confirm water quality prioritization.

* denotes an “A” rating that is based on the 303(d) listing

High Priority Water Quality Problems

Based on the assessments above and the available water quality data, the Copermittees have determined that the high priority water quality problems in the Carlsbad WMA are:

1. Bacteria / Pathogens in the Loma Alta, Agua Hedionda, Buena Vista, Escondido Creek HAs
2. Sediments in the Agua Hedionda and Escondido Creek HAs
3. Nutrients in the Escondido Creek HA, Agua Hedionda, and San Marcos Creek HA

3.4. Potential Pollutant Sources

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the watershed's high priority water quality problems.

With watershed water quality problems identified, the potential sources of pollutants that may be causing the water quality problems need to be identified. In 2005 as part of the BLTEA process, the Regional Copermittees identified thirty-four (34) sources of pollutants on which to focus their efforts. The BLTEA process included characterizing each source and determining a Source Loading Potential (SLP) for each of 8 pollutant types: heavy metals; organics; oil & grease; sediment; pesticides; nutrients; gross pollutants, and; bacteria. The BLTEA also developed a process to establish Threat-To-Water-Quality (TTWQ) ratings for the sources based on water quality priority ratings and the SLP of the inventoried sources within each WMA.

For the Carlsbad WMA, the TTWQ ratings tables for the high priority water quality problems in each HA are summarized below. Table 3-8 represents the highest TTWQ rated sources within each HA based on the high priority water quality problems. A "T1" TTWQ rating is the highest threat-to-water-quality in the rating system. The process used to develop the table was taken directly from the BLTEA. The data used for the process includes the following: (1) 2007 Baseline Water Quality Priority Ratings (Weston Solutions, 2007); (2) 2007 inventory information from all watershed Copermittees; (3) the SLP ratings from the BLTEA (Weston, MOE, LWA, 2005), and; (4) Copermittees' dry weather monitoring data..

Table 3-8 High Priority Sources in HAs

Source	Animal Facilities			Botanical/ Zoological Gardens			Eating or Drinking Establishments			Landscaping		
	Bacteria	Nutrients	Sediments	Bacteria	Nutrients	Sediments	Bacteria	Nutrients	Sediments	Bacteria	Nutrients	Sediments
904. 1 - Loma Alta (Bacteria, Nutrients, Sediments)		-			6			244			49	
904.2 - Buena Vista (Bacteria, Nutrients, Sediments)		4			-			412			78	
904.3 - Agua Hedionda (Bacteria, Nutrients, Sediments)		2			-			89			30	
904.4 - Encinitas (Bacteria, Nutrients, Sediments)		2			-			29			37	
904.5 - San Marcos (Bacteria, Nutrients, Sediments)		15			-			378			118	
904.6 - Escondido Creek (Bacteria, Nutrients, Sediments)		15			-			503			51	

Shaded Cells mean that the pollutant type is not a high priority for the HA

Note: Source quantities are based on updated inventory information from Copermittees. The geocoding process may limit the representation of sources

Additionally, the Copermittees have mapped the sources on an HA basis. An example of one of these maps is shown below. The source information and mapping help to highlight the areas and locations that the Copermittees may want to select activities.

Figure 3-2 HA 905.4 – High Priority Water Quality Problem = Bacteria

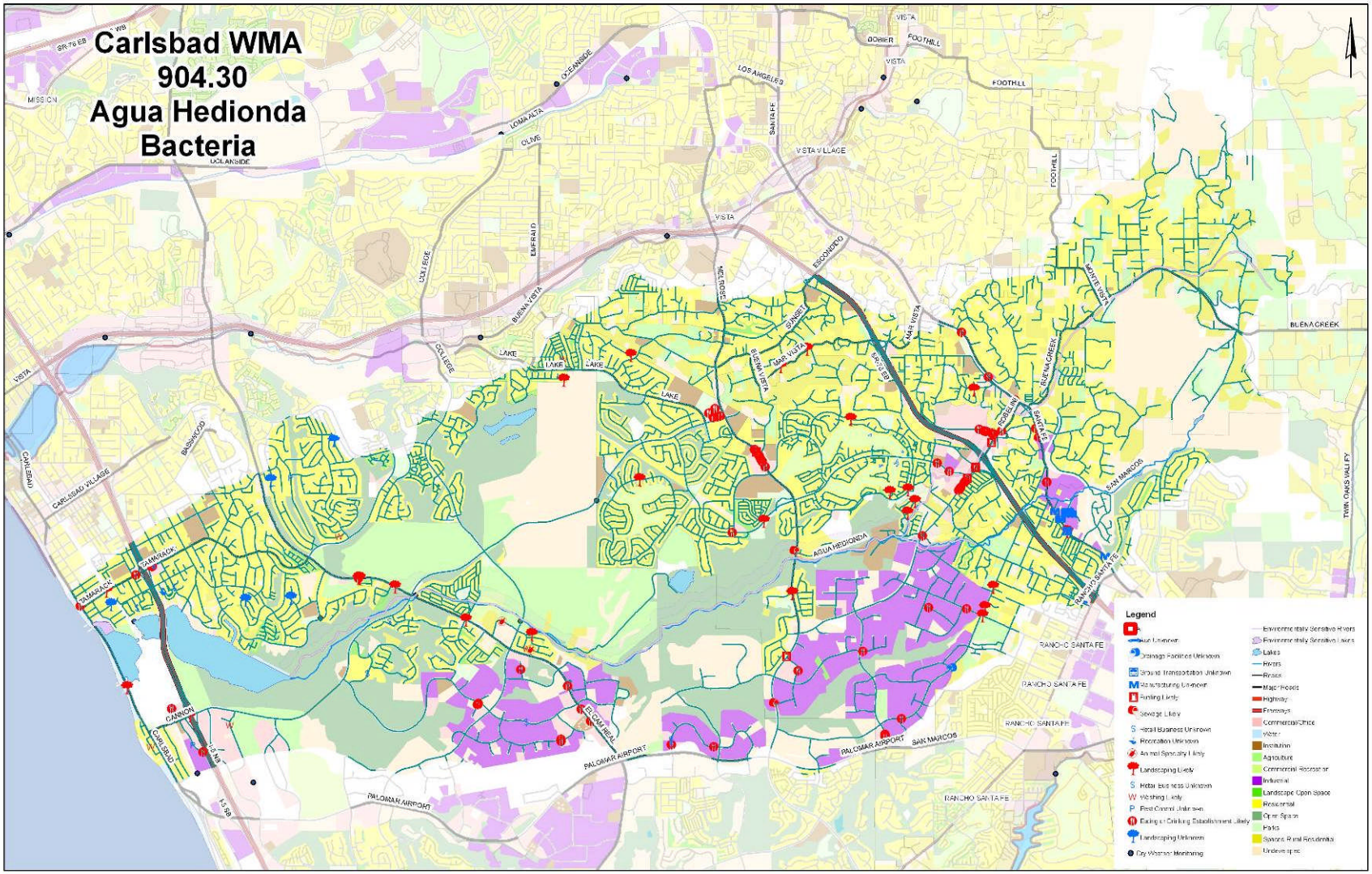

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4. FIVE-YEAR STRATEGIC PLAN

This section describes the results of the process described above in Section 2 – Collective Watershed Strategy. The strategy was applied at the Hydrologic Area (HA) level to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first, identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the high priority water quality problems in each HA. For the Loma Alta, Agua Hedionda, and Escondido Creek HAs in the Carlsbad WMA, bacteria were determined to be a high priority water quality problem. Additionally, in the Agua Hedionda and Escondido Creek HAs, sediment were determined to be a high priority water quality problem, and nutrients were identified as a high priority water quality problem in the Escondido Creek HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the high priority water quality problems for each HA-high priority water quality problem combination in the WMA. These sources are listed in Table 3-8 in the previous section. Based on the available data, the Copermittees could then make appropriate management decisions when selecting appropriate watershed water quality and education activities.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees will use Table 3-7 to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The remainder of this section discusses the activities that the Copermittees have selected to list as their activities for potential implementation. Each year (starting with Year 1) the Copermittees will evaluate the water quality problems, source information (SLP, TTWQ, and quantities) to determine the most appropriate activities to implement. At the end of the section is a proposed 5-year implementation schedule. This schedule is tentative and subject to change based on the annual evaluation of data and information. Any changes to the proposed schedule will be reflected in future WURMP Annual Reports.

4.1 Proposed Watershed Water Quality Activities

The Watershed Copermittees are responsible for identifying and implementing Watershed Water Quality Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. Watershed Education Activities are outreach and training activities that address high priority water quality problems in the WMA.

A list of the proposed Watershed Activities is included below and will be updated with each annual report. Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified high priority water quality problems in the WMA.

Each activity on the Watershed Activities List is fully described in an Activity Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;

3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified high priority water quality problem(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Watershed Copermittees will implement identified Watershed Activities pursuant to the proposed schedule. For each Permit year, no less than two Watershed Water Quality Activities will be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s). Watershed Water Quality Activities that are capital projects are in active implementation for the first year of implementation only.

Based on the watershed strategy for activity selection, the following water quality activities have been selected for first-year implementation. Water Quality Activity Sheets can be found in Appendix A.

Table 4-1 Watershed Activities – 5-Year Strategic Plan

Watershed HAs						Activity/Project Name	Jurisdiction	Watershed Priorities			Implementation Schedule							Comments
								Bacteria	Nutrients	Sediment	FY 07-08			FY 08-09			Future Fiscal Year(s)	
904.1	904.2	904.3	904.4	904.5	904.6	**CARLSBAD WATERSHED MANAGEMENT AREA**												
						Watershed Water Quality Activities (Load Reduction/Source Abatement)												
	X	X		X		Residential Irrigation Runoff Reduction	CAR	X	X	X	P			WQI	A			
X						Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility	OC	X						WQI	M		WQI, A	
X						Eternal Hills Cemetery BMPs	OC	X						WQI				
X						Myers Property Resotration Assessment	OC	X			WQI	A		WQI	A		WQI, A	
	X					Septic Tank Source Identification - Fire Mountain	OC/Cnty	X						WQI			WQI	
					X	Escondido Creek Restoration	ESC			X	WQI			WQI	M		WQI	
To be determined						Stormwater Qualtiy Master Plans for Special Drainage Fee Areas	Cnty	?	?	?				*			*	*Contingent upon SDA fee increase in 2009
		X				Nitrate Source Identification and Abatement: Buena Creek	Cnty		X		WQI	M	S	WQI	M	S		Future actiivty will be assessed based on program results
				X		Focused Inspections along San Marcos Creek	SM		X		WQI			WQI				
					X	Pet Waste Bag Dispenser Program in County Parks	Cnty	X	X		WQI			WQI			WQI	This activity will continue throughout the permit cycle
To be determined						Land Acquisitions	Cnty	X	X	X	WQI			**				**Unable to predict land acquisitions in advance
						Watershed Education Activities												
X			X	X	X	LID and Watershed Planning for Community Planning/Sponsor Groups	Cnty	X	X	X	P	WE		WE				Completion is anticipated in FY 08-09
	X	X		X		Residential Irrigation Runoff Reduction	CAR	X	X	X	P			WE	A			
					X	Pilot Restaurant Binder/CD Distribution	ENC	X			A							
X	X	X	X	X	X	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	OC, CAR, ENC, ESC, SM, VST, Cnty	X	X	X	WE			P			WE	
					X	LID Features in San Elijo Nature Center	Cnty	X	X	X				WE			WE	

WQI = Watershed Water Quality Activity Implementation (Active Implementation)
I = Watershed Water Quality Activity Implementation (No WURMP Credit)
A = Watershed Activity Assessment (No WURMP Credit)
P = Watershed Activity Planning (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)

E = Watershed Education Activity (No WURMP Credit)
PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)

4.2 Proposed Watershed Education Activities

The Watershed Copermittees are responsible for identifying and implementing Watershed Education Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional. Additionally, watershed water quality activities may be related to watershed education activities. Watershed Education Activities are outreach and training activities that address high priority water quality problems in the WMA.

The Watershed Copermittees will implement identified Watershed Education Activities pursuant to established schedules. For each Permit year, no less than two Watershed Education Activities will be in an active implementation phase. A Watershed Education Activity is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can reasonably be established in target audiences.

A list of the proposed Watershed Education Activities is included in Table 4-1 and will be updated with each annual report. Each activity on the Watershed Education Activities List is fully described in an Activity Sheet (Appendix A) and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified high priority water quality problem(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

4.3 Proposed Public Participation Activities

The Carlsbad Watershed Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed (such as other agencies, private companies, environmental groups, etc.)

Broad participation is critical to the success, further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process, including other regulatory agencies, environmental groups, educational institutions, landowners, and private citizens. Further, the participating jurisdictions recognize that no single agency has the capacity to address water quality issues on its own and broad partnerships are essential to positively affect the water resources in our region. It is only through a collaborative approach that we will develop a better understanding of the issues and processes affecting water quality in our watersheds and subsequently select and address priorities.

Carlsbad WMA Copermittees will continue to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as the workgroup continues to develop and implement the program and other watershed related management plans.

Participating jurisdictions will continue to pursue a strategy to actively encourage the participation and input of diverse stakeholders. The County's Project Clean Water has been identified as a forum for future public participation. Other mechanisms identified to foster public

participation include public meetings and community workshops as well as regular interaction with stakeholders as described below.

Project Clean Water
Project Clean Water, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. The relationship of Project Clean Water objectives to permit compliance is important. An underlying tenet of this effort is that Permit compliance alone cannot achieve improved water quality conditions. As such, Project Clean Water seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. This significantly broadens the base of stakeholder input available to consider issues directly related to Permit compliance. As with Copermittee meetings, all Project Clean Water meetings are open to the public and participation is encouraged through a variety of means including a website, electronic notifications and personal phone calls.

Cross-Jurisdictional Collaboration
The Carlsbad Watershed workgroup, which consists of representatives from the Cities of Oceanside, Vista, Carlsbad, San Marcos, Escondido, Encinitas, Solana Beach, and the County of San Diego, collaborate as needed to foster public input and participation on activities related to the watershed program.

In addition, an annual workshop may be held to present updates, revisions, and/or solicit comments in order to actively engage stakeholders affected or potentially affected by program development and its implementation. The watershed Copermittees will utilize various local media to advertise such meetings and efforts will be made to hold each workshop in a centrally located facility.

Integration and Participation in Local Planning Activities
Planning at the watershed scale has become an issue of increasing importance over the past few years. As part of the watershed program, jurisdictions will participate in and support associated efforts which provide opportunities to learn about concerns raised by the public and publicize efforts related to this program.

Direct Interaction
In addition to those methods already described, participating jurisdictions rely heavily on the interaction of their staff with members of the public during their job duties. This facet of jurisdictional programs will provide an additional avenue for obtaining direct feedback from interested stakeholders.

4.4 Proposed Land-Use Planning Activities

The Carlsbad Watershed Copermittees have developed a program for encouraging collaborative, watershed-based, land use planning in their jurisdictional planning departments. The watershed-based land-use planning program is described below.

The California Government Code gives local governments the authority and the responsibility to exercise local land use planning and associated regulatory functions. Because they ultimately control the types and intensities of particular activities that may be allowed within specified geographic areas, land use decisions play a critical role in addressing point and non-point sources of pollution.

Cities and counties have traditionally exercised their land use authority independently, with limited consideration of the chemical, biological, and physical processes that govern the generation, transport, and fate of contaminants and stressors at the watershed scale and therefore important to incorporate in land use decision-making. Land use policies of individual municipalities have the potential to affect water quality in water bodies well beyond their jurisdictional boundaries.

State law requires that each jurisdiction adopt a comprehensive, long-term General Plan to guide its physical development. The General Plan is the official document that outlines the long-term plans and policies regarding the location of housing, business, industry, roads, parks, and other land uses. Additionally, the General Plan addresses broad issues such as provision of infrastructure and conservation of natural resources. The legislative body of each City (the City Council) and each County (Board of Supervisors) adopts zoning, subdivision and other ordinances to regulate land uses and to carry out the policies of its General Plan. The General Plan can be described as the blueprint for future development. It represents the community's view of its future; a constitution made up of goals and policies upon which local decision makers (hearing officers, planning commissions, city councils and county board of supervisors) base their land use decisions.

California planning law establishes the minimum contents and scope of local general plans. State law requires planning agencies to "prepare, periodically review, and revise, as necessary, the general plan". Keeping the general plan current is important for good planning. State law gives counties and cities wide latitude in how they put a General Plan together, but there are fundamental requirements that must be met. These requirements include seven mandatory elements as described below:

Land Use Element: The land use element dedicates lands to particular purposes. It outlines how the jurisdiction will designate and separate various uses such as commercial, industrial, and residential. Natural resource, agriculture, timber production, and flood plain areas must also be delineated. A major intent of this element is to design areas for development that are compatible with one another.

Housing Element: This element requires local governments to adequately plan to meet the existing and projected housing needs of all economic segments of the community.

Circulation: This element identifies the general location of existing and planned transportation routes and public utilities. It is actually an infrastructure plan that concerns itself with the circulation of people, goods, energy, water, sewage, storm drainage, and communications. Its provisions support the goals, objectives, policies and proposals of the land use element.

Conservation: This element describes how the jurisdiction intends to protect and conserve its natural resources. The element covers water resources, soils, forest, wildlife, and fisheries.

Open Space: This element designates areas for preservation and managed production of natural resources, outdoor recreation, and public health and safety. The Open Space element is related to the conservation element in some ways, and designated lands in either element could be actually or nearly the same. The important difference between the two elements is the very specific inclusion of the consideration of public health and safety concerns in open space zoning.

Safety Element: The safety element defines community protection measures in relation to fires, seismic hazards, and geological hazards. It must include provisions for evacuation routes, water supply, minimum road widths, and clearances around structures.

Noise Element: This element is designed to address overall levels of noise in the community by identifying the sources of noise, assessing its effects and establishing policies, criteria and standards to reduce excessive noise to acceptable limits.

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5. PROGRAM EFFECTIVENESS ASSESSMENT

This Section is a description of how the Carlsbad WURMP addresses the requirements of Section I.2. of Order R9-2007-0001. WURMP effectiveness assessments will be based on the concepts first identified and described in the San Diego Copermittees' October 2003 document, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs" (Framework). The reader is encouraged to become familiar with the concepts described in the Framework to better understand the remainder of this section.

To summarize, the table below describes the six outcome levels identified in the Framework along with potential measures and methods for measuring effectiveness.

Table 5-1 Levels 1-6 Targeted Outcomes and Potential Assessment Measures and Methods

Outcome Type	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements	Verification that required activities were implemented
Level 2: Changes in Knowledge / Awareness	Measure of changes in targeted audiences knowledge and awareness potentially through the use of pre- and post-surveys and observations
Level 3: Behavioral Change / BMP Implementation	Measure of changes in behavior or BMP implementation potentially through the use of observations or inspections
Level 4: Load Reductions	Measured or calculated load reductions as a result of changes in behavior or BMP Implementation. Measurements may be supported by water quality data and calculations may be supported by information and data related to the pollutant generating activities
Level 5: Changes in Discharge Quality	Historical and statistically supportive trends in the levels of pollutants in the discharges from the MS4. This will be assessed periodically using the results of regional, WMA and jurisdictional water quality monitoring data
Level 6: Changes in Receiving Water Quality	Historical and statistically supportive trends in the levels of pollutants in the receiving waters. This will be assessed periodically using the results of regional, WMA and jurisdictional water quality monitoring data

Order R9-2007-0001 requires two types of assessment in the WURMP: 1) assessment of each watershed activity, and 2) assessment of overall WURMP effectiveness. The approach for complying with each requirement is described below.

5.1 Watershed Activity Assessment

The effectiveness of each Watershed Water Quality and Watershed Education Activity will be assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes.

Each activity summary sheet in Appendix A identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an

individual watershed activity would be measurable at Levels 5 or 6. Level 5 and 6 Outcomes are typically measurable through cumulative assessments as described in the following section.

5.2 Overall WURMP Assessment

The assessment of overall WURMP effectiveness will focus on the cumulative impacts of program implementation and will include the following elements: 1) an assessment of how well Watershed Copermittees have collectively complied with minimum Permit requirements, 2) an assessment of the cumulative impact of watershed activity implementation, and 3) an integrated assessment of discharge and receiving water quality.

To assess how well Watershed Copermittees have collectively complied with minimum Permit requirements, the following Level 1 Outcomes will be tracked on an annual basis:

1. Update any watershed maps.
2. Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.
3. Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.
4. Update list of potential Watershed Water Quality Activities.
5. Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.
6. Update list of potential Watershed Education Activities.
7. Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.
8. Describe the public participation mechanisms used during the reporting period and the parties that were involved.
9. A description of Copermittee collaboration efforts including meeting as the Carlsbad WMA WURMP Workgroup.
10. Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.
11. When applicable, describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. The description shall include:
    a. Any additional source identification information;
    b. The number, type, location, and other relevant information about BMP implementation, including any expanded or better tailored BMPs necessary to meet the WLAs;
    c. Updates in the BMP implementation prioritization and schedule;
    d. An assessment of the effectiveness of the BMP Implementation Plan, and;
    e. A discussion of the progress to date in meeting the TMDL Numeric Targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.

Assessing the cumulative effectiveness of watershed activity implementation is challenging. The results of individual activities are typically difficult to aggregate at the watershed level. Nevertheless, the Watershed Copermittees will strive to conduct activity-specific assessments in a way that allows for an assessment of cumulative watershed impacts when possible. This may involve the use of consistent methods to assess similar activity types or the use of consistent units of measure to aggregate the results of disparate activity types.

Finally, the Watershed Copermittees will attempt to improve their ability to conduct integrated assessments over the course of this Permit cycle. Integrated assessments aim to identify the relationship between program implementation and resulting effects on discharge and receiving water quality. Integrated assessments therefore attempt to draw links between the activity-specific assessments described above and water quality monitoring data collected at the regional, watershed, and jurisdictional levels. The Watershed Copermittees will use available data and information to determine what impacts, if any, WURMP implementation is having on Outcome Level 5 and 6. It must be recognized, however, that urban runoff management takes place at many levels. For example, jurisdictional and regional urban runoff programs also result in watershed benefits and it is unclear how to isolate the effect of each.

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6. PROGRAM REVIEW AND MODIFICATION

WURMP implementation is an iterative process that involves assessing the program's effectiveness as described above. The Copermittees will review the overall watershed program annually and make modifications as necessary to improve the overall effectiveness of Copermittee activities. One focus of the program will be to determine the effectiveness of the implemented activities, overall program implementation and the efficiency of the program implementation. Any changes to the program processes or implementation plan will be modified and reported in Annual Reports.

Another focus of the reviews will be to determine if sufficient data as been collected, jurisdictionally, within the WMA, regional or other level, that will help the evaluation conducted in the collective watershed strategy. If there are modifications necessary to the activities list based on the re-evaluation of water quality problems or source information, the Copermittees will provide updates in Annual Reports.

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Appendix A

Carlsbad Watershed Activity Sheets

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Water Quality Activity Sheets

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TITLE: **Residential Irrigation Runoff Reduction**
ID #: **CHU-WQA1**

ACTIVITY DESCRIPTION

The Carlsbad watershed has seen exceedances for various high priority pollutants during the Dry Weather Monitoring Program. A pilot single family residential area in a sub-watershed will be selected to evaluate the load reduction potential related to reducing irrigation runoff. The expected results include reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in pilot area, and reduction in irrigation runoff flow in the pilot area. Planned activities include:

- Use Dry Weather Monitoring Program results, BLTEA info, and field knowledge to select pilot area
- Collect pre-pilot flow data in pilot drainage area, and calculate estimated pollutant loads
- Work with volunteer residences and sites with irrigation runoff to review water usage, conduct water assessment and leak detection as necessary.
- Field reconnaissance to check for corrective action completion
- Collect post-pilot flow measurements in pilot drainage area, and calculate estimated pollutant loads
- Measure effectiveness of overall program by calculating any reduction in pollutant loading through reduction in over-irrigation.
- Education to be coordinated through CHU-WQEA1

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning – FY 2008
Implementation and Effectiveness Assessment – FY 2009

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad

All watershed Copermittees will participate during planning and measuring phases of this pilot. City of Carlsbad personnel will participate in the implementation phase of the activity.

OTHER PARTICIPATING ENTITIES

- Carlsbad Municipal Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, sediment, and nutrients as high priority water quality pollutants in the in the Agua Hedionda (904.3 – bacteria and sediment), Buena Vista (904.2 – bacteria), and San Marcos Creek (904.5 – nutrients) Hydrologic Areas. Bacteria, sediment, and nutrients have been identified as potential discharges from over-irrigation. This activity

addresses high priority water quality problems and potential source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Expected benefits include educating residents about pollution prevention and water conservation, load reduction and/or source abatement of high priority pollutants, and reduction of water usage.

EFFECTIVENESS MEASUREMENTS

A reduction of flow after working with applicable residents is the targeted outcome of this activity and will be assessed by measuring irrigation runoff flow after the pilot is completed. Implementation effectiveness will be measured by evaluating pre and post-flow surveys (Level 4 Outcome). Since the pilot will be completed prior to the start of the 2009 dry season, the results will be analyzed within nine months following completion of the pilot.

TITLE:	**Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility**
ID #:	**CHU-WQA2**

ACTIVITY DESCRIPTION

This project involves the construction of a filtration and ultraviolet radiation storm water treatment facility to be located adjacent to the Loma Alta Creek outlet in the City of Oceanside. One hundred percent of the dry weather creek flows (averaging 90 gallons per minute) will be intercepted at the outlet and diverted to the UV storm water treatment facility. Once treated, water will discharge through a pipe that will extend along the existing section of rip-rap that runs along the north side of the Loma Alta Creek outlet at Buccaneer Beach. During wet weather months, the lagoon would be opened to allow free flow to the ocean and the UV system would be bypassed.

The Loma Alta Creek and its discharge location to the Pacific Ocean at Buccaneer Beach are located mostly in the City of Oceanside with the headwaters within the City of Vista. Buccaneer Beach is a family beach adjacent to a park that is heavily used during dry months. The City determined that key source of bacteria and nutrients are urban runoff from the 6,400 acre Loma Alta Watershed, which is densely developed with residential, commercial and industrial land uses. With a great task at hand to eliminate the pollutants from these multiple sources, it was determined that action needed to be taken in a short period of time to divert the bacteria laden waters to reduce the numerous beach postings and closures at this popular beach. The City submitted and was awarded a grant to construct and operate the UV Treatment facility.

TMDL APPLICABILITY

The RWQCB and Copermittees are developing a Bacteria-Impaired Waters TMDL Project II for Lagoons and adjacent beaches and creeks, which includes Loma Alta Creek slough. This project will assist in the implementation of this TMDL by reducing bacterial contamination in the impaired segment of Loma Alta Creek slough.

TIME SCHEDULE FOR IMPLEMENTATION

A contractor was selected for construction in 2007. Construction completion is expected in June 2008 with operation beginning immediately thereafter.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Loma Alta Creek watershed is listed as impaired on the 303(d) list for bacterial indicators and eutrophication within the slough and 1.1 miles along the shoreline at the creek outlet at Buccaneer Beach

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential, commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality

problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The increased presence of bacteria and pathogens in the watershed poses a threat to REC-1 and REC-2 beneficial uses and results in increased number of beach closures at the Loma Alta Creek outlet at Buccaneer Beach. This project will address the bacterial issue through filtration and UV disinfection

EFFECTIVENESS MEASUREMENTS

This water quality activity will result in changes in discharge quality (Level 5) and changes in receiving water quality. (Level 6) A monitoring plan will be designed to measure water quality prior to and during facility implementation. The expectation is that there will be no future beach postings and closures to due to bacterial exceedances. Monitoring will be conducted at three locations: In the lagoon prior to water entering the UV facility, within the plant prior to and after UV treatment, and at the shoreline at the discharge point and in the coastal missing zone.

TITLE: **Eternal Hills Cemetery BMPs**
ID #: **CHU-WQA3**

ACTIVITY DESCRIPTION

The Eternal Hills Cemetery has a 2006 Urban Runoff Management Plan (URMP) that recommends various BMPs to minimize the introduction of fertilizers, pesticides, herbicides, fossil fuels, and soil alluvium into the Loma Alta Creek. Some components of that plan have not been implemented and Oceanside has issued enforcement notices to require correction of the problems and to implement and maintain the BMPs proposed in the plan. With the facility proposing expansion, the city will require the implementation of all components of their current URMP and to develop a new URMP relative to the proposed expansion. This new URMP will require the use of detention basins and additional BMPs to reduce peak flows and eliminate sedimentation, bacteria, and nutrients from the leaving the property and reaching the Loma Alta Creek.

TMDL APPLICABILITY

This activity is not being implemented for compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The current URMP is to be fully implemented during FY 2007-08 and beyond. The EIR for expansion is anticipated to be finalized in 2008. Because the facility's internment capacity is quickly being reduced, expansion is anticipated to be started as soon as final approval is received from the City of Oceanside.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

No other entities are participating on this project.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The expected benefit from this project is the implementation of recommend BMPs in the facility's URMP which will ultimately eliminate bacteria, nutrients, and sediment from leaving the cemetery property and reaching Loma Alta Creek.

EFFECTIVENESS MEASUREMENTS

The cemetery operators are knowledgeable of the lack of BMPs associated with their facility and the need to implement them according to their URMP (Level 2). The goal of this project is to implement BMPs (Level 3), and ultimately reduce the sediment load leaving the property (Level 4). Photo documentation will be used to determine implementation of required BMPs according to the RMP. During expansion of the facility, photo documentation will continue in to determine proper installation of BMPs and proper maintenance of already installed BMPs.

TITLE: **Myers Property Restoration Assessment**
ID #: **CHU-WQA4**

ACTIVITY DESCRIPTION

The Myers Property and Adjacent Creek Habitat Restoration project was completed in March 2007. The goal of the project was restoration and erosion control of the 35-acre parcel. This property was identified as a significant source of bacteria and sediment load into Loma Alta Creek due to off-road vehicle use and illegal access to the site coupled with frangible, erodible soils, as well as spoil storage along the tributary by the Eternal Hills Cemetery, which surrounds the property on all sides. The City applied for and received funding through a Proposition 13 grant for restoration and erosion control of the 256 acre parcel. Annually, an on-site inspection will be conducted, photo documentation and identification of any remedial restoration that needs to be done. The City will then conduct any remediation needed. An annual assessment report will be developed that will describe biological values, site assessment, and management measures.

TMDL APPLICABILITY

This activity is not being implemented for compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The implementation of BMPs was completed in March 2007 with monitoring scheduled to be conducted in subsequent years. The assessment will be conducted annually and the corresponding report is anticipated to be completed each June.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

This water quality activity will reduce the bacteria and sediment load from reaching Loma Alta Creek. This activity will preserve in perpetuity this 35 acre parcel near Loma Alta Creek.

EFFECTIVENESS MEASUREMENTS

This water quality activity implemented erosion control BMPs (Level 3). Now it is to be determined if the restoration project provided any load reductions (Level 4), changes in discharge quality (Level 5), or changes in receiving water quality (Level 6).

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TITLE: **Septic Tank Source identification – Fire Mountain**
ID #: **CHU-WQA5**

ACTIVITY DESCRIPTION

One of four isolated areas of Oceanside has over 20 homes that utilize on-site sewage treatment facilities to handle wastewater, even though a sewer system was installed in nearby neighborhoods. High bacteria levels within storm drain outlets from this neighborhood drain into Buena Vista Creek which created the need to determine the source of the bacteria. This project will assist in identifying if the source is from the neighborhood utilizing on-site waste water treatment systems. A detergent indicator test known as the optical brightener method will be utilized within neighborhood storm water vaults to detect a specific type of detergent in runoff water. This type of detergent is utilized in laundry detergents and can determine if the septic systems are leaking into the storm drain system. If this detergent is detected, the County of San Diego, Department of Environmental Health, will be requested to have home owners test the integrity of their septic system. If problems are detected, property owners will be offered the option to correct the problem or hook up to the city sewer system.

TMDL APPLICABILITY

The RWQCB and Copermittees are developing a Bacteria-Impaired Waters TMDL Project II for Lagoons and adjacent beaches and creeks, which include Buena Vista Lagoon. This project will assist in the implementation of this TMDL by reducing bacterial contamination in the impaired segment of Buena Vista Lagoon.

TIME SCHEDULE FOR IMPLEMENTATION

Source identification will begin in 2008 with the use of the optical brightener method to determine if there are detergents present in the storm water vaults. If detergents are detected then source identification will ensue. The County of San Diego will be requested to require a check of the septic systems and require proper corrections. This could take several years for corrections to be implemented. After corrections are made, the city will conduct the optical brightener activity to determine additional and ongoing problems. Additional detection methods may be utilized to confirm results from the optical brightener method.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, as a high priority water quality pollutant in the Buena Vista Hydrologic Area (904.2). Sewage treatment facilities have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The expected benefits from this project are to determine if on-site sewage treatment facilities in an isolated neighborhood of Oceanside are contributing to high bacteria levels in discharge water. If they are determined to be a source then the installation of septic system improvements or hooking up to the sewer system will eliminate this bacteria source.

EFFECTIVENESS MEASUREMENTS

If the on-site sewage treatment facilities in this isolated neighborhood are determined to be a bacteria source, then homeowners will be notified of the problems associated with their treatment system (Level 2). The City will require the homeowners to implement BMPs to eliminate the bacteria source (Level 3). This in turn will create a bacteria load reduction (Level 4), and hopefully a change in discharge water quality (Level 5), and a change in receiving water quality (Level 6).

TITLE: **Escondido Creek Restoration**
ID #: **CHU-WQA6**

ACTIVITY DESCRIPTION

This proposed restoration project is designed to improve water quality associated with Escondido Creek. The effort will focus on a segment of Escondido Creek located off Harmony Grove Road within unincorporated County of San Diego lands. The intent of the project is to implement bioengineering solutions to help correct stream bank and bed erosion on a segment of the creek known to exhibit severe erosion by installing gabion baskets and live plant material to stabilize the eroded bank.

TMDL APPLICABILITY

This activity is planned for implementation in compliance with the TMDLs established for sediment associated with Escondido Creek.

TIME SCHEDULE FOR IMPLEMENTATION

The Escondido Creek Restoration effort will occur between spring 2008 and winter 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment is a high-priority pollutant of concern within the Carlsbad Watershed. Implementation of this restoration effort will help reduce this pollutant through bank stabilization.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies sediment, as a high priority water quality pollutant in the Escondido Creek Hydrologic Area (904.6). Stream bank and bed erosion have been identified as potential discharges of sediment. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Copermittees expect that implementation of this restoration effort will result in the reduction of sediment in Escondido Creek and improve the overall condition of the habitat and waters of the creek.

EFFECTIVENESS MEASUREMENTS

This restoration effort is designed to improve the condition of the habitat and waters of Escondido Creek and improve the water quality of downstream water bodies (Level 6).

The effectiveness of the effort will be assessed through the evaluation of data from continuing water quality monitoring efforts. Data collected after implementation of the restoration project will be compared with data from previous monitoring efforts and analyzed to determine potential reduction in associated pollutant loads.

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TITLE: **Stormwater Quality Master Plans for Special Drainage Fee Areas**
ID #: **CHU-WQA7**

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Carlsbad Watershed include:

- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur before FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined

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Title:	**Nitrate Source Identification and Abatement: Buena Creek**
ID #:	**CHU-WQA8**

Activity Description

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) will collaborate on a project to identify and abate the source(s) of elevated nitrate levels in Buena Creek. Nitrate concentrations have been observed to exceed dry weather action levels at the County's CAR 05 dry weather monitoring station (Buena Creek at Robelini Drive). The State of California, which collected data from a nearby location in 2002 as part of its Surface Water Ambient Monitoring Program (SWAMP), also identified nitrates as an issue of concern[1]. Buena Creek is listed as impaired for nitrates/nitrites on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. To date, follow up investigations conducted as part of the County's illicit discharge detection and elimination program have yielded little definitive information about the source(s) of this problem. This activity will consist of intensified water quality monitoring, source identification, inspection, education, and enforcement as determined necessary.

Planned tasks include:

- Compile an inventory and map of potential nitrate sources in the CAR 05 drainage area.
- Compile baseline information on BMP implementation and compliance history for nurseries within the Buena Creek drainage area.
- Perform frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05.
- Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conduct targeted inspections as necessary to abate sources of nitrates.
- Conduct targeted education activities as necessary to abate sources of nitrates.
- Conduct enforcement activities as necessary to abate sources of nitrates.

TMDL Applicability

This activity is not specifically implemented in compliance with a TMDL. However, Buena Creek is listed as impaired for nitrate/nitrite on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development by 2019.

Time Schedule for Implementation

The proposed implementation schedule below is tentative subject to changes based on results obtained over the course of the project or unforeseen changes in departmental staffing or budgets.

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
Compile an inventory and map of potential nitrate sources in the CAR 05 drainage area.	X				

[1] Southern California Coastal Water Research Project, *Surface Water Ambient Monitoring Program (SWAMP), Report on the Carlsbad Hydrologic Unit*, July 2007

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	X				
Perform frequent water quality screenings for nitrate other parameters at CAR 05, the County's dry weather monitoring location along Buena Creek at Robelini Drive.	X	X	TBD	TBD	TBD
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.	X	X	TBD	TBD	TBD
Conduct targeted inspection activities as necessary to abate identified sources of nitrates.	X	X	TBD	TBD	TBD
Conduct targeted education activities as necessary to abate identified sources of nitrates.	X	X	TBD	TBD	TBD
Conduct targeted enforcement activities as necessary to abate identified sources of nitrates.	X	X	TBD	TBD	TBD

Participating Watershed Copermittees

- County of San Diego

High Priority Watershed Water Quality Problems Addressed

- Nutrients

Consistency with the Collective Watershed Strategy

The Carlsbad WURMP identifies nutrients as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3). This activity addresses nutrient discharges and is therefore consistent with the collective watershed strategy.

Expected Benefits

This project is expected to provide a better understanding of the source(s) of nitrates entering Buena Creek upstream of the CAR 05 dry weather monitoring station. If it is determined that the contributing sources are subject to the County's Watershed Protection Ordinance, this activity is expected to improve BMP implementation and eliminate illicit discharges through a combination of inspection, education, and enforcement actions. It is possible that non-point sources, including resurfacing groundwater, are responsible for the elevated nitrate levels observed at CAR 05. If this is found to be the case, the County may be limited in its ability to address the nitrate problem at this location. Regardless, this activity will provide useful information for the purpose of developing future program activities.

Effectiveness Measurements

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nitrate sources in the Buena Creek drainage area.	1	Completion	Yes / No
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes / No
Perform frequent water quality screenings for nitrate and other parameters at CAR 05, the County's dry weather monitoring location along Buena Creek at Robelini Drive.	1	4 field screenings / yr at CAR 05	# field screenings / yr at CAR 05
	6	Reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012	% reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012
Conduct targeted inspection activities as necessary to abate identified sources of nitrates.	1	Inspection of 100% of nurseries in the Buena Creek drainage area by June 2009	% of nurseries inspected in the Buena Creek drainage area by June 2009
	3	Reduction in nursery BMP violations observed during nursery inspections in the Buena Creek drainage area by 2010	% change in nursery BMP violations observed during nursery inspections in the Buena Creek drainage area by 2010
Conduct targeted education activities as necessary to abate identified sources of nitrates	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the Buena Creek drainage area by 2010	% change in stormwater knowledge assessment surveys administered to nursery staff in the Buena Creek drainage area by 2010

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TITLE: **Focused Inspections along San Marcos Creek**
ID #: **CHU-WQA9**

ACTIVITY DESCRIPTION

San Marcos Creek (904.5) was 303(d) listed for nutrients in 2006. As such, the City of San Marcos conducted focused inspections of all properties along San Marcos Creek to identify and abate the potential sources of elevated pollutant levels such as nutrients. This activity consists of targeted inspections, follow-up inspections, and enforcement as determined necessary.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2008 – Conduct inspections and any necessary enforcement actions
FY 2009 – Conduct follow-up inspections and any necessary enforcement actions

PARTICIPATING WATERSHED COPERMITTEES

- City of San Marcos

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies nutrients, as a high priority water quality pollutant in the San Marcos Creek Hydrologic Area (904.5). Residential, commercial, and industrial land uses have been identified as potential discharges of nutrients. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, correcting behaviors, and abating sources associated with nutrients.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number of inspections completed (Level 1) and assessing changes in knowledge and BMP implementation (Levels 2 and 3).

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TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID #: **CHU-WQA10**

ACTIVITY DESCRIPTION

The County of San Diego maintains an inventory of pet waste bag dispensers in its parks. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. In the Carlsbad Watershed, there are currently two dispensers located in one County park:

- San Elijo Lagoon Ecological Reserve (2 dispensers)

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – To be determined

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

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TITLE: **Land Acquisitions**
ID #: **CHU-WQA11**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP currently exists and the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis (Level 1). It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions (Level 4). The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

Education Activity Sheets

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TITLE: **Residential Irrigation Runoff Reduction Education**
ID #: **CHU-WQEA1**

ACTIVITY DESCRIPTION

The Carlsbad watershed has seen exceedances for various High Priority pollutants during the Dry Weather Monitoring Program. A pilot single family residential area in a sub-watershed will be selected to evaluate the load reduction potential related to reducing irrigation runoff – please refer to CHU-WQA1. The expected results include reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in pilot area, and reduction in irrigation runoff flow in the pilot area. This activity will focus on education of area residents related to water quality impacts of irrigation runoff. Planned activities include:

- mailer to residents to let them know of our pilot work, ask for voluntary participation, and notify that if over-irrigation or leaks suspected we will contact them directly,
- fact sheet/water use report issued to homeowner with results of assessment and recommendations for improvement,
- mailer to residents to thank them and invite them to participate in a website survey, and
- website survey to measure educational program effectiveness

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning – FY 2008
Implementation and Effectiveness Assessment – FY 2009

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad

All watershed Copermittees will participate during planning and measuring phases of this pilot. City of Carlsbad personnel will participate in the implementation phase of the activity.

OTHER PARTICIPATING ENTITIES

- Carlsbad Municipal Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, sediment, and nutrients as high priority water quality pollutants in the Agua Hedionda (904.3 – bacteria and sediment), Buena Vista (904.2 – bacteria), and San Marcos Creek (904.5 – nutrients) Hydrologic Areas. Bacteria, sediment, and nutrients have been identified as potential discharges from over-irrigation. This activity addresses high priority water quality problems and potential source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Expected benefits include educating residents about pollution prevention and water conservation, load reduction and/or source abatement of high priority pollutants, and reduction of water usage.

EFFECTIVENESS MEASUREMENTS

Targeted outcomes for this activity include increased awareness of irrigation runoff impacts to water quality, and the reduction of flow after working with applicable residents. Implementation effectiveness will be measured by evaluating survey results (Level 2 Outcome) and reviewing any water use changes (Level 3 Outcome). Since the pilot will be completed prior to the start of the 2009 dry season, the results will be analyzed within nine months following completion of the pilot.

TITLE: **Pilot Restaurant Binder/CD Distribution**
ID #: **CAR-WQEA2**

ACTIVITY DESCRIPTION

The Restaurant Binder/CD Distribution activity aims to increase the implementation of BMPs at eating establishments by distributing a binder of educational stormwater materials and organizational tools for restaurant managers and their staff. The binder also includes a short instructional video (CD-ROM) of the most common Best Management Practices for restaurants. The goal of this activity is to improve water quality through increased awareness of stormwater issues and increased implementation of BMPs at eating and drinking establishments.

The City of Encinitas initiated a pilot distribution of the Restaurant Binder and CD during FY06-07 restaurant inspections. The City of Encinitas plans to conduct a follow-up survey during regular annual restaurant inspections. This survey will be used to 1) determine if and how the binder was utilized at each restaurant and 2) get feed back from the restaurants about the usefulness of the binder and CD.

TMDL APPLICABILITY

This activity is not currently planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

FY 06-07 City of Encinitas Pilot Binder/CD Distribution
FY 07-08 City of Encinitas Follow-up Evaluation Survey

PARTICIPATING WATERSHED COPERMITTEES

- City of Encinitas

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Other Pollutants: Trash, Oil/Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant in the Escondido Creek (904.6) hydrologic area. Eating and drinking establishments have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

1. Increased knowledge and awareness among restaurant employees about storm water quality issues
2. Changes in behavior among restaurant managers and their employees
3. Load reductions of trash and bacteria downstream of restaurants

EFFECTIVENESS MEASUREMENTS

Success of the binder and CD distribution will be assessed through the comparison of FY 07-08 inspection outcomes with FY 06-07 outcomes. In FY 06-07 stormwater inspectors documented the restaurants' 1) knowledge/awareness level and 2) cleanliness, BMP implementation, and orderliness of site. During FY 07-08, stormwater inspectors will use the same assessment questions to evaluate each restaurant. In addition, inspectors will ask additional questions relating to the use of the CD and binder. Success of the binder and CD distribution will be evaluated on a site by site basis and in an overall analysis. The following table describes the assessment levels that will be evaluated for this activity.

Level	Targeted Outcome	Assessment Measure	Assessment Method
Level 1 Compliance with Activity-based Permit Requirements	Distribute 175 binders and CDs	Were 175 binders/CD distributed?	Document the number of binders distributed
Level 2 Changes in Knowledge/Awareness	Increased knowledge and awareness of stormwater issues among restaurant staff	Compare FY07-08 inspection and survey results to FY06-07 inspection and survey results	Inspect and survey restaurants that received binder and CD in FY07-08
Level 3 Behavioral Changes/BMP Implementation	Increased use of BMPs at restaurants	Compare FY07-08 inspection and survey results to FY06-07 inspection and survey results	Inspect and survey restaurants that received binder and CD in FY07-08

TITLE:	**Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses**
ID #:	**CHU-WQEA3**

ACTIVITY DESCRIPTION

This free educational workshop will target nurseries and agricultural businesses and will be held in North San Diego County. It will provide owners and operators of a better understanding of water quality runoff management and how the conditional agricultural waiver for discharges will affect their operations. This workshop is being conducted to keep growers and operators updated on runoff regulations, available resources to address any runoff and stormwater related issues, and to share information on how to conduct a site self-assessment prior to inspections. Growers from north San Diego County watersheds are invited to attend, including San Luis Rey, San Dieguito and the Carlsbad Hydrologic Unit. This workshop will typically be held every two years.

Thus, this workshop is designed to provide nursery and agricultural owners and operators with the tools they need to implement BMPs to reduce and eliminate polluted runoff from their operations. This workshop is hopefully the catalyst to implementing structural and operational BMPs at these facilities.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The first educational workshop will be conducted during FY 2008 and bi-annually thereafter.

PARTICIPATING WATERSHED COPERMITTEES

Copermittee participants include Carlsbad, Encinitas, Escondido, Oceanside, Poway, San Marcos and Vista. The City of Oceanside will secure speakers, develop workshop announcement materials and moderate the workshop. Other Copermittees will assist with information dissemination to constituents within their jurisdictions and provide additional support during the workshop.

OTHER PARTICIPATING ENTITIES

The County of San Diego, Agriculture Weights and Measures Division, the Natural Resources Conservation Service, University of California Cooperative Extension and the Regional Water Quality Control Board will provide speakers for the workshop. The San Diego County Farm Bureau and the local Resource Conservation Districts will distribute information to their constituents and provide additional support if resources are available.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity will assist Copermittees in addressing organics, sediment, pesticides, nutrients and bacteria, specific to their watersheds.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, sediment and nutrients as a high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and agricultural operations have been identified as potential discharges of bacteria, sediment, and nutrients. This activity

addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The expected benefit of this activity is the installation of structural or operational BMPs to reduce and eliminate irrigation runoff based on information obtained by conducting a site self-assessment and other available resources.

EFFECTIVENESS MEASUREMENTS

This workshop will increase knowledge of growers by providing updated runoff regulations, information about the new agricultural waiver that became effective in 2008, how to conduct a site self-assessment to determine any runoff issues, and the financial resources available to implement best management practices applicable to their operations (Level 2 Outcome). This workshop is designed to create behavioral changes and BMP implementation at agricultural operations (Level 3 Outcome), thereby reducing nutrient loads to receiving waters (Level 4 Outcome). To determine the effectiveness of the workshop, attendees will be polled after six months to determine if they conducted a site self-assessment , if any BMPs were implemented (structural and/or operational), and if they utilized any outside financial resources to implement the BMPs.

TITLE:	**LID and Watershed Planning for Community Planning and Sponsor Groups**
ID #:	**CHU-WQEA4**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the Carlsbad Watershed include:

- Hidden Meadows (North County Metro)
- Twin Oaks (North County Metro)
- San Dieguito
- Valley Center
- Bonsall

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcomes). The County will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2 Outcome).

TITLE: **LID Features in San Elijo Nature Center**
ID #: **CHU-WQEA5**

ACTIVITY DESCRIPTION

In November 2007, construction began on a two-storey, 5525 square foot, state-of-the-art nature center that will replace the former visitor center located at the San Elijo Lagoon Ecological Reserve in Encinitas. The new facility, which will open in early 2009, is designed to be constructed and commissioned in accordance with the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program and is expected to achieve Gold or Platinum certification. LEED credit 6 is specific to stormwater management and is achieved by maintaining the pre-development 24-hour peak discharge rate in the post-development environment if existing impervious surfaces are 50% or less. The building design incorporates Low Impact Development (LID) techniques which include a green roof with low water use native plants and a bioswale to aid in infiltration of runoff from the site and extraordinary efforts to significantly minimize area of disturbance to aid in erosion prevention and pollutant filtration during and after construction. In addition to the many "Green" qualities built into the building, the Nature Center's exhibits will showcase a series of high quality professional photographs and high-tech, interactive, educational kiosks for visitors of all ages. A section of the exhibits will educate visitors on what and where watersheds are, the causes of water pollution and its destructive impact on habitat and endangerment and extinction of species, clean drinking water, water conservation, water reuse, etc.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

November 2007 – Groundbreaking
December 2007 – Establish minimized area of disturbance, begin demolition of existing facilities
October 2008 – Installation of Exhibits
December 2008/January 2009 – Building Commissioning
January 2009 – Grand Opening

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria, sediment, and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

The LID techniques applied in this project will reduce the rate and volume of runoff and aid in the reduction of sediment, bacteria, and nutrients by increasing natural filtration of stormwater at the source and recharging groundwater through a bioswale. By minimizing disturbed area, the project will reduce the amount of sediment erosion on site. The existing established native plant species absorb stormwater thereby filtering out pollutants while aiding in groundwater recharge.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by assessing successful installation of LID features (Level 1). There is no post-construction water quality monitoring specifically planned for this site.

CARLSBAD WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2008
ANNUAL REPORT

January 31, 2009

Prepared and Submitted by the Carlsbad Watershed Copermittees

City of Carlsbad
City of Encinitas
City of Escondido
City of Oceanside
City of San Marcos
City of Solana Beach
City of Vista
County of San Diego

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Phil Cotton, City Manager
City of Encinitas

1-27-09
Date

ESCONDIDO
City of Choice

January 30, 2008

RE: STATEMENT OF CERTIFICATION
FY 2008 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lori Vereker
Director of Utilities
City of Escondido

City of Carlsbad
Public Works – Environmental Programs

January 30, 2009

RE: STATEMENT OF CERTIFICATION
2008 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Glenn Pruim P.E.
Public Works Director
City of Carlsbad

1635 Faraday Avenue • Carlsbad, CA 92008-7314 • (760) 602-4646 • FAX (760) 602-8562

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

January 30, 2009

RE: STATEMENT OF CERTIFICATION
2007-08 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed

I certify under penalty of law that the FY 2007-08 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahiouezadeh

Signatory Name
Signatory Title
Jurisdiction

300 NORTH COAST HIGHWAY • OCEANSIDE, CA 92054 • TELEPHONE 760-435-5800 • FAX 760-435-5814

January 30, 2009

RE: STATEMENT OF CERTIFICATION
2008 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Erica M. Ryan
Stormwater Program Manager
City of San Marcos

STATEMENT OF CERTIFICATION

Carlsbad Watershed Urban Runoff Management Plan (WURMP) FY 2007-2008 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2007-2008 Carlsbad Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-21-09
Date

City of Vista

January 28, 2009

RE: STATEMENT OF CERTIFICATION
2007-08 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed

I certify under penalty of law that the FY 2007-08 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita L. Geldert
City Manager
City of Vista

Lawrence D. Pierce
Director of Engineering
City of Vista

CITY OF SOLANA BEACH
635 SOUTH HIGHWAY 101 • SOLANA BEACH, CALIFORNIA 92075-2215 • (858) 720-2400
www.ci.solana-beach.ca.us FAX (858) 792-6513 / (858) 755-1782

January 30, 2009

RE: STATEMENT OF CERTIFICATION
2008 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. Sammak

Mo Sammak
Director of Engineering/Public Works
City of Solana Beach

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EXECUTIVE SUMMARY

This Annual Report represents the Carlsbad Watershed Copermittees' activities during the first reporting period (July 1, 2007 through June 30, 2008) of Order No. R9-2007-0001, issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Order, the Carlsbad WURMP Copermittees worked collaboratively to improve water quality within the watershed throughout FY 2008. The Copermittees will continue to work with the Regional Board to implement, improve, and enhance their programs and activities over the next several years.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed management area (WMA). The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

The Copermittees developed a collective watershed strategy using existing data and information available to the Copermittees related to water quality and potential sources of pollutants to identify the most important water quality problems and sources within the WMA. Some baseline source information was available through existing literature, including the Copermitees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA). The Copermittees then evaluated the Hydrologic Areas (HA) to make management decisions about potential targeted activities.

A summary of the program accomplishments for FY 2008 is found below:

Water Quality Assessment

Water quality priorities are evaluated each year based on the water quality assessment performed during the previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

High Priority Pollutants:

- Bacteria
- Sedimentation
- Nutrients

Constituents of Concern:

- Pesticides
- Total dissolved solids (TDS)
- Trash

Carlsbad Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Carlsbad WURMP Copermittees continued to develop and implement a watershed-based program that addresses the high priority water quality problems and their sources in the Carlsbad WMA. The Carlsbad WURMP Copermittees met ten times over the course of the reporting period to plan, implement and assess watershed activities. Through workgroup collaboration, there has been an increase in the ability of the Copermittees to identify and address watershed source pollutants, an increase in public awareness, partnerships formed with other organizations, and opportunities provided for collaboration resulting in cost-effective activities.

Watershed Activities

The Carlsbad WURMP Copermittees focused their efforts on the high priority water quality problems in the watershed during the FY 2008 reporting period. These activities represent the outcome of a collective watershed strategy developed to guide Copermittees to develop activities that reduce pollutant loads or abate source of high priority water quality problems. The result of this focused approach has been the implementation of ten watershed activities during the reporting period, all of which focus on high priority water quality problems and the most likely sources of them.

As a result of the evaluation of the WURMP activities, water quality and source information, the Carlsbad WURMP Copermittees determined to focus on the following activities for FY 2008:

1. Watershed Water Quality Activity – Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility
2. Watershed Water Quality Activity – Myers Property Restoration Assessment
3. Watershed Water Quality Activity – Escondido Creek Restoration
4. Watershed Water Quality Activity – Nitrate Source Identification and Abatement: Buena Creek
5. Watershed Water Quality Activity – Focused Inspections along San Marcos Creek
6. Watershed Water Quality Activity – Pet Waste Bag Dispenser Program in County Parks
7. Watershed Water Quality Activity – Land Acquisitions
8. Watershed Education Activity – LID and Watershed Planning for Community Planning/Sponsor Groups
9. Watershed Education Activity – Agricultural Workshop
10. Watershed Education Activity – Pilot Restaurant Binder and CD Distribution

The Carlsbad WURMP Copermittees have also decided to add two new watershed activities to their 5-year strategic plan as follows:

1. Watershed Education Activity – LID/SUSMP Implementation Workshops
2. Watershed Water Quality Activity – Lake San Marcos Tributary Watershed BMP Master Plan

Effectiveness Assessment

The Carlsbad Watershed Copermittees continue to improve the program's effectiveness assessment utilizing the six-level assessment framework prepared by the Regional Copermittees in October 2003. This year's assessment is more thorough than in past reports. Moreover, the Copermittees not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, this year's effectiveness assessment lays the foundation for future in-depth evaluations of activities and program implementation.

The following table identifies key assessments of the activities implemented during FY 2008. It is clear that the Copermittees have implemented activities that will assist in urban runoff reduction, pollution prevention and water quality improvements.

Key Assessments of Activities Implemented in FY 2008

Activity	High Priority Water Quality Problem(s) Addressed	Level 2 Changes in Knowledge/ Awareness	Level 3 Change in Behavior	Sources Identified?	Level 4 Sources Reduced or Abated?
Myers Property Restoration	Bacteria, Sediment	None measured.	Yes - BMPs were implemented on the property.	Sediment loads from erosive soils.	Yes - via native vegetation, erosion, and sediment control installation.
Escondido Creek Restoration	Sediment	None measured.	Yes - BMPs were implemented in Escondido Creek.	Stream bed and bank erosion.	Yes - via gabion structures and native vegetation.
Nitrate Source Identification and Abatement: Buena Creek	Nutrients	Yes - via inspections and resulting education.	Yes - BMPs implemented to reduce tail water runoff.	Nurseries, groundwater	Yes - inspections requiring BMP implementation.
Focused Inspections along San Marcos Creek	Nutrients	Yes - via inspections and resulting education.	None measured.	Commercial/Industrial Sources Suspected	Likely reduced via BMP implementation
Pet Waste Bag Dispenser Program in County Parks	Bacteria, Nutrients	Yes - via dispensers and positive examples.	Yes - in general, more people picking up after their pets.	Parks, specifically pet waste.	Yes - provided mechanism for proper disposal of pet waste.
Land Acquisitions	Bacteria, Sediment, Nutrients	None measured.	None measured.	Potential development.	No property acquired in Carlsbad WMA during FY 2008.
LID and Watershed Planning for Community Planning/Sponsor Groups	Pollutants specific to HA	Yes - measured via pre- and post-workshop quizzes.	None measured.	Future Development.	Not specifically.
Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses (Agriculture Workshop)	Bacteria, Sediment, Nutrients	Yes - measured via pre- and post-workshop quizzes.	Yes - BMPs implemented as assessed through follow-up assessment form.	N/A	Yes - reduced via BMP implementation.
Pilot Restaurant Binder and CD Distribution	Bacteria, Nutrients	Yes – measured via pre- and post-implementation survey	Yes – measured via pre- and post-implementation survey and via inspection data assessment	Used cooking oil, trash, cleaning products and other miscellaneous debris	Yes – reduced via increased BMP implementation

WURMP Improvements

Future data collection may concentrate on MS4 discharges and source characterization. The current Receiving Waters and Urban Runoff Monitoring and Reporting Program focuses largely on receiving water quality characterization and does not provide the watershed groups with data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WUMRPs but will be limited in scope. Since the WMA is composed of six unique HAs or watersheds, it is important that recommendations first be developed and presented that are specific to each HA prior to characterizing the current water quality environment for the entire WMA. The following HA and WMA improvements are based on the currently limited data.

Chapter 4 of this report provides an accounting of the effectiveness of the program and activities conducted by the Copermittees. Under federal law, the litmus of practicability imposed on these programs requires that an important balance be established between the costs of pollution controls and their effectiveness. In many cases, minimal data or information exists to substantiate this nexus. Over time, the Regional Water Quality Control Board (RWQCB), the Copermittees and other regulated parties must gather and evaluate the data needed to determine what works. Over the long-term, despite not having fully utilized an effectiveness assessment instrument, the Copermittees have made significant strides in developing a strategy for evaluating the effectiveness of the WURMP as described in the Permit. Compliance has been achieved in the Carlsbad WMA in this FY by the Carlsbad WURMP Copermittees as is evidenced in this report.

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The report also recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language, where necessary, to better develop and meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The Carlsbad WURMP Copermittees are committed to continuing their involvement in this process during the FY 2009 reporting period. It is anticipated that some changes to the 5-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the Copermittees and the RWQCB.

1 INTRODUCTION

This Annual Report represents the Carlsbad WURMP Copermittees' activities during the first reporting period (July 1, 2007 through June 30, 2008) of Order No. R9-2007-0001, issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Order, the Carlsbad WURMP Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout FY 2008. The Copermittees will continue to work with the Regional Board to implement, improve, and enhance their programs and activities over the next several years.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

Order No. R9-2007-0001 represents a continuation as well as a refinement of Order No. 2001-01, which was issued by the RWQCB in February 2001. As with the 2001 Permit, Order R9-2007-0001 includes federal requirements to reduce pollutants discharged from the municipal storm drain system to the maximum extent practicable (MEP) and incorporates specific program elements required by federal regulations. The Order R9-2007-0001 exceeds federal specifications by also directing municipal storm water dischargers to meet water quality standards and by requiring structural post-construction treatment control best management practices (TCBMPs) of a specified size for new development and significant redevelopment without limitation by the MEP standard.

The Order R9-2007-0001 also requires that the Copermittees within the Carlsbad Watershed collaborate in the development and implementation of a watershed-based program that addresses urban runoff[1] quality. The rationale for this need is simple: urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon shared receiving waters. The mechanism that the Order R9-2007-0001 uses to require watershed collaboration is the development of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, the Order R9-2007-0001 requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied.

[1] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

In order for a plan to be successful, clear goals and objectives must first be established, agreed to and implemented by the Carlsbad Watershed Copermittees. Otherwise, program activities and tasks are adopted without an understandable purpose or clear direction. The goal of the Carlsbad Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

To achieve this overarching goal, the Carlsbad WURMP Copermittees have formulated a collective watershed management strategy that focuses the program's efforts on collaboratively addressing water quality problems and potential sources that are unique to the Carlsbad Management Area's sub-watersheds. Data collected in the watershed and analyzed to date suggests that bacteria are a high-priority water quality problem in the Loma Alta, Agua Hedionda, and Escondido Creek Hydrologic Areas. In addition, sediment has been identified as a high-priority pollutant in the Escondido Creek and Agua Hedionda Hydrologic Areas (HAs). And finally, nutrients are identified as a high-priority water quality problem in the Escondido Creek HA.

To target these water quality problems, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the collective watershed strategy as the basis for developing and implementing the activities, the Copermittees focused their efforts on the potential sources that are the most likely high-priority pollutant contributors in the Carlsbad Watershed Management Area. The FY 2008 report details the implementation of the Carlsbad WURMP's collective watershed strategy.

1.1 COPERMITTEE COLLABORATION

1.1.1 CARLSBAD WURMP MEETINGS

In order to effectively plan and implement the Carlsbad WURMP the Copermittees met ten (10) times during FY 2008 to complete the 2008 Carlsbad WURMP Update, to develop and prioritize water quality activities that address pollutants of concern in the watershed, to exchange ideas on how to address high priority water quality pollutants in the watershed, to evaluate the effectiveness of actions, and to collaborate on development of required submittals. See Table 1-1 below for dates of these meetings and pertinent agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
7/17/2007	Watershed lead transfer; WURMP Update - watershed strategy & activity planning
9/6/2007	Watershed lead transfer; WURMP Update - watershed strategy & activity planning; TMDL process
9/18/2007	WURMP Update - Document format, schedule & activity planning; Data Management
10/16/2007	WURMP Update - activity planning; TMDL Process; WURMP annual reporting; Data Management; Copermittee MOU & Cost Share; Education Coordination with NCSWP
11/28/2007	WURMP Update & annual reporting; TMDL Discussion; Data Management; MOU and Cost Share; Outreach and Education

Date	Agenda Item Topics
1/15/2008	WURMP Annual Reporting; TMDL Discussion; Data Management
2/5/2008	WURMP Revisions
4/22/2008	Revised WURMP; Regional monitoring report; Public Participation; Targeted MS4 Outfall monitoring; RWQCB watershed audits
5/20/2008	Public participation; Data Management; WURMP Update - activity planning; Education Coordination with NCSWP; Grant opportunity
6/17/2008	Data Management; WURMP Implementation - activity update & annual cycle; Grant opportunity

The general watershed meetings of the Carlsbad WURMP Workgroup were led by the City of Carlsbad who is now the lead Copermittee for the Carlsbad WURMP Workgroup under this current Permit. A cost-share agreement was executed by the Copermittees to cover the cost of technical and administration assistance for the watershed program. Activities and tasks developed by the Copermittees are carried out by the Copermittees within the structure of their jurisdictional organization. Task completion is then tracked and assessed at the workgroup meetings and reported in the Annual Report.

1.1.2 LAGOON TMDL INVESTIGATIVE ORDER

The Carlsbad WURMP Copermittees have assisted in the development of an important TMDL program in the Carlsbad Watershed currently under development by the RWQCB. The TMDL is the Impaired Lagoons, Adjacent Beaches, and Agua Hedionda Creek TMDL (Lagoon TMDL). The Lagoon TMDL affects one slough and three lagoons in the WMA; Loma Alta Slough and Buena Vista, Agua Hedionda and San Elijo Lagoons and covers bacteria, sediment and nutrients (depending on the lagoon). During FY 2006, TMDL planning occurred. In FY 2007, the RWQCB issued Investigation Order R9 2006-076 for monitoring associated with Lagoon TMDL modeling. The Lagoon TMDL Investigation Order has resulted in the collection of a significant amount of hydrologic, hydraulic and water quality data for the four lagoons and their associated watersheds. Through monitoring during FY 2008, a significant amount of data was collected in order to calibrate and validate the TMDL models for pollutant load allocation.

1.1.3 GRANT APPLICATION

During the reporting period, the Copermittees worked together to develop a competitive West Coast Estuaries grant application. The proposed project was to develop a comprehensive, site-specific and scientific approach needed to evaluate and prioritize efforts to best protect and/or enhance the estuaries. To achieve these results, key implementation projects would be subject to computer modeling scenarios to determine the most effective activities/projects and implementation locations through the completion of five major tasks: (1) conduct baseline monitoring and assessment; (2) conduct modeling analysis; (3) design and create an LID pilot project; (4) measure and monitor LID benefits; and, (5) coordinate, outreach, and information transfer. Once the tasks were completed, the applicant(s) would have used the results to implement activities and BMPs to systematically and efficiently address the watershed's issues—a comprehensive approach that is critical to realizing sustainable watershed benefits. Unfortunately, the Copermittees were unsuccessful in their pursuits. The Copermittees will continue to seek grant funding for this project as well as other projects within the watershed.

1.1.4 AGUA HEDIONDA WATERSHED MANAGEMENT PLAN

During FY 2008, the watershed Copermittees collaborated in the completion of the Agua Hedionda Watershed Management Plan (AHWMP) – a grant funded effort led by the City of Vista. The AHWMP provides a comprehensive, scientifically-based plan for preserving, restoring, and enhancing the Agua Hedionda Watershed's natural functions and features. It assesses past, present, and future watershed conditions and identifies management needs throughout the watershed, considering the complex relationships among different watershed processes. The recommendations of the AHWMP represent a geographically focused, comprehensive watershed planning effort. The plan presents management measures for achieving and sustaining measurable water quality improvements and recommends focus areas where opportunities will complement each other and lead to greater improvement in watershed functions. More information about the AHWMP and the FY 2008 efforts can be found in Section 3.2 below.

1.1.5 WEB-BASED GIS DATA WAREHOUSING APPLICATION

The Carlsbad WURMP Copermittees designed and started implementing a web-based GIS data warehousing application in FY 2007. In FY 2008, the Carlsbad WURMP Copermittees continued working to be able to compare dry weather constituents of concern across the Carlsbad Hydrologic Unit. Each jurisdiction provided pollutant source inventories and historical dry weather data. The data was processed and integrated into the interactive mapping application. The GIS mapping application is the platform by which the assessment of dry weather monitoring data can be analyzed within the watershed. Some of the mapping application's tools include, zooming in and out, turning different layers on and off for display, selecting features, exporting data and creating maps of selected views. This mapping application can provide the Carlsbad WURMP group with the practical means to assess the source of water quality impacts within the watershed and provides a platform from which to develop appropriate BMPs to minimize impacts to receiving water bodies.

Although the data was submitted for this application by individual Copermittees, it is neither comprehensive nor has it been thoroughly reviewed for quality control purposes. Until measures for quality control and maintenance are implemented, the application cannot be completely utilized for accurate assessments. The Carlsbad WURMP Copermittees anticipate working toward implementing these appropriate measures in future reporting periods as resources allow.

1.2 WATERSHED MAP UPDATES

The Copermittees are providing a watershed map as Attachment 1.

1.3 ORGANIZATION AND CONTENT OF REPORT

The overall structure of the Annual Report is as follows:

SECTION 1- Introduction

Section 1 of the Annual Report provides a summary of the Carlsbad WURMP Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2- Water Quality and Pollutant Source Assessment
Section 2 provides an updated evaluation and analysis of the Carlsbad WMA's receiving water conditions based on applicable water quality data from the Receiving Waters and Urban Runoff Monitoring Program Annual Report. In addition, Section 2 provides an update on the likely source loads in urban runoff. Although the assessment covers the entire WMA, it specifically addresses the six distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA.

SECTION 3- Implementation of Watershed Activities
Section 3 describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2008 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution.

SECTION 4- Effectiveness Assessment
Section 4 provides an assessment of the implementation and effectiveness of the Carlsbad Watershed URMP for the period July 2007 through June 2008 using concepts from "A Framework for Assessing the Effectiveness of Jurisdictional Runoff Management Programs." The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and BMP implementation and resulting changes in receiving water quality. Consistent with the requirements of Order No. R9-2007-0001, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 5- Conclusions
Section 5 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

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2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section provides an updated water quality assessment and pollutant source assessment based upon previously established strategies and processes presented in the 2008 WURMP.

The water quality assessment provides an updated evaluation and analysis of the WMA's receiving waters conditions based on applicable water quality data, reports, analyses, and other information. The update in this annual report is based on the assessment strategy described in the 2008 WURMP (March 2008) with information from the 2007-2008 Receiving Waters and Urban Runoff Monitoring Program Annual Report (Weston, January 2009). The assessment concludes with identification of the high priority water quality problems for each applicable HA.

The pollutant source assessment provides an update of the likely sources of pollutant loads in urban runoff based on the currently available data associated with the urban runoff management programs. The source update is directly associated with the identified high priority water quality problems identified in the water quality assessment.

2.1 WATER QUALITY ASSESSMENT

This section summarizes the results and assessment of the 2007–2008 monitoring programs conducted in the Carlsbad WMA. Monitoring activities conducted in compliance with RWQCB Order R9-2007-0001 are provided in Table 2-1.

The Carlsbad WMA is comprised of six HAs: Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek. The WMA has two monitored mass loading stations (MLS), one on Agua Hedionda Creek and one on Escondido Creek. There are four temporary watershed assessment stations (TWAS) in the WMA, one each in Loma Alta, Buena Vista, Agua Hedionda, and Escondido Creek HAs. There are six bioassessment stations in the WMA, one each in Loma Alta and Buena Vista HAs and two each in Agua Hedionda and Escondido Creek HAs. Finally, there are numerous dry weather monitoring (DWM) sites and coastal storm drain monitoring (CSDM) sites throughout the WMA.

Table 2-2 and Figure 2-1 below identifies the various monitoring activities in each of the Hydrologic Areas (HA) of the WMA. In combination, all of the monitoring data was used to assess the conditions of the overall WMA. Where applicable, the data was also used to evaluate the water quality conditions in each of the HA.

Table 2-1. Monitoring Program Activities

Program Data Set	Constituents Assessed
MLS and TWAS – Ambient and Storm Monitoring	Toxicity, chemistry, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC
Rapid Stream Bioassessments	Benthic macroinvertebrates
Jurisdictional DWM	Field parameters and chemistry
CSDM Program	Indicator bacteria

Table 2-2 Monitoring Activities in the Carlsbad Hydrologic Unit

Hydrologic Area	MLS	2007-2008 TWAS	Bioassessment Stations	Dry Weather Monitoring	Coastal Storm Drain Monitoring
904.1 Loma Alta		X	X	X	X
904.2 Buena Vista Creek		X	X	X	X
904.3 Agua Hedionda	X	X	X (two stations)	X	X
904.4 Encinas				X	-
904.5 San Marcos				X	X
904.6 Escondido Creek	X	X	X (two stations)	X	X

2.1.1 INTEGRATED ASSESSMENTS ON HYDROLOGICAL AREA LEVEL

The San Diego County Municipal Copermittees 2007-2008 Urban Runoff Monitoring Report (Weston Report, January 2009) includes significant analyses of the monitoring activities conducted within the Carlsbad WMA during the reporting period. The analyses and assessments are of tremendous value to the Carlsbad WURMP Copermittees and the reader is directed to the Weston Report for details of the analyses.

As a part of the Weston Report, assessments of four of the six HAs during both wet weather and ambient weather monitoring conditions are presented in an integrated manner to convey an overall assessment of each HA to managers and to provide information and answers to the core monitoring management questions (Section 2.1.2). The integrated assessment also identifies which COCs overlap between receiving waters and urban runoff. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as the data become available in future years. These integrated watershed assessments results are presented in the tables below. Again, it is highly recommended that the reader review the Weston Report for further details on the analyses and assessments.

Figure 2-1. Carlsbad Watershed Management Area 2007–2008 Monitoring Station Location Map

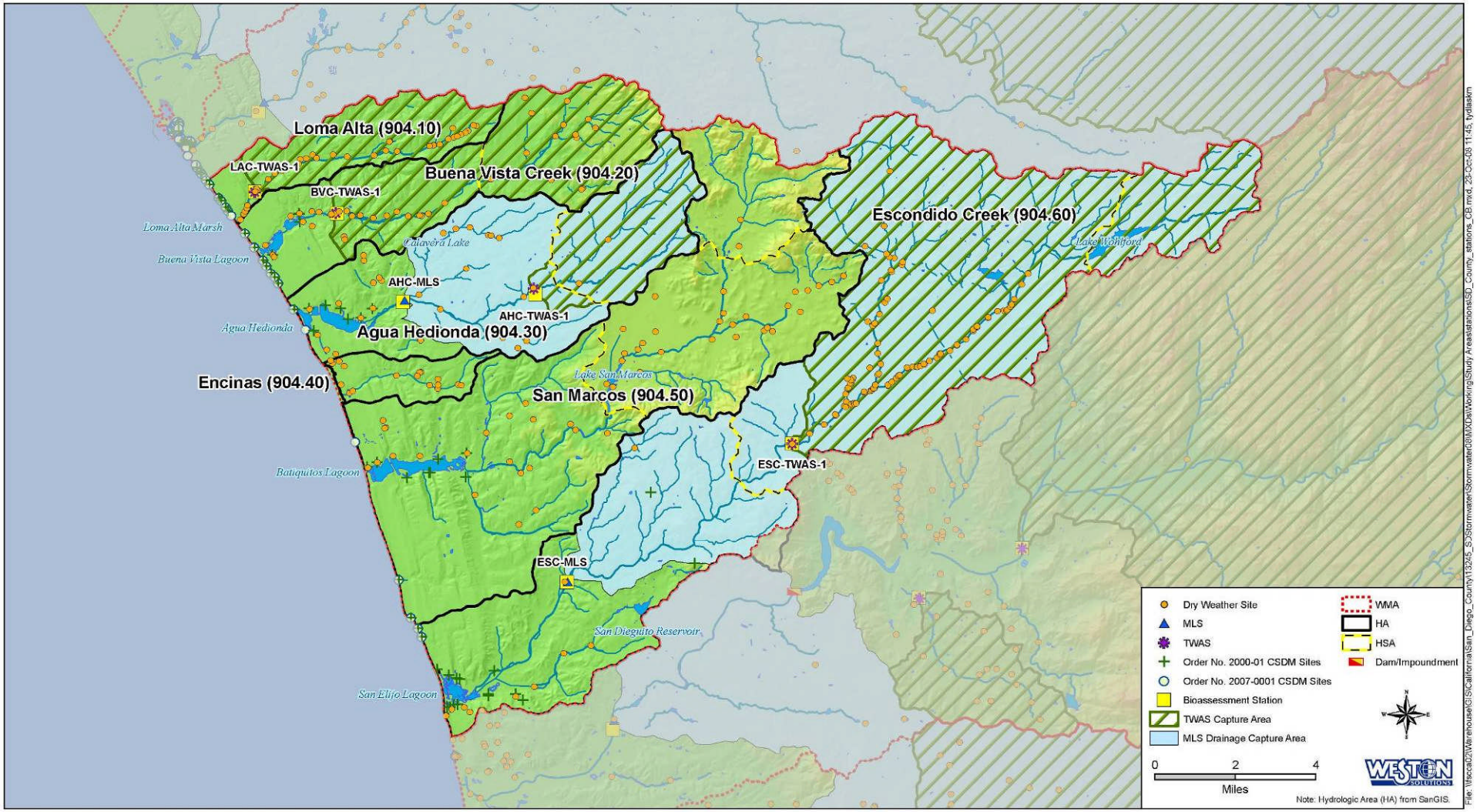

*** Note: Not all of the Dry Weather Monitoring Sites for the WMA are represented on this Figure**

Table 2-3. Integrated Watershed Area Management Assessment – LOMA ALTA

Assessment Category		Program	Frequency of Occurrence Assessment Findings	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	**Ambient Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS	No	Yes	TDS is identified as a high frequency of occurrence COC during only ambient weather conditions. TDS is a known issue related to importation of drinking water, over-irrigation, and potential recycled water uses. Indicator bacteria were not determined to be above benchmarks in the receiving water at the TWAS or during jurisdictional dry weather monitoring. Low frequency of occurrence COCs were primarily related to dry weather monitoring data collected in the MS4. Turbidity in dry weather runoff may be related to wet weather high frequency COCs listed below.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring, Coastal Storm Drain Monitoring, MS4 Program Data, Source Identification Monitoring	♦- Conductivity, turbidity, orthophosphate	NA		
Wet Weather	**Wet Weather Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TSS, turbidity, fecal coliform, enterococci ♦-Total coliform	Yes *(Hyalella azteca)*		Turbidity, TSS, fecal coliform, and enterococci are high frequency of occurrence COCs during wet weather conditions only. Turbidity was also identified as a low frequency ambient COC (due to jurisdictional dry weather monitoring data) suggesting a potential link between urban runoff and receiving water conditions. Toxicity to *Hyalella aztec* a is identified as persistent based on two of two monitoring events at the TWAS. Synthetic pyrethroids were detected at levels sufficient to induce a toxic response to this organism at the TWAS. This is a region wide and state wide problem, and is currently being addressed by the Department of Pesticide Regulation.
	Wet Weather Urban Runoff Areas	MS4 Program Data and Source Identification Monitoring	(No data from the programs to date)	NA		

* Note: MS4 Outfall Monitoring and Source Identification Monitoring Program data were not included in this assessment and will be incorporated in future data assessments.

Table 2-4. Integrated Watershed Area Management Assessment – BUENA VISTA CREEK

Assessment Category		Program	Frequency of Occurrence Assessment Findings	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	**Ambient Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, enterococci	No	Yes	TDS and enterococci are identified as a high frequency of occurrence COC during ambient conditions. TDS is a known issue related to importation of drinking water, over-irrigation, and potential recycled water uses. Enterococci was also detemined as a high frequency of occurrence COC in wet weather. Total coliform and fecal coliform medium frequency of occurrence COCs were dirven by jurisdictional dry weather monitoring data. Jurisdictional dry weather bacteria exceedances suggest a potential link between urban runoff and receiving water conditions. Indicator bacteria may potentially be related to bacterial re-growth in the receiving waters during low velocity conditions. Low frequency of occurrence COCs were primarily related to dry weather monitoring data collected in the MS4.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring, Coastal Storm Drain Monitoring, MS4 Program Data, Source Identification Monitoring	♦♦-Total coliform, fecal coliform ♦- Conductivity, ammonia	NA		
Wet Weather	**Wet Weather Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TSS, turbidity, total coliform, fecal coliform, enterococci	Yes *(Hyalella azteca)*		Turbidity, TSS, and all three indicator bacteria are high frequency of occurrence COCs during wet weather conditions. Enterococci are also detemined as a high frequency of occurrence ambient COC. Jurisdictional dry weather bacteria exceedances suggest a potential link between urban runoff and receiving water conditions. Toxicity to *Hyalella azteca* is identified as persistent based on two of two monitoring events at the TWAS. Synthetic pyrethroids were detected at levels sufficient to induce a toxic response to this organism at the TWAS. This is a region wide and state wide problem, and is currently being addressed by the Department of Pesticide Regulation.
	Wet Weather Urban Runoff Areas	MS4 Program Data and Source Identification Monitoring	(No data from the programs to date)	NA		

* Note: MS4 Outfall Monitoring and Source Identification Monitoring Program data were not included in this assessment and will be incorporated in future data assessments.

Table 2-5. Integrated Watershed Area Management Assessment – AGUA HEDIONDA

Assessment Category		Program	Frequency of Occurrence Assessment Findings	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	**Ambient Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, fecal coliform, enterococci	No	Yes	TDS, fecal coliform, and enterococci are identified as a high frequency of occurrence COC during both ambient and wet weather conditions. TDS is a known issue related to importation of drinking water, over-irrigation, and potential recycled water uses. Indicator bacteria are also related to dry weather runoff and potentially bacterial re-growth in the receiving waters during low velocity conditions. Low frequency of occurrence COCs were primarily related to dry weather monitoring data collected in the MS4.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring, Coastal Storm Drain Monitoring, MS4 Program Data, Source Identification Monitoring	♦- Conductivity, turbidity, ammonia, orthophosphate, total coliform	NA		
Wet Weather	**Wet Weather Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, TSS, turbidity, total coliform, fecal coliform, enterococci ♦-Diazinon, chlorpyrifos	Yes *(Hyalella azteca)*		Turbidity and TSS are high frequency of occurrence COCs during wet weather conditions only. Turbidity was also identified as a low frequency ambient COC suggesting a potential link between urban runoff and receiving water conditions. Diazinon and chlorpyrifos are identified as low frequency of occurrence COCs during wet weather. These two compounds have been banned by the U.S. EPA and may be related to use of remaining stock in residential and agricultural land uses. Toxicity to *Hyalella azteca* is identified as a persistent issue in this watershed. Synthetic pyrethroids were detected at levels sufficient to induce a toxic response to this organism at both the TWAS and MLS. This is a region wide and state wide problem, and is currently being addressed by the Department of Pesticide Regulation. TIEs also confirmed synthetic pyrethroids as the causitive agent of toxicity to *Hyalella azteca* in samples collected at the MLS.
	Wet Weather Urban Runoff Areas	MS4 Program Data and Source Identification Monitoring	(No data from the programs to date)	NA		

* Note: MS4 Outfall Monitoring and Source Identification Monitoring Program data were not included in this assessment and will be incorporated in future data assessments.

Table 2-6. Integrated Watershed Area Management Assessment – ESCONDIDO CREEK

Assessment Category		Program	Frequency of Occurrence Assessment Findings	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	**Ambient Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, enterococci	No	Yes	TDS and enterococci are identified as a high frequency of occurrence COC during both ambient and wet weather conditions. TDS is a known issue related to importation of drinking water, over-irrigation, and potential recycled water uses. Indicator bacteria are also related to dry weather runoff and potentially bacterial re-growth in the receiving waters during low velocity conditions. Low frequency of occurrence COCs were primarily related to dry weather monitoring data collected in the MS4 for turbidity, total coliform, and fecal coliform.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring, Coastal Storm Drain Monitoring, MS4 Program Data, Source Identification Monitoring	♦-Turbidity, total coliform, fecal coliform	NA		
Wet Weather	**Wet Weather Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, turbidity, total coliform, fecal coliform, enterococci ♦-TSS	Yes (*Hyalella azteca* at TWAS)		Turbidity and all three fecal indicator bacteria are high frequency of occurrence COCs during wet weather conditions. Turbidity was also identified as a low frequency ambient COC suggesting a potential link between urban runoff and receiving water conditions. Toxicity to *Hyalella azteca* is identified as persistent based on two of two monitoring events at the TWAS. Although two of two events were also toxic to *Hyalella azteca* at the MLS, the MLS historical data suggests it is not a persistent issue. Synthetic pyrethroids were detected at levels sufficient to induce a toxic response to this organism at both the MLS and TWAS. This is a region wide and state wide problem, and is currently being addressed by the Department of Pesticide Regulation.
	Wet Weather Urban Runoff Areas	MS4 Program Data and Source Identification Monitoring	(No data from the programs to date)	NA		

* Note: MS4 Outfall Monitoring and Source Identification Monitoring Program data were not included in this assessment and will be incorporated in future data assessments.

2.1.2 SUMMARY OF MONITORING PROGRAM DATA TO ADDRESS CORE MANAGEMENT QUESTIONS

Receiving water monitoring at MLS and TWAS was conducted during two ambient weather events and two wet weather events. Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Order R9-2007-0001 with the exception of Chollas Creek that is monitored each year. Each element of this monitoring program was designed to provide scientific data to address five core management questions. The core management questions, as listed in the Order R9-2007-0001, are presented as follows:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What are the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring programs vary in the number of years applied and the spatial extent to which the collected data applies. Therefore, data support only partially resolves each core management question. Through continued monitoring and the refinement of the Order R9-2007-0001 requirements a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments were conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach. Each HA in the Carlsbad WMA was assessed individually. The overall findings for the WMA are summarized by program element in Table2-7.

Table 2-7. Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
Carlsbad WMA	Receiving Water Monitoring Program	Ambient Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS and indicator bacteria – total coliform, fecal coliform, and/or enterococci). - Low frequency of occurrence (conductivity, turbidity, orthophosphate and ammonia). ▪ Constituents with a magnitude of exceedance greater than five times their benchmark included enterococci (Buena Vista Creek HA), fecal coliform (Agua Hedionda HA), and TDS (Escondido HA). ▪ No persistent toxicity was observed. ▪ Concentrations of benthic algal biomass, DO, and pH (secondary indicators of eutrophication) suggest nutrient levels may be impairing some beneficial uses at some sites. ▪ Pyrethroids were detected in post-storm sediments at concentrations above sediment benchmarks at two sites: Buena Vista Creek TWAS and Escondido Creek MLS.	1, 2
		Wet Weather Receiving Water Assessment	▪ Constituents of Concern[1]: - High frequency of occurrence (TSS, turbidity, and indicator bacteria – total coliform, fecal coliform, and/or enterococci). - Low frequency of occurrence (conductivity, orthophosphate, TSS, ammonia), Chlorpyrifos and Diazinon at Agua Hedionda HA only). ▪ Constituents with a magnitude of exceedance greater than five times the benchmark included fecal coliform and turbidity at all sites and Chlorpyrifos at the Agua Hedionda TWAS. ▪ Persistent toxicity to *Hyalella azteca* was observed at all sites. ▪ Pyrethroids were detected in receiving waters at concentrations above water quality benchmarks at all but one MLS and TWAS.	
		Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Poor or Very Poor IBI ratings) were observed at all sites.	
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (CSDM and DWM)	▪ Constituents of Concern[1]: - High frequency of occurrence (none). - Medium or low frequency of occurrence: • Loma Alta HA (conductivity, turbidity, orthophosphate). • Buena Vista Creek (conductivity, ammonia, total coliform, and fecal coliform). • Agua Hedionda HA (conductivity, turbidity, ammonia, orthophosphate, and total coliform) ▪ Escondido Creek HA (turbidity, total coliform, and fecal coliform)	3, 4
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ No data analyzed from this program to date.	

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
	WMA Assessment	Receiving Water Trend Assessment	▪ In the Agua Hedionda HA, significantly increasing trends were observed for ammonia, COD, dissolved phosphorus, TSS and turbidity, indicator bacteria, and four metals (total copper, lead, nickel, and zinc). Significantly decreasing trends were observed for TDS and conductivity. ▪ In the Escondido Creek HA, significantly increasing trends were observed for BOD, indicator bacteria, and total zinc. Significantly decreasing trends were observed for TDS, dissolved nickel, dissolved phosphorus, and total hardness.	▪ 5
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, TSS and turbidity, and indicator bacteria are consistent with the 2001–2006 BLTEA ratings.	

[1] Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in the Regional Monitoring Annual Report

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**

Beneficial uses affected by elevated levels of indicator bacteria, total dissolved solids (TDS), and total suspended solids (TSS) and turbidity may be impacted. Beneficial uses related to the quality of natural habitat supporting diversity may be similarly affected based on the Poor or Very Poor IBI ratings of the benthic community. However, specific physical or chemical factors could not be linked directly to the degraded benthic community. The chemical constituents monitored were not detected at concentrations expected to cause beneficial use impairments related to toxicity, except for the pyrethroid bifenthrin, which was found in the receiving waters at concentrations above benchmarks at nearly all monitored sites. Secondary indicators of nutrient-induced eutrophication suggest that some beneficial uses may be impaired by nutrients at some sites. CSDM data do not indicate that coastal storm drains impact coastal receiving waters with any regularity.

2. **What is the extent and magnitude of the current or potential receiving water problems?**

Receiving water problems related to TDS, sedimentation (TSS and turbidity), and indicator bacteria were prevalent throughout the Carlsbad WMA. The magnitude of the constituents of concern (COCs) varied by season. During ambient conditions, constituents with a magnitude of exceedance greater than five times their benchmark included enterococci (Buena Vista Creek HA), fecal coliform (Agua Hedionda HA), and TDS (Escondido HA). During wet weather, constituents with a magnitude of exceedance greater than five times the benchmark included fecal coliform and turbidity at all sites and Chlorpyrifos at Agua Hedionda TWAS. Few distinct spatial patterns were apparent, but TDS concentrations were fairly uniform among sites during ambient conditions. Stream bioassessment data indicated impaired benthic communities, with IBI ratings of Poor or Very Poor at all sites monitored. More information is needed to better understand the extent of benthic impairment throughout the WMA.

3. **What is the relative urban runoff contribution to the receiving water problem(s)?**

Core Management Question 3 is partially answered through the evaluation of urban runoff area assessments and future trash assessments. Organic contaminants (e.g., pesticides)

and trash are derived from anthropogenic activity; their route to receiving waters occurs through urban runoff, direct dumping, or via indirect sources (e.g., wind or animals, such as birds, coyotes, residential pets, and rodents). Concentrations of synthetic pyrethroids (primarily Bifenthrin) exceeded water quality benchmarks during wet weather monitoring at all but one site, suggesting widespread use in the WMA. Future trash information collected during the 2008 Jurisdictional DWM Program should provide a more robust data set for answering Core Management Question 4 more thoroughly.

4. **What are the sources of urban runoff that contribute to receiving water problem(s)?**

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The DWM Program, the CSDM Program, and trash assessment in the receiving waters provide some evaluation of urban runoff sources. The MLS and TWAS are located downstream of primarily residential land use areas, which have a high potential for contributing pollutants to receiving waters. Trash assessments at the sites conducted were Optimal or Suboptimal, so trash type ranking, source evaluation, and potential route information were not required or necessary. Future trash information collected during the 2008 DWM Program should provide a more robust data set for thoroughly answering Core Management Question 4 thoroughly. Pyrethroids were found during wet weather at all MLS and TWAS in the WMA. These pesticides are available for retail purchase for the control of ants, termites, and other pests. They are commonly used in residential, commercial, and industrial land uses and are frequently found in urban runoff. The DWM and the CSDM Programs have measures to identify and eliminate illegal connections and illicit discharges (ICIDs). Future MS4 Outfall Monitoring and Source Identification Monitoring will provide additional data useful in answering Core Management Question 4.

5. **Are conditions in receiving waters getting better or worse?**

Trend data are available for two HAs in the Carlsbad WMA: Agua Hedionda and Escondido Creek. At the Agua Hedionda MLS, significantly increasing trends were observed for ammonia, COD, dissolved phosphorus, TSS and turbidity, indicator bacteria, and four metals (total copper, lead, nickel, and zinc). Significantly decreasing trends were observed for TDS and conductivity. At the Escondido Creek MLS, significantly increasing trends were observed for BOD, indicator bacteria, and total zinc. Significantly decreasing trends were observed for TDS, dissolved nickel, dissolved phosphorus, and total hardness. Bioassessment results over the period of monitoring from 2001–2008 do not indicate any observed changes in the benthic community at the two sites for which long-term data are available (Agua Hedionda and Escondido Creek MLS). At both sites, IBI ratings have been Poor or Very Poor in every survey from 2001–2008. Persistent toxicity to H. azteca has been identified at both sites with long-term data sets.

2.1.3 WATER QUALITY RECOMMENDATIONS

Four of the six HAs in the Carlsbad WMA contained the full suite of monitoring elements: Loma Alta, Buena Vista Creek, Agua Hedionda, and Escondido Creek. Because the results among these HAs were similar, the recommendations can be generalized. For these HAs, the recommendations are to evaluate upstream sources of potential toxicity and consider additional chemical analytes for analysis. In addition, continued monitoring at the TWAS is needed to establish long-term trends, and assess toxic and benthic impacts. For the next full round of Order R9-2007-0001 monitoring in north San Diego County (Order R9-2007-0001 Year 2010–2011), it is recommended to retain the TWAS at the existing locations, except for Agua Hedionda HA, where a TWAS in the Calavera Lake drainage might be considered. In

addition, special studies targeted at identifying subwatershed sources of TDS and bacteria during ambient weather conditions would be useful for prioritization and characterization of the watershed. For the Encinas HA, additional monitoring is recommended to establish water quality conditions. In the San Marcos HA, it is recommended that the addition of an MLS or TWAS be considered for obtaining ambient and wet weather data.

2.2 WATER QUALITY PROBLEMS

The WMA Copermittees used the process developed in the regional watershed strategy to identify the water quality problems in the Carlsbad WMA at the Hydrologic Area (HA) level.

2.2.1 303(D) IMPAIRED WATER BODIES LISTINGS

Waterbodies in the Carlsbad WMA and constituents that have been placed on the SWRCB 2006 Section 303(d) list are presented in Table 2-8.

Table 2-8. Carlsbad WMA SWRCB Section 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/Stressor	TMDL
LOMA ALTA HA		
Pacific Ocean Shoreline	Indicator bacteria	Adopted
Loma Alta Slough	Indicator bacteria and eutrophic	In development
BUENA VISTA CREEK HA		
Buena Vista Lagoon (202 acres)	Indicator bacteria, nutrients, and sedimentation/siltation	In development
Buena Vista Creek	Sediment toxicity	Not developed
Pacific Ocean Shoreline	Indicator bacteria	Adopted
AGUA HEDIONDA HA		
Agua Hedionda Lagoon (7 acres)	Indicator bacteria and sedimentation/siltation	In development
Agua Hedionda Creek	TDS, manganese, selenium, and sulfates	TDS – in development; others not developed
Buena Creek	DDT, nitrate, nitrite, and phosphate	Not developed
SAN MARCOS HA		
Pacific Ocean Shoreline	Indicator bacteria	Adopted
San Marcos Creek	DDE, phosphorus, and sediment toxicity	Not developed
Lake San Marcos	Ammonia as N, nutrients, phosphorus	Not developed
ESCONDIDO CREEK HA		
Pacific Ocean Shoreline	Indicator bacteria	Adopted
San Elijo Lagoon	Indicator bacteria, eutrophic, and sedimentation/siltation	In development
Escondido Creek	DDT, manganese, phosphate, selenium, sulfates, and TDS	Not developed

Source: SWRCB, 2006

2001-2006 Baseline Water Quality Priority Ratings for the Carlsbad WMA

The baseline water quality priority ratings are presented in Table 2-9. These tables are tools that assist managers in prioritizing watershed activities or are used for identifying data gaps. The priority ratings are based on the methodology presented in the Baseline Long Term Effectiveness Assessment (WESTON, MOE, & LWA, 2005).

Table 2-9. Carlsbad Watershed Management Area 2001–2006 Water Quality Priority Ratings and 2007–2008 Diamond Ratings

Watersheds/Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/	Benthic Alterations	Toxicity
Carlsbad WMA	**100%**	***D***	***A***	***D***	***D***	***A***	***C***	***A***	***D***	***A***	***B***	***B***
Loma Alta HA (904.10)	5%	*D*	*A*	*D*	*D*	*C*	*B*	*A*	*B*	*A*	*D*	*A*
Buena Vista HA (904.20)	11%	*C*	*A*	*D*	*D*	*A*	*D*	*A*	*C*	*A*	*B*	*B*
Agua Hedionda HA (904.30)	14%	*C*	*A*	*D*	*D*	*A*	*B*	*D*	*C*	*A*	*A*	*A*
Encinas HA (904.40)	3%	*D*	*D*	*D*	*D*	*C*	*D*	*D*	*D*	*B*	*D*	*D*
San Marcos HA (904.50)	28%	*C*	*A*	*D*	*C*	*C*	*C*	*B*	*D*	*A*	*B*	*A*
Escondido Creek HA (904.60)	40%	*D*	*A*	*D*	*D*	*A*	*B*	*A*	*D*	*A*	*C*	*B*
2007–2008 Diamond Ratings[1]												
Loma Alta HA High[1] Frequency of Occurrence Ratings and COCs	Ambient		♦♦♦ TDS								Yes	No
	Wet Weather					♦♦♦ TSS Turbidity				♦♦♦ Fecal coliform, Enterococci		Yes
Buena Vista Creek HA High[1] Frequency of Occurrence Ratings and COCs	Ambient		♦♦♦ TDS							♦♦♦ Enterococci	Yes	No
	Wet Weather					♦♦♦ TSS Turbidity				♦♦♦ Total coliform, Fecal coliform, Enterococci		Yes
Agua Hedionda HA High[1] Frequency of Occurrence Ratings and COCs	Ambient		♦♦♦ TDS							♦♦♦ Fecal coliform, Enterococci	Yes	No
	Wet Weather		♦♦♦ TDS			♦♦♦ TSS Turbidity				♦♦♦ Total coliform, Fecal coliform, Enterococci		Yes
Escondido Creek HA High[1] Frequency of Occurrence Ratings and COCs	Ambient		♦♦♦ TDS							♦♦♦ Enterococci	Yes	No
	Wet Weather		♦♦♦ TDS			♦♦♦ Turbidity				♦♦♦ Total coliform, Fecal coliform, Enterococci		Yes

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes (TDS is total dissolved solids, TSS is total suspended solids, TC is total coliform, FC is fecal coliform, and ENT is Enterococci.)

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

2003 303(d) listing

Pollutant groups and stressor groups are given a ranking from A to D with A being the highest priority rating and D the lowest priority rating. Items ranked with a D indicate that the pollutant group or stressor is a low priority or does not have sufficient data to support a higher ranking. The priority ratings were based on the data record from 2001-2006 from the following programs and will be updated on a 5-year cycle:

1. Storm Water Mass Loading Monitoring (MLS) – Wet Weather Data (2000-2006)
2. Copermittee Dry Weather Data Monitoring (2003-2005)
3. Available Third Party Data (SWAMP, 2003)
4. Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring (2003-2005)
5. Urban Stream Bioassessment Monitoring (2000-2006)
6. Triad Assessment – Toxicity Testing of Storm Water (2000-2006)
7. 303(d) Listing (2003)

Dissolved minerals, sediments, nutrients, and bacteria were identified as high priority (A) rated pollutants for the overall Carlsbad WMA. Benthic alteration and toxicity were assigned B ratings. All other pollutants were given either a C or D rating.

High frequency of occurrence ratings from the WMA criterion assessments were compared to the water quality priority ratings summary table. High frequencies of occurrence ratings were determined for TSS, turbidity, TDS, and all three bacterial indicators for the Carlsbad WMA. Similarly, the water quality priority ratings identified high priority (A) ratings for these pollutants.

Several high priority (A) ratings were identified in the Loma Alta, Buena Vista, Agua Hedionda, San Marcos, and Escondido Creek sub-watersheds. These include dissolved minerals, sediments, nutrients, and bacteria, all of which had 303(d) listings or data to support to the rating. Benthic alteration and toxicity were also high priority (A) rated pollutants in sub-watersheds which was based primarily on the stream bioassessment findings and toxicity testing.

The 2007–2008 WMA criterion assessments for the four HAs in the Carlsbad WMA were compared to the BLTEA water quality priority ratings by identifying the high frequency COC for each HA. The 2007–2008 pattern of high frequency COCs, benthic alteration, and toxicity was similar among the HAs comprising the Carlsbad WMA. During ambient conditions in all four HAs, TDS was identified as a high frequency of occurrence COC, and there was evidence of benthic alteration, but no evidence of persistent toxicity. In addition, indicator bacteria (primarily enterococci) were identified as high frequency of occurrence COCs in all HAs except Loma Alta. Consistent patterns were also observed during wet weather. Indicators of sedimentation (TSS and/or turbidity) and indicator bacteria were identified as high frequency of occurrence COCs in all four HAs, and persistent toxicity was evident at all sites. In addition, TDS was identified as a high frequency of occurrence wet weather constituent at Agua Hedionda and Escondido HAs.

With the exception of nutrients, the 2007–2008 results are consistent with the long-term BLTEA ratings. Nutrients were not identified as having a high frequency COC in the diamond ratings for any of the four HAs assessed in the Carlsbad WMA. However, the results of the NNE assessment, which utilizes secondary indicators of nutrient-induced eutrophication (chlorophyll-a, pH, DO, and DOC), suggest that beneficial uses at some sites within each of the four HAs are impaired or potentially impaired by nutrient enrichment.

2.2.2 HIGH PRIORITY WATER QUALITY PROBLEMS

Based on the assessments above and the available water quality data, the Copermittees have determined that the high priority water quality problems in the Carlsbad WMA are, bacteria, sediments and nutrients as presented in Table 2-9 below.

Table 2-10. Carlsbad WMA High Priority Water Quality Problems

Hydrologic Area	Bacteria	Sediments	Nutrients
Loma Alta HA (904.10)	X		
Buena Vista HA (904.20)	X		
Agua Hedionda HA (904.30)	X	X	X
Encinas HA (904.40)			
San Marcos HA (904.50)			X
Escondido Creek HA (904.60)	X	X	X

In developing the Collective Watershed Strategy, the WURMP Copermittees decided that unless there was overwhelming evidence indicating otherwise, the high priority water quality problems identified in the WURMP would remain throughout the permit cycle. During the FY 2008 reporting period more monitoring information was collected than in years past. This data did not affect the high priority water quality problems identified in the 2008 Carlsbad WURMP.

2.3 POLLUTANT SOURCE ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Carlsbad WMA's high priority water quality problems.

In 2005 as part of the BLTEA process, the Regional Copermittees identified thirty-four (34) sources of pollutants on which to focus their efforts. The process included characterizing the sources and determining the potential for each source (Source Load Potential – SLP) to produce one of the eight pollutant types: heavy metals; organics; oil & grease; sediment; pesticides; nutrients; gross pollutants, and; bacteria.

The BLTEA also developed a process to establish Threat-To-Water-Quality (TTWQ) ratings for the sources based on water quality priority ratings for each HA and the SLP of the inventoried sources within each WMA. Together the water quality ratings and the SLP determined the TTWQ ratings of the sources based the sources' likelihood to generate pollutants that cause the water quality problems.

For the Carlsbad WMA, the TTWQ ratings tables for the high priority water quality problems in each HA are summarized below. Table 2-11 represents the highest TTWQ rated sources within each HA based on the high priority water quality problems.

The process used to develop the table was taken directly from the BLTEA. The data used for the process includes the following: (1) 2007 Baseline Water Quality Priority Ratings (Weston Solutions, 2007); (2) 2007 inventory information from all watershed Copermittees; (3) the SLP ratings from the BLTEA (Weston, MOE, LWA, 2005), and; (4) Copermittees' dry weather monitoring data..

Table 2-11 High Priority Sources in Carlsbad WMA HAs

Source	Animal Facilities			Botanical/ Zoological Gardens			Eating or Drinking Establishments			Landscaping		
	Bacteria	Nutrients	Sediments	Bacteria	Nutrients	Sediments	Bacteria	Nutrients	Sediments	Bacteria	Nutrients	Sediments
904. 1 - Loma Alta (Bacteria, Nutrients, Sediments)	-			6			244			49		
904.2 - Buena Vista (Bacteria, Nutrients, Sediments)	4			-			412			78		
904.3 - Agua Hedionda (Bacteria, Nutrients, Sediments)	2			-			89			30		
904.4 - Encinitas (Bacteria, Nutrients, Sediments)	2			-			29			37		
904.5 - San Marcos (Bacteria, Nutrients, Sediments)	15			-			378			118		
904.6 - Escondido Creek (Bacteria, Nutrients, Sediments)	15			-			503			51		

Note: Source quantities are based on updated inventory information from Copermittees. The geocoding process may limit the representation of sources

3 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 WATERSHED WATER QUALITY ACTIVITIES

The Carlsbad WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Carlsbad WURMP.

During the reporting period, the Copermittees implemented five water quality activities. Table 3-1 below lists the activities that were in active implementation during the reporting period. Details of the each activity can be found on the activity implementation sheets located in Appendix A.

Table 3-1. Watershed Water Quality Activities Implemented During FY 2008

ID #	Activity/Project Name
CHU-WQA4	Myers Property Restoration
CHU-WQA6	Escondido Creek Restoration
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek
CHU-WQA9	Focused Inspections along San Marcos Creek
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (Appendix A) and are summarized in the Section 4 – Effectiveness Assessment.

3.2 WATERSHED EDUCATION ACTIVITIES

This section describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2008 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing watershed education activities that address the high priority water quality problems in the Carlsbad WMA. The activity selection process is described fully in the March 2008 Carlsbad WURMP.

The Copermittees have made significant progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed. Table 3-2 below lists the watershed education activities implemented during FY 2008. Details of the each activity can be found in the activity implementation sheets located in Appendix A.

Table 3-2. Watershed Education Activities Implemented During FY 2008

ID #	Activity/Project Name
CHU-WQEA2	Pilot Restaurant Binder/CD Distribution
CHU-WQEA3	Water Quality Runoff Management & Agricultural Waiver Workshop for Nurseries and Agricultural Businesses
CHU-WQEA4	Low Impact Development & Watershed Planning for Community Planning/Sponsor Groups

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (Appendix A) and are summarized in the Section 4 – Effectiveness Assessment.

3.3 PUBLIC PARTICIPATION ACTIVITIES

The Watershed Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed, including other agencies, private companies, non-governmental organizations, environmental groups, etc. Several opportunities are available to the public to engage them in the implementation of the WURMP. Below is a summary of these opportunities and information about how they were implemented during this reporting period.

3.3.1 PROJECT CLEAN WATER

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. Project Clean Water was initiated in July 2000 to provide a broad and inclusive forum for exploring water quality issues of regional significance. In early 2004, in response to input provided by participants, organizational changes were implemented to streamline the overall Project Clean Water process and to focus on the issues of greatest interest to stakeholders. More than 600 people participated in four Technical Advisory Committees (TACs) and numerous ad hoc Technical Workgroups to accomplish the following: establish a visible forum to discuss issues of shared concern: find consensus-based solutions to priority water quality problems; and characterize baseline conditions in the region's watersheds.

One component of PCW is its website, which provides public access to information about San Diego County's watersheds. There are several web pages that provide information on San Diego's watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website also provides a link to the 2008 Carlsbad Watershed Urban Runoff Management Program update, allowing the public to access this document remotely.

During FY 2008 the hits for the Carlsbad Watershed totaled 1,903 and there were also 633 hits on the Carlsbad WURMP document. Also during the reporting period the Carlsbad Watershed webpage of the Project Clean Water website was reviewed for updates to be completed in FY 2009.

3.3.2 AGUA HEDIONDA WATERSHED MANAGEMENT PLAN

The Agua Hedionda Watershed is located in northern San Diego County about 35 miles north of downtown San Diego. The watershed drains 31 square miles of land and is a hydrologic subarea (HSA) of the Carlsbad Watershed Management Area. Land within the watershed includes the cities of Carlsbad, Vista, Oceanside, and San Marcos and the unincorporated County of San Diego. The watershed contains approximately 37 linear stream miles, most of which are still natural or earthen bottom channels. The watershed terminates at the Agua Hedionda Lagoon, an important cultural, economic and environmental resource that provides critical habitat for migratory and resident birds and fish. The lagoon also serves as a nursery habitat for commercially and recreationally significant coastal and resident species.

Signs of impacts are evident throughout the watershed, and significant loss of natural habitat across all ecosystems has occurred. To address these and other concerns, the local stakeholders prepared the Agua Hedionda Watershed Management Plan (AHWMP) to "preserve, restore and enhance the watershed's natural functions and features." Funding for the AHWMP was awarded to the City of Vista under the 2005-06 Consolidated Grants – Proposition 40 Integrated Watershed Management Program and was administered through an agreement with the State Water Resources Control Board. Stakeholders for the Agua Hedionda Creek Watershed originally began meeting in August 2005 to discuss goals, objectives, projects to initiate and grants to meet these objectives. The grant application was submitted in June of 2006, funds awarded in 2007, and the AHWMP completed in August 2008.

Consisting of 48 people representing over 30 agencies and the public, the Watershed Planning Group (WPG) met regularly during 2007 and 2008 to create this AHWMP. These stakeholders recognized that a healthy watershed is one that provides wildlife habitat, clean water, scenic beauty, and other benefits. A copy of this document can be found at the following website:

- The Carlsbad Watershed Network Website at http://www.carlsbadwatershednetwork.org/AH/AHWMPFinal_08-25-08.pdf

Drawing from individual priorities, the combined benefits of multiple management types was considered in selecting these focus areas which directly address the goals and objectives of the Watershed Planning group. The rationale and complementary management actions for each of these focus areas is detailed in section 6.8 of the AHWMP. The Carlsbad WURMP Copermittees will examine the recommended management actions during the activity planning stages for the Carlsbad WURMP and may choose to implement appropriate recommended activities where feasible.

Citizen Stewardship and Public Outreach Component

Stewardship and management of the Agua Hedionda Watershed depends on the collective efforts of citizens, businesses, non-governmental organizations and governmental agencies. Over 150 comments were received from agencies and the public about the draft AHWMP. Each of these comments was provided a response and changes were made to the draft document where applicable. Appendix K of the AHWMP provides the comments and responses from the WPG and public on the AHWMP draft.

The Carlsbad WURMP Copermittees are supportive of these outreach activities and will be involved where applicable and feasible.

3.3.3 NORTH COUNTY STORM WATER PROGRAM

- The North County Storm Water Program is a group of north San Diego County Copermittees that develop education outreach materials and collaborate on special events based on the needs of the activities planned for the WURMPs and other needs the group felt was vital to public education on storm water pollution.
- Collaboration with the Carlsbad and San Luis Rey WURMP workgroups
- Implementation/Compilation/Assessment of Pet Waste Surveys
- Implementation/Compilation/Assessment of BMP Knowledge and assessment scores
- Revisions of the Restaurant Compact Disc for inclusion with outreach binders
- Green Wrench Guide update

- Coordination with the San Diego County Regional Education Outreach group
- Standardized brand and message for San Diego County Copermittees

Outreach Events
Through the North County Storm Water Program the Copermittees collaborated to staff informational and informative booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials:

- March 22, 2009 – Agua Hedionda Lagoon Foundation Water Festival, Carlsbad
- March 29, 2009 – Kids Day at the Flower Fields, Carlsbad
- April 19, 2009 – Beach Preservation Day, Carlsbad
- April 26 – Creek to Bay Cleanup
- May 3 – Encinitas Garden Festival
- June 8 – Encinitas Environmental Day
- May 18 – Escondido Street Fair
- June 21, 2008 – NCSWP Day at the San Diego County Fair
- June 14 to July 6 – San Diego County Fair

Educational Materials Distributed
The Carlsbad Watershed Copermittees continued the distribution of the following items produced by the North County Storm Water Program during previous reporting periods at special events, inspections, classroom presentation and other public interactive venues:

- Construction brochure highlighting construction BMPs for large or small scale developments.
- North County watershed map ("We All Live in a Watershed" poster)
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Click-message pens
- San Diego County IPM program materials, including English and Spanish IPM Pest Tip Cards
- Personal pet waste bag dispensers

3.3.4 PET WASTE SURVEYS

The Carlsbad WURMP Copermittees determined that a potential source of bacteria and nutrients in the Carlsbad HA is from uncollected pet waste left on the ground. In FY 2006 The Carlsbad WURMP Copermittees implemented the Pet Waste Bacterial Load Reduction Program that incorporated four components: personal pet waste bag dispenser distribution, a public knowledge and behavior survey, installation of doggie bag dispensers in county parks, and the implementation of a dog waste tracking project at San Elijo Lagoon Ecological Reserve. During FY 2008 two of these components continued: from the previous year: distribution of the personal pet waste bag dispensers and the implementation of public knowledge and behavior surveys in regard to pet waste.

The individual Copermittees continued to distribute pet waste bag dispensers at outreach booths located within their jurisdiction. And, in order to better design and appropriately implement future BMPs that encourage people to pick up pet waste, the NCSWP cities continued to conduct pet waste surveys asking the public various questions about picking up

after pets. The North County Stormwater Program developed and disseminated a one-page survey for residents to complete, during public events to assess pet waste pollution knowledge and typical behaviors.

While staffing booths at local outreach events Copermittees asked individuals who requested a pet waste bag dispenser, as well as others who approached the tables to complete a short five question survey. During the reporting period, the survey was distributed and tabulated from several public events in the Carlsbad and San Luis Rey Watersheds. There were 346 surveys completed, with at least one personal pet waste bag dispenser distributed for each survey. This information provides additional data on the baseline knowledge of North County residents and provides potential direction in upcoming educational outreach efforts. An assessment of the survey is presented in Section 4 of this annual report.

3.3.5 RIVER, CREEK, AND BEACH CLEANUP EVENTS

River, creek, and beach cleanup events are an excellent way to involve the public in water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were thirteen cleanup events held throughout the Carlsbad WMA with 1,624 volunteers removing over 10 tons of debris from the waterways. Table 3-3 below provides a summary of these cleanup events.

Table 3-3. Summary of Clean Up Events

Date	Name	Location	Inland Sites	Coastal Sites	# of Participants	# of pounds removed
9/15/07	Fletcher Cove	Solana Beach		X	69	200
9/15/07	San Elijo Nature Center	Encinitas	X		147	500
9/15/07	San Elijo Lagoon at Rios Trailhead	Encinitas	X		53	405
9/15/07	San Elijo State Beach at Camp Grounds	Encinitas		X	73	178
9/15/07	Swami's Beach	Encinitas		X	111	173
9/15/07	Beacons Beach	Encinitas		X	169	467
9/15/07	Dixon Lake	Escondido	X		237	327
9/15/07	S. Carlsbad State Beach	Carlsbad		X	43	77
9/15/07	Frazee Beach			X	213	400
9/15/2007	Buccaneer Beach	Oceanside		X	100	89
9/15/2007	Coastal Cleanup Day	Buena Vista Creek	X		130	5500
4/26/2008	Loma Alta Creek Cleanup	Loma Alta Creek	X		110	8000
4/26/2008	Buccaneer Beach cleanup	Buccaneer Beach		X	169	4000
	Totals				**1,624**	**20,316**

3.4 COLLABORATIVE LAND USE PLANNING EFFORTS

This section describes collaborative land use planning efforts within the Carlsbad Watershed during FY 2008. The Carlsbad Watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

3.4.1 EDUCATION

The Carlsbad Watershed Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant redevelopment. In addition to the education and training provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego's development of a LID and Watershed Planning Education Activity. This activity is intended to educate local planning and sponsor groups on LID and watershed planning principles, practices, and requirements. The recommendations of local planning and sponsor groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. This education activity is intended to aid these advisory bodies in making informed recommendations on aspects of development projects that could affect watershed water quality. During the FY 2008 reporting period, County of San Diego staff began conducting presentations to planning and sponsor groups within the Carlsbad Watershed, with the first presentation made to the Hidden Meadows Community Sponsor group on June 26, 2008. Four additional Community Planning Groups and one additional community sponsor group are targeted for similar outreach during FY 2009.

3.4.2 CROSS-JURISDICTIONAL COMMUNICATION

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the Carlsbad Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the Carlsbad Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

3.5 UPDATED 5-YEAR STRATEGIC PLAN

3.5.1 NEW WATERSHED ACTIVITIES (FY 2009 AND FUTURE YEARS)

A list of the proposed new Watershed Activities is included below. Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified high priority water quality problems in the WMA. Watershed Activity Sheets can be found in Appendix A.

Each activity on the Watershed Activities List is fully described in an Activity Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified high priority water quality problem(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Watershed Copermittees will implement identified Watershed Activities pursuant to the proposed schedule. For each Permit year, no less than two Watershed Water Quality Activities will be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s). Watershed Water Quality Activities that are capital projects are in active implementation for the first year of implementation only.

Activities planned for FY 2009 are listed in section 3.5.2.1.

The new proposed activities include:

1. Watershed Education Activity – LID/SUSMP Implementation Workshops
2. Watershed Water Quality Activity – Lake San Marcos Tributary Watershed BMP Master Plan

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

3.5.2 UPDATED 5-YEAR STRATEGIC PLAN

This section describes the results of the Collective Watershed Strategy process described in the 2008 Carlsbad WURMP. The strategy was applied at the Hydrologic Area (HA) level to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first, identify water quality problems (where sufficient data is available). From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the high priority water quality problems in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the high priority water quality problems for each HA-high priority water quality problem combination in the WMA. Based on the available data, the Copermittees could then make appropriate management decisions when selecting appropriate watershed water quality and education activities.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees will use available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented at the end of this section is intended to supersede the earlier version presented in the 2008 Carlsbad WURMP.

A brief summary of the FY 2009 planned activities by HA is provided below.

3.5.2.1 Loma Alta HA

In addition to continued maintenance and installation of BMPs on the Myers Property, an additional water quality activity is planned for FY 2009, addressing bacteria. CHU-WQA2 involves the installation and operation of an Ultra-Violet Treatment Facility, designed to remove bacteria from the water in Loma Alta Creek (during dry weather) prior to discharge into the Pacific Ocean at Buccaneer Beach. *The activity is planned to address a high priority water quality problem, bacteria, identified in the HA.*

3.5.2.2 Buena Vista HA

The Septic Tank Source ID project listed in the WURMP for FY 2009 has been postponed until more funding is available to sustain a scientifically valid bacteria source tracking study. During FY 2008, optical brightener methods were tested in the storm drains confirmed to be downstream of suspected septic sources. These methods proved inconclusive and were unsuccessful in linking the bacteria concentrations to the existing septic systems in the area. After evaluation of the project, it was determined that more definitive source tracking methods are needed, which will require increased funding, currently unavailable. As funding is obtained, this bacteria source tracking activity may be pursued in the future. Although results of the study thus far have been inconclusive, the project did identify several potential sources of bacteria in the drainage area including restaurants and other commercial sources, residential septic systems, and natural sources such as bats inhabiting the storm drain.

The LID and Watershed Planning Workshop (CHU-WQEA4) will be expanded during FY 2009 and will include community planning groups specific to the Buena Vista HA. A small part of this HA is included in the Bonsall Community Sponsor Group planning area.

3.5.2.3 Agua Hedionda HA

The Nitrate Source Identification and Abatement on Buena Creek (CHU-WQA8) will continue into FY 2009. During this time, the remainder of the 26 identified nurseries will be inspected, educated, and required to implement BMPs to reduce nutrient impacts on the receiving waters in the HA. In the following years, through further inspections and monitoring, the effectiveness of the activity will be evaluated. *It is anticipated that changes in knowledge, BMP implementation, and ultimately in discharge water quality will be evident.*

The Residential Irrigation Runoff Reduction Activity (CHU-WQA1) will be in the implementation phase in the Agua Hedionda HA during FY 2009. This activity intends to address residential irrigation runoff during dry weather, primarily by providing water conservation education and BMPs directly to residents in the study area. The activity directly addresses a residential neighborhood as a potential source nutrients and bacteria. Ambient and storm water quality data collected during FY 2008 support the decision to approach bacteria as a high priority problem, as it was noted as a pollutant with a high frequency of occurrence in recent monitoring under both conditions. The activity was also designed to address nutrients and to a lesser extent, sediment. *The activity will serve as a pilot project and results will be evaluated in the WURMP Annual Report for FY 2009 to determine the project's effectiveness and applicability to other hydrologic areas.*

The Residential Irrigation Runoff Reduction Education Activity (CHU-WQEA1) will be in the implementation phase during FY 2009. The activity involves mailers, one-on-one education of residents, assessments of their properties, and a follow-up survey to measure effectiveness of education and outreach. This survey may be implemented via mail, phone, in person, or web-based tool, or through a combination of the above methods. Changes in knowledge will be assessed via the follow-up surveys. It is expected that changes in behavior will be evident in changes in water use, calculated from water bills and from flow monitoring data collected before and after the outreach campaign. *This activity is directly related to identified high-priority water quality problems in the HA, specifically addressing nutrients and bacteria.*

LID and Watershed Planning Workshops (CHU-WQEA4) will continue during FY 2009. Portions of the Twin Oaks Sponsor Group planning area are within the Agua Hedionda HA, which will be included in the presentations during FY 2009.

3.5.2.4 San Marcos HA

The water quality activity consists of implementing Focused Inspections along San Marcos Creek (CHU-WQA9) continues in FY 2009. Targeted follow-up inspections will focus on those properties previously inspected previously during FY 2008 as part of this activity. As inspections are completed, the difference in violations observed between the first and second year of inspections will be documented, representing the change in behavior as a result of this activity. *Although water quality monitoring will not be implemented to measure effectiveness, BMP implementation is expected to reduce violations and improve water quality in the HA.*

LID and Watershed Planning Workshops (CHU-WQEA4) will continue during FY 2009. Presentations are planned for the Twin Oaks Sponsor Group and for the San Dieguito Community Planning Group, both of which will cover parts of the San Marcos HA.

A proposed water quality activity is the Lake San Marcos tributary area pilot Watershed BMPs activities to address impacts of the area tributary to Lake San Marcos. This project will be in the planning phase during FY 2010 and likely to begin work in FY 2010.

3.5.2.5 Escondido HA

The Escondido Creek Restoration activity is expected to be in the monitoring and assessment phases during FY 2009. The assessments will include monitoring of channel morphology, sediment loss and accumulation, condition of the structures, and habitat

evaluations. Actual changes in water quality may be assessed via the Copermittees' Regional Monitoring Program, as storm events are monitored at the TWAS and historical MLS on Escondido Creek.

The Pet Waste Bag Dispenser Program activity will continue to expand the implementation of dispenser stations throughout County parks. The goal of the program is to increase the total number of County parks with pet waste dispensers by 100% over the five-year permit cycle, from 26 parks to 52 parks.

LID and Watershed Planning Workshops (CHU-WQEA4) will continue during FY 2009. Presentations are planned for the Twin Oaks Sponsor Group and for the San Dieguito Community Planning Group, both of which will cover parts of the Escondido Creek HA.

Table 3-4. Updated 5-Year Strategic Plan

Activity/Project Name		Jurisdiction	Watershed Priorities			Implementation Schedule			
			Bacteria	Nutrients	Sediment	FY 2008	FY 2009	FY 2010	Future Fiscal Year(s)
CHU-WQA1	Residential Irrigation Runoff Reduction	CAR	X	X	X	P	WQI	-	-
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility	OC	X			P	WQI	A	-
CHU-WQA3	Eternal Hills Cemetery BMPs	OC	X			Will be reported in JURMP			
CHU-WQA4	Myers Property Restoration Assessment	OC	X		X	WQI	WQI	?	?
CHU-WQA5	Septic Tank Source Identification - Fire Mountain	OC/Cnty	X			P	-	-	-
CHU-WQA6	Escondido Creek Restoration	ESC			X	P	WQI	-	-
CHU-WQA7	Stormwater Quality Master Plans for Special Drainage Fee Areas	Cnty	?	?	?	P	P	WQI	-
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek	Cnty		X		WQI	WQI	-	-
CHU-WQA9	Focused Inspections along San Marcos Creek	SM		X		WQI	WQI	-	-
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks	Cnty	X	X		WQI	WQI	WQI	WQI
CHU-WQA11	Land Acquisitions	Cnty	X	X	X	WQI	WQI	WQI	WQI
CHU-WQA12	Lake San Marcos Tributary Area Project	SM/Cnty/ESC	X	X	X				
Watershed Education Activities									
CHU-WQEA1	Residential Irrigation Runoff Reduction	CAR	X	X	X	P	WE	-	-
CHU-WQEA2	Pilot Restaurant Binder/CD Distribution	ENC	X			WE, A	-	-	-
CHU-WQEA3	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	X	X	X	WE	P	WE	P
CHU-WQEA4	LID and Watershed Planning for Community Planning/Sponsor Groups	Cnty	X	X	X	WE	WE	-	-
CHU-WQEA5	LID Features in San Elijo Nature Center	Cnty	X	X	X	P	WE	WE	WE
CHU-WQEA6	SUSMP Workshop/Training	ALL	X	X	X	-	P	WE	A

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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4 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2008. In addition, there is an effectiveness assessment of the collective WURMP implementation.

Each activity summary sheet in Appendix A of the 2008 WURMP identifies targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge individual activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measurable at levels 5 or 6. Levels 5 and 6 outcomes are typically measurable through cumulative assessments.

The activity summary sheets presented in Appendix A include effectiveness assessment summaries for each water quality and education activity, as required in Order R9-2007-0001, I.2.a.(1).

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

4.1.1 PERMIT COMPLIANCE (LEVEL 1)

A basic compliance assessment is presented in Table 4-1. This table describes minimum permit requirements set forth in Order R9-2007-0001, how compliance was demonstrated by the watershed Copermittees in FY 2008, and where in this report, required compliance is fulfilled or described in this report.

Table 4-1. Permit Component Compliance (Level 1)

Targeted Outcome	Confirmation and/or Result	Report Section/Appendix
Update any watershed maps.	Completed.	1.2
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	2.1
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	2.3
Update list of potential Watershed Water Quality Activities.	Completed.	3.5.1
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed.	3.1
Update list of potential Watershed Education Activities.	Completed.	3.5.1
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed.	3.2

Targeted Outcome	Confirmation and/or Result	Report Section/Appendix
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed.	3.3
A description of Copermittee collaboration efforts including meeting as the Carlsbad WMA WURMP Workgroup.	Completed.	1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land use planning.	Completed.	3.4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date I meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not applicable at this time.	N/A

As shown in the table, the Carlsbad WURMP Copermittees were in compliance with all WURMP related Permit requirements during FY 2008.

4.1.2 CUMULATIVE IMPACTS OF ACTIVITIES (LEVELS 2-4)

There were eight permit defined watershed water quality and watershed education activities in the active implementation phase during FY 2008; five focused on water quality and three focused on education. All of the activities focused on the high priority water quality problems in the WMA, including bacteria, nutrients, and sediment.

Although more water quality data is available from the monitoring efforts during the reporting period, it is not feasible to directly link changes in discharge or receiving water directly to the implemented watershed activities. In an effort to determine the cumulative effectiveness of the implemented activities, several effectiveness assessment questions were applied to the activities and their results. Table 4-2 summarizes these assessment questions and the results of the water quality and education activities.

Table 4-2. Summary the Assessments of the Water Quality and Education Activities

Activity	High Priority Water Quality Problem(s) Addressed	Level 2 Changes in Knowledge/ Awareness	Level 3 Change in Behavior	Sources Identified?	Level 4 Sources Reduced or Abated?
Myers Property Restoration	Bacteria, Sediment	None measured.	Yes - BMPs were implemented on the property.	Sediment loads from erosive soils.	Yes - via native vegetation, erosion, and sediment control installation.
Nitrate Source Identification and Abatement: Buena Creek	Nutrients	Yes - via inspections and resulting education.	Yes - BMPs implemented to reduce tail water runoff.	Nurseries, groundwater	Yes - inspections requiring BMP implementation.
Focused Inspections along San Marcos Creek	Nutrients	Yes - via inspections and resulting education.	None measured.	Commercial/Industrial Sources Suspected	Likely reduced via BMP implementation
Pet Waste Bag Dispenser Program in County Parks	Bacteria, Nutrients	Yes - via dispensers and positive examples.	Yes - in general, more people picking up after their pets.	Parks, specifically pet waste.	Yes - provided mechanism for proper disposal of pet waste.
Land Acquisitions	Bacteria, Sediment, Nutrients	None measured.	None measured.	Potential development.	No property acquired in CHU during FY 2008.
LID and Watershed Planning for Community Planning/Sponsor Groups	Pollutants specific to HA	Yes - measured via pre- and post-workshop quizzes.	None measured.	Future Development.	Not specifically.
Restaurant Binder/CD	Bacteria, Nutrients	Yes – measured through inspection assessment questions.	Yes – measured through inspection assessments.	Not definitively linked.	Yes, where positive changes in knowledge and BMP implementation occurred.
Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses (Agriculture Workshop)	Bacteria, Sediment, Nutrients	Yes - measured via pre- and post-workshop quizzes.	Yes - BMPs implemented as assessed through follow-up assessment form.	N/A	Yes - reduced via BMP implementation.

The following is a discussion of Table 4-2 and the details including an effectiveness assessment of the eight watershed activities implemented during FY 2008.

High Priority Water Quality Problems Addressed
In total, all activities addressed high priority water quality problems as identified in the WURMP. Bacteria were specifically addressed in six activities, nutrients in six activities, and sediment in four activities. In general, water quality and education activities appear effective at addressing identified high priority water quality problems in the Carlsbad WMA.

Level 2 – Changes in Knowledge/Awareness
Changes in knowledge and awareness of water quality problems were observed as a result of six of the eight activities implemented during this reporting period, although not always measured. Changes were accomplished through various mechanisms including inspections, outreach, public participation, Copermittee collaboration, and collective land use planning efforts.

Of the five water quality activities implemented during FY 2008, three of the activities resulted in increased knowledge and awareness. In two of the activities, knowledge was increased through direct contact with stormwater staff via on-site inspections. It is also assumed that knowledge was increased through the implementation of pet waste bags and signage at County parks. The activities that did not result in increased awareness were BMP implementation activities targeting load reductions. These activities focused on public lands and implemented BMPs to reduce the effects of sediment on receiving waters.

There were three watershed education activities implemented during the reporting period. The agriculture workshop produced measured results of increased knowledge and awareness specific to agriculture and nursery operations. The LID workshop was developed with mechanisms to measure changes in knowledge; however, due to the wording of the survey questions, there appeared to be a decrease in knowledge of attendees.. Because of the suspected negative impact of the survey's language, this will be modified in future implementation of the activity. The Restaurant Binder/CD Distribution was aimed at increasing the awareness and BMP implementation of restaurants through the use of documented trainings and BMPs for use by restaurant owners and managers.

Two additional mechanisms have been developed to track changes in knowledge and behavior over time, one using standardized ratings from inspections at commercial and industrial facilities and the other using a survey targeting pet owners and their knowledge of the effects of pet waste on the environment. Results of these are discussed in the Watershed Education Activities discussion in Section 3.3.

Collectively, the water quality activities are focused efforts leading to localized changes in knowledge and awareness. Conversely, the education activities are broad based, applicable to all hydrologic areas in the watershed and are expected to provide for a general increase in knowledge in the WMA over time.

Level 3 – Changes in Behavior
In five of the eight activities, changes in behavior were observed and BMPs were implemented. BMPs were implemented to address sediment loading, bacteria, and nutrients. Various sources were addressed including vacant lands, bed and bank erosion, nurseries, and other commercial establishments. It is also expected that more BMPs will be

implemented in the future as a result of LID workshops. The connection of the BMPs to the specific water quality problems will be further discussed below.

Level 4 – Sources Abated or Reduced
In general, the water quality activities appear effective at identifying and abating sources of high priority water quality problems in the Carlsbad WMA.

Load reductions occurred as a result of temporary and permanent BMPs implemented with the activities. For example, temporary sediment control BMPs were implemented on the Myers Property, preventing the transport of bacteria and sediment to Loma Alta Creek during rain events. During the Escondido Creek Restoration project, permanent BMPs (bioengineering solutions) were implemented within Escondido Creek to prevent further stream bed and bank erosion from occurring, significantly reducing sediment loads to San Elijo Lagoon. Bacteria problems were addressed specifically in the pet waste activity and loads were consequently reduced by directly removing the pet waste from the urban runoff tributary areas. Nutrient reductions were likely a result of three of the activities, mostly resulting from increased inspections and education to the agricultural and nursery communities, resulting in the implementation of site specific BMPs.

Because activities were developed to target high priority water quality problems, using a variety of techniques including restoration, inspections, and education, there were positive changes in knowledge, behavior, and pollutant loading, and watershed activities can thus be considered effective.

4.1.3 INTEGRATED ASSESSMENT (LEVELS 5-6)

Presented below is an assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority water quality problems, with a focus at the Hydrologic Area level.

4.1.3.1 Loma Alta Creek Hydrologic Area

The Loma Alta Creek HA is the northernmost of the WMA. The primary receiving waters in the HA are Loma Alta Creek which drains into the Loma Alta Slough and the Pacific Ocean. The HA is located almost entirely inside the City of Oceanside with less than 5% in the City of Vista. Land use within the HA consists of primarily residential areas (31%), transportation corridors, and vacant land. There are smaller areas of industrial and public facility uses interspersed with open space as well (Weston, January 2009).

4.1.3.1.1 Water Quality

The high priority water quality problem in the Loma Alta HA identified in the WURMP is bacteria, as reported in Section 2 of this annual report. Recent monitoring performed in FY 2008 provides new information as well, specific to the HA, and includes findings of bacteria, sediment and TDS during wet conditions and TDS during ambient conditions.

The Loma Alta TWAS was monitored for the first time in the 2007–2008 Monitoring Season. Therefore, trend evaluation is not feasible at this time.

4.1.3.1.2 Water Quality Activities

There was one water quality activity implemented in the Loma Alta HA during FY 2008, as part of the WURMP. This activity involved restoration and assessment of the Myers Property, a potential source of sediment (see CHU-WQA4). The Myers Property is a 35 acre

parcel, making up over 0.5% of the total land area in the watershed, and was identified as a source of bacteria and sediment to Loma Alta Creek. Restoration and sediment control on this piece of vacant land is therefore a well suited watershed activity, designed to address sediment (and bacteria) during wet weather. A reduction in sediment to the creek reduces the potential reservoirs for bacteria and other pollutants (metals, pesticides, etc) in Loma Alta Creek.

The activity restored native vegetation to the area and implemented several erosion and sediment control BMPs. Installation and maintenance of the BMPs is ongoing and represents a change in behavior relative to previous conditions (Level 3). The implementation of effective BMPs is reducing the sediment load into Loma Alta Creek (Level 4). Although this has not been quantified, there is evidence of reduced erosion and sediment capture on the site as a result of the BMPs. With continued maintenance, the reduction of sediment from the Myers Property will continue. At this time, there is insufficient data to determine whether changes in water quality have occurred. Funding for this project was obtained primarily through a Proposition 13 grant and did not include water quality monitoring of the site. Sediment and bacteria have been identified as wet weather problems in Loma Alta and historically there has been no monitoring of discharge or receiving water quality during wet weather in this HA.

The activity identified a specific source of sediment and implemented BMPs to reduce the discharge of sediment to the watershed.

4.1.3.2 Buena Vista Hydrologic Area

The Buena Vista Creek HA is the fourth largest land area within the WMA. Buena Vista Creek originates on the western slopes of the San Marcos Mountains and discharges into the Pacific Ocean via Buena Vista Lagoon. The primary receiving waters in the HA are Buena Vista Creek, the Buena Vista Lagoon, and the Pacific Ocean. The largest portion of the HA is in the City of Vista (45%), with the remaining in Oceanside, Carlsbad, and San Diego County. Land use within the HA is nearly half residential (48%), with significant transportation corridors and vacant land. Other less prevalent land uses include commercial, public facilities, land under construction, and open space (Weston, January 2009).

4.1.3.2.1 Water Quality

The high priority water quality problem in the Buena Vista HA identified in the WURMP and as reported in Section 2 of this annual report is bacteria. Recent monitoring performed in FY 2008 provides new information as well, specific to the HA, and includes findings of bacteria during ambient and wet conditions, sediment during wet conditions, and TDS during ambient conditions.

The Buena Vista TWAS was monitored for the first time in the 2007–2008 Monitoring Season. Therefore, trend evaluation is not feasible at this time.

4.1.3.3 Agua Hedionda Hydrologic Area

Agua Hedionda Creek HA is the third largest land area within the WMA. Agua Hedionda Creek originates on the southwestern slopes of the San Marcos Mountains in west central San Diego County and discharges into the Pacific Ocean via Agua Hedionda Lagoon. The primary water bodies in the HA include Agua Hedionda Creek, Buena Creek, Letterbox Canyon, Agua Hedionda Lagoon and the Pacific Ocean. Most of the HA is in the City of

Carlsbad (41%); the remainder is in Vista (24%), the County of San Diego (24%) and small amounts in Oceanside and San Marcos. Land use in the Agua Hedionda HA is 34% residential, with significant portions of open space and agricultural uses (38% combined). Commercial, industrial, and transportation corridors are also significant land uses in this HA (Tetra Tech, August 2008).

4.1.3.3.1 Water Quality

High priority water quality problems in the Agua Hedionda HA identified in the 2008 WURMP and as reported in Section 2 of this annual report are bacteria, sediment, and nutrients. Recent monitoring performed in FY 2008 provides new information as well, specific to the HA, including findings of bacteria and TDS during ambient and wet conditions and sediment during wet conditions. Evaluations of nutrient related indicators (benthic algal biomass, dissolved oxygen, pH, and dissolved organic carbon) performed under ambient conditions during FY 2008 also appear to support the decision to list nutrients as a high priority water quality problem in this HA.

4.1.3.3.2 Water Quality Activities

The Nitrate Source Identification and Abatement Activity on Buena Creek (CHU-WQA8) is an activity focused on a segment of the Agua Hedionda HA where nutrients have been identified as a high priority water quality problem. Buena Creek is listed as impaired for nitrates/nitrites on the 2006 303(d) list. Water quality data collected as part of the jurisdictional dry weather programs as well as the Numeric Nutrient Endpoint Assessments performed in the Regional Monitoring Report (Weston 2009) support further investigations into the sources of nutrients in this area. The activity is designed to incorporate past and present water quality data into source investigations in the Buena Creek drainage area. The activity has identified 26 nurseries (i.e. potential sources of nutrients) within the unincorporated County area upstream of an existing dry weather monitoring location. Baseline information consisting of BMP implementation and compliance histories for the nurseries was compiled. Of the 11 that have been inspected, seven had one or more violations. Extensive education is provided during inspections and enforcement activities are conducted as necessary. By incorporating monitoring, source investigations, inspections, education, and enforcement, this activity is expected to have a positive impact on nutrient conditions in the drainage basin. The implementation of appropriate BMPs may also have a positive impact on sediment laden runoff from nurseries as well, although sediment is not specifically targeted through this activity.

This activity appears well designed to address high priority water quality problems in the watershed, attempting to identify specific sources (agricultural land use comprises nearly 28% of WMA) of nutrients in the HA and abate the sources.

4.1.3.3.3 Education Activities

Education activities applicable to the HA implemented during FY 2008 included a Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses (CHU-WQEA3). Participation in the Agricultural Workshop included three business owners located in the Agua Hedionda HA. *Post workshop surveys revealed that BMPs implemented as a result of the Agricultural Workshop do address the pollutants specific to the Agua Hedionda HA, including bacteria, sediment and nutrients.*

Additionally, the inspections occurring as part of the Nitrate Source Identification and Abatement activity, provided education to nursery owners about the effects their operations may have on downstream water quality, *specifically targeting nutrient related runoff issues*.

4.1.3.4 Encinas Hydrologic Area

The Encinas Creek HA is 3,400 acres in size, making it the smallest within the WMA. The HA begins as a small drainage behind an industrial area where it is immediately channelized. The Encinas Creek continues down through industrial and office parks associated with Palomar Airport until it reaches the lower valley area. It then makes its way to the Pacific Ocean after crossing Interstate 5 and Pacific Coast Highway. The Encinas HA is entirely within the City of Carlsbad and the only significant receiving water body is the Pacific Ocean. Land use in the HA consists mostly of transportation corridors, industrial uses, open space, and vacant land. There are some residential and commercial areas interspersed as well (Weston, January 2009).

4.1.3.4.1 Water Quality

There were no high priority water quality problems identified in the WURMP specific to the Encinas Creek HA. Recent assessments of water quality data performed in FY 2008 provides new information, specific to the HA, however water quality data for this HA is limited. Data was collected during ambient (dry) conditions as part of the jurisdictional Dry Weather Monitoring Program for the City of Carlsbad. Exceedances for conductivity, nitrate, pH, and turbidity have been detected in the Dry Weather Monitoring. These action level exceedances appear to be related to groundwater in the area. Water quality problems identified in the LTEA included bacteria and sediments, listed as B and C ratings respectively.

4.1.3.5 San Marcos Hydrologic Area

The San Marcos Creek HA is the second largest land area within the WMA. San Marcos Creek originates on the western slopes of the Merriam Mountains in west central San Diego County and discharges into the Pacific Ocean via Batiquitos Lagoon. Encinitas Creek is one of the major tributaries in the HA. It originates in the hills southwest of Questhaven Road and parallels El Camino Real before its confluence with San Marcos Creek at the southeastern corner of Batiquitos Lagoon. Lake San Marcos is the largest impoundment within the HA. There are also a number of small farm ponds on various tributaries in the lower basin. The major receiving waterbodies within the HA are San Marcos Creek, Encinitas Creek, Batiquitos Lagoon, and the Pacific Ocean. The Cottonwood Creek sub-basin is also located in this HA which drains a portion of Encinitas directly into the Pacific Ocean. The San Marcos Creek HA is primarily located in San Marcos, Carlsbad, Encinitas, and the County of San Diego, with a small portion in Escondido. Land use in the HA is mostly residential (29%), open space, and vacant land. Transportation corridors, agriculture, and construction are also significant land uses in the area (Weston, January 2009).

4.1.3.5.1 Water Quality

The only high priority water quality problem in the San Marcos Creek HA identified in the WURMP is nutrient related, as reported in Section 2 of this annual report. Data assessed is limited to the jurisdictional Dry Weather and Coastal Storm Drain Monitoring Programs. Data was collected from the MS4 during ambient (dry) conditions only. Parameters exceeded in the dry weather monitoring program in FY 2008 include: bacteria, ammonia, conductivity, pH, nutrients, and turbidity.

4.1.3.5.2 Water Quality Activities

A water quality activity implementing Focused Inspections along San Marcos Creek (CHU-WQA9) was developed and initiated during FY 2008. Although not directly confirmed through the activity, the commercial and industrial land uses in the focal area are suspected sources of nutrients in the HA. During FY 2008, 15 commercial and industrial sites were identified and inspected. Onsite education was provided to the establishments and enforcement was utilized where necessary to gain compliance. This activity was developed to perform geographically based inspections as opposed to source specific inspections.

4.1.3.5.3 Education Activities

During FY 2008, the Pilot Restaurant Binder/CD Distribution Project (CAR-WQEA2) was completed and assessed in the City of Encinitas. Approximately 180 binders and CDs designed to assist restaurant managers in the implementation of appropriate BMPs and meeting stormwater requirements were distributed to restaurants in the San Marcos and Escondido Creek Hydrologic Areas. The information was distributed during routine inspections in FY 2007 and results were evaluated after inspections in FY 2008. The activity is designed primarily to address sources of bacteria, as eating and drinking establishments have been identified as likely sources. Although not identified as a high priority water quality problem in this HA, bacterial exceedances have been observed in jurisdictional dry weather monitoring programs and multiple sections of the Pacific Ocean Shoreline are listed as impaired for bacteria on the 2006 303(d) list. In general, follow-up inspections found that many of the binders and CDs were not utilized and in some cases, no longer present at the site. However, in assessing changes in stormwater knowledge and BMP implementation, positive changes were evident. Changes in knowledge increased nearly 85% in restaurants from FY 2007 to FY 2008. BMP implementation at restaurants increased by over 20%. Examples of measured improvements include:

- Increased employee training
- More trash areas free of litter and debris
- More often, wash water was disposed of properly
- More often, used oil drums were stored properly
- Grease traps and interceptors were maintained more frequently.

These measured improvements may be a result of the binder and CD distribution, as there were no other significant changes in the inspections program during this timeframe. Although water quality data supporting the hypothesis is lacking and is thus anecdotal, in theory, implementation of these types of BMPs should improve water quality during ambient and storm conditions.

The activity focused on Restaurant Education, using binders and CDs, may be effective at increasing the awareness and BMP implementation at eating and drinking establishments in the HA. However, personnel turnover in restaurants continues to be a significant barrier to achieving higher effectiveness. This activity should have a positive effect on water quality and may be implemented in other HAs in the future.

Education activities applicable to the HA implemented during FY 2008 included a Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses (CHU-WQEA3) and an LID and Watershed Planning Workshop (CHU-WQEA4). Two facilities from the San Marcos HA were represented at the Agricultural Workshop. The LID and Watershed Planning Workshop was presented to the Hidden Meadows Sponsor Group, which is partially in the San Marcos HA.

4.1.3.6 Escondido Creek Hydrologic Area

The Escondido Creek HA is the largest and most complex system within the WMA. Escondido Creek watershed originates in Bear Valley in north central San Diego County and discharges into the Pacific Ocean via San Elijo Lagoon. Most of the HA is in unincorporated areas of the County (55%). The remaining area is in the cities of Escondido and Encinitas, with a small portion in San Marcos and Solana Beach. The primary receiving waters are Escondido Creek, Lake Wohlford, Lake Dixon, Reidy Canyon, San Elijo Lagoon, and the Pacific Ocean. Land use in the HA is more than 25% vacant/undeveloped land, with significant portions of open space, residential areas, and land under construction. Other lesser uses include transportation corridors and agricultural uses (Weston, January 2009).

4.1.3.6.1 Water Quality

High priority water quality problems in the Escondido Creek HA identified in the WURMP and as reported in Section 2 of this annual report are bacteria, sediment, and nutrients. Recent monitoring performed in FY 2008 provides new information as well, specific to the HA, including findings of bacteria and TDS during ambient and wet conditions and turbidity during wet conditions. Evaluations of nutrient related indicators (benthic algal biomass, dissolved oxygen, pH, and dissolved organic carbon) performed under ambient conditions during FY 2008 also appear to support the decision to list nutrients as a high priority water quality problem in this HA.

4.1.3.6.2 Water Quality Activities

The Escondido Creek Restoration activity identified an area of Escondido Creek where severe bank erosion was evident. Bioengineering solutions were designed and constructed to eliminate stream bed and bank erosion along this segment of Escondido Creek. The BMPs installed are permanent structures (i.e. gabion baskets) planted with native vegetation to stabilize the banks. This activity directly addressed sediment loading to Escondido Creek and ultimately to San Elijo Lagoon (which is listed as impaired for sediment), supporting a high priority water quality problem that has been identified in the WURMP for this HA. The effectiveness of the project will be assessed via a two year monitoring program and will include monitoring of channel morphology, sediment loss and accumulation, condition of the structures, and habitat evaluations. This activity is expected to have a direct impact on sediment loading to the creek and will be further discussed in future assessments as the monitoring program progresses.

The Pet Waste Bag Dispenser Program (CHU-WQA10) activity directly addresses bacteria and nutrient loading into the watershed, both constituents identified as high priority pollutants of concern in the Escondido Creek HA. During the reporting period, the County installed 12 new dispensers in the Carlsbad WMA, including nine new dispensers in the San Elijo Ecological Reserve. In total, there are now 11 stations in the San Elijo Ecological Reserve, which dispensed approximately 45,500 bags, estimated to have provided for the disposal of over 9,000 pounds of pet waste during the fiscal year. The stations provide for direct reductions in bacteria and nutrient loading to San Elijo Lagoon, which is listed as impaired for sediment and nutrients, and also provides education to pet owners who walk their dogs in the Reserve.

Water quality activities appear to be appropriately addressing known water quality problems in the HA. Projects such as the Escondido Creek Restoration and the Pet Waste Bag Dispenser Program are likely to have positive long term impacts on water quality in the HA, specifically addressing sedimentation and bacteria, respectively.

4.1.3.6.3 Education Activities

Education activities applicable to the HA implemented during FY 2008 included a Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses (CHU-WQEA3) and an LID and Watershed Planning Workshop (CHU-WQEA4). Both of these activities address high priority pollutants identified for the watershed, with the Agricultural Workshop focused toward nutrient reduction and the planning workshop addressing a broad range of potential pollutants associated with new development. Twp facilities in the Escondido Creek HA were represented at the Agricultural Workshop The LID and Watershed Planning Workshop was presented to the Hidden Meadows Sponsor Group, which is partially in the Escondido Creek HA.

During FY 2008, the Pilot Restaurant Binder/CD Distribution Project (CAR-WQEA2) was completed and assessed. Approximately 180 binders and CDs designed to assist restaurant managers in the implementation of appropriate BMPs and meeting stormwater requirements were distributed to restaurants in the San Marcos and Escondido Creek Hydrologic Areas. The information was distributed during routine inspections in FY 2007 and results were evaluated after inspections in FY 2008. The activity is designed primarily to address sources of bacteria, as eating and drinking establishments have be identified as likely sources. Bacteria have been designated as a high priority water quality problem in this HA. In general, follow-up inspections found that many of the binders and CDs were not utilized and in some cases, no longer present at the site. However, in assessing changes in stormwater knowledge and BMP implementation, positive changes were evident. Changes in knowledge increased nearly 85% in restaurants from FY 2007 to FY 2008. BMP implementation at restaurants increased by over 20%. Examples of measured improvements include:

- Increased employee training
- More trash areas are free of litter and debris
- More often, wash water was disposed of properly
- More often, used oil drums were stored properly
- Grease traps and interceptors were maintained more frequently.

These measured improvements are likely a result of the binder and CD distribution, as there were no other significant changes in the inspections program during this timeframe. Although water quality data supporting the hypothesis is lacking, in theory, implementation of these types of BMPs may improve water quality during ambient and storm conditions.

The education water quality activities appear appropriately targeted for the HA. The Agriculture and LID workshops both address identified high priority water quality problems in the HA. The assessment of the restaurant outreach program has shown that the program has positively changed knowledge and behavior in the restaurant community, which will likely lessen the impacts of local restaurants on water quality. The newly constructed Nature Center at San Elijo Lagoon will also serve to educate the public as well as set a positive example for the development community, illustrating LID techniques.

4.1.4 OTHER WURMP ACTIVITIES

Outside of the Watershed Water Quality and Education Activities, there are other activities that the WURMP Copermittees collaborated on during the reporting period. These activities included pubic participation mechanisms, general Copermittee collaboration, land use planning, and a pet waste bag dispenser survey. The following is an assessment of the effectiveness for each of these activities.

4.1.4.1 Public Participation – Carlsbad WMA

Public participation mechanisms were numerous in FY 2008 and most often included multiple jurisdictions in the events. Some examples of mechanisms to involve the public in watershed planning efforts include: the development of the Agua Hedionda Watershed Management Plan, continued operation of the Project Clean Water Website, numerous outreach and education events and several clean up events, implementation of the Carlsbad Watershed Network Invasive Species Program. In addition, activities such as the Residential Irrigation Runoff Reduction Activity, LID and Watershed Planning Group presentations, and the LID Features in the San Elijo Lagoon Nature Center Activity will require public involvement to be successful. While there are not qualitative methods in place to assess the effectiveness of the public participation mechanism, the watershed has reached many diverse groups and continues to involve and educate the public. *Based on the general public involvement at these opportunities, these public participation mechanisms seem to be effective*.

4.1.4.2 Copermittee Collaboration

Copermittee collaboration efforts during the reporting period were effective at including all watershed Copermittees in development processes and decision making in relation to the WURMP. Collaborative efforts included 10 meetings of the Carlsbad WURMP group, cooperation on many watershed projects including development of the WURMP and WURMP Activities, and continuation of the North County Storm Water Program for education and outreach. *The collaborative process provided a forum for diverse opinions to be shared leading to the development of effective watershed programs as illustrated throughout this Annual Report.*

4.1.4.3 Land Use Planning

Watershed based, land use planning efforts are difficult to implement, as cities have evolved independently, often incorporating to allow for individualized land use jurisdictions. Where feasible, the Carlsbad WURMP group is seeking ways to implement collaborative, watershed based, land use planning efforts. The LID Watershed Planning Workshops for Community Planning and Sponsor Groups is one example of an activity used to promote these efforts. While implementation was limited in FY 2008, these efforts will continue to reach other groups in FY 2009. The Watershed Copermittees will implement a workshop to include LID and new SUSMP information. The expansion may include larger workshops based for land use planners and the development community in the WMA. A second example of collaborative, watershed based, land use planning efforts is in the development of the Agua Hedionda Watershed Management Plan. *Meetings during the planning and development phases for this plan were well attended and considered effective steps in collaborating on land use planning in the WMA.*

4.1.4.4 Pet Waste Surveys

While staffing booths at local outreach events, Copermittees asked individuals who requested a pet waste bag dispenser as well as others who approached the tables to complete a short five question survey. During the reporting period, the survey was distributed and tabulated at several public events in the Carlsbad and San Luis Rey Watersheds. There were 346 surveys completed, with at least one personal pet waste bag dispenser distributed for each survey. This information provides additional data on the baseline knowledge of North County residents and provides potential direction in upcoming educational outreach efforts.

The five questions on the survey were:

1. What is your zip code?
2. Where do you most often walk your dog?
3. What happens to the pet waste that is not picked up?
4. If you saw people not picking up after their pet, what would be your reaction?
5. Why do you think people would not pick up after their pet?

The demographics of the survey showed that 95% of the participants were California residents, with 89% living in San Diego County, and approximately 75% living in the Carlsbad or San Luis Rey Watershed. Most survey participants, approximately 63%, walk their dog in their neighborhood, while 15% use parks, and 13% walk their dog at the beach. This implies that outreach efforts with respect to pet waste are well targeted in parks and beaches, but may prove useful in residential neighborhoods as well. The majority of people surveyed, approximately 63%, appear to understand that pet waste washes into creeks, lagoons, and the ocean if it is not picked up. Others either do not know what happens to the waste, or believe that it disintegrates into and fertilizes the ground, or believe that someone else picks it up. This implies that outreach efforts may have changed awareness in nearly 2/3 of dog owners but should be continued or expanded in an attempt to encourage all dog owners to pick up and properly dispose of pet waste. Approximately 2/3 of people surveyed said that if they were to observe someone not picking up after their pet, they would ask them to do so. *The survey also showed that people most likely do not pick up after their pet because either they do not care, do not have a bag, and/or do not believe anyone will see them. This implies that through outreach efforts, Copermittees must continue to help people understand why it is important and continue to provide bags for cleaning up pet waste where feasible.*

4.1.4.5 Commercial and Industrial Changes in Awareness and Knowledge

An additional mechanism has been developed to track changes in knowledge and behavior over time using standardized ratings at commercial and industrial facilities.

Results of the inspections ratings for FY 2008 are illustrated in the graph below. In previous years, these results have not been compiled at the watershed level. Beginning next year, these assessment questions can be compared over time to illustrate changes in stormwater knowledge and awareness (Level 2) and in BMP implementation or behavior changes (Level 3). In general, results show that most businesses have an above average understanding of stormwater concepts and most are implementing appropriate BMPs, although not always to the extent necessary.

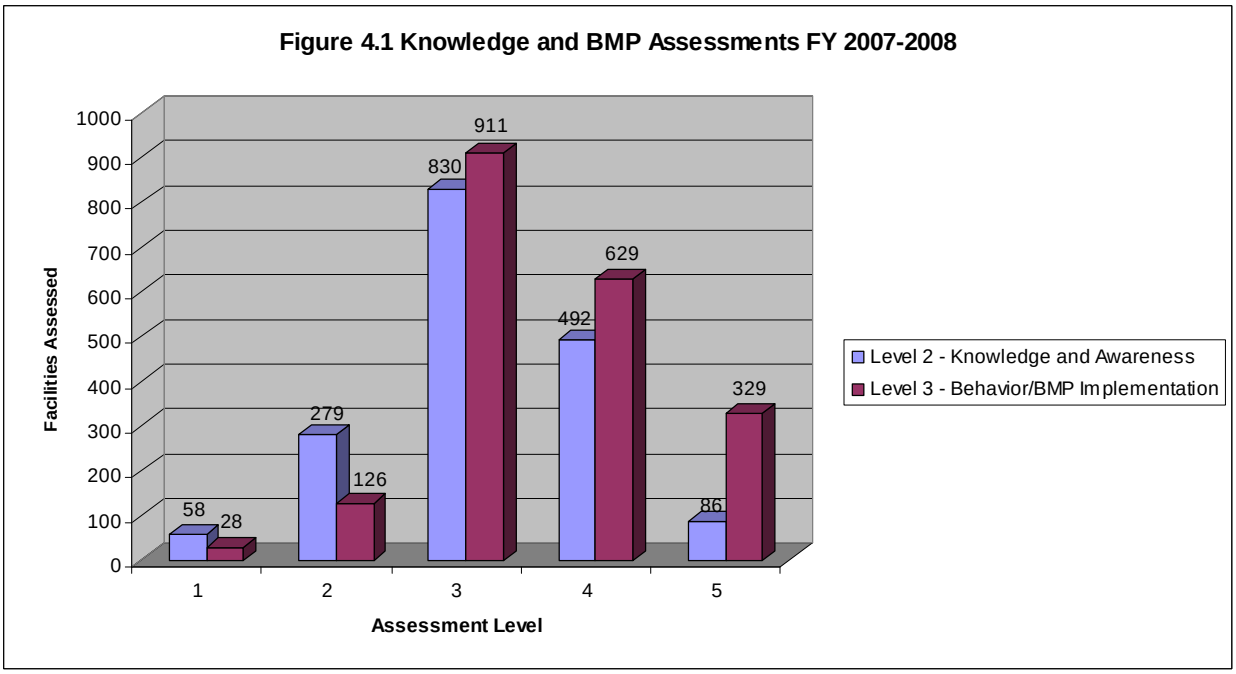
Figure 4.1 Knowledge and BMP Assessments FY 2007-2008
Facilities Assessed
1000
900
800
700
600
500
400
300
200
100
0
58
28
279
126
830
911
492
629
86
329
1
2
3
4
5
Assessment Level
Level 2 - Knowledge and Awareness
Level 3 - Behavior/BMP Implementation

5 CONCLUSIONS AND WURMP IMPROVEMENTS

5.1 CONCLUSIONS

The Carlsbad WMA is unique because it consists of six individual hydrologic areas (HAs) or watersheds. Therefore, to effectively address the WMA's water quality issues, the Copermittees identified and then evaluated the high priority water quality problems for likely sources at the individual watershed level. As a result of examining each HA in the WMA, the Copermittees identified some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the Carlsbad Watershed; b) water quality and education activities appear to be targeting potential sources of the high-priority problems and are generally viewed as effective tools which reduce water quality impacts from potential sources. However, in most cases, there is a lack of direct linkage between the potential pollutant sources and their impacts on water quality. For this reason, it is difficult to quantitatively assess the direct impacts of the activities on overall water quality.

As a result of the WURMP water quality assessment, bacteria, sediment, and nutrients were identified as high-priority water quality problems for the WMA. The identification of these constituents is generally supported by water quality data collected at the regional level. Potential source inventories have been developed for the WMA for each of these constituents; however, in few cases have these potential sources actually been linked to water quality problems through monitoring data. The lack of water quality data directly related to sources makes comprehensive effectiveness assessment of the activities difficult. Without the proper data, the Copermittees are limited to assessing water quality impacts on a qualitative basis. In order to work toward more effective management of water quality in the watersheds, the Carlsbad Watershed Copermittees may consider further development and characterization of source inventories and research existing data related to the potential sources, or collect data unique to the WMA. The goal of this data collection effort would be to more definitively link pollutant concerns with known sources, allowing the Copermittees to justifiably prioritize the sources for activity development.

Once source inventories are developed specific to the HAs, linkages may be established between the potential sources and water quality. This may be accomplished through a combination of research, analysis of existing data, and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the potential sources to water quality problems in the watershed. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional Dry Weather Monitoring Programs that may provide insight into specific sources. This program is designed to detect illicit discharges and connections, but in general is only conducted once per year. In many cases, water quality data may be unavailable to accurately characterize loading from potential sources. Where there is sufficient evidence of impacts to water quality from potential sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees would have the ability to identify water quality impacts, prioritize activities, and conduct more thorough effective assessments.

To date, much data has been collected in the receiving waters, allowing Copermittees to determine which pollutants are problematic in their watersheds. With the revision of the monitoring programs for Order R9-2007-0001, new receiving water sites were added (TWAS) to provide water quality data to be collected further up in the watersheds. After the first year of monitoring, these sites have generally confirmed the pollutants that were detected at the long-term MLS sites. Other new components of the Regional Monitoring Program include the MS4 Outfall Monitoring Program and the Source Identification Program. Both of these were developed in FY 2008 and are expected to provide information to help characterize water quality at MS4 outfalls and verify sources of potential water quality problems, respectively. It should be noted, however, that these programs are regional in nature and are designed to provide information related to regional needs. The watershed Copermittees have been able to assist in the design of the programs, and will be able to make use of this relevant information related to MS4 water quality and specific sources. . However, sample design may limit the ability to make sound conclusions. Although these programs will provide useful information in the future (as multiple years of data are collected), at this time they cannot be solely relied on for MS4 and source identification data.

5.2 PROGRAM IMPROVEMENTS

Future data collection may concentrate on MS4 discharges and source characterization. The current Receiving Waters and Urban Runoff Monitoring Program focuses largely on receiving water quality characterization and does not provide the watershed groups with data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WUMRPs but will be limited in scope. Since the WMA is composed of six unique HAs or watersheds, it is important that recommendations specific to each HA be first developed and then presented prior to characterizing the current water quality environment for the entire WMA. The following HA and WMA recommendations are based on the current, limited data.

5.2.1 LOMA ALTA

Future activities in the Loma Alta HA may continue to focus on bacteria and nutrients. Source inventories specific to the HA may be developed. Commercial inventories and GIS data are helpful in development of the inventories. Aerial photography of the HA may assist in identification of potential sources of sediment. Where restaurants are potential to be sources of bacteria, implementation of increased inspections and targeted outreach such as the Restaurant Binder and CD project may assist in improving water quality. Research of the area and existing water quality data may provide useful information to link potential sources to identified water quality problems. Continued monitoring at the TWAS station may be considered. Data collected at the TWAS and in Loma Alta Slough under the Lagoon Investigative Order may also be incorporated into future water quality and source assessments in the watershed as resources permit.

5.2.2 BUENA VISTA

Activities in Buena Vista HA may focus on identification and abatement of bacteria sources in the HA. Commercial inventories and potential sediment sources could be identified in order to address water quality problems specific to the HA. Monitoring may be considered to continue at the TWAS station, as limited receiving water data is available for this HA. Data collected at the TWAS and in Buena Vista Lagoon under the Lagoon Investigative Order may also be incorporated into future water quality and source assessments in the watershed.

5.2.3 AGUA HEDIONDA

Three high-priority water quality problems have been identified in Agua Hedionda HA, including bacteria, sediment, and nutrients. Based on available water quality data, elevated nutrients appear to be a localized problem and are currently being addressed by a water quality activity in Buena Creek. Source inventories for bacteria and sediment may be developed for the HA, leading to focused activities to address these identified problems. Several years of water quality data have been collected at the MLS, allowing for characterization of water quality at the base of the watershed during storm events. Resources may be better allocated to source investigations in the HA in lieu of continuing storm event monitoring at the MLS. However, the collection of ambient data at this location is a recent endeavor and should be considered for continuation.

The Agua Hedionda Watershed Management Plan was also recently developed. This Plan could be used as a starting point to guide future monitoring and activity efforts within the HA. The water quality, hydrology, and land use analyses performed in the plan may provide useful information to watershed managers in the HA. Data collected at the MLS and in Agua Hedionda Lagoon under the Lagoon TMDL Investigative Order R9-2006-076 may also be incorporated into future water quality and source assessments in the watershed as resources permit.

5.2.4 SAN MARCOS

Water quality in the San Marcos HA is largely uncharacterized at this time. Historically, there have been no MLS or TWAS in the HA, limiting the amount of data available. Compilation and assessment of Dry Weather Monitoring data for the HA may be performed and analyzed to gain a better understanding of the ambient water quality problems. It may also be useful to research available data collected by other agencies in the watershed for inclusion in future water quality analyses. In order to address nutrient impairment concerns in Lake San Marcos, future water quality and education activities will be primarily focused in the Lake San Marcos tributary area.

5.2.5 ESCONDIDO CREEK

High-priority water quality problems identified in the Escondido Creek HA include bacteria, sediment, and nutrients. TDS has also routinely exceeded benchmarks in the HA. With a historical MLS located in Escondido Creek, significant amounts of wet weather data have been collected. The addition of a TWAS station upstream and ambient monitoring will provide useful information in the future. Because wet weather water quality is well characterized in this HA, it may be a more effective use of resources to collect data upstream that is directly related to potential sources of the water quality problems. Data collected at the MLS and in San Elijo Lagoon under the Lagoon Investigative Order may also be incorporated into future water quality and source assessments in the watershed as resources permit.

5.2.6 CARLSBAD HYDROLOGIC UNIT

Elevated total dissolved solids (TDS) concentrations are persistent throughout the Carlsbad WMA and most of San Diego County. Sources of the elevated TDS are potentially related to the region's reliance on imported water and its impact on groundwater recharge of San Diego aquifers. This appears to be a region-wide problem; Carlsbad WURMP Copermittees may strive to address this water quality problem on a regional level.

Emerging pesticides, specifically pyrethroids, have been detected in concentrations likely contributing to toxicity in water and sediment samples collected at TWAS and MLS throughout the region. Carlsbad WURMP Copermittees should consider supporting regional and statewide

efforts to address the problem. The Regional Education and Residential Sources Workgroup may be an available mechanism to develop an outreach strategy to address this class of pesticides.

5.2.7 TOTAL MAXIMUM DAILY LOAD (TMDL) ORDER NO. R9-2006-076

Investigative Order R9-2006-076 was issued by the Regional Board in 2006 requiring identified responsible parties to collect water quality data in the region's lagoons. There was one slough and three lagoons named in the Order that lie within the Carlsbad WMA. These include Loma Alta Slough, Buena Vista Lagoon, Agua Hedionda Lagoon, and San Eljio Lagoon. These waterbodies are receiving waters for the four HAs prior to mixing with the Pacific Ocean. Estimated to cost nearly $2 million, a monitoring workplan and a Quality Assurance Project Plan (QAPP) were developed with the collaboration of the responsible parties, scientists of the Southern California Coastal Water Research Project, and representatives from the Regional Board. Monitoring was initiated in October 2007 and completed in October 2008. Water quality and hydrology data were collected during ambient and storm conditions at various points in the lagoons, as well as at monitoring sites located at base of the watersheds. This project has produced large amounts of data relevant to water quality in these receiving waters. As resources allow, Copermittees in the Carlsbad Watershed may strive to integrate this data into WURMP assessments and use the findings to further improvements specific to the HAs.

5.2.8 COLLABORATION WITH RWQCB

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The report also recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language, where necessary, to better develop and meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The Carlsbad WURMP Copermittees are committed to continuing their involvement in this process during the FY 2009 reporting period and future years. It is anticipated that some changes to the Five-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the Copermittees and the RWQCB.

Appendix A

Carlsbad Watershed Activity Sheets

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Water Quality Activity Sheets

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TITLE:	**RESIDENTIAL IRRIGATION RUNOFF REDUCTION**
ID #:	**CHU-WQA1**

ACTIVITY IMPLEMENTATION

A pilot singe family residential area in a sub-watershed will be selected to evaluate the load reduction potential related to reducing irrigation runoff. The expected results include reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in the pilot area, and reduction in irrigation runoff flow in the pilot area. Planned activities include:

- Use Dry Weather Monitoring Program results, BLTEA information, and field knowledge to select a pilot area.
- Collect pre-pilot flow data in pilot drainage area, and calculate estimated pollutant loads
- Work with volunteer residences and sites with irrigation runoff to review water usage, conduct water assessment and leak detection as necessary.
- Field reconnaissance to check for corrective action completion.
- Collect post-pilot flow measurements in pilot drainage area, and calculate estimated pollutant loads
- Measure effectiveness of overall program by calculating any reduction in pollutant loading through reduction in over-irrigation.
- Education to be coordinated through CHU-WQEA1

This activity was in the planning phase during FY 2008. Activities conducted during FY 2008 included researching potential pilot neighborhoods, field reconnaissance at outfalls, and development of draft outreach materials.

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation will occur in FY 2009. The pilot neighborhood will be identified by October of 2008. Preparation of the outfall for flow monitoring will occur in November 2008. Pre-pilot flow measurement will occur in December 2008, pending dry weather. Flow measurement will not occur during rain events, but may occur after rain events provided that there is no rain included in flow measurements. The first outreach piece will be delivered to the neighborhood once flow measurements are completed, in December 2008 or January 2009 depending on rain. Once flow measurements and introductory outreach is completed, one-on-one work with volunteer residences and sites with irrigation runoff will begin.

Assessment will also occur in FY 2009 if the implementation steps listed above are completed. Estimated timeframe is May 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad
- All watershed members will participate during planning and measuring phases of this activity. City of Carlsbad personnel will participate in the implementation phase of the activity.

OTHER PARTICIPATING AGENCIES

Carlsbad Municipal Water District Employees

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area (WMA) collective watershed strategy identifies bacteria, sediment, and nutrients as high priority water quality pollutants in the Agua Hedionda (904.3 – bacteria and sediment), Buena Vista (904.2 – bacteria), and San Marcos Creek (904.5 – nutrients) Hydrologic Areas. Bacteria, sediment, and nutrients have been identified as potential discharges from over-irrigation. This activity addresses high priority water quality problems and potential source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

A reduction of flow after working with applicable residents is the targeted outcome of this activity and will be assessed by measuring irrigation runoff flow after the pilot is completed. Implementation effectiveness will be measured by evaluating pre and post-flow surveys (Level 4 Outcome). Since the pilot will be completed prior to the start of the 2009 dry season, the results will be analyzed within nine months following completion of the pilot. In FY 2008, because several pilot neighborhoods have been identified and draft outreach materials developed, the planning phase of this activity is considered effective.

TITLE: **LOMA ALTA CREEK ULTRAVIOLET RADIATION STORM WATER TREATMENT FACILITY**
ID #: **CHU-WQA2**

ACTIVITY IMPLEMENTATATION

This project involves the construction of a filtration and ultraviolet (UV) radiation storm water treatment facility to be located adjacent to the Loma Alta Creek outlet in the City of Oceanside. One hundred percent of the dry weather creek flows (averaging 300 to 700 gallons per minute) will be intercepted at the outlet and diverted to the UV storm water treatment facility.

The treatment facility consists of piping flows from an exiting diversion structure by gravity from the lagoon through a 2 micron fine screen to a wet well where the flow is pumped into two large sand filters followed by two UV disinfection units housed in a reinforced concrete building. Once treated, water will discharge through a pipe that will extend along the existing section of rip-rap that runs along the north side of the Loma Alta Creek outlet at Buccaneer Beach. During wet weather months, the lagoon would be opened to allow free flow to the ocean and the UV system would be bypassed.

This project is located where Loma Alta Creek discharges to the Pacific Ocean at Buccaneer Beach. The watershed is mostly in the City of Oceanside with the headwaters within the City of Vista. Buccaneer Beach is a family beach adjacent to a park that is heavily used during dry months. The City determined that a key source of bacteria and nutrients are urban runoff from the 6,400 acre Loma Alta Watershed, which is densely developed with residential, commercial and industrial land uses. While nutrients promote algae growth in the lagoon and cause nuisance odors, the high bacteria levels in the creek flow to the ocean directly impacts the ocean water quality at Buccaneer Beach. To reduce the numerous beach postings and closures at this popular beach the City decided to apply for a Clean Beach Initiative Grant to construct an UV treatment facility to treat the dry weather flows in the Loma Alta creek prior to discharging the water to the beach. A $5,000,000 Proposition 40, Clean Beach Initiative Grant, was awarded to the City on January 24, 2007 to design and build the UV treatment facility.

The increased presence of bacteria and pathogens in the watershed poses a threat to REC-1 and REC-2 beneficial uses and results in increased number of beach closures at the Loma Alta Creek outlet at Buccaneer Beach. This project will address the bacterial issue through filtration and UV disinfection. The anticipated project goal is to eliminate beach closures during the dry months at Buccaneer Beach in Oceanside, California. This will be achieved by diverting the flow from the Loma Alta Lagoon through a UV treatment facility prior to discharging the flow onto the shoreline. The City will monitor the UV treated storm drain outlet and the surf zone for bacteria for the end of the 2008 and all of the 2009 AB411 period. The approved Monitoring Plan and Quality Assurance Project Plan developed for this project will be implemented

Prior to the construction, a Final Monitoring Plan and Quality Assurance Project Plan (QAPP) was developed and approved by the State Water Resources Control Board (SWRCB) in June of 2007. This plan listed the sample frequency, locations and methods for testing the effectiveness

of the treatment system. The monitoring plan would begin once the UV treatment facility was operational. The California Coastal Commission approved Permit No. 6-06-152 for construction of the outfall pipe associated with the UV treatment facility on June 14, 2007. Loma Alta Creek UV Treatment Facility project entered into the construction phase on August 13, 2007 when the official Notice to Proceed was issued to Orion Construction Corporation. The construction was completed in July 2008, testing ran through August 2008 and the UV treatment facility began discharging to the ocean in September 2008. All monitoring indicated that the system functions as expected and the surf zone samples all met AB411 limits. The facility was shut down for the wet season during the beginning of October as a storm approached the coast.

In May of 2009 the UV facility will be brought back online and will run until the first storm in September or October 2009. The QAPP monitoring program will run through the summer and a final report for the SWRCB will be completed by the end of 2009. The UV facility will be maintained and operated during the dry weather period for the next 20 years.

TMDL APPLICABILITY

The RWQCB and Copermittees are developing a Bacteria-Impaired Waters TMDL Project II for Lagoons and adjacent beaches and creeks, which includes Loma Alta Creek slough. This project will assist in the implementation of this TMDL by reducing bacterial contamination in the impaired segment of Loma Alta Slough and the Pacific Ocean shoreline. Just over eight acres of the Loma Alta Slough are included on Section 303(d) of the federal Clean Water Act list of impaired water bodies for bacterial indicators and eutrophication within the slough and for 1.1 miles of coastline at the opening.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was scheduled for planning and construction during FY 2008. Construction was completed in July 2008. Implementation was planned for FY 2009 which appears to be on schedule with the UV facility being brought back on-line in May 2009. Because this facility will run during the summer months of 2009 the implementation phase will overlap both FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential, commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

A Project Assessment and Evaluation Plan (PAEP) was developed to define how to measure the effectiveness of the UV treatment facility. A Final Monitoring Plan and Quality Assurance Project Plan (QAPP) defines the monitoring program that measures water quality prior to and during facility operation. Monitoring for total and fecal coliform and enterococcus will be conducted at several locations: In the lagoon prior to water entering the UV facility, within the plant prior to and after UV treatment, and at the shoreline at the discharge point and in the

coastal mixing zone (Level 5 and 6). After a complete dry season of testing (May through September 2009), a final effectiveness report will be generated using all of the data. The facility will be considered effective if the treated discharge from the UV facility meets the 30 day average Rec-1 Water Quality Standards set forth in the Ocean Plan. This will ensure that the surf zone will meet the same limits after mixing occurs.

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TITLE:	**ETERNAL HILLS CEMETERY BMPS**
ID #:	**CHU-WQA3**

ACTIVITY IMPLEMENTATION

The Eternal Hills Cemetery had an Urban Run-off Management Plan (URMP) approved in April 2005 and revised in March 2006. This URMP was developed at the request of the City of Oceanside and recommended various BMPs to minimize the release of fertilizers, pesticides, herbicides, fossil fuels, and sediment from the property. Some components of that plan had not been implemented and Oceanside issued enforcement notices to require correction of the problems and to implement and maintain the BMPs proposed in the URMP. With the facility proposing expansion, the city required the development of a new Storm Water Management Plan (SWMP) relative to the current operation and proposed expansion activities. This new SWMP required the use of additional BMPs and detention basins to attenuate peak flows and mitigate/reduce sedimentation from leaving the property. The expected benefit from this project was the implementation of recommended BMPs in the facility's new SWMP which will mitigate/reduce potential pollutants from leaving the cemetery property and reaching Loma Alta Creek.

During FY 2008 the following activities were completed:

- Conditions for approval of the Environmental Impact Report (EIR) for the facility expansion required Eternal Hills Cemetery to bring their Stormwater Management Plan (SWMP) up to current conditions as required by regulatory agencies and the City of Oceanside. Required resource agency permits were obtained and the EIR was approved on December 3, 2007. An amended SWMP was completed and approved on June 11, 2008.
- Prior to the rainy season in September 2007 Oceanside Code Enforcement (CE) staff conducted an initial inspection to determine if erosion control BMPs were in good repair. During that inspection it was noted that there were some BMP maintenance needs with regards to gravel bags and BMP placement around soil stock pile areas. No erosion was evident at the time of this inspection. A follow-up inspection determined that repairs had been made.
- The site was inspected after two rain events in both January and February 2008 and the erosion control BMPs were still in good repair and no soil erosion was evident.
- In March 2008 the site was inspected and it was determined that some BMPs were in need of repair and replacement. Subsequently the BMPs in need of repair were fixed and additional erosion control BMPs were placed on the site.
- During FY 2008 the following BMPs were installed on the Eternal Hills Cemetery Property: 1300 gravel bags; 20 yards of gravel; 1056 feet of new fiber rolls and 500 feet of replacement fiber rolls; 1000 feet of silt fence; 500 feet of burlap blankets for added erosion control on the stock pile areas; 8 acres of grass were dethatched to allow for water percolation and retention.

BMP maintenance for future years include: Additional acreage to be dethatched each quarter during FY 2009; BMPs will be inspected prior to each rain event; two yards of gravel and sixty gravel bags will be kept on-site for use where needed prior to rain events and for regular maintenance activities.

The City of Oceanside will continue to implement this activity , however, in the future the activity will be reported in the City's Jurisdictional Urban Runoff Management Program Annual Reports.

TMDL APPLICABILITY

This activity is not being implemented for compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was scheduled for implementation and assessment during FYs 2008 and 2009. This activity is on schedule according to the 5-year strategic plan submitted with the Carlsbad 2008 WURMP Update.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- No other entities are participating on this project.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Sediment in creeks can provide a reservoir for bacteria. Commercial and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problems and potential source of the problem within the watershed. Therefore this activity is consistent with eh Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

Though there was erosion evident after the March 2008 rain events, the amount of sediment reaching the bottom of the drainage channel was significantly less than when there were little BMPs in place. The cemetery operators are knowledgeable of the need for BMPs associated with their facility and the need to implement them according to their SWMP (Level 2). The facility is implementing BMPs according to the SWMP (Level 3).

TITLE:	**MYERS PROPERTY RESTORATION ASSESSMENT**
ID #:	**CHU-WQA4**

ACTIVITY IMPLEMENTATION

The Myers Property and Adjacent Creek Habitat Restoration project was completed in March 2007. The City applied for and received funding through a Proposition 13 grant for restoration and erosion control of the 35 acre parcel. This property was identified as a significant source of sediment load into Loma Alta Creek due to off-road vehicle (ORV) use and illegal access to the site coupled with frangible, erodible soils, as well as spoil storage along the tributary by the Eternal Hills Cemetery, which surrounds the property on all sides.

The habitat restoration involved revegetation of trails damaged by ORV use and installation of stormwater Best Management Practice (BMP) devices. Revegetation was performed through a combination of broadcast seeding and land imprinting methods and installation of willow and mulefat cuttings/live stakings in a tributary drainage to Loma Alta Creek.

On January 29, 2008 biologists with a private consulting firm contracted by the City of Oceanside conducted a site survey to evaluate the performance of the habitat restoration, revegetation, and erosion control on the Myers Property in the City of Oceanside. Recovery of seeded areas outside of reclaimed trails was generally positive. But, soil erosion and poor BMP performance was observed on several of the reclaimed trails. The reclaimed trails on the Myers Property were seeded via land imprinting in January 2007, and again using hand-broadcasting methods in February 2007 prior to the onset of the majority of winter rains. Unfortunately the 2007 rainy season yielded significantly below average precipitation and most of the seed applied failed to germinate. As a result, the reclaimed trails demonstrated low total vegetation cover and low native species cover. Seed germination and native recruitment were significantly suppressed by the low moisture availability. Over time, installed BMPs in the trails deteriorated, resulting in exposed and erosive soil conditions.

On April 3, 2008 consultant biologists conducted a qualitative site assessment to evaluate the performance of the habitat restoration, revegetation, and erosion control on the Myers Property in the City of Oceanside. As a result of rainfall events in the winter of 2007/2008, temporary slope stabilization and erosion control BMPs (i.e. fiber rolls) installed in winter 2007 on the Myers Property were no longer performing as intended and required maintenance in order to function properly.

Sediment traps installed along the main trail were working, but required maintenance. Along with trail reseeding and slope stabilization, a full sediment trap located at the outfall of one of the major erosion gullies (near an unnamed ephemeral drainage tributary to Loma Alta Creek) near the western edge of the Myers Property required excavation because sediment levels within the trap were above capacity. Corrective action was needed within the unnamed ephemeral drainage tributary to Loma Alta Creek where one of three stream stabilization log dams was damaged by heavy flows. The damaged log dam was installed in spring 2007 to stabilize the eroded channel and reduce head cut erosion advancing upstream. Repair of the log dam device to its original design was conducted to achieve its function.

The following BMPs were installed between May 15 and May 22, 2008:

- 1,692 Gravel Bags
- 64 Fiber Rolls (25 feet long totaling 1,600 feet)
- 100 feet of silt fence
- Rip rap rock

Gravel bags were placed in down slopes of exposed soil areas to reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle and reduce erosion.

Fiber rolls were installed in walking paths and roads that were originally bare of any plants when the restoration project began. These new rolls replaced fiber rolls that had been placed during the initial restoration.

100 feet of silt fence was placed at the southern end of the property on the property line between Eternal Hills Cemetery and this parcel. This was placed in this location to eliminate the introduction of sediment to the Myers Property.

Rip rap rock was placed around the edges of log check dams to prevent soil erosion in the areas where the log dams are secured to the ground. These log dams are in place to capture sediment in storm water runoff and attenuate peak flows to mitigate/reduce soil erosion.

On June 6, 2008 TAIC biologists conducted a site survey to evaluate the performance of the habitat restoration, revegetation, and erosion control BMPs. It was noted that several erosion control BMPs, including fiber rolls and gravel bags had replaced many of the original temporary slope stabilization and erosion control BMPs (i.e. fiber rolls) installed in winter 2007.

TMDL APPLICABILITY

This activity is not being implemented for compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was scheduled for implementation and assessment during FY 2008 and FY 2009. This activity is on schedule according to the 5-year strategic plan submitted with the Carlsbad 2008 WURMP Update.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- A private consulting firm will be utilized to conduct the assessment and develop the annual report. A private contractor with the City installed/replaced the erosion and sediment control BMPs.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Sediment in creeks can provide a reservoir for bacteria. Landscaping land uses including open space areas and cemeteries have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed. Therefore this activity is consistent with eh Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

The initial restoration project including seeding and erosion control BMP installation reduced the amount of sediment would have otherwise reached Loma Alta Creek if not completed. This restoration project reduced the area of exposed soil thereby reducing the amount of soil eroded during previous years. As expected and planned for, some of the BMPs needed replacement, which is currently a part of a regular maintenance plan managed by the City's Public Works Department. Some repairs were required for some of the permanent BMPs.

This water quality activity implemented several erosion control BMPs (Level 3). Sediment build up behind check log dams and other erosion control BMPs demonstrated that the BMPs did reduce sedimentation reaching Loma Alta Creek.

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TITLE:	**SEPTIC TANK SOURCE IDENTIFICATION – FIRE MOUNTAIN**
ID #:	**CHU-WQA5**

ACTIVITY IMPLEMENTATION

One of four isolated areas of Oceanside (Fire Mountain) has approximately 20 homes that utilize on-site sewage treatment facilities to handle wastewater, even though a sewer system was installed in nearby neighborhoods. Exceedances of Coastal Storm Drain Monitoring action levels from a storm drain that discharges from the Fire Mountain neighborhood to Buena Vista Lagoon has prompted upstream bacterial investigations. Several potential sources were identified including bats in the drainage pipe, restaurants and commercial urban runoff, and the area of homes with septic systems. To attempt to identify if the septic systems were contributing, a detergent indicator test known as the optical brightener method was proposed to be used within neighborhood storm water vaults to detect the presence of the additives in runoff water. This type of additive is commonly utilized in laundry detergents and could therefore help determine if the septic system runoff was seeping into the storm drain system. If this detergent was detected, the County of San Diego, Department of Environmental Health, would be requested to have home owners test the integrity of their septic system. The County of San Diego has the sole authority in San Diego County for permitting on-site sewage treatment facilities. If problems were detected then the property owner would be offered the option to correct the problem or hook up to the city sewer system. However, the county required a more definitive detection process than the optical brightener method.

In 2006 the City conducted two pilot studies in the Fire Mountain area to utilize the presence of optical brighteners for identification of possible bacterial contamination from septic tank seepage. A cotton pad was placed in two storm drains for seven days and then collected. Those pads, plus a control pad that was not exposed to sample water, were then placed under a hand-held ultraviolet light. Both pilot studies, one in July and one in August, had inconclusive results. During the July event, one outfall was positive, one was undetermined due to sediment buildup, and the negative control was negative. During the August event, one outfall pad was inexplicably lost, one was undetermined due to sediment buildup, and the negative control was positive.

During FY 2008, further research was conducted on optical brighteners as a bacterial source tracking method. The research papers and newsletters suggested that the preferred method of identifying optical brighteners in water was not by a presence/absence method (by a hand-held ultraviolet light), but by the use of a fluorometer. The cotton pad method has been shown to work only if they are placed very close to the source and the concentrations are sufficiently high to result in a detection of fluorescence. Even when using a fluorometer paired with indicator bacteria sampling, the results have still been contradictory.

Due to the inconclusive results of the pilot study and the further research, the City decided not to continue with the optical brightener study as planned during FY 2008. More definitive potential studies are being researched to identify human fecal presence, such as the QPCR method, for possible implementation in the 08/09 or 09/10 monitoring years, if funding becomes available.

Activities conducted during FY 2008

- Researched permitting records on file at the County of San Diego Department of Environmental Health creating a list of properties throughout Oceanside with on-site

sewage treatment facilities. These files were also reviewed for any failure information or additional permits for upgrading or modifications to the systems.
- Reviewed research papers and newsletters regarding the optical brightener test which determined that this method provides inconclusive results.
- Decision to discontinue this activity until funding is available to cover costs for a more definitive bacteria source tracking method.

TMDL APPLICABILITY

The RWQCB and Copermittees are developing a Bacteria-Impaired Waters TMDL Project II for Lagoons and adjacent beaches and creeks, which includes Buena Vista Lagoon. This project was planned to assist in the implementation of this TMDL by reducing bacterial contamination in the impaired segment of Buena Vista Lagoon.

TIME SCHEDULE FOR IMPLEMENTATION

Since the optical brightener method was determined to be an inconclusive method, this activity was not further pursued in FY 2008. A decision was made to discontinue this activity until funding is available to cover costs for a more definitive bacteria source tracking method.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Buena Vista Hydrologic Area (904.2). Sewage treatment facilities have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed. Therefore this activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

If the on-site sewage treatment facilities in this isolated neighborhood are determined to be a bacteria source, then homeowners will be notified of the problems associated with their treatment system (Level 2). The City will require the homeowners to implement BMPs to eliminate the bacteria source (level 3). This in turn will create a bacteria load reduction (Level 4), and a potential change in discharge water quality (Level 5), and a change in receiving water quality (level 6).

TITLE: **ESCONDIDO CREEK RESTORATION**
ID #: **CHU-WQA6**

ACTIVITY IMPLEMENTATION

This restoration project is designed to improve water quality associated with Escondido Creek. The effort focuses on a segment of Escondido Creek located off Harmony Grove Road within unincorporated County of San Diego lands. The intent of the project is to implement bioengineering solutions to help correct stream bank and bed erosion on a segment of the creek known to exhibit severe erosion by installing gabion baskets and live plant material to stabilize the eroded bank.

The project was completed in early November 2008 and included the installation of gabion baskets with live biological material to stabilize the eroding creek wall. Moreover, the eroded stream bank was cut/excavated to take advantage of natural conditions revealed with grading. Gabion baskets filled with a combination of rock and soil were placed within the bank upon completion of the grading. During the infilling process of the baskets, native wetland trees and vines, including willow species, were placed within each layer of the gabions to serve as the live biological material.

Follow-up monitoring will occur during the first two consecutive winter storm periods in 2009 through 2013 to document the physical and biological performance of the project. The monitoring will include an assessment of channel morphology, sediment loss and accumulation, the condition of any structural or non-structural materials, biological habitat growth conditions, and the overall effectiveness in stream erosion stabilization and sediment capture. All of these characteristics will be evaluated against the performance of a similar untreated reference area monitored during the same period.

TMDL APPLICABILITY

This activity is planned for implementation in compliance with the TMDLs established for sediment associated with Escondido Creek.

TIME SCHEDULE FOR IMPLEMENTATION

The Escondido Creek Restoration effort will occur between spring 2008 and winter 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment is a high-priority pollutant of concern within the Carlsbad Watershed. Implementation of this restoration effort will help reduce this pollutant through bank stabilization.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA (WMA) collective watershed strategy identifies sediment, as a high priority water quality pollutant in the Escondido Creek Hydrologic Area (904.6). Stream bank and bed erosion have been identified as potential discharges of sediment. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Copermittees expect that implementation of this restoration effort will result in the reduction of sediment in Escondido Creek and improve the overall condition of the habitat and waters of the creek.

EFFECTIVENESS ASSESSMENT

This restoration effort is designed to improve the condition of the habitat and waters of Escondido Creek and improve the water quality of downstream water bodies (Level 6).

The effectiveness of the effort will be assessed through the evaluation of data from continuing water quality monitoring efforts. Data collected after implementation of the restoration project will be compared with data from previous monitoring efforts and analyzed to determine potential reduction in associated pollutant loads.

TITLE: **STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS**
ID #: **CHU-WQA7**

ACTIVITY IMPLEMENTATION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Carlsbad Watershed include:

- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur anytime before FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS ASSESSMENT

To be determined

TITLE: **NITRATE SOURCE IDENTIFICATION AND ABATEMENT: BUENA CREEK**
ID #: **CHU-WQA8**

ACTIVITY IMPLEMENTATION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels in Buena Creek. Nitrate concentrations have been observed to exceed dry weather action levels at the County's CAR 05 dry weather monitoring station (Buena Creek at Robelini Drive). The State of California, which collected data from a nearby location in 2002 as part of its Surface Water Ambient Monitoring Program (SWAMP), also identified nitrates as an issue of concern[1]. Buena Creek is listed as impaired for nitrates/nitrites on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments.

The following tasks were completed during FY 2008:

- Perform frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year.
- Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Compilation of an inventory and map of potential nitrate sources in the CAR 05 drainage area. It was determined that there are 26 nurseries within the unincorporated area tributary to the CAR 05 monitoring station.
- Compilation of baseline information on BMP implementation and compliance history for nurseries within the CAR 05 drainage area. Of the 26 nurseries in this drainage area, eleven have been inspected by the County AWM Department. Seven of the eleven inspected nurseries had one or more violations.

The following tasks remain to be completed:

- Conduct targeted inspections to abate potential sources of nitrates. All 26 nurseries in the CAR 05 drainage area will be inspected during FY 08/09.
- Conduct targeted education activities as necessary to abate sources of nitrates. Education to nursery operations in the activity areas will focus on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators will be supplied with information and tools to assess and manage fertilizer use at their site. The UC Co-operative Extension Service *Self-Assessment for Greenhouses and Nurseries* and *Management Options for Nonpoint Source Pollution, Greenhouse and Container Crop Industries* documents will be provided where appropriate and the sections on nutrients will be reviewed. *The Rainbow Creek Nutrient Reduction Management Plan* is another source of valuable information for nitrate pollution prevention that will be referenced as a tool for the operators. Presentations and outreach events with audiences from these identified areas will focus on information regarding nitrate pollution prevention.
- Conduct enforcement activities as necessary to abate sources of nitrates.

[1] Southern California Coastal Water Research Project, *Surface Water Ambient Monitoring Program (SWAMP), Report on the Carlsbad Hydrologic Unit*, July 2007

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned Tasks	FY 2008	FY 2009	Status
Compile an inventory and map of potential nutrient sources in the CAR 05 drainage area.	X		Complete
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	X		Complete
Perform frequent water quality screenings for nutrients and other parameters at CAR 05	X	X	Ongoing
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	To be completed in FY 08/09
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	To be completed in FY 08/09
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	To be completed as necessary

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS ASSESSMENT

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the CAR 05 drainage area.	1	Completion	Yes
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at CAR 05	1	4 field screenings / yr at CAR 05	Yes
	6	Reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012	TBD
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the CAR 05 drainage area by June 2009	TBD
	3	Reduction in nursery BMP violations observed during nursery inspections in the CAR 05 drainage area by 2010	TBD
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the CAR 05 drainage area by 2012	TBD

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TITLE: **FOCUSED INSPECTIONS ALONG SAN MARCOS CREEK**
ID #: **CHU-WQA9**

ACTIVITY IMPLEMENTATION

During the reporting period, the City of San Marcos completed inspections of commercial properties along a direct tributary channel to San Marcos Creek known as Antique Village. The commercial/Industrial inspections occurred in the tributary area of San Marcos Creek from Grand Avenue to Via Vera Cruz. Fifteen properties were identified and inspected in January 2008. The inspections identified businesses that needed additional awareness of BMPs in order to abate potential pollutants into the channel. The purpose of the inspections was to identify any potential sources of elevated pollutants, such as nutrients. The inspections conducted in January 2008 consisted of inspections, follow up inspections, and enforcement as necessary. A follow up inspection with the same businesses will be conducted in 2009 to assess the effectiveness of the inspections (Level 1) and any changes in awareness and implementation of BMPs (Levels 2/3)

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The actual implementation schedule meets the time schedule established in the 5-year strategic plan.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Marcos

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies nutrients as a high priority water quality pollutant in the San Marcos Creek Hydrologic Area (904.5). Commercial and industrial land uses have been identified as potential dischargers of nutrients. This activity addresses a high priority water quality problem and potential source of the problem within the watershed. Therefore, the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Conduct targeted inspections	1	Inspection of 100% of all business adjacent to tributary channel (Antique Village) to San Marcos Creek	% of businesses in inspected in Antique Village by 2008
Conduct targeted follow up inspections to abate nutrients	3	Reduction in Business violations or follow up inspections by 2009	% change in nursery BMP violations in by 2009

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TITLE: **PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS**
ID #: **CHU-WQA10**

ACTIVITY IMPLEMENTATION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County maintains 16 dispenser stations at a total of two parks within the Carlsbad Watershed, including 12 new dispensers installed during the FY 07/08 reporting period. New dispenser installations took place at:

- San Elijo Lagoon Ecological Reserve (9 new dispensers, 11 total dispensers)
- San Dieguito County Park (3 new dispensers, 5 total dispensers)

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	FY 2008		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
San Elijo Ecological Reserve	11	45,500	9,100
San Dieguito Park*	5	20,995	4,199
Total	**16**	**66,495**	**13,299**

*San Dieguito County Park is counted in both the Carlsbad and San Dieguito HU Totals

Cumulatively, the County maintains 16 stations among the two County Parks within the Carlsbad Watershed. These stations distributed approximately 66,495 bags during the FY 07/08 reporting period, preventing an estimated 13,299 lbs of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: **LAND ACQUISITIONS**
ID #: **CHU-WQA11**

ACTIVITY IMPLEMENTATION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **LAKE SAN MARCOS TRIBUTARY WATERSHED BMP MASTER PLAN**
ID #: **CHU-WQA12**

ACTIVITY IMPLEMENTATION

Lake San Marcos is a man-made lake located in the County of San Diego that has been listed on the 2006 303(d) list as impaired for Ammonia (as N), Nutrients and Phosphorous. Water flowing in San Marcos Creek is impounded in the Lake by San Marcos Dam. Several jurisdictions are tributary to the Lake, including the Cities of San Marcos, Escondido and the County of San Diego. In addition, there are local home owners associations, golf courses and

The City of San Marcos will lead the WURMP activity to develop a Lake San Marcos Tributary Watershed (Tributary Watershed) BMP Master Plan. The process to develop the BMP Master Plan will include a stakeholder driven process to develop and implement a holistic approach to evaluate and identify potential solutions to the water quality problems in the Tributary Watershed

In FY 2008 the City of San Marcos will begin leading the following tasks, with stakeholder participation and input, as listed below:

1) Identify appropriate stakeholders in the Tributary Watershed
2) Convene and lead stakeholder meetings
3) Develop data needs (e.g., source characterization data, water quality data, etc.)
4) Develop data collection methods and standards
5) Host data storage
6) Develop Geographical Information Systems (GIS) layers to appropriately characterize the Tributary Watershed
7) Identify likely sources of the pollutants that are causing the impairments in Lake San Marcos
8) Based on the identified potential sources, develop a BMP Master Plan for the Tributary Watershed (*at this time – the Master Plan will be limited to the City of San Marcos jurisdiction*). The BMP Master Plan will be a road map for the City of San Marcos (and potentially other stakeholders) to begin implementing BMPs in a methodical manner starting with education and outreach and escalating to pollution prevention, source control, runoff reduction and the identification of potential treatment BMPs for implementation at a later stage.
9) Further tasks will be determined and reported on in future WURMP Annual Reports

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Marcos will begin implementation of this activity in FY 2008 and continue to implement the activity until at least FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Marcos (Activity Lead)
- County of San Diego
- City of Escondido

OTHER PARTICIPATING ENTITIES

- Other Tributary Watershed Stakeholders (e.g., private and other public entities) as appropriately identified and invited to participate

HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The development of a Tributary Watershed BMP Master Plan is consistent with the collective watershed strategy in that it will identify the water quality problems and likely sources of the pollutants potentially causing the water quality problems and develop a plan to abate the sources or significantly reduce the pollutant loading from the sources.

EXPECTED BENEFITS

The expected benefits of the activity are, with respect to the water quality issues and pollutants of concern: 1) increased awareness of the stakeholders and general public; 2) changes in behavior and BMP implementation; 3) reductions in pollutant loads in discharges; 4) improved water quality discharged from the MS4; and, 5) improved water quality in Lake San Marcos.

Another highlighted benefit is that the final work product and documented process may lead to full HA or WMA implementation.

EFFECTIVENESS ASSESSMENT

Because the BMP Master Plan will be fairly comprehensive, activity effectiveness will be measured all six levels of the effectiveness assessment schema developed by the San Diego Regional Copermittees in October 2003. At this time, specific targeted outcomes and measures have not been identified. These will be reported in future WURMP Annual Reports.

Education Activity Sheets

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TITLE:	**RESIDENTIAL IRRIGATION RUNOFF REDUCTION EDUCATION**
ID #:	**CHU-WQEA1**

ACTIVITY IMPLEMENTATION

A pilot single family residential area in a sub-watershed will be selected to evaluate the load reduction potential related to reducing irrigation runoff – please refer to CHUWQA1. The expected results include reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in the pilot area, and reduction in irrigation runoff flow in the pilot area. This activity will focus on education of area residents related to water quality impacts of irrigation runoff. Planned activities include:

- mailer to residents to let them know of our pilot work, ask for voluntary participation, and notify that if over-irrigation or leaks are suspected, we will contact them directly.
- fact sheet/water use report issued to homeowners with results of the assessment and recommendations for improvement.
- mailer to residents to thank them and invite them to participate in a website survey
- website survey to measure educational program effectiveness.

This activity was in the planning phased during FY 2008. Activities conducted during FY 2008 included researching potential pilot neighborhoods, field reconnaissance at outfalls, and development of draft outreach materials.

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation will occur in FY 2009. The pilot neighborhood will be identified by October of 2008. Preparation of the outfall for flow monitoring will occur in November 2008. Pre-pilot flow measurement will occur in December 2008, pending dry weather. Flow measurement will not occur during rain events, but may occur after rain events provided that there is no rain included in flow measurements. The first outreach piece will be delivered to the neighborhood once flow measurements are completed, in December 2008 or January 2009 depending on rain. Once flow measurements and introductory outreach is completed, one-on-one work with volunteer residences and sites with irrigation runoff will begin.

Assessment will also occur in FY 2009 if the implementation steps listed above are completed. Estimated timeframe is May 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad
- All watershed members will participate during planning and measuring phases of this activity. City of Carlsbad personnel will participate in the implementation phase of the activity.

OTHER PARTICIPATING AGENCIES

Carlsbad Municipal Water District Employees

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, sediment, and nutrients as high priority water quality pollutants in the Agua Hedionda (904.3 – bacteria and sediment), Buena Vista (904.2 – bacteria), and San Marcos Creek (904.5 – nutrients) Hydrologic Areas. Bacteria, sediment, and nutrients have been identified as potential discharges from over-irrigation. This activity addresses high priority water quality problems and potential sources of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Expected benefits include educating residents about pollution prevention and water conservation, load reduction and/or source abatement of high priority pollutants, and reduction of water usage.

EFFECTIVENESS ASSESSMENT

Targeted outcomes for this activity include increased awareness of irrigation runoff, impacts to water quality, and the reduction of flow after working with applicable residents. Implementation effectiveness will be measured by evaluating survey results (Level 2 Outcome) and reviewing any water use changes (Level 3 Outcome). Since the pilot will be completed prior to the start of the 2009 dry season, the results will be analyzed within nine months following completion of the pilot. In FY 2008, because several pilot neighborhoods have been identified and draft outreach materials developed, the planning phase of this activity is considered effective.

TITLE:	**PILOT RESTAURANT BINDER/CD DISTRIBUTION**
ID #:	**CAR-WQEA2**

ACTIVITY IMPLEMENTATION

The Restaurant Binder/CD Distribution activity aims to increase knowledge and awareness of stormwater quality and the implementation of BMPs at eating and drinking establishments by distributing a binder of educational materials and organizational tools for restaurant managers and their staff. The binder also includes a short instructional video (CD-ROM) of the most common Best Management Practices for restaurants. The goal of this activity is to improve water quality through increased awareness of stormwater issues and increased implementation of BMPs at restaurants.

The City of Encinitas initiated a pilot distribution of the Restaurant Binder and CD during FY 2007 restaurant inspections. Approximately 180 binders and CDs were distributed during routine restaurant inspection activities. The binders were designed to assist restaurant owners and managers in educating their employees about Stormwater Best Management Practices and tracking their routine stormwater maintenance activities. Each binder included a vicinity map, BMP information specific to restaurant operations, and sections to record training, inspection, and maintenance activities. The intent of the binder is to support restaurant owners and staff to ensure that proper BMPs are utilized to eliminate non-stormwater discharges.

The binders and CDs were hand delivered during routine stormwater inspections. During the site visit, the City's stormwater inspector reviewed the binder with the restaurant manager or lead staff and explained its intended use and application. Restaurant staff were expected to immediately begin using the binder/CD. Changes in attitude, knowledge, awareness, or behavior were anticipated to predominantly occur in FY 2008. Therefore this Watershed Activity was in active implementation phase in FY 2008. Subsequently, assessment of the success of the binder/CD was conducted towards the end of FY 2008 in order to best characterize the magnitude of changes in knowledge and awareness and/or behavior change (see time schedule below).

During FY 2008, the City of Encinitas augmented their restaurant inspection forms in order to survey the implementation of the binder/CD by restaurant staff. This survey was used to 1) determine if and how the binder was utilized at each restaurant and 2) get feed back from the restaurants about the usefulness of the binder and CD. Additional discussion regarding the assessment survey can be found in the Effectiveness Assessment section below.

TMDL APPLICABILITY

This activity is not currently planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Activity	Implementing Party	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	FY 2009
Binder/CD Distribution	City of Encinitas																
Utilization of Binder/CD	Restaurant Facilities																
Assessment of Binder/CD Use	City of Encinitas																
Expansion of Binder/CD Pilot Program*	All Cities and County in Carlsbad HU																

* Expansion of Binder/CD distribution to the rest of the Carlsbad HU is dependant upon the success of the pilot project.

PARTICIPATING WATERSHED COPERMITTEES
City of Encinitas

OTHER PARTICIPATING ENTITIES
None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED
- Trash
- Oil/Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
The Carlsbad WMA collaborative watershed strategy identified bacteria as a high priority water quality pollutant in the San Marcos (904.5) and Escondido Creek (904.6) hydrologic areas. Eating and drinking establishments have been identified as likely dischargers of bacteria. This activity addresses a high priority water quality problem and likely source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS
- Increased knowledge and awareness among restaurant employees about storm water quality issues
- Changes in behavior among restaurant managers and their employees (i.e. improved BMP implementation and on-site stormwater management)
- Load reductions of trash and bacteria downstream of restaurants

EFFECTIVENESS ASSESSMENT
In FY 2008, the City of Encinitas evaluated the overall effectiveness of the binder/CD distribution using three assessment measures, 1) a targeted binder/CD use survey, 2) a knowledge level comparison from FY 06-07 to FY 2008 and 3) BMP implementation comparison from FY 2007 to FY 2008.

Below is a summary of the findings.

1. Targeted Binder/CD Use Survey

Inspection staff conducted a survey of binder and CD usage in order to determine the general success and effectiveness of the restaurant binder distribution program. Commercial facility inspection forms were augmented to evaluate the use of the binder and CD the previous year. The following questions were used to evaluate the effectiveness of the effort:

1) Is the binder still at the facility?
2) Was the binder used within the last year?
3) Was the CD used within the last year?
4) Did the restaurant manager find the binder/CD to be a useful tool for stormwater management?
5) Any additional comments?

A total of 57 restaurants (33% of those that received binders and CDs) were surveyed. Based on the survey results, less than half of the binders that were distributed were put into use and almost 80% of the CD distributed were never viewed by employees. When asked their opinion of the usefulness of the binder, manager's results were evenly distributed between positive and negative responses. The following diagrams summarize the results of the survey.

Was the binder at the facility?

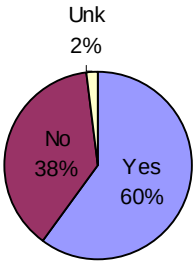

Was the binder utilized?

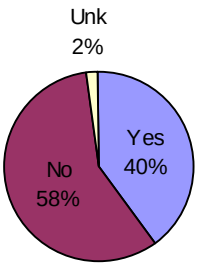

Was the CD utilized?

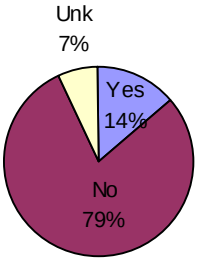

Did manager find binder/CD useful?

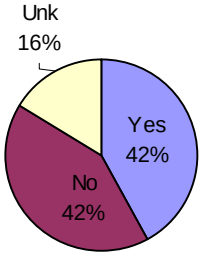

Notable and frequent comments on the binder and CD from restaurant staff surveyed included:

"Makes job easier."
"CD was lost."
"Good that it is in Spanish."
"CD was played at quarterly meeting."
"Did not know binder existed."
"If it was explained, it could be a useful tool."
"Corporate policy already addresses issues. Suggest using calendar."
"Did not like binder. Thought it was a waste of money."
"Read binder after issued NOV for grease."
"Manager was let go, new manager does not know about binder."
"Binder not on site, staff was unaware of binder."

Based on the survey, it appeared that the most common reason for restaurant staff not using the binder/CD may have been ineffective transfer of knowledge between restaurant staff. The binders and CDs were originally distributed during routine restaurant inspections. The City of

Encinitas conducts commercial inspections on a "drop-in" basis to observe typical operations. General Managers and/or restaurant owners are not always on the premises at the time of the inspection. In addition, restaurant management tends to change on a relatively frequent basis. New managers are likely to be unaware that the binder and CD were distributed for use. In addition, the CD may not have been used very often because many restaurants (especially smaller restaurants) do not have facilities to play the CD for their employees.

2. Stormwater Knowledge Assessment

In FY 06-07, the City of Encinitas stormwater inspectors began assessing the commercial facility's level of knowledge of stormwater issues during routine inspections. After each inspection, the inspector rated the manager's level of BMP knowledge on a scale of 1 to 5. With two years of data, a comparison of restaurant managers' stormwater knowledge for FY 06-07 to FY 2008 could be conducted. As shown in the graph below, the average level of stormwater knowledge of restaurant managers increased from 2.09 in FY 06-07 to 3.87 in FY 2009.

Since the binder/CD was distributed from March to June of 2007, this comparison provides a good indication of how distribution and use of the binder/CD may have affected restaurant manager's knowledge of stormwater issues. As depicted in the graph, restaurant manager's average level of stormwater knowledge increased by an even greater amount than commercial facility managers' knowledge. Although other factors could have also contributed to this marked improvement, the principle difference in the City's Commercial Component of the Clean Water Program was the implementation of the binder/CD distribution program. Even though the use of the binder/CD could be classified as marginal, reading the educational material provided in the binder and watching the CD conceivably helped contribute to the 1.49 point increase in knowledge level.

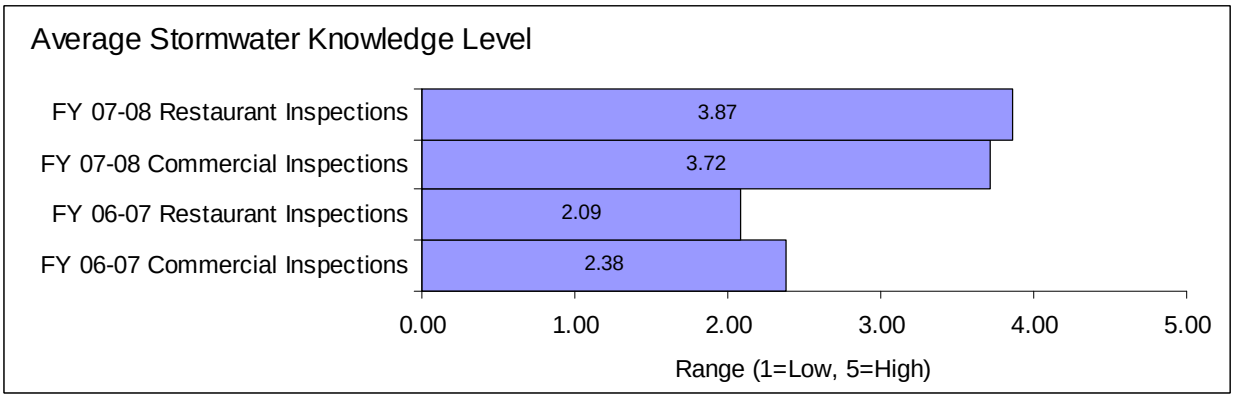

3. Behavioral Changes and BMP Implementation Assessment

Behavioral changes were measured by 1) evaluating the use of the binder/CDs as a "BMP", 2) assessing the level of BMP implementation from year to year, 3) reviewing the answers to routine commercial inspection questions.

Use of the binder/CD as a new stormwater BMP is summarized in the pie charts above. Although, the use of the binder/CD was not wholly adopted by restaurant owners and managers, any use could be considered a success. Challenges that hindered utilization of the CD could have included: lack of facilities to play the CD or the fact that the educational video was in CD-ROM format (as opposed to DVD). Actions that could improve the binder/CD implementation could include: a better orchestrated promotional campaign to accompany the

binder/CD distribution and/or the implementation of a mechanisms by which to reward those facilities that used the binder/CD.

In conjunction with the knowledge level assessment, stormwater inspectors rate the facility manager's level of BMP implementation. The rating takes into account not only the facility's BMP implementation, but also the level of cleanliness and orderliness of the site. The following graph compares the average level of BMP implementation for restaurants and all commercial inspections from FY 06-07 to FY 2008.

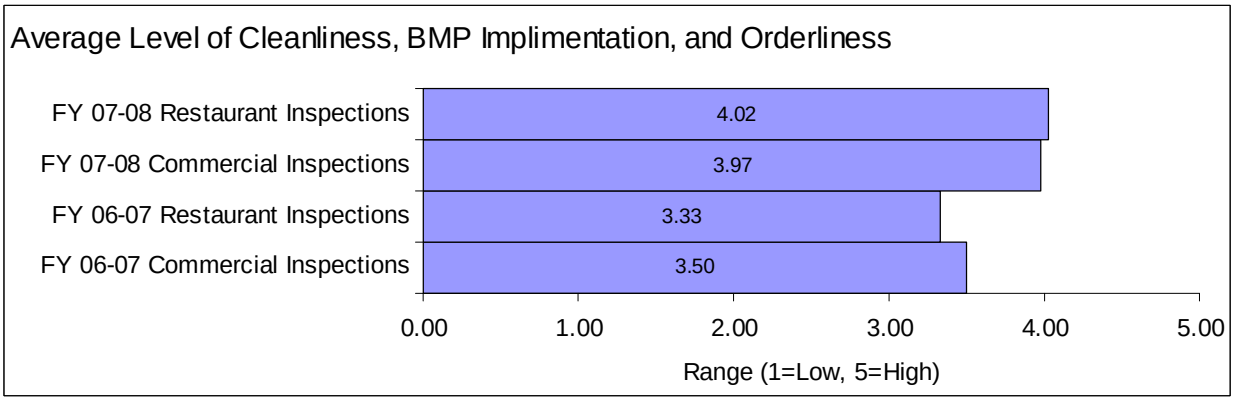

Similar to knowledge level, the average level of BMP implementation by restaurants increased from FY 06-07 to FY 2008 by an even greater amount than all commercial facilities combined. This increase in the level of BMP implementation could be attributed to the binder/CD distribution program, since this was the only significant change in the Commercial Component of the Clean Water Program in FY 06-07.

During routine commercial inspections, stormwater inspectors ask facility managers a series of questions relating to the BMPs that are conducted on site. These questions are then recorded in the City's inspection database system. Several of the most common BMPs implemented at commercial facilities were highlighted in the binder and/or CD that were distributed to restaurants in FY 06-07. BMPs that were highlighted included:

- employee training
- trash area cleaning
- capturing of wash water
- storage of fryer oil
- grease trap maintenance

The following graphs provide a summary of some of the BMP implementation questions asked during commercial and restaurant facility inspections. A comparison of the results from FY 06-07 to FY 2008 shows that restaurant facilities consistently improved upon BMP implementation to a greater extent than all commercial facilities combined. In addition, grease management, a function only performed by restaurants, also improved greatly.

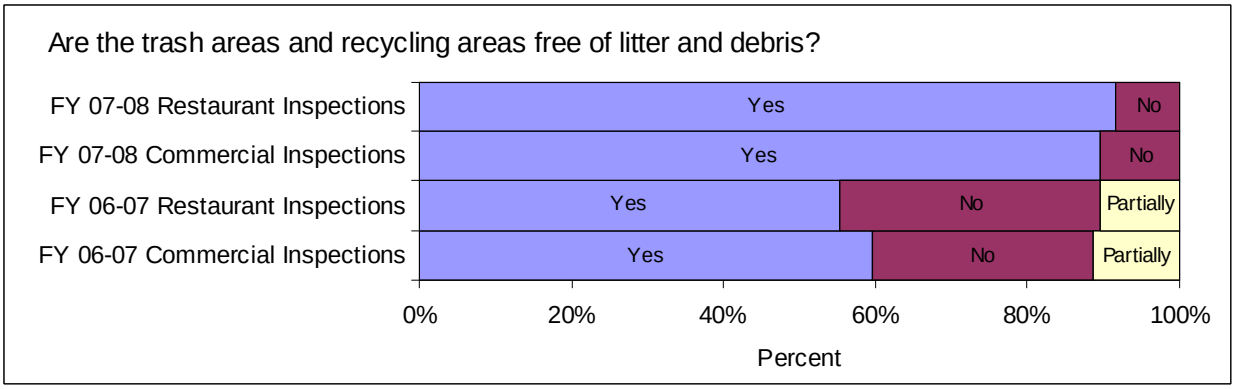
Are the trash areas and recycling areas free of litter and debris?
FY 07-08 Restaurant Inspections
FY 07-08 Commercial Inspections
FY 06-07 Restaurant Inspections
FY 06-07 Commercial Inspections
Yes
No
Partially
0%
20%
40%
60%
80%
100%
Percent

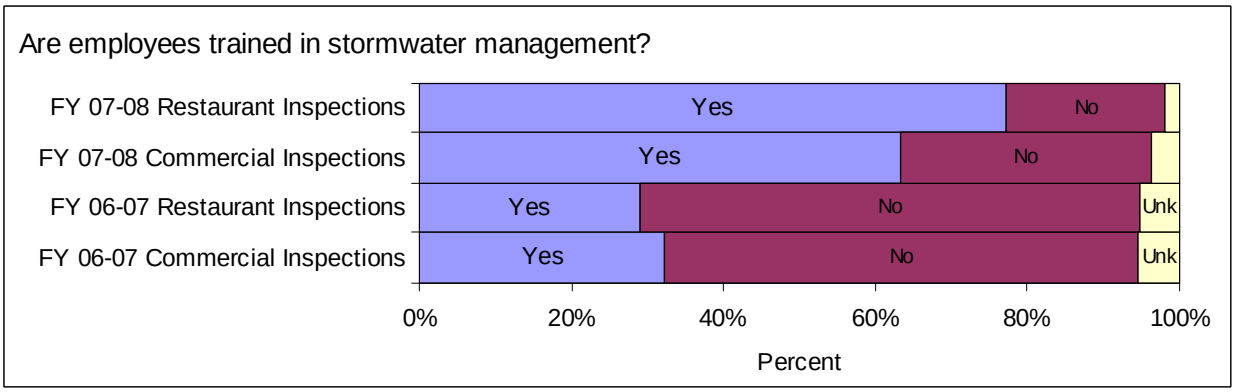
Are employees trained in stormwater management?
FY 07-08 Restaurant Inspections
FY 07-08 Commercial Inspections
FY 06-07 Restaurant Inspections
FY 06-07 Commercial Inspections
Yes
No
Unk
0%
20%
40%
60%
80%
100%
Percent

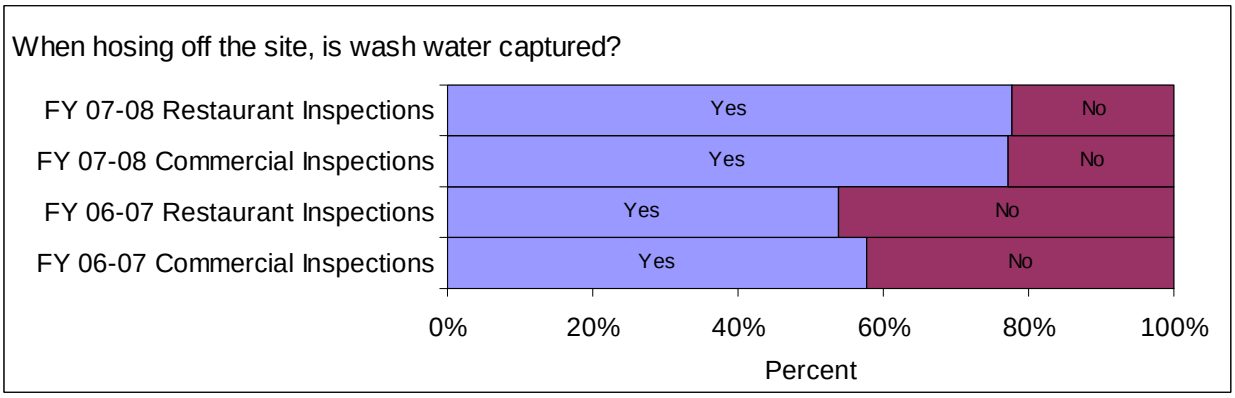
When hosing off the site, is wash water captured?
FY 07-08 Restaurant Inspections
FY 07-08 Commercial Inspections
FY 06-07 Restaurant Inspections
FY 06-07 Commercial Inspections
Yes
No
0%
20%
40%
60%
80%
100%
Percent

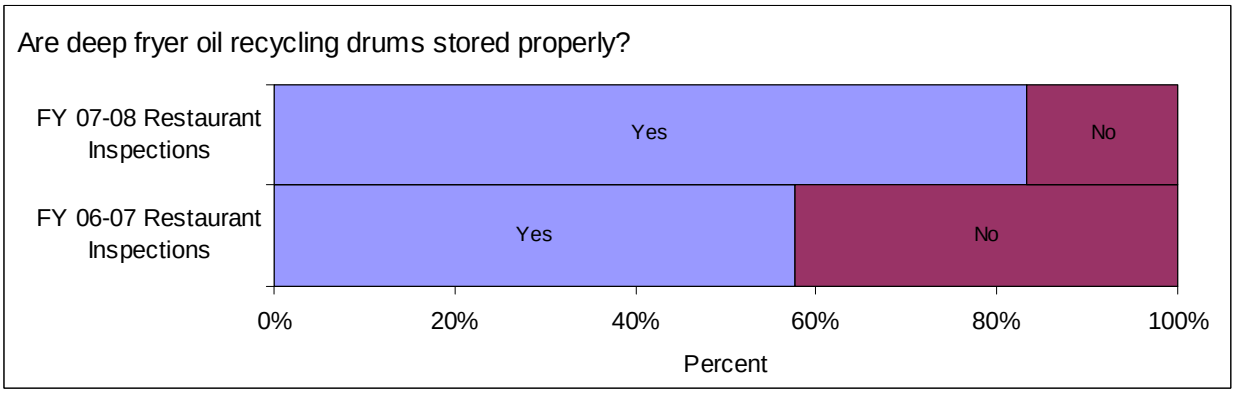
Are deep fryer oil recycling drums stored properly?
FY 07-08 Restaurant Inspections
FY 06-07 Restaurant Inspections
Yes
No
0%
20%
40%
60%
80%
100%
Percent

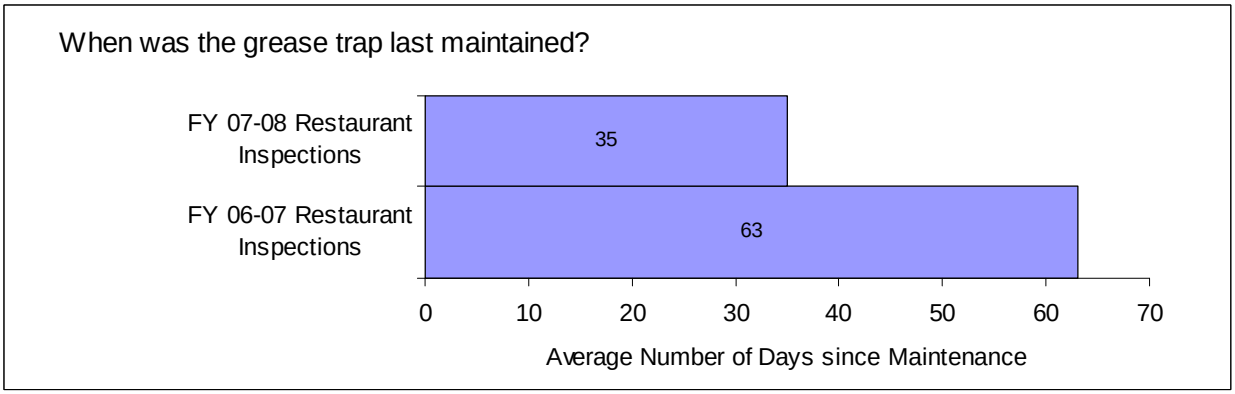

The inspection results summarized in these graphs shows that there was a clear increase in BMP implementation at restaurants from FY 2007 to FY 2008.

EFFECTIVENESS ASSESSMENT

A summary of the assessment of the Stormwater Restaurant Binder and CD Distribution Program can be found in the following table. In general, the assessment shows that although a restaurant manager survey demonstrated marginal utilization of the binder and CD, marked improvements in stormwater knowledge and BMP implementation from FY 06-07 to FY 2008 suggest that distribution of the binder/CD were a beneficial endeavor which could improve water quality. With some modifications of the City of Encinitas pilot program, the binder/ CD could prove to be a useful educational tool for the rest of the Carlsbad Watershed.

Level	Targeted Outcome	FY 2008 Measured Outcome
Level 1 Compliance with Activity-based Permit Requirements	Distribute 175 binders and CDs	172 binders and CDs were distributed.
Level 2 Changes in Knowledge/Awareness	Increase knowledge and awareness of stormwater issues among restaurant staff (Knowledge level assessment)	Knowledge level increased from and average of 2.09 to 3.87 for restaurant facilities from FY 06-07 to FY 2008, respectively.
Level 3 Behavioral Changes/BMP Implementation	1) Utilization of binders and CDs for stormwater management 2) Increase BMP implementation and level of cleanliness (BMP level assessment) 3) General increase in implementation of all other stormwater BMPs	1) Utilization of binders and CDs was marginal 2) Level of BMP implementation increased from 3.33 to 4.02 from FY 06-07 to FY 2008, respectively. 3) BMPs highlighted by the binder and CD were implemented on a much more frequent basis in FY 2008.

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TITLE:	**WATER QUALITY RUNOFF MANAGEMENT AND AGRICULTURAL WAIVER WORKSHOP FOR NURSERIES AND AGRICULTURAL BUSINESSES**
ID #:	**CHU-WQEA3**

ACTIVITY IMPLEMENTATION

This free educational workshop targeted nurseries and agricultural businesses and was held at the San Diego County Farm Bureau in Escondido on March 27, 2008. Four speakers provided the owners and operators a better understanding of water quality runoff management issues related to their operations. Growers from north San Diego County watersheds were invited to attend (San Luis Rey, San Dieguito, Santa Margarita, and the Carlsbad Hydrologic Unit).

Topics covered during the workshop were as follows:

- Water quality runoff regulations and BMPs for pollution prevention.
- Irrigated Agricultural Waivers.
- Storm water quality issues and typical inspection elements.
- Federal assistance for development of conservation management plans and other programs to assist operations in complying with water quality regulations.

Respective speakers for the topics above were as follows:

- Dr. Valerie Mellano, University of California Cooperative Extension
- Wayne Chiu – Regional Water Quality Control Board
- Nancy Appel – County of San Diego Ag, Weights and Measures
- Victor Smothers – USDA, Natural Resources Conservation Service

A total of 48 people were in attendance at the workshop including workshop organizers and speakers: 29 agricultural related and 19 governmental/jurisdictional. A breakdown of attendees of the workshop was as follows:

Agricultural (29)	**Other (19)**
5 - Advisors/Grove Care	Governmental - 13
1 - Farm Supplier	Jurisdictional - 6
6 - Grove (Avocado or other)	
2 - Hatchery	
8 - Nursery	
1 - Range Livestock	
6 - Combination Nursery and Grove	

See Figure 1 below for a map of the facilities represented at the workshop.

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 23 attendees took both the pre-test and post-test (some attendees arrived after the pre-test was given or left before the post-test was given). This test included seven questions that were provided by the speakers. The average pre-test score was 2.91. The average post-test score was 6.04. These scores represent a 150% increase in knowledge of the topics reviewed during the workshop.

One of the speakers provided the attendees with a Runoff & Nonpoint Source Pollution Self-Assessment (assessment) form for assessing potential runoff from their operation. Approximately seven months after the workshop, agricultural growers who attended the workshop were called to see if they conducted the assessment and to get feedback about the

Figure 1 – Facilities Represented at the Agricultural Workshop

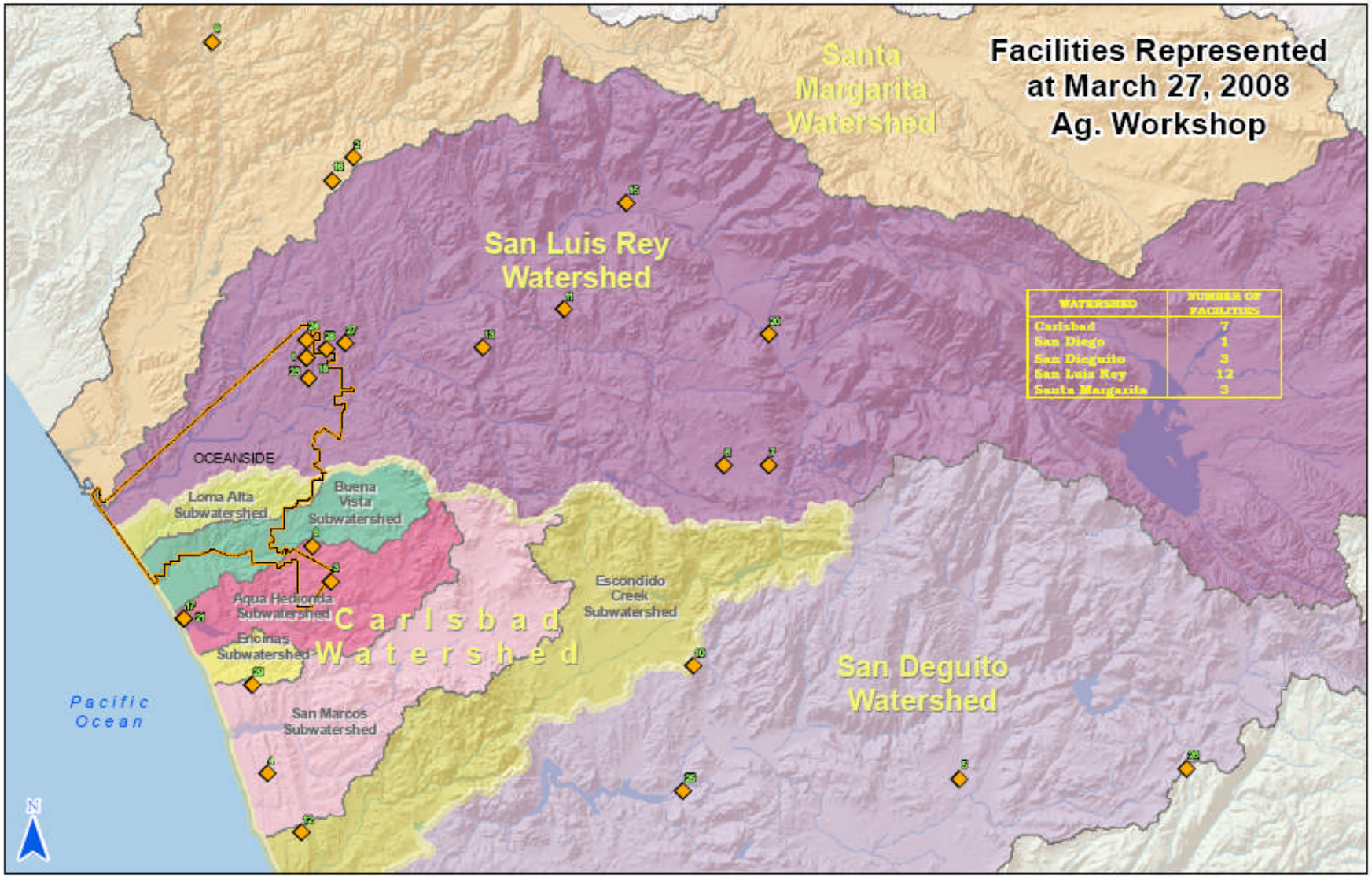

workshop as a whole. Following is a summary of answers from the agricultural growers who were contacted after the workshop.

- Did you utilize the self-site assessment form: All answered yes.
- Did you make changes to your operation as a result of conducting the assessment: All confirmed that their operations had BMPs in place. Two businesses added additional BMPs based on the assessment.
- Did you contact any of the agencies who presented at the workshop? All of the operations had been in contact with at least one of the representing agencies either prior to or after the workshop. Some businesses had developed detailed tail water recovery systems as a result of working with the NRCS and UC Cooperative Extension. Some of the workshop participants contacted the agencies after the workshop in regards to the following topics: tail water recovery systems, grove road erosion issues, water quality monitoring co-op, and the individual waiver program.
- Was the assessment helpful to the operation? All answered yes.
- Was the workshop itself helpful to the operation. All answered yes, and stated that the topics were timely and of great interest.
- Recommendations for future workshop topics: Topics of interest to the attendees include water quantity cutbacks, monitoring program for growers, and the use of recycled/reclaimed water.

Answers to these questions will help Copermittees focus on timely topics of interest to agricultural growers for future workshops. Since all of the operations stated that they had BMPs already in place demonstrates that they had prior knowledge of runoff related issues. The assessment form confirmed that the operations had BMPs in place and/or there was a need for additional BMPs. Some growers contacted the representative agencies for information specific to the agency. And, the growers provided specific topics that would be of interest to them for future workshops.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This workshop was initially scheduled for October 27, 2007. Due to fires in the San Diego County area during that time the workshop was postponed until March 27, 2008. This workshop is planned to be implemented in FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

All watershed Copermittees within the WMA (Carlsbad, Encinitas, Escondido, Oceanside, Poway, San Marcos, Vista, and the County of San Diego) disseminated information to constituents in their jurisdictions. The City of Oceanside secured speakers, developed workshop announcement materials, paid for materials printing and moderated the workshop. The Upper San Luis Rey Resource Conservation District provided refreshments for the workshop. Other Copermittees provided support during the workshop itself.

OTHER PARTICIPATING ENTITIES

- University of California Cooperative Extension
- Regional Water Quality Control Board
- USDA, Natural Resources Conservation Service
- San Diego County Farm Bureau
- Upper San Luis Rey Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Organics
- Sediment
- Pesticides
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, sediment and nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and Agricultural operations have been identified as potential dischargers of bacteria, sediment, and nutrients. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

A total of 23 attendees took both the pre-test and post-test which included seven questions that were provided by the speakers. The average pre-test score was 2.91 and the average post-test score was 6.04. This demonstrates an increase in knowledge and awareness of the topics presented (Level 2).

All growers who answered post-workshop follow-up questions stated that they had implemented the self-site assessment form. Most stated that this form helped confirm that their operation had appropriate BMPs in place while two growers stated that they increased BMPs as a result of conducting the assessment. If appropriate BMPs were not in place they were then installed (Level 3).

TITLE: **LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS**
ID #: **CHU-WQEA4**

ACTIVITY IMPLEMENTATION

The LID and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on Low Impact Development (LID) and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved, this education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups were provided copies of the LID handbook, including the Management Strategies, the Appendices and the Literary Guide. Advisory groups and audience members who wished to participate were also given a pre- and post- survey to assess their general knowledge of watershed planning and LID both before and after the presentation was given. The training sessions average fifty minutes depending upon the amount and type of questions asked during and after the presentation.

Staff began presenting the education activity during FY 2008, with the first presentation made to the Hidden Meadows Community Sponsor group on June 26, 2008, at the local community center. The sponsor group consists of 9 members, all of whom were present. Three audience members from the community were also present for the presentation. Including County staff, a total of 14 people were present for the presentation.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2008
- Begin Education Efforts – FY 2008
- Complete Education Efforts – FY 2009

The Watershed Planning and Low Impact Development training program was successfully developed during the spring of FY 2008, on schedule. The program consists of a PowerPoint presentation formally made to each of the planning and sponsor groups located within the unincorporated County, with a specific focus on the watershed(s) within which the community lies.

Local planning and sponsor groups to be trained within the Carlsbad Watershed during FY 2009 include:

- Twin Oaks (7/16/2008)
- San Dieguito (8/14/2008)
- Elfin Forest / Harmony Grove Town Council (A community within the San Dieguito Planning Area) (11/5/2008)

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity focuses on impacts to the watershed as a result of new and re-development. Specifically, impacts from increased impervious cover and any types of pollutants associated with runoff (both urban runoff and stormwater runoff) as it traverses a variety of types of land uses.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed during the presentation (Level 1 Outcome). Pre- and post-presentation survey evaluation forms are also provided to participants, which assesses whether the participants learned something valuable during the presentation (Level 2 Outcome). The 9 members of the Hidden Meadows Sponsor group and 2 audience members participated in both the pre- and post surveys during the presentation time.

The pre- and post- survey form consists of (the same) 5 multiple choice questions and a 6th open answer section which asks the participant to provide information on drainage within the community planning area (CPA). The survey results are calculated to obtain a mean average (in percentage) of the overall results of the survey. The pre- and post- survey results are then compared, with the anticipated result being a higher percentage obtained on the post-survey to show an increase in knowledge of watershed planning principles and LID.

The pre- and post- survey results for the Hidden Meadows Sponsor group showed a *decrease* in knowledge after the presentation was given. Survey results for the pre- survey scored an average of 69% and for the post- survey an average of 67%, showing and average 2% decrease in knowledge. Because two of the questions (questions 2 and 5) were consistently answered incorrectly in the post survey, staff reviewed the questions and found the wording may have caused confusion with the reader. Subsequently, questions 2 and 5 were modified slightly to clarify their intent. All future trainings will provide pre- and post- surveys with the modified questions.

TITLE: **LID FEATURES IN SAN ELIJO NATURE CENTER**
ID #: **CHU-WQEA5**

ACTIVITY IMPLEMENTATION

In November 2007, the County of San Diego began construction on a two-story, 5,525 square foot, state-of-the art nature center that replaces the former visitor center located at the San Elijo Lagoon Ecological Reserve in Encinitas. The new facility, which will open in early 2009, is designed to be constructed and commissioned in accordance with the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program and is expected to achieve Gold or Platinum certification. LEED credit 6 is specific to stormwater management and is achieved by maintaining the pre-development 24-hour peak discharge rate in the post-development environment if existing impervious surfaces are 50% or less.

The building design incorporates low impact development (LID) techniques which include a green roof with low water use native plants, a bioswale to aid in infiltration of runoff from the site, radiant floor heating, recycled cotton insulation, certified renewable lumber, photovoltaics that will provide 52% of energy requirements, natural daylighting and ventilation, stormwater filtering, native vegetation and recycled water used for irrigation, and extraordinary efforts to minimize area of disturbance. In addition to the many "Green" qualities designed into the building, the Nature Center's exhibits will showcase a series of high quality professional photographs and high-tech, interactive educational kiosks for visitors of all ages.

The goal for the San Elijo Visitor Center is to utilize the gold certification to educate the public on environmentally friendly building design and to present a "practice what we preach" public facility, demonstrating conservation of natural resources, use of recycled and environmentally friendly construction materials and reduced pollution and water use. A section of the exhibits will educate visitors on what and where watersheds are, the causes of water pollution and its destructive impact on habitat and endangerment and extinction of species, clean drinking water, water conservation, water reuse, etc. This facility will serve to promote future sustainable design in the San Diego region and educate citizens about ways in which they can reduce pollutants, including bacteria, sediment and nutrients, from entering the watershed.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

November 2007 – Groundbreaking
December 2007 – Establish minimized area of disturbance, begin demolition of existing facilities
October 2008 – Installation of Exhibits
December 2008/January 2009 – Building Commissioning
January 2009 – Grand Opening

PARTICIPATING WATERHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria, sediment and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a high priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

As indicated in the March 2008 WURMP, activity effectiveness will be measured by successful implementation of the LID features described (Level 1 Outcome). There is no post-construction water quality monitoring planned for this site.

TITLE: **UPDATED SAN DIEGO REGION MODEL SUSMP WORKSHOP / TRAINING**
ID #: **CHU-WQEA6**

ACTIVITY IMPLEMENTATION

As required in Water Quality Order No. 2007-0001 (San Diego Municipal Stormwater Permit), the San Diego County Stormwater Copermittees must update the San Diego Region Model Standard Urban Stormwater Management Plan (SUSMP). Approval of the San Diego Region updated Model SUSMP by the RWQCB is anticipated for the Spring of 2009. After the document is accepted by the RWQCB, Copermittees are required to adopt local SUSMPs within the following year. The Carlsbad Watershed Copermittees recognize that both municipal staff (engineers, planners, program managers, etc.) and the development community (planners, engineers, architects, etc.) play an integral role in ensuring that all development plans for new development and redevelopment projects properly address SUSMP requirements.

In order to promote consistent implementation and ease the transition of meeting the new SUSMP requirements, the Carlsbad Watershed Copermittees determined that a collaborative approach to educating the public about recent advancements in development planning would be a beneficial strategy for the watershed. Sharing education and information between jurisdictions (as compiled and incorporated into the training) will help to ensure adequate consideration of watershed-level problems and solutions.

A presentation and educational materials will be developed for the proposed SUSMP workshop / training event. Topics presented at the event may include: watershed principles, pollutants generated by land use type, the adopted Model SUSMP, SUSMP implementation, priority project categories, Low Impact Development, source control and treatment control Best Management Practices, hydromodification management, and operation and maintenance responsibilities.

The workshop will be planned subsequent to formal acceptance of the model SUSMP by the RWQCB and adoption by the Carlsbad WURMP Copermittees. Municipal staff, and local planning, engineering, and architectural firms and other development professionals will be solicited and informed of the workshop training opportunity through various mechanisms, which may include: direct mailing, website notification, and advertisement at public buildings.

TMDL APPLICABILITY

This activity is not currently planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2009	Develop SUSMP presentation and training materials; secure speakers
FY 09-10	Conduct presentation(s)*
FY 10-11	Effectiveness assessment

*Actual timing of presentation(s) contingent upon RWQCB approval of the Copermittee's final Model SUSMP.

PARTICIPATING WATERSHED COPERMITTEES

All watershed Copermittees within the WMA (County of San Diego, Carlsbad, Encinitas, Escondido, Oceanside, Poway, San Marcos, Solana Beach and Vista) will assist in disseminating information to development professionals working in the region. The City of Encinitas will secure speakers, develop workshop training and announcement materials, and moderate the workshop. Other Carlsbad Watershed Copermittees may provide support throughout the development of the training and during the workshop itself.

OTHER PARTICIPATING ENTITIES

- Developers
- Land use planners
- Civil Engineers
- Architects and Landscape Architects
- Property Owners

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses all high priority water quality problems and likely sources of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The expected benefits of this watershed education activity include increased awareness of SUSMP requirements and improved implementation of SUSMP BMPs on development and redevelopment projects. Installation of permanent BMPs at priority development project sites will reduce pollutant runoff and lead to improved water quality in downstream receiving waters.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed during the presentation (Level 1 Outcome). A pre- and post-presentation survey evaluation form will also be provided to participants. The survey will help determine whether the participants learned something valuable during the presentation (Level 2 Outcome).

City of Carlsbad

Property and Environmental Management

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

David Hauser
Property and Environmental Management Director
City of Carlsbad

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Phil Cotton, City Manager
City of Encinitas

1-20-10
Date

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lori Vereker
Utilities Director
City of Escondido

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

January 30, 2010

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FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahsaiezadeh

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

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Administration
1 Civic Center Drive
San Marcos, CA 92069-2918

Tel: 760.744.1050
Fax: 760.744.9520
Web: www.San-Marcos.net

STATEMENT OF CERTIFICATION

Date: January 30, 2010

RE: 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Erica M. Ryan
Stormwater Program Manager

City of San Marcos

CITY OF SOLANA BEACH
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www.ci.solana-beach.ca.us FAX (858) 792-6513 / (858) 755-1782

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. Sammak

Mohammad Sammak
Director of Engineering/Public Works
City of Solana Beach

City of Vista

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lawrence Pierce
Director of Engineering
City of Vista

Rita Geldert
City Manager
City of Vista

County of San Diego

LAND USE AND ENVIRONMENT GROUP

CHANDRA L. WALLAR
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256
Fax: (619) 531-5476

STATEMENT OF CERTIFICATION

Carlsbad Watershed Urban Runoff Management Plan (WURMP) FY 2008-09 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2008-2009 Carlsbad Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-27-10
Date

CARLSBAD WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

Fiscal Year 2009 Annual Report

January 31, 2010

Prepared and Submitted by the
Carlsbad Watershed Copermittees

City of Carlsbad
City of Encinitas
City of Escondido
City of Oceanside
City of San Marcos
City of Solana Beach
City of Vista
County of San Diego

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EXECUTIVE SUMMARY

This Annual Report represents the Carlsbad Watershed Copermittees' activities during the FY 2009 reporting period (July 1, 2008 through June 30, 2009) of Order No. R9-2007-0001, issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). In response to the Order, the Carlsbad WURMP Copermittees worked collaboratively to improve water quality within the watershed throughout FY 2009. The Copermittees will continue to work with the Regional Board to implement, improve, and enhance their programs and activities over the next several years.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed management area (WMA). The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

In preparing the 2008 Carlsbad WURMP, the Copermittees developed a collective watershed strategy using existing data and information available to the Copermittees related to water quality and potential sources of pollutants to identify the most important water quality problems and sources within the WMA. Some baseline source information was also available through existing literature, including the Copermittees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA). The Copermittees then evaluated the Hydrologic Areas (HA) to make management decisions about potential targeted activities.

During this reporting period the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the high priority water quality problems (HPWQPs) identified and each source's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

A summary of the program accomplishments for FY 2009 is found below:

Water Quality Assessment

Water quality priorities are evaluated each year based on the water quality assessment performed during the previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

HPWQPs in the Carlsbad WMA:

- Bacteria
- Sedimentation
- Nutrients

Carlsbad Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Carlsbad WURMP Copermittees continued to develop and implement a watershed-based program that addresses the HPWQPs and their sources in the Carlsbad WMA. The Carlsbad WURMP Copermittees met ten times over the course of the reporting period to plan, implement and assess watershed

activities. Through workgroup collaboration, there has been an increase in the ability of the Copermittees to identify and address watershed source pollutants, an increase in public awareness, partnerships formed with other organizations, and opportunities provided for collaboration resulting in cost-effective activities.

Watershed Activities

The Carlsbad WURMP Copermittees focused their efforts on the HPWQPs in the watershed during the FY 2009 reporting period. The result of this focused approach has been the implementation of twelve watershed activities during the reporting period, all of which focus on HPWQPs and the most likely sources of them.

All WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Details of these activities are found in the document and in **Appendix B** of the document. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is to be implemented.

As required, Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. In an effort to report on the Copermittees' activities performed to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. The data and information is not comprehensive and for some data sets, estimates were used to generate some of the numbers for the activities – these estimates are explained in **Appendix A** of the document. The Copermittees believe that it is an important first step towards integrating jurisdictional and watershed activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

Effectiveness Assessment

The Carlsbad Watershed Copermittees continue to improve the program's effectiveness assessment utilizing the six-level assessment framework prepared by the Regional Copermittees in October 2003, where appropriate. This year's assessment is more thorough than in past reports. Moreover, the Copermittees not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, this year's effectiveness assessment lays the foundation for future in-depth evaluations of activities and program implementation.

The following table identifies key assessments of the activities implemented during FY 2009. It is clear that the Copermittees have implemented activities that will assist in urban runoff reduction, pollution prevention and water quality improvements.

Key Assessments of Watershed Activities Implemented in FY 2009

Activity	HPWQP(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Sources Reduced or Abated?
Residential Irrigation Runoff Reduction	Bacteria Sediment Nutrients	Not Applicable	Not Applicable	Residential	Yes, reduction in dry weather flows was achieved
Loma Alta Creek UV Facility	Bacteria	Not Applicable	Not Applicable	Not Applicable	Dry weather bacteria loads reduced via treatment at base of hydrologic area
Myers Property Restoration	Bacteria Sediment	Not Applicable.	Yes, BMPs were implemented on the property.	Sediment loads from erosive soils.	Yes, via native vegetation, erosion, and sediment control installation.
Escondido Creek Restoration	Sediment	Not Applicable.	Yes, BMPs were implemented in Escondido Creek.	Stream bed and bank erosion.	Yes, via gabion structures and native vegetation.
Buena Vista Creek Cleanup and Restoration	Bacteria Nutrients	Not Applicable	Not Applicable	Decaying vegetation, trash.	Removed over 220 tons of debris and trash from creek channel.
Nitrate Source Identification and Abatement: Buena Creek	Nutrients	Yes, via inspections and resulting education.	Yes, BMPs implemented to reduce tail water runoff.	Nurseries, groundwater	Yes, inspections requiring BMP implementation.
Focused Inspections along San Marcos Creek	Nutrients	Yes, via inspections and resulting education.	Yes, inspections resulted in increased BMP implementation	Commercial/Industrial Sources Suspected	Likely reduced via BMP implementation
Upper San Marcos Creek Nutrient Management Plan	Bacteria Sediment Nutrients	Yes, via outreach and education	Yes, through enforcement and BMP implementation	Yes, including residential, agricultural. Parks and golf courses	Not determined yet
Pet Waste Bag Dispenser Program in County Parks	Bacteria Nutrients	Yes, via dispensers and positive examples.	Yes, in general, more people picking up after their pets.	Parks, specifically pet waste.	Yes, provided mechanism for proper disposal of pet waste.
Land Acquisitions	Bacteria Sediment Nutrients	None measured.	None measured.	Potential development.	Loading associated with potential future land uses eliminated, however monitoring not performed.
LID and Watershed Planning for Community Planning/Sponsor Groups	Bacteria Sediment Nutrients	Expected knowledge changes.	Expected BMP implementation.	Future Development.	Not specifically.
LID Features in San Elijo Nature Center	Bacteria Sediment Nutrients	Expected although not directly measured.	Expected although not directly measured.	None	Not specifically.

WURMP Improvements

Future data collection may concentrate on MS4 discharges and source characterization. The current Receiving Waters and Urban Runoff Monitoring and Reporting Program focuses largely on receiving water quality characterization and does not provide the watershed groups with data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope. Since the WMA is composed of six unique HAs or watersheds, it is important that recommendations first be developed and presented that are specific to each HA prior to characterizing the current water quality environment for the entire WMA. The following HA and WMA improvements are based on currently limited data.

Under federal law, the litmus of practicability imposed on these programs requires that an important balance be established between the costs of pollution controls and their effectiveness. In many cases, minimal data or information exists to substantiate this nexus. Over time, the Regional Water Quality Control Board (RWQCB), the Copermittees and other regulated parties must gather and evaluate the data needed to determine what works. Over the long-term, despite not having fully utilized an effectiveness assessment instrument, the Copermittees have made significant strides in developing a strategy for evaluating the effectiveness of the WURMP as described in the Permit. Compliance has been achieved in the Carlsbad WMA in this FY by the Carlsbad WURMP Copermittees as is evidenced in this report.

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The report also recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language, where necessary, to better develop and meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The Carlsbad WURMP Copermittees are committed to continuing their involvement in this process during the FY 2010 reporting period.

1 INTRODUCTION

This Annual Report represents the Carlsbad WURMP Copermittees' activities during the reporting period (July 1, 2008 through June 30, 2009) of Order No. R9-2007-0001, issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Order, the Carlsbad WURMP Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout FY 2009. The Copermittees will continue to work with the Regional Board to implement, improve, and enhance their programs and activities over the next several years.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

Order R9-2007-0001 represents a continuation as well as a refinement of Order No. 2001-01, which was issued by the RWQCB in February 2001. As with the 2001 Permit, Order R9-2007-0001 includes federal requirements to reduce pollutants discharged from the municipal storm drain system to the maximum extent practicable (MEP) and incorporates specific program elements required by federal regulations.

Order R9-2007-0001 also requires that the Copermittees within the Carlsbad Watershed collaborate in the development and implementation of a watershed-based program that addresses urban runoff[1] quality. The rationale for this need is simple: urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon shared receiving waters. The mechanism that Order R9-2007-0001 uses to require watershed collaboration is the development of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, Order R9-2007-0001 requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied. The overall goal of the Carlsbad Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

Water quality priorities are evaluated each year based on the water quality assessment performed during the previous reporting period. The water quality activities performed

[1] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP. For the WMA, they are: bacteria; sedimentation; and nutrients.

To target these water quality problems, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the collective watershed strategy as the basis for developing and implementing the activities, the Copermittees focused their efforts on the potential sources that are the most likely high-priority pollutant contributors in the Carlsbad Watershed Management Area. The FY 2009 report details the implementation of the Carlsbad WURMP's collective watershed strategy.

It is important to note that the Encinas hydrologic area (904.4) is not discussed in this report. Results of the jurisdictional dry weather monitoring program and the relative size of this hydrologic area do not support further evaluation at an HA level. Based on the identified JURMP activities ongoing in the hydrologic area, it was determined that the current level of activities is appropriate for the hydrologic area.

1.1 COPERMITTEE COLLABORATION

1.1.1 CARLSBAD WURMP MEETINGS

In order to effectively plan and implement the Carlsbad WURMP the Copermittees met ten (10) times during FY 2009 to coordinate and plan their efforts to collaboratively address water quality issues in the WMA. Furthermore, the Copermittees met to develop and prioritize water quality activities that address pollutants of concern in the watershed, to exchange ideas on how to address high priority water quality pollutants in the watershed, to evaluate the effectiveness of actions, and to collaborate on development of required submittals. See **Table 1-1** below for dates of these meetings and pertinent agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
7/15/2008	Database training development update; TMDL issues; coordination with North County Education Workgroup; Estuaries grant application
8/19/2008	Watershed activity updates; Estuaries grant application—comments and discussion; WURMP annual report and planning; database training
10/21/2008	Coordination with North County Education Group; Estuaries Grant Application Status; WURMP comment letter and audit report; WURMP annual report; database application and support
11/3/2008	WURMP comment letter and audit report; program planning
11/18/2008	Annual report preparation; MOU requirements regarding workgroup workplan and budget submittals; potential WURMP revisions
1/5/2009	WURMP revisions; annual report preparation; database application and support
2/17/2009	Annual Report process; regional WURMP activities; WURMP Permit language changes; stakeholders' TMDLs update
3/17/2009	Dry weather receiving waters monitoring; regional WURMP activities; WURMP permit revisions and TMDL updates; planning process initiation; database application update
4/21/2009	SANDAG Quality of Life Initiative; targeted restaurant inspections watershed activity; WURMP Permit and TMDL update; water quality activity updates; planning process—data collection and analysis; activity inventory and updates database
06/2/2009	Targeted wet weather MS4 monitoring; Lake San Marcos; data review; alternative reporting consideration and development; WURMP report planning; water quality activity updates

The general watershed meetings of the Carlsbad WURMP Workgroup were led by the City of Carlsbad who is the lead Copermittee for the Carlsbad WURMP Workgroup under this current Permit. A cost-share agreement was executed by the Copermittees to cover the cost

of technical assistance for the watershed program. Activities and tasks developed by the Copermittees are implemented by the Copermittees within the structure of their jurisdictional organization. Task completion is then tracked and assessed at the workgroup meetings and reported in the Annual Report.

1.1.2 INVESTIGATIVE ORDER R9-2006-076 MONITORING

In FY 2007, the RWQCB issued Investigative Order R9 2006-076 for monitoring associated with Lagoon TMDL modeling. The Investigative Order has resulted in the collection of a significant amount of hydrologic, hydraulic and water quality data for the four lagoons located in the Carlsbad WMA and their associated watersheds. Through monitoring during FY 2008, a significant amount of data was collected for the purpose of calibrating and validating TMDL models for pollutant load allocation. In FY 2008-09, monitoring conducted for the Investigative Order consisted of samples within several lagoons within the Carlsbad Watershed, including the San Elijo, Agua Hedionda, and Buena Vista Lagoons, as well as the Loma Alta Slough. Overall, lagoon monitoring was completed in compliance with the established regional work plan. The collected data will be included in future analyses in determining priorities for the WURMP Copermittees.

1.1.3 AGUA HEDIONDA WATERSHED MANAGEMENT PLAN

During FY 2008, the watershed Copermittees collaborated in the completion of the Agua Hedionda Watershed Management Plan (AHWMP) – a grant funded effort led by the City of Vista. Since the completion of the plan, the City of Vista formally adopted the AHWMP in the spring of 2009. With City Council support, the Vista Engineering Department and Water Quality Protection Program began working on the SR-02 project, one of the key restoration projects recommended in the report.

The AHWMP provides a comprehensive, scientifically-based plan for preserving, restoring, and enhancing the Agua Hedionda Watershed's natural functions and features. It assesses past, present, and future watershed conditions and identifies management needs throughout the watershed, considering the complex relationships among different watershed processes. The recommendations of the AHWMP represent a geographically focused, comprehensive watershed planning effort. The plan presents management measures for achieving and sustaining measurable water quality improvements and recommends focus areas where opportunities will complement each other and lead to greater improvement in watershed functions.

1.1.4 WURMP AUDITS AND WATERSHED PERMIT REVISIONS

In conjunction with RWQCB staff and other Copermittees, the Carlsbad WURMP Copermittees considered and developed revisions to the existing Regional WURMP Permit language. This effort was initiated by the RWQCB's audit of the Copermittees' WURMP programs in the spring of 2008 and by the RWQCB's request for the Copermittees to propose permit revisions in accordance with the audit's comments. These comments focused on the need for the watershed permit to more clearly focus on the collaborative identification of high priority water quality problems (HPWQPs) as well as the reduction of them to the maximum extent practicable. Based on this direction, a subcommittee of Copermittees, including three from the Carlsbad Watershed WURMP group, worked with RWQCB staff to develop revisions. Although this collaborative effort between RWQCB and Copermittee staff resulted in a draft permit revision, the RWQCB determined it should be reconsidered as part of the next permit's development since changes to the watershed component of the permit would likely trigger modifications to other sections of the current permit.

1.1.5 WEB-BASED GIS DATA WAREHOUSING APPLICATION

The Carlsbad WURMP Copermittees designed a web-based GIS data warehousing application in FY 2007. In FY 2008, the Carlsbad WURMP Copermittees continued working to review the quality of data, conducted internal training for the application, and explored long-term maintenance and use of the application. In FY 2009, the Carlsbad WURMP Copermittees reviewed the status of the application. Because resources could not be identified within the WURMP group to house and regularly maintain the database, its use was suspended until resources are available.

1.1.6 WATERSHED MAP UPDATES

No updates have been made to the previously submitted Watershed Map. Please refer to the FY 2008 WURMP Annual Report submitted in January 2009 for the most recent Watershed Map.

1.2 ORGANIZATION AND CONTENT OF REPORT

SECTION 1- Introduction
Section 1 of the Annual Report provides a summary of the Carlsbad WURMP Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2- Water Quality and Pollutant Source Assessment
Section 2 provides an updated evaluation and analysis of the Carlsbad WMA's receiving water conditions based on applicable water quality data from the Receiving Waters and Urban Runoff Monitoring Program Annual Report. In addition, Section 2 provides an update on the likely source loads in urban runoff. Although the assessment covers the entire WMA, it specifically addresses the six distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA.

SECTION 3- Implementation of Watershed Activities
Section 3 describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2009 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution.

SECTION 4- Effectiveness Assessment
Section 4 provides an assessment of the implementation and effectiveness of the Carlsbad WURMP for the FY 2009 reporting period using concepts from "A Framework for Assessing the Effectiveness of Jurisdictional Runoff Management Programs." The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and BMP implementation and resulting changes in receiving water quality. Consistent with the requirements of Order No. R9-2007-0001, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 5- Conclusions
Section 5 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

2 WATER QUALITY ASSESSMENT

This section provides an updated water quality assessment based upon previously established strategies and processes presented in the 2008 WURMP (March 2008). The water quality assessment provides an evaluation and analysis of the Carlsbad Watershed Management Area's (WMA) receiving waters conditions based on applicable water quality data, reports, analyses, and other information. Information and data from the 2008-2009 Receiving Waters and Urban Runoff Monitoring Program Annual Report (Weston, January 2010) and the Carlsbad Hydrologic Unit Lagoon Monitoring Report (MACTEC, June 2009) were used to conduct the assessment. Each of the hydrologic areas within the Carlsbad watershed is evaluated discretely. The assessment concludes with identification of the high priority water quality problems (HPWQPs) for each applicable HA.

The San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report (Weston Report) includes significant analyses of the monitoring activities conducted within the Carlsbad WMA during the reporting period. As a part of the Weston Report, assessments of the six HAs during both wet weather and ambient weather monitoring conditions are presented in an integrated manner to convey an overall assessment of each HA. The integrated assessment identifies which COCs tend to occur in the watershed more frequently than others. For a detailed understanding of the analysis and assessment conducted as part of the regional monitoring effort it is highly recommended that the reader review the Weston Report.

The Carlsbad WMA is comprised of 135,322 acres and six hydrologic areas (HAs): Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek. The WMA has two monitored mass loading stations (MLS), one on Agua Hedionda Creek and one on Escondido Creek. Four temporary watershed assessment stations (TWAS) have been monitored to date in the WMA, one each in Loma Alta, Buena Vista, Agua Hedionda, and Escondido Creek HAs. There have been six bioassessment stations monitored in the WMA, one each in Loma Alta and Buena Vista HAs and two each in Agua Hedionda and Escondido Creek HAs. Finally, there are numerous dry weather monitoring (DWM) sites and coastal storm drain monitoring (CSDM) sites throughout the WMA.

Monitoring conducted for the Lagoons TMDL Investigative Order (IO) in FY 2008-09 consisted of samples collected within the San Elijo Lagoon, Agua Hedionda Lagoon, Buena Vista Lagoon and Loma Alta Slough. Sampling was performed at one Mass Emissions Station upstream of each lagoon, one or two Lagoon Segments, and one or two Ocean Inlets in each of the lagoons. Lagoon IO monitoring also included Transect Sampling at several locations throughout each lagoon. Transect Sampling provided spatial data showing the variation of targeted constituents and was collected in order to calibrate and validate the lagoons' water quality models. Monitoring results and QA/QC analysis are presented in the Carlsbad Hydrologic Unit Lagoon Monitoring Report (MACTEC, June 2009).

Table 2-1 provides a summary of the monitoring activities conducted in the Carlsbad HU during fiscal year 2008-2009, in compliance with RWQCB Order R9-2007-0001 and RWQCB Investigative Order R9-2006-076. Figure 2-1 depicts the locations of monitoring stations within the Carlsbad WMA that were used the collect samples as part of the regional monitoring effort. Sampling locations established as part of the Lagoon TMDL Investigative Order monitoring effort can be found in Chapter 2 of the MACTEC Report.

Table 2-1 2008-2009 Monitoring Activities within the Carlsbad HU

Program Data Set	Constituents Assessed	Loma Alta	Buena Vista Creek	Agua Hedionda	San Marcos	Escondido Creek
Receiving Water Monitoring						
Ambient Monitoring	Water chemistry and toxicity				✓	
Rapid Stream Bioassessments	Benthic macroinvertebrates, periphyton, and physical habitat				✓	
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash			✓		✓
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	✓	✓	✓	✓	✓
Bight 08 Estuary Monitoring	Water (bacteria and TSS) and sediment quality (chemistry, toxicity, and benthic macroinvertebrates)			✓	✓	✓
Urban Runoff Monitoring						
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash	✓	✓	✓	✓	✓
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	✓		✓	✓	✓
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria			✓	✓	✓
MS4 Outfall Targeted Monitoring	Chemistry, metals, pesticides and bacteria	✓	✓	✓	✓	✓
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria	✓	✓	✓	✓	✓
Lagoons TMDL Investigative Order Monitoring						
Continuous Monitoring	Hydrologic and core water quality parameters	✓	✓	✓		✓
Wet Weather Monitoring of Three Storm Events	303(d) listed and associated constituents	✓	✓	✓		✓
Dry Weather Monitoring during Four Index Periods	303(d) listed and associated constituents	✓	✓	✓		✓
Transect Sampling	303(d) listed and associated constituents	✓	✓	✓		✓

Receiving water monitoring was conducted during one ambient weather event at one SMC site in the San Marcos HA and at the MLS at Agua Hedionda and Escondido Creek during one wet weather event. Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit. In 2008–2009, the scope of the monitoring program was adjusted due to the Copermittees participation in the Southern California Bight Regional Monitoring Program

Figure 2-1 Carlsbad Watershed Management Area 2008–2009 Monitoring Station Location Map

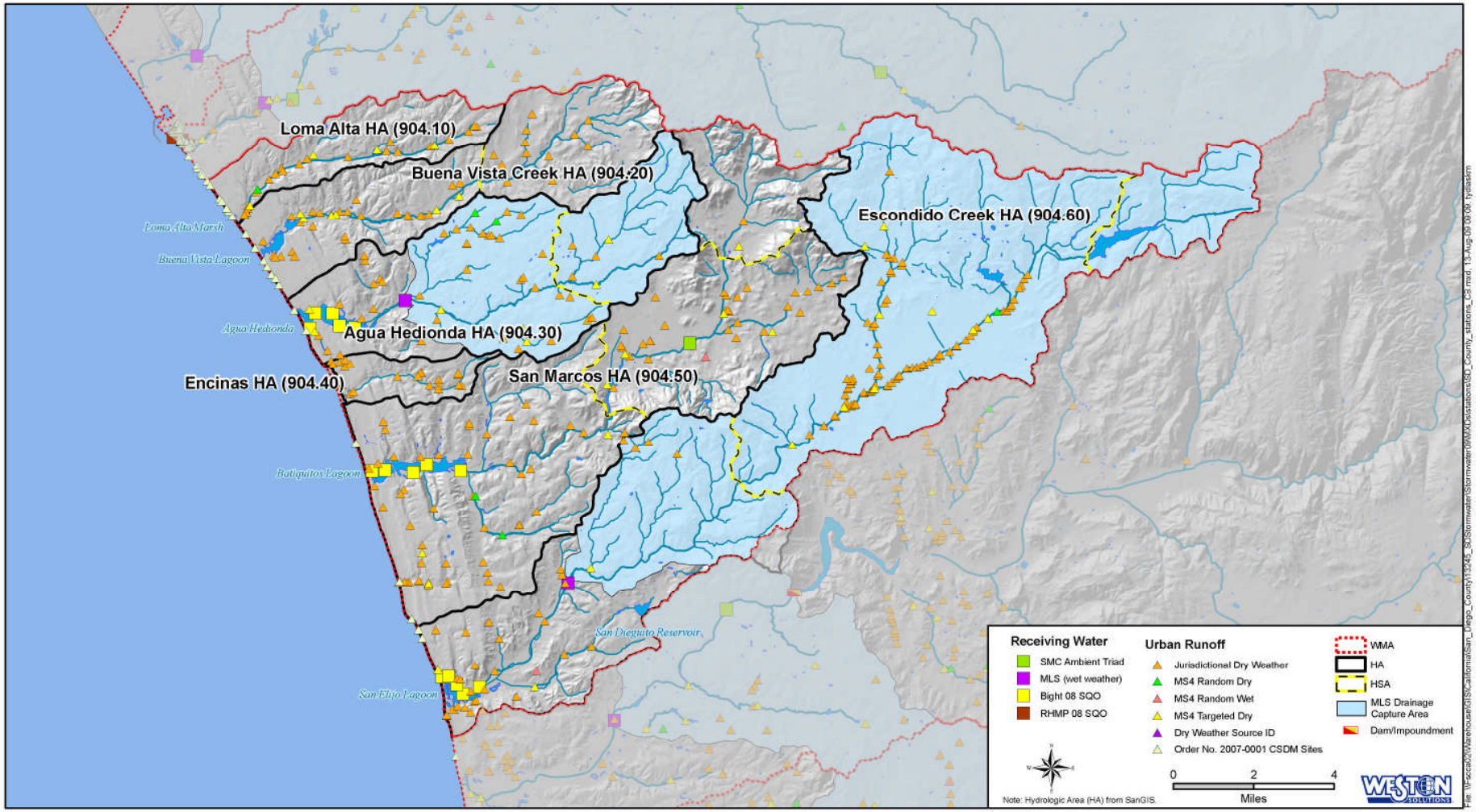

2.1 303(D) LISTINGS

Within this watershed, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant total maximum daily load (TMDL) status. However, several changes are proposed in the 2008 Draft 303(d) list.

Table 2-2 Carlsbad WMA SWRCB Section 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	HA(s)	TMDL Status
Pacific Ocean Shoreline	Indicator bacteria	904.1* 904.2* 904.5 904.6*	Adopted (Amendment by RWQCB in development.) 904.1, 904.2 and 904.6 are not in current Bacteria I TMDL
Loma Alta Slough	Indicator bacteria and eutrophic	904.1	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2008-2009.
Buena Vista Lagoon (202 acres)	Indicator bacteria, nutrients, and sedimentation/ siltation	904.2	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2008-2009.
Buena Vista Creek	Sediment toxicity	904.2	Not Applicable
Agua Hedionda Lagoon (7 acres)	Indicator bacteria and sedimentation/ siltation	904.3	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2008-2009.
Agua Hedionda Creek	TDS, manganese, selenium, and sulfates	904.3	Not Applicable
Buena Creek	DDT, nitrate, nitrite, and phosphate	904.3	Not Applicable
San Marcos Creek Watershed (Cottonwood Creek)	DDE, phosphorus, and sediment toxicity	904.5	Not Applicable
Lake San Marcos	Ammonia as N, nutrients, phosphorus	904.5	Not Applicable
Encinitas Creek	Phosphorus	904.5	Not Applicable
San Elijo Lagoon	Indicator bacteria, eutrophic, and sedimentation/siltation	904.6	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2008-2009.
Escondido Creek	DDT, manganese, phosphate, selenium, sulfates, and TDS	904.6	Not Applicable
Reidy Canyon Creek	Phosphorus	904.6	Not Applicable

Source: SWRCB, 2006
*Not a part of the proposed 2008 303(d) listings

2.2 ASSESSMENT

Each element of the Permit-required monitoring program was designed to provide scientific data to address five core management questions. The core management questions, as listed in the Permit, are presented as follows:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?

4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring program for each WMA vary across spatial and temporal scales. Therefore, data supports only partial resolution of each core management question. Through continued monitoring and the refinement of the Permit requirements a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments were conducted using data from multiple current and historical monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach. Each HA in the Carlsbad WMA was assessed individually. The overall findings for the WMA are summarized by program element in **Table 2-3**.

Table 2-3 Summary of WMA Assessment Findings

Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
Receiving Water Monitoring Program	Ambient Receiving Water Summary	▪ Constituent Summary: - Loma Alta HA ▪ TDS and total nitrogen > benchmark in 100% of samples - Buena Vista Creek HA ▪ TDS and total nitrogen >benchmark in 100% of samples; enterococci > benchmark in 50% of samples - Agua Hedionda Creek HA ▪ TDS >benchmark in 100% of samples; fecal coliform and enterococci > benchmark in75% of samples; total nitrogen and total phosphorus > benchmark in ≤ 50% of samples - San Marcos HA ▪ Chloride, sulfate, total nitrogen, total phosphorus > benchmark in 100% of samples (based on single sample) - Escondido Creek HA ▪ TDS and total nitrogen > benchmark in 100% of samples; enterococci > benchmark in 50% of samples; COC, total phosphorus and fecal coliform > benchmark in 25% of samples ▪ No constituents were observed to have a magnitude of exceedance of greater than five times their benchmark ▪ Pyrethroids were not detected above the reporting limit in post-storm sediment samples*	1, 2
	Wet Weather Receiving Water Assessment	▪ Constituents of Concern[1]: - High frequency of occurrence: ▪ Loma Alta HA (TSS, turbidity, fecal coliforms, enterococci) (based on one year of data). ▪ Buena Vista (TSS, turbidity, total coliforms, fecal coliforms, enterococci) (based on one year of data) ▪ Agua Hedionda (TSS, turbidity, total coliforms, fecal coliforms, and enterococci ▪ Escondido Creek (TDS, turbidity, total coliforms, fecal coliforms, and enterococci) - Medium or low frequency of occurrence: ▪ Loma Alta (total coliforms) ▪ Agua Hedionda (TDS and Chlorpyrifos) ▪ Escondido Creek (TSS) ▪ Fecal coliforms had a magnitude of exceedance greater than five times the benchmark at Agua Hedionda Creek and Escondido Creek. ▪ Persistent toxicity to *Hyalella azteca* was observed at Buena Vista Creek, Loma Alta Creek and Agua Hedionda Creek sites ▪ Pyrethroids were detected in receiving waters at concentrations above water quality benchmarks at Agua Hedionda MLS, but not Escondido Creek MLS	
	Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed at all sites	

Table 2-3 Summary of WMA Assessment Findings - Continued

Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
-	Bight 08	▪ Bacteria and TSS were low and below benchmarks in all ambient water samples collected in each lagoon monitored ▪ Agua Hedionda Lagoon ▪ Sediment quality results identified two sites as unimpacted, two sites as likely unimpacted, and one site as possibly impacted. Batiquitos Lagoon - Sediment quality results identified two sites as likely unimpacted, one site as unimpacted, one site as possibly impacted, and one site as likely impacted based on SQO Guidelines - A toxicity identification evaluation was conducted for the one site identified as likely impacted and indicated naturally occurring ammonia was the causative agent of toxicity and not toxic chemicals. The overall result of the likely impacted site was changed to likely unimpacted based on the SQO Guidance ▪ San Elijo Lagoon - Sediment quality results identified three sites as likely unimpacted, one site as inconclusive, and one site as likely impacted - The TIEs also identified the one site as likely impacted was due to naturally occurring ammonia and not toxic chemicals. The overall result of the likely impacted site was changed to likely unimpacted based on the SQO Guidance • Benthic Community impacts were likely due to physical habitat disturbances and lagoon specific conditions, but were not associated with chemically mediated effects	
Urban Runoff Monitoring	Ambient Urban Runoff Summary (Jurisdictional, MS4, CSDM)	▪ Results above action levels or receiving water benchmarks: - Loma Alta HA: ▪ Jurisdictional: No data ▪ MS4: TSS, total nitrogen, total phosphorus, fecal coliform, enterococci - Buena Vista Creek HA: ▪ Jurisdictional: No data ▪ MS4: TDS, TSS, total nitrogen, total phosphorus, fecal coliform, enterococci - Agua Hedionda HA: ▪ Jurisdictional: pH, conductivity, turbidity, ammonia, orthophosphate, total coliform, fecal coliform, enterococci ▪ MS4: TDS, sulfate, nitrate, nitrate/nitrite, total phosphorus, fecal coliform, enterococci, total manganese, total selenium - San Marcos HA: ▪ Jurisdictional: No data ▪ MS4: TDS, total nitrogen, total phosphorus, fecal coliform, enterococci - Escondido Creek HA: ▪ Jurisdictional: pH, oil and grease, turbidity, nitrate, total coliform, fecal coliform, enterococci ▪ MS4: TDS, TSS, sulfate, total nitrogen, total phosphorus, fecal coliform, enterococci, total manganese, total selenium ▪ Assessments of trash indicated that Loma Alta and Buena Vista Creek HAs were impacted the most by trash ▪ CSDM: Coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters	3, 4
	Wet Weather Urban Runoff Assessment (MS4)	▪ The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions ▪ CSDM: Coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters	

Table 2-3 Summary of WMA Assessment Findings - Continued

Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
WMA Assessment	Receiving Water Trend Assessment	▪ In the Agua Hedionda HA, significantly increasing trends were observed for COD, fecal coliforms, total copper, total lead, total nickel, total coliforms, TSS, turbidity and total zinc. Significantly decreasing trends were observed for dissolved arsenic and Diazinon ▪ In the Escondido Creek HA, significantly increasing trends were observed for total zinc. Significantly decreasing trends were observed for dissolved nickel and Diazinon	5
	2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, TSS and turbidity and indicator bacteria are, in general, consistent with the 2001–2006 BLTEA ratings	

Notes:
Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in Appendix B of the Weston Report (Weston, 2010).
*The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.

Based on these results, each of the five Core Management Questions are addressed below.

Core Question 1: Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed with the wet weather data assessments. Beneficial uses affected by elevated levels of indicator bacteria, total dissolved solids (TDS), total suspended solids (TSS), and total nitrogen may be impacted. Beneficial uses related to the quality of natural habitat supporting diversity may be similarly affected based on the Very Poor IBI ratings of the benthic community. However, specific physical or chemical factors could not be linked directly to the degraded benthic community. The chemical constituents monitored were not detected at concentrations expected to cause beneficial use impairments related to toxicity. Results of the Bight 08 program suggest that the receiving waters of the Batiquitos, Agua Hedionda and San Elijo Lagoons are protective of beneficial uses in that, of the 15 sites assessed, two were possibly impacted and two were likely impacted (but were due to naturally occurring ammonia and not chemically mediated effects). No clearly impacted sites were determined based on the SQO Guidelines. The Bight 08 program also determined that, while there were some instances of low DO in very localized areas, bacteria and TSS were below benchmark values in all ambient water samples.

Core Question 2: What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed with magnitude of exceedance ratios for ambient and wet weather conditions in the receiving waters and a spatial analysis of COC during ambient conditions. Receiving water problems related to TDS, sedimentation (TSS and turbidity), and indicator bacteria were common throughout the Carlsbad WMA. The magnitude of the COCs varied by HA. During wet weather, fecal coliforms had a magnitude of exceedance greater than five times the benchmark. Few distinct spatial patterns were apparent, but TDS concentrations were fairly uniform among sites during ambient conditions. Stream bioassessment data indicated impaired benthic communities, with IBI ratings of Very Poor at all sites monitored. However, more information is needed to better understand the extent of benthic impairment throughout the WMA.

Core Question 3: What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 is partially answered through the evaluation of urban runoff area assessments and trash assessments. Organic contaminants (e.g., pesticides) and trash are derived from anthropogenic activity; their route to receiving waters occurs through urban runoff, direct dumping, or via indirect sources (e.g., wind or animals, such as birds, coyotes, residential pets, and rodents). The synthetic pyrethroid Bifenthrin was detected above the benchmark concentration during wet weather at the Agua Hedionda MLS in 2008-2009. No synthetic pyrethroids were detected at the Escondido Creek MLS during wet weather in 2008-2009. Trash assessments conducted throughout the WMA indicated that Escondido Creek was minimally impacted by trash. Loma Alta Creek and Buena Vista Creek were found to be most impacted by trash, which consisted primarily of food packaging and household waste.

Core Question 4: What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The DWM Program, the CSDM Program, and trash assessment in the receiving waters provide some evaluation of urban runoff sources. The two MLS (Agua Hedionda and Escondido Creek) are located downstream of primarily residential land use areas. The synthetic pyrethroid Bifenthrin was detected above the benchmark concentration during wet weather at the Agua Hedionda MLS. No synthetic pyrethroids were detected at the Escondido Creek MLS. Indicator bacteria and TDS were identified as high frequency of occurrence COC during both dry and wet weather. TDS is a known issue related to importation of drinking water, over-irrigation and potential recycled water uses. Indicator bacteria are also related to dry and wet weather runoff and potentially bacterial regrowth in the receiving waters during low velocity flow conditions. The DWM Program and the CSDM Program have measures to identify and eliminate illegal connections and illicit discharges (ICIDs). Trash observations made under the DWM program indicated that, for those HAs with the most Poor or Submarginal ratings (Buena Vista Creek and Loma Alta Creek), most trash sources were linked to littering or upstream sources.

Core Question 5: Are conditions in receiving waters getting better or worse?
Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at MLS sites. Trend data are available for two HAs in the Carlsbad WMA: Agua Hedionda and Escondido Creek. At the Agua Hedionda MLS, significantly increasing trends were observed for COD, fecal coliforms, total copper, total lead, total nickel, total coliforms, TSS, turbidity and total zinc. Significantly decreasing trends were observed for dissolved arsenic and Diazinon. At the Escondido Creek MLS, significantly increasing trends were observed for total zinc. Significantly decreasing trends were observed for dissolved nickel, and Diazinon. Bioassessment results over the period of monitoring from 2001–2008 do not indicate any observed changes in the benthic community at the two sites for which long-term data are available (Agua Hedionda and Escondido Creek MLS). At both sites, IBI ratings have been Poor or Very Poor in every survey from 2001–2008. Persistent toxicity to *H. azteca* has been identified at the Agua Hedionda MLS with long-term data sets.

2.3 HIGH PRIORITY WATER QUALITY PROBLEMS AND RECOMMENDATIONS

In developing the Collective Watershed Strategy, the Carlsbad WURMP Copermittees decided that unless there were significant long-term trends indicating otherwise or overwhelming evidence, the high priority water quality problems identified for each hydrologic area would remain throughout the permit cycle. **Table 2-4** below presents the HPWQPs in the WMA.

New data collected and analytical results summarized in this water quality assessment and in the Regional Monitoring Report (Weston, January 2010) will be taken into consideration as watershed activities are established, but do not affect the HPWQPs identified in the Carlsbad WMA.

Table 2-4. Summary of High Priority Water Quality Problems

HA	Bacteria		Sediments		Nutrients	
	Wet	Ambient	Wet	Ambient	Wet	Ambient
Loma Alta	X					
Buena Vista Creek	X	X				
Agua Hedionda	X	X	X			X
San Marcos						X
Escondido Creek	X	X	X			X

3 POLLUTANT SOURCE ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Carlsbad WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by Hydrologic Area.

Table 3-1 summarizes the land use in each of the Hydrologic Areas. The pollutants found in wet weather urban runoff are generally associated with land uses in the tributary areas. Rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to the pollutants found in dry weather urban runoff that are generally associated with point dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant generating activities and from the traveled path of the urban runoff as it enters and travels through the MS4.

Tables 3-2 through **3-6** represent the inventoried sources that the Copermittees currently track. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants. The process used to develop the tables was taken directly from the Baseline Long-Term Effectiveness Assessment (BLTEA) (Weston, MOE, LWA, 2005). The data used for the process includes the following: (1) results in the 2008-2009 Regional Annual Monitoring Report (Weston Solutions, 2007); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the BLTEA (Weston, MOE, LWA, 2005).

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)					
	904.10	904.20	904.30	904.40	904.50	904.60
Commercial	206.14	932.79	423.26	253.16	1,078.11	865.81
Industrial	601.10	280.07	1,830.77	648.46	1,146.33	1,050.32
Institutional	251.32	556.48	252.51	10.89	889.62	685.09
Rural Residential	45.75	512.71	1,031.93	0.00	2,097.64	10,100.27
Single Family Residential	1,510.11	5,193.36	4,568.03	154.45	8,380.03	6,644.18
Multiple Family Residential	469.15	1,639.35	1,013.53	123.29	2,499.51	2,165.20
Municipal	81.93	73.93	51.74	20.72	105.86	142.11
Park	210.94	289.95	545.30	220.82	1520.50	746.97
Transportation	1,112.84	2,392.99	2,080.49	331.22	5,357.94	4,258.15
Open Space	1,728.47	2,047.90	5,776.61	485.57	12,789.05	22,734.82
Prison	0.00	24.21	0.00	0.00	0.00	0.00
Recreation	14.77	53.36	49.22	9.93	165.44	80.22
Under Construction	16.68	8.06	20.20	22.97	62.88	96.63
Water	13.45	222.08	341.12	1.25	528.38	866.07
Agricultural	0.00	180.35	1,656.51	68.88	2,584.97	3,921.02
Military	0.06	59.15	69.47	0.00	89.83	44.54

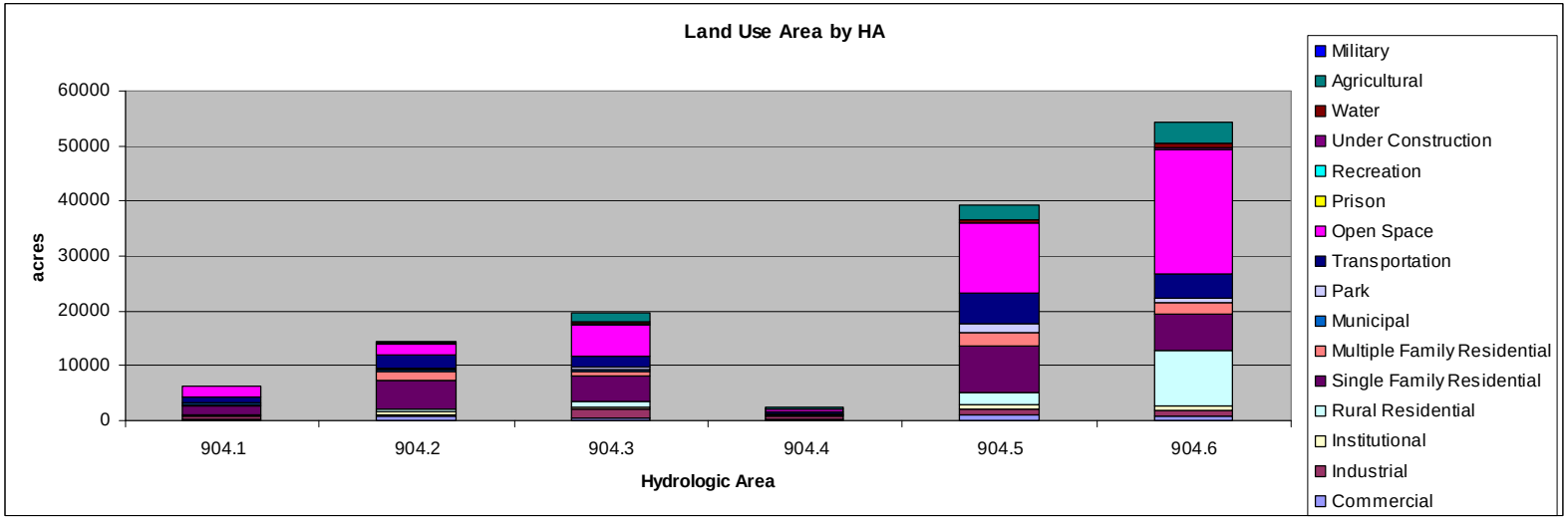

Source: SANDAG

Table 3-2 Pollutant Generating Sources – 904.1 Loma Alta Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	4			N	L	UL	L	UK	L	UK	L
Automotive	144			L	L	L	UL	UL	UK	L	UL
Cemetery	1			N	N	UL	L	L	L	L	L
Contractor	223			UL	UL	UL	L	UL	UL	L	UL
Restaurant	122			N	L	L	UL	UK	UK	L	L
Equipment	9			L	L	L	UL	UL	UK	L	UL
Fueling	6			UK	L	L	UK	N	N	UK	N
General Industrial	2			L	L	L	UK	UK	UK	UK	UK
General Retail	117			UL	UL	UL	L	UL	UL	L	UL
Health Services	11			N	L	UL	L	UK	L	UK	UL
Institutional	20			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	54			L	UK	UK	UK	UK	UK	UK	UL
Metal	12			L	L	L	UK	UK	UK	UK	UL
Nursery	7			L	UL	UL	L	L	L	UK	L
Stone	7			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	6			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	28	8									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	11	11	10								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely
***Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business

Table 3-3 Pollutant Generating Sources – 904.2 Buena Vista Creek Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	4			N	L	UL	L	UK	L	UK	L
Automotive	166			L	L	L	UL	UL	UK	L	UL
Contractor	257			UL	UL	UL	L	UL	UL	L	UL
Restaurant	364			N	L	L	UL	UK	UK	L	L
Equipment	2			L	L	L	UL	UL	UK	L	UL
Fueling	36			UK	L	L	UK	N	N	UK	N
General Retail	27			UL	UL	UL	L	UL	UL	L	UL
Health Services	10			N	L	UL	L	UK	L	UK	UL
Institutional	4			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	4			L	UK	UK	UK	UK	UK	UK	UL
Metal	2			L	L	L	UK	UK	UK	UK	UL
Nursery	29			L	UL	UL	L	L	L	UK	L
Stone	11			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	10			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	47	31									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	14	14	56								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely
***Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business

Table 3-4 Pollutant Generating Sources – 904.3 Agua Hedionda Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	4			L	UL	UL	L	L	L	UK	L
Animal	7			N	L	UL	L	UK	L	UK	L
Automotive	118			L	L	L	UL	UL	UK	L	UL
Contractor	298			UL	UL	UL	L	UL	UL	L	UL
Restaurant	185			N	L	L	UL	UK	UK	L	L
Equipment	55			L	L	L	UL	UL	UK	L	UL
Fueling	17			UK	L	L	UK	N	N	UK	N
General Industrial	5			L	L	L	UK	UK	UK	UK	UK
General Retail	24			UL	UL	UL	L	UL	UL	L	UL
Golf	3			N	N	UL	L	L	L	L	L
Health Services	11			N	L	UL	L	UK	L	UK	UL
Institutional	1			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	118			L	UK	UK	UK	UK	UK	UK	UL
Metal	51			L	L	L	UK	UK	UK	UK	UL
Nursery	71			L	UL	UL	L	L	L	UK	L
Stone	25			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	66			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	40	20									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	56	20	115								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely
***Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business

Table 3-5 Pollutant Generating Sources – 904.5 San Marcos Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	2			L	UL	UL	L	L	L	UK	L
Animal	49			N	L	UL	L	UK	L	UK	L
Automotive	275			L	L	L	UL	UL	UK	L	UL
Contractor	559			UL	UL	UL	L	UL	UL	L	UL
Restaurant	473			N	L	L	UL	UK	UK	L	L
Equipment	83			L	L	L	UL	UL	UK	L	UL
Fueling	25			UK	L	L	UK	N	N	UK	N
General Retail	44			UL	UL	UL	L	UL	UL	L	UL
Golf	8			N	N	UL	L	L	L	L	L
Manufacturing	98			L	UK	UK	UK	UK	UK	UK	UL
Metal	29			L	L	L	UK	UK	UK	UK	UL
Nursery	132			L	UL	UL	L	L	L	UK	L
Stone	29			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	114			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	93	62									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	63	39	133								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely
***Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business

Table 3-6 Pollutant Generating Sources – 904.6 Escondido Creek Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	2			L	UL	UL	L	L	L	UK	L
Animal	27			N	L	UL	L	UK	L	UK	L
Automotive	467			L	L	L	UL	UL	UK	L	UL
Contractor	339			UL	UL	UL	L	UL	UL	L	UL
Restaurant	416			N	L	L	UL	UK	UK	L	L
Equipment	46			L	L	L	UL	UL	UK	L	UL
Fueling	43			UK	L	L	UK	N	N	UK	N
General Industrial	8			L	L	L	UK	UK	UK	UK	UK
General Retail	78			UL	UL	UL	L	UL	UL	L	UL
Golf	6			N	N	UL	L	L	L	L	L
Health Services	13			N	L	UL	L	UK	L	UK	UL
Institutional	17			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	63			L	UK	UK	UK	UK	UK	UK	UL
Metal	29			L	L	L	UK	UK	UK	UK	UL
Mining	8			L	UK	UK	L	UK	UK	UK	UL
Nursery	47			L	UL	UL	L	L	L	UK	L
Park	3			N	N	UL	L	L	L	L	L
Stone	13			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	35			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High		Low	L	L	L	L	UK	UK	UK	UL
	38		37								
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	28	40	304								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely
***Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business

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4 IMPLEMENTATION OF WATERSHED ACTIVITIES

4.1 JURMP AND WATERSHED ACTIVITIES

The Carlsbad WURMP Copermittees are responsible for implementing JURMP activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. Many of these activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

In addition to the JURMP activities, the Carlsbad WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Carlsbad WURMP.

The tables below represent the Copermittees' initial effort towards reporting urban runoff management activities on a watershed basis, e.g., reporting of Copermittee activities regardless of jurisdiction-specific program labels. Reporting as many jurisdictional and watershed urban runoff management activities as feasible on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements.

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

Table 4-1 JURMP and WURMP Activities – 904.1 Loma Alta Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem Bacteria/Pathogens
Inspections	Animal	0: (4)	X
	Cemetery	0: (1)	X
	Food Establishment	96: (122)	X
	Nursery	4: (7)	X
Street Sweeping (Tons Collected)		437	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		397	X
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility		X
CHU-WQA4	Myers Property Restoration Assessment		X

Table 4-2 JURMP and WURMP Activities – 904.2 Buena Vista Creek Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem
			Bacteria/Pathogens
Inspections	Animal	0: (4)	X
	Food Establishment	236: (364)	X
	Nursery	14: (29)	X
Street Sweeping (Tons Collected)		646	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		2,112	X
CHU-WQA13	Buena Vista Creek Cleanup and Restoration		X

Table 4-3 JURMP and WURMP Activities – 904.3 Agua Hedionda Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem		
					Bacteria/ Pathogens	Nutrients	Sediment
Inspections	Construction	High	Medium	Low			X
		703: (56)	202: (20)	773: (115)			
	Agriculture	3: (4)			X	X	X
	Animal	0: (7)			X	X	X
	Contractor	16: (298)					X
	Food Establishment	133: (185)			X		
	General Retail	22: (24)					X
	Golf	2: (3)			X	X	X
	Health Services	0: (11)				X	X
	Nursery	42: (71)			X	X	X
Street Sweeping (Tons Collected)		628			X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,499			X	X	X
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek					X	
CHU-WQEA4	LID and Watershed Planning Education for Community Planning and Sponsor Groups				X	X	X

Table 4-4 JURMP and WURMP Activities – 904.5 San Marcos Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem
			Nutrients
Inspections	Agriculture	2: (2)	X
	Animal	0: (49)	X
	Golf	5: (8)	X
	Nursery	34: (132)	X
Street Sweeping (Tons Collected)		1,368	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		762	X
CHU-WQA12	Lake San Marcos Tributary BMP Master Plan		X
CHU-WQA9	Focused Inspections Along San Marcos Creek		X
CHU-WQEA4	LID and Watershed Planning Education for Community Planning and Sponsor Groups		X

Table 4-5 JURMP and WURMP Activities – 904.6 Escondido Creek Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem		
					Bacteria/ Pathogens	Nutrients	Sediment
Inspections	Construction	High	Medium	Low			X
		804: (28)	352: (40)	1,903: (304)			
	Agriculture	1: (2)			X	X	X
	Animal	10: (27)			X	X	X
	Contractor	288: (339)					X
	Food Establishment	393: (416)			X		
	General Retail	66: (78)					X
	Golf	6: (6)			X	X	X
	Health Services	13: (13)				X	X
	Mining	6: (8)					X
	Nursery	18: (47)			X	X	X
	Park	0: (3)			X	X	X
Street Sweeping (Tons Collected)		1,319			X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		2,297			X	X	X
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks				X	X	
CHU-WQA11	Land Acquisitions				X	X	X
CHU-WQA6	Escondido Creek Restoration						X
CHU-WQEA4	LID and Watershed Planning Education for Community Planning and Sponsor Groups				X	X	X
CHU-WQEA5	LID Features in San Elijo Nature Center				X	X	X

4.2 WATERSHED EDUCATION ACTIVITIES

This section describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2009 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the HPWQPs in the Carlsbad WMA. The activity selection process is described fully in the March 2008 Carlsbad WURMP.

The Copermittees have made significant progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed. **Table 4-6** below lists the watershed education activities implemented during FY 2009 by the Copermittees. Details of the each activity can be found on the Activity Implementation Sheets located in **Appendix B**.

Table 4-6. Watershed Education Activities Implemented During FY 2008

ID #	Activity/Project Name
CHU-WQEA1	Residential Irrigation Runoff Reduction Education
CHU-WQEA4	Low Impact Development & Watershed Planning for Community Planning/Sponsor Groups
CHU-WQEA5	LID Features in San Elijo Nature Center

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

4.3 PUBLIC PARTICIPATION ACTIVITIES

The Watershed Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed which could include other agencies, private companies, non-governmental organizations, environmental groups, etc. The Copermittees use several mechanisms to engage the public and receive input, including outreach events Below is a summary of these mechanisms where interaction with the public is the primary function.

4.3.1 PROJECT CLEAN WATER

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. PCW, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. PCW seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. It was formed under the guidance of a Technical Advisory Committee made up of local stormwater-related professionals.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds. There are several web pages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website provides Best Management Practices information for both residential and industrial/commercial audiences (http://www.projectcleanwater.org/bmp/).

PCW features a page devoted to the Carlsbad WMA, with details on the watershed, major pollutants, and organizations related to water quality. Additionally the webpage also offers links to relevant documents such as the WURMP and WURMP Annual Updates. During the FY 2009 reporting period, revisions were made to update the content and documents available via the site. During FY 2009 the hits for the Carlsbad Watershed page totaled 1,995 and there were also 696 hits on the Carlsbad WURMP document.

The Carlsbad WURMP Copermittees are supportive of these outreach activities and will be involved where applicable and feasible.

4.3.2 NORTH COUNTY STORM WATER PROGRAM

The North County Storm Water Program was originally established in 2002 and comprised stormwater staff from nine North San Diego County cities. The NCSWP developed and implemented general public storm water and watershed awareness education programs for the Northern San Diego County Region and collaborated on special events based on the needs of the activities planned for the WURMPs. This group has met regularly since 2002 and developed several brochures and staffed many education outreach events.

With the initiation of the Regional Education and Residential Sources Workgroup in FY 2008 Carlsbad WURMP Copermittee staff began attending those bi-monthly meetings collaborating with all 21 Copermittees on regional stormwater education programs. Therefore the NCSWP group combined efforts with the Regional Education group. It was determined that if a specific WURMP activity could utilize a focused group of Carlsbad Copermittee staff to develop and implement a component of the activity the NCSWP group would initiate meetings again.

The Carlsbad Copermittees did collaborate on the dissemination of education pieces developed in previous years under the NCSWP and coordinated the staffing of education outreach booths at various events. Below is a summary of the activities of the Carlsbad Copermittees, the materials distributed by the Carlsbad Copermittees, and the events at which a table was collaboratively staffed by one or more Copermittees.

- Staffing booths at outreach events
- Coordination with the Regional Education and Residential Sources Workgroup
- Development of a standardized brand and message for San Diego County Copermittees
- Collaboration with the Carlsbad and San Luis Rey WURMP workgroups

Outreach Events

The Carlsbad Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- June 14 – July 6, 2008 - San Diego County Fair
- August 3, 2008 – Vista Rod Run
- August 23, 2008 – Solana Beach Movie Night
- August 31, 2008 - Chamber of Commerce Street Fair (San Marcos)
- September 11, 2008 – Dimensions 1 Spas Health and Wellness Fair (Vista)
- October 11, 2008 - Fire Department Open House (San Marcos)
- October 25, 2008 – Solana Beach Community Cleanup Day
- October 26, 2008 – Oceanside Humane Society PAWS Festival
- November 2, 2008 – Carlsbad Village Street Faire

- December 7, 2008 - Cardiff Green Awareness Expo (Encinitas)
- February 8, 2009 - Solana Beach Community Cleanup Day
- February 27, 2009 – Solana Beach "Build It Green" Fair
- March 7, 2009 – Kragen Auto Parts Used Oil Filter Event (Vista)
- March 10, 2009 – Restaurant Compliance Workshop held in Escondido
- March 15, 2009 – Paws in the Park Event (Solana Beach)
- April 5, 2009 - San Marcos Spring Festival
- April 25, 2009 - Encinitas Garden Festival (Encinitas)
- April 17, 18, 19, 24, 25, 26 and May 1 – 3, 2009 - Del Mar National Horse Show
- May 16, 2009 - San Elijo Lagoon Day (Encinitas)
- May 22, 2009 - Public Works Week at Cardiff Elementary (Encinitas)
- May 24, 2009 – Chocolate Festival (Vista)
- June 6 & 7, 2009 – Fiesta del Sol (Solana Beach)
- June 7, 2009 - Encinitas Environment Day at Cottonwood Creek Park
- June 20, 2009 - Enviro Fair Day at the San Diego County Fair
- June 20, 2009 - A Day with Dad on the Trail (Encinitas)

Educational Materials Distributed

The Carlsbad Watershed Copermittees continued the distribution of the following items at special events, inspections, classroom presentation and other public interactive venues that were produced by the North County Storm Water Program during previous reporting periods:

- Construction brochure highlighting construction BMPs for large or small scale developments.
- North County watershed map ("We All Live in a Watershed" poster)
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Click-message pens
- San Diego County IPM program materials, including English and Spanish IPM Pest Tip Cards
- Personal pet waste bag dispensers

4.3.3 RIVER, CREEK AND BEACH CLEANUP EVENTS

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were 18 cleanup events held at 16 different sites throughout the Carlsbad WMA. 1,955 volunteers removed 18,459 pounds of trash and recyclables from the waterways. There were 854 volunteer who removed debris from the coastal beaches and 1101 volunteers who removed trash from inland waterways and lakes. **Table 4-7** provides a summary of the cleanup events.

Table 4-7 Summary of 2008-09 Clean Up Events

Date	Name	Location	# of Participants	# of pounds removed	Hydrologic Unit
4/25/09	Creek to Bay Cleanup	Buccaneer Beach	203	451	Loma Alta (904.1)
4/25/09	Loma Alta Creek Cleanup	Garrison Creek	99	2,000	Loma Alta (904.1)
4/25/09	Loma Alta Creek Cleanup	Ord Way			
4/25/09	Loma Alta Creek Cleanup	Smart & Final			
9/20/08	Coastal Cleanup Day	Buena Vista Creek – Fire Station #4	128	9,000	Buena Vista (904.2)
9/20/08	Coastal Cleanup Day	Buena Vista Creek – Chick's Sporting Goods			
9/20/08	Coastal Cleanup Day	Buena Vista Creek – Kohl's			
4/18/09	Earth Day Cleanup	Buena Vista Lagoon	250	2,000	Buena Vista (904.2)
5/2/09	Hosp Grove Cleanup	Hosp Grove	200	1,100	Buena Vista (904.2)
9/20/08	Coastal Cleanup Day	Buena Creek	70	2,400	Agua Hedionda (904.3)
4/25/09	Moonlight Beach	Encinitas	108	95	San Marcos (904.5)
9/20/08	Swami's Beach	Encinitas	263	244	San Marcos (904.5)
9/20/08	Dixon Lake	Escondido	212	407	Escondido (904.6)
4/25/09			55	87	
4/25/09	Cardiff State Beach-Cardiff Reef	Cardiff	73	200	Escondido (904.6)
9/20/08	San Elijo Lagoon at Rios Trailhead	Solana Beach	87	234	Escondido (904.6)
5/17/09	Fletcher Cove	Solana Beach	77	101	Escondido (904.6)
9/20/08			130	140	

Table 4-8 below provides a summary of the number of sites, number of volunteers and pounds of debris removed within each Carlsbad Hydrologic Unit.

Table 4-8 Summary of 2008-09 Clean Up Events by HA

Hydrologic Unit	# of sites	# of volunteers	Pounds of Debris removed
Loma Alta (904.1)	4	302	2,451
Buena Vista (904.2)	5	578	12,100
Agua Hedionda (904.3)	1	70	2,400
San Marcos (904.5)	2	371	339
Escondido (904.6)	4	634	1,169
Totals	**16**	**1,955**	**18,459**

4.4 COLLABORATIVE LAND USE PLANNING EFFORTS

This section describes collaborative land use planning efforts within the Carlsbad Watershed during FY 2009. The Carlsbad Watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual

reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

4.4.1 EDUCATION

The Carlsbad Watershed Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant re-development. In addition to the education and training that is provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego's development of a LID and Watershed Planning Education Activity. This activity is intended to educate local planning and sponsor groups on LID and watershed planning principles, practices, and requirements. The recommendations of local planning and sponsor groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. This education activity is intended to aid these advisory bodies in making informed recommendations on aspects of development projects that could affect watershed water quality. During the FY 2008-09, the County of San Diego made presentations to four local planning groups at least partially within the Carlsbad Watershed. These groups are listed here and additional information can be found in the LID and Watershed Planning Education for Community Planning and Sponsor Groups WURMP Water Quality Education Sheet located in the Appendices:

- Elfin Forest/Harmony Grove
- San Dieguito
- Twin Oaks
- Valley Center

4.4.2 CROSS-JURISDICTIONAL COMMUNICATION

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the Carlsbad Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the Carlsbad Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

4.5 5-YEAR STRATEGIC PLAN

4.5.1 NEW WATERSHED ACTIVITIES (FY 2010 AND FUTURE YEARS)

Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA. Watershed Activity Sheets can be found in **Appendix B.**

Each activity on the Watershed Activities List is fully described in an Activity Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQP(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Watershed Copermittees will implement identified Watershed Activities pursuant to the proposed schedule. For each Permit year, no less than two Watershed Water Quality Activities will be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's HPWQP(s). Watershed Water Quality Activities that are capital projects are in active implementation for the first year of implementation only.

4.5.2 UPDATED 5-YEAR STRATEGIC PLAN

This section describes the results of the Collective Watershed Strategy process described in the 2008 Carlsbad WURMP. The strategy was applied at the Hydrologic Area (HA) level to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first, identify water quality problems (where sufficient data is available). From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees could then make appropriate management decisions when selecting appropriate watershed water quality and education activities.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees will use available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented below is intended to supersede the earlier version presented in the 2008 Carlsbad WURMP and the FY 2008 Carlsbad WURMP Annual Report submitted in January 2009.

Table 4-9 Updated 5-Year Strategic Plan

Activity/Project Name		Jurisdiction(s)	Watershed Priorities			Implementation Schedule			
			Bacteria	Nutrients	Sediment	FY 2009	FY 2010	FY 2011	Future Fiscal Year(s)
Watershed Water Quality Activities									
CHU-WQA1	Residential Irrigation Runoff Reduction	CARLSBAD	X	X	X	WQI	-	-	-
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility	OCEANSIDE	X			WQI	A	-	-
CHU-WQA6	Escondido Creek Restoration	ESCONDIDO			X	WQI	A	A	A
CHU-WQA7	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	?	?	?	P	WQI	-	-
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek	COUNTY		X		WQI	-	-	-
CHU-WQA9	Focused Inspections along San Marcos Creek	SAN MARCOS		X		WQI	-	-	-
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks	COUNTY	X	X		WQI	WQI		
CHU-WQA11	Land Acquisitions	COUNTY	X	X	X	WQI	WQI		
CHU-WQA12	Upper San Marcos Creek Nutrient Management Plan	SM/COUNTY/ESC	X	X	X	WQI	WQI	WQI	WQI
CHU-WQA13	Buena Vista Creek Cleanup and Restoration	VISTA	X	X	X	WQI	-	-	-
CHU-WQA14	Water Quality Monitoring in Agua Hedionda Creek Watershed	COUNTY	X	X	X	M	M	-	-
CHU-WQA15	Water Quality Treatment Facility @ Palomar Airport	COUNTY	X	X	X	A	-	-	-
CHU-WQA16	Agua Hedionda Creek Restoration – SR-02+	VISTA			X	-	P	P	WQI

Table 4-9 Updated 5-Year Strategic Plan - Continued

Activity/Project Name		Jurisdiction(s)	Watershed Priorities			Implementation Schedule			
			Bacteria	Nutrients	Sediment	FY 2009	FY 2010	FY 2011	Future Fiscal Year(s)
Watershed Education Activities									
CHU-WQEA1	Residential Irrigation Runoff Reduction	CARLSBAD	X	X	X	WE	-	-	-
CHU-WQEA3	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	X	X	X	P	WE		
CHU-WQEA4	LID and Watershed Planning for Community Planning/Sponsor Groups	COUNTY	X	X	X	WE	-	-	-
CHU-WQEA5	LID Features in San Elijo Nature Center	COUNTY	X	X	X	WE	WE	-	-
CHU-WQEA6	SUSMP Workshop/Training	ALL	X	X	X	P	P	-	-
CHU-WQEA7	Bioassessment Training for High School Students	OCEANSIDE	X	X	X	WE	WE	-	-

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)

E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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5 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2009. In addition, there is an effectiveness assessment of the collective WURMP implementation.

The activity summary sheets presented in **Appendix B** include effectiveness assessment summaries for each water quality and education activity, as required in Order R9-2007-0001, I.2.a.(1).

5.1 PERMIT COMPLIANCE (LEVEL 1)

A basic compliance assessment is presented in **Table 5-1**. This table describes permit requirements set forth in Order R9-2007-0001, whether or not compliance was demonstrated by the watershed Copermittees in FY 2009, and where in this report, required compliance points are fulfilled or described.

Table 5-1 Permit Compliance

Targeted Outcome	Measure	Report Section
Update any watershed maps.	No changes	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the watershed.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
A description of Copermittee collaboration efforts including meeting as the Carlsbad WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date I meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not applicable at this time.	N/A

As shown in the table, the Copermittees were in compliance with all WURMP related Permit requirements during FY 2009.

5.2 MONITORING ASSESSMENT

5.2.1 MS4 SUMMARY

Current ambient monitoring efforts in the MS4 include the Dry Weather, MS4, and CSDM outfall monitoring programs. The Copermittees are currently participating in a regional portion of the MS4 outfall program that will collect and provide data in the MS4 during

storm events. The scope of this program is limited and may not provide local data within each HA. It is expected however, that over time, enough data will be collected to characterize storm water discharges from the MS4 during storm events. Currently, there are two random wet weather MS4 locations in the WMA, one in the San Marcos HA and one in the Escondido Creek HA.

5.2.2 RECEIVING WATER SUMMARY

Monitoring within the receiving waters is accomplished through the Regional Monitoring (MLS/TWAS), CSDM, Bight, and under the Lagoon Investigative Order Programs. Currently MLS are located at the base of Agua Hedionda and Escondido Creeks; TWAS are located at the base of Loma Alta and Buena Vista Creeks and upstream in Agua Hedionda and Escondido Creeks. There are currently no receiving water monitoring locations in the Encinas or San Marcos HAs. Historical MLS will remain as located. The intent of the TWAS was to be able to relocate stations in order to collect more relevant water quality information. The watershed group will consider future locations of the TWAS for the upcoming monitoring years.

5.3 WATERSHED ACTIVITY ASSESSMENTS

Each activity summary sheet in **Appendix B** of the WURMP identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measurable at levels 5 or 6. Levels 5 and 6 outcomes are typically measurable through cumulative assessments. **Tables 5-2** through **5-6** below, summarize the assessments of the water quality and education activities, on a hydrologic area basis, to provide a snapshot of the overall effectiveness of the watershed activities

In addition to the WURMP activities included in the tables, the WURMP Copermittees are presenting the JURMP activities that are related to the HPWQPs in each hydrologic area. It is important to note that not all JURMP activities are included in this presentation. This year's annual reporting effort is intended to be an initial presentation of JURMP activities that are conducted by WURMP Copermittees that are relatable based on hydrologic area of implementation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

Table 5-2 Summary of Implemented Activities for FY 2009 – 904.1 Loma Alta Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 08-09 included animal facilities, cemeteries, restaurants, and nurseries. Of the total 134 bacteria sources inventoried, 91% are restaurants. Approximately 79% of the restaurants were inspected, and overall 75% of the likely bacteria sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2009, 437 tons of material was removed from streets via street sweeping and 398 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Loma Alta Creek UV Facility	Water Quality	Bacteria	Level 4	Dry weather bacteria loads reduced via treatment at base of hydrologic area

Loma Alta Discussion

Major land use in the HA includes residential and open space, totaling approximately 60% of the land use in Loma Alta. Transportation, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, as this was identified as the only HPWQP in the HA.

Residential sources of bacteria include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. With the implementation of the Ultra Violet Treatment Facility, CHU-WQA2, bacteria is removed from the receiving waters prior to discharge to the Pacific Ocean. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Open space contributions of bacteria are most often uncontrollable and MS4 programs are not typically responsible for mitigating bacteria loads from this land use. However, contributions from open space can be significant. In the Loma Alta HA, the UV Facility is an excellent BMP to ensure that uncontrollable bacteria contributions to the receiving waters do not impact public health.

Other less predominant sources of bacteria in the HA include transportation, industrial/commercial, and municipal land uses. While the UV Facility removes the bacteria from these sources, it does not address the sources themselves. However, through implementation of the JURMP Activities, these sources are addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Table 5-3 Summary of Implemented Activities for FY 2009 – 904.2 Buena Vista Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2009 included animal facilities, restaurants, and nurseries. Of the total 397 bacteria sources inventoried, 92% are restaurants. Approximately 65% of the restaurants were inspected and 48% of the nurseries were inspected. Overall 63% of the likely bacteria sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2009, 648 tons of material was removed from streets via street sweeping and 2,115 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Buena Vista Creek Cleanup and Restoration	Water Quality	Bacteria and Nutrients	Level 4	Removed over 220 tons of debris and trash from creek channel

Buena Vista Discussion

The major land use in the HA is residential, comprising over 50% of the land use in Buena Vista. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, as this was identified as the only HPWQP in the HA.

Residential sources of bacteria include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. With the implementation of the Buena Vista Creek Cleanup Activity, CHU-WQA13 bacteria (and nutrient) loads were reduced in the Creek. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Other less predominant sources of bacteria in the HA include transportation, open space, industrial/commercial, and municipal land uses. Through implementation of the JURMP Activities, these sources are addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources

Table 5-4 Summary of Implemented Activities for FY 2009 – 904.3 Agua Hedionda Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2009 included agriculture, animal facilities, restaurants, golf courses, and nurseries. Of the total 270 bacteria sources inventoried, 69% are restaurants. Approximately 72% of the restaurants were inspected, and overall 67% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3 and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2009 included agriculture, animal facilities, golf courses, health services, and nurseries. Of the total 96 nutrient sources inventoried, 74% are nurseries. 59% of the nurseries in the HA were inspected. Overall, 49% of the likely nutrient sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2009 included construction sites, agriculture, animal facilities, contractors, general retail, golf courses, health services, and nurseries. Of the total 418 sediment sources inventoried (excluding construction sites), 71% are contractors and 17% are nurseries. Only 5% of the contractors were inspected, however 59% of the nurseries were inspected. Overall, 20% of the likely sediment sources that were not related to construction were inspected. The primary focus of likely sources of sediment are construction sites. During this FY, there were approximately 191 active construction sites in the HA that were inspected a total of 1678 times. The high priority sites were inspected an average of 13 times during the fiscal year.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2009, 630 tons of material was removed from streets via street sweeping and 1,501 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Nitrate Source Identification and Abatement: Buena Creek	Water Quality	Nutrients	Levels 1, 2, 3 and 4	Inspections resulted in education and BMP implementation
LID and Watershed Planning for Community Planning/Sponsor Groups	Water Education	Bacteria, Sediment and Nutrients	Levels 1, 2 and 3	Expected change in knowledge and BMP implementation
Bioassessment Training for High School Students	Water Education	Bacteria, Sediment and Nutrients	Level 2	Expected change in knowledge and potential BMP implementation

Agua Hedionda Discussion

The major land uses in the HA are residential, open space, and industrial/commercial comprising over 80% of the land use in Agua Hedionda. Transportation, municipal, and construction land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, sediment, and nutrients, as these were identified as the HPWQPs in the HA.

Residential sources of bacteria, sediment, and nutrients include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. With the implementation of the LID and

Watershed Planning Education for Community Planning and Sponsor Groups Activity, CHU-WQEA4, sources of all three high priority water quality problems are indirectly addressed. With the implementation of LID and SUSMP related BMPs, it is expected that pollutant loading will be reduced from residential areas, as well as others. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate the pollutants identified as high priority. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Industrial/commercial sources of bacteria, sediment, and nutrients include activities such as grounds/landscape maintenance, surfaces and washing, over irrigation, sewer/septic problems, and materials management issues among others. Through a combination of activities, including the three Watershed Activities, the JURMP commercial/industrial inspections programs, and complaint response programs, the likely sources of the HPWQPs are being addressed.

Other less predominant sources of bacteria, sediment, and nutrients in the HA include transportation, municipal, and construction land uses. The WURMP activities implemented in the HA did not address these sources directly. However, with the JURMP Activities, each of these land uses/sources are specifically addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Table 5-5 Summary of Implemented Activities for FY 2009 – 904.5 San Marcos Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3 and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2009 included agriculture, animal facilities, golf courses, and nurseries. Of the total 191 nutrient sources inventoried, 69% are nurseries. Only 26% of the nurseries in the HA were inspected, while 100% of the agriculture and golf facility sources were inspected. Overall, 26% of the likely nutrient sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2009, 1,224 tons of material was removed from streets via street sweeping and 739 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Upper San Marcos Creek Nutrient Management Plan	Water Quality	Bacteria, Sediment and Nutrients	Levels 1, 2, 3 and 4	Through education and outreach, inspections and BMP implementation, pollutant loading is expected to decrease
Focused Inspections Along San Marcos Creek	Water Quality	Bacteria, Sediment and Nutrients	Levels 1, 2, 3 and 4	Inspections resulted in education and BMP implementation
LID and Watershed Planning Workshops	Water Education	Bacteria, Sediment and Nutrients	Levels 1, 2 and 3	Expected change in knowledge and BMP implementation

San Marcos Discussion

The major land use in the HA is residential. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on nutrients, as this was identified as the only HPWQP in the HA.

JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate nutrients. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections). JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Other less predominant sources of nutrients in the HA include transportation, open space, industrial/commercial, and municipal land uses. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Table 5-6 Summary of Implemented Activities for FY 2009 – 904.6 Escondido Creek Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2009 included agriculture, animal facilities, restaurants, golf courses, nurseries, and parks. Of the total 501 bacteria sources inventoried, 83% are restaurants. Approximately 94% of the restaurants were inspected, and overall 85% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3 and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2009 included agriculture, animal facilities, golf courses, health services, nurseries, and parks. Of the total 98 nutrient sources inventoried, 48% are nurseries, 38% of which were inspected. Overall, approximately 49% of the likely nutrient sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2009 included construction sites, agriculture, animal facilities, contractors, general retail, golf courses, health services, mining, nurseries, and parks. Of the total 523 sediment sources inventoried (excluding construction sites), 65% are contractors, 15% are general retail, and 9% are nurseries. 85% of the contractors were inspected, however 85% of the general retails were inspected, and 38% of the nurseries were inspected. Overall, 78% of the likely sediment sources that were not related to construction were inspected. During this FY, there were approximately 372 active construction sites in the HA that were inspected a total of 3059 times. The high priority sites were inspected an average of 29 times during the fiscal year.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2009, 371 tons of material was removed from streets via street sweeping and 2,141 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Pet Waste Bag Dispenser Program in County Parks	Water Quality	Bacteria and Nutrients	Levels 1, 2, 3 and 4	Direct reduction in loading due to implementation of BMP
Land Acquisitions	Water Quality	Bacteria, Sediment and Nutrients	Level 4	Loading associated with potential development is eliminated
Escondido Creek	Water Quality	Sediment	Levels 1, 3 and 4	BMPs were implemented in the restoration project and gabion structures were implemented to reduce loading potential
LID Features in San Elijo Nature Center	Water Education	Bacteria, Sediment and Nutrients	Levels 1, 2 and 3	Expected change in knowledge and BMP implementation
LID and Watershed Planning for Community Planning/Sponsor Groups	Water Education	Bacteria, Sediment and Nutrients	Levels 1, 2 and 3	Expected change in knowledge and BMP implementation

Escondido Creek Discussion

The major land uses in the HA are open space and residential, comprising over 75% of the land use in Escondido Creek. Transportation, municipal, and construction land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, sediment, and nutrients, as these were identified as the HPWQPs in the HA.

Residential sources of bacteria, sediment, and nutrients include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. With the implementation of the LID and Watershed Planning Education for Community Planning and Sponsor Groups Activity, CHU-WQEA4, sources of all three HPWQPs are indirectly addressed. With the implementation of LID and SUSMP related BMPs, it is expected that pollutant loading will be reduced from residential areas, as well as others. Other activities such as the Escondido Creek Restoration, Pet Waste Dispenser Program, and Land Acquisitions focused on the appropriate water quality problems in the HA and indirectly focused on residential sources/causes of the problems.

JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate the pollutants identified as high priority. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections). Because of the relative potential for contributions from residential areas, based on the land use percentages, future WURMP activities focusing on residential sources of pollutants may be appropriate in this HA.

Other less predominant sources of bacteria, sediment, and nutrients in the HA include transportation, municipal, and construction land uses. The WURMP activities implemented in the HA did not address these sources directly. However, with the JURMP Activities, each of these land uses/sources are specifically addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

5.4 Assessment of Overall WURMP Effectiveness

Based on the individual HA assessments provided above, it appears that the monitoring and activities occurring in the Carlsbad Watershed are effectively addressing the HPWQPs identified in the watershed. Activities occurring in the watershed appear to be addressing the appropriate water quality problems. The assessments this year provided an integrated look at WURMP and JURMP activities to show the level of effort occurring in each HA with respect to identified problems and sources. Generally, the activities cover the appropriate sources well.

6 CONCLUSIONS AND WURMP IMPROVEMENTS

6.1 OVERVIEW

The Carlsbad Watershed Management Area (WMA) is unique because it consists of six individual hydrologic areas (HAs) or watersheds. To effectively address the WMA's water quality issues (bacteria, sediment, and nutrients), the Copermittees identified and then evaluated the high-priority water quality problems for likely sources at the individual HA level. As a result of examining each HA in the WMA, the Copermittees identified some general conclusions. It appears that the water quality activities occurring in the Carlsbad Watershed are effectively addressing the high-priority water quality problems identified in the watershed. Broadly, potential improvements as resources allow, include the following: 1) further source characterization and identification of residential land use since it comprises the majority of the Carlsbad Watershed; and 2) minor amendments to the monitoring program to ensure better coverage and more detailed information. However, to demonstrate the comprehensive level of effort already occurring in each HA with respect to identified problems and sources, listed below are individual HA assessments:

6.1.1 LOMA ALTA

The major land use in this HA includes residential and open space, totaling approximately 60 percent of its overall land use. Based on monitoring data, the high-priority water quality problem is bacteria. Residential sources of bacteria include activities such as over-irrigation, sanitary sewer overflows, landscape maintenance, pet waste, etc. JURMP activities addressing residential sources include complaint response, dry weather urban runoff monitoring and source identification, and inspections of treatment control BMPs, as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach focused on the residential community through the Copermittees' jurisdictional program. While JURMP activities do address a variety of residential sources by employing a multi-prong approach, many are reactive in nature (i.e., complaint response) and/or limited in scope (i.e., treatment control inspections). Because of the widespread and diffuse potential for contributions from residential areas that constitute 32 percent of the Loma Alta HA, the continued development of WURMP activities focused on residential sources of bacteria may be considered in the future as resources allow.

6.1.2 BUENA VISTA

The major land use in this HA is residential, comprising over 50 percent of the land use in Buena Vista. Based on monitoring data, the high-priority water quality problem is bacteria. Residential sources of bacteria include activities such as over-irrigation, sanitary sewer overflows, septic system overflows, landscape maintenance, various washing activities and pet waste. With the implementation of the Buena Vista Creek Cleanup Activity, bacteria loads were reduced. However, the activity does not address residential sources of bacteria. JURMP activities addressing residential sources include complaint response and inspections of treatment control BMPs, as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach delivered to the residential community through the Copermittees' JURMP programs. While JURMP activities do address a variety of residential sources by employing a multi-prong approach, many are reactive in nature (i.e., complaint response) and/or limited in scope (i.e., treatment control inspections). Because of the widespread and diffuse potential for contributions from residential areas that constitute 50 percent of the Buena Vista HA, the continued development of WURMP activities focused on residential sources of bacteria may be considered in the future as resources allow.

6.1.3 AGUA HEDIONDA

The major land uses in the HA are residential, open space, and industrial/commercial, which comprise over 80 percent of the land use in Agua Hedionda. Transportation, municipal, and construction land uses are all present as well and produce the high-priority pollutants identified for the area: bacteria sediment, and nutrients.

Residential, industrial/commercial, and other less predominant sources of bacteria, sediment, and nutrients include an array of activities, such as over-irrigation, sanitary sewer overflows, septic system overflows, landscape maintenance, various washing activities and pet waste. With the implementation of LID and SUSMP-related BMPs, as well as some other watershed water quality activities, it is expected that pollutant loading will be reduced from residential as well as other areas. JURMP activities addressing residential and other sources, such as outreach, industrial/commercial inspections, complaint response, and inspections of treatment control BMPs, also reduce pollutant loading in the HA. Because of the widespread and diffuse potential for contributions from residential, open space, and industrial commercial areas that constitute 80 percent of the Agua Hedionda HA, the continued development of WURMP activities focused on residential sources of pollutants may be appropriate. Additionally, while JURMP programs do inspect and educate large numbers of businesses in the HA, improvements to inspection selection and methodology may improve their effectiveness over time.

6.1.4 SAN MARCOS

The major land use in the HA is residential. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may also contribute to pollutant loading. Based on water quality monitoring data, nutrients are identified as the only high-priority water quality problem in the HA. Residential sources of nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, and pet waste. With the implementation of the Upper San Marcos Creek Nutrient Management Plan Project, nutrient loads are expected to be reduced in the HA over time. JURMP activities, such as complaint response and inspections, do address residential sources but could be improved in conjunction with the watershed program. Additionally, given the potential for residential pollutant loading, WURMP activities focused on reducing nutrients may be considered in the future as resources allow.

6.1.5 ESCONDIDO CREEK

The major land uses in the HA are open space and residential, which comprise over 75 percent of the total land use in Escondido Creek. Based on water quality monitoring, bacteria, sediment, and nutrients are identified as the high-priority water quality problems in the HA. Residential sources of bacteria, sediment, and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. With the implementation of the LID and Watershed Planning Education for Community Planning and Group Sponsor Activity, sources of all three high-priority water quality problems are foundationally addressed. It is expected that with the additional implementation of LID and SUSMP-related BMPs, pollutant loading will be reduced from residential as well as other land use areas over time. While JURMP program activities, such as complaint response and inspections, are designed to reduce or prevent high-priority pollutants, more residential-focused WURMP activities may be considered in the future as resources allow.

6.1.6 INVESTIGATIVE ORDER R9-2006-076 MONITORING

In FY 2007, the RWQCB issued Investigation Order R9 2006-076 for monitoring associated with Lagoon TMDL modeling. The Lagoon TMDL Investigation Order has resulted in the collection of a significant amount of hydrologic, hydraulic and water quality data for the four lagoons and their associated watersheds. Through monitoring during FY 2008, a significant amount of data was collected in order to calibrate and validate the TMDL models for pollutant load allocation. In FY 2009, monitoring conducted for the TMDL Order consisted of samples within several lagoons within the Carlsbad Watershed, including the San Elijo, Agua Hedionda, and Buena Vista Lagoons, as well as the Loma Alta Slough. Overall, lagoon monitoring was completed in compliance with the established regional work plan. The collected data will be included in future analyses in determining priorities for the WURMP Copermittees.

6.1.7 COLLABORATION WITH REGIONAL WATER QUALITY CONTROL BOARD (RWQCB)

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The report also recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language, where necessary, to better develop and meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The Carlsbad WURMP Copermittees continued their involvement in this process during the FY 2009 reporting period by collaborating with the Regional Board staff to revise the current Watershed permit component. However, the Regional Board deferred this revision to the next permit cycle to better integrate it with other affected permit components and/or programs.

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REFERENCES

San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Final Report, Weston, January 2010.

Carlsbad Watershed Urban Runoff Management Program, Los Peñasquitos WURMP Copermittees, March 2008

Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The WURMP Copermittees' FY 2009 (July 1st, 2008 through June 30th, 2009) JURMP Annual Reports were used to determine quantities of inventories. The WURMP Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1. Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2. Identified the Copermittees' total activity quantities for the following activities from the FY 2009 JURMP Annual Reports:
    1. Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
    2. Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3. Determined the amount of urban land use in each Copermittees' jurisdiction
4. Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City
5. Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation is as follows:

Copermittee Activity Quantity * % of land use in each HA for Activity Type = Copermittees's contribution to the HA

6. Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1
Jurisdiction A collected 800 tons of material from street sweeping in FY 2009

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2009

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1
Jurisdiction C collected 250 tons of material fro street sweeping in FY 2009

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:
800 tons of material *(250 urban land use acres/1,000 urban land use acres) = 200 tons

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:
1,000 tons of material *(1,250 urban land use acres/2,000 urban land use acres) = 625 tons

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:
250 tons of material *(500 urban land use acres/500 urban land use acres) = 250 tons

The total amount of estimated street sweepings collected in HA1 is 200+625+250=**1,075 tons**

Appendix B

Carlsbad Watershed Activity Sheets

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Carlsbad Watershed Water Quality Activity Sheets

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TITLE: **RESIDENTIAL IRRIGATION RUNOFF REDUCTION**
ID #: **CHU-WQA1**

ACTIVITY IMPLEMENTATION

A pilot singe-family residential area in a sub-watershed was selected to evaluate the load reduction potential related to reducing irrigation runoff. The expected results included reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in the pilot area, and reduction in irrigation runoff flow in the pilot area. Planned activities included:

- Using Dry Weather Monitoring Program results, BLTEA information, and field knowledge to select a pilot area.
- Collecting pre-pilot flow data in pilot drainage area, and calculating estimated pollutant loads.
- Working with volunteer residences and sites with irrigation runoff to review water usage, conduct water assessment and leak detection as necessary.
- Field reconnaissance to check for corrective action completion.
- Collecting post-pilot flow measurements in pilot drainage area, and calculating estimated pollutant loads.
- Measuring effectiveness of overall program by calculating any reduction in pollutant loading through reduction in over-irrigation.
- Coordinating education through CHU-WQEA1.

During FY 08-09, implementation activities included pre-pilot outfall flow measurement, initial outreach to the 91 single-family residences in the pilot area, personal assistance, doorhangers, and audits. Post-pilot outfall flow measurement and assessment followed. Note that all flow measurements were conducted > 72 hours after a rain event.

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

During FY 08-09, schedule of implementation occurred as follows:

- Pre-pilot flow measuring occurred in December 08 and January 09. The original start date was November, but the schedule was delayed due to rain events. Flow measurements were also originally scheduled to cover Monday - Friday consecutively, but the schedule was delayed and weekdays were split over December and January due to rain events in December and vandalism of the weir in January.
- Initial outreach occurred in February 09.
- Field reconnaissance, personal one on one assistance, and audits were conducted during February, March and April 09.
- Post-pilot flow measuring occurred in May 09.
- Effectiveness assessment occurred in June 09.

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad
- All watershed members participated during the planning phase of this activity. City of Carlsbad personnel participated in the implementation phase of the activity.

OTHER PARTICIPATING AGENCIES

- Carlsbad Municipal Water District Employees

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, sediment, and nutrients as high priority water quality pollutants in the Agua Hedionda (904.3 – bacteria and sediment), Buena Vista (904.2 – bacteria), and San Marcos Creek (904.5 – nutrients) Hydrologic Areas. Bacteria, sediment, and nutrients have been identified as potential discharges from over-irrigation. This activity addresses high priority water quality problems and potential source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS MEASUREMENTS

A reduction of flow after working with applicable residents was the targeted outcome of this activity and was assessed by measuring irrigation runoff flow after the pilot was completed. Implementation effectiveness was measured by evaluating pre and post-flow surveys (Level 4 Outcome).

Pre-pilot flow measurements showed an average flow of 2.66 gpm between 6-8:30 AM, and .15 gpm between 3-4 PM. Post-pilot flow measurements showed an average flow of 1.89 gpm between 6-8:30 AM and .08 gpm between 3-4PM. This equals a savings of .77 gpm in the AM, and .07 gpm in the PM.

Using a measurement time of 150 minutes and only looking at the AM measurements, the total gallons saved in the AM per day equals 115.5 gallons. Assuming 5 watering days/week, the total saved in the AM per week equals 577.5 gallons, or 30,030 gallons per year. Dividing this total by 91 homes, and extrapolating to the Carlsbad population of 105,000 (Sept. 2009 City of Carlsbad website) equals 34,650,000 gallons saved per year. It is assumed that any pollutants transported by this water would also be reduced.

Exact pollutant load reductions could not be measured during this pilot, and time did not allow comparison to reference studies.

TITLE: **LOMA ALTA CREEK ULTRAVIOLET RADIATION STORM WATER TREATMENT FACILITY**
ID #: **CHU-WQA2**

ACTIVITY DESCRIPTION

This project involves the construction of a filtration and ultraviolet (UV) radiation storm water treatment facility to be located adjacent to the Loma Alta Creek outlet in the City of Oceanside. One hundred percent of the dry weather creek flows (averaging 300 to 700 gallons per minute) will be intercepted at the outlet and diverted to the UV storm water treatment facility.

The treatment facility consists of piping flows from an exiting diversion structure by gravity from the lagoon through a 2 micron fine screen to a wet well where the flow is pumped into two large sand filters followed by two UV disinfection units housed in a reinforced concrete building. Once treated, water will discharge through a pipe that will extend along the existing section of rip-rap that runs along the north side of the Loma Alta Creek outlet at Buccaneer Beach. During wet weather months, the lagoon would be opened to allow free flow to the ocean and the UV system would be bypassed.

This project is located where Loma Alta Creek discharges to the Pacific Ocean at Buccaneer Beach. The watershed is mostly in the City of Oceanside with the headwaters within the City of Vista. Buccaneer Beach is a family beach adjacent to a park that is heavily used during dry months. The City determined that a key source of bacteria and nutrients are urban runoff from the 6,400 acre Loma Alta Watershed, which is densely developed with residential, commercial and industrial land uses. While nutrients promote algae growth in the lagoon and cause nuisance odors, the high bacteria levels in the creek flow to the ocean directly impacts the ocean water quality at Buccaneer Beach. To reduce the numerous beach postings and closures at this popular beach the City decided to apply for a Clean Beach Initiative Grant to construct an UV treatment facility to treat the dry weather flows in the Loma Alta creek prior to discharging the water to the beach. A $5,000,000 Proposition 40, Clean Beach Initiative Grant, was awarded to the City on January 24, 2007 to design and build the UV treatment facility.

The increased presence of bacteria and pathogens in the watershed poses a threat to REC-1 and REC-2 beneficial uses and results in increased number of beach closures at the Loma Alta Creek outlet at Buccaneer Beach. This project will address the bacterial issue through filtration and UV disinfection. The anticipated project goal is to eliminate beach closures during the dry months at Buccaneer Beach in Oceanside, California. This will be achieved by diverting the flow from the Loma Alta Lagoon through a UV treatment facility prior to discharging the flow onto the shoreline. The City will monitor the UV treated storm drain outlet and the surf zone for bacteria for the end of the 2008 and all of the 2009 AB411 period. The approved Monitoring Plan and Quality Assurance Project Plan developed for this project will be implemented

Prior to the construction, a Final Monitoring Plan and Quality Assurance Project Plan (QAPP) was developed and approved by the State Water Resources Control Board (SWRCB) in June of 2007. This plan listed the sample frequency, locations and methods for testing the effectiveness of the treatment system. The monitoring plan would begin once the UV treatment facility was operational. The California Coastal Commission approved Permit No. 6-06-152 for construction of the outfall pipe associated with the UV treatment facility on June 14, 2007. Loma Alta Creek UV Treatment Facility project entered into the construction phase on August 13, 2007 when the official Notice to Proceed was issued to Orion Construction Corporation. The construction was completed in July 2008, testing ran through August 2008 and the UV treatment facility began

discharging to the ocean in September 2008. All monitoring indicated that the system functions as expected and the surf zone samples all met AB411 limits.

ACTIVITY IMPLEMENTATION

During FY 08-09, The Loma Alta Creek Ultraviolet Light Treatment Facility started treatment in June 2009 and continued throughout the summer. The plant typically ran three to four days a week with average flows of 300 gallons per minute. No water was discharged onto the beach when the UV Facility was offline. Flows were lower than expected due to drought conditions and conservation efforts of Oceanside residents.

Water samples were taken weekly from Buccaneer Beach directly in front of the discharge pipe and seventy-five feet north and south of the discharge pipe. The samples were tested for total and fecal coliform and Enterococcus. All samples taken during summer 2009 met California Department of Health Services AB411 Objectives and there were no postings due to bacterial levels exceeding standards set by the County Department of Environmental Health. The UV Facility will run through September 2009 unless heavy rains arrive earlier than expected.

TMDL APPLICABILITY

The RWQCB and Copermittees are developing a Bacteria-Impaired Waters TMDL Project II for Lagoons and adjacent beaches and creeks, which includes Loma Alta Creek slough. This project will assist in the implementation of this TMDL by reducing bacterial contamination in the impaired segment of Loma Alta Slough and the Pacific Ocean shoreline. Just over eight acres of the Loma Alta Slough are included on Section 303(d) of the federal Clean Water Act list of impaired water bodies for bacterial indicators and eutrophication within the slough and for 1.1 miles of coastline at the opening.

TIME SCHEDULE FOR IMPLEMENTATION

This project began operation in June 2009 and is complete. It will continue to operate annually between the months of May and September.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential, commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The benefit of this project is to eliminate beach postings and closures due to bacteria level exceedances from dry weather flows that reach the Pacific Ocean shorline.

EFFECTIVENESS ASSESSMENT

A Project Assessment and Evaluation Plan (PAEP) was developed to define how to measure the effectiveness of the UV treatment facility. A Final Monitoring Plan and Quality Assurance Project Plan (QAPP) defines the monitoring program that measures water quality prior to and during facility operation. Monitoring for total and fecal coliform and enterococcus will be conducted at several locations: In the lagoon prior to water entering the UV facility, within the plant prior to and after UV treatment, and at the shoreline at the discharge point and in the coastal mixing zone (Level 5 and 6). After a complete dry season of testing (May through September 2009), a final effectiveness report will be generated using all of the data. The facility will be considered effective if the treated discharge from the UV facility meets the 30 day average Rec-1 Water Quality Standards set forth in the Ocean Plan. This will ensure that the surf zone will meet the same limits after mixing occurs.

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TITLE: **ESCONDIDO CREEK RESTORATION**
ID #: **CHU-WQA6**

ACTIVITY IMPLEMENTATION

This restoration project is designed to improve water quality associated with Escondido Creek. The effort focuses on a segment of Escondido Creek located off Harmony Grove Road within unincorporated County of San Diego lands. The intent of the project is to implement bioengineering solutions to help correct stream bank and bed erosion on a segment of the creek known to exhibit severe erosion by installing gabion baskets and live plant material to stabilize the eroded bank.

The project was completed in early November 2008 and included the installation of gabion baskets with live biological material to stabilize the eroding creek wall. Moreover, the eroded stream bank was cut/excavated to take advantage of natural conditions revealed with grading. Gabion baskets filled with a combination of rock and soil were placed within the bank upon completion of the grading. During the infilling process of the baskets, native wetland trees and vines, including willow species, were placed within each layer of the gabions to serve as the live biological material.

Follow-up monitoring will occur during the first two consecutive winter storm periods in 2009 through 2013 to document the physical and biological performance of the project. The monitoring will include an assessment of channel morphology, sediment loss and accumulation, the condition of any structural or non-structural materials, biological habitat growth conditions, and the overall effectiveness in stream erosion stabilization and sediment capture. All of these characteristics will be evaluated against the performance of a similar untreated reference area monitored during the same period.

TMDL APPLICABILITY

This activity is planned for implementation in compliance with the TMDLs established for sediment associated with Escondido Creek.

PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA (WMA) collective watershed strategy identifies sediment, as a high priority water quality pollutant in the Escondido Creek Hydrologic Area (904.6). Stream bank and bed erosion have been identified as potential discharges of sediment. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Copermittees expect that implementation of this restoration effort will result in the reduction of sediment in Escondido Creek and improve the overall condition of the habitat and waters of the creek.

EFFECTIVENESS ASSESSMENT

This restoration effort is designed to improve the condition of the habitat and waters of Escondido Creek and improve the water quality of downstream water bodies (Level 6).

The effectiveness of the effort will be assessed through the evaluation of data from continuing water quality monitoring efforts. Data collected after implementation of the restoration project will be compared with data from previous monitoring efforts and analyzed to determine potential reduction in associated pollutant loads.

TITLE: **STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS**
ID #: **CHU-WQA7**

ACTIVITY IMPLEMENTATION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Carlsbad Watershed include:

- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

The SWQMP for SDA 9 and SDA 10 is in the process of being drafted.

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2010-11. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2012.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined.

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS ASSESSMENT

To be determined.

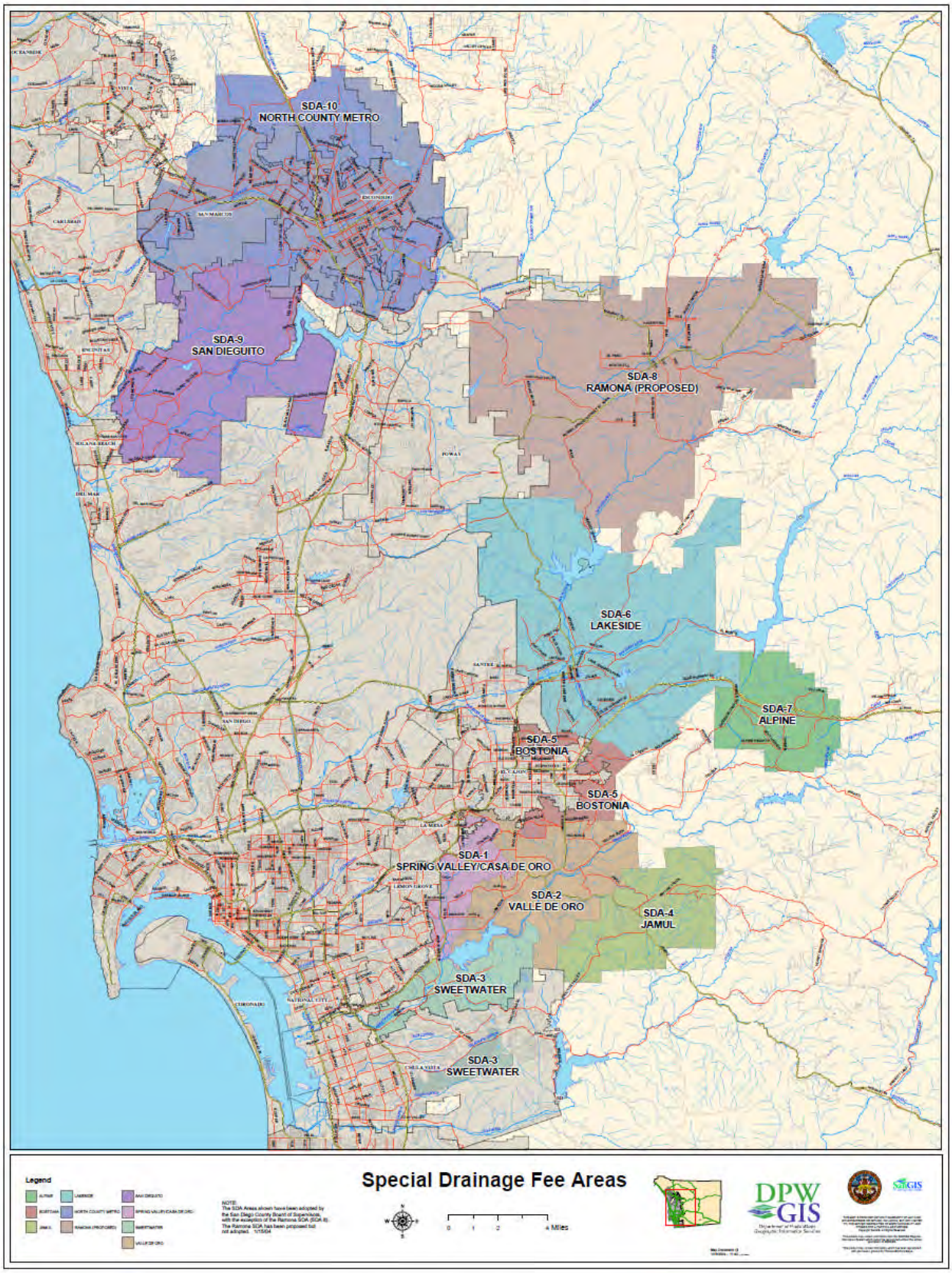
SDA-10
NORTH COUNTY METRO
SDA-9
SAN DIEGUITO
SDA-8
RAMONA (PROPOSED)
SDA-6
LAKESIDE
SDA-7
ALPINE
SDA-5
BOSTONIA
SDA-5
BOSTONIA
SDA-1
SPRING VALLEY/CASA DE ORO
SDA-2
VALLE DE ORO
SDA-4
JAMUL
SDA-3
SWEETWATER
SDA-3
SWEETWATER
Legend
Special Drainage Fee Areas
DPW
GIS

TITLE: **NITRATE SOURCE IDENTIFICATION AND ABATEMENT: BUENA CREEK**
ID #: **CHU-WQA8**

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels in Buena Creek. Nitrate concentrations have been observed to exceed dry weather action levels at the County's CAR 05 dry weather monitoring station (Buena Creek at Robelini Drive). The State of California, which collected data from a nearby location in 2002 as part of its Surface Water Ambient Monitoring Program (SWAMP), also identified nitrates as an issue of concern . Buena Creek is listed as impaired for nitrates/nitrites on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments.

ACTIVITY IMPLEMENTATION

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. All 26 nurseries in the CAR 05 drainage area were inspected during FY 08/09.
- Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site. The University of California Co-operative Extension Service Self-Assessment for Greenhouses and Nurseries and Management Options for Nonpoint Source Pollution, Greenhouse and Container Crop Industries documents were provided where appropriate and the sections on nutrients were reviewed.
- Notice of Violations were issued and follow up inspections were conducted whenever non-compliances were found at the nurseries. During FY 2008-09, excluding paperwork violations, only six nurseries out of 26 had one or more best management practice non-compliance (See Effectiveness Assessment – Inspection Summary). No nurseries were identified as direct sources of nitrates.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned Tasks	FY 07/08	FY 08/09	Status
Compile an inventory and map of potential nutrient sources in the CAR 05 drainage area.	X		Complete
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	X		Complete
Perform frequent water quality screenings for nutrients and other parameters at CAR 05	X	X	Ongoing
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	Complete
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	80% Complete
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS ASSESSMENT

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the CAR 05 drainage area.	1	Completion	Yes
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at CAR 05	1	4 field screenings / yr at CAR 05	Yes
	6	Reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012	To be determined
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the CAR 05 drainage area by June 2009	Yes
	3	Reduction in nursery BMP violations observed during nursery inspections in the CAR 05 drainage area by 2010	81% Complete 21 of 26 nurseries improved compliance or had continuous compliance.
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the CAR 05 drainage area by 2012	27% Complete Baseline scores have been recorded for all 26 nurseries. 7 of 13 nurseries with multiple scores had improved SKA scores.

Inspection Summary

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA score Over Time	TTWQ
Acosta Plants	8/26/2009	0	6	Yes	Same	High
	6/2/2009	0	N/A			
	5/7/2009	2	6			
	2/21/2007	0	N/A			
	1/31/2007	2	N/A			
	2/10/2005	3	N/A			
Altman Specialty Plants #06	2/18/2009	0	10	Yes	N/A	Medium
	8/16/2005	0	N/A			
	8/24/2004	0	N/A			
	5/4/2004	5	N/A			
Apgar Nursery	5/14/2009	0	9	No Violations	Yes	Low
	2/29/2008	0	8			
Azaleawood Nursery	5/22/2009	0	8	No Violations	N/A	Low
	4/8/2009	0	N/A			
C & J Cactus Nursery #2	5/26/2009	1	5	No	No	Low
	4/18/2008	0	10			
Cactus Classics	5/22/2009	4	4	No	N/A	Low
	3/8/2007	2	N/A			
	9/22/2004	4	N/A			
Cal Tropical Fruit Nursery #2	5/12/2009	3	3	Yes	N/A	Medium
	6/19/2007	0	N/A			
Deer Springs Gardens	5/12/2009	1	6	No	N/A	High
	3/4/2008	0	N/A			
Grigsby Cactus Gardens	7/21/2009	0	N/A	Yes	N/A	Low
	5/21/2009	3	6			
	6/21/2007	0	N/A			
H & P Sales Aka Growing Concepts	7/17/2009	0	10	Yes	N/A	Low
	6/20/2007	0	N/A			
	5/8/2006	0	N/A			
	3/6/2006	2	N/A			
	7/13/2004	0	N/A			

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA score Over Time	TTWQ
	3/15/2004	12	N/A			
Lone Oak Rancho Nursery	7/14/2008	0	8	N/A	N/A	Medium
Multiflora	2/2/2009	0	10	Yes	Same	High
	5/2/2008	1	10			
	2/14/2005	0	N/A			
Nature Designs Landscaping	9/9/2009	0	7	Yes	Yes	High
	4/18/2008	2	5			
Orchidsource Laboratory & Nursery	1/30/2009	0	9	Yes	Yes	Medium
	6/10/2008	0	7			
	4/11/2007	0	N/A			
	3/24/2006	0	N/A			
	12/30/2005	3	N/A			
Peacefield Farms	5/18/2009	3	7	No	Yes	Medium
	3/3/2008	1	5			
	2/18/2005	0	N/A			
Progressive Growers Inc #1	7/20/2009	0	6	Yes	No	High
	5/20/2009	1	9			
	1/26/2009	0	N/A			
	6/13/2008	1	10			
	1/4/2007	1	N/A			
Progressive Growers Inc #2	5/20/2009	1	9	No	No	Low
	6/13/2008	0	10			
	1/4/2007	0	N/A			
Silhouettes Of The Desert #1	8/19/2009	0	6	Yes	Yes	High
	1/23/2009	6	5			
	6/17/2008	7	2			
	1/31/2006	1	N/A			
	3/8/2005	2	N/A			
Silhouettes Of The Desert #2	7/14/2008	0	5	Same	N/A	Low
	2/16/2007	0	N/A			
Sonrise Growers	1/23/2009	1	8	Yes	Same	High

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA score Over Time	TTWQ
	6/23/2008	2	8			
Sunhill Ranch LLC	7/16/2009 5/12/2009	0 2	7 6	Yes	Yes	Medium
T M Palms And Shrubs	9/9/2009	0	6	Yes	No	Low
Tom Piergrossi Landscape & Vintage Green Farms	6/2/2009 7/11/2008	0 1	8 8	Yes	Same	Low
Tomlinson Select Nurseries	5/26/2009 6/26/2008 3/1/2007 3/15/2006 5/9/2005	0 0 0 0 5	8 10 N/A N/A N/A	Yes	No	Low
Venegas Creek Roses #1	6/26/2008	0	5	N/A	N/A	Low

*Does not include paperwork violations.

TITLE: **FOCUSED INSPECTIONS ALONG SAN MARCOS CREEK**
ID #: **CHU-WQA9**

ACTIVITY IMPLEMENTATION

During the reporting period, the City of San Marcos completed follow-up inspections of commercial/industrial properties along a direct tributary channel to San Marcos Creek known as Antique Village. The commercial/industrial inspections occurred in the tributary area of San Marcos Creek from Grand Avenue to Via Vera Cruz. Initially, fifteen properties were identified and inspected in December 2007. The follow-up inspections conducted for this reporting period included the same businesses inspected in December 2007, except for one business that either moved or went of business. Fourteen properties were identified and inspected in April 2009. The inspections reviewed current BMP implementation practices and identified businesses that needed additional awareness of BMPs in order to abate potential pollutants into the channel. Additionally, the inspections were utilized to identify any potential sources of elevated pollutants, such as nutrients. The purpose of the follow-up inspections was to provide an overall assessment of changes compared to the December 2007 inspections. In general, inspection results from the December 2007 inspections to the April 2009 inspections remained largely the same. Most facilities were in compliance both years.

TMDL APPLICABILITY

While it may be supportive of TMDL Goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The actual implementation schedule meets the time schedule established in the 5-year strategic plan. No changes are necessary. The activity was not implemented in compliance with a TMDL.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Marcos

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies nutrients as a high priority water quality pollutant in the San Marcos Creek Hydrologic Area (904.5). Commercial and industrial land uses have been identified as potential dischargers of nutrients. This activity addresses a high priority water quality problem and potential source of the problem within the watershed. Therefore, the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

Watershed: Carlsbad			
FOCUSED INSPECTIONS ALONG SAN MARCOS CREEK Assess the Efficiency and Effectiveness of Inspections along San Marcos Creek			
Planned Task	**Level**	**Targeted Outcome**	**Assessment Method(s)**
Conduct Targeted Inspections	1	Inspection of 100% of all business adjacent to tributary channel (Antique Village) to San Marcos Creek	100% of businesses were inspected in Antique Village during the April 2009 inspections. One business moved or went out of business compared to 2007.
Evaluate inspection effectiveness and changes in awareness and implementation of BMPs	3	Reduction in BMP-related violations compared with 2007 inspections	In general, inspection effectiveness was minimal. Two facilities were found to have BMP violations for both inspection periods. However, BMP-related improvements were noted for both facilities during the 2009 inspections. BMP assessment scores and knowledge assessment median scores remained relatively the same from December 2007 to April 2009. Based on this evaluation, similar future focused studies should include a higher frequency of inspections and include a monitoring program to determine effectiveness.

TITLE: **PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS**
ID #: **CHU-WQA10**

ACTIVITY IMPLEMENTATION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

No additional stations were added in the FY 2008-09. During this reporting period the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed. The parks and the number of dispensers include:

- San Elijo Lagoon Ecological Reserve (11 dispensers)
- San Dieguito County Park (5 dispensers)

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy

EFFECTIVENESS ASSESSMENT

Facility Name	FY 08-09		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
San Elijo Ecological Reserve	11	35,000	7,000
San Dieguito Park*	5	16,150	3,230
Total	**16**	**51,150**	**10,230**

*San Dieguito County Park is counted in both the Carlsbad and San Dieguito HU Totals

Cumulatively, the County maintains 16 stations among the two County Parks within the Carlsbad Watershed. These stations distributed approximately 51,150 bags during the FY 2007/08 reporting period, preventing an estimated 10,230 lbs of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: **LAND ACQUISITIONS**
ID #: **CHU-WQA11**

ACTIVITY IMPLEMENTATION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the southwestern portion of the County. Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period the County of San Diego purchased 287.12 acres of property located in the Carlsbad WMA. The current acquisitions are shown in the table below.

Property	Area (Acres)	Date	Watershed	APN(s)
Val Sereno	54.57	9/12/2008	904.61	264-180-22
Sage Hill	232.55	2/23/2009	904.61	679-060-04, -06, -07; 679-080-10, -11; 679-100-01, -02, -03, -04, -06
Total	**287.12**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups

- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE:	**UPPER SAN MARCOS CREEK WATERSHED/LAKE SAN MARCOS NUTRIENT MANAGEMENT PLAN**
ID #:	**CHU-WQA12**

ACTIVITY DESCRIPTION

Upper San Marcos Creek (USMC) and its tributary watershed (HSAs 904.53 and 904.52) drain to Lake San Marcos (Lake). Lake San Marcos has been listed on the 2006 §303(d) list as impaired for Ammonia (as N), Nitrogen, and Phosphorous. Water flowing in San Marcos Creek is impounded in the lake by San Marcos Dam. Both the dam and the land underlying the lake are privately owned. The City of San Marcos, the County of San Diego, and the City of Escondido (MS4 Copermittees) are tributary to the Lake along with Phase II MS4s (San Marcos Unified School District, Cal State San Marcos, Palomar College, North County Transit District), CalTrans, and various utility providers under the permitting or other regulatory requirements of the SDRWQCB (Vallecitos Water District, SDGE, SDCWA). The City of San Marcos will function as the lead for this WURMP activity in collaboration with the County of San Diego and the City of Escondido for efforts requiring integration of jurisdictional data, information, mapping, and reporting.

The MS4 Copermittees will meet and coordinate jurisdictional efforts to locate and abate sources of nutrients in the watersheds and report the efforts in Carlsbad WURMP Annual Reports. **Appendix C** of the FY 2009 Carlsbad WURMP Annual Report includes the USMC Watershed Nutrient Management Plan (Management Plan). The Management Plan contains a summary of preliminary nutrient source identification efforts, MS4 Copermittee watershed coordination, and abatement activities initiated during FY 09 and planned for completion during future years. Nearly all of the activities identified in the Management Plan go beyond the 2007 MS4 Stormwater Permit requirements and were developed to address nutrient source identification and abatement.

Development, implementation, and assessment of the Management Plan will be a collaborative effort by the MS4 Copermittees. Collaboration will include regular meetings and interim information reporting between the MS4 Copermittees to coordinate knowledge and data-based implementation of activities identified in **Appendix C** of the FY 2009 Carlsbad WURMP Annual Report.

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The MS4 Copermittees began implementation of this activity in FY 09 and will continue to implement the activity in future years. The MS4 Copermittees are committed to reassessing the Management Plan on an annual basis. Details of any changes made will be reported in Carlsbad WURMP Annual Reports.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Marcos (Activity Lead)
- County of San Diego
- City of Escondido

OTHER PARTICIPATING ENTITIES

- Other Tributary Watershed Stakeholders (e.g., private and other public entities)

HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The development of a Nutrient Management Plan is consistent with the collective watershed strategy in that it will identify the water quality problems and likely sources of the pollutants potentially causing the water quality problems and develop a plan to abate the sources or significantly reduce the pollutant loading from the sources.

EXPECTED BENEFITS

The expected benefits of the activity are, with respect to the water quality issues and pollutants of concern: 1) increased awareness of the stakeholders and general public; 2) changes in behavior and BMP implementation; 3) reductions in pollutant loads in discharges; 4) improved water quality discharged from the MS4; and, 5) improved water quality in Lake San Marcos.

EFFECTIVENESS ASSESSMENT

All six levels of the effectiveness will be assessed as appropriate based on the availability of data:

Level 1: Compliance with activity-based permit requirements
Level 2: Changes in Attitudes, Knowledge, and Awareness
Level 3: Behavioral Change and BMP Implementation
Level 4: Load Reductions
Level 5: Changes in Urban Runoff and Discharge Quality
Level 6: Changes in Receiving Water Quality

Effectiveness measurements will be included in future Carlsbad WURMP Annual Reports.

TITLE: **BUENA VISTA CREEK CLEANUP AND RESTORATION**
ID #: **CHU-WQA13**

ACTIVITY IMPLEMENTATION

Debris, invasive species, and downed trees have been identified in Buena Vista Creek (BVC) as potential fire hazards, breeding grounds for pests, and contributors to downstream water quality problems. Periodic cleanups of BVC have been organized to address these hazards and concerns. Collection of water quality and flow data in addition to periodic debris cleanups will allow the City of Vista (City) to report load reductions of constituents of concern (COCs) identified in the Carlsbad Watershed Urban Runoff Management Plan (WURMP).

TMDL APPLICABILITY

There are currently no TMDLs in this Hydrologic Area.

TIME SCHEDULE FOR IMPLEMENTATION

This project was completed in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Vista

OTHER PARTICIPATING ENTITIES

- San Elijo Lagoon Conservancy – assisting in invasive species eradication efforts within the watershed.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

While BVC itself is not 303(d) listed for bacteria or nutrients, areas downstream of BVC have been identified for bacteria and nutrients (Buena Vista Lagoon). The goal of this activity is to determine whether or not cleanups in BVC result in load reductions of these COCs in waters draining from the City to Buena Vista Lagoon. This goal will be addressed by answering the following two management questions.

1) Does improving natural flow in Buena Vista Creek result in load reductions of COCs?
2) Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?

To determine if the significant activity is a success, targeted measurable outcomes of debris, bacteria, and nutrient load reductions have been identified. Data will be collected and analyzed to report flow and COC concentrations, load estimates, and the cost of implementing the activity.

At each of the proposed cleanup sites, data will be collected before cleanup occurs (three samples both upstream and downstream of the cleanup site) for comparison with sampling that will be completed after cleanup occurs (three samples upstream and downstream). There will be a total of one upstream and one downstream sample location for each clean up site. The location will be sampled three times over the course of one week (no more than once per day). The amount of debris removed will be recorded, and visual observations obtained during

sampling and cleanup will also be used to assess the results of the significant activity. If flow is observed before cleanup occurs, it will be estimated and compared to post-cleanup flows.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Buena Vista Creek Hydrologic Area (904.2). Potential sources of bacteria have been identified along the Creek, including rodents, trash, and organic debris. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA Strategy.

EXPECTED BENEFITS

A reduction in bacteria and nutrient loading is anticipated from this activity. This will lead to decreased concentrations downstream in Buena Vista Lagoon, potentially decreasing beach postings at the mouth of Buena Vista Lagoon, and/or reducing algal growth and eutrophication within the lagoon. Additionally, the local community will benefit via an improved ecosystem and riparian corridor. There will be less trash in the area, less invasive species, and a creek channel that is more open to daylight. There will also be a reduction in fire hazards along the creek, as dead vegetation will be removed.

The expected measurable outcomes are:

1) Achieve load reduction of debris and trash from Creek cleanups.
2) Achieve load reduction of bacteria and nutrients.

EFFECTIVENESS ASSESSMENT

See attached report.

BUENA VISTA CREEK CLEAN UP EVALUATION REPORT

1.0 SPECIAL INVESTIGATIONS

1.1 Introduction

The City conducted one water quality activity beneficial to the watershed as a whole this Fiscal Year. The project was centered around clean-ups efforts along two sections of Buena Vista Creek and the resulting impacts on water quality.

1.2 Buena Vista Creek Cleanups (Crumpacker, Weston Solutions, 2009)

During FY 2008-09, two specific creek cleanup efforts within Buena Vista Creek were undertaken to address water quality and obstruction concerns. Prior to creek cleanup efforts, a monitoring plan was developed for data collection based on the significant activity goals outlined in Table 1.1 below. The data collected were used to answer the proposed management questions.

Clean up activities were conducted at the former Sycamore Creek Mobile Home Park Property (Sycamore) located at 751 E. Vista Way, and Buena Vista Creek (BV Creek) located between Foothill Drive and Brengle Terrace Park. The Sycamore clean up encompassed 1,700 linear feet and the BV Creek cleanup encompassed 2,100 linear feet of Buena Vista Creek (Figure 1).

Table 1.1 Significant Activity Summary

Significant Activity FY 2008-09 – Buena Vista Creek Cleanups	
Management Questions	• Does improving natural flow in the Buena Vista Creek result in load reductions of COCs? • Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?
Targeted Measurable Outcome(s)	• Achieve load reduction of debris from Creek cleanups • Achieve load reduction of bacteria and nutrients
Assessment Method(s)	• Monitoring (e.g., collect special study information on concentrations and creek flows to estimate load reduction) • Tabulation (e.g., amount of money spent on cleanups) • Quantification (e.g., compare data collected before and after cleanup to estimate load reduction) • Reporting (e.g., estimates of load reduction for cleanups)
Assessment Measures, Assessment Outcome Levels & Data:	• Amount of money spent on cleanups (Outcome Level 1) • Pre and post cleanup flow and concentration results (Outcome Level 1) • Upstream and downstream flow and concentration results (Outcome Level 1) • Estimated load reductions upstream and downstream, pre and post cleanup (Outcome Level 4) • Tons of debris collected from each cleaning (Outcome Level 4) • Stream miles of cleaned creek (linear ft) (Outcome Level 1) • Total number and location of all creek cleanups (Outcome Level 1) • Removal of invasive vegetation from creek (Outcome Level 1)

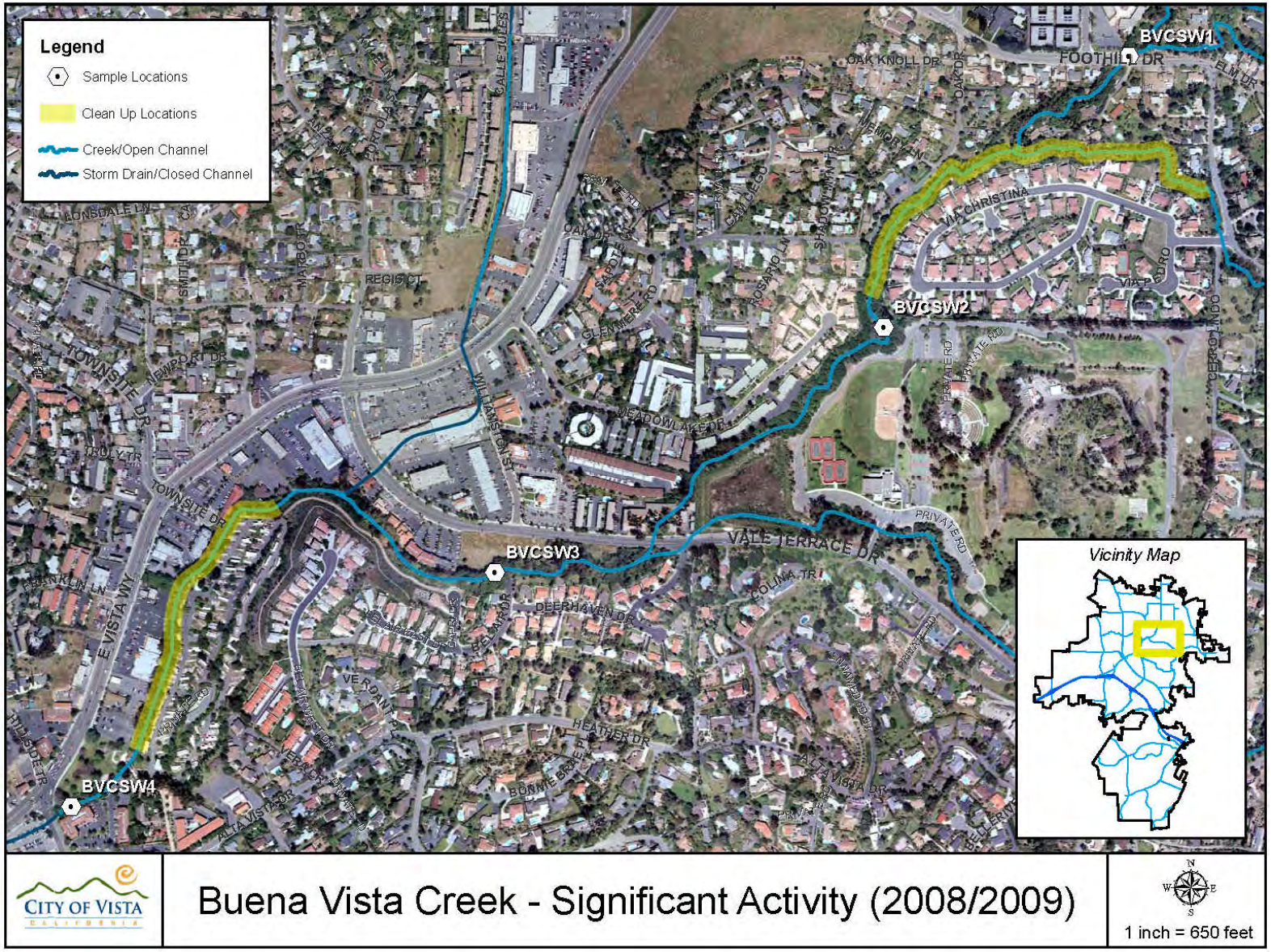

Figure 1.1 Map of Buena Vista Creek Cleanup Locations

1.2.1 Methods

Monitoring was conducted upstream and downstream of the cleanup sites prior to cleanup in September 2008 and after cleanup during March/April 2009. Sites BVCSW1 and BVCSW2 were upstream and downstream of the upper site (BV Creek) and Sites BVCSW3 and BVCSW4 were upstream and downstream of the lower site (Sycamore). Three samples were collected over three consecutive days at the four monitoring locations prior to and following cleanup activities. Flow estimates, bacteria, nutrient, and physical analyses were conducted during each event (Table 1.2). The amount of debris removed during the cleanup projects was recorded, and visual observations obtained during sampling and cleanup were also recorded.

Table 1.2 Sampling Summary

Analytes	Analysis Method	Frequency*
Nitrate-N	Field Test Kit or Analytical Lab	12
Total Nitrogen	Analytical Lab	12
Orthophosphate-P	Field Test Kit or Analytical Lab	12
Total Phosphorus	Analytical Lab	12
Ammonia-N	Field Test Kit or Analytical Lab	12
Enterococcus	Analytical Lab	12
Total Coliform	Analytical Lab	12
Fecal Coliform	Analytical Lab	12
Conductivity	Field Monitor	12
Temperature	Field Monitor	12
pH	Field Monitor	12
Dissolved Oxygen	Field Monitor	12
Turbidity	Field Monitor	12
Total Suspended Solids	Analytical Lab	12
Flow	Field Measurements	12
Debris (Tons)	Waste Disposal Report	1

*Based on one creek cleanup

Instantaneous loads were estimated using the observed flow and the measured contaminant levels. Loads were estimated to allow for direct comparison between the two monitoring events. During the September event, the observed flows were lower than the March/April observed flows. Therefore, estimation of the instantaneous loads was necessary to standardize the results prior to comparison. Instantaneous loads were estimated using Equation 1 for analytical concentration data and Equation 2 for bacterial indicators.

Contaminant Concentration(mg/L) x Flow(GPM) x 8.345×10^{-6}*=pound/minute*
(Equation1)

Bacterial Indicator(MPN/100mL) x Flow(GPM) x 37.854=MPN/minute
(Equation 2)

A paired t-test was performed to determine if differences between upstream and downstream contaminant levels were statistically different between the pre-cleanup condition and the post-cleanup condition. Prior to analysis, the data were tested for normality using the Shaprio-Wilk and the Kolmogorov-Smirnov tests. For analytes that did not pass normality testing, the data were log transformed and tested again using the same method. For those analytes that did not pass either test, a Wilcoxon Ranked Sum

test was used to test the hypothesis. Ammonia and total suspended solids were not included in the testing, because the proportion of non-detects was too high for the analysis results to be valid. For more information on these tests, please refer to Zar, 1999.

1.2.2 Results

Over 220 tons of vegetative debris was removed from Buena Vista Creek. Additionally, approximately 10 bags of urban debris (trash) were removed. At the downstream location (Sycamore) between 50 and 60 palm trees were stumped, and 15 non-native trees were also stumped. Castor bean was also removed from the Sycamore site. Only two trees were stumped at the upstream location (BV Creek) and some invasive plants, mostly fig, were removed. At both locations, dead plant growth on tree trunks was removed up to 30 feet off of the ground, all palm fronds were removed, and dead vegetation that had collected over the years on the ground was removed. The cleanup results are presented in Table 1.3, the analytical results are presented in Attachment A, Table 1, and the instantaneous load estimates are presented in Attachment A, Table 2.

Table 1.3 Summary of Activities at Two Buena Vista Creek Cleanup Sites

Activity	Sycamore	BV Creek
Dead Vegetation Removal	yes	yes
Palm Trees Stumped (number)	50-60	2
Non-Natives Stumped (number)	15	NA
Invasive Plants Removed	yes	yes
Vegetative Debris Removed (Tons)	59.07	163.34
Urban Debris Removed	yes	yes
Total Cost	$42,000	$42,000

Flow and General Chemistry Results

Flow

Flow monitoring pre and post cleanup showed increased flows at all stations during the post-cleanup sampling event. The post-cleanup event occurred in March/April of 2009, after the wet season when groundwater tables were higher. The increased flow may have been a function of the time of year. Another difference between pre and post-cleanup flow was that flow between BVCSW2 and BVCSW3 decreased during the pre-cleanup event, but increased between BVCSW2 and BVCSW3 during the post-cleanup event (Figure 1.2).

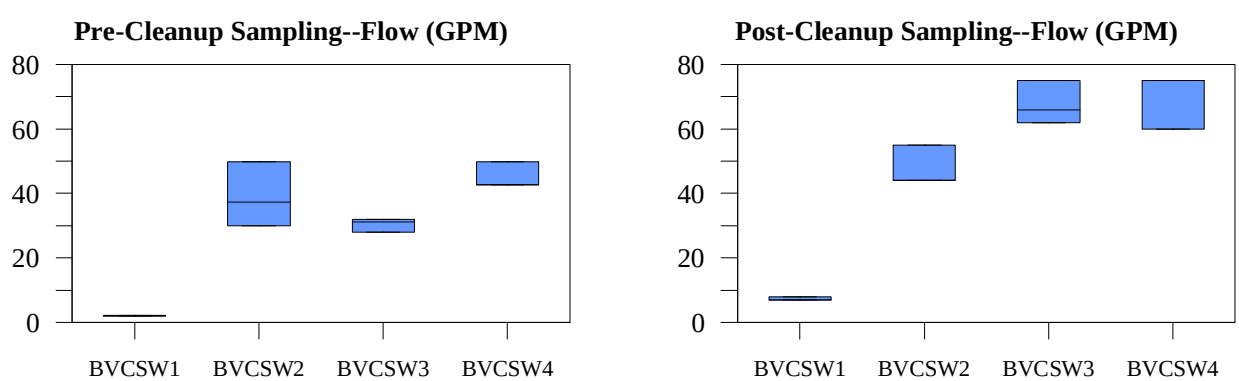

Figure 1.2 Pre and Post-Cleanup Flow Rates Observed in Buena Vista Creek

Dissolved Oxygen

Dissolved oxygen concentrations were higher at all stations during post-cleanup monitoring than during pre-cleanup monitoring. Concentrations followed the same pattern from upstream to downstream during both sampling events, with relatively higher concentrations at site BVCSW1, a drop in concentration at BVCSW2, and then increased downstream to site BVCSW4 (Figure 1.3). However, during the post-cleanup monitoring dissolved oxygen concentrations were higher at BVCSW4 than at BVCSW1. Evaluation of the dissolved oxygen instantaneous loads shows that during the post-cleanup event, levels of dissolved oxygen increased steadily from upstream to downstream. During pre-cleanup monitoring there was a dip in dissolved oxygen between site BVCSW2 and BVCSW3 (Figure 1.4).

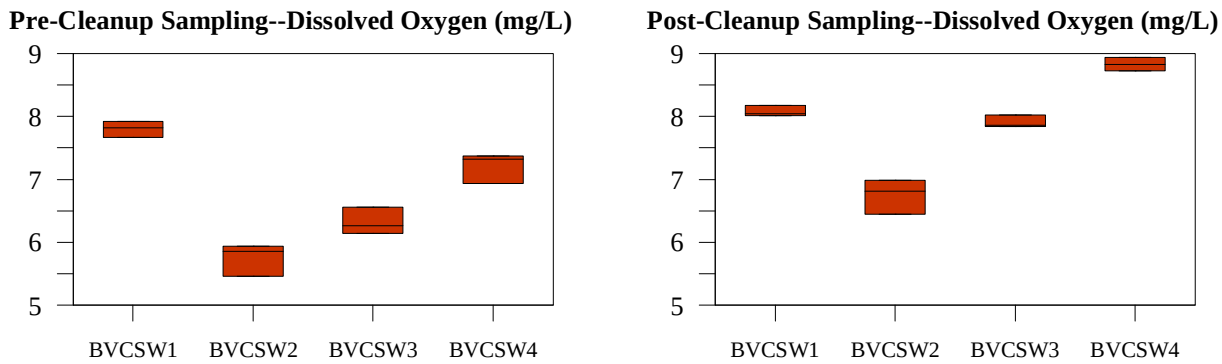

Figure 1.3 Dissolved Oxygen Concentrations Observed in Buena Vista Creek Pre and Post-Cleanup Monitoring

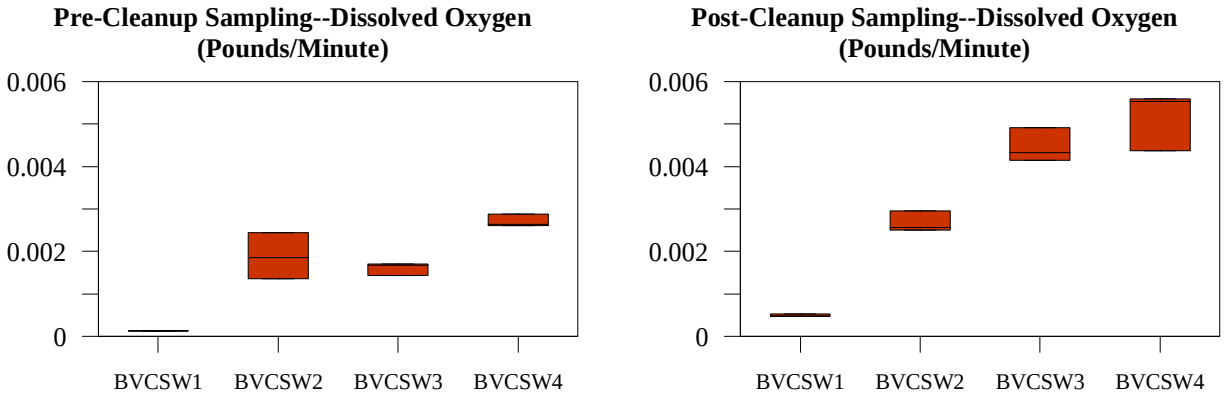

Figure 1.4 Dissolved oxygen instantaneous loads observed in Buena Vista Creek

Nutrients

Nutrient concentration results were similar when comparing pre and post-cleanup monitoring, with lower results for nitrate as nitrogen and total nitrogen upstream of each cleanup area compared to downstream at each cleanup area (Attachment A, Figure 1). Total phosphorus, ortho-phosphate, and total kjeldahl nitrogen results remained somewhat similar from up to downstream (Attachment A, Figure 1).

Instantaneous loads were calculated for all contaminants, and tested for normality prior to analysis. Normality testing of the data revealed that dissolved oxygen, nitrate as nitrogen, ortho-phosphate, total nitrogen, and total phosphorus were normally distributed, and therefore the t-test was used to check for differences between upstream and downstream instantaneous loads at each cleanup site. The distribution for total kjeldahl nitrogen was

unknown, and therefore the Wilcoxon Ranked Sum test was used to test for differences (Attachment A, Table 3).

The results of the statistical tests at the upstream cleanup site (BV Creek) showed that site BVCSW2 was significantly higher than site BVCSW1 during pre-cleanup monitoring for instantaneous loads of nitrate as nitrogen, ortho-phosphate, total kjeldahl nitrogen, total nitrogen, and total phosphorus. During post-cleanup monitoring this difference was less apparent for ortho-phosphate and total phosphorus (Figure 1. and Attachment A, Table 3). There was no change in relationship for nitrate as nitrogen, total nitrogen, or total kjeldahl nitrogen. This means that there were fewer contaminants entering the creek between site BVCSW1 and BVCSW2 during post-cleanup monitoring for ortho-phosphate and total phosphorus, but the contribution between BVCSW1 and BVCSW2 remained unchanged for nitrate as nitrogen, total nitrogen, and total kjeldahl nitrogen.

Downstream, at the Sycamore cleanup site, differences during pre-cleanup monitoring in instantaneous loads at the upstream site (BVCSW3) were significantly lower than the downstream site (BVCSW4) for nitrate as nitrogen and total nitrogen (Attachment A, Table 3). During post-cleanup monitoring, there was still a significant difference between sites BVCSW3 and BVCSW4 for nitrate as nitrogen and total nitrogen. However, there was less of a distinction between median results (shown on the box and whisker plots as the line in the middle of the colored rectangle) for nitrate as nitrogen and total nitrogen than there were for pre-cleanup monitoring (Figure 1.5). Additionally, the median instantaneous load for ortho-phosphate, total phosphorus, and total kjeldahl nitrogen were lower at BVCSW4 than BVCSW3 during post-cleanup monitoring. These results suggest that fewer contaminants were contributed between BVCSW3 and BVCSW4 during post-cleanup monitoring than during pre-cleanup monitoring (Figure 1.5 and Attachment A, Table 3).

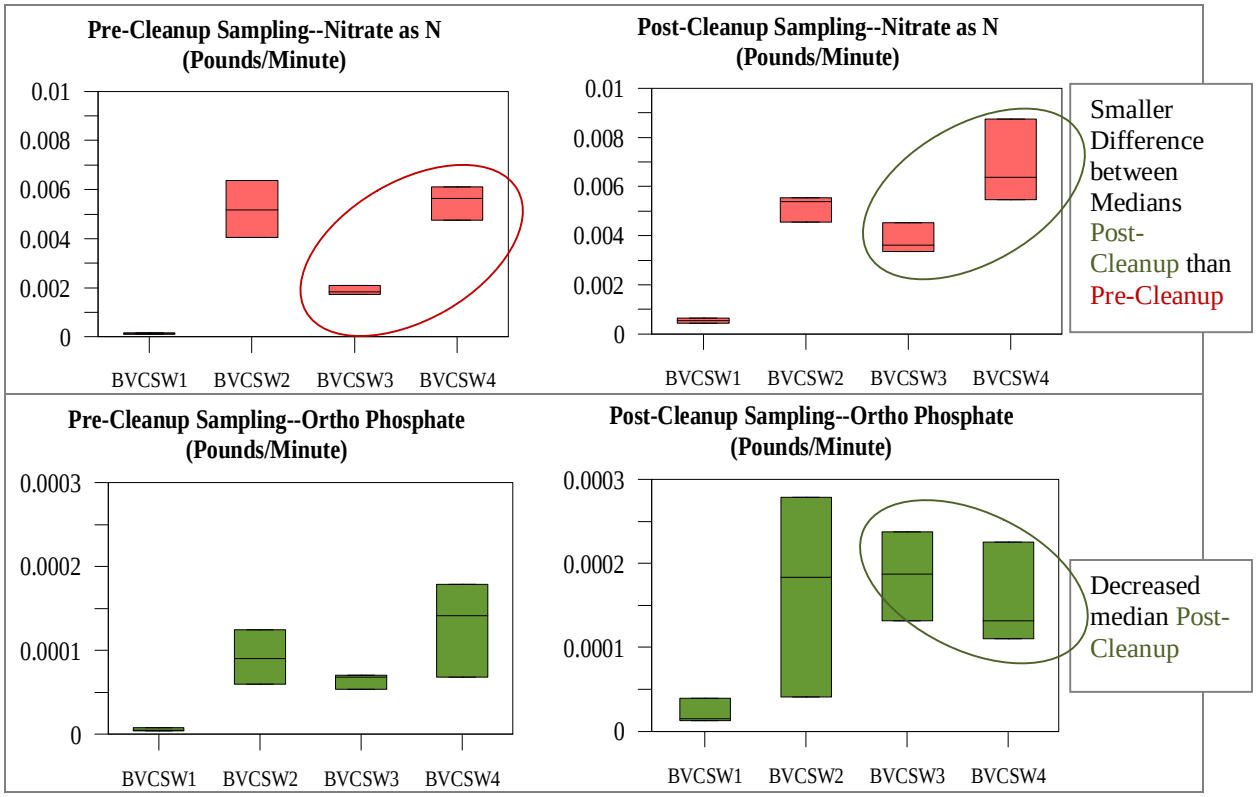

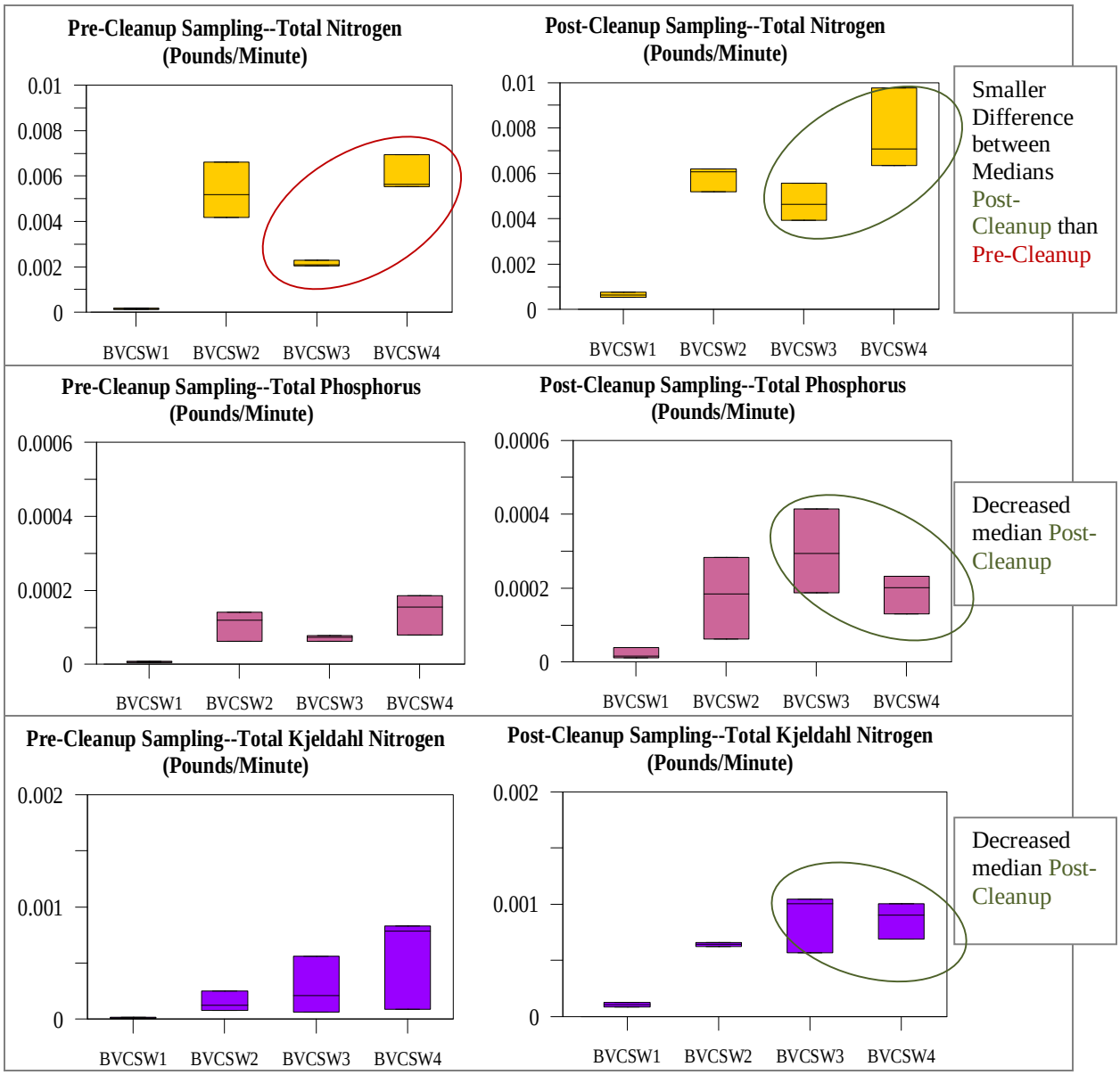

Figure 1.5 Box and Whisker plots of Pre and Post-Cleanup Instantaneous Loads for Buena Vista Creek

Indicator Bacteria Results

Bacteria concentrations for the pre-cleanup sampling were lower at the sites upstream of each cleanup area (BVCSW1 and BVCSW3) compared to their respective downstream sites (BVCSW2 and BVCSW4) (Attachment A, Figure 1). During post-cleanup monitoring the concentrations, on a log scale, did not change from the upstream site (BVCSW1) to the downstream site (BVCSW4) (Attachment A, Figure 1).

Instantaneous loads were also calculated for bacterial indicators and assessed using a paired t-test for enterococcus and fecal coliform, and the Wilcoxon Ranked Sum test for total coliform. The results show that the instantaneous loads at all downstream sites (except BV Creek for total coliform) were significantly higher than their respective upstream sites. However, during the post-cleanup monitoring the downstream instantaneous loads were not significantly higher than their respective upstream instantaneous loads at each cleanup site (except total coliform at Sycamore cleanup site).

This result means that although instantaneous loads for all indicator bacteria are somewhat higher at the furthest downstream site (BVCSW4) when compared to BVCSW1, overall there does not appear to be any load contribution from within the Sycamore cleanup area (Figure 1.6). There may be some contribution within the BV Creek cleanup area, but that might be attributed to the other branch of the creek entering the cleanup area

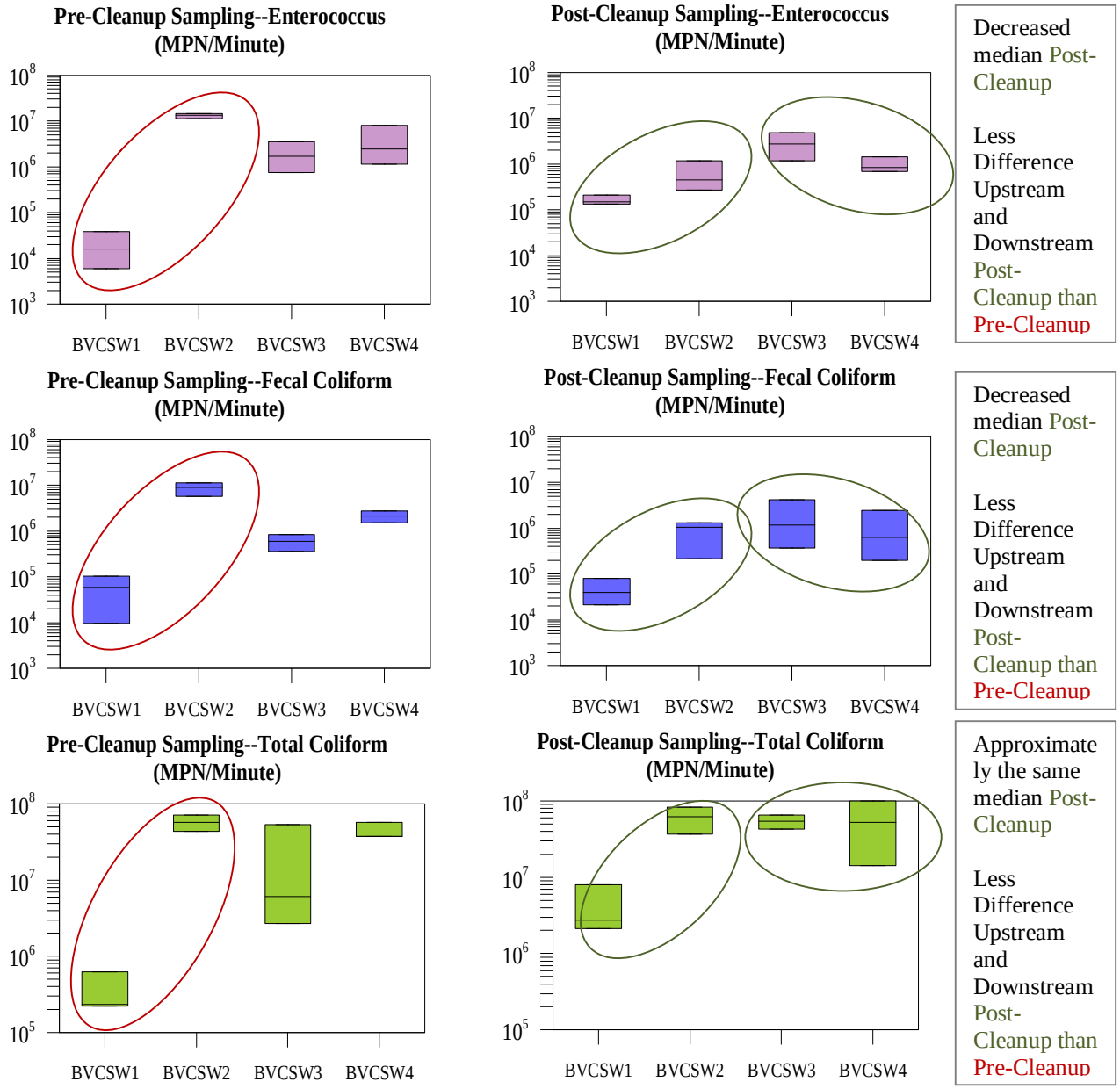

Figure 1.6 Bacteria Instantaneous Loads for Pre and Post Cleanup Monitoring at Buena Vista Creek

1.2.3 Discussion and Conclusions

The creek cleanups were conducted to help improve water quality and address obstruction concerns. The following two management questions were addressed to determine the success of the project:

- Does improving natural flow in the Buena Vista Creek result in load reductions of COCs?
- Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?

When answering these two questions it is important to remember that creek cleanups are not analogous to natural treatment systems, which treat water in a natural stream and help remove contaminants. Therefore, the measure of success is based on the relative difference of contaminant contribution between the upstream and downstream monitoring location at each cleanup site during the post-cleanup event. Any debris removal from the creeks is a benefit to the health of the creek, the improvement of water flow, and aesthetic appeal.

The two stream cleanups conducted in Buena Vista Creek resulted in over 220 tons of vegetative debris and 20 bags of urban debris removed. Any removal of debris is considered an outcome level 4 (load reduction) and therefore the cleanups were successful for removing debris.

General Chemistry and Flow Discussion and Conclusions

Flow levels were higher during the post-cleanup monitoring event than the pre-cleanup event. This lead to larger instantaneous loads during the second event, but because the relative difference between upstream and downstream monitoring was the measure of success this confounding factor had less impact on the analysis of success.

Dissolved oxygen results were elevated during the second event compared to the first event. Evaluation of the concentration results showed that the pattern of dissolved oxygen concentrations from upstream to downstream remained the same. However, because dissolved oxygen concentrations at site BVCSW1 remained approximately the same during both events, and the furthest downstream site had much higher concentrations of dissolved oxygen during the second event, the increase in dissolved oxygen downstream may be attributed (at least in part) to the cleanup efforts.

During the pre-cleanup monitoring event, instantaneous loads of all nutrients were significantly higher downstream of the BV Creek than upstream of the cleanup site. After the cleanup occurred ortho-phosphate and total phosphorus were no longer significantly higher. However, there is a confounding issue at this location because one branch of the creek (flowing into the upstream portion of the cleanup area) was not monitored. It is not known whether this branch contributed nutrient loads after cleanup or not.

At the Sycamore (downstream) cleanup site, all nutrient instantaneous loads were also higher during pre-cleanup monitoring downstream of the cleanup area, but only nitrate and total nitrogen were significantly higher. After the cleanup, the relative difference between upstream and downstream was less for all nutrients. Additionally, median ortho-phosphate, total phosphorus, and total kjeldahl nitrogen instantaneous loads were lower downstream of the Sycamore cleanup site.

- Does improving natural flow in the Buena Vista Creek result in load reductions of COCs?
    - Flow was improved within the Creek, even though all flows were generally higher after cleanup the relative difference in flow between the upstream and downstream monitoring locations (BVCSW1 and BVCSW4) was greater during the post-cleanup monitoring.

- Based on the monitoring results, particularly at the Sycamore site (downstream) fewer contaminants were contributed between the upstream and downstream monitoring locations. Additionally, dissolved oxygen concentrations were higher during the post-cleanup monitoring, conductivity results were more consistent from upstream to downstream, and temperature readings were approximately five degrees Celsius cooler over all at all stations.

- Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?
  - Contaminants associated with decaying vegetative debris, such as nitrogen, phosphorus, and dissolved oxygen were generally improved after the cleanup. This result was noted especially at the Sycamore cleanup area. Therefore, yes the removal of debris and vegetation helps to improve water quality in the Creek.

Indicator Bacteria Discussion and Conclusions

Instantaneous loads of indicator bacteria were significantly higher downstream of the BV Creek cleanup site than the upstream site during the pre-cleanup monitoring. During the post-cleanup monitoring, only total coliform was significantly higher at the downstream site, and the difference between medians for the upstream and downstream instantaneous load was less than one log.

Bacterial instantaneous loads at Sycamore creek were not significantly different pre-cleanup monitoring for enterococcus or fecal coliform, but they were for total coliform. During post-cleanup monitoring the downstream median instantaneous load for all bacterial indicators was less than the upstream instantaneous load.

- Does improving natural flow in the Buena Vista Creek result in load reductions of COCs?
  - Based on the monitoring results, particularly at the Sycamore site (downstream) fewer bacterial indicators were contributed between the upstream and downstream monitoring locations.
- Does cleanup of debris and non-native vegetation in the Creek result in load reductions of COCs?
  - At the Sycamore site, cleanup of the creek debris appears to have reduced the amount of bacteria contributed to the Creek in the cleanup area.

Summary of Activity Assessment

There were several confounding issues raised during data analysis, including the fact that a larger tributary enters the upper cleanup site (BV Creek) downstream of the monitoring location. Additionally, a small tributary enters Buena Vista creek downstream of BVCSW3 and into the downstream cleanup area (Sycamore). These inputs have unknown effects at this time. The intention of the monitoring plan was to monitor immediately upstream and downstream of the cleanup areas. Monitoring at Foothill drive (BVCSW1), while on the main creek, does not entirely capture the water quality and flow upstream of the upper cleanup area.

A summary of the significant activity results is presented in Table 1.4. These results were used to answer the two management questions posed for the activity:

Overall, the cleanup project resulted in several benefits to Buena Vista creek, including removal of water loving palm trees, removal of invasive species, more sunlight reaching

the creek itself, observations of wildlife after cleanup and removal of habitat for wood rats. In addition, improvements to water quality were achieved through the removal of contaminant related vegetative debris.

Table 1.4 Summary of Results

Buena Vista Creek Cleanups		Results
Assessment Measures, Assessment Outcome Levels & Data:	Amount of money spent on cleanups (Outcome Level 1)	$84,000
	Pre and post cleanup flow and concentration results (Outcome Level 1)	Higher levels of dissolved oxygen, lower levels of bacteria, lower levels of total phosphorus, ortho phosphate
	Upstream and downstream flow and concentration results (Outcome Level 1)	Lower concentrations relative to upstream at Sycamore cleanup site
	Estimated load reductions upstream and downstream, pre and post cleanup (Outcome Level 4)	Reductions in the contribution of nitrate, ortho phosphate, total nitrogen, total phosphorus, total kjeldahl nitrogen, enterococcus, fecal coliform, and total coliform
	Tons of debris collected from each cleaning (Outcome Level 4)	220 tons removed
	Stream miles of cleaned creek (linear ft) (Outcome Level 1)	3,800 linear stream feet
	Total number and location of all creek cleanups (Outcome Level 1)	2 locations, Sycamore and BV Creek
	Removal of invasive vegetation from creek (Outcome Level 1)	Yes

12.2.4 References

Zar, 1999. Biostatistical Analysis, 4th Edition. Prentice Hall, Upper Saddle River, NJ 07458

Attachment A

Table 1 Buena Vista Creek Pre and Post Cleanup Contaminant Concentrations

Location ID	Date	Flow (gpm)	Ammonia-Nitrogen (mg/L)	Dissolved Oxygen (mg/L)	Nitrate-Nitrogen (mg/L)	Orthophosphate-Phosphorus (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Total Suspended Solids (mg/L)	Enterococcus (MPN/100mL)	Fecal Coliforms (MPN/100mL)	Total Coliforms (MPN/100mL)	Turbidity (NTU)	pH	Temp. (°C)	Conductivity (mS/cm)
BVCSW1	9/10/2008	1.948	0.50	7.82	7.50	0.23	0.90	8.40	0.28	10.00	80	130	3000	1.78	8.26	21.90	1.91
BVCSW1	9/11/2008	2.0626	0.50	7.92	7.30	0.44	0.60	7.90	0.48	10.00	500	1300	8000	1.72	8.25	19.70	1.92
BVCSW1	9/12/2008	2.19	0.50	7.67	9.18	0.28	0.25	9.20	0.30	10.00	190	700	2800	3.30	8.24	19.40	1.91
BVCSW1	3/30/2009	7	0.15	8.17	9.30	0.26	1.80	11.10	0.28	10.00	500	80	30000	3.98	8.13	15.20	1.93
BVCSW1	3/31/2009	7	0.22	8.01	7.72	0.22	1.40	9.10	0.20	10.00	800	300	8000	2.20	8.07	13.70	0.28
BVCSW1	4/1/2009	8	0.50	8.04	9.50	0.59	1.90	11.40	0.59	10.00	500	130	9000	2.54	8.01	13.80	1.52
BVCSW2	9/10/2008	29.922	0.50	5.46	16.20	0.36	0.50	16.70	0.48	10.00	13000	8000	50000	1.14	7.64	21.10	2.14
BVCSW2	9/11/2008	49.87	0.50	5.86	15.30	0.30	0.60	15.90	0.34	10.00	7000	3000	23000	1.35	7.66	19.80	2.16
BVCSW2	9/12/2008	37.402	0.50	5.94	16.60	0.19	0.25	16.60	0.20	10.00	8000	8000	50000	1.25	7.73	19.30	2.15
BVCSW2	3/30/2009	44	0.24	6.98	12.40	0.11	1.70	14.10	0.17	10.00	700	800	50000	0.94	7.73	15.90	2.10
BVCSW2	3/31/2009	55	0.25	6.45	12.10	0.40	1.40	13.50	0.40	10.00	130	500	30000	1.20	7.78	15.60	2.05
BVCSW2	4/1/2009	44	0.50	6.81	14.70	0.76	1.80	16.50	0.77	10.00	270	130	22000	1.07	7.76	15.20	1.91
BVCSW3	9/10/2008	28	0.50	6.14	7.80	0.29	0.90	8.70	0.33	10.00	700	800	50000	0.44	7.95	21.30	2.34
BVCSW3	9/11/2008	32	0.50	6.26	6.50	0.20	2.10	8.60	0.23	10.00	1400	300	5000	1.05	8.03	20.20	2.34
BVCSW3	9/12/2008	31.169	0.50	6.56	8.01	0.27	0.25	8.00	0.28	10.00	3000	500	2300	0.90	8.00	19.00	2.36
BVCSW3	3/30/2009	62	0.21	8.02	6.48	0.46	1.10	7.60	0.80	10.00	500	500	23000	1.40	8.12	14.70	1.84
BVCSW3	3/31/2009	75	0.11	7.84	5.78	0.21	1.60	7.40	0.47	10.00	1700	130	23000	1.42	8.11	13.40	0.92
BVCSW3	4/1/2009	66	0.50	7.86	8.22	0.34	1.90	10.10	0.34	10.00	1100	1700	17000	2.71	8.13	13.90	1.83

Location ID	Date	Flow (gpm)	Ammonia-Nitrogen (mg/L)	Dissolved Oxygen (mg/L)	Nitrate-Nitrogen (mg/L)	Orthophosphate-Phosphorus (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	Total Suspended Solids (mg/L)	Enterococcus (MPN/100mL)	Fecal Coliforms (MPN/100mL)	Total Coliforms (MPN/100mL)	Turbidity (NTU)	pH	Temp. (°C)	Conductivity (mS/cm)
BVCSW4	9/10/2008	42.746	1.44	7.37	13.30	0.50	2.20	15.50	0.52	10.00	700	1300	23000	4.12	7.99	22.20	2.03
BVCSW4	9/11/2008	49.87	0.50	6.93	14.70	0.34	2.00	16.70	0.37	10.00	1300	800	30000	4.91	8.14	20.70	2.04
BVCSW4	9/12/2008	42.746	0.50	7.32	15.80	0.19	0.25	15.80	0.22	10.00	5000	1700	23000	3.78	8.08	20.00	2.02
BVCSW4	3/30/2009	60	0.19	8.72	10.90	0.22	1.80	12.70	0.26	10.00	300	1100	23000	0.64	8.33	17.40	1.61
BVCSW4	3/31/2009	75	0.50	8.83	10.20	0.21	1.10	11.30	0.32	10.00	500	220	5000	1.09	8.36	17.10	2.00
BVCSW4	4/1/2009	75	0.50	8.94	14.00	0.36	1.60	15.60	0.37	10.00	300	70	35000	0.94	8.33	16.60	1.95

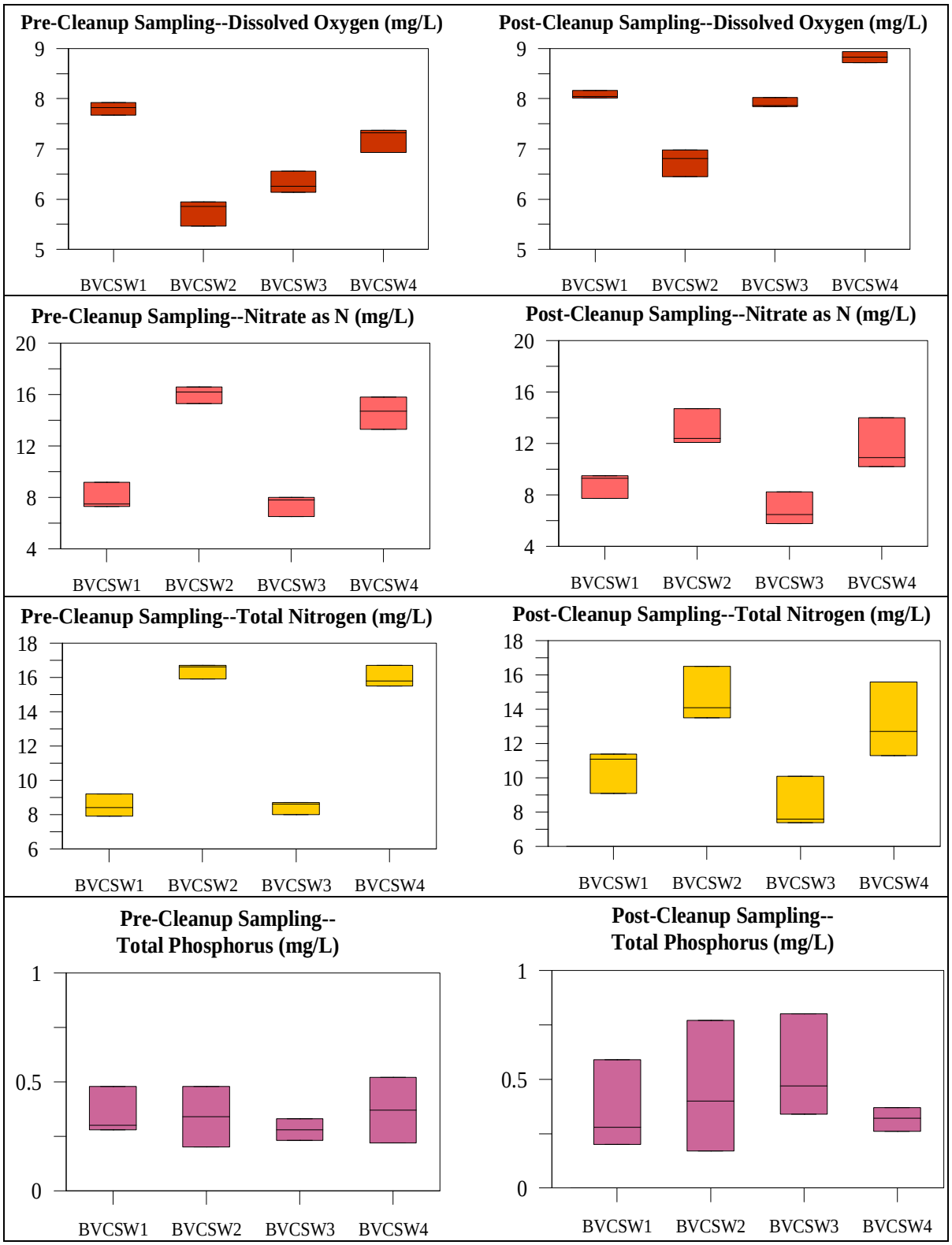
Pre-Cleanup Sampling--Dissolved Oxygen (mg/L)
9
8
7
6
5
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--Dissolved Oxygen (mg/L)
9
8
7
6
5
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--Nitrate as N (mg/L)
20
16
12
8
4
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--Nitrate as N (mg/L)
20
16
12
8
4
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--Total Nitrogen (mg/L)
18
16
14
12
10
8
6
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--Total Nitrogen (mg/L)
18
16
14
12
10
8
6
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--
Total Phosphorus (mg/L)
1
0.5
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Total Phosphorus (mg/L)
1
0.5
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4

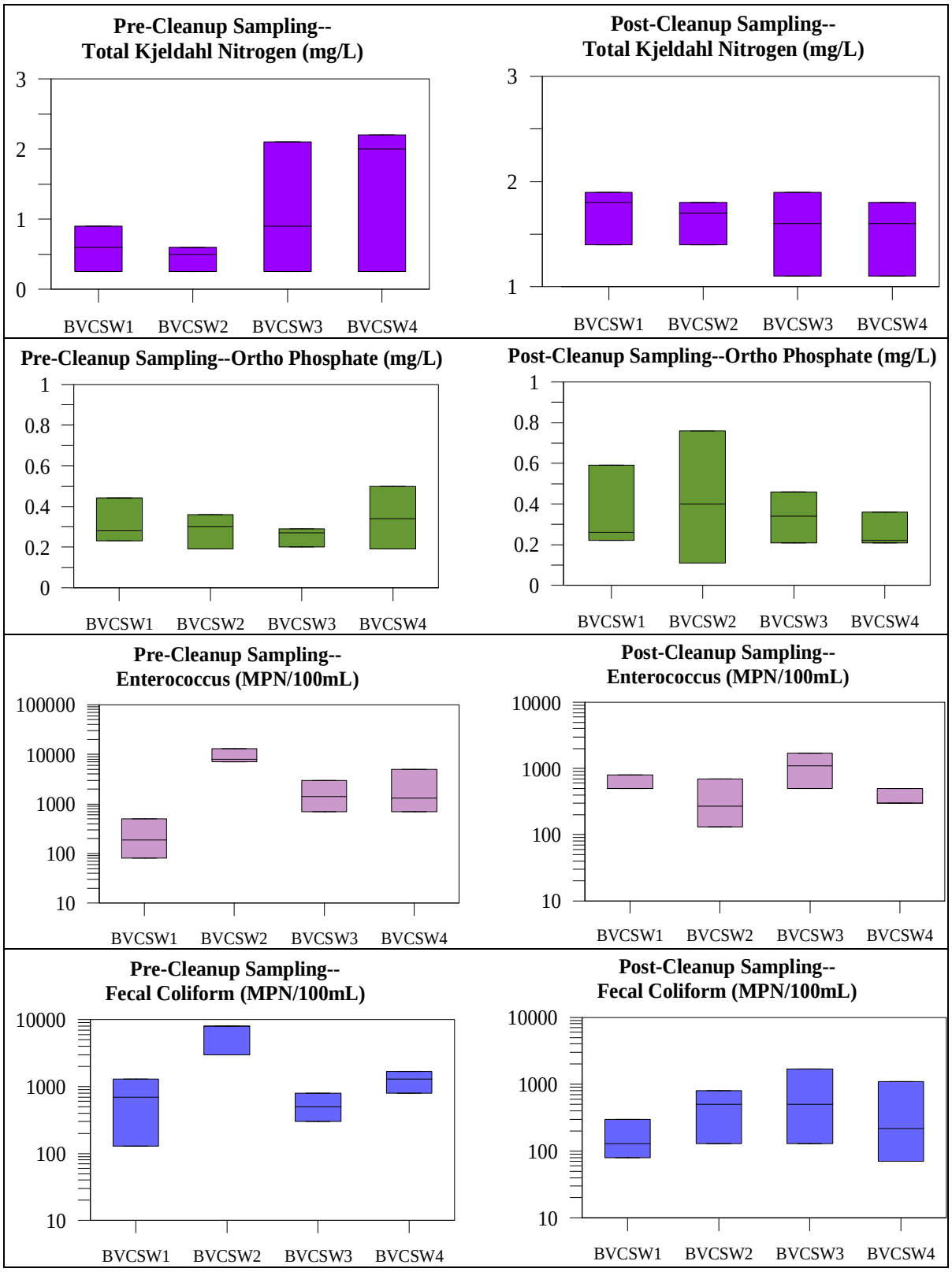
Pre-Cleanup Sampling--
Total Kjeldahl Nitrogen (mg/L)
3
2
1
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Total Kjeldahl Nitrogen (mg/L)
3
2
1
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--Ortho Phosphate (mg/L)
1
0.8
0.6
0.4
0.2
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--Ortho Phosphate (mg/L)
1
0.8
0.6
0.4
0.2
0
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--
Enterococcus (MPN/100mL)
100000
10000
1000
100
10
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Enterococcus (MPN/100mL)
10000
1000
100
10
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Pre-Cleanup Sampling--
Fecal Coliform (MPN/100mL)
10000
1000
100
10
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Fecal Coliform (MPN/100mL)
10000
1000
100
10
BVCSW1
BVCSW2
BVCSW3
BVCSW4

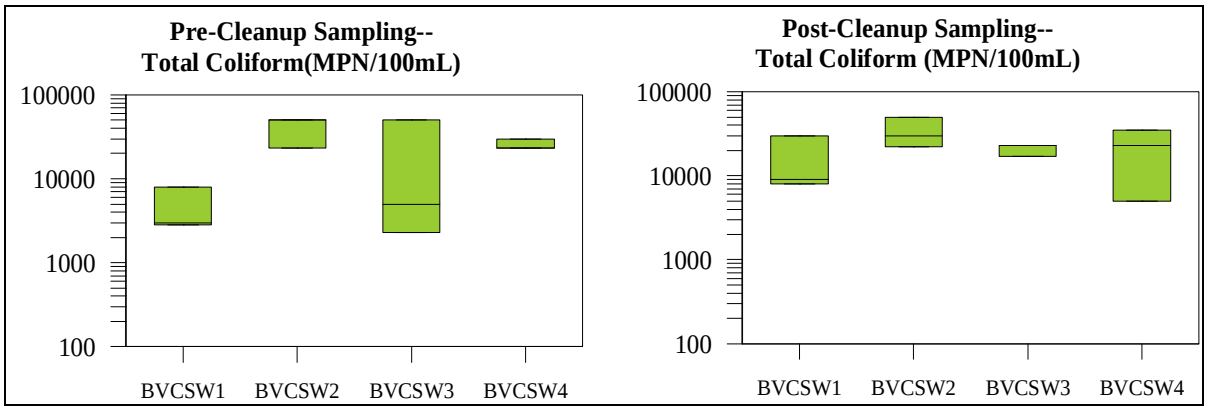
Pre-Cleanup Sampling--
Total Coliform(MPN/100mL)
100000
10000
1000
100
BVCSW1
BVCSW2
BVCSW3
BVCSW4
Post-Cleanup Sampling--
Total Coliform (MPN/100mL)
100000
10000
1000
100
BVCSW1
BVCSW2
BVCSW3
BVCSW4

Table 2 Buena Vista Creek Pre and Post Cleanup Instantaneous Loads

Location ID	Date	Ammonia-Nitrogen (pounds/min)	Dissolved Oxygen (pounds/min)	Nitrate-Nitrogen (pounds/min)	Orthophosphate-Phosphorus (pounds/min)	Total Kjeldahl Nitrogen (pounds/min)	Total Nitrogen (pounds/min)	Total Phosphorus (pounds/min)	Total Suspended Solids (pounds/min)	Enterococcus (MPN/min)	Fecal Coliforms (MPN/min)	Total Coliforms (MPN/min)
BVCSW 1	9/10/2008	8.13E-06	1.27E-04	1.22E-04	3.74E-06	1.46E-05	1.37E-04	4.55E-06	1.63E-04	5899	9586	221219
BVCSW 1	9/11/2008	8.61E-06	1.36E-04	1.26E-04	7.57E-06	1.03E-05	1.36E-04	8.26E-06	1.72E-04	39039	101501	624623
BVCSW 1	9/12/2008	9.14E-06	1.40E-04	1.68E-04	5.12E-06	4.57E-06	1.68E-04	5.48E-06	1.83E-04	15751	58030	232121
BVCSW 1	3/30/2009	8.76E-06	4.77E-04	5.43E-04	1.52E-05	1.05E-04	6.48E-04	1.64E-05	5.84E-04	132489	21198	7949365
BVCSW 1	3/31/2009	1.29E-05	4.68E-04	4.51E-04	1.29E-05	8.18E-05	5.32E-04	1.17E-05	5.84E-04	211983	79494	2119831
BVCSW 1	4/1/2009	3.34E-05	5.37E-04	6.34E-04	3.94E-05	1.27E-04	7.61E-04	3.94E-05	6.68E-04	151416	39368	2725496
BVCSW 2	9/10/2008	1.25E-04	1.36E-03	4.05E-03	8.99E-05	1.25E-04	4.17E-03	1.20E-04	2.50E-03	14724722	9061367	56633546
BVCSW 2	9/11/2008	2.08E-04	2.44E-03	6.37E-03	1.25E-04	2.50E-04	6.62E-03	1.42E-04	4.16E-03	13214494	5663355	43419052
BVCSW 2	9/12/2008	1.56E-04	1.85E-03	5.18E-03	5.93E-05	7.80E-05	5.18E-03	6.24E-05	3.12E-03	11326558	11326558	70790986
BVCSW 2	3/30/2009	8.81E-05	2.56E-03	4.55E-03	4.04E-05	6.24E-04	5.18E-03	6.24E-05	3.67E-03	1165907	1332465	83279059
BVCSW 2	3/31/2009	1.15E-04	2.96E-03	5.55E-03	1.84E-04	6.43E-04	6.20E-03	1.84E-04	4.59E-03	270657	1040988	62459294
BVCSW 2	4/1/2009	1.84E-04	2.50E-03	5.40E-03	2.79E-04	6.61E-04	6.06E-03	2.83E-04	3.67E-03	449707	216526	36642786

Location ID	Date	Ammonia-Nitrogen (pounds/min)	Dissolved Oxygen (pounds/min)	Nitrate-Nitrogen (pounds/min)	Orthophosphate-Phosphorus (pounds/min)	Total Kjeldahl Nitrogen (pounds/min)	Total Nitrogen (pounds/min)	Total Phosphorus (pounds/min)	Total Suspended Solids (pounds/min)	Enterococcus (MPN/min)	Fecal Coliforms (MPN/min)	Total Coliforms (MPN/min)
BVCSW3	9/10/2008	1.17E-04	1.43E-03	1.82E-03	6.78E-05	2.10E-04	2.03E-03	7.71E-05	2.34E-03	741941	847932	52995765
BVCSW3	9/11/2008	1.34E-04	1.67E-03	1.74E-03	5.34E-05	5.61E-04	2.30E-03	6.14E-05	2.67E-03	1695864	363400	6056659
BVCSW3	9/12/2008	1.30E-04	1.71E-03	2.08E-03	7.02E-05	6.50E-05	2.08E-03	7.28E-05	2.60E-03	3539625	589937	2713712
BVCSW3	3/30/2009	1.09E-04	4.15E-03	3.35E-03	2.38E-04	5.69E-04	3.93E-03	4.14E-04	5.17E-03	1173478	1173478	53979972
BVCSW3	3/31/2009	6.88E-05	4.91E-03	3.62E-03	1.31E-04	1.00E-03	4.63E-03	2.94E-04	6.26E-03	4826400	369078	65298353
BVCSW3	4/1/2009	2.75E-04	4.33E-03	4.53E-03	1.87E-04	1.05E-03	5.56E-03	1.87E-04	5.51E-03	2748209	4247232	42472320
BVCSW4	9/10/2008	5.14E-04	2.63E-03	4.74E-03	1.78E-04	7.85E-04	5.53E-03	1.86E-04	3.57E-03	1132678	2103546	37216579
BVCSW4	9/11/2008	2.08E-04	2.88E-03	6.12E-03	1.42E-04	8.32E-04	6.95E-03	1.54E-04	4.16E-03	2454120	1510228	56633546
BVCSW4	9/12/2008	1.78E-04	2.61E-03	5.64E-03	6.78E-05	8.92E-05	5.64E-03	7.85E-05	3.57E-03	8090561	2750791	37216579
BVCSW4	3/30/2009	9.51E-05	4.37E-03	5.46E-03	1.10E-04	9.01E-04	6.36E-03	1.30E-04	5.01E-03	681374	2498372	52238683
BVCSW4	3/31/2009	3.13E-04	5.53E-03	6.38E-03	1.31E-04	6.88E-04	7.07E-03	2.00E-04	6.26E-03	1419529	624593	14195294
BVCSW4	4/1/2009	3.13E-04	5.60E-03	8.76E-03	2.25E-04	1.00E-03	9.76E-03	2.32E-04	6.26E-03	851718	198734	99367059

Table 3 Paired t-test and Wilcoxon Ranked Sum Results

Analyte	Cleanup Area	Normality Testing Results	Test	Pre Cleanup Monitoring (p-value)	Post Cleanup Monitoring (p-value)
Ammonia	Upper (BVCSW2-BVCSW1)	NA	NA	NA*	NA*
Ammonia	Lower (BVCSW4-BVCSW3)	NA	NA	NA*	NA*
Dissolved Oxygen	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.030	0.005
Dissolved Oxygen	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.008	0.489
Nitrate as Nitrogen	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.017	0.005
Nitrate as Nitrogen	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.013	0.040
Ortho-Phosphate	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.042	0.149
Ortho-Phosphate	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.199	0.611
TKN	Upper (BVCSW2-BVCSW1)	Distribution Unknown	Wilcoxon rank test	0.040	0.040
TKN	Lower (BVCSW4-BVCSW3)	Distribution Unknown	Wilcoxon rank test	0.191	0.412
Total Nitrogen	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.018	0.004
Total Nitrogen	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.009	0.036
Total Phosphorus	Upper (BVCSW2-BVCSW1)	Normal	paired t-test	0.048	0.117
Total Phosphorus	Lower (BVCSW4-BVCSW3)	Normal	paired t-test	0.164	0.363
TSS	Upper (BVCSW2-BVCSW1)	NA	NA	NA*	NA*
TSS	Lower (BVCSW4-BVCSW3)	NA	NA	NA*	NA*
Enterococcus	Upper (BVCSW2-BVCSW1)	Log Normal	paired t-test	0.006	0.255
Enterococcus	Lower (BVCSW4-BVCSW3)	Log Normal	paired t-test	0.289	0.149
Fecal Coliform	Upper (BVCSW2-BVCSW1)	Log Normal	paired t-test	0.035	0.135
Fecal Coliform	Lower (BVCSW4-BVCSW3)	Log Normal	paired t-test	0.042	0.666
Total Coliform	Upper (BVCSW2-BVCSW1)	Distribution Unknown	Wilcoxon rank test	0.040	0.040
Total Coliform	Lower (BVCSW4-BVCSW3)	Distribution Unknown	Wilcoxon rank test	0.188	0.500

* No result because too many non-detects in the sample results (>85%)

12.3 Lagoon Investigative Order 2006-0076

The San Diego Regional Water Quality Control Board issued Investigative Order 2006-0076 to the dischargers to the creeks and lagoons in San Diego County that are 303(d) listed as impaired for bacteria, nutrients, sedimentation, and/or TDS. With five lagoons in the Carlsbad Hydrologic Unit (CHU), the listed dischargers in the Order that are present in the CHU determined that the monitoring would be best approached as a group. The Investigative Order covers four of the five lagoons in the CHU including: Loma Alta Slough, Buena Vista Lagoon, Agua Hedionda Lagoon, and San Elijo Lagoon.

In the CHU, monitoring under the Order began in October 2007 and was completed in October 2008. Several stations in each lagoon and watershed were monitored including stations at the mouth of the watershed prior to entry into the lagoons, at segments in the lagoons, at the ocean inlets to the lagoons, and at transect within the lagoons. Samples were collected continuously for certain parameters using deployable data sondes and loggers, while other constituents were monitored during storm events and dry weather index periods only. The monitoring effort was intensive for a period of one full year.

As the monitoring was completed in October 2008, the final data reports were due and submitted to the Regional Board by June 30, 2009. For more information on the monitoring conducted and results, refer to the Carlsbad Hydrologic Unit Lagoon Monitoring Report, San Diego Regional Water Quality Control Board, Investigative Order No. R9-2006-0076, June 2009, as prepared by MacTec on behalf of the dischargers in the Carlsbad Hydrologic Unit.

TITLE: **WATER QUALITY MONITORING IN THE AQUA HEDIONDA CREEK WATERSHED**
ID #: **CHU-WQA14**

ACTIVITY IMPLEMENTATION

The County of San Diego will conduct water quality sampling in the Agua Hedionda Creek Watershed during two wet weather events and two dry weather events at two monitoring stations. This is additional monitoring above what is required by the Municipal Stormwater Permit. Sample locations, COSD-CAR05 and COSD-CAR16-alt, are shown in the figure below. The two wet weather events will entail collecting six pollutograph samples. Dry weather events will be 24-hour composite samples for those analytes conducive to composite techniques. Grab samples will be collected for all microbiology samples using Polymerase chain reaction (PCR) trained, clean hands techniques. Please see the attached Agua Hedionda Creek Watershed Monitoring report for additional details.

FY 2009 ACTIVITY IMPLEMENTATION

- One dry weather event was monitored on June 23-24, 2009, at the two locations.

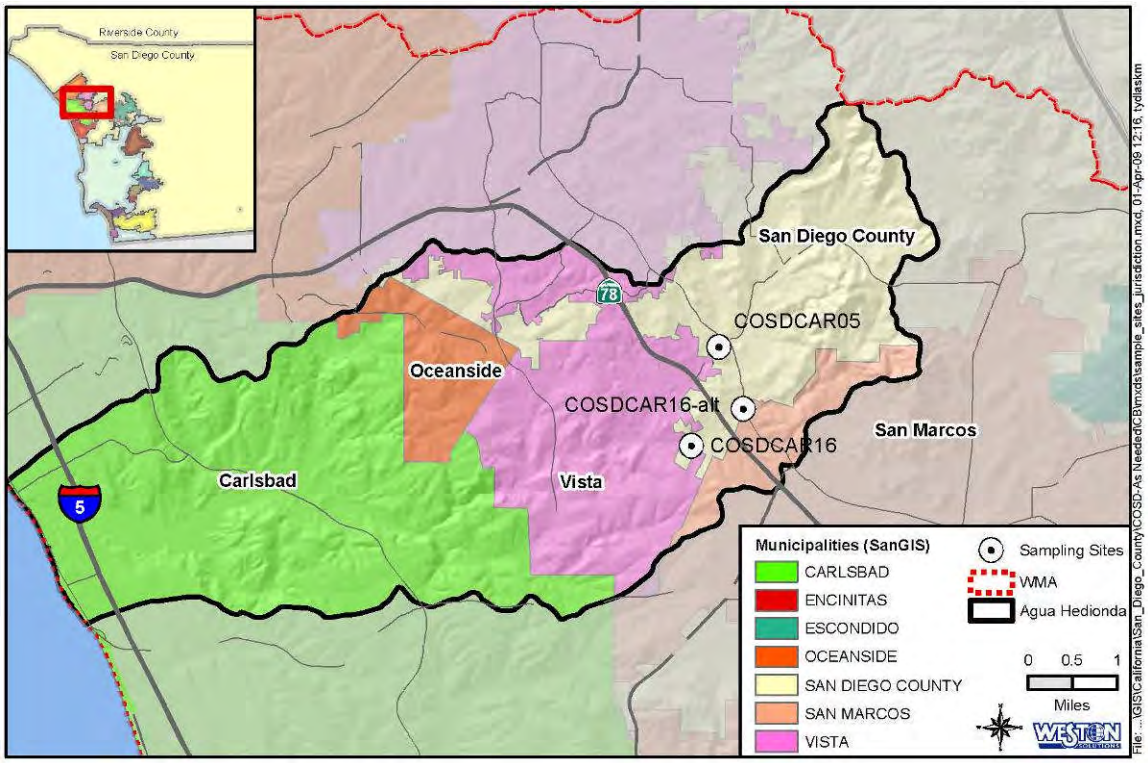

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Wet weather monitoring will be conducted during the 2009-2010 Wet Weather Season (October 1, 2009-April 30, 2010).

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients and bacteria are identified as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3) and this activity is aimed at identifying and abating sources in the watershed.

EFFECTIVENESS ASSESSMENT

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Perform data collection for two dry weather events	1	Completion	1 of 2 completed
Perform data collection for two wet weather events	1	Completion	Will be conducted during the 2009-2010 Wet Weather Season
Detailed data analysis and final report	1	Completion	Full analysis will not be completed until all events have been sampled

Agua Hedionda Creek Watershed Monitoring

Introduction

The purpose of this monitoring is to characterize receiving water quality at two locations within the Agua Hedionda Creek Watershed. The locations sampled, COSD-CAR05 and COSD-CAR16alt, are shown in Figure 1. Both locations will be sampled during two dry and two wet weather events. The two wet weather events will entail collecting six pollutograph samples and 24-hour composite samples are taken during dry weather events. Grab samples are also collected and analyzed for fecal indicator bacteria and *bacteroides spp.* using Polymerase chain reaction (PCR).

During FY 2008/2009, one set of dry weather samples was collected. Due to insufficient precipitation, no wet weather monitoring was conducted during spring of 2009. Wet weather monitoring was postponed until the 2009-2010 Wet Weather Season (October 1, 2009-April 30, 2010).

Table 1. Sample Locations

SITE	LOCATION	LATITUDE	LONGITUDE
COSDCAR05	Buena Creek @ Robelini Drive	33.172390	-117.209970
COSDCAR16-alt	Aqua Hedionda Cr. @ S. Santa Fe Ave.	33.162330	-117.205220

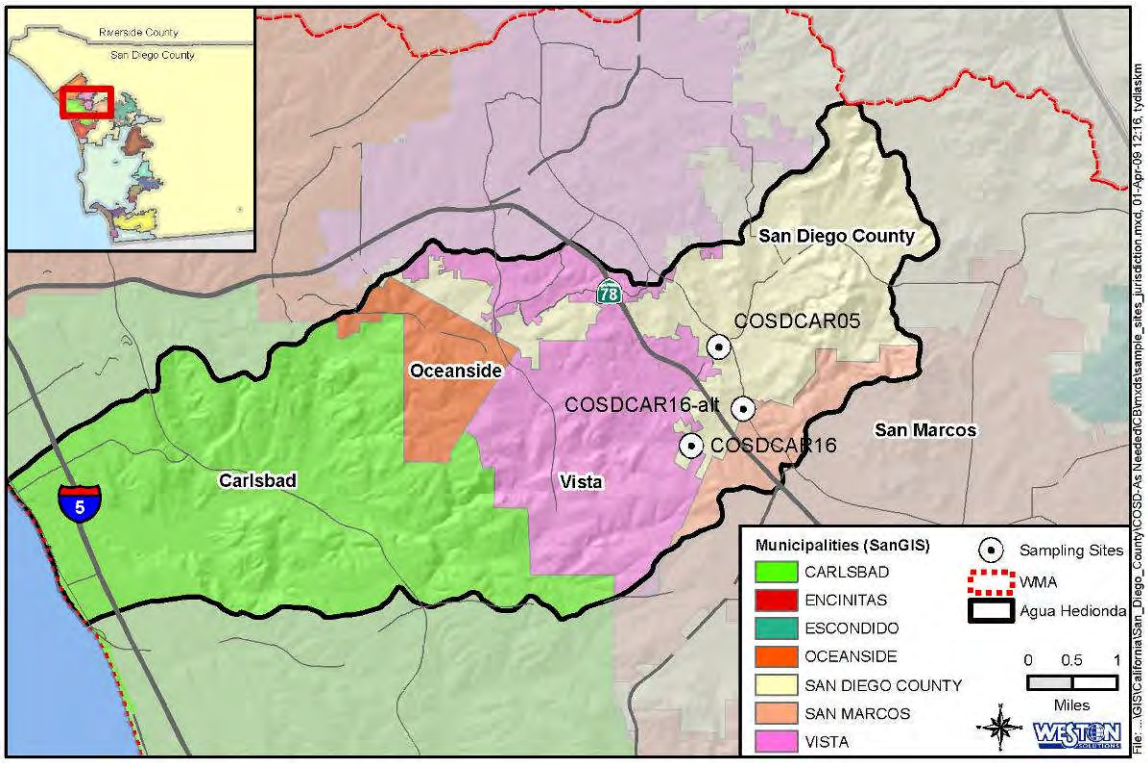

Figure 1. **Agua Hedionda Creek Watershed Sampling Locations**

Results

During FY 2008/2009, one dry weather event was monitored on June 23-24, 2009, at the two locations (Table 1). No flow was observed at COSDCAR16-alt and therefore no results are available for this site. Site COSDCAR16, downstream of COSDCAR16-alt, was also considered for sampling but it too was dry. Prior to the monitoring event, there was an antecedent dry period of 24 days.

The chemical and toxicity results for the dry weather event collected at COSD-CAR05 are presented in Table 2. *Bacteroides spp.* analysis results are listed in Table 3. YSI sonde data for COSDCAR05 are summarized in Table 4.

Detailed data analysis are not presented as a final report will not be completed until both wet weather and both dry weather events are sampled and all samples are analyzed.

Table 2. Chemical and Toxicity Analysis Results for COSDCAR05 sampled on June 23-24, 2009.

Analyte	Units	Water Quality Benchmarks	Source	County of San Diego -Carlsbad		
				COSDCAR05	COSDCAR05	COSDCAR05
				Composite-Blk	Composite	Composite-Dup
				06/24/09	06/24/09	06/24/09
General Chemistry						
Total Kjeldahl Nitrogen	mg/L			<0.46	0.7	0.84
Ammonia-N	mg/L			<0.03	0.04	0.03J
Nitrate-N by IC	mg/L	10	1. Basin Plan	<0.01	9.32	9.54
Nitrite-N by IC	mg/L	1	1. Basin Plan	<0.01	0.03J	0.03J
Sulfate by IC	mg/L	250	1. Basin Plan	<0.01	371.69	374.18
Total Nitrogen	mg/L	1.0	1. Basin Plan	<0.46	**10.05**	**10.41**
Dissolved Orthophosphate as P by IC	mg/L	0.1	1. Basin Plan	<0.0075	**0.1198**	**0.1086**
Total Phosphorus-Low Range	mg/L	0.1	1. Basin Plan	0.1	**0.246**	**0.26**
Total Dissolved Solids	mg/L	1000 (a)	1. Basin Plan	18	**1410**	**1418**
Total Suspended Solids	mg/L	100	1. Basin Plan	<0.5	3.5J	3J
Turbidity	NTU	20	1. Basin Plan	<1	2.3	3
Herbicides						
2,4,5-T (Trichlorophenoxy acetic ac	µg/L			<1	<1	<1
2,4,5-TP (Silvex)	µg/L	50	1. Basin Plan	<1	<1	<1
2,4-D (Dichlorophenoxyacetic acid)	µg/L	70	1. Basin Plan	<1	<1	<1
2,4-DB	µg/L			<1	<1	<1
3,5-Dichlorobenzoic Acid	µg/L			<1	<1	<1
4-Nitrophenol	µg/L			<1	<1	<1
Acifluorfen	µg/L			<1	<1	<1
Bentazon	µg/L	18	1. Basin Plan	<1	<1	<1
Chloramben	µg/L			<1	<1	<1
Dalapon	µg/L			<1	<1	<1
DCPA (mono & diacid)	µg/L			<0.2	<0.2	<0.2
Dicamba	µg/L			<1	<1	<1
Dichloroprop	µg/L			<1	<1	<1
Dinoseb (DNBP)	µg/L	7	1. Basin Plan	<1	<1	<1
Glyphosate	µg/L	700	1. Basin Plan	-	<1.8	<1.8
MCPA	µg/L			<100	<100	<100
MCPP	µg/L			<100	<100	<100
Pentachlorophenol (PCP)	µg/L	1	1. Basin Plan	<0.2	<0.2	<0.2
Picloram	µg/L	500	1. Basin Plan	<1	<1	<1
Total Metals						
Manganese (Mn)	µg/L	50	1. Basin Plan	<0.2	31.1	29.8
Selenium (Se)	µg/L	5	16.40 CFR 131.38	<0.2	0.9	0.8

Bold and Shaded text – exceeds water quality benchmark.

(a) Water Quality Benchmark for total dissolved solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).

J -Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

Note: Total Phosphorus samples may be positively biased as blank sample has result at detection limit.

Sources

1. San Diego Regional Water Quality Control Plan for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007)

Toxicity Test Results

No Toxicity was observed in the original or duplicate test result for Selenastrum capricornutum.

COSDCAR05-DUP	COSDCAR05-DUP
NOEC = 100%	NOEC = 100%
LOEC > 100%	LOEC > 100%

Table 3. *Bacteroides spp.* Analysis Results for COSDCAR05 sampled on June 23-24, 2009.

Sample ID	Date Sample Taken	Time Taken	General Bacteroides	Human Bacteroides
COSDCAR05-01	8/19/2009	1005	POS	NEG
COSDCAR05-02	8/19/2009	1605	POS	NEG
COSDCAR05-03	8/19/2009	2200	POS	NEG
COSDCAR05-04	8/20/2009	0400	POS	NEG
COSDCAR05-04-dup	8/20/2009	0400	POS	NEG
COSDCAR05-BC-Blank	8/19/2009	1605	NEG	NEG
JS Blank	8/20/2009	0415	NEG	NEG

Table 4. Data Sonde Results Summary for COSDCAR05 sampled on June 23-24, 2009.

	June 23, 2009 (08:30)-June 24, 2009 (08:30) Logging Interval = 15 minutes			
	Temp	Specific Conductivity	pH	Dissolved Oxygen
COSDCAR05	°C	mS/cm	units	mg/L
Min	17.47	1.681	7.88	5.75
Max	21.33	1.746	8.14	8.68
Mean	19.23	1.73	8.01	6.72

TITLE: **WATER QUALITY TREATMENT FACILITY AT THE MCCLELLAN-PALOMAR AIRPORT**
ID #: **CHU-WQA15**

ACTIVITY DESCRIPTION

The County of San Diego designed and installed a water quality treatment facility (WQTF) at the McClellan-Palomar Airport completed in April of 2006. This work was funded by Proposition 13 State Water Resources Control Board (SWRCB) grant agreement number 04-201-559-0. The County conducts regular water quality monitoring at the WQTF to assess effectiveness.

The WQTF was designed to provide water quality treatment for low storm flows and nuisance urban runoff that would enter Agua Hedionda Creek as shown in the figure below. Runoff flows enter the influent conveyances through a hydrodynamic separator that centrifugally removes debris and gross pollutants and directs flow into a detention vault where additional pollutants are removed through settlement during low flows. Flows greater than the design storm bypass the WQTF through the adjacent 36" storm drain.

From 2006 through 2008, sampling was conducted between October 1 and April 30 during storm events predicted to deliver greater than 0.10 inches of rainfall. A total of five storm events have been sampled.

The attached report presents additional details regarding monitoring results.

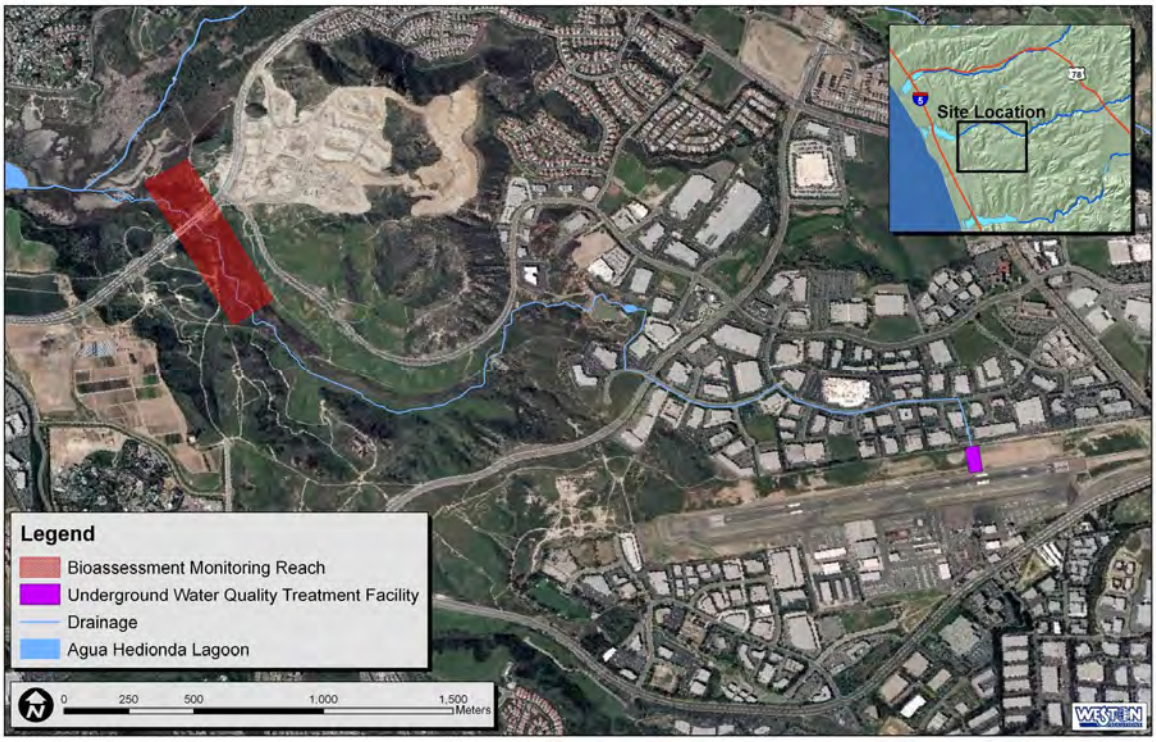

Figure 1. McClellan-Palomar Airport Monitoring Locations

ACTIVITY IMPLEMENTATION

- Preparation of the *County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport* summarizing the sampling efforts from 2006 to present.
- No monitoring took place during FY 2008-09

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Continued monitoring will take place for storms meeting the qualifying criteria.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients and sediment have been identified as priority water quality problems in the Agua Hedionda Hydrologic Area (904.3). Airport operations are a potential source of sediment and nutrients. Since this activity is addresses priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

WQTF effectiveness is assessed through regular water quality monitoring and comparison of influent and effluent pollutant loading. As discussed in the attached report, the WQTF has been demonstrated to function well in reducing the loading and concentration of total suspended solids (TSS) during those storms where TSS levels at the inlet were high. This indicates that the WQTF is functioning as designed with respect to TSS concentration. In addition, large load reductions were observed for the 2/22/2008 storm event where the instantaneous loadings of all constituents measured were reduced by more than 96%. For the remaining storm events, some load reductions were observed for most constituents during at least some of the storm events measured.

County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport

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Table 4 – Flow measurements and constituent loadings at the inlet and outlet of the Palomar Airport WQTF and percent differences between the influent and effluent loadings as measured over the five storm events occurring between December, 2006 and February, 2008.

APPENDIX A – LABORATORY ANALYTICAL REPORTS
APPENDIX B – FIELD DATA SHEETS

1 INTRODUCTION

The purpose of this report is to assess the effectiveness of the McClellan-Palomar Airport Water Quality Treatment Facility (WQTF) as measured through a comparison of constituent concentrations and loading between the WQTF's influent and effluent. From 2006 through 2009, sampling was conducted between October 1 and April 30 during storm events predicted to deliver greater than 0.10 inches of rainfall. A total of five storm events were sampled.

The WQTF was designed and installed by the County of San Diego in accordance with the Proposition 13 State Water Resources Control Board (SWRCB) grant agreement number 04-201-559-0 to treat urban runoff from the McClellan-Palomar Airport. This runoff discharges into Agua Hedionda Creek, to Agua Hedionda Lagoon and ultimately into the Pacific Ocean near Carlsbad, California. The WQTF was designed to reduce pollutants from upstream runoff per the numeric sizing criteria within the County of San Diego Standard Urban Stormwater Mitigation Plan (SUSMP). Agua Hedionda Creek is listed on the Clean Water

Act (CWA) Section 303 (d) as impaired for total dissolved solids, while further downstream, Agua Hedionda Lagoon is listed on the CWA Section 303 (d) for bacterial indicators and sedimentation/siltation.

The project was constructed underground on the north side of the existing McClellan-Palomar Airport runway (Figure 1). The site drains a mostly impervious area consisting of the airport runway, taxiway, and ground transportation access roads. Storm flows are conveyed to the project site via an underground storm drain system that ultimately exits the site on the northern side of McClellan-Palomar Airport. From here, flow is directed through a series of underground storm drains, open channels, and culverts before discharging into Agua Hedionda Creek just upstream of its confluence with the Agua Hedionda Lagoon.

The WQTF was designed to provide water quality treatment for low storm flows and nuisance urban runoff. As shown in Figure 2, the runoff flows from the influent conveyances, through a hydrodynamic separator that centrifugally removes debris and gross pollutants and directs the flow into the detention vault where additional pollutants are removed through settlement during low flows. Flows greater than the design storm bypass the WQTF through the adjacent 36” storm drain.

2 DESCRIPTION OF SAMPLING PROCEDURES

2.1 Flow Measurements

Storm water sampling was attempted every time a viable storm was forecasted since the completion of the WQTF and successful installation of the monitoring equipment on July 18, 2006. To date, five storms occurring on the following dates were successfully sampled: December 10, 2006, December 16, 2006, December 27, 2006, January 31, 2007, and February 22, 2008.

The mean flows at the inlet and outlet of the WQTF are presented in Table 1 below. Flow measurements were coordinated with the collection of wet weather grab samples. During 2006 and 2007, flow measurements were taken every 15 min for the duration of the storm and water quality samples were collected as flow-weighted composites. On February 22, 2008, flow measurements were taken randomly 3 times and a single grab sample was collected for analysis at each location (inlet and outlet).

The monitoring and sampling activities were performed via the access manholes above the WQTF. To determine stage height, a measuring tape device was lowered from a reference point to measure the water level in the conveyance below. For both the inlet and outlet stations, the top ridge of the access manhole was used as the reference point. The distance from this reference point to the water surface was measured with a weighted fiberglass measuring tape. The weighted tape was lowered to the water surface just to the point where the wake from the water passing by the weight forms a slight distinctive "V" shape. Measurements were conducted from the influent and effluent access manholes.

Table 1. Mean flows at the inlet and outlet of the WQTF during each storm event.

Date	Inlet Head Height (ft.)	Inlet Flow (cfs)	Outlet (ft.)	Outlet (cfs)
10/14/2006	Unknown	2.53	Unknown	0.45
12/10/2006	Unknown	4.53	Unknown	3.31
12/16/2006	Unknown	0.14	Unknown	0.14
12/27/2006	Unknown	0.2	Unknown	0.18
1/31/2007	Unknown	0.3	Unknown	0.11
2/22/2008	1.37	3.80	3.3	0.093

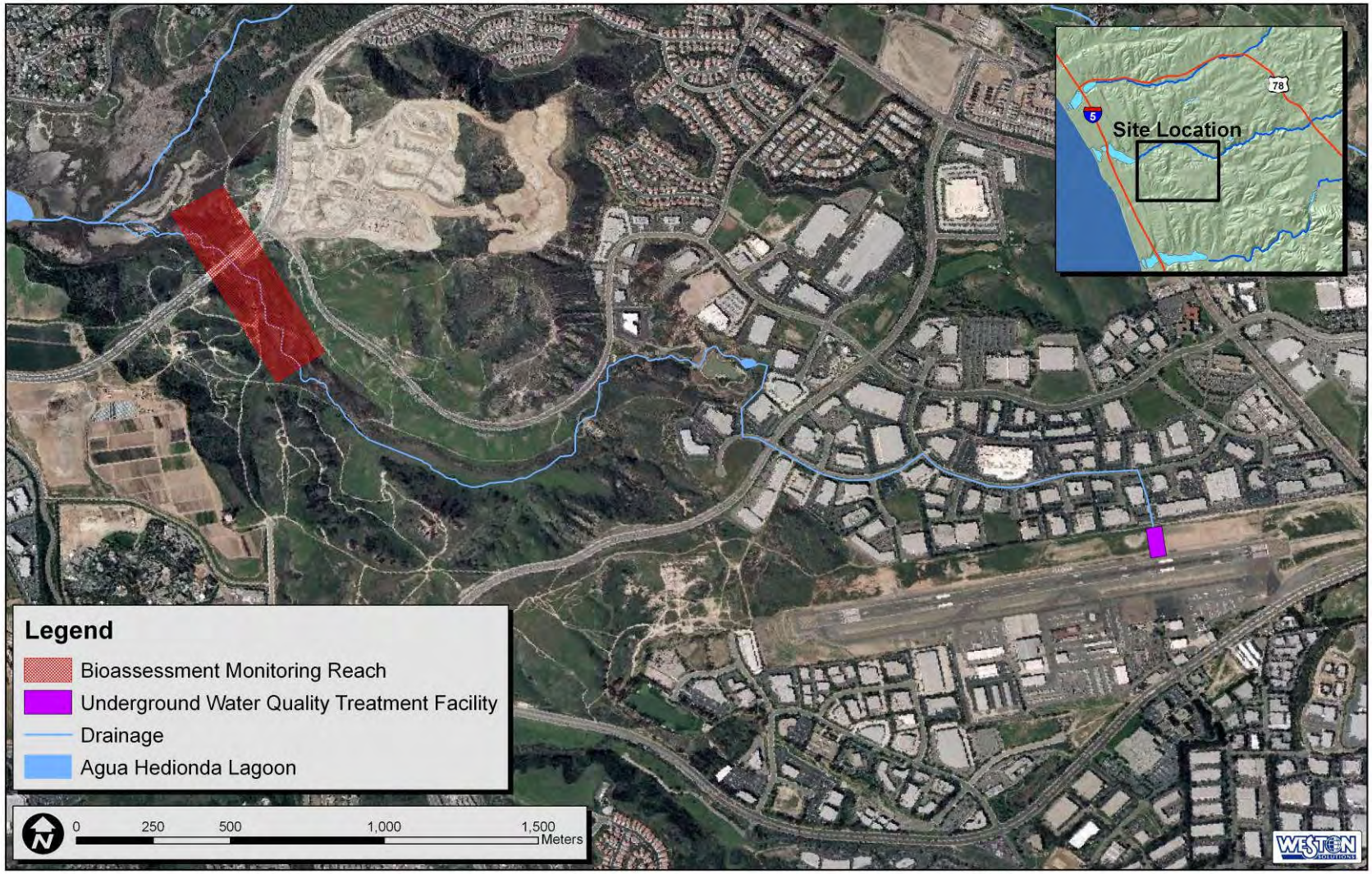

Figure 1. Location of the McClellan-Palomar Airport Water Quality Treatment Facility.

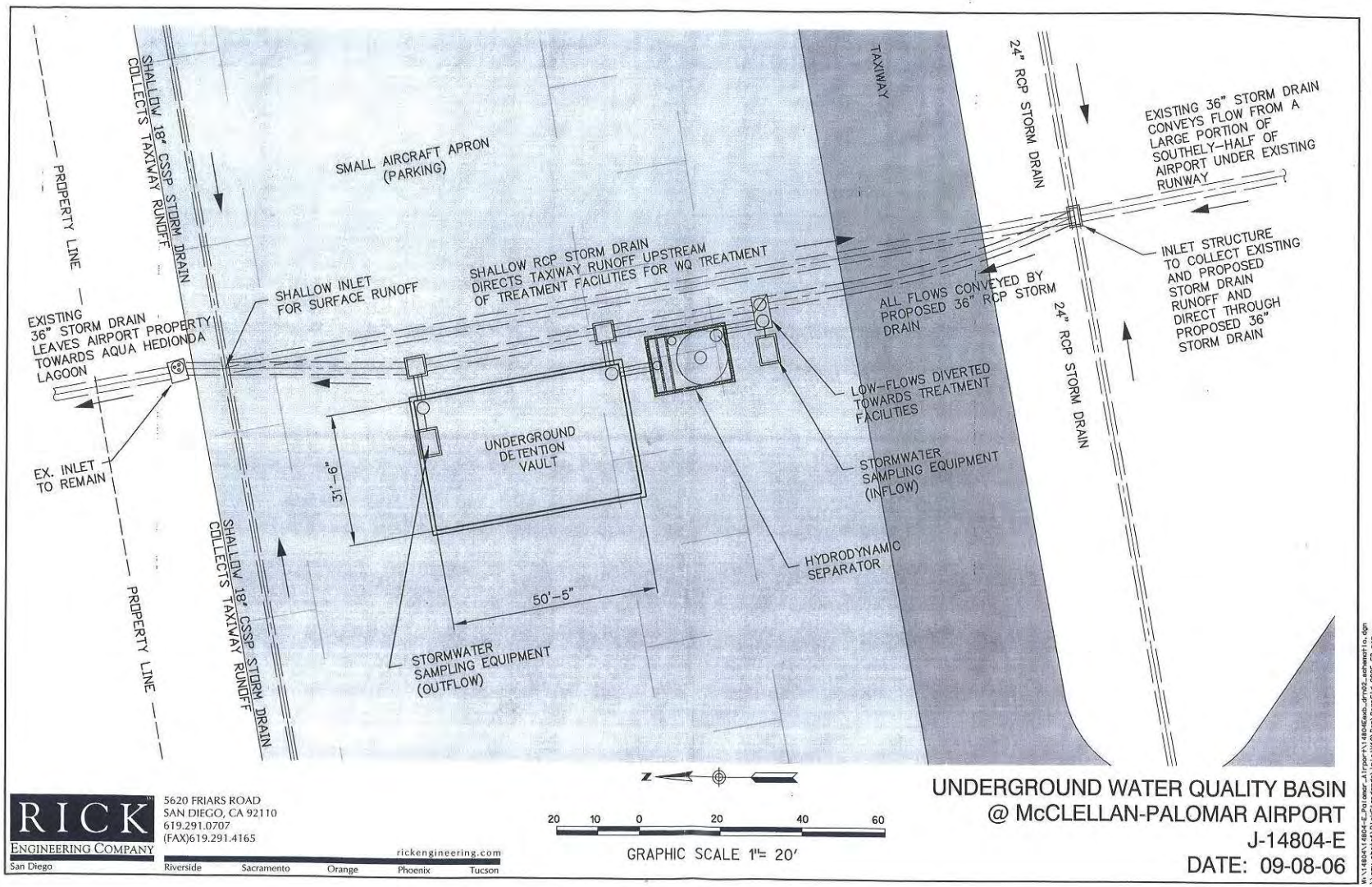

Figure 2. Facility design and sample site locations.

2.2 Water Quality Sampling

In 2006 and 2007, flow-weighted composite samples were used to determine the Event Mean Concentrations (EMCs) of the different constituents measured at the inlet and the outlet of the WQTF. During the 2/22/2008 sampling event, only one set of grab samples was collected at each the inlet and the outlet sampling location. The samples were collected by lowering a pre-cleaned container from the designated manhole access at either the influent or effluent sampling points. The samples were then transferred to appropriate laboratory-supplied sampling bottles.

Samples were labeled, placed in a cooler on ice and transported under proper chain-of-custody documentation to CRG Marine Laboratories Inc. in Torrance, CA for analysis. The samples were analyzed for the constituents listed in Table 2. During the sampling of the inlet and outlet, field measurements were also collected for pH, conductivity, temperature, dissolved oxygen, and turbidity. The field measurements are included on Table 3. Field data logs were also completed for each sampling site during each sampling event and are included in Appendix B.

Table 2. Analytical water quality parameters.

Analytical Parameter	Analytical Method	Sample Volume	Containers #, size, type	Preservation (chemical, temperature, light protected)	Maximum Holding Time: Preparation/ analysis
TSS	SM 2540-D	250mL	Plastic	Store Cool at <4ºC	6 Months
TDS	SM 2540-C	1L	Plastic	Store Cool at <4ºC	7 Days
Total Hardness	SM 2340-B	100mL	Plastic	HNO_3	6 Months
Dissolved Cadmium	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Copper	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Lead	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Zinc	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Nitrate - N	SM 4500-NO_3	100mL	Plastic or Glass	Store Cool at <4ºC	48 Hours
Total Phosphorus	SM 4500-P C	250mL	HDPE Plastic	Store Cool at <4ºC	28 Days
Dissolved Ortho-Phosphate	EPA 300	250mL	HDPE Plastic	Store Cool at <4ºC	28 Days
Diazinon	EPA 625	1 L	Amber Glass	Store Cool at <4ºC	Extraction 7 days; Analysis 40 days
Chlorpyrifos	EPA 625	1 L	Amber Glass	Store Cool at <4ºC	Extraction 7 days; Analysis 40 days
MBAS	SM 5540 C	500mL	Plastic	Store Cool at <4ºC	48 Hours
Oil and Grease	EPA 1664	1 L	Amber Glass	Store Cool at <4ºC, Add HCl to pH<2	28 Days

3 RESULTS

The results of field-collected water quality parameters and laboratory analysis are summarized in Table 3. Table 3 also shows percent differences between the inlet and outlet field results and constituent concentrations. Generally, these differences varied across storms and parameters. Noteworthy is the 2/22/2009 result for the Total Suspended Solids (TSS) where the inlet concentration was orders of magnitude higher that that in the previous storms and was reduced by 99.09% at the outlet of the WQTF. This indicates that the Treatment Facility is functioning as designed with respect to TSS.

The instantaneous load reductions in the effluent from the WQTF are summarized in Table 4. Generally, large load reductions were observed during the 2/22/2008 storm where the instantaneous loadings of all constituents measured were reduced by more than 96%. For the 1/31/2007 storm, load reductions were observed for all constituents except TSS. During that storm, TSS loading at the inlet was low which may indicate that the WQTF is most effective at

reducing only high TSS loads. For the three storms sampled in December of 2006, load reductions were observed for all constituents on 12/10/2006, for dissolved metals, MBAS, Nitrate-N and total hardness during on 12/16/2006 and for all constituents except TSS, and dissolved lead and zinc on 12/27/2006.

Table 3. Field measurements and constituent concentrations at the inlet and outlet of the Palomar Airport WQTF and percent differences between the influent and effluent concentrations as measured over the five storm events occurring between

Date	12/10/2006			12/16/2006			12/27/2006			1/31/2007			2/22/2008		
Location	**Inlet**	**Outlet**	**% Diff.**	**Inlet**	**Outlet**	**% Diff.**	**Inlet**	**Outlet**	**% Diff.**	**Inlet**	**Outlet**	**% Diff.**	**Inlet**	**Outlet**	**% Diff.**
Discharge (cfs)	4.53	3.31	**-26.93%**	0.14	0.14	**0.00%**	0.2	0.18	**-10.00%**	0.3	0.11	**-63.33%**	3.8026	0.093	**-97.55%**
pH	7.59	7.3	**-3.82%**	6.02	6.5	**7.97%**	7.4	8.82	**19.19%**	6.37	6.34	**-0.47%**	7.93	8.17	**3.03%**
Conductivity (uS/cm)	106	80	**-24.53%**	16	15	**-6.25%**	210	131	**-37.62%**	143.2	127.7	**-10.82%**	135	133	**-1.48%**
Turbidity (NTU)	710	661	**-6.90%**	290	290	**0.00%**	17	86	**405.88%**	14	12	**-14.29%**	19.4	18.8	**-3.09%**
DO (mg/L)	9	10.49	**16.56%**	6.15	6.42	**4.39%**	9.28	8.55	**-7.87%**	10.03	9.89	**-1.40%**	11.33	11.38	**0.44%**
Temp (C°)	15.3	14.4	**-5.88%**	12.1	12.2	**0.83%**	15.9	13.6	**-14.47%**	15.2	15.2	**0.00%**	13.26	13.25	**-0.08%**
Total Dissolved Solids (mg/L)	151	200	**32.45%**	157	167	**6.37%**	115	73	**-36.52%**	138	147	**6.52%**	198	178	**-10.10%**
Total Suspended Solids (mg/L)	263.48	239	**-9.29%**	95	217	**128.42%**	26.3	62.3	**136.88%**	8.8	27.3	**210.23%**	1284	11.7	**-99.09%**
Total Hardness as CaCO3 (mg/L)	10.9	9.68	**-11.19%**	23.8	19.9	**-16.39%**	15.3	11.4	**-25.49%**	9.74	23.21	**138.30%**	8.8	8.2	**-6.82%**
Nitrate-N (mg/L) [2]	0.78	0.69	**-11.54%**	0.98	0.77	**-21.43%**	1.13	1	**-11.50%**	0.87	1.78	**104.60%**	0.48	0.39	**-18.75%**
Dissolved Orthophosphate as P (mg/L) [1]	0.08	0.06	**-25.00%**	0.04	0.04	**0.00%**	0.07	0.04	**-42.86%**	0.21	0.13	**-38.10%**	<0.0075	0.0281	**NA**
Total Phosphorus (mg/L) [3]	0.23	0.22	**-4.35%**	0.19	0.31	**63.16%**	0.18	0.17	**-5.56%**	0.2	0.22	**10.00%**	0.038 J	0.031 J	**18.42%**
Oil & Grease (mg/L)	1.9J	1.9J	**0.00%**	1.3J	2J	**53.85%**	<1	<1	**NA**	8.7	5.8	**-33.33%**	1.7J	2.4 J	**41.18%**
MBAS (mg/L)	0.04	0.03	**-25.00%**	0.06	0.05	**-16.67%**	0.53	0.4	**-24.53%**	1.7	2.35	**38.24%**	0.113	0.107	**-5.31%**
Chlorpyrifos (ng/L)	<1	<1	**NA**	<1	<1	**NA**	<1	<1	**NA**	<1	<1	**NA**	<1	<1	**NA**
Diazinon (ng/L)	<2	<2	**NA**	<2	<2	**NA**	<2	<2	**NA**	<2	<2	**NA**	<2	<2	**NA**
DissolvedCadmium (ug/L)	<0.2	<0.2	**NA**	<0.2	<0.2	**NA**	<0.2	<0.2	**NA**	0.8	0.9	**12.50%**	<0.2	<0.2	**NA**
Dissolved Copper (ug/L)	10.8	8.9	**-17.59%**	9.2	7.3	**-20.65%**	14.2	9.7	**-31.69%**	38.3	42.1	**9.92%**	5	3.9	**-22.00%**
Dissolved Lead (ug/L)	0.47	0.4	**-14.89%**	0.51	0.49	**-3.92%**	1.52	2.24	**47.37%**	6.06	5.58	**-7.92%**	0.24	0.24	**0.00%**
Dissolved Zinc (ug/L)	28.6	23.9	**-16.43%**	18.4	12.1	**-34.24%**	38.2	55.9	**46.34%**	251.2	495.2	**97.13%**	16.8	18.8	**11.90%**

Notes:
1) Units on 2006 & 2007 sampling are mg/Kg
2) Units on 2006 & 2007 sampling are mg/Kg wet
3) Units on 2006 & 2007 sampling are mg/Kg dry
J= Estimated Value below the Reporting Limit and above the Method Detection Limit
NA = Not Analyzed

December, 2006 and February, 2008.

Table 4. Flow measurements and constituent loadings at the inlet and outlet of the Palomar Airport WQTF and percent differences between the influent and effluent loadings as measured over the five storm events occurring between December, 2006 and February, 2008.

Date	12/10/2006			12/16/2006			12/27/2006			1/31/2007			2/22/2008		
Location	**Inlet**	**Outlet**	**% Diff.**	**Inlet**	**Outlet**	**% Diff.**	**Inlet**	**Outlet**	**% Diff.**	**Inlet**	**Outlet**	**% Diff.**	**Inlet**	**Outlet**	**% Diff.**
Discharge (cfs)	4.53	3.31	**-26.93%**	0.14	0.14	**0.00%**	0.2	0.18	**-10.00%**	0.3	0.11	**-63.33%**	3.8026	0.093	**-97.55%**
Total Dissolved Solids (mg/s)	19370	18746	**-3.22%**	622	662	**6.37%**	651	372	**-42.87%**	1172	458	**-60.94%**	21320	469	**-97.80%**
Total Suspended Solids (mg/s)	33798	22401	**-33.72%**	377	860	**128.42%**	149	318	**113.19%**	75	85	**13.75%**	138258	31	**-99.98%**
Total Hardness as CaCO3 (mg/s)	1398.20	907.29	**-35.11%**	94.35	78.89	**-16.39%**	86.65	58.11	**-32.94%**	82.74	72.30	**-12.62%**	947.56	21.59	**-97.72%**
Nitrate-N (mg/s) [2]	100.05	64.67	**-35.36%**	3.89	3.05	**-21.43%**	6.40	5.10	**-20.35%**	7.39	5.54	**-24.98%**	51.69	1.03	**-98.01%**
Dissolved Orthophosphate as P (mg/s) [1]	10.26	5.62	**-45.20%**	0.16	0.16	**0.00%**	0.40	0.20	**-48.57%**	1.78	0.40	**-77.30%**	<0.0075	0.03	**NA**
Total Phosphorus (mg/s) [3]	29.50	20.62	**-30.11%**	0.75	1.23	**63.16%**	1.02	0.87	**-15.00%**	1.70	0.69	**-59.67%**	4.09	0.08	**-98.00%**
Oil & Grease (mg/s)	243.72	178.08	**-26.93%**	5.15	7.93	**53.85%**	<1	<1	**NA**	73.91	18.07	**-75.56%**	183.05	6.32	**-96.55%**
MBAS (mg/s)	5.13	2.81	**-45.20%**	0.24	0.20	**-16.67%**	3.00	2.04	**-32.08%**	14.44	7.32	**-49.31%**	12.17	0.28	**-97.68%**
Chlorpyrifos (ng/s)	<1	<1	**NA**	<1	<1	**NA**	<1	<1	**NA**	<1	<1	**NA**	<1	<1	**NA**
Diazinon (ng/s)	<2	<2	**NA**	<2	<2	**NA**	<2	<2	**NA**	<2	<2	**NA**	<2	<2	**NA**
DissolvedCadmium (ug/s)	<0.2	<0.2	**NA**	<0.2	<0.2	**NA**	<0.2	<0.2	**NA**	6.80	2.80	**-58.75%**	<0.2	<0.2	**NA**
Dissolved Copper (ug/s)	1385.37	834.19	**-39.79%**	36.47	28.94	**-20.65%**	80.42	49.44	**-38.52%**	325.36	131.14	**-59.70%**	538.39	10.27	**-98.09%**
Dissolved Lead (ug/s)	60.29	37.49	**-37.81%**	2.02	1.94	**-3.92%**	8.61	11.42	**32.63%**	51.48	17.38	**-66.24%**	25.84	0.63	**-97.55%**
Dissolved Zinc (ug/s)	3668.67	2240.12	**-38.94%**	72.94	47.97	**-34.24%**	216.34	284.92	**31.70%**	2133.96	1542.48	**-27.72%**	1808.98	49.51	**-97.26%**

Notes:
1) Units on 2006 & 2007 sampling are mg/Kg
2) Units on 2006 & 2007 sampling are mg/Kg wet
3) Units on 2006 & 2007 sampling are mg/Kg dry
J= Estimated Value below the Reporting Limit and above the Method Detection Limit
NA = Not Analyzed

4 CONCLUSIONS AND RECOMENDATIONS

A total of 5 storm events were sampled since 2006: three during December 2006, one on January 31, 2007, and one on February 22, 2008. No sampling was conducted during FY 2008/2009. Generally, the WQTF inlet/ outlet differences in constituent concentrations and field-measured parameters varied among storm events. The WQTF functioned well in reducing the loading and concentration of the total suspended solids during those storms where the TSS levels at the inlet were high. This indicates the Treatment Facility is functioning as designed with respect to the TSS concentration.

In addition, large load reductions were observed for the 2/22/2008 storm event where the instantaneous loadings of all constituents measured were reduced by more than 96%. For the remaining storm events, some load reductions were observed for most constituents during at least some of the storm events measured. It must be noted that while constituent concentrations used to estimate loads on 2/22/2008 were based on two single grab samples (one collected at the inlet and one at the outlet of the WQTF) and on the average flows based on only three flow measurements per inlet and outlet., event mean concentrations of constituents from samples collected as flow-weighted composites and average flows measured for the entire storm events were used for load estimations from the remaining storms. Thus, load and concentration estimates from the 2006 and 2007 storms may be more representative of the actual reductions in constituent concentrations and loadings.

TITLE: **AGUA HEDIONDA CREEK RESTORATION – SR-02+**
ID #: **CHU-WQA16**

ACTIVITY DESCRIPTION

The Agua Hedionda Watershed Management Plan (AHWMP) recommends several stream restoration projects to improve habitat and water quality within the watershed. The SR-02 project was developed to a 10% design as part of the AHWMP. The project was originally intended to support the mitigation needs of the City's sewer program. In looking at the opportunity closer, the City expanded the boundaries and scope of the SR-02 project to include a longer section of the Creek located entirely on public lands.

The Agua Hedionda Creek Restoration Project will begin at the Buena Vista Park property boundary with the Dawson Preserve continuing upstream to the property boundary with Green Oak Ranch (approximately 3,800 linear feet). Planned project highlights include: streambed stabilization and restoration, side slope restoration, removal of non-native plants and re-vegetation with native plants, rehabilitation of a dying Oak woodland, and a new bridge on the east end. The goals of the project are: (1) to enhance the natural environment for wildlife by restoring the riparian area as part of a larger wildlife corridor, while providing the community with an opportunity to observe the local wildlife and enjoy the trail system and (2) to reduce the bed and bank erosion occurring in the Creek and achieve a stable balance representative of the appropriate sediment transport for the system.

TMDL APPLICABILITY

Currently, the Agua Hedionda Lagoon is listed for sedimentation/siltation. A TMDL was under development during FY 08-09 for sedimentation and bacteria in Agua Hedionda Lagoon. After review of the data, the lagoon has been recommended for delisting for both constituents.

TIME SCHEDULE FOR IMPLEMENTATION

- Preliminary Engineering Design – FY 09-10 (Planning)
- Final Engineering Design – FY 10-11 (Planning)
- Construction of Phase I – FY 11-12 (Implementation)
- Construction of Phases II and III – Pending Future Funding

PARTICIPATING WATERSHED COPERMITTEES

- City of Vista

OTHER PARTICIPATING ENTITIES

- San Elijo Lagoon Conservancy – may assist in invasive species eradication efforts within the watershed

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Agua Hedionda Lagoon is currently §303(d) listed for sedimentation/siltation. One of the suspected sources of the sediment in the lagoon is from streambed and bank erosion occurring upstream in Agua Hedionda Creek. Sedimentation has been determined to be a high priority water quality problem in the HA as well. The project will address these sources of sedimentation and is intended to provide equilibrium for the sediment transport in the system.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies sediment as a high priority water quality pollutant in the Agua Hedionda Creek Hydrologic Area (904.3).

Potential sources of sediment have been identified along the Creek, including erosion occurring in the streambed and on the banks. This activity addresses a high priority water quality problem and potential sources of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA Strategy.

EXPECTED BENEFITS

A reduction in sediment loading is anticipated from this activity. However, the full impacts of the project may not be realized for some time as the project will be constructed in phases as funding is available. It is expected that the project will lead to decreased sedimentation downstream in Agua Hedionda Lagoon. Additionally, the local community will benefit via an improved ecosystem and riparian corridor.

Potential measurable outcomes are:

1) Achieve load reduction of sediment over time downstream of the project site.
2) Provide a more stabile habitat for the benthic macro-invertebrate community within the restored reaches of the Creek.

EFFECTIVENESS MEASUREMENTS

The effectiveness assessment of the project has not been completed developed at this time. As the preliminary and final designs are received, the City will evaluate the most feasible methods to determine the effectiveness of the project. Some potential measures are provided below as examples which may or may not be incorporated into the final activity design.

Potential effectiveness methods include:

1) Monitoring conducted over time at the existing Mass Loading Station may provide data to compare historical loading and trend data for sedimentation as measured by TSS and turbidity.
2) Monitoring conducted over time at bioassessment stations within Agua Hedionda Creek may provide historical, trend, and current data useful in assessing the activity.

Potential assessment measures related to these methods include:

1) Overall reduction in sediment loading to Agua Hedionda Lagoon over time (Level 4, Level 6).
2) Overall improvement in benthic macro-invertebrate community over time in the project area.
3) Removal of invasive vegetation from the Creek (Level 1).

Carlsbad Watershed Water Education Activity Sheets

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TITLE: **RESIDENTIAL IRRIGATION RUNOFF REDUCTION EDUCATION**
ID #: **CHU-WQEA1**

ACTIVITY IMPLEMENTATION

A pilot single-family residential area in a sub-watershed was selected to evaluate the load reduction potential related to reducing irrigation runoff – please refer to CHUWQA1. The expected results included reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in the pilot area, and reduction in irrigation runoff flow in the pilot area. This activity focused on education of area residents related to water quality impacts of irrigation runoff. Planned activities included:

- Mailer to residents to let them know of our pilot work, ask for voluntary participation, and notify that if over-irrigation or leaks are suspected, we will contact them directly.
- Fact sheet/water use report issued to homeowners with results of the assessment and recommendations for improvement.
- Mailer to residents to thank them and invite them to participate in a website survey
- Website survey to measure educational program effectiveness.

This activity was in the planning phased during FY 07-08. Activities conducted during FY 07-08 included researching potential pilot neighborhoods, field reconnaissance at outfalls, and development of draft outreach materials.

During FY 08-09, activities conducted included an initial outreach letter sent to the 91 single-family residences to introduce the pilot, as well as intensive outreach via doorhangers and in-person door-to-door canvassing. Due to the large amount of outreach conducted during the pilot, a follow up outreach survey was not conducted. Effectiveness of the outreach conducted is presented below.

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

During FY 08-09, schedule of implementation occurred as follows:

- Pre-pilot flow measuring occurred in December 08 and January 09. The original start date was November, but the schedule was delayed due to rain events. Flow measurements were also originally scheduled to cover Monday - Friday consecutively, but the schedule was delayed and weekdays were split over December and January due to rain events in December and vandalism of the weir in January.
- Initial outreach letter mailed to residents to introduce the pilot occurred in February and included advertising for a free review, and requesting volunteers.
- Field reconnaissance, personal one on one assistance, and audits were conducted during February, March and April. Outreach tools used during these months included doorhangers, callbacks, and door-to-door canvassing outside of normal business hours.
- Post-pilot flow measuring occurred in May 09.
- Effectiveness assessment occurred in June 09.

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad

- All watershed members participated during planning and measuring phases of this activity. City of Carlsbad personnel participated in the implementation phase of the activity.

OTHER PARTICIPATING ENTITIES

- Carlsbad Municipal Water District Employees

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, sediment, and nutrients as high priority water quality pollutants in the Agua Hedionda (904.3 – bacteria and sediment), Buena Vista (904.2 – bacteria), and San Marcos Creek (904.5 – nutrients) Hydrologic Areas. Bacteria, sediment, and nutrients have been identified as potential discharges from over-irrigation. This activity addresses high priority water quality problems and potential sources of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Expected benefits included educating residents about pollution prevention and water conservation, load reduction and/or source abatement of high priority pollutants, and reduction of water usage.

EFFECTIVENESS MEASUREMENTS

Targeted outcomes for this activity included increased awareness of irrigation runoff impacts to water quality, and the reduction of flow after working with applicable residents.

- Out of 91 initial introductory letters sent out in February, there was 1 volunteer, representing a 1% response rate.
- Out of 14 doorhangers left, there was no response from homeowners.
- Out of the 73 houses canvassed in-person after hours, there was 14 homeowners that responded, representing a 19% response rate. Out of the 14 homeowners that responded, all corrections to prevent over-irrigation were made at the time of the review with City personnel.
- During field reconnaissance, there were 20 residences with visible irrigation runoff before the pilot, and only 2 afterwards, representing a 90% improvement.

Results of these outreach efforts show that in-person contact was most effective at changing behavior. This is consistent with recent research that has also shown in-person contact as being more effective in changing attitudes and behaviors than simply providing written information, such as through direct mail. (Abramson, Alrdrich, Rohde, 2003, Aronson, Gonzales, 1990).

TITLE: **WATER QUALITY RUNOFF MANAGEMENT AND AGRICULTURAL WAIVER WORKSHOP FOR NURSERIES AND AGRICULTURAL BUSINESSES**
ID #: **CHU-WQEA3**

ACTIVITY IMPLEMENTATION

This free educational workshop is planned to be provided every other year. The workshop was provided in FY 2008 and will be provided again in FY 2010. Likely topics will include:

- Water quality runoff regulations and BMPs for pollution prevention.
- Irrigated Agricultural Waivers.
- Storm water quality issues and typical inspection elements.
- Federal assistance for development of conservation management plans and other programs to assist operations in complying with water quality regulations.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad
- City of Encinitas
- City of Escondido
- City of Oceanside
- City of Poway
- City of San Marcos
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- University of California Cooperative Extension
- Regional Water Quality Control Board
- USDA, Natural Resources Conservation Service
- San Diego County Farm Bureau
- Upper San Luis Rey Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, sediment and nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and Agricultural operations have been identified as potential dischargers of bacteria, sediment, and nutrients. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

The workshop will be re-assessed after it is given in FY 2010.

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TITLE: **LID AND WATERSHED PLANNING FOR COMMUNITY PLANNING AND SPONSOR GROUPS**
ID #: **CHU-WQEA4**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID Handbook, including Management Strategies, the Appendices, and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

Local planning groups within the Carlsbad Watershed include:

- Elfin Forest/Harmony Grove
- Hidden Meadows
- San Dieguito
- Twin Oaks
- Valley Center

ACTIVITY IMPLEMENTATION

As documented in the table below, presentations during FY 08-09 were delivered to four planning, sponsor or town council groups in the Carlsbad Watershed, which included 137 attendees. A total of 44 pre- and post- surveys were completed the groups.

Community Group	Presentation Date	No. Of Attendees	Surveys Completed
Elfin Forest / Harmony Grove (Town Council)	11/5/08	16	7
San Dieguito	8/14/08	41	11
Twin Oaks	7/16/08	19	12
Valley Center	9/8/08	61	9
Total		**137**	**39**

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This activity was completed during FY 2008-09. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness was assessed by tracking the number of presentations conducted (4), the number of participants in attendance (137), and the number of LID Handbooks distributed (60) (Level 1 Outcomes). Furthermore, attendees were asked to complete pre- and post- survey forms, which consisted of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area. Survey results were calculated to measures changes in attendee knowledge regarding watershed planning and LID principles (Level 2 Outcome).

The table below summarizes results from the surveys administered to groups in the Carlsbad Watershed. Improvements on the post- survey ranged from a 24.44% increase to a 31.43% increase. This represents a demonstrable increase in knowledge among the target audience.

Community Group	Total Attendees	# of Surveys Performed	Pre-survey % correct	Post-survey % correct	% Increase
Elfin Forest / Harmony Grove	16	7	57.14%	88.57%	31.43%
Hidden Meadows	13	11	69.09%	67.27%	-1.82%[1]
San Dieguito	41	11	58.18%	87.87%	29.69%
Twin Oaks	19	12	60.00%	84.44%	24.44%
Valley Center	61	9	62.22%	88.89%	26.67%

Questions posed on the surveys to the participants included:

1. Do watershed and community planning areas share the same boundaries?

a) Yes
b) No
c) Sometimes

[1] Effectiveness of the Hidden Meadows Sponsor Group result was reported in the 07-08 Annual Report. Because one question on the survey was found to be confusing to participants, the question was rephrased for subsequent presentations. Results have since shown an increase in knowledge between the post- and pre- surveys.

2. Increased urbanization (increased development)

a) Has no impact on water quality.
b) Has only a small impact on water quality, and the stormwater (storm drain) system helps to keep the water clean.
c) Increases evapotranspiration & infiltration directly proportional to the amount of development that is built.
d) Affects ground water and stormwater quality by increasing runoff and decreasing infiltration.

3. What are the County requirements with regard to LID for incoming projects?

a) Ensure all project use exactly the same Low Impact Development techniques for site design.
b) Require LID techniques for all priority development projects, and encourage LID techniques for all other projects.
c) There are no County requirements for LID, its all voluntary.
d) None of the above.

4. Priority Development Projects include projects that are:

a) Less than 5000 square feet in size and have no impact on environmentally sensitive areas
b) Are defined as new or redevelopment projects that require a Stormwater Management Plan (SWMP)
c) Small lot splits and do not require a SWMP to be completed.
d) Fast-tracked at the County.

5. Low Impact Development (LID) is

a) Developing fewer homes on larger lots.
b) A method of developing that serves to mimic the natural hydrology of a site.
c) Keeping all water away from storm drains and channeling it to the nearest creek.
d) An identical set of BMPs that are used in exactly the same manner each time to address stormwater runoff.

6. Where does stormwater or urban runoff from your CPA go? (Free answer)

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TITLE: **LID FEATURES IN SAN ELIJO NATURE CENTER**
ID #: **CHU-WQEA5**

ACTIVITY DESCRIPTION

In November 2007, the County of San Diego began construction on a two-story, 5,525 square foot, state-of-the art nature center that replaces the former visitor center located at the San Elijo Lagoon Ecological Reserve in Encinitas. The new facility, which will open in early 2009, is designed to be constructed and commissioned in accordance with the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program and is expected to achieve Gold or Platinum certification. LEED credit 6 is specific to stormwater management and is achieved by maintaining the pre-development 24-hour peak discharge rate in the post-development environment if existing impervious surfaces are 50% or less.

The building design incorporates low impact development (LID) techniques which include a green roof with low water use native plants, a bioswale to aid in infiltration of runoff from the site, radiant floor heating, recycled cotton insulation, certified renewable lumber, photovoltaics that will provide 52% of energy requirements, natural daylighting and ventilation, stormwater filtering, native vegetation and recycled water used for irrigation, and extraordinary efforts to minimize area of disturbance. In addition to the many "Green" qualities designed into the building, the Nature Center's exhibits will showcase a series of high quality professional photographs and high-tech, interactive educational kiosks for visitors of all ages.

The goal for the San Elijo Visitor Center is to utilize the gold certification to educate the public on environmentally friendly building design and to present a "practice what we preach" public facility, demonstrating conservation of natural resources, use of recycled and environmentally friendly construction materials and reduced pollution and water use. A section of the exhibits will educate visitors on what and where watersheds are, the causes of water pollution and its destructive impact on habitat and endangerment and extinction of species, clean drinking water, water conservation, water reuse, etc. This facility will serve to promote future sustainable design in the San Diego region and educate citizens about ways in which they can reduce pollutants, including bacteria, sediment and nutrients, from entering the watershed.

Figure 1. Photo of Green Roof Informational Signage and Green Roof

ACTIVITY IMPLEMENTATION

The San Elijo Nature Center celebrated a grand opening on January 31st, 2009. The San Elijo Nature Center is now open to the public. Since opening the San Elijo Nature Center has seen a total of approximately 21,000 visitors.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- October 2008 – Installation of Exhibits
- January 2009 – Building Commissioning
- January 31, 2009 – Grand Opening

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria, sediment and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a high priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

As indicated in the March 2008 WURMP, activity effectiveness will be measured by successful implementation of the LID features described (Level 1 Outcome). There is no post-construction water quality monitoring planned for this site.

TITLE: **UPDATED SAN DIEGO REGION MODEL SUSMP WORKSHOP/TRAINING**
ID #: **CHU-WQEA6**

ACTIVITY IMPLEMENTATION

As required in Water Quality Order No. 2007-0001 (San Diego Municipal Stormwater Permit), the San Diego County Stormwater Copermittees must update the San Diego Region Model Standard Urban Stormwater Management Plan (SUSMP). Approval of the San Diego Region updated Model SUSMP by the RWQCB is anticipated for the Spring of 2009. After the document is accepted by the RWQCB, Copermittees are required to adopt local SUSMPs within the following year. The Carlsbad Watershed Copermittees recognize that both municipal staff (engineers, planners, program managers, etc.) and the development community (planners, engineers, architects, etc.) play an integral role in ensuring that all development plans for new development and redevelopment projects properly address SUSMP requirements.

In order to promote consistent implementation and ease the transition of meeting the new SUSMP requirements, the Carlsbad Watershed Copermittees determined that a collaborative approach to educating the public about recent advancements in development planning would be a beneficial strategy for the watershed. Sharing education and information between jurisdictions (as compiled and incorporated into the training) will help to ensure adequate consideration of watershed-level problems and solutions.

A presentation and educational materials will be developed for the proposed SUSMP workshop/ training event. Topics presented at the event may include: watershed principles, pollutants generated by land use type, the adopted Model SUSMP, SUSMP implementation, priority project categories, Low Impact Development, source control and treatment control Best Management Practices, hydromodification management, and operation and maintenance responsibilities.

The workshop will be planned subsequent to formal acceptance of the model SUSMP by the RWQCB and adoption by the Carlsbad WURMP Copermittees. Municipal staff, and local planning, engineering, and architectural firms and other development professionals will be solicited and informed of the workshop training opportunity through various mechanisms, which may include: direct mailing, website notification, and advertisement at public buildings.

TMDL APPLICABILITY

This activity is not currently planned for implementation in compliance with a TMDL.

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad
- City of Encinitas
- City of Escondido
- City of Oceanside
- City of Poway
- City of San Marcos
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Developers

- Land use planners
- Civil Engineers
- Architects and Landscape Architects
- Property Owners

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses all high priority water quality problems and likely sources of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The expected benefits of this watershed education activity include increased awareness of SUSMP requirements and improved implementation of SUSMP BMPs on development and redevelopment projects. Installation of permanent BMPs at priority development project sites will reduce pollutant runoff and lead to improved water quality in downstream receiving waters.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed during the presentation (Level 1 Outcome). A pre- and post-presentation survey evaluation form will also be provided to participants. The survey will help determine whether the participants learned something valuable during the presentation (Level 2 Outcome).

TITLE: **BIOASSESSMENT TRAINING FOR HIGH SCHOOL STUDENTS**
ID #: **CHU-WQEA7**

ACTIVITY IMPLEMENTATATION

Communities Alive in Nature, a local non-profit organization, implements environmental education outreach programs to local school districts in San Diego County. One component of their education outreach program is to educate high school students about water quality and how to assess water quality based on water chemistry and the biological community of benthic macroinvertebrates living within the streams. Oceanside Clean Water Program staff was invited to participate in a hands-on field training for students to demonstrate how to properly use field test kits for water quality analysis and the proper protocols for collection of benthic macroinvertebrates. Ninth grade students from Pacific Ridge School, a private school located in Carlsbad, California, participated in this educational training event.

Two bioassessment training events were held during this reporting period. These two events were held on March 19 and March 26, 2009 at Dawson Reserve and Green Oaks Ranch respectively, both located in Vista along Agua Hedionda Creek. Forty seven 9th Grade students and 12 adults participated in the two training events.

During the trainings three stations were set-up along the creek that focused on three components of the overall bioassessment sampling: water chemistry, collection of benthic macroinvertebrates, and habitat assessment. Students were split into three groups and rotated between the three stations. At each station students were taught the appropriate protocols to complete specific tasks. The water chemistry station taught students how to properly collect a water sample and how to use field test kits. Data gathered at this station included water and air temperature, pH, dissolved oxygen and total nitrates. At the bioassessment station students learned about the various types of equipment used to collect benthic macroinvertebrates, how to properly access the water, and the correct protocol to collect the benthic macroinvertebrates. At the habitat assessment station students leaned how to properly complete the form used to assess the habitat surrounding the sampling site.

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This education outreach and training activity is scheduled for March/April of each year. This reporting period's training events were held on March 19 and 26, 2009. Two training events are planned for implementation in March/April 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING AGENCIES

- Communities Alive in Nature
- Pacific Ridge School

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, nutrients and sediment as high priority water quality pollutants in the Carlsbad WMA. This activity educates students and adults as to how these pollutants can affect the benthic macroinvertebrates living within the streams of the Carlsbad WMA.

EXPECTED BENEFITS

Expected benefits include educating high school students and adults about how water pollution can affect the benthic macroinvertebrates living within the streams of the Carlsbad WMA.

EFFECTIVENESS ASSESSMENT

All ninth grade students attending Pacific Ridge School are expected to attend one of the two trainings. This activity will provide increased awareness (Level 2 Outcome) on how benthic macroinvertebrates can determine water quality problems over time rather than just a snapshot as is seen with typical water quality sampling.

Appendix C

Upper San Marcos Creek Nutrient Management Plan

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UPPER SAN MARCOS CREEK WATERSHED (USMC) NUTRIENT MANAGEMENT PLAN

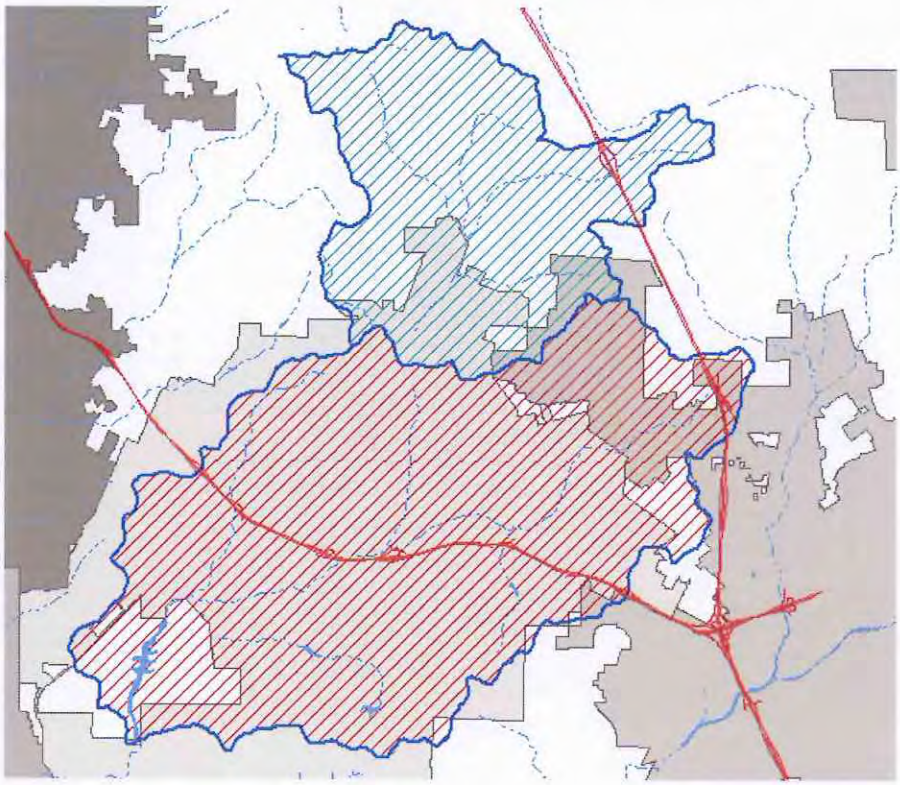

PREPARED BY:

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JANUARY 2010

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1.0 USMC NUTRIENT MANAGEMENT PLAN OBJECTIVES

The Upper San Marcos Creek (USMC) Watershed MS4 Copermittees (City of San Marcos, County of San Diego, and City of Escondido) have established four primary objectives for this Nutrient Management Plan:

1. Establish baseline data to assess nutrient-related water quality in the watershed and to measure future improvements;
2. Identify potential sources of nutrients in the watershed and establish priorities for source control activities;
3. Identify best management practices (BMPs) and other actions that will help to reduce nutrient discharges into and from municipal separate storm sewer systems (MS4s) operated by the USMC Watershed MS4 Copermittees;
4. Establish a framework for collaboration among the USMC Watershed MS4 Copermittees, including, data collection, monitoring, outreach, and reporting.

The USMC Watershed MS4 Copermittees will meet on a regular basis to achieve these objectives.

2.0 USMC WATERSHED CHARACTERIZATION

The USMC Watershed is approximately 29 square miles and is comprised of two sub-watersheds (See Appendix A, Figure 1). The primary water bodies in the USMC watershed are Upper San Marcos Creek and Lake San Marcos.

Table 2.1 illustrates that the Twin Oaks hydrologic sub-area (HSA 904.53) is located in the northern portion of the watershed and makes up 31% of the total watershed land area. The County of San Diego has the most land use jurisdiction in HSA 904.53, followed by the Cities of San Marcos and Escondido. HSA 904.53 is predominantly occupied by agricultural, open space, and single-family residential land uses.

The Richland HSA (HSA 904.52) comprises the remainder of the watershed, and is located south of the Twin Oaks HSA and north of Lake San Marcos. HSA 904.52 comprises 69% of the total land area of the watershed. The City of San Marcos has the predominant land use jurisdiction in HSA 904.52, followed by the City of Escondido and the County of San Diego. HSA 904.52 is predominantly urban with single-family residential land uses and some commercial and industrial corridors.

Table 2.1
HSAs in Upper San Marcos Creek Watershed

HSA	Land Area (acres)	% of UPPER SAN MARCOS CREEK WATERSHED
Twin Oaks (904.53)	5,663	30.6
Richland (904.52)	12,863	69.4
TOTAL	**18,526**	**100 %**

This plan focuses on nutrient management activities by three Phase I MS4 municipalities. Table 2.2 summarizes each municipality's total land area within the USMC Watershed. The City of San Marcos comprises the majority of the land area followed by the County of San Diego, and the City of Escondido. The plan does not address nutrient contributions from other MS4s in the watershed, including those operated by Caltrans, utility agencies, or Phase II MS4 entities such as school districts, colleges, universities, and transit agencies. In addition, there are numerous other entities and private parties which may hold other permits and/or rights that may be potential nutrient sources. Although they are not included as part of this plan, the Phase 1 MS4s will endeavor to work cooperatively with all responsible parties in the watershed wherever feasible.

Table 2.2

MS4 Copermittee Jurisdictional Land in Upper San Marcos Creek Watershed

Agency	Land Area (square miles)	% of UPPER SAN MARCOS CREEK WATERSHED
City of San Marcos	16.9	58.2
County of San Diego	9.4	32.4
City of Escondido	2.7	9.4
TOTAL	**29.0**	**100 %**

Table 2.3 summarizes current water quality impairments in San Marcos Creek and Lake San Marcos as identified on the State of California's 303(d) List of Impaired Water Body Segments. Table 2.4 lists the beneficial uses of San Marcos Creek, Lake San Marcos, and unnamed intermittent streams that are established in the Water Quality Control Plan for the San Diego Basin (Basin Plan). This plan focuses only on addressing nutrient-related impairments, which most directly impact aquatic wildlife (WARM, WILD) and aesthetic beneficial uses (REC-2).

Table 2.3

2006 303(d) Listings for San Marcos Creek/Lake San Marcos and Proposed 2008 303(d) Listings

303(d) Listed Water Body	2006
San Marcos Creek	DDE, phosphorous, sediment toxicity
Lake San Marcos	Ammonia as N, Nutrients, phosphorous

Table 2.4

Basin Plan Inland Surface Waters

Beneficial Uses for San Marcos Creek/Lake San Marcos

Water Body	Beneficial Uses
San Marcos Creek/Lake San Marcos (904.52 - Richland)	MUN (excepted), AGR, REC1, REC2, WARM, WILD
Unnamed intermittent streams (904.53 – Twin Oaks)	MUN (excepted), AGR, REC1, REC2, WARM, WILD

3.0 USMC WATERSHED POTENTIAL NUTRIENT SOURCES

This section identifies and describes potential sources of nutrients in the Upper San Marcos Creek Watershed. The USMC Watershed MS4 Copermittees conducted a watershed-based assessment of jurisdictional source inventories, available water quality monitoring data, and land use data to identify four priority source categories from the comprehensive list of potential sources shown in Table 3.1. These four source categories are likely contributors of nutrient loading in the Upper San Marcos Creek and Lake San Marcos. As shown in Table 3.1, management programs for many of these sources are already required pursuant to mandatory MS4 Permit compliance programs, including the Jurisdictional Urban Runoff Management Program (JURMP).

The relative nutrient loading from each potential source is unknown. Part of the initial work effort under this plan will involve iterative activities or data assessment studies to provide definitive information on a particular source's threat-to-water quality with respect to nutrients and potential abatement efforts on a sub-watershed basis.

Until more is known about the relative loading from each source, the USMC Watershed MS4 Copermittees will focus management and abatement activities on the top four source categories suspected to be contributing a significant portion of the nutrient load:

- Residential areas
- Agriculture (including nurseries)
- Parks, and
- Golf courses.

Together, these sources represent almost 50% of the total watershed land area. They are also thought to be significant in terms of their potential for over-irrigation and fertilizer use, both of which have the potential to exacerbate nutrient loading in the watershed. Table 3.1 also gives an indication of the extent and magnitude of each source category within the Upper San Marcos Creek Watershed.

Table 3.1

Potential Nutrient Sources in Upper San Marcos Creek Watershed

POTENTIAL NUTRIENT SOURCES	MANDATORY COMPONENT OF JURMP?	EXTENT WITHIN UPPER SAN MARCOS CREEK WATERSHED
PRIORITY SOURCE CATEGORIES UNDER THIS PLAN		
Residential Areas & Activities	Yes	5,949 acres (32.1%)
Agriculture, including nurseries	Yes (nurseries only)	2,133 acres (11.5%)
Parks & Recreational Areas	Yes	505 acres (2.7%)
Golf Courses (4 total)	Yes	422 acres (2.3 %)
	Total	***9,009 acres (48.6 %)***
OTHER SOURCE CATEGORIES THOUGHT TO CONTRIBUTE NUTRIENT LOADING		
Aerial Deposition	No	Unknown
Animal Facilities	Yes	FUTURE DATA ASSESSMENT
Cemeteries	Yes	FUTURE DATA ASSESSMENT
Landscaping in Commercial/Industrial Areas	Yes	FUTURE DATA ASSESSMENT
Construction Sites	Yes	FUTURE DATA ASSESSMENT
Development (New and Redevelopment)	Yes	FUTURE DATA ASSESSMENT
Groundwater	No	Unknown
Landfills (including closed landfills)	Yes	FUTURE DATA ASSESSMENT

POTENTIAL NUTRIENT SOURCES	MANDATORY COMPONENT OF JURMP?	EXTENT WITHIN UPPER SAN MARCOS CREEK WATERSHED
Naturally Occurring Nutrients in Soil	No	FUTURE DATA ASSESSMENT
Phase II MS4s	No	FUTURE DATA ASSESSMENT
Sanitary Sewer Systems & Facilities	No	FUTURE DATA ASSESSMENT
Streets, Roads, and Highways	Yes	FUTURE DATA ASSESSMENT

3.1 Residential Areas and Activities

There are 5,949 acres (9.3 square miles) of residential development in the Upper San Marcos Creek Watershed (See Appendix A, Figure 2). This represents 32% of the total watershed land area. As shown in Table 3.2[1], single-family homes are the predominant residential land use type (54%), followed by spaced rural residential (32%). There are also significant multi-family and mobile home residential uses in the watershed (7% each). Table 3.2 describes nutrient-generating activities common in residential areas.

Table 3.2
Summary of Land Use Types

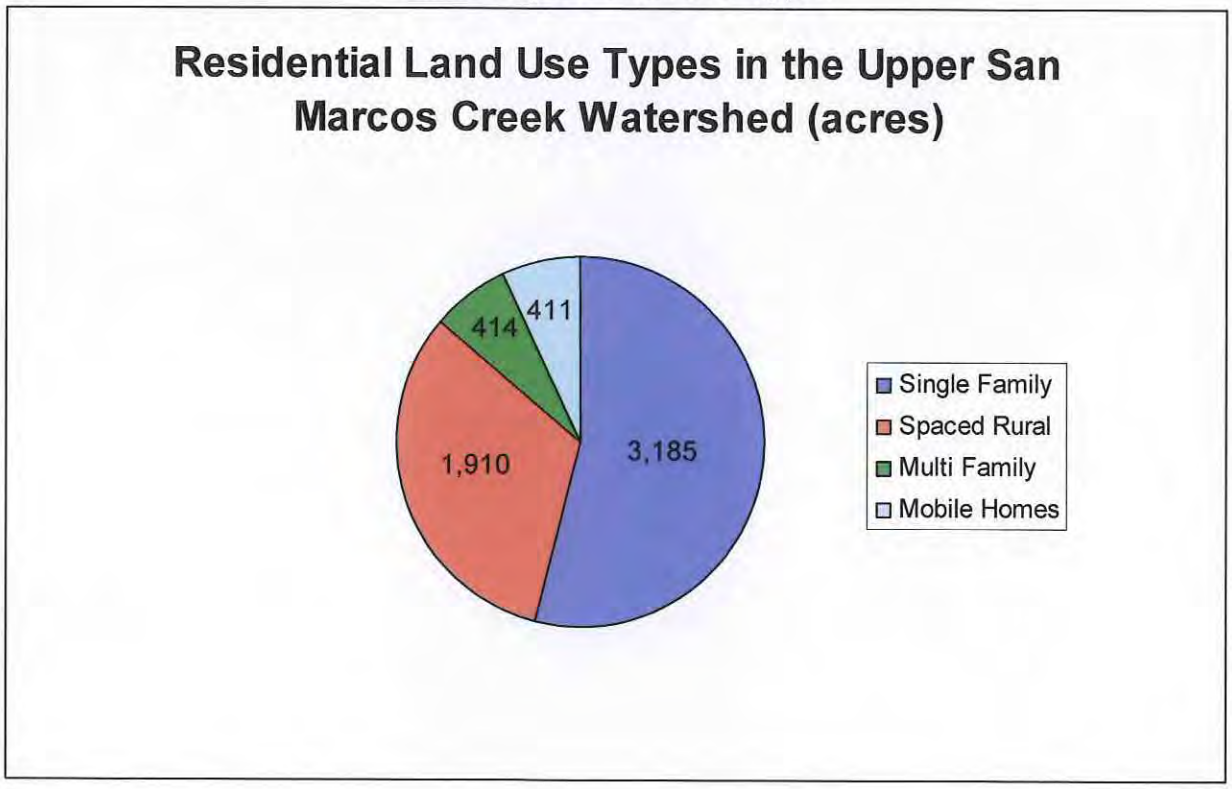

[1] Based on 2006 SANDAG Land Use Data

Table 3.3
Nutrient-Generating Activities Common to Residential Areas

ACTIVITY	DESCRIPTION
Automobiles and Boats	
Washing and cleaning	Washing and cleaning automobiles and boats can cause detergent and washwater with pollutants to run into the MS4 or directly into receiving waters.
Lawns, Gardens, and HOA-Maintained Areas	
Over-irrigation	Use of excessive water on lawns, gardens, or other green areas can cause runoff which carries pollutants to the MS4 or directly into receiving waters. Excessive water use can result from over-application, system leaks, or improperly adjusted sprinklers.
Fertilizer use	Overuse of fertilizer can cause contaminated runoff to enter the MS4 or receiving waters as a result of rain or irrigation flows.
Landscape drains	Landscape drains can convey irrigation water or groundwater with elevated levels of nutrients to the MS4 or directly to receiving waters.
Household and Home	
Outdoor cleaning	Cleaning outdoor areas such as sidewalks, driveways, and home exteriors by power washing or use of hazardous chemicals. Wash waters are often allowed to drain into the stormwater conveyance system or are not properly contained and disposed.
Pool, spa, and fountain care	Maintenance of swimming pools, spas, and ornamental water fixtures require chemical application and the discharging of polluted water and wash water. Water being drained is often allowed to flow into the MS4.
Materials and waste storage	Materials and waste that are not properly covered or contained have the potential to enter the MS4 or receiving waters as a result of rain or irrigation flows.
Waste disposal	Failure to properly dispose of material or waste into waste receptacles can lead to contamination of MS4s or receiving waters.
Sewer lateral maintenance	Failure to properly maintain private sewer laterals can lead to sewage overflows, which can contribute nutrients to receiving waters.
Pets	
Pet waste disposal	Failure to properly dispose of pet waste can lead to contaminated runoff entering MS4s or receiving waters as a result of rain or irrigation flows.
Pet cleaning	Pet cleaning and washing can cause detergent and wash waters with pollutants to run directly into MS4s or directly into receiving waters.
Livestock and Large Animals	
Manure management	Exposed manure from livestock, horses, or other large animals can enter the MS4 or receiving waters as a result of rain or irrigation flows.
Manure disposal	Failure to properly dispose of manure can lead to contaminated runoff entering MS4s or receiving waters as a result of rain or irrigation flows.
Composting	Failure to properly store and contain compost can result in nutrient loading to the MS4 or receiving waters.
Agriculture on Residential Parcels	
Over-irrigation	Use of excessive water leads to runoff, which can carry pollutants to the MS4 or directly into receiving waters.
Fertilizer use	Overuse of fertilizer can cause contaminated runoff to enter the MS4 or receiving waters as a result of rain or irrigation flows.

3.2 Agriculture (including Nurseries)

There are 2,133 acres (3.3 square miles) of agricultural land uses in the Upper San Marcos Creek Watershed (See Appendix A, Figure 3). This represents 12% of the total watershed land area. As shown in the Table 3.4 below[2], orchards and vineyards are the predominant type (57%), followed by intensive agriculture (23%), and field crops (21%). There are 42 nurseries and greenhouses in the unincorporated portion of the watershed, 6 within the City of San Marcos boundaries, and none in the City of Escondido. Table 3.5 describes nutrient-generating activities common in agricultural areas.

Table 3.4
Summary of Agricultural Land Uses

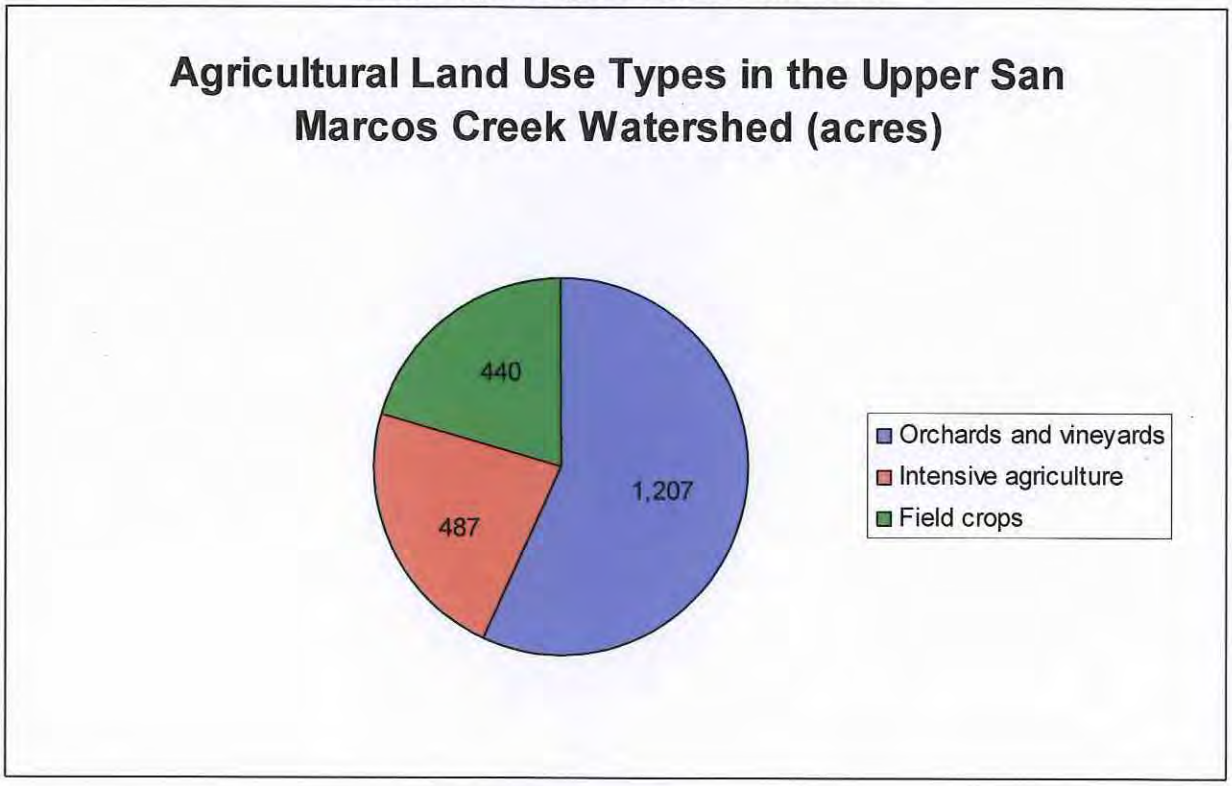

Table 3.5
Nutrient-Generating Activities Common to Agricultural Areas

ACTIVITY	DESCRIPTION
Irrigation management	Use irrigation water in a way that minimizes the amount of wasted water and the amount of water leaving the property and potentially reaching an MS4 or receiving water.
Nutrient management	Application of nutrients is necessary in agricultural settings, but the goal should be to apply only the amount of nutrients needed and usable by target plants, and at the appropriate time based on plant growth stage and environmental factors.
Erosion and runoff management	Erosion and runoff management involves modifying soil and container substrates to enhance their ability to hold water, creating barriers to the movement of sediments and water and capturing unused irrigation water for reuse or storage.

[2] 2006 SANDAG Land Use Data

3.3 Parks and Recreational Areas

There are 505 acres (0.79 square miles) of park land uses in the Upper San Marcos Creek Watershed (See Appendix A, Figure 4). This represents 2% of the total watershed land area. There are no parks in the unincorporated portion of the watershed, 52 within City of San Marcos boundaries, and none in the City of Escondido. Table 3.6 describes nutrient-generating activities common in landscaped park areas.

Table 3.6
Nutrient-Generating Activities Common to Park Areas

ACTIVITY	DESCRIPTION
Irrigation management	Use irrigation water in a way that minimizes the amount of wasted water and the amount of water leaving the property and potentially reaching an MS4 or receiving water.
Nutrient management	Application of nutrients is necessary in agricultural settings, but the goal should be to apply only the amount of nutrients needed and usable by target plants, and at the appropriate time based on plant growth stage and environmental factors.
Erosion and runoff management	Erosion and runoff management involves modifying soil and container substrates to enhance their ability to hold water, creating barriers to the movement of sediments and water and capturing unused irrigation water for reuse or storage.
Landscape Maintenance	Landscape Maintenance (shrub , grass, tree clippings, leaves) involves proper removal and disposal of organic matter from park areas in order to reduce the potential for organic matter to reach the MS4

3.4 Golf Courses

There are four separate golf courses throughout the Upper San Marcos Creek Watershed (See Appendix A, Figure 4). Of these four golf courses, two are within the unincorporated area, and one within each the City of San Marcos, and Escondido.

The total amount of land used by the four golf courses is 422.2 square acres (0.7 square miles). Golf courses in the County and Escondido are managed and/or owned by the same single private entity and comprise 65.1 % of the total golf course land use in the USMC watershed. Each golf course uses the following amount of area within the Upper San Marcos Creek Watershed:

- Lake San Marcos Executive Golf Course: 37 acres (0.06 square miles)
- Lake San Marcos Country Club Golf Course: 129 acres (0.20 square miles)
- Country Club (Escondido): 109 acres (0.17 square miles)
- Twin Oaks (San Marcos): 147 acres (0.23 square miles)

Table 3.7 describes nutrient-generation activities that are commonly associated with golf course operations.

Table 3.7
Nutrient-Generating Activities Common to Golf Courses

Source/Activity	Description
Fertilizer use	Overuse of fertilizer can cause polluted runoff.
Over irrigation	Over use of irrigation water for golf courses leads to excess runoff- resulting in nutrient rich water entering the MS4/receiving water bodies.
Wildlife waste	Wildlife (e.g., ducks) that gather in and around golf course.
MS4/receiving water protection	Unprotected inlets and exposed open channels.
Greenwaste management	Improper storage and/or disposal of greenwaste can pollute runoff.

4.0 IMPLEMENTATION PLAN

Implementation of this plan will involve a number of different activities, including monitoring, public education, enforcement of local ordinances to ensure private party compliance with nutrient discharge prohibitions, and municipal implementation of BMPs where appropriate.

4.1 Monitoring

This section describes current and planned water quality monitoring activities in the Upper San Marcos Creek Watershed. It is divided into two parts. "Core" monitoring activities are those required to maintain compliance with the MS4 Permit. "Enhanced" monitoring includes additional monitoring activities proposed by the Watershed Copermittees to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify sub-watershed priorities for management action.

As an initial step, the USMC Watershed MS4 Copermittees reviewed historical sources of nutrient-related water quality data in the Upper San Marcos Creek Watershed. In addition to the Copermittee data described starting in Section 4.1.1, the review uncovered the following external sources of information:

- 904CBSAM3: This site, which is located on Upper San Marcos Creek near McMahr Road, about 1,300 feet upstream of the Discovery Street Bridge, was sampled during ambient conditions as part of the State of California's Surface Water Ambient Monitoring Program (SWAMP) in 2002. Both ammonia as N and total phosphorous as P exceeded their respective aquatic life thresholds of 0.025 mg/L and 0.1 mg/L in four out of four samples taken. Nitrate + Nitrite as N did not exceed its aquatic life threshold (10 mg/L) in any of the four samples.

- SMC-00729: This site, which is located on Upper San Marcos Creek about 900 feet downstream of State Route 78, near Echo Lane, was sampled during ambient conditions on June 3, 2009, as part of a program conducted by the Southern California Stormwater Monitoring Coalition (SMC). Ammonia as N was measured at 0.05 mg/L. Nitrate as N was measured at 1.92 mg/L compared to a Basin Plan Water Quality Objective of 10 mg/L. Nitrite as N was measured at <0.01 mg/L compared to a Basin Plan Water Quality Objective of 1 mg/L. Total Kjeldahl Nitrogen (TKN) was measured at 0.98 mg/L. Total nitrogen was calculated to be 2.9 mg/L compared to a Basin Plan Water Quality Objective of 1 mg/L. Total orthophosphate as P was measured at 0.1 mg/L. Total phosphorous

was measured at 0.218 mg/L compared to a Basin Plan Water Quality Objective of 0.1 mg/L.

4.1.1 Core Monitoring

The San Diego Municipal MS4 Permit requires Copermittees to carry out a variety of mandated water quality monitoring activities at many locations throughout the San Diego region. These "core" monitoring programs are intended to: 1) assess the chemical, physical, and biological impacts to receiving waters resulting from urban runoff discharges, and 2) to identify and characterize sources of specific pollutants in urban runoff discharges. The Regional Receiving Waters Monitoring Program approved by the Regional Water Quality Control Board and implemented by the San Diego Regional Stormwater Copermittees does not currently include any monitoring stations in the Upper San Marcos Creek Watershed. However, the County of San Diego, the City of San Marcos, and the City of Escondido all conduct a Dry Weather Field Screening and Analytical Monitoring Program within their respective jurisdictions. Jurisdictional dry weather monitoring takes place between May 1 and September 30 each year and is designed to detect and eliminate illicit connections and illegal discharges to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow up investigations.

4.1.1.1 County of San Diego

The County of San Diego regularly monitors four stations as part of its jurisdictional Dry Weather Monitoring Program. The CAR 13 and CAR 14 monitoring stations are located at MS4 outfall locations immediately adjacent to the lake, on the lake's west and east side respectively. The CAR 04 monitoring station is located within the San Marcos Creek channel as it crosses beneath the Discovery Street Bridge at the jurisdictional boundary between the County of San Diego and the City of San Marcos. The CAR 06 monitoring station is located in an earthen channel, near San Marcos Creek approximately seven miles upstream of Lake San Marcos at the jurisdictional boundary between the County of San Diego and the City of San Marcos.

Field data collected during site visits include site descriptions, qualitative observations of site conditions, as well as quantitative measurements of flow and physiochemical properties of water. Measurements of water flow and/or physiochemical properties are measured in situ. Grab samples are collected for field measurement of ammonia, nitrate, orthophosphate, MBAS, and additional laboratory analysis of constituents as required by the Permit or deemed valuable to the County's monitoring program. A full explanation of procedures for the Dry Weather Monitoring Program is presented in the Dry Weather Analytical and Field Screening Monitoring Procedures Manual (County of San Diego, 2008). Additionally, the County has developed and annually updates a Quality Assurance Project Plan (QAPP) for the Program (County of San Diego, 2008). As established in the MS4 Permit, results that exceed the action levels established for various constituents trigger follow up investigations to seek out and abate the discharge sources. The action level for nitrate (nitrate-N) is 10.0 mg/l. The action level for phosphate (orthophosphate-P) is 2.0 mg/l.

CAR 13 is located on the western side of Lake San Marcos in a storm drain outlet that discharges directly to the lake at the terminus of San Marino Drive. The drainage area is

composed of residential properties and the Lake San Marcos Executive Golf Course. Flowing water is usually present at this site during dry weather conditions. No exceedances of action levels were recorded during the 2008 sampling dry weather sampling season. Between 2004 and 2007, various indicator bacteria exceeded action levels but there have been no exceedances of action levels for nitrate or phosphate. Upstream investigations have identified bacteria exceedances in two tributaries to the site, but no specific sources have been located. The County has identified the need for additional monitoring at this location to: 1) better characterize low flows during dry weather, and 2) characterize nutrient loading during storm events (see Section 4.1.2).

CAR 14 is located on the eastern side of Lake San Marcos in an earthen channel of a small tributary at the end of El Chico Lane. The drainage area for this station is composed of primarily residential properties, but also includes agricultural land uses (avocado orchards) and the Lake San Marcos Main Golf Course. Only ponded water has been observed at this site under dry weather sampling conditions. The site has been monitored since 2004. Between 2004 and 2007 there were no action level exceedances at this location. Indicator bacteria levels exceeded action levels in July 2008 sampling date and on a follow up visit in August 2008. Subsequent upstream investigations showed indicator bacteria levels below the action level and no discharge sources could be located. Ammonia exceeded its action level in September 2008 but was determined to be a localized environmental condition.

CAR 04 is located on San Marcos Creek upstream of Lake San Marcos at the Discovery Street Bridge. During 2008, this location was sampled twice. The site had flowing water on the first visit (July 21) and ponded water on the second visit (September 8). No action level exceedances have been recorded at this location from 2002 to 2008.

CAR 06 is located in an earthen channel near San Marcos Creek, approximately seven miles upstream of Lake San Marcos near the jurisdictional boundary between the County of San Diego and the City of San Marcos. The site receives runoff from portions of the Twin Oaks area and includes agricultural and rural residential land use types. Under dry weather conditions the site is most often dry, with water observed during only two out of the seven years sampled. In 2006, a referral of potential nitrate exceedances was made to the County of San Diego. In the years following the referral, the County has attempted investigation but the site remains dry during scheduled sampling visits preventing further sampling at the location. The County of San Diego Department of Agriculture, Weights and Measures concluded that the nitrate exceedance may be the result of subsurface flow potentially created by the irrigation practices of surrounding commercial nurseries, field grown agriculture, and to a lesser degree, equestrian and equine activities.

4.1.1.2 City of San Marcos

Within the Upper San Marcos Creek Watershed, the City of San Marcos has 27 core dry weather monitoring stations. Two stations are located within HSA 904.53 and 25 are located in HSA 904.52. The City of San Marcos has four primary drainage areas identified A, B, C, and D. An assessment of data collected since 2002 identifies that two primary drainage areas and monitoring locations (D-3 and B-3) indicate elevated levels of nutrients. Since 2002, six incidents of nutrient exceedance have occurred,

predominately at B-02 and B-03. However, there were no consistent trends. These monitoring locations are consistent with the primary land use nutrient sources in HSA 904.52.

4.1.1.3 City of Escondido

Within the Upper San Marcos Creek Watershed, the City of Escondido has five dry weather monitoring stations. The Upper San Marcos Creek Watershed comprises only 11 percent of Escondido's total area representation within the San Marcos Creek Watershed. All five of the dry weather stations are situated around or within the Country Club Golf Course. Three stations are located within the Country Club Golf Course (874.4.0, 874.3.0 and 874.2.0) and two outside/adjacent to the golf course (874.0.0 and 874.1.0). The following are descriptions of the dry weather station locations as the sole surface water body travels through the City of Escondido's jurisdiction:

874.4.0: located within the northern portion of the golf course as surface water immediately enters the City's jurisdiction and golf course (Nutmeg Street and Gary Lane) via an outfall pipe. Historical data for this station shows no past water quality issues. The station has had flow twice (Fiscal years 04-05 and 07-08) since the dry weather program was initiated in 2001.

874.3.0: located within golf course (County Club Road and La Brea Street) in a side unnamed tributary (open natural) prior to commingling with main open (natural) channel which transverses the course. Historical data for this station provides no past water quality issues. The station had flow once in fiscal year 2007-08.

874.2.0: located within the main golf course (open natural channel), downstream of the main golf course pond and the last exposed location prior to entering a subterranean portion of the MS4. This station has had past elevated total coliform (fiscal years 03-04 and 05-09) and fecal coliform levels in fiscal year 08-09. Upon investigation, the source of the elevated bacteria was the result of water fowl gathering in the golf course pond up-gradient of the station. No elevated nutrients were found in any of the past fiscal years.

874.1.0: located outside the golf course along a natural side drainage (natural channel at the end of Arroyo Road and County Club Road) which feeds to the City's MS4. Historically the station is dry.

874.0.0: located downstream of the golf course within a concrete channel which passes through a mobile home park/facility (within the City of San Marcos). Historical data for this station has shown elevated levels for total coliform and fecal coliform in fiscal year 08-09. As previously mentioned above, the source was water fowl gathering in the golf course pond. No elevated nutrients were found in any of the past fiscal years.

The layout of the five stations is used to provide water quality (dry weather flow) analysis as flow passes through the County Club Golf Course. Station 874.4.0 provides influent water quality as it enters both the City of Escondido and the golf course. Stations 874.3.0 and 874.2.0 provide water quality data as it passes through the golf course, which can be a prime candidate for providing nutrient loading (refer to section

3.4). Lastly station 874.0.0 provides the effluent results as flow has traveled through the entire portion of the golf course and additional runoff from surrounding areas. This station is used to characterize the final water quality as it leaves Escondido. Station 872.1.0 has been chronically dry throughout the majority of the dry weather program and has not contributed to the MS4 during dry periods of the year.

4.1.2 Enhanced Monitoring

"Enhanced" monitoring activities are those proposed by the USMC Watershed MS4 Copermittees to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify watershed priorities for management action. Enhanced monitoring includes watershed-wide monitoring projects jointly funded and implemented by the Watershed Copermittees, enhancements to existing jurisdictional monitoring programs to improve focus on watershed issues of concern, and a shared commitment to collaboratively reviewing and analyzing watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges.

4.1.2.1 Collaborative Watershed Monitoring Activities

The Watershed Copermittees will undertake a collaborative monitoring project to collect baseline information on flow as well as nutrient and sediment loading from multiple locations throughout the watershed during both wet and dry weather conditions. Monitoring will occur during FY 2009-10 and is summarized in the table below. All composite samples will be sent to a certified laboratory for analysis of Ammonia-N, Nitrate-N, Nitrite-N, Total Kjeldahl Nitrogen, Orthophosphate-P, Total Phosphorous, and Total Suspended Solids. Analysis of data collected through this project will be presented in the FY 2009-10 WURMP Annual Report, along with any additional planned monitoring that has been determined by that time. The WURMP Annual Report is scheduled for submittal to the RWQCB on January 31, 2011.

Table 4.1
Collaborative Watershed Monitoring Project for FY 2009-10

STATION	LATITUDE	LONGITUDE	LOCATION	FLOW	WET WEATHER	DRY WEATHER
LSM-05a	33.11959	-117.20581	Stormdrain outfall near intersection of La Plaza Dr. and San Pablo Dr.	Continuous flow monitoring: Nov 15 '09 – Jan 8 '09 + 1 month period in Spring '10	N/A	N/A
LSM-05b	33.11900	-117.20531	Stormdrain vault 150 'ft upstream of LMS-05	Continuous flow monitoring: Nov 15 '09 – Jan 08 '10 + 1 month period in Spring '10	N/A	N/A
LSM-04	33.11982	-117.20565	Outfall at Lake San Marcos boat dock near San Pablo Dr.	Continuous flow monitoring planned in Spring '10 for 1 month	N/A	N/A

STATION	LATITUDE	LONGITUDE	LOCATION	FLOW	WET WEATHER	DRY WEATHER
CAR-13	33.12012	-117.20997	Stormdrain outfall at southern terminus of San Marino Dr.	Continuous flow monitoring: Sep '09 – Dec '09	2 flow-weighted composite sampling events: Nov '09 – April '10	N/A
CAR-14	33.11896	-117.20744	Stormdrain outfall near La Plaza Dr. and El Chico Lane	N/A	2 flow-weighted composite sampling events: Nov '09 – April '10	N/A
Discovery Street	33.13053	-117.20037	San Marcos Creek at Discovery St. bridge	N/A	2 flow-weighted composite sampling events: Nov '09 – April '10	N/A
Via Vera Cruz	33.13166	-117.18687	San Marcos Creek at Via Vera Cruz	Continuous flow monitoring: Nov '09 – May '10	N/A	1 flow-weighted composite sampling event: May '10
Woodland Parkway	33.15404	-117.13048	East fork of San Marcos Creek at Woodland Parkway near Woodland Park	Continuous flow monitoring: Nov '09 – May '10	2 flow-weighted composite sampling events: Nov '09 – April '10	1 flow-weighted composite sampling event: May '10
CAR-06	33.17965	-117.15254	San Marcos Creek at intersection of Sycamore Dr. & Olive St.	Continuous flow monitoring: Nov '09 – May '10	2 flow-weighted composite sampling events: Nov '09 – April '10	1 flow-weighted composite sampling event: May '10

4.1.2.2 County of San Diego Dry Weather Monitoring Program Enhancements

In addition to the routine dry weather monitoring activities described in section 4.1.1.1, the County of San Diego will augment its program to identify illicit connections and illegal discharges by performing periodic sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos. Monitoring sweeps will consist of two staff physically inspecting each accessible above-surface conveyance into the Lake. It is anticipated that each monitoring sweep will take two to three days to complete. Staff will document whether each drain is dry or flowing. Flowing drains will be sampled for analysis of nutrients and an estimate of flow will be made. Nutrient results in excess of the Copermittees' established dry weather action levels will trigger a follow up investigation to identify and abate the source of the discharge. Monitoring sweeps will occur at least two times during FY 2009-10 (once during the summer and

once during a winter dry spell) and as appropriate during subsequent fiscal years. Results from County monitoring sweeps will be presented in the FY 2009-10 WURMP Annual Report, along with any future plans for monitoring sweeps that have been determined by that time. The FY 2009-10 WURMP Annual Report is scheduled for submittal to the RWQCB on January 31, 2011.

4.1.2.3 City of San Marcos Dry Weather Monitoring Program Enhancements

In addition to the core dry weather monitoring activities described in section 4.1.1.2, the City of San Marcos will augment its core monitoring program with an additional 20 future monitoring locations to identify and characterize other sources of nutrients. Focused monitoring will occur within San Marcos Creek and near outlets of Phase II agencies. The City of San Marcos will collaborate with the County of San Diego monitoring plan near CAR 13 through synchronized sampling along with the County's summer and winter monitoring sweeps and as appropriate during subsequent fiscal years.

4.1.2.4 City of Escondido Dry Weather Monitoring Program Enhancements

As described below (4.1.2.5), the City of Escondido plans to regularly collaborate with each Copermittee in reviewing and analyzing the combined Copermittee dry weather data. This review may result in coordinated dry weather monitoring efforts that will be conducted more than once during the dry weather monitoring season—an effort that would exceed the current Permit's core requirement. Through the core dry weather program the City of Escondido annually monitors the entire water course as it transverses through the city and monitors the effluent water as it travels into the next jurisdiction.

4.1.2.5 Collaborative Review and Analysis of Monitoring Data

The Watershed Copermittees are committed to collaboratively reviewing and analyzing watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges. For example, an exceedance of a dry weather action level in one jurisdiction will be communicated to upstream jurisdictions when appropriate. This will allow a more coordinated effort to seek out and abate illegal discharges and illicit connections to MS4s near jurisdictional boundaries. Also, Copermittees will coordinate dry weather sampling dates and locations as appropriate to better link upstream impacts on water quality results collected from downstream sampling locations. At least once a year, the Watershed Copermittees will collaborate on an assessment of available monitoring data to ensure that monitoring locations are appropriately coordinated throughout the watershed. Data gaps will be identified and plans to conduct additional monitoring will be discussed.

4.2 Residential Sources

This section describes current and planned activities to address nutrient loading from residential areas in the Upper San Marcos Creek Watershed. It is divided into two parts. "Core" residential activities are those required to maintain compliance with the MS4 Permit. "Enhanced" residential activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted residential activities in high priority areas.

4.2.1. Core Residential Activities

The MS4 Permit requires Watershed Copermittees to implement the activities outlined in Table 4.2 below as part of a jurisdictional program to manage discharges from residential areas and activities. Core residential activities will continue as currently implemented under existing JURMPs. Notably, Copermittees will enforce their local ordinances as they become aware of non-compliance with discharge prohibitions and minimum BMP requirements in residential areas.

Each Copermittee will also continue to operate a hotline to facilitate public reporting of illegal discharges in the watershed. Copermittees will record all instances of residential non-compliance, enforcement measures, and corrective actions for inclusion in the WURMP Annual Report.

Table 4.2
Core Residential Activities

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.c.(1) Identify high threat to water quality residential areas and activities.	County JURMP Section 8.2 describes residential sources in the unincorporated area.	City of San Marcos JURMP Section 8.2 describes residential sources in the City's jurisdiction.	City of Escondido JURMP Section 8.2 describes residential sources in the City's jurisdiction.
D.3.c.(2) Require the implementation of designated minimum BMPs for high priority residential areas and activities.	County JURMP Section 8.3 describes BMP requirements for residential areas and activities within the unincorporated area. Sec. 67.801-67.806 and 67.807 of the County's Code of Regulatory Ordinances Relating to Watershed Protection, Stormwater Management, and Discharge Control (WPO) contain the relevant ordinance provisions.	City of San Marcos JURMP Sections 8.3 and 8.3.2 describes BMP requirements and additional controls for residential areas and activities within the City's jurisdiction City of San Marcos Water Quality Ordinance 14.5 Contain the relevant ordinance provisions. In addition, the Property Appearance Ordinance enhances residential enforcement for over irrigation and landscape requirements fronting public streets.	City of Escondido JURMP Sections 8.3 and 8.3.2 describes BMP requirements and additional controls for residential areas and activities within the City's jurisdiction.
D.3.c.(3) Enforce stormwater ordinance for all residential areas and activities as necessary to maintain compliance.	County JURMP Section 8.4.1.2.2 describes enforcement procedures for addressing non-compliance in residential areas in the unincorporated area.	City of San Marcos JURMP Section 8.4.4 describes enforcement procedures for addressing non-compliance in residential areas in the City's jurisdiction.	City of Escondido JURMP Section 8.4.8 describes enforcement procedures for addressing non-compliance in residential areas in the City's jurisdiction.
D.5.b.(3) Develop and implement a plan to educate residential, general public, and school children target communities	County JURMP Sections 8.4.1 and 8.4.2 describe programs to educate residential and school children target audiences in the unincorporated area.	City of San Marcos JURMP Section 8.5 describes enforcement procedures for addressing non-compliance in residential areas in the City's jurisdiction.	City of Escondido JURMP Sections 8.4.4 and 10.3 describe programs to educate residential and school children target audiences in the City's jurisdiction.

4.2.2 Enhanced Residential Activities

4.2.2.1 Irrigation Reduction

The USMC Watershed MS4 Copermittees will implement a program during FY 2009-10 and FY 2010-11 that targets a reduction in over-irrigation flows from residential areas in the Upper San Marcos Creek Watershed. Activities will include outreach to residents through materials distribution, presentations, and mass media as appropriate. The Copermittees will explore the viability of implementing an incentive program (i.e., rebates for smart irrigation controllers, rain barrels, or other BMPs) during FY 2009-10 for possible implementation during FY 2010-11. Irrigation reduction programs will be coordinated with the Vallecitos Water District (VWD) to the greatest extent possible so that water conservation messages can be coordinated and to build upon VWD's existing water conservation efforts.

4.2.2.2 Template Water Quality Management Plan for Homeowners Associations (HOAs)

The Watershed Copermittees will collaborate on a project to develop a template water quality management plan for homeowners associations (HOA). Work will involve researching similar plans developed in other regions, soliciting input and feedback from select HOA representatives, and creating a template plan that is tailored to addressing the nutrient issues of concern in the Upper San Marcos Creek Watershed. A template plan will be finalized by the end of FY 2009-10. Copermittees will conduct outreach to as many HOAs in the watershed as possible during FY 2010-11 to encourage adoption of a water quality management plan.

4.2.2.3 Outreach to Professional Landscapers

The County of San Diego will undertake a project to educate professional landscapers about their role in controlling nutrient loading in the Upper San Marcos Creek Watershed. Activities will include development and distribution of outreach materials to landscapers and presentations to both professional landscapers associations and HOAs/residents interested in hiring a responsible landscape contractor. Activities will take place during FY 2009-10 and FY 2010-11.

4.3 Agricultural Sources, Including Commercial Nurseries and Greenhouses

This section describes current and planned activities to address nutrient loading from agricultural land uses, including commercial nurseries and greenhouses, in the Upper San Marcos Creek Watershed. It is presented in two parts. "Core" agricultural activities are those required to maintain compliance with the MS4 Permit. "Enhanced" agricultural activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted agricultural activities in high priority areas.

It is important to note that discharges from agricultural and nursery operations are directly regulated by the RWQCB pursuant to a conditional waiver of waste discharge requirements. In order to be eligible for Conditional Waiver No. 4, agricultural and nursery operator discharges must: 1) implement minimum management measures and

BMPs to minimize or eliminate pollutant discharges, 2) perform annual self-assessments and training, 3) form or join a monitoring group no later than December 31, 2010, and 4) file a notice of intent with the RWQCB to be part of an individual or group monitoring program no later than January 1, 2011.

4.3.1 Core Agricultural Activities

While the MS4 Permit requires Copermittees to actively prohibit most discharges into and from its MS4, it does not require all types of agriculture to be addressed as part of the Jurisdictional Urban Runoff Management Program. Copermittees are, however, required to implement the activities outlined in Table 4.3 below to effectively manage discharges from commercial nurseries and greenhouses. Notably, Copermittees will continue to enforce their local ordinances as they become aware of non-compliance with discharge prohibitions and minimum BMP requirements at commercial nurseries and greenhouses. Each Copermittee will continue to periodically inspect nurseries and greenhouses to assess compliance. Copermittees will record all instances of non-compliance, enforcement measures, and corrective actions at nurseries and greenhouses for inclusion in the WURMP Annual Report.

Table 4.3
Core Agricultural Activities

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.b.(1)(a) Annually update a watershed-based inventory of nurseries and greenhouses within its jurisdiction.	An updated inventory of nurseries and greenhouses in the unincorporated area is included in the County's FY 2008-09 JURMP Annual Report. There are 42 nurseries and greenhouses within the County's portion of the Upper San Marcos Creek Watershed.	An updated inventory of nurseries and greenhouses in the City of San Marcos Area is included in the City's FY 2008-09 JURMP Annual Report. There are 6 nurseries and greenhouses within the City's portion of the Upper San Marcos Creek Watershed; however, commercial businesses inventories are monitored through the City's JURMP in Section 7.2.2	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed; however, commercial businesses inventories are monitored through the City's JURMP in Section 7.2.2.3.
D.3.b.(2)(c) Notify the owner/operator of each nursery/greenhouse of applicable BMP requirements.	All nurseries and greenhouses in the unincorporated area have been notified of applicable BMP requirements.	FY 10 – San Marcos will notify all nurseries of applicable BMP requirements.	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.b.(2)(d) Require the implementation of designated minimum BMPs for nurseries and greenhouses.	County JURMP Section 7.2.3 describes BMP requirements for commercial sites and sources within the unincorporated area. Sec. 67.801-67.806 and 67.808 of the County's Code of Regulatory Ordinances Relating to Watershed Protection, Stormwater Management, and Discharge Control (WPO) contain the relevant ordinance provisions.	JURMP Section 7.2.3 describes BMP requirements for commercial sites and sources in the City. City of San Marcos Water Quality Ordinance 14.5 contains the relevant ordinance provisions	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.
D.3.b.(3)(a) Conduct site inspections at nurseries and greenhouses for compliance with ordinances, permits, and the MS4 Permit.	County JURMP Section 7.2 describes the inspection process for nurseries and greenhouses within the unincorporated area.	JURMP Section 7.2.4 describes the inspection process for nurseries and greenhouses within the City.	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.
D.3.b.(5) Enforce stormwater ordinance for all nurseries and greenhouses as necessary to maintain compliance.	The County's FY 2008-09 JURMP Annual Report Section 5.2 describes current enforcement procedures for addressing non-compliance at nurseries and greenhouses in the unincorporated area.	JURMP Section 7.2.4.2 describes enforcement procedures for addressing non-compliance at nurseries and greenhouses in the unincorporated area. City of San Marcos Water Quality Ordinance 14.5 Contain the relevant ordinance provisions	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.
D.5. Develop and implement a plan to educate owners and operators of nurseries and greenhouses	County JURMP Section 10.3.1.3 describes programs to educate owners and operators of nurseries and greenhouses in the unincorporated area.	City JURMP Section 10.3.4 describes programs to educate owners and operators of nurseries and greenhouses in the unincorporated area	The City of Escondido has no agricultural businesses located within the Upper San Marcos Creek Watershed.

4.3.2 Enhanced Agricultural Activities

4.3.2.1 County of San Diego

The County of San Diego will initially focus its attention on better understanding and addressing the impacts of agricultural activities in the immediate vicinity of Lake San Marcos. To initiate this effort, the County will work with professional grove management companies active in the area to collect information on crop types, water usage, fertilization schemes, and existing best management practices. It is estimated that approximately 70% of the parcels with ongoing agricultural activity in the Lake San Marcos community are operated by professional grove management companies. Given the number (~30) and size (~3-5 acres) of these parcels, this sub-set of groves is a reasonable place to begin.

Once baseline information has been collected, the County will solicit assistance from the Farm and Home Advisor, or other agencies with expertise in agriculture, to assess

whether existing grove management practices are consistent with industry best practices. Operational efficiencies and other opportunities for improvement will be communicated to grove operators following property assessments. The County will follow up with each of the appropriate grove management companies to track implementation of any recommended improvements. This work will be conducted during FY 2009-10 and FY 2010-11.

4.3.2.2 City of San Marcos

The City of San Marcos will focus its immediate attention on understanding and addressing the impacts of agricultural activities in the Twin Oaks Valley Area to mirror County efforts around Lake San Marcos. The City will establish baseline information on types of practices and growers in the Twin Oaks Valley Area. This work will be conducted during FY 2009-10 and FY 2010-11.

4.3.2.3 City of Escondido

The City of Escondido has no agricultural businesses within the Upper San Marcos Creek Watershed.

4.4 Parks

The MS4 Permit requires the USMC Watershed MS4 Copermittees to implement the activities outlined in Table 4.4 below as part of a jurisdictional program to manage discharges from municipal areas. Core municipal activities will continue as currently implemented under existing JURMPs. Notably, the City of San Marcos will enforce its local ordinances as it becomes aware of non-compliance with discharge prohibitions and minimum BMP requirements in municipal park areas. These consist of work orders to correct any issues. All municipal parks in the USMC watershed are owned and maintained by the City of San Marcos. The City maintains SWPPPs for Municipal Parks. The City will assess current fertilizer practices and BMPs in monitoring locations that show elevated nutrient trends.

4.4.1. Core Activities

Table 4.4
Core Activities for Parks

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.a.(1)(a) source identification within its jurisdiction.	N/A	An updated inventory of parks is in City of San Marcos Area is included in the City's FY 2008-09 JURMP Annual Report. There are 52 parks within the City's portion of the Upper San Marcos Creek Watershed; however, parks are monitored through the City's JURMP in Section 6.2.	N/A.
D.3.a.(2) Implement BMP requirements.	N/A	The City JURMP Section 6.3 describes BMP requirements for parks.	N/A.

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.a.(4) management of pesticides, herbicides, fertilizers	N/A	The City JURMP Section 6.3.2 describes designated minimum BMPs for parks and in City SWPPPs.	N/A.
D.3.a.(7)Conduct site inspections for compliance with ordinances, permits, and the MS4 Permit.	N/A	The City JURMP Section 6.4 describes inspection compliance with ordinances, permits and the MS4 Permit.	N/A.
D.3.a.(8) Enforce stormwater ordinance to maintain compliance.	N/A	The City JURMP Section 6.4.2 describes stormwater enforcement procedures.	N/A.
D.5. Develop and implement a plan to educate municipal departments and personnel	N/A	The City JURMP Section 10.0 describes education and outreach park staff.	N/A.

4.4.2. Enhanced Activities

4.4.2.1 County of San Diego

Within the Upper San Marcos Creek Watershed the County has no parks.

4.4.2.2 City of San Marcos

The City of San Marcos will focus its immediate attention on understanding and addressing the impacts of municipal parks in the USMC Watershed to identify baseline issues. The City will establish baseline information on effective source reduction BMPs. This work will be conducted during FY 2009-10 and FY 2010-11.

4.4.2.3 City of Escondido

Within the Upper San Marcos Creek Watershed the City of Escondido has no parks.

4.5 Golf Courses

This section describes current and planned activities to address nutrient loading from golf courses in the Upper San Marcos Creek Watershed. It is divided into two parts. "Core" golf course activities are those required to maintain compliance with the MS4 Permit. "Enhanced" golf course activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted golf course activities in high priority areas.

4.5.1. Core Activities

As described in the MS4 Permit, USMC Watershed MS4 Copermittees are required to add golf courses to their commercial inventories and update the inventories annually. Core activities performed under the JURMP are outlined in Table 4.5 below. Each Copermittee will enforce its local ordinance as it becomes aware of non-compliance with discharge prohibitions and minimum BMP requirements in golf courses. Compliance is determined through both active inspection of golf courses operations and responses to

public complaints about illegal discharges or insufficient BMPs. As described in section 4.1.1, the Core dry weather program assists in monitoring water quality and provides additional investigation if pollutants are detected (above the action level), triggering additional BMPs to protect water quality and monitoring.

Table 4.5
Core Activities for Golf Courses

PERMIT REQUIREMENT	COUNTY OF SAN DIEGO	CITY OF SAN MARCOS	CITY OF ESCONDIDO
D.3.b.(1)(a) Annually update a watershed-based inventory of golf courses within its jurisdiction.	An updated inventory of golf courses in the unincorporated area is included in the County's FY 2008-09 JURMP Annual Report.	An updated inventory of golf courses in the City of San Marcos Area is included in the City's FY 2008-09 JURMP Annual Report.	Golf course inventories are included in the commercial business inventory and are monitored through the City's JURMP in Section 7.2.2.3.
D.3.b.(2)(c) Notify the owner/operator of each commercial/industrial business of applicable BMP requirements.	Golf courses in the unincorporated area have been notified of applicable BMP requirements.	FY 10 – San Marcos will notify all golf courses of applicable BMP requirements.	The City of Escondido JURMP Section 7.2.3.1 describes BMP requirements for commercial businesses.
D.3.b.(2)(d) Require the implementation of designated minimum BMPs for commercial/industrial businesses	County JURMP Section 7.2.3 describes BMP requirements for commercial sites and sources within the unincorporated area. Sec. 67.801-67.806 and 67.808 of the County's Code of Regulatory Ordinances Relating to Watershed Protection, Stormwater Management, and Discharge Control (WPO) contain the relevant ordinance provisions.	JURMP Section 7.2.3 describes BMP requirements for commercial sites and sources in the City. City of San Marcos Water Quality Ordinance 14.5 Contain the relevant ordinance provisions	The City of Escondido JURMP Sections 7.2.3.1 and 7.2.3.2 describes designated minimum BMPs for commercial businesses.
D.3.b.(3)(a) Conduct site inspections at nurseries and greenhouses for compliance with ordinances, permits, and the MS4 Permit.	County JURMP Section 7.2 describes the inspection process for golf courses within the unincorporated area.	JURMP Section 7.2.4 describes the inspection process golf courses within the City.	The City of Escondido JURMP Section 7.2.4.3 describes inspection compliance with ordinances, permits and the MS4 Permit.
D.3.b.(5) Enforce stormwater ordinance for all commercial/industrial businesses as necessary to maintain compliance.	The County's FY 2008-09 JURMP Annual Report Section 5.2 describes current enforcement procedures for addressing non-compliance at golf courses in the unincorporated area.	JURMP Section 7.2.4 .2 describes enforcement procedures for addressing non-compliance at golf courses in the unincorporated area. City of San Marcos Water Quality Ordinance 14.5 Contain the relevant ordinance provisions	The City of Escondido JURMP Section 7.2.5 describes stormwater enforcement procedures.
D.5. Develop and implement a plan to educate owners and operators of commercial/industrial businesses.	County JURMP Section 10.3.1.3 describes programs to educate owners and operators of golf courses in the unincorporated area.	City JURMP Section 10.3.4 describes programs to educate owners and operators of golf courses in the unincorporated area	The City of Escondido JURMP Section 7.2.4.2 describes education and outreach for commercial business.

4.5.2. Enhanced Activities

Each Copermittee's enhancement activities will be carried out through its existing annual JURMP inspection and dry weather "Core" programs but will be collaboratively reviewed through the WURMP program to evaluate overall effectiveness and to determine any necessary program modifications. Based on individual golf courses, BMPs will be tailored to each site based on results from annual commercial inspections, complaint investigations, and through water quality investigations as a part of the dry weather program. Data collected annually will be provided through each Copermittee's JURMP annual report and aggregately presented in the WURMP annual report.

Appendix A

FIGURES

Figure 1
USMC - Watershed Map

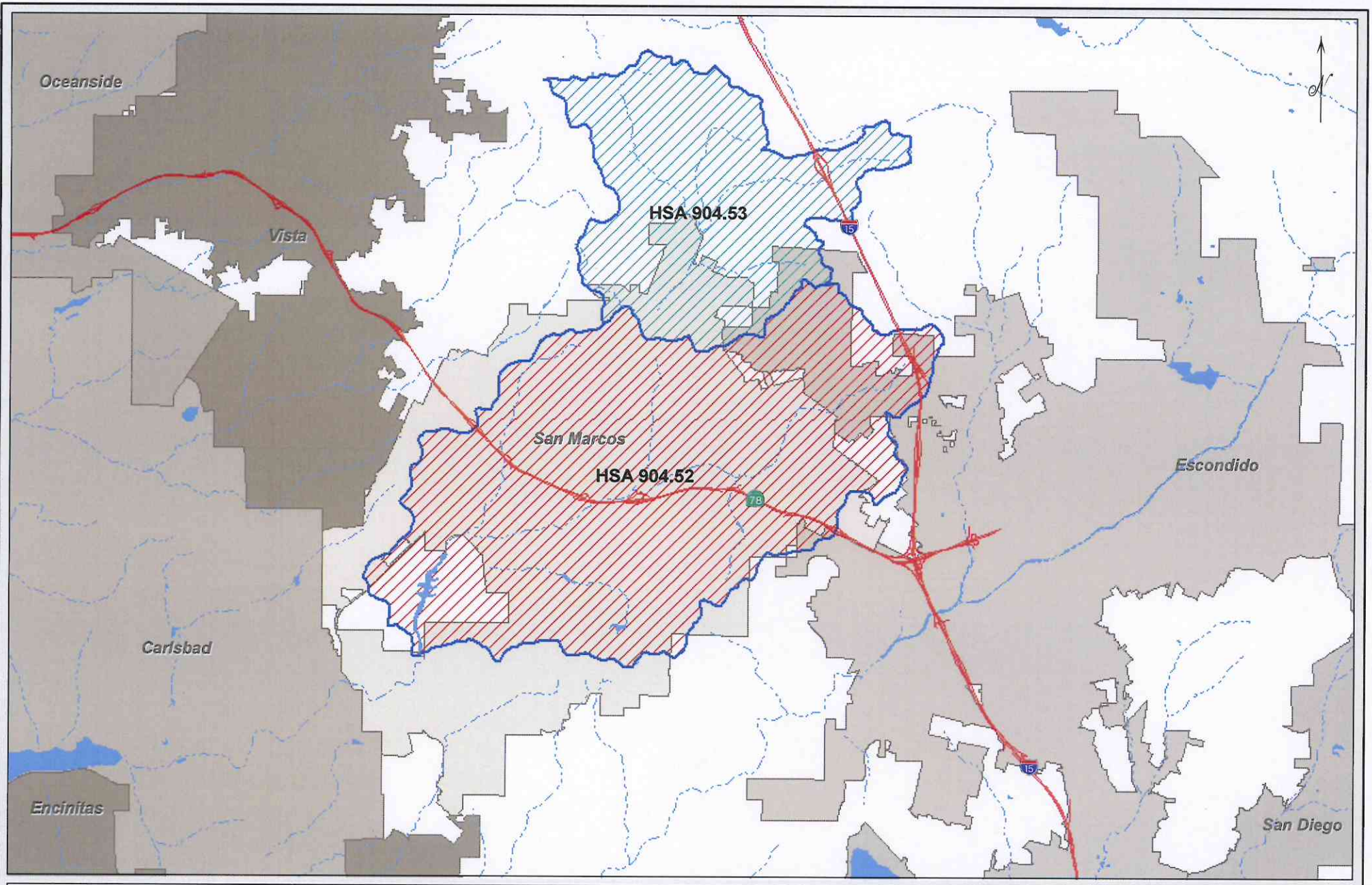

Every effort has been made to assure the accuracy of the maps and data provided; however, some information may not be accurate or current. The City of San Marcos assumes no responsibility arising from use of this information and incorporates by reference its disclaimer regarding the lack of any warranties, whether expressed or implied, concerning the use of the same. For additional information see the Disclaimer on the City's website.

USMC - Watershed Map

0 2,125 4,250 8,500 Feet

1 inch = 8,500 feet

CREATED BY: City of San Marcos GIS

SOURCES OF DATA: SanGIS, 10/09

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Figure 2
USMC - Residential Sources

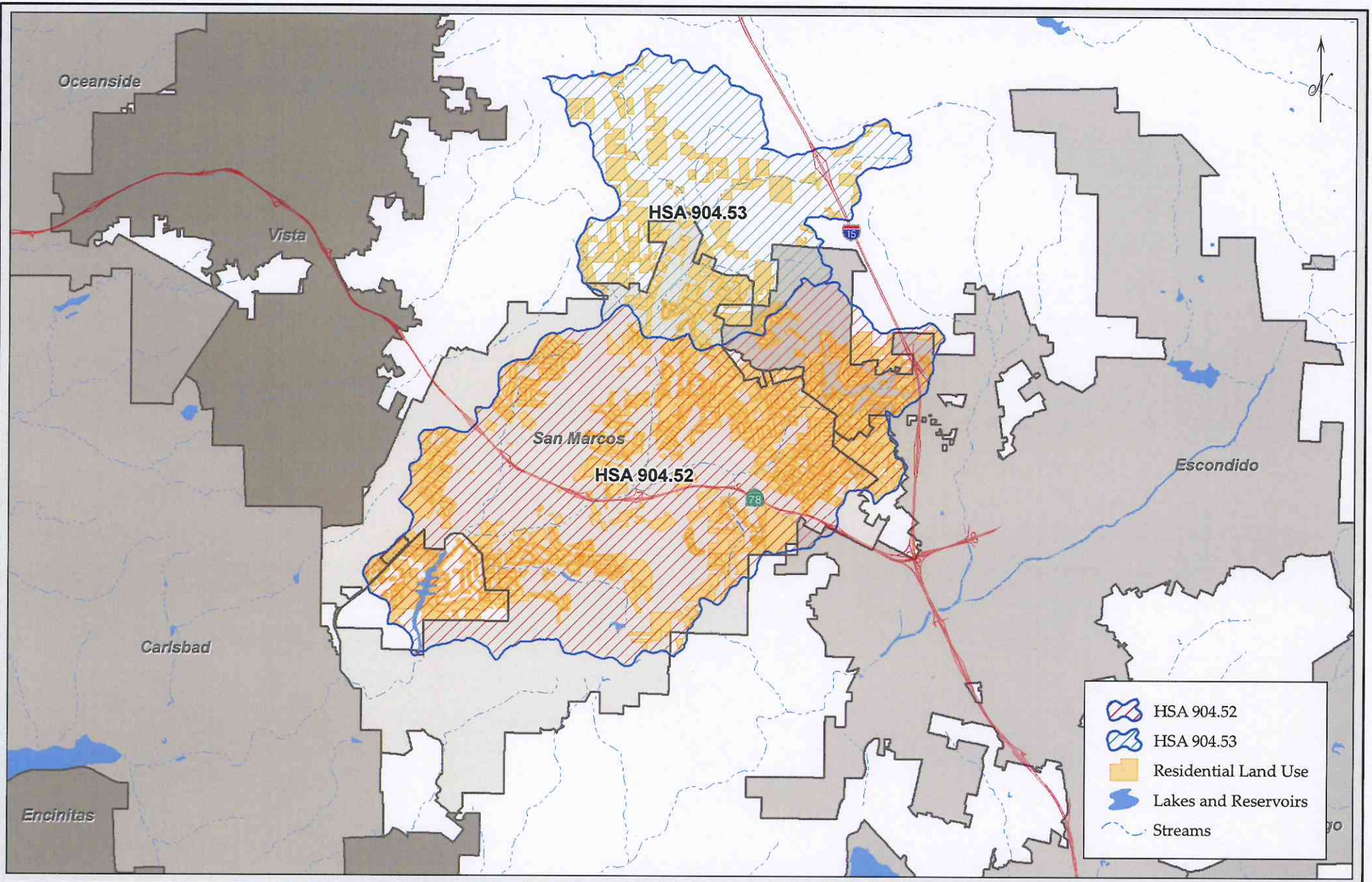

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USMC - Residential Sources

0 2,125 4,250 8,500 Feet

1 inch = 8,500 feet

CREATED BY: City of San Marcos GIS

SOURCES OF DATA: SanGIS, 10/09, Sandag, 2009, and City of San Marcos, 1/10

X:\Projects\Stormwater\Projects\WatershedPlanning\Maps\USMC - Residential Sources.mxd 1/25/2010

Figure 3
USMC - Agricultural Sources

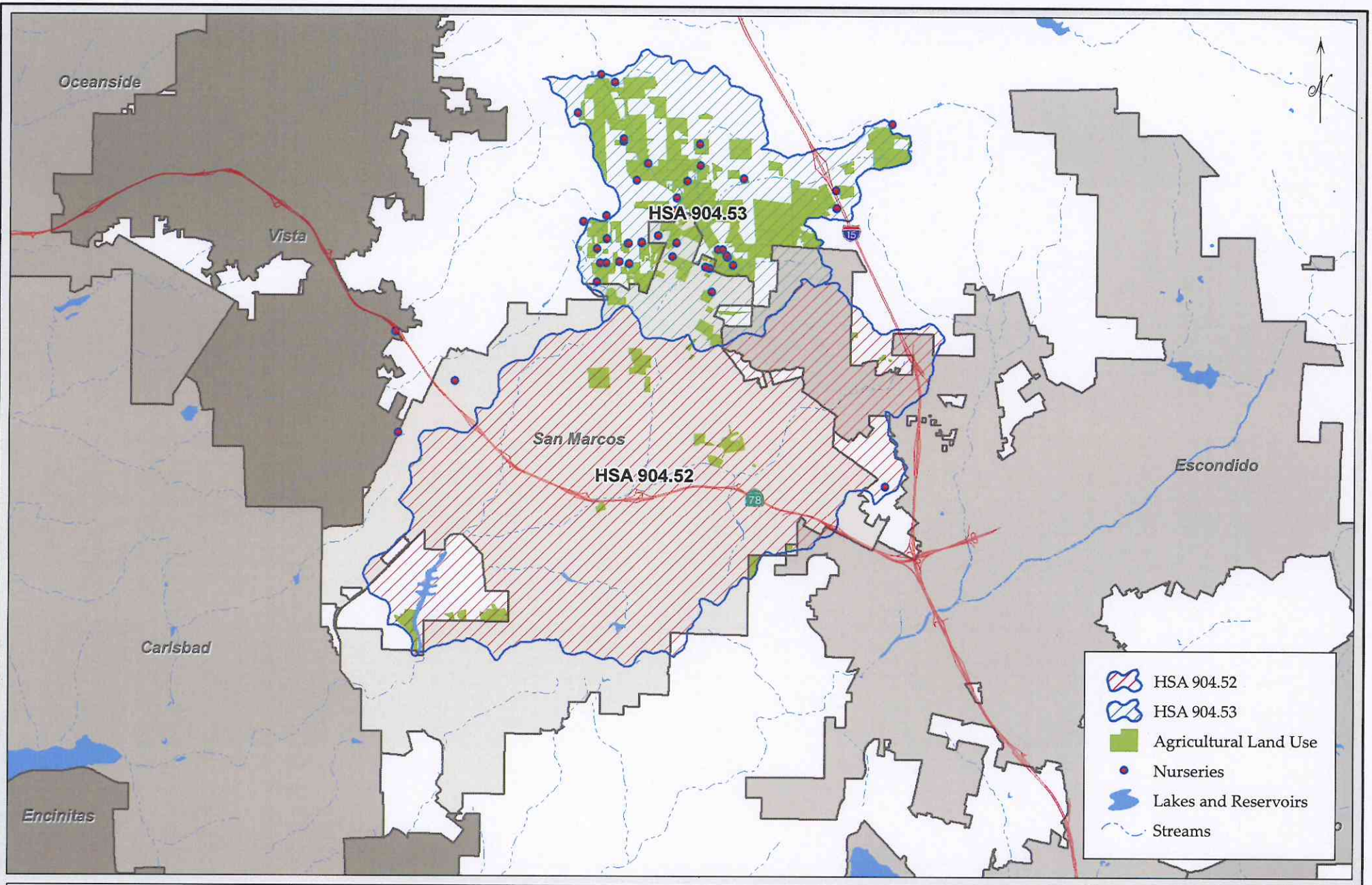

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USMC - Agricultural Sources

0 2,125 4,250 8,500 Feet

1 inch = 8,500 feet

CREATED BY: City of San Marcos GIS

SOURCES OF DATA: SanGIS, 10/09, Sandag, 2009, and City of San Marcos, 1/10

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Figure 4
USMC - Parks & Golf Courses

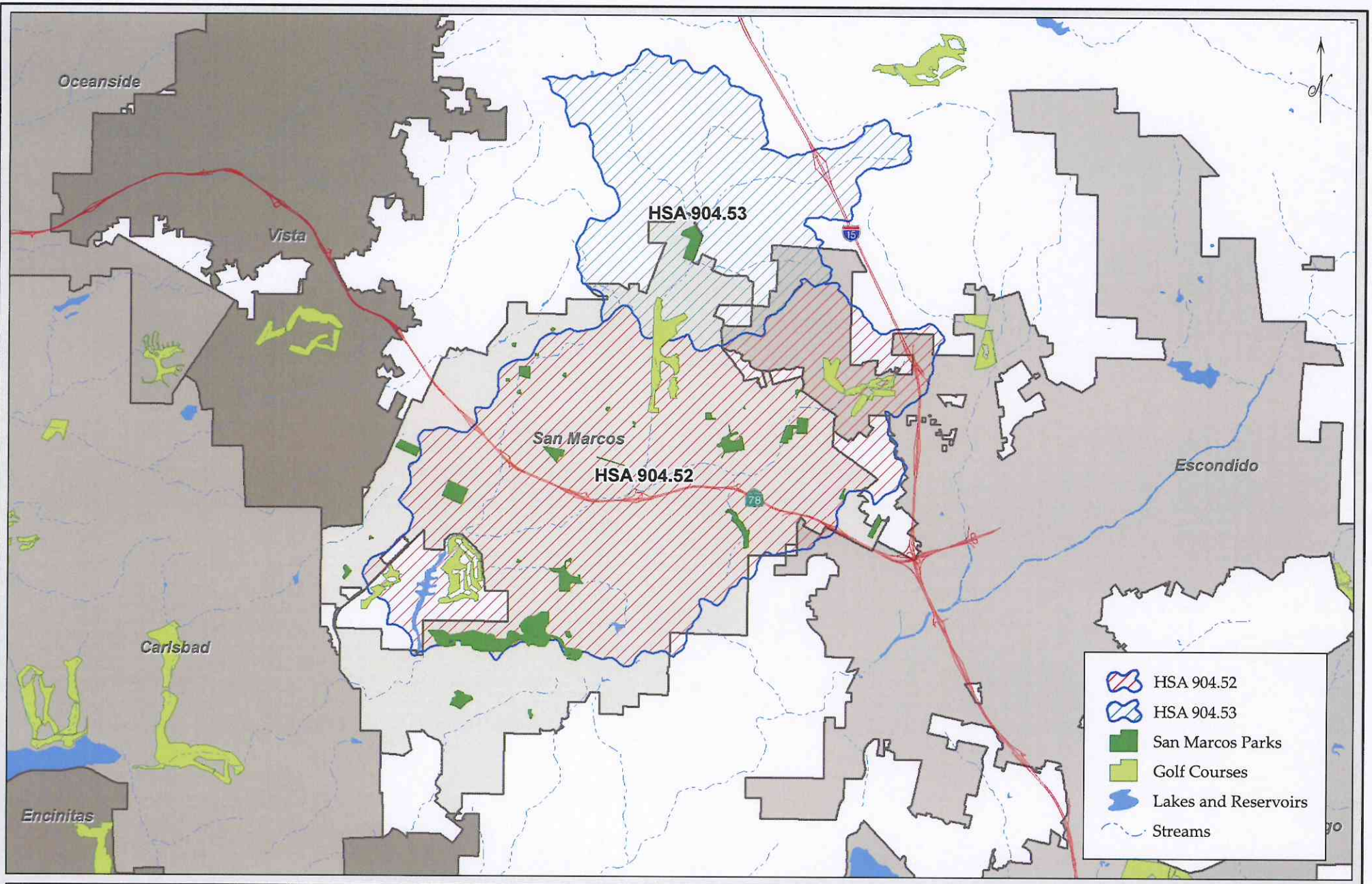

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USMC - Parks & Golf Courses

0 2,125 4,250 8,500 Feet

1 inch = 8,500 feet

CREATED BY: City of San Marcos GIS

SOURCES OF DATA: SanGIS, 10/09 and City of San Marcos, 1/10

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Figure 5
USMC - Water Quality Monitoring Locations

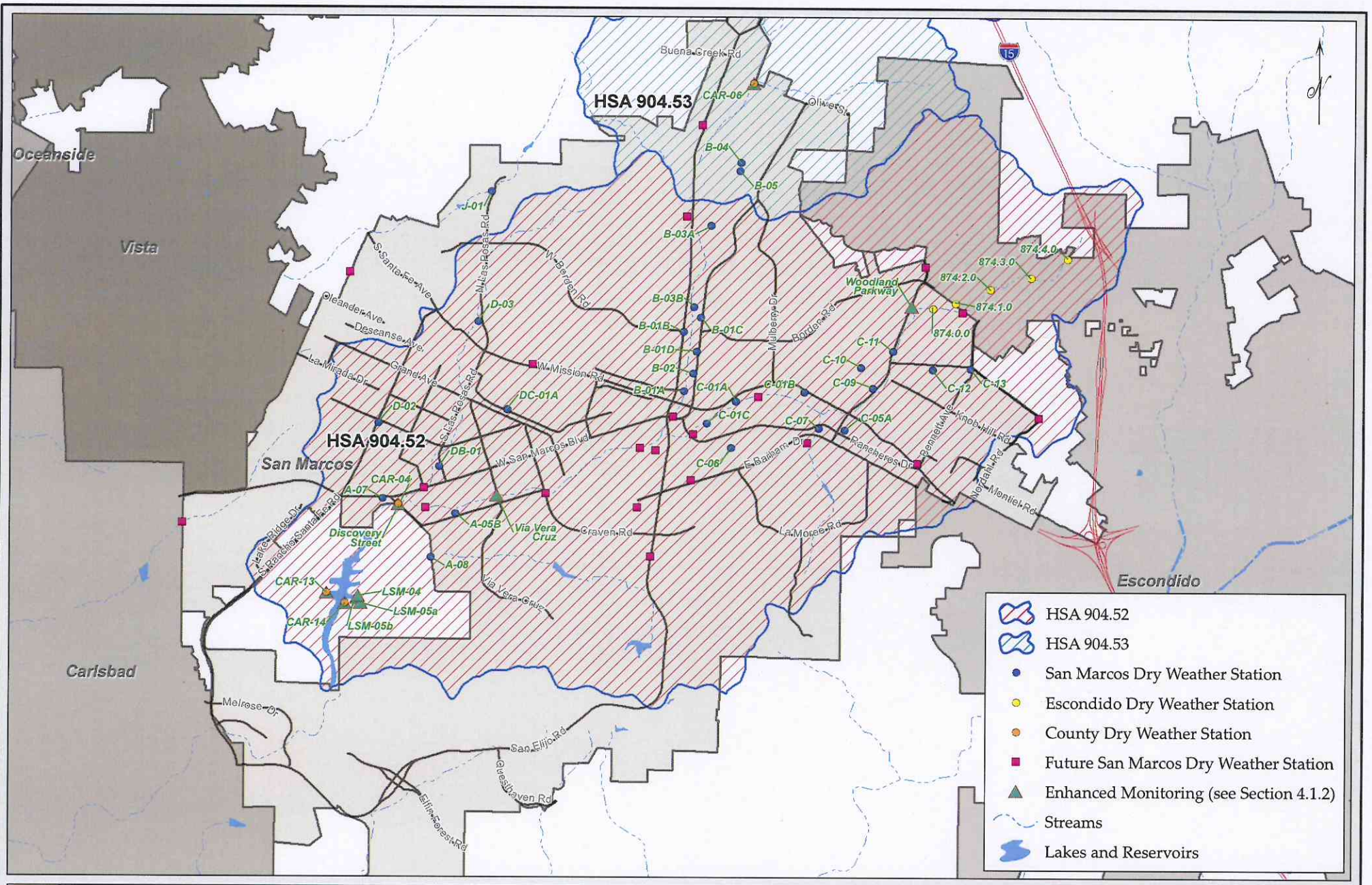

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USMC - Water Quality Monitoring Locations

0 1,375 2,750 5,500 Feet

1 inch = 5,500 feet

CREATED BY: City of San Marcos GIS

SOURCES OF DATA: SanGIS, 10/09, San Marcos, 1/10, County of SD, 1/10, & Escondido, 1/10

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Appendix B

City of San Marcos
Baseline Watershed Implementation Plan
(FY 10 through first quarter FY 11)

City of San Marcos
Baseline Watershed Implementation Plan
(FY 10 through first quarter FY 11)

Tables B-1, B-2 and B-3 summarize the City of San Marcos Baseline Watershed Implementation Plan (FY 10 through first quarter FY 11) activities that will be conducted by the City of San Marcos. These activities are the baseline information for year one of identification of nutrient sources and abatement of those sources. It is anticipated that the City will do multi- year refinement and iterations of these activities to establish effective BMP tool kits to realize an actual abatement of nutrient pollutant sources and that a Jurisdictional Watershed Implementation Plan will be prepared for inclusion in the FY 10 Carlsbad WURMP after ongoing additional data and monitoring data efforts have been completed in early FY 11.

The role of these activities is to refine and combine already existing inventories and data sets currently required under the MS4 permit into a geo-spatial assessment combined to better focus monitoring efforts within the the City of San Marcos Boundary. The primary objective is to establish a baseline data set for the primary sources of nutrients and establish an iterative process of identification and abatement over time.

Tables B-1, B-2, and B-3 summarize the efforts by the City of San Marcos. In addition, these efforts will be coordinated with the City's upcoming General Plan Update which will identify key policies to address the issues within the USMC watershed as well as significant development and planning efforts.

Table B-1
CITY OF SAN MARCOS
SOURCE IDENTIFICATION DATA ASSESSMENTS ACTIVITIES

Data Assessment	Completion Date
Land Use Assessment by HSA/Map/ Monitoring Location	FY11
Preliminary inventory of water quality and/or discharge permits by HSA/ Map	FY11
Private Party Land Area Assessment by HSA/Map	FY11
Inventory of HOAs/Map	FY 10/11
Dedicated Natural Open Space Inventory/Map	FY 10/11

Table B-2
CITY OF SAN MARCOS
BASELINE YEAR SOURCE ABATEMENT ATIVITIES

Activity	Completion Date
Annual BMP Inspection of Golf Courses	FY 10
Water Purveyor Program Collaboration	FY 11
Focused Nutrient Education Plan for Land Uses - reduction in over-irrigation flows from residential areas in the Upper San Marcos Creek Watershed	FY 10
Data Reporting Plan for Primary Nutrient Sources	FY 10/FY11
Data Sharing and Reporting Plan for Water Quality Monitoring for Primary Nutrient Sources	FY 10/FY11
Agricultural - track implementation of any recommended improvements	FY9/FY10/FY/11
Agricultural - outreach and coordinate tracking of implementation of any recommended improvements w/ County	FY9/FY10/FY/11
Educate professional landscapers	FY9/FY10/FY/11
Educate professional landscapers – Coordinate/Mirror County Effort	FY9/FY10/FY/11
Assess current fertilizer practices and BMPs in monitoring locations that show elevated nutrient trends	FY9/FY10/FY/11

Table B-3
SUMMARY OF USMC WATER QUALITY MONITORING ACTIVITIES

HSA	Core Monitoring Locations	City of San Marcos Future Locations
	San Marcos Total	
904.53	2	1
904.52	25	19
USMC Grand Total - 47	***27***	***20***

Table B-3 establishes the baseline water quality monitoring effort. These data needs, source abatement activities, and enhanced monitoring activities are intended to be refined as the effort moves forward and more information is gathered and the abatement of nutrients is assessed. For FY 10, the City of San Marcos has committed to coordinated data samples outside of the core monitoring requirements with a limited suite of constituents in order to cover more of the City. The City of San Marcos will complete a preliminary data assessment and map, by HSA, other agencies, private parties, and a preliminary inventory of water quality and/or discharge permits to geospatially identify and assess the effect of other potential nutrient sources in conjunction with the initially selected four land use based sources.

CARLSBAD WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

Fiscal Year 2010 Annual Report

January 31, 2011

Prepared and Submitted by the
Carlsbad Watershed Copermittees

City of Carlsbad
City of Encinitas
City of Escondido
City of Oceanside
City of San Marcos
City of Solana Beach
City of Vista
County of San Diego

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EXECUTIVE SUMMARY

This Annual Report represents the Carlsbad Watershed Copermittees' activities during the FY 2010 reporting period (July 1, 2009 through June 30, 2010) of Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). In response to the Permit, the Carlsbad WURMP Copermittees worked collaboratively to improve water quality within the watershed throughout FY 2010. The Copermittees will continue to work with the Regional Board to implement, improve, and enhance their programs and activities over the next several years.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed management area (WMA). The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

In preparing the 2008 Carlsbad WURMP, the Copermittees developed a collective watershed strategy using existing data and information available to the Copermittees related to water quality and potential sources of pollutants to identify the most important water quality problems and sources within the WMA. Some baseline source information was also available through existing literature, including the Copermittees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA). The Copermittees then evaluated the Hydrologic Areas (HA) to make management decisions about potential targeted activities.

During this reporting period the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the high priority water quality problems (HPWQPs) identified and each source's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

A summary of the program accomplishments for FY 2010 is found below:

Water Quality Assessment

Water quality priorities are evaluated each year based on the water quality assessment performed during the previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

HPWQPs in the Carlsbad WMA:

- Bacteria
- Sedimentation
- Nutrients

Carlsbad Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Carlsbad WURMP Copermittees continued to develop and implement a watershed-based program that addresses the HPWQPs and their sources in the Carlsbad WMA. The Carlsbad WURMP Copermittees met eight times over the course of the reporting period to plan, implement and assess watershed

activities. Through workgroup collaboration, there has been an increase in the ability of the Copermittees to identify and address watershed source pollutants, an increase in public awareness, partnerships formed with other organizations, and opportunities provided for collaboration resulting in cost-effective activities.

Watershed Activities

The Carlsbad WURMP Copermittees focused their efforts on the HPWQPs in the watershed during the FY 2010 reporting period. The result of this focused approach has been the implementation of twelve watershed activities during the reporting period, all of which focus on HPWQPs and the sources most likely contributing to them.

All WURMP activities required by the Permit were conducted during the reporting period. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. The listing below identifies the activities implemented, which includes planning:

Watershed Water Quality Activities

- Nitrate Source Identification and Abatement: Buena Creek
- Pet Waste Bag Dispenser Program in County Parks
- Land Acquisitions
- Water Quality Monitoring in Agua Hedionda Creek Watershed
- Water Quality Treatment Facility @ Palomar Airport
- Agua Hedionda Creek Restoration – SR-02+
- Residential Rain Barrel Subsidies and Distribution
- Upper San Marcos Creek Nutrient Management Plan
- Upper San Marcos Creek Nutrient Management Plan – Parks Component
- Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component
- Upper San Marcos Creek Nutrient Management Plan – Agriculture Component
- Upper San Marcos Creek Nutrient Management Plan – Monitoring Component
- Loma Alta Water Quality Monitoring Program

Watershed Education Activities

- Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses
- LID Features in San Elijo Nature Center
- Bioassessment Training for High School Students
- Upper San Marcos Creek Nutrient Management Plan – Residential Component

As required, Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. In an effort to report on the Copermittees' activities performed to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. The data and information is not comprehensive and for some data sets, estimates were used to generate some of the numbers for the activities – these estimates are explained in **Appendix A** of the document. The Copermittees believe that it is an important step towards integrating jurisdictional and watershed activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

Effectiveness Assessment

The Carlsbad Watershed Copermittees continue to improve the program's effectiveness assessment utilizing the six-level assessment framework prepared by the Regional Copermittees in October 2003, where appropriate. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, the effectiveness assessment continues to lay the foundation for future in-depth evaluations of activities and program implementation.

Based upon the requirements of the Permit, the Carlsbad WURMP Copermittees are compliant and effective in implementing the Carlsbad WURMP.

WURMP Improvements

In light of emerging TMDLs, the potential for regional permitting, the Copermittees' visioning process, and the unfunded mandate test claim status, the Copermittees are committed to focusing on increasing effectiveness and decreasing duplication of programs.

Regardless of the outcome of these and other issues, the Copermittees remain committed to working closely with the Regional Board in the next two years to ensure a reasonable, effective, and achievable Municipal Permit is prepared for reissuance. The Permit reissuance is likely to have significant changes to the WURMPs. The Carlsbad WURMP Copermittees will continue to assess their implementation, reporting and program assessment to look for improvement opportunities.

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1 INTRODUCTION

This Annual Report represents the Carlsbad WURMP Copermittees' activities during the reporting period (July 1, 2009 through June 30, 2010) of Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Permit, the Carlsbad WURMP Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout FY 2010. The Copermittees will continue to work collaboratively to implement, improve, and enhance their programs and activities.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

The Permit requires that the Copermittees within the Carlsbad Watershed collaborate in the development and implementation of a watershed-scale program that addresses urban runoff[1] quality. The rationale for this approach is simple: urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon downstream receiving waters. The mechanism that the Permit uses to require watershed collaboration is the development and implementation of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, The Permit requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied. The overall goal of the Carlsbad Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

Water quality priorities are evaluated each year and take into consideration the water quality assessment performed during each previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP. For the Carlsbad WMA, the water quality priorities are: bacteria; sedimentation; and nutrients.

To target these water quality priorities, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the

[1] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

collective watershed strategy as the basis for developing and implementing the activities, the Copermittees focused their efforts on the potential sources that are the most likely high-priority pollutant contributors in the Carlsbad Watershed Management Area. This FY 2010 report details the implementation of the Carlsbad WURMP's collective watershed strategy.

It is important to note that the Encinas hydrologic area (904.4) is not discussed in this report. Previously, lack of exceedances in the jurisdictional dry weather monitoring program, the relative small size of this hydrologic area, and the location within the City of Carlsbad boundary did not support evaluation. Please refer to the City of Carlsbad jurisdictional annual report for further information on activities in this HA.

1.1 COPERMITTEE COLLABORATION

1.1.1 CARLSBAD WURMP MEETINGS

In order to effectively plan and implement the Carlsbad WURMP the Copermittees met eight (8) times during FY 2010 to coordinate and plan their efforts to collaboratively address water quality issues in the WMA. Furthermore, the Copermittees met to develop and prioritize water quality activities that address pollutants of concern in the watershed, to exchange ideas on how to address high priority water quality pollutants in the watershed, to evaluate the effectiveness of actions, and to collaborate on development of required submittals. See **Table 1-1** below for dates of these meetings and pertinent agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
7/29/2009	Permit WURMP Language Revisions, Annual Reporting Database, Alternative Reporting
10/20/2009	303(d) Proposed Listings, TMDL Meeting with RWQCB, Annual Reporting Discussion
11/23/2009	CWA 319h Nonpoint Source 2010 Concept Proposal, Meeting with RWQCB Follow-up, Annual Reporting Discussion: Draft Sections and Activity Sheets
12/15/2009	Annual Reporting, Presentation of Integrated Reporting, Activity Planning, Watershed Treatment Model, 303(d) listings and RWQCB Hearing, Program Planning Workgroup, Unfunded Mandate Claim Status
1/19/2010	Annual Reporting Draft Report and Final Schedule, Integrated Reporting, Program Planning Workgroup and Other MOU Workgroups
2/16/2010	Annual Reporting Process, Beaches and Creeks Bacteria TMDL, 2012 303(d) Listing, Program Planning Workgroup Update, Weston Post-Report Water Quality Presentation
4/20/2010	Annual Calendar, WQ Program Analysis, Activity Updates, Cost Share Agreement Update, Unfunded Mandate Test Claim – Impacts, Workgroup Updates, ROWD
5/18/2010	Annual Calendar, WQ Program Analysis, Unfunded Mandate Test Claim – Impacts, Workgroup Updates, ROWD/LTEA, TWAS Locations

1.1.2 INVESTIGATIVE ORDER R9-2006-076 MONITORING

In FY 2007, the RWQCB issued Investigative Order R9 2006-076 for monitoring associated with Lagoon Total Maximum Daily Load (TMDL) modeling. The Investigative Order resulted in the collection of significant amounts of hydrologic, hydraulic and water quality data for the four lagoons located in the Carlsbad WMA and their associated watersheds. Monitoring during FY 2008 produced data collected for the purpose of calibrating and validating TMDL models for pollutant load allocation. In FY 2009 the Investigative Order consisted of monitoring within several lagoons, including: the San Elijo, Agua Hedionda, and Buena Vista Lagoons, as well as the Loma Alta Slough. Overall, lagoon monitoring was completed in compliance with an established regional work plan. The collected data has

been included in the water quality assessment and may, in the future, be used to determine priorities for the WURMP Copermittees.

1.1.3 AGUA HEDIONDA WATERSHED MANAGEMENT PLAN

During FY 2008, the watershed Copermittees collaborated in the completion of the Agua Hedionda Watershed Management Plan (AHWMP) – a grant funded effort led by the City of Vista. Since the completion of the plan, the City of Vista formally adopted the AHWMP in the spring of 2009. The AHWMP provides a comprehensive, scientifically-based plan for preserving, restoring, and enhancing the Agua Hedionda Watershed's natural functions and features. It assesses past, present, and future watershed conditions and identifies management needs throughout the watershed, considering the complex relationships among different watershed processes. The recommendations of the AHWMP represent a geographically focused, comprehensive watershed planning effort. The plan presents management measures for achieving and sustaining measurable water quality improvements and recommends focus areas where opportunities will complement each other and lead to greater improvement in watershed functions.

With City Council support, the Vista Engineering Department and Water Quality Protection Program began working on the SR-02 project, one of the key restoration projects recommended in the report. This project encompasses restoration of approximately 3,800 linear feet of Agua Hedionda Creek on City property. During FY 2010 the City completed the Preliminary Design Report for the project, examining several design options for the restoration. At this time, project proponents are seeking grant funding under the IRWM Program to further the project by completing the final design, permitting, and construction. These steps are contingent upon future funding opportunities.

1.1.4 WURMP AUDITS AND WATERSHED PERMIT REVISIONS

In conjunction with RWQCB staff and other Copermittees, the Carlsbad WURMP Copermittees considered and developed revisions to the existing Regional WURMP Permit language. This effort was initiated by the RWQCB's audit of the Copermittees' WURMP programs in the spring of 2008 and by the RWQCB's request for the Copermittees to propose permit revisions in accordance with the audit's comments. These comments focused on the need for the watershed permit to more clearly focus on the collaborative identification of high priority water quality problems (HPWQPs) as well as the reduction of them to the maximum extent practicable. Based on this direction, a subcommittee of Copermittees, including three from the Carlsbad Watershed WURMP group (County of San Diego, and Cities of Carlsbad and Escondido), worked with RWQCB staff to develop revisions. Although this collaborative effort between RWQCB and Copermittee staff resulted in a draft permit revision, the RWQCB determined it should be reconsidered as part of the next permit's development since changes to the watershed component of the permit would likely trigger modifications to other sections of the current permit.

1.1.5 WATERSHED MAP UPDATES

No updates have been made to the previously submitted Watershed Map. Please refer to the FY 2008 WURMP Annual Report submitted in January 2009 for the most recent Watershed Map.

1.2 ORGANIZATION AND CONTENT OF REPORT

SECTION 1- Introduction
Section 1 of the Annual Report provides a summary of the Carlsbad WURMP Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2- Water Quality and Pollutant Source Assessment
Section 2 provides an updated evaluation and analysis of the Carlsbad WMA's receiving water conditions based on applicable water quality data from the Receiving Waters and Urban Runoff Monitoring Program Annual Report. In addition, Section 2 provides an update on the likely sources of urban runoff. Although the assessment covers the entire WMA, it specifically addresses the six distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA.

SECTION 3- Implementation of Watershed Activities
Section 3 describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2010 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution.

SECTION 4- Effectiveness Assessment
Section 4 provides an assessment of the implementation and effectiveness of the Carlsbad WURMP for the FY 2010 reporting period using concepts from "A Framework for Assessing the Effectiveness of Jurisdictional Runoff Management Programs." The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and BMP implementation and resulting changes in receiving water quality. Consistent with the requirements of the Permit, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 5- Conclusions
Section 5 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

2 WATER QUALITY ASSESSMENT

This section provides an updated water quality assessment based upon previously established strategies and processes presented in the 2008 WURMP (March 2008). The water quality assessment provides the results of an evaluation and analysis of the Carlsbad Watershed Management Area's (WMA) receiving waters conditions based on applicable water quality data, reports, analyses, and other information. Information and data from the 2009-2010 Receiving Waters and Urban Runoff Monitoring Program Annual Report (Weston, January 2011) and the Carlsbad Hydrologic Unit Lagoon Monitoring Report (MACTEC, June 2009) were used to conduct the assessment. Each of the hydrologic areas within the Carlsbad watershed is evaluated discretely. The assessment concludes with identification of the high priority water quality problems (HPWQPs) for each applicable HA.

The San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Report (Weston Report) includes significant analyses of the monitoring activities conducted within the Carlsbad WMA during the reporting period. As a part of the Weston Report, assessments of the six HAs during both wet weather and ambient weather monitoring conditions are presented in an integrated manner to convey an overall assessment of each HA. The integrated assessment identifies which constituents tend to occur in the watershed more frequently than others. For a detailed understanding of the analysis and assessment conducted as part of the regional monitoring effort it is highly recommended that the reader review the Weston Report available at www.projectcleanwater.org. Section 5 of the Weston Report is the Carlsbad WMA section.

The Carlsbad WMA is comprised of 135,322 acres and six hydrologic areas (HAs): Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek. The WMA has historically monitored two mass loading stations (MLS), one on Agua Hedionda Creek and one on Escondido Creek. Four temporary watershed assessment stations (TWAS) have been monitored to date in the WMA, one each in Loma Alta, Buena Vista, Agua Hedionda, and Escondido Creek HAs. There have been six bioassessment stations monitored in the WMA, one each in Loma Alta and Buena Vista HAs and two each in Agua Hedionda and Escondido Creek HAs. Finally, there are numerous dry weather monitoring (DWM) sites and coastal storm drain monitoring (CSDM) sites throughout the WMA.

Monitoring conducted for the Lagoons TMDL Investigative Order (IO) in FY 2009 consisted of samples collected within the San Elijo Lagoon, Agua Hedionda Lagoon, Buena Vista Lagoon and Loma Alta Slough. Sampling was performed at one Mass Emissions Station upstream of each lagoon, one or two Lagoon Segments, and one or two Ocean Inlets in each of the lagoons. Lagoon IO monitoring also included Transect Sampling at several locations throughout each lagoon. Transect Sampling provided spatial data showing the variation of targeted constituents and was collected in order to calibrate and validate the lagoons' water quality models. Monitoring results and QA/QC analysis are presented in the Carlsbad Hydrologic Unit Lagoon Monitoring Report (MACTEC, June 2009).

Table 2-1 provides a summary of the monitoring activities conducted in the Carlsbad HU during FY 2010, in compliance with the Permit and RWQCB Investigative Order R9-2006-076. Figure 2-1 depicts the locations of monitoring stations within the Carlsbad WMA that were used to collect samples as part of the regional monitoring effort. Sampling locations established as part of the Lagoon TMDL Investigative Order monitoring effort can be found in Chapter 2 of the MACTEC Report.

Table 2-1 2009-2010 Monitoring Activities within the Carlsbad HU

Program Data Set	Constituents Assessed	Loma Alta	Buena Vista Creek	Agua Hedionda	San Marcos	Escondido Creek
Receiving Water Monitoring						
Ambient Monitoring*	Water chemistry, toxicity, bacteria, and trash			✓		✓
Rapid Stream Bioassessments*	Benthic macroinvertebrates, periphyton, and physical habitat			✓		✓
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash					
Ambient Bay and Lagoon Monitoring (ABLM)	Sediment chemistry, toxicity, and benthic habitat assessments, water chemistry, and bacteria			✓		
Urban Runoff Monitoring						
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash	✓	✓	✓	✓	✓
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria				✓	✓
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	✓		✓	✓	✓
MS4 Outfall Targeted Dry Weather Monitoring	Chemistry, metals, pesticides, and bacteria	✓	✓	✓	✓	✓
MS4 Outfall Targeted Wet Weather Monitoring	Chemistry, metals, pesticides, and bacteria					✓
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	✓	✓	✓	✓	✓
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria	✓	✓	✓	✓	✓

*captured through the SMC monitoring

Annual receiving water monitoring is conducted by the Copermittees on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit. Receiving waters ambient and wet weather monitoring did not occur within the Carlsbad WMA during the 2009-2010 reported period. Rapid Stream Bioassessments and instantaneous receiving water monitoring was conducted through the Stormwater Monitoring Coalition (SMC) Regional Bioassessment Program during one ambient weather event at one site in the Agua Hedionda HA and at two sites in the Escondido Creek HA.

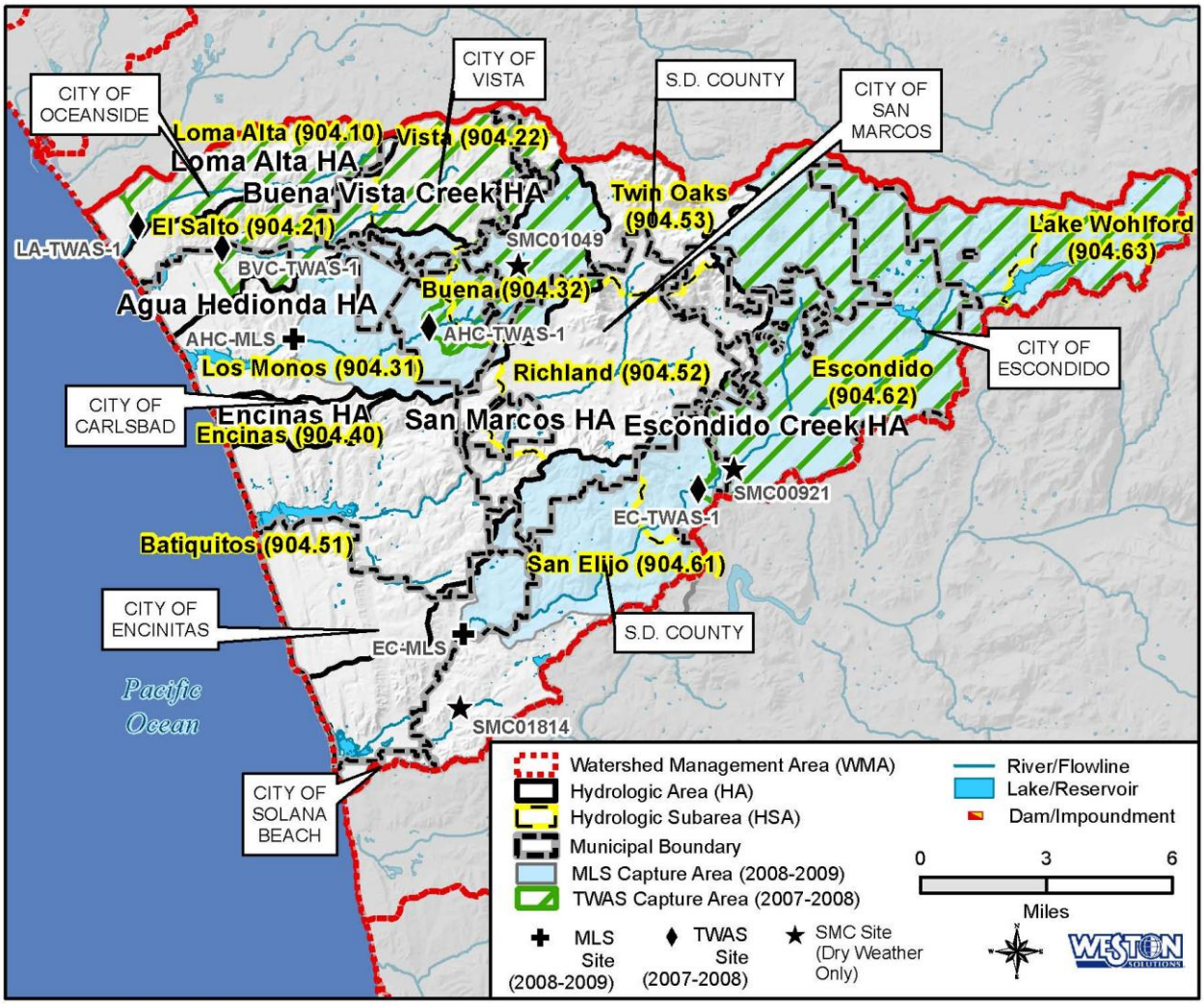

Figure 2-1 Carlsbad Watershed Management Area Monitoring Station Location Map

2.1 303(D) LISTINGS AND TMDLS

Within this watershed, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant TMDL status/activity. However, several changes to the listing will become effective soon. On November 12, 2010, EPA approved California's 2008-2010 Section 303(d) list of impaired waters requiring TMDLs and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. Updates to the 303(d) list must be finalized by USEPA before becoming effective. Therefore, until the associated Integrated Report is approved by USEPA, the 2006 303(d) List of Impaired Waterbodies is the current and active list.

Table 2-2 Carlsbad WMA SWRCB Section 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/ Stressor on 2006 SWRCB 303(d) List	HA(s)	TMDL Status
Pacific Ocean Shoreline	Indicator bacteria	904.1* 904.2* 904.5 904.6*	The Bacteria I TMDL has been adopted and is likely to be adopted by California Office of Administrative Law in 2011 904.1, 904.2 and 904.6 are not in current Bacteria I TMDL
Loma Alta Slough	Indicator bacteria and eutrophic	904.1	Investigation Order (I.O.) No. R9-2006-076 required stakeholders to collect data necessary to develop watershed loading and estuarine water quality models in lagoons or creeks that are 303(d) listed for specific pollutants including bacteria and nutrients. Southern California Coastal Water Research Project (SCCWRP) will be conducting modeling studies for Loma Alta Slough designed to support the development and implementation of the nutrient and bacteria TMDLs in Loma Alta Slough. The City of Oceanside, with the assistance of the City of Vista, began implementation of a watershed monitoring program for Loma Alta Creek and its major tributaries. The first year of data will be used as a baseline in anticipation of the nutrient and bacteria TMDLs that will be created and implemented at the slough.
Buena Vista Lagoon	Indicator bacteria, nutrients, and sedimentation/ siltation	904.2	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2009. Proposed completion date - 2019
Buena Vista Creek	Sediment toxicity	904.2	Proposed completion date - 2019
Agua Hedionda Creek	TDS, manganese, selenium, and sulfates	904.3	Proposed completion date - 2019
Buena Creek	DDT, nitrate, nitrite, and phosphate	904.3	Proposed completion date - 2019
Lower San Marcos Creek Watershed (Cottonwood Creek)	DDE, phosphorus, and sediment toxicity	904.5	Proposed completion date - 2019
Upper San Marcos Creek Watershed (San Marcos Creek)	DDE, phosphorus, and sediment toxicity	904.52 904.53	Proposed Completion date – 2019.Currently in Voluntary TMDL with Upper San Marcos Creek Stakeholders
Lake San Marcos	Ammonia as N, nutrients, phosphorus	904.5	Proposed Completion date – 2019.Currently in Voluntary TMDL with Upper San Marcos Creek Stakeholders
Encinitas Creek	Phosphorus	904.5	Proposed completion date - 2019
San Elijo Lagoon	Indicator bacteria, eutrophic, and sedimentation/siltation	904.6	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2009. Proposed completion date - 2019
Escondido Creek	DDT, manganese, phosphate, selenium, sulfates, and TDS	904.6	Proposed completion date - 2019
Reidy Canyon Creek	Phosphorus	904.6	Proposed completion date - 2019
Agua Hedionda Lagoon (7 acres)*	Indicator bacteria and sedimentation/ siltation	904.3	From July 2009 to Nov 2009, the Agua Hedionda HA Dischargers met with RWQCB staff 5 times. Along with the previous year's work in FY 2009, both sediment and bacteria impairments for Agua Hedionda Lagoon were delisted

Source: SWRCB, 2006
*Not a listed impairment in the 2008 303(d) listings

2.2 CARLSBAD HYDROLOGIC UNIT LAGOON MONITORING PROGRAM

In order to support the development of TMDLs in San Diego County creeks and lagoons, the San Diego Regional Water Quality Control Board (RWQCB) issued Investigation Order (IO) No. R9-2006-076. Per the IO, dischargers to the 303(d)-listed creeks and lagoons for

bacteria, total dissolved solids (TDS), sediment, and nutrients within San Diego County are required to collect monitoring data.

To comply with the IO, the Carlsbad Hydrologic Unit's dischargers collected data in four coastal lagoons during the 2008 calendar year. Aqua Hedionda Lagoon, Buena Vista Lagoon, Loma Alta Slough, and San Elijo Lagoon were included in the study, as each was listed for one or more of the qualifying constituents on the RWQCB's Section 303(d) list. The data were collected to support the development of TMDLs in one or more of these lagoons for bacteria, eutrophic conditions, and sedimentation. Additionally, data for TDS were collected for Agua Hedionda Creek. Data collected during this monitoring program may be utilized in future efforts to develop TMDLs for these lagoons.

The monitoring program established for the IO included three principal components:

1. Continuous monitoring of hydrologic and core water quality parameters such as flow, rainfall, specific conductivity, temperature, turbidity, and, if applicable, dissolved oxygen (DO) and pH.
2. Wet weather monitoring during and immediately following three storm events at the mass emission stations along the main tributaries of the lagoons, at targeted segment locations within the lagoons, and at the ocean inlets to the lagoons. The mass emission stations generally correspond to the locations of the mass loading and temporary watershed assessment stations that are monitored under the Copermittees MS4 permit.
3. Dry weather monitoring during four index period events designed to capture representative seasonal cycles of physical forcing, such as tides and currents acting on the lagoons, as well as biological activity within the lagoons. During each index period event, sampling was conducted at the mass emission stations along the main tributaries of the lagoons, at targeted segment locations within the lagoons, and at the ocean inlets to the lagoons.

Table 2-3 below presents the constituents monitored at each water body during the program.

Table 2-3. Summary of Lagoon Monitoring Activities

Water Body	*Applicable 303(d) Listings*	Monitoring Constituent													
		Enterococcus	Total Coliform	Fecal Coliform	TSS	TDS	Ammonia	CBOD	Nitrate + Nitrite	SRP	Total N	Dissolved N	Total P	Dissolved P	Chlorophyll α
Agua Hedionda Lagoon	*Bacteria, Sedimentation, TDS**	X	X	X	X	X*									
Buena Vista Lagoon	*Bacteria, Eutrophication, Sedimentation*	X	X	X	X		X	X	X	X	X	X	X	X	X
Loma Alta Slough	*Bacteria, Eutrophication, Sedimentation*	X	X	X	X		X	X	X	X	X	X	X	X	X
San Elijo Lagoon	*Bacteria, Eutrophication, Sedimentation*	X	X	X	X		X	X	X	X	X	X	X	X	X

* Agua Hedionda Creek is listed for TDS – monitoring for TDS occurred at an MES site within Agua Hedionda Creek.

Assessments were conducted using data from the Carlsbad Hydrologic Unit Lagoon Monitoring Report (MACTEC Report) (MACTEC, June 2009). For a detailed understanding of the analysis and assessment conducted as part of the regional monitoring effort it is highly recommended that the reader review the MACTEC Report.

2.3 MONITORING PROGRAM INTEGRATION

This section includes an integrated presentation of the Lagoon IO monitoring and watershed monitoring during both ambient and wet weather. The integrated assessment incorporates both the ambient weather and wet weather assessments from the Lagoon IO, and the results from Watershed receiving water and urban runoff monitoring (MS4, MLS, TWAS, and SMC), with the purpose of overlapping constituents between the two programs. Integrated watershed assessment results are presented by HA in **Tables 2-4** to **2-7** below.

Table 2-4 Loma Alta 904.1 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Total Phosphorus, Dissolved Oxygen (Med) ▪ Bacteria – Enterococci	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform
MLS, TWAS, and SMC, IO Monitoring	**Intermediate[2] Watershed Receiving Water** 2007-2008 Season MLS Results ▪ Chemistry – TDS ▪ Bioassessment – Very Poor Index of Biotic Integrity (IBI) ▪ Toxicity – C. dubia reproduction (Med), S. capricornutum (Med) IO MES Results ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous (Med), Dissolved Oxygen (Med) ▪ Bacteria – Enterococci, Fecal Coliform, Total Coliform (Med)	**Intermediate Watershed[2] Receiving Water** 2007-2008 Season MLS Results ▪ Chemistry –TSS, Turbidity ▪ Bacteria – Fecal Coliform ▪ Toxicity – H. azteca acute ▪ Synthetic Pyrethroids Assessment – Bifenthrin (Med) IO MES Results ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous ▪ Bacteria – Enterococci, Total Coliform, Fecal Coliform
Lagoon IO Monitoring	**Receiving Water – Loma Alta Slough** ▪ Chemistry – Ammonia as N, Total Nitrogen (Med), Total Phosphorous (Med) , Dissolved Oxygen (Med) ▪ Bacteria – Enterococci, Fecal Coliform, Total Coliform (Med)	**Receiving Water – Loma Alta Slough** ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous ▪ Bacteria – Enterococci, Total Coliform, Fecal Coliform

Notes:
1: High and medium priority constituents are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011)
2: Intermediate Watershed Receiving Waters are creeks and rivers

Within the Loma Alta HA, ambient weather water quality issues outlined by both monitoring programs include: Enterococci, total phosphorous, and dissolved oxygen. TDS, an ambient weather water quality issue based on the results of receiving water data in the Watershed Monitoring Program, was not analyzed in the Loma Alta HA during the Lagoon IO Monitoring Program. Fecal coliform is the only dry weather water quality issue noted by both monitoring programs.

The findings of this assessment support the existing HPWQPs within the Loma Alta HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-5 Buena Vista 904.2 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Total Nitrogen, Total Phosphorus, TDS ▪ Bacteria – Enterococci, Fecal Coliform	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform
MLS, TWAS, and SMC, IO Monitoring	**Intermediate[2] Watershed Receiving Water** 2007-2008 Season MLS Results ▪ Chemistry –TDS, Total Nitrogen, Total Phosphorus ▪ Bacteria – Enterococci ▪ Bioassessment – Very Poor Index of Biotic Integrity (IBI) ▪ Toxicity – None above benchmarks IO MES Results ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous ▪ Bacteria – Enterococci, Fecal Coliform (Med)	**Intermediate[2] Watershed Receiving Water** 2007-2008 Season MLS Results ▪ Chemistry –TSS, Turbidity ▪ Bacteria – Fecal Coliform ▪ Toxicity – H. azteca acute ▪ Synthetic Pyrethroids Assessment – Bifenthrin IO MES Results ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous ▪ Bacteria – Enterococci, Fecal Coliform, Total Coliform
Lagoon IO Monitoring	**Receiving Water – Buena Vista Lagoon** ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous ▪ Bacteria – Enterococci (Med)	**Receiving Water – Buena Vista Lagoon** ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous ▪ Bacteria – Enterococci, Total Coliform, Fecal Coliform

Notes:
1: High and medium priority constituents are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011)
2: Intermediate Watershed Receiving Waters are creeks and rivers

Within the Buena Vista HA, ambient weather water quality issues outlined by both monitoring programs include: Enterococci, fecal coliform, total nitrogen, and total phosphorous. TDS, an ambient weather water quality issue based on the results of MS4 and receiving water data in the Watershed Monitoring Program, was not analyzed in the Buena Vista HA during the Lagoon IO Monitoring Program. Fecal coliform is the only dry weather water quality issue noted by both monitoring programs.

The findings of this assessment support the existing HPWQPs within the Buena Vista HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-6 Agua Hedionda 904.3 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Total Phosphorus, TDS, Nitrate (Med), Total Selenium (Med) ▪ Bacteria – Fecal Coliform, Enterococci	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform
MLS, TWAS, and SMC, IO Monitoring	**Intermediate[2] Watershed Receiving Water** 2010 SMC Results (1 Station) ▪ Chemistry – Chloride, Sulfate, TDS, Total Nitrogen, Nitrate, Total Phosphorus ▪ Bacteria – Not Assessed ▪ Toxicity – None ▪ Bioassessment – Very Poor IBI 2007-2008 Season MLS Results ▪ Chemistry – TDS ▪ Bacteria – Fecal Coliform, Enterococci ▪ Bioassessment – Very Poor IBI ▪ Toxicity – None IO MES Results* ▪ Chemistry – TDS ▪ Bacteria – Enterococci, Total Coliform, Fecal Coliform	**Intermediate[2] Watershed Receiving Water** 2008-2009 Season MLS Results ▪ Chemistry –TSS, Turbidity, TDS, Chlorpyrifos ▪ Bacteria – Fecal Coliform, Enterococci ▪ Toxicity – H. azteca acute ▪ Synthetic Pyrethroids Assessment – Bifenthrin IO MES Results* ▪ Chemistry – TDS ▪ Bacteria – Enterococci, Total Coliform, Fecal Coliform
Lagoon IO Monitoring	**Receiving Water – Agua Hedionda Lagoon**** ▪ Chemistry – None above benchmarks ▪ Bacteria – None above benchmarks	**Receiving Water – Agua Hedionda Lagoon**** ▪ Chemistry – None ▪ Bacteria – Enterococci, Total Coliform, Fecal Coliform

Notes:
* Chemically analyzed for TDS and TSS only.
** Chemically analyzed for TSS only.
1: High and medium priority constituents are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011)
2: Intermediate Watershed Receiving Waters are creeks and rivers

Within the Agua Hedionda HA, ambient weather water quality issues outlined by both monitoring programs include: Enterococci, fecal coliform, and TDS. Enterococci, fecal coliform, and TDS were the dry weather water quality issues noted by both monitoring programs. Based on the Investigative Order, samples from Agua Hedionda HA during the IO Monitoring were chemically analyzed for TDS and TSS. Samples were not chemically analyzed for other constituents determined to be water quality issues during the Watershed Monitoring Program (e.g. nitrate, total nitrogen, total phosphorous).

The findings of this assessment support the existing HPWQPs within the Agua Hedionda HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-7 Escondido Creek 904.6 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Total Nitrogen, Total Phosphorus, TDS, Sulfate ▪ Bacteria – Fecal Coliform, Enterococci	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform
MLS, TWAS, and SMC, IO Monitoring	**Intermediate[2] Watershed Receiving Water** 2010 SMC Results (2 Stations) ▪ Chemistry – Chloride, Sulfate, TDS, Total Nitrogen, Nitrate, Total Phosphorus ▪ Bacteria – Not Assessed ▪ Toxicity – Toxicity observed to C. dubia ▪ Bioassessment – Very Poor IBI 2007-2008 Season MLS Results ▪ Chemistry –TDS ▪ Bacteria – Enterococci ▪ Bioassessment – Very Poor IBI ▪ Toxicity – C. dubia Reproduction (Med) IO MES Results ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous, Dissolved Oxygen (Med) ▪ Bacteria – Enterococci, Fecal Coliform	**Intermediate[2] Watershed Receiving Water** 2008-2009 Season MLS Results ▪ Chemistry –TDS, TSS, Turbidity ▪ Bacteria – Fecal Coliform, Enterococci ▪ Toxicity – No toxicity observed IO MES Results ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous, Dissolved Oxygen (Med) ▪ Bacteria – Enterococci, Fecal Coliform, Total Coliform
Lagoon IO Monitoring	**Receiving Water - San Elijo Lagoon** ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous ▪ Bacteria – Enterococci (Med)	**Receiving Water - San Elijo Lagoon** ▪ Chemistry – Ammonia as N, Total Nitrogen, Total Phosphorous ▪ Bacteria – Enterococci, Fecal Coliform, Total Coliform

Notes:
1: High and medium priority constituents are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011)
2: Intermediate Watershed Receiving Waters are creeks and rivers

Within the Escondido Creek HA, ambient weather water quality issues outlined by both monitoring programs include: Enterococci, fecal coliform, total nitrogen, and total phosphorus. Enterococci and fecal coliform were the dry weather water quality issues noted by both monitoring programs. TDS, an ambient and wet weather water quality issue based on the results of receiving water data in the Watershed Monitoring Program, was not analyzed in the Escondido Creek HA during the Lagoon IO Monitoring Program.

The findings of this assessment support the existing HPWQPs within the Escondido Creek HA. Other identified constituents may be further analyzed and addressed in future years.

2.4 HIGH PRIORITY WATER QUALITY PROBLEMS AND RECOMMENDATIONS

In developing the Collective Watershed Strategy, the Carlsbad WURMP Copermittees decided that unless there were significant long-term trends indicating otherwise or overwhelming evidence, the high priority water quality problems identified for each hydrologic area would remain throughout the permit cycle.

New data collected and analytical results summarized in this water quality assessment and in the Regional Monitoring Report (Weston, January 2011) will be taken into consideration as watershed activities are established, but do not affect the HPWQPs identified in the Carlsbad WMA. However, in light of the newly adopted Bacteria TMDL Project I and the

Loma Alta Nutrient TMDL (in development), these two constituents have been added as HPWQPs where applicable. **Table 2-8** below presents the FY 2011 HPWQPs in the WMA.

Table 2-8. Summary of High Priority Water Quality Problems

HA	Bacteria		Sediments		Nutrients	
	Wet	Ambient	Wet	Ambient	Wet	Ambient
Loma Alta	X				X	X
Buena Vista Creek	X	X				
Agua Hedionda	X	X	X			X
San Marcos	X	X				X
Escondido Creek	X	X	X			X

3 POLLUTANT SOURCE ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Carlsbad WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by Hydrologic Area.

Table 3-1 summarizes the land use in each of the Hydrologic Areas. The pollutants found in wet weather urban runoff are generally associated with land uses in the tributary areas. Rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to the pollutants found in dry weather urban runoff that are generally associated with point-source dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant generating activities and from the traveled path of the urban runoff as it enters and travels through the MS4.

Tables 3-2 through **3-6** represent the inventoried sources that the Copermittees currently track. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants. The process used to develop the tables was taken directly from the Baseline Long-Term Effectiveness Assessment (BLTEA) (Weston, MOE, LWA, 2005). The data used for the process includes the following: (1) results in the 2009-2010 Regional Annual Monitoring Report (Weston Solutions, 2011); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the BLTEA (Weston, MOE, LWA, 2005).

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)					
	904.1	904.2	904.3	904.4	904.5	904.6
Commercial	206.14	932.79	423.26	253.16	1,078.11	865.81
Industrial	601.10	280.07	1,830.77	648.46	1,146.33	1,050.32
Institutional	251.32	556.48	252.51	10.89	889.62	685.09
Rural Residential	45.75	512.71	1,031.93	0.00	2,097.64	10,100.27
Single Family Residential	1,510.11	5,193.36	4,568.03	154.45	8,380.03	6,644.18
Multiple Family Residential	469.15	1,639.35	1,013.53	123.29	2,499.51	2,165.20
Municipal	81.93	73.93	51.74	20.72	105.86	142.11
Park	210.94	289.95	545.30	220.82	1520.50	746.97
Transportation	1,112.84	2,392.99	2,080.49	331.22	5,357.94	4,258.15
Open Space	1,728.47	2,047.90	5,776.61	485.57	12,789.05	22,734.82
Prison	0.00	24.21	0.00	0.00	0.00	0.00
Recreation	14.77	53.36	49.22	9.93	165.44	80.22
Under Construction	16.68	8.06	20.20	22.97	62.88	96.63
Water	13.45	222.08	341.12	1.25	528.38	866.07
Agricultural	0.00	180.35	1,656.51	68.88	2,584.97	3,921.02
Military	0.06	59.15	69.47	0.00	89.83	44.54

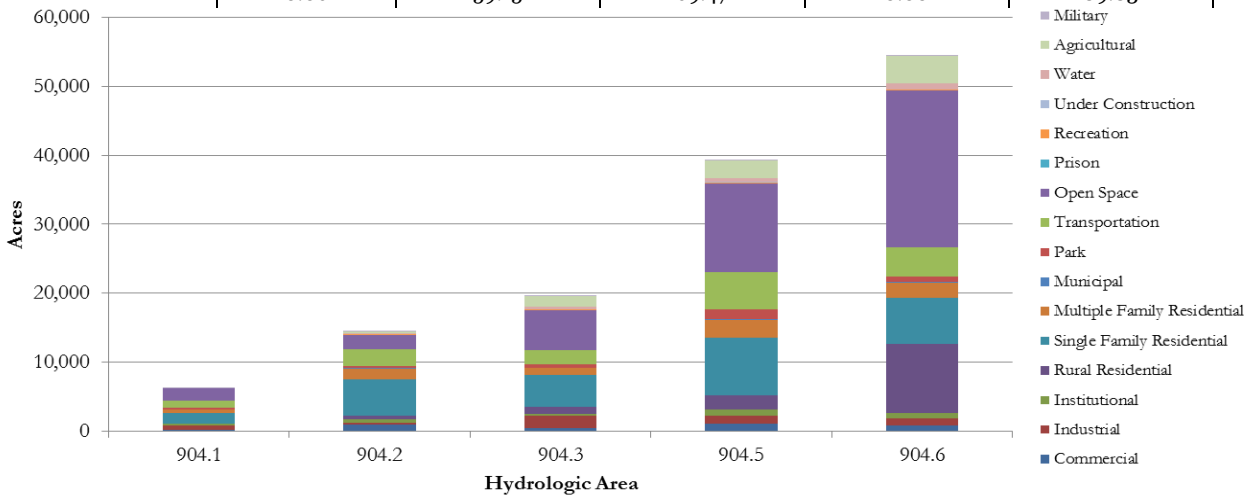

Note: HA 904.4 is not shown graphically due to the small overall area. For a land use representation of HA 904.4, please see Table 3-1 above.
Source: SANDAG

Table 3-2 Pollutant Generating Sources – 904.1 Loma Alta Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	12	N	L	UL	L	UK	L	UK	L
Automotive	119	L	L	L	UL	UL	UK	L	UL
Cemetery	1	N	N	UL	L	L	L	L	L
Contractor	111	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	145	N	L	L	UL	UK	UK	L	L
Equipment	4	L	L	L	UL	UL	UK	L	UL
Fueling	3	UK	L	L	UK	N	N	UK	N
General Industrial	23	L	L	L	UK	UK	UK	UK	UK
General Retail	496	UL	UL	UL	L	UL	UL	L	UL
Health Services	7	N	L	UL	L	UK	L	UK	UL
Institutional	7	L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	78	L	UK	UK	UK	UK	UK	UK	UL
Metal	15	L	L	L	UK	UK	UK	UK	UL
Nursery	11	L	UL	UL	L	L	L	UK	L
Stone	3	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	10	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 32; Non-High: 1	L	L	L	L	UK	UK	UK	UL
Construction	High: 6; Medium: 9; Low: 6	UL	UL	UL	L	UL	UL	L	UL
Residential	2,929 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-3 Pollutant Generating Sources – 904.2 Buena Vista Creek Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Agriculture	1			L	UL	UL	L	L	L	UK	L
Animal	6			N	L	UL	L	UK	L	UK	L
Automotive	172			L	L	L	UL	UL	UK	L	UL
Contractor	78			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	405			N	L	L	UL	UK	UK	L	L
Equipment	7			L	L	L	UL	UL	UK	L	UL
Fueling	35			UK	L	L	UK	N	N	UK	N
General Industrial	9			L	L	L	UK	UK	UK	UK	UK
General Retail	305			UL	UL	UL	L	UL	UL	L	UL
Golf	1			N	N	UL	L	L	L	L	L
Health Services	13			N	L	UL	L	UK	L	UK	UL
Institutional	1			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	11			L	UK	UK	UK	UK	UK	UK	UL
Metal	3			L	L	L	UK	UK	UK	UK	UL
Nursery	16			L	UL	UL	L	L	L	UK	L
Stone	5			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	15			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	50	31									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	12	9	29								
Residential	8,249 acres			L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-4 Pollutant Generating Sources – 904.3 Agua Hedionda Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	6			L	UL	UL	L	L	L	UK	L
Animal	6			N	L	UL	L	UK	L	UK	L
Automotive	99			L	L	L	UL	UL	UK	L	UL
Contractor	73			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	190			N	L	L	UL	UK	UK	L	L
Equipment	58			L	L	L	UL	UL	UK	L	UL
Fueling	16			UK	L	L	UK	N	N	UK	N
General Industrial	24			L	L	L	UK	UK	UK	UK	UK
General Retail	40			UL	UL	UL	L	UL	UL	L	UL
Golf	3			N	N	UL	L	L	L	L	L
Health Services	4			N	L	UL	L	UK	L	UK	UL
Manufacturing	134			L	UK	UK	UK	UK	UK	UK	UL
Metal	51			L	L	L	UK	UK	UK	UK	UL
Nursery	72			L	UL	UL	L	L	L	UK	L
Stone	13			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	67			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	47	21									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	27	22	87								
Residential	7,518 acres			L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-5 Pollutant Generating Sources – 904.5 San Marcos Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	42			N	L	UL	L	UK	L	UK	L
Automotive	223			L	L	L	UL	UL	UK	L	UL
Contractor	137			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	464			N	L	L	UL	UK	UK	L	L
Equipment	90			L	L	L	UL	UL	UK	L	UL
Fueling	25			UK	L	L	UK	N	N	UK	N
General Industrial	12			L	L	L	UK	UK	UK	UK	UK
General Retail	42			UL	UL	UL	L	UL	UL	L	UL
Golf	7			N	N	UL	L	L	L	L	L
Manufacturing	93			L	UK	UK	UK	UK	UK	UK	UL
Metal	26			L	L	L	UK	UK	UK	UK	UL
Nursery	129			L	UL	UL	L	L	L	UK	L
Stone	17			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	112			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	79	45									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	47	41	92								
Residential	13,882 acres			L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-6 Pollutant Generating Sources – 904.6 Escondido Creek Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	2			L	UL	UL	L	L	L	UK	L
Animal	26			N	L	UL	L	UK	L	UK	L
Automotive	498			L	L	L	UL	UL	UK	L	UL
Contractor	392			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	414			N	L	L	UL	UK	UK	L	L
Equipment	48			L	L	L	UL	UL	UK	L	UL
Fueling	47			UK	L	L	UK	N	N	UK	N
General Industrial	11			L	L	L	UK	UK	UK	UK	UK
General Retail	89			UL	UL	UL	L	UL	UL	L	UL
Golf	5			N	N	UL	L	L	L	L	L
Health Services	14			N	L	UL	L	UK	L	UK	UL
Institutional	17			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	66			L	UK	UK	UK	UK	UK	UK	UL
Metal	31			L	L	L	UK	UK	UK	UK	UL
Nursery	42			L	UL	UL	L	L	L	UK	L
Park	3			N	N	UL	L	L	L	L	L
Stone	17			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	37			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	36	39									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	51	60	227								
Residential	19,814 acres			L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

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4 IMPLEMENTATION OF ACTIVITIES

4.1 JURMP AND WATERSHED ACTIVITIES

The Carlsbad WURMP Copermittees are responsible for implementing JURMP activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. Many of these activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

In addition to the JURMP activities, the Carlsbad WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Carlsbad WURMP.

The tables below represent the Copermittees' efforts towards reporting urban runoff management activities on a watershed basis, e.g., reporting of Copermittee activities regardless of jurisdiction-specific program labels. Reporting as many jurisdictional and watershed urban runoff management activities as feasible on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements.

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

Table 4-1 JURMP and WURMP Activities – 904.1 Loma Alta Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem
			Bacteria/Pathogens
Inspections	Animal	1: (12)	X
	Cemetery	1: (1)	X
	Food Establishment	76: (145)	X
	Nursery	3: (11)	X
Street Sweeping (Tons Collected)		246	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		484	X
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility		X

Table 4-2 JURMP and WURMP Activities – 904.2 Buena Vista Creek Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem
			Bacteria/Pathogens
Inspections	Agriculture	1: (1)	X
	Animal	0: (6)	X
	Food Establishment	235: (405)	X
	Golf	0: (1)	X
	Nursery	19: (16)	X
Street Sweeping (Tons Collected)		1.755	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		788	X

Table 4-3 JURMP and WURMP Activities – 904.3 Agua Hedionda Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem		
					Bacteria/ Pathogens	Nutrients	Sediment
Inspections	Construction	High	Medium	Low			X
		448: (27)	197: (22)	545: (87)			
	Agriculture	5: (6)			X	X	X
	Animal	3: (6)			X	X	X
	Contractor	18: (73)					X
	Food Establishment	110: (190)			X		
	General Retail	34: (40)					X
	Golf	3: (3)			X	X	X
	Health Services	3: (4)				X	X
	Nursery	46: (72)			X	X	X
Street Sweeping (Tons Collected)		1,200			X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		770			X	X	X
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek					X	
CHU-WQEA7	Bioassessment Training for High School Students				X	X	X

Table 4-4 JURMP and WURMP Activities – 904.5 San Marcos Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem
			Nutrients
Inspections	Animal	12: (42)	X
	Golf	5: (7)	X
	Nursery	56: (129)	X
Street Sweeping (Tons Collected)		584	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,701	X
CHU-WQA11	Land Acquisitions		X
CHU-WQA12	Upper San Marcos Creek Watershed/Lake San Marcos Nutrient Management Plan		X
CHU-WQA18	Upper San Marcos Creek Nutrient Management Plan – Parks Component		X
CHU-WQA19	Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component		X
CHU-WQA20	Upper San Marcos Creek Nutrient Management Plan – Agriculture Component		X
CHU-WQA21	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component		X
CHU-WQEA8-	Upper San Marcos Creek Nutrient Management Plan – Residential Component		X

Table 4-5 JURMP and WURMP Activities – 904.6 Escondido Creek Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem		
					Bacteria/ Pathogens	Nutrients	Sediment
Inspections	Construction	High	Medium	Low			X
		670: (51)	515: (60)	1,604: (227)			
	Agriculture	1: (2)			X	X	X
	Animal	10: (26)			X	X	X
	Contractor	287: (392)					X
	Food Establishment	399: (414)			X		
	General Retail	74: (89)					X
	Golf	4: (5)			X	X	X
	Health Services	13: (14)				X	X
	Nursery	14: (42)			X	X	X
	Park	0: (3)			X	X	X
Street Sweeping (Tons Collected)		2,123			X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,182			X	X	X
CHU-WQA6	Escondido Creek Restoration						X
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks				X	X	
CHU-WQA11	Land Acquisitions				X	X	X
CHU-WQEA5	LID Features in San Elijo Nature Center				X	X	X

4.2 OTHER EDUCATION ACTIVITIES

This section describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2010 reporting period to enhance the general public's understanding of basic

watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the HPWQPs in the Carlsbad WMA. The activity selection process is described fully in the March 2008 Carlsbad WURMP.

The Copermittees continue to make progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed. **Table 4-6** below lists the watershed education activities implemented during FY 2010 by the Copermittees. Details of the each activity can be found on the Activity Implementation Sheets located in **Appendix B**.

Table 4-6. Watershed Education Activities Implemented During FY 2010

ID #	Activity/Project Name
CHU-WQEA3	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses
CHU-WQEA5	LID Features in San Elijo Nature Center
CHU-WQEA7	Bioassessment Training for High School Students
CHU-WQEA8	Upper San Marcos Creek Nutrient Management Plan – Residential Component

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

4.3 PUBLIC PARTICIPATION ACTIVITIES

The Watershed Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed which could include other agencies, private companies, non-governmental organizations, environmental groups, etc. The Copermittees use several mechanisms to engage the public and receive input, including outreach events. Below is a summary of these mechanisms where interaction with the public is the primary function.

4.3.1 PROJECT CLEAN WATER

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. PCW, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. PCW seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. It was formed under the guidance of a Technical Advisory Committee made up of local stormwater-related professionals.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds. There are several web pages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website provides Best Management Practices information for both residential and industrial/commercial audiences (http://www.projectcleanwater.org/bmp/).

PCW features a page devoted to the Carlsbad WMA, with details on the watershed, major pollutants, and organizations related to water quality. Additionally the webpage also offers

links to relevant documents such as the WURMP and WURMP Annual Updates. During the FY 2010 reporting period, revisions were made to update the content and documents available via the site. During FY 2010 the hits for the Carlsbad Watershed page totaled 2,333 and there were also 785 hits on the Carlsbad WURMP document.

The Carlsbad WURMP Copermittees are supportive of these outreach activities and will be involved where applicable and feasible.

4.3.2 Regional Education Group

Carlsbad WURMP Copermittees worked in cooperation with the Regional Education and Residential Sources workgroup.

Outreach Events

The Carlsbad Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- June 12 – July 5, 2009 - San Diego County Fair
- August 1, 2009 to August 2, 2009 – Vista Rod Run
- September 26, 2009 to September 27, 2009 – Cardiff Green Expo
- October 7, 2009 – Rancho Santa Fe Garden Club
- October 18, 2009 – Escondido Street Fair
- November 19, 2009 – Oak Crest Field Study @ San Elijo Lagoon
- January 25, 2010 – Kids Conference on Watersheds (Vista)
- March 7, 2010 – Pet Licensing Event (Carlsbad)
- March 10, 2010 – SD County High Tech Fair
- March 28, 2010 – Kids' Day at the Flower Fields (Carlsbad)
- April 3, 2010 – Elfin Forest Garden Event (Escondido)
- April 10, 17, 24, and May 8, 2010 – Community Event, Carlsbad Flower Fields
- April 17, 2010 – Encinitas Garden Festival
- April 19, 2010 – Palmquist Elementary 5th Grade (Oceanside)
- April 23, 2010 – La Costa Canyon High School Earth Day (Carlsbad)
- April 24, 2010 – Alta Vista Gardens Earth Day (Vista)
- April 25, 2010 – Earth Day at the Mission (Vista)
- May 1, 2010 – Carlsbad Beach Fest (Carlsbad)
- May 15, 2010 – San Elijo Lagoon Day (Encinitas)
- May 16, 2010 – Escondido Street Fair
- May 21, 2010 – Public Works Day (Encinitas)
- May 22, 2010 – Fit Fun Families Day (Vista)
- May 30, 2010 – Strawberry Festival (Vista)
- June 4, 2010 – Palmquist Elementary 2nd Grade (Oceanside)
- June 6, 2010 – Encinitas Environmental Day
- June 6, 2010 – Bow Wow Pow Wow (Encinitas)
- June 19, 2010 – Enviro Fair at San Diego County Fair
- Monthly – Escondido Farmer's Market

Educational Materials Distributed

The Carlsbad Watershed Copermittees continued the distribution of the following items at special events, inspections, classroom presentations and other public interactive venues that

were produced by the North County Storm Water Program during previous reporting periods:

- Construction brochure highlighting construction BMPs for large or small scale developments.
- North County watershed map ("We All Live in a Watershed" poster)
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Click-message pens
- San Diego County IPM program materials, including English and Spanish IPM Pest Tip Cards
- Personal pet waste bag dispensers
- Storm water coloring book and crayons

4.3.3 RIVER, CREEK AND BEACH CLEANUP EVENTS

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were three (3) cleanup events held at nine (9) different sites throughout the Carlsbad WMA. 1,428 volunteers removed 7,240 pounds of trash and recyclables from the waterways. **Table 4-7** provides a summary of the cleanup events.

Table 4-7 Summary of FY 2010 Clean Up Events

Date	Name	Location	# of Participants	# of pounds removed	Hydrologic Unit
7/6/2009	Morning After Mess	South Side of Oceanside Pier	71	476	Loma Alta (904.1)
9/19/2009	Coastal Cleanup Day	Buena Vista Creek, Oceanside	183	2500	Buena Vista (904.2)
		Buccaneer Park, Oceanside	154	527	Loma Alta (904.1)
		Tamarack State Beach, Carlsbad	250	242	Agua Hedionda (904.3)
		Swami's Beach, Encinitas	182	242.5	San Marcos (904.5)
		San Elijo Lagoon	195		Escondido (904.6)
		Buena Creek	118	1,373	Agua Hedionda (904.3)
4/24/2010	Creek to Bay Cleanup	Loma Alta Creek, Oceanside	90	2000	Loma Alta (904.1)
		Buccaneer Beach, Oceanside	192	812	Loma Alta (904.1)
		Moonlight Beach, Encinitas	111	125	San Marcos (904.5)
		Sycamore, San Marcos	28	614	San Marcos (904.5)

Table 4-8 below provides a summary of the number of sites, number of volunteers and pounds of debris removed within each Carlsbad Hydrologic Unit.

Table 4-8 Summary of FY 2010 Clean Up Events by HA

Hydrologic Unit	# of sites	# of volunteers	Pounds of Debris removed
Loma Alta (904.1)	4	507	3,815
Buena Vista (904.2)	1	183	2,500
Agua Hedionda (904.3)	2	368	1615
San Marcos (904.5)	2	321	982
Escondido (904.6)	1	195	316
Totals	**10**	**1,574**	**9,228**

4.4 COLLABORATIVE LAND USE PLANNING EFFORTS

The Carlsbad Watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

4.4.1 CROSS-JURISDICTIONAL COMMUNICATION

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the Carlsbad Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the Carlsbad Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues occurring in adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

4.5 5-YEAR STRATEGIC PLAN

4.5.1 NEW WATERSHED ACTIVITIES (FY 2010 AND FUTURE YEARS)

Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA. Watershed Activity Sheets can be found in **Appendix B.**

Each activity on the Watershed Activities List is fully described in an Activity Sheet and includes the following information:

1. A description of the activity;

2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQP(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Watershed Copermittees will implement identified Watershed Activities pursuant to the proposed schedule. For each Permit year, no less than two Watershed Water Quality Activities will be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's HPWQP(s). Watershed Water Quality Activities that are capital projects are in active implementation for the first year of implementation only.

4.5.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the 2008 Carlsbad WURMP. The strategy was applied at the Hydrologic Area (HA) level to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first, identify water quality problems (where sufficient data is available). From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees could then make appropriate management decisions when selecting appropriate watershed water quality and education activities.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees will use available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented below is intended to supersede the earlier versions presented in the 2008 Carlsbad WURMP and the FY 2008 and FY 2009 Carlsbad WURMP Annual Reports previously submitted.

Table 4-9 Updated 5-Year Strategic Plan

Activity/Project Name		Jurisdiction(s)	Watershed Priorities			Implementation Schedule			
			Bacteria	Nutrients	Sediment	FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
Watershed Water Quality Activities									
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility	OCEANSIDE	X			A	A	A	A
CHU-WQA6	Escondido Creek Restoration	ESCONDIDO			X	A	A	A	A
CHU-WQA7	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	?	?	?	P	P	WQI	WQI
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek	COUNTY		X		WQI	WQI	WQI	WQI
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks	COUNTY	X	X		WQI	WQI	WQI	WQI
CHU-WQA11	Land Acquisitions	COUNTY	X	X	X	WQI	WQI	WQI	WQI
CHU-WQA12	Upper San Marcos Creek Nutrient Management Plan	SM/COUNTY/ESC		X		WQI	WQI	WQI	WQI
CHU-WQA14	Water Quality Monitoring in Agua Hedionda Creek Watershed	COUNTY	X	X	X	M	-	-	-
CHU-WQA15	Water Quality Treatment Facility @ Palomar Airport	COUNTY	X	X	X	A	-	-	-
CHU-WQA16	Agua Hedionda Creek Restoration – SR-02+	VISTA			X	P	P	WQI	WQI
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution	COUNTY	X	X	X	P	WQI	-	-
CHU-WQA18	Upper San Marcos Creek Nutrient Management Plan – Parks Component	SM/COUNTY/ESC		X		WQI	-	-	-
CHU-WQA19	Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component	SM/COUNTY/ESC		X		WQI	WQI	-	-
CHU-WQA20	Upper San Marcos Creek Nutrient Management Plan – Agriculture Component	SM/COUNTY/ESC		X		WQI	WQI	-	-
CHU-WQA21	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component	SM/COUNTY/ESC		X		WQI	WQI	-	-
CHU-WQA22	Loma Alta Water Quality Monitoring Program	OCEANSIDE/ VISTA	X	X		M	M	M	M

Table 4-9 Updated 5-Year Strategic Plan - Continued

Activity/Project Name		Jurisdiction(s)	Watershed Priorities			Implementation Schedule			
			Bacteria	Nutrients	Sediment	FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
Watershed Education Activities									
CHU-WQEA3	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	X	X	X	WE	P	WE	-
CHU-WQEA5	LID Features in San Elijo Nature Center	COUNTY	X	X	X	WE	WE	-	-
CHU-WQEA7	Bioassessment Training for High School Students	OCEANSIDE	X	X	X	WE	-	-	-
CHU-WQEA8	Upper San Marcos Creek Nutrient Management Plan – Residential Component	SM/COUNTY/ESC		X		WE	WE	-	-
CHU-WQEA9	Residential Composting Workshop	OCEANSIDE/ COUNTY/VISTA				P	WE	-	-

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)

E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

5 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2010. In addition, there is an effectiveness assessment of the collective WURMP implementation.

The activity summary sheets presented in **Appendix B** include effectiveness assessment summaries for each water quality and education activity, as required in the Permit, I.2.a.(1).

5.1 PERMIT COMPLIANCE (LEVEL 1)

A basic compliance assessment is presented in **Table 5-1**. This table describes permit requirements set forth in the Permit, whether or not compliance was demonstrated by the watershed Copermittees in FY 2010, and where in this report, required compliance points are fulfilled or described.

Table 5-1 Permit Compliance

Targeted Outcome	Measure	Report Section
Update any watershed maps.	No changes	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the watershed.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
A description of Copermittee collaboration efforts including meeting as the Carlsbad WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date I meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not applicable at this time.	N/A

As shown in the table, the Copermittees were in compliance with all WURMP related Permit requirements during FY 2010.

5.2 MONITORING ASSESSMENT

Currently, the Copermittees are relying on the regional MS4 monitoring program for their primary source of water quality data. The regional program elements are collecting data however, because the scope and scale are limited, the data gathered may not provide sufficient data for use in selecting or assessing the effectiveness of activities.

Conducted in 2008 and summarized in this report, the Copermittees performed lagoon monitoring in response to a RWQCB Investigative Order. The results are likely to be used for modeling during TMDL development, however, because the scope was limited, the data gathered may not provide enough local data for selecting activities.

5.2.1 MS4 SUMMARY

Current ambient monitoring efforts in the MS4 include the Dry Weather, MS4, and CSDM outfall monitoring programs. The Copermittees are currently participating in a regional portion of the MS4 outfall program that will collect and provide data in the MS4 during storm events. The scope of this program is limited and may not provide local data within each HA. It is expected however, that over time, enough data will be collected to characterize storm water discharges from the MS4 during storm events. Currently, there are seven random wet weather MS4 locations in the WMA, three in the Escondido Creek HA, two in the San Marcos HA, and one in each of the Agua Hedionda and Loma Alta HAs.

5.2.2 RECEIVING WATER SUMMARY

Monitoring within the receiving waters is accomplished through the Regional Monitoring (MLS/TWAS), CSDM, Bight, and under the Lagoon Investigative Order Programs. Currently MLSs are located at the base of Agua Hedionda and Escondido Creeks; TWAS were located at the base of Loma Alta and Buena Vista Creeks and upstream in Agua Hedionda and Escondido Creeks. There are currently no receiving water monitoring locations in the Encinas or San Marcos HAs. Historical MLSs will remain as located. The intent of the TWASs was to be able to relocate stations in order to collect more relevant water quality information. The watershed group will consider future locations of the TWAS for the upcoming monitoring years.

5.3 WATERSHED ACTIVITY ASSESSMENTS

Each activity summary sheet in **Appendix B** of the WURMP identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measurable at levels 5 or 6. Levels 5 and 6 outcomes are typically measurable through cumulative assessments. **Tables 5-2** through **5-6** below, summarize the assessments of the water quality and education activities, on a hydrologic area basis, to provide a snapshot of the overall effectiveness of the watershed activities

In addition to the WURMP activities included in the tables, the WURMP Copermittees are presenting the JURMP activities that are related to the HPWQPs in each hydrologic area. It is important to note that not all JURMP activities are included in this presentation. This year's annual reporting effort is intended to be an initial presentation of JURMP activities that are conducted by WURMP Copermittees that are relatable based on hydrologic area of implementation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

Table 5-2 Summary of Implemented Activities for FY 2010 – 904.1 Loma Alta Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2010 included animal facilities, cemeteries, restaurants, and nurseries. Of the total 169 bacteria sources inventoried, 86% are restaurants. Approximately 52% of the restaurants were inspected, and overall 47% of the likely bacteria sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2010, 246 tons of material was removed from streets via street sweeping and 484 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Loma Alta Creek UV Facility	Water Quality	Bacteria	Level 4	Dry weather bacteria loads reduced via treatment at base of hydrologic area

Loma Alta HA Discussion

Major land use in the HA includes residential and open space, totaling approximately 60 percent of the land use in Loma Alta. Transportation, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria and nutrients, as these are identified as the HPWQPs in the HA.

Residential sources of bacteria and nutrients include activities such as over irrigation, application of fertilizers, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. With the implementation of the Ultra Violet Treatment Facility (UV Facility), CHU-WQA2, bacteria is removed from the receiving waters prior to discharge to the Pacific Ocean. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs.

Open space contributions of bacteria are most often uncontrollable and MS4 programs are not typically responsible for mitigating bacteria loads from this land use. However, contributions from open space can be significant. In the Loma Alta HA, the UV Facility is an excellent BMP to ensure that uncontrollable bacteria contributions to the receiving waters have lessened impact public health during dry weather.

Other less predominant sources of bacteria in the HA include transportation, industrial/commercial, and municipal land uses. While the UV Facility removes the bacteria from these sources, it does not address the sources themselves. However, through implementation of the JURMP Activities, these sources are addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

The planned monitoring activity, CHU-WQA22, will provide a baseline assessment of water quality in the receiving water and at selected tributaries. The quarterly, and thus seasonal, monitoring will then be assessed and modified to allocate resources to identifying sources of HPWQPs. The monitoring began during this fiscal year and will be assessed when a full year of data is available.

The following planned activity also targets the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity will be focused at addressing residential sources, a significant source of bacteria. More information will be provided after implementation of this activity is initiated.

Table 5-3 Summary of Implemented Activities for FY 2010 – 904.2 Buena Vista Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2010 included animal facilities, restaurants, and nurseries. Of the total 429 bacteria sources inventoried, 94% are restaurants. Approximately 58% of the restaurants were inspected and 100% of the nurseries were inspected. Overall 60% of the likely bacteria sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2010, 1,755 tons of material was removed from streets via street sweeping and 788 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.

Buena Vista HA Discussion

The major land use in the HA is residential, comprising over 50 percent of the land use in Buena Vista. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, as this was identified as the only HPWQP in the HA.

Residential sources of bacteria include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Other less predominant sources of bacteria in the HA include transportation, open space, industrial/commercial, and municipal land uses. Through implementation of the JURMP Activities, these sources are addressed. Examples of JURMP Activities addressing

these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

The following planned activity also targets the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity will be focused at addressing residential sources, a significant source of bacteria. More information will be provided after implementation of this activity is initiated.

Table 5-4 Summary of Implemented Activities for FY 2010 – 904.3 Agua Hedionda Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2010 included agriculture, animal facilities, restaurants, golf courses, and nurseries. Of the total 277 bacteria sources inventoried, 69% are restaurants. Approximately 58% of the restaurants were inspected, and overall 60% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3 and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2010 included agriculture, animal facilities, golf courses, health services, and nurseries. Of the total 91 nutrient sources inventoried, 79% are nurseries. 64% of the nurseries in the HA were inspected. Overall, 66% of the likely nutrient sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2010 included construction sites, agriculture, animal facilities, contractors, general retail, golf courses, health services, and nurseries. Of the total 204 sediment sources inventoried (excluding construction sites), 36% are contractors and 35% are nurseries. Only 24% of the contractors were inspected, however 64% of the nurseries were inspected. Overall, 55% of the likely sediment sources that were not related to construction were inspected. The primary focus of likely sources of sediment are construction sites. During this FY, there were approximately 136 active construction sites in the HA that were inspected a total of 1,190 times. The high priority sites were inspected an average of 16 times during the fiscal year.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2010, 1,200 tons of material was removed from streets via street sweeping and 770 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Nitrate Source Identification and Abatement: Buena Creek	Water Quality	Nutrients	Levels 1, 2, 3 and 4	Inspections resulted in education and BMP implementation
Bioassessment Training for High School Students	Water Education	Bacteria, Sediment and Nutrients	Level 2	Expected change in knowledge and potential BMP implementation

Agua Hedionda HA Discussion

The major land uses in the HA are residential, open space, and industrial/commercial comprising over 80 percent of the land use in Agua Hedionda. Transportation, municipal, and construction land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, sediment, and nutrients, as these were identified as the HPWQPs in the HA.

Residential sources of bacteria, sediment, and nutrients include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate the pollutants identified as high priority. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Industrial/commercial sources of bacteria, sediment, and nutrients include activities such as grounds/landscape maintenance, surfaces and washing, over irrigation, sewer/septic problems, and materials management issues among others. Through a combination of activities, including the Nitrate Source Identification and Abatement activity, JURMP commercial/industrial inspections programs, and complaint response programs, the likely sources of the HPWQPs are being addressed.

Other less predominant sources of bacteria, sediment, and nutrients in the HA include transportation, municipal, and construction land uses. The WURMP activities implemented in the HA did not address these sources directly. However, with the JURMP Activities, each of these land uses/sources are specifically addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

With CHU-WQA14, the County of San Diego aims to characterize a portion of the Agua Hedionda HA and develop a baseline of data. This data may also be used to identify hot spot areas contributing bacteria, nutrients and other pollutant constituents. The County could potentially use the data collected to develop future activities aimed at further characterization and/or abatement of sources.

The following planned activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity will be focused at addressing residential sources, a significant source of bacteria. More information will be provided after implementation of this activity is initiated.
- The County's Stormwater Quality Master Plan for Special Drainage Fee Areas will be focused at addressing portions of the County's jurisdiction within the WMA by retrofitting their drainage system with BMPs. This will address multiple sources as well as multiple water quality problems.

- The City of Vista's Agua Hedionda Creek Restoration Project will be focused at addressing sediment issues generated at the creek.

Table 5-5 Summary of Implemented Activities for FY 2010 – 904.5 San Marcos Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3 and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2010 included agriculture, animal facilities, golf courses, and nurseries. Of the total 178 nutrient sources inventoried, 72% are nurseries. 43% of the nurseries in the HA were inspected, while 71% of the golf facility sources were inspected. Overall, 41% of the likely nutrient sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2010, 584 tons of material was removed from streets via street sweeping and 1,701 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Upper San Marcos Creek Nutrient Management Plan	Water Quality	Nutrients	Levels 1, 2, 3 and 4	Through education and outreach, inspections and BMP implementation, pollutant loading is expected to decrease
Upper San Marcos Creek Nutrient Management Plan – Parks Component	Water Quality	Nutrients	1 and 4	Inspections were conducted at all park facilities in the USMC tributary area. Additionally, the City of San Marcos implemented true source control by switching the fertilizer product used to "Nature Safe" an organic product.
Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component	Water Quality	Nutrients	1 and 2	Inspections occurred at 3 of the 4 golf courses in the watershed. Additionally, three of the four golf courses were notified of existing requirements and appropriate BMPs for implementation.
Upper San Marcos Creek Nutrient Management Plan – Agriculture Component	Water Quality	Nutrients	1	Program elements were established and some inspections of agricultural operations occurred in the USMC tributary area..
Upper San Marcos Creek Nutrient Management Plan – Monitoring Component	Water Quality	Nutrients	1	Additional monitoring occurred to better characterize the USMC tributary area.
Upper San Marcos Creek Nutrient Management Plan – Residential Component	Water Education	Nutrients	2 and 3	Through various means, education messages were presented to the residents in the USMC tributary area.

San Marcos HA Discussion

The major land use in the HA is residential. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on nutrients, as this was identified as the only HPWQP in the HA.

JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate nutrients. Additionally, there are significant amounts of outreach directed at the residential

community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Other less predominant sources of nutrients in the HA include transportation, open space, industrial/commercial, and municipal land uses. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Within the San Marcos HA, the Upper San Marcos Creek (USMC) tributary area has been targeted for significant activities by the USMC Copermittees. The activities related to the USMC fall under the umbrella of the USMC Nutrient Management Plan. Through the implementation of this Plan, the commercial, residential, agricultural and municipal sources are being addressed. The activities are focused on characterizing and abating the sources of nutrients. These activities were initiated in FY 2009 and are currently ongoing.

The following planned activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity will be focused at addressing residential sources, a significant source of bacteria. More information will be provided after implementation of this activity is initiated.
- The County's Stormwater Quality Master Plan for Special Drainage Fee Areas will be focused at addressing portions of the County's jurisdiction within the WMA by retrofitting their drainage system with BMPs. This will address multiple sources as well as multiple water quality problems.

Table 5-6 Summary of Implemented Activities for FY 2010 – 904.6 Escondido Creek Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2010 included agriculture, animal facilities, restaurants, golf courses, nurseries, and parks. Of the total 492 bacteria sources inventoried, 84% are restaurants. Approximately 96% of the restaurants were inspected, and overall 87% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3 and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2010 included agriculture, animal facilities, golf courses, health services, nurseries, and parks. Of the total 92 nutrient sources inventoried, 46% are nurseries, 33% of which were inspected. Overall, approximately 45% of the likely nutrient sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2010 included construction sites, agriculture, animal facilities, contractors, general retail, golf courses, health services, mining, nurseries, and parks. Of the total 573 sediment sources inventoried (excluding construction sites), 68% are contractors, 15% are general retail, and 7% are nurseries. 73% of the contractors were inspected, however 83% of the general retails were inspected, and 33% of the nurseries were inspected. Overall, 70% of the likely sediment sources that were not related to construction were inspected. During this FY, there were approximately 338 active construction sites in the HA that were inspected a total of 2,789 times. The high priority sites were inspected an average of 13 times during the fiscal year.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2010, 2,123 tons of material was removed from streets via street sweeping and 1,182 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, and brow ditches.
Pet Waste Bag Dispenser Program in County Parks	Water Quality	Bacteria and Nutrients	Levels 1, 2, 3 and 4	Direct reduction in loading due to implementation of BMP
Land Acquisitions	Water Quality	Bacteria, Sediment and Nutrients	Level 4	Loading associated with potential development is eliminated
Escondido Creek	Water Quality	Sediment	Levels 1, 3 and 4	BMPs were implemented in the restoration project and gabion structures were implemented to reduce loading potential
LID Features in San Elijo Nature Center	Water Education	Bacteria, Sediment and Nutrients	Levels 1, 2 and 3	Expected change in knowledge and BMP implementation

Escondido Creek HA Discussion

The major land uses in the HA are open space and residential, comprising over 75 percent of the land use in Escondido Creek. Transportation, municipal, and construction land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, sediment, and nutrients, as these were identified as the HPWQPs in the HA.

Residential sources of bacteria, sediment, and nutrients include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. Activities such as the Escondido Creek Restoration, Pet Waste Dispenser Program, and Land Acquisitions focused on the appropriate water quality problems in the HA and indirectly focused on residential sources/causes of the problems.

JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate the pollutants identified as high priority. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections). Because of the relative potential for contributions from residential areas, based on the land use percentages, future WURMP activities focusing on residential sources of pollutants may be appropriate in this HA.

Other less predominant sources of bacteria, sediment, and nutrients in the HA include transportation, municipal, and construction land uses. The WURMP activities implemented in the HA did not address these sources directly. However, with the JURMP Activities, each of these land uses/sources are specifically addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

The following planned activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity will be focused at addressing residential sources, a significant source of bacteria. More information will be provided after implementation of this activity is initiated.
- The County's Stormwater Quality Master Plan for Special Drainage Fee Areas will be focused at addressing portions of the County's jurisdiction within the WMA by retrofitting their drainage system with BMPs. This will address multiple sources as well as multiple water quality problems.

5.4 Assessment of Overall WURMP Effectiveness

Based on the individual HA assessments provided above, it appears that the activities occurring in the Carlsbad Watershed are addressing the HPWQPs identified in the watershed. The assessments this year provided an integrated look at WURMP and JURMP activities to show the level of effort occurring in each HA with respect to identified problems and sources. Generally, the activities are focused on sources that are likely contributing to the HPWQPs within the WMA.

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6 CONCLUSIONS AND WURMP IMPROVEMENTS

6.1 OVERVIEW

The Carlsbad Watershed Management Area (WMA) is unique because it consists of six individual hydrologic areas (HAs) or watersheds. To effectively address the WMA's water quality issues (bacteria, sediment, and nutrients), the Copermittees identified and then evaluated the high-priority water quality problems for likely sources at the individual HA level. As a result of examining each HA in the WMA, the Copermittees identified some general conclusions. It appears that the water quality activities occurring in the Carlsbad Watershed are effectively addressing the high-priority water quality problems identified in the watershed.

The following is a summary of some general conclusions and potential improvements that will be considered in the Carlsbad WURMP.

6.1.1 LOMA ALTA

The major land use in this HA includes residential and open space, totaling approximately 60 percent of its overall land use. Based on monitoring data, the high-priority water quality problem is bacteria. Residential sources of bacteria include activities such as over-irrigation, sanitary sewer overflows, landscape maintenance, pet waste, etc. JURMP activities addressing residential sources include complaint response, dry weather urban runoff monitoring and source identification, and inspections of treatment control BMPs, as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach focused on the residential community through the Copermittees' jurisdictional program. The Copermittees may consider developing residentially focused activities within this HA.

6.1.2 BUENA VISTA

The major land use in this HA is residential, comprising over 50 percent of the land use in Buena Vista. Based on monitoring data, the high-priority water quality problem is bacteria. Residential sources of bacteria include activities such as over-irrigation, sanitary sewer overflows, septic system overflows, landscape maintenance, various washing activities and pet waste. JURMP activities addressing residential sources include complaint response and inspections of treatment control BMPs, as some are designed to mitigate bacteria. The Copermittees may consider developing residentially focused activities within this HA.

6.1.3 AGUA HEDIONDA

The major land uses in the HA are residential, open space, and industrial/commercial, which comprise over 80 percent of the land use in Agua Hedionda. Transportation, municipal, and construction land uses are all present as well and produce the high-priority pollutants identified for the area: bacteria sediment, and nutrients.

Residential, industrial/commercial, and other less predominant sources of bacteria, sediment, and nutrients include an array of activities, such as over-irrigation, sanitary sewer overflows, septic system overflows, landscape maintenance, various washing activities and pet waste. With the implementation of LID and SUSMP-related BMPs, as well as some other watershed water quality activities, it is expected that pollutant loading will be reduced from residential as well as other areas. JURMP activities addressing residential and other sources, such as outreach, industrial/commercial inspections, complaint response, and inspections of treatment control BMPs, also reduce pollutant loading in the HA.

6.1.4 SAN MARCOS

The major land use in the HA is residential. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may also contribute to pollutant loading. Based on water quality monitoring data, nutrients are identified as the only high-priority water quality problem in the HA. Residential sources of nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, and pet waste. With the implementation of the Upper San Marcos Creek Nutrient Management Plan Project, nutrient loads are expected to be reduced in the HA over time. Depending upon the results and the effectiveness of the Nutrient Management Plan, the other WMA Copermittees may implement elements of the Plan.

6.1.5 ESCONDIDO CREEK

The major land uses in the HA are open space and residential, which comprise over 75 percent of the total land use in Escondido Creek. Based on water quality monitoring, bacteria, sediment, and nutrients are identified as the high-priority water quality problems in the HA. Residential sources of bacteria, sediment, and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. The Copermittees may consider developing residentially focused activities within this HA.

6.2 WURMP IMPROVEMENTS

In light of emerging TMDLs, the potential for regional permitting, the Copermittees' visioning process, and the unfunded mandate test claim status, the Copermittees are committed to focusing on increasing effectiveness and decreasing duplication of programs.

Regardless of the outcome of these and other issues, the Copermittees remain committed to working closely with the Regional Board in the next two years to ensure a reasonable, effective, and achievable Municipal Permit is prepared for reissuance. The Permit reissuance is likely to have significant changes to the WURMPs. The Carlsbad WURMP Copermittees will continue to assess their implementation, reporting and program assessment to look for improvement opportunities.

References

Carlsbad Watershed Urban Runoff Management Program, Carlsbad WURMP Copermittees, March 2008

San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Final Report, Weston, January 2011.

Carlsbad Hydrologic Unit (CHU) Lagoon Monitoring Report, MACTEC, June 2009

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Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The WURMP Copermittees' FY 2009 (July 1st, 2008 through June 30th, 2009) JURMP Annual Reports were used to determine quantities of inventories. The WURMP Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1. Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2. Identified the Copermittees' total activity quantities for the following activities from the FY 2009 JURMP Annual Reports:
    1. Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
    2. Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3. Determined the amount of urban land use in each Copermittees' jurisdiction
4. Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City
5. Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation is as follows:

Copermittee Activity Quantity * % of land use in each HA for Activity Type = Copermittees's contribution to the HA

6. Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1
Jurisdiction A collected 800 tons of material from street sweeping in FY 2009

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2009

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1
Jurisdiction C collected 250 tons of material fro street sweeping in FY 2009

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:
800 tons of material *(250 urban land use acres/1,000 urban land use acres) = 200 tons

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:
1,000 tons of material *(1,250 urban land use acres/2,000 urban land use acres) = 625 tons

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:
250 tons of material *(500 urban land use acres/500 urban land use acres) = 250 tons

The total amount of estimated street sweepings collected in HA1 is 200+625+250=**1,075 tons**

Appendix B

Carlsbad Watershed Activity Sheets

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TITLE: LOMA ALTA CREEK ULTRAVIOLET RADIATION STORM WATER TREATMENT FACILITY
ID #: CHU-WQA2

ACTIVITY DESCRIPTION

This project involves the construction of a filtration and ultraviolet (UV) radiation storm water treatment facility to be located adjacent to the Loma Alta Creek outlet in the City of Oceanside. One hundred percent of the dry weather creek flows (averaging 300 to 700 gallons per minute) will be intercepted at the outlet and diverted to the UV storm water treatment facility.

The treatment facility consists of piping flows from an exiting diversion structure by gravity from the lagoon through a 2 micron fine screen to a wet well where the flow is pumped into two large sand filters followed by two UV disinfection units housed in a reinforced concrete building. Once treated, water will discharge through a pipe that will extend along the existing section of rip-rap that runs along the north side of the Loma Alta Creek outlet at Buccaneer Beach. During wet weather months, the lagoon would be opened to allow free flow to the ocean and the UV system would be bypassed.

This project is located where Loma Alta Creek discharges to the Pacific Ocean at Buccaneer Beach. The watershed is mostly in the City of Oceanside with the headwaters within the City of Vista. Buccaneer Beach is a family beach adjacent to a park that is heavily used during dry months. The City determined that a key source of bacteria and nutrients are urban runoff from the 6,400 acre Loma Alta Watershed, which is densely developed with residential, commercial and industrial land uses. While nutrients promote algae growth in the lagoon and cause nuisance odors, the high bacteria levels in the creek flow to the ocean directly impacts the ocean water quality at Buccaneer Beach. To reduce the numerous beach postings and closures at this popular beach the City decided to apply for a Clean Beach Initiative Grant to construct an UV treatment facility to treat the dry weather flows in the Loma Alta creek prior to discharging the water to the beach. A $5,000,000 Proposition 40, Clean Beach Initiative Grant, was awarded to the City on January 24, 2007 to design and build the UV treatment facility.

The increased presence of bacteria and pathogens in the watershed poses a threat to REC-1 and REC-2 beneficial uses and results in increased number of beach closures at the Loma Alta Creek outlet at Buccaneer Beach. This project will address the bacterial issue through filtration and UV disinfection. The anticipated project goal is to eliminate beach closures during the dry months at Buccaneer Beach in Oceanside, California. This will be achieved by diverting the flow from the Loma Alta Lagoon through a UV treatment facility prior to discharging the flow onto the shoreline. The City will monitor the UV treated storm drain outlet and the surf zone for bacteria for the end of the 2008 and all of the 2009 AB411 period. The approved Monitoring Plan and Quality Assurance Project Plan developed for this project will be implemented

Prior to the construction, a Final Monitoring Plan and Quality Assurance Project Plan (QAPP) was developed and approved by the State Water Resources Control Board (SWRCB) in June of 2007. This plan listed the sample frequency, locations and methods for testing the effectiveness of the treatment system. The monitoring plan would begin once the UV treatment facility was operational. The California Coastal Commission

approved Permit No. 6-06-152 for construction of the outfall pipe associated with the UV treatment facility on June 14, 2007. Loma Alta Creek UV Treatment Facility project entered into the construction phase on August 13, 2007 when the official Notice to Proceed was issued to Orion Construction Corporation. The construction was completed in July 2008, testing ran through August 2008 and the UV treatment facility began discharging to the ocean in September 2008. All monitoring indicated that the system functions as expected and the surf zone samples all met AB411 limits.

ACTIVITY IMPLEMENTATION

During FY 08-09, The Loma Alta Creek Ultraviolet Light Treatment Facility started treatment in June 2009 and continued throughout the summer. The plant typically ran three to four days a week with average flows of 300 gallons per minute. No water was discharged onto the beach when the UV Facility was offline. Flows were lower than expected due to drought conditions and conservation efforts of Oceanside residents.

Water samples were taken weekly from Buccaneer Beach directly in front of the discharge pipe and seventy-five feet north and south of the discharge pipe. The samples were tested for total and fecal coliform and Enterococcus. All samples taken during summer 2009 met California Department of Health Services AB411 Objectives and there were no postings due to bacterial levels exceeding standards set by the County Department of Environmental Health. The UV Facility will run through September 2009 unless heavy rains arrive earlier than expected.

During FY 2009-10 the UV Treatment Facility operated a total of 57 days. See table below for number of days per month.

Month	Number of Days Run
July 2009	23
August 2009	10
September 2009	12
May 2010	5
June 2010	7
Total	**57**

During FY 2009-10 water samples were taken once per week when the facility was running from Buccaneer Beach directly in front of the discharge pipe and seventy-five feet north and south of the discharge pipe. The samples were tested for total and fecal coliform and Enterococcus. All samples taken during this reporting period met California Department of Health Services AB411 objectives. There were no postings due to bacterial levels exceeding standards set by the County Department of Environmental Health when the facility was running. Also, during this reporting period there were no problems associated with starting the system up at the beginning of the dry season or general operation of the system.

TMDL APPLICABILITY

The RWQCB and Copermittees are developing a Bacteria-Impaired Waters TMDL Project II for Lagoons and adjacent beaches and creeks, which includes Loma Alta Creek slough. This project will assist in the implementation of this TMDL by reducing bacterial contamination in the impaired segment of Loma Alta Slough and the Pacific Ocean shoreline. Just over eight acres of the Loma Alta Slough are included on Section 303(d) of the federal Clean Water Act list of impaired water bodies for bacterial

indicators and eutrophication within the slough and for 1.1 miles of coastline at the opening.

TIME SCHEDULE FOR IMPLEMENTATION

This project began operation in June 2009 and is complete. It will continue to operate annually between the months of May and September.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING WATERSHED COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential, commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS ASSESSMENT

A Project Assessment and Evaluation Plan (PAEP) was developed to define how to measure the effectiveness of the UV treatment facility. A Final Monitoring Plan and Quality Assurance Project Plan (QAPP) defines the monitoring program that measures water quality prior to and during facility operation. Monitoring for total and fecal coliform and enterococcus will be conducted at several locations: In the lagoon prior to water entering the UV facility, within the plant prior to and after UV treatment, and at the shoreline at the discharge point and in the coastal mixing zone (Level 5 and 6). After a complete dry season of testing (May through September 2009), a final effectiveness report will be generated using all of the data. The facility will be considered effective if the treated discharge from the UV facility meets the 30 day average Rec-1 Water Quality Standards set forth in the Ocean Plan. This will ensure that the surf zone will meet the same limits after mixing occurs.

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TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: CHU-WQA7

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Carlsbad Watershed include:

- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

FY 2007-08 ACTIVITY IMPLEMENTATION

Work began on drafting SWQMP for SDA 9 and SDA 10.

FY 2008-09 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 is in the process of being drafted.

FY 2009-10 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2011-12. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2013.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING WATERSHED COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Unknown

EFFECTIVENESS ASSESSMENT

To be determined.

TITLE: NITRATE SOURCE IDENTIFICATION AND ABATEMENT: BUENA CREEK
ID #: CHU-WQA8

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels in Buena Creek. Nitrate concentrations have been observed to exceed dry weather action levels at the County's CAR 05 dry weather monitoring station (Buena Creek at Robelini Drive). The State of California, which collected data from a nearby location in 2002 as part of its Surface Water Ambient Monitoring Program (SWAMP), also identified nitrates as an issue of concern[1]. Buena Creek is listed as impaired for nitrates/nitrites on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments.

FY 2007-08 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2007-08:

- Performed frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Compiled inventory and map of potential nitrate sources in the CAR 05 drainage area. It was determined that there are 26 nurseries within the unincorporated area tributary to the CAR 05 monitoring station.
- Compiled baseline information on BMP implementation and compliance history for nurseries within the CAR 05 drainage area. Of the 26 nurseries in this drainage area, 11 have been inspected by the County AWM Department. Seven of the 11 inspected nurseries had one or more violations.

FY 2008-09 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2008-09:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Twenty six (26) nurseries in the CAR 05 drainage area were inspected during FY 2008-09.
- Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site. The University of California Co-operative Extension Service *Self-Assessment for Greenhouses and Nurseries*

[1] Southern California Coastal Water Research Project, *Surface Water Ambient Monitoring Program (SWAMP), Report on the Carlsbad Hydrologic Unit*, July 2007

and *Management Options for Nonpoint Source Pollution, Greenhouse and Container Crop Industries* documents were provided where appropriate and the sections on nutrients were reviewed.

- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2008-09, excluding paperwork violations, only six nurseries out of 26 had one or more instances of non-compliance (See Table 3). No nurseries were identified as direct sources of nitrates.

FY 2009-10 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2009-10:

- Updated inventory of nursery and nursery-related operations within the drainage basin. Seven additional facilities were identified and added to the initial potential nutrient source inventory (total of 33 facilities).
- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Twenty-four nurseries in the CAR 05 drainage area were inspected during FY 2009-10.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2009-10, excluding paperwork violations, ten nurseries out of 33 had one or more instances of non-compliances (See Table 3). No nurseries were identified as direct sources of nitrates.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	Status
Compile an inventory and map of potential nutrient sources in the CAR 05 drainage area.	X		X		Complete
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	X				Complete
Perform frequent water quality screenings for nutrients and other parameters at CAR 05	X	X	X	X	Ongoing

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	Status
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	X	X	Ongoing
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	X	X	Ongoing
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	X	X	Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS ASSESSMENT

Table 2. Effectiveness Assessment

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the CAR 05 drainage area.	1	Completion	Yes
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at CAR 05	1	4 field screenings / yr at CAR 05	Yes
	6	Reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012	To be determined
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the CAR 05 drainage area by June 2009	Yes
	3	Reduction in nursery BMP violations observed during nursery inspections in the CAR 05 drainage area by 2010	77% Complete 14 out of 18 nurseries with multiple inspections have improved or maintained compliance.
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the CAR 05 drainage area by 2012	62% Complete Baseline scores have been recorded for 33 nurseries. 15 of 24 nurseries with multiple scores had improved SKA scores.

Table 3. Inspection Summary

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time	TTWQ
Acosta Plants	3/19/2010	0	7	Yes	Yes	High
	8/26/2009	0	6			
	6/2/2009	0	N/A			
	5/7/2009	2	6			
	2/21/2007	0	N/A			
	1/31/2007	2	N/A			
	2/10/2005	3	N/A			
Altman Specialty Plants #01	2/25/2010	0	9	Yes	Same	High
	2/5/2010	1	9			
Altman Specialty Plants #06	2/10/2010	0	9	Yes	No	Medium
	2/18/2009	0	10			
	8/16/2005	0	N/A			
	8/24/2004	0	N/A			
	5/4/2004	5	N/A			
Apgar Nursery	5/14/2009	0	9	No Violations	Yes	Low
	2/29/2008	0	8			
Azaleawood Nursery	7/16/2009	0	N/A	No Violations	N/A	Low
	5/22/2009	0	8			
	4/8/2009	0	N/A			
C & J Cactus Nursery #2	5/26/2009	1	5	No	No	Low
	4/18/2008	0	10			
Cactus Classics	10/9/2009	0	6	Yes	Yes	Low
	5/22/2009	4	4			
	3/8/2007	2	N/A			
	9/22/2004	4	N/A			
Cal Tropical Fruit Nursery #2	5/12/2009	3	3	Yes	N/A	Medium
	6/19/2007	0	N/A			
Cruz Nursery	2/10/2010	0	3	Yes	Yes	High

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time	TTWQ
	1/11/2010	12	2			
	10/22/2009	9	2			
Curiel	5/6/2010	0	7	Yes	Yes	High
	8/10/2009	1	5			
Deer Springs Gardens	6/15/2010	0	7	Yes	Yes	Low
	5/12/2009	1	6			
	3/4/2008	0	N/A			
Grigsby Cactus Gardens	7/21/2009	0	N/A	Yes	N/A	Low
	5/21/2009	3	6			
	6/21/2007	0	N/A			
Growers Spraying Service	6/15/2010	2	6	N/A	N/A	Medium
H & P Sales Aka Growing Concepts	4/1/2010	0	N/A	Yes	No	Low
	8/6/2009	2	6			
	7/17/2009	0	10			
	6/20/2007	0	N/A			
	5/8/2006	0	N/A			
	3/6/2006	2	N/A			
	7/13/2004	0	N/A			
	3/15/2004	12	N/A			
H & P Sales Aka Growing Concepts #2	8/5/2009	2	6	N/A	N/A	High
Lone Oak Rancho Nursery	9/11/2009	0	6	No Violations	No	Medium
	7/14/2008	0	8			
Multiflora	4/14/2010	0	N/A	Yes	No	High
	4/7/2010	1	8			
	2/2/2009	0	10			
	5/2/2008	1	10			
	2/14/2005	0	N/A			
Nature Designs Landscaping	9/9/2009	0	7	Yes	Yes	High

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time	TTWQ
	4/18/2008	2	5			
Nazario Greenhouse	3/29/2010	0	7	No Violations	Yes	Medium
	8/5/2009	0	1			
Orchidsource Laboratory & Nursery	1/30/2009	0	9	Yes	Yes	Medium
	6/10/2008	0	7			
	4/11/2007	0	N/A			
	3/24/2006	0	N/A			
	12/30/2005	3	N/A			
Peacefield Farms	4/22/2010	0	7	Yes	Same	Medium
	5/18/2009	3	7			
	3/3/2008	1	5			
	2/18/2005	0	N/A			
Progressive Growers Inc #1	7/20/2009	0	6	Yes	No	High
	5/20/2009	1	9			
	1/26/2009	0	N/A			
	6/13/2008	1	10			
	1/4/2007	1	N/A			
Progressive Growers Inc #2	5/20/2009	1	9	No	No	Low
	6/13/2008	0	10			
	1/4/2007	0	N/A			
Rote Greenhouses #1	12/18/2009	0	9	N/A	N/A	Low
Silhouettes Of The Desert #1	8/19/2009	0	6	Yes	Yes	High
	1/23/2009	6	5			
	6/17/2008	7	2			
	1/31/2006	1	N/A			
	3/8/2005	2	N/A			
Silhouettes Of The Desert #2	8/19/2009	1	6	No	Yes	Low
	7/14/2008	0	5			

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time	TTWQ
	2/16/2007	0	N/A			
Sonrise Growers	1/28/2010	6	4	No	No	High
	1/23/2009	1	8			
	6/23/2008	2	8			
Sunhill Ranch LLC	7/16/2009	0	7	Yes	Yes	Medium
	5/12/2009	2	6			
T M Palms And Shrubs	9/9/2009	0	6	N/A	N/A	Low
Tom Piergrossi Landscape & Vintage Green Farms	6/2/2009	0	8	Yes	Same	Low
	7/11/2008	1	8			
Tomlinson Select Nurseries	5/26/2009	0	8	Yes	Yes	Low
	3/19/2009	0	7			
	6/26/2008	0	10			
	3/1/2007	0	N/A			
	3/15/2006	0	N/A			
	5/9/2005	5	N/A			
Tropical Connection #1	9/1/2009	3	5	N/A	N/A	Medium
Venegas Creek Roses #1	6/26/2008	0	5	N/A	N/A	Low

TITLE: **PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS**
ID #: **CHU-WQA10**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 16 stations at two County parks in the Carlsbad Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in the FY 2008-09. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed. The parks and the number of dispensers include:

- San Elijo Lagoon Ecological Reserve (11 dispensers)
- San Dieguito County Park (5 dispensers)

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in the FY 2009-10. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed. The parks and the number of dispensers include:

- San Elijo Lagoon Ecological Reserve (11 dispensers)
- San Dieguito County Park (5 dispensers)

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	FY 09-10		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
San Elijo Ecological Reserve	11	35,000	7,000
San Dieguito Park*	5	16,150	3,230
Total	**16**	**51,150**	**10,230**

*San Dieguito County Park is counted in both the Carlsbad and San Dieguito HU Totals

Cumulatively, the County maintains 16 stations among the two County Parks within the Carlsbad Watershed. These stations distributed approximately 51,150 bags during the FY 2009-10 reporting period, preventing an estimated 10,230 pounds of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 pounds.
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: **LAND ACQUISITIONS**
ID #: **CHU-WQA11**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the southwestern portion of the County. Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION
During the FY 2007-08 there were no land acquisitions by the County of San Diego in the Carlsbad WMA.

FY 2008-09 ACTIVITY IMPLEMENTATION
During the FY 2008-09 reporting period the County of San Diego purchased 287.12 acres of property located in the Carlsbad WMA.

FY 2009-10 ACTIVITY IMPLEMENTATION
During the FY 2009-10 reporting period the County of San Diego purchased 162.05 acres of property located in the Carlsbad WMA. The current acquisitions are shown in the table below.

Property	Acres	Date	HSA	APN(s)
Diamond Trail TET dedication	20	12/16/2009	904.51	222-550-22
Family Stations - Escondido Creek	119	12/18/2009	904.62	679-130-05
Pascoe - Del Dios Highlands	23	11/23/2009	904.62	238-021-07
TOTAL	**162.05**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. During the FY 2009-10 reporting period the County of San Diego acquired 162.05 acres of land within the Carlsbad Hydrologic Unit watershed. Over the past three fiscal periods the County of San Diego has acquired a total of 449.17 acres in the Carlsbad Hydrologic Unit watershed. These land acquisitions will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural perviousness.

TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN**
ID #: **CHU-WQA12**

ACTIVITY DESCRIPTION

Upper San Marcos Creek (USMC) and its tributary watershed (HSAs 904.53 and 904.52) drain to Lake San Marcos (Lake). Lake San Marcos has been listed on the 2006 §303(d) list as impaired for Ammonia (as N), Nitrogen, and Phosphorous. Water flowing in San Marcos Creek is impounded in the lake by San Marcos Dam. Both the dam and the land underlying the lake are privately owned. The City of San Marcos, the County of San Diego, and the City of Escondido (MS4 Copermittees) are tributary to the Lake along with Phase II MS4s (San Marcos Unified School District, Cal State San Marcos, Palomar College, North County Transit District), CalTrans, and various utility providers under the permitting or other regulatory requirements of the SDRWQCB (Vallecitos Water District, SDGE, SDCWA). The City of San Marcos will function as the lead for this WURMP activity in collaboration with the County of San Diego and the City of Escondido for efforts requiring integration of jurisdictional data, information, mapping, and reporting.

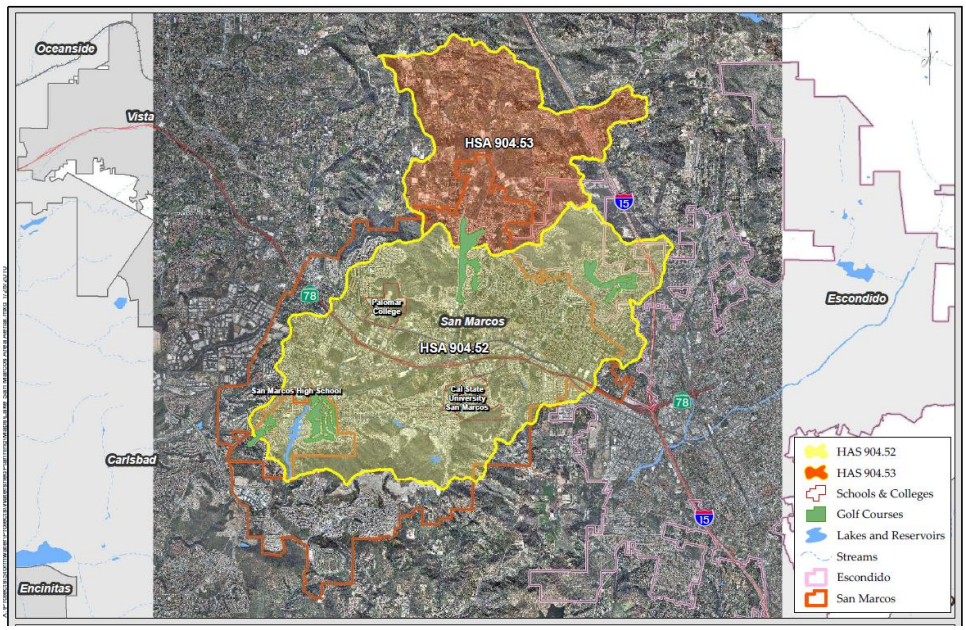

Lake San Marcos

The MS4 Copermittees will meet and coordinate jurisdictional efforts to locate and abate sources of nutrients in the watersheds and report the efforts in Carlsbad WURMP Annual Reports. Appendix C of the FY 2009 Carlsbad WURMP Annual Report includes the USMC Watershed Nutrient Management Plan (Management Plan). The Management Plan contains a summary of preliminary nutrient source identification efforts, MS4 Copermittee watershed coordination, and abatement activities initiated during FY 09 and planned for completion during future years. Nearly all of the activities identified in the Management Plan go beyond the 2007 MS4 Stormwater Permit requirements and were developed to address nutrient source identification and abatement.

Development, implementation, and assessment of the Management Plan will be a collaborative effort by the MS4 Copermittees. Collaboration will include regular meetings and interim information reporting between the MS4 Copermittees to coordinate knowledge and data-based

implementation of activities identified in Appendix C of the FY 2009 Carlsbad WURMP Annual Report.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The MS4 Copermittees began implementation of this activity in FY 2009 and will continue to implement the activity in future years. The MS4 Copermittees are committed to reassessing the Management Plan on an annual basis. Details of any changes made will be reported in Carlsbad WURMP Annual Reports.

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido
- City of San Marcos
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Other Tributary Watershed Stakeholders (e.g., private and other public entities)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The development of a Nutrient Management Plan is consistent with the collective watershed strategy in that it will identify the water quality problems and likely sources of the pollutants potentially causing the water quality problems and develop a plan to abate the sources or significantly reduce the pollutant loading from the sources.

EFFECTIVENESS ASSESSMENT

All six levels of the effectiveness will be assessed as appropriate based on the availability of data:

Level 1: Compliance with activity-based permit requirements
Level 2: Changes in Attitudes, Knowledge, and Awareness
Level 3: Behavioral Change and BMP Implementation
Level 4: Load Reductions
Level 5: Changes in Urban Runoff and Discharge Quality
Level 6: Changes in Receiving Water Quality

Effectiveness measurements will be included in future Carlsbad WURMP Annual Reports.

TITLE: WATER QUALITY MONITORING IN THE AQUA HEDIONDA CREEK WATERSHED
ID #: CHU-WQA14

ACTIVITY DESCRIPTION

The County of San Diego will conduct water quality sampling in the Agua Hedionda Creek Watershed during two wet weather events and two dry weather events at two monitoring stations. This is additional monitoring above what is required by the Municipal Stormwater Permit. Sample locations, COSD-CAR05 and COSD-CAR16alt, are shown in the figure below. The two wet weather events will entail collecting six pollutograph samples. Dry weather events will be 24-hour composite samples for those analytes conducive to composite techniques. Grab samples will be collected for all microbiology samples using Polymerase chain reaction (PCR) trained, clean hands techniques. Please see the attached Agua Hedionda Creek Watershed Monitoring report for additional details.

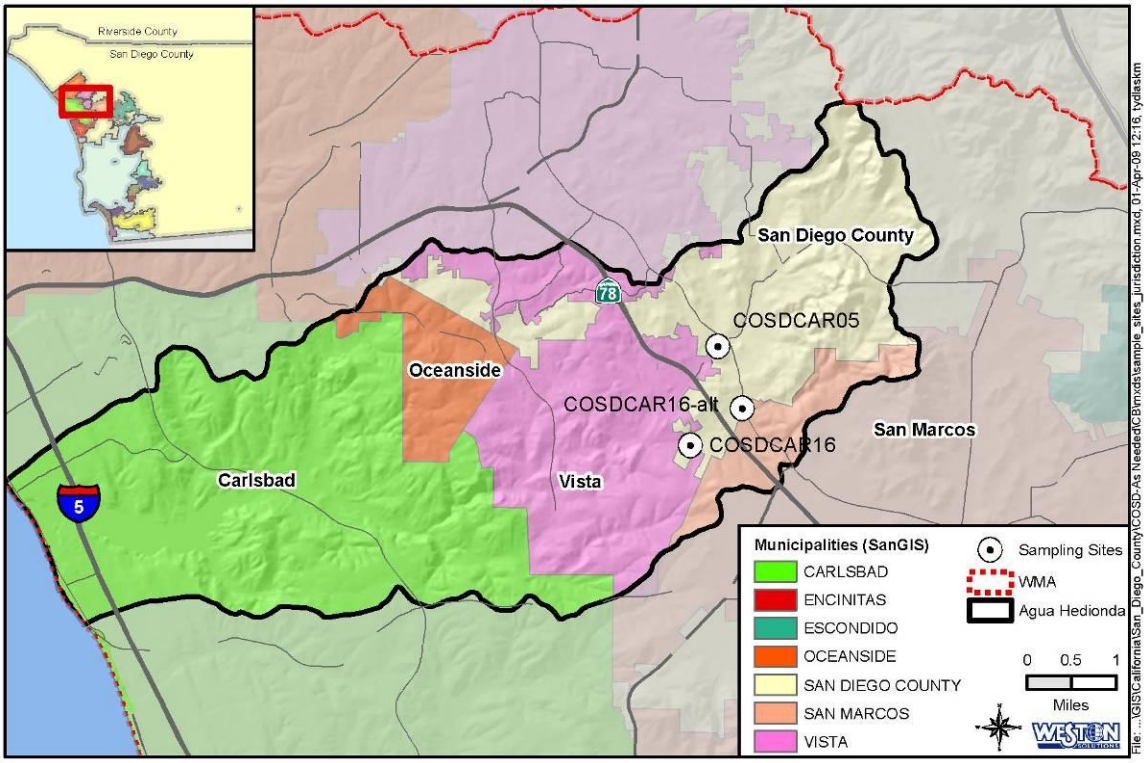

Agua Hedionda Creek Watershed Monitoring Locations

FY 2008-09 ACTIVITY IMPLEMENTATION

- One dry weather event was monitored on June 23-24, 2009, at the two locations.

FY 2009-10 ACTIVITY IMPLEMENTATION

- Wet weather event and non-storm samples were collected in FY 2009-10.
- The first wet weather event was captured on December 7, 2009, and was the first-flush event of the 2009–2010 wet season. The second event occurred on January 18, 2010.
- Non-storm samples were collected at site COSDCAR05 on June 23, 2009, and August 19, 2009. Both events were prior to the rainy season and occurred at least one week following any precipitation greater than 0.01 inch.

- Additional monitoring and analyses took place during the FY 2009-10. Please see the attached report for additional detail.

TMDL APPLICABILITY
This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION
Implementation and analysis components are complete. No future activities planned.

PARTICIPATING WATERSHED COPERMITTEES
- County of San Diego

OTHER PARTICIPATING ENTITIES
- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
This activity is consistent with the collective watershed strategy in that nutrients and bacteria are identified as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3) and this activity is aimed at identifying and abating sources in the watershed.

EFFECTIVENESS ASSESSMENT

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Perform data collection for two dry weather events	1	Completion	2 of 2 completed
Perform data collection for two wet weather events	1	Completion	2 of 2 completed
Detailed data analysis and final report	1	Completion	Report completed (see attached)

Attachment "WATER QUALITY MONITORING IN THE UNINCORPORATED AREA OF THE AGUA HEDIONDA WATERSHED", Weston Solutions, Inc. November 2010

WATER QUALITY MONITORING IN THE UNINCORPORATED AREA OF THE AGUA HEDIONDA WATERSHED

Prepared for:

The County of San Diego
Watershed Protection Program
5201 Ruffin Road, Suite P
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Prepared by:

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November 2010

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LIST OF ACRONYMS

Acronym	Definition
CD	compact disk
CFR	Code of Federal Regulations
COC	chain of custody
CRG	CRG Marine Laboratories, Inc.
data sonde	YSI 6920 Multiparameter Water Quality Sonde
DNA	deoxyribonucleic acid
DQO	data quality objective
ELAP	Environmental Laboratory Accreditation Program
USEPA	United States Environmental Protection Agency
GIS	geographic information system
HA	hydrologic area
HDPE	high-density polyethylene
LOEC	lowest observed effect concentration
MDL	minimum detection limit
MPN	most probable number
MS	matrix spike
MSD	matrix spike duplicate
NOEC	no-observed-effect concentration
NTU	nephelometric turbidity unit
PFD	personal flotation device
QA	quality assurance
QC	quality control
Q-PCR	Quantitative Polymerase Chain Reaction
SOP	standard operating procedure
SRM	standard reference material
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TKN	total kjeldahl nitrogen
TSS	total suspended solids
Weston®	Weston Solutions, Inc.
WMA	watershed management area

EXECUTIVE SUMMARY

This report presents the results of water quality and water quantity monitoring at two locations along Buena Creek and Agua Hedionda Creek in the Agua Hedionda Watershed located within the Carlsbad Watershed Management Area (WMA). Monitoring was conducted from June 2009 through January 2010. The study objective was to monitor two wet weather events and two non-storm events to compare flows and constituent loading near the boundary of the County of San Diego's jurisdiction. Samples were collected and analyzed for priority watershed constituents, including the following:

- Nutrients (i.e., nitrogen and phosphorus).
- Bacteria.
- Human-specific *Bacteroides.*
- Total suspended solids (TSS).
- Turbidity.
- Total dissolved solids (TDS).
- Sulfate.
- Selenium and manganese.
- Pesticides.
- Toxicity to *Hyalella azteca* and *Selenastrum capricornutum.*

The results provided baseline information for the locations monitored. Wet weather flow rates were larger at Buena Creek as compared to Agua Hedionda Creek. Dry weather flows were observed only at the Buena Creek location. The primary land use types influencing the two sampling locations included open space/ parks and recreation, residential, spaced rural residential, and agriculture. The two sampling locations differed in that Agua Hedionda Creek had a smaller drainage area that contained more open space and may have been influenced by an industrial area located in close proximity to the sampling location.

The results of this study are summarized below:

Wet Weather Events at Agua Hedionda Creek and Buena Creek

- Total nitrogen and total phosphorus concentrations exceeded their respective 1 mg/L and 0.1 mg/L water quality objectives (WQOs) at both sampling locations.
- Buena Creek (COSDCAR05) had consistently higher discharge rates, turbidity and concentrations of total nitrogen, total phosphorus, TSS, TDS and total manganese than Agua Hedionda Creek (COSDCAR16-alt).
- Buena Creek (COSDCAR05) wet weather TDS concentrations and turbidity were above their respective benchmarks during one of the two storm events.
- Sulfate and selenium concentrations were below their respective benchmark levels at both locations.
- The total manganese event mean concentrations (EMCs) for both sites were above the benchmark of 50 µg/L and were higher at COSDCAR05. Bifenthrin and Permethrin were the only synthetic pyrethroids whose concentrations exceeded benchmarks.

- Samples from Buena Creek exhibited toxicity to *H. azteca* for both wet weather events. Samples from Agua Hedionda Creek showed toxicity to *H. azteca* for one storm event.
- Fluvalinate concentrations at Buena Creek were high for both storm events. There is no *H. azteca* LC_{50} value for Fluvalinate.
- Wet weather bacterial concentrations generally exceeded benchmark levels for fecal coliforms, enterococci, and *E. coli*. General *Bacteroides* results were mostly positive, whereas human specific PCR results were negative for all but one sample (collected at Agua Hedionda Creek on January 18, 2010). This positive result for human-specific *Bacteroides* occurred in the last sample of the series of eight. The result indicates a potential isolated recent source of human fecal contamination upstream of the site.

Non-Storm Flows at Buena Creek Site

- Non-storm flows were sampled only at Buena Creek (COSDCAR05), the Agua Hedionda site was dry.
- Total nitrogen and total phosphorus concentrations exceeded their respective 1 mg/L and 0.1 mg/L WQOs during both sampling events.
- Turbidity and TSS concentrations did not exceed their benchmarks.
- TDS EMCs greatly exceeded the 500 mg/L WQO and were higher for non-storm flows than wet weather flows.
- Sulfate EMCs exceeded the 250 mg/L benchmark.
- Selenium concentrations did not exceed the benchmark. The total manganese EMC exceeded 50 µg/L WQO for one of the two sampling events.
- Chlorinated herbicide concentrations were below method detection limits.
- No toxicity to *S. capricornutum* was observed.
- Generally, non–storm fecal indicator bacteria concentrations were much lower than the wet weather counts.
- All non-storm flow samples exceeded the 151 MPN/ 100ml WQO for Enterococci. There were some fecal coliform WQO exceedances and only one *E. coli* exceedance that occurred during the August 19, 2009 event. All samples were positive for general *Bacteroides* but none for human *Bacteroides*.

1.0 INTRODUCTION

1.1 Program Overview

This report presents the results of water quality monitoring conducted at two locations in the Agua Hedionda Watershed within the County of San Diego's jurisdiction of the Carlsbad Watershed Management Area (WMA) (Figure 1-1). The purpose of the monitoring was to characterize drainage area flow rates and evaluate constituent concentrations and loads for two sampling locations; one on Agua Hedionda Creek and one on Buena Creek. Monitoring was conducted from June 2009 through January 2010 by Weston Solutions, Inc. (Weston®) under contract by the County of San Diego. Monitoring was conducted during two wet weather runoff events and two non-storm events. Samples were collected and analyzed for priority watershed constituents, including the following:

- Nutrients (nitrogen and phosphorus).
- Bacteria.
- Human-specific *Bacteroides.*
- Total suspended solids (TSS).
- Turbidity.
- Total dissolved solids (TDS).
- Sulfate.
- Selenium and manganese.
- Pesticides.
- Toxicity to *Hyalella azteca* and *Selenastrum capricornutum.*

Water quality problems identified in the Agua Hedionda Watershed include those shown on the 2006 State Water Resources Control Board (SWRCB) Section (§)303(d) list (Table 1-2). Additionally, water quality problems identified in the San Diego Regional Copermittee Monitoring Program include synthetic pyrethroid pesticides and toxicity to *H. azteca* during storm water runoff events.

1.2 Study Objectives

The purpose of water quality monitoring in the Agua Hedionda Watershed was to characterize storm water and non-storm urban runoff at two locations within the County of San Diego's jurisdiction (Figure 1-2). The locations included Buena Creek (Site COSD-CAR05) and Agua Hedionda Creek (Site COSD-CAR16-alt).

The following objectives were identified for this study:

1. Conduct flow and water quality monitoring during two storms and two non-storm events.
2. Calculate the discharged load during two storms and two non-storm events.

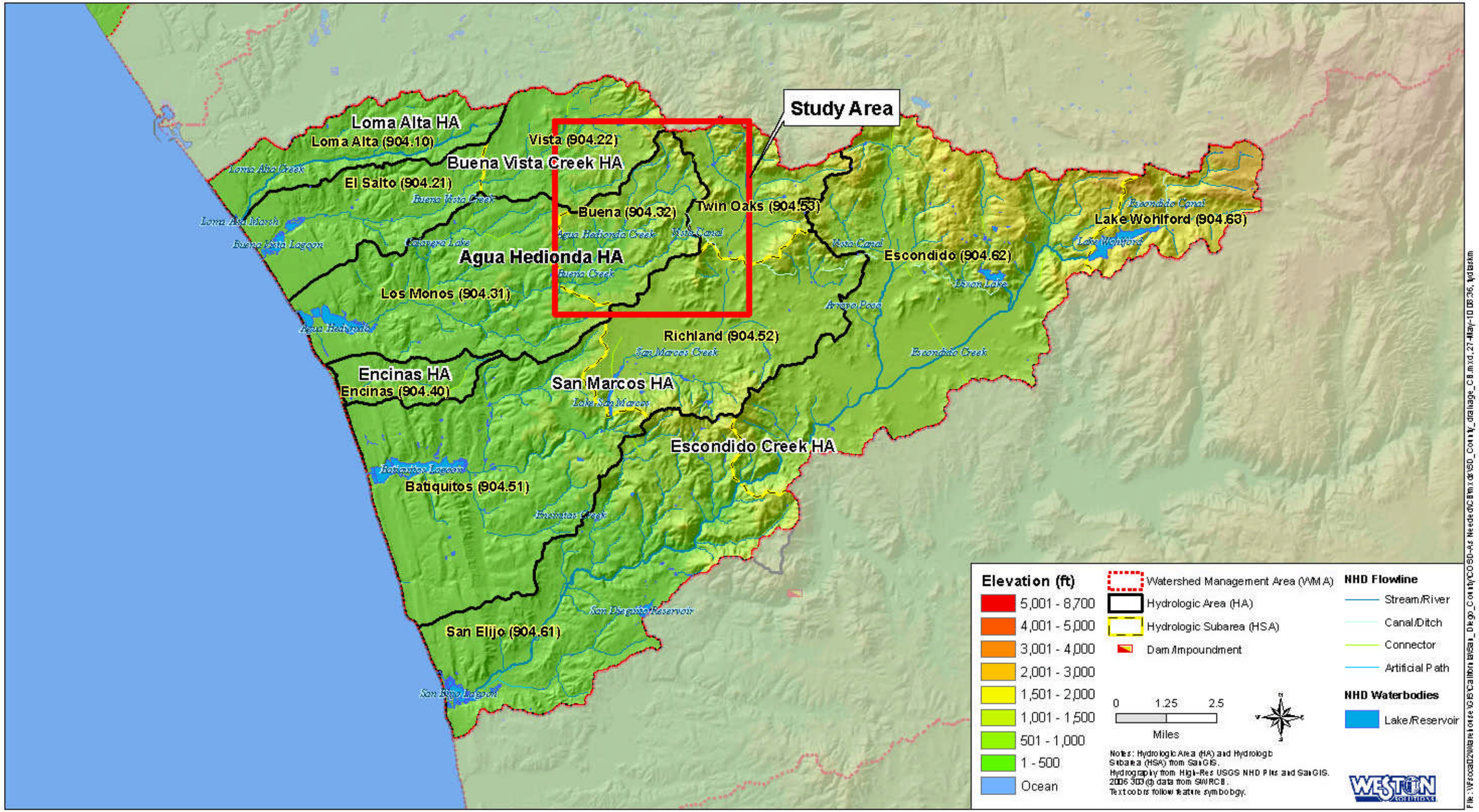

Figure 1-1. Carlsbad Watershed Management Area

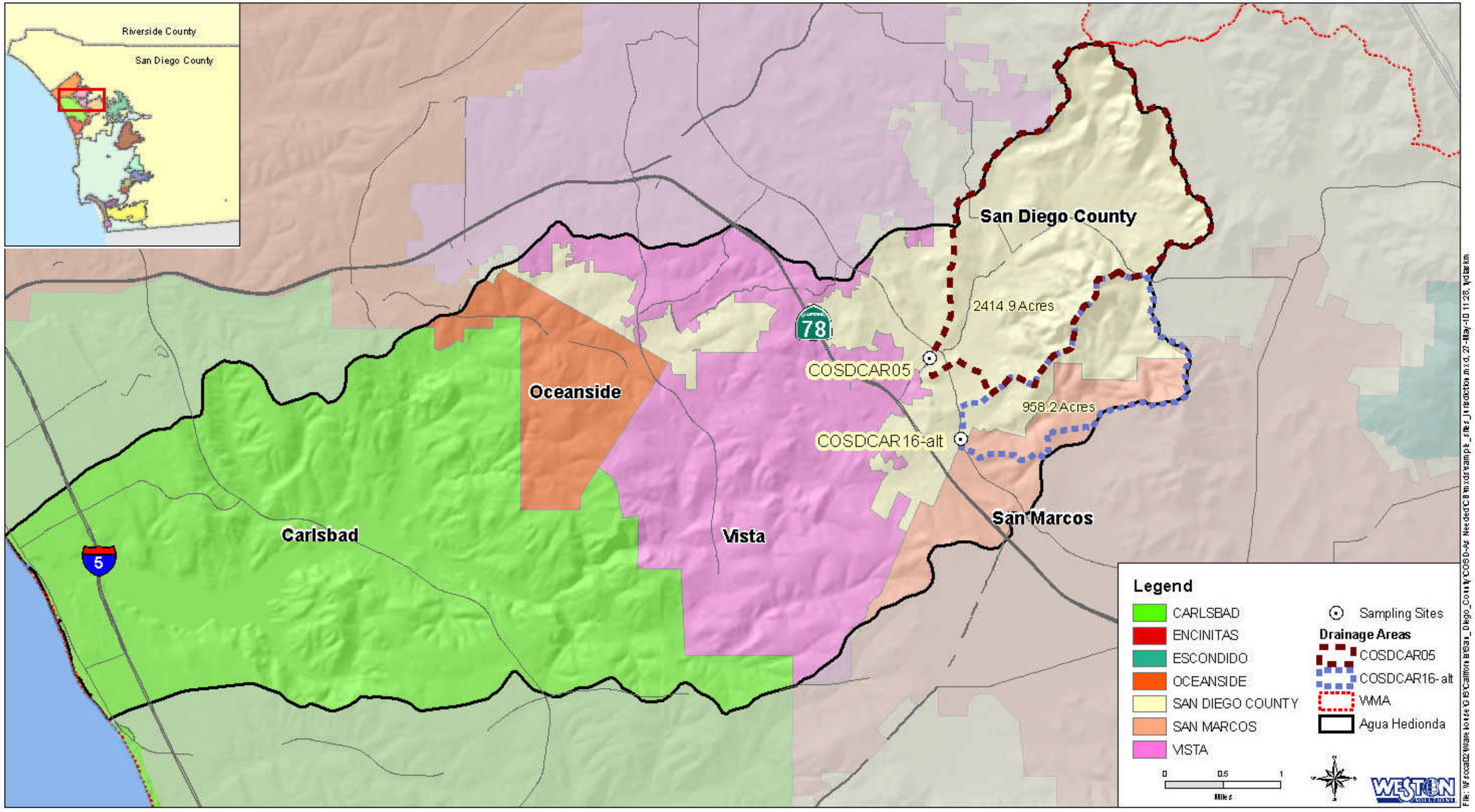

Figure 1-2. Sample Locations and Representative Drainage Area Monitored

1.3 Carlsbad Watershed Management Area

The Carlsbad WMA Hydrologic Unit (HU) (904.00) located in Northern San Diego County is comprised of 135,322 acres and consists of six HAs, including Loma Alta (904.1), Buena Vista Creek (904.2), Agua Hedionda (904.3), Encinas (904.4), San Marcos (904.5), and Escondido Creek (904.6) (Figure 1-1). Historically, the annual average rainfall over the watershed varies from 10.5 inches near the coast to 19.5 inches in the inland areas. The Agua Hedionda Watershed accounts for 14% of the overall WMA and is approximately 18,837 acres.

1.3.1 Land Use

Land use for the overall Carlsbad WMA is shown on Figure 1-3. The most common land use within the Carlsbad WMA is residential (26%), followed by undeveloped land (20%), open space / parks and recreation (15%), transportation (12%), and spaced rural residential (10%). Among the six HAs, Buena Vista Creek HA contains the largest proportion of residential land use (48%), followed by Loma Alta (31%), Agua Hedionda (29%), and San Marcos (29%). Agua Hedionda, Encinas, San Marcos, and Escondido Creek HAs have similar proportions of open space / parks and recreation (approximately 14–17% each), followed by Loma Alta HA and Buena Vista Creek HA (7% and 5%, respectively).

The relative land use composition within Agua Hedionda Watershed and the individual sampling site drainage areas is shown in Figure 1-4. The Buena Creek site (COSD-CAR05) is primarily influenced by residential, open space, spaced rural residential, and agricultural land uses. Nearly all of the land area draining into CAOSDCAR05 is within unincorporated County of San Diego.
The Agua Hedionda Creek monitoring location (COSD-CAR16-alt) is also dominated by open space, residential, spaced rural residential and agricultural land uses; there was also some localized industrial land use in direct proximity to the site. Approximately 45% of the land area draining to COSDCAR16-alt is located in the City of San Marcos, with the remaining 55% in the unincorporated County of San Diego.

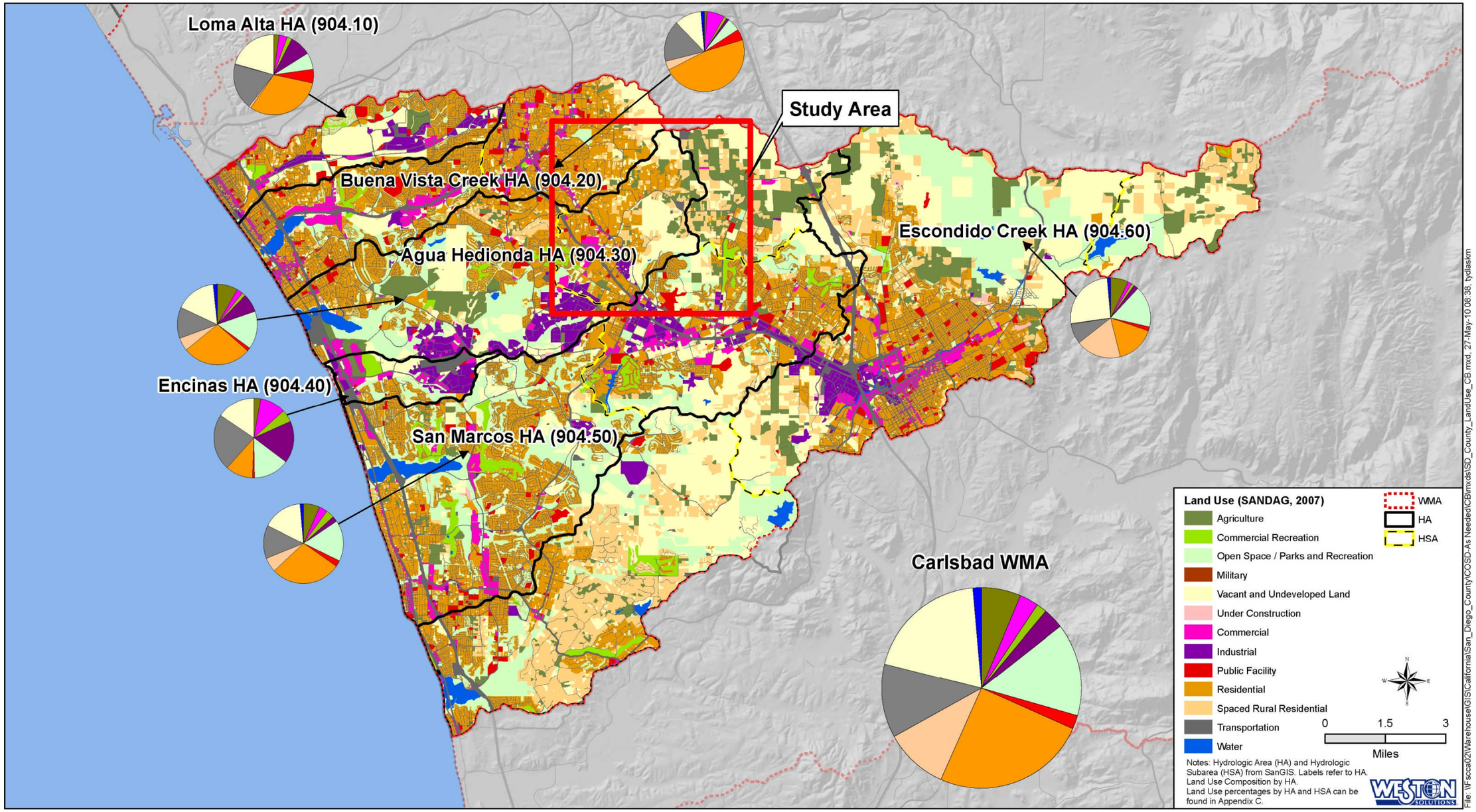

Figure 1-3. Carlsbad Watershed Management Area Land Use

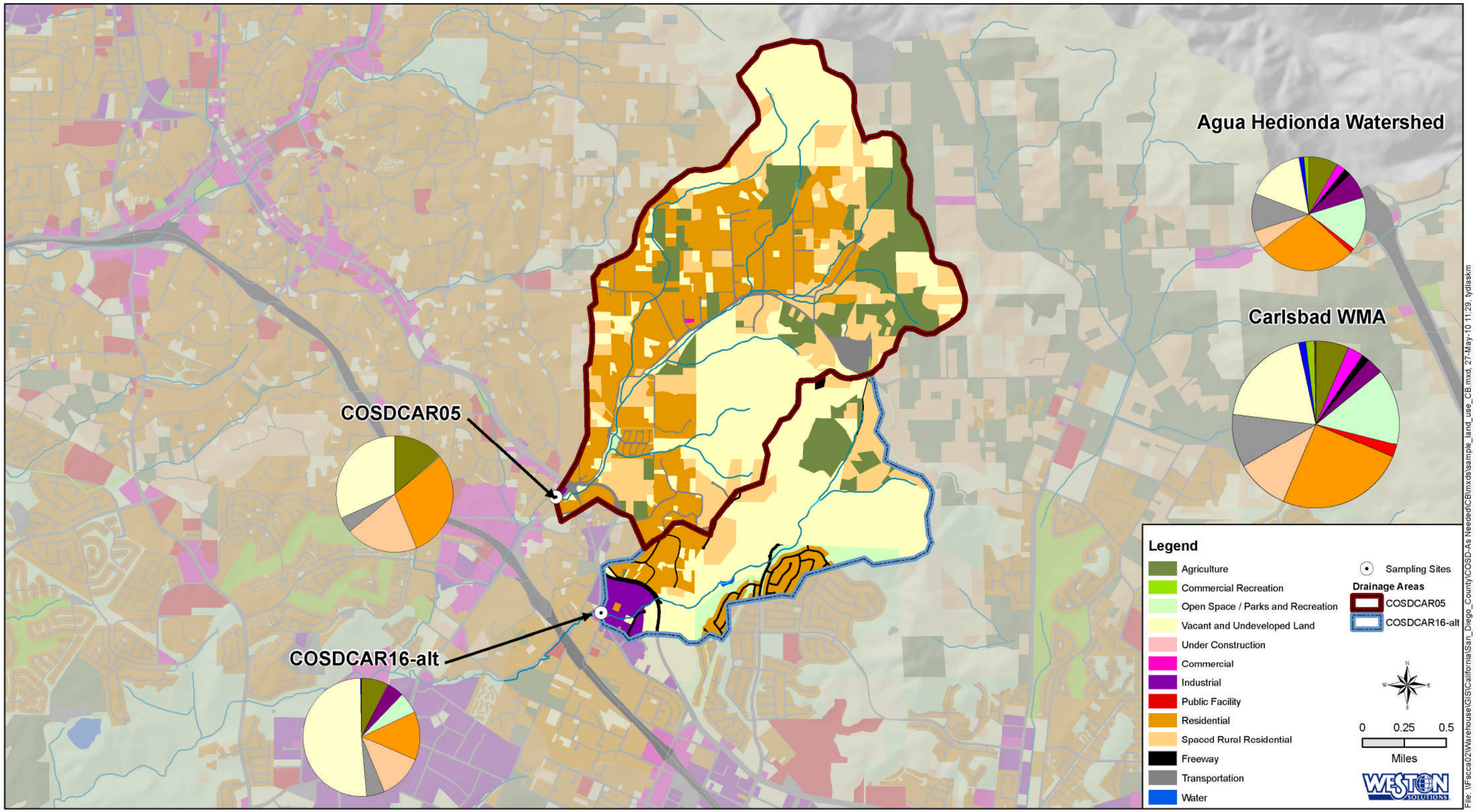

Figure 1-4. Agua Hedionda Watershed Land Use by Site Drainage Area

The population in the Carlsbad Watershed Management Area is estimated at 550,726 persons or 2,604 persons per mile, making it the second most densely populated WMA in San Diego County. The major population centers in the WMA are focused in the City of Escondido, the City of San Marcos, and the City of Vista and along the coastal communities of Oceanside, Carlsbad, and Encinitas. The population in the WMA is projected to increase by 15%, reaching approximately 633,000 people by the year 2020 (SANDAG, 2005).

The Carlsbad WMA is under the jurisdiction of several cities; approximately 19% of the WMA is within the City of Carlsbad, 13% is within the City of Escondido, 11% is within the City of San Marcos, and between 8–9% each is within the City of Encinitas, the City of Vista, and the City of Oceanside. The City of Solana Beach comprises less than 1% of the WMA. Another 31% of the WMA is classified as unincorporated lands under the County of San Diego jurisdiction.

1.3.2 Beneficial Uses

The Carlsbad WMA provides a variety of beneficial uses, including freshwater habitats and estuarine habitats (Table 1-1). The WMA also contains five coastal lagoons, including Loma Alta Slough, Buena Vista Lagoon, Agua Hedionda Lagoon, Batiquitos Lagoon, and San Elijo Lagoon. Flows from the two monitored sites ultimately drain to the Agua Hedionda Lagoon.

Table 1-1. Beneficial Uses within the Carlsbad Watershed Management Area

Beneficial Uses	Inland Surface Waters	Coastal Waters (excluding Pacific Ocean)	Pacific Ocean	Reservoirs and Lakes	Ground-waters
Municipal and domestic supply	●			●	●
Agricultural supply	●			●	●
Industrial service supply	●	●	●	O	●
Industrial process supply					
Groundwater recharge					
Freshwater replenishment					
Hydropower generation	●			●	
Navigation			●		
Contact water recreation (REC-1)	●	●	●	●[1]	
Non-contact water recreation (REC-2)	●	●	●	●	
Commercial and sport fishing		●	●		
Biological habitats of special significance	●	●	●		
Warm freshwater habitat (WARM)	●	●		●	
Cold freshwater habitat (COLD)	●			●	
Estuarine habitat		●			
Wildlife habitat	●	●	●	●	
Rare, threatened, or endangered species	●	●	●		
Marine habitat		●	●		
Migration of aquatic organisms		●	●		
Aquaculture		●	●		
Shellfish harvesting		●	●		

Table 1-1. Beneficial Uses within the Carlsbad Watershed Management Area

Beneficial Uses	Inland Surface Waters	Coastal Waters (excluding Pacific Ocean)	Pacific Ocean	Reservoirs and Lakes	Ground-waters
Spawning, reproduction, and/or early development		●	●		

● = Existing
O = Potential
[1] Shore and boat fishing only. Other REC-1 uses prohibited.
Note: Beneficial uses vary by HU basin number. Please refer to the *Water Quality Control Plan for the San Diego Basin 9* (Basin Plan) for individual HUs.
Source: Basin Plan September 8, 1994 (tables 2-2, 2-3, 2-4, and 2-5), amendments adopted through February 8, 2006.

1.3.3 Regulatory Water Quality Issues

Water quality problems identified in the Agua Hedionda Watershed include those on the 2006 SWRCB §303(d) list (indicator bacteria, sedimentation/siltation, TDS, manganese, selenium, sulfates, DDT, nitrate, nitrite, and phosphate) (Table 1-2) and those identified in the San Diego Regional Copermittee Monitoring Program that also include synthetic pyrethroid pesticides and toxicity to *H. azteca* during storm water runoff events. Sources of these pollutants are varied and may include urban runoff, agricultural runoff, sewage spills, livestock/domestic animals, and natural sources (San Diego County, 2009). The 2006 SWRCB §303(d) list was adopted by the SWRCB on October 25, 2006, and finalized by the United States Environmental Protection Agency (USEPA) on June 28, 2007. The 2010 SWRCB §303(d) list was partially approved by the USEPA on November 18, 2010 and updates from this list are also included in Table 1-2.

Table 1-2. Agua Hedionda Watershed Waterbodies on the 2006 Final and 2010 State Water Resources Control Board Section 303(d) List

Waterbody Name	HSA	HSA No.	Pollutant/Stressor
AGUA HEDIONDA HA – 2006 Final List			
Agua Hedionda Lagoon (7 acres)	Los Monos	904.31	Indicator bacteria and sedimentation/siltation (1)
Agua Hedionda Creek	Los Monos	904.31	TDS, manganese, selenium, and sulfates
Buena Creek	Buena	904.32	DDT, nitrate, nitrite, and phosphate
AGUA HEDIONDA HA – 2010 Final List			
Agua Hedionda Creek	Los Monos	904.31	Enterococci, fecal coliforms, manganese, phosphorus, selenium, TDS, total nitrogen, and toxicity
Buena Creek	Buena	904.32	DDT, nitrate, and nitrite

DDT = Dichloro-Diphenyl-Trichloroethane.
HSA = hydrologic subarea.
Source: SWRCB, 2006.

2.0 METHODS

The materials used and methods performed in this study are presented in the Carlsbad WMA Quality Assurance Project Plan (QAPP). The QAPP is provided in Appendix C. The purpose of the monitoring program was to characterize the conditions of storm water and non-storm urban runoff from the County of San Diego's jurisdiction. Two wet weather monitoring events and two non-storm monitoring events were conducted to address the current watershed loading from these drainage areas.

2.1 Study Duration

This study was conducted from June 2009 through January 2010.

2.2 Monitoring Locations

Within the Agua Hedionda Watershed, two sampling locations were proposed for monitoring (one in Buena Creek and one in Agua Hedionda Creek). The locations, presented in Table 2-1, were visited by Weston field staff who selected COSDCAR16-alt for flow monitoring and water sampling. COSDCAR16 was not chosen due to inadequate access and safety owing to bridge reconstruction on Oleander Avenue. Monitoring locations COSDCAR05 and COSDCAR16-alt are shown in Figure 2-1 and Figure 2-2, respectively. Approximately 45% of the land area draining to COSDCAR16-alt is located in the City of San Marcos, with the remaining 55% in the unincorporated County of San Diego. Nearly all of the land area draining into CAOSDCAR05 is within unincorporated County of San Diego.

Table 2-1. Carlsbad Watershed Management Area Monitoring Locations

Site	Location	Latitude	Longitude
COSDCAR05	Buena Creek at Robelini Drive	33.172390	-117.209970
COSDCAR16-alt	Agua Hedionda Creek at South Santa Fe Avenue	33.162330	-117.205220
COSDCAR16*	Agua Hedionda Creek at Oleander Avenue	33.156290	-117.215130

*Site not monitored

Figure 2-1. Site COSDCAR05, located in Buena Creek at Robelini Drive

Figure 2-2. Site COSDCAR16-alt, located in Agua Hedionda Creek at South Santa Fe Avenue

2.3 Wet Weather Sampling

Weston conducted pollutograph sampling at two locations in the Agua Hedionda Watershed within County jurisdiction (Site COSDCAR05 and Site COSDCAR16-alt). The pollutograph sampling targeted storm events that were predicted to produce 0.2 inch of rainfall or greater in the Carlsbad WMA based on National Weather Service forecasts. Both storms occurred during wet weather season as defined by the NPDES Permit. The first wet weather sampling event was targeted to occur during the first storm event on or after October 1. The first wet weather event was captured on December 7, 2009, and was the first-flush event of the 2009–2010 wet season. The second event occurred on January 18, 2010.

In total, ten pollutograph (grab) samples from each location were collected at regular intervals over the course of the storm for both chemistry and bacteria (including PCR samples). The rise, peak, and fall of each site's hydrograph were targeted during sample collection, with emphasis placed on the rise and peak. Only two samples were analyzed from the declining side of the hydrograph spaced appropriately to analyze the flow conditions. Although a total of ten samples were collected to ensure adequate sample representation, only six samples were submitted for analysis. Samples were analyzed for the constituents presented in Table 2-2 and Table 2-3.

One flow-weighted composite sample was collected to analyze for toxicity to *H. azteca* as persistent toxicity was observed in the lower watershed locations of Agua Hedionda Creek (AHC-MLS and AHC-TWAS-1). Additionally, one composite sample was submitted to the chemistry laboratory to analyze for synthetic pyrethroids.

Flow monitoring was conducted for the duration of the monitoring event and was logged at five-minute intervals. Flow monitoring was initialized one hour before rainfall to capture base flow and continued until flow rate returned to within 10% of the base flow or for five days maximum. Rainfall data were obtained from the Palomar Airport Rainfall Gauge and a station near the monitoring site from the Weather Underground network. Field parameters were collected using a data sonde set to monitor temperature, conductivity, turbidity, pH, and dissolved oxygen (DO) at 15-minute intervals.

2.4 Non-Storm Sampling

Weston planned to collect one 24-hour composite sample from each site COSDCAR05 and COSDCAR16-alt during two non-storm monitoring events. However site COSDCAR16-alt was not monitored because non-storm flow was present at COSDCAR16-alt only through mid-April 2009; the site was dry in late spring and summer of 2009. Flow at site COSDCAR16-alt appeared again after the first rainfall event of 2009. Non-storm samples were collected at site COSDCAR05 on June 23, 2009, and August 19, 2009. Both events were prior to the rainy season and occurred at least one week following any precipitation greater than 0.01 inch.

The chemistry and toxicity samples were collected as time-weighted composites using 250-mL aliquots for each sample draw with a Sigma 900 SD sampler equipped with Teflon tubing and a

20-L high-density polyethylene (HDPE) composite container. Sample pacing was set to collect one sample per 20-minute period for a total of 18 L for the 24-hour composite. The composite samples were analyzed for the constituents presented in Table 2-2 and Table 2-3. Toxicity testing was conducted using the freshwater alga *Selenastrum capricornutum.* The samples were also analyzed for herbicides to assess any influences on *S. capricornatum* toxicity. Bacteria samples were collected as grab samples at a rate of one every six hours for a total of four samples over the event duration per site. The bacteria samples were analyzed individually.

Flow monitoring was conducted for the duration of each monitoring event and was logged at five-minute intervals. Flow monitoring was initialized one day before the sampling event and continued until the end of the event. Field parameters were collected using a data sonde set to monitor temperature, conductivity, turbidity, pH, and DO at 15-minute intervals.

2.5 Flow Monitoring

Estimates of continuous flow at each site were made using a Sigma 920 (or similar) Flowmeter with a pressure/level transducer. The water level (stream stage) sensor was secured to the bottom of the channel at each sampling location. The measurements were downloaded after each sampling event and were verified to ensure accuracy. The flowmeter converts stream stage data using head/flow equations developed from stream survey and rating. Stage and flow data are then entered into a data management system, and archived.

To quantify flow rates based on stream stage, a relationship between flow and stage was derived using standardized stream rating protocols developed by the USGS (Rantz, 1982). Instantaneous flow measurements were taken at base flow for each site and were combined with site-specific survey information to produce rating curves.

2.5.1 Stream Survey

Channel Cross Section

Channel cross-section surveys were conducted at each monitoring site. The cross-section survey involves placing endpoints at the highest point of the channel on each bank. A tape is then stretched between the endpoints such that the zero end of the tape is attached to the endpoint on the left bank of the channel (looking downstream). Channel depth is measured by holding a stadia rod vertical and level from the channel bottom to the stretched tape. The channel depth measurements are recorded incrementally at equal horizontal distances across the channel for a minimum of 20 measurements.

Channel Slope

Using a DeWalt™ Model DW092 transit level, a minimum of three elevations at increasing horizontal distances from the transit level were recorded in the channel bed. A minimum of five elevations were measured at sites with irregularly sloped or curved channel surfaces. The average channel slope was calculated from the survey data.

Stream Rating

To measure instantaneous flow during base flow conditions, a Marsh-McBirney Model 2000 Portable Flowmeter connected via a cable to an electromagnetic open-channel velocity sensor

was used. The velocity sensor was attached to a stainless-steel, top-setting wading rod. To make instantaneous flow measurements, a tape measure was stretched across the stream, perpendicular to flow, and secured at both banks of the stream. The tape was suspended approximately 1 ft above water surface. The distance on the tape directly above the waterline (where water meets the bank) was recorded as the initial point. The first measurement was then made at the first point where there was adequate depth and measurable velocity. At this point, three measurements are made, including water depth, velocity, and distance from the bank (i.e., the initial point). Subsequent depth, velocity, and distance measurements were made incrementally across the entire width of the channel so that a minimum of 20 points were measured at each site. Water depth, in tenths of feet, was determined using a wading rod. Flow velocity measurements were made at each point along the transect by positioning the velocity sensor perpendicular to flow at 60% of the water depth (from the surface) to attain average velocity. The top-setting wading rod is designed so the sensor can be conveniently positioned at the appropriate depth. Water velocity was measured in feet per second.

Data from the field measurements were entered into a computer spreadsheet that calculates the stream's cross-sectional profile from the depth and distance-from-bank measurements. Total flow across the channel was determined by integrating the velocity measurements over the cross-sectional surface area of the stream channel. The result is an instantaneous flow measurement in cubic feet per second.

2.5.2 Rating Curve

A rating table or curve is a relationship between stage (water level) and flow at a cross section of a river and reflects the particular geometry of the given cross section. The Manning's Equation (Rantz, 1982) was used to produce a rating curve for each sampling site based on the channel survey data. Direct measurements of stream discharge collected during base flow conditions were used to estimate indirect stream discharge during storms. Each rating curve was than calibrated using instantaneous flow measurements by adjusting the equation's roughness coefficient.

The Manning's Equation is an empirical formula for open channel flow or for flow driven by gravity, as follows:

$$Q = VA = \left(\frac{1.49}{n}\right) AR^{\frac{2}{3}} \sqrt{S}$$

where

Q = Flow
n = Manning Roughness coefficient
A= Cross-sectional area
R = Hydraulic radius
S = Hydraulic slope

The hydraulic radius is derived as follows:

$$R = A/P$$

where

A = Cross-sectional area of flow (ft^2)
P = Wetted perimeter (ft)

The Manning's Equation was developed for conditions of uniform flow in which the water surface profile and energy gradient are parallel to the streambed and the area, hydraulic radius, and depth remain constant throughout the reach. Field surveys of the channel cross section and the channel geometry of each site were conducted to compute the channel characteristics for each monitoring site.

2.6 Water Sampling Methods

Water Sample Collection for Chemistry and Toxicity Analyses

Field scientists wearing clean, disposable gloves collected water grab samples in lab supplied and certified clean plastic and glass containers. Chemistry water samples for analysis were collected from the horizontal and vertical center of the channel.

Water Sample Collection for Bacterial Analyses

Field scientists wearing clean, disposable gloves collected bacterial grab samples in sterile, plastic containers. Sampling containers were stored in clear Ziploc® bags. To collect a sample, the bag was opened, then the sampling container was opened with the lid held face-down to prevent any airborne contamination. The bottle was submerged open-end down approximately 6 inches below the water's surface. The bottle was turned face-up and allowed to fill. As sampling containers contain small amounts of sodium thiosulfate preservative, the bottle was filled once and drained to the desired 100-mL volume. The bottle was closed and placed back in the Ziploc™ bag, and the bag was sealed. The contaminated gloves were removed. Samples were stored on ice in a covered cooler in the field and during pick-up and delivery to the laboratory. Chain-of-custody (COC) forms were submitted to the laboratory together with the samples. Laboratory analysis began as quickly as possible and within the method recommended holding time of six hours.

Water Sample Collection for Molecular Analyses

Q-PCR analysis for *Bacteroides* yields presence or absence results. Therefore, the genetic material from one single cell could potentially cause a false positive result for human contamination. For this reason, only certified, trained staff members performed the Q-PCR analysis. Samples were collected with the following strict clean hands aseptic technique. First, the exterior of the Ziploc® bag containing the Q-PCR bottle was labeled with sample identification, sample location, sample date, sample time, and name of collector using black, waterproof ink. The sampler's hands were sprayed with ethanol, dried, and immediately dressed in a pair of gloves that were than treated with *DNA AWAY*™, a deoxyribonucleic acid (DNA) destabilizing reagent, and wiped dry with Kimwipes®. Two decontaminated Ziploc® bags were used to store each of the 250-mL irradiated nuclease-free plastic containers before and after sampling. Prior to opening the outer bag's surface and seal were wiped with a *DNA AWAY*™ treated Kimwipes® and allowed to dry. The Ziploc® bag was then opened, and the bottle was removed. The sample container was carefully opened and the cap held carefully face down to prevent aerial contamination. The sampling container was inverted and allowed to fill and then capped and held in one hand. Excessive water was removed from the exterior of the sample container using Kimwipes® and transferred to the other hand. The outside glove of the hand that

held the bottle during sampling was removed. The sample bottle was sprayed with *DNA AWAY™*, wiped dry with Kimwipes®, and placed in the inner Ziploc® bag. The outer Ziploc® bag was sealed with both hands, and gloves were removed.

These steps were performed for each sample collected, and gloves were used only once. During sampling, if gloved hands touched anything other than the sampling bottle or the Ziploc® bag, the gloves were discarded, and the procedure was repeated. The sealed Ziploc® bags containing Q-PCR samples were placed in a cooler with sterile blue-ice and transported to Weston's molecular laboratory in Carlsbad, California.

One sterile field blank was prepared by each sampling scientist during each sampling event to ensure sterile techniques. Nuclease-free water was used to prepare the blanks. If a field blank was contaminated, results for that Q-PCR set were qualified accordingly.

Sample Handling

Samples were placed on ice immediately and transferred to the laboratory within the method specified holding time. COC forms were completed and delivered with the samples for all samples and analytes.

Visual Observations

In addition to flow measurements and water sample collection, field personnel collected visual observational data, including photographic records of the sampling locations and records of water appearance, odor, color, clarity, floatables, deposits, vegetation, biology, and flow conditions.

Field Water Quality Parameters

Data sondes were deployed in both monitoring locations prior to each sampling event. Sondes were housed in protective black ABS plastic sleeves anchored in place by stainless metal strapping attached to a hard substrate. Maintenance and calibration were performed prior to deployments to ensure that each of the water quality sondes was functioning properly. The data sondes were set up to log data in 15-minute intervals. Recorded sonde data was saved in the unit's internal memory until downloaded onto a portable laptop computer at the end of the sampling events. Table 2-2 details the parameters measured to assess general water chemistry in the monitoring locations during wet weather and dry weather surveys. The monitored parameters include temperature, turbidity, specific conductivity, pH, and DO.

Table 2-2. General Water Characterization Analyte List and Corresponding Method, Detection Limit, and Reporting Limit

Analyte	Method	Range of Detection	Accuracy	Units
Field Measurements				
Temperature	YSI6600 data sonde	-5 to 50	+/- 0.15	°C
Conductivity	YSI6600 data sonde	0 to 100	+/- 0.001	mS
Turbidity	YSI6600 data sonde	0 to 1000	+/- 0.1	NTU
pH	YSI6600 data sonde	0 to 14	+/- 0.2	pH unit
DO	YSI6600 data sonde	0 to 50	+/- 0.1	mg/L

NTU = nephelometric turbidity unit.

2.6.1 Analytical Methods

The laboratory analytical methods used for this project are listed in Table 2-3.

Table 2-3. Laboratory Analytical Methods and Detection Limits

Analyte	Method	MDL	Reporting Limit	Units
Chemistry Laboratory Measurements				
Total phosphorus as P	SM 4500 P E	0.016	0.05	mg/L
Dissolved phosphorus (orthophosphate as P)	USEPA 300.1	0.0075	0.01	mg/L
Nitrate as N	USEPA 300.1	0.01	0.05	mg/L
Nitrite as N	USEPA 300.1	0.01	0.05	mg/L
TKN	USEPA 351.3	0.455	0.50	mg/L
Ammonia as N	SM 4500-NH3 F	0.01	0.05	mg/L
Total nitrogen (sum of nitrate, nitrite, and TKN)	Calculation	0.455	0.50	mg/L
TDS	SM 2450 C	0.1	0.2	mg/L
TSS	SM 2540-D	0.5	0.5	mg/L
Turbidity	USEPA 180.1	1	2	NTU
Total manganese	USEPA 200.8	0.05	0.1	mg/L
Total selenium	USEPA 200.8	0.2	0.5	ug/L
Sulfate	USEPA 300.0	0.01	0.05	mg/L
Synthetic pyrethroids [1]	GC/MS-NCI	Varies per analyte		ng/L
Glyphosate [2]	USEPA 547	3.3	5.00	ug/L
Herbicides [2]	USEPA 8151	Varies per analyte		ug/L
Toxicology Laboratory Measurements				
H. azteca – 4-day acute test [1]	USEPA-821-R-02-012	To five dilutions		NOEC/LOEC/ LC_{50}
S. capricornutum – 4-day chronic test [2]	USEPA-821-R-02-013	To five dilutions		NOEC/LOEC/ IC_{50}
Microbiology Laboratory Measurements (reporting limit shown as a range)				
Total coliforms	SM 9221 B	20–16,000,000		MPN/100 mL
Fecal coliforms	SM 9221 E	20–16,000,000		MPN/100 mL
Enterococci	SM 9230 B	20–16,000,000		MPN/100 mL
E. coli	SM 9223	10–2,419,570		MPN/100 mL
Bacteroides fragilis	PCR	Presence/absence		

1. Wet weather events only.
2. Dry weather event only.

2.6.2 Water Quality Criteria

Where appropriate, water quality results were compared to the water quality benchmarks (benchmarks) used in the San Diego County Copermittees Monitoring Program, or as listed in the *Water Quality Control Plan for the San Diego Basin 9* (Basin Plan) and/or other relevant water quality standards. Table 2-4 lists the benchmarks for indicator bacteria and other water quality parameters monitored during this project.

Table 2-4. List of Analytes and Water Quality Benchmarks for Carlsbad Watershed Management Area

Analyte	Wet Weather Benchmark	Dry Weather Benchmark	Source
Field Measurements			
DO	> 5.0 mg/L	> 5.0 mg/L	Basin Plan (Regional Board, 1994)
pH	6.5–9.0 pH units	6.5–9.0 pH units	Basin Plan (Regional Board, 1994)
Conductivity	–	–	–
Temperature	–	–	–
Turbidity	< 20 NTU	< 20 NTU	Basin Plan (Regional Board, 1994)
Chemistry Laboratory Measurements			
Total phosphorus as P	2 mg/L	0.1 mg/L*	MSGP (2000) ; Basin Plan
Dissolved phosphorus (orthophosphate as P)	2 mg/L	–	MSGP (2000) ; Basin Plan for total phosphorus as P
Nitrate as N	10 mg/L	1 mg/L	Basin Plan for total Nitrogen
Nitrite as N	1 mg/L	1 mg/L	Basin Plan for Total Nitrogen,
Total kjeldahl nitrogen (TKN)	–	–	–
Ammonia as N	CMC (salmonids absent) Calculation based on pH, temp	CCC (early life stages present) Calculation based on pH, temp	USEPA Water Quality Criteria (freshwater)
Total nitrogen (sum of nitrate, nitrite, and TKN)	1 mg/L*	1 mg/L*	Basin Plan (Regional Board, 1994)*
TDS	500 mg/L	500 mg/L	Basin Plan (Regional Board, 1994)
TSS	100 mg/L	58 mg/L	MSGP 2000, NSQD, Basin Plan
Total manganese	0.05 mg/L	0.05 mg/L	Basin Plan (Regional Board, 1994)
Total selenium	0.005 mg/L	0.005 mg/L	40 CFR 131.38
Sulfate	250 mg/L	250 mg/L	Basin Plan (Regional Board, 1994)
Chloride	250 mg/L	250 mg/L	Basin Plan (Regional Board, 1994)
Synthetic pyrethroids	Varies by analyte	Not tested during dry weather	Wheelock et al. (2004) and Anderson (2006)
Herbicides	Not tested during wet weather	–	–
Toxicology Laboratory Measurements			
H. azteca – 4-day acute test	NOEC = 100%	Not tested during dry weather	Regional Board Order R9-2007-0001
S. capricornutum – 4-day chronic test	Not tested during wet weather	NOEC = 100%	Regional Board Order R9-2007-0001
Microbiology Laboratory Measurements (reporting limit shown as a range)			
Total coliforms	–	–	–
Fecal coliforms	400 MPN/100 mL	400 MPN/100 mL	Basin Plan REC-1
Enterococci	151 MPN/100 mL	151 MPN/100 mL	Basin Plan (Regional Board, 1994)
E. coli	576 MPN/100 mL	–	Basin Plan (Regional Board, 1994)–
Bacteroides fragilis	–	–	–

– = A water quality objective (WQO) has not been developed.

* = From Basin Plan (1994): "Threshold values have not been set for nitrogen compounds; however natural ration of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 shall be used." Given WQO for total P = 0.1, WQO for total N = 1.

CCC = criterion continuous concentration.

CMC = criterion maximum concentration.

MGSP = USEPA Multi-sector Industrial General Permit, 2002

MPN = most probable number.

NOEC = no-observed-effect concentration.
NSQD = National Stormwater Quality Database
NTU = nephelometric turbidity unit.
Regional Board = Regional Water Quality Control Board.

3.0 RESULTS

This section presents the results of the monitoring program undertaken in the Agua Hedionda Watershed. The results are presented in the following sections:

- Subsection 3.1 – Wet Weather Monitoring.
- Subsection 3.2 – Dry Weather Monitoring.

3.1 Wet Weather Monitoring

This portion of the study was designed to address the following study objective:

- Determine constituent concentrations and discharged loads within the Agua Hedionda Watershed in the County of San Diego's jurisdiction during two wet weather events.

The following subsections present the results of this survey, including the following:

- Constituent concentrations and event mean concentrations (EMC).
- Synthetic pyrethroids and toxicity results.
- Assessment of the presence of human fecal contamination.
- Estimated wet weather event loads.
- Field parameter results.

Two wet weather events were monitored during the 2009–2010 Wet Weather Season at two sampling sites (COSDCAR05 and COSDCAR16-alt). These sampling events occurred on December 7, 2009 and January 18, 2010. The 2009–2010 Wet Weather Season was influenced by El Nino conditions and frequent rainfall began in November and continued through April with the largest storms occurring in January. The first-flush event of 2009–2010 Wet Weather Season took place on November 27, 2009 following 272 days of antecedent dry weather; the total rainfall equaled approximately 0.5 inch. The first wet weather event monitored occurred on December 7–8, 2009, and was the largest event monitored during this study and was the second wet weather event of the 2009–2010 Wet Weather Season, occurring eight days following the smaller first-flush event on November 27, 2009.

Table 3-1 summarizes the two wet weather events monitored during 2009–2010, including antecedent dry days, rainfall duration, rainfall total and rainfall intensity. The wet weather event rainfall totals were obtained from a rain gauge at the County Alert station (6886 San Marcos CRS).

Table 3-1. Wet Weather Event Monitoring Summaries

Date of Wet Weather Event	Number of Antecedent Dry Days	Rainfall Event Duration (hours)	Rainfall Total (inches)	Rainfall Intensity (inches/hour)
12/07/2009	8	16	1.13	0.07
01/18/2010	35	8	1.02	0.13

Pollutograph samples from each location were collected at regular intervals over the course of the wet weather events and analyzed for chemistry, bacteria. One flow-weighted composite per

event for each site was collected and analyzed for synthetic pyrethroids and toxicity to *H. azteca*. Flow rates were measured at the two sites within the Carlsbad WMA for both wet weather events. Event hydrographs with rainfall and sample times are shown in Figure 3-1.

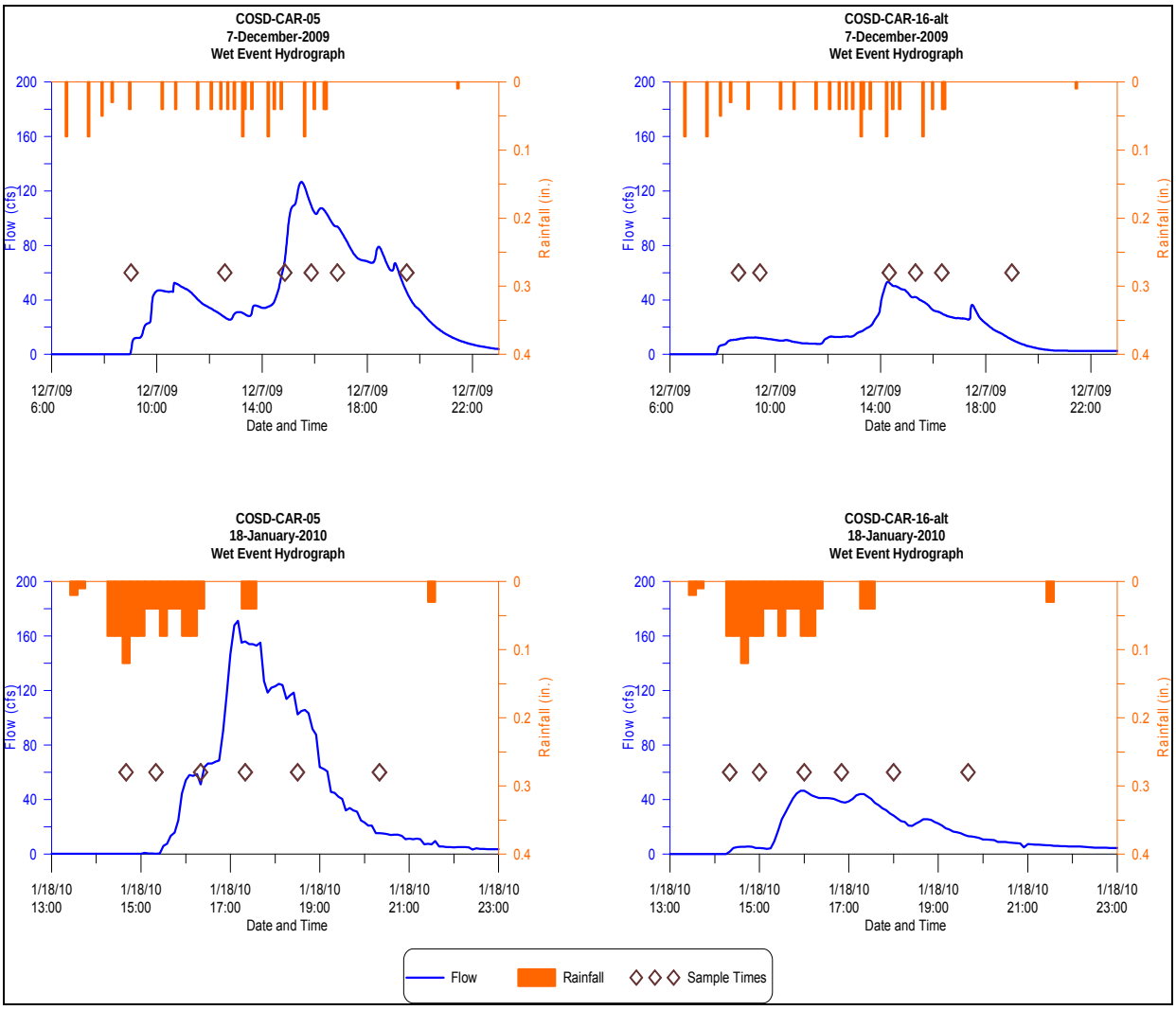

Figure 3-1. Wet Weather Event Hydrographs

3.1.1 Wet Weather Chemistry Concentrations

Wet weather chemistry samples were collected as discrete grabs over the course of the two wet weather monitoring events. Sample results are shown in Table 3-2 and Table 3-3 and are compared to relevant benchmarks. Results exceeding benchmarks are shaded and bold. Individual wet weather event hydrographs are presented as pollutographs, showing constituent concentrations as functions of rainfall and flow rates. (Figure 3-2 and Figure 3-3). The Event Mean Concentrations (EMCs) for each constituent are compared among sites and events in Figure 3-4.

Table 3-2. Wet Weather Event 1 Chemistry Concentrations and Event Mean Concentrations

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Wet Weather Event 1													
				COSD-CAR-05-1	COSD-CAR-05-4	COSD-CAR-05-5	COSD-CAR-05-6	COSD-CAR-05-7	COSD-CAR-05-8	COSD-CAR-05 Wet Weather Event 1 EMC	COSD-CAR-16-ALT-1	COSD-CAR-16-ALT-2	COSD-CAR-16-ALT-5	COSD-CAR-16-ALT-6	COSD-CAR-16-ALT-7	COSD-CAR-16-ALT-8	COSD-CAR-16-alt Wet Weather Event 1 EMC
				12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009		12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	
General Chemistry																	
Ammonia-N	mg/L			0.91	0.4	0.36	0.47	0.46	0.47	0.53	0.38	0.35	0.29	0.26	0.26	0.22	0.30
Nitrate-N	mg/L	10	Basin Plan	5.66 H	3.39 H	4.28 H	5.29 H	6.07 H	9.05 H	5.42	0.9 H	0.91 H	0.57 H	0.98 H	1.01 H	1.69 H	0.91
Nitrite-N	mg/L	1	Basin Plan	0.07 H	0.09 H	0.07 H	0.1 H	0.1 H	0.11 H	0.09	0.07 H	0.07 H	0.04 H,J	0.06 H	0.06 H	0.08 H	0.06
TKN	mg/L			0.65J	2.02	3.8	3.86	2.88	4.42	2.74	1.34	1.51	1.43	1.034	0.83J	1.008	1.22
Total nitrogen	mg/L	1	Basin Plan	**6.38**	**5.5**	**8.15**	**9.25**	**9.05**	**13.58**	**8.24**	**2.31**	**2.49**	**2.04**	**2.074**	**1.9**	**2.778**	**2.19**
Dissolved orthophosphate as P	mg/L	2	MSGP (2000)	0.26 H	0.27 H	0.662 H	1.4 H	1.593 H	2.287 H	1.02	0.27 H	0.288 H	0.367 H	0.245 H	0.264 H	0.343 H	0.29
Total phosphorus – low range	mg/L	0.1	Basin Plan	**0.512**	**0.691**	**0.178**	**2.822**	**2.904**	**3.914**	**1.74**	**0.595**	**0.617**	**0.663**	**0.523**	**0.399**	**0.604**	**0.55**
Chloride	mg/L	250	Basin Plan	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	250	Basin Plan	161.14	86.22	91.38	71.48	88.9	138.71	103.78	22.67	20.23	47.85	46.89	40.83	141.81	39.70
TDS	mg/L	500	Basin Plan	**820 B**	**538 B**	**534 B**	386 B	**562 B**	**709.4 B**	**587.26 B**	284 B	218 B	384 B	238 B	282 B	498 B	284.69 B
TSS	mg/L	100	MSGP	84.5	**124.5**	**554**	**644**	**462**	**910**	**417.76**	41.3	**190.5**	67.6	73.7	31	7.7	92.13
Turbidity	NTU	20	Basin Plan	**62.5**	**97.5**	**345**	**375**	**328**	**759**	**284.22**	**37.2**	**76.5**	**51**	**51.5**	**31.8**	11	**51.34**
Trace Metals																	
Total manganese	µg/L	50	Basin Plan	**210.7**	**266.3**	**775.9**	**587.2**	**407**	**658.9**	**457.88**	40.6	**92.1**	**167.1**	**112**	**76.3**	**112.8**	**102.55**
Total selenium	µg/L	5	40 CFR 131.38	0.3J	<0.2	0.2J	0.3J	0.3J	0.4J	0.28	<0.2	<0.2	<0.2	0.2J	0.3J	0.2J	0.25

< results less than the method detection limit.

B Analyte was detected in the associated method blank.

H Sample analyzed past the recommended holding time.

J Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

Table 3-3. Wet Weather Event 2 Chemistry Concentrations and Event Mean Concentrations

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Wet Weather Event 2													
				COSD-CAR-05-1	COSD-CAR-05-2	COSD-CAR-05-3	COSD-CAR-05-4	COSD-CAR-05-5	COSD-CAR-05-6	COSD-CAR-05 Wet Weather Event 1 EMC	COSD-CAR-16-ALT-1	COSD-CAR-16-ALT-2	COSD-CAR-16-ALT-3	COSD-CAR-16-ALT-4	COSD-CAR-16-ALT-5	COSD-CAR-16-ALT-6	COSD-CAR-16-alt Wet Weather Event 1 EMC
				01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010		01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	
General Chemistry																	
Ammonia-N	mg/L			0.46 B	0.2 B	0.35 B	0.47 B	0.43 B	0.41 B	0.40	0.42 B	0.24 B	0.19 B	0.25 B	0.36 B	0.28 B	0.27
Nitrate-N	mg/L	10	Basin Plan	3.6	6.2	3	4.8	6.1	7.1	4.82	0.46	0.45	0.67	0.96	1.2	1.7	0.96
Nitrite-N	mg/L	1	Basin Plan	0.12J	0.15	<0.09	<0.09	<0.09	<0.09	0.08	<0.09	<0.09	<0.09	<0.09	<0.09	0.12J	0.08
TKN	mg/L			4.62	2.02	5	5.34	3.42	2.9	4.43	2.64	0.792J	0.572J	0.626J	1.046	1.296	0.86
Total nitrogen	mg/L	1	Basin Plan	**8.34**	**8.37**	**8**	**10.14**	**9.52**	**10**	**9.26**	**3.1**	**1.242**	**1.242**	**1.586**	**2.246**	**3.116**	**1.83**
Dissolved orthophosphate as P	mg/L	2	MSGP (2000)	0.35	0.31	0.6	1.3	1.3	1.4	1.03	0.53	0.41	0.27	0.42	0.45	0.49	0.40
Total phosphorus – low range	mg/L	0.1	Basin Plan	**1.142**	**0.911**	**1.683**	**2.617**	**2.478**	**4.166**	**2.26**	**1.254**	**0.47**	**0.339**	**0.426**	**0.562**	**0.556**	**0.48**
Chloride	mg/L	250	Basin Plan	64.98	134.68	42.89	33.41	42.31	72.85	74.02	6.07	4.6	39.8	20.85	32.49	55.14	35.35
Sulfate	mg/L	250	Basin Plan	80.47	166.26	62.15	60.02	70.78	113.05	48.00	11.89	8.13	41.15	26.44	40.3	72.66	28.93
TDS	mg/L	500	Basin Plan	288	**610**	167.5	136.7	173.3	414	204.29	76	56	172	64	106	252	119.22
TSS	mg/L	100	MSGP	**500**	**322**	**1570**	**788**	**541**	**285.7**	**886.53**	**503**	**145**	67.5	62	20.3	10.3	**69.54**
Turbidity	NTU	20	Basin Plan	**276**	**139**	**614**	**500**	**366**	**264**	**461.03**	**380**	**119**	**57.3**	**51.9**	**25.8**	19.7	**60.49**
Trace Metals																	
Total manganese	µg/L	50	Basin Plan	**1007**	**675.1**	**1241**	**675.1**	**426.1**	**280.1**	**756.47**	**179.5**	**88**	**88.5**	**91**	**57.9**	38.7	**77.92**
Total selenium	µg/L	5	40 CFR 131.38	0.4J	0.6	0.2J	0.2J	0.3J	0.6	0.27	0.2J	<0.2	<0.2	0.3J	0.2J	0.3J	0.26

< results less than the method detection limit.

B Analyte was detected in the associated method blank.

H Sample analyzed past the recommended holding time.

J Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

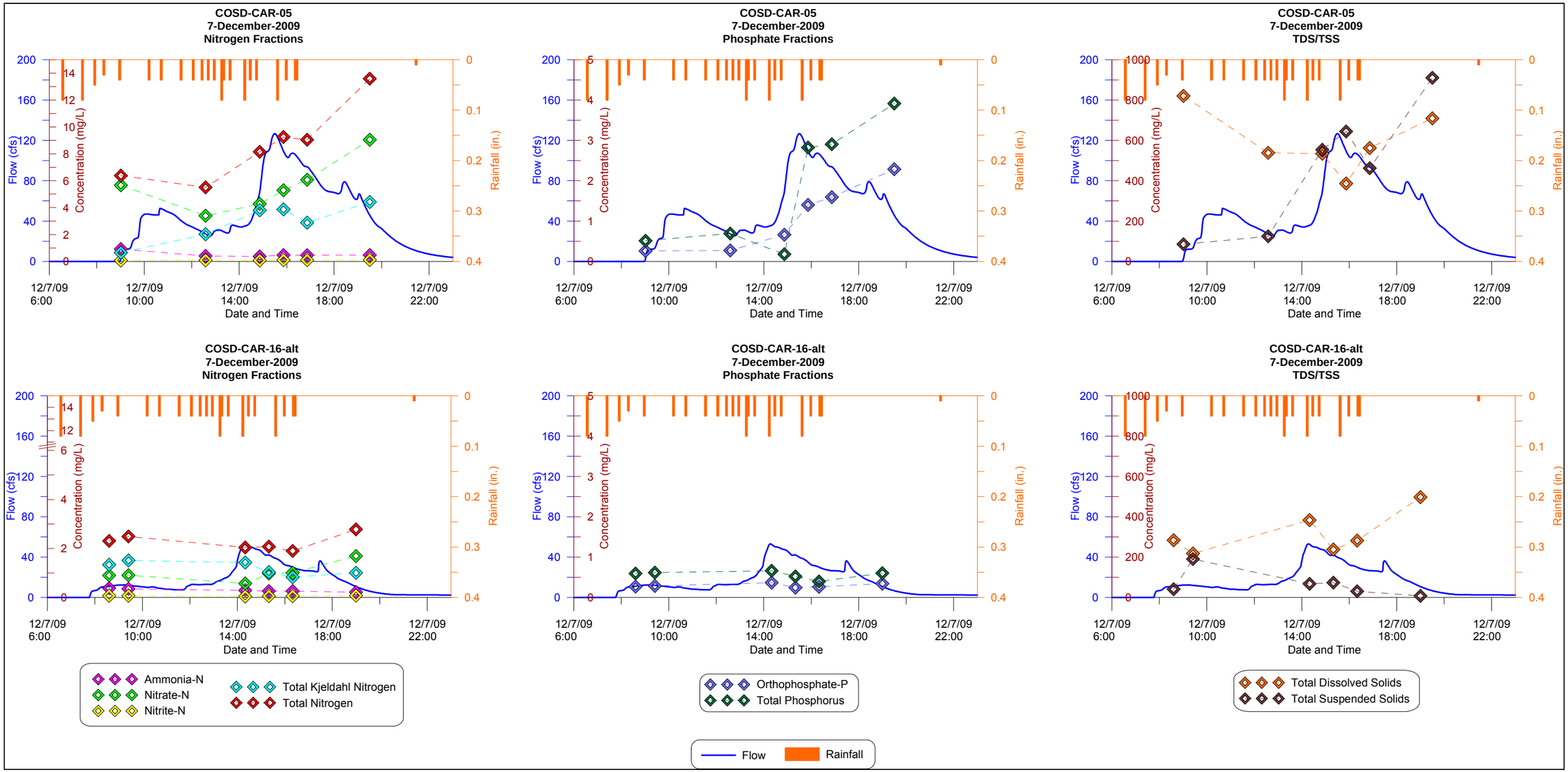

Figure 3-2. Chemistry Pollutographs for Wet Weather Event 1 – December 7, 2009

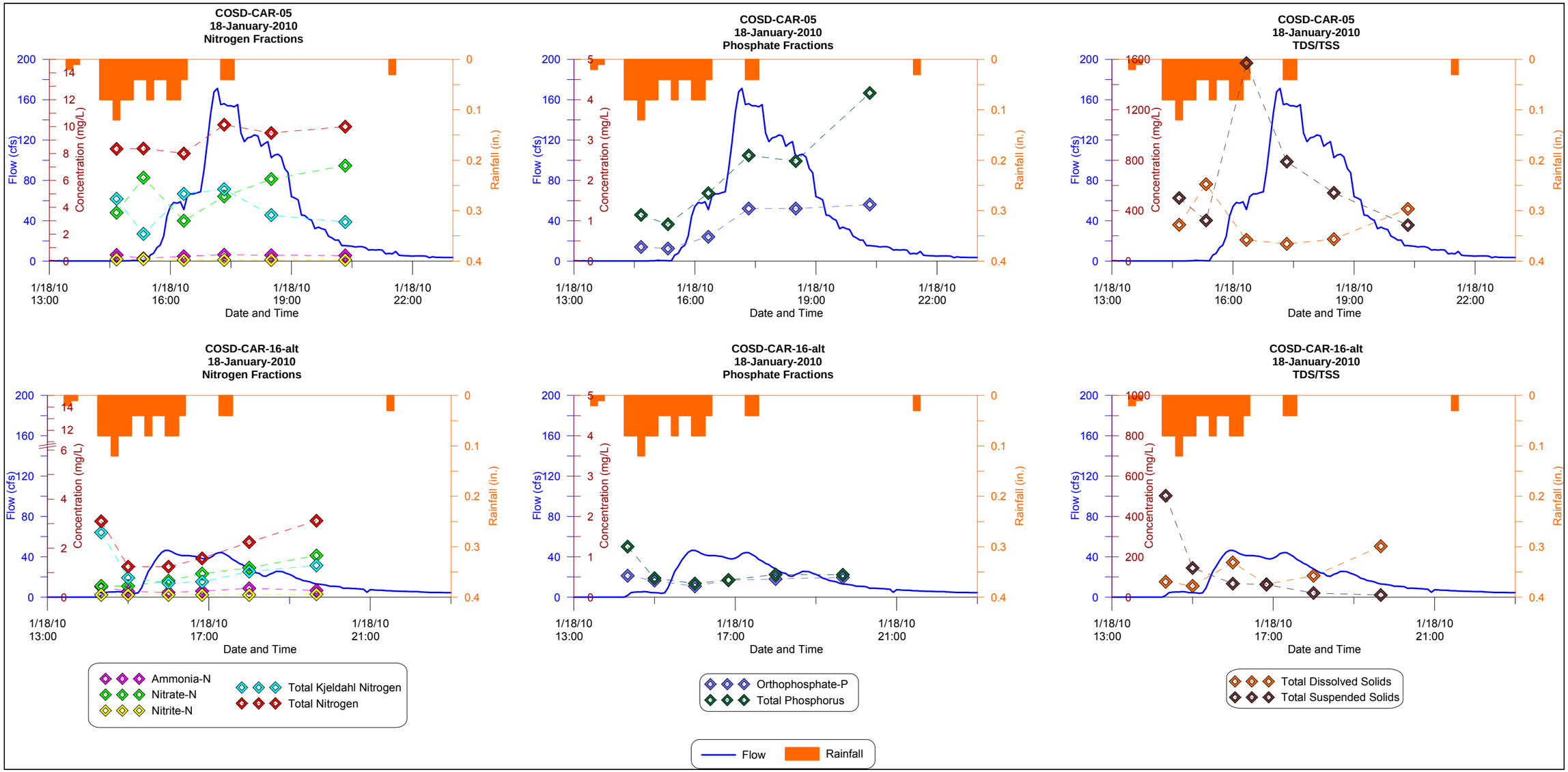

Figure 3-3. Chemistry Pollutographs for Wet Weather Event 2 – January 18, 2010

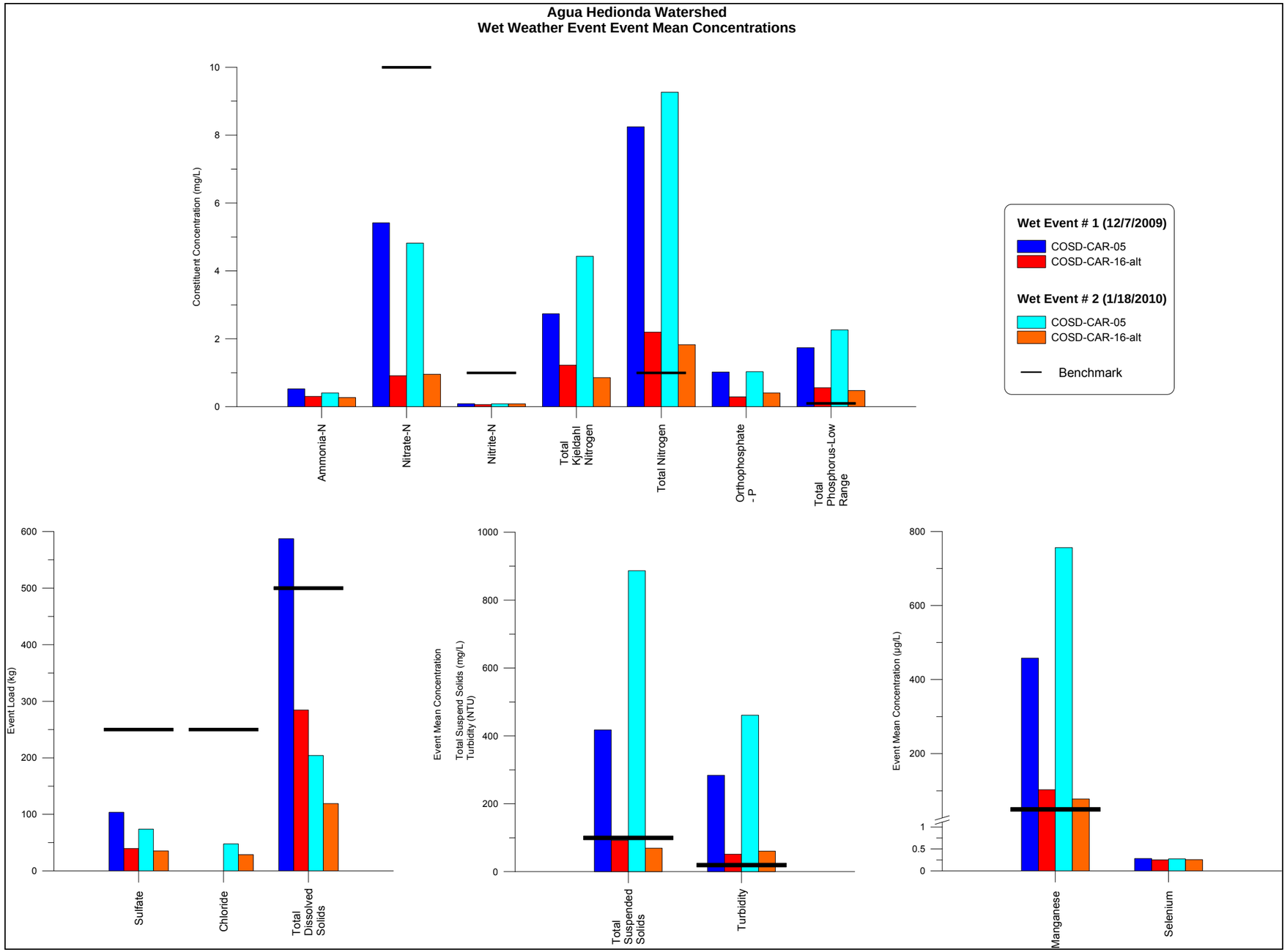

Figure 3-4. Event Mean Concentrations for Both Wet Weather Events

The total nitrogen concentration was calculated as a sum of TKN, nitrate (as N), and nitrite (as N) concentrations. TKN includes organic and ammonia nitrogen (as N). Total nitrogen concentration exceeded the benchmark of 1 mg/L for all samples at both sites during both wet weather events (Tables 3-2 and 3-3; Figures 3-2 through 3-4). The largest fractions of total nitrogen were from nitrate and TKN. Total nitrogen concentrations were higher at Site COSDCAR05. The EMCs for total nitrogen at COSDCAR05 were 8.26 mg/L and 9.26 mg/L for the first and second wet weather events, respectively. The EMCs for total nitrogen at COSDCAR16-alt were lower; 2.19 mg/L and 1.86 mg/L for the first and second wet weather events, respectively.

Total phosphorus concentrations exceeded the 0.1 mg/L benchmark at for all pollutograph samples at both locations (Tables 3-2 and 3-3; Figures 3-2 through 3-4). Similar to total nitrogen, total phosphorus concentrations were higher at COSDCAR05. For both wet weather events, the total phosphorus concentrations at COSDCAR05 increased as the discharge peaked and continued to rise as the flow decreased. The EMCs for total phosphorus at COSDCAR05 were 1.74 mg/L and 2.26 mg/L for the first and second wet weather events, respectively. The EMCs at COSDCAR16-alt were lower; 0.55 mg/L and 0.48 mg/L for the first and second wet weather events, respectively.

Both TSS and turbidity concentrations were above the benchmarks for both wet weather events at COSDCAR05. COSDCAR05 had higher TSS concentrations throughout both wet weather events.

Selenium concentrations were below the benchmark for both wet weather events at both sites. However, total manganese EMCs at both sites during both storm events exceeded the 50 µg/L WQO. Manganese concentrations at Site COSDCAR05 exceeded the benchmark in every sample during both events and were consistently higher than those measured at Site COSDCAR16-alt.

3.1.2 Wet Weather Toxicity

One flow-weighted composite sample was collected at each sampling location during each storm event to analyze for synthetic pyrethroids and toxicity to *H. azteca*. Sample results are presented and compared to relevant benchmarks in Table 3-4. Results above the relevant benchmark are shaded and bold.

COSDCAR05 had toxicity to *H. azteca* for both wet weather events, whereas COSDCAR16-alt only showed slight toxicity to *H. azteca* for the second wet weather event (TU_a = 5.32 and TU_a =23.6, respectively). Concentrations of Bifenthrin at each site were consistent between both wet weather events (TU_a = 0.87). Bifenthrin concentrations were above the benchmark of 9.3 ng/L at both sites during both wet weather events. Bifenthrin concentrations at COSDCAR05 were approximately eight times higher compared to COSDCAR16-alt. Permethrin concentrations were above the benchmark of 21 ng/L for the second event and COSDCAR16-alt had the highest value. Fluvalinate was only detected at COSDCAR05. Fluvalinate concentrations were high for both wet weather events, highest for the second wet weather event (i.e., 4,939.7 ng/L). LC_{50}s for Fluvalinate were not readily available, however, toxicity was more pronounced in these samples.

Table 3-4. Wet Weather Synthetic Pyrethroid Concentrations and Toxicity Results

Parameter	Units	Water Quality Benchmark	Benchmark Reference	COSD-CAR-05-COMP 12/07/2009	COSD-CAR16-ALT-COMP 12/07/2009	COSD-CAR-05-COMP 01/18/2010	COSD-CAR16-ALT COMP 01/18/2010
Synthetic Pyrethroids							
Allethrin	ng/L			<0.5	<0.5	<0.5	<0.5
Bifenthrin	ng/L	9.3	Anderson et al. (2006)	**202.3**	**24.2**	**187.8**	**24.4**
Cyfluthrin	ng/L	344	Wheelock et al. (2004)	86.4	24.3	33.1	23.2
Cypermethrin	ng/L	683	Wheelock et al. (2004)	<0.5	<0.5	3.9	<1
Danitol	ng/L			21.7	<0.5	13.3	<0.5
Deltamethrin	ng/L			<0.5	<0.5	<0.5	<0.5
Esfenvalerate	ng/L	250	Wheelock et al. (2004)	<0.5	<0.5	<0.5	<0.5
Fenvalerate	ng/L			<0.5	<0.5	<0.5	<0.5
Fluvalinate	ng/L			925.7	<0.5	4939.7	<0.5
L-Cyhalothrin	ng/L	200	Wheelock et al. (2004)	<0.5	<0.5	21.9	14.8
Permethrin	ng/L	21	Anderson et al. (2006)	<5	<5	**23J**	**82.2**
Prallethrin	ng/L			<0.5	<0.5	<0.5	<0.5
Resmethrin	ng/L			<5	<5	<5	<5
Toxicity							
96-hour survival	NOEC (%)	100	Regional Board Order R9-2007-0001	**6.25**	100	**<6.25**	**50**
H. azteca	LOEC			12.5	>100	6.25	100
	EC_{50}			18.81	>100	4.24	>100
	TU_a			5.32	0.51	23.6	0.87

< Results less than the method detection limit

J - Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.
NOEC (%) – No Observable Effect Concentration
LOEC – Lowest Observable Effect Concentration
EC_{50} – Half Maximal Effective Concentration (EC_{50}) - refers to the concentration of toxicant which induces a response halfway between the baseline and maximum after some specified exposure time
TU_a – Toxicity Unit derived by dividing 100 by the concentration of effluent which is lethal to 50% of the test organisms (LC50)

3.1.3 Wet Weather Bacteria Concentrations

Bacteria samples were collected as discrete grabs throughout the wet weather monitoring events. In addition to samples for fecal indicator bacteria (i.e., total coliforms, fecal coliforms, enterococci, and *E. coli*), samples were collected for *Bacteroides* to determine the presence or absence of general and human fecal contamination. Sample results are shown in Table 3-5 through Table 3-8 and are compared to relevant benchmarks. Results above benchmarks are shaded and bold. Individual wet weather event hydrographs are shown as pollutographs illustrating bacterial counts as functions of rainfall and flow rates in Figure 3-5. The indicator bacteria Event Mean Concentrations (EMCs) are compared among sites and events in Figure 3-4.

All samples collected at both sites during both wet weather events exceeded benchmarks for fecal coliforms, enterococci, and *E. coli.*

There was one positive result for human *Bacteroides.* The positive sample was the last collected at COSDCAR16-alt during the January 18, 2010 wet weather event. The result indicates that human fecal contamination may have occurred upstream of the site. Although many samples at both sites were positive for general *Bacteroides* the results indicate (other than a single sample at COSDCAR16-alt) that human fecal contamination was not frequently observed at the two sites during the monitored wet weather events.

Table 3-5. Wet Weather Event 1 Bacteria Concentrations and Event Mean Concentrations for COSD-CAR-05

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Wet Weather Event 1								
				COSD-CAR-05-1	COSD-CAR-05-2	COSD-CAR-05-3	COSD-CAR-05-4	COSD-CAR-05-5	COSD-CAR-05-6	COSD-CAR-05-7	COSD-CAR-05-8	Wet Weather Event 1 EMC
				12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	
Enterococci	MPN/100mL	151	Basin Plan	**50,000**	**11,000**	**22,000**	**22,000**	**30,000**	**≥160,000**	**50,000**	**30,000**	**59,083**
Fecal coliforms	MPN/100mL	400	Basin Plan	**17,000**	**5,000**	**6,000**	**600**	**13,000**	**50,000**	**22,000**	**50,000**	**22,976**
E. coli	MPN/100mL	576	Basin Plan	**5,461**	**5,555***	**5,475**	389	**18,501***	**30,759**	**11,528**	**10,758**	**13,100**
Total coliforms	MPN/100mL			240,000	130,000	80,000	30,000	500,000	300,000	240,000	1,600,000	354,047
General *Bacteroides*				POS	POS	NEG	NEG	POS	NEG	POS	NEG	NA
Human *Bacteroides*				NEG	NEG	NEG	NEG	NEG	NEG	NEG	NEG	NA

***** Although *E. coli* is a subgroup of fecal coliforms, some values may be higher due to differences in methodology and statistical range.

E Estimated value

Table 3-6. Wet Weather Event 1 Bacteria Concentrations and Event Mean Concentrations for COSD-CAR-16-alt

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Wet Weather Event 1								
				COSD-CAR-16-ALT-1	COSD-CAR-16-ALT-2	COSD-CAR-16-ALT-3	COSD-CAR-16-ALT-4	COSD-CAR-16-ALT-5	COSD-CAR-16-ALT-6	COSD-CAR-16-ALT-7	COSD-CAR-16-ALT-8	Wet Weather Event 1 EMC
				12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	12/07/2009	
Enterococci	MPN/100mL	151	Basin Plan	**30,000**	**90,000**	**9,000**	≥160,000	**30,000**	**50,000**	**90,000**	**30,000**	**66,246**
Fecal coliforms	MPN/100mL	400	Basin Plan	**5,000**	**3,000**	**7,000**	**5,000**	**504 E**	**5,000**	**11,000**	**23,000**	**5,797**
E. coli	MPN/100mL	576	Basin Plan	**3,873**	**4,106***	**2,282**	**2,909**	**6,015***	**4,611**	**5,172**	**16,695**	**5,328**
Total coliforms	MPN/100mL			23,000	110,000	35,000	50,000	50,000	240,000	170,000	110,000	126,544
General *Bacteroides*				POS	POS	POS	POS	POS	NEG	POS	POS	NA
Human *Bacteroides*				NEG	NEG	NEG	NEG	NEG	NEG	NEG	NEG	NA

***** Although *E. coli* is a subgroup of fecal coliforms, some values may be higher due to differences in methodology and statistical range.

E - Estimated value

Table 3-7. Wet Weather Event 2 Bacteria Concentrations and Event Mean Concentrations for COSD-CAR-05

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Wet Weather Event 2						
				COSD-CAR-05-1	COSD-CAR-05-2	COSD-CAR-05-3	COSD-CAR-05-4	COSD-CAR-05-5	COSD-CAR-05-6	Wet Weather Event 2 EMC
				01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	
Enterococci	MPN/100mL	151**	Basin Plan	**17,000**	**90,000**	**160,000**	**50,000**	**160,000**	**30,000**	**107,497**
Fecal coliforms	MPN/100mL	400	Basin Plan	**7,504E**	**8,000**	**50,000**	**30,000**	**70,000**	**30,000**	**42,792**
E. coli	MPN/100mL	576**	Basin Plan	**2,851**	**4,884**	**16,071**	**11,061**	**10,144**	**9,867**	**11,675**
Total coliforms	MPN/100mL			500,000	70,000	900,000	240,000	1,600,000	300,000	719,233
General *Bacteroides*				NEG	NEG	NEG	NEG	NEG	POS	NA
Human *Bacteroides*				NEG	NEG	NEG	NEG	NEG	NEG	NA

***** Although *E. coli* is a subgroup of fecal coliforms, some values may be higher due to differences in methodology and statistical range.
** USEPA recommended criteria for infrequently used areas for recreation
E Estimated value

Table 3-8. Wet Weather Event 2 Bacteria Concentrations and Event Mean Concentrations for COSD-CAR-16-alt

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Wet Weather Event 2						
				COSD-CAR-16-ALT-1	COSD-CAR-16-ALT-2	COSD-CAR-16-ALT-3	COSD-CAR-16-ALT-4	COSD-CAR-16-ALT-5	COSD-CAR-16-ALT-6	Wet Weather Event 2 EMC
				01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	
Enterococci	MPN/100mL	151**	Basin Plan	**90,000**	**30,000**	**22,000**	**30,000**	**30,000**	**30,000**	**29,535**
Fecal coliforms	MPN/100mL	400	Basin Plan	**28,000**	**110,000**	**50,000**	**22,000**	**17,000**	**50,000**	**44,470**
E. coli	MPN/100mL	576**	Basin Plan	**4,884**	**24,809**	**2,755**	**6,968**	**6,568**	**12,809**	**9,532**
Total coliforms	MPN/100mL			240,000	500,000	500,000	300,000	300,000	220,000	361,800
General *Bacteroides*				NEG	NEG	NEG	POS	NEG	POS	NA
Human *Bacteroides*				NEG	NEG	NEG	NEG	NEG	POS	NA

***** Although *E. coli* is a subgroup of fecal coliforms, some values may be higher due to differences in methodology and statistical range.
** USEPA recommended criteria for infrequently used areas for recreation
E Estimated value

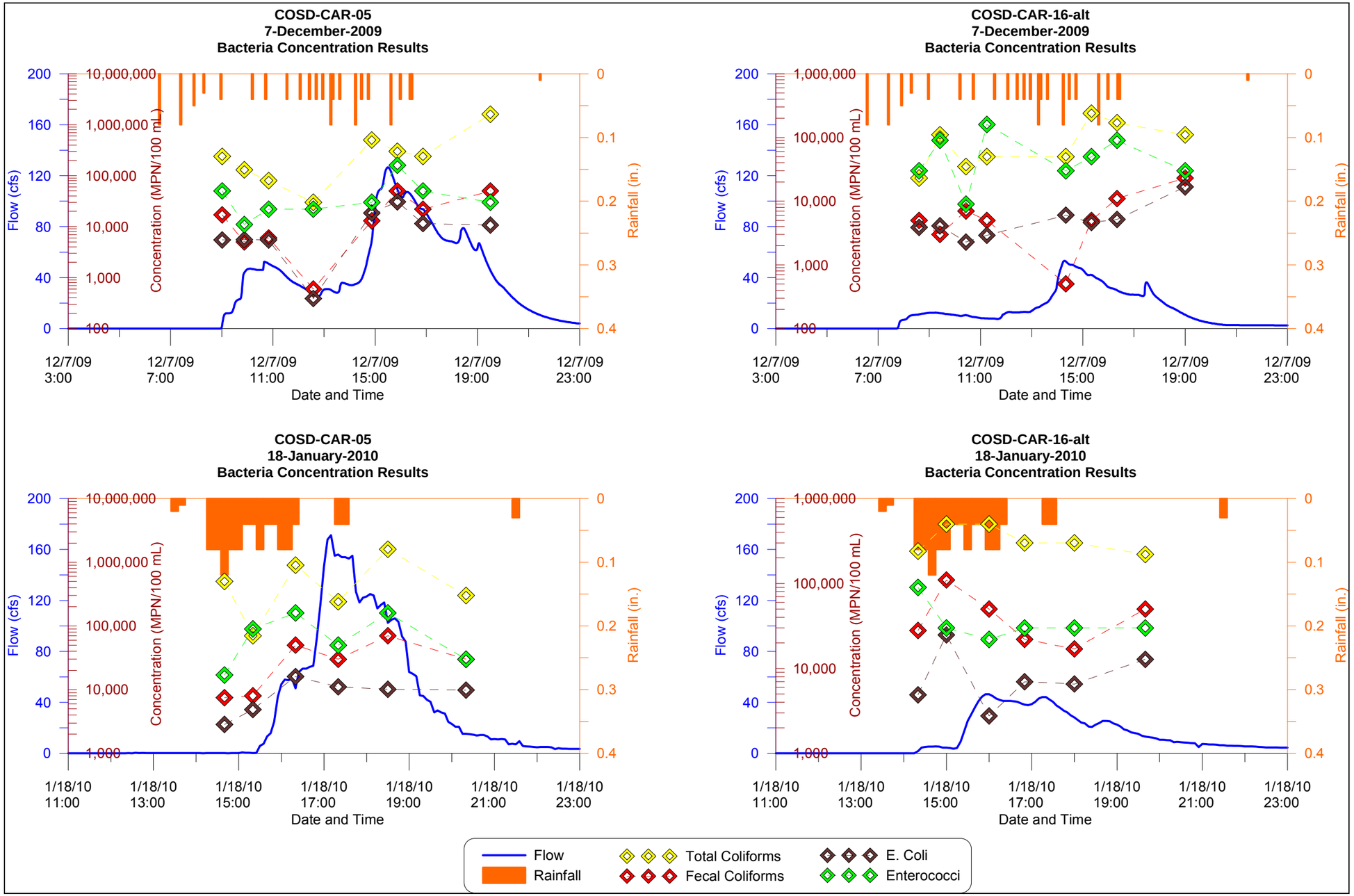

Figure 3-5. Bacteria Pollutographs for Both Wet Weather Events

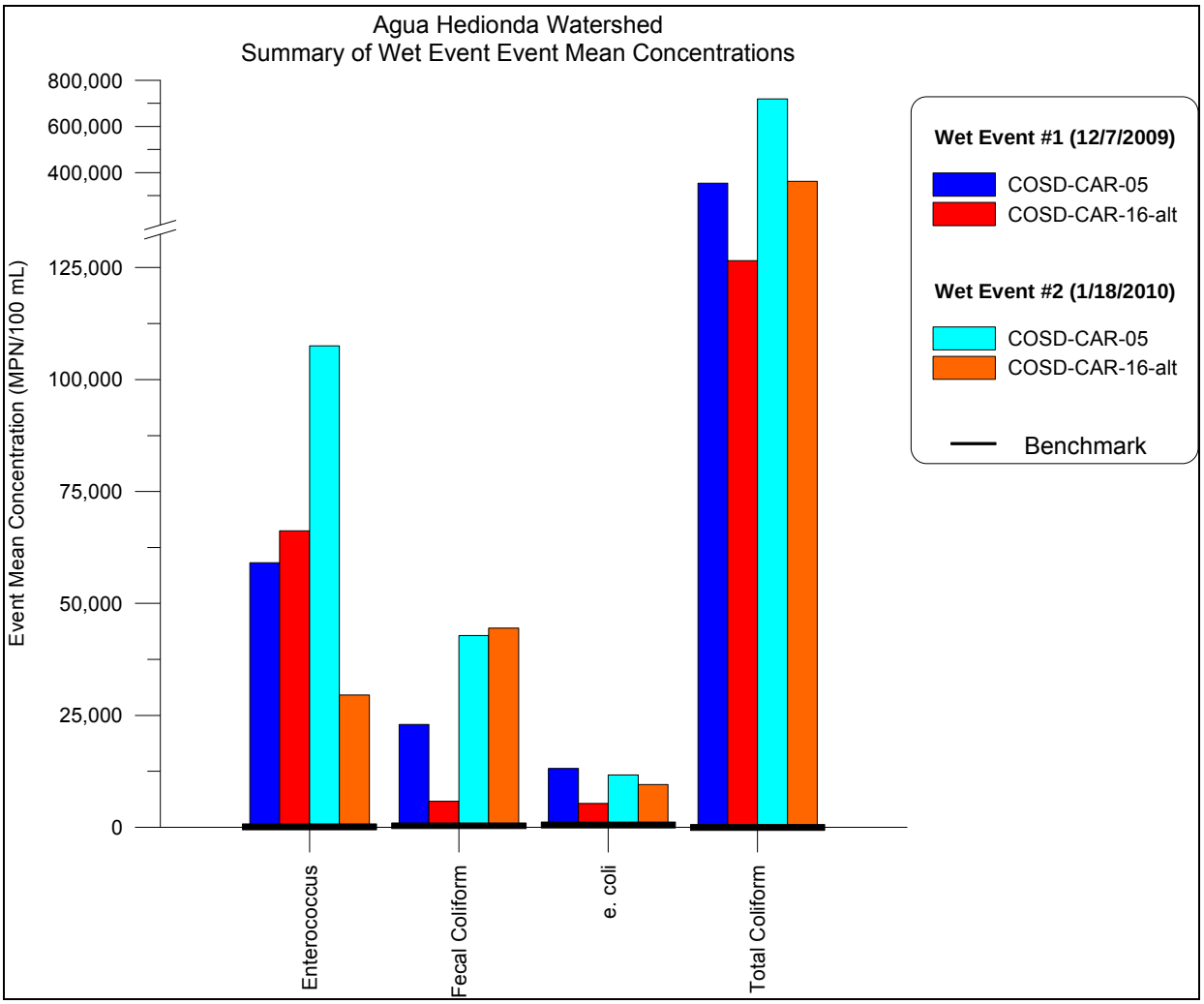

Figure 3-6. Wet Weather Event Bacteria Event Mean Concentrations

3.1.4 Wet Weather Estimated Instantaneous Load

This subsection presents a summary of estimated wet weather loads for the two monitored drainage areas. Total discharge values in cubic feet (cf) corresponding to each grab sample collected at each sampling location during the December 7, 2009 storm event are presented in Table 3-9. The corresponding discharges calculated for the January 18, 2010 storm are shown in Table 3-10. Constituent load estimates for each monitoring event were calculated by multiplying each constituent's EMC by the total discharge over the monitoring event and the event's duration. The resulting individual wet weather event loads for each constituent in kilograms (kg) are shown in Table 3-11.

Table 3-9. Summary of Discharge Volumes Corresponding to Grab Samples Collected Over Wet Weather Event 1 – December 7, 2009

Sample ID	Date	Time	Discharge Volume (cf)	Total Discharge Volume (cf)
COSD CAR05-1	12/07/2009	09:01	465,468	2,341,800
COSD CAR05-4	12/07/2009	12:35	290,604	
COSD CAR05-5	12/07/2009	14:52	400,770	
COSD CAR05-6	12/07/2009	15:52	367,206	
COSD CAR05-7	12/07/2009	16:52	669,318	
COSD CAR05-8	12/07/2009	19:30	148,434	

Sample ID	Date	Time	Discharge Volume (cf)	Total Discharge Volume (cf)
COSD CAR16alt-1	12/07/2009	08:36	61,050	889,980
COSD CAR16alt-2	12/07/2009	09:25	269,304	
COSD CAR16alt-5	12/07/2009	14:20	169,392	
COSD CAR16alt-6	12/07/2009	15:20	128,172	
COSD CAR16alt-7	12/07/2009	16:20	225,612	
COSD CAR16alt-8	12/07/2009	19:00	36,450	

Table 3-10. Summary of Discharge Volumes Corresponding to Grab Samples Collected Over Wet Weather Event 2 – January 18, 2010

Sample ID	Date	Time	Discharge Volume (cf)	Total Discharge Volume (cf)
COSDCAR05-1	01/18/2010	14:40	820	1,459,202
COSDCAR05-2	01/18/2010	15:20	117,408	
COSDCAR05-3	01/18/2010	16:20	401,404	
COSDCAR05-4	01/18/2010	17:20	542,051	
COSDCAR05-5	01/18/2010	18:30	330,974	
COSDCAR05-6	01/18/2010	20:20	66,546	

Sample ID	Date	Time	Discharge Volume (cf)	Total Discharge Volume (cf)
COSDCAR16alt-1	01/18/2010	14:20	11,931	588,955
COSDCAR16alt-2	01/18/2010	15:00	92,761	
COSDCAR16alt-3	01/18/2010	16:00	123,683	
COSDCAR16alt-4	01/18/2010	16:50	158,411	
COSDCAR16alt-5	01/18/2010	18:00	124,981	
COSDCAR16alt-6	01/18/2010	19:40	77,189	

Buena Creek Site COSDCAR05 had the highest total wet weather event discharge volumes over both storms. As a product of EMC and total discharge, event loads are heavily influenced by discharge volume. The December 7, 2009 storm event was the largest and contributed the highest loads for many constituents (Table 3-11). The COSDCAR05 site had consistently larger loads for most constituents due to higher EMCs and higher discharge volumes.

Table 3-11. Wet Weather Event Loads

Parameter	Units	Event Loads			
		Wet Weather Event 1 – 12/07/2009		Wet Weather Event 2 – 01/18/2010	
		COSD-CAR-05	COSD-CAR16-ALT	COSD-CAR-05	COSD-CAR16-ALT
Wet Weather Event Total Discharge Volume	cf	2,341,800	889,980	1,459,202	588,955
General Chemistry					
Ammonia-N	kg	34.95	7.55	16.67	4.45
Nitrate-N	kg	359.16	22.98	199.02	15.95
Nitrite-N	kg	5.86	1.53	3.35	1.35
TKN	kg	181.61	30.79	183.14	14.32
Total nitrogen	kg	546.63	55.30	382.66	30.53
Orthophosphate - P	kg	115.29	13.98	93.43	7.96
Total phosphorus – low range	kg	67.52	7.35	42.63	6.75
Sulfate	kg			1,983.41	482.56
Chloride	kg	6,881.65	1,000.38	3,058.69	589.53
TDS	kg	27,702.92	2,321.86	36,631.38	1,159.68
TSS	kg	38,942.38	7,174.71	8,441.15	1,988.20
Trace Metals					
Total manganese	kg	30.36	2.58	31.26	1.30
Total selenium	kg	0.019	0.006	0.011	0.004
Synthetic Pyrethroids					
Allethrin	kg	0.00007	0.00003	0.00004	0.00002
Bifenthrin	kg	0.01341	0.00061	0.00776	0.00041
Cyfluthrin	kg	0.00573	0.00061	0.00137	0.00039
Cypermethrin	kg	0.00007	0.00003	0.00016	0.00003
Danitol	kg	0.00144	0.00003	0.00055	0.00002
Deltamethrin	kg	0.00007	0.00003	0.00004	0.00002
Esfenvalerate	kg	0.00007	0.00003	0.00004	0.00002
Fenvalerate	kg	0.00007	0.00003	0.00004	0.00002
Fluvalinate	kg	0.06139	0.00003	0.20411	0.00002
L-Cyhalothrin	kg	0.00007	0.00003	0.00090	0.00025
Permethrin	kg	0.00083	0.00032	0.00095	0.00137
Prallethrin	kg	0.00007	0.00003	0.00004	0.00002
Resmethrin	kg	0.00083	0.00032	0.00052	0.00021
Bacteriological					
Enterococci	MPN	3.92E+13	1.67E+13	4.44E+13	4.93E+12
Fecal coliforms	MPN	1.52E+13	1.46E+12	1.77E+13	7.42E+12
E. coli	MPN	8.69E+12	1.34E+12	4.82E+12	1.59E+12

Total coliforms	MPN	2.35E+14	3.19E+13	2.97E+14	6.03E+13

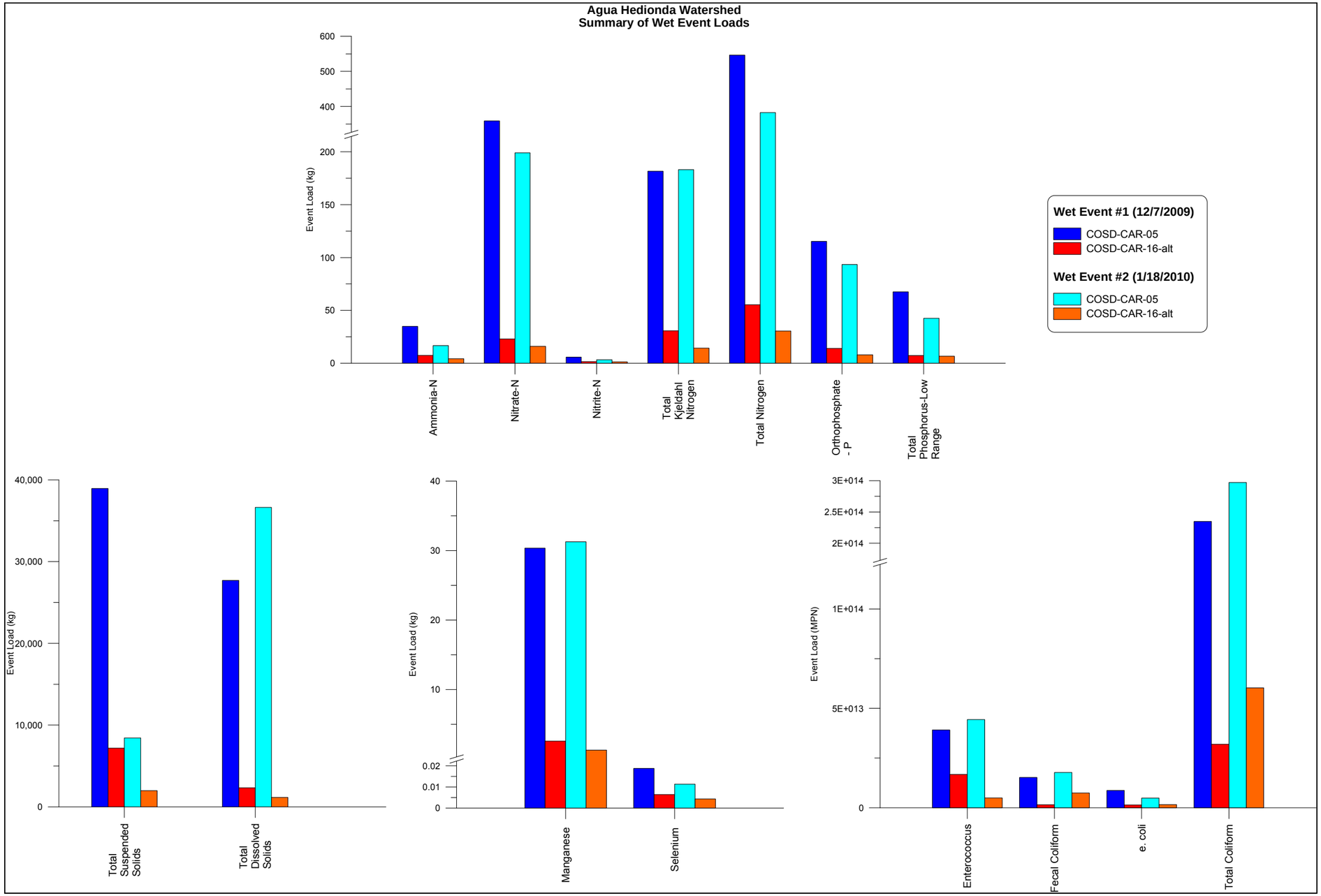

Figure 3-7. Summary of Wet Weather Event Loads

3.1.5 Wet Weather Field Parameter Results

Field parameters were only monitored for the January 18, 2009 storm event. Due to equipment failure, no water quality data were collected for the December 7, 2009 storm event. The results are summarized in Table 3-12 and presented graphically in Figure 3-8 for Site COSDCAR05 and Figure 3-9 for Site COSDCAR16-alt.

The mean values of depth, temperature, pH, specific conductance and dissolved oxygen (DO) were similar at the two sampling locations. The exception was turbidity. Although turbidity at both locations exceeded the Basin Plan WQO of 20 NTU, mean turbidity at COSDCAR05 was about five-fold higher than that at COSDCAR16-alt. No benchmark value exceedances were recorded for dissolved oxygen (DO) or pH at either of two the sampled locations.

Table 3-12. Average Field Parameter Results for COSDCAR05 and COSDCAR16-alt for Wet Weather Event 2 – January 18, 2010

Parameter	Wet Weather Event 2 – 01/18/2010							
	COSD-CAR-05				COSD-CAR-16-alt			
	Min	Max	Mean	Std	Min	Max	Mean	Std
Depth (m)	-0.151	0.32	-0.034	0.158	-0.274	0.018	-0.162	0.098
Temperature (C)	10.37	13.59	12.7	0.93	12.64	16.98	13.24	0.69
pH	7.67	8.11	7.85	0.14	7.71	8.24	7.83	0.09
Specific conductance (mS/cm)	0.005	1.215	0.338	0.293	0.018	0.703	0.395	0.204
DO (mg/L)	9.47	10.81	10.03	0.37	8.57	10.07	9.45	0.52
Turbidity (NTU)	0.7	841.5	288.7	211.7	9.4	365.1	57.6	78

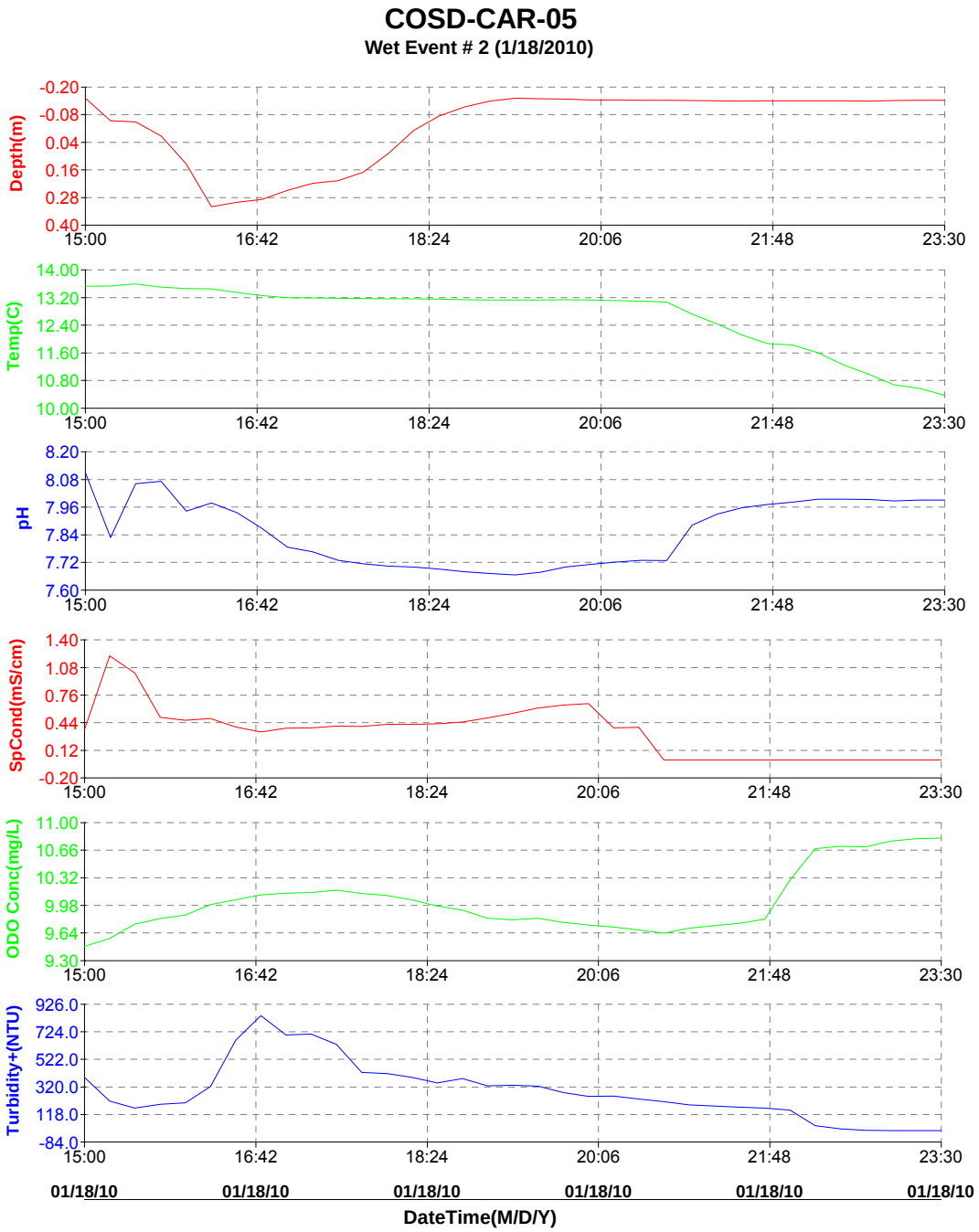

Figure 3-8. Field Parameter Results at COSDCAR05 for Wet Weather Event 2 – January 18, 2010

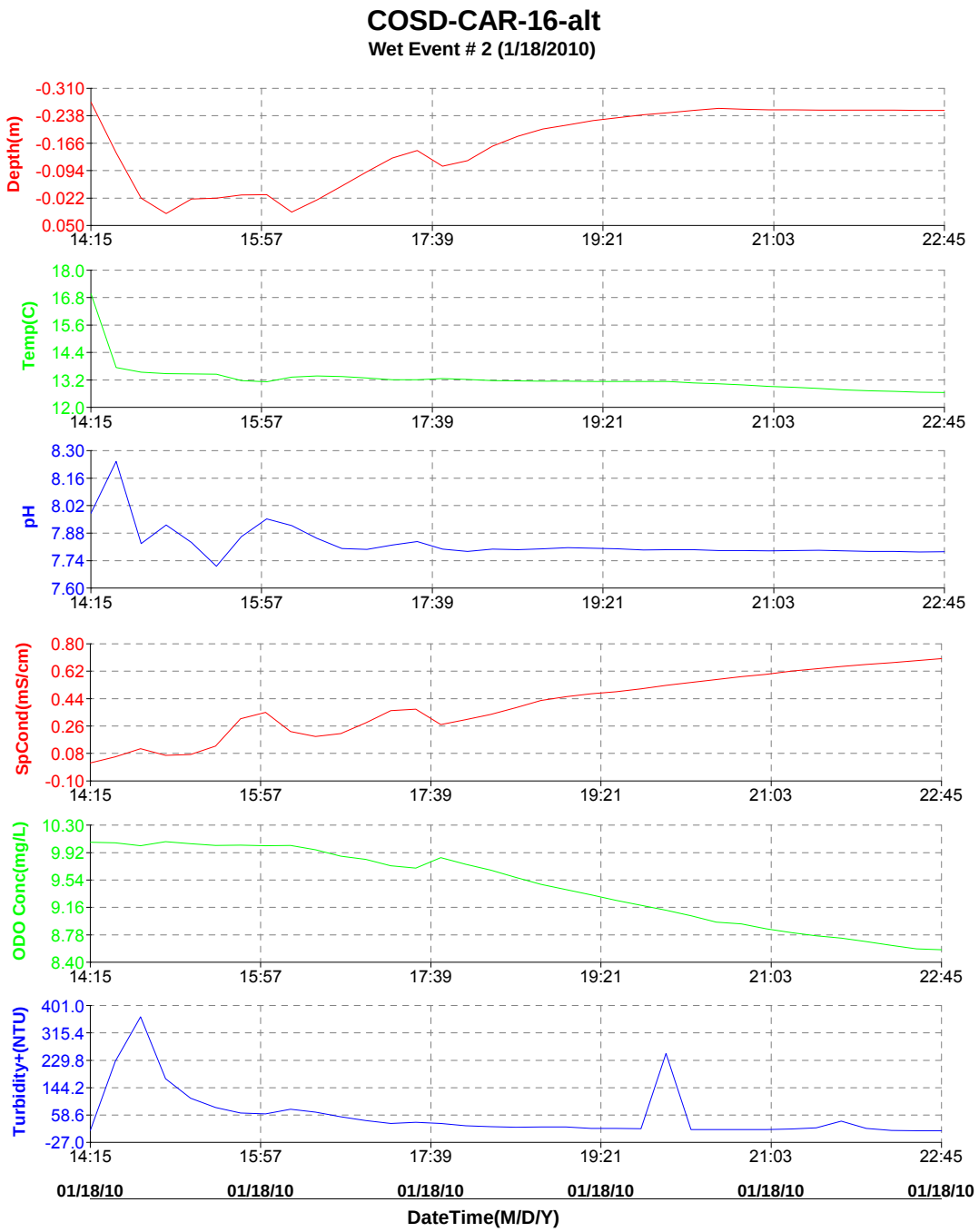

Figure 3-9. Field Parameter Results at COSDCAR16-alt for Wet Weather Event 2 – January 18, 2010

3.1.6 Wet Weather Actions

Weston field staff performed maintenance on the water quality monitoring equipment at Buena Creek Site COSDCAR05 Creek after a storm event that occurred on December 12–13, 2009 resulted in a large accumulation of debris that completely blocked the culvert passing under Robelini Dr. on the upstream side of Buena Creek. The debris consisted largely of *Arundo donax*, wood, and trash (Figure 3-10). The volume of material was significant for the size of the drainage area, totaling approximately 2–3 cubic yards. During a rain event this obstruction had the potential to prevent flow and create flood control issues. Weston alerted the County and appropriate actions were taken to remove the material. On December 22, 2009 a County storm water crew removed the debris on the inlet side, the excess materials on the outlet side and cleaned both pipes.

Figure 3-10. Site COSDCAR05 before Debris Deposition (left) and with Debris Jam on December 14, 2009 (right)

3.2 Dry Weather Monitoring

This portion of the study was designed to address the following study objective:

- Determine constituent concentrations and constituent loads within the Agua Hedionda Watershed in the County of San Diego's jurisdiction during two dry weather events.

The following subsections present the results of this survey, including the following:

- Constituent concentrations.
- Toxicity results.
- Assessment of the presence of human fecal contamination.
- Estimated 24-hour dry weather event loads.
- Field parameter results.

Two 24-hour non-storm events were monitored: one on June 23–24, 2009 and one on August 19–20, 2009. For both events, sampling was conducted only at COSD-CAR-05 as COSD-CAR-16-alt was dry during both events. Chemistry and toxicity samples were collected as time-weighted composites at 30-minute intervals resulting in a total volume of 18 L per composite sample. Bacteria samples were collected as grab samples every six hours for a total of four samples over the event duration. The bacteria samples were analyzed individually.

Table 3-13. Dry Weather Event Monitoring Summaries

Date of Dry Weather Event	Duration (hrs)	Site	Total Event Discharge Volume (cf)
06/24/2009	24	COSD-CAR-05	216,155
06/24/2009	24	COSD-CAR-16-alt	0 (dry)
08/20/2009	24	COSD-CAR-05	151,205
08/20/2009	24	COSD-CAR-16-alt	0 (dry)

3.2.1 Dry Weather Chemistry Concentrations

Sample concentrations for different chemical constituents are compared to relevant benchmarks in Table 3-14and Figure 3-11. With the exception of total manganese, there was little variation in constituent concentrations between the two non-storm events. The total manganese concentration was over twice as high during the second event.

The total nitrogen concentration exceeded the 1 mg/L benchmark for both non-storm events. Nitrate as N and TKN contributed the largest fractions to total nitrogen.

Total phosphorus concentrations also exceeded the benchmark value of 0.1 mg/L for both non-storm events. Slightly higher total phosphorus and orthophosphate as P concentrations were recorded for the first event.

Turbidity and TSS concentrations did not exceed their respective benchmark values but TDS concentrations were above the benchmark (1,000 mg/L) for both sampling events. Sulfate was also above the benchmark of 250 mg/L for both events.

Total selenium concentrations were below the benchmark for both non-storm events. However, the Total manganese concentration was above the benchmark of 50 µg/L for the second event.

The results for all chlorinated herbicide species tested were below method detection limit for both non-storm events.

Table 3-14. Dry Weather Event Composite Results

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Dry Weather Event 1 – 06/24/2009	Dry Weather Event 2 – 08/19/2009
				COSD-CAR-05-COMP	COSD-CAR-05-COMP
General Chemistry					
Ammonia-N	mg/L			0.04	0.04
Nitrate-N	mg/L	10	Basin Plan	9.32	**10.03**
Nitrite-N	mg/L	1	Basin Plan	0.03J	0.04J
TKN	mg/L			0.7	0.576J
Total nitrogen	mg/L	1	Basin Plan	**10.05**	**10.646**
Total phosphorus – low range	mg/L	0.1	Basin Plan	**0.246**	**0.125**
Dissolved orthophosphate as P	mg/L			0.1198	0.0891
Sulfate	mg/L	250	Basin Plan	**371.69**	**338.73**
TDS	mg/L	500	Basin Plan	**1410**	**1526**
TSS	mg/L	58	MSGP	3.5J	8.8
Turbidity	NTU	20	Basin Plan	2.3	5.4
Chlorinated Herbicides					
2,4,5-T (Trichlorophenoxy acetic acid)	µg/L			<1	<1
2,4,5-TP (Silvex)	µg/L			<1	<1
2,4-D (Dichlorophenoxyacetic acid)	µg/L			<1	<1
2,4-DB	µg/L			<1	<1
3,5-Dichlorobenzoic Acid	µg/L			<1	<1
4-Nitrophenol	µg/L			<1	<1
Acifluorfen	µg/L			<1	<1
Bentazon	µg/L			<1	<1
Chloramben	µg/L			<1	<1
DCPA (mono & diacid)	µg/L			<0.2	<0.2
Dalapon	µg/L			<1	<1
Dicamba	µg/L			<1	<1
Dichloroprop	µg/L			<1	<1
Dinoseb (DNBP)	µg/L			<1	<1
MCPA	µg/L			<100	<100
MCPP	µg/L			<100	<100
Pentachlorophenol (PCP)	µg/L			<0.2	<0.2
Picloram	µg/L			<1	<1
Glyphosate	µg/L			<1.8	<1.8
Trace Metals					
Total manganese	µg/L	50	Basin Plan	31.1	**78.7**
Total selenium	µg/L	5	40 CFR 131.38	0.9	0.8

< results less than the method detection limit.

J Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported

value is estimated.

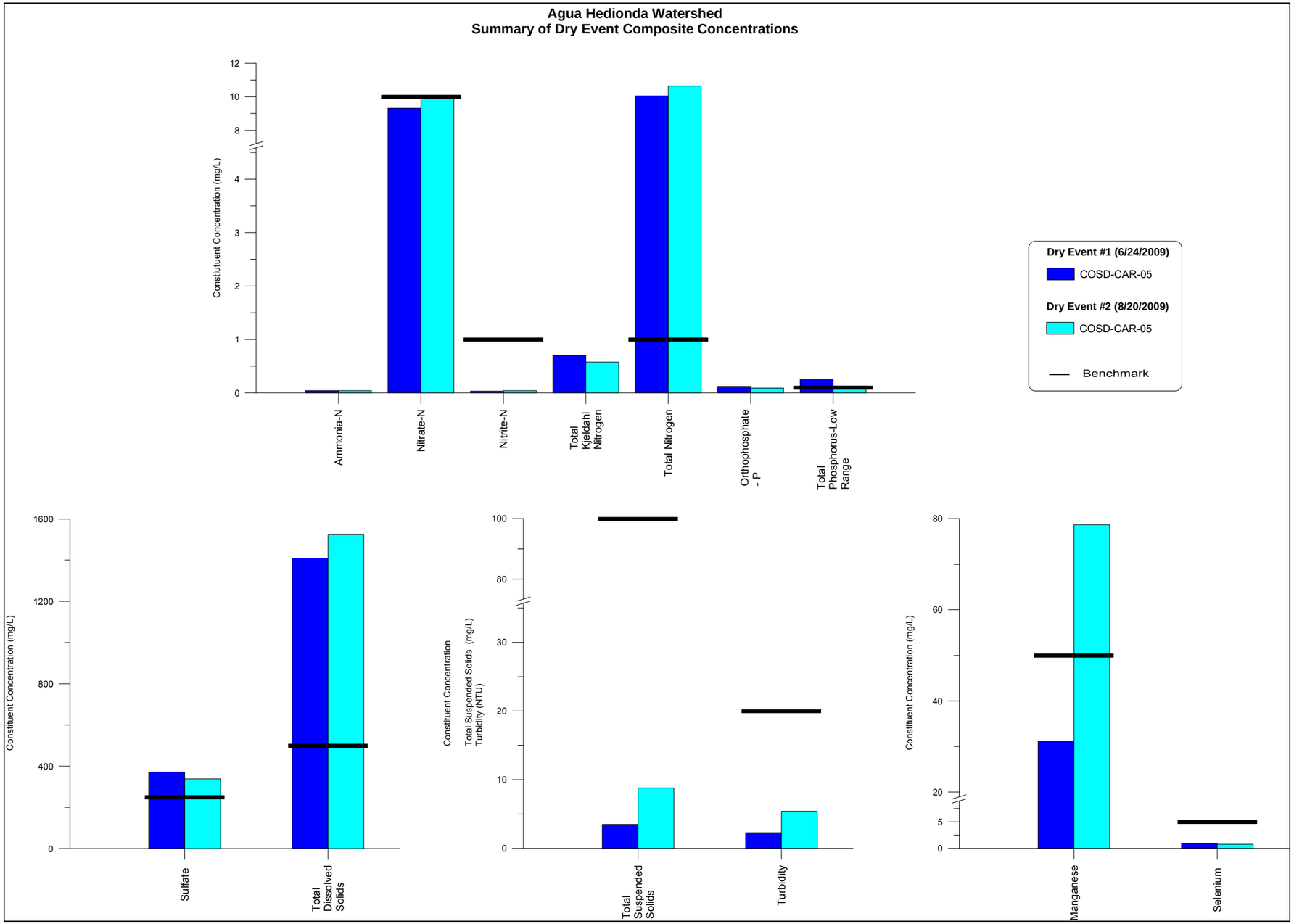

Figure 3-11. Dry Weather Chemistry Concentrations

3.2.2 Dry Weather Toxicity

One time-weighted composite sample per non-storm event was collected at COSDCAR05 and was tested for toxicity to freshwater algae *S. capricornutum*. Sample results are compared to relevant benchmarks in Table 3-15. Toxicity to *S. capricornutum* was not observed for either of the samples.

Table 3-15. Dry Weather Toxicity Monitoring Results

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Dry Weather Event 1 – 06/24/2009	Dry Weather Event 2 – 08/19/2009
				COSD-CAR-05-COMP	COSD-CAR-05-COMP
96-hour survival *S. capricornutum*	NOEC (%)	100	Regional Board Order R9-2007-0001	100	100
	LOEC	–	–	>100	>100
	EC_{50}	–	–	>100	>100
	TU_a	–	–	1	1

< results less than the method detection limit

J – Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

3.2.3 Dry Weather Bacteria Concentrations

Bacteria samples were collected as discrete grabs throughout each sampling event. In addition to fecal indicator bacteria (i.e., total coliforms, fecal coliforms, enterococci, and *E. coli*), samples were collected to test for *Bacteroides;* to determine the presence or absence of general and human fecal contamination. Sample results are compared to relevant benchmarks in Table 3-16 and Table 3-17. Results exceeding benchmarks are shaded and bold. Event pollutographs with their respective bacteria concentrations for both non-storm events are shown on Figure 3-12.

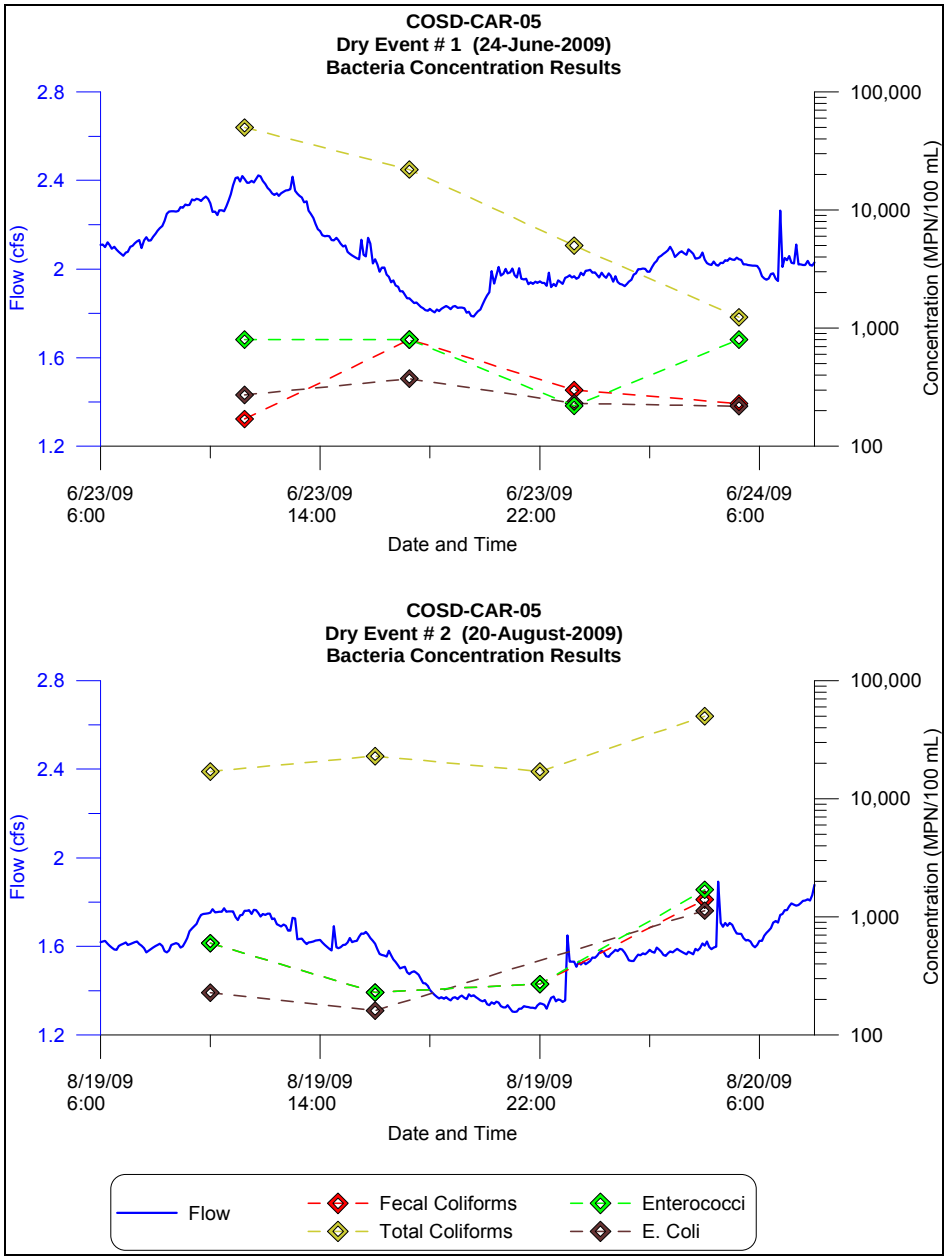

Figure 3-12. Bacteria Pollutographs for Both Non-Storm Events

Table 3-16. Dry Weather Event 1 Bacteria Concentrations and Event Mean Concentrations

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Dry Weather Event 1				
				COSD-CAR-05-1	COSD-CAR-05-2	COSD-CAR-05-3	COSD-CAR-05-4	Dry Weather Event 1 EMC
				06/23/2009	06/23/2009	06/23/2009	06/24/2009	
Enterococci	MPN/100mL	151	Basin Plan	**800**	**800**	**220**	**800**	**659**
Fecal coliforms	MPN/100mL	400	Basin Plan	170	**800**	300	230	349
E. coli	MPN/100mL	576	Basin Plan	272*	373	231	218	278
Total coliforms	MPN/100mL			50,000	22,000	5,000	1,234 E	27,265
General *Bacteroides*				POS	POS	POS	POS	NA
Human *Bacteroides*				NEG	NEG	NEG	NEG	NA

***** Although *E. coli* is a subgroup of fecal coliforms, some values may be higher due to differences in methodology and statistical range.

E - Estimated value

Table 3-17. Dry Weather Event 2 Bacteria Concentrations and Event Mean Concentrations

Parameter	Units	Water Quality Benchmark	Benchmark Reference	Dry Weather Event 2				
				COSD-CAR-05-01	COSD-CAR-05-02	COSD-CAR-05-03	COSD-CAR-05-04	Dry Weather Event 2 EMC
				08/19/2009	08/19/2009	08/19/2009	08/19/2009	
Enterococci	MPN/100mL	151	Basin Plan	**600**	**230**	**270**	**1,700**	**634**
Fecal coliforms	MPN/100mL	400	Basin Plan	**600**	230	270	**1,400**	**582**
E. coli	MPN/100mL	576	Basin Plan	228	161	295*	**1130**	388
Total coliforms	MPN/100mL			17,000	23,000	17,000	50,000	24,067
General *Bacteroides*				POS	POS	POS	POS	NA
Human *Bacteroides*				NEG	NEG	NEG	NEG	NA

***** Although *E. coli* is a subgroup of fecal coliforms, some values may be higher due to differences in methodology and statistical range.

E – Estimated value

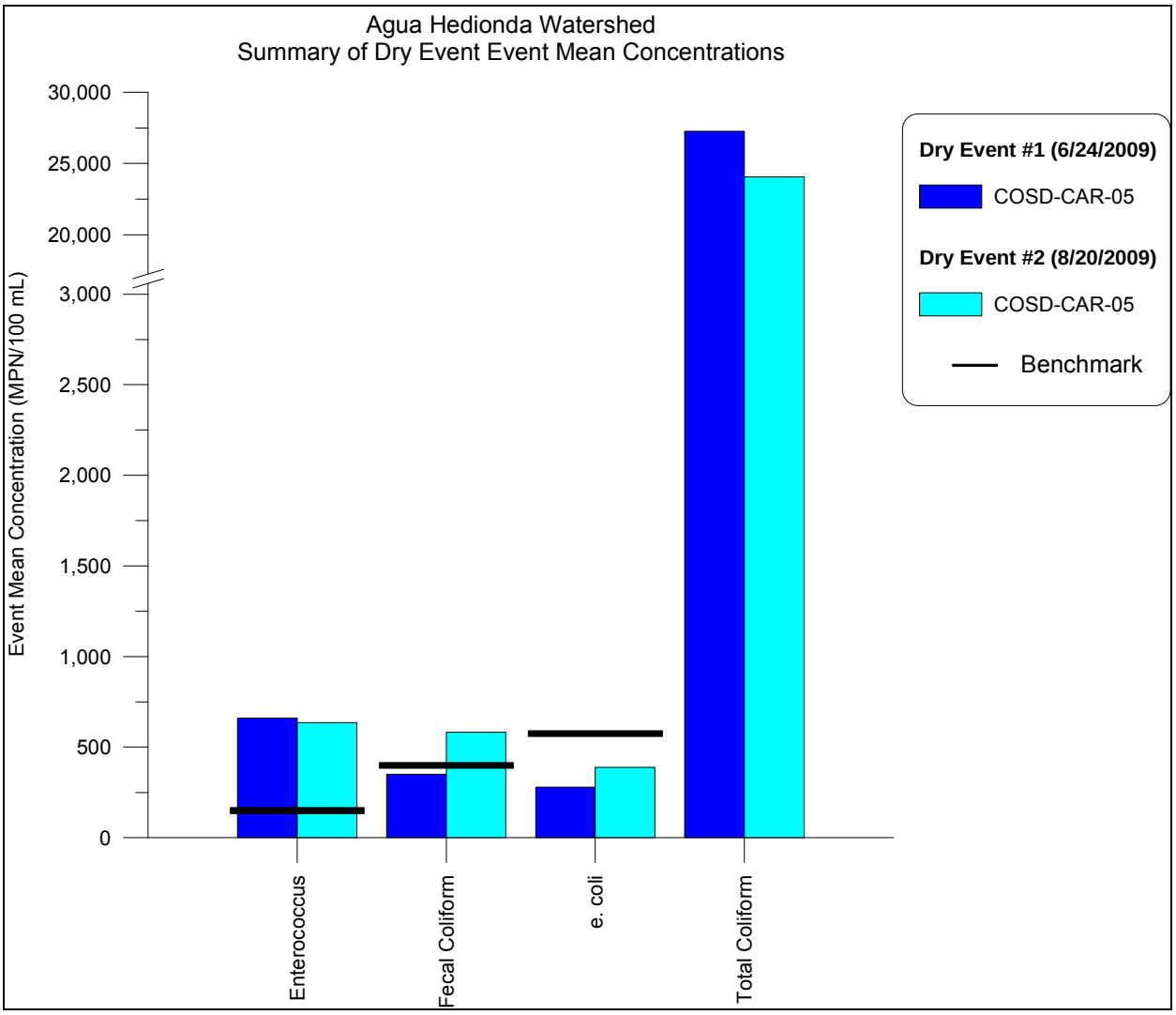

Figure 3-13. Dry Weather Bacteria Event Mean Concentrations

Enterococci exceeded the 151 MPN/100 ml WQO in all samples collected over both sampling events. Fecal coliform concentrations exceeded the 400 MPN/100 ml benchmark value in one of 4 samples collected in June and in two of 4 samples collected in August. This resulted in the fecal colifom EMC that exceeded the benchmark in August but not in June. Only one of the eight samples collected in June and August exceeded the 576 MPN/100ml WQO for *E. coli* and the *E. coli* EMCs for both non-storm events were below the benchmark. All samples tested positive for general *Bacteroides*, whereas none contained human-specific *Bacteroides*. The negative PCR (human-specific *Bacteroides*) result indicates that there were no recent sources of human fecal contamination at the sampled locations.

3.2.4 Dry Weather Estimated Daily Loads

The discharge volumes calculated in cubic feet (cf) for each non-storm event are presented in Table 3-18. Constituent daily loads (for each sampling event) were calculated by multiplying EMCs by these discharge volumes and are shown in Table 3-19. Loads for constituents with non-detect results were calculated by multiplying the event discharge volume by half the method detection limit.

Table 3-18. Dry Weather Flow Summaries

Date	Daily Discharge Volume (cf)	Average Flow Rate (cfs)	Average Flow Rate (gpm)
06/23/2009	216,155	2.50	1,124.3
08/19/2009	151,205	1.75	786.5

Table 3-19. Dry Weather Event Loads

Parameter	UNITS	Dry Weather Event Loads – COSD-CAR-05	
		Dry Weather Event 1 – 06/24/2009	Dry Weather Event 2 – 08/19/2010
General Chemistry			
Ammonia-N	kg	0.24	0.17
Nitrate-N	kg	57.05	42.95
Nitrite-N	kg	0.18	0.17
TKN	kg	4.28	2.47
Total nitrogen	kg	61.51	45.58
Orthophosphate - P	kg	0.73	0.38
Total phosphorus – low range	kg	1.51	0.54
Sulfate	kg	2275.05	1450.33
TDS	kg	8630.37	6533.81
Total phosphorus – low range	kg	1.51	0.54
TSS	kg	21.42	37.68
Glyphosate	kg	0.015	NA
Trace Metals			
Total manganese	kg	0.190	0.337
Total selenium	kg	0.006	0.003
Chlorinated Herbicides			
2,4,5-T (Trichlorophenoxy acetic acid)	kg	0.003 *	0.002 *
2,4,5-TP (Silvex)	kg	0.003 *	0.002 *
2,4-D (Dichlorophenoxyacetic acid)	kg	0.003 *	0.002 *
2,4-DB	kg	0.003 *	0.002 *
3,5-Dichlorobenzoic Acid	kg	0.003 *	0.002 *
4-Nitrophenol	kg	0.003 *	0.002 *
Acifluorfen	kg	0.003 *	0.002 *
Bentazon	kg	0.003 *	0.002 *
Chloramben	kg	0.003 *	0.002 *
Dalapon	kg	0.003 *	0.002 *
DCPA (mono & diacid)	kg	0.001 *	4.3E-04 *
Dicamba	kg	0.003 *	0.002 *
Dichloroprop	kg	0.003 *	0.002 *
Dinoseb (DNBP)	kg	0.003 *	0.002 *
MCPA	kg	0.306 *	0.214 *
MCPP	kg	0.306 *	0.214 *
Pentachlorophenol (PCP)	kg	0.001 *	4.28E-04 *
Picloram	kg	0.003 *	0.002 *
Bacteriological			
Enterococci	MPN	4.04E+10	2.72E+10
Fecal coliforms	MPN	2.14E+10	2.49E+10
E. coli	MPN	1.70E+10	1.66E+10
Total coliforms	MPN	1.67E+12	1.03E+12

* Result less than the constituent reporting limit. Load calculated using half the method detection limit.

NA – Not Applicable

3.2.5 Dry Weather Field Parameter Results

The dry weather field monitoring results are summarized in Table 3-12 and presented graphically on Figure 3-8. The mean values of pH, specific conductance and dissolved oxygen (DO) were similar for the two sampling events. Temperature, pH, and DO showed a similar pattern during both non-storm events showing a gradual rise in values during the day, peaking in the afternoon and gradually falling at night. Turbidity was the only parameter that showed a difference with a brief rise in values during the early morning. No benchmark value exceedances were recorded for turbidity, dissolved oxygen (DO) or pH.

Table 3-20. Average Field Parameter Results for Both Dry Weather Events

Parameter	COSD-CAR-05							
	Dry Weather Event 1 – 06/24/2009				Dry Weather Event 2 – 08/20/2009			
	Min	Max	Mean	Std	Min	Max	Mean	Std
Depth (m)	17.55	21.33	19.23	1.16	-0.152	-0.125	-0.138	0.007
Temperature(C)	-0.172	-0.12	-0.152	0.015	19.75	22.68	20.8	1.02
pH	7.93	8.14	8.01	0.06	8.04	8.16	8.12	0.03
Specific conductance (mS/cm)	1.681	1.746	1.731	0.018	1.758	1.771	1.764	0.003
DO (mg/L)	5.75	8.68	6.73	1.03	5.28	7.27	6.55	0.43
Turbidity (NTU)	-6.4	-4.4	-5.8	0.4	-6.1	311.6	2.2	33.3

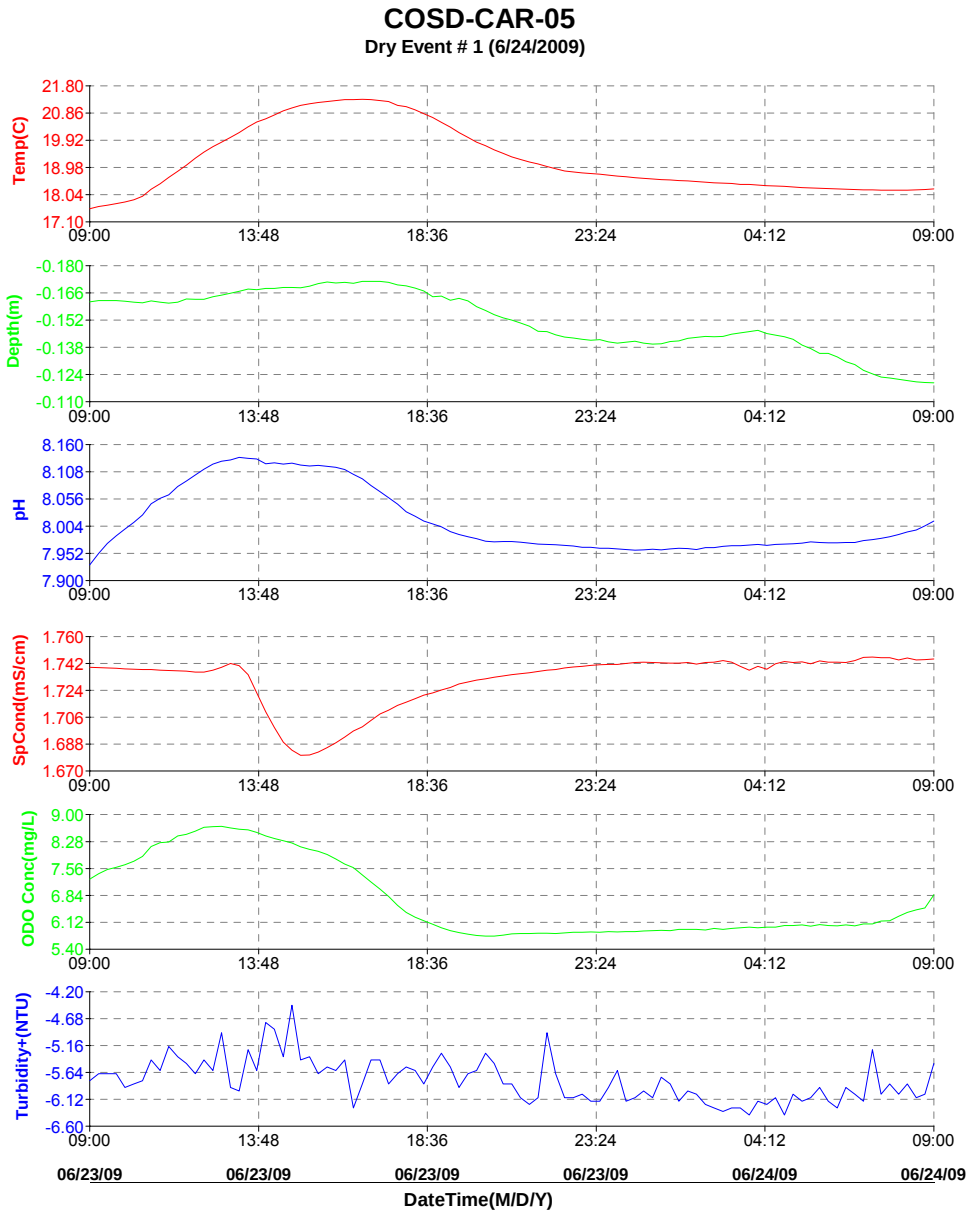

Figure 3-14. Field Parameter Results for COSDCAR05 on June 23–24, 2009

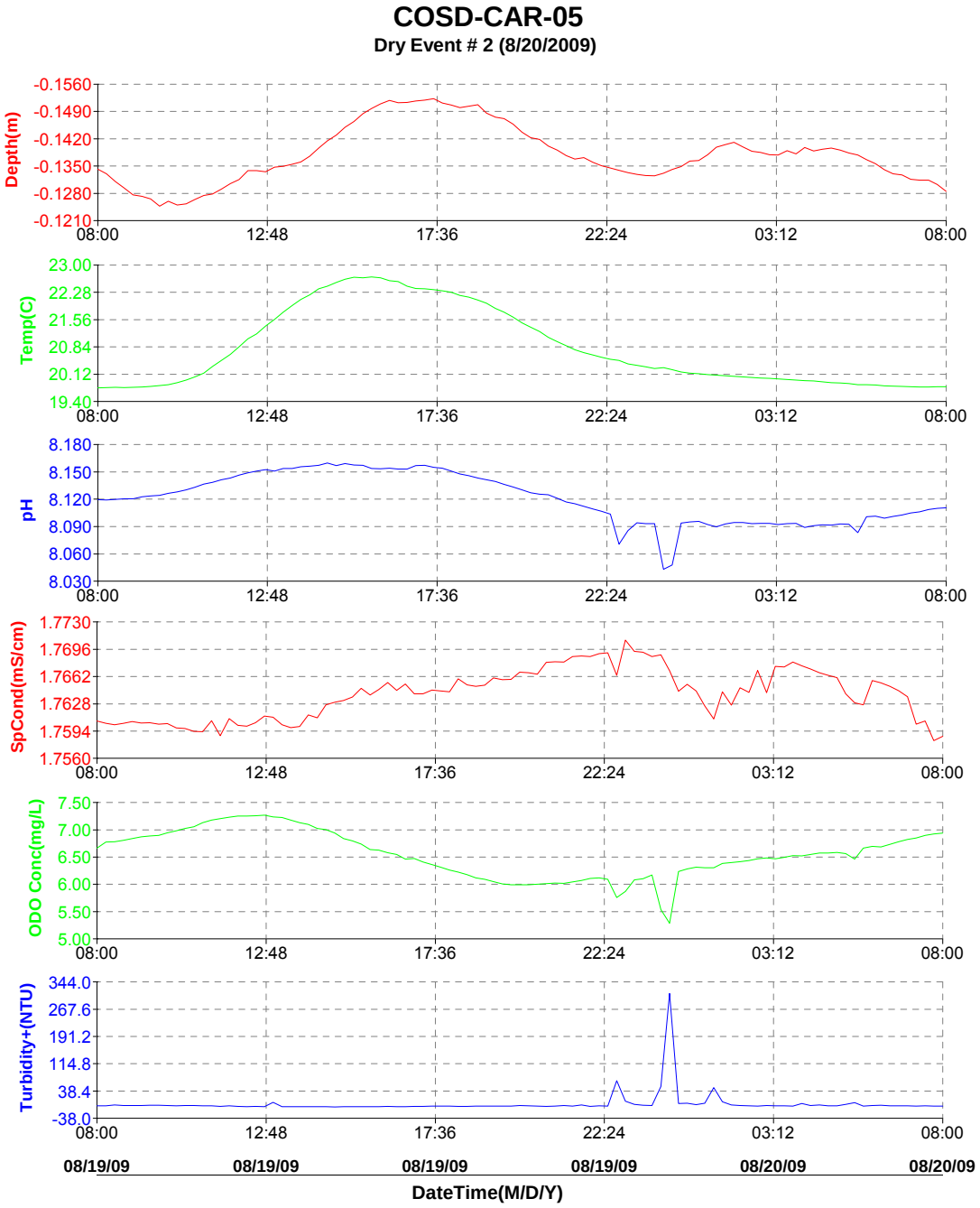

Figure 3-15. Field Parameter Results for COSDCAR05 on August 19–20, 2009

4.0 CONCLUSIONS

The study objective was to determine constituent concentrations and discharged loads for two sampling locations in Buena Creek and Agua Hedionda Creek over two storms and two non-storm flow events. This objective has generally been met with the exception of non-storm monitoring at Agua Hedionda Creek (COSDCAR16-alt) as the site was dry during dry weather conditions.

Both sampling locations were primarily influenced by open space, residential, rural residential, and agricultural land uses. The Agua Hedionda Creek's site COSDCAR16-alt drainage area was less than half that of Buena Creek (COSDCAR05) and was more influenced by open space. Also, there was a localized industrial area close to the COSDCAR16-alt.

As they drained a larger area, wet weather flows at Buena Creek (CPSDCAR05) were also higher and, as constituent loads are the product of event mean concentrations (EMC) and discharge volume, the higher wet weather event discharge volumes at Buena Creek resulted in higher loads for the majority of constituents. The December 2009 storm event was the largest and corresponded to the highest event loads for many of the constituents at both sampling locations.

The results of this study are summarized below:

Wet Weather Events

- Total nitrogen and total phosphorus concentrations exceeded their respective 1 mg/L and 0.1 mg/L WQOs at both sampling locations during both storm events.
- Buena Creek (COSDCAR05) had consistently higher discharge rates, turbidity and concentrations of total nitrogen, total phosphorus, TSS, TDS and total manganese than Agua Hedionda Creek (COSDCAR16-alt).
- Buena Creek (COSDCAR05) wet weather TSS concentrations and turbidity were above their respective benchmarks. TDS EMC exceeded the 500 mg/L WQO for Buena Creek during the December 7, 2009 storm event. TDS EMCs were below the benchmark at both sampling locations during the January 18, 2010 storm event.
- Sulfate and Selenium concentrations were below their respective benchmark levels at both locations during both wet weather events.
- The total manganese EMCs for both sites during both wet weather events were above the benchmark of 50 µg/L and were higher at COSDCAR05. Bifenthrin and Permethrin were the only synthetic pyrethroids whose concentrations exceeded benchmarks.
- Samples from Buena Creek exhibited toxicity to *H. azteca* for both wet weather events. Samples from Agua Hedionda Creek showed toxicity of *H. azteca* for the January 18, 2010 storm event only.
- Fluvalinate concentrations at Buena Creek were high for both wet storm events. There is no *H. azteca* LC_{50} value for Fluvalinate,
- Wet weather bacterial concentrations generally exceeded benchmark levels for fecal coliforms, enterococci, and *E. coli*. General *Bacteroides* results were mostly positive, whereas human specific PCR results were negative for all but one sample (collected at

Agua Hedionda Creek on January 18, 2010). This positive result for human-specific *Bacteroides* occurred in the last sample of the series of eight. The result indicates a potential isolated recent source of human fecal contamination upstream of the site.

Non-Storm Flows

- Non-storm flows were sampled only at Buena Creek (COSDCAR05)
- Total nitrogen and total phosphorus concentrations exceeded their respective 1 mg/L and 0.1 mg/L WQOs during both sampling events.
- Turbidity and TSS concentration did not exceed their respective benchmarks.
- TDS EMCs greatly exceeded the 500 mg/L WQO and were higher for non-storm flows (higher than the wet weather TDS concentrations).
- Sulfate EMCs exceeded the 250 mg/L benchmark for both non-storm events
- Selenium concentrations did not exceed the benchmark. The total manganese EMC exceeded 50 µg/L WQO only for the August 19, 2009 sampling event.
- Chlorinated herbicide concentrations were below method detection limits for both non-storm events
- No toxicity to *S. capricornutum* was observed in any of the samples.
- Generally, non–storm fecal indicator bacteria concentrations were much lower than the corresponding wet weather counts.
- All non-storm flow samples exceeded the 151 MPN/ 100ml WQO for Enterococci. There were some fecal coliform WQO exceedances and only one *E. coli* exceedance that occurred during the August 19, 2009 event. All samples were positive for general *Bacteroides* but none for human *Bacteroides*.

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TITLE: **WATER QUALITY TREATMENT FACILITY AT THE MCCLELLAN-PALOMAR AIRPORT**
ID #: **CHU-WQA15**

ACTIVITY DESCRIPTION

The County of San Diego designed and installed a water quality treatment facility (WQTF) at the McClellan-Palomar Airport completed in April of 2006. This work was funded by Proposition 13 State Water Resources Control Board (SWRCB) grant agreement number 04-201-559-0. The County conducts regular water quality monitoring at the WQTF to assess effectiveness.

The WQTF was designed to provide water quality treatment for low storm flows and nuisance urban runoff that would enter Agua Hedionda Creek as shown in the figure below. Runoff flows enter the influent conveyances through a hydrodynamic separator that centrifugally removes debris and gross pollutants and directs flow into a detention vault where additional pollutants are removed through settlement during low flows. Flows greater than the design storm bypass the WQTF through the adjacent 36" storm drain.

From 2006 through 2010, sampling was conducted during storm events predicted to deliver greater than 0.10 inches of rainfall. A total of five storm events have been sampled.

The attached report presents additional details regarding monitoring results.

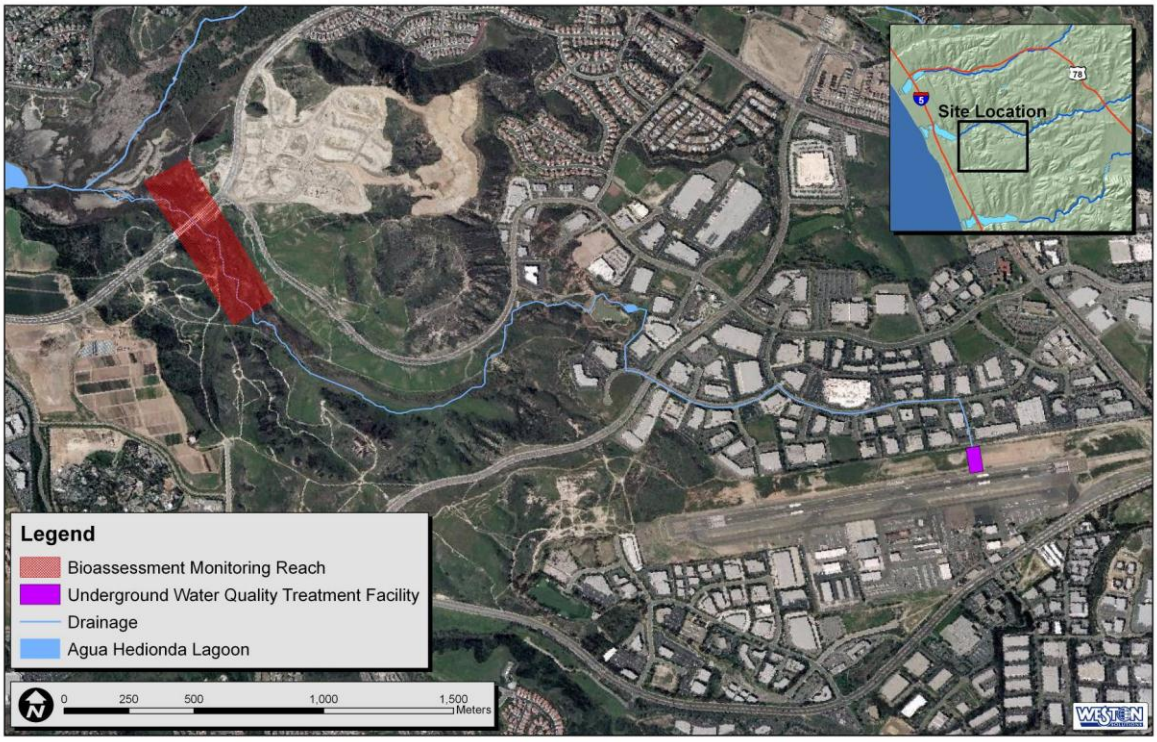

Figure 1. McClellan-Palomar Airport Monitoring Locations

FY 2008-09 ACTIVITY IMPLEMENTATION

- Preparation of the *County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport* summarizing the sampling efforts from 2006 to present.
- No monitoring took place during FY 2008-09

FY 2009-10 ACTIVITY IMPLEMENTATION

- Sampling of two storm events took place during FY 2009-10: December 11, 2009 and January 26, 2010.
- Revision and additions to *County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport* summarizing the sampling efforts from 2006 to present (see attached report).

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

No additional sampling events are scheduled at this time.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients and sediment have been identified as priority water quality problems in the Agua Hedionda Hydrologic Area (904.3). Airport operations are a potential source of sediment and nutrients. Since this activity is addresses priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Effectiveness is assessed through regular water quality monitoring and comparison of influent and effluent pollutant loading. Scheduled monitoring for the FY 2009-10 was completed (Level 1 Outcome). In general, concentrations in samples collected during 2009-2010 were within the range of previously collected sample concentrations. TDS was the only analyte with lower concentrations at the effluent than at the influent for both storm events.

COUNTY OF SAN DIEGO MCCLELLAN-PALOMAR AIRPORT
WATER QUALITY TREATMENT FACILITY

2009-2010 ANNUAL REPORT

JUNE 2010

WATERSHED PROTECTION PROGRAM
DEPARTMENT OF PUBLIC WORKS
COUNTY OF SAN DIEGO
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1.0 INTRODUCTION

In 2006, the County of San Diego designed and installed a Water Quality Treatment Facility (WQTF) as a Best Management Practice (BMP) to treat urban runoff from the McClellan-Palomar Airport sub-watershed under Proposition 13 State Water Resources Control Board (SWRCB) grant agreement number 04-201-559-0. The runoff flows from the airport to Agua Hedionda Creek, to Agua Hedionda Lagoon, and ultimately into the Pacific Ocean near Carlsbad, California. The site and surrounding area are depicted in Appendix A, Figure 1.

Initial studies, consisting of five samples collected with automated equipment, were performed in 2006-2007 and the Long-Term Monitoring Plan (LTMP) was prepared in 2007. Long-term monitoring is intended to provide data for continued assessment of the water quality benefit provided by the WQTF.

The LTMP included flow measurements and water quality monitoring for two storms per year for the first two years. The first year of sampling was 2007-2008, during which one sample was collected. Samples were not collected in 2008-2009.

The 2009-2010 sampling period represented the second season of long-term monitoring. The inlet and outlet to the Water Quality Basin were each sampled twice during the 2009-2010 storm season. The wet weather monitoring period was between October 1 and April 30. In accordance with the LTMP, the WQTF inlet and outlet flows were recorded and water quality samples were collected on December 11, 2009 and January 26, 2010.

This report contains the 2009-2010 Annual Report, including chemistry results and a description of monitoring activities.

2.0 DESCRIPTION OF SAMPLING PROCEDURES

2.1 FLOW MEASUREMENTS

Instantaneous flow was measured and recorded at the beginning, middle, and end of the sampled December 11, 2009 and January 26, 2010 storm events. All monitoring and sampling activities were performed from above ground via access manholes above the WQTF.

Flow rate was calculated from stage height that was determined by measuring distances from the rims of the influent and effluent access manholes to water level. The distances were measured three times (at the beginning, middle, and end of each sampling event) and the measurements were averaged. These measurements are the reverse of stage height. To obtain stage height, the average distance to water level was subtracted from the invert (25.37 feet for the influent, 26.97 feet for the effluent). Stage height was then converted to estimated instantaneous flow using Table 5-2 of the LTMP, reproduced as Table 1 in Appendix B.

The WQTF is designed to detain stormwater flow. Stage will generally increase and remain high at the influent point during a storm event, while the flow at the effluent will be relatively low and will remain steady after the rain has ceased, until the WQTF is empty. By design, the total discharge at the influent will equal the total discharge at the effluent for a given storm event, less the relatively small amount of sludge and water that remain in the WQTF.

2.2 WATER QUALITY SAMPLING

Water quality samples were collected during December 11, 2009 and January 26, 2010 storm events. One set of grab samples per event was taken at both the inlet and the outlet. Grab samples were collected in pre-cleaned containers and transferred to appropriate laboratory-supplied sampling bottles. Samples were collected by lowering a pre-cleaned container from the designated manhole access at either the influent or effluent sampling point. Samples were taken without personnel entering the treatment unit. Surface Water Ambient Monitoring Program (SWAMP) sampling protocol and procedures outlined in the LTMP were followed during sample collection.

Samples were labeled, placed on ice in coolers, and transported for analysis under standard chain-of-custody procedures to CRG Marine Laboratories, Inc., located in Torrance, California. The samples were analyzed for the constituents listed in Table 2 of Appendix B.

During the sampling of inlet and outlet, field measurements were recorded for pH, temperature, conductivity, dissolved oxygen (DO), turbidity, salinity, total dissolved solids (TDS), and oxidation reduction potential (ORP). The results of field measurements are shown in Table 3 of Appendix B, as well as within the field data logs completed for each sampling event and included in Appendix C.

3.0 ANALYTICAL RESULTS

The analytical laboratory and field results from the inlet and outlet, including flow measurements, are presented in Table 3 of Appendix B, along with results from the initial study and the first year of long-term sampling. Copies of the field forms are included in Appendix C, and the original laboratory analytical reports are included in Appendix D.

In general, concentrations in samples collected during 2009-2010 were within the range of previously collected sample concentrations. TDS, was the only analyte with lower concentrations at the effluent than at the influent at both storm events.

APPENDIX A – FIGURES

Figure 1: Location of the McClellan-Palomar Airport Water Quality Treatment Facility

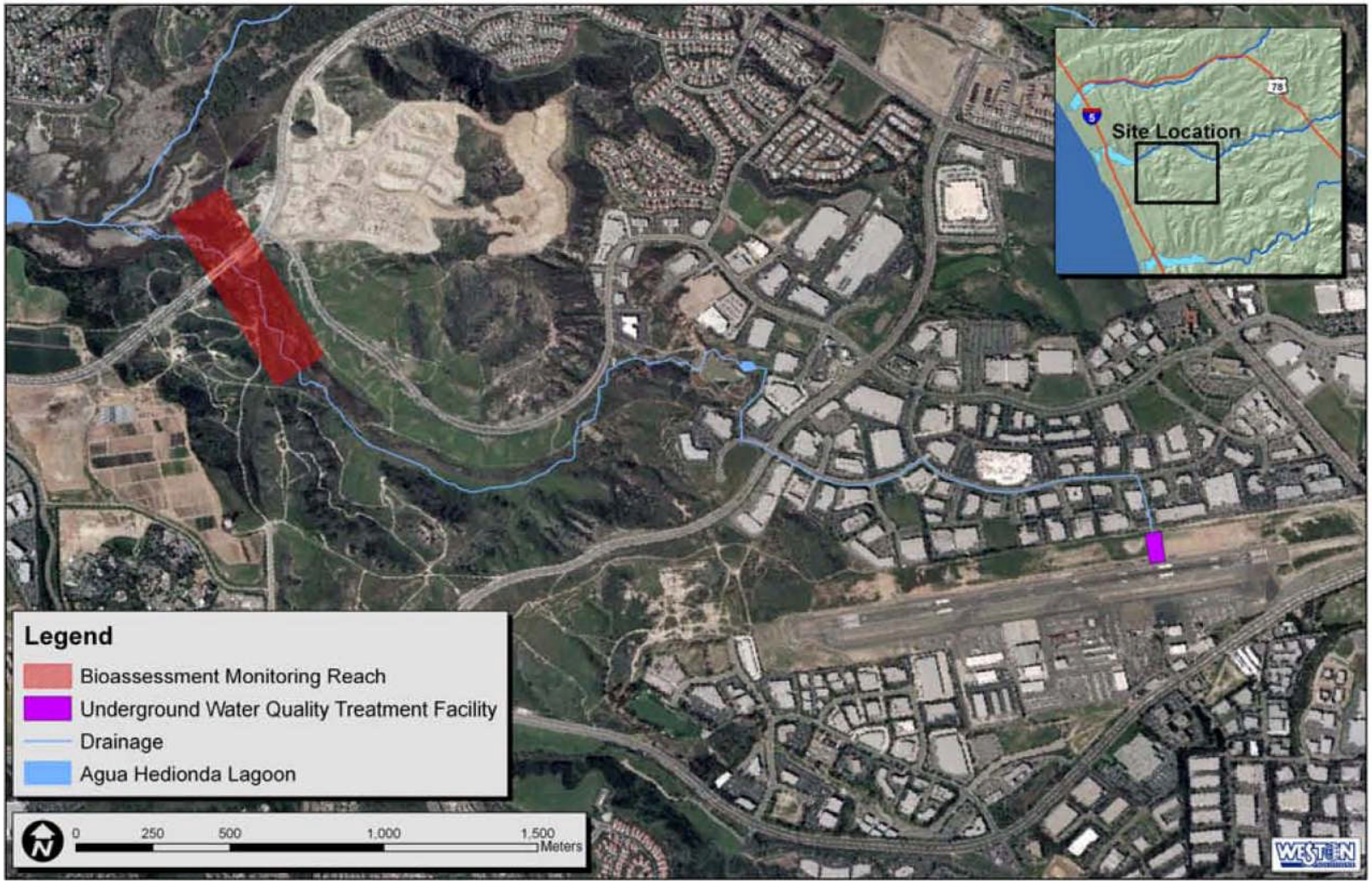

APPENDIX B – TABLES

Table 1: Stage Discharge

Head (in)	Influent Flow (cfs)	Effluent Flow (cfs)
0	0.46	0.07
1	3.07	0.08
2	5.5	0.09
3	7.75	0.09
4	9.83	0.10
5	11.7	0.11
6	13.4	0.11
7	15.0	0.12
8	16.4	0.13
9	17.0	0.14
10	18.6	0.15
11	19.4	0.15
12	20.1	0.16
13	20.6	0.17
14	20.9	0.17
15	21.3	0.18
16	21.7	0.18
17	21.8	0.19
18	21.9	0.20
19	22.0	0.2
20	22.1	0.21
21	22.1	0.22
22	21.9	0.22
23	21.4	0.23
24	20.2	0.24
25		0.25
26		0.25
27		0.26
28		0.27
29		0.28
30		0.29
31		0.29
32		0.30
33		0.31
34		0.32
35		0.33
36		0.33
37		0.34
38		0.35

Table 1: Stage Discharge (Continued)

Head (in)	Influent Flow (cfs)	Effluent Flow (cfs)
39		0.36
40		0.36
41		0.37
42		0.38
43		0.39
44		0.39
45		0.40
46		0.41
47		0.41
48		0.42
49		0.44
50		0.44
51		0.45
52		0.45
53		0.46
54		0.46
55		0.47
56		0.47
57		0.47
58		0.48
59		0.48
60		0.48

Table 2: McClellan-Palomar Airport Water Quality Treatment Facility Analytical Water Quality Parameters

Analytical Parameter	Analytical Method	Sample Volume	Containers #, Size, Type	Preservation (Chemical, Temperature, Light Protected)	Maximum Holding Time: Preparation/ Analysis
TSS	SM 2540-D	250 mL	Plastic	Store Cool at <4ºC	6 Months
TDS	SM 2540-C	1L	Plastic	Store Cool at <4ºC	7 Days
Total Hardness	SM 2340-B	100 mL	Plastic	HNO_3	6 Months
Dissolved Cadmium	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Copper	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Lead	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Zinc	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Nitrate - N	SM 4500-NO_3	100 mL	Plastic or Glass	Store Cool at <4ºC	48 Hours
Total Phosphorus	SM 4500-P C	250 mL	HDPE Plastic	Store Cool at <4ºC	28 Days
Dissolved Ortho-Phosphate	EPA 300	250 mL	HDPE Plastic	Store Cool at <4ºC	28 Days
Diazinon	EPA 625	1 L	Amber Glass	Store Cool at <4ºC	Extraction 7 days; Analysis 40 days
Chlorpyrifos	EPA 625	1 L	Amber Glass	Store Cool at <4ºC	Extraction 7 days; Analysis 40 days
MBAS	SM 5540 C	500 mL	Plastic	Store Cool at <4ºC	48 Hours
Oil and Grease	EPA 1664	1 L	Amber Glass	Store Cool at <4ºC, Add HCl to pH<2	28 Days

Table 3: McClellan-Palomar Airport Water Quality Treatment Facility Analytical Results

Date	Location	Flow (cfs)	Dissolved Orthophosphate as P (mg/L)[1]	MBAS (mg/L)	Nitrate-N (mg/L)[2]	Oil & Grease (mg/L)	Total Dissolved solids (mg/L)	Total Hardness as CaCO3 (mg/L)	Total Phosphorus (mg/L)[3]	Total Suspended Solids (mg/L)	Chlorpyrifos (ng/L)	Diazinon (ng/L)	Dissolved Cadmium (ug/L)	Dissolved Copper (ug/L)	Dissolved Lead (ug/L)	Dissolved Zinc (ug/L)	pH	Temp (C°)	DO (mg/L)	Turbidity (NTU)	Specific Conductance (uS/cm)
12/10/06	Inlet Sampling	4.53	0.08	0.04	0.78	1.9J	151	10.9	0.23	263	<1	<2	<0.2	10.8	0.47	28.6	7.59	15.3	9.00	710.0	106.0
	Outlet Sampling	3.31	0.06	0.03	0.69	1.9J	200	9.68	0.22	239	<1	<2	<0.2	8.90	0.40	23.9	7.30	14.4	10.5	661.0	80.0
	Percent Change in Concentration		**-25.0%**	**-25.0%**	**-11.5%**	**0.00%**	**32.5%**	**-11.2%**	**-4.35%**	**-9.29%**	**NA**	**NA**	**NA**	**-17.6%**	**-14.9%**	**-16.4%**	**-3.82%**	**-5.88%**	**16.56%**	**-6.90%**	**-24.5%**
12/16/06	Inlet Sampling	0.14	0.04	0.06	0.98	1.3J	157	23.8	0.19	95.0	<1	<2	<0.2	9.20	0.51	18.4	6.02	12.1	6.15	290.0	16.0
	Outlet Sampling	0.14	0.04	0.05	0.77	2J	167	19.9	0.31	217	<1	<2	<0.2	7.30	0.49	12.1	6.50	12.2	6.42	290.0	15.0
	Percent Change in Concentration		**0.0%**	**-16.7%**	**-21.4%**	**53.9%**	**6.37%**	**-16.4%**	**63.2%**	**128%**	**NA**	**NA**	**NA**	**-20.7%**	**-3.92%**	**-34.2%**	**7.97%**	**0.83%**	**4.39%**	**0.00%**	**-6.25%**
12/27/06	Inlet Sampling	0.20	0.07	0.53	1.13	<1	115	15.3	0.18	26.3	<1	<2	<0.2	14.2	1.52	38.2	7.40	15.9	9.28	17.0	210.0
	Outlet Sampling	0.18	0.04	0.40	1.00	<1	73.00	11.4	0.17	62.3	<1	<2	<0.2	9.70	2.24	55.9	8.82	13.6	8.55	86.0	131.0
	Percent Change in Concentration		**-42.9%**	**-24.5%**	**-11.5%**	**NA**	**-36.5%**	**-25.5%**	**-5.56%**	**137%**	**NA**	**NA**	**NA**	**-31.7%**	**47.4%**	**46.3%**	**19.2%**	**-14.5%**	**-7.87%**	**406%**	**-37.6%**
01/31/07	Inlet Sampling	0.30	0.21	1.70	0.87	8.70	138	9.74	0.20	8.80	<1	<2	0.80	38.3	6.06	251.20	6.37	15.2	10.0	14.0	143.2
	Outlet Sampling	0.11	0.13	2.35	1.78	5.80	147	23.2	0.22	27.3	<1	<2	0.90	42.1	5.58	495.20	6.34	15.2	9.89	12.0	127.7
	Percent Change in Concentration		**-38.1%**	**38.2%**	**104.6%**	**-33.3%**	**6.52%**	**138.3%**	**10.0%**	**210%**	**NA**	**NA**	**12.50%**	**9.92%**	**-7.92%**	**97.1%**	**-0.47%**	**0.00%**	**-1.40%**	**-14.3%**	**-10.8%**
02/11/07	Inlet Sampling	0.08	0.10	0.56	0.71	2J	27.00	8.00	0.13	12.00	<1	<2	0.50	17.00	3.76	122.00	NA	NA	NA	NA	NA
	Outlet Sampling	0.08	0.09	0.70	1.02	3J	46.00	9.00	0.11	12.00	<1	<2	0.60	17.10	3.16	143.00	NA	NA	NA	NA	NA
	Percent Change in Concentration		**-10.0%**	**25.0%**	**43.7%**	**50.0%**	**70.4%**	**12.5%**	**-15.4%**	**0.0%**	**NA**	**NA**	**20.0%**	**0.6%**	**-16.0%**	**17.2%**	**NA**	**NA**	**NA**	**NA**	**NA**
02/22/08	Inlet Sampling	21.74	<0.0075	0.11	0.48	1.7J	198	8.80	0.038J	1284	<1	<2	<0.2	5.00	0.24	16.8	7.93	13.3	11.3	19.4	135.0
	Outlet Sampling	0.36	0.03	0.11	0.39	2.4J	178	8.20	0.031J	11.7	<1	<2	<0.2	3.90	0.24	18.8	8.17	13.3	11.4	18.8	133.0
	Percent Change in Concentration		**NA**	**-5.31%**	**-18.75%**	**41.18%**	**-10.10%**	**-6.82%**	**-18.4%**	**-99.1%**	**NA**	**NA**	**NA**	**-22.0%**	**0.00%**	**11.9%**	**3.03%**	**-0.08%**	**0.44%**	**-3.09%**	**-1.48%**
12/11/09	Inlet Sampling	16.68	0.05	0.12	1.21	2.4J	72.0	27.0	0.33	26.7	ND	ND	0.2J	15.0	1.27	47.2	8.85	16.5	7.93	42.9	0.20
	Outlet Sampling	0.25	0.06	0.12	1.37	2.5J	66.0	27.3	0.33	21.5	ND	ND	0.2J	15.5	1.33	37.5	9.05	16.4	8.17	25.7	0.19
	Percent Change in Concentration		**27.1%**	**-3.36%**	**13.2%**	**4.17%**	**-8.33%**	**1.11%**	**0.30%**	**-19.5%**	**NA**	**NA**	**0.00%**	**3.33%**	**4.72%**	**-20.6%**	**2.26%**	**-0.61%**	**3.03%**	**-40.1%**	**-1.03%**
01/26/10	Inlet Sampling	21.74	0.05	0.04	NA	1.7J	210	48.7	0.13	15.5	ND	ND	0.2J	12.0	0.92	31.4	7.96	14.2	7.04	10.0	0.22
	Outlet Sampling	0.20	0.04	0.05	NA	2J	160	36.1	0.12	18.3	ND	ND	0.2J	11.0	0.93	35.6	8.48	13.2	8.39	10.0	0.13
	Percent Change in Concentration		**-20.4%**	**18.4%**	**NA**	**17.7%**	**-23.8%**	**-25.9%**	**-9.85%**	**18.1%**	**NA**	**NA**	**0.00%**	**-8.33%**	**1.09%**	**13.4%**	**6.53%**	**-7.04%**	**19.2%**	**0.00%**	**-39.4%**

Notes:
(1) Units on 2006 & 2007 sampling are mg/Kg
(2) Units on 2006 & 2007 sampling are mg/Kg wet
(3) Units on 2006 & 2007 sampling are mg/Kg dry
J = Estimated Value below the Reporting Limit and above the Method Detection Limit

APPENDIX C – FIELD FORMS

NOT INCLUDED IN THIS WURMP ANNUAL REPORT

APPENDIX D – LABORATORY ANALYTICAL REPORTS

NOT INCLUDED IN THIS WURMP ANNUAL REPORT

TITLE: **AGUA HEDIONDA CREEK RESTORATION - SR-02+**
ID #: **CHU-WQA16**

ACTIVITY DESCRIPTION

The Agua Hedionda Watershed Management Plan (AHWMP) recommends several stream restoration projects to improve habitat and water quality within the watershed. The SR-02 project was developed to a 10% design as part of the AHWMP. The project was originally intended to support the mitigation needs of the City's sewer program. In looking at the opportunity closer, the City expanded the boundaries and scope of the SR-02 project to include a longer section of the Creek located entirely on public lands.

The Agua Hedionda Creek Restoration Project will begin at the Buena Vista Park property boundary with the Dawson Preserve continuing upstream to the property boundary with Green Oak Ranch (approximately 3,800 linear feet). Planned project highlights include: streambed stabilization and restoration, side slope restoration, removal of non-native plants and re-vegetation with native plants, rehabilitation of a dying Oak woodland, and a new bridge on the east end. The goals of the project are: (1) to enhance the natural environment for wildlife by restoring the riparian area as part of a larger wildlife corridor, while providing the community with an opportunity to observe the local wildlife and enjoy the trail system and (2) to reduce the bed and bank erosion occurring in the Creek and achieve a stable balance representative of the appropriate sediment transport for the system.

ACTIVITY IMPLEMENTATION

Preliminary design was completed in August 2010 and final design and permitting is expected to occur during FY 2010-11. The City has applied for Proposition 84 funding through the San Diego Integrated Regional Water Management Program. Successful construction of the project will ultimately depend on the availability of funding.

TMDL APPLICABILITY

Currently, the Agua Hedionda Lagoon is listed for sedimentation/siltation. A TMDL was under development during FY 08-09 for sedimentation and bacteria in Agua Hedionda Lagoon. After review of the data, the lagoon has been recommended for delisting for both constituents. Implementation of the project is expected to reduce sediment loading to the lagoon, further reducing the need for a sediment TMDL in Agua Hedionda Lagoon.

TIME SCHEDULE FOR IMPLEMENTATION

Preliminary Engineering Design - FY 09-10 (Planning)
Final Engineering Design - FY 10-11 (Planning)
Construction of Phase I - FY 11-12 (Implementation)
Construction of Phases II and III - Pending Future Funding

LEAD WATERSHED COPERMITTEE

- City of Vista

OTHER PARTICIPATING WATERSHED COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- San Elijo Lagoon Conservancy – may assist in invasive species eradication efforts within the watershed

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies sediment as a high priority water quality pollutant in the Agua Hedionda Creek Hydrologic Area (904.3). Potential sources of sediment have been identified along the Creek, including erosion occurring in the streambed and on the banks. This activity addresses a high priority water quality problem and potential sources of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA Strategy.

EFFECTIVENESS ASSESSMENT

The effectiveness assessment of the project has not been completely developed at this time. As the preliminary and final designs are received, the City will evaluate the most feasible methods to determine the effectiveness of the project. Some potential measures are provided below as examples which may or may not be incorporated into the final activity design.

Potential effectiveness methods include:

1. Monitoring conducted over time at the existing Mass Loading Station may provide data to compare historical loading and trend data for sedimentation as measured by TSS and turbidity.
2. Monitoring conducted over time at bioassessment stations within Agua Hedionda Creek may provide historical, trend, and current data useful in assessing the activity.
3. The incorporation of CRAM to compare the changes in stream bed and bank morphology before and after implementation.

Potential assessment measures related to these methods include:

1. Overall reduction in sediment loading to Agua Hedionda Lagoon over time (Level 4, Level 6).
2. Overall improvement in benthic macro-invertebrate community over time in the project area.
3. Removal of invasive vegetation from the Creek (Level 1).

SR2+
east project limit
OAKCREEK LN
GREEN OAK RD
SM ELROSE DR
Agua Hedionda Creek
Green Oak Ranch
Buena Creek Pump Station
SR2+
west project limit
Dawson Preserve
LA MIRADA DR
OPALRIDGE
JEWELL RIDGE
DAWSON DR
DISTRIBUTION WY
PEARL HEIGHTS RD

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TITLE: **RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION**
ID #: **CHU-WQA17**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY 09-10

Activity during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY 2009-10. The events are scheduled to occur during FY 2010-11. Depending upon the success of the initial events, additional events will be considered for implementation during FY 2011-12 and FY 2012-13.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS ASSESSMENT

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

TITLE: UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN – PARKS COMPONENT
ID #: CHU-WQA18

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a plan for municipal park inspection and management activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" component activities will not change from year to year and focus on MS4 Permit compliance-based activities. "Enhanced" component activities are additional activities committed to by the USMC Watershed Copermittees and will be adapted as new information becomes available.

The San Diego Municipal MS4 Permit requires Copermittees to carry out a variety of mandated inspection, education, best management practices (BMPs) and enforcement activities at facilities, including municipal park facilities throughout the San Diego region. These core programs are intended to: 1) assess the effectiveness of using BMPs when engaging in potential pollutant generating activities of municipal park facilities to receiving waters, and 2) to identify and characterize sources of specific pollutants in urban runoff discharges. The County of San Diego and the City of Escondido in FY 2009-10 had no municipal park facilities in the watershed. The City of San Marcos currently has 29 active municipal parks in the watershed with one park under construction.

In addition to the core activities the USMC Watershed Copermittees will conduct enhanced assessment, collaborative outreach, and inspection activities intended to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify watershed priorities for management action. Enhanced assessment, outreach, and inspection activities are only conducted by San Marcos with the results shared collaboratively with the other watershed jurisdictions. These enhanced activities include a watershed-wide focused investigation by San Marcos of municipal park facility BMPs, irrigation practices, and fertilizer practices to improve focus on watershed issues of concern, and a shared commitment to collaboratively review and analyze watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges. Enhanced activities also included a city-wide preliminary assessment of fertilizer use and irrigation practices completed in FY 2009-10. Each year in the activity implementation sections (below) the USMC Watershed Copermittees will report on the activities conducted. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Program:

All elements of the core program were completed. All municipal park and mini-park facilities were inspected. The facility locations, inspection results, and corrective actions are included in Section 4.0 of the City of San Marcos FY 2009-10 JURMP Annual Report. The City maintains a Stormwater Pollution Prevention Plan (SWPPP) with BMPs for parks, including outreach and application information. A summary of the 29 active parks are included in the table below.

Table 1. Summary of Annual Stormwater Inspections for Municipal Parks

Municipal Park	Inspection Date	Corrective Actions Identified	Corrective Actions Completed
Alder Park	3/3/10	No	N/A
Amigo Park	6/24/10	No	N/A
Bradley Park	2/26/10	No	N/A
Cerro De Las Posas Park	5/24/10	Yes	Yes
Creek View Park	6/24/10	No	N/A
Double Peak Park	4/9/10	No	N/A
Discovery Creek Children's Park	6/24/10	No	N/A
Discovery Meadows	6/25/10	No	N/A
Foothills Park	6/24/10	No	N/A
Helen Bougher Park	2/26/10	No	N/A
Hollandia Park	5/26/10	Yes	Yes
Jack's Pond Park	5/3/10	Yes	Yes
Knob Hill Park	5/18/10	Yes	Yes
Discovery / Lakeview Park	6/23/10	Yes	Yes
Laurels Park	6/25/10	No	N/A
Mission Sports Park	In Construction	N/A	N/A
Montiel Park	5/18/10	Yes	Yes
Mulberry Park	3/26/10	No	N/A
Optimist Park	6/25/10	No	N/A
Pebblestone Park	6/24/10	No	N/A
Quail Hills Park	6/22/10	No	N/A
Regency Park	6/25/10	No	N/A
San Elijo Hills Park	4/9/10	Yes	Yes
Santa Fe Hills Mini Park	6/24/10	No	N/A
Simmons Family Park	5/24/10	No	N/A
Summer Hill / Bel Espirit Park	6/22/10	No	N/A
Sunset Park	5/24/10	Yes	Yes
Valley View Park	6/24/10	No	N/A
Walnut Grove Park	5/25/10	No	N/A
Woodland Park	3/18/10	No	N/A

Enhanced Program:

- ***County of San Diego Municipal Park Enhanced Activities –*** In FY 2009-10 there were no County municipal park facilities
- ***City of San Marcos Municipal Park Enhanced Activities –*** The City of San Marcos completed a baseline assessment on fertilizer use, irrigation practices, and water sources in FY 2009-10. Additional information on the preliminary baseline analysis is available in the accompanying attachments. The City keeps a log of fertilizer on each park and the basic fertilizer application and management practices were identified and assessed (Attachments A-C). Irrigation practices and sources were also identified. The City actively reviews fertilizer use and application to reduce cost and improve focused delivery to those facilities. In FY 2009-10, the City made a switch in its fertilizer product

usage to Nature Safe. This switch will be assessed in conjunction with applicable downstream data available in FY 2010-11.

- ***City of Escondido Dry Weather Monitoring Enhancement - Municipal Park Enhanced Activities*** –In FY 2009-10 there were no City of Escondido municipal park facilities.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of an adopted TMDL compliance program. This activity is intended to be supportive of a voluntary TMDL process currently being developed by stakeholders and the SDRWQCB.

TIME SCHEDULE FOR IMPLEMENTATION

Table 2. Implementation Schedule

Planned Tasks	FY 2009-10	FY 2010-11	Status
Core Collaborative Municipal Park Activities	All USMC watershed municipal park facilities inspected. Of the 29 facilities, 8 were identified as potential corrective action sites. All 8 facilities implemented corrective actions	TBD	Ongoing
County of San Diego Enhanced Park Activities	The County of San Diego had no municipal parks in the watershed	TBD	TBD
City of San Marcos Enhanced Park Activities	Municipal park facility baseline issues identified and assessed	TBD	Ongoing
City of Escondido Enhanced Park Activities	The City of Escondido had no municipal parks in the watershed	TBD	TBD

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Escondido

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will inform Copermittees on water quality issues and potential sources in the USMC Watershed. This information can then be used to guide future implementation efforts that may: 1) increase awareness of stakeholders; 2) change behavior and inform BMP implementation; 3) reduce pollutant loads in discharges; 4) improve water quality discharged from the MS4; and, 5) improve water quality in Lake San Marcos.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by assessing the completion of municipal park activities as designated in the USMC Nutrient Management Plan and outlined updates to the activity sheets in the WURMP Annual Report (Level 1).

Table 3. Effectiveness Assessment

Planned Tasks	FY 2009-10	FY 2010-11	Status
Core Collaborative Municipal Parks Program	Level 1 Assessment Completed	TBD	Ongoing
County of San Diego Enhanced Parks Activities	N/A	TBD	Ongoing
City of San Marcos Enhanced Parks Activities	Level 1 Assessment Completed	TBD	Ongoing
City of Escondido Enhanced Parks Activities	N/A	TBD	Ongoing

FERTILIZER LOG

DATE	CATEGORY	LOCATION	ZONES	VEGETATION	FERTILIZER	AMOUNT / bags	COMMENTS
06/19/09	Park	Hollandia Park	All Areas	Trees/Shrubs	13-13-13	18	
07/20/09	Park	Hollandia Park	All Areas	Turf	Other	20	cal-cn plus iron
07/21/09	Park	Hollandia Park	All Areas	Turf	Other	40	cal-cn plus iron
07/23/09	Park	Hollandia Park	All Areas	Turf	Other	100	cal-cn plus iron
08/28/09	Park	Hollandia Park	All Areas	Turf	Other	34	cal-cn plus iron
09/25/09	Park	Las Posas Park	All Areas	Turf	Other	100	cal-cn plus iron
09/25/09	Park	Bougher Park	All Areas	Turf	13-13-13	2	
09/25/09	Park	Optimist	All Areas	Turf	13-13-13	1	
09/25/09	Park	Regency Park	All Areas	Turf	13-13-13	1	
09/25/09	Park	Knob Hill Park	All Areas	Turf	13-13-13	6	
10/05/09	Park	Hollandia Park	All Areas	Turf	Other	60	cal-cn plus iron
11/23/09	Park	San Elijo Park	All Areas	Turf	Other	20	27-2-2 nature safe $31.49 with tax
11/23/09	Facility	Civic Center Rec Ctr	All Areas	Turf	Other	7	27-2-2 nature safe $31.49 with tax
11/23/09	Facility	Gym	All Areas	Turf	Other	0.5	27-2-2 nature safe $31.49 with tax
11/23/09	Facility	Spaghetti Factory	All Areas	Turf	Other	0.5	27-2-2 " " "
12/29/09	Facility	Civic Center Rec Ctr		Trees/Shrubs	Other	1 BOX	Palm tree stakes for Pygmie Palms
11/16/09	Park	Bradley Park	All Areas	Turf	Other	41 bags	27-2-2 nature safe
11/17/09	Park	Other	All Areas	Turf		39 bags	27-2-2
01/12/10	Park	San Elijo Park	All Areas	Groundcover	9-9-9	1.5 bags	$25.77 per bag
01/12/10	Park	Civic Center Rec Ctr	All Areas	Groundcover	9-9-9	2.5 bags	$25.77 per bag
01/14/10	Facility	Civic Center Rec Ctr	All Areas	Turf	Other	6	27-2-2 nature safe
01/14/10	Facility	Spaghetti Factory	All Areas	Turf	Other	1	27-2-2 nature safe
01/28/10	Facility	Gym	All Areas	Turf	Other	1	27-2-2
01/28/10	Park	San Elijo Park	All Areas	Turf	Other	23	27-2-2
02/24/10	Facility	Fire Station 3	All Areas	Turf	Barricade	1	
02/24/10	Facility	San Elijo Park	Upper Mesa	Turf	Barricade	4	
02/25/10	Park	San Elijo Park	All Areas	Trees/Shrubs	9-9-9	5	$26.01 per bag
02/25/10	Park	Civic Center Rec Ctr	All Areas	Trees/Shrubs	9-9-9	1	$26.01 per bag
03/29/10	Park	Other	All Areas	Turf	Other	9	27-2-2 nature safe
03/02/10	Facility	Fire Station 1	All Areas	Turf	Other	2	27-2-2 NATURE SAFE
03/02/10	Facility	Senior Center	All Areas	Turf	Other	2	27-2-2 nature safe
04/09/10	Park	Sunset Park	All Areas	Turf	Other	43	27-2-2 nature safe
04/15/10	Park	San Elijo Park	All Areas	Turf	Nature Safe 27-2-2	24	
04/15/10	Facility	Civic Center Rec Ctr	All Areas	Turf	Nature Safe 27-2-2	10	
04/15/10	Facility	Spaghetti Factory	All Areas	Turf	Nature Safe 27-2-2	1	
03/29/10	Park	Hollandia Park	All Areas	Turf	Nature Safe 27-2-2	39	27-2-2

FERTILIZER LOG

DATE	CATEGORY	LOCATION	ZONES	VEGETATION	FERTILIZER	AMOUNT / bags	COMMENTS
04/23/10	Park	San Elijo Park	Lower Mesa	Turf	Nature Safe 27-2-2	5	
04/23/10	Park	Bradley Park	All Areas	Turf	Nature Safe 27-2-2	40	
04/29/10	Park	Walnut Grove Park	All Areas	Turf	Nature Safe 27-2-2	41	
07/15/10	Park	San Elijo Park	Upper Mesa	Turf	42-0-0	4	
07/15/10	Park	Sunset Park	Upper Mesa	Groundcover	Other	20	16-16-16
08/16/10	Park	Bradley Park	Upper Mesa	Turf	Nature Safe 27-2-2	40	27-2-2 $31.49
08/16/10	Park	Walnut Grove Park	All Areas	Turf	Nature Safe 27-2-2	43	27-2-2 $31.49
08/19/10	Park	Sunset Park	All Areas	Turf	Nature Safe 27-2-2	40	27-2-2 $31.49
08/23/10	Park	San Elijo Park	All Areas	Turf	Nature Safe 27-2-2	34	27-2-2 $31.49
08/23/10	Facility	Gym	All Areas	Turf	Nature Safe 27-2-2	1	27-2-2 $31.49
08/24/10	Park	Hollandia Park	All Areas	Turf	Nature Safe 27-2-2	39	27-2-2 $31.49
08/23/02	Facility	Civic Center Rec Ctr	All Areas	Turf	Nature Safe 27-2-2	10	27-2-2 $31.49
09/16/10	Park	Mission Sports Park	All Areas	Turf	Nature Safe 27-2-2	20	27-2-2 $31.49
03/29/10	Park	Hollandia Park	All Areas	Turf	Nature Safe 27-2-2	39	31.49 per bag
04/08/10	Park	Woodland Park	All Areas	Turf	Nature Safe 27-2-2	18	31.49 per bag
04/08/10	Park	Las Posas Park	All Areas	Turf	Nature Safe 27-2-2	19	31.49 per bag
04/08/10	Facility	Other	All Areas	Turf	Nature Safe 27-2-2	0.5	Fulton House
04/08/10	Facility	Safety Center	All Areas	Turf	Nature Safe 27-2-2	1.5	31.49 per bag
04/08/10	Park	Bougher Park	All Areas	Turf	Nature Safe 27-2-2	3	31.49 per bag
04/08/10	Park	Optimist	All Areas	Turf	Nature Safe 27-2-2	1.5	31.49 per bag
04/08/10	Park	Knob Hill Park	All Areas	Turf	Nature Safe 27-2-2	4	31.49 per bag
04/08/10	Park	Jacks Pond	All Areas	Turf	Nature Safe 27-2-2	1	31.49 per bag
04/23/10	Park	Hollandia Park	All Areas	Turf	Nature Safe 27-2-2	4	31.49 per bag
08/17/10	Park	Hollandia Park	All Areas	Turf	Nature Safe 27-2-2	40	31.49 per bag
08/17/10	Park	Woodland Park	All Areas	Turf	Nature Safe 27-2-2	18	31.49 per bag
08/17/10	Park	Las Posas Park	All Areas	Turf	Nature Safe 27-2-2	19	31.49 per bag
08/17/10	Facility	Other	All Areas	Turf	Nature Safe 27-2-2	0.5	Fulton House
08/17/10	Park	Jacks Pond	All Areas	Turf	Nature Safe 27-2-2	3	31.49 per bag
08/17/10	Facility	Safety Center	All Areas	Turf	Nature Safe 27-2-2	2	31.49 per bag
08/17/10	Park	Bougher Park	All Areas	Turf	Nature Safe 27-2-2	3	31.49 per bag
08/17/10	Park	Optimist	All Areas	Turf	Nature Safe 27-2-2	1.5	31.49 per bag
08/17/10	Park	Knob Hill Park	All Areas	Turf	Nature Safe 27-2-2	4	31.49 per bag
08/17/10	Park	Jacks Pond	All Areas	Turf	Nature Safe 27-2-2	1	31.49 per bag

CITY OF SAN MARCOS

MEMORANDUM

TO: Erica Ryan, Stormwater Program Manager

FROM: Reed Thornberry, Stormwater Program Analyst

DATE: November 22, 2010

SUBJECT: **Municipal Irrigation & Fertilizer Practices**

Evaluation Findings & Recommendations:

Irrigation Practices

1. Most watering occurs at night for both public and CFD locations. All major City parks/recreational areas and the Discovery Hills CFD use well water to irrigate.

2. Watering application for City parks is based on a combination of evapotranspiration clocks and in field observations by collecting soil samples via probes or cores. The City uses a computer based system called Maxicom Irrigation Central Control System to control and adjust irrigation systems for all City parks. Adjustments to irrigation systems are made by percentages and can occur multiple times a day.

3. The irrigation systems for CFD areas mostly consist of pop-up spray head sprinklers. However, currently there is a rebate grant program administered by the County Water Authority to replace pop-up heads with MP Rotator® units manufactured by Hunter Industries. The City has taken advantage of this program for some areas within San Elijo Hills.

4. All new CFD areas that are adjacent to hardscape areas are irrigated utilizing drip systems.

5. Contractors that maintain CFD areas do not use computer based systems to control their systems. Instead they have to adjust the system at the controller itself. Our landscape inspectors meet once a week with the contractors and monitor water consumption reports on a monthly basis.

Fertilizing Practices

1. The City has recently switched to an all natural organic base fertilizer called Nature Safe.

2. Please see the attached Annual Fertilization Schedule and Fertilizer Log for more details regarding application.

3. Sheila recently sent an email notifying me that our landscape inspectors keep the

invoices of the fertilizer applied by contractors. She has requested that they keep a log, so we can obtain this information for future reporting.

ADDENDUM #3
APPENDIX A

ANNUAL FERTILIZATION SCHEDULE

1) **Trees**

a) All trees located in primary areas (i.e., park sites, at entry monuments, in medians, and along parkways) shall be fertilized once per year (March / April) using one (1) pound of time-released nitrogen in accordance with manufacturer's directions.

b) All palms shall be fertilized once per year (March / April) using a timed-release palm fertilizer.

c) Selectively fertilize other trees which show signs of stress or that are chlorotic in appearance. Fertilization for trees not mentioned above shall be considered Extra Work.

2) **Turf**

a) Fertilized all turf areas during the first week of the month at a rate of one (1) pound of nitrogen per thousand square feet. Fertilize all lawns based on the following schedule. Schedule may be adjusted depending on type and condition of grass, weather, and soil conditions, as deemed necessary by the PARKS SUPERVISOR.

Cool Season Turf Schedule

March	-	Super Iron 9-9-9
April	-	Nature Safe 27-2-2
August	-	Nature Safe 27-2-2
November	-	~~Nitra King:~~ 19-4-4 n.5 - nature Safe
January	-	~~Nitra King:~~ 19-4-4 n.5 -

Warm Season Turf Schedule

March	-	Super Iron 9-9-9
April	-	Nature Safe 27-2-2
August	-	Nature Safe 27-2-2

b) Apply fertilizer specified above in granular form using a mechanical, hand or push type spreader. Use Seymore spreader or equal.

c) All fertilizers shall be applied in a cross pattern by working in two directions at 90 degree angles. Calibrate spreader for the specified quantities and rates of application prescribed by the manufacturer.

d) All fertilizers shall be cleaned off of all hard surfaces immediately after application is complete, before irrigation is applied.

e) All fertilizers shall be applied evenly, followed by thorough watering coordinated with the PARKS SUPERVISOR.

f) Spray indicator dye is prohibited unless its use in a particular area is authorized by the City.

3) **Ground Cover**

a) Fertilizer all ground cover areas in streetscapes, park sites, medians and parkways a minimum of three (3) times per year using Best Endure 16-16-16 with Polyon Inside. Fertilize at the manufacturer's recommended rate. More applications may be necessary to encourage nitrogen-starved ground covers.

b) All fertilizers shall be applied evenly, followed by thorough watering coordinated with the PARKS SUPERINTENDENT.

c) All fertilizer shall be cleaned off of all hard surfaces immediately after all application is complete, before irrigation is applied.

4) **Shrubbery and Vines**

a) Plants, which are not located in ground cover areas, shall be fertilized a minimum of one (1) time per year using "Slow Release 14-14-14" at the Manufacturers Recommended Rate. Schedule may be adjusted depending on type of plant, weather or soil conditions, as deemed necessary by the PARKS SUPERINTENDENT.

b) All fertilizers shall be applied evenly, followed by thorough watering coordinated with the PARKS SUPERVISOR.

c) All fertilizer shall be cleaned off of hard surfaces immediately after application is complete, before irrigation is applied.

5) **Natives**

Native plants shall NOT be fertilized. Native plants will be identified at the start of the maintenance period.

6) **Fertilizer Invoices**

a) All copies of invoices for fertilizers purchased for each project shall be submitted to the CITY after each application for project files.

TITLE: UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN – GOLF COURSES COMPONENT
ID #: CHU-WQA19

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) emphasizes the need for oversight of golf course activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" activities focus on MS4 Permit compliance-based actions and will not change from year to year. "Enhanced" activities are additional activities above and beyond baseline MS4 Permit requirements and will be adapted as new information becomes available.

The San Diego MS4 Permit requires Copermittees to carry out a variety of mandated activities related to existing development within each jurisdiction. Core activities performed under the individual jurisdictions' JURMPs are outlined in the USMC Nutrient Management Plan Table 4.5 (see CHU-WQA12). For example, each Copermittee will enforce its local ordinance as it becomes aware of non-compliance with discharge prohibitions and minimum Best Management Practices (BMPs) requirements at golf courses. Compliance is determined through both active inspection of golf course operations and response to public complaints about illegal discharges or insufficient BMPs.

Enhanced activities at golf courses include each jurisdiction elevating the inspection priority for golf courses in the USMC Watershed. It is anticipated that increased inspection and oversight will result in appropriate BMPs being tailored to each site based on the results from annual commercial inspections, complaint investigations, and other information. Copermittees will also collaborate on golf course oversight where applicable to enhance each Copermittee's ability to identify and eliminate pollutant discharges. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Golf Course Facility Program:

All elements of the core golf course program were completed. The County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed. Three of the four golf courses in the watershed were inspected during FY 2009-10. The remaining facility is scheduled for inspection in FY 2010-11. Three of the four golf course facilities were notified of existing requirements and appropriate BMPs. When applicable, notices of violation were issued and follow up actions were taken. Golf course inspection results are included in Table 1 below.

Table 1. Golf Course Inspections

Golf Course	FY 2009-10 Inspection	Notice of Violation	Follow Up	Enforcement
Lake San Marcos 1 - Country Club (County)	Yes	Yes	Corrective Active Plan Required	Ongoing
Lake San Marcos 2 - Executive Course (County)	Yes	Yes	Corrective Active Plan Required	Ongoing
Twin Oaks Golf Course (San Marcos)	Yes	Yes	Corrective Actions Prescribed	Ongoing
Escondido Country Club (Escondido)	FY 2010-11	TBD	TBD	TBD

City of San Marcos Existing Golf Course Enhancement Activities:
In addition to the core activities, the City of San Marcos initiated development of a focused questionnaire targeting specific nutrient generating golf course activities. The questionnaire form will be shared with the other jurisdictions and findings will be collaboratively explored in FY 2010-11.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of an adopted TMDL compliance program. This activity is intended to be supportive of a voluntary TMDL process currently being developed by stakeholders and the SDRWQCB.

TIME SCHEDULE FOR IMPLEMENTATION

Table 2. Implementation Schedule

Planned Tasks		County		San Marcos		Escondido	
		FY 2009-10	FY 2010-11	FY 2009-10	FY 2010-11	FY 2009-10	FY 2010-11
Core Program	Update inventory	Yes	Planned	Yes	Planned	Yes	Planned
	Elevate golf course inspection priority in USMC Watershed	Yes	Planned	Yes	Planned	Yes	Planned
	Notify golf courses of applicable BMP requirements	Yes	Planned	Yes	Planned	Yes	Planned
	Conduct inspections at golf courses in USMC Watershed	Yes	Planned	Yes	Planned	No	Planned
	Conduct enforcement as appropriate	Yes	Planned	Yes	Planned	N/A	Planned
Enhanced Program	Develop golf course questionnaire on nutrient generating activities	N/A	N/A	Yes	Planned	N/A	N/A

LEAD WATERSHED COPERMITTEES

- City of San Marcos

OTHER PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Golf Course Facilities in Watershed

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is measured by assessing the completion of each Copermittees' core golf course program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core golf course program were completed: the County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed: three of the four golf courses in the watershed were inspected during FY 2009-10; three notices of violation were issued and follow up actions were implemented; three of the four golf course facilities were notified of existing requirements and appropriate BMPs (Level 1 Outcomes).

Table 3. Effectiveness Assessment

Planned Tasks	FY 2009-10	FY 2010-11	Status
County of San Diego Core Program	Level 1 Assessment Completed	TBD	Ongoing
City of San Marcos Core Program	Level 1 Assessment Completed	TBD	Ongoing
City of Escondido Core Program	Level 1 Assessment Completed	TBD	Ongoing
City of San Marcos Golf Course Questionnaire	In Development	TBD	Ongoing

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TITLE: UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN – AGRICULTURE COMPONENT
ID #: CHU-WQA20

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a strategy for addressing the impacts of agricultural activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" activities will not change from year to year and focus on MS4 Permit compliance-based monitoring. "Enhanced" component activities are additional activities committed to by the USMC Watershed Copermittees and will be adapted as new information becomes available.

The San Diego MS4 Permit requires Copermittees to carry out a variety of mandated activities related to agricultural operations within each jurisdiction. The San Diego MS4 Permit requires Copermittees to carry out a variety of mandated activities related to existing agricultural development within each jurisdiction. Core agriculture-related oversight activities performed under the individual jurisdictions' JURMPs are outlined in the USMC Nutrient Management Plan Table 4.3 (see CHU-WQA12). Each Copermittee will enforce its local ordinance as it becomes aware of non-compliance with discharge prohibitions and minimum Best Management Practices (BMPs) requirements for agricultural activities. Compliance is determined through both active inspection of agricultural operations and responses to public complaints about illegal discharges or insufficient BMPs.

Enhanced agricultural activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted agricultural activities in high priority areas.

It is important to note that discharges from agricultural and nursery operations are directly regulated by the RWQCB pursuant to conditional waiver of waste discharge requirements. In order to be eligible for Conditional Waiver No. 4, agricultural and nursery operator discharges must: 1) implement minimum management measures and BMPs to minimize or eliminate pollutant discharges, 2) perform annual self-assessments and training, 3) form or join a monitoring group no later than December 31, 2010, and 4) file a notice of intent with the RWQCB to be part of an individual or group monitoring program no later than January 1, 2011.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Monitoring Program:

All elements of the core agricultural program were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to agricultural land uses can be found in Table 4.3 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances with respect to non-compliance of discharge prohibitions, enforcement of minimum BMP requirements at commercial agriculture facilities, and continued to periodic inspection of commercial agricultural properties. Copermittees are required to record all instances of non-compliance, enforcement measures, and corrective actions at agriculture-related properties; documentation can be found in the respective jurisdictions' FY 2009-10 JURMP Annual Reports.

Enhanced Agriculture Program:

- ***County of San Diego Agriculture Practices Review –*** The County of San Diego undertook efforts to better understand and address the impacts of agricultural activities

in the immediate vicinity of Lake San Marcos. County inspectors worked with the professional grove management companies active in the Lake San Marcos area to collect information on crop type, irrigation regimes, fertilization techniques, and existing BMP implementation. This information was provided to experts at the Farm and Home Advisor for review and consultation. Review of current agricultural practices suggests that area grove management companies are implementing practices consistent with industry standards. Attachment A provides a summary of this analysis.

- ***City of San Marcos Agriculture Activities Enhancement*** **–** In addition to core activities, the City of San Marcos elevated the inspection priority of agricultural properties within the USMC and initiated development of a focused questionnaire targeting specific nutrient generating agricultural activities. The questionnaire form will be shared with the other jurisdictions and findings will be collaboratively explored in FY 2010-11. Based on the FY 2009-10 inspection results, and the January 2011 SDRWQCB NOI requirements for agricultural businesses, San Marcos will update its current inventory, outreach watershed issues, and identify key nutrient generating practices and recommended appropriate BMPs. FY 2009-10 agriculture business inspections were included in the FY 2009-10 Annual Report.
- ***City of Escondido Agriculture Activities Enhancement*** **–** The City of Escondido has no agricultural businesses in the Upper San Marcos Creek Watershed***.***

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of an adopted TMDL compliance program. This activity is intended to be supportive of a voluntary TMDL process currently being developed by stakeholders and the SDRWQCB.

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 2009-10	FY 2010-11	Status
Core Agriculture Program	Completed	Implementation	Ongoing
County of San Diego Agricultural Practices Review	Completed	Implementation	Ongoing
City of San Marcos Agriculture Activities Enhancement	Completed	N/A	Complete
City of Escondido Agriculture Activities Enhancement	City of Escondido has no agricultural properties in USMC watershed	N/A	N/A

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Escondido

OTHER PARTICIPATING ENTITIES

- Agricultural Property Owners within the USMC Watershed
- Grove Management Companies

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to address water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will inform Copermittees on water quality issues and potential sources in the USMC Watershed. This information can then be used to guide future implementation efforts that may: 1) increase awareness of stakeholders; 2) change behavior and inform BMP implementation; 3) reduce pollutant loads in discharges; 4) improve water quality discharged from the MS4; and, 5) improve water quality in Lake San Marcos.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is measured by assessing the completion of each Copermittees' core agriculture program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core residential activities program were completed.

Enhanced agriculture program elements will be assessed through the program progress (Level 1 Outcome) and the reporting of relevant metrics when applicable. Table 2 includes current assessment measures.

Table 2. Effectiveness Assessment

Planned Tasks	FY 2009-10	Outcome Level	Status
Core Agricultural Program	Complete	Level 1	Ongoing
County of San Diego Agricultural Practices Review	Complete	Level 1	Ongoing
City of San Marcos Agriculture Activities Enhancement	Complete	Level 1	Ongoing
City of Escondido Agriculture Activities Enhancement	N/A	N/A	TBD

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San Marcos Golf Course and Grove Information

Farm and Home Advisors Office Input-Dave Shaw and Valerie Mellano

On several occasions during summer of 2009 and fall of 2010 I met with the personnel from Ag, Weights and Measures regarding the water quality situation in the San Marcos golf course-avocado grove area. In addition, I visited the site in July of 2009 to review the grove location, runoff issues and obvious practices that have potentially contributed to the water quality issues. General recommendations that will minimize water quality issues arising from the grove include the following: Check irrigation system routinely for leaks and broken sprinklers. Conduct an irrigation evaluation to determine the efficiency of the irrigation system and make appropriate modifications. Make sure that pressure compensation is used on hillsides to avoid uneven watering and to minimize pressure-induced leaks and sprinkler breakage. Use weather/humidity data or soil moisture sensing systems to assist in irrigation scheduling. Utilize barriers or basins and grass lined ditches wherever possible to capture the runoff and use up any nutrient-laden runoff prior to the time it reaches the lake area.

In addition, Dave Shaw, (San Diego County Farm Advisor who deals with irrigation and fertilization issues in landscape and nurseries) and I reviewed the fertilization data that showed the amounts and timing of fertilizer applications to the grove. None of the fertilization was out of the ordinary, and in fact some of the levels seemed a little on the low side. From the data provided, we were not really able to tell if the application timing was appropriate.

Besides the avocado grove and golf course contributions to the water quality issues, examination and data needed to be collected on the neighborhood and landscape contributions to the issues.

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TITLE: UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN – MONITORING
ID #: CHU-WQA21

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a plan for monitoring within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of monitoring activities. "Core" monitoring focuses on the compliance-based monitoring required by the San Diego Municipal MS4 Permit (Permit). "Enhanced" monitoring involves additional activities that the USMC Watershed Copermittees have committed to and will be adapted as new information and needs are identified.

Core Monitoring:

The Permit requires Copermittees to carry out a variety of mandated water quality monitoring activities throughout the San Diego region. These core programs are intended to: 1) assess the chemical, physical, and biological impacts to receiving waters resulting from urban runoff discharges, and 2) to identify and characterize sources of specific pollutants in urban runoff discharges. The Regional Receiving Waters and Urban Runoff Monitoring Program initially approved by the Regional Stormwater Copermittees did not include any monitoring stations in the USMC Watershed. However, a new Temporary Watershed Assessment Station (TWAS) will be installed in San Marcos Creek, immediately upstream of Lake San Marcos, during FY 2010-11. The new TWAS station will be located in the same location as the wet and dry weather data collection location conducted as a part of the enhanced monitoring activities described elsewhere in this report. The USMC Watershed Copermittees each conduct a Dry Weather Field Screening and Analytical Monitoring Program within their respective jurisdictions. Jurisdictional dry weather monitoring takes place between May 1 and September 30 each year and is designed to detect and eliminate illicit connections and illegal discharges to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow up investigations. For FY 2009-10, within the USMC Watershed, the County of San Diego monitored four stations, the City of San Marcos monitored 27 stations, and the City of Escondido monitored five stations.

Enhanced Monitoring:

Enhanced monitoring is intended to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify watershed priorities for management action. Enhanced monitoring includes special monitoring projects to address identified needs, enhancements to existing jurisdictional monitoring programs to improve focus on watershed issues of concern, and a shared commitment to collaboratively reviewing and analyzing watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges. Enhanced activities will include jurisdiction-specific monitoring actions and collaborative projects. Each year in the activity implementation sections (below) the USMC Watershed Copermittees will report on the enhanced monitoring activities conducted. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Monitoring:

Core Monitoring during FY 2009-10 consisted of the jurisdictional dry weather monitoring programs implemented individually by each Watershed Copermittee. A description of each

jurisdiction's site locations, sampling dates, and results are included in their FY 2009-10 Jurisdictional Urban Runoff Management Program Annual Report.

Enhanced Monitoring:

- ***Collaborative Watershed Monitoring Project*** – The USMC Watershed Copermittees collaborated on the design of a special monitoring project to collect baseline information on flow, as well as nutrient and sediment loading, at various locations throughout the watershed (see table below). Monitoring was funded and implemented by the County of San Diego.

Table 1. Monitoring Station Locations

Station	Latitude	Longitude	Flow	Wet Weather	Dry Weather
LSM-05a	33.11959	-117.20581	Yes	No	No
LSM-05b	33.11900	-117.20531	Yes	No	No
LSM-04	33.11982	-117.20565	Yes	No	No
CAR-13	33.12012	-117.20997	Yes	Yes	No
CAR-14	33.11896	-117.20744	Yes	Yes	No
Discovery Street	33.13053	-117.20037	No	Yes	No
Via Vera Cruz	33.13166	-117.18687	Yes	No	Yes
Woodland Parkway	33.15404	-117.13048	Yes	Yes	Yes
Sycamore Drive	33.17965	-117.15254	Yes	Yes	Yes

- ***County of San Diego Dry Weather Monitoring Enhancement*** - The County supplemented its jurisdictional dry weather monitoring program by performing three separate sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos. For additional details, please refer to Appendices A and B to this activity sheet.
- ***City of San Marcos Dry Weather Monitoring Enhancement*** - In addition to core dry weather monitoring activities described in section 4.1.1.2 of USMC Nutrient Management Plan, the City of San Marcos will augment its core monitoring program with an additional 20 future monitoring locations to identify and characterize other sources of nutrients. Based on historic nutrient trend data, sites were selected to enhance the current inventory and mapped. A field assessment of all sites occurred and the total number of sites may be adjusted in accordance to field conditions. Focused monitoring will occur within the Twin Oaks Valley area, San Marcos Creek, and near outlets of Phase II agencies and other key agencies. A Quality Assurance Project Plan (QAPP) following Surface Water Ambient Monitoring Program (SWAMP) protocols will be prepared for the focused nutrient monitoring effort. Data collection and monitoring is planned to occur during dry weather monitoring periods as well as outside the dry weather monitoring period. The enhanced monitoring data collection will begin in FY 2010-11. The City of San Marcos consultant has collaborated with the County of San Diego monitoring plan near CAR 13 through synchronized sampling along with the County's summer and winter monitoring sweeps and as appropriate during subsequent fiscal years. Data planned for collection in FY 2010-11 as part of this effort will be shared with the County to assist in the nutrient sweeps. Data collected by Escondido under their dry weather program will be coordinated and assessed

- ***City of Escondido Dry Weather Monitoring Enhancement*** - The City of Escondido discussed regularly collaborating with each Copermittee in reviewing and analyzing the combined Copermittee dry weather data. It is anticipated this review will result in coordinated dry weather monitoring efforts during FY 2010-11 that will be conducted more than once during the dry weather monitoring season—an effort that would exceed the current Permit's core requirement. Through the core dry weather program the City of Escondido annually monitors the entire water course as it transverses through the city and monitors the effluent water as it travels into the next jurisdiction.
- ***Volunteer Monitoring Program*** – The County of San Diego began coordinating a volunteer resident monitoring program to assist in the collection of additional information on Lake San Marcos dissolved oxygen levels, temperature, and turbidity throughout the year. Lake San Marcos residents will conduct the monitoring from boats or kayaks with monitoring equipment purchased and provided by the County of San Diego. The County will develop sampling protocol guidance and will conduct a training session for resident volunteers in July 2010.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of an adopted TMDL compliance program. This activity is intended to be supportive of a voluntary TMDL process currently being developed by stakeholders and the SDRWQCB.

TIME SCHEDULE FOR IMPLEMENTATION

Table 2. Implementation Schedule

Planned Tasks	FY 2009-10	FY 2010-11	Status
Collaborative Watershed Monitoring Program	6-8 months of Extended Flow monitoring at 5 sites 2 Stormwater Water Quality Sampling events conducted at 5 sites Non-stormwater Water Quality Sampling conducted at 3 sites	TWAS Station Sampling will provide Stormwater and Non-stormwater water quality sampling results	Ongoing
County of San Diego Enhanced Dry Weather Monitoring	3 Dry Weather Monitoring sweeps at 51 potential discharge points around the Lake	At least 2 Dry Weather Monitoring sweeps at 51 potential discharge points around the Lake	Ongoing
City of San Marcos Enhanced Dry Weather Monitoring	Addition of 20 dry weather monitoring sites	QAPP for Enhanced Data Collection, Assessment and Source Investigations as Required of Enhanced Dry Weather Monitoring Locations (HSA 904.52 and 904.53) Coordination with County of San Diego CAR 13 Data Investigation (wet and dry weather) , Data Sharing Assessment, and Reporting (HSA 904.52) Assessment of Dry Weather Data with Escondido (HSA 904.53)	Ongoing
City of Escondido Enhanced Dry Weather Monitoring	4 sites sampled during dry weather conditions. 1 site exiting jurisdiction sampled during two wet weather events.	Pursue coordinated dry weather monitoring with County and San Marcos.	Ongoing

Planned Tasks	FY 2009-10	FY 2010-11	Status
County of San Diego Volunteer Monitoring	Development and planning	Training and implementation	Ongoing

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Escondido

OTHER PARTICIPATING ENTITIES

- Lake San Marcos residents

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan Monitoring component seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will inform Copermittees on water quality issues and potential sources in the USMC Watershed. This information can then be used to guide future implementation efforts that may: 1) increase awareness of stakeholders; 2) change behavior and inform BMP implementation; 3) reduce pollutant loads in discharges; 4) improve water quality discharged from the MS4; and, 5) improve water quality in Lake San Marcos.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by assessing the completion of monitoring activities as designated in the USMC Nutrient Management Plan and outlined updates to the activity sheets in the WURMP Annual Report (Level 1).

Table 3. Effectiveness Assessment

Planned Tasks	FY 2009-10	FY 2010-11	Status
Collaborative Watershed Monitoring Program	Level 1 Assessment Completed	TBD	Ongoing
County of San Diego Enhanced Dry Weather Monitoring	Level 1 Assessment	TBD	Ongoing
City of San Marcos Enhanced Dry Weather Monitoring	Level 1 Assessment Completed	TBD	Ongoing
City of Escondido Enhanced Dry Weather Monitoring	Level 1 Assessment Completed	TBD	Ongoing
County of San Diego Volunteer Monitoring	Planning Stages	TBD	Ongoing

TITLE: **LOMA ALTA WATERSHED WATER QUALITY MONITORING PROGRAM**
ID #: **CHU-WQA22**

ACTIVITY DESCRIPTION

To better understand and characterize constituents of concern in the Loma Alta Creek watershed, the City of Oceanside, with the assistance of the City of Vista, is implementing a watershed monitoring program for the creek and its major tributaries. The first year of data will be used as a baseline in anticipation of the nutrient and bacteria TMDLs that will be created and implemented at the slough. The quarterly ambient monitoring program will focus on seven receiving water locations and the three tributaries. As information is gathered, the monitoring program will be adapted through spatial or temporal changes to assess priority areas within the watershed. This adaptive approach will allow for the addition and removal of analytes, sampling locations, and sampling strategies.

A description of the monitoring program, including sampling locations, procedures, and analyses is included as Attachment A to this Activity Implementation Sheet.

ACTIVITY IMPLEMENTATION FY 2009-10

Sampling for the baseline year of data began in March of 2009. The spring sampling event took place on March 17th and the summer event took place on June 22nd. Six receiving water and three tributary sites had flowing or ponded water during each event and all constituents listed in the work plan were analyzed.

TMDL APPLICABILITY

This activity is planned for future implementation of the TMDL for Nutrients and Bacteria for Loma Alta Slough.

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring activities will continue into FY 2009-10. The program will be reevaluated for continued implementation in future years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the Loma Alta HA (904.10). This monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

The City of Oceanside and the City of Vista collected samples from Loma Alta Creek and its tributaries beginning March 2009, sampling bacteria, nutrients, and selenium. This activity is

only a monitoring activity to provide baseline results for further source assessment in the Loma Alta Watershed. An assessment will be made after a year's worth of data is collected and the program may be adapted to better identify priority areas. An overview of the monitoring program is provided in Attachment A.

Attachment "Loma Alta Creek Watershed Monitoring Program", City of Oceanside, March 2010

Loma Alta Creek
Watershed Monitoring Program

1 INTRODUCTION

To better understand and characterize constituents of concern in the Loma Alta Creek watershed, the City of Oceanside is implementing a watershed monitoring program for the creek and its major tributaries. The data will be used as a baseline in anticipation of the nutrient and bacteria TMDLs that will be created and implemented at the slough. The quarterly ambient monitoring program will focus on seven receiving water locations and the three tributaries. As information is gathered, the monitoring program may be adapted to fit the needs of the Clean Water Program. This adaptive approach will allow for the addition and removal of analytes, sampling locations, and sampling strategies.

Loma Alta Creek is currently listed on the 2006 303(d) list for the following segments and analytes:

Table 1. 2006 303(d) List.

Water body Segment Name	Estimated Size Affected	Pollutant/Stressor
Pacific Ocean at Loma Alta Creek Mouth	1.1 miles	Indicator Bacteria
Loma Alta Slough	8.2 acres	Eutrophic
		Indicator Bacteria

The proposed 2008 303(d) list, adopted by the San Diego Regional Water Quality Control Board (SDRWQCB) in December 2009 and awaiting State and EPA Region 9 approval, lists the following segments and analytes:

Table 2. Proposed 2008 303(d) List.

Water body Segment Name	Estimated Size Affected	Pollutant/Stressor
Pacific Ocean at Loma Alta Creek Mouth	0.03 miles	Indicator Bacteria
Loma Alta Slough	8.2 acres	Eutrophic
		Indicator Bacteria
Loma Alta Creek	7.8 mi	Selenium
		Toxicity

Additional historical and current monitoring data for Loma Alta Creek watershed is listed below.

Receiving Water Monitoring:

- Regional Temporary Watershed Assessment Station (TWAS); 2007-08; ambient and wet weather.
    - One station east of I-5 with continuous flow monitoring and two ambient and two wet weather events.
    - Not planned for continued TWAS monitoring.
- UV Treatment Facility Monitoring

    - Only sampled dry season when UV Facility is operational. One influent sample, UV influent (post sand–filter) and one effluent sample, and three beach samples.
- Pacific Ocean Shoreline Monitoring
    - Historical County Department of Health bacteria data for Buccaneer Beach is available. As of September 28, 2008, shore station sampling at Buccaneer Beach ended due to loss of funding.
- Lagoon TMDL Investigation Order Monitoring (Calendar Year 2008)
    - All locations were west of I-5. A mass emissions station, lagoon segment, ocean inlet segment, lagoon transect, and two storm drain locations were monitored for nutrients, bacteria, and conventional constituents for dry and wet weather. More information is available from the Carlsbad Hydrologic Unit Lagoon Monitoring Report (June 2009).
- Loma Alta Creek Watershed Management Plan Monitoring
    - All data collected between 200 and 2002. Used the following techniques for evaluation of water quality:
        - Land Use Based Model.
        - Ambient Monitoring (one station at Coast Highway crossing with grab samples from 11 events) .
        - Source Identification Monitoring (bacteria samples throughout the watershed between June 2000 and July 2001).
        - Wet Weather Monitoring (one storm event at Coast Highway crossing with grab samples).

Outfall Monitoring:

- Jurisdictional Dry Weather Monitoring
    - Up to 35 locations through the Loma Alta watershed within the MS4 system visited once per year during the dry season (May 1 – September 30).
- MS4 Monitoring
    - Dry and wet weather, targeted and random samples. Dry, targeted samples are collected by the City of Oceanside. The remaining three types of samples are collected and reported through the Regional Watershed Monitoring Program and Report.

2 MONITORING DESIGN

The City will conduct dry weather monitoring quarterly beginning in March, 2010. No sampling will be conducted if rainfall over 0.1 inches has occurred within 72 hour prior to the sampling date.

2.1 Sample Locations

Samples will be collected at the locations listed in Table 3. Sample locations may change based on the adaptive nature of the monitoring. As reaches are characterized, stations may be added or removed from the list as monitoring focuses on hot spots for constituents of concern.

Table 3. Loma Alta Creek Watershed Sampling Locations.

Station Name	Station Designation	Description	Latitude	Longitude
LA-PCH	RW	W of Pacific Coast Highway	33.17991	-117.36660
L108	Trib	LA Tributary W of I-5	33.18250	-117.36512
LA-SOC	RW	End of South Oceanside Blvd	33.19315	-117.35623
L027	Trib	Garrison Creek; N of Oceanside Blvd	33.20252	-117.33708
LA-ECR	RW	At El Camino Real - NE side of ECR and RR upstream of 2 pipes	33.19991	-117.33052
LA-RDO	RW	At Rancho Del Oro - NE side of RDO and RR; create path	33.20205	-117.31012
LA-COL	RW	E of College Blvd 200 ft	33.20619	-117.28347
L116	Trib	South of Oceanside Blvd and Arroyo	33.20809	-117.28042
LA-NOR	RW	Along North Ave near 4602 North Ave through easement	33.21235	-117.26995
LA-VIS*	RW	Top of Vista Pacific; start of storm drain system	33.21294	-117.26331

*LA-VIS will generally include visual observations only as it will likely be dry. If flowing, samples will be collected if resources allow.

2.2 Sampling Methods

2.2.1 Frequency

Monitoring will be conducting, at a minimum, quarterly, (i.e., four times/year). This allows for seasonal monitoring during ambient conditions. If a month is missed due to rain or other circumstances, it will be made up the following month to ensure four events per year are monitored.

2.2.2 Field Analysis

The following in-situ water quality measurements will be collected at each site:

- Water Temperature
- pH
- Conductivity
- Turbidity
- Dissolved Oxygen
- Flow

2.2.3 Laboratory Analysis

The following constituents will be analyzed by the laboratory:

- Total Coliform
- Fecal Coliform
- Enterococcus
- Nitrate-N
- Nitrite-N
- Total Kjeldahl Nitrogen (TKN)
- Total Suspended Solids (TSS)
- Ammonia
- Orthophosphate
- Total Phosphorous
- Dissolved Selenium

2.2.4 Sampling Methods

Field samples will be collected using an in-situ water quality meter. Where possible, the meter will placed directly into the flow. When flow is insufficient, a sampling cup my be used.

Flow will be measured quantitatively using standard USGS protocols. If the flows are too small to measure with instrumentation, the indirect methods described by USGS may be used to estimate flow (e.g., float method).

Laboratory samples will be collected as grab samples in the appropriate containers and stored on ice (4˚C) for transfer. The sample containers will be certified as clean and/or sterile by the laboratory performing the analysis prior to sample collection. Samples will be delivered to the laboratory or courier and analyses initiated within the specified holding times. Table 4 summarizes this information.

Table 4. Summary of Sample Analytical Methods and Requirements for Methods.

Analyte	Method	Target Reporting Limit	Units	Maximum Holding Time
Temperature	Field Meter	-	˚C	-
Dissolved Oxygen	Field Meter	0.1	mg/L	-
Conductivity	Field Meter	0.1	mS/cm	-
Turbidity	Field Meter	0.1	NTU	-
pH	Field Meter	0.1	pH Units	-
Total Coliform	SM 9221 B, E	20	MPN/100ml	6H
Fecal Coliform	SM 9221 B, E	20	MPN/100ml	6H
Enterococcus	Idexx	10	MPN/100ml	6H
Nitrate-N	SM4500	0.5	mg/L	48H
Nitrite-N	SM4500	0.05	mg/L	48H
TKN	SM4500	0.5	mg/L	28D
Ammonia	SM4500	0.1	mg/L	28D
Total Phosphorous	SM4500	0.05	mg/L	28D
Orthophosphate	SM4500	0.05	mg/L	48H
Dissolved Selenium	EPA 200.8	5	µg/L	6M
TSS	SM 2540 D	1.5	mg/L	7D

2.2.5 Quality Assurance/Quality Control

Quality assurance and quality control for sampling processes will include proper collection of the samples in order to minimize the possibility of contamination. All samples will be in laboratory supplied, laboratory-certified, contaminant-free sample bottles. In addition, during each sampling event one site is selected (at random or rotating) to conduct alternating field duplicates and field blanks.

Evaluation of sample contamination will be performed by collecting field blanks for all constituents at one site every other sampling event. The field blank will be used to assess the sample collection, container, and transport of the samples to the analytical laboratory.

Evaluation of sample variability will be performed by collecting field duplicates for all constituents at one site every other sampling event. The relative percent difference between sample duplicates may then be assessed.

The chemistry analysis of the samples will be performed under the guidelines of the quality assurance and quality control programs established by the state-certified laboratory.

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TITLE: WATER QUALITY RUNOFF MANAGEMENT AND AGRICULTURAL WAIVER WORKSHOP FOR NURSERIES AND AGRICULTURAL BUSINESSES
ID #: CHU-WQEA3

ACTIVITY DESCRIPTION

This free educational workshop is planned to be provided every other year. The workshop was provided in FY 2008 and will be provided again in FY 2010. Likely topics will include:

- Water quality runoff regulations and BMPs for pollution prevention.
- Irrigated Agricultural Waivers.
- Storm water quality issues and typical inspection elements.
- Federal assistance for development of conservation management plans and other programs to assist operations in complying with water quality regulations.

During Fiscal year 2009-10 this free educational workshop targeted nurseries and agricultural businesses and was held at the San Diego County Farm Bureau in Escondido on June 24, 2010. Four speakers provided the owners and operators a better understanding of water quality runoff management issues related to their operations. Growers from north San Diego County watersheds were invited to attend (San Luis Rey, San Dieguito and the Carlsbad Hydrologic Unit).

Topics covered during the workshop were as follows:

- Overview.
- Irrigated Agricultural Waivers.
- Irrigated lands group.
- Federal assistance.

Respective speakers for the topics above were as follows:

- Cynthia Mallett – City of Oceanside
- Eric Larson – San Diego County Farm Bureau (SDCFB)
- Pete Peuron – San Diego Regional Water Quality Control Board (SDRWQCB)
- Cori Calvert – United States Department of Agriculture and National Resource Conservation Service USDA/NRCS

Speakers and Topics:

- Cynthia Mallett from the City of Oceanside provided an overview of the regulations that affect Nursery and Agricultural operations. She also provided information on the role that municipalities play in assisting growers in complying with these regulations. There was also a sample employee training tracking form provided.
- Pete Peuron from the SDRWQCB discussed the conditional waiver for discharges from agricultural and nursery operations, that became effective in 2008.
- Eric Larson from the SDCFB provided an overview of monitoring groups and how their operation can benefit from participating in a collective approach to runoff compliance.
- Cori Calvert from the USDA/NRCS explained how NRCS can assist growers to develop conservation plans, as well as discussing funds available through the 2008 Farm Bill to help nurseries and agricultural operations in complying with water quality regulations.

A total of 62 people were in attendance at the workshop including workshop organizers and speakers: 45 agricultural related and 17 governmental/jurisdictional. A breakdown of attendees of the workshop is as follows:

Table 1. Agricultual Workshop Attendance

Organization	Number of Persons – Agricultural	Number of Persons – Other
Advisors/Grove Care	11	-
Farm Supplier	3	-
Grove (Avocado or other)	21	-
Nursery	9	-
Nursery and Grove	1	-
Governmental	-	10
Jurisdictional	-	7
Total	**45**	**17**

A distribution of the represented facilities attending the workshop can be seen below.

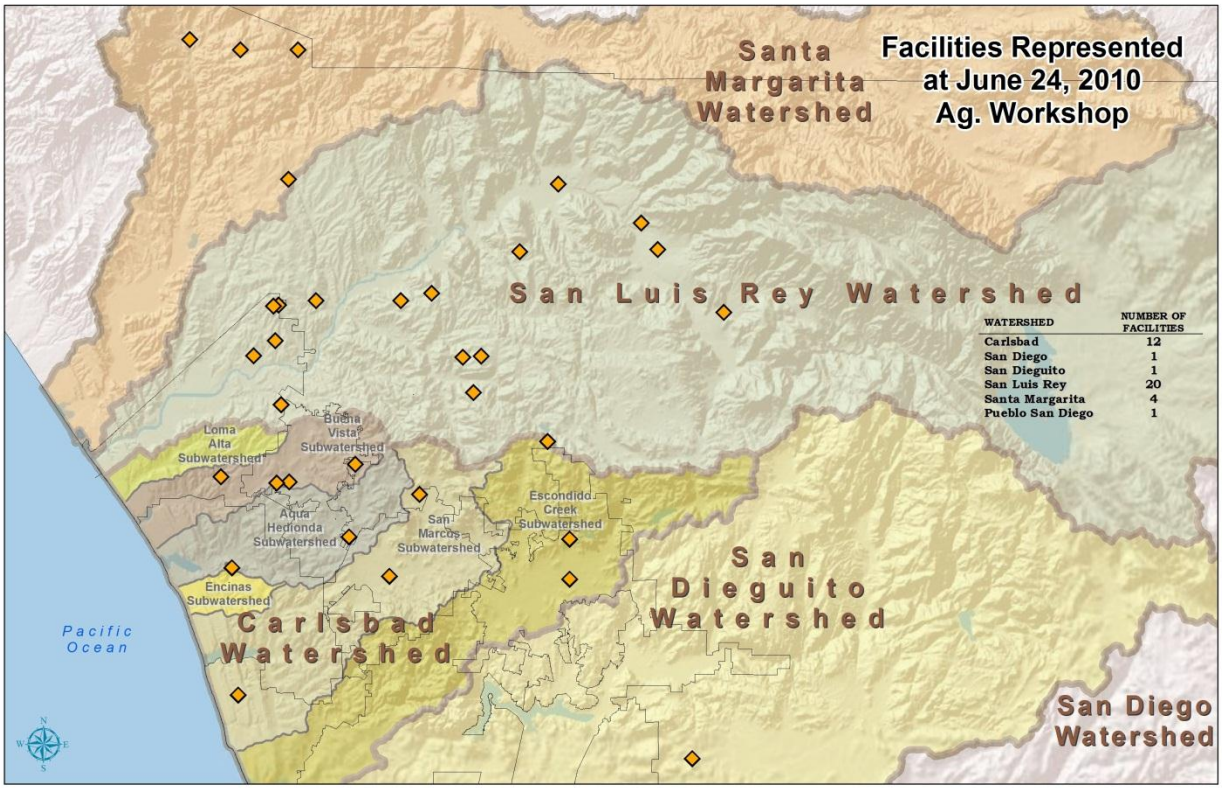

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 25 attendees took both the pre-test and post-test (some attendees arrived after the pre-test was given or left before the post-test was given). This test included ten questions that were provided by the speakers. The average pre-test score was 5.48. The average post-test score was 8.36. These scores represent a 61.03% increase in knowledge of the topics reviewed during the workshop.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This workshop is planned to be implemented every two years. The first workshop was held on

March 27, 2008. The second workshop was held on June 24, 2010. The next workshop is planned for fiscal year 2011-12.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad
- City of Encinitas
- City of Escondido
- City of Poway
- City of San Marcos
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- University of California Cooperative Extension
- Regional Water Quality Control Board
- USDA, Natural Resources Conservation Service
- San Diego County Farm Bureau
- Upper San Luis Rey Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, sediment and nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and Agricultural operations have been identified as potential dischargers of bacteria, sediment, and nutrients. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS MEASUREMENTS

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 25 attendees took both the pre-test and post-test (some attendees arrived after the pre-test was given or left before the post-test was given). This test included ten questions that were provided by the speakers. The average pre-test score was 5.48. The average post-test score was 8.36. These scores represent a 61.03% increase in knowledge of the topics reviewed during the workshop.

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TITLE: **LID FEATURES IN SAN ELIJO NATURE CENTER**
ID #: **CHU-WQEA5**

ACTIVITY IMPLEMENTATION

In November 2007, the County of San Diego began construction on a two-story, 5,525 square foot, state-of-the-art nature center that replaces the former visitor center located at the San Elijo Lagoon Ecological Reserve in Encinitas. The new facility, which will open in early 2009, is designed to be constructed and commissioned in accordance with the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program and is expected to achieve Gold or Platinum certification. LEED credit 6 is specific to stormwater management and is achieved by maintaining the pre-development 24-hour peak discharge rate in the post-development environment if existing impervious surfaces are 50% or less.

The building design incorporates low impact development (LID) techniques which include a green roof with low water use native plants, a bioswale to aid in infiltration of runoff from the site, radiant floor heating, recycled cotton insulation, certified renewable lumber, photovoltaics that will provide 52% of energy requirements, natural daylighting and ventilation, stormwater filtering, native vegetation and recycled water used for irrigation, and extraordinary efforts to minimize area of disturbance. In addition to the many "Green" qualities designed into the building, the Nature Center's exhibits will showcase a series of high quality professional photographs and high-tech, interactive educational kiosks for visitors of all ages.

The goal for the San Elijo Visitor Center is to utilize the gold certification to educate the public on environmentally friendly building design and to present a "practice what we preach" public facility, demonstrating conservation of natural resources, use of recycled and environmentally friendly construction materials and reduced pollution and water use. A section of the exhibits will educate visitors on what and where watersheds are, the causes of water pollution and its destructive impact on habitat and endangerment and extinction of species, clean drinking water, water conservation, water reuse, etc. This facility will serve to promote future sustainable design in the San Diego region and educate citizens about ways in which they can reduce pollutants, including bacteria, sediment and nutrients, from entering the watershed.

Figure 1. Photo of Green Roof Informational Signage and Green Roof

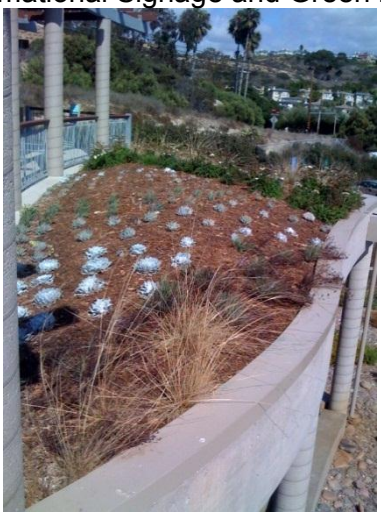

FY 2008-09 ACTIVITY IMPLEMENTATION

The San Elijo Nature Center celebrated a grand opening on January 31st, 2009. The San Elijo Nature Center is now open to the public. Since opening the San Elijo Nature Center has seen a total of approximately 21,000 visitors.

FY 2009-10 ACTIVITY IMPLEMENTATION

In addition to the educational displays featured at the San Elijo Nature Center, the facility also sponsors public participation activities in cooperation with the San Elijo Lagoon Conservancy (SELC). A list of these events, associated dates, and the estimated number of attendees is included below:

Table 1. San Elijo Nature Center Education/Outreach Events

Event	Date	Attendees
SELC Work Day/ Nature Walk	7/18/2009	26
SELC Work Day/ Nature Walk	8/15/2009	10
SELC Work Day/ Nature Walk	9/13/2009	4
Coastal Cleanup Day	9/19/2009	195
SELC Work Day/ Nature Walk	10/17/2009	37
SELC Work Day/ Nature Walk	10/25/2009	10
Elementary School Visit	11/16/2009	47
SELC Work Day/ Nature Walk	11/21/2009	30
SELC Work Day/ Nature Walk	1/16/2009	60
SELC Work Day/ Nature Walk	2/20/2010	47
SELC Work Day/ Nature Walk	4/17/2010	6
SELC Work Day/ Nature Walk	4/24/2010	5
Lagoon Day	5/15/2010	600
SELC Work Day/ Nature Walk	6/19/2010	15
Total Event Attendance		**1,092**

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Educational displays and outreach activities will continue throughout FY 2010-11.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING WATERSHED COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- San Elijo Lagoon Conservancy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria, sediment, and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a high priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

As indicated in the March 2008 WURMP, activity effectiveness was measured by the successful implementation of the LID features described (Level 1 Outcome). There is no post-construction water quality monitoring currently planned for this site.

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TITLE: **BIOASSESSMENT TRAINING FOR HIGH SCHOOL STUDENTS**
ID #: **CHU-WQEA7**

ACTIVITY DESCRIPTION

Communities Alive in Nature, a local non-profit organization, implements environmental education outreach programs to local school districts in San Diego County. One component of their education outreach program is to educate high school students about water quality and how to assess water quality based on water chemistry and the biological community of benthic macroinvertebrates (BMI) living within the streams. Oceanside Clean Water Program staff was invited to participate in a hands-on field training for students to demonstrate how to properly use field test kits for water quality analysis and the proper protocols for collection of benthic macroinvertebrates. Ninth grade students from Pacific Ridge School, a private school located in Carlsbad, California, participated in this educational training event.

Two bioassessment training events were held during this reporting period. These two events were held on March 19 and March 26, 2009 at Dawson Reserve and Green Oaks Ranch respectively, both located in Vista along Agua Hedionda Creek. Forty seven 9th Grade students and 12 adults participated in the two training events.

During the trainings three stations were set-up along the creek that focused on three components of the overall bioassessment sampling: water chemistry, collection of benthic macroinvertebrates, and habitat assessment. Students were split into three groups and rotated between the three stations. At each station students were taught the appropriate protocols to complete specific tasks. The water chemistry station taught students how to properly collect a water sample and how to use field test kits. Data gathered at this station included water and air temperature, pH, dissolved oxygen and total nitrates. At the bioassessment station students learned about the various types of equipment used to collect benthic macroinvertebrates, how to properly access the water, and the correct protocol to collect the benthic macroinvertebrates. At the habitat assessment station students leaned how to properly complete the form used to assess the habitat surrounding the sampling site.

ACTIVITY IMPLEMENTATION

During FY 2009-10 one field sampling bioassessment training event was conducted on March 25, 2010. Two training events were scheduled for March 25 and April 1 but rain caused the cancellation of the April 1 training event. Due to the school classroom scheduling the second field sampling event was not able to be rescheduled.

Thirty students participated in the field sampling event on March 25 and were divided into three groups. Each group conducting the following tasks at three sites along Agua Hedionda Creek in the Dawson Reserve: Chemical analysis, physical assessment, and biological sampling. The benthic macroinvertebrate samples were taken back to the school where the students sorted the insects with the use of high-powered microscopes. 45 students who were not able to attend the April 1 field sampling event were provided classroom training on proper field sampling protocols.

The BMI samples that were collected on March 25th were sorted by all students in a series of five lab classes. The samples are at the Dawson Reserve and labeled with the March 25, 2010 date. Students were then asked to analyze the data from the physical, chemical and BMI counts and draw a conclusion about water quality in Agua Hedionda Creek (AHC) at the Dawson Reserve. In making their case for the conclusion, students were asked to use all the data and

observations from the sampling day. The conclusion was to be drawn from the observations and facts not on speculation.

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This education outreach and training activity is scheduled for March/April of each year. This reporting period's training events were held on March 19 and 26, 2009. Two training events are planned for implementation in March/April 2010.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING WATERSHED COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- Communities Alive in Nature
- Pacific Ridge School
- University of California San Diego Natural reserve System

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, nutrients and sediment as high priority water quality pollutants in the Carlsbad WMA. This activity educates students and adults as to how these pollutants can affect the benthic macroinvertebrates living within the streams of the Carlsbad WMA.

EFFECTIVENESS MEASUREMENTS

All ninth grade students attending Pacific Ridge School are expected to attend one of the two trainings. This activity will provide increased awareness (Level 2 Outcome) on how benthic macroinvertebrates can determine water quality problems over time rather than just a snapshot as is seen with typical water quality sampling.

TITLE: UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN – RESIDENTIAL COMPONENT
ID #: CHU-WQEA8

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a strategy for addressing the impacts of residential activities within the Upper San Marcos Creek (USMC) Watershed. There are 5,949 acres (9.3 square miles) of residential development in the USMC Watershed, which represents 32 percent of the total watershed land area. Single-family and multi-family housing are the predominant land use type followed by spaced rural residential and then mobile homes.

Since many nutrient- and other pollutant-generating activities are associated with residential land use types, the watershed Copermittees' MS4 Permit requires a range of core activities to manage discharges from residential areas, e.g., identifying high threat to water quality residential areas and activities, implementing minimum BMPs to address high priority areas and sources, enforcing local stormwater ordinances, operating a hotline to facilitate public reporting of illegal discharges, as well as educating residents, the general public, target communities, and school children.

While these core residential activities will continue as currently implemented under existing jurisdictional plans, the USMC Watershed Copermittees will also conduct enhanced residential outreach activities focused on nutrient management within the watershed as follows.

- Irrigation Reduction – The USMC Watershed Copermittees will implement a program that targets a reduction in over-irrigation flows from residential areas in the USMC Watershed. Activities may include outreach to residents through materials distribution, presentations, mass media, and potentially exploring the viability of an incentive program (e.g., rebates for smart irrigation controllers, etc.).
- Template Water Quality Management Plan for Homeowners Associations – The Watershed Copermittees will collaborate to develop a template water quality management plan for homeowners associations (HOAs) and then introduce it to them by providing education and outreach.
- Outreach to Professional Landscapers – The USMC Copermittees recognize that conducting outreach to the professional landscape community may represent an opportunity for reducing future nutrient loading within the USMC watershed. Future outreach may include focused workshops for landscape professionals or guidance to residents in selecting responsible landscaping contractors.

The USMC Watershed Copermittees will annually report on the enhanced residential activities conducted. Any additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-2010

Core Residential Program:

All elements of the core residential programs were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to residential land uses can be found in Table 4.2 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances, operation of a hotline to facilitate public reporting, and maintaining records of all instances of residential non-compliance,

enforcement, and corrective actions. A full record of jurisdictional residential activities can be found in the individual Copermittees' JURMP FY 2009-10 Annual Reports.

Enhanced Residential Program:

Irrigation Reduction/BMPs Outreach

During FY 2009-10, the USMC Watershed Copermittees implemented programs targeting reductions in over-irrigation and nutrient flows in the USMC Watershed:

- Quail Call: In July of 2009, the Watershed Copermittees worked with the Lake San Marcos Community Association to communicate water quality-related educational messages via the community's quarterly periodical, the *Quail Call*. Contributions included information for frequent articles on water quality concerns in the Lake and actions residents can take to prevent pollution. The County also printed landscape maintenance educational brochures for inclusion in the *Quail Call*.
- Stormwater Calendars: The County of Diego distributed 2,400 educational stormwater calendars to residents of the Lake San Marcos community. The calendars, which include monthly tips for on preventing irrigation runoff and other BMPs to protect water quality, were designed and paid for by the San Diego Regional Stormwater Copermittees.
- Mass Media Campaigns: The County of San Diego sponsored six bus bench advertisements with water conservation-themed messaging from July through September of 2009. These benches were located among major roadways surrounding the Lake San Marcos community and emphasized reductions in over-watering and adjustment of sprinkler systems.

Template Water Quality Management Plan for Homeowners Associations

During FY 2009-10, the USMC Watershed Copermittees collaborated to develop a template water quality management plan to provide guidance to HOAs regarding BMPs for nutrient management. Initial work involved researching similar plans developed in other regions and tailoring content to the needs of the USMC Watershed. Although a template was created in FY 2009-10, final revisions will be made in FY 2010-11. Once the product is complete, the Copermittees will collaborate with Lake San Marcos HOA representatives to finalize the template plans and distribute them to HOAs throughout the watershed.

Outreach to Professional Landscapers

The County of San Diego began development of enhanced outreach efforts to landscape professionals during FY 2009-10.

Presentations and Public Forums

The USMC Copermittees also made outreach focused outreach presentation and hosted public forums for the residents within the USMC watershed. These presentations are listed in the table below.

Table 1. Presentations and Forums

Event	Date	Attendees	Subject	Venue	Presenter(s)
Lake San Marcos Stakeholder Forum	7/16/2009	33	Water Quality/ Discussion of Existing Data Sources	San Marcos Community Center	San Marcos (Facilitator), County, Escondido
Lake San Marcos Democratic Club	10/10/2009	25	Water Quality and BMPs	Lake San Marcos Country Club	County
Lake San Marcos Sportsman's Club	2/4/2010	25	USMC NMP Plan and Progress/ Lake Study Results	Lake San Marcos Country Club	San Marcos
San Marcos Creek Specific Plan Info Meeting	4/15/2010	20	Specific Plan Water Quality Objectives and Relationship to Lake	Lake San Marcos Country Club	San Marcos
VWD Water Conservation Practices	6/17/2010	20	Water Quality and BMPs	Lake San Marcos Country Club	San Marcos

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of an adopted TMDL compliance program. This activity is intended to be supportive of a voluntary TMDL process currently being developed by stakeholders and the SDRWQCB.

TIME SCHEDULE FOR IMPLEMENTATION

Table 2. Implementation Schedule

Planned Tasks	FY 2009-10	FY 2010-11	Status
Core Residential Outreach Program	Completed	Implementation	Ongoing
Irrigation Reduction – Quail Call Inserts	Completed (July 2009)	Implementation	Ongoing
Irrigation Runoff – Stormwater Calendars	Completed (December 2009)	N/A	Complete
Irrigation Reduction – Mass Media	Complete (September 2009)	N/A	Complete
Template Water Quality Management Plan for Homeowners Associations	Planning and Development	Implementation	Ongoing
Outreach to Professional Landscapers	Planning and Development	TBD	Ongoing
Presentations and Public Forums	Complete (Multiple Dates)	TBD	Ongoing

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Escondido

OTHER PARTICIPATING ENTITIES

- Lake San Marcos Residents
- Homeowner Associations

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will inform residents in the USMC about the impact of various landscape and household maintenance practices as they relate to nutrient loading and management in the USMC Watershed. This information can then be used to guide future implementation efforts that may: 1) increase awareness of residents; 2) change behavior and inform BMP implementation; 3) reduce pollutant loads in discharges; 4) improve water quality discharged from the MS4; and, 5) improve water quality in Lake San Marcos.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is measured by assessing the completion of each Copermittees' core residential activity program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core residential activities program were completed.

Residential activity enhanced program elements will be assessed through measures of material distribution, number of presentations, attendees, and program progress. Applicable measures are presented in the table below.

Table 3. Enhanced Effective Measures

Planned Tasks	FY 2009-10	Outcome Level	Status
Irrigation Reduction – Quail Call Inserts	Quail Call distributed quarterly to roughly 2,400 residents	Level 1	TBD
Irrigation Runoff – Stormwater Calendars	Calendars distributed to roughly 2,400 residents.	Level 1	Complete
Irrigation Reduction – Mass Media	6 locations for a period of 3 months	Level 1	TBD
Template Water Quality Management Plan for Homeowners Associations	Planning and Development	Level 1	Ongoing
Outreach to Professional Landscapers	Planning and Development	Level 1	TBD
Presentations and Public Forums	4 Presentations 1 Public forum 123 Total Attendees	Level 1	Ongoing

TITLE: **RESIDENTIAL COMPOSTING WORKSHOP**
ID #: **CHU-WQEA9**

ACTIVITY DESCRIPTION

Residents from the San Luis Rey and Carlsbad watersheds will be invited to attend a free composting workshop to be held during Fiscal Year 2010-11. This workshop will provide an overview of composting, hands-on demonstrations on how to compost, proper application of compost, and the benefits of compost to soil and water quality.

Topics to be covered during the workshop are as follows:

- Static Composting
- Active Composting
- Vermicomposting (worm composting)
- Compostable materials
- Carbon:Nitrogen Ratio
- Composting bins and tools
- Applying compost in landscapes and gardens
- How compost benefits soil and protects water quality
- Reduction of waste being land filled

Potential speakers for the workshop are:

- Cynthia Mallett – City of Oceanside
- Shamsa Visone– Solana Center for Environmental Innovation
- Mary Matava – Agri-Service

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This workshop is scheduled for implementation in Spring 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Agri-Service

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Pesticides
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed strategy identifies nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. The use of chemical fertilizers has been identified as a potential source of nutrients and eutrophication in local water bodies. Using

compost as a natural fertilizer will reduce the amount of chemical fertilizer that resident use in their landscapes. It also reduces the need for pesticides. Also, erosion and sedimentation can be reduced through the proper application of compost. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Expected benefits included educating residents about how to compost and providing them with information and tools to incorporate composting into their daily lives. Getting residents to actually compost and utilize the soil in their landscapes will help reduce pollutants from entering our local water bodies.

EFFECTIVENESS ASSESSMENT

A pre- and post-test will be administered at the workshop. Attendees will be asked to complete the same set of questions before the workshop begins and after the completion of the workshop. This will help determine the effectiveness of the speakers in improving attendees' knowledge of composting and composting applications (Level 2).

RECOMMENDATIONS

Depending on the success of this workshop, future workshops may be implemented.

CARLSBAD WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

Fiscal Year 2011 Annual Report

January 31, 2012

Prepared and Submitted by the
Carlsbad Watershed Copermittees

City of Carlsbad
City of Encinitas
City of Escondido
City of Oceanside
City of San Marcos
City of Solana Beach
City of Vista
County of San Diego

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EXECUTIVE SUMMARY

This Annual Report describes the Carlsbad Watershed Copermittees' activities during the Fiscal Year (FY) 2011 reporting period (July 1, 2010 through June 30, 2011) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). In response to the Permit, the Carlsbad Watershed Urban Runoff Program (WURMP) Copermittees worked collaboratively to improve water quality within the watershed throughout FY 2011. The Copermittees will continue to work with the Regional Board to implement, improve, and enhance their programs and activities in the coming years.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed management area (WMA). The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

In preparing the 2008 Carlsbad WURMP, the Copermittees developed a collective watershed strategy using existing data and information available to the Copermittees related to water quality and potential sources of pollutants to identify the most important water quality problems and sources within the WMA. Some baseline source information was also available through existing literature, including the San Diego Stormwater Copermittees' 2011 Long-Term Effectiveness Assessment (LTEA). The Copermittees then evaluated the hydrologic areas (HAs) to make management decisions about potential targeted activities.

During this reporting period, the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the high priority water quality problems (HPWQPs) identified and each source category's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

A summary of the program accomplishments for FY 2011 is found below:

Water Quality Assessment

Water quality priorities are evaluated each year based on the water quality assessment performed during the previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

HPWQPs in the Carlsbad WMA:

- Bacteria
- Sedimentation
- Nutrients

Carlsbad Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Carlsbad WURMP Copermittees continued to develop and implement a watershed-based program that addresses the HPWQPs and their sources in the Carlsbad WMA. The Carlsbad WURMP Copermittees met

nine (9) times over the course of the reporting period to plan, implement and assess watershed activities. Through workgroup collaboration, Copermittees had increased their ability to identify and address watershed source pollutants, improve public awareness of watershed-related issues, forged partnerships with other cooperating organizations, and expanded Copermittee capability to implement cost-effective watershed improvement activities.

Watershed Activities

The Carlsbad WURMP Copermittees focused their efforts on the HPWQPs in the watershed during the FY 2011 reporting period. The result of this focused approach has been the active implementation of fifteen (15) watershed activities and nine (9) watershed education activities during the reporting period, all of which focus on HPWQPs and the sources most likely contributing to them.

WURMP activities required by the Permit were conducted during the reporting period. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. The listing below identifies the activities implemented, which includes planning, monitoring, and assessment:

Watershed Water Quality Activities

- Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility
- Agua Hedionda Creek Restoration – SR-02+
- Stormwater Quality Master Plans for Special Drainage Fee Areas
- Nitrate Source Identification and Abatement: Buena Creek
- Pet Waste Bag Dispenser Program in County Parks
- Upper San Marcos Creek Nutrient Management Plan
- Water Quality Treatment Facility @ Palomar Airport
- Land Acquisitions
- Residential Rain Barrel Subsidies and Distribution
- Upper San Marcos Creek Nutrient Management Plan – Parks Component
- Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component
- Upper San Marcos Creek Nutrient Management Plan – Agriculture Component
- Upper San Marcos Creek Nutrient Management Plan – Monitoring Component
- Loma Alta Water Quality Monitoring Program
- San Diego County *Enterococcus* Regrowth Study

Watershed Education Activities

- Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses
- LID Features in San Elijo Nature Center
- Focused Equestrian Outreach
- Upper San Marcos Creek Nutrient Management Plan – Residential Component
- Residential Composting Workshop
- Residential Smart Landscape Evaluation Program
- Residential Rain Barrel Subsidies and Distribution
- Cottonwood Creek Watershed Interpretive Signage
- Ocean Friendly Gardens Workshop Series

As required, Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. In an effort to report on the Copermittees' activities performed to improve water quality in the WMA, the Copermittees are reporting on JURMP and WURMP activities performed on an HA basis. The data and information is not comprehensive and for some data sets, estimates were used to generate some of the numbers for the activities – the methodology for generating these estimates is explained in **Appendix A** of the document. The Copermittees believe that this approach is an important step towards integrating jurisdictional and watershed activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

Effectiveness Assessment

The Carlsbad Watershed Copermittees continue to improve the program's effectiveness assessment by utilizing the six-level assessment framework prepared by the Regional Copermittees in October 2003, where appropriate. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, the effectiveness assessment continues to lay the foundation for future in-depth evaluations of activities and program implementation.

Based upon the requirements of the Permit, the Carlsbad WURMP Copermittees are compliant and effective in implementing the Carlsbad WURMP.

WURMP Improvements

In light of emerging TMDLs, the potential for regional permitting, and the Copermittees' visioning process[1], the Copermittees are committed to focusing on increasing effectiveness and decreasing duplication of programs.

Regardless of the outcome of these and other issues, the Copermittees remain committed to working closely with the Regional Board in the next year to ensure a reasonable, effective, and achievable Municipal Permit is prepared for reissuance, as Permit reissuance is likely to have significant changes to the WURMPs. The Carlsbad WURMP Copermittees will continue to assess their implementation, reporting and program assessment to look for improvement opportunities.

[1] Described in the Copermittees' Report of Waste Discharge submittal to the Regional Water Quality Control Board on June 24, 2011.

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1 INTRODUCTION

This Annual Report describes the Carlsbad WURMP Copermittees' activities during the reporting period (July 1, 2010 through June 30, 2011) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Permit, the Carlsbad WURMP Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout Fiscal Year (FY) 2011. The Copermittees will continue to work to implement, improve, and enhance their programs and activities.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

The Permit requires that the Copermittees within the Carlsbad Watershed collaborate in the development and implementation of a watershed-scale program that addresses urban runoff[2] quality. The rationale for this approach is simple: urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon downstream receiving waters. The mechanism that the Permit uses to require watershed collaboration is the development and implementation of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, the Permit requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied. The overall goal of the Carlsbad Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

Water quality priorities are evaluated each year and take into consideration the water quality assessment performed during each previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP. For the Carlsbad WMA, the water quality priorities are: bacteria, sedimentation, and nutrients.

To target these water quality priorities, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the

[2] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

collective watershed strategy as the basis for developing and implementing the activities, the Copermittees focused their efforts on the potential sources that are the most likely high-priority pollutant contributors in the Carlsbad Watershed Management Area. This FY 2011 report details the implementation of the Carlsbad WURMP's collective watershed strategy.

It is important to note that the Encinas Hydrologic Area (904.4) is not discussed in this report. Lack of exceedances in the jurisdictional dry weather monitoring program, the relative small size of this hydrologic area, and the location within the City of Carlsbad boundary do not support evaluation. Please refer to the City of Carlsbad jurisdictional annual report for further information on activities in this HA.

1.1 COPERMITTEE COLLABORATION

1.1.1 CARLSBAD WURMP MEETINGS

In order to effectively plan and implement the Carlsbad WURMP, the Copermittees met nine (9) times during FY 2011 to coordinate and plan their efforts to collaboratively address water quality issues in the WMA. Furthermore, the Copermittees met to develop and prioritize water quality activities that address pollutants of concern in the watershed, to exchange ideas on how to address high priority water quality pollutants in the watershed, to evaluate the effectiveness of actions, and to collaborate on development of required submittals. See **Table 1-1** below for dates of these meetings and pertinent agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
7/20/2010	Annual Calendar, WURMP Annual Report, Update on FY 2011 Activities, Planning for FY 2012, IRWM, Los Peñasquitos Sediment TMDL, Bacteria Project I TMDL, Loma Alta TMDL, Lake San Marcos, Permit Reissuance Process (LTEA and ROWD), Unfunded Mandate Test Claim
8/17/2010	WURMP Annual Report, Bacteria Project I TMDL and Loma Alta TMDL Updates, Lake San Marcos, Permit Reissuance Process (LTEA and ROWD), Unfunded Mandate Test Claim
10/19/2010	Regional Monitoring Annual Report, WURMP Annual Report, Bacteria Project I TMDL and Loma Alta TMDL Updates, Lake San Marcos, Workgroup Updates, Permit Reissuance Process (LTEA and ROWD)
11/16/2010	WURMP Annual Report, Bacteria Project I TMDL, Los Peñasquitos TMDL, and Loma Alta TMDL Updates, Lake San Marcos, Workgroup Updates, Permit Reissuance Process (LTEA and ROWD)
2/15/2011	Annual Report Debrief, WURMP Annual Cycle, Activity Update, WQ Program Analysis, TMDLs, Permit Reissuance Process (Monitoring, LTEA/ROWD, Meetings with RWQCB), Workgroup Updates, Lake San Marcos
3/15/2011	Activity Update, TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos), Permit Reissuance Process (Monitoring, LTEA, ROWD), Workgroup Updates, Lake San Marcos
4/19/2011	Lake San Marcos, TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos), Permit Reissuance Process (Monitoring, LTEA, ROWD), HU to HA Reorganization, Workgroup Updates
5/17/2011	TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos), Construction Brochure, HU to HA Reorganization, Permit Reissuance Process (Monitoring, LTEA, ROWD), Lake San Marcos
6/21/2011	HU to HA Reorganization, CCMA Meeting and CWN Meeting Debrief, TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos), Construction Brochure, Permit Reissuance Process (Monitoring, LTEA, ROWD), Lake San Marcos

1.1.2 AGUA HEDIONDA WATERSHED MANAGEMENT PLAN

During FY 2008, the watershed Copermittees collaborated in the completion of the Agua Hedionda Watershed Management Plan (AHWMP) – a grant funded effort led by the City of Vista. Since the completion of the plan, the City of Vista formally adopted the AHWMP in the spring of 2009. The AHWMP provides a comprehensive, scientifically-based plan for preserving, restoring, and enhancing the Agua Hedionda Watershed's natural functions and

features. It assesses past, present, and future watershed conditions and identifies management needs throughout the watershed, considering the complex relationships among different watershed processes. The recommendations of the AHWMP represent a geographically focused, comprehensive watershed planning effort. The plan presents management measures for achieving and sustaining measurable water quality improvements and recommends focus areas where opportunities will complement each other and lead to greater improvement in watershed functions.

With City Council support, the Vista Engineering Department and Water Quality Protection Program began working on the SR-02 project, one of the key restoration projects recommended in the Agua Hedionda Watershed Management Plan. This project encompasses restoration of approximately 3,800 linear feet of Agua Hedionda Creek on City property. During FY 2011 the City completed the Preliminary Design Report for the project, examining several design options for the restoration. Project proponents are seeking grant funding under the Integrated Regional Water Management (IRWM) Program and Proposition 84 to further the project by completing the final design, permitting, and construction.

1.1.3 WATERSHED MAP UPDATES

No updates have been made to the previously submitted Watershed Map. Please refer to the FY 2008 WURMP Annual Report submitted in January 2009 for the most recent Watershed Map.

1.2 ORGANIZATION AND CONTENT OF REPORT

SECTION 1 - Introduction

Section 1 of the Annual Report provides a summary of the Carlsbad WURMP Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2 - Water Quality Assessment

Section 2 provides an updated evaluation and analysis of the Carlsbad WMA's receiving water conditions based on applicable water quality data from the *2010-2011 Receiving Waters and Urban Runoff Monitoring Program Annual Report* (Regional Annual Monitoring Report) (Weston, 2012). Furthermore, the high priority water quality problems (HPWQPs) are compared to the Copermittees' *2011 Long-Term Effectiveness Assessment* (LTEA) (MOE, LWA, Weston, 2011).

SECTION 3 - Pollutant Source Assessment

Section 3 provides an update on the likely sources of urban runoff. Although the assessment covers the entire WMA, it specifically addresses the distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA (with exception to the Encinas HA).

SECTION 4 - Implementation of Watershed Activities

Section 4 describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2011 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution. The activities selected and conducted by the Copermittees during FY 2011 address the overall goal of the WURMP and the Permit by focusing on the HPWQPs in all HAs.

SECTION 5 - Effectiveness Assessment
Section 5 provides an assessment of the implementation and effectiveness of the Carlsbad WURMP for the FY 2011 reporting period using concepts from *A Framework for Assessing the Effectiveness of Jurisdictional Runoff Management Programs*. The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and BMP implementation and resulting changes in receiving water quality. Consistent with the requirements of the Permit, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 6 - Conclusions
Section 6 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

2 WATER QUALITY ASSESSMENT

This section provides an updated water quality assessment based upon previously established strategies and processes presented in the 2008 WURMP (March 2008). The water quality assessment provides the results of an evaluation and analysis of the Carlsbad Watershed Management Area's (WMA) receiving waters and MS4 conditions based on applicable water quality data, reports, analyses, and other information. Information and data from the *2010-2011 Receiving Waters and Urban Runoff Monitoring Program Annual Report* (Weston, January 2012) was used to conduct the assessment. Each of the hydrologic areas within the Carlsbad watershed, with exception to the Encinas HA, is evaluated discretely. The assessment concludes with identification of the high priority water quality problems (HPWQPs) for each applicable HA.

The San Diego County Municipal Copermittees *2010-2011 Receiving Waters and Urban Runoff Monitoring Report* (Weston Report) includes significant analyses of the monitoring activities conducted within the Carlsbad WMA during the reporting period. As a part of the Weston Report, assessments of the HAs (with exception to the Encinas HA) during both wet weather and ambient weather monitoring conditions are presented in an integrated manner to convey an overall assessment of each. The integrated assessment identifies which constituents tend to occur in the watershed more frequently than others. For a detailed understanding of the analysis and assessment conducted as part of the regional monitoring effort it is highly recommended that the reader review the Weston Report available at www.projectcleanwater.org. The Carlsbad WMA is the focus in Section 5 of the Weston Report.

The Carlsbad WMA is comprised of 135,602 acres and six hydrologic areas (HAs): Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek. The WMA has historically monitored two mass loading stations (MLS), one on Agua Hedionda Creek and one on Escondido Creek. Four temporary watershed assessment stations (TWAS) have been monitored to date in the WMA, one each in Loma Alta and Buena Vista HAs, and two in the San Marcos HA (one utilized for each the wet and dry seasons). Finally, there are numerous dry weather monitoring (DWM) sites and coastal storm drain monitoring (CSDM) sites throughout the WMA.

Table 2-1 provides a summary of the monitoring activities conducted in the Carlsbad WMA during FY 2011, in compliance with the Permit. **Figure 2-1** depicts the locations of monitoring stations within the Carlsbad WMA that were used to collect samples as part of the regional monitoring effort.

Table 2-1 2010-2011 Monitoring Activities within the Carlsbad WMA

Program Data Set	Constituents Assessed	Loma Alta	Buena Vista Creek	Agua Hedionda	San Marcos	Escondido Creek
Receiving Water Monitoring						
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	✓	✓	✓	✓	✓
Rapid Stream Bioassessments*	Benthic macroinvertebrates, periphyton, and physical habitat		✓			✓
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, sediment chemistry, benthic habitat assessments, and trash	✓	✓	✓	✓	✓
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	✓	✓	✓	✓	✓
Third-Party Data	General chemistry and bacteria		✓		✓	✓
Ambient Bay and Lagoon Monitoring (ABLM)	Sediment chemistry, toxicity, and benthic habitat assessments, water chemistry, and bacteria					✓
Urban Runoff Monitoring						
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, indicator bacteria, and trash	✓	✓	✓	✓	✓
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria		✓		✓	✓
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria		✓		✓	
MS4 Outfall Targeted Dry Weather Monitoring	Chemistry, metals, pesticides, and bacteria	✓	✓	✓	✓	✓
MS4 Outfall Targeted Wet Weather Monitoring	Chemistry, metals, pesticides, and bacteria			✓		
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides					
Coastal Storm Drain Monitoring (CSDM) Program	Indicator bacteria	✓	✓	✓	✓	✓

*Captured through the SMC monitoring

Annual receiving water monitoring is conducted by the Copermittees on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit. Receiving waters ambient and wet weather monitoring occurred within the Carlsbad WMA during the 2010-2011 reporting period. Rapid Stream Bioassessment and instantaneous receiving water monitoring was conducted through the Stormwater Monitoring Coalition (SMC) Regional Bioassessment Program during one ambient weather event at one site in the Buena Vista Creek HA and one site in the Escondido Creek HA.

Ambient Bay and Lagoon Monitoring (ABLM) was performed at two sites within the Escondido Creek HA, although final station assessment was not performed because salinity did not meet the requirements of the standardized assessment tool.

Figure 2-1 Carlsbad Watershed Management Area Monitoring Station Location Map

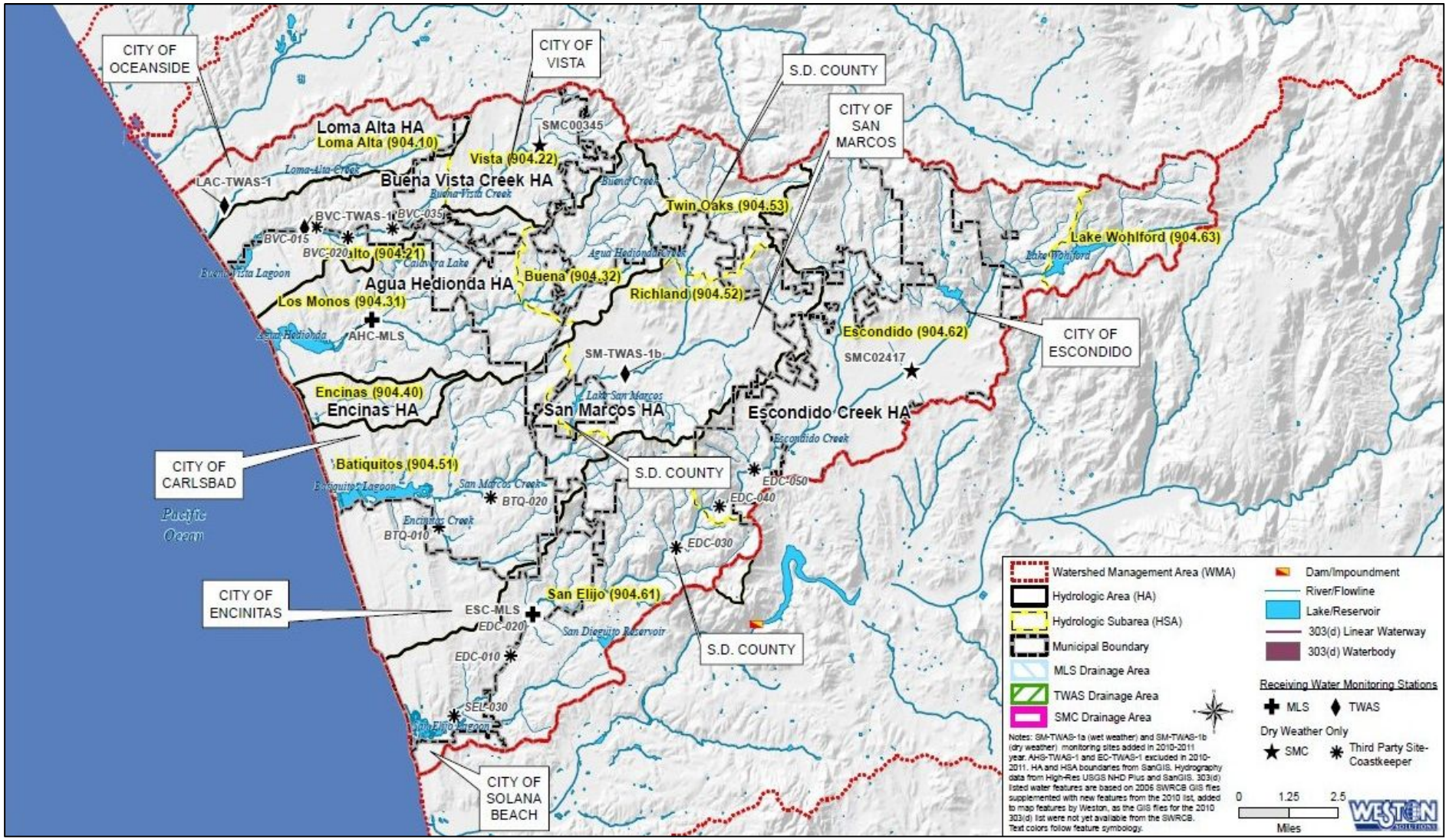

2.1 303(D) LISTINGS AND TMDLS

Within the watershed, contaminants identified on the 2010 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant TMDL status/activity. On November 12, 2010, USEPA approved California's 2008-2010 Section 303(d) list of impaired waters and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. At that time, USEPA identified additional water bodies and pollutants for inclusion on the State's 303(d) list and provided public notice and the opportunity for public comment on the proposed additions which ended December 23, 2010. On October 11, 2011, USEPA issued its final decision regarding the waters EPA added to the State's 303(d) list.

Table 2-2 Carlsbad WMA SWRCB 2010 Section 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/ Stressor on 2010 SWRCB 303(d) List	HA	TMDL Status
Loma Alta Creek	Selenium and toxicity	904.1	Proposed completion date - 2019
Loma Alta Slough	Indicator bacteria and eutrophic	904.1	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2009. The RWQCB began development of the Loma Alta Slough Bacteria and Nutrient TMDL in June 2010.Proposed completion date – June 2012.
Pacific Ocean Shoreline, Loma Alta Creek Mouth	Indicator bacteria	904.1	Proposed completion date - 2019
Buena Vista Creek	Sediment toxicity and selenium	904.2	Proposed completion date - 2019
Buena Vista Lagoon	Indicator bacteria, nutrients, and sedimentation/ siltation	904.2	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2009. Proposed completion date - 2019
Agua Hedionda Creek	*Enterococci*, fecal coliform, phosphorous, TDS, nitrogen, toxicity, manganese, and selenium	904.3	Proposed completion date - 2019
Buena Creek	DDT, nitrate and nitrite	904.3	Proposed completion date - 2019
Pacific Ocean Shoreline, Moonlight Beach	Total coliform	904.3	The Bacteria I TMDL has been adopted by the California Office of Administrative Law and a Load Reduction Plan is due to the RWQCB in October 2012
Lower San Marcos Creek Watershed (Cottonwood Creek)	DDT, selenium, and sediment toxicity	904.5	Proposed completion date - 2019
Upper San Marcos Creek Watershed (San Marcos Creek)	DDE, phosphorus, selenium, and sediment toxicity	904.5	Proposed Completion date – 2019. Currently in Voluntary Participation Agreement with Upper San Marcos Creek Stakeholders. Selenium proposed completion date 2021
Lake San Marcos	Ammonia as N, and nutrients	904.5	Proposed Completion date – 2019. Currently in Voluntary Participation Agreement with Upper San Marcos Creek Stakeholders
Encinitas Creek	Selenium and toxicity	904.5	Proposed completion date - 2019
San Elijo Lagoon	Indicator bacteria, eutrophic, and sedimentation/siltation	904.6	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2009. Proposed completion date - 2019
Escondido Creek	*Enterococci*, fecal coliform, DDT, manganese, nitrogen, phosphate, selenium, sulfates, toxicity, and TDS	904.6	Proposed completion date - 2019
Pacific Ocean Shoreline, Cardiff State Beach	Total coliform	904.6	Proposed completion date - 2019

Source: SWRCB, 2010

2.2 MONITORING PROGRAM INTEGRATION

This section includes an integrated presentation of the watershed monitoring during both ambient and wet weather. The integrated assessment incorporates the results from Watershed receiving water and urban runoff monitoring (MS4, MLS, TWAS, and SMC), with the purpose of overlapping constituents between the programs. Integrated watershed assessment results are presented by HA in **Tables 2-3** to **2-7** below.

Table 2-3 Loma Alta 904.1 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Ammonia (Med), Turbidity (Med) ▪ Bacteria – *Enterococci*, Fecal Coliform (Med) ▪ Nutrients – Total Nitrogen, Total Phosphorous ▪ TDS – Not observed	No samples collected during 2010-2011 monitoring
MLS and TWAS Monitoring	**Intermediate[2] Watershed Receiving Water** Loma Alta Creek TWAS-1 ▪ Chemistry – None above benchmarks ▪ Bacteria – *Enterococci* (Med) ▪ Bioassessment – Very Poor Index of Biotic Integrity (IBI)* ▪ Nutrients – Total Nitrogen (Med) ▪ Toxicity – *C. dubia* reproduction*, *C. dubia* acute (Med), *C. dubia* chronic (Med), *S. capricornutum* acute (Med) ▪ TDS – Not observed	**Intermediate[2] Watershed Receiving Water** Loma Alta Creek TWAS-1 ▪ Chemistry – Bifenthrin (Med) ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Very Poor Index of Biotic Integrity (IBI)* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Not observed Synthetic Pyrethroids in Sediment* ▪ None above benchmarks

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011)
2: Intermediate Watershed Receiving Waters are creeks and rivers

COD - Chemical Oxygen Demand
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the Loma Alta HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include *Enterococci* and total nitrogen. Other ambient weather water quality issues include ammonia, turbidity, fecal coliform, and total phosphorous in urban runoff, and very poor Index of Biotic Integrity (IBI), *Ceriodaphnia dubia* and *Selenastrum capricornutum* toxicity in intermediate receiving waters. Fecal coliform, bifenthrin, and very poor IBI are the only wet weather water quality issues noted by the monitoring programs.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data in the Loma Alta HA as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

The findings of this assessment support the existing HPWQPs within the Loma Alta HA, with exception to wet weather nutrients. Other identified constituents may be further analyzed and addressed in future years.

Table 2-4 Buena Vista 904.2 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – TSS (Med) ▪ Bacteria – *Enterococci*, Fecal Coliform ▪ Nutrients – Total Nitrogen, Total Phosphorous ▪ TDS – Observed	No samples collected during 2010-2011 monitoring
MLS, TWAS, and SMC Monitoring	**Intermediate[2] Watershed Receiving Water** Buena Vista Creek TWAS-1 ▪ Chemistry – None above benchmarks ▪ Bacteria – None above benchmarks ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – Total Nitrogen (Med) ▪ Toxicity – None above benchmarks ▪ TDS – Observed Stormwater Monitoring Coalition Program* ▪ Chemistry - Sulfate ▪ Bacteria – Not analyzed ▪ Bioassessment – Very Poor IBI ▪ Nutrients – Nitrate, Total Nitrogen ▪ Toxicity – No toxicity observed ▪ TDS – Observed Third Party Data (Coastkeeper) ▪ Bacteria – *Enterococci*, *E. coli*	**Intermediate[2] Watershed Receiving Water** Buena Vista Creek TWAS-1 ▪ Chemistry – Bifenthrin (Med) ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Observed Synthetic Pyrethroids in Sediment* ▪ Bifenthrin

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: Intermediate Watershed Receiving Waters are creeks and rivers.

COD - Chemical Oxygen Demand
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the Buena Vista HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: TDS, *Enterococci*, and total nitrogen. TDS, an ambient weather water quality issue based on the results of MS4 and receiving water data, was also found to be an issue in the wet weather monitoring. Fecal coliform, bifenthrin, very poor IBI, and sediment pyrethroids were determined to be water quality issues during the wet weather monitoring.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data in the Buena Vista HA as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

The findings of this assessment support the existing HPWQPs within the Buena Vista HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-5 Agua Hedionda 904.3 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Sulfate, Total Selenium (Med) ▪ Bacteria – Fecal Coliform, *Enterococci* ▪ Nutrients – Nitrate*, Total Nitrogen, Total Phosphorous, Dissolved Phosphorous* ▪ TDS – Observed	**Urban Runoff*** ▪ Chemistry – Turbidity, Dissolved Copper, Dissolved Zinc ▪ Bacteria – Fecal Coliform ▪ Nutrients – None above benchmarks ▪ TDS – Not observed
MLS and TWAS Monitoring	**Intermediate[2] Watershed Receiving Water** Agua Hedionda Creek MLS ▪ Chemistry – None above benchmarks ▪ Bacteria – *Enterococci*, Fecal Coliform (Med) ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – Total Nitrogen (Med) ▪ Toxicity – *C. dubia* reproduction*, *S. capricornutum* acute (Med) ▪ TDS – Observed	**Intermediate[2] Watershed Receiving Water** Agua Hedionda Creek MLS ▪ Chemistry – Bifenthrin (Med) ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Observed Synthetic Pyrethroids in Sediment* ▪ Bifenthrin
MLS Trends[3]		
Increasing		Total Coliform, Fecal Coliform, TSS, COD, Turbidity, Total Copper, Total Nickel
Decreasing		Diazinon

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: Intermediate Watershed Receiving Waters are creeks and rivers.
3: Trends are based on historical data, including data from the 2010-2011 monitoring year.

COD - Chemical Oxygen Demand
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the Agua Hedionda HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococci*, fecal coliform, total nitrogen, and TDS. Fecal coliform was also found to be a wet weather water quality issue in urban runoff and intermediate receiving waters. Other ambient weather water quality issues include sulfate, total selenium, nitrate, total phosphorous, and dissolved phosphorous in urban runoff, and very poor IBI, and *C. dubia* and *S. capricornutum* toxicity in intermediate receiving waters. Turbidity, dissolved copper, dissolved zinc, and fecal coliform are wet weather water quality issues in urban runoff, and bifenthrin, TDS, and very poor IBI were found to be issues in intermediate receiving waters.

Long-term trend analysis in the Agua Hedionda HA is currently limited to wet weather data collected at the MLS. Of the seven constituents with significantly increasing trends during wet weather, only three have historically been consistently above water quality benchmarks: fecal coliform, TSS, and turbidity. However, during the 2010-2011 Monitoring Season, TSS and turbidity were measured at concentrations below the water quality benchmark. Chemical oxygen demand (COD) has been historically below water quality benchmarks, and total coliform, total copper, and total nickel do not have wet weather water quality benchmarks. One constituent, diazinon, is significantly decreasing and has been below

water quality benchmarks for several years. At present there are insufficient data to complete trend analyses on available dry weather receiving water data.

The findings of this assessment support the existing HPWQPs within the Agua Hedionda HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-6 San Marcos Creek 904.5 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform, *Enterococci* ▪ Nutrients – Total Nitrogen, Total Phosphorous, Dissolved Phosphorous, Nitrate (Med) ▪ TDS – Observed	**Urban Runoff** ▪ Chemistry – TSS (Med) ▪ Bacteria – Fecal Coliform ▪ Nutrients – None above benchmarks ▪ TDS – Not observed
MLS and TWAS Monitoring	**Intermediate[2] Watershed Receiving Water** San Marcos Creek TWAS-1b (Dry) ▪ Chemistry – TSS (Med), Turbidity (Med) ▪ Bacteria – *Enterococci*, Fecal Coliform (Med) ▪ Bioassessment – Poor IBI* ▪ Nutrients – Total Nitrogen, Total Phosphorous (Med), Dissolved Phosphorous* (Med) ▪ Toxicity – *C. dubia* reproduction (Med), *S. capricornutum* acute (Med) ▪ TDS – Observed	**Intermediate[2] Watershed Receiving Water** San Marcos Creek TWAS-1a (Wet) ▪ Chemistry – Bifenthrin (Med) ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Poor IBI* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Observed Synthetic Pyrethroids in Sediment* ▪ Bifenthrin

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: Intermediate Watershed Receiving Waters are creeks and rivers.

COD - Chemical Oxygen Demand
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the San Marcos Creek HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococci*, fecal coliform, total nitrogen, total phosphorous, dissolved phosphorous, and TDS. Other ambient weather water quality issues include nitrate in urban runoff and TSS, turbidity, poor IBI, and *C. dubia* and *S. capricornutum* toxicity in intermediate receiving waters. Wet weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include fecal coliform. Other wet weather priority constituents include TSS in urban runoff and bifenthrin, poor IBI, TDS, and sediment pyrethroids in intermediate receiving waters.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data in the San Marcos HA as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

The findings of this assessment support the existing HPWQPs within the San Marcos Creek HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-7 Escondido Creek 904.6 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Sulfate, Dissolved Oxygen ▪ Bacteria – Enterococci, Fecal Coliform (Med) ▪ Nutrients – Total Nitrogen, Total Phosphorous ▪ TDS – Observed	No samples collected during 2010-2011 monitoring
MLS, TWAS, and SMC Monitoring	**Intermediate[2] Watershed Receiving Water** Escondido Creek MLS ▪ Chemistry – None above benchmarks ▪ Bacteria – *Enterococci* (Med) ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – Total Nitrogen (Med), Total Phosphorous (Med), Dissolved Phosphorous (Med) ▪ Toxicity – *S. capricornutum* acute (Med) Stormwater Monitoring Coalition Program* ▪ Chemistry – Sulfate, Bifenthrin ▪ Bacteria – Not analyzed ▪ Bioassessment – Very Poor IBI ▪ Nutrients – Nitrate as N, Total Nitrogen ▪ Toxicity – No toxicity observed ▪ TDS – Observed Third Party Data (Coastkeeper) ▪ Bacteria – *Enterococci*, *E. coli*	**Intermediate[2] Watershed Receiving Water** Escondido Creek MLS ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Observed Synthetic Pyrethroids in Sediment* ▪ None above benchmarks
MLS Trends[3]		
Increasing		Total Coliform
Decreasing		Total Phosphorous, Diazinon

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: Intermediate Watershed Receiving Waters are creeks and rivers.
3: Trends are based on historical data, including data from the 2010-2011 monitoring year.

ALBM - Ambient Lagoon and Bay Monitoring
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the Escondido Creek HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include *Enterococci*, total nitrogen, total phosphorus, sulfate, and TDS. Other ambient weather priority constituents observed in intermediate receiving waters include: *E. coli*, dissolved phosphorous, bifenthrin, nitrate, very poor IBI, and *S. capricornutum* toxicity. Dissolved oxygen and fecal coliform were ambient weather water quality issues in urban runoff. Wet weather priority constituents outlined by the monitoring programs include fecal coliform, TDS, and very poor IBI.

Long-term trend analysis in the Escondido Creek HA is currently limited to wet weather data collected at the MLS. Trend analysis for the Escondido Creek MLS wet weather data indicates three statistically significant trends: total coliform is increasing, while total phosphorous and diazinon are decreasing. Of these three constituents, total phosphorous is the only constituent rated as a high priority during the 2010-2011 monitoring.

Total coliform is the only significantly increasing constituent at the MLS. There is no wet weather benchmark for this constituent, which is increasing at a rate of approximately 2,941 MPN/100mL per year. Total phosphorus and diazinon are both significantly decreasing, and are both below wet weather water quality benchmarks. Diazinon has been below the wet weather benchmark since 2004. At present there are insufficient data to complete trend analyses on available dry weather receiving water data.

The findings of this assessment support the existing HPWQPs within the Escondido Creek HA with exception to wet weather sediment. Sediment-related constituents (TSS and turbidity) were considered a low-priority during the 2010-2011 regional monitoring, although wet weather MS4 outfall monitoring was not conducted in the HA during the reporting period. Other identified constituents may be further analyzed and addressed in future years.

2.3 HIGH PRIORITY WATER QUALITY PROBLEMS AND RECOMMENDATIONS

In developing the Collective Watershed Strategy, the Carlsbad WURMP Copermittees decided that unless there were significant long-term trends indicating otherwise or overwhelming evidence, the high priority water quality problems identified for each hydrologic area would remain throughout the permit cycle.

New data collected and analytical results summarized in this water quality assessment and in the Regional Monitoring Report (Weston, January 2012) will be taken into consideration as watershed activities are established, but do not affect the HPWQPs identified in the Carlsbad WMA. However, in light of the adopted Bacteria TMDL Project I and the Loma Alta Bacteria and Nutrient TMDL (in development), bacteria and nutrients have been added as HPWQPs where applicable. **Table 2-8** below presents the FY 2011 HPWQPs in the WMA.

Table 2-8. Summary of High Priority Water Quality Problems

HA	Bacteria/Pathogens		Sediments		Nutrients	
	Wet	Ambient	Wet	Ambient	Wet	Ambient
Loma Alta	✓				✓	✓
Buena Vista Creek	✓	✓				
Agua Hedionda	✓	✓	✓			✓
San Marcos	✓	✓				✓
Escondido Creek	✓	✓	✓			✓

The HPWQPs in the Loma Alta, Buena Vista Creek, Agua Hedionda, and Escondido Creek HAs have been confirmed by the LTEA, with exception to ambient weather bacteria in Buena Vista Creek (medium priority constituent in the LTEA) and wet weather nutrients in the Loma Alta HA (low priority constituent in the LTEA). Data in the San Marcos Creek HA were limited when determining priority constituents in the LTEA and thus were not presented in the report; therefore, comparisons between the WURMP HPWQPs and LTEA cannot be made for this hydrologic area.

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3 POLLUTANT SOURCE ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Carlsbad WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by hydrologic area.

Table 3-1 summarizes the land use in each of the hydrologic areas. The pollutants found in wet weather urban runoff are generally associated with land uses in the tributary areas. Rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to the pollutants found in dry weather urban runoff that are generally associated with identifiable-source dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant generating activities and from the traveled path of the urban runoff as it enters and travels through the MS4.

Tables 3-2 through **3-6** represent the inventoried sources that the Copermittees currently track. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants. The process used to develop the tables was taken directly from the Copermittees' *2011 Long-Term Effectiveness Assessment* (LTEA) (MOE, LWA, Weston, 2011). The data used for the process includes the following: (1) results in the *2010-2011 Receiving Waters and Urban Runoff Monitoring Report* (Weston, January 2012); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the LTEA (MOE, LWA, Weston, 2011).

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)					
	904.1	904.2	904.3	904.4	904.5	904.6
Agricultural, Orchards, Vineyards	51.5	183.2	1,358.2	55.0	2,463.2	3,835.0
Automotive and Transportation	9.3	40.3	134.8	202.7	96.8	131.6
Beach, Bay, Lagoon, Reservoir	13.4	222.1	319.3	1.3	520.0	830.8
Commercial	298.1	1,139.8	590.4	274.9	1,715.5	1,355.8
Construction	70.7	23.7	35.7	6.1	91.5	157.8
Health Services	5.7	67.4	11.8	1.3	85.4	58.9
Industrial	557.2	97.9	1,533.7	413.0	814.2	683.1
Institutional	273.2	629.4	320.6	28.2	929.9	798.1
Junkyard, Dump, Landfill	0.0	0.0	0.0	0.0	3.1	238.3
Multi-Family Residential	405.2	1,474.5	836.1	109.8	1,896.5	1,425.9
Open Space and Undeveloped Land	1,339.4	1,805.7	5,786.7	441.9	10,606.0	22,264.5
Parks, Golf Courses, Cemeteries	465.0	477.0	702.8	247.0	2,560.5	1,152.6
Prison	0.0	24.2	0.0	0.0	0.0	0.0
Recreation	11.3	54.3	64.6	138.7	207.3	77.0
Roads and Freeways	1,152.7	2,416.1	2,133.1	356.8	5,094.8	4,182.3
Single Family Residential	1,514.5	5,213.9	4,602.5	155.6	8,484.1	6,777.5
Spaced Rural Residential	44.3	510.5	1,038.0	0.0	2,192.0	10,461.9
Storage and Warehousing	37.3	35.7	29.0	21.7	86.5	49.9
Utilities	26.7	14.0	221.7	35.6	139.8	219.7

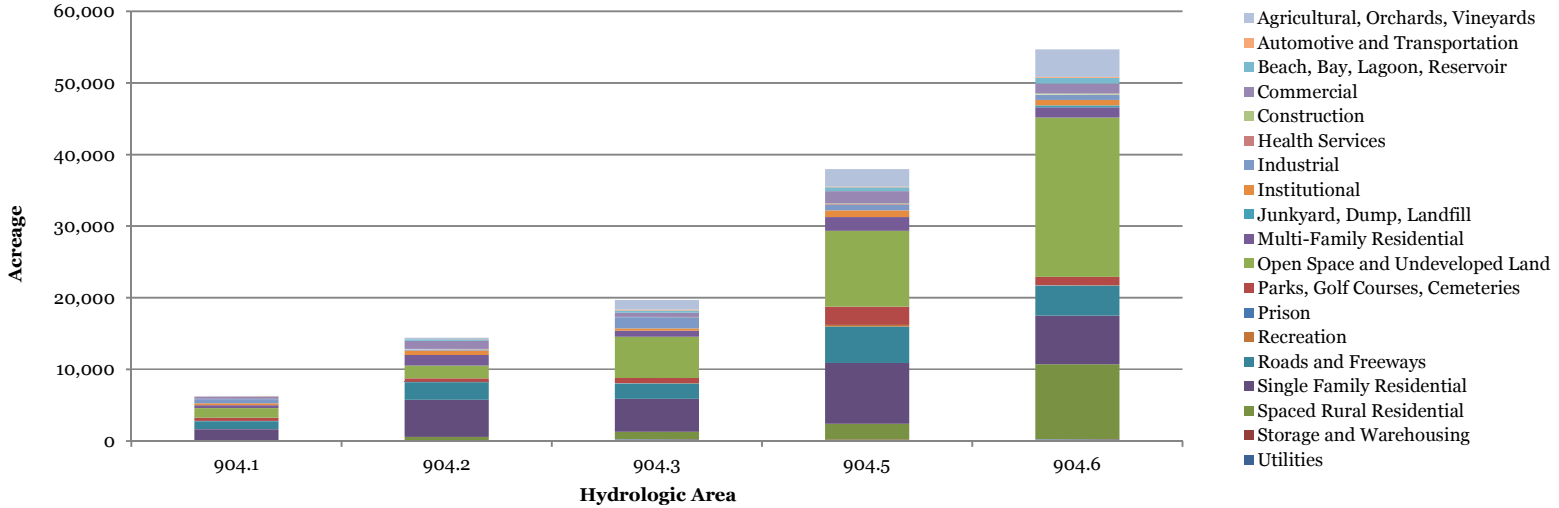

Note: HA 904.4 is not shown graphically due to the small overall area. For a land use representation of HA 904.4, please see **Table 3-1** above.
Source: SANDAG, 2009

Table 3-2 Pollutant Generating Sources – 904.1 Loma Alta Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Animal	7	N	UL	L	UK	L	L	N	L
Automotive	124	L	L	UL	UL	UK	UL	L	L
Cemetery	1	UK	UK	UK	UK	L	UK	UL	UK
Contractor	100	UL	UL	L	UL	UL	UL	UL	UL
Food Establishment	126	N	L	UL	UK	UK	L	UL	L
Equipment	9	L	L	UL	UL	UK	UL	UL	L
Fueling	6	UK	L	UK	N	N	N	N	L
General Industrial	15	L	L	UK	UK	UK	UK	UK	L
General Retail	207	UL	UL	L	UL	UL	UL	UL	UL
Health Services	15	N	UL	L	UK	L	UL	UK	L
Institutional	11	L	UK	UK	UK	UK	UL	UK	UK
Manufacturing	54	L	L	L	UL	UL	UL	UL	L
Metal	21	L	L	UK	UK	UK	UL	UL	L
Nursery	4	L	UL	L	L	L	L	UL	UL
Stone & Aggregates	5	L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	10	L	L	L	UL	UL	UL	UL	L
Municipal	High: 32; Non-High: 2	N	N	L	N	N	UK	UL	N
Construction	High: 7; Medium: 10; Low: 6	UL	UL	L	UL	UL	UL	L	UL
Residential	2,025 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-3 Pollutant Generating Sources – 904.2 Buena Vista Creek Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Agriculture	1	L	UL	L	L	L	L	UK	UL
Animal	6	N	UL	L	UK	L	L	N	L
Automotive	166	L	L	UL	UL	UK	UL	L	L
Contractor	55	UL	UL	L	UL	UL	UL	UL	UL
Food Establishment	404	N	L	UL	UK	UK	L	UL	L
Equipment	3	L	L	UL	UL	UK	UL	UL	L
Fueling	33	UK	L	UK	N	N	N	N	L
General Industrial	10	L	L	UK	UK	UK	UK	UK	L
General Retail	70	UL	UL	L	UL	UL	UL	UL	UL
Health Services	11	N	UL	L	UK	L	UL	UK	L
Institutional	5	L	UK	UK	UK	UK	UL	UK	UK
Manufacturing	10	L	L	L	UL	UL	UL	UL	L
Metal	6	L	L	UK	UK	UK	UL	UL	L
Nursery	28	L	UL	L	L	L	L	UL	UL
Stone & Aggregates	7	L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	16	L	L	L	UL	UL	UL	UL	L
Municipal	High: 49; Non-High: 29	N	N	L	N	N	UK	UL	N
Construction	High: 11; Medium: 12; Low: 27	UL	UL	L	UL	UL	UL	L	UL
Residential	7,345 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-4 Pollutant Generating Sources – 904.3 Agua Hedionda Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities			Pollutant Source Loading Potential[3]							
				Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Agriculture	6			L	UL	L	L	L	L	UK	UL
Animal	5			N	UL	L	UK	L	L	N	L
Automotive	85			L	L	UL	UL	UK	UL	L	L
Contractor	59			UL	UL	L	UL	UL	UL	UL	UL
Food Establishment	183			N	L	UL	UK	UK	L	UL	L
Equipment	51			L	L	UL	UL	UK	UL	UL	L
Fueling	19			UK	L	UK	N	N	N	N	L
General Industrial	38			L	L	UK	UK	UK	UK	UK	L
General Retail	53			UL	UL	L	UL	UL	UL	UL	UL
Golf	3			UK	UK	UK	UK	L	UK	UL	UK
Health Services	8			N	UL	L	UK	L	UL	UK	L
Institutional	11			L	UK	UK	UK	UK	UL	UK	UK
Manufacturing	91			L	L	L	UL	UL	UL	UL	L
Metal	46			L	L	UK	UK	UK	UL	UL	L
Nursery	66			L	UL	L	L	L	L	UL	UL
Stone & Aggregates	15			L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	71			L	L	L	UL	UL	UL	UL	L
Municipal	High	Non-High		N	N	L	N	N	UK	UL	N
	52	20									
Construction	High	Medium	Low	UL	UL	L	UL	UL	UL	L	UL
	22	20	69								
Residential	6,613 acres			L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-5 Pollutant Generating Sources – 904.5 San Marcos Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Animal	48	N	UL	L	UK	L	L	N	L
Automotive	194	L	L	UL	UL	UK	UL	L	L
Cemetery	1	UK	UK	UK	UK	L	UK	UL	UK
Contractor	197	UL	UL	L	UL	UL	UL	UL	UL
Food Establishment	526	N	L	UL	UK	UK	L	UL	L
Equipment	71	L	L	UL	UL	UK	UL	UL	L
Fueling	26	UK	L	UK	N	N	N	N	L
General Industrial	44	L	L	UK	UK	UK	UK	UK	L
General Retail	16	UL	UL	L	UL	UL	UL	UL	UL
Golf	9	UK	UK	UK	UK	L	UK	UL	UK
Health Services	1	N	UL	L	UK	L	UL	UK	L
Manufacturing	95	L	L	L	UL	UL	UL	UL	L
Metal	36	L	L	UK	UK	UK	UL	UL	L
Nursery	104	L	UL	L	L	L	L	UL	UL
Stone & Aggregates	54	L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	166	L	L	L	UL	UL	UL	UL	L
Municipal	High: 68; Non-High: 50	N	N	L	N	N	UK	UL	N
Construction	High: 30; Medium: 50; Low: 92	UL	UL	L	UL	UL	UL	L	UL
Residential	12,977 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-6 Pollutant Generating Sources – 904.6 Escondido Creek Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Agriculture	3	L	UL	L	L	L	L	UK	UL
Animal	25	N	UL	L	UK	L	L	N	L
Automotive	505	L	L	UL	UL	UK	UL	L	L
Contractor	390	UL	UL	L	UL	UL	UL	UL	UL
Food Establishment	433	N	L	UL	UK	UK	L	UL	L
Equipment	41	L	L	UL	UL	UK	UL	UL	L
Fueling	44	UK	L	UK	N	N	N	N	L
General Industrial	52	L	L	UK	UK	UK	UK	UK	L
General Retail	63	UL	UL	L	UL	UL	UL	UL	UL
Golf	4	UK	UK	UK	UK	L	UK	UL	UK
Health Services	11	N	UL	L	UK	L	UL	UK	L
Institutional	17	L	UK	UK	UK	UK	UL	UK	UK
Manufacturing	99	L	L	L	UL	UL	UL	UL	L
Metal	51	L	L	UK	UK	UK	UL	UL	L
Mining	7	L	UK	L	UK	UK	UL	UK	UK
Nursery	32	L	UL	L	L	L	L	UL	UL
Stone & Aggregates	32	L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	84	L	L	L	UL	UL	UL	UL	L
Municipal	High: 39; Non-High: 63	N	N	L	N	N	UK	UL	N
Construction	High: 34; Medium: 52; Low: 174	UL	UL	L	UL	UL	UL	L	UL
Residential	18,910 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

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4 IMPLEMENTATION OF ACTIVITIES

4.1 JURMP AND WATERSHED ACTIVITIES

The Carlsbad WURMP Copermittees are responsible for implementing JURMP activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. Many of these activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. In an effort to report on the Copermittees' activities performed in the WMA, data was collected for these activities on an HA basis. The data and information is not comprehensive and for some data sets, estimates were used to generate quantities for the activities – this is explained in **Appendix A** of the report.

In addition to the JURMP activities, the Carlsbad WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Carlsbad WURMP. The Copermittees believe it is an important step towards integrating jurisdictional and watershed activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The tables below represent the Copermittees' efforts towards reporting urban runoff management activities on a watershed basis, e.g., reporting of Copermittee activities regardless of jurisdiction-specific program labels. Reporting as many jurisdictional and watershed urban runoff management activities as feasible on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements.

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

Table 4-1 JURMP and WURMP Activities – 904.1 Loma Alta Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem	
			Bacteria/ Pathogens	Nutrients
Inspections	Animal	3: (7)	✓	✓
	Cemetery	1: (1)		✓
	Food Establishment	122: (126)	✓	
	Health Services	2: (15)		✓
	Nursery	3: (4)	✓	✓
	TCBMPs	186: (294)	✓	✓
Street Sweeping (Tons Removed)		521.4	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		229.4	✓	✓
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility		✓	
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓
CHU-WQA22	Loma Alta Water Quality Monitoring Program		✓	✓
CHU-WQEA9	Residential Composting Workshop			✓
CHU-WQEA11	Focused Equestrian Outreach		✓	✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓	✓

Table 4-2 JURMP and WURMP Activities – 904.2 Buena Vista Creek Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem
			Bacteria/Pathogens
Inspections	Agriculture	0: (1)	✓
	Animal	0: (6)	✓
	Food Establishment	282: (404)	✓
	Nursery	6: (28)	✓
	TCBMPs	98: (164)	✓
Street Sweeping (Tons Removed)		795.2	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,667.1	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓
CHU-WQEA11	Focused Equestrian Outreach		✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓

Table 4-3 JURMP and WURMP Activities – 904.3 Agua Hedionda Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem		
					Bacteria/ Pathogens	Nutrients	Sediment
Inspections	Agriculture	4: (6)			✓	✓	✓
	Animal	1: (5)			✓	✓	✓
	Contractor	15: (59)					✓
	Food Establishment	108: (183)			✓		
	General Retail	44: (53)					✓
	Golf	3: (3)				✓	
	Health Services	7: (8)				✓	✓
	Manufacturing	20: (91)					✓
	Nursery	12: (66)			✓	✓	✓
	Stone & Aggregates	7: (15)					✓
	Storage & Warehousing	16: (71)					✓
	TCBMPs	300: (558)			✓	✓	✓
	Construction	High	Medium	Low			✓
		423: (22)	263: (20)	353: (69)			
	Municipal	High	Non-High				✓
		52: (52)	2: (20)				
Street Sweeping (Tons Removed)		531.8			✓	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		995.4			✓	✓	✓
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek					✓	
CHU-WQA15	Water Quality Treatment Facility @ Palomar Airport					✓	✓
CHU-WQA16	Agua Hedionda Creek Restoration – SR-02+						✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution				✓	✓	✓
CHU-WQEA11	Focused Equestrian Outreach				✓	✓	✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program				✓	✓	

Table 4-4 JURMP and WURMP Activities – 904.5 San Marcos Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem	
			Bacteria/ Pathogens	Nutrients
Inspections	Animal	6: (48)	✓	✓
	Cemetery	0: (1)		✓
	Food Establishment	164: (526)	✓	
	Golf	6: (9)		✓
	Health Services	0: (1)		✓
	Nursery	11: (104)	✓	✓
	TCBMPs	597: (1,090)	✓	✓
Street Sweeping (Tons Removed)		1,805.6	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		438.6	✓	✓
CHU-WQA12	Upper San Marcos Creek Watershed/Lake San Marcos Nutrient Management Plan			✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓
CHU-WQA18	Upper San Marcos Creek Nutrient Management Plan – Parks Component			✓
CHU-WQA19	Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component			✓
CHU-WQA20	Upper San Marcos Creek Nutrient Management Plan – Agriculture Component			✓
CHU-WQA21	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component			✓
CHU-WQA23	San Diego County *Enterococcus* Regrowth Study		✓	
CHU-WQEA8	Upper San Marcos Creek Nutrient Management Plan – Residential Component			✓
CHU-WQEA10	Ocean Friendly Garden Workshop Series		✓	✓
CHU-WQEA11	Focused Equestrian Outreach		✓	✓
CHU-WQEA12	Cottonwood Creek Watershed Interpretive Signage		✓	

Table 4-5 JURMP and WURMP Activities – 904.6 Escondido Creek Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem		
					Bacteria/ Pathogens	Nutrients	Sediment
Inspections	Agriculture	1: (3)			✓	✓	✓
	Animal	8: (25)			✓	✓	✓
	Contractor	219: (390)					✓
	Food Establishment	282: (433)			✓		
	General Retail	32: (63)					✓
	Golf	1: (4)				✓	
	Health Services	7: (11)				✓	✓
	Manufacturing	59: (99)					✓
	Mining	7: (7)					✓
	Nursery	3: (32)			✓	✓	✓
	Stone & Aggregates	26: (32)					✓
	Storage & Warehousing	48: (84)					✓
	TCBMPs	297: (520)			✓	✓	✓
	Construction	High	Medium	Low			✓
		619: (34)	485: (52)	1,237: (174)			
	Municipal	High	Non-High				✓
		39: (39)	22: (63)				
Street Sweeping (Tons Removed)		1,056.1			✓	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		662.1			✓	✓	✓
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks				✓	✓	
CHU-WQA11	Land Acquisitions				✓	✓	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution				✓	✓	✓
CHU-WQEA5	LID Features in San Elijo Nature Center				✓	✓	✓
CHU-WQEA11	Focused Equestrian Outreach				✓	✓	✓

4.2 WATERSHED EDUCATION ACTIVITIES

This section describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2011 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the HPWQPs in the Carlsbad WMA. The activity selection process is described fully in the March 2008 Carlsbad WURMP.

The Copermittees continue to make progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed. **Table 4-6** below lists the watershed education activities implemented during FY 2011 by the Copermittees. Details of the each activity can be found on the Activity Implementation Sheets located in **Appendix B**.

Table 4-6. Watershed Education Activities Implemented During FY 2011

ID #	Activity/Project Name
CHU-WQEA5	LID Features in San Elijo Nature Center
CHU-WQEA8	Upper San Marcos Creek Nutrient Management Plan – Residential Component
CHU-WQEA9	Residential Composting Workshop
CHU-WQEA10	Ocean Friendly Gardens Workshop Series
CHU-WQEA11	Focused Equestrian Outreach
CHU-WQEA13	Residential Smart Landscape Evaluation Program
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

4.3 PUBLIC PARTICIPATION ACTIVITIES

The Watershed Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed which could include other agencies, private companies, non-governmental organizations, environmental groups, etc. The Copermittees use several mechanisms to engage the public and receive input, including outreach events. Below is a summary of these mechanisms where interaction with the public is the primary function.

4.3.1 PROJECT CLEAN WATER

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. PCW, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. PCW seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. It was formed under the guidance of a Technical Advisory Committee made up of local stormwater-related professionals.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds. There are several web pages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website provides Best Management Practices information for both residential and industrial/commercial audiences (http://www.projectcleanwater.org/bmp/).

PCW features a page devoted to the Carlsbad WMA, with details on the watershed, major pollutants, and organizations related to water quality. Additionally the webpage also offers links to relevant documents such as the WURMP and WURMP Annual Updates. During the FY 2011 reporting period, revisions were made to update the content and documents available via the site. During FY 2011 the hits for the Carlsbad Watershed page totaled 1,357 and there were also 510 hits on the Carlsbad WURMP document. A monthly breakdown of the hits can be found in the tables below.

Table 4-7 Numbers of Hits on the Project Clean Water Carlsbad WMA Web Site

July 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	March 11	April 11	May 11	June 11	Total
130	147	141	181	159	171	73	84	80	62	51	78	1,357

Table 4-8 Numbers of Hits on the Project Clean Water Carlsbad WURMP Web Site

July 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	March 11	April 11	May 11	June 11	Total
43	45	47	62	64	69	31	31	34	27	25	32	510

The Carlsbad WURMP Copermittees are supportive of these outreach activities and will be involved where applicable and feasible.

4.3.2 REGIONAL EDUCATION GROUP

Carlsbad WURMP Copermittees worked in cooperation with the Regional Education and Residential Sources workgroup.

Outreach Events

The Carlsbad Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- June 11 - July 5, 2010 – San Diego County Fair
- July 31 - August 1, 2010 – Vista Rod Run
- August 12, 2010 – OMWD Water Conservation Expo
- August 24, 2010 – Surfrider Ocean Friendly Gardens Basics Course
- August 28, 2010 – Beach Blanket Movie Night
- September 11, 2010 – Grape Day Festival
- September 16 - September 23, 2010 – Encinitas Pollution Prevention Week
- September 22, 2010 – Educators' Night Out (Teachers Fair)
- September 25, 2010 – Coastal Cleanup Day and Creek Cleanup
- September 25, 2010 – Stars in the Park Movie Nights
- September 26, 2010 – Surfrider Ocean Friendly Gardens Site Evaluation
- September 27, 2010 – School District Liaison Committee (Water Education Resources)
- October 1 - October 2, 2010 – Cardiff Surf Classic & Green Beach Fair
- October 9, 2010 – Alta Vista Gardens Fall Festival
- October 16, 2010 – California Friendly Landscape Workshop
- October 16, 2010 – Stars in the Park Movie Nights
- October 23, 2010 – Stars in the Park Movie Nights
- October 24, 2010 – Ocean Friendly Gardens GAP Workday
- December 16, 2010 – Day Without a Bag (Countywide)
- January 1, 2011 – Spanish Storm Water Calendar Distribution
- January 25, 2011 – Kids Conference on Watersheds
- January 31, 2011 – Mission Estancia Elementary School Presentation
- February 2011 – Girl Scout Cookie Drive (Water Conservation Fliers Distributed)
- February 9, 2011 – San Diego County High Tech Fair
- March 12, 2011 – Oceanside Green Fair
- March 20, 2010 – Paws in the Park
- March 26, 2011 – Solana Beach Green Fair

- March 26, 2011 – Kids Day at the Flower Fields
- April 17, 2011 – Fallbrook Avocado Festival
- April 22, 2011 – La Costa Canyon High School Earth Day
- April 23, 2011 – Alta Vista Gardens Earth Day
- April 30, 2011 – Creek to Bay Cleanup
- April 30, 2011 – Encinitas Garden Festival
- May 20, 2011 – Encinitas Public Works Day
- May 29, 2011 – City of Vista Strawberry Festival
- June 4, 2011 – Carlsbad Beach Fest
- June 4 - June 5, 2011 – Fiesta Del Sol
- June 5, 2011 – Encinitas Environment Day
- June 17, 2011 – Passport to Vista
- June 18, 2011 – San Diego County Fair – Enviro Fair

Educational Materials Distributed

The Carlsbad Watershed Copermittees continued the distribution of the following items at special events, inspections, classroom presentations and other public interactive venues that were produced by the North County Storm Water Program during previous reporting periods:

- Construction brochure highlighting construction BMPs for large or small scale developments
- Construction Demolition and Recycling Guide
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Hotline magnets, key chains, hand towels, reusable bags, click-message pens and pencils for the residential community
- San Diego County IPM program materials, including English and Spanish IPM Pest Tip Cards
- Informational letters (Solid Waste, Storm Water BMPs, Coastal Cleanup Day, Household Hazardous Waste/Used Oil, Rainy Season Preparations, Pool BMPs)
- Personal pet waste bag dispensers
- Storm water coloring book and crayons

Table 4-9 provides a summary of the educational materials distributed during the reporting period.

Table 4-9 Summary of FY 2011 Educational Materials Distributed

Educational Material	Approximate Quantity Distributed
10 Simple Ways to Protect the Ocean Brochure	361
Automotive BMPs Brochure	24
City Authorization Letter Copy	296
Clean Water Hotline Magnet	26
Clean Water Program Hand Towels	40
Construction Brochures	122
Door Hangers	150
FOG Brochures and Posters	193
Grease Bin Handout	9
Green Wrench Guide	23
Green Wrench Guide (Spanish)	9
Industrial/Commercial Brochure	78
Informational Handouts	3
Inspection Notification	289
Junior Lifeguard Field Manual	1,000
Key Chains	97
NOI Handout	51
NONA/NEC Paperwork	87
Pencils	337
Pesticide Management	57
Residential BMPs Brochure	25
Reusable Bags	30
Think Blue San Diego Region Calendar (Spanish)	300
Think Blue San Diego Region Coloring Books	100
What's Cookin' BMP Guide	39
What's Cookin' BMP Guide (Spanish)	18

4.3.3 RIVER, CREEK AND BEACH CLEANUP EVENTS

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were two (2) cleanup events held at twenty-four (24) different sites throughout the Carlsbad WMA. 3,302 volunteers removed approximately 39,847.5 pounds of trash and recyclables from the waterways. **Table 4-10** presents the locations, volunteers, and collections at the cleanup events.

Table 4-10 Summary of FY 2011 Cleanup Events

Date	Name	Location	# of Participants	# of Pounds Removed	Hydrologic Area
9/25/2010	Coastal Cleanup Day	Buccaneer Park, Oceanside	362	1,006	Loma Alta (904.1)
		Buena Vista Creek (3 sites), Oceanside	61	3,000	Buena Vista (904.2)
		Frazee Beach, Carlsbad	179	140	Buena Vista (904.2)
		Tamarack State Beach, Carlsbad	102	74	Agua Hedionda (904.3)
		Buena Creek, Vista	167	1,062	Agua Hedionda (904.3)
		Ponto Beach, Carlsbad	248	114	San Marcos (904.5)
		Carlsbad State Beach, Carlsbad	75	182.5	San Marcos (904.5)
		Beacon's Beach, Encinitas	90	70.5	San Marcos (904.5)
		Swami's Beach, Encinitas	125	323	San Marcos (904.5)
		Moonlight Beach, Encinitas	100	145	San Marcos (904.5)
		San Elijo State Beach, Encinitas	75	108.5	Escondido (904.6)
		Seaside Beach, Encinitas	152	134	Escondido (904.6)
		San Elijo Lagoon Rios Trailhead, Solana Beach	52	244	Escondido (904.6)
		Dixon Lake, Escondido	242	228	Escondido (904.6)
4/30/2011	Creek to Bay Cleanup	Buccaneer Beach, Oceanside	219	1,539	Loma Alta (904.1)
		Loma Alta Creek (3 sites), Oceanside	60	12,000	Loma Alta (904.1)
		Frazee Beach, Carlsbad	24	59	Buena Vista (904.2)
		Tamarack State Beach, Carlsbad	94	197	Agua Hedionda (904.3)
		Ponto Beach, Carlsbad	283	443	San Marcos (904.5)
		Beacon's Beach, Encinitas	60	112	San Marcos (904.5)
		Moonlight Beach, Encinitas	71	203	San Marcos (904.5)
		San Marcos Creek, San Marcos	45	11,320	San Marcos (904.5)
		San Elijo State Beach, Encinitas	102	275	Escondido (904.6)
		Cardiff State Beach, Encinitas	65	170	Escondido (904.6)
		Escondido Creek, Escondido	144	6,500	Escondido (904.6)
		Dixon Lake, Escondido	58	118	Escondido (904.6)
		Lake Wohlford, Escondido	47	80	Escondido (904.6)

Table 4-11 below provides a summary of the number of sites, number of volunteers and pounds of debris removed within each Carlsbad hydrologic area during the cleanup events.

Table 4-11 Summary of FY 2011 Cleanup Events by HA

Hydrologic Area	# of Sites	# of Volunteers	Pounds of Debris Removed
Loma Alta (904.1)	4	641	14,545
Buena Vista (904.2)	4	264	3,199
Agua Hedionda (904.3)	2	363	1,333
San Marcos (904.5)	6	1,097	12,913
Escondido (904.6)	8	937	7,857.5
Totals	**24**	**3,302**	**39,847.5**

4.4 COLLABORATIVE LAND USE PLANNING EFFORTS

The Carlsbad Watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

4.4.1 CROSS-JURISDICTIONAL COMMUNICATION

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the Carlsbad Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the Carlsbad Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues occurring in adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

4.5 5-YEAR STRATEGIC PLAN

4.5.1 NEW WATERSHED ACTIVITIES (FY 2011 AND FUTURE YEARS)

Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA. FY 2011 Watershed Activity Sheets can be found in **Appendix B.**

Each activity on the Watershed Activities List is fully described in an Activity Sheet and includes the following information:

1. A description of the activity;

2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQP(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Watershed Copermittees will implement identified Watershed Activities pursuant to the proposed schedule. For each Permit year, no less than two Watershed Water Quality Activities will be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's HPWQP(s). Watershed Water Quality Activities that are capital projects are in active implementation for the first year of implementation only.

4.5.2 UPDATED 5-YEAR STRATEGIC PLAN

This section describes the results of the Collective Watershed Strategy process described in the 2008 Carlsbad WURMP. The strategy was applied at the hydrologic area (HA) level to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify water quality problems (where sufficient data is available). From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees could then make appropriate management decisions when selecting appropriate watershed water quality and education activities.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees used available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented below is intended to supersede the earlier versions presented in the 2008 Carlsbad WURMP and the FY 2008-FY 2010 Carlsbad WURMP Annual Reports previously submitted.

Table 4-12 Updated 5-Year Strategic Plan

Activity/Project Name		Jurisdiction(s)	Watershed Priorities			Implementation Schedule			
			Bacteria	Nutrients	Sediment	FY 2011	FY 2012	FY 2013	Future Fiscal Year(s)
Watershed Water Quality Activities									
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility	OCEANSIDE	✓			A	A	A	A
CHU-WQA6	Escondido Creek Restoration	ESCONDIDO			✓	Completed – No longer reported			
CHU-WQA7	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	TBD			P	P	WQI	WQI
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek	COUNTY		✓		WQI	WQI	WQI	WQI
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks	COUNTY	✓	✓		WQI	WQI	WQI	WQI
CHU-WQA11	Land Acquisitions	COUNTY	✓	✓	✓	WQI	WQI	WQI	WQI
CHU-WQA12	Upper San Marcos Creek Nutrient Management Plan	SM/COUNTY/ESC		✓		WQI	WQI	WQI	WQI
CHU-WQA14	Water Quality Monitoring in Agua Hedionda Creek Watershed	COUNTY	✓	✓	✓	Completed – No longer reported			
CHU-WQA15	Water Quality Treatment Facility @ McClellan-Palomar Airport	COUNTY		✓	✓	M	M	M	-
CHU-WQA16	Agua Hedionda Creek Restoration – SR-02+	VISTA			✓	P	P	WQI	WQI
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution	COUNTY	✓	✓	✓	WQI	P	WQI	-
CHU-WQA18	Upper San Marcos Creek Nutrient Management Plan – Parks Component	SM/COUNTY/ESC		✓		-	WQI	WQI	-
CHU-WQA19	Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component	SM/COUNTY/ESC		✓		WQI	WQI	WQI	-
CHU-WQA20	Upper San Marcos Creek Nutrient Management Plan – Agriculture Component	SM/COUNTY/ESC		✓		WQI	WQI	WQI	-
CHU-WQA21	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component	SM/COUNTY/ESC		✓		WQI	WQI	WQI	-
CHU-WQA22	Loma Alta Water Quality Monitoring Program	OCEANSIDE/ VISTA	✓	✓		M	-	-	-
CHU-WQA23	San Diego County *Enterococcus* Regrowth Study	ENCINITAS	✓			M	M	-	-

Table 4-12 Updated 5-Year Strategic Plan - Continued

Activity/Project Name		Jurisdiction(s)	Watershed Priorities			Implementation Schedule			
			Bacteria	Nutrients	Sediment	FY 2011	FY 2012	FY 2013	Future Fiscal Year(s)
Watershed Education Activities									
CHU-WQEA3	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	✓	✓	✓	P	P	P	-
CHU-WQEA5	LID Features in San Elijo Nature Center	COUNTY	✓	✓	✓	WE	WE	WE	-
CHU-WQEA7	Bioassessment Training for High School Students	OCEANSIDE	✓	✓	✓	Completed – No longer reported			
CHU-WQEA8	Upper San Marcos Creek Nutrient Management Plan – Residential Component	SM/COUNTY/ESC		✓		WE	WE	WE	-
CHU-WQEA9	Residential Composting Workshop	OCEANSIDE/ COUNTY/VISTA		✓	✓	WE	-	-	-
CHU-WQEA10	Ocean Friendly Gardens Workshop Series	ENCINITAS	✓	✓	✓	WE	-	-	-
CHU-WQEA11	Focused Equestrian Outreach	COUNTY	✓	✓	✓	WE	WE	WE	-
CHU-WQEA12	Cottonwood Creek Watershed Interpretive Signage	ENCINITAS	✓			P	WE	A	-
CHU-WQEA13	Residential Smart Landscape Evaluation Program	OCEANSIDE	✓	✓		WE	-	-	-
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution	COUNTY	✓	✓	✓	WE	P	WE	-

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)

E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

5 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2011. In addition, there is an effectiveness assessment of the collective WURMP implementation.

The activity summary sheets presented in **Appendix B** include effectiveness assessment summaries for each water quality and education activity, as required in the Permit, I.2.a.(1).

5.1 PERMIT COMPLIANCE (LEVEL 1)

A basic compliance assessment is presented in **Table 5-1**. This table describes permit requirements set forth in the Permit, whether or not compliance was demonstrated by the watershed Copermittees in FY 2011, and where in this report, required compliance points are fulfilled or described.

Table 5-1 Permit Compliance

Targeted Outcome	Measure	Report Section
Update any watershed maps.	No changes	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the watershed.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
A description of Copermittee collaboration efforts including meeting as the Carlsbad WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date in meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not applicable at this time.	N/A

As shown in the table, the Copermittees were in compliance with all WURMP related Permit requirements during FY 2011.

5.2 MONITORING ASSESSMENT

Currently, the Copermittees are relying on the regional MS4 monitoring program for their primary source of water quality data. The regional program elements are collecting data however, because the scope and scale are limited, the data gathered may not provide sufficient data for use in selecting or assessing the effectiveness of activities.

5.2.1 MS4 SUMMARY

Current ambient monitoring efforts in the MS4 include the Dry Weather, MS4, and CSDM outfall monitoring programs. The Copermittees are currently participating in a regional portion of the MS4 outfall program that will collect and provide data in the MS4 during storm events. The scope of this program is limited and may not provide local data within each HA. It is expected however, that over time, enough data will be collected to characterize storm water discharges from the MS4 during storm events. Currently, there are six (6) random wet weather MS4 locations in the WMA, four (4) in the San Marcos HA and one (1) in each the Buena Vista Creek and Encinas HAs.

5.2.2 RECEIVING WATER SUMMARY

Monitoring within the receiving waters is accomplished through the Regional Monitoring (MLS/TWAS), CSDM, Bight Program, and other special studies. Currently MLSs are located at the base of Agua Hedionda and Escondido Creeks; TWAS are located at the base of Loma Alta and Buena Vista Creeks and upstream in San Marcos Creek. Currently, there are no receiving water monitoring locations in the Encinas HA. Historical MLSs will remain as located. The intent of the TWASs was to be able to relocate stations in order to collect more relevant water quality information. The watershed group will consider future locations of the TWAS for the upcoming monitoring years.

5.3 WATERSHED ACTIVITY ASSESSMENTS

Each activity summary sheet in **Appendix B** of the WURMP identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measurable at levels 5 or 6. Levels 5 and 6 outcomes are typically measurable through cumulative assessments. **Tables 5-2** through **5-6** below, summarize the assessments of the water quality and education activities, on a hydrologic area basis, to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the tables, the WURMP Copermittees are presenting the JURMP activities that are related to the HPWQPs in each hydrologic area. It is important to note that not all JURMP activities are included in this presentation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

Table 5-2 Summary of Implemented Activities for FY 2011 – 904.1 Loma Alta Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included animal facilities, restaurants, and nurseries. Of the total 137 bacteria sources inventoried, 92% are restaurants. Approximately 97% of the restaurants were inspected, and overall 93% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3, and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2011 included animal facilities, cemeteries, health services, and nurseries. Of the total 27 nutrient sources inventoried, 56% are health service facilities, while only 15% are nurseries. Approximately 13% of the health service facilities and 75% of the nurseries in the HA were inspected. Overall, 33% of the likely nutrient sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria and nutrient sources. During FY 2011, 521 tons of material was removed from streets via street sweeping and 229 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Loma Alta Creek UV Facility	Water Quality	Bacteria	Level 4	Dry weather bacteria loads reduced via treatment at base of hydrologic area
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
Loma Alta Water Quality Monitoring Program	Water Quality	Bacteria and Nutrients	Level 1	Watershed monitoring program for the Loma Alta Creek and its major tributaries. The first year of data will be used as a baseline in anticipation of the nutrient and bacteria TMDLs that will be created and implemented at the slough.
Residential Composting Workshop	Watershed Education	Nutrients	Levels 1, 2, and 3	Using compost as a natural fertilizer will reduce the amount of chemical fertilizer that residents use in their landscapes, thereby reducing a potential source of nutrients. Erosion and sedimentation can also be reduced through the proper application of compost.
Focused Equestrian Outreach	Watershed Education	Bacteria and Nutrients	Levels 1, 2, and 3	Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.
Residential Smart Landscape Evaluation Program	Watershed Education	Bacteria and Nutrients	Levels 1 and 2	Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Loma Alta HA Discussion

Major land use in the HA includes residential and open space, totaling approximately 53 percent of the land use in Loma Alta. Transportation, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria and nutrients, as these are identified as the HPWQPs in the HA.

Residential sources of bacteria and nutrients include activities such as over-irrigation, application of fertilizers, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. With the implementation of the Ultra Violet Treatment Facility (UV Facility), CHU-WQA2, bacteria is removed from the receiving waters prior to discharge to the Pacific Ocean. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs.

Open space contributions of bacteria are most often uncontrollable and MS4 programs are not typically responsible for mitigating bacteria loads from this land use. However, contributions from open space can be significant. In the Loma Alta HA, the UV Facility is an excellent BMP to ensure that uncontrollable bacteria contributions to the receiving waters have lessened impact to public health during dry weather.

Other less predominant sources of bacteria in the HA include transportation, industrial/commercial, and municipal land uses. While the UV Facility removes the bacteria from these sources, it does not address the sources themselves. However, through implementation of the JURMP Activities, these sources are addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities addressing the sources identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 750.8 tons of pollutants were removed in the HA.

The planned monitoring activity, CHU-WQA22, will provide a baseline assessment of water quality in the receiving water and at selected tributaries. The quarterly, and thus seasonal, monitoring will then be assessed and modified to allocate resources to identifying sources of HPWQPs. The monitoring began during FY 2010 and continued into FY 2011, although the fall sampling event was postponed due to laboratory contracting issues; therefore, sampling may continue into the next fiscal year and the program will be assessed when a full year of data is available.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. Two events were held during the

reporting period where rain barrels were sold to citizens in the WMA. A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County. While no event was hosted in the Carlsbad Watershed, eight (8) participants from the watershed purchased rain barrels and signed the rain barrel maintenance agreement.

- The Residential Composting Workshop education activity, CHU-WQEA9, is a free workshop providing an overview of composting, hands-on demonstrations on how to compost, proper application of compost, and the benefits of compost to soil and water quality. The use of chemical fertilizers has been identified as a potential source of nutrients and eutrophication in local water bodies. Using compost as a natural fertilizer will reduce the amount of chemical fertilizer that residents use in their landscapes, thereby reducing a potential source of nutrients. Erosion and sedimentation can also be reduced through the proper application of compost.
- The City of Oceanside's Residential Smart Landscape Evaluation Program education activity, CHU-WQEA13, focuses on reducing irrigation runoff from residential properties. The landscape irrigation evaluation program for single-family and multi-family residences provides technicians to visit and evaluate residential properties in order to make site-specific water-saving recommendations. Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Table 5-3 Summary of Implemented Activities for FY 2011 – 904.2 Buena Vista Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, restaurants, and nurseries. Of the total 439 bacteria sources inventoried, 92% are restaurants. Approximately 69% of the restaurants were inspected and 21% of the nurseries were inspected. Overall 66% of the likely bacteria sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2011, 795 tons of material was removed from streets via street sweeping and 1,667 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
Focused Equestrian Outreach	Watershed Education	Bacteria and Nutrients	Levels 1, 2, and 3	Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.
Residential Smart Landscape Evaluation Program	Watershed Education	Bacteria and Nutrients	Levels 1 and 2	Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Buena Vista HA Discussion

The major land use in the HA is residential, comprising approximately 50 percent of the land use in Buena Vista. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, as this was identified as the only HPWQP in the HA.

Residential sources of bacteria include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities addressing the sources identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 2,462.3 tons of pollutants were removed in the HA.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. Two events were held during the reporting period where rain barrels were sold to citizens in the WMA. A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County. While no event was hosted in the Carlsbad Watershed, eight (8) participants from the watershed purchased rain barrels and signed the rain barrel maintenance agreement.
- The County's Focused Equestrian Outreach education activity, CHU-WQEA11, provides focused outreach that leads to education, BMP implementation, and load-reducing effectiveness. Workshops in FY 2011 targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will potentially result in the reduction of pollutant loads, particularly bacteria and nutrients.
- The City of Oceanside's Residential Smart Landscape Evaluation Program education activity, CHU-WQEA13, focuses on reducing irrigation runoff from residential properties. The landscape irrigation evaluation program for single-family and multi-family residences provides technicians to visit and evaluate residential properties in order to make site-specific water-saving recommendations. Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Table 5-4 Summary of Implemented Activities for FY 2011 – 904.3 Agua Hedionda Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, restaurants, and nurseries. Of the total 260 bacteria sources inventoried, 70% are restaurants. Approximately 59% of the restaurants were inspected, and overall 48% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3, and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, golf courses, health services, and nurseries. Of the total 88 nutrient sources inventoried, 75% are nurseries. 18% of the nurseries in the HA were inspected. Overall, 31% of the likely nutrient sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3, and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, contractors, general retail, health services, manufacturing, nurseries, stone and aggregate facilities, storage and warehousing facilities, construction sites, and municipal facilities. The primary focus of likely sources of sediment is construction sites. During FY 2011, there were approximately 111 active construction sites in the HA that were inspected a total of 1,039 times. High priority construction sites were inspected an average of 19 times during the fiscal year. Of the total 374 commercial/industrial sediment sources inventoried, 24% are manufacturing facilities, 16% are contractors, and 14% are general retail. Only 18% of the manufacturing facilities and 25% of the contractors were inspected, however 83% of the general retail facilities were inspected. Overall, 43% of the likely sediment sources that were not related to construction sites were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria, Nutrients, and Sediments	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2011, 532 tons of material was removed from streets via street sweeping and 995 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Nitrate Source Identification and Abatement: Buena Creek	Water Quality	Nutrients	Levels 1, 2, 3, and 4	Inspections resulted in education and BMP implementation
Water Quality Treatment Facility @ Palomar Airport	Water Quality	Nutrients and Sediments	Level 1	Regular water quality monitoring and comparison of influent and effluent pollutant loading at McClellan-Palomar Airport water quality treatment facility. Nutrient and sediment removal of pollutants associated with airport operations.
Agua Hedionda Creek Restoration – SR-02+	Water Quality	Sediments	Levels 1, 4, and 6	Reduction of Creek bed and bank erosion to achieve a stable balance representative of the appropriate sediment transport; reduced sediment loading.
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
Focused Equestrian Outreach	Watershed Education	Bacteria and Nutrients	Levels 1, 2, and 3	Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.
Residential Smart Landscape Evaluation Program	Watershed Education	Bacteria and Nutrients	Levels 1 and 2	Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Agua Hedionda HA Discussion

The major land uses in the HA are residential, open space, and industrial/commercial comprising over 80 percent of the land use in Agua Hedionda. Transportation, municipal, and construction land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, sediment, and nutrients, as these were identified as the HPWQPs in the HA.

Residential sources of bacteria, sediment, and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate the pollutants identified as high priority. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Industrial/commercial sources of bacteria, sediment, and nutrients include activities such as grounds/landscape maintenance, surfaces and washing, over irrigation, sewer/septic problems, and materials management issues among others. Through a combination of activities, including the Nitrate Source Identification and Abatement activity, JURMP commercial/industrial inspections programs, and complaint response programs, the likely sources of the HPWQPs are being addressed.

Other less predominant sources of bacteria, sediment, and nutrients in the HA include transportation, municipal, and construction land uses. The WURMP activities implemented in the HA did not address these sources directly. However, with the JURMP Activities, each of these land uses/sources are specifically addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 1,527.2 tons of pollutants were removed in the HA.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Stormwater Quality Master Plan for Special Drainage Fee Areas will be focused at addressing portions of the County's jurisdiction within the WMA by retrofitting their drainage system with BMPs. This will address multiple sources as well as multiple water quality problems. The SWQMP for Special Drainage Areas 9 and 10 are currently in draft form and undergoing review by County personnel.
- Monitoring at the McClellan-Palomar Airport Water Quality Treatment Facility compares influent and effluent pollutant loading from runoff due to airport operations.

- The City of Vista's Agua Hedionda Creek Restoration Project is to address impacts from hydromodification that are evident within Agua Hedionda Creek, thereby addressing a source of sedimentation (bed and bank erosion).
- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. Two events were held during the reporting period where rain barrels were sold to citizens in the WMA. A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County. While no event was hosted in the Carlsbad Watershed, eight (8) participants from the watershed purchased rain barrels and signed the rain barrel maintenance agreement.
- The County's Focused Equestrian Outreach education activity, CHU-WQEA11, provides focused outreach that leads to education, BMP implementation, and load-reducing effectiveness. Workshops in FY 2011 targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will potentially result in the reduction of pollutant loads, particularly bacteria and nutrients.
- The City of Oceanside's Residential Smart Landscape Evaluation Program education activity, CHU-WQEA13, focuses on reducing irrigation runoff from residential properties. The landscape irrigation evaluation program for single-family and multi-family residences provides technicians to visit and evaluate residential properties in order to make site-specific water-saving recommendations. Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Table 5-5 Summary of Implemented Activities for FY 2011 – 904.5 San Marcos Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included animal facilities, restaurants, and nurseries. Of the total 678 bacteria sources inventoried, 78% are restaurants. Approximately 31% of the restaurants were inspected, and overall 27% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3, and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2011 included animal facilities, cemeteries, golf courses, health services, and nurseries. Of the total 163 nutrient sources inventoried, 64% are nurseries. 11% of the nurseries in the HA were inspected, while 67% of the golf facility sources were inspected. Overall, 14% of the likely nutrient sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria and nutrient sources. During FY 2011, 1,806 tons of material was removed from streets via street sweeping and 439 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Upper San Marcos Creek Nutrient Management Plan	Water Quality	Nutrients	Levels 1, 2, 3 and 4	Through education and outreach, inspections and BMP implementation, pollutant loading is expected to decrease
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
Upper San Marcos Creek Nutrient Management Plan – Parks Component	Water Quality	Nutrients	Levels 1 and 4	Inspections were conducted at all park facilities in the USMC tributary area. Additionally, the City of San Marcos implemented true source control by continuing to use "Nature Safe" an organic fertilizer product.
Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component	Water Quality	Nutrients	Levels 1 and 2	Inspections occurred at all 4 golf courses in the watershed. Additionally, the four golf courses were notified of existing requirements and appropriate BMPs for implementation.
Upper San Marcos Creek Nutrient Management Plan – Agriculture Component	Water Quality	Nutrients	Level 1	All elements of the core residential activities program were completed. Educational outreach efforts were conducted for professional grove management companies; attendees were provided BMP field guides for water quality and spill kits.
Upper San Marcos Creek Nutrient Management Plan – Monitoring Component	Water Quality	Nutrients	Level 1	Additional monitoring and new TWAS installation to better characterize the USMC tributary area. Development of a QAPP, additional DWM activities, residential monitoring and inspections of MS4 conveyances leading into Lake San Marcos.
San Diego County *Enterococcus* Regrowth Study	Water Quality	Bacteria	Level 1	Monitoring in Cottonwood Creek to determine possible sources of bacterial regrowth downstream of UV treatment facility at Moonlight Beach. Results compared to study in La Jolla.
Upper San Marcos Creek Nutrient Management Plan – Residential Component	Watershed Education	Nutrients	Levels 2 and 3	Through various means, education messages were presented to the residents in the USMC tributary area. This includes the decision to invest additional resources to involve Social Based Marketing professionals in order to enhance the effectiveness and applicability of the water quality management plan.
Ocean Friendly Gardens Workshop Series	Watershed Education	Bacteria and Nutrients	Levels 2 and 3	Expected change in knowledge and BMP implementation.
Focused Equestrian Outreach	Watershed Education	Bacteria and Nutrients	Levels 1, 2, and 3	Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.
Cottonwood Creek Watershed Interpretive Signage	Watershed Education	Bacteria	Level 1	Activity will add seven interpretive signs along Cottonwood Creek just east of Moonlight Beach, with information on stormwater awareness and pollution prevention.

San Marcos HA Discussion

The major land use in the HA is residential. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria and nutrients, as these pollutants are identified as the two HPWQPs in the HA.

JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate nutrients. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Examples of JURMP Activities addressing nutrient sources in the HA include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 2,244.2 tons of pollutants were removed in the HA.

Within the San Marcos HA, the Upper San Marcos Creek (USMC) tributary area has been targeted for significant activities by the USMC Copermittees. The activities related to the USMC fall under the umbrella of the USMC Nutrient Management Plan. Through the implementation of this Plan, the commercial, residential, agricultural and municipal sources are being addressed. The activities are focused on characterizing and abating the sources of nutrients. These activities were initiated in FY 2009 and are currently ongoing.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Stormwater Quality Master Plan for Special Drainage Fee Areas will be focused at addressing portions of the County's jurisdiction within the WMA by retrofitting their drainage system with BMPs. This will address multiple sources as well as multiple water quality problems. The SWQMP for Special Drainage Areas 9 and 10 are currently in draft form and undergoing review by County personnel.
- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. Two events were held during the reporting period where rain barrels were sold to citizens in the WMA. A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County. While no event was hosted in the Carlsbad Watershed, eight (8) participants from the watershed purchased rain barrels and signed the rain barrel maintenance agreement.
- The San Diego County *Enterococcus* Regrowth Study activity, CHU-WQA23, focused on determining potential source of bacterial indicator regrowth in MS4 conveyances. The goals of the study included: 1) to determine if biofilms and algae that form on the surfaces of storm drains support the growth of *Enterococci*; 2) to determine if

Enterococci growing on storm drain surfaces are a source of bacteria to sand and beach water; and 3) to determine if *Enterococci* growing on storm drain surfaces may be differentiated from those of fecal origin.

- The City of Encinitas, in collaboration with Olivenhain Municipal Water District and the San Dieguito Water District, hosted a hands-on workshop series presented by the Surfrider Foundation Ocean Friendly Gardens Program, education activity CHU-WQEA10. The program strives to educate the public about the environmental impacts caused by runoff from residential homes and landscapes and to provide homeowners with landscaping alternatives that can lead to reduced water usage and improved downstream water quality.
- The County's Focused Equestrian Outreach education activity, CHU-WQEA11, provides focused outreach that leads to education, BMP implementation, and load-reducing effectiveness. Workshops in FY 2011 targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will potentially result in the reduction of pollutant loads, particularly bacteria and nutrients.
- The City of Encinitas's Cottonwood Creek Watershed Interpretive Signage education activity, CHU-WQEA12, will add seven interpretive signs along Cottonwood Creek just east of Moonlight Beach. The signs will educate the public on the following themes: 1) Cottonwood Creek Watershed Overview; 2) Moonlight Beach Pump Station; 3) UV Treatment Facility; 4) Native Plant Species; 5) Native Animal Species; 6) Stormwater Awareness; and, 7) Stormwater Pollution Prevention Tips. The signs are planned to be installed in FY 2012.

Table 5-6 Summary of Implemented Activities for FY 2011 – 904.6 Escondido Creek Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, restaurants, and nurseries. Of the total 493 bacteria sources inventoried, 88% are restaurants. Approximately 65% of the restaurants were inspected, and overall 60% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3 and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, golf courses, health services, and nurseries. Of the total 75 nutrient sources inventoried, 43% are nurseries, 34% of which were inspected. Overall, approximately 37% of the likely nutrient sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, contractors, general retail, golf courses, health service facilities, manufacturing, mining facilities, nurseries, stone and aggregate facilities, storage and warehousing facilities, construction sites, and municipal facilities. The primary focus of likely sources of sediment is construction sites. During FY 2011, there were approximately 260 active construction sites in the HA that were inspected a total of 2,341 times. The high priority sites were inspected an average of 18 times during the fiscal year. Of the total 746 commercial/industrial sediment sources inventoried, 56% are contractors, 13% are manufacturing facilities, and 11% are storage and warehousing facilities. Over 56% of the contractors were inspected, approximately 60% of the manufacturing facilities were inspected, and approximately 57% of the storage and warehousing facilities were inspected. Overall, 55% of the likely sediment sources that were not related to construction sites were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2011, 1,056 tons of material was removed from streets via street sweeping and 662 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Pet Waste Bag Dispenser Program in County Parks	Water Quality	Bacteria and Nutrients	Levels 1, 2, 3 and 4	Direct reduction in loading due to implementation of BMP.
Land Acquisitions	Water Quality	Bacteria, Sediment and Nutrients	Level 4	Loading associated with potential development is eliminated. 192.00 acres were acquired in the Escondido Creek HA during FY 2011.
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
LID Features in San Elijo Nature Center	Watershed Education	Bacteria, Sediment and Nutrients	Levels 1, 2 and 3	Expected change in knowledge and BMP implementation.
Focused Equestrian Outreach	Watershed Education	Bacteria and Nutrients	Levels 1, 2, and 3	Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.

Escondido Creek HA Discussion

The major land uses in the HA are open space and residential, comprising over 75 percent of the land use in Escondido Creek. Transportation, municipal, and construction land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, sediment, and nutrients, as these were identified as the HPWQPs in the HA.

Residential sources of bacteria, sediment, and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. Activities such as the Pet Waste Dispenser Program, Land Acquisitions, and the LID Features in the San Elijo Nature Center focused on the appropriate water quality problems in the HA and indirectly focused on residential sources/causes of the problems.

JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate the pollutants identified as high priority. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections). Because of the relative potential for contributions from residential areas, based on the land use percentages, future WURMP activities focusing on residential sources of pollutants may be appropriate in this HA.

Other less predominant sources of bacteria, sediment, and nutrients in the HA include transportation, municipal, and construction land uses. The WURMP activities implemented in the HA did not address these sources directly. However, with the JURMP Activities, each of these land uses/sources are specifically addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 1,718.2 tons of pollutants were removed in the HA.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Stormwater Quality Master Plan for Special Drainage Fee Areas will be focused at addressing portions of the County's jurisdiction within the WMA by retrofitting their drainage system with BMPs. This will address multiple sources as well as multiple water quality problems. The SWQMP for Special Drainage Areas 9 and 10 are currently in draft form and undergoing review by County personnel.
- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. Two events were held during the reporting period where rain barrels were sold to citizens in the WMA. A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County.

While no event was hosted in the Carlsbad Watershed, eight (8) participants from the watershed purchased rain barrels and signed the rain barrel maintenance agreement.

- The County's LID Features in San Elijo Nature Center education activity, CHU-WQEA5, is expected to increase knowledge and BMP implementation. In addition to the educational displays featured at the San Elijo Nature Center, the facility also sponsors public participation activities in cooperation with the San Elijo Lagoon Conservancy (SELC). These programs which included educational field presentations, water quality testing activities, and clean up events had an estimated total attendance of 800 participants in FY 2011.
- The County's Focused Equestrian Outreach education activity, CHU-WQEA11, provides focused outreach that leads to education, BMP implementation, and load-reducing effectiveness. Workshops in FY 2011 targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will potentially result in the reduction of pollutant loads, particularly bacteria and nutrients.

5.4 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

Based on the individual HA assessments provided above, it appears that the activities occurring in the Carlsbad Watershed are addressing the HPWQPs identified in the watershed. The assessments this year provided an integrated look at WURMP and JURMP activities to show the level of effort occurring in each HA with respect to identified problems and sources. Generally, the activities are focused on sources that are likely contributing to the HPWQPs within the WMA.

6 CONCLUSIONS AND WURMP IMPROVEMENTS

6.1 OVERVIEW

The Carlsbad Watershed Management Area (WMA) is unique because it consists of six (6) individual hydrologic areas (HAs) or watersheds. To effectively address the WMA's water quality issues (bacteria, sediment, and nutrients), the Copermittees identified and then evaluated the high-priority water quality problems for likely sources at the individual HA level. As a result of examining each HA in the WMA, the Copermittees identified some general conclusions. It appears that the water quality activities occurring in the Carlsbad Watershed are effectively addressing the high-priority water quality problems identified in the watershed.

The following is a summary of some general conclusions and potential improvements that will be considered in the Carlsbad WURMP.

6.1.1 LOMA ALTA

The major land use in this HA includes residential and open space, totaling almost 60 percent of its overall land use. Based on monitoring data, the high-priority water quality problem are bacteria and nutrients. Potential residential sources of bacteria and nutrients include activities such as over-irrigation, sanitary sewer overflows, improper landscape maintenance, improper disposal of pet waste, and improper use of fertilizers, herbicides and pesticides. JURMP activities addressing residential sources include complaint response, dry weather urban runoff monitoring and source identification, and inspections of treatment control BMPs, as some in the hydrologic area are designed to mitigate bacteria. Additionally, there are significant outreach activities performed which are focused on the residential community through the Copermittees' jurisdictional program.

6.1.2 BUENA VISTA

The major land use in this HA is residential, comprising approximately 50 percent of the total land use area in Buena Vista. Based on monitoring data, the high-priority water quality problem is bacteria. Potential residential sources of bacteria include activities such as over-irrigation, sanitary sewer overflows, septic system overflows, improper landscape maintenance, various improper washing activities and improper disposal of pet waste. JURMP activities addressing residential sources include complaint response and inspections of treatment control BMPs, as some are designed to mitigate bacteria.

6.1.3 AGUA HEDIONDA

The major land uses in the HA are residential, open space, and industrial/commercial, which comprise over 85 percent of the land use in Agua Hedionda. Transportation, municipal, and construction land uses are all present as well and produce the high-priority pollutants identified for the area: bacteria, sediment, and nutrients.

Potential residential, industrial/commercial, and other less predominant sources of bacteria, sediment, and nutrients include an array of activities, such as over-irrigation, sanitary sewer overflows, septic system overflows, improper landscape maintenance, improper use of fertilizers, herbicides and pesticides, various improper washing activities and improper disposal of pet waste. With the implementation of LID and SUSMP-related BMPs, as well as some other watershed water quality activities, it is expected that pollutant loading will be reduced from residential as well as other areas. JURMP activities addressing residential and

other sources, such as outreach, industrial/commercial inspections, complaint response, and inspections of treatment control BMPs, also reduce pollutant loading in the HA.

6.1.4 SAN MARCOS

The major land uses in the hydrologic area are residential and open space, which total over 65 percent of the land use area in San Marcos HA. Transportation, industrial/commercial, and municipal land uses are all present as well and may also contribute to pollutant loading. Based on water quality monitoring data, bacteria and nutrients are identified as the high-priority water quality problems in the HA. Potential residential sources of bacteria and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, improper landscape maintenance, and improper disposal of pet waste. With the implementation of the Upper San Marcos Creek Nutrient Management Plan Project, nutrient loads are expected to be reduced in the HA over time. Depending upon the results and the effectiveness of the Nutrient Management Plan, the other WMA Copermittees may implement elements of the Plan.

6.1.5 ESCONDIDO CREEK

The major land uses in the HA are open space and residential, which comprise over 75 percent of the total land use in Escondido Creek. Based on water quality monitoring, bacteria, sediment, and nutrients are identified as the high-priority water quality problems in the HA. Potential residential sources of bacteria, sediment, and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, improper landscape maintenance, various improper washing activities, and improper disposal of pet waste.

6.2 WURMP IMPROVEMENTS

In light of emerging TMDLs, the potential for regional permitting, the Copermittees' visioning process, and the unfunded mandate test claim status, the Copermittees are committed to focusing on increasing effectiveness and decreasing duplication of programs.

Regardless of the outcome of these and other issues, the Copermittees remain committed to working closely with the Regional Board in the next year to ensure a reasonable, effective, and achievable Municipal Permit is prepared for reissuance. The Permit reissuance is likely to have significant changes to the WURMPs. The Carlsbad WURMP Copermittees will continue to assess their implementation, reporting and program assessment to look for improvement opportunities.

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CARLSBAD WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

Fiscal Year 2012
Annual Report

January 31, 2013

Prepared and Submitted by the
Carlsbad Watershed Copermittees

City of Carlsbad
City of Encinitas
City of Escondido
City of Oceanside
City of San Marcos
City of Solana Beach
City of Vista
County of San Diego

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County of San Diego

LAND USE AND ENVIRONMENT GROUP

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

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January 18, 2013

CARLSBAD WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM (WURMP) FY 2011-12 ANNUAL REPORT STATEMENT OF CERTIFICATION

I certify, under penalty of perjury of law, that the County of San Diego's contributions to this FY 2011-12 Carlsbad Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer
Land Use and Environment Group
County of San Diego

Date 1/18/13

CITY OF
CARLSBAD
Property & Environmental Management
www.carlsbadca.gov

January 4, 2012

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

David Hauser
Director Property and Environmental Management
City of Carlsbad

1635 Faraday Avenue, Carlsbad, CA 92008-7314 T 760-434-2943 F 760-602-8562

CERTIFICATION STATEMENT

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Glenn Pruim

Glenn Pruim, Director of Public Works & Engineering
City of Encinitas

JAN 8, 2013
Date

January 31, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Christopher W. McKinney

Christopher W. McKinney
Director of Utilities
City of Escondido

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

January 28, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahsaiezadeh

Mo Lahsaie, Ph.D., REHS
Environmental Officer
City of Oceanside

300 NORTH COAST HIGHWAY • OCEANSIDE, CA 92054 • TELEPHONE 760-435-5800 • FAX 760-435-5814

January 15, 2013

RE: STATEMENT OF CERTIFICATION - FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Maryam Babaki, PE
Deputy City Engineer
City of San Marcos

January 31, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Mohammed Sammak, P.E.
Director of Public Works/City Engineer
City of Solana Beach

CITY OF VISTA
CALIFORNIA

January 7, 2013

RE: STATEMENT OF CERTIFICATION

FY 2012 WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

CARLSBAD WATERSHED MANAGEMENT AREA

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Carlsbad Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Patrick Johnson
Patrick Johnson
City Manager

John Conley
John Conley
Director of Engineering

1/8/2013
Date

1/8/13
Date

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EXECUTIVE SUMMARY

This Annual Report describes the Carlsbad Watershed Copermittees' activities during the Fiscal Year (FY) 2012 reporting period (July 1, 2011 through June 30, 2012) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). In response to the Permit, the Carlsbad Watershed Urban Runoff Program (WURMP) Copermittees worked collaboratively to improve water quality within the watershed throughout FY 2012. The Copermittees will continue to work with the Regional Board to implement, improve, and enhance their programs and activities in the coming years, and with the new Municipal Permit currently in preparation by the Regional Board.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed management area (WMA). The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

In preparing the 2008 Carlsbad WURMP, the Copermittees developed a collective watershed strategy using existing data and information available to the Copermittees related to water quality and potential sources of pollutants to identify the most important water quality problems and sources within the WMA. Some baseline source information was also available through existing literature, including the San Diego Stormwater Copermittees' *2005 Baseline Long-Term Effectiveness Assessment* (BLTEA). The Copermittees then evaluated the hydrologic areas (HAs) to make management decisions about potential targeted activities.

During this reporting period, the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA, including an update of the pollutant source loading potentials using the *2011 Long-Term Effectiveness Assessment* (LTEA, 2011). The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the high priority water quality problems (HPWQPs) identified and each source category's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

A summary of the program accomplishments for FY 2012 is found below:

Water Quality Assessment

Water quality priorities are evaluated each year based on the water quality assessment performed during the previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

HPWQPs in the Carlsbad WMA:

- Bacteria
- Sedimentation
- Nutrients

Carlsbad Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Carlsbad WURMP Copermittees continued to develop and implement a watershed-based program that addresses the HPWQPs and their sources in the Carlsbad WMA. The Carlsbad WURMP Copermittees met nine (9) times over the course of the reporting period to plan, implement and assess watershed activities. Through workgroup collaboration, Copermittees had increased their ability to identify and address watershed source pollutants, improve public awareness of watershed-related issues, forged partnerships with other cooperating organizations, and expanded Copermittee capability to implement cost-effective watershed improvement activities.

Watershed Activities

The Carlsbad WURMP Copermittees focused their efforts on the HPWQPs in the watershed during the FY 2012 reporting period. The result of this focused approach has been the active planning, implementation, and assessment of twenty-two (22) watershed activities and seven (7) watershed education activities during the reporting period, all of which focus on HPWQPs and the sources most likely contributing to them.

WURMP activities required by the Permit were in planning and active implementation during the reporting period. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. The listing below identifies these activities (planning, monitoring, implementation and assessment phases):

Watershed Water Quality Activities

- Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility
- Agua Hedionda Creek Restoration – SR-02+
- Stormwater Quality Master Plans for Special Drainage Fee Areas
- Nitrate Source Identification and Abatement: Buena Creek
- Pet Waste Bag Dispenser Program in County Parks
- Residential Rain Barrel Subsidies and Distribution
- Water Quality Treatment Facility @ Palomar Airport
- Land Acquisitions
- Upper San Marcos Creek Nutrient Management Plan (includes Agriculture, Golf Courses, Parks, and Monitoring components)
- San Diego County *Enterococcus* Regrowth Study
- Cottonwood Creek Watershed LID Retrofit Study
- Rainwater Harvesting Workshop and Rebate Program
- Encinitas Creek Channel Improvement Project
- Campus Landscape Renovation, Conservation, & Pollutant Load Reduction Project
- Buena Vista Creek Enhancement Project at Brengle Terrace Park
- Smart Water Incentives for Outdoor Water Efficiency
- Live Turf Replacement Incentive Program
- Bacteria Source Investigation focused on Exfiltration from Sanitary Sewers

Watershed Education Activities

- Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses
- Upper San Marcos Creek Nutrient Management Plan – Residential Component
- Residential Rain Barrel Subsidies and Distribution
- Cottonwood Creek Watershed Interpretive Signage
- Rainwater Harvesting Workshop and Rebate Program
- Residential Smart Landscape Evaluation Program
- LID Features in San Elijo Nature Center

As required, Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. In an effort to report on the Copermittees' activities performed to improve water quality in the WMA, the Copermittees are reporting on JURMP and WURMP activities performed on an HA basis. The data and information is not comprehensive and for some data sets, estimates were used to generate some of the numbers for the activities – the methodology for generating these estimates is explained in **Appendix A** of the document. The Copermittees believe that this approach is an important step towards integrating jurisdictional and watershed activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

Effectiveness Assessment

The Carlsbad Watershed Copermittees continue to improve the program's effectiveness assessment by utilizing the six-level assessment framework prepared by the Regional Copermittees in October 2003, where appropriate. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, the effectiveness assessment continues to lay the foundation for future in-depth evaluations of activities and program implementation.

Based upon the requirements of the Permit, the Carlsbad WURMP Copermittees are compliant and effective in implementing the Carlsbad WURMP.

WURMP Improvements

In light of emerging TMDLs, the potential for regional permitting, and the Copermittees' visioning process[1], the Copermittees are committed to focusing on increasing effectiveness and decreasing duplication of programs. The Carlsbad WURMP Copermittees will continue to evaluate their implementation, reporting and program assessment to look for improvement opportunities.

It is anticipated that this report will constitute the final year and reporting period for the current Municipal Permit and 2008 Carlsbad WURMP. The proposed Tentative Order R9-2013-0001 and Water Quality Improvement Plans will alter watershed planning and reporting, and the Copermittees will reevaluate all activities following adoption of the Tentative Order. As such, the WURMP activities presented in the FY 2012 Carlsbad WURMP Annual Report may not move forward to following years.

[1] Described in the Copermittees' Report of Waste Discharge submittal to the Regional Water Quality Control Board on June 24, 2011.

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1 INTRODUCTION

This Annual Report describes the Carlsbad WURMP Copermittees' activities during the reporting period (July 1, 2011 through June 30, 2012) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Permit, the Carlsbad WURMP Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout Fiscal Year (FY) 2012. The Copermittees will continue to work to implement, improve, and enhance their programs and activities.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Carlsbad. Other participating jurisdictions include the Cities of Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, Vista, and the County of San Diego.

The Permit requires that the Copermittees within the Carlsbad Watershed collaborate in the development and implementation of a watershed-scale program that addresses urban runoff[2] quality. Urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon downstream receiving waters. The mechanism that the Permit uses to require watershed collaboration is the development and implementation of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, the Permit requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied. The overall goal of the Carlsbad Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

Water quality priorities are evaluated each year and take into consideration the water quality assessment performed during each previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Carlsbad WURMP and water quality assessments performed during previous reporting periods. For the Carlsbad WMA, the water quality priorities are: bacteria, sedimentation, and nutrients.

To target these water quality priorities, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the

[2] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

collective watershed strategy as the basis for developing and implementing the activities, the Copermittees focused their efforts on the potential sources that are the most likely high-priority pollutant contributors in the Carlsbad Watershed Management Area. This FY 2012 report details the implementation of the Carlsbad WURMP's collective watershed strategy.

It is important to note that the Encinas Hydrologic Area (904.4) is not discussed in this report. Lack of exceedances in the jurisdictional dry weather monitoring program, the relative small size of this hydrologic area, and the location within the City of Carlsbad boundary do not support evaluation. Please refer to the City of Carlsbad jurisdictional annual report for further information on activities in this HA.

1.1 COPERMITTEE COLLABORATION

1.1.1 CARLSBAD WURMP MEETINGS

In order to effectively plan and implement the Carlsbad WURMP, the Copermittees met nine (9) times during FY 2012 to coordinate and plan their efforts to collaboratively address water quality issues in the WMA. Furthermore, the Copermittees met to develop and prioritize water quality activities that address pollutants of concern in the watershed, to exchange ideas on how to address high priority water quality pollutants in the watershed, to evaluate the effectiveness of actions, and to collaborate on development of required submittals. See **Table 1-1** below for dates of these meetings and pertinent agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
7/20/2011	TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos), Permit Reissuance Process, Lake San Marcos, Workgroup Updates, FY 2011 Annual Report
8/16/2011	TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos), Permit Reissuance Process, Lake San Marcos, Workgroup Updates, FY 2011 Annual Report, Coastkeeper Reviews, HU to HAs – Pros and Cons, Carlsbad Watershed Network
9/20/2011	FY 2011 Annual Report, TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos, Lake San Marcos, San Elijo & Buena Vista), Ocean Plan Amendment, Watershed Activity Database, Permit Reissuance Process, Workgroup Updates
10/18/2011	FY 2011 Annual Report, TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos, Lake San Marcos, San Elijo & Buena Vista), Ocean Plan Amendment, Watershed Activity Database, Permit Reissuance Process, Workgroup Updates, Regional Monitoring Data Presentation
11/15/2011	FY 2011 Annual Report, TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos, Lake San Marcos, San Elijo & Buena Vista), Ocean Plan Amendment, Permit Reissuance Process, Workgroup Updates
2/21/2012	TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos, Lake San Marcos, San Elijo & Buena Vista), Permit Reissuance Process, Workgroup Updates, SB310-Ducheny Bill
3/29/2012	Bacteria Regrowth Study Presentation, TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos, Lake San Marcos, San Elijo & Buena Vista), TWAS, Permit Reissuance Process, Workgroup Updates
4/16/2012	Property Based Inspections Presentation, TMDLs (Bacteria Project I, Loma Alta, Los Peñasquitos, Lake San Marcos, San Elijo & Buena Vista), State Dept of Public Health, TWAS, Permit Reissuance Process, Workgroup Updates
5/22/2012	Bacteria TMDL Update – San Marcos HA, Permit Reissuance Process (Strategy for Focused Meetings, Representation of San Diego County Copermittees, Watershed Leads)

1.1.2 AGUA HEDIONDA WATERSHED MANAGEMENT PLAN

During FY 2008, the watershed Copermittees collaborated in the completion of the Agua Hedionda Watershed Management Plan (AHWMP) – a grant funded effort led by the City of

Vista. Since the completion of the plan, the City of Vista formally adopted the AHWMP in the spring of 2009. The AHWMP provides a comprehensive, scientifically-based plan for preserving, restoring, and enhancing the Agua Hedionda Watershed's natural functions and features. It assesses past, present, and future watershed conditions and identifies management needs throughout the watershed, considering the complex relationships among different watershed processes. The recommendations of the AHWMP represent a geographically focused, comprehensive watershed planning effort. The plan presents management measures for achieving and sustaining measurable water quality improvements and recommends focus areas where opportunities will complement each other and lead to greater improvement in watershed functions.

With City Council support, the Vista Engineering Department and Water Quality Protection Program began working on the SR-02 project, one of the key restoration projects recommended in the Agua Hedionda Watershed Management Plan. This project encompasses restoration of approximately 3,800 linear feet of Agua Hedionda Creek on City property. During FY 2011 the City completed the Preliminary Design Report for the project, examining several design options for the restoration. Project proponents are seeking grant funding under the Integrated Regional Water Management (IRWM) Program and Proposition 84 to further the project by completing the final design, permitting, and construction.

1.1.3 WATERSHED MAP UPDATES

No updates have been made to the previously submitted Watershed Map. Please refer to the FY 2008 WURMP Annual Report submitted in January 2009 for the most recent Watershed Map.

1.2 ORGANIZATION AND CONTENT OF REPORT

SECTION 1 - Introduction

Section 1 of the Annual Report provides a summary of the Carlsbad WURMP Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2 - Water Quality Assessment

Section 2 provides an updated evaluation and analysis of the Carlsbad WMA's receiving water conditions based on applicable water quality data from the *2011-2012 Receiving Waters and Urban Runoff Monitoring Program Annual Report* (Regional Annual Monitoring Report) (Weston, 2013). Furthermore, the high priority water quality problems (HPWQPs) are compared to the Copermittees' *2011 Long-Term Effectiveness Assessment* (LTEA) (MOE, LWA, Weston, 2011).

SECTION 3 - Pollutant Source Assessment

Section 3 provides an update on the likely sources of urban runoff. Although the assessment covers the entire WMA, it specifically addresses the distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA (with exception to the Encinas HA).

SECTION 4 - Implementation of Watershed Activities

Section 4 describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2012 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution. The activities selected and conducted by the

Copermittees during FY 2012 address the overall goal of the WURMP and the Permit by focusing on the HPWQPs in all HAs.

SECTION 5 - Effectiveness Assessment

Section 5 provides an assessment of the implementation and effectiveness of the Carlsbad WURMP for the FY 2012 reporting period using concepts from *A Framework for Assessing the Effectiveness of Jurisdictional Runoff Management Programs*. The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and BMP implementation and resulting changes in receiving water quality. Consistent with the requirements of the Permit, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 6 - Conclusions

Section 6 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

2 WATER QUALITY ASSESSMENT

This section provides an updated water quality assessment based upon previously established strategies and processes presented in the 2008 WURMP (March 2008). The water quality assessment provides the results of an evaluation and analysis of the Carlsbad Watershed Management Area's (WMA) receiving waters and MS4 conditions based on applicable water quality data, reports, analyses, and other information. Information and data from the *2011-2012 Receiving Waters and Urban Runoff Monitoring Program Annual Report* (Weston, January 2013) was used to conduct the assessment. Each of the hydrologic areas within the Carlsbad watershed, with exception to the Encinas HA, is evaluated discretely. The assessment begins with identification of the high priority water quality problems (HPWQPs) for each applicable HA.

2.1 HIGH PRIORITY WATER QUALITY PROBLEMS

In developing the Collective Watershed Strategy, the Carlsbad WURMP Copermittees decided that unless there were significant long-term trends indicating otherwise or overwhelming evidence, the high priority water quality problems identified for each hydrologic area would remain throughout the permit cycle.

New data collected and analytical results summarized in this water quality assessment and in the Regional Monitoring Report (Weston, January 2013) will be taken into consideration as watershed activities are established, but do not affect the HPWQPs identified in the Carlsbad WMA. However, in light of the adopted Bacteria TMDL Project I and the Loma Alta Bacteria and Nutrient TMDL (in development), bacteria and nutrients have been added as HPWQPs where applicable. **Table 2-1** below presents the FY 2012 HPWQPs in the WMA.

Table 2-1 Summary of High Priority Water Quality Problems

HA	Bacteria/Pathogens		Sediments		Nutrients	
	Wet	Ambient	Wet	Ambient	Wet	Ambient
Loma Alta	✓				✓	✓
Buena Vista Creek	✓	✓				
Agua Hedionda	✓	✓	✓			✓
San Marcos	✓	✓				✓
Escondido Creek	✓	✓	✓			✓

The HPWQPs in the Loma Alta, Buena Vista Creek, Agua Hedionda, and Escondido Creek HAs have been confirmed by the LTEA, with exception to ambient weather bacteria in Buena Vista Creek (medium priority constituent in the LTEA) and wet weather nutrients in the Loma Alta HA (low priority constituent in the LTEA). Data in the San Marcos Creek HA were limited when determining priority constituents in the LTEA and thus were not presented in the report; therefore, comparisons between the WURMP HPWQPs and LTEA cannot be made for this hydrologic area.

2.2 FY 2012 MONITORING PROGRAM ACTIVITIES

The San Diego County Municipal Copermittees *2011-2012 Receiving Waters and Urban Runoff Monitoring Report* (Regional Monitoring Report) includes significant analyses of the monitoring activities conducted within the Carlsbad WMA during the reporting period. As a part of the Regional Monitoring Report, assessments of the HAs (with exception to the Encinas HA) during both wet weather and ambient weather monitoring conditions are

presented in an integrated manner to convey an overall assessment of each. The integrated assessment identifies which constituents tend to occur in the watershed more frequently than others. For a detailed understanding of the analysis and assessment conducted as part of the regional monitoring effort it is highly recommended that the reader review the Regional Monitoring Report available at www.projectcleanwater.org. The Carlsbad WMA is the focus in Section 5 of the Regional Monitoring Report.

The Carlsbad WMA is comprised of 135,602 acres and six hydrologic areas (HAs): Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek. The WMA has historically monitored two mass loading stations (MLS), one on Agua Hedionda Creek and one on Escondido Creek. Four temporary watershed assessment stations (TWAS) have been monitored to date in the WMA, one each in Loma Alta and Buena Vista HAs, and two in the San Marcos HA (one utilized for each the wet and dry seasons). Finally, there are numerous dry weather monitoring (DWM) sites and coastal storm drain monitoring (CSDM) sites throughout the WMA.

Table 2-2 provides a summary of the monitoring activities conducted in the Carlsbad WMA during FY 2012, in compliance with the Permit. **Figure 2-1** depicts the locations of monitoring stations within the Carlsbad WMA that were used to collect samples as part of the regional monitoring effort.

Table 2-2 2011-2012 Monitoring Activities within the Carlsbad WMA

Program Data Set	Constituents Assessed	Loma Alta	Buena Vista Creek	Agua Hedionda	San Marcos	Escondido Creek
Receiving Water Monitoring						
Ambient Monitoring*	Water chemistry, toxicity, bacteria, and trash		✓	✓		✓
Rapid Stream Bioassessments*	Benthic macroinvertebrates, periphyton, and physical habitat		✓	✓		✓
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, sediment chemistry, benthic habitat assessments, and trash					
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC					
Third-Party Data	General chemistry and bacteria		✓		✓	✓
Ambient Bay and Lagoon Monitoring (ABLM)	Sediment chemistry, toxicity, and benthic habitat assessments, water chemistry, and bacteria				✓	
Urban Runoff Monitoring						
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, indicator bacteria, and trash	✓	✓	✓	✓	✓
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria			✓	✓	✓
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria			✓	✓	
MS4 Outfall Targeted Dry Weather Monitoring	Chemistry, metals, pesticides, and bacteria	✓	✓	✓	✓	✓
MS4 Outfall Targeted Wet Weather Monitoring	Chemistry, metals, pesticides, and bacteria			✓		
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides					
Coastal Storm Drain Monitoring (CSDM) Program	Indicator bacteria	✓	✓	✓	✓	✓

*Captured through the SMC monitoring; bacteria not analyzed

Annual receiving water monitoring is conducted by the Copermittees on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit. Receiving waters ambient and wet weather monitoring occurred within the Carlsbad WMA during the 2010-2011 reporting period. During the 2011-2012 reporting period, limited ambient receiving water monitoring was conducted through the Stormwater Monitoring Coalition (SMC) Program – MLS and TWAS stations were not monitored as the program was on South County rotation. Rapid Stream Bioassessment and instantaneous receiving water monitoring was conducted through the Stormwater Monitoring Coalition (SMC) Regional Bioassessment Program during one ambient weather event at one site in the Buena Vista Creek HA, one site in Agua Hedionda HA, and one site in the Escondido Creek HA.

Ambient Bay and Lagoon Monitoring (ABLM) was performed at three (3) water quality and sediment stations within the San Marcos HA at the Batiquitos Lagoon. Final station assessment was not performed at two (2) stations because salinity did not meet the requirements of the standardized assessment tool.

Figure 2-1 Carlsbad Watershed Management Area Monitoring Station Location Map

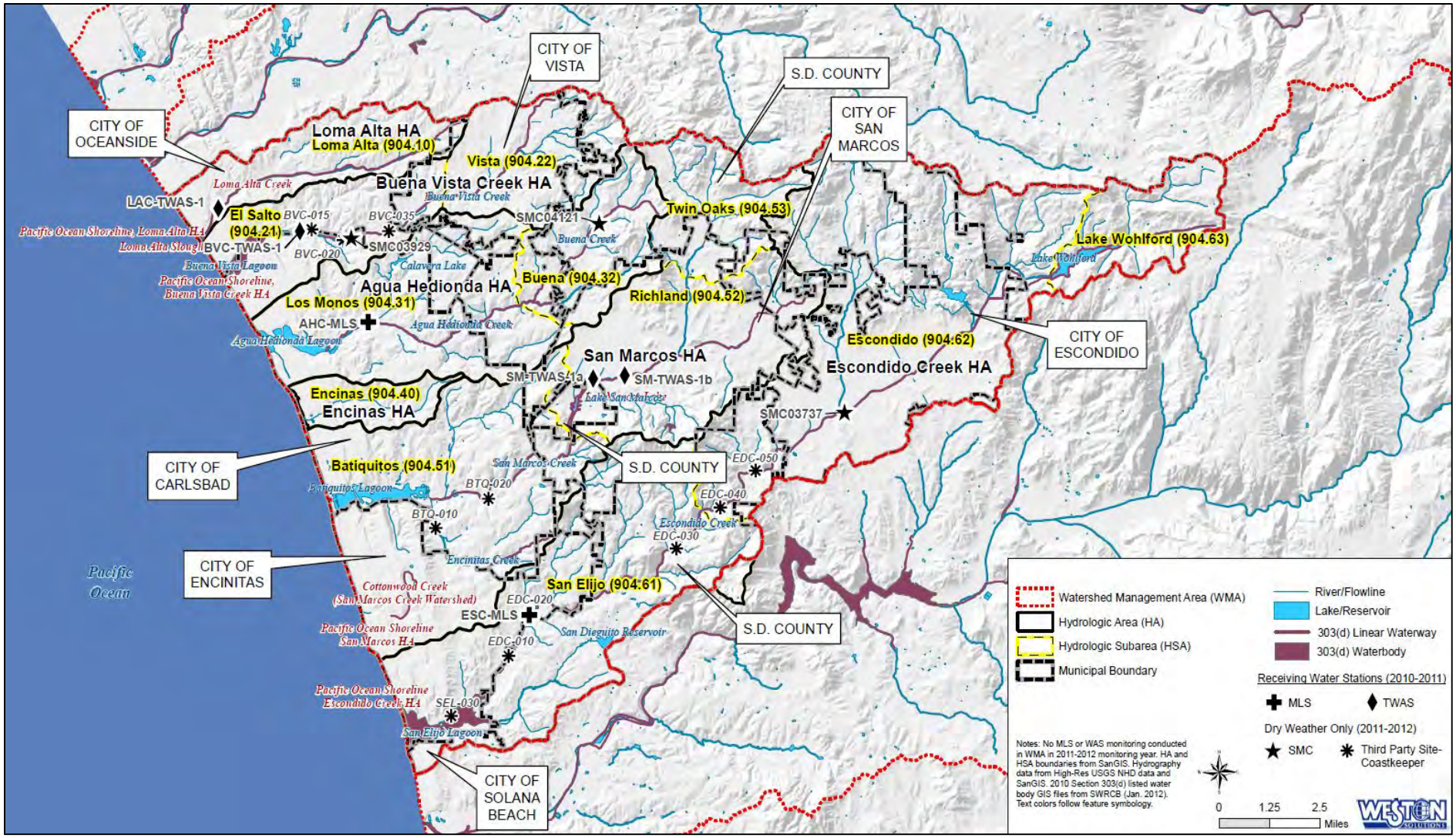

2.3 303(D) LISTINGS AND TMDLS

Within the watershed, contaminants identified on the 2010 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-3** with relevant TMDL status/activity. The 2010 SWRCB 303(d) list was adopted by the Board on August 4, 2010, and subsequently finalized by the United States Environmental Protection Agency (USEPA) on October 11, 2011.

Table 2-3 Carlsbad WMA SWRCB 2010 Section 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/ Stressor on 2010 SWRCB 303(d) List	HA	TMDL Status
Loma Alta Creek	Selenium and toxicity	904.1	Proposed completion date - 2019
Loma Alta Slough	Indicator bacteria and eutrophic	904.1	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2009. The RWQCB began development of the Loma Alta Slough Bacteria and Nutrient TMDL in June 2010. Proposed completion date – June 2013.
Pacific Ocean Shoreline, Loma Alta Creek Mouth	Indicator bacteria	904.1	Proposed completion date - 2019
Buena Vista Creek	Sediment toxicity and selenium	904.2	Proposed completion date - 2019
Buena Vista Lagoon	Indicator bacteria, nutrients, and sedimentation/ siltation	904.2	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2009. Proposed completion date - 2019
Agua Hedionda Creek	*Enterococcus*, fecal coliform, phosphorous, TDS, nitrogen, toxicity, manganese, and selenium	904.3	Proposed completion date - 2019
Buena Creek	DDT, nitrate and nitrite	904.3	Proposed completion date - 2019
Pacific Ocean Shoreline, Moonlight Beach	Total coliform	904.5	The Bacteria I TMDL has been adopted by the San Diego RWQCB, although further analysis by the San Marcos HA Responsible Parties established no REC-1 beneficial use impairments. Therefore, no load reduction plan will be submitted, see Section 5 for more details.
Lower San Marcos Creek Watershed (Cottonwood Creek)	DDT, selenium, and sediment toxicity	904.5	Proposed completion date - 2019
Upper San Marcos Creek Watershed (San Marcos Creek)	DDE, phosphorus, selenium, and sediment toxicity	904.5	Proposed Completion date – 2019. Currently in Voluntary Participation Agreement with Upper San Marcos Creek Stakeholders; Selenium proposed completion date 2021
Lake San Marcos	Ammonia as N, and nutrients	904.5	Proposed Completion date – 2019. Currently in Voluntary Participation Agreement with Upper San Marcos Creek Stakeholders.
Encinitas Creek	Selenium and toxicity	904.5	Proposed completion date - 2019
San Elijo Lagoon	Indicator bacteria, eutrophic, and sedimentation/siltation	904.6	Monitoring in support of lagoon and watershed modeling for TMDL development conducted in FY 2009; Proposed completion date - 2019
Escondido Creek	*Enterococcus*, fecal coliform, DDT, manganese, nitrogen, phosphate, selenium, sulfates, toxicity, and TDS	904.6	Proposed completion date - 2019
Pacific Ocean Shoreline, Cardiff State Beach	Total coliform	904.6	Proposed completion date - 2019

Source: SWRCB, 2010

2.4 MONITORING PROGRAM INTEGRATION

This section includes an integrated presentation of the watershed monitoring during both ambient and wet weather. The integrated assessment incorporates the results from Watershed receiving water and urban runoff monitoring (MS4, MLS, TWAS, and SMC), with

the purpose of overlapping constituents between the programs. MLS and TWAS results from the previous reporting period are shown for comparison purposes. Integrated watershed assessment results are presented by HA in **Tables 2-4** to **2-8** below.

Table 2-4 Loma Alta 904.1 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – *Enterococcus* ▪ Nutrients – Total Nitrogen, Total Phosphorous (Med) ▪ TDS – Not observed	No monitoring during 2011-2012
MLS and TWAS Monitoring	No monitoring during 2011-2012 FY 2011 Results: **Intermediate[2] Watershed Receiving Water** Loma Alta Creek TWAS-1 ▪ Chemistry – None above benchmarks ▪ Bacteria – *Enterococcus* (Med) ▪ Bioassessment – Very Poor Index of Biotic Integrity (IBI)* ▪ Nutrients – Total Nitrogen (Med) ▪ Toxicity – *C. dubia* reproduction*, *C. dubia* acute (Med), *C. dubia* chronic (Med), *S. capricornutum* acute (Med) ▪ TDS – Not observed	No monitoring during 2011-2012 FY 2011 Results: **Intermediate[2] Watershed Receiving Water** Loma Alta Creek TWAS-1 ▪ Chemistry – Bifenthrin (Med) ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Very Poor Index of Biotic Integrity (IBI)* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Not observed Synthetic Pyrethroids in Sediment* ▪ None above benchmarks

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011)
2: Intermediate Watershed Receiving Waters are creeks and inland waterways within the HA.

COD - Chemical Oxygen Demand
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the Loma Alta HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters (2010-2011) include *Enterococcus* and total nitrogen. Other ambient weather water quality issues include total phosphorous in urban runoff, and very poor Index of Biotic Integrity (IBI), *Ceriodaphnia dubia* and *Selenastrum capricornutum* toxicity in intermediate receiving waters. Fecal coliform, bifenthrin, and very poor IBI are the only wet weather water quality issues noted by the monitoring programs.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data in the Loma Alta HA as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

The findings of this assessment support the existing HPWQPs within the Loma Alta HA, with exception to wet weather nutrients which were identified during the previous reporting period. Other identified constituents may be further analyzed and addressed in future years.

Table 2-5 Buena Vista 904.2 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – *Enterococcus*, Fecal Coliform ▪ Nutrients – Total Nitrogen, Total Phosphorous ▪ TDS – Observed	No monitoring during 2011-2012
MLS, TWAS, and SMC Monitoring	One SMC and third-party site monitored during 2011-2012 **Intermediate[2] Watershed Receiving Water** Stormwater Monitoring Coalition Program* ▪ Chemistry - Sulfate ▪ Bacteria – Not analyzed ▪ Bioassessment – Very Poor IBI ▪ Nutrients – Nitrate, Total Nitrogen ▪ Toxicity – No toxicity observed ▪ TDS – Observed Third Party Data (Coastkeeper) ▪ Bacteria – *Enterococcus, E. coli* ▪ Chemistry – Turbidity FY 2011 Results: Buena Vista Creek TWAS-1 ▪ Chemistry – None above benchmarks ▪ Bacteria – None above benchmarks ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – Total Nitrogen (Med) ▪ Toxicity – None above benchmarks ▪ TDS – Observed	No monitoring during 2011-2012 FY 2011 Results: **Intermediate[2] Watershed Receiving Water** Buena Vista Creek TWAS-1 ▪ Chemistry – Bifenthrin (Med) ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Observed Synthetic Pyrethroids in Sediment* ▪ Bifenthrin

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: Intermediate Watershed Receiving Waters are creeks and inland waterways within the HA.

COD - Chemical Oxygen Demand
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the Buena Vista HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: TDS, *Enterococcus*, and total nitrogen. TDS, an ambient weather water quality issue based on the results of MS4 and receiving water data, was also found to be an issue in the wet weather monitoring during the previous reporting period.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data in the Buena Vista HA as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

The findings of this assessment support the existing HPWQPs within the Buena Vista HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-6 Agua Hedionda 904.3 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Sulfate, Total Selenium ▪ Bacteria – Fecal Coliform, *Enterococcus* ▪ Nutrients – Nitrate*, Total Nitrogen, Total Phosphorous ▪ TDS – Observed	**Urban Runoff*** ▪ Chemistry – TSS ▪ Bacteria – Fecal Coliform ▪ Nutrients – None above benchmarks ▪ TDS – Not observed
MLS, TWAS, and SMC Monitoring	One SMC site monitored during 2011-2012 **Intermediate[2] Watershed Receiving Water** Stormwater Monitoring Coalition Program* ▪ Chemistry – Chloride, Sulfate, Bifenthrin ▪ Bacteria – Not analyzed ▪ Bioassessment – Very Poor IBI ▪ Nutrients – Nitrate, Total Nitrogen, Total Phosphorous ▪ Toxicity – No toxicity observed ▪ TDS – Observed FY 2011 Results: Agua Hedionda Creek MLS ▪ Chemistry – None above benchmarks ▪ Bacteria – *Enterococcus*, Fecal Coliform (Med) ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – Total Nitrogen (Med) ▪ Toxicity – *C. dubia* reproduction*, *S. capricornutum* acute (Med) ▪ TDS – Observed	No monitoring during 2011-2012 FY 2011 Results: **Intermediate[2] Watershed Receiving Water** Agua Hedionda Creek MLS ▪ Chemistry – Bifenthrin (Med) ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Observed Synthetic Pyrethroids in Sediment* ▪ Bifenthrin
MLS Trends[3]		
Increasing		Total Coliform, Fecal Coliform, TSS, COD, Turbidity, Total Copper, Total Nickel
Decreasing		Diazinon

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: Intermediate Watershed Receiving Waters are creeks and inland waterways within the HA.
3: Trends are based on historical data, including data from the 2011-2012 monitoring year.

COD - Chemical Oxygen Demand
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the Agua Hedionda HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, fecal coliform, nitrate, total nitrogen, total phosphorous, sulfate, and TDS. Fecal coliform was also found to be a wet weather water quality issue in urban runoff in this year's data, and in intermediate receiving waters during the previous year's MLS monitoring. Other ambient weather water quality issues include chloride and total selenium in urban runoff, and very poor IBI, and *C. dubia* and *S. capricornutum* toxicity in intermediate receiving waters.

Long-term trend analysis in the Agua Hedionda HA is currently limited to wet weather data collected at the MLS. Of the seven constituents with significantly increasing trends during

wet weather, only three have historically been consistently above water quality benchmarks: fecal coliform, TSS, and turbidity. However, during the previous monitoring season at the MLS, TSS and turbidity were measured at concentrations below the water quality benchmark. Chemical oxygen demand (COD) has been historically below water quality benchmarks, and total coliform, total copper, and total nickel do not have wet weather water quality benchmarks. One constituent, diazinon, is significantly decreasing and has been below water quality benchmarks for several years. At present there are insufficient data to complete trend analyses on available dry weather receiving water data.

The findings of this assessment support the existing HPWQPs (bacteria, nutrients, and sediment) within the Agua Hedionda HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-7 San Marcos Creek 904.5 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform, *Enterococcus* ▪ Nutrients – Total Nitrogen, Total Phosphorous, Dissolved Phosphorous* ▪ TDS – Observed	**Urban Runoff** ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform ▪ Nutrients – None above benchmarks ▪ TDS – Not observed
MLS and TWAS Monitoring	No monitoring during 2011-2012 FY 2011 Results: **Intermediate[2] Watershed Receiving Water** San Marcos Creek TWAS-1b (Dry) ▪ Chemistry – TSS (Med), Turbidity (Med) ▪ Bacteria – *Enterococcus*, Fecal Coliform (Med) ▪ Bioassessment – Poor IBI* ▪ Nutrients – Total Nitrogen, Total Phosphorous (Med), Dissolved Phosphorous* (Med) ▪ Toxicity – *C. dubia* reproduction (Med), *S. capricornutum* acute (Med) ▪ TDS – Observed	No monitoring during 2011-2012 FY 2011 Results: **Intermediate[2] Watershed Receiving Water** San Marcos Creek TWAS-1a (Wet) ▪ Chemistry – Bifenthrin (Med) ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Poor IBI* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Observed Synthetic Pyrethroids in Sediment* ▪ Bifenthrin
Ambient Bay and Lagoon Monitoring	**Batiquitos Lagoon Receiving Water** ▪ One possibly impacted station (BL-12-1) ▪ Final station assessment not performed at two stations due to low salinity	ALBM not applicable for wet weather

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: Intermediate Watershed Receiving Waters are creeks and inland waterways within the HA.

COD - Chemical Oxygen Demand
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the San Marcos Creek HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, fecal coliform, total nitrogen, total phosphorous, dissolved phosphorous, and TDS. Fecal coliform is the only wet weather water quality issue outlined by the urban runoff and intermediate receiving water monitoring programs. Other wet weather priority

constituents include bifenthrin, poor IBI, TDS, and sediment pyrethroids in intermediate receiving waters.

ABLM results at the Batiquitos Lagoon suggested moderate benthic disturbance at the only site where final station assessments could be performed, indicating minimal to low chemistry exposure and no to low toxicity in the samples. A comparison to samples collected in Bight '08 showed benthic infaunal community conditions have not changed much since 2008. The species diversity and abundances of the benthic community within the lagoon appear to be affected by tidal exchange, channelization of the water during negative or low tides, and changes in sediment grain size. Year-to-year differences therefore appear to be a result of natural biological variation or physical disturbances rather than chemically-mediated effects.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data in the San Marcos HA as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

The findings of this assessment support the existing HPWQPs within the San Marcos Creek HA. Other identified constituents may be further analyzed and addressed in future years.

Table 2-8 Escondido Creek 904.6 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituents Assessment[1]	Annual Wet Weather Constituents Assessment[1]
MS4 Outfall, DWM	**Urban Runoff** ▪ Chemistry – Sulfate ▪ Bacteria – *Enterococcus*, Fecal Coliform ▪ Nutrients – Total Nitrogen, Total Phosphorous, Dissolved Phosphorous* ▪ TDS – Observed (Med)	No monitoring during 2011-2012
MLS, TWAS, and SMC Monitoring	One SMC and third-party site monitored during 2011-2012 **Intermediate[2] Watershed Receiving Water** Stormwater Monitoring Coalition Program* ▪ Chemistry – None above benchmarks ▪ Bacteria – Not analyzed ▪ Bioassessment – Very Poor IBI ▪ Nutrients – Total Nitrogen ▪ Toxicity – *C. dubia* - acute, chronic, reproduction ▪ TDS – Observed Third Party Data (Coastkeeper) Bacteria – *Enterococcus*, *E. coli* <u>FY 2011 Results</u>: Escondido Creek MLS ▪ Chemistry – None above benchmarks ▪ Bacteria – *Enterococcus* (Med) ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – Total Nitrogen (Med), Total Phosphorous (Med), Dissolved Phosphorous (Med) ▪ Toxicity – *S. capricornutum* acute (Med)	No monitoring during 2011-2012 <u>FY 2011 Results</u>: **Intermediate[2] Watershed Receiving Water** Escondido Creek MLS ▪ Chemistry – None above benchmarks ▪ Bacteria – Fecal Coliform ▪ Bioassessment – Very Poor IBI* ▪ Nutrients – None above benchmarks ▪ Toxicity – No toxicity observed ▪ TDS – Observed Synthetic Pyrethroids in Sediment* ▪ None above benchmarks
MLS Trends[3]		
Increasing		Total Coliform
Decreasing		Total Phosphorous, Diazinon

Notes:
* One sample used in the analysis.
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: Intermediate Watershed Receiving Waters are creeks and inland waterways within the HA.
3: Trends are based on historical data, including data from the 2011-2012 monitoring year.

ALBM - Ambient Lagoon and Bay Monitoring
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the Escondido Creek HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include *Enterococcus*, total nitrogen, total phosphorus, dissolved phosphorous, and TDS. Other ambient weather priority constituents observed in intermediate receiving waters include: *E. coli*, very poor IBI, and *S. capricornutum* and *C. dubia* toxicity. Fecal coliform is an ambient weather water quality issue in urban runoff not above benchmarks in the receiving water monitoring.

Long-term trend analysis in the Escondido Creek HA is currently limited to wet weather data collected at the MLS. Trend analysis for the Escondido Creek MLS wet weather data indicates three statistically significant trends: total coliform is increasing, while total

phosphorous and diazinon are decreasing. Of these three constituents, total phosphorous is the only constituent rated as a high priority based on data collected during the 2010-2011 monitoring.

Total coliform is the only significantly increasing constituent at the MLS, although there is no wet weather benchmark for the indicator bacteria. Total phosphorus and diazinon are both significantly decreasing, and are both below wet weather water quality benchmarks. Diazinon has been below the wet weather benchmark since 2004.

The findings of this assessment support the existing HPWQPs within the Escondido Creek HA with exception to wet weather sediment. No sampling was conducted during wet weather in the HA during the reporting period, although sediment-related constituents (TSS and turbidity) were considered a low-priority during the 2011-2012 regional monitoring. Other identified constituents may be further analyzed and addressed in future years.

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3 POLLUTANT SOURCE ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Carlsbad WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by hydrologic area.

Table 3-1 summarizes the land use in each of the hydrologic areas. The pollutants found in wet weather urban runoff are generally associated with land uses in the tributary areas. Rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to the pollutants found in dry weather urban runoff that are generally associated with identifiable-source dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant generating activities and from the traveled path of the urban runoff as it enters and travels through the MS4.

Tables 3-2 through **3-6** represent the inventoried sources that the Copermittees currently track. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants. The process used to develop the tables was taken directly from the Copermittees' *2011 Long-Term Effectiveness Assessment* (LTEA) (MOE, LWA, Weston, 2011). The data used for the process includes the following: (1) results in the *2011-2012 Receiving Waters and Urban Runoff Monitoring Report* (Weston, January 2012); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the LTEA.

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)					
	904.1	904.2	904.3	904.4	904.5	904.6
Agricultural, Orchards, Vineyards	51.5	183.2	1,358.2	55.0	2,463.2	3,835.0
Automotive and Transportation	9.3	40.3	134.8	202.7	96.8	131.6
Beach, Bay, Lagoon, Reservoir	13.4	222.1	319.3	1.3	520.0	830.8
Commercial	298.1	1,139.8	590.4	274.9	1,715.5	1,355.8
Construction	70.7	23.7	35.7	6.1	91.5	157.8
Health Services	5.7	67.4	11.8	1.3	85.4	58.9
Industrial	557.2	97.9	1,533.7	413.0	814.2	683.1
Institutional	273.2	629.4	320.6	28.2	929.9	798.1
Junkyard, Dump, Landfill	0.0	0.0	0.0	0.0	3.1	238.3
Multi-Family Residential	405.2	1,474.5	836.1	109.8	1,896.5	1,425.9
Open Space and Undeveloped Land	1,339.4	1,805.7	5,786.7	441.9	10,606.0	22,264.5
Parks, Golf Courses, Cemeteries	465.0	477.0	702.8	247.0	2,560.5	1,152.6
Prison	0.0	24.2	0.0	0.0	0.0	0.0
Recreation	11.3	54.3	64.6	138.7	207.3	77.0
Roads, Freeways, Railways	1,152.7	2,416.1	2,133.1	356.8	5,094.8	4,182.3
Single Family Residential	1,514.5	5,213.9	4,602.5	155.6	8,484.1	6,777.5
Spaced Rural Residential	44.3	510.5	1,038.0	0.0	2,192.0	10,461.9
Storage and Warehousing	37.3	35.7	29.0	21.7	86.5	49.9
Utilities	26.7	14.0	221.7	35.6	139.8	219.7

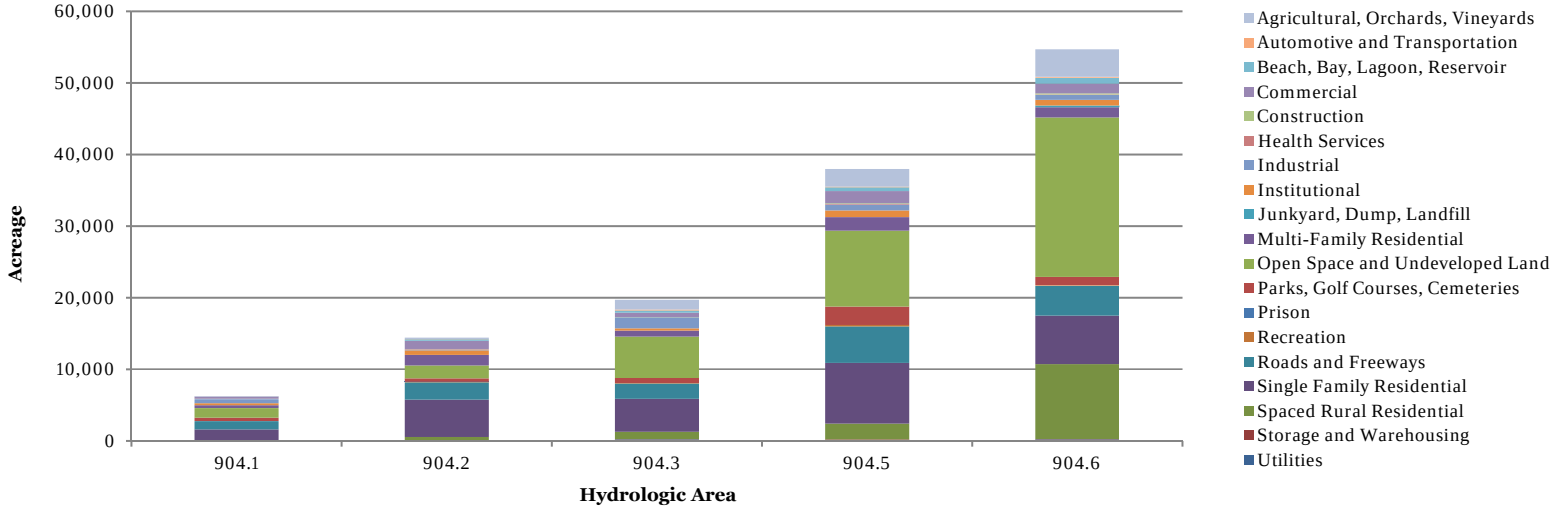

Note: HA 904.4 is not shown graphically due to the small overall area. For a land use representation of HA 904.4, please see **Table 3-1** above.
Source: SANDAG, 2009

Table 3-2 Pollutant Generating Sources – 904.1 Loma Alta Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Animal Facilities	10	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	92	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	6	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	28	L	L	UL	UL	UL	UL	L	L
Nurseries/Greenhouses	4	L	UL	L	L	L	L	UL	UL
Building Materials Retail	2	L	L	L	UL	UL	UL	UL	L
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L
Concrete Manufacturing	6	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	123	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	14	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	17	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	8	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	54	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	62	L	L	UK	UK	UK	UK	UK	L
General Retail	125	UL	UL	L	UL	UL	UL	UL	UL
Health Services	1	N	UL	L	UK	L	UL	UK	L
Institutional	6	L	UK	UK	UK	UK	UL	UK	UK
Mobile Landscaping	11	N	UL	L	L	L	L	UL	N
Motor Freight	12	L	L	UK	UK	UK	UK	UL	L
Offices	70	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	1	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	6	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	2	N	N	N	N	UK	N	N	UK
Primary Metal	8	L	UK	UK	UK	UK	UL	N	UK
Recycling & Junk Yards	5	L	L	L	UL	UL	UL	L	L
Stone/Glass Manufacturing	8	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	14	L	L	L	UL	UL	UL	UL	L
Municipal	High: 32; Non-High: 2	N	N	L	N	N	UK	UL	N
Construction	High: 4; Medium: 5; Low: 6	UL	UL	L	UL	UL	UL	L	UL
Residential	2,025 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-3 Pollutant Generating Sources – 904.2 Buena Vista Creek Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Aggregates/Mining	1	L	L	L	UL	UL	UL	UL	L
Agriculture	1	L	UL	L	L	L	L	UK	UL
Animal Facilities	5	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	131	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	16	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	19	L	L	UL	UL	UL	UL	L	L
Nurseries/Greenhouses	28	L	UL	L	L	L	L	UL	UL
Concrete Manufacturing	1	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	391	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	8	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	6	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	3	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	26	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	10	L	L	UK	UK	UK	UK	UK	L
General Retail	94	UL	UL	L	UL	UL	UL	UL	UL
Health Services	2	N	UL	L	UK	L	UL	UK	L
Institutional	2	L	UK	UK	UK	UK	UL	UK	UK
Mobile Landscaping	6	N	UL	L	L	L	L	UL	N
Motor Freight	3	L	L	UK	UK	UK	UK	UL	L
Offices	36	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	3	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	1	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	1	N	N	N	N	UK	N	N	UK
Recycling & Junk Yards	2	L	L	L	UL	UL	UL	L	L
Stone/Glass Manufacturing	3	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	9	L	L	L	UL	UL	UL	UL	L
Municipal	High: 49; Non-High: 32	N	N	L	N	N	UK	UL	N
Construction	High: 12; Medium: 13; Low: 25	UL	UL	L	UL	UL	UL	L	UL
Residential	7,345 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-4 Pollutant Generating Sources – 904.3 Agua Hedionda Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Agriculture	4	L	UL	L	L	L	L	UK	UL
Animal Facilities	5	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	67	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	27	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	12	L	L	UL	UL	UL	UL	L	L
Nurseries/Greenhouses	59	L	UL	L	L	L	L	UL	UL
Building Materials Retail	2	L	L	L	UL	UL	UL	UL	L
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L
Eating or Drinking Establishments	162	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	40	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	42	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	21	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	51	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	98	L	L	UK	UK	UK	UK	UK	L
General Retail	58	UL	UL	L	UL	UL	UL	UL	UL
Health Services	1	N	UL	L	UK	L	UL	UK	L
Institutional	1	L	UK	UK	UK	UK	UL	UK	UK
Mobile Upholstery Cleaning	1	N	UK	UL	N	UK	UL	N	UL
Mobile Landscaping	4	N	UL	L	L	L	L	UL	N
Motor Freight	10	L	L	UK	UK	UK	UK	UL	L
Offices	11	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	4	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	4	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	1	N	N	N	N	UK	N	N	UK
POTWs	1	UK	UK	UK	N	UK	L	UL	UK
Primary Metal	5	L	UK	UK	UK	UK	UL	N	UK
Recycling & Junk Yards	6	L	L	L	UL	UL	UL	L	L
Stone/Glass Manufacturing	10	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	48	L	L	L	UL	UL	UL	UL	L
Municipal	High: 51; Non-High: 18	N	N	L	N	N	UK	UL	N
Construction	High: 27; Medium: 23; Low: 53	UL	UL	L	UL	UL	UL	L	UL
Residential	6,613 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-5 Pollutant Generating Sources – 904.5 San Marcos Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Aggregates/Mining	1	L	L	L	UL	UL	UL	UL	L
Animal Facilities	45	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	136	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	4	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	48	L	L	UL	UL	UL	UL	L	L
Nurseries/Greenhouses	96	L	UL	L	L	L	L	UL	UL
Building Materials Retail	30	L	L	L	UL	UL	UL	UL	L
Chemical and Allied Products	4	UK	UK	UK	UK	UK	UL	N	L
Concrete Manufacturing	4	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	501	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	87	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	39	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	30	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	129	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	76	L	L	UK	UK	UK	UK	UK	L
General Retail	65	UL	UL	L	UL	UL	UL	UL	UL
Health Services	1	N	UL	L	UK	L	UL	UK	L
Institutional	1	L	UK	UK	UK	UK	UL	UK	UK
Mobile Landscaping	11	N	UL	L	L	L	L	UL	N
Motor Freight	23	L	L	UK	UK	UK	UK	UL	L
Offices	2	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	9	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	1	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	5	N	N	N	N	UK	N	N	UK
POTWs	3	UK	UK	UK	N	UK	L	UL	UK
Primary Metal	1	L	UK	UK	UK	UK	UL	N	UK
Recycling & Junk Yards	4	L	L	L	UL	UL	UL	L	L
Roads, Streets & Parking	1	L	L	L	UL	L	L	L	L
Stone/Glass Manufacturing	10	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	108	L	L	L	UL	UL	UL	UL	L
Municipal	High: 68; Non-High: 51	N	N	L	N	N	UK	UL	N
Construction	High: 36; Medium: 66; Low: 102	UL	UL	L	UL	UL	UL	L	UL
Residential	12,977 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-6 Pollutant Generating Sources – 904.6 Escondido Creek Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/Pathogens	Dissolved Minerals	Organics
Agriculture	1	L	UL	L	L	L	L	UK	UL
Animal Facilities	25	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	306	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	97	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	38	L	L	UL	UL	UL	UL	L	L
Nurseries/Greenhouses	29	L	UL	L	L	L	L	UL	UL
Building Materials Retail	24	L	L	L	UL	UL	UL	UL	L
Chemical and Allied Products	2	UK	UK	UK	UK	UK	UL	N	L
Concrete Manufacturing	5	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	410	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	40	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	53	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	11	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	155	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	53	L	L	UK	UK	UK	UK	UK	L
General Retail	156	UL	UL	L	UL	UL	UL	UL	UL
Health Services	8	N	UL	L	UK	L	UL	UK	L
Institutional	19	L	UK	UK	UK	UK	UL	UK	UK
Mobile Upholstery Cleaning	1	N	UK	UL	N	UK	UL	N	UL
Mobile Landscaping	24	N	UL	L	L	L	L	UL	N
Motor Freight	17	L	L	UK	UK	UK	UK	UL	L
Offices	8	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec	7	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	15	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	1	N	N	N	N	UK	N	N	UK
POTWs	1	UK	UK	UK	N	UK	L	UL	UK
Primary Metal	4	L	UK	UK	UK	UK	UL	N	UK
Recycling & Junk Yards	10	L	L	L	UL	UL	UL	L	L
Roads, Streets & Parking	1	L	L	L	UL	L	L	L	L
Stone/Glass Manufacturing	21	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	30	L	L	L	UL	UL	UL	UL	L
Municipal	High: 38; Non-High: 62	N	N	L	N	N	UK	UL	N
Construction	High: 14; Medium: 62; Low: 139	UL	UL	L	UL	UL	UL	L	UL
Residential	18,910 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

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4 IMPLEMENTATION OF ACTIVITIES

4.1 JURMP AND WATERSHED ACTIVITIES

The Carlsbad WURMP Copermittees are responsible for implementing JURMP activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. Many of these activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs, and in an effort to report on the Copermittees' activities performed in the WMA, data was collected for these activities on an HA basis. The data and information is not comprehensive and for some data sets, estimates were used to generate quantities for the activities – this is explained in **Appendix A** of the report.

In addition to the JURMP activities, the Carlsbad WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Carlsbad WURMP. The Copermittees believe it is an important step towards integrating jurisdictional and watershed activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The tables below represent the Copermittees' efforts towards reporting urban runoff management activities on a watershed basis, e.g., reporting of Copermittee activities regardless of jurisdiction-specific program labels. Reporting as many jurisdictional and watershed urban runoff management activities as feasible on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements.

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

Table 4-1 JURMP and WURMP Activities – 904.1 Loma Alta Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem	
			Bacteria/ Pathogens	Nutrients
Inspections	Animal Facilities	3: (10)	✓	✓
	Eating or Drinking Establishments	94: (123)	✓	
	Health Services	0: (1)		✓
	Mobile Landscaping	0: (11)	✓	✓
	Nurseries/Greenhouses	4: (4)	✓	✓
	Parks and Rec (incl. Golf, Cemetery)	0: (1)		✓
	TCBMPs	342: (435)	✓	✓
Street Sweeping (Tons Removed)		490.3	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		171.9	✓	✓
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility		✓	
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓
CHU-WQA29	Water Smart Incentives for Outdoor Water Efficiency		✓	✓
CHU-WQA30	Live Turf Replacement Incentive Program		✓	✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓	✓

Table 4-2 JURMP and WURMP Activities – 904.2 Buena Vista Creek Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem
			Bacteria/Pathogens
Inspections	Agriculture	1: (1)	✓
	Animal Facilities	2: (5)	✓
	Eating or Drinking Establishments	258: (391)	✓
	Mobile Landscaping	0: (6)	✓
	Nurseries/Greenhouses	10: (28)	✓
	TCBMPs	276: (387)	✓
Street Sweeping (Tons Removed)		674.8	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		241.0	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓
CHU-WQA29	Water Smart Incentives for Outdoor Water Efficiency		✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓

Table 4-3 JURMP and WURMP Activities – 904.3 Agua Hedionda Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem		
			Bacteria/ Pathogens	Nutrients	Sediment
Inspections	Agriculture	4: (4)	✓	✓	✓
	Animal Facilities	3: (5)	✓	✓	✓
	Auto Parking Lots or Storage	23: (27)			✓
	Building Materials Retail	1: (2)			✓
	Eating or Drinking Establishments	99: (162)	✓		
	General Contractors	8: (51)			✓
	General Retail	27: (58)			✓
	Health Services	1: (1)		✓	✓
	Mobile Landscaping	1: (4)	✓	✓	✓
	Nurseries/Greenhouses	33: (59)	✓	✓	✓
	Parks and Rec (incl. Golf, Cemetery)	3: (4)		✓	
	POTWs	0: (1)	✓		
	Recycling & Junk Yards	3: (6)			✓
	Stone/Glass Manufacturing	7: (10)			✓
	Storage/Warehousing	6: (48)			✓
	TCBMPs	502: (520)	✓	✓	✓
	Construction	High: 426: (27); Medium: 187: (23); Low: 284: (53)			✓
	Municipal	High: 51: (51); Non-High: 0: (18)			✓
Street Sweeping (Tons Removed)		728.0	✓	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		159.4	✓	✓	✓
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek			✓	
CHU-WQA15	Water Quality Treatment Facility @ Palomar Airport			✓	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓	✓
CHU-WQA29	Water Smart Incentives for Outdoor Water Efficiency		✓	✓	
CHU-WQA30	Live Turf Replacement Incentive Program		✓	✓	
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓	✓	

Table 4-4 JURMP and WURMP Activities – 904.5 San Marcos Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem	
			Bacteria/ Pathogens	Nutrients
Inspections	Animal Facilities	5: (45)	✓	✓
	Eating or Drinking Establishments	186: (501)	✓	
	Health Services	1: (1)		✓
	Mobile Landscaping	5: (11)	✓	✓
	Nurseries/Greenhouses	27: (96)	✓	✓
	Parks and Rec (incl. Golf, Cemetery)	7: (9)		✓
	POTWs	3: (3)	✓	
	Roads, Streets and Parking	1: (1)	✓	✓
	TCBMPs	964: (1,593)	✓	✓
Street Sweeping (Tons Removed)		2,268.0	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		358.3	✓	✓
CHU-WQA12	Upper San Marcos Creek Watershed/Lake San Marcos Nutrient Management Plan			✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓
CHU-WQA18	Upper San Marcos Creek Nutrient Management Plan – Parks Component			✓
CHU-WQA19	Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component			✓
CHU-WQA20	Upper San Marcos Creek Nutrient Management Plan – Agriculture Component			✓
CHU-WQA21	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component			✓
CHU-WQA23	San Diego County *Enterococcus* Regrowth Study		✓	
CHU-WQEA8	Upper San Marcos Creek Nutrient Management Plan – Residential Component			✓

Table 4-5 JURMP and WURMP Activities – 904.6 Escondido Creek Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem		
					Bacteria/ Pathogens	Nutrients	Sediment
Inspections	Agriculture	1: (1)			✓	✓	✓
	Animal Facilities	6: (25)			✓	✓	✓
	Auto Parking Lots or Storage	97: (97)					✓
	Nurseries/Greenhouses	21: (29)			✓	✓	✓
	Building Materials Retail	24: (24)					✓
	Concrete Manufacturing	5: (5)					✓
	Eating or Drinking Establishments	383: (410)			✓		
	General Contractors	154: (155)					✓
	General Retail	155: (156)					✓
	Health Services	8: (8)				✓	✓
	Mobile Landscaping	24: (24)			✓	✓	✓
	Parks and Rec	6: (7)				✓	
	POTWs	1: (1)			✓		
	Recycling & Junk Yards	10: (10)					✓
	Roads, Streets, & Parking	1: (1)			✓	✓	✓
	Stone/Glass Manufacturing	21: (21)					✓
	Storage/Warehousing	27: (30)					✓
	TCBMPs	235: (629)			✓	✓	✓
	Construction	High	Medium	Low			✓
		131: (14)	646: (62)	997: (139)			
	Municipal	High	Non-High				✓
		34: (38)	26: (62)				
Street Sweeping (Tons Removed)		1,710.1			✓	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		511.8			✓	✓	✓
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks				✓	✓	
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution				✓	✓	✓
CHU-WQEA5	LID Features in San Elijo Nature Center				✓	✓	✓

4.2 WATERSHED EDUCATION ACTIVITIES

This section describes activities implemented by the Carlsbad WURMP Copermittees during the FY 2012 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the HPWQPs in the Carlsbad WMA. The activity selection process is described fully in the March 2008 Carlsbad WURMP.

The Copermittees continue to make progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed. **Table 4-6** below lists the watershed education activities implemented during FY 2012 by the Copermittees for WURMP credit. Other watershed education activities were in the planning

and/or assessment phase during the reporting period. Details of the each activity can be found on the Activity Implementation Sheets located in **Appendix B**.

Table 4-6. Watershed Education Activities Implemented During FY 2012

ID #	Activity/Project Name
CHU-WQEA5	LID Features in San Elijo Nature Center
CHU-WQEA8	Upper San Marcos Creek Nutrient Management Plan – Residential Component
CHU-WQEA13	Residential Smart Landscape Evaluation Program

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

4.3 PUBLIC PARTICIPATION ACTIVITIES

The Watershed Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed including other agencies, private companies, non-governmental organizations, environmental groups, etc. The Copermittees use several mechanisms to engage the public and receive input, including outreach events. Below is a summary of these mechanisms where interaction with the public is the primary function.

4.3.1 PROJECT CLEAN WATER

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. PCW, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. PCW seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. It was formed under the guidance of a Technical Advisory Committee made up of local stormwater-related professionals.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds. There are several web pages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website provides Best Management Practices information for both residential and industrial/commercial audiences (http://www.projectcleanwater.org/bmp/).

PCW features a page devoted to the Carlsbad WMA, with details on the watershed, major pollutants, and organizations related to water quality. Additionally the webpage also offers links to relevant documents such as the WURMP and WURMP Annual Updates. During the previous reporting period, revisions were made to update the content and documents available via the site. During FY 2012 the hits for the Project Clean Water website totaled 35,299, or an average of 97 site visits per day.

The Carlsbad WURMP Copermittees are supportive of these outreach activities and will be involved where applicable and feasible.

4.3.2 REGIONAL EDUCATION GROUP

Carlsbad WURMP Copermittees worked in cooperation with the Regional Education and Residential Sources workgroup.

Outreach Events

The Carlsbad Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- July 4, 2011 – 4th of July Block Party
- July 5, 2011 – Morning After Mess
- July 11, 2011 – Mural in a Day
- July 19, 2011 – Escondido Farmers Market
- July 21, 2011 – Encinitas Classic Car Nights
- August 2, 2011 – National Night Out/Walk Against Crime
- August 5-7, 2011 – Rod Run 21 Annual Car Show & Smokin' Q Classic BBQ
- August 10, 2011 – Escondido Rustic Village
- August 16, 2011 – Escondido Farmers Market
- August 18, 2011 – Encinitas Classic Car Nights
- August 20, 2011 – Watermelon Festival - Community Event-Booth
- August 27, 2011 – Beach Blanket Movie Night, Solana Beach
- August 31, 2011 – Firefighter MDA Boot Drive
- September 7, 2011 – West Hillside Neighborhood Group
- September 10, 2011 – Escondido Grape Day Festival
- September 15, 2011 – Encinitas Classic Car Nights
- September 17, 2011 – California Coastal Cleanup Day
- September 17-18, 2011 – Cardiff Surf Classic and Green EXPO
- September 19-29, 2011 – Escondido Pollution Prevention Week
- September 24-25, 2011 – Oceanside Harbor Days
- September 28, 2011 – Educators' Night Out
- September 28, 2011 – Red Shoe Day
- October 1, 2011 – City of Encinitas 25th Anniversary Celebration
- October 18, 2011 – Escondido Farmers Market
- October 21, 2011 – Used Oil Filter Exchange Event
- October 29, 2011 – Families on Foot
- November 3, 2011 – Employee Health & Lifestyle EXPO
- November 5, 2011 – Harbor Beach Cleanup
- November 5, 2011 – Fruit Tree Day
- November 5, 2011 – San Luis Rey River Cleanup
- November 9, 2011 – California Friendly Landscape Class
- November 12, 2011 – Vista Invitational Band Tournament
- December 2-3, 2011 – Downtown Tree Lighting, Christmas Parade & Carnival
- December 6, 2011 – Escondido Farmers Market
- January 13, 2012 – Photo Shoot for Tri-City Medical
- January 14, 2012 – Burger Run Car Show
- January 19, 2012 – Kids Conference on Watersheds

Outreach Events – Continued

- January 21, 2012 – Soroptimist Walk
- February 14, 2012 – Bookmobile for Overdrive Digital
- February 16, 2012 – San Marcos Elementary School Career Day
- March 9, 2012 – Lake San Marcos Garden Club - IPM Workshop
- March 10, 2012 – Plant Sale at Home Depot
- March 10, 2012 – Water Smart Plant Fair - Community Event-Booth
- March 17, 2012 – St. Pat's Event
- March 17, 2012 – MiraCosta Garden Club - IPM Workshop
- March 20, 2012 – Escondido Farmers Market
- March 24, 2012 – Vista Community Clinic Fundraiser
- March 25, 2012 – Paws in the Park
- March 31, 2012 – Carlsbad Flower Fields - Community Event-Booth
- March 31, 2012 – Water Smart Plant Fair - Community Event-Booth
- April 1, 2012 – Kids Day at the Flower Fields
- April 3, 2012 – Fire Fighter Boot Drive Burn Institute
- April 3, 2012 – Community Prayer Service A National Day of Prayer
- April 10, 2012 – General Ag Water Quality - Ag Water School
- April 21, 2012 – Encinitas Garden Festival and Garden Tour
- April 23-29, 2012 – Oceanside Green Week
- April 28, 2012 – Dia del Nino
- April 28, 2012 – Alta Vista Gardens Earth Day
- April 28, 2012 – Vista Library Re-dedication
- April 28, 2012 – Oceanside Green Fair
- April 28, 2012 – Creek to Bay Cleanup
- April 29, 2012 – Encinitas Street Fair
- May 16, 2012 – How To Hire A Landscape Professional And Save Money - Gardening Workshop
- May 18, 2012 – Public Works Day
- May 19, 2012 – VVBA BID ROC Clean Up Event
- May 19, 2012 – Family Open Studios
- May 20, 2012 – Escondido Street Faire
- May 27, 2012 – City of Vista Strawberry Festival and Street Fair
- June 2-3, 2012 – Fiesta del Sol
- June 9, 2012 – Used Oil Filter Exchange Event
- June 9, 2012 – Carlsbad Beach Fest
- June 10, 2012 – Encinitas Environment Day
- June 14, 2012 – VVBA Flag Day
- June 23, 2012 – Scottish Highland Games
- June 23, 2012 – San Diego County Fair - Enviro Fair
- June 27, 2012 – Taste of Vista
- June 28, 2012 – Kids Town Montessori
- June 28, 2012 – Red Shoe Day

Educational Materials Distributed

The Carlsbad Watershed Copermittees continued the distribution of the following items at special events, inspections, classroom presentations and other public interactive venues that were produced by the North County Storm Water Program during previous reporting periods:

- Construction brochure highlighting construction BMPs for large or small scale developments
- Construction Demolition and Recycling Guide
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Hotline magnets, key chains, hand towels, reusable bags, click-message pens and pencils for the residential community
- San Diego County IPM program materials, including English and Spanish IPM Pest Tip Cards
- Informational letters (Solid Waste, Storm Water BMPs, Coastal Cleanup Day, Household Hazardous Waste/Used Oil, Rainy Season Preparations, Pool BMPs)
- Personal pet waste bag dispensers
- Storm water coloring book and crayons

Table 4-7 provides a summary of the educational materials distributed during the reporting period.

Table 4-7 Summary of FY 2012 Educational Materials Distributed

Educational Material	Approximate Quantity Distributed
Automotive BMPs Brochures	8
City Authorization Letter Copy	16
City Newsletters/Periodicals	474,000
Construction Brochures	310
Decals/Stickers	1,050
FOG Brochures and Posters	288
Green Wrench Guide	202
Green Wrench Guide (Spanish)	201
ILACSD Brochures	80
Commercial/Industrial BMP Brochures	353
Commercial/Industrial Inspection Notifications	184
Local City Brochures	280
NOI Handouts	2
NONA/NEC Paperwork	6
Pens/Pencils	1,985
Pesticides Management	140
Pet Waste Bag Dispensers	310
Powerwashing BMPs	25
Required Minimum BMPs for Mobile Businesses	34
Residential BMP Brochures	385
Residential Door Hangers	210
Reusable Shop Towels/Rally Towels	300
Stormwater Brochures	280
Stormwater Brochures (Spanish)	280
Think Blue Regional Calendars	510
Think Blue Regional Coloring Books	210
T-shirts/Tote Bags/Water Bottles/Coffee Mugs	2,400
Water Conservation Brochures	560
Water for Tomorrow Brochures	280
Watershed Posters	210
What's Cookin' BMP Guides	368
What's Cookin' BMP Guides (Spanish)	212
Yard and Garden BMP Brochures	30

4.3.3 RIVER, CREEK AND BEACH CLEANUP EVENTS

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were two (2) regional cleanup events held at twenty-six (26) different sites throughout the Carlsbad WMA. 2,461 volunteers removed over 26,000 pounds of trash, recyclables, and green waste from the waterways. **Table 4-8** presents the locations, volunteers, and collections at the cleanup events within the watershed.

Table 4-8 Summary of FY 2012 Cleanup Events

Date	Name	Location	# of Participants	# of Pounds Removed	Hydrologic Area
9/17/2011	Coastal Cleanup Day	Buccaneer Park/Beach, Oceanside	173	369	Loma Alta (904.1)
		Buena Vista Creek (3 sites), Oceanside	40	2,000	Buena Vista (904.2)
		Frazee Beach, Carlsbad	154	201	Buena Vista (904.2)
		Tamarack State Beach, Carlsbad	113	335	Agua Hedionda (904.3)
		Buena Creek, Vista	172	1,365	Agua Hedionda (904.3)
		Ponto Beach, Carlsbad	209	270	San Marcos (904.5)
		Carlsbad State Beach, Carlsbad	101	222	San Marcos (904.5)
		Beacon's Beach, Encinitas	91	140	San Marcos (904.5)
		Swami's Beach, Encinitas	84	189	San Marcos (904.5)
		San Elijo State Beach, Encinitas	62	454	Escondido (904.6)
		Seaside Beach, Encinitas	61	289.5	Escondido (904.6)
		San Elijo Lagoon Rios Trailhead, Solana Beach	40	150	Escondido (904.6)
		Dixon Lake, Escondido	79	776	Escondido (904.6)
4/28/2012	Creek to Bay Cleanup	Buccaneer Park/Beach, Oceanside	272	238	Loma Alta (904.1)
		Loma Alta Creek (3 sites), Oceanside	80	1,865	Loma Alta (904.1)
		Frazee Beach, Carlsbad	20	36	Buena Vista (904.2)
		Tamarack State Beach, Carlsbad	88	67	Agua Hedionda (904.3)
		Duck Pond/Roman Creek, Vista	86	518	Agua Hedionda (904.3)
		Ponto Beach, Carlsbad	69	110	San Marcos (904.5)
		Beacon's Beach, Encinitas	63	60	San Marcos (904.5)
		Moonlight Beach, Encinitas	113	67	San Marcos (904.5)
		San Marcos Creek, San Marcos	35	1,980	San Marcos (904.5)
		San Elijo State Beach, Encinitas	61	58.5	Escondido (904.6)
		Cardiff State Beach, Encinitas	75	350	Escondido (904.6)
		Escondido Creek, Escondido	37	13,480	Escondido (904.6)
		Dixon Lake, Escondido	83	564	Escondido (904.6)

Table 4-9 below provides a summary of the number of sites, number of volunteers and pounds of debris removed within each Carlsbad hydrologic area during the cleanup events.

Table 4-9 Summary of FY 2012 Cleanup Events by HA

Hydrologic Area	# of Sites	# of Volunteers	Pounds of Debris Removed
Loma Alta (904.1)	3	525	2,472
Buena Vista (904.2)	3	214	2,237
Agua Hedionda (904.3)	4	459	2,285
San Marcos (904.5)	8	765	3,038
Escondido (904.6)	8	498	16,122
Totals	**26**	**2,461**	**26,154**

4.4 COLLABORATIVE LAND USE PLANNING EFFORTS

The Carlsbad Watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

4.4.1 CROSS-JURISDICTIONAL COMMUNICATION

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the Carlsbad Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the Carlsbad Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues occurring in adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

4.5 5-YEAR STRATEGIC PLAN

4.5.1 NEW WATERSHED ACTIVITIES (FY 2012 AND FUTURE YEARS)

Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA. FY 2012 Watershed Activity Sheets can be found in **Appendix B.**

Each activity on the Watershed Activities List is fully described in an Activity Sheet and includes the following information:

1. A description of the activity;

2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQP(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Watershed Copermittees will implement identified Watershed Activities pursuant to the proposed schedule. For each Permit year, no less than two Watershed Water Quality Activities will be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's HPWQP(s). Watershed Water Quality Activities that are capital projects are in active implementation for the first year of implementation only.

4.5.2 UPDATED 5-YEAR STRATEGIC PLAN

This section describes the results of the Collective Watershed Strategy process described in the 2008 Carlsbad WURMP. The strategy was applied at the hydrologic area (HA) level to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify water quality problems (where sufficient data is available). From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees could then make appropriate management decisions when selecting appropriate watershed water quality and education activities.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees used available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented below is intended to supersede the earlier versions presented in the 2008 Carlsbad WURMP and the FY 2008 through FY 2011 Carlsbad WURMP Annual Reports previously submitted.

Table 4-10 Updated 5-Year Strategic Plan

Activity/Project Name		Jurisdiction(s)	Watershed Priorities			Implementation Schedule		
			Bacteria	Nutrients	Sediment	FY 2012	FY 2013	Future Fiscal Year(s) under WQIP[1]
Watershed Water Quality Activities								
CHU-WQA2	Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility	OCEANSIDE	✓			A	A	A
CHU-WQA7	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	TBD			P	WQI	WQI
CHU-WQA8	Nitrate Source Identification and Abatement: Buena Creek	COUNTY		✓		WQI	WQI	WQI
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks	COUNTY	✓	✓		WQI	-	-
CHU-WQA11	Land Acquisitions	COUNTY	✓	✓	✓	P	WQI	WQI
CHU-WQA12	Upper San Marcos Creek Nutrient Management Plan	SM/COUNTY/ESC		✓		WQI	WQI	WQI
CHU-WQA15	Water Quality Treatment Facility @ McClellan-Palomar Airport	COUNTY		✓	✓	M	-	-
CHU-WQA16	Agua Hedionda Creek Restoration – SR-02+	VISTA			✓	P	P	WQI
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution	COUNTY	✓	✓	✓	P, A	P, A	WQI
CHU-WQA18	Upper San Marcos Creek Nutrient Management Plan – Parks Component	SM/COUNTY/ESC		✓		WQI	WQI	WQI
CHU-WQA19	Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component	SM/COUNTY/ESC		✓		WQI	WQI	WQI
CHU-WQA20	Upper San Marcos Creek Nutrient Management Plan – Agriculture Component	SM/COUNTY/ESC		✓		WQI	WQI	WQI
CHU-WQA21	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component	SM/COUNTY/ESC		✓		WQI	WQI	WQI
CHU-WQA22	Loma Alta Water Quality Monitoring Program	OSD/VISTA	✓	✓		Completed – No longer reported		
CHU-WQA23	San Diego County *Enterococcus* Regrowth Study	ENCINITAS	✓			M	-	-
CHU-WQA24	Cottonwood Creek Watershed LID Retrofit Project (Prop 84 IRWM Grant)	ENCINITAS	✓	✓	✓	P	P	WQI
CHU-WQA25	Rainwater Harvesting Workshop and Rebate Program (Pilot)	ENCINITAS	✓	✓	✓	P	WQI	-
CHU-WQA26	Encinitas Creek Channel Improvement Project (Vector Control Grant)	ENCINITAS	✓		✓	P	WQI	-
CHU-WQA27	Campus Landscape Renovation, Conservation & Pollutant Load Reduction Project (Prop 50 IRWM Grant)	ENCINITAS	✓	✓	✓	P	WQI	-
CHU-WQA28	Buena Vista Creek Enhancement Project at Brengle Terrace Park	VISTA	✓	✓	✓	P	WQI	WQI
CHU-WQA29	Water Smart Incentives for Outdoor Water Efficiency	OCEANSIDE	✓	✓		WQI	WQI	-
CHU-WQA30	Live Turf Replacement Incentive Program	OCEANSIDE	✓	✓		WQI	WQI	-
CHU-WQA31	Bacteria Source Investigation focused on Exfiltration from Sanitary Sewers	VISTA	✓	✓		S	S	-

Note: 1 - Under the proposed Water Quality Improvement Plan process, these activities may change.

Table 4-10 Updated 5-Year Strategic Plan - Continued

Activity/Project Name		Jurisdiction(s)	Watershed Priorities			Implementation Schedule		
			Bacteria	Nutrients	Sediment	FY 2012	FY 2013	Future Fiscal Year(s) under WQIP[1]
Watershed Education Activities								
CHU-WQEA3	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	✓	✓	✓	P	P	-
CHU-WQEA5	LID Features in San Elijo Nature Center	COUNTY	✓	✓	✓	WE	-	-
CHU-WQEA8	Upper San Marcos Creek Nutrient Management Plan – Residential Component	SM/COUNTY/ESC		✓		WE	WE	WE
CHU-WQEA9	Residential Composting Workshop	OCEANSIDE/ COUNTY/VISTA		✓	✓	Completed – No longer reported		
CHU-WQEA10	Ocean Friendly Gardens Workshop Series	ENCINITAS	✓	✓	✓	Completed – No longer reported		
CHU-WQEA11	Focused Equestrian Outreach	COUNTY	✓	✓	✓	Activity on hold		
CHU-WQEA12	Cottonwood Creek Watershed Interpretive Signage	ENCINITAS	✓			P	WE	-
CHU-WQEA13	Residential Smart Landscape Evaluation Program	OCEANSIDE	✓	✓		WE	-	-
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution	COUNTY	✓	✓	✓	P, A	P, A	WE
CHU-WQA25	Rainwater Harvesting Workshop and Rebate Program (Pilot)	ENCINITAS	✓	✓	✓	P	WE	-

Note: 1 - Under the proposed Water Quality Improvement Plan process, these activities may change.

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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5 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2012. In addition, there is an effectiveness assessment of the collective WURMP implementation.

The activity summary sheets presented in **Appendix B** include effectiveness assessment summaries for each water quality and education activity, as required in the Permit, I.2.a.(1).

5.1 PERMIT COMPLIANCE (LEVEL 1)

A basic compliance assessment is presented in **Table 5-1**. This table describes permit requirements set forth in the Permit, whether or not compliance was demonstrated by the watershed Copermittees in FY 2012, and where in this report, required compliance points are fulfilled or described.

Table 5-1 Permit Compliance

Targeted Outcome	Measure	Report Section
Update any watershed maps.	No changes	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the watershed.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4, **Appendix B**
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4, **Appendix B**
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
A description of Copermittee collaboration efforts including meeting as the Carlsbad WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date in meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not applicable at this time, see below.	N/A

In 2010, the San Diego RWQCB adopted Resolution No. R9-2010-0001 to incorporate the *Revised Total Maximum Daily Loads (TMDL) for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)* (Bacteria TMDL) into the Basin Plan. The TMDL was established to address exceedances of the Contact Water Recreation (REC-1) water quality objectives and listed the San Marcos HA shoreline as a waterbody addressed by the TMDL. Inclusion of the San Marcos HA in the TMDL is based upon data from the receiving waters at Moonlight State Beach, and Responsible Parties in the San Marcos HA include the Cities of Carlsbad, Encinitas, Escondido, San Marcos, the California Department of Transportation, and County of San Diego.

The Responsible Parties evaluated the extent of the exceedances following adoption of the TMDL, and analysis showed that no REC-1 beneficial use impairments could be established for any period of time from 1999 to 2011, including the approximate timeframe for which the data were evaluated to establish the TMDL (data used to establish the 2002 303(d) list). These findings were confirmed by the RWQCB, and no Bacteria Load Reduction Plan (BLRP) would be required as of this time. The Responsible Parties are thus continuing with currently mandated programs as required by the Municipal Permit.

As shown in **Table 5-1** above, the Copermittees were in compliance with all WURMP related Permit requirements during FY 2012.

5.2 MONITORING ASSESSMENT

Currently, the Copermittees are relying on the regional MS4 monitoring program for their primary source of water quality data to assess activity effectiveness. The regional program elements are collecting data however, because the scope and scale are limited, the data gathered may not provide sufficient data for use in selecting or assessing the effectiveness of activities.

5.2.1 MS4 SUMMARY

Current ambient monitoring efforts in the MS4 include the Dry Weather, MS4, and CSDM outfall monitoring programs. The Copermittees are currently participating in a regional portion of the MS4 outfall program that will collect and provide data in the MS4 during storm events. The scope of this program is limited and may not provide local data within each HA. It is expected however, that over time, enough data will be collected to characterize storm water discharges from the MS4 during storm events. During the reporting period, five (5) random wet weather MS4 locations were monitored in the WMA, two (2) in each the San Marcos and Encinas HAs, and one (1) in the Agua Hedionda HA.

5.2.2 RECEIVING WATER SUMMARY

Monitoring within the receiving waters is accomplished through the Regional Monitoring (MLS/TWAS), CSDM, ABLM, Bight Program, and other special studies. Currently MLSs are located at the base of Agua Hedionda and Escondido Creeks; TWAS are located at the base of Loma Alta and Buena Vista Creeks and upstream in San Marcos Creek. Currently, there are no receiving water monitoring locations in the Encinas HA. Historical MLSs will remain as located. The intent of the TWASs was to be able to relocate stations in order to collect more relevant water quality information. The watershed group will consider future locations of the TWAS for the upcoming monitoring years. During the 2011-2012 reporting period, limited ambient receiving water monitoring was conducted through the Stormwater Monitoring Coalition (SMC) Program – MLS and TWAS stations were not monitored as the program was on South County rotation.

5.3 WATERSHED ACTIVITY ASSESSMENTS

Each activity summary sheet in **Appendix B** of the WURMP identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measurable at

levels 5 or 6. Levels 5 and 6 outcomes are typically measurable through cumulative assessments. **Tables 5-2** through **5-6** below, summarize the assessments of the water quality and education activities, on a hydrologic area basis, to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the tables, the WURMP Copermittees are presenting the JURMP activities that are related to the HPWQPs in each hydrologic area. It is important to note that not all JURMP activities are included in this presentation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

Table 5-2 Summary of Implemented Activities for FY 2012 – 904.1 Loma Alta Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included animal facilities, restaurants, mobile landscaping, and nurseries. Of the total 148 bacteria sources inventoried, 83% are eating or drinking establishments. Approximately 76% of the eating or drinking establishments were inspected, and overall 68% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3, and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2012 included animal facilities, health services, mobile landscaping, parks and rec facilities (including cemeteries and golf) and nurseries. Of the total 27 nutrient sources inventoried, 41% are mobile landscaping facilities, while only 15% are nurseries. 100% of the nurseries in the HA were inspected. Overall, 26% of the likely nutrient sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria and nutrient sources. During FY 2012, 490 tons of material was removed from streets via street sweeping and 172 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Loma Alta Creek UV Facility	Water Quality	Bacteria	Level 4	Dry weather bacteria loads reduced via treatment at base of hydrologic area.
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
Water Smart Incentives for Outdoor Water Efficiency	Water Quality	Bacteria and Nutrients	Levels 1, 2, and 4	Rebate program for water-efficient irrigation devices aimed at single-family residences. Program addresses water conservation, potential for urban runoff, and water quality.
Live Turf Replacement Incentive Program	Water Quality	Bacteria and Nutrients	Levels 1, 2, and 4	Conservation incentive program pays up to $1 per square foot of turf removal. Turf is the most water-thirsty landscape component, and replacement allows for less water dependent landscaping to be planted which will reduce the potential for over-irrigation.
Residential Smart Landscape Evaluation Program	Watershed Education	Bacteria and Nutrients	Levels 1 and 2	Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Loma Alta HA Discussion

Major land use in the HA includes residential and open space, totaling approximately 53 percent of the land use in Loma Alta. Transportation, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria and nutrients, as these are identified as the HPWQPs in the HA.

Residential sources of bacteria and nutrients include activities such as irrigation runoff, application of fertilizers, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP and WURMP programs. The City of Oceanside's Water Smart Incentives for Outdoor Water Efficiency, CHU-WQA29, provides an incentivized program to address irrigation runoff from residential properties. The activity promotes the use of water-efficient irrigation devices to support water conservation, address potential urban runoff, and improve overall water quality. The Residential Smart Landscape Evaluation Program education activity, CHU-WQEA13, also focuses on reducing irrigation runoff from residential properties. This program provides technicians to visit and evaluate single-family and multi-family residential properties in order to provide site-specific water-saving advice and help eliminate irrigation runoff.

Other less predominant sources of bacteria in the HA include transportation, industrial/commercial, and municipal land uses. Through implementation of the JURMP Activities, these sources are addressed. Examples of JURMP Activities addressing these sources include various inspection programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources. The City of Oceanside's Live Turf Replacement Incentive Program, CHU-WQA30, provides an incentivized program to promote landscape turf removal from industrial/commercial and municipal properties. Replacement of live turf allows for less water dependent landscaping to be planted, which will reduce the potential for over-irrigation.

With the implementation of the Ultra Violet Treatment Facility (UV Facility), CHU-WQA2, bacteria is removed from Loma Alta Creek prior to discharge to the Pacific Ocean. The UV Facility is an excellent BMP to ensure that uncontrollable bacteria contributions to the Pacific Ocean shoreline have lessened impact to public health during dry weather. This BMP treats bacteria sources from the hydrologic area that have not been addressed by other WURMP and JURMP activities.

Through the implementation of JURMP Activities addressing the sources identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 662 tons of pollutants were removed in the HA.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. During FY 2012, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

Table 5-3 Summary of Implemented Activities for FY 2012 – 904.2 Buena Vista Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, eating or drinking establishments, mobile landscaping, and nurseries. Of the total 431 bacteria sources inventoried, 91% are eating or drinking establishments. Approximately 66% of the eating or drinking establishments were inspected and 36% of the nurseries were inspected. Overall 63% of the likely bacteria sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2012, 675 tons of material was removed from streets via street sweeping and 241 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
Water Smart Incentives for Outdoor Water Efficiency	Water Quality	Bacteria and Nutrients	Levels 1, 2, and 4	Rebate program for water-efficient irrigation devices aimed at single-family residences. Program addresses water conservation, potential for urban runoff, and water quality.
Residential Smart Landscape Evaluation Program	Watershed Education	Bacteria and Nutrients	Levels 1 and 2	Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Buena Vista HA Discussion

Residential land use comprises approximately 50 percent of the total land area in the Buena Vista HA. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. Bacteria is the focus of the source analysis, as this was identified as the only HPWQP in the HA.

Residential sources of bacteria include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate bacteria. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections). The City of Oceanside's Water Smart Incentives for Outdoor Water Efficiency, CHU-WQA29, provides an incentivized program to address irrigation runoff from residential properties. The activity promotes the use of water-efficient irrigation devices to support water conservation, address potential urban runoff, and improve overall water quality. The Residential Smart Landscape Evaluation Program education activity, CHU-WQEA13, also focuses on reducing irrigation runoff from residential properties. This program provides technicians to visit and evaluate single-family and multi-family residential properties in order to provide site-specific water-saving advice and help eliminate irrigation runoff.

Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities addressing the sources identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 916 tons of pollutants were removed in the HA.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. During FY 2012, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

Table 5-4 Summary of Implemented Activities for FY 2012 – 904.3 Agua Hedionda Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, eating or drinking establishments, mobile landscaping, POTWs, and nurseries. Of the total 235 bacteria sources inventoried, 69% are eating or drinking establishments. Approximately 61% of the eating or drinking establishments were inspected, and overall 60% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3, and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, health services, mobile landscaping, parks and rec facilities (including golf and cemeteries), and nurseries. Of the total 77 nutrient sources inventoried, 77% are nurseries. 56% of the nurseries in the HA were inspected. Overall, 58% of the likely nutrient sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3, and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, auto parking and storage, building materials retail, general contractors, general retail, health services, mobile landscaping, nurseries, parks and rec facilities, stone/glass manufacturing, storage and warehousing facilities, construction sites, and municipal facilities. The primary focus of likely sources of sediment is construction sites, and during FY 2012, there were approximately 103 active construction sites in the HA that were inspected a total of 797 times. High priority construction sites were inspected an average of 16 times during the fiscal year. Of the total 275 commercial/industrial sediment sources inventoried, 21% are nurseries/greenhouses, 19% are contractors, and 17% are storage facilities. Only 16% of the contractors were inspected, however 56% of the nurseries/greenhouses were inspected. Overall, 43% of the likely sediment sources that were not related to construction sites were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria, Nutrients, and Sediments	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2012, 728 tons of material was removed from streets via street sweeping and 159 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Nitrate Source Identification and Abatement: Buena Creek	Water Quality	Nutrients	Levels 1, 2, 3, and 4	Inspections resulted in education and BMP implementation.
Water Quality Treatment Facility @ Palomar Airport	Water Quality	Nutrients and Sediments	Level 1	Regular water quality monitoring and comparison of influent and effluent pollutant loading at McClellan-Palomar Airport water quality treatment facility. Nutrient and sediment removal of pollutants associated with airport operations.
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
Water Smart Incentives for Outdoor Water Efficiency	Water Quality	Bacteria and Nutrients	Levels 1, 2, and 4	Rebate program for water-efficient irrigation devices aimed at single-family residences. Program addresses water conservation, potential for urban runoff, and water quality.
Live Turf Replacement Incentive Program	Water Quality	Bacteria and Nutrients	Levels 1, 2, and 4	Conservation incentive program pays up to $1 per square foot of turf removal. Turf is the most water-thirsty landscape component, and replacement allows for less water dependent landscaping to be planted which will reduce the potential for over-irrigation.

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
Residential Smart Landscape Evaluation Program	Watershed Education	Bacteria and Nutrients	Levels 1 and 2	Site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property.

Agua Hedionda HA Discussion

Residential, open space, and industrial/commercial land uses encompass over 80 percent of the land area in Agua Hedionda. Transportation, municipal, and construction land uses are all present as well and may contribute to pollutant loading. Source analysis is focused on the HPWQPs in the HA: bacteria, sediment, and nutrients.

Residential sources of bacteria, sediment, and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate the pollutants identified as high priority. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections). The City of Oceanside's Water Smart Incentives for Outdoor Water Efficiency, CHU-WQA29, provides an incentivized program to address irrigation runoff from residential properties. The activity promotes the use of water-efficient irrigation devices to support water conservation, address potential urban runoff, and improve overall water quality. The Residential Smart Landscape Evaluation Program education activity, CHU-WQEA13, also focuses on reducing irrigation runoff from residential properties. This program provides technicians to visit and evaluate single-family and multi-family residential properties in order to provide site-specific water-saving advice and help eliminate irrigation runoff.

Industrial/commercial sources of bacteria, sediment, and nutrients include activities such as grounds/landscape maintenance, surfaces and washing, irrigation runoff, sewer/septic problems, and materials management issues among others. Through a combination of activities, including the Nitrate Source Identification and Abatement activity, JURMP commercial/industrial inspections programs, and complaint response programs, the likely sources of the HPWQPs are being addressed. The City of Oceanside's Live Turf Replacement Incentive Program, CHU-WQA30, provides an incentivized program to promote landscape turf removal from industrial/commercial and municipal properties. Replacement of live turf allows for less water dependent landscaping to be planted, which will reduce the potential for over-irrigation.

Other less predominant sources of bacteria, sediment, and nutrients in the HA include transportation, municipal, and construction land uses. The WURMP activities implemented in the HA did not address these sources directly. However, with the JURMP Activities, each of these land uses/sources are specifically addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 887 tons of pollutants were removed in the HA.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Stormwater Quality Master Plan for Special Drainage Fee Areas will be focused at addressing portions of the County's jurisdiction within the WMA by retrofitting their drainage system with BMPs. This will address multiple sources as well as multiple water quality problems. The SWQMP for Special Drainage Areas 9 and 10 are currently in draft form and undergoing review by County personnel.
- Monitoring at the McClellan-Palomar Airport Water Quality Treatment Facility compares influent and effluent pollutant loading from runoff due to airport operations.
- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. During FY 2012, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

Table 5-5 Summary of Implemented Activities for FY 2012 – 904.5 San Marcos Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included animal facilities, eating or drinking establishments, mobile landscaping, POTWs, roads/streets and nurseries. Of the total 657 bacteria sources inventoried, 76% are eating or drinking establishments. Approximately 37% of eating or drinking establishments were inspected; overall 35% of bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3, and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2012 included animal facilities, health services, mobile landscaping, parks and rec (including golf and cemeteries), and nurseries. Of the total 173 nutrient sources inventoried, 55% are nurseries. 28% of the nurseries in the HA were inspected, while 78% of the parks and rec facilities were inspected. Overall, 27% of the likely nutrient sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria and nutrient sources. During FY 2012, 2,268 tons of material was removed from streets via street sweeping and 358 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Upper San Marcos Creek Nutrient Management Plan	Water Quality	Nutrients	Levels 1, 2, 3 and 4	Through education and outreach, inspections and BMP implementation, pollutant loading is expected to decrease.
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
Upper San Marcos Creek Nutrient Management Plan – Parks Component	Water Quality	Nutrients	Levels 1 and 4	Inspections were conducted at all park facilities in the USMC tributary area. Additionally, the City of San Marcos implemented true source control by continuing to use "Nature Safe" an organic fertilizer product.
Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component	Water Quality	Nutrients	Levels 1 and 2	Inspections occurred at all 4 golf courses in the watershed. Additionally, the four golf courses were notified of existing requirements and appropriate BMPs for implementation.
Upper San Marcos Creek Nutrient Management Plan – Agriculture Component	Water Quality	Nutrients	Level 1	All elements of the core residential activities program were completed. Educational outreach efforts were conducted for professional grove management companies; attendees were provided BMP field guides for water quality and spill kits.
Upper San Marcos Creek Nutrient Management Plan – Monitoring Component	Water Quality	Nutrients	Level 1	Additional monitoring and new TWAS installation to better characterize the USMC tributary area. Development of a QAPP, additional DWM activities, residential monitoring and inspections of MS4 conveyances leading into Lake San Marcos.
San Diego County *Enterococcus* Regrowth Study	Water Quality	Bacteria	Level 1	Monitoring in Cottonwood Creek to determine possible sources of bacterial regrowth downstream of UV treatment facility at Moonlight Beach. Results compared to study in La Jolla.
Upper San Marcos Creek Nutrient Management Plan – Residential Component	Watershed Education	Nutrients	Levels 2 and 3	Through various means, education messages were presented to the residents in the USMC tributary area. This includes involving Social Based Marketing professionals in order to enhance the effectiveness and applicability of the water quality management plan. The USMC Copermittees also hosted two (2) public workshop outreach presentations for the residents within the USMC watershed during the reporting period.

San Marcos HA Discussion

The major land use in the San Marcos HA is residential. Transportation, open space, industrial/commercial, and municipal land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria and nutrients, as these pollutants are identified as the two HPWQPs in the HA.

JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate nutrients. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections).

Examples of JURMP Activities addressing nutrient sources in the HA include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 2,626 tons of pollutants were removed in the HA.

Within the San Marcos HA, the Upper San Marcos Creek (USMC) tributary area has been targeted for significant activities by the USMC Copermittees. The activities related to the USMC fall under the umbrella of the USMC Nutrient Management Plan. Through the implementation of this Plan, the commercial, residential, agricultural and municipal sources are being addressed. The activities are focused on characterizing and abating the sources of nutrients. These activities were initiated in FY 2009 and are currently ongoing.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. During FY 2012, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Results of the survey will help to determine how to proceed with a rainwater harvesting program.
- The San Diego County *Enterococcus* Regrowth Study activity, CHU-WQA23, focused on determining potential source of bacterial indicator regrowth in MS4 conveyances. The goals of the study included: 1) to determine if biofilms and algae that form on the surfaces of storm drains support the growth of *Enterococcus*; 2) to determine if *Enterococcus* growing on storm drain surfaces are a source of bacteria to sand and beach water; and 3) to determine if *Enterococcus* growing on storm drain surfaces may be differentiated from those of fecal origin.

Table 5-6 Summary of Implemented Activities for FY 2012 – 904.6 Escondido Creek Hydrologic Area

Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, eating or drinking establishments, mobile landscaping, POTWs, road/streets, and nurseries. Of the total 491 bacteria sources inventoried, 84% are eating or drinking establishments. Approximately 93% of the eating or drinking establishments were inspected, and overall 89% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Nutrients	Levels 1, 3 and 4	Sources categorized as likely to produce nutrients inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, health services, mobile landscaping, parks and rec facilities, roads/streets, and nurseries. Of the total 95 nutrient sources inventoried, 31% are nurseries, 72% of which were inspected. Overall, approximately 71% of the likely nutrient sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, auto parking and storage, building materials retail, contractors, concrete manufacturing, general retail, health service facilities, mobile landscaping, nurseries, recycling/junk yards, stone/glass manufacturing, storage and warehousing facilities, construction sites, and municipal facilities. The primary focus of likely sources of sediment is construction sites. During FY 2012, there were approximately 215 active construction sites in the HA that were inspected a total of 1,774 times. Each high priority site was inspected an average of 9 times during the fiscal year. Of the total 586 commercial/industrial sediment sources inventoried, general retail and contractors comprise 53% of the sources, and 17% are storage and warehousing facilities. Over 99% of the contractors were inspected, 100% of the manufacturing facilities were inspected, and 90% of the storage and warehousing facilities were inspected. Overall, 95% of the likely sediment sources that were not related to construction sites were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria sources. During FY 2012, 1,710 tons of material was removed from streets via street sweeping and 512 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.
Pet Waste Bag Dispenser Program in County Parks	Water Quality	Bacteria and Nutrients	Levels 1, 2, 3 and 4	Direct reduction in loading due to implementation of BMP.
Residential Rain Barrel Subsidies and Distribution	Water Quality	Bacteria and Nutrients	Levels 1 and 4	Residential rain barrel subsidy promoting outdoor water conservation and runoff reduction through public outreach.
LID Features in San Elijo Nature Center	Watershed Education	Bacteria, Sediment and Nutrients	Levels 1, 2 and 3	Expected change in knowledge and BMP implementation.

Escondido Creek HA Discussion

The major land uses in the HA are open space and residential, comprising over 75 percent of the land use in Escondido Creek. Transportation, municipal, and construction land uses are all present as well and may contribute to pollutant loading. The focus of the source analysis is on bacteria, sediment, and nutrients, as these were identified as the HPWQPs in the HA.

Residential sources of bacteria, sediment, and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, and pet waste. Activities such as the Pet Waste Dispenser Program, Land Acquisitions, and the LID Features in the San Elijo Nature Center focused on the appropriate water quality problems in the HA and indirectly focused on residential sources/causes of the problems.

JURMP activities addressing residential sources include complaint response and inspections of Treatment Control BMP (TCBMPs), as some are designed to mitigate the pollutants identified as high priority. Additionally, there are significant amounts of outreach directed at the residential community via the JURMP programs. While JURMP activities do address residential sources to some extent, many are reactive in nature (i.e. complaint response) and limited in scope (TCBMP inspections). Because of the relative potential for contributions from residential areas, based on the land use percentages, future WURMP activities focusing on residential sources of pollutants may be appropriate in this HA.

Other less predominant sources of bacteria, sediment, and nutrients in the HA include transportation, municipal, and construction land uses. The WURMP activities implemented in the HA did not address these sources directly. However, with the JURMP Activities, each of these land uses/sources are specifically addressed. Examples of JURMP Activities addressing these sources include various inspections programs, MS4 cleaning, street sweeping, and complaint response efforts. In comparing the level of effort involved in each of these activities with the relative contribution of the land uses in the area, it appears that the JURMP activities are well suited to address these sources.

Through the implementation of JURMP Activities identified above, the WURMP Copermittees have effectively reduced the amount of pollutants from entering the receiving waters in the HA. Activities presented by the Copermittees in the JURMP Annual Reports, namely street sweeping and MS4 cleanings, result in a quantifiable pollutant load reduction to the MS4 and thereby to the receiving waters. Looking at these two municipal activities alone, approximately 2,222 tons of pollutants were removed in the HA.

The following activities also target the HPWQPs and the sources likely to be contributing to them:

- The County's Residential Rain Barrel activity, CHU-WQA17, is focused on addressing residential sources, a significant source of bacteria. During FY 2012, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Results of the survey will help to determine how to proceed with a rainwater harvesting program.
- The County's LID Features in San Elijo Nature Center education activity, CHU-WQEA5, is expected to increase knowledge and BMP implementation. In addition to the educational displays featured at the San Elijo Nature Center, the facility also sponsors public participation activities in cooperation with the San Elijo Lagoon Conservancy (SELC). These programs which included special events, school

programs, educational field presentations, water quality testing activities, and clean up events had an estimated total attendance of 6,000 participants in FY 2012.

5.4 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

Based on the individual HA assessments provided above, it appears that the activities occurring in the Carlsbad Watershed are addressing the HPWQPs identified in the watershed. The assessments this year provided an integrated look at WURMP and JURMP activities to show the level of effort occurring in each HA with respect to identified problems and sources. Generally, the activities are focused on sources that are likely contributing to the HPWQPs within the WMA.

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6 CONCLUSIONS AND WURMP IMPROVEMENTS

6.1 OVERVIEW

The Carlsbad Watershed Management Area (WMA) is unique because it consists of six (6) individual hydrologic areas (HAs) or watersheds. To effectively address the WMA's water quality issues (bacteria, sediment, and nutrients), the Copermittees identified and then evaluated the high-priority water quality problems for likely sources at the individual HA level. As a result of examining each HA in the WMA, the Copermittees identified some general conclusions. It appears that the water quality activities occurring in the Carlsbad Watershed are effectively addressing the high-priority water quality problems identified in the watershed.

The following is a summary of some general conclusions and potential improvements that will be considered in the Carlsbad WURMP.

6.1.1 LOMA ALTA

The major land use in this HA includes residential and open space, totaling over 50 percent of its overall land use. Based on monitoring data, the high-priority water quality problems are bacteria and nutrients. Potential residential sources of bacteria and nutrients include activities such as over-irrigation, sanitary sewer overflows, improper landscape maintenance, improper disposal of pet waste, and improper use of fertilizers, herbicides and pesticides. JURMP activities addressing residential sources include complaint response, dry weather urban runoff monitoring and source identification, and inspections of treatment control BMPs, as some in the hydrologic area are designed to mitigate bacteria. Additionally, there are significant outreach activities performed which are focused on the residential community through the Copermittees' jurisdictional program.

6.1.2 BUENA VISTA

The major land use in this HA is residential, comprising approximately 50 percent of the total land use area in Buena Vista. Based on monitoring data, the high-priority water quality problem is bacteria. Potential residential sources of bacteria include activities such as over-irrigation, sanitary sewer overflows, septic system overflows, improper landscape maintenance, various improper washing activities and improper disposal of pet waste. JURMP activities addressing residential sources include complaint response and inspections of treatment control BMPs, as some are designed to mitigate bacteria.

6.1.3 AGUA HEDIONDA

The major land uses in the HA are residential, open space, and industrial/commercial, which comprise over 85 percent of the land use in Agua Hedionda. Transportation, municipal, and construction land uses are all present as well and produce the high-priority pollutants identified for the area: bacteria, sediment, and nutrients.

Potential residential, industrial/commercial, and other less predominant sources of bacteria, sediment, and nutrients include an array of activities, such as over-irrigation, sanitary sewer overflows, septic system overflows, improper landscape maintenance, improper use of fertilizers, herbicides and pesticides, various improper washing activities and improper disposal of pet waste. With the implementation of LID and SUSMP-related BMPs, as well as some other watershed water quality activities, it is expected that pollutant loading will be reduced from residential as well as other areas. JURMP activities addressing residential and

other sources, such as outreach, industrial/commercial inspections, complaint response, and inspections of treatment control BMPs, also reduce pollutant loading in the HA.

6.1.4 SAN MARCOS

The major land uses in the hydrologic area are residential and open space, which total over 65 percent of the land use area in San Marcos HA. Transportation, industrial/commercial, and municipal land uses are all present as well and may also contribute to pollutant loading. Based on water quality monitoring data, bacteria and nutrients are identified as the high-priority water quality problems in the HA. Potential residential sources of bacteria and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, improper landscape maintenance, and improper disposal of pet waste. With the implementation of the Upper San Marcos Creek Nutrient Management Plan Project, nutrient loads are expected to be reduced in the HA over time. Depending upon the results and the effectiveness of the Nutrient Management Plan, the other WMA Copermittees may implement elements of the Plan.

6.1.5 ESCONDIDO CREEK

The major land uses in the HA are open space and residential, which comprise over 75 percent of the total land use in Escondido Creek. Based on water quality monitoring, bacteria, sediment, and nutrients are identified as the high-priority water quality problems in the HA. Potential residential sources of bacteria, sediment, and nutrients include activities such as over-irrigation, sanitary sewer overflows and septic system failures, improper landscape maintenance, various improper washing activities, and improper disposal of pet waste.

6.2 WURMP IMPROVEMENTS

In light of emerging TMDLs, the potential for regional permitting, the Copermittees' visioning process, and the unfunded mandate test claim status, the Copermittees are committed to focusing on increasing effectiveness and decreasing duplication of programs.

It is anticipated that this report will constitute the final year and reporting period for the current Municipal Permit and 2008 Carlsbad WURMP. The proposed Tentative Order R9-2013-0001 and Water Quality Improvement Plans will alter watershed planning and reporting, and the Copermittees will reevaluate all activities following adoption of the Tentative Order. As such, the WURMP activities presented in the FY 2012 Carlsbad WURMP Annual Report may not move forward to following years.

REFERENCES

Carlsbad Watershed Urban Runoff Management Program, Carlsbad WURMP Copermittees, March 2008.

San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Final Report, Weston, January 2011.

San Diego County Municipal Copermittees 2010-2011 Urban Runoff Monitoring Final Report, Weston, January 2012.

San Diego County Municipal Copermittees 2011-2012 Urban Runoff Monitoring Final Report, Weston, January 2013.

San Diego County Municipal Copermittees Long-Term Effectiveness Assessment (LTEA); MOE, LWA, and Weston; June 2011.

San Diego County Municipal Copermittees Report of Waste Discharge (ROWD); LWA, June 2011.

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Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The WURMP Copermittees' FY 2012 (July 1st, 2011 through June 30th, 2012) JURMP Annual Reports were used to determine quantities of inventories. The WURMP Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction
5) TCBMP

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1) Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2) Identified the Copermittees' total activity quantities for the following activities from the FY 2012 JURMP Annual Reports:
   a) Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
   b) Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3) Determined the amount of urban land use in each Copermittees' jurisdiction.
4) Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City.
5) Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation determining the Copermittee's contribution to the HA is as follows:

$$(Copermittee\ Activity\ Quantity) \times \left(\frac{Copermittee\ urban\ land\ use\ in\ HA}{Copermittee\ total\ urban\ land\ use}\right)$$

6) Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

JURMP Source and Activity Quantities Estimation Example

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1.
Jurisdiction A collected 800 tons of material from street sweeping in FY 2012.

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1.
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2012.

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1.
Jurisdiction C collected 250 tons of material from street sweeping in FY 2012.

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:

$$(800\ tons\ of\ material) \times \left(\frac{250\ urban\ land\ use\ acres\ in\ HA1}{1{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ A}\right) = \mathbf{200\ tons}$$

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:

$$(1{,}000\ tons\ of\ material) \times \left(\frac{1{,}250\ urban\ land\ use\ acres\ in\ HA1}{2{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ B}\right) = \mathbf{625\ tons}$$

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:

$$(250\ tons\ of\ material) \times \left(\frac{500\ urban\ land\ use\ acres\ in\ HA1}{500\ urban\ land\ use\ acres\ in\ Jurisdiction\ C}\right) = \mathbf{250\ tons}$$

The total amount of estimated street sweepings collected in HA1 is therefore:

$$200\ tons + 625\ tons + 250\ tons = \mathbf{1{,}075\ tons}$$

Appendix B

FY 2012 Carlsbad Watershed Activity Sheets

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TITLE: **LOMA ALTA CREEK ULTRAVIOLET RADIATION STORM WATER TREATMENT FACILITY**
ID #: **CHU-WQA2**

ACTIVITY DESCRIPTION

Loma Alta Creek Lagoon and Buccaneer Beach, located in the City of Oceanside, have historically been impacted by high levels of bacteria. This is a family beach adjacent to a park with a large parking area, showers and an eating establishment that sees large crowds during the dry months. The source of water for Loma Alta Creek is a spring just east of the jurisdictional boundary combined with flows from the approximately 6,400 acres within the watershed.

In 2005, the City was awarded a $5,000,000 Proposition 40 Clean Beaches Initiative (CBI) grant by the SWRCB to construct an ultraviolet (UV) light treatment facility at the existing La Salina Wastewater Treatment Facility. One hundred percent of the dry weather creek flows (averaging 300 to 700 gallons per minute) will be intercepted in the lagoon and diverted to the UV treatment facility, located on the northern bank of the creek. The treatment facility consists of piping flows from an exiting diversion structure by gravity from the lagoon through a 2 micron fine screen to a wet well where the flow is pumped into two large sand filters followed by two UV disinfection units housed in a reinforced concrete building. The treated water is discharged through a pipe extended along the existing section of rip-rap that runs along the north side of the Loma Alta creek outlet at Buccaneer Beach. During wet weather months (November through April), with increased flow in the creek, the lagoon is open to the ocean and the UV system is bypassed.

TMDL APPLICABILITY

This activity is not being implemented as part of a TMDL compliance program; however the shoreline is listed in Section 303(d) of the federal Clean Water Act list of impaired water bodies for bacterial indicators.

TIME SCHEDULE FOR IMPLEMENTATION

The California Coastal Commission approved Permit No. 6-06-152 for construction of the outfall pipe associated with the UV treatment facility on June 14, 2007. Loma Alta Creek UV Treatment Facility project entered into the construction phase on August 13, 2007 when the official Notice to Proceed was issued to Orion Construction Corporation.

Each year the Loma Alta Creek Ultraviolet Light Treatment Facility is scheduled to start treatment in May and continue through September. While the facility is running, water samples are collected weekly from the effluent within the treatment facility and a mixing zone sample directly in front of the outfall at the shoreline. The samples were tested for total and fecal coliform and Enterococcus.

During the summer of 2009, repairs and upgrades were required to restart the facility and operation began in June. The plant typically ran three to four days a week with average flows of 300 gallons per minute. No water was discharged onto the beach when the UV Facility was offline. Flows were lower than expected due to drought conditions and conservation efforts of Oceanside residents. All samples taken during the summer of 2009 met California Department of Health Services AB411 Objectives and there were no postings due to bacterial levels exceeding standards set by the County Department of Environmental Health. The UV Facility ran through September 2009.

During the 2009-10 reporting year, Loma Alta Creek flows continued to be lower than expected during drought conditions warranting sporadic running of the UV facility. The facility began running in June 2010 for the summer dry season and discontinued running in October 2010. It ran for a total of 27 days during this time period. Approximately 16 million gallons of water was treated through the facility during the summer of 2010.

During the 2010-11 reporting year, the Oceanside Loma Alta Creek UV Treatment Plant operated between June and August 2011 for a total of 57 days. Higher flows in the Creek allowed continuous treatment through mid-July. Approximately 25 million gallons of water was treated through the facility.

During the 2011-12 reporting year, the Oceanside Loma Alta Creek UV Treatment Plant operated between May and September 2012. The September 2012 data was not available for reporting, however between May and August, the plant operated a total of 80 days. Approximately 31 million gallons of water was treated through the facility.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential, commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured on a Level 1, 4, and 6 assessment. The activity has been implemented (Level 1) as indicated by the number of days in operation each summer. Monitoring of the UV influent and effluent was conducted in 2008 and 2009. In the first full summer of operation, 2009, seventeen paired samples were collected. Fifteen of these sampling days resulted in at least one indicator bacteria exceedance of AB411 single sample standards in the influent to the facility. There were no exceedances of the standards in the effluent resulting in a reduction of bacteria loads from the watershed to the beach, a Level 4 measure of effectiveness (Table 1).

Table 1. Paired UV Treatment Facility Influent and Effluent Results.

Date	Total Coliforms (MPN/100ml)		Fecal Coliforms (MPN/100ml)		Enterococcus (MPN/100ml)	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
2008 (Test Operation)						
8/14/2008	500	30	130	10	83	< 1
8/15/2008	1100	500	80	**500**	38	< 1
8/16/2008	2200	8	13	< 2	**548**	7
9/16/2008	500	< 2	4	< 2	3	< 1
9/22/2008	800	80	50	80	28	**1550**
9/29/2008	> **16000**	2700	**9000**	**500**	> **2420**	99
2009						
6/1/2009	1700	30	**500**	13	53	20
6/3/2009	230	30	40	4	16	3
6/8/2009	30	23	4	< 2	39	51
6/16/2009	600	< 2	23	< 2	**165**	1
6/29/2009	1300	< 2	27	< 2	**214**	4
7/7/2009	500	< 2	70	< 2	**1120**	24
7/14/2009	500	< 2	110	< 2	**128**	3
7/21/2009	> **16000**	< 2	> **16000**	< 2	> **2420**	2
7/28/2009	< 20	11	< 20	< 2	**1200**	4
8/4/2009	230	4	20	< 2	**345**	21
8/12/2009	300	< 2	50	< 2	**866**	3
8/19/2009	130	< 2	80	< 2	**152**	4

Date	Total Coliforms (MPN/100ml)		Fecal Coliforms (MPN/100ml)		Enterococcus (MPN/100ml)	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
8/25/2009	300	< 2	130	< 2	**214**	8
9/9/2009	9000	< 2	**5000**	< 2	**2420**	1
9/16/2009	9000	< 2	**500**	< 2	**172**	2
9/22/2009	2800	< 2	130	< 2	**> 200**	< 1
9/29/2009	< 20	8	< 20	< 2	**579**	< 1

Values highlighted in red and bold indicate an AB411 single sample objective exceedance.

Paired sampling at the effluent from the treatment facility (before entering the discharge pipe) and a beach receiving water mixing zone sample are collected weekly while the facility is running. In the first full years of operation, 2009 – 2012, there has been only one exceedance of bacterial standards in the effluent and no exceedances of standards at the beach (Table 2). This has resulted in improved receiving water quality, a Level 6 assessment.

Table 2. Paired UV Effluent and Beach Mixing Zone Results.

Date	Total Coliforms (MPN/100ml)		Fecal Coliforms (MPN/100ml)		Enterococcus (MPN/100ml)	
	Effluent	Beach	Effluent	Beach	Effluent	Beach
2008 (Test Operation)						
9/16/2008	< 2	< 2	< 2	< 2	< 1	< 10
9/22/2008	80	2	80	< 2	**1550**	< 10
9/29/2008	2700	14	**500**	6	99	< 10
2009						
6/8/2009	23	2	< 2	< 2	51	< 10
6/16/2009	< 2	13	< 2	8	1	< 10
6/29/2009	< 2	< 2	< 2	< 2	4	< 10
7/7/2009	< 2	< 2	< 2	< 2	24	< 10
7/14/2009	< 2	2	< 2	< 2	3	< 10
7/21/2009	< 2	4	< 2	< 2	2	< 10
7/28/2009	11	< 2	< 2	< 2	4	< 10
8/4/2009	4	13	< 2	4	21	< 10
8/12/2009	< 2	4	< 2	2	3	< 10
8/19/2009	< 2	4	< 2	4	4	< 10
8/25/2009	< 2	< 2	< 2	< 2	8	10
9/9/2009	< 2	80	< 2	9	1	31
9/16/2009	< 2	4	< 2	< 2	2	< 10
9/22/2009	< 2	2	< 2	2	< 1	< 10
9/29/2009	8	30	< 2	11	< 1	31

Date	Total Coliforms (MPN/100ml)		Fecal Coliforms (MPN/100ml)		Enterococcus (MPN/100ml)	
	Effluent	Beach	Effluent	Beach	Effluent	Beach
2010						
6/7/2010	< 2	8	< 2	4	10	< 10
6/14/2010	< 2	2	< 2	< 2	< 10	< 10
8/16/2010	2	< 2	2	< 2	< 10	< 10
8/24/2010	4	12	2	2	< 10	< 10
8/30/2010	2	< 2	2	< 2	10	< 10
9/8/2010	< 2	13	< 2	8	< 10	< 10
9/13/2010	< 2	4	< 2	2	< 10	< 10
2011						
6/21/2011	2	< 2	2	< 2	< 10	< 10
6/27/2011	21	< 2	< 2	< 2	20	< 10
7/6/2011	30	11	< 2	< 2	10	10
7/11/2011	140	70	< 2	21	< 10	10
7/18/2011	11	< 2	< 2	< 2	20	< 10
7/25/2011	7	23	< 2	23	53	< 10
8/1/2011	30	4	2	< 2	< 10	10
8/8/2011	2	2	< 2	2	< 10	< 10
8/15/2011	< 2	2	< 2	< 2	**207**	< 10
2012						
5/29/2012	< 2	2	< 2	< 2	< 10	< 10
6/4/2012	< 2	4	< 2	4	< 10	< 10
6/11/2012	300	2	< 2	< 2	< 10	< 10
6/18/2012	11	< 2	< 2	< 2	< 10	< 10
6/27/2012	< 2	8	< 2	< 2	< 10	10
7/12/2012	4	< 2	< 2	< 2	< 10	10
7/16/2012	2	< 2	< 2	< 2	< 10	< 10
7/23/2012	< 2	< 2	< 2	< 2	< 10	< 10
8/1/2012	< 2	7	< 2	2	< 10	< 10

Values highlighted in red and bold indicate an AB411 single sample objective exceedance.

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TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: CHU-WQA7

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Carlsbad Watershed include:

- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

FY 2007-08 ACTIVITY IMPLEMENTATION

Work began on drafting SWQMP for SDA 9 and SDA 10.

FY 2008-09 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 is in the process of being drafted.

FY 2009-10 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

FY 2010-11 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

FY 2011-12 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2013-14. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2015.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined.

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined.

TITLE: NITRATE SOURCE IDENTIFICATION AND ABATEMENT: BUENA CREEK
ID #: CHU-WQA8

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels in Buena Creek. Nitrate concentrations have been observed to exceed dry weather action levels at the County's CAR 05 dry weather monitoring station (Buena Creek at Robelini Drive). The State of California, which collected data from a nearby location in 2002 as part of its Surface Water Ambient Monitoring Program (SWAMP), also identified nitrates as an issue of concern. Buena Creek is listed as impaired for nitrates/nitrites on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments.

FY 2007-08 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2007-08:

- Performed frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Compiled inventory and map of potential nitrate sources in the CAR 05 drainage area. It was determined that there are 26 nurseries within the unincorporated area tributary to the CAR 05 monitoring station.
- Compiled baseline information on BMP implementation and compliance history for nurseries within the CAR 05 drainage area. Of the 26 nurseries in this drainage area, 11 have been inspected by the County AWM Department. Seven of the 11 inspected nurseries had one or more violations.

FY 2008-09 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2008-09:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Twenty six (26) nurseries in the CAR 05 drainage area were inspected during FY 2008-09.
- Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at

identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site. The University of California Co-operative Extension Service Self-Assessment for Greenhouses and Nurseries and Management Options for Nonpoint Source Pollution, Greenhouse and Container Crop Industries documents were provided where appropriate and the sections on nutrients were reviewed.

- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2008-09, excluding paperwork violations, only six nurseries out of 26 had one or more instances of non-compliance. No nurseries were identified as direct sources of nitrates.

FY 2009-10 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2009-10:

- Updated inventory of nursery and nursery-related operations within the drainage basin. Seven additional facilities were identified and added to the initial potential nutrient source inventory (total of 33 facilities).
- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Twenty-four nurseries in the CAR 05 drainage area were inspected during FY 2009-10.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2009-10, excluding paperwork violations, ten nurseries out of 33 had one or more instances of non-compliances (See Table 3). No nurseries were identified as direct sources of nitrates.

FY 2010-11 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2010-11:

- Updated inventory of nursery and nursery-related operations within the drainage basin. Twelve nurseries were removed from the inventory because they did not meet the criteria for inclusion. Seven additional facilities were identified and added to the initial potential nutrient source inventory, bringing

the total to 23 facilities. Five nurseries reported in FY 2010-11 are no longer in business.

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on three dates throughout the year
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. All twenty- three nurseries in the CAR 05 drainage area were inspected during FY 2010-11.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2010-11, excluding paperwork violations, four nurseries out of 23 had one or more instances of non-compliances. No nurseries were identified as direct sources of nitrates.

FY 2011-12 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2011-12:

- Updated inventory of nursery and nursery-related operations within the drainage basin. No additional facilities were identified. Two nurseries reported in FY 2010-11 are no longer in business.
- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. All twenty-one nurseries in the CAR 05 drainage area were inspected during FY 2011-12.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.

- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2011-12, excluding paperwork violations, two nurseries out of 21 had one or more instances of non-compliances (See Table 3). No nurseries were identified as direct sources of nitrates.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	Status
Compile (update) an inventory and map of potential nutrient sources in the CAR 05 drainage area.	X		X	X	X	Complete
Compile (update) baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	X			X	X	Complete
Perform frequent water quality screenings for nutrients and other parameters at CAR 05	X	X	X	X	X	Ongoing
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	X	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS MEASUREMENTS

Table 2. Effectiveness Assessment

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile (update) an inventory and map of potential nutrient sources in the CAR 05 drainage area.	1	Completion	Yes
Compile (update) baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at CAR 05	1	4 field screenings / yr at CAR 05	100% complete, 4 screenings complete
	6	Reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012	To be determined
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the CAR 05 drainage area by June 2009.	Yes, complete
	3	Reduction in nursery BMP violations observed during nursery inspections in the CAR 05 drainage area by 2012.	95% Complete 20 out of 21 nurseries with multiple inspections have improved or maintained compliance.
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the CAR 05 drainage area by 2012.	86% Complete 18 of 21 nurseries with multiple scores had improved SKA scores. Baseline scores have been recorded for 21 nurseries.

Table 3. Inspection Summary

Facility Name	Inspection Date	# of BMP Violations[1]	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time[2]	TTWQ
Acosta Plants	2/3/2012	0	8	Yes	Yes	High
	2/17/2011	0	8			
	9/3/2010	0	7			
	8/26/2009	0	6			
	6/2/2009	0	N/A			
	5/7/2009	2	6			
	2/21/2007	0	N/A			
	1/31/2007	2	N/A			
	2/10/2005	3	N/A			
Altman Specialty Plants #01	9/21/2011	1	9	No	Same	High
	8/25/2010	0	9			
	2/25/2010	0	9			
	2/5/2010	1	9			
Altman Specialty Plants #03	2/9/2012	0	7	No Violations	No	Low
	3/30/2011	0	8			
Altman Specialty Plants #06	2/9/2012	0	8	Yes	No	Medium
	3/30/2011	0	8			
	2/10/2010	0	9			
	2/18/2009	0	10			
	8/16/2005	0	N/A			
	8/24/2004	0	N/A			
	5/4/2004	5	N/A			
Apgar Nursery	1/24/2012	0	9	No Violations	Yes	Low
	3/23/2011	0	8			
	5/14/2009	0	9			
	2/29/2008	0	8			
C & J Cactus Nursery #2	1/6/2012	0	8	Yes	Yes	Medium
	3/21/2011	0	8			
	5/26/2009	1	5			
	4/18/2008	0	10			
Desert Gold	4/26/2012	0	8	No Violations	Yes	Medium
	3/18/2011	0	5			
Grigsby Cactus Gardens	2/2/2012	0	8	Yes	Yes	Low
	3/25/2011	1	8			
	7/21/2009	0	N/A			
	5/21/2009	3	6			
	6/21/2007	0	N/A			

Facility Name	Inspection Date	# of BMP Violations[1]	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time[2]	TTWQ
H & P Sales Aka Growing Concepts	2/23/2012	0	6	Yes	Yes	Low
	1/6/2011	3	6			
	4/1/2010	0	N/A			
	8/6/2009	2	6			
	7/17/2009	0	10			
	6/20/2007	0	N/A			
	5/8/2006	0	N/A			
	3/6/2006	2	N/A			
	7/13/2004	0	N/A			
	3/15/2004	12	N/A			
H & P Sales Aka Growing Concepts #2	2/23/2012	0	6	Yes	Same	High
	1/6/2011	2	6			
	8/5/2009	2	6			
Jeff Lorenz	4/26/2012	0	7	No Violations	Same	Medium
	4/13/2011	0	7			
Juan Diaz Mariscal	5/23/2012	0	6	No Violations	Yes	Medium
	4/12/2011	0	5			
Lone Oak Rancho Nursery	2/24/2012	0	9	No Violations	Yes	Medium
	3/24/2011	0	9			
	9/11/2009	0	6			
	7/14/2008	0	8			
Progressive Growers Inc #1	12/28/2011	0	10	Yes	Yes	High
	12/9/2010	0	8			
	7/20/2009	0	6			
	5/20/2009	1	9			
	1/26/2009	0	N/A			
	6/13/2008	1	10			
	1/4/2007	1	N/A			
Silhouettes Of The Desert #1	4/25/2012	0	8	Yes	Yes	High
	3/8/2011	0	6			
	8/19/2009	0	6			
	1/23/2009	6	5			
	6/17/2008	7	2			
	1/31/2006	1	N/A			
	3/8/2005	2	N/A			
Sonrise Growers	5/2/2012	1	8	Yes	Yes	High
	1/5/2011	6	5			
	1/28/2010	6	4			
	1/23/2009	1	8			

Facility Name	Inspection Date	# of BMP Violations[1]	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time[2]	TTWQ
	6/23/2008	2	8			
Sunhill Ranch LLC	1/17/2012	0	8	Yes	Yes	Medium
	4/12/2011	0	8			
	7/16/2009	0	7			
	5/12/2009	2	6			
T M Palms And Shrubs	1/11/2012	0	7	No Violations	Yes	Medium
	4/5/2011	0	7			
	9/9/2009	0	6			
Tomlinson Select Nurseries	4/4/2012	0	8	Yes	No	Low
	3/24/2011	0	8			
	5/26/2009	0	8			
	3/19/2009	0	7			
	6/26/2008	0	10			
	3/1/2007	0	N/A			
	3/15/2006	0	N/A			
	5/9/2005	5	N/A			
Venegas Creek Roses #1	1/19/2012	0	7	No Violations	Yes	Low
	3/9/2011	0	7			
	6/26/2008	0	5			
Western Cactus Growers, Inc.	9/14/2011	0	9	Yes	Yes	High
	9/10/2010	0	8			
	6/19/2009	3	8			

1. Does not include paperwork violations.
2. When three or more SKA scores are available, last SKA score is compared to average of three previous scores

TITLE: PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS
ID #: CHU-WQA10

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 16 stations at two County parks in the Carlsbad Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2010-11. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed.

FY 2011-12 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2011-12. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed. The parks and the number of dispensers include:

- San Elijo Lagoon Ecological Reserve (11 dispensers)
- San Dieguito County Park (5 dispensers)

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers - Ongoing
- Addition of new dispensers in County parks - Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Table 1. Effectiveness Assessment

Facility Name	FY 11-12		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
San Elijo Ecological Reserve	11	35,000	7,000
San Dieguito Park*	5	16,150	3,230
Total	**16**	**51,150**	**10,230**

*San Dieguito County Park is counted in both the Carlsbad and San Dieguito HU Totals

Cumulatively, the County maintains 16 stations among the two County Parks within the Carlsbad Watershed. These stations distributed approximately 51,150 bags during the FY 2011-12 reporting period, preventing an estimated 10,230 pounds of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 pounds.
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

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TITLE: LAND ACQUISITIONS
ID #: CHU-WQA11

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the southwestern portion of the County. Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 there were no land acquisitions by the County of San Diego in the Carlsbad WMA.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period the County of San Diego purchased 287.12 acres of property located in the Carlsbad WMA.

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting period the County of San Diego purchased 162.05 acres of property located in the Carlsbad WMA.

FY 2010-11 ACTIVITY IMPLEMENTATION

During the FY 2010-11 reporting period the County of San Diego purchased 192.00 acres of property located in the Carlsbad WMA.

FY 2011-12 ACTIVITY IMPLEMENTATION

During the FY 2011-12 reporting period there were no land acquisitions by the County of San Diego in the Carlsbad WMA.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. During the FY 2011-12 reporting period the County of San Diego did not acquire any additional lands within the Carlsbad Hydrologic Unit watershed. Over the past five annual reporting periods the County of San Diego has acquired a total of 641.17 acres in the Carlsbad Hydrologic Unit Watershed.

TITLE: **UPPER SAN MARCOS CREEK WATERSHED/LAKE SAN MARCOS NUTRIENT MANAGEMENT PLAN**

ID #: **CHU-WQA12**

ACTIVITY DESCRIPTION

Upper San Marcos Creek (USMC) and its tributary watershed (HSAs 904.53 and 904.52) drain to Lake San Marcos (Lake). Lake San Marcos has been listed on the 2006 303(d) list as impaired for Ammonia (as N), Nitrogen, and Phosphorous. Water flowing in San Marcos Creek is impounded in the lake by San Marcos Dam. Both the dam and the land underlying the lake are privately owned. The City of San Marcos, the County of San Diego, and the City of Escondido (MS4 Copermittees) are tributary to the Lake along with Phase II MS4s (San Marcos Unified School District, Cal State San Marcos, Palomar College, North County Transit District), CalTrans, and various utility providers under the permitting or other regulatory requirements of the SDRWQCB (Vallecitos Water District, SDGE, SDCWA). The City of San Marcos will function as the lead for this WURMP activity in collaboration with the County of San Diego and the City of Escondido for efforts requiring integration of jurisdictional data, information, mapping, and reporting.

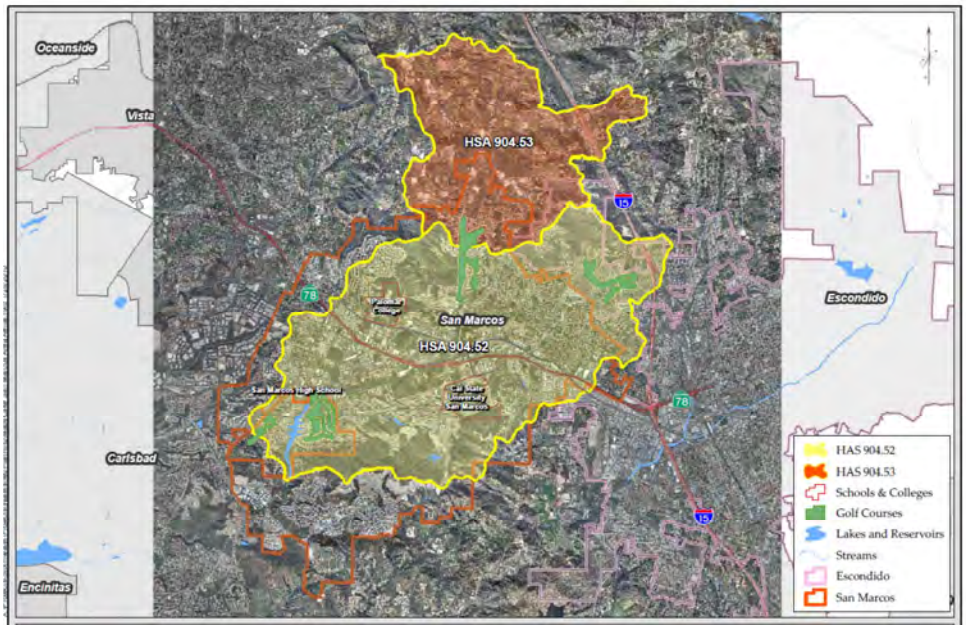

Figure 1. Lake San Marcos

The MS4 Copermittees will meet and coordinate jurisdictional efforts to locate and abate sources of nutrients in the watersheds and report the efforts in Carlsbad WURMP Annual Reports. Appendix C of the FY 2009 Carlsbad WURMP Annual Report includes the USMC Watershed Nutrient Management Plan (Management Plan). The Management Plan contains a summary of preliminary nutrient source identification efforts, MS4 Copermittee watershed coordination, and abatement activities initiated during FY 09 and planned for completion during future years. Nearly all of the activities

identified in the Management Plan go beyond the 2007 MS4 Stormwater Permit requirements and were developed to address nutrient source identification and abatement.

Development, implementation, and assessment of the Management Plan will be a collaborative effort by the MS4 Copermittees. Collaboration will include regular meetings and interim information reporting between the MS4 Copermittees to coordinate knowledge and data-based implementation of activities identified in Appendix C of the FY 2009 Carlsbad WURMP Annual Report.

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The MS4 Copermittees began implementation of this activity in FY 2009 and will continue to implement the activity in future years. The MS4 Copermittees are committed to reassessing the Management Plan on an annual basis. Details of any changes made will be reported in Carlsbad WURMP Annual Reports.

ACTIVITY IMPLEMENTATION FY 2011-12

The specific components of the USMC Nutrient Management Plan are addressed in individual activity sheets CHU-WQA18, CHU-WQA19, CHU-WQA20, CHU-WQA21, and CHU-WQAEA08.

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Other Tributary Watershed Stakeholders (e.g., private and other public entities)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The development of a Nutrient Management Plan is consistent with the collective watershed strategy in that it will identify the water quality problems and likely sources

of the pollutants potentially causing the water quality problems and develop a plan to abate the sources or significantly reduce the pollutant loading from the sources.

EFFECTIVENESS MEASUREMENTS

All six levels of the effectiveness will be assessed as appropriate based on the availability of data:

Level 1: Compliance with activity-based permit requirements
Level 2: Changes in Attitudes, Knowledge, and Awareness
Level 3: Behavioral Change and BMP Implementation
Level 4: Load Reductions
Level 5: Changes in Urban Runoff and Discharge Quality
Level 6: Changes in Receiving Water Quality

Effectiveness measurements will be included in future Carlsbad WURMP Annual Reports.

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TITLE: **WATER QUALITY TREATMENT FACILITY AT THE MCCLELLAN-PALOMAR AIRPORT**
ID #: **CHU-WQA15**

ACTIVITY DESCRIPTION

The County of San Diego designed and installed a water quality treatment facility (WQTF) at the McClellan-Palomar Airport completed in April of 2006. This work was funded by Proposition 13 State Water Resources Control Board (SWRCB) grant agreement number 04-201-559-0. The County conducts regular water quality monitoring at the WQTF to assess effectiveness.

The WQTF was designed to provide water quality treatment for low storm flows and nuisance urban runoff that would enter Agua Hedionda Creek as shown in the figure below. Runoff flows enter the influent conveyances through a hydrodynamic separator that centrifugally removes debris and gross pollutants and directs flow into a detention vault where additional pollutants are removed through settlement during low flows. Flows greater than the design storm bypass the WQTF through the adjacent 36" storm drain.

The attached report presents additional details regarding monitoring results.

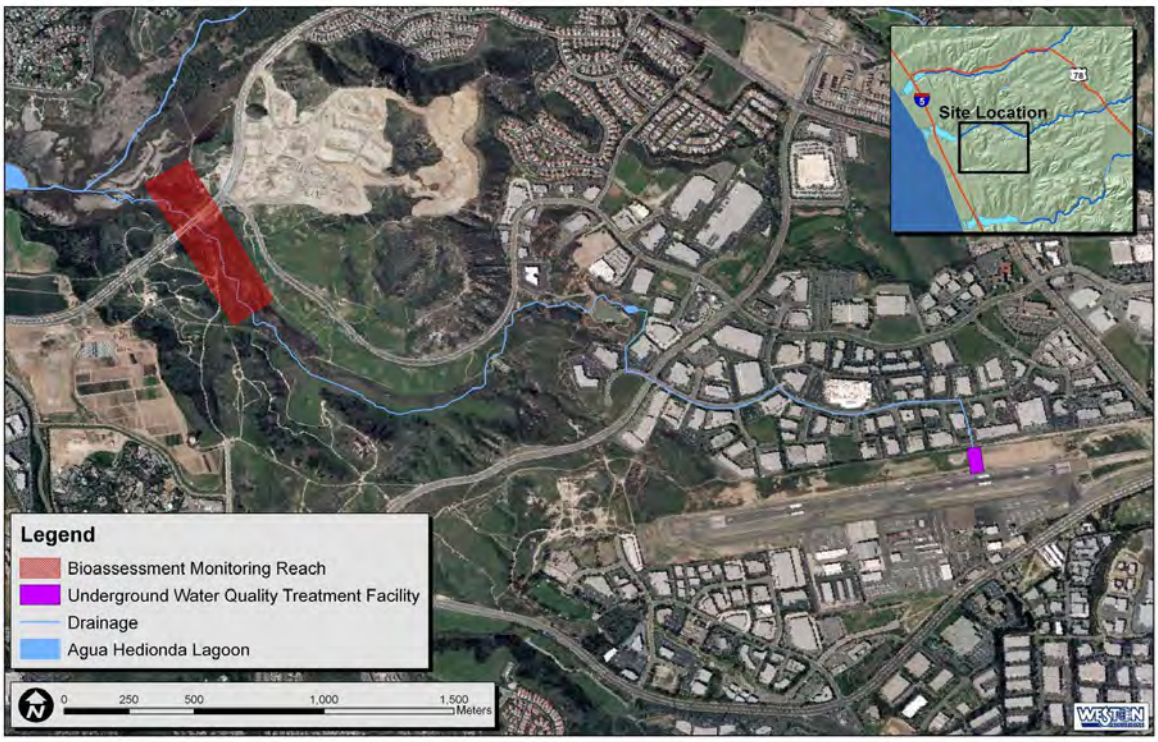

Figure 1. McClellan-Palomar Airport Monitoring Locations

FY 2008-09 ACTIVITY IMPLEMENTATION

- Preparation of the County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport summarizing the sampling efforts from 2006 to present.
- No monitoring took place during FY 2008-09

FY 2009-10 ACTIVITY IMPLEMENTATION

- Sampling of two storm events took place during FY 2009-10: December 11, 2009 and January 26, 2010.
- Revision and additions to County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport summarizing the sampling efforts from 2006 to 2010.

FY 2010-11 ACTIVITY IMPLEMENTATION

- Sampling of two storm events took place during FY 2010-11: February 16, 2010 and February 26, 2010.
- Revision and additions to County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport summarizing the sampling efforts from 2006 to 2011.

FY 2011-12 ACTIVITY IMPLEMENTATION

- Sampling of two storm events took place during FY 2011-12: February 27, 2012 and March 17, 2012.
- Revision and additions to County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport summarizing the sampling efforts from 2006 to present (see attached report).

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

No additional sampling events are scheduled at this time.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients and sediment have been identified as priority water quality problems in the Agua Hedionda Hydrologic Area (904.3). Airport operations are a potential source of sediment and nutrients. Since this activity is addresses priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Effectiveness is assessed through regular water quality monitoring and comparison of influent and effluent pollutant loading. Scheduled monitoring for the FY 2011-12 was completed (Level 1 Outcome). In general, concentrations in samples collected during 2011-12 were within the range of previously collected sample concentrations. For additional information on sampling results please refer to the attached report (Attachment A).

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CHU-WQA15

Attachment A

County of San Diego McClellan-Palomar Airport

Water Quality Treatment Facility

2011-2012 Best Management Practices Monitoring Report

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COUNTY OF SAN DIEGO MCCLELLAN-PALOMAR AIRPORT

WATER QUALITY TREATMENT FACILITY

2011-2012 BEST MANAGEMENT PRACTICES MONITORING REPORT

November 2012

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ACRONYMS AND ABBREVIATIONS

ºC	Degrees Celsius
µg	Microgram(S)
µg/L	Microgram(S) per Liter
µS	Micro Siemens
µS/cm	Micro Siemens per Centimeter
%	Percent
ASAP	As Soon As Possible
BMP	Best Management Practice
cfs	Cubic Feet per Second
cm	Centimeter(S)
DO	Dissolved Oxygen
EPA	United States Environmental Protection Agency
ft	Foot/Feet
HDPE	High Density Polyethylene
in	Inch(es)
L	Liter(s)
LTMP	Long-Term Monitoring Plan
mg	Milligram(s)
mg/L	Milligram(s) per Liter
mL	Milliliter(s)
NA	Not Applicable
ND	Non Detected
ng	Nanogram(s)
ng/L	Nanogram(s) per Liter

NTU	Nephelometric Turbidity Units
SM	Standard Method
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TSS	Total Suspended Solids
TDS	Total Dissolved Solids
WQTF	Water Quality Treatment Facility

1.0 INTRODUCTION

In 2006, the County of San Diego designed and installed a Water Quality Treatment Facility (WQTF) as a Best Management Practice (BMP) to treat urban runoff from the McClellan-Palomar Airport within the Agua Hedionda sub-watershed (904.3) under Proposition 13 State Water Resources Control Board (SWRCB) Grant Agreement Number 04-201-559-0. The runoff flows from the airport to Agua Hedionda Creek, to Agua Hedionda Lagoon, and ultimately into the Pacific Ocean near Carlsbad, California. The site and surrounding areas are depicted in Figure 1-1.

Initial studies, consisting of four samples collected with automated equipment, were conducted in 2006-2007 (Weston, 2007a). The County of San Diego McClellan-Palomar Airport WQTF Long-Term Monitoring Plan (LTMP) was prepared in 2007 (Weston, 2007b). Long-term monitoring is intended to provide data for continued assessment of the water quality benefit provided by the WQTF.

The LTMP includes flow estimation and water quality monitoring during the wet season (between October 1 and April 30) for two wet weather events per year for five years. One sample was collected in 2007-2008, none in 2008-2009, and two in 2009-2010; during 2010-2011 two storm events were monitored. Thus, the 2011-2012 wet season was the fourth season of long-term monitoring during which inlet and outlet to the WQTF were sampled on February 27, 2012 and March 17, 2012. In accordance with the LTMP, the WQTF influent and effluent flows were recorded and water quality samples were collected.

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Figure 1-1. Location of the McClellan-Palomar Airport WQTF

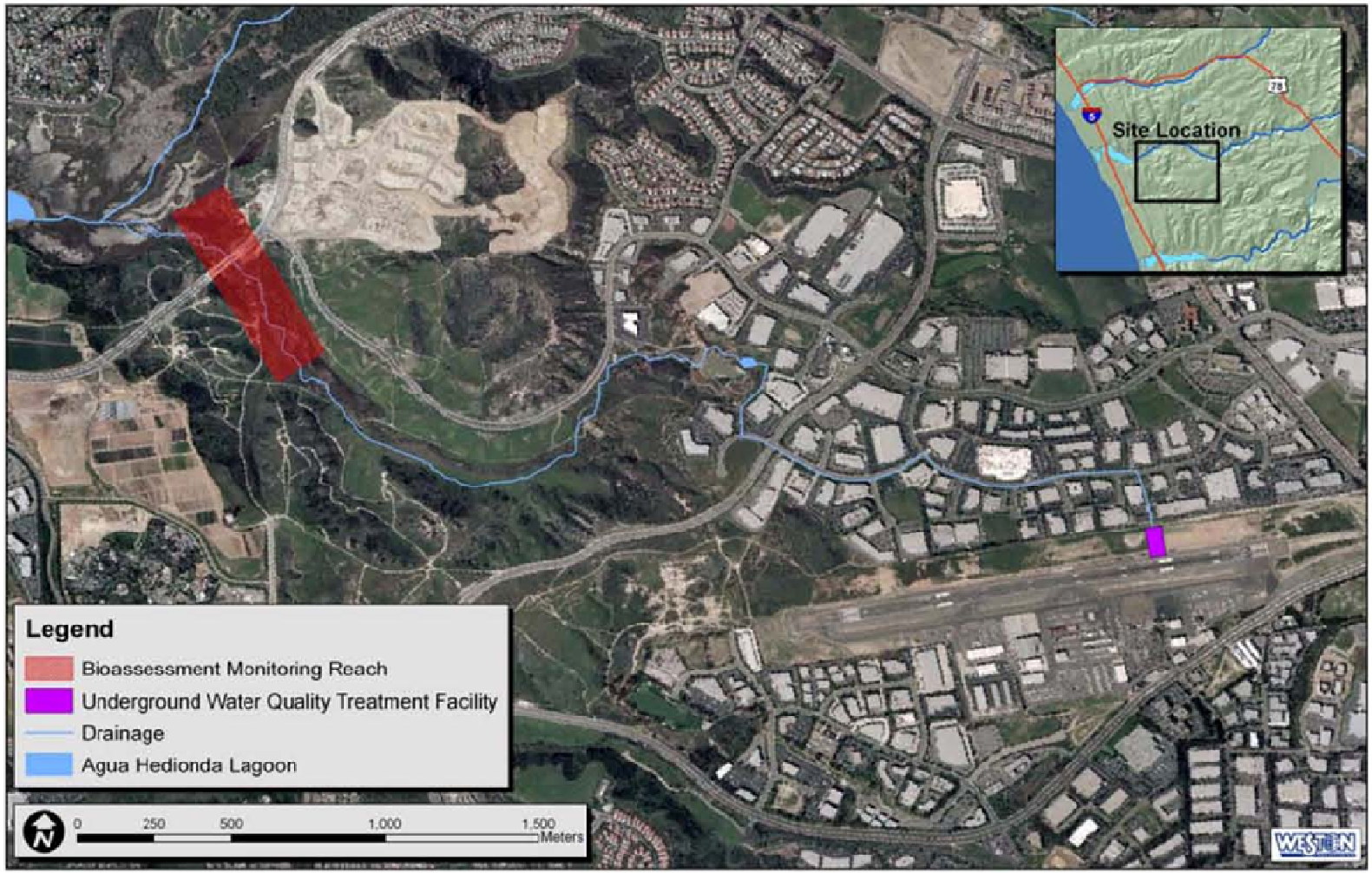

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2.0 DESCRIPTION OF SAMPLING PROCEDURES

2.1 Flow Measurements

The WQTF is designed to temporarily detain storm water flow. During a storm event, stage height increases and remains high at the influent, while the effluent flow velocity is relatively low and constant until empty. Since the WQTF is not designed to permanently retain storm water, the influent and effluent volumes should be approximately the same for a given storm event except during bypass conditions. Factors that may reduce total effluent volume include: the potentially negligible amount of sludge and water that may remain in the WQTF, potential exfiltration, evaporation, and/or other additional means for volume reduction.

Flow measurements for the 2011-2012 wet season are presented in Tables 3-7. Instantaneous flows were measured and recorded at the beginning, middle, and end of each wet weather event. All monitoring and sampling activities were performed above ground through the access manholes above the WQTF. Flow was estimated by first measuring distances from the rims of the influent and the effluent access manholes to the water level. The distances were measured three times: at the beginning, middle and end of sampling; and the measurements were averaged. The measurements represent the reverse of true stage height. To obtain the stage height, the average distance to the water was subtracted from the invert (25.37 feet (ft) for the influent, 26.97 ft for the effluent). The stage heights were then converted to instantaneous flow values using Table 5-2 of the LTMP, reproduced below as Table 2-1.

Table 2-1.
Stage Discharge

Head (in)	Influent Flow (cfs)	Effluent Flow (cfs)
0	0.46	0.07
1	3.07	0.08
2	5.5	0.09
3	7.75	0.09
4	9.83	0.10
5	11.7	0.11
6	13.4	0.11
7	15.0	0.12
8	16.4	0.13
9	17.0	0.14
10	18.6	0.15
11	19.4	0.15
12	20.1	0.16
13	20.6	0.17
14	20.9	0.17
15	21.3	0.18
16	21.7	0.18
17	21.8	0.19
18	21.9	0.20
19	22.0	0.2
20	22.1	0.21
21	22.1	0.22
22	21.9	0.22

Head (in)	Influent Flow (cfs)	Effluent Flow (cfs)
23	21.4	0.23
24	20.2	0.24
25		0.25
26		0.25
27		0.26
28		0.27
29		0.28
30		0.29
31		0.29
32		0.30
33		0.31
34		0.32
35		0.33
36		0.33

Table 2-1.
Stage Discharge (Cont.)

Head (in)	Influent Flow (cfs)	Effluent Flow (cfs)
37		0.34
38		0.35
39		0.36
40		0.36
41		0.37
42		0.38
43		0.39
44		0.39
45		0.40
46		0.41
47		0.41
48		0.42
49		0.44
50		0.44
51		0.45
52		0.45
53		0.46
54		0.46
55		0.47
56		0.47
57		0.47
58		0.48
59		0.48

Head (in)	Influent Flow (cfs)	Effluent Flow (cfs)
60		0.48

Notes:

cfs - cubic feet per second

in - inch(es)

2.2 Water Quality Sampling

During each storm event, one set of grab samples was collected at both the inlet and outlet of the WQTF. Grab samples were collected in pre-cleaned containers and transferred to appropriate laboratory-supplied sampling bottles. Samples were collected by lowering a pre-cleaned container from the designated manhole access at either the inlet or outlet sampling point. Surface Water Ambient Monitoring Program (SWAMP) sampling protocols and the procedures in the LTMP were followed during sample collection.

Samples were labeled, placed on ice in coolers, and transported for analysis under standard chain-of-custody procedures to EnviroMatrix Analytical, Inc., located in San Diego, California. The samples were analyzed for the constituents listed in Table 2-2.

Table 2-2.
McClellan-Palomar Airport WQTF Analytical Water Quality Parameters

Analytical Parameter	Analytical Method	Sample Volume	Containers #, Size, Type	Preservation (Chemical, Temperature, Light Protected)	Maximum Holding Time: Preparation/ Analysis
Total Suspended Solids	SM 2540-D	250 mL	Plastic	Store Cool at <4ºC	6 Months
Total Dissolved Solids	SM 2540-C	1L	Plastic	Store Cool at <4ºC	7 Days
Total Hardness	EPA 200.7	100 mL	Plastic	HNO_3	6 Months
Dissolved Cadmium	EPA 200.8	1L	Plastic	Store Cool at <4ºC	Filter ASAP / 6 Months
Dissolved Copper	EPA 200.8	1L	Plastic	Store Cool at <4ºC	Filter ASAP / 6 Months

Analytical Parameter	Analytical Method	Sample Volume	Containers #, Size, Type	Preservation (Chemical, Temperature, Light Protected)	Maximum Holding Time: Preparation/ Analysis
Dissolved Lead	EPA 200.8	1L	Plastic	Store Cool at <4ºC	Filter ASAP / 6 Months
Dissolved Zinc	EPA 200.8	1L	Plastic	Store Cool at <4ºC	Filter ASAP / 6 Months
Nitrate - N	SM 4500-NO_3 E	100 mL	Plastic or Glass	Store Cool at <4ºC	48 Hours
Total Phosphorus	SM 4500-P, B, E	250 mL	HDPE Plastic	Store Cool at <4ºC	28 Days
Dissolved Ortho-Phosphate	SM 4500 P, E	250 mL	HDPE Plastic	Store Cool at <4ºC	28 Days
Diazinon	EPA8141A	1 L	Amber Glass	Store Cool at <4ºC	Extraction 7 days; Analysis 40 days
Chlorpyrifos	EPA 8141A	1 L	Amber Glass	Store Cool at <4ºC	Extraction 7 days; Analysis 40 days
MBAS	SM 5540 C	500 mL	Plastic	Store Cool at <4ºC	48 Hours
Oil and Grease	EPA 1664A	1 L	Amber Glass	Store Cool at <4ºC, Add HCl to pH<2	28 Days

During the sampling of the inlet and the outlet, field measurements were recorded for pH, temperature, conductivity, dissolved oxygen (DO), turbidity, and salinity. Field measurements were recorded in field data logs (Appendix A) and are presented below in Tables 3-1 through 3-7.

3.0 ANALYTICAL RESULTS

The analytical laboratory results for the last four monitoring seasons including 2011-2012 are listed in tables 3-1 thorough 3-7 and presented graphically in Figures 3-1 through 3-14. Appendix A contains the 2011-2012 laboratory analytical reports.

In general, constituent concentrations in samples collected during 2011-2012 were within the range of those from previous years. During the February 27, 2012 storm event, concentrations of dissolved and total phosphorus and total dissolved solids (TDS) were slightly higher at the outlet than at the inlet; the effluent also had a higher pH and dissolved oxygen (DO) concentration. Slightly lower concentrations of dissolved metals (cadmium, copper, lead and zinc), nitrate as N, and total suspended solids (TSS) as well as lower total hardness, temperature, turbidity and specific conductance were recorded for the effluent.

Effluent samples collected during the March 17, 2012 storm event had slightly higher, than influent, concentrations of nitrate as N, total phosphorus, and TDS; the effluent also had higher pH, temperature, DO, and turbidity. Slightly decreased concentrations of dissolved metals (copper and zinc), orthophosphate as P and TSS as well as lower hardness were recorded for the effluent

Monitoring season 2011-2012 constituent loads for the inlet and outlet of the WQTF are presented in Tables 3-1 through 3-7 along with historical results. In load calculations, analyte concentrations below detection limits were assumed to equal half their corresponding SWAMP method detection limits.

Load reductions between the inlet and outlet of the WQTF are also presented in Tables 3-1 through 3-7 and percent load reductions are listed in Table 4-1 and illustrated in Figure 4-1. Load reductions were calculated using the following formula:

$$\text{\% Load Reduction} = \frac{Inlet\ Load - Outlet\ Load}{Inlet\ Load}$$

Since it was assumed that effluent volume equaled influent volume, these load reductions are directly proportional to the differences in concentrations between the influent and effluent. As stated in Section 2.1, factors that may reduce the total effluent volume include: the potentially negligible amount of sludge and water that remain in the WQTF and any loss to volume resulting from potential exfiltration, evaporation, and/or other additional means for volume reduction.

Table 3-1.
2006 McClellan-Palomar Airport WQTF Analytical Results

Analyte Class	Constituent	12/10/06					12/16/06				
		Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]	Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil and Grease (mg/L)	1.9J	1.9J	46.42	46.42	0%	1.3J	2J	0.98	1.51	-54%
Metals	Dissolved Cadmium (µg/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Dissolved Copper (µg/L)	10.8	8.90	0.26	0.22	18%	9.2	7.3	0.01	0.01	21%
	Dissolved Lead (µg/L)	0.47	0.40	0.011	0.010	15%	0.51	0.49	0.00039	0.00037	4%
	Dissolved Zinc (µg/L)	28.6	23.9	0.70	0.58	16%	18.4	12.1	0.014	0.009	34%
Nutrients	Nitrate-N (mg/L)	0.78	0.69	19.06	16.86	12%	0.98	0.77	0.74	0.58	21%
	Dissolved Orthophosphate as P (mg/L)	0.08	0.06	1.95	1.47	25%	0.04	0.04	0.03	0.03	0%
	Total Phosphorus (mg/L)	0.23	0.22	5.62	5.38	4%	0.19	0.31	0.14	0.23	-63%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.04	0.03	0.98	0.73	25%	0.06	0.05	0.045	0.038	17%
Conventionals	Total Suspended Solids (mg/L)	263	239	6438	5840	9%	95	217	72	164	-128%
	Total Dissolved solids (mg/L)	151	200	3690	4887	-32%	157	167	119	119	0%
	Total Hardness as CaCO3 (mg/L)	10.9	9.68	NA	NA	11%	23.8	19.9	NA	NA	16%

	pH	7.59	7.30	NA	NA	4%	6.0	6.5	NA	NA	-8%
	Temp (°C)	15.3	14.4	NA	NA	6%	12.1	12.2	NA	NA	-1%
	DO (mg/L)	9.00	10.5	NA	NA	-17%	6.15	6.42	NA	NA	-4%
	Turbidity (NTU)	710.0	661.0	NA	NA	7%	290	290	NA	NA	0%
	Specific Conductance (µs/cm)	106.0	80.0	NA	NA	25%	16	15	NA	NA	6%
	Flow (cfs)	4.53	3.31	NA	NA	27%	0.14	0.14	NA	NA	0%

Table 3-1.
2006 McClellan-Palomar Airport WQTF Analytical Results (Cont.)

Analyte Class	Constituent	12/27/06				
		Concentration[3,5]		Load (lbs/day)[5]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil and Grease (mg/L)	ND	ND	ND	ND	NA
Metals	Dissolved Cadmium (µg/L)	ND	ND	ND	ND	NA
	Dissolved Copper (µg/L)	14.2	9.7	0.015	0.01	32%
	Dissolved Lead (µg/L)	1.52	2.24	0.0016	0.0024	-47%
	Dissolved Zinc (µg/L)	38.2	55.9	0.04	0.06	-46%
Nutrients	Nitrate-N (mg/L)	1.13	1	1.22	1.08	12%
	Dissolved Orthophosphate as P (mg/L)	0.07	0.04	0.08	0.04	43%
	Total Phosphorus (mg/L)	0.18	0.17	0.19	0.18	6%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.53	0.4	0.57	0.43	25%
Conventionals	Total Suspended Solids (mg/L)	26.3	62.3	28	67	-137%
	Total Dissolved solids (mg/L)	115	73	124	79	37%

	Total Hardness as CaCO3 (mg/L)	15.3	11.4	NA	NA	25%
	pH	7.4	8.82	NA	NA	-19%
	Temp (°C)	15.9	13.6	NA	NA	14%
	DO (mg/L)	9.28	8.55	NA	NA	8%
	Turbidity (NTU)	17	86	NA	NA	-406%
	Specific Conductance (µs/cm)	210	131	NA	NA	38%
	Flow (cfs)	0.2	0.18	NA	NA	10%

Notes:

[1] Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain storm water flow, thus effluent volume is assumed to equal influent volume.

[2] Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.

[3] J = Estimated value below the reporting limit and above the method detection limit.

[4] NA = Not Applicable = Where loads are NA, value represents change in concentration.

[5] ND = Constituent not detected above the reporting limit.

Table 3-2
2007 McClellan-Palomar Airport WQTF Analytical Results

Analyte Class	Constituent	01/31/07					02/11/07				
		Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]	Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil and Grease (mg/L)	8.7	5.8	14	9.39	33%	2J	3J	0.86	1.29	-50%
Metals	Dissolved Cadmium (µg/L)	0.8	0.9	0.0013	0.0015	-13%	0.5	0.6	0.00022	0.00026	-20%
	Dissolved Copper (µg/L)	38	42	0.06	0.07	-10%	17	17.10	0.01	0.01	-1%
	Dissolved Lead (µg/L)	6.06	5.58	0.01	0.01	8%	3.76	3.16	0.0016	0.0014	16%
	Dissolved Zinc (µg/L)	251	495	0.41	0.80	-97%	122	143	0.05	0.06	-17%
Nutrients	Nitrate-N (mg/L)	0.87	1.78	1.41	2.88	-105%	0.71	1.02	0.31	0.44	-44%
	Dissolved Orthophosphate as P (mg/L)	0.21	0.13	0.34	0.21	38%	0.1	0.09	0.04	0.04	10%
	Total Phosphorus (mg/L)	0.2	0.22	0.32	0.36	-10%	0.13	0.11	0.06	0.05	15%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	1.7	2.35	2.75	3.80	-38%	0.56	0.7	0.24	0.30	-25%
Conventionals	Total Suspended Solids (mg/L)	8.8	27	14.2	44.2	-210%	12	12	5.2	5.2	0%
	Total Dissolved solids (mg/L)	138	147	223	238	-7%	27	46	12	20	-70%

	Total Hardness as $CaCO_3$ (mg/L)	9.7	23.2	NA	NA	-138%	8	9	NA	NA	-13%
	pH	6.4	6.3	NA	NA	0%	NA	NA	NA	NA	NA
	Temp (°C)	15.2	15.2	NA	NA	0%	NA	NA	NA	NA	NA
	DO (mg/L)	10	9.9	NA	NA	1%	NA	NA	NA	NA	NA
	Turbidity (NTU)	14	12	NA	NA	14%	NA	NA	NA	NA	NA
	Specific Conductance (µs/cm)	143	128	NA	NA	11%	NA	NA	NA	NA	NA
	Flow (cfs)	0.3	0.1	NA	NA	63%	0.08	0.08	NA	NA	0%

Notes:

[1] Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain storm water flow, thus effluent volume is assumed to equal influent volume.

[2] Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.

[3] J = Estimated value below the reporting limit and above the method detection limit.

[4] NA = Not Applicable = Where loads are NA, value represents change in concentration. NA is also present for field measurements that were not analyzed on 2/11/07.

[5] ND = Constituent not detected above the reporting limit.

Table 3-3.
2008 McClellan-Palomar Airport WQTF Analytical Results

Analyte Class	Constituent	02/22/08				
		Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil and Grease (mg/L)	1.7J	2.4J	199	281	-41%
Metals	Dissolved Cadmium (µg/L)	ND	ND	ND	ND	NA
	Dissolved Copper (µg/L)	5	3.9	0.59	0.46	22%
	Dissolved Lead (µg/L)	0.2	0.2	0.03	0.03	0%
	Dissolved Zinc (µg/L)	16.8	18.8	2.0	2.2	-12%
Nutrients	Nitrate-N (mg/L)	0.48	0.39	56	46	19%
	Dissolved Orthophosphate as P (mg/L)	ND	0.03	ND	3.3	NA
	Total Phosphorus (mg/L)	0.038J	0.031J	4.5	3.6	18%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.113	0.107	13.3	12.5	5%
Conventionals	Total Suspended Solids (mg/L)	1284	12	150,563	1,372	99%
	Total Dissolved solids (mg/L)	198	178	23,218	20,872	10%
	Total Hardness as CaCO3 (mg/L)	8.8	8.2	NA	NA	7%

	pH	7.9	8.2	NA	NA	-3%
	Temp (°C)	13.3	13.3	NA	NA	0%
	DO (mg/L)	11.3	11.4	NA	NA	0%
	Turbidity (NTU)	19.4	18.8	NA	NA	3%
	Specific Conductance (µs/cm)	135	133	NA	NA	1%
	Flow (cfs)	21.74	0.36	NA	NA	98%

Notes:

[1] Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain storm water flow, thus effluent volume is assumed to equal influent volume.

[2] Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.

[3] J = Estimated value below the reporting limit and above the method detection limit.

[4] NA = Not Applicable = Where loads are NA, value represents change in concentration.

[5] ND = Constituent not detected above the reporting limit.

Table 3-4.
2009 McClellan-Palomar Airport WQTF Analytical Results

Analyte Class	Constituent	12/11/09				
		Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil and Grease (mg/L)	2.4J	2.5J	216	225	-4%
Metals	Dissolved Cadmium (µg/L)	0.2J	0.2J	18	18	0%
	Dissolved Copper (µg/L)	15	15.5	1.35	1.39	-3%
	Dissolved Lead (µg/L)	1.27	1.33	0.11	0.12	-5%
	Dissolved Zinc (µg/L)	47	38	4	3	21%
Nutrients	Nitrate-N (mg/L)	1.2	1.4	109	123	-13%
	Dissolved Orthophosphate as P (mg/L)	0.05	0.06	4.3	5.5	-27%
	Total Phosphorus (mg/L)	0.328	0.329	3.4	2.8	18%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.119	0.115	10.7	10.3	3%
Conventionals	Total Suspended Solids (mg/L)	27	22	2402	1934	19%
	Total Dissolved solids (mg/L)	72	66	6478	5938	8%
	Total Hardness as CaCO3 (mg/L)	27	27.3	NA	NA	-1%

	pH	8.9	9.1	NA	NA	-2%
	Temp (°C)	16.5	16.4	NA	NA	1%
	DO (mg/L)	7.9	8.2	NA	NA	-3%
	Turbidity (NTU)	42.9	25.7	NA	NA	40%
	Specific Conductance (µs/cm)	0.20	0.19	NA	NA	1%
	Flow (cfs)	16.68	0.25	NA	NA	99%

Notes:

[1] Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain storm water flow, thus effluent volume is assumed to equal influent volume.

[2] Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.

[3] J = Estimated value below the reporting limit and above the method detection limit.

[4] NA = Not Applicable = Where loads are NA, value represents change in concentration.

[5] ND = Constituent not detected above the reporting limit.

Table 3-5.
2010 McClellan-Palomar Airport WQTF Analytical Results

Analyte Class	Constituent	01/26/10				
		Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil and Grease (mg/L)	1.7J	2J	199	235	-18%
Metals	Dissolved Cadmium (µg/L)	0.2J	0.2J	23	23	0%
	Dissolved Copper (µg/L)	12	11	1.41	1.29	8%
	Dissolved Lead (µg/L)	0.92	0.93	0.11	0.11	-1%
	Dissolved Zinc (µg/L)	31.4	35.6	3.68	4.17	-13%
Nutrients	Nitrate-N (mg/L)	NA	NA	NA	NA	NA
	Dissolved Orthophosphate as P (mg/L)	0.05	0.04	6.33	5.04	20%
	Total Phosphorus (mg/L)	0.13	0.12	15.48	13.95	10%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.04	0.05	4.46	5.28	-18%
Conventionals	Total Suspended Solids (mg/L)	15.5	18.3	1,818	2,146	-18%
	Total Dissolved solids (mg/L)	210	160	24,625	18,762	24%
	Total Hardness as CaCO3 (mg/L)	48.7	36.1	NA	NA	26%

	pH	7.96	8.48	NA	NA	-7%
	Temp (°C)	14.2	13.2	NA	NA	7%
	DO (mg/L)	7	8.4	NA	NA	-19%
	Turbidity (NTU)	10	10	NA	NA	0%
	Specific Conductance (µs/cm)	0.22	0.13	NA	NA	39%
	Flow (cfs)	21.74	0.20	NA	NA	99%

Notes:

[1] Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain storm water flow, thus effluent volume is assumed to equal influent volume.

[2] Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.

[3] J = Estimated value below the reporting limit and above the method detection limit.

[4] NA = Not Applicable = Where loads are NA, value represents change in concentration.

[5] ND = Constituent not detected above the reporting limit.

Table 3-6.
2011 McClellan-Palomar Airport WQTF Analytical Results

Analyte Class	Constituent	02/16/11					02/26/11				
		Concentration[3,5]		Load (lbs/day)[4,5]		Load Reduction[2]	Concentration[3,5]		Load (lbs/day)[4,5]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil and Grease (mg/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Metals	Dissolved Cadmium (µg/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Dissolved Copper (µg/L)	14	14	0.4	0.4	0%	ND	ND	ND	ND	NA
	Dissolved Lead (µg/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Dissolved Zinc (µg/L)	42	44	1.2	1.3	-5%	ND	ND	ND	ND	NA
Nutrients	Nitrate-N (mg/L)2	0.74	0.74	22	22	0%	0.2	0.48	3.3	7.9	-140%
	Dissolved Orthophosphate as P (mg/L)1	0.19	0.06	5.6	1.8	68%	ND	ND	ND	ND	NA
	Total Phosphorus (mg/L)3	0.10	0.10	3	3	0%	0.06	ND	0.99	0.4E	60%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Malathion (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.6	0.7	18	21	-17%	ND	ND	ND	ND	NA
Conventionals	Total Suspended Solids (mg/L)	ND	32	ND	949	NA	ND	ND	ND	ND	NA
	Total Dissolved solids (mg/L)	122	80	3619	2373	34%	109	105	1805	1739	4%

	Total Hardness as CaCO3 (mg/L)	23	21	NA	NA	9%	ND	ND	NA	NA	NA
	pH	5.71	5.47	NA	NA	4%	6.95	6.97	NA	NA	0%
	Temp (°C)	19.4	13.7	NA	NA	29%	17.5	15.5	NA	NA	11%
	DO (mg/L)	8.0	8.8	NA	NA	-10%	5.6	5.9	NA	NA	-6%
	Turbidity (NTU)	112	103	NA	NA	8%	450	477	NA	NA	-6%
	Specific Conductance (µs/cm)	0.0	0.0	NA	NA	0%	0.0	0.0	NA	NA	0%
	Flow (cfs)	5.50	0.09	NA	NA	98%	3.07	0.08	NA	NA	97%

Notes:

[1] Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain storm water flow, thus effluent volume is assumed to equal influent volume.

[2] Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.

[3] J = Estimated value below the reporting limit and above the method detection limit.

[4] NA = Not Applicable = Where loads are NA, value represents change in concentration.

[5] ND = Constituent not detected above the reporting limit. Pollutant load calculated based on half of the SWAMP reporting limit for load reduction.

Table 3-7.
2012 McClellan-Palomar Airport WQTF Analytical Results

Analyte Class	Constituent	02/27/12					03/17/12				
		Concentration[3,5]		Load (lbs/day)[4,5]		Load Reduction[2]	Concentration[3,5]		Load (lbs/day)[4,5]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet		Inlet	Outlet	Inlet	Outlet	
Hydrocarbons	Oil and Grease (mg/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Metals	Dissolved Cadmium (µg/L)	0.4	0.3	16.72	8.8997	47%	ND	ND	ND	ND	NA
	Dissolved Copper (µg/L)	17	15	710.63	444.99	37%	17.00	16.00	710.63	474.65	33%
	Dissolved Lead (µg/L)	1	ND	41.80	ND	NA	ND	ND	ND	ND	NA
	Dissolved Zinc (µg/L)	71	55	2967.9	1631.6	45%	32.00	30.00	1337.6	889.97	33%
Nutrients	Nitrate-N (mg/L)	0.9	0.88	38.04	26.11	31%	0.34	0.36	14.21	10.68	25%
	Dissolved Orthophosphate as P (mg/L)1	0.05	0.06	2.09	1.78	15%	0.06	0.05	2.51	1.48	41%
	Total Phosphorus (mg/L)	0.12	0.15	5.02	4.45	11%	0.15	0.16	6.27	4.75	60%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Malathion (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.30	0.3	12.54	8.90	29%	0.50	0.50	20.90	14.83	29%
Conventionals	Total Suspended Solids (mg/L)	24.00	22	1003.2	652.65	35%	16.8	14.7	702.27	436.09	38%

	Total Dissolved Solids (mg/L)	107.0	110	4472.7	3263.2	27%	49	55	2048.2	1631.62	20%
	Total Hardness as CaCO3 (mg/L)	308	264	NA	NA	14%	14.0	14.0	NA	NA	NA
	pH	6.74	7.34	NA	NA	-9%	7.71	7.81	NA	NA	-1%
	Temp (°C)	11.7	11.6	NA	NA	1%	14.9	15.0	NA	NA	-1%
	DO (mg/L)	9.4	11.2	NA	NA	-19%	8.9	9.0	NA	NA	-2%
	Turbidity (NTU)	39	27	NA	NA	31%	22	26	NA	NA	-17%
	Specific Conductance (µs/cm)	0.2	0.1	NA	NA	0%	0.1	0.1	NA	NA	0%
	Flow (cfs)	7.75	5.50	NA	NA	29%	7.75	5.50	NA	NA	29%

Notes:

[1] Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain storm water flow, thus effluent volume is assumed to equal influent volume.

[2] Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.

[3] J = Estimated value below the reporting limit and above the method detection limit.

[4] NA = Not Applicable = Where loads are NA, value represents change in concentration.

[5] ND = Constituent not detected above the reporting limit.

Figure 3-1. Oil and Grease Results

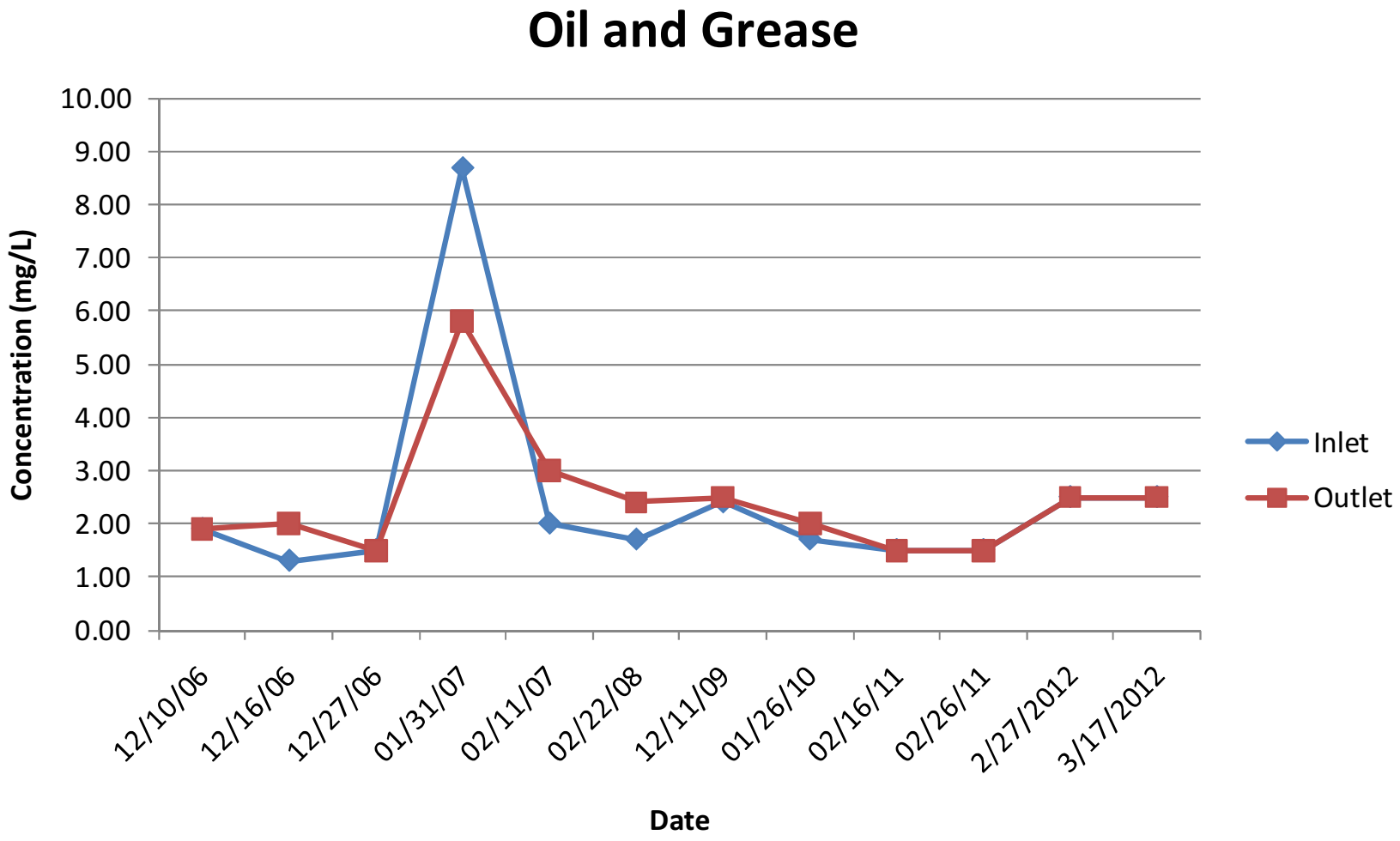

Figure 3-2. Dissolved Cadmium Results

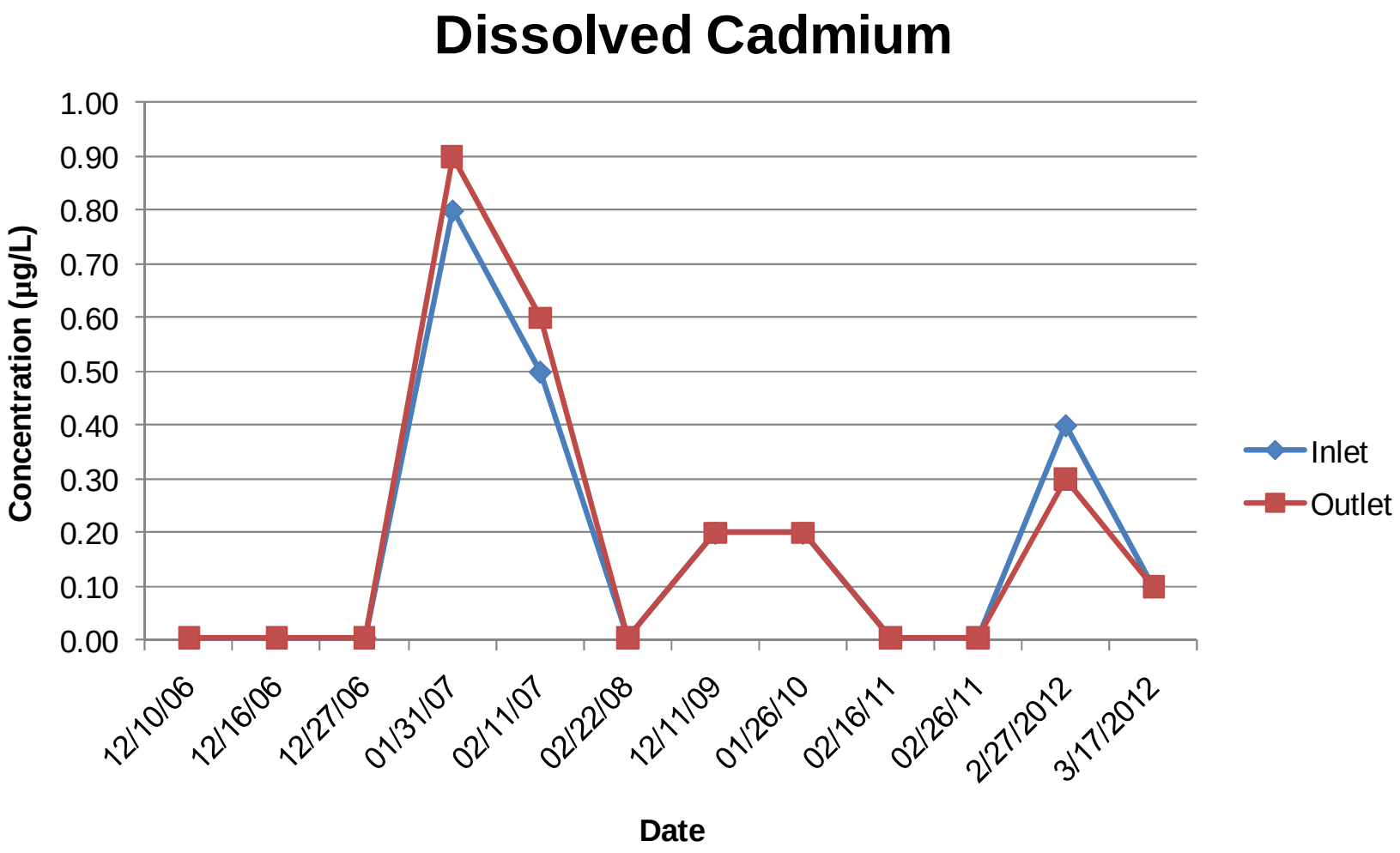

Figure 3-3. Dissolved Copper Results

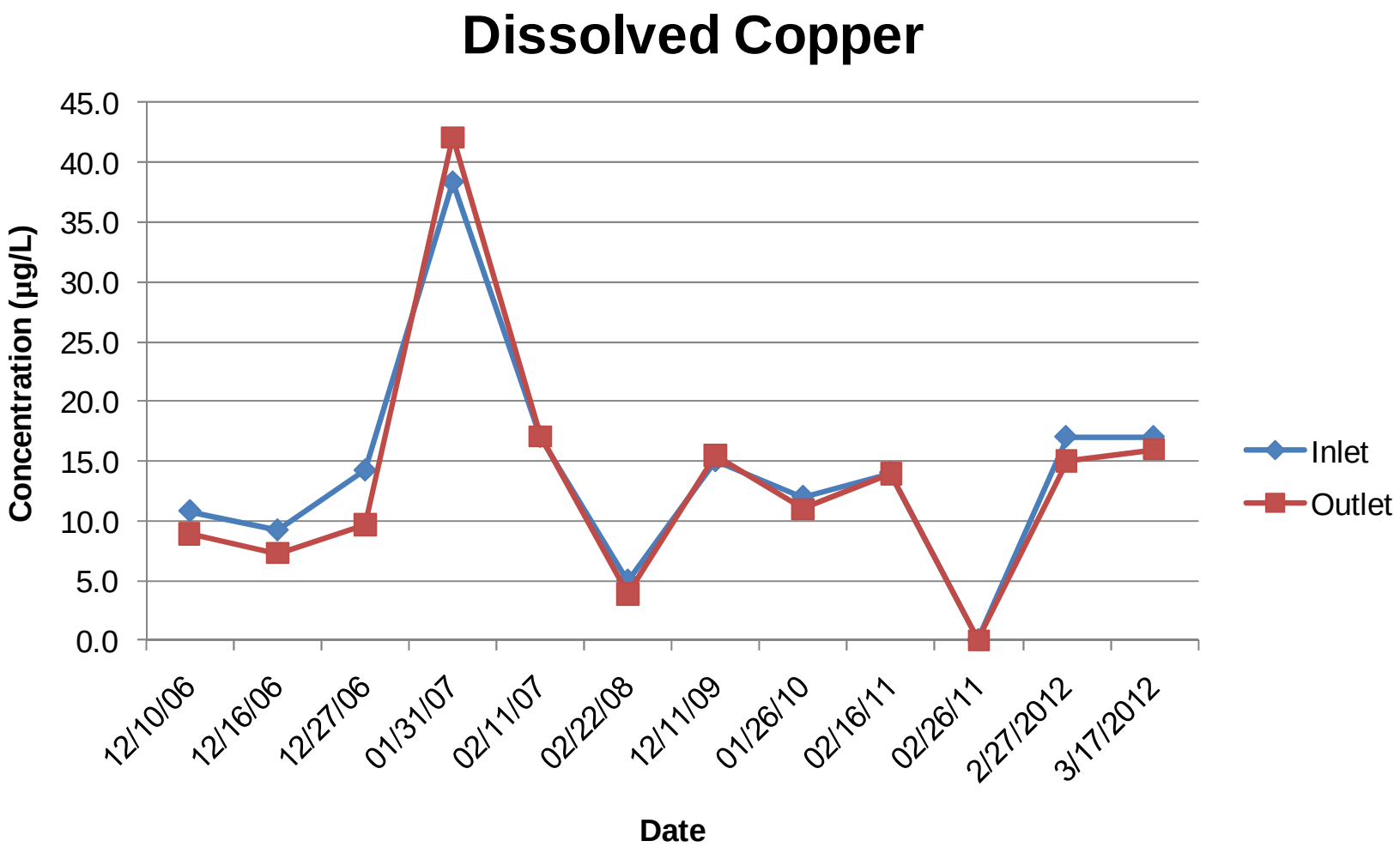

Figure 3-4. Dissolved Lead Results

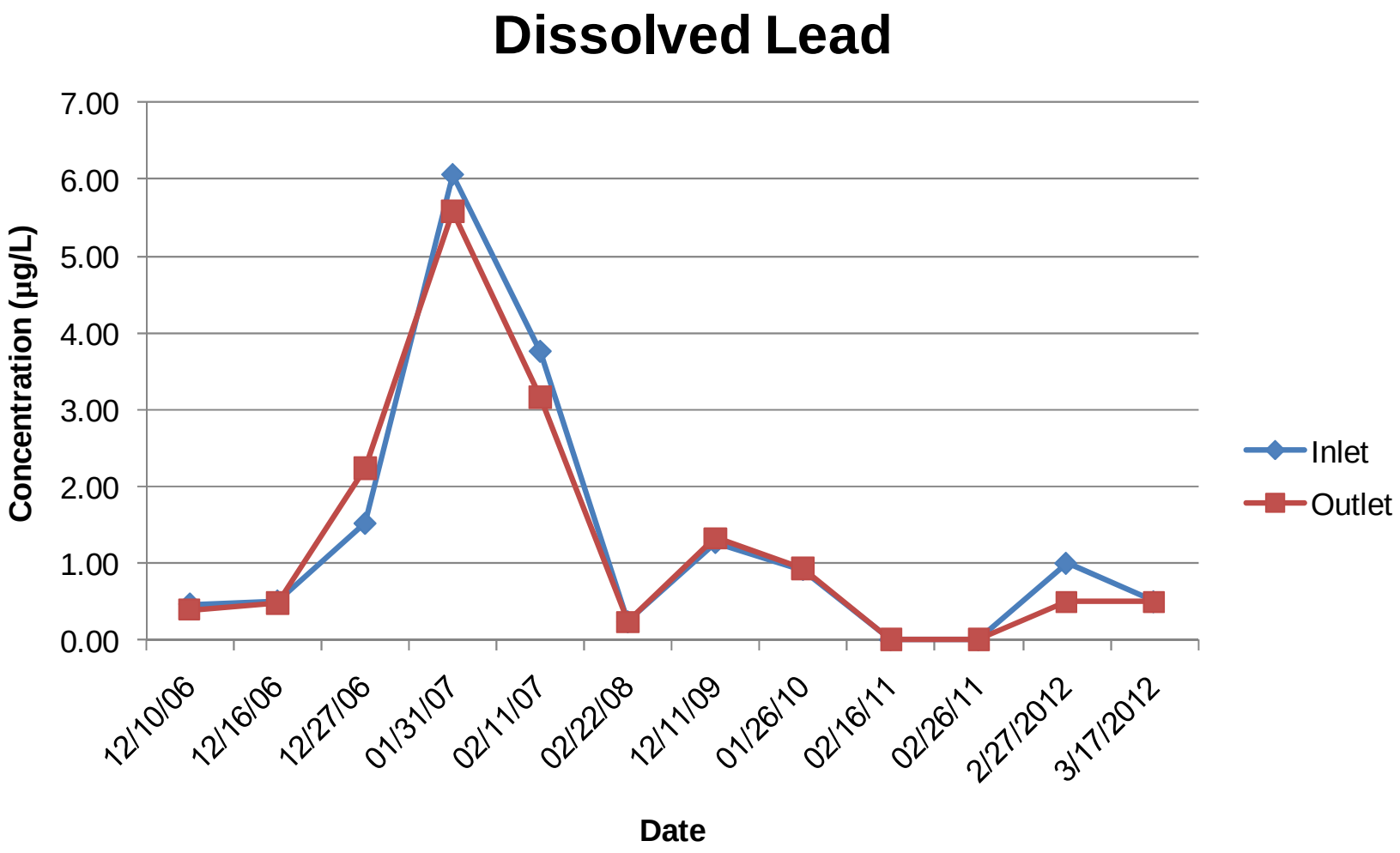

Figure 3-5. Dissolved Zinc Results

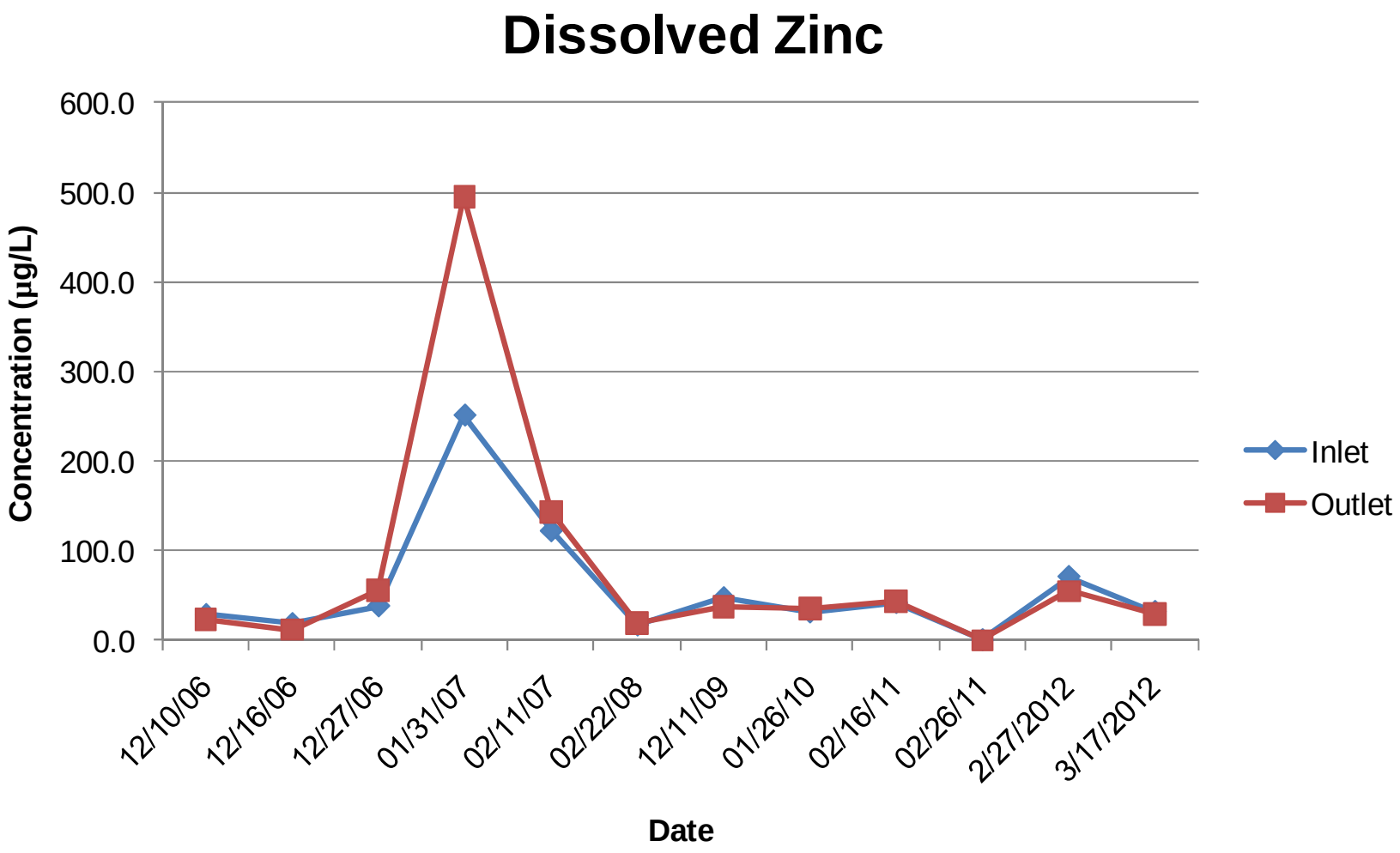

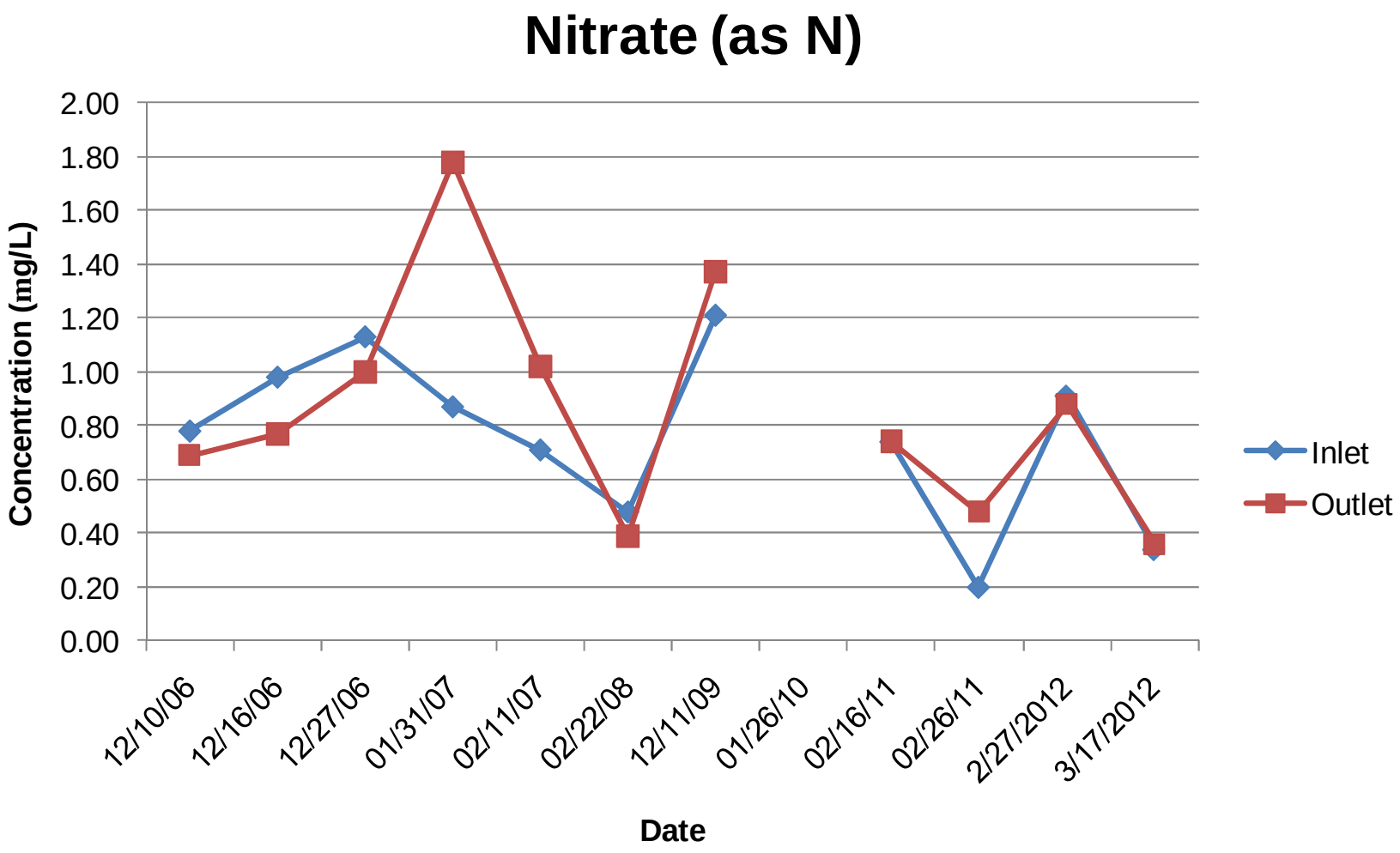

Figure 3-6. Nitrate Results

Figure 3-7. Dissolved Orthophosphate (as P) Results

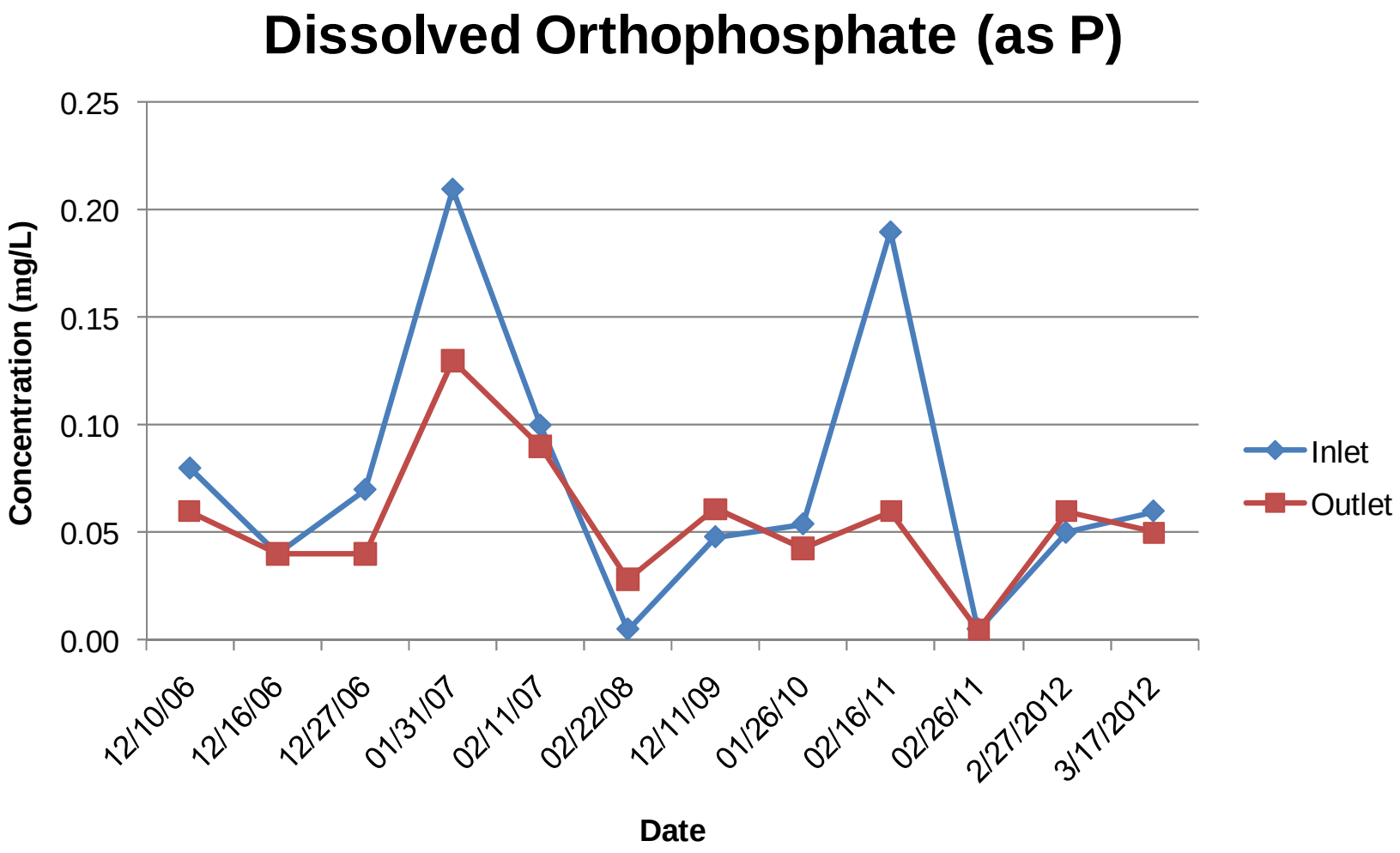

Figure 3-8. Total Phosphorus Results

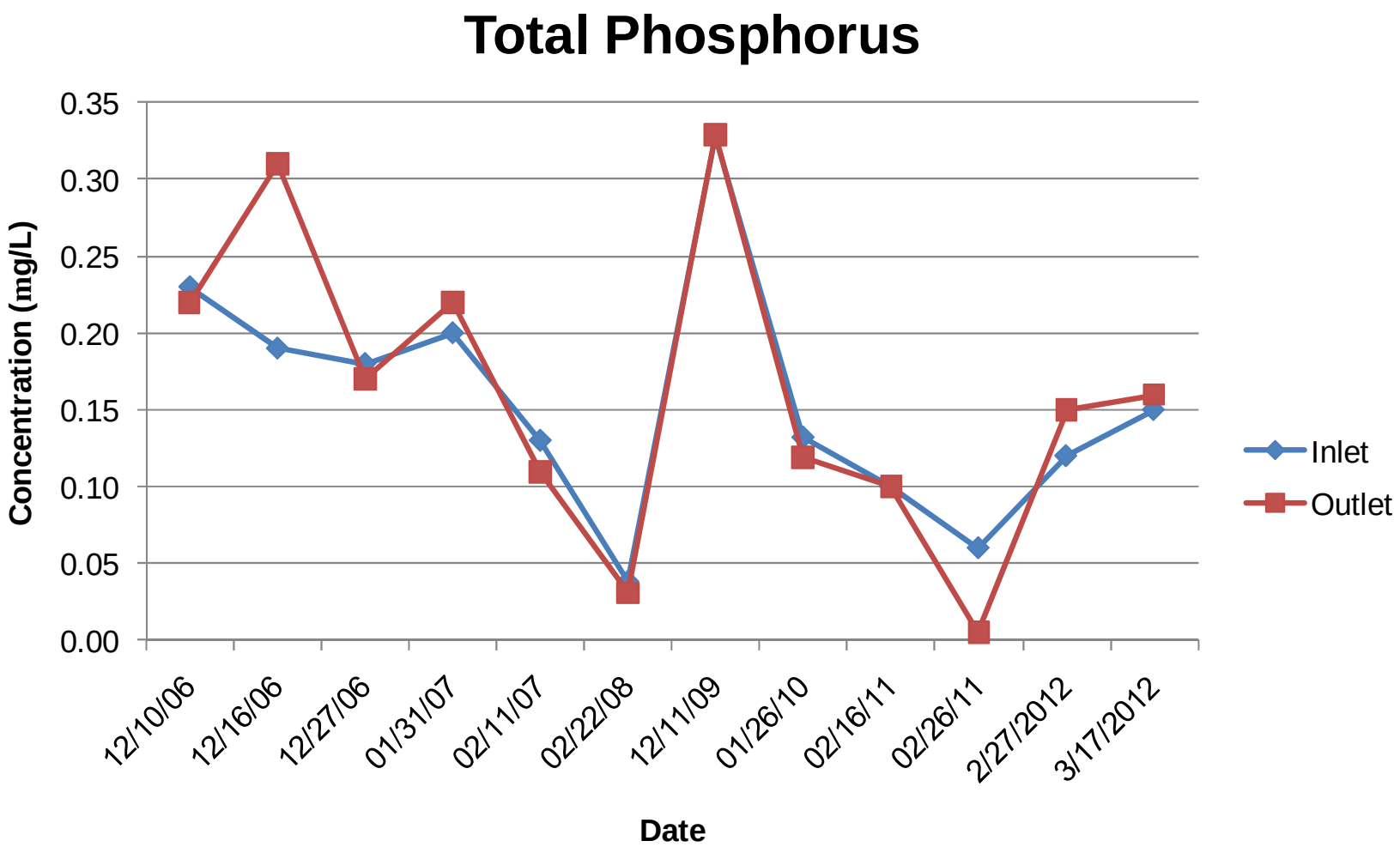

Figure 3-9. Chlorpyrifos Results

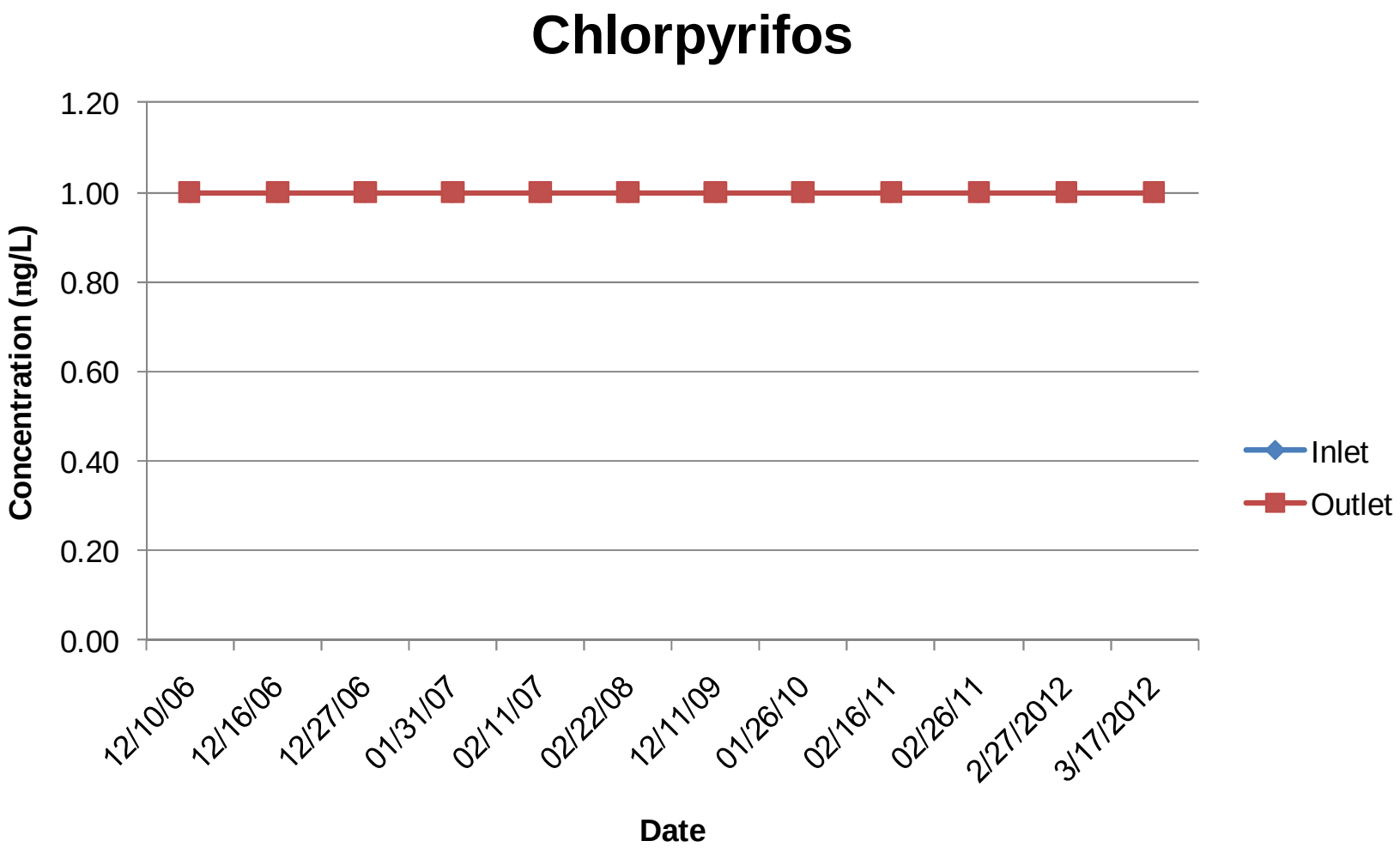

Figure 3-10. Diazinon Results

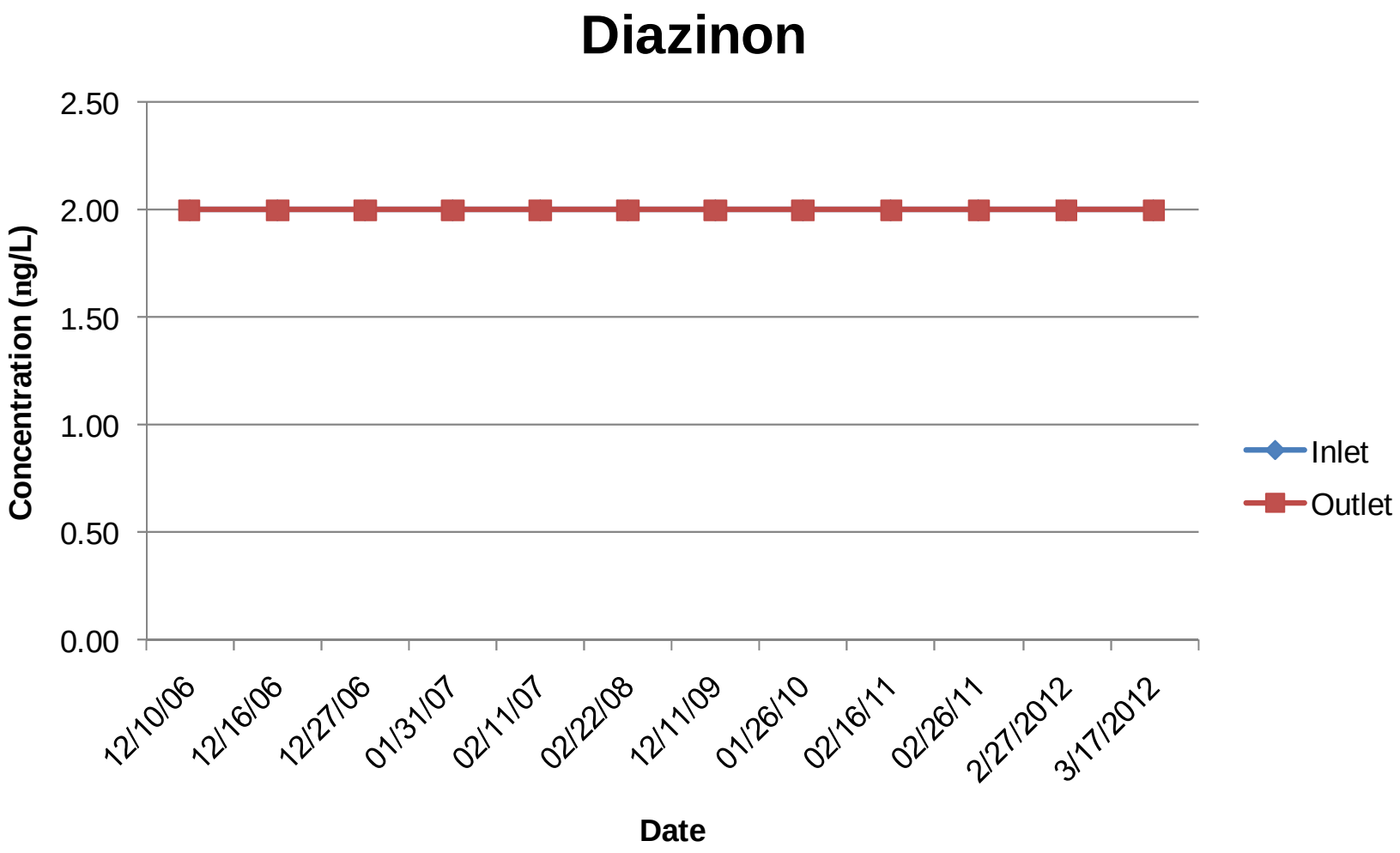

Figure 3-11. MBAS Results

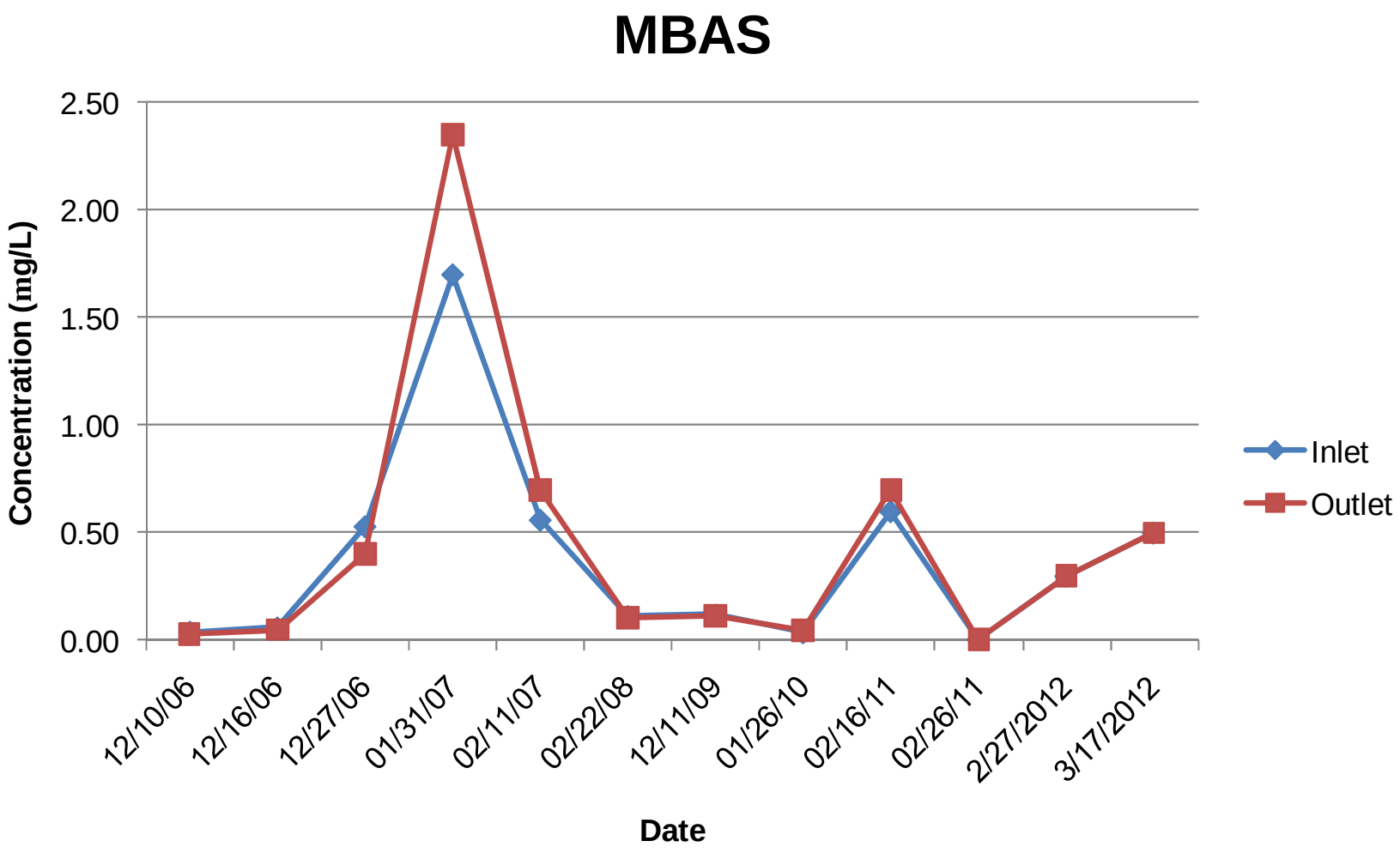

Figure 3-12. TSS Results

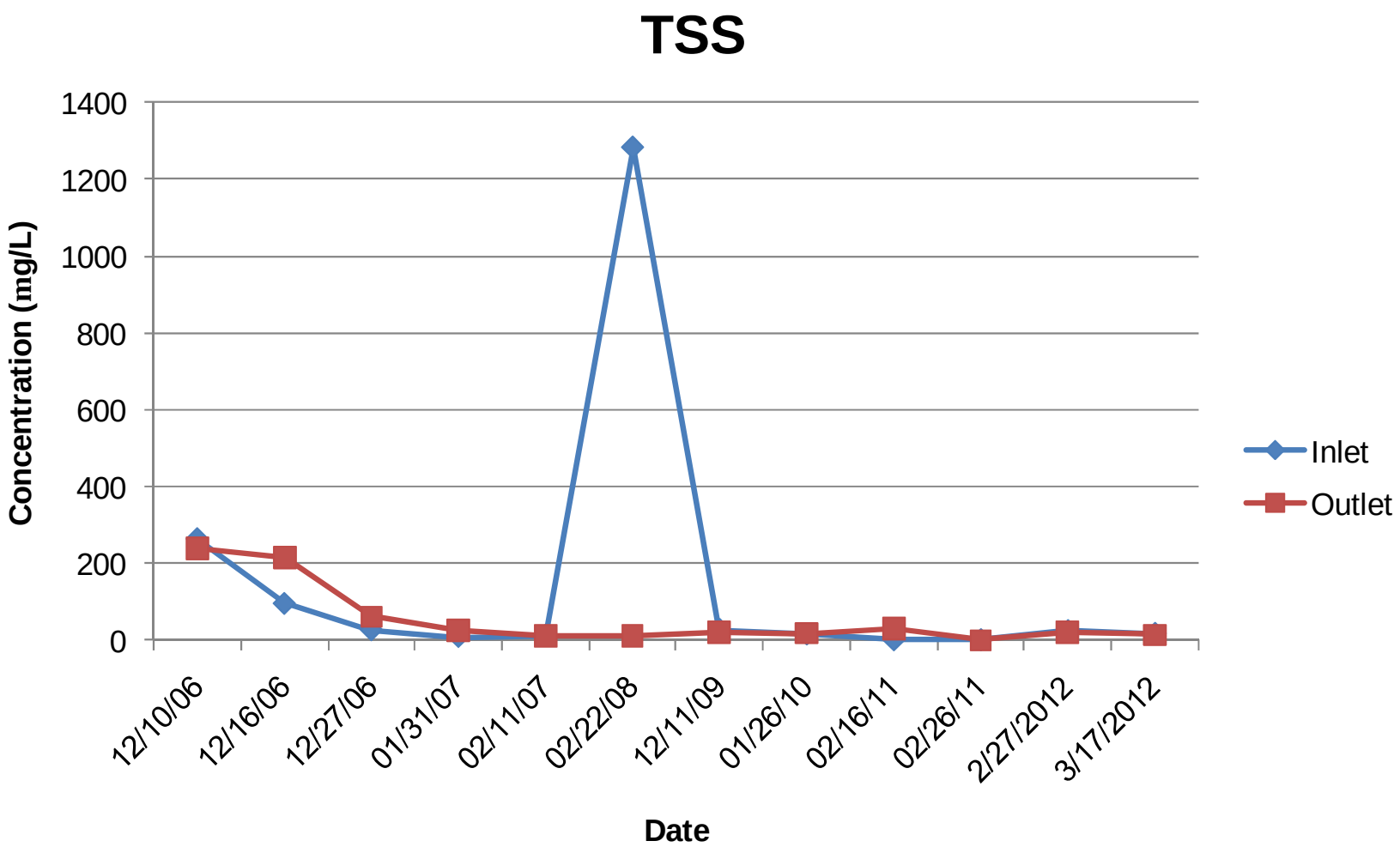

Figure 3-13. TDS Results

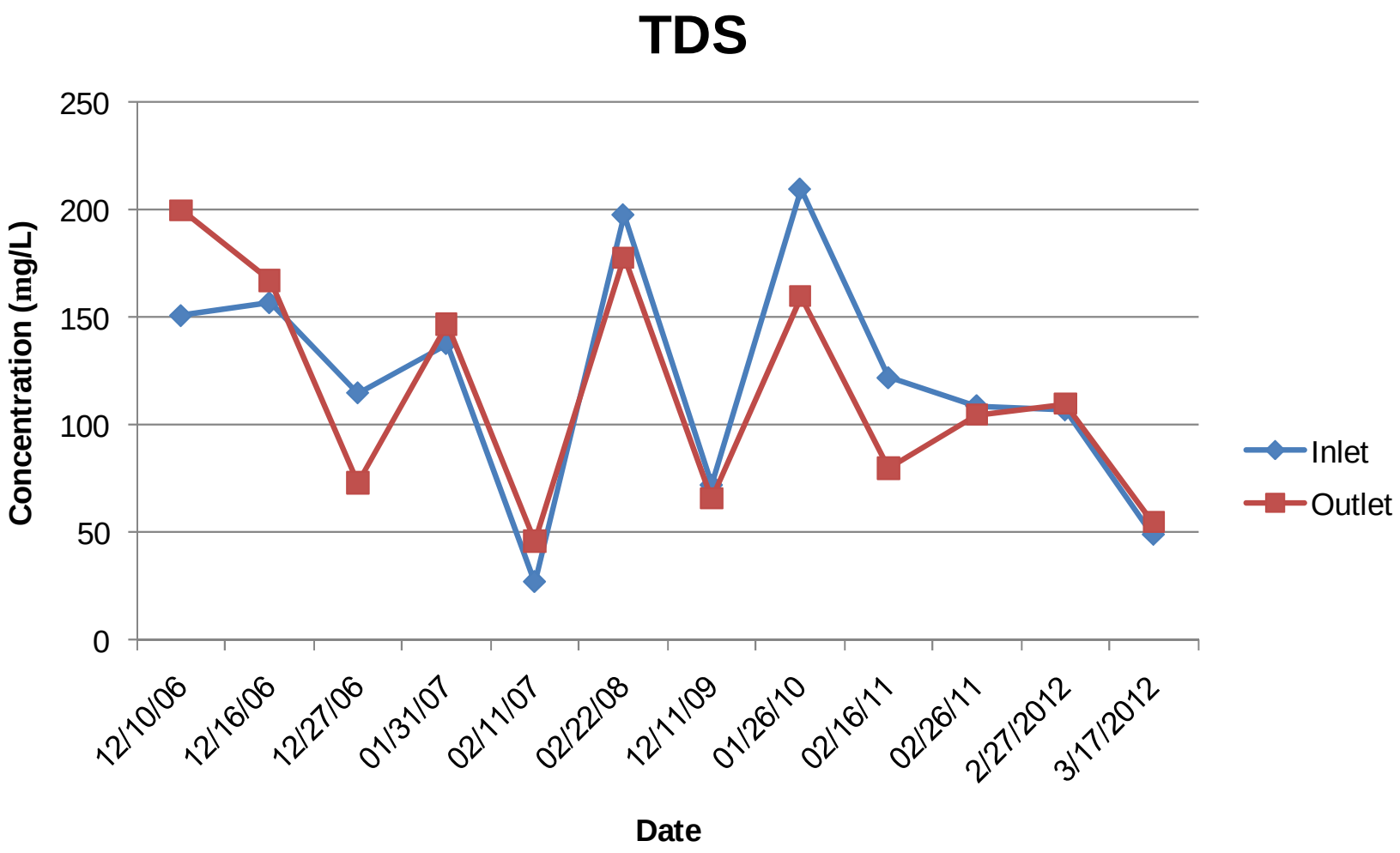

Figure 3-14. Total Hardness (as CaCO3) Results

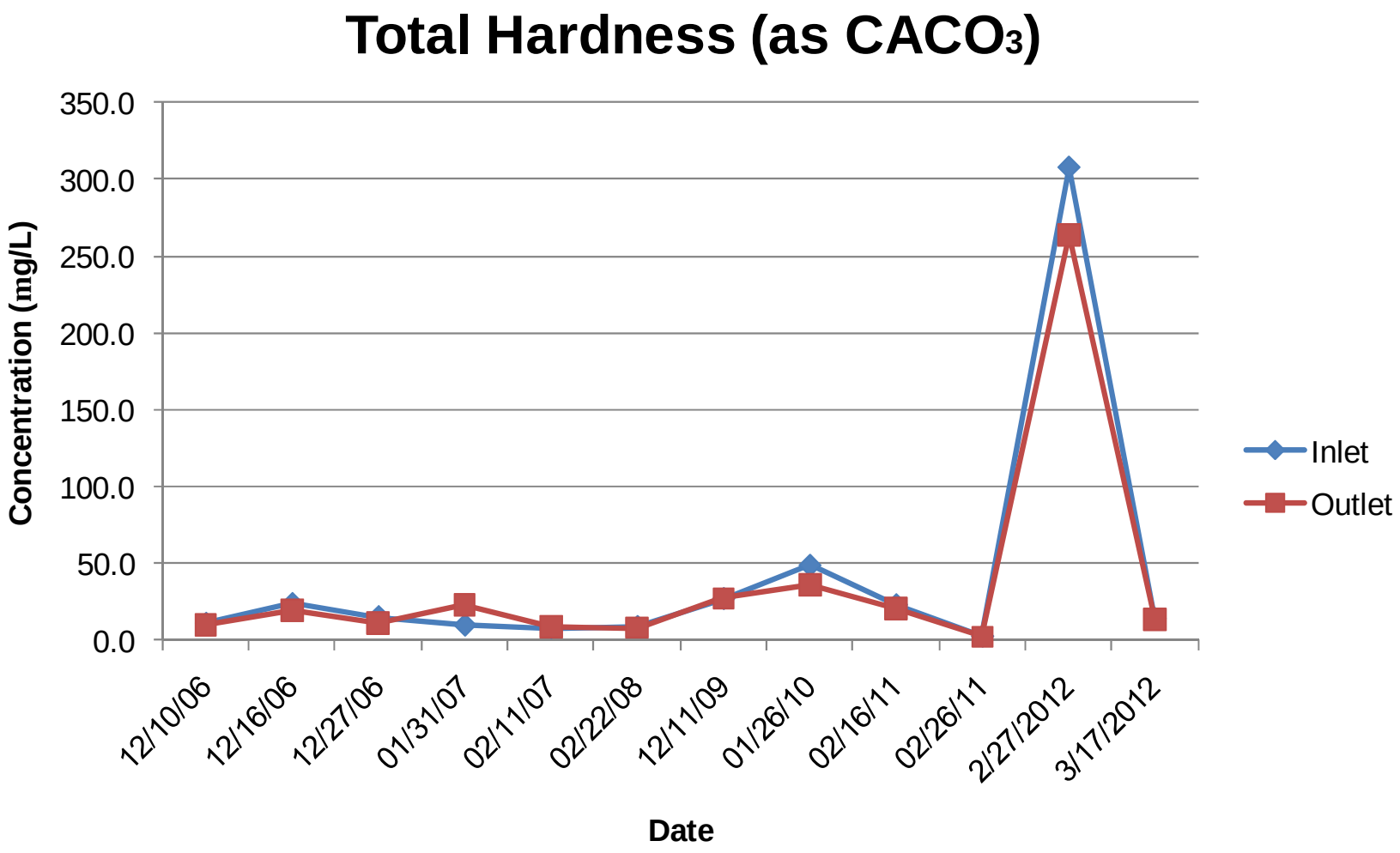

4.0 EFFECTIVENESS ASSESSMENT

As of March 2012, twelve storm events have been monitored at the WQTF. During all events outlet flow velocity was reduced in effluent measurements. Table 4-1 and Figure 4-1 detail the percentages of storms, since 2006, where load reductions were observed for those constituents whose concentrations were above method detection limits at both outlet and inlet of the WQTF. The results indicate that some load reductions did occur for the detected constituents at least some of the time. On the average (based on median values), flow rate through the facility was reduced by 48% and temperature by 1%. There were also marked reductions in orthophosphate as P (13%), specific conductance (10%), total hardness (8%), dissolved copper (7%), dissolved lead (4%), turbidity (3%), and total phosphorus (2%). The median dissolved oxygen concentration increased by 4%. In addition, a significant reduction in TSS (99%) occurred during the one storm event (the 2/22/2008 storm) characterized by a high TSS concentration indicating that the WQTF was functioning properly.

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Table 4-1.
Percent Load Reduction Success

Analyte	# of Storms Monitored with Results > ND	# of Storms with Load Reductions	Percent of Storms with Reduced Loads	Median % Load Reduction	Comments
Cadmium, Dissolved (µg/L)	5	1	20%	8%	
Chlorpyrifos (ng/L)	0	0	NA	NA	All Results = ND
Diazinon (ng/L)	0	0	NA	NA	All Results = ND
Malathion (ng/L)	0	0	NA	NA	All Results = ND
Oil and Grease (mg/L)	7	1	14%	< 0%	
DO (mg/L)	12	2	17%	4% increase	
Zinc, Dissolved (µg/L)	11	5	45%	< 0%	
Total Suspended Solids (mg/L)	11	5	45%	0%	
pH	9	4	44%	NA	
Nitrate as N (mg/L)	11	6	55%	0%	
Lead, Dissolved (µg/L)	8	4	50%	4%	
Copper, Dissolved (µg/L)	11	7	64%	7%	
MBAS (mg/L)	11	7	64%	0%	
Turbidity (NTU)	12	6	50%	3%	
Phosphorus (mg/L)	12	8	67%	2%	
Total Dissolved Solids (mg/L)	12	8	67%	0%	
Dissolved Organophosphate as P (mg/L)	11	8	73%	13%	
Total Hardness as CaCO3 (mg/L)	9	6	67%	8%	
Temp (°C)	12	6	50%	1%	
Specific Conductance (µs/cm)	12	7	58%	10%	
Flow (cfs)	12	12	100%	48%	

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Figure 4-1. WQTF Load Reductions

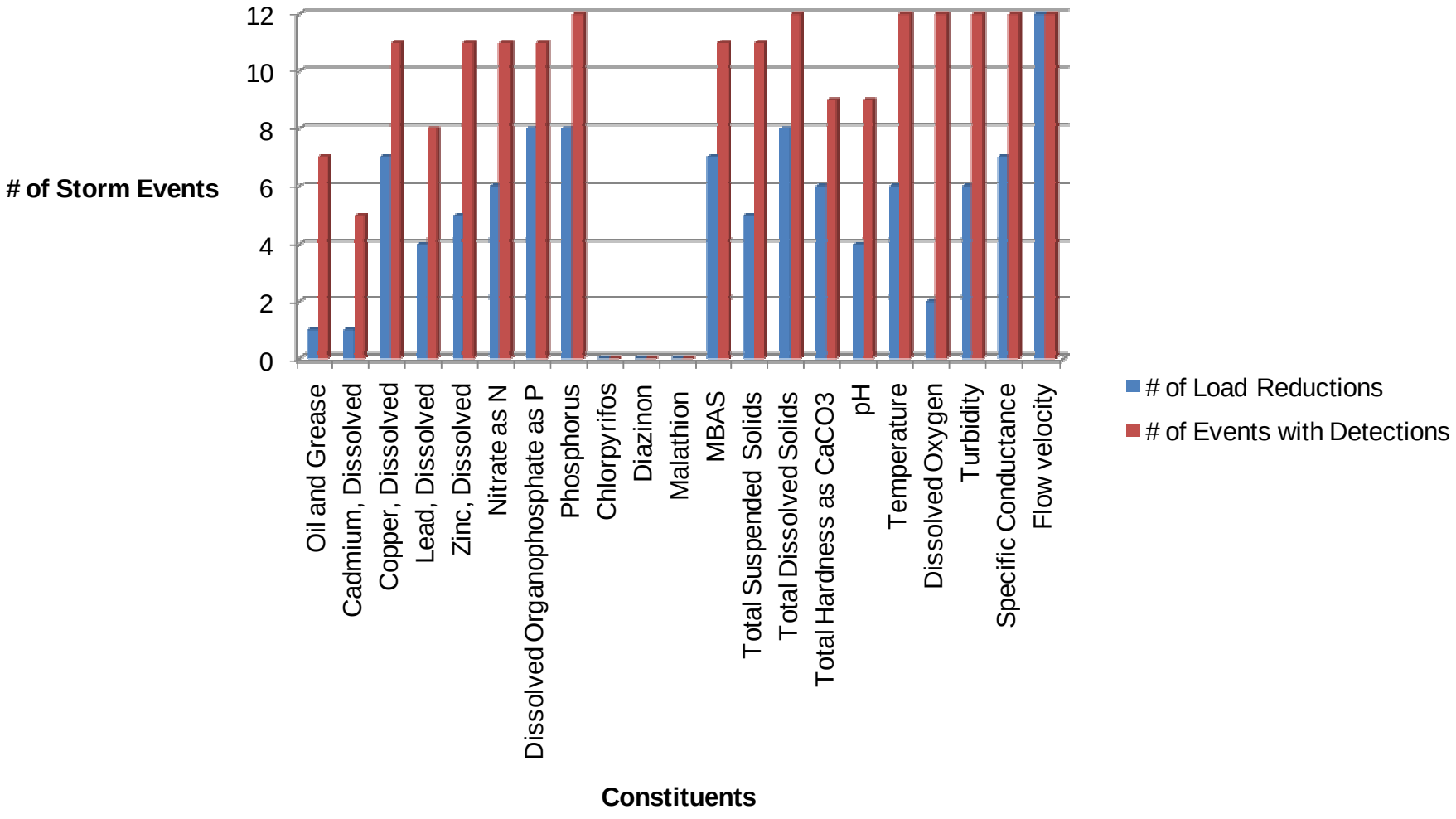

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Continued sampling twice annually for an additional one year is recommended, as set forth in the LTMP. Upon completion, at the fifth-year of WQTF long-term monitoring, effectiveness assessment should be conducted, per the LTMP whereby constituent concentrations are compared to parameter benchmark values to better assess pollutant removal effectiveness of the WQTF.

In summary, based on current and historical monitoring data, the following actions are recommended:

- Continue sampling for one additional year;

  and

- Include BMP probability analysis and constituent concentration comparisons to parameter benchmark values in the fifth-year report.

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5.0 REFERENCES

Weston Solution. 2007a. *McClellan-Palomar Airport Water Quality Treatment Facility Effectiveness Assessment Monitoring Final Report.* Prepared for Rick Engineering.

Weston Solutions. 2007b. *County of San Diego McClellan-Palomar Airport Water Quality Treatment Facility Long-Term Monitoring and Maintenance Plan Water Quality Control Board Grant Agreement No. 04-201-559-0*. Prepared for the County of San Diego.

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APPENDIX A

LABORATORY ANALYTICAL REPORTS

Appendix A has been omitted, to conserve space. Please contact the County of San Diego for access to this Appendix.

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TITLE: AGUA HEDIONDA CREEK RESTORATION SR-02+
ID #: CHU-WQA16

ACTIVITY DESCRIPTION

The Agua Hedionda Watershed Management Plan (AHWMP) recommends several stream restoration projects to improve habitat and water quality within the watershed. The SR-02 project was developed to a 10% design as part of the AHWMP. The project was originally intended to support the mitigation needs of the city's sewer program. In looking at the opportunity closer, the City expanded the boundaries and scope of the SR-02 project to include a longer section of the Creek located entirely on public lands.

The Agua Hedionda Creek Restoration Project will begin at the Buena Vista Park property boundary with the Dawson Preserve continuing upstream to the property boundary with Green Oak Ranch (approximately 3,800 linear feet). Planned project highlights include: streambed stabilization and restoration, side slope restoration, removal of non-native plants and revegetation with native plants, rehabilitation of a dying Oak woodland, dry weather diversion of a 60" storm drain outfall, and a new bridge on the east end. The goals of the project are: (1) to enhance the natural environment for wildlife by restoring the riparian area as part of a larger wildlife corridor, while providing the community with an opportunity to observe the local wildlife and enjoy the trail system, and (2) to reduce the bed and bank erosion occurring in the Creek and achieve a stable balance representative of the appropriate sediment transport for the system.

TMDL APPLICABILITY

The Agua Hedionda Lagoon was recently de-listed for sedimentation/siltation, however extensive hydromodification is evident in this reach of the Creek. There is no direct applicability to a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

1) Preliminary Engineering Design: FY 2010, FY 2011 (Planning - Complete)
2) Final Engineering Design and Permitting: FY 2013, FY 2014 (Planning - Pending Funding)
3) Construction: FY 2014, FY 2015 (Implementation - Pending Funding)

LEAD WATERSHED COPERMITTEE

- City of Vista

OTHER PARTICIPATING ENTITIES

- Buena Sanitation District, County Water Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies sediment as a high priority water quality pollutant in the Agua Hedionda Creek Hydrologic Area (904.3). This project is designed to mitigate the effects of hydromodification in the Creek thereby reducing sediment loading downstream.

EFFECTIVENESS MEASUREMENTS

The effectiveness assessment of the project has not been completely developed at this time. As the final design progresses, the City will evaluate the most feasible methods to determine the effectiveness of the project. Some potential measures are provided below as examples which may or may not be incorporated into the final activity design.

Potential effectiveness methods include:

1) Monitoring conducted over time at the existing Mass Loading Station may provide data to compare historical loading and trend data for sedimentation as measured by TSS and turbidity.
2) Monitoring conducted over time at bioassessment stations within Agua Hedionda Creek may provide historical, trend, and current data useful in assessing the activity.

Potential assessment measures related to these methods include:

1) Overall reduction in sediment loading to Agua Hedionda Lagoon over time (Level 4, Level 6).
2) Overall improvement in benthic macro-invertebrate community over time in the project area.
3) Removal of invasive vegetation from the Creek (Level 1).

TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION
ID #: CHU-WQA17

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

Activity during FY 2009-2010 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In

addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY 2010-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

The Fallbrook Sales event took place at Fallbrook Village Square on September 26, 2010, from 9 a.m. until 1 p.m. Upon completion of the event 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County. While no event was hosted in the Carlsbad Watershed, eight participants from the watershed purchased rain barrels and signed the maintenance agreement.

ACTIVITY IMPLEMENTATION FY 2011-12

During FY 2011-12, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Survey results will be summarized in FY 12-13. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Additional events are being considered for implementation in FY 2013-14.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Luis Rey Watershed Council

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes during FY 2011-12 were achieved through completion of the 50 telephone surveys conducted. Future implementation will include additional effectiveness measurements.

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TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - PARKS COMPONENT**
ID #: **CHU-WQA18**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a plan for municipal park inspection and management activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" component activities will not change from year to year and focus on MS4 Permit compliance-based activities. "Enhanced" component activities are additional activities committed to by the USMC Watershed Copermittees and will be adapted as new information becomes available.

The San Diego Municipal MS4 Permit requires Copermittees to carry out a variety of mandated inspection, education, best management practices (BMPs) and enforcement activities at facilities, including municipal park facilities throughout the San Diego region. These core programs are intended to: 1) assess the effectiveness of using BMPs when engaging in potential pollutant generating activities of municipal park facilities to receiving waters, and 2) to identify and characterize sources of specific pollutants in urban runoff discharges. The County of San Diego and the City of Escondido in FY 2011-12 had no municipal park facilities in the watershed. The City of San Marcos currently has 32 active municipal parks in the watershed with one park under construction.

In addition to the core activities the USMC Watershed Copermittees will conduct enhanced assessment, collaborative outreach, and inspection activities intended to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify watershed priorities for management action. Enhanced assessment, outreach, and inspection activities are only conducted by San Marcos with the results shared collaboratively with the other watershed jurisdictions. These enhanced activities include a watershed-wide focused investigation by San Marcos of municipal park facility BMPs, irrigation practices, and fertilizer practices to improve focus on watershed issues of concern, and a shared commitment to collaboratively review and analyze watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges. Enhanced activities also included a city-wide preliminary assessment of fertilizer use and irrigation practices completed in FY 2009-10. Each year in the activity implementation sections (below) the USMC Watershed Copermittees will report on the activities conducted. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Program

All elements of the core program were completed. All municipal park and mini-park facilities were inspected. The facility locations, inspection results, and corrective actions are included in Section 4.0 of the City of San Marcos FY 2009-10 JURMP Annual Report. The City maintains a Stormwater Pollution Prevention Plan (SWPPP) with BMPs for parks, including outreach and application information. A summary of the 29 active parks are included in the table below.

Table 1. Summary of Annual FY10 Stormwater Inspections for Municipal Parks

Municipal Park	Inspection Date	Corrective Actions Identified	Corrective Actions Completed
Alder Park	3/3/10	No	N/A
Amigo Park	6/24/10	No	N/A
Bradley Park	2/26/10	No	N/A
Cerro De Las Posas Park	5/24/10	Yes	Yes
Creek View Park	6/24/10	No	N/A
Double Peak Park	4/9/10	No	N/A
Discovery Creek Children's Park	6/24/10	No	N/A
Discovery Meadows	6/25/10	No	N/A
Foothills Park	6/24/10	No	N/A
Helen Bougher Park	2/26/10	No	N/A
Hollandia Park	5/26/10	Yes	Yes
Jack's Pond Park	5/3/10	Yes	Yes
Knob Hill Park	5/18/10	Yes	Yes
Discovery / Lakeview Park	6/23/10	Yes	Yes
Laurels Park	6/25/10	No	N/A
Mission Sports Park	In Construction	N/A	N/A
Montiel Park	5/18/10	Yes	Yes
Mulberry Park	3/26/10	No	N/A
Optimist Park	6/25/10	No	N/A
Pebblestone Park	6/24/10	No	N/A
Quail Hills Park	6/22/10	No	N/A
Regency Park	6/25/10	No	N/A
San Elijo Hills Park	4/9/10	Yes	Yes
Santa Fe Hills Mini Park	6/24/10	No	N/A
Simmons Family Park	5/24/10	No	N/A
Summer Hill / Bel Espirit Park	6/22/10	No	N/A
Sunset Park	5/24/10	Yes	Yes
Valley View Park	6/24/10	No	N/A
Walnut Grove Park	5/25/10	No	N/A
Woodland Park	3/18/10	No	N/A

Enhanced Program:

- **County of San Diego Municipal Park Enhanced Activities** – In FY 2009-10 there were no County municipal park facilities.
- **City of San Marcos Municipal Park Enhanced Activities** – The City of San Marcos completed a baseline assessment on fertilizer use, irrigation practices, and water sources in FY 2009-10. Additional information on the preliminary baseline analysis is available in the accompanying attachments. The City keeps a log of fertilizer on each park and the basic fertilizer application and management practices were identified and assessed. Irrigation practices and sources were also identified. The City actively reviews fertilizer use and application to reduce cost and improve focused delivery to those facilities. In FY 2009-10, the City made a switch in its fertilizer product usage to Nature Safe. This switch will be assessed in conjunction with applicable downstream data available in FY 2010-11.
- **City of Escondido Dry Weather Monitoring Enhancement - Municipal Park Enhanced Activities** – In FY 2009-10 there were no City of Escondido municipal park facilities.

ACTIVITY IMPLEMENTATION FY 2010-11

Core Program:

All elements of the core program were completed. All municipal park and mini-park facilities were inspected. The facility locations, inspection results, and corrective actions are included in Section 4.0 of the City of San Marcos FY 2010-11 JURMP Annual Report. The City maintains a Stormwater Pollution Prevention Plan (SWPPP) with BMPs for parks, including outreach and application information. A summary of the 32 active parks are included in the table below.

Table 2. Summary of Annual FY11 Stormwater Inspections for Municipal Parks

Municipal Park	Inspection Date	Corrective Actions Identified	Corrective Actions Completed
Alder Park	6/3/11	No	N/A
Amigo Park	6/3/11	No	N/A
Bradley Park	5/23/11	No	N/A
Buelow Park	6/8/11	No	N/A
Cerro De Las Posas Park	6/6/11	No	N/A
Creek View Park	6/21/11	No	N/A
Civic Center Park	6/3/11	No	N/A
Double Peak Park	6/30/11	No	N/A
Discovery Creek Children's Park	6/25/11	No	N/A
Discovery Meadows	6/3/11	No	N/A
Foothills Park	6/3/11	No	N/A
Helen Bougher Park	6/6/11	No	N/A
Hollandia Park	6/8/11	No	N/A

Municipal Park	Inspection Date	Corrective Actions Identified	Corrective Actions Completed
Jack's Pond Park	6/30/11	No	N/A
Knob Hill Park	6/8/11	No	N/A
Discovery / Lakeview Park	6/25/11	No	N/A
Laurels Park	6/3/11	No	N/A
Mission Sports Park	5/23/11	No	N/A
Montiel Park	6/8/11	Yes	Yes
Mulberry Park	6/6/11	No	N/A
Optimist Park	6/9/11	No	N/A
Pebblestone Park	6/6/11	No	N/A
Quail Hills Park	6/9/11	No	N/A
Regency Park	6/9/11	No	N/A
San Elijo Hills Park	6/30/11	No	N/A
Santa Fe Hills Mini Park	6/6/11	No	N/A
Simmons Family Park	6/6/11	No	N/A
Summer Hill / Bel Espirit Park	6/6/11	No	N/A
Sunset Park	6/6/11	No	N/A
Valley View Park	6/9/11	No	N/A
Walnut Grove Park	6/6/11	No	N/A
Woodland Park	6/8/11	No	N/A

Enhanced Program:

- **County of San Diego Municipal Park Enhanced Activities** – In FY 2010-11 there were no County municipal park facilities.
- **City of San Marcos Municipal Park Enhanced Activities** – The City of San Marcos continued to assess fertilizer use, irrigation practices, and water sources in FY 2010-11. The City maintains its current practices of logging fertilizer quantities and application methods at each park within the City. Improvements to irrigation practices are ongoing by utilizing computer based watering controller systems to reduce the amount of water needed to irrigate the parks. In FY 2010-11, the City is utilizing the organic based Nature Safe fertilizer product at all City parks. The City of San Marcos Public Works department has begun to post signs at the parks that identifies that the Nature Safe product is being used.
- **City of Escondido Municipal Park Enhanced Activities** – In FY 2010-11 there were no City of Escondido municipal park facilities.

ACTIVITY IMPLEMENTATION FY 2011-12

Core Program:

All elements of the core program were completed. All municipal park and mini-park facilities were inspected. The facility locations, inspection results, and corrective actions are included in Section 4.0 of the City of San Marcos FY 2011-12 JURMP Annual Report. The City maintains a Stormwater Pollution Prevention Plan (SWPPP) with BMPs for

parks, including outreach and application information. A summary of the 32 active parks are included in the table below.

Table 3. Summary of Annual FY12 Stormwater Inspections for Municipal Parks

Municipal Facility	Inspection Date	Corrective Actions Identified	Corrective Actions Completed
Alder Glen Park	6/7/12	No	N/A
Amigo Park	6/26/12	No	N/A
Bradley Park	6/13/12		
Buelow Park	6/712	No	N/A
Cerro De Las Posas Park	6/26/12	Yes	Yes
Civic Center	6/28/12	No	N/A
Creek View Park	6/28/12	No	N/A
Double Peak Park	6/12/12	No	N/A
Discovery Creek Children's Park	6/28/12	No	N/A
Discovery Meadows Park	6/12/12	No	N/A
Foothills Park	6/26/12	No	N/A
Helen Bougher Park	6/5/12	No	N/A
Hollandia Park	6/21/12	Yes	Yes
Jack's Pond Park	6/7/12	No	N/A
Knob Hill Park	6/7/12	No	N/A
Discovery / Lakeview Park	6/12/12	Yes	Yes
Laurels Park	6/29/12	No	N/A
Mission Sports Park	6/18/12	No	N/A
Montiel Park	6/7/12	No	N/A
Mulberry Park	6/12/12	No	N/A
Optimist Park	6/29/12	No	N/A
Pebblestone Park	6/7/12	No	N/A
Quail Hills Park	6/29/12	No	N/A
Regency Park	6/29/12	No	N/A
San Elijo Hills Park	6/4/12	Yes	Yes
Santa Fe Hills Mini Park	6/7/12	No	N/A
Simmons Family Park	6/13/12	No	N/A
Summer Hill / Bel Espirit Park	6/7/12	No	N/A
Sunset Park	6/13/12	Yes	N/A
Valley View Park	6/29/12	No	N/A
Walnut Grove Park	6/12/12	No	N/A
Woodland Park	6/5/12	Yes	In Progress

Enhanced Program:

- **County of San Diego Municipal Park Enhanced Activities** – In FY 2011-12 there were no County municipal park facilities.

- **City of San Marcos Municipal Park Enhanced Activities** – The City of San Marcos continued to assess fertilizer use, irrigation practices, and water sources in FY 2011-12. The City maintains its current practices of logging fertilizer quantities and application methods at each park within the City. Improvements to irrigation practices are ongoing by utilizing computer based watering controller systems to reduce the amount of water needed to irrigate the parks. In FY 2011-12, the City continues to utilize the organic based Nature Safe fertilizer product at all City parks. The City of San Marcos Public Works department continued to post signs at the parks that identifies that the Nature Safe product is being used.
- **City of Escondido Municipal Park Enhanced Activities** – In FY 2011-12 there were no City of Escondido municipal park facilities.

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 4. Implementation Schedule

Planned Tasks	FY 2010-11	FY 2011-12	Status
Core Collaborative Municipal Park Activities	All USMC watershed municipal park facilities inspected. Of the 32 facilities, no facilities were identified as potential corrective action sites.	All USMC watershed municipal park facilities inspected. Of the 32 facilities, 6 facilities were identified as potential corrective action sites. Five of the six facilities have completed corrective actions. Corrective actions are ongoing for the remaining facility.	Ongoing
County of San Diego Enhanced Park Activities	The County of San Diego had no municipal parks in the watershed	The County of San Diego had no municipal parks in the watershed	TBD
City of San Marcos Enhanced Park Activities	Municipal park facility baseline issues identified and assessed	Municipal park facility baseline issues identified and assessed	Ongoing
City of Escondido Enhanced Park Activities	The City of Escondido had no municipal parks in the watershed	The City of Escondido had no municipal parks in the watershed	TBD

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by assessing the completion of municipal park activities as designated in the USMC Nutrient Management Plan and outlined updates to the activity sheets in the WURMP Annual Report (Level 1).

Table 5. Effectiveness Assessment

Planned Tasks	FY 2010-11	FY 2011-12	Status
Core Collaborative Municipal Parks Program	Level 1 Assessment Completed	TBD	Ongoing
County of San Diego Enhanced Parks Activities	N/A	N/A	Ongoing
City of San Marcos Enhanced Parks Activities	Level 1 Assessment Completed	TBD	Ongoing
City of Escondido Enhanced Parks Activities	N/A	N/A	Ongoing

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TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - GOLF COURSES COMPONENT**
ID #: **CHU-WQA19**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) emphasizes the need for oversight of golf course activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" activities focus on MS4 Permit compliance-based actions and will not change from year to year. "Enhanced" activities are additional activities above and beyond baseline MS4 Permit requirements and will be adapted as new information becomes available.

The San Diego MS4 Permit requires Copermittees to carry out a variety of mandated activities related to existing development within each jurisdiction. Core activities performed under the individual jurisdictions' JURMPs are outlined in the USMC Nutrient Management Plan Table 4.5 (see CHU-WQA12). For example, each Copermittee will enforce its local ordinance as it becomes aware of non-compliance with discharge prohibitions and minimum Best Management Practices (BMPs) requirements at golf courses. Compliance is determined through both active inspection of golf course operations and response to public complaints about illegal discharges or insufficient BMPs.

Enhanced activities at golf courses include each jurisdiction elevating the inspection priority for golf courses in the USMC Watershed. It is anticipated that increased inspection and oversight will result in appropriate BMPs being tailored to each site based on the results from annual commercial inspections, complaint investigations, and other information. Copermittees will also collaborate on golf course oversight where applicable to enhance each Copermittee's ability to identify and eliminate pollutant discharges. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Golf Course Facility Program:

All elements of the core golf course program were completed. The County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed. Three of the four golf courses in the watershed were inspected during FY 2009-10. The remaining facility is scheduled for inspection in FY 2010-11. Three of the four golf course facilities were notified of existing requirements and appropriate BMPs. When applicable, notices of violation were issued and follow up actions were taken. Golf course inspection results are included in Table 1 below.

Table 1. FY 2009-10 Golf Course Inspections

Golf Course	FY 2009-10 Inspection	Notice of Violation	Follow Up	Enforcement
Lake San Marcos 1 - Country Club (County)	Yes	Yes	Corrective Active Plan Required	Ongoing
Lake San Marcos 2 - Executive Course (County)	Yes	Yes	Corrective Active Plan Required	Ongoing
Twin Oaks Golf Course (San Marcos)	Yes	Yes	Corrective Actions Prescribed	Ongoing
Escondido Country Club (Escondido)	FY 2010-11	TBD	TBD	TBD

City of San Marcos Existing Golf Course Enhancement Activities:
In addition to the core activities, the City of San Marcos initiated development of a focused questionnaire targeting specific nutrient generating golf course activities. The questionnaire form will be shared with the other jurisdictions and findings will be collaboratively explored in FY 2010-11.

ACTIVITY IMPLEMENTATION FY 2010-11
Core Golf Course Facility Program:
All elements of the core golf course program were completed. The County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed. All four golf courses in the watershed were inspected during FY 2010-11. Golf course facilities were notified of existing requirements and appropriate BMPs. When applicable, notices of violation were issued and follow up actions were taken. Golf course inspection results are included in Table 2 below.

Table 2. FY 2010-11 Golf Course Inspections

Golf Course	FY 2010-11 Inspection	Notice of Violation	Follow Up	Enforcement
Lake San Marcos 1 - Country Club (County)	Yes	Yes	Corrective Actions Prescribed	Compliant
Lake San Marcos 2 - Executive Course (County)	Yes	No	Compliant	Compliant
Twin Oaks Golf Course (San Marcos)	Yes	No	Compliant	Compliant
Escondido Country Club (Escondido)	Yes	Yes	Corrective Actions Prescribed	Compliant

City of San Marcos Existing Golf Course Enhancement Activities:
The City of San Marcos completed the work associated with the development of the focused questionnaire that targeted specific nutrient generating golf course activities.

ACTIVITY IMPLEMENTATION FY 2011-12

Core Golf Course Facility Program:

All elements of the core golf course program were completed. The County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed. Four golf courses in the watershed were inspected during FY 2011-12. Golf course facilities were notified of existing requirements and appropriate BMPs. When applicable, notices of violation were issued and follow up actions were taken. Golf course inspection results are included in Table 3 below.

Table 3. FY 2011-12 Golf Course Inspections

Golf Course	FY 2011-12 Inspection	Notice of Violation	Follow Up	Enforcement
Lake San Marcos 1 - Country Club (County)	Yes	Yes	Yes	Ongoing
Lake San Marcos 2 - Executive Course (County)	Yes	No	Compliant	Compliant
Twin Oaks Golf Course (San Marcos)	Yes	No	Compliant	Compliant
Escondido Country Club (Escondido)	Yes	Yes	Compliant	Compliant

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 4. Implementation Schedule

Planned Tasks		County		San Marcos		Escondido	
		FY 2010-11	FY 2011-12	FY 2010-11	FY 2011-12	FY 2010-11	FY 2011-12
Core Program	Update inventory	Yes	Yes	Yes	Yes	Yes	Yes
	Elevate golf course inspection priority in USMC Watershed	Yes	Yes	Yes	Yes	Yes	Yes
	Notify golf courses of applicable BMP requirements	Yes	Yes	Yes	Yes	Yes	Yes
	Conduct inspections at golf courses in USMC Watershed	Yes	Yes	Yes	Yes	Yes	Yes
	Conduct enforcement as appropriate	Yes	Yes	Yes	Yes	Yes	Yes
Enhanced Program	Develop golf course questionnaire on nutrient generating activities	N/A	N/A	Yes	N/A	N/A	N/A

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Golf Course Facilities in Watershed

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the completion of each Copermittees' core golf course program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core golf course program were completed: the County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed: four golf courses in the watershed were inspected during FY 2011-12; two notices of violation were issued and follow up actions were implemented; four golf course facilities were notified of existing requirements and appropriate BMPs (Level 1 Outcomes).

Table 5. Effectiveness Assessment

Planned Tasks	FY 2009-10	FY 2010-11	FY 2011-12	Status
County of San Diego Core Program	Level 1 Assessment Completed	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
City of San Marcos Core Program	Level 1 Assessment Completed	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
City of Escondido Core Program	Level 1 Assessment Completed	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
City of San Marcos Golf Course Questionnaire	Level 1 Assessment Completed	Level 1 Assessment Completed	Level 1 Assessment Completed	Completed

TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - AGRICULTURE COMPONENT**
ID #: **CHU-WQA20**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a strategy for addressing the impacts of agricultural activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" activities will not change from year to year and focus on MS4 Permit compliance-based activities. "Enhanced" activities are additional activities committed to by the USMC Watershed Copermittees and will be adapted as new information becomes available.

The San Diego MS4 Permit requires Copermittees to carry out a variety of mandated activities related to agricultural operations within each jurisdiction. Core agriculture-related oversight activities performed under the individual jurisdictions' JURMPs are outlined in the USMC Nutrient Management Plan Table 4.3 (see CHU-WQA12). Each Copermittee will enforce its local ordinance as it becomes aware of non-compliance with discharge prohibitions and minimum Best Management Practices (BMPs) requirements for agricultural activities. Compliance is determined through both active inspection of agricultural operations and responses to public complaints about illegal discharges or insufficient BMPs.

Enhanced agricultural activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted agricultural activities in high priority areas.

It is important to note that discharges from agricultural and nursery operations are directly regulated by the RWQCB pursuant to a conditional waiver of waste discharge requirements. In order to be eligible for Conditional Waiver No. 4, agricultural and nursery operator discharges must: 1) implement minimum management measures and BMPs to minimize or eliminate pollutant discharges, 2) perform annual self-assessments and training, 3) form or join a monitoring group no later than December 31, 2010, and 4) file a notice of intent with the RWQCB to be part of an individual or group monitoring program no later than January 1, 2011.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Agricultural Program:

All elements of the core agricultural program were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to agricultural land uses can be found in Table 4.3 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to, the enforcement of local ordinances with respect to non-compliance of discharge prohibitions, enforcement of

minimum BMP requirements at commercial agriculture facilities, and periodic inspection of commercial agricultural properties. Copermittees are required to record all instances of non-compliance, enforcement measures, and corrective actions at agriculture-related properties. Documentation can be found in the respective jurisdictions' FY 2009-10 JURMP Annual Reports.

Enhanced Agriculture Program:

- **County of San Diego Agriculture Practices Review** – The County of San Diego undertook efforts to better understand and address the impacts of agricultural activities in the immediate vicinity of Lake San Marcos. County inspectors worked with the professional grove management companies active in the Lake San Marcos area to collect information on crop type, irrigation regimes, fertilization techniques, and existing BMP implementation. This information was provided to experts at the Farm and Home Advisor for review and consultation. Review of current agricultural practices suggests that area grove management companies are implementing practices consistent with industry standards.
- **City of San Marcos Agriculture Activities Enhancement** – In addition to core activities, the City of San Marcos elevated the inspection priority of agricultural properties within the USMC and initiated development of a focused questionnaire targeting specific nutrient generating agricultural activities. The questionnaire form will be shared with the other jurisdictions and findings will be collaboratively explored in FY 2010-11. Based on the FY 2009-10 inspection results, and the January 2011 SDRWQCB NOI requirements for agricultural businesses, San Marcos will update its current inventory, outreach watershed issues, and identify key nutrient generating practices and recommended appropriate BMPs. FY 2009-10 agriculture business inspections were included in the FY 2009-10 Annual Report.
- **City of Escondido Agriculture Activities Enhancement** – The City of Escondido has no agricultural businesses in the Upper San Marcos Creek Watershed.

<u>ACTIVITY IMPLEMENTATION FY 2010-11</u>

Core Monitoring Program:

All elements of the core agricultural program were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to agricultural land uses can be found in Table 4.3 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances with respect to non-compliance of discharge prohibitions, enforcement of minimum BMP requirements at commercial agriculture facilities, and continued to periodic inspection of commercial agricultural properties. Copermittees are required to record all instances of non-compliance, enforcement measures, and corrective actions at agriculture-related properties; documentation can be found in the respective jurisdictions' FY 2010-11 JURMP Annual Reports.

Enhanced Agriculture Program:

- **County of San Diego Agriculture Practices Review** – The County of San Diego has taken efforts to better understand and address the impacts of agricultural activities in the immediate vicinity of Lake San Marcos. During FY 2010-11, educational outreach efforts were conducted and available to professional grove management companies active in the Lake San Marcos area. Attendees of outreach efforts were provided BMP field guides for water quality and spill kits. The County continues to work with the professional grove management companies active in the Lake San Marcos area to collect information on crop type, irrigation regimes, fertilization techniques, and existing BMP implementation. Previous review of this information by the experts at Farm and Home Advisor suggested that area grove management companies are implementing practices consistent with industry standards.
- **City of San Marcos Agriculture Activities Enhancement** – The City of San Marcos completed the work associated with the development of the focused questionnaire that targeted specific nutrient generating agricultural activities. A copy of the questionnaire form that was utilized is provided in the FY 2011 Carlsbad WURMP Annual Report.
- **City of Escondido Agriculture Activities Enhancement** – The City of Escondido has no agricultural businesses in the Upper San Marcos Creek Watershed.

ACTIVITY IMPLEMENTATION FY 2011-12

Core Monitoring Program:

All elements of the core agricultural program were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to agricultural land uses can be found in Table 4.3 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances with respect to non-compliance of discharge prohibitions, enforcement of minimum BMP requirements at commercial agriculture facilities, and continued to periodic inspection of commercial agricultural properties. Copermittees are required to record all instances of non-compliance, enforcement measures, and corrective actions at agriculture-related properties; documentation can be found in the respective jurisdictions' FY 2011-12 JURMP Annual Reports.

Enhanced Agriculture Program:

- **County of San Diego Agriculture Practices Review** – The County of San Diego continues to implement actions to better understand and address the impacts of agricultural activities in the immediate vicinity of Lake San Marcos. The County continues to work with the professional grove management companies active in the Lake San Marcos area to collect information on crop type, irrigation regimes, fertilization techniques, and existing BMP implementation. Previous review of this information by the experts at Farm and Home Advisor suggested that area

grove management companies are implementing practices consistent with industry standards.

- **City of San Marcos Agriculture Activities Enhancement** – The City of San Marcos continued to elevate the inspection priority of agriculture based businesses within the USMC watershed. All agriculture based business have been placed on the City's high priority Industrial/Commercial inspection program and will continue to stay at a high priority level independent of inspection outcomes.
- **City of Escondido Agriculture Activities Enhancement** – The City of Escondido has no agricultural businesses in the Upper San Marcos Creek Watershed.

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 2009-10	FY 2010-11	FY 2011-12	Status
Core Agriculture Program	Completed	Completed	Implementation	Ongoing
County of San Diego Agricultural Practices Review	Completed	Completed	Implementation	Ongoing
City of San Marcos Agriculture Activities Enhancement	Completed	Completed	Completed	Ongoing
City of Escondido Agriculture Activities Enhancement	City of Escondido has no agricultural properties in USMC watershed	N/A	N/A	N/A

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Agricultural Property Owners within the USMC Waters
- Grove Management Companies

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to address water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the completion of each Copermittees' core agriculture program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core residential activities program were completed.

Enhanced agriculture program elements will be assessed through the program progress (Level 1 outcome) and the reporting of relevant metrics when applicable. Table 2 includes current assessment measures.

Table 2. Effectiveness Assessment

Planned Tasks	FY 2011-12	Outcome Level	Status
County of San Diego Agricultural Practices Review	Complete	Level 1	Ongoing
City of San Marcos Agriculture Activities Enhancement	Complete	Level 1	Ongoing
City of Escondido Agriculture Activities Enhancement	N/A	N/A	TBD

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TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - MONITORING COMPONENT**
ID #: **CHU-WQA21**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a plan for monitoring within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of monitoring activities. "Core" monitoring focuses on the compliance-based monitoring required by the San Diego Municipal MS4 Permit (Permit). "Enhanced" monitoring involves additional activities that the USMC Watershed Copermittees have committed to and will be adapted as new information and needs are identified.

Core Monitoring:

The Permit requires Copermittees to carry out a variety of mandated water quality monitoring activities throughout the San Diego region. These core programs are intended to: 1) assess the chemical, physical, and biological impacts to receiving waters resulting from urban runoff discharges, and 2) to identify and characterize sources of specific pollutants in urban runoff discharges. The Regional Receiving Waters and Urban Runoff Monitoring Program initially approved by the Regional Stormwater Copermittees did not include any monitoring stations in the USMC Watershed. However, a new Temporary Watershed Assessment Station (TWAS) was installed in San Marcos Creek, immediately upstream of Lake San Marcos, during FY 2010-11. The new TWAS station is located in the same location as the wet and dry weather data collection location conducted as a part of the enhanced monitoring activities described in the FY 2009-10 CHU-WQA21 activity sheet. The USMC Watershed Copermittees each conduct a Dry Weather Field Screening and Analytical Monitoring Program within their respective jurisdictions. Jurisdictional dry weather monitoring takes place between May 1 and September 30 each year and is designed to detect and eliminate illicit connections and illegal discharges to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow up investigations.

Enhanced Monitoring:

Enhanced monitoring is intended to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify watershed priorities for management action. Enhanced monitoring includes special monitoring projects to address identified needs, enhancements to existing jurisdictional monitoring programs to improve focus on watershed issues of concern, and a shared commitment to collaboratively reviewing and analyzing watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges. Enhanced activities will include jurisdiction-specific monitoring actions and collaborative projects. Each year in the activity implementation sections (below) the USMC Watershed Copermittees will report on the enhanced monitoring activities

conducted. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Monitoring:

Core Monitoring during FY 2009-10 consisted of the jurisdictional dry weather monitoring programs implemented individually by each Watershed Copermittee. A description of each jurisdiction's site locations, sampling dates, and results are included in their FY 2009-10 Jurisdictional Urban Runoff Management Program Annual Report.

Enhanced Monitoring:

- **Collaborative Watershed Monitoring Project** – The USMC Watershed Copermittees collaborated on the design of a special monitoring project to collect baseline information on flow, as well as nutrient and sediment loading, at various locations throughout the watershed (see table below). Monitoring was funded and implemented by the County of San Diego.

Table 1. Monitoring Station Locations

Station	Latitude	Longitude	Flow	Wet Weather	Dry Weather
LSM-05a	33.11959	-117.20581	Yes	No	No
LSM-05b	33.11900	-117.20531	Yes	No	No
LSM-04	33.11982	-117.20565	Yes	No	No
CAR-13	33.12012	-117.20997	Yes	Yes	No
CAR-14	33.11896	-117.20744	Yes	Yes	No
Discovery Street	33.13053	-117.20037	No	Yes	No
Via Vera Cruz	33.13166	-117.18687	Yes	No	Yes
Woodland Parkway	33.15404	-117.13048	Yes	Yes	Yes
Sycamore Drive	33.17965	-117.15254	Yes	Yes	Yes

- **County of San Diego Dry Weather Monitoring Enhancement** – The County supplemented its jurisdictional dry weather monitoring program by performing three separate sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos.
- **City of San Marcos Dry Weather Monitoring Enhancement** – In addition to core dry weather monitoring activities described in section 4.1.1.2 of USMC Nutrient Management Plan, the City of San Marcos will augment its core monitoring program with an additional 20 future monitoring locations to identify and characterize other sources of nutrients. Based on historic nutrient trend data, sites were selected to enhance the current inventory and mapped. A field assessment of all sites occurred and the total number of sites may be adjusted in accordance to field conditions. Focused monitoring will occur within the Twin

Oaks Valley area, San Marcos Creek, and near outlets of Phase II agencies and other key agencies. A Quality Assurance Project Plan (QAPP) following Surface Water Ambient Monitoring Program (SWAMP) protocols will be prepared for the focused nutrient monitoring effort. Data collection and monitoring is planned to occur during dry weather monitoring periods as well as outside the dry weather monitoring period. The enhanced monitoring data collection will begin in FY 2010-11. The City of San Marcos consultant has collaborated with the County of San Diego monitoring plan near CAR 13 through synchronized sampling along with the County's summer and winter monitoring sweeps and as appropriate during subsequent fiscal years. Data planned for collection in FY 2010-11 as part of this effort will be shared with the County to assist in the nutrient sweeps. Data collected by Escondido under their dry weather program will be coordinated and assessed.

- **City of Escondido Dry Weather Monitoring Enhancement** – The City of Escondido discussed regularly collaborating with each Copermittee in reviewing and analyzing the combined Copermittee dry weather data. It is anticipated this review will result in coordinated dry weather monitoring efforts during FY 2010-11 that will be conducted more than once during the dry weather monitoring season – an effort that would exceed the current Permit's core requirement. Through the core dry weather program the City of Escondido annually monitors the entire water course as it transverses through the city and monitors the effluent water as it travels into the next jurisdiction.
- **Volunteer Monitoring Program** – The County of San Diego began coordinating a volunteer resident monitoring program to assist in the collection of additional information on Lake San Marcos dissolved oxygen levels, temperature, and turbidity throughout the year. Lake San Marcos residents will conduct the monitoring from boats or kayaks with monitoring equipment purchased and provided by the County of San Diego. The County will develop sampling protocol guidance and will conduct a training session for resident volunteers in July 2010.

<u>ACTIVITY IMPLEMENTATION FY 2010-11</u>

Core Monitoring:

Core Monitoring during FY 2010-11 consisted of the jurisdictional dry weather monitoring programs implemented individually by each Watershed Copermittee. A description of each jurisdiction's site locations, sampling dates, and results are included in their FY 2010-11 Jurisdictional Urban Runoff Management Program Annual Report.

During FY 2010-11 a new Temporary Watershed Assessment Station (TWAS) was installed in San Marcos Creek, immediately upstream of Lake San Marcos. The new TWAS station is located in the same location as the FY 2009-10 wet and dry weather data collection efforts conducted as a part of the enhanced monitoring activities.

Enhanced Monitoring:

- **County of San Diego Dry Weather Monitoring Enhancement** – The County supplemented its jurisdictional dry weather monitoring program by performing three separate sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos.

- **Volunteer Monitoring Program** – The County of San Diego continued to facilitate a coordinated a volunteer resident monitoring program to assist in the collection of additional information on Lake San Marcos dissolved oxygen levels, temperature, and turbidity. Lake San Marcos resident volunteers regularly conduct bi-weekly monitoring from boats or kayaks with monitoring equipment purchased and provided by the County of San Diego. The County of San Diego developed volunteer data collection protocols, field data entry forms, and in which volunteers may store the data. To familiarize volunteers with the use of the sampling equipment, data recording, and appropriate sampling protocols the County offered an in-field training sessions for volunteers during in July of 2010.

- **City of San Marcos Dry Weather Monitoring Enhancement** – The City of San Marcos supplemented its jurisdictional dry weather monitoring program by implementing the additional monitoring activities to identify and characterize other sources of nutrients as described above. A QAPP was completed and the first round of additional monitoring began May 2011.

ACTIVITY IMPLEMENTATION FY 2011-12

Core Monitoring:

Core Monitoring during FY 2011-12 consisted of the jurisdictional dry weather monitoring programs implemented individually by each Watershed Copermittee. A description of each jurisdiction's site locations, sampling dates, and results are included in their FY 2011-12 Jurisdictional Urban Runoff Management Program Annual Report.

During FY 2011-12 and as in previous years, the Temporary Watershed Assessment Station (TWAS) was installed in San Marcos Creek, immediately upstream of Lake San Marcos. The TWAS station is located in the same location as the FY 2009-10 wet and dry weather data collection efforts conducted as a part of the enhanced monitoring activities.

Enhanced Monitoring:

- **County of San Diego Dry Weather Monitoring Enhancement** – The County supplemented its jurisdictional dry weather monitoring program by performing three separate sweeps of accessible pipes and conveyances that drain directly into Lake San Marcos. For additional details, please refer to Attachment A of this activity sheet.

- **Volunteer Monitoring Program** – The County of San Diego continued to facilitate a coordinated a volunteer resident monitoring program to assist in the collection of additional information on Lake San Marcos dissolved oxygen levels, temperature, and turbidity. Lake San Marcos resident volunteers regularly conduct bi-weekly monitoring from boats or kayaks with monitoring equipment purchased and provided by the County of San Diego. To view the volunteer data collection protocols, field data entry forms, and spreadsheet database developed by the County of San Diego for this effort, please refer to the FY 2011 Carlsbad WURMP Annual Report.

- **City of San Marcos Dry Weather Monitoring Enhancement** – The City of San Marcos continued to supplement its jurisdictional dry weather monitoring program by implementing the additional monitoring activities to identify and characterize other sources of nutrients as described above. For FY 2011-12, four rounds of dry weather sampling and one wet weather sampling event was completed. To review the results of the referenced monitoring events, please refer to Attachment B.

TMDL APPLICABILITY

This activity supports implementation of the voluntary collaborative process being coordinated by the Regional Water Quality Control Board in lieu of a TMDL or enforcement program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 2. Implementation Schedule

Planned Tasks	FY 2010-11	FY 2011-12	Status
Collaborative Watershed Monitoring Program	TWAS Station Sampling installed. For data please refer to the FY 2010-11 Copermittee Monitoring Report.	TWAS Station Sampling installed. For data please refer to the FY 2011-12 Copermittee Monitoring Report.	Ongoing
County of San Diego Enhanced Dry Weather Monitoring	3 Dry Weather Monitoring sweeps at 21 potential discharge points around the Lake	Dry Weather Monitoring sweeps will be conducted as needed.	Ongoing
City of San Marcos Enhanced Dry Weather Monitoring	Completed QAPP for Enhanced Data Collection, Assessment and Source Investigations as Required of Enhanced Dry Weather Monitoring Locations (HSA 904.52 and 904.53) Initiated First Round of Additional Monitoring.	Completed four additional rounds of dry weather monitoring and one round of wet weather monitoring.	Ongoing

Planned Tasks	FY 2010-11	FY 2011-12	Status
City of Escondido Enhanced Dry Weather Monitoring	Four sites sampled during dry weather conditions. One site location was dry.	Four sites sampled during dry weather conditions. One site location was dry.	Ongoing
County of San Diego Volunteer Monitoring	Training and implementation	Continued facilitation	Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- San Marcos
- Escondido

OTHER PARTICIPATING ENTITIES

- Lake San Marcos residents

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan Monitoring component seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will inform Copermittees on water quality issues and potential sources in the USMC Watershed. This information can then be used to guide future implementation efforts that may: 1) increase awareness of stakeholders; 2) change behavior and inform BMP implementation; 3) reduce pollutant loads in discharges; 4) improve water quality discharged from the MS4; and, 5) improve water quality in Lake San Marcos.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by assessing the completion of monitoring activities as designated in the USMC Nutrient Management Plan and outlined updates to the activity sheets in the WURMP Annual Report (Level 1).

Table 3. Effectiveness Assessment

Planned Tasks	FY 2009-10	FY 2010-11	FY 2011-12	Status
Collaborative Watershed Monitoring Program	Level 1 Assessment Completed	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
County of San Diego Enhanced Dry Weather Monitoring	Level 1 Assessment Completed	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
City of San Marcos Enhanced Dry Weather Monitoring	Level 1 Assessment Completed	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
City of Escondido Enhanced Dry Weather Monitoring	Level 1 Assessment Completed	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
County of San Diego Volunteer Monitoring	Planning Stages	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing

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CHU-WQA21

Attachment A

Dry Weather Monitoring Sweeps at Lake San Marcos

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DRY WEATHER MONITORING SWEEPS AT LAKE SAN MARCOS

INTRODUCTION

Lake San Marcos and San Marcos Creek are the primary waterbodies of the Upper San Marcos Creek (USMC) Watershed. The watershed is approximately 29 square miles and is comprised of two sub-watersheds: Twin Oaks hydrologic sub-area (HSA 904.53) and Richland hydrologic sub-area (HSA 904.52) The Twin Oaks HSA is located in the northern portion of the watershed and makes up 31% of the total watershed land area. The County of San Diego has the most land use jurisdiction in HSA 904.53, followed by the Cities of San Marcos and Escondido. HSA 904.53 is predominantly occupied by agricultural, open space, and single-family residential land uses. The Richland HSA is located south of the Twin Oaks HSA and includes Lake San Marcos. The City of San Marcos has the predominant land use jurisdiction in HSA 904.52, followed by the City of Escondido and the County of San Diego. HSA 904.52 is predominantly urban with single-family residential land uses and some commercial and industrial corridors.

San Marcos Creek is listed on the 2010 California 303(d) List of Water Quality Limited Segments for DDE, phosphorous, sediment toxicity, and selenium. Lake San Marcos is listed for ammonia as nitrogen and nutrients. To address these impairments, the County of San Diego together with the Cities of Escondido and San Marcos have established the *Upper San Marcos Creek Watershed (USMC) Nutrient Management Plan* (January 2010) with four primary objectives as listed below:

1. Establish baseline data to assess nutrient-related water quality in the watershed and to measure future improvements;
2. Identify potential sources of nutrients in the watershed and establish priorities for source control activities;
3. Identify best management practices (BMPs) and other actions that will help to reduce nutrient discharges into and from municipal separate storm sewer systems (MS4s) operated by the USMC Watershed MS4 Copermittees;
4. Establish a framework for collaboration among the USMC Watershed MS4 Copermittees, including, data collection, monitoring, outreach, and reporting.

In order to address objective 2 of the *USMC Nutrient Management Plan,* beginning in July 2009, the County conducted periodic dry weather monitoring sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos to identify any illicit connections and illegal discharges. The sweeps are an enhancement of the County's routine Dry Weather Monitoring Program conducted in compliance with the RWQCB San Diego Region Order No. R9-2007-001 NPDES Permit.

METHODS

County staff inspected each accessible above-surface conveyance draining into the Lake and documented whether the discharge points were dry or flowing. The work was conducted in accordance with the *County of San Diego Dry Weather Monitoring Quality Assurance Project Plan* (QAPP) and *the Dry Weather Monitoring Field Manual* (County of San Diego, 2012).

All sampling was conducted during dry weather, which is defined as more than 72 hours following rainfall with precipitation greater than 0.1 inches. At each location with flow, discharge was estimated using the velocity-area method, which requires the physical measurement of the cross-sectional area and the velocity of the flowing water. Discharge is determined as the product of the area times the velocity.

Discharge (ft^3/sec) = Velocity (ft/sec) x Depth (ft) x Width (ft)

At locations with adequate depth and flow, the Global Flow Probe was used to measure flow velocity. At each location, three flow velocity measurements were taken: one at the center and two toward the edges of the flow. The three measurements were then averaged to calculate the final velocity. Rough measurements of the depth and width of the channel were taken to calculate the estimated instantaneous flow (discharge). Where the depth of the channel was too low to use the Global Flow Probe, the floating debris method was used to estimate flow velocity. At outfalls with very low flows, discharge was determined by measuring the length of time required to fill a container of a known volume.

At all locations with flowing water, in-situ measurements of pH, specific conductivity, turbidity, dissolved oxygen, temperature, and salinity were taken using the Horiba U-10, 5-parameter probe.

Grab samples were also collected and tested in the analytical laboratory for nutrients (including ammonia, nitrate as N, nitrite as N, organic N, total Kjeldahl nitrogen (TKN), total N, orthophosphate as P, and total phosphate as P), specific conductivity, and total suspended solids (TSS). A list of analytes with the corresponding analytical methods, method detection limits (MDL) and reporting limits (RL) is provided in Table 1.

Table 1. Constituents Included in Grab Sample Analysis with the Corresponding Methods and Detection and Reporting Limits Employed.

ANALYTE	METHOD		UNITS	DETECTION LIMIT		REPORTING LIMIT	
	2009*	2010/ 11**		2009	2010-2012	2009	2010-2012
Ammonia as N	SM 4500 NH3 C,D	SM 4500 NH3 B,C	mg/L	0.009	0.02	0.02	0.05
Nitrate as N	EPA 300.0	SM 4500 NO3 E		0.007	0.009	0.2	0.05
Nitrite as N	SM 4500 NO2 B			0.001	0.007	0.01	0.05
TKN	SM 4500 N C			0.08	0.5	0.5	0.5
Total N	By Calculation			N/A			
Organic N	By Calculation			N/A			
Orthophosphate as P	SM 4500 P E			0.004	0.007	0.02	0.05
Total Phosphate as P	SM 4500 P E			0.01	0.02	0.02	0.05
TSS	SM 2540 D			0.3	1	5	20
Specific Conductance	EPA120.1	SM 2510 B	umhos/cm	0.153	1	2	1

* Grab samples collected during 2009 were analyzed by Truesdail Laboratories Inc.

** Grab samples collected during 2010, 2011 and 2012 were analyzed by Enviromatrix Analytical Inc.

In addition to assessing the concentrations of the chemical constituents, instantaneous loads were calculated to further characterize the discharges. Instantaneous loads represent the load for a given constituent at the time of data collection. Given the intermittent nature of dry weather flows in this watershed, instantaneous loads should not be extrapolated to longer time periods such as day or year. Thus, load is represented in units of milligrams per second (mg/s). Comparing loads among sites can be useful to assess relative difference between site locations, but it is important to note that the results represent snapshots in time and may not reflect the overall dry weather characteristics at that site.

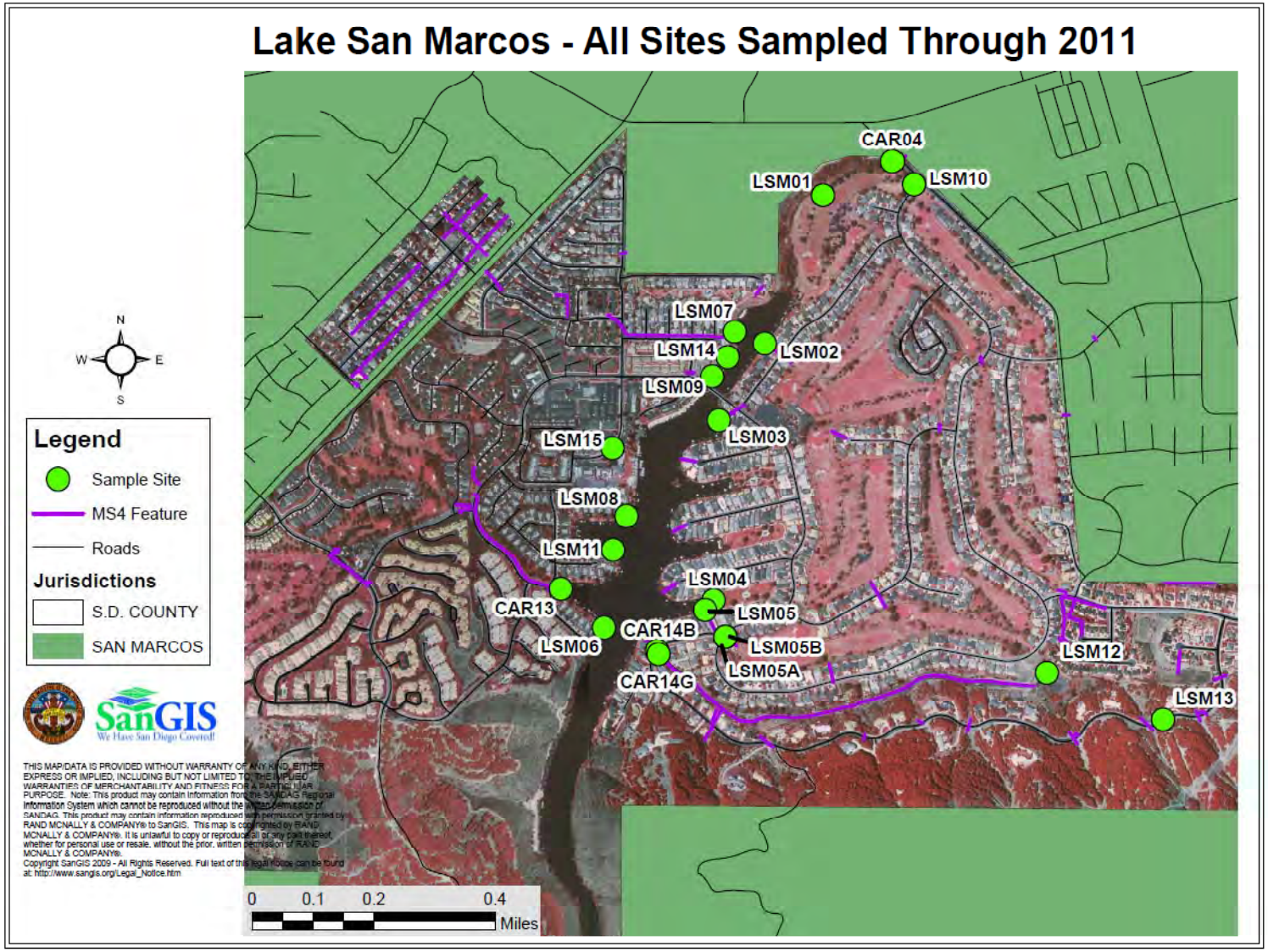

Figure 1. Map of Sampling Locations.

4

RESULTS

Of 51 potential surface water sampling locations at outfalls discharging to the lake and the San Marcos Creek, 20 (Table 2; Figure 1) contained flowing water at least some of the time and one (LSM12) was a pond. Nineteen of the 21 sites, were visited over ten rounds of monitoring sweeps from July 2009 through February 2012. The remaining two locations (LSM14 and LSM15) were added to the program later: LSM14 in August 2010 and LSM15 in May 2011. One location, the gutter at La Plaza Drive (CAR14B), could not be sampled consistently after October 2011 as the curb flow was diverted to a French drain taking the discharge underground.

Flow and in-situ measurements of pH, dissolved oxygen, specific conductance, temperature, and turbidity were taken at all 21 locations. Also, grab water samples were collected and analyzed for nutrients, total dissolved solids and total suspended solids. Additional investigations were conducted at specific locations if sample nutrient concentrations exceeded the Copermittees' established dry weather action levels of 10 mg/L Nitrate as N and/or 1 mg/L of orthophosphate as P. The data collected are summarized in *Attachment A*. Photographs of the locations sampled are presented in *Attachment B*.

Table 2. Sampling Locations with GPS Coordinates and Descriptions.

SITE ID	LOCATION	LATITUDE	LONGITUDE
CAR04	San Marcos Creek at Discovery Street	33.13044	-117.20064
CAR13	73-inch storm drain outfall to Lake San Marcos at the end of San Marino Drive	33.12012	-117.20997
CAR14B	Discharge from the gutter on La Plaza Drive (as it enters the curb inlet)	33.11866	-117.20721
CAR14G	Grassy channel at the end of El Chico Lane (upstream of the curb inlet)	33.11857	-117.20717
LSM01	Concrete channel discharging to San Marcos Creek at San Pablo Drive	33.12961	-117.20260
LSM02	Storm drain outfall at 1853 San Pablo Drive	33.12604	-117.20422
LSM03	Storm drain outfall at the end of San Pablo Drive (1795)	33.12419	-117.20551
LSM04	6-inch white pipe draining a local French drain system into Lake San Marcos at boat dock near San Pablo Drive	33.11988	-117.20561
LSM05	Storm drain outfall at 1400 La Plaza Drive	33.11964	-117.20585
LSM05A	Curb inlet draining to Storm drain outfall @ 1400 La Plaza Drive (to LSM05)	33.11900	-117.20527
LSM05B	Underground culvert draining to storm drain outfall at 1400 La Plaza Drive (to LSM05; upstream of LSM05A)	33.11900	-117.20527
LSM06	Storm drain outfall at the end of Camino De Vela	33.11919	-117.20873
LSM07	Storm drain outfall at 1501 La Fiesta Lane	33.12632	-117.20508
LSM08	White pipe draining to Lake San Marcos at Via Entrada Del Lago	33.12188	-117.20812
LSM09	Storm drain outfall at the North side of the bridge on the North-West side of Lake San Marcos	33.12525	-117.20571
LSM10	Concrete channel discharging to San Marcos Creek at San Pablo Drive	33.12989	-117.20004
LSM11	Storm drain outfall at Via Brisa Del Lago	33.12106	-117.20849
LSM12	Pond at San Pablo Drive	33.11820	-117.19612
LSM13	Sprinkler overspray at 1875 La Plaza Drive	33.11711	-117.19280
LSM14	Drain outfall 250 feet south of LSM07 (La Fiesta lane site)	33.12571	-117.20527
LSM15	Storm drain nearest the Lake San Marcos Gallery Room at La Bonita Drive	33.12350	-117.20853

Nutrient Concentrations

The mean nutrient concentrations over the entire sampling period (since 2009) at each sampling location, numbers of samples analyzed and the corresponding 95% confidence intervals are listed in Table 3. The total nitrogen and total phosphorus results are also presented graphically in Figures 2 and 3 below. Although *The Water Quality Control Plan for the San Diego Basin* (Basin Plan) water quality objectives (WQOs) do not apply to storm drain runoff, constituent concentrations from the current study are compared to these WQOs in order to determine if storm drain runoff has the potential to contribute to receiving water quality problems. Caution is advised when extrapolating from a few instantaneous concentration measurements at discharge points of the storm drains' discharges as dry weather flows are highly variable over time.

The total nitrogen concentrations (Table 3, Figure 2) at most locations sampled exceeded the 1.0 mg/L Basin Plan water quality objective (WQO). The highest mean concentration (13.82 ± 18.40 mg/L) was found in the discharge from the gutter on La Plaza Drive (as it enters the curb inlet) (CAR14G), followed by the discharge from storm drain outfall at 1400 La Plaza Drive (LSM05) including the contributing flow from the curb inlet (LSM05A) and the underground culvert upstream (LSM05B). Since CAR14G has been dry over 7 of the 9 sampling occasions, the high mean total nitrogen concentration at that site is based on only two samples with very different total N concentrations: one (23.2 mg/L) from 2/2/2010 and one (4.43 mg/L) from 11/29/2011. The nitrogen concentrations at LSM05 (mean = 9.85 ± 1.26 mg/L) have been consistently high and significantly higher than those measured at most of the other locations monitored including San Marcos Creek (CAR04). The mean total N concentration at San Marcos Creek was 5.00 ± 1.84 mg/L.

The total phosphorus concentrations (Table 3, Figure 3) tended to exceed the 0.1 mg/L Basin Plan WQO at most sampling locations. The highest mean concentrations were found in the storm drain outfall at Via Brisa Del Lago (LSM11) (0.55 ± 0.12 mg/L), the discharge from the gutter on La Plaza Drive as it enters the curb inlet (CAR14B) (0.48 ± 0.30 mg/L), and the storm drain outfall at 1853 San Pablo Drive (LSM02) (0.34 ± 0.18 mg/L). For comparison, the mean total P concentration for San Marcos Creek (CAR04) was 0.27 ± 0.08 mg/L. Approximately in October 2011, the gutter at La Plaza Drive (CAR14B) had its flow diverted to a French drain taking the discharge underground where it can no longer be reached. CAR14B together with CAR14G eventually discharge into CAR14 which is an earthen channel that flows into Lake San Marcos at the southern terminus of San Marino Drive. To mitigate this issue, CAR14 could be included in future sampling.

Table 3. Mean Nutrient Concentrations in Milligrams per Liter (mg/L), Numbers of Samples Taken and 95% Confidence Intervals for Different Sampling Locations.

Site ID	Total Nitrogen (mg/L)			Total Phosphorus (mg/L)			Nitrate as N (mg/L)			Orthophosphate as P (mg/L)			Comments
	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf	
San Marcos Creek (CAR04)	9	5.00	1.84	10	0.27	0.08	10	2.36	1.10	10	0.23	0.08	
CAR13	7	2.84	0.44	8	0.29	0.04	8	0.68	0.39	8	0.25	0.04	
CAR14B	9	2.59	0.92	9	0.48	0.30	9	0.83	0.77	9	0.30	0.16	
CAR14G	2	13.82	18.40	2	0.23	0.22	2	12.86	17.13	2	0.19	0.22	Only two samples collected; site was dry over remaining sweeps
LSM01	10	2.39	0.92	10	0.17	0.06	10	0.35	0.46	10	0.12	0.07	
LSM02	10	3.24	0.74	10	0.34	0.18	10	1.21	0.65	10	0.24	0.14	
LSM03	9	2.52	0.93	9	0.19	0.03	9	0.10	0.04	9	0.08	0.04	
LSM04	12	4.05	0.88	13	0.21	0.10	13	2.67	0.53	13	0.13	0.08	
LSM05	13	9.85	1.26	13	0.20	0.13	13	8.78	1.34	13	0.16	0.10	
LSM05A	8	9.44	3.38	8	0.27	0.17	8	8.16	3.18	8	0.14	0.11	
LSM05B	9	9.49	2.11	9	0.21	0.04	9	7.64	2.06	9	0.14	0.05	
LSM06	1	1.15	NA	1	0.01	NA	1	0.24	NA	1	0.01	NA	Only one sample collected on 7/24/09; site was dry for the remaining sweeps
LSM07	7	2.25	0.91	8	0.17	0.09	8	0.63	0.17	8	0.12	0.09	
LSM08	1	1.08	NA	1	0.15	NA	1	0.10	NA	1	0.11	NA	Only one sample collected on 7/24/09; site was dry or submerged for the remaining sweeps
LSM09	7	1.98	0.95	8	0.20	0.07	8	0.21	0.13	8	0.14	0.08	
LSM10	5	2.54	1.01	5	0.17	0.09	5	0.71	0.78	5	0.15	0.09	
LSM11	4	2.49	1.46	5	0.55	0.12	5	0.10	0.09	5	0.47	0.12	
LSM12	6	2.74	1.94	6	0.09	0.03	6	0.91	1.47	6	0.03	0.02	Sits is a pond
LSM13	1	0.91	NA	1	0.06	NA	1	0.11	NA	1	0.00	NA	
LSM14	2	4.92	5.00	3	0.26	0.04	3	0.64	0.79	3	0.17	0.12	Site sampled since 8/12/10
LSM15	1	3.30	NA	1.00	0.34	NA	1.00	0.39	NA	1.00	0.21	NA	Site sampled only on 5/12/11

NA – Not Applicable

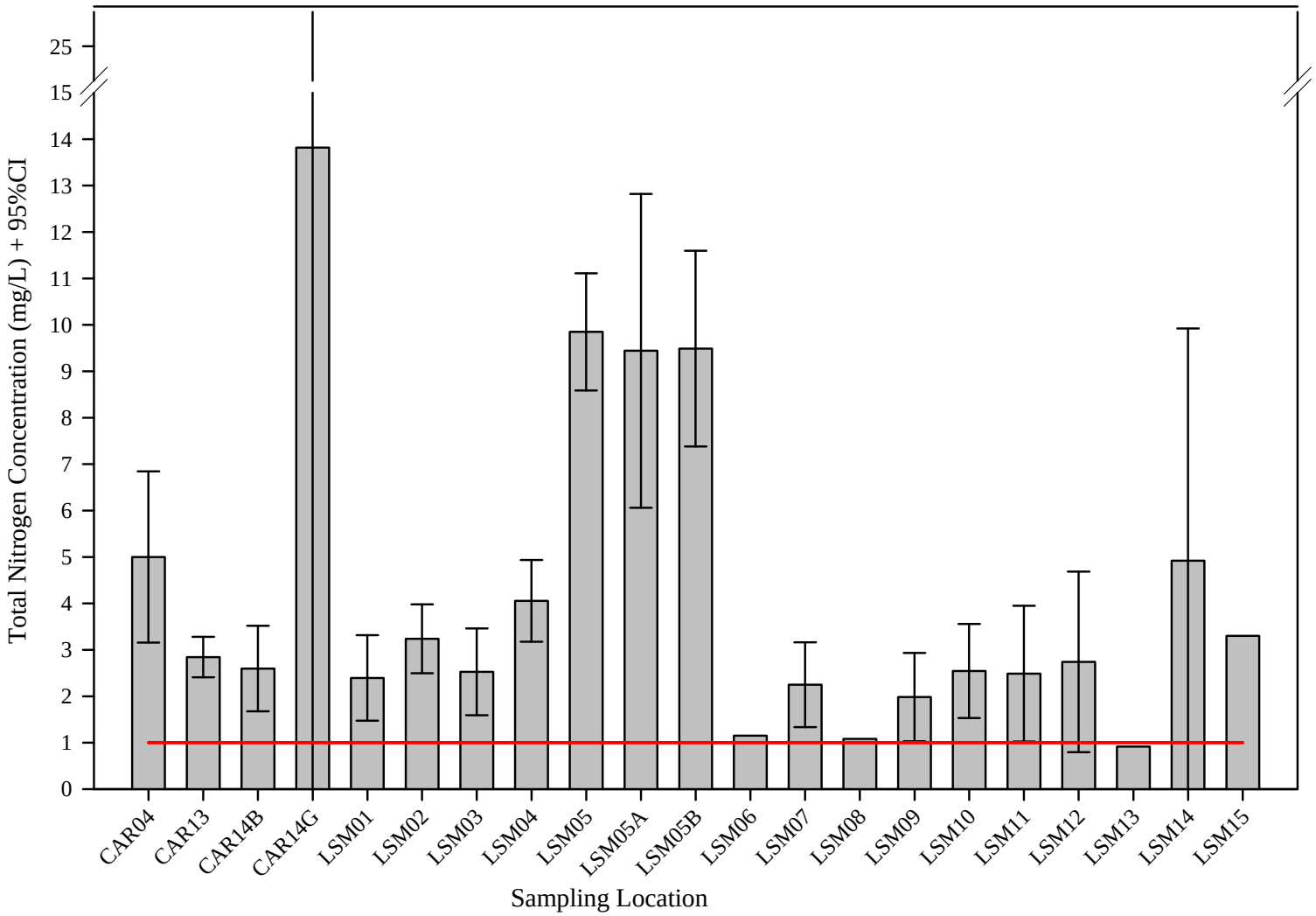

Figure 2. Mean Concentrations in Milligrams Per Liter (mg/L) + 95% Confidence Intervals (CI) of Total Nitrogen Detected in Samples Collected at Different Locations During Monitoring Sweeps Conducted From July 2009 through February 2012. The red line shows the Basin Plan Water Quality Objective to Total Nitrogen.

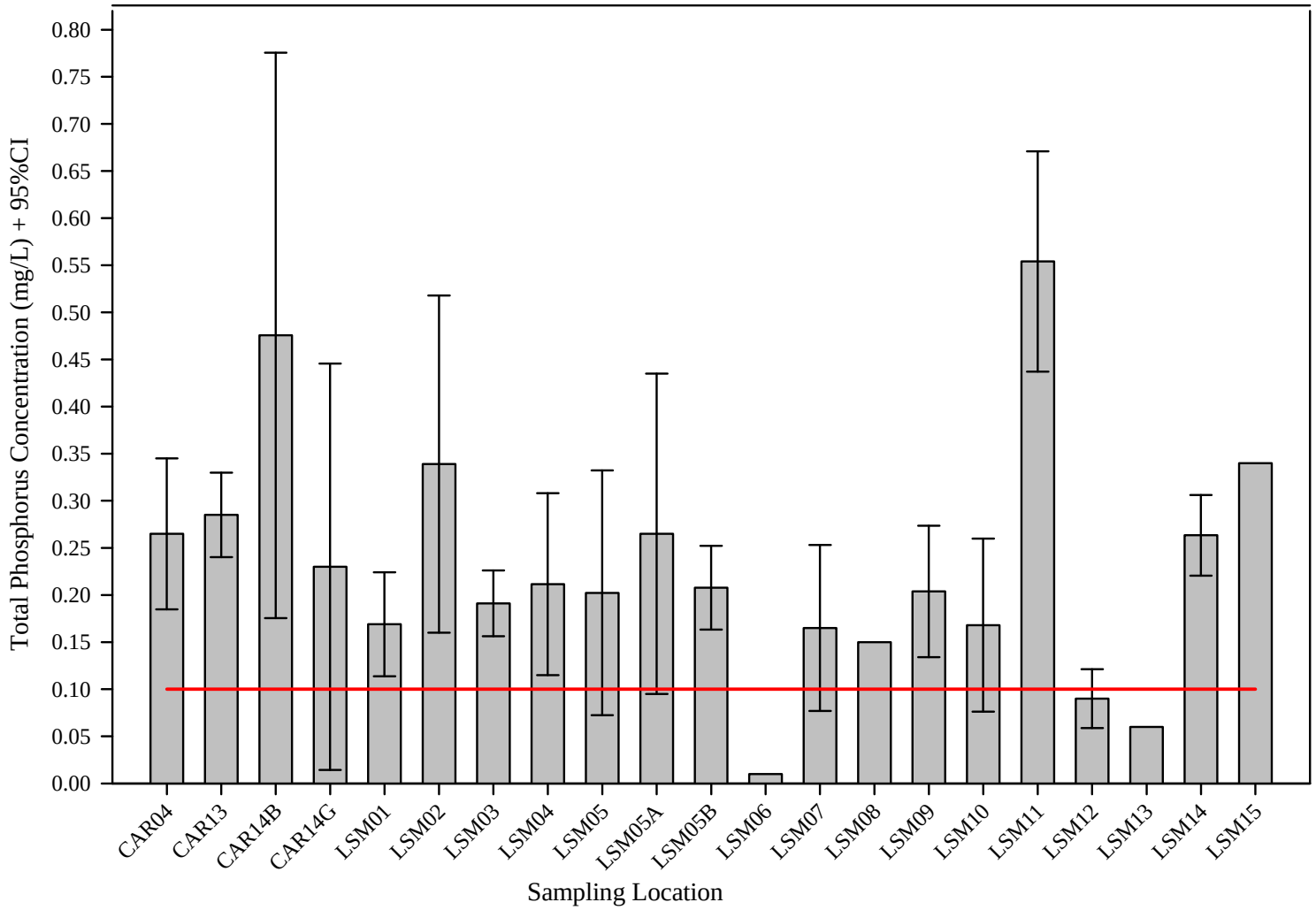

Figure 3. Mean Concentrations in Milligrams Per Liter (mg/L) + 95% Confidence Intervals (CI) of Total Phosphorus Detected in Samples Collected at Different Locations During Monitoring Sweeps Conducted From July 2009 through February 2012. The red line shows the Basin Plan Water Quality Objective to Total Phosphorus.

Instantaneous Loads

Due to the intermittency of dry weather flows in this watershed, instantaneous loads should not be extrapolated to longer time periods and loads are expressed in milligrams per second (mg/s) only. Although it may be useful to compare loads among sites in order to assess relative differences between locations, these results represent only snapshots in time and may not reflect the overall dry weather characteristics at those sites.

For the purpose of instantaneous load comparisons, flow at LSM05B was difficult to estimate as the culvert could not be accessed by field staff. Instead of direct measurements, the floating debris method was used to estimate current speed and channel width from street level.

Based on the instantaneous load estimates (Table 4, Figures 4 and 5), San Marcos Creek (CAR04), being the only tributary, contributed the highest non-storm instantaneous nutrient loads to the Lake (for both total N and total P). The highest total N instantaneous loadings from storm drains were observed at LSM05 (including the contributing flow LSM05 A and B) and LSM10; the second highest total N instantaneous loads were observed at LSM07, LSM01, LSM02, CAR14G and CAR13. For total P, the highest storm drain loads were contributed from LSM10, LSM07, LSM02; LSM05 (including contributing flows from LSM05A and B), LSM01, and CAR13.

However, it must be noted that the mean instantaneous flow for San Marcos Creek (measured at CAR04), was over 5 times higher than that from all remaining sample sites combined; the instantaneous total N loading from the Creek was 6.6 times higher and the instantaneous total P loading from the Creek was 7.5 times higher.

Table 4. Mean Discharges in Liters per Second (L/s) and Instantaneous Nutrient Loads in Milligrams per Second (mg/s), Numbers of Samples Taken, and 95% Confidence Intervals for Different Sampling Locations.

Site ID	Discharge (L/s)			Total Nitrogen (mg/s)			Total Phosphorus (mg/s)			Nitrate as N (mg/s)			Orthophosphate as P (mg/s)		
	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf
San Marcos Creek (CAR04)	10	54.482	26.660	8	331.71	223.75	9	17.27	13.25	9	193.50	149.20	9	15.34	12.24
CAR13	9	0.641	0.564	7	2.26	2.04	8	0.21	0.21	8	0.58	0.57	8	0.16	0.13
CAR14B	9	0.044	0.024	9	0.14	0.10	9	0.01	0.01	9	0.07	0.07	9	0.01	0.01
CAR14G	2	0.269	0.361	2	1.99	0.03	2	0.04	0.02	2	1.85	0.03	2	0.03	0.01
LSM01	10	0.999	0.414	10	2.87	2.05	10	0.19	0.11	10	0.65	0.99	10	0.15	0.11
LSM02	10	0.885	0.326	10	3.08	1.50	10	0.27	0.16	10	1.09	0.83	10	0.21	0.13
LSM03	9	0.152	0.118	9	0.41	0.37	9	0.03	0.02	9	0.01	0.01	9	0.01	0.01
LSM04	13	0.328	0.093	12	1.19	0.40	13	0.08	0.06	13	0.87	0.27	13	0.04	0.02
LSM05	13	1.132	0.287	13	10.94	2.79	13	0.27	0.17	13	9.64	2.46	13	0.22	0.14
LSM05A	9	0.363	0.155	8	3.43	1.50	8	0.09	0.06	8	2.97	1.38	8	0.04	0.03
LSM05B	10	0.974	0.526	9	9.47	5.58	9	0.20	0.09	9	7.88	4.78	9	0.16	0.10
LSM06	1	0.003	NA	1	0.00	NA	1	0.00	NA	1	0.00	NA	1	0.00	NA
LSM07	9	1.379	1.352	7	3.86	3.53	8	0.26	0.27	8	1.16	1.39	8	0.20	0.23
LSM08	1	0.001	NA	1	0.00	NA	1	0.00	NA	1	0.00	NA	1	0.00	NA
LSM09	9	0.095	0.052	7	0.16	0.14	8	0.02	0.02	8	0.02	0.01	8	0.02	0.02
LSM10	4	3.194	3.460	4	10.17	13.24	4	0.61	0.75	4	5.11	7.58	4	0.45	0.48
LSM11	6	0.015692	0.010	4	0.023	0.03	5	0.01	0.01	5	0.00	0.00	5	0.01	0.01
LSM13	1	0.0002	NA	1	0.00	NA	1	0.00	NA	1	0.00	NA	1	0.00	NA
LSM14	3	0.004	0.005	2	0.02	0.01	3	0.00	0.00	3	0.00	0.00	3	0.00	0.00
LSM15	1	0.028	NA	1	0.09	NA	1	0.01	NA	1	0.01	NA	1	0.01	NA
Total (without CAR04)		**10.51**			**50.12**			**2.31**			**31.91**			**1.70**	
Percent of CAR04 Value		**19%**			**15%**			**13%**			**16%**			**11%**	

NA – Not Applicable

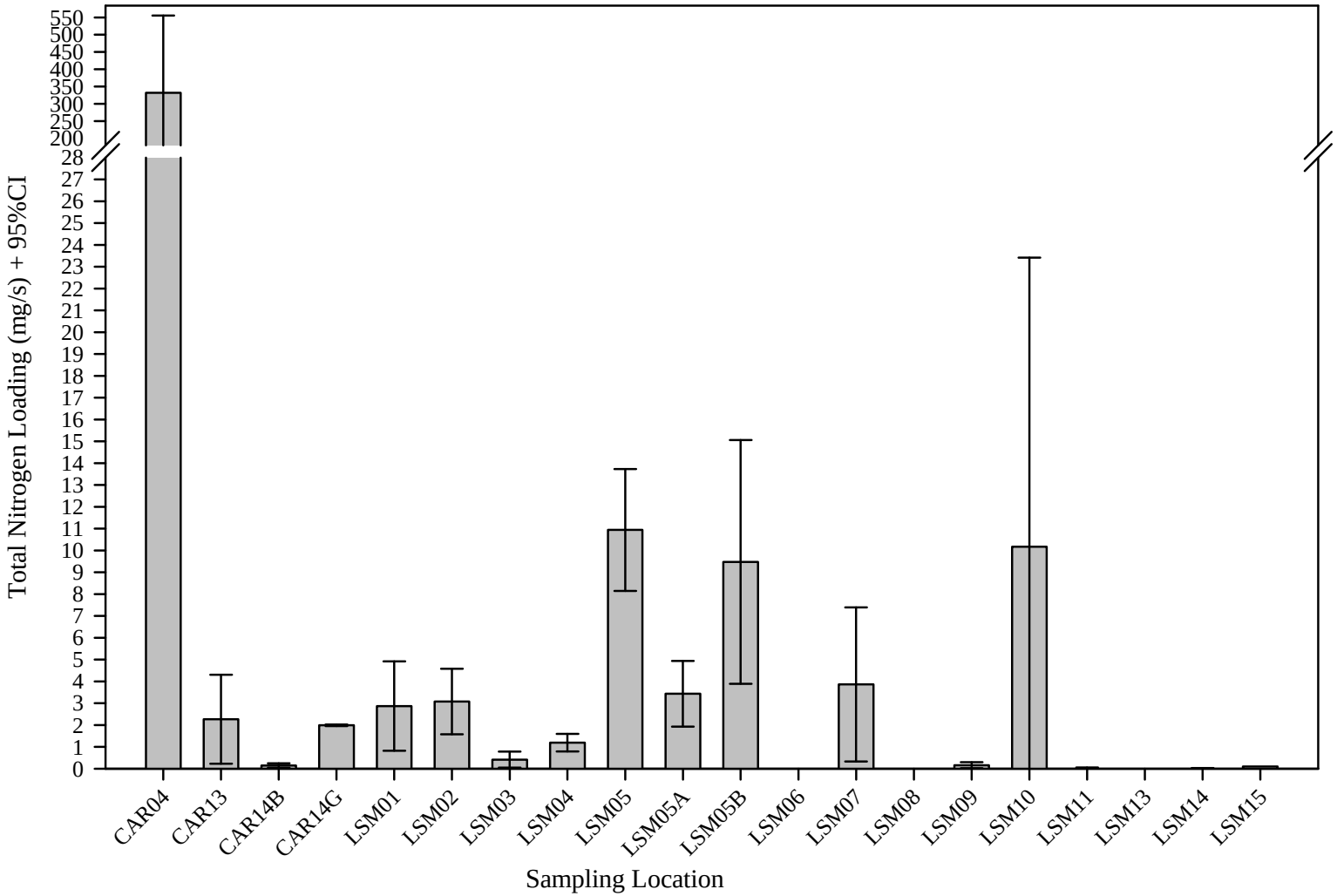

Figure 4. Mean Instantaneous Loadings (mg/s) + 95% Confidence Intervals (CI) of Total Nitrogen Detected in Samples Collected at Different Locations During Monitoring Sweeps Conducted From July 2009 through February 2012.

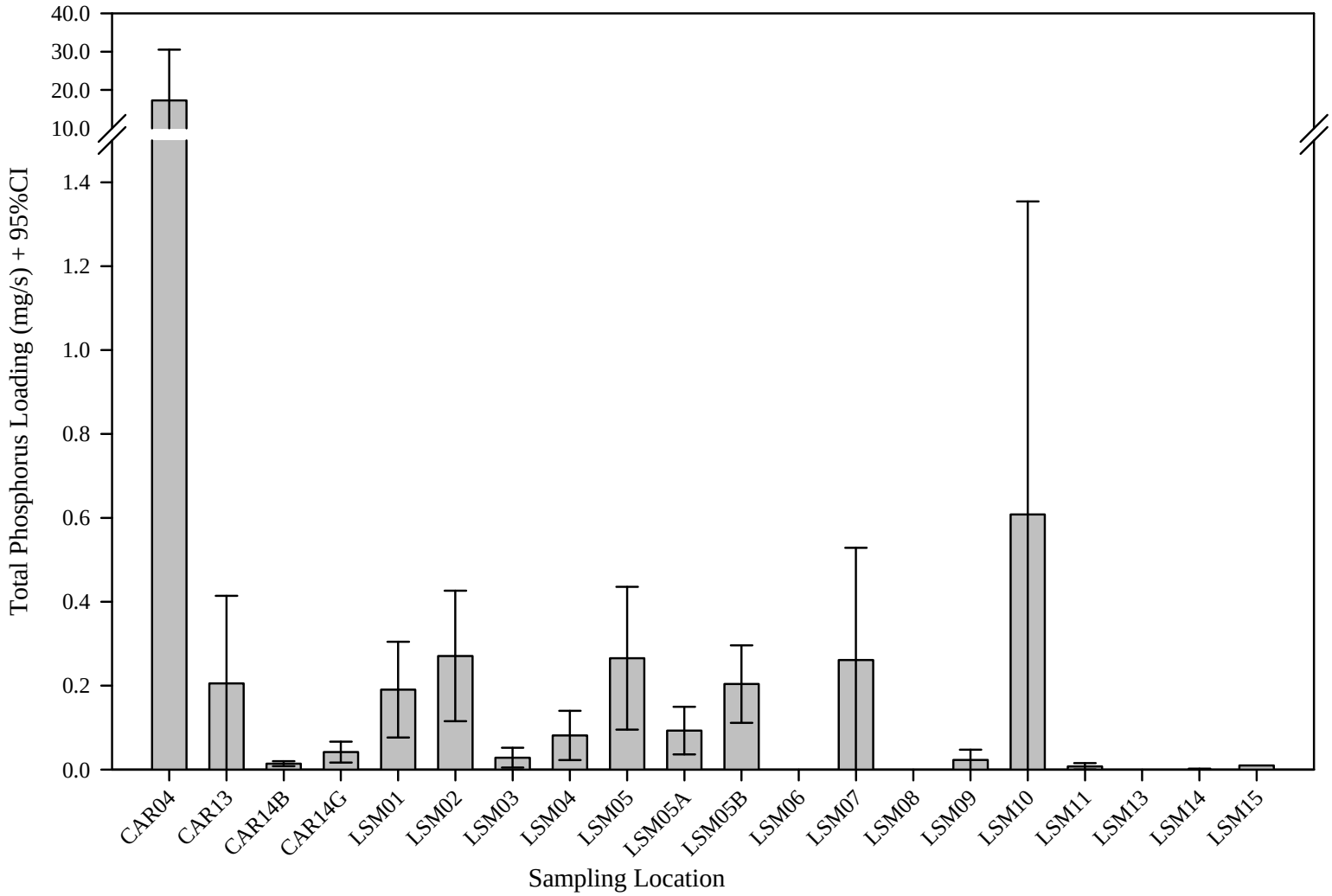

Figure 5. Mean Instantaneous Loadings (mg/s) + 95% Confidence Intervals (CI) of Total Phosphorus Detected in Samples Collected at Different Locations During Monitoring Sweeps Conducted From July 2009 through February 2012.

Data Quality

All data collected for the purpose of this report have been reviewed for quality and conformance with the requirements of the *County of San Diego's Dry Weather Monitoring Program and MS4 Program Quality Assurance Project Plan* (August 2012) (QAPP). The results of this review are summarized in *Data Quality Control and Quality Assurance Report for the Dry Weather Monitoring Sweeps at Lake San Marcos* (*Attachment C*). In general, no data were rejected and thus all have met the completeness data quality objectives. All blank sample results were below the method detection limits for all constituents tested. Based on the analysis of LCS and LCSDup samples, data quality objectives for bias (accuracy) were also met for all constituents. The DQO of 80-120% percent recovery for ammonia was exceeded in one of 11 MSS and MSSDup samples (both from the same batch). The exceedance was due to matrix interference and the laboratory accepted the associated data batch based on LCS and LCSDup QC results. A total of 7 precision ± 30% DQO exceedances were found. All these excedances were found in the blind field duplicate (BFDup) sample pairs. All associated results were accepted based on the LCSDup and MSSDup results.

Discussion

The current study offers some preliminary insights into the relative dry weather contributions of nutrients to Lake San Marcos from the Upper San Marcos Creek and other surface inputs monitored during the study period of up to three years beginning in July 2009. A maximum of ten quarterly sweeps were conducted at 21 sampling locations during which instantaneous flow measurements were taken and grab samples were collected for nutrient analysis from San Marcos Creek and accessible storm drains flowing into Lake San Marcos. The relative magnitudes of groundwater inputs compared to these surface water inputs to Lake San Marcos are unknown.

Caution should also be exercised in using only ten or less grab water samples from a discharge point as representative of the storm drain water quality. Due to the variable nature of dry weather discharges, the flow rates and composition of the discharges may not be consistent over time. Although water quality objectives (WQOs) do not apply to storm drain runoff, constituent concentrations were compared to WQOs to determine if storm drain runoff has the potential to contribute to receiving water quality nutrient problems. Generally, grab sample data suggest that the total nitrogen concentrations at most locations sampled exceed the 1.0 mg/L Basin Plan WQO; on the average, the 1.0 mg/L total nitrogen WQO was exceeded 4.6 times and total phosphorus WQO (0.1 mg/L) 1.7 times.

It was difficult to estimate relative nutrient loads to the Lake from the various surface flow sources as flows were often trickles and difficult to measure. During dry weather, San Marcos Creek contributed total nitrogen loads that were on the average 6.6 times higher than the combined average instantaneous loadings from all storm drain inputs monitored in this study. For total phosphorus, the Creek's average loading was 7.5 times higher. The highest mean total N and total P instantaneous dry weather loadings from storm drains discharging to the Lake were measured in the storm drain outfall at 1400 La Plaza Drive (LSM05).

REFERENCES

City of San Marcos, County of San Diego and City of Escondido. January 2010. *Upper San Marcos Creek Watershed (USMC) Nutrient Management Plan.*

County of San Diego. 2012. *County of San Diego Dry Weather Monitoring Quality Assurance Project Plan* (QAPP). http://www.projectcleanwater.org/

County of San Diego. 2012. *Dry Weather Monitoring Field Manual.* http://www.projectcleanwater.org/

ATTACHMENT A

MONITORING SWEEPS - DATA TABLE

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
CAR04	FS	7/24/09	9:00	Flowing	0.3000	NS	NS	NS	NS	NS	NS	0.03(J)	0.05(J)	<0.001	0.98	1.03	0.09	0.13	NS	3.4
		2/1/10	9:40	Flowing	0.0000	7.08	1.97	0.09	4	6.75	14.3	0.18	2.19	<0.007	7.2	9.39	0.29	0.3	NS	<20 (E)
		5/4/10	11:20	Flowing	1.6968	7.67	2.21	0.1	14	6.16	16.5	0.12	1.78	<0.007	1.2	2.98	0.1	0.16	NS	12.2
		8/12/10	9:10	Flowing	0.8845	7.58	2.09	0.09	14	6.78	18.2	<0.5	0.6	<0.007	NS	NS	0.27	0.28	NS	17.6
		11/18/10	10:30	Flowing	1.9278	7.38	2.3	0.1	3	6.84	12.6	0.14	1.16	<0.007	1.9	3.06	0.41	0.43	1380	4
		2/3/11	10:00	Flowing	5.1646	7.83	2.2	0.1	2	8.48	10.2	0.18	4.63	0.009(J)	2	6.64	0.42	0.46	NS	4.6
		5/10/11	11:00	Flowing	1.5051	7.89	2.36	0.11	11	6.55	16.2	0.33	4.91	0.01(J)	3.5	8.42	0.37	0.39	NS	12.4
		8/12/11	9:00	Flowing	0.88445	7.58	2.09	0.09	14	6.78	18.2	0.25	NS	NS	0.5	NS	NS	NS	NS	NS
		8/22/11	10:30	Flowing	0.5093	7.77	2.2	0.1	5	6.64	19.5	0.16	0.86	0.01(J)	2	2.87	0.1	0.16	NS	7.7
		11/29/11	9:30	Flowing	3.0056	7.74	1.71	0.07	8	7.18	12.8	0.06	3.15	0.01(J)	1.2	4.36	0.19	0.24	NS	5.9
		2/2/12	10:00	Flowing	3.36195	7.78	2.28	0.1	6	9.08	11.5	0.14	4.31	0.01(J)	1.9	6.22	0.09	0.1	NS	2.7
CAR13	FS	7/24/09	10:10	Flowing	0.0180	NS	NS	NS	NS	NS	NS	0.04(J)	0.47	0.01	1.63	2.11	0.18	0.19	NS	1.8
		2/1/10	13:40	Flowing	0.0300	8.31	2.42	0.11	4	9.76	14.9	0.12	2.01	<0.007	1	3.01	0.18	0.19	NS	<20 (E)
		5/4/10	12:50	Flowing	0.1012	8.11	3.11	0.15	8	8.5	21.6	0.19	0.73	0.08	2.1	2.91	0.21	0.33	NS	66
		8/12/10	12:10	Flowing	0.0045	8.24	1.69	0.07	2	9.39	19.7	<0.5	0.49	<0.007	NS	NS	0.28	0.33	NS	6.8
		11/18/10	13:10	Flowing	0.0100	7.87	2.42	0.11	31	10.45	16.3	0.15	0.35	<0.007	1.6	1.95	0.32	0.35	1430	11
		2/3/11	13:40	Flowing	0.0100	8.29	2.22	0.1	1	10.35	12.7	0.18	0.7	<0.007	2.4	3.10	0.26	0.26	NS	<1
		5/12/11	11:00	Flowing	0.0112	8.27	1.98	0.09	4	8.9	17.1	0.15	0.43	0.007(J)	3.1	3.54	0.27	0.33	NS	3.6
		8/12/11	12:10	Flowing	0.0045	8.24	1.69	0.07	2	9.39	19.7	0.25	NS	NS	0.5	NS	NS	NS	NS	NS
		8/23/11	11:50	Flowing	0.0143	8.12	2.63	0.12	5	8.42	21.1	0.13	0.25	0.02(J)	3	3.27	0.3	0.3	NS	9.8
CAR14B	FS	7/23/09	13:20	Flowing	0.0005	NS	NS	NS	NS	NS	NS	0.04(J)	0.46 (E)	<0.001	0.98	1.44	0.29	0.38	NS	4.4
		8/11/10	11:30	Flowing	0.0005	8.76	1.69	0.07	3	12.33	28.9	<0.5	0.05(J)	<0.007	<1	0.55	0.83	1.62	NS	21.4
		11/17/10	13:50	Flowing	0.0003	9.19	2.03	0.09	11	12.25	22	0.34	0.03 (J)	<0.007	2.2	2.23	0.28	0.3	1220	106
		2/3/11	12:50	Flowing	0.0016	8.38	1.69	0.07	7	11.31	15.3	0.19	0.21	<0.007	2.6	2.81	0.48	0.5	NS	9.6
		5/11/11	11:00	Flowing	0.0006	8.74	1.67	0.07	7	9.14	26.9	0.16	0.07(J)	<0.007	3.6	3.67	0.04(J)	0.23	NS	47.6

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
	SID	2/1/10	13:00	Flowing	0.0030	8.02	2.64	0.12	4	14.21	18.9	0.12	0.95	<0.007	2.2	3.15	0.17	0.25	NS	<20
		5/3/10	12:50	Flowing	0.0009	9.56	1.66	0.07	42	10.41	31.3	< 0.02	<0.009	<0.007	1	1.01	0.29	0.64	NS	22
		8/23/11	10:00	Flowing	0.0028	7.4	1.58	0.07	3	7.24	23.4	0.11	2.87	0.01(J)	2	4.88	0.27	0.29	NS	9.4
		11/29/11	12:50	Flowing	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/2/12	13:30	Flowing	0.00375	7.97	1.43	0.06	1	9.48	15.9	0.19	2.79	< 0.007	0.8	3.5935	0.06	0.07	NS	0.5(J)
CAR14G	FS	2/2/10	9:40	Flowing	0.003	6.79	1.62	0.07	1	4.91	13.5	0.18	21.6	<0.007	1.6	23.20	0.3	0.34	NS	<20
		5/3/10	13:20	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		8/11/10	11:40	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/17/10	14:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/3/11	13:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		5/11/11	11:10	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		8/23/11	10:10	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/29/11	12:40	Flowing	0.016	7.35	1.03	0.04	3	9.65	19	0.02(J)	4.12	0.008(J)	0.3(J)	4.428	0.08	0.12	NS	6.7
		2/2/12	14:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LSM01	FS	7/23/09	9:40	Flowing	0.0120	NS	NS	NS	NS	NS	NS	0.05	<0.007 (E)	<0.001	1.43	1.43	0.02	0.06	NS	19.4
		2/10/10	10:00	Flowing	0.0624	8.75	2.42	0.11	7	19.99	15.6	0.12	0.59	<0.007	3.8	4.39	0.08	0.12	NS	<20
		5/3/10	10:00	Flowing	0.0540	8.5	2.15	0.1	2	10.99	22.6	< 0.02	0.06(J)	<0.007	0.5	0.56	0.21	0.21	NS	2.3
		8/11/10	9:20	Flowing	0.0179	8.7	2.33	0.11	5	13.59	24.6	<0.5	< 0.009	<0.007	<1	0.51	0.07	0.1	NS	9.2
		11/17/10	10:50	Flowing	0.0225	9.57	1.97	0.09	9	17.49	22.4	0.39	0.03 (J)	<0.007	2	2.03	0.09	0.16	1320	22
		2/3/11	9:30	Flowing	0.0752	8.72	2.04	0.09	2	15.19	12	0.16	2.4	0.02(J)	1.9	4.32	0.09	0.16	NS	46.4
		5/10/11	10:50	Flowing	0.0548	8.78	1.9	0.09	4	10.71	25.7	0.14	0.05(J)	<0.007	3.4	3.45	0.38	0.39	NS	5.5
		8/22/11	10:10	Flowing	0.01404	8.74	2.17	0.1	8	9.12	28.1	0.12	0.03(J)	< 0.007	3.8	3.8335	0.07	0.18	NS	15.2
		11/29/11	10:00	Flowing	0.024	9.53	2.04	0.09	5	18.38	17	0.02(J)	< 0.009	< 0.007	1.7	1.708	0.08	0.18	NS	9
		2/2/12	10:20	Flowing	0.01599	9.22	1.96	0.09	5	13.37	17.7	0.14	0.28	< 0.007	1.4	1.6835	0.06	0.13	NS	4.4

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
LSM02	FS	7/23/09	10:40	Flowing	0.0264	NS	NS	NS	NS	NS	NS	0.17	0.07 (E)	0.01	1.82	1.90	0.21	0.26	NS	16.5
		2/1/10	10:20	Flowing	0.0450	8.75	3.68	0.18	5	12.91	15.6	0.12	2.56	<0.007	2.1	4.66	0.15	0.18	NS	<20 (E)
		5/3/10	10:20	Flowing	0.0210	8.69	2.84	0.14	2	8.24	21	0.63	1.3	<0.007	1.1	2.40	0.09	0.23	NS	2.8
		8/11/10	9:50	Flowing	0.0120	8.6	2.5	0.12	7	7.51	21.9	<0.5	0.93	<0.007	<1	1.43	0.56	0.95	NS	5.8
		11/17/10	11:30	Flowing	0.0140	8.42	2.63	0.12	5	9.27	19.4	0.24	1.95	0.05	2	4.00	0.63	0.68	1580	12
		2/3/11	10:30	Flowing	0.0450	8.68	3.39	0.16	8	10.55	12.4	0.16	2.99	0.02(J)	1.8	4.81	0.13	0.15	NS	23.4
		5/11/11	9:50	Flowing	0.0112	8.55	2.68	0.13	7	8	19.3	0.34	0.17(J)	0.02(J)	3.1	3.29	0.01(J)	0.08	NS	8.6
		8/22/11	11:10	Flowing	0.06	8.65	1.5	0.06	8	7.23	26.8	0.13	0.13(J)	0.02(J)	4	4.15	0.42	0.54	NS	20
		11/29/11	10:30	Flowing	0.056	9.34	2.55	0.12	3	12.16	16.7	0.03(J)	0.37	0.007(J)	1.8	2.177	0.21	0.23	NS	6.6
		2/2/12	11:00	Flowing	0.02211	9.03	2.18	0.1	3	10.24	16.5	0.24	1.62	0.02(J)	1.9	3.54	0.02(J)	0.09	NS	4.7
LSM03	FS	7/23/09	11:10	Flowing	0.0000	NS	NS	NS	NS	NS	NS	0.05	0.07 (E)	0.01	2.55	2.63	0.16	0.15	NS	0.2(J)
		2/1/10	10:50	Flowing	0.0080	8.66	3.3	0.16	20	9.53	14.2	0.14	0.15(J)	<0.007	2.2	2.35	<0.007	0.18	NS	20 (E)
		5/3/10	10:40	Flowing	0.0006	8.53	1.03	0.04	4	6.42	17.7	< 0.02	0.17(J)	<0.007	0.6	0.77	0.06	0.28	NS	4
		8/11/10	10:10	Flowing	0.0020	7.78	1.26	0.05	5	5.42	19.3	<0.5	0.13(J)	<0.007	<1	0.63	0.14	0.19	NS	41.8
		11/17/10	12:00	Flowing	0.0022	7.79	2.02	NS	11	7.89	17.7	0.44	0.1(J)	0.03(J)	4.2	4.33	0.09	0.22	1200	43
		2/3/11	10:50	Flowing	0.0028	8.27	2.39	0.11	3	10.06	10.8	0.18	0.02 (J)	<0.007	1.9	1.92	0.06	0.1	NS	2.4
		5/11/11	10:20	Flowing	0.0012	8.04	1.51	0.06	5	7.69	17	0.12	0.15(J)	0.06	3.8	4.01	0.01(J)	0.23	NS	12.2
		8/22/11	11:30	Ponded	0.0000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/29/11	13:20	Flowing	0.01399	8.9	2.49	0.12	14	7.34	16.8	0.13	0.01(J)	0.02(J)	4.3	4.33	0.12	0.15	NS	15.6
		2/2/12	11:30	Flowing	0.0176	8.29	2.06	0.09	9	8.03	14.4	0.36	0.12(J)	0.02(J)	1.6	1.74	0.08	0.22	NS	4
LSM04	FS	7/23/09	12:40	Flowing	0.0060	NS	NS	NS	NS	NS	NS	0.04(J)	3.56 (E)	<0.001	0.36(J)	3.93	0.01	0.01(J)	NS	0.2(J)
		8/24/09	12:20	Flowing	0.0041	7.55	2.43	0.11	4	7.92	23.1	0.05	3.94	<0.007	1.09	5.03	0.01	0.01(J)	NS	2
		11/2/09	10:00	Flowing	0.0074	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/9/09	10:40	Flowing	0.0040	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/25/09	11:10	Flowing	0.0055	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/1/10	11:20	Flowing	0.0113	7.76	2.43	0.11	1	7.74	16.1	< 0.02(E)	3.3	<0.007	0.5	3.80	<0.007	0.09	NS	<20 (E)

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		2/17/10	10:10	Flowing	0.0088	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/5/10	10:20	Flowing	0.0141	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/15/10	10:10	Flowing	0.0087	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/22/10	9:50	Flowing	0.0122	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/29/10	11:00	Flowing	0.0235	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/7/10	11:10	Flowing	0.0126	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/26/10	10:50	Flowing	0.0124	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		5/3/10	11:20	Flowing	0.0077	7.8	2.55	0.12	2	8.07	19.5	< 0.02	0.28	<0.007	<0.3	0.4(J)	0.48	0.53	NS	<1
		6/4/10	10:00	Flowing	0.0120	7.27	2.51	0.12	0	7.99	20.5	< 0.02	2.86	<0.007	0.8 (E)	3.66	0.05	0.11	NS	<1
		6/18/10	10:15	Flowing	0.0113	NS	NS	NS	NS	NS	NS	< 0.02	2.41	<0.007	0.6	3.01	0.12	0.14	NS	2.2
		7/2/10	9:20	Flowing	0.0270	NS	NS	NS	NS	NS	NS	0.14	2.39	<0.007	NS	NS	<0.007	0.54	NS	<1
		8/11/10	10:30	Flowing	0.0101	7.31	2.39	0.11	1	7.93	21.5	<0.5	2.32	<0.007	<1	2.82	0.34	0.36	NS	1.8
		11/17/10	12:30	Flowing	0.0130	7.21	2.42	0.11	0	9.17	18.6	0.12	3.14	<0.007	1.6	4.74	0.25	0.35	1460	10
		2/3/11	11:20	Flowing	0.0178	7.44	2.5	0.12	2	8.73	15.7	0.14	2.46	<0.007	2.1	4.56	0.07	0.08	NS	<1
		5/10/11	12:50	Flowing	0.0128	7.56	2.48	0.12	2	7.52	19.6	0.07	1.81	<0.007	2.7	4.51	0.08	0.11	NS	1.2
		8/22/11	11:50	Flowing	0.0021	7.48	2.34	0.11	0	7.41	22.2	0.22	3.11	0.009(J)	2.4	5.52	0.04(J)	0.13	NS	1.3
		11/29/11	11:00	Flowing	0.0124	7.52	2.33	0.11	1	8.05	17.5	< 0.02	4.35	< 0.007	2.3	6.6535	0.20	0.24	NS	< 1
		2/2/12	12:10	Flowing	0.006912	7.58	2.29	0.1	0	8.93	15.9	0.2	2.78	< 0.007	2.2	4.9835	0.02(J)	0.06	NS	< 1
LSM05	FS	7/23/09	13:00	Flowing	0.0496	NS	NS	NS	NS	NS	NS	0.04(J)	9.29	0.02	0.67	9.98	0.01	0.02	NS	7.1
		8/24/09	12:30	Flowing	0.0360	8.3	2.06	0.09	12	8.65	22.7	0.04(J)	10.1	0.03	0.7	10.80	0.02	0.02	NS	0.5(J)
		8/28/09	10:00	Flowing	0.0158	7.95	1.98	0.09	0	8.76	21.8	0.04(J)	11.6	<0.007	0.42(J)	12.10	0.01	0.01(J)	NS	1.4
		8/28/09	9:40	Flowing	0.0064	8.86	1.95	0.09	11	11.71	26.3	0.04(J)	7.92	0.09	1.09	9.10	0.01	0.02	NS	5.6
		11/2/09	10:10	Flowing	0.0450	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/9/09	10:30	Flowing	0.0390	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/25/09	11:20	Flowing	0.0880	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		2/1/10	11:30	Flowing	0.0640	7.96	2.68	0.13	1	9.37	14.9	0.1	6.99	<0.007	1.3	8.29	0.07	0.09	NS	<20 (E)
		2/17/10	10:20	Flowing	0.0375	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/5/10	10:30	Flowing	0.1021	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/15/10	10:20	Flowing	0.0306	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/22/10	10:00	Flowing	0.0441	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/29/10	11:15	Flowing	0.0377	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/7/10	11:20	Flowing	0.0356	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/7/10	11:30	Flowing	0.0275	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/26/10	11:00	Flowing	0.0508	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		5/3/10	11:30	Flowing	0.0472	8.04	2.02	0.09	1	8.71	19.4	< 0.02	7.48	<0.007	0.6	8.08	0.15	0.22	NS	<1
		8/11/10	10:40	Flowing	0.0369	7.99	2.22	0.1	1	8.54	21.2	<0.5	11	0.08	<1	11.58	0.65	0.87	NS	2.2
		11/17/10	12:40	Flowing	0.0433	8.07	2.12	0.1	0	9.86	18.4	0.12	7.65	0.01(J)	1.1	8.76	0.21	0.27	1320	7
		2/3/11	11:30	Flowing	0.0555	7.99	2.29	0.1	0	9.99	14.3	0.13	4.88	<0.007	1.7	6.58	0.31	0.33	NS	2.2
		5/10/11	13:00	Flowing	0.0720	8.14	2.01	0.09	1	8.12	19.6	0.13	8.15	0.02(J)	1.6	9.77	0.38	0.42	NS	2.2
		8/22/11	12:10	Flowing	0.0324	8.08	2.14	0.1	5	8.06	22.1	0.15	8.43	0.02(J)	1.8	10.25	0.08	0.14	NS	2
		11/29/11	11:20	Flowing	0.04008	7.97	2.28	0.1	41	9.34	17.4	< 0.02	14.2	0.02(J)	1.2	15.42	0.12	0.12	NS	30.8
		2/2/12	12:20	Flowing	0.02052	7.99	2.02	0.09	2	9.67	15.1	0.14	6.4	< 0.007	0.9	7.30	0.09	0.1	NS	< 1
LSM05A	FS	8/28/09	9:40	Flowing	0.0064	8.86	1.95	0.09	11	11.71	26.3	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/1/10	11:40	Flowing	0.0212	8.5	2.67	0.13	7	18.12	16.7	0.15	6.15	<0.007	0.7	6.85	<0.007	0.34	NS	<20 (E)
		5/3/10	12:00	Flowing	0.0097	8.93	2.05	0.09	6	16.09	28.2	< 0.02	6.65	0.17	1.3	8.12	0.1	0.22	NS	13.4
		8/11/10	10:50	Flowing	0.0099	8.91	1.85	0.08	3	14.51	27.8	0.63	19.3	0.38	1.7	21.38	0.5	0.84	NS	4.6
		11/17/10	13:00	Flowing	0.0120	8.68	2.04	0.09	7	16.35	20.3	0.15	6.7	0.04(J)	1.3	8.04	0.06	0.14	1310	34
		2/3/11	11:50	Flowing	0.0144	8.42	2.46	0.11	5	15.33	13.4	0.14	4.65	0.02(J)	1.7	6.37	0.19	0.21	NS	6.8
		5/10/11	13:30	Flowing	0.0101	9.31	1.91	0.09	20	10.92	28.7	0.19	7.08	0.16	1	8.24	0.1	0.15	NS	164
		8/22/11	12:30	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/29/11	11:30	Flowing	0.0017	8.01	2.39	0.11	1	9.18	17.6	0.02(J)	7.35	< 0.007	0.9	8.25	0.1	0.15	NS	1.3

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		2/2/12	12:50	Flowing	0.03	8.01	1.95	0.09	2	9.59	15.1	0.11	7.36	< 0.007	0.9	8.26	0.06	0.07	NS	1.9
LSM05B	FS	8/28/09	10:00	Flowing	0.0158	7.95	1.98	0.09	0	8.76	21.8	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/2/09	9:50	Flowing	0.0360	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/9/09	10:20	Flowing	0.0300	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/25/09	11:00	Flowing	0.0270	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/1/10	12:00	Flowing	0.1067	8.06	2.65	0.12	2	9.13	14.8	< 0.02(E)	7.95	<0.007	1.5	9.45	0.11	0.12	NS	<20 (E)
		2/17/10	10:00	Flowing	0.0550	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/5/10	10:50	Flowing	0.0842	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/15/10	10:30	Flowing	0.0374	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/22/10	10:10	Flowing	0.0202	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		3/29/10	11:25	Flowing	0.0506	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		4/26/10	11:10	Flowing	0.0256	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		5/3/10	11:50	Flowing	0.0216	8.5	1.95	0.09	1	9.26	18.9	< 0.02	9.95	<0.007	1.5	11.45	0.08	0.29	NS	1
		8/11/10	11:00	Flowing	0.0151	7.98	2.27	0.1	6	9.02	21.2	<0.5	9.45	<0.007	<1	9.95	0.12	0.23	NS	2.6
		11/17/10	13:10	Flowing	0.0248	7.92	2.09	0.1	2	10.01	18.1	0.14	0.36	<0.007	1.5	1.86	0.23	0.26	1350	14
		2/3/11	12:00	Flowing	0.0560	7.98	2.15	0.1	1	9.67	14.4	0.11	5.49	<0.007	1.8	7.29	0.24	0.26	NS	1.9
		5/10/11	13:40	Flowing	0.0186	8.09	1.99	0.09	1	8.36	19.2	0.11	10.3	0.01(J)	1.4	11.71	0.09	0.2	NS	2.5
		8/22/11	12:40	Flowing	0.032	7.91	2.17	0.1	3	8.22	22.3	0.17	8.63	0.008(J)	1.5	10.14	0.07	0.13	NS	2.6
		11/29/11	11:40	Flowing	0.0496	7.88	2.25	0.1	303	9.1	17.1	< 0.02	9.81	0.04(J)	1.4	11.25	0.25	0.26	NS	76
		2/2/12	13:00	Flowing	0.004	7.85	2.06	0.09	0	9.59	14.7	0.05	6.86	< 0.007	5.4	12.26	0.07	0.12	NS	< 1
LSM06	FS	7/24/09	11:00	Flowing	0.0001	NS	NS	NS	NS	NS	NS	0.3	0.24	0.02(J)	0.9	1.15	0.01	0.01(J)	NS	4.8
		2/2/10	12:40	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		5/4/10	13:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		8/12/10	12:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/18/10	13:30	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		2/3/11	13:50	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		5/12/11	11:30	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		8/23/11	12:50	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LSM07	FS	7/24/09	13:00	Flowing	0.0023	NS	NS	NS	NS	NS	NS	0.1	0.63	<0.001	1.12	1.75	0.03	0.03	NS	12.3
		2/2/10	10:50	Flowing	0.2000	7.86	3.87	0.19	2	8.98	15.6	0.12	1.02	<0.007	1	2.02	0.17	0.18	NS	22
		5/4/10	13:50	Flowing	0.0140	7.93	3.69	0.18	11	8.45	20	0.15	0.19(J)	<0.007	0.7	0.89	<0.007	0.07	NS	20.6
		8/12/10	11:10	Flowing	0.0083	7.96	3.67	0.18	14	9.27	20.2	<0.5	0.85	<0.007	NS	NS	0.39	0.45	NS	2.6
		11/18/10	12:00	Flowing	0.1500	7.92	3.52	0.17	10	9.65	18.5	0.16	0.54	<0.007	1.7	2.24	0.09	0.17	2060	60
		2/4/11	9:50	Flowing	0.0165	8.08	3.69	0.18	7	NS	14	0.02 (J)	0.57	<0.007	1.5	2.07	0.17	0.18	NS	21.6
		5/11/11	13:10	Flowing	0.0300	8.01	3.46	0.17	6	8.35	19.7	0.17	0.56	<0.007	4.3	4.86	0.03(J)	0.11	NS	19
		8/12/11	11:10	Flowing	0.0083	7.96	3.67	0.18	14	9.27	20.2	NS	NS	NS	<1	0.50	NS	NS	NS	NS
		8/23/11	11:00	Flowing	0.009	7.83	3.48	0.17	9	7.66	23.1	0.09	0.68	<0.007	1.2	1.88	0.08	0.13	NS	12.1
LSM08	FS	7/24/09	13:30	Flowing	NS	NS	NS	NS	NS	NS	NS	0.04(J)	0.1	<0.007	0.98	1.08	0.11	0.15	NS	0.7(J)
		2/2/10	10:00	Ponded	0.0000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		5/4/10	10:50	Submer.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		8/12/10	9:40	Submer.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/18/10	11:10	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/4/11	11:20	Submer.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		5/12/11	10:20	Submer.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		8/23/11	13:00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LSM09	FS	7/29/09	10:10	Flowing	0.0007	NS	NS	NS	NS	NS	NS	0.05	0.03 (J)	0.01	1.46	1.49	0.27	0.3	NS	6.6
		2/2/10	11:10	Flowing	0.0029	7.92	2.74	0.13	2	9.09	14.7	< 0.02(E)	0.21	<0.007	0.6	0.81	0.12	0.2	NS	<20
		5/4/10	13:20	Flowing	0.0016	8.13	2.66	0.13	3	7.62	19.3	0.16	0.6	0.1	1	1.70	0.06	0.13	NS	3.2
		8/12/10	10:10	Flowing	0.0049	7.79	2.47	0.12	1	5.97	19.1	<0.5	0.37	0.05	NS	NS	0.12	0.14	NS	1.8
		11/18/10	11:40	Flowing	0.0096	7.97	2.04	0.09	2	9.15	16.7	0.12	0.04 (J)	<0.007	1.8	1.84	0.36	0.4	1240	24
		2/4/11	10:20	Flowing	0.0005	8.05	2.83	0.13	1	NS	12.3	0.02 (J)	0.12(J)	<0.007	2.3	2.42	0.06	0.09	NS	1.5

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		5/11/11	12:00	Flowing	0.0025	7.91	2.32	0.11	6	5.16	18.1	0.39	0.11(J)	0.01(J)	4.5	4.62	0.03(J)	0.19	NS	24.8
		8/12/11	10:10	Flowing	0.0049	7.79	2.47	0.12	1	5.97	19.1	NS	NS	NS	<1	NS	NS	NS	NS	NS
		8/23/11	10:40	Flowing	0.0024	7.71	2.51	0.12	5	6.5	21.5	0.11	0.16(J)	0.02(J)	0.8	0.98	0.08	0.18	NS	9.8
LSM10	FS	8/24/09	10:30	Ponded	0	8.12	2.63	0.12	6	6.45	26	0.09	<0.007	<0.001	1.54	1.54	0.01	0.02	NS	22.8
		2/2/10	9:20	Flowing	0.2907	7.03	1.8	0.08	1	9.74	15.9	0.17	2	<0.007	1.6	3.60	0.14	0.21	NS	<20
		5/3/10	9:40	Flowing	0.0576	7.28	1.43	0.06	3	6.61	19.7	< 0.02	0.26	<0.007	0.8	1.06	0.21	0.24	NS	3.3
		8/11/10	9:10	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/17/10	10:30	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/3/11	9:20	Flowing	0.0984	7.03	1.42	0.06	2	6.94	16	0.23	1.28	<0.007	1.9	3.18	0.1	0.1	NS	8.6
		5/10/11	9:30	Flowing	0.0045	8.07	1.26	0.05	8	9.5	22.3	0.16	0.02 (J)	<0.007	3.3	3.32	0.27	0.27	NS	4.9
		8/22/11	10:00	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		11/29/11	9:50	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/2/12	10:10	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LSM11	FS	2/2/10	10:20	Flowing	0.0004	7.2	2.16	0.1	27	0.1	13.1	< 0.02(E)	<0.009	<0.007	0.8	0.81	0.39	0.6	NS	32
		5/4/10	12:10	Flowing	0.0000	7.3	1.28	0.05	22	0.24	15.7	0.62	<0.009	0.07	1.6	1.67	0.43	0.49	NS	5.4
		8/12/10	12:40	Flowing	0.0011	7.56	1.45	0.06	4	1.94	18.5	<0.5	0.23	<0.007	NS	NS	0.69	0.74	NS	1.2
		11/18/10	12:50	Ponded	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/4/11	11:10	Flowing	0.0007	7.57	1.25	0.05	8	4.86	12.1	0.22	0.18(J)	0.02(J)	3.3	3.50	0.36	0.38	NS	5.4
		5/12/11	10:40	Flowing	0.0001	7.48	1.49	0.06	31	0.31	16.1	0.77	0.06(J)	<0.007	3.9	3.96	0.49	0.56	NS	4.6
		8/12/11	12:40	Flowing	0.0011	7.56	1.45	0.06	4	1.94	18.5	NS	NS	NS	<1	NS	NS	NS	NS	NS
		8/23/11	13:10	Ponded	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LSM12	FS	5/4/10	10:30	Ponded	0	7.98	1.93	0.09	10	11.3	22	0.12	0.05(J)	<0.007	0.8	0.85	<0.007	0.06	NS	6
		8/11/10	12:10	Ponded	0	7.9	2.35	0.11	10	7.08	26.8	<0.5	<0.009	<0.007	<1	0.51	<0.007	0.13	NS	10.4
		11/17/10	14:50	Ponded	0	8.1	2.49	0.12	5	10.21	17.8	0.43	0.14(J)	0.02(J)	1.8	1.96	<0.007	0.06	1420	16
		2/4/11	9:20	Ponded	0	7.54	1.48	0.06	3	8.39	12.6	0.56	4.62	0.18	2.4	7.20	0.04(J)	0.05	NS	3
		5/10/11	10:20	Ponded	0	8.18	1.35	0.06	7	8.9	20.8	0.19	0.67	0.03(J)	2.7	3.40	0.05	0.1	NS	4

Site ID	Event Type	Date	Time	Water Flow	Flow (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		8/22/11	13:50	Ponded	0	7.82	1.73	0.08	6	6.25	27.2	0.16	<0.009	<0.007	2.5	2.51	0.05	0.14	NS	10.4
LSM13	FS	5/4/10	9:40	Flowing	0.0000	7.81	0.776	0.03	0	9.92	17.6	0.26	0.11(J)	<0.007	0.8	0.91	<0.007	0.06	NS	<1
LSM14	FS	8/12/10	10:40	Flowing	0.0000	7.91	2.04	0.09	30	9.37	25.3	<0.5	0.05(J)	<0.007	NS	NS	0.24	0.28	NS	11.6
		11/18/10	11:30	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		2/4/11	10:00	Flowing	0.0003	8.53	1.64	0.07	8	11.82	16.9	0.06	0.46	<0.007	1.9	2.36	0.21	0.22	NS	8.5
		5/11/11	11:40	Flowing	0.0001	7.68	1.78	0.08	8	8.23	20.1	0.71	1.41	0.06	6	7.47	0.05	0.29	NS	65.4
		8/23/11	10:30	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LSM 15	FS	5/12/11	10:00	Flowing	0.0010	7.4	3.74	0.19	10	7.21	19.6	0.22	0.39	0.01(J)	2.9	3.30	0.21	0.34	NS	55

FS – Field Screening
NS – Not Sampled
SID – Source Identification
Submer. – site was submerged (not sampled)
E – Result was qualified as "estimated" (see Table 5 for details)
J – Result value is greater than the method detection limit (MDL) but smaller than then project reporting limit (RL)

ATTACHMENT B

MONITORING SWEEPS SAMPLING LOCATIONS

CAR04 – San Marcos Creek at Discovery Street

CAR13 – Storm Drain Outfall to Lake San Marcos at the End of San Marino Drive

CAR14 – This location collects input from CAR14B and CAR14G.

CAR14B – Discharge from the gutter on La Plaza Drive (as It Enters the Curb Inlet)

CAR14G – Grassy Flume at the End of El Chico Lane
(Upstream of the Curb Inlet)

LSM01 – Flume Discharging to San Marcos Creek at San Pablo Drive

LSM02 – Storm Drain Outfall at 1853 San Pablo Drive

LSM03 – Storm Drain Outfall at the End of San Pablo Drive

LSM04 – White Pipe Draining to Lake San Marcos at the Boat Dock Near San Pablo Drive

LSM05 – Storm Drain Outfall at 1400 La Plaza Drive

LSM05A – Curb Inlet Draining to the Storm Drain Outfall at 1400 La Plaza Drive (to LSM05)

LSM05B – Underground Culvert Draining to the Storm Drain Outfall at 1400 La Plaza Drive (to LSM05 upstream of LSM05A)

LSM06 – Storm Drain Outlet at the End of Camino Del Vela

LSM07 – Storm Drain Outlet at 1501 La Fiesta Lane

LSM08 – White Pipe Draining to Lake San Marcos at Via Entrada Del Lago

LSM09 – Storm Drain Outfall at the North Side of the Bridge on the North-West Side of Lake San Marcos

LSM10 – Flume Discharging to San Marcos Creek at San Pablo Drive

LSM11 – Storm Drain Outfall at Via Brisa Del Lago

LSM12 – Pond at San Pablo Drive

LSM13 – Sprinkler Overspray at 1875 La Plaza Drive

LSM14 – Drain outfall 250 feet south of LSM07 (La Fiesta lane site)

LSM15 – Storm drain nearest the Lake San Marcos Gallery Room at La Bonita Drive

ATTACHMENT C

DATA QUALITY CONTROL AND QUALITY ASSURANCE REPORT FOR

THE DRY WEATHER MONITORING SWEEPS AT LAKE SAN MARCOS

DATA QUALITY CONTROL AND QUALITY ASSURANCE REPORT

FOR THE DRY WEATHER MONITORING SWEEPS AT LAKE SAN MARCOS

Detailed information about the quality control measures employed in this project is provided in the *County of San Diego's Dry Weather Monitoring Program and MS4 Program Quality Assurance Project Plan* (August 2012) (QAPP). Although the document has been prepared for the Dry Weather Monitoring and MS4 monitoring programs specifically, the general procedures for the collection and maintenance of data, personnel training, data quality objectives, analytical method requirements, and data review, verification and validation have been followed for the present project as described in the QAPP.

Data quality is evaluated through a series of standards that measure the adequacy of sample collection and analysis methods. In general, certain performance criteria (data quality objectives) are established to ensure that the data are acceptable and usable. Four quantitative performance criteria were used in the *Dry Weather Monitoring Sweeps at Lake San Marcos* to evaluate the degree of certainty or usability of the data to users. These criteria included precision, accuracy, completeness and representativeness. Precision is expressed as relative percent difference (RPD%) between two duplicate samples. Accuracy is expressed as the percent recovery (REC%) of an analyte from a sample of known analyte concentration. Completeness is defined as the percentage of actual measurements that are judged to be valid, over the planned overall measurements. Representativeness is the degree to which a sample (measurement) taken in a study reflect the true conditions being studied.

According to the QAPP, the constituents monitored should meet laboratory reporting limits as outlined in table 1 below.

Table 1. Data Quality Objectives.

Parameter	Reporting Limit (mg/L)	Accuracy	Precision	Recovery	Completeness	Frequency
Ammonia-N	0.05	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by supplier. If not available, within 80% to 120% of true value	Laboratory duplicate, Blind Field duplicate, or MS/MSD 25% RPD Laboratory duplicate minimum.	Matrix spike 80% - 120% or control limits at ± 3 standard deviations based on actual lab data.	90%	5% or 1 per batch of 20 samples
Nitrate-N	0.05					
Nitrite-N	0.05					
Ortho-phosphate-P	0.05					
TKN	0.5					
Total P	0.05					
TSS	20					

The laboratory analysis of the grab samples was conducted by Enviromatrix, Analytical Inc. (EMA).

Results

Data quality analysis for laboratory data was conducted using laboratory method blanks (LMB), blind field blank (BFB) samples, laboratory duplicate samples (LDS), blind field duplicate (BFD) samples, laboratory control samples (LCS), laboratory control sample duplicates (LCSDup), matrix spike samples (MSS), and matrix spike sample duplicates (MSSDup).

Blank Sample Analysis

The laboratory method blanks (LMB) were used to assess laboratory contamination introduced during sample preparation and analysis. The method blanks are processed in a manner identical to the associated field samples. At least one laboratory method blank is analyzed per 20 samples or one per batch, whichever is more frequent.

The blind field blank (BFB) samples were prepared at the sampling locations using laboratory-supplied bottles and reagent-grade water. The samples were prepared and transported in the same manner as the grab samples.

Only one BFB sample was prepared and analyzed for this project. The results of blank sample analysis are summarized in Table 2 below. All blank sample results were below the method detection limits for all constituents tested.

Table 2. Results of the Laboratory Method Blank and Blind Field Blank Sample Analysis.

Constituent	Laboratory Method Blanks		Blind Field Blank	
	No. Processed	No. Results Equal to or Above RL	No. Processed	No. Results Equal to or Above RL
Ammonia-N	14	All ND	1	1
Nitrate-N	14	All ND	1	1
Nitrite-N	15	All ND	1	1
TKN	13	All ND	1	1
Total Nitrogen	0	NA	0	NA
Ortho-phosphate-P	13	All ND	1	1
Total P	12	All ND	1	1
TSS	17	All ND	1	1

ND – constituent concentration below the detection level; NA – not applicable

Percent Recovery - Bias

The LCS, LCSDup, MSS, and MSSDup samples were evaluated for percent recovery. Percent recovery expresses the proportion of a known quantity that can be measured by a given analytical technique. It is calculated by dividing the result of the analysis (less any blank or sample contribution) by the known quantity of the analyte and expressed as a percentage. Laboratory control samples (LCS) are analyzed to assess the bias (accuracy) of a given analytical method. Matrix spike samples (MSS) are prepared from randomly selected field samples spiked with known amounts of target analytes. This process is then repeated for a subset of field samples to create MSSDups. Both MSS and MSSDup are used to evaluate

the effect of the sample matrix on the recovery of the target analyte(s) (i.e. to assess the bias from an environmental sample matrix plus normal method performance). At least one LCS/LCSDup and one MSS/MSSDup pair analysis were performed per 20 samples or one per batch, whichever was more frequent. The results of this analysis are summarized in Table 3.

Based on the analysis of LCS and LCSDup samples, data quality objectives for bias (accuracy) were met for all constituents. The DQO of 80-120% percent recovery for ammonia was exceeded in one of 11 MSS and MSSDup samples (both from the same batch). Accoridng to the laboratory report, the exceedance was due to matrix interference and the laboratory accepted the associated data batch based on LCS and LCSDup QC results. The data were not rejected for the purpose of this report but they were qualified as "Estimated" (E) in the report data table (Attachment A). The qualified data included ten ammonia results from samples collected at various sampling locations on 2/1/2010. A detailed summary of all potential data quality issues encountered is provided in Table 5

Table 3. Bias (Accuracy) Expressed as Percent Recovery for Lab Control Samples (LCS), LCS Duplicates (LCSDup), Matrix Spike Samples (MSS), and MSS Duplicates (MSSDup). Any DQO Exceedances are Outlined in Bold Print. - updated

Parameter	DQO	LCS and Duplicates			MSS and Duplicates		
		N	% Recovery (Min-Max)		N	% Recovery (Min-Max)	
			LCS	LCSDup		MSS	MSSDup
Ammonia-N	80-120%	14	87-118	82-114	11	**61**-119	**65**-108
Nitrate-N		14	84-103	86-104	13	83-101	81-107
Nitrite-N		15	99-109	99-110	12	81-102	84-102
Ortho-phosphate-P		13	92-116	87-117	10	84-114	87-120
TKN		13	87-111	84-106	12	82-113	84-111
Total P		12	90-115	95-112	10	87-112	82-111
TSS		3	97-103	97-104	0	NA	NA

Duplicate Analysis (Precision) and Completeness

Precision was calculated as the relative percent difference for laboratory control samples and duplicates (LCS and LCSDup), matrix spike samples and duplicates (MSS and MSSDup), laboratory duplicate samples (LDS), and blind field duplicate samples (BFDup). The results are summarized in Table 4 below.

A total of 7 precision ± 30% DQO exceedances were found. All these excedances were found in the blind field duplicate (BFDup) sample pairs (no presicion DQO exceedances were detected in the LCSDup, MSSDup and LDS). The exceedances occurred in one of 5 BFDup sample pairs for Nitrate as N, three of 5 BFDup sample pairs for Othrophosphate as P, two of 5 BFDup sample pairs for total phosphate as P, and one of 5 BFDup sample pairs for TKN (Table 5). All associated results were accepted based on the LCSDup and MSSDup results and qualified with "E" for "Estimated" in the reported data (Attachment A).

The completeness analysis indicated 100% completeness for all analytes.

Table 4. Precision Expressed as the Relative Percent Difference for Lab Control Samples (LCS) and LCS Duplicates (LCDDup), Matrix Spike Samples (MSS) And MS Duplicates (MSSDup), Laboratory Duplicate Samples (LDS), and Blind Field Duplicate Samples (BFD). Any DQO Exceedances are Outlined in Bold Print. Also Shown: Percent Completeness.

Parameter	Numbers of Duplicate Pairs (N) and Ranges of Relative Percent Differences Achieved									Completeness	
	DQO	LCS & LCSDup		MSS & MSSDup		LDS		BFD		DQO	Achieved
		N	Min - Max	N	Min – Max	N	Min – Max	N	Min – Max		
Ammonia-N	± 30%	10	4-15	11	2-20	12	0-19	5	0-17	90%	100%
Nitrate-N		10	2-9	11	2-13	11	5-18	5	0-**44**		100%
Nitrite-N		13	0-5	12	0-6	7	0-19	5	0		100%
Ortho-phosphate-P		9	0-9	10	2-9	12	0.5-29	5	0-**86**		100%
TKN		10	3-14	10	1-16	12	3-20	5	14-**63**		100%
Total P		9	0.2-18	10	1-5	12	0.6-15	5	0-**67**		100%
TSS		3	1-7	0	NA	15	0-18	5	0		100%

Results outside of DQO range are boldfaced

NA – Not Applicable

ND – both results non-detect for the duplicate pair

Table 5. List of QC Issues Found and Results classified as "Estimated" (E) in the Report Data Table.

Analyte	QC Type	Issue	Batch (Lab QCID)	Lab. Classif.*	Problem Description	Affected Data	Batch Qualification
Ammonia	MSS	Rec=61%	21101	QM-05	MSS > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	Ammonia results from samples collected on 2/1/2010 at CAR04, CAR13, CAR14B, LSM01, LSM02, SLM03, LSM04, LSM05, LSM05A and LSM05B	E (Estimated)
Ammonia	MSSDup	Rec=65%	21101	QM-05	MSSDup > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	Ammonia results from samples collected on 2/1/2010 at CAR04, CAR13, CAR14B, LSM01, LSM02, SLM03, LSM04 ,LSM05, LSM05A and LSM05B	E (Estimated)
Nitrate	BFDup	RPD=44	1120503	W-02	BFDup RPD > DQO of ±30%. Batch accepted based on MSS/ MSSDup and LCS/LCSDup QC results.	All nitrate as N results for samples collected on 11/29/2011 at CAR04, CAR14, LSM01, LSM02, SLM03, LSM04 and LSM05	E (Estimated)
Orthophosphate as P	BFDup	RPD= 49	1020428		BFDup RPD > DQO of ±30%. Batch accepted based on MSS/ MSSDup and LCS/LCSDup QC results.	All nitrate as N results for samples collected on 2/3/2011 at CAR04,CAR13, CAR14B, LSM01, LSM04, LSM05, LSM05A, LSM05B, LSM10 and LSM12	E (Estimated)
Orthophosphate as P	BFDup	RPD= 86	1051024		BFDup RPD > DQO of ±30%. Batch accepted based on MSS/ MSSDup and LCS/LCSDup QC results.	All orthophosphate as P results for samples collected on 5/10/2011 at CAR04, LSM01, LSM04, LSM05, LSM05A, LSM05B, LSM10 and LSM12	E (Estimated)
Orthophosphate as P	BFDup	RPD= 75	1113025		BFDup RPD > DQO of ±30%. Batch accepted based on MSS/ MSSDup and LCS/LCSDup QC results.	All orthophosphate as P results for samples collected on 11/29/2011 at CAR04, LSM01, LSM02, SLM03, LSM04 and LSM05	E (Estimated)
Total P	BFDup	RPD= 67	1051405		BFDup RPD > DQO of ±30%. Batch accepted based on MSS/ MSSDup and LCS/LCSDup QC results.	All orthophosphate as P results for samples collected on 5/10/2011 at CAR04, LSM01, LSM04, LSM05, LSM05A,	E (Estimated)

Analyte	QC Type	Issue	Batch (Lab QCID)	Lab. Classif.*	Problem Description	Affected Data	Batch Qualification
						LSM05B, LSM10 and LSM12	
Total P	BFDup	RPD= 56	1020930		BFDup RPD > DQO of ±30%. Batch accepted based on MSS/ MSSDup and LCS/LCSDup QC results.	All nitrate as N results for samples collected on 2/3/2011 at CAR04, CAR13, CAR14B, LSM01, LSM02, SLM03, LSM04, LSM05. LSM05A, LSM05B and LSM10	E (Estimated)
TKN	BFDup	RPD= 63	1121301		BFDup RPD > DQO of ±30%. Batch accepted based on MSS/ MSSDup and LCS/LCSDup QC results.	All TKN results for samples collected on 11/29/2011 at CAR04, LSM01, LSM02, SLM03, LSM04, and LSM05	E (Estimated)

***Laboratory Classification Categories:**

QM-05 – The spike recovery was outside acceptance limits for the MSS and/or MSSDup due to matrix interference. The LCS and/or LCSDup were within acceptance limits showing that the laboratory is in control and the data are acceptable.

W-02 - The sample for nitrate analysis was preserved with H2SO4 after the nitrite portion of the analysis was completed to extend the holding time for the sample. Nitrate results are corrected for the nitrite contribution per the method.

CHU-WQA21

Attachment B

Lake San Marcos

Monitoring Data Summary

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D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

October 5, 2011
Project No. 201043W

Erica Ryan
Stormwater Program Manager
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: Lake San Marcos Additional Monitoring, August 2011

Dear Erica,

D-MAX Engineering, Inc. (D-MAX) is pleased to submit initial results from the storm water monitoring conducted upstream of Lake San Marcos in August 2011. This round of sampling was the second round of monitoring overall and the first of two sets of Phase 2 visits to "sites of interest," as identified by the City. The sites of interest were selected based on review of the initial round of montoring that D-MAX completed earlier this summer; City staff selected three additional sites beyond the originally planned total of 16 sites of interest, for a total of 19.

Results Summary

All 19 sites of interest were visited. Two samples were taken at site C-25—one in the main channel (site C-25), and one from a significant flow from an outfall into the channel (designated as site C-25A). Since significant flow from the outfall had not been observed before, it was sampled separately to assess its water quality independently.

Tables and figures attached to this letter include the following:

- Table 1: Field Observations and Measurements
- Table 2: Laboratory Analysis Results
- Figure 1: Mapped Total Nitrogen Results
- Figure 2: Mapped Total Phosphorus Results

Monitoring Notes

Because a high relative percent difference (37 percent) between two orthophosphate phosphorus samples from the same site was recorded in the previous round, additional duplicate samples were collected during this round of sampling. A total of four duplicate samples were analyzed. One of the four pairs of samples had a relative percent difference of 36 percent (site B-20), although the other three pair had recorded differences at relatively normal levels. Unlike previous results though, this is the same relative percent difference as recorded for total phosphorus. QA/QC data provided by the laboratory show their internal laboratory duplicates met relevant standards. Because the water at site B-20 was ponded and because data

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from the other sites, which did not have ponded water, did not have a similarly high relative percent difference for phosphorus, the most likely explanation is that the initial sampling in the shallow ponded water disturbed and suspended some sediment that contained phosphorus, some of which was then captured in the second sample. We will continue to monitor differences in phosphorus levels in subsequent rounds of monitoring to see if further patterns are uncovered.

Algae was observed at most sites, but no obvious sources of runoff containing nutrients were noted at any site. Total nitrogen levels were generally lower than had been observed in the May monitoring, with only one site (B-20) having a total nitrogen value over 10 mg/L. All sites tested, however, had total nitrogen of at least 1.0 mg/L and total phosphorus of at least 0.1 mg/L. Total nitrogen and total phosphorus levels at the sites monitored are presented spatially on figures 1 and 2.

If you have any questions regarding this monitoring report, please feel free to contact me at (858) 586-6600 ext. 25.

Sincerely,
D-MAX Engineering, Inc.

John Quenzer
Senior Scientist

Table 1: Field Observations and Measurements

Site	Date	Time	Flow (gpm)	Algae	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)
A-05A	8/23/2011	10:50	221	Submerged	23.0	8.66	22.13	1.98	6.10
A-05A	8/23/2011	10:55	221	Submerged	23.5	8.66	15.44	2.02	6.30
A-07	8/23/2011	14:30	8.5	Submerged and floating	26.4	7.40	3.02	4.57	6.32
A-08	8/23/2011	13:00	Ponded	Submerged	26.0	8.34	7.90	2.02	4.76
A-20	8/22/2011	14:00	484	No Algae	25.0	8.10	15.09	2	6.38
A-21	8/23/2011	10:00	<1	No Algae	20.3	7.66	18.76	1.99	6.23
A-22	8/24/2011	14:00	Dry	No Algae	ns	ns	ns	ns	ns
B-01	8/22/2011	10:30	36	Submerged	25.2	7.80	4.89	2.64	6.52
B-20	8/25/2011	11:00	Ponded	No Algae	24.9	7.73	41.34	2.33	8.40
B-20	8/25/2011	11:05	Ponded	No Algae	24.1	7.69	40.86	2.33	8.73
B-24	8/25/2011	10:10	Dry	No Algae	ns	ns	ns	ns	ns
B-25	8/25/2011	10:30	Dry	No Algae	ns	ns	ns	ns	ns
C-13	8/24/2011	11:40	Ponded	Submerged and floating	25.7	8.48	38.07	0.95	4.11
C-20	8/22/2011	12:00	347	Submerged and floating	24.5	7.88	1.58	2.04	6.68
C-24*	8/24/2011	13:20	Ponded	No Algae	ns	ns	ns	ns	ns
C-25	8/24/2011	10:20	28	Submerged and floating	31.2	7.87	2.21	2.16	10.52
C-25A	8/24/2011	10:30	23	Submerged	25.9	8.34	0 J	1.72	7.71
D-20	8/23/2011	15:10	17	Submerged and floating	26.4	7.40	11.15	4.69	6.35
D-21	8/24/2011	14:30	Ponded	Submerged and floating	26.5	8.10	2.51	5.96	5.05
D-21	8/24/2011	14:35	Ponded	Submerged and floating	26.4	8.12	3.1	6.01	5.34
D-22	8/25/2011	15:00	1	Submerged and floating	35.7	9.93	31.96	1.80	8.66
D-23	8/25/2011	13:30	17	Submerged and floating	28.8	8.35	1.20	1.14	8.30
D-24	8/25/2011	12:00	0.6	Submerged and floating	29.8	9.48	18.41	0.85	5.29
D-24	8/25/2011	12:05	0.6	Submerged and floating	29.9	9.37	17.82	0.83	5.15

Notes:

Gray shaded row: duplicate sample collected for quality control.

ns = not sampled

* A very small amount of ponded water was observed, but not enough to collect and analyze a sample.

Table 2: Laboratory Analysis Results

Site	Date	Time	Flow (gpm)	Ammonia As N (mg/L)	Nitrate As N (mg/L)	Nitrite As N (mg/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Orthophosphate As P (mg/L)	Total Phosphorus As P (mg/L)
A-05A	8/23/2011	10:55	221	1.25	2.1	nd	1.31	3.42	0.48	0.50
A-05A	8/23/2011	10:50	221	1.30	2.0	nd	1.34	3.40	0.52	0.55
A-07	8/23/2011	14:30	8.5	1.20	1.0	0.021	1.23	2.25	0.27	0.30
A-08	8/23/2011	13:00	Ponded	1.40	2.6	nd	1.46	4.10	1.22	1.30
A-20	8/22/2011	14:00	484	0.87	2.2	nd	0.90	4.10	0.11	0.13
A-21	8/23/2011	10:00	<1	1.15	1.8	nd	1.19	3.00	0.58	0.60
B-01	8/22/2011	10:30	36	1.15	2.3	0.031	1.20	3.55	0.12	0.14
B-20	8/25/2011	11:00	Ponded	1.30	11.6	0.152	1.35	13.10	0.67	0.70
B-20	8/25/2011	11:05	Ponded	1.30	11.4	0.155	1.37	12.90	0.43	0.45
C-13	8/24/2011	11:40	Ponded	5.10	2.3	nd	5.20	7.50	0.67	0.70
C-20	8/22/2011	12:00	347	0.96	2.6	nd	0.99	3.60	0.10	0.11
C-25	8/24/2011	10:20	28	1.05	4.3	0.028	1.12	3.50	0.23	0.25
C-25A	8/24/2011	10:30	23	1.00	2.5	0.026	1.08	3.60	0.22	0.25
D-20	8/23/2011	15:10	17	1.30	0.7	nd	1.34	2.10	0.97	1.05
D-21	8/24/2011	14:30	Ponded	1.55	2.4	0.09	1.68	4.17	0.14	0.15
D-21	8/24/2011	14:35	Ponded	1.45	2.5	0.092	1.52	4.11	0.14	0.15
D-22	8/25/2011	15:00	1	0.95	1.8	nd	1.02	2.80	0.31	0.35
D-23	8/25/2011	13:30	17	0.40	2.0	nd	0.44	2.40	0.27	0.30
D-24	8/25/2011	12:05	0.6	0.85	0.6	nd	0.90	1.50	0.23	0.25
D-24	8/25/2011	12:00	0.6	0.75	0.8	nd	0.79	1.60	0.18	0.20

Notes:
Gray shaded row contains a duplicate sample collected for quality control.
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Figure 1: Mapped Total Nitrogen Results

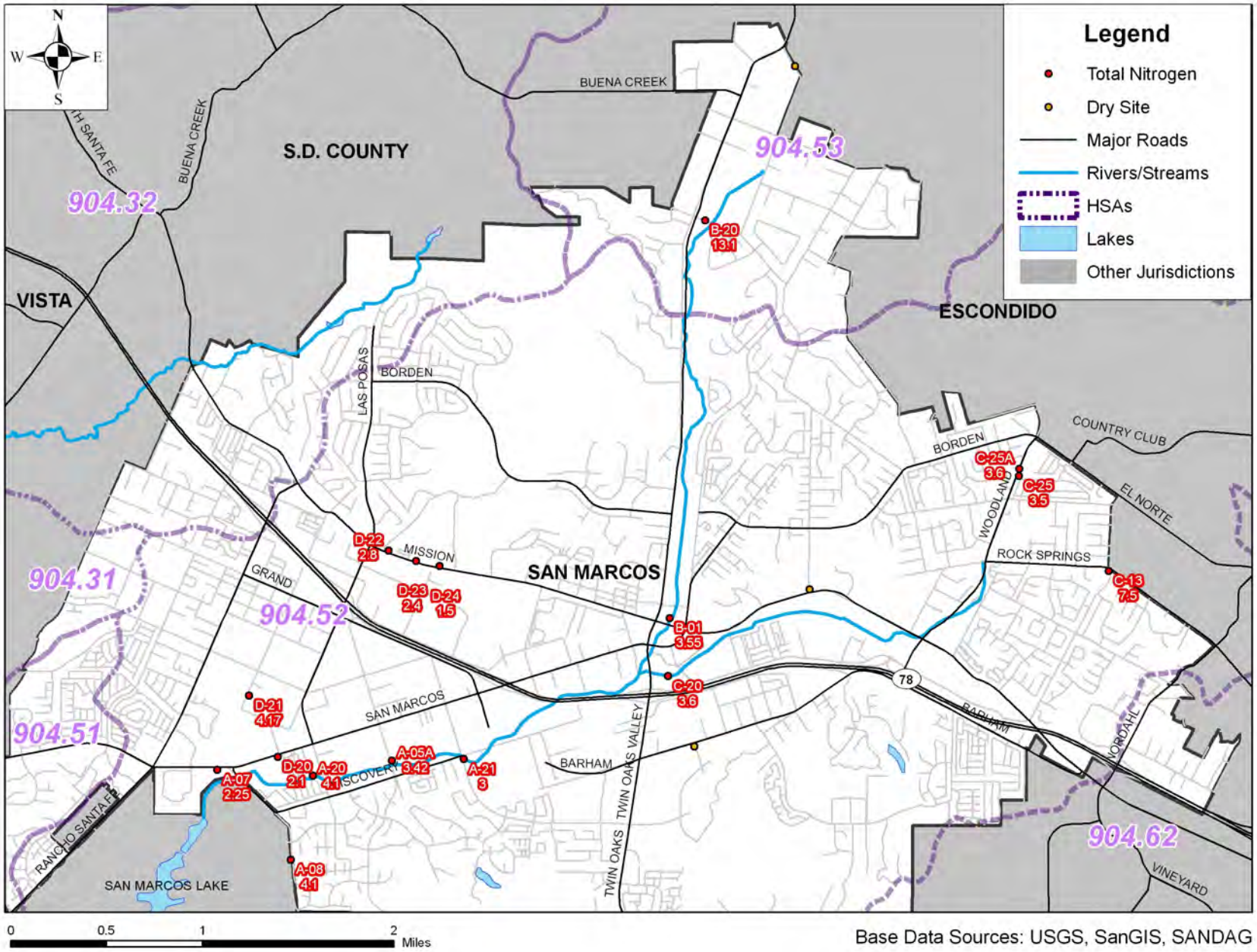

Figure 2: Mapped Total Phosphorus Results

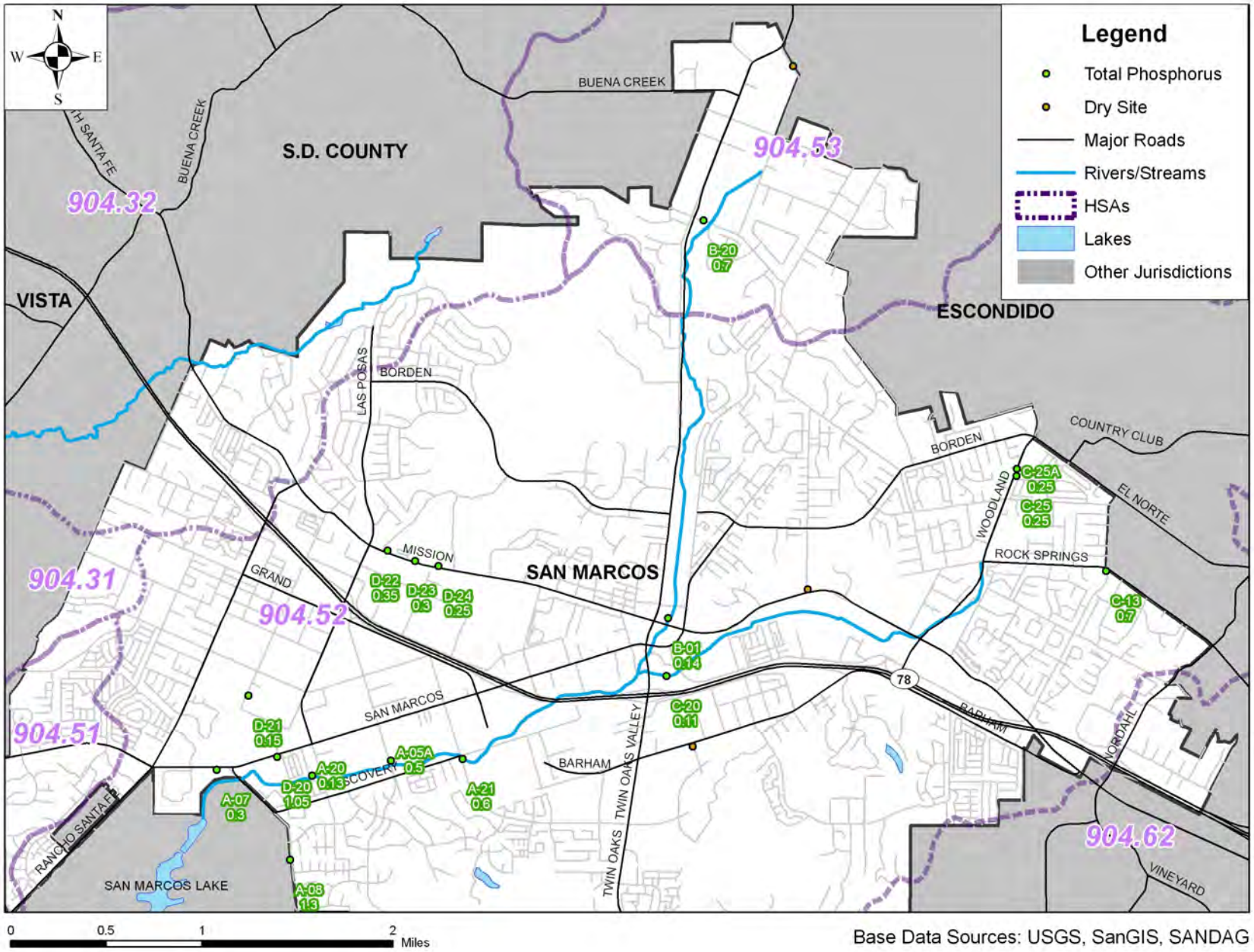

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

December 5, 2011
Project No. 201043W

Erica Ryan
Stormwater Program Manager
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: Lake San Marcos Additional Monitoring, Wet Weather (November 2011)

Dear Erica,

D-MAX Engineering, Inc. (D-MAX) is pleased to submit initial results from the wet weather storm water monitoring conducted upstream of Lake San Marcos on November 4, 2011. The three sites identified as wet weather monitoring sites in the Quality Assurance Project Plan (QAPP) were all visited and sampled.

Results Summary

Samples were collected beginning in the late morning of November 4. Rainfall intensity was not exceptionally high, but runoff was observed and sampled at all three sites. A duplicate sample was also collected at one site for quality assurance purposes. Because this was a wet weather sampling event, dissolved oxygen and algae were not monitored, as directed in the QAPP. Turbidity tests were done at the analytical laboratory rather than in the field due to turbidity meter malfunctions encountered during sampling.

Results of the sampling showed relatively high turbidity at all three sites, but the reading at Site A-27 was about three times higher than the values for the other two sites. The total nitrogen level at Site A-27 was also about three times higher than recorded at the other two sites; Site A-27 also had the highest total phosphorus level.

Tables and figures attached to this letter include the following:

- Table 1: Field Observations and Measurements
- Table 2: Laboratory Analysis Results
- Figure 1: Mapped Total Nitrogen Results
- Figure 2: Mapped Total Phosphorus Results

An Excel file of historical data is also included as an electronic attachment.

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

Monitoring Notes

If you have any questions regarding this monitoring report, please feel free to contact me at (858) 586-6600 ext. 25.

Sincerely,
D-MAX Engineering, Inc.

John Quenzer
Senior Scientist

Table 1: Field Observations and Measurements

Site	Date	Time	Flow (gpm)	Algae	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
A-27	11/4/2011	11:30	Flowing	na	15.6	8.4	269	0.45	na
A-27	11/4/2011	11:35	Flowing	na	15.9	8.1	247	0.48	na
C-23	11/4/2011	12:20	Flowing	na	17	7.5	90.2	0.21	na
D-23	11/4/2011	10:30	Flowing	na	14.7	6.9	88.3	0.16	na

Notes:
Gray shaded row: duplicate sample collected for quality control.
na = not applicable. Algae and dissolved oxygen are not monitored in wet weather.
Note that turbidity tests were submitted to the analytical laboratory for analysis, not tested in the field. However, the turbidity results are still included in this table for consistency with past reports.
Per the QAPP, numeric flow measurements are not taken during wet weather.

Table 2: Laboratory Analysis Results

Site	Date	Time	Flow (gpm)	Ammonia As N (mg/L)	Nitrate/Nitrite As N (mg/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Orthophosphate As P (mg/L)	Total Phosphorus As P (mg/L)
A-27	11/4/2011	11:30	Flowing	0.72	14.0	3.7	17.7	0.40	0.67
A-27	11/4/2011	11:35	Flowing	0.89	13.8	2.3	16.1	0.34	0.63
C-23	11/4/2011	12:20	Flowing	1.07	0.95	3.3	4.3	0.25	0.40
D-23	11/4/2011	10:30	Flowing	0.13	1.48	4.2	5.7	0.16	0.22

Notes:
Gray shaded row contains a duplicate sample collected for quality control.
nd = not detected

Figure 1: Mapped Total Nitrogen Results

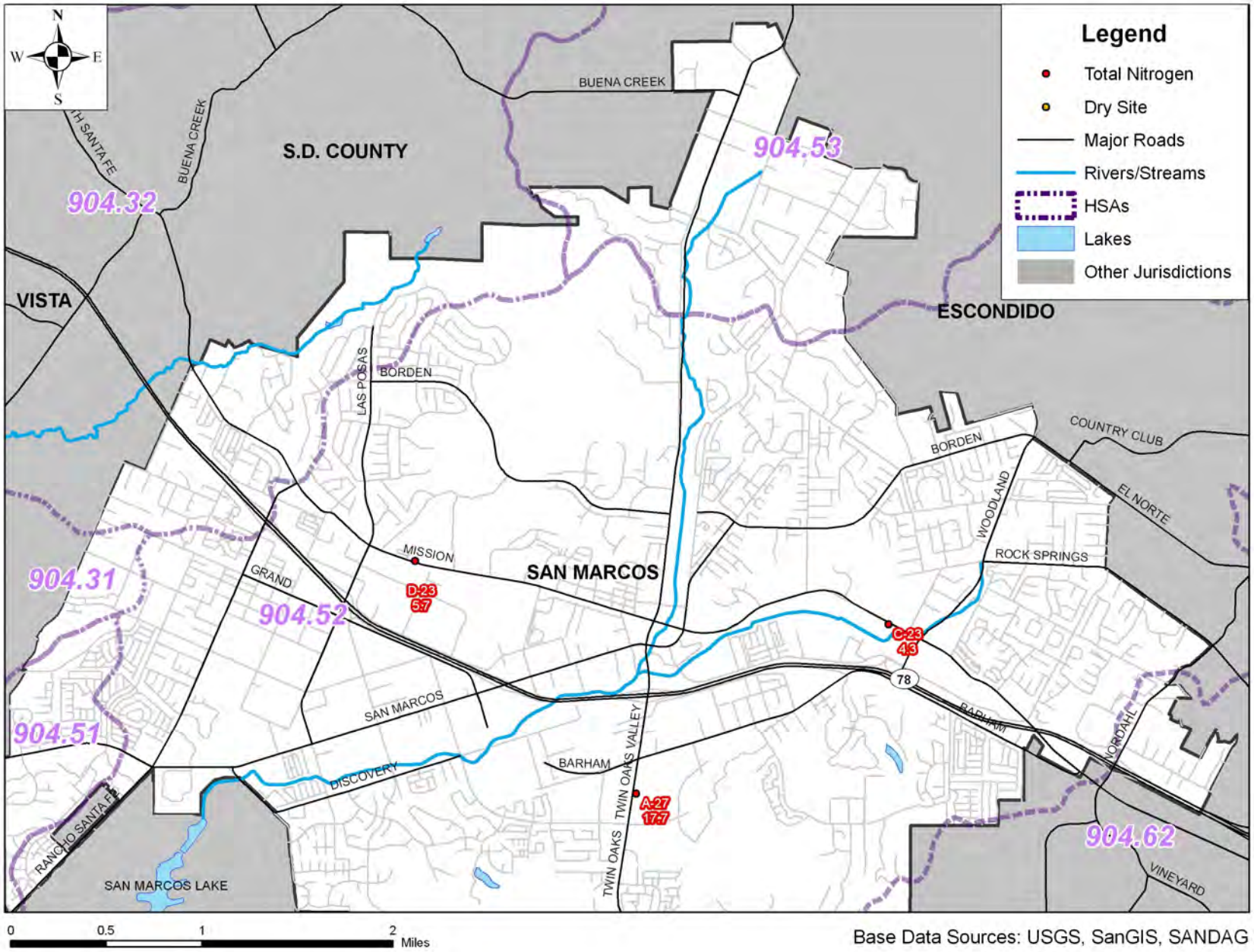

Figure 2: Mapped Total Phosphorus Results

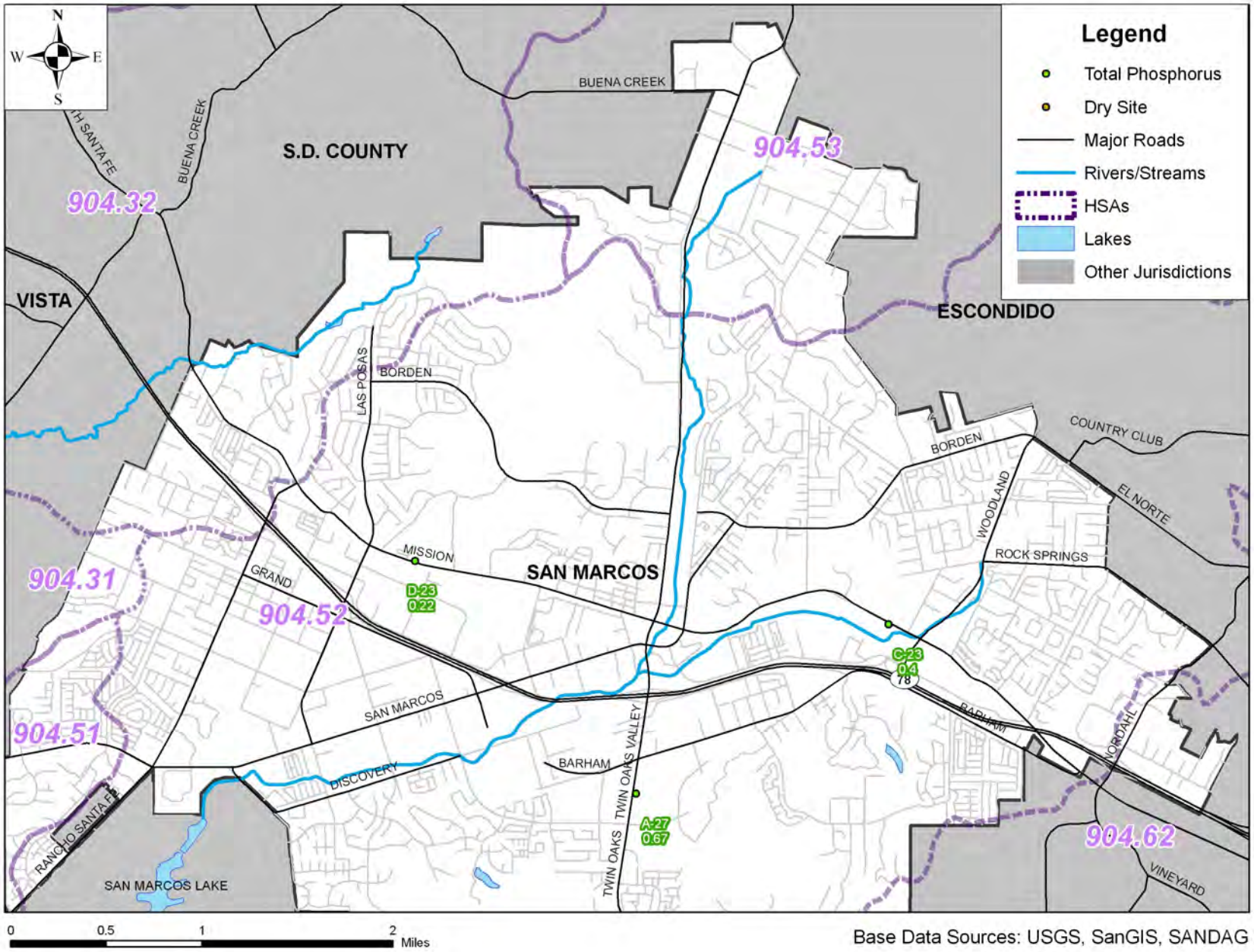

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

December 16, 2011
Project No. 201043W

Erica Ryan
Stormwater Program Manager
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: Lake San Marcos Additional Monitoring, November/December 2011

Dear Erica,

D-MAX Engineering, Inc. (D-MAX) is pleased to submit initial results from the water quality monitoring conducted upstream of Lake San Marcos in November and December 2011. This round of sampling was the third round of monitoring overall and the second set of Phase 1 visits to the complete list of sites identified in the QAPP.

Results Summary

Thirty site visits were conducted; 15 samples were collected at sites with flowing water and submitted for laboratory analyses. Samples were collected on November 15 through 18, 2011 and on December 1, 2011. Sampling for this round was originally scheduled to be completed on Monday, November 21, but due to rain the final day of sampling in this round has to be postponed until December 1.

Tables and figures attached to this letter include the following:

- Table 1: Field Observations and Measurements
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- Figure 1: Mapped Total Nitrogen Results
- Figure 2: Mapped Total Phosphorus Results

An Excel file of historical data is also included as an electronic attachment.

Monitoring Notes

In general, total nitrogen values were relatively lower for samples collected in the last two rounds of sampling than for samples collected in May 2011. As more samples are collected over this wet season, it should become more apparent if there is a correlation between the cumulative amount of rain received (as a rough proxy for relative elevation of the groundwater table) and the level of total nitrogen, especially the nitrate component, in sampling results. This information may be useful in helping evaluate whether the data point toward a potential link between groundwater contribution and nitrogen levels in surface waters.

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

As in the previous round of monitoring, Site B-20 had a total nitrogen value over 10 mg/L. It also had a relatively low dissolved oxygen level of 3.89 mg/L. Site B-20 is located at an outlet from a detention basin, in the northern portion of the City, which has a significant amount of agricultural land use in its drainage area. All sites tested had total nitrogen of at least 1.0 mg/L. Total nitrogen and total phosphorus levels at the sites monitored are presented spatially on figures 1 and 2.

One duplicate sample was collected during this round of sampling, and no abnormal differences between the routine and duplicate samples were noted in phosphorus or other constituents measured.

If you have any questions regarding this monitoring report, please feel free to contact me at (858) 586-6600 ext. 25.

Sincerely,
D-MAX Engineering, Inc.

John Quenzer
Senior Scientist

Table 1: Field Observations and Measurements

Site	Date	Time	Flow (gpm)	Algae	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
A-05A	11/16/2011	10:30	1,126	No Algae	19.8	7.7	3.78	2.08	5.96
A-07	11/17/2011	14:45	5	Submerged	19.6	8.1	21.29	4.71	6.75
A-08	11/16/2011	14:50	Ponded	Floating	ns	ns	ns	ns	ns
A-20	11/16/2011	13:20	1,531	No Algae	18.6	7.7	4.46	2.10	6.53
A-20	11/16/2011	13:25	1,531	No Algae	17.0	7.7	4.73	2.06	6.41
A-21	11/16/2011	10:00	<1	No Algae	16.6	7.6	3.95	2.06	5.61
A-22	11/15/2011	12:40	Dry	No Algae	ns	ns	ns	ns	ns
A-24	11/15/2011	12:20	Dry	No Algae	ns	ns	ns	ns	ns
A-25	11/15/2011	11:50	Dry	No Algae	ns	ns	ns	ns	ns
A-27	11/15/2011	10:50	Ponded	Submerged	ns	ns	ns	ns	ns
AW-01	11/15/2011	13:30	Dry	No Algae	ns	ns	ns	ns	ns
B-01	12/1/2011	10:30	429	Submerged	14.9	7.7	7.52	2.58	6.20
B-20	11/15/2011	14:10	15	No Algae	19.5	7.0	11.72	2.29	3.89
B-21	11/15/2011	15:00	Dry	No Algae	ns	ns	ns	ns	ns
B-22	11/15/2011	14:45	Dry	No Algae	ns	ns	ns	ns	ns
B-23	11/18/2011	11:00	Ponded	No Algae	ns	ns	ns	ns	ns
B-24	11/18/2011	10:10	Dry	No Algae	ns	ns	ns	ns	ns
B-25	11/18/2011	10:20	Dry	No Algae	ns	ns	ns	ns	ns
C-01B	11/18/2011	12:45	Dry	No Algae	ns	ns	ns	ns	ns
C-13	12/1/2011	13:30	Ponded	Floating	ns	ns	ns	ns	ns
C-20	12/1/2011	11:30	369	Submerged and floating	15.3	7.7	2.91	2.00	7.33
C-21	12/1/2011	14:10	Ponded	No Algae	ns	ns	ns	ns	ns
C-22	11/18/2011	13:10	Dry	No Algae	ns	ns	ns	ns	ns
C-23	11/18/2011	12:55	Dry	No Algae	ns	ns	ns	ns	ns
C-24	11/18/2011	12:20	<1	No Algae	17.3	7.6	38.78	0.99	6.00
C-25	12/1/2011	13:00	62	Submerged	18.9	8.3	5.19	1.71	7.70
D-20	11/17/2011	14:00	55	Submerged and floating	18.3	7.8	1.80	2.36	7.47

Site	Date	Time	Flow (gpm)	Algae	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
D-21	11/17/2011	13:30	<1	No Algae	18.3	6.6	3.83	6.00	0.87
D-22	11/17/2011	10:00	3	Floating	19.2	8.7	162	2.05	8.42
D-23	11/17/2011	11:10	17	Submerged	20.1	7.8	1.13	1.36	6.64
D-24	11/17/2011	11:55	2	Submerged and floating	22.6	9.2	1.62	1.49	7.57

Notes:
Gray shaded row: duplicate sample collected for quality control.
ns = not sampled (dry or ponded site)

Table 2: Laboratory Analysis Results

Site	Date	Time	Flow (gpm)	Ammonia As N (mg/L)	Nitrate/Nitrite As N (mg/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Orthophosphate As P (mg/L)	Total Phosphorus As P (mg/L)	TSS (mg/L)
A-05A	11/16/2011	10:30	1,126	1.2	2.0	1.25	3.30	0.25	0.27	5
A-07	11/17/2011	14:45	5	1.3	1.7	1.75	3.45	0.18	0.20	1
A-20	11/16/2011	13:20	1,531	1.25	2.2	1.34	3.55	0.21	0.24	2
A-20	11/16/2011	13:25	1,531	1.3	2.1	1.36	3.50	0.20	0.23	3
A-21	11/16/2011	10:00	<1	1.3	3.52	1.38	4.90	0.27	0.30	7
B-01	12/1/2011	10:30	429	1.05	5.245	1.12	6.40	0.94	1.0	nd
B-20	11/15/2011	14:10	15	1.2	17.472	1.30	18.8	0.33	0.35	3
C-20	12/1/2011	11:30	369	0.9	2.5	0.96	3.50	1.20	1.35	nd
C-24	11/18/2011	12:20	<1	3.25	2.359	3.55	5.91	0.76	0.80	6
C-25	12/1/2011	13:00	62	0.9	2.6	0.95	3.60	1.32	1.45	nd
D-20	11/17/2011	14:00	55	0.9	0.8	0.93	1.73	0.56	0.60	3
D-21	11/17/2011	13:30	<1	1.6	2.289	1.68	3.97	0.31	0.35	1
D-22	11/17/2011	10:00	3	0.9	2.635	0.94	3.58	0.56	0.60	23
D-23	11/17/2011	11:10	17	0.85	0.4	0.87	1.27	0.62	0.65	nd
D-24	11/17/2011	11:55	2	0.8	0.5	0.83	1.33	0.23	0.25	2

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Figure 1: Mapped Total Nitrogen Results

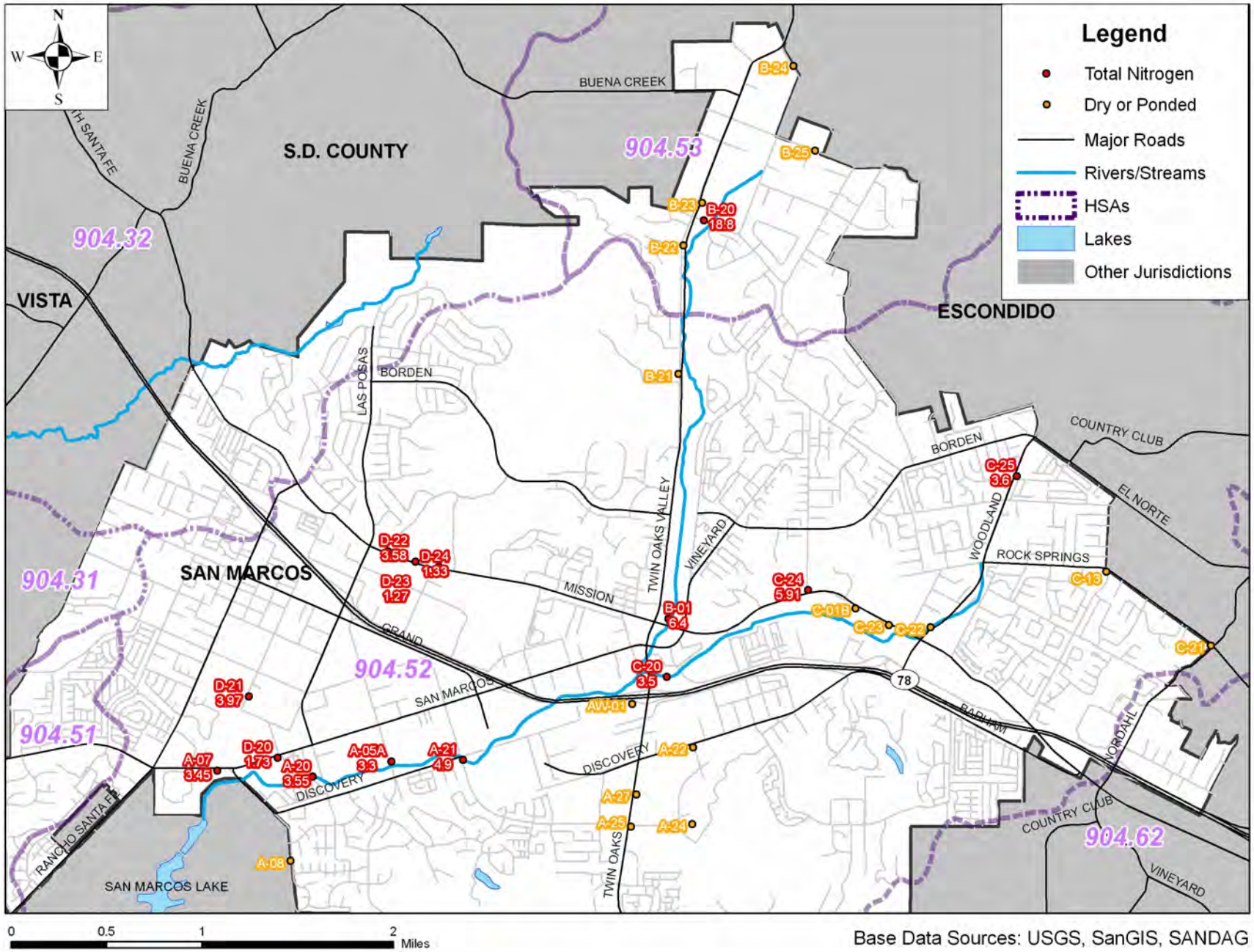

Figure 2: Mapped Total Phosphorus Results

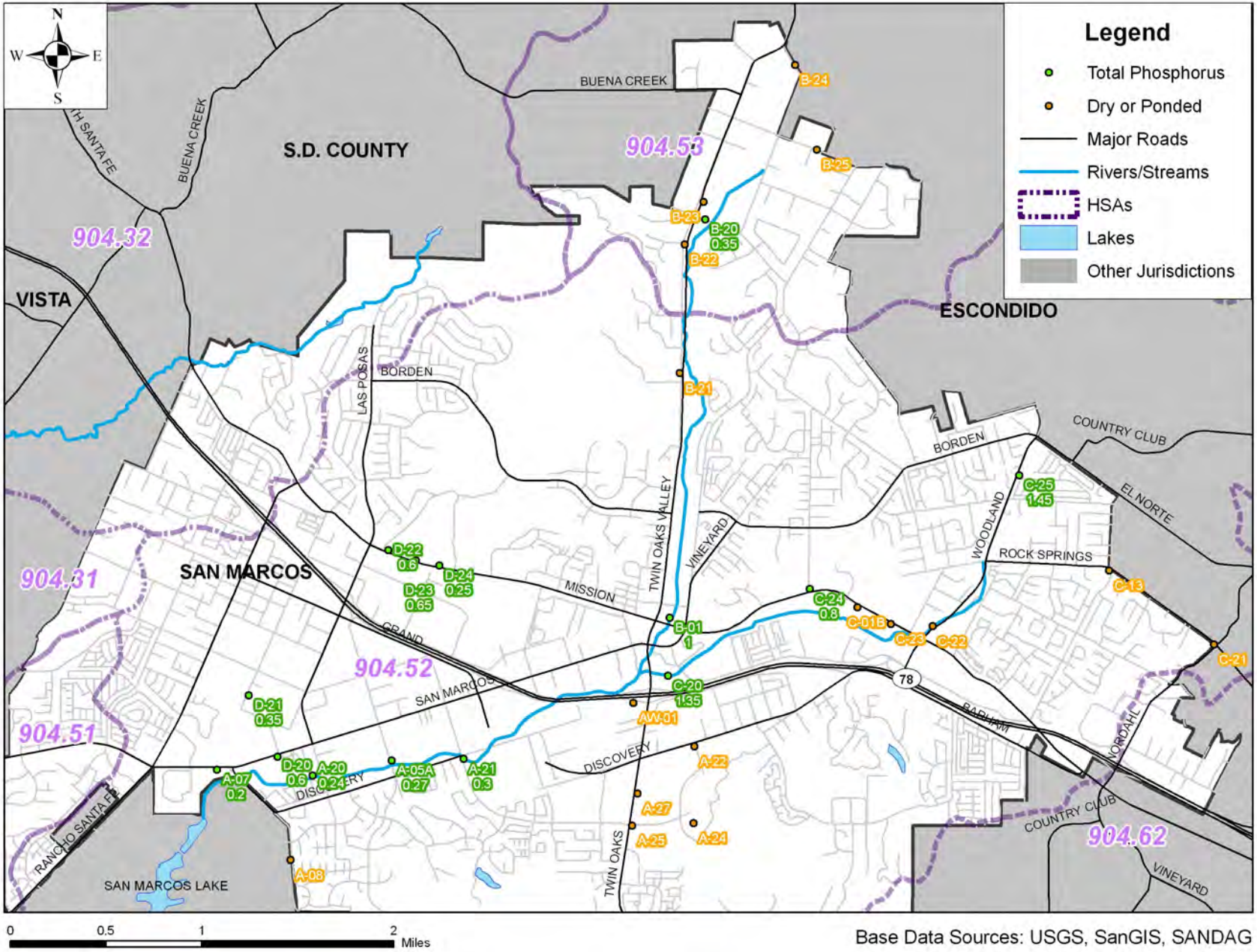

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

December 16, 2011
Project No. 201043W

Erica Ryan
Stormwater Program Manager
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: Lake San Marcos Additional Monitoring, November/December 2011

Dear Erica,

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Results Summary

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A-20	11/16/2011	13:20	1,531	No Algae	18.6	7.7	4.46	2.10	6.53
A-20	11/16/2011	13:25	1,531	No Algae	17.0	7.7	4.73	2.06	6.41
A-21	11/16/2011	10:00	<1	No Algae	16.6	7.6	3.95	2.06	5.61
A-22	11/15/2011	12:40	Dry	No Algae	ns	ns	ns	ns	ns
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C-22	11/18/2011	13:10	Dry	No Algae	ns	ns	ns	ns	ns
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A-20	11/16/2011	13:25	1,531	1.3	2.1	1.36	3.50	0.20	0.23	3
A-21	11/16/2011	10:00	<1	1.3	3.52	1.38	4.90	0.27	0.30	7
B-01	12/1/2011	10:30	429	1.05	5.245	1.12	6.40	0.94	1.0	nd
B-20	11/15/2011	14:10	15	1.2	17.472	1.30	18.8	0.33	0.35	3
C-20	12/1/2011	11:30	369	0.9	2.5	0.96	3.50	1.20	1.35	nd
C-24	11/18/2011	12:20	<1	3.25	2.359	3.55	5.91	0.76	0.80	6
C-25	12/1/2011	13:00	62	0.9	2.6	0.95	3.60	1.32	1.45	nd
D-20	11/17/2011	14:00	55	0.9	0.8	0.93	1.73	0.56	0.60	3
D-21	11/17/2011	13:30	<1	1.6	2.289	1.68	3.97	0.31	0.35	1
D-22	11/17/2011	10:00	3	0.9	2.635	0.94	3.58	0.56	0.60	23
D-23	11/17/2011	11:10	17	0.85	0.4	0.87	1.27	0.62	0.65	nd
D-24	11/17/2011	11:55	2	0.8	0.5	0.83	1.33	0.23	0.25	2

Notes:
Gray shaded row contains a duplicate sample collected for quality control.
nd = not detected

Figure 1: Mapped Total Nitrogen Results

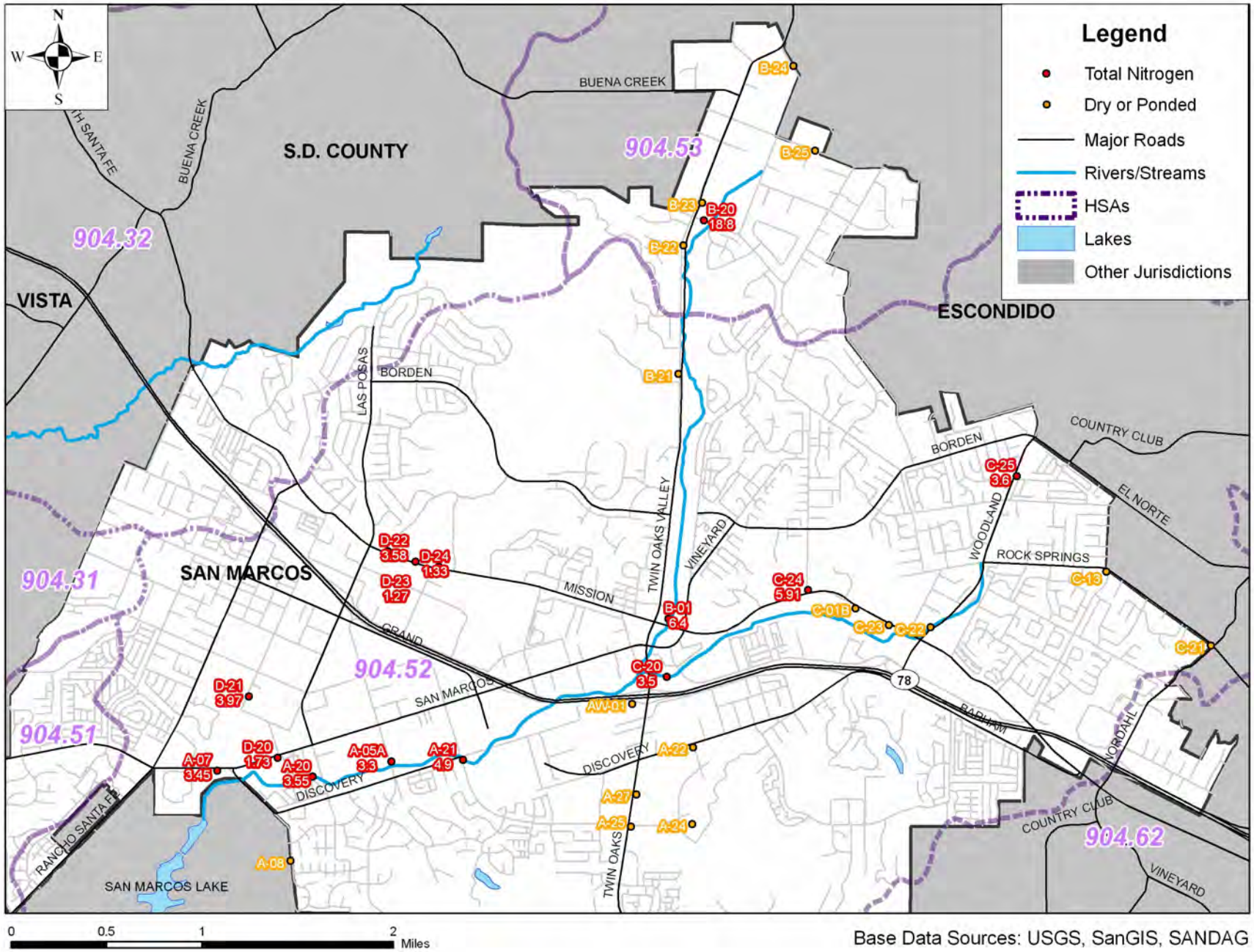

Figure 2: Mapped Total Phosphorus Results

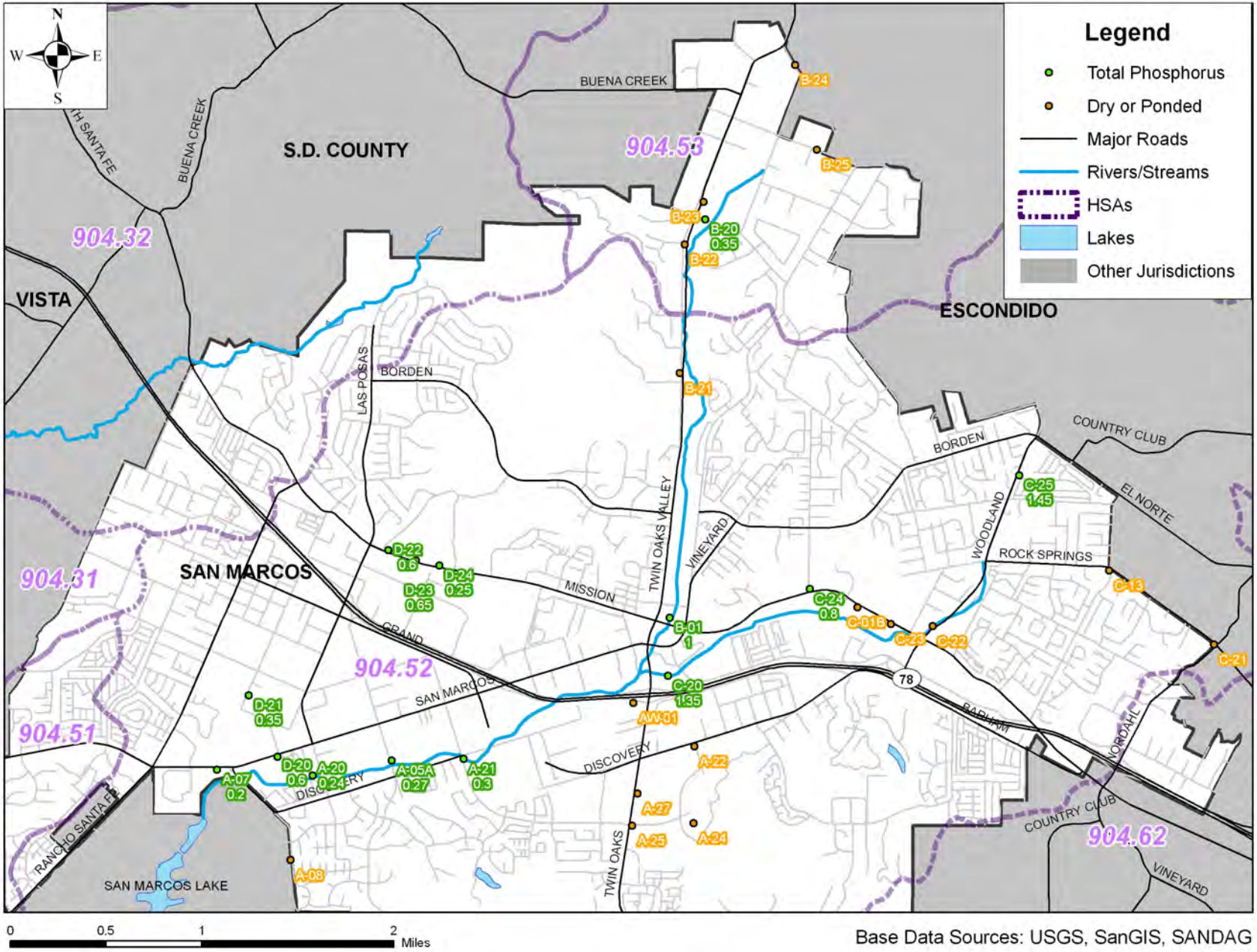

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

April 30, 2012
Project No. 201043W

Erica Ryan
Stormwater Program Manager
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: Lake San Marcos Additional Monitoring, April 2012

Dear Erica,

D-MAX Engineering, Inc. (D-MAX) is pleased to submit the results from the water quality monitoring conducted upstream of Lake San Marcos in April 2012. This round of sampling was the fifth round of monitoring overall and the third set of Phase 1 visits to the complete list of sites identified in the QAPP.

Results Summary

Thirty site visits were conducted; 15 samples were collected at sites with flowing water and submitted for laboratory analyses. Samples were collected on April 2, 3, 4, and 6, 2012.

Tables and figures attached to this letter include the following:

- Table 1: Field Observations and Measurements
- Table 2: Laboratory Analysis Results
- Figure 1: Mapped Total Nitrogen Results
- Figure 2: Mapped Total Phosphorus Results

An Excel file of historical data is also included as an electronic attachment.

Monitoring Notes

In general, total nitrogen results were similar to samples collected in the previous round of sampling in February 2012, and Site B-20 had a total nitrogen value over 10 mg/L. During this round of monitoring, Site B-01 also had a total nitrogen value over 10 mg/L. Total nitrogen and total phosphorus levels at the sites monitored are presented spatially on figures 1 and 2.

Field turbidity readings for sites A-05A, A-07, A-20, A-21, and C-20 were higher than expected based on historical data, and visually the water did not appear cloudy enough to result in the turbidity levels reported. It was suspected that the field meter may have been providing anomalous values, so samples were also submitted for laboratory analysis of turbidity. Laboratory analyses of turbidity values were generally lower than the anomalous field results, and, based on the visual observations of water clarity, likely are more representative than the

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

field meter readings. The field meter manufacturer was contacted regarding the results, and based on their recommendation, a thorough cleaning of the meter was performed and it meter was recalibrated. Turbidity readings on subsequent sampling days appeared more typical after these steps were taken.

The turbidity level at one other location, Site D-21, also had a relatively high turbidity measurement of 50.00 NTU. Since field observations indicated that the reading was likely due to the presence of fine particles in the slow moving water at the sample collection point, no additional laboratory analysis was deemed necessary. Field and laboratory results are included in tables 1 and 2 below.

In general, flow rates were slightly higher during this round of sampling. The increase in flow was most likely attributed to rainfall over the period prior to sampling. Also note that in previous rounds of monitoring, the flow rate at Site A-21 could not be determined due to inaccessibility. Since during the most recent visit dense vegetation had been cleared away around the outlet at the northwest corner of the intersection of Bent Avenue and Discovery Street, the field crew was able to collect a flow measurement, which is shown in Table 1.

One duplicate sample was collected during this round of sampling, and no abnormal differences between the routine and duplicate sample were noted.

If you have any questions regarding this monitoring report, please feel free to contact me at (858) 586-6600 ext. 25 or Bri Martin at ext. 14.

Sincerely,
D-MAX Engineering, Inc.

John Quenzer
Senior Scientist

Table 1: Field Observations and Measurements

Site	Date	Time	Flow (gpm)	Algae	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
A-05A	4/3/2012	10:30	816	Submerged	15.6	7.7	30.47*	1.80	6.19
A-07	4/3/2012	12:15	8	Submerged and on banks	19.5	8.1	13.38*	4.54	6.79
A-08	4/2/2012	15:20	Ponded	Submerged and floating	ns	ns	ns	ns	ns
A-20	4/2/2012	11:00	1,353	No Algae	15.7	7.4	44.13*	1.35	7.25
A-20	4/2/2012	11:05	1,353	No Algae	15.1	7.5	40.33*	1.33	6.77
A-21	4/2/2012	14:30	1,591	No Algae	16.7	7.6	37.50	1.39	7.15
A-22	4/2/2012	13:55	Ponded	No Algae	ns	ns	ns	ns	ns
A-24	4/2/2012	13:45	Ponded	No Algae	ns	ns	ns	ns	ns
A-25	4/2/2012	13:30	Ponded	No Algae	ns	ns	ns	ns	ns
A-27	4/2/2012	13:15	Ponded	No Algae	ns	ns	ns	ns	ns
AW-01	4/2/2012	12:30	Dry	No Algae	ns	ns	ns	ns	ns
B-01	4/6/2012	10:15	482	Submerged	14.2	7.7	4.58	2.30	6.06
B-20	4/4/2012	14:45	95	Submerged	21.5	7.6	19.59	2.20	5.33
B-21	4/6/2012	10:00	Dry	No Algae	ns	ns	ns	ns	ns
B-22	4/6/2012	9:45	Dry	No Algae	ns	ns	ns	ns	ns
B-23	4/4/2012	14:15	Ponded	Floating	ns	ns	ns	ns	ns
B-24	4/4/2012	14:00	Dry	No Algae	ns	ns	ns	ns	ns
B-25	4/4/2012	13:45	Dry	No Algae	ns	ns	ns	ns	ns
C-01B	4/3/2012	15:00	Dry	No Algae	ns	ns	ns	ns	ns
C-13	4/4/2012	11:10	2	Submerged and floating	24.1	9.0	11.75	0.50	10.78
C-20	4/2/2012	9:30	441	Submerged and floating	16.2	7.4	30.87*	1.29	5.70
C-21	4/4/2012	10:50	Dry	No Algae	ns	ns	ns	ns	ns
C-22	4/4/2012	10:30	Dry	No Algae	ns	ns	ns	ns	ns

Site	Date	Time	Flow (gpm)	Algae	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)
C-23	4/3/2012	15:15	Ponded	No Algae	ns	ns	ns	ns	ns
C-24	4/6/2012	12:00	<1	No Algae	18.9	7.9	6.79	2.27	4.30
C-25	4/4/2012	11:50	141	Submerged and floating	22.2	8.3	2.57	1.63	7.46
D-20	4/3/2012	13:00	206	Submerged and floating	17.2	7.6	7.64	2.04	5.32
D-21	4/3/2012	13:50	<1	No Algae	17.7	6.8	50.00	4.18	1.69
D-22	4/6/2012	13:00	3	Submerged and floating	23.1	8.6	13.67	1.33	6.10
D-23	4/6/2012	14:00	11	Submerged and floating	19.0	7.9	1.35	1.20	6.40
D-24	4/6/2012	14:50	2	Submerged and floating	23.6	9.5	2.47	1.47	6.63

Notes:

Gray shaded row: duplicate sample collected for quality control.

ns = not sampled (dry or ponded site)

* Samples were submitted for laboratory analysis of turbidity since it was suspected that the field meter was producing anomalous values.

Table 2: Laboratory Analysis Results

Site	Date	Time	Flow (gpm)	Ammonia As N (mg/L)	Nitrate/Nitrite As N (mg/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Orthophos-phate As P (mg/L)	Total Phosphorus As P (mg/L)	TSS (mg/L)	Turbidity (NTU)
A-05A	4/3/2012	10:30	816	nd	4.65	nd	4.7	0.13	0.21	9 J	7.74
A-07	4/3/2012	12:15	8	0.37	3.54	0.8	4.3	0.06	0.12	nd	1.14
A-20	4/2/2012	11:00	1,353	nd	3.5	nd	3.5	0.19	0.26	nd	3.44*
A-20	4/2/2012	11:05	1,353	nd	3.47	nd	3.6	0.19	0.24	1 J	3.53*
A-21	4/2/2012	14:30	1,591	nd	3.79	nd	3.9	0.11	0.29	2 J	4.24
B-01	4/6/2012	10:15	482	nd	11.84	1.4	13.2	0.16	0.18	2 J	na
B-20	4/4/2012	14:45	95	nd	26.78	nd	26.8	0.09	0.38	5 J	na
C-13	4/4/2012	11:10	2	nd	0.0145	nd	nd	0.04 J	0.22	3 J	na
C-20	4/2/2012	9:30	441	nd	1.73	nd	1.7	0.11	0.15	nd	2.97*
C-24	4/6/2012	12:00	<1	0.02 J	2.71	nd	2.7	0.4	0.55	21	na
C-25	4/4/2012	11:50	141	0.02 J	2.99	nd	3.0	0.09	0.18	1 J	na
D-20	4/3/2012	13:00	206	0.03 J	0.478	nd	0.5	0.08	0.09	2 J	na
D-21	4/3/2012	13:50	<1	0.08 J	2.18	nd	2.2	0.4	0.42	6 J	na
D-22	4/6/2012	13:00	3	0.02 J	2.11	0.3 J	2.4	0.07	0.1	8 J	na
D-23	4/6/2012	14:00	11	0.08 J	3.14	nd	3.1	0.07	0.16	1 J	na

Notes:

Gray shaded row contains a duplicate sample collected for quality control.

nd = not detected; na = not analyzed.

J = Value is below the reporting limit, therefore result is an estimate.

* This sample was analyzed outside of the method recommended holding time due to the analysis request being made after the holding time had expired.

Figure 1: Mapped Total Nitrogen Results

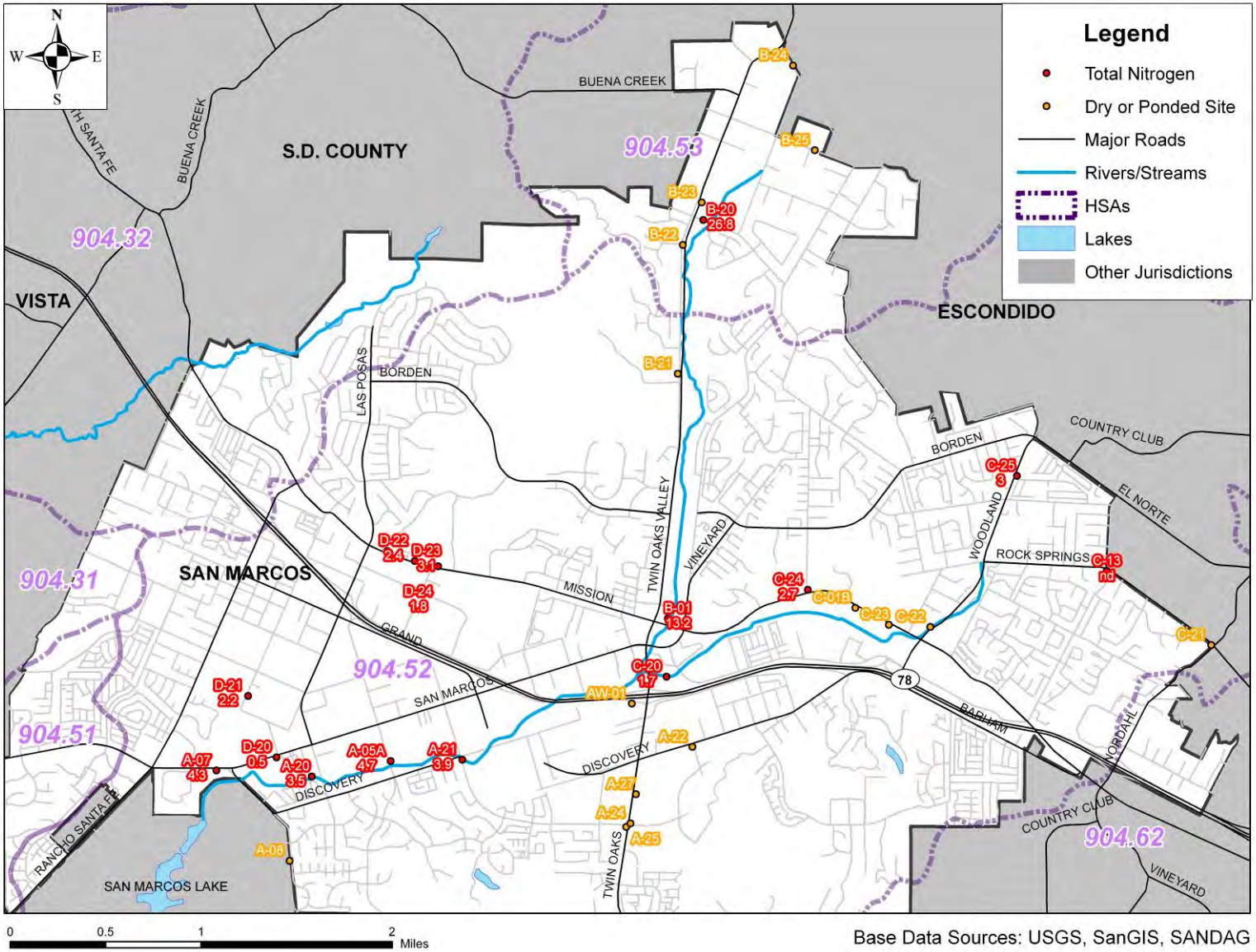

Base Data Sources: USGS, SanGIS, SANDAG

Figure 2: Mapped Total Phosphorus Results

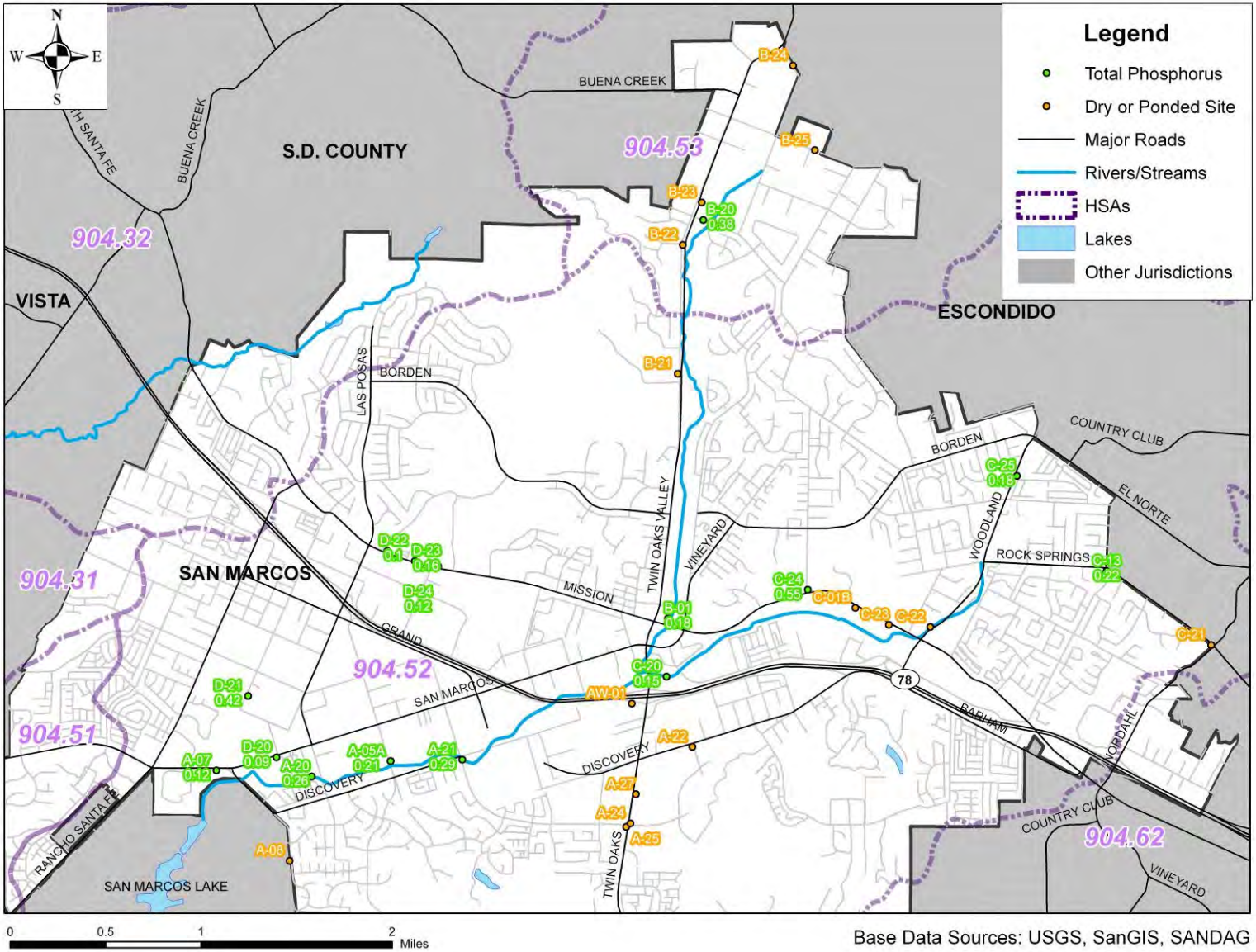

TITLE: SAN DIEGO COUNTY ENTEROCOCCUS REGROWTH STUDY
ID #: CHU-WQA23

ACTIVITY DESCRIPTION

The San Diego County *Enterococcus* Regrowth Study was developed to assess storm drains as a potential source of *Enterococcus* bacteria to San Diego's marine coastal waters during dry weather. The goals of the study include: 1) to determine if biofilms and algae that form on the surfaces of storm drains support the growth of enterococci; 2) to determine if enterococci growing on storm drain surfaces are a source of bacteria to sand and beach water; and 3) to determine if enterococci growing on storm drain surfaces may be differentiated from those of fecal origin. Enterococcal growth will be assessed using small concrete blocks (coupons) tethered to the bottom surfaces of storm drain pipes. The hypothesis is that enterococci in urban runoff will attach to the coupons located inside the storm drain pipes, form biofilm, and multiply, leading to increased densities of enterococci over time. This raises the possibility that bacterial growth within storm drains may be at least partly responsible for elevated concentrations of enterococci observed in urban runoff impacting beach water quality.

Based on historical bacterial monitoring data, the presence of continuous dry weather flow, and accessibility, both Moonlight Beach in Encinitas and a City of San Diego beach in the community of La Jolla were chosen to participate in this regional study. The site at Moonlight Beach was of particular interest because it has an ultra violet urban runoff treatment facility (UV Facility) located approximately 230 yards upstream of Moonlight Beach. The UV Facility diverts 85% of the dry weather flows in Cottonwood Creek into an ultra violet treatment system designed to inactivate bacteria and viruses in the creek water. Bacteria removal efficiencies through the UV Facility have been calculated at >99%. In February 2006, the City of Encinitas published the Moonlight Beach Urban Runoff Treatment Facility Final Report which indicated that additional sources of bacteria are contributing to the degradation of water quality downstream of the UV Facility. While nearly 100% of the bacteria were removed from the treated water at the UV Facility, removal efficiencies from the effluent to the Moonlight Beach outfall were not as dramatic, indicating significant regeneration of bacteria between the UV Facility and the beach. Despite the presence of the UV Facility, samples from Moonlight Beach occasionally exceed the Enterococci AB411 single sample standard of 104 MPN/100 ml. Hypotheses offered in the City's Moonlight Beach Urban Runoff Treatment Facility Final Report indicated that increases in bacteria downstream of the UV Facility could be primarily due to animals in the creek and on the beach, sediments and debris in the creek and storm drains, and the wrack line on the beach.

TMDL APPLICABILITY

Moonlight State Beach was named in the *Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region*. The

study results will support efforts to meet Bacteria TMDL requirements at Moonlight State Beach.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2010-11: Monitoring Plan, Field Sampling
FY 2011-12: Field Sampling, Data Analysis, Prepare Final Report

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING COPERMITTEES

- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Southern California Coastal Water Research Project

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Cottonwood Creek Watershed is a sub-basin within the San Marcos Hydrologic Area. Bacteria has been identified as a priority water quality problem in the San Marcos HA (904.5). The shoreline at Moonlight Beach is 303(d) listed for bacteria for which there is an established TMDL (Resolution No. R9-2010-0001). This monitoring study addresses bacteria regrowth within Cottonwood Creek which is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

The final report demonstrates that scientifically sound methods and analysis were conducted in order to ensure reliable results and assessment. Duplicate samples and control sample were collected. Water sample testing was conducted in a certified lab. Correlations in enterococci concentrations were determined using Microsoft Excel Software and SigmaStat, version 2 (Systat, Chicago, IL). Multivariate analysis was conducted using Canoco for Windows 4.5 (Microcomputer Power, Ithaca, NY).

TITLE: **COTTONWOOD CREEK WATERSHED LID RETROFIT PROJECT (PROP 84 GRANT)**
ID #: **CHU-WQA24**

ACTIVITY DESCRIPTION

The Cottonwood Creek Watershed LID Retrofit Project is intended to reduce runoff volumes and address bacteria loading within Cottonwood Creek. As an alternative to traditional drainage infrastructure design, the proposed project will consist of a thorough watershed-wide analysis to identify opportunities for both public and private LID retrofit projects. The identified LID retrofit projects will be prioritized based on those projects that achieve the most effective runoff volume and bacteria load reduction. The result of this project will be a comprehensive LID implementation plan for the watershed. The plan will set the stage for several LID retrofit projects to be designed and installed at various municipal facilities throughout the watershed. In compliment to the LID implementation plan, a watershed scale outreach and training program will also be developed to educate, promote, and incentivize the use of LID features on residential and commercial properties.

The City of Encinitas received $242,460 in grant funds to complete this planning project. The City will spend $26,940 in local matching funds. The total project cost is $269,400.

TMDL APPLICABILITY

The study results will support efforts to meet Bacteria TMDL requirements at Moonlight State Beach.

TIME SCHEDULE FOR IMPLEMENTATION

To be determined.

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING ENTITIES

- San Dieguito Water District
- City of Encinitas Environmental Commission
- Solana Center for the Environment
- Olivenhain Municipal Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Oil & Grease

- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Cottonwood Creek Watershed is a sub-basin within the San Marcos Hydrologic Area. Bacteria and sediment have been identified as priority water quality problems in the San Marcos HA (904.5). The shoreline at Moonlight Beach is 303(d) listed for bacteria for which there is an established TMDL (Resolution No. R9-2010-0001). Through the planning of future LID BMP installation, this project addresses bacteria and sediment issues within Cottonwood Creek which is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

A Project Assessment and Evaluation Plan (PAEP) will be developed to define how to measure effectiveness.

TITLE: RAINWATER HARVESTING WORKSHOP AND REBATE PROGRAM
ID #: CHU-WQA25

ACTIVITY DESCRIPTION

This project was initiated as a voluntary pilot project to offer incentives to City of Encinitas residents who install a rainwater harvesting system to capture rainwater and reuse it on their property. Reuse of rainwater minimizes potential downstream stormwater runoff impacts and promotes municipal water conservation. The project is a cooperative effort between the City of Encinitas Stormwater Division, the San Dieguito Water District, the Olivenhain Municipal Water District and the Solana Center for Environmental Innovation. It is in the mutual interest of all agencies to promote stormwater runoff control and water conservation. The program will include public workshop(s) to educate City residents about water supply, rainwater harvesting and monetary rebates to those participants who purchase and install a rainwater catchment system on their property.

At a minimum the project will include one workshop taught by a professional in the field of landscape design, water conservation, stormwater resources management, or similar and $50 rebates for 30 participants who are residents of the City of Encinitas and own their single-family residences. Additional workshops and rebates may be offered if all parties agree to continue the project.

TMDL APPLICABILITY

This activity is not being implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2011-12: Planning and Implementation of Pilot Workshop and Rebates
Future Fiscal Years: Implantation of additional workshops and rounds of rebates if Pilot was successful and agencies agree to continue the program.

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING ENTITIES

- San Dieguito Water District
- Olivenhain Municipal Water District
- Solana Center for Environmental Innovation

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

- Organics
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

To be determined.

Figure 1. Rainwater Harvesting Public Workshop

Figure 2. Rainwater Harvesting Public Workshop

Figure 3. Rainwater Catchment Basin Assembly

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TITLE: ENCINITAS CREEK CHANNEL IMPROVEMENT PROJECT
ID #: CHU-WQA26

ACTIVITY DESCRIPTION

The Encinitas Creek Channel Improvement project will address flooding, invasive species and vector issues along a portion of the creek channel at the northwest corner of El Camino Real and Leucadia Boulevard. Encinitas Creek currently runs within an incised channel along the eastern portion of the site, near the toe of a manufactured slope adjacent to El Camino Real. An overgrowth of invasive and non-native plant species along the creek is choking out native habitat and creating a build-up of debris which has led to increased mosquito breeding areas. The site is also a popular target for illegal dumping and transient use; evidenced through the presence of fill, trash, ornamental landscaping, and encampment sites scattered throughout the property. Additionally, increased sediment from upstream development is deposited at the northwest corner of the intersection, which has led to the development of shallow ponds of water, creating perpetual mosquito habitat and flooding of the roadway during major storm events.

The project is currently at 100% design, and the CEQA Mitigated Negative Declaration has been completed. The project team is currently working through ACOE, CDFG, and RWQCB to obtain the necessary permits in order to construct the project. Based on comments from the ACOE, the permit will be granted in approximately 6 months, once USFWS has completed their Biological Opinion. CDFG and RWQCB permits are in draft form, and are pending ACOE permit approval.

As part of the proposed project, long-term annual maintenance is proposed within the channel bottom to ensure that vegetation growth and sediment accumulation does not preclude water flow through the channel. If it is determined via an annual site inspection that vegetation and sediment removal is needed, then the City would remove the accumulated sediment and vegetation.

TMDL APPLICABILITY

This project is not being conducted as a result of a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

To be determined.

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This project is consistent with the collective watershed strategy for Carlsbad HU. The project will address sediment issues via the removal of increased sediment and annual maintenance of sediment accumulation and vegetation management. The Carlsbad HU high priority water quality pollutants will also be addressed via the removal of encampments, trash and other debris.

EFFECTIVENESS MEASUREMENTS

To be determined.

TITLE: **CAMPUS LANDSCAPE RENOVATION, CONSERVATION & POLLUTANT LOAD REDUCTION PROJECT (PROP 50 IRWM GRANT)**
ID #: **CHU-WQA27**

ACTIVITY DESCRIPTION

The Campus Landscape Renovation, Conservation and Pollutant Load Reduction project will protect and enhance water quality by reducing irrigation runoff through improved water use efficiency at MiraCosta College located within the Carlsbad Watershed in San Diego County. This site represents a large public facility with extensive landscaping, water demand, and educational opportunity located adjacent to the San Elijo Lagoon, which is a 303(d) listed water body impaired for bacteria, nutrients and sediment. The objectives of the project are to provide measurable water use efficiency and water quality benefits and to demonstrate the link between irrigation runoff reduction and associated reductions in pollutant concentrations and loading. This will be accomplished through landscape renovation, flow monitoring and water quality monitoring both on-site and at key outfall locations into the lagoon.

Recent studies and local water quality monitoring have shown that irrigation runoff may be a significant source of bacteria (and possibly nutrients). Project elements include: 1) the development of a comprehensive campus-wide landscape renovation plan, 2) the construction of a priority project identified in the landscape renovation plan, 3) communitywide education and outreach on efficient irrigation methods and landscapes using the new project site as an educational facility, and 4) measurements of effectiveness through the monitoring of water quality and quantity.

Water usage will be measured and assessed before, during and after program implementation to determine water usage reductions. Direct flow measurements and chemical testing will be used to assess water quality benefits. Monitoring will be conducted before, during, and after implementation of water conservation efforts. Water quality monitoring will consist of a variety of constituents including bacterial, nutrients, and conductivity. Estimates of pollutant loads and pollutant load reductions will be calculated using flow monitoring and chemical test data together.

This project integrates programs and strategies for enhancing the Region's water supply, water quality and watersheds. It will reduce the Region's reliance on imported water by reducing water use through an enhanced efficiency of current irrigation practices. It will protect and enhance the health and viability of the San Elijo Lagoon by reducing pollutant loads that are contained in irrigation runoff. Monitoring and analyzing the quantity and quality of runoff before and after the implementation of landscape renovations and will establish the project's effectiveness.

TMDL APPLICABILITY

This activity is not specifically being implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2011-12: Planning
FY 2012-13: Implementation, Monitoring
FY 2013-14: Monitoring, Assessment

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, sediment and nutrients as the high priority water quality pollutants. This activity addresses all three high priority water quality problems and is therefore consistent with the collective Carlsbad WMA strategy.

EFFECTIVENESS MEASUREMENTS

A Project Assessment and Evaluation Plan (PAEP), Monitoring Plan and Quality Assurance Project Plan (QAPP) will be developed to assess the effectiveness of this project. Water usage will be measured and assessed before, during and after program implementation to determine water usage reductions. Direct flow measurements and chemical testing will be used to assess water quality benefits. Monitoring will be conducted before, during, and after implementation of water conservation efforts. Water quality monitoring will consist of a variety of constituents including bacterial, nutrients, and conductivity. Estimates of pollutant loads and pollutant load reductions will be calculated using flow monitoring and chemical test data together.

TITLE: BUENA VISTA CREEK ENHANCEMENT PROJECT AT BRENGLE TERRACE PARK
ID #: CHU-WQA28

ACTIVITY DESCRIPTION

The City of Vista's Buena Vista Creek Enhancement Project at Brengle Terrace Park will provide tremendous benefits to the community through the enhancement and expansion of community green space. Brengle Terrace Park in northeastern Vista is the focal point of the project, which consists of two components: the creation of a new nature trail that will link Brengle Terrace Park with the city-wide urban trail system and riparian restoration and native tree re-establishment along Buena Vista Creek (Creek). The new nature trail will begin on the southeastern corner of Brengle Terrace Park and meander along the southern tributary of Buena Vista Creek. This area of the Creek will also undergo restoration to a natural riparian corridor, which will include the removal of invasive plants and re-establishment of native species, including planting 285 trees, and a new pedestrian bridge. The restoration efforts will provide water quality benefits. Additionally, there will be three permanent stormwater BMPs installed to treat runoff from the parking lots and adjacent areas in the park. Visitors to the park will have complete access to the restored area and trail. Educational signage will enable the public to enjoy and learn about pollution prevention and the natural environment in their community.

TMDL APPLICABILITY

None.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2011-12: Conceptual Design and Grant Submittal
FY 2012-13: Grant Award, Invasive Species removal; begin final design
FY 2013-14: Complete final design; bid project; begin construction
FY 2014-15: Complete construction and revegetation

LEAD WATERSHED COPERMITTEE

- City of Vista

OTHER PARTICIPATING ENTITIES

- Vista Conservancy, Carlsbad Watershed Network

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The project is consistent with the collective watershed strategy in that is will reduce the amount of erosion in the creek by improving the native habitat along the creek corridor. The BMPs to be constructed to treat the parking lot runoff will also reduce sedimentation as erosion from the parking area to the creek will be reduced. Restoration of native habitat is also expected to provide nutrient reductions through increased uptake by native plants. These activities will ultimately reduce bacteria, sediment, and nutrient loading to Buena Vista Lagoon, which is listed as impaired for all three.

EFFECTIVENESS MEASUREMENTS

Project effectiveness measures have not been fully developed at this time. Level 1 will be assessed upon completion of the project. Levels 2 and 3 are expected to be measurable with the implementation of extensive educational signage throughout the project. Although not specifically budgeted in the grant, the City may be able to perform water quality monitoring at one or more of the stormwater BMPs to assess pollutant loading reductions as well (level 4).

TITLE: WATER SMART INCENTIVES FOR OUTDOOR WATER EFFICIENCY
ID #: CHU-WQA29

ACTIVITY DESCRIPTION

The City of Oceanside promotes and participates in several of the Metropolitan Water District of Southern California's (MWD) SoCal Water$mart programs. The SoCal Water$mart single-family residential rebate program for water-efficient devices is a program that not only addresses water conservation, but also addresses urban runoff and water quality. The SoCal Water$mart Program provides two water-efficient devices used outdoors: Weather Based Irrigation 'Smart' Controller (WBIC) and Rotating Sprinkler Nozzles (RSN).

The weather based irrigation controllers automatically adjust the irrigation schedule to account for changing weather and plant types. It can save over 13,500 gallons of water per year which translates into a similar reduction for the amount of irrigation runoff that can occur without frequent adjustments. The rotating sprinkler nozzles apply water more slowly and uniformly to prevent over-watering and encourage healthy plant growth. This water-efficient device is estimated to use 20% less water than conventional nozzles. The use of water-efficient irrigation systems saves water and prevents over-irrigation which is the most prominent transport mechanism and potential source of dry weather residential contributions to water quality issues.

ACTIVITY IMPLEMENTATION FY 2011-12

During FY 2011-12, 13 single-family residences within the City of Oceanside in the Carlsbad Hydrologic Unit (HU) took advantage of the rebate program. Table 1 presents a summary of the type of incentive, quantity, and date of installation during this reporting year.

Table 1. Summary of Residential Rebate Program for FY 2012.

Watershed	Type of Incentive	Date Installed	Quantity
Agua Hedionda	WBIC	8/10/2011	1
	WBIC	9/9/2011	1
Buena Vista	Rotating Nozzle	9/13/2011	4
	Rotating Nozzle	9/13/2011	21
	WBIC	4/25/2012	1
Loma Alta	WBIC	4/20/2011	1
	WBIC	6/27/2011	1
	WBIC	7/22/2011	1
	Rotating Nozzle	7/26/2011	21
	Rotating Nozzle	7/26/2011	22
	Rotating Nozzle	7/28/2011	31
	WBIC	10/23/2011	1
	WBIC	4/8/2012	1

TMDL APPLICABILITY

The Loma Alta Slough Bacteria and Nutrient TMDL is currently under development. This activity will provide dry weather load reductions for all devices implemented in the Loma Alta Hydrologic Area.

TIME SCHEDULE FOR IMPLEMENTATION

Each year, implementation is based on program funding and the number of customers who call to take advantage of the service. It is anticipated that the program will continue during the next fiscal year.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- Metropolitan Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as a priority water quality problem in the Carlsbad Hydrologic Unit (HU). In addition, residential runoff has been targeted as a high priority through several Copermittee activities. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This program is targeted at Levels 1, 2, and 4 effectiveness assessment outcomes. The program was implemented during the reporting year (Level 1 outcome) and 13 single-family residential properties participated within the Carlsbad HU. Simply by researching and applying for the rebate opportunity, the property owners were educated on appropriate and efficient use of water, specifically focusing on irrigation, thus raising awareness (Level 2 outcome). The installation of the devices will reduce water use, thus reducing flow leaving the property as urban runoff. This will then reduce the pollutant loading into the storm drains, creeks, and ocean resulting in a Level 4 Effectiveness Assessment outcome, load reductions. The Level 4 Effectiveness Assessment may be completed in future years through analysis of dry weather monitoring data where it can be paired with drainage areas where water-efficient devices have been installed.

TITLE: LIVE TURF REPLACEMENT INCENTIVE PROGRAM
ID #: CHU-WQA30

ACTIVITY DESCRIPTION

In conjunction with the San Diego County Water Authority and the Metropolitan Water District of Southern California, the City of Oceanside is replacing existing live turf (grass) with planted areas and permeable surfaces. The conservation incentive program pays up to $1 per square foot of turf removal; 30% of which will be paid by the City of Oceanside. Turf is the most water-thirsty landscape component. Replacement of live turf allows for less water dependent landscaping to be planted which will reduce the potential for over-irrigation. The incentive program ensures this by specifying that no grass, synthetic turf or impermeable surfaces are eligible for rebates. Over-irrigation is the most prominent transport mechanism and potential source of dry weather residential contributions to water quality issues.

The City of Oceanside incorporated turf replacement into existing municipal projects for city parks and at the La Salina Wastewater Treatment Plant. In addition, the Ocean Hills Country Club Homeowner Association completed a turf replacement project on Cannon Road. From December 2011 to April 2012, total turf removed within the City was 257,848 square feet, which was the most turf removed compared to other San Diego water agencies during this time period.

ACTIVITY IMPLEMENTATION FY 2011-12

Table 1 presents a summary of the turf replaced in the City of Oceanside in the Carlsbad Hydrologic Unit (HU) and the distribution among Hydrologic Areas (HAs) during FY 2011-12.

Table 1. Summary of Turf Replacement Program for FY 2012.

Service Address	Description	Watershed	Sq. Ft. Replaced	Post-Inspection
La Salina Wastewater Treatment Plant	N. Side of Aeration Unit	Loma Alta	7,280	12/19/2011
	N. of Clarifier Basin	Loma Alta	419	12/19/2011
	W. of Digester	Loma Alta	5,406	12/19/2011
	Entrance Area	Loma Alta	1,040	12/19/2011
Oak Riparian Park	Oak Riparian Park	Agua Hedionda	9,000	2/9/2012
Ocean Hills	Cannon Median	Agua Hedionda	22,450	6/5/2012
	Majorca Slope 10	Agua Hedionda	158,700	6/5/2012

Total turf removed in the Carlsbad HU was 204,295 sq. ft. at a cost to the City of $68,288.50.

TMDL APPLICABILITY

The Loma Alta Slough Bacteria and Nutrient TMDL is currently under development. This activity has the potential to provide dry weather pollutant load reductions where turf is replaced by landscape that requires less irrigation in the Loma Alta Hydrologic Area.

TIME SCHEDULE FOR IMPLEMENTATION

Each year, implementation is based on program funding and the number of customers who call to take advantage of the service. It is anticipated that the program will continue during the next fiscal year.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- United States Bureau of Reclamation
- California Department of Water Resources
- Metropolitan Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as a priority water quality problem in the Carlsbad Hydrologic Unit (HU). In addition, residential runoff has been targeted as a high priority through several Copermittee activities. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This program is targeted at Levels 1, 2, and 4 effectiveness assessment outcomes. The program was implemented during the reporting year (Level 1 outcome) and 204,295 sq. ft. of turf was removed within the Carlsbad HU. The FY2011-12 City turf replacement program was primarily utilized on City property. The City will be promoting these areas to raise awareness for water conservation and turf replacement, a Level 2 outcome. It is planned that turf removal will then be offered to residential and/or commercial land uses. The removal of turf followed by landscaping that is less dependent on irrigation water will ultimately reduce over-irrigation flow leaving properties as urban runoff. This will then reduce the pollutant loading into the storm drains, creeks, and ocean resulting in a Level 4 Effectiveness Assessment outcome, load reductions. The level 4 effectiveness assessment may be completed in future years through analysis of dry weather monitoring data where it can be paired with drainage areas where turf replacement has occurred.

TITLE: **BACTERIA SOURCE INVESTIGATION FOCUSED ON EXFILTRATION FROM SANITARY SEWERS – LOMA ALTA HYDROLOGIC AREA**
ID #: **CHU-WQA31**

ACTIVITY DESCRIPTION

Potential sources of human bacteria in stormwater and urban runoff include sanitary sewers, on-site wastewater treatment systems, and homeless encampments. This project is designed to investigate the City's sanitary sewer infrastructure to evaluate its integrity and identify any potential areas where it may contribute to bacteria loading into the storm drain system. This special study will build on recommendations from work performed by the City of Santa Barbara.

TMDL APPLICABILITY

A TMDL is in development for Loma Alta Slough for indicator bacteria and nutrients. This special study is designed to detect and eliminate sources of these pollutants associated with potential exfiltration from sanitary sewers into storm drains within the City of Vista.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2012-13: Phases I, II (potentially III)
FY 2013-14: Phase III (and IV if necessary)

LEAD WATERSHED COPERMITTEE

- City of Vista

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The project will address sources of bacteria and nutrients within the Loma Alta Hydrologic Area. These pollutants have been identified as high priority for the Carlsbad Watershed and this activity is consistent with strategies developed within.

EFFECTIVENESS MEASUREMENTS

Level 1 effectiveness will be measured via progress in Phases I, II, and III. Since the project is not targeting increases in awareness or behavioral changes, Levels 2 and 3 will not be assessed. If areas are located where sanitary sewer infrastructure is contributing to bacteria concentrations within the MS4, loading estimates will be calculated where

feasible, which may lead to load reductions, level 4. This may also lead to improved MS4 water quality. Where it is feasible to measure a difference in water quality before and after a repair is made, level 5 assessments may also be feasible.

TITLE: **WATER QUALITY RUNOFF MANAGEMENT AND AGRICULTURAL WAIVER WORKSHOP FOR NURSERIES AND AGRICULTURAL BUSINESSES**
ID #: **CHU-WQEA3**

ACTIVITY DESCRIPTION

This free educational workshop is planned to be provided every other year. The workshop was provided in FY 2008 and was provided again in FY 2010. Likely future topics will include:

1) Water quality runoff regulations and BMPs for pollution prevention.
2) Irrigated Agricultural Waivers.
3) Storm water quality issues and typical inspection elements.
4) Federal assistance for development of conservation management plans and other programs to assist operations in complying with water quality regulations.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This workshop is scheduled to be provided every other year. The first workshop was provided in FY 2008 and was provided again in FY 2010.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING COPERMITTEES

- City of Carlsbad
- City of Encinitas
- City of Escondido

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria & Pathogens
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, sediment and nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and Agricultural operations have been identified as potential

dischargers of bacteria, sediment, and nutrients. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS MEASUREMENTS

FY 2007-08 EFFECTIVENESS ASSESSMENT

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 23 attendees took both the pre-test and post-test (some attendees arrived after the pre-test was given or left before the post-test was given). This test included seven questions that were provided by the speakers. The average pre-test score was 2.91. The average post-test score was 6.04. These scores represent a 150% increase in knowledge of the topics reviewed during the workshop.

FY 2009-10 EFFECTIVENESS ASSESSMENT

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 25 attendees took both the pre-test and post-test which included ten questions that were provided by the speakers. The average pre-test score was 5.48 and the average post-test score was 8.36 representing a 61.03% increase in knowledge of the topics reviewed during the workshop. This demonstrates an increase in knowledge and awareness of the topics presented (Level 2).

TITLE: LID FEATURES IN SAN ELIJO NATURE CENTER
ID #: CHU-WQEA5

ACTIVITY DESCRIPTION

In November 2007, the County of San Diego began construction on a two-story, 5,525 square foot, state-of-the-art nature center that replaces the former visitor center located at the San Elijo Lagoon Ecological Reserve in Encinitas. The new facility, which will open in early 2009, is designed to be constructed and commissioned in accordance with the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program and is expected to achieve Gold or Platinum certification. LEED credit 6 is specific to stormwater management and is achieved by maintaining the pre-development 24-hour peak discharge rate in the post-development environment if existing impervious surfaces are 50% or less.

The building design incorporates low impact development (LID) techniques which include a green roof with low water use native plants, a bioswale to aid in infiltration of runoff from the site, radiant floor heating, recycled cotton insulation, certified renewable lumber, photovoltaics that will provide 52% of energy requirements, natural daylighting and ventilation, stormwater filtering, native vegetation and recycled water used for irrigation, and extraordinary efforts to minimize area of disturbance. In addition to the many "Green" qualities designed into the building, the Nature Center's exhibits will showcase a series of high quality professional photographs and high-tech, interactive educational kiosks for visitors of all ages.

The goal for the San Elijo Visitor Center is to utilize the gold certification to educate the public on environmentally friendly building design and to present a "practice what we preach" public facility, demonstrating conservation of natural resources, use of recycled and environmentally friendly construction materials and reduced pollution and water use. A section of the exhibits will educate visitors on what and where watersheds are, the causes of water pollution and its destructive impact on habitat and endangerment and extinction of species, clean drinking water, water conservation, water reuse, etc. This facility will serve to promote future sustainable design in the San Diego region and educate citizens about ways in which they can reduce pollutants, including bacteria, sediment and nutrients, from entering the watershed.

Figure 1. Photo of Green Roof Informational Signage and Green Roof

FY 2008-09 ACTIVITY IMPLEMENTATION

The San Elijo Nature Center celebrated a grand opening on January 31st, 2009. The San Elijo Nature Center is now open to the public. Since opening the San Elijo Nature Center has seen a total of approximately 21,000 visitors.

FY 2009-10 ACTIVITY IMPLEMENTATION

In addition to the educational displays featured at the San Elijo Nature Center, the facility also sponsors public participation activities in cooperation with the San Elijo Lagoon Conservancy, with a total attendance of 1,092 participants.

FY 2010-11 ACTIVITY IMPLEMENTATION

In addition to the educational displays featured at the San Elijo Nature Center, the facility also sponsors public participation activities in cooperation with the San Elijo Lagoon Conservancy. These programs which included educational field presentations, water quality testing activities, and clean up events had an estimated total attendance of 800 participants in FY 2010-11.

FY 2011-12 ACTIVITY IMPLEMENTATION

In addition to the educational displays featured at the San Elijo Nature Center, the facility also sponsors public participation activities in cooperation with the San Elijo Lagoon Conservancy (SELC). These programs which included special events, school programs, educational field presentations, water quality testing activities, and clean up events had an estimated total attendance of 6,000 participants in FY 2011-12.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Educational displays and outreach activities will continue throughout FY 2011-12.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Elijo Lagoon Conservancy
- California Department of Fish and Game

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria, sediment and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a high priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

As indicated in the March 2008 WURMP, activity effectiveness was measured by the successful implementation of the LID features described (Level 1 Outcome) and the continued reporting of special event attendance. There is no post-construction water quality monitoring currently planned for this site.

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TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - RESIDENTIAL COMPONENT**
ID #: **CHU-WQEA8**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a strategy for addressing the impacts of residential activities within the Upper San Marcos Creek (USMC) Watershed. There are 5,949 acres (9.3 square miles) of residential development in the USMC Watershed, which represents 32 percent of the total watershed land area. Single-family and multi-family housing are the predominant land use type followed by spaced rural residential and then mobile homes.

Since many nutrient- and other pollutant-generating activities are associated with residential land use types, the watershed Copermittees' MS4 Permit requires a range of core activities to manage discharges from residential areas, e.g., identifying high threat to water quality residential areas and activities, implementing minimum BMPs to address high priority areas and sources, enforcing local stormwater ordinances, operating a hotline to facilitate public reporting of illegal discharges, as well as educating residents, the general public, target communities, and school children.

While these core residential activities will continue as currently implemented under existing jurisdictional plans, the USMC Watershed Copermittees will also conduct enhanced residential outreach activities focused on nutrient management within the watershed as follows.

- Irrigation Reduction – The USMC Watershed Copermittees will implement a program that targets a reduction in over-irrigation flows from residential areas in the USMC Watershed. Activities may include outreach to residents through materials distribution, presentations, mass media, and potentially exploring the viability of an incentive program (e.g., rebates for smart irrigation controllers, etc.).
- Template Water Quality Management Plan for Homeowners Associations – The Watershed Copermittees will collaborate to develop a template water quality management plan for homeowners associations (HOAs) and then introduce it to them by providing education and outreach.
- Outreach to Professional Landscapers – The USMC Copermittees recognize that conducting outreach to the professional landscape community may represent an opportunity for reducing future nutrient loading within the USMC watershed. Future outreach may include focused workshops for landscape professionals or guidance to residents in selecting responsible landscaping contractors.

The USMC Watershed Copermittees will annually report on the enhanced residential activities conducted. Any additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-2010

Core Residential Program:

All elements of the core residential programs were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to residential land uses can be found in Table 4.2 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances, operation of a hotline to facilitate public reporting, and maintaining records of all instances of residential non-compliance, enforcement, and corrective actions. A full record of jurisdictional residential activities can be found in the individual Copermittees' JURMP FY 2009-10 Annual Reports.

Enhanced Residential Program:

Irrigation Reduction/BMPs Outreach

During FY 2009-10, the USMC Watershed Copermittees implemented programs targeting reductions in over-irrigation and nutrient flows in the USMC Watershed:

- Quail Call: In July of 2009, the Watershed Copermittees worked with the Lake San Marcos Community Association to communicate water quality-related educational messages via the community's quarterly periodical, the *Quail Call*. Contributions included information for frequent articles on water quality concerns in the Lake and actions residents can take to prevent pollution. The County also printed landscape maintenance educational brochures for inclusion in the *Quail Call*.
- Stormwater Calendars: The County of Diego distributed 2,400 educational stormwater calendars to residents of the Lake San Marcos community. The calendars, which include monthly tips for on preventing irrigation runoff and other BMPs to protect water quality, were designed and paid for by the San Diego Regional Stormwater Copermittees.
- Mass Media Campaigns: The County of San Diego sponsored six bus bench advertisements with water conservation-themed messaging from July through September of 2009. These benches were located among major roadways surrounding the Lake San Marcos community and emphasized reductions in over-watering and adjustment of sprinkler systems.

Template Water Quality Management Plan for Homeowners Associations

During FY 2009-10, the USMC Watershed Copermittees collaborated to develop a template water quality management plan to provide guidance to HOAs regarding BMPs for nutrient management. Initial work involved researching similar plans developed in other regions and tailoring content to the needs of the USMC Watershed. Although a template was created in FY 2009-10, final revisions will be made in FY 2010-11. Once

the product is complete, the Copermittees will collaborate with Lake San Marcos HOA representatives to finalize the template plans and distribute them to HOAs throughout the watershed.

Outreach to Professional Landscapers

The County of San Diego began development of enhanced outreach efforts to landscape professionals during FY 2009-10.

Presentations and Public Forums

The USMC Copermittees also made outreach focused outreach presentation and hosted public forums for the residents within the USMC watershed. These presentations are listed in the table below.

ACTIVITY IMPLEMENTATION FY 2010-2011

Core Residential Program:

All elements of the core residential programs were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to residential land uses can be found in Table 4.2 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances, operation of a hotline to facilitate public reporting, and maintaining records of all instances of residential non-compliance, enforcement, and corrective actions. A full record of jurisdictional residential activities can be found in the individual Copermittees' JURMP FY 2010-11 Annual Reports.

Enhanced Residential Program:

Template Water Quality Management Plan for Homeowners Associations

During FY 2010-11, the USMC Watershed Copermittees continued to collaborate on the development of a template water quality management plan that will provide guidance to HOAs and residents regarding BMPs for nutrient management. Initial work on this effort produced a template plan, but additional development is needed. Originally planned for release in FY 2010-11, the USMC Watershed Copermittees have decided to invest additional resources to involve Social Based Marketing professionals in order to enhance the effectiveness and applicability of the water quality management plan. Once the product is complete, the Copermittees will collaborate with Lake San Marcos HOA representatives to finalize the end product and distribute them to HOAs and residents.

Outreach to Professional Landscapers

The County of San Diego continues collaborative efforts in the development of enhanced outreach efforts to landscape professionals during FY 2010-11.

Presentations and Public Forums

The USMC Copermittees also made outreach focused outreach presentation and hosted public forums for the residents within the USMC watershed. These presentations are listed in the table below.

Table 1. Presentations and Forums FY 2010-11

Event	Date	Attendees	Subject	Venue	Presenter(s)
San Marcos Creek Specific Plan Info Meeting	9/29/2010	19	Specific Plan Water Quality Objectives and Relationship to Lake	Lake San Marcos Country Club	San Marcos

ACTIVITY IMPLEMENTATION FY 2011-2012

Core Residential Program:

All elements of the core residential programs were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to residential land uses can be found in Table 4.2 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances, operation of a hotline to facilitate public reporting, and maintaining records of all instances of residential non-compliance, enforcement, and corrective actions. A full record of jurisdictional residential activities can be found in the individual Copermittees' JURMP FY 2011-12 Annual Reports.

Enhanced Residential Program:

Template Water Quality Management Plan for Homeowners Associations

Additional development for the Water Quality Management Plan for Homeowners Associations was placed on hold due to ongoing legal issues concerning the Lake San Marcos Homeowners Associations and the Lake owner. Once litigation is resolved continued development will take place.

"How to Hire a Landscape Professional" Workshop

The Country of San Diego sponsored a workshop titled "How to Hire a Landscape Contractor" which was open to all residents and staff members in the Lake San Marcos community. The workshop was presented by representatives of the Cuyamaca College Water Conservation Garden. The workshop focused on how to evaluate potential landscape professionals to ensure that they are properly implementing BMPs to protect water quality. The workshop was held May 16, 2012 and was attended by 46 participants.

Outreach to Professional Landscapers

The County of San Diego continues collaborative efforts in the development of enhanced outreach efforts to landscape professionals during FY 2011-12.

Presentations and Public Forums

The USMC Copermittees also made outreach focused outreach presentation and hosted public forums for the residents within the USMC watershed. These presentations are listed in the table below.

Table 2. Presentations and Forums FY 2011-12

Event	Date	Attendees	Subject	Venue	Presenter(s)
Lake San Marcos Public Participation Plan Workshop	1/18/2012	25	Status report on USMC water quality improvement projects	City of San Marcos	San Marcos
Lake San Marcos Public Participation Plan Workshop	4/24/2012	17	Status report on USMC water quality improvement projects	City of San Marcos	San Marcos

TIME SCHEDULE FOR IMPLEMENTATION

Table 3. Implementation Schedule

Planned Tasks	FY 2010-11	FY 2011-12	FY 2012-13	Status
Core Residential Outreach Program	Complete	Complete	Implementation	Ongoing
Template Water Quality Management Plan for Homeowners Associations	Planning and Development	Planning and Development	Planning and Development	Ongoing
Outreach to Professional Landscapers	Planning and Development	Planning and Development	Planning and Development	Ongoing
Presentations and Public Forums	Complete	Complete	Implementation	Ongoing
"How to Hire a Landscape Professional" Workshop	N/A	Complete	TBD	Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- San Marcos
- Escondido

OTHER PARTICIPATING ENTITIES

- Lake San Marcos Residents
- Homeowner Associations
- Cuyamaca College Water Conservation Garden

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will inform residents in the USMC about the impact of various landscape and household maintenance practices as they relate to nutrient loading and management in the USMC Watershed. This information can then be used to guide future implementation efforts that may: 1) increase awareness of residents; 2) change behavior and inform BMP implementation; 3) reduce pollutant loads in discharges; 4) improve water quality discharged from the MS4; and, 5) improve water quality in Lake San Marcos.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the completion of each Copermittees' core residential activity program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core residential activities program were completed.

Residential activity enhanced program elements will be assessed through measures of material distribution, number of presentations, attendees, and program progress. Applicable measures are presented in the table below.

Table 4. Enhanced Effective Measures

Planned Tasks	FY 2011-12	Outcome Level	Status
Template Water Quality Management Plan for Homeowners	Planning and Development	Level 1	Ongoing
Outreach to Professional Landscapers	Planning and Development	Level 1	Ongoing
"How to Hire a Landscape Professional" Workshop	1 Workshop 46 Total Attendees	Level 1	Complete
Presentations and Public Forums	2 Presentations 42 Total Attendees	Level 1	Ongoing

TITLE: COTTONWOOD CREEK WATERSHED INTERPRETIVE SIGNAGE
ID #: CHU-WQEA12

ACTIVITY DESCRIPTION

The City of Encinitas is developing seven interpretive signs to be posted along the portion of Cottonwood Creek that runs parallel to B Street between South Coast Highway 101 and Moonlight Beach. Cottonwood Creek was instrumental in the establishment of the town of Encinitas in the late 1800s. Cottonwood Creek was designated as a "Point of Historical Interest" in 1991. The goal of the project is to promote the protection of stormwater quality and to provide education to the public related to various aspects of the Cottonwood Creek watershed.

ACTIVITY IMPLEMENTATION

Currently there are two interpretive signs situated within Cottonwood Creek Park, just east of Moonlight Beach. This project will add seven additional interpretive signs along Cottonwood Creek just east of Moonlight Beach. The signs will have the following themes:

1. Cottonwood Creek Watershed Overview
2. Moonlight Beach Pump Station
3. UV Treatment Facility
4. Native Plant Species
5. Native Animal Species
6. Stormwater Awareness
7. Stormwater Pollution Prevention Tips

City Stormwater Division staff developed draft text and graphics for the signs and secured a graphic designer to produce the final panels. Staff reached out to the Encinitas Historical Society and local advocacy groups to gather engaging information to display on the signs. Stormwater staff coordinated with the Parks Department on placement of the signs.

TMDL APPLICABILITY

This activity is not being implemented as part of a TMDL compliance program. However some signs have the potential to encourage residents and business owners to reduce their water quality impacts related to bacteria and sediment potential sources.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2010-11 & FY 2011-12: Develop text, photos and graphics for signs
FY 2012-13: Erect signs, Activity Assessment

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Cottonwood Creek Watershed is a sub-basin within the San Marcos Hydrologic Area. Bacteria and sediment have been identified as priority water quality problems in the San Marcos HA (904.5). The shoreline at Moonlight Beach is 303(d) listed for bacteria for which there is an established TMDL (Resolution No. R9-2010-0001). The educational material presented addresses priority water quality problems and priority sources and consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

The use of a Quick Response (QR) Code on the signs will direct visitors to a website where they can choose to complete a survey related to the interpretive signs. Effectiveness of the signs will be conducted in FY 2013.

TITLE: RESIDENTIAL SMART LANDSCAPE EVALUATION PROGRAM
ID #: CHU-WQEA13

ACTIVITY DESCRIPTION

The City of Oceanside is offering a free landscape irrigation evaluation service to single-family and multi-family residences within its jurisdiction. The program is in conjunction with the San Diego County Water Authority (SDCWA) irrigation check-up program. The SDCWA and the City of Oceanside provide funding for the Mission Resource Conservation District to send professional technicians to visit the residential property and provide site-specific water-saving recommendations. Participants can expect to have the technician review and evaluate the performance of their site's outside irrigation system. At the end, the participant will receive a list of recommendations and a proposed watering schedule. For multi-family customers, participants will receive a report outlining site specific irrigation and maintenance recommendations as well as plant alternatives designed to reduce water waste and use.

Over-irrigation is the most prominent transport mechanism and potential source of dry weather residential contributions to water quality issues. This one-on-one, site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property. It is also a useful tool for Clean Water Program Inspectors and Code Enforcement Officers when following-up on customer or staff complaints of over-irrigation. The inspector or officer can provide general education on the regulations and suggest this hand's-on evaluation.

ACTIVITY IMPLEMENTATION FY 2010-11

During FY 2010-11, three single-family and four multi-family residential landscape evaluations were completed within the City of Oceanside in the Carlsbad Hydrologic Unit (HU). Table 1 presents the distribution among Hydrologic Areas (HAs) and the dates the evaluations were completed.

Table 1. Summary of Residential Landscape Evaluations Completed in FY 2011.

Hydrologic Area	Multi-Family	Single-Family	Completed
Agua Hedionda		X	8/16/2010
Agua Hedionda		X	2/2/2011
Buena Vista	X		3/21/2011
Loma Alta	X		9/15/2010
Loma Alta		X	10/5/2010
Loma Alta	X		5/31/2011
Loma Alta	X		6/1/2011

ACTIVITY IMPLEMENTATION FY 2011-12

During FY 2011-12, 29 single-family and one multi-family residential landscape evaluations were completed within the City of Oceanside in the Carlsbad Hydrologic

Unit (HU). Table 2 presents the distribution among Hydrologic Areas (HAs) and the dates the evaluations were completed.

Table 2. Summary of Residential Landscape Evaluations Completed in FY 2012.

Hydrologic Area	Multi-Family	Single-Family	Completed
Agua Hedionda		X	9/28/2011
		X	10/24/2011
		X	11/14/2011
		X	11/14/2011
		X	1/3/2012
		X	3/26/2012
Buena Vista		X	8/9/2011
		X	9/23/2011
		X	10/14/2011
		X	10/18/2011
		X	10/24/2011
		X	10/25/2011
		X	12/15/2011
		X	1/4/2012
		X	1/26/2012
		X	3/28/2012
Loma Alta	X		7/19/2011
		X	9/23/2011
		X	10/19/2011
		X	10/28/2011
		X	10/28/2011
		X	11/3/2011
		X	11/16/2011
		X	11/18/2011
		X	11/24/2011
		X	12/15/2011
		X	1/25/2012
		X	3/1/2012
		X	3/29/2012
		X	6/6/2012

The cost to the City for implementation of the program during FY 2011-12 was $1,606.50.

TMDL APPLICABILITY

The Loma Alta Slough Bacteria and Nutrient TMDL is currently under development. This activity will provide dry weather load reductions for all devices implemented in the Loma Alta Hydrologic Area.

TIME SCHEDULE FOR IMPLEMENTATION

Each year, implementation is based on program funding and the number of customers who call to take advantage of the service. It is anticipated that the program will continue during the next fiscal year.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- San Diego County Water Authority
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as a priority water quality problem in the Carlsbad HU. In addition, residential runoff has been targeted as a high priority through several Copermittee activities. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This program is targeted at Levels 1 and 2 effectiveness assessment outcomes. The program was implemented during the reporting year (Level 1 outcome) and 29 single-family properties and one multi-family residential property were visited. The property owners/managers were given education about irrigation runoff, thus raising awareness (Level 2 outcome).

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Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The WURMP Copermittees' FY 2011 (July 1st, 2010 through June 30th, 2011) JURMP Annual Reports were used to determine quantities of inventories. The WURMP Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction
5) TCBMP

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1) Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2) Identified the Copermittees' total activity quantities for the following activities from the FY 2011 JURMP Annual Reports:
   a) Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
   b) Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3) Determined the amount of urban land use in each Copermittees' jurisdiction.
4) Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City.
5) Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation determining the Copermittee's contribution to the HA is as follows:

$$(Copermittee\ Activity\ Quantity) \times \left(\frac{Copermittee\ urban\ land\ use\ in\ HA}{Copermittee\ total\ urban\ land\ use}\right)$$

6) Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

JURMP Source and Activity Quantities Estimation Example

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1.
Jurisdiction A collected 800 tons of material from street sweeping in FY 2011.

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1.
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2011.

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1.
Jurisdiction C collected 250 tons of material from street sweeping in FY 2011.

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:

$$(800\ tons\ of\ material) \times \left(\frac{250\ urban\ land\ use\ acres\ in\ HA1}{1{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ A}\right) = \mathbf{200\ tons}$$

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:

$$(1{,}000\ tons\ of\ material) \times \left(\frac{1{,}250\ urban\ land\ use\ acres\ in\ HA1}{2{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ B}\right) = \mathbf{625\ tons}$$

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:

$$(250\ tons\ of\ material) \times \left(\frac{500\ urban\ land\ use\ acres\ in\ HA1}{500\ urban\ land\ use\ acres\ in\ Jurisdiction\ C}\right) = \mathbf{250\ tons}$$

The total amount of estimated street sweepings collected in HA1 is therefore:

$$200\ tons + 625\ tons + 250\ tons = \mathbf{1{,}075\ tons}$$

Appendix B

FY 2011 Carlsbad Watershed Activity Sheets

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TITLE: **LOMA ALTA CREEK ULTRAVIOLET RADIATION STORM WATER TREATMENT FACILITY**
ID #: **CHU-WQA2**

ACTIVITY DESCRIPTION

This project involves the construction of a filtration and ultraviolet (UV) radiation storm water treatment facility to be located adjacent to the Loma Alta Creek outlet in the City of Oceanside. One hundred percent of the dry weather creek flows (averaging 300 to 700 gallons per minute) will be intercepted at the outlet and diverted to the UV storm water treatment facility. The treatment facility consists of piping flows from an existing diversion structure by gravity from the lagoon through a 2 micron fine screen to a wet well where the flow is pumped into two large sand filters followed by two UV disinfection units housed in a reinforced concrete building. Once treated, water will discharge through a pipe that will extend along the existing section of rip-rap that runs along the north side of the Loma Alta Creek outlet at Buccaneer Beach. During wet weather months, the lagoon would be opened to allow free flow to the ocean and the UV system would be bypassed.

This project is located where Loma Alta Creek discharges to the Pacific Ocean at Buccaneer Beach. The watershed is mostly in the City of Oceanside with the headwaters within the City of Vista. Buccaneer Beach is a family beach adjacent to a park that is heavily used during dry months. The City determined that a key source of bacteria and nutrients are urban runoff from the 6,400 acre Loma Alta Watershed, which is densely developed with residential, commercial and industrial land uses. While nutrients promote algae growth in the lagoon and cause nuisance odors, the high bacteria levels in the creek flow to the ocean and directly impacts the ocean water quality at Buccaneer Beach. To reduce the numerous beach postings and closures at this popular beach the City decided to apply for a Clean Beach Initiative Grant to construct an UV treatment facility to treat the dry weather flows in the Loma Alta creek prior to discharging the water to the beach. A $5,000,000 Proposition 40, Clean Beach Initiative Grant, was awarded to the City on January 24, 2007, to design and build the UV treatment facility.

The increased presence of bacteria and pathogens in the watershed poses a threat to REC-1 and REC-2 beneficial uses and results in increased number of beach closures at the Loma Alta Creek outlet at Buccaneer Beach. This project will address the bacterial issue through filtration and UV disinfection. The anticipated project goal is to eliminate beach closures during the dry months at Buccaneer Beach in Oceanside, California. This will be achieved by diverting the flow from the Loma Alta Lagoon through a UV treatment facility prior to discharging the flow onto the shoreline. The City will monitor the UV treated storm drain outlet and the surf zone for bacteria for the end of the 2008 and all of the 2009 AB411 period. The approved Monitoring Plan and Quality Assurance Project Plan developed for this project will be implemented prior to the construction, a

Final Monitoring Plan and Quality Assurance Project Plan (QAPP) was developed and approved by the State Water Resources Control Board (SWRCB) in June of 2007. This plan listed the sample frequency, locations and methods for testing the effectiveness of the treatment system. The monitoring plan would begin once the UV treatment facility was operational. The California Coastal Commission approved Permit No. 6-06-152 for construction of the outfall pipe associated with the UV treatment facility on June 14, 2007. Loma Alta Creek UV Treatment Facility project entered into the construction phase on August 13, 2007 when the official Notice to Proceed was issued to Orion Construction Corporation. The construction was completed in July 2008, testing ran through August 2008 and the UV treatment facility began discharging to the ocean in September 2008. All monitoring indicated that the system functions as expected and the surf zone samples all met AB411 limits.

TMDL APPLICABILITY

This activity may be utilized for future implementation of the TMDL for Nutrients and Bacteria for Loma Alta Slough. While this project specifically reduces bacterial contamination at the Pacific Ocean shoreline, and not in the Slough, additional uses for the UV Treatment Facility are being considered.

TIME SCHEDULE FOR IMPLEMENTATION

This project began operation in June 2009 and is complete. It will continue to operate annually between the months of May and September.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential, commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS MEASUREMENTS

A Project Assessment and Evaluation Plan (PAEP) was developed to define how to measure the effectiveness of the UV treatment facility. A Final Monitoring Plan and

Quality Assurance Project Plan (QAPP) defines the monitoring program that measures water quality prior to and during facility operation. Monitoring for total and fecal coliform and *Enterococcus* will be conducted at several locations: In the lagoon prior to water entering the UV facility, within the plant prior to and after UV treatment, and at the shoreline at the discharge point and in the coastal mixing zone (Level 5 and 6). After a complete dry season of testing (May through September 2009), a final effectiveness report will be generated using all of the data. The facility will be considered effective if the treated discharge from the UV facility meets the 30 day average Rec-1 Water Quality Standards set forth in the Ocean Plan. This will ensure that the surf zone will meet the same limits after mixing occurs.

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TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: CHU-WQA7

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Carlsbad Watershed include:

- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

Work began on drafting SWQMP for SDA 9 and SDA 10.

FY 2008-09 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 is in the process of being drafted.

FY 2009-10 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

FY 2010-11 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2012-13. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2014.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EFFECTIVENESS MEASUREMENTS

To be determined.

TITLE: NITRATE SOURCE IDENTIFICATION AND ABATEMENT: BUENA CREEK
ID #: CHU-WQA8

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels in Buena Creek. Nitrate concentrations have been observed to exceed dry weather action levels at the County's CAR 05 dry weather monitoring station (Buena Creek at Robelini Drive). The State of California, which collected data from a nearby location in 2002 as part of its Surface Water Ambient Monitoring Program (SWAMP), also identified nitrates as an issue of concern. Buena Creek is listed as impaired for nitrates/nitrites on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments.

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2007-08:

- Performed frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Compiled inventory and map of potential nitrate sources in the CAR 05 drainage area. It was determined that there are 26 nurseries within the unincorporated area tributary to the CAR 05 monitoring station.
- Compiled baseline information on BMP implementation and compliance history for nurseries within the CAR 05 drainage area. Of the 26 nurseries in this drainage area, 11 have been inspected by the County AWM Department. Seven of the 11 inspected nurseries had one or more violations.

FY 2008-09 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2008-09:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Twenty six (26) nurseries in the CAR 05 drainage area were inspected during FY 2008-09.

- Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site. The University of California Co-operative Extension Service Self-Assessment for Greenhouses and Nurseries and Management Options for Nonpoint Source Pollution, Greenhouse and Container Crop Industries documents were provided where appropriate and the sections on nutrients were reviewed.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2008-09, excluding paperwork violations, only six nurseries out of 26 had one or more instances of non-compliance (See Table 3). No nurseries were identified as direct sources of nitrates.

FY 2009-10 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2009-10:

- Updated inventory of nursery and nursery-related operations within the drainage basin. Seven additional facilities were identified and added to the initial potential nutrient source inventory (total of 33 facilities).
- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on four dates throughout the year
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Twenty-four nurseries in the CAR 05 drainage area were inspected during FY 2009-10.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2009-10, excluding paperwork violations, ten nurseries out of 33 had one or more instances of non-compliances (See Table 3). No nurseries were identified as direct sources of nitrates.

FY 2010-11 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2010-11:

- Updated inventory of nursery and nursery-related operations within the drainage basin. Twelve nurseries were removed from the inventory because

they did not meet the criteria for inclusion. Seven additional facilities were identified and added to the initial potential nutrient source inventory, bringing the total to 23 facilities. Five nurseries reported in FY 2010-11 are no longer in business.

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05. Field water quality activities were conducted on three dates throughout the year
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. All twenty- three nurseries in the CAR 05 drainage area were inspected during FY 2010-11.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2010-11, excluding paperwork violations, four nurseries out of 23 had one or more instances of non-compliances (See Table 3). No nurseries were identified as direct sources of nitrates.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	Status
Compile an inventory and map of potential nutrient sources in the CAR 05 drainage area.	X		X	X		Complete
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	X			X		Complete
Perform frequent water quality screenings for nutrients and other parameters at CAR 05	X	X	X	X	X	Ongoing

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	Status
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	X	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS MEASUREMENTS

Table 2. Effectiveness Assessment

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the CAR 05 drainage area.	1	Completion	Yes
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at CAR 05.	1	4 field screenings / yr at CAR 05	75% complete, 3 screenings complete
	6	Reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012	To be determined
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the CAR 05 drainage area by June 2009	Yes
	3	Reduction in nursery BMP violations observed during nursery inspections in the CAR 05 drainage area by 2010	88% Complete 15 out of 17 nurseries with multiple inspections have improved or maintained compliance.
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the CAR 05 drainage area by 2012	82% Complete Baseline scores have been recorded for 23 nurseries. 14 of 17 nurseries with multiple scores had improved SKA scores.

Table 3. Inspection Summary

Facility Name	Inspection Date	# of BMP* Violations	SKA Score		Reduced # of BMP Violations Over Time	Improved SKA score Over Time	TTWQ
Acosta Plants	2/17/2011	0	8		Yes	Yes	High
	9/3/2010	0	7				
	8/26/2009	0	6				
	6/2/2009	0	N/A				
	5/7/2009	2	6				
	2/21/2007	0	N/A				
	1/31/2007	2	N/A				
	2/10/2005	3	N/A				
Altman Specialty Plants #01	8/25/2010	0	9		Yes	Same	High
	2/25/2010	0	9				
	2/5/2010	1	9				
Altman Specialty Plants #03	3/30/2011	0	8		N/A	N/A	Low
Altman Specialty Plants #06	3/30/2011	0	8		Yes	No	Medium
	2/10/2010	0	9				
	2/18/2009	0	10				
	8/16/2005	0	N/A				
	8/24/2004	0	N/A				
	5/4/2004	5	N/A				
Apgar Nursery	3/23/2011	0	8		No Violations	No	Low
	5/14/2009	0	9				
	2/29/2008	0	8				
C & J Cactus Nursery #2	3/21/2011	0	8		Yes	Yes	Medium
	5/26/2009	1	5				
	4/18/2008	0	10				
Desert Gold	3/8/2011	0	5		N/A	N/A	Medium
Estrelita Growers	4/19/2011	0	5		N/A	N/A	Medium
Grigsby Cactus Gardens	3/25/2011	1	8		Yes	Yes	Low
	7/21/2009	0	N/A				
	5/21/2009	3	6				
	6/21/2007	0	N/A				

Facility Name	Inspection Date	# of BMP* Violations	SKA Score		Reduced # of BMP Violations Over Time	Improved SKA score Over Time	TTWQ
H & P Sales Aka Growing Concepts	1/6/2011	3	6		Yes	No	Low
	4/1/2010	0	N/A				
	8/6/2009	2	6				
	7/17/2009	0	10				
	6/20/2007	0	N/A				
	5/8/2006	0	N/A				
	3/6/2006	2	N/A				
	7/13/2004	0	N/A				
	3/15/2004	12	N/A				
H & P Sales Aka Growing Concepts #2	1/6/2011	2	6		No	Same	High
	8/5/2009	2	6				
Ildefonso Haro	4/19/2011	0	9		N/A	N/A	Medium
Jeff Lorenz	4/13/2011	0	7		N/A	N/A	Medium
Juan Diaz Mariscal	4/12/2011	0	5		N/A	N/A	Medium
Lone Oak Rancho Nursery	3/24/2011	0	9		No Violations	Yes	Medium
	9/11/2009	0	6				
	7/14/2008	0	8				
Progressive Growers Inc #1	12/9/2010	0	8		Yes	Yes	High
	7/20/2009	0	6				
	5/20/2009	1	9				
	1/26/2009	0	N/A				
	6/13/2008	1	10				
	1/4/2007	1	N/A				
Silhouettes Of The Desert #1	3/8/2011	0	6		Yes	Yes	High
	8/19/2009	0	6				
	1/23/2009	6	5				
	6/17/2008	7	2				
	1/31/2006	1	N/A				
	3/8/2005	2	N/A				
Sonrise Growers	1/5/2011	6	5		No	Yes	High

Facility Name	Inspection Date	# of BMP* Violations	SKA Score		Reduced # of BMP Violations Over Time	Improved SKA score Over Time	TTWQ
	1/28/2010	6	4				
	1/23/2009	1	8				
	6/23/2008	2	8				
Sunhill Ranch LLC	4/12/2011	0	8		Yes	Yes	Medium
	7/16/2009	0	7				
	5/12/2009	2	6				
T M Palms And Shrubs	4/5/2011	0	7		No Violations	Yes	Medium
	9/9/2009	0	6				
Tomlinson Select Nurseries	3/24/2011	0	8		Yes	Yes	Low
	5/26/2009	0	8				
	3/19/2009	0	7				
	6/26/2008	0	10				
	3/1/2007	0	N/A				
	3/15/2006	0	N/A				
	5/9/2005	5	N/A				
Venegas Creek Roses #1	3/9/2011	0	7		No Violations	Yes	Low
	6/26/2008	0	5				
Western Cactus Growers, Inc.	9/10/2010	0	8		Yes	Same	High
	6/19/2009	3	8				

*Does not include paperwork violations.

TITLE: PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS
ID #: CHU-WQA10

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 16 stations at two County parks in the Carlsbad Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in the FY 2008-09. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in the FY 2009-10. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

No additional stations were added in the FY 2010-11. During this reporting period, the County of San Diego continued to maintain 16 dispenser stations at a total of two parks within the Carlsbad Watershed. The parks and the number of dispensers include:

- San Elijo Lagoon Ecological Reserve (11 dispensers)
- San Dieguito County Park (5 dispensers)

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers - Ongoing
- Addition of new dispensers in County parks - Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Table 1. FY 2010-11 Pet Waste Bag Collections

Facility Name	FY 2010-11		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
San Elijo Ecological Reserve	11	35,000	7,000
San Dieguito Park*	5	16,150	3,230
Total	**16**	**51,150**	**10,230**

*San Dieguito County Park is counted in both the Carlsbad and San Dieguito HU Totals

Cumulatively, the County maintains 16 stations among the two County Parks within the Carlsbad Watershed. These stations distributed approximately 51,150 bags during the FY 2010-11 reporting period, preventing an estimated 10,230 pounds of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 pounds.
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: LAND ACQUISITIONS
ID #: CHU-WQA11

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the southwestern portion of the County. Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 there were no land acquisitions by the County of San Diego in the Carlsbad WMA.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period the County of San Diego purchased 287.12 acres of property located in the Carlsbad WMA.

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting period the County of San Diego purchased 162.05 acres of property located in the Carlsbad WMA.

FY 2010-11 ACTIVITY IMPLEMENTATION

During the FY 2010-11 reporting period the County of San Diego purchased 192.00 acres of property located in the Carlsbad WMA. The current acquisitions are shown in the Table 1 below.

Table 1. FY 2010-11 Carlsbad WMA Land Acquisitions

Property	Acres	Watershed ID	APN(s)
Mendocino – Escondido Creek	40.16	904.61	264-042-87
Del Dios Highlands	99.38	904.61, 904.62	679-140-11, 679-140-16
Escondido Creek – TECC (Coler) Donation	45.18	904.61, 904.62	679-140-12, 679-140-15
Escondido Creek	7.28	904.62	238-010-57
TOTAL	**192.00**		

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

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TITLE: **UPPER SAN MARCOS CREEK WATERSHED/LAKE SAN MARCOS NUTRIENT MANAGEMENT PLAN**

ID #: **CHU-WQA12**

ACTIVITY DESCRIPTION

Upper San Marcos Creek (USMC) and its tributary watershed (HSAs 904.53 and 904.52) drain to Lake San Marcos (Lake). Lake San Marcos has been listed on the 2006 303(d) list as impaired for Ammonia (as N), Nitrogen, and Phosphorous. Water flowing in San Marcos Creek is impounded in the lake by San Marcos Dam. Both the dam and the land underlying the lake are privately owned. The City of San Marcos, the County of San Diego, and the City of Escondido (MS4 Copermittees) are tributary to the Lake along with Phase II MS4s (San Marcos Unified School District, Cal State San Marcos, Palomar College, North County Transit District), CalTrans, and various utility providers under the permitting or other regulatory requirements of the SDRWQCB (Vallecitos Water District, SDGE, SDCWA). The City of San Marcos will function as the lead for this WURMP activity in collaboration with the County of San Diego and the City of Escondido for efforts requiring integration of jurisdictional data, information, mapping, and reporting.

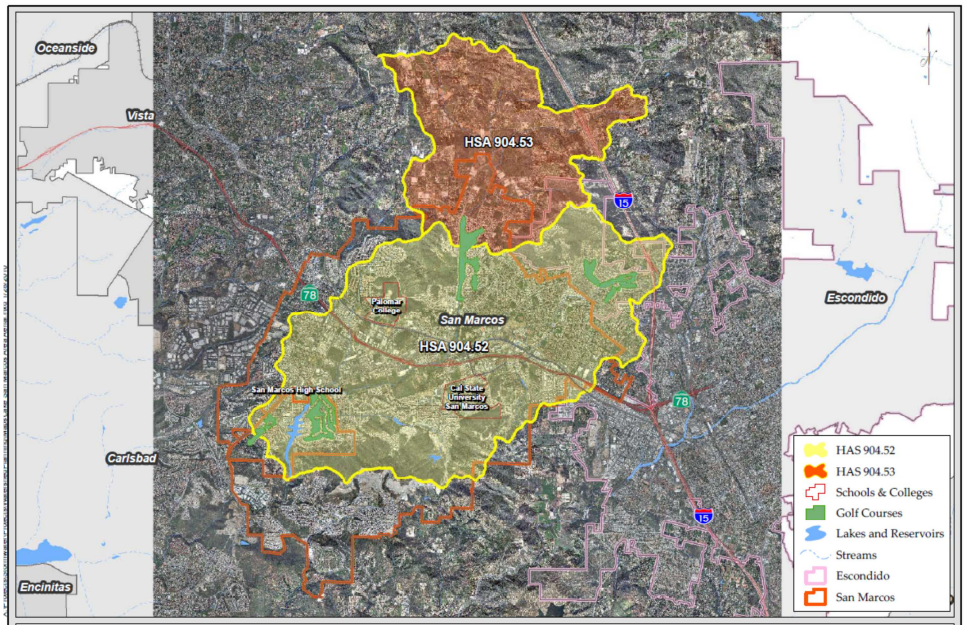

Lake San Marcos

The MS4 Copermittees will meet and coordinate jurisdictional efforts to locate and abate sources of nutrients in the watersheds and report the efforts in Carlsbad WURMP Annual Reports. Appendix C of the FY 2009 Carlsbad WURMP Annual Report includes the USMC Watershed Nutrient Management Plan (Management Plan). The Management Plan contains a summary of preliminary nutrient source identification efforts, MS4 Copermittee watershed coordination, and abatement activities initiated during FY 09 and planned for completion during future years. Nearly all of the activities

identified in the Management Plan go beyond the 2007 MS4 Stormwater Permit requirements and were developed to address nutrient source identification and abatement.

Development, implementation, and assessment of the Management Plan will be a collaborative effort by the MS4 Copermittees. Collaboration will include regular meetings and interim information reporting between the MS4 Copermittees to coordinate knowledge and data-based implementation of activities identified in Appendix C of the FY 2009 Carlsbad WURMP Annual Report.

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The MS4 Copermittees began implementation of this activity in FY 09 and will continue to implement the activity in future years. The MS4 Copermittees are committed to reassessing the Management Plan on an annual basis. Details of any changes made will be reported in Carlsbad WURMP Annual Reports.

ACTIVITY IMPLEMENTATION FY 2010-2011

The specific components of the USMC Nutrient Management Plan are addressed in individual activity sheets CHU-WQA18, CHU-WQA19, CHU-WQA20, CHU-WQA21, and CHU-WQEA8.

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The development of a Nutrient Management Plan is consistent with the collective watershed strategy in that it will identify the water quality problems and likely sources of the pollutants potentially causing the water quality problems and develop a plan to abate the sources or significantly reduce the pollutant loading from the sources.

EFFECTIVENESS MEASUREMENTS

All six levels of the effectiveness will be assessed as appropriate based on the availability of data:

Level 1: Compliance with activity-based permit requirements
Level 2: Changes in Attitudes, Knowledge, and Awareness
Level 3: Behavioral Change and BMP Implementation
Level 4: Load Reductions
Level 5: Changes in Urban Runoff and Discharge Quality
Level 6: Changes in Receiving Water Quality

Effectiveness measurements will be included in future Carlsbad WURMP Annual Reports.

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TITLE: **WATER QUALITY TREATMENT FACILITY AT THE MCCLELLAN-PALOMAR AIRPORT**
ID #: **CHU-WQA15**

ACTIVITY DESCRIPTION

The County of San Diego designed and installed a water quality treatment facility (WQTF) at the McClellan-Palomar Airport completed in April of 2006. This work was funded by Proposition 13 State Water Resources Control Board (SWRCB) grant agreement number 04-201-559-0. The County conducts regular water quality monitoring at the WQTF to assess effectiveness.

The WQTF was designed to provide water quality treatment for low storm flows and nuisance urban runoff that would enter Agua Hedionda Creek as shown in the figure below. Runoff flows enter the influent conveyances through a hydrodynamic separator that centrifugally removes debris and gross pollutants and directs flow into a detention vault where additional pollutants are removed through settlement during low flows. Flows greater than the design storm bypass the WQTF through the adjacent 36" storm drain.

The attached report presents additional details regarding monitoring results (Attachment A).

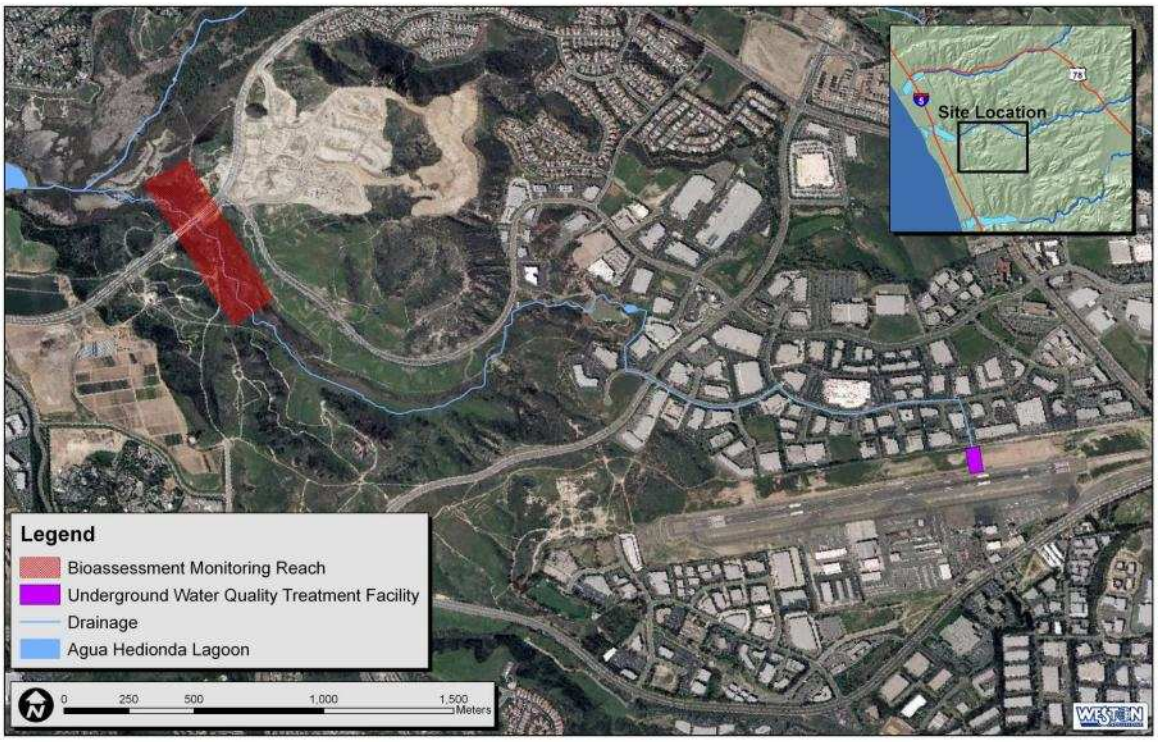

Figure 1. McClellan-Palomar Airport Monitoring Locations

FY 2008-09 ACTIVITY IMPLEMENTATION

- Preparation of the County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport summarizing the sampling efforts from 2006 to present.
- No monitoring took place during FY 2008-09

FY 2009-10 ACTIVITY IMPLEMENTATION

- Sampling of two storm events took place during FY 2009-10: December 11, 2009 and January 26, 2010.
- Revision and additions to County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport summarizing the sampling efforts from 2006 to 2010

FY 2010-11 ACTIVITY IMPLEMENTATION

- Sampling of two storm events took place during FY 2010-11: February 16, 2010 and February 26, 2010.
- Revision and additions to County of San Diego Storm Water Sampling Report for the McClellan-Palomar Airport summarizing the sampling efforts from 2006 to present (see attached report).

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

No additional sampling events are scheduled at this time.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients and sediment have been identified as priority water quality problems in the Agua Hedionda Hydrologic Area (904.3). Airport operations are a potential source of sediment and nutrients. Since this activity is addresses priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Effectiveness is assessed through regular water quality monitoring and comparison of influent and effluent pollutant loading. Scheduled monitoring for the FY 2010-11 was completed (Level 1 Outcome). In general, concentrations in samples collected during 2010-11 were within the range of previously collected sample concentrations. For additional information on sampling results please refer to attached report.

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CHU-WQA15

Water Quality Treatment Facility @ McClellan-Palomar Airport

Attachment 1

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COUNTY OF SAN DIEGO MCCLELLAN-PALOMAR AIRPORT

WATER QUALITY TREATMENT FACILITY

2010-2011 LONG TERM EFFECTIVENESS MONITORING REPORT

MAY 2011

WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS

COUNTY OF SAN DIEGO

5555 OVERLAND AVENUE, SUITE 2188

SAN DIEGO, CA 92123

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1.0 INTRODUCTION

In 2006, the County of San Diego designed and installed a Water Quality Treatment Facility (WQTF) as a Best Management Practice (BMP) to treat urban runoff from the McClellan-Palomar Airport sub-watershed under Proposition 13 State Water Resources Control Board (SWRCB) Grant Agreement Number 04-201-559-0. The runoff flows from the airport to Agua Hedionda Creek, to Agua Hedionda Lagoon, and ultimately into the Pacific Ocean near Carlsbad, California. The site and surrounding area are depicted in Appendix A, Figure 1.

Initial studies, consisting of five samples collected with automated equipment, were performed in 2006-2007 and the County of San Diego McClellan-Palomar Airport Water Quality Treatment Facility Long-Term Monitoring Plan (LTMP) was prepared in 2007 (County of San Diego, March, 2007). Long-term monitoring is intended to provide data for continued assessment of the water quality benefit provided by the WQTF.

The LTMP included monitoring flow and water quality during wet weather season (from October 1 through April 30) for two storms per year for the first two years. One sample was collected in 2007-2008, none in 2008-2009, two in 2009-2010.

The 2010-2011 sampling season represented the third season of long-term monitoring. The inlet and outlet to the WQTF were sampled on February 16, 2011 and February 26, 2011 according to the procedures described in the LTMP.

2.0 DESCRIPTION OF SAMPLING PROCEDURES

2.1 FLOW MEASUREMENTS

The WQTF is designed to temporarily detain stormwater flow. During a storm event, stage height increases and remains high for influent, while effluent flow velocity is relatively low and steady draining at the WQTF at a comparatively constant velocity until empty. Since the WQTF is not designed to permanently retain stormwater, the total influent and effluent (also referred to as the inlet and outlet, respectively) volumes should be approximately the same for a given storm event. Factors that may reduce total effluent volume include: the potentially negligible amount of sludge and water that may remain in the WQTF, potential exfiltration, and evaporation Flow measurements for the 2010-2011 storm season are available in Table 3 through 8 of Appendix B.

Instantaneous flow was measured and recorded at the beginning, middle, and end points of the sampling effort during the February 16, 2011 and February 26, 2011 storm events. All monitoring and sampling activities were performed above ground via the access manholes above the WQTF.

Flow was estimated by, first, measuring distances from the rims of the influent and the effluent access manholes to the water level. The distances were measured three times (at the beginning, middle, and end of sampling) and the measurements were averaged. These measurements are the reverse of true stage height. To obtain the stage height, the average distance to the water was subtracted from the invert (25.37 feet for the influent, 26.97 feet for the effluent). The stage heights were then converted to estimated instantaneous flow values using Table 5-2 of the LTMP reproduced as Table 1 in Appendix B.

2.2 WATER QUALITY SAMPLING

During each storm event, one set of grab samples was collected at both the inlet and outlet of the WQTF. Grab samples were collected in pre-cleaned containers and transferred to appropriate laboratory-supplied sampling bottles. Samples were collected by lowering a pre-cleaned container from the designated manhole access at either the influent or effluent sampling point. Surface Water Ambient Monitoring Program (SWAMP) sampling protocols and the procedures in the LTMP were followed during sample collection.

Samples were labeled, placed on ice in coolers, and transported for analysis under standard chain-of-custody procedures to EnviroMatrix Analytical, Inc., located in San Diego, California. The samples were analyzed for the constituents listed in Table 2 of Appendix B.

During the sampling of the inlet and the outlet, field measurements were recorded for pH, temperature, conductivity, dissolved oxygen (DO), turbidity, and salinity. The field measurements are incorporated in Tables 3 through 8 of Appendix B, as well as within the field data logs completed for each sampling event, included in Appendix C.

3.0 ANALYTICAL RESULTS

Field measurements, flow estimates, and analytical laboratory results are presented in Tables 3 through 8 of Appendix B, along with results from the prior seasons. All analytical laboratory results are also summarized in Figures 3 through 16 of Appendix A. Copies of the 2010-2011 field forms and maintenance records are provided in Appendix C, Appendix D contains the 2010-2011 laboratory analytical reports.

In general, 2010-2011 sample concentrations were similar to those of samples collected in earlier years. The February 26, 2011 storm event produced lower concentrations for all analytes except total dissolved solids (TDS), which fell within normal range based on historical results. Reduced analyte concentrations during the latter storm event may be attributed to several possible factors, including, but not limited to: a reduced antecedent dry period and associated pollutant buildup, duration and intensity of rainfall, variations in watershed activities, and/or other unknown factors.

Dissolved orthophosphate, TDS, and total hardness concentrations were lower in the effluent than in the influent during both storm events. Also, dissolved oxygen (DO) concentration (higher DO concentration generally improves water quality) was higher in the effluent during both storm events. Results for the remaining constituents varied depending on storm event or fell below the detection limits.

Percent changes in constituent loadings were calculated with the following formula:

$$\text{\% Load Change} = \frac{Outlet\ Load - Inlet\ Load}{Inlet\ Load} \text{ x } 100$$

Since it was assumed that effluent volume approximately equaled influent volume, these load reductions are directly proportional to the differences in concentrations between the influent and effluent. As stated in Section 2.1, factors that may reduce the total effluent volume include: the potentially negligible amount of sludge and water that remain in the WQTF and any loss to volume resulting from potential exfiltration, evaporation, and/or other additional means for volume reduction. Inlet volumes, analyte concentrations, loads, and load reductions are presented in Tables 3 through 8 of Appendix B.

4.0 EFFECTIVENESS ASSESSMENT

As of May 2011, ten storm events have been monitored at the WQTF. On the average (based on the median values), flow rate through the facility was reduced by 82%. Based on the median values calculated for the 10 storms (Table 1), there were also reductions in temperature (6%), specific conductance (6%), turbidity (3%), MBAS (3%), oil and grease (2%), dissolved orthophosphate as P (15%), total phosphorus (5%), total dissolved solids (6%), total hardness (8%), and dissolved copper (4%). In addition, significant reductions in TSS (98-99%) occurred during storm events characterized by high TSS concentrations indicating that the WQTF was functioning properly.

WQTF load reduction effectiveness is summarized in Table 1 above. Loads and load reductions are available in Table 3 of Appendix B.

A continuation of sampling two times annually, at a minimum, for additional two years is recommended, as set forth in the LTMP. Upon completion of the additional two years of sampling, at the fifth year of WQTF long-term monitoring, an additional effectiveness assessment should be conducted, per the LTMP. Due to the limited data, statistical analyses were not conducted as part of the effectiveness assessment, but are recommended to be included as part of the fifth year report. During the fifth year effectiveness assessment, BMP probability analyses and constituent concentration comparisons to parameter benchmark values should be conducted, if possible, to help better assess pollutant removal effectiveness of the WQTF.

In addition, based on analytical results, removal of Chlorpyrifos and Diazinon from the monitoring program is suggested as these analytes have not been detected in either influent or effluent samples over the entire study period.

In summary, the following actions are recommended:

- Continue sampling for two additional years,
- Remove pesticides (Chlorpyrifos and Diazinon) from the laboratory analysis list based on no detections.

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APPENDIX A – FIGURES

Figure 1: Location of the McClellan-Palomar Airport Water Quality Treatment Facility

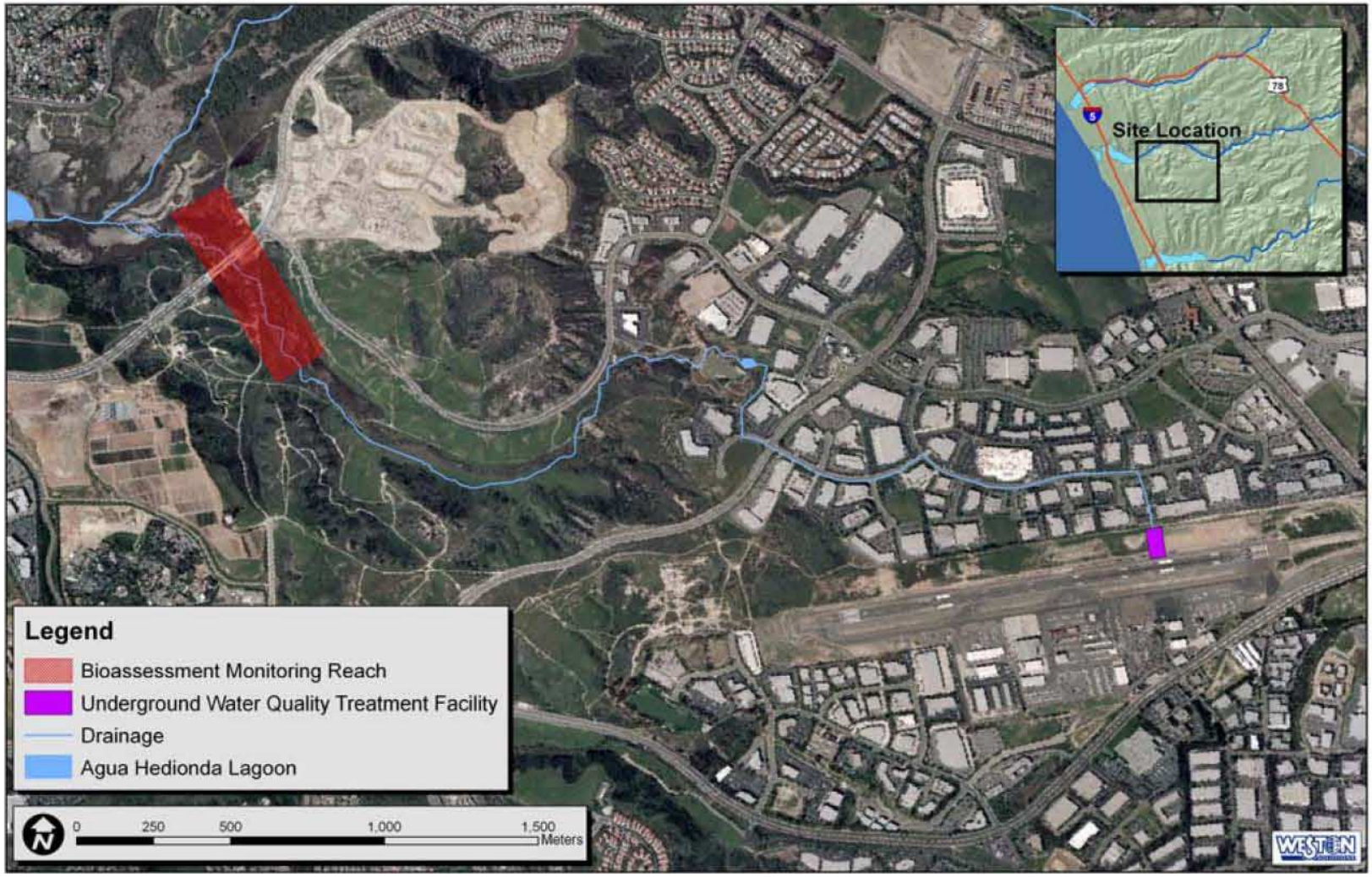

Figure 2: Oil and Grease Results[1]

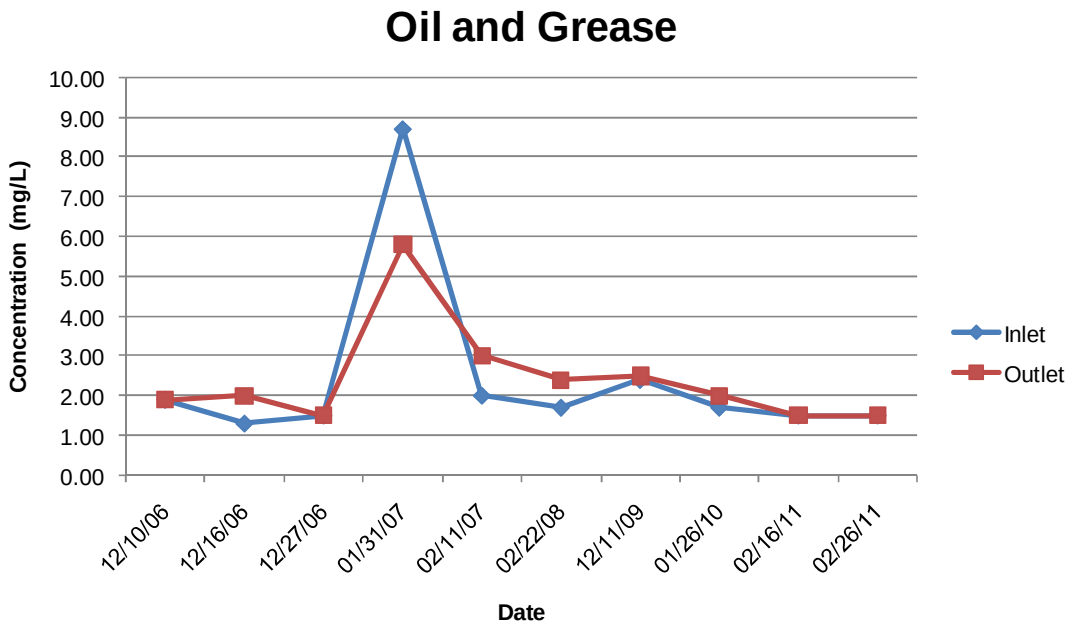

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 3: Dissolved Cadmium Results[1]

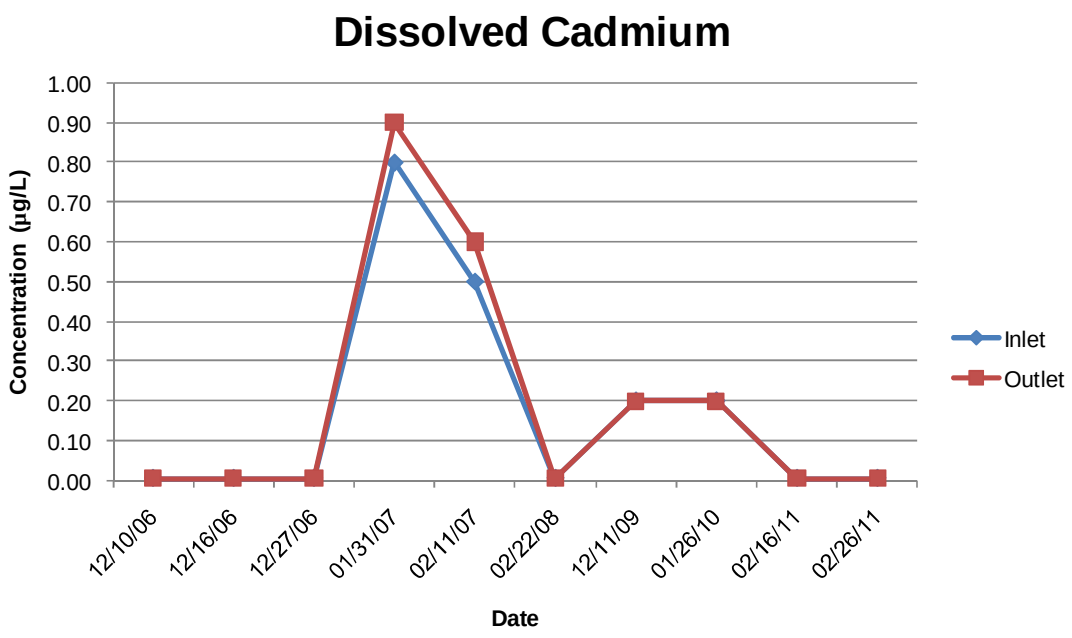

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 4: Dissolved Copper Results[1]

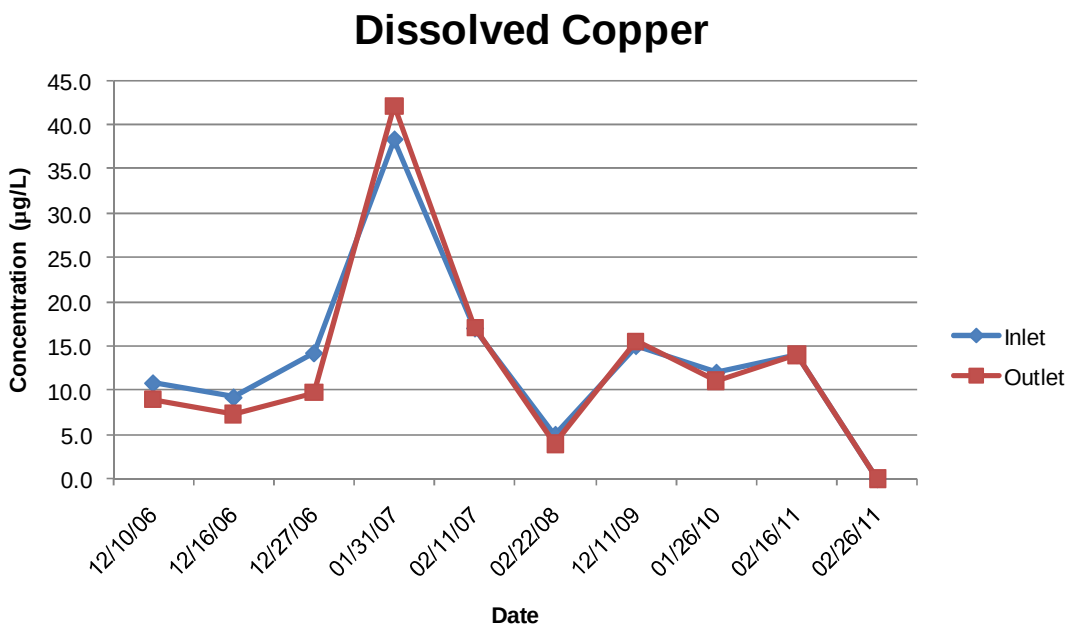

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 5: Dissolved Lead Results[1]

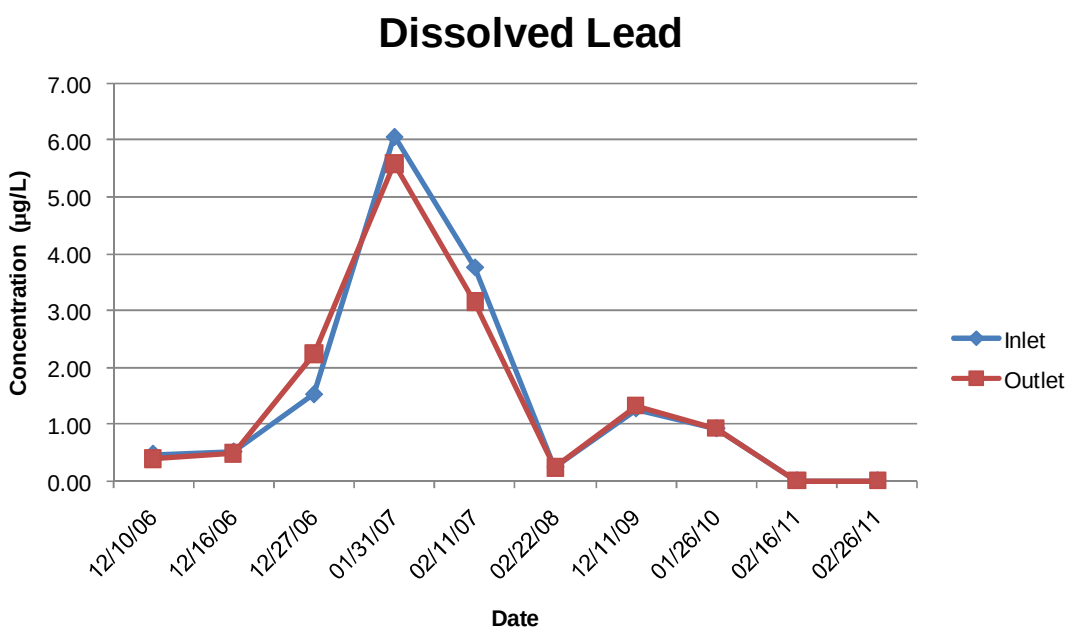

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 6: Dissolved Zinc Results[1]

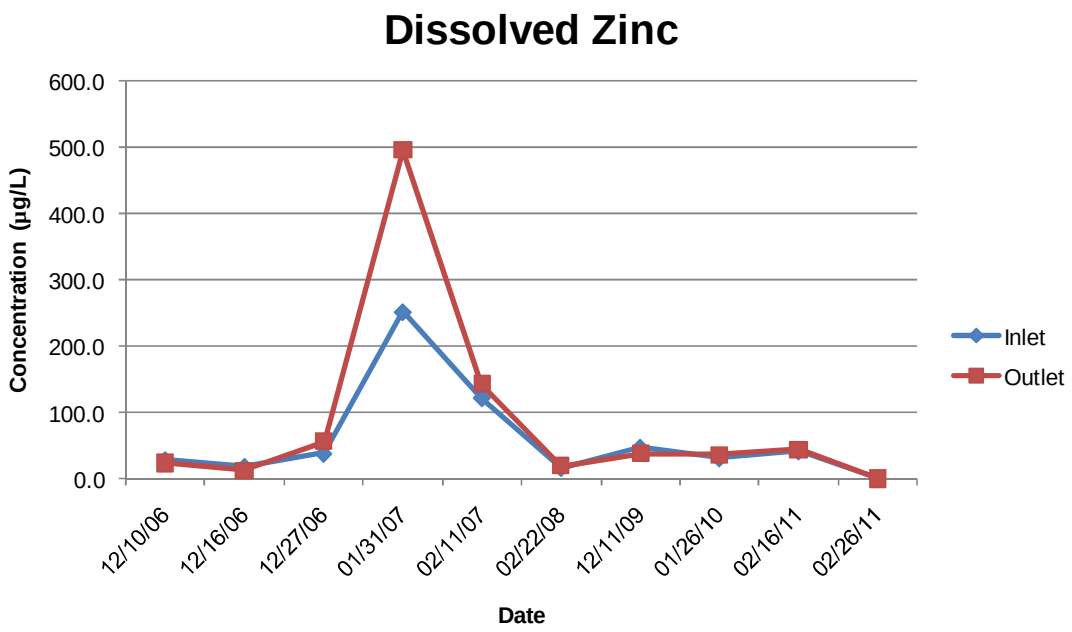

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 7: Nitrate Results[1]

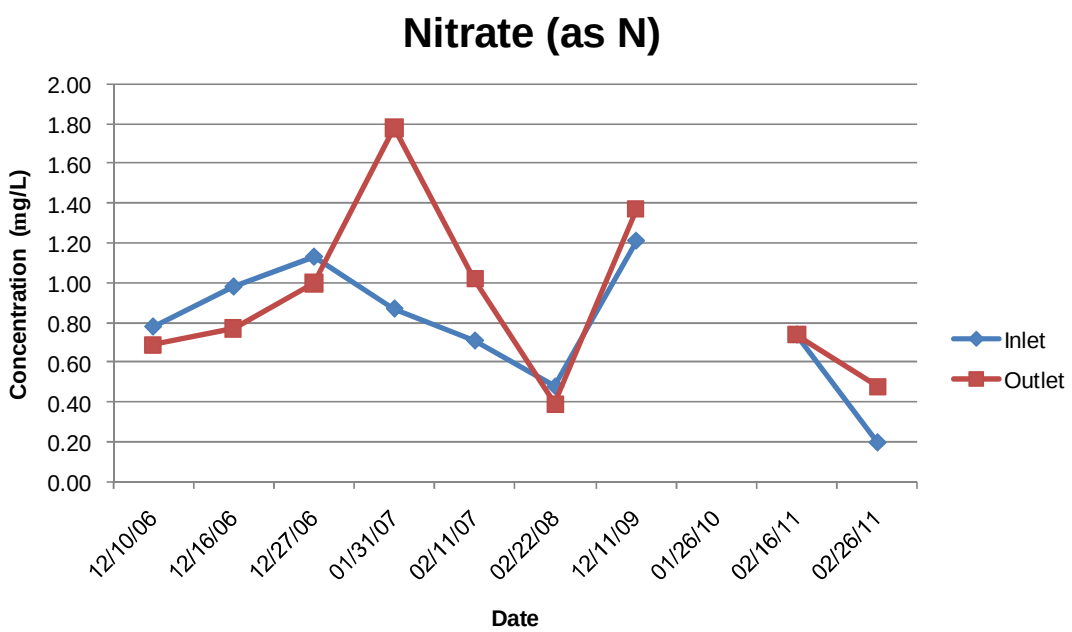

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 8: Dissolved Orthophosphate (as P) Results[1]

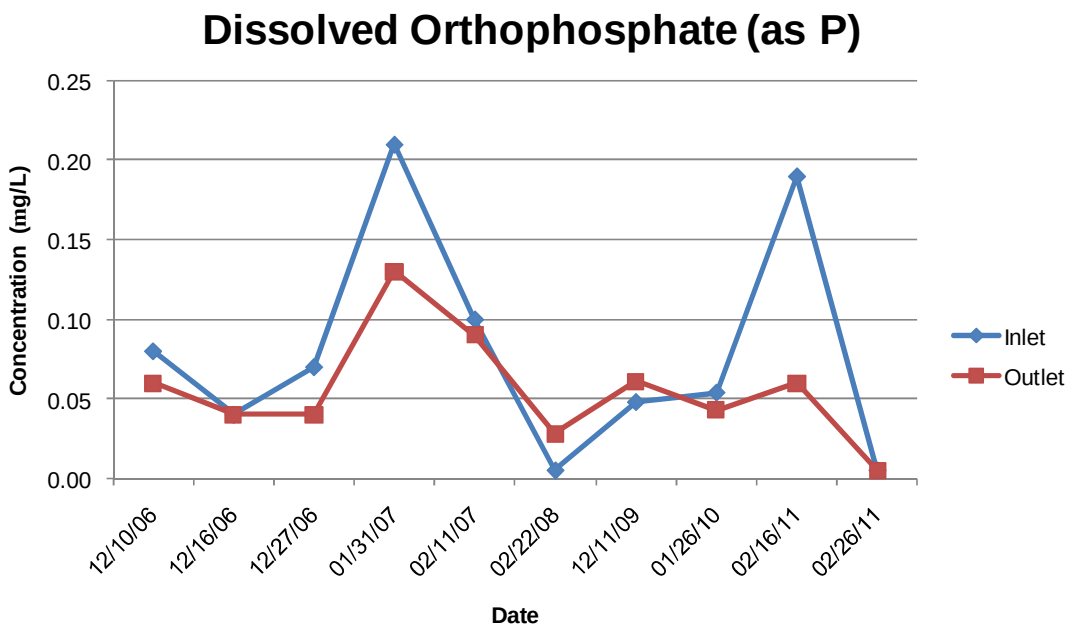

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 9: Total Phosphorus Results[1]

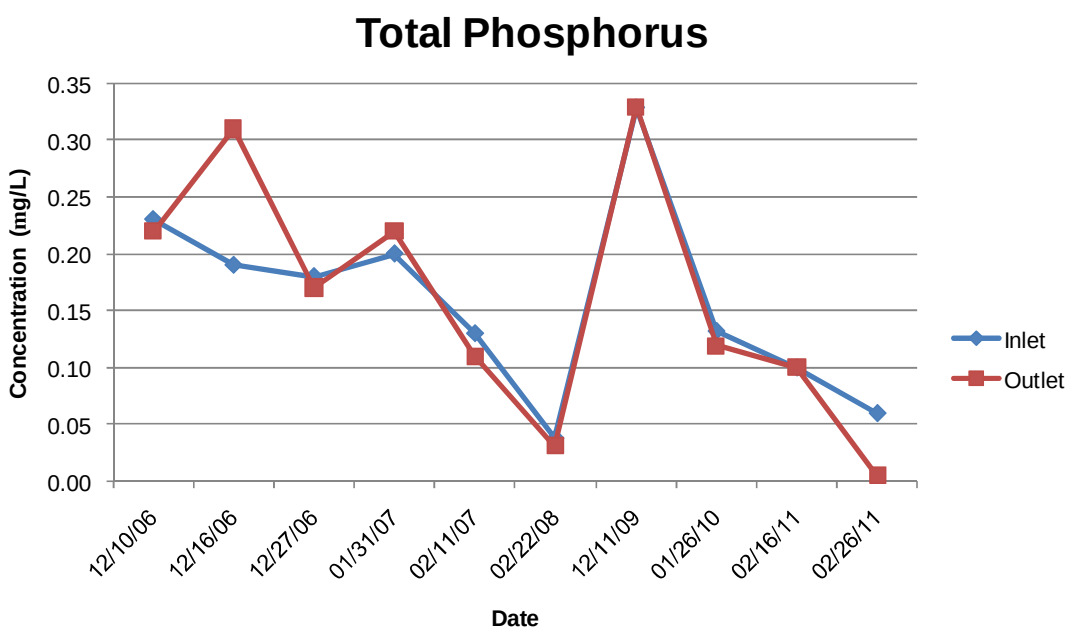

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 10: Chlorpyrifos Results[1]

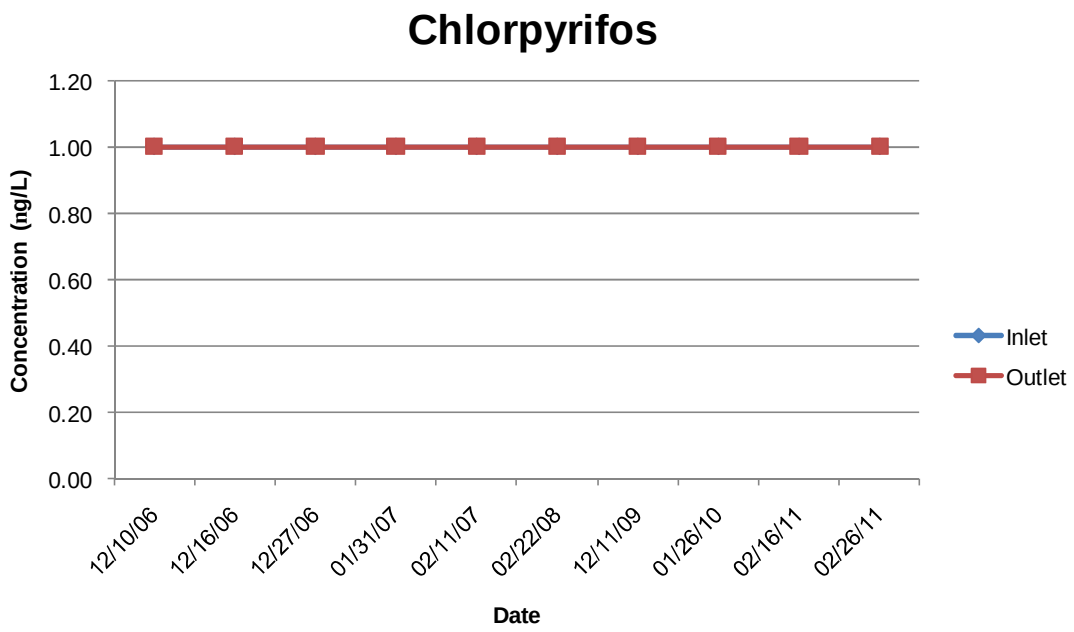

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 11: Diazinon Results[1]

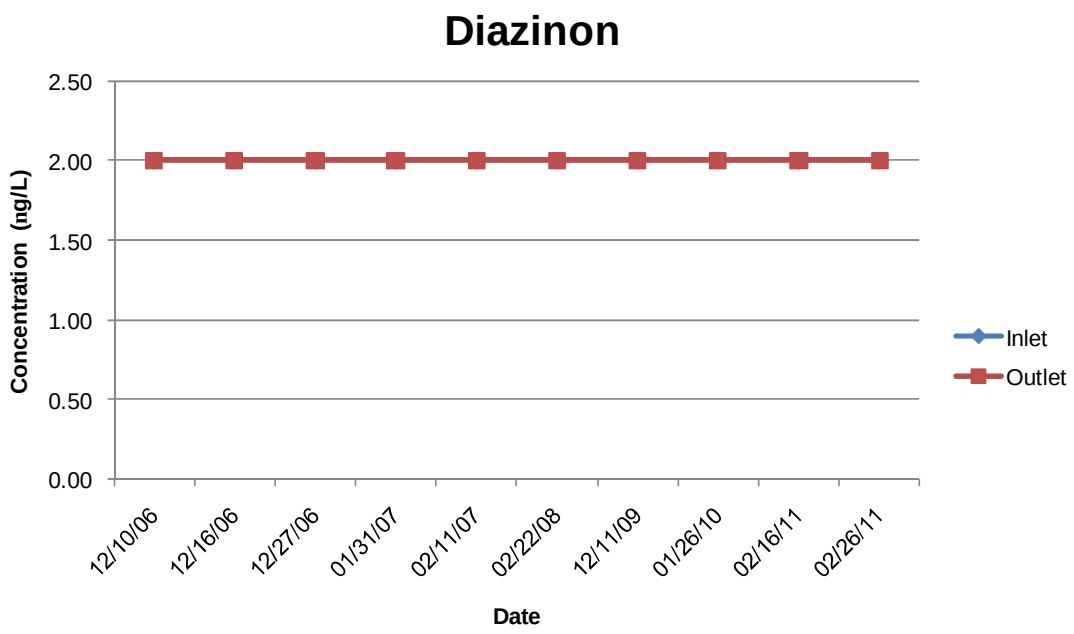

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 12: MBAS Results[1]

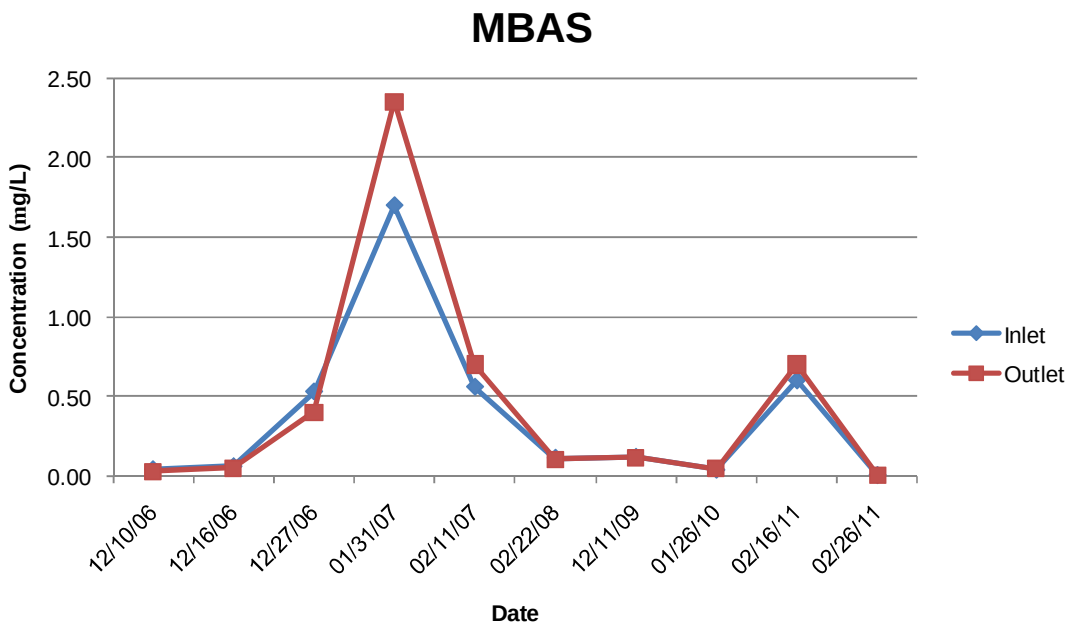

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 13: TSS Results[1]

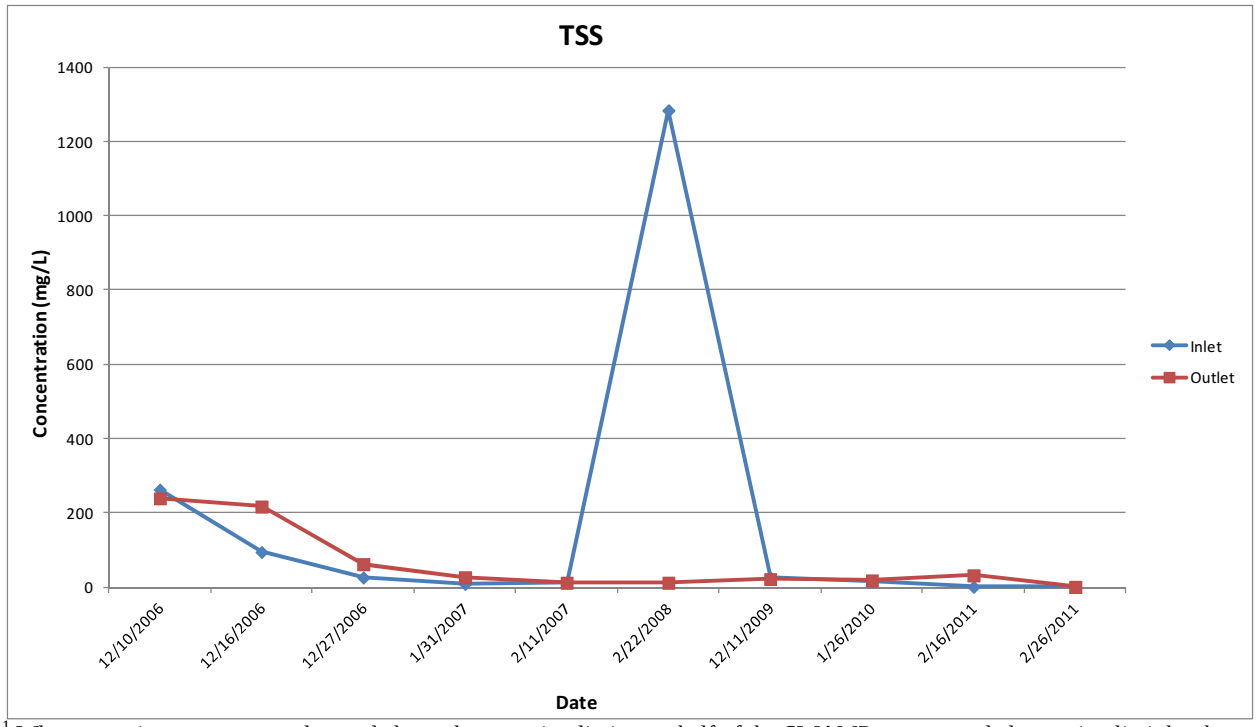

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 14: TDS Results[1]

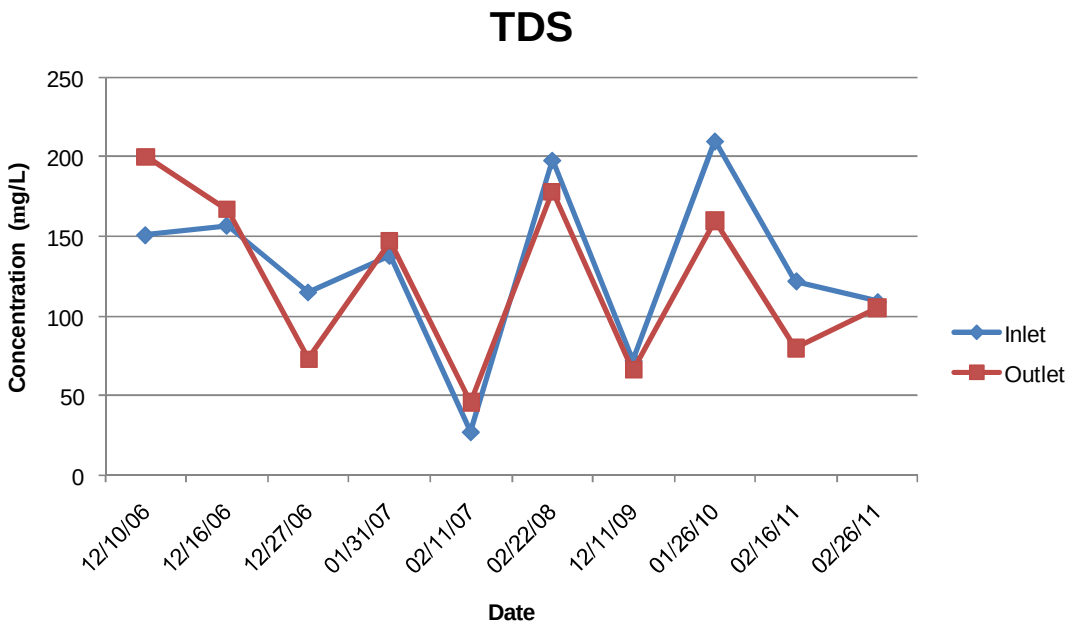

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

Figure 14: Total Hardness (as $CaCO_3$) Results[1]

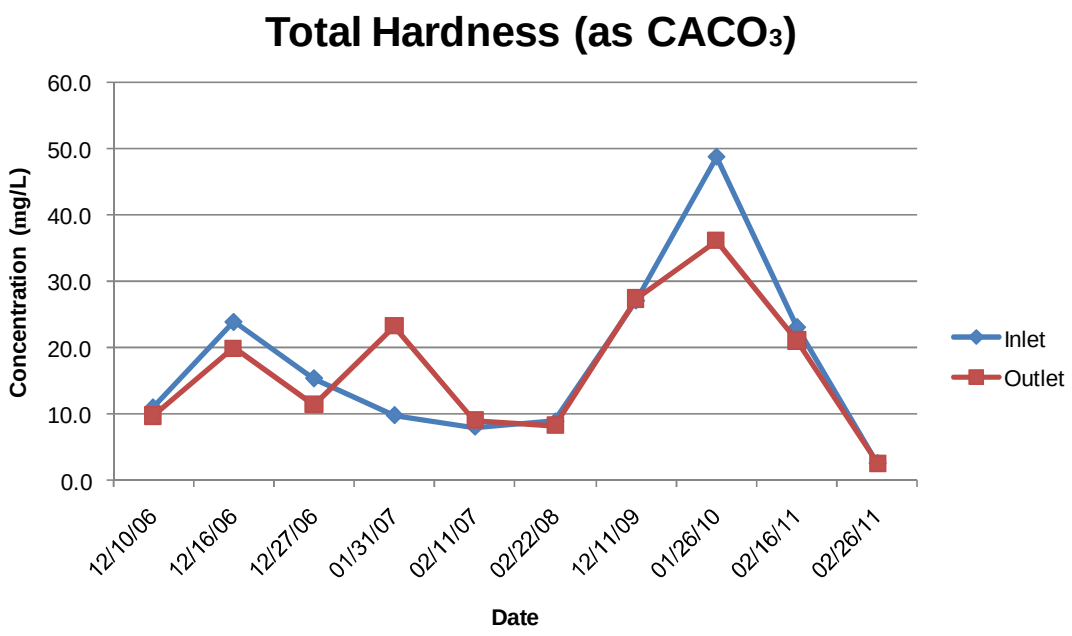

[1] Where constituents were not detected above the reporting limit, one-half of the SWAMP recommended reporting limit has been used.

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APPENDIX B – TABLES

Table 1: Percent change in constituent measured values and/or concentrations between the inlet and outlet of the WQTF.

% Change in Concentration	12/10/2006	12/16/2006	12/27/2006	1/31/2007	2/11/2007	2/22/2008	12/11/2009	1/26/2010	2/16/2011	2/26/2011	Mean	Median	Total Count	No. Reduced	No. Increased	No. No Change	% Reduced
Flow (cfs)	-27%	0%	-10%	-67%	0%	-98%	-99%	-99%	-98%	-97%	-60%	-82%	10	8	0	2	80%
Temp (C°)	-6%	1%	-14%	0%		0%	-1%	-7%	-29%	-11%	-8%	-6%	9	6	1	2	67%
pH	-4%	8%	19%	-2%		4%	2%	7%	-4%	0%	3%	2%	9	3	6	0	33%
Specific Conductance (uS/cm)	-25%	-6%	-38%	-10%		-1%	-5%	-41%	0%	0%	-14%	-6%	9	7	0	2	78%
Turbidity (NTU)	-7%	0%	406%	-14%		-3%	-40%	0%	-8%	6%	38%	-3%	9	5	2	2	56%
DO (mg/L)	17%	4%	-8%	-1%		1%	4%	20%	10%	5%	6%	4%	9	2	7	0	22%
MBAS (mg/L)	-25%	-17%	-25%	38%	25%	-5%	-3%	25%	17%	0%	3%	-2%	10	5	4	1	50%
Oil & Grease (mg/L)	0%	54%	0%	-33%	50%	41%	4%	18%	0%	0%	13%	2%	10	1	5	4	10%
Dissolved Orthophosphate as P (mg/L)	-25%	0%	-43%	-38%	-10%	900%	20%	-20%	-68%	0%	72%	-15%	10	6	2	2	60%
Total Phosphorus (mg/L)	-4%	63%	-6%	10%	-15%	-18%	0%	-8%	0%	-83%	-6%	-5%	10	6	3	1	60%
Nitrate-N (mg/L)	-12%	-21%	-12%	105%	44%	-19%	17%	0%	0%	140%	24%	0%	10	4	4	2	40%
Total Dissolved solids (mg/L)	32%	6%	-37%	7%	70%	-10%	-8%	-24%	-34%	-4%	0%	-6%	10	6	4	0	60%
Total Suspended Solids (mg/L)	-9%	128%	137%	207%	0%	-99%	-19%	18%	12700%	0%	1306%	9%	10	3	5	2	30%
Total Hardness as CaCO3 (mg/L)	-11%	-16%	-25%	139%	13%	-7%	1%	-26%	-9%	0%	6%	-8%	10	6	3	1	60%
Dissolved Cadmium (ug/L)	0%	0%	0%	13%	20%	0%	0%	0%	0%	0%	3%	0%	10	0	2	8	0%
Dissolved Copper (ug/L)	-18%	-21%	-32%	11%	1%	-22%	3%	-8%	0%	0%	-9%	-4%	10	5	3	2	50%
Dissolved Lead (ug/L)	-15%	-4%	47%	-8%	-16%	0%	5%	1%	0%	0%	1%	0%	10	4	3	3	40%
Dissolved Zinc (ug/L)	-16%	-34%	46%	97%	17%	12%	-19%	13%	5%	0%	12%	8%	10	3	6	1	30%

Positive percentages indicate increases (higher at the outlet than at the inlet); negative percentages show decreases.

Table 2: Stage Discharge

Head (in)	Influent Flow (cfs)	Effluent Flow (cfs)
0	0.46	0.07
1	3.07	0.08
2	5.5	0.09
3	7.75	0.09
4	9.83	0.10
5	11.7	0.11
6	13.4	0.11
7	15.0	0.12
8	16.4	0.13
9	17.0	0.14
10	18.6	0.15
11	19.4	0.15
12	20.1	0.16
13	20.6	0.17
14	20.9	0.17
15	21.3	0.18
16	21.7	0.18
17	21.8	0.19
18	21.9	0.20
19	22.0	0.2
20	22.1	0.21
21	22.1	0.22
22	21.9	0.22
23	21.4	0.23
24	20.2	0.24
25		0.25
26		0.25
27		0.26
28		0.27
29		0.28
30		0.29
31		0.29
32		0.30
33		0.31
34		0.32
35		0.33
36		0.33
37		0.34
38		0.35

Head (in)	Influent Flow (cfs)	Effluent Flow (cfs)
39		0.36
40		0.36
41		0.37
42		0.38
43		0.39
44		0.39
45		0.40
46		0.41
47		0.41
48		0.42
49		0.44
50		0.44
51		0.45
52		0.45
53		0.46
54		0.46
55		0.47
56		0.47
57		0.47
58		0.48
59		0.48
60		0.48

Table 3: McClellan-Palomar Airport Water Quality Treatment Facility Analytical Water Quality Parameters

Analytical Parameter	Analytical Method	Sample Volume	Containers #, Size, Type	Preservation (Chemical, Temperature, Light Protected)	Maximum Holding Time: Preparation/ Analysis
TSS	SM 2540-D	250 mL	Plastic	Store Cool at <4ºC	6 Months
TDS	SM 2540-C	1L	Plastic	Store Cool at <4ºC	7 Days
Total Hardness	SM 2340-B	100 mL	Plastic	HNO_3	6 Months
Dissolved Cadmium	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Copper	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Lead	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Dissolved Zinc	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Nitrate - N	SM 4500-NO_3	100 mL	Plastic or Glass	Store Cool at <4ºC	48 Hours
Total Phosphorus	SM 4500-P C	250 mL	HDPE Plastic	Store Cool at <4ºC	28 Days
Dissolved Ortho-Phosphate	EPA 300	250 mL	HDPE Plastic	Store Cool at <4ºC	28 Days
Diazinon	EPA 625	1 L	Amber Glass	Store Cool at <4ºC	Extraction 7 days; Analysis 40 days
Chlorpyrifos	EPA 625	1 L	Amber Glass	Store Cool at <4ºC	Extraction 7 days; Analysis 40 days
MBAS	SM 5540 C	500 mL	Plastic	Store Cool at <4ºC	48 Hours
Oil and Grease	EPA 1664	1 L	Amber Glass	Store Cool at <4ºC, Add HCl to pH<2	28 Days

Table 4: 2006 McClellan-Palomar Airport Water Quality Treatment Facility Analytical Results

Analyte Class	Constituent	12/10/06					12/16/06				
		Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]	Concentration[3,5]		Load (lbs/day)[4]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil & Grease (mg/L)	1.9J	1.9J	46.42	46.42	0%	1.3J	2J	0.98	1.51	-54%
Metals	Dissolved Cadmium (ug/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Dissolved Copper (ug/L)	10.8	8.90	0.26	0.22	18%	9.2	7.3	0.01	0.01	21%
	Dissolved Lead (ug/L)	0.47	0.40	0.011	0.010	15%	0.51	0.49	0.00039	0.00037	4%
	Dissolved Zinc (ug/L)	28.6	23.9	0.70	0.58	16%	18.4	12.1	0.014	0.009	34%
Nutrients	Nitrate-N (mg/L)	0.78	0.69	19.06	16.86	12%	0.98	0.77	0.74	0.58	21%
	Dissolved Orthophosphate as P (mg/L)	0.08	0.06	1.95	1.47	25%	0.04	0.04	0.03	0.03	0%
	Total Phosphorus (mg/L)	0.23	0.22	5.62	5.38	4%	0.19	0.31	0.14	0.23	-63%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.04	0.03	0.98	0.73	25%	0.06	0.05	0.045	0.038	17%
Conventionals	Total Suspended Solids (mg/L)	263	239	6438	5840	9%	95	217	72	164	-128%
	Total Dissolved solids (mg/L)	151	200	3690	4887	-32%	157	167	119	119	0%
	Total Hardness as CaCO3 (mg/L)	10.9	9.68	NA	NA	11%	23.8	19.9	NA	NA	16%
	pH	7.59	7.30	NA	NA	4%	6.0	6.5	NA	NA	-8%
	Temp (C°)	15.3	14.4	NA	NA	6%	12.1	12.2	NA	NA	-1%
	DO (mg/L)	9.00	10.5	NA	NA	-17%	6.15	6.42	NA	NA	-4%
	Turbidity (NTU)	710.0	661.0	NA	NA	7%	290	290	NA	NA	0%
	Specific Conductance (uS/cm)	106.0	80.0	NA	NA	25%	16	15	NA	NA	6%
	Flow (cfs)	4.53	3.31	NA	NA	27%	0.14	0.14	NA	NA	0%

Table 4: 2006 McClellan-Palomar Airport Water Quality Treatment Facility Analytical Results (continued)

Analyte Class	Constituent	12/27/06				
		Concentration[3,6]		Load (lbs/day)[5]		Load Reduction[2]
		Inlet	Outlet	Inlet	Outlet[1]	
Hydrocarbons	Oil & Grease (mg/L)	ND	ND	ND	ND	NA
Metals	Dissolved Cadmium (ug/L)	ND	ND	ND	ND	NA
	Dissolved Copper (ug/L)	14.2	9.7	0.015	0.01	32%
	Dissolved Lead (ug/L)	1.52	2.24	0.0016	0.0024	-47%
	Dissolved Zinc (ug/L)	38.2	55.9	0.04	0.06	-46%
Nutrients	Nitrate-N (mg/L)	1.13	1	1.22	1.08	12%
	Dissolved Orthophosphate as P (mg/L)	0.07	0.04	0.08	0.04	43%
	Total Phosphorus (mg/L)	0.18	0.17	0.19	0.18	6%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.53	0.4	0.57	0.43	25%
Conventionals	Total Suspended Solids (mg/L)	26.3	62.3	28	67	-137%
	Total Dissolved solids (mg/L)	115	73	124	79	37%
	Total Hardness as CaCO3 (mg/L)	15.3	11.4	NA	NA	25%
	pH	7.4	8.82	NA	NA	-19%
	Temp (C°)	15.9	13.6	NA	NA	14%
	DO (mg/L)	9.28	8.55	NA	NA	8%
	Turbidity (NTU)	17	86	NA	NA	-406%
	Specific Conductance (uS/cm)	210	131	NA	NA	38%
	Flow (cfs)	0.2	0.18	NA	NA	10%

Notes:
(1) Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain stormwater flow, thus effluent volume is assumed to equal influent volume.
(2) Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.
(3) J = Estimated value below the reporting limit and above the method detection limit.
(4) NA = Where loads are NA, value represents change in concentration.
(5) ND = Constituent not detected above the reporting limit.

Table 5: 2007 McClellan-Palomar Airport Water Quality Treatment Facility Analytical Results

		01/31/07					02/11/07				
		Concentration[3,5]		Load (lbs/day)[4]		Load	Concentration[3,5]		Load (lbs/day)[4]		Load
Analyte Class	**Constituent**	**Inlet**	**Outlet**	**Inlet**	**Outlet[1]**	**Reduction[2]**	**Inlet**	**Outlet**	**Inlet**	**Outlet[1]**	**Reduction[2]**
Hydrocarbons	Oil & Grease (mg/L)	8.7	5.8	14	9.39	33%	2J	3J	0.86	1.29	-50%
Metals	Dissolved Cadmium (ug/L)	0.8	0.9	0.0013	0.0015	-13%	0.5	0.6	0.00022	0.00026	-20%
	Dissolved Copper (ug/L)	38	42	0.06	0.07	-10%	17	17.10	0.01	0.01	-1%
	Dissolved Lead (ug/L)	6.06	5.58	0.01	0.01	8%	3.76	3.16	0.0016	0.0014	16%
	Dissolved Zinc (ug/L)	251	495	0.41	0.80	-97%	122	143	0.05	0.06	-17%
Nutrients	Nitrate-N (mg/L)	0.87	1.78	1.41	2.88	-105%	0.71	1.02	0.31	0.44	-44%
	Dissolved Orthophosphate as P (mg/L)	0.21	0.13	0.34	0.21	38%	0.1	0.09	0.04	0.04	10%
	Total Phosphorus (mg/L)	0.2	0.22	0.32	0.36	-10%	0.13	0.11	0.06	0.05	15%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	1.7	2.35	2.75	3.80	-38%	0.56	0.7	0.24	0.30	-25%
Conventionals	Total Suspended Solids (mg/L)	8.8	27	14.2	44.2	-210%	12	12	5.2	5.2	0%
	Total Dissolved solids (mg/L)	138	147	223	238	-7%	27	46	12	20	-70%
	Total Hardness as $CaCO_3$ (mg/L)	9.7	23.2	NA	NA	-138%	8	9	NA	NA	-13%
	pH	6.4	6.3	NA	NA	0%	NA	NA	NA	NA	NA
	Temp (C°)	15.2	15.2	NA	NA	0%	NA	NA	NA	NA	NA
	DO (mg/L)	10	9.9	NA	NA	1%	NA	NA	NA	NA	NA
	Turbidity (NTU)	14	12	NA	NA	14%	NA	NA	NA	NA	NA
	Specific Conductance (uS/cm)	143	128	NA	NA	11%	NA	NA	NA	NA	NA
	Flow (cfs)	0.3	0.1	NA	NA	63%	0.08	0.08	NA	NA	0%

Notes:
(1) Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain stormwater flow, thus effluent volume is assumed to equal influent volume.
(2) Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.
(3) J = Estimated value below the reporting limit and above the method detection limit.
(4) NA = Where loads are NA, value represents change in concentration. NA is also present for field measurements that were not analyzed on 2/11/07.
(5) ND = Constituent not detected above the reporting limit.

Table 6: 2008 McClellan-Palomar Airport Water Quality Treatment Facility Analytical Results

		02/22/08				
		Concentration[3,5]		Load (lbs/day)[4]		
Analyte Class	**Constituent**	**Inlet**	**Outlet**	**Inlet**	**Outlet[1]**	**Load Reduction[2]**
Hydrocarbons	Oil & Grease (mg/L)	1.7J	2.4J	199	281	-41%
Metals	Dissolved Cadmium (ug/L)	ND	ND	ND	ND	NA
	Dissolved Copper (ug/L)	5	3.9	0.59	0.46	22%
	Dissolved Lead (ug/L)	0.2	0.2	0.03	0.03	0%
	Dissolved Zinc (ug/L)	16.8	18.8	2.0	2.2	-12%
Nutrients	Nitrate-N (mg/L)	0.48	0.39	56	46	19%
	Dissolved Orthophosphate as P (mg/L)	ND	0.03	ND	3.3	NA
	Total Phosphorus (mg/L)	0.038J	0.031J	4.5	3.6	18%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.113	0.107	13.3	12.5	5%
Conventionals	Total Suspended Solids (mg/L)	1284	12	150,563	1,372	99%
	Total Dissolved solids (mg/L)	198	178	23,218	20,872	10%
	Total Hardness as CaCO3 (mg/L)	8.8	8.2	NA	NA	7%
	pH	7.9	8.2	NA	NA	-3%
	Temp (C°)	13.3	13.3	NA	NA	0%
	DO (mg/L)	11.3	11.4	NA	NA	0%
	Turbidity (NTU)	19.4	18.8	NA	NA	3%
	Specific Conductance (uS/cm)	135	133	NA	NA	1%
	Flow (cfs)	21.74	0.36	NA	NA	98%

Notes:
1) Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain stormwater flow, thus effluent volume is assumed to equal influent volume.
(2) Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.
(3) J = Estimated value below the reporting limit and above the method detection limit.
(4) NA = Where loads are NA, value represents change in concentration.
(5) ND = Constituent not detected above the reporting limit.

Table 7: 2009 McClellan-Palomar Airport Water Quality Treatment Facility Analytical Results

		12/11/09				
		Concentration[3,5]		Load (lbs/day)[4]		
Analyte Class	**Constituent**	**Inlet**	**Outlet**	**Inlet**	**Outlet[1]**	**Load Reduction[2]**
Hydrocarbons	Oil & Grease (mg/L)	2.4J	2.5J	216	225	-4%
Metals	Dissolved Cadmium (ug/L)	0.2J	0.2J	18	18	0%
	Dissolved Copper (ug/L)	15	15.5	1.35	1.39	-3%
	Dissolved Lead (ug/L)	1.27	1.33	0.11	0.12	-5%
	Dissolved Zinc (ug/L)	47	38	4	3	21%
Nutrients	Nitrate-N (mg/L)	1.2	1.4	109	123	-13%
	Dissolved Orthophosphate as P (mg/L)	0.05	0.06	4.3	5.5	-27%
	Total Phosphorus (mg/L)	0.328	0.329	3.4	2.8	18%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.119	0.115	10.7	10.3	3%
Conventionals	Total Suspended Solids (mg/L)	27	22	2402	1934	19%
	Total Dissolved solids (mg/L)	72	66	6478	5938	8%
	Total Hardness as CaCO3 (mg/L)	27	27.3	NA	NA	-1%
	pH	8.9	9.1	NA	NA	-2%
	Temp (C°)	16.5	16.4	NA	NA	1%
	DO (mg/L)	7.9	8.2	NA	NA	-3%
	Turbidity (NTU)	42.9	25.7	NA	NA	40%
	Specific Conductance (uS/cm)	0.20	0.19	NA	NA	1%
	Flow (cfs)	16.68	0.25	NA	NA	99%

Notes:
1) Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain stormwater flow, thus effluent volume is assumed to equal influent volume.
(2) Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.
(3) J = Estimated value below the reporting limit and above the method detection limit.
(4) NA = Where loads are NA, value represents change in concentration.
(5) ND = Constituent not detected above the reporting limit.

Table 8: 2010 McClellan-Palomar Airport Water Quality Treatment Facility Analytical Results

		01/26/10				
		Concentration[3,5]		Load (lbs/day)[4]		
Analyte Class	**Constituent**	**Inlet**	**Outlet**	**Inlet**	**Outlet[1]**	**Load Reduction[2]**
Hydrocarbons	Oil & Grease (mg/L)	1.7J	2J	199	235	-18%
Metals	Dissolved Cadmium (ug/L)	0.2J	0.2J	23	23	0%
	Dissolved Copper (ug/L)	12	11	1.41	1.29	8%
	Dissolved Lead (ug/L)	0.92	0.93	0.11	0.11	-1%
	Dissolved Zinc (ug/L)	31.4	35.6	3.68	4.17	-13%
Nutrients	Nitrate-N (mg/L)	NA	NA	NA	NA	NA
	Dissolved Orthophosphate as P (mg/L)	0.05	0.04	6.33	5.04	20%
	Total Phosphorus (mg/L)	0.13	0.12	15.48	13.95	10%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.04	0.05	4.46	5.28	-18%
Conventionals	Total Suspended Solids (mg/L)	15.5	18.3	1,818	2,146	-18%
	Total Dissolved solids (mg/L)	210	160	24,625	18,762	24%
	Total Hardness as CaCO3 (mg/L)	48.7	36.1	NA	NA	26%
	pH	7.96	8.48	NA	NA	-7%
	Temp (C°)	14.2	13.2	NA	NA	7%
	DO (mg/L)	7	8.4	NA	NA	-19%
	Turbidity (NTU)	10	10	NA	NA	0%
	Specific Conductance (uS/cm)	0.22	0.13	NA	NA	39%
	Flow (cfs)	21.74	0.20	NA	NA	99%

Notes:
(1) Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain stormwater flow, thus effluent volume is assumed to equal influent volume.
(2) Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.
(3) J = Estimated value below the reporting limit and above the method detection limit.
(4) NA = Where loads are NA, value represents change in concentration. NA is also present for Nitrate that was not analyzed on 1/26/10.
(5) ND = Constituent not detected above the reporting limit.

Table 9: 2011 McClellan-Palomar Airport Water Quality Treatment Facility Analytical Results

		02/16/11					02/26/11				
		Concentration[3, 6]		Load (lbs/day)[4, 5]		Load	Concentration[3, 6]		Load (lbs/day)[4, 5]		Load
Analyte Class	**Constituent**	**Inlet**	**Outlet**	**Inlet**	**Outlet[1]**	**Reduction[2]**	**Inlet**	**Outlet**	**Inlet**	**Outlet[1]**	**Reduction[2]**
Hydrocarbons	Oil & Grease (mg/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Metals	Dissolved Cadmium (ug/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Dissolved Copper (ug/L)	14	14	0.4	0.4	0%	ND	ND	ND	ND	NA
	Dissolved Lead (ug/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Dissolved Zinc (ug/L)	42	44	1.2	1.3	-5%	ND	ND	ND	ND	NA
Nutrients	Nitrate-N (mg/L)2	0.74	0.74	22	22	0%	0.2	0.48	3.3	7.9	-140%
	Dissolved Orthophosphate as P (mg/L)1	0.19	0.06	5.6	1.8	68%	ND	ND	ND	ND	NA
	Total Phosphorus (mg/L)3	0.10	0.10	3	3	0%	0.06	ND	0.99	0.4E	60%
Pesticides	Chlorpyrifos (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Diazinon (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
	Malathion (ng/L)	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Surfactants	MBAS (mg/L)	0.6	0.7	18	21	-17%	ND	ND	ND	ND	NA
Conventionals	Total Suspended Solids (mg/L)	ND	32	ND	949	NA	ND	ND	ND	ND	NA
	Total Dissolved solids (mg/L)	122	80	3619	2373	34%	109	105	1805	1739	4%
	Total Hardness as CaCO3 (mg/L)	23	21	NA	NA	9%	ND	ND	NA	NA	NA
	pH	5.71	5.47	NA	NA	4%	6.95	6.97	NA	NA	0%
	Temp (C°)	19.4	13.7	NA	NA	29%	17.5	15.5	NA	NA	11%
	DO (mg/L)	8.0	8.8	NA	NA	-10%	5.6	5.9	NA	NA	-6%
	Turbidity (NTU)	112	103	NA	NA	8%	450	477	NA	NA	-6%
	Specific Conductance (uS/cm)	0.0	0.0	NA	NA	0%	0.0	0.0	NA	NA	0%
	Flow (cfs)	5.50	0.09	NA	NA	98%	3.07	0.08	NA	NA	97%

Notes:
(1) Load reductions are based on influent flow rates because the WQTF is designed to temporarily detain stormwater flow, thus effluent volume is assumed to equal influent volume.
(2) Negative values indicate an increase in pollutant load. Positive values indicate a pollutant load reduction.
(3) J = Estimated value below the reporting limit and above the method detection limit.
(4) E = Constituent was not detected. Pollutant load calculated based on half of the reporting limit.
(5) NA = Where loads are NA, value represents change in concentration.
(6) ND = Constituent not detected above the reporting limit.

APPENDIX C – 2010-2011 FIELD FORMS AND BMP INSPECTION FORM

(This information has not been included in the electronic due to space limitations. Please contact the County of San Diego, Watershed Planning Department for copies of this information)

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APPENDIX D – LABORATORY ANALYTICAL REPORTS

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TITLE: AGUA HEDIONDA CREEK RESTORATION SR-02+
ID #: CHU-WQA16

ACTIVITY DESCRIPTION

The Agua Hedionda Watershed Management Plan (AHWMP) recommends several stream restoration projects to improve habitat and water quality within the watershed. The SR-02 project was developed to a 10% design as part of the AHWMP. The project was originally intended to support the mitigation needs of the city's sewer program. In looking at the opportunity closer, the City expanded the boundaries and scope of the SR-02 project to include a longer section of the Creek located entirely on public lands.

The Agua Hedionda Creek Restoration Project will begin at the Buena Vista Park property boundary with the Dawson Preserve continuing upstream to the property boundary with Green Oak Ranch (approximately 3,800 linear feet). Planned project highlights include: streambed stabilization and restoration, side slope restoration, removal of non-native plants and revegetation with native plants, rehabilitation of a dying Oak woodland, dry weather diversion of a 60" storm drain outfall, and a new bridge on the east end. The goals of the project are: (1) to enhance the natural environment for wildlife by restoring the riparian area as part of a larger wildlife corridor, while providing the community with an opportunity to observe the local wildlife and enjoy the trail system and (2) to reduce the bed and bank erosion occurring in the Creek and achieve a stable balance representative of the appropriate sediment transport for the system.

TMDL APPLICABILITY

The Agua Hedionda Lagoon was recently de-listed for sedimentation/siltation, however extensive hydromodification is evident in this reach of the Creek. There is no direct applicability to a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

1) Preliminary Engineering Design – FY 10, FY 11 (Planning - Complete)
2) Final Engineering Design and Permitting – FY 12, FY 13 (Planning)
3) Construction – FY 13, FY 14 (Implementation - Pending Funding)

LEAD WATERSHED COPERMITTEE

- City of Vista

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies sediment as a high priority water quality pollutant in the Agua Hedionda Creek Hydrologic Area (904.3).

EFFECTIVENESS MEASUREMENTS

The effectiveness assessment of the project has not been completed developed at this time. As the preliminary and final designs are received, the City will evaluate the most feasible methods to determine the effectiveness of the project. Some potential measures are provided below as examples which may or may not be incorporated into the final activity design.

Potential effectiveness methods include:

1) Monitoring conducted over time at the existing Mass Loading Station may provide data to compare historical loading and trend data for sedimentation as measured by TSS and turbidity.
2) Monitoring conducted over time at bioassessment stations within Agua Hedionda Creek may provide historical, trend, and current data useful in assessing the activity.

Potential assessment measures related to these methods include:

1) Overall reduction in sediment loading to Agua Hedionda Lagoon over time (Level 4, Level 6).
2) Overall improvement in benthic macro-invertebrate community over time in the project area.
3) Removal of invasive vegetation from the Creek (Level 1).

TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION
ID #: CHU-WQA17

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

Activity during FY 2009-2010 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and

planning was initiated for two distribution events to be held during FY 2010-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY 2010-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

The Fallbrook Sales event took place at Fallbrook Village Square on September 26, 2010, from 9 a.m. until 1 p.m. Upon completion of the event 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County. While no event was hosted in the Carlsbad Watershed, eight participants from the watershed purchased rain barrels and signed the maintenance agreement.

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The events took place on August 28, 2011 (Cuyamaca College) and September 26, 2011 (Fallbrook Village). Additional events are being considered for implementation in FY 2012-13.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Luis Rey Watershed Council

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the Carlsbad Watershed and through the signing of rain barrel maintenance agreements.

- Number of rain barrels sold to Carlsbad Watershed residents: 8
- Number of Rain Barrel Maintenance Agreements signed by Carlsbad Watershed residents: 8

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TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - PARKS COMPONENT**
ID #: **CHU-WQA18**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a plan for municipal park inspection and management activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" component activities will not change from year to year and focus on MS4 Permit compliance-based activities. "Enhanced" component activities are additional activities committed to by the USMC Watershed Copermittees and will be adapted as new information becomes available.

The San Diego Municipal MS4 Permit requires Copermittees to carry out a variety of mandated inspection, education, best management practices (BMPs) and enforcement activities at facilities, including municipal park facilities throughout the San Diego region. These core programs are intended to: 1) assess the effectiveness of using BMPs when engaging in potential pollutant generating activities of municipal park facilities to receiving waters, and 2) to identify and characterize sources of specific pollutants in urban runoff discharges. The County of San Diego and the City of Escondido in FY 2009-10 had no municipal park facilities in the watershed. The City of San Marcos currently has 29 active municipal parks in the watershed with one park under construction.

In addition to the core activities the USMC Watershed Copermittees will conduct enhanced assessment, collaborative outreach, and inspection activities intended to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan, and 2) identify and verify watershed priorities for management action. Enhanced assessment, outreach, and inspection activities are only conducted by San Marcos with the results shared collaboratively with the other watershed jurisdictions. These enhanced activities include a watershed-wide focused investigation by San Marcos of municipal park facility BMPs, irrigation practices, and fertilizer practices to improve focus on watershed issues of concern, and a shared commitment to collaboratively review and analyze watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges. Enhanced activities also included a city-wide preliminary assessment of fertilizer use and irrigation practices completed in FY 2009-10. Each year in the activity implementation sections (below) the USMC Watershed Copermittees will report on the activities conducted. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Program:

All elements of the core program were completed. All municipal park and mini-park facilities were inspected. The facility locations, inspection results, and corrective actions are included in Section 4.0 of the City of San Marcos FY 2009-10 JURMP Annual Report. The City maintains a Stormwater Pollution Prevention Plan (SWPPP) with BMPs for parks, including outreach and application information. A summary of the 29 active parks are included in the table below.

Table 1. Summary of Annual Stormwater Inspections for Municipal Parks

Municipal Park	Inspection Date	Corrective Actions Identified	Corrective Actions Completed
Alder Park	3/3/10	No	N/A
Amigo Park	6/24/10	No	N/A
Bradley Park	2/26/10	No	N/A
Cerro De Las Posas Park	5/24/10	Yes	Yes
Creek View Park	6/24/10	No	N/A
Double Peak Park	4/9/10	No	N/A
Discovery Creek Children's Park	6/24/10	No	N/A
Discovery Meadows	6/25/10	No	N/A
Foothills Park	6/24/10	No	N/A
Helen Bougher Park	2/26/10	No	N/A
Hollandia Park	5/26/10	Yes	Yes
Jack's Pond Park	5/3/10	Yes	Yes
Knob Hill Park	5/18/10	Yes	Yes
Discovery / Lakeview Park	6/23/10	Yes	Yes
Laurels Park	6/25/10	No	N/A
Mission Sports Park	In Construction	N/A	N/A
Montiel Park	5/18/10	Yes	Yes
Mulberry Park	3/26/10	No	N/A
Optimist Park	6/25/10	No	N/A
Pebblestone Park	6/24/10	No	N/A
Quail Hills Park	6/22/10	No	N/A
Regency Park	6/25/10	No	N/A
San Elijo Hills Park	4/9/10	Yes	Yes
Santa Fe Hills Mini Park	6/24/10	No	N/A
Simmons Family Park	5/24/10	No	N/A
Summer Hill / Bel Espirit Park	6/22/10	No	N/A
Sunset Park	5/24/10	Yes	Yes
Valley View Park	6/24/10	No	N/A
Walnut Grove Park	5/25/10	No	N/A
Woodland Park	3/18/10	No	N/A

Enhanced Program:

- County of San Diego Municipal Park Enhanced Activities - In FY 2009-10 there were no County municipal park facilities
- City of San Marcos Municipal Park Enhanced Activities - The City of San Marcos completed a baseline assessment on fertilizer use, irrigation practices, and water sources in FY 2009-10. Additional information on the preliminary baseline analysis is available in the accompanying attachments. The City keeps a log of fertilizer on each park and the basic fertilizer application and management practices were identified and assessed (Attachments A-C). Irrigation practices and sources were also identified. The City actively reviews fertilizer use and application to reduce cost and improve focused delivery to those facilities. In FY 2009-10, the City made a switch in its fertilizer product usage to Nature Safe. This switch will be assessed in conjunction with applicable downstream data available in FY 2010-11.
- City of Escondido Dry Weather Monitoring Enhancement - Municipal Park Enhanced Activities - In FY 2009-10 there were no City of Escondido municipal park facilities.

ACTIVITY IMPLEMENTATION FY 2010-11

Core Program:

All elements of the core program were completed. All municipal park and mini-park facilities were inspected. The facility locations, inspection results, and corrective actions are included in Section 4.0 of the City of San Marcos FY 2010-11 JURMP Annual Report. The City maintains a Stormwater Pollution Prevention Plan (SWPPP) with BMPs for parks, including outreach and application information. A summary of the 32 active parks are included in the table below.

Table 2. Summary of Annual Stormwater Inspections for Municipal Parks

Municipal Park	Inspection Date	Corrective Actions Identified	Corrective Actions Completed
Alder Park	6/3/11	No	N/A
Amigo Park	6/3/11	No	N/A
Bradley Park	5/23/11	No	N/A
Buelow Park	6/8/11	No	N/A
Cerro De Las Posas Park	6/6/11	No	N/A
Creek View Park	6/21/11	No	N/A
Civic Center Park	6/3/11	No	N/A
Double Peak Park	6/30/11	No	N/A
Discovery Creek Children's Park	6/25/11	No	N/A
Discovery Meadows	6/3/11	No	N/A
Foothills Park	6/3/11	No	N/A
Helen Bougher Park	6/6/11	No	N/A
Hollandia Park	6/8/11	No	N/A

Municipal Park	Inspection Date	Corrective Actions Identified	Corrective Actions Completed
Jack's Pond Park	6/30/11	No	N/A
Knob Hill Park	6/8/11	No	N/A
Discovery / Lakeview Park	6/25/11	No	N/A
Laurels Park	6/3/11	No	N/A
Mission Sports Park	5/23/11	No	N/A
Montiel Park	6/8/11	Yes	Yes
Mulberry Park	6/6/11	No	N/A
Optimist Park	6/9/11	No	N/A
Pebblestone Park	6/6/11	No	N/A
Quail Hills Park	6/9/11	No	N/A
Regency Park	6/9/11	No	N/A
San Elijo Hills Park	6/30/11	No	N/A
Santa Fe Hills Mini Park	6/6/11	No	N/A
Simmons Family Park	6/6/11	No	N/A
Summer Hill / Bel Espirit Park	6/6/11	No	N/A
Sunset Park	6/6/11	No	N/A
Valley View Park	6/9/11	No	N/A
Walnut Grove Park	6/6/11	No	N/A
Woodland Park	6/8/11	No	N/A

Enhanced Program:

- County of San Diego Municipal Park Enhanced Activities - In FY 2010-11 there were no County municipal park facilities.
- City of San Marcos Municipal Park Enhanced Activities - The City of San Marcos continued to assess fertilizer use, irrigation practices, and water sources in FY 2010-11. The City maintains its current practices of logging fertilizer quantities and application methods at each park within the City. Improvements to irrigation practices are ongoing by utilizing computer based watering controller systems to reduce the amount of water needed to irrigate the parks. In FY 2010-11, the City is utilizing the organic based Nature Safe fertilizer product at all City parks. The City of San Marcos Public Works department has begun to post signs at the parks that identifies that the Nature Safe product is being used.
- City of Escondido Municipal Park Enhanced Activities - In FY 2010-11 there were no City of Escondido municipal park facilities.

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 3. Implementation Schedule

Planned Tasks	FY2010-11	FY 2011-12	Status
Core Collaborative Municipal Park Activities	All USMC watershed municipal park facilities inspected. Of the 32 facilities, no facilities were identified as potential corrective action sites.	TBD	Ongoing
County of San Diego Enhanced Park Activities	The County of San Diego had no municipal parks in the watershed	The County of San Diego had no municipal parks in the watershed	TBD
City of San Marcos Enhanced Park Activities	Municipal park facility baseline issues identified and assessed	TBD	Ongoing
City of Escondido Enhanced Park Activities	The City of Escondido had no municipal parks in the watershed	The City of Escondido had no municipal parks in the watershed	TBD

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by assessing the completion of municipal park activities as designated in the USMC Nutrient Management Plan and outlined updates to the activity sheets in the WURMP Annual Report (Level 1).

Table 4. Effectiveness Assessment

Planned Tasks	FY 2010-11	FY 2011-12	Status
Core Collaborative Municipal Parks Program	Level 1 Assessment Completed	TBD	Ongoing
County of San Diego Enhanced Parks Activities	N/A	N/A	Ongoing
City of San Marcos Enhanced Parks Activities	Level 1 Assessment Completed	TBD	Ongoing
City of Escondido Enhanced Parks Activities	N/A	N/A	Ongoing

TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - GOLF COURSES COMPONENT**
ID #: **CHU-WQA19**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) emphasizes the need for oversight of golf course activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" activities focus on MS4 Permit compliance-based actions and will not change from year to year. "Enhanced" activities are additional activities above and beyond baseline MS4 Permit requirements and will be adapted as new information becomes available.

The San Diego MS4 Permit requires Copermittees to carry out a variety of mandated activities related to existing development within each jurisdiction. Core activities performed under the individual jurisdictions' JURMPs are outlined in the USMC Nutrient Management Plan Table 4.5 (see CHU-WQA12). For example, each Copermittee will enforce its local ordinance as it becomes aware of non-compliance with discharge prohibitions and minimum Best Management Practices (BMPs) requirements at golf courses. Compliance is determined through both active inspection of golf course operations and response to public complaints about illegal discharges or insufficient BMPs.

Enhanced activities at golf courses include each jurisdiction elevating the inspection priority for golf courses in the USMC Watershed. It is anticipated that increased inspection and oversight will result in appropriate BMPs being tailored to each site based on the results from annual commercial inspections, complaint investigations, and other information. Copermittees will also collaborate on golf course oversight where applicable to enhance each Copermittee's ability to identify and eliminate pollutant discharges. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Golf Course Facility Program:

All elements of the core golf course program were completed. The County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed. Three of the four golf courses in the watershed were inspected during FY 2009-10. The remaining facility is scheduled for inspection in FY 2010-11. Three of the four golf course facilities were notified of existing requirements and appropriate BMPs. When applicable, notices of violation were issued and follow up actions were taken. Golf course inspection results are included in Table 1 below.

Table 1. Golf Course Inspections

Golf Course	FY 2009-10 Inspection	Notice of Violation	Follow Up	Enforcement
Lake San Marcos 1 - Country Club (County)	Yes	Yes	Corrective Active Plan Required	Ongoing
Lake San Marcos 2 - Executive Course (County)	Yes	Yes	Corrective Active Plan Required	Ongoing
Twin Oaks Golf Course (San Marcos)	Yes	Yes	Corrective Actions Prescribed	Ongoing
Escondido Country Club (Escondido)	FY 2010-11	TBD	TBD	TBD

City of San Marcos Existing Golf Course Enhancement Activities - In addition to the core activities, the City of San Marcos initiated development of a focused questionnaire targeting specific nutrient generating golf course activities. The questionnaire form will be shared with the other jurisdictions and findings will be collaboratively explored in FY 2010-11.

ACTIVITY IMPLEMENTATION FY 2010-11

Core Golf Course Facility Program:

All elements of the core golf course program were completed. The County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed. All four golf courses in the watershed were inspected during FY 2010-11. Golf course facilities were notified of existing requirements and appropriate BMPs. When applicable, notices of violation were issued and follow up actions were taken. Golf course inspection results are included in Table 2 below.

Table 2. Golf Course Inspections

Golf Course	FY 2010-11 Inspection	Notice of Violation	Follow Up	Enforcement
Lake San Marcos 1 - Country Club (County)	Yes	Yes	Corrective Actions Prescribed	Compliant
Lake San Marcos 2 - Executive Course (County)	Yes	No	Compliant	Compliant
Twin Oaks Golf Course (San Marcos)	Yes	No	Compliant	Compliant
Escondido Country Club (Escondido)	Yes	Yes	Corrective Actions Prescribed	Compliant

City of San Marcos Existing Golf Course Enhancement Activities:

The City of San Marcos completed the work associated with the development of the focused questionnaire that targeted specific nutrient generating golf course activities. A

copy of the questionnaire form that was utilized is provided in Appendix A of this activity sheet. The results of the questionnaire are provided in Appendix B of this activity sheet.

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 3. Implementation Schedule

Planned Tasks		County		San Marcos		Escondido	
		FY 2010-11	FY 2011-12	FY 2010-11	FY 2011-12	FY 2010-11	FY 2011-12
Core Program	Update inventory	Yes	Planned	Yes	Planned	Yes	Planned
	Elevate golf course inspection priority in USMC Watershed	Yes	Planned	Yes	Planned	Yes	Planned
	Notify golf courses of applicable BMP requirements	Yes	Planned	Yes	Planned	Yes	Planned
	Conduct inspections at golf courses in USMC Watershed	Yes	Planned	Yes	Planned	Yes	Yes
	Conduct enforcement as appropriate	Yes	Planned	Yes	Planned	N/A	Planned
Enhanced Program	Develop golf course questionnaire on nutrient generating activities	N/A	N/A	Yes	N/A	N/A	N/A

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the completion of each Copermittees' core golf course program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core golf course program were completed: the County of San Diego and the Cities of San Marcos and Escondido all elevated the inspection priority of golf courses within the USMC Watershed: all four golf courses in the watershed were inspected during FY 2010-11; two notices of violation were issued and follow up actions were implemented (Level 1 Outcomes). In addition, the City of San Marcos completed development of the Golf Course Questionnaire (Level 1 Outcome).

Table 4. Effectiveness Assessment

Planned Tasks	FY 2010-11	FY 2011-12	Status
County of San Diego Core Program	Level 1 Assessment Completed	TBD	Ongoing
City of San Marcos Core Program	Level 1 Assessment Completed	TBD	Ongoing
City of Escondido Core Program	Level 1 Assessment Completed	TBD	Ongoing
City of San Marcos Golf Course Questionnaire	Level 1 Assessment Completed	N/A	Completed

CHU-WQA19

Upper San Marcos Creek Nutrient Management Plan – Golf Course Component

Appendix A

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CITY OF SAN MARCOS

UPPER SAN MARCOS CREEK WATERSHED SUPPLEMENTAL QUESTIONNAIRE

Inspected by D-MAX Engineering, Inc.

GREEN WASTE MANAGEMENT

Are lawn clippings blown into the street or gutter? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Are clippings placed on tarps/burlap? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Is work area hosed after landscaping is complete? ☐ Yes ☐ No ☐ N/A ☐ Unknown

If yes, is water collected? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Where are tools rinsed/cleaned out? (☐ Unknown) _____

FERTILIZATION PRACTICES

What times of year are fertilizers usually applied (check all that apply) ☐ Winter ☐ Spring ☐ Summer ☐ Fall

What is the frequency of fertilizer application during these time periods? _____ times per year/month/week (circle one)

Is there a site-specific written plan about how and when to apply fertilizers? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Are staff trained or certified for use of fertilizers? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Are granular fertilizer products swept up if they are outside targeted areas? ☐ Yes ☐ No ☐ N/A ☐ Unknown

EROSION/SEDIMENT CONTROL

Are the areas around discharge points effectively stabilized? ☐ N/A ☐ FI ☐ PI ☐ NI

Approximately what percentage of the site drains to retention or detention ponds? _____%

If a retention or detention pond is present, is it lined? ☐ Yes ☐ No ☐ N/A ☐ Unknown

IRRIGATION RUNOFF CONTROL

Irrigation percentages by method (by area of site used for growing plans or that has managed landscaping):

Sprinklers _____% _____ times per year/month/week (circle one)

Is an automated controller system used? ☐ Yes ☐ No ☐ N/A ☐ Unknown

If yes, Is it a "smart timer" type controller? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Drip _____% _____ times per year/month/week (circle one)

By Hand _____% _____ times per year/month/week (circle one)

Don't Irrigate _____%

How often do they change the settings to address current water needs? _____ times per year/month/week (circle one)

What time is most irrigation done (check all that apply)? ☐ Morning ☐ During Business Hours ☐ Evening ☐ Night

According to site personnel, how often does irrigation runoff leave the site? _____ times per year/month/week (circle one)

OTHER

Is groundwater (from a well) used for any irrigation? ☐ Yes ☐ No ☐ N/A ☐ Unknown

If yes, is there any water quality or depth information available for the well? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Are there any areas on the site where groundwater seepage has been regularly observed? If so, list:

_____

_____

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CHU-WQA19

Upper San Marcos Creek Nutrient Management Plan – Golf Course Component

Appendix B

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CHU-WQA19 Appendix B

Supplemental Questionnaire Data - Twin Oaks Valley Golf Course

Business Name:	TWIN OAKS GOLF COURSE
Address:	1425
Street:	TWIN OAKS VALLEY RD
Principal Activity:	Golf Course and Restaurant
Are lawn clippings blown into the street or gutter?	No
Are clippings placed on tarps/burlap?	No
Is work area hosed after landscaping is complete?	No
If yes, is water collected?	N/A
Where are tools rinsed/cleaned out?	Wash rack in maintenance yard
What times of year are fertilizers usually applied?:	
Winter	No
Spring	Yes
Summer	Yes
Fall	No
What is the frequency of fertilizer application during these time periods? Frequency:	2
Time Per:	year
Is there a site-specific written plan about how and when to apply fertilizers?	Yes
Are staff trained or certified for use of fertilizers?	Yes
Are granular fertilizer products swept up if they are outside targeted areas?	Yes
Are the areas around discharge points effectively stabilized?	Fully Implemented
Approximately what percentage of the site drains to retention or detention ponds?	0
If a retention or detention pond is present, is it lined?	N/A
Irrigation percentages by method (by area of site used for growing plants or that has managed landscaping):	
Sprinkler System Percent	99
Sprinkler Frequency:	4
Times Per:	week
Is an automated controller system used?	Yes
If yes, Is it a "smart timer" type controller?	Yes
Drip System Percent	1
Drip System Frequency:	2
Times Per:	week
Hand Watered Percent	0
Hand Watered Frequency:	
Times Per:	
Don't Irrigate Percent	0
How often do they change the settings to address current water needs? Frequency:	1
Times Per:	week
What time is most irrigation done?	
Morning	No
During Business Hours	Yes
Evening	No
Night	Yes
According to site personnel, how often does irrigation runoff leave the site? Frequency:	0
Times Per:	year
Is groundwater (from a well) used for any irrigation?	Yes
If yes, is there any water quality or depth information available for the well?	Yes
Are there any areas on the site where groundwater seepage has been regularly observed? If so, list:	no

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TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - AGRICULTURE COMPONENT**
ID #: **CHU-WQA20**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a strategy for addressing the impacts of agricultural activities within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of activities. "Core" activities will not change from year to year and focus on MS4 Permit compliance-based activities. "Enhanced" activities are additional activities committed to by the USMC Watershed Copermittees and will be adapted as new information becomes available.

The San Diego MS4 Permit requires Copermittees to carry out a variety of mandated activities related to agricultural operations within each jurisdiction. Core agriculture-related oversight activities performed under the individual jurisdictions' JURMPs are outlined in the USMC Nutrient Management Plan Table 4.3 (see CHU-WQA12). Each Copermittee will enforce its local ordinance as it becomes aware of non-compliance with discharge prohibitions and minimum Best Management Practices (BMPs) requirements for agricultural activities. Compliance is determined through both active inspection of agricultural operations and responses to public complaints about illegal discharges or insufficient BMPs.

Enhanced agricultural activities are more targeted in nature and focus on raising awareness, changing behaviors, and reducing nutrient loading from specific targeted agricultural activities in high priority areas.

It is important to note that discharges from agricultural and nursery operations are directly regulated by the RWQCB pursuant to a conditional waiver of waste discharge requirements. In order to be eligible for Conditional Waiver No. 4, agricultural and nursery operator discharges must: 1) implement minimum management measures and BMPs to minimize or eliminate pollutant discharges; 2) perform annual self-assessments and training; 3) form or join a monitoring group no later than December 31, 2010; and 4) file a notice of intent with the RWQCB to be part of an individual or group monitoring program no later than January 1, 2011.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Agricultural Program:

All elements of the core agricultural program were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to agricultural land uses can be found in Table 4.3 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to, the enforcement of local ordinances with respect to non-compliance of discharge prohibitions, enforcement of

minimum BMP requirements at commercial agriculture facilities, and periodic inspection of commercial agricultural properties. Copermittees are required to record all instances of non-compliance, enforcement measures, and corrective actions at agriculture-related properties. Documentation can be found in the respective jurisdictions' FY 2009-10 JURMP Annual Reports.

Enhanced Agriculture Program:

- County of San Diego Agriculture Practices Review - The County of San Diego undertook efforts to better understand and address the impacts of agricultural activities in the immediate vicinity of Lake San Marcos. County inspectors worked with the professional grove management companies active in the Lake San Marcos area to collect information on crop type, irrigation regimes, fertilization techniques, and existing BMP implementation. This information was provided to experts at the Farm and Home Advisor for review and consultation. Review of current agricultural practices suggests that area grove management companies are implementing practices consistent with industry standards. Attachment A provides a summary of this analysis.
- City of San Marcos Agriculture Activities Enhancement - In addition to core activities, the City of San Marcos elevated the inspection priority of agricultural properties within the USMC and initiated development of a focused questionnaire targeting specific nutrient generating agricultural activities. The questionnaire form will be shared with the other jurisdictions and findings will be collaboratively explored in FY 2010-11. Based on the FY 2009-10 inspection results, and the January 2011 SDRWQCB NOI requirements for agricultural businesses, San Marcos will update its current inventory, outreach watershed issues, and identify key nutrient generating practices and recommended appropriate BMPs. FY 2009-10 agriculture business inspections were included in the FY 2009-10 Annual Report.
- City of Escondido Agriculture Activities Enhancement - The City of Escondido has no agricultural businesses in the Upper San Marcos Creek Watershed.

<u>ACTIVITY IMPLEMENTATION FY 2010-11</u>

Core Monitoring Program:

All elements of the core agricultural program were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to agricultural land uses can be found in Table 4.3 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances with respect to non-compliance of discharge prohibitions, enforcement of minimum BMP requirements at commercial agriculture facilities, and continued to periodic inspection of commercial agricultural properties. Copermittees are required to record all instances of non-compliance, enforcement measures, and corrective actions at agriculture-related properties; documentation can be found in the respective jurisdictions' FY 2010-11 JURMP Annual Reports.

Enhanced Agriculture Program:

- County of San Diego Agriculture Practices Review - The County of San Diego has taken efforts to better understand and address the impacts of agricultural activities in the immediate vicinity of Lake San Marcos. During FY 2010-11, educational outreach efforts were conducted and available to professional grove management companies active in the Lake San Marcos area. Attendees of outreach efforts were provided BMP field guides for water quality and spill kits. The County continues to work with the professional grove management companies active in the Lake San Marcos area to collect information on crop type, irrigation regimes, fertilization techniques, and existing BMP implementation. Previous review of this information by the experts at Farm and Home Advisor suggested that area grove management companies are implementing practices consistent with industry standards.
- City of San Marcos Agriculture Activities Enhancement - The City of San Marcos completed the work associated with the development of the focused questionnaire that targeted specific nutrient generating agricultural activities. A copy of the questionnaire form that was utilized is provided in Appendix A of this activity sheet. The results of the questionnaire are provided in Appendix B of this activity sheet.
- City of Escondido Agriculture Activities Enhancement - The City of Escondido has no agricultural businesses in the Upper San Marcos Creek Watershed.

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 2009-10	FY 2010-11	FY 2011-12	Status
Core Agriculture Program	Completed	Completed	Implementation	Ongoing
County of San Diego Agricultural Practices Review	Completed	Completed	Implementation	Ongoing
City of San Marcos Agriculture Activities Enhancement	Completed	Completed	N/A	Complete
City of Escondido Agriculture Activities Enhancement	City of Escondido has no agricultural properties in USMC watershed	N/A	N/A	N/A

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Agricultural Property Owners within the USMC Watershed
- Grove Management Companies

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to address water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the completion of each Copermittees? core agriculture program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core residential activities program were completed.

Enhanced agriculture program elements will be assessed through the program progress (Level 1 outcome) and the reporting of relevant metrics when applicable. Table 2 includes current assessment measures.

Table 2. Effectiveness Assessment

Planned Tasks	FY 2010-11	Outcome Level	Status
County of San Diego Agricultural Practices Review	Complete	Level 1	Ongoing
City of San Marcos Agriculture Activities Enhancement	Complete	Level 1	Ongoing
City of Escondido Agriculture Activities Enhancement	N/A	N/A	TBD

CHU-WQA20

Upper San Marcos Creek Nutrient Management Plan – Agriculture Component

Appendix A

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CITY OF SAN MARCOS

UPPER SAN MARCOS CREEK WATERSHED SUPPLEMENTAL QUESTIONNAIRE

Inspected by D-MAX Engineering, Inc.

GREEN WASTE MANAGEMENT

Are lawn clippings blown into the street or gutter? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Are clippings placed on tarps/burlap? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Is work area hosed after landscaping is complete? ☐ Yes ☐ No ☐ N/A ☐ Unknown

If yes, is water collected? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Where are tools rinsed/cleaned out? (☐ Unknown) _____

FERTILIZATION PRACTICES

What times of year are fertilizers usually applied (check all that apply) ☐ Winter ☐ Spring ☐ Summer ☐ Fall

What is the frequency of fertilizer application during these time periods? _____ times per year/month/week (circle one)

Is there a site-specific written plan about how and when to apply fertilizers? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Are staff trained or certified for use of fertilizers? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Are granular fertilizer products swept up if they are outside targeted areas? ☐ Yes ☐ No ☐ N/A ☐ Unknown

EROSION/SEDIMENT CONTROL

Are the areas around discharge points effectively stabilized? ☐ N/A ☐ FI ☐ PI ☐ NI

Approximately what percentage of the site drains to retention or detention ponds? _____%

If a retention or detention pond is present, is it lined? ☐ Yes ☐ No ☐ N/A ☐ Unknown

IRRIGATION RUNOFF CONTROL

Irrigation percentages by method (by area of site used for growing plans or that has managed landscaping):

Sprinklers _____% _____ times per year/month/week (circle one)

Is an automated controller system used? ☐ Yes ☐ No ☐ N/A ☐ Unknown

If yes, Is it a "smart timer" type controller? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Drip _____% _____ times per year/month/week (circle one)

By Hand _____% _____ times per year/month/week (circle one)

Don't Irrigate _____%

How often do they change the settings to address current water needs? _____ times per year/month/week (circle one)

What time is most irrigation done (check all that apply)? ☐ Morning ☐ During Business Hours ☐ Evening ☐ Night

According to site personnel, how often does irrigation runoff leave the site? _____ times per year/month/week (circle one)

OTHER

Is groundwater (from a well) used for any irrigation? ☐ Yes ☐ No ☐ N/A ☐ Unknown

If yes, is there any water quality or depth information available for the well? ☐ Yes ☐ No ☐ N/A ☐ Unknown

Are there any areas on the site where groundwater seepage has been regularly observed? If so, list:

_____

_____

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CHU-WQA20

Upper San Marcos Creek Nutrient Management Plan – Agriculture Component

Appendix B

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Business Name:	Address:	Street:	Principal Activity:	Are lawn clippings blown into the street or gutter?	Are clippings placed on tarps/burlap?	Is work area hosed after landscaping is complete?	If yes, is water collected?	Where are tools rinsed/cleaned out?	What times of year are fertilizers usually applied?:	Winter	Spring	Summer	Fall
ADES & GISH NURSERY INC	2222	TWIN OAKS VALLEY RD	Nursery	N/A	No	No	N/A	n/a		Yes	Yes	Yes	Yes
AMPOL NURSERY	2247	COUNTRY CREEK RD	Nursery	No	No	No	No	n/a		Yes	Yes	Yes	Yes
BEMUS LANDSCAPE INC	184	LAS POSAS RD	Landscape Contractor	No	No	No	na	service bay		Yes	Yes	Yes	Yes
BHEAU VIEW RANCH	390	COX RD	Horse Boarding & Nonprofit Camp	Yes	No	No		n/a		No	No	No	No
DANIELS LANDSCAPE INC	561	TWIN OAKS VALLEY RD	Landscaping Contractor	N/A	No	No	N/A	n/a		Yes	Yes	Yes	Yes
DISCOVERY VALLEY EQUESTRIAN LL	140	DEER SPRINGS RD	Horse Boarding & Training Facility	No	No	No	N/A	n/a		No	Yes	Yes	No
FOUR SEASONS TREE CARE INC	225	TWIN OAKS VALLEY RD	Landscaping Contractor	N/A	Yes	No	N/A	n/a		No	No	No	No
HUNTER INDUSTRIES INC	1940	DIAMOND ST	Irrigation System Manufacturing	No	Yes	No		unknown		Yes	Yes	Yes	Yes
JAVIER FLOWER GROWERS	1970	TWIN OAKS VALLEY RD	Nursery	N/A	No	No	N/A	n/a		No	Yes	Yes	No
JOHN DEER LANDSCAPES INC	1370	LA MIRADA DR	Landscaping Supply	No	No	No	na	n/a		No	No	No	No
MAR VISTA NURSERY	472	COX RD	Nursery	N/A	Yes	No	N/A	n/a		No	Yes	Yes	No
MCLANE NURSERY	410	OLIVE ST	Nursery	N/A	No	No	N/A	n/a		Yes	Yes	Yes	Yes
North County Cemetery District	1021	MULBERRY DR	Cemetery	No	No	No	N/A	pervious field		No	Yes	No	No
SAN DIEGO WHOLESALE FLORIST	125	BUENA CREEK RD	Floral Distributor	N/A	No	No	N/A	n/a		No	No	No	No
SUPER GARDEN CENTERS INC	1019	SAN MARCOS BL	Nursery, Garden Store	No	No	No	N/A	n/a		No	Yes	Yes	No
TROPICAL CONNECTION, THE	2921	SANTA FE AV	Nursery	No	No	No	na	n/a		No	Yes	No	Yes
TWIN OAKS VALLEY VINTNERS LLC	1575	MULBERRY DR	Wine Production Facility/Vineyard	N/A	N/A	N/A		n/a		No	No	No	No
VALLEY VIEW NURSERY INC	389	OLIVE ST	Nursery	N/A	No	No	N/A	n/a		No	Yes	Yes	Yes
West Coast Nurseries	147	BUENA CREEK RD	Nursery	No	No	No	N/A	n/a		Yes	Yes	Yes	Yes
WOODLAND NURSERY	962	POINSETTIA AV	Nursery	N/A	N/A	No	N/A	n/a		No	Yes	Yes	No

Business Name:	What is the frequency of fertilizer application during these time periods? Frequency:	Time Per:	Is there a site-specific written plan about how and when to apply fertilizers?	Are staff trained or certified for use of fertilizers?	Are granular fertilizer products swept up if they are outside targeted areas?	Are the areas around discharge points effectively stabilized?	Approximately what percentage of the site drains to retention or detention ponds?	If a retention or detention pond is present, is it lined?	Irrigation percentages by method (by area of site used for growing plants or that has managed landscaping):	Sprinkler System Percent	Sprinkler Frequency:	Times Per:
ADES & GISH NURSERY INC	7	week	No	Yes	N/A	Fully Implemented	0	N/A		0		
AMPOL NURSERY	3	week	No	No	N/A	Fully Implemented	0	N/A		100	3	week
BEMUS LANDSCAPE INC	6	year	Yes	Yes	Yes	Fully Implemented	0	N/A		100	3	week
BHEAU VIEW RANCH			N/A	N/A	N/A	Fully Implemented	0	N/A		100	14	week
DANIELS LANDSCAPE INC	4	year	Yes	Yes	Yes	Fully Implemented	0	N/A		0		
DISCOVERY VALLEY EQUESTRIAN LL			Unknown	N/A	N/A	N/A	0	N/A		100	3	week
FOUR SEASONS TREE CARE INC			N/A	N/A	N/A	Fully Implemented	0	N/A		0		
HUNTER INDUSTRIES INC	1	year	No	Unknown	Unknown	Fully Implemented	0	N/A		100	3	week
JAVIER FLOWER GROWERS	2	year	No	Yes	No	Fully Implemented	0	N/A				
JOHN DEER LANDSCAPES INC	0	year	N/A	N/A	N/A	Fully Implemented	0	N/A		100		week
MAR VISTA NURSERY	2	year	No	Yes	No	Fully Implemented	0	N/A		40	84	week
MCLANE NURSERY	7	week	No	Yes	N/A	Not Implemented	0	N/A		10	3	week
North County Cemetery District	1	year	No	Yes	Yes	Fully Implemented	0	N/A		95	7	week
SAN DIEGO WHOLESALE FLORIST	0	year	N/A	N/A	N/A	Fully Implemented	0	N/A		0		
SUPER GARDEN CENTERS INC	1	month	No	Yes	N/A	Fully Implemented	90	No		0		
TROPICAL CONNECTION, THE	1	year	No	Yes	Yes	Not Implemented	0	N/A		0		
TWIN OAKS VALLEY VINTNERS LLC			N/A	N/A	N/A	PI	0	N/A				
VALLEY VIEW NURSERY INC	3	week	No	N/A	N/A	Fully Implemented	80	No				
West Coast Nurseries	7	week	No	Yes	N/A	Fully Implemented	0	N/A				
WOODLAND NURSERY	2	year	No	Yes	N/A	PI	0	N/A				

Business Name:	Is an automated controller system used?	If yes, Is it a "smart timer" type controller?	Drip System Percent	Drip System Frequency:	Times Per:	Hand Watered Percent	Hand Watered Frequency:	Times Per:	Don't Irrigate Percent	How often do they change the settings to address current water needs? Frequency:	Times Per:	What time is most irrigation done?
ADES & GISH NURSERY INC			85	3	week	15	3	week		2	year	
AMPOL NURSERY										0	year	
BEMUS LANDSCAPE INC	No	N/A	0			0			0			
BHEAU VIEW RANCH	Yes	No								2	year	
DANIELS LANDSCAPE INC			100	1	week							
DISCOVERY VALLEY EQUESTRIAN LL	Yes	No								2	year	
FOUR SEASONS TREE CARE INC			0			100	3	week	0			
HUNTER INDUSTRIES INC	Yes	Yes	0			0			0			
JAVIER FLOWER GROWERS			100	2	week							
JOHN DEER LANDSCAPES INC			0			0			0	0	year	
MAR VISTA NURSERY	Yes	No	5	2	week	55	2	week		2	year	
MCLANE NURSERY	No		50	3	week	40	3	week		2	year	
North County Cemetery District	Yes	No	5	7	week					1	month	
SAN DIEGO WHOLESALE FLORIST			100	2	month							
SUPER GARDEN CENTERS INC					week	100	2					
TROPICAL CONNECTION, THE			100	3	week	0			0			
TWIN OAKS VALLEY VINTNERS LLC	No	N/A	100	1	week							
VALLEY VIEW NURSERY INC			100	3	week					0	year	
West Coast Nurseries			50	7	week	50	7	week		0	year	
WOODLAND NURSERY			98	2	week	2	2	week		2	year	

Business Name:	Morning	During Business Hours	Evening	Night	According to site personnel, how often does irrigation runoff leave the site? Frequency:	Times Per:	Is groundwater (from a well) used for any irrigation?	If yes, is there any water quality or depth information available for the well?	Are there any areas on the site where groundwater seepage has been regularly observed? If so, list:
ADES & GISH NURSERY INC	Yes	No	No	No	0	year	No	No	
AMPOL NURSERY	Yes	No	No	No	0	year	No	N/A	
BEMUS LANDSCAPE INC	No	Yes	No	No	0		No	N/A	
BHEAU VIEW RANCH	No	No	Yes	No	0	year	Yes	Yes	
DANIELS LANDSCAPE INC	No	Yes	No	No	0	year	N/A	N/A	
DISCOVERY VALLEY EQUESTRIAN LL	No	No	No	Yes	0	year	Yes	Yes	no
FOUR SEASONS TREE CARE INC	Yes	No	No	No	0	year	No	N/A	
HUNTER INDUSTRIES INC	No	No	No	Yes	3	week	No	No	Throughout parking lots
JAVIER FLOWER GROWERS	Yes	No	No	No	0	year	Yes	No	
JOHN DEER LANDSCAPES INC	Yes	No	No	No	0	year	No	N/A	
MAR VISTA NURSERY	No	Yes	No	No	0	year	No	N/A	
MCLANE NURSERY	No	Yes	No	No	0	year	No	N/A	
North County Cemetery District	No	No	No	Yes	0	year	Yes	Yes	
SAN DIEGO WHOLESALE FLORIST	No	Yes	No	No	0	year	No	N/A	
SUPER GARDEN CENTERS INC	No	Yes	No	No	0	year	No	N/A	
TROPICAL CONNECTION, THE	Yes	No	No	No	0		No	N/A	
TWIN OAKS VALLEY VINTNERS LLC	No	Yes	No	No			Yes	Yes	no
VALLEY VIEW NURSERY INC	No	Yes	No	No	0	year	Yes	Yes	
West Coast Nurseries	No	Yes	No	No	0	year	Yes	Yes	no
WOODLAND NURSERY	No	Yes	No	No	0	year	No	N/A	

TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - MONITORING COMPONENT**
ID #: **CHU-WQA21**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a plan for monitoring within the Upper San Marcos Creek (USMC) Watershed. The Nutrient Management Plan describes two types of monitoring activities. "Core" monitoring focuses on the compliance-based monitoring required by the San Diego Municipal MS4 Permit (Permit). "Enhanced" monitoring involves additional activities that the USMC Watershed Copermittees have committed to and will be adapted as new information and needs are identified.

Core Monitoring:

The Permit requires Copermittees to carry out a variety of mandated water quality monitoring activities throughout the San Diego region. These core programs are intended to: 1) assess the chemical, physical, and biological impacts to receiving waters resulting from urban runoff discharges; and 2) to identify and characterize sources of specific pollutants in urban runoff discharges. The Regional Receiving Waters and Urban Runoff Monitoring Program initially approved by the Regional Stormwater Copermittees did not include any monitoring stations in the USMC Watershed. However, a new Temporary Watershed Assessment Station (TWAS) will be installed in San Marcos Creek, immediately upstream of Lake San Marcos, during FY 2010-11. The new TWAS station will be located in the same location as the wet and dry weather data collection location conducted as a part of the enhanced monitoring activities described elsewhere in this report. The USMC Watershed Copermittees each conduct a Dry Weather Field Screening and Analytical Monitoring Program within their respective jurisdictions. Jurisdictional dry weather monitoring takes place between May 1 and September 30 each year and is designed to detect and eliminate illicit connections and illegal discharges to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow up investigations. For FY 2009-10, within the USMC Watershed, the County of San Diego monitored four stations, the City of San Marcos monitored 27 stations, and the City of Escondido monitored five stations.

Enhanced Monitoring:

Enhanced monitoring is intended to: 1) assess water quality improvements resulting from implementation of this Nutrient Management Plan; and 2) identify and verify watershed priorities for management action. Enhanced monitoring includes special monitoring projects to address identified needs, enhancements to existing jurisdictional monitoring programs to improve focus on watershed issues of concern, and a shared commitment to collaboratively reviewing and analyzing watershed monitoring data in a way that enhances each Copermittee's ability to identify and eliminate pollutant discharges. Enhanced activities will include jurisdiction-specific monitoring actions and

collaborative projects. Each year in the activity implementation sections (below) the USMC Watershed Copermittees will report on the enhanced monitoring activities conducted. Additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Monitoring:

Core Monitoring during FY 2009-10 consisted of the jurisdictional dry weather monitoring programs implemented individually by each Watershed Copermittee. A description of each jurisdiction's site locations, sampling dates, and results are included in their FY 2009-10 Jurisdictional Urban Runoff Management Program Annual Report.

Enhanced Monitoring:

- Collaborative Watershed Monitoring Project - The USMC Watershed Copermittees collaborated on the design of a special monitoring project to collect baseline information on flow, as well as nutrient and sediment loading, at various locations throughout the watershed (see table below). Monitoring was funded and implemented by the County of San Diego.

Table 1. Monitoring Station Locations

Station	Latitude	Longitude	Flow	Wet Weather	Dry Weather
LSM-05a	33.11959	-117.20581	Yes	No	No
LSM-05b	33.11900	-117.20531	Yes	No	No
LSM-04	33.11982	-117.20565	Yes	No	No
CAR-13	33.12012	-117.20997	Yes	Yes	No
CAR-14	33.11896	-117.20744	Yes	Yes	No
Discovery Street	33.13053	-117.20037	No	Yes	No
Via Vera Cruz	33.13166	-117.18687	Yes	No	Yes
Woodland Parkway	33.15404	-117.13048	Yes	Yes	Yes
Sycamore Drive	33.17965	-117.15254	Yes	Yes	Yes

- County of San Diego Dry Weather Monitoring Enhancement - The County supplemented its jurisdictional dry weather monitoring program by performing three separate sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos. For additional details, please refer to Appendices A and B to this activity sheet.
- City of San Marcos Dry Weather Monitoring Enhancement - In addition to core dry weather monitoring activities described in section 4.1.1.2 of USMC Nutrient Management Plan, the City of San Marcos will augment its core monitoring program with an additional 20 future monitoring locations to identify and characterize other sources of nutrients. Based on historic nutrient trend data, sites were selected to enhance the current inventory and mapped. A field assessment of all sites occurred and the total number of sites may be adjusted in accordance to field conditions. Focused monitoring will occur within the Twin

Oaks Valley area, San Marcos Creek, and near outlets of Phase II agencies and other key agencies. A Quality Assurance Project Plan (QAPP) following Surface Water Ambient Monitoring Program (SWAMP) protocols will be prepared for the focused nutrient monitoring effort. Data collection and monitoring is planned to occur during dry weather monitoring periods as well as outside the dry weather monitoring period. The enhanced monitoring data collection will begin in FY 2010-11. The City of San Marcos consultant has collaborated with the County of San Diego monitoring plan near CAR 13 through synchronized sampling along with the County's summer and winter monitoring sweeps and as appropriate during subsequent fiscal years. Data planned for collection in FY 2010-11 as part of this effort will be shared with the County to assist in the nutrient sweeps. Data collected by Escondido under their dry weather program will be coordinated and assessed.

- City of Escondido Dry Weather Monitoring Enhancement - The City of Escondido discussed regularly collaborating with each Copermittee in reviewing and analyzing the combined Copermittee dry weather data. It is anticipated this review will result in coordinated dry weather monitoring efforts during FY 2010-11 that will be conducted more than once during the dry weather monitoring season - an effort that would exceed the current Permit's core requirement. Through the core dry weather program the City of Escondido annually monitors the entire water course as it transverses through the city and monitors the effluent water as it travels into the next jurisdiction.
- Volunteer Monitoring Program - The County of San Diego began coordinating a volunteer resident monitoring program to assist in the collection of additional information on Lake San Marcos dissolved oxygen levels, temperature, and turbidity throughout the year. Lake San Marcos residents will conduct the monitoring from boats or kayaks with monitoring equipment purchased and provided by the County of San Diego. The County will develop sampling protocol guidance and will conduct a training session for resident volunteers in July 2010.

<u>ACTIVITY IMPLEMENTATION FY 2010-11</u>

Core Monitoring:

- Core Monitoring during FY 2010-11 consisted of the jurisdictional dry weather monitoring programs implemented individually by each Watershed Copermittee. A description of each jurisdiction's site locations, sampling dates, and results are included in their FY 2010-11 Jurisdictional Urban Runoff Management Program Annual Report.
- During FY 2010-11 a new Temporary Watershed Assessment Station (TWAS) was installed in San Marcos Creek, immediately upstream of Lake San Marcos. The new TWAS station is located in the same location as the FY 2009-10 wet and dry weather data collection efforts conducted as a part of the enhanced monitoring activities.

Enhanced Monitoring:

- County of San Diego Dry Weather Monitoring Enhancement - The County supplemented its jurisdictional dry weather monitoring program by performing three separate sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos. For additional details, please refer to Appendix A of this activity sheet.
- Volunteer Monitoring Program - The County of San Diego continued to facilitate a coordinated a volunteer resident monitoring program to assist in the collection of additional information on Lake San Marcos dissolved oxygen levels, temperature, and turbidity. Lake San Marcos resident volunteers regularly conduct bi-weekly monitoring from boats or kayaks with monitoring equipment purchased and provided by the County of San Diego. The County of San Diego developed volunteer data collection protocols (see Appendix B), field data entry forms (See Appendix C), and in which volunteers may store the data. To familiarize volunteers with the use of the sampling equipment, data recording, and appropriate sampling protocols the County offered an in-field training sessions for volunteers during in July of 2010.
- City of San Marcos Dry Weather Monitoring Enhancement - The City of San Marcos supplemented its jurisdictional dry weather monitoring program by implementing the additional monitoring activities to identify and characterize other sources of nutrients as described above. A QAPP (See Appendix D) was completed and the first round of additional monitoring began May 2011. To review the results of the first round of monitoring please refer to Appendix E.

TMDL APPLICABILITY

This activity supports implementation of the voluntary collaborative process being coordinated by the Regional Water Quality Control Board in lieu of a TMDL or enforcement program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 2. Implementation Schedule

Planned Tasks	FY 2010-11	FY 2011-12	Status
Collaborative Watershed Monitoring Program	TWAS Station Sampling installed. For data please refer to the FY 2010-11 Copermittee Monitoring Report.		Ongoing
County of San Diego Enhanced Dry Weather Monitoring	3 Dry Weather Monitoring sweeps at 51 potential discharge points around the Lake	Dry Weather Monitoring sweeps will be conducted as needed.	Ongoing
City of San Marcos Enhanced Dry Weather Monitoring	Completed QAPP for Enhanced Data Collection, Assessment and Source Investigations as Required of Enhanced Dry Weather Monitoring Locations (HSA 904.52 and 904.53) Initiated First Round of Additional Monitoring.	Continue to Initiate Additional Rounds of Enhanced Monitoring Coordination with County of San Diego CAR 13 Data Investigation (wet and dry weather), Data Sharing Assessment, and Reporting (HSA 904.52) Assessment of Dry Weather Data with Escondido (HSA 904.53)	Ongoing
City of Escondido Enhanced Dry Weather Monitoring	Four sites sampled during dry weather conditions. One site location was dry	Pursue coordinated dry weather monitoring with County and San Marcos.	Ongoing
County of San Diego Volunteer Monitoring	Training and implementation	Continued facilitation	Ongoing

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Lake San Marcos Residents

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan Monitoring component seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by assessing the completion of monitoring activities as designated in the USMC Nutrient Management Plan and outlined updates to the activity sheets in the WURMP Annual Report (Level 1).

Table 3. Effectiveness Assessment

Planned Tasks	FY 2009-10	FY 2010-11	Status
Collaborative Watershed Monitoring Program	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
County of San Diego Enhanced Dry Weather Monitoring	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
City of San Marcos Enhanced Dry Weather Monitoring	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
City of Escondido Enhanced Dry Weather Monitoring	Level 1 Assessment Completed	Level 1 Assessment Completed	Ongoing
County of San Diego Volunteer Monitoring	Planning Stages	Level 1 Assessment Completed	Ongoing

CHU-WQA21

Upper San Marcos Creek Nutrient Management Plan – Monitoring Component

Appendix A

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DRY WEATHER MONITORING SWEEPS AT LAKE SAN MARCOS

INTRODUCTION

Lake San Marcos and San Marcos Creek are the primary waterbodies of the Upper San Marcos Creek (USMC) Watershed. The watershed is approximately 29 square miles and is comprised of two sub-watersheds: Twin Oaks hydrologic sub-area (HSA 904.53) and Richland hydrologic sub-area (HSA 904.52) The Twin Oaks HSA is located in the northern portion of the watershed and makes up 31% of the total watershed land area. The County of San Diego has the most land use jurisdiction in HSA 904.53, followed by the Cities of San Marcos and Escondido. HSA 904.53 is predominantly occupied by agricultural, open space, and single-family residential land uses. The Richland HSA is located south of the Twin Oaks HSA and includes Lake San Marcos. The City of San Marcos has the predominant land use jurisdiction in HSA 904.52, followed by the City of Escondido and the County of San Diego. HSA 904.52 is predominantly urban with single-family residential land uses and some commercial and industrial corridors.

Upper San Marcos Creek is 303(d) listed for DDE, phosphorous, sediment toxicity, and selenium. Lake San Marcos is listed for ammonia as nitrogen, nutrients, and phosphorus. To address these impairments, the County of San Diego together with the Cities of Escondido and San Marcos have established the *Upper San Marcos Creek Watershed (USMC) Nutrient Management Plan* (January 2010) with four primary objectives as listed below:

1. Establish baseline data to assess nutrient-related water quality in the watershed and to measure future improvements;

2. Identify potential sources of nutrients in the watershed and establish priorities for source control activities;

3. Identify best management practices (BMPs) and other actions that will help to reduce nutrient discharges into and from municipal separate storm sewer systems (MS4s) operated by the USMC Watershed MS4 Copermittees;

4. Establish a framework for collaboration among the USMC Watershed MS4 Copermittees, including, data collection, monitoring, outreach, and reporting.

In order to address objective 2 of the *USMC Nutrient Management Plan,* beginning in July 2009, the County conducted periodic dry weather monitoring sweeps of all accessible pipes and conveyances that drain directly into Lake San Marcos to identify any illicit connections and illegal discharges. The sweeps are an enhancement of the County's routine Dry Weather Monitoring Program conducted in compliance with the RWQCB San Diego Region Order No. R9-2007-001 NPDES Permit.

METHODS

County staff inspected each accessible above-surface conveyance draining into the Lake and documented whether the discharge points were dry or flowing. The work was conducted in accordance with the *County of San Diego Dry Weather Monitoring Quality Assurance Project Plan* (QAPP) and *the Dry Weather Monitoring Field Manual* (County of San Diego, 2010).

All sampling was conducted during dry weather, which is defined as more than 72 hours following rainfall with precipitation greater than 0.1 inches. At each location with flow, discharge was estimated using the velocity-area method, which requires the physical measurement of the cross-sectional area and the velocity of the flowing water. Discharge is determined as the product of the area times the velocity.

Discharge (ft^3/sec) = Velocity (ft/sec) x Depth (ft) x Width (ft)

At locations with adequate depth and flow, the Global Flow Probe was used to measure flow velocity. At each location, three flow velocity measurements were taken: one at the center and two toward the edges of the flow. The three measurements were then averaged to calculate the final velocity. Rough measurements of the depth and width of the channel were taken to calculate the estimated instantaneous flow (discharge). Where the depth of the channel was too low to use the Global Flow Probe, the floating debris method was used to estimate flow velocity. At outfalls with very low flows, discharge was determined by measuring the length of time required to fill a container of a known volume.

At all locations with flowing water, in-situ measurements of pH, specific conductivity, turbidity, dissolved oxygen, temperature, and salinity were taken using the Horiba U-10, 5-parameter probe.

Grab samples were also collected and tested in the analytical laboratory for nutrients (including ammonia, nitrate as N, nitrite as N, organic N, total Kjeldahl nitrogen (TKN), total N, orthophosphate as P, and total phosphate as P), specific conductivity, and total suspended solids (TSS). A list of analytes with the corresponding analytical methods, method detection limits (MDL) and reporting limits (RL) is provided in Table 1.

Table 1. Constituents Included in Grab Sample Analysis with the Corresponding Methods and Detection and Reporting Limits Employed.

ANALYTE	METHOD		UNITS	DETECTION LIMIT		REPORTING LIMIT	
	2009*	2010/ 11**		2009	2010/ 11	2009	2010/ 11
Ammonia as N	SM 4500 NH3 C,D	SM 4500 NH3 B,C	mg/L	0.009	0.02	0.05	0.1
Nitrate as N	EPA 300.0	SM 4500 NO3 E		0.007	0.009	0.2	0.05
Nitrite as N	SM 4500 NO2 B			0.001	0.007	0.01	0.05
TKN	SM 4500 N C			0.08	0.5	0.5	0.5
Total N	By Calculation			N/A			
Organic N	By Calculation			N/A			
Orthophosphate as P	SM 4500 P E			0.004	0.007	0.02	0.05
Total Phosphate as P	SM 4500 P E			0.01	0.02	0.02	0.05
TSS	SM 2540 D			0.3	1	5	20
Specific Conductance	EPA120.1	SM 2510 B	umhos/cm	0.153	1	2	1

* Grab samples collected during 2009 were analyzed by Truesdail Laboratories Inc.

** Grab samples collected during 2010 and 2011 were analyzed by Enviromatrix Analytical Inc.

In addition to assessing the concentrations of the chemical constituents, instantaneous loads were calculated to further characterize the discharges. Instantaneous loads represent the load for a given constituent at the time of data collection. Given the intermittent nature of dry weather flows in this watershed, instantaneous loads should not be extrapolated to longer time periods such as day or year. Thus, load is represented in units of milligrams per second (mg/s). Comparing loads among sites can be useful to assess relative difference between site locations, but it is important to note that the results represent a snapshot in time and may not reflect the overall dry weather characteristics at that site.

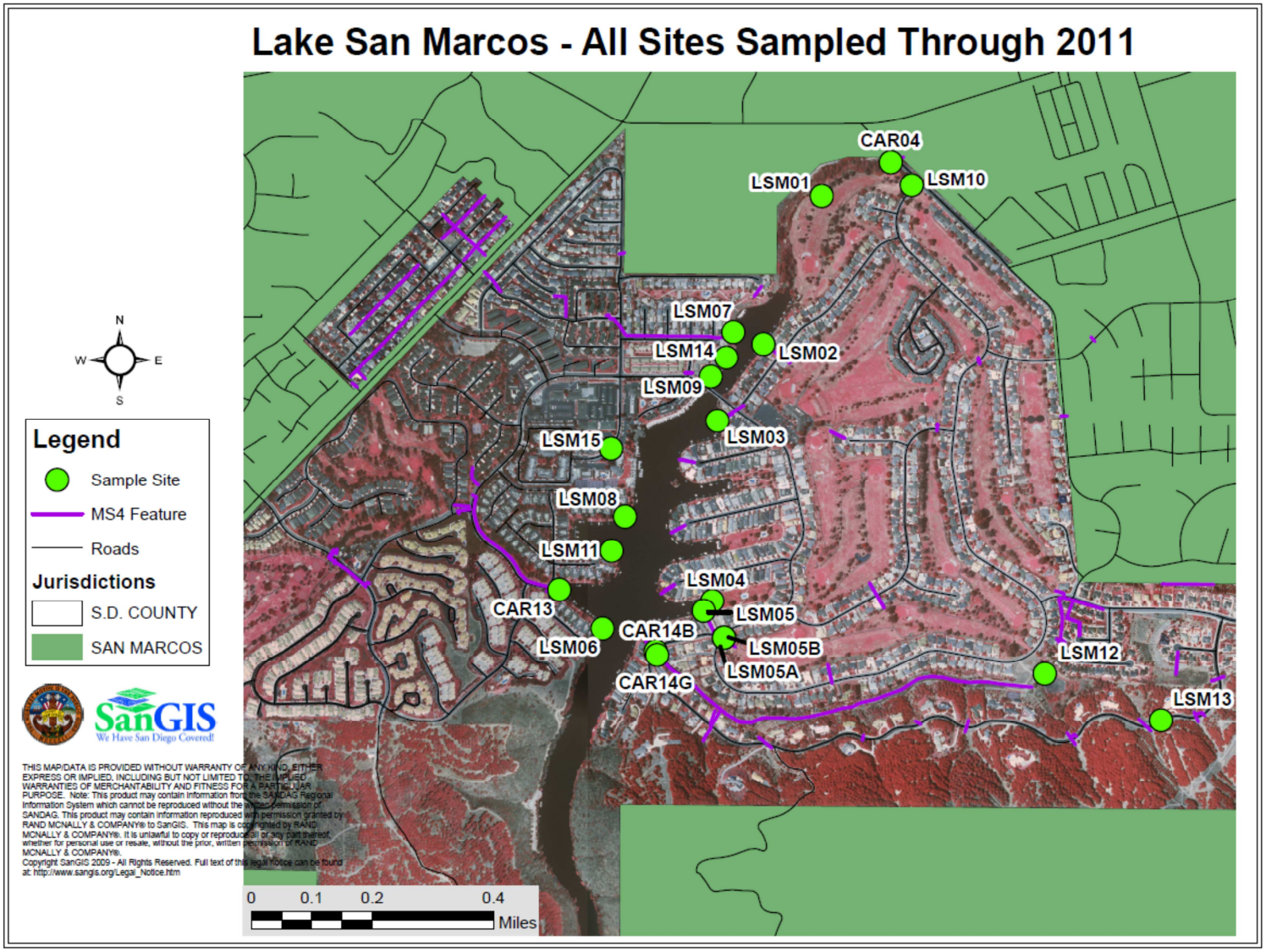

Figure 1. Map of Sampling Locations.

4

RESULTS

MONITORING SWEEPS

Of 51 potential surface water sampling locations at outfalls discharging to the lake and the San Marcos Creek, 21 (Table 2; Figure 1) contained flowing water at least some of the time, Nineteen of the 21 sites, were visited over seven rounds of monitoring sweeps from July 2009 through May 2011. The remaining two locations (LSM14 and LSM15) were added to the program later: LSM14 in August 2010 and LSM15 in May 2011. Flow and in-situ measurements of pH, dissolved oxygen, specific conductance, temperature, and turbidity were taken at all 21 locations. Also, grab water samples were collected and analyzed for nutrients and total dissolved solids. Additional investigations were conducted at specific locations if sample nutrient concentrations exceeded the Copermittees' established dry weather action levels of 10 mg/L Nitrate as N and/or 1 mg/L of orthophosphate as P. The data collected are summarized in *Attachment A*. Photographs of the locations sampled are presented in *Attachment C*.

Table 2. Sampling Locations with GPS Coordinates and Descriptions.

SITE ID	LOCATION	LATITUDE	LONGITUDE
CAR04	San Marcos Creek at Discovery Street	33.13044	-117.20064
CAR13	73-inch storm drain outfall to Lake San Marcos at the end of San Marino Drive	33.12012	-117.20997
CAR14B	Discharge from the gutter on La Plaza Drive (as it enters the curb inlet)	33.11866	-117.20721
CAR14G	Grassy channel at the end of El Chico Lane (upstream of the curb inlet)	33.11857	-117.20717
LSM01	Concrete channel discharging to San Marcos Creek at San Pablo Drive	33.12961	-117.20260
LSM02	Storm drain outfall at 1853 San Pablo Drive	33.12604	-117.20422
LSM03	Storm drain outfall at the end of San Pablo Drive (1795)	33.12419	-117.20551
LSM04	6-inch white pipe draining a local French drain system into Lake San Marcos at boat dock near San Pablo Drive	33.11988	-117.20561
LSM05	Storm drain outfall at 1400 La Plaza Drive	33.11964	-117.20585
LSM05A	Curb inlet draining to Storm drain outfall @ 1400 La Plaza Drive (to LSM05)	33.11900	-117.20527
LSM05B	Underground culvert draining to storm drain outfall at 1400 La Plaza Drive (to LSM05; upstream of LSM05A)	33.11900	-117.20527
LSM06	Storm drain outfall at the end of Camino De Vela	33.11919	-117.20873
LSM07	Storm drain outfall at 1501 La Fiesta Lane	33.12632	-117.20508
LSM08	White pipe draining to Lake San Marcos at Via Entrada Del Lago	33.12188	-117.20812
LSM09	Storm drain outfall at the North side of the bridge on the North-West side of Lake San Marcos	33.12525	-117.20571
LSM10	Concrete channel discharging to San Marcos Creek at San Pablo Drive	33.12989	-117.20004
LSM11	Storm drain outfall at Via Brisa Del Lago	33.12106	-117.20849
LSM12	Pond at San Pablo Drive	33.11820	-117.19612
LSM13	Sprinkler overspray at 1875 La Plaza Drive	33.11711	-117.19280

SITE ID	LOCATION	LATITUDE	LONGITUDE
LSM14	Drain outfall 250 feet south of LSM07 (La Fiesta lane site)	33.12571	-117.20527
LSM15	Storm drain nearest the Lake San Marcos Gallery Room at La Bonita Drive	33.12350	-117.20853

Site means were calculated for total nitrogen, total phosphorus, nitrate as N and orthophosphate as P concentrations, and instantaneous loads over the entire sampling period beginning in July 2009. Also, the number of observations and 95% confidence intervals were determined for each site mean. These values are presented in Table 3 (for the concentrations) and Table 4 (for discharges and loads). These results are also presented graphically in Figures 2 through 5.

For the purpose of instantaneous load comparisons, flow at LSM05B was difficult to estimate as the culvert could not be accessed by field staff . Instead of direct measurements, the floating debris method was used to estimate current speed and channel width from street level.

As mentioned above, due to the intermittency of dry weather flows in this watershed, instantaneous loads should not be extrapolated to longer time periods and loads are expressed in milligrams per second (mg/s) only. Although it may be useful to compare loads among sites in order to assess relative differences between locations, these results represent only a snapshot in time and may not reflect the overall dry weather characteristics at those sites.

Nutrient Concentrations

Similar to the use of instantaneous loads, caution is advised in using three grab water samples from a discharge point as representative of the storm drain's discharge. Due to the variable nature of dry weather discharges, the composition of the discharge may not be consistent over time. However, although water quality objectives (WQOs) do not apply to storm drain runoff, the concentration is compared to WQOs to determine if storm drain runoff has the potential to contribute to receiving water quality problems.

The total nitrogen concentrations (Table 3, Figure 2) at most locations sampled exceeded the 1.0 mg/L Basin Plan water quality objective (WQO). The highest mean concentrations were found at the grassy channel at the end of El Chico Lane (CAR14G), followed by the storm drain at 1400 La Plaza Drive (LSM05) including the two contributing flows from LSM05A and B, the storm drain outfall 250 feet south of LSM07 (LSM14), and the San Marcos Creek (CAR04). Since CAR14G has been dry over 6 of the 7 sampling occasions, the high total nitrogen concentration of 23.2 mg/L detected at that site is based on a single sample collected with a syringe due to an extremely low flow (0.003 L/s). The LSM14 average (4.9 ± 5.0 mg/L) is based on only two samples as the site has only been monitored since August 2010. If possible, more samples need to be collected at those two outfalls to determine if these concentrations are representative of the sites. The nitrogen concentrations at LSM05 (9.6 ± 1.0 mg/L) have been consistently high and significantly higher than those measured at most of the other locations monitored including San Marcos Creek (CAR04). The mean total N concentration at San Marcos Creek was 4.9 ± 2.4 mg/L.

The total phosphorus concentrations (Table 3, Figure 3) tended to exceed the 0.1 mg/L Basin Plan WQO at most sampling locations. The highest mean concentrations were found in the storm drain outfall at Via Brisa Del Lago (LSM11) (0.6 ± 0.1 mg/L), the discharge from the gutter on La Plaza Drive as it enters the curb inlet (CAR14B) (0.5 ± 0.3 mg/L), and the storm drain outfall at 1853 San Pablo Drive (LSM02) (0.4 ± 0.2 mg/L). The mean total P concentration for San Marcos Creek (CAR04) was 0.3 ± 0.1 mg/L. CAR14B together with CAR14G eventually discharge into CAR14 which is an earthen channel that flows into Lake San Marcos at the southern terminus of San Marino Drive.

Table 3. Mean Nutrient Concentrations in Milligrams per Liter (mg/L), Numbers of Samples Taken and 95% Confidence Intervals for Different Sampling Locations.

Site ID	Total Nitrogen (mg/L)			Total Phosphorus (mg/L)			Nitrate as N (mg/L)			Orthophosphate as P (mg/L)			Comments
	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf	
San Marcos Creek (CAR04)	7	4.91	2.38	8	0.29	0.09	8	2.02	1.26	8	0.26	0.10	
CAR13	7	2.84	0.44	8	0.29	0.04	8	0.68	0.39	8	0.25	0.04	
CAR14B	8	2.47	1.01	8	0.53	0.32	8	0.58	0.68	8	0.33	0.16	
CAR14G	1	23.20		1	0.34		1	21.60		1	0.30		Only one sample collected on 2/2/10; site was dry for the remaining sweeps
LSM01	8	2.57	1.13	8	0.17	0.07	8	0.40	0.58	8	0.13	0.08	
LSM02	8	3.33	0.89	8	0.38	0.21	8	1.26	0.79	8	0.28	0.16	
LSM03	7	2.38	1.06	7	0.19	0.04	7	0.11	0.04	7	0.07	0.04	
LSM04	11	3.82	0.82	12	0.21	0.11	12	2.63	0.54	12	0.12	0.09	
LSM05	11	9.57	0.96	11	0.22	0.15	11	8.50	1.13	11	0.17	0.12	
LSM05A	6	9.83	4.57	6	0.32	0.21	6	8.42	4.32	6	0.16	0.14	
LSM05B	7	8.84	2.52	7	0.21	0.05	7	7.45	2.60	7	0.13	0.05	
LSM06	1	1.15		1	0.01		1	0.24		1	0.01		Only one sample collected on 7/24/09; site was dry for the remaining sweeps
LSM07	7	2.25	0.91	8	0.17	0.09	8	0.63	0.17	8	0.12	0.09	
LSM08	1	1.08		1	0.15		1	0.10		1	0.11		Only one sample collected on 7/24/09; site was dry or submerged for the remaining sweeps
LSM09	7	1.98	0.95	8	0.20	0.07	8	0.21	0.13	8	0.14	0.08	
LSM10	5	2.54	1.01	5	0.17	0.09	5	0.71	0.78	5	0.15	0.09	
LSM11	4	2.49	1.46	5	0.55	0.12	5	0.10	0.09	5	0.47	0.12	
LSM12	6	2.74	1.94	6	0.09	0.03	6	0.91	1.47	6	0.03	0.02	Pond
LSM13	1	0.91		1	0.06		1	0.11		1	0.00		
LSM14	2	4.92	5.00	3	0.26	0.04	3	0.64	0.79	3	0.17	0.12	Site sampled since 8/12/10
LSM15	1	3.30		1	0.34		1	0.39		1	0.21		Site sampled only on 5/12/11

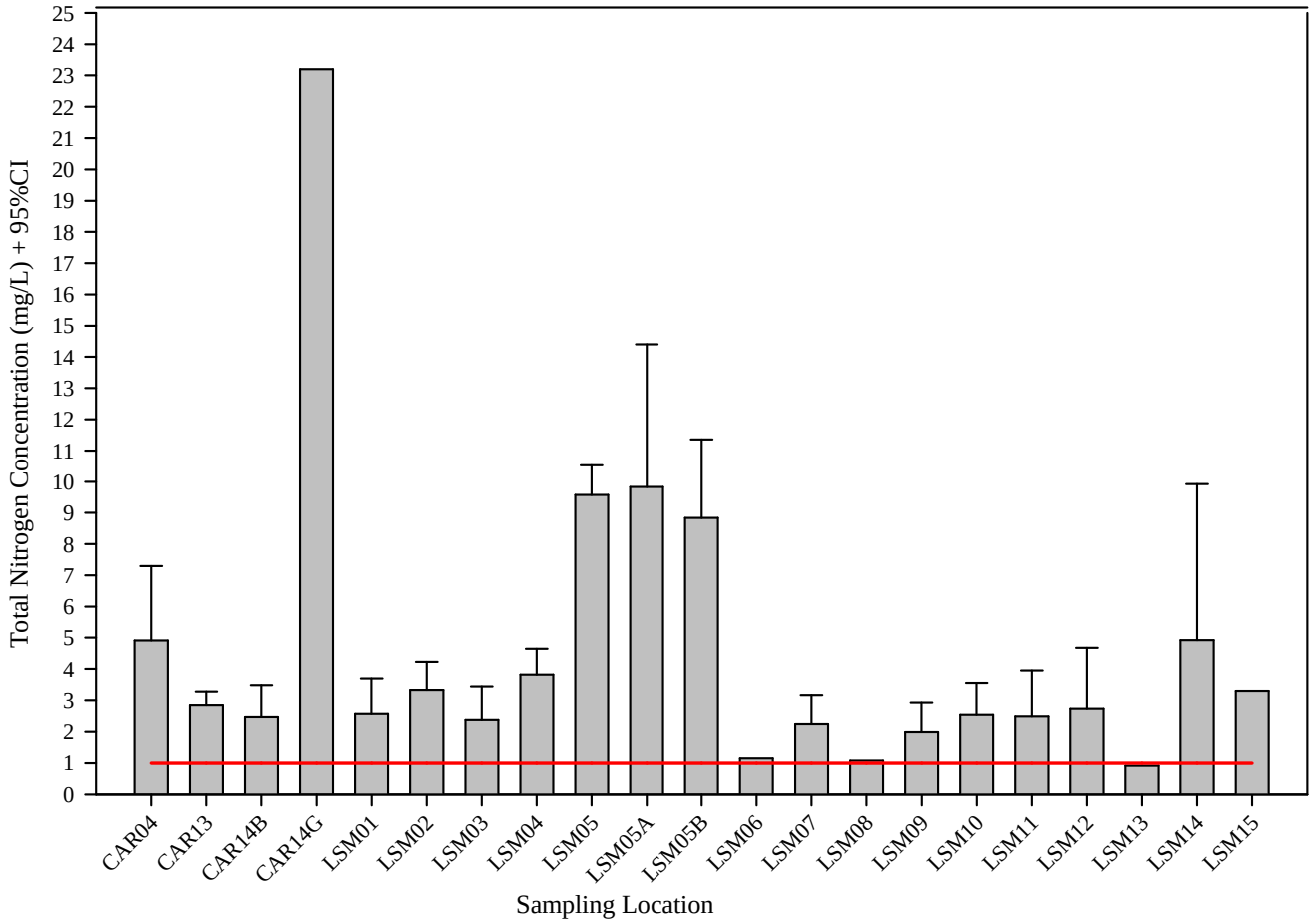

Figure 2. Mean Concentrations in Milligrams Per Liter (mg/L) + 95% Confidence Intervals (CI) of Total Nitrogen Detected in Samples Collected at Different Locations During Monitoring Sweeps Conducted From July 2009 Through June 2011. The red line shows the Basin Plan Water Quality Objective to Total Nitrogen.

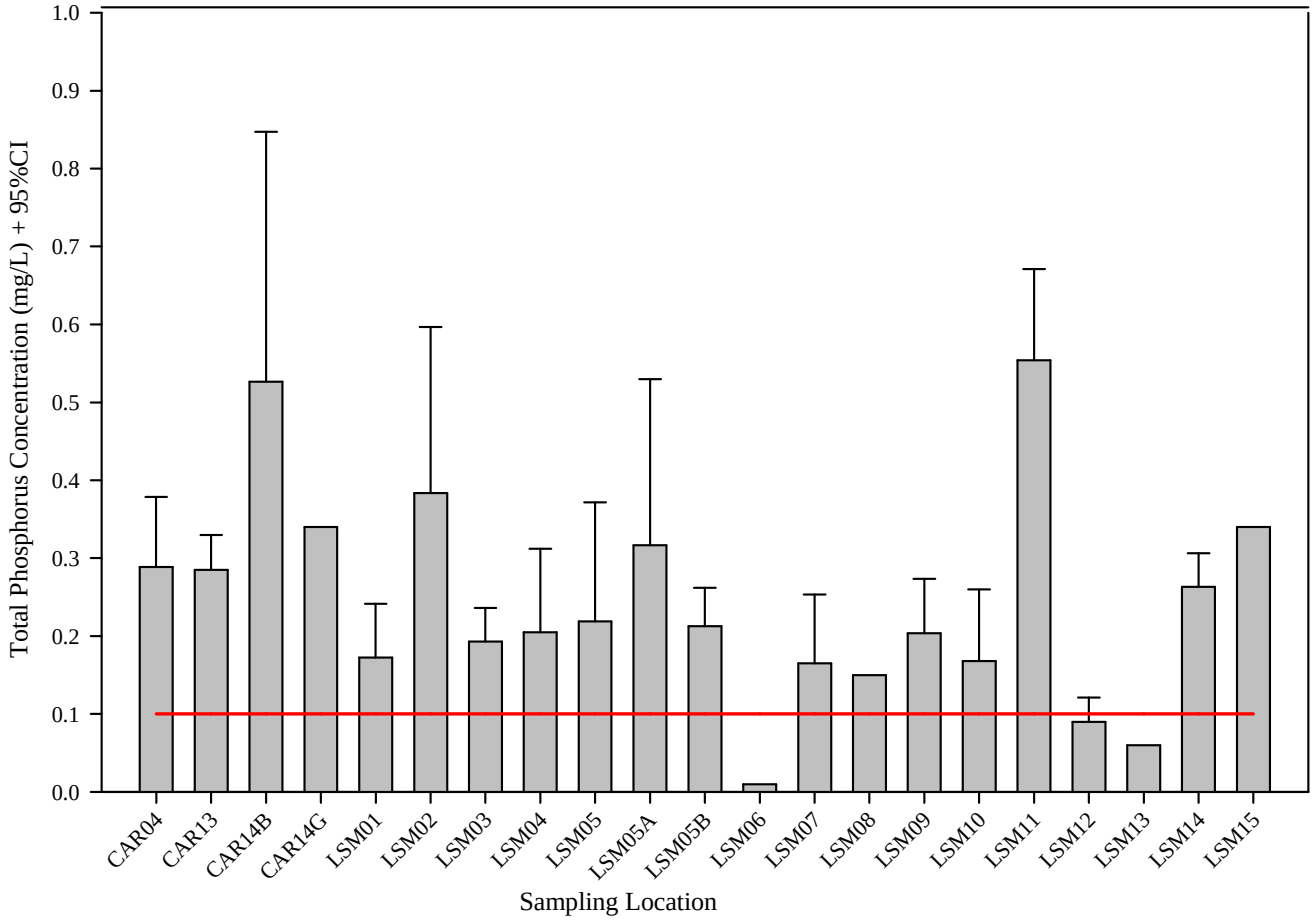

Figure 3. Mean Concentrations in Milligrams Per Liter (mg/L) + 95% Confidence Intervals (CI) of Total Phosphorus Detected in Samples Collected at Different Locations During Monitoring Sweeps Conducted From July 2009 Through June 2011. The red line shows the Basin Plan Water Quality Objective to Total Phosphorus.

Instantaneous Loads

Based on the instantaneous load estimates (Table 4, Figures 4 and 5), San Marcos Creek (CAR04), being the only tributary, contributed the highest non-storm instantaneous nutrient loads to the Lake (for both total N and total P). The highest total N instantaneous loadings from storm drains were observed at LSM05 and LSM10; the second highest total N instantaneous loads were observed at LSM07, LSM01, LSM02 and CAR13. For total P, the highest storm drain loads were again contributed from LSM10; LSM05, LSM07, LSM01, LSM02 and CAR13 had instantaneous total P loadings that were second highest.

Table 4. Mean Discharges in Liters per Second (L/s) and Instantaneous Nutrient Loads in Milligrams per Second (mg/s), Numbers of Samples Taken, and 95% Confidence Intervals for Different Sampling Locations.

Site ID	Discharge (L/s)			Total Nitrogen (mg/s)			Total Phosphorus (mg/s)			Nitrate as N (mg/s)			Orthophosphate as P (mg/s)		
	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf	No.	Mean	95% Conf
San Marcos Creek (CAR04)	9	1.430	1.008	6	281.75	287.49	7	17.93	17.16	7	151.87	179.57	7	16.19	15.88
CAR13	9	0.023	0.020	7	2.26	2.04	8	0.21	0.21	8	0.58	0.57	8	0.16	0.13
CAR14B	8	0.001	0.001	8	0.11	0.10	8	0.01	0.01	8	0.04	0.06	8	0.01	0.01
CAR14G	1	0.003		1	1.97		1	0.03		1	1.83		1	0.03	
LSM01	8	0.039	0.017	8	3.34	2.47	8	0.22	0.14	8	0.79	1.23	8	0.17	0.14
LSM02	8	0.029	0.013	8	3.14	1.89	8	0.29	0.19	8	1.16	1.04	8	0.22	0.15
LSM03	8	0.002	0.002	7	0.16	0.14	7	0.01	0.01	7	0.01	0.01	7	0.00	0.00
LSM04	22	0.011	0.002	11	1.05	0.39	12	0.08	0.06	12	0.80	0.27	12	0.04	0.02
LSM05	22	0.045	0.009	11	10.95	2.82	11	0.30	0.20	11	9.59	2.42	11	0.24	0.17
LSM05A	7	0.012	0.004	6	3.34	1.17	6	0.11	0.07	6	2.86	1.15	6	0.05	0.04
LSM05B	17	0.039	0.012	7	9.72	6.62	7	0.21	0.09	7	8.05	5.60	7	0.16	0.11
LSM06	1	0.000		1	0.00		1	0.00		1	0.00		1	0.00	
LSM07	9	0.049	0.048	7	3.86	3.53	8	0.26	0.27	8	1.16	1.39	8	0.20	0.23
LSM08	2	0.000	0.000	1	0.00		1	0.00		1	0.00		1	0.00	
LSM09	9	0.003	0.002	7	0.16	0.14	8	0.02	0.02	8	0.02	0.01	8	0.02	0.02
LSM10	5	0.090	0.104	4	10.17	13.24	4	0.61	0.75	4	5.11	7.58	4	0.45	0.48
LSM11	6	0.001	0.000	4	0.02	0.03	5	0.01	0.01	5	0.00	0.00	5	0.01	0.01
LSM12	6														
LSM13	1	0.0000		1	0.00		1	0.00		1	0.00		1	0.00	
LSM14	3	0.000	0.000	2	0.02	0.01	3	0.00	0.00	3	0.00	0.00	3	0.00	0.00
LSM15	1	0.001		1	0.09		1	0.01		1	0.01		1	0.01	

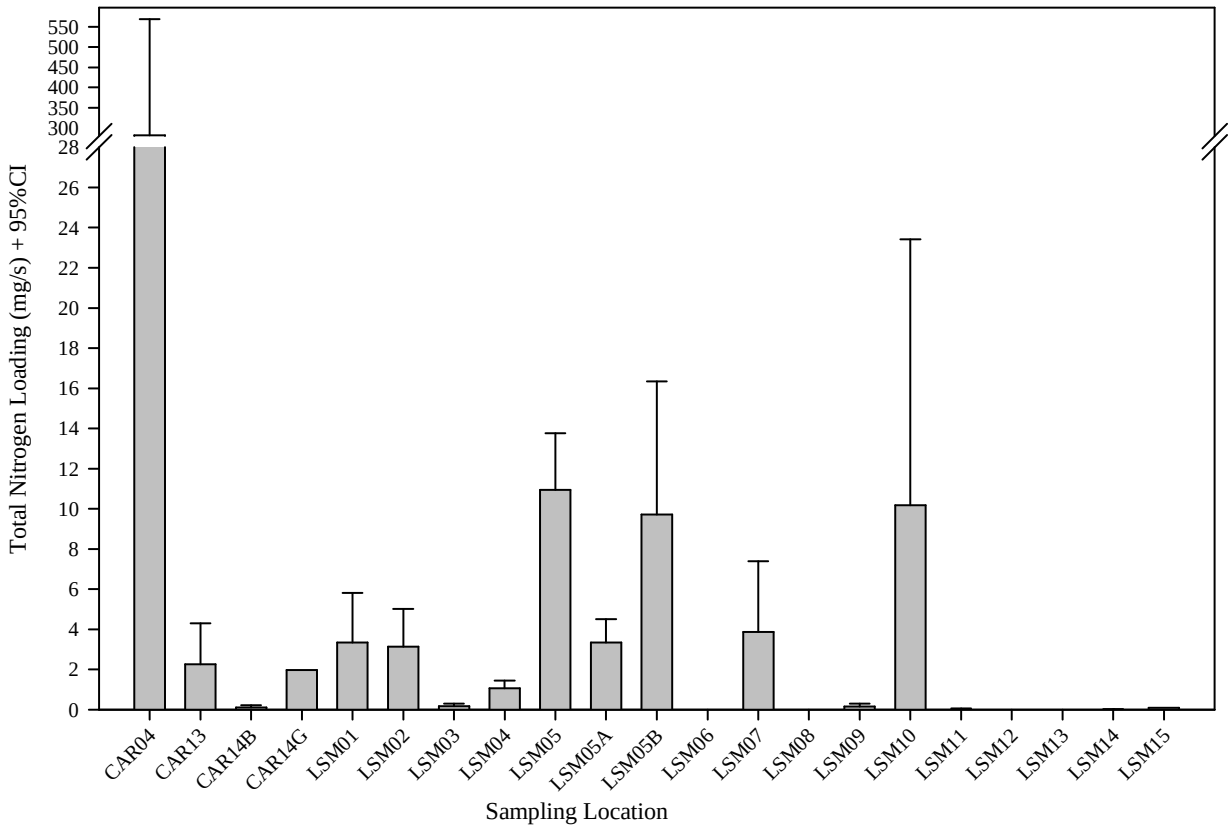

Figure 4. Mean Instantaneous Loadings (mg/s) + 95% Confidence Intervals (CI) of Total Nitrogen Detected in Samples Collected at Different Locations During Monitoring Sweeps Conducted From July 2009 Through June 2011.

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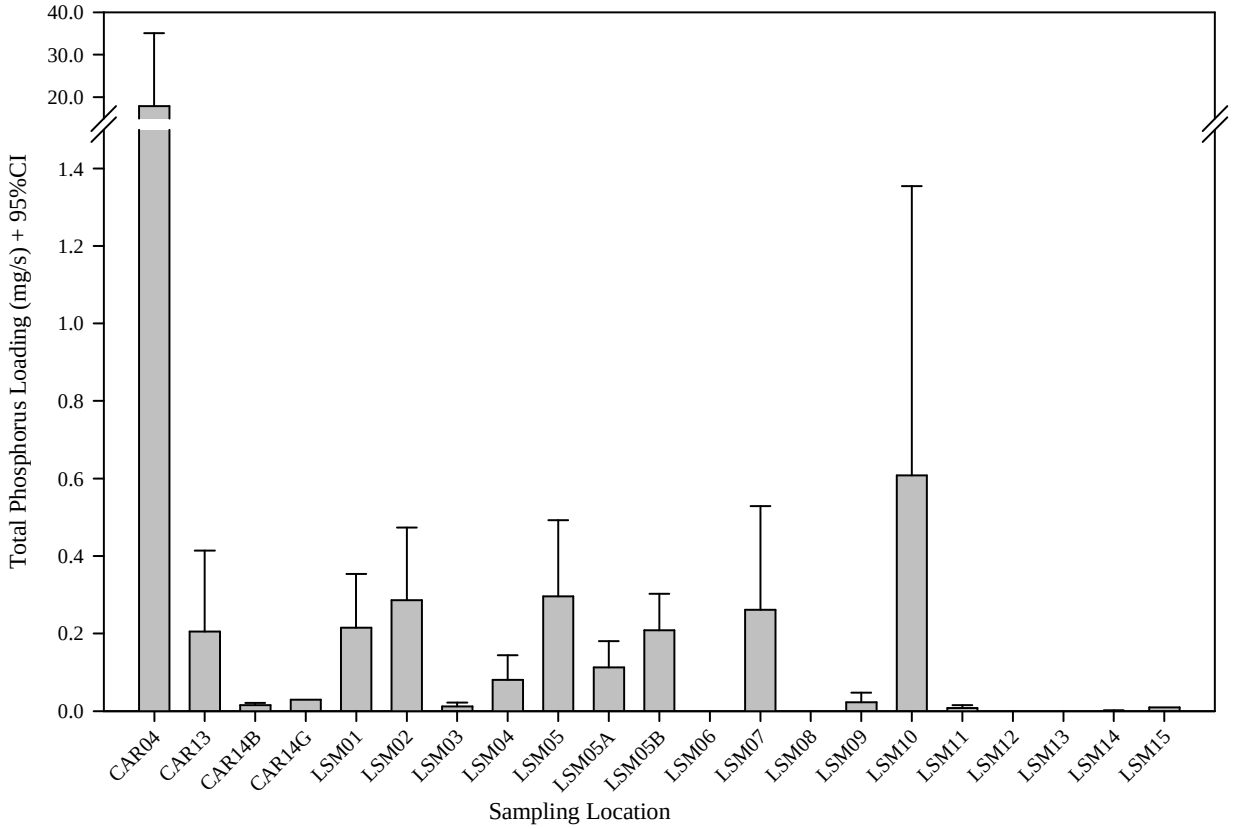

Figure 5. Mean Instantaneous Loadings (mg/s) + 95% Confidence Intervals (CI) of Total Phosphorus Detected in Samples Collected at Different Locations During Monitoring Sweeps Conducted From July 2009 Through June 2011.

Data Quality

All data collected for the purpose of this report have been reviewed for quality and conformance with the requirements of the *County of San Diego's Dry Weather Monitoring Program and MS4 Program Quality Assurance Project Plan* (August 2010) (QAPP). The results of this review are summarized in *Data Quality Control and Quality Assurance Report for the Dry Weather Monitoring Sweeps and Non-Storm Flow Monitoring at Lake San Marcos* (*Attachment G*). All water quality data have met the completeness data quality objectives. A great majority of data have also satisfied the accuracy (bias) requirement of 80-120% recovery for laboratory control and matrix spike samples. The exceptions included four of 28 ammonia matrix spike (MSS) and matrix spike duplicate (MSSDup) samples, two of 28 MSS and MSSDup samples for TKN, two of 36 MSS and MSSDup samples for Nitrite and one of 18 MSS samples for Nitrate.

The requirement for precision (DQO of Relative Percent Difference < ±30%) was met for all constituents and samples when assessed with Laboratory Control Sample Duplicates (LCSDup) and Matrix Spike Sample Duplicates. Most data also exhibited adequate precision when assessed with Laboratory Duplicate Samples (LDS). The exceptions included one of 14 ammonia LDS and one of 24 TSS LDS.

All of the above DQO exceedances were attributed to matrix non-homogeneity and associated data were accepted based on LCS results. The associated data were qualified as "estimated" (E) in the report data table (*Attachment A*). The qualified data included 14 ammonia results from samples collected at various sampling locations on 2/1/2010, 2/2/2010 and 7/2/2010, five nitrate results from some of the samples collected on 7/23/2009, one TKN result from a sample collected at LSM04 on 6/18/2010, and ten TSS results from all samples taken on 2/1/2010.

Discussion

The current study offers some preliminary insights into the relative dry weather contributions of nutrients to Lake San Marcos from the Upper San Marcos Creek and other surface inputs monitored during the study period of up to two years beginning in July 2009. A maximum of seven quarterly sweeps were conducted at 21 sampling locations during which instantaneous flow measurements were taken and grab samples were collected for nutrient analysis from San Marcos Creek and accessible storm drains flowing into Lake San Marcos. The relative magnitudes of groundwater inputs compared to these surface water inputs to Lake San Marcos are unknown.

Caution should also be exercised in using only seven or less grab water samples from a discharge point as representative of the storm drain's water quality. Due to the variable nature of dry weather discharges, the flow rate and composition of the discharge may not be consistent over time. Although water quality objectives (WQOs) do not apply to storm drain runoff, constituent concentrations were compared to WQOs to determine if storm drain runoff has the potential to contribute to receiving water quality nutrient problems. Generally, grab sample data suggest that the total nitrogen concentrations at most locations sampled exceed the 1.0 mg/L Basin Plan WQO; on average, the samples exceeded the 1.0 mg/L total nitrogen WQO by 4.5 and total phosphorus concentrations were more than double the 0.01 mg/L WQO.

It was difficult to estimate relative nutrient loads to the Lake from the various surface flow sources as flows were often trickles and difficult to measure. During dry weather, San Marcos Creek contributed total nitrogen loads that were on the average 7.5 times higher than the combined average instantaneous loadings from all storm drain inputs monitored in this study. For total phosphorus, the Creek's average loading was 8.7 times higher. The highest mean total N and total P instantaneous dry weather loadings from storm drains discharging to the Lake were measured in the storm drain outfall at 1400 La Plaza Drive (LSM05). Several other storm drains seemed to contribute relatively high loadings of nutrients directly to the Lake. These included the storm drain outfalls at 1501 La Fiesta Lane (LSM07), 1853 San Pablo Drive (LSM02), and at the end of San Marino Drive (CAR13). Two concrete channels discharging into San Marcos Creek at San Pablo Drive (LSM10 and LSM01) also contributed relatively high instantaneous dry weather nutrient loadings.

REFERENCES

City of San Marcos, County of San Diego and City of Escondido. January 2010. *Upper San Marcos Creek Watershed (USMC) Nutrient Management Plan.*

County of San Diego. 2010. *County of San Diego Dry Weather Monitoring Quality Assurance Project Plan* (QAPP). http://www.projectcleanwater.org/

County of San Diego. 2010. *Dry Weather Monitoring Field Manual.* http://www.projectcleanwater.org/

ATTACHMENT A

MONITORING SWEEPS - DATA TABLE

Table 6. Values exceeding the Copermittees' dry weather action levels are indicated in bold print.

SiteID	EventType	Date	Time	Flow	Discharge (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
CAR04	FS	7/24/09	9:00	Flowing	0.3000							0.03	0.05	<0.001	0.98	1.03	0.09	0.13		3.4
		2/1/10	9:40	Flowing	0.0000	7.08	1.97	0.09	4	6.75	14.3	0.18 (E)	2.19	<0.007	7.2	9.39	0.29	0.3		<20 (E)
		5/4/10	11:20	Flowing	1.6968	7.67	2.21	0.1	14	6.16	16.5	0.12	1.78	<0.007	1.2	2.98	0.1	0.16		12.2
		8/12/10	9:10	Flowing	0.8845	7.58	2.09	0.09	14	6.78	18.2	< 0.009	0.6	<0.007			0.27	0.28		17.6
		11/18/10	10:30	Flowing	1.9278	7.38	2.3	0.1	3	6.84	12.6	0.14	1.16	<0.007	1.9	3.06	0.41	0.43	1380	4
		2/3/11	10:00	Flowing	5.1646	7.83	2.2	0.1	2	8.48	10.2	0.18	4.63	0.009	2	6.64	0.42	0.46		4.6
		5/10/11	11:00	Flowing	1.5051	7.89	2.36	0.11	11	6.55	16.2	0.33	4.91	0.01	3.5	8.42	0.37	0.39		12.4
CAR13	FS	7/24/09	10:10	Flowing	0.0180							0.04	0.47	0.01	1.63	2.11	0.18	0.19		1.8
		2/1/10	13:40	Flowing	0.0300	8.31	2.42	0.11	4	9.76	14.9	0.12 (E)	2.01	<0.007	1	3.01	0.18	0.19		<20 (E)
		5/4/10	12:50	Flowing	0.1012	8.11	3.11	0.15	8	8.5	21.6	0.19	0.73	0.08	2.1	2.91	0.21	0.33		66
		8/12/10	12:10	Flowing	0.0045	8.24	1.69	0.07	2	9.39	19.7	<0.5	0.49	<0.007			0.28	0.33		6.8
		11/18/10	13:10	Flowing	0.0100	7.87	2.42	0.11	31	10.45	16.3	0.15	0.35	<0.007	1.6	1.95	0.32	0.35	1430	11
		2/3/11	13:40	Flowing	0.0100	8.29	2.22	0.1	1	10.35	12.7	0.18	0.7	<0.007	2.4	3.10	0.26	0.26		<1
		5/12/11	11:00	Flowing	0.0112	8.27	1.98	0.09	4	8.9	17.1	0.15	0.43	0.007	3.1	3.54	0.27	0.33		3.6
CAR14B	FS	7/23/09	13:20	Flowing	0.0005							0.04	0.46 (E)	<0.001	0.98	1.44	0.29	0.38		4.4
		8/11/10	11:30	Flowing	0.0005	8.76	1.69	0.07	3	12.33	28.9	<0.5	0.05	<0.007	<1	0.55	0.83	1.62		21.4
		11/17/10	13:50	Flowing	0.0003	9.19	2.03	0.09	11	12.25	22	0.34	0.03 (J)	<0.007	2.2	2.23	0.28	0.3	1220	106
		2/3/11	12:50	Flowing	0.0016	8.38	1.69	0.07	7	11.31	15.3	0.19	0.21	<0.007	2.6	2.81	0.48	0.5		9.6
		5/11/11	11:00	Flowing	0.0006	8.74	1.67	0.07	7	9.14	26.9	0.16	0.07	<0.007	3.6	3.67	0.04	0.23		47.6
	SID	2/1/10	13:00	Flowing	0.0030	8.02	2.64	0.12	4	14.21	18.9	0.12 (E)	0.95	<0.007	2.2	3.15	0.17	0.25		<20
		5/3/10	12:50	Flowing	0.0009	9.56	1.66	0.07	42	10.41	31.3	< 0.009	<0.009	<0.007	1	1.01	0.29	0.64		22
CAR14G	FS	2/2/10	9:40	Flowing	0.003	6.79	1.62	0.07	1	4.91	13.5	0.18	21.6	<0.007	1.6	23.20	0.3	0.34		<20

SiteID	EventType	Date	Time	Flow	Discharge (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		5/3/10	13:20	Dry																
		8/11/10	11:40	Dry																
		11/17/10	14:00	Dry																
		2/3/11	13:00	Dry																
		5/11/11	11:10	Dry																
LSM01	FS	7/23/09	9:40	Flowing	0.0120							0.05	<0.007 (E)	<0.001	1.43	1.43	0.02	0.06		19.4
		2/10/10	10:00	Flowing	0.0624	8.75	2.42	0.11	7	19.99	15.6	0.12	0.59	<0.007	3.8	4.39	0.08	0.12		<20
		5/3/10	10:00	Flowing	0.0540	8.5	2.15	0.1	2	10.99	22.6	< 0.009	0.06	<0.007	0.5	0.56	0.21	0.21		2.3
		8/11/10	9:20	Flowing	0.0179	8.7	2.33	0.11	5	13.59	24.6	<0.5	< 0.009	<0.007	<1	0.51	0.07	0.1		9.2
		11/17/10	10:50	Flowing	0.0225	9.57	1.97	0.09	9	17.49	22.4	0.39	0.03 (J)	<0.007	2	2.03	0.09	0.16	1320	22
		2/3/11	9:30	Flowing	0.0752	8.72	2.04	0.09	2	15.19	12	0.16	2.4	0.02	1.9	4.32	0.09	0.16		46.4
		5/10/11	10:50	Flowing	0.0548	8.78	1.9	0.09	4	10.71	25.7	0.14	0.05	<0.007	3.4	3.45	0.38	0.39		5.5
LSM02	FS	7/23/09	10:40	Flowing	0.0264							0.17	0.07 (E)	0.01	1.82	1.90	0.21	0.26		16.5
		2/1/10	10:20	Flowing	0.0450	8.75	3.68	0.18	5	12.91	15.6	0.12 (E)	2.56	<0.007	2.1	4.66	0.15	0.18		<20 (E)
		5/3/10	10:20	Flowing	0.0210	8.69	2.84	0.14	2	8.24	21	0.63	1.3	<0.007	1.1	2.40	0.09	0.23		2.8
		8/11/10	9:50	Flowing	0.0120	8.6	2.5	0.12	7	7.51	21.9	<0.5	0.93	<0.007	<1	1.43	0.56	0.95		5.8
		11/17/10	11:30	Flowing	0.0140	8.42	2.63	0.12	5	9.27	19.4	0.24	1.95	0.05	2	4.00	0.63	0.68	1580	12
		2/3/11	10:30	Flowing	0.0450	8.68	3.39	0.16	8	10.55	12.4	0.16	2.99	0.02	1.8	4.81	0.13	0.15		23.4
		5/11/11	9:50	Flowing	0.0112	8.55	2.68	0.13	7	8	19.3	0.34	0.17	0.02	3.1	3.29	0.01	0.08		8.6
LSM03	FS	7/23/09	11:10	Flowing	0.0000							0.05	0.07 (E)	0.01	2.55	2.63	0.16	0.15		0.2
		2/1/10	10:50	Flowing	0.0080	8.66	3.3	0.16	20	9.53	14.2	0.14 (E)	0.15	<0.007	2.2	2.35	<0.007	0.18		20 (E)
		5/3/10	10:40	Flowing	0.0006	8.53	1.03	0.04	4	6.42	17.7	< 0.009	0.17	<0.007	0.6	0.77	0.06	0.28		4

SiteID	EventType	Date	Time	Flow	Discharge (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		8/11/10	10:10	Flowing	0.0020	7.78	1.26	0.05	5	5.42	19.3	<0.5	0.13	<0.007	<1	0.63	0.14	0.19		41.8
		11/17/10	12:00	Flowing	0.0022	7.79	2.02		11	7.89	17.7	0.44	0.1	0.03	4.2	4.33	0.09	0.22	1200	43
		2/3/11	10:50	Flowing	0.0028	8.27	2.39	0.11	3	10.06	10.8	0.18	0.02 (J)	<0.007	1.9	1.92	0.06	0.1		2.4
		5/11/11	10:20	Flowing	0.0012	8.04	1.51	0.06	5	7.69	17	0.12	0.15	0.06	3.8	4.01	0.01	0.23		12.2
LSM04	FS	7/23/09	12:40	Flowing	0.0060							0.04	3.56 (E)	<0.001	0.36	3.93	0.01	0.01		0.2
		8/24/09	12:20	Flowing	0.0041	7.55	2.43	0.11	4	7.92	23.1	0.05	3.94	<0.007	1.09	5.03	0.01	0.01		2
		11/2/09	10:00	Flowing	0.0074															
		11/9/09	10:40	Flowing	0.0040															
		11/25/09	11:10	Flowing	0.0055															
		2/1/10	11:20	Flowing	0.0113	7.76	2.43	0.11	1	7.74	16.1	< 0.009 (E)	3.3	<0.007	0.5	3.80	<0.007	0.09		<20 (E)
		2/17/10	10:10	Flowing	0.0088															
		3/5/10	10:20	Flowing	0.0141															
		3/15/10	10:10	Flowing	0.0087															
		3/22/10	9:50	Flowing	0.0122															
		3/29/10	11:00	Flowing	0.0235															
		4/7/10	11:10	Flowing	0.0126															
		4/26/10	10:50	Flowing	0.0124															
		5/3/10	11:20	Flowing	0.0077	7.8	2.55	0.12	2	8.07	19.5	< 0.009	0.28	<0.007	<0.3	0.43	0.48	0.53		<1
		6/4/10	10:00	Flowing	0.0120	7.27	2.51	0.12	0	7.99	20.5	< 0.009	2.86	<0.007	0.8 (E)	3.66	0.05	0.11		<1
		6/18/10	10:15	Flowing	0.0113							< 0.009	2.41	<0.007	0.6	3.01	0.12	0.14		2.2
		7/2/10	9:20	Flowing	0.0270							0.14 (E)	2.39	<0.007			<0.007	0.54		<1
		8/11/10	10:30	Flowing	0.0101	7.31	2.39	0.11	1	7.93	21.5	<0.5	2.32	<0.007	<1	2.82	0.34	0.36		1.8
		11/17/10	12:30	Flowing	0.0130	7.21	2.42	0.11	0	9.17	18.6	0.12	3.14	<0.007	1.6	4.74	0.25	0.35	1460	10

SiteID	EventType	Date	Time	Flow	Discharge (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		2/3/11	11:20	Flowing	0.0178	7.44	2.5	0.12	2	8.73	15.7	0.14	2.46	<0.007	2.1	4.56	0.07	0.08		<1
		5/10/11	12:50	Flowing	0.0128	7.56	2.48	0.12	2	7.52	19.6	0.07 (J)	1.81	<0.007	2.7	4.51	0.08	0.11		1.2
LSM05A	FS	8/28/09	9:40	Flowing	0.0064	8.86	1.95	0.09	11	11.71	26.3									
		2/1/10	11:40	Flowing	0.0212	8.5	2.67	0.13	7	18.12	16.7	0.15 (E)	6.15	<0.007	0.7	6.85	<0.007	0.34		<20 (E)
		5/3/10	12:00	Flowing	0.0097	8.93	2.05	0.09	6	16.09	28.2	< 0.009	6.65	0.17	1.3	8.12	0.1	0.22		13.4
		8/11/10	10:50	Flowing	0.0099	8.91	1.85	0.08	3	14.51	27.8	0.63	19.3	0.38	1.7	21.38	0.5	0.84		4.6
		11/17/10	13:00	Flowing	0.0120	8.68	2.04	0.09	7	16.35	20.3	0.15	6.7	0.04	1.3	8.04	0.06	0.14	1310	34
		2/3/11	11:50	Flowing	0.0144	8.42	2.46	0.11	5	15.33	13.4	0.14	4.65	0.02	1.7	6.37	0.19	0.21		6.8
		5/10/11	13:30	Flowing	0.0101	9.31	1.91	0.09	20	10.92	28.7	0.19	7.08	0.16	1	8.24	0.1	0.15		164
LSM05B	FS	8/28/09	10:00	Flowing	0.0158	7.95	1.98	0.09	0	8.76	21.8									
		11/2/09	9:50	Flowing	0.0360															
		11/9/09	10:20	Flowing	0.0300															
		11/25/09	11:00	Flowing	0.0270															
		2/1/10	12:00	Flowing	0.1067	8.06	2.65	0.12	2	9.13	14.8	< 0.009 (E)	7.95	<0.007	1.5	9.45	0.11	0.12		<20 (E)
		2/17/10	10:00	Flowing	0.0550															
		3/5/10	10:50	Flowing	0.0842															
		3/15/10	10:30	Flowing	0.0374															
		3/22/10	10:10	Flowing	0.0202															
		3/29/10	11:25	Flowing	0.0506															
		4/26/10	11:10	Flowing	0.0256															
		5/3/10	11:50	Flowing	0.0216	8.5	1.95	0.09	1	9.26	18.9	< 0.009	9.95	<0.007	1.5	11.45	0.08	0.29		1
		8/11/10	11:00	Flowing	0.0151	7.98	2.27	0.1	6	9.02	21.2	<0.5	9.45	<0.007	<1	9.95	0.12	0.23		2.6
		11/17/10	13:10	Flowing	0.0248	7.92	2.09	0.1	2	10.01	18.1	0.14	0.36	<0.007	1.5	1.86	0.23	0.26	1350	14

SiteID	EventType	Date	Time	Flow	Discharge (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		2/3/11	12:00	Flowing	0.0560	7.98	2.15	0.1	1	9.67	14.4	0.11	5.49	<0.007	1.8	7.29	0.24	0.26		1.9
		5/10/11	13:40	Flowing	0.0186	8.09	1.99	0.09	1	8.36	19.2	0.11	10.3	0.01	1.4	11.71	0.09	0.2		2.5
LSM05	FS	7/23/09	13:00	Flowing	0.0496							0.04	9.29	0.02	0.67	9.98	0.01	0.02		7.1
		8/24/09	12:30	Flowing	0.0360	8.3	2.06	0.09	12	8.65	22.7	0.04	10.1	0.03	0.7	10.80	0.02	0.02		0.5
		8/28/09	9:40	Flowing	0.0064	8.86	1.95	0.09	11	11.71	26.3	0.04	7.92	0.09	1.09	9.10	0.01	0.02		5.6
		8/28/09	10:00	Flowing	0.0158	7.95	1.98	0.09	0	8.76	21.8	0.04	11.6	<0.007	0.42	12.10	0.01	0.01		1.4
		11/2/09	10:10	Flowing	0.0450															
		11/9/09	10:30	Flowing	0.0390															
		11/25/09	11:20	Flowing	0.0880															
		2/1/10	11:30	Flowing	0.0640	7.96	2.68	0.13	1	9.37	14.9	0.1 (E)	6.99	<0.007	1.3	8.29	0.07	0.09		<20 (E)
		2/17/10	10:20	Flowing	0.0375															
		3/5/10	10:30	Flowing	0.1021															
		3/15/10	10:20	Flowing	0.0306															
		3/22/10	10:00	Flowing	0.0441															
		3/29/10	11:15	Flowing	0.0377															
		4/7/10	11:20	Flowing	0.0356															
		4/7/10	11:30	Flowing	0.0275															
		4/26/10	11:00	Flowing	0.0508															
		5/3/10	11:30	Flowing	0.0472	8.04	2.02	0.09	1	8.71	19.4	< 0.009	7.48	<0.007	0.6	8.08	0.15	0.22		<1
		8/11/10	10:40	Flowing	0.0369	7.99	2.22	0.1	1	8.54	21.2	<0.5	11	0.08	<1	11.58	0.65	0.87		2.2
		11/17/10	12:40	Flowing	0.0433	8.07	2.12	0.1	0	9.86	18.4	0.12	7.65	0.01	1.1	8.76	0.21	0.27	1320	7
		2/3/11	11:30	Flowing	0.0555	7.99	2.29	0.1	0	9.99	14.3	0.13	4.88	<0.007	1.7	6.58	0.31	0.33		2.2
		5/10/11	13:00	Flowing	0.0720	8.14	2.01	0.09	1	8.12	19.6	0.13	8.15	0.02	1.6	9.77	0.38	0.42		2.2

SiteID	EventType	Date	Time	Flow	Discharge (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
LSM06	FS	7/24/09	11:00	Flowing	0.0001							0.3	0.24	0.02	0.9	1.15	0.01	0.01		4.8
		2/2/10	12:40	Dry																
		5/4/10	13:00	Dry																
		8/12/10	12:00	Dry																
		11/18/10	13:30	Dry																
		2/3/11	13:50	Dry																
		5/12/11	11:30	Dry																
LSM07	FS	7/24/09	13:00	Flowing	0.0023							0.1	0.63	<0.001	1.12	1.75	0.03	0.03		12.3
		2/2/10	10:50	Flowing	0.2000	7.86	3.87	0.19	2	8.98	15.6	0.12 (E)	1.02	<0.007	1	2.02	0.17	0.18		22
		5/4/10	13:50	Flowing	0.0140	7.93	3.69	0.18	11	8.45	20	0.15	0.19	<0.007	0.7	0.89	<0.007	0.07		20.6
		8/12/10	11:10	Flowing	0.0083	7.96	3.67	0.18	14	9.27	20.2	<0.5	0.85	<0.007			0.39	0.45		2.6
		11/18/10	12:00	Flowing	0.1500	7.92	3.52	0.17	10	9.65	18.5	0.16	0.54	<0.007	1.7	2.24	0.09	0.17	2060	60
		2/4/11	9:50	Flowing	0.0165	8.08	3.69	0.18	7		14	0.02 (J)	0.57	<0.007	1.5	2.07	0.17	0.18		21.6
		5/11/11	13:10	Flowing	0.0300	8.01	3.46	0.17	6	8.35	19.7	0.17	0.56	<0.007	4.3	4.86	0.03	0.11		19
LSM08	FS	7/24/09	13:30	Flowing								0.04	0.1	<0.007	0.98	1.08	0.11	0.15		0.7
		2/2/10	10:00	Ponded																
		5/4/10	10:50	Submerged																
		8/12/10	9:40	Submerged																
		11/18/10	11:10	Dry																
		2/4/11	11:20	Submerged																
		5/12/11	10:20	Submerged																
LSM09	FS	7/29/09	10:10	Flowing	0.0007							0.05	0.03 (J)	0.01	1.46	1.49	0.27	0.3		6.6
		2/2/10	11:10	Flowing	0.0029	7.92	2.74	0.13	2	9.09	14.7	< 0.009 (E)	0.21	<0.007	0.6	0.81	0.12	0.2		<20
		5/4/10	13:20	Flowing	0.0016	8.13	2.66	0.13	3	7.62	19.3	0.16	0.6	0.1	1	1.70	0.06	0.13		3.2

SiteID	EventType	Date	Time	Flow	Discharge (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		8/12/10	10:10	Flowing	0.0049	7.79	2.47	0.12	1	5.97	19.1	<0.5	0.37	0.05			0.12	0.14		1.8
		11/18/10	11:40	Flowing	0.0096	7.97	2.04	0.09	2	9.15	16.7	0.12	0.04 (J)	<0.007	1.8	1.84	0.36	0.4	1240	24
		2/4/11	10:20	Flowing	0.0005	8.05	2.83	0.13	1		12.3	0.02 (J)	0.12	<0.007	2.3	2.42	0.06	0.09		1.5
		5/11/11	12:00	Flowing	0.0025	7.91	2.32	0.11	6	5.16	18.1	0.39	0.11	0.01	4.5	4.62	0.03	0.19		24.8
LSM10	FS	8/24/09	10:30	Ponded		8.12	2.63	0.12	6	6.45	26	0.09	<0.007	<0.001	1.54	1.54	0.01	0.02		22.8
		2/2/10	9:20	Flowing	0.2907	7.03	1.8	0.08	1	9.74	15.9	0.17 (E)	2	<0.007	1.6	3.60	0.14	0.21		<20
		5/3/10	9:40	Flowing	0.0576	7.28	1.43	0.06	3	6.61	19.7	< 0.009	0.26	<0.007	0.8	1.06	0.21	0.24		3.3
		8/11/10	9:10	Dry																
		11/17/10	10:30	Dry																
		2/3/11	9:20	Flowing	0.0984	7.03	1.42	0.06	2	6.94	16	0.23	1.28	<0.007	1.9	3.18	0.1	0.1		8.6
		5/10/11	9:30	Flowing	0.0045	8.07	1.26	0.05	8	9.5	22.3	0.16	0.02 (J)	<0.007	3.3	3.32	0.27	0.27		4.9
LSM11	FS	2/2/10	10:20	Flowing	0.0004	7.2	2.16	0.1	27	0.1	13.1	< 0.009 (E)	<0.009	<0.007	0.8	0.81	0.39	0.6		32
		5/4/10	12:10	Flowing	0.0000	7.3	1.28	0.05	22	0.24	15.7	0.62	<0.009	0.07	1.6	1.67	0.43	0.49		5.4
		8/12/10	12:40	Flowing	0.0011	7.56	1.45	0.06	4	1.94	18.5	<0.5	0.23	<0.007			0.69	0.74		1.2
		11/18/10	12:50	Ponded																
		2/4/11	11:10	Flowing	0.0007	7.57	1.25	0.05	8	4.86	12.1	0.22	0.18	0.02	3.3	3.50	0.36	0.38		5.4
		5/12/11	10:40	Flowing	0.0001	7.48	1.49	0.06	31	0.31	16.1	0.77	0.06	<0.007	3.9	3.96	0.49	0.56		4.6
LSM12	FS	5/4/10	10:30	Ponded		7.98	1.93	0.09	10	11.3	22	0.12	0.05	<0.007	0.8	0.85	<0.007	0.06		6
		8/11/10	12:10	Ponded		7.9	2.35	0.11	10	7.08	26.8	<0.5	<0.009	<0.007	<1	0.51	<0.007	0.13		10.4
		11/17/10	14:50	Ponded		8.1	2.49	0.12	5	10.21	17.8	0.43	0.14	0.02	1.8	1.96	<0.007	0.06	1420	16
		2/4/11	9:20	Ponded		7.54	1.48	0.06	3	8.39	12.6	0.56	4.62	0.18	2.4	7.20	0.04	0.05		3

SiteID	EventType	Date	Time	Flow	Discharge (cfs)	pH	Spec. Conductance (Ms/cm)	Salinity	Turbidity (NTU)	DO (mg/L)	Temperature (°C)	NH_4-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	Total N (mg/L)	PO_4-P (mg/L)	Total P (mg/L)	TDS (mg/L)	TSS (mg/L)
		5/10/11	10:20	Ponded		8.18	1.35	0.06	7	8.9	20.8	0.19	0.67	0.03	2.7	3.40	0.05	0.1		4
LSM13	FS	5/4/10	9:40	Flowing	0.0000	7.81	0.776	0.03	0	9.92	17.6	0.26	0.11	<0.007	0.8	0.91	<0.007	0.06		<1
LSM14	FS	8/12/10	10:40	Flowing	0.0000	7.91	2.04	0.09	30	9.37	25.3	<0.5	0.05	<0.007			0.24	0.28		11.6
		11/18/10	11:30	Dry																
		2/4/11	10:00	Flowing	0.0003	8.53	1.64	0.07	8	11.82	16.9	0.06 (J)	0.46	<0.007	1.9	2.36	0.21	0.22		8.5
		5/11/11	11:40	Flowing	0.0001	7.68	1.78	0.08	8	8.23	20.1	0.71	1.41	0.06	6	7.47	0.05	0.29		65.4
LSM15	FS	5/12/11	10:00	Flowing	0.0010	7.4	3.74	0.19	10	7.21	19.6	0.22	0.39	0.01	2.9	3.30	0.21	0.34		55

FS – Field Screening
SID – Source Identification
E – Result was qualified as "estimated" due to inadequate precision caused by matrix interference (MS and/or MSDup %Recovery exceeded DQO of 80-120%)

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ATTACHMENT C

MONITORING SWEEPS SAMPLING LOCATIONS

CAR04 – San Marcos Creek at Discovery Street

CAR13 – Storm Drain Outfall to Lake San Marcos at the End of San Marino Drive

CAR14 – This location collects input from CAR14B and CAR14G. It was not sampled during the current study.

CAR14B – Discharge from the gutter on La Plaza Drive (as It Enters the Curb Inlet)

CAR14G – Grassy Flume at the End of El Chico Lane (Upstream of the Curb Inlet)

LSM01 – Flume Discharging to San Marcos Creek at San Pablo Drive

LSM02 – Storm Drain Outfall at 1853 San Pablo Drive

LSM03 – Storm Drain Outfall at the End of San Pablo Drive

LSM04 – White Pipe Draining to Lake San Marcos at the
Boat Dock Near San Pablo Drive

LSM05 – Storm Drain Outfall at 1400 La Plaza Drive

LSM05A – Curb Inlet Draining to the Storm Drain Outfall at 1400 La Plaza Drive (to LSM05)

LSM05B – Underground Culvert Draining to the Storm Drain Outfall at 1400 La Plaza Drive (to LSM05 upstream of LSM05A)

LSM06 – Storm Drain Outlet at the End of Camino Del Vela

LSM07 – Storm Drain Outlet at 1501 La Fiesta Lane

LSM08 – White Pipe Draining to Lake San Marcos at Via Entrada Del Lago

LSM09 – Storm Drain Outfall at the North Side of the Bridge on the North-West Side of Lake San Marcos

LSM10 – Flume Discharging to San Marcos Creek at San Pablo Drive

LSM11 – Storm Drain Outfall at Via Brisa Del Lago

LSM12 – Pond at San Pablo Drive

LSM13 – Sprinkler Overspray at 1875 La Plaza Drive

LSM14 – Drain outfall 250 feet south of LSM07 (La Fiesta lane site)

LSM15 – Storm drain nearest the Lake San Marcos Gallery Room at La Bonita Drive

ATTACHMENT G

DATA QUALITY CONTROL AND QUALITY ASSURANCE REPORT FOR

THE DRY WEATHER MONITORING SWEEPS AND NON-STORM FLOW MONITORING

AT LAKE SAN MARCOS

DATA QUALITY CONTROL AND QUALITY ASSURANCE REPORT

FOR THE DRY WEATHER MONITORING SWEEPS AT LAKE SAN MARCOS

Detailed information about the quality control measures employed in this project is provided in the *County of San Diego's Dry Weather Monitoring Program and MS4 Program Quality Assurance Project Plan* (August 2010) (QAPP). Although the document has been prepared for the Dry Weather Monitoring and MS4 monitoring programs specifically, the general procedures for the collection and maintenance of data, personnel training, data quality objectives, analytical method requirements, and data review, verification and validation have been followed for the present project as described in the QAPP.

Data quality is evaluated through a series of standards that measure the adequacy of sample collection and analysis methods. In general, certain performance criteria (data quality objectives) are established to ensure that the data are acceptable and usable. Four quantitative performance criteria were used in the *Dry Weather Monitoring Sweeps and Non-Storm Flow Monitoring at Lake San Marcos* to evaluate the degree of certainty or usability of the data to users. These criteria included precision, accuracy, completeness and representativeness. Precision is expressed as relative percent difference (RPD%) between two duplicate samples. Accuracy is expressed as the percent recovery (REC%) of an analyte from a sample of known analyte concentration. Completeness is defined as the percentage of actual measurements that are judged to be valid, over the planned overall measurements. Representativeness is the degree to which a sample (measurement) taken in a study reflect the true conditions being studied.

Proper representativeness was ensured in the present study by collecting flow-weighted composite samples. Samples collected in this manner represent the varying flow regimes that occur during storm events by collecting sample aliquots more frequently when flow rates are increased and less frequently when flow rates are lower. Time-weighted composite samples were collected for the non-storm event. The results of QA/QC data review for precision, accuracy and completeness are presented below.

According to the QAPP, the constituents monitored should meet laboratory reporting limits as outlined in table 1 below.

Table 3. Data Quality Objectives.

Parameter	Reporting Limit (mg/L)	Accuracy	Precision	Recovery	Completeness	Frequency
Ammonia-N	0.1	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by supplier. If not available, within 80% to 120% of true value	Laboratory duplicate, Blind Field duplicate, or MS/MSD 25% RPD Laboratory duplicate minimum.	Matrix spike 80% - 120% or control limits at ± 3 standard deviations based on actual lab data.	90%	5% or 1 per batch of 20 samples
Nitrate-N	0.1					
Nitrite-N	0.05					
Ortho-phosphate-P	0.05					
TKN	0.1					
Total P	0.05					
TSS	20					

The laboratory analysis of the composite samples was conducted by CRG Laboratories for storm water samples and by Enviromatrix, Analytical Inc. (EMA) for the non-storm water quality samples.

Results

Data quality analysis for laboratory data was conducted using laboratory method blanks (LMB), laboratory duplicate samples (LDS), laboratory control samples (LCS), laboratory control sample duplicates (LCSDup), matrix spike samples (MSS), and matrix spike sample duplicates (MSSDup).

Blank Sample Analysis

The laboratory method blanks (LMB) were used to assess laboratory contamination introduced during sample preparation and analysis. The method blanks are processed in a manner identical to the associated field samples. At least one laboratory method blank is analyzed per 20 samples or one per batch, whichever is more frequent.

The results of blank sample analysis are summarized in Table 2 below. All blanks sample results were below the method detection limits for all constituents tested.

Table 4. Results of the Field Equipment Blank Analysis.

Constituent	Laboratory Method Blanks	
	No. Processed	No. Results Equal to or Above RL
Ammonia-N	26	All ND
Nitrate-N	21	All ND
Nitrite-N	21	All ND
TKN	24	All ND
Total Nitrogen	0	NA
Ortho-phosphate-P	21	All ND
Total P	22	All ND
TSS	22	All ND

ND – constituent concentration below the detection level; NA – not applicable

Percent Recovery - Bias

The LCS, LCSDup, MSS, and MSSDup samples were evaluated for percent recovery. Percent recovery expresses what proportion of a known quantity can be measured by a given analytical technique. It is calculated by dividing the result of the analysis (less any blank or sample contribution) by the known quantity of the analyte, expressed as a percentage. Laboratory control samples (LCS) are analyzed to assess the bias (accuracy) of a given analytical method. Matrix spike samples (MSS) are prepared from randomly selected field samples spiked with known amounts of target analytes. This process is then repeated for a subset of field samples to create MSSDups. Both MSS and MSSDup are used to evaluate the effect of the sample matrix on the recovery of the target analyte(s) (i.e. to assess the bias from an environmental sample matrix plus normal method performance). At least one LCS/LCSDup and one MSS/MSSDup pair analysis were performed per 20 samples or one per batch, whichever was more frequent. The results of this analysis are summarized in Table 3.

Based on the analysis of LCS and LCSDup samples, data quality objectives for bias (accuracy) were met for all constituents. The DQO of 80-120% percent recovery for ammonia was exceeded in two of seventeen MSS and two of seventeen MSSDup samples. For nitrate, the 80-120% percent recovery DQO was exceeded in one of 18 MSS. For nitrite and TKN, one MSS and one MSSDup (both from the same batch) exceeded the DQO of 80-120% percent recovery. Accoridng to laboratory reports, all these exceedances were due to matrix interference and the laboratory accepted associated data batches based on LCS and LCSDup QC results. The data were not rejected for the purpose of this report but they were qualified as "estimated" (E) in the report data table. The qualified data included ten ammonia results from samples collected at various sampling locations on 2/1/2010 and one TKN result from the sample collected at LSM04 on 6/18/2010. A detailed summary of all potential data quality issues encountered is provided in Table 11.

Table 5. Bias (Accuracy) Expressed as Percent Recovery for Lab Control Samples (LCS), LCS Duplicates (LCSDup), Matrix Spike Samples (MSS), and MSS Duplicates (MSSDup). Any DQO Exceedances are Outlined in Bold Print. - updated

Parameter	DQO	LCS and Duplicates			MSS and Duplicates		
		N	% Recovery (Min-Max)		N	% Recovery (Min-Max)	
			LCS	LCSDup		MSS	MSSDup
Ammonia-N	80-120%	17	87-118	82-115	14	**45**-119	**55**-108
Nitrate-N		19	82-110	84-108	18	83-**132**	83-122
Nitrite-N		19	98-118	97-117	18	81-**127**	84-**127**
Ortho-phosphate-P		17	85-116	85-117	14	83-114	83-120
TKN		14	82-118	84-114	13	**68**-117	**71**-110
Total P		16	91-110	95-112	14	87-112	82-112
TSS		3	97-103	96-103	0	NA	NA

Duplicate Analysis (Precision) and Completeness

Precision was calculated as the relative percent difference for laboratory control samples and duplicates (LCS and LCSDup), matrix spike samples and duplicates (MSS and MSSDup), laboratory duplicate samples (LDS), and field duplicate samples (FDup). The results are summarized in Table 2 below.

Only two precision ± 30% DQO exceedances were found. The exceedances occurred in one of 14 LDS for Ammonia and one of 24 LDS for TSS. Because both results in each of the duplicate pairs of measurements were below the reporting limits required, sample batches associated with these DQO exceedances were not rejected or qualified (Table 5).

The completeness analysis indicated 100% completeness for all analytes.

Table 6. Precision Expressed as the Relative Percent Difference for Lab Control Samples (LCS) and LCS Duplicates (LCDDup), Matrix Spike Samples (MSS) And MS Duplicates (MSSDup), Laboratory Duplicate Samples (LDS), and Field Duplicate Samples (FDup). Any DQO Exceedances are Outlined in Bold Print. Also Shown: Percent Completeness. -updated

Parameter								Completeness	
	DQO	Achieved (LCS & LCSDup)		Achieved (MSS & MSSDup)		Achieved (LDS)		DQO	Achieved
		N	Min - Max	N	Min – Max	N	Min – Max		
Ammonia-N	± 30%	13	2-16	14	2-20	14	2-**36**	90%	100%
Nitrate-N		15	2-10	16	1-17	15	1-18		100%
Nitrite-N		17	1-8	18	1-9	8	0-19		100%
Ortho-phosphate-P		13	0-9	14	0-5	16	0-29		100%
TKN		11	3-12	11	1-10	14	1-20		100%
Total P		13	0-12	14	0-12	15	0-17		100%
TSS		3	1-7	0	NA	24	0-**50**		100%

Results outside of DQO range are boldfaced
NA – Not Applicable
ND – both results non-detect for the duplicate pair

Table 7. List of QC Issues Found and Batches classified as "Estimated" (E) in the Report Data Table.

Parameter	QC Type	Issue	Batch (Lab QCID)	Lab. Classif.*	Problem Description	Batch Qualification
Ammonia	LDS	RPD=36	0021702	QR-04	LDS RPD > DQO of ±30%. However, the RPD value for lab duplicate is not valid since both results are below the reporting limit for this analyte. Batch accepted based on MSS/ MSSDup and LCS/LCSDup QC results.	Not Qualified
Ammonia	MSS	Rec=61%	0021101	QM-05	MSS > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	E (Estimated)
Ammonia	MSSDup	Rec=65	0021101	QM-05	MSSDup > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	E (Estimated)
Ammonia	**MSSDup**	**Rec=55**	**0072602**	**QM-05**	**MSSDup > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results**	**E (Estimated)**
Ammonia	**MSS**	**Rec=45**	**0072602**	**QM-05**	**MSSDup > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results**	**E (Estimated)**
Nitrite	MSSDup	Rec=127	08NO209J	None - Truesdail	MSSDup > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	E (Estimated)
Nitrite	MSS	Rec=127	08NO209J	None - Truesdail	MSS > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	E (Estimated)
Nitrate	MSS	Rec=132	07AN09R	None - Truesdail	MSS > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	E (Estimated)
TKN	MSS	Rec=68	0061801	QM-05	MSS > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	E (Estimated)
TKN	MSSDup	Rec=71	0061801	QM-05	MSSDup > DQOdue of 80-120% due to matrix interference. Lab accepted the batch based on LCS and LCSDup QC results	E (Estimated)
TSS	LDS	RPD=50	0020531	QR-04	LDS RPD > DQO of ±30%. However, the RPD value for lab duplicate is not valid since both results are below the reporting limit for this analyte. Batch accepted.	Not Qualified

***Laboratory Classification Categories:**

QM-05 – The spike recovery was outside acceptance limits for the MSS and/or MSSDup due to matrix interference. The LCS and/or LCSDup were within acceptance limits showing that the laboratory is in control and the data are acceptable.

QR-04 - The RPD value for lab duplicate is not valid since both results are below the reporting limit for this analyte.

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Upper San Marcos Creek Nutrient Management Plan – Monitoring Component

Appendix B

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Lake San Marcos Monitoring
Visual Observation Field Datasheet

OBJECTIVE: Record atmospheric and lake conditions, dissolved oxygen and temperature levels, lake water level, and lake transparency (by Secchi Disk).

I. EQUIPMENT PER KIT

- Garmin GPS Unit
- YSI Dissolved Oxygen Meter
- Secchi Disk Sampling Unit: Includes a Secchi disk (20 cm diameter) attached to measuring tape.

II. PROCEDURES

A. NAVIGATION USING GARMIN GPS UNIT

- Turn unit on. Assure that at least 4 or 5 satellites are connected. Wait for "**3D Navigation**". Press page button 3 times.
- Refer to lat/long on screen as you navigate to each site.
- Anchoring the boat may cause bottom sediment to be disturbed and alter the natural conditions of the site. It is recommended that an anchor not be used during the process. Some amount of drift due to wind/wave movement is expected, but monitoring crews should seek to stay as close to the original location as possible. If the conditions (e.g., very windy) make it very difficult to stay in one location, it may be necessary to use an anchor. Safety is of primary concern, and if anchoring would help stabilize the boat in dangerous conditions we recommend deploying anchor. Volunteers can determine if necessary.
- Site 1 notes for navigation:
    - Near dam. Deeper site (8-9 meters)
    - Visual Markers: Looking east, align with rock; Looking south, align with 2nd pylon of dam from left
    - Once in area, check GPS to ensure correct positioning
- Site 2 notes for navigation:
    - Mid-lake. Shallower site (3-4 meters)
    - Visual Markers : Looking west, align with left balcony; Looking east, align with wooden house

B. GENERAL SITE DESCRIPTION

- Record site ID, Observer Names, Date and Vessel Type.

C. ATMOSPHERIC AND LAKE CONDITIONS

- Visually observe and mark boxes that pertain to each category; add notes under "Other" as needed. Use Comments/Observations area at bottom of sheet if more space needed.

D. YSI DISSOLVED OXYGEN METER (MG/L)

- Calibration should be performed at the dock or elsewhere landside, in case supplies are needed.
- Calibration should occur in an area such that the probe in NOT in direct sunlight.
- Calibrate Unit:
    - Moisten the sponge in the storage sleeve with a small amount of clean water. The sponge should be clean, and no water droplets should be on sensor cap and temperature sensor.
    - Install the storage sleeve over the probe. Make sure the DO and temperature sensors are not immersed in water. This is done by checking the Dissolved Oxygen Sensor (small black circle inside protective probe housing) for excess moisture. If there is an excessive amount of moisture on the DO Sensor, shake off the water rather than blot it with a cloth. The sensor should be moist, but should not have large droplets of water on it. If the DO Sensor is too dry and the sponge inside the tube needs to be moistened, add a small

amount of tap water to the sponge, wait for 10 minutes, draining excess water from the cap and rechecking the DO Sensor.

- Wait approximately 5 to 10 minutes for the storage container to become completely saturated and to allow the temperature and dissolved oxygen sensors to stabilize (keep out of direct sunlight).
- Press Calibration button. Highlight "**DO**" and press enter. Highlight "**DO%**" and press enter to confirm.
- Wait for the temperature and DO% values under "**Actual Readings**" to stabilize and verify reading is stable and is not continuously increasing or decreasing. Once stabilized, highlight "**Accept Calibration**" and press enter to calibrate. If values do not appear stable allow probe more time for stabilization. If stabilization does not occur, remove storage container, inspect probe, and repeat calibration steps.

- Confirm location with GPS and readjust vessel position as needed.
- Record time.
- Take Measurement:
  - Lower the probe over the side of the vessel into the lake, at a depth of approximately one foot below the surface. Gently move the probe only when first inserting into lake to release any air bubbles and to provide a fresh sample to the sensor cap; then hold the probe still for readings.
  - Allow the temperature readings to stabilize and wait approximately 25-35 seconds for the DO readings to stabilize. Confirm that readings are stable prior to recording data point.
  - Record DO (mg/L) and Temperature (^{o}C) values on field data sheet.
  - Log data in handheld by highlighting "**Logging**" and hitting the Enter button. Next select "**Use Site List**" and hit the Enter button. Highlight the appropriate site name and select Enter. Data will be time-stamped and will be in order from top to bottom so there is no need to enter a depth on the site name. This step is intended to be a back up in the event the data needs to be revisited.
  - Repeat measurements every meter until reaching the bottom of lake (approximately 8-9 meters at Site 1 and approximately 3-4 meters at Site 2). Measurements are from water surface (e.g., the one meter measurement is one meter below the surface).
    - Note on site depth: We do not have exact depth information for the sites, but instead we have provided estimates of max depth at each of the sites. The estimates are: Site 1 is 8-9 meters deep, and Site 2 is 3-4 meters deep. These depths may vary and are only estimates, so volunteers should attempt to "find" the bottom each time by lowering the probe until it seems they have hit the bottom.
    - Note on probe fouling from hitting bottom: If during a sampling event the sensor becomes soiled (e.g.; with mud) the sensor should be rinsed under clean tap water as soon as possible. In most cases this will be sufficient to remove any debris. In extreme cases the sensor may require a microfiber cloth to remove stubborn debris, but this is unlikely. The sensor is very sensitive and care should be taken in the event that a microfiber cloth is required to remove debris

E. SECCHI DISK TRANSPARENCY SAMPLING PROCEDURE PER MEASUREMENT

- Confirm location with GPS and readjust vessel position as needed.
- Inspect Secchi disk unit prior to using to assure that disk is well secured to measuring tape.
- Gently wipe disk clean prior to submersion; avoid abrasion or scratching.
- Measurements should be made on shady side of boat, without sunglasses.
- When reading depth, be sure to read yellow side of tape measure (metric side).

Lake San Marcos Monitoring
Visual Observation Field Datasheet

- Record time. Slowly lower disk in water column until you are no longer able to distinguish between black and white quadrants. Continue to lower unit further until it is completely out of sight. Record when no longer visible as *"Disappearing Depth"* on field data sheet.
- Then begin to raise unit slowly, until you can just distinguish between the black and white quadrants. Record this as *"Reappearing Depth"* on field data sheet.
- Record average of Disappearing Depth and Reappearing Depth as Secchi Depth (in meters) (Disappearing Depth + Reappearing Depth divided by 2).
- Repeat sequence and compare Secchi Depth reading 1 to reading 2; make additional measurements only if first two readings differ by greater than 20%.

F. LAKE LEVEL MEASUREMENT

- Record level from staff gauge at the community dock on La Plaza. Add offset for final lake elevation.

G. COMMENTS/OBSERVATIONS

- Record all the information you collect. Include any observations not identified on form within *"Comments/Observations"* section on field data sheet.

H. END OF DAY

- When done, give the data to Fran (1406 La Plaza) who will make a copy and give the data to Warren Lydecker.
- The instrument kit should be taken by a member of the team to the Boat Captain for the week following (see monthly calendar).

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Upper San Marcos Creek Nutrient Management Plan – Monitoring Component

Appendix C

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Lake San Marcos Monitoring
Visual Observation Field Datasheet

GENERAL SITE DESCRIPTION

Site ID _____ Observers _____ Date _____

SITE COORDINATES (WGS84)	Latitude	Longitude
LSM-1: Deep Section	33.10970^0	117.20878^0
LSM-2: Mid Depth Section	33.11725^0	117.20915^0

Vessel Type _____

Motor Y / N If yes Electric / Gasoline

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☐ Mostly Cloudy ☐ Overcast ☐ Fog ☐ Rain

Wind ☐ Calm / None ☐ Low (<5 Knots) ☐ Medium (5 to 15 Knots) ☐ High (> 15 Knots)

Last Rain ☐ > 72 Hours ☐ < 72 Hours

Rainfall within last 72 hour ☐ None ☐ < 0.1" ☐ > 0.1"

LAKE CONDITIONS

Color ☐ Blue ☐ Yellow ☐ Brown ☐ Green ☐ Gray ☐ Other:

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other:

Flotables ☐ None ☐ Trash ☐ Bubbles/Foam ☐ Oily Sheen ☐ Organic Debris ☐ Other:

Biology ☐ None ☐ Insects ☐ Algae ☐ Snails ☐ Birds (#) ☐ Other:

WATER QUALITY PARAMETERS

Time _____

Note: * Approximate depth of lake.

Depth Below Surface	Dissolved Oxygen (mg/L)	Temperature (^{0}C)
1 foot		
1 meter		
2 meters		
3 meters		
4 meters		
5 meters		
6 meters		
7 meters		
8 meters*		
9 meters		
10 meters		

WATER CLARITY ESTIMATION WORKSHEETS USING A SECCHI DISK

Disk Measurement	**1**	**2**	**3****	**4****
Time of Measurement				
Disappearing Depth (Z_{dis}) (m)				
Reappearing Depth (Z_{re}) (m)				
Secchi Depth (m) Z_d (m) = (Z_{dis} + Z_{re})/2				

Final Secchi Depth (m)
Final (Z_d) = (sum of measurements)/(number of measurements)

Note: ** Only required if measurements 1 and 2 are not similar.

LAKE LEVEL MEASUREMENT

Time	**Staff Gauge (ft)**	+	**Offset (ft)**	=	**Lake Elevation (ft) (NAVD 88)**
		+	493.7346	=	

Comments/Observations:

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Upper San Marcos Creek Nutrient Management Plan – Monitoring Component

Appendix D

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Quality Assurance Project Plan

CITY OF SAN MARCOS
LAKE SAN MARCOS ADDITIONAL STUDY

February 17, 2011

PREPARED FOR:

CITY OF SAN MARCOS
1 CIVIC CENTER DRIVE
SAN MARCOS, CA 92069
TEL: (760) 744-1050
FAX: (760) 752-7578

PREPARED BY:

D-MAX ENGINEERING, INC.
7220 TRADE STREET, SUITE 119
SAN DIEGO, CA 92121
TEL: (858) 586-6600
FAX: (858) 586-6644

1. APPROVAL SIGNATURES

Title:	Name:	Signature:	Date:
Project Manager	Erica Ryan		
D-MAX Project Manager	Arsalan Dadkhah		

2. TABLE OF CONTENTS

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3. DISTRIBUTION LIST

Title:	Name (Affiliation):	Tel. No.:	QAPP copies:
Project Manager	Erica Ryan (City of San Marcos)	(760) 752-7550 x3218	1
D-MAX Project Manager	Arsalan Dadkhah (D-MAX Engineering, Inc.)	(858) 586-6600	1

4. PROJECT/TASK ORGANIZATION

4.1 Involved Parties and Roles

Table 1. (Element 4) Personnel Responsibilities

Name	Organizational Affiliation	Title	Contact Information (Telephone number, email address.)
Erica Ryan	City of San Marcos	Project Manager	(760) 752-7550 x3218 eryan@san-marcos.net
Arsalan Dadkhah	D-MAX Engineering, Inc.	D-MAX Project Manager	(858) 586-6600 arsalan@dmaxinc.com
John Quenzer	D-MAX Engineering, Inc.	QA Program Manager	(858) 586-6600 jquenzer@dmaxinc.com
Sara Dadkhah	D-MAX Engineering, Inc.	Assistant Project Scientist	(858) 586-6600 sdadkhah@dmaxinc.com
Jennifer Beyer	EnviroMatrix Analytical, Inc.	QA Director	(858) 560-7717 jbeyer@enviromatrixinc.com

4.2 Quality Assurance Officer Role

The City of San Marcos Storm Water Program Manager, Erica Ryan, will fill the role of both Project Manager and Project QA Officer. Arsalan Dadkhah is D-MAX Engineering Inc.'s (D-MAX) Project Manager. John Quenzer is D-MAX's sampling and analysis Quality Assurance Manager. This role will include establishing the quality assurance and quality control procedures found in this QAPP as part of the sampling, field analysis, and in-house analysis procedures. Mr. Quenzer will also work with Jennifer Beyer, the Quality Assurance Director for EnviroMatrix Analytical, Inc., by communicating all quality assurance and quality control issues contained in this QAPP to EnviroMatrix. Dr. Dadkhah, in conjunction with Ms. Ryan, will also review and assess all procedures during the life of the contract against QAPP requirements.

4.3 Persons Responsible for QAPP Update and Maintenance

Changes and updates to this QAPP may be made after a review of the evidence for change by the City's Project Manager.

4.4 Organizational Chart and Responsibilities

Figure 1. Organizational Chart

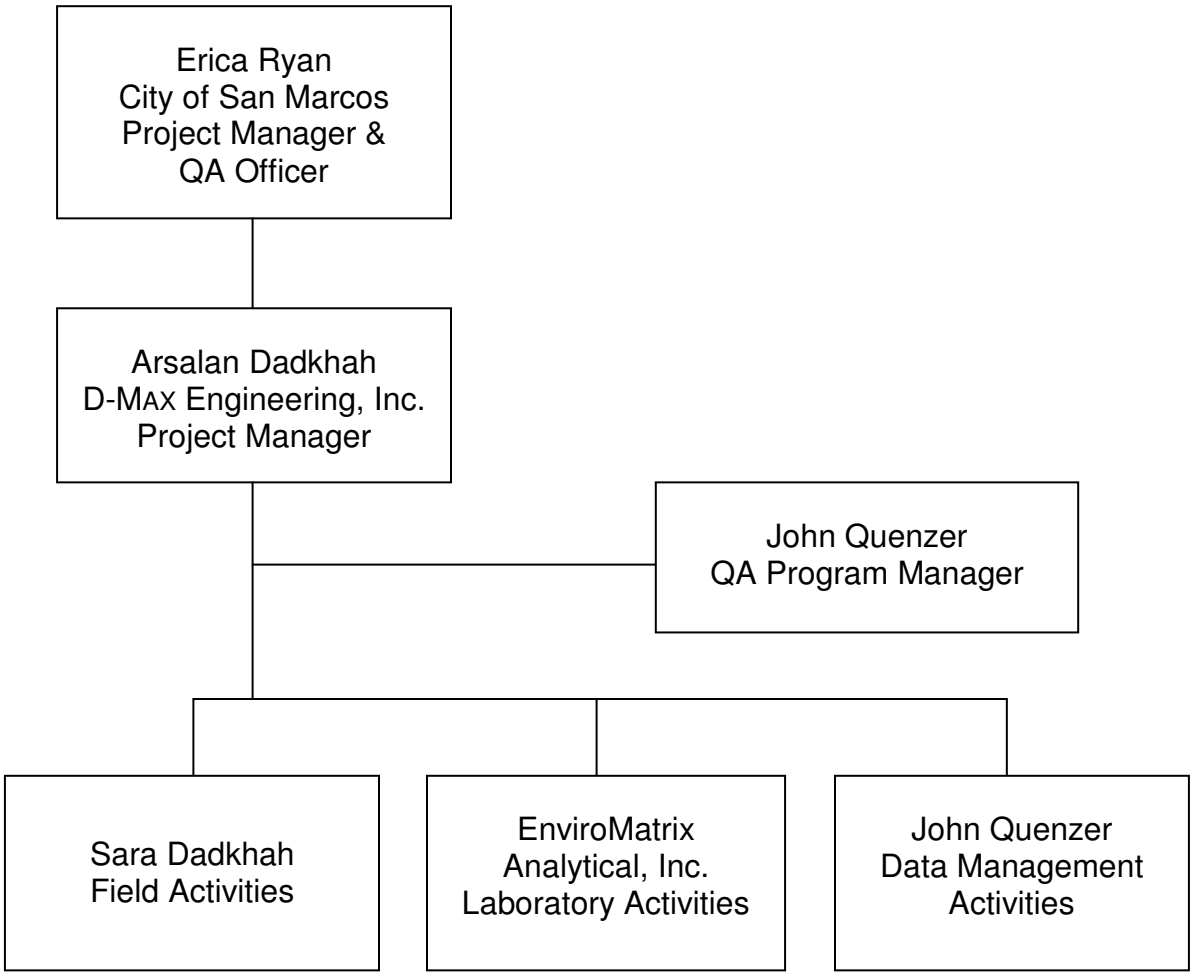

5. PROBLEM DEFINITION/BACKGROUND

5.1 Problem Statement

According to the Clean Water Act 2008 303(d) list, Lake San Marcos is an impaired water body due to levels of ammonia as nitrogen, phosphorus, and other nutrients above the water quality objective. Therefore, the San Diego Regional Water Quality Control Board (RWCQB) has directed all jurisdictions that are tributary to Lake San Marcos, including the City of San Marcos, to reduce nutrient discharges to the lake. As part of the City of San Marcos' objective to identify and abate sources of nutrients in the Lake San Marcos watershed, additional monitoring upstream of the lake will be conducted. Because minimal data about discharges under dry weather conditions during the wet season (October through April) exists, much of the monitoring for this study will occur under those conditions.

5.2 Decisions or Outcomes

Data collected during this project will be used to help evaluate sources of nutrients to Lake San Marcos to assist the City of San Marcos in complying with nutrient reduction requirements from the San Diego RWQCB. In addition, data will also be used to help the City of San Marcos assess the impact of creek restoration associated with the implementation of the San Marcos Creek Specific Plan.

5.3 Water Quality or Regulatory Criteria

No specific constituent action levels apply to this monitoring study. The study will focus on making an assessment of the baseline conditions in the watershed and, where possible, identifying sources of nutrients. Where Water Quality Objectives (WQO) have been established for constituents monitored as part of this program, results will be compared to WQOs for data assessment purposes.

6. PROJECT/TASK DESCRIPTION

6.1 Work Statement and Produced Products

Ambient monitoring (during dry weather) will be conducted in two phases. Phase 1 of the Lake San Marcos Additional Monitoring project will include sampling and analysis at 29 study sites, including six downstream basin locations. This initial monitoring will be done to determine which sites have the highest nutrient potential contribution to Lake San Marcos, which will be called the "sites of interest." Phase 2 of the project will conduct approximately bi-monthly (every two months) monitoring at the "sites of interest," based on Phase 1 monitoring and the City project manager's interpretation of regulatory requirements, as well as quarterly monitoring for the remaining sites. D-MAX Engineering will coordinate with the City of San Marcos to determine which sites should be considered "sites of interest" prior to beginning Phase 2 monitoring. Phase 2 sampling will begin following this coordination. The total number of site visits will likely depend on site specific monitoring results. Because several of the sites selected for the project have been found to be dry regularly based on initial field reconnaissance for site selection, 29 sites have been selected. This should allow for the collection of water samples for analysis at approximately 20 sites. When sites are dry, a field data sheet will be recorded to document that the site was dry, and that data will be incorporated into the final data set for consideration in analysis. The sites selected for ambient monitoring are presented in Table 2 below.

Wet weather monitoring grab samples will also be taken at three sites during one storm event in the wet season of 2010/2011 in order to provide an initial assessment of nutrient levels in wet weather runoff from non-Copermittee jurisdictions. These data will be provided to the City project manager for consideration. Note that in the event of inaccessibility during wet weather conditions, an alternate nearby site may be selected. The three sites selected for wet weather monitoring are also presented in Table 2 below.

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Table 2. (Element 6) Study Sites

Site	Location	Latitude	Longitude	Downstream Basin Site	Sampling Weather	RW/MS4 only	Conveyance Structure	Site History	Jurisdiction(s)	Land Use 1	Land Use 2
A-07	San Marcos Boulevard, east of San Marcos High School, across from Westview Plaza (San Marcos High School Agriculture Dept entrance)	33.13117	-117.20248	X	Dry	MS4 only	Culvert / Earthen Channel	Current DWM	San Marcos	Residential	Commercial
A-08	La Sombra Drive, north of Quail Hill Drive, next to No. 1042	33.12437	-117.19581	X	Dry	Creek	Concrete Channel	Current DWM	San Marcos	Residential	Open
A-20	SM Creek, east of Discovery Street, east/upstream of confluence with branch from the north (from Basin D)	33.12992	-117.19822	X	Dry	Creek	Earthen Channel	New	San Marcos, County, Escondido, CSUSM, CalTrans	Mixed	
A-21	Manhole at east side of Craven Road, 75 feet south of Discovery Street, in front of white fence barrier	33.13215	-117.18031		Dry	MS4 only	Manhole	New	San Marcos	Residential	
A-22	CSUSM, manhole at southwest corner of Campus Way and Barham Dr	33.13328	-117.15955		Dry	MS4 only	Manhole / Curb Inlet	New	CSUSM	Educational	
A-24	CSUSM: manhole/inlet at NE corner of intersection of Craven Road and S Twin Oaks Valley Road	33.12744	-117.16499		Dry	MS4 only	Manhole / Curb Inlet	New	CSUSM	Educational	
A-25	CSUSM: manhole/inlet at SE corner of intersection of Craven Road and S Twin Oaks Valley Road	33.12721	-117.16506		Dry	MS4 only	Manhole / Curb Inlet	New	CSUSM	Educational	
A-27	CSUSM: channel east of S Twin Oaks Valley Road at north side of access road to CSUSM, across the street from driveway for shopping center	33.12965	-117.16461		Dry, Wet	MS4 only	Concrete Channel	New	CSUSM	Educational	
AW-01	Southwest of Twin Oaks Valley Road and Highway 78, north of storage yard	33.13652	-117.16505		Dry	MS4 only	Culvert / Earthen Channel	Old DWM	San Marcos, CSUSM	Industrial	Educational
B-01	North of Mission Road, west of Vineyard Road	33.14271	-117.16187	X	Dry	Creek	Creek / Culvert	Old DWM	San Marcos, County	Mixed	
B-20	Outflow from detention basin north of La Cienega Road and east of N Twin Oaks Valley Road	33.17324	-117.15898		Dry	Creek	Culvert	New	County, San Marcos	Mixed	
B-21	Open channel just N of private road on W side of N Twin Oaks Valley Road (~1280 N Twin Oaks)	33.16156	-117.16116		Dry	MS4 only	Concrete Channel / Culvert	New	San Marcos	Residential	Open
B-22	Manhole at east side of Via Las Brisas and N Twin Oaks Valley Road (frontage road)	33.17134	-117.16081		Dry	MS4 only	Manhole / Curb Inlet	New	San Marcos, County	Residential	Agriculture
B-23	Open channel E of N Twin Oaks Valley Road, 350 feet N of La Cienega Road	33.17457	-117.15915		Dry	MS4 only	Earthen Channel / Culvert	New	County, San Marcos	Agriculture	Residential
B-24	Open channel NE of Mulberry Drive between Sycamore Drive and Deer Springs Road	33.18501	-117.15101		Dry	Creek	Earthen Channel	New	County	Agriculture	
B-25	Open channel N of Olive Street, W of Mulberry Drive	33.17860	-117.14898		Dry	Creek	Earthen Channel	New	County	Agriculture	
C-01B	South of Mission Road, west of No.785. (Doose LandScape Inc.)	33.14393	-117.14497		Dry	MS4 only	Culvert / Earthen Channel	New	San Marcos, Mission Hills HS	Park	Educational
C-13	Southwest corner of Rock Springs Rd. and Bennet Ave intersection (north outfall)	33.14688	-117.12231		Dry	MS4 only	Culvert / Concrete Channel	New	Escondido	Residential	
C-20	San Marcos Creek, west of Rancheros Drive. Access via Old Spaghetti Factory parking lot (from N) or parking lot at 277 Rancheros Dr (from S)	33.13859	-117.16195	X	Dry	Creek	Concrete Channel / Culvert	New	San Marcos, Escondido	Mixed	
C-21	Southwest of intersection of Nordahl Road and Rock Springs Road, in channel.	33.14134	-117.11283		Dry	MS4 only	Earthen Channel	New	Escondido	Residential	
C-22	Manhole/inlet at entrance to apartment complex at west side of Woodland Parkway, north of Mission Road	33.14253	-117.13818		Dry	Creek	Manhole / Curb Inlet	New	San Marcos, Escondido	Mixed	
C-23	Manhole/inlet just east of entrance to Liberty Storage Yards (809 E Mission Rd)	33.14267	-117.14193		Dry, Wet	MS4 only	Manhole / Curb Inlet	New	San Marcos, Mission Hills HS	Educational	Park
C-24	Manhole/inlet at the intersection of Mission Rd and Mulberry Dr, NE corner on the west-facing curb	33.145295	-117.149269		Dry	MS4 only	Manhole / Curb Inlet	New	San Marcos	Industrial	Commercial
C-25*	East fork of San Marcos Creek at Woodland Parkway near Woodland Park	33.15404	-117.13048		Dry	Creek	Concrete Channel	County Addtl Study	San Marcos, Escondido	Residential	Commercial/ Golf Course
D-20	South of the intersection of Pacific Street and San Marcos Blvd, in channel	33.13221	-117.19707	X	Dry	Creek	Culvert / Earthen Channel	New	San Marcos, CalTrans, Palomar	Industrial	Commercial
D-21	Channel at east side of Pacific Street, just east of Bradley Park	33.13684	-117.19969		Dry	MS4 only	Earthen Channel	New	San Marcos	Park	Residential
D-22	Palomar College: open channel just E of western intersection of Comet Circle and Mission Road, N of Mission Road	33.14794	-117.18725		Dry	MS4 only	Concrete Channel / Culvert	New	Palomar	Educational	
D-23	Outlet N of Mission Road, across street from Palomar College Sprinter Station	33.14719	-117.18475		Dry, Wet	MS4 only	Concrete Channel / Culvert	New	Palomar	Educational	
D-24	W end of open channel N of Mission Road, next to Palomar College baseball field	33.14680	-117.18265		Dry	MS4 only	Concrete Channel / Culvert	New	Palomar	Educational	

RW = Receiving Water; MS4 = Municipal Separate Sewer System; DWM = Dry Weather Field Screening and Analytical Monitoring Program site, CSUSM = California State University San Marcos; Palomar = Palomar Community College; County = County of San Diego
*Referred to as "Woodland Parkway" in "Water Quantity and Quality Study In Upper San Marcos Creek and Two Storm drains Discharging to Lake San Marcos", completed by the County of San Diego in 2009/2010

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A brief summary report will be provided following Phase 1 monitoring results. A final report will be provided following the completion of Phase 2 monitoring and analysis of results.

6.2 Constituents to be Monitored and Measurement Techniques

Field screening techniques consist of qualitative field observations, flow measurement, and quantitative field analyses of selected water quality parameters. Water quality constituents to be analyzed with field meters at each site during both Phase 1 and Phase 2 are as follows:

- Temperature
- pH
- Specific conductance
- Turbidity

Samples collected at the study sites in Phase 1 and Phase 2 will be transported to EnviroMatrix Analytical, Inc. EnviroMatrix Analytical, Inc. is a laboratory certified by the California Department of Health Services. All samples will be analyzed for the following constituents:

- Nitrate/nitrite as N
- Total Kjeldahl nitrogen
- Total nitrogen
- Orthophosphate as P
- Total phosphorus
- Total suspended solids (TSS)
- Ammonia as N

6.3 Project Schedule

Note that the project timeline, as shown in Table 3 below, is subject to change, based on work scheduling constraints.

Table 3. (Element 6) Project Schedule Timeline

Activity	Date		Deliverable	Deliverable Due Date
	Anticipated Date of Initiation	Anticipated Date of Completion		
Phase 1 Monitoring	Winter 2010-2011	Winter 2010-2011	Summary Letter	Winter 2010-2011
Phase 2 Monitoring	Winter 2010-2011	Summer 2011	Final Summary Report	September 2011

6.4 Geographical Setting

This study is motivated by a commitment to identify and reduce sources of nutrients to Lake San Marcos, located in an unincorporated area of the County of San Diego. The primary water bodies in the Upper San Marcos Creek Watershed are Lake San Marcos and Upper San Marcos Creek. This watershed area is approximately 29 square miles and includes parts of the City of San Marcos (City), the City of Escondido, and unincorporated areas of the County of San Diego. Note that unincorporated areas of the County of San Diego are both upstream of the City and downstream of the City, including the lake itself.

Located in northeastern San Diego County, the City of San Marcos is situated within the Carlsbad Hydrologic Unit (HU). Approximately 16.9 suqare miles of the City are within the Upper San Marcos Creek Watershed, which is 58.2 percent of the watershed area. Within the City various other Phase I and

Phase II MS4 entities also operate, including CalTrans, utility agencies, transit agencies, school districts, colleges, and universities.

The area of the City tributary to San Marcos Creek has been divided into six drainage basins for the purpose of monitoring, and six corresponding downstream sites were selected. See Figure 2 for a map of the hydrologic subareas and downstream basin sites within the City of San Marcos. Figure 3 shows all of the locations of the monitoring sites for this project.

6.5 Constraints

Monitoring sites have been evaluated and selected with consideration for accessibility and the presence of flowing water. If a monitoring site is dry, no sample can be taken, but visual observations, such as evidence of past water flows or algal growth, will be documented. Whether a site has flowing water or not is itself important data and will be included in the data assessment in the final summary report.

Figure 2. Watershed Map Showing Hydrologic Subareas and Downstream Basin Sites

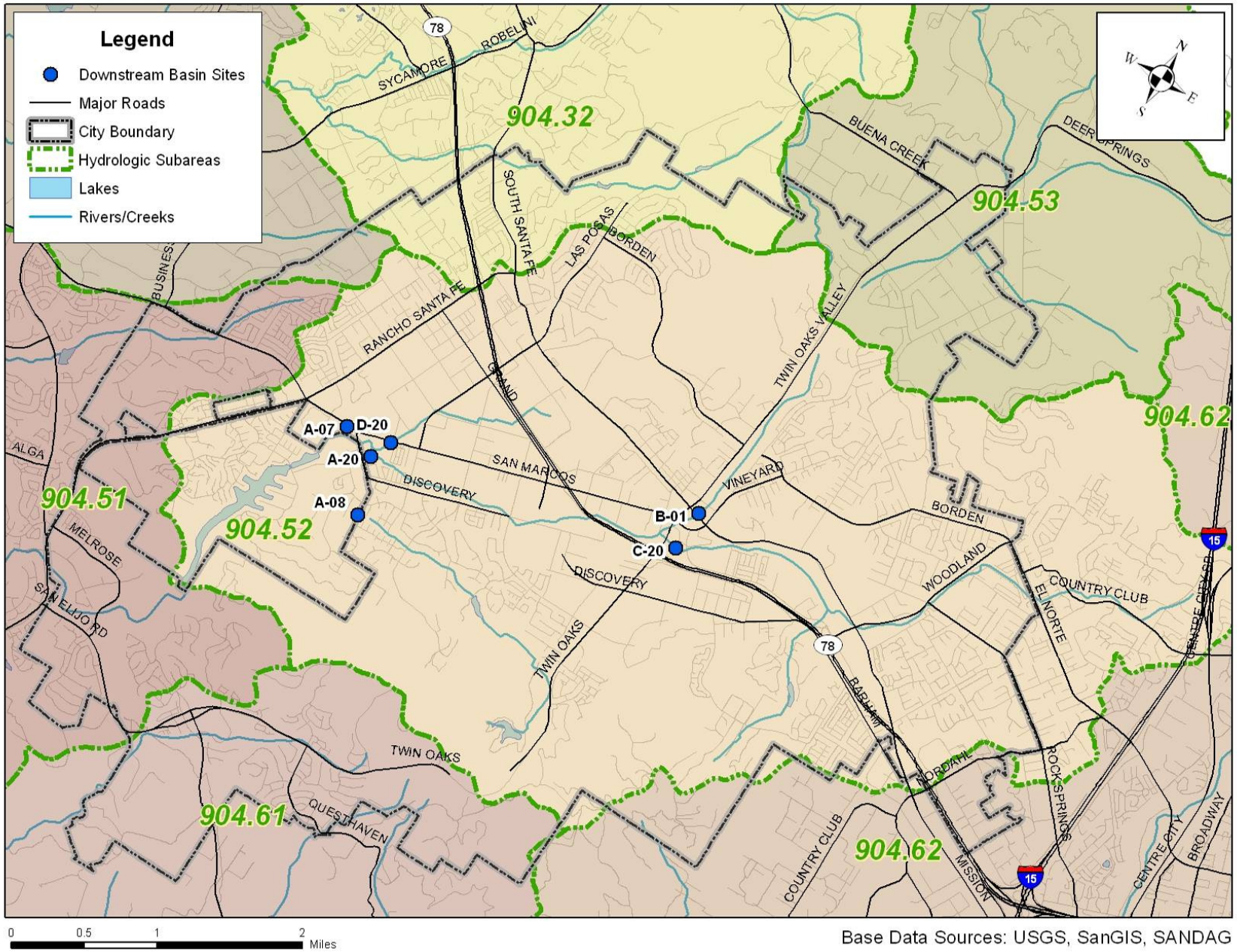

7. QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

7.1 Data Quality Indicators

Measurement or Analyses Type	Applicable Data Quality Indicators
Field Measurement, Conventional Analytes in Water	*Accuracy, Precision, Comparability, Completeness, Representativeness*
Laboratory Analysis, Conventional Analytes in Water	*Accuracy, Precision, Comparability, Completeness, Representativeness, Sensitivity*

In depth information about the laboratory assessments and controls for each data quality indicator are available in the QA/QC plan at EnviroMatrix Analytical upon request.

Accuracy measures how close results are to a true or expected value. All instruments will be calibrated according to manufacturer instructions.

Precision is the degree of agreement among repeated measurements of the same characteristic. Field duplicates will be collected in each phase of the project, totaling at least five percent (5%) of the project sample count.

Comparability is the extent to which data can be compared between periods of time within the project or between projects. To ensure comparability within and between years, monitoring conducted as part of this project will use the standardized sampling methods, analytical methods, and units of reporting described in this document.

Completeness is the difference between the planned amount of samples and data and the actual amount collected.

Representativeness is the extent to which measurements actually represent the true condition at the time of sample collection. Field measurements will be taken at the centroid of the water flow, where turbulence and mixing is greatest, to maximize representativeness of water quality at that segment. If the center of the waterbody is too far to reach without immersion, the sample will be taken at the narrowest and most quickly moving part of the waterbody in the vicinity of the sampling location.

Sensitivity is the capability of a method or instrument to discriminate between different levels of the variable of interest. Method sensitivity is dealt with by the inclusion of the required SWAMP Target Reporting Limits, where such values exist.

EnviroMatrix Analytical, Inc. will retain all quality assurance and quality control records for laboratory analyses. D-MAX Engineering, Inc. will retain all quality assurance and quality control records for field measurements, including field duplicates of laboratory analyses.

7.2 Field and Laboratory Measurement Quality Objectives Tables

Table 4. (Element 7) Measurement Quality Objectives for Field Data

Group	Parameter	Accuracy	Precision	Recovery	Target Reporting Limit	Completeness
Field Measurement, Conventional Analytes in Water	Temperature (°C)	± 0.5 °C	No SWAMP requirement; will use ± 0.5 °C	NA	No SWAMP requirement	No SWAMP requirement; will use 90%
Field Measurement, Conventional Analytes in Water	pH	± 0.2 pH	No SWAMP requirement; will use ± 0.2 pH	NA	No SWAMP requirement	No SWAMP requirement; will use 90%
Field Measurement, Conventional Analytes in Water	Specific Conductivity (µS/cm)	± 2% of functional sensitivity 1% & 2% of range	No SWAMP requirement; ± 2% of functional sensitivity 1% & 2% of range	NA	2 µS/cm	No SWAMP requirement; will use 90%
Field Measurement, Conventional Analytes in Water	Turbidity (NTU)	± 1 NTU or 5% of reading (whichever is greater)	No SWAMP requirement; ± 1 NTU or 5% of reading (whichever is greater)	NA	5 NTU	No SWAMP requirement; will use 90%
Field Measurement	Depth (m)	NA	No SWAMP requirement	NA	0.02 m	NA
Field Measurement	Velocity (ft/s)	NA	No SWAMP requirement	NA	0.1 ft/s	NA

Note: Values in this table are based on SWAMP QAPrP 2008. Field method SOPs are available in Appendix A.

Table 5. (Element 7) Measurement Quality Objectives for Laboratory Data

Group	Parameter	Accuracy	Precision	Recovery	Target Reporting Limit	Completeness
Laboratory Analysis, Conventional Analytes in Water	Nitrate/nitrite as N	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by provider of material	Laboratory duplicate 20% RPD.	Matrix spike 80% - 120%	0.05mg/L	90%
Laboratory Analysis, Conventional Analytes in Water	Total Kjeldahl nitrogen	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by provider of material	Laboratory duplicate 20% RPD.	Matrix spike 80% - 120%	0.5 mg/L	90%
Laboratory Analysis, Conventional Analytes in Water	Total nitrogen	NA; sum of other tests, not direct test	NA, sum of other tests, not direct test	NA, sum of other tests, not direct test	0.5 mg/L	90%
Laboratory Analysis, Conventional Analytes in Water	Orthophosphate as P	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by provider of material	Laboratory duplicate 20% RPD.	Matrix spike 80% - 120%	0.05 mg/L	90%
Laboratory Analysis, Conventional Analytes in Water	Total phosphorus	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by provider of material	Laboratory duplicate 20% RPD.	Matrix spike 80% - 120%	0.05 mg/L	90%
Laboratory Analysis, Conventional Analytes in Water	Total suspended solids (TSS)	NA	Laboratory duplicate 20% RPD.	NA	20.0 mg/L	90%
Laboratory Analysis, Conventional Analytes in Water	Ammonia as N	Standard Reference Materials (SRM, CRM, PT) within 95% CI stated by provider of material	Laboratory duplicate 20% RPD.	Matrix spike 80% - 120%	0.1 mg/L	90%

8. SPECIAL TRAINING NEEDS/CERTIFICATION

8.1 Specialized Training or Certifications

There is no specialized training required for water quality monitoring or photo documentation. All sampling will be performed by D-MAX personnel who are trained in sample collection, handling, storage, and chain of custody procedures, as discussed in Element 12 of this document. All field sampling personnel will be trained on the specific methods as presented in this document.

All laboratory analysis will be conducted by EnviroMatrix Analytical, Inc. EnviroMatrix is certified through the Environmental Laboratory Accreditation Program (ELAP #2564) of the California Department of Public Health (formerly the Department of Health Services, or DOHS). Details of EnviroMatrix training are discussed in Section 4 of EnviroMatrix's internal QA/QC plan and are available from the laboratory upon request.

8.2 Training and Certification Documentation

There is no specialized training needed for this project. Documentation of field personnel training is maintained at D-MAX Engineering, Inc. Documentation of laboratory certification can be found in the EnviroMatrix QA/QC plan, available from the laboratory upon request.

8.3 Training Personnel

There are no training personnel applicable to this project.

Table 6. (Element 8) Specialized Personnel Training or Certification

Specialized Training Course Title or Description	Training Provider	Personnel Receiving Training/ Organizational Affiliation	Location of Records & Certificates
Laboratory certification	California ELAP	EnviroMatrix Analytical, Inc.	Lab QA/QC document

9. DOCUMENTS AND RECORDS

D-MAX Engineering, Inc. will maintain all records for the field collection and analyses. Samples sent to EnviroMatrix are accompanied by a chain of custody (COC) form. EnviroMatrix generates records for sample receipt and storage, analyses, and reporting. The results of the laboratory analyses are transmitted to D-MAX in electronic form.

D-MAX will record all of the sampling data in an electronic database compatible with the SWAMP information management standards. Laboratory analytical reports will also be saved electronically as pdf files. All field and laboratory electronic files will be backed up within the D-MAX server continuously. A compact disc of the data will be produced and included with the hard copy of the written program report, which is described below.

A report of collected monitoring data will be submitted to the City of San Marcos. Records of field test results and observations, laboratory analytical reports, sampling locations and GPS coordinates, and photographs of sampling locations will be provided to the City. Electronic and hard copies of this information will be available.

Table 7. (Element 9) Document and Record Retention, Archival, and Disposition Information

	Identify Type Needed	Retention	Archival	Disposition
Sample Collection Records	Field data sheets	Paper	Paper file	5 years
	Chain of custody forms	Paper, Electronic (.pdf)	Paper file, Hard disk / compact disc	5 years
Field Records	Field data sheets	Paper	Paper file	5 years
	Site photographs	Electronic (.jpg)	Hard disk / compact disc	5 years
Analytical Records	Laboratory reports	Electronic (.pdf)	Hard disk / compact disc	5 years
	Chain of custody forms	Electronic (.pdf)	Hard disk / compact disc	5 years
Data Records	Analytical data	Electronic (.mdb or .xls)	Hard disk	5 years
	Field data sheets	Electronic (.pdf)	Hard disk / compact disc	5 years
Assessment Records	Calibration log sheets	Paper	Paper file	5 years
Data Analysis & Reports	Analysis of data	Electronic	Hard disk	5 years
	Monitoring reports	Electronic (.pdf)	Hard disk / compact disc	5 years
	Monitoring reports	Paper	Bound report	5 years

GROUP B: DATA GENERATION AND ACQUISITION

10. SAMPLING PROCESS DESIGN

This study consists of monitoring that is conducted within the City of San Marcos in two phases. Twenty-eight potential sites have been chosen through a preliminary selection process. These 29 potential study sites, including six downstream basin locations, are shown below in Figure 3.

Phase 1 monitoring will occur at 29 potential sites, if water is present, and take place during winter 2010/2011. Phase 2 monitoring will follow analyses of Phase 1 results and continue until summer 2011. Approximately 16 "sites of interest" will be sampled bimonthly during Phase 2, while the remaining sites will be monitored quarterly or as determined by the City, based on the initial results. Phase 1 sampling is designed to gather information about discharges from (1) major MS4 laterals within the City that discharge to the creek; (2) Phase II jurisdictions like universities, colleges, and school districts; (3) neighboring jurisdictions into the City's MS4; (4) the major land use types within the City; and (5) the six major drainage basins within the City that are upstream of Lake San Marcos. Refer to Table 2 for a list of study sites and the drainage areas that they represent.

Figure 3. Potential Monitoring Locations Map

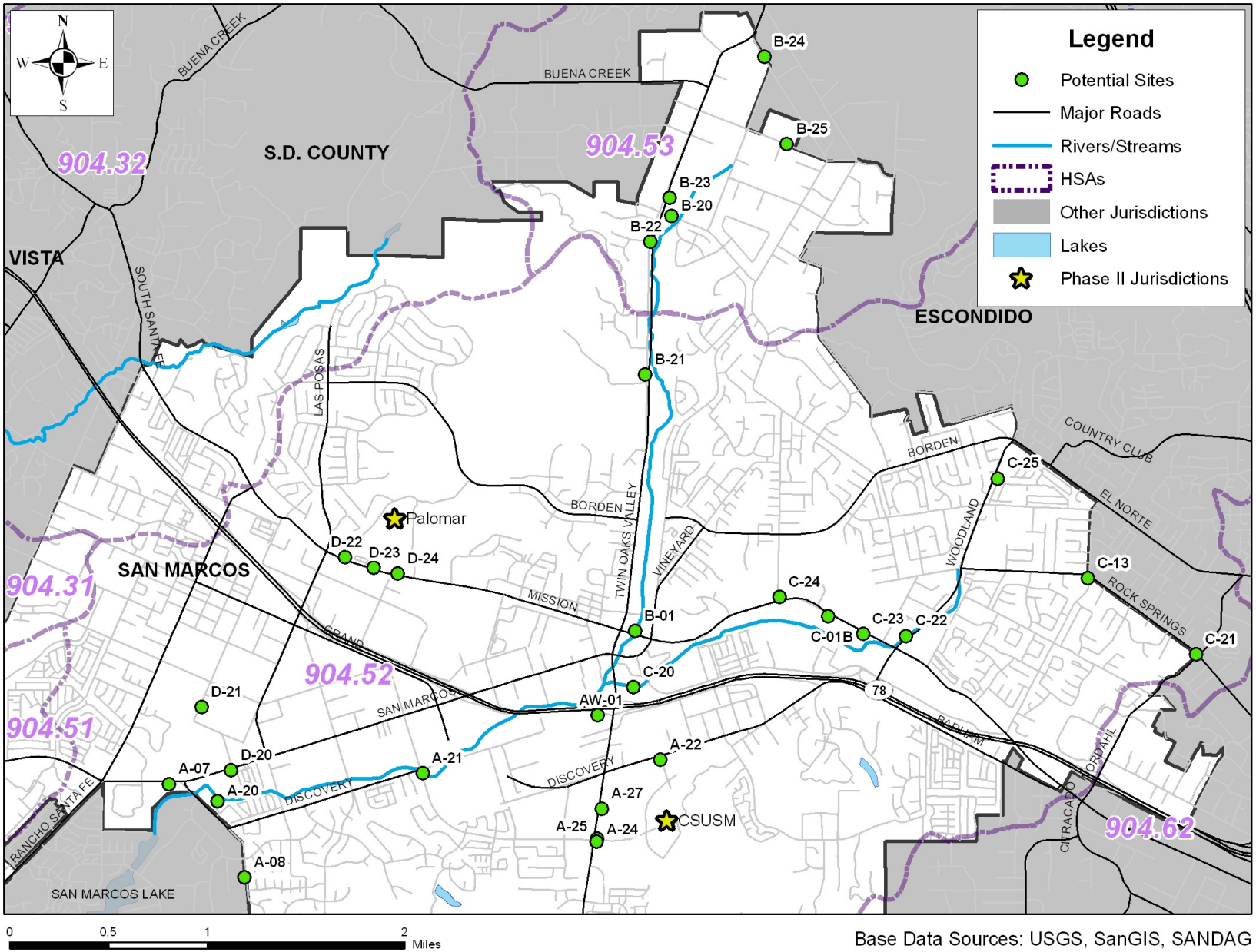

Base Data Sources: USGS, SanGIS, SANDAG

11. SAMPLING METHODS

Field method SOPs, available in Appendix A, are based on *Standard Operating Procedures (SOPs) for Conducting Field Measurements and Field Collections of Water and Bed Sediment Samples in SWAMP* (2007), SOP Procedure Number 1.0.

At each site during Phase 1 and Phase 2, measurements of pH, temperature, specific conductance, and turbidity will be performed. These measurements will be taken in-situ, where feasible, otherwise a clean sample container, rinsed with distilled water and sample water, will be used. Grab samples will be collected for laboratory analysis for the analytes described in Table 8. Flow rate will be measured at the sampling location where possible, but may be measured upstream or downstream where the total flow is deemed equivalent.

When collecting water samples, field personnel will wear clean latex gloves to protect themselves and to prevent contamination of the samples. Samples will be taken by direct collection into the sample container by field personnel. Samples will be collected by manual grab sampling at an approximate depth of six inches below the water surface, pointing the bottle opening upstream, and avoiding floating debris. In shallow water (less than six inches deep), bottles are filled from the surface of the flowing water. A clean syringe may also be used to collect water in very low flow or in ponded water.

Samples for laboratory analysis are stored in an ice cooler at ≤ 4 °C, in appropriate sample containers with appropriate preservatives. All samples are to be transported to the laboratory within the specified holding times.

Field data sheets (Appendix B) are completed for each site visit. The empirical observations of the site and water quality characteristics include: meteorological conditions at the time of sampling, water odor and clarity, algal growth, and evidence of potential nutrient sources. Each site is also photographed to document site conditions.

Table 8 lists the analytical parameters assessed to represent water quality. Water samples at all sites are analyzed for all of the listed parameters. Grab samples taken during both dry (ambient) and wet weather conditions will be analyzed for the same list of parameters. If any of the samples cannot be taken or analyses cannot be performed for any reason, the QA/QC Officer will be notified. Any appropriate corrective actions will be documented.

Table 8. (Element 11) Sampling Locations and Sampling Methods

Analytical Parameter	Analytical Method	Sample Volume	Container size and type	Preservation (chemical, temperature, light protected)	Maximum Holding Time: Preparation/ analysis
pH	N/A	N/A	Analyzed in Field	N/A	N/A
Temperature	N/A	N/A	Analyzed in Field	N/A	N/A
Specific conductance	N/A	N/A	Analyzed in Field	N/A	N/A
Turbidity	N/A	N/A	Analyzed in Field	N/A	N/A
Nitrate/Nitrite as N	SM4500 NO3 E	150 mL	Polyethylene Bottles	Cool to 4 °C and store in the dark. Acidify with H2SO4 to pH<2	48 hours or 28 days if acidified
TKN	SM4500 N C	600 mL	Polyethylene Bottles	Cool to 4 °C and store in the dark. Acidify with H2SO4 to pH<2	7 days or 28 days if acidified
Total Nitrogen	Calculation	N/A	N/A	N/A	N/A
Orthophosphate as P	SM4500 P E	150 mL	Polyethylene Bottles	Filter; Cool to 4 °C and store in the dark	48 hours
Total Phosphorus as P	SM4500 P B, E	150 mL	Polyethylene Bottles	Cool to 4 °C and store in the dark	48 hours
Total Suspended Solids	SM2540 D	250 mL	Polyethylene Bottles	Refrigeration or icing to 4°C, to minimize microbiological decomposition of solids	7 days
Ammonia as N	SM4500 NH3 B,C	250 mL	Polyethylene Bottles	Cool to 4 °C and store in the dark. Acidify with H2SO4 to pH<2	48 hours or 28 days if acidified

12. SAMPLE HANDLING AND CUSTODY

The grab samples collected during monitoring events are labeled with site location, date, sample time, analysis to be performed, sample preservation (if any) and field sampler's name. For each site visit, the time, date, site, and event type are recorded on a field data sheet. Sample bottles are stored and transported at ≤ 4 °C in an ice cooler until processed. Samples are delivered to EnviroMatrix Analytical, Inc. within specific holding times (Table 9, below).

An example chain of custody form is attached in Appendix C.

Table 9. (Element 12) Sample Handling and Custody

Analytical Parameter	Container size and type	Sample Volume	Preservation (chemical, temperature, light protected)	Maximum Holding Time: Preparation/ analysis
Nitrate/Nitrite as N	Polyethylene Bottles	150 mL	Cool to 4 °C and store in the dark. Acidify with $H2SO_4$ to pH<2	48 hours or 28 days if acidified
TKN	Polyethylene Bottles	600 mL	Cool to 4 °C and store in the dark. Acidify with $H2SO_4$ to pH<2	7 days or 28 days if acidified
Total Nitrogen	N/A	N/A	N/A	N/A
Orthophosphate as P	Polyethylene Bottles	150 mL	Filter; Cool to 4 °C and store in the dark	48 hours
Total Phosphorus as P	Polyethylene Bottles	150 mL	Cool to 4 °C and store in the dark	48 hours
Total Suspended Solids	Polyethylene Bottles	250 mL	Refrigeration or icing to 4°C, to minimize microbiological decomposition of solids	7 days
Ammonia as N	Polyethylene Bottles	250 mL	Cool to 4 °C and store in the dark. Acidify with H2SO4 to pH<2	48 hours or 28 days if acidified

13. ANALYTICAL METHODS

Field and laboratory analytical methods are given below in tables 10 and 11, respectively. The standard operating procedures for the field methods can be found in Appendix A. Laboratory analyses are performed in accordance with the approved method number listed.

Table 10. (Element 13) Field Analytical Methods

Analyte	Laboratory / Organization	Analytical Method / SOP	Reporting Limit	Units
pH	Field monitoring by D-MAX Engineering staff	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.01	pH units
Specific Conductance	Field monitoring by D-MAX Engineering staff	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.01	mS/cm
Temperature	Field monitoring by D-MAX Engineering staff	Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter*	0.1	℃
Turbidity	Field monitoring by D-MAX Engineering staff	Hanna Instruments HI 93703 Portable Turbidity Meter*	0.00	NTU

Table 11. (Element 13) Laboratory Analytical Methods

Analyte	Laboratory / Organization	Analytical Method / SOP	Minimum Detection Limit	Reporting Limit	Units
Nitrate/Nitrite as N	EnviroMatrix Analytical, Inc.	*SM4500 NO3 E	0.009	0.05	mg/L
TKN	EnviroMatrix Analytical, Inc.	*SM4500 N C	0.299	0.5	mg/L
Total Nitrogen	EnviroMatrix Analytical, Inc.	Calculation	0.5	0.5	mg/L
Orthophosphate as P	EnviroMatrix Analytical, Inc.	*SM4500 P E	0.007	0.05	mg/L
Total Phosphorus as P	EnviroMatrix Analytical, Inc.	*SM4500 P B, E	0.02	0.05	mg/L
Total Suspended Solids	EnviroMatrix Analytical, Inc.	*SM2540 D	1.0	20.0	mg/L
Ammonia as N	EnviroMatrix Analytical, Inc.	*SM4500 NH3 B,C	0.022	0.1	mg/L

* *Standard Methods for the Examination of Water and Wastewater*, 20th edition.

14. QUALITY CONTROL

Quality control samples will be collected both in the field and in the lab to verify that valid data are recorded. Proper collection of all samples, using clean disposable gloves and appropriate clean containers and preservative, is primary in ensuring the quality of collected data. Field instruments will be calibrated prior to each day of sampling, and records will be retained by D-MAX Engineering, Inc. An example calibration log sheet is included in Appendix D.

Field duplicates help quantify intrinsic variability associated with sampling activities. Field duplicate samples will be used to replicate field measurements as well as laboratory analyses. Field duplicates are comprised of a second sample taken at five percent of all sampling sites. There are no specific criteria for field duplicate variability, but these data are evaluated in the data analysis/assessment process.

Laboratory blanks, duplicates, matrix spikes and laboratory control standards (LCS) are used to ensure proper sample handling, identify bias, check for consistent analysis of samples, and verify correct operation of laboratory equipment. All contract laboratory analysis will be performed in accordance with the guidelines of the QA/QC plan of EnviroMatrix Analytical, Inc.

Table 12. (Element 14) Sampling (Field) QC

Matrix: Water
Sampling SOP: SWAMP Procedure No. 1.0
Analytical Parameter(s): Conventionals in Water
Analytical Method/SOP Reference: N/A
Sample locations: All locations

Field QC	Frequency/Number per sampling event	Acceptance Limits
Cooler Temperature	4 °C	0 – 6 °C
Field Duplicate Pairs	5% of total project sample count	RPD<25% (n/a if native concentration of either sample<RL)*

Table 13. (Element 14) Analytical QC

Matrix: Water
Sampling SOP: SWAMP Procedure No. 1.0
Analytical Parameter(s): Conventionals in Water
Analytical Method/SOP Reference: N/A
Sample locations: All locations

Laboratory QC	Frequency/Number	Acceptance Limits
Laboratory Blank	Per 20 samples or per analytical batch, whichever is more frequent	<RL for target analyte
Lab. Duplicate	Per 20 samples or per analytical batch, whichever is more frequent	RPD<25% (n/a if native concentration of either sample<RL)
Lab. Matrix Spike	Per 20 samples or per analytical batch, whichever is more frequent	80-120% recovery
Matrix Spike Duplicate	Per 20 samples or per analytical batch, whichever is more frequent	80-120% recovery RPD<25% for duplicates

If any of the quality control acceptance limits are not met for field measurements or laboratory analysis, the corresponding batch of data will be flagged to be excluded from analysis and the Project Manager will be notified. The Project Manager will determine whether to re-analyze the sample, if holding times have not been exceeded, or to re-sample at the monitoring location(s).

15. INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

Field measurement equipment will be checked for operation in accordance with the manufacturer's specifications. Spare instruments and parts are kept in the field sampling vehicle and at the D-MAX office in the City of San Diego. Quality control for data collected in the field will be accomplished by proper calibration and care of the instruments used to take the readings and by proper handling of sampling equipment and containers, as described in Section 16 below.

EnviroMatrix maintains its equipment in accordance with its QA/QC procedures, which are available at the laboratory upon request.

Table 14. (Element 15) Testing, Inspection, Maintenance of Sampling Equipment and Analytical Instruments

Equipment / Instrument	Maintenance Activity, Testing Activity or Inspection Activity	Responsible Person	Frequency	SOP Reference
Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter	Clean, inspect, check with pH buffer solutions, check with standard conductivity solution, check/replace batteries	D-MAX field staff	Daily inspection and replacement as necessary	SWAMP Procedure Number 1.0
Hanna Instruments HI 93703 Portable Turbidity Meter	Clean, inspect, check with distilled water, check/replace batteries	D-MAX field staff	Daily inspection and replacement as necessary	SWAMP Procedure Number 1.0
Field Camera	Clean, inspect, check/replace batteries	D-MAX field staff	Daily inspection and replacement as necessary	Appendix A

16. INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

The field meters used to measure pH, temperature, specific conductance, and turbidity will be calibrated and checked as recommended by the manufacturer. The sensors and membranes will be kept moist to preserve the instruments' accuracy during field work.

EnviroMatrix Analytical, Inc. maintains calibration practices as part of its QA/QC procedures, which are available at the laboratory upon request.

Table 15. (Element 16) Instrument/Equipment Calibration and Frequency.

Equipment / Instrument	SOP reference	Calibration Description and Criteria	Frequency of Calibration	Responsible Person
Hanna Instruments HI 991301 Portable pH/EC/TDS/Temperature Meter	SWAMP Procedure Number 1.0	Calibrate and check with pH 4, pH 7, and pH 10 solutions and with EC 12.880 mS/cm solution	Calibrate and check before each field day, post-field check also for pH	D-MAX field staff
Hanna Instruments HI 93703 Portable Turbidity Meter	SWAMP Procedure Number 1.0	Calibrate and check with distilled water	Calibrate and check before each use	D-MAX field staff

If a field instrument does not pass inspection, the instrument should be recalibrated following its manufacturer's cleaning and maintenance procedures. If measurements continue to fail measurement quality objectives, affected data should not be reported and the instrument should be returned to the manufacturer for maintenance. All troubleshooting and corrective actions should be recorded in the calibration and field data records.

17. INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES

Supplies necessary for this project include calibration standard solutions, reagents, and sample collection bottles provided by EnviroMatrix Analytical, Inc. Upon receipt, all supplies are inspected for leaks or broken seals. Supplies are stored in accordance with manufacturer's recommendations in a secure location. If these chemicals do not meet the acceptance criteria or whenever they exceed their manufacturer recommended shelf life, they are disposed of appropriately and replaced.

EnviroMatrix Analytical, Inc. maintains its laboratory supplies in accordance to their QA/QC procedures, which are available at the laboratory upon request.

Table 16. (Element 17) Inspection/Acceptance Testing Requirements for Consumables and Supplies

Project-Related Supplies / Consumables	Inspection / Testing Specifications	Acceptance Criteria	Frequency	Responsible Individual
Calibration standard solutions	Check containers and seals for breakage; check expiration dates; ensure proper storage	Containers and seals intact; stored closed in proper conditions; shelf life not exceeded	Upon receipt and each use	D-MAX field staff
Reagents	Check containers and seals for breakage; check expiration dates; ensure proper storage	Containers and seals intact; stored closed in proper conditions; shelf life not exceeded	Upon receipt and each use	D-MAX field staff
Sample collection bottles	Check containers and seals for breakage; ensure proper storage	Containers and seals intact; stored closed in proper conditions	Upon receipt and each use	D-MAX field staff

18. NON-DIRECT MEASUREMENTS (EXISTING DATA)

Potential non-direct measurements may be made using historical data collected during previous years of creek monitoring or by the Dry Weather Field Screening and Analytical Monitoring Program. Regional Water Quality Control Board Surface Water Ambient Monitoring Program (RWQCB SWAMP) data or data obtained from other agencies may also be used. In addition, photo documentation, topographical maps, land use maps, and hydrological maps generated from San Diego Association of Governments (SANDAG) GIS database, may be used.

Data collected during previous years of creek monitoring, the Dry Weather Field Screening and Analytical Monitoring Program, RWQCB SWAMP, and data acquired from other agencies will be reviewed against data quality objectives stated in Section 7, and only those data that meet all of the criteria may be used in this project.

19. DATA MANAGEMENT

Field data sheets will be checked at the end of the day by D-MAX field staff. Electronic data is also reviewed by D-MAX, following data entry, for completeness, accuracy, and errors in data entry or transcription.

Data will be maintained as previously discussed in Element 9. All document and data hard copies will be retained in a project file, and all document and data electronic copies will be stored on a backed up hard disk at the office of D-MAX Engineering, Inc. EnviroMatrix Analytical, Inc. will also retain records of all transmitted laboratory reports.

GROUP C: ASSESSMENT AND OVERSIGHT

20. ASSESSMENTS & RESPONSE ACTIONS

Laboratory data will be reviewed for consistency as they are received from the laboratory by D-MAX. D-MAX will also conduct an internal review of the collected field data each month. Further, the City of San Marcos Project Manager will review the data as reported by D-MAX on a monthly basis. If a reviewer discovers any discrepancy, the reviewer will discuss the observed discrepancy with the appropriate person responsible for the activity (see organization chart). EnviroMatrix has a defined process for corrective action outlined in their QA/QC documents, which are available at the laboratory upon request. In the case of a discrepancy in the data, the D-MAX QA Officer will consult with EnviroMatrix and/or the City of San Marcos Project Manager, as appropriate, to discuss whether the information collected is accurate, what were the cause(s) leading to the deviation, how the deviation might impact data quality, and what corrective actions might be considered. Depending on the type of discrepancy, corrective actions may include, but are not limited to, review of data entry practices, additional training for laboratory personnel, or re-sampling.

The City of San Marcos Project Manager has the power to halt all sampling and analytical work if the deviation(s) noted are considered detrimental to data quality of the project.

21. REPORTS TO MANAGEMENT

At each site visit, the field crew will complete a field data sheet. The data sheet contains information regarding site identification and location, weather conditions, visual observations, and field measurement results. The City of San Marcos will be notified immediately in the event that there is visual or numeric evidence of a significant threat to water quality. Criteria for a significant threat to water quality consist of evidence of an illegal discharge, observation of unusual water color or odor, numeric results significantly above historical data, and best professional judgment. Monitoring results from laboratory analyses will be reviewed after being received from EnviroMatrix. If any of the laboratory results indicate evidence of a threat to water quality, the City will be notified immediately.

A summary report of monitoring data will be prepared and presented to the City of San Marcos Program Manager following the completion of Phase 2. Records of sampling locations and GPS coordinates, field measurement results and observations, laboratory analytical reports, and photographs of sampling locations will be included in the report. The report will include tabular presentations of field measurements, visual observations, and laboratory analytical data. The monitoring results will be compared to the applicable WQOs listed in the Basin Plan. Statistical analyses, such as medians, means, maximums, and minimums will be conducted as appropriate to provide the City with the capability of comparing the test results with other published results. Both electronic and hard copies of the summary report will be prepared.

Table 17. (Element 21) QA Management Reports

Type of Report	Frequency	Projected Delivery Date	Person(s) Responsible for Report Preparation	Report Recipients
Final Summary Report	Following completion of Phase 2	September 2011	Arsalan Dadkhah, D-MAX Project Manager	Erica Ryan, Project Manager

Note that the projected delivery date may be subject to change.

GROUP D: DATA VALIDATION AND USABILITY

22. DATA REVIEW, VERIFICATION, AND VALIDATION REQUIREMENTS

Data generated by project activities will be reviewed against the data quality objectives previously cited in Element 7 and the quality assurance/quality control practices cited in Elements 14, 15, and 16. Data will be separated into three categories: data meeting all data quality objectives, data failing to meet precision or recovery criteria, and data failing to meet accuracy criteria. Data meeting all data quality objectives, but with failures of quality assurance/quality control practices will be set aside to determine the impact of the failure on data quality. Once determined, the data will be moved into either the first category (meeting all data quality objectives) or the last category (failing to meet quality control practices).

Data in the first category is considered usable by the project. Data falling in the last category is considered unusable. Data falling in the second category will be assessed before it is used in the project. If sufficient evidence is found supporting data quality for use in this project, the data will be moved to the first category, but will be flagged with a "J" as per EPA specifications.

23. VERIFICATION AND VALIDATION METHODS

D-MAX will review all collected data and the D-MAX QA Officer will review the lab reports, notifying the EnviroMatrix QA Director in the case of an inconsistency.

Any issues that arise will be noted. Reconciliation and correction will be done by a committee composed of the City of San Marcos QA Officer & Project Manager, the D-Max Project Manager, the D-MAX QA Officer & Data Manager, and the EnviroMatrix Laboratory Manager/QA Director. D-MAX will keep the City of San Marcos informed of any pertinent data inconsistencies as they arise. The committee will attempt to reach unanimous consent on any issues, but the City of San Marcos Project Manager will make the determination if agreement cannot be reached.

24. RECONCILIATION WITH USER REQUIREMENTS

The project needs adequate numbers of data points, as represented by the completeness data quality objective in order to do perform statistical analyses, such as means, medians, maximums, and minimums. The sampling frequencies that have been developed should provide sufficient data points to complete the necessary analysis.

REFERENCES

City of San Marcos, County of San Diego, County of Escondido. 2010. *Upper San Marcos Creek Watershed (USMC) Nutrient Management Plan*. Accessed at: http://www.ci.san-marcos.ca.us/Modules/ShowDocument.aspx?documentid=3101

Marine Pollution Studies Lab – Department of Fish and Game. 2007. *Standard Operating Procedures (SOPs) for Conducting Field Measurements and Field Collections of Water and Bed Sediment Samples in SWAMP. SOP Procedure Number 1.0*. Prepared by MPSL-DFG Field Sampling Team. Accessed at: http://swamp.mpsl.mlml.calstate.edu/wp-content/uploads/2009/04/swamp_sop_field_measures_water_sediment_collection_v1_0.pdf. May 5, 2010.

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Surface Water Ambient Monitoring Program. 2008. *Quality Assurance Program Plan*. State Water Resources Control Board. Sacramento, CA. Accessed at: http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/qaprp082209.pdf. May 5, 2010.

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Appendix A. Field Measurement Standard Operating Procedures

Field Measurement Standard Operating Procedures

Adapted from SOP Procedure Number 1.0, "Standard Operating Procedures (SOPs) for Conducting Field Measurements and Field Collections of Water and Bed Sediment Samples in SWAMP" (2007)

Field Data Logbook

A field data logbook or a field folder is taken into the field on each sampling trip. The use of bound or loose-leaf notebooks is left up to the entity conducting the monitoring. A good safety precaution against the loss of a bound field data logbook is to photocopy the current pages upon returning from the field. These pages are kept on file at the specific sample collection entity's office. If a loose-leaf notebook is used, take care to remove original field data log sheets from the notebook and file in the office. Copies of the field data log sheets may be left in the notebook for future reference. The entry's discussed below are recorded at each sampling site.

Field Data Logbooks (bound or loose leaf sheets) are maintained on file indefinitely in the office. They are never discarded, since the logbook may be the only written record of field measurements.

Record of Data Submission
A *Field Data Logbook* must indicate in some manner whether data recorded in the logbook has been transcribed onto data forms and submitted to the data management staff.

Site Photo

Digital photos are taken to help document the actual sampling site. Record the number of photos taken in the field data sheet. When uploading the photos to a computer, name the photos according to their site ID, the date, and the number of the photo at the site, like this: "SITEID_YYYY_MM_DD_##.jpg". Do not use spaces. Include two digits for the photo number (e.g., ## = "01") since there may be more than nine photos in some cases. The convention is to take photos facing downstream, overlooking the site. Right bank and left bank are thus defined in this downstream-facing direction. Document any discrepancies from this convention. Only one downstream photo is necessary, if both, left and right bank, fit into one frame. Document the photo numbers (##) that correspond with the downstream-looking view (and/or the upstream-looking view, if taken) on the field data sheet.

Field Observations

Upon arrival at a sampling site, record visual observations on the appearance of the water and other information related to water quality and water use.

Left Bank/Right Bank
Left bank is defined as the bank to the left of the observer when facing downstream, and the *right bank* is to the right of the observer when facing downstream.

Water Appearance - Color, unusual amount of suspended matter, debris or foam, etc.

Sediment Appearance - Color and sediment composition should be noted.

Weather - Note recent meteorological events that may have impacted water quality; heavy rains, cold front, very dry, very wet, etc.

Biological Activity - Note excessive macrophyte, phytoplankton, or periphyton growth. The observation of water color and excessive algal growth is very important in explaining high chlorophyll-*a* values. Other observations such as presence of fish, birds, and spawning fish are noted.

Unusual Odors - Note if hydrogen sulfide odor, musty odor, sewage odor, etc. This should be recorded for sediment as well.

Comments - Specific comments about the sample itself that may be useful in interpreting the results of the analysis. For example, if the sample was collected for a complaint, make a note of this in the observation section. If a scheduled parameter or group of parameters is not collected, make some note of this in the comments

Field Measurements

After collecting water samples, record appropriate field measurements. When field measurements are made with a multiparameter instrument, it is preferable to place the probe in the body of water to be sampled and allow it to equilibrate in the dissolved oxygen (DO) mode while water samples are collected. Field measurements are made at the centroid of flow if the stream visually appears to be completely mixed from shore to shore. *Centroid* is defined as the midpoint of that portion of the stream width which contains 50% of the total flow. When measurements cannot be taken *in situ*, the sample should be taken from as close to the centroid as possible.

Recommended Depths for Conducting Field Data Measurements

Water Depth Less than 5 feet (<1.5m)	If the water depth is less than 5 feet (1.5m), grab samples for water are taken at approximately 0.1m (4 inches), and multi-probe measurements are taken at approximately 0.2m (8 in). This is because all sensors have to be submerged, so 0.1m would not be deep enough. But taking a grab sample at 0.2m is not always feasible, as it is difficult to submerge bottles to that depth, and in many cases the bottle will hit the stream bottom.
Water Depth Greater than 5 feet (>1.5m)	If the water depth at the sampling point exceeds 5 feet (1.5m) in depth, a vertical profile of dissolved oxygen, temperature, pH and specific conductance are made using the multiparameter probe equipment. The depth of the sonde at the time of measurement is most accurately determined from the depth sensor on the multiparameter sonde rather than depth labels on the cable.

WATER TEMPERATURE (°C)

Water temperature data are recorded for each visit in final form in a Field Data Logbook and submitted to the data management staff.

Temperature Measuring Equipment

- Centigrade Thermometer
- Electronic Temperature Sensor

Temperature Sampling Procedures

Temperature is measured in-stream at the depth(s) specified in "Field Measurements" above. Measuring temperature directly from the stream by immersing a multiprobe instrument or thermometer is preferred.

Hand Held Centigrade Thermometer

If an electronic meter is not available, the temperature is measured with a hand-held, centigrade thermometer (Rawson, 1982).

- In wadeable streams, stand so that a shadow is cast upon the site for temperature measurement.
- Hold the thermometer by its top and immerse it in the water. Position the thermometer so that the scale can be read.
- Allow the thermometer to stabilize for at least one minute, then without removing the thermometer from the water, read the temperature to the nearest 0.1 °C and record.
- Do not read temperature with the thermometer out of the water. Temperature readings made with modern digital instruments are accurate to within ± 0.1 °C

Temperature Measurement from a Bucket
When temperature cannot be measured in-stream, it can be measured in a bucket-Nalgene or plastic. Care must be taken to insure a measurement representative of in-stream conditions.

The following conditions must be met when measuring temperature from a bucket:

- The bucket must be large enough to allow full immersion of the probe or thermometer.
- The bucket must be brought to the same temperature as the water before it is filled.
- The probe must be placed in the bucket immediately, before the temperature changes.
- The bucket must be shaded from direct sunlight and strong breezes prior to and during temperature measurement.
- The probe is allowed to equilibrate for at least one minute before temperature is recorded.
- After these measurements are made, this water is discarded and another sample is drawn for water samples which are sent to the laboratory.

Temperature Instrument Operation

1. Remove storage cap from the calibrated temperature meter and rinse the electrode with distilled water.
2. Turn on the meter and place the probe in the water sample and wait approximately one minute.
3. Once the reading has stabilized record the temperature.
4. Remove the probe and turn off the meter.
5. Rinse the electrode with distilled water and replace the cap.

pH (STANDARD UNITS)
pH data is recorded for each visit in final form in a Field Data Logbook and submitted to the project data management staff.

pH Sampling Equipment
The pH meter should be calibrated according to the Standard Field Equipment Calibration Procedures document.

pH Sampling Procedure
Calibrate the pH sensor. The pH function is calibrated each day of use for multiparameter instruments.

In-stream Method
Preferably, pH is measured directly in-stream at the depth(s) specified earlier in this document. Allow the pH probe to equilibrate for at least one minute before pH is recorded to the nearest 0.1 pH unit.

pH Measurement from a Bucket
When pH cannot be measured in-stream, it can be measured in a bucket-Nalgene or plastic, following precautions outlined under “Temperature Measurement from a Bucket” above.

Potential Problems

- If the pH meter value does not stabilize in several minutes, out gassing of carbon dioxide or hydrogen sulfide, or the settling of charged clay particles may be occurring (Rawson, 1982).
- If out gassing is suspected as the cause of meter drift, collect a fresh sample, immerse the pH probe and read pH at one minute.
- If suspended clay particles are the suspected cause of meter drift, allow the sample to settle for 10 minutes, then read the pH in the upper layer of sample without agitating the sample.
- With care, pH measurements can be accurately measured to the nearest 0.1 pH unit.

pH Instrument Operation

1. Remove storage cap from the calibrated pH meter and rinse the electrode with distilled water.
2. Turn on the meter and place the probe in the water sample and wait approximately one minute.
3. Record the reading once the displayed value has stabilized.
4. Remove the probe and turn off the meter.
5. Rinse the electrode with distilled water and replace the cap.

SPECIFIC CONDUCTANCE (µmhos/cm)

Specific conductance should be recorded for each visit in final form in a Field Data Logbook and submitted to the project data management staff.

Specific Conductance Sampling Equipment

Conductivity meter, calibrated according to the Standard Field Equipment Calibration Procedures document.

Specific Conductance Sampling Procedure

In-stream Method

Preferably, specific conductance is measured directly in-stream at the depth(s) specified on prior pages. Allow the conductivity probe to equilibrate for at least one minute before specific conductance is recorded to three significant figures (if the value exceeds 100). The primary physical problem in using a specific conductance meter is entrapment of air in the conductivity probe chambers. The presence of air in the probe is indicated by unstable specific conductance values fluctuating up to $\pm$100 µmhos/cm. The entrainment of air can be minimized by slowly, carefully placing the probe into the water; and when the probe is completely submerged, quickly move it through the water to release any air bubbles.

Specific Conductance Measurement from a Bucket

If specific conductance cannot be measured in-stream, it should be measured in the container used for collection of water samples (a bucket) using the precautions outlined on prior pages, under the "Temperature Measurement from a Bucket" section.

Conductivity Instrument Operation

1. Turn on the calibrated conductivity meter, ensuring the electrode is moist. If the electrode is dry, recalibrate the meter using standard solutions.
2. Rinse the probe with distilled water.
3. Immerse the probe in the sample water and wait approximately one minute.
4. Record the reading once the displayed value has stabilized.
5. Remove the electrode and turn off the meter.
6. Rinse the electrode with distilled water and replace the cap.

TURBIDITY MEASUREMENT WITH A TURBIDITY METER

Turbidity data is recorded for each visit in final form in a Field Data Logbook and submitted to the project data management staff.

Turbidity Sampling Equipment

The turbidity meter should be calibrated according to the Standard Field Equipment Calibration Procedures document.

Turbidity Sampling Procedure

Calibrate the turbidity meter.

Turbidity Instrument Operation

1. Turn on the calibrated turbidity meter.
2. Rinse the vial twice with 5 ml of the liquid to be tested. This removes the effect of any previous liquid and any dust or foreign objects that may be present inside. Gently pour the liquid down the side of the vial to reduce air bubbles.
3. Before inserting the vial into the instrument, wipe it with a soft, lint-free tissue. Handle vials so that no fingerprints can get on the areas where light passes.
4. Press the READ key and the LCD will display a blinking "SIP" (Sampling in Process). The turbidity value will appear after approx. 20 seconds.
5. Remove the vial and turn off the meter.
6. Rinse the vial twice with distilled water and replace the cap.

FLOW (cfs or gpm)
Flow data is recorded for each visit in final form in a Field Data Logbook and submitted to the project data management staff. Flow information for over 200 USGS sites is available on the Internet. The address is **http://water.usgs.gov/index.html**. Where a USGS stream gauge site is nearby; data from the USGS site can be used to provide flow information.

Flow (ft3/s)
If requested, flow data should be recorded for each monitoring visit to non-tidal, flowing streams. Flow data should be recorded in final form on a Field Data Sheet and submitted to data management staff. The following are two exceptions to the flow reporting requirement:

- **No Flow/ Pools:** If there is no flow at a stream site and accessible, isolated pools remain in the stream bed, collect and report the required field data and laboratory samples from the pools and report instantaneous flow. Under these conditions, flow (ft3/s) should be reported as zero. The reported flow severity value should be one. Pools may represent natural low-flow conditions in some streams and the chemistry of these pools will reveal natural background conditions.
- **Dry:** If the stream bed holds no water, the sampling visit is finished. Report that the stream was "dry" in the observations. No value is reported for flow since there is no water.

Instantaneous Flow Measurement
Water quality monitoring visits to sites where there are no nearby USGS flow gauges will require water quality monitoring personnel to measure flow.

Flow Measurement Procedure (USGS, 1969)
Select a stream reach with the following characteristics:

- Straight reach with laminar flow (threads of velocity parallel to each other) and bank to bank. These conditions are typically found immediately upstream of riffle areas or places where the stream channel is constricted.
- The site should have an even streambed free of large rocks, weeds, and protruding obstructions that create turbulence. The site should not have dead water areas near the banks, and a minimum amount of turbulence or back eddies.

Flat Streambed Profile (cross section)
Stretch the measuring tape across the stream at right angles to the direction of flow. When using an electronic flow meter, the tape does not have to be exactly perpendicular to the bank (direction of flow). When using a propeller or pigmy type meter, however, corrections for deviation from perpendicular must be made.

If necessary and possible, modify the measuring cross section to provide acceptable conditions by building dikes to cut off dead water and shallow flows, remove rocks, weeds, and debris in the reach of stream one or two meters upstream from the measurement cross section. After modifying a streambed, allow the flow to stabilize before starting the flow measurement.

The following information should be recorded by the field sampling team for each flow measurement:

- Station Location and Station ID
- Date
- Time measurement is initiated and ended
- Name of person(s) measuring flow
- Note if measurements are in feet or meters
- Total stream width and width of each measurement section
- For each cross section, record the mid-point, section depth and flow velocity
- Measure and record the stream width between the points where the tape is stretched (water's edge to water's edge).

Determining the Number of Flow Cross Sections
Determine the spacing and location of flow measurement sections. Some judgment is required depending on the shape of the stream bed. Measurements must be representative of the velocity within

the cross-section. If the stream banks are straight and the depth is nearly constant and the bottom is free of large obstructions, fewer measurements are needed, because the flow is homogeneous over a large section. Flow measurement sections do not have to be equal width. However, they should be unless an obstacle or other obstruction prevents an accurate velocity measurement at that point. Typically, except when small flow rates are observed, no flow measurement section should have greater than 10% of the total flow.

If the *stream width is less than 5 ft*, use flow sections with a width of 0.5 ft (See example 1 on page 23 of this document). If the *stream width is greater than 5 ft*, the minimum number of flow measurements is 10. The preferred number of flow measurement cross sections is 20-30 (See Example 2 on page 24 on this document). The total stream width is 26 ft with 20 measurements, section widths will be 1.3 ft (26/20 = 1.3).

Determining the Mid-Point of the Cross Section

To find the mid-point of a cross section, divide the cross section width in half. Using Example 2 (see forms at end of document);

- The total stream width is 26 ft with 20 cross sections and each cross section width is equal to 1.3 ft.
- Divide 1.3 ft in half and the mid-point of the first section is 0.65 ft. In this example the tape at water's edge is set at zero (0) ft.
- By adding 0.65 to zero the mid-point of the first section is 0.65 ft.
- Each subsequent mid-point is found by adding the section width (1.3 ft) to the previous mid-point. For example; MIDPOINT #1 is 0.65 + 0.0 = 0.65; MIDPOINT #2 is 0.65 + 1.3= 1.95 ft; MIDPOINT #3 is 1.95 + 1.3 = 3.25 ft and ....MIDPOINT # 20 is 24.05 +1.3.
- Place the top setting wading rod at 0.65 ft for the first measurement.
- Using a top setting wading rod, measure the depth at the mid-point of the first flow measurement section and record to the nearest 0.01 ft.

Calculating Flow

To calculate flow, multiply the width x depth (ft2) to derive the area of the flow measurement section. The area of the section is then multiplied by the velocity (ft/s) to calculate the flow in cubic feet per second (cfs or ft3/sec) for that flow measurement section. When flow is calculated for all of the measurement sections, they are added together for the total stream flow (see Figure 2).

Q=Total Flow (or discharge), W=Width, D=Depth, V=Velocity.

$$Q = (W1 * D1 * V1) + (W2 * D2 * V2) + ... (Wn * Dn * Vn)$$

What to Do with Negative Values

Do not treat cross sections with negative flow values as zero. Negative values obtained from areas with back eddies should be subtracted during the summation of the flow for a site.

Flow Estimate (ft3/s)

Flow estimate data may be recorded for a non-tidally influenced stream when it is not possible to measure flows by one of the methods described above. Flow estimates are subjective measures based on field personnel's experience and ability to estimate distances, depths, and velocities. If flow cannot be measured at a routine non-tidal station, a new site should be selected where flow can be measured.

Flow Estimate Procedure

- Observe the stream and choose a reach of the stream where it is possible to estimate the stream cross section and velocity.
- Estimate stream width (ft) at that reach and record.
- Estimate average stream depth (ft) at that reach and record. Estimate stream velocity (ft/s) at that reach and record. A good way to do this is to time the travel of a piece of floating debris. If doing this method from a bridge, measure the width of the bridge. Have one person drop a floating object (something that can be distinguished from other floating materials present); the other staff at the downstream side of the bridge will stop the clock when the floating object reaches the downstream side of the bridge. Divide the bridge width by the number of seconds to calculate the velocity. The velocity can be measured at

multiple locations along the bridge. These velocities are averaged. If this is done alone, watch for road traffic.

- Multiply stream width (ft) by average stream depth (ft) to determine the cross sectional area (in ft2) which when multiplied by the stream velocity (in ft/s) and a correction constant, gives an estimated flow (ft3/s).

***Example**:* A stream sampler conducted a sampling visit to a stream while the flow meter was being repaired. The sampler looked at the creek downstream from the bridge and saw a good place to estimate flow. The stream width was around 15 ft. It appeared the average depth on this reach was about 0.75 ft. The sampler timed a piece of floating debris as it moved a distance of 10 ft in 25 s downstream over the reach. An estimated flow with a smooth bottom was calculated using the following formula.

Width x Depth x Velocity x A (correction factor) = estimated flow
15 ft (width) x 0.75 ft (depth) x 2.5 ft/s (velocity) x A =25 ft3/s (cfs)

"A" is a correction constant: 0.8 for rough bottom and 0.9 for smooth bottom
Estimated flow should be reported to one or two significant figures.

Experienced field personnel are able to estimate flow to within 20% of actual flow for total flows less than 50 ft^3/s. The best way to develop this skill is to practice estimating flow before making measurements at all monitoring visits to non-tidally influenced flowing streams and then compare estimated flows with those obtained from USGS gages or from instantaneous flow measurements

Appendix B. Monitoring Program Field Data Sheet

City of San Marcos
Storm Water Monitoring Field Datasheet

Monitoring Type: **Phase 1 LSM Additional Study** **Phase 2 LSM Additional Study** **Other**

GENERAL SITE DESCRIPTION **MS4** **Receiving Water**

Site ID		**Date**		**Time**	
Location					
Observer(s)		**Latitude**		**Longitude**	

Conveyance (Check one only)	Manhole	Catch Basin	Outlet	Concrete Channel	Natural Creek	Earthen Channel	Curb/ Gutter

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog		
Tide	N/A	Low	Incoming	High	Outgoing	**Tide Height:**_____ft.
Last Rain	> 72 hours	< 72 hours				
Rainfall	None	< 0.1"	> 0.1"			

OBSERVED CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other
Color	None	Yellow	Brown	White	Gray	Other
Clarity	Clear		Slightly Cloudy	Opaque		Other
Algal Growth	None	Submerged	Floating	On Banks	(if dense algal mats present, photograph)	
Vegetation	None	Limited	Normal	Excessive	(if excessive, check for nutrient sources)	
Water Flow	Flowing	Ponded	Dry	Tidal		

Evidence of runoff from potential nutrient sources? No Yes If yes, photograph and describe: _____

Photo # Range **#** _____ **to #** _____ (where name is "SiteID_YYYY_MM_DD_##.jpg") **Downstream #** _____ **Upstream #** _____

Field Screening Samples Collected **Yes** **No**

Parameter	**Reading**	**Parameter**	**Reading**
Water Temp (°C)		COND (mS/cm)	
pH (pH units)		TURB (NTU)	

Analytical Lab Samples Collected? **Yes** **No**

FLOW ESTIMATION WORKSHEET

If stream width less than 5 ft, use flow sections with a width of 0.5 ft. If the stream width is greater than 10 ft, use supplemental flow worksheet.

Measurements	**Total (Sum*A)**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Width (inches)											
Width (ft)											
Depth (inches)											
Depth (ft)											
Velocity (ft/sec)											
Flow (cfs)											
Flow (gpm)											

Correction factor (A) used for Total:	

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec), **A** = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)

$\mathbf{Q} = [(\mathbf{W}_1 * \mathbf{D}_1 * \mathbf{V}_1) + (\mathbf{W}_2 * \mathbf{D}_2 * \mathbf{V}_2) + \ldots\ldots (\mathbf{W}_n * \mathbf{D}_n * \mathbf{V}_n)] * \mathbf{A}$

1 cfs (ft x ft x ft/sec) = 448.83 gpm *Estimated flow should be reported to one or two significant figures.*

COMMENTS: _____

Revised 1/26/2011

City of San Marcos
Supplemental Flow Estimation Worksheet

If the stream width is greater than 10 ft use this flow estimation worksheet.

GENERAL SITE DESCRIPTION

Site ID		**Date**		**(Include the latitude and longitude of flow estimation location if different than site.)**	**Latitude**	
Observer(s)		**Time**			**Longitude**	

FLOW ESTIMATION WORKSHEET

Measurements	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Flow (cfs)															

Measurements	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Width (inch)															
Width (ft)															
Depth (inch)															
Depth (ft)															
Velocity (ft/sec)															
Flow (cfs)															

Calculations	**Sum of all sections**	**Correction factor (A)**	**Estimated Flow (Sum*A)**
Flow (cfs)			
Flow (gpm)			

Q=Total Flow (cfs), **W**=Width (ft), **D**=Depth (ft), **V**=Velocity (ft/sec), **A** = correction factor (0.8 for rough bottom and 0.9 for smooth bottom)

$\mathbf{Q} = [(\mathbf{W}_1 * \mathbf{D}_1 * \mathbf{V}_1) + (\mathbf{W}_2 * \mathbf{D}_2 * \mathbf{V}_2) + \ldots\ldots (\mathbf{W}_n * \mathbf{D}_n * \mathbf{V}_n)] * \mathbf{A}$ *Estimated flow should be reported to one or two significant figures.*

1 cfs (ft x ft x ft/sec) = 448.83 gpm

COMMENTS: _____

Revised 1/26/2011

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Appendix C. Chain of Custody Form

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #:

EMA DATE/TIME STAMP

Client:

Address:

Attn: Phone:

Sampled by: Fax:

Billing Address:

Project: PO #:

REQUESTED ANALYSIS

EMA ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container(s) #	Container(s) Type*	418.1 (TRPH)	Oil & Grease 413.1___ 413.2___ 1664___	TPH (8015B) Gas___ Diesel___	TPH-Extended 8015B ___ASTM D2887___	602 / 8021 B BTXE___ MTBE___	601 / 8021 B (Volatile Organics)	EPA 8021 B Aromatics__Halogenated__	608 / 8081 (Pesticides)	608 / 8082 (PCB's)	624 / 8260 (Volatile Organics)	625 / 8270 (Semi Volatile Organics)	TTLC Metals (CAC Title 22)	STLC Metals (CAC Title 22)	TCLP (RCRA) Metals___ Organics___	Cd Cr Cu Pb Ni Ag Zn	pH EC TSS						
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												

*Container Types: B=Brass Tube; V=VOA; G=Glass; P=Plastic; O=Other (list)

Tamper-Proof Seals Intact: Yes No N/A | Correct Containers: Yes No

Sample(s): Cold Ambient Warm | VOAs w/ZHS: Yes No N/A

All Samples Properly Preserved: Yes No N/A

Disposal: N/C (aqueous) *EMA (@$5.00/sample) Return Hold

Turnaround Time: 24 hr 48 hr 3 day 4 day 5 day Normal

Comments:

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature		Signature
Print		Print
Company:		Company:
Signature		Signature
Print		Print
Company:		Company:
Signature		Signature
Print		Print
Company:		Company:

* EMA reserves the right to return samples that do not match our waste profile.

White - EMA Canary - Accounting Pink - Client (w/Report) Goldenrod - Client (Relinquish Samples)

Appendix D. Calibration Log Sheets

D-MAX Quality Assurance/Quality Control (QA/QC) Plan

Daily Calibration Log Sheet

Project Name: _____ Project Number: _____

Pre-Field Calibration											Post-Field Check			
Constituent		pH meter 1			pH meter 2			Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	pH meter 1		pH meter 2	
Standard value		4.0	7.0	10.0	4.0	7.0	10.0	12.88	0	8.39 @ 23°C	7.0	10.0	7.0	10.0
Acceptable range		± 0.2	± 0.2	± 0.2	± 0.2	± 0.2	± 0.2	± 2% (± 0.2576)	± 0.5	± 5%	± 0.2	± 0.2	± 0.2	± 0.2
Date	Staff													

Additional notes: _____

_____

_____

CHU-WQA21

Upper San Marcos Creek Nutrient Management Plan – Monitoring Component

Appendix E

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D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

July 8, 2011
Project No. 201043W-16

Erica Ryan
Stormwater Program Manager
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: Lake San Marcos Additional Monitoring (Phase 1, First Quarterly Round of Sampling)

Dear Erica,

D-MAX Engineering, Inc. (D-MAX) is pleased to submit initial results from the storm water monitoring conducted upstream of Lake San Marcos in May 2011. This round of sampling was the first of four sets of Phase 1 quarterly visits planned at the sites selected in the Lake San Marcos Additional Study Quality Assurance Project Plan (QAPP).

Results Summary

All 29 sites from the QAPP were visited, following the planned Phase 1 quarterly monitoring protocol. Site A-21 is located at a manhole was initially believed to access a culvert through wich San Marcos Creek flows. However, the site visit found that the manhole does not access the creek culvert but rather a less significant lateral line that drains to the creek. Therefore, an additional site relatively close to Site A-21 but directly in the creek (for a total of 30 sites) was visited to gather data in line with the original intent of the program. This additional site (Site A-05A) was historically a Dry Weather Monitoring Program site. Of these 30 sites, 20 had water present that could be sampled, and 10 sites were dry.

Tables and figures attached to this letter include the following:

- Table 1: Sites Visited
- Table 2: Field Observations and Measurements
- Table 3: Laboratory Analysis Results
- Figure 1: Mapped Total Nitrogen Results
- Figure 2: Mapped Total Phosphorus Results

The sites visited in Table 1 are shaded light brown where no flowing or ponded water was present to sample.

Monitoring Notes

In addition to field measurements and laboratory analyses, field staff also conducted an assessment of the presence of algae at each site and looked for other potential nutrient sources

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

in the immediate area. Algal growth is a common indicator of the consistent presence of water, and algal blooms may result from excessive nutrient inputs. Algae was present at most sites with water, often in sufficient amounts to create floating algal mats. At some sites, dense algal mats were even present on the banks of channels where water had receded from higher levels in the recent past. Algae was absent at all sites that lacked water except one, Site B-23, where dried algae was observed in the channel bed, likely indicating that water had been present relatively recently. During monitoring, no obvious sources of runoff containing nutrients were noted at any site.

The highest total nitrogen levels were observed at sites A-07, A-22, B-24, B-25, and C-24. Total nitrogen levels at these sites ranged from 14.8 mg/L (B-24) to 96.7 mg/L (A-07). Since the level at site A-07 was especially high, we had the laboratory verify the test result, and the high value was confirmed. No direct sources of nutrients were observed at the site at the time of sampling. Site C-24 had the highest total phosphorus concentration (0.69 mg/L). Since only one round of sampling has been completed, these results should be considered preliminary, and more analysis can be conducted as the size of the data set increases.

The quality control field duplicate results indicated a relative percent difference of 37 percent for orthophosphate as P results from two samples collected at the same site (i.e., the routine and duplicate samples). The original and duplicate samples' orthophosphate P results for Site C-24 were 0.59 mg/L and 0.37 mg/L, respectively, which are 37 percent different. Review of field sampling procedure did not result in idenfication of deviations from standard procedure or other potential sources of error, and all other values for field parameters and lab analytes were acceptably similar between the routine and duplicate samples. The laboratory was contacted regarding this issue, but it reported all internal QC data checked out. Three additional duplicate samples will be taken in the next round for additional quality control purposes to help evaluate the representativeness and reproducibility of orthophosphate results.

Program Recommendations

Per the QAPP, 16 "sites of interest" are to be selected that will be revisited most frequently—on a bi-monthly basis. As part of the initial round of visits, we have some recommendations about which sites should be considered the 16 sites of interest. All 29 QAPP sites—both the 16 sites of interest and the other 13 sites—will still be revisited on a quarterly basis. Since 15 sites were dry or had only ponded water during the recent visits, these have not been chosen as sites of interest. We recommend that the remaining 16 sites with flowing water present be considered "sites of interest" for the beginning of Phase 2 bi-monthly site visits starting in July 2011. These 16 sites are shaded blue in Table 1, which is attached to this letter.

Additionally, we recommend removing Site A-21 from the QAPP site list since its location was found to be a relatively minor lateral to the creek rather than being in the creek directly, as originally thought.

If you have any questions regarding this monitoring report, please feel free to contact me at (858) 586-6600 ext. 23.

Sincerely,
D-MAX Engineering, Inc.

Crystal Kaplan, M.S.
Assistant Project Scientist

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Table 1: Sites Visited

Site	Location	Latitude	Longitude	Downstream Basin Site	RW/MS4 only	Conveyance Structure	Jurisdiction(s)	Land Use 1	Land Use 2
A-05A	Via Vera Cruz and Discovery Street, northwest of intersection, west of bridge in creek	33.13200	-117.18678		Creek	Earthen Channel	San Marcos, County, Escondido, CSUSM, CalTrans	Mixed	
A-07	San Marcos Boulevard, east of San Marcos High School, across from Westview Plaza (San Marcos High School Agriculture Dept entrance)	33.13117	-117.20248	X	MS4 only	Culvert / Earthen Channel	San Marcos	Residential	Commercial
A-08	La Sombra Drive, north of Quail Hill Drive, next to No. 1042	33.12437	-117.19581	X	Creek	Concrete Channel	San Marcos	Residential	Open
A-20	SM Creek, east of Discovery Street, east/upstream of confluence with branch from the north (from Basin D)	33.12992	-117.19822	X	Creek	Earthen Channel	San Marcos, County, Escondido, CSUSM, CalTrans	Mixed	
A-21	Manhole at east side of Craven Road, 75 feet south of Discovery Street, in front of white fence barrier	33.13215	-117.18031		MS4 only	Manhole	San Marcos	Residential	
A-22	CSUSM, manhole at southwest corner of Campus Way and Barham Dr	33.13328	-117.15955		MS4 only	Manhole / Curb Inlet	CSUSM	Educational	
A-24	CSUSM: manhole/inlet at NE corner of intersection of Craven Road and S Twin Oaks Valley Road	33.12744	-117.16499		MS4 only	Manhole / Curb Inlet	CSUSM	Educational	
A-25	CSUSM: manhole/inlet at SE corner of intersection of Craven Road and S Twin Oaks Valley Road	33.12721	-117.16506		MS4 only	Manhole / Curb Inlet	CSUSM	Educational	
A-27	CSUSM: channel east of S Twin Oaks Valley Road at north side of access road to CSUSM, across the street from driveway for shopping center	33.12965	-117.16461		MS4 only	Concrete Channel	CSUSM	Educational	
AW-01	Southwest of Twin Oaks Valley Road and Highway 78, north of storage yard	33.13652	-117.16505		MS4 only	Culvert / Earthen Channel	San Marcos, CSUSM	Industrial	Educational
B-01	North of Mission Road, west of Vineyard Road	33.14271	-117.16187	X	Creek	Creek / Culvert	San Marcos, County	Mixed	
B-20	Outflow from detention basin north of La Cienega Road and east of N Twin Oaks Valley Road	33.17324	-117.15898		Creek	Culvert	County, San Marcos	Mixed	
B-21	Open channel just N of private road on W side of N Twin Oaks Valley Road (~1280 N Twin Oaks)	33.16156	-117.16116		MS4 only	Concrete Channel / Culvert	San Marcos	Residential	Open
B-22	Manhole at east side of Via Las Brisas and N Twin Oaks Valley Road (frontage road)	33.17134	-117.16081		MS4 only	Manhole / Curb Inlet	San Marcos, County	Residential	Agriculture
B-23	Open channel E of N Twin Oaks Valley Road, 350 feet N of La Cienega Road	33.17457	-117.15915		MS4 only	Earthen Channel / Culvert	County, San Marcos	Agriculture	Residential
B-24	Open channel NE of Mulberry Drive between Sycamore Drive and Deer Springs Road	33.18501	-117.15101		Creek	Earthen Channel	County	Agriculture	
B-25	Open channel N of Olive Street, W of Mulberry Drive	33.1786	-117.14898		Creek	Earthen Channel	County	Agriculture	
C-01B	South of Mission Road, west of No.785. (Doose LandScape Inc.)	33.14393	-117.14497		MS4 only	Culvert / Earthen Channel	San Marcos, Mission Hills HS	Park	Educational
C-13	Southwest corner of Rock Springs Rd. and Bennet Ave intersection (north outfall)	33.14688	-117.12231		MS4 only	Culvert / Concrete Channel	Escondido	Residential	
C-20	San Marcos Creek, west of Rancheros Drive. Access via Old Spaghetti Factory parking lot (from N) or parking lot at 277 Rancheros Dr (from S)	33.13859	-117.16195	X	Creek	Concrete Channel / Culvert	San Marcos, Escondido	Mixed	
C-21	Southwest of intersection of Nordahl Road and Rock Springs Road, in channel.	33.14134	-117.11283		MS4 only	Earthen Channel	Escondido	Residential	
C-22	Manhole/inlet at entrance to apartment complex at west side of Woodland Parkway, north of Mission Road	33.14253	-117.13818		Creek	Manhole / Curb Inlet	San Marcos, Escondido	Mixed	
C-23	Manhole/inlet just east of entrance to Liberty Storage Yards (809 E Mission Rd)	33.14267	-117.14193		MS4 only	Manhole / Curb Inlet	San Marcos, Mission Hills HS	Educational	Park
C-24	Manhole/inlet at the intersection of Mission Rd and Mulberry Dr, NE corner on the west-facing curb	33.145295	-117.149269		MS4 only	Manhole / Curb Inlet	San Marcos	Industrial	Commercial
C-25*	East fork of San Marcos Creek at Woodland Parkway near Woodland Park	33.15404	-117.13048		Creek	Concrete Channel	San Marcos, Escondido	Residential	Commercial/ Golf Course
D-20	South of the intersection of Pacific Street and San Marcos Blvd, in channel	33.13221	-117.19707	X	Creek	Culvert / Earthen Channel	San Marcos, CalTrans, Palomar	Industrial	Commercial
D-21	Channel at east side of Pacific Street, just east of Bradley Park	33.13684	-117.19969		MS4 only	Earthen Channel	San Marcos	Park	Residential
D-22	Palomar College: open channel just E of western intersection of Comet Circle and Mission Road, N of Mission Road	33.14794	-117.18725		MS4 only	Concrete Channel / Culvert	Palomar	Educational	
D-23	Outlet N of Mission Road, across street from Palomar College Sprinter Station	33.14719	-117.18475		MS4 only	Concrete Channel / Culvert	Palomar	Educational	
D-24	W end of open channel N of Mission Road, next to Palomar College baseball field	33.1468	-117.18265		MS4 only	Concrete Channel / Culvert	Palomar	Educational	

Note: Light brown shaded rows contain sites that did not have water present during the May 2011 visit. These will be checked again in the next quarterly visit in September 2011.
Light blue shaded rows are recommended to be "sites of interest" to be visited next in July 2011.

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Table 2: Field Observations and Measurements

Site	Date	Time	Flow (gpm)	Algae	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (µS/cm)
A-05A	6/10/2011	13:15	390	Submerged	19.2	8.1	17.01	1.98
A-07	5/4/2011	13:40	2	Submerged, floating, and on banks	22.7	7.5	0.01	3.22
A-08	5/4/2011	15:50	Ponded	Submerged	27.5	7.9	6.09	1.81
A-20	5/10/2011	12:15	409*	None noted	17.8	7.8	8.27	2.09
A-21	5/4/2011	15:11	Ponded	None noted	20.6	7.8	6.48	2.09
A-22	5/5/2011	13:45	1	None noted	23.5	7.7	0.03	1.38
A-24	5/5/2011	15:20	Dry	None noted	--	--	--	--
A-25	5/5/2011	15:05	Dry	None noted	--	--	--	--
A-27	5/5/2011	15:40	Dry	None noted	--	--	--	--
AW-01	5/10/2011	10:10	Dry	None noted	--	--	--	--
B-01	6/10/2011	14:30	121	Submerged	18.6	7.94	7.78	2.34
B-20	5/6/2011	9:15	42	None noted	18.2	7.5	3.22	1.67
B-21	5/5/2011	16:25	Dry	None noted	--	--	--	--
B-22	5/5/2011	16:05	Dry	None noted	--	--	--	--
B-23	5/6/2011	10:00	Dry	On banks	--	--	--	--
B-24	5/6/2011	10:35	16	Submerged, floating, and on banks	20.2	7.5	0.01	1.61
B-25	5/6/2011	11:15	Ponded	Submerged and floating	18.7	7.4	1.52	2.02
C-01B	5/10/2011	9:30	Dry	None noted	--	--	--	--
C-13	5/9/2011	10:15	<1	Submerged and floating	18.1	7.9	4.63	1.98
C-20	5/5/2011	14:30	90	Submerged, floating, and on banks	21.2	7.7	2.39	2.06
C-21	5/9/2011	11:10	Dry	None noted	--	--	--	--

Site	Date	Time	Flow (gpm)	Algae	Temperature (°C)	pH	Turbidity (NTU)	Conductivity (µS/cm)
C-22	5/9/2011	14:30	Dry	None noted	--	--	--	--
C-23	5/9/2011	12:20	Dry	None noted	--	--	--	--
C-24	5/9/2011	13:45	<1	None noted	20.6	7.7	3.11	2.75
C-24-Dup	5/9/2011	13:55	<1	None noted	20.1	7.8	3.12	2.75
C-25	5/9/2011	15:15	18	Submerged	20.4	8.1	0.95	2.29
D-20	5/4/2011	14:30	4.5	Submerged and on banks	20.6	7.5	4.55	2.6
D-21	5/5/2011	9:30	1	Submerged and floating	17.6	6.8	1.79	5.83
D-22	5/5/2011	11:00	<1	Submerged	30.3	9.1	0.36	1.78
D-23	5/5/2011	10:25	3.5	Submerged and floating	21.7	7.9	0.01	1.51
D-24	5/5/2011	11:45	<1	Submerged	20.5	8.1	1.75	1.5

Notes:
Gray shaded row contains a duplicate sample collected for quality control.
* Site A-20 flow measurement was performed on 6/14/2011 due to flow meter malfunction at initial visit.

Table 3: Laboratory Analysis Results

Site	Date	Time	Flow (gpm)	Ammonia As N (mg/L)	Nitrate/Nitrite As N (mg/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Orthophosphate As P (mg/L)	Total Phosphorus As P (mg/L)
A-05A	6/10/2011	13:15	390	0.19	3.05	2.8	5.9	0.22	0.23
A-07	5/4/2011	13:40	2	0.41	3.5	93.2	96.7	0.10	0.13
A-08	5/4/2011	15:50	Ponded	1.5	0.06	5.5	5.6	0.21	0.40
A-20	5/10/2011	12:15	409	0.1	3.25	1.4	4.7	0.12	0.17
A-21	5/4/2011	15:11	Ponded	0.25	4.17	2.7	6.9	0.27	0.29
A-22	5/5/2011	13:45	1	0.02 J	23.2	0.7	23.9	0.27	0.27
B-01	6/10/2011	14:30	121	0.17	6.9	2.3	9.2	0.16	0.2
B-20	5/6/2011	9:15	42	0.2	22.4	0.6	23	0.31	0.33
B-24	5/6/2011	10:35	16	0.1	14.2	0.6	14.8	0.27	0.28
B-25	5/6/2011	11:15	Ponded	0.1	30.4	0.7	31.1	0.46	0.48
C-13	5/9/2011	10:15	<1	0.12	5.73	3.4	9.1	0.10	0.22
C-20	5/5/2011	14:30	90	0.06 J	4.23	2.5	6.7	0.10	0.12
C-24	5/9/2011	13:45	<1	0.1	18	1.2	19.2	0.59	0.69
C-24-Dup	5/9/2011	13:55	<1	0.09 J	21.1	1.4	22.5	0.37	0.59
C-25	5/9/2011	15:15	18	0.1	2.09	4.4	6.5	0.40	0.41
D-20	5/4/2011	14:30	4.5	1.44	0.22	3.5	3.7	0.19	0.20
D-21	5/5/2011	9:30	1	0.17	6.09	2.3	8.4	0.37	0.38
D-22	5/5/2011	11:00	<1	0.37	5.09	4.5	9.6	0.01 J	0.06
D-23	5/5/2011	10:25	3.5	0.02 J	4.2	3.3	7.5	0.08	0.12
D-24	5/5/2011	11:45	<1	0.21	2.61	4.2	6.8	0.08	0.13

Notes:
Gray shaded row contains a duplicate sample collected for quality control.
J = Value above the detection limit but below the reporting limit; therefore, the reported result is an estimated concentration.

Figure 1: Mapped Total Nitrogen Results

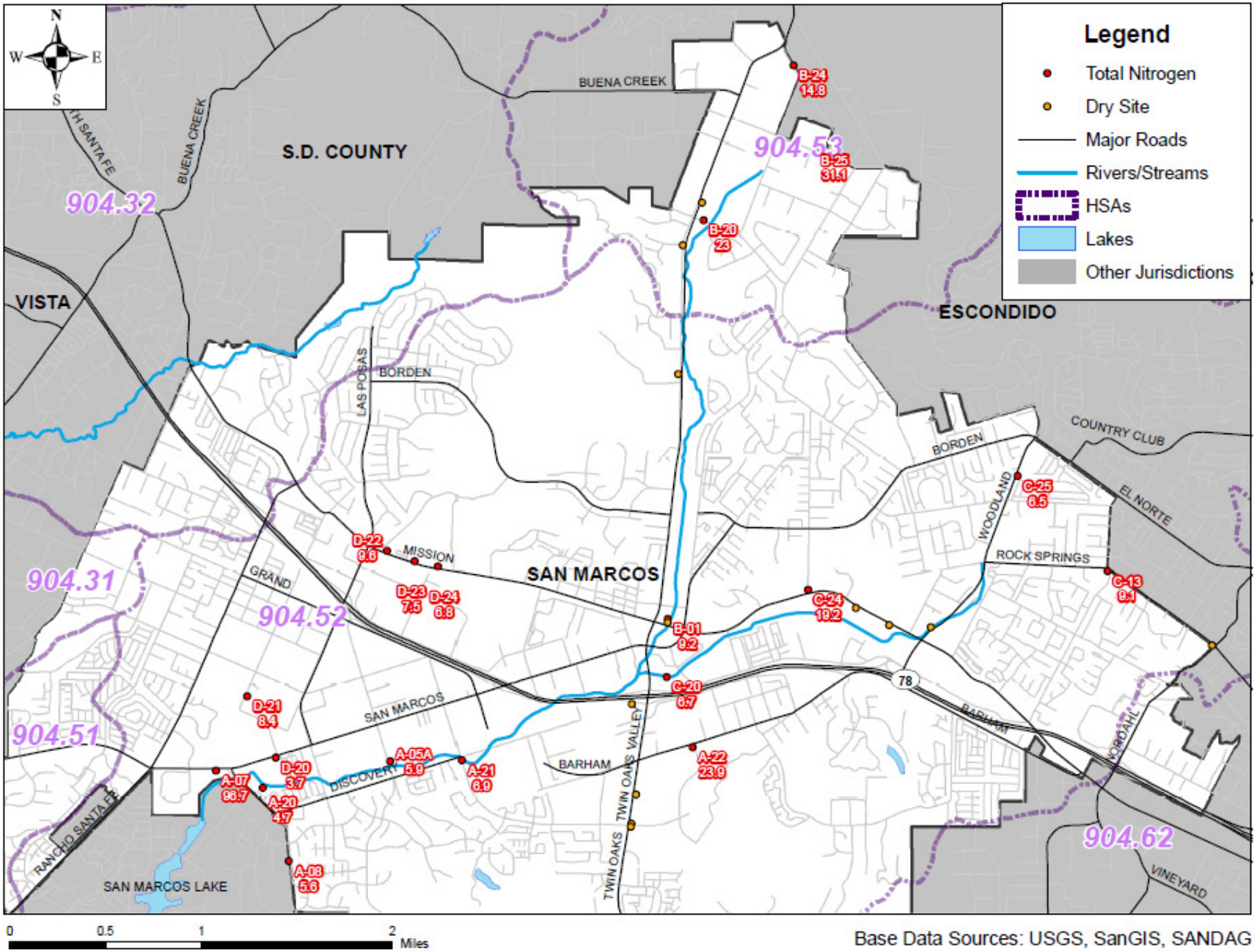

Figure 2: Mapped Total Phosphorus Results

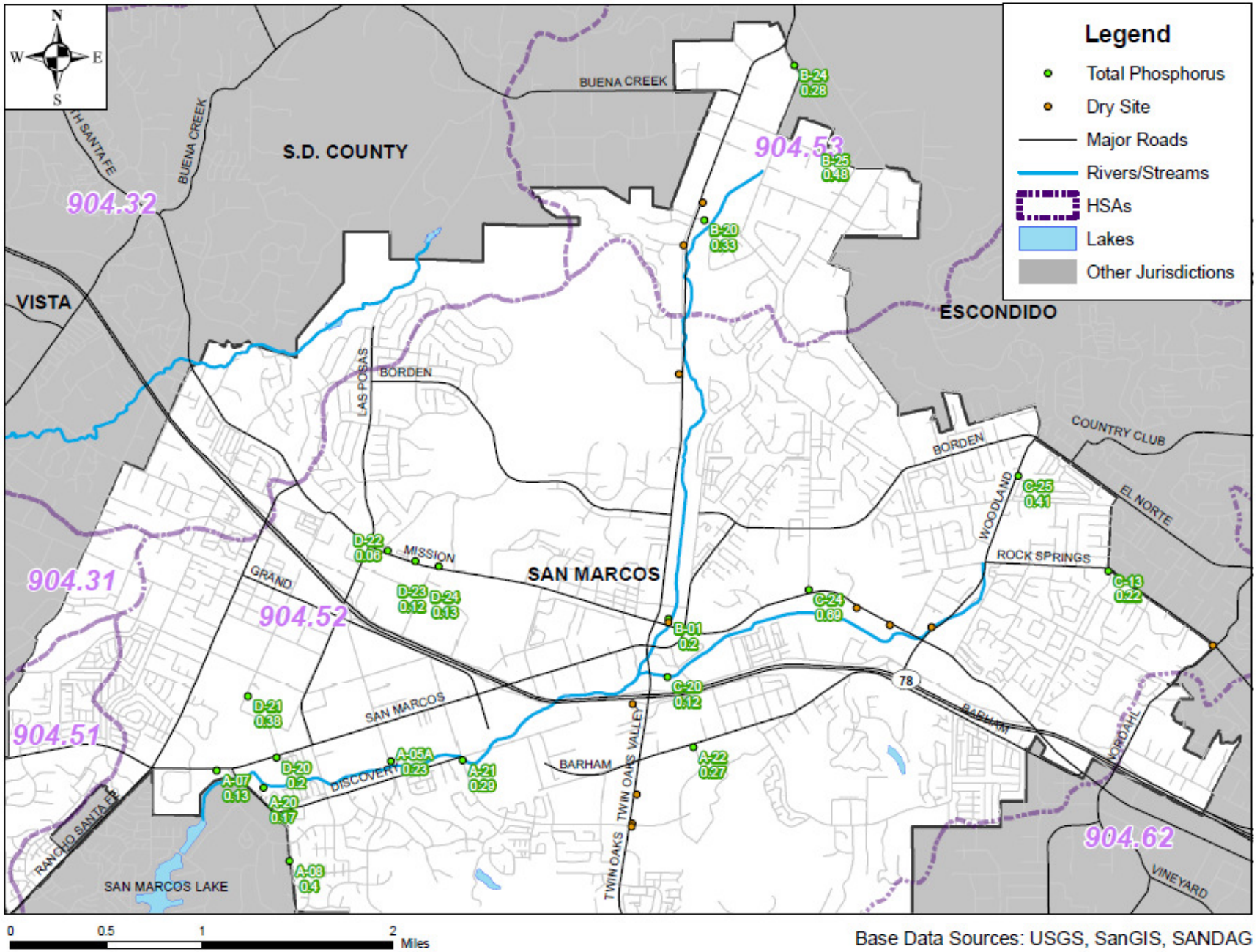

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TITLE: LOMA ALTA WATER QUALITY MONITORING PROGRAM
ID #: CHU-WQA22

ACTIVITY DESCRIPTION

To better understand and characterize constituents of concern in the Loma Alta Creek watershed, the City of Oceanside, with the assistance of the City of Vista, is implementing a watershed monitoring program for the creek and its major tributaries. The first year of data will be used as a baseline in anticipation of the nutrient and bacteria TMDLs that will be created and implemented at the slough. The quarterly ambient monitoring program will focus on seven receiving water locations and the three tributaries. As information is gathered, the monitoring program will be adapted through spatial or temporal changes to assess priority areas within the watershed. This adaptive approach will allow for the addition and removal of analytes, sampling locations, and sampling strategies.

A description of the monitoring program, including sampling locations, procedures, and analyses is included as Attachment A to this Activity Implementation Sheet. An overview of the FY 2010 and FY 2011 results are provided in Attachment B.

TMDL APPLICABILITY

This activity is planned for future implementation of the TMDL for Nutrients and Bacteria for Loma Alta Slough.

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring activities began in FY 2009-10 and continued into FY 2010-11. A fall sampling event is missing and therefore, sampling may continue into FY 2011-2012. The program will be reevaluated for continued implementation in future years.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING COPERMITTEES

- City of Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the Loma Alta HA (904.10). This monitoring program is therefore consistent with the strategy.

EFFECTIVENESS MEASUREMENTS

The City of Oceanside and the City of Vista collected samples from Loma Alta Creek and its tributaries beginning March 2010, sampling bacteria, nutrients, and selenium. This activity is only a monitoring activity to provide baseline results for further source assessment in the Loma Alta Watershed. An assessment will be made after a year of data is collected and the program may be adapted to better identify priority areas. An overview of the monitoring program is provided in Attachment A. An overview of the FY 2010 and FY 2011 results are provided in Attachment B.

CHU-WQA22

Loma Alta Water Quality Monitoring Program

Attachment A

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Loma Alta Creek
Watershed Monitoring Program

1 INTRODUCTION

To better understand and characterize constituents of concern in the Loma Alta Creek watershed, the City of Oceanside is implementing a watershed monitoring program for the creek and its major tributaries. The data will be used as a baseline in anticipation of the nutrient and bacteria TMDLs that will be created and implemented at the slough. The quarterly ambient monitoring program will focus on seven receiving water locations and the three tributaries. As information is gathered, the monitoring program may be adapted to fit the needs of the Clean Water Program. This adaptive approach will allow for the addition and removal of analytes, sampling locations, and sampling strategies.

Loma Alta Creek is currently listed on the 2006 303(d) list for the following segments and analytes:

Table 1. 2006 303(d) List.

Water body Segment Name	Estimated Size Affected	Pollutant/Stressor
Pacific Ocean at Loma Alta Creek Mouth	1.1 miles	Indicator Bacteria
Loma Alta Slough	8.2 acres	Eutrophic
		Indicator Bacteria

The proposed 2008 303(d) list, adopted by the San Diego Regional Water Quality Control Board (SDRWQCB) in December 2009 and awaiting State and EPA Region 9 approval, lists the following segments and analytes:

Table 2. Proposed 2008 303(d) List.

Water body Segment Name	Estimated Size Affected	Pollutant/Stressor
Pacific Ocean at Loma Alta Creek Mouth	0.03 miles	Indicator Bacteria
Loma Alta Slough	8.2 acres	Eutrophic
		Indicator Bacteria
Loma Alta Creek	7.8 mi	Selenium
		Toxicity

Additional historical and current monitoring data for Loma Alta Creek watershed is listed below.

Receiving Water Monitoring:

- Regional Temporary Watershed Assessment Station (TWAS); 2007-08; ambient and wet weather.
    - One station east of I-5 with continuous flow monitoring and two ambient and two wet weather events.
    - Not planned for continued TWAS monitoring.
- UV Treatment Facility Monitoring

  - Only sampled dry season when UV Facility is operational. One influent sample, UV influent (post sand–filter) and one effluent sample, and three beach samples.
- Pacific Ocean Shoreline Monitoring
  - Historical County Department of Health bacteria data for Buccaneer Beach is available. As of September 28, 2008, shore station sampling at Buccaneer Beach ended due to loss of funding.
- Lagoon TMDL Investigation Order Monitoring (Calendar Year 2008)
  - All locations were west of I-5. A mass emissions station, lagoon segment, ocean inlet segment, lagoon transect, and two storm drain locations were monitored for nutrients, bacteria, and conventional constituents for dry and wet weather. More information is available from the Carlsbad Hydrologic Unit Lagoon Monitoring Report (June 2009).
- Loma Alta Creek Watershed Management Plan Monitoring
  - All data collected between 2000 and 2002. Used the following techniques for evaluation of water quality:
    - Land Use Based Model.
    - Ambient Monitoring (one station at Coast Highway crossing with grab samples from 11 events) .
    - Source Identification Monitoring (bacteria samples throughout the watershed between June 2000 and July 2001).
    - Wet Weather Monitoring (one storm event at Coast Highway crossing with grab samples).

Outfall Monitoring:

- Jurisdictional Dry Weather Monitoring
  - Up to 35 locations through the Loma Alta watershed within the MS4 system visited once per year during the dry season (May 1 – September 30).
- MS4 Monitoring
  - Dry and wet weather, targeted and random samples. Dry, targeted samples are collected by the City of Oceanside. The remaining three types of samples are collected and reported through the Regional Watershed Monitoring Program and Report.

2 MONITORING DESIGN

The City will conduct dry weather monitoring quarterly beginning in March, 2010. No sampling will be conducted if rainfall over 0.1 inches has occurred within 72 hour prior to the sampling date.

2.1 Sample Locations

Samples will be collected at the locations listed in Table 3. Sample locations may change based on the adaptive nature of the monitoring. As reaches are characterized, stations may be added or removed from the list as monitoring focuses on hot spots for constituents of concern.

Table 3. Loma Alta Creek Watershed Sampling Locations.

Station Name	Station Designation	Description	Latitude	Longitude
LA-PCH	RW	W of Pacific Coast Highway	33.17991	-117.36660
L108	Trib	LA Tributary W of I-5	33.18250	-117.36512
LA-SOC	RW	End of South Oceanside Blvd	33.19315	-117.35623
L027	Trib	Garrison Creek; N of Oceanside Blvd	33.20252	-117.33708
LA-ECR	RW	At El Camino Real - NE side of ECR and RR upstream of 2 pipes	33.19991	-117.33052
LA-RDO	RW	At Rancho Del Oro - NE side of RDO and RR; create path	33.20205	-117.31012
LA-COL	RW	E of College Blvd 200 ft	33.20619	-117.28347
L116	Trib	South of Oceanside Blvd and Arroyo	33.20809	-117.28042
LA-NOR	RW	Along North Ave near 4602 North Ave through easement	33.21235	-117.26995
LA-VIS*	RW	Top of Vista Pacific; start of storm drain system	33.21294	-117.26331

*LA-VIS will generally include visual observations only as it will likely be dry. If flowing, samples will be collected if resources allow.

2.2 Sampling Methods

2.2.1 Frequency

Monitoring will be conducting, at a minimum, quarterly, (i.e., four times/year). This allows for seasonal monitoring during ambient conditions. If a month is missed due to rain or other circumstances, it will be made up the following month to ensure four events per year are monitored.

2.2.2 Field Analysis

The following in-situ water quality measurements will be collected at each site:

- Water Temperature
- pH
- Conductivity
- Turbidity
- Dissolved Oxygen
- Flow

2.2.3 Laboratory Analysis

The following constituents will be analyzed by the laboratory:

- Total Coliform
- Fecal Coliform
- Enterococcus
- Nitrate-N
- Nitrite-N
- Total Kjeldahl Nitrogen (TKN)
- Total Suspended Solids (TSS)
- Ammonia
- Orthophosphate
- Total Phosphorous
- Dissolved Selenium

2.2.4 Sampling Methods

Field samples will be collected using an in-situ water quality meter. Where possible, the meter will placed directly into the flow. When flow is insufficient, a sampling cup my be used.

Flow will be measured quantitatively using standard USGS protocols. If the flows are too small to measure with instrumentation, the indirect methods described by USGS may be used to estimate flow (e.g., float method).

Laboratory samples will be collected as grab samples in the appropriate containers and stored on ice (4˚C) for transfer. The sample containers will be certified as clean and/or sterile by the laboratory performing the analysis prior to sample collection. Samples will be delivered to the laboratory or courier and analyses initiated within the specified holding times. Table 4 summarizes this information.

Table 4. Summary of Sample Analytical Methods and Requirements for Methods.

Analyte	Method	Target Reporting Limit	Units	Maximum Holding Time
Temperature	Field Meter	-	˚C	-
Dissolved Oxygen	Field Meter	0.1	mg/L	-
Conductivity	Field Meter	0.1	mS/cm	-
Turbidity	Field Meter	0.1	NTU	-
pH	Field Meter	0.1	pH Units	-
Total Coliform	SM 9221 B, E	20	MPN/100ml	6H
Fecal Coliform	SM 9221 B, E	20	MPN/100ml	6H
Enterococcus	Idexx	10	MPN/100ml	6H
Nitrate-N	SM4500	0.5	mg/L	48H
Nitrite-N	SM4500	0.05	mg/L	48H
TKN	SM4500	0.5	mg/L	28D
Ammonia	SM4500	0.1	mg/L	28D
Total Phosphorous	SM4500	0.05	mg/L	28D
Orthophosphate	SM4500	0.05	mg/L	48H
Dissolved Selenium	EPA 200.8	5	µg/L	6M
TSS	SM 2540 D	1.5	mg/L	7D

2.2.5 Quality Assurance/Quality Control

Quality assurance and quality control for sampling processes will include proper collection of the samples in order to minimize the possibility of contamination. All samples will be in laboratory supplied, laboratory-certified, contaminant-free sample bottles. In addition, during each sampling event one site is selected (at random or rotating) to conduct alternating field duplicates and field blanks.

Evaluation of sample contamination will be performed by collecting field blanks for all constituents at one site every other sampling event. The field blank will be used to assess the sample collection, container, and transport of the samples to the analytical laboratory.

Evaluation of sample variability will be performed by collecting field duplicates for all constituents at one site every other sampling event. The relative percent difference between sample duplicates may then be assessed.

The chemistry analysis of the samples will be performed under the guidelines of the quality assurance and quality control programs established by the state-certified laboratory.

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CHU-WQA22

Loma Alta Water Quality Monitoring Program

Attachment B

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CHU-WQA22 Loma Alta Water Quality Monitoring Program
Attachment B

Introduction

To better understand and characterize constituents of concern in the Loma Alta Creek watershed, the City of Oceanside, with the assistance of the City of Vista, implemented a watershed monitoring program for the Creek and its major tributaries. The first year of data was to be used as a baseline in anticipation of the nutrient and bacteria TMDLs being developed and implemented in the Slough. The quarterly ambient monitoring program focused on seven receiving water locations and three tributaries. After the first full year of data, the monitoring program was intended to be adapted through spatial or temporal changes to assess priority areas within the watershed. This adaptive approach will allow for the addition and removal of analytes, sampling locations, and sampling strategies.

Sampling for the baseline year of data began in March of 2010. The spring sampling event took place on March 17th and the summer event took place on June 22nd. Six receiving water and three tributary sites had flowing or ponded water during each event and all constituents listed in the work plan were analyzed.

Sampling continued into the 2010-11 fiscal year. The fall sampling event was canceled due to laboratory contracting issues followed by multiple storm events. A winter sampling event occurred on November 29, 2010. Six receiving water and three tributary sites had flowing or ponded water during the winter event and all constituents listed in the work plan were analyzed. The next spring sampling event occurred on March 3, 2011. The most upstream site, LA_VIS which is usually dry, had flowing water and therefore seven receiving water and three tributary sites were sampled for all constituents listed in the work plan were analyzed.

Results

Table 1 (attached) provides all of the data collected including field data, flow, and analytical results. Below is a summary and discussion of results.

Analytical results from the receiving water and tributary sites and sampling events are provided in Table 2. The results from the receiving water and tributary samples were similar for all analytes, with the exception of selenium. Selenium was only detected at one site during two of the four events; tributary site L108 on November 29, 2010 and March 3, 2011. These sampling events coincide with a commercial construction project and storm drain improvement involving the movement of dirt, realignment of the tributary, and surfacing groundwater into the stormdrain system.

Indicator bacteria results for the tributary and receiving water results were similar, although there was a greater range in results for receiving water samples. The indicator bacteria results are presented spatially in Figure 1. There is no trend observed for total coliforms, but there is a slight increasing trend moving from upstream to downstream for fecal coliforms and a slight decreasing trend for Enterococcus; although these have not been analyzed for statistical significance.

Table 2. Summary of Analytical Results.

		Count	Max	Min	Mean	Units
Tributary Results	Ammonia as N	12	2.6	0.1	0.9	mg/L
	Nitrate as N	12	2.4	<0.05	0.96	mg/L
	Nitrite as N	12	<0.05	<0.02	*	mg/L
	Total Kjeldahl Nitrogen	12	2.72	0.8	1.41	mg/L
	Total Nitrogen	12	4.93	1.008	2.373	mg/L
	Orthophosphate as P	12	0.39	0.09	0.21	mg/L
	Phosphorus, Total	12	0.42	0.1	0.24	mg/L
	Selenium, Total	12	15	<0.005	2.385	µg/L
	Selenium, Dissolved	12	14	<0.005	1.896	µg/L
	Total Suspended Solids	12	13	0.9	4.3	mg/L
	Enterococci	12	640	10	161**	MPN/100 mL
	Fecal Coliforms	12	3000	<20	203**	MPN/100 mL
	Total Coliforms	12	8000	2200	4001**	MPN/100 mL

		Count	Max	Min	Mean	Units
Receiving Water Results	Ammonia as N	25	1.7	0.12	0.8	mg/L
	Nitrate as N	25	3.7	<0.05	0.98	mg/L
	Nitrite as N	25	0.05	<0.02	0.02	mg/L
	Total Kjeldahl Nitrogen	25	1.8	0.6	1.33	mg/L
	Total Nitrogen	25	4.9035	0.608	2.310	mg/L
	Orthophosphate as P	25	0.35	<0.05	0.1804	mg/L
	Phosphorus, Total	25	0.41	0.09	0.21	mg/L
	Selenium, Total	25	<1.3	<0.005	*	µg/L
	Selenium, Dissolved	25	<1.3	<0.005	*	µg/L
	Total Suspended Solids	25	33	0.4	4.6	mg/L
	Enterococci	25	2100	41	181**	MPN/100 mL
	Fecal Coliforms	25	1300	<20	215**	MPN/100 mL
	Total Coliforms	25	23000	640	4523**	MPN/100 mL

Where there were non-detect results, means were calculated by using half of the reporting limit value.
*The mean was not calculated when all results were non-detect. A change in analytical laboratories resulted in varying reporting limits and thus different maximum and minimum values even when all results were non-detect.
**The geometric mean is presented for indicator bacteria results.

Total nitrogen and total phosphorous results are presented spatially in Figure 2. Because of the dynamic biological processes involving nutrients, the concentrations are generally not a good indicator of nutrient issues. As expected, total nitrogen levels are typically lower in the summer, as algae blooms take up the nutrients. It is interesting that at LA_NOR, where Loma Alta Creek daylights, the total nitrogen level was the highest of any other sample collected. Another peak of total nitrogen was at the tributary L108 during the two later sampling event. Again, these events coincide with construction and storm drain system realignment for drainage for groundwater, tributary, and existing urban and storm runoff. There is no trend evident for total phosphorous levels.

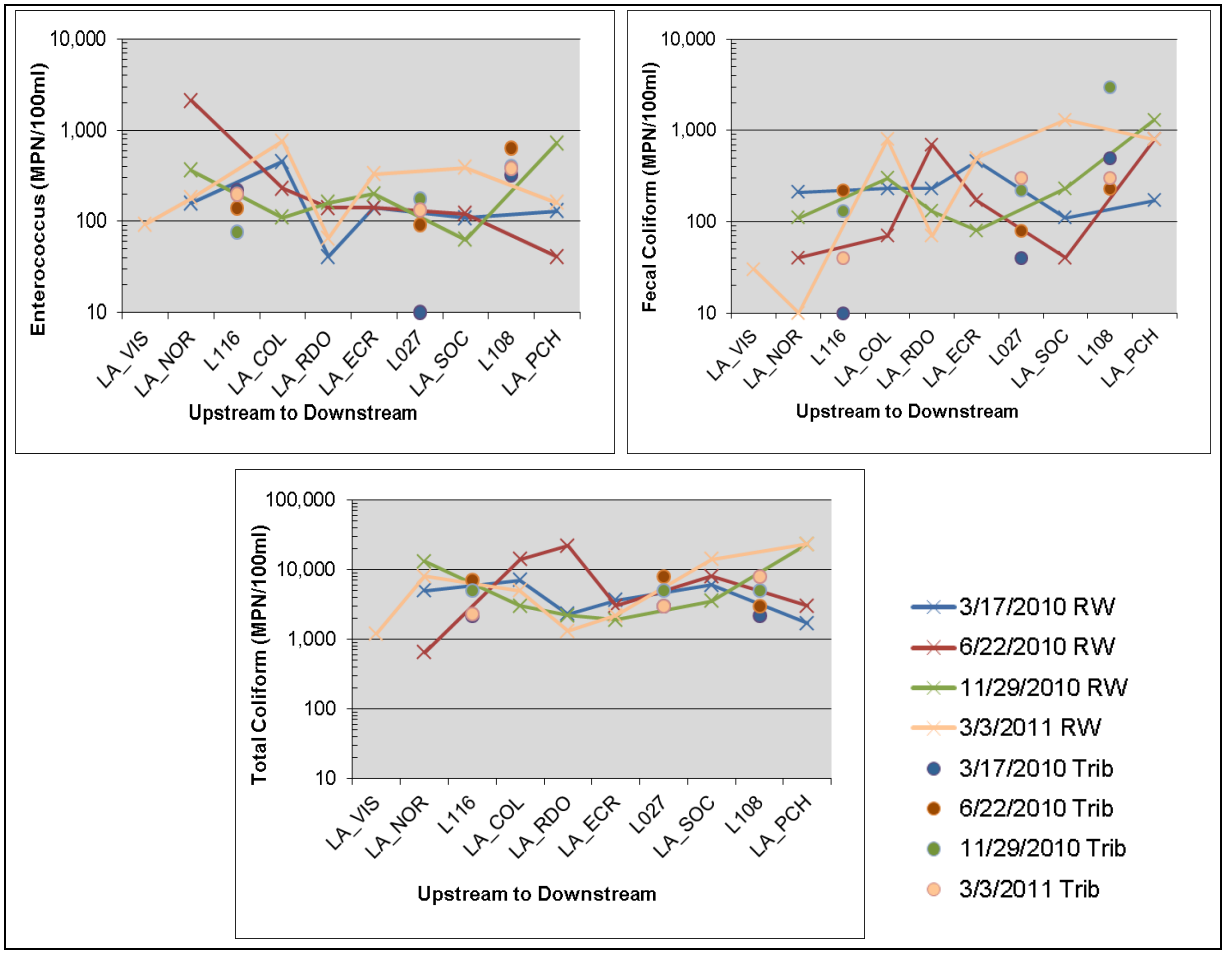

Figure 1. Indicator Bacteria Results Upstream to Downstream.

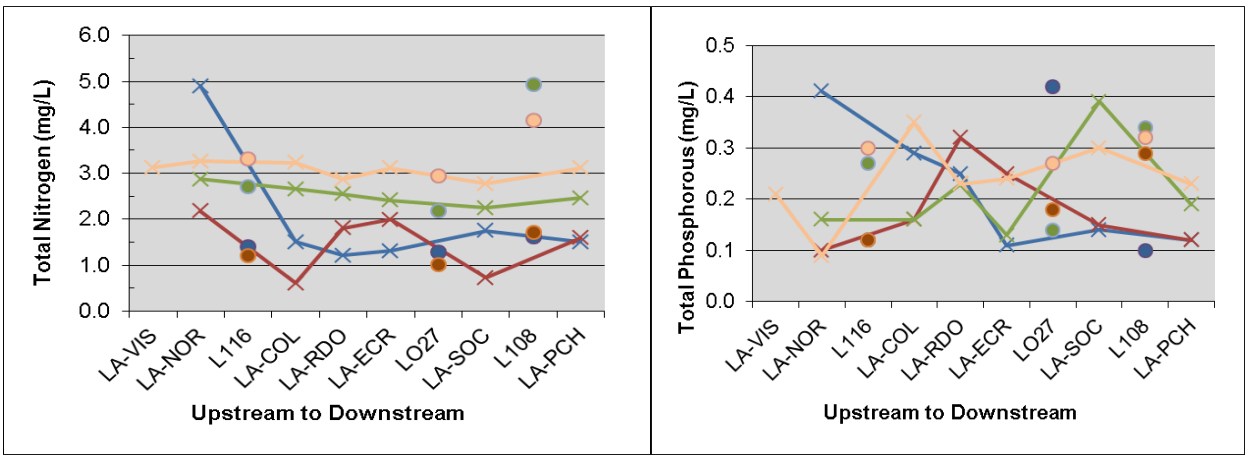

Figure 2. Total Nitrogen and Total Phosphorous Results Upstream to Downstream.

When reviewing the ammonia-N results in Table 1, it appears that during the last two events the results were almost an order of magnitude higher then the first two event results. Nitrate-N results are also higher overall during the last two events. A different analytical laboratory was

used for the first two events and the last two events. As sampling continues an additional assessment should be made of these results and if the variance is due to environmental or laboratory factors.

Also of note, the water sampled at the most upstream site during the one event where there was water present, LA_VIS, was solely surfacing groundwater. There was no overland flow present. This indicates that nutrient levels in groundwater may be affecting the entire watershed.

In summary, while a fall event has not been completed, seasonal differences appear slight for bacteria. There is a more prominent seasonal difference for total nitrogen, as expected, due to the biological processes and continuous nutrient cycling. The most evident spatial trend is in fecal coliforms with a slight increase from upstream to downstream sites. Enterococcus has a slight decrease and then increases again near the creek mouth. However, these trends have not been confirmed with statistical analysis. Selenium was detected at one tributary location during two sampling events. These coincide with construction and grading and movement of soils and sediment.

Table 1. Summary of Loma Alta Watershed Data FY 2009-10 and FY 2010-11.

Station Name	Sample Date	Sample Time	Flow	Flow (gpm)	Water Temperature (°C)	Conductivity (mS/cm)	pH (pH Units)	DO (mg/L)	Turbidity (NTU)	Ammonia as N (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Phosphorus, Total (mg/L)	Selenium, Dissolved (mg/L)	Selenium, Total (mg/L)	Enterococci (MPN/100mL)	Fecal Coliforms (MPN/100mL)	Total Coliforms (MPN/100mL)	Total Suspended Solids (mg/L)
LA-NOR	3/17/2010	9:05	Flowing	5	15.81	0.96	7.94	11	1.9	0.23	3.7	<0.05	1.2	4.9035	0.33	0.41	<0.005	<0.005	158	210	5000	2
L116	3/17/2010	9:34	Flowing	42	12.06	4.61	7.37	8.27	7.3	0.2	<0.05	<0.05	1.4	1.408	0.09	0.12	<0.005	<0.005	220	<20	2200	1
LA-COL	3/17/2010	9:55	Flowing	65	12.05	No data[2]	7.38	5.06	8.5	0.24	<0.05	<0.05	1.5	1.508	0.26	0.29	<0.005	<0.005	450	230	7000	1
LA-RDO	3/17/2010	10:30	Flowing	143	11.43	4.71	7.66	8.04	1.8	0.19	<0.05	<0.05	1.2	1.208	0.12	0.25	<0.005	<0.005	41	230	2300	2.6
LA-ECR	3/17/2010	11:00	Flowing	178	13.11	4.14	7.69	9.72	4.3	0.22	<0.05	<0.05	1.3	1.308	<0.05	0.11	<0.005	<0.005	140	460	3600	5
L027	3/17/2010	12:30	Flowing	29	15.66	4.73	7.75	10.26	6.9	0.18	0.08	<0.05	1.2	1.2835	0.39	0.42	<0.005	<0.005	10	40	3000	3.4
LA-SOC	3/17/2010	13:00	Flowing	1647	15.07	4.23	7.88	9.41	3.1	0.12	0.14	<0.05	1.6	1.7435	0.14	0.14	<0.005	<0.005	109	110	6000	2.8
L108	3/17/2010	13:40	Ponded	0	25.4	11	8.12	19.32	18.6	0.17	0.51	<0.05	1.1	1.6135	0.09	0.1	<0.005	<0.005	320	500	2200	7.8
LA-PCH	3/17/2010	14:08	Ponded	0	20.95	25.2	8.43	21.48	10.7	0.16	0.5	<0.05	1	1.5035	0.12	0.12	<0.005	<0.005	130	170	1700	3.4
LA-VIS	6/22/2010	8:02	Dry	0	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
LA-NOR	6/22/2010	8:15	Flowing	16	18.04	5.62	7.54	8.75	3.8	0.16	0.83	0.05	1.3	2.18	0.1	0.1	<0.005	<0.005	2100	40	640	2.6
L116	6/22/2010	8:45	Flowing	10	16.32	8.26	7.2	6.02	3.9	0.22	0.1	<0.05	1.1	1.2035	0.09	0.12	<0.005	<0.005	140	220	7000	4.8
LA-COL	6/22/2010	9:22	Flowing	18	16.88	4.99	7.44	6.13	3.7	0.2	<0.05	<0.05	0.6	0.608	0.1	0.16	<0.005	<0.005	230	70	14000	13
LA-RDO	6/22/2010	10:02	Flowing	85	16.53	5.53	7.71	7.72	4.7	0.15	<0.05	<0.05	1.8	1.808	0.3	0.32	<0.005	<0.005	140	700	22000	5.2
LA-ECR	6/22/2010	10:48	Flowing	101	17.46	4.85	7.5	10.01	8.8	0.15	0.19	<0.05	1.8	1.9935	0.24	0.25	<0.005	<0.005	140	170	3000	2.6
L027	6/22/2010	12:29	Flowing	68	22.9	4.65	7.81	9.76	5.7	0.1	<0.05	<0.05	1	1.008	0.1	0.18	<0.005	<0.005	92	80	8000	3.8
LA-SOC	6/22/2010	12:58	Ponded	0	25.71	4.64	7.79	12.19	4.4	0.14	0.12	<0.05	0.6	0.7235	<0.05	0.15	<0.005	<0.005	121	40	8000	8.6
L108	6/22/2010	13:25	Flowing	21	31.66	10.72	8.44	15.7	6.1	0.18	0.91	<0.05	0.8	1.7135	0.26	0.29	<0.005	<0.005	640	230	3000	5
LA-PCH	6/22/2010	14:03	Flowing	343	23.95	6.75	7.87	12.17	8.3	0.19	0.79	<0.05	0.8	1.5935	0.12	0.12	<0.005	<0.005	41	800	3000	33
LA-VIS	11/29/2010	8:16	Dry	0	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
LA-NOR	11/29/2010	8:32	Flowing	5	8.34	4.55	8.27	15.33	0.9	1.7	1.1	<0.02	1.76	2.87	0.14	0.16	<1.3	<1.3	360	110	13000	2
L116	11/29/2010	9:03	Flowing	35	8.79	2.86	7.47	9.09	1.3	1.4	1.2	<0.02	1.49	2.7	0.24	0.27	<1.3	<1.3	76	130	5000	0.9
LA-COL	11/29/2010	9:35	Flowing	39	8.75	2.59	7.71	8.63	1	1.5	1.1	<0.02	1.55	2.66	0.15	0.16	<1.3	<1.3	110	300	3000	0.4
LA-RDO	11/29/2010	10:21	Flowing	125	8.82	2.7	7.77	10.46	1.5	1.3	1.2	<0.02	1.34	2.55	0.21	0.23	<1.3	<1.3	160	130	2200	0.9
LA-ECR	11/29/2010	11:07	Flowing	403	10.11	3.09	7.81	11.8	2.5	1.25	1.1	<0.02	1.3	2.41	0.11	0.13	<1.3	<1.3	200	80	1900	0.9
L027	11/29/2010	12:47	Flowing	373	12.07	2.71	7.88	12.45	3.3	1.15	1	<0.02	1.18	2.19	0.12	0.14	<1.3	<1.3	175	220	5000	3.2
LA-SOC	11/29/2010	13:22	Flowing	213	11.81	3.16	8.04	11.87	2.9	1.2	1	<0.02	1.24	2.25	0.35	0.39	<1.3	<1.3	63	230	3500	3.1
L108	11/29/2010	13:55	Flowing	12	15.5	10.97	8.94	20.99	0.2	2.6	2.2	<0.02	2.72	4.93	0.31	0.34	14	15	400	3000	5000	13
LA-PCH	11/29/2010	14:29	Flowing	1102	15.56	4.09	8.38	15	9.8	0.9	1.5	<0.02	0.95	2.46	0.17	0.19	<1.3	<1.3	720	1300	23000	12
LA-VIS	3/3/2011	8:08	Flowing	3	11.46	3.85	7.41	7.03	6.2	1.55	1.5	<0.02	1.61	3.12	0.19	0.21	<0.63	<0.63	92	30	1200	2.8
LA-NOR	3/3/2011	9:16	Flowing	14	16.11	4.4	8.02	12.56	0.7	1.6	1.6	<0.02	1.65	3.26	0.08	0.09	<0.63	<0.63	180	<20	8000	1
L116	3/3/2011	9:37	Flowing	135	13.9	5.51	7.67	7.68	0.3	1.85	1.4	<0.02	1.9	3.31	0.28	0.3	<0.63	<0.63	200	40	2300	1
LA-COL	3/3/2011	10:06	Flowing	303	13.38	1.93	7.8	8.36	0.3	1.45	1.7	<0.02	1.52	3.23	0.32	0.35	<0.63	<0.63	758	800	5000	1
LA-RDO	3/3/2011	11:01	Flowing	195	13.15	4.16	7.89	11.77	0.2	1.7	1.1	<0.02	1.76	2.87	0.21	0.23	<0.63	<0.63	65	70	1300	1
LA-ECR	3/3/2011	11:45	Flowing	No data[1]	No data[2]	No data[2]	No data[2]	No data[2]	No data[2]	1.25	1.8	<0.02	1.3	3.11	0.23	0.24	<0.63	<0.63	330	500	2200	2.6
L027	3/3/2011	13:22	Flowing	No data[1]	15.78	3.6	9.92	10.12	3.3	1.2	1.7	<0.02	1.24	2.95	0.25	0.27	<0.63	<0.63	134	300	3000	4
LA-SOC	3/3/2011	13:57	Flowing	808	17.51	3.27	8.18	9.07	3	1.1	1.6	<0.02	1.16	2.77	0.27	0.3	<0.63	<0.63	390	1300	14000	4.2
L108	3/3/2011	14:30	Flowing	31	23.46	8.81	8.89	16.7	0.3	1.7	2.4	<0.02	1.75	4.16	0.3	0.32	6.8	11	380	300	8000	4
LA-PCH	3/3/2011	15:05	Flowing	No data[1]	19.48	3.88	8.46	12.04	1.3	1.35	1.7	<0.02	1.4	3.11	0.2	0.23	<0.63	<0.63	160	800	23000	0.8

No data[1] Flow meter not working.

No data[2] Field data sheet on laptop deleted.

Sites beginning with "LA-" are receiving water sites. Sites beginning with "L" followed by a number are tributaries/MS4 outfalls.

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TITLE: SAN DIEGO COUNTY ENTEROCOCCUS REGROWTH STUDY
ID #: CHU-WQA23

ACTIVITY DESCRIPTION

The San Diego County *Enterococcus* Regrowth Study was developed to assess storm drains as a potential source of *Enterococcus* bacteria to San Diego's marine coastal waters during dry weather. The goals of the study include: 1) to determine if biofilms and algae that form on the surfaces of storm drains support the growth of *Enterococci*; 2) to determine if *Enterococci* growing on storm drain surfaces are a source of bacteria to sand and beach water; and 3) to determine if *Enterococci* growing on storm drain surfaces may be differentiated from those of fecal origin. *Enterococcal* growth will be assessed using small concrete blocks (coupons) tethered to the bottom surfaces of storm drain pipes. The hypothesis is that *Enterococci* in urban runoff will attach to the coupons located inside the storm drain pipes, form biofilm, and multiply, leading to increased densities of *Enterococci* over time. This raises the possibility that bacterial growth within storm drains may be at least partly responsible for elevated concentrations of *Enterococci* observed in urban runoff impacting beach water quality.

Based on historical bacterial monitoring data, the presence of continuous dry weather flow, and accessibility, both Moonlight Beach in Encinitas and a City of San Diego beach in the community of La Jolla were chosen to participate in this regional study. The site at Moonlight Beach was of particular interest because it has an ultra violet urban runoff treatment facility (UV Facility) located approximately 230 yards upstream of Moonlight Beach. The UV Facility diverts 85% of the dry weather flows in Cottonwood Creek into an ultra violet treatment system designed to inactivate bacteria and viruses in the creek water. Bacteria removal efficiencies through the UV Facility have been calculated at >99%. In February 2006, the City of Encinitas published the Moonlight Beach Urban Runoff Treatment Facility Final Report which indicated that additional sources of bacteria are contributing to the degradation of water quality downstream of the UV Facility. While nearly 100% of the bacteria were removed from the treated water at the UV Facility, removal efficiencies from the effluent to the Moonlight Beach outfall were not as dramatic, indicating significant regeneration of bacteria between the UV Facility and the beach. Despite the presence of the UV Facility, samples from Moonlight Beach occasionally exceed the *Enterococci* AB411 single sample standard of 104 MPN/100 ml. Hypotheses offered in the City's Moonlight Beach Urban Runoff Treatment Facility Final Report indicated that increases in bacteria downstream of the UV Facility could be primarily due to animals in the creek and on the beach, sediments and debris in the creek and storm drains, and the wrack line on the beach.

TMDL APPLICABILITY

The study results will support efforts to meet Bacteria TMDL requirements at Moonlight State Beach.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2010-11: Monitoring Plan, Field Sampling
FY 2011-12: Field Sampling, Data Analysis, Prepare Final Report

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING COPERMITTEES

- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Southern California Coastal Water Research Project

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Cottonwood Creek Watershed is a sub-basin within the San Marcos Hydrologic Area. Bacteria and sediment have been identified as priority water quality problems in the San Marcos HA (904.5). The shoreline at Moonlight Beach is 303(d) listed for bacteria for which there is an established TMDL (Resolution No. R9-2010-0001). This monitoring study addresses bacteria regrowth within Cottonwood Creek which is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

To be documented once the final report is complete.

TITLE: **WATER QUALITY RUNOFF MANAGEMENT AND AGRICULTURAL WAIVER WORKSHOP FOR NURSERIES AND AGRICULTURAL BUSINESSES**

ID #: **CHU-WQEA3**

ACTIVITY DESCRIPTION

This free educational workshop is planned to be provided every other year. The workshop was provided in FY 2008 and was provided again in FY 2010. Topics included:

1) Water quality runoff regulations and BMPs for pollution prevention.
2) Irrigated Agricultural Waivers.
3) Storm water quality issues and typical inspection elements.
4) Federal assistance for development of conservation management plans and other programs to assist operations in complying with water quality regulations.

A distribution of the represented facilities attending the workshop in June 2010 can be seen below.

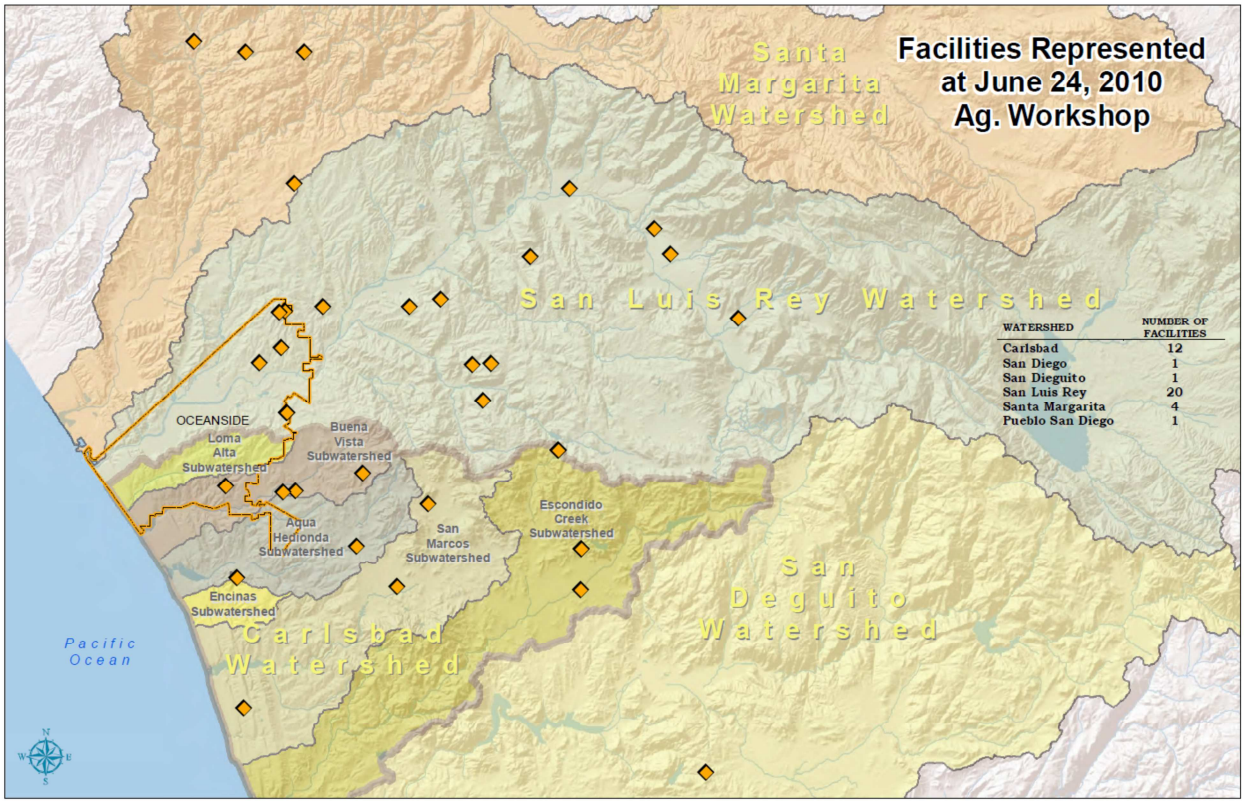

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This workshop is scheduled to be provided every other year. The first workshop was provided in FY 2008 and was provided again in FY 2010.

The workshop was not held during FY 2010-11. Planning for this activity for implementation in future fiscal years is on-going, although no events have been scheduled as of the end of the reporting period.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING COPERMITTEES

- City of Carlsbad
- City of Encinitas
- City of Escondido
- County of San Diego, Ag Weights and Measures

OTHER PARTICIPATING ENTITIES

- San Diego County Farm Bureau
- Upper San Luis Rey Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria & Pathogens
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad WMA collective watershed strategy identifies bacteria, sediment and nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and Agricultural operations have been identified as potential dischargers of bacteria, sediment, and nutrients. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS MEASUREMENTS

FY 2007-08 EFFECTIVENESS ASSESSMENT

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 23 attendees took both the pre-test and post-test (some attendees arrived after the pre-test was given or left before the post-test was given). This test included seven questions that were provided by the speakers. The average pre-test score was 2.91.

The average post-test score was 6.04. These scores represent a 150% increase in knowledge of the topics reviewed during the workshop.

FY 2009-10 EFFECTIVENESS ASSESSMENT

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 25 attendees took both the pre-test and post-test which included ten questions that were provided by the speakers. The average pre-test score was 5.48 and the average post-test score was 8.36 representing a 61.03% increase in knowledge of the topics reviewed during the workshop. This demonstrates an increase in knowledge and awareness of the topics presented (Level 2).

FY 2010-11 EFFECTIVENESS ASSESSMENT

Not applicable.

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TITLE: **LID FEATURES IN SAN ELIJO NATURE CENTER**
ID #: **CHU-WQEA5**

ACTIVITY DESCRIPTION

In November 2007, the County of San Diego began construction on a two-story, 5,525 square foot, state-of-the-art nature center that replaces the former visitor center located at the San Elijo Lagoon Ecological Reserve in Encinitas. The new facility, which will open in early 2009, is designed to be constructed and commissioned in accordance with the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program and is expected to achieve Gold or Platinum certification. LEED credit 6 is specific to stormwater management and is achieved by maintaining the pre-development 24-hour peak discharge rate in the post-development environment if existing impervious surfaces are 50% or less.

The building design incorporates low impact development (LID) techniques which include a green roof with low water use native plants, a bioswale to aid in infiltration of runoff from the site, radiant floor heating, recycled cotton insulation, certified renewable lumber, photovoltaics that will provide 52% of energy requirements, natural daylighting and ventilation, stormwater filtering, native vegetation and recycled water used for irrigation, and extraordinary efforts to minimize area of disturbance. In addition to the many "Green" qualities designed into the building, the Nature Center's exhibits will showcase a series of high quality professional photographs and high-tech, interactive educational kiosks for visitors of all ages.

The goal for the San Elijo Visitor Center is to utilize the gold certification to educate the public on environmentally friendly building design and to present a "practice what we preach" public facility, demonstrating conservation of natural resources, use of recycled and environmentally friendly construction materials and reduced pollution and water use. A section of the exhibits will educate visitors on what and where watersheds are, the causes of water pollution and its destructive impact on habitat and endangerment and extinction of species, clean drinking water, water conservation, water reuse, etc. This facility will serve to promote future sustainable design in the San Diego region and educate citizens about ways in which they can reduce pollutants, including bacteria, sediment and nutrients, from entering the watershed.

Figure 1. Photo of Green Roof Informational Signage and Green Roof

FY 2008-09 ACTIVITY IMPLEMENTATION

The San Elijo Nature Center celebrated a grand opening on January 31st, 2009. The San Elijo Nature Center is now open to the public. Since opening the San Elijo Nature Center has seen a total of approximately 21,000 visitors.

FY 2009-10 ACTIVITY IMPLEMENTATION

In addition to the educational displays featured at the San Elijo Nature Center, the facility also sponsors public participation activities in cooperation with the San Elijo Lagoon Conservancy, with a total attendance of 1,092 participants.

FY 2010-11 ACTIVITY IMPLEMENTATION

In addition to the educational displays featured at the San Elijo Nature Center, the facility also sponsors public participation activities in cooperation with the San Elijo Lagoon Conservancy. These programs which included educational field presentations, water quality testing activities, and clean up events had an estimated total attendance of 800 participants in FY 2010-11.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Educational displays and outreach activities will continue throughout FY 2011-12.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Elijo Lagoon Conservancy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria, sediment and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a high priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

As indicated in the March 2008 WURMP, activity effectiveness was measured by the successful implementation of the LID features described (Level 1 Outcome) and the continued reporting of special event attendance. There is no post-construction water quality monitoring currently planned for this site.

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TITLE: **UPPER SAN MARCOS CREEK NUTRIENT MANAGEMENT PLAN - RESIDENTIAL COMPONENT**
ID #: **CHU-WQEA8**

ACTIVITY DESCRIPTION

The Upper San Marcos Creek Nutrient Management Plan (CHU-WQA12) describes a strategy for addressing the impacts of residential activities within the Upper San Marcos Creek (USMC) Watershed. There are 5,949 acres (9.3 square miles) of residential development in the USMC Watershed, which represents 32 percent of the total watershed land area. Single-family and multi-family housing are the predominant land use type followed by spaced rural residential and then mobile homes.

Since many nutrient - and other pollutant-generating activities are associated with residential land use types, the watershed Copermittees' MS4 Permit requires a range of core activities to manage discharges from residential areas, e.g., identifying high threat to water quality residential areas and activities, implementing minimum BMPs to address high priority areas and sources, enforcing local stormwater ordinances, operating a hotline to facilitate public reporting of illegal discharges, as well as educating residents, the general public, target communities, and school children.

While these core residential activities will continue as currently implemented under existing jurisdictional plans, the USMC Watershed Copermittees will also conduct enhanced residential outreach activities focused on nutrient management within the watershed as follows.

- Irrigation Reduction - The USMC Watershed Copermittees will implement a program that targets a reduction in over-irrigation flows from residential areas in the USMC Watershed. Activities may include outreach to residents through materials distribution, presentations, mass media, and potentially exploring the viability of an incentive program (e.g., rebates for smart irrigation controllers, etc.).
- Template Water Quality Management Plan for Homeowners Associations - The Watershed Copermittees will collaborate to develop a template water quality management plan for homeowners associations (HOAs) and then introduce it to them by providing education and outreach.
- Outreach to Professional Landscapers - The USMC Copermittees recognize that conducting outreach to the professional landscape community may represent an opportunity for reducing future nutrient loading within the USMC watershed. Future outreach may include focused workshops for landscape professionals or guidance to residents in selecting responsible landscaping contractors.

The USMC Watershed Copermittees will annually report on the enhanced residential activities conducted. Any additional documentation detailing these efforts (reports or data) will be included as appendices if applicable.

ACTIVITY IMPLEMENTATION FY 2009-10

Core Residential Program:

All elements of the core residential programs were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to residential land uses can be found in Table 4.2 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances, operation of a hotline to facilitate public reporting, and maintaining records of all instances of residential non-compliance, enforcement, and corrective actions. A full record of jurisdictional residential activities can be found in the individual Copermittees' JURMP FY 2009-10 Annual Reports.

Enhanced Residential Program:

Irrigation Reduction/BMPs Outreach

During FY 2009-10, the USMC Watershed Copermittees implemented programs targeting reductions in over-irrigation and nutrient flows in the USMC Watershed:

- Quail Call: In July of 2009, the Watershed Copermittees worked with the Lake San Marcos Community Association to communicate water quality-related educational messages via the community's quarterly periodical, the Quail Call. Contributions included information for frequent articles on water quality concerns in the Lake and actions residents can take to prevent pollution. The County also printed landscape maintenance educational brochures for inclusion in the Quail Call.
- Stormwater Calendars: The County of Diego distributed 2,400 educational stormwater calendars to residents of the Lake San Marcos community. The calendars, which include monthly tips for on preventing irrigation runoff and other BMPs to protect water quality, were designed and paid for by the San Diego Regional Stormwater Copermittees.
- Mass Media Campaigns: The County of San Diego sponsored six bus bench advertisements with water conservation-themed messaging from July through September of 2009. These benches were located among major roadways surrounding the Lake San Marcos community and emphasized reductions in over-watering and adjustment of sprinkler systems.

Template Water Quality Management Plan for Homeowners Associations

During FY 2009-10, the USMC Watershed Copermittees collaborated to develop a template water quality management plan to provide guidance to HOAs regarding BMPs for nutrient management. Initial work involved researching similar plans developed in other regions and tailoring content to the needs of the USMC Watershed. Although a template was created in FY 2009-10, final revisions will be made in FY 2010-11. Once

the product is complete, the Copermittees will collaborate with Lake San Marcos HOA representatives to finalize the template plans and distribute them to HOAs throughout the watershed.

Outreach to Professional Landscapers

The County of San Diego began development of enhanced outreach efforts to landscape professionals during FY 2009-10.

Presentations and Public Forums

The USMC Copermittees also made outreach focused outreach presentation and hosted public forums for the residents within the USMC watershed.

ACTIVITY IMPLEMENTATION FY 2010-11

Core Residential Program:

All elements of the core residential programs were completed as part of each jurisdiction's local stormwater program. Core implementation activities related to residential land uses can be found in Table 4.2 of the USMC Nutrient Management Plan (CHU-WQA12). These activities include, but are not limited to the enforcement of local ordinances, operation of a hotline to facilitate public reporting, and maintaining records of all instances of residential non-compliance, enforcement, and corrective actions. A full record of jurisdictional residential activities can be found in the individual Copermittees' JURMP FY 2010-11 Annual Reports.

Enhanced Residential Program:

Template Water Quality Management Plan for Homeowners Associations

During FY 2010-11, the USMC Watershed Copermittees continued to collaborate on the development of a template water quality management plan that will provide guidance to HOAs and residents regarding BMPs for nutrient management. Initial work on this effort produced a template plan, but additional development is needed. Originally planned for release in FY 2010-11, the USMC Watershed Copermittees have decided to invest additional resources to involve Social Based Marketing professionals in order to enhance the effectiveness and applicability of the water quality management plan. Once the product is complete, the Copermittees will collaborate with Lake San Marcos HOA representatives to finalize the end product and distribute them to HOAs and residents.

Outreach to Professional Landscapers

The County of San Diego continues collaborative efforts in the development of enhanced outreach efforts to landscape professionals during FY 2010-11.

Presentations and Public Forums

The USMC Copermittees also made outreach focused outreach presentation and hosted public forums for the residents within the USMC watershed. These presentations are listed in the table below.

Table 1. Presentations and Forums

Event	Date	Attendees	Subject	Venue	Presenter(s)
San Marcos Creek Specific Plan Info Meeting	9/29/2010	19	Specific Plan Water Quality Objectives and Relationship to Lake	Lake San Marcos Country Club	San Marcos

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Table 2. Implementation Schedule

Planned Tasks	FY 2010-11	FY 2011-12	Status
Core Residential Outreach Program	Completed	Implementation	Ongoing
Template Water Quality Management Plan for Homeowners Associations	Planning and Development	Implementation	Ongoing
Outreach to Professional Landscapers	Planning and Development	TBD	Ongoing
Presentations and Public Forums	Complete	TBD	Ongoing

LEAD WATERSHED COPERMITTEE

- City of San Marcos

OTHER PARTICIPATING COPERMITTEES

- City of Escondido
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Lake San Marcos Residents
- Homeowner Associations

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been established as a priority water quality problem in the Carlsbad Hydrologic Unit. The USMC Nutrient Management Plan seeks to identify water quality problems and likely nutrient pollutant sources. This approach is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the completion of each Copermittees' core residential activity program elements, as designated in the USMC Nutrient Management Plan, and updates to the activity sheets in the WURMP Annual Report (Level 1 Outcome). All elements of the core residential activities program were completed.

Residential activity enhanced program elements will be assessed through measures of material distribution, number of presentations, attendees, and program progress. Applicable measures are presented in the table below.

Table 3. Enhanced Effective Measures

Planned Tasks	FY 2010-11	Outcome Level	Status
Template Water Quality Management Plan for Homeowners Associations	Planning and Development	Level 1	Ongoing
Outreach to Professional Landscapers	Planning and Development	Level 1	Ongoing
Presentations and Public Forums	1 Presentations 19 Total Attendees	Level 1	Ongoing

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TITLE: RESIDENTIAL COMPOSTING WORKSHOP
ID #: CHU-WQEA9

ACTIVITY DESCRIPTION

Residents from the San Luis Rey and Carlsbad watersheds were invited to attend a free composting workshop held during fiscal year 2010-11. This workshop provided an overview of composting, hands-on demonstrations on how to compost, proper application of compost, and the benefits of compost to soil and water quality.

Topics covered during the workshop are as follows:

- Static Composting
- Active Composting
- Vermicomposting (worm composting)
- Compostable materials
- Carbon:Nitrogen Ratio
- Composting bins and tools
- Applying compost in landscapes and gardens
- How compost benefits soil and protects water quality
- Reduction of waste being land filled

Speakers for the workshop are as follows:

- Cynthia Mallett – City of Oceanside
- Cheryl Broadhead – Solana Center for Environmental Innovation
- Mary Matava – Agri-Service

A copy of the Compost Workshop flyer is included below.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This workshop was implemented during the 2011 reporting period.

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING COPERMITTEES

- City of Carlsbad
- City of Encinitas
- City of Escondido

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed strategy identifies nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. The use of chemical fertilizers has been identified as a potential source of nutrients and eutrophication in local water bodies. Using compost as a natural fertilizer will reduce the amount of chemical fertilizer that resident use in their landscapes. It also reduces the need for pesticides. Also, erosion and sedimentation can be reduced through the proper application of compost. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EFFECTIVENESS MEASUREMENTS

After completion of the workshop attendees were provided with an evaluation form to provide feedback on the workshop components including topics covered, instructor quality, and if they owned and/or planned to purchase a compost bin. Eleven (11) evaluations were returned by workshop participants. Overall comments were good. All evaluations stated that they either owned a compost bin or were planning to purchase one.

Learn how to compost your kitchen scraps and landscape trimmings at this free workshop.

Date
March 8, 2011

Time
2:00 – 4:00 PM

Location
El Corazon Senior Center
3302 Senior Center Dr.
Oceanside, CA 92054

Reserve a seat
Call: 760-436-7986 ext. 222
Or log onto
www.solanacenter.org and
click on Workshops.

Questions
GreenOceanside@ci.oceanside.ca.us

Win a compost bin!

Agenda

2:00 Colleen Foster and Cynthia Mallett – City of Oceanside: Environmental benefits to composting.

2:15 Mary Matava – Agri-Service: Building Healthy Soils - Bring a 2 cup sample of your soil and learn how to evaluate your garden soil and use soil amendments to improve your gardening success.

3:15 Cheryl Broadhead – Solana Center for Environmental Innovation: Learn static and worm composting techniques.

3:55 Compost bin raffle – Workshop attendees can enter a raffle to win a compost bin.

Workshop Sponsors

Green Oceanside

Agri Service, Inc.
Building Healthy Soils™
El Corazon Compost Facility

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TITLE: **OCEAN FRIENDLY GARDENS WORKSHOP SERIES**
ID #: **CHU-WQEA10**

ACTIVITY DESCRIPTION

The City of Encinitas, in collaboration with Olivenhain Municipal Water District and the San Dieguito Water District, hosted a hands-on workshop series presented by the Surfrider Foundation Ocean Friendly Gardens (OFG) Program. The OFG program strives to educate the public about the environmental impacts caused by runoff from residential homes and landscapes and to provide homeowners with landscaping alternatives that can lead to reduced water usage and improved downstream water quality. The workshop series included one classroom learning session and two hands-on workdays. The goal of the workshop series was to apply Conservation, Permeability, and Retention, or "CPR" landscaping techniques.

Figures 1 through 3. Ocean Friendly Gardens Workshop Series

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2009-10 & FY 2010-11: Event Coordination with Surfrider and other sponsors
FY 2010-11: Set of 3 classes held over the course of 3 months
FY 2011-12: Activity Assessment

Surfrider OFG Courses will continue to be held on a regular basis throughout the county.

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING ENTITIES

- Olivenhain Municipal Water District
- San Dieguito Water District
- Surfrider Foundation

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City of Encinitas is within the San Marcos and Escondido Creek HAs. Bacteria and sediment have been identified as priority water quality problems in the San Marcos HA (904.5) and bacteria, sediment, and nutrients have been identified as priority water quality problems in the Escondido Creek HA. Residential areas and activities are a potential source of bacteria, sediment and nutrients. Since this activity addresses priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

A post-course questionnaire was completed by each participant.

TITLE: FOCUSED EQUESTRIAN OUTREACH
ID #: CHU-WQEA11

ACTIVITY DESCRIPTION

The County of San Diego conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups.

ACTIVITY IMPLEMENTATION FY 2010-11

Workshop Activities:

During FY 2010-11, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Workshops during FY 2010-11 were held in Lakeside, Ramona*, Bonsall, and Rainbow. The table below identifies the primary watershed(s) addressed by each workshop. The Ramona event was rescheduled due to low attendance and the make-up workshop will be held on November 19, 2011.

Table 1. FY 2010-11 Workshops

Location	Presentation Date	No. of Attendees	Primary Watershed(s) Addressed
Lakeside	6/25/11	24	San Diego River
Ramona	6/18/11	1	San Diego River, San Dieguito
Bonsall	6/25/11	22	Santa Margarita, San Luis Rey, Carlsbad
Rainbow	6/18/11	14	Santa Margarita, San Luis Rey
Total		**69**	

Funded by the County, the workshops were presented by staff from either the Solana Center or the MRCD. They included presentations, demonstration BMPs, presentations,

and handouts identifying resources available to equestrians. Information presented included local watershed awareness, manure management, and composting. Key elements included how proper manure management relates to horse health, water quality, and maintenance of positive relationships with neighbors. Question and answer sessions were conducted in all workshops. Assessment was conducted in the form of pre- and post-workshop surveys.

Community Events:
County staff and/or contractors also provided targeted outreach to the equestrian community at three equestrian themed community events during FY 2010-11. At these events, the County staff gave a presentation or hosted a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. Additional details on each community event are provided in the table below.

Table 2. FY 2010-11 Community Events

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
8/2/2010	San Diego Equestrian Foundation	Hunter Equestrian Center	35	Carlsbad
10/10/2010	Horse Heritage Festival	Walnut Grove Park	75	Carlsbad
10/16/2011	Vaquero Days Western Heritage Festival	Granville Martin Ranch/Museum	150	Sweetwater
TOTAL			**215**	

Surveys:
In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted a firm with expertise in Community Based Social Marketing (CBSM) to conduct research to: 1) identify barriers to proper manure management, 2) develop strategies to remove barriers, and 3) conduct pilot studies to gauge the effectiveness of compost workshops. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Information was gathered via survey questionnaires and in person interviews during the Lakeside manure composting workshop. A total of 24 horse owners participated in the survey. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (see Attachment A).

TMDL APPLICABILITY

While it may be supportive of future TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Additional workshops are planned to take place in the Santa Margarita and San Luis Rey Watersheds during FY 2011-12, but will be open to all residents throughout the County of San Diego. The County is interested in pursuing opportunities to facilitate peer mentoring programs that encourage equestrians to learn about proper BMPs such as manure management from one another. Development of such a program in the future is contingent upon identifying a reliable source of funding such as grants. Presentations and education activities will continue as opportunities become available.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for an important source of the high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by assessing the completion of outreach activities (Level 1 Outcome) and changes in knowledge and awareness (Level 2 Outcome) that were conducted in the Carlsbad Watershed annually.

Two outreach events (presentations or booths) were completed in the Carlsbad Watershed, and one workshop was conducted in the adjacent Bonsall area. In addition, a Community Based Social Marketing report was produced to inform future outreach efforts. Level 1 Outcomes were achieved during FY 2010-11.

Changes in knowledge and awareness (Level 2 Outcome) were demonstrated through the use of pre- and post surveys administered to workshop participants. Results of the equestrian BMP workshop in the adjacent Bonsall area (San Luis Rey Watershed) are presented below.

- 100% percent of participants responded correctly that they lived in a watershed

When surveyed on identification of BMPs the following results were found:
Pre-survey results found:

- 37.5% believe horse manure contributes “a great deal” to water pollution.
- 70% responded correctly by identifying erosion control BMPs.
- 50% correctly identified drainage control BMPs.
- 70% correctly identified manure management BMPs.

Post survey results showed:

- 17% believe horse manure contributes “a great deal” to water pollution.
- 100% responded correctly by identifying erosion control BMPs.
- 92% could correctly identify drainage control BMPs
- 83% correctly identified manure management BMPs.

CHU-WQEA11
Focused Equestrian Outreach
Attachment A

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2011

San Diego County Manure Management Workshops

Prepared for:
San Diego County, Department of Public Works
Watershed Protection Program

Prepared by:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

June 30, 2011

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Project Background

Horse manure has been linked to the contamination of ground water as well as surface water, much to the detriment of fish and other aquatic life. As part of the County of San Diego's ongoing commitment to preventing the pollution of local waterways, the county implemented a manure management research and outreach plan to promote proper management of horse manure in unincorporated areas of San Diego County.

In order to improve the knowledge and behavior of horse owners, the County of San Diego contracted with Action Research to utilize a Community-Based Social Marketing approach. CBSM packages basic principles of psychology with applied research methods in a way that provides a usable framework for practitioners working to promote behavior change across a variety of settings (McKenzie-Mohr,1999;2011).

The CBSM approach begins with the careful selection of a specific target behavior and then uses a step-by-step process to foster sustainable behavior change. The basic steps are as follows: (1) identify the barriers to a targeted behavior, (2) develop strategies to remove barriers, (3) pilot the selected tools using empirical research methodology and a control group, and (4) evaluate the project once it has been widely implemented. Because the programs developed under this approach are piloted on a small scale, the program can be refined as needed until there is documented evidence to show that the program works before it is broadly implemented.

Identifying Barriers. In 2010, Action Research conducted in-person interviews with horse owners living in two unincorporated areas of the county: Lakeside and Ramona. A total of 96 horse owners were interviewed between June 16, and June 27, 2010. The primary goal of the study was to identify the benefits and barriers to specific manure management practices (such as composting) as well as gather information about the current manure management practices of horse owners.

Develop Strategies to Remove Barriers. Informaton obtained from the barrier and benefit survey was used to develop a pilot outreach program. The pilot program recommendations included a community-based outreach model (i.e., local workshops) and incorporated known tools of behavior change such as social norms and commitment.

Pilot the Selected Tools. In the present report, we present the results of a small pilot to assess the efficacy of conducting composting workshops with horse owners. An assessment instrument was developed to determine if the outreach approach successfully increased knowledge and awareness regarding best management practices for manure management. The information was gathered during the workshops in the form of pre- and post-tests. This information was analyzed, and based on the results, recommendations are provided for future outreach and marketing activities.

Summary of Barrier Research and Outreach Recommendations

The 2010 barrier survey of horse owners in Ramona and Lakeside revealed that horse owners place a lot of importance on their manure-management practices. Additionally, when considering manure-management practices, horse owners were very concerned about horse and human health. Finally, the results indicated that horse owners' found value in using un-composted and composted manure on their property. Based on the survey results, we recommended that following elements be addressed through education and outreach:

Address Knowledge Barriers

- **Provide education about proper composting as a means to maintain fly control and cleanliness.** The survey revealed that those who disposed of the manure in the trash or dumpster listed *fly control* and *cleanliness* as the greatest benefits to this method. To decrease trash and dumpster practices, and increase the use of composting, we recommended that outreach to horse owners should highlight the ability of best management practices to achieve fly control and maintain the cleanliness of their property, while also gaining the benefits of composting (fertilizer).

- **Distinguish between the properties of un-composted and composted manure, as well as proper methods for achieving composted manure.** The survey revealed that those who stated they compost the manure on their property also stated they used (1) un-composted manure, (2) pile-up and leave the manure, and (3) leave the manure as-is on their property. This indicated that horse owners didn't understand the difference between un-composted and composted manure and they perceived that composting could be achieved through a variety of means.

Promote Positive Social Norms

- ***Engage horse owners who utilize landfill methods with those who are doing the right thing.*** We recommended the use of community workshops where horse owners who currently compost demonstrate the proper methods. Additionally, we recommended that the workshops take place at the host horse owner's property and include vivid visual demonstration methods, detailed descriptive language and hands-on activities.

- ***Utilize respected peers as models.*** Social norms are effective for changing behaviors in cohesive communities such as the community of horse owners in these two areas of San Diego County. Sustainable behaviors can spread quickly when modeled by peers and others who are respected in the community.

- ***Utilize testimonials from horse owners who currently compost.*** We recommended testimonials in the form of an informational flyer to be handed out at the workshops. Outreach materials could profile a horse owner in each area who is currently composting manure.

Outreach Strategy

Based on the results and recommendations summarized in the barrier survey final report titled "*Community-Based Social Marketing: Horse Manure Management Intercept Interviews,"* Action Research developed an outreach strategy that consisted of the following elements.

Manure Composting Workshops

Community composting workshops were developed to increase knowledge, awareness, and the use of best practices for manure management. The workshops were designed to focus specifically on composting. Content of the workshops included: demonstrations of proper composting methods, messages highlighting the ability of proper composting to achieve fly control and maintain cleanliness, messages highlighting the benefits of composting, education about the properties of un-composted and composted manure, and information about proper methods for achieving composted manure.

Informational Flyer

A unique flyer was created for each of the location workshops, Lakeside and Ramona (See Appendix A and B respectively). Each flyer included testimonials from horse owners in each of those locations. The flyers were styled like a small town newspaper, with the headline reading, "Happy Healthy Horses Here." The information presented on the flyer highlighted composting as important to horse health and fly/vector control and addressed some of the barriers to composting (e.g., time, space, money) identified in the previous research. The flyer also included information about the essentials of composting including bin sizes, site selection, turning frequency, covering methods, watering frequency, and piling techniques. The flyers served both to provide education as well as to develop and reinforce positive social norms about composting in the community.

Testimonials

The outreach strategy incorporated social norms in the form of testimonials. Using contact information gathered during the intercept interviews (barrier research), Action Research gathered testimonials from actual Lakeside and Ramona horse owners who currently compost. Two testimonials and one picture were gathered from Lakeside horse owners and three testimonials were obtained from Ramona horse owners. The testimonials, and picture, were included on informational flyers (described above) and distributed during the composting workshops.

Commitment

The final element of the outreach strategy was commitment. Research shows that when individuals agree to a small request, it can alter the way they perceive themselves. Indeed, individuals who agree to a small initial request are far more likely to argee to a subsequent larger request. In order to foster a commitment among horse owners to proper manure management practices (specifically, composting), we developed a commitment strategy that included the following:

Name badges. Upon arriving at the workshops each participant received a name badge to wear during the workshop. The name badge read, "*Join your NEIGHbors in boasting about composting*." The message hints that neighbors are already composting; thereby, utilizing social norms.

Figure 1: Join your NEIGHbors name badges

Informational Flyer. At the end of the workshop, each participant was offered two of the informational flyers and asked to make a commitment to share the flyer and what they learned at the workshop with one other person in their community.

Figure 2: Sample informational flyer

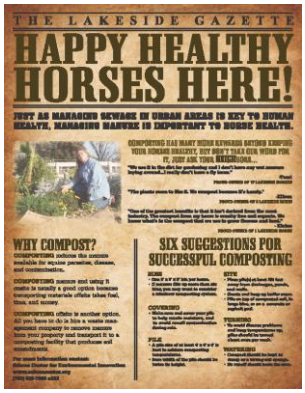

Prompt. If a participant agreed to share a flyer with another community member, they received a large refrigerator magnet that read, "*I'm boasting about composting!*" The magnet served as a a visual reminder (prompt) of their commitment and participation in the workshop.

Figure 3: Composting magnet (prompt)

Public Commitment. A large blanket with the picture of a quarter horse was displayed at the workshop to provide a public forum for displaying commitments. This medium served both to strengthen commitments (by making them public) as well as to reinforce social norms. Participants who made a commitment to share the flyer with one other person in their community were asked to sign the blanket as a symbol of their commitment. To foster social norms, the blanket can be displayed and used at future workshops to display the growing list of individuals committed to composting.

Figure 4: Signature horse blanket

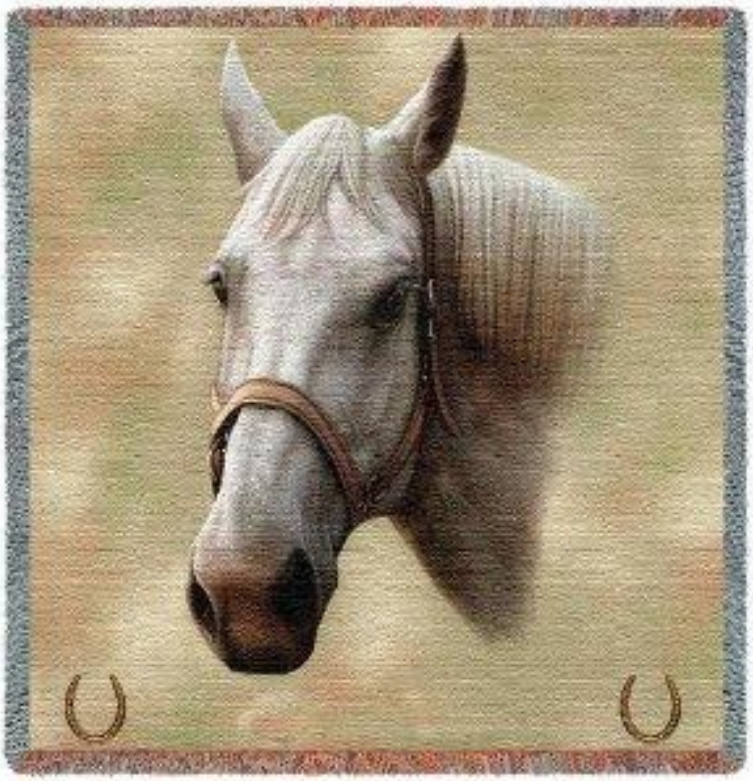

Implementation Summary

In order to pilot the outreach approach, we implemented the Community-Based Social Marketing outreach strategy and materials at two manure composting workshops in diverse regions of unincorporated San Diego County: Ramona and Lakeside. All workshops were conducted by Lisa Wood, a well-known master composter and experienced horse ranch owner/operator. The workshops were also attended by a representative from Solana Center as well an Action Research staff member. A summary of the implementation outcomes is provided below.

Ramona

The Ramona workshop was held at the Ramona Library on Saturday, June 18, 2011. Due to a lack of sufficient outreach, only one participant attended the Ramona workshop. Because there was only one participant, the workshop was informal and unstructured and a variety of other topics beyond manure composting were discussed. As a result, we could not effectively implement the behavioral components or evaluate the workshop outcomes. One thing that was observed was that due to the multiple entities involved (Instructor, Action Research, and Solana Center), there was an overwhelming amount of information that was being distributed including several handouts, assessment components, and product samples.

Lakeside

The Lakeside workshop was held outdoors on Saturday, June 25, 2011 on a local ranch that maintains over 50 horses. The ranch owner was a manure composter. A total of 24 people attended the Lakeside workshop. Upon arrival, participants were greeted by an Action Research staff member who provided each individual with a name badge and the pre-test. At the same time, the staff from the Solana Center asked participants to sign in and then provided them with a workshop evaluation survey which led to some confusion. As people finished their pre-tests, Action Research collected them and put them into an envelope. Contrary to the Ramona workshop, the Lakeside workshop was more effectively focused on composting manure.

After the majority of the information was provided, the workshop participants walked over to view an actual compost pile and talk about large manure volume composting. At the conclusion of the workshop, the Action Research staff member asked each participant to complete the post-test. Upon completing the post-test, participants were asked to return the survey and then complete the commitment activities (i.e., accept the flyer and sign the blanket). Unfortunately, participants were bombarded with additional information provided by Solana Center at the end of the workshop (an additional survey and raffle entry for a composting thermometor). This additional information drew attention away from the ability for the commitment exercise to be implemented as designed.

Assessment Outcomes

An assessment instrument was developed to assess changes in knowledge, attitudes, and behavioral intention associated with attending the workshop. Participants were administered a similar set of items before and after participation in the workshop. The pre- and post-test survey instruments are attached as Appendix C. A total of 24 pre-tests and 22 post-test were collected from participants resulting in 22 matched cases (a few people snuck out during the composting demonstration and did not complete the post test). Key findings for the Lakeside workshop are presented below.

Sample Characteristics

- **Gender.** Participants were 12 males and 12 females.

- **Age.** Particpants ranged in age from 27 to 75 years of age (*Mean Age* = 58.35).

- **Number of horses.** Participants reported having between 0 and 65 horses (*Mean* = 11.92 horses, *SD* = 21.00). Of the 22 participants who completed demographic information, six (27%) reported not having any horses.

- **Property size.** Property size ranged from 0 to 30 acres (*Mean* = 5.90 acres, *SD* = 7.69). Nearly half of participants (48%) lived on one acre or less and two-thirds lived on less than two acres.

- **Residence.** Participants were from communities all over the county, including some from incorporated areas. Just less than one-third (32%) of workshop participants were from Lakeside. See Table 1 below.

Table 1: What town or community do you live in?

Community	N	%
Lakeside	7	31.8
El Cajon	2	9.1
Bonita	2	9.1
Guatay	2	9.1
Unknown/Blank	2	9.1
Ramona	1	4.5
Valley Center	1	4.5
Vista	1	4.5
Oceanside	1	4.5
Jamul	1	4.5
Shelter Island	1	4.5
Rancho Bernardo	1	4.5
San Diego	1	4.5
San Marcos	1	4.5

Manure Management Behavior

On the pre-test, participants were asked about their current manure management practices such as removal frequency, disposal methods, and composting frequency. On the post-test, participants were asked a modified version of the question where by they were asked to report their intentions to participate in such practices "in the future."

Manure Removal Frequency. Among horse owners (*N* = 16), there is some evidence that the workshop sparked behavioral intentions to remove manure from corrals and stalls more frequently. Prior to the workshop, 32% of horse owners reported that they currently removed manure from their property once a week or less often. Following the workshop, only 7% of horse owners said that they planned to remove manure once per week or less often. Similarly, following the workshop 53% of horse owners said that they planned to remove manure from corrals and stalls every day, compared to 38% who said that they were currently doing so.

Table 2: How often is manure removed from the horse corrals or stalls on your property?

Manure Removal Frequency	PRE Current	POST Future Plans
Less than once per week	13%	0%
Once per week	19%	7%
2-3 times per week	6%	27%
4-6 times per week	0%	0%
Daily	**38%**	**53%**
Other	25%	13%

Manure Disposal Practices. Among horse owners (*N=16)*, the workshop led to positive behavioral intentions to manage manure by composting. Prior to the workshop, 50% of horse owners said that they currently composted. Following the workshop, 87% said that in the future they planned to manage the manure generated on their property by composting. Note that multiple responses were allowed, so totals do not equal 100%.

Table 3: How do you dispose of the manure generated on your property?

Manure Disposal Methods	PRE Current	POST Future Plans
Compost	**50%**	**87%**
Send to landfill	25%	25%
Give it away	19%	6%
Pile it up (not for compost)	6%	0%
Apply to land	44%	31%
Other	6%	0%

Quantity of Manure Composted. On the pre-test, participants were asked to report how much of the manure generated by their horses was managed by composting. On the post-test, participants were asked, "*in the future, how much of the manure generated by your horse(s) do you plan on managing by composting?"* Responses were made on a scale from 0 (none) to 10 (all). Results indicate that the workshop promoted positive behavioral intentions regarding the amount of manure that would be managed through composting.

- **Pre.** At pre-test, the average amount of manure that was currently composted was 4.07 on the scale from 0 (none) to 10 (all).

- **Post.** Following the workshop, the average amount of manure that participants planned to compost was 7.36 on the scale from 0 (none) to 10 (all). This corresponded to a statistically significant increase $t(13)=3.14$, $p<.01$

Knowledge and Awareness about Stormwater Pollution

Is Stormwater Treated? Participants were asked to report whether water that passes through the storm drain system in San Diego is treated at a wastewater treatement plant, or if it is released into creeks or the ocean without treatment. Valid responses were "Treated," "Not treated," or "Don't Know." Across all participants (not just horse owners), results showed high baseline knowledge of the concept that stormwater is not treated before being released. Unfortuntely, the results showed a small increase from pre- to post-test in the proportion of workshop participants who beleieved that stormwater was treated.

Table 4: Is water that passes through the storm drain system treated or not…?

Is Stormwater Treated?	PRE	POST
Not treated	65%	71%
Treated	4%	14%
Don't know	31%	14%

Perception of Manure as Pollutant. Participants were asked to rate the extent to which they believed that horse manure contributes to pollution of local waterways using a scale from 0 (not at all) to 10 (a great deal). Overall, workshop participants believed that horse manure was not a strong contributer to pollution rating it lower than the mid-point on the 0 – 10 scale. Although perceptions increased slightly following the workshop, the difference was not statistically significant with the current sample size.

Table 5: How much do you think that horse manure contributes to pollution..?

Horse Manure as A Pollutant	PRE	POST
Mean Score	3.59	4.41

Perceived Barriers and Benefits to Composting Horse Manure

Perceptions about Composting. Participants were asked to rate their pereceptions about composting horse manure across a variety of dimensions. All responses were made on a scale from 0 to 10, but the anchors of the scale changed as a function of the construct being measured. Results showed that:

- Participants pereceived composting manure to be **significantly less difficult** following the workshop compared to pre-test.
- Participants provided **equally high ratings regarding the importance** of composting both before and after the workshop.
- Following the workshop, participants pereceived composting manure to be **significantly more common** in their community compared to pre-test.
- Both before and after the workshop, participants provided **equally high ratings regarding composting being healthy for horses**.

Table 6: Composting the manure from my horse(s) seems...

Construct	Scale Anchors	PRE	POST
DIFFICULT	(0 = Easy; 10 = Difficult)	3.11	2.05
IMPORTANT	(0 = Unimportant; 10 = Important)	8.30	8.85
COMMON	(0 = Uncommon; 10 = Common) Reverse coded	3.24	6.76
HEALTHY FOR HORSES	(0 = Unhealthy; 10 = Healthy)	8.27	8.93

Benefits of Composting. Both before and after the workshop, participants were asked, *"how could you benefit from composting the manure on your property?"* A range of responses were provided on both the pre- and post-tests including: use on property, fly/vector control, fertilizer/soil amendment, generate income, and reduced manure volume.

Barriers to Composting. Both before and after the workshop, participants were asked, *"is there anything that would make it difficult for you to compost the manure on your property?"* A range of responses were provided on both the pre- and post-tests including: worry about smell and/or flies, need for space, and labor/equipment needs. Interestingly, following the workshop there were no mentions about concerns for smell, flies, or pests and the majority of the response were focused on labor and equipment needs.

Conclusions and Recommendations

Conclusions

Based on the pre/post assessment conducted at the Lakeside workshop, it appears that the workshop was successful at fostering positive attitudes and perceived control about composting. Clearly, intentions to compost in the future were greater than current levels of composting. The only area where the workshop appeared to be ineffective in terms of raising knowledge and awareness was with regard to stormwater concepts. Future workshops might benefit from highlighting key issues such as the potential for manure to pollute waterways and the fact that stormwater is not treated.

Future Workshop Recommendations

While the assessment component demonstrated positive increases in knowledge, awareness, and behavioral intention as a result of attending the workshop, we have several concrete recommendations regarding delivery of future workshops.

#1. Limit competing materials. Allowing contracted partners to include their own, distally-related materials (handouts, raffles, surveys), potentially limited the effectiveness of the social marketing materials aimed at sustainable behavior change. The overuse of handouts and surveys might also overwhelm workshop participants and make it difficult for them to retain critical information .

#2. Provide visual aids. We recommend incorporating additional visual aids during the presentation of composting information to enhance the vividness of the material.

#3. Cohesive planning. It is essential for the success of the workshop that the workshop materials, flow, and process are planned in a coordinated manner. Without this cohesive planning the workshops can be disjointed and confusing to participants. Additionally, we recommend that future workshops include a written protocol that outlines the procedures, roles, and responsibilities of those involved.

#4. Commitment alterations. We recommend simplifying the commitment process to decrease the effort on the part of participants. Instead of having participant sign the blanket (one more step in the process), participants can simply pin their name badge to the blanket as they leave. The name badges would simplify the process and stand out against the blanket better than the signatures.

#5. Better instructional flow. To the extent possible, we recommend that the material is presented in a linear fashion. If composting information is intermixed with regulation information, vector control, and horse health, the presentation becomes convoluted and

confusing for participants. It is best to completely cover one topic, and allow for questions and answers, before moving on to the next topic.

#6. Focused outreach and recruitment. Outreach efforts for a workshop that is specific to residents in a specific area should be focused on recruiting from that area. Workshop materials and content are created to be unique to a specific workshop/location. If too many participants are from out-of-area, then the materials and content may not be relevant to them.

Appendix A: Lakeside Flyer

THE LAKESIDE GAZETTE

HAPPY HEALTHY HORSES HERE!

JUST AS MANAGING SEWAGE IN URBAN AREAS IS KEY TO HUMAN HEALTH, MANAGING MANURE IS IMPORTANT TO HORSE HEALTH.

COMPOSTING HAS MANY MORE REWARDS BEYOND KEEPING YOUR HORSES HEALTHY, BUT DON'T TAKE OUR WORD FOR IT, JUST ASK YOUR NEIGHBORS...

"We use it in the dirt for gardening and I don't have any wet manure laying around...I really don't have a fly issue."

-Todd

PROUD OWNER OF 17 LAKESIDE HORSES

"The plants seem to like it. We compost because it's handy."

-Eileen

PROUD OWNER OF 3 LAKESIDE HORSES

"One of the greatest benefits is that it isn't derived from the meat industry. The compost from my horses is cruelty free and organic. We know what's in the compost that we use to grow flowers and food."

- Elaine

PROUD OWNER OF 1 LAKESIDE HORSE

WHY COMPOST?

COMPOSTING reduces the manure available for equine parasites, disease, and contamination.

COMPOSTING manure and using it onsite is usually a good option because transporting materials offsite takes fuel, time, and money.

COMPOSTING offsite is another option. All you have to do is hire a waste management company to remove manure from your property and transport it to a composting facility that produces soil amendments.

For more information contact:
Sidney Center for Environmental Innovation
www.sidneycenter.org
(760) 438-7000 x222

SIX SUGGESTIONS FOR SUCCESSFUL COMPOSTING

SIZE
- One 5' x 5' x 5' bin per horse.
- If manure fills up more than six bins, you may want to consider a windrow composting system.

COVERING
- Make sure and cover your pile to help retain moisture, and to avoid runoff contamination during rain.

PILE
- A pile size of at least 4' x 4' x 4' is best to achieve composting temperatures.
- Base width of the pile should be twice its height.

SITE
- Place pile(s) at least 100 feet away from drainages, ponds, and wells.
- Create and keep up buffer zones.
- Pile on top of compacted soil, in large bins, or on a concrete or asphalt pad.

TURNING
- To avoid disease problems and keep temperatures up, piles should be turned about once per week.

WATERING
- Compost should be kept as damp as a wrung-out sponge.
- No runoff should leave the area.

Appendix B: Ramona Flyer

THE RAMONA GAZETTE

HAPPY HEALTHY HORSES HERE!

JUST AS MANAGING SEWAGE IN URBAN AREAS IS KEY TO HUMAN HEALTH, MANAGING MANURE IS IMPORTANT TO HORSE HEALTH.

COMPOSTING HAS MANY MORE REWARDS BEYOND KEEPING YOUR HORSES HEALTHY, BUT DON'T TAKE OUR WORD FOR IT, JUST ASK YOUR NEIGHBORS...

"I think it's the cheapest way to manage manure... it's environmentally friendly."

-Amelia

PROUD OWNER OF RANCHER HORSES

"I can use it in my garden; it doesn't fill up the dumpster; it's free; it's good for roses and it's more sanitary."

- Rosa

PROUD OWNER OF RANCHER HORSES

WHY COMPOST?

COMPOSTING reduces the manure available for equine parasites, disease, and contamination.

COMPOSTING manure and using it onsite is usually a good option because transporting materials offsite takes fuel, time, and money.

COMPOSTING offsite is another option. All you have to do is hire a waste management company to remove manure from your property and transport it to a composting facility that produces soil amendments.

For more information contact:
Silicon Center for Environmental Innovation
www.siliconcenter.org
(760) 438-7888 x222

SIX SUGGESTIONS FOR SUCCESSFUL COMPOSTING

BINS
- One 5' x 5' x 5' bin per horse.
- If manure fills up more than six bins, you may want to consider a windrow composting system.

COVERING
- Make sure and cover your pile to help retain moisture, and to avoid runoff contamination during rain.

PILE
- A pile size of at least 4' x 4' x 4' is best to achieve composting temperatures.
- Base width of the pile should be twice its height.

SITE
- Place pile(s) at least 50 feet away from drainages, ponds, and wells.
- Create and keep up buffer zones.
- Pile on top of compacted soil, in large bins, or on a concrete or asphalt pad.

TURNING
- To avoid disease problems and keep temperatures up, piles should be turned about once per week.

WATERING
- Compost should be kept as damp as a wrung-out sponge.
- No runoff should leave the area.

Appendix C: Pre/Post Test

First Name: _____ Last Initial: _____ **PRE**

San Diego County Manure Composting Survey - Summer 2011

1. **What town or community do you live in?** _____

2.	**How often is manure removed from the horse corrals or stalls on your property? Check one.**	☐ Less than once per week ☐ Once per week ☐ 2-3 times per week ☐ 4-6 times per week ☐ Daily ☐ Other: _____
3.	**How do you dispose of the manure generated on your property? Check all that apply.**	☐ Compost ☐ Send to landfill ☐ Give it away ☐ Pile it up (not for compost) ☐ Apply to land ☐ Other: _____
4.	**Currently, how much of the manure generated by your horse(s) do you manage by composting?**	0 1 2 3 4 5 6 7 8 9 10 None … Half … All
5.	**Is water that passes through the storm drain system in San Diego County treated at a wastewater treatment plant, or is it released into creeks or the ocean without treatment?**	☐ Treated ☐ Not Treated ☐ Don't Know
6.	**How much do you think that horse manure contributes to pollution of local waterways? Circle one.**	0 1 2 3 4 5 6 7 8 9 10 Not at all … A great deal
7a.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Easy to me … Difficult to me
7b.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Unimportant to me … Important to me
7c.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Common in my community … Uncommon in my community
7d.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Unhealthy for my horse(s) … Healthy for my horse(s)

8. **How could you benefit from composting the manure on your property?**

9. **Is there anything that would make it difficult for you to compost the manure on your property?**

10. **For classification purposes, please provide the following information:**

Gender: ☐ Male ☐ Female **Zip Code:** _____ **Year of Birth:** _____

Number of horses on property: _____ **Property Acreage:** _____

First Name: _____ Last Initial: _____ POST

San Diego County Manure Composting Survey - Summer 2011

1.	**In the future, how often do you plan to remove manure from the horse corrals or stalls on your property? Check one.**	☐ Less than once per week ☐ Once per week ☐ 2-3 times per week ☐ 4-6 times per week ☐ Daily ☐ Other:_____
2.	**In the future, how do you plan to dispose of the manure generated on your property? Check all that apply.**	☐ Compost ☐ Send to landfill ☐ Give it away ☐ Pile it up (not for compost) ☐ Apply to land ☐ Other:_____
3.	**In the future, how much of the manure generated by your horse(s) do you plan on managing by composting?**	0 1 2 3 4 5 6 7 8 9 10 None Half All
4.	**Is water that passes through the storm drain system in San Diego County treated at a wastewater treatment plant, or is it released into creeks or the ocean without treatment?**	☐ Treated ☐ Not Treated ☐ Don't Know
5.	**How much do you think that horse manure contributes to pollution of local waterways? Circle one.**	0 1 2 3 4 5 6 7 8 9 10 Not at all A great deal
6a.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Easy to me Difficult to me
6b.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Unimportant to me Important to me
6c.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Uncommon in my community Common in my community
6d.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Unhealthy for my horse(s) Healthy for my horse(s)

7. **How could you benefit from composting the manure on your property?**

8. **Is there anything that would make it difficult for you to compost the manure on your property?**

9. **For classification purposes, please provide the following information:**

Gender: ☐ Male ☐ Female **Zip Code:** _____ **Year of Birth:** _____

Number of horses on property: _____ **Property Acreage:** _____

Provide your contact information below if you would like additional information on manure management or horse-related activities and events organized by the County of San Diego.

Name: _____ Email: _____

Address: _____City/State: _____

☐ Please send me additional information about manure management by: ☐ Print ☐ Electronic

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for reproduction purposes

TITLE: COTTONWOOD CREEK WATERSHED INTERPRETIVE SIGNAGE
ID #: CHU-WQEA12

ACTIVITY DESCRIPTION

The City of Encinitas is developing seven interpretive signs to be posted along the portion of Cottonwood Creek that runs parallel to B Street between South Coast Highway 101 and Moonlight Beach. Cottonwood Creek was instrumental in the establishment of the town of Encinitas in the late 1800s. Cottonwood Creek was designated as a "Point of Historical Interest" in 1991. The goal of the project is to promote the protection of stormwater quality and to provide education to the public related to various aspects of the Cottonwood Creek watershed.

ACTIVITY IMPLEMENTATION

Currently there are two interpretive signs situated within Cottonwood Creek Park, just east of Moonlight Beach. This project will add seven additional interpretive signs along Cottonwood Creek just east of Moonlight Beach. The signs will have the following themes:

1. Cottonwood Creek Watershed Overview
2. Moonlight Beach Pump Station
3. UV Treatment Facility
4. Native Plant Species
5. Native Animal Species
6. Stormwater Awareness
7. Stormwater Pollution Prevention Tips

City Stormwater Division staff developed draft text and graphics for the signs and secured a graphic designer to produce the final panels. Staff reached out to the Encinitas Historical Society and local advocacy groups to gather engaging information to display on the signs. Stormwater staff coordinated with the Parks Department on placement of the signs.

TMDL APPLICABILITY

This activity is not being implemented as part of a TMDL compliance program. However some signs have the potential to encourage residents and business owners to reduce their water quality impacts related to bacteria and sediment potential sources.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2010-11 & FY 2011-12: Develop text, photos and graphics for signs
FY 2011-12: Erect signs
FY 2012-13: Activity Assessment

LEAD WATERSHED COPERMITTEE

- City of Encinitas

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Cottonwood Creek Watershed is a sub-basin within the San Marcos Hydrologic Area. Bacteria and sediment have been identified as priority water quality problems in the San Marcos HA (904.5). The shoreline at Moonlight Beach is 303(d) listed for bacteria for which there is an established TMDL (Resolution No. R9-2010-0001). The educational material presented addresses priority water quality problems and priority sources and consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

The use of a QR Code on the signs is being considered to direct visitors to a website where they can choose to complete a survey related to the interpretive signs.

TITLE: RESIDENTIAL SMART LANDSCAPE EVALUATION PROGRAM
ID #: CHU-WQEA13

ACTIVITY DESCRIPTION

The City of Oceanside is offering a free landscape irrigation evaluation service to single-family and multi-family residences within its jurisdiction. The program is in conjunction with the San Diego County Water Authority (SDCWA) irrigation check-up program. The SDCWA and the City of Oceanside provide funding for the Mission Resource Conservation District to send professional technicians to visit the residential property and provide site-specific water-saving recommendations. Participants can expect to have the technician review and evaluate the performance of their site's outside irrigation system. At the end, the participant will receive a list of recommendations and a proposed watering schedule. For multi-family customers, participants will receive a report outlining site specific irrigation and maintenance recommendations as well as plant alternatives designed to reduce water waste and use.

Over-irrigation is the most prominent transport mechanism and potential source of dry weather residential contributions to water quality issues. This one-on-one, site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property. It is also a useful tool for Clean Water Program Inspectors and Code Enforcement Officers when following-up on customer or staff complaints of over-irrigation. The inspector or officer can provide general education on the regulations and suggest this hands-on evaluation.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Each year, implementation is based on program funding and the number of customers who call to take advantage of the service. During FY 2010-11, three single-family and four multi-family residential landscape evaluations were completed within the City of Oceanside in the Carlsbad Hydrologic Unit (HU). Table 1 presents the distribution among Hydrologic Areas (HAs) and the dates the evaluations were completed.

Table 1. Summary of Residential Landscape Evaluations Completed in FY 2011.

Hydrologic Area	Multi-Family	Single-Family	Completed
Agua Hedionda		X	8/16/2010
Agua Hedionda		X	2/2/2011
Buena Vista	X		3/21/2011
Loma Alta	X		9/15/2010
Loma Alta		X	10/5/2010
Loma Alta	X		5/31/2011
Loma Alta	X		6/1/2011

LEAD WATERSHED COPERMITTEE

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- San Diego County Water Authority
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as a priority water quality problem in the Carlsbad HU. In addition, residential runoff has been targeted as a high priority through several Copermittee activities. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This program is targeted at Levels 1 and 2 effectiveness assessment outcomes. The program was implemented during the reporting year (Level 1 outcome) and three single-family and four multi-family residential properties were visited. The property owners/managers were given education about irrigation runoff, thus raising awareness (Level 2 outcome).

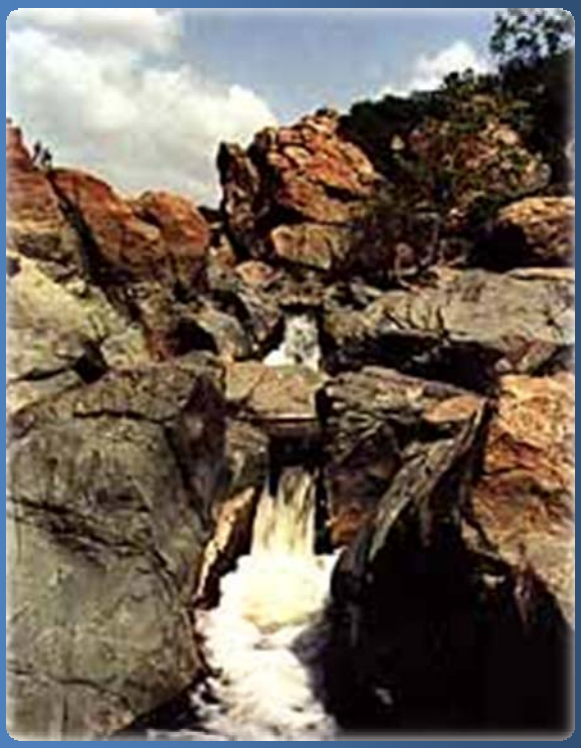

PENASQUITOS

WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

MARCH 2008

STATEMENT OF CERTIFICATION
Penasquitos Watershed Urban Runoff Management Program

I certify under penalty of law that the County of San Diego participated in the development of the Penasquitos Watershed Urban Runoff Management Program and all attachments. County staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

3-21-08
Date

Peñasquitos Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Poway participated in the development of the Peñasquitos Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Haupt March 14, 2008
Director of Public Works
City of Poway

Robert J. Manis March 14, 2008
Director of Development Services
City of Poway

THE CITY OF SAN DIEGO

RE: Peñasquitos Watershed Urban Runoff Management Program Statement of Certification

I certify under penalty of law that the City of San Diego participated in the development of the Peñasquitos Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew Kleis

Andrew Kleis
Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
City of San Diego

3/18/08
Date

DIVERSITY BRINGS US ALL TOGETHER

Storm Water Pollution Prevention Division
1970 B Street, MS 27A • San Diego, CA 92102
Hotline (619) 235-1000 Fax (619) 525-8641

Peñasquitos Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Del Mar participated in the development of the Peñasquitos Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Karen P. Brust

KAREN P. BRUST
City Manager
City of Del Mar

3/18/08
Date

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EXECUTIVE SUMMARY

The Los Peñasquitos Creek is one of the eight major stream systems in San Diego County that drains to the Pacific Ocean. In recent years, there has been a growing concern that the Los Peñasquitos Creek and Lagoon are being impacted by pollution associated with urban and stormwater runoff. Controlling pollution in runoff is critical to preserving aquatic resources and the economic viability of the San Diego region. The Los Peñasquitos Watershed Urban Runoff Management Program is intended to be one of many efforts to protect and improve water quality, thereby protecting the natural resources within the watershed and ensure sustainability for future generations.

The goal of the Los Peñasquitos Watershed Urban Runoff Management Program (WURMP) is to positively impact the water quality of the receiving waters in the Los Peñasquitos Watershed Management Area while balancing economic, social, and environmental constraints. The Los Peñasquitos Watershed Urban Runoff Management Plan has been prepared by the City of Poway, as lead agency, in collaboration with the Cities of Del Mar, San Diego and the County of San Diego – all local agencies which have jurisdiction within the Los Peñasquitos Watershed Management Area. The Plan meets the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit for San Diego Copermittees (Order No. 2007-0001, NPDES No. CAS0108758). The Municipal Stormwater Permit requires the development and implementation of Watershed Urban Runoff Management Programs for each of nine watershed areas within San Diego County, including the Los Peñasquitos Watershed Management Area. This document represents the plan the jurisdictions have prepared to implement said Program.

The Los Peñasquitos WURMP is the continuation of a long-term effort to protect and enhance the water quality of the creeks and lagoon, at the watershed level. It is the goal of all participating jurisdictions to work cooperatively with other agencies, non-governmental organizations, and private citizens at the watershed level in order to positively affect the water resources of the region and achieve compliance with the Municipal Permit. It should be noted that this plan has been written with the public in mind as a means to engage San Diego area residents in watershed issues and to facilitate public understanding of challenges related to the protection of our precious water resources.

The Los Peñasquitos WURMP identifies and prioritizes water quality problems within the watershed that can be potentially attributed to discharges from the municipal storm drain systems and may be addressed through a cross-jurisdictional approach. Additionally, activities to abate sources of pollution and restore and protect beneficial uses are also identified. During this initial year, the evaluation of watershed conditions and the potential sources of the pollutants were based upon a limited data set. As more data become available, it is important that the Program be evaluated and allowed to evolve. Participating agencies consider this point in time to be the continuation of a long-term process – reducing the pollutant loads that are contributing to the water quality problems identified in the Watershed Management Area. Consistent with the Municipal Permit, Program amendments or revisions will be submitted to the California Regional Water Quality Control Board – San Diego Region for review as part of the annual reporting process.

The Copermittees developed a collective watershed management strategy that is found in Chapter 2. The watershed strategy focuses the program efforts on the water quality problems and potential sources that are unique to the Los Peñasquitos Management Area sub-watersheds. Data analyzed to date suggests that bacteria are a high priority water quality problem throughout the Watershed Management Area. Sediments have been identified to be a

high priority water quality problem in one of the hydrologic areas – the Miramar sub-watershed. Additionally, total dissolved solids also are found to be a water quality problem in the Miramar sub-watershed. The water quality assessment is discussed in detail in Chapter 3.

To address issues of concern, this Plan identifies a series of watershed water quality and education activities in Chapter 4, in addition to other ongoing and planned activities identified for Land Use Planning and Public Participation. Having used the collective watershed strategy as the basis for developing the activities, the Copermittees have focused the activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the Los Peñasquitos Watershed Management Area.

The Cities of San Diego, Del Mar, Poway and the County of San Diego share the implementation responsibilities for the Program. Due to the commitments of these agencies, this watershed program is expected to extend beyond the Municipal Permit expiration date of January 24, 2012. Using the watershed approach, the Cities of San Diego, Del Mar, Poway and the County of San Diego aim to protect and enhance aquatic resources in a cost effective, environmentally sensitive, and collaborative manner.

1. INTRODUCTION

Urban and stormwater runoff discharged into streams, bays, and oceans from municipal storm drain systems has been identified under local, regional, and national research programs as one of the principal causes of water quality problems in most urbanized regions. Runoff reaching our waterways has the potential to contain a host of constituents like trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, and metals. These pollutants can adversely affect receiving and coastal waters, associated biota, and public health.

The Los Peñasquitos Watershed Management Area (WMA) is within the boundaries of the Cities of San Diego, Del Mar, Poway and the County of San Diego. These local jurisdictions are committed to finding creative and effective ways to improve the water quality of the receiving waters of the Los Peñasquitos WMA, such as the Los Peñasquitos Lagoon and Pacific Ocean, while also complying with the National Pollutant Discharge Elimination System Municipal Stormwater Permit (Order No. 2007-0001), hereafter referred to as the Municipal Permit.

While the Cities of Del Mar, Poway, San Diego and the County of San Diego ("Los Peñasquitos WMA Copermittees") are implementing broad water pollution prevention programs within their respective jurisdictions, the Los Peñasquitos Watershed Urban Runoff Management Program focuses specifically on water quality related issues within the Los Peñasquitos WMA that can be potentially attributed (wholly or partially) to discharges from the municipal separate storm sewer system (MS4) and may be addressed through a cross-jurisdictional approach.

The primary goal of this inter-jurisdictional effort is to positively affect the water resources of the Los Peñasquitos WMA while balancing economic, social and environmental constraints. The following objectives have been identified in order to achieve the program goal:

1. Develop/expand methods/activities to assess and improve water quality within the watershed
2. Integrate watershed principles into land use planning;
3. Enhance public understanding of sources of water pollution; and,
4. Encourage and develop stakeholder participation.

Why a Watershed?

A watershed is defined as a contiguous area of land that drains to a particular location, usually a water body such as a creek, lake, lagoon, or ocean (See Figure 1-1). Watersheds come in all shapes and sizes and cross jurisdictional, state and national boundaries. The delineation of a watershed, or drainage area, depends on the scale of reference and small watersheds are combined together to become larger watersheds. Watershed boundaries follow the major ridgelines around river channels and meet where the water flows out of the watershed, usually the mouth of a stream or river.

In San Diego County, all waterways west of the Peninsular Range ultimately reach to the Pacific coast. While watersheds can be large or small, we all live in a watershed as every stream, tributary, or river has an associated watershed.

Because the water moves downstream in a watershed, any activity that affects the water quality, quantity, or rate of movement at one location can affect the watershed and receiving waters at downstream locations. Before reaching a stream, surface runoff accumulates from the highest points in a watershed and flows downhill across lawns, rooftops, parking lots, and roads, picking up many pollutants along the way that have the potential to reach our rivers and beaches. For this reason, everyone living or working within a watershed needs to contribute to ensure the health of the watershed.

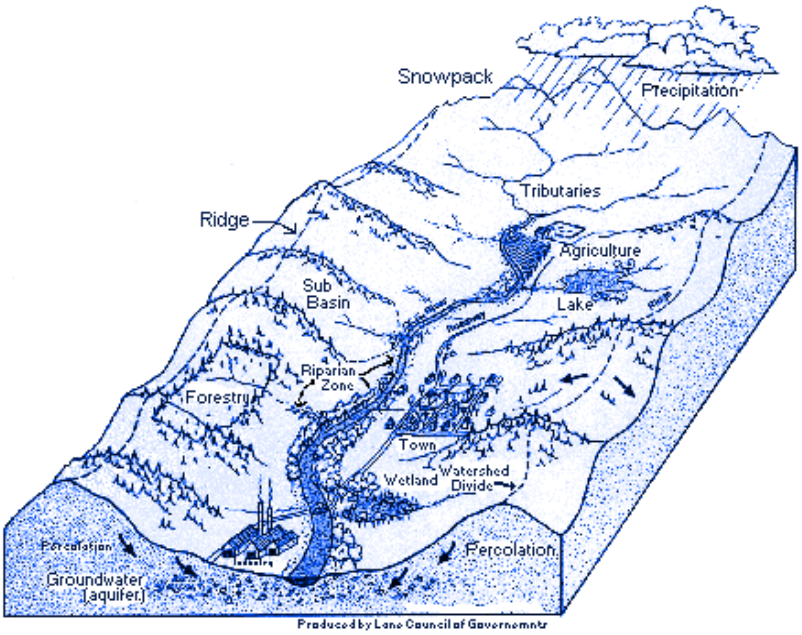

Figure 1-1 Typical watershed. ***Source: U.S. EPA, Office of Wetlands, Oceans & Watersheds***

Most environmental management activities have traditionally been based on the jurisdictional limits of participating institutions including cities, counties, and states. While this may be effective in some instances, it is also important to implement and coordinate activities on a sub-watershed scale. Sub-watersheds often share common water quality problems and sources based on land use and other factors which may provide more effective activity implementation, investigations, or analysis.

San Diego Watersheds

San Diego County encompasses an area of over 4,000 square miles in the southwest corner of California. The northwest to southeast trending Peninsular Range divide two hydrologic regions in the San Diego region. The San Diego Hydrologic Region drains in a westerly direction toward the Pacific Ocean and the Colorado Hydrologic Region drains in an easterly direction toward the Colorado River.

There are a total of 11 major watersheds or *hydrologic units* in the San Diego Hydrologic Region encompassing a land area of nearly 3,000 square miles (See Figure 1-2). Eight major stream systems originate on the western slope of the Peninsular Range and discharge into the Pacific Ocean. From north to south they are San Juan Creek, Santa Margarita, San Luis Rey, Los Peñasquitos, San Diego, Sweetwater, Otay, and Tijuana Rivers. In addition, there are three hydrologic units whose headwaters are located between the Peninsular Range and the Pacific Ocean. These include the Carlsbad, Los Peñasquitos, and Pueblo San Diego units[1].

[1] Project Clean Water, 2002.

Figure 1-2 San Diego Hydrologic Units.

In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards ("Regional Boards") have primary responsibility for the protection of water quality. This requires preventing and reducing water pollution in our rivers, streams, lakes, beaches, bays, and groundwater. Within this regulatory context, the San Diego Regional Board determines the appropriate scale to define watersheds in the region. For regulatory purposes, the Regional Board has divided the San Diego region into 11 Watershed Management Areas as illustrated in Figure 1-3.

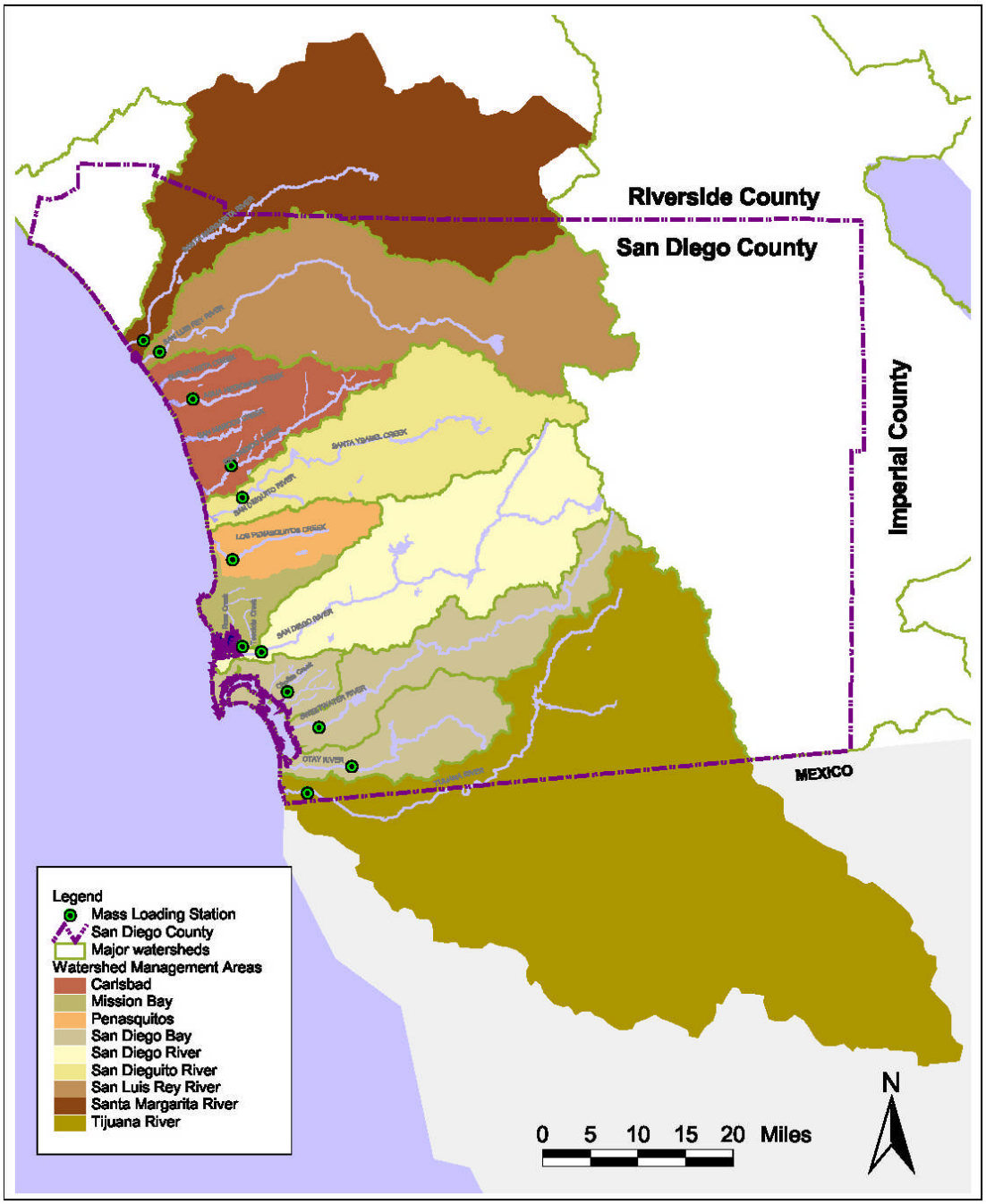

Figure 1-3 San Diego Watershed Management Areas

Background

Pollutant loads associated with urban and stormwater runoff is one of the leading causes of water quality impairment in the San Diego region and nationwide. Pollutants carried in urban and stormwater runoff, indiscriminate of dry or wet weather conditions, routinely find their way to our creeks, lagoons, bays, and ocean via the municipal storm drain systems. Unlike many other

regions in the country, storm drain systems in San Diego are separate from sanitary sewer systems (Figure 1-4). The Los Peñasquitos Watershed storm drain system, like the drainage system throughout San Diego County conveys urban runoff and rainwater from our streets, rooftops, driveways, parking lots, and other impervious areas, directly to the river and Pacific Ocean without receiving any form of treatment.

Figure 1-4. San Diego Sanitary Sewer and Storm Drain Systems.

Urban and stormwater runoff potentially contain a host of pollutants like trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals. These contaminants can adversely affect receiving and coastal waters, associated wildlife, and public health. Water pollution associated with runoff is not only a problem during rainy seasons, but also year-round due to many types of water use activities that discharge runoff into the storm drain system.

1.1. Program Framework

Municipal Stormwater Permit

The principal law governing pollution of the nation's surface waters is the Federal Water Pollution Control Act, more commonly known as the Clean Water Act. The Clean Water Act set the goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The federal Clean Water Act was amended in 1987 to address urban and stormwater runoff. One requirement of the amendment was that many municipalities throughout the United States were obligated for the first time to obtain National Pollutant Discharge Elimination System (NPDES) permits for discharges from their stormwater conveyance system. The National Pollutant Discharge Elimination System (NPDES) is a federal program established under the Clean Water Act to regulate discharges from any point source. A point source, as defined under the Clean Water Act is any "discernible, confined and discrete conveyance from which pollutants are or may be discharged." Discharge of urban and stormwater runoff conveyed in the storm drain system is considered a point source. Section 402(p) of the Clean Water Act prohibits municipal stormwater discharges without an NPDES permit. Discharge from any point source, except in compliance with an NPDES permit, is considered unlawful.

Residents, businesses and other uses within local jurisdictions contribute to discharges of pollution in stormwater and urban runoff from their property into *receiving waters* of the San Diego region via municipal storm drain systems. These municipal stormwater discharges are regulated under countywide requirements contained in Regional Board Order No. 2007-0001. This Order serves as the NPDES Municipal Stormwater Permit (Municipal Permit) for the

County of San Diego, the San Diego Unified Port District, the San Diego Regional Airport Authority and the 18 incorporated cities of San Diego County, referred to collectively as the *Copermittees*.

The Municipal Permit is granted and administered by the State Water Resources Control Board through the San Diego Regional Water Quality Control Board ("Regional Board"). The State Water Resources Control Board (SWRCB) and its nine Regional Boards have primary responsibility in California for the protection of water quality. This responsibility translates into preventing and reducing water pollution in our rivers, streams, lakes, beaches, and bays.

Municipal Permits seek to ensure that the *beneficial uses* of receiving waters are protected. Beneficial uses are defined as the uses of water necessary for the survival or well being of people, plants, and wildlife. Beneficial uses include surfing at a local beach, fishing in a creek or stream, or just taking a pleasurable walk along a scenic waterfront. Municipal stormwater NPDES permits contain requirements to achieve numeric and narrative *water quality objectives* that are established to protect beneficial uses. Water quality objectives are defined as constituent concentrations, levels, or narrative statements, representing a quality of water that supports the most sensitive beneficial uses that have been designated for a water body.

Each Copermittee is required to implement the requirements of the Municipal Permit across two broad levels of responsibility: (1) their jurisdiction and (2) their watershed(s). The Municipal Permit reflects these two broad levels of responsibility, in that it requires implementation of comprehensive urban runoff management programs, memorialized though Urban Runoff Management Plans, at both jurisdictional and watershed levels.

All Los Peñasquitos WMA Copermittees are implementing their Jurisdictional Urban Runoff Management Plans. In general, these plans outline broad implementation actions that each of these agencies will undertake in order to protect and improve the water quality of the Pacific Ocean, as well as rivers, creeks and bays in the region while achieving compliance with the Municipal Permit.

Watershed Urban Runoff Management Programs

The Municipal Permit requires the development and implementation of Watershed Urban Runoff Management Programs (WURMPs) for each of nine watershed management areas within San Diego County.

The City of Poway is the lead Copermittee for the Los Peñasquitos Watershed Urban Runoff Management Program. As such, Poway is responsible for developing the Los Peñasquitos Urban Runoff Management Program, producing associated documents, and coordinating overall implementation of the program. All Los Peñasquitos Watershed Copermittees are required to collaborate with one another within the watershed to develop and implement a program that "…reduces the discharge of pollutants from the MS4 to the MEP, and prevent urban runoff discharges from the MS4 from causing or contributing to a violation of water quality standards." (Permit Section E.2).

The Los Peñasquitos Watershed Urban Runoff Management Program will be submitted to the Regional Board no later than March 24, 2008. Additionally, annual program reports will also be submitted to the Regional Board. Annual reports will include the following:

1. A comprehensive description of all activities conducted by the watershed Copermittees;
2. Updates to any watershed maps;
3. Updates to assessments and analyses of the WMA's current and past applicable water

quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period;

4. Identification of the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed;
5. Updates to list of potential Watershed Water Quality Activities;
6. Identification and description of the Watershed Water Quality Activities implemented by each Copermittee during the reporting period;
7. Updates to list of potential Watershed Education Activities;
8. Identification and description of the Watershed Education Activities implemented by each Copermittee during the reporting period;
9. Description of the public participation mechanisms used during the reporting period and the parties that were involved;
10. A description of Copermittee collaboration efforts including meeting as the Los Peñasquitos WMA WURMP Workgroup;
11. Description of the efforts implemented to encourage collaborative, watershed-based, land-use planning;
12. When applicable, description of all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. The description shall include:
    a. Any additional source identification information;
    b. The number, type, location, and other relevant information about BMP implementation, including any expanded or better tailored BMPs necessary to meet the WLAs;
    c. Updates in the BMP implementation prioritization and schedule;
    d. An assessment of the effectiveness of the BMP Implementation Plan, and;
    e. A discussion of the progress to date in meeting the TMDL Numeric Targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.
13. Assessment of the effectiveness of the WURMP.

The first annual report will be submitted to the Regional Board by January 31, 2009. Subsequent annual reports are due every January 31st during the life of the current Municipal Permit.

Water Quality Control Plan for the San Diego Basin

The Water Quality Control Plan for the San Diego Region (more commonly referred to as the Basin Plan) was adopted by the Regional Board in 1994. This document serves to guide and coordinate the management of water quality within the region. According to the Basin Plan, "the most basic goal of the Regional Board is to preserve and enhance the quality of water resources in the San Diego Region for the benefit of present and future generations[2]." Specifically, the Basin Plan: (1) designates beneficial uses for inland surface waters, coastal waters, reservoirs and lakes, and ground water; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses; (3) describes implementation programs to protect the beneficial uses of all waters in the Region; and, (4) describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan. The Basin Plan incorporates by reference all applicable State and Regional Board plans and policies.

[2] San Diego Regional Water Quality Control Board (SDRWQCB), 1994.

Beneficial uses applicable to the waters of the state of California include contact water recreation (such as swimming and surfing), provision of habitat for freshwater, marine and wildlife species, and water supply.

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) and the Federal Clean Water Act both mandate periodic review of water quality control plans. Section 303 (c)(1) of the Federal Clean Water Act requires, "… the water pollution control agency of such State shall from time to time (but at least once each three year period...) hold public hearings for the purpose of reviewing applicable water quality standards[3] and, as appropriate, modifying and adopting standards." Because the review mandated by the Clean Water Act takes place every three years, it is termed a "Triennial Review".

Clean Water Act Section 303(d) Listed Water Bodies

Section 303(d) of the federal Clean Water Act requires States to periodically identify all surface waters in the state that do not meet *water quality objectives* as described in the Basin Plan. In California, the State Water Resources Control Board works with its Regional Boards to compile a draft list that is submitted to the U.S. Environmental Protection Agency for their review and approval. The list must include a description of the pollutants causing the violation of water quality objectives and a priority ranking of the water quality limited segments for the purpose of development of action plans aimed to improve their water quality. These action plans are referred to as *Total Maximum Daily Loads* (TMDLs).

The most recent 303(d) list for the Los Peñasquitos Watershed is shown in Table 1-1 below.

Table1-1. 2006 303(d) listings for Los Peñasquitos Watershed

Water Body Name	Hydrologic Area (HSA)	HSA No.	Pollutant/Stressor
Los Peñasquitos Lagoon	Miramar	906.1	Sediment/Siltation
Los Peñasquitos Creek	Miramar	906.1	Phosphate, TDS

Source: SWRCB, 2006

Program Responsibilities

As described above, the Los Peñasquitos Watershed falls within the boundaries of the Cities of Del Mar, Poway, and San Diego as well as within unincorporated areas under the jurisdiction of the County of San Diego. While the City of Poway is identified as the WURMP lead Copermittee, all of the Copermittees have participated in the development of this WURMP and are responsible for its continued assessment and implementation.

The following section identifies which specific departments and/or divisions within each of the participating jurisdictions are responsible for stormwater management activities as well as their primary functions and goals. Contact information for each agency is also provided.

[3] *Water Quality Standards* refer to both numeric and narrative water quality objectives and beneficial uses.

CITY OF DEL MAR

Del Mar is continuing to implement the environmentally friendly policies and guidelines of its City Council and citizens'. The City developed and is implementing its Jurisdictional Urban Runoff Management Program in order to affect a change in water quality within the City's stormwater conveyance system. However, the Program's primary goal is to protect its most visible and valuable natural resources – our lagoons, and the Pacific Ocean – from the degradation caused by pollution in urban runoff.

The Clean Water Manager, within the Planning and Community Services Department, has primary responsibility for development and implementing the Program's many elements, and ensuring city-wide compliance with the Municipal Permit. To accomplish this, the Clean Water Manager works with staff from the various City Departments; representatives from community and environmental groups; and staff from other jurisdictions in San Diego County to ensure that the requirements of the Municipal Permit are met through proper education/training, water quality monitoring and assessment, auditing, facility inspections, planning and reporting, and enforcement activities. All of the City's departments are working closely to implement the Urban Runoff Program as effectively and efficiently as possible.

CITY OF POWAY

The City of Poway has a Stormwater Pollution Prevention Program in place to ensure compliance with the Municipal Stormwater Permit. The Program goals are to comply with Federal, State, and regional regulatory requirements. The City's Stormwater Program must ensure all public and private facilities, and existing and new development implement the City's Jurisdictional Urban Runoff Management Plan. The City of Poway Stormwater Program receives policy direction from the City Council. The administration of the Stormwater Pollution Prevention Program is shared by the Department of Public Works and the Department of Development Services.

The Department of Public Works is responsible for ongoing, enhanced maintenance of the City's storm drain system, illicit discharge detection and elimination, dry weather monitoring, and municipal and residential permit compliance. The Department of Development Services administers a vigorous Industrial and Commercial Inspection program to ensure the facilities and developers that operate in the City of Poway demonstrate compliance with the City's JURMP and the Stormwater Permit. The Department of Development Services Code Compliance Division investigates illegal discharges and illicit connections, maintains a database of compliance history for each facility, and enforces the Permit requirements. Both the Department of Public Works and the Department of Development Services create and conduct stormwater pollution prevention education and outreach to the City's residents, municipal staff, businesses, and developers.

CITY OF SAN DIEGO

The City of San Diego Stormwater Pollution Prevention Division, housed within the General Services Department, is the lead office in the City's efforts to reduce pollutants in urban runoff and stormwater. Additionally, the Stormwater Pollution Prevention Division is responsible for achieving compliance with the Municipal Permit.

The Division is focused on protecting and improving the water

quality of rivers, bays and the ocean for the citizens of San Diego and future generations by targeting pollutant sources for abatement and eliminating and reducing pollutants in urban runoff and stormwater in an efficient, effective and cost-effective manner.

The City's belief that public education is key to cleaner ocean waters leads to the development of the "Think Blue" educational campaign. "Think Blue" (www.thinkbluesd.org) seeks to educate residents, business, and industry about the causes of stormwater pollution and the pollution prevention behaviors everyone can adopt to protect the region's water resources for now and for future generations of San Diegans.

The Stormwater Pollution Prevention Division is responsible for the front-line development and implementation of the City's watershed urban runoff management programs. The Division also leads a citywide effort to retool and reconfigure existing policies, procedures and development regulations to incorporate pro-active stormwater pollution prevention strategies.

COUNTY OF SAN DIEGO

The County of San Diego's Stormwater Management Program is designed to improve water quality through education, inspection, response and water monitoring. The objectives of the Stormwater Management Program are to provide guidance to the public on water quality issues and to act as a coordinating entity towards a cohesive regional stormwater program.

Several departments within the County's Land Use and Environment Group (LUEG) implement the Stormwater Management Program. The County believes that the individual departments within the County each have a core competency, and a Program Manager is designated in County Departments to ensure program implementation.

1.2. Watershed Description & Map

General Description

The Peñasquitos watershed encompasses a land area of approximately 100 square miles, extending east to Iron Mountain and draining west to Los Peñasquitos Lagoon at the Pacific Ocean Coast. Runoff from the drainage basin enters the Lagoon via Soledad Canyon, Los Peñasquitos Canyon and Carmel Valley Creeks[4].

The WMA includes portions of the Cities of Del Mar, San Diego, and Poway as well as areas within the jurisdiction of the County of San Diego as shown below (see additional maps of the watershed in Appendix B).

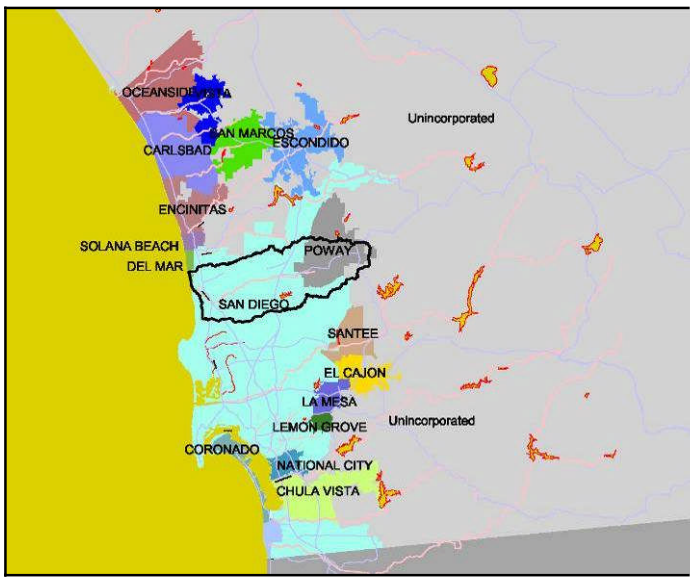

Figure 1-1. Peñasquitos Creek Watershed: Jurisdictional Boundaries.

The watershed provides a home to over 180 sensitive plant and animal species. Many of the species in the watershed are considered

[4] Mudie et al, 1974.

endangered under state and federal listings. Some of the species that can be found in the watershed include the Salt marsh daisy, Quino checkerspot butterfly, American peregrine falcon, California gnatcatcher, California least tern, Cooper's hawk, Orange-throated whiptail, Western spadefoot toad, and the San Diego black-tailed jackrabbit[5]. The Peñasquitos watershed is also a stopover location for migratory birds, and includes riparian wetlands, vernal pools, salt marshes, and open waters.

The Peñasquitos WMA is formed by the Miramar Reservoir (906.1) and Poway (906.2) hydrologic areas within the Peñasquitos hydrologic unit (see Figure 2-2 below). The remaining hydrologic areas (Scripps 906.3, Miramar 906.4, and Tecolote 906.5) are aggregated to form the Mission Bay Watershed Management Area (considered under a separate urban runoff management program under the jurisdiction of the City of San Diego).

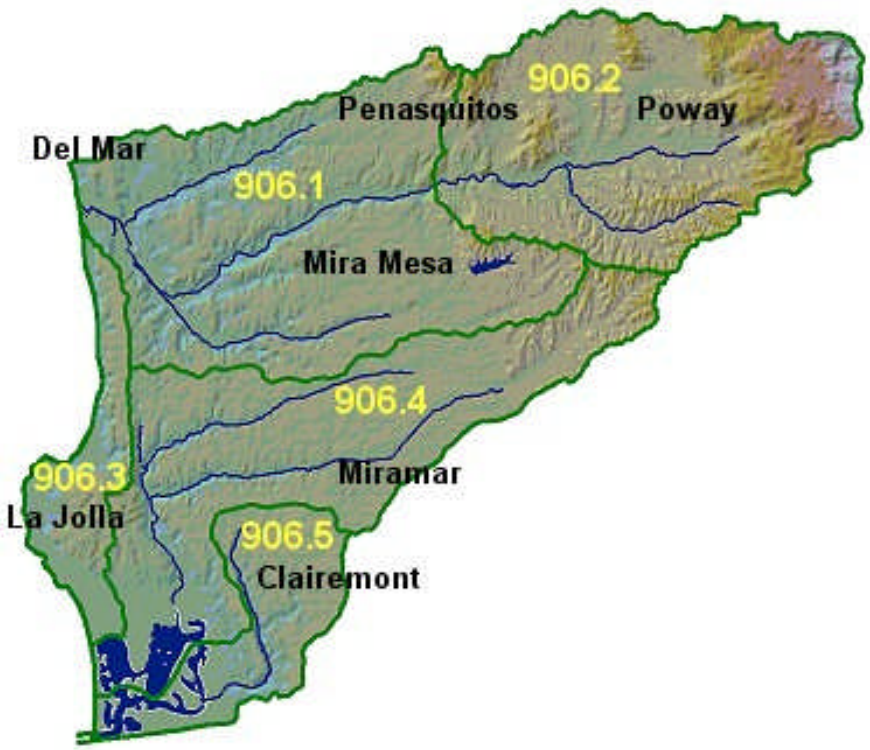

Figure 1-2. Peñasquitos Hydrologic Unit and Areas.

Land Use

Each of the watersheds in the San Diego region is unique in size, terrain, and development pattern. It is now well documented that as the amount of impervious pavement and rooftops increases in a watershed, the velocity and volume of surface water as well as pollutant loads are increased. There is a strong correlation between the amount of imperviousness in a watershed and the health of its receiving water bodies.

[5] Los Penasquitos Watershed Profile. California State Coastal Conservancy. Aug. 2001 http://eureka.regis.berkeley.edu/wrpinfo/watersheds/lp/.

Impervious surfaces collect and accumulate pollutants deposited from the atmosphere, leaked from vehicles or derived from other sources. During storms, accumulated substances are quickly washed off and rapidly delivered to aquatic systems. Even during extended periods of dry weather, constituents carried in water flows associated with landscape irrigation, car washing, hosing off sidewalks and driveways, and industrial discharges reach surface waters.

Research has shown that impervious surfaces, a consequence of development, have a direct impact upon stream water quality. A watershed with impervious surface coefficient less than 10% is considered a protected area, between 10% to 25% is considered an affected area, and higher than 25% is considered a degraded area[6]. The categories indicate a qualitative degree of stream deterioration due to urbanization, which is measured by the impervious coverage.

The increased influx of runoff from urbanization, due to the increase of impervious surfaces, can also change such things as peak flow rates and velocity within the watershed. Urbanization can be associated with activities such as urban runoff, sewage spills, dredging, landfill leachate, conversion of agriculture to urban uses, irrigation from agricultural activities, and catch basins that are not maintained within the watershed. All of these activities can pose major threats to the health of the watershed.

The lower portion of the Peñasquitos WMA is generally typical of urbanized coastal areas in Southern California. Principal land uses within the Peñasquitos WMA are identified below in Table 1-2: Figure 1-3 is an update land use map reflecting the 2006 data.

[6] Schueler, 1994.

Figure 1-3 Peñasquitos Watershed – 2006 Land Uses

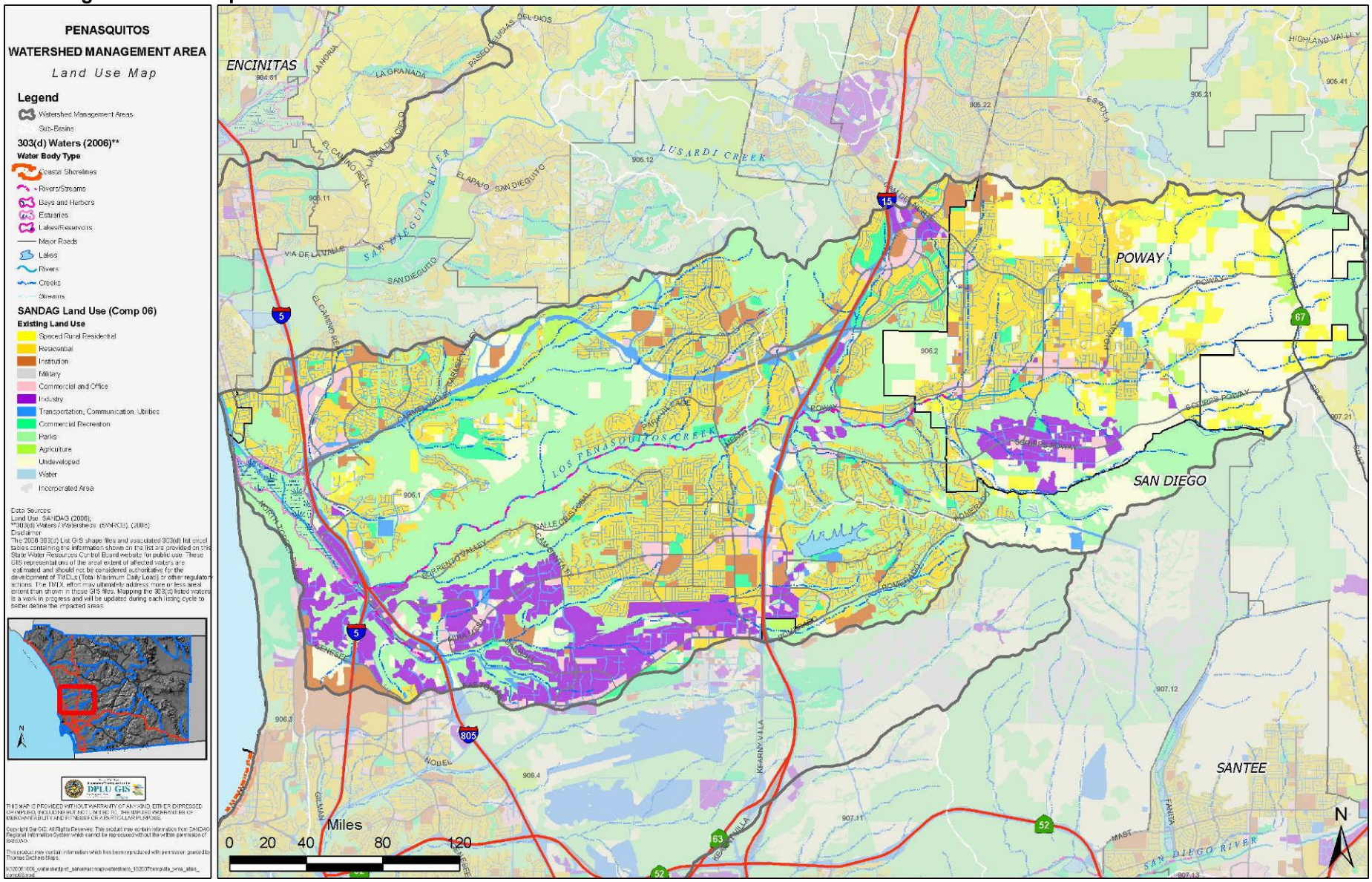

Table 1-2. Peñasquitos WMA: Land Uses Based on Year 2006 Data[7].

LAND USE DESCRIPTION	ACRES	ACREAGE As Percentage of WMA
Agriculture	753.40	1.2%
Commercial	1,481.64	2.5%
Golf	607.48	1.0%
Industrial	4,221.11	7.0%
Junkyard/Dumps/Landfills	38.60	0.1%
Landscape Open Space	697.22	1.2%
Military	10.05	0.0%
Municipal	115.73	0.2%
Office	688.65	1.1%
Open Space	16,747.29	27.7%
Parking Lots	48.10	0.1%
Parks	550.29	0.9%
Rail Transit	163.31	0.3%
Recreation	93.33	0.2%
Miscellaneous Residential	2,406.73	4.0%
Schools	1,453.45	2.4%
Single Family Residential	11,034.45	18.3%
Spaced Rural Residential	2,712.38	4.5%
Transportation	7,107.17	11.8%
Undeveloped	9,063.05	15.0%
Utilities	187.43	0.3%
Water	178.80	0.3%
TOTALS	60,359.64	100.0%

Source: SANDAG 2006

Generally, runoff from open space areas and undeveloped land contributes lower contaminant loads into watersheds while residential, commercial, industrial, and transportation land uses have higher contaminant loads. Contaminants associated with residential, commercial, industrial, and transportation land uses include oil and grease, bacteria, pesticides, metals, suspended solids, and surfactants, while open space and construction activities tend to contribute to sedimentation. Agricultural land uses tend to contribute nutrients and pesticides to watershed loads. Soil types and susceptibility to erosion also influences water quality and streambed conditions.

WMA Drainage Characteristics

The Peñasquitos watershed drains portions of the communities of Poway, Rancho Peñasquitos, Mira Mesa, and Del Mar. Presently, however, most of the flow is year-round due to urbanization within and around the watershed.

[7] SANDAG 2006

The WMA contains approximately 60,000 acres of drainage area which extends as far easterly as the Iron Mountains and drains west to the Los Peñasquitos Lagoon and finally into the Pacific Ocean. The watershed consists of three parallel canyons running inland toward the foothills with a peak elevation of 2900 feet[8].

Runoff in the WMA is closely related to the rainfall patterns, which is largely derived from winter storm systems. The annual precipitation ranges from less than 8 inches along the coast to 18 inches inland. The upper portion of the watershed includes topography that is relatively steep. Therefore, in this area there are stream channels that run through narrow and deep valleys. In the lower portion of the watershed, the topography is less steep resulting in stream channels that cut through relatively broad valleys. The three main water drainage areas include the Los Peñasquitos Creek, Carroll Creek, and Carmel Creek.

Los Peñasquitos Creek
The Los Peñasquitos Creek flows through the entire length of the Los Peñasquitos Canyon. Beginning at the eastern end of the creek, there are three main drainages that initiate the flow. The three drainages are Beeler Canyon, Rattlesnake, and Poway Creeks. Los Peñasquitos Creek begins in the city of Poway in an area with land use that is characterized by vacant and undeveloped land along with single family residential and public services. After the initiation of the creek, the drainage flows west and collects water from Sabre Springs, the Peñasquitos Preserve, the Los Peñasquitos Ranch house spring, Lopez Creek, and adjacent tributary canyons[9]. The creek then crosses Interstate 15 and once it is on the west side, it flows through an area with vacant undeveloped land. There are also residential single family homes that are encroaching upon the vacant land and creek in this area. The creek then meanders in a southwest direction through Mira Mesa until it reaches Sorrento Valley. Los Peñasquitos Creek then flows near Interstate 5 and 805 and into areas where it is surrounded by light industrial land use. Next, the creek turns northward and once again flows through undeveloped vacant land until it enters and drains into the Los Peñasquitos Lagoon. There are two stretches in the western lower portions of the Los Peñasquitos Creek that are lined in concrete. This was done to minimize the effects of erosion.

Carroll Creek
Carroll Creek flows westward through the Carroll Canyon sub-basin, which is located along the southern edge of the watershed. The headwaters of the creek are located near the Miramar Reservoir. The initiation of the creek is located in an area of extractive industry and from there the creek flows west through areas of vacant and undeveloped land, public services, and parks until it reaches Interstate 805. At this location the creek begins to flow in a northwesterly direction and comes into contact with lands that are used for light industry and parks. Carroll creek then crosses Interstate 5 and joins Los Peñasquitos Creek in Sorrento Valley prior to discharging into the lagoon.

Carmel Creek
Carmel Creek also flows westward through the Carmel Valley sub-basin located within the northwestern portion of the watershed. The headwaters are on Black Mountain and begin in an agricultural area. The creek then continues west through areas of undeveloped vacant land, single family residential, and commercial recreational areas. It then carries on parallel to

[8] Don Coppock, Los Peñasquitos Lagoon and Enhancement Plan and Program (State Coastal Conservancy, 1985)
[9] Los Peñasquitos Watershed Profile. California State Coastal Conservancy. Aug. 2001 http://eureka.regis.berkeley.edu/wrpinfo/watersheds/lp/.

Carmel Valley Road until it crosses Interstate 5. From there the drainage flows to the Los Peñasquitos marsh area. A marsh is a tract of low wet land that is normally treeless and periodically inundated. The Los Peñasquitos salt marsh area has been converted to a cattail and riparian marsh due to sedimentation and increased freshwater flows.

Los Peñasquitos Lagoon

The flows that originate from the three drainage areas, and any other sources, enter into the Los Peñasquitos Lagoon along with eight storm drains. This drainage then discharges into the Pacific Ocean (the outlet of Peñasquitos Lagoon is shown in Figure 1-X). The lagoon was once a tidal estuary, but there are factors that have degraded the lagoon and have closed it to tidal action for long periods of time. Some factors that have degraded the lagoon are the construction of a railroad embankment that has cut off lagoon channels, increased sediment from changing land uses upstream, and the construction of North Torrey Pines Road that restricted the location of the lagoon mouth. The ocean inlet is restricted by the crossing of Highway 1 and, therefore, must be mechanically cleared to prevent sediment blockage for extended periods of time.

Figure 1-X Los Peñasquitos Lagoon Ocean Outlet

Water Supply Resources

The history of San Diego region revolves around a never-ending search for a safe, reliable water supply in this arid area of Southern California. The Peñasquitos watershed is home to the Miramar Reservoir. Miramar Reservoir is located approximately 18 miles north of downtown San Diego in the Scripps Ranch community. This lake is very popular for bicycling, jogging, walking, roller-blading, and picnicking. When full, the reservoir has 162 surface acres, a maximum water depth of 114 feet, and 4 shoreline miles.

2. COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos WMA Copermittees are responsible for developing and implementing a collective watershed strategy to abate the sources and reduce the discharge of pollutants causing the high priority water quality problems of the WMA. The strategy guides WMA Copermittee selection of Watershed Activities so that the Watershed Activities selected and implemented are appropriate for each WMA Copermittee's contribution to the WMA's high priority water quality problems.

In order to meet this responsibility, the WMA Copermittees have developed a collective watershed strategy that includes elements developed by the Regional Copermittees as a part of the Model Watershed Urban Runoff Management Strategy found in the Regional URMP. The model strategy's primary function is to facilitate identification and selection of the most appropriate watershed water quality and education activities for implementation through the Five-Year Strategic Plan described in Section 4.

In the simplest form, the collective watershed strategy uses the existing data and information that is available to the Copermittees related to water quality and known sources of pollutants to identify the most important water quality problems and sources within the WMA. The water quality status is assessed annually as a part of the regional monitoring program. Some baseline source information is available through existing literature, including the Copermittees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA) where Source Loading Potential ratings were developed and used to assess sources' threat-to-water-quality (TTWQ). Additional information related to sources (Source Loading Potential or SLP, BLTEA 2005) is also needed and can be obtained through many of the activities that are proposed to be implemented at the watershed level. The source information is needed to better characterize what and where the high priority threat-to-water-quality (TTWQ) sites are within the watershed. Having a better understanding of the TTWQ of the known sources will help prioritize activities.

This process is consistent with the Copermittee standard process to implement other programs at the jurisdictional and regional levels. The process applied for the recommended watershed activity selection in the model watershed strategy is summarized below.

Part A: Baseline Watershed Evaluation

Step 1: Step 1 requires an evaluation of each Hydrologic Area to determine whether water quality monitoring data are sufficient and adequate to support management decisions. The water quality ratings presented in theCopermittees' Baseline Long-Term Effectiveness Assessment (BLTEA) should serve as the starting point for performing this step. In addition to the BLTEA, Copermittees may consider supplemental information as appropriate to determine the sufficiency of monitoring data.

Step 2: Based on the results of Step 1, the Watershed Copermittees should evaluate the Hydrologic Area with regard to the quantity, location, and potential threat of pollutant sources to determine if the sources have been adequately identified and characterized to support management decisions. The BLTEA's source loading potential (SLP) and threat-to-water quality (TTWQ) ratings should serve as the starting point for performing Step 2. In addition to the SLP and TTWQ ratings, Copermittees may consider supplemental information as appropriate to determine whether pollutant sources are adequately identified and characterized to support management decisions.

Step 3: The third step in the Model Strategy is to identify potential management actions based on the results of Steps 1 and 2.

Part B: Selection of Watershed Activities

Building upon the potential management actions identified in Step 3 of the baseline watershed evaluation, Copermittees must select specific activities for implementation.

Part C: Five-Year Strategic Plans

Watershed activities selected will be combined into a five-year strategic plan for the WMA. The five-year strategic plan identifies and describes in detail the watershed activities planned for implementation during the upcoming year of implementation and also includes plans for activity implementation beyond the upcoming year of implementation where appropriate.

3. WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

The Los Peñasquitos WMA Copermittees will annually assess the water quality of receiving waters in the Los Peñasquitos WMA. The assessment will use applicable water quality data, reports, and analysis generated in accordance with the requirements of the Receiving Waters Monitoring and Reporting Program, as well as applicable information available from other public and private organizations.

The assessment and analysis will annually identify the WMA's water quality problems that are partially or fully attributable to MS4 discharges. Identified water quality problems will include CWA section 303(d) listings, persistent violations of water quality standards, toxicity, impacts to beneficial uses, and other pertinent conditions. From the list of water quality problems, the high priority water quality problems of the WMA will be identified, which shall include those water quality problems which most exceed or impact water quality standards (water quality objectives and beneficial uses).

The assessment will include annual identification of the likely sources of the WMA's high priority water quality problems.

The process for assessment of both water quality problems and potential pollutant sources is described below.

3.1. Water Quality Assessment Approach

3.1.1. Monitoring Program Background

The San Diego Regional Copermittees are covered under a municipal NPDES permit for discharge of urban runoff to waters of the United States. The participating Copermittees share the costs of monitoring required for compliance with this permit. In response to the permit requirements, the Copermittees developed a monitoring framework that includes the following three elements:

Regional Monitoring Programs that provide baseline datasets for comparing information from local monitoring programs. These programs encompass a large spatial area (e.g., the San Diego region, and the entire Southern California Bight), and look at many elements potentially impacted by stormwater runoff. This type of monitoring takes a long-term view of the ultimate receiving waters, the coastal bays, lagoons, and the ocean. Regional monitoring is designed to answer questions concerning the ecological health of a large geographic region and encompass numerous components, including water and sediment quality, fish, benthos, birds, etc. An example of regional monitoring is the Southern California Coastal Waters Research Project (SCCWRP) Bight Monitoring Program that is conducted every five years.

Core Monitoring is long-term monitoring with the objective of tracking compliance with regulatory requirements or limits, or to track trends over time. Core monitoring programs typically involve routine sampling at fixed stations through time. Individual monitoring components are designed to evaluate long-term changes in water quality and mass loading to MS4 and receiving waters. Assessing concentrations of chemical constituents, toxicity to test organisms, and benthic assemblages provides indications of long-term trends and effects between and within watersheds.

The primary short-term objectives of the Core Receiving Waters Monitoring Program activities are to:

1. Determine the ecological health of receiving waters in the county based on chemical, physical, and biological evidence.

2. Assess compliance with RWQCB order No. R9-2007-0001.

The long-term objectives include:

1. Predict short- and long-term impacts to receiving waters that result from changes in land-use within each watershed, and provide data that can be analyzed to develop pollutant reduction strategies for those impacts.
2. Measure the effectiveness of Urban Runoff Management Plans (URMPs) and other potential pollutant reduction strategies.
3. Develop and implement a program that integrates with other regional programs involved in assessing the overall health of receiving waters in San Diego County and Southern California.

Special Studies supplement both the Core Monitoring and the Regional Monitoring. Special Studies are focused evaluations designed to answer specific questions. These are typically short-term efforts intended to answer specific questions that may be raised during assessment of core monitoring results. Some examples of Special Studies include evaluation of the link between stormwater discharges and impaired water quality, conducting molecular/genetic host tracking for bacterial source identification in a watershed, and source identification studies used for the development of Total Maximum Daily Loads (TMDLs) for 303(d) listed impaired water bodies.

For additional information on the monitoring program, please refer to the San Diego County Municipal Copermittees Urban Runoff Monitoring Program Reports (2001, 2002, 2003, 2004, 2005, 2006, and 2007).

3.1.2. Water Quality Assessment Strategy

As part of the watershed-based water quality assessment, information from the Receiving Water Monitoring and Reporting Program is utilized. The following steps are generally taken in the data evaluation and analysis:

1. Identify constituents of concern which have been found to exceed administrative water quality standards/objectives as well as the frequency, magnitude and duration of such exceedances;
2. Isolate constituents of concern shown to exceed applicable water quality standards and/or objectives in a persistent and/or recurrent manner;
3. As data permits, evaluate whether there are any potential effects which could be a result of co-mingling and/or bioaccumulation effects of recorded constituents and pertinent data/analysis related to source identification investigations or related efforts;
4. Examine how any of the constituents of concern identified in step (2) above, may contribute to water quality degradation which would negatively impact designated beneficial uses; and,
5. The development of a longer historical record over multiple years of monitoring, allows Copermittees to assess constituent of concern data to see if there are any increasing or decreasing trends through time applying statistical analysis.

The three data sets (stormwater chemistry, stormwater toxicity and rapid stream bioassessment data) collected under the Core Monitoring program are evaluated using the triad decision matrix. This triad of monitoring data is utilized in a 'weight of evidence' approach. Stormwater chemistry and stormwater toxicity data provide an indication of the pollutant loads during a storm event and potential aquatic impacts during storm events to organisms, respectively. The stream bioassessment provides information related to the ecological health of the watershed and an indication of stream health effects from urban runoff. Stream bioassessment data not

only provide information about the benthic invertebrate community present in the watershed, but also information about the quality and condition of the physical habitat.

The intention of the triad decision matrix is to direct changes in the monitoring program using a consistent and scientific approach. Copermittees use the triad decision matrix as one step in the process of identifying additional monitoring needs, such as performing a Toxicity Identification and Elimination (TIE) study to identify the constituents causing toxicity.

Two constituents of concern not considered in the triad approach are bacteria and total dissolved solids (TDS). The bacteria parameters are not considered in the triad because they are not believed to influence toxicity responses in bioassay test organisms. Human health objectives for water contact recreation or non-water contact recreation are the water quality objectives for bacterial indicators. Total dissolved solids are not considered because, while this parameter may exceed water quality objectives in the Basin Plan, the objectives were set for municipal drinking water supply and not ecological impacts.

The Regional Board considers bacterial indicators and TDS constituents of concern and assesses these parameters by looking at all applicable factors (303(d) listings, beneficial uses, public health considerations, jurisdictional goals, economic impact, etc.). Bacterial indicators and TDS are then included as appropriate in the prioritized strategy. Bacterial indicators and TDS may not have the benefit of the added evidence of benthic community and toxicity, yet they may lead to watershed activities when considered with all other stressors and constituents of concern in the watershed and their potential impact on beneficial uses.

Historical Data Trend Assessment

Where longer-term data are obtained from the monitoring program, data can be evaluated for trends over time. The assessment of a long-term data set can be accomplished through two statistical tools, regression and power analyses. Because analytical data sets are inherently variable, determining if concentrations of a potential constituent of concern are significantly decreasing or increasing in a watershed requires statistical analysis of the data.

Linear regression analysis can be performed after applying appropriate data transformations to the data. This regression analysis determines the slope of the trend line to assess either a decreasing or an increasing trend. Care must be taken to examine each data set for outliers or influential data points that unduly influence the results of the analysis.

In addition to determining whether there are significant trends for each of the potential constituents of concern, it is also important to know the power of the regression line, or in other words, the confidence one has in the regression results based on the slope of the regression and the number of data points (times) in the analysis. Typically, power estimates of 80% or greater (at an alpha level [error] of 0.05) are desired to be able to make strong statements about statistical results.

The historical data will be used in an overall integrated assessment to determine the overall effectiveness of the WURMP program. This is described in more detail in Section 5.

Data Sources

The following comprehensive reports provided most of the water quality data and related information that was evaluated as part of this watershed assessment:

San Diego Regional Previous Stormwater Monitoring Review and Future Recommendations Report (MEC Draft August 20, 2001): This report contains a summary of significant findings from Copermittee monitoring programs implemented from 1993 to 2000. However, this report contains data and analysis pertinent to the historic monitoring sites (Chollas Creek, Tecolote Creek and Agua Hedionda Creek) and therefore only applies to the San Diego Bay Watershed, Mission Bay Watershed, and Carlsbad Watershed.

Urban Runoff Monitoring Report (MEC, 2002): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2001-2002 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (MEC, 2003): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2002-2003 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (MEC, 2004): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2003-2004 season. (This report applies to all watersheds.)

Baseline Long-Term Effectiveness Assessment (Weston, MOE & LWA, 2005): This document establishes a watershed based priority rating system based on the available monitoring data for each individual hydrologic area within the Watersheds. (This report applied to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2005): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2004-2005 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2006): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2005-2006 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2007): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2006-2007 season. (This report applies to all watersheds.)

Additionally, the October 2006 Clean Water Act Section 303(d) Lists of Water Quality Limited Segments and associated list of constituents of concern in the watershed were considered as data sources[10].

Over the course of the permit life, new monitoring data will be available for evaluation, including the Temporary Watershed Assessment Station Monitoring, MS4 Outfall Monitoring and Source Identification Monitoring programs. As these programs are developed, the WURMP Annual Reports will include discussions on how the information and data collected from these programs will affect the collective WURMP strategy as well as effectiveness assessment evaluations.

Strategy for Prioritizing Water Quality Issues

Once the Copermittees identify constituents of concern, the watershed water quality problems are identified using a qualitative process that considers watershed-specific conditions using the weight of the evidence approach as well as best professional judgment to interpret the

[10] SWRCB, 2006.

relationships between exceedances, regulatory mechanisms, and beneficial uses. Factors considered include:

1. Availability of sufficient qualified data (may include detection levels, number of sample(s), spatial and temporal characteristics);
2. Opportunity to protect and preserve healthy water bodies;
3. Need to integrate additional data;
4. Ability to determine conditions at the sub-watershed level;
5. Current related concerns and/or priorities expressed by local jurisdictions;
6. Stakeholder input;
7. Grant funding opportunities; and,
8. Human and ecological health considerations.

3.2. Receiving Waters Condition

The following receiving waters condition information is take from the Urban Runoff Monitoring Report, Weston 2007. The Los Peñasquitos WMA was assessed utilizing chemistry and toxicity data collected during storm events from a single MLS, field and chemistry data collected from up to 55 dry weather monitoring sites upstream of the MLS, and IBI scores generated at two bioassessment sites. The WMA assessment methods presented in the Urban Runoff Monitoring Report (Weston, 2007) were applied to these data to determine which constituents are of concern and to develop a high, medium, or low frequency of occurrence for these constituents. The results of this assessment are presented in 3-1.

Table 3-1 Constituent exceedances in the Los Peñasquitos WMA MLS Area

Constituents With Any Wet Weather (MLS) WQO or Dry Weather Action Level Exceedance	MLS (Wet Weather) Results														Dry Weather Results *		Frequency of Occurrence	Criterion No.
	2001/2002		2002/2003		2003/2004		2004/2005		2005/2006		2006/2007		CUMULATIVE		2006			
	# /3	%	# /3	%	# /3	%	# /3	%	# /3	%	# /3	%	# /18	%	#	%		
Conventional Parameters																		
COD	0	0	0	0	0	0	1	33	0	0	0	0	1	6	NA	NA	-	-
Ammonia[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	-	-
Total Dissolved Solids	3	100	3	100	3	100	3	100	2	67	3	100	17	94	NA	NA	♦♦♦	1
Total Suspended Solids	0	0	0	0	0	0	1	33	1	33	1	33	3	17	NA	NA	-	-
Turbidity	0	0	2	67	0	0	1	33	1	33	1	33	5	28	14	26	♦	8
pH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
Nutrients																		
Orthophosphate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	0	-	-
Nitrate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	-	-
Bacteriological																		
Total Coliform	0	0	2	67	0	0	1	33	1	33	0	0	4	22	3	23	♦	8
Fecal Coliform	1	33	3	100	1	33	3	100	3	100	3	100	14	78	1	8	♦♦♦	2
Enterococcus	0	0	2	67	0	0	0	0	2	67	1	33	5	28	3	23	♦	8
Pesticides																		
Chlorpyrifos	0	0	2	67	0	0	0	0	0	0	0	0	2	11	0	0	-	-
Diazinon	2	67	1	33	0	0	0	0	0	0	0	0	3	17	0	0	-	-
Total Metals																		
Antimony	0	0	1	33	0	0	0	0	0	0	0	0	1	6	NA	NA	-	-
Dissolved Metals																		
Copper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
Toxicity																	**EVIDENCE OF PERSISTENT TOXICITY?**	
	0	0	0	0	0	0	0	0	0	0	1	33	1	6	NA	NA	No	
Bioassessment	IBI Rating																**EVIDENCE OF BENTHIC ALTERATION?**	
Los Penasquitos Creek, at Cobblestone Creek Rd.	Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		NA		Yes	
Carroll Canyon Creek, at Highway 805 **	Very Poor		Poor		Poor		Poor		Very Poor		Very Poor		Very Poor		NA			

* = Total number of observations varied among constituents.
NA = Not assessed
[1] Wet weather data is compared to the Basin Plan WQO for un-ionized ammonia, dry weather data is compared to the dry weather action levels
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.
DS = Downstream of MLS
** Bioassessment station relocated during 2006-2007 to Los Penasquitos Creek at 805

It is important to note that the data used for the following assessment was collected from a representative portion of the WMA – not the entire WMA. The mass loading station for the Los Peñasquitos Watershed is located in the Peñasquitos Creek (PC) in the City of San Diego, at the North end of Sorrento Valley Court, under the Sorrento Valley Court Bridge. This creek has an earthen bottom, and rip-rap along the sides of the channel. The contributing runoff area consists of over 36,700 acres and comprises approximately 60 percent of Los Peñasquitos WMA. The two major land uses within the contributing runoff area are open space (59%) and residential (29%). The contributing runoff area is representative of the entire watershed, which is characterized by open space (52%) and residential (25%) land uses. Los Peñasquitos Creek flows into Los Peñasquitos Lagoon.

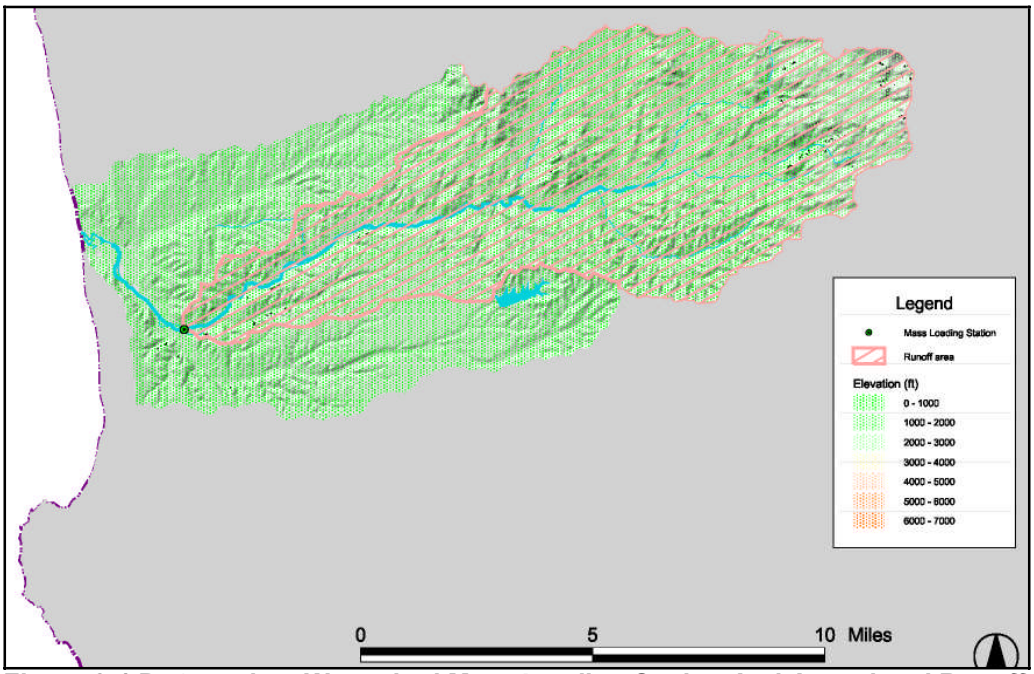

Figure 3-1 Peñasquitos Watershed Mass Loading Station And Associated Runoff Area.

Two constituents were found to have high frequencies of occurrence in the Los Peñasquitos WMA. Total dissolved solids received a three diamond rating and fecal coliform also received a three diamond rating. Total dissolved solids exceeded the WQO in 94% of the monitored wet weather MLS events since the 2001/2002 storm monitoring season. For fecal coliform, six of the last consecutive storm samples at the MLS were above the WQO.

Three constituents were found to have a low frequency of occurrence. Turbidity, Total coliform, and enterococcus were assigned a one diamond rating.

Through 2005/2006, toxicity had not been observed in bioassay exposures to collected sample water from any of the 12 events monitored since 2001. However, toxicity was observed in *Ceriodaphnia dubia* exposed to stormwater collected on January 30, 2007. The water on this date was shown to elicit a toxic response in *C. dubia* reproduction.

IBI scores resulting from bioassessment monitoring on Los Peñasquitos WMA have consistently indicated a rating of Very Poor at the Cobblestone Creek Rd. bioassessment site. The Carroll Canyon Creek site received a rating of poor in three years of monitoring between 2002 and 2005 but received a very poor rating in the first year of monitoring and in the 2005-2006 year of monitoring. In 2006-2007 this site was moved to Los Peñasquitos Creek immediately downstream of the MLS. The newly located station received a very poor rating in the 2006-2007 year of monitoring. Therefore, there are indications of benthic alteration within the Los Peñasquitos Creek Watershed.

Figure 3-1 summarizes the number of times constituents were measured above water quality objectives in six analytical categories. The categories include conventional, nutrients, bacteria, pesticides, metals and toxicity. The stacked bars represent the number of times constituent values from the wet weather MLS results were above WQOs in Table 3-1 for each constituent category. The overall number of times the water quality values were above WQOs at the Los Peñasquitos Creek MLS has remained relatively low during the last three monitoring seasons.

The figure also indicates that bacteriological and conventional parameters are the only constituent groups that are above the WQO with any type of regularity.

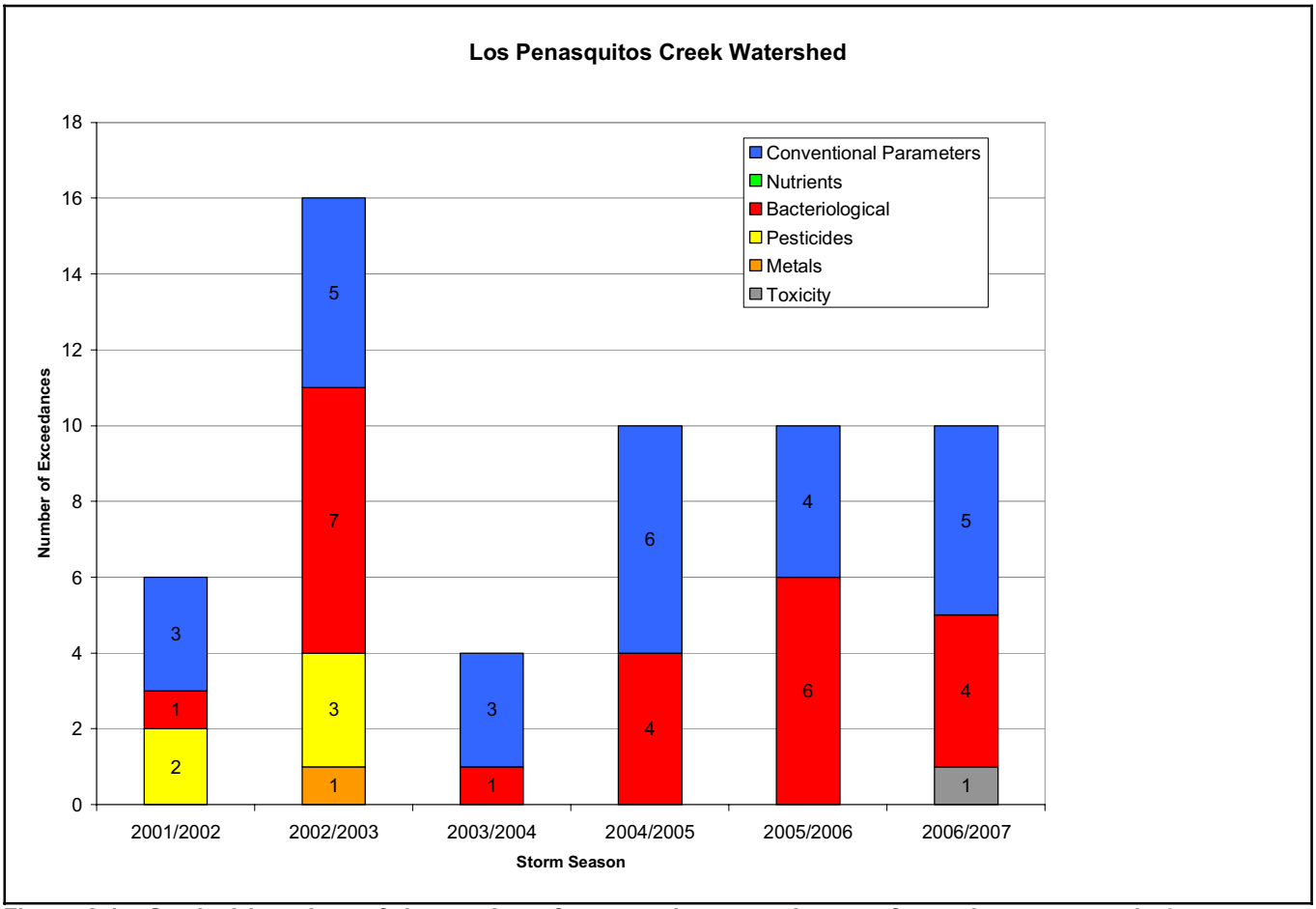

Figure 3-1. Stacked bar chart of the number of wet weather exceedances of constituent groups in Los Peñasquitos WMA MLS Area

Triad Decision Matrix

The triad decision matrix combines the occurrence of COC with the toxicity and bioassessment results to determine possible conclusions about the watershed and provide possible actions for future monitoring or assessment. Table 3-2 summarizes these results and lists possible conclusions and potential actions.

Table 3-2. Triad Decision Matrix Results for the Los Peñasquitos WMA.

Chemistry	Toxicity	Benthic Alteration	Possible Conclusions	Potential Actions or Decisions
No persistent exceedances of water quality objectives	No evidence of persistent toxicity	Indications of alteration	Alteration may be due to physical impacts, not toxic contamination Test organisms not sensitive to problem pollutants	1) No action necessary based on toxic chemicals. 2) Consider whether different or additional test organisms should be evaluated. 3) Consider potential role of physical habitat disturbance.

*Weston 2007

3.3. Water Quality Problem(s)

The WMA Copermittees used the process developed in the regional watershed strategy to identify the water quality problems in the Los Peñasquitos WMA at the Hydrologic Area (HA) level.

303(d) Impaired Water Bodies Listings

The following table includes the impaired water bodies within the WMA. There are new listings added as a part of the 2006 listings. These new listings are not considered in the Baseline Water Quality Priority Ratings discussed below and summarized in Table 3-4. The listings include Sediment/Siltation, Phosphate and TDS in the Miramar HA.

Table3-3. 2006 303(d) listings for Los Peñasquitos Watershed

Water Body Name	Hydrologic Area (HSA)	HSA No.	Pollutant/Stressor
Los Peñasquitos Lagoon	Miramar	906.1	Sediment/Siltation
Los Peñasquitos Creek	Miramar	906.1	Phosphate, TDS

Source: SWRCB, 2006

2001-2006 Baseline Water Quality Priority Ratings for the Los Peñasquitos WMA

The baseline water quality priority ratings are presented in Table 3-4. These tables are tools that assist managers in prioritizing watershed activities or are used for identifying data gaps. The priority ratings are based on the methodology presented in the Baseline Long Term Effectiveness Assessment (WESTON, MOE, & LWA, 2005).

Table 3-4. 2001-2006 Water Quality Priority Ratings for the Los Peñasquitos WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Los Peñasquitos WMA	**100%**	***D***	***A***	***D***	***D***	***A***	***D***	***D***	***D***	***A***	***A***	***C***
Miramar HA (906.10)	55%	*C*	*A*	*D*	*D*	*A*	*D*	*C*	*C*	*A*	*A*	*C*
Poway HA (906.20)	45%	*D*	*A*	*D*	*D*	*C*	*D*	*D*	*D*	*B*	*B*	*C*
Frequency of Occurrence Rating High[1]			♦♦♦							♦♦♦		
Constituents of Concern			TDS							Fecal Coliform		

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

2003 303d listing

Bacteria was removed from 2006 303(d) listing update

Constituent groups and stressor groups are given a ranking from A to D with A being the highest priority rating and D the lowest priority rating. Items ranked with a D indicate that the constituent group or stressor is a low priority or does not have sufficient data to support a higher ranking.

The priority ratings were based on the data record from 2001-2006 from the following programs and will be updated on a 5-year cycle:

1. Stormwater Mass Loading Monitoring (MLS) – Wet Weather Data (2000-2006)
2. Copermittee Dry Weather Data Monitoring (2003-2005)
3. Available Third Party Data (SWAMP, 2003)
4. Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring (2003-2005)
5. Urban Stream Bioassessment Monitoring (2000-2006)
6. Triad Assessment – Toxicity Testing of Stormwater (2000-2006)
7. 303(d) Listing (2003)

It should be noted that the 303(d) listing for the bacteria has been removed from the 2006 303(d) list. For the overall Los Peñasquitos WMA, dissolved minerals, sediments, bacteria and benthic alteration were identified as a high priority (A) rated constituents.

The high priority (A) ratings for the overall WMA are primarily driven by the Miramar HA, which accounts for 55% of the Los Peñasquitos WMA. This subwatershed also has high priority (A) ratings for dissolved minerals, sediments, bacteria, and benthic alteration. The high priority (A) rating for dissolved minerals is primarily due to the wet weather exceedances for TDS and the limited third party SWAMP data where manganese and sulfate results were above the WQO. The high priority (A) rating for sediments is due to the wet weather monitoring data, third party SWAMP data where turbidity was above the WQO, and due to the 303(d) listings for sedimentation/siltation. The high priority (A) rating for bacteria is due to the medium frequency of occurrence wet weather monitoring data for fecal coliform and due to the 2003 303(d) listing for bacteria. The high priority (A) rating for benthic alteration is due to the stream bioassessment findings.

High frequency of occurrence ratings from the WMA criterion assessments (Table 3-1) were compared to the water quality priority rating summary table above (Table 3-4). High frequencies of occurrence ratings were determined for total dissolved solids and fecal coliform for the Los Peñasquitos WMA. Similarly, the water quality priority ratings found high priority (A) ratings for dissolved minerals, sediments, bacteria and benthic alteration.

Baseline Watershed Evaluation

Using the Baseline Watershed Evaluation process described in the regional watershed strategy, the WMA Copermittees developed a list of the water quality problems in the Los Peñasquitos WMA. Table 3-5 shows the water quality problems and the corresponding recommended actions.

Table 3-5 Water Quality Problems and Recommended Actions Identified by the BWE Process

HA	Pollutant Category	Water Quality Priority Rating (BLTEA)	Frequency of Occurrence	Action
906.1 Miramar	Bacteria / Pathogens	A*	♦♦ (Fecal Coliform)	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
906.1 Miramar	Dissolved Minerals	A	♦♦♦ (TDS)	Consider conducting source identification
906.1 Miramar	Sediment	A*	♦	Consider additional monitoring to confirm water quality prioritization. In accordance with Investigation Order R9-2006-076, Copermittees will be collecting monitoring data needed to characterize dry weather flow and storm flow influenced water quality to complete the development of a TMDL and load and waste load allocations and reductions.
906.2 Poway	Bacteria / Pathogens	B	-	Consider additional monitoring to confirm water quality prioritization and help appropriately select targeted Water Quality Activities and/or Watershed Education Activities.
906.2 Poway	Dissolved Minerals	A	♦♦♦ (TDS)	Consider conducting source identification

* denotes an "A" rating that is based on the 2003 303(d) listing

High Priority Water Quality Problems
Based on the assessments above and the available water quality data, the Copermittees have determined that the high priority water quality problems in the Los Peñasquitos WMA are:

1. Bacteria / Pathogens in all Hydrologic Areas
2. Sediment in the Miramar Area

3.4. Potential Pollutant Sources

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the watershed's high priority water quality problems.

With watershed water quality problems identified, the potential sources of pollutants that may be causing the water quality problems need to be identified. In 2005 as part of the BLTEA process, the Regional Copermittees identified thirty-four (34) sources of pollutants on which to focus their efforts. The BLTEA process included characterizing each source and determining a Source Loading Potential (SLP) for each of 8 pollutant types: heavy metals; organics; oil & grease; sediment; pesticides; nutrients; gross pollutants, and; bacteria. The BLTEA also developed a process to establish Threat-To-Water-Quality (TTWQ) ratings for the sources based on water quality priority ratings and the SLP of the inventoried sources within each WMA.

For the Los Peñasquitos WMA, the TTWQ ratings tables for the high priority water quality problems in each HA are summarized below. Table 3-6 represents the highest TTWQ rated sources within each HA based on the high priority water quality problems. A "T1" TTWQ rating is the highest threat-to-water-quality in the rating system. The process used to develop the table was taken directly from the BLTEA. The data used for the process includes the following: (1) 2007 Baseline Water Quality Priority Ratings (Weston Solutions, 2007); (2) 2007 inventory

information from all watershed Copermittees; (3) the SLP ratings from the BLTEA (Weston, MOE, LWA, 2005), and; (4) Copermittees' dry weather monitoring data.

Table 3-6 High Priority Sources in HAs

Source	Animal Facilities		Botanical/ Zoological Gardens		Eating or Drinking Establishments		Landscaping		POTWs	
	Bacteria	Sediment	Bacteria	Sediment	Bacteria	Sediment	Bacteria	Sediment	Bacteria	Sediment
906. 1 - Miramar HA (Bacteria, Sediments)	19		3		474		90		3	
906.2 - Poway HA (Bacteria)	8		3		260		26		1	

Shaded Cells mean that the pollutant type is not a high priority for the HA
Note: Source quantities are based on updated inventory information from Copermittees. The geocoding process may limit the representation of sources

Additionally, the Copermittees have mapped the sources on an HA basis. An example of one of these maps is shown below. The source information and mapping help to highlight the areas and locations that the Copermittees may want to select activities.

Figure 3-2 HA 906.2 – High Priority Water Quality Problem = Bacteria

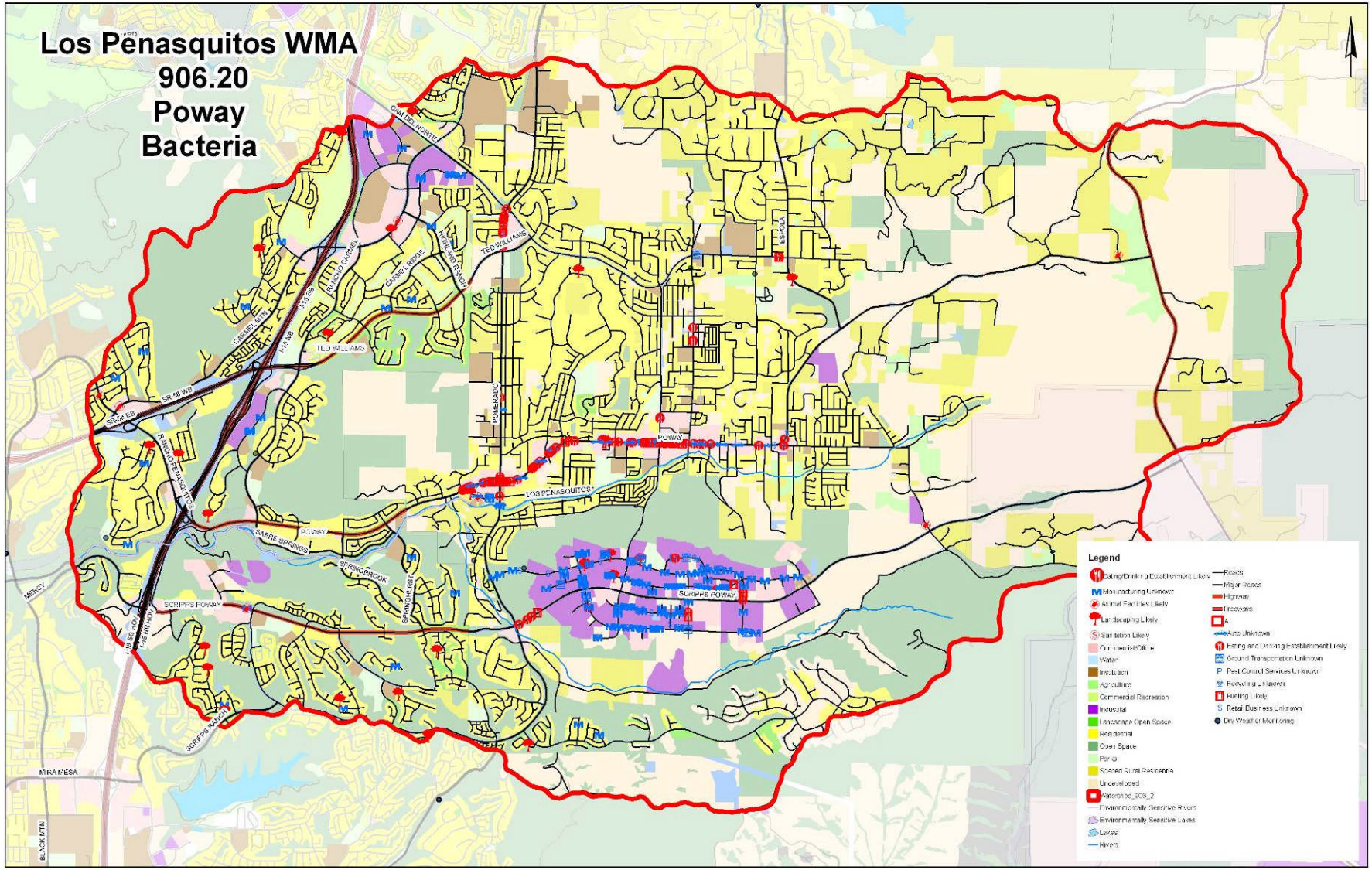

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4. FIVE-YEAR STRATEGIC PLAN

This section describes the results of the process described above in Section 2 – Collective Watershed Strategy. The strategy was applied at the Hydrologic Area (HA) level to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first, identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the high priority water quality problems in each HA. For both of the HAs in the Los Peñasquitos WMA, bacteria were determined to be a high priority water quality problem. Additionally, in the Miramar HA, sediments were determined to be a high priority water quality problem.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the high priority water quality problems for each HA-high priority water quality problem combination in the WMA. These sources are listed in Table 3-6 in the previous section. Based on the available data, the Copermittees could then make appropriate management decisions when selecting appropriate watershed water quality and education activities.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees will use Table 3-5 to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The remainder of this section discusses the activities that the Copermittees have selected to list as their activities for potential implementation. Each year (starting with Year 1) the Copermittees will evaluate the water quality problems, source information (SLP, TTWQ, and quantities) to determine the most appropriate activities to implement. At the end of the section is a proposed 5-year implementation schedule. This schedule is tentative and subject to change based on the annual evaluation of data and information. Any changes to the proposed schedule will be reflected in future WURMP Annual Reports.

4.1 Proposed Watershed Water Quality Activities

The Watershed Copermittees are responsible for identifying and implementing Watershed Water Quality Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level.

A list of the proposed Watershed Activities is included below and will be updated with each annual report. Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified high priority water quality problems in the WMA.

Each activity on the Watershed Activities List is fully described in an Activity Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified high priority water quality problem(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;

6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Watershed Copermittees will implement identified Watershed Activities pursuant to the proposed schedule. For each Permit year, no less than two Watershed Water Quality Activities will be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s). Watershed Water Quality Activities that are capital projects are in active implementation for the first year of implementation only.

Based on the watershed strategy for activity selection, the following water quality activities have been selected for first-year implementation. The Water Quality Activity Sheets can be found in Appendix A.

Table 4-1 Watershed Activities – 5-Year Strategic Plan

Watershed HAs		Activity/Project Name	Jurisdiction	Watershed Priorities		Implementation Schedule							Comments
				Bacteria	Sediment	FY 07-08			FY 08-09			Future Fiscal Year(s)	
906.1	906.2	**LOS PENASQUITOS WATERSHED**											
		Watershed Water Quality Activities (Load Reduction/Source Abatement)											
X	X	Alpha Project for the Homeless, Inc. Trash Cleanups	SD	X		WQI							
X	X	ILACSD Trash Cleanup Sponsorship	SD/POW	X		WQI			WQI			WQI	
X	X	SDCK Trash Cleanup Sponsorship	SD	X		WQI			WQI			WQI	
X	X	Targeted Animal-Related Facility Inspections	SD	X		P	WQI		P	WQI		WQI	
X	X	Targeted Landscaping-Related Facility Inspections	SD	X		P			P	WQI		WQI	
X	X	Targeted Municipal Facility Inspections	SD	X		P			WQI				
X	X	Targeted Restaurant Facility Inspections	SD	X		P	WQI		WQI			WQI	
X	X	Municipal Rain Barrel Installation and Downspout Disconnects	SD	X	X	P	WQI						
X	X	Hydrodynamic Separator Installation	SD	X	X	P			P			WQI	
X	X	Residential Rain Barrel & Xeriscaping Incentive Program	SD	X	X							P, WQI	
X	X	Infiltration BMP Retrofit	SD	X		P			P	M		P,M, WQI	
	X	Over-Irrigation/Dry Weather Runoff Reduction	POW	X					P			WQI	
	X	Gate Drive Detention Basin Modification	POW	X		WQI							
	X	Increase Trash Receptacles and Dogi-Pot stations	POW	X								P, WQI	
X		Park and Open Space Irrigation and Controllers	DM	X					P	WQI	A	A	
X		Median Irrigation System Replacement	DM	X		P			P	WQI	A	A	
	X	Aubrey Street Continuous Deflective Separation (CDS) Device	POW		X	WQI							
		Watershed Education Activities											
X	X	LID and Watershed Planning Education	Cnty/DM	X	X	WE			WE				Completion is anticipated in FY 08-09
X	X	Public Service Announcements: *Karma and Karma Second Chance*	SD	X		WE			WE			WE	
X	X	Mobile Advertising	SD	X	X	WE			WE			WE	
X	X	Infiltration BMP Retrofit Outreach	SD	X					P			WE	
X	X	Restaurant Inspection Outreach	SD	X					P			P, WE	
	X	Over-Irrigation/Dry Weather Runoff Reduction Education	POW	X					P			WQI	
X		Residential Water Conservation Outreach	DM	X								P, WE	

WQI = Watershed Water Quality Activity Implementation(Active Implementation)
I = Watershed Water Quality Activity Implementation (No WURMP Credit)
A = Watershed Activity Assessment (No WURMP Credit)
P = Watershed Activity Planning (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)

E = Watershed Education Activity (No WURMP Credit)
PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)

4.2 Proposed Watershed Education Activities

The Watershed Copermittees are responsible for identifying and implementing Watershed Education Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. Additionally, watershed water quality activities may be related to watershed education activities. Watershed Education Activities are outreach and training activities that address high priority water quality problems in the WMA.

The Watershed Copermittees will implement identified Watershed Education Activities pursuant to established schedules. For each Permit year, no less than two Watershed Education Activities will be in an active implementation phase. A Watershed Education Activity is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can reasonably be established in target audiences.

A list of the proposed Watershed Education Activities is included in Table 4-1 and will be updated with each annual report. Each activity on the Watershed Education Activities List is fully described in an Activity Sheet (Appendix A) and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified high priority water quality problem(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

4.3 Proposed Public Participation Activities

The Los Peñasquitos Watershed Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed (such as other agencies, private companies, and environmental groups, etc.)

Broad participation is critical to the success, further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process, including other regulatory agencies, environmental groups, educational institutions, landowners, and private citizens. Further, the participating jurisdictions recognize that no single agency has the capacity to address water quality issues on its own and broad partnerships are essential to positively affect the water resources in our region. It is only through a collaborative approach that we will develop a better understanding of the issues and processes affecting water quality in our watersheds and subsequently select and address priorities.

Los Peñasquitos Watershed Copermittees will continue to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as the workgroup continues to develop and implement the program and other watershed related management plans.

Participating jurisdictions will continue to pursue a strategy to actively encourage the participation and input of diverse stakeholders. The County's Project Clean Water has been identified as a forum for future public participation. Other mechanisms identified to foster public

participation include public meetings and community workshops as well as regular interaction with stakeholders as described below.

Project Clean Water
Project Clean Water, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. The relationship of Project Clean Water objectives to permit compliance is important. An underlying tenet of this effort is that Permit compliance alone cannot achieve improved water quality conditions. As such, Project Clean Water seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. This significantly broadens the base of stakeholder input available to consider issues directly related to Permit compliance. As with Copermittee meetings, all Project Clean Water meetings are open to the public and participation is encouraged through a variety of means including a website, electronic notifications and personal phone calls.

Cross-Jurisdictional Collaboration
The Los Peñasquitos Watershed workgroup, which consists of representatives from the City of San Diego, Del Mar, Escondido, Poway, Solana Beach and County of San Diego collaborate as needed to foster public input and participation on activities related to the watershed program.

In addition, an annual workshop may be held to present updates, revisions, and/or solicit comments in order to actively engage stakeholders affected or potentially affected by program development and its implementation. The watershed Copermittees will utilize various local media to advertise such meetings and efforts will be made to hold each workshop in a centrally located facility.

Integration and Participation in Local Planning Activities
Planning at the watershed scale has become an issue of increasing importance over the past few years. As part of the watershed program, jurisdictions will participate in and support associated efforts which provide opportunities to learn about concerns raised by the public and publicize efforts related to this program. The development of the Los Peñasquitos Watershed Management Plan is an important example of one of these efforts.

Direct Interaction
In addition to those methods already described, participating jurisdictions rely heavily on the interaction of their staff with members of the public during their job duties. This facet of jurisdictional programs will provide an additional avenue for obtaining direct feedback from interested stakeholders.

4.4 Proposed Land-Use Planning Activities

The Los Peñasquitos Watershed Copermittees have developed a program for encouraging collaborative, watershed-based, land use planning in their jurisdictional planning departments. The watershed-based land-use planning program requirements are described below.

The California Government Code gives local governments the authority and the responsibility to exercise local land use planning and associated regulatory functions. Because they ultimately control the types and intensities of particular activities that may be allowed within specified geographic areas, land use decisions play a critical role in addressing point and non-point sources of pollution.

Cities and counties have traditionally exercised their land use authority independently, with limited consideration of the chemical, biological, and physical processes that govern the generation, transport, and fate of contaminants and stressors at the watershed scale. Land use policies of individual municipalities have the potential to affect water quality in water bodies well beyond their jurisdictional boundaries.

State law requires that each jurisdiction adopt a comprehensive, long-term General Plan to guide its physical development. The General Plan is the official document that outlines the long-term plans and policies regarding the location of housing, business, industry, roads, parks, and other land uses. Additionally, the General Plan addresses broad issues such as provision of infrastructure and conservation of natural resources. The legislative body of each City (the City Council) and each County (Board of Supervisors) adopts zoning, subdivision and other ordinances to regulate land uses and to carry out the policies of its General Plan. The General Plan can be described as the blueprint for future development. It represents the community's view of its future; a constitution made up of goals and policies upon which local decision makers (hearing officers, planning commissions, city councils and county board of supervisors) base their land use decisions.

California planning law establishes the minimum contents and scope of local general plans. State law requires planning agencies to "prepare, periodically review, and revise, as necessary, the general plan". Keeping the general plan current is important for good planning. State law gives counties and cities wide latitude in how they put a General Plan together, but there are fundamental requirements that must be met. These requirements include seven mandatory elements as described below:

Land Use Element: The land use element dedicates lands to particular purposes. It outlines how the jurisdiction will designate and separate various uses such as commercial, industrial, and residential. Natural resource, agriculture, timber production, and flood plain areas must also be delineated. A major intent of this element is to design areas for development that are compatible with one another.

Housing Element: This element requires local governments to adequately plan to meet the existing and projected housing needs of all economic segments of the community.

Circulation: This element identifies the general location of existing and planned transportation routes and public utilities. It is actually an infrastructure plan that concerns itself with the circulation of people, goods, energy, water, sewage, storm drainage, and communications. Its provisions support the goals, objectives, policies and proposals of the land use element.

Conservation: This element describes how the jurisdiction intends to conserve its natural resources for future utilization. The element covers water resources, soils, forest, wildlife, mineral resources, and fisheries.

Open Space: This element designates areas for preservation and managed production of natural resources, outdoor recreation, and public health and safety. The Open Space element is related to the conservation element in some ways, and designated lands in either element could be actually or nearly the same. The important difference between the two elements is the very specific inclusion of the consideration of public health and safety concerns in open space zoning.

Safety Element: The safety element defines community protection measures in relation to fires, seismic hazards, and geological hazards. It must include provisions for evacuation routes, water supply, minimum road widths, and clearances around structures.

Noise Element: This element is designed to address overall levels of noise in the community by identifying the sources of noise, assessing its effects and establishing policies, criteria and standards to reduce excessive noise to acceptable limits.

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5. PROGRAM EFFECTIVENESS ASSESSMENT

This Section is a description of how the Los Peñasquitos WURMP addresses the requirements of Section I.2. of Order R9-2007-0001. WURMP effectiveness assessments will be based on the concepts first identified and described in the San Diego Copermittees' October 2003 document, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs" (Framework). The reader is encouraged to become familiar with the concepts described in the Framework to better understand the remainder of this section. To summarize, the table below describes the six outcome levels identified in the Framework along with potential measures and methods for measuring effectiveness.

Table 5-1 Levels 1-6 Targeted Outcomes and Potential Assessment Measures and Methods

Outcome Type	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements	Verification that required activities were implemented
Level 2: Changes in Knowledge / Awareness	Measure of changes in targeted audiences knowledge and awareness potentially through the use of pre- and post-surveys and observations
Level 3: Behavioral Change / BMP Implementation	Measure of changes in behavior or BMP implementation potentially through the use of observations or inspections
Level 4: Load Reductions	Measured or calculated load reductions as a result of changes in behavior or BMP Implementation. Measurements may be supported by water quality data and calculations may be supported by information and data related to the pollutant generating activities
Level 5: Changes in Discharge Quality	Historical and statistically supportive trends in the levels of pollutants in the discharges from the MS4. This will be assessed periodically using the results of regional, WMA and jurisdictional water quality monitoring data
Level 6: Changes in Receiving Water Quality	Historical and statistically supportive trends in the levels of pollutants in the receiving waters. This will be assessed periodically using the results of regional, WMA and jurisdictional water quality monitoring data

Order R9-2007-0001 requires two types of assessment in the WURMP: 1) assessment of each watershed activity, and 2) assessment of overall WURMP effectiveness. The approach for complying with each requirement is described below in addition to an optional third that deals with assessing programmatic efficiency.

5.1 Watershed Activity Assessment

The effectiveness of each Watershed Water Quality and Watershed Education Activity will be assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes.

Each activity summary sheet in Appendix A identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an

individual watershed activity would be measurable at Levels 5 or 6. Level 5 and 6 Outcomes are typically measurable through cumulative assessments as described in the following section.

5.2 Overall WURMP Assessment

The assessment of overall WURMP effectiveness will focus on the cumulative impacts of program implementation and will include the following elements: 1) an assessment of how well Watershed Copermittees have collectively complied with minimum Permit requirements, 2) an assessment of the cumulative impact of watershed activity implementation, and 3) an integrated assessment of discharge and receiving water quality.

To assess how well Watershed Copermittees have collectively complied with minimum Permit requirements, the following Level 1 Outcomes will be tracked on an annual basis:

1. Update any watershed maps.
2. Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.
3. Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.
4. Update list of potential Watershed Water Quality Activities.
5. Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.
6. Update list of potential Watershed Education Activities.
7. Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.
8. Describe the public participation mechanisms used during the reporting period and the parties that were involved.
9. A description of Copermittee collaboration efforts including meeting as the Los Peñasquitos WMA WURMP Workgroup.
10. Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.
11. When applicable, describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. The description shall include:
    a. Any additional source identification information;
    b. The number, type, location, and other relevant information about BMP implementation, including any expanded or better tailored BMPs necessary to meet the WLAs;
    c. Updates in the BMP implementation prioritization and schedule;
    d. An assessment of the effectiveness of the BMP Implementation Plan, and;
    e. A discussion of the progress to date in meeting the TMDL Numeric Targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.

Assessing the cumulative effectiveness of watershed activity implementation is challenging. The results of individual activities are typically difficult to aggregate at the watershed level. Nevertheless, the Watershed Copermittees will strive to conduct activity-specific assessments in a way that allows for an assessment of cumulative watershed impacts when possible. This may involve the use of consistent methods to assess similar activity types or the use of consistent units of measure to aggregate the results of disparate activity types.

Finally, the Watershed Copermittees will attempt to improve their ability to conduct integrated assessments over the course of this Permit cycle. Integrated assessments aim to identify the relationship between program implementation and resulting effects on discharge and receiving water quality. Integrated assessments therefore attempt to draw links between the activity-specific assessments described above and water quality monitoring data collected at the regional, watershed, and jurisdictional levels. The Watershed Copermittees will use available data and information to determine what impacts, if any, WURMP implementation is having on Outcome Level 5 and 6. It must be recognized, however, that urban runoff management takes place at many levels. For example, jurisdictional and regional urban runoff programs also result in watershed benefits and it is unclear how to isolate the effect of each.

5.3 Program Efficiency

This section presents an optional approach that the Watershed Copermittees may utilize to improve management decisions with respect to WURMP ***and*** JURMP implementation.

Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts. Assessment also determines the efficiency of activities and program implementation. Knowing the efficiency of individual activities and the overall WURMP program implementation, for example, will provide the WMA Copermittees with data to prioritize resources appropriately and maximize pollutant program effectiveness to achieve the ultimate goal of protection and improvement of water quality in the region's creeks, rivers, beaches, and bays.

Some Copermittees plan to refine their programs to implement them as efficiently as possible. The simplified process is to use information obtained about the following program elements to assess which activities are the most effective and efficient for reducing pollutant loads.

1. Water Quality Problems
2. Source Loading Potentials
3. Pollutant Generating Activities
4. BMP Implementation Effectiveness
5. Education and Outreach Effectiveness
6. Program Element Costs

By evaluating the abovementioned elements, the Copermittees can determine the most influential sources/pollutant generating activities and address them with the most effective tools for achieving load reduction. The Copermittees recognize that the most effective way to achieve changes in discharge water quality and receiving water quality (Levels 5 & 6) is through load reductions and source abatement (Level 4).

Through collaboration with JURMP and other WURMP programs throughout the County, the Copermittees may collect data to begin developing efficiency ratings (load-reduction to cost ratios) for activities, including BMP implementation and Outreach and Education activities. It is anticipated that through JURMP activities and evaluation of effectiveness, many activities will be measured for their effectiveness at achieving Levels 1-4 Targeted Outcomes. In addition to what is learned from JURMP effectiveness assessments, the Copermittees will also implement watershed water quality activities that will provide information and data related to effectiveness of specific program activities.

Together, the data from both of the program levels may be used to assist in prioritizing programs to maximize the Levels 1-4 Targeted Outcomes which ultimately maximizes the Levels 5 & 6 Targeted Outcomes. The Levels 5 & 6 Targeted Outcomes will be measured through the water quality monitoring programs described in Section 3 above. This means that some program activities that are less effective may be deemphasized while other activities that are determined to be more effective may be enhanced or used on a more broad-scale.

Note, however, that baseline JURMP activities mandated by the Municipal Permit will always be implemented regardless of efficiency ratings in order for the cities to remain in compliance with the Permit. Pilot activities that are implemented to meet WURMP requirements and to obtain data to determine the efficiency of baseline JURMP activities may be modified, expanded or terminated as deemed appropriate.

6. PROGRAM REVIEW AND MODIFICATION

WURMP implementation is an iterative process that involves assessing the program's effectiveness as described above. The Copermittees will review the overall watershed program annually and make modifications as necessary to improve the overall effectiveness of Copermittee activities. One focus of the program will be to determine the effectiveness of the implemented activities, overall program implementation and the efficiency of the program implementation. Any changes to the program processes or implementation plan will be modified and reported in Annual Reports.

Another focus of the reviews will be to determine if sufficient data as been collected, jurisdictionally, within the WMA, regional or other level, that will help the evaluation conducted in the collective watershed strategy. If there are modifications necessary to the activities list based on the re-evaluation of water quality problems or source information, the Copermittees will provide updates in Annual Reports.

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Appendix A

Los Peñasquitos Watershed Activity Sheets

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Los Peñasquitos Watershed Water Quality Activity Sheets

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TITLE: **San Diego Coastkeeper Trash Cleanup Sponsorship**
ID #: **LP-WQA1**

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love A Clean San Diego
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

Although Coastal Cleanup Day is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Los Peñasquitos WMA through cleanup events, bacteria loading are reduced.

[1] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Targeted Animal-Related Facility Inspections**
ID #: **LP-WQA2**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target animal-related facilities within the Los Peñasquitos WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at animal-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Los Peñasquitos WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at animal-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Landscaping-Related Facility Inspections**
ID #: **LP-WQA3**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target landscaping-related facilities within the Los Peñasquitos WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at landscaping-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Los Peñasquitos WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources

associated with bacteria. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at landscaping-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Municipal Facility Inspections**
ID #: **LP-WQA4**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target municipal facilities within the Los Peñasquitos WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Los Peñasquitos WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's municipal facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board in FY 2008 to help develop and implement the activity beginning in FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria at municipal facilities. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at municipal facilities. Knowledge and experience gained through this activity would help the City optimize its municipal facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Restaurant Facility Inspections**
ID #: **LP-WQA5**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target restaurant facilities within the Los Peñasquitos WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at restaurant facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Los Peñasquitos WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Alpha Project for the Homeless, Inc. Trash Cleanups**
ID #: **LP-WQA6**

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division has partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups and potentially homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2007 and FY 2008.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with Alpha Project to ensure that sites within the Los Peñasquitos WMA are included in the list of sites to target for cleanups in FY 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for Los Peñasquitos WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Cleanups by Alpha Project will result in load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

Although the cleanups conducted by Alpha Project focus on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[2] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Los Peñasquitos WMA through cleanup events, bacteria loading are reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)

[2] http://www.epa.gov/owow/oceans/debris/

Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Hydrodynamic Separator Installation**
ID #: **LP-WQA7**

ACTIVITY DESCRIPTION

This activity will involve the installation of a hydrodynamic separator in the Los Peñasquitos WMA to treat dry weather flows. Hydrodynamic separators, or baffle boxes, are composed of a series of chambers that clean contaminated water in two ways. The first chamber collects water and allows contaminants, such as trash and sediment, to settle at the bottom before the water overflows into the following chamber to repeat the process. As water flows from chamber to chamber, it also passes through screens to filter out additional pollutants. Eventually, clean water leaves the device and discharges into designated receiving waters. Exact location of installation will be based on monitoring considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality pollutant throughout the entire watershed and sediment as a high priority water quality pollutant in the Miramar Hydrologic Area (906.1). The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality problems. Implementation of this activity will address both high priority water quality problems by capturing dry weather flows and slowly releasing them to allow for the settlement of pollutants for later removal. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by capturing dry weather flows and slowly releasing them to allow for the settlement of sediment and trash for later removal.

Also, this activity will address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[3] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Los Peñasquitos WMA via collection by the hydrodynamic separator, bacteria loading are reduced.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of hydrodynamic separators to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of hydrodynamic separators as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Which type of separator provides the most efficient removal of trash and debris? • What is the load reduction efficiency of hydrodynamic separators in reducing trash? • How effective are hydrodynamic retrofits at reducing loads of trash?
Targeted Measurable Outcome(s)	• Determination of most efficient and effective hydrodynamic separator • Reduction in trash based on amount removed from hydrodynamic separator • Receiving water quality improvement (less observed trash in receiving water downstream)
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

[3] http://www.epa.gov/owow/oceans/debris/

TITLE: **I Love A Clean San Diego Trash Cleanup Sponsorship**
ID #: **LP-WQA8**

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the jurisdictions will coordinate with ILACSD staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego
- City of Poway

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

Although Creek to Bay Cleanup is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[4] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Los Peñasquitos WMA through cleanup events, bacteria loading are reduced.

[4] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Infiltration BMP Retrofit**
ID #: **LP-WQA9**

ACTIVITY DESCRIPTION

This activity will involve the implementation of an infiltration project in the Los Peñasquitos WMA to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problem by reducing and treating runoff volume via infiltration/retention. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Municipal Rain Barrel Installation and Downspout Disconnects**
ID #: **LP-WQA10**

ACTIVITY DESCRIPTION

This activity will involve the installation of rain barrels and/or the disconnection of downspouts to direct runoff from municipal facility roofs into pervious areas (such as landscaping) for infiltration. Rain barrels, downspout disconnects, and rainwater harvesting/reuse systems help to capture, store, and divert urban runoff to reduce the volume thereof, thus contributing to reduced flooding, erosion, and the contamination of surface water with sediment, fertilizer, metals, and pesticides. In addition, this activity has the added benefit of water conservation; runoff collected and diverted to landscaping would help reduce the amount of potable water needed for irrigation. Roof runoff solutions can be used both in large-scale landscapes, such as municipal buildings, community centers, schools, and commercial sites, as well as in small residential landscapes.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007 and is anticipated to continue until the end of calendar year 2007. Procurement of rain barrels and other items and installation are anticipated to occur from beginning in March 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality pollutant throughout the entire watershed and sediment as a high priority water quality pollutant in the Miramar Hydrologic Area (906.1). The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality problems. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention, and infiltration. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing runoff volume via capture, retention, and eventual infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of rain barrels, downspout disconnects, and rainwater harvesting/reuse systems to reduce urban runoff volume and pollution. Knowledge and experience gained through this activity will help the City

document the benefits, limitations, and challenges of rain barrels and downspout disconnects as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	• Reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	• Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data	• Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

TITLE: **Aubrey Street Continuous Deflective Separation (CDS) Device**
ID #: **LP-WQA11**

ACTIVITY DESCRIPTION

The City will install a continuous deflective separation (CDS) device system in the intersection of Aubrey Street and York Avenue as part of the Aubrey Park street improvements, otherwise known as Old Poway Park Neighborhood. The street improvements include Norwalk Street, York and Sycamore Avenues, and the alley east of York Avenue. Once installed, the CDS system will effectively screen, separate, and trap debris, sediment, oil and grease, floatables and neutral buoyant material from stormwater runoff. Ultimately the CDS unit will enhance the treatment of runoff from existing land uses in the 41.9 acre project area. In order to maintain the effectiveness of the CDS unit, the City of Poway's Drainage/Storm Water Maintenance staff will inspect, clean, and maintain the CDS unit quarterly and after any major storm event(s).

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program at this time.

TIME SCHEDULE FOR IMPLEMENTATION

The CDS Device will be completed in FY 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash, debris, and floatables
- Oil and grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a high priority water quality problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce them. Implementation of this activity will address the high priority water quality problems by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by screening, separating and trapping sediment along with other pollutants for subsequent removal.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through the amount of material removed from the CDS system with regard to the project area and existing land uses. This will be a direct measurement of the amount of material captured by the CDS system and removed from the stormwater runoff of the project area (Level 4 Outcome).

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TITLE: **Gate Drive Detention Basin Modification.**
ID #: **LP-WQA12**

ACTIVITY DESCRIPTION

The City of Poway is retrofitting the Gate Drive flood control detention basin to remove pollutants from storm water. The Gate Drive basin is located in the South Poway Business Park, and could be installed as part of the typical SUSMP requirements; however the basin's design goes above and beyond the normal requirements. Rather than requiring every business in the drainage area to separately capture and treat the first 0.6 inches of storm water on their property, the City has devised a plan to regionally capture and treat this water with over 38 businesses draining to this basin. With the modification to the basin to have a regional effect, the actual costs have increased. The total cost is $131,000, with the City paying $67,400 and the developer paying $63,900. The City is also managing the construction of the project to ensure it meets the standards of a watershed water quality project.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program at this time.

TIME SCHEDULE FOR IMPLEMENTATION

Scheduled for completion in April 2008

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as high priority water quality problem in the Miramar HA and bacteria throughout the WMA. Existing development has been identified as a potential source of sediment and bacteria. This activity addresses high priority water quality problems and potential source of the problems within the watershed, therefore the activity is consistent with the Los Peñasquitos WMA strategy.

EXPECTED BENEFITS

The reduction in pollutant loads through the regional detention basin will result in continuation of exploring the benefits of regional detention basins in other areas in the City.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by analyzing the load reductions of the non-SUSMP areas tributary to the treatment BMP (Level 4 outcome).

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TITLE: **Median Irrigation System Replacement**
ID #: **LP-WQA13**

ACTIVITY DESCRIPTION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. While the new ordinance is not yet adopted, one key element has been identified, and that key element is to replace timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for automated irrigation controllers and irrigation system repairs and retrofits of manual valves and drip systems in the City of Del Mar rights-of-way. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project is budgeted for FY 2007/2008 and FY 2008/2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

OTHER PARTICIPATING ENTITIES

This project involves monies and support from the State Department of Water Resources.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

OTHER WATER QUALITY PROBLEMS ADDRESSED

- Nutrients
- TDS

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos Watershed Management Area collaborative watershed strategy identified bacteria as a high priority water quality pollutant in all areas of the watershed, and sediment in the Miramar Hydrologic Area. Landscaping for parks and open space areas has been identified as potential discharges of bacteria and sediment from over-irrigation. In addition, other non-priority pollutants have been identified including nutrients and TDS as potential discharges from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problems within the watershed, therefore the activity is found to be consistent with the Los Peñasquitos WMA strategy.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Once implemented, the City of Del Mar can track water consumption through the use of flow metering and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **Park and Open Space Irrigation and Controllers**
ID #: **LP-WQA14**

ACTIVITY DESCRIPTION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. While the new ordinance is not yet adopted, one key element has been identified, and that key element is to replace timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in City parks and open space areas. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project is budgeted for FY 2007/2008 and FY 2008/2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

OTHER PARTICIPATING ENTITIES

This project involves monies and support from the State Department of Water Resources.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- TDS

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos Watershed Management Area collaborative watershed strategy identified bacteria as a high priority water quality pollutant in all areas of the watershed, and sediment in the Miramar hydrologic area. Landscaping for parks and open space areas has been identified as potential discharges of bacteria and sediment from over-irrigation. In addition, other non-priority pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problems within the watershed, therefore the activity is found to be consistent with the Los Peñasquitos WMA strategy.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Once implemented, the City of Del Mar can track water consumption through the use of flow metering and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **Over Irrigation/Dry Weather Runoff Reduction**
ID #: **LP-WQA15**

ACTIVITY DESCRIPTION

The Los Peñasquitos watershed has seen exceedances for various pollutants during the Dry Weather Monitoring Program. A pilot homogenous source type area will be selected to evaluate the load reduction potential related to reducing irrigation runoff and dry weather runoff. The homogenous source type area will also have an isolated drainage area and will be an appropriate size for analyzing targeted outcomes to determine if implemented BMPs are effective. Planned activities in the pilot area include:

- Identify all of the sources within the focus area (any entity that uses water or conducts activities) and determine the initial threat to water quality profiles. The threat to water quality will include assumed pollutant generating activities, assumed runoff generating activities, and assumed pollutant types.
- Monitor urban runoff flows based upon the drainage system. This may involve installing flow meter(s) downstream of the focus area, visual observations during and after regular business hours, grab samples for watershed water quality problem constituents, and other methods yet to be determined to assist in this activity.
- Obtain water use information. This will consist of coordinating with the water department to collect historic water use information regarding all of the sources within the focus area.
- Perform inspections/investigations to gather information for the assessment and refinement of the threat to water quality profiles. If applicable, changes will be made to inspection/investigation forms to refine the process and collect appropriate information in a more effective manner.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program at this time.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is scheduled for plan development during FY 2009 and implementation in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

OTHER PARTICIPATING ENTITIES

All Los Peñasquitos Watershed Copermittees will provide insight and advice on planning the pilot program, and feedback on how the program is going during the implementation process.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem throughout the watershed and sediment in the Miramar hydrologic area. Bacteria and sediment have been identified as potential discharges from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problems within the watershed, therefore the activity is found to be consistent with the Los Peñasquitos WMA strategy.

EXPECTED BENEFITS

Beneficial impact to watershed water quality through the reduction in urban runoff, from over-irrigation in the focus area.

EFFECTIVENESS MEASUREMENTS

To be determined once the pilot activity planning is completed.

TITLE: **Residential Rain Barrel and Xeriscaping Incentive Program**
ID #: **LP-WQA16**

ACTIVITY DESCRIPTION

This activity will involve launching a pilot incentive program to encourage the use of residential rain barrels and low impact gardens, or xeriscaping, to reduce over-irrigation and the overall need for landscaping irrigation. Specific residential areas will be targeted and monitored to assess the efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in July 2009. Program launch is anticipated to occur in FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter
- City of San Diego Water Department (to be invited to participate)
- San Diego County Water Authority (to be invited to participate)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Minerals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria and sediment as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing dry weather flows resulting from over-irrigation.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing dry weather flows resulting from over-irrigation. Reduction of runoff means less pollutants conveyed into the storm drain system and out into receiving waters. Water conservation will also be an added benefit as program participants waste less water on irrigation.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting and monitoring of an irrigation runoff reduction program to combat urban pollution. Knowledge and experience

gained through this activity will help the City document the benefits, limitations, and challenges of irrigation runoff reduction programs as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	• Reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	• Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data	• Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

TITLE: **Increase Trash Receptacles and Dogi-Pot Stations**
ID #: **LP-WQA17**

ACTIVITY DESCRIPTION

This activity will increase the number of pet waste and trash receptacles within the Los Peñasquitos watershed. Pet waste and trash receptacles provide pet owners with litter bags and trash receptacles for easy disposal of pet waste, reducing the amount of pollutants entering receiving waters. The City of Poway plans to increase the number of trash cans and Dogi-Pot stations around popular trails in the watershed. The City intends to focus these efforts on popular trails utilized by hikers with dogs; and trails where trash or animal wastes are found frequently by City staff.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Plan development will occur in FY 2010 and implementation will occur in FY 2011

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed. Pet waste has been identified as a potential source of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

This proposed activity is designed to provide pet owners with a convenient means to dispose of pet waste, thereby reducing pollutants in runoff to receiving waters. As a result, Copermittees hope to see a reduction in concentrations of pollutants associated with pet waste in receiving waters.

EFFECTIVENESS MEASUREMENTS

This activity is designed to raise awareness of the potential water quality impacts associated with pet waste and change pet owner behavior by providing a means for pet waste disposal (Levels 2 and 3). Proper disposal of pet waste will reduce pollutant loads (Level 4).

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Los Peñasquitos Watershed Education Activity Sheets

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TITLE: **Mobile Advertising**
ID #: **LP-WQEA1**

ACTIVITY DESCRIPTION

The City of San Diego's Storm Water Division has retained a mobile advertising company to advertise "Think Blue" messages in both English and Spanish on its static billboard trucks in the Los Peñasquitos WMA. The City will coordinate with its Printing Services Division in the design of the advertisements and intends to create advertisements that target behaviors associated with bacteria and/or sediment. The trucks will drive pre-determined routes in the Los Peñasquitos WMA in an effort to reach targeted, high priority areas within the WMA to increase awareness and promote behavior change.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The advertisements will be developed and displayed on the billboard trucks in FY 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria and sediment as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing the static billboard trucks will result in increased knowledge and awareness directly and will promote behavior change.

EXPECTED BENEFITS

The billboard advertisements will address bacteria and/or sediment to increase knowledge awareness and promote behavior change.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)

Assessment Measures, Assessment Outcome Levels & Data	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

TITLE: **Public Service Announcements: *Karma* and *Karma Second Chance***
ID #: **LP-WQEA2**

ACTIVITY DESCRIPTION

The City of San Diego's Storm Water Pollution Prevention Division has retained a contract with a production company to produce two Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled, *Karma* and *Karma Second Chance*, and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. These PSAs were developed in FY 2007 and FY 2008, and will be broadcast on several TV and radio stations throughout the Los Peñasquitos WMA in FY 2008. The PSAs will be broadcast in both English and Spanish.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with a production company to complete production in FY 2008 and will then work with various broadcast media outlets to distribute and air the PSAs in FY 2008 and FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radio Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem in the WMA. The *Karma* and *Karma Second Chance* PSAs will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

The PSAs address bacteria directly by focusing on pet waste, food waste and organic matter, and indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[5] states that *pathogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

[5] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

Management Questions	• What changes in awareness/attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data	• Number of listeners (radio) or homes (television) reached (Outcome Level 1) • Change in knowledge or awareness (Outcome Level 2)

TITLE: **Restaurant Inspection Outreach**
ID #: **LP-WQEA3**

ACTIVITY DESCRIPTION

The City of San Diego (City) proposes Restaurant Inspection Outreach in support of the planned inspection activity to target restaurant facilities within the Los Peñasquitos WMA. The purpose of the activity is to characterize activities at restaurant facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach efforts. The City's Storm Water Division will delineate a specific area within the Los Peñasquitos WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported.

Education and outreach methods, activities and materials will then be developed to supplement the inspections, with the goal of increasing awareness and compliance which will lead to load reductions. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In Fiscal Year 2008, the City retained several outreach consultants, including at least one firm that specializes in Community Outreach. Specific outreach planning will occur in FY09, with implementation, outreach, and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The Los Peñasquitos Watershed Management Area collective watershed strategy identifies bacteria as a high priority water quality problem. Restaurant facilities have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is found to be consistent with the Los Peñasquitos WMA strategy.

EXPECTED BENEFITS

The Restaurant Inspection Outreach will address bacteria indirectly by removing bacterial sources observed in the Watershed, which may include trash and food debris. Literature published by the United States Environmental Protection Agency on its website[6] states that p*athogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish

[6] http://www.epa.gov/owow/oceans/factsheets/fact1.html

kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

Management Questions	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors pre- and post- outreach? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the target area compare to other areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in target group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data	• Number of number of stakeholders reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of pollutants removed from study area (Outcome Level 4)

TITLE: **LID and Watershed Planning Education**
ID #: **LP-WQEA4**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups for the unincorporated County and the development community in the City of Del Mar on low impact development (LID) and watershed planning principles, practices, and requirements.

In the unincorporated County, local planning and sponsor groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the Los Peñasquitos Watershed include:

- Lakeside
- Ramona

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

County of San Diego:

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

City of Del Mar:

- Community Outreach Workshops will be implemented in FY 2008

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Del Mar

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos Watershed Management Area collaborative watershed strategy identified bacteria as a high priority water quality pollutant in all areas of the watershed. New development has been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problems within the watershed. As such, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcome). The County and the City of Del Mar will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2 Outcome).

TITLE: **Infiltration BMP Retrofit Outreach**
ID #: **LP-WQEA5**

ACTIVITY DESCRIPTION

This Infiltration BMP Education and Outreach Activity will support the planned implementation of an infiltration project in the Los Peñasquitos WMA to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. Educational materials, outreach strategies and methods will be developed and implemented once a location and project is finalized. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

In Fiscal Year 2008, the City retained several outreach and research consultants, including at least one firm that specializes in Community Outreach. Planning will occur in FY09, with implementation, outreach, and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problem by reducing and treating runoff volume via infiltration/retention. Therefore, this activity is consistent with the Los Peñasquitos WMA Strategy.

EXPECTED BENEFITS

Infiltration BMP Education and Outreach will address bacteria indirectly by removing bacterial sources observed in the Watershed, which may include trash, pet waste and other debris. Literature published by the United States Environmental Protection Agency on its website[7] states that p*athogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

[7] http://www.epa.gov/owow/oceans/factsheets/fact1.html

EFFECTIVENESS MEASUREMENTS

Management Questions	• What changes in awareness are reported as a result of the targeted outreach? • What changes in behavior are detected as a result of the targeted outreach? • What amount of reduction of trash and debris are observed in the targeted education area? • Can changes be attributed to the changes in awareness and behavior resulting from the education/outreach component of the activity? • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., involve 50% of local households during LID development and construction) • Achieve higher incidence of knowledge and attitude in local population (by comparing survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data	• Number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash removed from study area (Outcome Level 4) • Reduction of bacteria and trash entering LID (Outcome Level 4)

TITLE: **Residential Water Conservation Outreach**
ID #: **LP-WQEA6**

ACTIVITY DESCRIPTION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. While the new ordinance is not yet adopted, one key element has been identified: the replacement timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. While this planned activity does not directly replace controllers in the residential zones of the City, it provides for outreach through direct mail and utility bill enclosures to encourage water-wise approaches to landscaping, including the use of native plants, smart controllers and drip irrigation systems. This is beneficial from an NPDES perspective since any reduction in water usage, including the use of efficient irrigation systems, reduces the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project proposed for FY 2008/2009 and FY 2009/2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos Watershed Management Area collaborative watershed strategy identified bacteria as a high priority water quality pollutant in all areas of the watershed. Landscaping for parks and open space areas has been identified as potential discharges of bacteria and sediment from over-irrigation. In addition, other non-priority pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problems within the watershed, therefore the activity is found to be consistent with the Los Peñasquitos WMA strategy.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Quantification of contacts with the residents regarding water conservation water quality activities can be tracked demonstrating a Level 2 outcome (Change in Knowledge).

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TITLE: **Over Irrigation/Dry Weather Runoff Reduction Education**
ID #: **LP-WQEA7**

ACTIVITY DESCRIPTION

This activity will be implemented in conjunction with LP-WQA15 - A pilot homogenous source type area will be selected to evaluate the load reduction potential related to reducing irrigation runoff and dry weather runoff. Education and outreach will be conducted as part of the pilot project and will include educating residents and/or businesses in the project area on ways to reduce irrigation runoff.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program at this time.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is scheduled for plan development during FY 2009 and implementation in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

OTHER PARTICIPATING ENTITIES

All Los Peñasquitos Watershed Copermittees will provide insight and advice on planning the pilot program, and feedback on how the program is going during the implementation process.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. Bacteria have been identified as potential discharges from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, and therefore, the activity is consistent with the Los Peñasquitos WMA strategy.

EXPECTED BENEFITS

Beneficial impact to watershed water quality through the reduction in urban runoff, from over-irrigation as well as a positive impact to the community through watershed education in the focused areas.

EFFECTIVENESS MEASUREMENTS

To be determined once the pilot activity planning is completed.

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LOS PEÑASQUITOS WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2008
ANNUAL REPORT

January 31, 2009

Prepared and Submitted by the Los Peñasquitos Watershed Copermittees

City of Del Mar
City of Poway
City of San Diego
County of San Diego

City of Del Mar
1050 Camino Del Mar · Del Mar, California 92014-2698

Where the Turf meets the Surf

January 30, 2008

RE: STATEMENT OF CERTIFICATION
FY 2008 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Karen P. Brust
City Manager
City of Del Mar

Telephone: (858) 755-9313 · Fax: (858) 755-2794

CITY OF POWAY

MICKEY CAFAGNA, Mayor
DON HIGGINSON, Deputy Mayor
MERRILEE BOYACK, Councilmember
JIM CUNNINGHAM, Councilmember
BETTY REXFORD, Councilmember

January 30, 2008

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Robert J. Manis
Director of Development Services
City of Poway

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THE CITY OF SAN DIEGO

January 30, 2008

RE: STATEMENT OF CERTIFICATION
FY 2008 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350

STATEMENT OF CERTIFICATION

Los Penasquitos Watershed Urban Runoff Management Plan (WURMP) FY 2007-2008 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2007-2008 Los Penasquitos Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-21-09
Date

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EXECUTIVE SUMMARY

Since January 2002, the County of San Diego and the Cities of Poway, San Diego and Del Mar (herein referred to as the "Los Peñasquitos WURMP Copermittees") have been active in planning, developing and implementing watershed-based programs in the Los Peñasquitos Watershed Management Area (WMA). This Annual Report describes the actions taken by Los Peñasquitos WURMP Copermittees in Fiscal Year (FY) 2008 (July 1st, 2007 to June 30th 2008) to implement and refine the 2008 Los Peñasquitos Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA. The Annual Report consists of the following sections:

Section 1 (Introduction) provides a brief overview of the information included in the Annual Report.

Section 2 (Water Quality and Pollutant Source Assessment) includes a summary of an assessment of the quality of the water and pollutant sources in the Los Peñasquitos WMA based on data collected and analyzed from July 2007 through June 2008. In order to assess the water quality of regional WMAs on a yearly basis, Regional Copermittees completed the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report) for FY 2008 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. Based on the data and findings of this report, the Los Peñasquitos WURMP Copermittees have decided to focus their efforts on targeting the following High Priority Water Quality Problems for the Los Peñasquitos WMA:

- Bacteria
- Sediment

Section 3 (Implementation of Watershed Activities) contains a review of the water quality, education and public participation activities as well as the collaborative land-use planning efforts that occurred during the reporting period as a direct result of the Los Peñasquitos WURMP Copermittees' efforts in implementing the Los Peñasquitos WURMP. The Los Peñasquitos WURMP Copermittees implemented six water quality activities and developed and implemented educational programs aimed at decreasing urban runoff and improving water quality. All of these activities are anticipated to have a positive impact on water quality. Specifically, the following water quality activities were in active implementation during the reporting period:

- LP-WQA1 San Diego Coastkeeper Trash Cleanup Sponsorship
- LP-WQA2 Targeted Inspections (Combined)
- LP-WQA6 Alpha Project for the Homeless, Inc. Trash Cleanups
- LP-WQA8 ILACSD Trash Cleanup Sponsorship
- LP-WQA11 Aubrey Street Continuous Deflective Separation Device
- LP-WQA12 Gate Drive Detention Basin Modification

In addition, the following three education activities were in active implementation during FY 2008:

- LP-WQEA1 Mobile Advertising
- LP-WQEA2 Public Service Announcements
- LP-WQEA8 Transit Shelters

Detailed information for each activity can be found in the Activity Implementation Sheets located in Appendix A and in Table 3-6 in Section 3.

This section also includes a discussion on the collaborative public participation and land-use planning efforts that took place in the Los Peñasquitos WMA during the reporting period. For example, the Los Peñasquitos WMA web page on the Project Clean Water website received 1,487 hits and the Los Peñasquitos WURMP page received 440 hits during FY 2008. These totals were similar to those seen in the previous reporting period. The Los Peñasquitos WURMP Copermittees will continue to provide opportunities for residents and other interested parties to participate in Los Peñasquitos WURMP activities in FY 2009. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the Los Peñasquitos WMA.

A discussion of the Updated 5-Year Strategic Plan is also included in this section. In order to address Priority Water Quality Problems in the WMA—and in particular the High Priority Water Quality Problems discussed above—the Los Peñasquitos WURMP Copermittees implemented the Collective Watershed Strategy process described the 2008 Los Peñasquitos WURMP. The strategy was specifically applied at the Hydrologic Area (HA) level in an effort to focus the Copermittees' activities at a scale in which actions and results can be reasonably measured. The basic strategy applied was to first identify and review water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the High Priority Water Quality Problems in each HA. The second step was to identify the sources that are most likely to contribute to the High Priority Water Quality Problems for each HA in the WMA. Based on the available data, the Copermittees made appropriate management decisions on which water quality and education activities to implement in the WMA.

Section 4 (Effectiveness Assessment) provides an assessment of overall effectiveness of the Los Peñasquitos WURMP. The assessment includes activity specific assessments as well as a comprehensive summary of the effectiveness of the WURMP activities implemented during the reporting period.

Section 5 (Conclusions and Recommendations) offers concluding remarks regarding the accomplishments of the Los Peñasquitos WURMP Copermittees in implementing the 2008 Los Peñasquitos WURMP, and recommendations for further refining the program.

The Los Peñasquitos WURMP Copermittees will continue to refine and augment the Los Peñasquitos WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the Los Peñasquitos WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In short, the Los Peñasquitos WURMP Annual Report presents an update on the Los Peñasquitos WURMP Copermittees' long-term efforts to protect and enhance the water quality of the WMA using a comprehensive watershed-based approach.

1 INTRODUCTION

The San Diego Regional Water Quality Control Board Order No. R9-2007-0001 (Municipal Permit) requires Copermittees sharing jurisdiction within the Los Peñasquitos Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP) for the WMA. The WURMP consists of the Copermittees' combined efforts to address high priority surface water quality issues throughout the Los Peñasquitos WMA. The program includes identifying and addressing High Priority Water Quality Problems in the WMA, and developing and implementing activities that address pollutant load reduction and pollutant source abatement (Watershed Water Quality Activities); improvements in the public's knowledge, awareness and behaviors (Watershed Education Activities); as well as public participation and collaborative land use planning. The updated Los Peñasquitos WURMP was submitted to the San Diego Regional Water Quality Control Board (RWQCB) and began implementation in March 2008.

The new Municipal Permit was adopted in 2007 by the RWQCB and will be in effect until 2012. It is worth noting that because the current Municipal Permit was adopted during Fiscal Year (FY) 2008, this Annual Report covers two permit periods (the previous San Diego Region Order No. 2001-01 and the current San Diego Region Order No. R9-2007-0001).

The following Annual Report is divided into five sections that highlight the Copermittees' efforts to reduce urban runoff and improve water quality in the Los Peñasquitos WMA during the FY 2008 reporting period. The reporting period is from July 1st, 2007 through June 30th, 2008.

1.1 COPERMITTEE COLLABORATION

1.1.1 LOS PEÑASQUITOS WURMP MEETINGS

In order to effectively plan and implement the Los Peñasquitos WURMP, the Copermittees met eleven (11) times during FY 2008 to update the Los Peñasquitos WURMP; develop and prioritize water quality activities that address pollutants of concern in the WMA; exchange ideas on how to address High Priority Water Quality Problems in the WMA; evaluate the effectiveness of actions; and collaborate on development of required submittals. See Table 1-1 below for dates of meetings and pertinent agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
7/23/2007	WURMP Update - watershed strategy & activity development; cost-share agreements; public participation
8/27/2007	WURMP Update - watershed strategy & activity planning; TMDL process; cost-share agreements; public participation; WURMP Annual Reports
9/10/2007	WURMP Update - watershed strategy & activity planning; TMDL process; cost-share agreements; public participation; WURMP Annual Reports
10/9/2007	WURMP Update - watershed strategy & activity planning; TMDL process; public participation; WURMP Annual Reports

Date	Agenda Item Topics
10/31/2007	WURMP Update - watershed strategy & activity planning; TMDL process; public participation; WURMP Annual Reports
1/10/2008	WURMP Update - watershed strategy & activity planning; TMDL process; public participation; WURMP Annual Reports
2/12/2008	WURMP Update - watershed strategy & activity planning; TMDL process; public participation
3/6/2008	WURMP Update - watershed strategy & activity planning; TMDL process; public participation
4/8/2008	WURMP Submittal; RWQCB Audits; Regional Monitoring Report; public participation
4/23/2008	Watershed Presentation; TMDL process; public participation; activity updates
6/5/2008	Watershed Presentation; TMDL process; public participation; activity updates

The general watershed meetings of the Los Peñasquitos WURMP Workgroup were led by the City of Poway, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks developed are then carried out by the Copermittees, each within the structure of their jurisdictional organization. Task completion is then tracked and assessed at the Workgroup meetings and reported in the Annual Report.

Lagoon TMDL Investigative Order

The Los Peñasquitos WURMP Copermittees have assisted in the development of an important TMDL program in the Los Peñasquitos WMA currently under development by the RWQCB. The TMDL is the Impaired Lagoons, Adjacent Beaches and Agua Hedionda Creek TMDL (Lagoon TMDL). The Lagoon TMDL affects the Los Peñasquitos Lagoon in the WMA and specifically addresses sediment in the WMA as well as other constituents in other WMAs. During FY 2006, TMDL planning occurred. In FY 2007, the RWQCB issued Investigation Order R9 2006-76 for monitoring associated with Lagoon TMDL modeling. The Lagoon TMDL Investigation Order has resulted in the collection of a significant amount of hydrologic, hydraulic and water quality data for the lagoon and the associated WMA. Through monitoring during FY 2008, a significant amount of data was collected in order to calibrate and validate the TMDL models for pollutant load allocation.

1.2 WATERSHED MAP UPDATES

The Copermittees have provided a watershed map as Attachment 1.

2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section provides an updated water quality assessment and pollutant source assessment based upon previously established strategies and processes presented in the 2008 Los Peñasquitos WURMP. This assessment is required to clearly describe and justify any changes made to the WMA's water quality problems since the previous reporting period.

The water quality assessment provides an updated evaluation and analysis of the Los Peñasquitos WMA's receiving waters conditions based on applicable water quality data, reports, analyses, and other information. The update in this annual report is based on the assessment strategy described in the 2008 Los Peñasquitos WURMP, and includes information from the 2007-2008 *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Urban Runoff Monitoring Report) (Weston, January 2009). The assessment concludes with identification of the High Priority Water Quality Problems for each applicable WMA. As will be described below, no changes in the WMA's water quality problems were identified as a result of the monitoring conducted during the FY 2008 reporting period.

The pollutant source assessment provides an update of the likely sources of pollutant loads in urban runoff based on the currently available data associated with the urban runoff management programs. The source update is directly associated with the identified High Priority Water Quality Problems identified in the water quality assessment.

2.1 WATER QUALITY ASSESSMENT

During the FY 2008 reporting period, the regional water quality monitoring program implemented new changes to both timing and location of monitoring. In addition to the historical Mass Loading Station (MLS) within the Los Peñasquitos WMA, the Copermittees funded two Temporary Watershed Assessment Stations (TWAS) in key upstream locations of the WMA. During the reporting period, each MLS and TWAS was monitored during both wet weather and ambient seasonal conditions. In previous reporting periods, only wet weather monitoring was conducted at the MLS.

In addition to the MLS and TWAS locations, numerous dry weather sites, coastal storm drains and bioassessment stations were monitored during the reporting period. Figure 2-1 below identifies the various monitoring activities in the WMA.

Aggregate monitoring data from all the monitoring sites was used to assess the overall condition of the WMA. Where applicable, the data was also used to evaluate the water quality conditions in specific areas of the WMA.

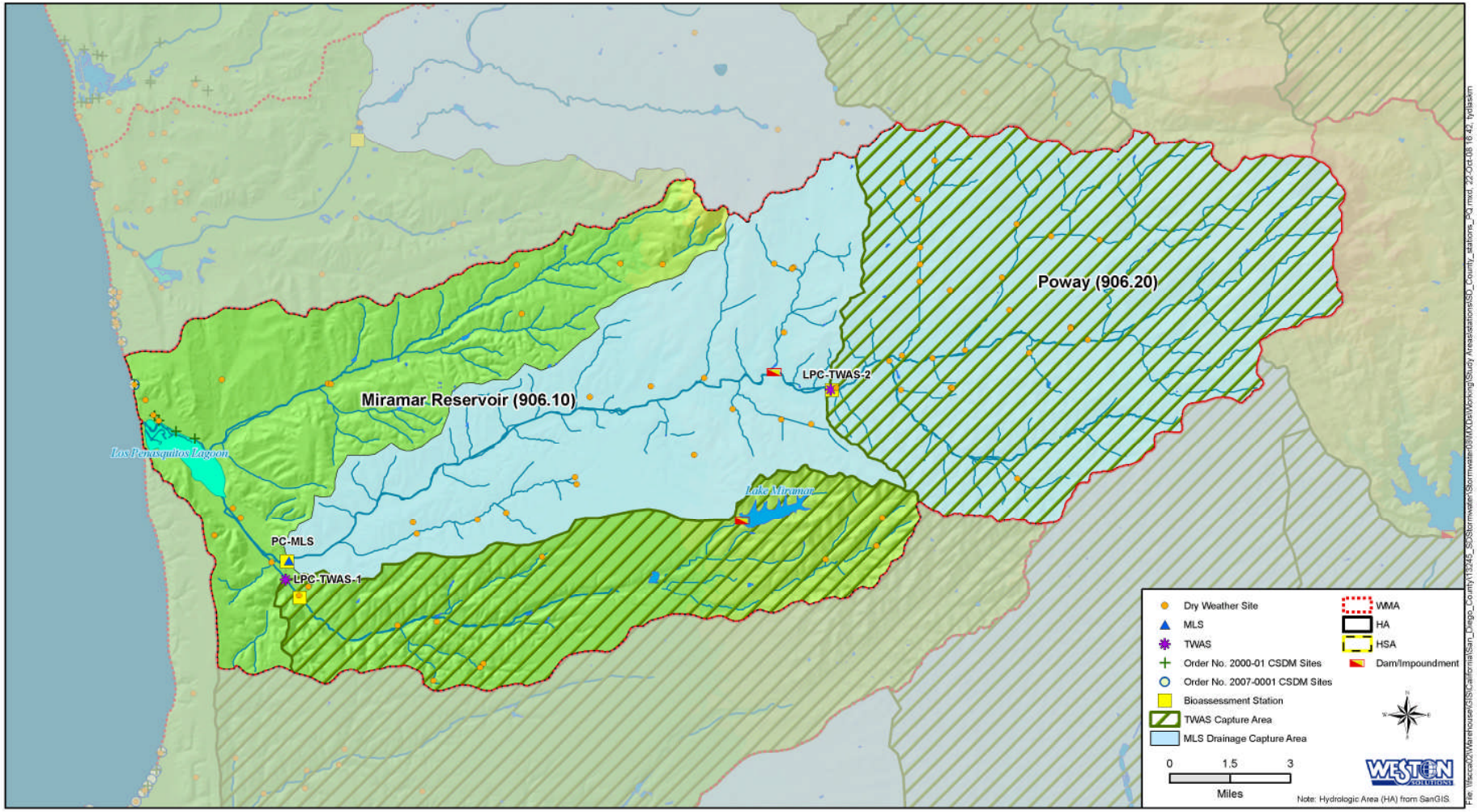

Figure 2-1. Los Peñasquitos Watershed Management Area 2007–2008 Monitoring Station Location Map

The following receiving waters condition information is taken from the Urban Runoff Monitoring Report (Weston, January 2009). During the FY 2008 monitoring period, the Los Peñasquitos WMA was assessed for the first time under the requirements of Order R9-2007-0001 which expanded the scope of Regional Monitoring requirements to now include the following:

- Monitoring continues at MLS and TWAS during two ambient weather events and two wet weather events. This required the modification of water quality benchmarks (benchmarks) used to assess water quality concentrations. The Copermittees developed a new set of benchmarks based on current and environmentally relevant water quality values. The benchmarks and their associated references are provided in the Methods Section of the Urban Runoff Monitoring Report.
- Ambient weather monitoring water quality results for nutrients were assessed using the Nutrient Numeric Endpoint (NNE) Model to evaluate whether beneficial uses have the potential to be impaired due to concentrations of nitrogen and phosphorus in receiving waters.
- Bioassessment monitoring during the 2007–2008 Monitoring Season was only required during Spring 2008.
- The WMA assessment methodology was modified to assess ambient weather receiving water quality conditions. This provides an assessment of both wet weather and dry weather as well as an integrated assessment of water quality conditions in the WMA.

The WMA assessment methods presented in the Urban Runoff Monitoring Report were applied to these data to determine which constituents are of concern and to develop a high, medium or low frequency of occurrence for these constituents. It should be noted that the added complexity of the Urban Runoff Monitoring Program for 2007-2008, to comply with the Municipal Permit, resulted in an expanded set of results that are summarized in new assessment tables below.

2.1.1 AMBIENT WATER QUALITY ASSESSMENT

The first assessment includes an evaluation of the new ambient weather receiving water quality. A summary of the data is presented in Table 2-1. As shown, ambient weather monitoring at the MLS and both TWAS are in their first year; therefore, the results of this assessment are only indicative of conditions over the 2007–2008 monitoring season. In the Los Peñasquitos WMA, five constituents were classified as ambient weather constituents of concern (COC_a) with a low, medium or high frequency of occurrence. These constituents include: TDS, turbidity, total coliform, fecal coliform, and enterococci.

TDS and enterococci were each identified as a high frequency of occurrence COC_a in 2007–2008 and each received three diamonds. The rating for TDS and enterococci are based on Criterion No. 1, when the LPC-MLS or either TWAS test results exceed the benchmark in greater than or equal to 80% of the samples. In this case, both TDS and enterococcus results have been detected at levels above the benchmark in 100% of the ambient weather samples. Enterococci were measured above the action levels in 27% of the Dry Weather Monitoring (DWM) samples.

Turbidity, total coliform and fecal coliform were each identified as a COC_a having a low frequency of occurrence and received one diamond based on Criterion No. 8, dry weather site exceedances found in 10–50% of the samples in the past year. Turbidity, total coliform

and fecal coliform were not present in the 2007–2008 ambient weather receiving water results for the MLS and/or TWAS.

Table 2-1. Los Peñasquitos Watershed Management Area Ambient Weather Constituent Exceedances

Constituents With Any Ambient Receiving Water Benchmark or Dry Weather Action Level Exceedance	Ambient Receiving Water Results at MLS and/or TWAS[2]				Urban Runoff Program Results[1]		Frequency of Occurrence	Criterion No.
	2007/2008		CUMULATIVE		2007*			
	#/6	%	#/6	%	#	%		
Conventional Parameters								
Ammonia	0	0	**0**	**0**	1	4	-	-
Total dissolved solids	6	100	**6**	**100**	NA	NA	♦♦♦	1
Total suspended solids	0	0	**0**	**0**	NA	NA	-	-
Turbidity	0	0	**0**	**0**	3	12	♦	8
Nutrients								
Orthophosphate	0	0	**0**	**0**	1	4	-	-
Bacteriological								
Total coliform	0	0	**0**	**0**	3	20	♦	8
Fecal coliform	0	0	**0**	**0**	2	13	♦	8
Enterococci	6	100	**6**	**100**	4	27	♦♦♦	1
Pesticides								
Diazinon	0	0	**0**	**0**	0	0	-	-
Toxicity							**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 7-day reproduction	5	83	**5**	**83**	NA	NA	Yes[3]	
Selenastrum 96-hour	1	17	**1**	**17**	NA	NA	No	
Bioassessment	**IBI Rating**						**EVIDENCE OF BENTHIC ALTERATION?**	
Los Peñasquitos Creek, at Highway 805 **	Very Poor		**Very Poor**		NA		Yes[3]	
Los Peñasquitos Creek, at Springbrook Drive (LPC-TWAS-2)	Very Poor		**Very Poor**		NA			
Carroll Canyon Creek, at Sorrento Valley Road (LPC-TWAS-1)	Very Poor		**Very Poor**		NA			

[1] Urban Runoff Program results from Jurisdictional Dry Weather Program, Dry-Coastal Storm Drain Monitoring Program, Dry MS4 Outfall, and Dry Source ID Monitoring Programs.

[2] The TWAS located in Carroll Canyon drains to Los Peñasquitos Lagoon below the MLS.
* = Total number of observations varied among constituents.
NA = Not assessed, Not Applicable, or Not Analyzed.
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.

[3] Based on two of two toxic results at LPC-TWAS-1 and the MLS and one toxic result at LPC-TWAS-2.

2.1.2 WET WEATHER WATER QUALITY ASSESSMENT

In the Los Peñasquitos WMA, six constituents were classified as wet weather constituents of concern (COC_w) with a low, medium or high frequency of occurrence. These constituents included: TDS, TSS, turbidity, total coliform, fecal coliform, and enterococci (Table 2-2).

TDS and fecal coliform were each identified as a high frequency of occurrence COC_w and each received three diamonds. The rating for TDS is based on Criterion No. 1, when the LPC-MLS or TWAS test results exceed the benchmark in greater than or equal to 80% of the samples. In this case, TDS results have been detected at levels above the benchmark in 83% of the wet weather samples. The rating for fecal coliform is based on Criterion No. 3, when less than 80% and greater than or equal to 50% of the LPC-MLS or TWAS samples exceed the benchmark and at least one DWS exceedance occurred in the past year. Fecal coliform concentrations were at 79% cumulatively from 2001–2008, but exceeded the benchmark in greater than 80% of the wet weather samples in all annual monitoring periods except for 2001–2002 and 2003–2004.

TSS, turbidity, ammonia, total coliform, and enterococci were each identified as a COC_w having a low frequency of occurrence and received one diamond based on Criterion No. 9, when LPC-MLS or TWAS exceedances are found in 25% to less than or equal to 50% of the samples and at least one exceedance is found in the last two years at the LPC-MLS or TWAS.

The high frequency of occurrence COC_w TDS and two low frequency of occurrence COC_ws (turbidity and TSS) are constituents on or related to the 2006 SWRCB Section 303(d) list (TDS within the Los Peñasquitos Creek, and sediment and siltation for Los Peñasquitos Lagoon). Wet season CSDM data did not indicate that coastal storm drains were contributing to persistent bacteria exceedances at coastal waterbodies. Jurisdictional DWM data indicated action level exceedances for enterococci, fecal coliform, total coliform, and turbidity.

The 2006 SWRCB Section 303(d) list also includes toxic sediment for Soledad Canyon, which is located within Carroll Canyon. Turbidity, while having a low frequency of occurrence during wet weather conditions, could contribute to COC_w pollutant loading and subsequent beneficial use impairments for the main receiving waterbody (i.e., Los Peñasquitos Lagoon).

Persistent toxicity is evident when more than 50% of the toxicity tests conducted on any species have an NOEC of less than 100%. Persistent toxicity was observed for *H. azteca* toxicity samples at LPC-TWAS-2 and was likely associated with Bifenthrin at concentrations sufficient to induce a toxic response to this organism based on LC_{50} values. This is a common issue on a regional and statewide basis for urban areas and is not particular to the Los Peñasquitos WMA.

Cumulative IBI scores from bioassessment monitoring at the LPC-MLS and the TWAS within the Los Peñasquitos WMA were rated Very Poor. These sites have historically been rated Poor to Very Poor for the monitoring period since 2001. These results indicate that there is evidence of benthic alteration.

Table 2-2. Los Peñasquitos Watershed Management Area Wet Weather Constituent Exceedances

Constituents With Any Wet Weather Benchmark or Dry Weather Action Level Exceedance	Wet Weather Receiving Water Results at MLS and/or TWAS[2]																Urban Runoff Program Results[1]		Frequency of Occurrence	Criterion No.
	2001/2002		2002/2003		2003/2004		2004/2005		2005/2006		2006/2007		2007/2008		CUMULATIVE		2007*			
	#/3	%	#/3	%	#/3	%	#/3	%	#/3	%	#/3	%	#/6	%	#/24	%	#	%		
Conventional Parameters																				
COD	0	0	0	0	0	0	1	33	0	0	0	0	0	0	**1**	**4**	NA	NA	-	-
Ammonia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	1	4	-	-
Total dissolved solids	3	100	3	100	3	100	3	100	2	67	3	100	3	50	**20**	**83**	NA	NA	♦♦♦	1
Total suspended solids	0	0	0	0	0	0	1	33	1	33	1	33	4	67	**7**	**29**	NA	NA	♦	9
Turbidity	0	0	2	67	0	0	1	33	1	33	1	33	5	83	**10**	**42**	3	12	♦	9
Nutrients																				
Orthophosphate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0**	**0**	1	4	-	-
Bacteriological																				
Total coliform	0	0	2	67	0	0	1	33	1	33	0	0	2	33	**6**	**25**	3	20	♦	9
Fecal coliform	1	33	3	100	1	33	3	100	3	100	3	100	5	83	**19**	**79**	2	13	♦♦♦	3
Enterococci	0	0	2	67	0	0	0	0	2	67	1	33	3	50	**8**	**33**	4	27	♦	9
Pesticides																				
Chlorpyrifos	0	0	2	67	0	0	0	0	0	0	0	0	0	0	**2**	**8**	0	0	-	-
Diazinon	2	67	1	33	0	0	0	0	0	0	0	0	0	0	**3**	**13**	0	0	-	-
Toxicity																			**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 7-day reproduction	0	0	0	0	0	0	0	0	0	0	1	33	0	0	**1**	**4**	NA	NA	No	
Hyalella 96-hour acute	0	0	0	0	0	0	0	0	0	0	0	0	3	75	**3**	**14**	NA	NA	Yes[3]	
Selenastrum 96-hour	2	67	0	0	1	33	0	0	2	67	1	33	0	0	**5**	**21**	NA	NA	No	
Bioassessment	IBI Rating																		**EVIDENCE OF BENTHIC ALTERATION?**	
Los Peñasquitos Creek, at Highway 805 **	Very Poor		Poor		Poor		Poor		Very Poor		Very Poor		Very Poor		**Very Poor**		NA		Yes	
Los Peñasquitos Creek, at Springbrook Drive (LPC-TWAS-2)	Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		**Very Poor**		NA			
Carroll Canyon Creek, at Sorrento Valley Road (LPC-TWAS-1)	Very Poor		Poor		Poor		Poor		Very Poor		Very Poor		Very Poor		**Very Poor**		NA			

[1] Urban Runoff Program results from Jurisdictional Dry Weather Program, Coastal Storm Drain Monitoring Program, Wet MS4 Outfall, and Wet Source ID Monitoring Programs.

[2] The TWAS located in Carroll Canyon drains to Los Peñasquitos Lagoon below the MLS.
* = Total number of observations varied among constituents.
NA = Not assessed.
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.

[3] Persistent toxicity triggered by two of two *Hyalella azteca* toxicity hits at LPC-TWAS-2 with no historical data to suggest otherwise. Synthetic pyrethroids were detected in levels sufficient to induce a toxic response to this organism based on published LC_{50} values. This is common issue on a region wide and statewide basis in urban areas.

2.1.3 TRASH ASSESSMENT

Trash assessments were conducted at receiving water stations during ambient weather and wet weather monitoring events in compliance with the Municipal Permit (Section II.A.1.k). Trash assessments were conducted in accordance with the Monitoring Work Plan for the Assessment of Trash in San Diego County (Weston, 2007). Trash assessment results are presented in Table 2-3.

Table 2-3. Los Peñasquitos Watershed Management Area Trash Assessment Results in Los Peñasquitos Receiving Waters

Site	Date	Trash Assessment Rating[1]	Threat Rating
LPC-TWAS-1	09/26/2007	Optimal	None
	11/30/2007	Marginal	None
	02/03/2008	Optimal	None
	06/03/2008	Marginal	None
LPC-TWAS-2	09/26/2007	Optimal	None
	11/30/2007	Optimal	None
	02/03/2008	Optimal	None
	06/03/2008	Suboptimal	None
LPC-MLS	09/26/2007	Optimal	None
	11/30/2007	Optimal	None
	02/03/2008	Optimal	None
	06/03/2008	Optimal	None

[1]Trash type ranking, source evaluation and potential route information is provided in Appendix K for sites with Submarginal or Poor ratings. (Weston, December 2008, Draft)

Trash assessments were not required for the 2007 Jurisdictional DWM Program under the 2001 Municipal Permit (Order 2001-01); therefore, a discussion of the findings on a WMA-wide scale is not appropriate as limited data is available. However, trash assessments are included in the jurisdictional DWM Program for 2008 under the current Municipal Permit (Order R9-2007-0001). A discussion of trash assessments will be provided in future reports where inclusion of the dry weather trash assessments will result in a more robust data set that can be used to assess trash on a WMA-wide scale.

2.1.4 NUMERIC NUTRIENT ENDPOINT BENEFICIAL USE ASSESSMENT

An evaluation of the potential impacts of nutrient levels in the Los Peñasquitos WMA was conducted using secondary indicators collected during the two ambient weather monitoring events and one bioassessment monitoring event. The secondary indicators of nutrient-induced eutrophication were selected based on the Nutrient Numeric Endpoints (NNE) methodology (Tetra Tech, 2006) and include benthic algal biomass, dissolved oxygen (DO), pH, and dissolved organic carbon (DOC). The purpose of this evaluation is to assess the risk elevated nutrients may pose to beneficial uses by comparing concentrations of secondary indicators at a site to benchmarks established for each beneficial use. Data collected from the site are compared to the benchmark for each secondary indicator and placed into one of three beneficial use risk categories:

I. Presumptive Unimpaired (use is supported),
II. Potential Impaired (may require an impairment assessment), or
III. Presumptive Impaired (use is not supported or is highly threatened).

For the Los Peñasquitos WMA, secondary indicators have been established for WARM beneficial uses (Table 2-4). REC-1 and REC-2 beneficial uses are addressed by aquatic life criteria related to benthic algal biomass, but there is no direct link between these beneficial uses and the remaining secondary indicators (DO, pH, and DOC). Therefore, potential impairment to the REC-1 and REC-2 beneficial uses was not assessed using the NNE method.

The results of the analysis indicate that benthic algal biomass levels fall into the Presumptive Impaired category (for WARM) for LPC-MLS based on chlorophyll-a levels measured in June (Table 2-4). This finding warrants evaluation of nutrient concentrations and flow at LPC-MLS to determine beneficial use impairment. Both TWAS fall into the Presumptive Unimpaired category for benthic algal biomass, DO and pH, although chlorophyll-a was measured near the risk category boundary during the reporting period at LPC-TWAS-2.

Comparing concentrations of secondary indicators to established benchmarks can be an effective way to assess the risk of eutrophication and beneficial use impairment. However, it is worth noting that only limited data are available for the 2007–2008 monitoring season. Future monitoring and NNE evaluation will help verify these initial results and will help identify those areas where eutrophication is a potential problem. Nutrient benchmark criteria are currently being developed by the Southern California Coastal Water Research Project (SCCWRP). Results of these efforts will provide additional information for assessment of nutrient impacts in the Los Peñasquitos WMA.

Table 2-4. Los Peñasquitos Watershed Management Area Nutrient Numeric Endpoint Assessment Results

Secondary Indicators	Risk Category Boundary	Beneficial Use Benchmarks			LPC-MLS		LPC-MLS Risk Category Result	LPC-TWAS-1		LPC-TWAS-2		LPC-TWAS-1 and LPC-TWAS-2 Risk Category Result
		WARM	REC-1	REC-2	9/26/07-9/27/07	6/2/08-6/3/08		9/26/07-9/27/07	6/2/08-6/3/08	9/26/07-9/27/07	6/2/08-6/3/08	
Benthic algal biomass (mg chlorophyll-a/m^2) maximum	I/II	150	C	C			III-Presumptive Impaired (for Warm)		69		134.8	I-Presumptive Unimpaired
	II/III	200	C	C		269.3						
Dissolved oxygen (mg/L) Streams--mean of 7 daily minimums	I/II	6.0	A	A		7.69	I-Presumptive Unimpaired		10.1		6.6	I-Presumptive Unimpaired
	II/III	4.0	A	A								
pH maximum--photosynthesis driven	I/II	9.0	A	A	8.07	8.1	I-Presumptive Unimpaired	8	8.28	7.60	7.68	I-Presumptive Unimpaired
	II/III	9.5	A	A								
DOC (mg/L)	I/II	A	A	A	13.6	9.9	NA	6.8	5.3	11.8	8.5	NA
	II/III	A	A	A								

A=No direct Linkage
C=Addressed by Aquatic Life Criteria

Source: Tetra Tech, Inc. 2006. Technical Approach to Develop Nutrient Numeric Endpoints for California. Prepared for US EPA Region IX, California State Water Resource Control Board; Planning and Standards Implementation Unit

Beneficial Use Risk-Category I. Presumptive unimpaired (use is supported)
Beneficial Use Risk Category II. Potentially impaired (may require an impairment assessment)
Beneficial Use Risk Category III. Presumptive impaired (use is not supported or highly threatened)

2.1.5 INTEGRATED ASSESSMENT

Assessment of the Los Peñasquitos WMA during both wet weather and ambient weather monitoring conditions is presented in an integrated manner to provide managers with an overall assessment of the WMA, and to provide answers to the core monitoring management questions outlined in the regional monitoring program. The integrated assessment provides the results of the receiving water and urban runoff assessments during both storm events and ambient weather events. It also provides a summary of the overall findings of the WMA. The integrated assessment further provides the ability to identify where COCs overlap between urban runoff and receiving waters. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as additional data becomes available in future years. Integrated WMA assessment results are presented in Table 2-5.

Table 2-5. Integrated WMA Assessment

Assessment Category		Program	Frequency of Occurrence Assessment Findings	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	**Ambient Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, enterococci	Yes (*C. dubia* reproductive endpoint at LPC-TWAS-1)	Yes	TDS is identified as a high frequency of occurrence COC during both ambient and wet weather conditions. TDS is a known issue related to importation of drinking water, over-irrigation, and potential recycled water uses. Enterococci were identified as a high frequency of occurrence COC during ambient conditions. Both TWAS sites and MLS sites were above the benchmark during both monitoring events. Indicator bacteria may be related to dry weather runoff due to jurisdictional dry weather data exceedances. Bacterial re-growth in the receiving waters may occur during low velocity conditions. Low frequency of occurrence COCs were primarily related to dry weather monitoring data collected in the MS4 for turbidity, total coliform, and fecal coliform. Persistent toxicity was observed to the *Ceriodaphnia dubia* reproductive endpoint during both ambient events at the MLS and LPC-TWAS-1 sites. Toxicity was not observed at a level sufficient to warrant a toxicity identification evaluation (Survival was > 50% in the 100% sample) at either site during the Spring 2008 ambient event.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring, Coastal Storm Drain Monitoring, MS4 Program Data, Source Identification Monitoring	♦-Turbidity, total coliform, fecal coliform	NA		
Wet Weather	**Wet Weather Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, fecal coliform ♦-Turbidity, total coliform, enterococci	Yes (*Hyalella azteca* at LPC-TWAS-2)		TDS and fecal coliform are high frequency of occurrence COCs during wet weather conditions. Turbidity was also identified as a low frequency COC in both ambient conditions, wet weather conditions, and in jurisdicational dry weather data suggesting a potential link between urban runoff and receiving water conditions. Toxicity to *Hyalella azteca* is identified as persistent based on two of two monitoring events at LPC-TWAS-2 (Poway HA). Toxicity to *Hyalella azteca* was also observed only during the first event at the MLS. The MLS and TWAS-2 sites capture runoff from primarily residential land uses and less commercial and industrial land uses. Synthetic pyrethroids were detected at levels sufficient to induce a toxic response to this organism at the TWAS-2 site during the two wet weather sample events and at the MLS during the first wet weather event where toxicity was observed. This is a region wide and state wide problem, and is currently being addressed by the Department of Pesticide Regulation.
	Wet Weather Urban Runoff Areas	MS4 Program Data, Source Identification Monitoring, Coastal Storm Drain Monitoring	(No COCw identified or no data from the programs to date)	NA		

* Note: MS4 Outfall Monitoring and Source Identification Monitoring Program data were not included in this assessment and will be incorporated in future data assessments.

2.1.6 TRIAD DECISION MATRIX

The triad decision matrix incorporates the chemistry data from both wet and dry weather events with toxicity and bioassessment results to provide indications of pollutant loading, potential impacts to organisms, and the ecological health of the WMA. The triad assessment presents possible conclusions regarding the WMA and provides possible actions or decisions for future monitoring and assessment efforts. A summary of these results are included in Table 2-6.

Table 2-6. Los Peñasquitos Watershed Management Area Triad Decision Matrix Results

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
There were persistent exceedances of water quality benchmarks (TWAS-2 pyrethroids).	There was evidence of persistent toxicity (ambient toxicity at TWAS-1 for *C. dubia* reproduction and wet weather toxicity at TWAS-2 for *H. azteca*).	There were indications of benthic alteration.	There was strong evidence of pollution-induced degradation.	1) Toxicity tests at higher dilutions to better quantify toxicity; Use TIE to identify contaminants of concern, based on TIE metric. 2) Evaluate/identify upstream source as a high priority.

Fecal coliform and TDS were each identified as a high frequency of occurrence COC_ws. Enterococci and TDS were each identified as a high frequency of occurrence COC_as. However, neither TDS nor indicator bacteria are considered in the triad decision-making process since they are not believed to induce a toxic response to aquatic organisms (see Methods Section in Appendix B for more complete details). The synthetic pyrethroid Bifenthrin was detected in both wet weather samples where toxicity was observed to *H. azteca*. Additionally, persistent toxicity was observed to *C. dubia* reproduction during ambient weather events at TWAS-1. There were no persistent chemicals identified that may be causing toxicity at the TWAS-1 Site. Therefore, based on the triad decision matrix, there was evidence of persistent chemistry benchmark high frequency exceedances (Bifenthrin). There were, however, indications of benthic alteration. Toxicity to *H. azteca* related to synthetic pyrethroids is not specific to this WMA and can be considered both a regional and state issue. Although a TIE is recommended based on the triad decision matrix, TIEs conducted in the Agua Hedionda Watershed and the Chollas Creek Watershed confirmed synthetic pyrethroids to be the likely causative agent of toxicity to *H. azteca* during wet weather monitoring events. TIEs may be useful for identifying the causative agent of toxicity to *C. dubia* reproduction in the TWAS-1 location. However, the level of toxicity did not warrant conducting a TIE due to the low level of toxicity observed. It is recommended to continue monitoring to gather long-term trend information, to consider TIEs at the TWAS-1 location during ambient weather events, to consider the potential role of physical habitat disturbance, and to identify upstream sources of COCs.

2.2 WATER QUALITY PROBLEM(S)

The Los Peñasquitos WURMP Copermittees used the process developed in the regional watershed strategy to identify the water quality problems in the Los Peñasquitos WMA.

2.2.1 303(D) IMPAIRED WATER BODIES LISTINGS

Table 2-7 lists the impaired water bodies within the Los Peñasquitos WMA from the 2006 303(d) Impaired Water Bodies Listings. These listings were not considered in the Baseline Water Quality Priority Ratings discussed below and summarized in Table 2-8. The listings include Sediment/Siltation, Phosphate and TDS in the Miramar Hydrological Area (HA).

Table 2-7. 2006 303(d) listings for Los Peñasquitos Watershed

Water Body Name	Hydrologic Area (HSA)	HSA No.	Pollutant/Stressor
Los Peñasquitos Lagoon	Miramar	906.1	Sediment/Siltation
Los Peñasquitos Creek	Miramar	906.1	Phosphate, TDS

Source: SWRCB, 2006

The baseline water quality priority ratings presented in the 2005–2006 Urban Runoff Monitoring Report are also presented in this report in Table 2-8 to compare annual WMA assessment results. This table is a tool for managers to prioritize WMA activities and to identify data gaps. The priority ratings are based on the methodology presented in the BLTEA report (Weston et al., 2005) and are summarized in the Methods section of the 2007-2008 Urban Runoff Monitoring Report.

The BLTEA ratings are used to guide long-term programmatic WMA activities and are performed on a five-year cycle. The WMA assessments are used to guide annual water quality monitoring activities and to evaluate annual differences or change through time. The WMA COCs are compared to the BLTEA ratings to evaluate if activities are showing improvements or impairments through the five-year cycle.

Table 2-8. Los Peñasquitos Watershed Management Area 2001–2006 Water Quality Priority Ratings

Watersheds/ Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacterial/ Pathogens	Benthic Alterations	Toxicity
Los Peñasquitos WMA	**100%**	***D***	***A***	***D***	***D***	***A***	***D***	***D***	***D***	***A***	***A***	***C***
Miramar Reservoir HA (906.10)	55%	*C*	*A*	*D*	*D*	*A*	*D*	*C*	*C*	*A*	*A*	*C*
Poway HA (906.20)	45%	*D*	*A*	*D*	*D*	*C*	*D*	*D*	*D*	*B*	*B*	*C*
2006–2008 High Frequency of Occurrence COCs (from WMA Integrated Assessment)												
2006–2007 High[1] Frequency of Occurrence Ratings			♦♦♦ TDS									
2007–2008 High[1] Frequency of Occurrence Ratings	Wet Weather		♦♦♦ TDS							♦♦♦ Fecal coliform	Very Poor IBI	Persistent Toxicity to *H. azteca* (TWAS-2)
	Ambient		♦♦♦ TDS							♦♦♦ Entero-cocci	Very Poor IBI	Persistent Toxicity to *C. dubia* reproduc-tion (TWAS-1)

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High-Priority Level Based on Data

2006 SWRCB Section 303d listing

Constituent groups and stressor groups are given a ranking from A to D, with A being the highest priority rating and D the lowest. Items ranked with a D indicate that the constituent group or stressor is a low priority or does not have sufficient data to support a higher ranking. The BLTEA priority ratings were based on the data record from 2001–2006 from the following programs and will be updated on a five-year cycle:

- Storm Water Mass Loading Monitoring (LPC-MLS)—Wet Weather Data (2000–2006).
- Copermittee Dry Weather Data Monitoring (2003–2005).
- Available Third-Party Data (SWAMP, 2004).
- Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring (2003–2005).
- Urban Stream Bioassessment Monitoring (2000–2006).
- Triad Assessment—Toxicity Testing of Storm Water (2000–2006).
- SWRCB Section 303(d) Listing (2003).

High-priority (A) ratings for the Los Peñasquitos WMA included dissolved minerals, sediment, bacteria/pathogens, and benthic alterations. The Miramar Reservoir HA (906.10) has the same high-priority ratings as the entire Los Peñasquitos WMA. The Poway HA (906.20) only had a high-priority rating for dissolved minerals, while bacteria, pathogens and benthic alterations received B priority ratings. The A and B priority ratings for these COCs

are consistent with higher urbanized land uses. All other constituents were given either a C or D rating.

High frequency of occurrence ratings for COCs from the Los Peñasquitos WMA criterion assessments were compared to the water quality priority ratings summary table (Table 2-8) for the Los Peñasquitos WMA assessment. A high frequency of occurrence rating was determined for TDS during both wet and ambient weather conditions. Fecal coliform was identified as a high frequency of occurrence COC_w, while enterococci was identified as a high frequency COC_a. In comparison, the BLTEA ratings were similar for the overall WMA and Miramar HA for these categories, while the Poway HA had these COCs with B ratings.

A list of potential likely or unknown sources for the nutrients and bacteria categories in the Los Peñasquitos WMA that are based on the threat to water quality inventory ratings tables can be found in the BLTEA report (Weston et al., 2005).

2.2.2 HIGH PRIORITY WATER QUALITY PROBLEMS

Based on the assessments above and the available water quality data, the Los Peñasquitos WURMP Copermittees have determined that the High Priority Water Quality Problems in the Los Peñasquitos WMA remain unchanged from previous assessment and are:

1. Bacteria / Pathogens in all HAs (under both ambient and wet weather conditions)
2. Sediment in the Miramar Area

It should be noted that the High Priority Water Quality Problems have not changed from previous assessments or the Los Peñasquitos WURMP, even though this year's assessment included the first year of expanded monitoring data as required under the Municipal Permit (Order R9-2007-0001).

2.3 POTENTIAL POLLUTANT SOURCES ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Los Peñasquitos WMA's high priority water quality problems.

In 2005 as part of the BLTEA process, the Regional Copermittees identified thirty-four (34) sources of pollutants on which to focus their efforts. The process included characterizing the sources and determining the potential for each source (Source Load Potential – SLP) to produce one of the eight pollutant types: heavy metals; organics; oil & grease; sediment; pesticides; nutrients; gross pollutants, and; bacteria.

The BLTEA also developed a process to establish Threat-To-Water-Quality (TTWQ) ratings for the sources based on water quality priority ratings for each HA and the SLP of the inventoried sources within each WMA. Together the water quality ratings and the SLP determined the TTWQ ratings of the sources based the sources' likelihood to generate pollutants that cause the water quality problems.

For the Los Peñasquitos WMA, the TTWQ ratings tables for the high priority water quality problems in each HA are summarized below. Table 2-9 represents the highest TTWQ rated sources within each HA based on the high priority water quality problems.

The process used to develop the table was taken directly from the BLTEA. The data used for the process includes the following: (1) 2007 Baseline Water Quality Priority Ratings

(Weston Solutions, 2007); (2) 2007 inventory information from all watershed Copermittees; (3) the SLP ratings from the BLTEA (Weston, MOE, LWA, 2005), and; (4) Copermittees' dry weather monitoring data.

Table 2-9. High Priority Sources in HAs

Source	Animal Facilities		Botanical/ Zoological Gardens		Eating or Drinking Establishments		Landscaping		POTWs	
	Bacteria	Sediment	Bacteria	Sediment	Bacteria	Sediment	Bacteria	Sediment	Bacteria	Sediment
906. 1 - Miramar HA (Bacteria, Sediments)	19		3		474		90		3	
906.2 - Poway HA (Bacteria)	8		3		260		26		1	

Shaded Cells mean that the pollutant type is not a high priority for the HA
Note: Source quantities are based on updated inventory information from Copermittees. The geocoding process may limit the representation of sources

3 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 WATERSHED WATER QUALITY ACTIVITIES

The Los Peñasquitos WURMP Copermittees are responsible for identifying and implementing water quality activities that address the High Priority Water Quality Problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed or jurisdictional level. The activity selection process is described fully in the 2008 Los Peñasquitos WURMP.

During the reporting period, the Los Peñasquitos WURMP Copermittees implemented six water quality activities. Table 3-1 below lists the activities that were in active implementation during the reporting period. Details of the each activity can be found on the Activity Implementation Sheets located in Appendix A. In addition, other activities were in the active planning, design or assessment phases during the reporting period. For more details on all of the activities, refer to Table 3-6 and Appendix A.

Table 3-1. Watershed Water Quality Activities Implemented During FY 2007-08

ID #	Activity/Project Name
LP-WQA1	San Diego Coastkeeper Trash Cleanup Sponsorship
LP-WQA5	Targeted Inspections
LP-WQA6	Alpha Project for the Homeless, Inc. Trash Cleanups
LP-WQA8	ILACSD Trash Cleanup Sponsorship
LP-WQA11	Aubrey Street Continuous Deflective Separation Device
LP-WQA12	Gate Drive Detention Basin Modification

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (Appendix A) and are summarized in Section 4 – Effectiveness Assessment.

3.2 WATERSHED EDUCATION ACTIVITIES

This section describes activities implemented by the Los Peñasquitos WURMP Copermittees during the FY 2008 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Los Peñasquitos WURMP Copermittees are responsible for identifying and implementing education activities that address the High Priority Water Quality Problems in the Los Peñasquitos WMA. The activity selection process is described fully in the 2008 Los Peñasquitos WURMP.

The Los Peñasquitos WURMP Copermittees have made significant progress in developing and implementing programs aimed at improving storm water and urban runoff water quality in the WMA. Table 3-2 below list the three education activities implemented during FY 2008 by the Los Peñasquitos WURMP Copermittees. In addition, other activities were in the active planning or assessment phases during the reporting period. For more details on all of the activities, refer to Table 3-6 and Appendix A.

Table 3-2. Watershed Education Activities Implemented During FY 2007-08

ID #	Activity/Project Name
LPHU-WQEA1	Mobile Advertising
LPHU-WQEA2	Public Service Announcements
LPHU-WQEA8	Transit Shelters

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (Appendix A) and are summarized in Section 4 – Effectiveness Assessment.

3.3 PUBLIC PARTICIPATION ACTIVITIES

3.3.1 INTRODUCTION

The Public Participation component of the 2008 Los Peñasquitos WURMP encourages residents and organizations within the WMA (such as other agencies, private companies and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water and other methods including direct interaction of Los Peñasquitos WURMP Copermittee staff with members of the public.

3.3.2 ACTIVITIES CONDUCTED

WURMP documents and reports have been posted on the Project Clean Water website, where they are available to all interested stakeholders. During FY 2008, the Los Peñasquitos WMA web page on the Project Clean Water website received 1,487 hits and the Los Peñasquitos WURMP page received 440 hits. These totals are similar to those seen in the previous reporting period. A monthly breakdown of the hits can be found in the tables below.

Table 3-3. Number of Hits on the Project Clean Water Los Peñasquitos WMA Web Site

July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	Jan 08	Feb 08	March 08	April 08	May 08	June 08	Total
148	123	106	118	104	91	110	113	118	158	152	146	1,487

Table 3-4. Number of Hits on the Project Clean Water Los Peñasquitos WURMP Web Site

July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	Jan 08	Feb 08	March 08	April 08	May 08	June 08	Total
53	42	27	42	29	34	29	27	36	47	36	38	440

During this reporting period, the Los Peñasquitos WURMP Copermittees participated in 12 community events that reached more than 16,000 participants, as shown in Table 3-5 below. Watershed concepts and principles were incorporated into booth displays and event activities.

Table 3-5. Community Events in FY 08-09

Date	Event Title	Target Audience	Estimated Attendance	Location	Jurisdiction
7/5/07	Beach Cleanup	Public	No data	Del Mar	Del Mar
9/14/07	Fall Home and Garden Show	Public	400	Del Mar Fairgrounds	Del Mar
9/15/07	Community Day	Public	9,000	Poway Community Park	Poway
9/15/07	Beach Cleanup	Public	No data	Del Mar	Del Mar
9/29/07	Sea World Garden Festival	Public	250	Sea World Garden of Discovery	San Diego
11/14/07	Surfrider Foundation (San Diego Chapter) Water Quality	Members of Surfrider Foundation	43	Forum Hall	San Diego
1/31/08	Community Workshop: General IPM and Ants	Public	19	Pacific Beach Kiwanis Club	San Diego
2/29/08	Spring Home and Garden Show	Public	250	Del Mar Fairgrounds	Del Mar
4/19/08	Earth Day/Arbor Day Celebration	Public	450	Blue Sky Nature Reserve	Poway
5/3/08	Clairemont Garden Tour	Public	150	Clairemont	San Diego
6/7/08	National Trails Day: Manure Management & Watershed Awareness	Public – Horse Owners, Hikers, and Mountain Bikers	500	Los Peñasquitos Canyon Preserve	County of San Diego
6/14/08	Flower and Garden Show	Public	5,000	Del Mar Fairgrounds	Del Mar

As noted in section 3.1 of this report, Water Quality Activities, several community cleanup events were held during FY 2008. These cleanup events involved more than 168 volunteer participants.

3.4 FUTURE EFFORTS

The Los Peñasquitos WURMP Copermittees will continue to provide opportunities for residents and other interested parties to participate in Los Peñasquitos WURMP activities. Draft documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the Los Peñasquitos WMA.

3.5 COLLABORATIVE LAND-USE PLANNING EFFORTS

3.5.1 INTRODUCTION

The Land-Use Planning component of the 2008 Los Peñasquitos WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across Los Peñasquitos WURMP Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities.

3.5.2 ACTIVITIES CONDUCTED

As noted in the Activity Implementation Sheets in Appendix A of this report, the City of San Diego has been an active participant in the Integrated Regional Water Management (IRWM) planning process (IRWMPP). The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders. Participation in the IRWMPP has already led to funding approval for a number of BMP installation projects that will benefit the WMA by reducing runoff. In addition, informational presentations on the IRWMP were given to the City Councils of the Cities of Del Mar and Poway to increase awareness of the need to coordinate land-use and other planning activities across WMAs and the region.

Coordination of land-use planning will also benefit from the development of the Low Impact Development (LID) Handbook and the associated education program. The Handbook, which was developed by the County of San Diego in association with the LID Technical Advisory Committee, was completed in December 2007. The LID and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on Low Impact Development (LID) and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved within the unincorporated County, this education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect WMA water quality.

This education program, which consists of a PowerPoint presentation and provides Planning and Sponsor Group members each a set of LID Handbooks, was successfully developed on schedule during the spring of FY 2008. Presentations have not yet been conducted in the Los Peñasquitos WMA.

3.5.3 FUTURE EFFORTS

In FY 08-09, the City of San Diego will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will begin. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the City and other jurisdictions.

LID and Watershed Planning Education for Community Planning and Sponsor Groups will be conducted in the Los Peñasquitos WMA during FY 2009. This education activity will help increase knowledge of watershed planning and LID principles and will provide common guidelines for implementation during land-use planning.

The Los Peñasquitos WURMP Copermittees remain committed to encouraging collaborative, watershed-based land-use planning in their jurisdictional planning departments. The Los Peñasquitos WURMP Copermittees will continue to work together to seek additional means of collaboration in this area.

3.6 UPDATED 5-YEAR STRATEGIC PLAN

3.6.1 NEW WMA ACTIVITIES

A list of the proposed new WMA activities is included below. Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified High Priority Water Quality Problems in the WMA. Activity Implementation Sheets can be found in Appendix A.

Each activity on the WMA Activities List is fully described in an Activity Implementation Sheet that includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified High Priority Water Quality Problem(s) of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Los Peñasquitos WURMP Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no less than two water quality activities will be in an active implementation phase. A water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's High Priority Water Quality Problem(s). Water quality activities that are capital projects are in active implementation for the first year of implementation only.

The new proposed activities include:

1) LP-WQA18 – Sweeping Route Posting and Enforcement
2) LP-WQA20 – Sediment Source ID Study
3) LP-WQEA8 – Transit Shelters

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

3.6.2 UPDATED 5-YEAR STRATEGIC PLAN

This section describes the results of the Collective Watershed Strategy process described the Los Peñasquitos WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale in which actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the High Priority Water Quality Problems in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the High Priority Water Quality Problems for each HA-High Priority Water Quality Problem combination in the WMA. Based on the available data, the Los Peñasquitos WURMP Copermittees made appropriate management decisions on which water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Los Peñasquitos WURMP Copermittees will use available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented at the end of this section is intended to supersede the earlier version presented in the Los Peñasquitos WURMP.

Table 3-6 Updated 5-Year Strategic Plan

Watershed Water Quality Activities		Jurisdiction	Watershed WQ Priorities		Implementation Schedule			
			Bacteria	Sediment	FY 07-08	FY 08-09	FY 09-10	Future Fiscal Year(s)
LP-WQA1	SDCK Trash Cleanup Sponsorship	SD	X		WQI	WQI	WQI	WQI
LP-WQA2	Targeted Animal Related Facility Inspections	SD	X		Combined with LP-WQA5			
LP-WQA3	Targeted Landscaping-Related Facility Inspections	SD	X					
LP-WQA4	Targeted Municipal Facility Inspections	SD	X		-	To be reported in City of SD JURMP		
LP-WQA5	Targeted Inspections (formerly Targeted Restaurant Facility Inspections)	SD	X		WQI	WQI	WQI	WQI
LP-WQA6	Alpha Project for the Homeless, Inc. Trash Cleanups	SD	X		WQI	-	-	-
LP-WQA7	Marindustry Hydrodynamic Separator Installation	SD	X	X	P	P	P	WQI
LP-WQA8	ILACSD Trash Cleanup Sponsorship	SD/POW	X		WQI	WQI	WQI	WQI
LP-WQA9	Mira Mesa Biorention and Infiltration BMP Retrofit	SD	X		P	P	P	P,M, WQI
LP-WQA10	Municipal Rain Barrel Installation and Downspout Disconnects	SD	X	X	P	P	WQI	A
LP-WQA11	Aubrey Street Continuous Deflective Separation (CDS) Device	POW		X	WQI	A	A	A
LP-WQA12	Gate Drive Detention Basin Modification	POW	X		WQI	A	A	A
LP-WQA13	Median Irrigation System Replacement	DM	X		P	WQI	A	A
LP-WQA14	Park and Open Space Irrigation and Controllers	DM	X		P	WQI	A	A
LP-WQA15	Over-Irrigation/Dry Weather Runoff Reduction	POW	X		-	P	WQI	A
LP-WQA16	Residential Rain Barrel & Xeriscaping Incentive Program	SD	X	X	-	P	P	WQI
LP-WQA17	Increase Trash Receptacles and Dogi-Pot stations	POW/SD	X		-	P	WQI	WQI
LP-WQA18	Sweeping Route Posting and Enforcement	SD	X	X	-	P	P,WQI	WQI
LP-WQA19	City of San Diego *Strategic Plan for Watershed Activity Implementation*	SD	X	X	P	I	I	I
LP-WQA20	Sediment Source Identification Study	SD	X	X	-	P	I	-

Watershed Water Education Activities								
LP-WQEA1	Mobile Advertising	SD	X	X	WE	WE	WE	WE
LP-WQEA2	Public Service Announcements: *Karma and Karma Second Chance*	SD	X		WE	WE	WE	WE
LP-WQEA3	LP WMA Inspection Outreach - formerly Restaurant Inspection Outreach	SD	X		E	E	E	E
LP-WQEA4	LID and Watershed Planning Education	COUNTY/ DM	X	X	P	WE	A	-
LP-WQEA5	Infiltration BMP Retrofit Outreach	SD	X		P	P	P	WE
LP-WQEA6	Residential Water Conservation Outreach	DM	X		-	-	-	P, WE
LP-WQEA7	Over-Irrigation/Dry Weather Runoff Reduction Education	POW	X		-	P	WE	WE
LP-WQEA8	Transit Shelters	SD	X	X	WE	WE	WE	WE
LP-WQEA9	Our Water, Our Responsibility Pamphlet Distribution	SD	X	X	E	E	E	-
LP-WQEA10	Erosion and Sediment Control Poster	SD	X	X	E	E	E	-
LP-WQEA11	Restaurant Best Management Practices Booklet	SD	X		E	E	E	E

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

4 EFFECTIVENESS ASSESSMENT

The Municipal Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, and to assess the effectiveness of the activities to meet those goals and objectives or identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.2.i of the Municipal Permit, and reports on the activities planned and implemented during FY 2007-08, the first of a 5-year cycle.

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

Activities collaborated upon and selected by the Los Peñasquitos WURMP Copermittees address the overall goal of the WURMP by focusing on the High Priority Water Quality Problems within the WMA.

As set forth in the Permit and outlined in the 2008 Los Peñasquitos WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the watershed Los Peñasquitos WURMP Copermittees in FY 2008, and where in this report required compliance points are fulfilled or described.

Table 4-1. Permit Compliance Outcomes

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Completed	2.0
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the WMA's water quality problems and High Priority Water Quality Problem(s) during the reporting period.	Completed	2.1-2.2
Identify the likely sources, pollutant discharges and/or other factors causing the High Priority Water Quality Problems within the WMA.	Completed	2.3
Update list of potential Water Quality Activities.	Completed	3.5
Identify and describe the Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	3.1
Update list of potential Education Activities.	Completed	3.5
Identify and describe the Education Activities implemented by each Copermittee during the reporting period.	Completed	3.2
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	3.3
A description of Copermittee collaboration efforts including meeting as the Los Peñasquitos WURMP Workgroup.	Completed	1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	3.4
Describe all TMDL activities implemented for each approved TMDL in the WMA. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not Applicable	N/A

As shown in Table 4-1, the Los Peñasquitos WURMP Copermittees were in compliance with all Level 1 WURMP-related Municipal Permit requirements during FY 2008.

4.2 ACTIVITIES ASSESSMENT

The effectiveness of each Water Quality and Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Los Peñasquitos WURMP Copermittees collaborated on and selected activities that would address High Priority Water Quality Problems not only within not only each jurisdiction, but throughout the WMA. In some cases, these activities will reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each Activity Implementation Summary sheet in Appendix A identifies specific targeted outcomes (Levels 1-6) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each WMA activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3).

Table 4-2. Outcome Levels: Levels 1-6

	Outcome Level	Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement WMA Activities	Number of applicable WMA Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/ exposure.	Pre- and post-implementation surveys of targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support WMA health and water quality.	Pre- and post- implementation observations of targeted audience behavior. Behavior may be directly observed/ measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2008, there were nine activities in the active implementation phase, six of which focused on water quality and three focused on education. These activities addressed the

High Priority Water Quality Problems in the Los Peñasquitos WMA; which include bacteria and sediment; and are the activities for which the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. Table 4-3, below, summarizes the assessments of the water quality and education activities to provide a snapshot of the overall effectiveness of the watershed activities.

Generally, more water quality data is available after the first year of Regional Monitoring under the Municipal Permit. However, an initial qualitative assessment of the cumulative impacts of the watershed activities can be made from the activities implemented during this fiscal year.

Also, four activities were in the active planning phase during FY 2008. Activities in active planning are listed in a separate table below. Although these activities should be implemented in future years, some planning progress was made such as site selection or equipment purchases.

4.3 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs currently in effect within the Los Peñasquitos WMA.

Table 4-3 Summary of Implemented Water Quality and Water Education Activities for FY 2008

Activity:	HA:	Type:	Priority Problems Addressed	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
SDCK Trash Cleanup Sponsorship	906.1 906.2	Water Quality	Bacteria & Trash	Level 1 & Level 4	*During this event 50 participants removed 500 pounds of trash and debris for an efficiency of $2.00 per pound collected.*
Targeted Municipal Facility Inspections	906.1 906.2	Water Quality	Bacteria & Sediment	Level 1, Level 3 & Level 4	*Inspections led to education, BMP implementation, and load-reducing effectiveness.*
Alpha Project for the Homeless, Inc. Trash Cleanups	906.1 906.2	Water Quality	Bacteria	Level 1 & Level 4	*Alpha Project removed 3,260 pounds of trash during three separate clean-up events using an average of 4 volunteers per site for an efficiency of $0.51 per pound collected.*
ILACSD Trash Cleanup Sponsorship	906.1 906.2	Water Quality	Bacteria	Level 1 & Level 4	*During this event 178 participants removed or recycled 1900 pounds of trash and debris, of which approximately 236 pounds was recycled for an efficiency of $0.44 per pound collected.*
Aubrey Street Continuous Deflective Separation Device	906.2	Water Quality	Sediment	Level 1, Level 4 & Level 5	*A total of 1 yard of floating trash and 1 yard of silt and heavy debris was removed from the unit, and 3 hydrocarbon-absorbent pillows required replacement. These amounts are the verified load reduction achieved by this unit.*
Gate Drive Detention Basin Modification	906.2	Water Quality	Sediment	Level 1, Level 4 & Level 5	*Completion of this basin occurred during the dry season. Sampling results from other similar basins converted and operated demonstrate substantial reductions in pollutants, and similar results are expected when sampling is conducted during the next reporting period.*
Mobile Advertising	906.1 906.2	Water Education	Bacteria & Sediment	Level 1, Level 2 & Level 3	*A mobile truck drove pre-determined routes in the Los Peñasquitos WMA in an effort to reach targeted, high priority within the WMA to increase awareness and promote behavior change.*
Public Service Announcements: Karma/Karma Second Chance Public Service Announcements	906.1 906.2	Water Education	Bacteria	Level 1 & Level 2	*PSAs were developed and broadcasted in FY 2007-2008 via TV and radio stations throughout the Los Peñasquitos WMA in both English and Spanish. Effectiveness was measured by tabulating the number of households or listeners reached by the PSAs via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.*
Transit Shelter Advertisements	906.1 906.2	Water Education	Bacteria & Sediment	Level 1 & Level 2	*Think Blue transit shelter advertisements were located at two locations in Los Peñasquitos WMA in FY 2008 in an effort to educating the public about the causes of storm water pollution to encourage positive behavioral change. Effectiveness was measured via telephone surveys and focus groups.*

Table 4-4. Summary of Planned Water Quality and Water Education Activities for Future Years

Planned Activity:	HA:	Type:	Priority Problems Addressed:	Level Outcomes:	Expected Benefit:
Marindustry Drive Hydrodynamic Separator Installation	906.1	Water Quality	Bacteria & Sediment	Level 1 & Level 4	*No water quality monitoring studies have been completed to date, however field verification and site selection occurred in FY 2008.*
Mira Mesa Library Bioretention and Infiltration Retrofit	906.1	Water Quality	Bacteria & Sediment	Level 1 & Level 4	*Assessment or monitoring have not been accomplished at this time, however the conceptual design for this project occurred in FY 2008.*
LID and Watershed Planning Education for Community Planning and Sponsor Groups	906.2	Water Education	All	Level 1 & Level 2	*Educating,Planning and Sponsoring group members on the new permit requirement. Effectiveness will be measured by tabulating results of pre- and post- presentation surveys.*
Infiltration BMP Retrofit Outreach	906.1 906.2	Water Education	Sediment & Bacteria	Level 1, Level 2, Level 3 & Level 4	*Increased infiltration to reduce urban runoff and pollutant loading from MS4 and into receiving waters.*
Watershed Municipal Rain Barrel Installation and Downspout Disconnect Project	906.1 906.2	Water Quality	Bacteria	Level 1 & Level 4	*Determining whether rain barrel/downspout disconnect systems reduce stormwater runoff and associated pollutant loads. Procurement of rain barrels and other materials began during the second quarter of FY2008.*

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5 CONCLUSIONS AND PROGRAM IMPROVEMENTS

5.1 CONCLUSIONS

During FY 2008, the Los Peñasquitos WURMP Copermittees strove to address the overall goal of the WURMP—to positively impact the water quality of the Los Peñasquitos WMA—by focusing on its High Priority Water Quality Problems. To target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 Los Peñasquitos WURMP, which strives to link identified water quality problems to their potential sources. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the High Priority Water Quality Problems in the Los Peñasquitos WMA are bacteria/pathogens in all HAs and sediment in the Miramar HA. It should be noted that the High Priority Water Quality Problems have not changed from previous assessments even though this year's evaluation included the first year of expanded monitoring mandated under the new Municipal Permit.

To effectively address the Los Peñasquitos WMA's High Priority Water Quality Problems, the Copermittees identified and then evaluated them for likely sources at the individual watershed level (please refer to Table 2-9). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; and b) water quality and education activities appear to be targeting suspected sources of the High Priority Water Quality Problems and are mostly viewed as effective at reducing the impacts of the sources. Based on this analysis, the Copermittees focused their activities on the following suspected priority sources: eating and drinking establishments; animal facilities; nurseries, greenhouses and botanical or zoological gardens; landscaping-golf courses; cemeteries; and construction sites.

The Los Peñasquitos WURMP Copermittees then developed and implemented watershed water quality and education activities to address these High Priority Water Quality Problems and their sources. Tables 3-1 and 3-2 summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Municipal Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, ten activities were implemented, six of which focused on water quality and four on education. All of these activities concentrated on the High Priority Water Quality Problems in Los Peñasquitos WMA, which include bacteria and sediment.

The Los Peñasquitos WURMP Copermittees have responded to meet the challenges of implementing the new requirements outlined in the Municipal Permit as they continue to refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs across the

region. Furthermore, the Los Peñasquitos WURMP Copermittees will continue to implement the activities described in Section 3 of this document in future reporting periods.

5.2 PROGRAM IMPROVEMENTS

The lack of water quality data directly related to sources makes true effectiveness assessment of the activities difficult. Without the data, the Copermittees are limited to qualitative assessments, which contain substantial assumptions linking the sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the Los Peñasquitos WURMP Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources, or collect data unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research, analysis of existing data and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level (i.e., evaluating the data from the larger watershed level). Analysis of the data at the HA-level may provide useful information to the 2008 Los Peñasquitos WURMP.

In many cases, water quality data may be unavailable to accurately characterize loading from suspected sources. Where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 Los Peñasquitos WURMP—to determine and target the sources contributing to the High Priority Water Quality Problems – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve water quality within the WMA;
- Integrate watershed principles into land use planning;
- Enhance public understanding of water pollution sources; and
- Encourage and develop stakeholder participation.

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. It also

recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language where necessary to better develop and meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008.

The Los Peñasquitos WURMP Copermittees are committed to continue their involvement in this process during the 2009 reporting period. It is anticipated that some changes to the Five-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the Copermittees and the RWQCB.

Appendix A

Los Peñasquitos Watershed Activity Sheets

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Los Peñasquitos Watershed Water Quality Activity Sheets

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TITLE:	**LOS PEÑASQUITOS COASTAL CLEANUP DAY SPONSORSHIP**
ID #:	**LP-WQA1**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 15, 2007. The City of San Diego (City) sponsored the Peñasquitos Canyon Reserve site in the Los Peñasquitos Watershed Management Area (WMA). Approximately 50 volunteers removed 500 pounds of trash and debris. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

According to Regional Board staff comments[1], the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the WMA, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDCK's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	500 lbs
	Number of participants (Outcome Level 1)	50
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$6,000
	Amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1)	$1,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$2.00/lb

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

Fifty participants removed approximately 500 pounds of trash and debris. Debris removal (i.e., load reduction) was tracked using data cards provided by the Ocean Conservancy. The total estimated sponsorship cost for all six WMAs was $6,000. For cost estimate analysis, it was assumed that the Los Peñasquitos site was sponsored at the "Garibaldi Sponsor" level, or $1,000. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the

sponsorship cost for the Los Peñasquitos WMA by the pounds of trash removed, was $2.00 per pound.

Conclusions

Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2009. Future results may be used to compare various types of trash cleanups completed and their associated costs, as well as comparing the same types of trash cleanups that are sponsored each year over time.

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TITLE:	**LOS PEÑASQUITOS TARGETED INSPECTIONS (COMBINED)**
ID #:	**LP-WQA2, LP-WQA3 & LP-WQA5**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a focused inspection program to target facilities that are potential sources of High Priority Water Quality Problems. In the Los Peñasquitos Watershed Management Area (WMA), the City is focusing on restaurant and animal-related facilities[2]. The long-term goals of the program are:

- Determine the most efficient frequency of inspections to ensure proper Best Management Practices implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The City delineated a specific area within the Los Peñasquitos WMA to conduct the targeted inspections based on factors such as facility clustering and proximity to other watershed activities being conducted. The overall approach of the site selection process focused first on the specific business categories within the prioritized sectors in each WMA. If multiple category types were targeted for inspection in a particular WMA, a fairly equal distribution of sites from each category was selected for inspection where possible. In addition, knowledge gained by the City from past inspections was used to consider the likelihood of certain business types and areas of the City to be more problematic than others regarding constituents of concern in each WMA.

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected community, only one inspection was conducted at each facility. The inspections that were conducted provide baseline data for comparison to future years' watershed-focused inspection programs. Information gathered during the FY 2008 watershed-focused inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years.

Forty-nine full inspection equivalents occurred across the Los Peñasquitos WMA at restaurants and animal-related activities. Full inspection equivalents are equal to the number of full inspections plus one half the number of "other site visits" (site visits that did not result in a full inspection), excluding other site visits where the facility has moved and is gone and a replacement business was found. This metric allows for a more equal comparison of

[2] The 2008 Los Peñasquitos WURMP also identified landscaping-related facilities as a facility type of interest for the City's targeted inspection program in the WMA; however, these businesses were not inspected in FY 2008. The city has modified its targeted inspection program and will instead inspect these businesses in FY 2009.

inspection effort among WMAs. There were 29 full inspections conducted for restaurant facilities with 12 follow-ups and 1 "other site visit" and 11 full inspections conducted for animal-related facilities with no follow ups and 16 "other site visits."

This activity is in active implementation, and source abatement information is included in the effectiveness assessment section of this activity summary sheet. The City requests credit for one of the two required watershed water quality activities for this reporting year with this activity.

The City acknowledges Regional Board staff's comment[3] that recorded data and assessment is needed regarding the inspections and that the inspections must be above and beyond JURMP requirements. Inspections under this activity occurred to facilities that were not inspected under the JURMP program. Recorded data and assessment is included in this report.

Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become "business and usual." However, the City is implementing this non-capital activity over multiple years in order to optimize the program prior to incorporating the results and recommendations into the JURMP. Specific changes to the JURMP are not yet planned as the study is ongoing at this time. Incorporating this activity into the JURMP at this time would be premature in putting valuable resources toward wide-scale implementation before the program is optimized. With optimization the City anticipates gaining the strongest improvement to storm water discharge quality that is achievable at this point in time. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as "business as usual."

It should be noted that all of the inspections (animal and restaurant facilities) are being reported on one activity summary sheet for FY 2008 due to the structuring of this year's program. The inspections were previously detailed as separate activities in the 2008 Los Peñasquitos WURMP. For consistency, the activity numbers are included in the heading of this summary sheet. The City is not expecting to receive two watershed water activity credits (one for each type of facility) for this program year; the City is requesting credit for one of the two required activities in this program year. However, the program may be restructured in the future and depending on the scale of implementation, the City may request credit for different facilities in the future.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The City selected and hired a consultant who implemented the watershed-focused project from the end of March through June 2008. The City will continue to evaluate ways to optimize the inspection of various facilities in the future. The City is currently developing its 2009 program and anticipates continuing piloting the targeted inspections through FY2012.

[3] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Los Peñasquitos WMA inspections target the following high priority water quality problems:

FACILITY TYPE	HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED
	Bacteria
Restaurants	X
Animal-related	X

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Restaurant Facility Inspections	
Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect source abatement? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of source abatement be made from inspection data?
Targeted Measurable Outcome(s)	• Source abatement due to inspections • Increased BMP implementation due to inspections

Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	Number of restaurant facility full inspections, spot and scheduled (Outcome Level 1)	29
	Number of restaurant facility follow-up inspections (Outcome Level 1)	12
	Number of animal-related facility full inspections, spot and scheduled (Outcome Level 1)	11
	Number of animal-related follow-up inspections (Outcome Level 1)	0
	Total number of full equivalent inspections, spot and scheduled (Outcome Level 1)	49*
	Number of Sites Needing Corrective Action (Outcome Level 1)	40
	Number of Sites That Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	2
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	2
	Number of missing BMPs (Outcome Level 1)	38
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	NA
Recommended Data	• Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of educational information items passed out (Outcome Level 3) • Potential Pollutant Discharge Assessment (Outcome Level 4)	

* Includes “other site” visits in calculation of the total.

Objectives

The goal of this effectiveness assessment is to determine the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections, and to ensure proper BMP implementation to reduce pollutant loading.

Analysis and Results

A breakdown of the number of sites needing corrective action, and number of sites that implemented at least some corrective action during the inspection, were included in the Watershed-Focused Storm Water Compliance Inspection Program Report[4] (see Table 1). The table also includes the number of Illegal Connections/Illicit Discharges (IC/ID) observed during the inspections, and the total number of IC/IDs abated during the inspections. Two of

[4] D-MAX Engineering, *Watershed-Focused Storm Water Compliance Inspection Program* (September 2008).

the 40 sites implemented corrective action during the inspection, which resulted in source abatement at those facilities.

Table 1. Corrective Actions Implemented at Time of Inspection

Area	Number of Sites Needing Corrective Action	Number of Sites That Implemented Some Corrective Action During Inspection	Total IC/IDs Observed	Total IC/IDs Eliminated During Inspection
LP	40	2	0	N/A

Although a load reduction was not calculated for each location, abatement of potential sources (Outcome Level 4) may be assumed with corrective actions being implemented due to the inspections. Future years' analysis will include a detailed pollutant discharge potential assessment to better show this source abatement. Inspected facilities were assigned a rating to reflect the level of BMP implementation noted at the site, and a separate rating to reflect the facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility.

Table 2 presents a breakdown of the average knowledge and average BMP implementation scores for the inspected facilities in each WMA. In the Los Peñasquitos WMA, the Average BMP Implementation Score increased while the Average Knowledge Score decreased. While some conclusions can be drawn based on the results of the FY 2007 and FY 2008 inspection programs, the number of inspections completed, the individual sites visited, and the business types targeted in each WMA were not the same in FY 2008 as in FY 2007. Because of these differences, drawing definitive conclusions is difficult. The City is modifying its strategy for future years, and the use of a new inspection form should provide the ability to derive more solid conclusions in future years to help optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

Table 2. Breakdown of Average Knowledge and BMP Implementation Scores by Area

Area	Average Knowledge Score FY 2007	Average BMP Implementation Score FY 2007	Average Knowledge Score FY 2008	Average BMP Implementation Score FY 2008
LP	2.2	2.6	1.9	2.8

Conclusions

The inspections that were conducted in the Los Peñasquitos WMA provide baseline data for comparison to future years' watershed-focused inspection programs in the WMA. More inspection data is anticipated in FY 2009 to build on what was gathered in FY 2008. Specifically, information gathered during the FY 2008 Los Peñasquitos WMA targeted inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years. Further analysis of inspection efficiency, BMP implementation and education and their source abatement effectiveness is required before conclusions can be made and will include the cost of inspections, BMP implementations, education data, and enforcement follow-ups.

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TITLE:	**TARGETED MUNICIPAL FACILITY INSPECTIONS**
ID #:	**LP-WQA4**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) had planned to develop a focused inspection activity to target municipal facilities within the Los Peñasquitos WMA. The purpose of the activity was to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

Based on Regional Board staff comments[5], the City will no longer pursue this activity under the WURMP section of the Municipal Permit. The City may choose to reconsider this as a significant JURMP activity in the future, though staff time and resources are currently allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. The reporting of this activity will cease with this annual report.

Regional Board staff further commented that this activity is an internal audit and credit would not be granted as a watershed water quality activity. As noted above, the City will not implement this activity under the WURMP. If the City chooses to move forward with the activity, it may be considered under the JURMP.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning and implementation is not yet scheduled for this activity. If it moves forward, it would be reported under the JURMP.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

[5] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment/siltation/turbidity/total suspended solids
- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

If implemented under the WURMP, this activity would have been consistent based on the City's *Strategic Plan for Watershed Activity Implementation*, which identifies bacteria and sediment as High Priority Water Quality Problems in the Los Peñasquitos WMA, and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity if pursued would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria and sediment at municipal facilities.

EFFECTIVENESS MEASUREMENTS

Watershed: Los Peñasquitos	
TARGETED MUNICIPAL FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Targeted Municipal Facility Inspections**	
Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect the incidence of illicit discharge? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation?
Targeted Measurable Outcome(s)	• Achieve reduced rate of illicit discharge from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated probability of illicit discharge) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)

Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of discharges abated (Outcome Level 4)

The City will no longer pursue this activity under the WURMP section of the Municipal Permit. The City may choose to reconsider this as a significant JURMP activity in the future, which would trigger an effectiveness assessment at that time.

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TITLE:	**ALPHA PROJECT FOR THE HOMELESS, INC. CLEANUP SPONSORSHIP**
ID #:	**LP-WQA6**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups and potentially homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2008.

Alpha Project conducted a cleanup at five locations (Torrey Pines State Beach, Peñasquitos Lagoon, Canyon Lake Drive, 11200 Cedar Road and Cedar Place, and 10050 Mountain Road) in the Los Peñasquitos Watershed on 5 May, 16 May, and 2 July 2007. Approximately four workers per location participated to remove approximately 1.63 tons of trash and debris in FY 2008.

According to Regional Board staff comments[6], the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the WMA, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The City will not continue the Alpha Project trash cleanup sponsorship in FY 2009. The reporting of this activity will cease with this annual report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

[6] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Cleanups by Alpha Project result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
ALPHA PROJECT FOR THE HOMELESS, INC. CLEANUP Assess the Efficiency and Effectiveness of Sponsoring Alpha Project's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound	
Targeted Measurable Outcome(s)	Achieve load reduction of bacteria (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	3,260 lbs
	Number of participants (Outcome Level 1)	20
	Amount of money spent on cleanups (Outcome Level 1)	$1662.60
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.51/lb

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

Alpha Project conducted a cleanup at five locations in the Los Peñasquitos WMA with an estimated four workers per location. The total cost of this cleanup was $1662.60 and approximately 3,260 pounds of trash and debris were removed. Thus, there was a 3,260 pound load reduction associated with this cleanup, with an efficiency of $0.51 per pound collected. The efficiency was calculated by dividing the total cost of the cleanup ($1662.60) by the pounds of trash removed (3,260).

Conclusions

The City will not continue the Alpha Project in FY 2009. The reporting of this activity will cease with this annual report.

TITLE:	**MARINDUSTRY DRIVE HYDRODYNAMIC SEPARATOR INSTALLATION**
ID #:	**LP-WQA7**

ACTIVITY IMPLEMENTATION

A hydrodynamic separator will be installed in Marindustry Drive, which is located on the north side of Miramar road in the Los Peñasquitos Watershed Management Area (WMA), as a retrofit within the existing storm drain system. The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system. The separator will be located directly in line with a 24-inch storm drain before it discharges into the nearby canyon. The 24-inch line is the main collector in a small storm drain network that collects storm flows from the industrial and business park, associated parking lots and Marindustry Drive. Due to the industrial activity and high vehicular traffic, storm events typically result in the accumulation of a variety of trash, sediments, leaves, dirt oil, petroleum, and other chemical pollutants in the storm drain system. Observations will be field verified in January 2008 during a site visit and factored in the selection making process.

This project was originally identified as "Hydrodynamic Separator Installation" in the 2008 Los Peñasquitos WURMP.

According to Regional Board staff comments[7], this activity will only be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City agrees that the Municipal Permit precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that "capital projects are in active implementation for the first year of implementation only."

The Regional Board further noted that the City needs to provide additional information about the selected location and effectiveness. Information about the location is discussed in this section. The effectiveness will be discussed once post-installation monitoring is completed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The project will be transferred to Engineering and Capital Projects in September 2008 for purposes of managing the project through final design, construction and project closeout. Project design is anticipated to continue through FY 2009. Funding for construction will be identified in FY 2009. The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated and construction is expected to be completed in FY 2013 instead of being initiated in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[7] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by capturing dry weather flows and slowly releasing them to allow for the settlement of pollutants for later removal.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
MARINDUSTRY DRIVE HYDRODYNAMIC SEPARATOR INSTALLATION Assess the Efficiency and Effectiveness of Flow Control Detention Basin	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the hydrodynamic separator at reducing priority pollutant loads?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., calculate estimated load reduction) • Monitoring (e.g., collect special study information to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator installation in reducing the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the hydrodynamic separator has not been installed and therefore no priority pollutant load data have been collected.

Conclusions

It is anticipated that the hydrodynamic separator will be installed in FY 2013. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the hydrodynamic separator in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

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TITLE:	**I LOVE A CLEAN SAN DIEGO TRASH CLEANUP SPONSORSHIP**
ID #:	**LP-WQA8**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 26th, 2008. The City of San Diego sponsored the Peñasquitos Canyon site in the Los Peñasquitos Watershed Management Area (WMA). Approximately 178 volunteers removed 1,664 pounds of trash and debris and recycled 236 pounds of trash and debris over a 12 mile area.

In addition, the City of Poway sponsored three sites in the Los Peñasquitos WMA including the inland creek bed cleanup on May 10, 2008. . Approximately 40 volunteers removed 404 pounds of trash and debris and collected 136 pounds of recyclable material.

According to Regional Board staff comments[8], the Copermitees would receive credit only for the first trash cleanup event in the fiscal year. The Copermittees, while reporting on multiple trash cleanup events that occurred within the WMA, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the Copermittees also acknowledge that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach and public participation. Therefore, the Copermittees may choose to continue to implement and report on more than one trash cleanup each year.

The Copermittees requests that the Regional Board accept this activity as a watershed water quality activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the Copermittees will coordinate with ILACSD staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

[8] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of Poway

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City and San Diego's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Pproblem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/lb collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded – City of San Diego	Pounds of trash removed (Outcome Level 4)	1,664 lbs
	Pounds of trash recycled (Outcome Level 4)	236 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	1,900 lbs
	Number of participants (Outcome Level 1)	178
	Total money spent on cleanups for all six watersheds (Outcome Level 1)	$5,000
	Estimated amount of money spent on cleanups for Los Peñasquitos River watershed (Outcome Level 1)	$833.33*
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.44/lb

Data Recorded – City of Poway	Was the program in compliance? (Outcome Level 1)	Yes
	Pounds of trash removed (Outcome Level 4)	404 lbs
	Pounds of trash recycled (Outcome Level 4)	136 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	540 lbs
	Number of participants (Outcome Level 1)	40
	Money spent on cleanup (Outcome Level 1)	$500
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.93/lb

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On 26 April 2008, 178 participants removed approximately 1,664 pounds of trash and debris and recycled approximately 236 pounds of trash and debris from numerous sites in the Los Peñasquitos WMA. The average estimated sponsorship cost of $833.33 per watershed was calculated by dividing the total cost of cleanups ($5,000) by six watersheds. Thus, there was a 1,900 pound load reduction associated with sponsorship per yearly event, with an efficiency of $0.44 per pound collected. The efficiency was calculated by dividing the estimated sponsorship cost for the Los Peñasquitos WMA by the pounds of trash removed.

On May 10, 2008, 40 participants removed approximately 404 pounds of trash and debris and recycled approximately 136 pounds of trash and debris from numerous sites in the Los Peñasquitos WMA. The cost of sponsorship was $500. Thus, there was an efficiency of $0.93 per pound collected.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2009. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

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TITLE:	**MIRA MESA LIBRARY BIORETENTION AND INFILTRATION RETROFIT**
ID #:	**LP-WQA9**

ACTIVITY IMPLEMENTATION

New catch basins will be constructed within the parking area at the Mira Mesa Library in the Peñasquitos Watershed Management Area (WMA) to capture parking lot and building runoff. These catch basins will drain via a new storm drain system to an existing unpaved area on the site. Under existing conditions, this unpaved area is higher in elevation than the parking lot and is covered with grass. This area will be excavated approximately five feet below the parking lot elevation, lined with an impermeable liner, and backfilled around the perimeter of the excavation with a gravel reservoir to which the new storm drain system will drain. Soils and plants capable of surviving with only the seasonal rainfall typical of Southern California will be placed in the center of the excavation. The gravel reservoir will be separated from the planter area by a concrete wall. Storm runoff will pass from the gravel reservoir to the planter area via small diameter pipes through the concrete wall.

In addition, approximately four building downspouts will be retrofitted with rain barrels which will drain to raised concrete planters. The planters will allow low flows to infiltrate and pass through a subdrain system out the bottom of the planter, while high flows will pass over the surface of the planter and exit on the far end from the rain barrel. The rain barrels will be elevated and secured to capture runoff from the rainspouts. This runoff can be used to water the raised planters by gravity flow.

The project goal is to capture site runoff from the five-year, six hour storm event and convey it to the gravel reservoir / planter area where the water will exit the site via evapotranspiration. An additional project goal is to capture roof runoff with rain barrels and use it to water raised planters, with the planters providing treatment *via* infiltration for low flows or surface contact during high flows.

This project was originally identified as “Infiltration BMP Retrofit” in the 2008 Los Peñasquitos WURMP. In FY 2008 the Mira Mesa Library was selected as the site and the conceptual design was released for this project.

According to Regional Board staff comments[9], this activity will only be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City agrees that the Municipal Permit precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that “capital projects are in active implementation for the first year of implementation only.”

The Regional Board further noted that the City needs to provide additional information about the selected location and effectiveness. Information about the location is discussed in this section. The effectiveness will be discussed once post-installation monitoring is completed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

[9] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS.” September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The project will be transferred to Engineering and Capital Projects in September 2008 for purposes of managing the project through final design, construction and project closeout. Funding for construction will be identified in FY 2009. The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated and construction is expected to be completed in FY 2013 instead of being initiated in FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
MIRA MESA LIBRARY BIORENTENTION AND INFILTRATION RETROFIT Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs	
Management Questions	• What is the load reduction of the bioretention area? • How effective are bioretention areas at reducing priority pollutant loads?
Targeted Measurable Outcome(s)	Reduction in priority pollutant loads

Assessment Method(s)	• Inspections (e.g., ensure the bioretention areas are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Number of inspections • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives
The goal of this assessment is to determine the effectiveness of the bioretention areas in reducing pollutant loads from runoff from the Mira Mesa Library.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time because the bioretention areas have not been installed and therefore no priority pollutant load data have been collected.

Conclusions
It is anticipated that the bioretention areas will be installed in FY 2013. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the bioretention areas in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

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TITLE:	**LOS PEÑASQUITOS WATERSHED MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROJECT**
ID #:	**LP-WQA10**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Los Peñasquitos Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities. Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, and effectiveness assessments.

The City is using the prioritization process that is outlined in the *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Los Peñasquitos WMA and other WMAs for this project. Based on this prioritization plan, the selected site for rain barrel installation, Mira Mesa Library, was in one of the highest priority sectors of the Los Peñasquitos WMA for potential for pollutant loading.

The first phase of this project will focus on installing rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the project will be applied to implementation in residential areas.

Based on these findings, the City may modify its municipal rain barrel installation and downspout disconnect project to increase effectiveness and/or seek City Council approval for additional funding to implement future phases (i.e., incentives) and additional rain barrel/downspout disconnect systems.

A one page information sheet regarding the rain barrels was developed in the summer of 2007. The Mira Mesa Library was chosen as a site for the installation. The site selection process was long and iterative. Field reconnaissance was required to identify sites with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were also assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be

discharged. Sites were also selected for education/outreach opportunities. The Mira Mesa Library a publicly accessible City facility where future capital improvement infiltration projects will be installed. There is a need to address the roof drain on the eastern side of the building which discharges through dirt to the storm drain.

The Regional Board requested in a letter[10] documenting its review of the WURMPs that the City provide data on the locations selected, number of barrels installed, and the volume of rain water collected. The location is discussed in this implementation section above. The number of rain barrels has yet to be decided, but will be discussed in future reporting. As the rain barrels are not yet installed, the volume of water captured is not known and will also be discussed in future reporting.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and is anticipated to continue until the end of calendar year 2008. Initially the project was anticipated to be completed in Spring 2008. Planning, site selection, and procurement of the rain barrels took longer than expected. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains began in the second quarter of 2008. Subcontractors will be procured in late 2008. The specifications and installation guidelines will be developed by the end of 2008. A site pre-bid meeting will be held by the end of 2008. Parts and equipment will be installed at this site March and April 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problem by reducing runoff volume via capture, retention and infiltration.

[10] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff		
Management Questions	• What is the effectiveness/efficiency of rain barrel/downspout disconnect systems in reducing storm water runoff volume? • What is the loading reduction of different systems?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Estimated cost of site preparation, installation and start-up for site	$7,542
	Estimated cost of operation and maintenance evaluation for all sites	$13,086
	Estimated cost of effectiveness monitoring for all sites	$21,526
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives
The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results
Procurement of rain barrels and other materials began started in the second quarter of 2008. Estimated costs for rain barrel preparation, installation and start-up total approximately $7,542. Estimated costs for operation and maintenance evaluation total $13,086 or $1,869 per site for each of the seven sites. Estimated costs for effectiveness monitoring total $21,526 or $3,075 per site for each of the seven sites. Further analysis will be completed after installation of the rain barrels through monitoring.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the rain barrel system. Conclusions will be made after the assessment is complete.

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TITLE:	**AUBREY STREET CONTINUOUS DEFLECTIVE SEPARATION (CDS) DEVICE**
ID #:	**LP-WQA11**

ACTIVITY IMPLEMENTATION

The City of Poway installed a continuous deflective separation (CDS) device system in the intersection of Aubrey Street and York Avenue as a retrofit within the existing storm drain system. This CDS system screens, separates, and traps debris, sediment, oil and grease, floatables, and neutral buoyant material from stormwater runoff, enhancing the treatment of runoff from existing land uses in the 41.9-acre Old Poway Park project area.

To maintain the effectiveness of the CDS device, the City of Poway's drainage/storm water maintenance staff inspected, cleaned, and maintained the device quarterly and after any major storm events.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Construction and maintenance of this CDS device occurred in FY 2008. Inspection, cleaning, and maintenance continue on an on-going basis.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash, debris, and floatables
- Oil and grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
AUBREY STREET CONTINUOUS DEFLECTIVE SEPARATION (CDS) DEVICE Assess the Efficiency and Effectiveness of the CDS Device	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the hydrodynamic separator at reducing priority pollutant loads? • Does the implementation of the hydrodynamic separator result in detectable receiving water quality improvements?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Monitoring (e.g., receiving water sampling data)
Recommended Data	• Number of inspections (Outcome Level 1) • Measurable load reduction after implementation (Outcome Level 4) • Amount of money spent on installation, inspections, and maintenance (Outcome Level 1) • Measurable water quality improvement in receiving water (Outcome Level 6)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator installation in reducing the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

Analysis and Results
Inspections of the unit occurred on October 1, 2007, and January 29, 2008. A total of 1 yard of floating trash, 1 yard of silt and heavy debris was removed from the unit, and 3 hydrocarbon-absorbent pillows required replacement. As all of the material removed would otherwise have eventually entered the receiving waters, this amount is the verified load reduction achieved by this unit.

The cost of installation of the CDS device was $134,000.00. The cost of inspections and maintenance was $429.95. The cost per unit of load reduction is therefore $67,215 per yard of pollutants removed. This unit cost will decrease over time as the only additional expenses are staff time for inspections and cleaning.

Dry weather monitoring is conducted annually at a location on Community Road downstream of the CDS device. Although this monitoring location receives some commingled flows from additional locations, data will be reviewed to determine any trends in receiving water quality. Because long-term data are needed to show significant effects on water quality, these results are not yet available.

TITLE:	**GATE DRIVE DETENTION BASIN MODIFICATION**
ID #:	**LP-WQA12**

ACTIVITY IMPLEMENTATION

The City of Poway retrofitted the Gate Drive flood control detention basin to remove pollutants from storm water. The Gate Drive basin is located in the South Poway Business Park and was originally constructed as a flood control device. Conversion of the basin to a storm water treatment device provides treatment of storm water runoff from more than 38 businesses, including many existing businesses not subject to SUSMP requirements.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Conversion of the basin was completed on June 18, 2008. Operation and maintenance of the basin are ongoing.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
GATE DRIVE DETENTION BASIN MODIFICATION Assess the Efficiency and Effectiveness of the Detention Basin Modification	
Management Questions	• What is the sediment load reduction efficiency of the detention basin? • How effective is the detention basin at reducing priority pollutant loads? • Does the implementation of detention basin result in a detectible receiving water quality improvement?

Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the detention basin retrofits are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Number of inspections (Outcome Level 1) • Inflow and outflow monitoring data (Outcome Level 5) • Estimated load reduction (Outcome Level 4) • Amount of money spent on construction, inspections, and maintenance (Outcome Level 1)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of the Gate Drive detention basin modification in reducing pollutant levels in storm water runoff from the South Poway Business Park.

Analysis and Results
Completion of this basin occurred during the dry season. As no rain events occurred between completion of the basin and the end of the reporting period, no operation or sampling data were available. Sampling results from other similar basins converted and operated by the City of Poway, however, demonstrate substantial reductions in turbidity, total suspended solids, ammonia nitrogen, nitrate nitrogen, orthophosphate phosphorus, total organic carbon, and metals. It is expected that similar results will be seen when sampling is conducted during the next reporting period. Maintenance effort will also be recorded.

The cost of basin conversion was $131,000, of which $63,900 was paid by a developer of a site that uses the basin for storm water treatment. As noted above, no maintenance costs occurred during this reporting period.

Conclusions
Inflow and outflow sampling will be conducted annually. These data will be used to determine the effectiveness of the basin at reducing pollutants, and to estimate load reductions.

TITLE: **MEDIAN IRRIGATION SYSTEM REPLACEMENT**
ID #: **LP-WQA13**

ACTIVITY IMPLEMENTATION

As part of the review of water quality issues within the Los Peñasqitos WMA, Copermittees had previously identified overwatering from residential and municipal sources as an activity with a high potential for water quality impacts from nutrients and bacteria. The City of Del Mar had previously identified overwatering as a potential cause of higher levels of bacteria and nutrients in the southern portions of the City, and proposed the replacement of median and park irrigation timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in the City of Del Mar along the medians on Camino Del Mar, through the center of the village. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. In addition to the installation of the controllers, City of Del Mar staff continue to monitor these sites to ensure that runoff from over irrigation has been minimized to the maximum extent practicable. This includes periodic inspections of the site by the Clean Water Manager, and coordination with the City's landscape contractor.

The Water Conservation in Landscaping Act of 2006 (Act) requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. To date, the new model ordinance has not yet been developed by the State, and implementation of the requirements is not anticipated until the year 2010. The City of Del Mar acknowledges Regional Board staff's comment[11] that the activity appears to be solely a response to the Act. However, the City of Del Mar respectfully disagrees with this opinion. Development of this activity took place as a result of Copermittees analysis of specific water quality issues within the WMA, and as part of the investigations conducted in Anderson Canyon. While, one of the key components of the Act is the use of "smart" controllers for irrigation, by addressing runoff using these controllers, the City of Del Mar is able to meet challenges proposed by the Act, and address specific water quality concerns related to overwatering. Further, the City of Del Mar believes that the efficient use of public funds, such as this program, to address multiple needs and requirements is a prudent course of action, and credit should be granted for the Activity.

These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project is to be implemented in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar
- City of Solana Beach

[11] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

This project involves monies and support from the State Department of Water Resources and the Metropolitan Water Department.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- TDS
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA. Landscaping for parks and open space areas has been identified as potential discharges of bacteria and nutrients from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2008 Los Peñasquitos WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Once implemented, the City of Del Mar can track water consumption through the use of flow metering and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **PARK AND OPEN SPACE IRRIGATION AND CONTROLLERS**
ID #: **LP-WQA14**

ACTIVITY IMPLEMENTATION

As part of the review of water quality issues within the Los Peñasquitos WMA, Copermittees had previously identified overwatering from residential and municipal sources as an activity with a high potential for water quality impacts from nutrients and bacteria. The City of Del Mar had previously identified overwatering as a potential cause of higher levels of bacteria and nutrients in the southern portions of the City, and proposed the replacement of median and park irrigation timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in City parks and open space areas. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. In addition to the installation of the controllers, City of Del Mar staff continue to monitor these sites to ensure that runoff from over irrigation has been minimized to the maximum extent practicable. This includes periodic inspections of the site by the Clean Water Manager, and coordination with the City's landscape contractor.

The Water Conservation in Landscaping Act of 2006 (Act) requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. To date, the new model ordinance has **not** yet been developed by the State, and implementation of the requirements is not anticipated until the year 2010. The City of Del Mar acknowledges Regional Board staff's comment[12] that the activity appears to be solely a response to the Act. However, the City of Del Mar respectfully disagrees with this opinion. Development of this activity took place as a result of Copermittees analysis of specific water quality issues within the WMA, and as part of the investigations conducted in Anderson Canyon. While, one of the key components of the Act is the use of "smart" controllers for irrigation, by addressing runoff using these controllers, the City of Del Mar is able to meet challenges proposed by the Act, and address specific water quality concerns related to overwatering. Further, the City of Del Mar believes that the efficient use of public funds, such as this program, to address multiple needs and requirements is a prudent course of action, and credit should be granted for the Activity.

These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project is to be implemented in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

[12] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

This project involves monies and support from the State Department of Water Resources and the Metropolitan Water Department.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA. Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2008 Los Peñasquitos WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Once implemented, the City of Del Mar can track water consumption through the use of flow metering and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **OVER IRRIGATION/DRY WEATHER RUNOFF REDUCTION**
ID #: **LP-WQA15**

ACTIVITY IMPLEMENTATION

The Los Peñasquitos WMA has seen exceedances for various pollutants during the Dry Weather Monitoring Program. A pilot homogenous source type area will be selected to evaluate the load reduction potential related to reducing irrigation runoff and dry weather runoff. The homogenous source type area will also have an isolated drainage area and will be an appropriate size for analyzing targeted outcomes to determine if implemented BMPs are effective. Planned activities in the pilot area include:

- Identify all of the sources within the focus area (any entity that uses water or conducts activities) and determine the initial threat to water quality profiles. The threat to water quality will include assumed pollutant generating activities, assumed runoff generating activities, and assumed pollutant types.
- Monitor urban runoff flows based upon the drainage system. This may involve installing flow meter(s) downstream of the focus area, visual observations during and after regular business hours, grab samples for watershed water quality problem constituents, and other methods yet to be determined to assist in this activity.
- Obtain water use information. This will consist of coordinating with the water department to collect historic water use information regarding all of the sources within the focus area.
- Perform inspections/investigations to gather information for the assessment and refinement of the threat to water quality profiles. If applicable, changes will be made to inspection/investigation forms to refine the process and collect appropriate information in a more effective manner.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program at this time.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is scheduled for plan development during FY 2009 and implementation in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

OTHER PARTICIPATING ENTITIES

All Los Peñasquitos WURMP Copermittees will provide insight and advice on planning the pilot program, and feedback on how the program is going during the implementation process.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a High Priority Water Quality Problem throughout the WMA and sediment in the Miramar hydrologic area. Bacteria and sediment have been identified as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problems within the watershed; therefore, the activity is found to be consistent with the 2008 Los Peñasquitos WURMP.

EXPECTED BENEFITS

This project is expected to result in a beneficial impact to watershed water quality through the reduction in urban runoff from over-irrigation in the focus area.

EFFECTIVENESS MEASUREMENTS

To be determined once the pilot activity planning is completed.

TITLE:	**RESIDENTIAL RAIN BARREL AND XERISCAPING INCENTIVE PROGRAM**
ID #:	**LP-WQA16**

ACTIVITY IMPLEMENTATION

This activity involves launching a pilot incentive program to encourage the use of residential rain barrels and low impact gardens, or xeriscaping, to reduce over-irrigation and the overall need for landscaping irrigation. Specific residential areas will be targeted and monitored to assess the efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

The City of San Diego (City) acknowledges the Regional Board staff's comment[13] that data will need to be provided such as success, hardships, and effectiveness in reducing pollutants of concern. The City's *Strategic Plan for Watershed Activity Implementation* calls for the piloting and monitoring of an irrigation runoff reduction program to combat urban pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of irrigation runoff reduction programs as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements. Once the education and experience information is gathered and the effectiveness of the activity assessed, it will be provided to the Regional Board in subsequent annual reporting.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in July 2009. Program launch is anticipated to occur in FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter
- City of San Diego Water Department (to be invited to participate)
- San Diego County Water Authority (to be invited to participate)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Dissolved Minerals

[13] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify sediment, bacteria, and dissolved minerals as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address High Priority Water Quality Problems by reducing dry weather flows resulting from over-irrigation.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
RESIDENTIAL RAIN BARREL AND XERISCAPING INCENTIVE PROGRAM Assess the Efficiency and Effectiveness of the Xeriscaping Incentive Program	
Management Questions	• What is the effectiveness/efficiency of the xeriscaping systems in reducing storm water runoff volume? • What is the loading reduction of different systems?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of systems installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the xeriscaping systems (acres drained) (Outcome Level 4)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of using residential rain barrels and xeriscaping to reduce over irrigation and the overall need for landscaping irrigation.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in July 2009. Program launch is anticipated to occur in FY 2012.

Conclusions

After project launch, specific residential areas will be targeted and monitored to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads. The program will also include a component to investigate the challenges in convincing residents to participate in this incentive program to better focus subsequent education and outreach efforts, and to determine whether broad-scale implementation of this activity should be pursued.

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TITLE: **INCREASE TRASH RECEPTACLES AND DOGI-POT STATIONS**
ID #: **LP-WQA17**

ACTIVITY IMPLEMENTATION

The City of Poway plans to increase the number of trash cans and Dogi-Pot stations around popular trails in the Los Peñasquitos WMA. Pet waste and trash receptacles provide pet owners with litter bags and trash receptacles for easy disposal of pet waste, reducing the amount of pollutants entering receiving waters. The City of Poway intends to focus these efforts on popular trails utilized by hikers with dogs; and trails where trash or animal wastes are found frequently by City staff.

In addition, the City of San Diego plans to increase the number of pet waste and trash receptacles within the Los Peñasquitos WMA by targeting areas frequented by pet owners such as municipal parks and/or street and sidewalk right of ways in the Los Peñasquitos WMA. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones.

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by using a tiered approach. The Pet Waste Bag Dispenser Program prevents pollutant release.

In the Regional Board Comment letter[14], Regional Board staff indicated that this activity may not be given credit in the future if there is already a similar activity elsewhere in the watershed in implementation phase. While the City of San Diego acknowledges that it may not receive credit for duplicative watershed activity efforts, the City of San Diego plans to implement this activity to assess its effectiveness under the prevue of its *Strategic Plan for Watershed Implementation*.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in FY 2009. Implementation is anticipated to begin in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway
- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

[14] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

Both the Collective Watershed Strategy for the Los Peñasquitos WMA and the City of San Diego's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address a High Priority Water Quality Problem by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
PET WASTE BAG DISPENSER PROGRAM Assess the Effectiveness of Pet Waste Bag Disposal	
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in FY 2009. Program launch is anticipated to occur in FY 2010.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

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TITLE:	**SWEEPING ROUTE POSTING AND ENFORCEMENT**
ID #:	**LP-WQA18**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing an activity to determine the water quality benefits associated with posting previously non-posted routes for street sweeping. The City would post specific routes with no parking signage to allow for street sweeping to occur along the gutters of streets where currently vehicles are allowed to park on days that street sweeping occurs. The vehicles block the street sweepers' access to the gutters along these non-posted routes. This activity will be used to determine whether posting routes improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring will occur to allow for assessment. This activity will occur in three watersheds, including the Los Peñasquitos Watershed Management Area (WMA). One control site will be chosen in one watershed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Street Sweeping Route Posting and Enforcement Project will be piloted first to determine whether posting the routes improves the effectiveness of street sweeping activities before broad scale implementation.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Planning is anticipated to be developed in FY 2009 and into FY 2010. Implementation is anticipated to occur in FY 2010 and FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by targeting increased sweeping and removal of sediment and trash from the City streets.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
SWEEPING ROUTE POSTING AND ENFORCEMENT PROJECT Assess the Effectiveness of Posting Routes on Improving Street Sweeping Activities	
Management Questions	• Is posting previously un-posted sweeping routes effective in removing bacteria and sediment contaminants? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives
The goal of the assessment is to investigate whether posting previously non-posted routes for street sweeping improves the effectiveness of street sweeping activities.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in FY 2009 and into FY 2010. Implementation is anticipated to occur in FY 2010 and FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via water quality and/or debris monitoring efforts) to the cost of project installation, operation and maintenance. Conclusions will be made after the assessment is complete.

TITLE:	**CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**
ID #:	**LP-WQA19**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

City of San Diego Strategic Plan Activities and Projects

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
Tecolote Watershed "Green Street" Infiltration Retrofit	Green Street	Water Quality	Structural	Bacteria, Metals & Sediment
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash
Maple Canyon Water Quality Improvement Project	Sustainable Canyons	Water Quality	Structural	Metals, TSS, Bacteria, Pesticides & Trash
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals
Tijuana River Solid Waste Removal and Transfer Facility	Trash/Debris Separation	Water Quality	Structural	Trash, bacteria
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment
Residential Landscaping Retrofit Pilot Project	Residential Landscaping Retrofit	Water Quality	Non-structural	Targeted Multiple Pollutants
Smart Irrigation and Controller Incentive/Giveaway Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Targeted Multiple Pollutants
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A
Pet Waste Dispenser Program	Doggie Bag Dispenser	Water Quality	Non-structural	Bacteria
Posted Street Sweeping Routes	Street Sweeping	Water Quality	Non-structural	Metals, Trash & TSS
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Commercial Pest Control Art Turf or Product Sub	Product Sub	Water Quality	Non-Structural	Pesticides
Residential Pesticide Management Art Turf or Prod Sub	Product Sub	Water Quality	Non-Structural	Pesticides
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
Home Auto Activities (Metals) Code Mod and Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease
Alley Cleanup and Sweeping Pilot Project	Street Sweeping	Water Quality	Non-structural	Bacteria, Trash & Metals

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and

pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE:	**LOS PEÑASQUITOS LAGOON TMDL – WATERSHED PHASE I SEDIMENT SOURCE IDENTIFICATION STUDY**
ID #:	**LP-WQA20**

ACTIVITY IMPLEMENTATION

The City of Poway, the City of Del Mar, the City of San Diego (City), the County of San Diego, and the California Department of Transportation have been identified by the San Diego Regional Water Quality Control Board (RWQCB) as dischargers (Dischargers) under the total maximum daily load (TMDL) for sediments into Los Peñasquitos Lagoon. The San Diego RWQCB is developing the sediment/siltation TMDL based on the State Water Resources Control Board (SWRCB) Section 303(d) listing of the lagoon for impairments due to sediment/siltation. The purpose of the TMDL is to meet the water quality objectives sediment/siltation for the lagoon and to restore its beneficial uses.

As part of the TMDL development, the San Diego RWQCB required the identified Dischargers to conduct monitoring of the lagoon under Investigation Order No. R9-2006-076 (Investigation Order). The Monitoring Program focused on water quality and sediment characteristics in the lagoon and from the three tributaries into the lagoon. The data obtained from the Investigation Order are to be used to further develop the TMDL model that will assign load allocations to each Discharger. The San Diego RWQCB is currently assessing the TMDL development schedule and is in discussion with Dischargers regarding steps forward.

Based on the results of the Investigation Order, storm flows from the Carroll Canyon watershed subarea appear to represent the majority of sediment loading to the lagoon. This conclusion is based on measured total suspended solids (TSS) concentrations and storm flows monitored during the 2007–2008 Wet Weather Season. The mean concentration of TSS for all the three storms monitored were higher at the Carroll Canyon monitoring point compared to the Los Peñasquitos Creek and Carmel Creek sites. The results identify Carroll Canyon as the largest portion of the overall sediment load. The results and findings of the Investigation Order are presented in the TMDL Monitoring for Sedimentation/Siltation in Los Peñasquitos Lagoon Report completed by Weston Solutions, Inc.

Based on these findings, the City has determined that additional investigations are needed to identify the potential sources of sediment loading from Carroll Canyon. In addition, the location of the sampling points for the Peñasquitos Creek and Carmel Creek drainage areas require further assessment to better evaluate the sediment load data. The location of the monitoring sites above and below the existing sediment management basins and restoration projects will likely provide a more complete picture of sediment loading from these tributaries to the lagoon. The sampling location for Carroll Canyon is above the existing sediment control basins that are located upstream of the lagoon.

The additional investigations planned by the City include a two-phase sediment source study in the Carroll Canyon watershed subarea. Phase I consists of a visual survey for evidence of sediment loading within the subarea, including inspections of larger storm sewer outfalls into the canyons. Phase II of the source investigation is a water quality sampling program and modeling effort to identify significant sources of sediment and loading potential to the creek and lagoon. The modeling component of the Phase II will assess the effectiveness of various solutions to address the identified sources.

The Phase I investigation will build upon the results of the Investigation Order and will focus on sources of sediment and siltation. However, both phases of the source investigation will also report sources of other priority water quality problems, if identified during the Phase I survey, in accordance with the Integrated Watershed Approach presented in the City's *Strategic Plan for Watershed Activity Implementation*.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This new activity conforms to this strategic approach by completing a baseline evaluation of the sediment issue in the WMA prior to selecting watershed activities for implementation. The Phase I investigation follows a tiered approach that considers both water quality and pollutant source data to identify potential management actions in the watershed.

TMDL APPLICABILITY

- Los Peñasquitos Lagoon Sediment/Siltation TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The work plan for Phase I will be developed in FY 2009. Future steps that will be considered in FY 2009 – 2010 include:

1. Find out what other constituents of concern are entering the watershed and lagoon through the MS4.

2. Model Carroll Canyon and its subdrainages.

3. Complete design and implementation of BMPs that have multiple benefits (e.g., reduce bacteria, sediment, and flow rates).

4. Depending on the outcome of the Phase I investigation, a detention basin may be constructed on City-owned land at the southwestern end of Roselle Street. The detention basin would utilize an area that impounds runoff within a natural canyon under existing conditions and increase use of the impoundment by decreasing the size of the outlet and improving the condition and/or height of the embankment which currently impounds the flow. The new outlet would detain low flows with a perforated concrete weir structure while allowing larger flows to spill over the weir and enter the existing storm drain system as it does under existing conditions. The project would also include a new access road to maintain the basin inlet works and an emergency spillway to pass flows in excess of the existing storm drain system capacity. This project may be advanced to design in FY 2009 pending the results of the Phase I investigation.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the WMA. Furthermore, the City's *Strategic Plan for Watershed Activity Implementation* identified data gaps in the information known on sediment sources in the WMA. This study will fill this data gap by identifying sources of sediment in the WMA which will help the City address High Priority Water Quality Problems by targeting sediment sources and determining the effectiveness of various solutions to address the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this study is not an implementation or education activity. This study is filling the pollutant source data gaps identified above. Future activities implemented in response to the results of this study, such as the Roselle Street detention basin, will be reported as separate activities should they be implemented.

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Los Peñasquitos Watershed Education Activity Sheets

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TITLE:	**MOBILE ADVERTISING**
ID #:	**LP-WQEA1**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has retained a contract with a mobile advertising firm to advertise *Think Blue* messages on its static billboard trucks in the Los Peñasquitos Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria and/or sediment. The goal of mobile advertising is to educate the public about the causes of storm water pollution, and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed in both English and Spanish. The estimated audience was 757,420 impressions per four-week period. The following image shows the Los Peñasquitos WMA route that was driven using a Banner Billboard Truck.

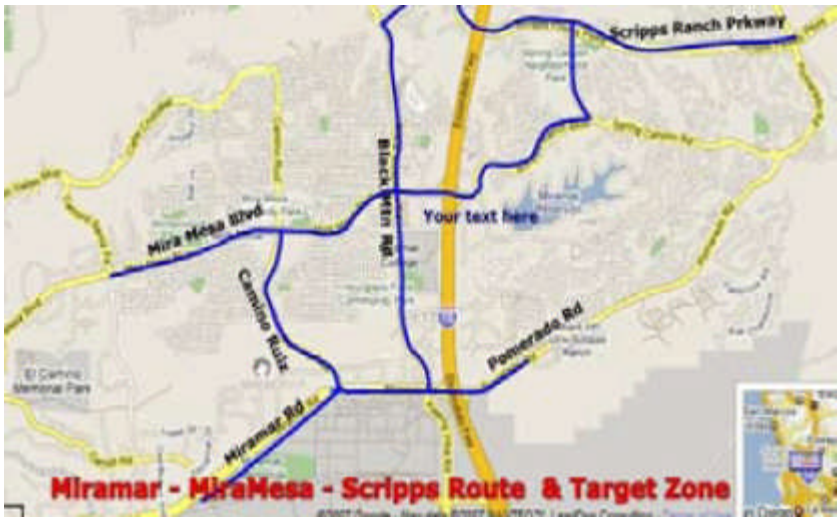

According to Regional Board staff comments[15], the City will need to answer effectiveness measurement questions and provide routes in the annual report. The routes are provided above. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Los Peñasquitos WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The City requests that the Regional Board accept this activity as a watershed education activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a change in pollutant-related behavior (Outcome Level 3) during the reporting period.

TMDL APPLICABILITY

- None

[15] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The City developed the design of the advertisements and had them placed on the company's static billboard trucks in FY 2008. The Mobile truck was driven around pre-determined routes in the Los Peñasquitos WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change. The City plans to continue to implement mobile advertising in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy identify bacteria and sediment as High Priority Water Quality Problems throughout the Los Peñasquitos WMA, and recommend implementing load reduction/source abatement activities to address them. Utilizing the mobile billboard truck will result in increased knowledge and awareness regarding bacteria and sediment and will promote behavior change.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
MOBILE ADVERTISING Assess the Efficiency and Effectiveness of Advertisement on Static Billboard Trucks		
Management Questions	• What changes in awareness /attitude regarding bacteria and sediment was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)	
Data Recorded	Number of impressions in the Los Peñasquitos WMA (Outcome Level 1)	37,871 DEC*
	Change in knowledge or attitude based on survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior based on survey results (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 757,420.
**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives
The goal of this assessment is to determine the effectiveness of mobile advertising to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

Analysis and Results
The mobile advertisements were developed in the FY 2008 and displayed throughout Los Peñasquitos WMA in both English and Spanish. The estimated audience was 757,420 total impressions per 4-week period. Out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, approximately 33% of residents became aware of the *Think Blue* message via mobile advertising in FY 2008.

Conclusions
The City plans to continue to implement mobile advertisements in FY 2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Los Peñasquitos WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure to mobile advertising in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

Furthermore, the increase in impressions made in FY 2008 also indicates that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. The activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

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TITLE:	**PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #:	**LP-WQEA2**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company, American Dream Cinema, to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist*. The goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

According to Regional Board staff comments[16], the City will need to answer effectiveness measurement questions in the annual report. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Los Peñasquitos WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The City requests that the Regional Board accept this activity as a watershed education activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a change in pollutant-related behavior (Outcome Level 3) during the reporting period.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Los Peñasquitos Watershed Management Area (WMA) from February 2008 to April 2008. The City will work with various broadcast media outlets to distribute and air the PSAs, as well as produce additional pollutant spots in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

[16] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST Assess the Efficiency and Effectiveness of Public Service Announcements		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in Los Peñasquitos WMA (Outcome Level 1)	2,451,081
	Number of impressions made to the public through radio announcements in Los Peñasquitos WMA (Outcome Level 1)	785,906
	Change in knowledge or attitude from survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes*

*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The PSAs were developed in the FY 2007-2008, and broadcast on several TV and radio stations throughout the Los Peñasquitos WMA from February 2008 to April 2008. The PSAs were broadcast in both English and Spanish.

Out of 800 total residents from all WMAs who participated in a random digit-dial *Think Blue* survey, 52% of residents became aware of the *Think Blue* message by seeing the television ads, and 13% of residents heard the radio announcements in FY 2008. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. To estimate the number of impressions made in the Los Peñasquitos WMA, the total number of estimated City-wide impressions (15,680,381 for television and 5,027,700 for radio ads) was multiplied by the proportion of residents living in the Los Peñasquitos WMA (16% of the City's total population). According to the random survey, groups most likely to have seen the television ad were: residents who knew that storm water was untreated (25%); people without college degrees (25%); and residents of the San Diego Bay (26%) and San Diego River (25%) WMAs. Groups most likely to have heard the radio ad were: residents who are white (9%); residents in the 35-49 age group (9%); and people between the ages of 18 and 35 (9%).

Conclusions

The City will work with various broadcast media outlets to continue distribution of the PSAs in FY 2008-2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Los Peñasquitos WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, the *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

It is worth noting that the City's PSAs continue to reach new individuals in the Los Peñasquitos WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the survey do indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

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TITLE:	**LOS PEÑASQUITOS WMA INSPECTION OUTREACH**
ID #:	**LP-WQEA3**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) plans to implement an outreach program in support of all of its planned inspection activities within the Los Peñasquitos Watershed Management Area (WMA). The purpose of this activity is to provide information on the inspections and their planned frequency to the affected facilities and community. The City delineated a specific area within the Los Peñasquitos WMA to conduct the targeted inspections based on several factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported.

This activity was originally identified as "Restaurant Inspection Outreach" in the 2008 Los Peñasquitos WURMP; however, the City broadened its focus from solely restaurant facilities to include additional outreach efforts for all its inspections in the WMA.

Furthermore, the City acknowledges Regional Board staff's comments[17] that recorded data and assessment is needed regarding inspection outreach efforts and that the inspections must be above and beyond JURMP requirements. Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become "business and usual." Inspections under this activity occurred to facilities that were not inspected under the JURMP program.

Based on the above comment, the City is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities. Individual reporting of this activity will cease with this annual report. Future inspection outreach efforts will be reported concurrently with the City's targeted inspection activities.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This activity will be performed concurrently with all facility inspections.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

[17] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Los Peñasquitos WMA inspections target the following high priority water quality problems:

FACILITY TYPE	HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED
	Bacteria
Restaurants	X
Animal-related	X

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them.

EFFECTIVENESS ASSESSMENT

The City distributed 379 booklets in the Los Peñasquitos WMA during FY 2008. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE:	**LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS**
ID #:	**LP-WQEA4**

ACTIVITY IMPLEMENTATION

The LID and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on Low Impact Development (LID) and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved within the unincorporated County, this education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID handbook, including the Management Strategies, the Appendices and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post- survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

This education program was successfully developed during the spring of FY2007-2008, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2008, none were conducted in the Los Peñasquitos WMA.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Local planning and sponsor groups to be trained within the Los Peñasquitos WMA during the FY 2009 timeframe include:

- Lakeside (TBD)
- Ramona (TBD)

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity focuses on impacts to the WMA as a result of new and re-development. Specifically, impacts from increased impervious cover and any types of pollutants associated with runoff (both urban runoff and stormwater runoff) as it traverses a variety of types of land uses.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the Collective Watershed Strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed during the presentation (Level 1 Outcome). Since no presentations to groups in the Los Peñasquitos WMA were conducted during FY 2008, there are no Level 1 outcomes to assess. The County is targeting presentations to 2 community-planning and sponsor groups during FY 2009.

As described above pre- and post-presentation survey evaluation forms are administered before and after each presentation. The pre- and post- survey form consists of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area (CPA). The survey results are calculated to obtain a mean average (in percentage) of the overall results of the survey. The pre- and post- survey results are then compared, with the anticipated result being a higher percentage obtained on the post-survey to show an increase in knowledge of watershed planning and LID principles (Level 2 Outcome). Since no presentations to groups in the Los Peñasquitos WMA were conducted during FY 2008, there are no Level 2 outcomes to assess.

TITLE:	**INFILTRATION BMP RETROFIT OUTREACH**
ID #:	**LP-WQEA5**

ACTIVITY IMPLEMENTATION

This Infiltration BMP Education and Outreach Activity will support the planned implementation of an infiltration project in the Los Peñasquitos WMA to reduce runoff volume. The activity will complement the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA09). Educational materials, such as infiltration specific brochures and facts sheets will be developed, which will explain the importance of the project as well as the water quality benefits that will be realized. Outreach strategies and methods will include direct public interaction, stakeholder meetings, information sessions, print media and website postings. Ongoing educational materials will be developed and implemented once the project is finalized. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

The City acknowledges the Regional Board staff's comment[18] that the previous activity sheet for this project did not present the appropriate information or adequate project detail. In FY 2008, a specific project was chosen for this BMP retrofit outreach activity (see Activity Sheet LP-WQA09 for more detailed information on the Mira Mesa Library Bioretention and Infiltration Retrofit Project). A more specific time schedule for implementation of the Mira Mesa project is provided in that activity sheet.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In FY 2008, the City retained several outreach consultants, including at least one firm that specializes in Community Outreach. The conceptual design for the Mira Mesa Library Bioretention and Infiltration Retrofit project occurred in FY 2008. Specific outreach planning will occur in FY 2009, with implementation, outreach, and evaluation occurring at least one year prior to the start of construction and through construction. The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated and construction is expected to be completed in FY 2013 instead of being initiated and constructed in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

[18] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will indirectly address these High Priority Water Quality Problems by contributing to positive changes in awareness and behavior as a result of the targeted outreach.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
INFILTRATION BMP RETROFIT OUTREACH **Assess the Efficiency and Effectiveness of Conducting Infiltration BMP Retrofit Outreach**	
Management Questions	• What changes in awareness are reported as a result of the targeted outreach? • What changes in behavior are detected as a result of the targeted outreach? • What amount of reduction of trash and debris are observed in the targeted education area? • Can changes be attributed to the changes in awareness and behavior resulting form the education/outreach component of the activity? • How do the survey results change pre- and post- activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., involve 50% of local households during LID development and construction) • Achieve higher incidence of knowledge and attitude in local population (by comparing survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent on education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data	• Number of stakeholders, residents and businesses reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4) • Volume of pollutants removed from study area (Outcome Level 4) • Reduction of bacteria and trash entering LID (Outcome Level 4)

An effectiveness assessment for this activity is not possible at this time as this activity has yet to occur. Implementation of this activity is anticipated to begin at least one year prior to the start of construction of the Mira Mesa Bioretention and Infiltration Project, which is scheduled for completion in FY 2013. When implemented, an effectiveness assessment will be conducted for this activity and submitted to the Regional Board.

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TITLE: **Residential Water Conservation Outreach**
ID #: **LP-WQEA6**

ACTIVITY IMPLEMENTATION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. While the new ordinance is not yet adopted, one key element has been identified: the replacement timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. While this planned activity does not directly replace controllers in the residential zones of the City of Del Mar, it provides for outreach through direct mail and utility bill enclosures to encourage water-wise approaches to landscaping, including the use of native plants, smart controllers and drip irrigation systems. This is beneficial from an NPDES perspective since any reduction in water usage, including the use of efficient irrigation systems, reduces the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project is proposed for FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA. Landscaping for parks and open space areas has been identified as potential discharges of bacteria and sediment from over-irrigation. In addition, other non-priority pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2008 Los Peñasquitos WURMP

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Quantification of contacts with the residents regarding water conservation water quality activities can be tracked demonstrating a Level 2 outcome (Change in Knowledge).

TITLE: **Over Irrigation/Dry Weather Runoff Reduction Education**
ID #: **LP-WQEA7**

ACTIVITY IMPLEMENTATION

This activity will be implemented in conjunction with LP-WQA15 - A pilot homogenous source type area will be selected to evaluate the load reduction potential related to reducing irrigation runoff and dry weather runoff. Education and outreach will be conducted as part of the pilot project and will include educating residents and/or businesses in the project area on ways to reduce irrigation runoff.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program at this time.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is scheduled for plan development during FY 2009 and implementation in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

OTHER PARTICIPATING ENTITIES

All Los Peñasquitos WURMP Copermittees will provide insight and advice on planning the pilot program, and feedback on how the program is going during the implementation process.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria as a High Priority Water Quality Problem and recommends implementing load reduction/source abatement activities to address it. Bacteria have been identified as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problem within the watershed, and therefore, the activity is consistent with the 2008 Los Peñasquitos WURMP.

EXPECTED BENEFITS

Beneficial impact to watershed water quality through the reduction in urban runoff, from over-irrigation as well as a positive impact to the community through watershed education in the focused areas.

EFFECTIVENESS MEASUREMENTS

To be determined once the pilot activity planning is completed.

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TITLE:	**TRANSIT SHELTER ADVERTISEMENTS**
ID #:	**LP-WQEA8**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has secured a contract with an outdoor advertising company, CBS Outdoor, to display *Think Blue* advertisements on transit shelters located in the Los Peñasquitos Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria and sediment. The goal of the advertisements is to educate the public about the causes of storm water pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the Los Peñasquitos WMA in both English and Spanish.

This project was inadvertently left out of the Los Peñasquitos WURMP, submitted to the Regional Board in March 2008, and is therefore a newly reported activity. During the search for location for a similar activity in other WMAs, suitable locations were found in this WMA. Transit shelter *Think Blue* advertisements were located at two locations in the Los Peñasquitos WMA in FY 2008:

- Miramar Rd. at Nobel Dr.
- Mira Mesa Blvd. at Black Mountain Rd.

The audience number for the advertisements varied by location.

According to Regional Board staff comments[19] , the City will need to answer effectiveness measurement questions and provide locations of the advertisements and transit centers in the annual report. Locations for the advertisements have been provided above. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Los Peñasquitos WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The City requests that the Regional Board accept this activity as a watershed education activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a change in pollutant-related behavior (Outcome Level 3) during the reporting period.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The City plans to continue to implement transit shelter advertisements in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[19] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and sediment, thereby resulting in future load reductions of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness		
Management Questions	• What changes in awareness /attitude regarding bacteria and sediment was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of public reached by ads)	
Data Recorded	Number of transit shelter advertisements impressions in the Los Peñasquitos WMA (Outcome Level 1)	92,450 DEC*
	Number of public participants reached by billboard advertisements in all WMAs (Outcome Level 1)	7%
	Change in knowledge or attitude (Outcome Level 2)	45% increase
	Change in pollutant-related behavior (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewership, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 2,588,600 for transit shelter ads.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives
The goal of this assessment is to determine the effectiveness of transit shelter billboards to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

Analysis and Results
Think Blue transit shelter advertisements were located at two locations in FY 2008: Miramar Road at Nobel Drive; and Mira Mesa Boulevard at Black Mountain Road. The number of public reached varied by location. Out of 800 randomly selected residents from all WMAs who participated in the *Think Blue* survey, 7% reported becoming aware of the *Think Blue* message by seeing the billboards. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. According to the survey, groups most likely to have seen the billboard were: residents under 50 years of age, (38%) compared to seniors (24%); Latino women (49%) compared to white men (31%) and white women (32%); and Latino renters (50%) compared to white homeowners (29%).

Conclusions
Implementation of the *Think Blue* transit shelter advertisements and billboards will continue in the FY 2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Los Peñasquitos WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the survey, 45% reported exposure in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

Furthermore, the increase in impressions made in FY 2008 also indicates that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

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TITLE:	**OUR WATER, OUR RESPONSIBILITY PAMPHLET DISTRIBUTION**
ID #:	**LP-WQEA9**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced pamphlet to be made available at all San Diego City lakes as an insert inside a map of the area. The pamphlet includes information about the nine City-owned and operated reservoirs and explains how the public can protect drinking water supplies and natural habitat. Additionally, the pamphlet explains that the habitat surrounding three of the nine reservoirs is protected under the Multiple Species Conservation Program (MSCP) and that by protecting the land around the reservoirs, the community's water supply is kept safe and an important refuge for wildlife is provided. Approximately 611 pamphlets were distributed at the Miramar Reservoir in the Los Peñasquitos Watershed Management Area (WMA) in FY 2008.

The Regional Board provided comments[20] on the March 2008 WURMPs based on an audit conducted by PG Engineering. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit…pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet LP-WQA19 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMPs because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these pamphlets have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the pamphlets in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[20] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and sediment discharges.

EFFECTIVENESS ASSESSMENT

The City distributed 611 pamphlets in FY 2008. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the pamphlet to permit applications, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities

TITLE:	**LOS PEÑASQUITOS WATERSHED EROSION AND SEDIMENT CONTROL POSTER**
ID #:	**LP-WQEA10**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control poster to be handed out to development applicants receiving a grading or public improvement permit from the City. The poster is large and durable enough to be posted outdoors or indoors to serve as a steady reminder to construction managers and workers of storm water issues and Best Management Practices (BMPs). Photos on the poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally to distribute the poster in FY 2008 to development applicants receiving a grading or public improvement permit from the City. Based on the number of permits granted, the total number of posters distributed in the Los Peñasquitos Watershed Management Area (WMA) was 35.

The Regional Board provided comments[21] on the March 2008 WURMPs based on an audit conducted by PG Engineering. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit…pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet LP-WQA19 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMPs because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

[21] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the poster to permit applicants in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment/siltation/turbidity/total suspended solids
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 35 erosion and sediment control posters in FY 2008. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the poster to permit applications, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE:	**LOS PEÑASQUITOS WATERSHED RESTAURANT BEST MANAGEMENT PRACTICES BOOKLET**
ID#:	**LP-WQEA11**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the Los Peñasquitos Watershed during inspections. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer; however, after further evaluation, City staff determined that a booklet to supplement existing fact sheets passed out during inspections would be more effective in educating food and drinking establishment owners and workers about storm water issues and BMPs. After review, the booklet could be kept by owners/managers for reference, and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs.

City staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2008 to City-permitted facilities. The City distributed 379 booklets in the Los Peñasquitos WMA.

The Regional Board provided comments[22] on the March 2008 WURMPs based on an audit conducted by PG Engineering. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit…pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet LP-WQA19 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these booklets have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

[22] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2009 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 379 booklets in FY 2008. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

City of Del Mar

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the Peñasquitos Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Peñasquitos Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

KAREN P. BRUST
City Manager
City of Del Mar

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CITY OF POWAY

DON HIGGINSON, Mayor
CARL KRUSE, Deputy Mayor
MERRILEE BOYACK, Councilmember
JIM CUNNINGHAM, Councilmember
BETTY REXFORD, Councilmember

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the Peñasquitos Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Peñasquitos Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Robert J. Manis
Director of Development Services
City of Poway

City Hall Located at 13325 Civic Center Drive
Mailing Address: P.O. Box 789, Poway, California 92074-0789
www.poway.org

THE CITY OF SAN DIEGO

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the Peñasquitos Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the Peñasquitos Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350

County of San Diego

LAND USE AND ENVIRONMENT GROUP

CHANDRA L. WALLAR
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256
Fax: (619) 531-5476

STATEMENT OF CERTIFICATION

Los Penasquitos Watershed Urban Runoff Management Plan (WURMP) FY 2008-09 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2008-2009 Los Penasquitos Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-27-10
Date

Los Peñasquitos Watershed URBAN RUNOFF MANAGEMENT PROGRAM

Fiscal Year 2009 Annual Report

January 31, 2010

Prepared and Submitted by the Los Peñasquitos Watershed Copermittees

City of Del Mar
City of Poway
City of San Diego
County of San Diego

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Executive Summary

Since January 2002, the County of San Diego and the Cities of Del Mar, Poway and San Diego (herein referred to as the "Los Peñasquitos WURMP Copermittees" or "Copermittees") have been active in planning, developing and implementing watershed-based programs in the Los Peñasquitos Watershed Management Area (WMA). This Annual Report describes the actions taken by Los Peñasquitos WURMP Copermittees in Fiscal Year (FY) 2009 (July 1st, 2008 to June 30th, 2009) to implement and refine the 2008 Los Peñasquitos Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA.

The Copermittees collaborated on their efforts to address high priority surface water quality issues throughout the Los Peñasquitos WMA. This was coordinated through periodic meetings held throughout the reporting period. The meetings were held in order to effectively plan and implement the Los Peñasquitos WURMP, develop and prioritize water quality activities that address pollutants of concern in the WMA, exchange ideas on how to address High Priority Water Quality Problems (HPWQPs) in the WMA, evaluate the effectiveness of actions, and collaborate on development of required submittals. In order to complete the objectives, the group performed assessments and conducted activities to address the water quality problems. These assessments and activities include: (1) a water quality assessment; (2) a pollutant source assessment; (3) planning and implementation of watershed activities; and (4) an assessment of the Copermittees' activities in the watershed.

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the Los Peñasquitos WMA based on data collected and analyzed from July 2008 through June 2009. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the San Diego County Municipal Copermittees Urban Runoff Monitoring Report (Annual Monitoring Report) for FY 2009 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. Based on the data and findings of this report, the Los Peñasquitos WURMP Copermittees have determined to focus their efforts on targeting the following HPWQPs for the Los Peñasquitos WMA: (1) Bacteria in both hydrologic areas (HAs); and (2) Sediment in the Miramar HA.

The Copermittees also completed an assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of this assessment was to identify the high priority pollutant sources in each hydrologic area based on the HPWQPs identified and each source's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

All WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Details of these activities are found in Section 4 and Appendix C of this Annual Report. For each WURMP activity a plan for implementation has been developed and updated, and each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is to be implemented. Collectively, the Copermittees conducted ten WURMP Watershed Activities – six (6) Water Quality Activities and four (4) Water Education Activities.

As required, Copermittees implemented activities in the watershed as part of their Jurisdictional Urban Runoff Management Programs (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. This data and information is not comprehensive and for some data sets, estimates were used to generate quantities of activities. The Copermittees believe that it is an important first step towards integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees also performed an Effectiveness Assessment to determine the overall effectiveness of the Los Peñasquitos WURMP and the activities conducted by the Copermittees. The assessment includes activity-specific assessments as well as a comprehensive summary of the effectiveness of the WURMP activities implemented during the reporting period. This year, the Copermittees have added in their JURMP activities as they were performed in each HA. The JURMP activities reported are limited in type due to the infancy of this type of reporting. The Copermittees are committed to continue this process and further develop the reporting and assessment of all activities conducted on an HA basis.

Activities selected and conducted by the Los Peñasquitos WURMP Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. The effectiveness of the individual activities is variable; however, collectively the Copermittees' program actions are having positive effects on water quality.

The Los Peñasquitos WURMP Copermittees will continue to refine and augment the Los Peñasquitos WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the Los Peñasquitos WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In short, the FY 2009 Los Peñasquitos WURMP Annual Report presents an update on the Los Peñasquitos WURMP Copermittees' long-term efforts to protect and enhance the water quality of the WMA using a comprehensive watershed-based approach.

1 Introduction

The San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit) requires Copermittees within the Los Peñasquitos Watershed Management Area (WMA) to collaborate and implement a Watershed Urban Runoff Management Program (WURMP). The WURMP consists of the Copermittees' combined efforts to address and identify High Priority Water Quality Problems (HPWQPs) in the WMA; develop and implement activities that address pollutant load reduction and pollutant source abatement in Watershed Water Quality Activities and Watershed Education Activities; public participation and collaborative land use planning. The reporting period for this annual report is from July 1st, 2008 through June 30th, 2009 (FY 2009).

1.1 Copermittee Collaboration

1.1.1 Los Peñasquitos WURMP Meetings

The Los Peñasquitos Watershed Copermittees met seven (7) times during FY 2009 to implement the Los Peñasquitos WURMP. The Copermittees collaborated to develop, prioritize and implement watershed activities that address HPWQPs and sources in the WMA and the development of the Annual Report. They exchanged ideas on how to address HPWQPs in the WMA and evaluated the effectiveness of the watershed activities. **Table 1-1** is a summary of Los Peñasquitos WURMP meetings and an outline of agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Items Discussed
8/6/2008	WURMP Update - watershed strategy & activity planning; public participation; WURMP Annual Reports
11/20/2008	WURMP Update - watershed strategy & activity planning; WURMP Annual Reports; RWQCB letter; Regional WURMP
1/13/2009	WURMP Update - watershed strategy & activity planning; WURMP Annual Reports
2/24/2009	WURMP Annual Report; WURMP Update - watershed strategy & activity planning; TMDL process
3/24/2009	WURMP Update - watershed strategy & activity planning; TMDL process; public participation
4/22/2009	WURMP Update - watershed strategy & activity planning; Regional Monitoring Report; cost share agreements; SANDAG Quality of Life Initiative
6/11/2009	WURMP Update - watershed strategy & activity planning; TMDL process; cost-share agreements; public participation; WURMP Annual Reports; SANDAG Quality of Life Initiative

The general watershed meetings of the Los Peñasquitos WURMP Workgroup were led by the City of Poway, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks were then carried out by the Copermittees, each within the structure of their jurisdictional organization. Task completion was then tracked and assessed at the Workgroup meetings and reported in the Annual Report.

Lagoon TMDL Investigative Order
The Los Peñasquitos WURMP Copermittees are assisting the RWQCB in the development of a sediment TMDL in the Los Peñasquitos WMA. The TMDL specifically addresses the issue of sedimentation/siltation within the lagoon. In FY 2007, the RWQCB issued Investigative Order R9 2006-76 for monitoring associated with Lagoon TMDL modeling. The Lagoon TMDL Investigative Order has resulted in the collection of a significant amount of hydrologic, hydraulic and water quality data for the lagoon and the associated WMA. Through monitoring during FY 2008, a significant amount of data was collected in order to calibrate and validate the TMDL models for pollutant load allocation. During FY 2009, the Copermittees as well as other dischargers and interested parties began meeting with RWQCB staff to begin developing the TMDL.

1.2 Watershed Map Update

The Los Peñasquitos WMA is located within west–central San Diego County. The WMA has two hydrologic areas (HAs) and extends from the foothills east of the City of Poway to the coastal plain where the watershed drains into Los Peñasquitos Lagoon before flowing into the Pacific Ocean through a narrow mouth at Torrey Pines State Beach. The Los Peñasquitos WMA is 60,419 acres and encompasses the drainage areas of Los Peñasquitos Creek, Carmel Creek, and Carroll Canyon Creek (Soledad Canyon), with the remaining 1,107 acres comprising of the lagoon and coastal drainages. Land use within the overall Los Peñasquitos WMA is classified primarily as open space / parks and recreation (31%), residential (22%), vacant and undeveloped land (14%), and transportation (13%). However, there are several notable differences in land use composition among the three creek drainage areas and between the two HAs that make up the watershed. The Los Peñasquitos WMA is mostly within City of San Diego jurisdiction (71%), with the remaining areas in City of Poway (25%), County of San Diego (3%), and City of Del Mar (0.2%) jurisdiction. Over 60% of the watershed is privately owned land.

No updates have been made to the previously submitted Watershed Map. See the Los Peñasquitos WURMP Annual Report submitted in January 2009 for the most recent Watershed Map.

2 Water Quality Assessment

This section provides an assessment of the 2008–2009 monitoring programs conducted in the Los Peñasquitos WMA. A complete presentation of the monitoring efforts conducted during the reporting period is located in **Appendix A**, an excerpt of the *2008-2009 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Urban Runoff Monitoring Report) (Weston, January 2010).

2.1 Monitoring Programs

Monitoring activities conducted in the WMA to comply with Order R9-2007-0001 are provided in **Table 2-1**. A map showing the 2008-2009 Monitoring Station Locations is provided on the following page.

Table 2-1 2008-2009 Monitoring Program Activities

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Ambient Monitoring	Water chemistry and toxicity
Rapid Stream Bioassessments	Benthic macroinvertebrates, periphyton, and physical habitat
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria
MS4 Outfall Targeted Monitoring	Chemistry, metals, pesticides and bacteria
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria

2.2 303(d) Listings

Within this WMA, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant total maximum daily load (TMDL) status. However, several changes are currently proposed in the 2008 Draft 303(d) list currently under development.

Table 2-2 Los Peñasquitos WMA SWRCB 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Los Peñasquitos Lagoon	Sediment/siltation	In Development
Los Peñasquitos Creek	Phosphate and TDS	Not Developed
Soledad Canyon	Sediment toxicity	Not Developed

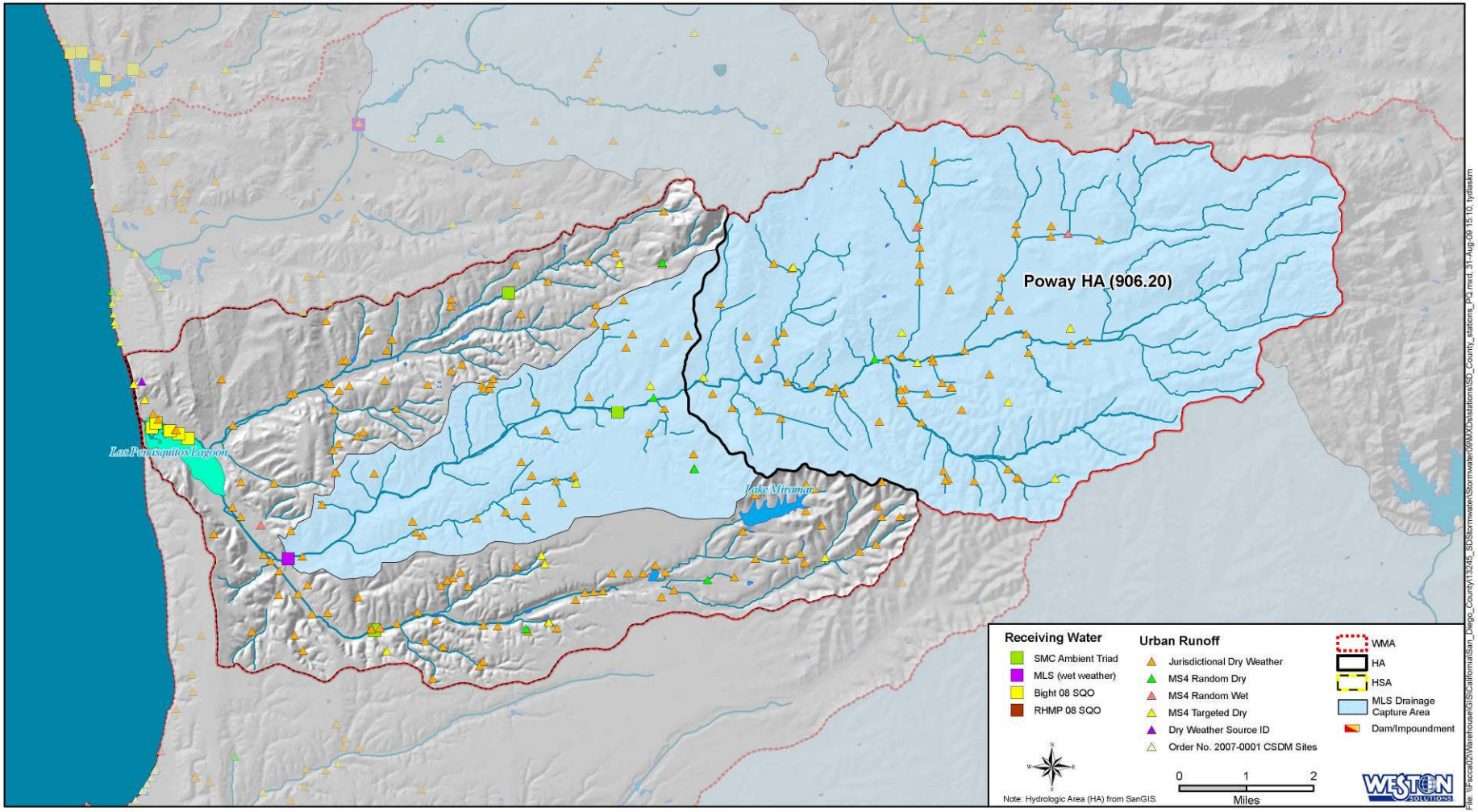

Figure 2-1 Los Peñasquitos WMA 2008–2009 Monitoring Station Location Map

2.3 Assessment

Receiving water monitoring was conducted during one ambient weather event at three Southern California Stormwater Monitoring Coalition (SMC) sites and at the Mass Loading Station (MLS) during one wet weather event. Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit, with the exception of Chollas Creek which is monitored each year. In 2008-2009, the scope of the monitoring program was adjusted due to the Copermittees' participation in the Southern California Bight Regional Monitoring Program.

Each element of the Permit-required monitoring program was designed to provide scientific data consistent with addressing five core management questions. The core management questions, as listed in the Permit, are presented as follows:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring program for each WMA vary across spatial and temporal scales. Therefore, data support only partial resolution of each core management question. Through continued monitoring and the refinement of the Permit requirements, a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments were conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach. The results for the Los Peñasquitos WMA are summarized in **Table 2-3**.

Table 2-3. Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
Los Peñasquitos WMA	Receiving Water Monitoring	Ambient Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS, chloride, sulfate, and enterococci). - Low frequency of occurrence (total nitrogen) ▪ No constituents had magnitudes of exceedance greater than five times their benchmark. ▪ Toxicity was observed for the *Ceriodaphnia dubia* reproductive endpoint, 96-hour survival, and 7-day survival at one random SMC site (Site SMC-01158) ▪ There is evidence of persistent toxicity.	1, 2
		Wet Weather Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS, fecal coliform, and Bifenthrin from historical data). - Low frequency of occurrence (TSS, turbidity and enterococci). ▪ Fecal coliform was the only constituent with a magnitude of exceedance of more than five times the benchmark. ▪ Neither toxicity nor pesticides were detected during 2008-2009 wet weather monitoring at the MLS. ▪ Pyrethroid concentrations were below detection limits in all sediment samples.	
		Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed.	
		Bight 08	▪ Water column TSS and bacterial concentrations were below the ambient benchmarks ▪ Results indicated 2 of 5 sites were unimpacted and 3 of 5 sites were likely unimpacted based on SQO Guidelines.	
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of concern[1]: - High frequency of occurrence (TDS, total nitrogen, and enterococci) - Medium frequency of occurrence (total phosphorus and fecal coliform) - Low frequency of occurrence (Jurisdictional: conductivity, turbidity, total coliform, fecal coliform, and enterococci) ▪ The dry weather MS4 monitoring results suggest that the MS4 effluent may have the potential to contribute to receiving water problems for some constituents (TDS and enterococci). ▪ Trash assessments indicated portions of the upper watershed had the highest occurrence of observed trash. Trash sources were related to littering and dumping.	3, 4
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions.	
		Source Identification Program	▪ Results indicated synthetic pyrethroids were associated with single family residential runoff. Nitrate and elevated TDS were likely associated with groundwater discharges as opposed to urban runoff from overland sources.	
	WMA Assessment	Receiving Water Trend Assessment	▪ Significantly increasing trends were observed for fecal coliform. ▪ Significantly decreasing trends were observed for total lead.	5
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, sulfate, chloride, and fecal coliform, together with the benthic alterations, are consistent with the 2001–2006 BLTEA ratings. ▪ The presence of Bifenthrin is not consistent with the 2001–2006 BLTEA ratings.	

Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking method is described in Appendix B of the Regional Monitoring Report (Weston, 2010).

Based on these results, each of the five Core Management Questions are addressed below.

Core Question 1: Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

The results of the 2008–2009 monitoring program in the Los Peñasquitos WMA indicate that some of the constituents monitored were identified as high frequency of occurrence COCs. In the Los Peñasquitos WMA, these COCs included TDS, enterococci, fecal coliforms, and Bifenthrin. This suggests that some beneficial uses may be impaired by these constituents.

Historical stream bioassessment results indicate evidence of benthic community impairment in the Los Peñasquitos WMA, with Very Poor IBI ratings at the TWAS and either Very Poor or Poor ratings at the MLS since 2001; see **Figure 2-2** for the 2007-2008 Monitoring Station Locations. Additional bioassessment monitoring conducted at SMC sites in the WMA produced similar results. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat or other constituents not monitored in this program. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

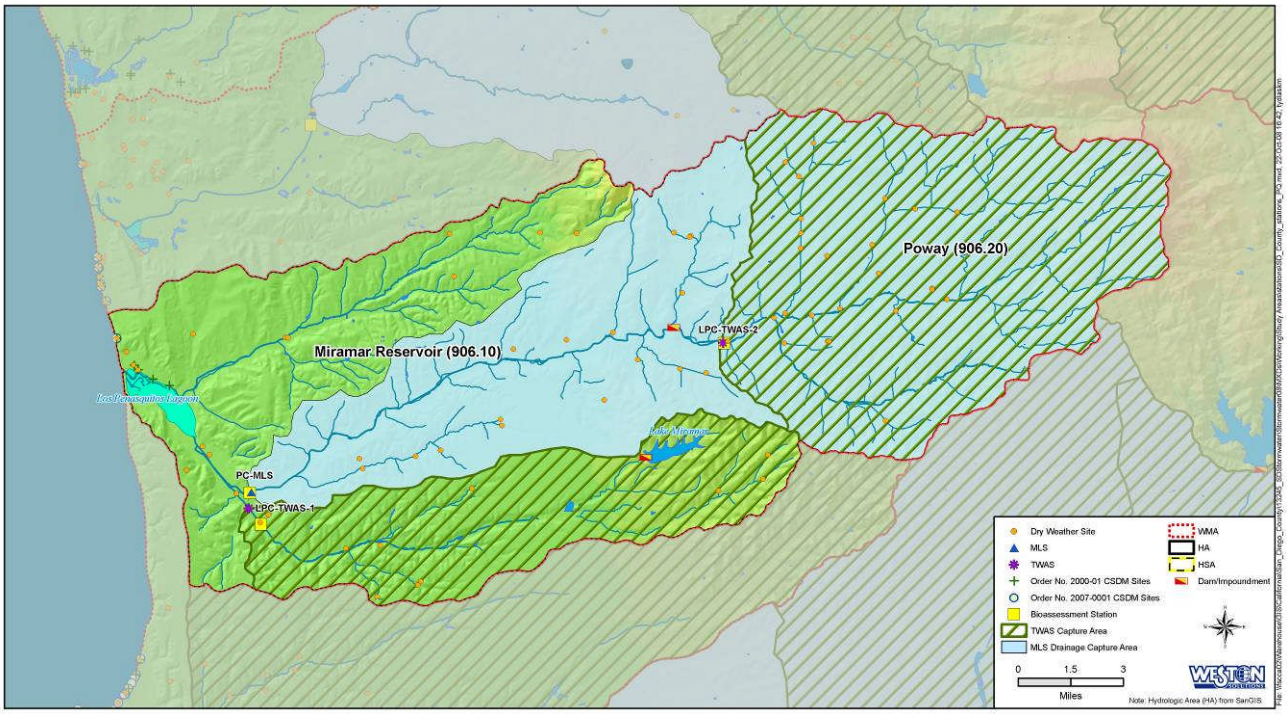

Figure 2-2 Los Peñasquitos WMA 2007–2008 Monitoring Station Location Map

There is evidence of persistent toxicity at Los Peñasquitos WMA in ambient monitoring, based on the 7-day reproduction *C. dubia* test. The persistent toxicity at this site indicates that the receiving waters may not be protective of beneficial uses.

Based on the monitoring and data analyses conducted on samples collected as part of the Bight '08 Program in Los Peñasquitos Lagoon, the data suggest that conditions are generally protective of the beneficial uses. All sediment quality sites assessed were either unimpacted or likely unimpacted based on the SQO Guidelines. However, low dissolved oxygen concentrations are documented to be of concern in this lagoon (Weston, 2010), and the

lagoon mouth is periodically dredged to maintain sufficient flow from the lagoon to the ocean. Water quality samples collected for fecal indicator bacteria and TSS analyses were below Basin Plan standards.

Core Question 2: What is the extent and magnitude of the current or potential receiving water problems?

The greatest concentration-to-benchmark ratios during ambient conditions in the Los Peñasquitos WMA were observed for chloride and sulfate. Ratios varied among the three sites assessed. Chloride and sulfate exceeded 1.4 to 4.9 times the respective benchmarks at all three sites. Concentration-to-benchmark ratios during wet weather at the MLS were greatest for fecal coliforms and TDS. The fecal coliform concentration during the 2008 storm event was more than 12 times greater than the benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at the MLS on average have been 29 times greater than the benchmark. The TDS concentration during wet weather in 2008–2009 was more than four times than the benchmark, which is slightly higher than the historical mean for the site.

Receiving water spatial patterns in the Los Peñasquitos WMA varied by constituent. During ambient conditions, receiving water concentrations of total phosphorus and constituents comprising TDS (i.e., chloride and sulfate) were greater than their respective benchmarks. The total phosphorus concentration was highest at Site SMC-00198 (located in the central portion of the WMA, along Los Peñasquitos Creek) and was the only site where the benchmark was slightly exceeded. Concentrations of chloride and sulfate, which are constituents comprising TDS, were greater than the benchmark at all ambient sites monitored in the WMA. These results provide a snapshot of receiving water conditions during the time of the survey. Additional data is needed to provide a more robust assessment of the spatial patterns of water quality constituents within the Los Peñasquitos WMA.

Historical stream bioassessment ratings conducted in the WMA indicate a Very Poor benthic community at both MLS and TWAS locations. The consistent rating of Very Poor at both the MLS and TWAS since 2002 suggests that the extent of the impairment on the benthic community is not isolated to one area. This is supported by the 2008–2009 bioassessment results, which indicate a Very Poor benthic community at all SMC sites monitored within the WMA.

Bight '08 results characterized all sites unimpacted or likely unimpacted based on the SQO guidelines. In terms of the magnitude of the potential receiving waters problem, all sediment chemistry LOE scores were either minimal or low and the sediment toxicity LOE scores were either non-toxic or low. The benthic community LOE scores indicated either low or moderate impacts.

Core Question 3: What is the relative urban runoff contribution to the receiving water problem(s)?

In 2008–2009, the Los Peñasquitos Creek WMA MS4 was assessed through the random dry, random wet, and targeted dry programs. Nine sites were visited as part of the random dry program, but only six were flowing at the time of the survey. Concentrations of several analytes including total nitrogen, total phosphorus, and indicator bacteria (i.e., enterococci) were greater than water quality benchmarks at several sites, suggesting that dry weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations.

Six sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes including total nitrogen, total phosphorus, and indicator bacteria (i.e., fecal coliform) were greater than benchmarks at several sites, suggesting that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents primarily at one site located in the upper portion of the Miramar Reservoir HA (906.10). The catchment for this site was characterized by primarily open space / parks and recreation land uses.

A total of 15 sites in the Los Peñasquitos WMA were visited as part of the targeted dry weather program, 13 of which were flowing at the time of the survey. Thus, over 13% of the targeted dry weather sites were ponded or dry, compared to over 33% of the random dry weather sites. Drought restrictions implemented in the summer of 2009 may have helped to reduce flows from some areas. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentrations of chemical analytes in the MS4 runoff to receiving water quality benchmarks for the following constituents: total nitrogen, total phosphorus, TDS, MBAS, Diazinon, dissolved copper, and indicator bacteria (i.e., fecal coliforms and enterococci). Of these constituents, total nitrogen, total phosphorus, TDS, and indicator bacteria (i.e., fecal coliforms and enterococci) had concentrations that were greater than their respective benchmarks in at least one of the 15 sites assessed. Concentrations of TDS exceeded the benchmark most frequently followed by indicator bacteria (i.e., fecal coliforms and enterococci). The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were frequently greatest where flow rates were highest, which occurred at two sites located in the central portion of the Los Peñasquitos WMA. MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the Los Peñasquitos WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

Core Question 4: What are the sources of urban runoff that contribute to receiving water problem(s)?

The Jurisdictional DWM Program (See **Figure 2-3** on the following page for the DWM exceedances), the CSDM Program, the Source Identification Program, and the trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources can be found in each Copermittee's Jurisdictional Urban Runoff Monitoring Program Annual Report and in the CSDM Program Annual Report (Appendix N of the 2008-2009 Urban Runoff Monitoring Report).

The trash assessment conducted in 2008–2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Los Peñasquitos Creek WMA. A total of 215 sites

were assessed for trash in the WMA, including two HAs. Urbanized population centers had the greatest percentage of sites with Submarginal or Poor ratings. Trash at three of the six sites with Submarginal or Poor ratings consisted primarily of household waste while trash at the other three sites consisted of food packaging, construction debris, and biohazard waste. The potential trash route was listed as Littering for three of the six sites rated as Submarginal or Poor in the Los Peñasquitos Creek WMA and Dumping for the three remaining sites. Additionally, two out of the 215 sites assessed for trash in the Los Peñasquitos Creek WMA during the Jurisdictional DWM Program were identified as a potential human health threat and ten sites were identified as potential aquatic health threats. See **Figure 2-4** on the following pages for the Trash Assessment results.

A dry weather source identification study of single family residences was conducted by the Copermittees during the 2008-2009 Monitoring Season. Nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables associated with residential lawn watering).

Core Question 5: Are conditions in receiving waters getting better or worse?
Based on the trend analysis, only fecal coliforms are increasing over time at this site. In contrast, concentrations of total lead are decreasing over time. At the current observed rate of increase, fecal coliform concentrations are expected to increase approximately 41 MPN/100mL/yr. The decreasing trend in total lead concentrations is likely inconsequential in terms of benchmarks, since concentrations of this constituent have been very low historically at this site.

The bioassessment ratings at the Los Peñasquitos Creek MLS and TWAS have been Very Poor in nearly all assessments conducted from 2001 to 2008 and there are no apparent trends in the benthic community.

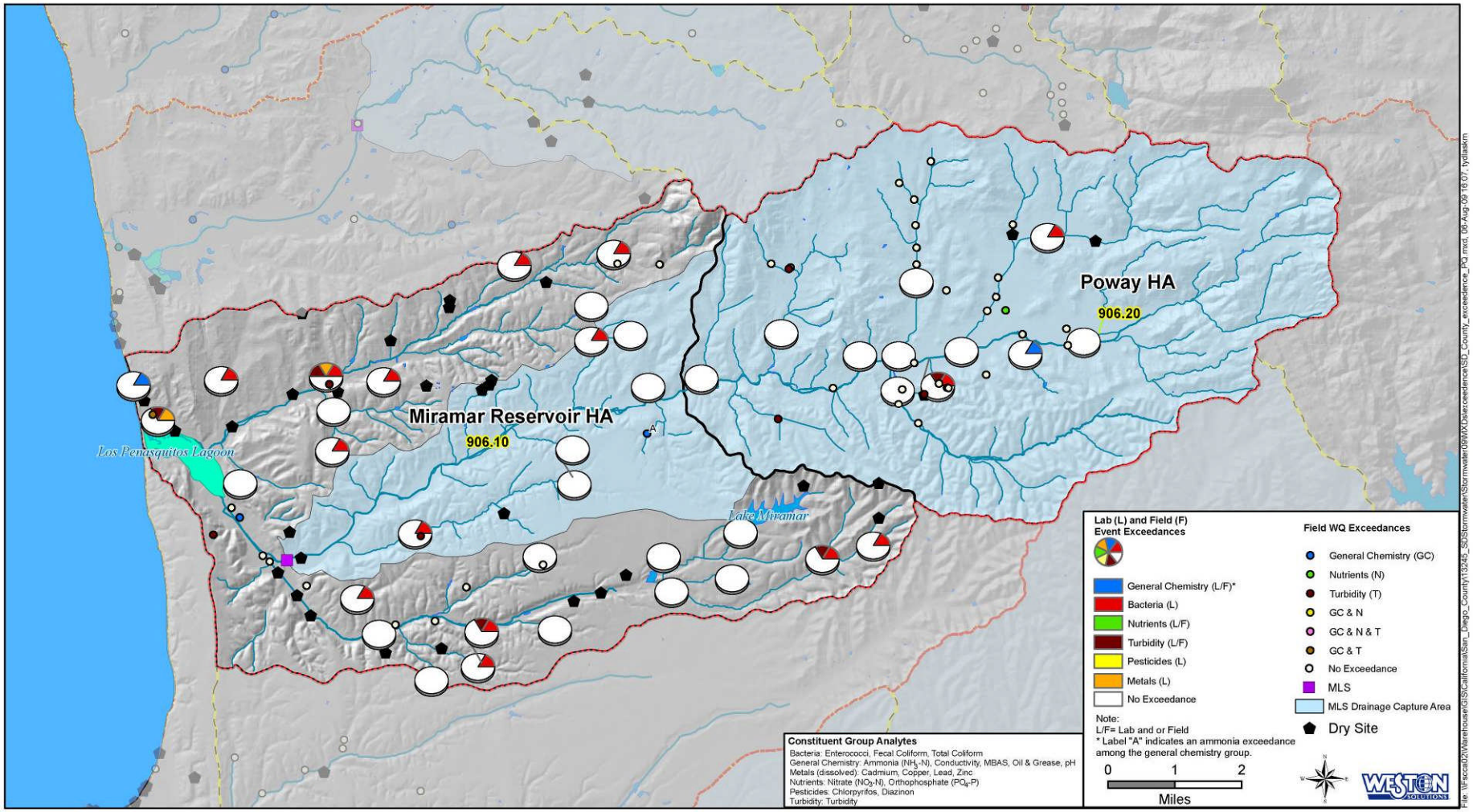

Figure 2-3 **Los Peñasquitos WMA 2008–2009 Dry Weather Monitoring Exceedance Map**

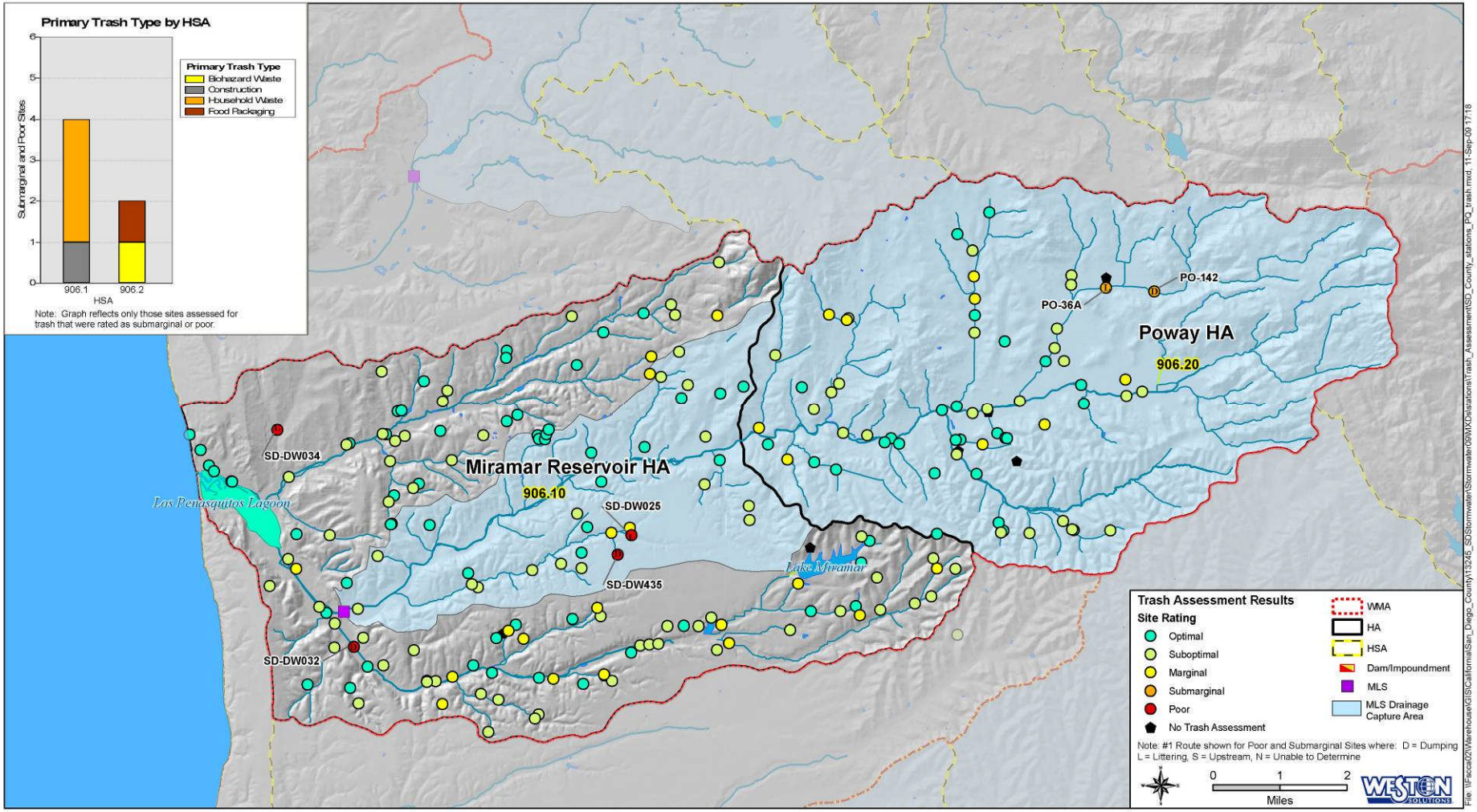

Figure 2-4 Los Peñasquitos WMA 2008–2009 Trash Assessment Results

A low level of toxicity was determined during ambient conditions based on 83% of the *C. dubia* reproduction toxicity tests conducted on receiving waters in 2007–2008. This level was not conducive for conducting a toxicity identification evaluation at this time.

2.4 Integrated Assessment

Assessment of the WMA during both wet weather and ambient conditions is presented in an integrated manner to present managers with an overall assessment of the WMA and to provide answers to the core management questions. The integrated assessment incorporates both the ambient weather and wet weather assessments and provides a summary of the overall findings for the Los Peñasquitos WMA. The integrated assessment also identifies which COCs overlap between receiving waters and urban runoff. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as the data become available in future years. Integrated watershed assessments results are presented in **Table 2-4** on the following page.

2.4.1 High Priority Water Quality Problems

Based on the assessments above and the available water quality data, the Los Peñasquitos WURMP Copermittees have determined that the HPWQPs in the Los Peñasquitos WMA are:

1. Bacteria in both HAs (under both ambient and wet weather conditions)
2. Sediment in the Miramar HA

It should be noted that the HPWQPs have not changed from previous assessments or the Los Peñasquitos WURMP, even though this year's assessment included the first year of expanded monitoring data as required under the Municipal Permit (Order R9-2007-0001).

Table 2-4 Integrated Watershed Area Management Assessment

Assessment Category		Program	Parameters With Results Above the Receiving Water Benchmarks or Action Levels For Dry Weather Monitoring Data	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	Ambient Receiving Water	SMC and Bioassessment Monitoring[2]	TDS, Chloride, Sulfate, Enterococci, Total nitrogen, Total phosphorus, Enterococci	*	Yes	TDS, chloride, sulfate, indicator bacteria, and total phosphorus were measured at concentrations greater than their respective benchmarks, however, an ambient assessment was not conducted due to the limited data set. The dry weather MS4 monitoring results suggest that the MS4 effluent may have the potential to contribute to receiving water problems for constituents with concentrations greater than the benchmark.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring	Conductivity, Turbidity, Ammonia, Nitrate as N, Total coliform, Fecal coliform, Enterococci	NA		
		MS4 Random Dry and Targeted Dry Monitoring[2]	TDS, TSS, Nitrate/Nitrite as N, Total nitrogen, Fecal coliform, Enterococci	NA		
Wet Weather	Wet Weather Receiving Water[1]	MLS and Bioassessment Monitoring	♦♦♦-TDS, Fecal coliform ♦-TSS, Turbidity, Enterococci	No		TDS and fecal coliform were identified as high frequency of occurrence COC during wet weather conditions. TSS, turbidity and enterococci were also identified as a low frequency COC. In addition to the wet weather results, TDS and enterococci were found at concentrations greater than the benchmark in both the ambient receiving water monitoring and the dry weather MS4 monitoring, suggesting that the MS4 may have the potential to contribute to receiving water problems for these constituents. Persistent toxicity was not identified at this site, although Bifenthrin was identified as a high frequency of occurrence COC. This is a region wide and state wide problem, and is currently being addressed by the Department of Pesticide Regulation
	Wet Weather Urban Runoff Areas	MS4 Random Wet and Targeted Wet Monitoring[2]	Total phosphorus, Total nitrogen, Fecal coliform	NA		

*Ambient sampling as part of normal permit was not monitored due to Bight '08 participation.

NA = Not assessed, Not Applicable, or Not Analyzed.

[1]Frequency of occurrence ratings are only applicable to wet weather receiving water data. A minimum of 3 years of data is needed for other elements of the program to assess frequency of occurrence.

[2]Concentration was compared to receiving water benchmarks for comparative purposes only.

3 Pollutant Source Assessment

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Los Peñasquitos WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by HA.

Table 3-1 summarizes the land use in each of the HAs. Land use information is generally associated with wet weather urban runoff where rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to dry weather urban runoff that is generally associated with point dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant generating activities and from the path of the urban runoff as it enters and travels through the MS4.

Tables 3-2 and **3-3** present a limited inventory that the Copermittees currently track of pollutant generating sources by HA. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants (blue highlight). The process used to develop the tables was taken directly from the Baseline Long-Term Effectiveness Assessment (BLTEA) (Weston, MOE, LWA, 2005). The data used for the process includes the following: (1) results in the 2008-2009 Regional Annual Monitoring Report (Weston, 2010); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the BLTEA (Weston, MOE, LWA, 2005).

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)	
	906.1	906.2
Open Space	12,674.6	13,041.7
Single Family Residential	6,513.4	4,692.3
Transportation	4,807.3	2,565.2
Industrial	4,065.0	1,097.8
Multiple Family Residential	1,451.1	973.3
Commercial	1,239.2	639.4
Institutional	1,139.5	367.0
Park	764.3	552.4
Agricultural	414.1	291.2
Water	178.6	0.0
Recreation	118.3	31.1
Rural Residential	112.9	2,608.4
Municipal	89.4	128.6
Under Construction	86.8	74.1
Military	28.8	42.4
Prison	0.0	0.0

Source: SANDAG

Table 3-2 Pollutant Generating Sources – 906.1 Miramar Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	22			N	L	UL	L	UK	L	UK	L
Automotive	681			L	L	L	UL	UL	UK	L	UL
Contractor	872			UL	UL	UL	L	UL	UL	L	UL
Restaurant	620			N	L	L	UL	UK	UK	L	L
Equipment	90			L	L	L	UL	UL	UK	L	UL
Fueling	25			UK	L	L	UK	N	N	UK	N
General Retail	54			UL	UL	UL	L	UL	UL	L	UL
Golf	1			N	N	UL	L	L	L	L	L
Manufacturing	360			L	UK	UK	UK	UK	UK	UK	UL
Metal	68			L	L	L	UK	UK	UK	UK	UL
Nursery	1			L	UL	UL	L	L	L	UK	L
Stone	26			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	641			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	104	0									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	12	7	13								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely
***Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources

Table 3-3 Pollutant Generating Sources – 906.2 Poway Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	12			N	L	UL	L	UK	L	UK	L
Automotive	235			L	L	L	UL	UL	UK	L	UL
Contractor	218			UL	UL	UL	L	UL	UL	L	UL
Restaurant	304			N	L	L	UL	UK	UK	L	L
Equipment	46			L	L	L	UL	UL	UK	L	UL
Fueling	26			UK	L	L	UK	N	N	UK	N
General Retail	16			UL	UL	UL	L	UL	UL	L	UL
Golf	3			N	N	UL	L	L	L	L	L
Manufacturing	79			L	UK	UK	UK	UK	UK	UK	UL
Metal	22			L	L	L	UK	UK	UK	UK	UL
Nursery	3			L	UL	UL	L	L	L	UK	L
Stone	10			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	171			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	63	5									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	23	43	59								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely
***Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources

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4 Implementation of Watershed Activities

4.1 JURMP and watershed Activities

The Los Peñasquitos WURMP Copermittees are responsible for implementing Jurisdictional Urban Runoff Management Program (JURMP) activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. These activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

In addition to their JURMP activities, the Los Peñasquitos WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Los Peñasquitos WURMP.

The tables below present the Copermittees' initial effort towards reporting all urban runoff management activities on a watershed basis, e.g., reporting of Copermittee activities regardless of bureaucratic program labels. Reporting as many urban runoff management activities as feasible on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements.

Collectively, the Copermittees conducted five (5) watershed water quality and three (3) watershed education activities in the Miramar HA (906.1); and, three (3) watershed water quality and three (3) watershed education activities in the Poway HA (906.2). Some of these activities overlapped HAs.

Table 4-1 JURMP and WURMP Activities – 906.1 Miramar Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem	
					Bacteria	Sediment
Inspections	Construction	High	Medium	Low		X
		217: (12)	76: (7)	66: (13)		
	Animal	3: (22)			X	X
	Contractor	243: (872)				X
	Food Establishment	51: (620)			X	
	General Retail	0: (54)				X
	Golf	0: (1)			X	X
	Nursery	0: (1)			X	X
Street Sweeping (Tons Collected)		1,042			X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		894			X	X
LP-WQA1	SDCK Trash Cleanup Sponsorship				X	
LP-WQA5	Targeted Facility Inspections				X	X
LP-WQA8	ILACSD Trash Cleanup Sponsorship				X	
LP-WQA13	Median Irrigation System Replacement				X	
LP-WQA14	Park and Open Space Irrigation and Controllers				X	
LP-WQEA6	Residential Water Conservation Outreach				X	
LP-WQEA2	Public Service Announcements: Karma/Karma Second Chance Public Service Announcements				X	
LP-WQEA13	Fiesta del los Peñasquitos				X	X

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

Table 4-2 JURMP and WURMP Activities – 906.2 Poway Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem
			Bacteria
Inspections	Animal	5: (12)	X
	Food Establishment	30: (304)	X
	Golf	0: (3)	X
	Nursery	1: (3)	X
Street Sweeping (Tons Collected)		802	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		608	X
LP-WQA5	Targeted Facility Inspections		X
LP-WQA8	ILACSD Trash Cleanup Sponsorship		X
LP-WQA12	Gate Drive Detention Basin Modification		
LP-WQEA2	Public Service Announcements: Karma/Karma Second Chance Public Service Announcements		X
LP-WQEA4	LID and Watershed Planning Education		X
LP-WQEA13	Fiesta del los Peñasquitos		X

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

4.2 Watershed Education Activities

This section describes activities implemented by the Los Peñasquitos WURMP Copermittees during the FY 2009 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Los Peñasquitos WURMP Copermittees are responsible for identifying and implementing education activities that address the HPWQPs in the Los Peñasquitos WMA. The activity selection process is described fully in the 2008 Los Peñasquitos WURMP.

The Los Peñasquitos WURMP Copermittees have made significant progress in developing and implementing programs aimed at improving storm water and urban runoff water quality in the WMA. **Table 4-3** below list the four education activities implemented during FY 2009 by the Los Peñasquitos WURMP Copermittees. In addition, other activities were in the active planning or assessment phases during the reporting period. For more details on all of the activities, refer to **Table 4-10** and **Appendix C**.

Table 4-3 Watershed Education Activities Implemented During FY 2009

ID #	Activity/Project Name
LP-WQEA2	Public Service Announcements
LP-WQEA4	LID and Watershed Planning Education for Community Planning and Sponsor Groups
LP-WQEA6	Residential Water Conservation Outreach
LP-WQEA13	Fiesta De Los Peñasquitos

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix C**) and are summarized in Section 5 – Effectiveness Assessment.

4.3 Public Participation Activities

4.3.1 Introduction

The Public Participation component of the 2008 Los Peñasquitos WURMP encourages residents and organizations within the WMA (such as other agencies, private companies and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water and other methods including direct interaction of Los Peñasquitos WURMP Copermittee staff with members of the public.

4.3.2 Activities Conducted

WURMP documents and reports have been posted on the Project Clean Water website, where they are available to all interested stakeholders. During FY 2009, the Los Peñasquitos WMA web page on the Project Clean Water website received 1,832 hits and the Los Peñasquitos WURMP page received 507 hits. These totals are slightly higher than those seen in the previous reporting period. A monthly breakdown of the hits can be found in the tables below.

Table 4-4 Number of Hits: Project Clean Water Los Peñasquitos WMA Web Site

Jun 09	May 09	Apr 09	Mar 09	Feb 09	Jan 09	Dec 08	Nov 08	Oct 08	Sep 08	Aug 08	Jul 08	Total
127	147	138	197	171	178	116	151	171	151	135	150	1,832

Table 4-5 Number of Hits: Project Clean Water Los Peñasquitos WURMP Web Site

Jun 09	May 09	Apr 09	Mar 09	Feb 09	Jan 09	Dec 08	Nov 08	Oct 08	Sep 08	Aug 08	Jul 08	Total
36	27	40	58	50	45	45	44	59	35	35	33	507

During this reporting period, the Los Peñasquitos WURMP Copermittees participated in three community events that reached approximately 15,275 participants, as shown in **Table 4-6** below. Watershed concepts and principles were incorporated into booth displays and event activities.

Table 4-6 Community Events in FY 2009

Date	Event Title	Target Audience	Estimated Attendance	Location	Jurisdiction
10/23/08	Water Day at the School of Science, Connections & Technology	Public	125	Kearny High Educational Complex	County of San Diego
4/18/09	Earth Day/Arbor Day Celebration	Public	150	Blue Sky Nature Reserve	Poway
5/3/09	Fiesta De Los Peñasquitos	Public	15,000	Black Mountain Road	San Diego, County of San Diego, Poway, Del Mar

As noted in section 4.1 of this report, Water Quality Activities, several community cleanup events were held during FY 2009, which also provides opportunities for individuals or organizations to be involved in improving water quality in the Los Peñasquitos WMA.

4.4 Future Efforts

The Los Peñasquitos WURMP Copermittees will continue to provide opportunities for residents and other interested parties to participate in Los Peñasquitos WURMP activities. Draft documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the Los Peñasquitos WMA.

4.5 Collaborative Land-Use Planning Efforts

4.5.1 Introduction

The Land-Use Planning component of the 2008 Los Peñasquitos WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across Los Peñasquitos WURMP Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities.

4.5.2 Activities Conducted

Integrated Regional Water Management (IRWM)

The WURMP Copermittees have been active participants in the Integrated Regional Water Management (IRWM) planning process (IRWMPP). The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders. Participation in the IRWMPP has already led to funding approval for a number of BMP installation projects that will benefit the WMA by reducing runoff.

Low Impact Development Handbook

Coordination of land-use planning also has benefited from the development and implementation of the Low Impact Development (LID) Handbook and the associated education program. The Handbook, which was developed by the County of San Diego in association with the LID Technical Advisory Committee, was completed in December 2007. The LID and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on Low Impact Development (LID) and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved within the unincorporated County, this education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect WMA water quality.

This education program, which consists of a PowerPoint presentation and provides Planning and Sponsor Group members each a set of LID Handbooks, was successfully developed on schedule during the spring of FY 2008. As noted in the Activity Implementation Sheets in **Appendix C** of this report, two presentations were conducted in the Los Peñasquitos WMA during FY 2009, with 36 attendees.

Quality of Life Initiative
The County of San Diego has been invited to participate in SANDAG's Quality of Life Funding Strategy, and asked to take the lead on the Water Quality Enhancement Element. Based upon past analysis from SANDAG's Regional Comprehensive Plan (RCP), it has been determined that the region lacks a long-term and sustainable funding source for different areas of infrastructure, including stormwater. The County will be working collaboratively with other Copermittees, as well as interested regional stakeholders to vet through a variety of funding options, conduct a regional needs assessment and help establish funding priorities related to water quality. This is an ongoing effort, which currently has a vision through 2012. Work products will be produced as early as fall of 2010.

4.5.3 Future Efforts

In FY 2010, the City and County of San Diego, as well as other WURMP Copermittees, will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will continue. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the City and other jurisdictions.

The Los Peñasquitos WURMP Copermittees remain committed to encouraging collaborative, watershed-based land-use planning in their jurisdictional planning departments. The Los Peñasquitos WURMP Copermittees will continue to work together to seek additional means of collaboration in this area.

4.6 Updated 5-Year Strategic Plan

4.6.1 New WMA Activities

Proposed watershed activities Implementation Sheets can be found in **Appendix C**. New activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA.

Each activity on the WMA Activities List is fully described in an Activity Implementation Sheet that includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQP(s) of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Los Peñasquitos WURMP Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no less than two water quality activities will be in an active implementation phase. A water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's HPWQP(s). Water quality activities that are capital projects are in active implementation for the first year of implementation only.

The new proposed activities include:

1. LP-WQA21 – ESD Phased Green Mall and Underground Vault Project
2. LP-WQEA12 – Compost Sox – Demonstration Project
3. LP-WQEA13 – Fiesta de Los Peñasquitos
4. LP-WQEA14 – Watershed Brochure

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

4.6.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the Los Peñasquitos WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale in which actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Los Peñasquitos WURMP Copermittees made appropriate management decisions on which water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Los Peñasquitos WURMP Copermittees will use available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented below is intended to supersede the earlier versions presented in the 2008 Los Peñasquitos WURMP and January 2009 Los Peñasquitos WURMP Annual Report.

Table 4-7 Updated 5-Year Strategic Plan

Watershed Water Quality Activities		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Sediment	FY 2009	FY 2010	FY 2011	Future Fiscal Year(s)
LP-WQA1	SDCK Trash Cleanup Sponsorship	SD	X		WQI	WQI	WQI	WQI
LP-WQA5	Targeted Inspections (formerly Targeted Restaurant Facility Inspections)	SD	X		WQI	WQI	WQI	WQI
LP-WQA7	Marindustry Hydrodynamic Separator Installation	SD	X	X	P	P	P	WQI
LP-WQA8	ILACSD Trash Cleanup Sponsorship	SD/POW	X		WQI	WQI	WQI	WQI
LP-WQA9	Mira Mesa Bioretention and Infiltration BMP Retrofit	SD	X		P	P	P	P,M, WQI
LP-WQA10	Municipal Rain Barrel Installation and Downspout Disconnects	SD	X	X	P	WQI	-	-
LP-WQA11	Aubrey Street Continuous Deflective Separation (CDS) Device	POW		X	A	A	A	A
LP-WQA12	Gate Drive Detention Basin Modification	POW	X		WQI	A	A	A
LP-WQA13	Median Irrigation System Replacement	DM	X		WQI	A	A	A
LP-WQA14	Park and Open Space Irrigation and Controllers	DM	X		WQI	A	A	A
LP-WQA16	Irrigation Hardware Giveaway and Cash for Plants Program	SD	X	X	-	-	P	WQI
LP-WQA17	Increase Trash Receptacles and Dogi-Pot stations	POW/SD	X		-	WQI	WQI	WQI
LP-WQA18	Sweeping Route Posting and Enforcement	SD	X	X	-	P	P,WQI	WQI
LP-WQA19	City of San Diego *Strategic Plan for Watershed Activity Implementation*	SD	X	X	P	I	I	I
LP-WQA20	Sediment Source Identification Study	SD	X	X	-	P	I	-
LP-WQA21	ESD Phased Green Mall and Underground Vault Project	SD	X		P	P	P	WQI

Table 4-7 Updated 5-Year Strategic Plan - Continued

Watershed Water Education Activities		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Sediment	FY 2009	FY 2010	FY 2011	Future Fiscal Year(s)
LP-WQEA2	Public Service Announcements: *Karma and Karma Second Chance*	SD	X		WE	WE	WE	WE
LP-WQEA4	LID and Watershed Planning Education	COUNTY/DM	X	X	WE	-	-	-
LP-WQEA5	Infiltration BMP Retrofit Outreach	SD	X		P	P	P	WE
LP-WQEA6	Residential Water Conservation Outreach	DM	X		WE	WE	WE	P, WE
LP-WQEA8	Transit Shelters	SD	Completed – no longer reported					
LP-WQEA9	Our Water, Our Responsibility Pamphlet Distribution	SD	X	X	E	E	E	-
LP-WQEA10	Erosion and Sediment Control Poster	SD		X	E	E	E	-
LP-WQEA11	Restaurant Best Management Practices Booklet	SD	X		E	E	E	E
LP-WQEA12	Compost Sox – Demonstration Project	COUNTY	X		P	WE	-	-
LP-WQEA13	Fiesta de Los Peñasquitos	ALL	X		WE	WE	-	-
LP-WQEA14	Watershed Brochure	SD	X	X	P	WE	-	-

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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5 Effectiveness Assessment

The Municipal Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, and to assess the effectiveness of the activities conducted to meet those goals and objectives or identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.2.i of the Municipal Permit, and reports on the activities planned and implemented during FY 2009.

5.1 Assessment of Overall WURMP Effectiveness

Activities collaborated upon and selected by the Los Peñasquitos WURMP Copermittees address the overall goal of the WURMP by focusing on the HPWQPs within the WMA.

As set forth in the Municipal Permit and outlined in the 2008 Los Peñasquitos WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the Los Peñasquitos WURMP Copermittees in FY 2009, and where in this report required compliance points are fulfilled or described.

Table 5-1 Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Not Applicable	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the WMA.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
A description of Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not Applicable	N/A

As shown in the **Table 5-1**, the Los Peñasquitos WURMP Copermittees were in compliance with all Level 1 WURMP related Municipal Permit requirements during FY 2009.

5.1.1 Activities Assessment

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated on and selected activities that would address HPWQPs within not only each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in **Appendix C** identifies specific targeted outcomes (Levels 1-6 – as described in **Table 5-2** below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 5-2 Outcome Levels: Levels 1-6

Outcome Level		Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/ exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/ measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2009, there were ten (10) activities in the active implementation phase, six (6) of which focused on water quality and four (4) focused on education. These activities addressed the HPWQPs in the Los Peñasquitos WMA; which include bacteria and sediment; and are the activities for which the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. Tables 5-3 and 5-4 below, summarize the assessments of the water quality and education activities to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the table, the WURMP Copermittees are presenting their JURMP activities that are related to the HPWQPs in each HA. It is important to note that not all JURMP activities are included in this presentation. This year's annual reporting effort is intended to be an initial presentation of JURMP activities that are conducted by WURMP Copermittees that are relatable based on hydrologic area of implementation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

5.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs currently in effect within the Los Peñasquitos WMA.

Table 5-3 Summary of Implemented Activities for FY 2009 – 906.1 Miramar Hydrologic Area (HPWQPs = Bacteria & Sediment)

Activity:	Type:	Priority Problems Addressed	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
SDCK Trash Cleanup Sponsorship	Water Quality	Bacteria	Level 1 & Level 4	The City contributed $2,000 towards the Cleanup Sponsorship in the hydrologic area. During this event 87 participants removed 902 pounds of trash and debris for an efficiency of $2.21 per pound collected.
Targeted Facility Inspections	Water Quality	Bacteria & Sediment	Level 1, Level 3 & Level 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Level 1 & Level 4	The Cities of Poway and San Diego collectively contributed $5,500 towards this Cleanup Sponsorship in the hydrologic area. During this event 64 participants removed or recycled 592 pounds of trash and debris, of which approximately 42 pounds was recycled for an efficiency of $9.29 per pound collected.
Median Irrigation System Replacement	Water Quality	Bacteria	Level 4	Based on observation initial results show the implementation of the controllers has resulted in a reduction in the amount of dry-weather flows from landscaped areas, thus a reduction in associated pollutant load.
Park and Open Space Irrigation and Controllers	Water Quality	Bacteria	Level 4	Based on observation initial results show the implementation of the controllers has resulted in a reduction in the amount of dry-weather flows from landscaped areas, thus a reduction in runoff from over irrigation. Additional benefits include water use efficiency and conservation.
Water Conservation Outreach	Water Education	Bacteria	Level 2	Education and outreach to the community regarding water quality benefits and water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff associated with dry-weather flows.
Public Service Announcements: Karma/Karma Second Chance Public Service Announcements	Water Education	Bacteria & Sediment	Level 1, Level 2 and Level 3	PSAs were developed and broadcasted in FY 2009 via TV and radio stations throughout the San Dieguito WMA in both English and Spanish. Effectiveness was measured by tabulating the number of listeners reached by the program via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.
Fiesta del Los Peñasquitos	Water Education	Bacteria & Sediment	Level 1 & Level 2	The event provided direct outreach regarding pollution prevention and pollutant reduction to the residents living in the local hydrologic area. Through assessments, the Copermittees established several findings based on surveys of the Fiesta participants: 91% of responding participants knew of pollution issues in the waterways, yet 40% were not aware that the MS4 is separate from the sanitary sewer system and goes untreated to the receiving waters. The Copermittees can use this information to focus their education and outreach programs.

Table 5-4 Summary of Implemented Activities for FY 2009 – 906.2 Poway Hydrologic Area (HPWQP = Bacteria)

Activity:	Type:	Priority Problems Addressed	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
Targeted Facility Inspections	Water Quality	Bacteria & Sediment	Level 1, Level 3 & Level 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Level 1 & Level 4	The Cities of Poway and San Diego collectively contributed $5,500 towards this Cleanup Sponsorship in the hydrologic area. During this event 64 participants removed or recycled 592 pounds of trash and debris, of which approximately 42 pounds was recycled for an efficiency of $9.29 per pound collected.
Aubrey Street Continuous Deflective Separation Device	Water Quality	Sediment	Level 1, Level 4 & Level 5	A total of 0.5 yard of floating trash and 0.5 yard of silt and heavy debris was removed from the unit, and 2 hydrocarbon-absorbent pillows required replacement. These amounts are the verified load reduction achieved by this unit.
Gate Drive Detention Basin Modification	Water Quality	Sediment	Level 1, Level 4 & Level 5	The inflow/outflow monitoring that occurred showed a slight increase in turbidity (9.2NTU to 13.4 NTU) and in total coliform (13,000 to 80,000 MPN/100mL). However, both there were decreases in the amount of fecal coliform (5,000 to 2,200 MPN/100mL) and enterococci (1,300 to 130 MPN/100mL). There was no measurable total suspended solids at the inflow, so no load reduction was determined for sediment.
Public Service Announcements: Karma/Karma Second Chance Public Service Announcements	Water Education	All	Level 1, Level 2 and Level 3	PSAs were developed and broadcasted in FY 2009 via TV and radio stations throughout the San Dieguito WMA in both English and Spanish. Effectiveness was measured by tabulating the number of listeners reached by the program via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.
LID and Watershed Planning Education	Water Education	Bacteria & Sediment	Levels 1, 2 and 3	Expected change in knowledge and BMP implementation
Fiesta del Los Peñasquitos	Water Education	Bacteria & Sediment	Level 1 & Level 2	The event provided direct outreach regarding pollution prevention and pollutant reduction to the residents living in the local hydrologic area. Through assessments, the Copermittees established several findings based on surveys of the Fiesta participants: 91% of responding participants knew of pollution issues in the waterways, yet 40% were not aware that the MS4 is separate from the sanitary sewer system and goes untreated to the receiving waters. The Copermittees can use this information to focus their education and outreach programs.

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6 Conclusions and Program Improvements

6.1 Conclusions

During FY 2009, the Los Peñasquitos WURMP Copermittees strove to address the overall goal of the WURMP—to positively impact the water quality of the Los Peñasquitos WMA—by focusing on its HPWQPs. To target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 Los Peñasquitos WURMP, which strives to link identified water quality problems to their potential sources. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the HPWQPs in the Los Peñasquitos WMA are bacteria in both HAs and sediment in the Miramar HA. It should be noted that the HPWQPs have not changed from previous assessments even though this year's evaluation included the first year of expanded monitoring mandated under the new Municipal Permit.

To effectively address the Los Peñasquitos WMA's HPWQPs, the Copermittees identified and then evaluated them for likely sources at the individual watershed level (please refer to Tables 3-2 and 3-3). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; and b) water quality and education activities appear to be targeting suspected sources of the HPWQPs and are mostly viewed as effective at reducing the impacts of the sources. Based on this analysis, the Copermittees focused their activities on the following suspected priority sources: eating and drinking establishments; animal facilities; nurseries, greenhouses and botanical or zoological gardens; landscaping-golf courses; cemeteries; and construction sites.

The Los Peñasquitos WURMP Copermittees then developed and implemented watershed water quality and education activities to address these HPWQPs and their sources. Tables 4-1 and 4-2 summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Municipal Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, ten activities were implemented, six of which focused on water quality and four on education. All of these activities concentrated on the HPWQPs in Los Peñasquitos WMA, which include bacteria and sediment.

In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. The Copermittees believe that it is an important first step towards integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Los Peñasquitos WURMP Copermittees have responded to meet the challenges of implementing the new requirements outlined in the Municipal Permit as they continue to refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs

across the region. Furthermore, the Los Peñasquitos WURMP Copermittees will continue to implement the activities described in Section 4 of this document in future reporting periods.

6.2 Program Improvements

The lack of water quality data directly related to sources makes true effectiveness assessment of the activities difficult. Without the data, the Copermittees are limited to qualitative assessments, which contain substantial assumptions linking the sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the Los Peñasquitos WURMP Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources, or collect data unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research, analysis of existing data and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level (i.e., evaluating the data from the larger watershed level). Analysis of the data at the HA-level may provide useful information to the 2008 Los Peñasquitos WURMP.

In many cases, water quality data may be unavailable to accurately characterize loading from suspected sources. Where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 Los Peñasquitos WURMP—to determine and target the sources contributing to the HPWQPs – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve water quality within the WMA;
- Integrate watershed principles into land use planning;
- Enhance public understanding of water pollution sources; and
- Encourage and develop stakeholder participation.

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. It is also recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language where necessary to better develop and meet program goals. The

San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The Los Peñasquitos WURMP Copermittees are committed to continue their involvement in this process during the 2010 reporting period.

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San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Final Report, Weston, January 2010.

Los Peñasquitos Watershed Urban Runoff Management Program, Los Peñasquitos WURMP Copermittees, March 2008

Appendix A

Excerpt from 2008-2009 San Diego County Municipal Copermittees Urban Runoff Monitoring Report

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ES.7 LOS PEÑASQUITOS WATERSHED MANAGEMENT AREA EXECUTIVE SUMMARY

This section summarizes the results and assessment of the 2008–2009 monitoring programs conducted in the Los Peñasquitos Watershed Management Area (WMA). Monitoring activities conducted in compliance with Regional Water Quality Control Board (RWQCB) Order R9-2007-0001 (Permit) are provided in Table-ES.7-1.

Table-ES.7-1. 2008–2009 Monitoring Program Activities

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Ambient Monitoring	Water chemistry and toxicity
Rapid Stream Bioassessments	Benthic macroinvertebrates, periphyton, and physical habitat
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC
Bight '08 Estuary Monitoring	Water (bacteria and TSS) and sediment quality (chemistry, toxicity, and benthic macroinvertebrates)
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria
MS4 Outfall Targeted Monitoring	Chemistry, metals, pesticides and bacteria
Regional Dry Weather Source Identification Monitoring	General chemistry, metals, bacteria, pesticides
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria

The Los Peñasquitos WMA is located within west–central San Diego County. The WMA has two hydrologic areas (HAs) and extends from the foothills east of the City of Poway to the coastal plain where the watershed drains into Los Peñasquitos Lagoon before flowing into the Pacific Ocean through a narrow mouth at Torrey Pines State Beach. The Los Peñasquitos WMA is 60,419 acres and encompasses the drainage areas of Los Peñasquitos Creek, Carmel Creek, and Carroll Canyon Creek (Soledad Canyon), with the remaining 1,107 acres comprised of the lagoon and coastal drainages. Land use within the overall Los Peñasquitos WMA is classified primarily as open space / parks and recreation (31%), residential (22%), vacant and undeveloped land (14%), and transportation (13%). However, there are several notable differences in land use composition among the three creek drainage areas and between the two HAs that compromise the watershed. The Los Peñasquitos WMA is mostly within City of San Diego jurisdiction (71%), with the remaining areas in City of Poway (25%), County of San Diego (3%), and City of Del Mar (0.2%) jurisdiction. Over 60% of the watershed is privately owned land.

Within this watershed, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in Table-ES.7-2 with relevant total maximum daily

load (TMDL) status. However, several changes are currently proposed in the 2008 Draft 303(d) List currently under development.

Table-ES.7-2. Los Peñasquitos Watershed management Area State Water Resources Control Board Section 303(d) Listed Waterbodies and Total Maximum Daily Load Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Los Peñasquitos Lagoon	Sediment/siltation	In Development
Los Peñasquitos Creek	Phosphate and TDS	Not Developed
Soledad Canyon	Sediment toxicity	Not Developed

Summary of Monitoring Program Data to Address the Permit Core Management Questions

Receiving water monitoring was conducted during one ambient weather event at three SMC sites and at the MLS during one wet weather event. Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit with the exception of Chollas Creek which is monitored each year. In 2008–2009, the scope of the monitoring program was adjusted due to the Copermittees participation in the Southern California Bight Regional Monitoring Program.

Each element of the Permit-required monitoring program was designed to provide scientific data consistent with addressing five core management questions. The core management questions, as listed in the Permit, are presented as follows:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring program for each WMA vary across spatial and temporal scales. Therefore, data support only partial resolution of each core management question. Through continued monitoring and the refinement of the Permit requirements, a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments were conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach. The results for the Los Peñasquitos WMA are summarized in Table-ES.7-3.

Table-ES.7-3. Summary of Watershed Management Area Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
Los Peñasquitos WMA	Receiving Water Monitoring	Ambient Receiving Water Summary	▪ Constituent Summary: - TDS, chloride, sulfate, and enterococci > benchmark in 100% of samples. - Total nitrogen > benchmark in 33% of samples - Total phosphorus > benchmark in 22% of samples ▪ No constituents had magnitudes of exceedance greater than five times their benchmark. ▪ Toxicity was observed for the *Ceriodaphnia dubia* reproductive endpoint, 96-hour survival, and 7-day survival at one random SMC site (Site SMC-01158)	1, 2
		Wet Weather Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS, fecal coliform). - Low frequency of occurrence (TSS, turbidity and enterococci). ▪ Fecal coliform was the only constituent with a magnitude of exceedance of more than five times the benchmark. ▪ Neither toxicity nor pesticides were detected during 2008-2009 wet weather monitoring at the MLS. ▪ Pyrethroid concentrations were below detection limits in all sediment samples[1].	
		Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed.	
		Bight 08	▪ Water column TSS and bacterial concentrations were below the ambient benchmarks ▪ Results indicated two of five sites were unimpacted and three of five sites were likely unimpacted based on SQO Guidelines.	
	Urban Runoff Monitoring	Ambient Urban Runoff Summary (Jurisdictional, MS4, CSDM)	▪ Results above action levels or receiving water benchmark: - Jurisdictional: conductivity, turbidity, ammonia, nitrate, total coliform, fecal coliform, enterococci - MS4: TDS, TSS, nitrate/nitrite, total N, fecal coliform, enterococci ▪ The dry weather MS4 monitoring results suggest that the MS4 effluent may have the potential to contribute to receiving water problems for some constituents. ▪ Trash assessments indicated portions of the upper watershed had the highest occurrence of observed trash. Trash sources were related to littering and dumping. ▪ CSDM: Coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters.	3, 4
		Wet Weather Urban Runoff Summary (MS4)	▪ The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions. ▪ CSDM: Coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters.	

Table-ES.7-3. Summary of Watershed Management Area Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
		Source Identification Program	▪ Results indicated synthetic pyrethroids were associated with single family residential runoff. Nitrate and elevated TDS were likely associated with groundwater discharges as opposed to urban runoff from overland sources.	
	WMA Assessment	Receiving Water Trend Assessment	▪ Significantly increasing trends were observed for fecal coliform. ▪ Significantly decreasing trends were observed for total lead.	5
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS and fecal coliform, together with the benthic alterations, are consistent with the 2001–2006 BLTEA ratings.	

1 The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.
Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking method is described in Appendix B.

Based on these results, each of the five Core Management Questions are addressed below.

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**

Core Management Question 1 was addressed with wet weather data assessments. The results of the 2008–2009 monitoring program in the Los Peñasquitos Creek WMA indicate that some of the constituents monitored were identified as high frequency of occurrence COC. In the Los Peñasquitos Creek WMA, these COCs included TDS and fecal coliforms. This suggests that some beneficial uses may be impaired by these constituents.

Historical stream bioassessment results indicate evidence of benthic community impairment in the Los Peñasquitos Creek WMA, with Very Poor IBI ratings at the TWAS and either Very Poor or Poor ratings at the MLS since 2001. Additional bioassessment monitoring conducted at SMC sites in the WMA produced similar results. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat or other constituents not monitored in this program. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

There is no evidence of persistent toxicity at Los Peñasquitos Creek WMA, based on the wet weather assessment.

Based on the monitoring and data analyses conducted on samples collected as part of the Bight ’08 Program in Los Peñasquitos Lagoon, the data suggest that conditions are generally protective of the beneficial uses. All sediment quality sites assessed were either unimpacted or likely unimpacted based on the SQO Guidelines. However, low dissolved oxygen concentrations are documented to be of concern in this lagoon (LPL, 2008) and the lagoon mouth is periodically

dredged to maintain sufficient flow from the lagoon to the ocean. Water quality samples collected for fecal indicator bacteria and TSS analyses were below Basin Plan standards.

2. **What is the extent and magnitude of the current or potential receiving water problems?**

Core Management Question 2 was addressed with magnitude of exceedance ratios for ambient and wet weather conditions in the receiving waters and a spatial analysis of COC during ambient conditions; wet weather monitoring was conducted only once at the MLS in 2008–2009 due to participation in the Bight '08 Program.

The greatest concentration-to-benchmark ratios during ambient conditions in the Los Peñasquitos Creek WMA were observed for chloride and sulfate. Ratios varied among the three sites assessed. Chloride and sulfate exceeded 1.4 to 4.9 times the respective benchmarks at all three sites. Concentration-to-benchmark ratios during wet weather at the MLS were greatest for fecal coliforms and TDS. The fecal coliform concentration during the 2008 storm event was more than 12 times greater than the benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at the MLS on average have been 29 times greater than the benchmark. The TDS concentration during wet weather in 2008–2009 was more than four times the benchmark, which is slightly higher than the historical mean for the site.

Receiving water spatial patterns in the Los Peñasquitos Creek WMA varied by constituent. During ambient conditions, receiving water concentrations of total phosphorus and constituents comprising TDS (i.e., chloride and sulfate) were greater than their respective benchmarks. The total phosphorus concentration was highest at Site SMC-00198 (located in the central portion of the WMA, along Los Peñasquitos Creek) and was the only site where the benchmark was slightly exceeded. Concentrations of chloride and sulfate, which are constituents comprising TDS, were greater than the benchmark at all ambient sites monitored in the WMA. These results provide a snapshot of receiving water conditions during the time of the survey. Additional data is needed to provide a more robust assessment of the spatial patterns of water quality constituents within the Los Peñasquitos Creek WMA.

Historical stream bioassessment ratings conducted in the WMA indicate a Very Poor benthic community at both MLS and TWAS locations. The consistent rating of Very Poor at both the MLS and TWAS since 2002 suggests that the extent of the impairment on the benthic community is not isolated to one area. This is supported by the 2008–2009 bioassessment results, which indicate a Very Poor benthic community at all SMC sites monitored within the WMA.

Bight 08 results characterized all sites unimpacted or likely unimpacted based on the SQO guidelines. In terms of the magnitude of the potential receiving waters problem, all sediment chemistry LOE scores were either minimal or low and the sediment toxicity LOE scores were either non-toxic or low. The benthic community LOE scores indicated either low or moderate impacts.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. In 2008–2009, the Los Peñasquitos Creek WMA MS4 was assessed through the random dry, random wet, and targeted dry programs.

Nine sites were visited as part of the random dry program, but only six were flowing at the time of the survey. Concentrations of several analytes including total nitrogen, total phosphorus, and indicator bacteria (i.e., enterococci) were greater than water quality benchmarks at several sites, suggesting that dry weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations.

Six sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes including total nitrogen, total phosphorus, and indicator bacteria (i.e., fecal coliform) were greater than benchmarks at several sites, suggesting that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents primarily at one site located in the upper portion of the Miramar Reservoir HA (906.10). The catchment for this site was characterized by primarily open space / parks and recreation land uses.

A total of 15 sites in the Los Peñasquitos Creek WMA were visited as part of the targeted dry weather program, 13 of which were flowing at the time of the survey. Thus, over 13% of the targeted dry weather sites were ponded or dry, compared to over 33% of the random dry weather sites. Drought restrictions implemented in the summer of 2009 may have helped to reduce flows from some areas. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentrations of chemical analytes in the MS4 runoff to receiving water quality benchmarks for the following constituents: total nitrogen, total phosphorus, TDS, MBAS, Diazinon, dissolved copper, and indicator bacteria (i.e., fecal coliforms and enterococci). Of these constituents, total nitrogen, total phosphorus, TDS, and indicator bacteria (i.e., fecal coliforms and enterococci) had concentrations that were greater than their respective benchmarks in at least one of the 15 sites assessed. Concentrations of TDS exceeded the benchmark most frequently followed by indicator bacteria (i.e., fecal coliforms and enterococci). The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were frequently greatest where flow rates were highest, which occurred at two sites located in the central portion of the Los Peñasquitos Creek WMA. MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the Los Peñasquitos Creek WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial

comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

The CSDM results indicate that coastal storm drains do not appear to be affecting bacterial concentrations in the coastal receiving waters during dry or wet weather conditions, among the sites sampled.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional DWM Program, the CSDM Program, the Source Identification Program, and the trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources in regards to the Jurisdictional DWM Program and the CSDM Program can be found in each Copermittee's JURMP Annual Report and in the CSDM Program Annual Report respectively (Appendix N).

The trash assessment conducted in 2008–2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Los Peñasquitos Creek WMA. A total of 215 sites were assessed for trash in the WMA, including two HAs. The Poway HA (906.20) had a slightly higher proportion of trash and the greatest percentage of sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained a slightly greater amount of trash in the WMA. This result coincides with the urbanized population centers, which are also found in the upper portion of the WMA. Trash at three of the six sites with Submarginal or Poor ratings consisted primarily of household waste while trash at the other three sites consisted of food packaging, construction debris, and biohazard waste. The potential trash route was listed as littering for three of the six sites rated as Submarginal or Poor in the Los Peñasquitos Creek WMA and dumping for the three remaining sites. Additionally, two out of the 215 sites assessed for trash in the Los Peñasquitos Creek WMA during the Jurisdictional DWM Program were identified as a potential human health threat and ten sites were identified as potential aquatic health threats.

A dry weather source identification study of single family residences was conducted by the Copermittees during the 2008–2009 Monitoring Season. Results indicated that synthetic pyrethroids were commonly detected in runoff from residential land uses in concentrations above published toxicity benchmarks for aquatic invertebrates. However, the Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results. Bacteria results were generally higher at sites influenced from overland runoff in comparison to one site influenced from continuous groundwater flows. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables).

5. Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the Los Peñasquitos Creek MLS. Based on the trend

analysis, only fecal coliforms are increasing over time at this site. In contrast, concentrations of total lead are decreasing over time. At the current observed rate of increase, fecal coliform concentrations are expected to increase approximately 41 MPN/100mL/yr. The decreasing trend in total lead concentrations is likely inconsequential in terms of benchmarks, since concentrations of this constituent have been very low historically at this site.

The bioassessment ratings at the Los Peñasquitos Creek MLS and TWAS have been Very Poor in nearly all assessments conducted from 2001 to 2008 and there are no apparent trends in the benthic community.

There is evidence of persistent toxicity during ambient conditions based on 83% of the *C. dubia* reproduction toxicity tests conducted on receiving waters in 2007–2008. However, the toxicity level was low and was not conducive for conducting a toxicity identification evaluation at this time.

Recommendations

The recommendations for this watershed are to continue with the requirements of the Permit, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. For the next full round of Permit monitoring in north San Diego County (Permit Year 2010–2011), the Copermittee Monitoring Workgroup will review and consider alternate locations for the TWAS to gather relevant information for assessing the watershed.

Specific recommendations for the Los Peñasquitos Creek WMA are based on the triad assessments in the Permit. Based on wet weather conditions, no action is necessary to address toxic chemicals. Addressing the potential role of urban runoff in causing physical habitat disturbance is recommended.

7.0 LOS PEÑASQUITOS CREEK WATERSHED MANAGEMENT AREA

This section presents the Los Peñasquitos Creek Watershed Management Area (WMA) monitoring data for the 2008–2009 Monitoring Season. The following subsections are presented in compliance with the Receiving Waters and Urban Runoff Monitoring Program in San Diego Regional Water Quality Control Board (RWQCB) Order R9-2007-0001 (Permit) to address core management questions listed in the Permit. The organization of this WMA section is as follows:

- A discussion of the core management questions listed in the Permit and how this Monitoring Report addresses each question.
- An overview of the WMA, regulatory water quality challenges, and the monitoring site descriptions used to assess the WMA.
- Watershed monitoring activities and discussion of results.
- A loading analysis and discussion of flow within the watershed.
- WMA assessments, triad assessment, and Baseline Long-Term Effectiveness Assessment (BLTEA) priority ratings.
- Conclusions and recommendations.

The 2008–2009 report includes several changes from the 2007–2008 Monitoring Program, due primarily to the 2008 Southern California Bight (Bight ’08) Regional Monitoring Program sampling conducted in 2008–2009. Monitoring under the Regional Monitoring Program conducted in 2008–2009 included the following:

- Monitoring was required at mass loading stations (MLS) as in previous years, but not at the temporary watershed assessment stations (TWAS). One wet weather event was monitored, but dry weather monitoring was not conducted at the MLS. During the 2007–2008 Permit year, the Copermittees developed a new set of benchmarks based on current and environmentally relevant water quality values. The benchmarks and their associated references are provided in the Methods Section (Appendix B). A trash assessment was conducted as part of the storm event monitoring.
- Ambient Bay and Lagoon Monitoring (ABLM) was not conducted as a separate Copermittee program.
- The MS4 Outfall Monitoring Program was implemented in 2008–2009. The program used a stratified random design for a regional evaluation of the MS4 outfalls as well as a targeted approach at the watershed level. Targeted dry weather MS4 monitoring was conducted by the jurisdictions.
- The Source Identification Program was implemented in 2008–2009. Two sites were assessed, including one in the City of La Mesa in the San Diego Bay WMA and one in the City of Del Mar in the Los Peñasquitos WMA.
- The Copermittees participated in the Stormwater Monitoring Coalition (SMC) Bioassessment Workgroup and the Southern California Regional Watershed Monitoring Program. Ambient water quality monitoring and rapid stream bioassessments were

conducted at 16 randomly selected sites throughout the region, which included some WMAs, but not all.

- The WMA assessment methods were modified to utilize bioassessment data from previous years since the MLS sites were not sampled in 2008–2009 due to the Bight '08 Monitoring Program. This provides an assessment of wet weather and dry weather as well as an integrated assessment of water quality conditions in the WMA.

7.1 Watershed Core Management Questions

This WMA Monitoring Report is designed to answer the following five core management questions listed in Section I.B of the Receiving Waters and Urban Runoff Monitoring Program:

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**
2. **What is the extent and magnitude of the current or potential receiving water problems?**
3. **What is the relative urban runoff contribution to the receiving water problem(s)?**
4. **What are the sources of urban runoff that contribute to receiving water problem(s)?**
5. **Are conditions in receiving waters getting better or worse?**

While some of the core management questions can be answered through the monitoring and data analyses that occur each year consistent with addressing the intended goals of the Permit, some questions can only be partially answered. However, the program can provide needed data to support other monitoring programs (e.g., bacterial source tracking studies) designed to answer specific questions.

Watershed monitoring results were evaluated to answer the core management questions presented above. For the purposes of assessing this Urban Monitoring Runoff Program, results were categorized and assessed as follows:

- Receiving water quality was assessed for ambient and wet weather conditions separately.
- Trend analyses were conducted for receiving water sites.
- Urban runoff data were assessed for wet weather and ambient weather conditions separately.
- Loading analysis was conducted to determine wet weather, ambient weather, and annual loading as data availability allowed.
- Watershed area evaluations were conducted using the following assessments: frequency of occurrence assessments for ambient and wet weather monitoring; an integrated assessment that combines both ambient and wet weather data; a triad decision matrix that uses chemistry, toxicity, and bioassessment results; and a comparison to a long-term effectiveness assessment.

- Conclusions and recommendations provide a final summary of the results and steps forward.

7.2 Los Peñasquitos Creek Watershed Management Area Description

The Los Peñasquitos Creek WMA is located within west–central San Diego County and includes portions of the City of San Diego, the City of Poway, and the City of Del Mar, as well as unincorporated areas of San Diego County. The area extends from the foothills east of the City of Poway to the coastal plain where the watershed drains into Los Peñasquitos Lagoon before flowing into the Pacific Ocean through a narrow mouth at Torrey Pines State Beach. The Los Peñasquitos Creek WMA (Hydrologic Unit (HU) 906.00) is 60,419 acres and encompasses the drainage areas of Los Peñasquitos Creek (37,028 acres), Carmel Creek (11,180 acres), and Carroll Canyon Creek (11,004 acres), and the remaining 1,107 acres is comprised of the lagoon and coastal drainages.

The Los Peñasquitos Creek WMA consists of two hydrologic areas (HAs): Miramar Reservoir (906.10) and Poway (906.20). The Miramar Reservoir HA comprises the western portion of the WMA and contains the drainage areas of Carmel Creek, Carroll Canyon Creek, and the lower portion of the Los Peñasquitos Creek. The Poway HA, located to the east, is covered entirely by the upper portion of the Los Peñasquitos Creek subwatershed. The HAs, hydrologic subareas (HSAs), and named tributaries are shown on Figure 7-1.

The drainage areas of the three creeks flow to Los Peñasquitos Lagoon. Carmel Creek flows directly into the northeast portion of the lagoon, while Carroll Canyon Creek and Los Peñasquitos Creek merge and enter the southern portion of the lagoon via a maintained channel. Carroll Canyon Creek is channelized (i.e., concrete) from approximately 3 miles east of Interstate 5 at Carroll Road. West of Interstate 5, the channel flows approximately 2 miles north before joining the channelized portion of Los Peñasquitos Creek which begins approximately 0.25 mile east of the Interstate 805 and Interstate 5 merge. A northeastern tributary of Carroll Canyon Creek originates at Miramar Reservoir, the other major surface waterbody in the watershed. Los Peñasquitos Creek also contains a surface water impoundment approximately 0.75 mile east of Interstate 15 within the Poway HA. The surface water impoundment is a constructed dam approximately 8 ft high by 90 ft wide. Dense vegetation occurs on the pond's northern, southern, and eastern boundaries. Verbal communications with City of San Diego's Park and Recreation staff indicates the dam was constructed in the 1950s by a local cattle rancher to provide ponded water for livestock.

7.2.1 Land Use

Land use categories within the Los Peñasquitos Creek WMA are shown on Figure 7-2 (SANDAG, 2007). Land use within the overall Los Peñasquitos Creek WMA is classified primarily as open space / parks and recreation (31%), residential (22%), vacant and undeveloped land (14%), and transportation (13%). Other land use classifications within the watershed include agriculture, commercial recreation, industrial, public facility, water, and under construction. Of

the total watershed area, the Los Peñasquitos Creek drainage area represents approximately 61% of the WMA and is representative of the major land use proportions in the overall watershed. However, there are several notable differences in land use composition among the three creek drainage areas and between the two HAs that compromise the watershed.

The upper portion of the Los Peñasquitos Creek drainage area within the Poway HA (906.20) has the highest percentages of vacant and undeveloped land (26%) and spaced rural residential (10%) based on land use analysis by creek and HA. Conversely, the lower portion of the Los Peñasquitos Creek drainage area which lies within the Miramar Reservoir HA (906.10) has less than 3% vacant and undeveloped land and no spaced rural residential use. This lower creek area has the highest percentage of residential development (32%) but also the largest proportion of open space / parks and recreation (44%) due mostly to the Los Peñasquitos Canyon Preserve. Among the three creek drainages (i.e., Los Peñasquitos Creek, Carmel Creek, and Carroll Canyon Creek), the most significant difference is shown in the distribution of industrial and commercial land use which is considerably higher in the Carroll Canyon Creek drainage area. Industrial (25%) and commercial (6%) land uses comprise approximately 31% of this drainage area compared with a total of less than 6% in each of the other two creek drainage areas. Land use data tables and pie charts by HSA are presented for each WMA in Appendix C.

The land use variation among drainage areas includes differences in impervious cover that influence storm water runoff (e.g., response time, duration, and peak flows), dry weather flows, erosion, and sediment transport. Using an estimate of percent impervious cover for each land use classification, the upper portion of the Los Peñasquitos Creek drainage area has an estimated impervious cover of approximately 29%. The lower portion of the Los Peñasquitos Creek drainage area has 37% impervious surface, and the Carmel Creek drainage area has 36% impervious cover. The Carroll Canyon Creek drainage area has the highest estimated impervious cover at 54%, largely due to the higher percentage of industrial and commercial land use in the lower portion of this subwatershed.

7.2.2 Population and Jurisdiction

The Los Peñasquitos Creek WMA is the fourth most populated watershed in San Diego County with approximately 254,000 persons (WESTON, 2008). However, it has the second highest population density of 4.20 persons per acre according to the SANDAG Population Estimate, with the main population center located in the central and eastern portions of the Miramar Reservoir HA (Figure 7-3) (SANDAG, 2005). Additional areas of population density occur in the northwest corner of the Miramar Reservoir HA and west–central portion of the Poway HA.

The Los Peñasquitos Creek WMA is mostly within City of San Diego jurisdiction (71%) with remaining areas including Poway (25%), County of San Diego (3%), and Del Mar (0.2%). Over 60% of the watershed is privately owned land. The remaining portions are mostly locally owned with a small percentage of land being state and federally owned.

7.2.3 Beneficial Uses

The Los Peñasquitos Creek Watershed is comprised of three subwatersheds (Carmel Valley, Los Peñasquitos Canyon, and Carroll Canyon) and a 395-acre coastal salt marsh lagoon (Los Peñasquitos Lagoon) (Figure 7-1). The watershed contains Lake Miramar, has a relatively large area of open space, and provides a variety of beneficial uses (Table 7-1).

Table 7-1. Los Peñasquitos Creek Watershed Beneficial Uses

Beneficial Uses	Inland Surface Waters	Coastal Waters (excluding Pacific Ocean)	Pacific Ocean	Reservoirs and Lakes	Ground-waters
Municipal and domestic supply				●	●
Agricultural supply	●				●
Industrial service supply	●		●	●	●
Industrial process supply					
Groundwater recharge					
Freshwater replenishment					
Hydropower generation				●	
Navigation			●		
Contact water recreation	●	●	●	●[1]	
Non-contact water recreation	●	●	●	●	
Commercial and sport fishing			●		
Warm freshwater habitat	●			●	
Cold freshwater habitat	●				
Biological habitats of special significance	●	●	●		
Estuarine habitat		●			
Wildlife habitat	●	●	●	●	
Rare, threatened, or endangered species	●	●	●		
Marine habitat		●	●		
Migration of aquatic organisms		●	●		
Shellfish harvesting		●	●		
Aquaculture			●		
Spawning, reproduction, and/or early development		●	●		

● = Existing
[1] Shore and boat fishing only. Other REC-1 uses prohibited.
Note: Beneficial uses vary by HU basin number. Please refer to the basin plan for individual HUs.
Source: Basin Plan September 8, 1994 (tables 2-2, 2-3, 2-4, and 2-5), amendments adopted through February 8, 2006.

7.2.4 Regulatory Water Quality Challenges

The Los Peñasquitos Creek WMA has noted impacts that include surface water quality degradation, beach closures, sedimentation, habitat degradation and loss, invasive species, and eutrophication (San Diego County, 2009). Constituents that have been placed on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list for waterbodies throughout the watershed are sedimentation/siltation, phosphate, total dissolved solids (TDS), and toxic

sediment (Figure 7-4). Indicator bacteria were removed from the 2006 SWRCB Section 303(d) list based on the delisting recommendations during the development of the 2006 SWRCB Section 303(d) list. Urban runoff, sewage spills, dredging, landfill leachate, and natural sources are factors that may be impairing water quality within the Los Peñasquitos Creek WMA (San Diego County, 2009). The 2006 SWRCB Section 303(d) list was adopted by the SWRCB on October 25, 2006 and finalized by the United States Environmental Protection Agency (USEPA) on June 28, 2007. Waterbodies located within the Los Peñasquitos Creek WMA placed on the 2006 SWRCB Section 303(d) list are presented in Table 7-2.

Table 7-2. Los Peñasquitos Creek Watershed Management Area Waterbodies on the 2006 State Water Resources Control Board Section 303(d) List

Waterbody Name	HSA	HSA No.	Pollutant/Stressor
Los Peñasquitos Lagoon	Miramar Reservoir	906.10	Sediment/siltation
Los Peñasquitos Creek	Miramar Reservoir	906.10	Phosphate and TDS
Soledad Canyon	Miramar Reservoir	906.10	Sediment toxicity

Source: SWRCB, 2006

The Los Peñasquitos Lagoon is also identified in the San Diego RWQCB Investigation Order and Technical Report for Lagoons Total Maximum Daily Load (TMDL) Project – Order No. R9-2006-0076 (Lagoon Order), which established monitoring requirements for dischargers. The Los Peñasquitos Lagoon is listed as impaired due to sedimentation/siltation. The Lagoon Order required dischargers to develop a monitoring program and submit monitoring program reports. Responsible dischargers to the Los Peñasquitos Lagoon, as identified within the Lagoon Order, include the City of Del Mar, the City of San Diego, the City of Poway, the County of San Diego, and Caltrans. A Monitoring Program was implemented during the 2007–2008 Wet Weather Monitoring Season in compliance with the Lagoon Order. A final report describing the methods and outcomes of this Monitoring Program was submitted to the responsible dischargers and stakeholder group January 21, 2009 (TMDL Monitoring for Sedimentation/Siltation in Los Peñasquitos Lagoon, 21 January 2009).

The San Diego RWQCB adopted a Basin Plan amendment on December 12, 2007, to incorporate the 19 indicator bacteria total maximum daily loads (TMDLs) developed in the *Project I – Beaches and Creeks in the San Diego Region*. Project I involved calculating TMDLs for numerous surface waters throughout San Diego County. Creeks discharging to lagoons, bays, or harbors were not included. Interim and final goals for reducing fecal coliforms and enterococci loading over ten years are detailed in the TMDL. Municipalities will achieve these reductions through conditions to be written into the Municipal Separate Storm Sewer System (MS4) Storm Water Permit by the San Diego RWQCB. However, recent information indicates that the San Diego RWQCB will revise the TMDL load allocations based on number of allowable exceedance days within the watersheds as opposed to a listed bacterial density most probable number (MPN) as it is currently written (Tobler, pers comm, 2008). The Beaches and Creeks Bacteria TMDL is due to be adopted in 2009 (Chiu, pers comm, 2009).

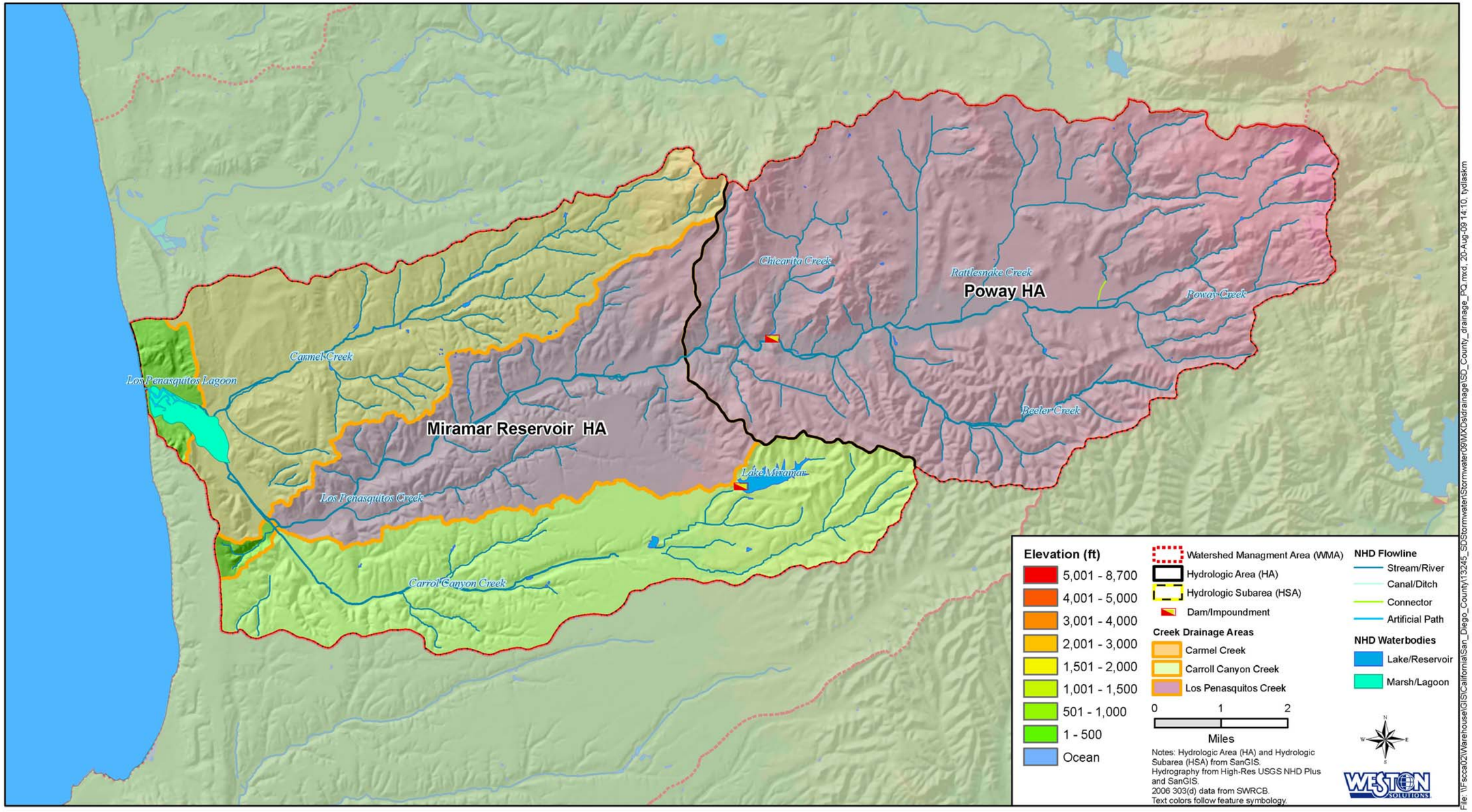

Figure 7-1. Los Peñasquitos Creek Watershed Management Area

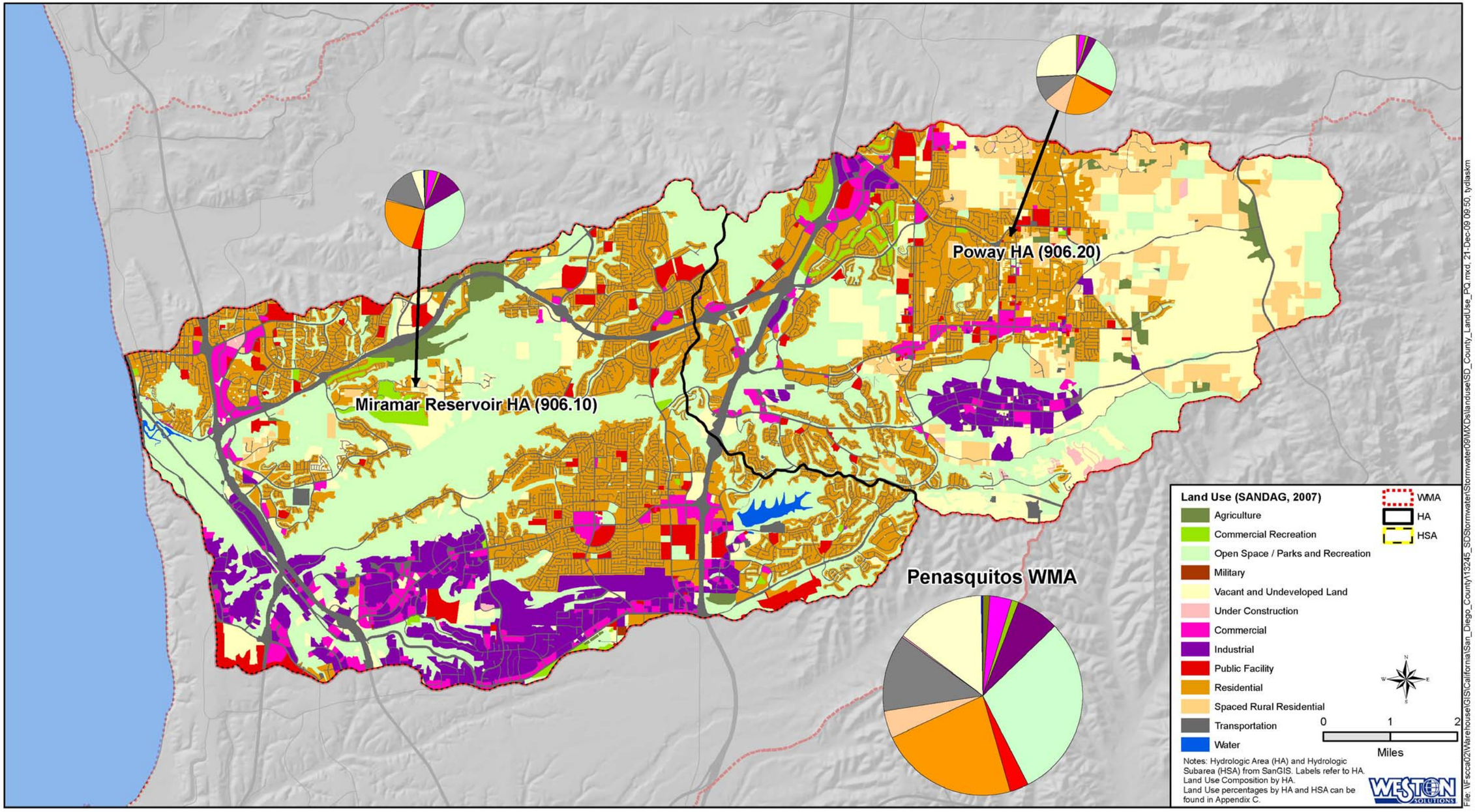

Figure 7-2. Los Peñasquitos Creek Watershed Management Area Land Use Distribution

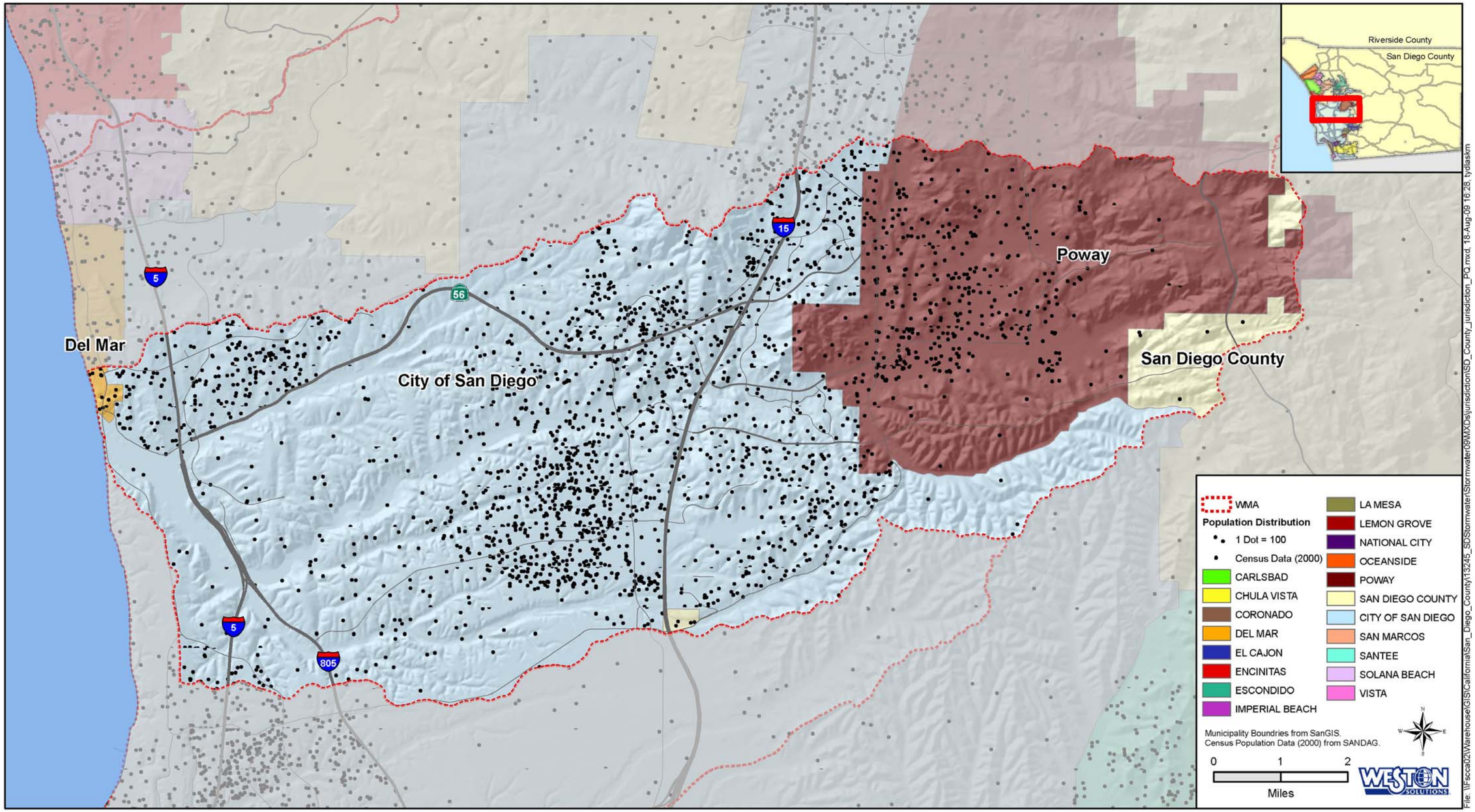

Figure 7-3. Los Peñasquitos Creek Watershed Management Area Jurisdiction and Population Distribution

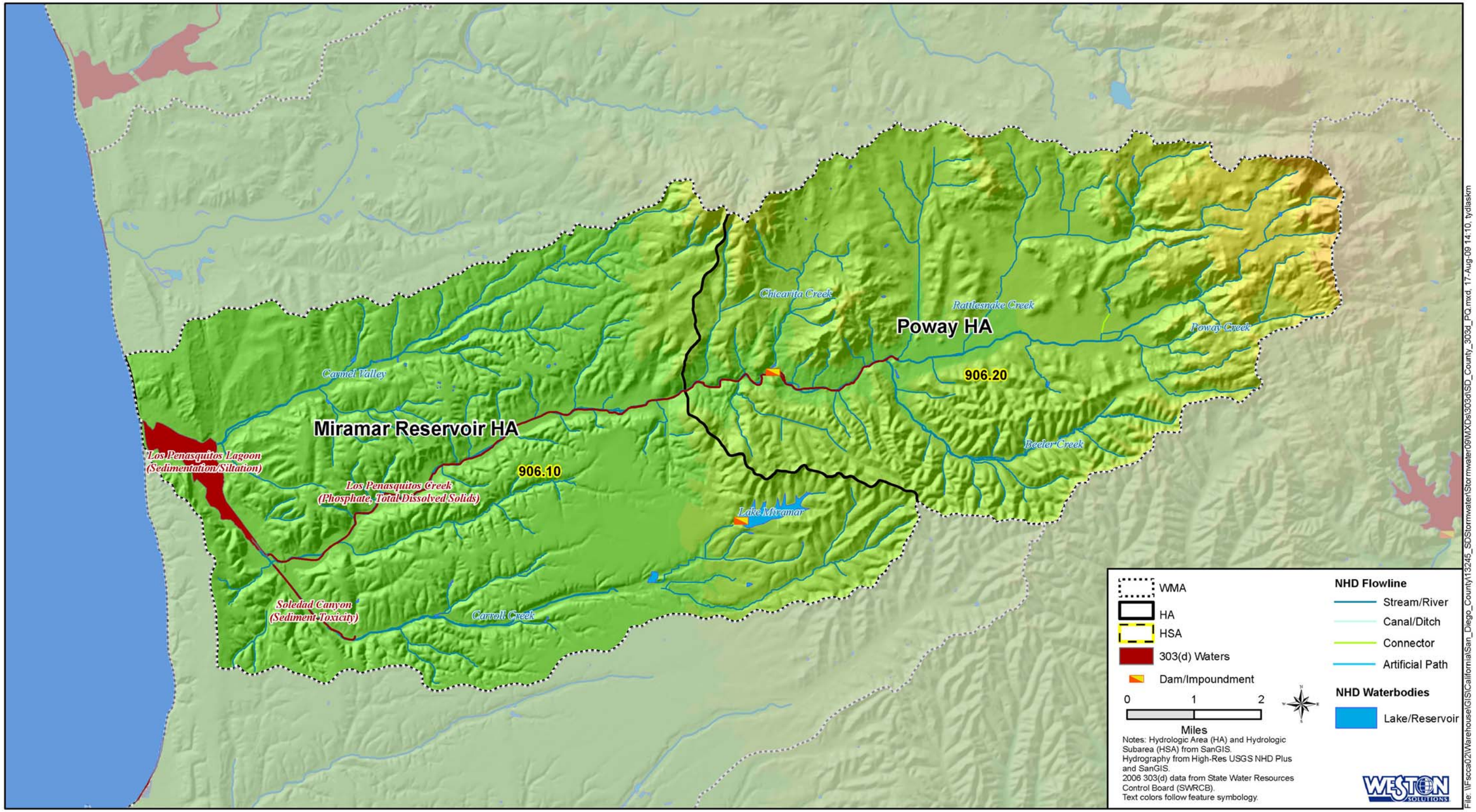

Figure 7-4. Los Peñasquitos Creek Watershed Management Area 2006 State Water Resources Control Board Section 303(d) Listed Waterbodies

7.3 Watershed Monitoring Activities Summary

The following subsections include the results and analyses of chemistry, bacteria, and toxicity data collected as part of receiving water monitoring programs and urban runoff monitoring programs. The data assessed for the Los Peñasquitos Creek and the associated monitoring program (in parentheses) are listed below. Assessments of the data from these programs are presented in Subsection 7.5, and conclusions and recommendations are presented in Subsection 7.6.

Receiving water monitoring included the following:

- Ambient monitoring – water chemistry and toxicity (SMC).
- Rapid Stream Bioassessment – macroinvertebrates, periphyton and physical habitat (SMC).
- Wet weather monitoring – water chemistry, trash, and toxicity (Order R9-2007-0001).
- Receiving water trend assessment (long-term Copermittee data set).
- Post-storm event synthetic pyrethroid monitoring (Order R9-2007-0001).
- Bight ’08 estuary monitoring (Bight ’08).

Urban runoff monitoring included the following:

- Jurisdictional dry weather monitoring (DWM) (Jurisdictional DWM Program).
- Ambient weather municipal separate storm sewer system (MS4) outfall random DWM (MS4 Program).
- Wet weather MS4 outfall random wet weather monitoring (MS4 Program).
- Ambient MS4 targeted monitoring (MS4 Program).
- Regional dry weather source identification monitoring (Regional Dry Weather Source Identification Program).
- Coastal storm drain monitoring (CSDM) (CSDM Program).

Sample locations from each monitoring program are presented on Figure 7-5.

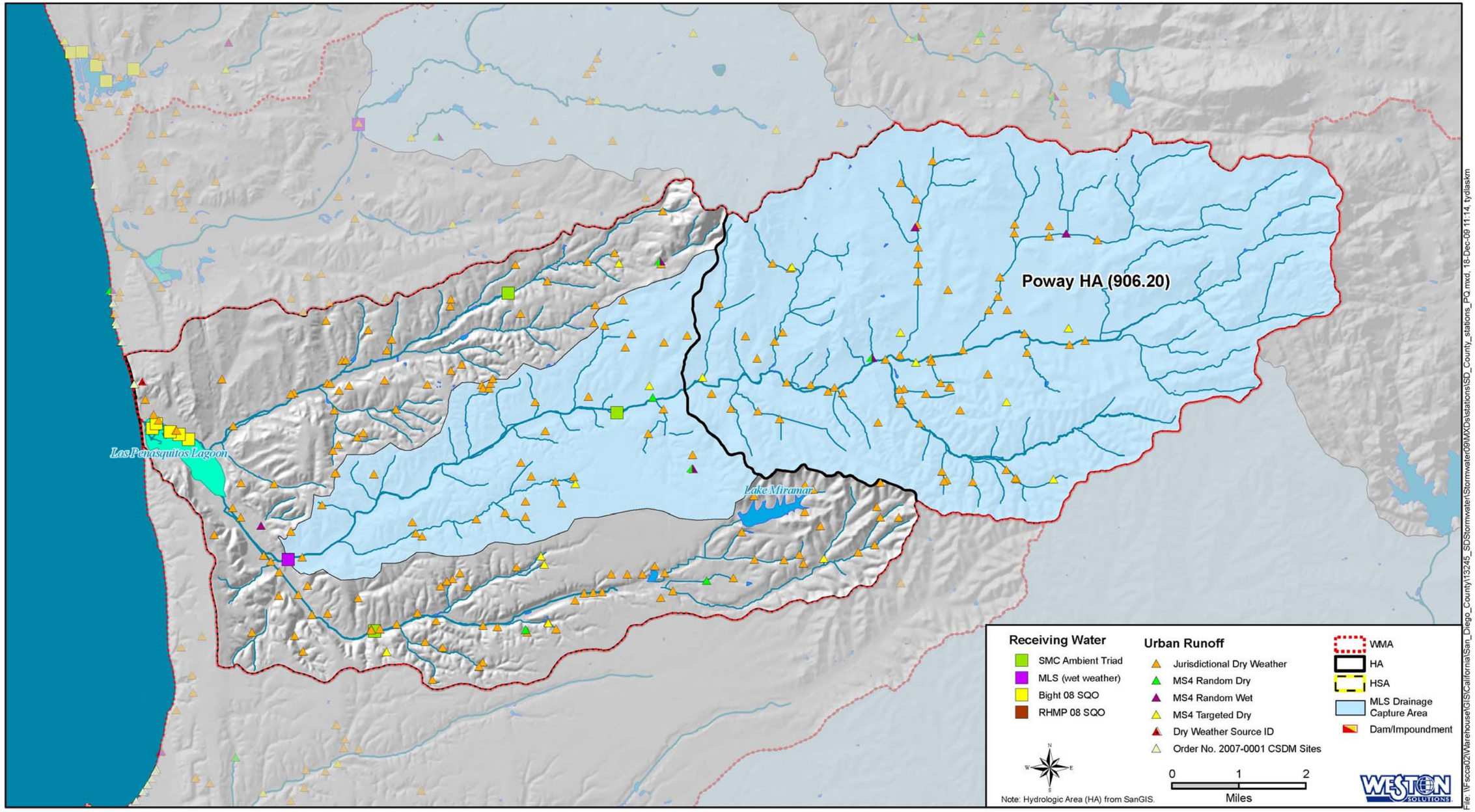

Figure 7-5. Los Peñasquitos Creek Watershed Management Area 2008–2009 Monitoring Station Location Map

7.3.1 Receiving Water Monitoring

In 2008–2009 Monitoring Season, data were collected and assessed in receiving waters in San Diego County primarily to address two core management questions: 1) Are conditions in receiving waters protective, or likely to be protective, of beneficial uses? and 2) What is the extent and magnitude of the current or potential receiving water problems?

To address these questions, data were collected in the receiving waters of the Los Peñasquitos Creek WMA during both ambient weather (i.e., dry weather) and wet weather conditions. Ambient weather conditions in the receiving waters of the Los Peñasquitos Creek WMA were assessed using data collected as part of the SMC Program. The program uses the three major components of the assessment triad to evaluate the receiving waters: water quality, toxicity, and rapid stream bioassessment. The water quality and toxicity results were evaluated by comparison to benchmarks and magnitudes of exceedance. The rapid stream bioassessment uses four major components: macroinvertebrate community structure, attached algae (i.e., periphyton) community metrics, physical habitat, and riparian condition. Bioassessment data tables and discussions are presented in Appendix F.

The wet weather evaluation of the receiving waters in 2008–2009 also included several components. Wet weather monitoring at the MLS was conducted during one storm event, and the water quality and toxicity data were evaluated by comparison to water quality benchmarks and magnitudes of exceedance. A trend assessment was conducted for wet weather data that have been collected at the Los Peñasquitos Creek WMA, including the 2008–2009 data set. Samples of sediment were collected at the MLS following the storm event and were analyzed for synthetic pyrethroids. The data were compared to toxicity benchmarks for pyrethroids established in the literature. Data tables of chemistry, bacteria, and toxicity results are presented in Appendix D.

Finally, the receiving waters were also assessed using data collected in coastal embayments as part of the Bight ’08 Program and other third-party data collected as special studies such as the Regional Harbor Monitoring Program (RHMP), or TMDLs. The data tables for these studies are presented in Appendix L.

7.3.1.1 Ambient Monitoring

Ambient conditions in the receiving waters of the Los Peñasquitos Creek WMA were assessed using data collected as part of the Stormwater Monitoring Coalition Regional Watershed Monitoring (SMC) Program. The program uses the three major components of the assessment triad to evaluate the receiving waters: water quality, toxicity, and rapid stream bioassessment. Data collected for each of these components were assessed in the following sections.

Three receiving water sites were monitored during ambient conditions in the Los Peñasquitos Creek WMA as part of the 2008–2009 SMC Monitoring Program: Site SMC-00198, Site SMC-00710, and Site SMC-00457 in HA 906.10 (Figure 7-5). All three sites were located in the

Miramar Reservoir HA. The sites were monitored on May 19, 2009 and May 20, 2009, as shown in Table 7-3. Water samples collected from each site were monitored for the following water quality constituents (as summarized in Appendix B and detailed in the SMC Regional Monitoring Workplan) (SMCBWG, 2007):

- Physical chemistry.
- Nutrients.
- Total suspended solids (TSS).
- Synthetic pyrethroids.
- Total and dissolved metals.

Water quality results were compared to the benchmarks provided in each table and are based on published values applicable to this monitoring program. These benchmarks were selected by the Copermittee Monitoring Workgroup based on the sources provided in the results table and referenced citations.

The physical parameters measured during the ambient monitoring were conductivity, pH, and water temperature. Conductivity, which is a measure of the dissolved solutes in the water, was relatively high at all three sites, ranging from 2,316 µmhos/cm at Site SMC-00710 in Soledad Canyon to 2,735 µmhos/cm at Site SMC-01158 in McGonigle Canyon (Table 7-3). There is no benchmark established for conductivity; however, there is an established benchmark for pH. In streams, pH values can vary widely, even over a 24-hour period. But among the three sites monitored, pH values fell within the range identified in the Basin Plan. Temperature was more consistent among the three sites monitored, ranging from 18.68–20.4ºC.

Ash-free dry weight and chlorophyll-a are measures of a stream's productivity. Samples for these analyses were taken at each of the three sites as part of the SMC's Bioassessment Program. The results are discussed as part of that program in Subsection 7.3.1.3.

Table 7-3. Los Peñasquitos Creek Watershed Management Area Ambient Water Quality Monitoring Results

Parameter	Units	Water Quality Benchmarks	WMA	Los Peñasquitos Creek		
			HA	906.10	906.10	906.10
			Source	SMC-00198	SMC-00710	SMC-01158
				5/20/2009	5/19/2009	5/20/2009
Physical Chemistry						
Conductivity	umhos/cm	NA		2,701	2,316	2,735
pH	pH units	6.5-9.0	1. Basin Plan	7.84	7.57	7.9
Water temperature	°C	NA		19.20	18.68	20.40
Periphyton						
Ash-free dry weight	g/m^2	NA		39.33	36.33	129.44
Chlorophyll-a	mg/m^3	NA		43.2	20.6	124.4
Wet Chemistry						
Ammonia as N	mg/L	(a)	6. USEPA Water Quality Criteria (Freshwater)	0.03J	<0.03	0.045
Nitrate as N	mg/L	10	1. Basin Plan	0.04J	0.03J	<0.01
Nitrite as N	mg/L	1	1. Basin Plan	<0.01	<0.01	<0.01
Total kjeldahl nitrogen	mg/L	NA		0.7	0.63	1
Total nitrogen***	mg/L	1	1. Basin Plan	0.74	0.66	1
Total phosphorus***	mg/L	0.1	1. Basin Plan	**0.124**	0.032J	0.082
Total orthophosphate as P	mg/L	NA		0.1	0.02	0.06
Chloride	mg/L	250	1. Basin Plan by Hydrologic Area	**708.61**	**516.09**	**1,216.75**
Silica	mg/L	NA		33.2	18.1	38.6
Sulfate by IC	mg/L	250	1. Basin Plan by Hydrologic Area	**341.43**	**500.44**	**710.16**
Total suspended solids	mg/L	58	14. NSQD	4J	1J	8
Hardness						
Total hardness	mg $CaCO_3$/L	NA		815.5	830.9	1445.4
Synthetic Pyrethroids****						
Allethrin	ng/L	NA		<0.5	<0.5	<0.5
Bifenthrin	ng/L	9.3/13.0*	15.Anderson et al., 2006/Weston	<0.5	<0.5	<0.5
Cyfluthrin	ng/L	344	17. Wheelock et al. 2004	<0.5	<0.5	<0.5
Cypermethrin	ng/L	683	17. Wheelock et al. 2004	1.6J	<0.5	1.6J
Danitol	ng/L	NA		<0.5	<0.5	<0.5
Deltamethrin	ng/L	NA		<0.5	<0.5	<0.5
Esfenvalerate	ng/L	250	17. Wheelock et al. 2004	<0.5	<0.5	<0.5
Fenvalerate	ng/L	NA		<0.5	<0.5	<0.5
Fluvalinate	ng/L	NA		0.5J	<0.5	<0.5
L-Cyhalothrin	ng/L	200	17. Wheelock et al. 2004	<0.5	<0.5	<0.5
Permethrin	ng/L	21/39/47*	15.Anderson et al., 2006/Weston	<5	<5	<5
Prallethrin	ng/L	NA		<0.5	<0.5	<0.5
Resmethrin	ng/L	NA		<5	<5	<5
Total Metals						
Arsenic	mg/L	0.05	1. Basin Plan	0.0032	0.0016	0.0052
Cadmium	mg/L	0.005	1. Basin Plan	<0.0002	<0.0002	<0.0002

Table 7-3. Los Peñasquitos Creek Watershed Management Area Ambient Water Quality Monitoring Results

Parameter	Units	Water Quality Benchmarks	WMA	Los Peñasquitos Creek		
			HA	906.10	906.10	906.10
			Source	SMC-00198	SMC-00710	SMC-01158
				5/20/2009	5/19/2009	5/20/2009
Chromium	mg/L	0.05	1. Basin Plan	0.0001J	<0.0001	0.0002J
Copper	mg/L	1.0	1. Basin Plan	0.0008	0.0012	0.0011
Lead	mg/L	NA		0.00007J	<0.00005	0.00019
Nickel	mg/L	0.1	1. Basin Plan	0.001	0.0014	0.0013
Selenium	mg/L	0.005	40 CFR 131.38	0.001	0.0015	0.0042
Zinc	mg/L	5.0	1. Basin Plan	0.0012	0.0046	0.0047
Dissolved Metals						
Arsenic	mg/L	0.34 (acute) and 0.15 (chronic)	40 CFR 131.38	0.0032	0.0013	0.0048
Cadmium	mg/L	(b)	40 CFR 131.38	<0.0002	<0.0002	<0.0002
Chromium	mg/L	(b)	40 CFR 131.38	<0.0001	<0.0001	<0.0001
Copper	mg/L	(b)	40 CFR 131.38	0.0007J	0.0013	0.001
Lead	mg/L	(b)	40 CFR 131.38	<0.00005	<0.00005	<0.00005
Nickel	mg/L	(b)	40 CFR 131.38	0.001	0.0014	0.0012
Selenium	mg/L	NA		0.0011	0.0016	0.0038
Zinc	mg/L	(b)	40 CFR 131.38	0.0008	0.0059	0.003
Toxicity						
Ceriodaphnia 96-hr	% Survival	NA		100	100	30**
Ceriodaphnia 7-day survival	% Survival	NA		100	100	30**
Ceriodaphnia 7-day reproduction	Average Reproduction	NA		19.6	16.5	0.5**

(a) Water Quality Benchmark is based on CMC (salmonids absent) and CCC (early life stages present) using water temperature and pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

(b) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

NA indicates no criteria or published value was available or applicable to the matrix or program.

Shaded text – exceeds water quality benchmarks. Underlined results are above the **CMC** water quality benchmark for metals.

* The lowest value presented in the range was used for conservative purposes.
** Results are significantly different from the control.
***Total N and Total P are narrative standards in the Basin Plan based on biostimulatory responses to nutrients
****The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.
J flagged values indicate that the reported result is below the reporting limit, but above the method detection limit.

Source
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Several nutrients were monitored as part of the ambient monitoring analyte list, including nitrate, nitrite, total kjeldahl nitrogen (TKN), total nitrogen, and total phosphorus (Table 7-3). Of these, benchmarks are available for total nitrogen and total phosphorus. Concentrations of total nitrogen at all three monitoring sites in the Los Peñasquitos Creek WMA did not exceed the Basin Plan water quality objective of 1.0 mg/L. Total nitrogen is the sum of nitrate, nitrite, and TKN (i.e., the sum of ammonia and organic nitrogen such as the protein in plant matter). In most cases, nitrite is ephemeral in aquatic systems where it is quickly converted to nitrate, which can accumulate over time, depending on a variety of physical and biological factors.

In contrast to total nitrogen, among the three sites monitored, the total phosphorus concentration was highest at Site SMC-00198 (0.124 mg/L) and was the only site where the total phosphorus concentration was above the Basin Plan standard of 0.1 mg/L (Table 7-3). Site SMC-00198 also had the greatest orthophosphate concentration (0.1 mg/L). Phosphorus exists in three forms in the environment: orthophosphate, metaphosphate, and organically bound phosphate. Orthophosphate is important in watershed assessments because it can be found at high concentrations in storm water and agricultural runoff and is easily taken up by plants, which can lead to algal blooms.

TSS is an important parameter for estimating the relative amount of sediment carried by a stream. In the Los Peñasquitos Creek WMA, ambient TSS concentrations were relatively low, with the greatest TSS (8 mg/L) at Site SMC-01158 (Table 7-3). Greater TSS concentrations in this portion of the watershed may simply be a result of local sources, and may also reflect the greater percentage of agricultural land use at this site compared to the other two SMC sites in the WMA. TSS concentrations were below the water quality benchmark of 58 mg/L at all sites.

Chloride and sulfate in all three sites monitored were above its respective benchmark of 250 mg/L (Table 7-3). Chloride concentrations ranged from 516 mg/L at SMC-00710 to 1,217 mg/L at SMC-01158. Sulfate concentrations ranged from 341.43 mg/L at SMC-00198 to 710.16 mg/L at SMC-01158. Elevated chloride and sulfate levels are likely the result of elevated dissolved solids which have historically been problematic region-wide.

Synthetic pyrethroid pesticides have become increasingly common in urban watershed assessments (WESTON, 2009). These highly toxic pesticides are hydrophobic and tend to be associated more with sediment than with water in environmental samples. Thirteen synthetic pyrethroids were monitored from water column samples as part of the ambient monitoring program (Table 7-3). Concentrations of the synthetic pyrethroids analyzed were low (i.e., slightly above the detection limit) or below detection limits in all three sites monitored in the Los Peñasquitos Creek WMA.

The total and dissolved fractions of eight metals were assessed at each of the sites monitored in the SMC Program. Total metal concentrations at a site were compared to water quality benchmarks, and dissolved metal concentrations were compared to standards based on the hardness of the site water. Among the three sites monitored in the Los Peñasquitos Creek WMA, concentrations of total and dissolved metals were low (i.e., not detected or slightly above the detection limit) and none were greater than their respective benchmarks (Table 7-3).

The ambient receiving water samples collected in the Los Peñasquitos Creek WMA were also analyzed for toxicity to the water flea (*Ceriodaphnia dubia*). Three toxicity tests were conducted for each site monitored: 96-hr acute test measuring survival, 7-day chronic test measuring survival, and 7-day chronic test measuring reproduction. In the 96-hr and 7-day survival tests, *C. dubia* was exposed to site water for a period of 96 hours or seven days, respectively, and the percent survival was recorded. The results were compared to those of a control test where *C. dubia* was exposed to reconstituted laboratory water (see Appendix B for complete methods). Several replicates of the test were conducted so a statistical comparison could be made between

the two groups. In the 7-day reproduction test, *C. dubia* was exposed to site water, and the number of progeny was compared to that produced by control organisms exposed to reconstituted laboratory water. As with the 7-day survival test, a statistical evaluation of the number of progeny produced was conducted to determine differences between the two groups.

Among the three sites in the Los Peñasquitos Creek WMA assessed for toxicity to *C. dubia*, Site SMC-01158 a significantly different percent survival compared to controls (Table 7-3). In addition, the 7-day reproductive test for Site SMC-01158 showed a significant difference between the number of progeny produced by control organisms compared to those exposed to site water. These results suggest that, among the sites tested in the Los Peñasquitos Creek WMA, ambient receiving water in McGonigle Canyon was toxic to test organisms.

7.3.1.2 Magnitude of Exceedance for Ambient Conditions

The concentration of a constituent that exceeded its respective benchmark was compared to its benchmark value to answer the magnitude portion of Core Management Question 2—What is the extent and magnitude of the current or potential receiving water problems? These concentration–to-benchmark ratios were plotted for constituents monitored within the Los Peñasquitos Creek WMA, whose concentrations were greater than benchmark values (Figure 7-6). Since this is the first year of the SMC Program, the three sites monitored in the Los Peñasquitos Creek WMA were plotted individually for each constituent. These graphs are useful in visualizing which constituents exceeded the benchmark values as well as the magnitude of the exceedance.

Figure 7-6 shows that for the ambient monitoring in the Los Peñasquitos Creek WMA, chloride and sulfate exceeded 1.4 to 4.9 times the respective benchmarks at all three sites. While the total phosphorus benchmark was slightly greater than the benchmark at SMC-00198, all other ratios were less than or equal to its respective benchmark.

The ambient receiving water toxicity results were not evaluated using the concentration-to-benchmark ratios because the results were presented as percent difference between test organisms and controls, rather than a comparison to benchmark values.

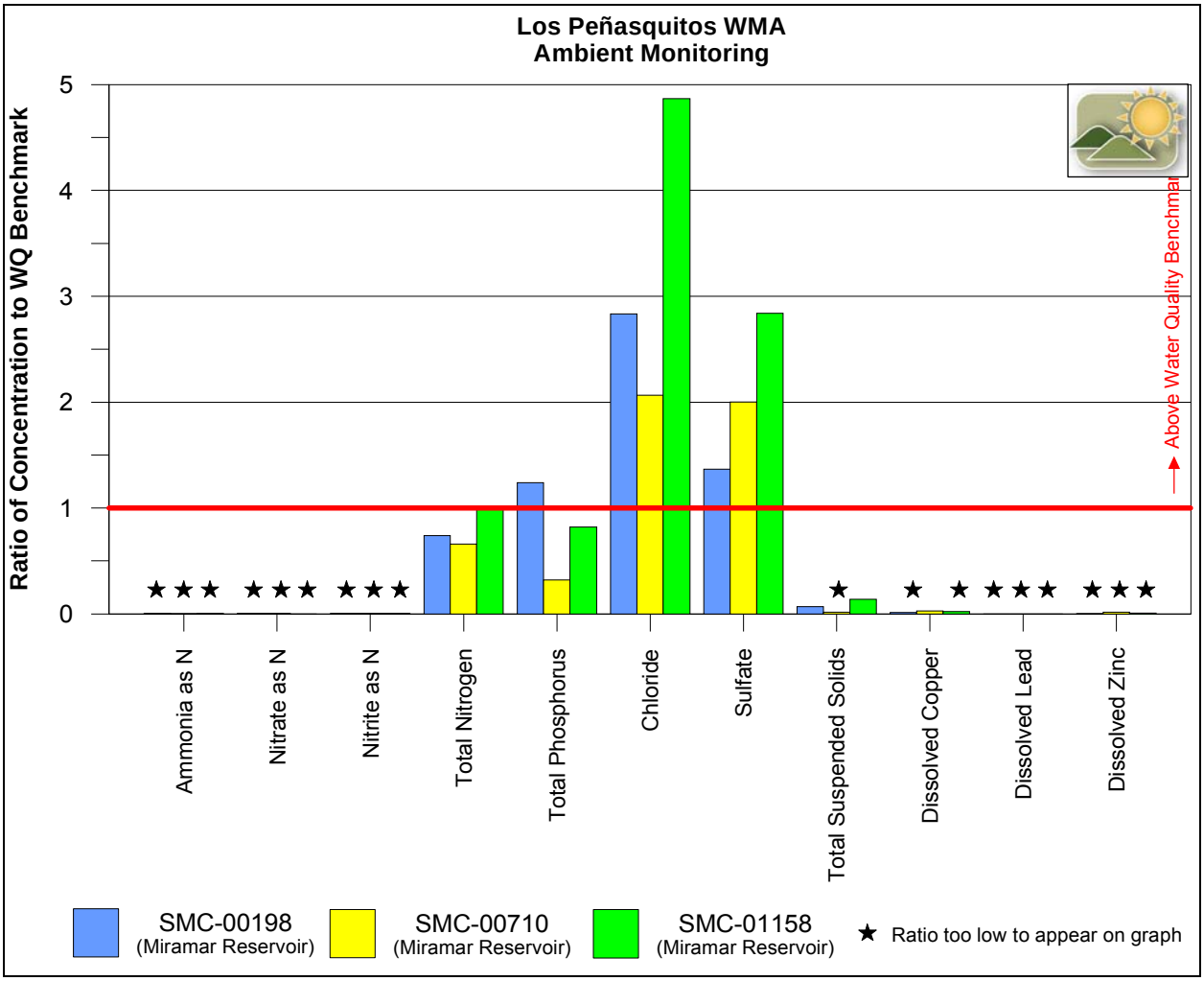

Figure 7-6. Los Peñasquitos Creek Ambient Water Quality Concentration-to-Benchmark Ratios

7.3.1.3 Rapid Stream Bioassessment

Stream bioassessment in 2009 was conducted according to the SMC Program Work Plan (SMCBWG, 2007) at all monitoring sites. Monitoring included the collection of samples for benthic macroinvertebrates (BMI), benthic algae, water chemistry, and aquatic toxicology. The sites were randomly selected and were in different locations than in previous surveys. To assess the quality of the BMI community at each site, biological metrics were calculated as well as two summary indices. The summary indices included a multi-metric Index of Biotic Integrity (IBI) and a predictive Observed-to-Expected ratio (O/E), both of which identify the level of biological impairment at a site and are specific to Southern California ecological conditions. These indices are described in greater detail in the Methods in Appendix B. Benthic algae (i.e., periphyton) samples were collected at the time of the bioassessment surveys, and a taxonomic analysis was performed; however, the benthic algae results are not yet available. These data may be analyzed

when metrics and a benthic algal IBI become available; a Southern California algal IBI is being developed by the State of California. Physical habitat was assessed at each site using two methods, the Surface Water Ambient Monitoring Program (SWAMP) Physical Habitat Assessment Method and the California Rapid Assessment Method (CRAM) for riverine wetlands. Complete lists of taxa, community metrics, indices, and physical habitat information from the bioassessment surveys are presented in Appendix F. A summary of the key metrics and site characteristics are presented in Table 7-4.

Three randomly placed SMC monitoring reaches were monitored in the Los Peñasquitos Creek WMA in 2009, including Site SMC-01158 in McGonigle Canyon Creek along State Route 56, Site SMC-00198 in Los Peñasquitos Creek downstream of Black Mountain Road, and Site SMC-00710 in Soledad Canyon Creek in Sorrento Valley. The locations of the sites are presented on Figure 7-5.

Site SMC-01158 – McGonigle Canyon Creek

The benthic macroinvertebrate community IBI quality rating was Very Poor at the McGonigle Canyon Creek Site, with an IBI score of 1 out of 70 possible points (Table 7-4). The O/E ratio was 0.38, which implies that the BMI community has lost an estimated 62% of the biodiversity expected at the site, and it was impaired.

The physical habitat at the site was fair with a low gradient streambed dominated by fine sediment (61%) and sand (25%) (Appendix F). The adjacent landscape was dominated by agricultural operations and upstream was urbanized with major roads and relatively new commercial and housing developments. The riparian zone and stream banks were well vegetated but narrow, with an average reach-wide canopy cover of 83%. The CRAM habitat score was 65 out of a possible 100 points. Water quality parameters measured at the time of the survey included temperature, pH, dissolved oxygen (DO), specific conductance, and alkalinity. Temperature, pH, and DO can change dramatically over a 24-hour period in some lotic systems, depending on several variables, but specific conductance and alkalinity can provide more consistent measures of water quality. Specific conductance and alkalinity at the time of the survey were 2.735 ms/cm and 136 mg/L $CaCO_3$, respectively (Table 7-3, Appendix F). Reference streams in San Diego County typically have specific conductance values of less than 1.0 ms/cm and alkalinity of near or below 100 mg/L $CaCO_3$ (WESTON, 2008).

Table 7-4. Selected Biological Metrics and Physical Measures of the Los Peñasquitos Creek Watershed Management Area for 2009

Parameter	McGonigle Canyon Creek (SMC-01158)	Los Peñasquitos Creek (SMC-00198)	Soledad Canyon Creek (SMC-00710)
Index of Biotic Integrity/ Qualitative Rating*	**1** **Very Poor**	**9** **Very Poor**	**6** **Very Poor**
O/E Ratio**	**0.38**	**0.75**	**0.59**
Key Metrics			
Taxa richness	15	28	23
EPT taxa (i.e., mayflies, stoneflies, and caddisflies)	0	4	1
% Intolerant organisms	0.0%	0.0%	0.0%
% Tolerant organisms	19.9%	51.6%	73.7%
Physical Measures			
CRAM total physical habitat score (25-100 scale)	65	87	75
Elevation	210	223	103
% Canopy cover	83%	99%	85%
Dominant substrate type	Fine sediment	Coarse gravel and tree roots	Coarse gravel and cobble
Flow (cfs)	0.02	1.12	0.13
Dominant flow regime	Run/glide	Run/glide	Riffle
Benthic Algae Measures			
Macroalgae cover (% of reach)	28.6%	69.5%	65.7%
Microalgae cover (% of reach)	57.1%	87.5%	75.2%
Algal ash-free dry mass (AFDM) (g/m^2)	129.4	39.3	36.3
Chlorophyll-a (mg/m^3)	124.4	43.2	20.6

*IBI Score 0–13=Very Poor, 14–26=Poor, 27–40=Fair, 41–55=Good, 56–70=Very Good; IBI scores of >26 represents unimpacted conditions.

**O/E ratio of >0.8 represents unimpacted conditions.

BMI taxa richness included 15 different taxa (Appendix F) with no Ephemeroptera, Plecoptera, Trichoptera (EPT) taxa (i.e., mayflies, stoneflies, and caddisflies) collected (Table 7-4). Taxa that are highly intolerant (i.e., sensitive) to impairment were not collected at the site. Highly tolerant taxa represented 19.9% of the community. The chironomid midge *Micropsectra* dominated the site and comprised 66% of the community. Ostracods (seed shrimp) were the second most abundant organism and comprised 11% of the community. Collector taxa accounted for 92% of the community (Appendix F). Collectors feed on fine particulate organic detritus, algae, and various micro-organisms (Smith, 2001; Usinger, 1956) and generally increase in response to high levels of urbanization and runoff (SLSI, 2003).

Attached macroalgae at Site SMC-01158 was determined to cover 28.6% of the substrate in the sampling reach (Table 7-4). The relatively low macroalgae cover may have been influenced by the predominance of fine particulate substrates and lack of hard substrates. Microalgae (i.e., diatoms) observed in the sample reach were estimated to cover 57.1% of the substrate. Chlorophyll-a had a value of 124.4 mg/m^3, and ash-free dry mass (AFDM) was 129.4 g/m^2.

Site SMC-00198 – Los Peñasquitos Creek

The benthic macroinvertebrate community IBI quality rating was Very Poor at the Los Peñasquitos Creek Site, with an IBI score of 9 out of 70 possible points (Table 7-4). The O/E ratio was 0.75, which implies that the BMI community has lost an estimated 25% of the biodiversity expected at the site, and it was impaired.

The physical habitat at the site was good with a low gradient streambed dominated by coarse gravel (39%) and tree roots (18%) (Appendix F). The adjacent landscape was an open space park, although the creek has been perennialized by urban runoff. The riparian zone and stream banks were well vegetated with an average reach-wide canopy cover of 99%. The CRAM habitat score was 87 out of a possible 100 points. Specific conductance and alkalinity at the time of the survey were 2.701 ms/cm and 330 mg/L $CaCO_3$, respectively (Table 7-3) (Appendix F). Reference streams in San Diego County typically have specific conductance values of less than 1.0 ms/cm and alkalinity of near or below 100 mg/L $CaCO_3$ (WESTON, 2008).

BMI taxa richness included 28 different taxa with four different EPT taxa (i.e., mayflies, stoneflies, and caddisflies) collected (Table 7-4). Taxa that are highly intolerant (i.e., sensitive) to impairment were not collected at the site. Highly tolerant taxa represented 51.6% of the community. Ostracods dominated the site and comprised 43% of the community. The mayflies *Baetis adonis* and the black fly *Simulium* were the second and third most abundant organisms and comprised 20% and 8% of the community, respectively. Collector taxa accounted for 87% of the community (Appendix F).

Attached macroalgae at Site SMC-00198 was determined to cover 69.5% of the substrate in the sampling reach (Table 7-4). Microalgae (i.e., diatoms) observed in the sample reach were estimated to cover 87.5% of the substrate. Chlorophyll-a had a value of 43.2 mg/m^3, and AFDM was 39.3 g/m^2.

Site SMC-00710 – Soledad Canyon Creek

The benthic macroinvertebrate community IBI quality rating was Very Poor at the Soledad Canyon Creek Site, with an IBI score of 6 out of 70 possible points (Table 7-4). The O/E ratio was 0.59, which implies that the BMI community has lost an estimated 41% of the biodiversity expected at the site, and it was impaired.

The physical habitat at the site was good with a low gradient streambed dominated by coarse gravel (49%) and cobble (31%) (Appendix F). The adjacent landscape was open space with commercial business development along the Soledad Canyon. The creek has been perennialized by urban runoff. The riparian zone and stream banks were well vegetated with an average reach-wide canopy cover of 85%. The CRAM habitat score was 75 out of a possible 100 points. Specific conductance and alkalinity at the time of the survey were 2.316 ms/cm and 200 mg/L $CaCO_3$, respectively (Table 7-3) (Appendix F). Reference streams in San Diego County typically have specific conductance values of less than 1.0 ms/cm and alkalinity of near or below 100 mg/L $CaCO_3$ (WESTON, 2008).

BMI taxa richness included 23 different taxa with one EPT taxon (i.e., mayflies, stoneflies, and caddisflies) collected (Table 7-4). Taxa that are highly intolerant (i.e., sensitive) to impairment were not collected at the site. Highly tolerant taxa represented 73.7% of the community. Ostracods dominated the site and comprised 71% of the community. The chironomid midge *Micropsectra* and the black fly *Simulium* were the second and third most abundant organisms and both comprised 6% of the community. Collector taxa accounted for 94% of the community (Appendix F).

Attached macroalgae at Site SMC-00710 was determined to cover 65.7% of the substrate in the sampling reach (Table 7-4). Microalgae (i.e., diatoms) observed in the sample reach were estimated to cover 75.2% of the substrate. Chlorophyll-a had a value of 20.6 mg/m^3, and AFDM was 36.3 g/m^2.

7.3.1.4 Wet Weather Monitoring

One wet weather event was monitored during the 2008–2009 Wet Weather Monitoring Season at the Los Peñasquitos Creek MLS (Figure 7-5). Annual storm water monitoring has been performed at the MLS since the 2001–2002 Wet Weather Monitoring Season. The 2008–2009 wet weather event occurred on November 11, 2008. Concentrations of constituents analyzed from the event for the Los Peñasquitos Creek WMA are presented in Appendix D. Sample results were compared to the benchmarks provided in each table and are based on published values applicable to this monitoring program. These benchmarks were selected by the Copermittee Monitoring Workgroup from the sources provided in the results table and referenced citations.

Rainfall data obtained from the MLS are presented in Table 7-5, and the rain event hydrograph is presented in Appendix G. During the November 11, 2008 storm event, a total of 0.20 inches of rain fell at the Los Peñasquitos Creek MLS over a 1.3-hour period. The rain intensity was 0.16 inch per hour. Prior to this storm event, there were five days of dry weather at this site.

Table 7-5. Los Peñasquitos Creek Watershed Management Area 2008–2009 Rainfall Statistics for the Monitored Storm Event

Start Date–Site	Total Rain (inches)	Duration (hr)	Avg. Intensity (inch/hr)	Antecedent Dry Days
11/11/2008 - LPC-MLS	0.20	1.3	0.16	5

Wet weather water quality data collected at the Los Peñasquitos Creek MLS from 2001 through 2009 are presented in Appendix D. The results from the 2008–2009 Wet Weather Season are presented in Table 7-6. Concentrations of conventional constituents collected during the November 11, 2008 storm event were below their respective benchmark values, with the exception of TDS and fecal coliform. The TDS concentration during the storm event was 2,360 mg/L, which was greater than the benchmark value of 500 mg/L. TDS concentrations have been greater than the benchmark value in all storm event samples collected at this site since 2001 except for one storm on February 28, 2006. This is similar to other WMAs in San Diego County, suggesting a region-wide issue.

Table 7-6. Los Peñasquitos Creek Watershed Management Area Wet Weather Water Quality Monitoring Results

Analyte	Units	Water Quality Benchmarks	Watershed	Los Peñasquitos
			SOURCE	Los Peñasquitos Creek
				MLS
				11/11/2008
General/Physical/Organic				
Electrical Conductivity	umhos/cm	NA	2. CCR, 5. Goldbook	4,760
Oil & Grease	mg/L	10	1. Basin Plan, 3. Anacostia River TMDL, 4. MSGP 2000	<5
pH	pH scale	6.5-9.0	1. Basin Plan	7.82
Water Temperature	Celsius	NA		15.00
Bacteriological				
Enterococci	MPN/100mL	NA	1. Basin Plan	11,000
Fecal Coliform	MPN/100mL	400	1. Basin Plan REC-1/REC-2	**5,000**
Total Coliform	MPN/100mL	NA	1. Basin Plan	50,000
Wet Chemistry				
Ammonia as N	mg/L	(a)	6. U.S. EPA Water Quality Criteria (Freshwater)	0.08
Biochemical Oxygen Demand	mg/L	30	4. MSGP 2000, 8. McNeeley (1979)	4.7
Chemical Oxygen Demand	mg/L	120	4. MSGP 2000	99
Dissolved Organic Carbon	mg/L	NA		19
Dissolved Phosphorus	mg/L	2	4. MSGP 2000	0.301
Nitrate as N	mg/L	10	1. Basin Plan	0.55
Nitrite as N	mg/L	1	1. Basin Plan	0.06
Methylene Blue Active Substances	mg/L	0.5	1. Basin Plan	0.24
Total Dissolved Solids	mg/L	500	1. Basin Plan	**2,360**
Total Kjeldahl Nitrogen	mg/L	NA		1.7
Total Organic Carbon	mg/L	NA		18.7
Total Phosphorus	mg/L	2	4. MSGP 2000	0.35
Total Suspended Solids	mg/L	100	4. MSGP 2000, 1. Basin Plan	6.8
Turbidity	NTU	20	1. Basin Plan	4.1
Pesticides				
Chlorpyrifos	µg/L	0.02 acute / 0.014 chronic	12. CA Dept. of Fish & Game, 2000	<0.002
Diazinon	µg/L	0.08 acute / 0.05 chronic	12. CA Dept. of Fish & Game, 2000, 11. Chollas Creek TMDL for Diazinon, 10. U.S. EPA, Aquatic Life Ambient Water Quality Criteria Diazinon	<0.004
Malathion	µg/L	0.43	13. CA Dept. of Fish & Game, 1998, 5. Goldbook	<0.006
Hardness				
Hardness	mg $CaCO_3$/L	NA		809.5
Total Metals				
Antimony	mg/L	NA		0.0007
Arsenic	mg/L	NA		0.0048
Cadmium	mg/L	NA		<0.0004
Chromium	mg/L	NA		0.0003J
Copper	mg/L	NA		0.0023
Lead	mg/L	NA		0.0002

Table 7-6. Los Peñasquitos Creek Watershed Management Area Wet Weather Water Quality Monitoring Results

Analyte	Units	Water Quality Benchmarks	Watershed	Los Peñasquitos
			SOURCE	Los Peñasquitos Creek
				MLS
				11/11/2008
Nickel	mg/L	NA		0.0023
Selenium	mg/L	NA		0.0007
Zinc	mg/L	NA		0.004
Dissolved Metals				
Antimony	mg/L	0.006	1. Basin Plan	0.0007
Arsenic	mg/L	0.34 (c)	16. 40 CFR 131.38	0.0053
Cadmium	mg/L	(d)	16. 40 CFR 131.38	<0.0004
Chromium	mg/L	(d)	16. 40 CFR 131.38	0.0001J
Copper	mg/L	(d)	16. 40 CFR 131.38	0.0023
Lead	mg/L	(d)	16. 40 CFR 131.38	<0.0001
Nickel	mg/L	(d)	16. 40 CFR 131.38	0.0021
Selenium	mg/L	NA		0.0008
Zinc	mg/L	(d)	16. 40 CFR 131.38	0.0029
Toxicity				
Ceriodaphnia 96-hr	NOEC (%)	100		100
Ceriodaphnia 7-day survival	NOEC (%)	100		100
Ceriodaphnia 7-day reproduction	NOEC (%)	100		100
Hyalella 96-hr	NOEC (%)	100		100
Selenastrum 96-hr	NOEC (%)	100		100

(a) Water Quality Benchmark is based on CMC (salmonids absent) using pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.
(b) Water Quality Benchmark for total dissolved solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).
(c) Water Quality Benchmark for dissolved metal fractions are based on a default water effects ratios (WER) value of 1 and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(d) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. The Criteria Maximum Concentration (CMC) was used.
NA indicates no criteria or published value was available or applicable to the matrix or program.
Shaded text – exceeds water quality benchmarks. Underlined results are above the **CMC** water quality benchmark for metals.
* Indicates detection limit exceeds water quality benchmark.
J flagged values indicate that the reported result is below the reporting limit, but above the method detection limit.

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Concentrations of other conventional constituents, such as indicators of sedimentation (e.g., turbidity and TSS) and eutrophication (e.g., nutrients), were below their respective benchmarks (Table 7-6).

Among the indicator bacteria monitored (i.e., total coliforms, fecal coliforms, and enterococci), fecal coliforms were the only one for which a benchmark has been established for wet weather.

During the monitored storm event at the Los Peñasquitos Creek MLS, the fecal coliform concentration (taken as a single grab sample) was 5,000 MPN/100 mL, nearly 13 times greater than the REC-1 benchmark of 400 MPN/100 mL established in the Basin Plan (Table 7-6). The fecal coliform concentration has been greater than the benchmark in 76% of the storm water samples collected at this site since sampling began in 2001 (Appendix D).

Three organophosphate pesticides were monitored during wet weather, including Chlorpyrifos, Malathion, and Diazinon. All three pesticides were not detected during the November 11, 2008 storm event at the Los Peñasquitos Creek MLS (Table 7-6). Since monitoring began at the Los Peñasquitos Creek MLS in 2001, organophosphate concentrations have been greater than benchmark values in only three events (Appendix D).

The total and dissolved fractions of nine metals were assessed at the MLS during the November 11, 2008 storm event (Table 7-6). There are no benchmarks established for total metals in wet weather runoff; however, benchmarks have been established for dissolved metals in the Basin Plan. These hardness-based benchmarks were used for comparison to concentrations of dissolved metals measured in storm water runoff. Concentrations of the dissolved metals assessed in the November 11, 2008 storm event were below their respective benchmarks and have been since monitoring began at the Los Peñasquitos Creek MLS in 2001 (Appendix D).

Toxicity testing of storm water runoff was performed using three laboratory test species, including the water flea (*C. dubia*), the amphipod (*Hyalella azteca),* and the algae (*Selenastrum capricornutum)* (Table 7-6). *C. dubia* was used in three separate tests, including 96-hour survival, 7-day survival, and 7-day reproduction. The results of the tests were used to calculate a no-observed-effect concentration (NOEC), which is the concentration of the storm water at which the sample has no effect on the test organism. The NOEC for the toxicity tests using *C. dubia, H. azteca*, and *S. capricornutum* were all 100%, indicating no observed toxicity from the storm water sample on these test organisms. Since storm water monitoring began at the Los Peñasquitos Creek MLS in 2001, only one sample has been toxic to *C. dubia* (i.e., January 30, 2007) and only one to *H. azteca* (i.e., November 30, 2007) (Appendix D).

Synthetic pyrethroid pesticides were analyzed during wet weather conditions in both the receiving water samples taken during the storm event at the MLS and in post-storm sediment samples (Subsection 7.3.1.7). Over the past 20 years, synthetic pyrethroids have largely replaced organophosphate pesticides and have become the dominant pesticide group throughout the United States for ant, termite, and mosquito control (Weston, D., 2008). Synthetic pyrethroids are considerably more toxic at lower concentrations compared to organophosphates (e.g., Diazinon) and have become increasingly more common in urban runoff (Weston, D., 2008). Of the ten pyrethroids analyzed in the storm water sample collected from the Los Peñasquitos Creek WMA, pyrethroids were not found at concentrations above the detection limit (Table 7-7).

Table 7-7. Los Peñasquitos Creek Watershed Management Area Wet Weather Pyrethroid Results

Analyte[1]	Units	Water Quality Benchmarks *	Source	LPC-MLS 11/11/2008
Allethrin	µg/L	NA		<0.002
Bifenthrin	µg/L	0.0093/0.0130	Anderson et al., 2006/Weston, D. 2008	<0.002
Cyfluthrin	µg/L	0.344	San Diego Regional Monitoring Program	<0.002
Cypermethrin	µg/L	0.683	San Diego Regional Monitoring Program	<0.002
Danitol	µg/L	NA		<0.002
Deltamethrin	µg/L	NA		<0.002
Esfenvalerate	µg/L	0.25	San Diego Regional Monitoring Program	<0.002
L-Cyhalothrin	µg/L	0.2	San Diego Regional Monitoring Program	<0.002
Permethrin	µg/L	0.021/0.039/0.047	Anderson et al., 2006/Wheelock et al., 2005	<0.025**
Prallethrin	µg/L	NA		<0.002

1 The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.
NA indicates no criteria or published value was available or applicable to the matrix or program.
*Note: The lowest value presented in the range was used for conservative purposes.
** Benchmark was below detection limit, and so detection level exceedance cannot be determined.

7.3.1.5 Magnitude of Exceedance for Wet Weather

As with ambient monitoring, the ratio of a constituent concentration during the storm event that exceeded its respective benchmark was compared to its benchmark value to answer the magnitude portion of Core Management Question 2—What is the extent and magnitude of the current or potential receiving water problems? These concentration-to-benchmark ratios were plotted for several constituents monitored during the November 11, 2008 storm event at the Los Peñasquitos Creek WMA (Figure 7-7). In addition, the mean ratios for each constituent from wet weather samples collected at the Los Peñasquitos Creek MLS since 2001 were also plotted, allowing a comparison to historical values at this site. These graphs are useful in visualizing which constituents exceeded the benchmark values as well as the magnitude of the exceedance.

As shown on Figure 7-7, the mean concentration-to-benchmark ratios have been greater than one for several constituents monitored at the Los Peñasquitos Creek MLS, including TDS, turbidity, and fecal coliforms. Historically, the magnitude of the exceedance has been greatest for fecal coliforms and TDS (ratios of approximately 29 and three, respectively). During the November 11, 2008 storm event, concentrations of TDS and fecal coliforms were greater than their respective benchmarks. The TDS concentration was approximately 4.7 times greater than its benchmark value, which is slightly higher than the mean value for the site. The fecal coliform concentration was 12.5 times greater than its benchmark value, which is considerably less than the historical mean. In contrast to previous years, the value for turbidity in 2008 was below the benchmark.

The concentration-to-benchmark ratios are not applicable for assessing toxicity results. In contrast to the water quality constituents, the toxicity benchmark is a NOEC of 100% and anything less than that is considered an exceedance of the benchmark. Thus, toxicity results were not assessed relative to the magnitudes of exceedances.

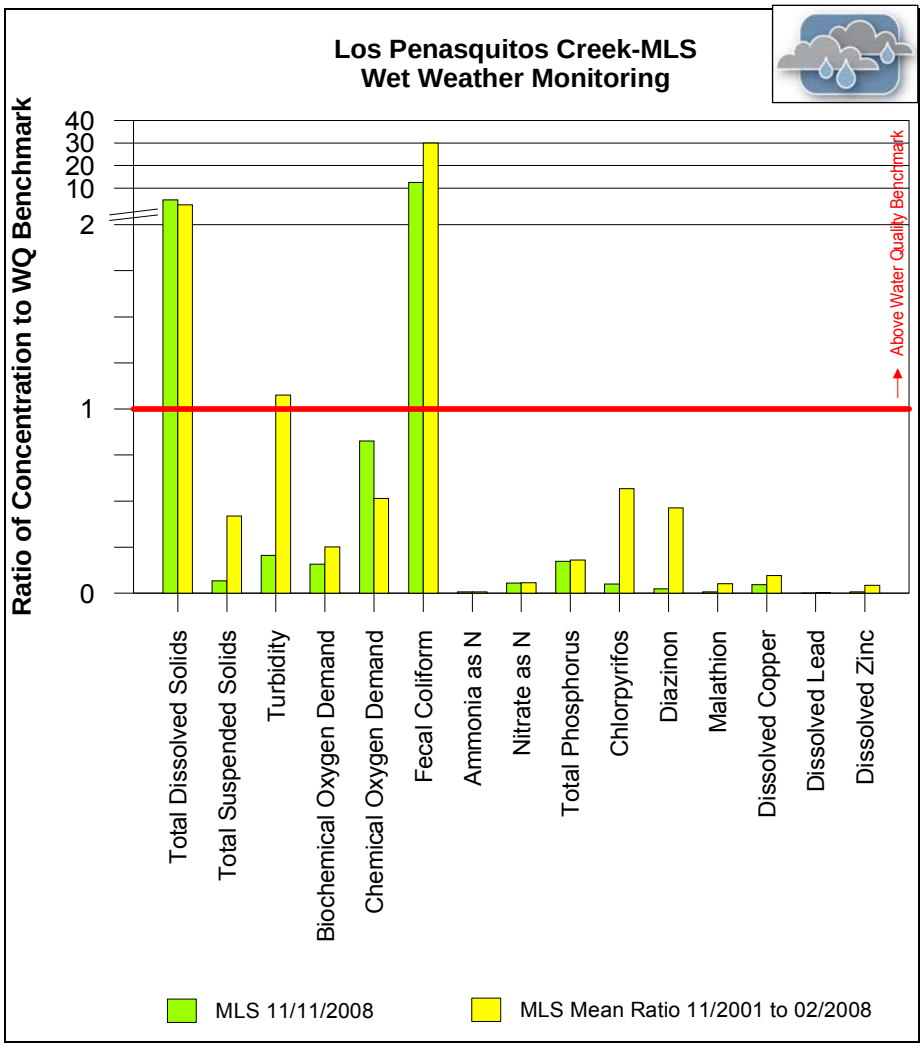

Figure 7-7. Los Peñasquitos Creek Wet Weather Concentration-to-Benchmark Ratios

7.3.1.6 Receiving Water Trend Assessment

Evaluations of long-term trends in monitoring data address Core Management Question 5—Are conditions in receiving waters getting better or worse? Long-term trends were analyzed for chemical, bacterial, and toxicological parameters for wet weather conditions only, since only one year of ambient data have been collected at a given site in the WMA. Additionally, trends in the rapid stream bioassessment results are presented. In 2008–2009, rapid stream bioassessment was conducted at the SMC sites and are therefore not directly comparable to the historical data collected at the MLS. Thus, for assessing bioassessment trends, the historical results through the 2007–2008 Monitoring Season are presented.

Water quality, bacteria, and toxicity results were assessed using the Mann-Kendall trend analysis (i.e., a non-parametric test) to evaluate the presence or absence of significant trends using the available monitoring data (see Appendix B for details). This test is often employed for analysis of environmental time series data. Sen's Estimate of Slope is shown on the graphs to illustrate the median trend of the data per constituent over time. This is not a predictive slope, but rather the median true slope observed to date (i.e., change per unit time). Only significant trends are shown in this WMA section.

At the Los Peñasquitos Creek MLS, concentrations of the indicator bacteria, fecal coliform, appear to be increasing over time (Figure 7-8). In contrast, concentrations of total lead appear to be decreasing over time. Other scatterplots, as well as a table of trend results, including the S-statistic values and critical values, can be found in Appendix H.

Trend analyses of the monitoring results for bacteriological constituents indicates significantly increasing trends for fecal coliforms (p=0.045) over the monitoring period. The magnitudes of the trends show increases in bacteriological concentrations of 41 MPN/100mL/yr (Figure 7-8).

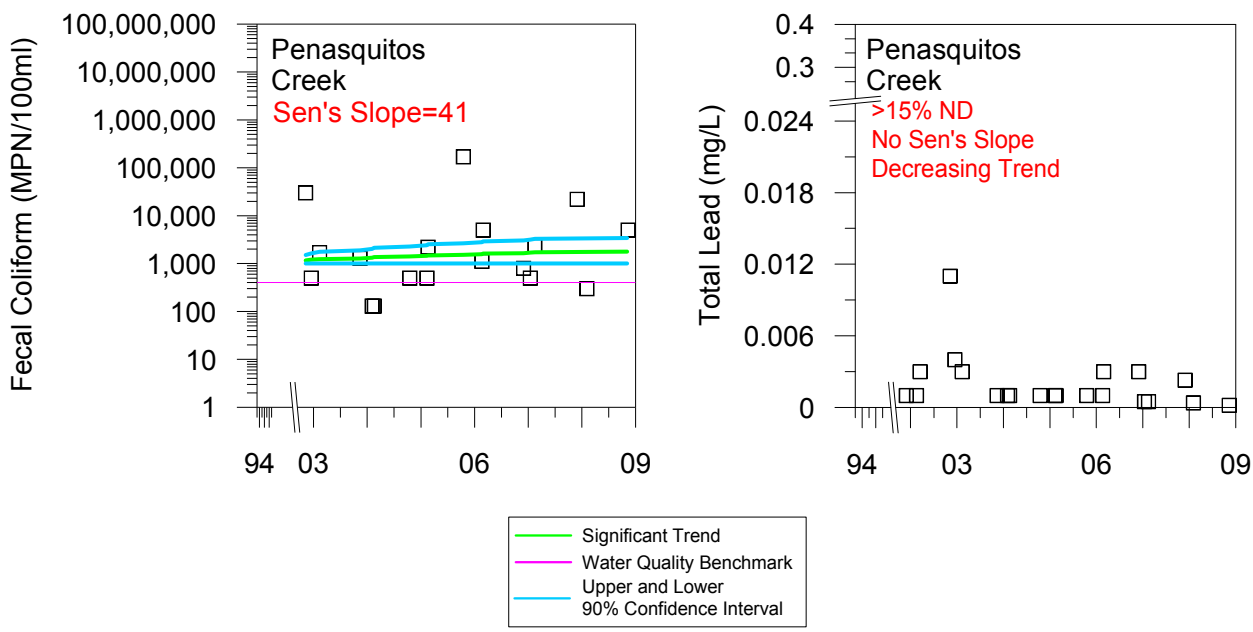

Figure 7-8. Scatterplots of Constituents with Significant Mann-Kendall Trends and Sen's Estimate of Slope

Bioassessment Trends

In the 2008–2009 Monitoring Season, bioassessment was conducted as part of the SMC Monitoring Program. Monitoring sites were not associated with the MLS or TWAS sites as they have been historically. Thus, the 2008–2009 bioassessment data cannot be used in the trend assessment. However, bioassessment trends are an important component of the overall WMA assessment process, and the historical data set from samples collected at the MLS and TWAS through the 2007–2008 Monitoring Period will be used for that purpose. The results presented below are from the 2007–2008 bioassessment trend assessment and will be used with previous data collected at the MLS and TWAS in the final WMA assessments.

Summary Indices Results over Time

The LPC-MLS Site has been sampled three times since 2006, once October 2006, once May 2007, and once May 2008. The mean IBI scores have shown minimal seasonal variability with a mean value of 9.0 for October surveys and 6.5 for May surveys, and a site mean of 7.3 (Figure 7-9). All IBI ratings have been Very Poor and have been well below the impairment threshold of 26. The O/E ratio for LPC-MLS was below the impairment threshold (O/E ratio of 0.80) with a site mean of 0.42, which indicates that the site had lost 58% of the biodiversity expected to occur at this site. This site has shown some improved O/E ratios over the following three years: 0.03 in 2006, 0.33 in 2007, and 0.62 in 2008 (Figure 7-10). However, continued sampling of this site is needed to establish any trend.

The LPC-TWAS-1 Site has been sampled seven times since 2001, although sampling only occurred during May for 2006–2008. Aside from 2002, the mean IBI scores have shown minimal seasonal variability with the mean values of 14.4 for October surveys and 10.0 for May surveys and a site mean of 11.8 (Figure 7-11). IBI ratings have been Very Poor or Poor. The O/E ratio for LPC-TWAS-1 was below the impairment threshold (O/E ratio of 0.80) with an October mean of 0.71, a May mean of 0.53, and an overall site mean of 0.61. The site mean indicates that LPC-TWAS-1 had lost 39% of the biodiversity expected to occur at this site. Seasonal variability for the O/E ratios for LPC-TWAS-1 was substantial in 2001 and 2002 (Figure 7-12).

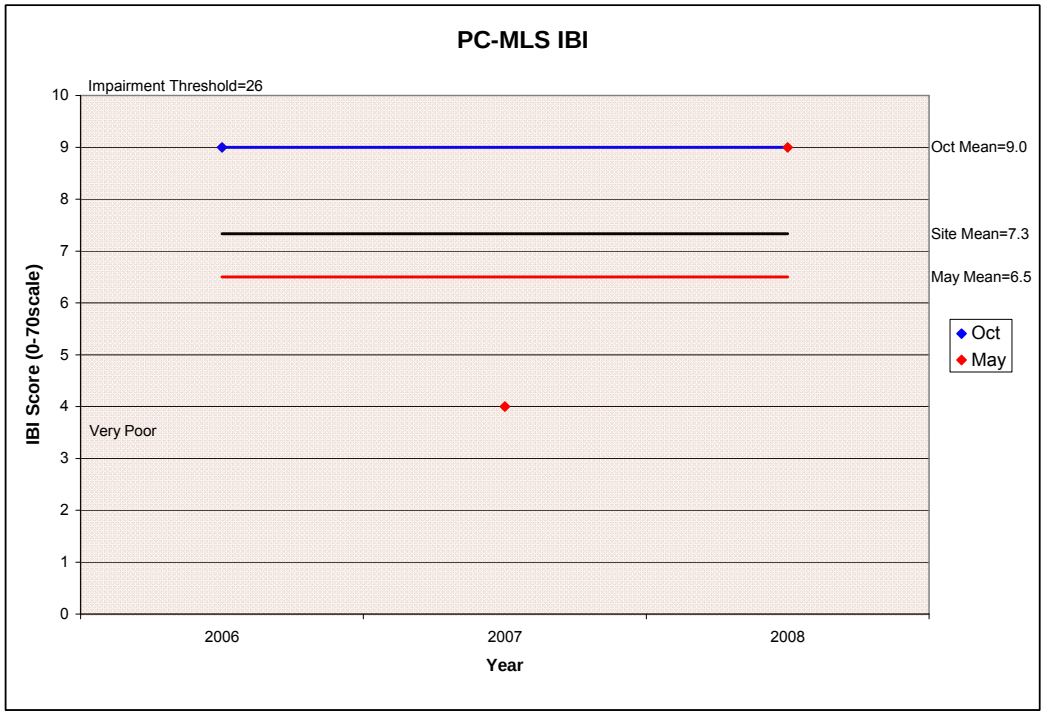

Figure 7-9. Los Peñasquitos Creek Watershed Management Area Index of Biotic Integrity at LPC-MLS

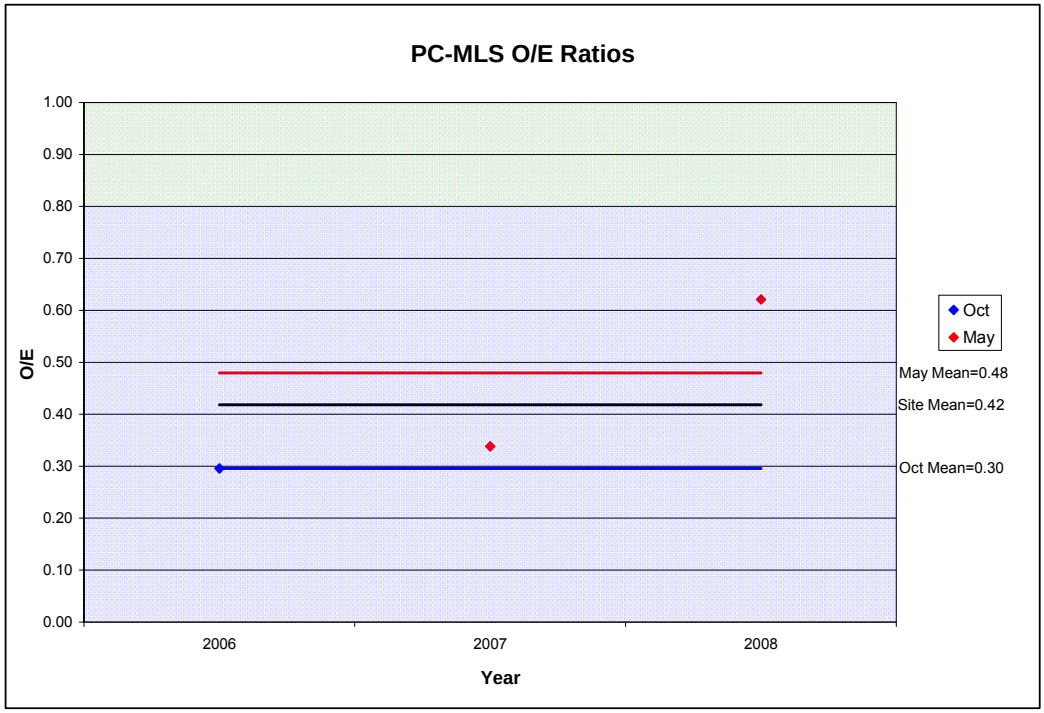

Figure 7-10. Los Peñasquitos Creek Watershed Management Area O/E Ratio for LPC-MLS

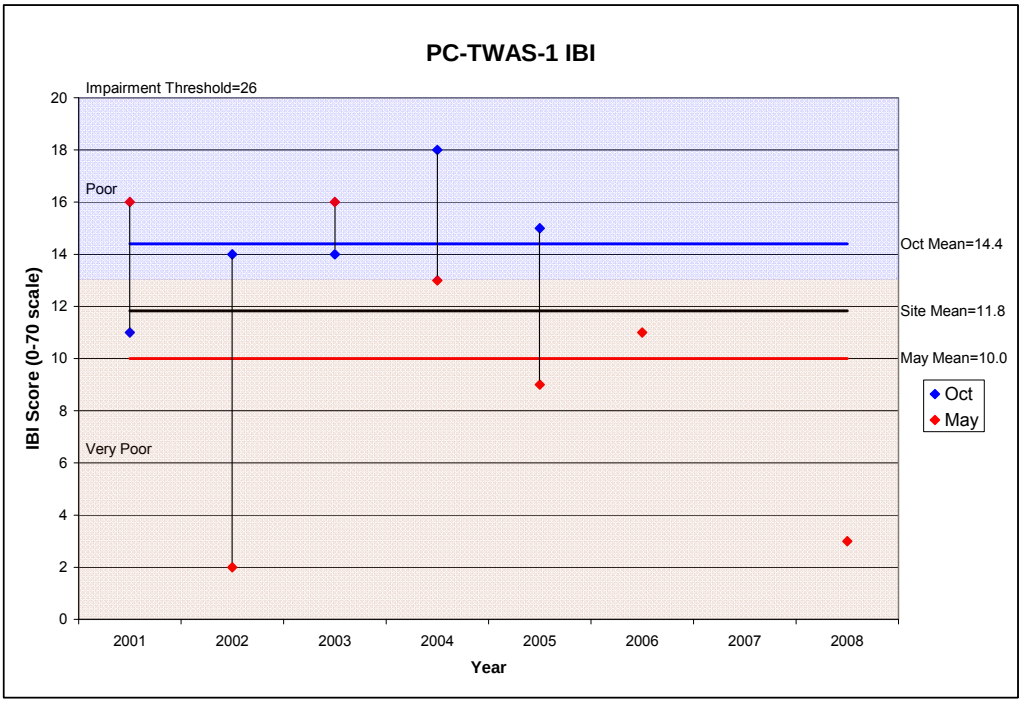

Figure 7-11. Los Peñasquitos Creek Watershed Management Area Index of Biotic Integrity for Carroll Canyon Creek at LPC-TWAS-1

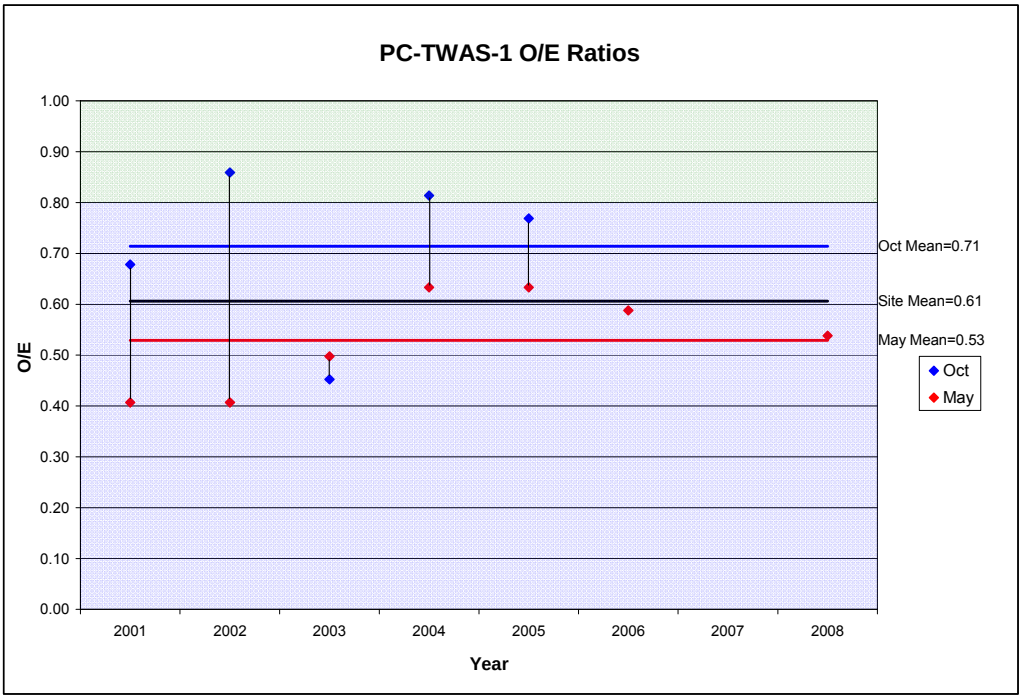

Plot includes historical data from Site CCC-805

Figure 7-12. Los Peñasquitos Creek Watershed Management Area O/E Ratio for Carroll Canyon Creek at LPC-TWAS-1

The LPC-TWAS-2 was sampled in May 2008 for the first time for benthic macroinvertebrates. For trend analysis, this site was combined with the historic site located approximately 1 mile upstream at Cobblestone Creek Road that has been sampled since 2001. Sampling only occurred during the month of May in 2002, 2007, and 2008. Slight seasonal variability was observed in 2001 and 2006. The mean IBI value was 12.6 for October surveys and 6.8 for May surveys, with a site mean value of 9.0 (Figure 7-13). IBI ratings have been Very Poor or Poor. Aside from October 2001 and October 2005 surveys, the O/E ratio for LPC-TWAS-2 was below the impairment threshold (O/E ratio of 0.80) with an October mean of 0.77, a May mean of 0.55, and an overall site mean of 0.64. The site mean indicates that LPC-TWAS-2 had lost 36% of the biodiversity expected to occur at this site. Seasonal variability for O/E ratios was observed in 2001 and 2005 (Figure 7-14).

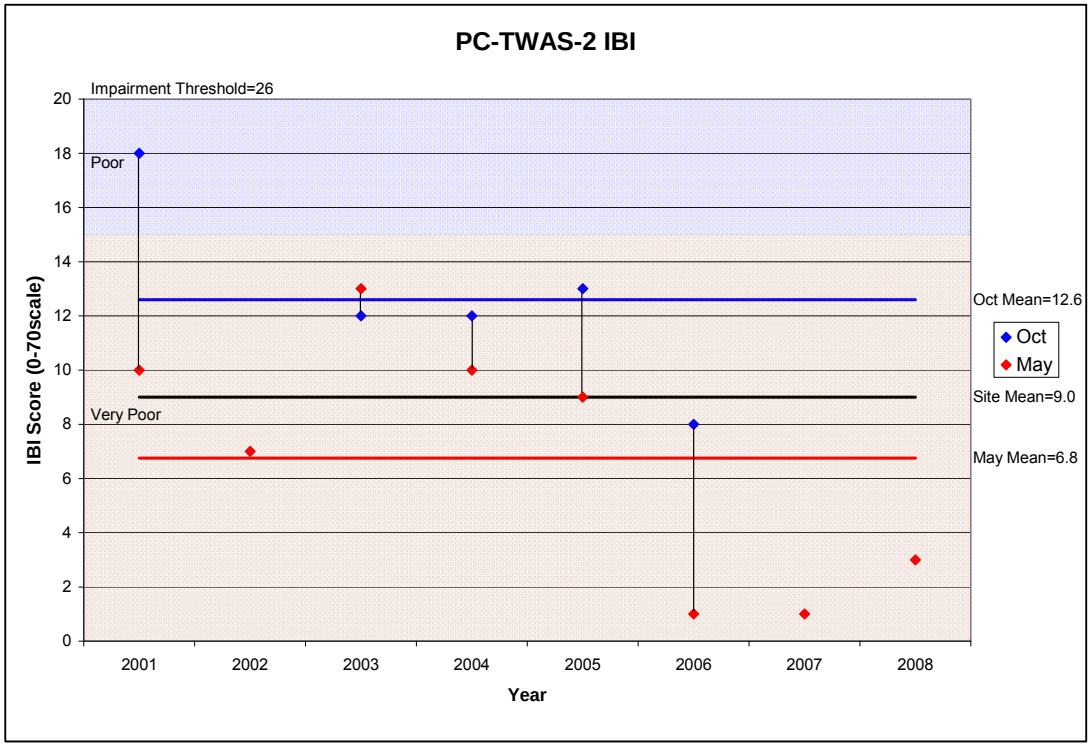

Figure 7-13. Los Peñasquitos Creek Watershed Management Area Index of Biotic Integrity at LPC-TWAS-2

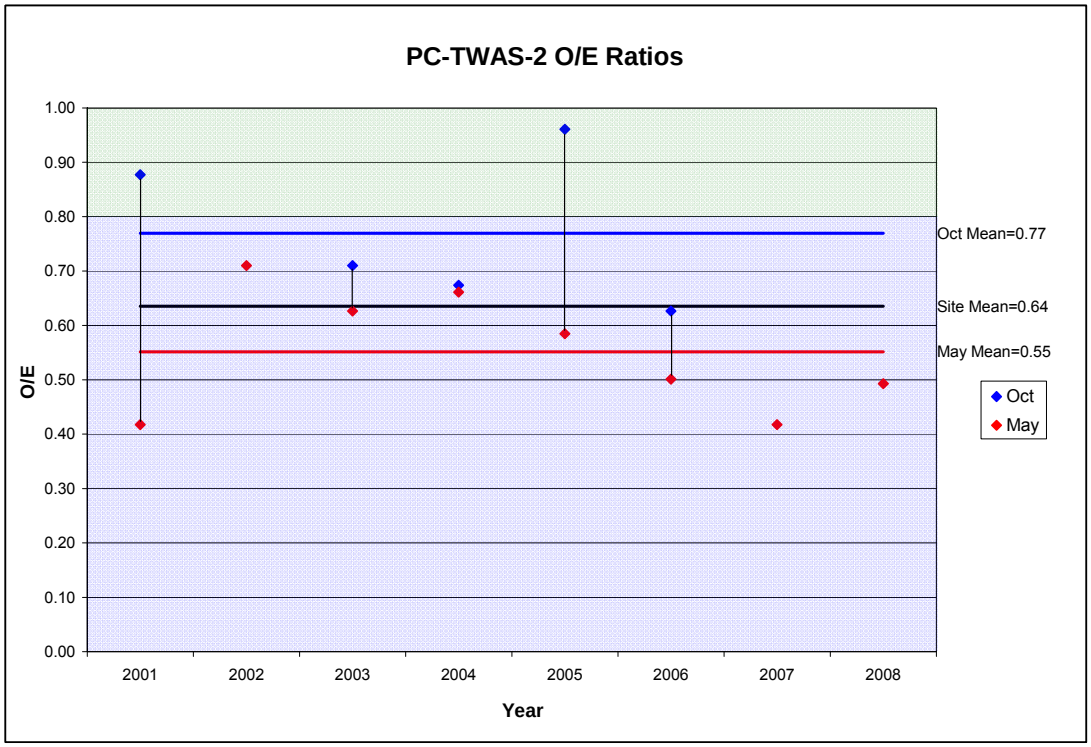

Plot includes historical data from Site LPC-CCR

Figure 7-14. Los Peñasquitos Creek Watershed Management Area O/E Ratio at TWAS-2

7.3.1.7 Post-Storm Event Synthetic Pyrethroid Monitoring

Post-storm sediment sampling was conducted during the 2008–2009 Monitoring Season to comply with Section II.A.7 of the Permit, which requires the assessment of synthetic pyrethroids in San Diego receiving waters. Synthetic pyrethroid monitoring in sediments helps to partially answer two core management questions: 1) Are conditions in receiving water protective, or likely to be protective, of beneficial uses? and 2) What is the extent and magnitude of the current or potential receiving water problem(s)? Sampling occurred at the MLS on November 17, 2008. Sediment samples were analyzed for synthetic pyrethroids, total organic carbon (TOC), and grain-size distribution in accordance with the *Monitoring Work Plan for the Assessment of Synthetic Pyrethroids in San Diego County* (WESTON, 2007b). Wet weather pyrethroid water quality results are discussed in Subsection 7.3.1.4 and are also presented in the data tables in Appendix D.

Results for the post-storm sediment sampling are presented in Appendix D and are compared to published LC_{50} values for *H. azteca* from the literature. The LC_{50} value is the concentration at which half of the given test species exhibit mortality. In the sediment samples collected at the Los Peñasquitos Creek MLS, the ten pyrethroids analyzed were below their respective detection limits (Table 7-8).

Table 7-8. Los Peñasquitos Creek Watershed Management Area Synthetic Pyrethroid Sediment Monitoring Results and Comparison to Published LC_{50} for *Hyalella azteca*

Analyte[1]	Units	Sediment Benchmarks *	Source	LPC-MLS 11/17/2008
Allethrin	ng/g	NA		<2
Bifenthrin	ng/g	3.0 - 8.2/5.5	Amweg et al., 2005	<2
Cyfluthrin	ng/g	12.5 - 14.9	Amweg et al., 2005	<2
Cypermethrin	ng/g	3.6/18.0/23.0	Maund et al., 2002	<2
Danitol	ng/g	NA		<2
Deltamethrin	ng/g	9.8 - 10.0	Amweg et al., 2005	<2
Esfenvalerate	ng/g	10.4 - 48.3	Amweg et al., 2005	<2
L-Cyhalothrin	ng/g	5.2 - 6.0	Amweg et al., 2005	<2
Permethrin	ng/g	57 - 112	Amweg et al., 2005	<25
Prallethrin	ng/g	NA		<2

1 The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.
NA indicates no criteria or published value was available or applicable to the matrix or program.
*Note: The lowest value presented in the range was used for conservative purposes.

Sediment at the MLS site consisted primarily of sand (41.2%) and gravel (25.8%) (Table 7-9). Finer-sized particles (e.g., clay and silt) constituted a small fraction (13.6% and 19.4%, respectively) of the sediment at this site, and the TOC content was low (0.3%). Pyrethroids are known to attach to fine-grained sediments with high organic carbon content. Thus, the large-grained particles found in the Los Peñasquitos Creek sediments may have influenced the absence of pyrethroids found at this site.

Table 7-9. Los Peñasquitos Creek Watershed Management Area Post-Storm Surficial Sediment Sample Grain-Size Distribution and Total Organic Carbon Results

Site	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	TOC (%)
LPC-MLS	13.60	19.44	41.17	25.80	0.3

7.3.1.8 Bight '08 Estuary Monitoring

The Southern California Bight 2008 Regional Monitoring Survey is an integrated assessment of the Southern California Bight (SCB) that occurs every five years from Point Conception to the Mexican border. The program assesses the ecological health of nearshore and offshore marine habitats as well as coastal embayments by measuring indicators of environmental condition (e.g., habitat quality, sediment contamination, toxicity, infaunal communities, and fish communities) at nearly 400 sites distributed throughout 11 different types of strata. Data from the Bight 2003 Survey (Bight '03) indicated that embayments, especially marinas and urban estuaries located primarily in the Los Angeles region, had lower sediment quality and higher sediment toxicity than nearshore and offshore environments. Based on the Bight '03 data, an assessment of the condition of Southern California's estuaries, particularly in San Diego County, was presented as a focus for the Bight 2008 Survey (Bight '08). The Copermittees chose to participate in Bight

'08 in lieu of conducting the complete regional storm water monitoring requirements as presented in the San Diego County Municipal National Pollutant Discharge Elimination System (NPDES) Permit Order No. 2007-0001. Although the Bight '08 study reports will not be available for several years, the Copermittees are reporting on the condition of San Diego's Lagoons with the available data collected in San Diego County.

San Diego's Bight '08 sediment quality data were assessed using California's sediment quality objectives (SQOs) as described in the *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality* (State Water Resources Control Board (SWRCB) – California Environmental Protection Agency (Cal EPA), 2009). These SQOs are based on a multiple lines of evidence (MLOE) approach in which the lines of evidence (LOE) are sediment toxicity, sediment chemistry, and benthic community condition. The MLOE results were integrated through the evaluation of the severity of biological effects and the potential for chemically-mediated effects to provide a final site level assessment. The integration of all three measurements will help to provide a comprehensive assessment of the lagoons in San Diego County using the most up-to-date protocols. While not part of the Regional Bight '08 workplan, water quality samples were collected in San Diego lagoons to provide supporting data to help San Diego County answer questions related to ambient water quality conditions in the lagoons/estuaries. The Bight '08 data provide key information regarding the receiving waters of Los Peñasquitos Lagoon that will help to answer the core management questions outlined in the Receiving Waters and Urban Runoff Monitoring Program. These questions include:

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**
2. **What is the extent and magnitude of the current or potential receiving water problems?**
3. **What is the relative urban runoff contribution to the receiving water problem(s)?**
4. **What are the sources of urban runoff that contribute to receiving water problem(s)?**
5. **Are conditions in receiving waters getting better or worse?**

Los Peñasquitos Lagoon was among eight lagoons/estuaries selected by the Copermittees for inclusion in the Bight '08 study. In each lagoon/estuary, a longitudinal-transect study was used to investigate changes in sediment conditions at increasing distances from freshwater input areas. Lagoons and estuaries were partitioned into five segments and five sampling sites were selected randomly in accordance with Bight '08 protocols. Water and sediment collection in Los Peñasquitos Lagoon was performed on July 18, 2008. Site locations and sample depths are shown in Table 7-10. The site locations are shown on Figure 7-15. Brief descriptions of sample collection and laboratory methods are discussed below. A detailed description of site location protocols, sample collection methods and laboratory methods for the chemistry, toxicity and benthic infaunal samples are provided in Appendix B.

Table 7-10. Los Peñasquitos Lagoon Site Locations and Dates Sampled

Lagoon/Estuary	Site Identification	Sediment Sampling			
		Latitude	Longitude	Sample Depth (ft)	Date Sampled
Los Peñasquitos Lagoon	6228	32.9304	-117.2486	1.5	07/18/2008
	6229	32.9316	-117.2510	5.0	07/18/2008
	6230	32.9321	-117.2534	2.5	07/18/2008
	6232	32.9328	-117.2579	2.1	07/18/2008
	6236	32.9338	-117.2568	4.6	07/18/2008

Figure 7-15. Los Peñasquitos Lagoon Sediment Site Locations

Water quality samples were collected 6 inches below the surface at each of the five sites. Samples were analyzed for total suspended solids (TSS), total coliforms, fecal coliforms, and enterococci. In addition, physical parameters (e.g., hydrogen ion concentration (pH), salinity, temperature, dissolved oxygen (DO), and turbidity) were measured 6 inches below the surface, mid-depth, and 6 inches above the bottom using a YSI 6600 data sonde. Sediment collection was

performed using a stainless-steel, 0.1-m^2 Van Veen grab sampler. Sediment samples were analyzed for the following constituents:

- General chemistry (i.e., percent solids, total organic carbon (TOC), total nitrogen, total phosphorus, and grain-size distribution).
- Trace metals.
- Synthetic pyrethroids.
- Organochlorine pesticides and polychlorinated biphenyls (PCBs).
- Polynuclear aromatic hydrocarbons (PAHs).
- Sediment Toxicity (using *Eohaustorius estuarius* and *Mytilus galloprovincialis*).
- Benthic infauna.

Following the SQO guidelines and Bight '08 protocols, two types of toxicity tests were performed along with chemistry and benthic infaunal analysis. The toxicity tests included a 10-day solid phase test using the amphipod *E. estuarius* and a 48-hour sediment-water interface test using *M. galloprovincialis*. Sediment with a high percentage of fines may contribute to *E. estuarius* toxicity due solely to the physical properties of the particles rather than chemical influences (Word et al., 2005). Therefore, during sediment collection the sediment was characterized as to whether fine-grained or coarse-grained sediment comprised the majority of each sample based on the sediment's physical characteristics. For those sediment samples that were comprised of predominantly fine-grained materials, an additional 10-day solid phase test was performed using the amphipod *Leptocheirus plumulosus*. The additional amphipod test was performed to assess whether grain size had an effect on the toxicity to *E estuarius*, since *L. plumulosus* is tolerant of clay fractions and is a species also appropriate for SQO analysis. For Los Peñasquitos Lagoon, the additional *L. plumulosus* test was performed on sediment from two sites.

Benthic infaunal samples were initially sorted into five major phyletic groups for distribution to taxonomists who identified the species to the lowest possible taxon. Taxonomists used the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT) Edition 5 for nomenclature and orthography. It is important to note that current SQO guidelines are using the SCAMIT Edition 4 for species identification; however, the guidelines will be updated when SCCWRP finishes analyzing the Regional Bight '08 data.

The grain-size distribution samples were analyzed by the City of San Diego Marine Laboratory using a Horiba LA-920 laser scattering particle analyzer. Data provided herein are reported as received from the City of San Diego Marine Laboratory.

Water Quality Results

Water quality results for Los Peñasquitos Lagoon are provided in Table 7-11. TSS ranged from 2.50-8.50 mg/L with the highest values found at Sites 6236 (8.50 mg/L) and 6230 (8.20 mg/L), both located in the middle of the lagoon. Total coliform and fecal coliform concentrations were the highest at Site 6228, located furthest inland (1,300 MPN/100 mL and 300 MPN/100mL, respectively). Fecal coliform concentrations were below the criteria identified in the Basin Plan

for all five sites. Enterococcus concentrations were all below the method detection limit. Temperature and pH values were similar between the five sites throughout the water column, and pH values fell within the range identified in the Basin Plan. Four of the sites had similar salinity values within a range of 31.55-33.09 ppt. Site 6228, which is located furthest inland and was the shallowest site, had slightly lower salinity values indicating more of a freshwater influence. DO values were lower inland and increased as the sites got closer to the mouth of the lagoon. DO concentrations at Sites 6228 and 6229 fell below the water quality objective of 5.0 mg/L established in the Basin Plan. Turbidity values were also lower further inland with higher values found mid-lagoon. Turbidity values tended to increase with depth; however, the sites were very shallow and these increases could be a result of equipment use stirring up bottom sediments.

Table 7-11. Water Quality Results for Sites in Los Peñasquitos Lagoon.

Analyte	Units	Depth	Los Peñasquitos Lagoon				
			July 18, 2008				
			Site 6228	Site 6229	Site 6230	Site 6232	Site 6236
			1.5 ft	5.0 ft	2.5 ft	2.1 ft	4.6 ft
pH	pH units	6 inches below surface	7.61	7.55	7.62	7.76	7.65
		Mid-depth	7.64	7.54	7.64	7.76	7.65
		6 inches above bottom	7.58	7.56	7.64	7.76	7.77
Salinity	PPT	6 inches below surface	27.00	31.55	31.88	32.71	32.10
		Mid-depth	26.53	31.76	31.91	32.77	32.72
		6 inches above bottom	27.44	32.60	32.03	32.75	33.09
Temperature	°C	6 inches below surface	23.62	24.52	25.63	23.78	25.71
		Mid-depth	23.62	24.31	25.55	23.68	24.07
		6 inches above bottom	23.60	23.87	25.48	23.62	22.25
DO	mg/L	6 inches below surface	4.71	4.18	5.61	7.31	6.56
		Mid-depth	4.72	4.20	5.83	7.44	6.30
		6 inches above bottom	4.55	4.25	5.62	7.38	7.48
Turbidity	NTU	6 inches below surface	0.70	<0.50	1.30	1.00	1.30
		Mid-depth	0.70	<0.50	1.30	0.80	1.40
		6 inches above bottom	0.70	2.50	1.70	1.10	2.60
TSS	mg/L	6 inches below surface	5.50	2.50J	8.20	6.30	8.50
Total coliforms	MPN/100 mL	6 inches below surface	1,300	70	80	8	50
Fecal coliforms	MPN/100 mL	6 inches below surface	300	50	80	2	11
Enterococci	MPN/100 mL	6 inches below surface	<2	<2	<2	<2	<2

J = Value below the reporting limit and above the method detection limit.

Sediment Chemistry Results

Sediment chemistry results for Los Peñasquitos Lagoon are provided in Appendix E. Concentrations of total PCBs, total PAHs, and total chlordanes at all five sites were below their respective ER-Ls[1]. Metal concentrations were below their respective ER-Ls at all sites except Site 6229 which had an arsenic concentration of 9.160 µg/dry g. While this concentration was above the ER-L of 8.20 µg/dry g, it was not above the ER-M value. Total DDT concentrations (primarily consisting of 4,4'-DDE) were above the ER-L value of 1.58 ng/dry g at Sites 6230 (4.0 ng/dry g), 6236 (2.4 ng/dry g), and 6228 (1.8 ng/dry g); however, none of the sites were above the ER-M value. The remaining organochlorine pesticides and pyrethroid concentrations were non-detectable at all five sites.

Grain-size distribution results for all five sites are shown in Table 7-12. Sites 6229, 6230, and 6228 consisted primarily of fine materials (silts and clays) ranging from 68.61%-84.93%. Sites 6232 and 6236, both located closer to the mouth of the lagoon, had a higher percentage of sands than the other three sites with 97.43% and 65.33% sands, respectively.

Table 7-12. Grain-Size Distribution Results for Sites in Los Peñasquitos Lagoon

Site Identification	Los Peñasquitos Lagoon[1]				
	Gravel ≥2000µm (%)	Sand ≥63µm to <2000µm (%)	Silt ≥3.9µm to <63µm (%)	Clay <3.9µm (%)	Fines <63µm (%)
6228	0.00	31.19	57.57	11.24	68.81
6229	0.00	24.67	68.48	16.45	84.93
6230	0.00	27.40	67.65	4.95	72.60
6232	0.00	97.43	8.41	0.00	8.41
6236	0.00	65.33	36.86	2.27	39.13

[1] Data have not been finalized by the Bight '08 technical committees and is still susceptible to change.

Sediment Quality Objective Results

Sediment quality from Los Peñasquitos Lagoon was assessed using California's SQO guidelines (SWRCB–Cal EPA, 2009). These SQOs are based on a MLOE approach in which the LOE are sediment chemistry, sediment toxicity, and benthic community condition. The guidelines state that the MLOE approach is "intended to assess benthic communities relative to potential for exposure to toxic pollutants in sediments." The integration of the specific information that each LOE produces will help to provide a more confident assessment of sediment quality. It is important to note that "none of the individual LOE is sufficiently reliable when used alone to

[1] The effects range values are helpful in assessing the potential significance of elevated sediment-associated contaminants of concern, in conjunction with corresponding biological effects. Briefly, these values were developed from a large data set where results of both benthic organism effects (*e.g.,* amphipod tests) and chemical analysis were available for individual samples. The ER-L was then calculated as the lower tenth percentile of the observed effects concentrations and the ER-M as the 50th percentile of the observed effects concentrations. While these values are useful for identifying elevated sediment-associated contaminants, they should not be used to infer causality because of the inherent variability and uncertainty of the approach. The ER-M sediment quality values are included in tables for comparative purposes only (Long et al, 1995).

assess sediment quality impacts due to toxic pollutants." An individual LOE "may underestimate or overestimate the risk to benthic communities and do not indicate causality of specific chemicals." Other "stresses associated with natural or physical factors, such as sediment grain size, physical disturbance, or organic enrichment" can affect the results produced by individual LOEs.

A detailed description of the methods used to evaluate sediment using SQO guidelines is provided in Appendix B. Data used to calculate individual LOEs are presented in Appendix E. A map with the individual LOE categories and the final site assessment for each of the sites is shown on Figure 7-16.

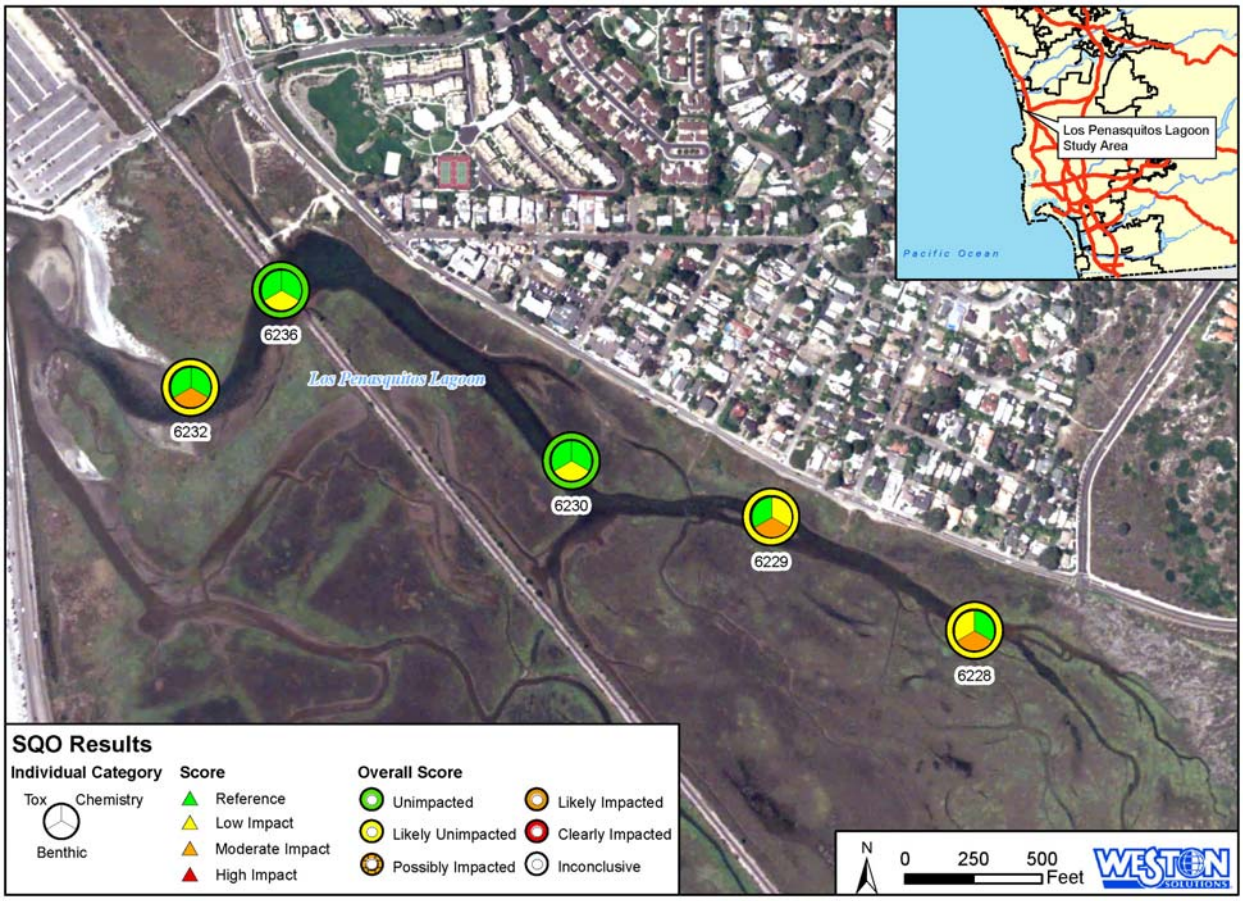

Figure 7-16. Individual LOE Categories and Final SQO Site Assessments for Los Peñasquitos Lagoon

The final SQO assessment for the five sites in Los Peñasquitos Lagoon identified three sites as likely unimpacted (6228, 6229, and 6232) and two sites as unimpacted (6230 and 6236) (Table 7-13). Two of the sites categorized as likely unimpacted (6228 and 6229) were located furthest inland, whereas the third site was located closer to the mouth of the lagoon (6232). The five sites were categorized as having minimal to low chemical exposure and sediment toxicity categorized as low or nontoxic.

Table 7-13. Final Site Assessment Category for Five Sites in Los Peñasquitos Lagoon

Site Identification	Sediment Chemistry Exposure	Benthic Community Condition Impact	Sediment Toxicity	Final Site Assessment
6228	Minimal	Moderate	Low	Likely unimpacted
6229	Low	Moderate	Nontoxic	Likely unimpacted
6230	Minimal	Low	Nontoxic	Unimpacted
6232	Minimal	Moderate	Nontoxic	Likely unimpacted
6236	Minimal	Low	Nontoxic	Unimpacted

The three sites that were likely unimpacted were categorized as having moderate disturbances in the benthic communities; however, these disturbances do not appear to be associated with chemically mediated effects (chemical exposure was minimal to low). Rather, the moderate disturbances in the benthic communities for all three sites appear to be driven by moderate to high impacts as a result of BRI and RIVPACS scores (see data in Appendix E). The benthic community disturbance at Site 6228 may be a result of the low DO concentrations and the low salinity values. Also, the moderate benthic disturbance at Site 6232 could be a result of dredging that occurred in May 2008 at the mouth of the lagoon just prior to the Bight survey. The Los Peñasquitos Lagoon Foundation conducts periodic maintenance dredging to keep the lagoon mouth open in the event that low DO concentrations are observed over a sustained period.

In addition to the two toxicity tests that were used for the SQO analysis, a third toxicity test was performed on sediment collected at Sites 6228 and 6229 using the amphipod *L. plumulosus* to determine if the grain size of the sediment (i.e., fines) had an effect on sediment toxicity. Sediment toxicity data from the *E. estuarius* and *L. plumulosus* tests were separately used to calculate the sediment toxicity LOE by 1) using *E. estuarius* and *M. galloprovincialis* toxicity results or 2) using *L. plumulosus* and *M. galloprovincialis* toxicity results. A comparison of these results is provided in Table 7-14. Substituting *L. plumulosus* toxicity results for those of *E. estuarius* did not change the toxicity LOE or the final site assessment for Site 6228. However, lower survival in *L. plumulosus* tests for Site 6229 resulted in the sediment toxicity LOE changing from nontoxic to low and the final site assessment changing from likely unimpacted to possibly impacted. These results indicate that sediment toxicity was not due to grain size, but was likely a consequence of other physical or chemical characteristics of the sediment. While the differences in toxicity may result in a change in the LOE classification; the differences are slight and not unexpected due to the differences in organism sensitivity.

Table 7-14. Comparison of Sediment Toxicity Sediment Quality Objective Assessment Using *E. estuarius* and *L. plumulosus* for Fine-Grained Sediment Sites in Los Peñasquitos Lagoon

Site Identification	Amphipod Test Species	Sediment Toxicity LOE	Final Site Assessment
6228	*E. estuarius*	Low	Likely Unimpacted
	L. plumulosus	Low	Likely Unimpacted
6229	*E. estuarius*	Nontoxic	Likely Unimpacted
	L. plumulosus	Low	Possibly Impacted

In accordance with the Permit, the Copermittees participated in the Bight '08 study and developed their workplan with respect to collecting data useful in addressing the goals and management questions listed in the Permit. The following summarizes the results presented above with respect to addressing the core management questions:

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**

Based on the monitoring and data analyses conducted on samples collected as part of the Bight '08 Program in Los Peñasquitos Lagoon, the data suggest that conditions are generally protective of the beneficial uses. All sediment quality sites assessed were either unimpacted or likely unimpacted based on the SQO Guidelines. However, low dissolved oxygen concentrations are documented to be of concern in this lagoon (LPL, 2008) and the lagoon mouth is periodically dredged to maintain sufficient flow from the lagoon to the ocean. Water quality samples collected for fecal indicator bacteria and TSS analyses were below Basin Plan standards. These two analytes were analyzed in water column samples to assess these regionally problematic constituents.

2. **What is the extent and magnitude of the current or potential receiving water problems?**

The Copermittees developed their Bight '08 Monitoring Program to provide spatial characterization of the lagoon using a transect design with five samples. The lagoon was segmented into five equidistant portions and samples were selected randomly following the Bight '08 sampling protocols. As mentioned above, all sites were identified as unimpacted or likely unimpacted based on the SQO guidelines. In terms of the magnitude of the potential receiving waters problem, all sediment chemistry LOE scores were either minimal or low and the sediment toxicity LOE scores were either non-toxic or low. The benthic community LOE scores indicated either low or moderate impacts. The moderate benthic impacts may be associated with the variability of physical characteristics within the lagoon, but were not associated with chemically mediated effects. The inner most lagoon site (Site 6228) may be influenced from the naturally occurring transitional environment from the freshwater watershed inputs to the lagoon. However, no toxic chemicals were observed above the sediment benchmarks.

3. **What is the relative urban runoff contribution to the receiving water problem(s)?**

The inputs of sediment to Los Peñasquitos Lagoon primarily originate from watershed sources, local drainages, erosion of local sediments, and tidal inputs from the ocean inlet. Because pesticides originate from anthropogenic sources only, the results suggest that urban runoff may have contributed minor concentrations of legacy organochlorine pesticides (DDT isomers). No DDT isomers were detected above the ER-M values and are not at levels expected to induce chemically mediated effects at the concentrations observed. Synthetic pyrethroids were not detected in any of the samples collected from Los Peñasquitos Lagoon. The relative urban runoff contribution question will be more fully answered following modeling efforts associated with the Lagoon TMDL development efforts.

4. **What are the sources of urban runoff that contribute to receiving water problem(s)?**

This question can be partially answered by assessing the nature of contaminants found in the lagoon/estuary sediments. For instance, pesticides (e.g., organochlorines, organophosphates, and synthetic pyrethroids) do not occur naturally in the environment. Thus, if they are found in the receiving waters, the likely sources originate from watershed inputs, but may occur via different transport mechanisms. DDT isomers were detected in low concentrations in Los Peñasquitos Lagoon sediments and are likely associated with historical uses of this pesticide. No detections were noted for currently used and available synthetic pyrethroids. It should be noted that highly developed residential communities and commercial and industrial land uses exist in direct proximity to the lagoon.

5. **Are conditions in receiving waters getting better or worse?**

The Bight '08 studies conducted in Los Peñasquitos Lagoon provide valuable baseline data for comparing the SQO results in future sediment surveys. In comparison to previous ambient bay and lagoon surveys, results appear to be similar when sites typically indicated relatively low chemical concentrations, low or no toxicity, but poor benthic community conditions. However, it should be noted that the dissimilar sample designs between the ABLM and Bight '08 Programs may result in non-comparable results. Similar results were observed for chemical constituents during the Bight '03 sediment surveys. Chemistry results during Bight '03 were generally low with few analytes being detected above the ER-Ls. No toxicity results were available for Los Peñasquitos Lagoon from the Bight '03 Survey. However, one benthic community result was available for Los Peñasquitos Lagoon from the Bight '03 study which indicated a moderate benthic community impact.

7.3.1.9 Third Party Data

An Urban Runoff Source Identification Program study was conducted in the Los Peñasquitos Creek WMA. The results of the study are presented in Section 12.

7.3.2 Urban Runoff Monitoring Results

Urban runoff water quality assessments primarily address the following two core management questions: 3) What is the relative urban runoff contribution to the receiving water problem(s)? and 4) What are the sources of urban runoff that contribute to receiving water problem(s)? Under the previous permit (Order R9-2001-01), the jurisdictional DWM and CSDM programs addressed urban runoff. Analyses conducted under these programs focused on a limited subset of parameters to identify illegal connections and illicit discharges (ICIDs) in the MS4.

Several new monitoring programs are required under the new Permit, including an MS4 Outfall Monitoring Program and a Source Identification Program. The Copermittees were granted flexibility in implementing these two new programs over the course of the Permit. The Copermittees developed new work plans—*The MS4 Outfall Monitoring Program in San Diego County Watershed Management Areas* (SDCRC, 2008a) and *The Urban Runoff Source Identification Program in San Diego County Watersheds* (SDCRC, 2008b)—during the 2007–2008 Monitoring Season to comply with the Permit. Methods from these work plans are summarized in Appendix B, and details can be found in the individual work plans. The purpose of MS4 Outfall Monitoring Program is to characterize pollutant discharges from MS4 outfalls in each WMA during wet weather and dry weather, as required by Section II.B.1 of the Permit. The goal of the Source Identification Monitoring Program is to identify and assess the sources of discharges of constituents related to urban runoff causing high-priority water quality problems in the receiving water(s) within each WMA. Both programs were implemented during the 2008–2009 Monitoring Season. The MS4 Outfall Monitoring Program was implemented throughout the County, but the Source Identification Monitoring Program was conducted in only two WMAs (Los Peñasquitos Creek WMA and Pueblo San Diego WMA).

Urban runoff conditions in the Los Peñasquitos Creek WMA were assessed using data from the following programs:

- Jurisdictional DWM.
- MS4 Outfall Monitoring:
  - Random Wet Weather Monitoring.
  - Random DWM.
  - Targeted DWM.
- CSDM.

The Jurisdictional DWM data were collected during the 2008 DWM Season (May 1, 2008–September 30, 2008), and the MS4 outfall monitoring and CSDM data were collected during the 2009 DWM Season (May 1, 2009–September 30, 2009). The programs are designed to assess the MS4 and are representative of conditions in the storm drains that have the potential to drain to receiving waters during ambient (i.e., non-rain event) conditions. Each jurisdiction provides a report of their DWM programs in their Jurisdictional Urban Runoff Management Program (JURMP) annual reports. CSDM data were also analyzed separately and are reported in the

CSDM Annual Report (Appendix N). The results are summarized in this report, but are not included in the WMA assessments.

The results from each program are presented bellow.

7.3.2.1 Jurisdictional Dry Weather Monitoring Program

The Jurisdictional Dry Weather Monitoring Program was conducted in 2008 to fulfill Order No. R9-2007-0001, which requires each Copermittee to conduct a dry weather field screening and analytical monitoring program. The goal of the program is to detect and eliminate ICIDs to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow-up investigations. The data are also useful in assessing the spatial distribution of the constituents analyzed. The program consists of the following three components:

- Field observations,
- Field screening monitoring,
- Analytical monitoring at selected stations, and
- Trash assessment.

Field observations consisted of a visual evaluation of conditions at the site, including an estimate of flow and a thorough trash assessment as described at the end of this section. Field screening monitoring was conducted at all sites where water was present, either ponded or flowing, at the time of the site visit. Samples were collected and analyzed with on-site field test kits. The following constituents were analyzed: specific conductance, turbidity, pH, orthophosphate, nitrate, ammonia, and surfactants (Methylene Blue Active Substances (MBAS)). Analytical monitoring was conducted for at least 25% of the DWM stations where water was present. Samples were analyzed for the following constituents in the laboratory: total hardness, oil & grease, Diazinon, Chlorpyrifos, dissolved copper, dissolved lead, dissolved zinc, and dissolved cadmium, and indicator bacteria (i.e., total coliforms, fecal coliforms, and enterococci).

The results of the field screening and analytical monitoring results were compared to dry weather action levels. These values were established for each constituent by the Copermittees to trigger investigations upstream of the sampling location and to eliminate ICIDs where present. Dry weather action levels are typically much greater than benchmarks to facilitate ICID investigations. They were initially established in 2002 and have been updated on a yearly basis, as necessary.

The Jurisdictional DWM sampling sites in the Los Peñasquitos Creek WMA are shown on Figure 7-5. The results are depicted on Figure 7-17 as small circles for field screening results and as pie symbols for laboratory analytical results. The colored slices of the pie or circle represent the different constituent groups (i.e., bacteria, general chemistry, metals, nutrients, pesticides, and turbidity) with analyte concentrations greater than the applicable action levels. Constituent groups are represented in the figure rather than individual constituents because of the size and

complexity of the dry weather data set submitted by the Copermittees. The complete data set is presented in Appendix M.

A total of 219 sites were visited in the Los Peñasquitos Creek WMA in 2008 as part of the Jurisdictional DWM Program. One hundred eighty-eight of these sites had ponded or flowing water at the time of the site visit and were sampled for either field or laboratory analyses. Twenty-seven sites were dry during all site visits conducted in 2008, and data were not available for three sites. The sites sampled were dispersed throughout the Miramar Reservoir and Poway HAs (Figure 7-17). The 2008–2009 DWM Program results for the Los Peñasquitos Creek WMA are summarized in Table 7-15. The total number of samples collected for each analyte may differ from the number of sample sites because multiple samples were taken at some locations (see Appendix B for details on dry weather sampling). Sample results from sites with both flowing and ponded water are included because they have the potential to contribute to receiving water quality impairments, but are not specified in the table.

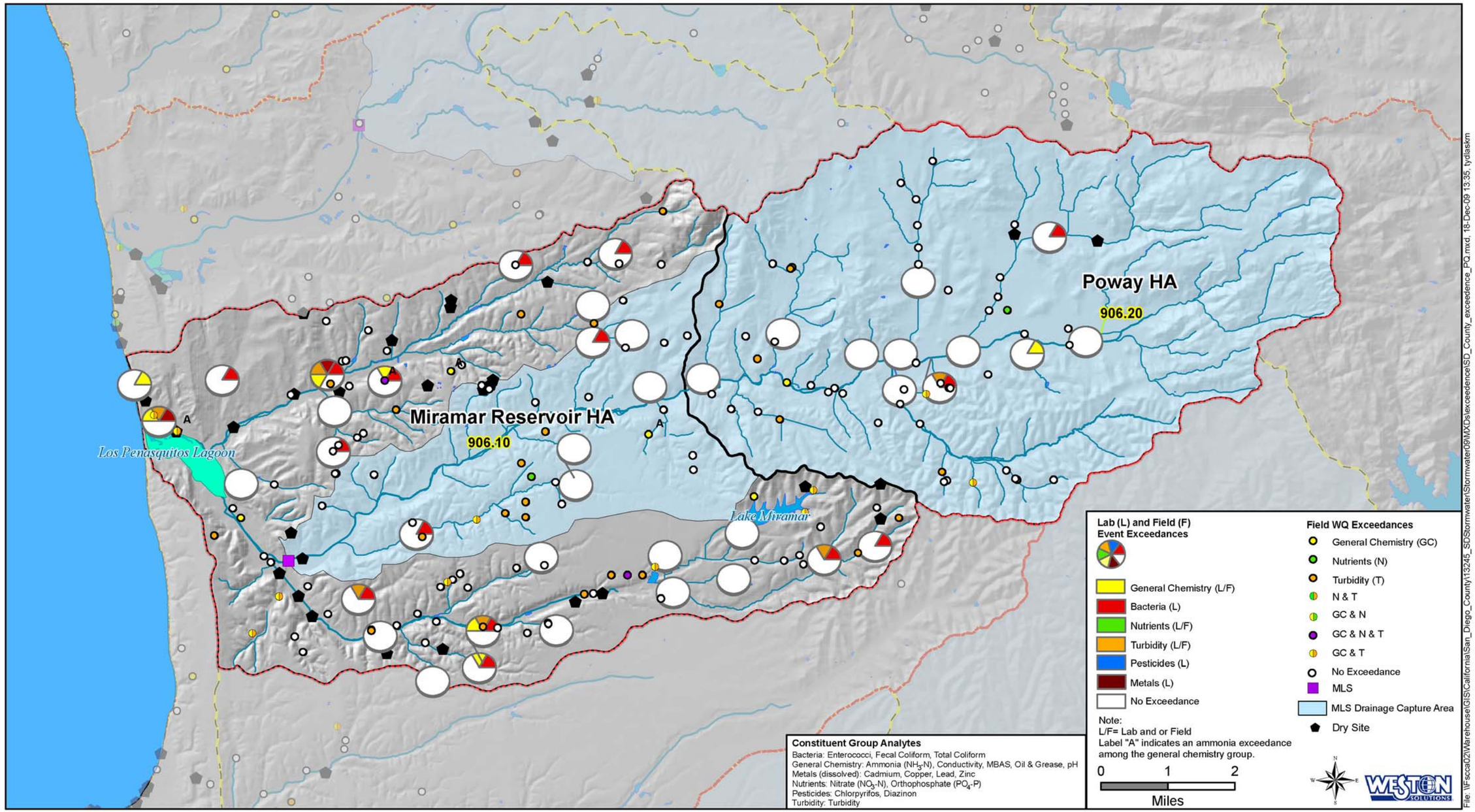

Figure 7-17. Los Peñasquitos Creek Watershed Management Area Dry Weather Results Map

Table 7-15. Los Peñasquitos Creek Watershed Management Area Summary of the 2008 Dry Weather Monitoring Results

Analyte	Units	DW Action Level	Number of Samples	RESULTS		
				Minimum	Mean	Maximum
Conductivity*	mS/cm	5	192	0.23	2.48	20.00
Oil & Grease	mg/L	15	41	2.50	-	28.00
pH	pH unit	7	192	5.94	7.76	8.90
Enterococcus	MPN/100 mL	10,000	42	10	17,769	160,000
Fecal Coliform	MPN/100 mL	20,000	42	9	12,097	130,000
Total Coliform	MPN/100 mL	50,000	42	9	112,295	1,600,000
Ammonia (NH_3-N)	mg/L	1	190	0.00	0.23	3.23
Orthophosphate (PO_4-P)	mg/L	2	191	0.00	0.43	4.93
Nitrate (NO_3-N)	mg/L	10	191	0.04	-	11.65
MBAS	mg/L	1	192	0.02	0.54	11.70
Turbidity**	NTU	20	190	0.01	24.19	1,000.00
Chlorpyrifos	µg/L	0.5	41	0.03	-	0.25
Diazinon	µg/L	0.5	41	0.03	-	0.25
Cadmium, Dissolved	µg/L	(a)	41	2.50	-	2.50
Copper, Dissolved	µg/L	(a)	41	2.50	-	66.00
Zinc, Dissolved	µg/L	(a)	41	0.04	27.88	210.00
Lead, Dissolved	µg/L	(a)	41	2.50	-	2.50
Hardness	mg $CaCO_3$/L		41	140	610	2,150

* Some conductivity data units were converted for comparison with action level. The action levels were adopted by the dry weather workgroup and are based on best professional judgment (BPJ).

** The turbidity action level is BPJ, however, the Basin Plan WQO was used for the interim watershed assessments.

Results are reported as provided by the Dry Weather Workgroup. Mean values are calculated including non-detect results at half the reporting limit. If the mean value was less than the reporting limit, then the mean was not included in the table.

(a) Dry weather action level for dissolved metal fraction based on total hardness and calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. If total hardness was greater than 400 mg/L, then 400 mg/L was used to calculate dissolved metals water quality benchmarks.

Table 7-16 shows the dry weather constituents with concentrations greater than their respective dry weather action levels during sampling conducted in 2008. Analytes that had concentrations greater than action levels included general chemistry (i.e., conductivity and ammonia), indicator bacteria (i.e., total coliforms, fecal coliforms, and enterococci), nutrients (i.e., nitrate), turbidity, and metals (i.e., dissolved copper). Concentrations of pesticides (i.e., Diazinon and Chlorpyrifos) were below action levels in all samples analyzed. The measured value for turbidity exceeded the action level the greatest number of times (12 of 69 samples analyzed), followed by total coliforms and enterococci (both 11 out of 42 samples analyzed).

The Jurisdictional DWM results were compared to the ambient weather receiving water results to assess the relative urban runoff contribution to the receiving waters (Core Management Question 3). Among the chemical analytes with concentrations greater than their respective action levels in the Jurisdictional DWM Program, none of those monitored in the SMC Ambient Monitoring

Program exceeded water quality benchmarks in the Los Peñasquitos Creek WMA (Table 7-3). Indicator bacteria were not assessed in the ambient monitoring program.

Table 7-16. Los Peñasquitos Creek Watershed Management Area 2008 Dry Weather Results Matrix

Analyte	Number of Samples	Number > Action Level	Average of Action Ratio	Standard Deviation of Action Ratio
Conductivity	192	10	0.50	0.53
Oil & Grease	41	1	0.21	0.27
pH	192	3	0.32	0.23
Enterococcus	42	11	1.78	3.56
Fecal Coliform	42	6	0.60	1.37
Total Coliform	42	11	2.25	5.42
Ammonia (NH_3-N)	190	4	0.23	0.43
Orthophosphate (PO_4-P)	191	3	0.21	0.27
Nitrate (NO_3-N)	191	1	0.09	0.11
MBAS	192	15	0.54	1.11
Turbidity	190	43	1.21	3.93
Chlorpyrifos	41	0	0.39	0.20
Diazinon	41	0	0.39	0.20
Cadmium, Dissolved	41	0	0.13	0.09
Copper, Dissolved	41	2	0.26	0.55
Zinc, Dissolved	41	0	0.10	0.19
Lead, Dissolved	41	0	0.01	0.01
Peñasquitos Total	**1,751**	**110**	**0.48**	**1.77**

Concentrations of nutrient (i.e., nitrate) analytes were greater than their respective action levels at one Jurisdictional DWM site located in the central Poway HA (906.20) (Figure 7-17). Concentrations were greater than turbidity action levels primarily in the Miramar Reservoir HA, with some in the Poway HA. These results provide information regarding potential sources that may contribute to receiving water problems. Sites with general chemistry (i.e., conductivity and ammonia) concentrations above the action level were found in the Poway HA where higher residential and industrial land uses occur within the watershed; however, none of these general chemistry parameters were measured above the ambient weather or wet weather receiving water benchmarks during the 2007–2008 Monitoring Season.

Concentrations of indicator bacteria action levels also appear focused in the Miramar Reservoir HA, with two exceedances in the Poway HA. Dissolved copper concentrations were greater than action levels in two samples, both located in the lower Miramar Reservoir HA.

There were fewer Jurisdictional DWM sites in the upper watershed (Poway HA) compared with the lower watershed (Miramar Reservoir HA) (Figure 7-17). This is likely a function of the Jurisdictional DWM Program's intent to target ICIDs. Because there are few urban land uses in the upper watershed, it appears that the number of dry weather sites may be sufficient to meet the

intended goals of the DWM Program. For future MS4 outfall monitoring and source identification monitoring, additional samples in the Poway HA may prove useful to identify drainage areas and sources contributing to higher TDS in the watershed.

Trash was assessed and characterized as part of the Jurisdictional DWM Program at the DWM sites using a trash evaluation protocol developed for the Copermittees (WESTON, 2007a), as summarized in Appendix B. As described in the work plan, the trash monitoring was conducted to answer the following three study questions:

1. **Where is trash being detected in San Diego watersheds?**
2. **How many sites are identified as Submarginal or Poor?**
3. **In locations identified as Submarginal or Poor, what is the nature of the types of trash present?**

When the surveys were conducted, a qualitative estimate of the presence of trash was determined at each site and was categorized into one of the following five categories based on the amount of trash observed:

- **Optimal** – At first glance, no trash is visible. Little or no trash (i.e., less than ten pieces) is evident when the evaluated area is closely examined for litter and debris.
- **Suboptimal** – At first glance, little or no trash is visible. After close inspection, a small amount of trash (i.e., approximately ten to 50 pieces) is evident in the evaluated area.
- **Marginal** – A low to medium amount of trash is evident (i.e., approximately 51–100 pieces) at first glance. Evaluated area contains litter and debris. Evidence of site being used by people (e.g., scattered cans, bottles, food wrappers, blankets, and clothing) is present.
- **Submarginal** – Trash distracts the eye at first glance. Evaluated area contains a substantial amount of litter and debris (i.e., more than 100–400 pieces). Evidence of site being used frequently by people (e.g., many cans, bottles, food wrappers, blankets, and clothing) is present.
- **Poor** – Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping is observed. The evaluated area contains a substantial amount of litter and debris (i.e., more than 400 pieces).

Study questions 1 and 2 can be answered by the trash ratings. A total of 215 sites were assessed for trash in the Los Peñasquitos Creek WMA (Table 7-17). All of the assessments occurred throughout the Poway HA and the Miramar Reservoir HA as shown on Figure 7-18. The relative amount of trash recorded at each site was determined by the trash ratings, since each rating has a quantitative component (e.g., less than ten pieces for the Optimal rating). It is evident from the summary table that the upper portion of the Los Peñasquitos Creek WMA had the greatest proportion of trash based on the Jurisdictional DWM Program. The Poway HA (906.20) had a slightly higher percentage of sites with Submarginal (i.e., less than 100–400 pieces of trash) or Poor (i.e., more than 400 pieces) ratings. A total of two out of 63 sites (approximately 3.2%) assessed had Submarginal or Poor ratings in Poway HA, indicating that this portion of the

watershed contained the greatest amount of trash in the WMA. A total of four out of 152 sites (approximately 2.6%) assessed had Submarginal or Poor ratings in Miramar Reservoir HA.

Table 7-17. Los Peñasquitos Creek Watershed Management Area Jurisdictional Dry Weather Trash Summary

HSA	Trash Rating	Number of Sites	Number of Assessments	Human Health Threat	Aquatic Health Threat
906.1	Optimal	61	64	0	0
	Suboptimal	66	70	0	0
	Marginal	21	19	0	5
	Poor	4	4	0	3
SUB-TOTAL:		**152**	**157**	**0**	**8**
906.2	Optimal	26	26	0	0
	Suboptimal	26	26	0	0
	Marginal	9	9	0	0
	Submarginal	2	2	2	2
SUB-TOTAL:		**63**	**63**	**2**	**2**
GRAND TOTAL:		**215**	**220**	**2**	**10**

Study Question 3, regarding the nature of the types of trash present, can be answered by examining the trash assessment forms, which included the following three categories: trash type, potential route, and threat to human and/or aquatic health. If a site was rated Submarginal or Poor during the assessment, the type of trash present was further characterized using these categories. The results of the trash type assessment for the Los Peñasquitos Creek WMA are depicted on Figure 7-18 in the "Primary Trash Type by HSA" inset. In HA 906.10, trash at 3 of the 4 sites with Poor ratings consisted primarily of household waste, and trash at the remaining site consisted primarily of construction debris. Two sites in HA 906.20 had a Submarginal rating, and the trash consisted of food packaging at one site and biohazard waste at the other.

The potential route of the debris was also noted on the field forms for sites with Submarginal and Poor ratings. Possible choices for the route the debris may have taken to arrive at the site included dumping, littering, upstream, and unable to determine. These potential routes are depicted on Figure 7-18 as letters within the site rating symbols (D (dumping), L (littering), S (upstream), and N (unable to determine)). The potential trash route was listed as L for three of the sites rated as Submarginal or Poor in the Los Peñasquitos Creek WMA, and D for three of the remaining Submarginal or Poor sites.

In addition to the types of trash at each site and their suspected route, the trash assessment also evaluated whether or not the trash was a threat to human health or aquatic health based on the following criteria (see Final Monitoring Workplan for the Assessment of Trash in San Diego County Watersheds (WESTON, 2007a) for a complete description):

- **Threat to Human Health** –Trash and debris have the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g., medical waste, diapers, and

human waste), or have the potential for physical harm (e.g., sharps, entanglement, and nails).

- **Threat to Aquatic Health –** Trash and debris are a potential threat to aquatic health or wildlife via contact, ingestion, entanglement, etc., including small floatable material that may be ingested; wire, plastic, fishing line, and other material that has the potential for entanglement; and oil and other visible chemicals or chemical containers.

Two out of the 215 sites assessed for trash in the Los Peñasquitos Creek WMA during the Jurisdictional DWM Program were identified as a potential human health threat (Table 7-17). In addition, ten sites were identified as potential aquatic health threats using the criteria listed above. Eight of the 12 sites were in HA 906.10 and were rated Marginal or Poor. The remaining two sites were in HA 906.20 and were rated Submarginal. It is important to note that the 2008–2009 Monitoring Season was the first year that the trash rating system was used to assess trash and debris on a regional level. The field guidelines for rating these sites will be further refined in subsequent years to provide a better assessment of the potential threats to aquatic and human health.

The trash ratings discussed above will not be used in the watershed assessment ranking system since this is the first year that regional trash data have been collected. It is assumed that at least three years of data will be necessary before trash can be considered in the watershed assessments, since the trend evaluation is an important component of the ranking system. As the program is refined and additional data are collected, the assessments may then be used to identify regional strategies to develop targeted outreach strategies, where applicable. When appropriate, these data could be used by watershed groups and/or jurisdictions to single out a commonly occurring predominant source and/or type of trash. The data may also help guide the selection of management actions where appropriate. In addition, evaluating the effectiveness of outcomes, such as behavior changes and load reductions, where applicable, may be appropriate after evaluating multiple years of data and observing improvements or declines in site conditions.

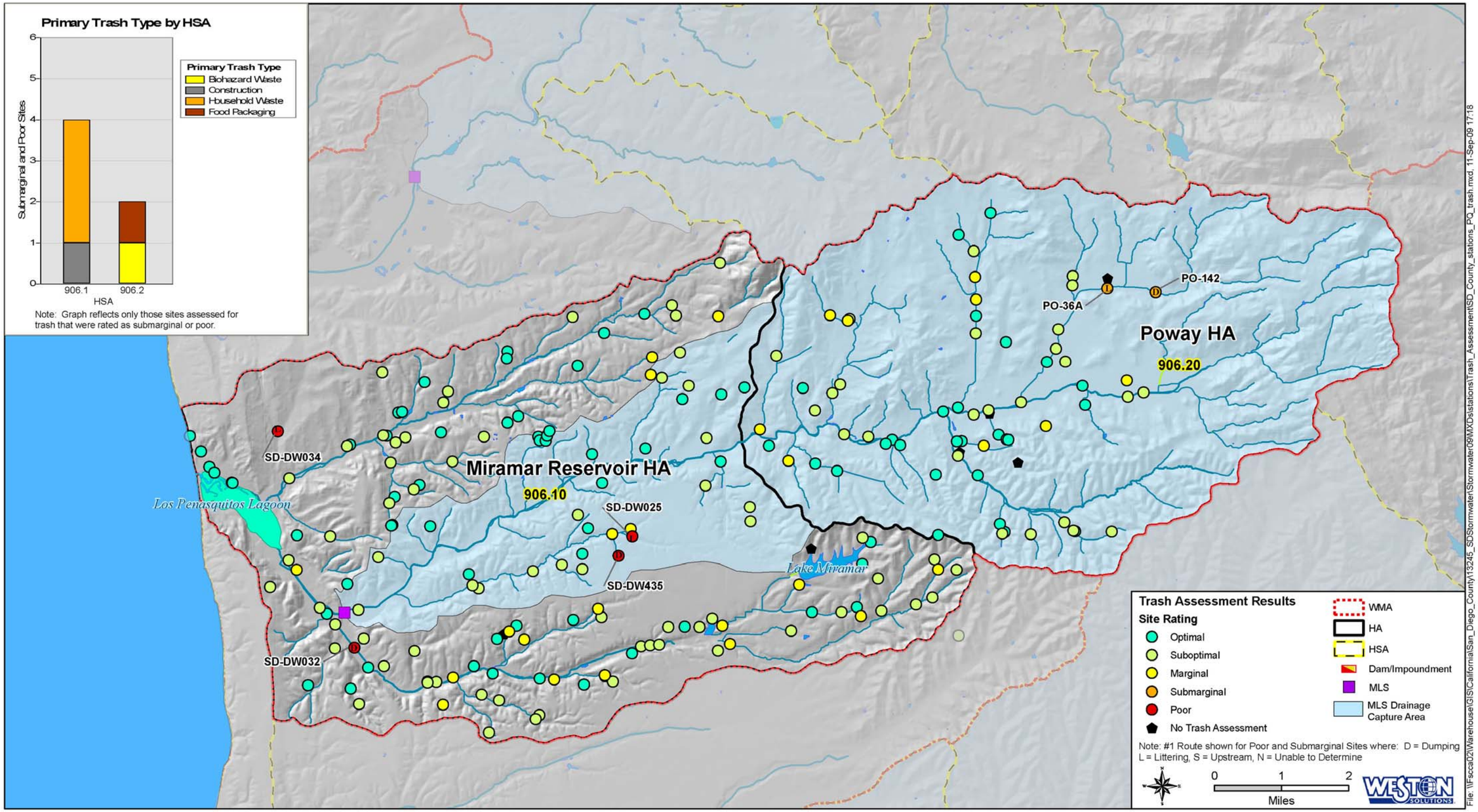

Figure 7-18. Los Peñasquitos Creek Watershed Management Area Trash Assessment Results

7.3.2.2 Municipal Separate Storm Sewer System Outfall Monitoring – Random Dry Weather

The purpose of MS4 Outfall Monitoring Program is to characterize pollutant discharges from MS4 outfalls in each watershed during wet weather and dry weather, as required by the Permit (Section II.B.1 of the Permit). The collection and analysis of water samples discharging from MS4 outfalls to receiving waters will be used to address Core Management Question 3:

What is the relative urban runoff contribution to the receiving water problem(s)?

The design of the MS4 Outfall Monitoring Program is based on a combination of random and targeted samples to be collected during dry weather and wet weather periods. The program has the following four monitoring components: random dry weather, random wet weather, targeted dry weather, and targeted wet weather. The first three elements were conducted for the first time in 2008–2009 as the first phase of the program. Targeted wet weather monitoring will be implemented in 2009–2010, allowing the Copermittees time to develop a comprehensive program (SDCRC, 2008a).

The Random Dry Weather MS4 Outfall Monitoring Program was developed to deduce statistically valid inferences regarding the region as a whole, rather than analyzing each isolated MS4 station. The region was divided into nine strata delineated by WMA. The original work plan indicates that six sites from each WMA will be selected at random and will be sampled. Outfalls without dry weather flows will be documented, and the next outfall on the randomized list will be sampled. A maximum of 12 sites were visited in each WMA, but in some cases, fewer than six storm drains were flowing at the time of the site visit. Where flowing or ponded water was observed, samples were taken and analyzed for high-priority water quality pollutants identified in the Watershed Urban Runoff Management Programs.

In addition to addressing Core Management Question 3, random sampling was conducted to address the following subquestions:

1. What are the characteristics of the pollutants discharged from the MS4?
2. Are pollutant loadings changing over time?

Question 1 is best answered in a regional context, based on the study design for the random dry weather program. The regional assessment is presented in Section 12. In addition, the characteristics of the pollutants discharged in the dry weather program are presented in this section. Question 2 will be addressed in subsequent years of the program when additional data are available for temporal comparisons. Nine MS4 outfall sites in the Los Peñasquitos Creek WMA were monitored as part of the Random Dry Weather MS4 Outfall Monitoring Program in 2008–2009 (Figure 7-19). Three of the outfall sites were located in the Poway HA, but only one was flowing at the time of the site visit (MS4D-LPC-10), two sites were dry (Table 7-18). Six of the outfall sites were located in the Miramar Reservoir HA and two were flowing at the time of the site visit (MS4D-LPC-03, MS4D-LPC-12), three were ponded (MS4D-LPC-04, MS4D-LPC-06, MS4D-LPC-09), and one was dry. All of the sites with flowing or ponded water were

sampled and analyzed. All but one site with flowing water are located in the lower portion of the WMA (HA 906.10) in predominantly residential land use areas (Figure 7-2). Site MS4D-LPC-10 is located in the upper portion of the Los Peñasquitos Creek WMA in HA 906.20, while Site MS4D-LPC-03 and Site MS4D-LPC-12 are located in the middle portion of the WMA in HA 906.10. These three sites were sampled on May 27, 2009. Sites MS4D-LPC-04, MS4D-LPC-06, and MS4D-LPC-09 are located in HSA 906.10 and were sampled on June 9, 2009.

The chemical characteristics of the water at each site are depicted in Table 7-18. Among the physical characteristics, conductivity was lower at Site MS4D-LPC-09 than the other sites, while pH was lower at Site MS4D-LPC-06, and temperature was lower at Site MS4D-LPC-12. The typical high-priority water quality pollutants identified in the Watershed Urban Runoff Management Programs include total nitrogen, total phosphorus, and indicator bacteria (i.e., total coliforms, fecal coliforms, and enterococci). Total nitrogen and total phosphorus concentrations were much greater in samples collected from Site MS4D-LPC-10 compared with concentrations at the other sites. In contrast to the pattern observed for total nitrogen and total phosphorus, TSS concentrations were less than 1.0 mg/L at all sites except for Site MS4D-LPC-04 (82 mg/L).

Concentrations of indicator bacteria varied widely among the six sites sampled, which is typical for urban runoff. However, for all three indicator bacteria, concentrations at Site MS4D-LPC-10 were considerably greater than those found at the other sites.

Concentrations of constituents were compared to water quality benchmarks to help address Core Management Question 3. It is important to note that the water quality benchmarks listed in the table are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. They have been placed in Table 7-18 for comparative purposes only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Of the constituents analyzed, concentrations of total phosphorus, total nitrogen, TSS, and indicator bacteria were greater than their respective benchmarks at some sites. The results suggest that these sites may have the potential to contribute to receiving water problems for the constituents listed.

In addition to assessing the chemical constituents of the MS4 runoff, instantaneous loads were also calculated to further characterize the pollutants discharged from the MS4. Instantaneous loads represent the load for a given pollutant at the time of data collection. Given the intermittent nature of dry weather flows in this region, instantaneous loads should not be extrapolated to longer time periods, such as day or year. Thus, load is represented in units of pounds per minute. Comparing loads among sites can be useful to assess relative differences between site locations, but it is important to note that the results represent a snapshot in time and may not reflect the overall dry weather characteristics at that site.

Instantaneous loads were calculated for three of the six MS4 random dry sites that were flowing at the time of the site visit in the Los Peñasquitos Creek WMA (Table 7-19). Flow was not recorded at Sites MS4D-LPC-04, MS4D-LPC-06, and MS4D-LPC-09, therefore instantaneous loads could not be calculated. Instantaneous loads for all three indicator bacteria were greatest at MS4D-LPC-10 in the Poway HA.

Table 7-18. Los Peñasquitos Creek Municipal Separate Storm Sewer System Monitoring – Random Dry Weather Chemistry Results (Water Quality Benchmarks for Comparative Purposes Only)

Group	Analytes	Units	Benchmarks	Source	MS4D-LPC-03	MS4D-LPC-04	MS4D-LPC-06	MS4D-LPC-09	MS4D-LPC-10	MS4D-LPC-12
					80024692	80024603	80038342	80038630	282-1743.1	80037284
					5/27/2009	6/9/2009	6/9/2009	6/9/2009	5/27/2009	5/27/2009
Flow	Flow	GPM	NA	NA	8.886	Ponded	Ponded	Ponded	0.741	0.028
Physical Chemistry	Conductivity	µS/cm	NA	NA	4,050	5,410	1,364	1,128	1,298	1,280
	pH	pH units	6.5-9.0	1. Basin Plan	8.12	8.01	7.07	8.26	7.83	7.57
	Temperature	°C	NA	NA	19.8	18.3	19.5	17.5	23.4	17.2
General Chemistry	Nitrate as N	mg/L	10	1. Basin Plan	1.790	1.660	0.290	<0.009	0.820	0.430
	Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	1.800	1.660	0.300	<0.009	1.050	0.510
	Nitrite as N	mg/L	1	1. Basin Plan	<0.007	<0.007	<0.007	<0.007	0.240	0.080
	Phosphorus, Total*	mg/L	0.1	1. Basin Plan	0.08	0.19	0.18	0.30	1.76	0.58
	Total Kjeldahl Nitrogen	mg/L	NA	NA	1.1	<0.3	0.6	2.0	5.6	2.8
	Total Nitrogen*	mg/L	1	1. Basin Plan	2.9	1.7	0.9	2.0	6.6	3.3
	Total Suspended Solids	mg/L	58	14. NSQD	<1.0	82	<1.0	<1.0	<1.0	<1.0
Bacteria	Enterococci	MPN/100 mL	151	1. Basin Plan	500	500	1,400	500	30,000	13,000
	Fecal Coliform	MPN/100 mL	400	1. Basin Plan	170E	130	230	230	240,000	4,838E
	Total Coliform	MPN/100 mL	NA	1. Basin Plan	3,000	11,000	3,000	13,000	500,000	240,000

NA indicate no criteria or published value was available or applicable to the matrix or program.
NR = Not Recorded
< = Results less than the method detection limit
E = Result is an estimate
*Total N and Total P are narrative standards in the Basin Plan based on biostimulatory responses to nutrients

Source
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

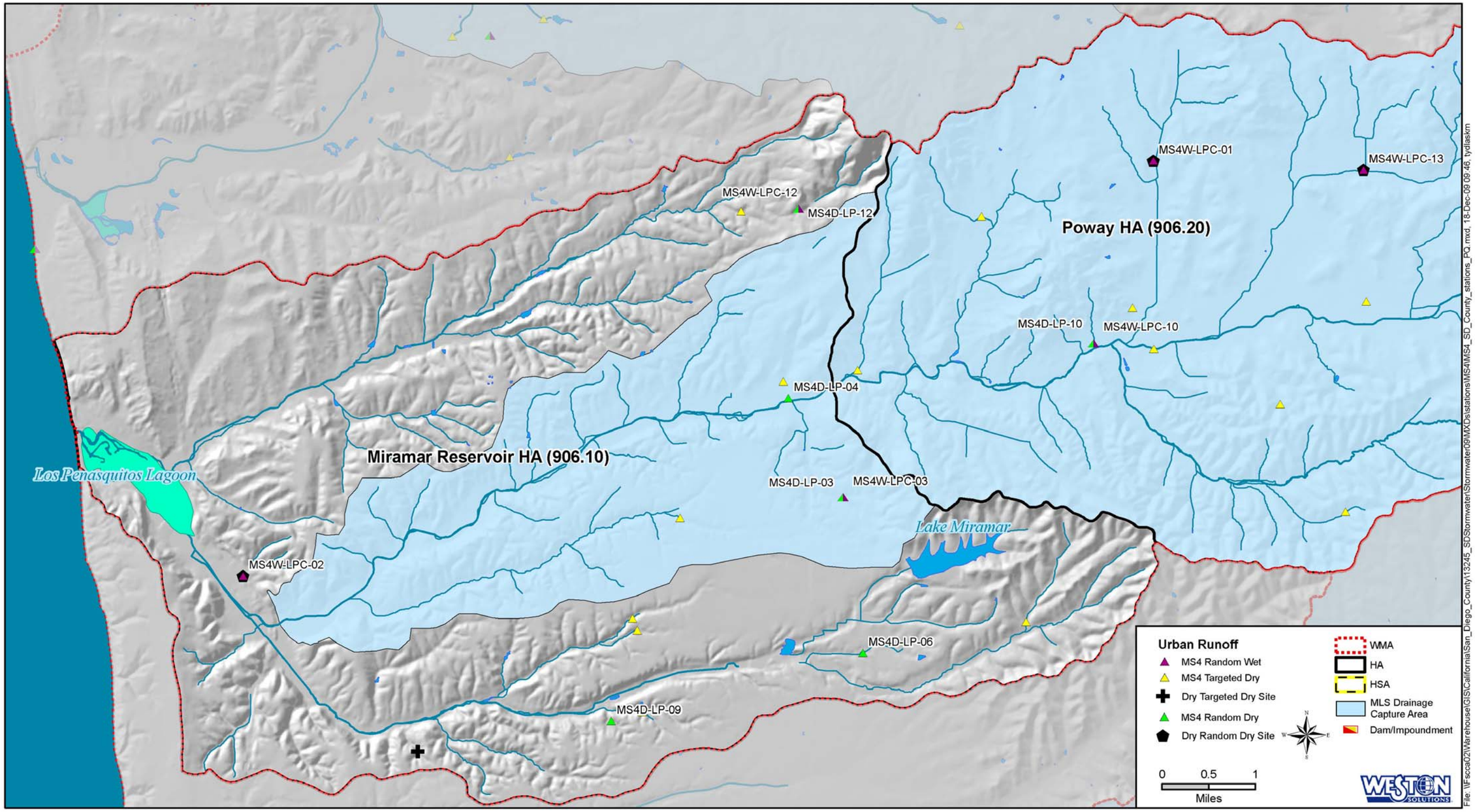

Figure 7-19. Map of Los Peñasquitos Creek Watershed Management Area Showing Random Dry, Random Wet, and Target Dry Sites Monitored as Part of the Municipal Separate Storm Sewer System Outfall Monitoring Program

Table 7-19. Los Peñasquitos Creek Municipal Separate Storm Sewer System Monitoring – Random Dry Weather Instantaneous Loads

Group	Analytes	Units	MS4D-LPC-03	MS4D-LPC-04	MS4D-LPC-06	MS4D-LPC-09	MS4D-LPC-10	MS4D-LPC-12
			80024692	80024603	80038342	80038630	282-1743.1	80037284
			5/27/2009	6/9/2009	6/9/2009	6/9/2009	5/27/2009	5/27/2009
Flow	Flow	GPM	8.886	Ponded	Ponded	Ponded	0.741	0.028
General Chemistry	Nitrate as N	lbs/min	1.33E-04	0	0	0	5.07E-06	1.02E-07
	Nitrate/Nitrite as N	lbs/min	1.33E-04	0	0	0	6.49E-06	1.21E-07
	Nitrite as N	lbs/min	0.00E+00	0	0	0	1.48E-06	1.90E-08
	Total Kjeldahl Nitrogen	lbs/min	8.16E-05	0	0	0	3.46E-05	6.64E-07
	Total Nitrogen	lbs/min	2.15E-04	0	0	0	4.08E-05	7.83E-07
	Phosphorus, Total	lbs/min	5.93E-06	0	0	0	1.09E-05	1.38E-07
	Total Suspended Solids	lbs/min	0	0	0	0	0	0
Bacteria	Enterococci	MPN/min	168,200	0	0	0	840,900	14,000
	Fecal Coliform	MPN/min	57,200	0	0	0	6,727,600	5,200
	Total Coliform	MPN/min	1,009,100	0	0	0	14,015,800	258,300

7.3.2.3 Municipal Separate Storm Sewer System Outfall Monitoring – Random Wet Weather

The random wet weather portion of the MS4 Outfall Monitoring Program is designed to answer the same subquestions, as follow, during a rain event as the random dry weather program:

1. What are the characteristics of the pollutants discharged from the MS4?
2. Are pollutant loadings changing over time?

The protocol for the random wet weather monitoring is analogous to that of the random dry weather sampling program, but the sampling is conducted during a storm event through the Wet Weather Season (October 1 through April 30). As part of the protocol, grab samples are to be collected during any part of a storm with at least 0.1 inch of total rainfall.

Four storms were monitored in the Los Peñasquitos Creek WMA as part of the random wet component of the MS4 Outfall Monitoring Program in 2008–2009 (December 15, 2008; February 6, 2009; February 13, 2009; and April 10, 2009) (Table 7-20). The following six MS4 sites throughout the Los Peñasquitos Creek WMA were selected at random and were sampled during the storm events: Site MS4W-LPC-01, Site MS4W-LPC-02, Site MS4W-LPC-03, Site MS4W-LPC-10, Site MS4W-LPC-12, and Site MS4W-LPC-13 as shown on Figure 7-19. Sites MS4W-LPC-01, MS4W-LPC-10, and MS4W-LPC-13 are in the 906.20 HA, and sites MS4W-LPC-02, MS4W-LPC-03, and MS4W-LPC-12 are in the 906.10 HA.

The sites can be characterized by assessing the chemical and bacterial parameters during a storm event. Wet weather data collected at Site MS4W-LPC-02, located in the lower portion of the Los Peñasquitos Creek WMA, had substantially lower conductivity values compared with the other sites (Table 7-20). This site also had the lowest concentrations of total nitrogen and was among three sites with the lowest TSS concentrations. Sites MS4W-LPC-03 and MS4W-LPC-12, both located in the middle portion of the Los Peñasquitos Creek WMA, had the highest concentration of total phosphorus and total nitrogen, respectively. Site MS4W-LPC-13, located in the upper portion of the 906.20 HA, had the highest concentration of TSS among the sites monitored. It is important to note that sampling for these sites occurred during different storm events, which may account for the varying parameter concentrations. In addition, the sizes of the subwatersheds that drain to the monitored MS4 outfalls may also influence concentration. Among the six sites monitored, Site MS4W-LPC-13 and Site MS4W-LPC-12 have the largest subwatersheds (656.8 acres and 355.3 acres, respectively), followed by MS4W-LPC-10 (118.0 acres). Sites MS4W-LPC-03, MS4W-LPC-01, and MS4W-LPC-02 have the smallest subwatersheds (49.8 acres, 30.0 acres, and 27.4 acres, respectively).

One way to account for the variability due to different storms is to normalize the rainfall data to a uniform size and to generate flows based on the size of the subwatershed for that site. Normalizing the data by rainfall allows for a relative comparison between sites. Normalized loads were generated for the six random wet weather sites monitored in the Los Peñasquitos Creek WMA (Appendix I and Figure 7-20) based on a 0.5-inch storm and the analyte

concentrations presented in Table 7-20. The relative comparison between the sites shows that Site MS4W-LPC-12 had the greatest normalized loads for total nitrogen, enterococci, and fecal coliform bacteria, as well as the second greatest loads for TSS and total coliform bacteria. The greatest loads for TSS were found at Site MS4W-LPC-13. This site also had the second greatest loads among the six sites of total nitrogen and fecal coliforms. The smallest loads were generally found at Site MS4W-LPC-02 which had the smallest drainage area.

The catchments of the six random wet sites monitored in the Los Peñasquitos Creek WMA in 2008–2009 and the land uses associated with them are depicted on Figure 7-21 to further characterize the wet weather loads. The catchment for Site MS4W-LPC-13 consists primarily of residential and spaced rural residential. In contrast, land use as Site MS4W-LPC-12 is primarily composed of open space / parks and recreation land use. Land use comprising the other remaining sites consists primarily of open space / parks and recreation, vacant and undeveloped, and transportation land uses. This difference in land use may account for the greater TSS total coliforms, and TSS loads found at MS4W-LPC-13 compared to the other sites monitored. The inset on Figure 7-21 is an aerial photograph of the drainage area of the site, which shows residential and spaced rural residential that may have contributed to the elevated constituent loads.

Table 7-20. Los Peñasquitos Creek Municipal Separate Storm Sewer System Outfall Monitoring – Random Wet Weather Chemistry Results (Water Quality Benchmarks for Comparative Purposes Only)

Group	Analyte	Units	Benchmarks	Source	MS4W-LPC-01	MS4W-LPC-02	MS4W-LPC-03	MS4W-LPC-10	MS4W-LPC-12	MS4W-LPC-13
					294-1749, 4	80024779	80024692	282-1743, 1	80037284	294-1761, 2
					12/15/2008	12/15/2008	2/6/2009	2/13/2009	4/10/2009	4/10/2009
Physical Chemistry	Conductivity	µS/cm	NA	NA	683.0	158.3	3,460.0	238.0	190.0	425.0
	pH	pH units	6.5-9.0	1. Basin Plan	7.50	8.74	7.64	7.78	8.15	8.14
	Temperature	°C	NA	NA	13.1	12.9	17.7	11.0	16.9	15.3
General Chemistry	Nitrate as N	mg/L	10	1. Basin Plan	-	-	2.67	0.92	1.92	1.03
	Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	1.01	0.61	1.71	0.96	2.02	1.1
	Nitrite as N	mg/L	1	1. Basin Plan	-	-	<0.007	<0.007	0.100	0.070
	Phosphorus, Total	mg/L	0.1	1. Basin Plan	0.39	0.26	0.64	0.16	0.29	<0.02
	Total Kjeldahl Nitrogen	mg/L	NA	NA	0.8	0.5	1.3	1.8	3.6	2.6
	Total Nitrogen	mg/L	1	1. Basin Plan	1.8	1.1	3	2.8	5.6	3.7
	Total Suspended Solids	mg/L	100	4. MSGP 2000	23	<1	<1	<1	46	89
Bacteria	Enterococci	MPN/100mL	NA	NA	23,000	7,000	1,700	5,000	30,000	17,000
	Fecal Coliform	MPN/100mL	400	1. Basin Plan	3,000	500	210	800	70,000	13,000
	Total Coliform	MPN/100mL	NA	NA	170,000	8,000	30,000	80,000	110,000	80,000

NA indicate no criteria or published value was available or applicable to the matrix or program.
< = Results less than the method detection limit

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

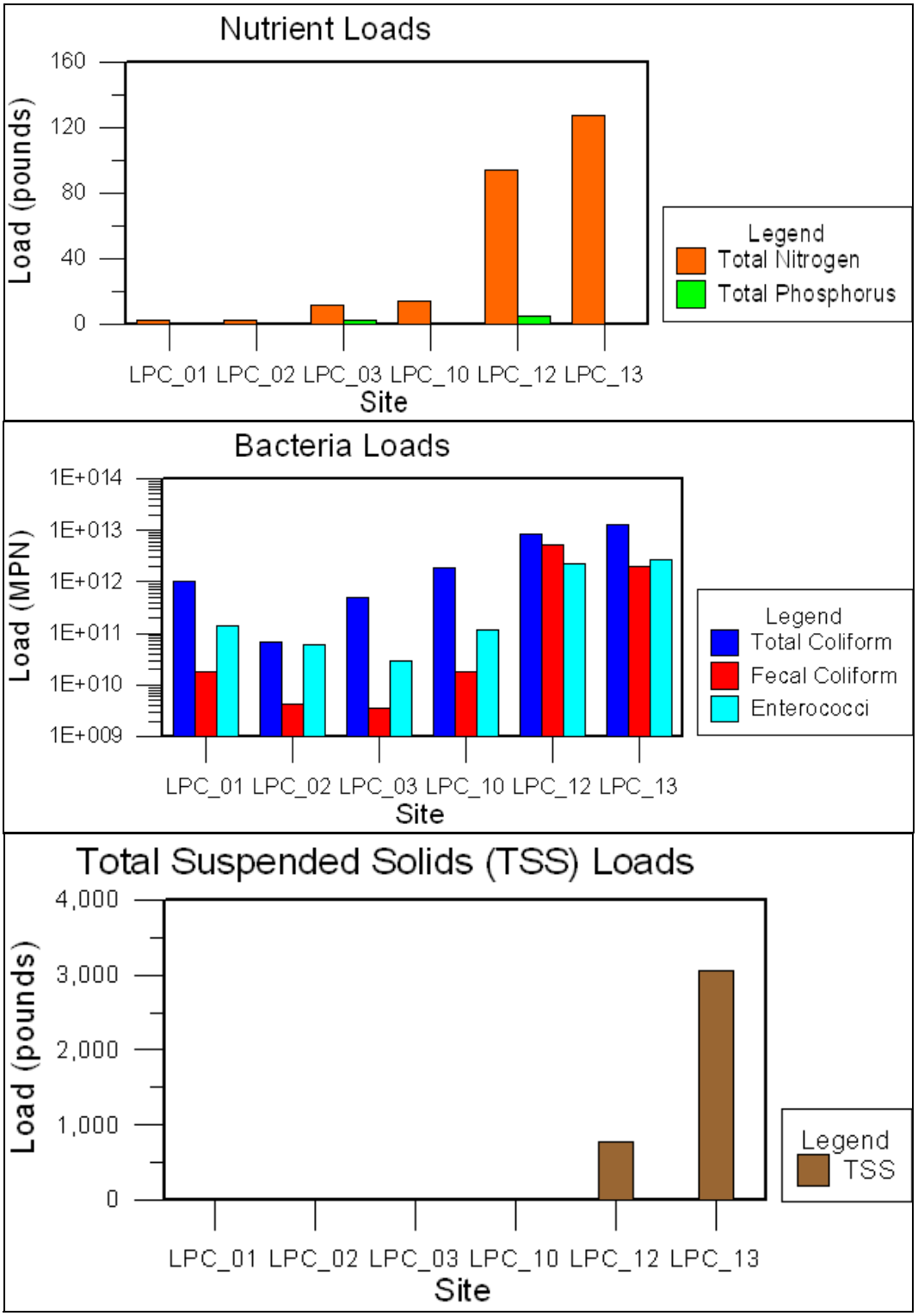

Figure 7-20. Los Peñasquitos Creek Watershed Management Area Estimated Random Wet Weather Loads for Nutrients, Bacteria, and Total Suspended Solids Based on a 0.5-Inch Simulated Storm

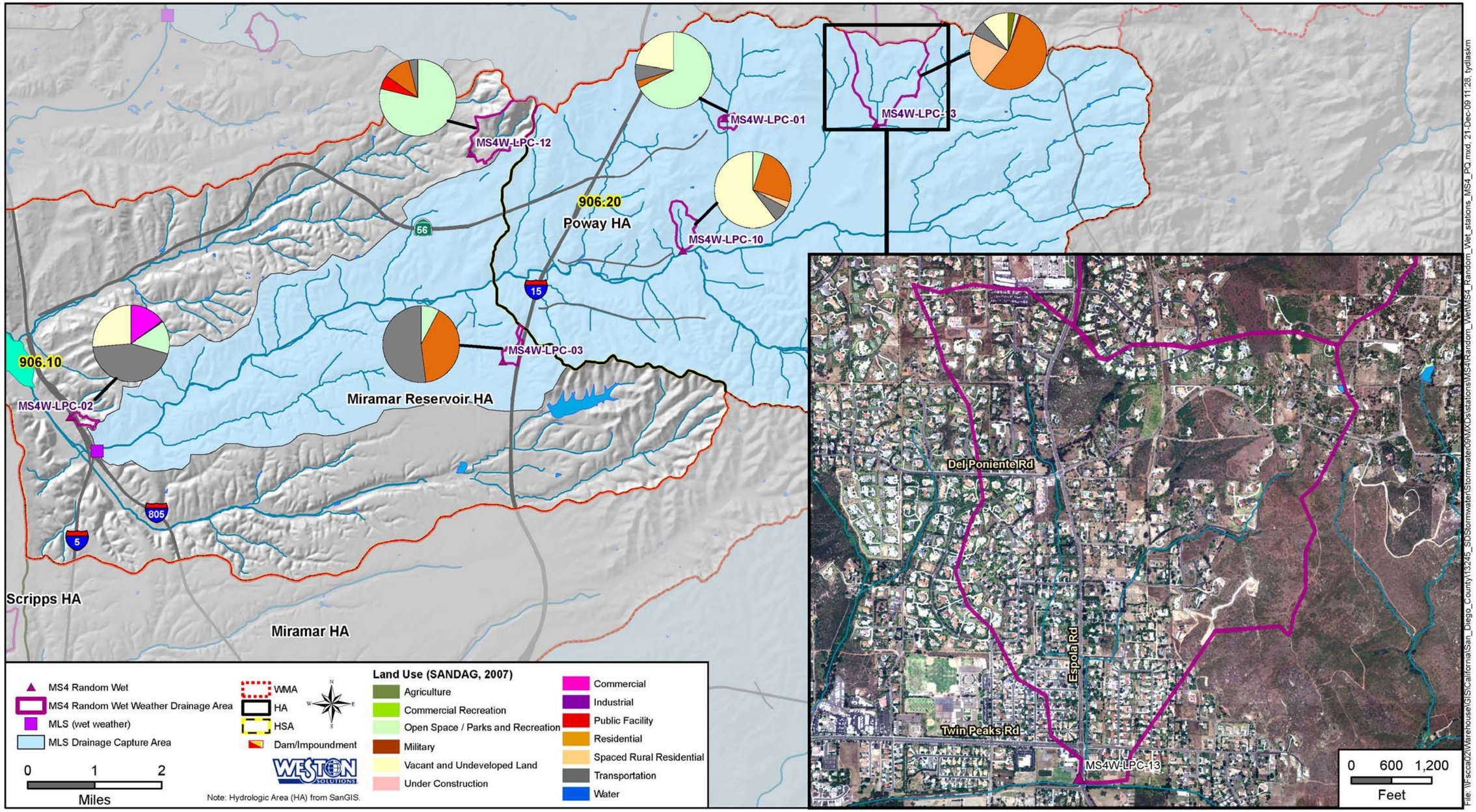

Figure 7-21. Los Peñasquitos Creek Watershed Management Area Drainage Areas for Municipal Separate Storm Sewer System Random Wet Sites

7.3.2.4 Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather

The targeted dry portion of the MS4 Outfall Monitoring Program focuses monitoring efforts on those MS4 outfalls that are most likely to contribute to receiving water problems (e.g., largest potential pollutant loading) (SDCRC 2008a). As part of the program, sampling is to occur once each year at pre-selected outfalls during the dry season (May 1 through September 30).

In addition to addressing Core Management Question 3 above, targeted sampling was conducted to address the following subquestions:

1. Which of the targeted MS4 outfalls have the greatest pollutant loading?
2. Are pollutant loadings changing over time?

A total of 15 MS4 outfall sites in the Los Peñasquitos Creek WMA were monitored as part of the Targeted Dry Weather MS4 Outfall Monitoring Program in 2008–2009 (Figure 7-22). The sites were distributed throughout the Los Peñasquitos Creek WMA and visited between May 4, 2009, and July 6, 2009 (Table 7-21). Among the 15 sites, 13 were flowing at the time of the site visit and were sampled and analyzed for the constituents listed in Table 7-21. Two sites were dry or ponded at the time of the site visit (represented by a black cross on Figure 7-22).

The chemical characteristics of the water at each site are depicted in Table 7-21. Benchmarks used for assessing receiving waters in ambient conditions (Table 7-3) were placed on the MS4 Targeted Dry table to help address the Core Management Question 3—What is the relative urban runoff contribution to the receiving water problem(s)? It is important to note that the benchmarks listed in the table are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. They have been placed on the table for comparative purposes only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3.

Receiving water quality benchmarks available for comparison to the Los Peñasquitos Creek MS4 targeted data set include total nitrogen, total phosphorus, TDS, MBAS, Diazinon, dissolved copper, and indicator bacteria (i.e., fecal coliforms and enterococci) (Table 7-21).

TDS concentrations were greater than the TDS benchmark of 500 mg/L at 14 sites monitored, reflecting the elevated TDS concentrations typically found throughout the region. TDS is on the 2006 SWRCB Section 303(d) list for the Los Peñasquitos Creek WMA (Table 7-2) and was identified as high frequency of occurrence Constituent of Concern (COC) in the ambient receiving water assessment (Subsection 7.5). The results suggest that TDS in MS4 dry weather runoff from these sites may have the potential to contribute to receiving water problems.

Total nitrogen is a nitrogenous compound with a water quality objective (WQO) available for comparison to analytes in the targeted DWM program (Table 7-21). The benchmark for total

nitrogen (the sum of nitrate, nitrite and TKN) is 1.0 mg/L. This value is based on the Basin Plan objective for biostimulatory substances in an effort to maintain nutrient levels below those that stimulate algae and emergent plant growth (RWQCB, 2007). In the Los Peñasquitos Creek WMA, the total nitrogen concentrations were greater than the benchmark of 1.0 mg/L at nine sites of the 15 sites sampled. Total nitrogen is not on the 2006 SWRCB Section 303(d) list for the Los Peñasquitos Creek WMA (Table 7-2). However, the results may suggest that nitrogenous compounds in MS4 dry weather runoff from the random and targeted sites that were greater than their respective benchmarks may have the potential to contribute to receiving water problems.

Similar to total nitrogen, the benchmark for total phosphorus of 0.1 mg/L (Table 7-21) is based on the Basin Plan objective for biostimulatory substances in an effort to maintain nutrient levels below those that stimulate algae and emergent plant growth (RWQCB, 2007). Concentrations of total phosphorus were greater than the benchmark at five targeted dry weather sites in the Los Peñasquitos Creek WMA. Phosphate, a component of total phosphorus, is on the 2006 SWRCB Section 303(d) list for waterbodies in the Los Peñasquitos Creek WMA. The results suggest that phosphorus compounds in MS4 dry weather runoff from the random and targeted sites that were greater than their respective benchmarks may have the potential to contribute to receiving water problems.

The benchmarks for indictor bacteria are based on Basin Plan standards of 151 MPN/100 mL for enterococci and 400 MPN/100 mL for fecal coliforms (Table 7-21). Enterococcus concentrations were greater than the benchmark at all but one of the targeted dry weather sites sampled in the Los Peñasquitos Creek WMA and concentrations of fecal coliform were greater than the benchmark at all but four of the sites. Waterbodies within the Los Peñasquitos Creek WMA are not on the 2006 SWRCB Section 303(d) list for indicator bacteria (Table 7-2). The results suggest that those targeted dry MS4 sites where enterococcus concentrations were greater than their respective benchmarks have the potential to contribute to receiving water problems.

Comparing concentrations of analytes across a WMA provides some information on the potential for runoff from the MS4 to contribute to receiving water problems. However, MS4 dry weather runoff can be extremely variable, and the extent to which it contributes to the receiving water is highly dependent on flow. As part of the MS4 Targeted DWM Program, instantaneous flow (i.e., flow measured at the time of the site visit only) was measured at sites where water was flowing. Instantaneous flow combined with the concentration data described above allows for a calculation of instantaneous load at each site, which can then be used to answer subquestion 1 above (Which of the targeted MS4 outfalls have the greatest pollutant loading?). Instantaneous loads represent the load for a given pollutant at the time of data collection. Given the intermittent nature of dry weather flows in this region, instantaneous loads should not be extrapolated to longer time periods, such as day or year. Thus, load is represented in units of pounds per minute, similar to the random dry weather data. Comparing loads among sites can be useful to assess relative differences between site locations, but it is important to note that the results represent a snapshot in time and may not reflect the overall dry weather characteristics at that site.

Instantaneous flows and loads for analytes assessed in the MS4 targeted dry weather sites in the Los Peñasquitos Creek WMA are presented in Table 7-22. Among the 15 sites assessed, flow was greatest at Site SD-DW018 and Site SD-DW289, both located in the central portion of the

WMA (Figure 7-22). Flow at these sites (149.0 GPM and 111.8 GPM, respectively) were at least eight times as high as those at almost all other sites assessed. Sites SD-DW428, SD-DW021, and SD-DW026, located in the southern portion of the WMA, had the lowest instantaneous flows of all sites assessed (0.01, 0.4, and 0.8 GPM, respectively).

Among the 15 sites assessed, loads of analytes were high at Site SD-DW018 and Site SD-DW289 (Table 7-22). Instantaneous loads of total nitrogen and TDS were greatest at Site SD-DW289 while loads of total phosphorus and TSS were greatest at Site SD-DW018. The smallest TSS and TDS loads were measured at Site SD-DW428, where flow was lowest, reflecting the influence that flow has on the load calculation. The instantaneous loads of total nitrogen and total phosphorus are presented in the inset of Figure 7-22 to demonstrate the relative differences among sites for these nutrients and address subquestion 1 (Which of the targeted MS4 outfalls have the greatest pollutant loading?). This graph depicts single samples taken once during the 2009 dry season. Although it is helpful in identifying sites with the greatest analyte loads in this first year of the program, it should not yet be considered representative of dry weather MS4 runoff in the Los Peñasquitos Creek WMA. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program. Additional temporal data will also allow us to address subquestion 2 (Are pollutant loadings changing over time?) in future assessments.

In addition to nutrients, relative instantaneous loads of indicator bacteria were also assessed at dry weather sites in the Los Peñasquitos Creek WMA. Instantaneous loads of fecal coliforms and total coliforms were greatest at Site SD-DW247, a relatively low flow site (1.3 GPM). In contrast, instantaneous load of enterococci was greatest at Site SD-DW018, where flow was highest. This indicates that bacterial loads often cannot be directly linked to flow or other analytes, due to the inherent variability of indicator bacteria populations in the environment. Concentrations of enterococci, for example, can fluctuate over several orders of magnitude at a given location due to environmental variables, such as temperature, pH, TSS, and the presence of organic debris. In addition, several studies have suggested that indicator bacteria concentrations may change from one location to the next due to dieoff and reproduction in the environment, including regrowth within the MS4 (WESTON, 2005). Thus, an assessment of relative bacterial loads within a given area should be interpreted with caution, particularly when the results are based on a single sample. Additional data that will be provided in subsequent years of the MS4 Outfall Monitoring Program are needed for a more meaningful assessment of the spatial and temporal characteristics of bacterial loads in the Los Peñasquitos Creek WMA.

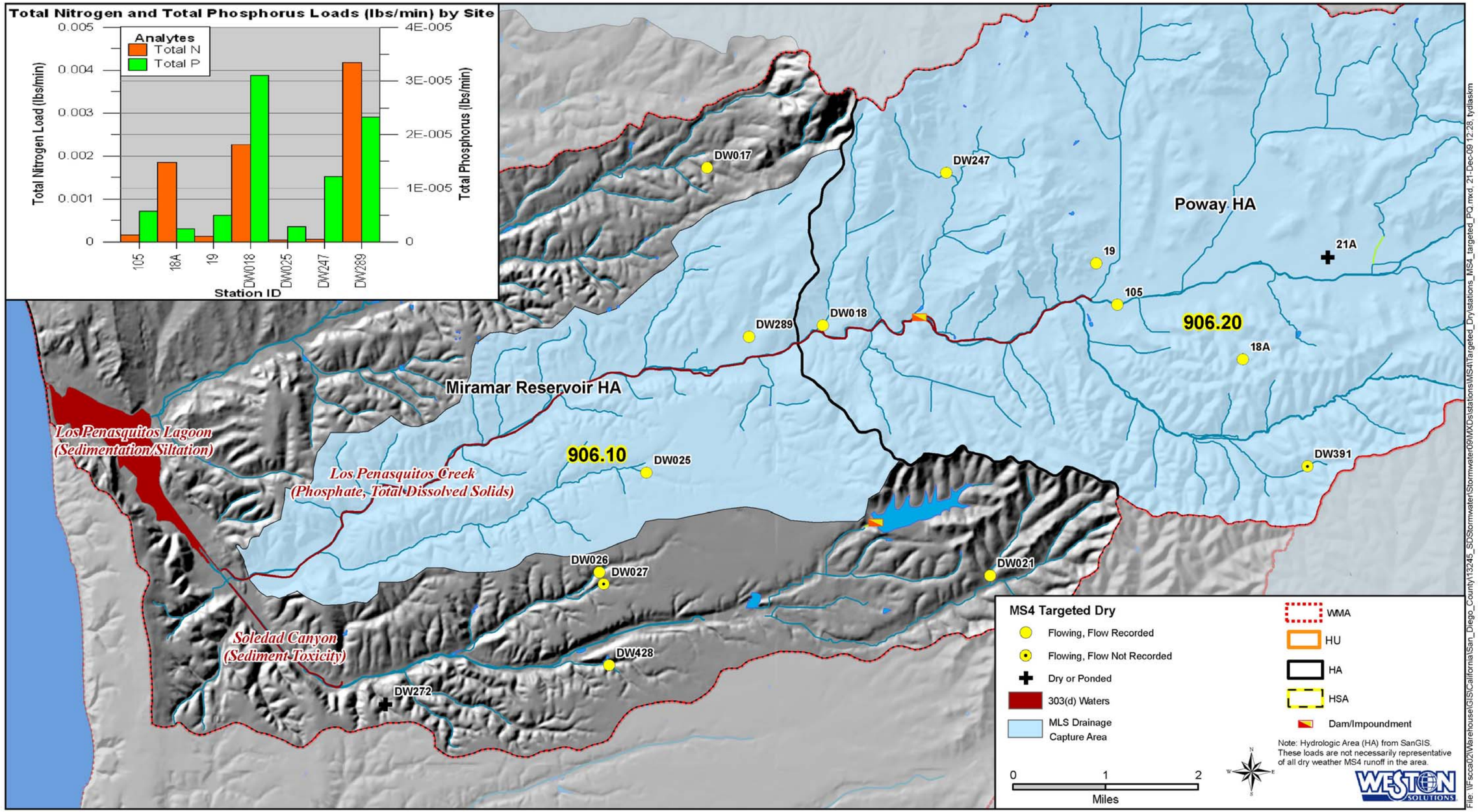

Figure 7-22. Los Peñasquitos Creek Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Monitoring Sites

Table 7-21. Los Peñasquitos Creek Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather Chemistry Results with Water Quality Benchmarks for Comparative Purposes Only

Analyte	Unit	Benchmark	Source	PO-105	PO-18A	PO-19	PO-21A	SD-DW017	SD-DW018	SD-DW021	SD-DW025
				06/23/2009	06/23/2009	06/23/2009	06/24/2009	05/04/2009	05/19/2009	05/06/2009	05/26/2009
Flow											
Flow	GPM	NA	NA	3.00	11.70	12.00	Ponded	12.47	149.01	0.39	1.56
General Chemistry											
MBAS	mg/L	0.5	1. Basin Plan	NS	NS	NS	NS	NS	NS	NS	NS
Wet Chemistry											
Nitrate/Nitrite as N	mg/L	NA	NA	5.72	18.1	< 0.05	1.14	NS	NS	NS	NS
Total Kjeldahl Nitrogen	mg/L	NA	NA	0.8	0.8	1.4	3.8	NS	NS	NS	NS
Total Nitrogen	mg/L	1	1. Basin Plan	6.5	18.9	1.4	4.9	NS	1.825	NS	3.675
Total Phosphorus	mg/L	0.1	1. Basin Plan	0.23	< 0.05	0.05	1.03	NS	< 0.05	NS	0.22
Total Dissolved Solids	mg/L	500	1. Basin Plan	2,280	1,580	848	939	2,400	1,600	3,500	1,500
Total Suspended Solids	mg/L	58	NA	< 20	< 20	< 20	24	< 10	17	31	< 10
Total Hardness	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS	500
Dissolved Metals											
Copper, Dissolved	mg/L	(a)	40 CFR 131.38	NS	NS	NS	NS	NS	NS	NS	< 0.01
Pesticides											
Diazinon	µg/L	0.08	CA Dept of Fish Game 2000	NS	NS	NS	NS	NS	NS	< 0.952**	NS
Bacteria											
Enterococci	MPN/100 mL	151	1. Basin Plan	13,000	230	20	500	940	700	100,000	2,400 E
Fecal Coliform	MPN/100 mL	400	1. Basin Plan REC-1/REC-2	5,000	800	< 20	500	78	45	490	490
Total Coliform	MPN/100 mL	NA	NA	5,000	2,300	130	14,000	1,700	2,300	13,000	4,900
CMC Benchmarks for Dissolved Metals											
Copper, Dissolved	mg/L			NS	NS	NS	NS	NS	NS	NS	0.050

Table 7-21. Los Peñasquitos Creek Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather Chemistry Results with Water Quality Benchmarks for Comparative Purposes Only (Continued)

Analyte	Unit	Benchmark	Source	SD-DW026	SD-DW027	SD-DW247	SD-DW272	SD-DW289	SD-DW391	SD-DW428
				05/19/2009	05/19/2009	07/06/2009	07/01/2009	05/19/2009	05/06/2009	05/19/2009
Flow										
Flow	GPM	NA	NA	0.78	NR	1.33	Dry	111.76	NR	0.01
General Chemistry										
MBAS	mg/L	0.5	1. Basin Plan	0.25	NS	NS	NS	NS	NS	NS
Wet Chemistry										
Nitrate/Nitrite as N	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS
Total Kjeldahl Nitrogen	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS
Total Nitrogen	mg/L	1	1. Basin Plan	NS	NS	4.675	NS	4.475	4.075	NS
Total Phosphorus	mg/L	0.1	1. Basin Plan	NS	NS	1.1	NS	< 0.05	0.38	NS
Total Dissolved Solids	mg/L	500	1. Basin Plan	830	980	1,100	NS	3,400	1,300	1,100
Total Suspended Solids	mg/L	58	NA	< 10	5	19	NS	< 10	< 10	110
Total Hardness	mg/L	NA	NA	300	NS	NS	NS	NS	NS	NS
Dissolved Metals										
Copper, Dissolved	mg/L	(a)	40 CFR 131.38	< 0.01	NS	NS	NS	NS	NS	NS
Pesticides										
Diazinon	µg/L	0.08	CA Dept of Fish Game 2000	< 0.952**	NS	NS	NS	NS	NS	NS
Bacteria										
Enterococci	MPN/100 mL	151	1. Basin Plan	6,000	5,000	66,000	NS	360 E	24,000 E	24,000
Fecal Coliform	MPN/100 mL	400	1. Basin Plan REC-1/REC-2	1,100	790	13,000	NS	20	7,900	4,900
Total Coliform	MPN/100 mL	NA	NA	17,000	3,100	350,000	NS	700	22,000	79,000
CMC Benchmarks for Dissolved Metals										
Copper, Dissolved	mg/L			0.038	NS	NS	NS	NS	NS	NS

E = Estimated
NA indicate no criteria or published value was available or applicable to the matrix or program.
NR = Not recorded
NS=Not Sampled
** Benchmark was below detection limit, and so detection level exceedance cannot be determined.
< = results less than the method detection limit.

a) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. The Criteria Maximum Concentration (CMC) was used.

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Table 7-22. Los Peñasquitos Creek Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather Loads

Group	Analytes	Units	PO-105	PO-18A	PO-19	PO-21A	SD-DW017	SD-DW018	SD-DW021	SD-DW025	SD-DW026	SD-DW027	SD-DW247	SD-DW272	SD-DW289	SD-DW391	SD-DW428
			6/23/09	6/23/09	6/23/09	6/24/09	5/4/09	5/19/09	5/6/09	5/26/09	5/19/09	5/19/09	7/6/09	7/1/09	5/19/09	5/6/09	5/19/09
Flow	Flow	GPM	3.0	11.7	12.0	Ponded	12.5	149.0	0.4	1.6	0.8	NR	1.3	Dry	111.8	NR	0.01
Bacteria	Enterococci	MPN/min	1.476E+06	1.019E+05	9.085E+03	0	4.437E+05	3.948E+06	1.476E+06	1.417E+05	1.772E+05	0	3.323E+06	0	1.523E+06	0	9.085E+03
	Fecal Coliform	MPN/min	5.678E+05	3.543E+05	0	0	3.682E+04	2.538E+05	7.234E+03	2.894E+04	3.248E+04	0	6.545E+05	0	8.461E+04	0	1.855E+03
	Total Coliform	MPN/min	5.678E+05	1.019E+06	5.905E+04	0	8.025E+05	1.297E+07	1.919E+05	2.894E+05	5.019E+05	0	1.762E+07	0	2.961E+06	0	2.990E+04
Wet Chemistry	Nitrate/Nitrite as N	lbs/min	1.43E-04	1.77E-03	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Total Phosphorus	lbs/min	5.76E-06	0	5.01E-06	0	NS	0	NS	2.86E-06	NS	NS	1.22E-05	0	0	0	NS
	Total Kjeldahl Nitrogen	lbs/min	2.00E-05	7.81E-05	1.40E-04	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Total Nitrogen	lbs/min	1.63E-04	1.85E-03	1.40E-04	0	NS	2.27E-03	NS	4.78E-05	NS	NS	5.19E-05	0	4.17E-03	0	NS
	Total Suspended Solids	lbs/min	0	0	0	0	0	2.11E-02	1.01E-04	0	0	0	2.11E-04	0	0	0	9.18E-06
	Total Dissolved Solids	lbs/min	5.71E-02	1.54E-01	8.49E-02	0	2.50E-01	1.99E+00	1.14E-02	1.95E-02	5.40E-03	0	1.22E-02	0	3.17E+00	0	9.18E-05
	MBAS	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	1.63E-06	NS	NS	NS	NS	NS	NS
Pesticides	Diazinon	lbs/min	NS	NS	NS	NS	NS	NS	0	NS	0	NS	NS	NS	NS	NS	NS
Dissolved Metals	Cadmium, Dissolved	lbs/min	NS	NS	NS	NS	NS	NS	NS	0	0	NS	NS	NS	NS	NS	NS
	Copper, Dissolved	GPM	3.0	11.7	12.0	Ponded	12.5	149.0	0.4	1.6	0.8	NR	1.3	Dry	111.8	NR	0.01
	Lead, Dissolved	MPN/min	1.476E+06	1.019E+05	9.085E+03	0	4.437E+05	3.948E+06	1.476E+06	1.417E+05	1.772E+05	0	3.323E+06	0	1.523E+06	0	9.085E+03
	Zinc, Dissolved	MPN/min	5.678E+05	3.543E+05	0	0	3.682E+04	2.538E+05	7.234E+03	2.894E+04	3.248E+04	0	6.545E+05	0	8.461E+04	0	1.855E+03

NS=Not Sampled
Note: E+01, E+02, etc. is scientific notation meaning multiply result by 10, 100, etc., respectively.

7.3.2.5 Regional Dry Weather Source Identification Program

The Regional Dry Weather Source Identification Program was conducted in drainages within the Los Peñasquitos WMA and the San Diego Bay WMA. See Section 12 for a summary of the results.

7.3.2.6 CSDM Results (storm drain and receiving water combined)

CSDM was conducted during the same period as the DWM Program (May 1, 2008–September 30, 2008). Samples were located only in the coastal area of the WMA and have no relation to the MLS, but they do provide a measure of conditions in the coastal areas. Additionally, CSDM sites include monitoring in the receiving water within direct influence of the outfalls monitored. Sample results are summarized in Table 7-23 for storm drains and in Table 7-24 for receiving waters. Receiving water results were compared to AB 411 criteria, while storm drains were compared to CSDM action levels. During the dry season, there were five samples collected from outfalls and one sample collected from receiving waters under this program in the Los Peñasquitos Creek WMA. Bacterial concentrations in all samples were less than water quality benchmarks. This indicates that the coastal storm drains monitored do not appear to be impacting coastal receiving waters during the dry weather season. For a complete description of the CSDM Program and monitoring results, please refer to Appendix N.

Table 7-23. Los Peñasquitos Creek Watershed Management Area Dry Season Coastal Storm Drain Monitoring Results

Season	Analyte	Action Level (MPN/100 mL)	Number of Samples Greater Than Action Level	Number of Samples Collected	Number of Sites Visited
2008 Dry Season (May 1-September 30)	Enterococci	17,820	0	5	1
	Fecal coliform	18,775	0	5	1
	Total coliform	160,000	0	5	1

Table 7-24. Los Peñasquitos Creek Watershed Management Area Dry Season Coastal Receiving Water Monitoring Results

Season	Analyte	AB 411 (MPN/100 mL)	Number of Samples Greater Than AB 411	Number of Samples Collected
2008 Dry Season (May 1-September 30)	Enterococci	104	0	1
	Fecal coliform	400	0	1
	Total coliform	10,000	0	1

The results of the Wet Season CSDM are presented in Table 7-25 and Table 7-26. Samples were collected between October 1, 2008 and April 30, 2009 from one storm drain outfalls (seven samples). Two receiving water samples were collected. Among the storm drain samples, bacteria

concentrations were less than their respective action levels in all samples collected. Bacterial concentrations in the receiving waters were below AB411 criteria, except for enterococci, which had a concentration greater than the benchmark in on sample. Similar to the dry weather CSDM, These results suggest that coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters during the wet weather season.

Table 7-25. Los Peñasquitos Creek Watershed Management Area Wet Season Coastal Storm Drain Monitoring Results

Season	Analyte	Action Level (MPN/100 mL)	Number of Samples Greater Than Action Level	Number of Samples Collected	Number of Sites Visited
2008-2009 Wet Season (October 1st-April 30th)	Enterococci	17,820	0	7	1
	Fecal coliform	18,775	0	7	1
	Total coliform	160,000	0	7	1

Table 7-26. Los Peñasquitos Creek Watershed Management Area Wet Season Coastal Receiving Water Monitoring Results

Season	Analyte	AB 411 (MPN/100 mL)	Number of Samples Greater Than AB 411	Number of Samples
2008-2009 Wet Season (October 1st-April 30th)	Enterococci	104	1	2
	Fecal coliform	400	0	2
	Total coliform	10,000	0	2

7.4 Constituent Load Estimates

Annual loads were estimated for the MLS for the purpose of displaying loads that are discharged to a coastal lagoon, estuary, bay, or the Pacific Ocean. Loads were estimated for wet weather runoff as a result of the monitored storm event in 2008–2009 and are presented in Appendix J.

Wet weather loads were estimated for the Los Peñasquitos Creek MLS using daily mean flow rates measured by the USGS gage station on the Los Peñasquitos Creek for the 2008–2009 Monitoring Season. For the purposes of calculating loads, the time frame for each monitoring year was defined as July 1 through June 30 of the following year (i.e., July 1, 2008 through June 30, 2009 for the 2008–2009 Monitoring Season). Wet weather loads were calculated by multiplying the average event mean concentration (EMC) for each constituent for the season's wet weather monitoring events by the seasons total wet weather discharge volume. An example calculation is expressed as follows:

$A \times B = C$

where:
A = 2008–2009 Average Wet Weather EMC (pounds/gallon)
B = volume discharged (gallon/year)
C = Wet Weather Load (pounds/year)

If a constituent has never had a result above the detection limit (i.e., non-detect for all results), a load was not calculated. If a constituent had at least one result above the detection limit, that result was used, and all other results were calculated as one-half of the detection limit to estimate the load. For fecal indicator bacteria, values were expressed as MPN/yr. However, the RWQCB has indicated that future assessments of bacterial TMDLs may be based on exceedance days as opposed to loads.

The average ambient weather monitoring EMC for each parameter was multiplied by the total base flow volume, excluding storm event volumes. Base flow volumes were separated from the annual hydrograph by subtracting precipitation-related discharge volumes included in the wet weather load estimate. The total load is the sum of the wet weather load plus the ambient dry weather load. Wet weather loading estimates were prepared using the historical observed wet weather discharge volumes for each monitoring period with the average wet weather EMC from each monitoring season. Because dry weather concentrations were not measured under the previous Permit cycle, historical ambient or total loads could not be estimated.

7.5 Los Peñasquitos Creek Watershed Management Area Assessment

The Los Peñasquitos Creek Watershed was assessed for ambient conditions and wet weather conditions using chemistry and toxicity data collected during receiving water monitoring events. Both assessments use the results of the bioassessment surveys, which are considered to represent the long-term assessment of the benthic community. The ambient and wet weather assessments are then combined for an integrated watershed assessment intended to provide watershed managers needed information for planning purposes.

Watershed water quality monitoring data were assessed using the following:

- Los Peñasquitos Creek WMA Ambient Monitoring Summary.
- Los Peñasquitos Creek WMA Wet Weather Assessment.
- Integrated Assessment.
- Triad Decision Matrix.
- 2001–2006 BLTEA Ratings for the Los Peñasquitos Creek WMA.

7.5.1 Los Peñasquitos Creek Watershed Management Area Ambient Monitoring Summary

Data used to complete the WMA assessment for ambient conditions in the Los Peñasquitos Creek WMA are presented in Table 7-27. The WMA assessment methods, discussed in the Methods Section (Appendix B), were applied to these data to determine the COCs and to develop a frequency of occurrence ranking of high, medium, or low. The results of this assessment are presented in Table 7-28.

Ambient data were collected in the WMA as part of the SMC Program for the first time in 2008–2009. Therefore, the assessment of ambient conditions was limited to a summary of the number of results for individual constituents with concentrations greater than the benchmark. Data summarized for ambient conditions in the Los Peñasquitos Creek WMA are presented in Table 7-27. In the Los Peñasquitos Creek WMA, the 2008–2009 SMC results were combined with the ambient results collected in 2007–2008. The summary is presented in Table 7-28.

Table 7-27. Los Peñasquitos Creek Watershed Management Area Ambient Monitoring Summary Data Set

Program Data Set	Data Collection Period	Constituents Summarized
SMC Ambient Monitoring	May, 2009 –June, 2009	Chemistry and toxicity
Rapid Stream Bioassessments	May 2002-May 2007	Benthic macroinvertebrates

A total of six constituents monitored in the Los Peñasquitos Creek WMA have been measured at concentrations greater than their respective benchmarks during ambient conditions (Table 7-28). TDS, chloride, sulfate, and enterococci concentrations were greater than the benchmark in all samples collected. Total nitrogen and total phosphorus concentrations were greater than the benchmarks in 33 and 22% of the samples collected, respectively.

Table 7-28. Los Peñasquitos Creek Watershed Management Area Interim Ambient Monitoring Summary

Constituents With Any Ambient Receiving Water Results Above the Benchmark	Number of Ambient Receiving Water Results Above the Benchmark					
	2007/2008		2008/2009		CUMULATIVE	
	#/6	%	#/3	%	#*	%
Conventional Parameters						
Total dissolved solids	6	100	NA	NA	**6**	**100**
Chloride	NA	NA	3	100	**3**	**100**
Sulfate	NA	NA	3	100	**3**	**100**
Nutrients						
Total nitrogen	3	50	0	0	**3**	**33**
Total phosphorus	1	17	1	33	**2**	**22**
Bacteriological						
Enterococci	6	100	NA	NA	**6**	**100**
Toxicity						
Ceriodaphnia 7-day reproduction	5	83	NA**	NA**	**5**	**83**
Selenastrum 96-hour	1	17	NA	NA	**1**	**17**
Bioassessment	**IBI Rating**					
Los Peñasquitos Creek, at Highway 805	Very Poor		NA		**Very Poor**[1]	
Los Peñasquitos Creek, at Springbrook Drive (LPC-TWAS-2)	Very Poor		NA		**Very Poor**[1]	
Carroll Canyon Creek, at Sorrento Valley Road (LPC-TWAS-1)	Very Poor		NA		**Very Poor**[1]	
McGonigle Canyon Creek (SMC-01158)	Not Sampled		Very Poor		**Very Poor**	
Los Peñasquitos Creek, at Black Mountain Rd (SMC-00198)	Not Sampled		Very Poor		**Very Poor**	
Soledad Canyon Creek (SMC-00710)	Not Sampled		Very Poor		**Very Poor**	

* = Total number of observations varied among constituents.
**Toxicity in 2008-2009 screen values were used therefore data are not comparable.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1]Cumulative result based on average of last 3 years of historic data (refer to wet weather long-term WMA assessment table).

Persistent toxicity is evident when more than half of the toxicity tests conducted on any species have a NOEC of less than 100%. Toxicity was demonstrated in 83% of the toxicity tests conducted on receiving water samples during ambient conditions in 2007–2008 which suggests evidence of persistent toxicity.

IBI scores from bioassessment monitoring at all sites monitored within the Los Peñasquitos Creek Watershed were rated Very Poor. These results indicate that there is evidence of benthic alteration.

7.5.2 Los Peñasquitos Creek Watershed Management Area Wet Weather Assessment

Data used to complete the WMA assessment for wet weather conditions are presented in Table 7-29. The WMA assessment methods, discussed in the Methods Section (Appendix B), were applied to these data to determine the COCs and to develop a frequency of occurrence ranking of high, medium, or low. The results of this assessment are presented in Table 7-30.

Table 7-29. Los Peñasquitos Creek Watershed Management Area Wet Weather Assessment Data Set

Program Data Set	Data Collection Period	Constituents Assessed
MLS Storm Event Monitoring	November 11, 2008	Chemistry, bacteria, and toxicity
Rapid Stream Bioassessments	May 2002-May 2007	Benthic macroinvertebrates

In the Los Peñasquitos Creek WMA, the following six constituents were classified as wet weather constituents of concern with low, medium, or high frequency of occurrence (Table 7-30):

- TDS.
- TSS.
- Turbidity.
- Fecal coliforms.
- Enterococci.

TDS and fecal coliforms were identified as high frequency of occurrence COCs and received three diamonds based on Criterion No. 1, when test results exceed the benchmark in greater than or equal to 80% of the samples. These constituents have been greater than their respective benchmarks in 84 and 80% of the samples collected, respectively.

TSS, turbidity, and enterococci were each identified as a COC having a low frequency of occurrence. TSS, turbidity, and enterococci received one diamond based on Criterion No. 9, when MLS or TWAS exceedances are found in 25% to less than or equal to 50% of the samples, and at least one exceedance is found in last two years at the MLS or TWAS. In this case, TSS,

turbidity, and enterococcus concentrations have been greater than the benchmark in 28%, 40%, and 36% respectively, of the wet weather samples.

One high frequency of occurrence COC (TDS) is a constituent on the 2006 SWRCB Section 303(d) list within the Los Peñasquitos Creek. Similar results have been found in a number of watersheds throughout the county, reflecting that elevated TDS concentrations may be region-wide concern.

Persistent toxicity is evident when more than half of the toxicity tests conducted on any species have a NOEC of less than 100%. There is no evidence of persistent toxicity during wet weather conditions in the Los Peñasquitos Creek WMA based on the data observed to date.

IBI scores from bioassessment monitoring at the MLS and the TWAS within the Los Peñasquitos Creek Watershed were rated Very Poor. The MLS site has historically been rated Very Poor for the monitoring period since 2002. These results indicate that there is evidence of benthic alteration.

Table 7-30. Los Peñasquitos Creek Watershed Management Area Interim Wet Weather Constituent Assessment

Constituents With Any Wet Weather Benchmark or Dry Weather Action Level Exceedance	Wet Weather Receiving Water Results at MLS																		Frequency of Occurrence	Criterion No.
	2001/2002		2002/2003		2003/2004		2004/2005		2005/2006		2006/2007		2007/2008		2008/2009		CUMULATIV			
	#/3	%	#/3	%	#/3	%	#/3	%	#/3	%	#/3	%	#/6	%	#/1	%	#*	%		
Conventional Parameters																				
COD	0	0	0	0	0	0	1	33	0	0	0	0	0	0	0	0	**1**	**4**	-	-
Total dissolved solids	3	100	3	100	3	100	3	100	2	67	3	100	3	50	1	100	**21**	**84**	♦♦♦	1
Total suspended solids	0	0	0	0	0	0	1	33	1	33	1	33	4	67	0	0	**7**	**28**	♦	9
Turbidity	0	0	2	67	0	0	1	33	1	33	1	33	5	83	0	0	**10**	**40**	♦	9
Bacteriological																				
Total coliform**	0	0	2	67	0	0	1	33	1	33	0	0	2	33	0	0	**6**	**24**	-	-
Fecal coliform	1	33	3	100	1	33	3	100	3	100	3	100	5	83	1	100	**20**	**80**	♦♦♦	1
Enterococci**	0	0	2	67	0	0	0	0	2	67	1	33	3	50	1	100	**9**	**36**	♦	9
Pesticides																				
Chlorpyrifos	0	0	2	67	0	0	0	0	0	0	0	0	0	0	0	0	**2**	**8**	-	-
Diazinon	2	67	1	33	0	0	0	0	0	0	0	0	0	0	0	0	**3**	**12**	-	-
L-Cyhalothrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	17	0	0	**1**	**20**	-	-
Toxicity																			**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 7-day reproduction	0	0	0	0	0	0	0	0	0	0	1	33	0	0	0	0	**1**	**4**	No	
Hyalella 96-hour acute	0	0	0	0	0	0	0	0	0	0	0	0	3[1]	50	0	0	**3**	**12**	No	
Selenastrum 96-hour	2	67	0	0	1	33	0	0	2	67	1	33	0	0	0	0	**6**	**24**	No	
Bioassessment	IBI Rating																		**EVIDENCE OF BENTHIC ALTERATION?**	
Los Peñasquitos Creek, at Highway 805	Very Poor		Poor		Poor		Poor		Very Poor		Very Poor		Very Poor		NA		**Very Poor[2]**		Yes	
Los Peñasquitos Creek, at Springbrook Drive (LPC-TWAS-2)	Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		NA		**Very Poor[2]**			
Carroll Canyon Creek, at Sorrento Valley Road (LPC-TWAS-1)	Very Poor		Poor		Poor		Poor		Very Poor		Very Poor		Very Poor		NA		**Very Poor[2]**			
McGonigle Canyon Creek (SMC-01158)[3]	NA		NA		NA		NA		NA		NA		NA		Very Poor		**NA**			
Los Peñasquitos Creek, at Black Mountain Rd (SMC-00198)[3]	NA		NA		NA		NA		NA		NA		NA		Very Poor		**NA**			
Soledad Canyon Creek (SMC-00710)[3]	NA		NA		NA		NA		NA		NA		NA		Very Poor		**NA**			

* = Total number of observations varied among constituents.
** = Total coliform and Enterococci were compared to DWS action levels.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1]Persistent toxicity triggered by two of two *Hyalella azteca* toxicity hits at LPC-TWAS-2 with no historical data to suggest otherwise. Synthetic pyrethroids were detected in levels sufficient to induce a toxic response to this organism based on published LC_{50} values. This is common issue on a region wide and statewide basis in urban areas.
[2]Cumulative result based on average of last 3 years of historic data.
[3]This is the 1st year of the SMC Regional Monitoring Program. Historical MLS data was used to assess triad recommendations.
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.

7.5.3 Integrated Assessment

Assessment of the watershed during both wet weather and ambient conditions is presented in an integrated manner to present managers with an overall assessment of the WMA and to provide answers to the core management questions. The integrated assessment incorporates both the ambient weather and wet weather assessments and provides a summary of the overall findings for the Los Peñasquitos Creek WMA. The integrated assessment also identifies which COCs overlap between receiving waters and urban runoff. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as the data become available in future years. Integrated watershed assessments results are presented in Table 7-31.

Table 7-31. Los Peñasquitos Creek Watershed Management Area Interim Integrated Watershed Area Management Assessment

Assessment Category		Program	Parameters With Results Above the Receiving Water Benchmarks or Action Levels For Dry Weather Monitoring Data	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	Ambient Receiving Water	SMC and Bioassessment Monitoring[2]	TDS, Chloride, Sulfate, Enterococci, Total nitrogen, Total phosphorus, Enterococci	*	Yes	TDS, chloride, sulfate, indicator bacteria, and total phosphorus were measured at concentrations greater than their respective benchmarks, however, an ambient assessment was not conducted due to the limited data set. The dry weather MS4 monitoring results suggest that the MS4 effluent may have the potential to contribute to receiving water problems for constituents with concentrations greater than the benhcmark.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring	Conductivity, Turbidity, Ammonia, Nitrate as N, Total coliform, Fecal coliform, Enterococci	NA		
		MS4 Random Dry and Targeted Dry Monitoring[2]	TDS, TSS, Nitrate/Nitrite as N, Total nitrogen, Fecal coliform, Enterococci	NA		
Wet Weather	Wet Weather Receiving Water[1]	MLS and Bioassessment Monitoring	♦♦♦-TDS, Fecal coliform ♦-TSS, Turbidity, Enterococci	No		TDS and fecal coliform were identified as high frequency of occurrence COC during wet weather conditions. TSS, turbidity and enterococci were also identified as a low frequency COC. In addition to the wet weather results, TDS and enterococci were found at concentrations greater than the benchmark in both the ambient receiving water monitoring and the dry weather MS4 monitoring, suggesting that the MS4 may have the potential to contribute to receiving water problems for these constituents. Persistent toxicity was not identified at this site, although Bifenthrin was identified as a high frequency of occurrence COC. This is a region wide and state wide problem, and is currently being addressed by the Department of Pesticide Regulation.
	Wet Weather Urban Runoff Areas	MS4 Random Wet and Targeted Wet Monitoring[2]	Total phosphorus, Total nitrogen, Fecal coliform	NA		

*Ambient sampling as part of normal permit was not monitored due to Bight '08 participation.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1]Frequency of occurance ratings are only applicable to wet weather receiving water data. A minimum of 3 years of data is needed for other elements of the program to assess frequency of occurance.
[2]Concentration was compared to receiving water benchmarks for comparitive purposes only.

7.5.4 Triad Decision Matrix

The triad decision matrix incorporates the chemistry data from wet weather events with the toxicity and bioassessment results to provide indications of pollutant loading, potential impacts to organisms, and the ecological health of the watershed. The triad assessment presents possible conclusions regarding the watershed and provides possible actions or decisions for future monitoring and assessment based on the Permit. Table 7-32 summarizes these results.

Table 7-32. Los Peñasquitos Creek Watershed Management Area Triad Decision Matrix Results

Condition	Chemistry	Toxicity	Bioassessment	Action
Wet Weather	No persistent exceedances of water quality objectives.	No evidence of persistent toxicity.	Indications of alteration.	No action necessary to address toxic chemicals. Address potential role of urban runoff in causing physical habitat disturbance.

Note: Insufficient data to assess ambient results due to Bight '08 monitoring year.

TDS and fecal coliforms were identified as high frequency of occurrence COCs, however, they are not considered in the triad decision-making process because they are not believed to induce a toxic response to aquatic organisms (see Methods Section in Appendix B for more complete details). There is no evidence of persistent toxicity during ambient conditions in the Los Peñasquitos Creek WMA, however, the bioassessment results suggest that there are indications of benthic alteration.

Based on the possible actions or decisions from the WMA triad framework, no action is necessary to address toxic chemicals. Consideration of additional parameters, continuation of monitoring to gather long-term trend information, and consideration of the potential role of physical habitat disturbance is recommended.

7.5.5 Baseline Long-Term Effectiveness Assessment Ratings for the Los Peñasquitos Creek Watershed Management Area

The BLTEA tool is used to guide long-term programmatic watershed activities and is performed on a five-year cycle. The WMA assessments are used to guide annual water quality monitoring activities and to evaluate annual differences or change through time. In this section, the WMA COCs identified in 2008–2009 are compared to the long-term BLTEA ratings to evaluate if activities are showing improvements or impairments through the five-year cycle.

The BLTEA baseline water quality priority ratings presented in the 2005–2006 Urban Runoff Monitoring Report are also presented in this report in Table 7-33. The table has been appended to include the 2008–2009 WMA assessment results. These tables are tools that assist managers in prioritizing watershed activities and identifying data gaps. The priority ratings are based on the methods presented in the BLTEA Report (WESTON et al., 2005) and are summarized in Appendix B.

Constituent groups and stressor groups identified in Table 7-33 are given a ranking from A to D, with A being the highest priority rating and D being the lowest priority rating. Items ranked with a D indicate that the constituent group or stressor is a low priority or does not have sufficient data to support a higher ranking. The priority ratings were based on the data record from 2001–2006 from the following programs and will be updated on a five-year cycle:

- Storm Water MLS Monitoring – Wet Weather Data (2000–2006).
- Copermittee Dry Weather Data Monitoring (2003–2005).
- Available Third-Party Data (SWAMP, 2003).
- Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring (2003–2005).
- Urban Stream Bioassessment Monitoring (2000–2006).
- Triad Assessment – Toxicity Testing of Storm Water (2000–2006).
- SWQCB Section 303(d) Listing (2003).

For the overall Los Peñasquitos Creek WMA, dissolved minerals, sediments, bacteria/pathogens, and benthic alterations were identified as high-priority (A) rated constituents in the BLTEA system (Table 7-33). Toxicity was identified as a priority (C) rated constituent while heavy metals, organics, oil & grease, pesticides, nutrients, and gross pollutants were identified as lowest priority (D) constituents for the overall Los Peñasquitos Creek WMA. In the Miramar Reservoir HA, dissolved minerals, sediments, bacteria/pathogens, and benthic alteration were each identified as high-priority (A) rated constituents. The Poway HA received a high-priority (A) rating for dissolved mineral constituents.

Table 7-33. Los Peñasquitos Creek Watershed Management Area Water Quality Priority Ratings

Watersheds/Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Los Peñasquitos WMA	**100%**	***D***	***A***	***D***	***D***	***A***	***D***	***D***	***D***	***A***	***A***	***C***
Miramar Reservoir HA (906.10)	55%	*C*	*A*	*D*	*D*	*A*	*D*	*C*	*C*	*A*	*A*	*C*
Poway HA (906.20)	45%	*D*	*A*	*D*	*D*	*C*	*D*	*D*	*D*	*B*	*B*	*C*
2006–2009 High Frequency of Occurrence COCs (from Integrated WMA Assessment)												
2006–2007 High[1] Frequency of Occurrence Ratings and COCs	Wet Weather		♦♦♦ TDS									No
2007–2008 High[1] Frequency of Occurrence Ratings and COCs	Ambient Weather		♦♦♦ TDS							♦♦♦ Enterococci	Very Poor IBI	Persistent Toxicity to *C. dubia* reproduction (TWAS-1)
	Wet Weather		♦♦♦ TDS							♦♦♦ Fecal coliform	Very Poor IBI	Persistent Toxicity to *H. azteca* (TWAS-2)
2008–2009 High[1] Frequency of Occurrence Ratings and COCs	Wet Weather		♦♦♦ TDS							♦♦♦ Fecal coliform	Very Poor IBI	No

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest – A to Lowest – D)*

High-Priority Level Based on Data

2006 SWRCB Section 303d listing

The 2008–2009 WMA criteria assessments for the two HAs in the Los Peñasquitos Creek WMA were compared to the BLTEA water quality priority ratings by identifying the high frequency COC for each HA (Table 7-33). The 2008–2009 pattern of high frequency COCs for TDS (i.e., dissolved minerals) and indicator bacteria (fecal coliform) were similar to previous years. During wet weather, TDS and indicator bacteria (i.e., fecal coliforms) were identified as high frequency of occurrence COCs. There was also evidence of benthic alteration but no evidence of persistent toxicity during wet weather for the 2008-2009 Monitoring Season.

The 2008–2009 results are consistent with the long-term BLTEA ratings with dissolved minerals, indicator bacteria, and benthic alteration showing elevated frequencies of occurrence.

A list of potential likely or unknown sources for the sediments, nutrients, and bacterial categories in the Los Peñasquitos Creek WMA based on the threat to water quality inventory ratings tables can be found in the BLTEA Report (WESTON et al., 2005).

7.6 Los Peñasquitos Creek Watershed Management Area Conclusions and Recommendations

7.6.1 Conclusions

This WMA Monitoring Report is designed to address the following five core management questions listed in Section I.B. of the Receiving Waters and Urban Runoff Monitoring Program.

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**

Core Management Question 1 was addressed with wet weather data assessments. The results of the 2008–2009 monitoring program in the Los Peñasquitos Creek WMA indicate that some of the constituents monitored were identified as high frequency of occurrence COC. In the Los Peñasquitos Creek WMA, these COCs included TDS and fecal coliforms. This suggests that some beneficial uses may be impaired by these constituents.

Historical stream bioassessment results indicate evidence of benthic community impairment in the Los Peñasquitos Creek WMA, with Very Poor IBI ratings at the TWAS and either Very Poor or Poor ratings at the MLS since 2001. Additional bioassessment monitoring conducted at SMC sites in the WMA produced similar results. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat or other constituents not monitored in this program. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

There is no evidence of persistent toxicity at Los Peñasquitos Creek WMA, based on the wet weather assessment.

Based on the monitoring and data analyses conducted on samples collected as part of the Bight ’08 Program in Los Peñasquitos Lagoon, the data suggest that conditions are generally protective of the beneficial uses. All sediment quality sites assessed were either unimpacted or likely unimpacted based on the SQO Guidelines. However, low dissolved oxygen concentrations are documented to be of concern in this lagoon (LPL, 2008) and the lagoon mouth is periodically dredged to maintain sufficient flow from the lagoon to the ocean. Water quality samples collected for fecal indicator bacteria and TSS analyses were below Basin Plan standards.

2. **What is the extent and magnitude of the current or potential receiving water problems?**

Core Management Question 2 was addressed with magnitude of exceedance ratios for ambient and wet weather conditions in the receiving waters and a spatial analysis of COC during ambient

conditions; wet weather monitoring was conducted only once at the MLS in 2008–2009 due to participation in the Bight '08 Program.

The greatest concentration-to-benchmark ratios during ambient conditions in the Los Peñasquitos Creek WMA were observed for chloride and sulfate. Ratios varied among the three sites assessed. Chloride and sulfate exceeded 1.4 to 4.9 times the respective benchmarks at all three sites. Concentration-to-benchmark ratios during wet weather at the MLS were greatest for fecal coliforms and TDS. The fecal coliform concentration during the 2008 storm event was more than 12 times greater than the benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at the MLS on average have been 29 times greater than the benchmark. The TDS concentration during wet weather in 2008–2009 was more than four times the benchmark, which is slightly higher than the historical mean for the site.

Receiving water spatial patterns in the Los Peñasquitos Creek WMA varied by constituent. During ambient conditions, receiving water concentrations of total phosphorus and constituents comprising TDS (i.e., chloride and sulfate) were greater than their respective benchmarks. The total phosphorus concentration was highest at Site SMC-00198 (located in the central portion of the WMA, along Los Peñasquitos Creek) and was the only site where the benchmark was slightly exceeded. Concentrations of chloride and sulfate, which are constituents comprising TDS, were greater than the benchmark at all ambient sites monitored in the WMA. These results provide a snapshot of receiving water conditions during the time of the survey. Additional data is needed to provide a more robust assessment of the spatial patterns of water quality constituents within the Los Peñasquitos Creek WMA.

Historical stream bioassessment ratings conducted in the WMA indicate a Very Poor benthic community at both MLS and TWAS locations. The consistent rating of Very Poor at both the MLS and TWAS since 2002 suggests that the extent of the impairment on the benthic community is not isolated to one area. This is supported by the 2008–2009 bioassessment results, which indicate a Very Poor benthic community at all SMC sites monitored within the WMA.

Bight 08 results characterized all sites unimpacted or likely unimpacted based on the SQO guidelines. In terms of the magnitude of the potential receiving waters problem, all sediment chemistry LOE scores were either minimal or low and the sediment toxicity LOE scores were either non-toxic or low. The benthic community LOE scores indicated either low or moderate impacts.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. In 2008–2009, the Los Peñasquitos Creek WMA MS4 was assessed through the random dry, random wet, and targeted dry programs.

Nine sites were visited as part of the random dry program, but only six were flowing at the time of the survey. Concentrations of several analytes including total nitrogen, total phosphorus, and indicator bacteria (i.e., enterococci) were greater than water quality benchmarks at several sites,

suggesting that dry weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations.

Six sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes including total nitrogen, total phosphorus, and indicator bacteria (i.e., fecal coliform) were greater than benchmarks at several sites, suggesting that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents primarily at one site located in the upper portion of the Miramar Reservoir HA (906.10). The catchment for this site was characterized by primarily open space / parks and recreation land uses.

A total of 15 sites in the Los Peñasquitos Creek WMA were visited as part of the targeted dry weather program, 13 of which were flowing at the time of the survey. Thus, over 13% of the targeted dry weather sites were ponded or dry, compared to over 33% of the random dry weather sites. Drought restrictions implemented in the summer of 2009 may have helped to reduce flows from some areas. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentrations of chemical analytes in the MS4 runoff to receiving water quality benchmarks for the following constituents: total nitrogen, total phosphorus, TDS, MBAS, Diazinon, dissolved copper, and indicator bacteria (i.e., fecal coliforms and enterococci). Of these constituents, total nitrogen, total phosphorus, TDS, and indicator bacteria (i.e., fecal coliforms and enterococci) had concentrations that were greater than their respective benchmarks in at least one of the 15 sites assessed. Concentrations of TDS exceeded the benchmark most frequently followed by indicator bacteria (i.e., fecal coliforms and enterococci). The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were frequently greatest where flow rates were highest, which occurred at two sites located in the central portion of the Los Peñasquitos Creek WMA. MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the Los Peñasquitos Creek WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

The CSDM results indicate that coastal storm drains do not appear to be affecting bacterial concentrations in the coastal receiving waters during dry or wet weather conditions, among the sites sampled.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional DWM Program, the CSDM Program, the Source Identification Program, and the trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources in regards to the Jurisdictional DWM Program and the CSDM Program can be found in each Copermittee's JURMP Annual Report and in the CSDM Program Annual Report respectively (Appendix N).

The trash assessment conducted in 2008–2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Los Peñasquitos Creek WMA. A total of 215 sites were assessed for trash in the WMA, including two HAs. The Poway HA (906.20) had a slightly higher proportion of trash and the greatest percentage of sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained a slightly greater amount of trash in the WMA. This result coincides with the urbanized population centers, which are also found in the upper portion of the WMA. Trash at three of the six sites with Submarginal or Poor ratings consisted primarily of household waste while trash at the other three sites consisted of food packaging, construction debris, and biohazard waste. The potential trash route was listed as littering for three of the six sites rated as Submarginal or Poor in the Los Peñasquitos Creek WMA and dumping for the three remaining sites. Additionally, two out of the 215 sites assessed for trash in the Los Peñasquitos Creek WMA during the Jurisdictional DWM Program were identified as a potential human health threat and ten sites were identified as potential aquatic health threats.

A dry weather source identification study of single family residences was conducted by the Copermittees during the 2008–2009 Monitoring Season. Results indicated that synthetic pyrethroids were commonly detected in runoff from residential land uses in concentrations above published toxicity benchmarks for aquatic invertebrates. However, the Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results. Bacteria results were generally higher at sites influenced from overland runoff in comparison to one site influenced from continuous groundwater flows. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables).

5. Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the Los Peñasquitos Creek MLS. Based on the trend analysis, only fecal coliforms are increasing over time at this site. In contrast, concentrations of total lead are decreasing over time. At the current observed rate of increase, fecal coliform concentrations are expected to increase approximately 41 MPN/100mL/yr. The decreasing trend in total lead concentrations is likely inconsequential in terms of benchmarks, since concentrations of this constituent have been very low historically at this site.

The bioassessment ratings at the Los Peñasquitos Creek MLS and TWAS have been Very Poor in nearly all assessments conducted from 2001 to 2008 and there are no apparent trends in the benthic community.

There is evidence of persistent toxicity during ambient conditions based on 83% of the *C. dubia* reproduction toxicity tests conducted on receiving waters in 2007–2008. However, the toxicity level was low and was not conducive for conducting a toxicity identification evaluation at this time.

7.6.2 Recommendations

The recommendations for this watershed are to continue with the requirements of the Permit, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. For the next full round of Permit monitoring in north San Diego County (Permit Year 2010–2011), the Copermittee Monitoring Workgroup will review and consider alternate locations for the TWAS to gather relevant information for assessing the watershed.

Specific recommendations for the Los Peñasquitos Creek WMA are based on the triad assessments in the Permit. Based on wet weather conditions, no action is necessary to address toxic chemicals. Addressing the potential role of urban runoff in causing physical habitat disturbance is recommended.

Appendix B

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The WURMP Copermittees' FY 2009 (July 1st, 2008 through June 30th, 2009) JURMP Annual Reports were used to determine quantities of inventories. The WURMP Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1. Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2. Identified the Copermittees' total activity quantities for the following activities from the FY 2009 JURMP Annual Reports:
    1. Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
    2. Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3. Determined the amount of urban land use in each Copermittees' jurisdiction
4. Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City
5. Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation is as follows:

Copermittee Activity Quantity * % of land use in each HA for Activity Type = Copermittees's contribution to the HA

6. Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1
Jurisdiction A collected 800 tons of material from street sweeping in FY 2009

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2009

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1
Jurisdiction C collected 250 tons of material fro street sweeping in FY 2009

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:
800 tons of material *(250 urban land use acres/1,000 urban land use acres) = 200 tons

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:
1,000 tons of material *(1,250 urban land use acres/2,000 urban land use acres) = 625 tons

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:
250 tons of material *(500 urban land use acres/500 urban land use acres) = 250 tons

The total amount of estimated street sweepings collected in HA1 is 200+625+250=**1,075 tons**

Appendix C

Los Peñasquitos Watershed Activity Sheets

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Los Peñasquitos Watershed Water Quality Activity Sheets

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TITLE: **COASTAL CLEANUP DAY SPONSORSHIP**
ID #: **LP-WQA1**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 20, 2008. The City of San Diego (City) sponsored the Peñasquitos Canyon Preserve site in the Los Peñasquitos Watershed Management Area (WMA). Approximately 87 volunteers removed 902 pounds of trash and debris. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2009 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDCK's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	902 lbs
	Number of participants (Outcome Level 1)	87
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$12,000
	Amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1)	$2,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$2.21/lb

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results
The event's debris removal was tracked using data cards provided by the Ocean Conservancy, a 902 pound load reduction was recorded. There was a total of $12,000 estimated for the sponsorship cost for all six WMAs in the City's jurisdiction and 87 participants for this WMA. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the sponsorship cost for the Los Peñasquitos WMA by the pounds of trash removed, was $2.21 per pound.

Conclusions
Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs, as well as comparing the same types of trash cleanups that are sponsored each year over time.

TITLE: **LOS PEÑASQUITOS GEOGRAPHICALLY BASED BUSINESS PROPERTY AND FACILITY INSPECTIONS**
ID #: **LP-WQA02, LP-WQA03, & LP-WQA05**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What activities and locations at businesses should be targeted during the inspection?
2) Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?
3) Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?

The focus of the activity was to evaluate/inspect properties as a whole as well as individual business regardless of whether they were included in the City's commercial/industrial inventory. Property and business evaluations were not as in-depth as regular commercial inspections, but rather were observation oriented to quickly assess the outdoor activities and impacts of the properties and businesses.

The major findings included problems in trash enclosures, with irrigated landscaped areas, and outdoor good-housekeeping practices. The findings for the FY 2009 activity implementation do not completely answer the management questions; however, by the end of the program, it is anticipated that these questions will be answered.

In FY 2009 83 full inspections (including supplemental business evaluations), 106 business evaluations only, and 43 property evaluations were conducted in the three geographic areas selected in the Los Peñasquitos WMA.

Facilities

The following is a summary of the evaluations performed across the participating watersheds:

Number of Evaluated Properties = 190 as follows:

- 48 Shopping Centers
- 63 Office Parks
- 39 Industrial Parks
- 39 Individual Businesses

Number of Businesses Evaluated = 825 including, but not limited to:

- Medical Offices
- Manufacturing
- General Retail
- Automotive
- Contractors
- Bookstores
- Equipment Repair
- Warehouses
- Food Service Establishments
- Hair and Nail Salons
- Janitorial
- Massage Therapists
- Dry Cleaners
- Home Improvement Centers
- Landscaping
- Lodging
- General Offices
- Pest Control
- Printing
- Storage

Public Outreach
The City developed an inspection letter that was distributed to property owners and businesses informing them of the inspection program. In addition, the City advertised its intent to implement this inspection program in various public outreach media forums.

TMDL APPLICABILITY
- None

TIME SCHEDULE FOR IMPLEMENTATION
The City conducted its inspection program during FY 2009 and will perform a second round of inspections in FY 2010 to obtain more data to compile and assess. The results of the data analysis will be used to answer the management questions posed by this activity.

PARTICIPATING WATERSHED COPERMITTEES
- City of San Diego

OTHER PARTICIPATING ENTITIES
- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Findings
The following represents the primary findings of the activity. Other activity findings are less substantiated and are therefore not presented as a part of this activity. Further studies may be appropriate to develop supported results.

Property Evaluations: Landscaping / Irrigation
- 85% of landscaped areas are watered with spray/rotor delivery irrigation systems
- 94% of landscaped areas show some evidence of over-watering / over-spraying runoff
- Industrial and Office Parks tend to have more evidence of over watering than shopping centers or individual businesses
- Evidence of over watering runoff was rarely observed in areas with no irrigation system or with low flow irrigation

Property Evaluations: Trash/Dumpster Areas
- Shopping centers were most likely property type to have bird guano/feces present
- Shopping centers were somewhat, but not dramatically, more likely to have dirty trash areas

- Cleanliness of the trash area shows the strongest relationship with presence of feces

Property Evaluations: Roof Drains and Parking Areas

- 21% of roof drains discharge to pervious areas
- Almost all parking lots are impervious and directly connected to MS4
- Of the approximately 320 acres of parking lot area inspected:
    - 0% (0 ac.) had porous pavement
    - 1.4% (4.5 ac.) had gravel/dirt
    - 4.9% (15.8 ac.) discharged to pervious areas

Property Evaluations: Outdoor Trash Receptacles

- 25% of outdoor trash receptacles had no cover

All Business Evaluations: Activities and BMP Implementation

- Powerwashing activities – 12% do not implement any BMPs
- Vehicle washing – 43% fully implement BMPs, 34% do not implement BMPs or it is unknown whether BMPs were implemented
- Hosing outdoor areas – 56% do not implement any BMPs
- Loading/unloading areas – 93% uncovered and 25% not protected from run-on

Automotive Business Evaluations: Activities and BMP Implementation

- 10% of Automotive Repair Facilities have outdoor repair activities
    - 50% do not implement coverage BMPs
    - 25% are not protected from run-on
    - 62% partially implemented good-housekeeping BMPs
- 20% of Automotive Repair Facilities have outdoor automotive fluid storage
    - 15% do not implement coverage BMPs
    - 20% do not have any secondary containment

TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Facility Inspections		
Management Questions	• What activities and locations at businesses should be targeted during the inspection? • Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)? • Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the Los Peñasquitos Watershed	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	**Property Evaluations**	
	Number of property evaluations (Outcome Level 1)	43
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	93%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	78%
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Full Inspections Plus Supplemental Business Evaluation Sheet	
	Number of full inspections plus business evaluations (Outcome Level 1)	83
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	24
	Number of sites needing corrective action (Outcome Level 1)	83
	Number of Sites That Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	6
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	6
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	1
	Business Evaluations Only	
	Number of facility evaluations (Outcome Level 1)	106
	Number of sites needing corrective action (Outcome Level 1)	7
	Number of Sites That Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	4
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	4
	Total IC/IDs Observed (Outcome Level 1)	3
	Total IC/IDs Assumed Eliminated (Outcome Level 4)	3
Recommended Data	• Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of educational information items passed out (Outcome Level 3) • Potential Pollutant Discharge Assessment (Outcome Level 4)	

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 90 sites. Additionally, the City noted 31 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at ten locations, corrective actions were immediately taken. This demonstrates both a Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcome was achieved as a direct result of this activity. Also, in this watershed, the City confirms that four IC/IDs were observed and called into the City's hotline for response and follow-up for abatement.

The City plans to implement the program in FY 2010 to more obtain more data necessary to answer the management questions associated with the program activity.

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TITLE: **MARINDUSTRY DRIVE HYDRODYNAMIC SEPARATOR INSTALLATION**
ID #: **LP-WQA7**

ACTIVITY IMPLEMENTATION

A hydrodynamic separator will be installed in Marindustry Drive, located on the north side of Miramar road in the Los Peñasquitos Watershed Management Area (WMA), as a retrofit within the existing storm drain system. The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system. The separator will be located directly in line with a 24-inch storm drain before it discharges into the nearby canyon. The 24-inch line is the main collector in a small storm drain network that collects storm flows from the industrial and business park, associated parking lots and Marindustry Drive. Due to the industrial activity and high vehicular traffic, storm events typically result in the accumulation of a variety of trash, sediments, leaves, dirt oil, petroleum, and other chemical pollutants in the storm drain system. Observations were field verified in January 2008 during a site visit and factored in the selection making process.

This project was originally identified as "Hydrodynamic Separator Installation" in the 2008 Los Peñasquitos WURMP.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design is anticipated to begin in September 2009 and continue through FY 2011. Construction is expected to be completed in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by capturing dry weather flows and slowly releasing them to allow for the settlement of pollutants for later removal.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
MARINDUSTRY DRIVE HYDRODYNAMIC SEPARATOR INSTALLATION Assess the Efficiency and Effectiveness of Flow Control Detention Basin	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the hydrodynamic separator at reducing priority pollutant loads?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., calculate estimated load reduction) • Monitoring (e.g., collect special study information to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator installation in reducing the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the hydrodynamic separator has not been installed and therefore no priority pollutant load data have been collected.

Conclusions

It is anticipated that the hydrodynamic separator will be installed in FY 2013. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the hydrodynamic separator in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: **I LOVE A CLEAN SAN DIEGO TRASH CLEANUP SPONSORSHIP**
ID #: **LP-WQA8**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 25, 2009. The City of San Diego (City) sponsored the Miramar Lake site in the Los Peñasquitos Watershed Management Area (WMA). Approximately 34 volunteers removed 92 pounds of trash and debris and recycled 42 pounds of trash and debris over a seven-mile area. The City of Poway sponsored the Rattlesnake Canyon site in the Los Peñasquitos WMA. Approximately 30 volunteers removed 500 pounds of trash over a 1.5-mile area.

The Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2009 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of Poway

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/lb collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	550 lbs
	Pounds of trash recycled (Outcome Level 4)	42 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	592 lbs
	Number of participants (Outcome Level 1)	64
	Total money spent on cleanups for all six watersheds (Outcome Level 1)	$30,500
	Estimated amount of money spent on cleanups for Los Peñasquitos River watershed (Outcome Level 1)	$5,500*
	Activity Efficiency (Total Cost/Total Pounds Removed)	$10.00/lb

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On 25 April 2009, 64 participants removed and recycled approximately 592 pounds of trash and debris from numerous sites in the Los Peñasquitos WMA. The average estimated sponsorship cost for the City of San Diego was $5,000 per watershed ($30,000/6 watersheds with City sponsorship). The City of Poway contributed an additional $500 towards sponsorship of this event in the WMA. Thus, there was a 592 pound load reduction associated with sponsorship per yearly event, with an efficiency of $10.00 per pound collected. The efficiency was calculated by dividing the estimated sponsorship cost for the Los Peñasquitos WMA by the pounds of trash removed.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

TITLE: **MIRA MESA LIBRARY BIORETENTION AND INFILTRATION RETROFIT**
ID #: **LP-WQA9**

ACTIVITY IMPLEMENTATION

New catch basins will be constructed within the parking area at the Mira Mesa Library in the Los Peñasquitos Watershed Management Area (WMA) to capture parking lot and building runoff. These catch basins will drain via a new storm drain system to an existing unpaved area on the site. Under existing conditions, this unpaved area is higher in elevation than the parking lot and is covered with grass. The original concept for this area was to excavate approximately five feet below the parking lot elevation, lined with an impermeable liner, and backfilled around the perimeter of the excavation with a gravel reservoir to which the new storm drain system will drain. Soils and plants capable of surviving with only the seasonal rainfall typical of Southern California would have been placed in the center of the excavation. The gravel reservoir would have been separated from the planter area by a concrete wall. Storm runoff was expected to pass from the gravel reservoir to the planter area via small diameter pipes through the concrete wall. Unfortunately, the area selected to provide infiltration was rejected by the Library Department, as the destruction of an architectural detail was deemed unacceptable. A new location for infiltration on the grounds of the Mira Mesa Library is under review.

In addition, four building downspouts were retrofitted with rain barrels, which will drain to raised concrete planters (For more information on the building downspouts see activity sheet LP-WQA10). The planters will allow low flows to infiltrate and pass through a subdrain system out the bottom of the planter, while high flows will pass over the surface of the planter and exit on the far end from the rain barrel. The rain barrels will be elevated and secured to capture runoff from the rainspouts. This runoff can be used to water the raised planters by gravity flow.

The project goal is to capture site runoff from the five-year, six hour storm event and convey it to the gravel reservoir / planter area where the water will exit the site via evapotranspiration. An additional project goal is to capture roof runoff with rain barrels and use it to water raised planters, with the planters providing treatment via infiltration for low flows or surface contact during high flows.

This project was originally identified as “Infiltration BMP Retrofit” in the 2008 Los Peñasquitos WURMP. In FY 2008, the Mira Mesa Library was selected as the site and the conceptual design was released for this project.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Because a new location for the infiltration basin is being reviewed, the preliminary engineering was put on hold in June 2009. It will resume in FY 2010. With the delay, construction is expected to be completed in FY 2014 instead of FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
Mira Mesa Library Biorentention and Infiltration Retrofit Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs	
Management Questions	• What is the load reduction of the bioretention area? • How effective are bioretention areas at reducing priority pollutant loads?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the bioretention areas are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Number of inspections • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of this assessment is to determine the effectiveness of the bioretention areas in reducing pollutant loads from runoff from the Mira Mesa Library.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the bioretention areas have not been installed and therefore no priority pollutant load data have been collected.

Conclusions

It is anticipated that the bioretention areas will be installed in FY 2014. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the bioretention

areas in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

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TITLE: **LOS PEÑASQUITOS WATERSHED MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROJECT**
ID #: **LP-WQA10**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Los Peñasquitos Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities.

Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Los Peñasquitos WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the Los Peñasquitos WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Mira Mesa Library was selected because it is located in one of the highest priority sectors of the Los Peñasquitos WMA for potential pollutant loading. The library is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor began installation of two rain barrel systems at the library. Two serially connected 75-gallon rain boxes were installed and connected to an existing downspout along the back wall of the library. This system utilizes an automated timer and pump to release captured runoff to nearby vegetated areas. In addition, a 75-gallon rain box and concrete planter system was installed and connected to an existing downspout along the side wall of the building. This system will also use an automated time and pump to release captured runoff to the concrete planter. A planter was chosen for this system because the adjacent area consists of an impervious bare clay surface.

Serially-connected Rain Boxes

Rain Box and Planter

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer will be distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer will be posted on the City's *Think Blue* website during the first quarter of FY 2010.

This phase of the pilot project focuses on implementing and assessing the effectiveness of rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the pilot project will be applied to implementation in residential areas.

Based on these findings, the City may modify its municipal rain barrel installation and downspout disconnect project to increase effectiveness and/or seek City Council approval for additional funding to implement future phases (i.e., incentives) and additional rain barrel/downspout disconnect systems.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems began in April 2009, however, due to construction/contractor issues, the installation was not complete until FY 2010. Wet-weather monitoring will be preformed from October 2009 to April 2010. Assessment and final reporting for this program will conclude by June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problem by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

MUNICIPAL RAIN BARREL INSTALLATION PROGRAM Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff		
Management Questions	• What is the effectiveness/efficiency of rain barrel/downspout disconnect systems in reducing storm water runoff volume? • What is the loading reduction of different systems?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of site preparation, installation and start-up for site	TBD
	Cost of operation and maintenance evaluation for all sites	TBD
	Cost of effectiveness monitoring for all sites	TBD
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results

The pilot project was not in active implementation during FY 2009. Further analysis will take place after wet-weather monitoring data is collected, which is scheduled for completion by April 2010.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the rain barrel system. Conclusions will be made after the effectiveness assessment is completed in June 2010. Any recommendations resulting from this pilot project will be reported in the FY 2010 WURMP Annual Report.

TITLE: **AUBREY STREET CONTINUOUS DEFLECTIVE SEPARATION (CDS) DEVICE**
ID #: **LP-WQA11**

ACTIVITY IMPLEMENTATION

The City of Poway installed a continuous deflective separation (CDS) device system in the intersection of Aubrey Street and York Avenue as a retrofit within the existing storm drain system. This CDS system screens, separates, and traps debris, sediment, oil and grease, floatables, and neutral buoyant material from stormwater runoff, enhancing the treatment of runoff from existing land uses in the 41.9-acre Old Poway Park project area.

To maintain the effectiveness of the CDS device, the City of Poway's drainage/storm water maintenance staff inspected, cleaned, and maintained the device quarterly and after any major storm events.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Construction and maintenance of this CDS device occurred in FY 2008. Inspection, cleaning, and maintenance occurred in FY 2009 and continue on an on-going basis.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash, debris, and floatables
- Oil and grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
AUBREY STREET CONTINUOUS DEFLECTIVE SEPARATION (CDS) DEVICE Assess the Efficiency and Effectiveness of the CDS Device	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the hydrodynamic separator at reducing priority pollutant loads? • Does the implementation of the hydrodynamic separator result in detectable receiving water quality improvements?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Monitoring (e.g., receiving water sampling data)
Recommended Data	• Number of inspections (Outcome Level 1) • Measurable load reduction after implementation (Outcome Level 4) • Amount of money spent on installation, inspections, and maintenance (Outcome Level 1) • Measurable water quality improvement in receiving water (Outcome Level 6)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator installation in reducing the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

Analysis and Results

Inspections of the unit occurred on September 23, 2008, December 8, 2008, and January 7, 2009. A total of 0.5 cubic yard of floating trash and 0.5 cubic yard of silt and heavy debris was removed from the unit, and 2 hydrocarbon-absorbent pillows required replacement. As noted in the 2008 WURMP Annual Report, 1 cubic yard of floating trash and 1 cubic yard of silt and heavy debris was removed during FY 2008. Because all of the material removed would otherwise have eventually entered the receiving waters, this amount is the verified load reduction achieved by this unit.

The cost of installation of the CDS device was $134,000.00. The cost of inspections and maintenance was $429.95 in FY 2008 and $515.01 in FY 2009. The cost per unit of load reduction over two years is therefore $44,981 per yard of pollutants removed. This unit cost will decrease over time as the only additional expenses are staff time for inspections and cleaning.

Dry weather monitoring is conducted annually at a location on Community Road downstream of the CDS device. Although this monitoring location receives some commingled flows from additional locations, data were reviewed to determine any trends in receiving water quality. The most recent data show that the standardized Trash Assessment results have moved from Suboptimal to Optimal, indicating a reduction in trash in the receiving water. Other field analytic results showed essentially no change, as noted in the table below.

Reporting Period	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia-Nitrogen (mg/L NH_3-N)	Nitrate (mg/L NO_3-N)	Ortho phosphate-P (Mg/L PO_4-P)
2007	0.66	1.96	0.25	0.2	2.42	0.33
2008	0.3	1.88	0.38	0.15	2.02	0.23
2009	0.19	1.96	0.13	0.189	2.92	0.217

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TITLE:	**GATE DRIVE DETENTION BASIN MODIFICATION**
ID #:	**LP-WQA12**

ACTIVITY IMPLEMENTATION

The City of Poway retrofitted the Gate Drive flood control detention basin to remove pollutants from storm water. The Gate Drive basin is located in the South Poway Business Park and was originally constructed as a flood control device. Conversion of the basin to a storm water treatment device provides treatment of storm water runoff from more than 38 businesses, including many existing businesses not subject to SUSMP requirements.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Conversion of the basin was completed on June 18, 2008. Operation and maintenance of the basin occurred in FY 2009 and are ongoing.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS ASSESSMENT

GATE DRIVE DETENTION BASIN MODIFICATION Assess the Efficiency and Effectiveness of the Detention Basin Modification	
Management Questions	• What is the sediment load reduction efficiency of the detention basin? • How effective is the detention basin at reducing priority pollutant loads? • Does the implementation of detention basin result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the detention basin retrofits are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Number of inspections (Outcome Level 1) • Inflow and outflow monitoring data (Outcome Level 5) • Estimated load reduction (Outcome Level 4) • Amount of money spent on construction, inspections, and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the Gate Drive detention basin modification in reducing pollutant levels in storm water runoff from the South Poway Business Park.

Analysis and Results

The first round of annual inflow sampling was conducted during a rain event on December 15, 2008. Outflow sampling occurred on December 19, 2008. Although in previous years the City of Poway's other basins showed reductions in both total suspended solids and turbidity, in this reporting period no basin had detectable levels of total suspended solids during inflow or outflow. Turbidity during inflow was also at lower levels than seen in previous years, and increased slightly from 9.2 NTU at inflow to 13.4 NTU at outflow in the Gate Drive basin. Although total coliforms increased from inflow to outflow, both fecal coliforms and enterococci decreased, as shown in the table below.

Parameter	Inflow	Outflow	% Reduction
Total Coliforms (MPN/100 mL)	13,000	80,000	-515.4%
Fecal Coliforms (MPN/100 mL)	5,000	2,200	56.0%
Enterococci (MPN/100 mL)	1,300	130	90.0%

The cost of basin conversion was $131,000, of which $63,900 was paid by a developer of a site that uses the basin for storm water treatment. As no total suspended solids were noted during inflow sampling, load reduction of sediment could not be estimated during this reporting period.

Conclusions

Inflow and outflow sampling will be conducted annually. These data will be used to determine the effectiveness of the basin at reducing pollutants, and to estimate load reductions.

TITLE: **MEDIAN IRRIGATION SYSTEM REPLACEMENT**
ID #: **LP-WQA13**

ACTIVITY IMPLEMENTATION

As part of the review of water quality issues within the Los Peñasquitos WMA, Copermittees had previously identified overwatering from residential and municipal sources as an activity with a high potential for water quality impacts from nutrients and bacteria. The City of Del Mar had previously identified overwatering as a potential cause of higher levels of bacteria and nutrients in the southern portions of the City, and proposed the replacement of median and park irrigation timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in the City of Del Mar along the medians on Camino Del Mar, through the center of the village. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. In addition to the installation of the controllers, City of Del Mar staff continue to monitor these sites to ensure that runoff from over irrigation has been minimized to the maximum extent practicable. This includes periodic inspections of the site by the Clean Water Manager, and coordination with the City's landscape contractor.

The Water Conservation in Landscaping Act of 2006 (Act) requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. To date, the new model ordinance has not yet been developed by the State, and implementation of the requirements is not anticipated until the year 2010. The City of Del Mar acknowledges Regional Board staff's comment[1] that the activity appears to be solely a response to the Act. However, the City of Del Mar respectfully disagrees with this opinion. Development of this activity took place as a result of Copermittees analysis of specific water quality issues within the WMA, and as part of the investigations conducted in Anderson Canyon. While, one of the key components of the Act is the use of "smart" controllers for irrigation, by addressing runoff using these controllers, the City of Del Mar is able to meet challenges proposed by the Act, and address specific water quality concerns related to overwatering. Further, the City of Del Mar believes that the efficient use of public funds, such as this program, to address multiple needs and requirements is a prudent course of action, and credit should be granted for the Activity.

These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

Program implementation was completed in April 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

This project involves monies and support from the State Department of Water Resources and the Metropolitan Water Department.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- TDS
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA. Landscaping for parks and open space areas has been identified as potential discharges of bacteria and nutrients from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2008 Los Peñasquitos WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Initial impressions of the results of the implementation by Del Mar staff are that the implementation has resulted in a reduction in the amount of flows from the medians, based on observation, and community feedback. The City of Del Mar will continue to track water consumption through the use of flow metering (as appropriate) and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **PARK AND OPEN SPACE IRRIGATION AND CONTROLLERS**
ID #: **LP-WQA14**

ACTIVITY IMPLEMENTATION

As part of the review of water quality issues within the Los Peñasquitos WMA, Copermittees had previously identified overwatering from residential and municipal sources as an activity with a high potential for water quality impacts from nutrients and bacteria. The City of Del Mar had previously identified overwatering as a potential cause of higher levels of bacteria and nutrients in the southern portions of the City, and proposed the replacement of median and park irrigation timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in City parks and open space areas. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. In addition to the installation of the controllers, City of Del Mar staff continue to monitor these sites to ensure that runoff from over irrigation has been minimized to the maximum extent practicable. This includes periodic inspections of the site by the Clean Water Manager, and coordination with the City's landscape contractor.

The Water Conservation in Landscaping Act of 2006 (Act) requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. To date, the new model ordinance has **not** yet been developed by the State, and implementation of the requirements is not anticipated until the year 2010. The City of Del Mar acknowledges Regional Board staff's comment[2] that the activity appears to be solely a response to the Act. However, the City of Del Mar respectfully disagrees with this opinion. Development of this activity took place as a result of Copermittees analysis of specific water quality issues within the WMA, and as part of the investigations conducted in Anderson Canyon. While, one of the key components of the Act is the use of "smart" controllers for irrigation, by addressing runoff using these controllers, the City of Del Mar is able to meet challenges proposed by the Act, and address specific water quality concerns related to overwatering. Further, the City of Del Mar believes that the efficient use of public funds, such as this program, to address multiple needs and requirements is a prudent course of action, and credit should be granted for the Activity.

These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

Program implementation was completed in May 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

[2] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

This project involves monies and support from the State Department of Water Resources and the Metropolitan Water Department.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Los Peñasquitos WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA. Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2008 Los Peñasquitos WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Initial impressions of the results of the implementation by Del Mar staff are that the project has resulted in a reduction in the amount of flows from landscaped areas, based on observation, and community feedback. The City of Del Mar will continue to track water consumption through the use of flow metering (as appropriate) and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: IRRIGATION HARDWARE GIVEAWAY AND CASH FOR PLANTS PROGRAM[3]
ID #: LP-WQA16

ACTIVITY IMPLEMENTATION

This activity will involve launching a pilot program offering an opportunity for customized commercial landscape and residential surveys along with state-of the art efficient irrigation free of charge to customers maintaining irrigation systems at landscaped sites throughout the City of San Diego. A group of 200 participating sites will also serve as a study group to demonstrate the link between use of landscape conservation and a reduction in water use. Specific residential and commercial areas will be targeted and monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of irrigation runoff reduction programs as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and Total Maximum Daily Load (TMDL) requirements. A watershed-wide implementation may be considered after the effectiveness of the program is assessed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in FY 2010. Program launch is anticipated to occur in FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- City of San Diego Water Department
- San Diego County Water Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA) identify bacteria and sediment as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing dry weather flows resulting from over-irrigation.

[3] This project was originally identified as the "Residential Rain Barrel and Xeriscaping Incentive Program." A more accurate title was chosen for this activity during program planning.

EFFECTIVENESS ASSESSMENT

IRRIGATION HARDWARE GIVEAWAY AND CASH FOR PLANTS PROGRAM Assess the Efficiency and Effectiveness of Smart Irrigation and Low Water Use Landscaping	
Management Questions	• How effective are smart irrigation and other types of low flow distribution hardware in reducing dry weather runoff? Does replacing high water use landscape with low water use landscape reduce dry weather runoff? • What is the potential load reduction for both residential and commercial properties when utilizing smart irrigation in conjunction with low water use landscaping? • What is the average cost savings from utilizing smart irrigation and or low water use landscaping?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of systems installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the xeriscaping systems (acres drained) (Outcome Level 4)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of using weather-based irrigation devices in conjunction with low water use landscaping to reduce over irrigation. Targeted pollutants include bacteria and sediment.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in FY 2010. Program launch is anticipated to occur in FY 2012.

Conclusions

Project planning and coordination is anticipated to begin in FY 2010. Project launch is anticipated to occur in FY 2012. Monitoring will be conducted to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

After project launch, specific residential areas will be targeted and monitored to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads. The program will also include a component to investigate how to convince residents: 1) to participate in this incentive program; 2) to better focus subsequent education and outreach efforts; and 3) to determine whether broad-scale implementation of this activity should be pursued.

TITLE: **PET WASTE BAG DISPENSER PROGRAM**
ID #: **LP-WQA17**

ACTIVITY IMPLEMENTATION

This activity will target areas frequented by pet owners such as municipal parks and/or street and sidewalk right of ways in the Los Peñasquitos Watershed Management Area (WMA). When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones.

This project was in its design and planning stage during FY 2009. Coordination meetings were held between the City of San Diego Education and Outreach staff and the project consultant to outline the strategy associated with educating pet owners about the importance of cleaning up after their pets. Watershed maps were developed and utilized to assist in the selection of potential installation sites. The criteria used to identify potential sites were:

a) High density residential areas
b) Routes connecting residential areas to a destination (park, trail, water body, commercial area)
c) Established trail locations
d) Destination (park, open space area)
e) Areas draining to a water body impaired for bacteria, phosphorus or nitrogen
f) Potential for partnership
g) Areas of complaints/chronic pet waste observations

Three watershed management areas (WMAs) were selected for implementation in FY 2010: Los Peñasquitos, San Dieguito River and Tijuana River.

For the City of Poway, project planning and coordination were anticipated to begin in FY 2009, with implementation to begin in FY 2010. However, the City of Poway added five Dogi-Pot stations to trails in the Los Peñasquitos WMA during FY 2009. The locations were Community Park (2 stations), Aubrey Park (2 stations), and Old Poway Park (1 station).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment is anticipated to begin in FY 2010 and continue into FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway
- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
PET WASTE BAG DISPENSER PROGRAM Assess the Effectiveness of Pet Waste Bag Disposal	
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results

The City of San Diego's pilot project was not in active implementation during FY 2009. Program launch is anticipated to occur in FY 2010.

The City of Poway will collect data during FY 2010 and beyond to examine the effectiveness of these additional stations at reducing bacteria loading in the Los Peñasquitos WMA.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

TITLE: **ROUTE POSTING AND MEDIAN SWEEPING PILOT STUDY**[4]
ID #: **LP-WQA18**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a pilot study to assess the effectiveness of two potential modifications to its street sweeping program: 1) posting limited-hour "no parking" signs along non-posted routes to allow street sweeping near curb areas; and 2) modifying or increasing street sweeping routes to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study will specifically focus on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with these proposed programmatic changes to the City's street sweeping program.

The first program element of this pilot study would require the installation of limited-hour "no parking" signs along existing street sweeping routes that are traditionally "free swept", or swept closer to the centerline of the street due to the presence of curb-park vehicles. Implementation of this programmatic change would allow an effectiveness evaluation of the current "free sweep" practice and calculation of potential increases in pollutant removal efficiency afforded by sweeper access to the curb and gutter. The second program element would expand current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change would allow calculation of potential pollutant removal efficiency afforded by sweeper access to what is believed to be heavily polluted areas.

The overall pilot study will aim to answer the following management questions:

- What is the relative cost-efficiency of integrating additional route posting and median sweeping into the City street sweeping program?
- What level of general debris removal benefit does the posting of street sweeping routes provide?
- What level of metals removal benefit does the posting of street sweeping routes provide?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does the posting of street sweeping routes provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study will be used to determine whether posting routes and sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring will occur to allow for assessment. This activity will occur in multiple watersheds. One control site will be chosen in one watershed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Route Posting and Median Sweeping Pilot Study will be piloted first to determine whether route posting and median sweeping improves the effectiveness of street sweeping activities before broad scale implementation.

[4] In the FY08 WURMP Annual Report, this activity was known as Sweeping Route Posting and Enforcement Program. A more accurate title was chosen for this activity during project planning that took place in FY09.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2009 and will continue through FY 2010. Implementation is anticipated to occur in FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address this high priority water quality problem by targeting increased sweeping and removal of sediment and trash from City streets.

EFFECTIVENESS ASSESSMENT

ROUTE POSTING AND MEDIAN SWEEPING PILOT STUDY Assess the Effectiveness of Posting Routes and Sweeping Medians on Improving Street Sweeping Activities	
Management Questions	• What is the relative cost-efficiency of integrating additional route posting and median sweeping into the City street sweeping program? • What level of general debris removal benefit does the posting of street sweeping routes provide? • What level of metals removal benefit does the posting of street sweeping routes provide? • What level and type of debris can be removed by sweeping high volume median areas? • What level of metals removal benefit does the posting of street sweeping routes provide? • What type of sweeping equipment optimizes debris removal in or on high volume median areas?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives
The goal of the assessment is to investigate whether posting previously non-posted routes and sweeping medians improves the effectiveness of street sweeping activities.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time as project planning and coordination will continue through FY 2010. Implementation is anticipated to occur in FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via water quality and/or debris monitoring efforts) to the cost of project installation, operation and maintenance. Conclusions will be made after the assessment is complete.

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TITLE: **CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**
ID #: **LP-WQA19**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Irrigation Hardware Giveaway and Cash for Plants Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, implementation and assessment completion anticipated in FY2013. WMA: TBD.

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash	Pre-planning
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals	Sponsorship of the Brake Pad Partnership is in progress.
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment	Cancelled
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

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TITLE:	**LOS PEÑASQUITOS LAGOON TMDL – CARROLL CANYON SEDIMENT SOURCE STUDY PHASE I**
ID #:	**LP-WQA20**

ACTIVITY IMPLEMENTATION

The Los Peñasquitos Lagoon (Lagoon) was placed on the Clean Water Act Section 303(d) list for impairment due to sedimentation/siltation. The City of Poway, City of San Diego, and City of Del Mar, along with the County of San Diego and the California Department of Transportation have been identified by the San Diego Regional Water Quality Control Board (RWQCB) as responsible dischargers (Dischargers) to the Lagoon. The RWQCB is developing a TMDL for sedimentation/siltation to meet the Lagoon's water quality objectives and restore its beneficial uses.

As part of the TMDL development, the RWQCB required the identified Dischargers to conduct monitoring of the lagoon under Investigation Order No. R9-2006-076 (Investigation Order). The Monitoring Program focused on water quality and sediment characteristics in the lagoon and from the three tributaries to the lagoon. The data obtained from the Investigation Order are to be used to further develop the TMDL model that will assign load allocations to each Discharger. The RWQCB is currently working with the Dischargers to develop the TMDL.

Based on the results of the Investigation Order monitoring, wet weather flows from the Carroll Canyon subwatershed appear to represent the majority of sediment loading to the lagoon. This conclusion is based on measured total suspended solids (TSS) concentrations and storm flows monitored during the 2007–2008 Wet Weather Season. The mean concentration of TSS for all the three storm events monitored were higher at the Carroll Canyon monitoring point compared to the Los Peñasquitos Creek and Carmel Creek sites. The results and findings of the Investigation Order are presented in the TMDL Monitoring for Sedimentation/Siltation in Los Peñasquitos Lagoon Report completed by Weston Solutions, Inc., January 21, 2009.

The Investigation Order monitoring identified the Carroll Canyon subwatershed as the primary contributor of sediment to the lagoon because of its steep drainage area, incised canyons, higher proportion of impervious surfaces due to industrial land use, concrete-lined channel, and limited vegetation. Based on these findings, the City of San Diego (City) determined that further investigation was needed to identify the potential sources of sediment loading from the Carroll Canyon subwatershed. Further study was needed to identify factors influencing erosion and sediment transport, and identify watershed activities to meet future load reductions to the lagoon.

Phase I consists of a visual survey for evidence of sediment loading from the Carroll Canyon subwatershed, Los Peñasquitos subwatershed, and within peripheral drainages located along the lagoon boundaries and serves as a Tier II watershed activity identified in the City's Strategic Plan for Watershed Activity Implementation (Strategic Plan) (Weston , 2007b). Source studies are needed to identify Tier I pollution prevention and source control Best Management Practices (BMPs), develop conceptual designs for Tier II Low Impact Development (LID) BMPs and Tier III Treatment BMPs.

Results and Findings

1. Sediment loading from the Carroll Canyon and peripheral drainages is representative of a natural system modified by hydromodification that accelerates the process.

2. Within the Carroll Canyon subwatershed, large areas of impervious surfaces associated with industrial land use above canyon walls and along Carroll Canyon Creek direct large volumes of storm water runoff into the MS4.
3. Cement channelization of the lower reach of Carroll Canyon Creek results in quicker response times to storm water runoff and significantly higher peak flows when compared to the other two main tributaries (Carmel and Los Peñasquitos Creeks) to the lagoon.
4. Evidence of multiple pollutants near and below City MS4 outfalls.
5. Sedimentation in City-owned structures results in increased maintenance costs and increased vulnerability of private property and City infrastructure to flooding.
6. Coordination between City departments and divisions, as well as with other stakeholder groups (e.g., Caltrans, State Parks) will likely be needed to provide cost-effective maintenance of flow and sediment abatement structures.

TMDL APPLICABILITY

- Los Peñasquitos Lagoon Sediment/Siltation TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will be conducting additional water quality monitoring during 2009-2010 aimed at providing additional date for the use in the preparation of the Final Los Peñasquitos Lagoon TMDL.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sedimentation/Siltation

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify sediment as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the Los Peñasquitos, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this study is not an implementation or education activity. This study is filling the pollutant source data gaps identified above. Future activities implemented in response to the results of this study, such as the Roselle Street detention basin, will be reported as separate activities should they be implemented.

TITLE: **ESD PHASED GREEN MALL AND UNDERGROUND VAULT PROJECT**
ID #: **LP-WQA21**

ACTIVITY IMPLEMENTATION

This first phase of this project will construct a bio-retention basin Best Management Practice (BMP) along the south side of the visitor's parking lot. Along the basin, the existing curb and gutter will be removed and replaced with a zero height, or flush, curb. The bio-retention basin will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters. The City of San Diego (City) has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Green Mall" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in June 2009. The work performed in FY 2009 included the conceptual design and the City facility stakeholder, Environmental Services Department (ESD). The design consultant will start work in FY 2010. Construction is anticipated to occur from February through September 2012. Water quality monitoring is anticipated be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the **Los Peñasquitos** Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
ESD "GREEN MALL" INFILTRATION AND UNDERGROUND VAULT Assess Efficiency and Effectiveness of Green Malls in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the effectiveness and efficiency of the ESD Green Mall Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not possible at this time. Project design will continue in FY 2010.

Conclusions

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

Los Peñasquitos Watershed Education Activity Sheets

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TITLE:	**MOBILE ADVERTISING**
ID #:	**LP-WQEA1**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a mobile advertising firm, AdTruks, to advertise Think Blue messages on static billboard trucks in the Los Peñasquitos Watershed Management Area (WMA) in FY08. The City created advertisements that targeted behaviors associated with bacteria and trash. The goal of mobile advertising was to educate the public about the impacts litter and pollution have on local waterways and beaches and to encourage positive behavioral change.

Based on results from the 2009 Storm Water Survey in which 17% of participants stated they received Think Blue messages via mobile advertising, it was determined that the program was not as effective in generating sufficient knowledge and awareness of the program or storm water issues. Additionally, the Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. Therefore, the City did not conduct mobile advertising in the Los Peñasquitos WMA in FY09, and has discontinued this activity.

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TITLE: **PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #: **LP-WQEA2**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Los Peñasquitos Watershed Management Area (WMA) during FY 2009 from August 2008 to April 2009. The City will work with various broadcast media outlets to distribute and air the PSAs during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as high priority water quality problems in the Los Peñasquitos WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* PSAs will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST **Assess the Efficiency and Effectiveness of Public Service Announcements**	
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in Los Peñasquitos WMA (Outcome Level 1)	1,787,342
	Number of impressions made to the public through radio announcements in Los Peñasquitos WMA (Outcome Level 1)	2,453,838
	Change in knowledge or attitude from survey results (Outcome Level 2)	44%
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes**

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The city conducted an effectiveness assessment of *Think Blue* PSAs and storm water messages via field experiment in which 309 individuals were shown eight different *Think Blue* PSAs (including the *Karma, Karma Second Chance* PSAs). Participants were then asked questions to determine storm water knowledge, awareness and possible changes to future behavior as a result of the PSA. The results of the field experiment demonstrate the messages in the PSAs are effective in increasing public knowledge that storm water is not treated. 25% of participants were more likely to answer that storm water is not treated than those who had answered the question prior to watching the PSA. Additionally, awareness that storm water pollution is an important issue in San Diego also increased after watching the PSA. Lastly, the *Karma Second Chance* PSA scored the highest of the PSAs in motivating participants to take specific actions to prevent storm water pollution.

The city also obtained assessment information from its annual random-digit dial 2009 *San Diego Storm Water Survey* of 800 total residents from all WMAs. 55% of residents said they saw a *Think Blue* PSA last year (up from 52%) on television while 8% of residents heard the radio announcements in FY 2009. 51% said they prefer to get information about storm water via television. This year's survey also noted that while 44% of residents know that storm water was not treated, significant increases in awareness were detected among women (particularly over the age of 50), residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their

behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "*Think Blue*" 40% reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the city as a whole. To estimate the number of impressions in the Los Peñasquitos WMA, the total number of estimated city-wide impressions, (11,170,888 for television and 15,336,488 for radio ads) was multiplied by the proportion of residents living in the Los Peñasquitos WMA (16%) of the city's total population.

Conclusions

Based on assessment from both the survey and the field experiment as well as feedback from the public, *Think Blue* PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the city will continue to monitor public perception and feedback to determine if this is actually occurring. The city will continue to work with appropriate broadcast media outlets to air *Think Blue* television and radio PSAs in FY 2010.

Additionally, the city continued to measure public awareness of the *Think Blue* program via surveys comprised of a random digit dial sample of the residents living in the Los Peñasquitos WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, while the *2009 San Diego Storm Water Survey* indicated that 39% had heard the phrase "Think Blue" during FY 2009, awareness that storm water is not treated increased. These results, coupled with a continued decrease in the percentage of residents hosing down their driveways, and in residents using pesticide or weed killers, demonstrate that the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the Los Peñasquitos WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

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TITLE: **LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS**
ID #: **LP-WQEA4**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID Handbook, including Management Strategies, the Appendices, and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

Local planning and sponsor groups within the Los Peñasquitos River Watershed include:

- Lakeside
- Ramona

ACTIVITY IMPLEMENTATION FY 07-08

This education program was successfully developed during the spring of FY 2007-2008, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2007-08, none were conducted in the Los Peñasquitos River Watershed.

ACTIVITY IMPLEMENTATION FY 08-09

As documented in the table below, presentations were delivered to 2 planning and sponsor groups in the Los Peñasquitos River Watershed, which included 36 attendees. A total of 24 pre- and post- surveys were completed the groups.

Community Group	Presentation Date	No. of Attendees	Surveys Completed
Lakeside	3/18/09	17	13
Ramona	1/26/09	19	11
Total		**36**	**24**

TMDL APPLICABILITY
This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION
This activity was completed during FY 2008-09. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS
Activity effectiveness was assessed by tracking the number of presentations conducted (2), the number of participants in attendance (36), and the number of LID Handbooks distributed (30) (Level 1 Outcomes). Furthermore, attendees were asked to complete pre- and post- survey forms, which consisted of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area. Survey results were calculated to measures changes in attendee knowledge regarding watershed planning and LID principles (Level 2 Outcome).

The table below summarizes results from the 2 groups' surveys administered in the Los Peñasquitos River Watershed. Improvements on the post- survey ranged from a 15.38% increase to a 21.82% increase. This represents a demonstrable increase in knowledge among the target audience.

Community Group	Total Attendees	# of Surveys Given	Pre-survey % correct	Post-survey % correct	% Increase
Lakeside	17	13	60%	75.38%	15.38%
Ramona	19	11	67.27%	89.09%	21.82%

Questions posed on the surveys to the participants included:

1. Do watershed and community planning areas share the same boundaries?

a) Yes
b) No
c) Sometimes

2. Increased urbanization (increased development)

a) Has no impact on water quality.
b) Has only a small impact on water quality, and the stormwater (storm drain) system helps to keep the water clean.
c) Increases evapotranspiration & infiltration directly proportional to the amount of development that is built.
d) Affects ground water and stormwater quality by increasing runoff and decreasing infiltration.

3. What are the County requirements with regard to LID for incoming projects?

a) Ensure all project use exactly the same Low Impact Development techniques for site design.
b) Require LID techniques for all priority development projects, and encourage LID techniques for all other projects.
c) There are no County requirements for LID, its all voluntary.
d) None of the above.

4. Priority Development Projects include projects that are:

a) Less than 5000 square feet in size and have no impact on environmentally sensitive areas
b) Are defined as new or redevelopment projects that require a Stormwater Management Plan (SWMP)
c) Small lot splits and do not require a SWMP to be completed.
d) Fast-tracked at the County.

5. Low Impact Development (LID) is

a) Developing fewer homes on larger lots.
b) A method of developing that serves to mimic the natural hydrology of a site.
c) Keeping all water away from storm drains and channeling it to the nearest creek.
d) An identical set of BMPs that are used in exactly the same manner each time to address stormwater runoff.

6. Where does stormwater or urban runoff from your CPA go? (Open answer)

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TITLE: **INFILTRATION BMP RETROFIT OUTREACH**
ID #: **LP-WQEA5**

ACTIVITY IMPLEMENTATION

This Infiltration BMP Education and Outreach Activity was planned to support the implementation of an infiltration project in the Los Peñasquitos WMA to reduce runoff volume. The activity will complement the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA09). Educational materials, such as infiltration specific brochures and facts sheets will be developed, which will explain the importance of the project as well as the water quality benefits that will be realized. Outreach strategies and methods may include direct public interaction, stakeholder meetings, information sessions, print media and website postings. Ongoing educational materials will be developed and implemented once the project is finalized. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TIME SCHEDULE FOR IMPLEMENTATION

The outreach for the implementation of the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA09) is on hold until the project is approved to begin.

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TITLE: **RESIDENTIAL WATER CONSERVATION OUTREACH**
ID #: **LP-WQEA6**

ACTIVITY IMPLEMENTATION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies.

While the new ordinance is not yet adopted, one key element has been identified: the replacement timed irrigation controllers with "smart" controllers, which adjust the amount of water used based on weather conditions. While this planned activity does not directly replace controllers in the residential zones of the City, it provides for outreach through direct mail and utility bill enclosures to encourage water-wise approaches to landscaping, including the use of native plants, smart controllers and drip irrigation systems. This is beneficial from an NPDES perspective since any reduction in water usage, including the use of efficient irrigation systems, reduces the potential for runoff from over irrigation.

The City of Del Mar initiated its education and outreach program through the establishment of an Ad-Hoc Water Conservation Citizen's Advisory Committee in March 2009. The Committee, made up of members of the Del Mar community and appointed by the City Council, has been tasked with developing an outreach and education campaign to address water conservation issues, including a series of public workshops. The Committee met bi-monthly, and developed its first workshop on drought tolerant gardening slated for July 2010.

TMDL APPLICABILITY

While not yet adopted, a Bacteria TMDL has been proposed for the mouth of the San Dieguito Lagoon and the Anderson Canyon area of Los Peñasquitos Lagoon. Reduction of irrigation runoff from residential sources has the potential to decrease bacteria levels in the beaches and lagoons, and is a TMDL applicable activity.

TIME SCHEDULE FOR IMPLEMENTATION

This project is proposed for implementation in FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar
- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA, including the Miramar Hydrologic Area (906.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses a High Priority

Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2009 Los Peñasquitos WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT

Quantification of contacts with the residents regarding water conservation water quality activities can be tracked demonstrating a Level 2 outcome (Change in Knowledge).

TITLE: **TRANSIT SHELTER ADVERTISEMENTS**
ID #: **LP-WQEA8**

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego (City) retained a contract with an outdoor advertising company to advertise *Think Blue* messages on billboards and bus shelters located in the Los Peñasquitos Watershed Management Area (WMA). The City created advertisements in English and Spanish that target behaviors associated with bacteria profiled as a vector. The goal of the billboards was to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed and implemented in FY 2008 throughout the Los Peñasquitos WMA. In FY 2009, it was determined that transit shelters and billboard advertisements were not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. The City will continue to monitor outdoor advertising opportunities in the future and may reconsider the use of this activity in the Los Peñasquitos WMA.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City no longer plans to use billboards and transit shelters as part of its watershed program.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City no longer plans to use billboards and transit shelters as part of its watershed program; therefore, no assessment was conducted in FY 2009.

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TITLE:	**LOS PEÑASQUITOS WATERSHED EROSION AND SEDIMENT CONTROL POSTER CLEAN CONSTRUCTION POSTER AND BROCHURE DISTRIBUTION**
ID#:	**LP-WQEA10**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper Best Management Practices (BMPs.) The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and BMPs for construction. Photos on the brochure and poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally to distribute the poster in FY 2009 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of brochures and posters were distributed in the Los Peñasquitos Watershed Management Area (WMA) was 124. The number of posters distributed by Storm Water inspectors was 20 (14 in English and 6 in Spanish).

This activity does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years and the City plans to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the poster to permit applicants in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the Los Peñasquitos WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with sediment and bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 124 clean construction Posters and Brochures in FY 2009. Due to the nature of this activity, effectiveness assessment beyond Level 1 is not being conducted for this activity. The City may continue to report on the distribution of the brochures and posters, but is not currently requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **LOS PEÑASQUITOS WATERSHED RESTAURANT BEST MANAGEMENT PRACTICES BOOKLET**
ID#: **LP-WQEA11**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission several years ago from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the Los Peñasquitos Watershed Management Area (WMA) during inspections. After review by restaurant employees, the booklet could be kept by owners/managers for reference and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs. The booklets were not modified in FY 2009, but continue to be distributed.

City staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2009 to City-permitted facilities. The City distributed 427 booklets in the Los Peñasquitos WMA.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these booklets have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2010 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 427 booklets in FY 2009. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **COMPOST SOX DEMONSTRATION PROJECT, POWAY LANDFILL**
ID#: **LP-WQEA12**

ACTIVITY DESCRIPTION

A soil erosion BMP evaluation pilot study is being conducted at the closed Poway landfill to compare the effectiveness of compost-filled socks and straw-filled socks, also called "wattles", in capturing sediment and other pollutants from stormwater runoff. Straw has been used as the industry standard for erosion control wattles for many years. Straw filled wattles have also been used on construction sites, for post-fire mitigation, and during re-vegetation of slopes. More recently, composted materials have been introduced as an alternative to straw. The compost used in the socks is created from recycled products such as yard waste, wood pallets, and organic wastes that would otherwise be placed into a landfill. Although compost is a relatively new option for this application, it has been used for a few years. Compost is an industry-accepted soil amendment that improves soil quality and may benefit plant growth, which also aides in preventing erosion.

Straw wattles and compost socks will be installed to control surface erosion on disturbed slopes at the landfill. Samples will be collected from distinct sections of the project location during wet weather runoff events. Of the 8 total sites installed, 2 sites are composed of straw wattles and 4 sites of the compost socks, and 2 control sites. 8 flow capture devices were also installed on the 6 sites mentioned above, plus 2 control sites. Passive sampling devices will be installed prior to each (qualifying) storm event with the intent of capturing 3 wet-weather samples at each of the 8 sites.

In addition to the demonstration project, two educational DVDs were completed during FY 2008-09 and several outreach activities are being planned for the spring of 2010.

ACTIVITY IMPLEMENTATION FY 08-09

Project conception and planning were ongoing during FY 2008-09. Two educational DVDs about the demonstration activity were planned and completed during FY 2008-09, as well.

TMDL APPLICABILITY

This activity will support compliance with the sedimentation/siltation TMDL currently being developed for the Los Peñasquitos Lagoon.

TIME SCHEDULE FOR IMPLEMENTATION

- Installation of BMPs at the Poway Landfill was completed August 2009.
- Educational DVDs were created during FY 2008-09.
- Wet weather monitoring and reporting will occur during FY 2009-10.
- Outreach activities will occur during FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trace Metals
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The closed Poway Landfill is a potential source of sediment to the Los Peñasquitos Watershed, including the Los Peñasquitos Lagoon. Since sediment has been identified as a high priority water quality problem in the Los Peñasquitos Watershed, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Monitoring will occur during FY 09-10 and will be reported during that period. Test results will compare the effectiveness of pollutant removal from straw and compost devices.

PHOTO: Each grid section is comprised of straw wattles or compost socks. Troughs along the bottom of each grid are designed to collect storm runoff.

Poway Landfill

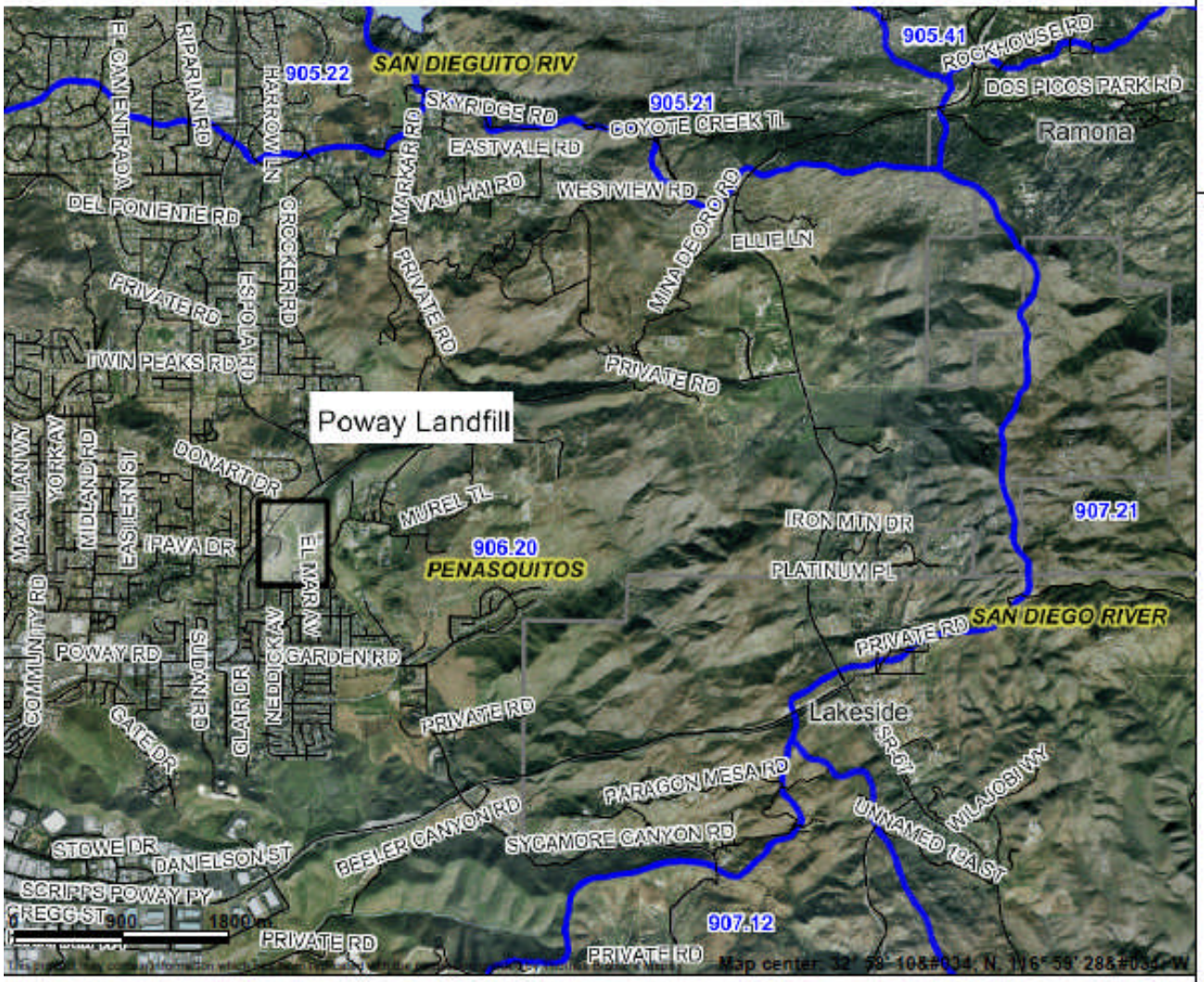

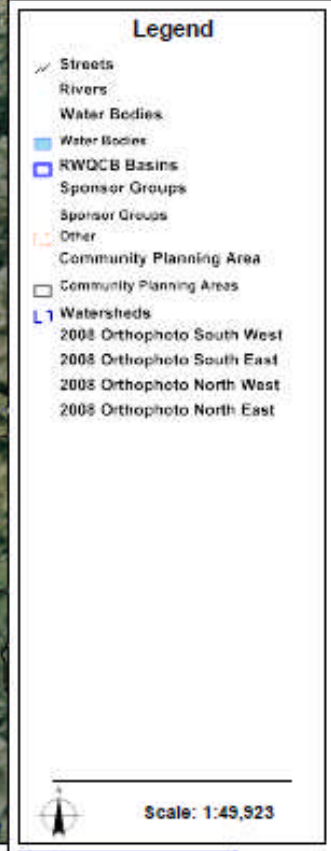

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TITLE: **FIESTA DE LOS PEÑASQUITOS**
ID#: **LP-WQEA13**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in the Los Peñasquitos Watershed Management Area (WMA) in FY 2009, the City of San Diego and other Copermittees jointly participated in the Fiesta De Los Peñasquitos Celebration, a family oriented annual street faire for residents of the Rancho Peñasquitos community. This festival has been slated the largest event of the year for the Rancho Peñasquitos Town Council. The festival was held on Sunday, May 3, from 11 am – 5 pm and was free to the public.

The Fiesta targeted key sources of bacteria in the Los Peñasquitos WMA. Participation provided direct outreach to watershed residents dedicated to preserving water quality in San Diego, but primarily focused on water bodies in Los Peñasquitos WMA. Goals were to increase knowledge and awareness and encourage everyone to take positive steps in preventing pollution from entering the storm drain.

With more than 15,000 people in attendance, our presence at the event provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

An outreach booth staffed with *Think Blue* personnel and consultants, in order to increase direct public education and interaction. Public education materials available in the booth included brochures, car wash fact sheets, and pollution prevention tip cards, along with best management practice items that helped promote behavior change such as, dust pans, pet trash bag containers and pet trash bag refills. Promotional giveaways included *Think Blue* stickers, eco-friendly pens, pencils, backpacks, and Frisbees, along with best management practice (BMP) giveaways, such as dustpans and pet trash bag containers.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue plans to participate in the Fiesta De Los Peñasquitos during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of Poway
- County of San Diego
- City of Del Mar

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos							
FIESTA DE LOS PEÑASQUITOS Assess the effectiveness of direct public outreach to increase awareness about storm drain pollution and prevention.							
Management Questions	• What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?						
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys						
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)						
Data Recorded	***Think Blue* FY 2009 Fiesta de los Peñasquitos**						
		Number of Visitors to Outreach Booth	***Gender***	***Heard of Think Blue?***	***How have you heard about Think Blue?***	***Total Materials Distributed***	
	Fiesta de los Peñasquitos 2009	176	52 Reported 40% Male 60% Female	55% Yes 45% No	53% TV	1013 *	
	Estimated total visitors exposed to the *Think Blue* Booth at the Fiesta de los Peñasaquitos in FY 2009 (Outcome Level 1)						15,000
	Number of Surveys administered in FY 2009 (Outcome Level 1)						176
	Percentage of individuals surveyed that believed storm water was an extremely important issue (Outcome Level 2)						91%
	Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2)						61%
	Percentage of individuals able to name a concrete action to prevent storm water pollution (Outcome Level 3)						83%
	Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3)						96%

Objectives

The goal of this assessment was to determine community knowledge and awareness about storm water issues and whether or not residents would adopt non-polluting behaviors. Another goal was to create positive behavioral change that will reduce bacteria and gross sediment in water bodies in the Los Peñasquitos WMA.

Analysis and Results

The campaign targeted key areas of concern for pollutants in the Los Peñasquitos WMA. The event provided direct outreach to residents living within the Rancho Peñasquitos area. Based on the assessment, many citizens knew about pollution issues in neighboring waterways (91%). However, approximately four in ten residents were unaware the sewer system and storm drain system are not connected, and that water in the storm drain system is not treated. Efforts were made to educate attendees on awareness of pollutant sources (specifically bacteria), and pollution prevention methods in order to reduce and prevent pollution.

Conclusions

The Fiesta De Los Peñasquitos attracted mainly residents living in the local WMA. The event provided Copermittees and Storm Water staff an open venue to interact with the community. *Think Blue* provided the booth for continued outreach dedicated in preserving water quality in San Diego. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain system. With approximately 15,000 people in attendance, Presence at the event provided a great opportunity to spread the message about storm drain pollution prevention.

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TITLE: **LOS PEÑASQUITOS WATERSHED BROCHURE**
ID#: **LP-WQEA14**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2010. Implementation and distribution is expected to occur in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	**San Diego River**	**San Diego Bay**	**Mission Bay**	**San Dieguito River**	**Los Peñasquitos**
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants		Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City plans to continue to implement the brochure program in FY 2010. Effectiveness assessments will be conducted after the watershed brochures are implemented in FY 2010. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

Los Peñasquitos Watershed URBAN RUNOFF MANAGEMENT PROGRAM

Fiscal Year 2010 Annual Report

January 31, 2011

Prepared and Submitted by the Los Peñasquitos Watershed Copermittees

City of Del Mar
City of Poway
City of San Diego
County of San Diego

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Executive Summary

Since January 2002, the County of San Diego and the Cities of Del Mar, Poway and San Diego (herein referred to as the "Los Peñasquitos WURMP Copermittees" or "Copermittees") have been active in planning, developing and implementing watershed-based programs in the Los Peñasquitos Watershed Management Area (WMA). This Annual Report describes the actions taken by Los Peñasquitos WURMP Copermittees in Fiscal Year (FY) 2010 (July 1st, 2009 to June 30th, 2010) to implement and refine the 2008 Los Peñasquitos Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA.

The Copermittees collaborated on their efforts to address high priority surface water quality issues throughout the Los Peñasquitos WMA. This was coordinated through periodic meetings held throughout the reporting period. The meetings were held in order to effectively plan and implement the Los Peñasquitos WURMP, develop and prioritize water quality activities that address pollutants of concern in the WMA, exchange ideas on how to address High Priority Water Quality Problems (HPWQPs) in the WMA, evaluate the effectiveness of actions, and collaborate on development of required submittals. In order to complete the objectives, the group performed assessments and conducted activities to address the water quality problems. These assessments and activities include: (1) a water quality assessment; (2) a pollutant source assessment; (3) planning and implementation of watershed activities; and (4) an assessment of the Copermittees' activities in the WMA.

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the Los Peñasquitos WMA based on data collected and analyzed from July 2009 through June 2010. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the San Diego County Municipal Copermittees Urban Runoff Monitoring Report (Annual Monitoring Report) for FY 2010 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. Based on the data and findings of this report, the Los Peñasquitos WURMP Copermittees have determined to focus their efforts on targeting the following HPWQPs for the Los Peñasquitos WMA: (1) Bacteria in both hydrologic areas (HAs); and (2) Sediment in the Miramar HA.

The Copermittees also completed an assessment of potential pollutant generating sources in each HA in the WMA. The purpose of this assessment was to identify the high priority pollutant sources in each HA based on the HPWQPs identified and each source's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would typically have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on their potential for generating bacteria as a pollutant.

All WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Details of these activities are found in Section 4 and Appendix B of this Annual Report. For each WURMP activity a plan for implementation has been developed and updated, and each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is to be implemented. Collectively, the Copermittees conducted eight (8) WURMP Watershed Activities – six (6) Water Quality Activities and two (2) Water Quality Education Activities.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Programs (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. This information is not comprehensive and for some data sets, estimates were used to generate quantities of activities. The Copermittees believe that this is an important first step towards integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees also performed an Effectiveness Assessment to determine the overall effectiveness of the Los Peñasquitos WURMP and the activities conducted by the Copermittees. The assessment includes activity-specific assessments as well as a comprehensive summary of the effectiveness of the WURMP activities implemented during the reporting period. This is the second year in which the Copermittees have included their JURMP activities as they were performed in each HA; however, the JURMP activities reported are limited in type due to the infancy of this type of reporting. The Copermittees are committed to continue this process and further develop the reporting and assessment of all activities conducted on an HA basis.

Activities selected and conducted by the Los Peñasquitos WURMP Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. The effectiveness of the individual activities is variable; however, collectively the Copermittees' program actions are having positive effects on water quality.

The Los Peñasquitos WURMP Copermittees will continue to refine and augment the Los Peñasquitos WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the Los Peñasquitos WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In short, the FY 2010 Los Peñasquitos WURMP Annual Report presents an update on the Los Peñasquitos WURMP Copermittees' successful long-term efforts to protect and enhance the water quality of the WMA using a comprehensive watershed-based approach.

1 Introduction

The San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit) requires Copermittees within the Los Peñasquitos Watershed Management Area (WMA) to collaborate and implement a Watershed Urban Runoff Management Program (WURMP). The WURMP consists of the Copermittees' combined efforts to address and identify High Priority Water Quality Problems (HPWQPs) in the WMA; develop and implement activities that address pollutant load reduction and pollutant source abatement in Watershed Water Quality Activities and Watershed Education Activities; and participate in collaborative land use planning efforts. The reporting period for this Annual Report is from July 1st, 2009, through June 30th, 2010 (FY 2010).

1.1 Copermittee Collaboration

1.1.1 Los Peñasquitos WURMP Meetings

The Los Peñasquitos Watershed Copermittees met nine (9) times during FY 2010 to implement the Los Peñasquitos WURMP. The Copermittees collaborated to develop, prioritize and implement watershed activities that address HPWQPs and sources in the WMA and the development of the Annual Report. They exchanged ideas on how to address HPWQPs in the WMA and evaluated the effectiveness of the watershed activities. **Table 1-1** is a summary of Los Peñasquitos WURMP meetings and an outline of agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Items Discussed
8/13/2009	Permit WURMP Language Revisions; Annual Reporting Database; Alternative Reporting; Quality of Life Funding Strategy
10/8/2009	WURMP Annual Report – Database and Alternative Reporting; Permit WURMP Language Revisions; Quality of Life Funding Strategy; Cost Share Agreement; 303(d) Listings
11/12/2009	WURMP Annual Report –Alternative Reporting; Quality of Life Funding Strategy; Cost Share Agreement
1/14/2010	WURMP Annual Report – Certifications and Scheduling; Quality of Life Funding Strategy; Cost Share Agreement; Public Outreach Coordination
2/11/2010	WURMP Activities; Follow-up to Annual Reporting; Quality of Life Funding Strategy; Outreach Coordination – Fiesta de Los Peñasquitos 2010; Bacteria TMDL
3/11/2010	WURMP Activities; Quality of Life Funding Strategy; Outreach Coordination – Fiesta de Los Peñasquitos 2010; Bacteria TMDL
4/15/2010	WURMP Activities – Sediment Basins, Source ID Studies; Quality of Life Funding Strategy; Fiesta de Los Peñasquitos 2010; Bacteria TMDL; Unfunded Mandate Test Claim
5/13/2010	WURMP Activities – Source ID Studies; WURMP Calendar; Quality of Life Funding; Fiesta de Los Peñasquitos; Bacteria TMDL; TWAS Locations; Hodges Basin Natural Treatment System
6/17/2010	WURMP Calendar; Quality of Life Funding Strategy; TWAS Locations; TMDLs – Bacteria, Los Peñasquitos Lagoon; WURMP Activities – Source ID Studies

The general watershed meetings of the Los Peñasquitos WURMP Workgroup were led by the City of Poway, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks were then carried out by the Copermittees, each within the structure of their

jurisdictional organization. Task completion was tracked and assessed at the Workgroup meetings and reported in the Annual Report.

Lagoon TMDL Investigative Order
The Los Peñasquitos WURMP Copermittees are assisting the RWQCB in the development of a sediment TMDL in the Los Peñasquitos WMA. The TMDL specifically addresses the issue of sedimentation/siltation within the lagoon. In FY 2007, the RWQCB issued Investigative Order R9 2006-76 for monitoring associated with Lagoon TMDL modeling. The Lagoon TMDL Investigative Order has resulted in the collection of a significant amount of hydrologic, hydraulic and water quality data for the lagoon and the associated WMA. Through monitoring during FY 2008, a significant amount of data was collected in order to calibrate and validate the TMDL models for pollutant load allocation. During FY 2009, the Copermittees as well as other dischargers and interested parties began meeting with RWQCB staff to begin developing the TMDL. In FY 2010, the Copermittees continued to work with the RWQCB to complete modeling for the TMDL development and develop the draft TMDL for scientific peer review.

1.2 Watershed Map Update

The Los Peñasquitos WMA is located within west–central San Diego County. The WMA has two hydrologic areas (HAs) and extends from the foothills east of the City of Poway to the coastal plain where the watershed drains into Los Peñasquitos Lagoon before flowing into the Pacific Ocean through a narrow mouth at Torrey Pines State Beach. The Los Peñasquitos WMA is 60,419 acres and encompasses the drainage areas of Los Peñasquitos Creek, Carmel Creek, and Carroll Canyon Creek (Soledad Canyon), with the remaining 1,107 acres comprising the lagoon and coastal drainages. Land use within the overall Los Peñasquitos WMA is classified primarily as open space / parks and recreation (31%), residential (22%), vacant and undeveloped land (14%), and transportation (13%). However, there are several notable differences in land use composition among the three creek drainage areas and between the two HAs that make up the watershed. The Los Peñasquitos WMA is mostly within City of San Diego jurisdiction (71%), with the remaining areas in City of Poway (25%), County of San Diego (3%), and City of Del Mar (0.2%) jurisdiction. Over 60% of the watershed is privately owned land.

No updates have been made to the previously submitted Watershed Map. See the Los Peñasquitos WURMP Annual Report submitted in January 2009 for the most recent Watershed Map.

2 Water Quality Assessment

This section provides an assessment of the 2009–2010 monitoring programs conducted in the Los Peñasquitos WMA. A complete presentation of the monitoring efforts conducted during the reporting period is located in the *2009-2010 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Urban Runoff Monitoring Report) (Weston, January 2011).

2.1 Monitoring Programs

Monitoring activities conducted in the WMA to comply with Order R9-2007-0001 are provided in **Table 2-1**. A map showing the locations of the MLS, TWA and the HSAs is provided on the following page as **Figure 2-1**.

Table 2-1 2009-2010 Monitoring Program Activities

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Ambient Monitoring	Water chemistry and toxicity
Rapid Stream Bioassessments	Benthic macroinvertebrates, periphyton, and physical habitat
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, and bacteria
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria
Regional Source Identification Monitoring	Chemistry, metals, pesticides, and bacteria
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria

2.2 303(d) Listings

Within this WMA, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant total maximum daily load (TMDL) status. However, several changes are currently proposed in the 2008 Draft 303(d) list currently under development.

Table 2-2 Los Peñasquitos WMA SWRCB 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Los Peñasquitos Lagoon	Sediment/siltation	In development
Los Peñasquitos Creek	Phosphate and TDS	Proposed for completion - 2019
Soledad Canyon	Sediment toxicity	

Figure 2-1 Location of MLS, TWAS, and HSA – Los Peñasquitos Creek WMA

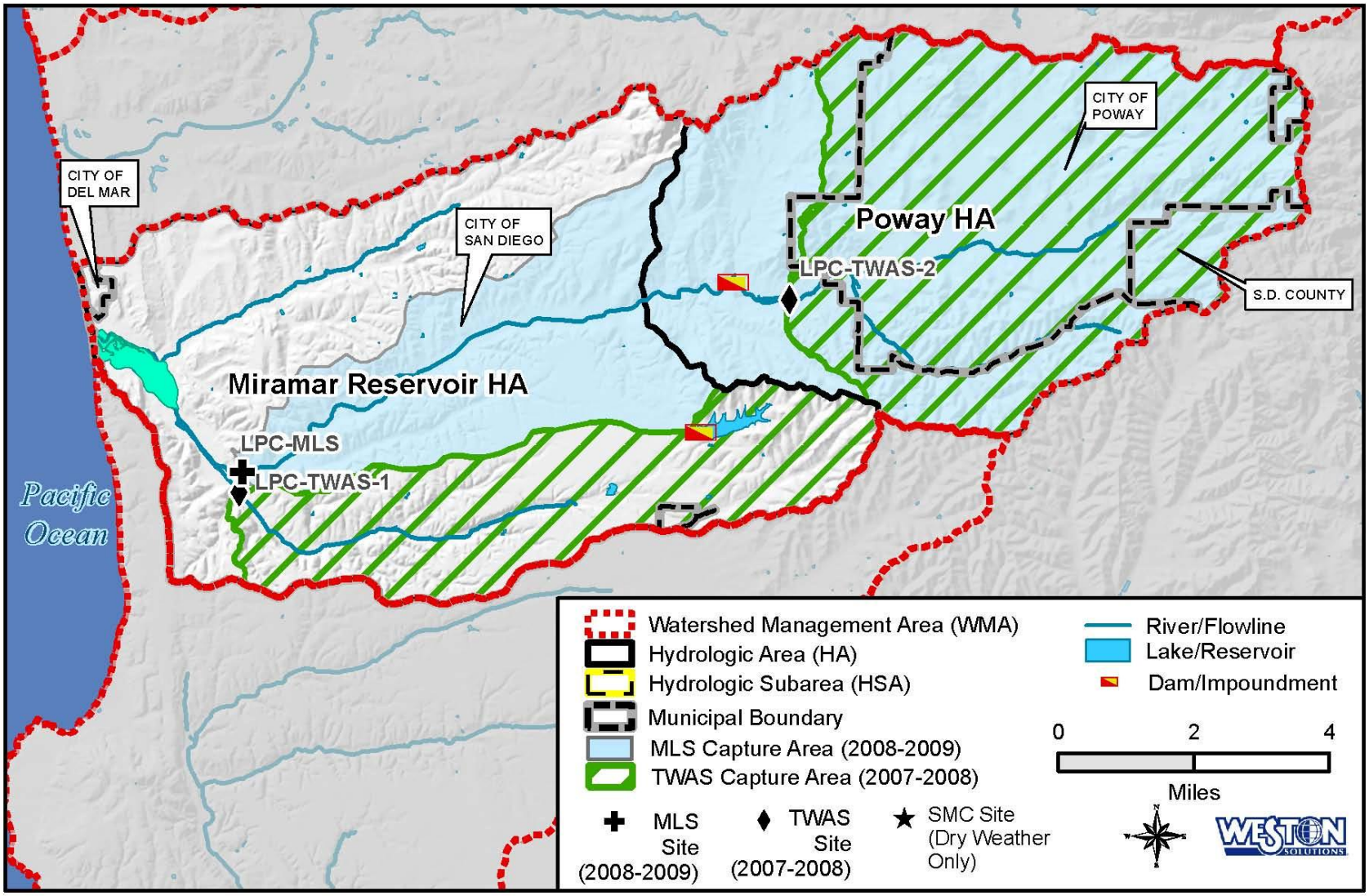

2.3 Assessment

Receiving water monitoring was not conducted during the 2009-2010 reporting period in the Los Peñasquitos Creek WMA due to the rotational nature of the Permit: the South County received the MLS and TWAS monitoring. Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit, with the exception of Chollas Creek which is monitored each year. Ambient and wet weather receiving water monitoring will be conducted during the 2010–2011 Monitoring Season.

Assessments were conducted using data from multiple current and historical monitoring programs, and the results derived using a weight-of-evidence approach. Each HA in the Los Peñasquitos WMA was assessed individually and summarized for the entire WMA by program element in **Table 2-3**.

Table 2-3. Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings
Los Peñasquitos WMA	Receiving Water Monitoring	Ambient Receiving Water Assessment	Ambient weather receiving water monitoring was not conducted during the FY2010 Monitoring Season in the Los Peñasquitos WMA. The results from the FY2009 Monitoring Season are outlined below. ▪ Constituents of concern[1]: – High frequency of occurrence (TDS, chloride, sulfate, and Enterococci). – Low frequency of occurrence (total nitrogen). ▪ No constituents had magnitudes of exceedance greater than five times their benchmark. ▪ Toxicity was observed for the *Ceriodaphnia dubia* reproductive endpoint, 96-hour survival, and 7-day survival at one random SMC site (Site SMC-01158). ▪ There is evidence of persistent toxicity.
		Wet Weather Receiving Water Assessment	Wet weather receiving water monitoring was not conducted during the FY2010 Monitoring Season in the Los Peñasquitos WMA. The results from the FY2009 Monitoring Season are outlined below. ▪ Constituents of concern[1]: – High frequency of occurrence (TDS, fecal coliform, and Bifenthrin from historical data). – Low frequency of occurrence (TSS, turbidity and Enterococci). ▪ Fecal coliform was the only constituent with a magnitude of exceedance of more than five times the benchmark. ▪ Neither toxicity nor pesticides were detected during 2008-2009 wet weather monitoring at the MLS. ▪ Pyrethroid concentrations were below detection limits in all sediment samples.
		Rapid Stream Bioassessment	Results from the FY2009 Monitoring Season are outlined below. ▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed.
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of concern[1]: – High frequency of occurrence (TDS, total nitrogen, total phosphorus, Enterococci). – Medium frequency of occurrence (fecal coliform, dissolved copper; Jurisdictional: conductivity, turbidity, total coliform, fecal coliform, and Enterococci). ▪ Trash assessments indicated portions of the lower watershed (906.1) had the highest occurrence of observed trash. No human health or aquatic health threats were identified.
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ Constituents of concern[1]: – High frequency of occurrence (fecal coliform). – Medium frequency of occurrence (fecal coliform, pH, TSS, TDS).
		Source Identification Program	▪ Results suggest that single family residential land uses are likely contributors of the following constituents during wet weather events: – TSS, turbidity, dissolved copper (site specific), bifenthrin, cyfluthrin, l-cyhalothrin, permethrin, fecal coliforms. ▪ In the Del Mar study area (906.1), fecal coliform, TSS, turbidity, dissolved copper (site specific), bifenthrin, cyfluthrin, and L-cyhalothrin were identified as high priority constituents.
	WMA Assessment	Receiving Water Trend Assessment	No sampling during 2009-2010 (South County Rotation). 2008-2009 Monitoring Season Results: ▪ Significantly increasing trends were observed for fecal coliform. ▪ Significantly decreasing trends were observed for total lead.
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, sulfate, chloride, and fecal coliform, together with the benthic alterations, are consistent with the 2001–2006 BLTEA ratings. ▪ The presence of Bifenthrin is not consistent with the 2001–2006 BLTEA ratings.

2.4 Integrated Assessment

Assessment of the WMA during both wet weather and ambient conditions is presented in an integrated manner to present managers with an overall assessment of the WMA and to provide answers to the core management questions as described in the regional monitoring program. The integrated assessment incorporates both the ambient weather and wet weather assessments and provides a summary of the overall findings for the Los Peñasquitos WMA. The integrated assessment also identifies which priority constituents overlap between receiving waters and urban runoff. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as the data become available in future years. Integrated watershed assessments results are presented in **Table 2-4**.

Table 2-4 Integrated Watershed Area Management Assessment

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Receiving Water Monitoring (MLS, TWAS, and SMC)	**No Sampling During 2009-2010 Season** **2009 SMC Results** • Chemistry –TDS, Chloride, Sulfate • Bioassessment – Very Poor IBI • Toxicity – *C. dubia* acute (high TDS)	**No Sampling During 2009-2010 Season** **2008-2009 Season Results** • Chemistry –TDS, TSS, Turbidity • Bacteria – Fecal Coliform, Enterococci • Toxicity – None detected • Synthetic Pyrethroids Assessment – Not Detected
Urban Runoff Monitoring (MS4 Outfall and DWM)	• Chemistry – TDS, Total Nitrogen, Total Phosphorus • Bacteria – Fecal Coliform, Enterococci	• Chemistry – None above benchmarks • Bacteria – Fecal Coliform

MLS Trends*	
Increasing	Fecal Coliform
Decreasing	Total Lead

Regional Source Study: Results of the Regional Source Study for Residential Land Use in Los Peñasquitos Creek WMA (City of Del Mar) indicated that single-family residential land uses may be potential sources of TSS, turbidity, fecal coliforms, and synthetic pyrethroids (bifenthrin, cyfluthrin, L-cyhalothrin, and permethrin) in stormwater flows during wet weather events. Residences with architectural copper may also be a source of copper to wet weather storm flows.

*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data (based on 2008-2009 Monitoring Season).
1: High and medium priority constituents are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

DWM - dry weather monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - total dissolved solids
TSS - total suspended solids

2.4.1 High Priority Water Quality Problems

Based on the assessments above and the available water quality data, the Los Peñasquitos WURMP Copermittees have determined that the HPWQPs in the Los Peñasquitos WMA are:

1. Bacteria in both HAs (under both ambient and wet weather conditions)
2. Sediment in the Miramar HA

It should be noted that the HPWQPs have not changed from previous assessments or the Los Peñasquitos WURMP.

3 Pollutant Source Assessment

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Los Peñasquitos WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by HA.

Table 3-1 summarizes the land use in each of the HAs. Land use information is generally associated with wet weather urban runoff where rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to dry weather urban runoff that is generally associated with point dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant generating activities and from the conveyance of urban runoff as it enters and travels through the MS4.

Tables 3-2 and **3-3** present a limited inventory of pollutant generating sources that the Copermittees currently track by HA. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants (blue highlight). The process used to develop the tables was taken directly from the Baseline Long-Term Effectiveness Assessment (BLTEA) (Weston, MOE, LWA, 2005). The data used for the process includes the following: (1) results in the 2008-2009 Regional Annual Monitoring Report (Weston, 2010); (2) current inventory information from all WMA Copermittees; and (3) the Source Loading Potential (SLP) ratings from the BLTEA (Weston, MOE, LWA, 2005).

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)	
	906.1	906.2
Open Space	12,674.6	13,041.7
Single Family Residential	6,513.4	4,692.3
Transportation	4,807.3	2,565.2
Industrial	4,065.0	1,097.8
Multiple Family Residential	1,451.1	973.3
Commercial	1,239.2	639.4
Institutional	1,139.5	367.0
Park	764.3	552.4
Agricultural	414.1	291.2
Water	178.6	0.0
Recreation	118.3	31.1
Rural Residential	112.9	2,608.4
Municipal	89.4	128.6
Under Construction	86.8	74.1
Military	28.8	42.4
Prison	0.0	0.0

Source: SANDAG

Table 3-2 Pollutant Generating Sources – 906.1 Miramar Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	27			N	L	UL	L	UK	L	UK	L
Automotive	554			L	L	L	UL	UL	UK	L	UL
Contractor	837			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	654			N	L	L	UL	UK	UK	L	L
Equipment	99			L	L	L	UL	UL	UK	L	UL
Fueling	26			UK	L	L	UK	N	N	UK	N
General Industrial	17			L	L	L	UK	UK	UK	UK	UK
General Retail	47			UL	UL	UL	L	UL	UL	L	UL
Golf	1			N	N	UL	L	L	L	L	L
Manufacturing	306			L	UK	UK	UK	UK	UK	UK	UL
Metal	59			L	L	L	UK	UK	UK	UK	UL
Stone	25			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	573			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	103	0									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	6	6	26								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-3 Pollutant Generating Sources – 906.2 Poway Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	13			N	L	UL	L	UK	L	UK	L
Automotive	191			L	L	L	UL	UL	UK	L	UL
Contractor	200			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	335			N	L	L	UL	UK	UK	L	L
Equipment	59			L	L	L	UL	UL	UK	L	UL
Fueling	26			UK	L	L	UK	N	N	UK	N
General Industrial	3			L	L	L	UK	UK	UK	UK	UK
General Retail	11			UL	UL	UL	L	UL	UL	L	UL
Golf	8			N	N	UL	L	L	L	L	L
Manufacturing	85			L	UK	UK	UK	UK	UK	UK	UL
Metal	22			L	L	L	UK	UK	UK	UK	UL
Nursery	4			L	UL	UL	L	L	L	UK	L
Stone	11			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	160			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	59	8									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	12	33	41								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

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4 Implementation of Activities

4.1 JURMP and Watershed Activities

The Los Peñasquitos WURMP Copermittees are responsible for implementing Jurisdictional Urban Runoff Management Program (JURMP) activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. These activities have historically been reported only in jurisdictional Annual Reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

In addition to their JURMP activities, the Los Peñasquitos WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Los Peñasquitos WURMP.

The tables below present the Copermittees' efforts towards reporting all urban runoff management activities on a watershed basis. A comprehensive reporting of all urban runoff management activities on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements.

Collectively, the Copermittees conducted five (5) watershed water quality activities and one (1) watershed education activity in the Miramar HA (906.1); and, four (4) watershed water quality and two (2) watershed education activities in the Poway HA (906.2). Some of these activities overlapped HAs.

Table 4-1 JURMP and WURMP Activities – 906.1 Miramar Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem	
					Bacteria	Sediment
Inspections	Construction	High	Medium	Low		X
		119: (6)	62: (6)	166: (26)		
	Animal	2: (27)			X	X
	Contractor	226: (837)				X
	Food Establishment	184: (654)			X	
	General Retail	59: (47)				X
	Golf	1: (1)			X	X
Street Sweeping (Tons Collected)		3,157			X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,036			X	X
LP-WQA1	SDCK Trash Cleanup Sponsorship				X	
LP-WQA5	Targeted Inspections (formerly Targeted Restaurant Facility Inspections)				X	X
LP-WQA8	ILACSD Trash Cleanup Sponsorship				X	
LP-WQA10	Municipal Rain Barrel Installation and Downspout Disconnects				X	X
LP-WQA17	Pet Waste Bag Dispenser Program				X	
LP-WQEA13	Fiesta de Los Peñasquitos				X	X

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report

Table 4-2 JURMP and WURMP Activities – 906.2 Poway Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem Bacteria
Inspections	Animal	3: (13)	X
	Food Establishment	66: (335)	X
	Golf	5: (8)	X
	Nursery	2: (4)	X
Street Sweeping (Tons Collected)		1,078	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		821	X
LP-WQA5	Targeted Facility Inspections		X
LP-WQA8	ILACSD Trash Cleanup Sponsorship		X
LP-WQA17	Pet Waste Bag Dispenser Program		X
LP-WQA18	Median Sweeping Pilot Study		X
LP-WQEA12	Compost Sox Demonstration Project, Poway Landfill		
LP-WQEA13	Fiesta de Los Peñasquitos		X

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report

4.2 Watershed Education Activities

This section describes activities implemented by the Los Peñasquitos WURMP Copermittees during the FY 2010 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Los Peñasquitos WURMP Copermittees are responsible for identifying and implementing education activities that address the HPWQPs in the Los Peñasquitos WMA. The activity selection process is described fully in the 2008 Los Peñasquitos WURMP.

The Los Peñasquitos WURMP Copermittees have made significant progress in developing and implementing programs aimed at improving storm water and urban runoff water quality in the WMA. **Table 4-3** below list the two (2) education activities implemented during FY 2010 by the Los Peñasquitos WURMP Copermittees. In addition, other activities were in the active planning or assessment phases during the reporting period. For more details on all of the activities, refer to **Table 4-7** and **Appendix B**.

Table 4-3 Watershed Education Activities Implemented During FY 2010

ID #	Activity/Project Name
LP-WQEA12	Compost Sox Demonstration Project, Poway Landfill
LP-WQEA13	Fiesta De Los Peñasquitos

The effectiveness assessments for these activities are presented in the Activity Implementation Sheets (**Appendix B**) and are summarized in Section 5 – Effectiveness Assessment.

4.3 Public Participation Activities

4.3.1 Introduction

The Public Participation component of the 2008 Los Peñasquitos WURMP encourages residents and organizations within the WMA (such as other agencies, private companies and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water and other methods including direct interaction of Los Peñasquitos WURMP Copermittee staff with members of the public.

4.3.2 Activities Conducted

WURMP documents and reports have been posted on the Project Clean Water website, http://www.projectcleanwater.org/, where they are available to all interested stakeholders. During FY 2010, the Los Peñasquitos WMA web page on the Project Clean Water website received 1,912 hits and the Los Peñasquitos WURMP page received 553 hits. These totals are slightly higher than those seen in the previous reporting period. A monthly breakdown of the hits can be found in the tables below.

Table 4-4 Number of Hits: Project Clean Water Los Peñasquitos WMA Web Site

July 09	Aug 09	Sep 09	Oct 09	Nov 09	Dec 09	Jan 10	Feb 10	March 10	April 10	May 10	June 10	Total
145	138	143	179	175	163	186	137	200	149	152	145	1,912

Table 4-5 Number of Hits: Project Clean Water Los Peñasquitos WURMP Web Site

July 09	Aug 09	Sep 09	Oct 09	Nov 09	Dec 09	Jan 10	Feb 10	March 10	April 10	May 10	June 10	Total
37	36	41	68	50	31	45	49	66	59	41	30	553

During this reporting period, the Los Peñasquitos WURMP Copermittees participated in three community events that reached approximately 30,070 participants, as shown in **Table 4-6** below. Watershed concepts and principles were incorporated into booth displays and event activities.

Table 4-6 Community Events in FY 2010

Date	Event Title	Target Audience	Estimated Attendance	Location	Jurisdiction(s)
9/21/09	San Diego Women's Foundation Environmental Fair	Public	70	Mira Mesa	City of San Diego
4/25/10	Earth Day Celebration	Public	15,000	Midland Road	Poway
5/2/10	Fiesta de Los Peñasquitos	Public	15,000	Black Mountain Road	San Diego, County of San Diego, Poway, Del Mar

As noted in section 4.1 of this report, Water Quality Activities, several community cleanup events were held during FY 2010, which also provides opportunities for individuals or organizations to be involved in improving water quality in the Los Peñasquitos WMA.

4.3.3 Future Efforts

The Los Peñasquitos WURMP Copermittees will continue to provide opportunities for residents and other interested parties to participate in Los Peñasquitos WURMP activities.

Draft documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the Los Peñasquitos WMA.

4.4 Collaborative Land-Use Planning Efforts

4.4.1 Introduction

The Land-Use Planning component of the 2008 Los Peñasquitos WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across Los Peñasquitos WURMP Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities.

4.4.2 Activities Conducted

Integrated Regional Water Management (IRWM)

The WURMP Copermittees have been active participants in the Integrated Regional Water Management (IRWM) planning process (IRWMPP). The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders. Participation in the IRWMPP has already led to funding approval for a number of BMP (Best Management Practice) installation projects that will benefit the WMA by reducing runoff.

Quality of Life Funding Strategy

The County of San Diego has been invited to participate in SANDAG's Quality of Life Funding Strategy, and asked to take the lead on the Water Quality Enhancement Element. Based upon past analysis from SANDAG's Regional Comprehensive Plan (RCP), it has been determined that the region lacks a long-term and sustainable funding source for different areas of infrastructure, including stormwater. The County has been working collaboratively with other Copermittees, as well as interested regional stakeholders to vet a variety of funding options, conduct a regional needs assessment and help establish funding priorities related to water quality. This is an ongoing effort that currently has a vision through 2012.

4.4.3 Future Efforts

In FY 2011, the City and County of San Diego, as well as other WURMP Copermittees, will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will continue. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the City and other jurisdictions.

The Los Peñasquitos WURMP Copermittees remain committed to encouraging collaborative, watershed-based land-use planning in their jurisdictional planning departments. The Los Peñasquitos WURMP Copermittees will continue to work together to seek additional means of collaboration in this area.

4.5 Updated 5-Year Strategic Plan

4.5.1 New WMA Activities

Proposed watershed activities Implementation Sheets can be found in **Appendix B**. New activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA.

Each activity on the WMA Activities List is fully described in an Activity Implementation Sheet that includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQP(s) of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Los Peñasquitos WURMP Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no fewer than two water quality activities will be in an active implementation phase. A water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's HPWQP(s). Water quality activities that are capital projects are in active implementation for the first year of implementation only.

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

4.5.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the Los Peñasquitos WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale in which actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Los Peñasquitos WURMP Copermittees made appropriate management decisions on which water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Los Peñasquitos WURMP Copermittees used available information to

identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented below is intended to supersede the earlier versions presented in the 2008 Los Peñasquitos WURMP and the FY 2008 and FY 2009 Los Peñasquitos WURMP Annual Reports.

Table 4-7 Updated 5-Year Strategic Plan

Watershed Water Quality Activities		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Sediment	FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
LP-WQA1	Coastal Cleanup Day Sponsorship	SD	X		WQI	WQI	WQI	WQI
LP-WQA5	Los Peñasquitos Targeted Inspections (formerly Targeted Restaurant Facility Inspections)	SD	X		WQI	WQI	Completed	
LP-WQA7	Marindustry Hydrodynamic Separator Installation	SD	X	X	P	P	P	WQI
LP-WQA8	ILACSD Trash Cleanup Sponsorship	SD/POW	X		WQI	WQI	WQI	WQI
LP-WQA9	Mira Mesa Bioretention and Infiltration Retrofit	SD	X		P	P	P	P, M, WQI
LP-WQA10	Los Peñasquitos Municipal Rain Barrel Installation and Downspout Disconnect Project	SD	X	X	WQI	Completed – no longer reported		
LP-WQA11	Aubrey Street Continuous Deflective Separation (CDS) Device	POW		X	A	A	A	A
LP-WQA12	Gate Drive Detention Basin Modification	POW	X		A	A	A	A
LP-WQA13	Median Irrigation System Replacement	DM	Completed – no longer reported					
LP-WQA14	Park and Open Space Irrigation and Controllers	DM	Completed – no longer reported					
LP-WQA16	Outdoor Water Conservation Rebate Program	SD	X	X	P	I	I	WQI
LP-WQA17	Pet Waste Bag Dispenser Program	SD	X		WQI	Completed – no longer reported		
LP-WQA18	Median Sweeping Pilot Study	SD	X	X	WQI	Completed – no longer reported		
LP-WQA19	City of San Diego Strategic Plan Implementation	SD	X	X	I	I	I	I
LP-WQA20	Sediment Source Identification Study	SD	Completed – no longer reported					
LP-WQA21	ESD Phased Green Mall and Underground Vault Project	SD	X		P	P	P	WQI
LP-WQA22	Los Peñasquitos Lagoon Third Party TMDL Development	SD/POW COUNTY/DM		X	P	I	-	-
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	COUNTY	X	X	P	WQI	WQI	WQI
LP-WQA24	Stormwater Quality Master Plans For Special Drainage Fee	COUNTY	X	X	P	P	WQI	WQI

Table 4-7 Updated 5-Year Strategic Plan - Continued

Watershed Water Education Activities		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Sediment	FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
LP-WQEA2	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	SD	X		E	Completed – no longer reported		
LP-WQEA4	LID and Watershed Planning Education	COUNTY/DM	Completed – no longer reported					
LP-WQEA5	Infiltration BMP Retrofit Outreach	SD	X		P	P	P	P, WE
LP-WQEA6	Residential Water Conservation Outreach	DM	X		P	WE	P, WE	P, WE
LP-WQEA9	Our Water, Our Responsibility Pamphlet Distribution	SD	Completed – no longer reported					
LP-WQEA10	Erosion and Sediment Control Poster	SD		X	E	Completed – no longer reported		
LP-WQEA11	Los Peñasquitos Watershed Restaurant Best Management Practices Booklet	SD	X		E	Completed – no longer reported		
LP-WQEA12	Compost Sox Demonstration Project, Poway Landfill	COUNTY		X	WE	Completed – no longer reported		
LP-WQEA13	Fiesta de Los Peñasquitos	ALL	X		WE	WE	-	-
LP-WQEA14	Los Peñasquitos Watershed Brochure	SD	X	X	P	P	WE	-

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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5 Effectiveness Assessment

The Municipal Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, to assess the effectiveness of the activities conducted to meet those goals and objectives, and to identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.2.i of the Municipal Permit, and reports on the activities planned and implemented during FY 2010.

5.1 Assessment of Overall WURMP Effectiveness

Activities collaborated upon and selected by the Los Peñasquitos WURMP Copermittees address the overall goal of the WURMP by focusing on the HPWQPs within the WMA.

As set forth in the Municipal Permit and outlined in the 2008 Los Peñasquitos WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the Los Peñasquitos WURMP Copermittees in FY 2010, and where in this report required compliance points are fulfilled or described.

Table 5-1 Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Not Applicable	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the WMA.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
Describe Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not Applicable	N/A

As shown in **Table 5-1**, the Los Peñasquitos WURMP Copermittees were in compliance with all Level 1 WURMP related Municipal Permit requirements during FY 2010.

5.1.1 Activities Assessment

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated on and selected activities that would address HPWQPs not only within each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in **Appendix B** identifies specific targeted outcomes (Levels 1-6 – as described in **Table 5-2** below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 5-2 Outcome Levels: Levels 1-6

Outcome Level		Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/ exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/ measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2010, there were eight (8) activities in the active implementation phase, six (6) of which focused on water quality and two (2) focused on education. These activities addressed the HPWQPs in the Los Peñasquitos WMA, which include bacteria and sediment, and are the activities that the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. **Tables 5-3** and **5-4** below, summarize the assessments of the water quality and education activities to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the table, the WURMP Copermittees are presenting their JURMP activities that are related to the HPWQPs in each HA. It is important to note that not all JURMP activities are included in this presentation. This year's annual reporting effort is intended to be a follow-up to the initial presentation of JURMP activities conducted by WURMP Copermittees that are relatable based on hydrologic area of implementation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

5.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs with implementation plans currently in effect within the Los Peñasquitos WMA.

Table 5-3 Summary of Implemented Activities for FY 2010 – 906.1 Miramar Hydrologic Area (HPWQPs = Bacteria & Sediment)

Activity:	Type:	Priority Problems Addressed	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Construction and Industrial/Commercial Inspections	Water Quality	Bacteria & Sediment	Levels 1, 3 and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Contractors; Food Establishments; General Retail Facilities; Golf Courses and Construction Sites.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria & Sediment	Level1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria and sediment in the HA.
Coastal Cleanup Day Sponsorship	Water Quality	Bacteria	Level 1 & Level 4	The City of San Diego contributed $5,000 towards the Cleanup Sponsorship in the hydrologic area. During this event 85 participants removed 3,275 pounds of trash, debris, and recyclables for an efficiency of $1.53 per pound collected.
Los Peñasquitos Targeted Facility Inspections	Water Quality	Bacteria & Sediment	Level 1, Level 3 & Level 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Level 1 & Level 4	The City of San Diego contributed an estimated $5,000 towards the Cleanup Sponsorship in the hydrologic area. During this event 218 participants removed or recycled 2,012 pounds of trash and debris, of which approximately 103 pounds were recycled, for an efficiency of $2.82/lb.
Municipal Rain Barrel Installation and Downspout Disconnect Project	Water Quality	Bacteria & Sediment	Level 1 & Level 4	The City of San Diego assessed the capacity of rain barrels to capture rain water and prevent runoff to the MS4. Results showed that the barrels could attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4.
Pet Waste Bag Dispenser Program	Water Quality	Bacteria	Levels 1, 2 and 4	Reducing the amount of pet waste and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
Fiesta de Los Peñasquitos	Water Education	Bacteria & Sediment	Level 1 & Level 2	The event provided direct outreach regarding pollution prevention and pollutant reduction to the residents living in the local hydrologic area. Through assessments, the Copermittees established several findings based on surveys of the Fiesta participants: 72% of individuals surveyed that knew storm water is not treated, and 83% of those who took the survey were able to name a behavior that they could do to prevent storm water pollution. Furthermore, 96% of individuals surveyed reported that they would be willing to take steps to prevent pollution, specifically in regards to picking up after their pets.

Table 5-4 Summary of Implemented Activities for FY 2010 – 906.2 Poway Hydrologic Area (HPWQP = Bacteria)

Activity:	Type:	Priority Problems Addressed	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria & Sediment	Levels 1, 3 and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Food Establishments; Golf Courses and Nurseries.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria & Sediment	Level1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria and sediment in the HA.
Los Peñasquitos Targeted Facility Inspections	Water Quality	Bacteria & Sediment	Level 1, Level 3 & Level 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Level 1 & Level 4	The City of San Diego contributed an estimated $5,000 towards the Cleanup Sponsorship in the hydrologic area. During this event 218 participants removed or recycled 2,012 pounds of trash and debris, of which approximately 103 pounds were recycled, for an efficiency of $2.82/lb.
Pet Waste Bag Dispenser Program	Water Quality	Bacteria	Levels 1, 2 and 4	Reducing the amount of pet waste and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
Median Sweeping Pilot Study	Water Quality	Bacteria & Sediment	Level 1 & Level 4	This pilot study was used to determine whether sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring was conducted to allow for assessment.
Compost Sox Demonstration Project, Poway Landfill	Water Education	Sediment	Levels 1, 2 and 3	Studies were conducted to assess the effectiveness of compost and straw wattles. Both the straw wattle and compost sock BMPs showed reduced flow compared to the control plots, although not statistically significant. When statistically significant differences were found between straw wattles and compost socks compared to control plots, most constituents were elevated at the straw wattles and compost sock test plots over the control plots.
Fiesta de Los Peñasquitos	Water Education	Bacteria & Sediment	Level 1 & Level 2	The event provided direct outreach regarding pollution prevention and pollutant reduction to the residents living in the local hydrologic area. Through assessments, the Copermittees established several findings based on surveys of the Fiesta participants: 72% of individuals surveyed that knew storm water is not treated, and 83% of those who took the survey were able to name a behavior that they could do to prevent storm water pollution. Furthermore, 96% of individuals surveyed reported that they would be willing to take steps to prevent pollution, specifically in regards to picking up after their pets.

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6 Conclusions and Program Improvements

6.1 Conclusions

During FY 2010, the Los Peñasquitos WURMP Copermittees strove to address the overall goal of the WURMP—to have a positive impact on the water quality of the Los Peñasquitos WMA—by focusing on its HPWQPs. To target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 Los Peñasquitos WURMP, which strives to link identified water quality problems to their potential sources. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the HPWQPs in the Los Peñasquitos WMA are bacteria in both HAs and sediment in the Miramar HA. It should be noted that the HPWQPs have not changed from previous assessments even though this year's evaluation included the first year of expanded monitoring mandated under the new Municipal Permit.

To effectively address the Los Peñasquitos WMA's HPWQPs, the Copermittees identified and then evaluated them for likely sources at the individual HA level (please refer to **Tables 3-2** and **3-3**). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; and b) water quality and education activities appear to be targeting suspected sources of the HPWQPs and are mostly viewed as effective at reducing the impacts of the sources. Based on this analysis, the Copermittees focused their activities on the following suspected priority sources: eating and drinking establishments; animal facilities; nurseries, greenhouses and botanical or zoological gardens; landscaping-golf courses; cemeteries; and construction sites.

The Los Peñasquitos WURMP Copermittees then developed and implemented watershed water quality and education activities to address these HPWQPs and their sources. **Tables 4-1** and **4-2** summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Municipal Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, eight (8) activities were implemented, six (6) of which focused on water quality and two (2) on education. All of these activities targeted the HPWQPs in the Los Peñasquitos WMA, which include bacteria and sediment. The Los Peñasquitos WURMP Copermittees satisfied the Permit requirement by having at least two water quality activities and two education activities in active implementation during the reporting period.

In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. The Copermittees believe that it is an important first step towards integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Los Peñasquitos WURMP Copermittees have responded to meet the challenges of implementing the new requirements outlined in the Municipal Permit as they continue to

refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs across the region. Furthermore, the Los Peñasquitos WURMP Copermittees will continue to implement the activities described in Section 4 of this document in future reporting periods.

6.2 Program Improvements

The lack of water quality data directly related to sources makes true effectiveness assessment of the activities difficult. Without the data, the Copermittees are limited to qualitative assessments, which contain substantial assumptions linking the sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the Los Peñasquitos WURMP Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources, or collect data unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research, analysis of existing data and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level (i.e., evaluating the data from the larger watershed level). Analysis of the data at the HA level may provide useful information to the 2008 Los Peñasquitos WURMP.

In many cases, water quality data may be unavailable to accurately characterize loading from suspected sources. Where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 Los Peñasquitos WURMP—to determine and target the sources contributing to the HPWQPs – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve water quality within the WMA;
- Integrate watershed principles into land use planning;
- Enhance public understanding of water pollution sources; and
- Encourage and develop stakeholder participation.

References

San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Final Report, Weston, January 2011.

Los Peñasquitos Watershed Urban Runoff Management Program, Los Peñasquitos WURMP Copermittees, March 2008

Los Peñasquitos Watershed Urban Runoff Management Program Annual Report, Los Peñasquitos WURMP Copermittees, January 2009

Los Peñasquitos Watershed Urban Runoff Management Program Annual Report, Los Peñasquitos WURMP Copermittees, January 2010

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Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The WURMP Copermittees' FY 2009 (July 1st, 2008 through June 30th, 2009) JURMP Annual Reports were used to determine quantities of inventories. The WURMP Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1. Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2. Identified the Copermittees' total activity quantities for the following activities from the FY 2009 JURMP Annual Reports:
    1. Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
    2. Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3. Determined the amount of urban land use in each Copermittees' jurisdiction
4. Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City
5. Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation is as follows:

Copermittee Activity Quantity * % of land use in each HA for Activity Type = Copermittees's contribution to the HA

6. Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1
Jurisdiction A collected 800 tons of material from street sweeping in FY 2009

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2009

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1
Jurisdiction C collected 250 tons of material fro street sweeping in FY 2009

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:
800 tons of material *(250 urban land use acres/1,000 urban land use acres) = 200 tons

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:
1,000 tons of material *(1,250 urban land use acres/2,000 urban land use acres) = 625 tons

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:
250 tons of material *(500 urban land use acres/500 urban land use acres) = 250 tons

The total amount of estimated street sweepings collected in HA1 is 200+625+250=**1,075 tons**

Appendix B

Los Peñasquitos Watershed Activity Sheets

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TITLE: **COASTAL CLEANUP DAY SPONSORSHIP**
ID #: **LP-WQA1**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 19, 2009. The City of San Diego (City) sponsored the Carmel Mountain Preserve site in the Los Peñasquitos Watershed Management Area (WMA). Approximately 85 volunteers removed 3,200 pounds of trash and debris and recycled 75 pounds of trash and debris over a 6 mile area. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the Los Peñasquitos WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDCK's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the trash cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	3,200 lbs
	Pounds of trash recycled (Outcome Level 4)	75 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	3,275 lbs
	Number of participants (Outcome Level 1)	85
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$30,000
	Estimated amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1)	$5,000*
	Efficiency (Total Cost/Total Pounds Removed)	$1.53/lb

*Calculated by dividing total sponsorship cost by six watersheds.

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

ANALYSIS AND RESULTS

The event's debris removal was tracked using data cards provided by the Ocean Conservancy, a 3,275 pound load reduction was recorded by 85 participants for this WMA. The average estimated sponsorship cost was $5,000 per watershed. The event's efficiency, calculated by dividing the sponsorship cost for the Los Peñasquitos WMA by the total pounds of trash removed and recycled, was $1.53 per pound.

CONCLUSIONS

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 3,275 pounds during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2011.

Attachment: "25th Annual California Coastal Cleanup Day: FINAL REPORT—San Diego County"

25th Annual California Coastal Cleanup Day
FINAL REPORT—San Diego County

Event Overview

The 25th Annual California Coastal Cleanup Day was held on Saturday September 19th, 2009 from 9am to 12noon in San Diego County. This year's event celebrated the 25th anniversary of California Coastal Cleanup Day, and the 24th anniversary of the International Coastal Cleanup. I Love A Clean San Diego (ILACSD) and San Diego Coastkeeper (SDCK) coordinated the effort once again in San Diego County. As in past years, ILACSD coordinated all inland cleanup sites while SDCK coordinated all coastal sites. This was the sixth consecutive year that San Diego Coastkeeper was involved as co-coordinator of the event and the twenty-third year that ILACSD has been involved.

California Coastal Cleanup Day is part of International Coastal Cleanup (ICC), a global volunteer initiative organized by the Ocean Conservancy. Each year, the majority of U.S. states, and over fifty countries worldwide participate in the largest international volunteer event in support of the marine environment. ICC is unique in that all volunteers are asked to track the debris they collect by completing data cards provided by The Ocean Conservancy. These cards track the type and amount of trash and recyclables collected at each site, as well as identify certain items of local concern, including cigarette butts, fishing line, and food wrappers. These data cards are entered into a comprehensive online database managed by the Ocean Conservancy and are used to determine sources of marine debris and pollution trends, making volunteers an important part of a global marine pollution study.

This year Coastal Cleanup Day broke volunteer records once again, making this year a continuation in the tradition of increased volunteer support locally year after year. In San Diego County, 10,283 volunteers participated in Coastal Cleanup Day at 80 sites countywide. Six of these cleanup sites were hosted by Proyecto Fronterizo across the border at beaches in Tijuana. Of all cleanup sites, 38 were coastal and 42 were inland, further demonstrating the shift to inland sites as many local beaches have less of a problem with litter. These volunteers removed an impressive 174,491 pounds or 87 tons of trash, recyclables, and green waste from cleanup sites, showing an increase in the amount of trash collected when compared to 2007 and 2008 debris totals.

Community Participation

Volunteers

San Diego County volunteering reached a milestone this year, with over 10,000 individuals giving their time to Coastal Cleanup Day. This was more than a 25% increase from 2008, when there was a similar jump in numbers from the previous year. Many volunteers came with their family or were part of community service groups, including company teams, scout troops, and school groups. Coordinators hope to encourage youth participation each year to create

environmental stewards at a young age. To reward and engage these youth volunteers, scout troops can earn commemorative event patches for their service, and volunteers in grades K – 6 can enter a coloring contest for a prize and recognition on the website. This year's Coloring Contest theme asked students to create their own CCD mascot to act as a cleanup champion for clean communities, and winners from each grade were rewarded with an art kit.

In order to accommodate the increasing numbers of volunteers, 4 more sites were added and each site captain was given more supplies. This year's 80 sites reached over 150 miles of shoreline, spanning across the majority of the coastline from Oceanside to Rosarito, Baja California, and inland sites as far north as Fallbrook and as far east as El Cajon. In total, 10,283 participants removed 124,236 pounds of trash and 50,255 pounds of recycling for a total of 174,491 pounds or 87 tons of debris. San Diego County had some of the highest accomplishments of coordinating groups in the state of California, where over 78,000 volunteers removed over 1.2 million pounds of debris. San Diego ranked third after Los Angeles and Orange counties in terms of volunteer totals in California. San Diego ranked 2nd only to Los Angeles County for the most debris collected.

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Each coordinating organization enlisted the help of many student volunteers to help with this event. These volunteers were called on to help prepare each site's supplies, distribute materials to site captains, and to manage registration and food at the media site on the day of the event. Some volunteers also helped tabulate data cards after the event. In total, 187 volunteer hours were spent on such activities.

Over 7,500 volunteers registered prior to the cleanup on the San Diego Coastal Cleanup Day website, www.cleanupday.org. This website is regularly maintained by the event coordinators with updated information about site locations, special instructions, scout patches and coloring contests, and press releases/photos/news. Tracking online registration is an important part of distributing volunteer groups to sites with fewer volunteers, as coordinators are able to set a reasonable cap on registration for some of the more popular sites. While it is recognized that a number of registrants will not actually attend, a similar number will attend without registering. Urging volunteers to register is an important part of managing such a large simultaneous event, and accessing that information through the website helps to prepare site captains for the expected number of attendees. Red text is used in the weeks leading up to the event to further encourage participation at sites in need of volunteers. Coordinators recommend adding differentiation for full sites as well so they stand out against sites that are open. There are opportunities to better match the actual capacity of certain sites with the cap set on registration at the website and the quantity of supplies provided. Coordinators hope to further streamline this process next year.

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Site Captains

ILACSD and SDCK are greatly appreciative that many site captains were experienced returning veterans for their site. However, it is inevitable that some captains cannot continue the level of commitment necessary to make the event a success, and some sites required recruiting new eager site captains. Site captains are often associated with a community group or local government agency, or an organization dedicated to supporting the environment. Since many captains work with co-captains, there were well over 100 site captains and co-captains for 80 sites at Coastal Cleanup Day 2009.

Site captains are strongly encouraged to attend one of two training meetings one month before the event to distribute their cleanup supplies and for updates on any news or changes. As an incentive to attend, captains are treated to dinner and entertainment (in the form of a brief educational PowerPoint presentation on marine debris and the history of Coastal Cleanup Day). The meetings were held from 6:00-7:30 pm on Tuesday August 11th at the Oceanside Library Civic Center Community Room and on Monday August 17th at the Naval Training Center Command Center in Point Loma. Statewide coordinators from the Coastal Commission were able to attend and introduce themselves at both meetings; Shannon Waters attended the North County meeting and Eben Schwartz attended the Point Loma meeting. Both meetings had impressive attendance, although due to conflicts some site captains were required to pick up their supplies from the ILACSD or SDCK offices and receive a brief tutorial.

Site captains are responsible for reporting their total volunteer count and trash weight, along with any hazardous waste for pick up, to the coordinators by 12:30 pm on the day of the cleanup. While some follow up calls were necessary, over 85% of totals were recorded before the distribution of the final press release. There are always captains who fail to complete data cards, or do not tally their sites data cards on the site captain summary card, leading to some extra follow up by coordinators after the event.

Marketing & Media

Coordinators decided to hire a professional marketing, advertising and public relations agency, Oster & Associates to help with media buys, press releases and overall event branding this year. Focus was placed on the 25th anniversary component, as well as the bi-national aspect of San Diego's Coastal Cleanup Day to garner more media attention. Coordinators created and disseminated two pre-event press releases, one media advisory, and one post-event release. Outreach was also done by printing 1,000 posters and 5,000 flyers recognizing event sponsors and directing potential volunteers to the local CCD website, www.cleanupday.org. The posters were once again printed with both English and Spanish text on one poster, and the two different versions of the flyers were available, one in English and one in Spanish. These documents were also sent out electronically to all site captains to further disseminate to all email contacts.

Belmont Park in Mission Beach was chosen as the location for this year's media site. This site was chosen for a variety of reasons, including its central location, local landmark status, substantial parking in multiple lots, ability for volunteers to spread out in a large cleanup area, and a new partnership with Belmont Park through Wavehouse and the San Diego Coaster Company. In order to manage the expected 500 + volunteer turnout, ILACSD coordinated a variety of service projects at this site including storm drain stenciling and stenciling beach rules on the boardwalk and seawall.

ILACSD & SDCK updated the "how you heard about the event" field in the online registration form to reflect current media partners as well as other outreach means including schools, sponsors, word of mouth, internet, etc. This field was made mandatory as part of the registration process. A complete breakdown of how registered volunteers heard about the event is shown in the table below. The

feedback shows that online and social marketing and media is an excellent method of reaching a wide audience. Coordinators anticipate a heavier emphasis in online marketing next year, as well as targeting media that will more effectively reach members of the Hispanic community, which makes up 30% of the population of San Diego County.

SOURCE	NUMBER	% of TOTAL
SDCK Website	337	20.46%
Friend	196	11.90%
School	169	10.26%
ILACSD Website	142	8.62%
Internet	99	6.01%
10 News	96	5.83%
Local Newspaper	82	4.98%
Flyer	40	2.43%
Sponsor	34	2.06%
Work	29	1.76%
Radio Latina	25	1.52%
Poster	20	1.21%
Star 94.1	19	1.15%
Previous Participation	19	1.15%
Contigo Univision	10	0.61%
Facebook	10	0.61%
Other	320	19.43%
TOTAL	**1647**	**100.00%**

With the help of Oster & Associates, coordinators were able to get proposals from a variety of television and radio stations in order to find the best partnership at a competitive price. Coordinators received proposals from the following stations: Star 94.1, KPRI 102.1, Sophie 103.7, 10News, Fox5, Azteca America, Univision TV, Radio Latina 104.5 and La Nueva 106.5.

Television

Coordinators worked with media partners ABC 10News and Univision TV to conduct cross-platform outreach in both the English and Spanish language. This marked the 4th year that ABC 10News has acted as the English language television partner providing hundreds of spots as well as web presence and an emcee for the media site. The station produced pre-event public service announcements of the following lengths: :04 seconds, :05 seconds, :10 seconds, :15 seconds, and :30 seconds. Tracking was provided showing the air date, length, and timeslot for each airing. ABC 10News also produced a post-event PSA in lengths of :04 seconds, :15 seconds, and :30 seconds. Online hits were also tracked, with a .03% click and read rate from their web banners. Out of over 3 million impressions, 891 impressions were clicked and read. While ABC 10News did air an impressive number of spots, their new shift away from community news and toward "hard news" has encouraged coordinators to reach out to other stations for the 2010 event.

This year coordinators chose to reach out to other Spanish language television stations as media partners, since previous years Spanish language media outreach was fairly unsuccessful with the current measuring system. Univision TV Channel 17 was chosen as the Spanish language television partner due to the popularity of their nationally syndicated "novellas" as well as their local morning and evening news programs. Univision offered a Coastal Cleanup Day representative the opportunities to be interviewed for their morning show, *Despierta San Diego*, of which ILACSD staff member Gilberto Alfaro attended. Univision aired a total of 62 spots while their sister station Telemundo also aired 60 spots.

Radio

Again, coordinators received proposals from a variety of stations in order to truly select the best partnership to promote the event. Past CCD media sponsors KPRI 102.1FM and Sophie 103.7FM submitted proposals, as did Star 94.1FM, a station that has never promoted Coastal Cleanup Day. While their advertising rates were a bit more expensive, their audience was larger than any other station and the opportunity to advertise during the hugely popular Jeff & Jer Morning Show encouraged coordinators to choose Star 94.1FM. However, the morning show which had been on air for over 20 years was cut right before the advertising campaign began, marking a very sudden and potentially negative change in programming. Star 94.1FM aired 54 spots, 14 of which were 30 seconds and 40 of

which were 15 seconds in length. They also provided an appearance by popular morning and afternoon show personality, Delana at the media site, which added to the event. Clear Channel, the owner of this station also put together a 30 minute pre-recorded interview featuring SDCK & ILACSD Executive Directors Bruce Reznik and Pauline Martinson, which aired across all of their stations in San Diego multiple times. Radio Latina aired a total of 51 spots varying in length from 10 seconds, 30 seconds, and 60 seconds. Radio Latina also adopted two sites, one in Tijuana and one in Imperial Beach, encouraging listeners to attend one of these two sites depending on which side of the border they live on. Their two morning show personalities, Jesse and Nelly, attended one of the two sites, and used live call-ins during the event to compete for who could get the most volunteers at their respective site. As a result, both sites boomed with volunteers as well as fun festivities during and after the cleanup.

Print

Several local papers and magazines covered Coastal Cleanup Day in San Diego County, both before the event and after its completion. These include *The Union Tribune (5X), The Carlsbad Sun, The Peninsula Beacon, Beach and Bay Press (2X), Carmel Valley Leader (3X), Coronado Eagle and Journal (4X), Del Mar Times (5X), East County Magazine, Eagle and Times (3X), El Mexicano (2X), La Jolla Light, Lavender Lens, La Jolla Village News, North County Times (3X), Pacific San Diego Magazine, Rancho Santa Fe Record (3X), Rancho Santa Fe Review (2X), Presidio Sentinel (2X), San Diego News Network, Del Mar Village Voice, Fallbrook Bonsall Village News*, and *Mission Times Courier (2X)*.

Online

Most online marketing directed potential participants to visit the www.cleanupday.org website for more information and to register for a site near them. ILACSD and SDCK highlighted Coastal Cleanup Day as a major volunteer opportunity on both of their websites and through regular email alerts. The www.cleanupday.org website also allows for an email blast to be sent to all previously registered participants, and coordinators sent this reminder when online registration opened on August 1st. As mentioned, ABC10News, Univision, and Star 94.1 posted information and links on their websites. A link was made available on the Belmont Park Roller Coaster Website advertising that viewers could get a free ride on the rollercoaster just for volunteering, and led participants to the registration website. Many site captains' organizations internally advertised the event through email blasts or by posting a link on their website. An email was also sent to San Diego Unified School District Teachers advertising the event, and save the date flyers were distributed to Girl Scout Troop leaders at a meeting early in the summer. Finally, a Facebook event page was created for the San Diego County Cleanup where Facebook members could find more information, RSVP, post photos, ask questions, or make comments about the event.

New in 2009

Online Post-Event Survey

A few changes were introduced at this year's Coastal Cleanup Day Conference with the California Coastal Commission. Surveys were introduced in 2008 in a select few counties that could coordinate it last minute, including San Diego. ILACSD and SDCK chose a few sites to test the surveys based off of the experience level of the site captains. This year, the CCC encouraged all county coordinators to use surveys, and San Diego planned to implement them countywide. However, the CCC was delayed in sending out the surveys, so they were not included in each site captain box. ILACSD and SDCK did not receive surveys until the week leading up to the event, leaving little time to distribute and explain to

captains with such short notice. To remedy this, ILACSD printed surveys to distribute to attendees at the media site, and planned to send out surveys digitally to volunteers in the post-event thank you email. This additionally saves on paper and resources for a more sustainable event.

Online Data Collection System

The Ocean Conservancy presented a new online data collection system at this year's conference. Rather than sending in each data card and summary card as in years past, coordinators will log into an online database to report data from each summary card. The Ocean Conservancy created the initial county profile with a list of cleanup sites that coordinators can log into and edit each year. Summary cards are entered online, giving coordinators immediate access to data and trends calculated countywide.

Crystal Geyser Water Partnership

A partnership with Crystal Geyser was established in 2008 to provide water donations for many counties at a statewide level. The Coastal Commission made an error with order deadlines, and water deliveries could not be secured in time for the first site captain meeting in North County. ILACSD worked with the local Crystal Geyser contact, Bob Flavin, as well as the statewide contact, Jackie Suzuki, to work out a solution. Water coupons were mailed for distribution to all of the North County site captains that attended the first site captain meeting in Oceanside. Recommended stores for redemption included Stater Brothers, Vons, Albertsons, and Wal-Mart. Coordinators did not receive any complaints regarding the coupons from site captains. The CRV added cost may be an issue pending further review.

Site Captain Appreciation Event

Additions were made at a local level to the San Diego County event. Coordinators secured Belmont Park and the San Diego Coaster Company as sponsors of this year's event, who provided each volunteer with a roller coaster ride pass. This sponsorship also provided the venue, food, and service staff for the first ever Site Captain Appreciation Night. Wavehouse, a part of Belmont Park in Mission Beach, hosted the event. Site captains were encouraged to return their supplies while also enjoying food provided by Wavehouse, beer provided by CCD sponsor Alaskan Brewery, and other refreshments from Wavehouse. Photos submitted for the photo contest were shown on a slideshow during the event, and winners were announced for categories that included Volunteers in Action, Group Photo, Kids, and the best Before and After shot. The photo contest was another new addition, and was a successful way to encou captains to submit photos to coordinators. ILACSD and SDCK facilitated conversation amongst site captains through an ice breaker bingo game, and did a short presentation of site captain stand out awards. Awards included best rookie captain, most trash removed, most trash removed per volunteer, and best all around captain, each for coastal and inland sites. A "Golden Grabber" award was presented to Jane Donely for her 20th Anniversary as a site captain with Coastal Cleanup Day.

This event was not only a fun and relaxing way to get to know site captains better, but also proved to be a great way to get supplies back in a timely fashion. Some site captains who were not able to stay for the event still came simply to drop off their supplies, as the "after-hours" timing seems to work better for many people's schedules. This event, held four days after Coastal Cleanup Day provided site captains the opportunity to share their site results and experiences. Spreadsheets with totals from all sites were printed out and placed at each table to help facilitate conversation. Site leaders were also able to bring their children to the event, as the venue had games for both kids and adults to engage in.

Sempra Volunteer Service Projects

The Sempra Energy Foundation partnered with ILACSD for the second year to organize five Coastal Cleanup Day sites chosen for Sempra employees. To keep an expected 200 volunteers occupied and engaged at each site, ILACSD coordinated service projects to compliment the debris removal at one cleanup site in each of the five zones. Sempra asked for sites near their main offices and recommended targeted communities to hit, including National City and Carlsbad. Sempra volunteers could choose from the cleanup option or the side projects at each of their cleanup sites. Below is a list of the service projects coordinated for Sempra volunteers in San Diego County:

Zone 1: North County Coastal
Carlsbad State Beach campgrounds: Campground renovations and amphitheater mural

Zone 2: North County Inland
Dixon Lake: Kayak cleanup, trail maintenance, and bridge installation

Zone 3: Central San Diego
Belmont Park Media Site: Storm Drain Stenciling and stenciling beach rules on the seawall

Zone 4: East County
El Cajon Rose House: Landscaping and facelift for foster care center

Zone 5: South Bay
Paradise Creek Educational Park: Upland creekbed restoration, native planting

When coordinating service projects, a few characteristics were used to qualify sites. Veteran captains that have a history of efficiency were selected because of their ability to handle the added responsibility successfully. Sites also needed to have enough trash and need for additional work, and enough space for the added large group of volunteers. Projects were selected that were varied from the rest, to occupy an assortment of age ranges and physical abilities to satisfy Sempra's diverse volunteer base. The Paradise Creek site was promoted as the family friendly site, and the Dixon Lake was marketed towards sturdier volunteers ready to work hard.

Team Sempra hand selected leaders from their employee base to ensure that volunteers were qualified as a point of contact for the project. Last year, they asked for employee volunteers and had some problems with scheduling and training before the event. By selecting candidates that they felt would be up to the challenge, each team leaders was very helpful and easy to work with. Site visits were scheduled in the weeks leading up to the event. These meetings were very beneficial and crucial to the event's success. Each site captain got a specific idea of the layout and plan for the event. to meet the Sempra team leader and discuss supplies, logistics, and give the Sempra employee

To coordinate supplies, each site captain utilized their knowledge and expertise at each of their sites to establish a supply list of needs for their projects. ILACSD approved the budget and allowed captains to purchase supplies. Receipts were required from each captain for reimbursements. Team Sempra provided pizza from Oggi's for all volunteers at each of the five sites. Some site captains arranged for extra snacks or drinks to compliment the lunch. In addition to pizza arrangements, ILACSD coordinated with Sempra to reserve parking spots for Sempra executives that were assigned to each site.

One Sempra volunteer advised that coordinators provide masks for any project that used paint. This should be taken into consideration for next year's event. All other feedback provided by Sempra volunteers and event coordinators was extremely positive. ILACSD plans to meet with Sempra to discuss an overview of the event, including pros and cons before beginning to plan for the 2010 event.

For more information regarding Coastal Cleanup Day, please contact either of the co-coordinators:

San Diego Coastkeeper:

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Alicia@sdcoastkeeper.org
619-758-7743 ext 125

I Love A Clean San Diego:

Morgan Justice-Black
mjusticeblack@cleansd.org
619-291-0103 ext. 3003

Natalie Roberts
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619-291-0103 ext. 3014

Sempra Coastal Cleanup Day 2009

Carlsbad State Beach campgrounds

Rose House, El Cajon

Belmont Park, Mission Beach

Paradise Creek, National City

25th Annual Coastal Cleanup Day Site Totals

NORTH COASTAL	Miles Cleaned	Number of Volunteers	Pounds Trash	Pounds Recycling	Total Weight
Beacon's Beach, Encinitas	6	150	165	5	170
Buccaneer Beach, Oceanside	1	154	473	54	527
Carlsbad State Beach (Campgrounds)	1	123	112.5	56.5	169
Fletcher Cove, Solana Beach	1	186	100	64	164
Frazee Beach, Carlsbad	3	172	171	55	226
Oceanside City Beach	2	410	880	0	880
Powerhouse Park, Del Mar	3	155	281	41	322
San Elijo State Beach (Campgrounds)	1	154	67	53	120
San Elijo Lagoon (Trailhead at Rios)	2	94	137	52	189
Seaside Beach, Cardiff	1.5	115	85	15	100
South Carlsbad State Beach (Ponto Beach)	2	289	330	10	340
Swami's Beach, Encinitas	2	182	171	71.5	242.5
Tamarack State Beach & Aqua Hediona Lagoon, Carlsbad	4	108	184	58	242
Torrey Pines and Penasquitos Lagoon	1	148	100	27	127
NORTH INLAND	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Buena Creek, Vista	1	118	1153	220	1373
Buena Vista Creek (3 sites)	1	183	2500	0	2500
Carmel Mountain Preserve	6	85	3,200	75	3,275
De Luz, Daily Rd and Santa Margarita Truck Trail	12	32	34,680	3,320	38,000
Dixon Lake, Escondido	2	327	280	426	706
Fallbrook	15	100	4140	31460	35600
Lake Hodges	3	80	462	75	537
San Elijo Lagoon, Cardiff-by-the-Sea	2	137	400	0	400
CENTRAL SAN DIEGO	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Belmont Park MEDIA SITE	3	759	1,361	62.5	1,423
Bonita Cove, Mission Bay (Kayak Cleanup)	5	16	30	1	31
Chollas Creek, 33rd and National	3	40	5280	10	5290
Chollas Creek, 54th Street	1	25	1,060	30	1,090
Chollas Lake Park, Oak Park	1	59	128	5	133
Chollas Radio Canyon	1	80	200	50	250
Cooper Canyon	1	29	2500	40	2540
Embarcadero Docks (Underwater Cleanup)	1	141	512	59	571
Florida Canyon	2	86	854	91	945
G Street Pier to Broadway Pier	2	45	200	30	230

25th Annual Coastal Cleanup Day Site Totals

CENTRAL SAN DIEGO (cont.)	Miles Cleaned	# Vols	Pounds Trash	Pounds Recycling	Total Weight
Guymon Arms Open Space	1	30	600	50	650
La Jolla Shores	3	278	215	20	235
Lakehurst Canyon	1	43	1400	20	1420
Manzanita Canyon	1	32	0	0	0
Mission Bay - Santa Clara Point	2.5	110	105	25	130
Normal Heights Canyon	0.5	27	346	370	716
North Park (29th and University)	2	26	3280	0	3280
North Swan Canyon	0.5	114	8980	6820	15800
Ocean Beach, Dog Beach	3	207	211	16	227
Ocean Beach Pier	2	351	243	34.5	277.5
Pacific Beach Drive	0.5	92	99	26	125
Rose Creek	3	94	1460	100	1,560
San Diego River, Mission Valley Preserve	1	70	4280	0	4280
Shawn Canyon	0.25	23	1700	110	1810
Sorrento Creek	3	45	465	91	556
South Swan Canyon, City Heights	0.75	16	1,470	20	1,490
Stevenson Canyon	1	11	0	2880	2,880
Tourmaline Beach	1	213	56	1	57
Zena Canyon	2	15	4660	60	4720
47th Street Canyon, City Heights	1.5	35	3,620	6	3,626
EAST COUNTY	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Alvarado Channel, La Mesa	0.25	10	17.5	3	20.5
El Cajon	3	93	161	101	262
Lake Murray	8	253	229	100	329
Lemon Grove	1.5	24	620	250	870
Rancho Mission Canyon	0.1	10	340	100	440
Santee San Diego River	2	164	3000	250	3250
University Channel, La Mesa	0.4	15	539	10	549
SOUTH BAY	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Borderfield State Park	1	82	668	0	668
Chula Vista Wildlife Reserve off of the Power Plant	1	92	2138	0	2138
Coronado City Beach	2	175	465	184	649
Eastern Otay Valley Regional Park	2.5	112	3000	300	3300
Imperial Beach Pier	3	475	485	0	485
Las Playas, Tijuana	6	1350	8016	0	8016

25th Annual Coastal Cleanup Day Site Totals

SOUTH BAY (cont.)	Miles Cleaned	# Vols	Pounds Trash	Pounds Recycling	Total Weight
Montgomery High School Natives Plant Garden	0.5	8	20	5	25
Paradise Creek Education Park	1	120	100	700	800
Silver Strand State Beach, Coronado	3	205	340	100	440
South Bay Wildlife Refuge	1	15	60	66	126
Sweetwater Regional Park, Western Staging Area	3.7	104	2020	420	2440
Sweetwater River	2	90	2240	20	2,260
Tijuana River Valley	1	92	3680	400	4080
Tijuana Slough , North Beach	1	100	386	55	441
Western Otay Valley Regional Park	1.5	80	326	25	351
TOTALS:	**168.5**	**10,283**	**124,236**	**50,255**	**174,491**

25th Annual Coastal Cleanup Day Site Captains

NORTH COASTAL	Site Captain	Site Captain Affiliation
Beacon's Beach, Encinitas	Bob & Jan Rogers & Family	Heaviland Enterprise, Inc
Buccaneer Beach, Oceanside	Carla Miller	Harrah's Rincon Casino
Carlsbad State Beach (Camp)	Laura Ohman	California State Parks
Fletcher Cove, Solana Beach	Craig Miller	City of Solana Beach
Frazee Beach, Carlsbad	Bill Dodson	Individual
Oceanside City Beach	Cynthia Mallet	City of Oceanside Clean Water Program
Powerhouse Park, Del Mar	Ed Yuskiewicz/ Andrea Eaton	Keep Del Mar Clean/ Women's Environmental Council
San Elijo State Beach (Campgrounds)	Rebecca Bergren, Megan Malaska	SeaLife Aquarium, LegoLand
San Elijo Lagoon (Trailhead, Rios)	Danny King	City of Solana Beach
Seaside Beach, Cardiff	Lisa Hellstrom	Junior Girl Scouts Troop 1259
South Carlsbad State Beach (Ponto Beach)	Dave Boerlin	Kids Korps, Cub Scout Pack 740
Swami's Beach, Encinitas	Carlie Peck/ Kristy Rygiel	Solana Center for Environmental Innovation/City of Encinitas
Tamarack State Beach & Aqua Hediona Lagoon, Carlsbad	Sheree Hildebrandt	City of Carlsbad Environmental Program
Torrey Pines and Penasquitos Lagoon	Alyson Wright	REI
NORTH INLAND	**Site Captain**	**Site Captain Affiliation**
Buena Creek, Vista	Ligeia Heagy	City of Vista, Engineering Dept.
Buena Vista Creek (3 sites)	Cynthia Mallett	City of Oceanside Clean Water
Carmel Mountain Preserve	Sr. Ranger Gina Washington	City of San Diego, Open Space Div.
De Luz, Daily Rd & Santa Margarita Truck Trail	Ali Nusbaum	De Luz Cleanup Committee
Dixon Lake, Escondido	Kathy Winn, Heather Thomas	City of Escondido Recycling Prog.
Fallbrook	Judy Mitchell	Keep Fallbrook Clean & Green
Lake Hodges	County co-coordinators	I Love A Clean SD/SD Coastkeeper
San Elijo Lagoon, Cardiff	Geoffrey Smith	San Elijo Lagoon Conservancy
CENTRAL SAN DIEGO	**Site Captain**	**Site Captain Affiliation**
Belmont Park MEDIA SITE	County Co-coordinators	I Love A Clean SD/SD Coastkeeper
Bonita Cove, Mission Bay (Kayak)	Dave Teafatiller	HikeBikeKayak
Chollas Creek, 33rd and National	Eric Bowlby, Javier Hernandez	San Diego Canyonlands
Chollas Creek, 54th Street	Bill Babcock	Friends of Chollas Creek
Chollas Lake Park, Oak Park	Brigitte Taylor, Sirena Ung	Girls Alliance

25th Annual Coastal Cleanup Day Site Captains

CENTRAL SAN DIEGO (cont.)	Site Captain	Site Captain Affiliation
Chollas Radio Canyon	Liz Faddis	Groundwork SD, Chollas Creek
Cooper Canyon	Laurie Carlock, Jody Carey	Individuals
Embarcadero Docks (Underwater Cleanup)	Cheryl Barnes	San Diego Oceans Foundation
Florida Canyon	Shawn Veen	Florida Canyon
G Street Pier to Broadway Pier	LT Sonja Hedrick	US Coast Guard, Sector San Diego
Guymon Arms Open Space	Ranger Jason Allen	City of San Diego Parks & Rec
La Jolla Shores	Alicia Bravo	Kashi
Lakehurst Canyon	David Prakken, Hal Bosworth	Individuals
Manzanita Canyon	Linda Pennington, Tom Lashbrook	Project CLEAN
Mission Bay - Santa Clara Point	Maruta Gardener	Mission Beach Women's Club
Normal Heights Canyon	Kevin Johnston	Friends of Normal Heights Canyon
North Park (29th and University)	Omar Passons	North Park Community Assn
North Swan Canyon	Valentina Hernandez, Andrea Zinko	North Swan Canyon Neighborhood Association
Ocean Beach, Dog Beach	Jane Donley, Mindy Pellissier	Friends of Dog Beach
Ocean Beach Pier	Sarah Adams, Bill Hickman	Surfrider Foundation, SD Chapter
Pacific Beach Drive	Larissa Johnson/ Eliza Rooks	SD Tufts Alliance/Kiehl's
Rose Creek	Karin Zirk, & Evette Callahan	Friends of Rose Creek
San Diego River, Mission Valley Preserve	Shannon Quigley	San Diego River Park Foundation
Shawn Canyon	Linda Thompson, Carleen Blandin	San Diego Canyonlands
Sorrento Creek	Olen Yoder/Vickie Garner	Friends of Sorrento Creek/Genzyme
South Swan Canyon, City Heights	Brian Moehl, Steve Kaiser	San Diego Canyonlands
Stevenson Canyon	Masada Disenhouse, Dennis Sabella	Individuals
Tourmaline Beach	Mary & Amber Sanborn	Sierra Club
Zena Canyon	Debbie Blake, Audrey Ledesma	Individuals
47th Street Canyon, City Heights	John Hanley	Individual
EAST COUNTY	**Site Captain**	**Site Captain Affiliation**
Alvarado Channel, La Mesa	Joe Kuhn	City of La Mesa
El Cajon	Aaron Unseth, Marilyn Heatherington	First Lutheran Church
Lake Murray	Barbara Cleves	Friends of Lake Murray
Lemon Grove	Cora Long	City of Lemon Grove
Rancho Mission Canyon	Fred Kramer	Friends of Rancho Mission Canyon

25th Annual Coastal Cleanup Day Site Captains

EAST COUNTY (cont.)	Site Captain	Site Captain Affiliation
Santee San Diego River	Richard Dhu	San Diego River Park Foundation
University Channel, La Mesa	Scott Munzenmaier	City of La Mesa
SOUTH BAY	**Site Captain**	**Site Captain Affiliation**
Borderfield State Park	Danielle Litke	TJ River National Estuarine Research Reserve
Chula Vista Wildlife Reserve (Power Plant)	Phil Gibbons	Unified Port of San Diego
Coronado City Beach	Cecilia Lyon	City of Coronado
East Otay Valley Regional Park	Rangers Bill Lipowcan & Robert Major	County of San Diego, Parks & Recreation Dept.
Imperial Beach Pier	Shanti Santulli	US Army Corps of Engineers
Las Playas, Tijuana	Margarita Diaz	Proyecto Fronterizo de Educacion Ambiental
Montgomery High Natives Plant Garden	Theresa Acerro	Montgomery High School
Paradise Creek Education Park	Ted Godshalk	Paradise Creek Education Park
Silver Strand State Beach, Coronado	Barbara Denny	Coronado City Council
South Bay Wildlife Refuge	Debbie Good	California State Parks
Sweetwater Regional Park, W. Staging Area	Jeff Westra	SD County Dept of Parks & Rec
Sweetwater River	Shauna McKellar	DMAX Engineering
Tijuana River Valley	Jay Novak	Tijuana River Concerned Citizens
Tijuana Slough , North Beach	Ann Marie Tipton	TJ River National Estuarine Research Reserve
West Otay Valley Regional Park	Katie Westfall, John Barone	WiLDCOAST

Photos by Matthew Meier

2009 San Diego County Media Site

ILACSD and SDCK pose with event sponsors and Proclaimations from local government.

Coastal and Inland CCD coordinators

SDCK and ILACSD accept Proclamation from County Board Supervisor Greg Cox.

Volunteers check in at registration and get their cleanup supplies.

Belmont Park, Mission Beach

Volunteers contributed to an international study on marine debris through data cards tallying each item they found at CCD.

CCD brings volunteers of all ages together to make a difference.

Additional projects were completed by volunteers to keep the beach safe and clean.

Photos from Coastal Sites

Volunteers celebrated after cleaning near the Chula Vista Wildlife Reserve

ABOVE: Santa Clara Point site captain Maruta Gardener (Mission Bay Women's Club) assists USD students with their trash. RIGHT: A happy family cleaning the Mission Beach boardwalk.

Site captains from Kashi (a CCD sponsor) raffled off prizes to relaxing volunteers after the La Jolla Shores cleanup.

BELOW (L , Center, & R): Volunteers assist the San Diego Oceans Foundation with multiple underwater cleanups on land and in the water of San Diego Bay.

California Coastal Cleanup Day
San Diego County Sponsors 2009

Presented by:

San Diego County Supervisors
Greg Cox & Pam Slater-Price

Think Blue-City of San Diego
Storm Water Department

With additional support from:

Major in-kind donors:

Media Sponsors:

Statewide Sponsors:

Thank you for helping make San Diego's beaches, bays and inland waterways clean, safe and healthy

Most common items found: Cigarette butts, bottle caps, food wrappers

El Cajon

Beacon's Beach, Encinitas

25% more volunteers in 2009 than 2008, and a 8% increase in debris removed

10,283 Volunteers

174,491 pounds of debris removed

80 coastal and inland cleanup sites

169 miles covered

Buena Creek, Vista

Sweetwater River, National City

Before ...

Coastal Cleanup Day 2009

... After

42 Inland Sites and 38 Coastal Sites

3,137 inland volunteers removed 154,403 lbs. of debris
= 50 lbs per volunteer

7,146 coastal volunteers removed 20,058 lbs. of debris
= 2.8 lbs per volunteer

Most unusual items found: ATM machine, fake nose, comb with hairpiece, fencing sword

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TITLE: **LOS PEÑASQUITOS TARGETED INSPECTIONS**
ID #: **LP-WQA5**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What activities and locations at businesses should be targeted during the inspection based on severity of observed/report issues?
2) Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?
3) Based on information collected during inspections, can the inventory of specific source types be feasibly prioritized based on site specific characteristics?

The City delineated a specific area within the Los Peñasquitos WMA. Inspections were conducted within this geographic area, both inspecting properties as a whole, and evaluating and inspecting individual businesses regardless of whether they were included in the City's commercial/industrial inventory. A mixture of individual businesses and multi-suite complexes, such as industrial parks and shopping centers, were located in this selected geographic area. Two types of data collection were performed at the overall property level: geographic property evaluations and property inspections. Two types of additional data collection at the individual business level on these properties were also conducted: pre-contact and post-contact inspections. Details of these evaluations and inspections are included below:

Property level data collection:

- Geographic property evaluations, referred to as "geographic evaluations" for short, recorded detailed information about landscaping, trash/disposal areas, and storm drains within a given property. The purpose of the property evaluations was to characterize the area and collect data additional data beyond the scope of a typical inspection to be used for assessment purposes. For example, a typical inspection answers the question of whether trash areas at a site are clean enough to meet the City's BMP requirements. During property evaluations, more detailed information was recorded: the number of trash areas at a property and the type(s) and quantities of trash observed in them (outside the dumpsters) were recorded.
- Property inspections were performed at shopping centers and industrial parks. Property inspections gathered information about shared areas such as landscaping, trash/dumpster areas, parking lots, outdoor material storage, and high threat to water quality activities. Typically, these areas are the responsibility of the property owner or property management company. These inspections were based solely on information gathered through observations and focused mainly on compliance evaluation.

Individual business level data collection:

- Pre-contact business inspections were performed based on the inspectors' observations only and before speaking with facility representatives. These inspections were performed at all types of businesses on the City's industrial and commercial inventory. Pre-contact business inspections were not conducted at facilities for which site access required contact with site personnel or for facilities that appeared likely not to be inventoried.

- Post-contact business compliance inspections were conducted at businesses that inspectors determined were or would likely need to be included on the City's industrial and commercial inventory based on pre-contact inspection results and were completed after the pre-contact inspections. The post-contact business inspection involved the same steps as a standard industrial and commercial inspection under the City's JURMP industrial and commercial inspection program. A post-inspection was only conducted if a pre-contact inspection was completed. Educational material was distributed, as applicable, during post-contact inspections.

In FY 2010, 40 geographic evaluations, 29 property inspections, 133 pre-contact business inspections and 100 post-contact industrial/commercial inspections, were conducted in the two areas selected in the Los Peñasquitos WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2009 and FY2010. Assessment and reporting on this activity were completed in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. The goal of the evaluations and inspections conducted during this program was to gain information on activities occurring in the selected areas and determine the extent to which these areas are sources of bacteria and sediment based on inspector observations. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria and sediment at a variety of business types.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Facility Inspections		
Management Questions	• What activities and locations at businesses should be targeted during the inspection based on the severity of observed/reported issues? • Can the City increase its commercial/industrial program efficiency by using a tiered inspection process (variable inspection forms & procedures) based on site specific characteristics of the businesses? • Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the Los Peñasquitos Watershed	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	**Geographic Evaluations**	
	Number of geographic evaluations (Outcome Level 1)	40
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	70%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	59%
	Percent of storm drains with observed trash, debris, and/or sediment (Outcome Level 1)	92%
	Property Inspections	
	Number of property inspections (Outcome Level 1)	29
	Percent of facilities recommended for follow-up inspection (Outcome Level 1)	14%
	Percent of sites needing corrective action (Outcome Level 1)	93%
	Percent of properties identified of sources of sediment (Outcome Level 1)	0%
	Percent of properties identified of sources of bacteria (Outcome Level 1)	3%
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Pre-Contact Business Inspections	
	Number of full inspections (Outcome Level 1)	133
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	23
	Number of sites needing corrective action (Outcome Level 1)	133
	Number of sites identified of sources of sediment (Outcome Level 1)	0
	Number of sites identified of sources of bacteria (Outcome Level 1)	5
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Post-Contact Business Inspections	
	Number of full inspections (Outcome Level 1)	100
	Number of facilities recommended for follow-up inspection (Outcome	28

Watershed: Los Peñasquitos		
TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Facility Inspections		
	Level 1)	
	Number of sites needing corrective action (Outcome Level 1)	99
	Number of sites identified of sources of sediment (Outcome Level 1)	1
	Number of sites identified of sources of bacteria (Outcome Level 1)	3
	Number of Sites that Implemented Some Corrective Action During Inspection (i.e. BMPs implemented) (Outcome Level 3)	3
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level 4)	3
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	1

OBJECTIVES

The goal of this assessment is to determine if evaluating facilities based on observation only is an effective and efficient method for identifying and eliminating storm water pollution sources generated on industrial/commercial sites. Furthermore, this program aimed to identify potential sources of constituents of concern in the Los Peñasquitos watershed by assessing industrial and commercial areas, businesses, and activities in the selected geographic areas.

ANALYSIS AND RESULTS

A total of 70% of properties evaluated during geographic evaluations were observed to have some evidence of over-irrigation. Additionally, 92% of storm drains were observed to have some level of accumulated trash, litter, and/or sediment. Lastly, 59% of trash areas were observed to have accumulated trash, debris, and/or sediment.

A total of 93% of the properties that received property inspections had at least one corrective action. Most of these relatively minor corrections, but 14% of the properties that received property inspections had corrective actions significant enough to require further follow-up. Based on the inspections performed and the recorded time for each inspection, it appears that a property inspection is an effective and efficient method for identifying major outdoor activities and storage that contribute to storm water pollutant runoff. Overall property inspections do not provide much ability to assess BMPs for activities outside accessible common areas, but at shopping centers and industrial parks, it is very rare for activities with potential to influence storm water quality to occur outside areas that can be accessed without first contacting a business representative. Occasionally, it was difficult for the inspectors to clearly delineate a property. Different parcels located close to one another can appear to be part of the same property complex, but may actually have different parcel owners.

As previously mentioned, business inspections were conducted in two parts, the pre-contact inspection and the post-contact inspection. Pre-contact inspections are faster and were effective at identifying outdoor BMP implementation deficiencies at properties, such as shopping centers and industrial parks with accessible areas. Pre-contact inspections were not as effective at identifying BMP deficiencies at sites that are more difficult to access or where potentially pollutant-generating activities are conducted in areas closed off to the general public, such as auto repair shops. It should be noted that during pre-contact inspections BMP implementation problems could be identified, but it was often not possible to identify the responsible party without talking to personnel at the site. The number of pre-contact inspections

is greater than the number of post-contact inspections because in several instances the pre-contact inspection was performed, but after talking with facility personnel during the post-contact inspection the inspector determined that the facility was not conducting activities for which inclusion on the industrial/commercial inventory was required. The percentage of sites that required corrective actions increased slightly between the pre- and post-contact inspections, 100% and 99% respectively.

CONCLUSIONS

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

Based on the gathered information, pre-contact inspections of an overall complex assessment with shared areas is an efficient and effective in identifying BMP implementation deficiencies in outdoor areas for shopping centers and industrial parks, but less so for individual businesses that are more difficult to access or areas closed to the public, such as contractor storage yards or automotive repair shops.

Based upon the two year inspections results, the primary areas and activities that should be focused on during inspections are: 1) Over-Irrigation; 2) Trash Areas; and 3) Storm Drains. In addition, there were no other businesses warranted to be on the industrial/commercial inventory.

As a result of this activity during the post-contact business inspections, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 99 sites. Additionally, the City noted 28 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify at three locations, corrective actions were immediately taken. This demonstrates both Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcomes were achieved as a direct result of this activity. Also, in this watershed, the City confirms one IC/ID was observed and called into the City's hotline for response and follow-up for abatement.

The City plans to implement a modified version of the property inspections in the Los Peñasquitos WMA in FY 2011.

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TITLE: **MARINDUSTRY HYDRODYNAMIC SEPARATOR INSTALLATION**
ID #: **LP-WQA7**

ACTIVITY IMPLEMENTATION

A hydrodynamic separator will be installed in Marindustry Drive, located on the north side of Miramar road in the Los Peñasquitos Watershed Management Area (WMA), as a retrofit within the existing storm drain system. The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system. The separator will be located directly in line with a 24-inch storm drain before it discharges into the nearby canyon. The 24-inch line is the main collector in a small storm drain network that collects storm flows from the industrial and business park, associated parking lots and Marindustry Drive. Due to the industrial activity and high vehicular traffic, storm events typically result in the accumulation of a variety of trash, sediments, leaves, dirt oil, petroleum, and other chemical pollutants in the storm drain system. Observations were field verified in January 2008 during a site visit and factored in the selection making process.

This project was originally identified as "Hydrodynamic Separator Installation" in the 2008 Los Peñasquitos WURMP.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design began February 2010 and is anticipated to continue through FY 2011. Construction is expected to be completed in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by capturing dry weather flows and slowly releasing them to allow for the settlement of pollutants for later removal.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
MARINDUSTRY DRIVE HYDRODYNAMIC SEPARATOR INSTALLATION Assess the Efficiency and Effectiveness of Flow Control Detention Basin	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the hydrodynamic separator at reducing priority pollutant loads?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., calculate estimated load reduction) • Monitoring (e.g., collect special study information to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1)

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator installation in reducing the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

ANALYSIS AND RESULTS

An effectiveness assessment of this activity is not possible at this time because the hydrodynamic separator has not been installed and therefore no priority pollutant load data have been collected.

CONCLUSIONS

It is anticipated that the hydrodynamic separator will be installed in FY 2013. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the hydrodynamic separator in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: **ILACSD TRASH CLEANUP SPONSORSHIP**
ID #: **LP-WQA8**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 24, 2010. The City of San Diego (City) sponsored the Los Peñasquitos Canyon Preserve site in the Los Peñasquitos Watershed Management Area (WMA). Approximately 43 volunteers removed 1,720 pounds of trash and debris and recycled 50 pounds of trash and debris over a five-mile area.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the Los Peñasquitos WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/lb collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	1,720 lbs
	Pounds of trash recycled (Outcome Level 4)	50 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	1,770 lbs
	Number of participants (Outcome Level 1)	43
	Total money spent on cleanups for all six watersheds (Outcome Level 1)	$30,000
	Estimated amount of money spent on cleanups for Los Peñasquitos watershed (Outcome Level 1)	$5,000*
	Efficiency (Total Cost/Total Pounds Removed and Recycled)	$2.82/lb

*Calculated by dividing total sponsorship cost by six watersheds.

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

ANALYSIS AND RESULTS

On April 24, 2010, 43 volunteers removed 1,720 pounds of trash and debris and recycled 50 pounds of trash and debris from numerous sites in the Los Peñasquitos WMA. The average estimated sponsorship cost for the City of San Diego was $5,000 per watershed ($30,000/6 watersheds with City sponsorship). Thus, there was a 1,770 pound load reduction and an efficiency of $2.82 per pound collected. The efficiency was calculated by dividing the estimated sponsorship cost for the Los Peñasquitos WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 1,770 pounds during the reporting period. Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2011.

I LOVE A CLEAN SAN DIEGO
Serving San Diego County Since 1954.
Community. Environment. Education.
www.ilacsd.org T: 619.291.0103 F: 619.298.1314 4891 Pacific Hwy. Suite 115 San Diego, CA 92110

May 13, 2010

Ruth de la Rosa
County of San Diego Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Dear Ms. De la Rosa,

On behalf of I Love A Clean San Diego, I would like to thank the County of San Diego Watershed Protection Program for its support of the annual Creek to Bay Cleanup. We had a great turnout this year and were able to make a big impact on the quality of local waterways. Our successes would not be possible without the support of invested agencies like the County of San Diego Watershed Protection Program.

Results from this year's cleanup were impressive, and coordinators are happy to report a volunteer surge of over 5,000 participants. Here are a few statistics from the 8th Annual Creek to Bay Cleanup:

- 5,181 volunteers
- 69 sites throughout San Diego County
- 186 miles covered
- Close to 160,000 pounds of trash and recyclables collected

Support from your agency helped ILACSD to expand the event to cover new cleanup sites and provide supplies for more volunteers than ever before. Included is a one page document which highlights event accomplishments and captures volunteers in action.

We value and welcome your feedback on your experience as part of this year's Creek to Bay Cleanup. As we close the book on Creek to Bay, we are busy making plans for the Coastal Cleanup Day 2010 event. Save the date for CCD which will be held on Saturday September 25th this year. Feel free to contact us if you are interested in getting involved in Coastal Cleanup Day this year.

Best regards,

Natalie Roberts
Director of Community Events
I Love A Clean San Diego

Printed on Recycled Paper

5,181 Volunteers
69 Sites Countywide
186 Miles
160,000 Pounds of Debris
I Love a Clean San Diego's
Creek to Bay 2010

Creek to Bay 2010 Totals by Watershed

Cleanup Site	Watershed	Miles Cleaned	# of Vols	Pounds Trash	Pounds Recycling	Total Weight
Beacon's Beach	Carlsbad	4	58	88	4	92
Buccaneer Beach, Oceanside	Carlsbad	2.5	192	812	203	1,015
Cardiff State Beach	Carlsbad	3	57	226	0	226
Carlsbad State Beach campgrounds	Carlsbad	5	163	231	17	248
Escondido - Lake Dixon	Carlsbad	2	105	181	138	319
Escondido - Lake Wohlford	Carlsbad	2	32	248	42	290
Frazee Beach	Carlsbad	2	43	74	12	86
Loma Alta Creek (3 Sites)	Carlsbad	3	90	2,000	0	2,000
Moonlight Beach, Encinitas	Carlsbad	2	111	106	19	125
Ponto, Carlsbad State Beach	Carlsbad	2.5	200	300	10	310
San Elijo State Beach	Carlsbad	2	47	91	36	127
San Marcos - Walnut Grove Park	Carlsbad	2	28	517	97	614
Tamarack	Carlsbad	1	98	97	19	116
	Carlsbad Subtotal	**33**	**1,224**	**4,971**	**597**	**5,568**
Lower Otay Lakes County Parks	Otay	3	115	600	200	800
Montgomery High School	Otay	1	21	5	805	810
San Ysidro	Otay	2	120	9,180	84	9,264
Silverstrand State Beach Bayside	Otay	1.25	116	297	109	406
Western OVRP	Otay	3	120	406	48	454
	Otay Subtotal	**10.25**	**492**	**10,488**	**1,246**	**11,734**
La Jolla Shores	Penasquitos	6	126	205	0	205
Los Penasquitos Canyon Preserve	Penasquitos	5	43	1,720	50	1,770
Marian Bear Memorial Park, San Clemente Canyon	Penasquitos	2	50	211	36	247
Mission Beach, Belmont Park	Penasquitos	4	366	331	35	366
Pacific Beach - Tourmaline	Penasquitos	1.5	67	163	0	163
Santa Clara Point, Mission Bay	Penasquitos	3	45	61	87	149
Sorrento Creek	Penasquitos	3	44	10,040	35	10,075
South Shores, Mission Bay	Penasquitos	2	105	448	39	487
Stevenson Canyon	Penasquitos	0.75	15	3,120	3	3,123
Torrey Pines State Beach	Penasquitos	3	175	189	53	242
	Penasquitos Subtotal	**30.25**	**1,036**	**16,488**	**338**	**16,827**
47th Street Canyon	Pueblo San Diego	1	11	1,580	50	1,630
Albatross Canyon	Pueblo San Diego	0.5	19	165	20	185
Cervantes Canyon	Pueblo San Diego	0.5	27	1,440	10	1,450
Chollas Creek, 47th Street	Pueblo San Diego	0.5	33	1,560	10	1,570
Cooper Canyon	Pueblo San Diego	3	60	9,960	100	10,060
Downtown San Diego	Pueblo San Diego	1	21	200	0	200
Embarcadero Underwater Dive Site	Pueblo San Diego	0.5	14	60	0	60
Goldfinch Canyon	Pueblo San Diego	2	27	85	10	95
Juniper Canyon	Pueblo San Diego	1.5	52	1,579	24	1,603
Lemon Grove	Pueblo San Diego	2	21	316	122	438
Manzanita Canyon	Pueblo San Diego	1	29	combined	combined	0
Normal Heights Canyon	Pueblo San Diego	0.5	14	246	436	682
North Swan Canyon	Pueblo San Diego	1	45	6,020	0	6,020
Paradise Creek Educational Park	Pueblo San Diego	0.5	45	200	310	510
San Diego High School campus	Pueblo San Diego	1	132	1,148	7	1,155
Shelter Island watercraft cleanup	Pueblo San Diego	30	15	500	10	510
Southcrest Community Park	Pueblo San Diego	2	280	22,600	70	22,670
Sunshine Field Park	Pueblo San Diego	1	92	100	5	105
	Pueblo San Diego Subtotal	**49.5**	**937**	**47,759**	**1,184**	**48,943**

Creek to Bay 2010 Totals by Watershed

Cleanup Site	Watershed	Miles Cleaned	# of Vols	Pounds Trash	Pounds Recycling	Total Weight
El Cajon	San Diego River	3	33	176	504	680
La Mesa - Alvarado Channel	San Diego River	0.25	23	425	10	435
La Mesa - University Channel	San Diego River	0.4	16	335	30	365
Lakeside - Los Coches Creek	San Diego River	1	22	550	5	555
Ocean Beach - Dog Beach	San Diego River	1.5	86	121	6	127
Ocean Beach Pier	San Diego River	3.5	105	243	51	294
Rancho Mission Canyon	San Diego River	5	28	44	9	53
Ruffin Canyon	San Diego River	2	49	4,800	0	4,800
San Diego River - MVP	San Diego River	0.5	202	8,400	0	8,400
Santee	San Diego River	1	98	1,575	20	1,595
	San Diego River Subtotal	**18.15**	**662**	**16,669**	**635**	**17,304**
Del Mar Powerhouse Park	San Dieguito	4	114	328	124	452
Fletcher Cove	San Dieguito	1.5	57	240	21	261
Lake Hodges	San Dieguito	3	113	250	20	270
Ramona Community Park	San Dieguito	3	67	3,040	0	3,040
Ramona Trash Transfer Station	San Dieguito	3	26	5,452	40	5,492
	San Dieguito Subtotal	**14.5**	**377**	**9,310**	**205**	**9,515**
Oceanside Pier	**San Luis Rey**	**1.5**	**188**	**205**	**5**	**210**
De Luz	**Santa Margarita**	**15**	**33**	**39,600**	**6,540**	**46,140**
D Street Fill	Sweetwater	1.5	55	2,111	0	2,111
J Street Marina	Sweetwater	1.5	128	400	150	550
Sweetwater Regional Park	Sweetwater	2	80	780	10	790
	Sweetwater Subtotal	**5**	**263**	**3,291**	**160**	**3,451**
Tijuana River - Dairy Mart Rd	**Tijuana River**	**3**	**20**	**0**	**0**	**0**
TOTALS:		**180.15**	**5,232**	**148,781**	**10,910**	**159,691**

TITLE: **MIRA MESA LIBRARY BIORETENTION AND INFILTRATION RETROFIT**
ID #: **LP-WQA9**

ACTIVITY IMPLEMENTATION

New catch basins will be constructed within the parking area at the Mira Mesa Library in the Los Peñasquitos Watershed Management Area (WMA) to capture parking lot and building runoff. These catch basins will drain via a new storm drain system to an existing unpaved area on the site. Under existing conditions, this unpaved area is higher in elevation than the parking lot and is covered with grass. The original concept for this area was to excavate approximately five feet below the parking lot elevation, lined with an impermeable liner, and backfilled around the perimeter of the excavation with a gravel reservoir to which the new storm drain system will drain. Soils and plants capable of surviving with only the seasonal rainfall typical of Southern California would have been placed in the center of the excavation. The gravel reservoir would have been separated from the planter area by a concrete wall. Storm runoff was expected to pass from the gravel reservoir to the planter area via small diameter pipes through the concrete wall. Unfortunately, the area selected to provide infiltration was rejected by the Library Department, as the destruction of an architectural detail was deemed unacceptable. A location around the grassy area has been selected as the new site.

In addition, four building downspouts were retrofitted with rain barrels, which will drain to raised concrete planters (For more information on the building downspouts see activity sheet LP-WQA10). The planters will allow low flows to infiltrate and pass through a subdrain system out the bottom of the planter, while high flows will pass over the surface of the planter and exit on the far end from the rain barrel. The rain barrels will be elevated and secured to capture runoff from the rainspouts. This runoff can be used to water the raised planters by gravity flow.

The project goal is to capture site runoff from the five-year, six hour storm event and convey it to the gravel reservoir / planter area where the water will exit the site via evapotranspiration. An additional project goal is to capture roof runoff with rain barrels and use it to water raised planters, with the planters providing treatment via infiltration for low flows or surface contact during high flows.

This project was originally identified as “Infiltration BMP Retrofit” in the 2008 Los Peñasquitos WURMP. In FY 2008, the Mira Mesa Library was selected as the site and the conceptual design was released for this project.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Preliminary engineering resumed in May 2010 but, because of the delay, will not be completed until November. With the delay, construction is expected to be completed in FY 2014 instead of FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
Mira Mesa Library Bioretention and Infiltration Retrofit Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs	
Management Questions	• What is the load reduction of the bioretention area? • How effective are bioretention areas at reducing priority pollutant loads?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the bioretention areas are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Number of inspections • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

OBJECTIVES

The goal of this assessment is to determine the effectiveness of the bioretention areas in reducing pollutant loads from runoff from the Mira Mesa Library.

ANALYSIS AND RESULTS

An effectiveness assessment of this activity is not possible at this time because the bioretention areas have not been installed and therefore no priority pollutant load data have been collected.

CONCLUSIONS

It is anticipated that the bioretention areas will be installed in FY 2014. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the bioretention areas in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

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TITLE:	**LOS PEÑASQUITOS WATERSHED MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROJECT**
ID #:	**LP-WQA10**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) completed a municipal rain barrel installation and downspout disconnect project that reduced pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project consisted of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Los Peñasquitos Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. The project included site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Los Peñasquitos WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the Los Peñasquitos WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Mira Mesa Library was selected because it is located in one of the highest priority sectors of the Los Peñasquitos WMA for potential pollutant loading. The library is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed two rain barrel systems at the library. Two serially connected 75-gallon rain boxes were installed and connected to an existing downspout along the back wall of the library. This system utilizes an automated timer and pump to release captured runoff to nearby vegetated areas. In addition, a 75-gallon rain box and concrete planter system was installed and connected to an existing downspout along the side wall of the building. This system will also use an automated time and pump to release captured runoff to the concrete planter. A planter was chosen for this system because the adjacent area consists of an impervious bare clay surface.

Serially-connected Rain Boxes

Rain Box and Planter

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer was distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer were posted on the City's *Think Blue* website during the first quarter of FY 2010.

During FY 2010 the City assessed the effectiveness of the rain barrel/rain harvesting systems at Mira Mesa Library. Ultimately, the City would like to incorporate the use of the LID techniques implemented at this facility into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY

2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems began in April 2009; however, due to construction/contractor issues, the installation was not complete until FY 2010. Wet-weather monitoring was preformed from October 2009 to April 2010. Assessment and final reporting for this program concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity addressed this high priority water quality problem by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff		
Management Questions	• What is the effectiveness of rain barrel/downspout disconnect systems in reducing pollutant loads and storm water runoff volume? • What are the potential pollutant load and volume reductions for the three system configurations tested? • Which system configuration is the most cost-efficient?	
Targeted Measurable Outcome(s)	• Pollutant load reductions due to rain barrel/downspout disconnect installation • Runoff reduction due to rain barrel/downspout disconnect installation	
Cost Data	Cost of site preparation, installation and start-up	$8,120
	Cost of operation and maintenance evaluation	$269
	Cost of effectiveness monitoring	$6,842
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/attenuated (Outcome Level 4) • Average concentrations of metals in rainwater or runoff (µg/L) (Outcome Level 4) • Pollutant load reductions for metals for each system configuration (grams) (Outcome Level 4)	

OBJECTIVES

The goal of the rain barrel and rain harvesting assessment was to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

ANALYSIS AND RESULTS

The pilot project was assessed in FY 2010 based on monitoring data from two storm events collected over one wet-weather season. The two systems at the Mira Mesa Library captured and attenuated 84.6 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from the copper roof and galvanized downspouts were 4,627 µg/L for copper, 25 µg/L for lead, and 157 µg/L for zinc. Over the two monitored storm events, the 150-gallon capacity gravity-flow system configuration at the Mira Mesa Library (MM-2) resulted in load reduction of 4 grams of copper and 0.1 grams of zinc. During the same two storm events, the 75-gallon rain barrel-planter box system configuration (MM-1) resulted in a load reduction of 0.3 grams of copper and no measureable reductions of zinc.

The total cost of installation, operation, maintenance, and effectiveness assessment for the two systems at Mira Mesa Library was approximately $15,231.

Assessment data at this site shows that the gravity-flow system configuration, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, is more effective and reducing pollutant loads and attenuating wet weather flows than other systems tested. Overall, the study found that gravity-flow systems can attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Furthermore, this configuration was the least expensive of the three tested, which makes it the most cost-efficient. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively.

CONCLUSIONS

Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Although less effective than gravity-flow systems at addressing pollutant loads, rain barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas. Based on the analysis that this activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, this activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

TITLE:	**AUBREY STREET CONTINUOUS DEFLECTIVE SEPARATION (CDS) DEVICE**
ID #:	**LP-WQA11**

ACTIVITY IMPLEMENTATION

The City of Poway installed a continuous deflective separation (CDS) device system in the intersection of Aubrey Street and York Avenue as a retrofit within the existing storm drain system. This CDS system screens, separates, and traps debris, sediment, oil and grease, floatables, and neutral buoyant material from storm water runoff, enhancing the treatment of runoff from existing land uses in the 41.9-acre Old Poway Park project area.

To maintain the effectiveness of the CDS device, the City of Poway's drainage/storm water maintenance staff inspected, cleaned, and maintained the device quarterly and after any major storm events.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Construction and maintenance of this CDS device occurred in FY 2008. Inspection, cleaning, and maintenance began in FY 2009 and continue on an on-going basis.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash, debris, and floatables
- Oil and grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
AUBREY STREET CONTINUOUS DEFLECTIVE SEPARATION (CDS) DEVICE Assess the Efficiency and Effectiveness of the CDS Device	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the hydrodynamic separator at reducing priority pollutant loads? • Does the implementation of the hydrodynamic separator result in detectable receiving water quality improvements?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Monitoring (e.g., receiving water sampling data)
Recommended Data	• Number of inspections (Outcome Level 1) • Measurable load reduction after implementation (Outcome Level 4) • Amount of money spent on installation, inspections, and maintenance (Outcome Level 1) • Measurable water quality improvement in receiving water (Outcome Level 6)

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator installation in reducing the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

ANALYSIS AND RESULTS

Inspections of the unit occurred on July 10, 2009, and May 4, 2010. A total of 4.75 cubic yards of debris was removed from the unit. As noted in the previous WURMP Annual Reports, 2 cubic yards of debris was removed during FY 2009 and 1 cubic yard of debris was removed during FY 2008. Because all of the material removed would otherwise have eventually entered the receiving waters, this amount is the verified load reduction achieved by this unit.

The cost of installation of the CDS device was $134,000.00. The cost of inspections and maintenance was $429.95 in FY 2008, $515.01 in FY 2009, and $190.00 in FY 2010. The cost per unit of load reduction over three years is therefore $17,437 per cubic yard of pollutants removed. This unit cost will continue to decrease over time as the only additional expenses are staff time for inspections and cleaning.

Dry weather monitoring is conducted annually at a location on Community Road downstream of the CDS device. Although this monitoring location receives some commingled flows from additional locations, data were reviewed to determine any trends in receiving water quality. Post-installation data show that the standardized Trash Assessment results have moved from

Suboptimal to Optimal, indicating a reduction in trash in the receiving water. Other field analytic results showed essentially no change, as noted in the table below.

Reporting Period	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia-Nitrogen (mg/L NH_3-N)	Nitrate (mg/L NO_3-N)	Ortho phosphate-P (mg/L PO_4-P)
BEFORE INSTALLATION						
2007	0.66	1.96	0.25	0.20	2.42	0.33
AFTER INSTALLATION						
2008	0.30	1.88	0.38	0.15	2.02	0.23
2009	0.19	1.96	0.13	0.19	2.92	0.22
2010	1.04	2.06	0.25	0.13	3.10	0.18

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TITLE: **GATE DRIVE DETENTION BASIN MODIFICATION**
ID #: **LP-WQA12**

ACTIVITY IMPLEMENTATION

The City of Poway retrofitted the Gate Drive flood control detention basin to remove pollutants from storm water. The Gate Drive basin is located in the South Poway Business Park and was originally constructed as a flood control device. Conversion of the basin to a storm water treatment device provides treatment of storm water runoff from more than 38 businesses, including many existing businesses not subject to SUSMP requirements.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Conversion of the basin was completed on June 18, 2008. Operation and maintenance of the basin began in FY 2009 and are ongoing.

PARTICIPATING WATERSHED COPERMITTEES

- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
GATE DRIVE DETENTION BASIN MODIFICATION Assess the Efficiency and Effectiveness of the Detention Basin Modification	
Management Questions	• What is the sediment load reduction efficiency of the detention basin? • How effective is the detention basin at reducing priority pollutant loads? • Does the implementation of detention basin result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the detention basin retrofits are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Number of inspections (Outcome Level 1) • Inflow and outflow monitoring data (Outcome Level 5) • Estimated load reduction (Outcome Level 4) • Amount of money spent on construction, inspections, and maintenance (Outcome Level 1)

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of the Gate Drive detention basin modification in reducing pollutant levels in storm water runoff from the South Poway Business Park.

ANALYSIS AND RESULTS

FY 2008-2009 Reporting Period

The first round of annual inflow sampling was conducted during a rain event on December 15, 2008. Outflow sampling occurred on December 19, 2008. Although in previous years the City of Poway's other basins showed reductions in both total suspended solids and turbidity, in this reporting period no basin had detectable levels of total suspended solids during inflow or outflow. Turbidity during inflow was also at lower levels than seen in previous years, and increased slightly from 9.2 NTU at inflow to 13.4 NTU at outflow in the Gate Drive basin. Although total coliforms increased from inflow to outflow, both fecal coliforms and enterococci decreased, as shown in the table below.

Parameter	Inflow	Outflow	% Reduction
Total Coliforms (MPN/100 mL)	13,000	80,000	-515.4%
Fecal Coliforms (MPN/100 mL)	5,000	2,200	56.0%
Enterococci (MPN/100 mL)	1,300	130	90.0%

FY 2009-2010 Reporting Period

The second round of annual inflow sampling was conducted during a rain event on December 7, 2009. Outflow sampling occurred on December 10, 2009. As in the 2008-2009 reporting period, this basin had no detectable levels of total suspended solids during inflow or outflow. Turbidity decreased from 14.6 NTU at inflow to 8.2 NTU at outflow (44% reduction). The levels of indicator bacteria also decreased, as shown in the table below.

Parameter	Inflow	Outflow	% Reduction
Total Coliforms (MPN/100 mL)	23,000	23,000	0.0%
Fecal Coliforms (MPN/100 mL)	8,000	500	93.8%
Enterococci (MPN/100 mL)	600	110	81.7%

The cost of basin conversion was $131,000, of which $63,900 was paid by a developer of a site that uses the basin for storm water treatment. As no total suspended solids were noted during inflow sampling in either year, load reduction of sediment could not be estimated. Bacteria load reduction was demonstrated in both reporting periods.

CONCLUSIONS

Inflow and outflow sampling will be conducted annually. These data will be used to determine the effectiveness of the basin at reducing pollutants, and to estimate load reductions.

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TITLE: **OUTDOOR WATER CONSERVATION REBATE PROGRAM**[1]
ID #: **LP-WQA16**

ACTIVITY IMPLEMENTATION

This activity involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring will be conducted both at the pre and post irrigation modification stage. It is also anticipated that the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of irrigation runoff reduction programs as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and Total Maximum Daily Load (TMDL) requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination occurred in FY 2010. Program launch is anticipated to occur in FY 2011

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA) identify bacteria and sediment as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing dry weather flows resulting from over-irrigation.

[1] This project was originally identified as the "Residential Rain Barrel and Xeriscaping Incentive Program" and "Irrigation Hardware Giveaway And Cash For Plants Program." A more accurate title was chosen for this activity during program planning.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
IRRIGATION HARDWARE GIVEAWAY AND CASH FOR PLANTS PROGRAM Assess the Efficiency and Effectiveness of Smart Irrigation and Low Water Use Landscaping	
Management Questions	• How effective are smart irrigation and other types of low flow distribution hardware in reducing dry weather runoff? Does replacing high water use landscape with low water use landscape reduce dry weather runoff? • What is the potential load reduction for both residential and commercial properties when utilizing smart irrigation in conjunction with low water use landscaping? • What is the average cost savings from utilizing smart irrigation and or low water use landscaping?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of systems installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the xeriscaping systems (acres drained) (Outcome Level 4)

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of using weather-based irrigation devices in conjunction with low water use landscaping to reduce over irrigation. Targeted pollutants include bacteria and sediment.

ANALYSIS AND RESULTS

An effectiveness assessment of this activity is not possible at this time as project planning and coordination occurred in FY 2010. Program launch is anticipated to occur in FY 2011.

CONCLUSIONS

Monitoring will be conducted to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

Specific residential and commercial locations will be monitored to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads.

TITLE: **PET WASTE BAG DISPENSER PROGRAM**
ID #: **LP-WQA17**

ACTIVITY IMPLEMENTATION

The purpose of the activity is to assess the effectiveness of installing pet waste stations at municipal and mixed-use locations. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. The assessment focused on evaluating the installation of pet waste stations as a best management practice (BMP) in reducing pollutant loading in correlation with the number of bags deployed.

The project includes site evaluations and selections, the installation of pet waste bag dispensers and all-in-one pet stations (dispenser and trash receptacle), pre- and post- site observations for the effectiveness assessments.

Watershed maps were developed and utilized to assist in the selection of appropriate municipal and mixed-use locations. Criteria used to identify the sites included:

a) Canine related activity, e.g. dogs being walked
b) Cleanliness (observed pet waste)
c) Trash receptacles present
d) Pet Waste receptacles present
e) Degree of pet waste observed
f) Potential for vandalism

Additionally, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Los Peñasquitos watershed management area (WMA).

Two sites within the Los Peñasquitos WMA were selected: the Ocean Air Community Park and Trailhead and the Black Mountain Service Road Trailhead. During the initial assessments for site selection, high degrees (more than 20 piles) of pet waste were observed at both locations.

One All-in-One Pet Station (bag dispenser, trash receptacle and sign), was installed at the entrance to the Ocean Air Community Park Trailhead and one Dogipot pet waste station (bag dispenser and sign), was installed at the Black Mountain Service Road Trailhead information center.

Figure 1. All-in-One Pet Waste Station at Ocean Air Community Park and Trailhead

Figure 2. Pet Waste Bag Dispenser and Sign at Black Mountain Service Road Trailhead

Sign

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2009. Installation of the pet waste bag dispensers and the effectiveness assessment concluded during FY 2010. Dispensers will be maintained by the Park and Recreation Department.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos			
PET WASTE BAG DISPENSER PROGRAM Assess the Effectiveness of Pet Waste Bag Disposal			
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?		
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park		
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)		
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)		
Data Recorded		Ocean Air Community Park/Trailhead	Black Mountain Service Road Trailhead
	Weekly average of waste piles observed prior to installation	8.7	39.7
	Weekly average of waste piles observed after installation	1	19
	Weekly average number of bags dispensed	20	15
	Average Weekly waste pile reduction	7.7	20.7
	Percent waste reduction	89%	54%
	Ratio of bags dispensed to pet waste piles removed	2.6	0.7

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

ANALYSIS AND RESULTS

Observations and pet waste pile counts were conducted for a total of six weeks. For three weeks prior to the installation of the pet waste bag dispensers, weekly observations and cleaning were conducted to assess the conditions at each site. Prior to the installation of the pet waste bag dispensers a weekly average of 8.7 piles and 39.7 piles were observed at the Ocean Air Community Park and Trailhead and Black Mountain Service Road Trailhead, respectively. After the installation of the pet waste bag dispensers, a weekly average of 1 pile and 19 piles were observed at the Ocean Air Community Park and Trailhead and Black Mountain Service Road Trailhead, respectively.

The observations show an average weekly reduction of 7.7 piles and 20.7 piles Ocean Air Community Park and Trailhead and Black Mountain Service Road Trailhead, respectively. The average weekly reduction was calculated by subtracting the pre-installation average count of observed waste and the post-installation average count of observed waste. This translates to 89% and a 54% reduction in the amount of pet waste piles observed. Additionally, the weekly average number of bags dispensed was 20 and 15 at the Ocean Air Community Park and Trailhead and Black Mountain Service Road Trailhead, respectively.

CONCLUSIONS

A review of the collected data revealed that the installation of the pet waste stations contributed to the reduction of pet waste piles within the study area. The average number of bags dispensed weekly at the Ocean Air Community Park and Trailhead and Black Mountain Service Road Trailhead corresponds to an estimated removal of 4.1 pounds and 3.4 pounds of pet waste per week, respectively[2].

Overall, this activity demonstrated that there are positive, measureable pollutant load reductions (Outcome Level 4) due to the installation of pet waste bag dispensers. The reduction of pet waste observed and the low bag usage at the Black Mountain Service Road Trailhead suggests that signage alone might be effective in reducing the amount of pet waste at this site. This activity fulfills the requirement of one of two required watershed water quality activities for the Los Peñasquitos WMA because the activity resulted in a pollutant load reduction.

[2] Welker, S. 2004. Dog Waste Tracking Project. San Elijo Lagoon Ecological Reserve.

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TITLE: **MEDIAN SWEEPING PILOT STUDY**
ID #: **LP-WQA18**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) implemented a one-year pilot study to assess the effectiveness of modifying its street sweeping program to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study specifically focused on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with this proposed programmatic change to the City's street sweeping program.

The pilot study specifically looked at expanding current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change allowed calculation of potential pollutant removal efficiency afforded by sweeper access to what was found to be heavily polluted areas.

The overall pilot study was designed to answer the following management questions:

- What is the relative cost-efficiency of integrating median sweeping into the City street sweeping program?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does median sweeping provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study was used to determine whether sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring was conducted to allow for assessment. This activity took place in multiple watersheds, including Miramar Road in the Los Peñasquitos WMA.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Median Sweeping Pilot Study was piloted first to determine whether median sweeping improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2009 and continued into the first quarter of FY 2010. Implementation and assessment took place during FY 2010. This project is complete, and will no longer be including in future reporting updates.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity addressed this high priority water quality problem by targeting increased sweeping and removal of sediment and trash, which contain bacteria, from City streets.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
MEDIAN SWEEPING PILOT STUDY Assess the Effectiveness of Sweeping Medians on Improving Street Sweeping Activities	
Management Questions	• What is the relative cost-efficiency of integrating median sweeping into the City street sweeping program? • What level and type of debris can be removed by sweeping high volume median areas? • What level of metals removal benefit does median sweeping provide? • What type of sweeping equipment optimizes debris removal in or on high volume median areas?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

OBJECTIVES

The goal of the assessment was to investigate whether sweeping medians improves the effectiveness of the City's current street sweeping activities.

ANALYSIS AND RESULTS

A baseline sweep of the four pilot median areas, which included Miramar Road in the Los Peñasquitos WMA, resulted in the removal of 32,460 lbs of debris over a total of 58 miles with an average of 560 lbs of debris removed per mile swept. After the initial baseline sweep, each route was swept four more times over an approximate three month period (with roughly three weeks between sweeps). A total of 32,560 lbs of debris was removed over this three month study period.

CONCLUSIONS

The study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic City roadways. The initial baseline median sweep collected 3-5 times more debris than the subsequent 3-week interval sweeps. This suggests that there is a significant buildup of debris adjacent to median areas. Furthermore, debris sampling confirmed the presence of heavy metals, nutrients and hydrocarbons in the debris collected. This activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period and fulfills the requirement of a watershed water quality activity for FY 2010.

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TITLE: **CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**
ID #: **LP-WQA19**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring (runoff volume) will be conducted both at the pre and post irrigation modification stage. The rebate program is scheduled to be implemented in FY11.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, implementation and assessment completion anticipated in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP	Hydro mod BMP	Water	Structural	Sediment & TSS	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
(2)		Quality			
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas;

and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

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TITLE: **ESD PHASED GREEN MALL AND UNDERGROUND VAULT PROJECT**
ID #: **LP-WQA21**

ACTIVITY IMPLEMENTATION

This first phase of this project will construct a bio-retention basin Best Management Practice (BMP) along the south side of the visitor's parking lot. Along the basin, the existing curb and gutter will be removed and replaced with a zero height, or flush, curb. The bio-retention basin will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters. The City of San Diego (City) has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Green Mall" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in June 2009 and finished in March 2010. It is anticipated that the project will begin Preliminary Engineering in winter 2010 and will begin design in spring 2011. Construction is anticipated to occur in FY 2014. Water quality monitoring is anticipated be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA) identifies bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos	
ESD "GREEN MALL" INFILTRATION AND UNDERGROUND VAULT Assess Efficiency and Effectiveness of Green Malls in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

OBJECTIVES

The goal of the assessment is to determine the effectiveness and efficiency of the ESD Green Mall Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

RESULTS AND ANALYSIS

This activity was not in active implementation in FY 2010. Therefore, assessment is not possible at this time. Project design will continue in FY 2011.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: **LOS PEÑASQUITOS THIRD PARTY TMDL DEVELOPMENT**
ID #: **LP-WQA22**

ACTIVITY IMPLEMENTATION

- Met monthly with stakeholders, including the Regional Board staff, to discuss the development of the Los Peñasquitos Lagoon Sedimentation\Siltation TMDL.
- Dischargers met on a regular basis to prepare documentation for discussion with the stakeholders.
- Developed and prepared sections final draft Los Peñasquitos Lagoon Sedimentation\Siltation draft technical draft for review and comment by the stakeholders.

TMDL APPLICABILITY

- Los Peñasquitos Lagoon Sedimentation\Siltation TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The development of the third party TMDL was initiated in the spring of 2009. The dischargers are striving to write sections of the draft technical report to the Regional Board staff and other stakeholders during the summer of 2010. Corrections to the final draft will be completed in October 2010, so the final draft version can be provided to the Regional Board staff to be sent out for peer review.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of Del Mar
- City of Poway
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Caltrans

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos Lagoon WMA identify sediment as a high priority water quality problem throughout the Los Peñasquitos Lagoon WMA.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this third party TMDL Development is not a water quality or education activity.

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TITLE: **RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION**
ID #: **LP-WQA23**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the storm water system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY09-10. The events are scheduled to occur during FY10-11. Depending upon the success of the initial events, additional events will be considered for implementation during FY11-12 and FY12-13.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes will be achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: LP-WQA24

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Los Peñasquitos Watershed include:

- SDA 6 (Lakeside)
- SDA 8 (Ramona)

FY 2007-08 ACTIVITY IMPLEMENTATION

Work began on drafting the SWQMPs for individual SDAs.

FY 2008-09 ACTIVITY IMPLEMENTATION

Work continues on the drafting of the SWQMPs for individual SDAs.

FY 2009-10 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 6 and SDA 8 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2011-12. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2013.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
To be determined

EXPECTED BENEFITS
The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS
To be determined

TITLE: **PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #: **LP-WQEA2**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Los Peñasquitos Watershed Management Area (WMA) in FY 2009 and FY 2010. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

The City will continue to run the *Karma* public service announcements; however, this activity will no longer be included in future reporting updates.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Los Peñasquitos WMA in FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City will continue to run the *Karma* public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program, therefore no assessment was conducted in FY 2010.

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TITLE: **INFILTRATION BMP RETROFIT OUTREACH**
ID #: **LP-WQEA5**

ACTIVITY IMPLEMENTATION

This Infiltration BMP Education and Outreach Activity was planned to support the implementation of an infiltration project in the Los Peñasquitos WMA to reduce runoff volume. The activity will complement the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA09). Educational materials, such as infiltration specific brochures and facts sheets will be developed, which will explain the importance of the project as well as the water quality benefits that will be realized. Outreach strategies and methods may include direct public interaction, stakeholder meetings, information sessions, print media and website postings. Ongoing educational materials will be developed and implemented once the project is finalized. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TIME SCHEDULE FOR IMPLEMENTATION

The outreach for the implementation of the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA09) is on hold until the project is approved to begin.

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TITLE: **RESIDENTIAL WATER CONSERVATION OUTREACH**
ID #: **LP-WQEA6**

ACTIVITY IMPLEMENTATION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies.

The City adopted the ordinance in the FY 2011 reporting period. One key element identified is the replacement of timed irrigation controllers with "smart" controllers, which adjust the amount of water used based on weather conditions. While this planned activity does not directly replace controllers in the residential zones of the City, it provides for outreach through direct mail and utility bill enclosures to encourage water-wise approaches to landscaping, including the use of native plants, smart controllers and drip irrigation systems. This is beneficial from an NPDES perspective since any reduction in water usage, including the use of efficient irrigation systems, reduces the potential for runoff from over irrigation.

The City of Del Mar initiated its education and outreach program through the establishment of an Ad-Hoc Water Conservation Citizen's Advisory Committee in March 2009. The Committee, made up of members of the Del Mar community and appointed by the City Council, was tasked with developing an outreach and education campaign to address water conservation issues, including a series of public workshops. The Committee met bi-monthly, and developed its first workshop on drought tolerant gardening slated for the FY 2011 reporting period.

TMDL APPLICABILITY

This activity is related to the Bacteria TMDL adopted for the mouth of the San Dieguito Lagoon and the Anderson Canyon area of the Los Peñasquitos Watershed Management Area. Reduction of irrigation runoff from residential sources has the potential to decrease bacteria levels in the beaches and lagoons, and is a TMDL applicable activity.

TIME SCHEDULE FOR IMPLEMENTATION

This project is proposed for implementation in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar
- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Peñasquitos WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA. Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of

the problem within the WMA; therefore, the activity is found to be consistent with the 2009 San Dieguito WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT

Quantification of contacts with the residents regarding water conservation water quality activities can be tracked demonstrating a Level 2 outcome (Change in Knowledge).

TITLE: **EROSION AND SEDIMENT CONTROL POSTER**
ID #: **LP-WQEA10**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper BMPs. The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and Best Management Practices (BMPs) for construction. Photos on the brochure and poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally to distribute the poster in FY 2010 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of brochures and posters distributed in the Los Peñasquitos Watershed Management Area (WMA) was 94. The number of posters distributed by Storm Water inspectors was 11 (8 in English and 3 in Spanish).

At the current time, this activity does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years with positive feedback from users, so the City plans to continue their distribution. The City will discontinue reporting on this activity after FY 2010.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the poster and/or brochure to permit applicants in FY 2011, but will not be reporting on it in the future.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment/Siltation/Turbidity/TSS
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with sediment and bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 94 erosion and sediment control brochures and posters in FY 2010. After FY 2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **LOS PEÑASQUITOS WATERSHED RESTAURANT BEST MANAGEMENT PRACTICES BOOKLET**
ID#: **LP-WQEA11**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission several years ago from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the Los Peñasquitos Watershed Management Area (WMA) during inspections. After review by restaurant employees, the booklet could be kept by owners/managers for reference and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs. The booklets continue to be distributed.

City staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2010 to City-permitted facilities. The City distributed 398 booklets in the Los Peñasquitos WMA.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these booklets have been distributed over a number of years and the City plan to continue their distribution. The booklets will continue to be distributed in the future; however, the City will not be reporting on this activity.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (Miramar Reservoir HA)

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2011 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 398 booklets in FY 2010. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. After FY2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **COMPOST SOX DEMONSTRATION PROJECT, POWAY LANDFILL**
ID #: **LP-WQEA12**

ACTIVITY DESCRIPTION

A soil-erosion BMP evaluation pilot study was conducted at the closed Poway landfill to compare the effectiveness of compost-filled socks and straw-filled socks, also called "wattles", in capturing sediment and other pollutants from storm water runoff. Straw has been used as the industry standard for erosion control wattles for many years. Straw filled wattles have also been used on construction sites, for post-fire mitigation, and during re-vegetation of slopes. More recently, composted materials have been introduced as an alternative to straw. The compost used in the socks is created from recycled products such as yard waste, wood pallets, and organic wastes that would otherwise be placed into a landfill. Although compost is a relatively new option for this application, it has been used for a few years. Compost is an industry accepted soil amendment that improves soil quality and may benefit plant growth, which also aides in preventing erosion.

Straw wattles and compost socks were installed to control surface erosion on disturbed slopes at the landfill. Samples were collected from distinct sections of the project location during wet weather runoff events. Of the eight total sites installed, two sites are composed of straw wattles and four sites of the compost socks. There are two control sites as well. Eight flow capture devices were also installed on the six sites mentioned above, including the two control sites. Passive sampling devices were installed prior to each qualifying storm event with the intent of capturing three wet-weather samples at each of the eight sites.

In addition to the demonstration project, two educational DVDs were completed and some outreach activities were planned for the spring of 2010.

ACTIVITY IMPLEMENTATION FY 08-09

Project conception and planning were ongoing during FY 2008-09. Two educational DVDs about the demonstration activity were planned and completed during FY 2008-09 as well. Outreach activities were planned for the spring of 2010.

ACTIVITY IMPLEMENTATION FY 09-10

- Installation of BMPs at the Poway Landfill was completed in August 2009.
- Four wet weather events were monitored during FY 2009-10:
  - December 7, 2009
  - January 18, 2010
  - February 19/20, 2010
  - March 6/7, 2010
- One demonstration tour (outreach) facilitated April 13, 2010.
- BMPs Demobilized July 2010.
- A final technical memo was completed.

TMDL APPLICABILITY

This activity supports compliance with the sedimentation/siltation TMDL currently being developed for the Los Peñasquitos Lagoon.

TIME SCHEDULE FOR IMPLEMENTATION

No further activity is planned for this activity.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trace Metals
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The closed Poway Landfill is a potential source of sediment to the Los Peñasquitos Watershed, including the Los Peñasquitos Lagoon. Since sediment has been identified as a high priority water quality problem in the Los Peñasquitos Watershed, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Monitoring occurred during FY 09-10. Results from the statistical analysis generally did not show any statistically significant differences between the treatment sites and the control sites.
Below is an abbreviated summary of the key findings. A complete summary of the key findings is located in Section 3.5 of the Final Technical Memo, which is attached to this report:

- Both the straw wattle and compost sock BMPs showed reduced flow compared to the control plots, although not statistically significant.
- When statistically significant differences were found between straw wattles and compost socks compared to control plots, most constituents were elevated at the straw wattles and compost sock test plots over the control plots.
- The general lack of differences between treatments indicates that there may be other parameters that outweigh the treatment effects, such as vegetative and soil structure and characteristics that control runoff potentials to a greater degree than the wattle treatments themselves.
- The paucity of treatment effects may also be a function of slope age; after 25 years of exposure to the elements, the base decomposed granite cap may be exhausted of the majority of erodible entities. Traditionally, wattles have been used in new projects and freshly exposed soils and caps, where water retention and erosion control are more obvious.
- The anecdotal observation that plant height seemed to be a greater upgrade from the wattles and along the vertical wattles indicated that, over time, micro-terraces could form with wattles that would reduce the velocity of runoff.

If the study were to be expanded, future recommendations include:

- Installing a small concrete swale to prevent distortion observed during this study with the PVC collection trays due to UV exposure.
- Installing a flow meter at each test plot.
- Using an automated sampler.
- Increasing data collection to provide a more accurate picture of the site's characteristics and to allow for increased statistical power when conducting comparative analyses.

BMP Installation and Collection Tray Configuration

Poway Landfill

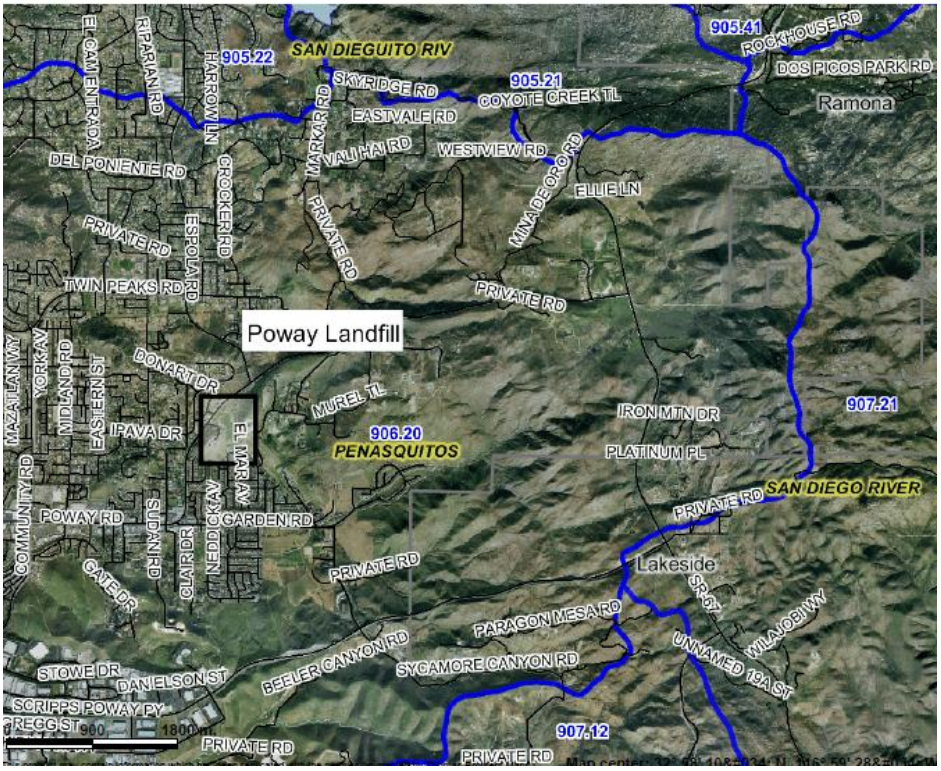

Map showing location of Poway Landfill in the Watershed

Attachment: “Poway Landfill Erosion BMP Evaluation: TECHNICAL MEMORANDUM”

Poway Landfill Erosion BMP Evaluation

TECHNICAL MEMORANDUM
Final

July 2010

Prepared for:
County of San Diego

Prepared by:

MACTEC

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MACTEC

engineering and constructing a better tomorrow

July 29, 2010

County of San Diego
Watershed Protection Program
Department of Public Works
5201 Ruffin Road, Suite P
San Diego, CA 92123
Mail Stop 0326

Attention: Rachel Borgatti

Subject: ***Final* Poway Landfill Erosion BMP Evaluation Technical Memorandum**
County of San Diego, Public Works Department, Watershed Protection Program
Task Order 02
MACTEC Project Number: 5013-09-0005

Dear Ms. Borgatti:

MACTEC Engineering and Consulting, Inc., is pleased to submit the *Final Poway Landfill Erosion BMP Evaluation Technical Memorandum*. The technical memorandum presents the results of the monitoring activities performed during the 2009-2010 wet season (October 1, 2009 to April 30, 2010) for the County of San Diego County, Public Works Department, Watershed Protection Program.

Sincerely,

MACTEC Engineering and Consulting, Inc.

Jay J. Shrake
Project Manager

Nathan J. Schaedler
Principal Engineer

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1.0 INTRODUCTION AND BACKGROUND

Landfills present many challenges in the responsibility of assuring that potential environmental impacts are minimized for a long period of time. Cap integrity, prevention of erosion and leakage, vegetation health, and control of storm water runoff are interdependent, making continual management adjustments necessary to protect public health and welfare. It is of advantage to establish a vegetative cover that will protect the landfill cap from degradation, and strict protocols exist to assure Best Management Practices (BMPs) (Tchobanoglous et.al., 1993). A thorough understanding of the dynamics of the anthropogenic ecosystem of landfills is needed to choose correct practices and evolve the management of the developing succession ecosystem into a sustainable entity that will contain the waste mass and minimize degradation of the closure for as long as the landfill exists. Water drainage in particular is of utmost importance to protect the landfill. In Southern California, most landfills are considered to be dry tombs in that surface water is prevented from infiltrating into the waste to reduce the rate of degradation of the entombed biomass, which is the source of leachate and landfill gases. This is engineered through extensive water drainage systems, an impermeable cap, and vegetation that will buffer the force of rainfall yet not penetrate the cap to permit seepage through canalization by deep root systems. The erosive nature of storm water in particular on the steep landfill face and slopes must be understood in detail. The interactions of rainfall with the soil in the cap and the vegetation growing on the landfill play key roles in sustaining the landfill in perpetuity. This report describes a large-scale experiment testing different slope treatments comparing commercially available straw and compost-filled wattles (socks) to determine if a network of wattles would have better sediment retention than no treatment control plots, considering macronutrient and metal erosion, the effects of vegetation cover, and variability in soil characteristics. The work was carried out by the San Diego County Department of Public Works at the Poway closed landfill in Poway, California.

1.1 HISTORY AND DESCRIPTION OF THE LANDFILL

The Poway landfill is an inactive Class III municipal solid waste landfill located in Poway, San Diego County, California. The landfill is situated at the head of a small south-trending canyon that drains to the main east-west drainage of Poway Creek, located about 0.5 miles south of the landfill. The site encompasses an area of about 39 acres of which the landfill occupies approximately 14.5 acres. (Geosyntec/County of San Diego, March 2009). The site was operated as a burn dump from 1949 to 1966. From 1967 to 1975, the site was operated as a Class III (Class III under current regulations) solid waste disposal site. The landfill was owned and operated by San Diego County Department of Public Works. The landfill was permitted to receive residential, commercial, and agricultural wastes. No known

septic, chemical, or liquid wastes were received at the site. The landfill contains an estimated 165,000 tons of refuse with a maximum waste fill thickness of 80 feet. The landfill was constructed without a liner and does not have a leachate collection system or removal system. Other than the groundwater monitoring wells and five landfill gas monitoring probes, no leak detection system has been installed at the landfill. The landfill cover consists of a layer of clean soil approximately two- to ten-feet thick (Geosyntec, September 2008). No monitoring wells are present on the test site in this experiment, although gas lines do traverse the plots in the center of the test area, and are present along the perimeter roads of the plots.

Upon inactivation of the Poway landfill in 1992, the majority of soil placed on the south landfill face study area as a final cap was non-specification decomposed granite (tonolite) from a quarry in Oceanside, California. Other soil materials, including clay, were brought in as needed from unknown sources to provide a minimum of two feet of capping (personal communication with Greg Weston, DPW, County of San Diego, 2009).

In 2003 the landfill was burned due to the Cedar Fires, and then subsequently hydromulched. Native or adapted species were used, including:

- *Lotus scoparius*
- *Artemisia californica*
- *Eriogonum fasciculatum* var. *fasiculatum*
- *Bromus carinatus*
- *Nasselia lepida*
- *Nasella pulchra*
- *Vulpia microstachys*
- *Mimulus aurauntiacus*
- *Salvia apiana*
- *Eschscholtzia californica*
- *Layia platyglossa*
- *Nemophila menziesii*
- *Lasthenia glabrata*
- *Lupinus succulentus*
- *Dimorphotheca sinuata*
- *Encelia californica*
- *Mimulus polymorpha L.* var. *brevispina*
- *Trifolium hirtum*

2.0 METHODS AND MATERIALS

The south facing slope of the Poway landfill was chosen for the experiment (Figure 2-1). The slope was well compacted and uniform. Very little evidence of soil erosion was present on the slope. The grade of the slope was very uniform, ranging from about 21 degrees inclination on the western half and about 17 degrees on the eastern half. In May 2009, after the dry vegetation had been mowed as a part of normal maintenance, a thin layer of stubble and mulch existed with a percent cover of from 25 to 85 percent. Parallel windrows of stubble and mulch were common because of the mowing. The mulch and stubble was no more than five centimeters in depth in any place, and the ground was bare in many locations, especially between mowing windrows. Because of its engineered uniformity and known history, the site was ideal for field experimentation.

Eight test plots were established at random in a continuous rectangular block on the south facing slope, avoiding a gas pipeline in the approximate center of the slope. The eight plots were each 40-foot by 40-foot square (12.2 by 12.2 meters) and consisted of two controls that did not have wattle installations, two plots with straw wattle BMPs, and four sites with compost-filled socks. Each plot with treatments had four horizontal wattles or socks and two vertical wattles or socks (Figure 2-1). Straw wattle material used at both straw wattle sites was the same. The compost material used in each sock was the same at all compost sock sites; however, different sock materials were used at different sites. The materials consisted of black plastic mesh, orange plastic mesh, and black and yellow plastic mesh (Filtrex, 2009). Site IDs and site descriptions, going from west to east, are provided in Table 2-1. Some figures and tables in this report also illustrate information from an east to west gradient.

Table 2-1: Site IDs and Descriptions (West to East)

	Site ID	Site Description
West	STRWATW	Straw Wattle West
↓	CMPBLKW	Compost Black Mesh West
	STRWATE	Straw Wattle East
	CMPORNG	Compost Orange Mesh West
	CNTPLTW	Control Plot West
	CMPBLYE	Compost Orange Mesh East (Compost Black/Yellow Mesh)[(a)]
	CNTPLTE	Control Plot East
East	CMPBLKE	Compost Black Mesh East

(a) This site originally had black and yellow striped mesh, which broke down rapidly and was replaced with a mixture of orange mesh socks and black mesh socks. The Site ID did not change to maintain consistency; however, this site is referred to as Compost Orange Mesh East throughout this document.

2.1 WET WEATHER WATER SAMPLING

The County of San Diego (County) contracted MACTEC Engineering and Consulting, Inc. (MACTEC) to conduct wet weather sampling associated with a preliminary BMP assessment. The assessment compared sediment and some associated constituent removal performance when compared to control plots without any BMP installations. The BMPs consisted of traditional straw wattles and compost-filled socks.

Forty-foot collection trays were installed at the bottom of each test plot to collect runoff. Runoff was directed to a sample container for each site that would passively collect runoff as it flowed through the system. Figure 2-1 shows a few test plots and the general configuration of each test plot.

Figure 2-1: BMP Installation and Collection Tray Configuration

Due to uncertainty regarding runoff characteristics, it was initially determined that an attempt would be made to collect one sample at the beginning of the storm, one in the middle, and one at the end. The samples collected at each test plot were to be composited by the laboratory and analyzed for the constituents listed in Table 2-2. Analysis for water samples was conducted by CRG Marine Laboratories, Inc., of Torrance, California.

Rainfall data was collected at one-minute intervals using one tipping bucket rain gauge temporarily installed on site during each monitored event. Rainfall data was collected using a HACH tipping bucket rain gauge. Each tip of the bucket is equal to 0.01 inch of rainfall. Flow estimates for this project were made using the fill-a-bottle method. This method estimates flow by recording the time that is taken to fill a bottle of a known volume. The discharge can be calculated by dividing the volume by the time. For example, if it takes 10 minutes to fill a 1-gallon bottle, the discharge is: 1 gallon/10 minutes = 0.1 gallons per minute (gpm). *In-situ* water quality measurements consisting of temperature, pH, and electrical conductivity were collected at each test plot one time during each monitored event. Field measurements were made with an Oakton 300 Series field meter, which was calibrated prior to each sampling event.

Table 2-2: Analytical Constituents, Methods, Detection Limits, and Reporting Limits for Water Samples

Analytical Constituents	Analytical Method	Method Detection Limit (units)	Laboratory Reporting Limit (units)
Total Antimony (Sb)	EPA 200.8	0.1 (ug/L)	0.5 (ug/L)
Total Arsenic (As)	EPA 200.8	0.2 (ug/L)	0.5 (ug/L)
Total Cadmium (Cd)	EPA 200.8	0.2 (ug/L)	0.4 (ug/L)
Total Chromium (Cr)	EPA 200.8	0.1 (ug/L)	0.5 (ug/L)
Total Copper (Cu)	EPA 200.8	0.4 (ug/L)	0.8 (ug/L)
Total Iron (Fe)	EPA 200.8	5.0 (ug/L)	10.0 (ug/L)
Total Lead (Pb)	EPA 200.8	0.05 (ug/L)	0.1 (ug/L)
Total Nickel (Ni)	EPA 200.8	0.2 (ug/L)	0.5 (ug/L)
Total Selenium (Se)	EPA 200.8	0.2 (ug/L)	0.5 (ug/L)
Total Zinc (Zn)	EPA 200.8	0.1 (ug/L)	0.5 (ug/L)
Total Kjeldahl Nitrogen (TKN)	SM 4500-N Org B	0.456 (mg/L)	0.50 (mg/L)
Total Organic Carbon (TOC)	SM 5310-B	0.1 (mg/L)	0.2 (mg/L)
Total Suspended Solids (TSS)	SM 2540 D	0.5 (mg/L)	5.0 (mg/L)

2.2 SOIL SAMPLING

On April 2, 2010, soil samples were collected from the eight plots by the San Diego County Department of Public Works staff. Samples were taken from the top 5-10 centimeters. Soil samples from each test plot consisted of a composite sample of three randomly selected sample points within each plot. The center of each plot was located, and a sample of two large handfuls of soil were excavated and placed in a plastic bag. The second and third sample points were randomly selected by tossing a pointed stick and following in the direction it pointed. The second sample was five meters in the random direction of the stick and the third sample was taken eight meters from the second sample site in the direction of the stick. The samples from the three locations in each plot were mixed in one plastic bag and transported immediately to the laboratory for analysis. The soil samples collected at each test plot were analyzed for the constituents

listed in Table 2-3. Analysis for soil samples was conducted by EnviroMatrix Analytical, Inc., of San Diego, California, a laboratory certified by the State of California to conduct the listed analyses (CA ELAP No. 2564).

Table 2-3: Analytical Constituents, Methods, Detection Limits, and Reporting Limits for Soil Samples

Analytical Constituents	Analytical Method	Method Detection Limit (mg/kg)	Laboratory Reporting Limit (mg/kg)
Total Arsenic (As)	EPA 6010	4.3	10.0
Total Antimony (Sb)	EPA 6010	1.00	10.0
Total Cadmium (Cd)	EPA 6010	0.08	1.0
Total Chromium (Cr)	EPA 6010	0.40	1.0
Total Copper (Cu)	EPA 6010	0.09	1.0
Total Iron (Fe)	EPA 6010	0.50	10.0
Total Lead (Pb)	EPA 6010	0.79	1.0
Total Nickel (Ni)	EPA 6010	0.31	1.0
Total Selenium (Se)	EPA 6010	0.52	1.0
Total Zinc (Zn)	EPA 6010	0.04	1.0
Nitrate as N	SM4500 NO3 E	2.5	2.5
Nitrite as N	SM4500 NO2 B	0.5	0.5
Total Kjeldahl Nitrogen	SM4500 N C	5.0	5.0
Total Nitrogen	Calculation	0.5	0.5
pH	EPA 9045B	0.01 (pH units)	0.1(pH units)
Total Phosphorus	SM4500 P B, E	0.4	1.0
Potassium	EPA 6010	100	100

2.3 VEGETATION STUDY

The Department of Public Works staff conducted a vegetation study in the spring of 2010. Vegetation height was measured to the nearest centimeter in the center of each plot, and then one meter toward the center from each corner of the eight plots. Rough sketches of plant distribution were drawn of each plot. On March 12, 2010, the vegetation had just reached its peak in growth and was starting to decline, as indicated by the slight yellowing of some of the older leaves and incipient rust pustules on the co-dominant species *Malva parviflora*. Data was collected on April 3, 2010, to make biomass determinations for each test plot. A randomly selected area for vegetation harvesting was selected by first locating the center of each plot and then moving out three meters in the direction of a pointed stick spun from the center of the plot. All plants were harvested from one square meter, including as many roots as possible without actual excavation. Any dirt was removed by shaking, and as much organic material was extracted as possible without actually excavating the roots by pulling out the plants. The harvested plants per plot were then placed in a labeled plastic garbage bag. Each plot harvest was measured for wet weight on

April 5, 2010. After weighing, bags were perforated and opened to start air drying. Two days later, the plants were dried in an oven at Scripps Institution of Oceanography in San Diego. On May 10, 2010, all plants per plot were weighed again. The bag weights were included in the weight, and the accuracy of the scale was within 45 grams.

2.4 DATA ANALYSIS

A comparative statistical analysis was performed on water and soil sample data collected throughout the project by Neptune and Company of Lakewood, Colorado. For analysis purposes, the different site types or treatments were combined (e.g., all compost site data was combined, all straw wattle date, etc.). Non-detect results were treated as half of the detection limit for purposes of fitting the regression models. It should be noted that this substitution approach may lead to spurious results for analytes for which the detection rate is low (i.e., arsenic and selenium). Several different analyses were completed. These were:

- Exploratory Data Analysis
  - Summary statistics
  - Box plots
  - Scatter plots (concentrations vs. sediment results and concentrations vs. flow rates)
- Regression Analysis
  - Assess if treatments had a significant effect on constituent removal
    - The basic regression model had the form:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k + \varepsilon$$

Where: Y is the response variable of interest (concentration in this case);
X_i is an independent variable being modeled as a predictor of Y;
β_i is a parameter (or coefficient) indicating the *mean* increase (or decrease) in Y for a one unit increase in the variable X_i,
ε is an error term that incorporates all of the leftover variability, and is typically modeled as having a normal distribution with mean zero.

- Anaylsis of Variance (ANOVA)
  - Assess differences between treatments

Details on the statistical methods of analysis as well as the results from those analyses are provided in Appendix A. Vegetation and soil data were also assessed statistically by County staff.

3.0 RESULTS

Results from wet weather water sampling conducted by MACTEC, soil sampling and the vegetation study conducted by the County, and data analysis conducted by Neptune and Company and the County are provided in the sections below.

3.1 WET WEATHER WATER SAMPLING RESULTS

Four wet weather events were successfully monitored at the Poway Landfill site during the 2009-2010 wet weather season. Table 3-1 provides the dates and rainfall totals for the monitored events. Figure 3-1 shows the rainfall events throughout the season and which events were monitored. Details for each event are provided in the following sections.

Table 3-1: Monitored Events, Dates, and Rainfall Totals

Monitored Event	Date(s)	Rainfall Totals (in./mm)
Wet Weather Event 1	December 7, 2009	1.74/44.2
Wet Weather Event 2	January 18,2010	0.98/24.9
Wet Weather Event 3	February 19 - 20, 2010	0.34/8.6
Wet Weather Event 4	March 6 - 7, 2010	0.43/10.9

Figure 3-1: 2009-2010 Rainfall and Monitored Events

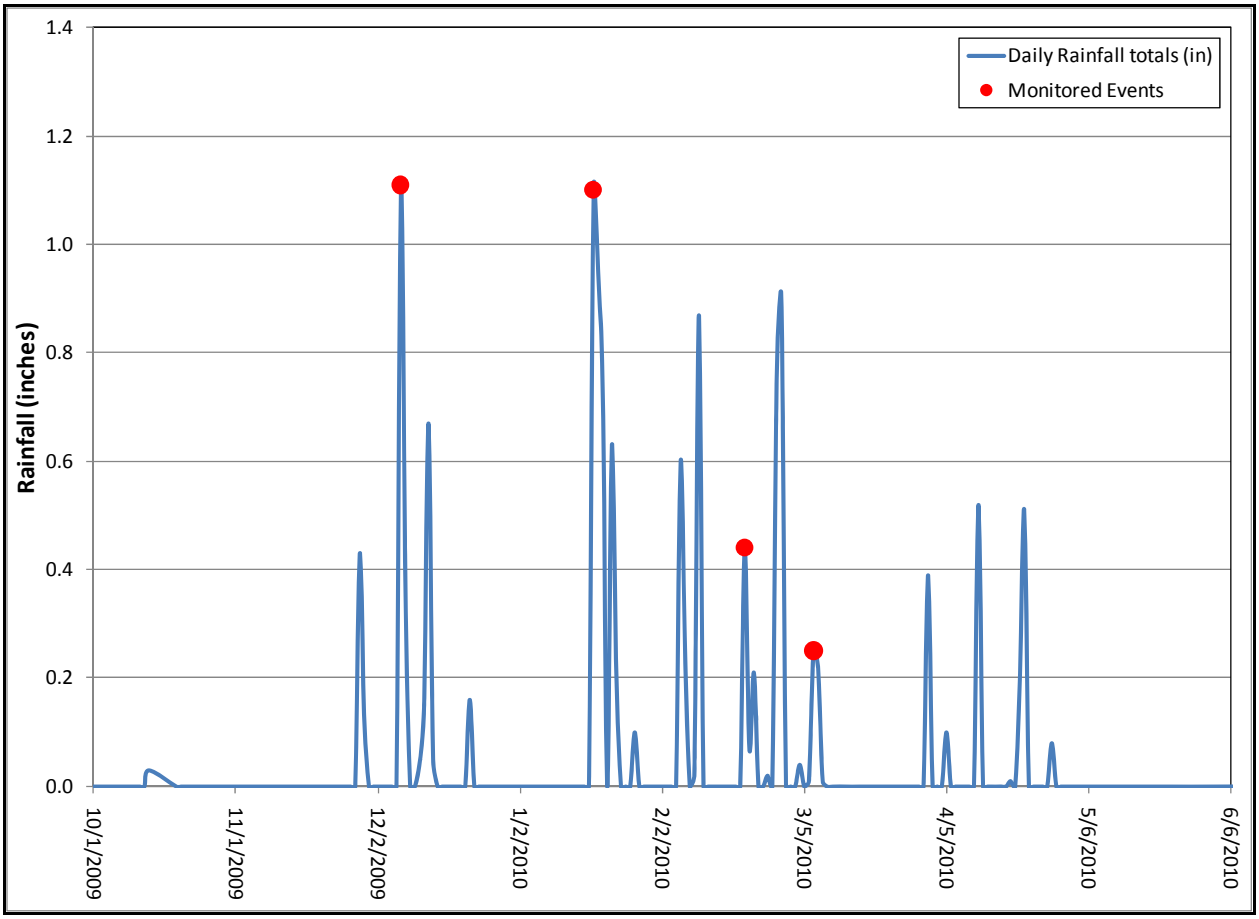

Note: Rainfall data is from the National Oceanic and Atmospheric Administration website (http://www.wrh.noaa.gov/sgx/obs/rtp/rtpmap.php?wfo=sgx).

3.1.1 Wet Weather Event 1

Wet Weather Event 1 occurred on December 7, 2009. The storm produced 1.74 inches (44.2 mm) of rain at the Poway Landfill site. Pre-storm set-up activities were performed on the morning of December 6, 2009. Sampling took place over two time intervals on December 7, 2009. Sixteen samples were delivered to the analytical laboratory on December 8, 2009.

Based on forecasts and the unpredictable nature of the runoff for this event, sampling was performed during two intervals throughout the event. The first set of bottles was filled at all eight test plots between 07:15 and 09:23 on December 7, 2009. A second set of bottles was filled at all eight test plots between 13:28 and 15:27 on December 7, 2009. Each pair of samples collected at each test plot was combined into one time-weighted composite. The total time taken to fill the first bottle at each site was divided by the total time taken to fill both bottles at each site, resulting in a time-weighted percentage for each composite

sample as presented in Table 3-2. These percentages were provided to the analytical laboratory to follow when compositing the received samples. *In-situ* field measurements for temperature, specific conductivity, and pH were made at each sampling site during both sampling periods for this event. Table 3-3 provides a summary of the average *in-situ* values at each test plot. Table 3-3 also provides average flow values at each test plot based on bottle fill times. Figure 3-2 displays recorded rainfall, cumulative rainfall, and sampling time periods. Analytical results for composite samples are summarized in Table 3-4.

Table 3-2: Sample Bottle Fill Times and Composite Fractions Wet Weather Event 1

Site	Bottle 1 Fill Time (minutes)	Bottle 2 Fill Time (minutes)	Total Fill Time (minutes)	Bottle 1 Composite Fraction	Bottle 2 Composite Fraction
Straw Wattle West	95	68	163	58%	42%
Compost Black Mesh West	97	107	204	48%	52%
Straw Wattle East	123	69	192	64%	36%
Compost Orange Mesh West	119	113	232	51%	49%
Control Plot West	78	54	132	59%	41%
Compost Orange Mesh East	67	52	119	56%	44%
Control Plot East	67	50	117	57%	43%
Compost Black Mesh East	50	63	113	44%	56%

Table 3-3: Summary of Average *In-Situ* Field Measurements Wet Weather Event 1

Site	Temperature (°C)	pH	Specific Conductivity (uS)	Flow Rate (gpm)[(a)]
Straw Wattle West	11.80	6.95	73.45	0.0126
Compost Black Mesh West	11.15	6.72	65.15	0.0098
Straw Wattle East	11.55	7.00	117.80	0.0113
Compost Orange Mesh West	10.90	7.35	59.95	0.0086
Control Plot West	11.45	7.06	65.50	0.0157
Compost Orange Mesh East	11.20	7.10	50.75	0.0171
Control Plot East	10.60	6.96	37.15	0.0175
Compost Black Mesh East	10.50	6.94	50.65	0.0179

(a) Average flow rates are based on bottle fill times.

Figure 3-2: Hyetograph and Sampling Time Periods Wet Weather Event 1

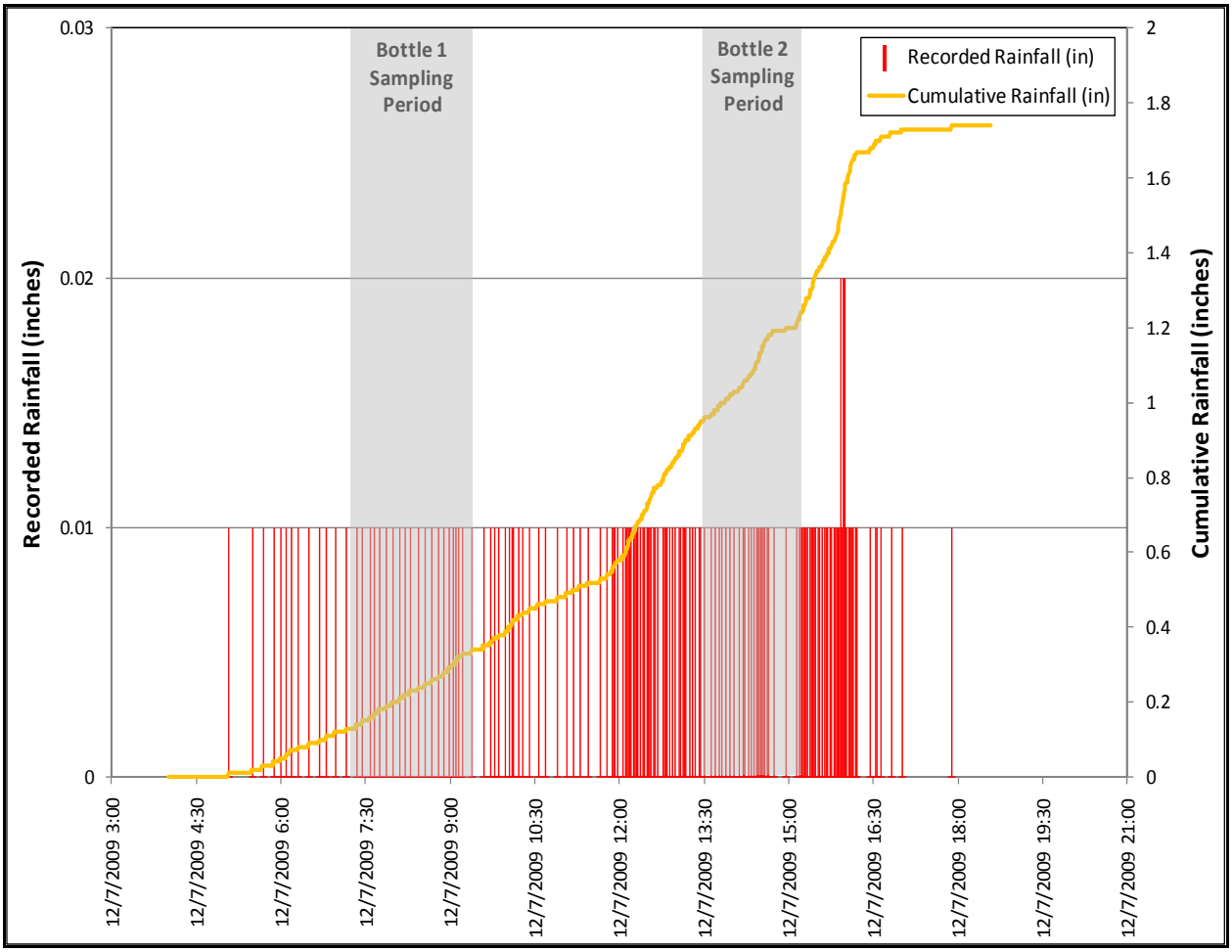

Note: Recorded rainfall bars indicate when the rain gauge bucket tips occurred. Each bucket tip accounts for 0.01 inches of rainfall. Periods of heavy rainfall are indicated by higher frequency and/or height of bars.

Table 3-4: Summary of Analytical Results Wet Weather Event 1

Analyte	Units	Compost Plots				Straw Wattle Plots		Control Plots	
		Black Mesh East	Black Mesh West	Orange Mesh East	Orange Mesh West	Straw Wattle East	Straw Wattle West	Control Plot East	Control Plot West
Antimony (Sb)	ug/L	0.10	0.10	0.20	0.10	0.10	0.10	0.10	0.10
Arsenic (As)	ug/L	0.30	0.20	<0.2	0.50	0.30	<0.2	0.20	0.20
Cadmium (Cd)	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium (Cr)	ug/L	5.00	5.20	4.60	9.80	7.50	8.20	7.40	13.30
Copper (Cu)	ug/L	3.60	5.00	4.00	4.00	6.60	4.80	3.50	4.90
Iron (Fe)	ug/L	257	519	223	341	699	382	116	171
Lead (Pb)	ug/L	0.36	1.16	0.30	0.79	1.99	0.82	0.05	0.11
Nickel (Ni)	ug/L	0.20	0.30	0.30	0.20	0.50	0.30	0.20	0.30
Selenium (Se)	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.20
Zinc (Zn)	ug/L	7.00	13.00	7.20	5.90	11.00	4.90	5.50	9.20
Total Kjeldahl Nitrogen	mg/L	1.29	1.24	0.82	1.26	1.44	0.93	1.09	1.97
Total Organic Carbon	mg/L	6.40	2.90	3.30	7.10	5.80	2.80	8.30	11.80
Total Suspended Solids	mg/L	44	75	29	54	141	63	10	20

Note: Values with a "<" symbol were not detected at or above the Method Detection Limit (MDL) and are therefore noted as less than the MDL.

3.1.2 Wet Weather Event 2

Wet Weather Event 2 occurred on January 18, 2010. The storm produced 0.98 inches (24.9 mm) of rainfall at the Poway Landfill site, with the majority of the rainfall occurring within the first two hours of the event. Pre-storm set-up activities were performed on the morning of January 15, 2010. Sampling was attempted over two time periods on January 18, but the second round of sampling was unsuccessful due to the very short duration of rainfall. Eight samples were delivered to the analytical laboratory on January 19, 2010.

Prior to mobilizing for Wet Weather Event 2, some compost socks were replaced with new socks as the mesh sock material was found to be decomposing, most likely due to UV and ozone exposure. The four horizontal sections of the Black and Yellow Compost site were replaced with orange mesh compost socks on the upper horizontal section, and black mesh compost socks on the lower three horizontal sections. The site ID and samples ID's for these sites, however, remained the same as their original designations for organization purposes. This "mixed "plot is referred to in this document as "Orange Compost East".

The first set of sample bottles was filled at all eight test plots between 14:50 and 15:33 on January 18, 2010. A second round of sampling was attempted beginning at approximately 16:30; however, due to a very sharp drop in rainfall intensity, flow decreased substantially and only small amounts of water were delivered to the sample bottles, producing insufficient water volume to allow for sample compositing and laboratory analysis. Field measurements for temperature, specific conductivity, and pH were taken at each site during the first sampling period and during the second sampling period when the sample volume allowed. Table 3-5 provides a summary of field measurements and flow rates based on bottle fill times. Table 3-6 provides a summary of the field measurements at each test plot collected during the second round of sampling. These measurements were made with the small amount of water that was delivered during the attempted second round of sampling. Some bottles did not have enough volume to conduct all measurements. These were not averaged with the first round values as they were not associated with any samples delivered to the analytical laboratory. Figure 3-3 displays recorded rainfall, cumulative rainfall, and sampling time periods. Analytical results for samples are summarized in Table 3-7.

Table 3-5: Summary of Field Measurements Wet Weather Event 2

Site	Temperature (°C)	pH	Specific Conductivity (uS/cm)	Flow Rate (gpm)[(a)]
Straw Wattle West	10.8	6.89	294	0.0769
Compost Black Mesh West	11.0	6.90	850	0.0833
Straw Wattle East	10.8	6.97	360	0.0250
Compost Orange Mesh West	11.0	6.88	706	0.1667
Control Plot West	11.0	6.79	446	0.2000
Compost Orange Mesh East	10.8	6.74	708	0.0909
Control Plot East	10.7	6.70	355	0.1000
Compost Black Mesh East	10.6	7.09	735	0.0714

(a) Flow rates are based on bottle fill times.

Table 3-6: Summary of Secondary Field Measurements

(Made on second round bottles when possible)

Site	Temperature (°C)	pH	Specific Conductivity (uS/cm)
Straw Wattle West	10.8	6.77	25.2
Compost Black Mesh West	11.1	6.64	15.08
Straw Wattle East	11.1	6.60	NA
Compost Orange Mesh West	11.2	6.57	18.7
Control Plot West	10.9	6.61	NA
Compost Orange Mesh East	10.6	6.41	77.5
Control Plot East	10.5	6.30	44.4
Compost Black Mesh East	10.7	6.32	36.5

NA = Not analyzed due to insufficient volume in sample container.
Note: These values are not averaged with those in Table 3-5 as these values are not associated with the analytical samples for this event.

Figure 3-3: Hyetograph and Sampling Time Periods Wet Weather Event 2

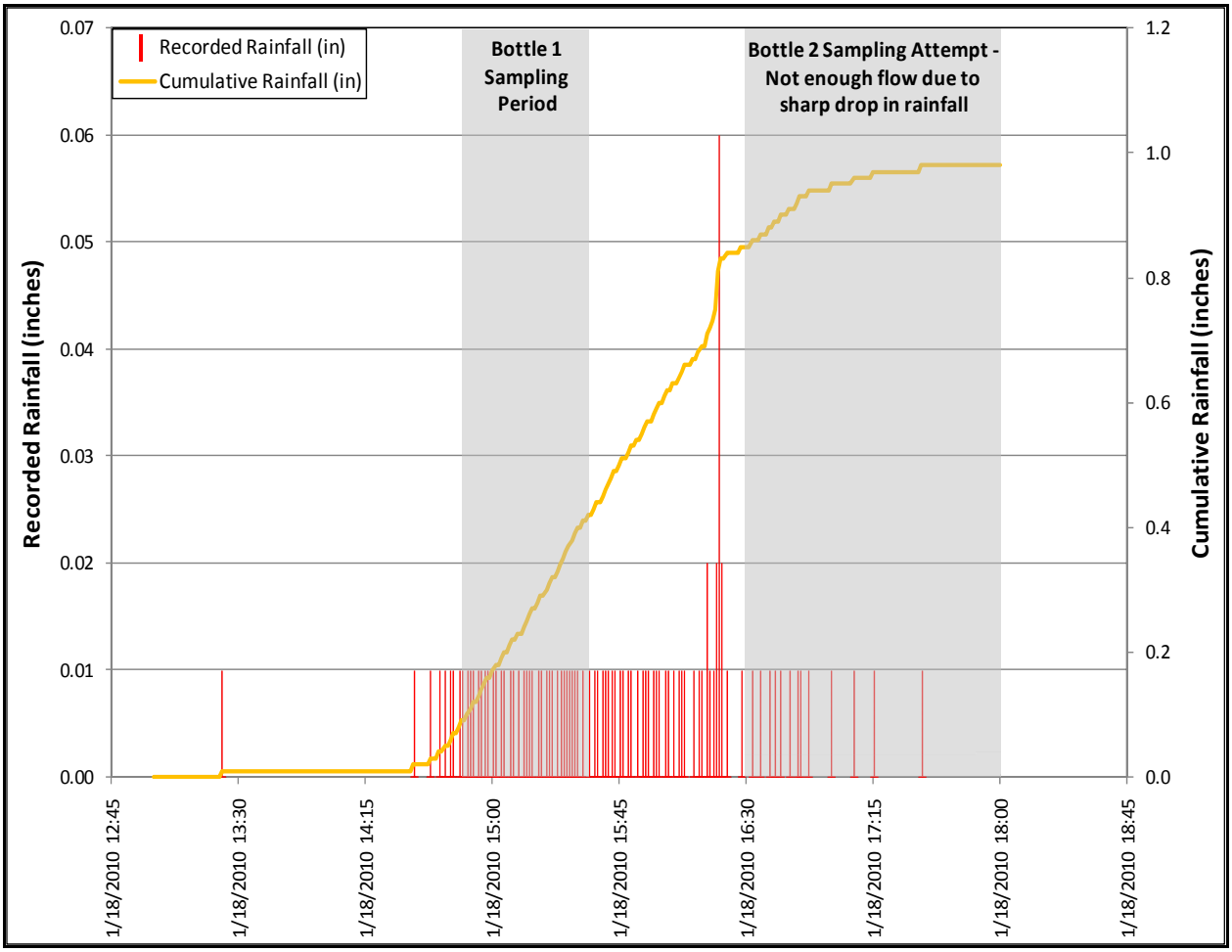

Note: Recorded rainfall bars indicate when the rain gauge bucket tips occurred. Each bucket tip accounts for 0.01 inches of rainfall. Periods of heavy rainfall are indicated by higher frequency and/or height of bars.

Table 3-7: Summary of Analytical Results Wet Weather Event 2

Analyte	Units	Compost Plots				Straw Wattle Plots		Control Plots	
		Black Mesh East	Black Mesh West	Orange Mesh East	Orange Mesh West	Straw Wattle East	Straw Wattle West	Control Plot East	Control Plot West
Antimony (Sb)	ug/L	0.30	0.50	0.40	0.60	0.30	0.50	0.20	0.40
Arsenic (As)	ug/L	0.40	1.30	1.20	1.70	0.80	0.70	<0.2	<0.2
Cadmium (Cd)	ug/L	0.40	0.70	0.40	0.70	0.40	0.20	0.30	0.40
Chromium (Cr)	ug/L	0.8	1.9	1.8	2.3	3.1	3.8	3.0	2.0
Copper (Cu)	ug/L	12.0	30.2	13.0	28.8	19.9	16.6	10.1	20.0
Iron (Fe)	ug/L	323	787	399	1254	1965	1331	580	673
Lead (Pb)	ug/L	1.00	3.02	1.59	5.72	5.69	4.77	1.90	3.45
Nickel (Ni)	ug/L	1.50	3.50	2.20	2.80	2.10	1.70	1.50	1.60
Selenium (Se)	ug/L	<0.2	<0.2	<0.2	0.30	0.30	<0.2	0.30	1.00
Zinc (Zn)	ug/L	62.6	154.1	62.6	119.0	49.0	51.5	74.6	72.4
Total Kjeldahl Nitrogen	mg/L	17.90	36.80	22.90	33.00	14.20	9.90	8.22	21.84
Total Organic Carbon	mg/L	128.2	181.8	112.0	168.2	74.8	66.7	70.6	141.5
Total Suspended Solids	mg/L	67	224	131	306	388	219	67	188

Note: Values with a "<" symbol were not detected at or above the method detection limit (MDL) and are therefore noted as less than the MDL.

3.1.3 Wet Weather Event 3

Wet Weather Event 3 occurred on February 19 and 20, 2010. The storm produced 0.34 inches (8.6 mm) of rainfall at the Poway Landfill site, with the majority of the rainfall occurring between 02:20 and 03:40 on February 20, 2010. Pre-storm set-up activities were performed on the morning of February 19, 2010. A single set of sample bottles was filled between 02:30 and 03:45 on February 20, 2010. Eight samples were delivered to the analytical laboratory on February 21, 2010.

Bottles at four test plots (Orange Compost East, Control Plot East, Control Plot West, Straw Wattle West) filled completely by the time runoff ceased. Bottles at the remaining four test plots (Black Compost East, Black Compost West, Orange Compost West, Straw Wattle East) were approximately half full by the time runoff ceased. Bottles were replaced at the test plots with full bottles, and the half-full bottles were left open in anticipation of more runoff. However, no further runoff occurred and all bottles were pulled from the site at approximately 05:00 on February 20, 2010.

In-situ field measurements for temperature, specific conductivity, and pH were taken at the four test plots with full bottles. *In-situ* measurements were not taken at the plots with half-full bottles, as the volume of water was too close to the minimum necessary for laboratory analysis of other required parameters. The laboratory was directed to measure specific conductivity and pH in the samples in the four half-full bottles. Laboratory measurements were not taken for temperature as the samples were on ice and were not representative of site conditions. Measurements for temperature, specific conductivity, and pH from the field and laboratory are summarized in Table 3-8. Table 3-8 also provides flow values at each test plot based on bottle fill times. Figure 3-4 displays recorded rainfall, cumulative rainfall, and sampling time periods. Analytical results for samples are summarized in Table 3-9.

Table 3-8: Summary of Field Measurements for Wet Weather Event 3

Site	Temperature (°C)	pH (pH Units)	Specific Conductivity (uS)	Flow Rate (gpm)[(a)]
Straw Wattle West	10.5	6.43	61	0.01887
Compost Black Mesh West	NA[(b)]	6.2	90	0.00906
Straw Wattle East	NA[(b)]	6.3	82	0.00725
Compost Orange Mesh West	NA[(b)]	6.3	143	0.00996
Control Plot West	10.3	6.95	106	0.02632
Compost Orange Mesh East	9.8	7.09	459	0.01695
Control Plot East	9.7	7.04	159	0.01639
Compost Black Mesh East	NA[(b)]	6.5	673	0.00996

(a) Flow rates are based on bottle fill times.
(b) Temperature was not measured in the laboratory as samples had been on ice and temperature was, therefore, not representative of site characteristics at that point.
NA = Not Available.

Figure 3-4: Hyetograph and Sampling Time Periods Wet Weather Event 3

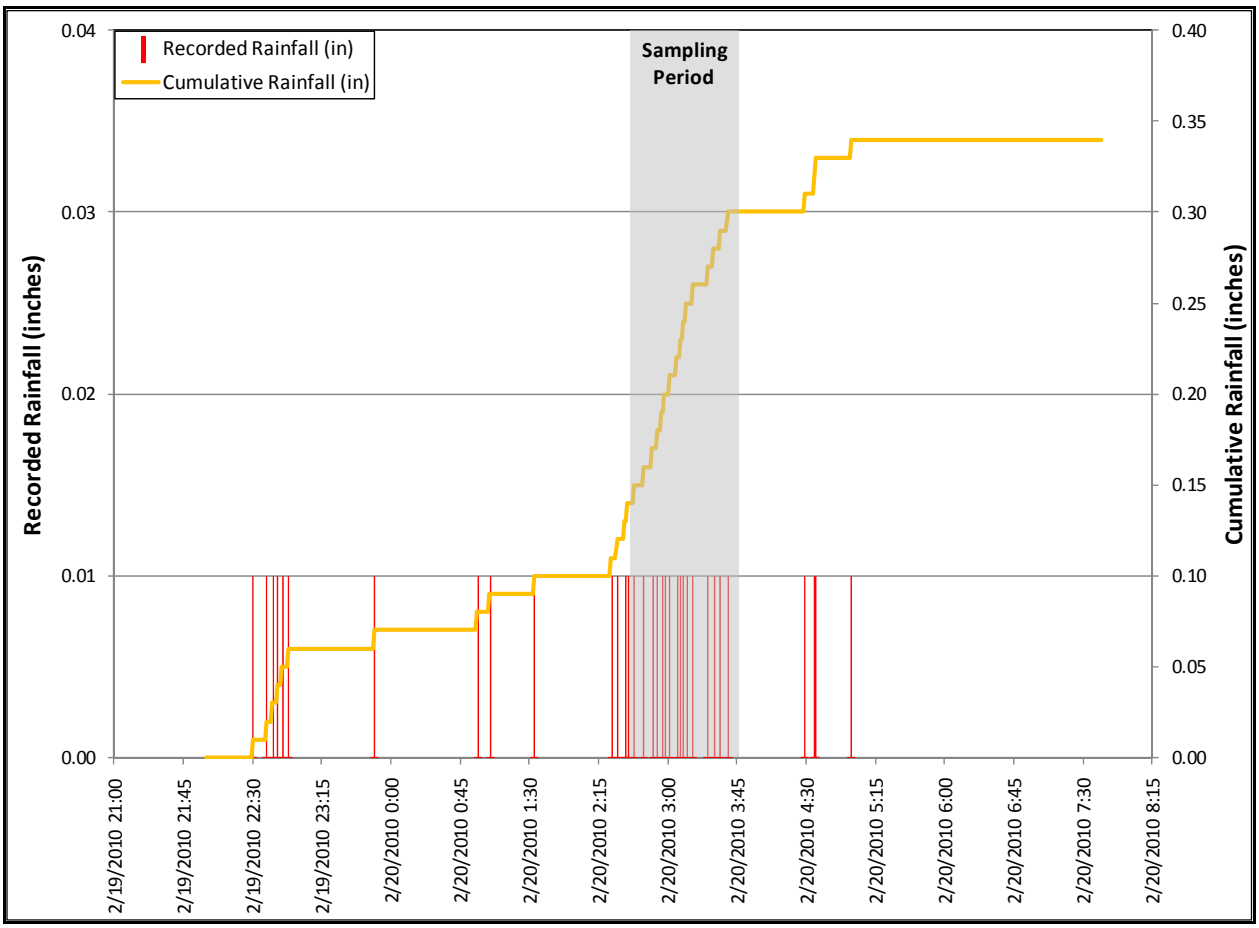

Note: Recorded rainfall bars indicate when the rain gauge bucket tips occurred. Each bucket tip accounts for 0.01 inches of rainfall. Periods of heavy rainfall are indicated by higher frequency and/or height of bars.

Table 3-9: Summary of Analytical Results Wet Weather Event 3

Analyte	Units	Compost Plots				Straw Wattle Plots		Control Plots	
		Black Mesh East	Black Mesh West	Orange Mesh East	Orange Mesh West	Straw Wattle East	Straw Wattle West	Control Plot East	Control Plot West
Antimony (Sb)	ug/L	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Arsenic (As)	ug/L	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2
Cadmium (Cd)	ug/L	0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chromium (Cr)	ug/L	8.3	3.0	4.9	3.4	3.6	3.4	8.3	3.8
Copper (Cu)	ug/L	11.2	5.3	8.9	5.8	6.0	5.6	5.1	5.6
Iron (Fe)	ug/L	201	138	149	159	192	117	84	102
Lead (Pb)	ug/L	0.37	0.46	0.28	0.62	0.6	0.48	0.31	0.39
Nickel (Ni)	ug/L	1.0	0.5	1.0	0.5	0.5	0.4	0.4	0.5
Selenium (Se)	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn)	ug/L	52.0	19.0	33.8	21.3	12.3	14.5	18.3	9.7
Total Kjeldahl Nitrogen	mg/L	10.86	1.96	10.2	1.81	3.06	2.64	5.94	2.12
Total Organic Carbon	mg/L	72.1	18.4	80.4	25.3	17.2	17.7	24.2	18.9
Total Suspended Solids	mg/L	43	35.8	35	35.7	57.3	34.8	23	22

Note: Values with a "<" symbol were not detected at or above the method detection limit (MDL) and are, therefore, noted as less than the MDL.

3.1.4 Wet Weather Event 4

Wet Weather Event 4 occurred on March 6 and 7, 2010. The storm produced 0.43 inches (10.9 mm) of rainfall at the Poway Landfill site, with the majority of the rainfall occurring near the beginning and the end of the storm. Pre-storm set-up activities were performed on March 6, 2010. Sampling began during the night of March 6, and continued into the morning of March 7, 2010. Eight samples were delivered to the analytical laboratory on March 8, 2010.

The sampling period at all eight test plots began at approximately 17:17 on March 6, 2010. Bottles were partially filled during the initial portion of the storm, which lasted approximately two hours. As rain was forecast to occur intermittently throughout the night, the first set of bottles was pulled and placed on ice and a second set was installed and left open overnight. By the morning of March 7, 2010, all bottles were either partially full or nearly full, and bottles were replaced again at the sites with nearly full bottles. Bottles were left in place until approximately 13:00 on March 7; however, no further significant runoff occurred. Total runoff at the Black Compost West, Straw Wattle East, Orange Compost West, and Black Compost East test plots ceased before enough volume was delivered to fill a single bottle entirely. Total runoff at the Straw Wattle West, Control Plot West, Orange Compost East, and Control Plot East test plots was enough to fill one bottle entirely and approximately one-half to two-thirds of a second bottle. The times taken to fill each bottle were highly variable due to the sporadic nature of the storm event and inconsistencies in runoff, and could not be measured and recorded.

Due to the uncertainty of the runoff, *in-situ* field measurements for temperature, specific conductivity, and pH were not taken on site in order to preserve sample volume for the primary laboratory analysis. Once it was apparent that some sites would have enough volume to perform the on-site measurements the decision was made to have the laboratory perform conductivity and pH measurements for all sites, as some portions of the samples were already on ice, and measuring the total combined samples was the most appropriate course of action.

Measurements for specific conductivity and pH from the laboratory are summarized in Table 3-10. Temperature measurements were not made at the laboratory due to samples being on ice and not representative of site conditions. Temperatures provided in Table 3-10 are averages from previous events. Table 3-10 also provides flow estimates and total discharge volume from each test plot. Due to the very sporadic rainfall that resulted in highly variable runoff, runoff times could not measured. For purposes of flow rate estimations, total runoff time was estimated at 88 minutes for all sites based on rainfall patterns.

Figure 3-5 displays recorded rainfall, cumulative rainfall, and sampling time periods. Analytical results for the samples are summarized in Table 3-11.

Table 3-10: Summary of Field Measurements for Wet Weather Event 4

Site	Temperature (°C)[(a)]	pH (pH Units)	Specific Conductivity (uS)	Flow Rate (gpm)[(b)]	Total Discharge Volume (gallons)
Straw Wattle West	11.0	6.5	128	0.02071	1.82
Compost Black Mesh West	11.1	6.5	178	0.00270	0.24
Straw Wattle East	11.3	6.7	136	0.00330	0.29
Compost Orange Mesh West	11.0	6.8	317	0.00240	0.21
Control Plot West	10.9	7	110	0.02191	1.93
Compost Orange Mesh East	10.6	6.9	627	0.02011	1.77
Control Plot East	10.3	7.1	279	0.02026	1.78
Compost Black Mesh East	10.6	7.2	1,004	0.00645	0.57

(a) Temperature was not measured due to samples being on ice and, therefore, temperature was not representative of site conditions. Temperatures provided are averages from previous events.
(b) Flow rates are based on total bottle volumes and an estimated total runoff time of 88 minutes at all eight test plots based on rainfall patterns.

Figure 3-5: Hyetograph and Sampling Time Periods Wet Weather Event 4

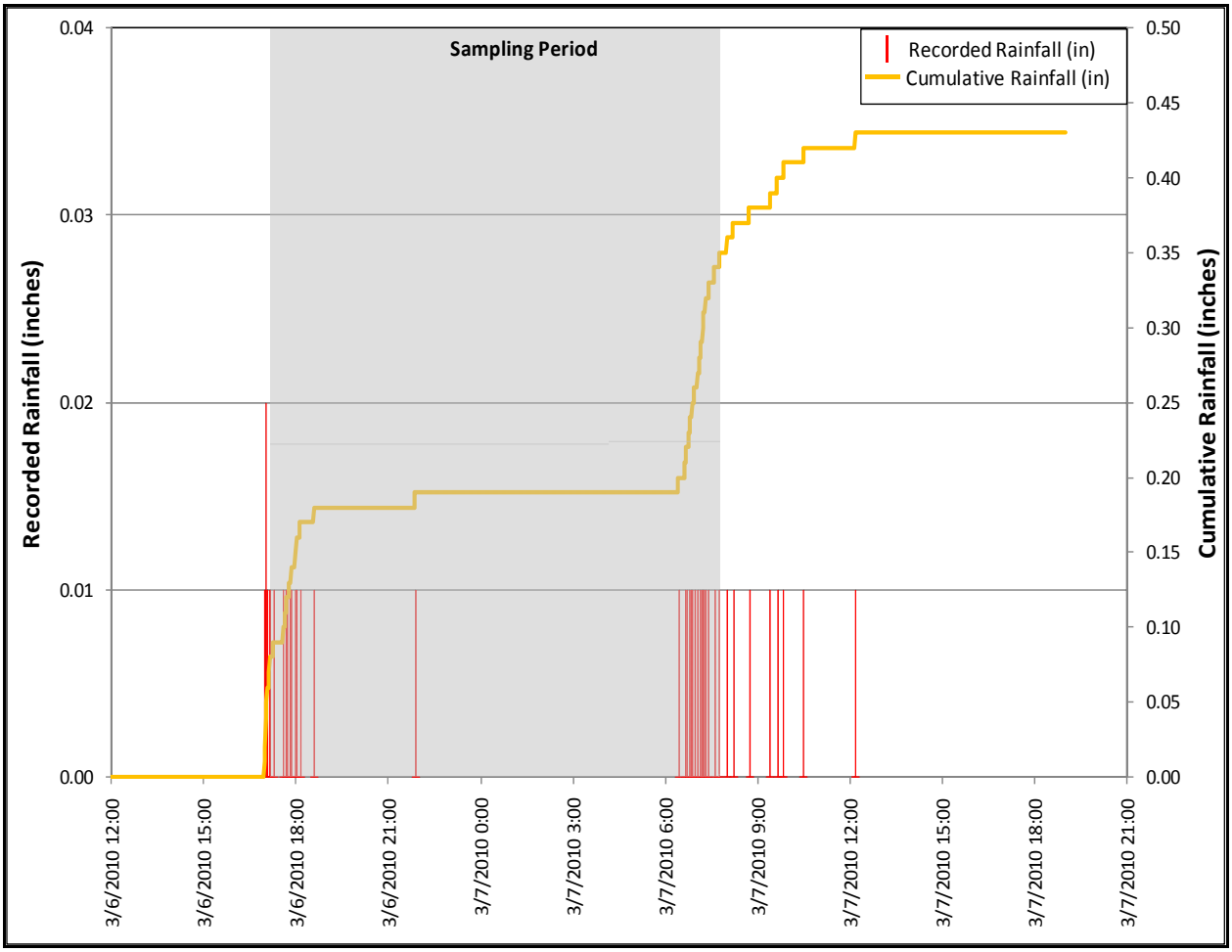

Note: Recorded rainfall bars indicate when the rain gauge bucket tips occurred. Each bucket tip accounts for 0.01 inches of rainfall. Periods of heavy rainfall are indicated by higher frequency and/or height of bars.

Table 3-11: Summary of Analytical Results Wet Weather Event 4

Analyte	Units	Compost Plots				Straw Wattle Plots		Control Plots	
		Black Mesh East	Black Mesh West	Orange Mesh East	Orange Mesh West	Straw Wattle East	Straw Wattle West	Control Plot East	Control Plot West
Antimony (Sb)	ug/L	0.9	0.7	0.8	0.8	0.8	0.7	0.7	0.7
Arsenic (As)	ug/L	0.3	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium (Cd)	ug/L	0.5	<0.2	0.4	0.2	<0.2	<0.2	<0.2	<0.2
Chromium (Cr)	ug/L	6.6	4.9	4.7	2.6	3.3	2.7	5.8	4.2
Copper (Cu)	ug/L	21.4	8.2	12.5	10.4	8.9	8.5	10.4	7.3
Iron (Fe)	ug/L	276	109	268	132	136	64	104	64
Lead (Pb)	ug/L	0.44	0.41	0.27	0.4	0.37	0.5	0.43	0.27
Nickel (Ni)	ug/L	2.1	0.8	1.7	1.1	0.5	0.6	0.7	0.5
Selenium (Se)	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn)	ug/L	97.5	33.9	65.9	40	19.9	22	27.6	14.1
Total Kjeldahl Nitrogen	mg/L	34.14	4.1	9.08	6.86	5.8	7.9	6.82	1.7
Total Organic Carbon	mg/L	143.6	38.9	130.3	60.5	39.6	42.9	63.5	26.2
Total Suspended Solids	mg/L	53.3	23.5	42.7	27	24	24	28.7	14.5

Note: Values with a "<" symbol were not detected at or above the method detection limit (MDL) and are therefore noted as less than the MDL.

3.1.5 Mean Flow Rates for the Plot Types

Mean flow rate was calculated for each plot type for the four monitored events. Mean flow was highest at the control plot type when compared to the compost sock and straw wattle plot types (Figure 3-6). Mean flow rates were lowest at the straw wattle plot type. It should be noted that the flow estimations made during this program were based on flow measurements made during sample collection periods and do not reflect flow throughout the entire storm events. Flow rates at each plot type are also affected by subtle differences in slope face and rainfall intensity.

Figure 3-6: Mean Flow Rates by Plot Type for the Four Monitored Events

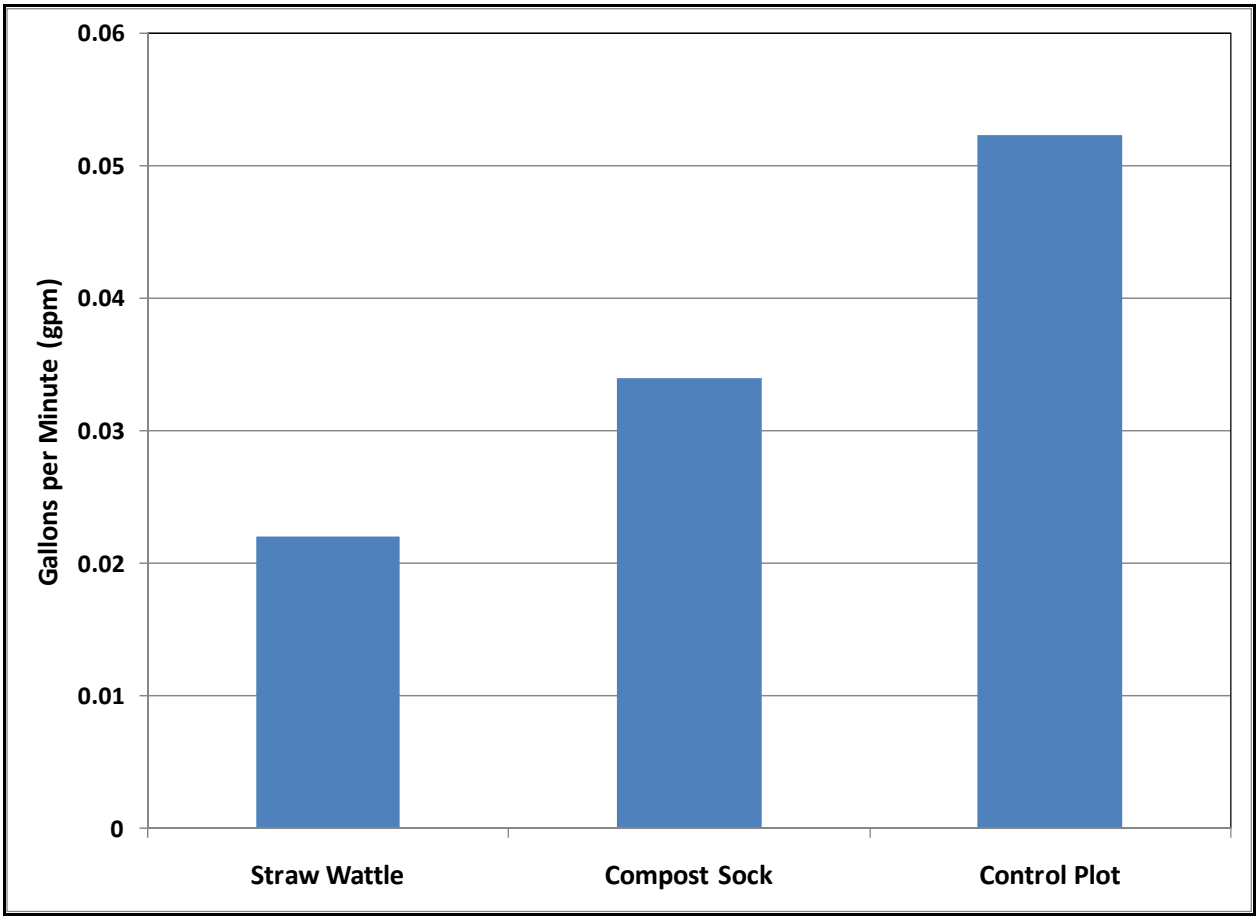

3.1.6 Acidity of Runoff Water and Soil

The acidity of the water samples from the four wet weather events ranged from 6.2 to 7.35 pH units, with a mean of 6.83 and a standard deviation (SD) of 0.14. The runoff water was more acidic than the soil and was more uniform over the site, with the four eastern plots being only slightly acidic, and the four western plots being gradually more acidic toward the west end of the site (Figure 3-7). The acidity of the

soil samples ranged from 6.74 to 7.67. The mean soil acidity for all plots was slightly basic (7.36), with a SD of 0.3. This acidity range is within the range of optimal growth for most plant species and would not be acidic enough to leach out heavy metals from the soil. Soil acidity was variable without an apparent gradient from east to west and there was no apparent association with treatments. There did not appear to be a direct relationship between soil pH and water pH, and none associated with the treatments.

Figure 3-7: Soil and Runoff Water Acidity

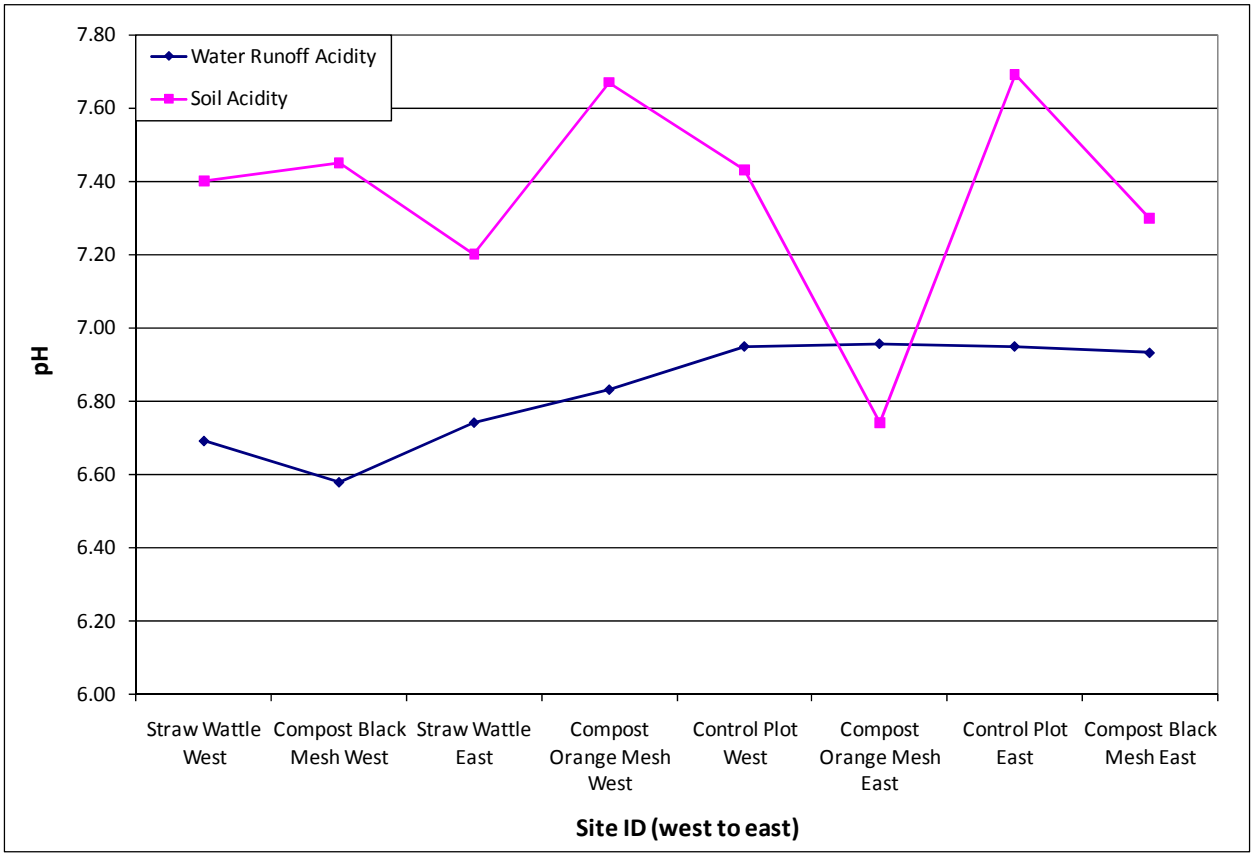

3.1.7 Specific Conductivity of Runoff Water

The specific conductivity (SC) readings for the four wet weather events ranged from 37.15 microsieman units (uS) to 1,004 uS, with mean values per event ranging from 139 to 619 uS on the plots. Wet Weather Event 1 had the lowest values with a mean of 65.05 uS, and Wet Weather Event 2 averaged the highest SC, with a mean of 556.75 uS. For Wet Weather Event 4, the Black Compost East plot had the highest SD from the mean value, but that plot had one very high value that may have skewed the conductivity readings for the event. Considering all eight plots, there was an east-west gradient, with the highest conductivity on the eastern-most plots. The highest specific conductivity readings were for Black

Compost East and Orange Compost East. Control plots and the straw wattle plots tended to have lower conductivity. The zigzag gradient (Figure 3-8) may be a function of the vegetative gradient, but may also be related to SC electrolytes arising from the compost material in the wattles. Rain intensity and duration is probably related to any leaching from the wattles (and soil) that may have occurred, resulting in the observed conductivity. This pattern was indicated by mean values (Figure 3-8). Wet Weather Event 2 yielded the highest uniform conductivity of the four rain events. The treatment replicates did not appear to have a relationship to conductivity of the runoff.

Figure 3-8: Mean Specific Conductivity of Runoff Water from Four Wet Weather Events

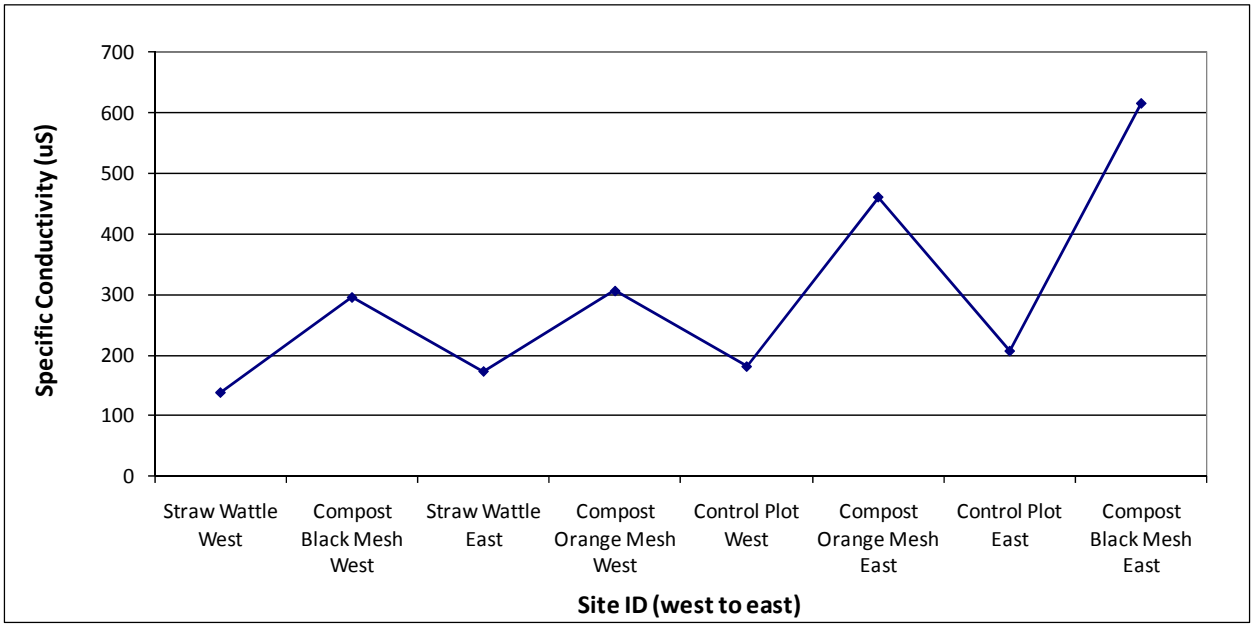

3.2 SOIL SAMPLING RESULTS

The soil on the landfill slope at the test sites has a shallow, dark "A" horizon, not more than five centimeters in depth. This accumulated carbon came from the vegetation and probably from the 2003 fire. The uniform decomposed granite cap was grey/brown-yellow in color and reported to be about two-feet thick. In May 2010 when the plots were established, the cap soil was baked hard, presenting difficulty in driving stakes into the ground. During the rainy season the cap soil absorbed water and was easily penetrated with a shovel. Macronutrient nutrient (NPK) concentrations from soil samples collected are summarized in Table 3-12.

Table 3-12: Analytical Results for Soil Samples

Analyte	Units	Compost Plots				Straw Wattle Plots		Control Plots	
		Black Mesh East	Black Mesh West	Orange Mesh East	Orange Mesh West	Straw Wattle East	Straw Wattle West	Control Plot East	Control Plot West
Arsenic (As)	mg/kg	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3	< 4.3
Antimony (Sb)	mg/kg	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Cadmium (Cd)	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (Cr)	mg/kg	11.4	12.9	15.3	7.5	5.4	6.5	14.3	10.6
Copper (Cu)	mg/kg	15.2	27	23.8	19.8	30.6	24.3	14.9	29.1
Iron (Fe)	mg/kg	25,200	36,900	44,700	24,400	14,800	18,900	22,900	26,400
Lead (Pb)	mg/kg	3.4	8.8	3.5	7.5	3.3	4.6	2.9	12.6
Nickel (Ni)	mg/kg	6.9	4.7	6.6	3.6	2.6	3.2	5.5	5
Selenium (Se)	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (Zn)	mg/kg	38.8	46.2	50.5	57.2	42.2	39.1	36.5	50.5
Nitrate as N	mg/kg	18.1	23.0	8.0	8.2	16.4	9.0	6.4	12.6
Nitrite as N	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Kjeldahl Nitrogen	mg/kg	268	65	18	51.6	302	398	626	279
Total Nitrogen	mg/L	286	88	26	59.8	318	407	632	292
pH	pH Units	7.33	7.45	6.74	7.67	7.2	7.4	7.69	7.43
Total Phosphorus	mg/kg	20.5	23.4	18.0	20.4	35.4	25.0	16.2	24.4
Potassium	mg/kg	4680	3080	4060	5050	5170	4940	3930	4920

Note: Values with a "<" symbol were not detected at or above the method detection limit (MDL) and are therefore noted as less than the MDL.

3.2.1 Nitrogen, Phosphorus, and Potassium Content in Soil

The essential plant nutrients NPK were tested for soil at each plot (Table 3-12 and Figure 3-9).

- Nitrogen. Four different tests for soil nitrogen were performed: Total Kjehdahl Nitrogen (TKN-S), Nitrate-Solid, Nitrogen Total A and Nitrite. No Nitrite was detected. TKN and Total Nitrogen were essentially the same (Figure 3-9), with means of 251 mg/kg and 263.6 mg/l respectively. These nitrogen forms showed a zigzag pattern across the plots with five plots higher than the other three plots. No clear association to location with the slope or treatment was apparent. Nitrate concentrations were low, ranging from 6.4 to 23 mg/kg. Nitrate varied from plot to plot, but without apparent associations to any treatment, and no east to west gradient was noted.
- Phosphorus. The concentrations of worldwide phosphorus in soil solutions are low, generally on the order of one part per million. The phosphorus content of the lithosphere is 0.12 percent (Epstein, 1972). At the Poway landfill, soil phosphorus was uniformly low, with a mean value of 22.91 mg/kg and a standard deviation of 5.9 mg/kg.
- Potassium was the macronutrient of highest concentrations, with a mean value of 4,479 mg/kg and a SD of 726 mg/kg. The range of potassium was from 3,080 mg/kg to 5,170 mg/kg in adjacent plots (Table 3-12). Potassium in the lithosphere is approximately 2.59 percent (Epstein, 1972). The percent of potassium in the sampled soils was 0.0045 percent. No relationship was apparent within or between treatments, and potassium was relatively uniform on the test landfill slope (Figure 3-9). No nutrient deficiencies or excess symptoms were noted in the flora at the landfill face.

Figure 3-9: Nitrogen, Phosphorus, and Potassium in Soil from Poway Landfill

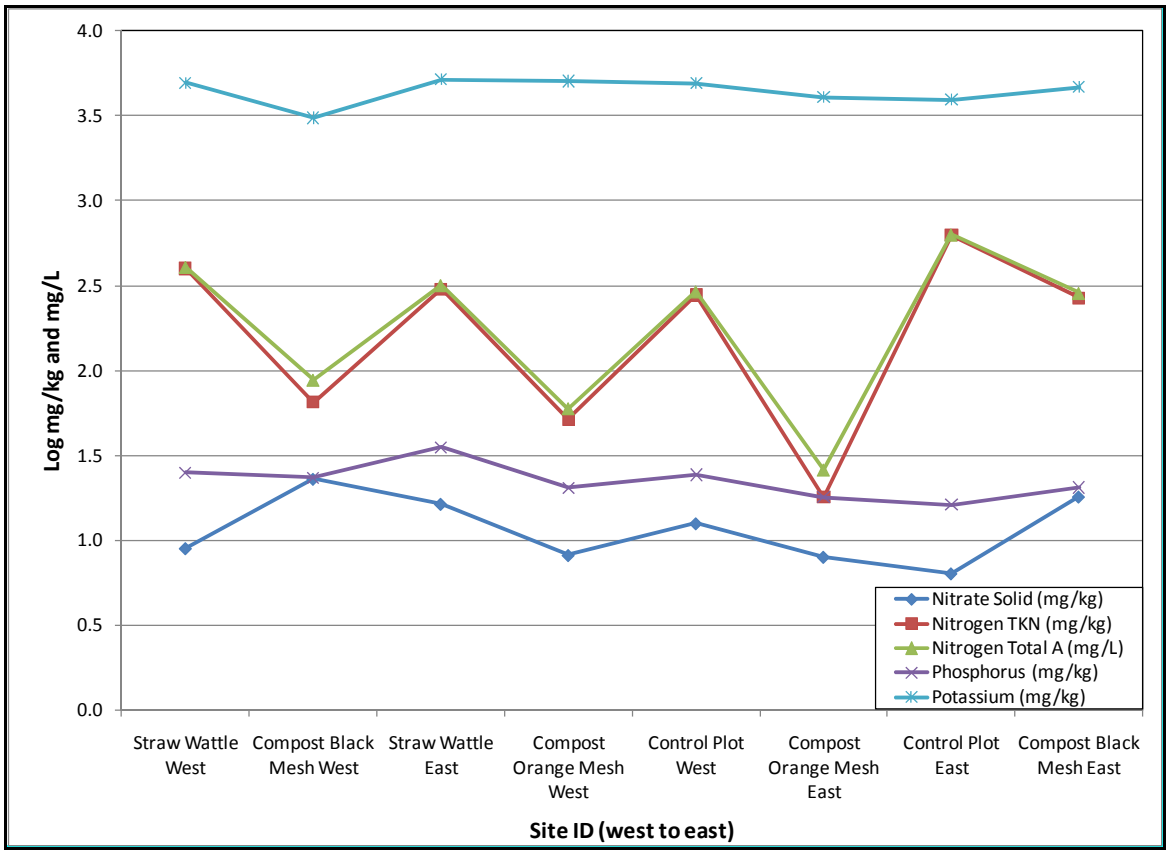

3.2.2 Iron in Soil

Iron content of soil samples on the south-facing slope at Poway varied from 14,800 mg/kg to 44,700 mg/kg (Figure 3-10). The mean value was 26,775 mg/kg, with a standard deviation of 9,655 mg/kg, or 35 percent. There does not appear to be any association between plots and iron. The two plots with the highest iron concentrations were the Compost Orange Mesh East and Compost Black Mesh West (Figure 3-10). The lowest concentration of iron was on plot Straw Wattle East. Neptune and Company reported a significant statistical difference between iron and treatment in water (Appendix A).

Figure 3-10: Total Iron in Soil Samples on West to East Gradient at Poway Landfill

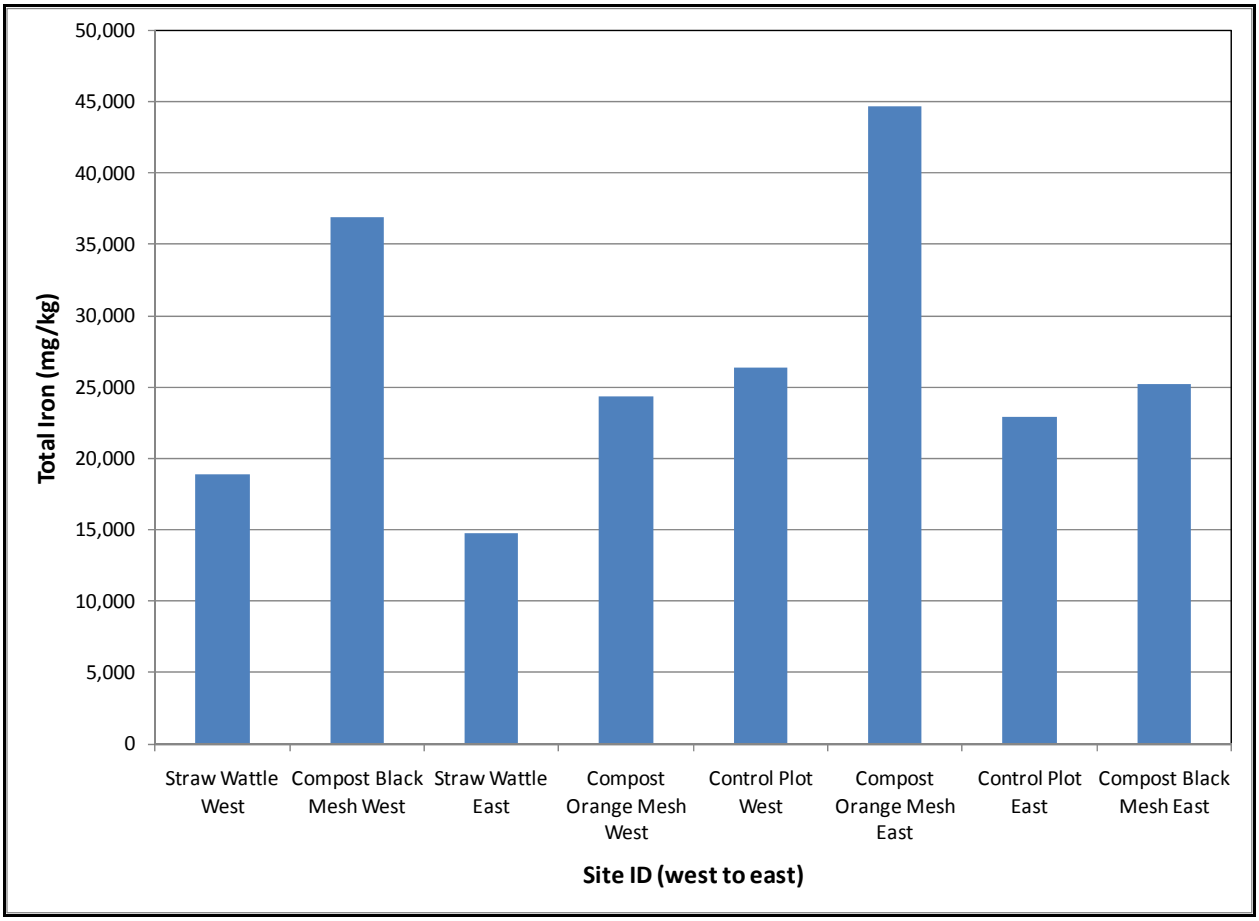

<u>Zinc and Iron Washout after Four Wet Weather Events</u>

Iron and zinc were the most common washout metals. Iron in the washout water of the four wet weather events ranged from 221 to 748 micrograms/liter (ug/L). The Straw Wattle East plot had the highest mean concentrations of iron in water (Figure 3-11). Zinc concentrations were much less than concentrations of iron, as expected, with a range of 19.8 to 55 ug/l.

Figure 3-11: Iron and Zinc in Soil and Water at Poway Landfill

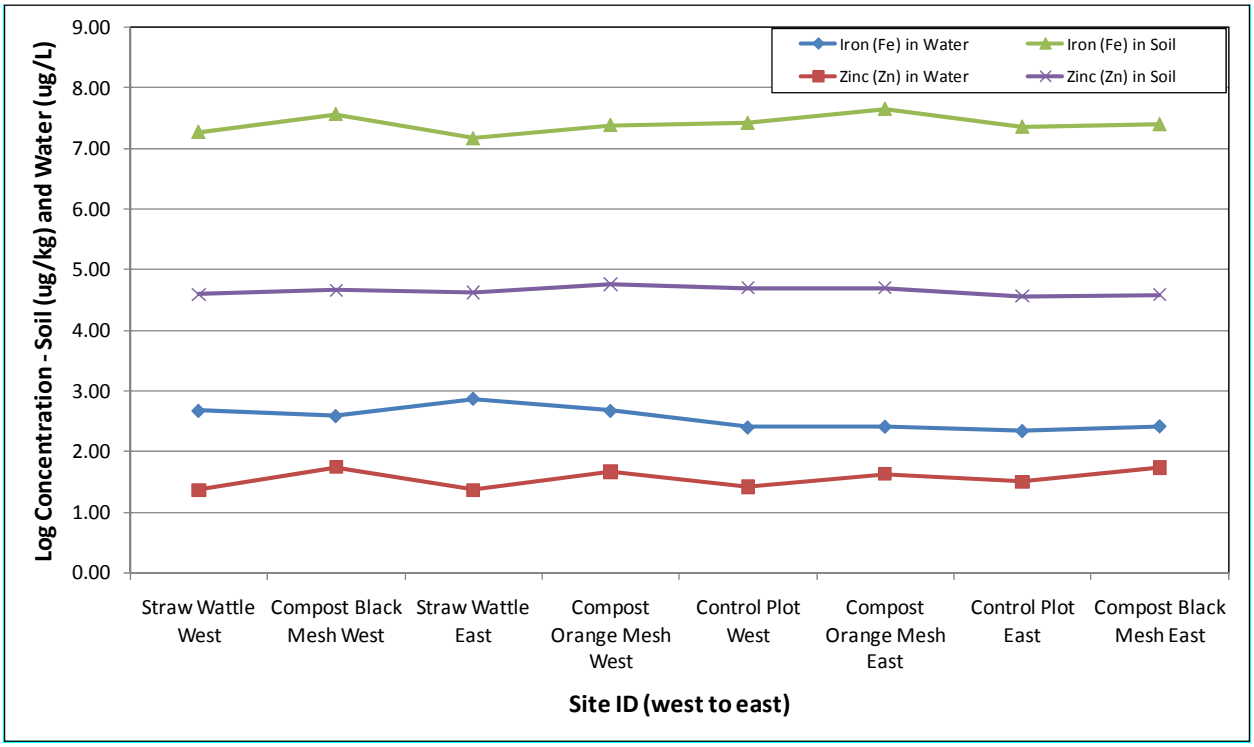

3.2.3 Heavy Metals

There was no detectable arsenic, antimony, cadmium, or selenium in any soil sample (Table 3-12). Analytes not detected are noted by a less than the method detection limit (MDL) (e.g., <0.10). Arsenic was detected in the water in Wet Weather Events 1, 2, and 4 from concentrations at the lowest detection level (0.2 ug/L) to 1.7 ug/L. Antimony was detected in a water sample from Wet Weather Event 1 in all plots at a mean concentration of 0.11 ug/L. Cadmium was detected in water from the MDL (0.2 ug/L to 0.7 ug/L). The test resolution for the soil analysis was not as high as for the water analysis.

Other than iron, zinc was present at the highest of the metals tested (Figure 3-12, Table 3-12). Zinc in soil was detected in each plot in concentrations from 36.5 mg/kg to 57.2 mg/kg, with a mean of 45.1 mg/kg and a standard deviation of 7.2 mg/kg (16 percent). Zinc was the least variable metal in the soil samples. Chromium in the soil was detected in each plot in concentrations from 5.44 mg/kg to 15.3mg/kg, with a mean of 10.5 mg/kg and a standard deviation of 3.69 mg/kg (35 percent). Copper in the soil was detected in each plot in concentrations from 14.9 mg/kg to 30.6 mg/kg, with a mean value of 23.1 mg/kg and a standard deviation of 5.975 mg/kg (25.9 percent). Lead in the soil was detected in each plot in concentrations from 3.4 mg/kg to 12.6 mg/kg, with a mean of 5.8 mg/kg and a standard deviation of 3.49 mg/kg (60 percent). Lead results displayed the highest variability among the metals. Nickel in the soil was

detected in each plot in concentrations from 2.55 mg/kg to 6.93 mg/kg, with a mean of 4.7 mg/kg and a standard deviation of 1.57 mg/kg (33.6 percent).

Figure 3-12: Metal Content of Soil at Poway Landfill

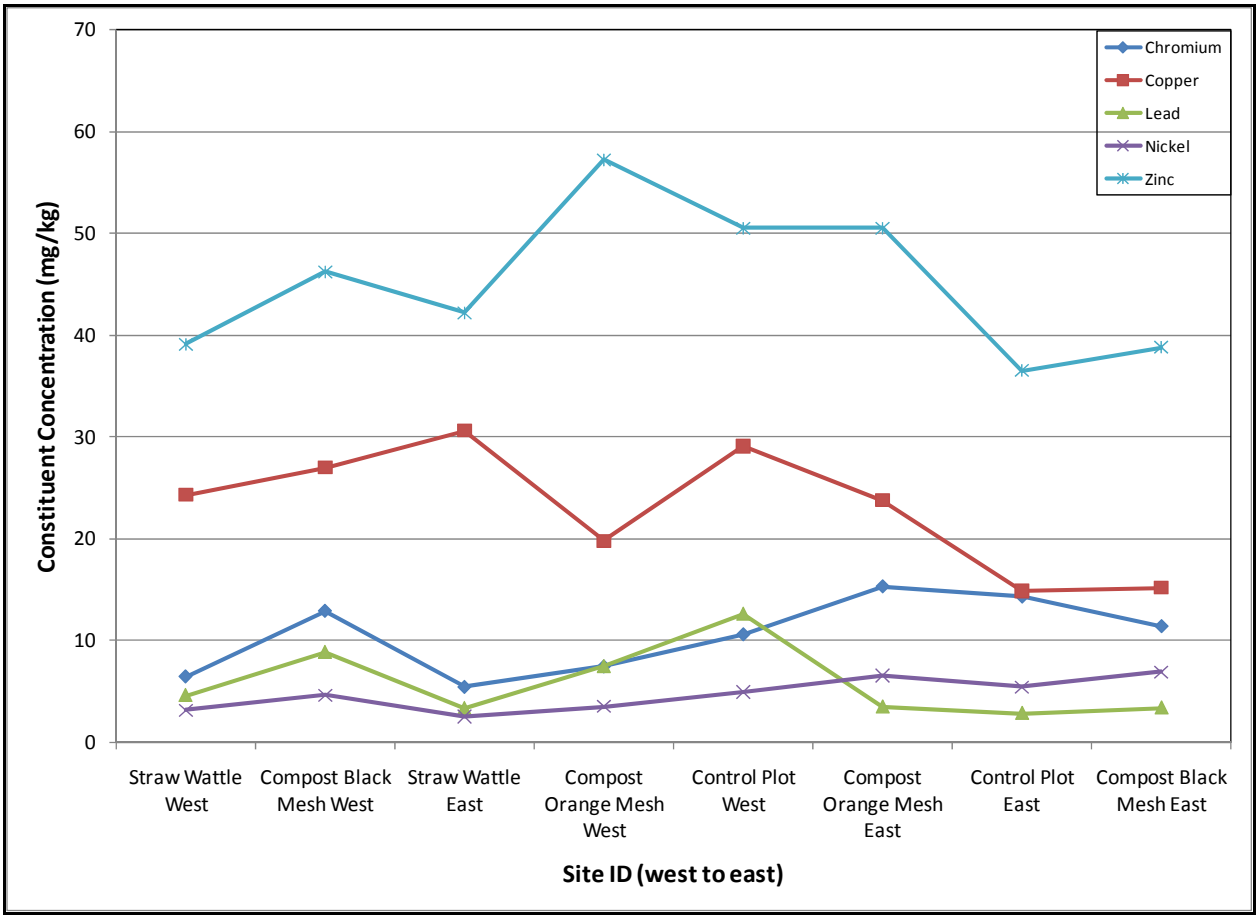

3.3 VEGETATION STUDY RESULTS

One year after the initial hydromulching in 2003, it was observed that few if any of the natives planted in the hydromulching had survived (Weston, G., 2009). Remnants of the seed bank and wind-blown propagules constituted the vegetation on the landfill face.

The majority of the species present in the test plots from February to April 2010 included:

- *Malva parviflora* (dominant)
- *Erodium vulgare* (dominant)
- *Eschscholtzia californica* – possible remnant from the hydromulching
- *Avena californica*
- *Hordeum spp*.
- *Lupinus spp*. – possibly *L. succulentus* from hydroseeding
- *Chenopodium album*
- *Sonchus spp*.
- *Amsinkia*, possibly *A. vulgare* or *A. spectabilis*
- *Silene* (?) of the *Cruciferae*
- *Brassica nigra* and another small *Brassica* species
- *Bromus* – possibly from hydromulching
- *Melilotus indica* – possibly from hydromulching
- *Osteospermum spp* – possibly from hydromulching

In May 2009 when the experiment started, there was very little green vegetation present on the plots except for a few perennial invasive weeds (Figure 2-1). This is normal for this time of year in Southern California. Vegetation management at the landfill consists of one annual mowing in early May, when the plants are in senescence and drying rapidly at the end of the rainy season.

As soon as the winter rains began, the landfill seed bank germinated and within a few weeks a lush growth and greening began. This change in vegetation growth and variability of plant cover most likely played a role in the high variability of constituent concentrations in the wet weather runoff. On February 12, 2010, the first documentation of vegetation characteristics was made, and on March 12, 2010, percent cover, vegetative height, mapping, and biomass (wet weight and dry weight of samples) were measured. By July 7, 2010, the vegetation had been mowed again, with only a very few remnant *C. album* and *E. californica* remaining as green and growing.

3.3.1 Vegetative Height

The County conducted a vegetative height study on March 12, 2010. Height measurements were taken in each corner and in the center of the eight test plots (Table 3-13). A surface plot of the vegetative height distribution throughout the study area demonstrated a variable vegetative height, with greater height in the east third, and a tendency for shorter plants in the center and on the west half (Figure 3-13). The vegetation pattern was unknown when the plots were established; therefore, there was no apparent or expected association between the type of plots and the height or growth patterns during the study period. Mean vegetative height per plot ranged from 77.8 centimeters on the eastern plot to 38.1 centimeters on the western plot (Figure 3-13, Table 3-13). Compost Black Mesh East had the highest vegetation and Compost Orange Mesh West had the lowest vegetation (Figure 3-13).

Table 3-13: Vegetation Height (cm) at Measured Locations and Mean within Each Test Plot

	Site ID	Center	Northwest Corner	Northeast Corner	Southwest Corner	Southeast Corner	Mean
West	Straw Wattle West	66.1	17.8	26.7	69.9	10.2	38.1
↓	Compost Black Mesh West	62.3	58.4	35.6	6.4	30.5	38.6
	Straw Wattle East	61	81.3	75	19.1	15.2	50.3
	Compost Orange Mesh West	16.5	40.7	25.4	40.7	38.1	32.3
	Control Plot West	39.4	63.5	78.8	39.4	15.2	47.3
	Compost Orange Mesh East	55.9	48.3	101.6	NA	62.3	67.0
	Control Plot East	62.3	91.5	35.6	71.1	72.4	66.6
East	Compost Black Mesh East	106.7	35.6	109.3	81.3	55.9	77.8

NA = Measurement not available.

Figure 3-13: Surface Plot of Vegetative Height Distribution

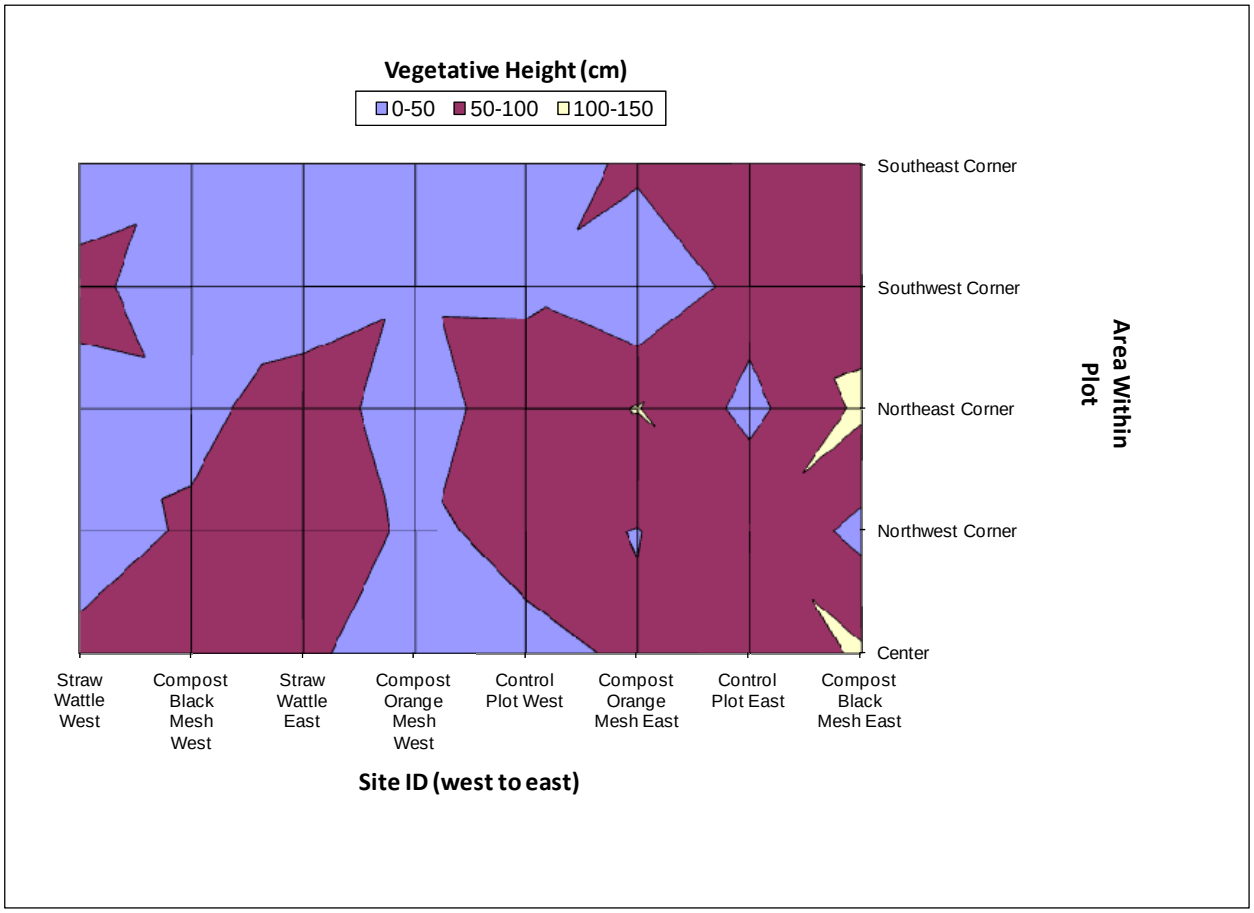

3.3.2 Vegetative Percent Coverage

Percent cover on March 12, 2010, was estimated to be between 98 and 100 percent in all plots. The vegetation cover was uneven and irregular in height (Figure 3-14 and Table 3-14), with 100 percent herbs and forbs. *Malva parviflora* and *Erodium vulgare* were the co-dominant species, each occupying their own particular niches. *M. parviflora* was dominant on the eastern two plots and *E. vulgare* was dominant over the rest of the slope toward the west, with scatterings and clumps of other species. Vegetation tended to be higher on the eastern half of the slope, with shorter growth in most of the western half. This was primarily due to the domination of *M. parviflora*, a robust herb on the eastern half of the plots, and the dominance of the more diminutive *E. vulgare* on the western half of the plots (Figure 3-14).

Table 3-14 presents the percent coverage values for *M. parviflora* and *E. vulgare*, and the combined total for each test plot. Some parts of the plots had more lush growth than others, probably due to better soil composition, structure, and drainage, or compaction differences resulting in a heterogeneous aspect.

There was a tendency for the plants to be taller adjacent to the upslope sides of the erosion socks and on both sides of vertically placed socks regardless of species.

Figure 3-14: Percent Coverage of *Malva parviflora* and *Erodium vulgare*

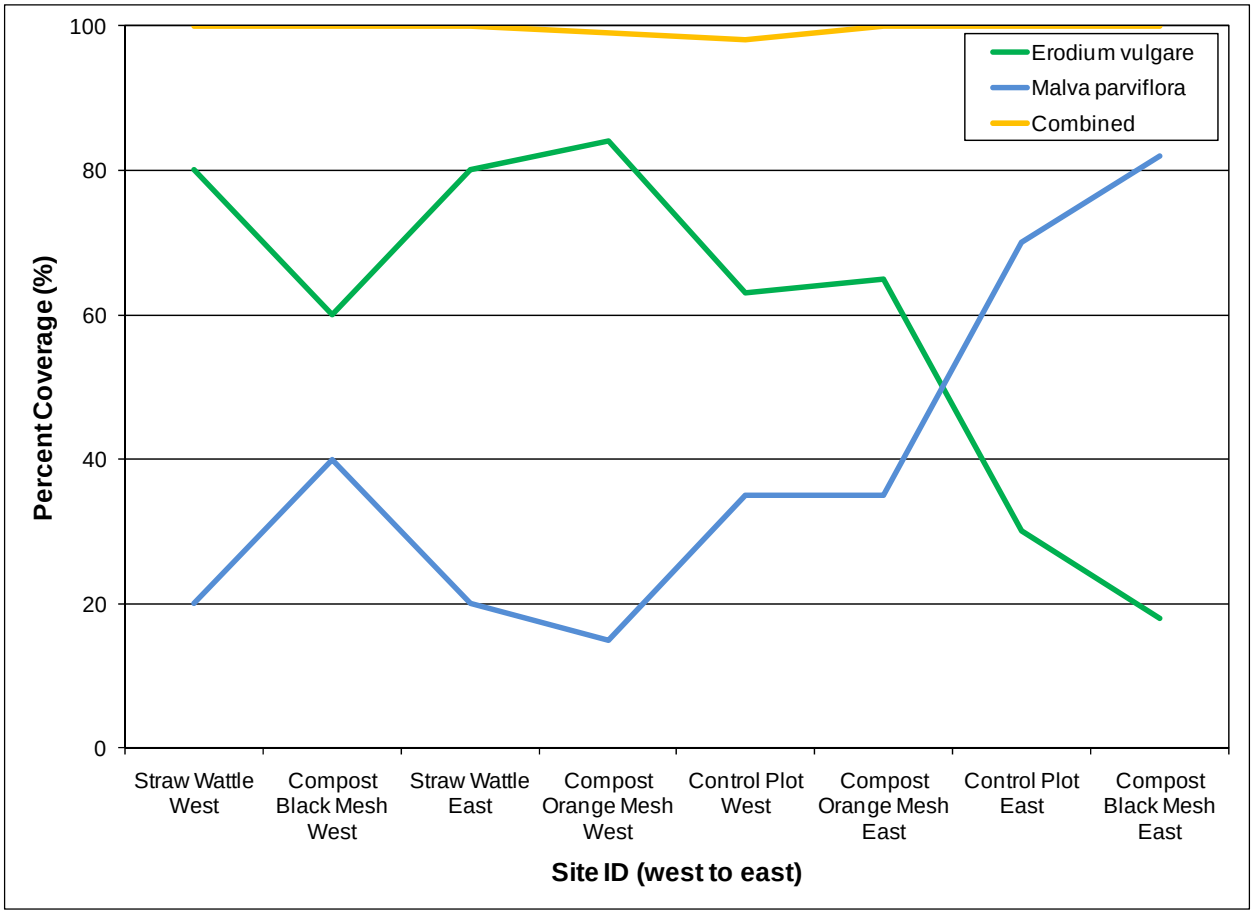

Table 3-14: Percent Coverage of *Malva parviflora* and *Erodium vulgare*

Plot		*Erodium vulgare*	*Malva parviflora*	Combined
West	Straw Wattle West	80%	20%	100%
↓	Compost Black Mesh West	60%	40%	100%
	Straw Wattle East	80%	20%	100%
	Compost Orange Mesh West	84%	15%	99%
	Control Plot West	63%	35%	98%
	Compost Orange Mesh East	65%	35%	100%
	Control Plot East	30%	70%	100%
East	Compost Black Mesh East	18%	82%	100%

3.3.3 Biomass Assessment

As part of the vegetation study, the County also conducted a biomass assessment on March 12, 2010. This assessment compared wet weight to dry weight (Table 3-15, Figure 3-15). The results from the one-meter square samples were extrapolated to each entire test plot size. Figure 3-15 shows the distribution of wet and dry weights at each test plot. The dry weight datum for the Black Compost East site was lost.

Table 3-15: Biomass Wet and Dry Weights and Percent Water

Plot	Wet Weight (kg)	Dry Weight (kg)	Percent Water	Wet Biomass per Plot	Dry Biomass per Plot
Straw Wattle West	2.27	1.14	49.8	337.3	169.4
Compost Black Mesh West	2.05	1.59	22.4	304.6	236.3
Straw Wattle East	2.50	1.14	54.4	371.5	169.4
Compost Orange Mesh West	2.27	1.14	49.8	337.3	169.4
Control Plot West	1.14	0.68	40.4	169.4	101.0
Compost Orange Mesh East	1.82	0.68	62.6	270.5	101.0
Control Plot East	2.50	1.14	54.5	371.5	169.4
Compost Black Mesh East	1.14	NA	NA	169.4	NA
Mean of Plots	1.96	1.07	47.70	291.44	159.41
Standard Deviation	0.55	0.31	13.01	82.31	46.79

NA = The dry weight data for the Compost Black Mesh East site was lost.

Figure 3-15: Plant Wet and Dry Weight Distribution at Each Test Plot

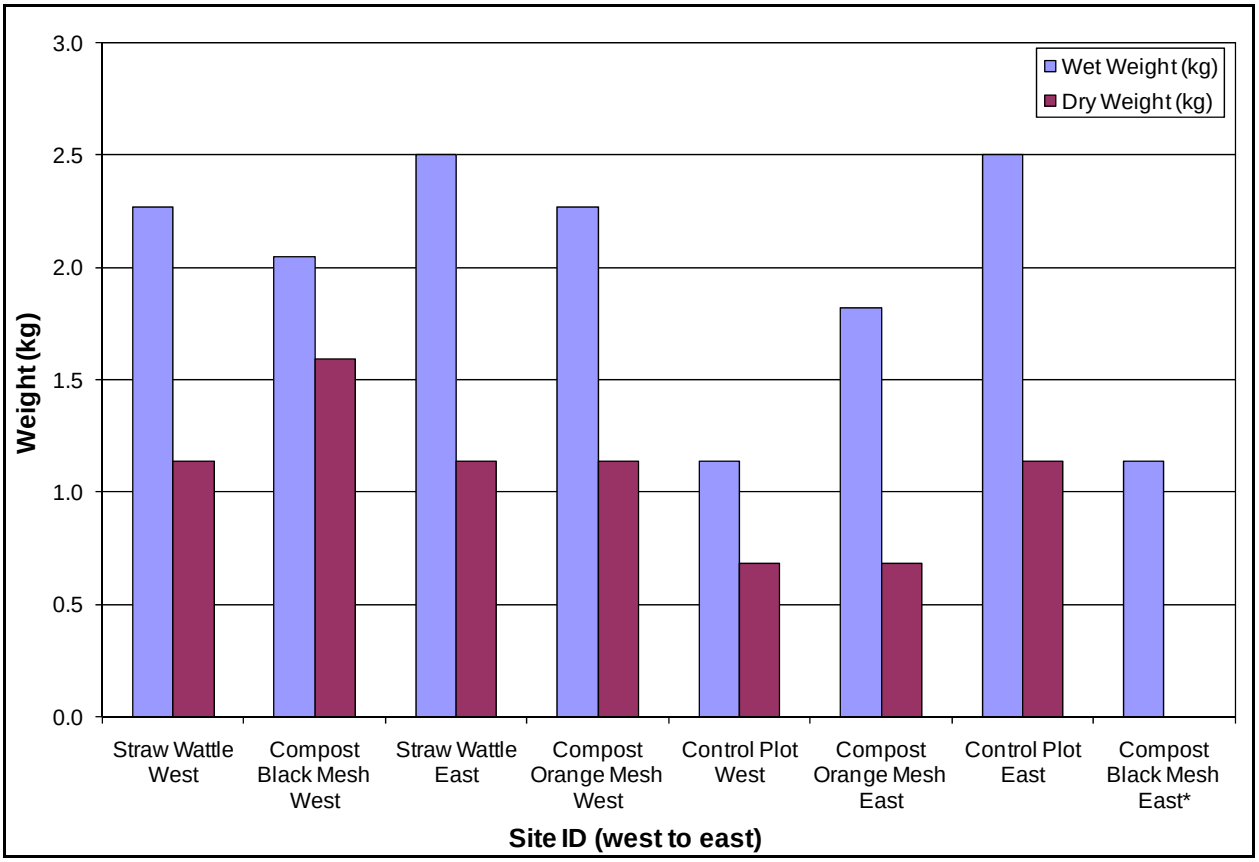

*The dry weight data for the Compost Black Mesh East site was lost.

Wet weights per the 149 square-meter plots ranged from lows of 169 kg on two plots, to highs of 337 kg on two plots. The mean wet weight per plot was 291.4 kg, with a standard deviation of 82.3 kg, indicating a potential 28-percent deviation from the mean. Dry weights of biomass for the plots ranged from 101 kg to 236 kg, with a mean of 159.4 kg per plot and a standard deviation of 46.8 kg, about 29 percent of the dry weight. Moisture content in the plants accrued to about 206 kg per plot, with a mean of 47.7-percent moisture. Dry biomass equivalent was 10.7 metric tons per hectare.

The plants on the western half of the study area generally had greater wet weights than the plants on the eastern half, with the exception of Control Plot East (Figure 3-15). There was an apparent inverse relationship of plant height and wet weights. This relationship could be explained by the shorter *Erodium vulgare* at 98-100 percent cover having a greater density per area than the taller *Malva parviflora* at 98-100 percent cover, although density of plants per area was not measured.

3.4 DATA ANALYSIS RESULTS

3.4.1 Comparative Statistical Analysis

Results from the statistical analysis conducted by Neptune and Company generally did not show any statistically significant differences between the treatment sites and the control sites. Some of the notable results are summarized below:

- There was little evidence of a correlation between the sediment and water chemistry concentrations.
- There was a mild correlation between water flow and water chemistry concentrations for some constituents.
- While the compost and straw wattle treatments did show reduced flow, the reduction was not statistically significant.
- There were some mildly statistically significant results, but the concentrations for the treatment plots were mostly *elevated* from the control plots.
  - For example, iron shows a significant effect of treatment:
    - The straw wattle treatment had a statistically significant effect – an estimated mean concentration increase of 533 ug/L for the straw wattle above the mean for the control site.
    - The compost treatment site had an estimated mean concentration increase of 205 ug/L over the mean concentration for the control site, but this increase was not statistically significant.
- Chromium showed a negative estimate of mean concentrations for the compost or straw wattle plots over the mean for the control plots, but the overall treatment effect was not statistically significant.
- Log-transformations of the water flow data were examined due to the right-skew in flow data. The overall effect on the models was small.

Greater detail regarding results of the statistical analysis, along with the data tables and charts, can be found in Appendix A. The general lack of relationships between treatments indicates that there may be other parameters that outweigh the treatment effects, such as vegetative and soil structure and characteristics that control runoff potentials to a greater degree than the wattle treatments themselves. Therefore, multivariate analysis is warranted between water, soil, and plants to understand better the dynamics of storm water runoff at the landfill face.

3.4.2 Multivariate Analysis of Water, Soil, and Plants

Results from the multivariate analysis of water, soil, and plants conducted by the County are summarized below.

3.4.2.1 Washout from Four Rain Events at the Poway landfill

The four sampled rain events differed in their amounts of total precipitation, length of time of each rain event, and intensity patterns. Wet Weather Event 2 on January 18, 2010, was the most intense rain event and produced the greatest erosion potential as evidenced by high total suspended solids (TSS) concentrations. Washout yields were compared for all variables and were compared to determine the effects of slope location, vegetation status, soil content, and treatment. Only preliminary results are described here.

Total Suspended Solids

- Wet Weather Event 2 on January 18, 2010, caused the greatest erosion of TSS (Figure 3-16). For this event there was a strong east to west gradient, with the eastern plots yielding the least TSS. The other events had a much lower yield of TSS, with the Straw Wattle East test plot tending to have more TSS on Wet Weather Events 1 and 3. The higher vegetation on the eastern plots could explain this phenomenon because of a greater biomass protection of the soil. Wet Weather Event 1 was a fairly gentle rain, and although there was not much vegetation present, little erosion was observed. Wet Weather Events 3 and 4 had lesser erosion, probably due to a greater amount of vegetation present.

Figure 3-16: TSS Concentrations between Sites and Monitored Events

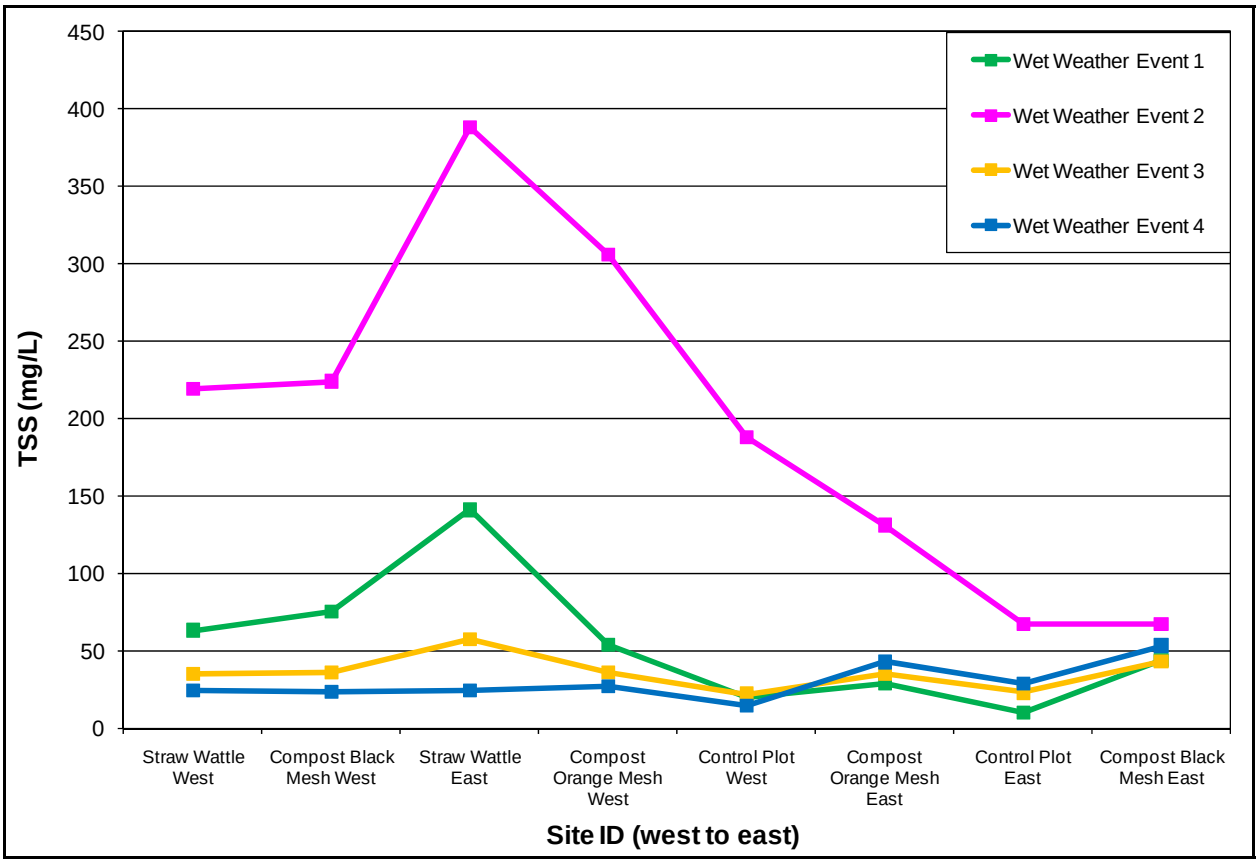

Total Organic Carbon

- Wet Weather Event 2 on January 18, 2010, also yielded the highest average TOC at the landfill (Figure 3-17). For three of the four wet weather events there may have been an east-west gradient. Wet Weather Event 1 on December 7, 2009, yielded the lowest average TOC (Figure 3-18). Orange Compost East Mesh tended to yield the most TOC for individual events. The wet weather events yielded an erratic pattern, with adjacent plots varying greatly in a zigzag pattern (Figure 3-18).

Figure 3-17: Average TOC Concentration during Monitored Events

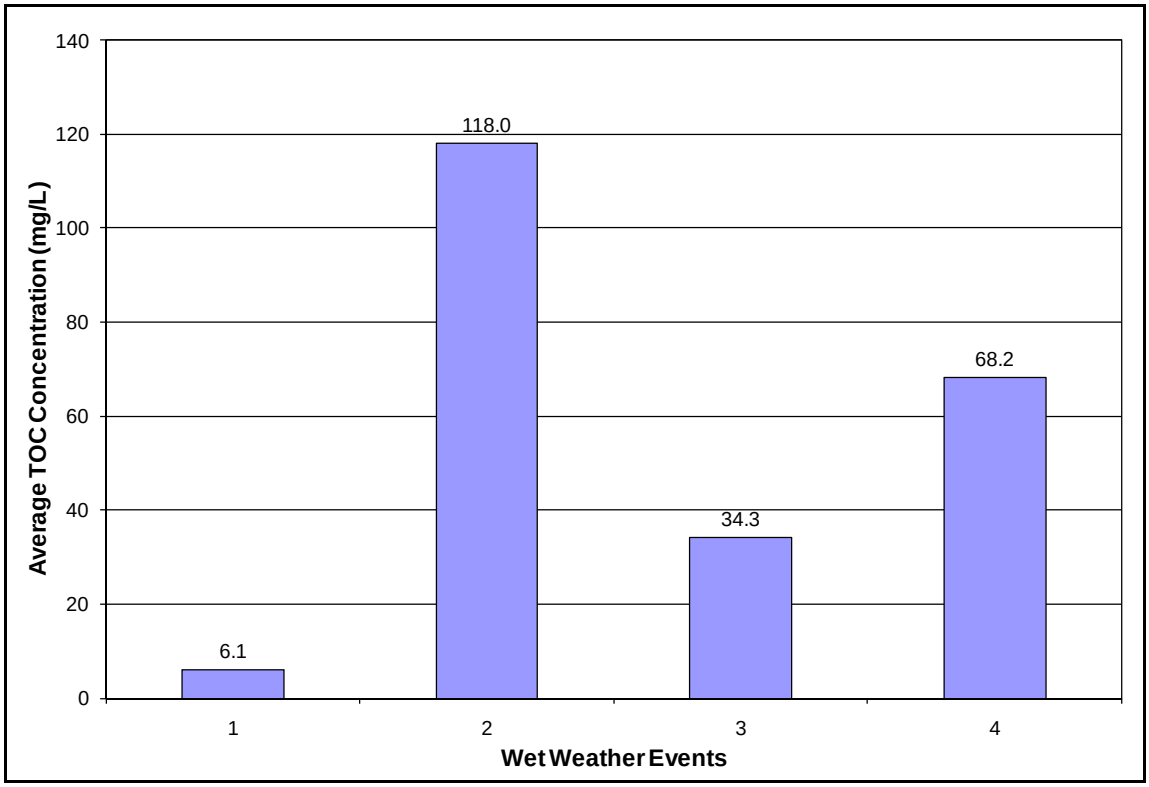

Figure 3-18: TOC Concentrations between Sites and Monitored Events

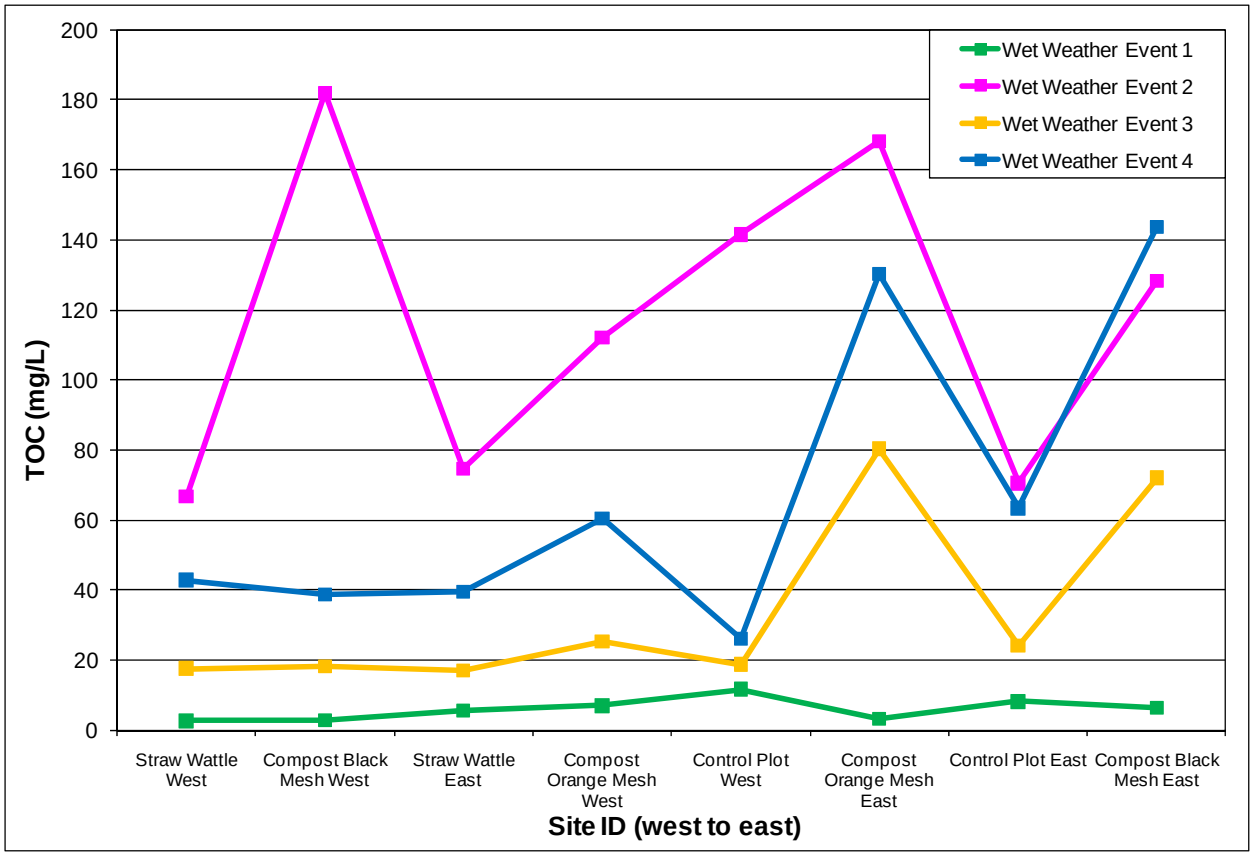

3.4.2.2 TKN, TSS, and TOC from Wet Weather Events Compared with Vegetative Height

<u>Total Kjeldahl Nitrogen (TKN) and Plant Height</u>

- TKN varied considerably from event to event (Figure 3-19). Wet Weather Event 1 had a low, uniform TKN. Wet Weather Event 2 tended to yield the most TKN on an irregular basis across the slope with no apparent relation to treatments.
- With both TKN and plant height, there was a gradient from east to west on the landfill face. Figure 3-20 shows the average TKN concentrations for Wet Weather Events 1 through 4, as well as average concentrations from Wet Weather Events 2 through 4. The data for Wet Weather Events 2 through 4 were plotted because seasonal plant growth had not begun prior to the first wet weather event (Figure 3-20). TKN is associated with biomass and Wet Weather Events 2 through 4 occurred after germination and plant growth began. Also, the heavier rain during Wet Weather Event 2 washed out part of the load of TSS, which contains nitrogen in the mulch and plant debris. Comparing average TKN values from Wet Weather Events 2 through 4 to average plant height was an appropriate comparison.
- For Wet Weather Events 2 through 4, average TKN varied from about 7 mg/L in the west plot to about 20 mg/L on the east plot. Plant height varied from an average of about 38 centimeters in the west to about 78 centimeters in the east later in the season, implying that more biomass was available somewhat earlier in the rainy season. A correlation coefficient (Gxy) of 0.78 (G critical 0.05 was 0.795) when extrapolated produced a level of probability of 0.08. The direct relationship

of increased TKN concentration with increased plant height could be expected about 92 percent of the time. This relationship implies that taller vegetative material produces more TKN on the slope than shorter vegetation.

- Soil samples contained much greater TKN than rain samples (Figure 3-21). Soil TKN was irregular, but there was no apparent slope gradient effect or treatment. The TKN in the plots was irregular, and TKN from the four wet weather events varied in relation to plant height, but there was little apparent statistical association with plant height (Figure 3-20).

Figure 3-19: TKN from Four Rain Events at Poway Landfill

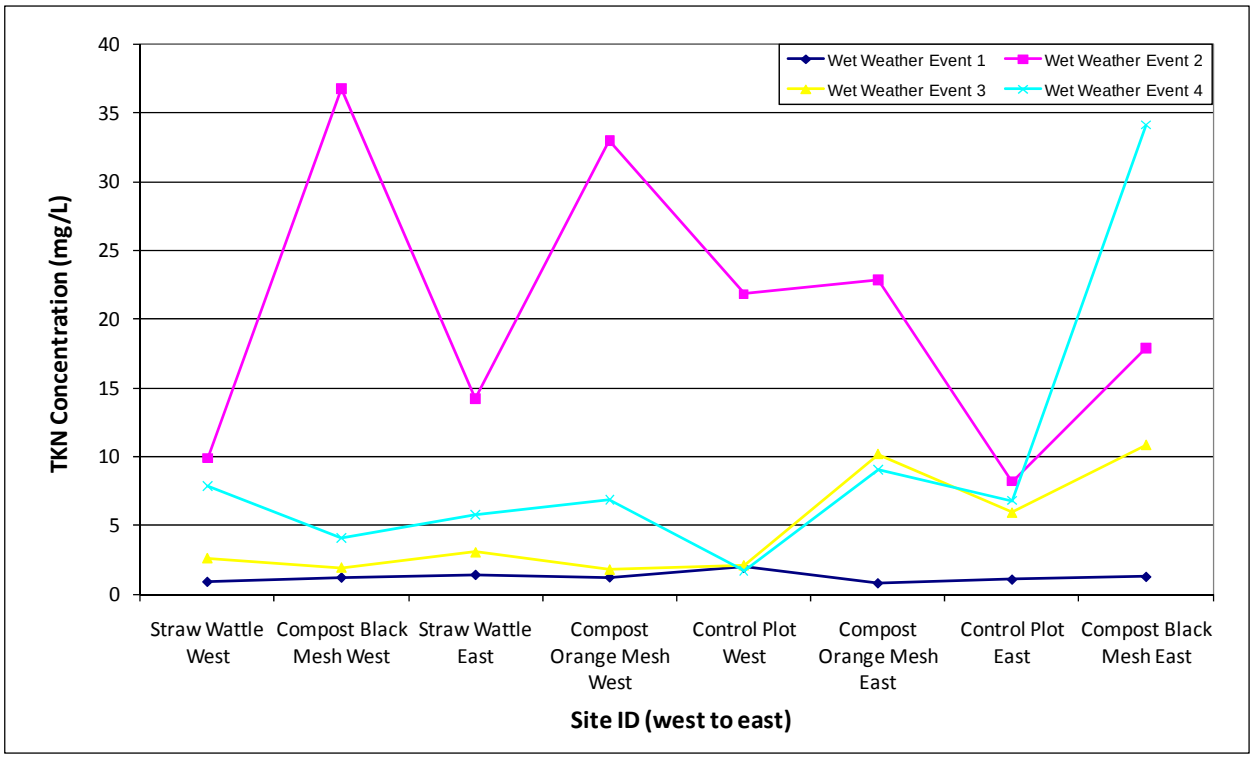

Figure 3-20: Mean TKN and Mean Plant Heights across Test Plots

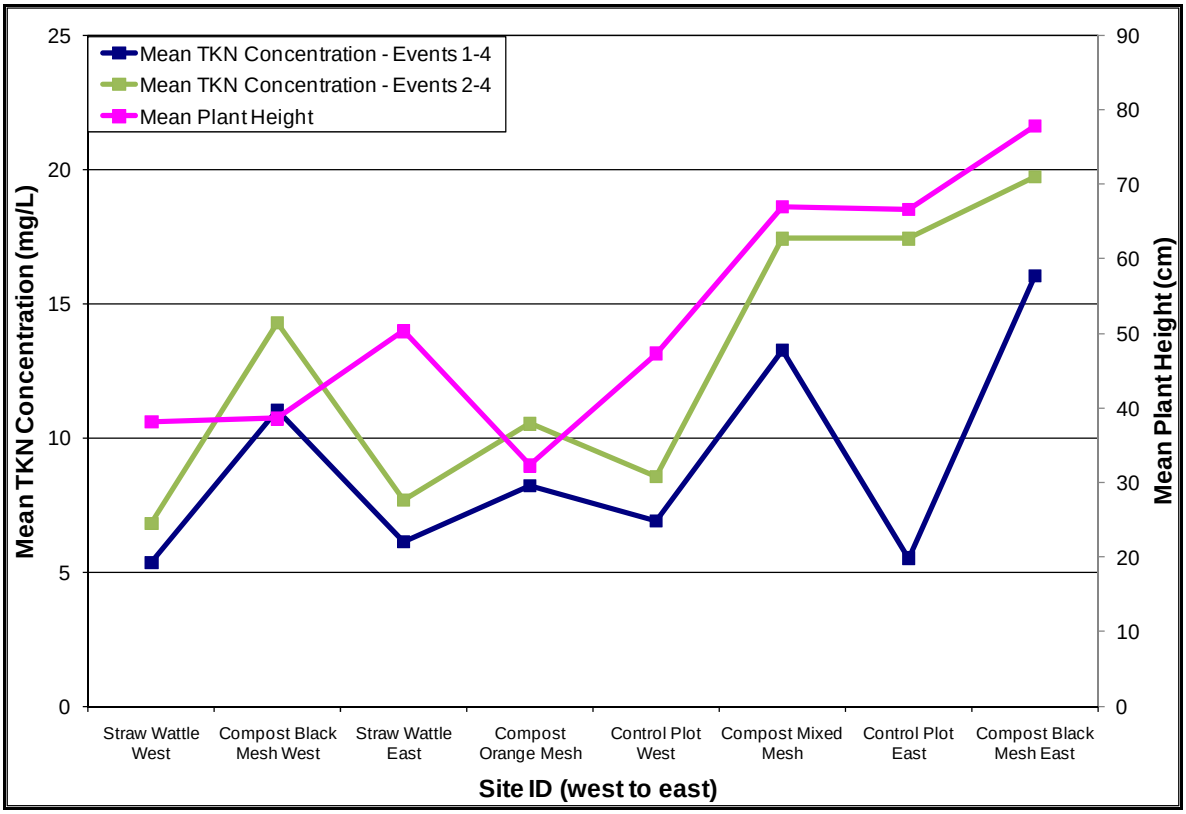

Figure 3-21: Comparison of TKN in Soil and Runoff Water

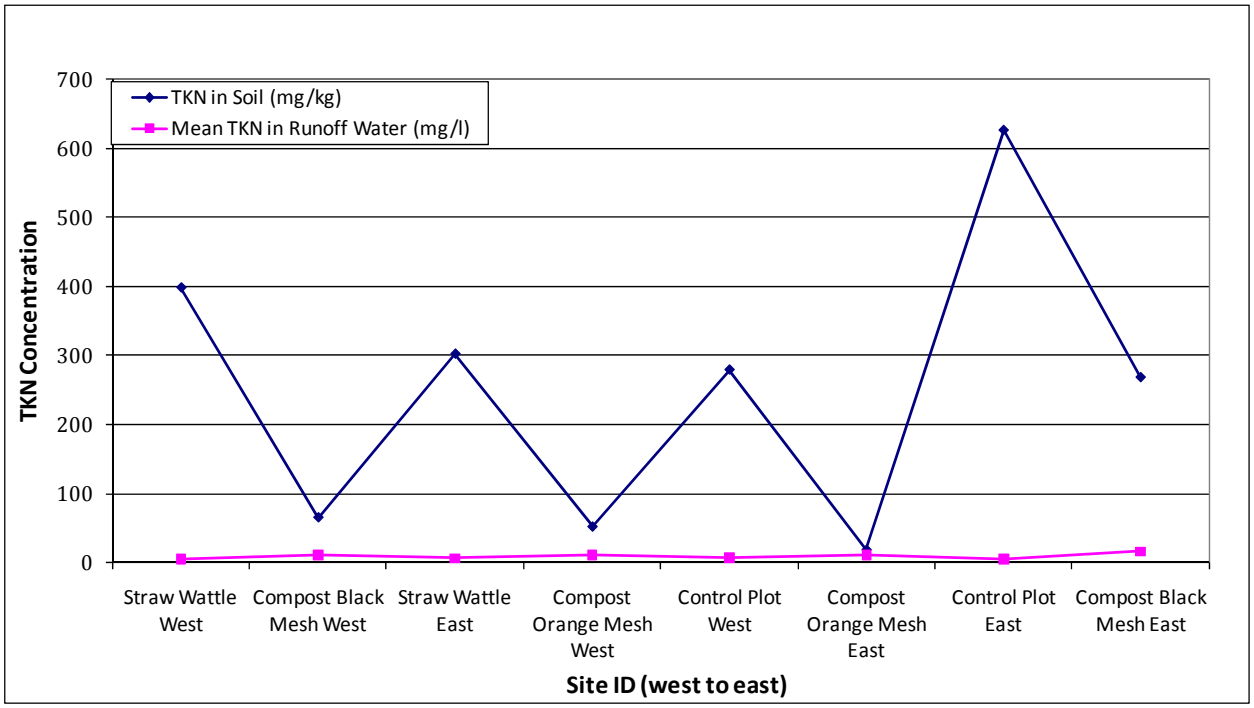

Total Organic Carbon (TOC) and Plant Height

- Average total organic carbon (TOC) in samples from Wet Weather Events 1 through 4 and average plant heights both showed similar changes from east to west, with the eastern part of the slope tending to have taller plants and higher TOC concentrations (Figure 3-22). However, the variability of TOC was more erratic than plant height. Average TOC from Wet Weather Events 1 through 4 ranged from about 95 mg/L on the east to about 32 mg/L on the west. A correlation coefficient (Gxy) of 0.67 (G critical 0.05 was 0.795) when extrapolated produced a level of probability of 0.11. This indicates that the direct relationship of increased TOC concentration with increased plant height could be expected about 89 percent of the time (Figure 3-22). The high variation in the TOC across the slope accounts for the lower correlation coefficient when compared to the correlation coefficient for TKN described above. The higher variation in TOC compared to TKN may be attributable to sources of TOC beyond living vegetative material, such as decomposed or dry vegetative material and animal biomass.

Figure 3-22: Mean TOC and Mean Plant Heights across Test Plots

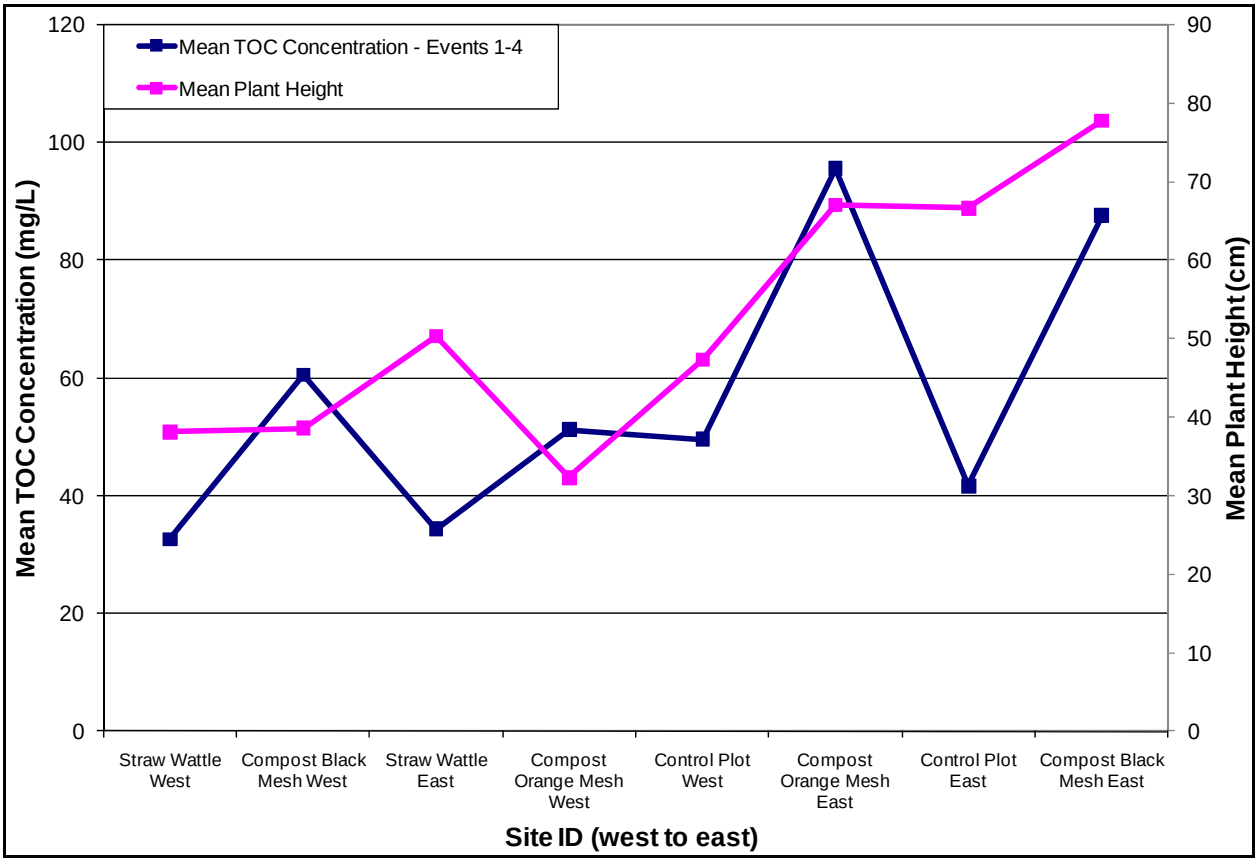

Total Suspended Solids (TSS) and Plant Height

- Average total suspended solids (TSS) in samples from Wet Weather Events 1 through 4 had a pattern across the slope opposite that of plant height where there was a tendency for more suspended solids to wash out where the plant height was less (Figure 3-23). Average TSS from Wet Weather Events 1 through 4 ranged from about 32 mg/L on the east to about 150 mg/L on the west. Based on the pattern described above, it could be expected that in areas of greater plant

height, lower amounts of TSS would be expected. However, this expectation may be affected by the increased biomass volume in those areas and the potential for vegetative material deposition on the surface. That is, areas with increased plant height, and associated increased plant volume, present a greater potential to contribute vegetative material to the ground surface, potentially increasing TSS concentrations in runoff. Although there was an inverse pattern shown between plant height and TSS, there was no statistically significant correlation between TSS and plant height (Gxy = -0.14).

Figure 3-23: Mean TSS and Mean Plant Heights across Test Plots

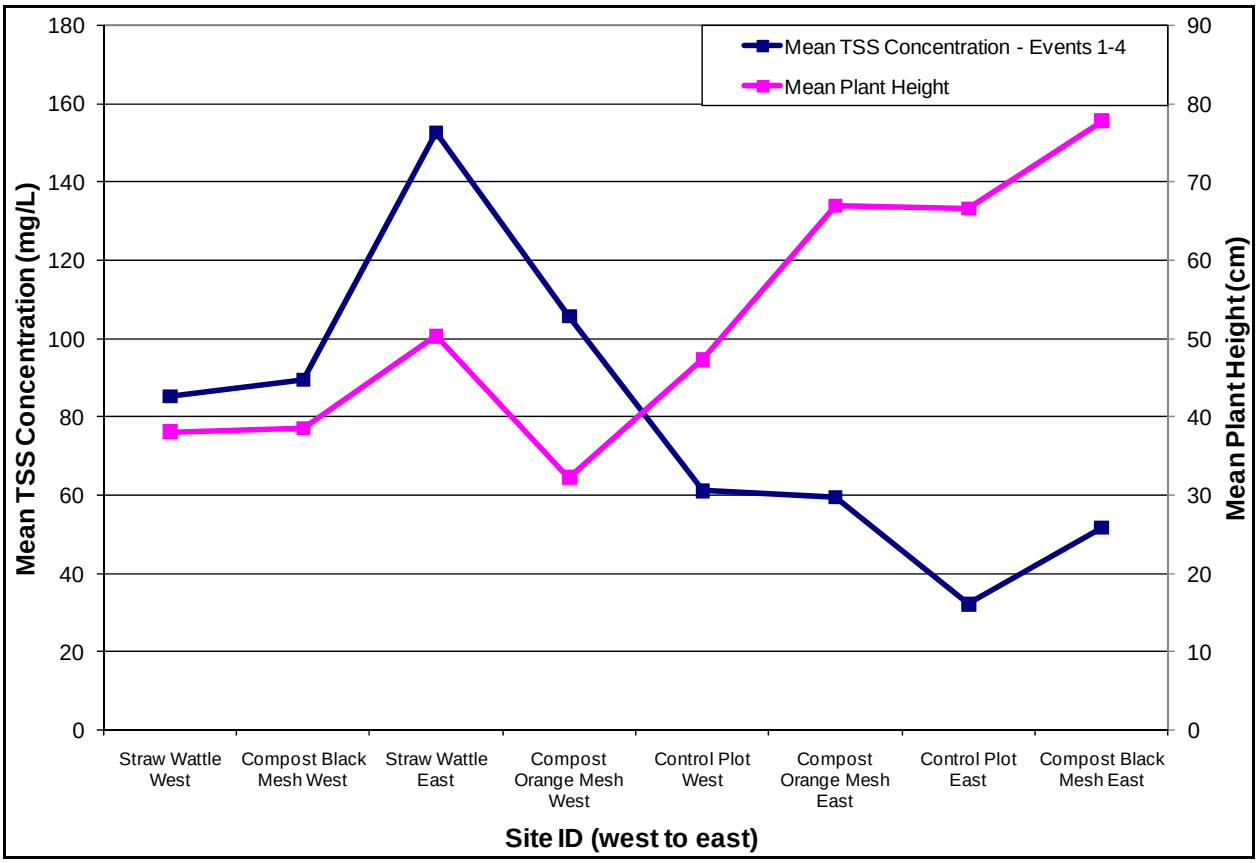

3.5 SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

- The black and yellow mesh did not last very long under UV and weather exposure before beginning to break down and needing replacement.
- The PVC material used for collection trays distorted to different degrees due to UV and/or heat exposure.
- Both the straw wattle and compost sock BMPs showed reduced flow compared to the control plots, although not statistically significant.
- When statistically significant differences were found between straw wattles and compost socks compared to control plots, most constituents were elevated at the straw wattles and compost sock test plots over the control plots.

- The TKN concentrations during periods of plant growth showed a direct, positive relationship with plant height. Although this relationship was not found to be traditionally statistically significant (95-99 percent probability) it was determined to be a notable relationship based on the p-value of 0.08.
- The TOC concentrations showed a direct, positive relationship with plant height. Although this relationship was not found to be traditionally statistically significant (ibid) it was determined to be a notable relationship based on the p-value of 0.11.
- There was an apparent inverse relationship between TSS and plant height, although it was not found to be statistically significant.
- The general lack of differences between treatments indicates that there may be other parameters that outweigh the treatment effects, such as vegetative and soil structure and characteristics that control runoff potentials to a greater degree than the wattle treatments themselves.
- The paucity of treatment effects may also be a function of slope age; after 25 years of exposure to the elements, the base decomposed granite cap may be exhausted of the majority of erodible entities. Traditionally, wattles have been used in new projects and freshly exposed soils and caps, where water retention and erosion control are more obvious.
- The direct relationship of increased TKN concentration with increased plant height could be expected about 92 percent of the time. This relationship implies that taller vegetative material produces more TKN on the slope than shorter vegetation.
- The direct relationship of increased TOC concentration with increased plant height could be expected about 89 percent of the time.
- Although there was an inverse pattern shown between plant height and TSS, there was no statistically significant correlation between TSS and plant height (Gxy = -0.14).
- The anecdotal observation that plant height seemed to be a greater upgrade from the wattles and along the vertical wattles indicated that over time, micro-terraces could form with wattles that would reduce the velocity of runoff.
- *Malva* is a larger herb than *Erodium*, and both have vertical taproots with some fibrous roots near their crowns. A deeper taproot might not be desirable on the landfill cap because it can penetrate further and afford water seepage into the waste mass below, which is undesirable for the creation of greenhouse gases and leachate in this unlined landfill. However, the taller species (*Malva*) has the ability to lessen the force of the rain drops through a thicker canopy. Grasses at the landfill, exemplified by *Bromus sp*, appeared to be able to retain comparatively more soil and mulch than the dicot herbs, and this would be desirable for the retention of more sediment flowing down slope.

4.0 RECOMMENDATIONS FOR FUTURE STUDIES

If this study were to be expanded, recommendations to improve data collection methods and to enhance data quantity and quality are summarized below.

Installing a small concrete swale would prevent distortion observed during this study with the PVC collection trays due to UV exposure. If installing a concrete swale, steps should be taken to create a similar slope between all swales. Properly installed concrete swales would allow for controlling some of the slight variables associated with temporary PVC collection tray installations.

Another data collection enhancement would include installing a flow meter at each test plot. This would provide more detailed flow data and help indicate differences such as the onset of flow between sites, flow rate peaks, and consistent versus inconsistent flow. However, this option would likely include installing a concrete swale or similar flow collection system to allow for installation of flow sensors. Steps for this type of installation should be taken not to slow down flow and allow particles to settle out of the discharge, as this could skew the results.

A third enhancement would be the use of an automated sampler. This would allow for the collection of time-weighted or flow-weighted samples, the latter requiring the use of a flow meter as well. Both of these options provide a composite sample collected throughout the monitoring events, which would be potentially more advantageous as it is more representative of the total discharge. Time weighting allows the automated sampler to be programmed to collect sample aliquots on a specific time interval. The drawback to a time-weighted program is if collection of a sample aliquot is attempted when flow is not present, resulting in a missed sample. A flow-weighted sample would provide the best data as the automated sampler would be programmed to collect samples based on flow volumes passing through the system. This type of program provides a sample that is representative of the various flows throughout the event as well as being representative of the entire event. The primary drawback with a flow-weighted program is the cost, as an automated sampler and flow meter are required at each monitoring location.

Finally, as true with any scientific investigation or evaluation, increased data collection will provide a more accurate picture of the characteristics of a site and allow for increased statistical power when conducting comparative analyses. Monitoring more events over multiple years, particularly with the data collection enhancements described above, would potentially provide a better understanding of the performance of the BMPs.

An amplification of this study to determine the effects of vegetation on storm water runoff and subsequent erosion would be to test the effects of not mowing the vegetation at the end of the growing season and testing the effects of mowing at different heights. One concern however is the omnipresence of fire danger in this rural setting, surrounded by native chaparral and coastal sage on two sides and suburban housing development on the other two sides. New soil surfaces versus seasoned landfill caps would also be worth comparing for efficacy of wattles.

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TITLE: **FIESTA DE LOS PEÑASQUITOS**
ID #: **LP-WQEA13**

ACTIVITY IMPLEMENTATION

In FY 2010, the Los Peñasquitos Watershed Copermittees and the City of San Diego's Think Blue jointly participated in the Fiesta de Los Peñasquitos Celebration, a family oriented annual street faire for residents of the Rancho Peñasquitos community. The education at the event was focused on preventing bacteria pollution in the Los Peñasquitos Watershed Management Area (WMA). This festival has been slated the largest event of the year for the Rancho Peñasquitos Town Council. The Festival was held on Sunday, May 2, from 11 am – 5 pm and was free to the public.

The Fiesta targeted key sources of bacteria in the Los Peñasquitos WMA. Participation provided direct outreach to watershed residents dedicated to preserving water quality in San Diego, but primarily focused on water bodies in Los Peñasquitos WMA. Goals were to increase knowledge and awareness and encourage everyone to take positive steps in preventing pollution from entering the storm drain. With more than 15,000 people in attendance, our presence at the event provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

One outreach booth was staffed by the City of San Diego's Think Blue and another booth was staffed by all four of the Los Peñasquitos Watershed Copermittees (Watershed Booth), in order to provide direct public education and interaction. Public education materials were available in both booths, along with best management practice items that helped promote behavior change. In addition, the Los Peñasquitos Watershed booth distributed reusable bags, clips, pet trash bag containers, pet trash bag refills, and pens as giveaways. Think Blue's promotional giveaways included Think Blue stickers, eco-friendly pens, pencils, backpacks, and Frisbees, along with best management practice (BMP) giveaways, such as dustpans and pet trash bag containers.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue and the Los Peñasquitos Watershed Copermittees plan to participate in the Fiesta de Los Peñasquitos during FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of Poway
- City of Del Mar
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Los Peñasquitos							
FIESTA DE LOS PEÑASQUITOS **Assess the effectiveness of direct public outreach to increase awareness about storm drain pollution and prevention.**							
Management Questions	• What change in awareness /attitude regarding bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?						
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys						
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)						
Data Recorded	***Think Blue* FY 2010 Fiesta de los Peñasquitos**						
	Number of Visitors	***Number of Surveys***	***Gender***	***Heard of Think Blue?***	***How have you heard about Think Blue?***	***Total Materials Distributed***	
	98	36	29% Male 71% Female	67% Yes	57% TV	963 *	
	Estimated total visitors exposed to the Think Blue and Watershed Booths at the Fiesta de los Peñasquitos in FY 2010 (Outcome Level 1)						15,000
	Number of Surveys administered in FY 2010 (Outcome Level 1)						36
	Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2)						72%
	Percentage of individuals able to name a concrete action to prevent storm water pollution (Outcome Level 3)						83%
	Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3)						96%

OBJECTIVES

A Think Blue event survey was administered to visitors who approached the booth. The Survey focused on pet waste as a form of, and source for, bacteria. The goal of the assessment was to determine community knowledge and awareness about storm water issues and whether or not residents would adopt non-polluting behaviors specific to the removal of pet waste. Another goal was to create positive behavioral change that will reduce bacteria and gross sediment in water bodies in the Los Peñasquitos WMA. A primary focus of the Watershed Booth was to increase the public's knowledge and awareness of watersheds (particularly the Los Peñasquitos watershed) and how the public's activities directly affect the health of the watershed and ultimately the lagoons and ocean.

ANALYSIS AND RESULTS

The campaign targeted key areas of concern for pollutants in the Los Peñasquitos WMA. The event provided direct outreach to residents living within the Rancho Peñasquitos area. Based on the assessment, 72% of the individuals surveyed knew that storm water is not treated, and 83% of those who took the survey were able to name a behavior that they could do to prevent storm water pollution. Furthermore, 96% of individuals surveyed reported that they would be willing to take steps to prevent pollution, specifically in regards to picking up after their pets.

CONCLUSIONS

The Fiesta de Los Peñasquitos attracted mainly residents living in the local WMA. The event provided Copermittees and Storm Water staff an open venue to interact with the community. The Think Blue booth and Los Peñasquitos Watershed booth provided continued outreach dedicated in preserving water quality in San Diego. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain system. With approximately 15,000 people in attendance, an educational presence at the event provided a great opportunity to spread the message about storm drain pollution prevention.

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TITLE: **LOS PEÑASQUITOS WATERSHED BROCHURE**
ID #: **LP-WQEA14**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2011. Implementation and distribution is expected to occur in late FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	**San Diego River**	**San Diego Bay**	**Mission Bay & La Jolla**	**San Dieguito River**	**Los Peñasquitos**
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants		Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

OBJECTIVES

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

ANALYSIS AND RESULTS

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

CONCLUSIONS

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2011. Effectiveness assessments are scheduled to begin in FY 2011. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

Los Peñasquitos Watershed URBAN RUNOFF MANAGEMENT PROGRAM

Fiscal Year 2011 Annual Report

January 31, 2012

Prepared and Submitted by the Los Peñasquitos Watershed Copermittees

City of Del Mar
City of Poway
City of San Diego
County of San Diego

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Executive Summary

Since January 2002, the County of San Diego and the Cities of Del Mar, Poway and San Diego (herein referred to as the "Copermittees") have been active in planning, developing and implementing watershed-based programs in the Los Peñasquitos Watershed Management Area (WMA) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). This Annual Report describes the actions taken by the Copermittees in Fiscal Year (FY) 2011 (July 1st, 2010 to June 30th, 2011) to implement and refine the 2008 Los Peñasquitos Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA.

The Copermittees collaborated on their efforts to address high priority surface water quality issues throughout the Los Peñasquitos WMA. This was coordinated through periodic meetings held throughout the reporting period. The meetings were held in order to effectively plan and implement the Los Peñasquitos WURMP, develop and prioritize water quality activities that address pollutants of concern in the WMA, exchange ideas on how to address High Priority Water Quality Problems (HPWQPs) in the WMA, evaluate the effectiveness of actions, and collaborate on development of required submittals. In order to complete the objectives, the group performed assessments and conducted activities to address the water quality problems. These assessments and activities include: (1) a water quality assessment; (2) a pollutant source assessment; (3) planning and implementation of watershed activities; and (4) an assessment of the Copermittees' activities in the WMA.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees collected and reported JURMP and WURMP activities performed on a hydrologic area (HA) basis. This information is not comprehensive and for some data sets, estimates were used to generate quantities of activities (this process is explained in **Appendix A**). The Copermittees believe that this is an important step to integrate the activities and reporting to best assess and plan for activities that address the identified HPWQPs on a HA basis.

The Copermittees will continue to refine and augment the Los Peñasquitos WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the Los Peñasquitos WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

A summary of the program accomplishments for FY 2011 is found below:

Los Peñasquitos Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Copermittees continued to develop and implement a watershed-based program that addresses the HPWQPs and their sources in the Los Peñasquitos WMA. The Copermittees met nine (9) times over the course of the reporting period to plan, implement and assess watershed activities. Through workgroup collaboration, there has been an increase in the ability of the Copermittees to identify and address watershed source pollutants, an increase in public awareness, partnerships formed

with other organizations, and opportunities provided for collaboration resulting in cost-effective activities.

Water Quality Assessment

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the Los Peñasquitos WMA based on data collected and analyzed during the reporting period. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the *2010-2011 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2012)for FY 2011 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Los Peñasquitos WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

HPWQPs in the Los Peñasquitos WMA:

- Bacteria in both HAs
- Sedimentation in the Miramar HA

Pollutant Source Assessment

During this reporting period, the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the HPWQPs identified and each source category's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

Planning and Implementation of Watershed Activities

WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Collectively, seven (7) WURMP Watershed Activities were actively implemented for WURMP credit during the reporting period – this includes four (4) Water Quality Activities (one of which had an educational component) and three (3) Water Quality Education Activities. Additional activities were also in other phases such as planning and assessment in FY 2011. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. Details of these activities are found in Section 4 and **Appendix B** of this Annual Report. The listing below identifies the activities actively implemented for WURMP credit:

Watershed Water Quality Activities

- Coastal Cleanup Day Sponsorship
- ILACSD Trash Cleanup Sponsorship
- Residential Rain Barrel Subsidies & Distribution
- Los Peñasquitos Property-Based Inspections

Watershed Education Activities

- Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*
- Fiesta de Los Peñasquitos
- Coastal Cleanup Day
- Residential Rain Barrel Subsidies & Distribution (Educational Component)

Activities selected and conducted by the Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. The effectiveness of the individual activities is variable; however, collectively the Copermittees' program actions intend to have positive effects on water quality.

Effectiveness Assessment

The Copermittees continue to improve the program's effectiveness assessment by utilizing where appropriate the six-level assessment framework prepared by the Regional Copermittees in October 2003. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, the effectiveness assessment continues to lay the foundation for future in-depth evaluations of activities and program implementation.

Based upon the requirements of the Permit, the Copermittees are compliant and effective in implementing the Los Peñasquitos WURMP.

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1 Introduction

This Annual Report describes the Copermittees' activities during the reporting period (July 1, 2010 through June 30, 2011) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Permit, the Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout Fiscal Year (FY) 2011. The Copermittees will continue to work to implement, improve, and enhance their programs and activities.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Poway. Other participating jurisdictions include the Cities of Del Mar and San Diego, and the County of San Diego.

The Permit requires that the Copermittees within the Los Peñasquitos Watershed collaborate in the development and implementation of a watershed-scale program that addresses urban runoff[1] quality. The rationale for this approach is simple: urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon downstream receiving waters. The mechanism that the Permit uses to require watershed collaboration is the development and implementation of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, the Permit requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied. The overall goal of the Los Peñasquitos Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

Water quality priorities are evaluated each year and take into consideration the water quality assessment performed during each previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Los Peñasquitos WURMP. For the Los Peñasquitos WMA, the water quality priorities are: bacteria and sediment.

To target these water quality priorities, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the collective watershed strategy as the basis for developing and implementing the activities, the

[1] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

Copermittees focused their efforts on the potential sources that are the likely high-priority pollutant contributors in the Los Peñasquitos WMA. This FY 2011 report details the implementation of the Los Peñasquitos WURMP's collective watershed strategy.

1.1 Copermittee Collaboration

1.1.1 Los Peñasquitos WURMP Meetings

The Copermittees met nine (9) times during FY 2011 to implement the Los Peñasquitos WURMP. All four (4) of the Los Peñasquitos Copermittees also participate in the San Dieguito WURMP, so to maximize efficiency and prevent overlap of discussion, these meetings were held concurrently with the San Dieguito WURMP Copermittees. The Copermittees collaborated to develop, prioritize and implement watershed activities that address HPWQPs and sources in the WMA and the development of the Annual Report. They also exchanged ideas on how to address HPWQPs in the WMA and evaluated the effectiveness of the watershed activities. **Table 1-1** is a summary of Los Peñasquitos WURMP meetings and an outline of agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Items Discussed
7/8/2010	IRWM, Quality of Life Funding Strategy, TMDLs (Bacteria – Los Peñasquitos Lagoon), WURMP Activity Planning, Unfunded Mandate Test Claim Discussion
10/14/2010	Annual Water Quality Monitoring Report Update, WURMP Annual Report, Quality of Life Funding Strategy, TMDLs (Bacteria – Los Peñasquitos Lagoon), Watershed Activity Presentation (Beyond Inspections)
12/9/2010	WURMP Annual Report, Quality of Life Funding Strategy, TMDLs (Bacteria – Los Peñasquitos Lagoon), Workgroup Updates
1/13/2011	WURMP Annual Report, Quality of Life Funding Strategy, TMDLs (Bacteria – Los Peñasquitos Lagoon), Workgroup Updates
2/10/2011	WURMP Annual Report, Quality of Life Funding Strategy, TMDLs (Bacteria – Los Peñasquitos Lagoon), Workgroup Updates, Fiesta de Los Peñasquitos 2011
3/10/2011	Quality of Life Funding Strategy, TMDLs (Bacteria – Los Peñasquitos Lagoon), Workgroup Updates (Regional WURMP Workgroup & Program Planning Committee)
4/14/2011	Quality of Life Funding Strategy, TMDLs (Bacteria – Schedule, MOU, LRPs, Cost Sharing and Compliance Monitoring), Workgroup Updates (Regional WURMP Workgroup & Program Planning Committee)
5/11/2011	Quality of Life Funding Strategy, TMDLs (Bacteria – Schedule, MOU, LRPs, and Cost Sharing), Workgroup Updates (Regional WURMP Workgroup & Program Planning Committee), Fiesta de los Peñasquitos 2011
6/16/2011	TMDLs (Bacteria – Schedule, MOU, LRPs, and Cost Sharing; Peñasquitos Lagoon)

The general watershed meetings of the Los Peñasquitos WURMP Workgroup were led by the City of Poway, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks were then carried out by the Copermittees, each within the structure of their jurisdictional organization. Task completion was tracked and assessed at the Workgroup meetings and reported in this Annual Report.

Lagoon TMDL
The Copermittees are assisting the RWQCB in the development of a sediment TMDL in the Los Peñasquitos WMA. The TMDL specifically addresses the issue of sedimentation/ siltation within the lagoon. In FY 2007, the RWQCB issued Investigative Order R9 2006-76 for monitoring associated with Lagoon TMDL modeling. The Lagoon TMDL Investigative Order has resulted in the collection of a significant amount of hydrologic, hydraulic and water quality data for the lagoon and the associated WMA. Through monitoring during FY 2008, a significant amount of data was collected in order to calibrate and validate the TMDL models for pollutant load allocation. During FY 2009, the Copermittees as well as other dischargers and interested parties began meeting with RWQCB staff to begin developing the TMDL. In FY 2010 and FY 2011, the Copermittees continued to work with the RWQCB staff to complete the TMDL and prepare it for adoption by the RWQCB.

1.2 Watershed Map Update

The Los Peñasquitos WMA is located within west–central San Diego County. The WMA has two hydrologic areas (HAs) and extends from the foothills east of the City of Poway to the coastal plain where the watershed drains into Los Peñasquitos Lagoon before flowing into the Pacific Ocean through a narrow mouth at Torrey Pines State Beach. The Los Peñasquitos WMA is 60,419 acres and encompasses the drainage areas of Los Peñasquitos Creek, Carmel Creek, and Carroll Canyon Creek (Soledad Canyon), with the remaining 1,107 acres comprising the lagoon and coastal drainages. Land use within the overall Los Peñasquitos WMA is classified primarily as open space/parks and recreation (31%), residential (22%), vacant and undeveloped land (14%), and transportation (13%). However, there are several notable differences in land use composition among the three creek drainage areas and between the two HAs that make up the watershed. The Los Peñasquitos WMA is mostly within City of San Diego jurisdiction (71%), with the remaining areas in City of Poway (25%), County of San Diego (3%), and City of Del Mar (0.2%) jurisdiction. Over 60% of the watershed is privately owned land.

No updates have been made to the previously submitted Watershed Map. A copy of the most recent Watershed Map from the Los Peñasquitos WURMP Annual Report submitted in January 2009 can be found in **Attachment A** to this report.

1.3 Organization and Content Of Report

SECTION 1 - Introduction
Section 1 of the Annual Report provides a summary of the Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2 - Water Quality Assessment
Section 2 provides an updated evaluation and analysis of the Los Peñasquitos WMA's receiving water conditions based on applicable water quality data from the *2010-2011 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2012).

SECTION 3 - Pollutant Source Assessment
Section 3 provides an update on the likely sources of urban runoff. Although the assessment covers the entire WMA, it specifically addresses the distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA.

SECTION 4 - Implementation of Watershed Activities
Section 4 describes activities implemented by the Copermittees during the FY 2011 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution. The activities selected and conducted by the Copermittees during FY 2011 address the overall goal of the WURMP and the Permit by focusing on the HPWQPs in both HAs.

SECTION 5 - Effectiveness Assessment
Section 5 provides an assessment of the implementation and effectiveness of the Los Peñasquitos WURMP for the FY 2011 reporting period using concepts from "A Framework for Assessing the Effectiveness of Jurisdictional Runoff Management Programs." The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and best management practice (BMP) implementation and resulting changes in receiving water quality. Consistent with the requirements of the Permit, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 6 - Conclusions
Section 6 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

2 Water Quality Assessment

This section provides an assessment of the 2010-2011 monitoring programs conducted in the Los Peñasquitos WMA. A complete presentation of the monitoring efforts conducted during the reporting period is located in the *2010-2011 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2012).

2.1 Monitoring Programs

Monitoring activities conducted in the WMA to comply with Order R9-2007-0001 are provided in **Table 2-1**. A map presenting the locations of the Mass Loading Station (MLS), Temporary Watershed Assessment Stations (TWAS), and the HAs is provided on the following page as **Figure 2-1**.

Table 2-1 2010-2011 Monitoring Program Activities

Program Data Set	Constituents Assessed	Number of Sites Assessed
Receiving Water Monitoring		**7**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	1 MLS, 2 TWAS, 1 SMC[1]
SMC Regional Monitoring[1]	Water chemistry, toxicity, bacteria, rapid stream bioassessment	1 SMC[1]
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, trash	1 MLS, 2 TWAS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, TOC	1 MLS, 2 TWAS
Third-Party Data	General chemistry and bacteria	3 Coastkeeper
Urban Runoff Monitoring		**446**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	194
Jurisdictional Dry Weather Monitoring	Trash	225
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	6
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	6
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, and bacteria	13
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	1
CSDM Program	Coastal Outfall and Receiving Waters bacteria	1

1: The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over 5 years.
CSDM – Coastal Storm Drain Monitoring
MLS – Mass Loading Station
SMC – Stormwater Monitoring Coalition
TOC – Total Organic Carbon
TWAS – Temporary Watershed Assessment Station

Figure 2-1 Location of MLS, TWAS, and HAs – Los Peñasquitos Creek WMA

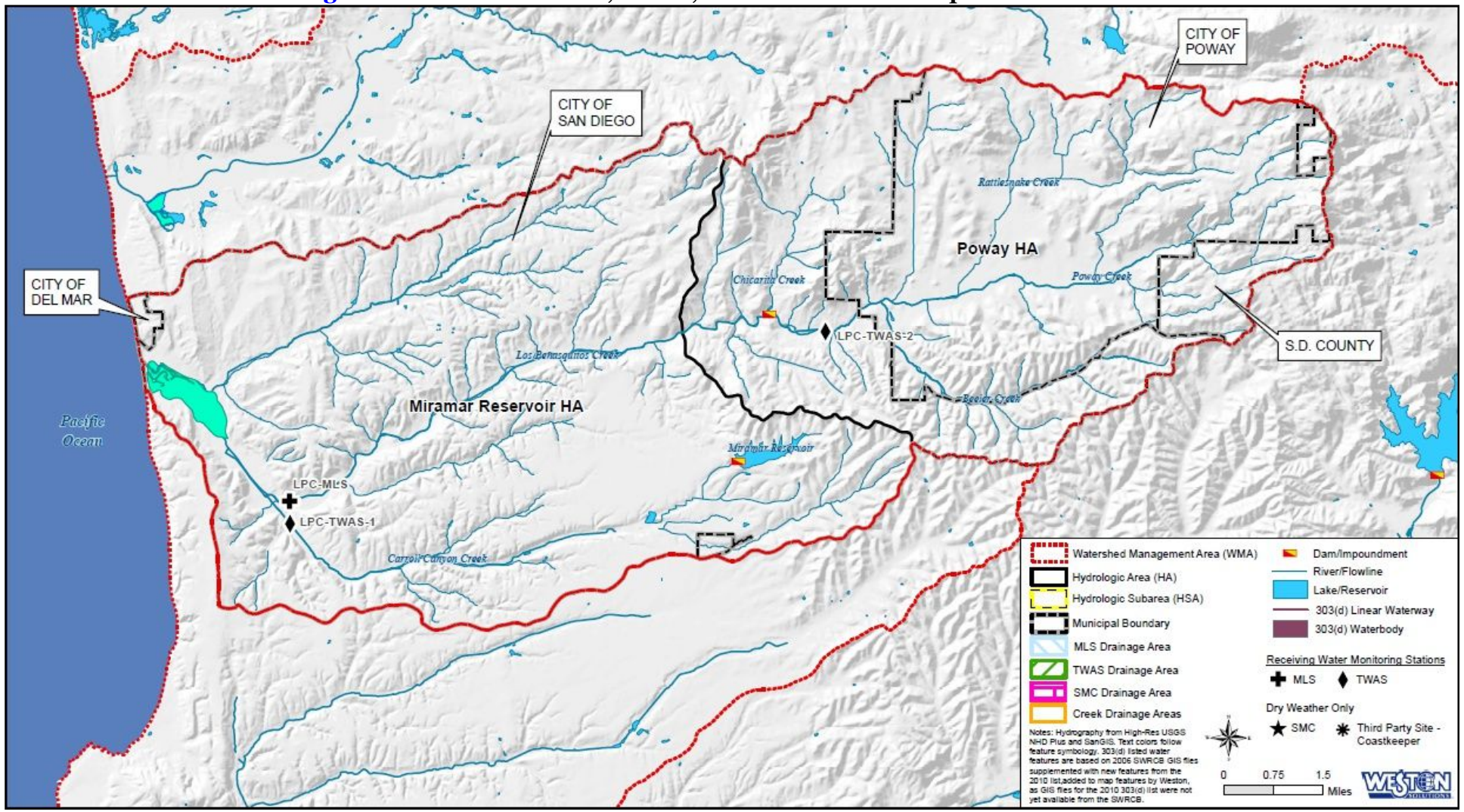

2.2 303(d) Listings

Within the watershed, contaminants identified on the 2010 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant TMDL status/activity. On November 12, 2010, USEPA approved California's 2008-2010 Section 303(d) list of impaired waters and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. At that time, USEPA identified additional water bodies and pollutants for inclusion on the State's 303(d) list and provided public notice and the opportunity for public comment on the proposed additions which ended December 23, 2010. On October 11, 2011, USEPA issued its final decision regarding the waters EPA added to the State's 303(d) list.

Table 2-2 Los Peñasquitos WMA 2010 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	HA	Pollutant/Stressor on 2010 SWRCB 303(d) List	TMDL Status
Los Peñasquitos Lagoon	906.1	Sedimentation/Siltation	In development – proposed for completion in 2019
Los Peñasquitos Creek	906.1	*Enterococcus*, Fecal Coliform, Selenium, TDS, Total Nitrogen as N	Proposed for completion in 2019
		Toxicity	Proposed for completion in 2021
Pacific Ocean Shoreline at Los Peñasquitos River Mouth	906.1	Total Coliform	Proposed for completion in 2019
Miramar Reservoir	906.1	Total Nitrogen as N	Proposed for completion in 2019
Soledad Canyon	906.1	Sediment Toxicity	Proposed for completion in 2019
		Selenium	Proposed for completion in 2021
Poway Creek	906.2	Selenium and Toxicity	Proposed for completion in 2021

Source: SWRCB, 2010

2.3 Assessment

This section includes an integrated presentation of the watershed monitoring during both ambient and wet weather. The integrated assessment incorporates the results from watershed receiving water and urban runoff monitoring (MS4, MLS, TWAS, and SMC), with the purpose of overlapping constituents between the programs. Assessments were conducted using data from multiple current and historical monitoring programs, and the results derived using a weight-of-evidence approach. Each HA in the Los Peñasquitos WMA was assessed individually and summarized for the entire WMA by program element in **Table 2-3**.

Table 2-3 Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings
Los Peñasquitos WMA	Intermediate Receiving Water Monitoring[3]	Ambient Receiving Water Assessment (MLS, TWAS, SMC, and 3rd Party Data)	▪ MLS and TWAS Constituents of Concern[1]: - High priority: *Enterococcus*, TDS, Toxicity (*S. capricornutum* acute), Very Poor IBI. - Medium priority: Total P, Dissolved P. ▪ SMC Program (SMC02902)[2]: - High priority: Dissolved Oxygen, Chloride, Sulfate, Poor IBI, Total N, Total P, and TDS. ▪ Third Party Data (Coastkeeper): - High priority: *Enterococcus*. ▪ Lagoon, Estuary, and Bay Monitoring were not applicable during the 2010-2011 monitoring year.
		Wet Weather Receiving Water Assessment (MLS and TWAS)	▪ MLS and TWAS Constituents of Concern[1]: - High priority: Fecal Coliform, Very Poor IBI, TDS, TSS, Turbidity. - Medium priority: pH, Bifenthrin, Toxicity (*H. azteca* acute). ▪ Pyrethroid concentrations were below detection limits in all sediment samples. ▪ Lagoon, Estuary, and Bay Monitoring were not applicable during the 2010-2011 monitoring year.
		Rapid Stream Bioassessment	One bioassessment sample is collected each year at each MLS and TWAS location during ambient conditions and used for both the ambient and wet assessment. ▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed during the 2010-2011 monitoring year.
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of Concern[1]: - High priority: *Enterococcus,* Total N, Total P, TDS. - Medium priority: Fecal Coliform. ▪ Trash assessments indicated portions of the lower watershed (906.1) had the highest occurrence of observed trash. Of the 225 sites monitored, 5% received a rating of marginal and 1% received a rating of poor. The remainder of the sites were rated as either optimal or suboptimal.
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ Constituents of Concern[1]: - High priority: Fecal Coliform. - Medium priority: TDS.
		Source Identification Program	▪ Results suggest that single family residential land uses are likely contributors of the following constituents during wet weather events: - High priority: TSS, Turbidity, Dissolved Copper (site specific), Bifenthrin, Permethrin, and Fecal Coliform. - Medium priority: Cyfluthrin and pH. ▪ Dry weather constituents suggestively contributed by single family residential land uses include: - High priority: *Enterococcus*[2], Fecal Coliform[2], Total N[2], Total P[2], TDS[2].
	WMA Assessment	Receiving Water Trend Assessment	Trends are based on historical data, including data from the 2010-2011 monitoring year: ▪ Significantly increasing trends were observed for Fecal Coliform, Total Coliform, and Total Nickel. ▪ Significantly decreasing trends were observed for Total Lead and Total Organic Carbon.
		2011 Long-Term Effectiveness Assessment (LTEA) Ratings	▪ WMA high priority ratings for Fecal Coliform, *Enterococcus*, Total P, Total N, TDS, Turbidity, Bifenthrin, Benthic Algae, and Toxicity. ▪ Results are generally consistent with the 5-year assessment in the LTEA. Bifenthrin and TSS were not confirmed during wet weather receiving water monitoring, and Bifenthrin and Benthic Algae not confirmed during ambient weather receiving water monitoring.

Notes:
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.
IBI – Index of Biotic Integrity
TDS – Total Dissolved Solids
TSS – Total Suspended Solids

2.4 Integrated Assessment

Assessment of the WMA during both wet weather and ambient conditions is presented in an integrated manner to present managers with an overall assessment of the WMA and to provide answers to the core management questions as described in the regional monitoring program. The integrated assessment incorporates both the ambient weather and wet weather assessments and provides a summary of the overall findings for the Los Peñasquitos WMA. The integrated assessment also identifies which priority constituents overlap between receiving waters and urban runoff. It is anticipated that MS4 Outfall Program data will bolster the assessment process as the data become available in future years. The integrated watershed assessment results are presented in **Tables 2-4** and **2-5.**

Table 2-4 Miramar 906.1 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Intermediate Receiving Water Monitoring [3] (MLS, TWAS, and SMC)	**NPDES Program – MLS** • Chemistry – No priority constituents identified • Toxicity – *S. capricornutum* acute (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* • Nutrients – Total Phosphorous (Med), Dissolved Phosphorous (Med) • TDS – Observed **NPDES Program – TWAS-1** • Chemistry – No priority constituents identified • Toxicity – *S. capricornutum* acute (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – Observed **SMC Program (One Station)[2]** • Chemistry – DO, Chloride, Sulfate • Toxicity – No toxicity observed • Bioassessment – Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed **Third-Party Data (Coastkeeper)** • Bacteria – *Enterococcus*	**NPDES Program – MLS** • Chemistry – No priority constituents identified • Toxicity – No toxicity observed • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – Observed **NPDES Program – TWAS-1** • Chemistry – TSS, Turbidity, Bifenthrin (Med), pH (Med) • Toxicity – No toxicity observed • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – Observed (Med) **Synthetic Pyrethroids in Sediment[2]** • No priority constituents identified
Urban Runoff Monitoring (MS4 Outfall and DWM)	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – *Enterococcus*, Fecal Coliform (Med) • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Not observed

MLS Trends[4]	
Increasing	Fecal Coliform, Total Coliform, Total Nickel
Decreasing	Total Lead, Total Organic Carbon

1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.
4: Trends are based on historical data, including data from the 2010-2011 monitoring year.

DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
TWAS - Temporary Watershed Assessment Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
DO - Dissolved Oxygen

Within the Miramar HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, total nitrogen, total phosphorous, and TDS. Ambient weather medium-priority constituents include total and dissolved phosphorus. The Copermittees' *2011 Long-Term Effectiveness Assessment* (LTEA) (MOE, LWA, Weston, 2011) rated TDS and *Enterococcus* as high

priorities, as well as benthic algae, which is rated as a low priority based on the 2010-2011 monitoring results. Medium priorities in the LTEA included total nitrogen (also found to be low priority during the 2010-2011 monitoring). The only high-priority constituent at TWAS-1 is TDS; the LTEA results are consistent, although *Enterococcus*, a low priority during the 2010-2011 monitoring, was identified as an additional high priority in the LTEA.

Fecal coliform is the only wet weather water quality issue outlined by the monitoring programs in both urban runoff and intermediate receiving waters. TDS is the only constituent designated as high-priority and fecal coliform is the only constituent as a medium priority at the MLS during wet weather. Results are generally consistent with the 5-year assessment in the LTEA, although fecal coliform was rated as a high-priority constituent in the LTEA. In addition, the LTEA identified bifenthrin as a medium-priority constituent (identified as a low-priority at the MLS during 2010-2011 monitoring). At the TWAS-1 monitoring station, high-priority constituents include TSS and turbidity, and medium-priority constituents include TDS, fecal coliform, pH, and bifenthrin. Results for turbidity, TDS, and bifenthrin are consistent with the LTEA. Fecal coliform was identified as a high priority and TSS was identified as a medium priority in the LTEA.

Long-term trend analysis in the Miramar HA is currently limited to wet weather data collected at the MLS. Three constituents are significantly increasing — fecal coliform, total coliform, and total nickel. Of these three constituents, only fecal coliform is above the wet weather water quality benchmark. Total coliform and total nickel do not have wet weather water quality benchmarks. Two constituents, total lead and total organic carbon (TOC), are significantly decreasing at the MLS. Neither constituent has a wet weather water quality objective, although total lead is decreasing at a rate of 2.94 mg/L per year, and TOC is reducing at a rate of 0.203 mg/L per year. These findings are similar to those of the LTEA. At present there are insufficient data to complete trend analyses on available dry weather receiving water data.

Table 2-5 Poway 906.2 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Intermediate Receiving Water[3] Monitoring (MLS, TWAS, and SMC)	**NPDES Program – TWAS-2** • Chemistry – No priority constituents identified • Toxicity – *S. capricornutum* acute (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* • Nutrients – No priority constituents identified • TDS – Observed **SMC Program (One Station)[2]** • Chemistry – DO, Chloride, Sulfate • Toxicity – No toxicity observed • Bioassessment – Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed	**NPDES Program – TWAS-2** • Chemistry – TSS (Med), Turbidity (Med), Bifenthrin (Med) • Toxicity – *H. azteca* acute (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Observed (Med) **Synthetic Pyrethroids in Sediment[2]** • No priority constituents identified
Urban Runoff Monitoring (MS4 Outfall and DWM)	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – *Enterococcus*, Fecal Coliform (Med) • Nutrients – Total Nitrogen, Total Phosphorous (Med) • TDS – Observed	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Not observed

1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.

DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
TWAS - Temporary Watershed Assessment Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
DO - Dissolved Oxygen

Within the Poway HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, total nitrogen, total phosphorous, and TDS. TDS and *Enterococcus* were rated as the ambient weather high-priority constituents at the TWAS-2 monitoring station. Both constituents were also identified as high priorities in the LTEA, along with total phosphorus and total nitrogen (total phosphorous and total nitrogen were both rated as low-priority in the current annual assessment).

Fecal coliform is the only wet weather water quality issue outlined by the monitoring programs in both urban runoff and intermediate receiving waters. Only fecal coliform is identified as a high-priority constituent at the Los Peñasquitos Creek TWAS-2 monitoring station during wet weather. Medium-priority wet weather constituents include TDS, TSS, turbidity, and bifenthrin. The LTEA identified most of the same constituents as priorities, however, TSS, turbidity, and bifenthrin were identified as high priorities in the LTEA, and TDS was not identified as a priority. In addition, the LTEA identified diazinon (a low-priority constituent based on the current annual monitoring) as a medium priority.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data in the Poway HA as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

2.4.1 High Priority Water Quality Problems

Based on the assessments above and the available water quality data, the Copermittees have determined that the HPWQPs in the Los Peñasquitos WMA are:

1. Bacteria in both HAs
2. Sediment in the Miramar Hydrologic Area

It should be noted that the HPWQPs have not changed from previous assessments or the 2008 Los Peñasquitos WURMP.

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3 Pollutant Source Assessment

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Los Peñasquitos WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs and is presented by HA.

Table 3-1 summarizes the land use in each of the HAs. Land use information is generally associated with wet weather urban runoff where rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to dry weather urban runoff that is generally associated with point dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant generating activities and from the conveyance of urban runoff as it enters and travels through the MS4. Potential pollutant generating activities include irrigation runoff, sanitary sewer overflows, improper landscape maintenance, and improper use of fertilizers, herbicides, and pesticides.

Through four studies performed by the City of San Diego – *Tecolote Creek Microbial Source Tracking Summary* (City of San Diego, 2010); *San Diego River Source Tracking Investigation* (City of San Diego, 2010); *Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek* (City of San Diego and Weston, 2009); and, *San Diego County Enterococcus Regrowth Study* (SCCWRP, 2012) – it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates that regrowth in catch basins is a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[2], was found to provide both a transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishii et al., 2007; Yamahara et al., 2009).

Tables 3-2 and **3-3** present an inventory of pollutant generating sources that the Copermittees currently track by HA. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants (blue highlight). The process used to develop the tables was taken directly from the Copermittees' LTEA. The data used for the process includes the following: (1) results in the 2010-2011 Regional Annual Monitoring Report (Weston Solutions, January 2012); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the LTEA (MOE, LWA, Weston, 2011).

[2] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)	
	906.1	906.2
Open Space	11,183.1	6,551.9
Single Family Residential	6,531.4	4,727.1
Roads and Freeways	4,908.0	2,596.9
Industrial	3,207.3	856.4
Multiple Family Residential	1,419.6	922.1
Vacant and Undeveloped Land	1,392.6	5,987.4
Commercial	1,291.2	743.3
Institutional	1,218.8	450.5
Parks, Golf Courses, Cemeteries	1,090.9	856.7
Agricultural, Orchards, Vineyards	218.2	364.9
Storage and Warehousing	185.1	46.9
Water Supply	137.2	0.0
Recreation	113.5	31.8
Spaced Rural Residential	112.9	2,653.7
Utilities	90.8	99.3
Health Services	76.6	50.7
Construction	68.8	71.0
Water	41.4	0.0
Automotive and Transportation	37.2	54.8
Junkyard, Dump, Landfill	0.0	27.2

Source: SANDAG, 2009

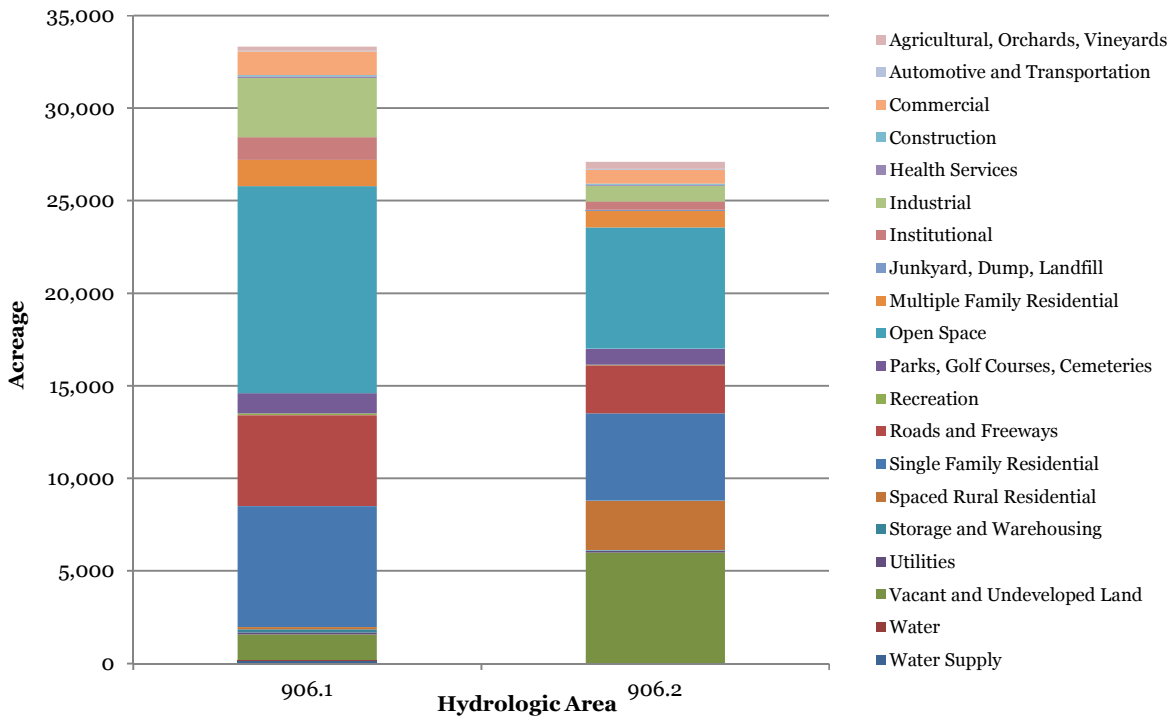

Table 3-2 Pollutant Generating Sources – 906.1 Miramar Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Agriculture	3	UK	L	L	L	L	L	UK	L
Animal	34	N	UL	L	UK	L	L	N	L
Automotive	350	L	L	UL	UL	UK	UK	L	L
Cemetery	2	UK	UK	UK	UK	L	UK	UL	UK
Contractor	397	UL	UL	L	UL	UL	UL	UL	UL
Food Establishment	663	N	L	UL	UK	UK	L	UL	L
Equipment	114	L	L	UL	UL	UK	UL	UL	L
Fueling	23	UK	L	UK	N	N	N	N	L
General Industrial	103	L	L	UK	UK	UK	UK	UK	L
General Retail	20	UL	UL	L	UL	UL	UL	UK	UL
Golf	3	UK	UK	UK	UK	L	UK	UL	UK
Health Services	2	N	UL	L	UK	L	UL	UK	L
Institutional	6	L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	311	L	L	L	UL	UL	UL	UL	L
Metal	57	L	L	UK	UK	UK	UL	UL	L
Nursery	3	L	UL	L	L	L	L	UL	UL
Stone & Aggregates	90	L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	728	L	L	L	UK	UK	UL	UL	L
Municipal	High: 89; Non-High: 1	N	N	L	N	N	UK	UL	N
Construction	High: 23; Medium: 41; Low: 1,339	UL	UL	L	UL	UL	UL	L	UL
Residential	8,077 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-3 Pollutant Generating Sources – 906.2 Poway Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities			Pollutant Source Loading Potential[3]							
				Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Agriculture	1			UK	L	L	L	L	L	UK	L
Animal	15			N	UL	L	UK	L	L	N	L
Automotive	120			L	L	UL	UL	UK	UK	L	L
Contractor	85			UL	UL	L	UL	UL	UL	UL	UL
Food Establishment	342			N	L	UL	UK	UK	L	UL	L
Equipment	46			L	L	UL	UL	UK	UL	UL	L
Fueling	24			UK	L	UK	N	N	N	N	L
General Industrial	21			L	L	UK	UK	UK	UK	UK	L
General Retail	5			UL	UL	L	UL	UL	UL	UK	UL
Golf	8			UK	UK	UK	UK	L	UK	UL	UK
Health Services	1			N	UL	L	UK	L	UL	UK	L
Manufacturing	86			L	L	L	UL	UL	UL	UL	L
Metal	22			L	L	UK	UK	UK	UL	UL	L
Nursery	5			L	UL	L	L	L	L	UL	UL
Stone & Aggregates	23			L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	228			L	L	L	UK	UK	UL	UL	L
Municipal	High	Non-High		N	N	L	N	N	UK	UL	N
	59	22									
Construction	High	Medium	Low	UL	UL	L	UL	UL	UL	L	UL
	10	24	358								
Residential	8,274 acres			L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

4 Implementation of Activities

4.1 JURMP and Watershed Activities

The Copermittees are responsible for implementing Jurisdictional Urban Runoff Management Program (JURMP) activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. These activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. To develop meaningful analysis of the results and assessment of activities conducted, the data and information is reported on an HA basis. However, the JURMP data and information is not comprehensive and for some data sets, estimates were used to generate quantities on an HA basis – this estimation process is explained in **Appendix A** of the report.

In addition to their JURMP activities, the Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Los Peñasquitos WURMP.

The tables below present the Copermittees' efforts towards reporting all urban runoff management activities on a watershed basis. A comprehensive reporting of all urban runoff management activities on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements. The tables identify the WURMP and many of the JUIRMP activities that are associated with the HPWQPs in each HA.

Collectively, the Copermittees actively implemented four (4) watershed water quality activities and three (3) watershed education activities in the Miramar HA (906.1), and two (2) watershed water quality activities and three (3) watershed education activities in the Poway HA (906.2). Some of these activities overlapped HAs. The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

Table 4-1 JURMP and WURMP Activities – 906.1 Miramar Hydrologic Area*

Activity		Results			HPWQPs	
					Bacteria/ Pathogens	Sediment
Inspections # of Inspections: (Inventory #)	Agriculture	1: (3)			✓	✓
	Animal	14: (34)			✓	✓
	Contractor	96: (397)				✓
	Food Establishment	426: (663)			✓	
	General Retail	8: (20)				✓
	Health Services	0: (2)				✓
	Manufacturing	104: (311)				✓
	Nursery	2: (3)			✓	✓
	Stone & Aggregates	47: (90)				✓
	Storage & Warehousing	169: (728)				✓
	Construction	High	Medium	Low		✓
		292: (23)	319: (41)	6,397: (1,339)		
	Municipal	High	Non-High			✓
		89: (89)	1: (1)			
Street Sweeping (Tons Collected)		830.7			✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		4,735.6			✓	✓
LP-WQA1	Coastal Cleanup Day Sponsorship				✓	
LP-WQA8	ILACSD Trash Cleanup Sponsorship				✓	
LP-WQA23	Residential Rain Barrel Subsidies & Distribution				✓	✓
LP-WQA25	Los Peñasquitos Property-Based Inspections				✓	✓
LP-WQEA2	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*				✓	
LP-WQEA13	Fiesta de Los Peñasquitos				✓	✓
LP-WQEA15	Coastal Cleanup Day				✓	✓

*Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-2 JURMP and WURMP Activities – 906.2 Poway Hydrologic Area*

Activity		Results	HPWQP
			Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Agriculture	0: (1)	✓
	Animal	4: (15)	✓
	Food Establishment	123: (342)	✓
	Nursery	0: (5)	✓
Street Sweeping (Tons Collected)		667.6	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,814.4	✓
LP-WQA23	Residential Rain Barrel Subsidies & Distribution		✓
LP-WQA25	Los Peñasquitos Property-Based Inspections		✓
LP-WQEA2	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*		✓
LP-WQEA13	Fiesta de Los Peñasquitos		✓
LP-WQEA15	Coastal Cleanup Day		✓

*Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

4.2 Watershed Education Activities

This section describes activities implemented by the Copermittees during the FY 2011 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing education activities that address the HPWQPs in the Los Peñasquitos WMA. The activity selection process is described fully in the 2008 Los Peñasquitos WURMP.

The Copermittees continue to make progress in developing and implementing programs aimed at improving storm water and urban runoff water quality in the WMA. **Table 4-3** below list the education activities implemented during FY 2011 by the Copermittees. In addition, other activities were in the active planning phase during the reporting period. For more details on all of the activities, refer to **Table 4-7** and **Appendix B**.

Table 4-3 Watershed Education Activities Implemented During FY 2011

ID #	Activity/Project Name
LP-WQEA2	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*
LP-WQEA13	Fiesta De Los Peñasquitos
LP-WQEA15	Coastal Cleanup Day
LP-WQA23	Residential Rain Barrel Subsidies & Distribution

The effectiveness assessments for these activities are presented in the Activity Implementation Sheets (**Appendix B**) and are summarized in Section 5 – Effectiveness Assessment.

4.3 Public Participation Activities

4.3.1 Introduction

The Public Participation component of the 2008 Los Peñasquitos WURMP encourages residents and organizations within the WMA (such as other agencies, private companies and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water and other methods including direct interaction of Los Peñasquitos WURMP Copermittee staff with members of the public.

4.3.2 Activities Conducted

WURMP documents and reports have been posted on the Project Clean Water website, http://www.projectcleanwater.org, where they are available to all interested stakeholders. During FY 2011, the Los Peñasquitos WMA web page on the Project Clean Water website received 1,287 hits and the Los Peñasquitos WURMP page received 358 hits. These totals are similar to those seen in the previous reporting period. A monthly breakdown of the site visits can be found in the tables below.

Table 4-4 Number of Hits: Project Clean Water Los Peñasquitos WMA Web Site

Jul 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	Mar 11	Apr 11	May 11	Jun 11	Total
122	136	142	131	203	145	48	59	90	61	65	85	1,287

Table 4-5 Number of Hits: Project Clean Water Los Peñasquitos WURMP Web Site

Jul 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	Mar 11	Apr 11	May 11	Jun 11	Total
31	40	37	47	41	37	28	17	27	16	15	22	358

Copermittees worked in cooperation with the Regional Education and Residential Sources workgroup. During this reporting period, the Copermittees participated in eight (8) community events outlined in the list below.

Outreach Events

The Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- June 11 - July 5, 2010 – San Diego County Fair
- September 19, 2010 – Poway Days Festival
- September 25, 2010 – Coastal Cleanup Day
- December 15, 2010 – Day Without a Bag (Countywide)
- April 16, 2011 – Poway Spirit Day
- May 1, 2011 – Fiesta de los Peñasquitos
- April 30, 2011 – Creek to Bay Cleanup
- June 18, 2011 – San Diego County Fair – Enviro Fair

Two cleanup events took place at four (4) locations in the WMA that included approximately 501 participants. These events are presented in **Table 4-6** below. Watershed concepts and principles were incorporated into outreach efforts at booth displays and event activities.

Table 4-6 Community Cleanup Events in FY 2011

Date	Name	Location	# of Participants	# of Pounds Removed	Hydrologic Area
9/25/2010	Coastal Cleanup Day	Torrey Pines and Los Peñasquitos Lagoon	133	89	Miramar (906.1)
		Los Peñasquitos Canyon Preserve	65	300	Miramar (906.1)
		Poway Community Park, Poway	170	168	Poway (906.2)
4/30/2011	Creek to Bay Cleanup	Torrey Pines State Beach	93	85	Miramar (906.1)
		Los Peñasquitos Canyon Preserve	40	2,155	Miramar (906.1)

Other events included focused presentations to residents, stormwater training for municipal employees, guided watershed hikes, residential oil and hazardous waste collections and tire collections.

4.3.3 Future Efforts

The Copermittees will continue to provide opportunities for residents and other interested parties to participate in Los Peñasquitos WURMP activities. Draft documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the Los Peñasquitos WMA.

4.4 Collaborative Land-Use Planning Efforts

4.4.1 Introduction

The Land-Use Planning component of the 2008 Los Peñasquitos WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities.

4.4.2 Activities Conducted

Integrated Regional Water Management (IRWM)

The Copermittees have been active participants in the Integrated Regional Water Management (IRWM) planning process (IRWMPP) since its beginning in 2005. The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders.

During FY 2010-11, the IRWM Program held five (5) Regional Advisory Committee (RAC) meetings providing updates on Basin Plan Triennial Review, Quality of Life Initiative, role of salinity management in water supply, and a discussion on the concept of the public goods charge for water. Participation in the IRWMPP has already led to funding approval for a number of BMP (Best Management Practice) installation projects that will benefit the region by reducing runoff. On January 7, 2011, the IRWM Program successfully submitted an implementation grant proposal for $7.9 million to fund 11 projects as part of the Round 1 of Proposition 84 IRWM Implementation grants.

Quality of Life Funding Strategy

The County of San Diego has participated in the SANDAG Quality of Life Funding Strategy since 2009, taking the lead on the Water Quality Enhancement Element. The County has worked collaboratively with other Copermittees, as well as interested regional stakeholders, to explore a variety of funding options, develop a regional needs assessment (published in April 2011), and help establish funding priorities related to water quality. The Needs Assessment and Cost Estimate was developed primarily to provide water quality need and costing information to SANDAG, but has been found to be a useful tool when estimating costs for TMDLs that were recently adopted in the region. This is an ongoing effort that currently has a vision through 2016.

4.4.3 Future Efforts

In FY 2012, the City and County of San Diego, as well as other WURMP Copermittees, will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will continue. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the City and other jurisdictions.

The Los Peñasquitos WURMP Copermittees remain committed to encouraging collaborative, watershed-based land-use planning in their jurisdictional planning departments. The Copermittees will continue to work together to seek additional means of collaboration in this area.

4.5 Updated 5-Year Strategic Plan

4.5.1 New WMA Activities

Proposed watershed activities Implementation Sheets can be found in **Appendix B**. New activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA.

Each activity on the WMA Activities List is fully described in an Activity Implementation Sheet that includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQP(s) of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no fewer than two water quality activities will be in an active implementation phase. A water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's HPWQP(s). Water quality activities that are capital projects are in active implementation for the first year of implementation only.

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

4.5.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the Los Peñasquitos WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale in which actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees made appropriate management decisions on which water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees used available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented below is intended to supersede the earlier versions presented in the 2008 Los Peñasquitos WURMP and the FY 2008 through FY 2010 Los Peñasquitos WURMP Annual Reports.

Table 4-7 Updated 5-Year Strategic Plan

Activity/Project Name		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Sediment	FY 2011	FY 2012	FY 2013	Future Fiscal Year(s)
Watershed Water Quality Activities								
LP-WQA1	Coastal Cleanup Day Sponsorship	SD	✓		WQI	WQI	WQI	WQI
LP-WQA7	Rehco Road Hydrodynamic Separator Installation (formerly Marindustry Hydrodynamic Separator Installation)	SD	✓	✓	P	P	I	WQI
LP-WQA8	ILACSD Trash Cleanup Sponsorship	SD/POW	✓		WQI	WQI	WQI	WQI
LP-WQA9	Mira Mesa Bioretention and Infiltration Retrofit	SD	✓		P	P	P	M, WQI
LP-WQA11	Aubrey Street Continuous Deflective Separation (CDS) Device	POW		✓	A	A	A	-
LP-WQA12	Gate Drive Detention Basin Modification	POW	✓		A	A	A	-
LP-WQA16	Outdoor Water Conservation Rebate Program	SD	✓	✓	Completed – no longer reported			
LP-WQA19	City of San Diego Strategic Plan Implementation	SD	✓	✓	I	I	I	I
LP-WQA21	ESD Phased Green Mall and Underground Vault Project	SD	✓		P	P	P	WQI
LP-WQA22	Los Peñasquitos Lagoon Third Party TMDL Development	SD/POW DM/COUNTY		✓	P	I	-	-
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	COUNTY	✓	✓	WQI	WQI	WQI	WQI
LP-WQA24	Stormwater Quality Master Plans For Special Drainage Fee	COUNTY	✓	✓	P	WQI	WQI	-
LP-WQA25	Los Peñasquitos Property-Based Inspections	SD	✓	✓	WQI	Completed – no longer reported		
LP-WQA26	Targeted Catch Basin Cleaning Pilot Study	SD	✓	✓	P	WQI	-	-
LP-WQA27	Rainwater Harvesting Rebate Pilot Program	SD	✓	✓	P	WQI	-	-
LP-WQA28	Residential Patrolling	DM	✓	✓	P	WQI	WQI	A

Table 4-7 Updated 5-Year Strategic Plan - Continued

Activity/Project Name		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Sediment	FY 2011	FY 2012	FY 2013	Future Fiscal Year(s)
Watershed Education Activities								
LP-WQEA2	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	SD	✓		WE	WE	E	E
LP-WQEA5	Infiltration BMP Retrofit Outreach	SD	✓		P	P	P	WE
LP-WQEA13	Fiesta de Los Peñasquitos	ALL	✓		WE	WE	WE	WE
LP-WQEA14	Los Peñasquitos Watershed Brochure	SD	✓	✓	P	WE	E	-
LP-WQEA15	Coastal Cleanup Day	POW/SD	✓	✓	WE	WE	WE	WE
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	COUNTY	✓	✓	WE	WE	WE	WE

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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5 Effectiveness Assessment

The Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, to assess the effectiveness of the activities conducted to meet those goals and objectives, and to identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.2.i of the Permit, and reports on the activities planned and implemented during FY 2011.

5.1 Assessment of Overall WURMP Effectiveness

Activities collaborated upon and selected by the Copermittees address the overall goal of the WURMP by focusing on the HPWQPs within the WMA.

As set forth in the Permit and outlined in the 2008 Los Peñasquitos WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the Copermittees in FY 2011, and where in this report required compliance points are fulfilled or described.

Table 5-1 Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Not Applicable	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the WMA.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
Describe Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	In Progress	5.2

As shown in **Table 5-1**, the Copermittees were in compliance with all Level 1 WURMP related Permit requirements during FY 2011.

5.1.1 Activities Assessment

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated and selected activities that would address HPWQPs not only within each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in **Appendix B** identifies specific targeted outcomes (Levels 1 through 6 – as described in **Table 5-2** below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 5-2 Outcome Levels: Levels 1 through 6

Outcome Level		Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2011, there were seven (7) activities in the active implementation phase, four (4) of which focused on water quality and three (3) focused on education. One of the water quality activities also included an educational component. These activities addressed the HPWQPs in the Los Peñasquitos WMA, which include bacteria and sediment, and are the activities that the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. **Tables 5-3** and **5-4**

below, summarize the assessments of the water quality and education activities to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the table, the Copermittees are presenting their JURMP activities that are related to the HPWQPs in each HA. It is important to note that not all JURMP activities are included in this presentation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittee's FY 2011 JURMP Annual Report.

5.2 Assessment of TMDL BMP Implementation Plan Effectiveness

Regional Water Quality Control Board Order R9-2010-0001 (Bacteria TMDL) became effective on April 4, 2011. During the reporting period, the Copermittees initiated efforts to develop a Comprehensive Load Reduction Plan (CLRP). The CRLP is scheduled to be completed in October 2012 for submission to the RWQCB. The CLRP will include BMPs and activities selected specifically to address bacteria and other pollutants within the Los Peñasquitos WMA. At this time, there are no adopted TMDLs with BMP implementation plans currently in effect within the Los Peñasquitos WMA.

Table 5-3 Summary of Implemented Activities for FY 2011 – 906.1 Miramar Hydrologic Area (HPWQPs = Bacteria & Sediment)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Construction and Industrial/Commercial Inspections	Water Quality	Bacteria & Sediment	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Agricultural Facilities; Animal Facilities; Contractors; Food Establishments; General Retail Facilities; Health Service Facilities; Manufacturing Facilities; Nurseries; Stone & Aggregate Facilities; Storage & Warehousing Facilities; Municipal and Construction Sites.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria & Sediment	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria and sediment in the HA. Approximately 831 tons were removed via street sweeping, and 4,736 tons were removed from the MS4 in this HA.
LP-WQA1	Coastal Cleanup Day Sponsorship	Water Quality	Bacteria	Levels 1 and 4	The City of San Diego contributed $5,000 towards the Cleanup Sponsorship in the hydrologic area. During this event 65 participants removed 300 pounds of trash, debris, and recyclables for an efficiency of $16.67 per pound collected.
LP-WQA8	ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Levels 1 and 4	The City of San Diego contributed an estimated $5,000 towards the Cleanup Sponsorship in the hydrologic area. During this event 40 participants removed or recycled 2,155 pounds of trash and debris, of which approximately 2,005 pounds were recycled, for an efficiency of $2.32/lb.
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	Water Quality	Bacteria	Level 1	Rain barrel use is encouraged through a subsidy eligible to residents of unincorporated areas, and residents of incorporated cities are able to purchase rain barrels at an affordable price. The program promotes outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events. A total of 185 residents participated in these events and a total of 240 rain barrels were sold.
LP-WQA25	Los Peñasquitos Property-Based Inspections	Water Quality	Bacteria & Sediment	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
LP-WQEA2	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	Water Education	Bacteria	Levels 1, 2, and 3	Three Public Service Announcements (PSAs) were developed and broadcast on several TV and radio stations throughout the WMA from April to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean.
LP-WQEA13	Fiesta de Los Peñasquitos	Water Education	Bacteria & Sediment	Levels 1 and 2	The event provided direct outreach regarding pollution prevention and pollutant reduction to the residents living in the local hydrologic area. Through assessments, the Copermittees established several findings based on surveys of the Fiesta participants: 68% of individuals surveyed that knew storm water is not treated, and 91% of those who took the survey knew about storm water pollution issues in neighboring waterways. Although 80% of respondents felt a strong or very strong obligation not to litter, more than 20% admitted to littering within the past year. Efforts were made to educate attendees on awareness of pollutant sources and pollution prevention methods.

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
LP-WQEA15	Coastal Cleanup Day	Water Education	Bacteria & Sediment	Levels 1 and 2	Educational presentation provided to cleanup volunteers during the Coastal Cleanup Day in the watershed. City staff conducted a presentation that included information on the watershed, the difference between the storm drain and the sanitary sewer, and pollutants affecting the watershed. Pre- and post-tests were provided to measure the effectiveness of the educational activity. Overall, respondent scores increased on average of 35% between the pre- and post-tests.

Table 5-4 Summary of Implemented Activities for FY 2011 – 906.2 Poway Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities and Food Establishments.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria and sediment in the HA. Approximately 668 tons were removed via street sweeping, and 1,814 tons were removed from the MS4 in this HA.
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	Water Quality	Bacteria	Level 1	Rain barrel use is encouraged through a subsidy eligible to residents of unincorporated areas, and residents of incorporated cities are able to purchase rain barrels at an affordable price. The program promotes outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events. A total of 185 residents participated in these events and a total of 240 rain barrels were sold.
LP-WQA25	Los Peñasquitos Property-Based Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
LP-WQEA2	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	Water Education	Bacteria	Levels 1, 2, and 3	Three Public Service Announcements (PSAs) were developed and broadcast on several TV and radio stations throughout the WMA from April to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean.
LP-WQEA13	Fiesta de Los Peñasquitos	Water Education	Bacteria	Levels 1 and 2	The event provided direct outreach regarding pollution prevention and pollutant reduction to the residents living in the local hydrologic area. Through assessments, the Copermittees established several findings based on surveys of the Fiesta participants: 68% of individuals surveyed that knew storm water is not treated, and 91% of those who took the survey knew about storm water pollution issues in neighboring waterways. Although 80% of respondents felt a strong or very strong obligation not to litter, more than 20% admitted to littering within the past year. Efforts were made to educate attendees on awareness of pollutant sources and pollution prevention methods.
LP-WQEA15	Coastal Cleanup Day	Water Education	Bacteria & Sediment	Levels 1 and 2	Educational presentation provided to cleanup volunteers during the Coastal Cleanup Day in the watershed. City staff conducted a presentation that included information on the watershed, the difference between the storm drain and the sanitary sewer, and pollutants affecting the watershed. Pre- and post-tests were provided to measure the effectiveness of the educational activity. Overall, respondent scores increased on average of 35% between the pre- and post-tests.

6 Conclusions and Program Improvements

6.1 Conclusions

During FY 2011, the Copermittees strove to address the overall goal of the WURMP – to have a positive impact on the water quality of the Los Peñasquitos WMA – by focusing on its HPWQPs. In order to target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 Los Peñasquitos WURMP, which attempts to link identified water quality problems to their potential sources. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the HPWQPs in the Los Peñasquitos WMA are bacteria in both HAs and sediment in the Miramar HA.

The Los Peñasquitos WMA consists of two individual HAs. Therefore, to effectively address the WMA's water quality issues, the Copermittees identified and then evaluated the HPWQPs for likely sources at the individual HA level (see **Tables 3-2** and **3-3**). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; and b) water quality and education activities appear to be targeting sources of the HPWQPs and are considered effective at reducing the impacts of the sources. Based on this analysis, the Copermittees focused their activities on the following suspected priority sources: residential areas/activities; eating and drinking establishments; agricultural facilities; animal facilities; nurseries, greenhouses and botanical/zoological gardens; stone and aggregate facilities; storage and warehousing facilities; and construction sites. Potential sources of bacteria and nutrients from the residential, commercial, and industrial communities include activities such as irrigation runoff, sanitary sewer overflows, improper landscape maintenance, and improper use of fertilizers, herbicides and pesticides.

The Copermittees then developed and implemented watershed water quality and education activities to address these HPWQPs and their sources. **Tables 4-1** and **4-2** summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, seven (7) activities were actively implemented, four (4) of which focused on water quality and three (3) on education. All of these activities targeted the HPWQPs in the Los Peñasquitos WMA, which include bacteria and sediment. The Copermittees satisfied the Permit requirement by having at least two water quality activities and two education activities in active implementation during the reporting period.

The Copermittees performed additional JURMP activities addressing potential community sources during the reporting period. These included activities such as complaint response, dry weather urban runoff monitoring and source identification, and inspections of treatment control BMPs, as some in are designed to mitigate bacteria. Additionally, there are significant outreach events performed which are focused on the residential community

through the Copermittees' jurisdictional program and aimed at reducing over-irrigation, improper landscape maintenance, and improper use of fertilizers, herbicides, and pesticides.

In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees continued the process of collecting and reporting on JURMP and WURMP activities performed on an HA basis. The Copermittees believe that it is an important step towards integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees have responded to meet the challenges of implementing the requirements outlined in the Permit as they continue to refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs across the region. Furthermore, the Copermittees will continue to implement the activities described in Section 4 of this document in future reporting periods.

6.2 Program Improvements

The lack of water quality data directly related to sources makes true effectiveness assessment of the activities difficult. Without the data, the Copermittees are limited to qualitative assessments, which contain substantial assumptions linking the sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources, or collect data unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research and analysis of existing data and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level (i.e., evaluating the data from the larger watershed level). Analysis of the data at the HA level may provide useful information to the 2008 Los Peñasquitos WURMP.

In many cases, water quality data may be unavailable to accurately characterize loading from suspected sources. Where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 Los Peñasquitos WURMP – to determine and target the sources contributing to the HPWQPs – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve water quality within the WMA;
- Integrate watershed principles into land use planning;
- Enhance public understanding of water pollution sources; and
- Encourage and develop stakeholder participation.

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Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The Copermittees' FY 2011 (July 1st, 2010 through June 30th, 2011) JURMP Annual Reports were used to determine quantities of inventories. The Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction
5) TCBMP

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1) Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2) Identified the Copermittees' total activity quantities for the following activities from the FY 2011 JURMP Annual Reports:
   a) Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
   b) Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3) Determined the amount of urban land use in each Copermittees' jurisdiction.
4) Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City.
5) Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation determining the Copermittee's contribution to the HA is as follows:

$$(Copermittee\ Activity\ Quantity) \times \left(\frac{Copermittee\ urban\ land\ use\ in\ HA}{Copermittee\ total\ urban\ land\ use}\right)$$

6) Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

JURMP Source and Activity Quantities Estimation Example

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1.
Jurisdiction A collected 800 tons of material from street sweeping in FY 2011.

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1.
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2011.

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1.
Jurisdiction C collected 250 tons of material from street sweeping in FY 2011.

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:

$$(800\ tons\ of\ material) \times \left(\frac{250\ urban\ land\ use\ acres\ in\ HA1}{1{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ A}\right) = \mathbf{200\ tons}$$

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:

$$(1{,}000\ tons\ of\ material) \times \left(\frac{1{,}250\ urban\ land\ use\ acres\ in\ HA1}{2{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ B}\right) = \mathbf{625\ tons}$$

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:

$$(250\ tons\ of\ material) \times \left(\frac{500\ urban\ land\ use\ acres\ in\ HA1}{500\ urban\ land\ use\ acres\ in\ Jurisdiction\ C}\right) = \mathbf{250\ tons}$$

The total amount of estimated street sweepings collected in HA1 is therefore:

$$200\ tons + 625\ tons + 250\ tons = \mathbf{1{,}075\ tons}$$

Appendix B

FY 2011 Los Peñasquitos Watershed Activity Sheets

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TITLE: COASTAL CLEANUP DAY SPONSORSHIP
ID #: LP-WQA1

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 25, 2010. The City of San Diego (City) sponsored the Los Peñasquitos Canyon Preserve site in the Los Peñasquitos Watershed Management Area (WMA). Approximately 65 volunteers removed 300 pounds of trash and debris.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK and ILACSD staff to ensure that sites within the Los Peñasquitos WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- San Diego Coastkeeper
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1. What is the load reduction associated with sponsorship?
2. What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s):

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s):

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded:
Pounds of trash removed (Outcome Level 4): 300 lbs
Total pounds of trash removed (Outcome Level 4): 300 lbs
Number of participants (Outcome Level 1): 65
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
Estimated amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1): $5,000
Efficiency (Total Cost/Total Pounds Removed): $16.67/lb

Expected Benefits:
Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

Analysis Results:
A load reduction of 300 pounds of trash and debris was recorded at the site by 65 volunteers, which was tracked using data cards provided by the Ocean Conservancy. There was a total sponsorship cost of $30,000 by the City for all six WMAs in the City's jurisdiction. The event's efficiency, calculated by dividing the sponsorship cost for the Los Peñasquitos WMA by the pounds of trash removed, was $16.67 per pound.

Conclusions:
This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 300 pounds during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE: **REHCO RD HYDRODYNAMIC SEPARATOR INSTALLATION**
ID #: **LP-WQA7**

ACTIVITY DESCRIPTION

A hydrodynamic separator was originally going to be installed in Marindustry Drive, located on the north side of Miramar road in the Los Peñasquitos Watershed Management Area (WMA), as a retrofit within the existing storm drain system. This location proved to be infeasible. A replacement location was found in the same watershed and neighborhood at the end of the cul-de-sac on Rehco Rd.

The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system. The separator will be located in a parallel line with a 27-inch storm drain before it discharges into the nearby canyon. The 27-inch line is the main collector in a small storm drain network that collects storm flows from the industrial and business park, associated parking lots and Rehco Rd. Due to the industrial activity and high vehicular traffic, storm events typically result in the accumulation of a variety of trash, sediments, leaves, dirt oil, petroleum, and other chemical pollutants in the storm drain system.

This project was originally identified as Hydrodynamic Separator Installation in the 2008 Los Peñasquitos WURMP.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

Design began February 2010 and is anticipated to continue through FY 2012. Construction is expected to be completed in FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by capturing dry weather flows and slowly releasing them to allow for the settlement of pollutants for later removal.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of the hydrodynamic separator?
2) How effective is the hydrodynamic separator at reducing priority pollutant loads?

Targeted Measurable Outcome(s):

1) Reduction in priority pollutant loads

Assessment Method(s):

1) Inspections (e.g., ensure the hydrodynamic separator is working as designed)
2) Quantification (e.g., calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Expected Benefits:

Reduction of sediment and bacteria.

Analysis Results:

An effectiveness assessment of this activity is not possible at this time because the hydrodynamic separator has not been installed and therefore no priority pollutant load data have been collected.

Conclusions:

It is anticipated that the hydrodynamic separator will be installed in FY 2013. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the hydrodynamic separator in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP
ID #: LP-WQA8

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 30, 2011. The City of San Diego (City) sponsored the Los Peñasquitos Canyon Preserve site in the Peñasquitos Watershed Management Area (WMA). Approximately 40 volunteers removed 150 pounds of trash and debris and recycled 2,005 pounds of trash and debris over a two mile area.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to the event, the City will coordinate with ILACSD staff to ensure that a Los Peñasquitos WMA site is included in the list for cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address the high priority water quality problem.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s):

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s):

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded:
Pounds of trash removed (Outcome Level 4): 150 lbs
Pounds of trash recycled (Outcome Level 4): 2,005 lbs
Total pounds of trash removed and recycled (Outcome Level 4): 2,155 lbs
Number of participants (Outcome Level 1): 40
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
Estimated amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1): $5,000
Efficiency (Total Cost/Total Pounds Removed): $2.32/lb

Expected Benefits:
Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

Analysis and Results:
At the event, 40 participants removed 15 pounds of trash and debris and recycled 2,005 pounds of trash and debris. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 2,155 pound load reduction and an efficiency of $2.32 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Los Peñasquitos WMA by the total pounds of trash removed and recycled.

Conclusions:
This trash cleanup activity fulfills a watershed water quality activity for FY 2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 2,155 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE: MIRA MESA LIBRARY BIORETENTION AND INFILTRATION RETROFIT
ID #: LP-WQA9

ACTIVITY DESCRIPTION

New catch basins will be constructed within the parking area at the Mira Mesa Library in the Los Peñasquitos Watershed Management Area (WMA) to capture parking lot and building runoff. These catch basins will drain via a new storm drain system to an existing unpaved area on the site. Under existing conditions, this unpaved area is higher in elevation than the parking lot and is covered with grass. The original concept for this area was to excavate approximately five feet below the parking lot elevation, lined with an impermeable liner, and backfilled around the perimeter of the excavation with a gravel reservoir to which the new storm drain system will drain. Soils and plants capable of surviving with only the seasonal rainfall typical of Southern California would have been placed in the center of the excavation. The gravel reservoir would have been separated from the planter area by a concrete wall. Storm runoff was expected to pass from the gravel reservoir to the planter area via small diameter pipes through the concrete wall. Unfortunately, the area selected to provide infiltration was rejected by the Library Department, as the destruction of an architectural detail was deemed unacceptable. Instead, the area around the grassy area has been selected as the new site.

The project goal is to capture site runoff from the five-year, six hour storm event and convey it to the gravel reservoir/planter area where the water will exit the site via evapotranspiration.

This project was originally identified as Infiltration BMP Retrofit in the 2008 Los Peñasquitos WURMP. In FY 2008, the Mira Mesa Library was selected as the site and the conceptual design was released for this project.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

Preliminary engineering resumed in May 2010 and was completed in October 2010. Design is in progress and will continue through FY 2013. Construction is expected to be completed in FY 2013 or FY 2014.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration/retention.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) What is the load reduction of the bioretention area?
2) How effective are bioretention areas at reducing priority pollutant loads?

Targeted Measurable Outcome(s):

1) Reduction in priority pollutant loads

Assessment Method(s):

1) Inspections (e.g., ensure the bioretention areas are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded:

1) Number of inspections
2) Change (%) in load reduction pre and post-implementation (Outcome Level 4)
3) Number of educational information items passed out (Outcome Level 1)
4) How much money spent on inspections and maintenance (Outcome Level 1)
5) Dataset of load contributions for specific activities (Outcome Level 4)

Expected Benefits:

Reduction of sediment and bacteria.

Analysis Results:
An effectiveness assessment of this activity is not possible at this time because the hydrodynamic separator has not been installed and therefore no priority pollutant load data have been collected.

Conclusions:
It is anticipated that the bioretention areas will be installed in FY 2014. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the bioretention areas in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

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TITLE: AUBREY STREET CONTINUOUS DEFLECTIVE SEPARATION (CDS) DEVICE
ID #: LP-WQA11

ACTIVITY DESCRIPTION

In 2008 the City of Poway installed a continuous deflective separation (CDS) device system in the intersection of Aubrey Street and York Avenue as a retrofit within the existing storm drain system. This CDS system screens, separates, and traps debris, sediment, oil and grease, floatables, and neutral buoyant material from stormwater runoff, enhancing the treatment of runoff from existing land uses in the 41.9-acre Old Poway Park project area.

To maintain the effectiveness of the CDS device, the City of Poway's drainage/storm water maintenance staff inspects, cleans, and maintains the device as needed.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Construction and maintenance of this CDS device occurred in FY 2008. Inspection, cleaning, and maintenance began in FY 2009 and continue on an on-going basis.

LEAD WATERSHED COPERMITTEE

- City of Poway

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS MEASUREMENTS

See Effectiveness Assessment Table below.

Objectives:

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator installation in reducing the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

Analysis and Results:

During fiscal year 2011, inspections of the unit occurred on December 17, 2010, and January 4, 2011. A total of 7.9 cubic yards of debris was removed from the unit. As noted in the previous WURMP Annual Reports, 2 cubic yards of debris were removed during FY 2008, 1 cubic yard during FY 2009, and 4.75 cubic yards during FY 2010. Because all of the material removed would otherwise have eventually entered the receiving waters, this amount is the verified load reduction achieved by this unit.

The cost of installation of the CDS device was $134,000.00. The cost of inspections and maintenance was $429.95 in FY 2008, $515.01 in FY 2009, $190.00 in FY 2010, and $964.11 in FY 2011. The cost per unit of load reduction over four years is therefore $8,696 per cubic yard of pollutants removed. This unit cost will decrease over time as the only additional expenses are staff time for inspections and cleaning.

Dry weather monitoring is conducted annually at a location on Community Road downstream of the CDS device. Although this monitoring location receives some commingled flows from additional locations, data were reviewed to determine any trends in receiving water quality. Post-installation data show that the standardized Trash Assessment results have moved from Suboptimal to Optimal, indicating a reduction in trash in the receiving water. Other field analytic results showed essentially no change, as noted in the table below.

Reporting Period	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia-Nitrogen (mg/L NH_3-N)	Nitrate (mg/L NO_3-N)	Ortho-phosphate-P (mg/L PO_4-P)
BEFORE INSTALLATION						
2007	0.66	1.96	0.25	0.20	2.42	0.33
AFTER INSTALLATION						
2008	0.30	1.88	0.38	0.15	2.02	0.23
2009	0.19	1.96	0.13	0.19	2.92	0.22
2010	1.04	2.06	0.25	0.13	3.10	0.18
2011	0.01	2.23	0.13	0.12	4.42	0.16

TITLE: GATE DRIVE DETENTION BASIN MODIFICATION
ID #: LP-WQA12

ACTIVITY DESCRIPTION

The City of Poway retrofitted the Gate Drive flood control detention basin to remove pollutants from storm water. The Gate Drive basin is located in the South Poway Business Park and was originally constructed as a flood control device. Conversion of the basin to a storm water treatment device provides treatment of storm water runoff from more than 38 businesses, including many existing businesses not subject to SUSMP requirements.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Conversion of the basin was completed on June 18, 2008. Operation and maintenance of the basin began in FY 2009 and are ongoing.

LEAD WATERSHED COPERMITTEE

- City of Poway

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS MEASUREMENTS

See Effectiveness Assessment Table below.

Objectives:

The goal of this assessment is to determine the effectiveness and efficiency of the Gate Drive detention basin modification in reducing pollutant levels in storm water runoff from the South Poway Business Park.

Analysis and Results:

Inflow sampling is conducted annually during a rain event, with outflow sampling conducted after a settling period of one to three days. During the most recent round of sampling, turbidity was reduced by 99.6% (from 11.6 to 0.05 NTU), and total suspended solids were reduced by 93.3% (from 15.0 to 1.0 mg/L). The basin is therefore clearly effective at reducing sediment loads.

Although total coliforms and *Enterococci* increased from inflow to outflow during this year's sampling, fecal coliform concentrations decreased, as shown in the table below.

Parameter	Inflow	Outflow	% Reduction
Total Coliforms (MPN/100 mL)	5,000	8,000	-60.0%
Fecal Coliforms (MPN/100 mL)	800	500	37.5%
Enterococci (MPN/100 mL)	170	1,300	-664.7%

The cost of basin conversion was $131,000, of which $63,900 was paid by a developer of a site that uses the basin for storm water treatment. Maintenance has cost less than $200/year to date.

Conclusions:

Inflow and outflow sampling will continue to be conducted annually. These data will be used to determine the effectiveness of the basin at reducing pollutants, and to estimate load reductions.

TITLE: OUTDOOR WATER CONSERVATION REBATE PROGRAM
ID #: LP-WQA16

ACTIVITY DESCRIPTION

This activity involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring will be conducted both at the pre and post irrigation modification stage. It is also anticipated the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad scale implementation should be pursued.

TMDL APPLICABILITY

1) TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
2) Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination occurred in FY 2010. Program launch occurred in FY 2011. There was no assessment due to a lack of qualified applicants meeting the assessment criteria, this project assessment was withdrawn and no longer included in future reporting updates.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the *Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA)* identify bacteria and sediment as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing dry weather flows resulting from over irrigation.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) How effective are smart irrigation and other types of low flow distribution hardware in reducing dry weather runoff? Does replacing high water use landscape with low water use landscape reduce dry weather runoff?
2) What is the potential load reduction for both residential and commercial properties when utilizing smart irrigation in conjunction with low water use landscaping?
3) What is the average cost savings from utilizing smart irrigation and or low water use landscaping?

Targeted Measurable Outcome(s):

1) Load reduction due to system installation
2) Runoff reduction due to system installation

Assessment Method(s):

1) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
2) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
3) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)

Recommended Data:

1) Estimated cost of site preparation, installation and start-up for site (Outcome Level 1)
2) Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1)
3) Estimated cost of effectiveness monitoring for all sites (Outcome Level 1)
4) Number of systems installed (Outcome Level 1)
5) Volume of storm water captured/diverted (Outcome Level 4)
6) Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4)
7) Percent capture of the xeriscaping systems (acres drained) (Outcome Level 4)

Expected Benefits:
The initial goal was to conduct the assessment in order to determine the effectiveness and efficiency of using weather-based irrigation devices in conjunction with low water use landscaping to reduce over irrigation. However due to a lack of applicants meeting the assessment criteria, e.g. residence proximity to storm drain, the project assessment was withdrawn.

Analysis Results:
No assessment occurred due to a lack of applicants.

Conclusions:
Monitoring was not conducted to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads.

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TITLE: CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION
ID #: LP-WQA19

ACTIVITY DESCRIPTION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program conducted by the Public Utilities Department involved launching a city-wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. The rebate program was implemented in FY 2011.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the support of storm water and urban runoff pollution management efforts of the public.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics

- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City Strategic Plan and the Copermittees Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS MEASUREMENTS

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

Table 1. Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, implementation and assessment completion anticipated in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

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TITLE: ESD PHASED GREEN MALL AND UNDERGROUND VAULT PROJECT
ID #: LP-WQA21

ACTIVITY DESCRIPTION

This first phase of this project will construct a bio-retention basin BMP along the south side of the visitor's parking lot. Along the basin, the existing curb and gutter will be removed and replaced with a zero height, or flush, curb. The bio-retention basin will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in June 2009 and finished in March 2010. There is no timeline for the beginning of design at this time.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA) identifies bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters?
2) How much reduction in runoff volume can be achieved through LID retrofits?
3) How efficient are LID retrofits in reducing pollutant loads?

Targeted Measurable Outcome(s):

1) Reduction in pollutant loads
2) Reduction in runoff volume

3) Improvements in discharge quality

Assessment Method(s):
1) Inspections (e.g., ensure LID retrofits working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction)
3) Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)

Data Recorded:
1) Number of inspections (Outcome Level 1)
2) Design, installation, and maintenance costs (Outcome Level 1)
3) Operations and maintenance challenges (Outcome Level 1)
4) Percent change in load reduction pre- and post-implementation (Outcome Level 4)
5) Percent change in discharge quality and runoff volume (Outcome Level 5)

Expected Benefits:
Reduction of bacteria.

Analysis Results:
This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

Conclusions:
No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: LOS PENASQUITOS LAGOON THIRD PARTY TMDL DEVELOPMENT
ID #: LP-WQA22

ACTIVITY DESCRIPTION

Met monthly with stakeholders, including the Regional Board staff, to discuss the development of the Los Peñasquitos Lagoon Sedimentation\Siltation TMDL.

Dischargers met on a regular basis to prepare documentation for discussion with the stakeholders.

Developed and prepared final technical draft of Los Peñasquitos Lagoon Sedimentation\Siltation TMDL for review and comment by the stakeholders.

The purpose of this technical report is to present the Total Maximum Daily Load (TMDL) developed for sediment\siltation for Los Peñasquitos Lagoon (Lagoon). The Lagoon is listed as impaired for sediment\siltation on the Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments. A TMDL helps restore the beneficial uses of the Lagoon and achieve water quality standards.

TMDL APPLICABILITY

Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The development of the third party TMDL was initiated in the spring of 2009. Peer review comments have been received, and the Final Technical report should be approved in 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of Del Mar
- City of Poway
- County of San Diego

OTHER PARTICIPATING ENTITIES

- California Department of Transportation (Caltrans)
- San Diego Coastkeeper
- California State Parks
- Los Peñasquitos Lagoon Foundation
- Representatives from the Regional Board

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos Lagoon WMA identify sediment as a high priority water quality problem.

EFFECTIVENESS MEASUREMENTS

Effectiveness is not being assessed as this study is not an implementation or education activity.

Expected Benefits:
Developing a sediment/siltation TMDL for the Lagoon is for the restoration of the beneficial uses of the Lagoon.

TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION
ID #: LP-WQA23

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate. Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

Activity during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY 2010-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

On September 26, 2010, there was a buzz in Fallbrook as eager residents stood in line before the 9 a.m. start time for the distribution event at Fallbrook Village Square. By the 1 p.m. closing time, 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County (Table 1).

Table 1. Residents by Watershed

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	San Diego River	San Diego Bay	Tijuana	Unknown
Total Residents	2	24	61	6	8	4	27	50	2	1

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL. Although would be compliant with the Bacteria TMDL for Los Peñasquitos.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY 2009-10. The events took place on August 28, 2011 (Cuyamaca College) and September 26, 2011 (Fallbrook Village). Additional events are being considered for implementation in FY 2012-13.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals

- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

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TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: LP-WQA24

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Los Peñasquitos Watershed include:

1) SDA 6 (Lakeside)
2) SDA 8 (Ramona)

FY 2007-08 ACTIVITY IMPLEMENTATION:
Work began on drafting the SWQMPs for individual SDAs.

FY 2008-09 ACTIVITY IMPLEMENTATION:
Work continues on the drafting of the SWQMPs for individual SDAs.

FY 2009-10 ACTIVITY IMPLEMENTATION:
The SWQMP for SDA 6 and SDA 8 are in draft form and undergoing review by County personnel.

FY 2010-11 ACTIVITY IMPLEMENTATION:
The SWQMP for SDA 6 and SDA 8 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2011-12. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2014.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined.

EFFECTIVENESS MEASUREMENTS

To be determined.

TITLE: LOS PENASQUITOS PROPERTY-BASED INSPECTIONS
ID #: LP-WQA25

ACTIVITY DESCRIPTION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, San Diego River and Tijuana River watershed management areas (WMAs). The City of San Diego (City) performed an inspection program activity specifically focused on properties with multi-businesses. The activity involved inspecting properties and the businesses located on the properties, regardless whether they are part of the City's commercial and industrial inventory. Traditionally, the City performs individual business inspections in the City's commercial and industrial inventory.

The City developed and implemented a focused inspection activity designed to evaluate the effectiveness of performing multi-business property-based inspections and answer the following management questions related to the commercial and industrial inspections program:

1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

The areas selected for inspection were shopping centers, industrial parks, and office parks within five watershed management areas.

The inspections occurred over two phases. Property inspections and business investigations were conducted during both phases. During the first phase, inspectors performed a full inspection of each property. Properties were inspected for BMP compliance, general site observations, pollutant discharge potential, and illicit connections/illegal discharges (IC/IDs) similar to an individual business inspection. Site observations and BMP deficiencies were noted on the inspection form. When an issue was noted during the property inspection and could be associated to a particular business, the inspector initiated an investigation of the business, or businesses. These individual business inspections were limited to investigating the significant deficiencies observed. If an issue could not be associated to one or more businesses on the property, the issue was considered to be the responsibility of the property owner or management company, and no business inspections were performed.

The property inspection reports were sent to the property management company, or to the property owner on file. Where applicable, business inspections reports were sent to corporate offices. If a business was not part of a corporation, the report was sent directly to the business at its physical location, or mailing address.

In phase two of the activity, selected properties from phase one that were determined to be high priority follow-ups were inspected. Each property was inspected using the same procedures utilized in the initial inspections. As a part of phase two, business investigations were also performed to those businesses likely responsible for potential storm water issue(s) in the area.

During both phases, if violations were identified, they were recorded for appropriate follow-up. Follow-up inspections occurred based on the severity of the identified violations. If discharges were identified, they were immediately reported to the City's Storm Water hotline number. Lastly, education material was distributed, as applicable, during phase one and two of the inspection activity.

TMDL APPLICABILITY

1) TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
2) Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment took place during FY 2011. This project is complete, and will no longer be included in future reporting updates.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria and sediment as high priority water quality problems in the Los Peñasquitos WMA, and recommends implementing load reduction/source abatement activities to address them. Implementation of the property inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria and sediment.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

Targeted Measurable Outcome(s):

1) Identification of sources of constituents of concern in the Los Peñasquitos Watershed

Assessment Method(s):

1) Inspections
2) Quantification
3) Monitoring
4) Tabulation
5) Reporting

Data Recorded:

Phase One Property Inspections

Number of property inspections = 187
Number of properties recommended for follow-up inspection= 59
Total IC/IDs Observed = 10
Total IC/IDs Eliminated During Inspection = 0

Phase One Business Investigations

Number of business investigations = 129
Number of sites recommended for follow-up inspection = 112
Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 5
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = 5
Total IC/IDs Observed = 18
Total IC/IDs Eliminated During Inspection = 1

Phase Two Property Inspections

Number of property inspections = 44
Number of properties recommended for follow-up inspection = 34
Total IC/IDs Observed = 2
Total IC/IDs Eliminated During Inspection = 0

Phase Two Business Investigations

Number of business investigations = 60
Number of sites recommended for follow-up inspection = 50
Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 8
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = 8
Total IC/IDs Observed = 3
Total IC/IDs Eliminated During Inspection = 2

Overall

Number of Sites That Implemented Some Corrective Action Between the Two Phases (Outcome Level 3) = 11

Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = 11

Expected Benefits:
The goal of this assessment is to determine the effectiveness of property-based inspections as a method to conduct inspections, which includes identifying and eliminating potential sources of storm water pollution.

Analysis Results:
During phase one, 187 properties received property inspections. A total of 31% of these properties needed follow-up to verify that corrective actions/BMPs were implemented. From the phase one property inspections, 129 businesses were investigated with five sites implementing some corrective action during inspection.

For phase two, 44 properties from phase one received a follow-up property inspection. A total of 34 of the 44 properties were recommended for follow-up to verify that corrective actions/BMPs were implemented. From the 44 properties, there were 60 business investigations in phase two. Also in phase two, eight out of the 60 businesses implemented some corrective action during the inspection.

Overall between the two phases of inspections, there were 11 sites that implemented some corrective action. The City can verify a total of 13 locations had taken corrective actions immediately. The number of IC/IDs decreased from ten to two between the two phases of the 44 properties inspections. Between the two phases of business investigations, the number of IC/IDs decreased from 18 to three. Lastly, three IC/IDs were eliminated during inspection.

Property inspections are an efficient and effective method to assess shared areas and evaluate visible, outdoor areas for BMP implementation at shopping centers, industrial parks, and office parks. Overall, BMP implementation improved at the properties inspected between the two phases of inspection and a reduction of IC/IDs. There are some BMPs normally addressed during business inspections that did not apply to property inspections, as they require input from a business representative, or are requirements specific to business operations, such as employee training. In addition, the follow-up inspection priorities improved between the inspection phases. Lastly, common areas that have the highest threat to water quality, such as trash, landscaping, and storm drain areas, can be effectively evaluated during a property inspection.

Conclusions:
Overall, property-based commercial and industrial inspections provide efficiency in both cost and coverage, with the ability to inspect a large area with multiple businesses in a short amount of time. Also common areas of high pollutant generating activities are addressed during these inspections, including IC/IDs, trash areas, landscaping and storm drain issues. Ten IC/IDs were observed during the first property inspections phase, and called into the City's hotline for response and follow-up for abatement. Two IC/IDs were found during the second property

inspections phase in the Los Peñasquitos WMA. In addition, 11 sites implement some corrective action between the two phases of inspections. A total of 13 businesses implemented corrective actions immediately during inspection in the two phases. Three IC/IDs were eliminated during inspection. Although a load reduction was not calculated, abatement of potential sources may be assumed with corrective actions being implemented and IC/ID eliminated during inspection; therefore, demonstrating both Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcomes being achieved as a result of conducting the property inspection activity. This activity fulfills the requirement of one of the two required watershed water quality activities.

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TITLE: TARGETED CATCH BASIN CLEANING PILOT STUDY
ID #: LP-WQA26

ACTIVITY DESCRIPTION

The City of San Diego Storm Water Division began the planning of a catch basin cleaning pilot study in FY 2011. The purpose of the project is to understand the potential water quality improvements and load reduction associated with catch basin cleaning by evaluating the quantity and quality of materials removed from the storm drains from four pilot areas. The areas were selected to be representative of different land uses within the City limits. Additionally two cleaning methods will be evaluated – manual and using vactor equipment. One of the pilot areas is within the Los Peñasquitos WMA near the intersection of Scripps Poway Parkway and Interstate 15.

Composite samples collected from the material removed from the targeted catch basins will be analyzed for metals, nutrients, organics, and bacteria.

TMDL APPLICABILITY

1) TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
2) Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment is scheduled for FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address these constituents. This project will result in a quantifiable load reduction of sediment and will evaluate the amount of bacteria reduced as part of catch basin cleaning.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) To what extent do changes in catch basin cleaning frequency affect the amount of pollutants collected?
2) What is the annual calculated load reduction based on pilot scale data collection with catch basin cleaning?
3) Which cleaning method, manual versus mechanical is the most cost effective method for removing sediment from catch basins?

Targeted Measurable Outcome(s):

1) Reduction in bacteria exported from the catch basin.
2) Reduction in sediment exported from the catch basin.
3) Reduction in nutrients associated with the catch basin.

Assessment Method(s):

1) Evaluate the volume of material currently removed from each catch basin.
2) Evaluate the correction in cleaning results with land use category, impervious area, watershed size, and surface water impairments.

Data Recorded:

1) Volume Removed
2) Location
3) Sediment sample analysis

Expected Benefits:
N/A

Analysis Results:
N/A

Conclusions:
N/A

TITLE: RAINWATER HARVESTING REBATE PILOT PROGRAM
ID #: LP-WQA27

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). During this reporting period staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program will be open to the residents of the City of San Diego on a first come first serve basis and will provide a rebate of .50 cents per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department will administer the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in the last quarter of FY 2011 with a tentative implementation start date in FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- City of San Diego Public Utilities Department

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA) identify several water quality problems throughout the watershed. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

Data to be recorded:

1) Most common water catchment device installed
2) Average size of water catchment device installed

EXPECTED BENEFITS

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

The project is currently being planned so there are no conclusions to report.

TITLE: **RESIDENTIAL PATROLLING**
ID #: **LP-WQA28**

ACTIVITY DESCRIPTION

The City of Del Mar is a small jurisdiction with a relatively small residential community. The majority of the City consists of single family dwellings set in a hilly terrain that drains towards the Pacific Ocean and the San Dieguito and Los Peñasquitos lagoons. One of the primary sources of urban runoff within the City is residential irrigation runoff. Through this activity, the City intends to identify sources of urban runoff and abate them through a cycle of patrolling activities.

This activity includes periodically patrolling the entire City to identify residential and municipal sources of urban runoff and pollutant generating activities at various times of the week and day (non-working hours). The patrols will be conducted both before and after work hours to capture the likely times when residents are irrigating their properties. In addition to identification of urban runoff and their sources, patrollers will also look to identify other pollutant generating activities that need to be abated.

Identified issues will be followed up on in a timely manner (within 72 hours) using educational outreach materials the City has recently developed.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

This activity is related to the Bacteria TMDL as it addresses sources of indicator bacteria as well as dry weather urban runoff that have been shown to contribute to regrowth of indicator bacteria within MS4 systems.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is planned for implementation during Fiscal Years 2012 and 2013 with continual assessment to determine if modifications are necessary.

LEAD WATERSHED COPERMITTEE

- City of Del Mar

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Oil and Grease
- Sediment

- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses high priority water quality problems and sources of the associated pollutants and is therefore consistent with the 2008 WURMP watershed strategy.

EFFECTIVENESS MEASUREMENTS

The City will maintain records on each of the parcels for the following information that will be used for effectiveness assessment:

- Parcel information for those that are identified to be contributing urban runoff and conducting potential pollutant generating activities
- Follow-up activities conducted by the City including outreach and enforcement
- Dates of identified issues and indication of repeat issues

It is anticipated that the follow-up contact with the identified sources will lead to some abatement of their contributions to urban runoff and pollutant generating activities.

TITLE: **PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #: **LP-WQEA2**

ACTIVITY DESCRIPTION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma*, *Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Los Peñasquitos Watershed Management Area (WMA) from April 2011 to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

According to Regional Board staff comments, the City will need to answer effectiveness measurement questions in the annual report. Effectiveness measurement questions can be found in the Effectiveness Assessment section of this activity summary sheet.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Los Peñasquitos WMA from April 2011 to June 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as high priority water quality problems in the WMA. The *Karma, Karma Second Chance*, and *Karma Tourist* Public Service Announcements will result in both increased knowledge and awareness regarding

bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation?
2) How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s):

1) Reach goal of number of listeners (radio) and homes (television) reached, based on survey results
2) Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s):

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)
2) Quantification (e.g., number of residents reached by PSA)

Data Recorded:

1) Number of impressions made in homes through television in Los Peñasquitos WMA (Outcome Level 1): 1,548,526
2) Number of impressions made to the public through radio announcements in Los Peñasquitos WMA (Outcome Level 1): 2,163,903
3) Change in knowledge or attitude from survey results (Outcome Level 2): 32%
4) Change in pollutant-related behavior from survey results (Outcome Level 3): Yes**

**32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Higher levels of response to this question are found among those who have greater familiarity with the Think Blue program, suggesting the effectiveness of outreach efforts in changing behavior. There was also an increase in the numbers of respondents who cited proper disposal of pet waste and motor oil as behaviors they had changed recently. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Expected Benefits:

The goal of this assessment is to determine the effectiveness of the K*arma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis Results:
The PSAs were developed in the FY 2007-2008, and broadcast on several TV and radio stations throughout the Los Peñasquitos WMA from April 2011 to June 2011. The PSAs were broadcast in both English and Spanish.

The City also obtained assessment information from its annual random-digit dial 2011 San Diego Storm Water Survey of 800 total residents from all WMAs. 58% of residents said they saw a Think Blue PSA last year on television while 14% of residents heard the radio announcements in FY 2010. 51% said they prefer to get information about storm water via television. This year's survey also noted that 57% of residents know that storm water was not treated, a continued rise in the public's awareness, up from 39% in 2008. Significant increases in awareness were continuing to grow among white residents, women and residents under the age of 65. Additionally, 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" an increasing number reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the city as a whole. To estimate the number of impressions in the Los Peñasquitos WMA, the total number of estimated city-wide impressions was multiplied by the proportion of residents living in the Los Peñasquitos WMA (16%) of the City's total population.

Conclusions:
Based on assessment from both the survey and the field experiment as well as feedback from the public, Think Blue PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the City will continue to monitor public perception and feedback to determine if this is actually occurring. The City will continue to work with appropriate broadcast media outlets to air Think Blue television and radio PSAs in FY 2012.

Additionally, the city continued to measure public awareness of the Think Blue program via surveys comprised of a random digit dial sample of the residents living in the Los Peñasquitos WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, the 2011 San Diego Storm Water Survey indicated that 53% had heard the phrase “Think Blue” in 2011, and awareness that storm water is not treated had increased. These results, coupled with a continued increase in the percentage of residents in taking steps to reduce pollution demonstrate the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the Los Peñasquitos WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE: **INFILTRATION BMP RETROFIT OUTREACH**
ID #: **LP-WQEA5**

ACTIVITY DESCRIPTION

This Infiltration BMP Education and Outreach Activity was planned to support the implementation of an infiltration project in the Los Peñasquitos WMA to reduce runoff volume. The activity will complement the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA09). Educational materials, such as infiltration specific brochures and facts sheets will be developed, which will explain the importance of the project as well as the water quality benefits that will be realized. Outreach strategies and methods may include direct public interaction, stakeholder meetings, information sessions, print media and website postings. Ongoing educational materials will be developed and implemented once the project is finalized. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The outreach for the implementation of the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA09) is on hold until the project is approved to begin.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will educate the public and address high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration/retention.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) How much change in awareness was achieved?
2) What changes in levels of behavior was achieved after implementation?
3) How do the survey results change pre and post activity implementation?

Targeted Measurable Outcome(s):

1) Achieve increased awareness of bacteria and sediment issues
2) Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)

Assessment Method(s):

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)
2) Quantification (e.g., count observable pollution and behavior of participants in program)
3) Monitoring (e.g., water quality monitoring at base of targeted watershed)
4) Tabulation (e.g., amount of money spent on education and outreach, number of residents and households reached)
5) Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)

Data Recorded:

N/A

Expected Benefits:

An increase ineffectiveness of the bioretention areas in reducing pollutant loads from runoff from the Mira Mesa Library. In addition to actual load reduction efforts, the project's outreach element will inform and educate the public about the projects in an effort to increase awareness about bacteria and sediment issues within the Los Peñasquitos watershed.

Analysis Results:

There are no analysis results as of this reporting period.

Conclusions:

There are no conclusions as of this reporting period.

TITLE: **FIESTA DE LOS PENASQUITOS**
ID #: **LP-WQEA13**

ACTIVITY DESCRIPTION

In order to prevent bacteria pollution in the Los Peñasquitos Watershed Management Area (WMA), the Los Peñasquitos Watershed Copermittees jointly participated in the Fiesta De Los Peñasquitos Celebration, a family oriented annual street faire for residents of the Rancho Peñasquitos community. This festival has been slated as the largest event of the year for the Rancho Peñasquitos Town Council. The festival was held on Sunday, May 1, 2011, from 11 am - 5 pm and was free to the public.

The Fiesta targeted key sources of bacteria in the Los Peñasquitos WMA. Participation provided direct outreach to watershed residents dedicated to preserving water quality in San Diego, but primarily focused on water bodies in the Los Peñasquitos WMA. Goals were to increase knowledge and awareness and encourage everyone to take positive steps in preventing pollution from entering the storm drain.

With more than 15,000 people in attendance, our presence at the event provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

Public education materials available in the booth included brochures, fact sheets, and pollution prevention tip cards, along with best management practice items that helped promote behavior change such as dust pans, pet trash bag containers, and pet trash bag refills.

TMDL APPLICABILITY

- None

LEAD WATERSHED COPERMITTEE

- City of Poway

OTHER PARTICIPATING COPERMITTEES

- City of Del Mar
- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria and sediment as high priority water quality problems throughout the WMA, and recommends implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

Objectives:

The goal of this assessment was to determine community knowledge and awareness about storm water issues and whether or not residents would adopt non-polluting behaviors. Another goal was to create positive behavioral change that will reduce bacteria and gross sediment in water bodies in the Los Peñasquitos WMA.

Analysis and Results:

The campaign targeted key areas of concern for pollutants in the Los Peñasquitos WMA. The event provided direct outreach to residents living within the Rancho Peñasquitos area. A total of 203 surveys were completed. Based on the assessment, many citizens knew about pollution issues in neighboring waterways (91%). Sixty-eight percent of residents were aware the sewer system and storm drain system are not connected, and that water in the storm drain system is not treated. Sixty-three percent of residents stated that litter contributes a lot to pollution of local waterways, 29% said a moderate amount, and 8% said a little or not at all. Although 80% of respondents felt a strong or very strong obligation not to litter, more than 20% admitted to littering within the past year. Efforts were made to educate attendees on awareness of pollutant sources and pollution prevention methods.

Conclusions:

The Fiesta De Los Peñasquitos attracted mainly residents living in the local WMA. The event provided Copermittees and Storm Water staff an open venue to interact with the community. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain system. With approximately 15,000 people in attendance, the event provided a great opportunity to spread the message about storm drain pollution prevention.

TITLE: LOS PENASQUITOS WATERSHED BROCHURE
ID #: LP-WQEA14

ACTIVITY DESCRIPTION

The City of San Diego (City) and Think Blue will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the attention of the audience, enhance the understanding of basic watershed principles of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay/La Jolla
5) San Dieguito River
6) Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2012. Implementation and distribution is expected to occur in early FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the city's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?
2) Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

Targeted Measurable Outcome(s):

1) Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.
2) Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.
3) Increased intent to act to prevent storm water pollution after reading the watershed brochure.

Assessment Method(s):

Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Data Recorded:

N/A

Expected Benefits:

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

Analysis and Results:

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions:
The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2012. In FY 2011 it was determined that the watershed brochures for all six (6) watersheds within the City of San Diego would need to be revised, including the already completed Tijuana and San Diego River watershed brochures. Watershed brochure revision will be completed in FY 2012. Effectiveness assessments are scheduled to begin in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

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TITLE: **COASTAL CLEANUP DAY**
ID #: **LP-WQEA15**

ACTIVITY DESCRIPTION

In association with the Coastal Cleanup Day conducted by San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD), an educational presentation was provided to the cleanup volunteers. At two of the three cleanup sites located within the Los Peñasquitos watershed, City of Poway staff and a consultant presented information on the watershed, the difference between the storm drain and the sanitary sewer, and pollutants affecting the watershed. One site was in each of the two hydrologic areas in the watershed. A pre-test and post-test were given to measure the effectiveness of the educational activity.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was planned and implemented in Fiscal Year 2011.

LEAD WATERSHED COPERMITTEE

- City of Poway

OTHER PARTICIPATING COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria and sediment as high-priority water quality problems throughout the WMA and recommends load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria, trash, and sediment as pollutants in the watershed and future load reduction of trash and sediment directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

There were 65 volunteers at the Los Peñasquitos Canyon Preserve site and 170 volunteers at the Poway Community Park site. Due to site conditions and some confusion between the various volunteer coordinators, not all volunteers received the educational presentation or completed pre-tests and post-tests.

A total of 19 volunteers at the Los Peñasquitos Canyon Preserve site were given the presentation and completed pre-tests, but only 3 of these individuals completed post-test. At the Poway Community Park site, 41 pre-tests and 39 post-tests were completed, but these included only 8 matched sets (pre-tests and post-tests completed by the same individuals). The results are therefore shown in the table below in two ways: by matched sets and total respondents.

	Percentage of Correct Answers			
	Matched Sets		Total Respondents	
Question	**Pre-Test**	**Post-Test**	**Pre-Test**	**Post-Test**
A watershed is all the land that drains to a waterbody (T/F)	100%	100%	69%	98%
You are in which watershed? (multiple choice)	45%	100%	43%	95%
Which of the following pollutants is a major concern in this watershed? (multiple choice)	82%	100%	66%	90%

Attachment A

2008 Los Peñasquitos WURMP Watershed Map

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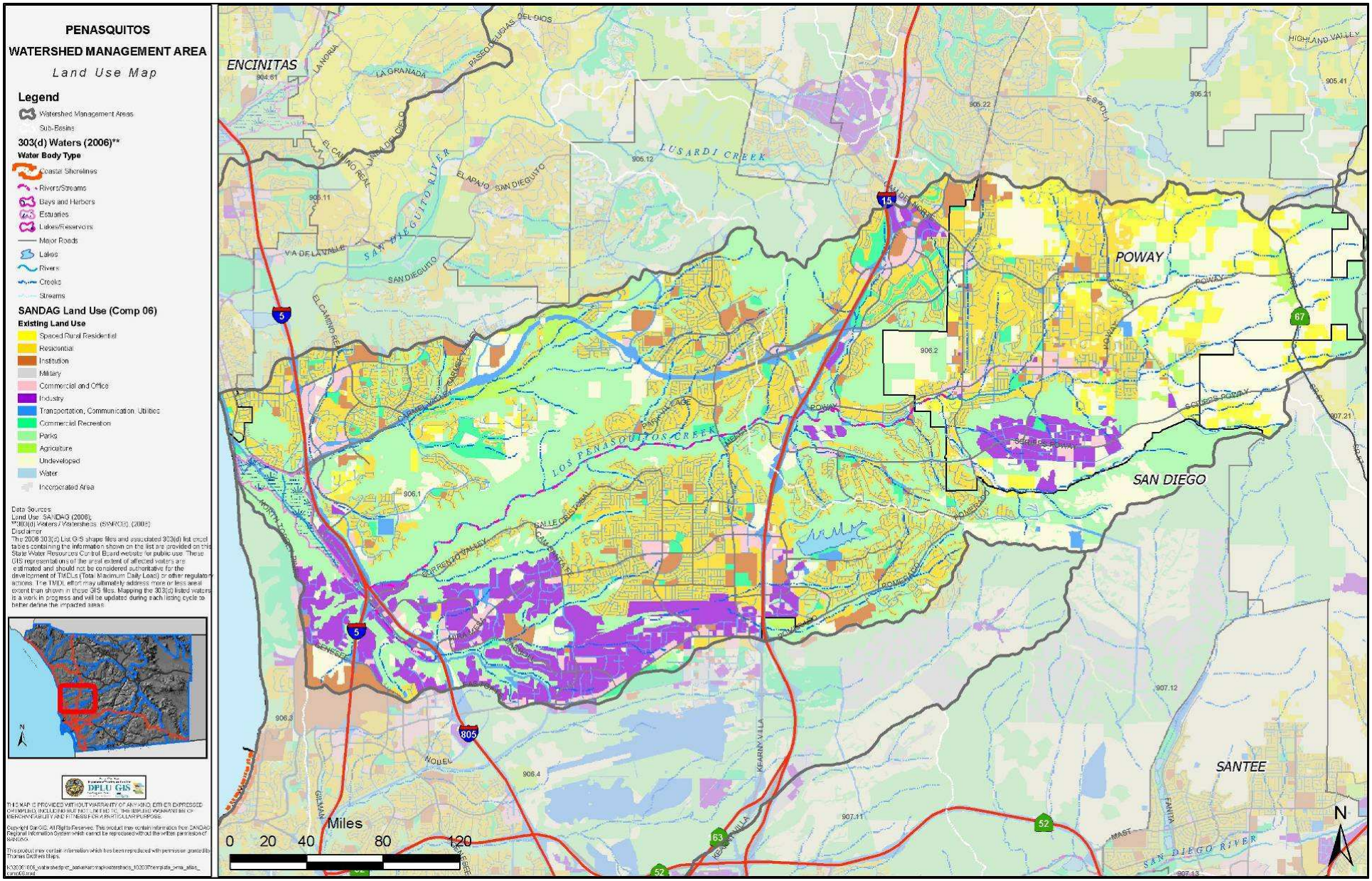

Attachment A – Los Peñasquitos WURMP Watershed Map
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Los Peñasquitos Watershed URBAN RUNOFF MANAGEMENT PROGRAM

Fiscal Year 2012 Annual Report

January 31, 2013

Prepared and Submitted by the Los Peñasquitos Watershed Copermittees

City of Del Mar
City of Poway
City of San Diego
County of San Diego

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County of San Diego

LAND USE AND ENVIRONMENT GROUP

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January 18, 2013

LOS PENASQUITOS RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM (WURMP) FY 2011-12 ANNUAL REPORT STATEMENT OF CERTIFICATION

I certify, under penalty of perjury of law, that the County of San Diego's contributions to this FY 2011-12 Los Penasquitos River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer
Land Use and Environment Group
County of San Diego

Date 1/18/13

City of Del Mar

January 18, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott Huth
City Manager
City of Del Mar

CITY OF POWAY

DON HIGGINSON, Mayor
JOHN MULLIN, Deputy Mayor
JIM CUNNINGHAM, Councilmember
DAVE GROSCH, Councilmember
STEVE VAUS, Councilmember

January 31, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Robert J. Manis
Director of Development Services
City of Poway

Leah Browder
Director of Public Works
City of Poway

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THE CITY OF SAN DIEGO

January 18, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Los Peñasquitos Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
City of San Diego

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Executive Summary

Since January 2002, the County of San Diego and the Cities of Del Mar, Poway and San Diego (herein referred to as the "Copermittees") have been active in planning, developing and implementing watershed-based programs in the Los Peñasquitos Watershed Management Area (WMA) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007, by the San Diego Regional Water Quality Control Board (RWQCB). This Annual Report describes the actions taken by the Copermittees in Fiscal Year (FY) 2012 (July 1st, 2011 to June 30th, 2012) to implement and refine the 2008 Los Peñasquitos Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA.

The Copermittees collaborated on their efforts to address high priority surface water quality issues throughout the Los Peñasquitos WMA. This was coordinated through monthly meetings held throughout the reporting period. The meetings were held in order to effectively plan and implement the Los Peñasquitos WURMP, develop and prioritize water quality activities that address pollutants of concern in the WMA, exchange ideas on how to address High Priority Water Quality Problems (HPWQPs) in the WMA, evaluate the effectiveness of actions, and collaborate on development of required submittals. In order to complete the objectives, the group performed assessments and conducted activities to address the water quality problems. These assessments and activities include: (1) a water quality assessment, (2) a pollutant source assessment, (3) planning and implementation of watershed activities, and (4) an assessment of the Copermittees' activities in the WMA.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees collected and reported JURMP and WURMP activities performed on a hydrologic area (HA) basis. This information is not comprehensive and, for some data sets, estimates were used to generate quantities of activities (this process is explained in **Appendix A**). The Copermittees believe that this is an important step to integrate the activities and reporting to best assess and plan for activities that address the identified HPWQPs on a HA basis.

The Copermittees will continue to refine and augment the Los Peñasquitos WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the Los Peñasquitos WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

A summary of the program accomplishments for FY 2012 is found below:

Los Peñasquitos Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Copermittees continued to develop and implement a watershed-based program that addresses the HPWQPs and their sources in the Los Peñasquitos WMA. The Copermittees met ten (10) times over the course of the reporting period to plan, implement and assess watershed activities. Through workgroup collaboration, there has been an increase in the ability of the Copermittees to identify and address watershed source pollutants, an increase in public awareness, partnerships formed

with other organizations, and opportunities provided for collaboration resulting in cost-effective activities.

Water Quality Assessment

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the Los Peñasquitos WMA based on data collected and analyzed during the reporting period. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the *2011-2012 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2013)for FY 2012 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Los Peñasquitos WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

HPWQPs in the Los Peñasquitos WMA:

- Bacteria in both HAs
- Sedimentation in the Miramar HA

Pollutant Source Assessment

During this reporting period, the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the HPWQPs identified and each source category's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Eating or Drinking Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

Planning and Implementation of Watershed Activities

WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Collectively, ten (10) WURMP Watershed Activities were actively implemented for WURMP credit during the reporting period – this includes eight (8) Water Quality Activities, one of which also had an educational component, and two (2) Water Quality Education Activities. Additional activities were also in other phases such as planning and assessment in FY 2012. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. Details of these activities are found in Section 4 and **Appendix B** of this Annual Report. The listing below identifies the activities actively implemented for WURMP credit:

Watershed Water Quality Activities

- Coastal Cleanup Day Sponsorship
- ILACSD Trash Cleanup Sponsorship
- Residential Rain Barrel Subsidies & Distribution
- Targeted Catch Basin Cleaning Pilot Study
- Rainwater Harvesting Rebate Pilot Program
- Residential Patrolling
- Land Acquisitions
- Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship

Watershed Education Activities

- Fiesta de Los Peñasquitos
- Los Peñasquitos Watershed Brochure
- Residential Rain Barrel Subsidies & Distribution (Educational Component)

Activities selected and conducted by the Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. The effectiveness of the individual activities is variable; however, collectively the Copermittees' program actions intend to have positive effects on water quality.

Effectiveness Assessment

The Copermittees continue to improve the program's effectiveness assessment by utilizing where appropriate the six-level assessment framework prepared by the Regional Copermittees in October 2003. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, the effectiveness assessment continues to lay the foundation for future in-depth evaluations of activities and program implementation.

Based upon the requirements of the Permit, the Copermittees are compliant and effective in implementing the Los Peñasquitos WURMP.

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1 Introduction

This Annual Report describes the Copermittees' activities during the reporting period (July 1, 2011, through June 30, 2012) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007, by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Permit, the Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout Fiscal Year (FY) 2012. The Copermittees will continue to work to implement, improve, and enhance their programs and activities.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Poway. Other participating jurisdictions include the Cities of Del Mar and San Diego, and the County of San Diego.

The Permit requires that the Copermittees within the Los Peñasquitos Watershed collaborate in the development and implementation of a watershed-scale program that addresses urban runoff[1] quality. The rationale for this approach is simple: urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon downstream receiving waters. The mechanism that the Permit uses to require watershed collaboration is the development and implementation of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, the Permit requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied. The overall goal of the Los Peñasquitos Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

Water quality priorities are evaluated each year and take into consideration the water quality assessment performed during each previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 Los Peñasquitos WURMP. For the Los Peñasquitos WMA, the water quality priorities are bacteria and sediment.

To target these water quality priorities, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the collective watershed strategy as the basis for developing and implementing the activities, the

[1] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

Copermittees focused their efforts on the potential sources that are the likely high-priority pollutant contributors in the Los Peñasquitos WMA. This FY 2012 report details the implementation of the Los Peñasquitos WURMP's collective watershed strategy.

1.1 Copermittee Collaboration

1.1.1 Los Peñasquitos WURMP Meetings

The Copermittees met ten (10) times during FY 2012 to implement the Los Peñasquitos WURMP. All four (4) of the Los Peñasquitos Copermittees also participate in the San Dieguito WURMP, so to maximize efficiency and prevent overlap of discussion, these meetings were held concurrently with the San Dieguito WURMP Copermittees. The Copermittees collaborated to develop, prioritize, and implement watershed activities that address HPWQPs and sources in the WMA and the development of the Annual Report. They also exchanged ideas on how to address HPWQPs in the WMA and evaluated the effectiveness of the watershed activities. **Table 1-1** is a summary of Los Peñasquitos WURMP meetings and an outline of agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Items Discussed
9/8/2011	TMDLs (Bacteria, Peñasquitos Lagoon), Annual Report, Temporary MLS Locations
10/13/2011	Presentation of Watershed Results, Cost Share Agreement, Annual Report, Temporary MLS Locations, TMDLs (Bacteria, Peñasquitos Lagoon), Workgroup Updates, Permit Reissuance Process
11/10/2011	ILACSD, Cost Share Agreement, Annual Report, TMDLs (Bacteria, Peñasquitos Lagoon), Workgroup Updates, Permit Reissuance Process
12/8/2011	Annual Report, TMDLs (Bacteria, Peñasquitos Lagoon), Cost Share Agreement, Workgroup Updates, Permit Reissuance Process, ILACSD Follow-Up
1/12/2012	CLRP Discussion, Annual Report, TMDLs (Bacteria, Peñasquitos Lagoon), Cost Share Agreement, Workgroup Updates, Permit Reissuance Process
2/9/2012	Outreach and Assessment, CLRP Development, Annual Report, TMDLs (Peñasquitos Lagoon), Cost Share Agreement, Permit Reissuance Process
3/8/2012	TMDLs (Peñasquitos Lagoon), CLRP Development, Cost Share Agreement, Permit Reissuance Process, Workgroup Updates, Activities, Updates
4/12/2012	Tentative Order R9-2012-0011, Follow-up 303(d) List, TMDLs (Bacteria, Peñasquitos Lagoon), CLRP Development, Cost Share Agreement, Workgroup Updates, Activities Updates
5/8/2012	Tentative Order R9-2012-0011, Follow-up 303(d) List, TMDLs (Bacteria, Peñasquitos Lagoon), CLRP Development, Cost Share Agreement, Workgroup Updates, Activities Updates, AMEC CLRP Special Studies Memo Discussion
6/7/2012	Tentative Order R9-2012-0011 and WQIPs, Follow-up 303(d) List, TMDLs (Bacteria, Peñasquitos Lagoon), CLRP Development, Cost Share Agreement, PPS Meeting Update, TWAS Locations

The general watershed meetings of the Los Peñasquitos WURMP Workgroup were led by the City of Poway, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks were then carried out by the Copermittees, each within the structure of their jurisdictional organization. Task completion was tracked and assessed at the Workgroup meetings and reported in this Annual Report.

Lagoon TMDL
The RWQCB is assisting the Copermittees in the development of a Third Party TMDL for sediment in the Los Peñasquitos WMA. The TMDL specifically addresses the issue of sedimentation/siltation within the lagoon. In FY 2007, the RWQCB issued Investigative Order R9 2006-76 for monitoring associated with Lagoon TMDL modeling. The Lagoon TMDL Investigative Order has resulted in the collection of a significant amount of hydrologic, hydraulic, and water quality data for the lagoon and the associated WMA. Through monitoring during FY 2008, a significant amount of data was collected in order to calibrate and validate the TMDL models for pollutant load allocation. Between FY 2009 and FY 2011, the Copermittees continued to work with the RWQCB staff to complete the TMDL and prepare it for adoption by the RWQCB. On June 13, 2012, the San Diego RWQCB adopted Resolution No. R9-2012-0033 (Sediment TMDL), an *Amendment to the Water Quality Control Plan for the San Diego Basin to Incorporate the Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon*. The Amendment sets a numeric target for sediment loading of 12,360 tons of sediment per wet period or 58.6 tons per day, requiring a 67% sediment load reduction from the watershed. The Amendment is awaiting approval from the SWRCB and the USEPA.

1.2 WATERSHED MAP UPDATE

The Los Peñasquitos WMA is located within west–central San Diego County. The WMA has two hydrologic areas (HAs) and extends from the foothills east of the City of Poway to the coastal plain where the watershed drains into Los Peñasquitos Lagoon before flowing into the Pacific Ocean through a narrow mouth at Torrey Pines State Beach. The Los Peñasquitos WMA is 60,419 acres and encompasses the drainage areas of Los Peñasquitos Creek, Carmel Creek, and Carroll Canyon Creek (Soledad Canyon), with the remaining 1,107 acres comprising the lagoon and coastal drainages. Land use within the overall Los Peñasquitos WMA is classified primarily as open space/parks and recreation (31%), residential (22%), vacant and undeveloped land (14%), and transportation (13%). However, there are several notable differences in land use composition among the three creek drainage areas and between the two HAs that make up the watershed. The Los Peñasquitos WMA is mostly within City of San Diego jurisdiction (71%), with the remaining areas in City of Poway (25%), County of San Diego (3%), and City of Del Mar (0.2%) jurisdiction. Over 60% of the watershed is privately owned land.

No updates have been made to the previously submitted Watershed Map. A copy of the most recent Watershed Map from the Los Peñasquitos WURMP Annual Report submitted in January 2009 can be found in **Attachment A** to this report.

1.3 ORGANIZATION AND CONTENT OF REPORT

SECTION 1 - Introduction
Section 1 of the Annual Report provides a summary of the Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2 - Water Quality Assessment
Section 2 provides an updated evaluation and analysis of the Los Peñasquitos WMA's receiving water conditions based on applicable water quality data from the *2011-2012 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2013).

SECTION 3 - Pollutant Source Assessment
Section 3 provides an update on the likely sources of urban runoff. Although the assessment covers the entire WMA, it specifically addresses the distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA.

SECTION 4 - Implementation of Watershed Activities
Section 4 describes activities implemented by the Copermittees during the FY 2012 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution. The activities selected and conducted by the Copermittees during FY 2012 address the overall goal of the WURMP and the Permit by focusing on the HPWQPs in both HAs.

SECTION 5 - Effectiveness Assessment
Section 5 provides an assessment of the implementation and effectiveness of the Los Peñasquitos WURMP for the FY 2012 reporting period using concepts from *A Framework for Assessing the Effectiveness of Jurisdictional Runoff Management Programs*. The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and best management practice (BMP) implementation and resulting changes in receiving water quality. Consistent with the requirements of the Permit, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 6 - Conclusions
Section 6 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

2 Water Quality Assessment

This section provides an assessment of the 2011-2012 monitoring programs conducted in the Los Peñasquitos WMA. A complete presentation of the monitoring efforts conducted during the reporting period is located in the *2011-2012 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2013).

2.1 Monitoring Programs

Monitoring activities conducted in the WMA to comply with Order R9-2007-0001 are provided in **Table 2-1**. A map presenting the locations of the Mass Loading Station (MLS), Temporary Watershed Assessment Stations (TWAS), and the HAs is provided on the following page as **Figure 2-1**.

Table 2-1 2011-2012 Monitoring Program Activities

Program Data Set	Constituents Assessed	Number of Sites Assessed
Receiving Water Monitoring		**3**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	0
SMC Regional Monitoring[1]	Water chemistry, toxicity, bacteria, rapid stream bioassessment	0
Wet Weather Monitoring	Water chemistry, toxicity, bacteria, and trash	0
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, TOC	0
Third-Party Data	Water chemistry and bacteria	3 Coastkeeper
Urban Runoff Monitoring		**242**
Jurisdictional Dry Weather Monitoring	Field and analytical water chemistry	178
Jurisdictional Dry Weather Monitoring	Trash	215
MS4 Outfall Random Dry Weather Monitoring	Water chemistry and bacteria	6
MS4 Outfall Random Wet Weather Monitoring	Water chemistry and bacteria	6
MS4 Outfall Targeted Dry Monitoring	Water chemistry, metals, and bacteria	13
MS4 Outfall Targeted Wet Monitoring	Water chemistry, metals, bacteria, and pesticides	1
Regional Source Identification Monitoring	Water chemistry, metals, bacteria, and pesticides	0
CSDM Program	Coastal Outfall and Receiving Waters bacteria	1

CSDM – Coastal Storm Drain Monitoring
MLS – Mass Loading Station
SMC – Stormwater Monitoring Coalition
TOC – Total Organic Carbon
TWAS – Temporary Watershed Assessment Station

Annual receiving water monitoring is conducted by the Copermittees on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit. Receiving waters ambient and wet weather monitoring occurred within the Peñasquitos WMA during the 2010-2011 reporting period. During the 2011-2012 reporting period, limited receiving water monitoring was conducted by third party groups. MLS and TWAS stations were not monitored in 2011-2012 as the regional program was on South County rotation.

Figure 2-1 Location of MLS, TWAS, and HAs – Los Peñasquitos Creek WMA

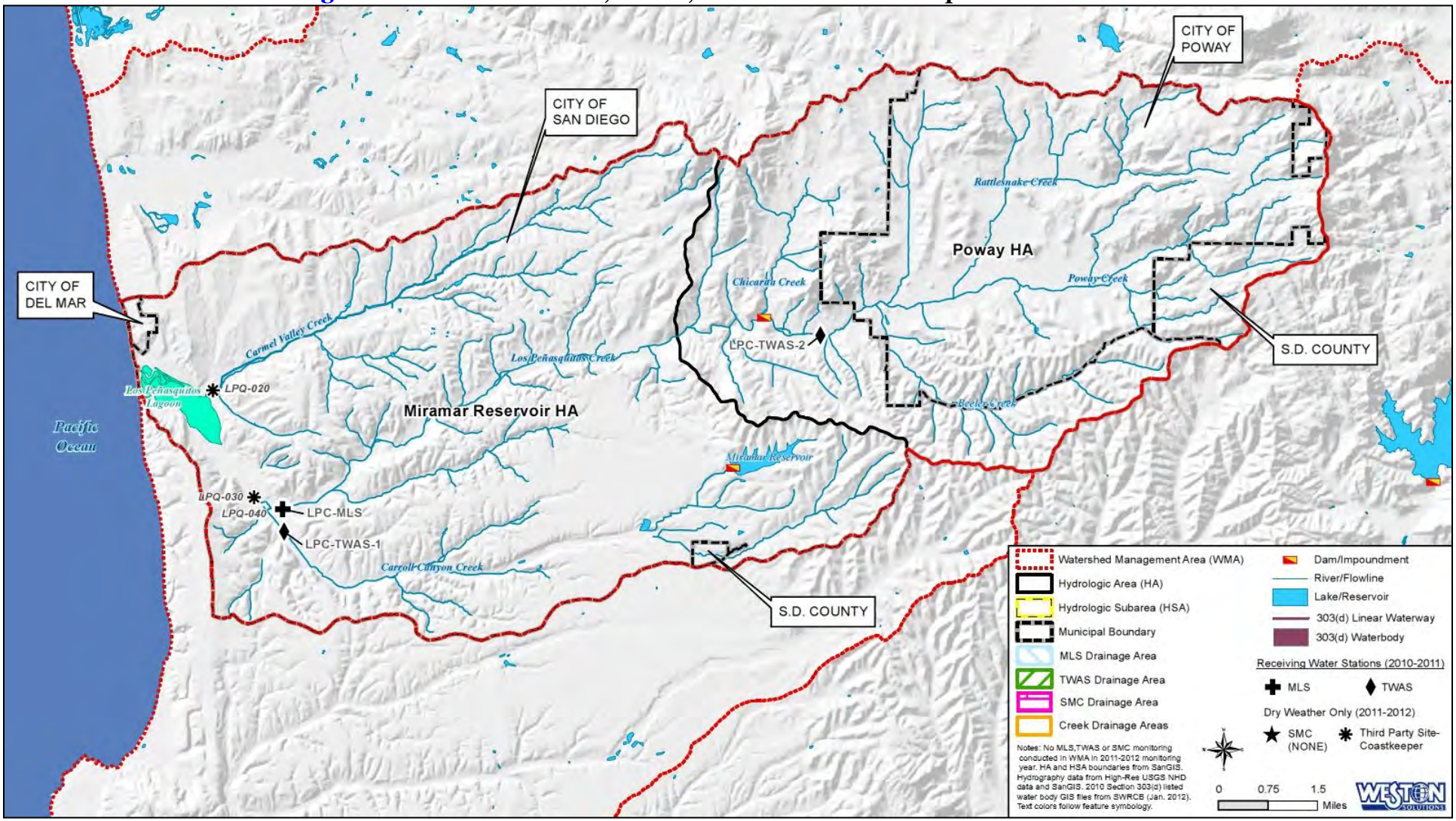

2.2 303(d) Listings

Within the watershed, contaminants identified on the 2010 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant TMDL status/activity. On November 12, 2010, USEPA approved California's 2008-2010 Section 303(d) list of impaired waters and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. At that time, USEPA identified additional water bodies and pollutants for inclusion on the State's 303(d) list and provided public notice and the opportunity for public comment on the proposed additions which ended December 23, 2010. On October 11, 2011, USEPA issued its final decision regarding the waters EPA added to the State's 303(d) list.

Table 2-2 Los Peñasquitos WMA 2010 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	HA	Pollutant/Stressor on 2010 SWRCB 303(d) List	TMDL Status
Los Peñasquitos Lagoon	906.1	Sedimentation/Siltation	Adopted in June 2012
Los Peñasquitos Creek	906.1	*Enterococcus*, Fecal Coliform, Selenium, TDS, Total Nitrogen as N	Proposed for completion in 2019
		Toxicity	Proposed for completion in 2021
Pacific Ocean Shoreline at Los Peñasquitos River Mouth	906.1	Total Coliform	Proposed for completion in 2019
Miramar Reservoir	906.1	Total Nitrogen as N	Proposed for completion in 2019
Soledad Canyon	906.1	Sediment Toxicity	Proposed for completion in 2019
		Selenium	Proposed for completion in 2021
Poway Creek	906.2	Selenium and Toxicity	Proposed for completion in 2021

Source: SWRCB, 2010

2.3 Assessment

This section includes an integrated presentation of the watershed monitoring during both ambient and wet weather. The integrated assessment incorporates the results from watershed receiving water and urban runoff monitoring (MS4, MLS, TWAS, and SMC), with the purpose of overlapping constituents between the programs. Assessments were conducted using data from multiple current and historical monitoring programs, and the results derived using a weight-of-evidence approach. Each HA in the Los Peñasquitos WMA was assessed individually and summarized for the entire WMA by program element in **Table 2-3**.

Table 2-3 Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings
Los Peñasquitos WMA	Intermediate Receiving Water Monitoring[3]	Ambient Receiving Water Assessment (MLS, TWAS, SMC, and 3rd Party Data)	▪ Third Party Data (Coastkeeper): - High priority: *Enterococcus* MLS/TWAS/SMC receiving water monitoring was not conducted in FY 2012 FY 2011 Results: ▪ MLS and TWAS Constituents of Concern[1]: - High priority: *Enterococcus*, TDS, Toxicity (*S. capricornutum* acute), Very Poor IBI - Medium priority: Total P, Dissolved P ▪ SMC Program (SMC02902)[2]: - High priority: Dissolved Oxygen, Chloride, Sulfate, Poor IBI, Total N, Total P, and TDS
		Wet Weather Receiving Water Assessment (MLS and TWAS)	MLS/TWAS receiving water monitoring was not conducted in FY 2012 FY 2011 Results: ▪ MLS and TWAS Constituents of Concern[1]: - High priority: Fecal Coliform, Very Poor IBI, TDS, TSS, Turbidity - Medium priority: pH, Bifenthrin, Toxicity (*H. azteca* acute) ▪ Pyrethroid concentrations were below detection limits in all sediment samples
		Rapid Stream Bioassessment	MLS/TWAS receiving water monitoring was not conducted in FY 2012 FY 2011 Results: ▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed during the 2010-2011 monitoring year
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of Concern[1]: - High priority: *Enterococcus*, Total N, Total P, TDS, Fecal Coliform ▪ Trash assessments indicated portions of the lower watershed (906.1) had the highest occurrence of observed trash. Of the 215 sites monitored, 97% of sites were rated optimal or suboptimal and 3% were marginal. No threats to aquatic health or human health were identified.
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ Constituents of Concern[1]: - High priority: Fecal Coliform, Turbidity[2], Dissolved Copper[2], MBAS[2]
		Source Identification Program	FY 2011 Results: ▪ Results suggest that single family residential land uses are likely contributors of the following constituents during wet weather events: - High priority: TSS, Turbidity, Dissolved Copper (site specific), Bifenthrin, Permethrin, and Fecal Coliform. - Medium priority: Cyfluthrin and pH. ▪ Dry weather constituents suggestively contributed by single family residential land uses include: - High priority: *Enterococcus*[2], Fecal Coliform[2], Total N[2], Total P[2], TDS[2].
	WMA Assessment	Receiving Water Trend Assessment	Trends are based on historical data, 2011-2012 monitoring year data unavailable due to South County rotation. ▪ Significantly increasing trends were observed for Fecal Coliform, Total Coliform, and Total Nickel. ▪ Significantly decreasing trends were observed for Total Lead and Total Organic Carbon.
		2011 Long-Term Effectiveness Assessment (LTEA) Ratings	▪ WMA high priority ratings for Fecal Coliform, *Enterococcus*, Total P, Total N, TDS, Turbidity, Bifenthrin, Benthic Algae, and Toxicity.

Notes:
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.
IBI – Index of Biotic Integrity
TDS – Total Dissolved Solids
TSS – Total Suspended Solids

2.4 Integrated Assessment

Assessment of the WMA during both wet weather and ambient conditions is presented in an integrated manner to present managers with an overall assessment of the WMA and to provide answers to the core management questions as described in the regional monitoring program. The integrated assessment incorporates both the ambient weather and wet weather assessments and provides a summary of the overall findings for the Los Peñasquitos WMA. The integrated assessment also identifies which priority constituents overlap between receiving waters and urban runoff. It is anticipated that MS4 Outfall Program data will bolster the assessment process as the data become available in future years. The integrated watershed assessment results are presented in **Tables 2-4** and **2-5.**

Table 2-4 Miramar 906.1 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Intermediate Receiving Water Monitoring[3] (MLS, TWAS, and SMC)	**Third-Party Data (Coastkeeper)** Bacteria – *Enterococcus* No MLS/TWAS/SMC monitoring during 2011-2012 FY 2011 Results: **NPDES Program – MLS** • Chemistry – No priority constituents identified • Toxicity – *S. capricornutum* acute (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* • Nutrients – Total P (Med), Dissolved P (Med) • TDS – Observed **NPDES Program – TWAS-1** • Chemistry – No priority constituents identified • Toxicity – *S. capricornutum* acute (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – Observed **SMC Program (One Station)[2]** • Chemistry – DO, Chloride, Sulfate • Toxicity – No toxicity observed • Bioassessment – Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed	No MLS/TWAS monitoring during 2011-2012 FY 2011 Results: **NPDES Program – MLS** • Chemistry – No priority constituents identified • Toxicity – No toxicity observed • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – Observed **NPDES Program – TWAS-1** • Chemistry – TSS, Turbidity, Bifenthrin (Med), pH (Med) • Toxicity – No toxicity observed • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – Observed (Med) **Synthetic Pyrethroids in Sediment[2]** • No priority constituents identified
Urban Runoff Monitoring (MS4 Outfall and DWM)	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – *Enterococcus*, Fecal Coliform (Med) • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Not observed

MLS Trends[4]	
Increasing	Fecal Coliform, Total Coliform, Total Nickel
Decreasing	Total Lead, Total Organic Carbon

1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.
4: Trends are based on wet weather historical data; 2011-2012 monitoring year data unavailable due to South County rotation.

DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
TWAS - Temporary Watershed Assessment Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
DO - Dissolved Oxygen

Within the Miramar HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, total nitrogen, total phosphorous, and TDS. Ambient weather medium-priority constituents include total and dissolved phosphorus. The Copermittees' *2011 Long-Term Effectiveness*

Assessment (LTEA) (MOE, LWA, Weston, 2011) rated TDS and *Enterococcus* as high priorities, as well as benthic algae, which is rated as a low priority based on current monitoring data. Medium priorities in the LTEA included total nitrogen (found to be high priority during the 2011-2012 MS4 outfall monitoring).

Fecal coliform is the only wet weather water quality priority constituent outlined by both the FY 2011 receiving water monitoring and FY 2012 MS4 outfall monitoring programs. This result is consistent with the 5-year assessment in the LTEA, where fecal coliform was rated as a high-priority constituent. In addition, the LTEA identified bifenthrin as a medium-priority constituent (identified as a low-priority at the MLS based on last year's monitoring results).

Long-term trend analysis in the Miramar HA is currently limited to wet weather data collected at the MLS. Due to rotational nature of the monitoring program, receiving water data for this station is not available for the 2011-2012 monitoring year; therefore, these trends did not change from those presented in the FY 2011 WURMP Annual Report. Based on the past data, three constituents are significantly increasing — fecal coliform, total coliform, and total nickel. Of these three constituents, only fecal coliform is above the wet weather water quality benchmark (total coliform and total nickel do not have wet weather water quality benchmarks). Two constituents, total lead and total organic carbon (TOC), are significantly decreasing at the MLS. Neither constituent has a wet weather water quality objective, although total lead is decreasing at a rate of 2.94 mg/L per year, and TOC is reducing at a rate of 0.203 mg/L per year. These findings are similar to those of the LTEA. At present there are insufficient data to complete trend analyses on available dry weather receiving water data.

Table 2-5 Poway 906.2 HA Integrated Assessment Findings

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Intermediate Receiving Water[3] Monitoring (MLS, TWAS, and SMC)	No MLS/TWAS/SMC monitoring during 2011-2012 FY 2011 Results: **NPDES Program – TWAS-2** • Chemistry – No priority constituents identified • Toxicity – *S. capricornutum* acute (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* • Nutrients – No priority constituents identified • TDS – Observed **SMC Program (One Station)[2]** • Chemistry – DO, Chloride, Sulfate • Toxicity – No toxicity observed • Bioassessment – Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed	No MLS/TWAS monitoring during 2011-2012 FY 2011 Results: **NPDES Program – TWAS-2** • Chemistry – TSS (Med), Turbidity (Med), Bifenthrin (Med) • Toxicity – *H. azteca* acute (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Observed (Med) **Synthetic Pyrethroids in Sediment[2]** • No priority constituents identified
Urban Runoff Monitoring (MS4 Outfall and DWM)	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – *Enterococcus*, Fecal Coliform • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Not observed

1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.

DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
TWAS - Temporary Watershed Assessment Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
DO - Dissolved Oxygen

Within the Poway HA, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, total nitrogen, total phosphorous, and TDS. TDS and *Enterococcus* were rated as the ambient weather high-priority constituents at the TWAS-2 monitoring station. Both constituents were also identified as high priorities in the LTEA, along with total phosphorus and total nitrogen, which is consistent with the 2011-2012 dry weather MS4 outfall monitoring.

Fecal coliform is the only wet weather water quality issue outlined by the monitoring programs in both urban runoff and intermediate receiving waters and is identified as a high priority constituent. This is consistent with the assessment presented in the LTEA.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data in the Poway HA as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

2.4.1 High Priority Water Quality Problems

Based on the assessments above and the available water quality data, the Copermittees have determined that the HPWQPs in the Los Peñasquitos WMA are:

1. Bacteria in both HAs
2. Sediment in the Miramar Hydrologic Area

It should be noted that the HPWQPs have not changed from previous assessments or the 2008 Los Peñasquitos WURMP.

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3 Pollutant Source Assessment

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the Los Peñasquitos WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs and is presented by HA.

Table 3-1 summarizes the land use in each of the HAs. Land use information is generally associated with wet weather urban runoff where rainfall runoff has the potential to contribute pollutants to the receiving waters from areas that are collectively associated with particular land use types. Conversely, dry weather urban runoff is generally associated with point dischargers such as residences, commercial facilities, etc., where pollutants enter the runoff from pollutant generating activities and from the conveyances as runoff enters and travels through the MS4. Potential pollutant generating activities include irrigation runoff, sanitary sewer overflows, improper landscape maintenance, and improper use of fertilizers, herbicides, and pesticides.

Through four studies performed by the City of San Diego – *Tecolote Creek Microbial Source Tracking Summary* (City of San Diego, 2010), *San Diego River Source Tracking Investigation* (City of San Diego, 2010), *Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek* (City of San Diego and Weston, 2009), and, *San Diego County Enterococcus Regrowth Study* (SCCWRP, 2012) – it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates that regrowth in catch basins is a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[2], was found to provide both a transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishii et al., 2007; Yamahara et al., 2009).

Tables 3-2 and **3-3** present an inventory of pollutant generating sources that the Copermittees currently track by HA. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants (blue highlight). The process used to develop the tables was taken directly from the Copermittees' LTEA. The data used for the process includes the following: (1) results in the *2011-2012 Regional Annual Monitoring Report* (Weston Solutions, January 2013); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the LTEA (MOE, LWA, Weston, 2011).

[2] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)	
	906.1	906.2
Open Space	11,183.1	6,551.9
Single Family Residential	6,531.4	4,727.1
Roads and Freeways	4,908.0	2,596.9
Industrial	3,207.3	856.4
Multiple Family Residential	1,419.6	922.1
Vacant and Undeveloped Land	1,392.6	5,987.4
Commercial	1,291.2	743.3
Institutional	1,218.8	450.5
Parks, Golf Courses, Cemeteries	1,090.9	856.7
Agricultural, Orchards, Vineyards	218.2	364.9
Storage and Warehousing	185.1	46.9
Water Supply	137.2	0.0
Recreation	113.5	31.8
Spaced Rural Residential	112.9	2,653.7
Utilities	90.8	99.3
Health Services	76.6	50.7
Construction	68.8	71.0
Water	41.4	0.0
Automotive and Transportation	37.2	54.8
Junkyard, Dump, Landfill	0.0	27.2

Source: SANDAG, 2009

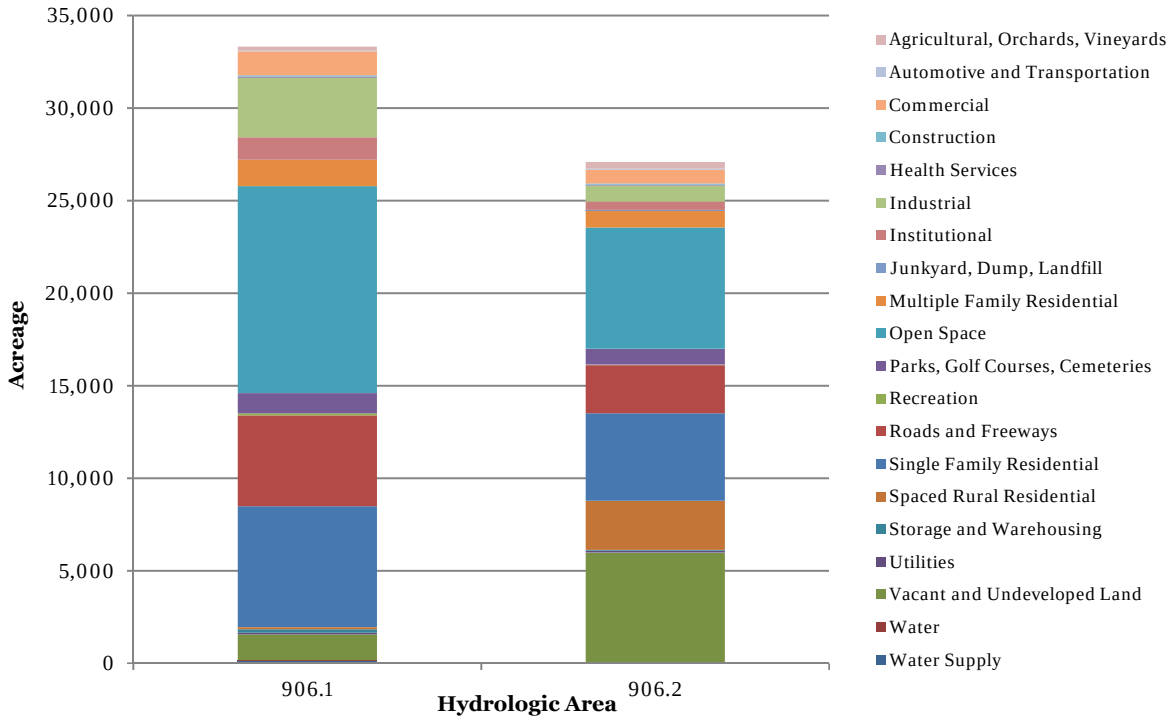

Table 3-2 Pollutant Generating Sources – 906.1 Miramar Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Aggregates/Mining	2	L	L	L	UL	UL	UL	UL	L
Agriculture	3	L	UL	L	L	L	L	UK	UL
Animal Facilities	54	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	170	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	11	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	157	L	L	UL	UL	UL	UL	L	L
Building Materials Retail	56	L	L	L	UL	UL	UL	UL	L
Chemical and Allied Products	12	UK	UK	UK	UK	UK	UL	N	L
Concrete Manufacturing	12	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	639	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	153	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	121	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	51	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	326	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	193	L	L	UK	UK	UK	UK	UK	L
General Retail	181	UL	UL	L	UL	UL	UL	UL	UL
Health Services	3	N	UL	L	UK	L	UL	UK	L
Institutional	5	L	UK	UK	UK	UK	UL	UK	UK
Mobile Upholstery Cleaning	5	N	UK	UL	N	UK	UL	N	UL
Mobile Landscaping	26	N	UL	L	L	L	L	UL	N
Mobile Power Washing	15	UK	UK	UK	UK	UK	UK	UK	UK
Motor Freight	242	L	L	UK	UK	UK	UK	UL	L
Nurseries/Greenhouses	1	L	UL	L	L	L	L	UL	UL
Offices	15	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	12	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	10	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	18	N	N	N	N	UK	N	N	UK
Primary Metal	4	L	UK	UK	UK	UK	UL	N	UK
Recycling & Junk Yards	7	L	L	L	UL	UL	UL	L	L
Stone/Glass Manufacturing	9	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	491	L	L	L	UL	UL	UL	UL	L
Municipal	High: 93; Non-High: 1	N	N	L	N	N	UK	UL	N
Construction	High: 16; Medium: 31; Low: 1,526	UL	UL	L	UL	UL	UL	L	UL
Residential	8,077 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-3 Pollutant Generating Sources – 906.2 Poway Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Aggregates/Mining	1	L	L	L	UL	UL	UL	UL	L
Animal Facilities	24	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	85	L	L	UL	UL	UK	UL	L	L
Auto Parking Lots or Storage	3	L	L	L	UK	UK	UK	UL	L
Auto Body Repair or Painting	43	L	L	UL	UL	UL	UL	L	L
Building Materials Retail	10	L	L	L	UL	UL	UL	UL	L
Chemical and Allied Products	2	UK	UK	UK	UK	UK	UL	N	L
Concrete Manufacturing	8	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	341	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	64	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	53	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	11	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	73	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	49	L	L	UK	UK	UK	UK	UK	L
General Retail	47	UL	UL	L	UL	UL	UL	UL	UL
Health Services	1	N	UL	L	UK	L	UL	UK	L
Mobile Landscaping	15	N	UL	L	L	L	L	UL	N
Mobile Power Washing	2	UK	UK	UK	UK	UK	UK	UK	UK
Motor Freight	82	L	L	UK	UK	UK	UK	UL	L
Nurseries/Greenhouses	7	L	UL	L	L	L	L	UL	UL
Offices	1	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	11	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	1	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	3	N	N	N	N	UK	N	N	UK
Primary Metal	2	L	UK	UK	UK	UK	UL	N	UK
Recycling & Junk Yards	2	L	L	L	UL	UL	UL	L	L
Stone/Glass Manufacturing	4	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	166	L	L	L	UL	UL	UL	UL	L
Municipal	High: 55; Non-High: 22	N	N	L	N	N	UK	UL	N
Construction	High: 10; Medium: 23; Low: 482	UL	UL	L	UL	UL	UL	L	UL
Residential	8,274 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

4 Implementation of Activities

4.1 JURMP and Watershed Activities

The Copermittees are responsible for implementing Jurisdictional Urban Runoff Management Program (JURMP) activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. These activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. To develop meaningful analysis of the results and assessment of activities conducted, the data and information is reported on an HA basis. However, the JURMP data and information is not comprehensive and for some data sets, estimates were used to generate quantities on an HA basis – this estimation process is explained in **Appendix A** of the report.

In addition to their JURMP activities, the Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 Los Peñasquitos WURMP.

The tables below present the Copermittees' efforts towards reporting all urban runoff management activities on a watershed basis. A comprehensive reporting of all urban runoff management activities on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements. The tables identify the WURMP and many of the JURMP activities that are associated with the HPWQPs in each HA.

Collectively, the Copermittees actively implemented six (6) watershed water quality activities and two (2) watershed education activities in the Miramar HA (906.1), and five (5) watershed water quality activities and two (2) watershed education activities in the Poway HA (906.2). Some of these activities overlapped HAs. The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

Table 4-1 JURMP and WURMP Activities – 906.1 Miramar Hydrologic Area*

Activity		Results			HPWQPs	
					Bacteria/ Pathogens	Sediment
Inspections # of Inspections: (Inventory #)	Aggregates/Mining	2: (2)				✓
	Agriculture	0: (3)			✓	✓
	Animal Facilities	12: (54)			✓	✓
	Auto Parking Lots or Storage	8: (11)				✓
	Building Materials Retail	36: (56)				✓
	Concrete Manufacturing	9: (12)				✓
	Eating or Drinking Establishments	339: (639)			✓	
	General Contractors	147: (326)				✓
	General Retail	93: (181)				✓
	Health Services	0: (3)				✓
	Mobile Landscaping	12: (26)			✓	✓
	Nurseries/Greenhouses	1: (1)			✓	✓
	Recycling & Junk Yards	3: (7)				✓
	Stone/Glass Manufacturing	3: (9)				✓
	Storage/Warehousing	188: (491)				✓
	Construction	High	Medium	Low		✓
		447: (16)	485: (31)	8,158: (1,526)		
	Municipal	High	Non-High			✓
		185: (93)	0: (1)			
Street Sweeping (Tons Collected)		909.1			✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		44.3			✓	✓
LP-WQA1	Coastal Cleanup Day Sponsorship				✓	
LP-WQA8	ILACSD Trash Cleanup Sponsorship				✓	
LP-WQA23	Residential Rain Barrel Subsidies & Distribution				✓	✓
LP-WQA27	Rainwater Harvesting Rebate Pilot Program				✓	✓
LP-WQA28	Residential Patrolling				✓	✓
LP-WQA30	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship				✓	
LP-WQEA13	Fiesta de Los Peñasquitos				✓	✓
LP-WQEA14	Los Peñasquitos Watershed Brochure				✓	✓

*Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-2 JURMP and WURMP Activities – 906.2 Poway Hydrologic Area*

Activity		Results	HPWQP
			Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Animal Facilities	13: (24)	✓
	Eating or Drinking Establishments	182: (341)	✓
	Mobile Landscaping	4: (15)	✓
	Nurseries/Greenhouses	2: (7)	✓
Street Sweeping (Tons Collected)		1,236.7	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		722.4	✓
LP-WQA23	Residential Rain Barrel Subsidies & Distribution		✓
LP-WQA26	Targeted Catch Basin Cleaning Pilot Study		✓
LP-WQA27	Rainwater Harvesting Rebate Pilot Program		✓
LP-WQA29	Land Acquisitions		✓
LP-WQA30	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship		✓
LP-WQEA13	Fiesta de Los Peñasquitos		✓
LP-WQEA14	Los Peñasquitos Watershed Brochure		✓

*Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

4.2 Watershed Education Activities

This section describes activities implemented by the Copermittees during the FY 2012 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing education activities that address the HPWQPs in the Los Peñasquitos WMA. The activity selection process is described fully in the 2008 Los Peñasquitos WURMP.

The Copermittees continue to make progress in developing and implementing programs aimed at improving storm water and urban runoff water quality in the WMA. **Table 4-3** below list the education activities implemented during FY 2012 by the Copermittees. In addition, other activities were in the active planning phase during the reporting period. For more details on all of the activities, refer to **Table 4-5** and **Appendix B**.

Table 4-3 Watershed Education Activities Implemented During FY 2012

ID #	Activity/Project Name
LP-WQEA13	Fiesta De Los Peñasquitos
LP-WQEA14	Los Peñasquitos Watershed Brochure
LP-WQA23	Residential Rain Barrel Subsidies & Distribution (Educational Component)

The effectiveness assessments for these activities are presented in the Activity Implementation Sheets (**Appendix B**) and are summarized in Section 5 – Effectiveness Assessment.

4.3 Public Participation Activities

4.3.1 Introduction

The Public Participation component of the 2008 Los Peñasquitos WURMP encourages residents and organizations within the WMA (such as other agencies, private companies and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water and other methods including direct interaction of Los Peñasquitos WURMP Copermittee staff with members of the public.

4.3.2 Activities Conducted

WURMP documents and reports have been posted on the Project Clean Water website, http://www.projectcleanwater.org, where they are available to all interested stakeholders. During the previous reporting period, revisions were made to update the content and documents available via the site. During FY 2012, hits at the Project Clean Water website totaled 35,299, or an average of 97 site visits per day.

Copermittees also worked in cooperation with the Regional Education and Residential Sources workgroup. During this reporting period, the Copermittees participated in eight (8) community events outlined in the list below.

Outreach Events

The Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- June 10 - July 3, 2011 – San Diego County Fair
- September 17, 2011 – California Coastal Cleanup Day
- September 18, 2011 – Rendezvous in Poway Festival
- December 15-17, 2011 – Day Without a Bag (Countywide)
- April 15, 2012 – Poway Spring Street Fair
- April 28, 2012 – Creek to Bay Cleanup
- May 6, 2012 – Fiesta de los Peñasquitos
- June 23, 2012 – San Diego County Fair – Enviro Fair

Two cleanup events took place at four (4) locations in the WMA that included approximately 478 participants. These events are presented in **Table 4-4** below. Watershed concepts and principles were incorporated into outreach efforts at booth displays and event activities.

Table 4-4 Community Cleanup Events in FY 2012

Date	Name	Location	# of Participants	# of Pounds Removed	Hydrologic Area
9/17/2011	Coastal Cleanup Day	Torrey Pines and Los Peñasquitos Lagoon	230	27	Miramar (906.1)
		Carmel Mountain Preserve	90	110	Miramar (906.1)
		Miramar Reservoir, Scripps Ranch	62	56	Miramar (906.1)
4/28/2012	Creek to Bay Cleanup	Torrey Pines State Beach	96	169	Miramar (906.1)
		Totals	**478**	**362**	-

Other events included focused presentations to residents and targeted communities, stormwater training for municipal employees, guided watershed hikes, residential oil and hazardous waste collections and tire collections.

4.3.3 Future Efforts

The Copermittees will continue to provide opportunities for residents and other interested parties to participate in Los Peñasquitos WURMP activities. Draft documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the Los Peñasquitos WMA.

4.4 Collaborative Land-Use Planning Efforts

4.4.1 Introduction

The Land-Use Planning component of the 2008 Los Peñasquitos WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities.

4.4.2 Activities Conducted

Integrated Regional Water Management (IRWM)

The Copermittees have been active participants in the Integrated Regional Water Management (IRWM) planning process (IRWMPP) since its beginning in 2005. The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders.

During FY 2011-12, the IRWM Program held five (5) Regional advisory Committee (RAC) meetings plus the first ever IRWM Summit to kick off the formal public participation for the update of the IRWM Plan. The RAC meetings provided updates on the IRWM Planning efforts, City of San Diego Climate Change Mitigation and Adaptation Plan, Municipal Stormwater NPDES Permit renewal, and Bacteria TMDL implementation plans. In

addition, the RAC hosted panel discussions on stormwater and Los Peñasquitos Watershed Planning.

Quality of Life Funding Strategy

The County of San Diego has participated in the SANDAG Quality of Life Funding Strategy since 2009, taking the lead on the Water Quality Enhancement Element. The County continues to work collaboratively with other Copermittees and interested regional stakeholders, to explore funding options, and priorities for water quality needs within the region. In April 2011 a Needs Assessment Cost Estimate (report) was developed for the region, to begin the process of establishing funding priorities related to water quality and to provide water quality need and costing information to SANDAG for the Quality of Life Funding Strategy. The report has also been found to be a useful tool when estimating costs for TMDLs that were recently adopted in the region.

SANDAG conducted additional polling in late 2011 to test the climate for a ballot measure, as the TransNet Extension Ordinance required the agency to take the funding strategy to the voters 'no later than November of 2012'. Given the current economic climate, a measure was not determined to be feasible, and would likely fail. In 2012 SANDAG voted to amend the TransNet Extension Ordinance language to reflect a date 'no later than November of 2016'. Furthermore, SANDAG is developing an update to the Regional Comprehensive Plan (RCP) which will incorporate the newly adopted Regional Transportation Plan (RTP) creating a comprehensive regional infrastructure document. SANDAG is currently considering using the Funding Strategy as the funding mechanism for regional infrastructure, operations and maintenance. This is an ongoing effort that currently has a vision beyond 2016.

4.4.3 Future Efforts

In FY 2013, the City and County of San Diego, as well as other WURMP Copermittees, will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will continue. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the City and other jurisdictions.

4.5 Updated 5-Year Strategic Plan

4.5.1 New WMA Activities

Proposed watershed activities Implementation Sheets can be found in **Appendix B**. New activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA.

Each activity on the WMA Activities List is fully described in an Activity Implementation Sheet that includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQP(s) of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no fewer than two water quality activities will be in an active implementation phase. A water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's HPWQP(s). Water quality activities that are capital projects are in active implementation for the first year of implementation only.

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

4.5.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the Los Peñasquitos WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale in which actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees made appropriate management decisions on which water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees used available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The updated 5-year strategic plan presented below is intended to supersede the earlier versions presented in the 2008 Los Peñasquitos WURMP and the FY 2008 through FY 2011 Los Peñasquitos WURMP Annual Reports.

Table 4-5 Updated 5-Year Strategic Plan

Activity/Project Name		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Sediment	FY 2012	FY 2013	FY 2014[1]	Future Fiscal Year(s)[1]
Watershed Water Quality Activities								
LP-WQA1	Coastal Cleanup Day Sponsorship	SD	✓		WQI	WQI	WQI	WQI
LP-WQA7	Rehco Road Hydrodynamic Separator Installation	SD	✓	✓	P	I	WQI	-
LP-WQA8	ILACSD Trash Cleanup Sponsorship	SD/POW	✓		WQI	WQI	WQI	WQI
LP-WQA9	Mira Mesa Bioretention and Infiltration Retrofit	SD	✓		P	P	I	M
LP-WQA11	Aubrey Street Continuous Deflective Separation (CDS) Device	POW		✓	A	A	A	A
LP-WQA12	Gate Drive Detention Basin Modification	POW	✓		A	A	A	A
LP-WQA19	City of San Diego Strategic Plan Implementation	SD	✓	✓	Will no longer be reported			
LP-WQA21	ESD Phased Green Mall and Underground Vault Project	SD	✓		P	P	P	P
LP-WQA22	Los Peñasquitos Lagoon Third Party TMDL Development	ALL		✓	I	-	-	-
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	COUNTY	✓	✓	WQI	WQI	WQI	WQI
LP-WQA24	Stormwater Quality Master Plans For Special Drainage Fee	COUNTY	✓	✓	P	P	P	P
LP-WQA25	Los Peñasquitos Property-Based Inspections	SD	✓	✓	Completed – no longer reported			
LP-WQA26	Targeted Catch Basin Cleaning Pilot Study	SD	✓	✓	WQI	-	-	-
LP-WQA27	Rainwater Harvesting Rebate Pilot Program	SD	✓	✓	WQI	-	-	-
LP-WQA28	Residential Patrolling	DM	✓	✓	WQI	WQI	A	-
LP-WQA29	Land Acquisitions	COUNTY	✓	✓	WQI	WQI	-	-
LP-WQA30	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	SD	✓		WQI	-	-	-
LP-WQA31	Flanders Canyon Sediment Monitoring	SD		✓	M	M	WQI	-

Note: 1 - Under the proposed Water Quality Improvement Plan process, these activities may change.

Table 4-5 Updated 5-Year Strategic Plan - Continued

Activity/Project Name		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Sediment	FY 2012	FY 2013	FY 2014[1]	Future Fiscal Year(s)[1]
Watershed Education Activities								
LP-WQEA2	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	SD	✓		E	E	E	E
LP-WQEA5	Infiltration BMP Retrofit Outreach	SD	✓		P	WE	A	A
LP-WQEA13	Fiesta de Los Peñasquitos	ALL	✓	✓	WE	WE	WE	WE, A
LP-WQEA14	Los Peñasquitos Watershed Brochure	SD	✓	✓	WE	WE	WE	A
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	COUNTY	✓	✓	WE	WE	WE	WE

Note: 1 - Under the proposed Water Quality Improvement Plan process, these activities may change.

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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5 Effectiveness Assessment

The Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, to assess the effectiveness of the activities conducted to meet those goals and objectives, and to identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.1.b. of the Permit, and reports on the activities planned and implemented during FY 2012.

5.1 Assessment of Overall WURMP Effectiveness

Activities collaborated upon and selected by the Copermittees address the overall goal of the WURMP by focusing on the HPWQPs within the WMA.

As set forth in the Permit and outlined in the 2008 Los Peñasquitos WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the Copermittees in FY 2012, and where in this report required compliance points are fulfilled or described.

Table 5-1 Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Not Applicable	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the WMA.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4, **Appendix B**
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4, **Appendix B**
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
Describe Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	In Progress	5.2

As shown in **Table 5-1**, the Copermittees were in compliance with all Level 1 WURMP related Permit requirements during FY 2012.

5.1.1 Activities Assessment

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated and selected activities that would address HPWQPs not only within each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in **Appendix B** identifies specific targeted outcomes (Levels 1 through 6 – as described in **Table 5-2** below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 5-2 Outcome Levels: Levels 1 through 6

Outcome Level		Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2012, there were ten (10) activities in the active implementation phase, of which eight (8) focused on water quality and two (2) focused on education. One of the water quality activities also included an educational component. These activities addressed the HPWQPs in the Los Peñasquitos WMA, which include bacteria and sediment, and are the activities that the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. **Tables 5-3** and **5-4**

below summarize the assessments of the water quality and education activities to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the table, the Copermittees are presenting their JURMP activities that are related to the HPWQPs in each HA. It is important to note that not all JURMP activities are included in this presentation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittee's FY 2012 JURMP Annual Report.

5.2 Assessment of TMDL BMP Implementation Plan Effectiveness

In FY 2012, the Copermittees and Caltrans (Responsible Parties) began the development of the Comprehensive Load Reduction Plan (CLRP) for the Los Peñasquitos Watershed for compliance with the *Revised Total Maximum Daily Loads for Indicator Bacteria, Project 1 - Twenty Beaches and Creeks in the San Diego Region* (Bacteria TMDL), which was approved by the San Diego Regional Water Quality Control Board and took effect April 4, 2011. Due to the fact that the Pacific Ocean Shoreline within the Los Peñasquitos Watershed is not impaired for Recreational Use (REC-1) Beneficial uses per the 2010 303(d) list for bacteria, the Copermittees and Caltrans received confirmation in FY 2013 that the submittal of a CLRP for the Los Peñasquitos Watershed is not required at this time.

The California Regional Water Quality Control Board San Diego Region approved a Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Total Maximum Daily Load for Sedimentation in Los Peñasquitos Lagoon (Resolution No. R9-2012-0033) (Sediment TMDL) in June 2012. The Sediment TMDL will take effect once the Office of Administrative Law has approved the TMDL, and applicable information will be included in future annual reports. During FY 2012, the Responsible Parties along with other stakeholders (i.e. Los Peñasquitos Lagoon Foundation, State Parks, RWQCB, EPA, Coastkeeper) met on average once a month to finalize the development of the TMDL.

Table 5-3 Summary of Implemented Activities for FY 2012 – 906.1 Miramar Hydrologic Area (HPWQPs = Bacteria & Sediment)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Construction and Industrial/Commercial Inspections	Water Quality	Bacteria & Sediment	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Aggregates/Mining, Animal Facilities, Auto Parking Lots and Storage, Building Materials Retailers, Concrete Manufacturers, Eating or Drinking Establishments, General Contractors, General Retail Facilities, Mobile Landscapers, Nurseries, Recycling and Junk Yards, Stone & Glass Facilities, Storage & Warehousing Facilities, Municipal and Construction Sites.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria & Sediment	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping, which has a direct load reduction of bacteria and sediment in the HA. Approximately 909 tons were removed via street sweeping, and 44 tons were removed from the MS4 in this HA.
LP-WQA1	Coastal Cleanup Day Sponsorship	Water Quality	Bacteria	Levels 1 and 4	The City of San Diego contributed $2,500 towards the Cleanup Sponsorship in the hydrologic area. During this event 90 participants removed 110 pounds of trash, debris, and recyclables for an efficiency of $22.73 per pound collected.
LP-WQA8	ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Levels 1 and 4	The City of San Diego contributed an estimated $2,500 towards the Cleanup Sponsorship in the hydrologic area. During this event 40 participants removed or recycled 169 pounds of trash and debris, for an efficiency of $14.79/lb.
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	Water Quality	Bacteria	Level 1	During FY 2012, 50 customers who purchased rain barrels were surveyed to ensure the rain barrels had been installed and maintained. Results of the surveys will be reported in future fiscal years.
LP-WQA27	Rainwater Harvesting Rebate Pilot Program	Water Quality	Bacteria & Sediment	Levels 1, 3, and 4	Rebate program for water capture and smart irrigation controllers. The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Rebates provided for 196 rain barrels, and 297 outdoor water conservation devices (smart controllers, micro-irrigation, and turf conversion).
LP-WQA28	Residential Patrolling	Water Quality	Bacteria & Sediment	Levels 1, 2, and 3	Periodic patrols of residential and municipal areas within the City of Del Mar in order to identify sources of urban runoff and pollutant generating activities at various times of the week and day. Identified issues are followed up using educational outreach materials developed by the City (door hangers). 216 door hangers were distributed at residential properties over 14 patrols in FY 2012. City will continue to pursue activity and will gather more information to assess correlation between activity implementation and changes in behavior.
LP-WQA30	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	Water Quality	Bacteria	Levels 1, 3, and 4	The City of San Diego conducted a drop-off clean-up event open to all City residents and targeted items such as appliances, metals, junk furniture, mattresses and tires. A total of 112,000 pounds were collected, of which 44,000 pounds were recycled.
LP-WQEA13	Fiesta de Los Peñasquitos	Water Education	Bacteria & Sediment	Levels 1 and 2	The event provided direct outreach regarding pollution prevention and pollutant reduction to the residents living in the local hydrologic area. Through assessments, the Copermittees established several findings based on surveys of the Fiesta participants: 62% of individuals surveyed that knew storm water is not treated, and 89% of those who took the survey felt that litter contributes to pollution at least a moderate amount. 91% of participants reported that they dispose of litter they see in their community.

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
LP-WQEA14	Los Peñasquitos Watershed Brochure	Water Education	Bacteria & Sediment	Levels 1 and 2	The City of San Diego and Think Blue implemented a new brochure program for the WMA, which is used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces help address high priority water quality problems in the WMA. The main goals of the brochures are to capture the attention of the audience, enhance the understanding of basic watershed principles of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system. Implementation and distribution occurred in FY 2012 and will continue through FY 2015. Assessment is scheduled for FY 2015.

Table 5-4 Summary of Implemented Activities for FY 2012 – 906.2 Poway Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities, Eating or Drinking Establishments, Mobile Landscaping Facilities, and Nurseries & Greenhouses.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping, which has a direct load reduction of bacteria and sediment in the HA. Approximately 1,237 tons were removed via street sweeping, and 722 tons were removed from the MS4 in this HA.
LP-WQA23	Residential Rain Barrel Subsidies & Distribution	Water Quality	Bacteria and Sediment	Level 1	During FY 2012, 50 customers who purchased rain barrels were surveyed to ensure the rain barrels had been installed and maintained. Results of the surveys will be reported in future fiscal years.
LP-WQA26	Targeted Catch Basin Cleaning Pilot Study	Water Quality	Bacteria and Sediment	Levels 1, 3, and 4	Pilot project to understand the potential water quality improvements and load reduction associated with catch basin cleaning. Evaluation of the quantity and quality of materials removed from the storm drains from four pilot areas representative of different land uses within the City. Two cleaning methods are being evaluated - manual and using vactor equipment.
LP-WQA27	Rainwater Harvesting Rebate Pilot Program	Water Quality	Bacteria and Sediment	Levels 1, 3, and 4	Rebate program for water capture devices. The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Rebates provided for 196 rain barrels, and 297 outdoor water conservation devices (smart controllers, micro-irrigation, and turf conversion).
LP-WQA29	Land Acquisitions	Water Quality	Bacteria and Sediment	Levels 1 and 4	Loading associated with potential development is eliminated. 79.09 acres were acquired in the Poway HA during FY 2012.
LP-WQA30	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	Water Quality	Bacteria	Levels 1, 3, and 4	The City of San Diego conducted a drop-off clean-up event open to all City residents and targeted items such as appliances, metals, junk furniture, mattresses and tires. A total of 112,000 pounds were collected, of which 44,000 pounds were recycled.
LP-WQEA13	Fiesta de Los Peñasquitos	Water Education	Bacteria	Levels 1 and 2	The event provided direct outreach regarding pollution prevention and pollutant reduction to the residents living in the local hydrologic area. Through assessments, the Copermittees established several findings based on surveys of the Fiesta participants: 62% of individuals surveyed that knew storm water is not treated, and 89% of those who took the survey felt that litter contributes to pollution at least a moderate amount. 91% of participants reported that they dispose of litter they see in their community.
LP-WQEA14	Los Peñasquitos Watershed Brochure	Water Education	Bacteria & Sediment	Levels 1 and 2	The City of San Diego and Think Blue implemented a new brochure program for the WMA, which is used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces help address high priority water quality problems in the WMA. The main goals of the brochures are to capture the attention of the audience, enhance the understanding of basic watershed principles of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system. Implementation and distribution occurred in FY 2012 and will continue through FY 2015. Assessment is scheduled for FY 2015.

6 Conclusions and Program Improvements

6.1 Conclusions

During FY 2012, the Copermittees strove to address the overall goal of the WURMP – to have a positive impact on the water quality of the Los Peñasquitos WMA – by focusing on its HPWQPs. In order to target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 Los Peñasquitos WURMP, which attempts to link identified water quality problems to their potential sources and pollutant generating activities. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the HPWQPs in the Los Peñasquitos WMA are bacteria in both HAs and sediment in the Miramar HA.

The Los Peñasquitos WMA consists of two individual HAs. Therefore, to effectively address the WMA's water quality issues, the Copermittees identified and then evaluated the HPWQPs for likely sources at the individual HA level (see **Tables 3-2** and **3-3**). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; and b) water quality and education activities appear to be targeting sources of the HPWQPs and are considered effective at reducing the impacts of the sources. Based on this analysis, the Copermittees focused their activities on the following suspected priority sources: residential areas/activities; eating or drinking establishments; agricultural facilities; animal facilities; nurseries, greenhouses and botanical/zoological gardens; stone and aggregate facilities; storage and warehousing facilities; and construction sites. Potential sources of bacteria and nutrients from the residential, commercial, and industrial communities include activities such as irrigation runoff, sanitary sewer overflows, improper landscape maintenance, and improper use of fertilizers, herbicides and pesticides.

The Copermittees then developed and implemented watershed water quality and education activities to address these HPWQPs and their sources. **Tables 4-1** and **4-2** summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, ten (10) activities were actively implemented, of which eight (8) focused on water quality and two (2) on education. All of these activities targeted the HPWQPs in the Los Peñasquitos WMA, which include bacteria and sediment. The Copermittees satisfied the Permit requirement by having at least two water quality activities and two education activities in active implementation during the reporting period.

The Copermittees performed additional JURMP activities addressing potential community sources during the reporting period. These included activities such as complaint response, dry weather urban runoff monitoring and source identification, and inspections of treatment control BMPs, as some are designed to mitigate bacteria. Additionally, there are significant outreach events performed which are focused on the residential community through the

Copermittees' jurisdictional program and aimed at reducing irrigation runoff, improper landscape maintenance, and improper use of fertilizers, herbicides, and pesticides.

In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees continued the process of collecting and reporting on JURMP and WURMP activities performed on an HA basis. The Copermittees believe that it is an important step towards integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees have responded to meet the challenges of implementing the requirements outlined in the Permit as they continue to refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs across the region. The Los Peñasquitos Copermittees will continue to implement the activities described in Section 4 of this document in future reporting periods, although under the proposed Water Quality Improvement Plan process, these activities may change.

6.2 Program Improvements

Copermittees' true effectiveness assessment of the activities is difficult because the evaluation is currently limited to qualitative assessments that contain substantial assumptions linking the potential sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources that is unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research and analysis of existing data and monitoring. Significant source identification studies have been undertaken in Southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level (i.e., evaluating the data from the larger watershed level). Analysis of the data at the HA level may provide useful information to the 2008 Los Peñasquitos WURMP.

In cases where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to further assess water quality data to characterize the impacts. Without this confirmatory step, other assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 Los Peñasquitos WURMP – to determine and target the sources contributing to the HPWQPs – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve storm water quality within the WMA;
- Integrate storm water quality principles into land use planning;
- Enhance public understanding of storm water pollution sources; and
- Encourage and develop stakeholder participation.

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Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The Copermittees' FY 2012 (July 1st, 2011, through June 30th, 2012) JURMP Annual Reports were used to determine quantities of inventories. The Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1) Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2) Identified the Copermittees' total activity quantities for the following activities from the FY 2012 JURMP Annual Reports:
   a) Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
   b) Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3) Determined the amount of urban land use in each Copermittees' jurisdiction.
4) Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City.
5) Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation determining the Copermittee's contribution to the HA is as follows:

$$(Copermittee\ Activity\ Quantity) \times \left(\frac{Copermittee\ urban\ land\ use\ in\ HA}{Copermittee\ total\ urban\ land\ use}\right)$$

6) All contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

JURMP Source and Activity Quantities Estimation Example

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1.
Jurisdiction A collected 800 tons of material from street sweeping in FY 2012.

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1.
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2012.

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1.
Jurisdiction C collected 250 tons of material from street sweeping in FY 2012.

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:

$$(800\ tons\ of\ material) \times \left(\frac{250\ urban\ land\ use\ acres\ in\ HA1}{1{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ A}\right) = \mathbf{200\ tons}$$

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:

$$(1{,}000\ tons\ of\ material) \times \left(\frac{1{,}250\ urban\ land\ use\ acres\ in\ HA1}{2{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ B}\right) = \mathbf{625\ tons}$$

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:

$$(250\ tons\ of\ material) \times \left(\frac{500\ urban\ land\ use\ acres\ in\ HA1}{500\ urban\ land\ use\ acres\ in\ Jurisdiction\ C}\right) = \mathbf{250\ tons}$$

The total amount of estimated street sweepings collected in HA1 is therefore:

$$200\ tons + 625\ tons + 250\ tons = \mathbf{1{,}075\ tons}$$

Appendix B

FY 2012 Los Peñasquitos Watershed Activity Sheets

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TITLE: **COASTAL CLEANUP DAY SPONSORSHIP**
ID #: **LP-WQA1**

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruit and organize site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 17, 2011. The City of San Diego (City) sponsored the Carmel Mountain Preserve site in the Los Peñasquitos Watershed Management Area (WMA). Approximately 90 volunteers removed 110 pounds of trash and debris.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK and ILACSD staff to ensure that sites within the Los Peñasquitos WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- San Diego Coastkeeper
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority

water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

TARGETED MEASURABLE OUTCOME(S)

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

ASSESSMENT METHOD(S)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

DATA RECORDED

Pounds of trash removed (Outcome Level 4): 110 lbs.
Total pounds of trash removed (Outcome Level 4): 110 lbs.
Number of participants (Outcome Level 1): 90
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $15,000
Estimated amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1): $2,500
Efficiency (Total Cost/Total Pounds Removed): $22.73/lbs.

EXPECTED BENEFITS

Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS

A load reduction of 110 pounds of trash and debris was recorded at the site by 90 volunteers, which was tracked using data cards provided by the Ocean Conservancy. There was a total sponsorship cost of $15,000 by the City for all six WMAs in the City's jurisdiction. The event's efficiency, calculated by dividing the sponsorship cost for the Los Peñasquitos WMA by the pounds of trash removed, was $22.73 per pound.

CONCLUSIONS

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 110 pounds during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

TITLE: **REHCO ROAD HYDRODYNAMIC SEPARATOR INSTALLATION**
ID #: **LP-WQA7**

ACTIVITY DESCRIPTION

A hydrodynamic separator was originally going to be installed in Marindustry Drive, located on the north side of Miramar Road in the Los Peñasquitos Watershed Management Area (WMA), as a retrofit within the existing storm drain system. This location proved to be infeasible. A replacement location was found in the same watershed and neighborhood at the end of the cul-de-sac on Rehco Road.

The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system. The separator will be located in a parallel line with a 27-inch storm drain before it discharges into the nearby canyon. The 27-inch line is the main collector in a small storm drain network that collects storm flows from the industrial and business park, associated parking lots and Rehco Rd. Due to the industrial activity and high vehicular traffic, storm events typically result in the accumulation of a variety of trash, sediments, leaves, dirt oil, petroleum, and other chemical pollutants in the storm drain system.

This project was originally identified as Hydrodynamic Separator Installation in the 2008 Los Peñasquitos WURMP.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design began February 2010 and is anticipated to continue into FY 2013. Construction is expected to start in FY 2013. Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by capturing dry weather flows and slowly releasing them to allow for the settlement of pollutants for later removal.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction efficiency of the hydrodynamic separator?
2) How effective is the hydrodynamic separator at reducing priority pollutant loads?

TARGETED MEASURABLE OUTCOME(S)

1) Reduction in priority pollutant loads

ASSESSMENT METHOD(S)

1) Inspections (e.g., ensure the hydrodynamic separator is working as designed)
2) Quantification (e.g., calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

EXPECTED BENEFITS

Reduction of sediment and bacteria.

ANALYSIS RESULTS

An effectiveness assessment of this activity is not possible at this time because the hydrodynamic separator has not been installed and therefore, no priority pollutant load data have been collected.

CONCLUSIONS

It is anticipated that the hydrodynamic separator will be installed in FY 2013. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the hydrodynamic separator in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP
ID #: LP-WQA8

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 28, 2012. The City of San Diego (City) sponsored the Torrey Pines State Beach site in the Peñasquitos Watershed Management Area (WMA). Approximately 96 volunteers removed 163 pounds of trash and debris and recycled 6 pounds of trash and debris over a three-mile area.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Los Peñasquitos WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority

water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

TARGETED MEASURABLE OUTCOME

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

ASSESSMENT METHOD(S)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

DATA RECORDED

Pounds of trash removed (Outcome Level 4): 163 lbs.
Pounds of trash recycled (Outcome Level 4): 6 lbs.
Total pounds of trash removed and recycled (Outcome Level 4): 169 lbs.
Number of participants (Outcome Level 1): 96
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $15,000
Estimated amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1): $2,500
Efficiency (Total Cost/Total Pounds Removed): $14.79/lbs.

EXPECTED BENEFITS

Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS AND RESULTS

At the event, 96 participants removed 163 pounds of trash and debris and recycled 6 pounds of trash and debris. The average estimated sponsorship cost was $2,500 per watershed; thus, there was a 169 pound load reduction and an efficiency of $14.79 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Los Peñasquitos WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This trash cleanup activity fulfills a watershed water quality activity for FY2012 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 169 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

TITLE: MIRA MESA LIBRARY BIORETENTION AND INFILTRATION RETROFIT
ID #: LP-WQA9

ACTIVITY DESCRIPTION

New catch basins will be constructed within the parking area at the Mira Mesa Library in the Los Peñasquitos Watershed Management Area (WMA) to capture parking lot and building runoff. These catch basins will drain via a new storm drain system to an existing unpaved area on the site. Under existing conditions, this unpaved area is higher in elevation than the parking lot and is covered with grass. The original concept for this area was to excavate approximately five feet below the parking lot elevation, lined with an impermeable liner, and backfilled around the perimeter of the excavation with a gravel reservoir to which the new storm drain system will drain. Soils and plants capable of surviving with only the seasonal rainfall typical of Southern California would have been placed in the center of the excavation. The gravel reservoir would have been separated from the planter area by a concrete wall. Storm runoff was expected to pass from the gravel reservoir to the planter area via small diameter pipes through the concrete wall. Unfortunately, the area selected to provide infiltration was rejected by the Library Department, as the destruction of an architectural detail was deemed unacceptable. Instead, the area around the grassy area has been selected as the new site.

The project goal is to capture site runoff from the five-year, six hour storm event and convey it to the gravel reservoir/planter area where the water will exit the site via evapotranspiration.

This project was originally identified as Infiltration BMP Retrofit in the 2008 Los Peñasquitos WURMP. In FY 2008, the Mira Mesa Library was selected as the site and the conceptual design was released for this project.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Preliminary engineering resumed in May 2010 was completed in October 2010. Design is in progress and will continue through FY2013. Construction is expected to be completed in FY 2014. Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration/retention.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction of the bioretention area?
2) How effective are bioretention areas at reducing priority pollutant loads?

TARGETED MEASURABLE OUTCOME(S)

1) Reduction in priority pollutant loads

ASSESSMENT METHOD(S)

1) Inspections (e.g., ensure the bioretention areas are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

DATA RECORDED

1) Number of inspections
2) Change (%) in load reduction pre and post-implementation (Outcome Level 4)
3) Number of educational information items passed out (Outcome Level 1)
4) How much money spent on inspections and maintenance (Outcome Level 1)
5) Dataset of load contributions for specific activities (Outcome Level 4)

EXPECTED BENEFITS
Reduction of sediment and bacteria.

ANALYSIS RESULTS
An effectiveness assessment of this activity is not possible at this time because the hydrodynamic separator has not been installed and therefore no priority pollutant load data have been collected.

CONCLUSIONS
It is anticipated that the bioretention areas will be installed in FY 2014. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the bioretention areas in reducing bacteria and sediment loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

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TITLE: AUBREY STREET CONTINUOUS DEFLECTIVE SEPARATION (CDS) DEVICE
ID #: LP-WQA11

ACTIVITY DESCRIPTION

In 2008 the City of Poway installed a continuous deflective separation (CDS) device system in the intersection of Aubrey Street and York Avenue as a retrofit within the existing storm drain system. This CDS system screens, separates, and traps debris, sediment, oil and grease, floatables, and neutral buoyant material from stormwater runoff, enhancing the treatment of runoff from existing land uses in the 41.9-acre Old Poway Park project area.

To maintain the effectiveness of the CDS device, the City of Poway's drainage/storm water maintenance staff inspects, cleans, and maintains the device as needed.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Construction and maintenance of this CDS device occurred in FY 2008. Inspection, cleaning, and maintenance began in FY 2009 and continue on an on-going basis.

LEAD WATERSHED COPERMITTEE

- City of Poway

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS MEASUREMENTS

See Effectiveness Assessment Table below.

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator installation in reducing the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

ANALYSIS AND RESULTS

During FY 2012, inspection of the unit occurred on March 1, 2012. A total of 5 cubic yards of debris was removed from the unit. As noted in the previous WURMP Annual Reports, 2 cubic yards of debris were removed during FY 2008, 1 cubic yard during FY 2009, 4.75 cubic yards during FY 2010, and 7.9 cubic yards during FY 2011. Because all of the material removed would otherwise have eventually entered the receiving waters, this amount is the verified load reduction achieved by this unit.

The cost of installation of the CDS device was $134,000.00. The cost of inspections and maintenance was $429.95 in FY 2008, $515.01 in FY 2009, $190.00 in FY 2010, $964.11 in FY 2011, and $920.44 in FY 2012. The cost per unit of load reduction over five years is therefore $6,635 per cubic yard of pollutants removed. This unit cost will decrease over time as the only additional expenses are staff time for inspections and cleaning.

Dry weather monitoring is conducted annually at a location on Community Road downstream of the CDS device. Although this monitoring location receives some commingled flows from additional locations, data were reviewed to determine any trends in receiving water quality. Post-installation data show that the standardized Trash Assessment results have moved from Suboptimal to Optimal, indicating a reduction in trash in the receiving water. Other field analytic results showed essentially no change, as noted in the table below.

Reporting Period	Turbidity (NTU)	Conductivity (mS/cm)	Surfactants (mg/L MBAS)	Ammonia-Nitrogen (mg/L NH_3-N)	Nitrate (mg/L NO_3-N)	Ortho-phosphate-P (mg/L PO_4-P)
BEFORE INSTALLATION						
2007	0.66	1.96	0.25	0.20	2.42	0.33
AFTER INSTALLATION						
2008	0.30	1.88	0.38	0.15	2.02	0.23
2009	0.19	1.96	0.13	0.19	2.92	0.22
2010	1.04	2.06	0.25	0.13	3.10	0.18
2011	0.01	2.23	0.13	0.12	4.42	0.16
2012	1.16	2.25	0.50	0.18	3.40	0.22

TITLE: GATE DRIVE DETENTION BASIN MODIFICATION
ID #: LP-WQA12

ACTIVITY DESCRIPTION

The City of Poway retrofitted the Gate Drive flood control detention basin to remove pollutants from storm water. The Gate Drive basin is located in the South Poway Business Park and was originally constructed as a flood control device. Conversion of the basin to a storm water treatment device provides treatment of storm water runoff from more than 38 businesses, including many existing businesses not subject to SUSMP requirements.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity was not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Conversion of the basin was completed on June 18, 2008. Operation and maintenance of the basin began in FY 2009 and are ongoing.

LEAD WATERSHED COPERMITTEE

- City of Poway

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies sediment as a High Priority Water Quality Problem in the Miramar HA (906.2) and recommends implementing load reduction/source abatement activities to reduce sediment loads. Implementation of this activity will address this High Priority Water Quality Problem by reducing the amount of sediment entering the receiving waters. Therefore, this activity is consistent with the collective strategy for the Los Peñasquitos WMA.

EFFECTIVENESS MEASUREMENTS

See Effectiveness Assessment Table below.

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of the Gate Drive detention basin modification in reducing pollutant levels in storm water runoff from the South Poway Business Park.

ANALYSIS AND RESULTS

Inflow sampling is conducted annually during a rain event, with outflow sampling conducted after a settling period of one to three days. During the most recent round of sampling, turbidity was reduced by 84% (from 30.5 to 4.96 NTU), and total suspended solids also were reduced by 84% (from 38 to 6 mg/L). The basin is therefore clearly effective at reducing sediment loads.

Although total coliforms and enterococci increased from inflow to outflow during this year's sampling, fecal coliform concentrations decreased, as shown in the table below.

Parameter	Inflow	Outflow	% Reduction
Total Coliforms (MPN/100 mL)	13,000	50,000	-285%
Fecal Coliforms (MPN/100 mL)	5,000	700	86%
Enterococcus (MPN/100 mL)	2,300	3,000	-30%

The cost of basin conversion was $131,000, of which $63,900 was paid by a developer of a site that uses the basin for storm water treatment. Maintenance has cost less than $450/year, on average, to date.

CONCLUSIONS

Inflow and outflow sampling will continue to be conducted annually. These data will be used to determine the effectiveness of the basin at reducing pollutants, and to estimate load reductions.

TITLE: ESD PHASED GREEN MALL AND UNDERGROUND VAULT PROJECT
ID #: LP-WQA21

ACTIVITY DESCRIPTION

This first phase of this project will construct a bio-retention basin BMP along the south side of the visitor's parking lot. Along the basin, the existing curb and gutter will be removed and replaced with a zero height, or flush, curb. The bio-retention basin will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in June 2009 and finished in March 2010. The project is on hold because design is pending.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA) identifies bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters?
2) How much reduction in runoff volume can be achieved through LID retrofits?
3) How efficient are LID retrofits in reducing pollutant loads?

TARGETED MEASURABLE OUTCOME(S)
1) Reduction in pollutant loads
2) Reduction in runoff volume
3) Improvements in discharge quality

ASSESSMENT METHOD(S)
1) Inspections (e.g., ensure LID retrofits working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction)
3) Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)

DATA RECORDED
1) Number of inspections (Outcome Level 1)
2) Design, installation, and maintenance costs (Outcome Level 1)
3) Operations and maintenance challenges (Outcome Level 1)
4) Percent change in load reduction pre- and post-implementation (Outcome Level 4)
5) Percent change in discharge quality and runoff volume (Outcome Level 5)

EXPECTED BENEFITS
Reduction of bacteria.

ANALYSIS RESULTS
This activity was not in active implementation in FY 2012. Therefore, assessment is not possible at this time.

CONCLUSIONS
No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time. This project is on hold as the design is still pending at this time.

TITLE: LOS PENASQUITOS LAGOON THIRD PARTY TMDL DEVELOPMENT
ID #: LP-WQA22

ACTIVITY DESCRIPTION

Met monthly with stakeholders, including the Regional Board staff, to discuss the development of the Los Peñasquitos Lagoon Sedimentation\Siltation TMDL.

Discharges met on a regular basis to prepare documentation for discussion with the stakeholders.

Developed and prepared final technical draft of Los Peñasquitos Lagoon Sedimentation\Siltation TMDL for review and comment by the stakeholders.

The purpose of the technical report is to present the Total Maximum Daily Load (TMDL) that was developed for sediment/siltation for Los Peñasquitos Lagoon (Lagoon). The Lagoon is listed as impaired for sediment/siltation on the Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments. Sedimentation within the Lagoon restricts the tidal prism, or exchange between the ocean and the Lagoon, and degrades critical salt marsh habitats through various processes. A TMDL is needed to help restore the beneficial uses of the Lagoon and achieve water quality standards.

TMDL APPLICABILITY

Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The development of the third party TMDL was initiated in the spring of 2009. The Final Technical report was approved in 2012 with the adoption of the Los Peñasquitos Lagoon Sediment TMDL.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of Del Mar
- City of Poway
- County of San Diego

OTHER PARTICIPATING ENTITIES

- California Department of Transportation (Caltrans)
- San Diego Coastkeeper
- California State Parks
- Los Peñasquitos Lagoon Foundation

- Representatives from the Regional Board

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos Lagoon WMA identify sediment as a high priority water quality problem.

EFFECTIVENESS MEASUREMENTS

EXPECTED BENEFITS

The purpose of a TMDL is to attain WQOs that support beneficial uses in the waterbody. A TMDL is defined as the sum of the individual waste load allocations (WLAs) for point sources, and load allocations (LAs) for nonpoint sources and natural background, such that the capacity of the waterbody to assimilate pollutant loading (i.e., the loading capacity) is not exceeded. A TMDL, therefore, represents the maximum amount of the pollutant of concern that the waterbody can receive and still attain water quality standards. Additionally, a TMDL represents a strategy for meeting WQOs by allocating quantitative limits for point and nonpoint pollution sources. Once the total maximum pollutant load has been calculated, it is divided up and allocated among all of the contributing sources in the watershed. Developing a sediment TMDL for the Lagoon is necessary for the restoration of the beneficial uses of the Lagoon, including the estuarine beneficial use most impacted by sediment accumulation.

ANALYSIS RESULTS

Multiple data sources were used to characterize the watershed and Lagoon, in particular stream flow and water quality conditions. Much of this information was recently collected by watershed stakeholders to assist with TMDL model development. Data describing the watershed's topography, land use, soil characteristics, meteorological data, and irrigation needs along with available bathymetric survey information and data sondes analyzing pressure and salinity were used to calibrate the watershed and Lagoon models.

CONCLUSIONS

Daily loads are established by dividing the modeled loads by the number of days within the critical wet period (211 days). Existing loads were estimated based on modeling of current land use conditions (from the SANDAG 2000 land use coverage) and meteorological conditions from the critical wet period (10/1/92 to 4/30/93). The numeric target was calculated based on modeling of historical (mid-1970s) land use conditions and the same meteorological data in order to accurately compare the watershed and Lagoon response to the same weather conditions. Historic loads define the allowable load; therefore, required load reductions represent the difference

between current sediment loads and historic (allowable) loads. Note that sediment dynamics within the Lagoon are dependent on a number of factors, including runoff volumes and the amount of sediment that is transported to the lagoon from the watershed. These factors are important components in determining the timing and magnitude of erosion and depositional processes within the Lagoon. The Lagoon model shows that a reduction in watershed sediment loading affects the amount of sediment that can deposit throughout the lagoon from oceanic inputs (considering a constant input of sediment from the ocean boundary under current and historical conditions). The model analysis for historical conditions indicates that a greater proportion of sediment that deposits in the Lagoon originates from tidal inputs during lower watershed loading periods, therefore, the TMDL results show that a net increase in oceanic loads occurs during the critical wet period under historical land use conditions. To meet the TMDL, the total load reduction required from the watershed is approximately 67%. Tidal input from the ocean boundary represents natural background loads; therefore, no reduction is required for this source category.

Effectiveness is not being assessed as this third party TMDL Development is not a water quality or education activity.

On June 13, 2012, the San Diego Water Board adopted Resolution No. R9-2012-0033, an amendment incorporating the Los Peñasquitos Lagoon Sediment TMDL into the San Diego Basin Plan.

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TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION
ID #: LP-WQA23

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

Activity during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In

addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY 2010-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

On September 26, 2010, there was a buzz in Fallbrook as eager residents stood in line before the 9 a.m. start time for the distribution event at Fallbrook Village Square. By the 1 p.m. closing time, 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County (Table 1).

Table 1. Residents by Watershed

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	San Diego River	San Diego Bay	Tijuana	Unknown
Total Residents	2	24	61	6	8	4	27	50	2	1

ACTIVITY IMPLEMENTATION FY 2011-12

During FY 2011-12, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Survey results will be summarized in FY 2012-13. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL. Although would be compliant with the Bacteria TMDL for Los Peñasquitos.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2009-10: Planning for this activity occurred.

FY 2010-11: Two events were scheduled: August 28, 2010 (Cuyamaca College) and September 26, 2010 (Fallbrook Village).

FY 2011-12: County of San Diego conducted a customer survey of 50 residents who purchased rain barrels.
FY 2012-13: Results of the survey will be provided and additional events are being considered.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

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TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: LP-WQA24

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Los Peñasquitos Watershed include:

1. SDA 6 (Lakeside)
2. SDA 8 (Ramona)

FY 2007-08 ACTIVITY IMPLEMENTATION

Work began on drafting the SWQMPs for individual SDAs.

FY 2008-09 ACTIVITY IMPLEMENTATION

Work continues on the drafting of the SWQMPs for individual SDAs.

FY 2009-10 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 6 and SDA 8 are in draft form and undergoing review by County personnel.

FY 2010-11 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 6 and SDA 8 are in draft form and undergoing review by County personnel.

FY 2011-12 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 6 and SDA 8 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2012-13. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2014.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined.

EFFECTIVENESS MEASUREMENTS

To be determined.

TITLE: TARGETED CATCH BASIN CLEANING PILOT STUDY
ID #: LP-WQA26

ACTIVITY DESCRIPTION

The City of San Diego Storm Water Division began the planning of a catch basin cleaning pilot study in FY 2011, implementation of Phase I occurred in FY 2012. The purpose of the project is to understand the potential water quality improvements and load reduction associated with catch basin cleaning by evaluating the quantity and quality of materials removed from the storm drains from four pilot areas. The areas were selected to be representative of different land uses within the City limits. Additionally two cleaning methods will be evaluated - manual and using vactor equipment. One of the pilot areas is within the Los Peñasquitos WMA near the intersection of Scripps Poway Parkway and the I-15. Composite samples collected from the material removed from the targeted catch basins will be analyzed for metals, nutrients, organics, and bacteria.

The City's literature review and draft work plan development project in 2011 (Tetra Tech 2011) highlighted some of the nuances of catch basin cleaning methods and frequencies that can affect pollutant removal and municipal costs. There is evidence from the literature survey that optimizing catch basin cleaning, both by using the most effective and efficient cleaning techniques and by tailoring frequencies to different drainage areas, can maximize the return on investment in terms of both pollutant reduction, and municipal labor and funds. Data collection and GIS analysis, which the City improved substantially in 2011 on a city-wide basis by establishing a unique identifier for each inlet, are vital to this type of optimization.

With the diversity of land use types, neighborhoods, and drainage system ages and conditions found throughout the City of San Diego, developing a more specific or tailored plan for catch basin cleaning frequency and techniques requires some understanding of how accumulation rates and pollutant concentrations in catch basin materials differ among land use types and settings. Identifying land use settings or areas with rapid rates of pollutant accumulation and potential mobilization, as well as areas with high concentrations of pollutants of concern, may be used to suggest the most efficient and effective timing, frequency, and method of catch basin cleaning. Land use settings or areas where pollutants accumulate slowly, with minimal mobilization, or low concentrations of pollutants of concern for a particular watershed, would suggest different maintenance schedules to achieve the same water quality results.

Catch basin cleaning in San Diego also must be addressed in light of the region's weather pattern, typified by a long dry season from roughly May through October during which catch basin materials are expected to accumulate without mobilization into the MS4, followed by a wet weather season with sporadic but occasionally very significant rain events (i.e. greater than one inch of precipitation in a 24-hour period).

While this Pilot Study Phase I did not begin until December 2011, which was after substantial precipitation had fallen, the information base nonetheless will be useful, particularly if and when the City is able to complete an end of season cleaning before rain events begin. Sampling prior to intensive rainfall may have yielded different results, possibly greater concentrations of analytes that accumulate over time and are not easily re-suspended (such as metals). Microbiology samples might also be different during the dry season, especially if incubation is dependent on wet sumps.

The Scripps Poway Parkway areas were classified as mixed residential and commercial use areas. The 29 catch basins in the Scripps Poway Parkway area are along the parkway and in the parking lots around the commercial buildings. The Scripps/Poway Parkway area drains approximately 11.2 acres of surfaces, predominantly asphalt, though roof drainage and some vegetation along the road shoulders, medians, and parking islands are present. This area was constructed relatively recently (roughly in the late 1980s through the late 1990s) and as such observation suggests there is little infrastructure deterioration. This area was selected for vactor cleaning, in part because of the depth and large size of the catch basins which make manual cleaning especially difficult.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment for Phase I was conducted in FY 2012. It was determined a Phase II would be implemented and assessed in FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems in the WMA, and recommend implementing load

reduction/source abatement activities to address these constituents. This project will result in a quantifiable load reduction of sediment and will evaluate the amount of bacteria reduced as part of catch basin cleaning.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) To what extent do changes in catch basin cleaning frequency affect the amount of pollutants collected?

2) What is the annual calculated load reduction based on pilot scale data collection with catch basin cleaning?

3) Which cleaning method, manual versus mechanical is the most cost effective method for removing sediment from catch basins?

TARGETED MEASURABLE OUTCOME(S)

1) Reduction in bacteria exported from the catch basin.

2) Reduction in sediment exported from the catch basin.

3) Reduction in nutrients associated with the catch basin.

ASSESSMENT METHOD(S)

1) Evaluate the volume of material currently removed from each catch basin.

2) Evaluate the correction in cleaning results with land use category, impervious area, watershed size, and surface water impairments.

DATA RECORDED

1) Debris Removed - 1.07 tons

The total amounts of nutrients and metals removed during the clean-out process were calculated by multiplying analyte concentrations by the weight of the material removed. The estimates for each analyte in each clean-out event were standardized to a 30-day accumulation period and 10 acre drainage area:

Nitrogen - 450g
Phosphorus - 214g
Copper - 30.47g
Lead - 5.80g
Zinc - 93.86g

2) Location: Scripps Poway Parkway and I-15

3) Sediment sample analysis:

Sediment - 80% of material removed
Trash - 5% of material removed
Organics - 15% of material removed

EXPECTED BENEFITS

The objectives of the project were to:

1. Provide baseline information on the amounts and characteristics of materials removed from catch basins in four study areas.
2. Determine patterns in quantity and quality of materials removed, especially in relation to prevalent land uses, sampling methods, clean-out timing, and frequency.
3. Recommend potential strategies to optimize efficiency of clean-outs for specific land use categories, pollutants, and catch basin configurations.
4. Propose ongoing monitoring protocols to improve on the baseline information and refine clean-out strategies.

ANALYSIS RESULTS

Results of the monitoring efforts for catch basin cleaning in four areas with different land use patterns, catch basin configurations, and cleaning methods show variations in amounts of materials and concentrations of analytes collected in each area and over time. The observations suggest overarching patterns and provide baseline information for ongoing monitoring and analysis. Because the samples were not sufficiently replicated, it is not possible to attribute statistical significance to any of the observed differences among treatments (area, timing, frequency, method, or catch basin configuration).

Nutrients accumulated quickly between clean-outs and concentrations generally reached a plateau. That suggests that nutrients are commonly available in the contributing storm water runoff (hence the rapid accumulation) and may be easily washed though the drainage system (hence the plateau). Nutrient loads were high in the Scripps Poway Parkway area because of the large amounts of materials retrieved. Coliform bacteria were relatively uniform across study areas, while *Enterococcus* was more concentrated in the Scripps Poway Parkway areas.

Comparison of Vactor and Manual Clean-Out Methods

The vactor method was used in the Downtown and Scripps Poway Parkway areas and the manual method was used in the San Ysidro and Tecolote areas. To the extent an inference about the difference in methods can be drawn from this study, the results from the two mixed-use land use areas - Scripps Poway Parkway and Tecolote Creek - can be compared. The vactor method produced greater amounts of materials in the Scripps Poway Parkway area than did manual cleaning in the Tecolote area. Because the amounts retrieved by vactor from the Downtown area were not much greater than the amounts retrieved using manual methods, it is suspected that differences in amounts of materials removed are due to factors other than the clean-out method, particularly the capacities of the catch basin sumps. Moreover, observation in the Scripps Poway Parkway area, which has significant topography, suggests that physical and soil conditions may be playing a role in the volume of material observed.

CONCLUSIONS

This pilot study demonstrates that there are differences in amounts of materials and pollutants that can be removed from catch basin inlets. Attributing those differences to factors such as removal methods, categorical land uses, timing in relation to rain events, frequency of cleaning, or a number of unmeasured factors is difficult given the small sample size and confounding factors. The costs and benefits associated with methods, schedules, or targeted locations in relation to sediment and pollutant removal would be better quantified with ongoing monitoring. Within the catch basin clean-out program that is ongoing in San Diego, there may be opportunities to collect valuable information with only a little extra effort. Other data collection for specific analyses will require a targeted monitoring program.

RECOMMENDATIONS

A major limitation of the pilot study is that we did not sample before the first significant rain event. Additional data should be collected after a dry season accumulation, clean-out, and sampling. The additional data should then be re-processed to determine clean-out procedures relative to dry season accumulation.

The City assumes that accumulation of sediments and pollutants is greatest during the wet season. The wet season is therefore the time to focus on frequent clean-outs. However, until dry season monitoring and analysis is complete, we cannot discount the importance of also scheduling clean-outs before the first wet season rains wash accumulated materials out of the systems. This may be especially important for metals. In residential areas or areas expected to have applied fertilizers, the middle of the growing season may be a critical time for clean-outs to maximize removal of nutrients.

In FY 2013 Dry Weather Clean-Out and Monitoring will be identical to the protocols observed in the FY 2012 Pilot Study Phase I so that the City has the benefit of a full year's profile of catch basin materials, characteristics and pollutants removed in each of the four study areas.

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TITLE: RAINWATER HARVESTING REBATE PILOT PROGRAM
ID #: LP-WQA27

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division in FY 2011 collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). Staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program was implemented in FY 2012 and was open to the residents of the City of San Diego on a first come first serve basis and provided a rebate of $0.50 per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department administered the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program. In the Los Peñasquitos Watershed there were 6 participants rebating a total of 26 rain barrels.

In addition to Rain Barrels Rebate Program an Outdoor Water Conservation Rebate Program was also offered to the residents of the City of San Diego. The Outdoor Water Conservation Rebate Program involved a rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in FY 2011, implementation occurred in FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA) identify bacteria and sediment as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

EXPECTED BENEFITS

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Reduction in runoff can be achieved with the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants.

ANALYSIS RESULTS

City wide data recorded:

1) Total amount of Rain Barrels rebated - 196 rain barrels
2) Average size of Rain Barrels installed - 60 gallons
3) Total Rain Barrel gallons rebated - 17,400 gallons
4) Number of Outdoor Water Conservation items rebated - 297 rebates
    - Smart Controllers -106
    - Micro Irrigation - 93
    - Turf Conversion - 98

CONCLUSIONS

Rebate program is ongoing.

TITLE: RESIDENTIAL PATROLLING
ID #: LP-WQA28

ACTIVITY DESCRIPTION

The City of Del Mar is a small jurisdiction with a relatively small residential community. The majority of the City consists of single family dwellings set in a hilly terrain that drains towards the Pacific Ocean and the San Dieguito and Los Peñasquitos lagoons. One of the primary sources of urban runoff within the City is residential irrigation runoff. Through this activity, the City intends to identify sources of urban runoff and abate them through a cycle of patrolling activities.

This activity includes periodically patrolling the entire City to identify residential and municipal sources of urban runoff and pollutant generating activities at various times of the week and day. The patrols will be conducted both before and after work hours to capture the likely times when residents are irrigating their properties. In addition to identification of urban runoff and their sources, patrollers will also look to identify other pollutant generating activities that need to be abated.

Identified issues will be followed up on in a timely manner (within 72 hours) using educational outreach materials the City has recently developed.

FY 2011-12 ACTIVITY IMPLEMENTATION

The City conducted four rounds of patrols throughout the City. Each round of patrols consisted of at least fourteen (14) patrols to capture each day of the week and both early morning and later evening time periods.

Within 72 hours of each daily patrol, educational outreach materials, in the form of door hangars, were provided to each residence where irrigation runoff had been observed. A total of 216 door hangars were placed as a result of the fourteen City-wide patrols.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

This activity is related to the Bacteria TMDL as it addresses sources of indicator bacteria as well as dry weather urban runoff that have been shown to contribute to regrowth of indicator bacteria within MS4 systems.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred in FY 2011. Activity implementation began in FY 2012 and will continue through FY 2013, with continual assessment to determine if modifications are necessary.

LEAD WATERSHED COPERMITTEE

- City of Del Mar

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Oil and Grease
- Sediment
- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses high priority water quality problems and sources of the associated pollutants and is therefore consistent with the 2008 WURMP watershed strategy.

EFFECTIVENESS MEASUREMENTS

The City will maintain records on each of the parcels for the following information that will be used for effectiveness assessment:

- Parcel information for those that are identified to be contributing urban runoff and conducting potential pollutant generating activities
- Follow-up activities conducted by the City including outreach and enforcement
- Dates of identified issues and indication of repeat issues

It is anticipated that the follow-up contact with the identified sources will lead to some abatement of their contributions to urban runoff and pollutant generating activities.

FY 2011-12 EFFECTIVENESS ASSESSMENT

Although identifying 216 instances of irrigation runoff and distributing educational materials is a significant effort, the data collected thus far does not provide correlations between educational material distribution and changes in irrigation runoff behaviors, e.g. reduction of over-spray and over-irrigation.

TITLE: **LAND ACQUISITIONS**
ID #: **LP-WQA29**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During FY 2011-12 reporting period there were 79.09 acres of land acquired in the Los Peñasquitos Watershed. Table 1 below shows the FY 2011-12 acquisitions.

Table 1. FY 2011-12 Land Acquisitions for Los Peñasquitos Watershed

Property	Acres	Date	Hydrologic Area	APN(S)
Sycamore Canyon (Hagey)	9.36	Nov 2011	906.20	324-040-25
Sycamore Canyon (Hagey)	12.43	Nov 2011	906.20	324-040-26
Sycamore Canyon (Hagey)	26.01	Nov 2011	906.20	324-040-27
Sycamore Canyon (Hagey)	20.79	Nov 2011	906.20	324-040-28
Sycamore Canyon (Hagey)	10.49	Nov 2011	906.20	324-040-31
TOTAL	**79.09**	-	-	-

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **QUALCOMM STADIUM DROP-OFF COMMUNITY CLEAN-UP AND RECYCLING EVENT SPONSORSHIP**
ID #: **LP-WQA30**

ACTIVITY DESCRIPTION

The City of San Diego Environmental Services Department (ESD) conducted a drop-off clean-up event in March. The event was open to all City residents and targeted items like appliances, metals, junk furniture, mattresses and tires. The Qualcomm Stadium parking lot was the site for the drop off and ESD staff conducted both events. This event was selected based upon citizen requests, pledges of community involvement and previous citizen participation levels.

A total of 112,000 pounds were collected of which 44,000 pounds were recycled. Some of the items collected were refrigerators, microwaves, stoves, window air conditioners, clothes washers and dryers, dishwashers, and tires.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

This event took place in March and was in the planning stages for approximately 2-3 months. Scheduling and coordinating available dates at Qualcomm stadium, writing traffic control patterns if needed, reserving equipment for use and scheduling drivers, creating a site map of the staging area and traffic flow pattern for ease of use.

This event was open to all City of San Diego residents. The location for the drop off was a designated location in the parking lot of the Qualcomm Stadium.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load

reduction/source abatement activities to address it. Clean-up events will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the sponsored cleanup? ($/lbs. collected)

TARGETED MEASURABLE OUTCOME(S)

Load reduction due to reduction of trash (any amount) due to trash clean-up sponsorship

ASSESSMENT METHOD(S)

Quantification (e.g., pounds of trash collected)
Pounds of trash removed (Outcome Level 4): 68,000 lbs.
Pounds of trash recycled (Outcome Level 4): 44,000 lbs.
Total pounds of trash removed and recycled (Outcome Level 4): 112,000 lbs.
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $2,200
Efficiency (Total Cost/Total Pounds Removed and Recycled): $0.03/lbs.

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness and efficiency of free drop-off clean-up and recycling events. In sponsoring these clean-up events, the City is providing a convenient drop off location for the free drop-off/disposal of furniture, appliances and tires. These community clean-up events are also intended to deter residents from illegally dumping unwanted items in street and alley rights-of-way, canyons, creeks and riverbeds as well as other locations throughout the City. They also replace a house-by-house bulky item pick-up.

ANALYSIS RESULTS

ESD staff collected a total of 112,000 lbs. of metals, appliances, junk furniture and mattresses, disposed of 68,000 lbs., and recycled 44,000 lbs. The sponsorship from the City of San Diego Transportation and Storm Water Department, Storm Water Division for this event was $2,200.

CONCLUSIONS

This activity fulfills a watershed water quality activity for FY 2012 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 112,000 pounds during the reporting period.

RECOMMENDATIONS

There are no recommendations at this time.

TITLE: FLANDERS CANYON SEDIMENT MONITORING
ID #: LP-WQA31

ACTIVITY DESCRIPTION

The purpose of this project is to monitor sediment transport in Flanders Canyon and investigate sediment deposition in the Lagoon. This project is designed to provide data on sediment concentrations within storm flows in Flanders Canyon Creek prior to converging with Carroll Canyon Creek and immediately downstream of their respective confluences. This project is also designed to provide insight on the age and origin of the sediment deposited in the Lagoon.

Data collected during this program will be used to assess the geomorphologic and sediment transport characteristics of Flanders Canyon and Carroll Canyon, and to evaluate the sediment deposition patterns of the Lagoon. The data collected under this monitoring program may be helpful for addressing the Sediment TMDL. Monitoring results and data analysis will be provided to the City in a final project monitoring report.

TMDL APPLICABILITY

Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring began in FY 2012 and will continue to FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos Lagoon WMA identify sediment as a high priority water quality problem.

EFFECTIVENESS MEASUREMENTS

EXPECTED BENEFITS

The data collected under this monitoring program may be helpful for addressing the Sediment TMDL.

ANALYSIS RESULTS
There are no analysis results as of this reporting period.

Samples will be collected during dry weather conditions at Lagoon monitoring locations, and at two new creek monitoring locations during wet and dry weather conditions.

CONCLUSIONS
There are no conclusions as of this reporting period.

TITLE: **PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #: **LP-WQEA2**

ACTIVITY DESCRIPTION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled Karma, Karma Second Chance, and Karma Tourist and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Los Peñasquitos Watershed Management Area (WMA). The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcasted on several TV and radio stations throughout the Los Peñasquitos WMA.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria as high priority water quality problems in the WMA. The Karma, Karma Second Chance, and Karma Tourist Public Service Announcements will result in both increased knowledge and awareness regarding bacteria and trash as a vector, and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation?

2) How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

TARGETED MEASURABLE OUTCOME(S)

1) Reach goal of number of listeners (radio) and homes (television) reached, based on survey results

2) Increased level of knowledge/attitude based on post-activity surveys

ASSESSMENT METHOD(S)

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)

2) Quantification (e.g., number of residents reached by PSA)

DATA RECORDED

1) Number of impressions made in homes through television in Los Peñasquitos WMA (Outcome Level 1)

2) Number of impressions made to the public through radio announcements in Los Peñasquitos WMA (Outcome Level 1)

3) Change in knowledge or attitude from survey results (Outcome Level 2)

4) Change in pollutant-related behavior from survey results (Outcome Level 3)

EXPECTED BENEFITS

The goal of Karma, Karma Second Chance, and Karma Tourist PSAs is in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

ANALYSIS RESULTS

The City will continue to run the Karma public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program; therefore, no assessment was conducted in FY 2012.

CONCLUSIONS

The PSAs educate the public about causes of pollution and encourage positive behavior changes in preventing pollution from entering the storm drain system. The City will continue to run the Karma public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program.

TITLE: INFILTRATION BMP RETROFIT OUTREACH
ID #: LP-WQEA5

ACTIVITY DESCRIPTION

This Infiltration BMP Education and Outreach Activity was planned to support the implementation of an infiltration project in the Los Peñasquitos WMA to reduce runoff volume. The activity will complement the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA09). Educational materials, such as infiltration specific brochures and facts sheets will be developed, which will explain the importance of the project as well as the water quality benefits that will be realized. Outreach strategies and methods may include direct public interaction, stakeholder meetings, information sessions, print media and website postings. Ongoing educational materials will be developed and implemented once the project is finalized. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
Los Peñasquitos Sediment TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The outreach planning phase for the Mira Mesa Library Bioretention and Infiltration Retrofit Project (see Activity Sheet LP-WQA9) began in FY 2012. Implementation of the outreach activities is scheduled to begin in late FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Los Peñasquitos WMA identify bacteria and sediment as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them.

Implementation of this activity will educate the public and address high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration/retention.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) How much change in awareness was achieved?
2) What changes in levels of behavior was achieved after implementation?
3) How do the survey results change pre and post activity implementation?

TARGETED MEASURABLE OUTCOME(S)

1) Achieve increased awareness of bacteria and sediment issues
2) Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)

ASSESSMENT METHOD(S)

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)
2) Quantification (e.g., count observable pollution and behavior of participants in program)
3) Monitoring (e.g., water quality monitoring at base of targeted watershed)
4) Tabulation (e.g., amount of money spent on education and outreach, number of residents and households reached)
5) Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)

DATA RECORDED

N/A

EXPECTED BENEFITS

An increase in effectiveness of the bioretention areas in reducing pollutant loads from runoff from the Mira Mesa Library. In addition to actual load reduction efforts, the project's outreach element will inform and educate the public about the projects in an effort to increase awareness about bacteria and sediment issues within the Los Peñasquitos watershed.

ANALYSIS RESULTS

There are no analysis results as of this reporting period.

CONCLUSIONS

There are no conclusions as of this reporting period.

TITLE: **FIESTA DE LOS PEÑASQUITOS**
ID #: **LP-WQEA13**

ACTIVITY DESCRIPTION

In order to prevent bacteria pollution in the Los Peñasquitos Watershed Management Area (WMA), the Los Peñasquitos Watershed Copermittees jointly participated in the Fiesta de los Peñasquitos community festival. The Fiesta de Los Peñasquitos festival is designed to bring the community together to showcase local arts & crafts, regional & local businesses, service clubs and religious organizations, and provides an excellent venue to focus on watershed-based constituents of concern and pollution prevention methods. This festival has been slated as the largest event of the year for the Rancho Peñasquitos Town Council. The festival was held on Sunday, May 6, 2012, and was free to the public.

Participation provided direct outreach to watershed residents and educates the public about preserving the local environment, promoting stewardship of the Los Peñasquitos Watershed and encouraging the public to take proactive steps in preventing pollution from entering the storm drain system.

Public education materials available in the booth included brochures, fact sheets, and pollution prevention tip cards. In addition, free BMP related giveaway items, such as dust pans and pet trash bags with containers, were exchanged for public's participation in a survey designed to assess their knowledge and attitudes towards storm water pollution.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region
Los Peñasquitos Sediment TMDL

LEAD WATERSHED COPERMITTEE

- City of Poway

OTHER PARTICIPATING COPERMITTEES

- City of Del Mar
- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Los Peñasquitos WMA identifies bacteria and sediment as high priority water quality problems throughout the WMA, and recommends implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector, and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What change in awareness/attitude regarding bacteria was achieved after implementation?

2) How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

TARGETED MEASURABLE OUTCOMES

1) Reach pre-set percentage of residents within target watershed

2) Increased level of knowledge/attitude based on post-activity surveys

ASSESSMENT METHODS

1) Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants)

2) Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

DATA RECORDED

Estimated total visitors exposed to the Think Blue Booth at the Fiesta de los Peñasquitos in FY 2012 (Outcome Level 1) = 15,000

Number of Surveys administered in FY 2012 (Outcome Level 1) = 155

Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2) = 62%

Percentage of individuals surveyed who feel that litter contributes to pollution at least a moderate amount (Outcome Level 2) = 89%

Percentage of individuals surveyed who reported that they feel a very strong or strong obligation to not litter (Outcome Level 2) = 96%

Percentage of individuals surveyed who reported that they pick up litter they see in their community and throw it in the trash at least sometimes (Outcome Level 3) = 91%

EXPECTED BENEFITS

The goal of this activity is increasing knowledge and awareness in the residents and visitors in the Los Peñasquitos Watershed in order create positive behavioral change that will reduce the presence of bacteria and gross pollutants in nearby waterbodies.

ANALYSIS RESULTS

Effectiveness Assessment will be ongoing as more data is gathered from the event. Effectiveness assessment results of this activity will occur in FY 2015 in order to have a statistically significant sample size and provide an opportunity to note any behavioral changes over a longer period of time. Efforts were made to educate attendees on awareness of pollutant sources and pollution prevention methods.

CONCLUSIONS

The Fiesta de Los Peñasquitos festival attracted mainly residents living in the local WMA. The event provided Copermittees and Storm Water staff an open venue to interact with the community and will continue to sponsor and staff the event. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain system. With approximately 15,000 people in attendance, our presence at the event provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of storm drain pollution prevention. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

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TITLE: **LOS PEÑASQUITOS WATERSHED BROCHURE**
ID #: **LP-WQEA14**

ACTIVITY DESCRIPTION

The City of San Diego (City) and Think Blue will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the attention of the audience, enhance the understanding of basic watershed principles of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:
1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay
5) San Dieguito River
6) Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2012. Implementation and distribution occurred in FY 2012 and will continue through FY 2015. Assessment is proposed in FY 2015.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?

2) Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

TARGETED MEASURABLE OUTCOME(S)

1) Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.

2) Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.

3) Increased intent to act to prevent storm water pollution after reading the watershed brochure.

ASSESSMENT METHOD(S)

Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

DATA RECORDED
N/A

EXPECTED BENEFITS
The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

ANALYSIS AND RESULTS
An effectiveness assessment of this activity is not possible at this time because the watershed brochures have not been distributed to enough residents within the Watershed Management Area. Data will be collected and throughout FY 2012 - 2015.

CONCLUSIONS
All six watershed brochure revisions were completed in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

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Attachment A

2008 Los Peñasquitos WURMP Watershed Map

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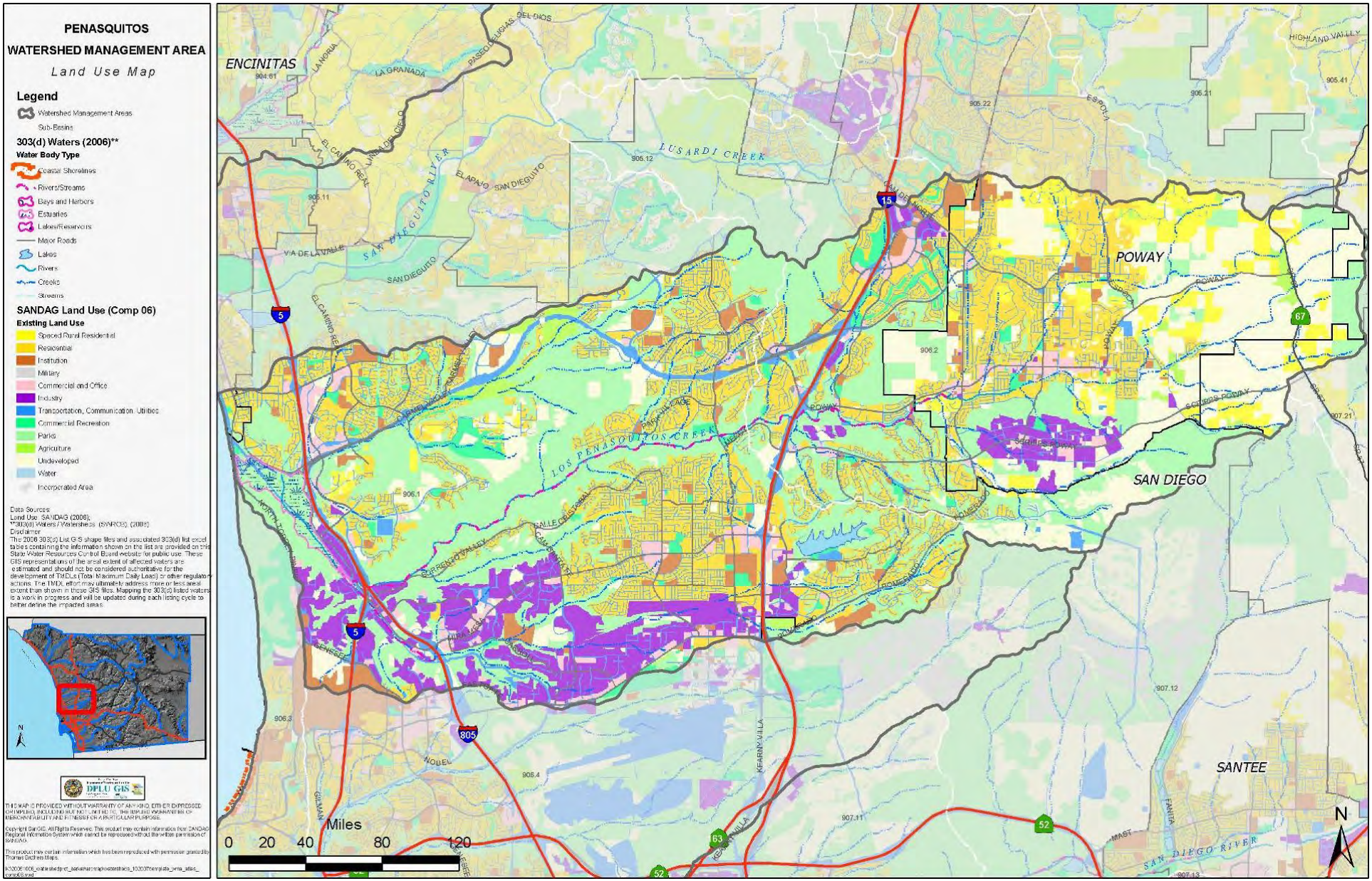
PENASQUITOS
WATERSHED MANAGEMENT AREA
Land Use Map
Legend
Watershed Management Areas
Sub-Basins
303(d) Waters (2006)**
Water Body Type
Coastal Shorelines
Rivers/Streams
Bays and Harbors
Estuaries
Lakes/Reservoirs
Major Roads
Lakes
Rivers
Creeks
Streams
SANDAG Land Use (Comp 06)
Existing Land Use
Spaced Rural Residential
Residential
Institution
Military
Commercial and Office
Industry
Transportation, Communication, Utilities
Commercial Recreation
Parks
Agriculture
Undeveloped
Water
Incorporated Area
Data Sources
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB), (2006)
Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on this list are provided on the State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Loads) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.
DPLU GIS
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ENCINITAS
POWAY
SAN DIEGO
SANTEE
LUSARDI CREEK
LOS PEÑASQUITOS CREEK
SAN DIEGUITO RIVER
SAN DIEGO RIVER
Miles
0 20 40 80 120
N

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MISSION BAY &
LA JOLLA WATERSHED
URBAN RUNOFF MANAGEMENT PLAN

MARCH 2008

Storm Water Pollution Prevention Division
General Services Department
City of San Diego

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Statement of Certification

RE: STATEMENT OF CERTIFICATION for the Mission Bay & La Jolla Watershed Urban Runoff Management Plan

I certify under penalty of law that the Mission Bay & La Jolla Watershed Urban Runoff Management Plan was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew Kleis 3/7/08

ANDREW KLEIS Date
Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
City of San Diego

Executive Summary

Introduction

The purpose of the Mission Bay & La Jolla Watershed Urban Runoff Management Plan (WURMP) is to guide the efforts of the City of San Diego (City), led by the Storm Water Pollution Prevention Division in the General Services Department, to protect and improve the surface water quality of Mission Bay, the La Jolla coast, San Clemente Creek, Rose Creek, and Tecolote Creek. More specifically, the WURMP addresses issues related to surface water quality within the Mission Bay & La Jolla Watershed Management Area (WMA) that can be potentially attributed (wholly or partially) to discharges from the municipal separate storm sewer system (MS4), which is also referred to as the storm drain system. Urban runoff, either from precipitation or human activity, conveys pollutants through the MS4 and directly into local water bodies, contributing significantly to their degradation.

The WURMP also addresses the requirements associated with San Diego Regional Water Quality Control Board Order No. R9-2007-0001, National Pollutant Discharge Elimination System Permit No. CAS0108758[1] (Municipal Permit). The Municipal Permit was re-issued on January 24, 2007, and has a five-year life. The San Diego City Council adopted this WURMP on January 7, 2008, and the effective implementation start date is March 24, 2008.

Furthermore, the WURMP addresses other regulatory requirements affecting the WMA, including those associated with Area of Special Biological Significance (ASBS) protection and anticipated Total Maximum Daily Loads (TMDLs). The City's philosophy is to approach these regulations and the Municipal Permit comprehensively, proactively, and in a coordinated fashion to maximize resources and efficiency in meeting their shared aim.

The primary goal of the WURMP is to positively affect the water quality of the Mission Bay & La Jolla WMA while balancing economic, social, and environmental constraints. The following objective and sub-objectives have been identified by the City to achieve this goal:

- Implement best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by:
    - Targeting sources/causes of identified priority water quality problems strategically
    - Gathering data necessary to determine the efficiency of load reduction activities
    - Optimizing the efficiency of activities in addressing priority water quality problems

Watershed Strategy

In spring 2006, the City initiated efforts to proactively address present and anticipated TMDL, ASBS protection, and Municipal Permit WURMP requirements using an integrated approach to maximize resources and efficiency. These efforts are described in the *Strategic Plan for*

[1] http://www.swrcb.ca.gov/rwqcb9/programs/sd_stormwater.html

Watershed Activity Implementation (November 2007) (Strategic Plan)[2], the preparation of which involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers to determine the priority water quality problems for the City's WMAs and geospatially prioritize the City's portion of each of those WMAs for activity implementation.

Water Quality Assessment

To assess yearly the water quality of the WMAs, the Copermittees have been compiling the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report). The Annual Monitoring Report presents data and findings from the various Regional Monitoring, Core Monitoring, and Process Studies programs implemented throughout the region by the Copermittees. Based on the data and findings of the Annual Monitoring Report and the City's Strategic Plan, the City has determined to focus its efforts on targeting the following Priority Water Quality Problems for the Mission Bay & La Jolla WMA. The problems that are bolded and italicized are considered High Priority Water Quality Problems.

- ***Bacteria/Pathogens***
- ***Heavy Metals***
- ***Nutrients***
- Pesticides
- Sediment

Plan of Action

To address the identified Priority Water Quality Problems—and in particular the High Priority Water Quality Problems—the City has developed a five-year plan of action using its Strategic Plan, which is presented in this WURMP. The plan of action outlines various activity types, including: water quality, education, special studies, public participation, and watershed-based land use planning. Water quality activities range from trash cleanup sponsorships, to facility inspections, to targeted street sweeping, to right-of-way porous asphalt pilot projects. Education activities range from public service announcements, to outdoor advertisements and direct outreach, to Community-Based Social Marketing pilot study efforts. The City also has a plan to continue to encourage the participation and input of diverse stakeholders and the general public in the development, implementation, and assessment of the Mission Bay & La Jolla WURMP through various means, such as the Think Blue website[3], outreach to established committees and commissions, and partnerships with local not-for-profit groups. As for watershed-based land use planning, the City anticipates using the community plan update process to incorporate general urban runoff management principles into the relevant plans, as needed, to address special concerns identified for the Mission Bay & La Jolla WMA.

[2] http://www.sandiego.gov/thinkblue/programreports/index.shtml
[3] http://www.thinkbluesd.org

Effectiveness Assessment

To evaluate its efforts at the activity and program levels, the City has developed an assessment framework that emphasizes maximization of activity efficiency and obtainment of knowledge and data associated with activity efficiency. This will help guide future management decisions on how to best allocate the City's resources to obtain the maximum amount of pollutant load reduction from its efforts. The City defines efficiency as pollutant load reduction divided by implementation cost. Individual activities are evaluated such that the necessary data collected allow for the calculation of their efficiency and for conclusions as to whether or not management goals and objectives have been met. Knowledge gained then feeds into subsequent management decisions regarding future allocation of resources. Assessment is part of the iterative approach of planning, implementation, and assessment, in which findings from the assessment feed into planning and implementation to continually improve the program and individual activities.

Conclusions

The City will continue to refine and augment the Mission Bay & La Jolla WURMP as it improves its understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality. Such refinement and augmentation are supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

Adaptive management is key to making the iterative process work. Adaptive management allows adjustments in management direction as new information becomes available. The combination of natural variability in the hydrologic cycle and the uncertainty associated with a complex system requires that watershed managers be flexible enough to modify implementation approaches based on progress and available information. Watershed characteristics, sources of pollutants, and management approaches are unique, and, therefore, management efforts may not proceed exactly as planned. Adaptive management does not mean that the watershed's water quality goals would be modified based upon lack of progress, but that the results would be used to modify management policies, strategies, practices, and operation and maintenance procedures to reach goals.

In short, the Mission Bay & La Jolla WURMP presents the City's long-term efforts to protect and enhance the water quality of the WMA using a watershed-based approach. The WURMP will continue to be developed with stakeholder participation and be integrated with other non-City projects, as appropriate.

Section 1 Introduction

1.1 Framework

This section introduces the purpose, goals, objectives, and efforts of the City of San Diego (City) to protect and improve the surface water quality of the Mission Bay & La Jolla Watershed Management Area (WMA).

1.1.1 Program Purpose

The purpose of the Mission Bay & La Jolla Watershed Urban Runoff Management Program (WURMP) is to guide the City's efforts to protect and improve the surface water quality of Mission Bay, the La Jolla coast, San Clemente Creek, Rose Creek, Tecolote Creek, and the Pacific Ocean shoreline. More specifically, the WURMP addresses issues related to surface water quality within the Mission Bay & La Jolla WMA that can be potentially attributed (wholly or partially) to discharges from the municipal separate storm sewer system (MS4), which is also referred to as the storm drain system. Urban runoff, either from precipitation or human activity, conveys pollutants through the MS4 and directly into local water bodies, contributing significantly to their degradation.

1.1.2 Program Development

Development of the WURMP is based on an iterative process of data collection and analysis, program planning, activity implementation, and activity and program assessment. The City, both by itself and in cooperation with other jurisdictions in the region, collects and analyzes data pertaining to water quality and pollutant sources to determine and prioritize the prevalent problems in the WMA, the sources or causes of those problems, and the site of those problems. Using this information, the City then identifies, plans, and implements activities to effectively address the worst problems in the most critical areas of the WMA. These activities are assessed for their effectiveness in conjunction with assessment of the WURMP as a whole on a periodic basis. The City adds the assessment data to the updated water quality and pollutant source data to refine its future WURMP management decisions and efforts.

The Storm Water Pollution Prevention Division (Storm Water Division) in the General Services Department leads the City's efforts to reduce urban runoff pollution. It consists of staff from various disciplines working together to develop and implement the WURMP. In addition to City staff, stakeholders participate regularly in activity planning and implementation efforts regularly via meetings at the City or at stakeholder locales. Because the City is the only Copermittee within the WMA, internal and stakeholder meetings are held on an ad hoc basis.

1.1.3 Order No. R9-2007-0001

The WURMP closely adheres to Section E of San Diego Regional Water Quality Control Board Order No. R9-2007-0001, National Pollutant Discharge Elimination System Permit No.

CAS0108758[1] (Municipal Permit). Section E (and other sections) of the Municipal Permit outlines a vision for managing urban runoff pollution at the watershed level, which includes:

- Identifying the WMA's high priority water quality problems and their sources/causes
- Conducting an annual assessment of the WMA's water quality
- Characterizing the sources/causes of the WMA's high priority water problems
- Planning, implementing, and assessing activities to address the WMA's high priority water quality problems and their sources
- Collaborating with other jurisdictions in the WMA to address the high priority water quality problems and their sources/causes
- Assessing the effectiveness of the WURMP as a whole
- Coordinating and integrating Total Maximum Daily Load (TMDL) efforts into WURMP efforts

1.1.4 Program Goal and Objectives

The primary goal of the WURMP is to positively affect the water quality of the Mission Bay & La Jolla WMA while balancing economic, social, and environmental constraints. The following objective and sub-objectives have been identified by the City to achieve this goal:

- Implement best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by
    - ✓ Targeting sources/causes of identified priority water quality problems strategically
    - ✓ Gathering data necessary to determine the efficiency of load reduction activities
    - ✓ Optimizing the efficiency of activities in addressing priority water quality problems

1.2 Watershed Description

This section describes the Mission Bay & La Jolla WMA to contextualize the City's efforts to protect and improve the surface water quality of the WMA.

1.2.1 Geography

The geography of the Mission Bay & La Jolla WMA features: four main water bodies; canyons and wildlife preserves; a coastline with steep bluffs and sandy and rocky beaches; salt marshes; mesas; and desert. San Clemente Creek, Rose Creek, and Tecolote Creek flow into Mission Bay. Mission Bay itself is a system of islands, peninsulas, beaches, remnant salt marshes, and a navigable inlet to the Pacific Ocean, whose current configuration is largely the result of dredging of tidal salt marshes and mudflats. Wildlife preserves include the Tecolote Canyon Natural Park, the Rose Canyon Open Space Preserve, the Marian Bear Memorial Natural Park, and the Kendall-Frost Mission Bay Marsh Reserve. Steep bluffs line the La Jolla coast as well as both sandy and rocky beaches. Mesas can be found in the University of California, San Diego area

[1] http://www.swrcb.ca.gov/rwqcb9/programs/sd_stormwater.html

and surrounding communities. Desert habitat is featured in the Miramar Marine Corps Air Station area.

1.2.2 Biology

Mission Bay provides habitat for numerous sensitive species indigenous to the Southern California coastline and is home to several wildlife preserves that provide important habitat for the federally endangered least tern, brown pelican, and light-footed clapper rail. Tecolote Canyon Natural Park, the Rose Canyon Open Space Preserve, the Marian Bear Memorial Natural Park, and the Kendall-Frost Mission Bay Marsh Reserve also provide habitat for a variety of both animal and plant species, including riparian and chaparral vegetation, such as willows and coastal sage scrub.

1.2.3 Hydrology and Beneficial Uses

The Mission Bay & La Jolla WMA is the smallest WMA in the San Diego region with a land area of over 43,000 acres. It is fully within the jurisdiction of the City. Three hydrologic areas (HA) form the WMA:

- Scripps HA (906.3)
- Miramar HA (906.4)
- Tecolote HA (906.5)

Together with the Miramar Reservoir HA (906.1) and the Poway HA (906.2), the Mission Bay & La Jolla WMA forms the Peñasquitos Hydrologic Unit (906.0).

The Miramar and Tecolote HAs drain directly into Mission Bay via Rose and Tecolote creeks, respectively. The Scripps HA drains into the Pacific Ocean along the coastlines of the communities of Pacific Beach and La Jolla.

The Water Quality Control Plan for the San Diego Basin (Basin Plan) lists the following existing and potential beneficial uses for the main water bodies of the WMA:

- Mission Bay: IND, REC1, REC2, COMM, EST, WILD, RARE, MAR, MIGR, SPWN, SHELL
- Rose Creek: IND, REC1, REC2, WARM, WILD
- Tecolote Creek: REC1, REC2, WARM, WILD
- San Clemente Creek: IND, REC1, REC2, WARM, COLD, WILD, RARE, SPWN
- Pacific Ocean Shoreline: IND, NAV, REC1, REC2, COMM, BIOL, WILD, RARE, MAR, AQUA, MIGR, SPWN, SHELL

1.2.4 Land Use

The Mission Bay & La Jolla WMA contains some of the more intensely urbanized areas of San Diego County (the San Diego Association of Governments estimated the population of the WMA to be 226,446 in 2000). Residential uses predominate in the Scripps and Tecolote HAs

and in the southern portion of the Miramar HA. The Miramar Marine Corps Air Station and the University of California, San Diego, occupy the northern portion of the Miramar HA. Mission Bay, the largest aquatic park along the western coast of the United States, is the outstanding land use at the southwestern corner of the WMA. It supports a variety of recreational uses and a small amount of remnant salt marshes. Commercial and industrial land uses are clustered generally along Interstate 5 and in the Golden Triangle area (bounded by Interstate 805, Interstate 5, and State Route 52). Wildlife preserves and parks run along San Clemente, Rose, and Tecolote creeks.

Table I-1 below summarizes the land uses in the WMA in terms of acreage and percentage of the WMA as a whole.

Table I-1. Mission Bay & La Jolla WMA Land Uses[2].

Land Use Categories	Acreage	Percentage of WMA
Agriculture	80	0.22%
Commercial	1,301	3.55%
Industrial	1,580	4.31%
Military	2,126	5.80%
Open Space/Open Water	11,269	30.72%
Parks/Recreation	2,064	5.63%
Public	607	1.65%
Residential	8,422	22.96%
Roads	5,429	14.80%
Schools	1,248	3.40%
Undeveloped	2,553	6.96%
Total	36,678	100.00%

1.2.5 Jurisdictions

The Mission Bay & La Jolla WMA is fully within the City's jurisdiction; therefore, the City is the only Copermittee within the WMA. However, significant military presence is located in the eastern part of the WMA as well as the University of California, San Diego in La Jolla. Maps are included in Appendix D for reference. These maps include the following features within the WMA to facilitate activity planning and implementation efforts:

- Receiving waters
- Clean Water Act Section 303(d) impaired receiving waters
- Land uses
- MS4
- Major highways
- Inventories commercial, industrial, and municipal sites

[2] Sources include SANDAG Year 2000 digital imagery and City of San Diego water utilities digital orthophotos, jurisdictional land use data, and various secondary sources used to verify land use interpretations. Data were primarily tabulated by SANDAG as a courtesy to Municipal Permit Copermittees and further refined by Copermittees.

Section 2 Watershed Strategy

In Spring 2006, the City initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Permit WURMP requirements using an integrated approach to maximize resources and achieve efficiencies. This "Strategic Approach" is documented in the *Strategic Plan for Watershed Activity Implementation* (November 2007) (Strategic Plan)[1], the preparation of which involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers to determine the priority water quality problems for the WMAs that the City has jurisdiction in and geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

Subsequent to the adoption of the Municipal Permit in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in maintaining consistency during: prioritization of areas within each WMA; selection of appropriate watershed activities; monitoring and pollutant source identification studies; and identification of data gaps with regard to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

This section summarizes the City's Strategic Plan, which was used to determine the High Priority Water Quality Problems and watershed activities to implement within the Mission Bay & La Jolla WMA. Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in the Section 3, Water Quality Assessment, of this WURMP.

2.1 Geographic Prioritization

The Strategic Plan divided the City's portion of each of the WMAs in which it has jurisdiction into priority sectors. The prioritization was based on a combined geospatial analysis of historical water quality monitoring data, pollutant source data from the Baseline Long-Term Effectiveness Assessment (BLTEA), and land use data. In short, areas that had historical water quality problems and high concentrations of pollutant sources were considered a higher priority for implementing activities versus areas that had relatively less water quality problems and lower concentrations of pollutant sources. Furthermore, areas that had or were likely to have TMDLs and/or ASBS protection requirements in development were considered higher priority than those that did or were unlikely to have so. Opportunities and space for activity implementation also raised the priority of areas.

[1] http://www.sandiego.gov/thinkblue/programreports/index.shtml

The purpose of the prioritization was to guide management decisions in terms of where to implement watershed activities. Implementing activities in the most problematic areas and where multiple regulations would be addressed simultaneously would help management maximize the efficiency of its efforts.

The geographic prioritization process also simultaneously resulted in identifying: (1) priority water quality problems to target; (2) priority sources to target; and (3) data gaps to address. Priority water quality problems were identified when the Strategic Plan analyzed data regarding water quality problems historically and geospatially and within the context of current and pending regulatory requirements. The geospatial analysis identified the pollutant source clusters to target, which entailed and pointed to further investigation of those sources for better implementation of activities.

Note that water quality problems for the Mission Bay & La Jolla WMA are presented in Section 3.3. Likely pollutant sources in the WMA are presented in Section 3.4.

2.2 Activity Prioritization

In addition to geographic prioritization, the City's Strategic Plan also compiled a menu of potential activities prioritized according to efficiency in reducing pollutant loading. In general, activities that targeted sources and prevented pollutant generation (labeled as "Tier I") were considered more efficient that those that involved reduction of runoff flow and pollutants ("Tier II") and treatment of urban runoff ("Tier III"). Source control and pollution prevention activities tended to be non-structural in nature and easier to implement relative to runoff reduction and treatment activities that tended to be structural in nature and, therefore, more challenging to implement. The prioritized menu of potential activities can be found in Appendix A. Note that this menu is not exhaustive, and modifications are anticipated as more information is gathered and activity efficiency rates are confirmed through implementation pilots.

The activity prioritization process also simultaneously resulted in presenting a prioritized scheme for implementing the activities. In general, due to the efficiency and implementation facility of source control and pollutant activities, the City's Strategic Plan recommended their implementation first, maximizing the amount of pollutant load reduction possible through them before moving more aggressively with runoff reduction and treatment activities. Treatment activities, due to their higher cost, more challenging implementation requirements, and unconfirmed efficiency, were considered last resort activities. This tiered approach to activity selection and implementation would help management maximize the efficiency of its efforts at given resource levels. The City anticipates refining its activity selection and implementation through this tiered approach as more information is gathered and efficiency rates are confirmed through evaluation of pilots before implementation on a broader scale.

2.3 Assessment

The City's Strategic Plan also presented a framework to assess the efficiency of activities. Assessment of efficiency would allow the City to make good management decisions on whether activities should be implemented at a broader scale, modified to improve their efficiency, or removed from the menu of potential watershed activities. Knowing the efficiency of activities

(both in terms of pollutant load reduction divided by cost and ability to address multiple pollutants simultaneously) also allows for the selection of the most efficient suite of activities for implementation to maximize pollutant load reduction at given resources. Section 5 of this WURMP describes the assessment framework more thoroughly.

Section 3 Water Quality Assessment

This section describes the approach to assess the conditions of the receiving waters of the Mission Bay & La Jolla WMA, identify the WMA's water quality problems, and identify the likely sources/causes of those water quality problems. The purpose of the water quality assessment is to make possible management decisions that focus resources on the highest water quality problem priorities in the most problematic areas using the best known approaches.

3.1 Water Quality Assessment Approach

3.1.1 Data

The monitoring programs that the Copermittees are engaged in can be divided into three major categories: Regional Monitoring, Core Monitoring, and Process Studies.

Regional Monitoring encompasses large spatial areas and looks at many elements potentially impacted by urban runoff. It takes a longer-term view of the ultimate receiving waters, coastal bays, lagoons, and the Pacific Ocean. Regional Monitoring is designed to answer questions concerning broad ecological health and encompasses numerous components, including water and sediment quality, fish, benthos, birds, etc. Examples of Regional Monitoring include:

- Southern California Bight
- Southern California Coastal Waters Research Project
- Regional Harbor Monitoring Program

Core Monitoring refers to several long-term monitoring activities conducted by the Copermittees on an annual (or more frequent) basis. These activities are more focused, concentrate on fewer parameters than Regional Monitoring efforts, and are better able to provide data to assess long-term trends within and across WMAs. The Copermittees have designed these monitoring programs under an adaptive strategy that is subject to review as warranted by new data or information. Examples of Core Monitoring include:

- Mass Loading Stations
- Dry Weather
- Coastal Storm Drain Outfalls
- MS4 Outfalls
- Ambient Bay, Lagoon, and Coastal Receiving Water
- Urban Stream Bioassessment

Process Studies supplement both Regional and Core monitoring activities. They are short-term evaluations designed to answer specific questions. Examples include:

- Pollutant source identification and characterization
- DNA ribotyping
- Storm water discharge and toxicity link

3.1.2 Water Quality Problems

To identify the priority water quality problems within each WMA for this cycle of the Municipal Permit, the Copermittees have used data from the above monitoring programs together with the process outlined in the Model Watershed Strategy for determining appropriate actions to take in each HA. Based on the Copermittees' best professional judgment on the adequacy of monitoring and pollutant source data and the relationship of those data with the alphabetic "water quality priority ratings" (as presented in the 2006–2007 *San Diego County Municipal Copermittees Urban Runoff Monitoring* [Annual Monitoring Report]) determined using the methodology in the BLTEA, the Model Watershed Strategy recommends one of the following actions: load reduction/source abatement activities; monitoring studies; or source characterization studies. An implementation priority (high, medium, low) is also assigned to each monitoring study or source characterization study recommendation.

In essence, water quality problems for which the Model Watershed Strategy recommends load reduction/source abatement activities are "high priority water quality problems" (at least for certain HAs within the WMA). Water quality problems for which the Model Watershed Strategy recommends high and medium priority monitoring studies or source characterization studies are simply "priority water quality problems" (at least for certain HAs within the WMA).

However, note that, for the Mission Bay & La Jolla WMA, instead of using monitoring data in conjunction with the process outlined in the Model Watershed Strategy, the City decided to use the results from the geographic prioritization process completed as part of the City's Strategic Plan (see Section 2 of this WURMP) as the basis for determining the WMA's list of water quality problems. The results are presented in Section 3.3 below.

Note that, once the priority and high priority water quality problems have been identified, they are set until the Municipal Permit is re-issued again by the Regional Board. Only major, unforeseen events that the Copermittees judge to be sufficiently significant would prompt a modification to the list of high priority water quality problems.

3.1.3 Annual Water Quality Assessment

To assess yearly the water quality of the WMAs, the Copermittees have been compiling the Annual Monitoring Report. The Annual Monitoring Report presents data and findings from the various Regional Monitoring, Core Monitoring, and Process Studies programs implemented throughout the region by the Copermittees. In particular, it follows a methodology to determine which constituents during the reporting period have a high, medium, or low frequency of occurrence or exceedances. Diamonds are used (♦♦♦ for high, ♦♦ for medium, and ♦ for low) to graphically represent the ratings. The Copermittees are able to use the diamond rating to monitoring trends in exceedances and take action accordingly. The diamond ratings will continue to be used by the Copermittees to assess the water quality of each WMA annually.

3.2 Receiving Waters Condition

This section summarizes the results of the 2006-2007 Annual Monitoring Report for the Mission Bay Watershed Management Area (WMA) section and analysis conducted by Weston Solutions, Inc. on behalf of the San Diego County Municipal Copermittees.

3.2.1 Watershed Monitoring

Wet weather and bioassessment monitoring sites within the Mission Bay WMA are depicted in Figure III- (dry weather stations are not shown). Activities included:

- Chemical and toxicity testing of storm water runoff.
- Dry weather data analysis.
- Rapid stream bioassessment.

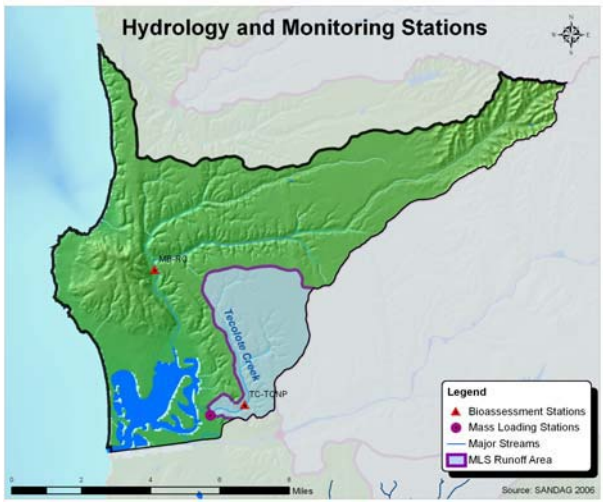

Figure III-1. Mission Bay WMA Monitoring Locations.

3.2.1.1 Storm Water Runoff

The Tecolote Creek (TC) mass loading station (MLS) is located along a trapezoidal, concrete-lined open channel on the east side of Morena Boulevard in San Diego (Figure III-2). The contributing runoff area covers over 5,992 acres, which is approximately 14% of the Mission Bay WMA. The primary land uses within the contributing runoff area are residential (44%), parks (19%) and transportation (18%) (Figure III-3).

Figure III-2. Tecolote Creek MLS Site.

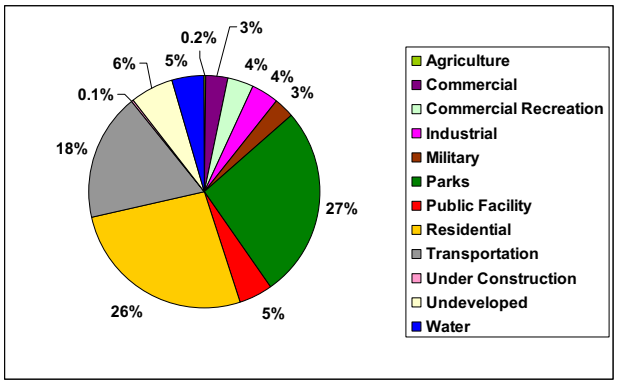

Figure III-3. Mission Bay Land Use Statistics

Three storm events were monitored during the 2006-2007 wet-weather season (Figure III-4). The figure depicts the river levels and flow rates observed during the monitoring season.

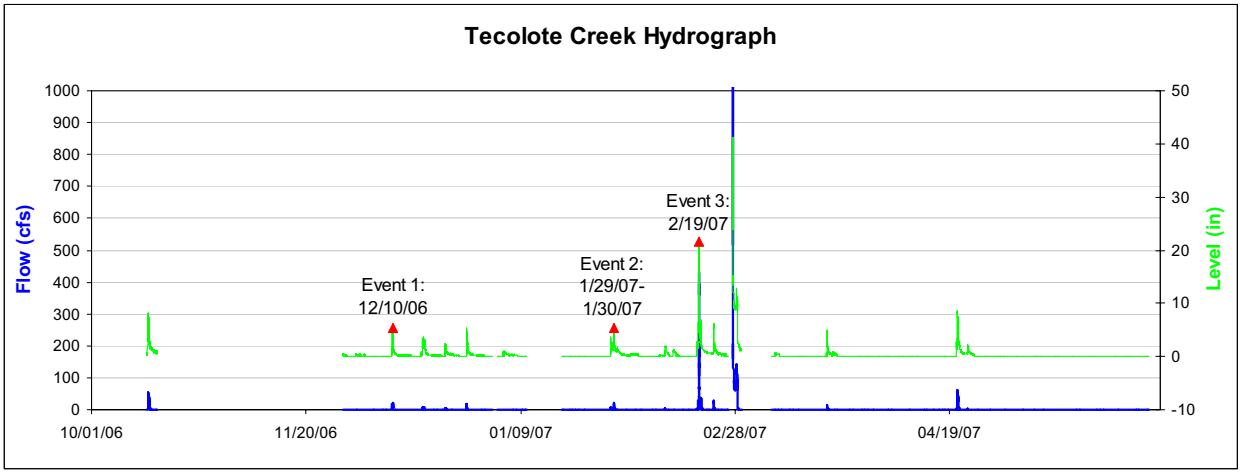

Figure III-4. Tecolote Creek 2006-2007 Wet Weather Monitoring Period Flow Record and Monitored Storm Events.

Table III-5 summarizes constituents with concentrations detected at levels above the benchmark water quality objectives (WQO) which are shown in bold. Pesticides, hardness, dissolved metals, and toxicity were not detected at levels above WQO.

Table III-5. Constituents With Results Above the Benchmark WQO During the 2006-2007 Monitoring Season at the Tecolote Creek MLS.

Analyte	Units	WQO	Source	2006-2007 Storms		
				12/10/06	1/30/07	2/19/07
Fecal Coliform	MPN/100mL	4,000	Basin Plan	**5,000**	**5,000**	**3,000**
BOD	mg/L	30	USEPA Multi-Sector Permit	9.2	**39.7**	10.0
Un-ionized ammonia	µg/L	25	Basin Plan	34.9	**2.8**	2.0
COD	mg/L	120	USEPA Multi-Sector General Permit	89	83	**151**
TDS	mg/L	1000	Basin Plan by watershed	**1,680**	**2,310**	308
TSS	mg/L	100	USEPA Multi-Sector General Permit	**166**	65	**442**
Turbidity	NTU	20	Basin Plan	**84**	12.4	**282**
Total Cadmium	mg/L	*	40 CFR 131	0.004	<0.001	**0.012**
Total Copper	mg/L	*	40 CFR 131	0.025	0.014	**0.061**
Total Lead	mg/L	*	40 CFR 131	0.014	0.005	**0.056**
Total Zinc	mg/L	*	40 CFR 131	0.109	0.057	**0.391**

* WQO based on water hardness

The recent monitoring year and the mean historical ratios of the benchmark water quality objective (WQO) from all storm events between October 2001 and April 2007 were plotted and compared to the WQO (Figure III-6). The highest ratios of water quality constituents above their respective WQO for the Mission Bay WMA were for turbidity, fecal coliform, total lead, total copper, TDS, and TSS. Total zinc, ammonia as N, BOD, and COD also had results that were above WQOs, but were not greater than three times the WQO.

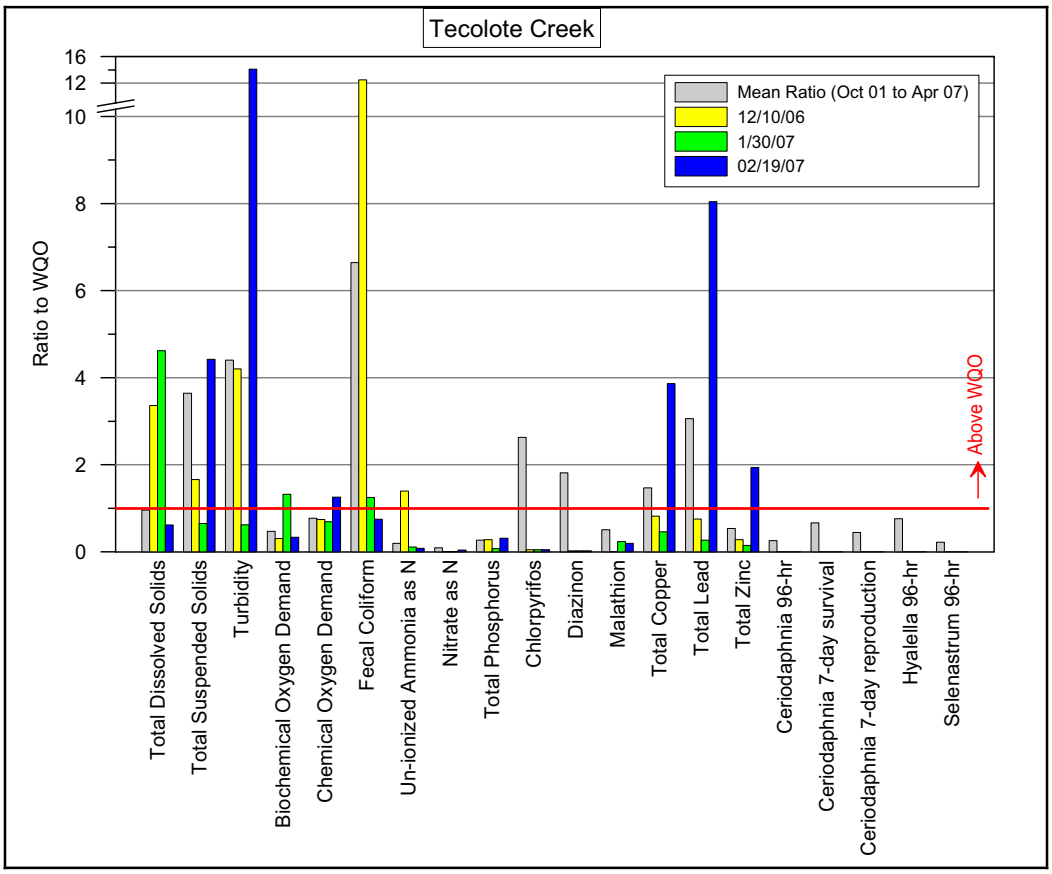

Figure III-6. Ratio of Results to WQO for the Mission Bay Watershed Management Area.

Mann-Kendall trend analyses were performed to identify any long-term trends observed in the data. Statistically significant increasing trends were identified for enterococci while statistically significant decreasing trends were identified for oil and grease, BOD, Diazinon, and nitrate. Concentrations of oil and grease, BOD, Diazinon, and nitrate were all below benchmark WQOs.

3.2.1.2 Constituent Loads

Measured storm event loads were compared to loading values derived from the National Stormwater Quality Database (Pitt et al., 2004). Expected loads based on the national database were used to evaluate the magnitude of loads measured at each MLS site. Measured loads for total dissolved solids and bacterial indicators were greater than expected for a majority of the storm events sampled. Most of the constituents measured were within the expected range or lower that expected. In particular, metals consistently showed lower than expected loads for all the storms events sampled.

3.2.1.3 Dry Weather Data

A separate dry weather monitoring program is carried out by each jurisdiction. Dry weather monitoring investigations were performed at 54 sites in the Mission Bay WMA during the summer of 2006. Fourteen of these sites are located upstream of the MLS on Tecolote Creek. Constituents found to exceed dry weather action levels are depicted in Table III-7.

Table III-7. Mission Bay WMA 2006 Dry Weather Exceedances.

Analyte	Number of Action Level Exceedances	Total Samples
Conductivity	14	52
pH	3	53
Enterococcus	7	11
Fecal Coliform	2	13
Total Coliform	6	11
Ammonia (NH3-N)	4	47
Orthophosphate (PO4-P)	1	48
Turbidity	31	48

3.2.1.4 Stream Bioassessment

Stream bioassessment monitoring was conducted at two urban affected monitoring sites representing two different watersheds. One site was located in Rose Creek, downstream of the confluence with San Clemente Canyon Creek near Highway 52 (MB-RC) (Figure III-8). The other site was in Tecolote Creek in Tecolote Canyon Natural Park, near the downstream border of the Park (TC-TCNP) (Figure III-9).

Figure III-8. Rose Creek Monitoring Site

Figure III-9. Tecolote Creek in Tecolote Canyon Natural Park Monitoring Site

The Mission Bay WMA stream bioassessment sites had Index of Biotic Integrity (IBI) Ratings of Very Poor for both sites and both surveys (Table III-10). The observed species to expected species (O/E) ratios were in general agreement with the IBI scores, indicating degraded biotic conditions at the sites. It should be noted that these two sites had some of the highest specific conductance readings of all of the county monitoring sites.

Two summary indices were used to assess the benthic communities at the monitoring sites: an Index of Biotic Integrity and an O/E ratio. For these indices, higher values indicate better biotic conditions.

The Mission Bay WMA stream bioassessment sites had Index of Biotic Integrity (IBI) Ratings of Very Poor for both sites and both surveys (Table III-). The observed species to expected species (O/E) ratios were in general agreement with the IBI scores, indicating degraded biotic conditions at the sites. It should be noted that these two sites had some of the highest specific conductance readings of all of the county monitoring sites.

Since the 2001survey, the Rose Creek site has had a mean IBI score of 12.5 and a mean O/E ratio of 0.58 (an estimated 42% loss in biodiversity). Tecolote Creek has had a mean IBI score of 16.2 and a mean O/E ratio of 0.52 (an estimated 48% loss in biodiversity). Both indices rated the sites impaired for all surveys.

Table III-10. Selected Biological Integrity Ratings and O/E Ratios for the Mission Bay WMA.

Mission Bay Watershed Management Area	Rose Creek near Highway 52 (MB-RC)		Tecolote Creek in Tecolote Canyon Natural Park (TC-TCNP)	
Survey	**Oct-06**	**May-07**	**Oct-06**	**May-07**
Index of Biotic Integrity/ Qualitative Rating*	**8 Very Poor**	**9 Very Poor**	**12 Very Poor**	**1 Very Poor**
O/E Ratio**	**0.50**	**0.41**	**0.59**	**0.32**

*IBI Score 0-13=Very Poor, 14-26=Poor, 27-40=Fair, 41-55=Good, 56-70=Very Good, **O/E ratio of >0.8 represents unimpacted conditions

3.2.1.5 Ambient Bay and Lagoon Monitoring

The Ambient Bay and Lagoon Monitoring Program was not conducted during the 2006-2007 monitoring period.

3.2.2 Watershed Management Area Assessment

The Mission Bay WMA was assessed using the interim guidance document "Watershed Data Assessment Framework" (June 2004) to comply with NPDES Order 2001-01. The following assessment results for the WMA are presented:

- Evidence of persistent water quality objective exceedances (turbidity); (fecal coliform and total coliform are not considered likely to induce toxic responses),
- No evidence of persistent toxicity, and
- Indications of benthic alteration.

Statistically significant long-term trends were observed for the following constituents:

- Enterococci (increasing)
- Oil and grease (decreasing)
- Diazinon (decreasing)
- BOD (decreasing)
- Nitrate (increasing)

Constituents of concern identified for the Mission Bay WMA are summarized in Table III-11.

Table III-11. Constituent of Concern Rating Table Summary for the Mission Bay WMA.

Constituents With Any Wet Weather (MLS) WQO or Dry Weather Action Level Exceedance	Frequency of Occurrence Rating	Criterion Basis
Fecal Coliform	High	Mass loading station tests results exceed WQO in greater than or equal to 80% of samples.
Total Coliform	High	Six of the last consecutive storm samples at the MLS exceed WQO.
Turbidity	High	Less than 80% and greater than or equal to 50% of the MLS samples exceed WQO and at least one dry weather site exceedance in the past year.
TSS	Medium	Less than 80% and greater than or equal to 50% of the MLS samples exceed WQO and one or more exceedances found in last 2 years of monitoring at the MLS.
Enterococcus	Medium	
Lead	Medium	
pH	Low	Dry weather sample exceedances in 10 to 50% of the samples in the past year.
Ammonia	Low	
COD	Low	MLS exceedances found in 25% to less than or equal to 50% of the samples and at least one exceedance found in last 2 years at the MLS (with or without dry weather sample exceedances in the past year).

3.2.3 Recommendations

The recommendations for this watershed are to continue monitoring to gather long-term trend information, identify where data gaps exist and do not allow for informed decision making, and consider where watershed resources may be more effectively targeted to reduce heavy metals, dissolved minerals, nutrients, bacterial indicators, toxicity, and impacts to the physical stream habitats. The new permit monitoring order (R9-2007-0001) calls for two temporary watershed assessment stations (TWAS) for this watershed. The additional upstream stations will provide the ability to evaluate the distribution of heavy metals, dissolved minerals, nutrients, bacteria, and toxicity.

3.3 Water Quality Problems

This section outlines the water quality problems identified by the City to be targeted in the Mission Bay & La Jolla WMA.

3.3.1 Priority Water Quality Problems

The City's Strategic Plan lists the following as "constituents of concern" in the Mission Bay & La Jolla WMA. The City has decided to refer to these constituents of concern as "priority water quality problems."

- Bacteria/Pathogens
- Heavy Metals
- Nutrients
- Pesticides
- Sediment

3.3.2 High Priority Water Quality Problems

Of the list above, the City has determined the following water quality problems as "high priority water quality problems" because they each have received a water quality priority rating of A (determined using the methodology in the BLTEA) as indicated by Table 9-16 of the 2005–2006 Annual Monitoring Report.

- Bacteria/Pathogens
- Heavy Metals
- Nutrients

3.4 Likely Pollutant Sources

Table III-12 below lists the likely pollutant sources per the BLTEA for each of the high priority water quality problems identified in Section 3.3.2 above.

Table III-12. Likely Sources of High Priority Water Quality Problems in Mission Bay WMA.

High Priority Water Quality Problem	Likely Sources per BLTEA
Bacteria/Pathogens	Eating/drinking establishments; animal facilities; landscaping (e.g., parks, golf courses, cemeteries, etc.); publicly owned treatment works (water and wastewater); home automobile–associated activities, home and garden care activities, waste disposal
Heavy Metals	Auto mechanical repair, maintenance, fueling, or cleaning; automobile and other vehicle body repair and painting; botanical or zoological gardens and nurseries/greenhouses; fabricated metal; motor freight; boat mechanical repair, maintenance, fueling, or cleaning
Nutrients	Animal facilities; botanical or zoological gardens and nurseries/greenhouses; landscaping (e.g., parks, golf courses, cemeteries, etc.); pest control services; home automobile–associated activities, home and garden care activities, waste disposal; roads, streets, highways, and parking facilities; parks and recreation facilities

Section 4 Plan of Action

This section presents the City's five-year plan of action to address the High Priority Water Quality Problems identified in Section 3.3.2. Activities included in the five year plan have been selected based on their ability to effectively address high priority water quality problems within the WMA as detailed in the City's *Strategic Plan for Watershed Activity Implementation* (November 2007). Table IV-1 below summarizes the activities included the plan of action. A more complete table with additional information can be found in Appendix B.

Table IV-1. Summary of Five-Year Plan of Action.

Activity Type / ID Number / Name			Anticipated Implementation Year	Water Quality Problem(s) Addressed	Status (FY 08)
Water Quality	MB-1001	Alpha Project Trash Cleanups	2008	Bacteria	Implementation
	MB-1002	ILACSD Trash Cleanup Sponsorship	Annual	Bacteria	Implementation
	MB-1003	SDCK Trash Cleanup Sponsorship	Annual	Bacteria	Implementation
	MB-1004	Targeted Animal-Related Facility Inspections	2011	Bacteria; Nutrients	Planning
	MB-1005	Targeted Auto-Related Facility Inspections	2008	Metals	Planning
	MB-1006	Targeted Landscaping-Related Facility Inspections	2012	Bacteria; Nutrients	Planning
	MB-1007	Targeted Municipal Facility Inspections	2012	Bacteria; Nutrients; Metals	Planning
	MB-1008	Targeted Residential Activity Inspections	2009	Bacteria; Nutrients; Metals	Planning
	MB-1009	Targeted Restaurant Facility Inspections	2008	Bacteria	Planning
	MB-1010	Targeted Street Sweeping	2008	Metals	Planning
	MB-1011	Municipal Rain Barrel Installation	2008	Bacteria; Nutrients; Metals	Planning
	MB-1012	Hydrodynamic Separator Installation	2010	Bacteria; Nutrients	Planning
	MB-1013	LJ Dry Weather Flow Diversions	2011	Bacteria; Nutrients; Metals	Planning
	MB-1014	Kellogg Park Green Lot BMP Retrofit	2010	Bacteria; Nutrients; Metals	Design
	MB-1015	Mt. Abernathy Green Street BMP Retrofit	2010	Bacteria; Nutrients; Metals	Design
	MB-1016	Infiltration LID BMP #1	2010	Bacteria; Nutrients; Metals	Planning
	MB-1017	Infiltration LID BMP #2	2011	Bacteria; Nutrients; Metals	Planning
Education	MB-2001	Karma/Karma Second Chance PSAs	Annual	Bacteria; Gross Pollutants	Implementation
	MB-2002	Mobile Advertising	Annual	General; Bacteria	Implementation
	MB-2003	Business & Residential CBSM Pilots (La Jolla)	2008-2009	Bacteria; Gross Pollutants	Planning & Implementation
	MB-2004	Business CBSM Pilot (Genessee)	2010	Bacteria; Gross Pollutants	Planning
Special Studies	MB-3001	Tecolote Creek Bacterial Source ID Study	N/A	Bacteria	Ongoing
Public Participation	MB-4001	Non-Governmental Organization Engagement	Annual	All	Ongoing
	MB-4002	Outreach	Annual	All	Ongoing
	MB-4003	Independent Rate Oversight Committee	Annual	All	Ongoing
	MB-4004	Mission Bay Park Committee	Annual	All	Ongoing
	MB-4005	Project Clean Water	Annual	All	Ongoing
	MB-4006	Think Blue Website	Annual	All	Ongoing
Land Use					

4.1 Proposed Water Quality Activities

Refer to Appendix C for the Activity Summary Sheets describing the City's proposed watershed water quality activities and details regarding their anticipated implementation schedule. Note that the list of activities and the accompanying descriptions are subject to change.

4.2 Proposed Education Activities

Refer to Appendix C for the Activity Summary Sheets describing the City's proposed watershed education activities and details regarding their anticipated implementation schedule. Note that the list of activities and the accompanying descriptions are subject to change.

4.3 Proposed Special Studies

Refer to Appendix C for the Activity Summary Sheets describing the City's proposed special studies. Note that the list of activities and accompanying descriptions are subject to change.

4.4 Proposed Public Participation Activities

The City will continue to actively encourage the participation and input of diverse stakeholders in the development, implementation, and assessment of the Mission Bay WURMP. Historically, stakeholders have participated regularly in activity planning and implementation efforts via formal and informal discussions and meetings at the City or stakeholder locales. Because the City is the only Copermittee within the WMA, internal and stakeholder meetings are held at an ad hoc basis. The City values its strong relationships with stakeholders and will continue to use this informal participation as the foundation of its participation and implementation efforts in conjunction with the more formal participation mechanisms outlined below.

The paragraphs below broadly outline the public participation strategy that the City will be pursuing to encourage stakeholder engagement in the WURMP. Specific public participation activities as conducted will be reported in the annual reports to be appended to this WURMP.

4.4.1 Non-Governmental Organization Engagement

The City will continue to engage non-governmental organizations (NGOs) active in the WMA in the development, implementation, and assessment of the Mission Bay WURMP through a variety of means, including, but not limited to:

- Entering into agreements with NGOs to implement activities, such as trash/debris sponsorships, creation and distribution of education materials, workshop facilitation, research, community events, and presentations
- Inviting NGO representatives to the City and sending City representatives to NGO meetings to discuss urban runoff pollution prevention efforts, share input, and identify opportunities for coordination
- Partnering with NGOs as appropriate in advocating legislation protective of water quality

4.4.2 Outreach

The City will continue to conduct outreach to the public on its own and in coordination with NGOs as described above. Outreach efforts may involve, but not be limited to, the following:

- Presence and distribution of materials at community events, e.g., booths, trash/debris, cleanup teams, delegates
- Presentations and talks at stakeholder events/meetings
- Workshops targeting specific audiences/pollutant sources
- Participation in ad hoc committees

4.4.3 Mission Bay Park Committee

The Mission Bay Park Committee advises the Park and Recreation Board of the Park and Recreation Department on the development, utilization, and policies regarding Mission Bay Park. The Committee meets once a month and provides a venue for the public and the Storm Water Division to discuss issues related to urban runoff management pertaining to the park. In the past, for example, the Storm Water Division made a presentation to the committee on the findings of a bacterial source identification study on Mission Bay, which led to the construction of the Mission Bay Computerized Irrigation System Project, designed to reduce over-irrigation in the park conveying bacteria-laden bird wastes into the bay. The City will continue to use this venue to engage stakeholders in the WURMP, especially with regards to project implementation.

4.4.4 Project Clean Water

Project Clean Water, which was initiated in July 2000 by the Regional Copermittees, established a framework for the broad-based and collaborative development of solutions to local water quality problems. The relationship of Project Clean Water policies to Municipal Permit compliance is important. An underlying tenet of this effort is that Municipal Storm Water Permit compliance alone cannot achieve clean water. As such, Project Clean Water seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. This significantly broadens the base of stakeholder input available to consider issues directly related to Municipal Permit compliance. As with Copermittee meetings, all Project Clean Water meetings are open to the public and participation is encouraged through a variety of avenues including a website, electronic notifications, and personal phone calls.

To provide information on meetings, work products, and other valuable links to the public and interested parties, a Project Clean Water website[1] is maintained. Interested parties have extensively utilized the site to post various work products for review and comment. It is the goal of Project Clean Water to establish this site as a centralized source of water quality information for the San Diego region.

The Mission Bay WURMP and annual reports are placed on the website to allow stakeholders to view the documents and submit comments. The City will continue to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as it continues to develop and implement the WURMP.

[1] http://www.projectcleanwater.org

4.4.5 Think Blue Website

The City's Storm Water Division maintains the Think Blue website[2]. It is available to the public and professional organizations as a resource to help them be compliant with urban runoff regulations and to educate themselves on urban runoff issues and solutions. BMP fact sheets and other education materials in both English and Spanish as well as bacterial source identification studies are available online. The Storm Water Division has also posted the Mission Bay WURMP on the website, as well as the annual reports to provide stakeholders the opportunity to review and comment on the documents. In addition, solicitations for public participation in meetings and outreach events are posted on the website. The City will continue to use this venue to encourage stakeholder participation in the development and implementation of the Mission Bay WURMP.

4.5 Proposed Land Use Planning Activities

The City is divided into various politically recognized communities, each with its own community plan prepared by the City Planning & Community Investment Department that implement the planning policies in the City's General Plan. The Mission Bay & La Jolla WMA encompasses nine communities: Linda Vista, Clairemont Mesa, Kearny Mesa, Mission Beach, Pacific Beach, La Jolla, University City, Mission Bay Park, and MCAS Miramar. Of these, seven have community plans (Mission Bay Park and MCAS Miramar are covered under other planning documents). Each community plan is updated periodically to reflect changes in the community, as well as provide fresh direction regarding growth and development. For example, the California Coastal Commission approved the La Jolla Community Plan update in FY 2004, and City staff began its implementation in FY 2005. The La Jolla Community Plan includes extensive storm water policies pertaining to coastal bluffs and steep hills.

The City will use the community plan update process, as needed, to incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the plans to address special concerns identified for the Mission Bay & La Jolla WMA. Updates to the community plans will be primarily reported in the City's JURMP due to their general nature and close relationship with the General Plan. However, highlights will be provided in the WURMP annual report as deemed appropriate.

[2] http://www.thinkbluesd.org

Section 5 Effectiveness Assessment

This section outlines the framework that the City will use to assess the effectiveness of its efforts at improving surface water quality within the Mission Bay & La Jolla WMA. The Municipal Permit requires assessment of the effectiveness of individual watershed activities as well as the implementation of the WURMP as a whole.

5.1 Introduction

According to the California Stormwater Quality Association (CASQA) document, *An Introduction to Storm Water Program Effectiveness Assessment,* effectiveness assessment is "necessary and fundamental" to the development and implementation of a successful urban runoff pollution prevention program. Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts to maximize resources.

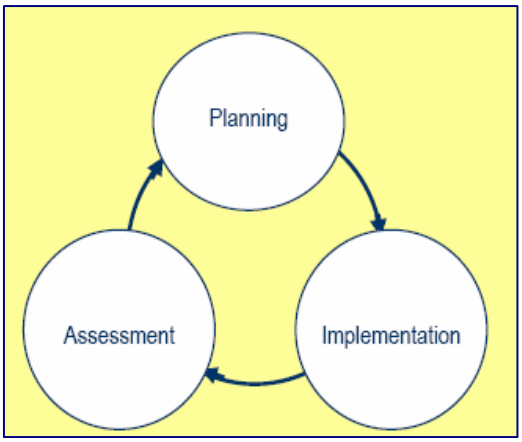

Figure V-1. CASQA Iterative Program Management Process.

Like most management programs, the City uses assessment as part of an iterative feedback loop (Figure V-1) involving (1) Planning, (2) Implementation, and (3) Assessment. Because assessment is not independent of planning and implementation, these two aspects of program management are also discussed in this section. The City incorporates planning on an annual and long-term cycle. Annual planning incorporates the lessons learned from implementation and assessment of the current year's activities, and the cycle begins again with implementation of the next year's activities. At the end of each Permit cycle, information gained during implementation and assessment over the Permit cycle is used for program planning over the next Permit cycle (i.e., long-term planning). Management questions are used during annual and long-term planning to ensure that the City selects activities that supply information needed to manage its program most effectively and efficiently.

The City views the Watershed Urban Runoff Management Program (WURMP) and Jurisdictional Urban Runoff Management Program (JURMP) as integrated components to its overall municipal Storm Water Program. The City's overall Storm Water Program incorporates the JURMP, WURMP, and other programs as needed to implement and comply with the Permit. The City first complies with all aspects of the Permit, implementing activities as required. In addition, the City identifies certain "pilot" projects in its WURMP programs for special efficiency assessment. This allows the City to perform the "pilot" activities to determine their effectiveness at reducing pollutant loads on a small scale and determining cost efficiency, before implementing wide-scale. While most "pilot" activities will be initially tested under the WURMP programs, certain JURMP activities defined as significant for effectiveness assessment may also undergo this special cost efficiency assessment, if feasible. Where viable, the City will also integrate into its program those effectiveness assessment approaches that are developed

collaboratively by the Copermittees. When efficiency is assessed, the unit of measurement for efficiency will be a pollutant load reduction to cost ratio. Data will be collected in units using the regional standards developed collectively by the Copermittees (e.g., tons and not cubic yards for street sweeping debris). If a pilot activity proves effective and efficient, it may be transferred to the JURMP program for City-wide large scale implementation, or implemented on a watershed-level. Effectiveness and cost efficiency will be considered when activities are recommended and selected for implementation into the next Permit cycle.

5.2 Effectiveness Assessment Approach

Assessment is not possible without program planning and implementation, and, therefore, a summary of program planning and implementation is presented below. The cycle of planning, implementation, and assessment, which is presented in Figure V-2 below, is explained and referenced in the text.

5.2.1 Program Planning

Management questions serve as the framework to help focus future activities and assess the program as a whole. The process of annual assessment is presented in Figure V-2 on page 5-4, Steps 1-3.

Step 1: All Permit-required activities are implemented according to the Permit. The City selects pilot and/or significant activities for special efficiency assessment based on data gaps in the Activity Efficiency Ratings Table from the previous years (discussed in Step 8) or based on management questions and other strategic plans. Pilot activities are selected for the WURMP to gather information on a small scale to determine if an activity is effective and efficient before implementing on a larger scale. Significant JURMP activities are selected to undergo additional study to gather further effectiveness and efficiency information.

Step 2: The City develops activity-specific management questions. An example of management questions for an inspection activity could include:

- Do inspections increase rate of BMP implementation?
- Does increased rate of BMP implementation affect load reduction?
- What is the optimal frequency of inspection (point of diminishing returns)?
- Are spot inspections more effective than scheduled inspections?
- Does enforcement alter future behavior (implementing BMPs)?
- Does education increase rate of BMP implementation?
- How can an estimate of load reduction be made from inspection data?

Step 3: The City defines targeted outcomes, assessment methods, and assessment measures for each activity. Continuing the example from Step 2, these would include:

Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate

Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

5.2.2 Implementation

Implementation is shown as part of the iterative program management loop in Figure V-2, below.

Step 4: Permit-required activities will be implemented as required. Pilot and selected significant JURMP activities will be monitored to collect data and information needed to calculate or estimate activity efficiencies. Both pilot and selected significant activities may be implemented through the WURMP, although it is possible to implement significant activities through the JURMP.

Data will be collected during implementation. Some data may be used to show compliance with the Permit, while other data may be used to assess effectiveness and efficiency. Outcome Levels 1-5 refer to the Targeted Outcome Levels presented in the CASQA document. Outcome Levels 4-5 data can be used to estimate load reduction to cost ratios, while Outcome Levels 1-3 data are reported in annual reports and may be used to help estimate load reduction to cost ratios.

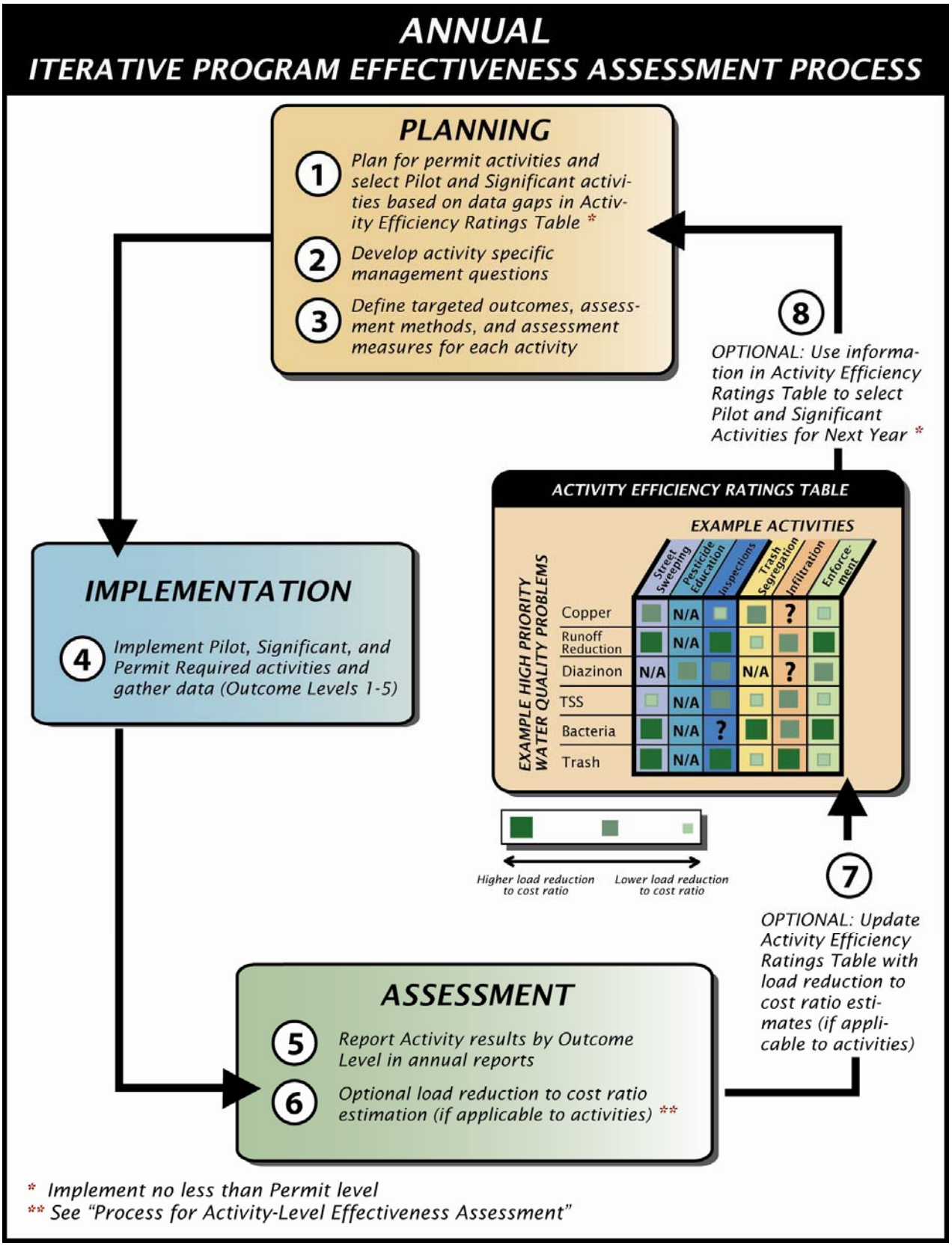

Figure V-2: Annual Planning, Implementation, and Assessment Process for Urban Runoff Management.

5.2.3 Assessment

Like Program Planning, there are two basic types of assessment: 1) long-term assessments of the overall Storm Water Program (which include the JURMP, WURMPs, and other programs); and 2) annual assessments (short term) of the overall urban runoff management program and of the individual activities. Following the cycle shown in Figure V-2, steps 5-7 will be completed during annual assessment.

5.2.3.1 Annual Assessment

The City will annually assess the implementation of its Storm Water Program, WURMP components, and selected significant activities for compliance with the Permit through the annual reporting process.

Step 5: The City will report Targeted Outcome Level data 1-5 in its Annual Report, and will include the following Permit required information:

WURMP Implementation Level 1 Targeted Outcomes assessed on an annual basis include the following:

- Update any watershed maps.
- Update assessments and analyses of the WMAs current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.
- Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.
- Update list of potential Watershed Water Quality Activities.
- Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.
- Update list of potential Watershed Education Activities.
- Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.
- Describe the public participation mechanisms used during the reporting period and the parties that were involved.
- A description of Copermittee collaboration efforts.
- Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.

Targeted Outcome Levels 2-4 will be summarized annually and reported in the WURMP Annual Reports. Targeted Outcome Levels 5 and 6 will be reported on an annual basis if possible.

Step 6: The optional load reduction to cost ratio will be completed by following the process shown in Figure V-3 on page 5-7. Management questions for each pilot or significant activity will be answered by assessing the targeted outcomes using the assessment methods and measures for each activity. For WURMPs the management questions, targeted outcomes, assessment methods, and assessment measures will be included in the activity summary sheets and the

Annual Reports. For JURMPs, the selected significant activities' management questions, targeted outcomes, assessment measures, and assessment methods will be included in the Annual Reports' effectiveness assessment sections.

Data will be collected to answer the management questions and calculate or estimate load reduction to cost ratios for each water quality and education activity. It may not be possible to report load reduction to cost ratios for all activities, and therefore those data will be reported as Outcome Levels 1-3 data in the annual report. If Outcome Level 4 data are not available, Outcome Levels 1-3 data may be used to estimate load reductions.

If, after implementation, it is determined that an activity has led to a pollutant load reduction, then the efficiency of the activity will be assessed by calculating or estimating the load reduction to cost ratio. This information will be used to update the Activity Efficiency Ratings Table each year.

If the activity did not lead to a pollutant reduction but was required by the Permit, then implementation of the activity will continue, and improvements to future Permit requirements can be justified through data tracking.

If the non-load reducing activity was not required by the Permit, then it would be further assessed to determine if changes can be made that would potentially lead to a pollutant reduction, and the activity would be re-implemented and re-assessed. If no changes to the activity to improve its effectiveness are possible, then the activity would be terminated and not considered for future implementation.

Activities that reduce loads can be further refined and assessed to maximize their efficiency. The load reduction to cost ratio (e.g., tons reduced/dollar) is estimated for pilot and significant activities that were focused on collecting Outcome Levels 4-6 data. In some cases, it may be possible to infer or estimate load reductions from data collected by other Jurisdictions, agencies, or as part of the applicable scientific literature. The costs will include every aspect of the activity, for example, planning, implementation, and assessment costs. The Activity Efficiency Ratings Table is updated with the new data.

If an activity shows load reduction, but is costly, it will be assessed and refined to improve the load reduction to cost ratio. If no refinement can be made, equivalent load-reducing activities that are less costly may be piloted and phased in as substitutes for that inefficient activity if it was not required by the Permit. If the activity was required by the Permit, improvements to future Permit requirements can be justified through data tracking.

Once efficiency of all activities has been maximized, then the City will have been successful in identifying and implementing feasible activities that positively affect water quality, which is the building block of an effective program.

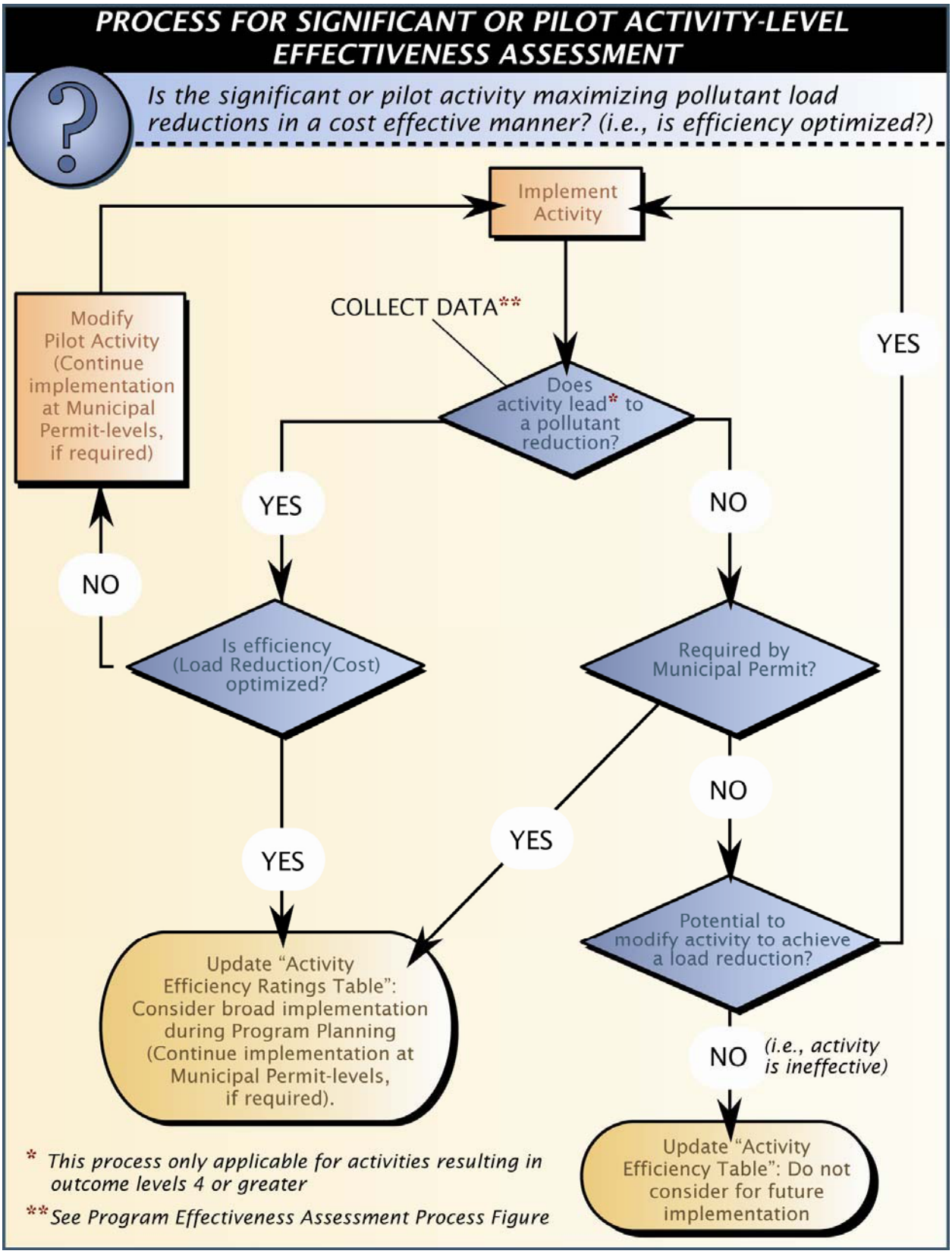

Figure V-3. Flow Diagram of Activity-Level Effectiveness Assessment.

Step 7: Each year, the City will update load reduction to cost ratios for pilot, selected significant, and applicable Permit-required activities completed during the prior year. The size of the square within each activity-pollutant combination is an indication of the load reduction to cost ratio of that activity for that water quality problem. Small squares indicate a small ratio (small reduction for the cost), while large squares indicate a large ratio (large reduction for the cost). Note that, during the first years of the Permit cycle, the efficiency within the Activity Efficiency Ratings Table may be only *estimated* load reduction to cost ratios. In the example given in Figure V-4 most of the boxes are filled with a question mark (**?**) during the first year of the Permit (Year 1). This is because at the beginning of the Permit cycle, ratios may be estimates based on best professional judgment. Because management decisions must be made, sometimes in the absence of information, the question marks serve as a reminder that more data are needed to provide a quantitative assessment. As activities are completed and assessed, estimates and calculations of load reduction to cost ratios will be updated in the table each year. If an activity is not applicable to a pollutant, it is marked not applicable (**N/A**) in the table.

The goal is to collect and store data within the Activity Efficiency Ratings Table over the Permit cycle (5 years) and use it as a planning tool for the next Permit cycle. It is not necessary to complete the table before the next Permit cycle.

Step 8: Use Information from Activity Efficiency Ratings Table for Activity Selection.

This step is the same as Step 1 in Section 5.2.1 above. It is repeated here to illustrate how the process begins during the first year of a Permit cycle (with activity selection), and how it is repeated each year to select activities for the next fiscal year.

5.2.3.2 Long-Term Assessment

Figure V-4 on page 5-10 illustrates the steps that will help the City assess the effectiveness of its URMP every Permit cycle (long-term). This figure is very similar to Figure V-2, except that implementation and annual assessment are not shown in the figure. At the end of every Permit cycle, an attempt is made to optimize resources based on the load reduction to cost ratio information present in the Activity Ratings Efficiency Table. Note that the Activity Ratings Efficiency Table need not be complete to optimize. Additionally, Integrated and Water Quality assessments will be completed to answer the management questions as described in the examples below.

Step 1: Define Long-term Management Questions

The first step is to answer management questions developed during the inception of the Permit to determine if any progress toward improving water quality has been observed.

Examples of long term management questions and assessment:

- *Is the City observing an improvement in water quality (both of urban runoff/discharge and of receiving waters) as shown through long-term water quality assessments?*

  An Integrated Assessment is used here. Qualitative analysis of various regional programs and activities implemented within the City during the Municipal Permit

cycle will be related to receiving water quality data collected within the City's jurisdiction (including upstream inputs). If successful, Outcome Levels 5 and 6 data may be reported in the Annual Reports. If unsuccessful, the data gathering or assessment methods may be modified to allow better comparison of activities to receiving water data.

- *Is the City making progress towards achieving its program goal of water quality improvement in a way that maximizes resources, is cost effective, and achieves the maximum water quality benefit possible?*

  A Water Quality Assessment is used here. Information collected from regional, City, and Municipal Permit-required programs will be compiled and assessed for areas within the City's jurisdiction. These data will be assessed for trends or other applicable analyses. Qualitative assessments will also be completed from the Activity Efficiency Rating Table, and an integrated assessment of all aspects of the urban runoff management program. If the answer is yes, the City will continue to use the suite of activities at a broader scale in future years.

- *Is the City able to determine the efficiency of its activities?*

  This question will be answered by examining the Activity Efficiency Ratings Table. Successful updates over the Permit cycle will mean that the City's assessment strategy, management questions, data needs assessment, and data gathering strategies are working. If it was not possible to update much information in the table that will mean that the City may need to modify its methodology to be able to better assess its activities and programs.

- *Is the City implementing the most efficient suite of activities to improve water quality?*

  The answer to this question will be based on the optimization of the Activity Efficiency Ratings Table (Step 3 in Figure V-4). Overall high pollutant load to cost ratios will mean that the City is moving towards its goal of implementing the best suite of activities. If the City is consistently spending money with small or no observed load reductions, then changes to the program can be made to improve future water quality. The City will determine which pilot activities to continue, expand, discontinue, or add.

- *How is the City doing in terms of identifying, characterizing, and targeting pollutant sources of the high priority water quality problems?*

  The answer to this question will be based on activities such as source identification studies and inspections. If pollution sources are identified, the City can better target activities to maximize their effectiveness and efficiency.

<u>Step 2: Compile Annual Activity Efficiency Ratings Table</u>

Information gathered and stored in the Activity Efficiency Ratings Table over the Permit cycle will be summarized into one large database that can be used to assist in answering management questions, as well as for optimization of the Program.

Step 3: Optimize Activity Efficiency Ratings Table

Determine where money may be best spent to get the largest load reduction to cost ratio for each high priority water quality pollutant. This step will also help answer the management questions.

Step 4: Develop Management Goals and Questions

This is the same as Step 1, above, and uses results from Steps 2 and 3 to help develop new management goals and questions for the next Permit cycle.

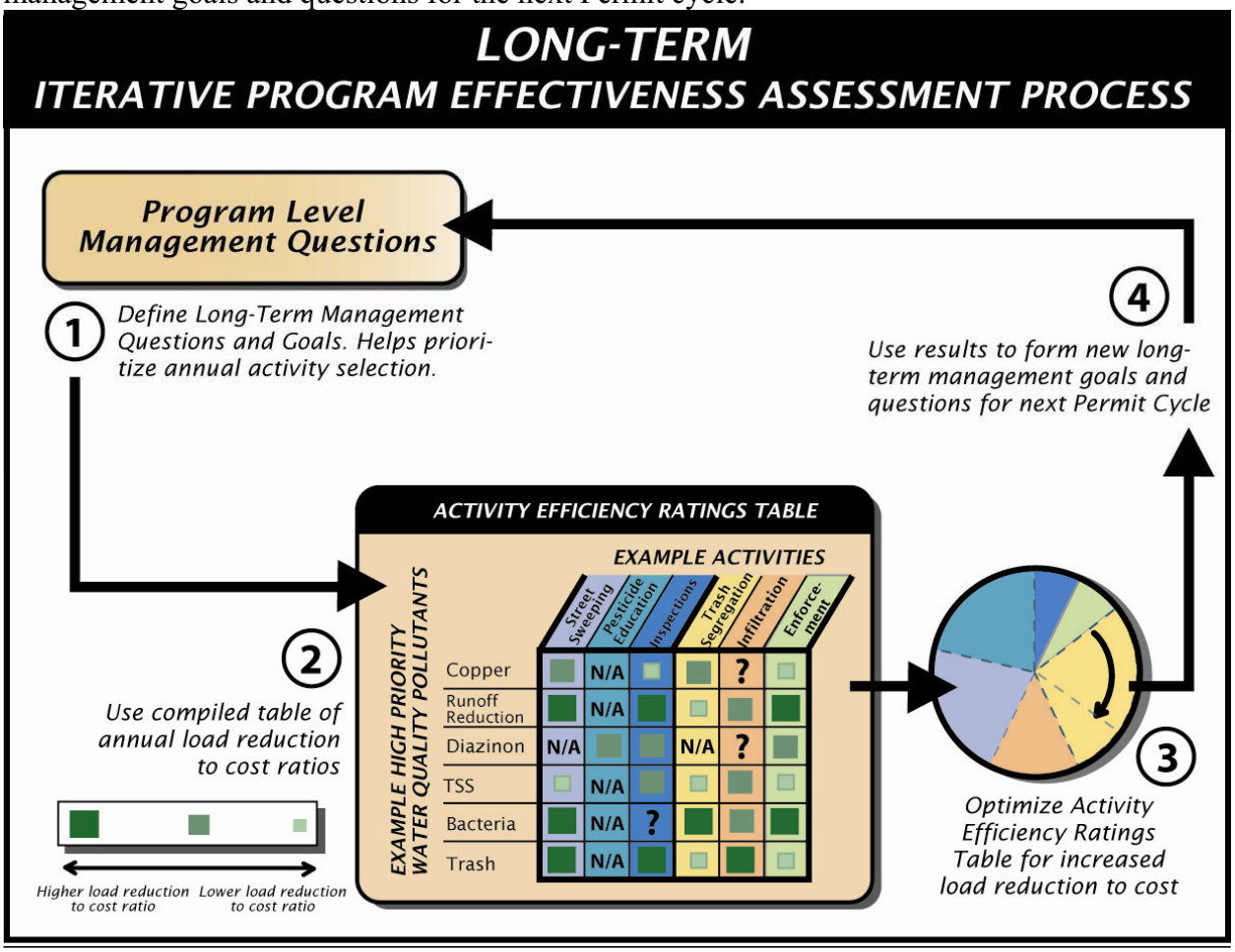

Figure V-4: Long-Term Program Effectiveness Assessment Process

5.2.3.3 Definitions

- Efficiency: A measure of how well an activity helps reduce pollutant loads divided by the amount of money spent to implement the activity (measured in load reduction to cost ratio)

- Efficiency Activity Ratings Table: Database of load reduction to cost ratios

- Effectiveness: Determination of whether or not implementation of an activity resulted in a load reduction

- Load Reduction to Cost Ratio: Standard unit of measure, and is used in reporting efficiency of City activities

- Management Questions: Questions developed as a basis for assessment, they serve as a framework to design activities and programs, and data are collected to answer them

- Pilot Activities: Special studies implemented through the WURMP program to determine effectiveness at reducing pollutant loads on a small scale, before implementing watershed-wide.

- Significant Activities: Significant activities are JURMP Permit compliance activities that undergo additional study to gather further effectiveness and, in some cases, efficiency information.

5.3 TMDL and ASBS BMP Implementation Plans

No TMDLs are currently in effect for the Mission Bay & La Jolla WMA. However, the following water bodies in the WMA are currently listed as impaired per Section 303(d) of the Clean Water Act:

- Mission Bay: Bacteria indicators, lead, eutrophication
- Tecolote Creek: Bacteria indicators, cadmium, copper, lead, zinc, toxicity

As TMDLs are developed to address the issues for the above water bodies, the City will work to integrate TMDL efforts with WURMP efforts to maximize resources and efficiency. TMDL BMP implementation plans affecting the Mission Bay & La Jolla WMA will be described in this section and reported in the Mission Bay & La Jolla WURMP annual reports.

In addition, it is important to note that the City's Strategic Plan, which comprehensively considers all current and anticipated regulations, including ASBS protection, is being implemented in this WMA. Through the implementation of pilot activities, the City will refine and maximize the efficiency of activities, which will help the City to implement the best suite of proven efficient activities when the TMDL regulations are adopted.

Should a TMDL come into effect within the Mission Bay & La Jolla WMA, the City will meet Permit requirements by reporting the following in its Mission Bay & La Jolla WURMP annual reports:

> Describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. The description shall include:
>
> a. Any additional source identification information;
> b. The number, type, location, and other relevant information about BMP implementation, including any expanded or better tailored BMPs necessary to meet the WLAs;
> c. Updates in the BMP implementation prioritization and schedule;
> d. An assessment of the effectiveness of the BMP Implementation Plan, and;
> e. A discussion of the progress to date in meeting the TMDL Numeric Targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.

Section 6 Conclusions and Recommendations

6.1 Conclusions

The goal of this WURMP is to guide the City's efforts to protect and improve the surface water quality of Mission Bay, the Pacific Ocean shoreline, and associated creeks and water bodies in the WMA. The City will continue to refine and augment the Mission Bay & La Jolla WURMP over the long term as it improves its understanding of the complex issues affecting the Mission Bay & La Jolla WMA. Such refinement and augmentation are supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for the Storm Water Division to coordinate with stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

Adaptive management is key to making the iterative process work. Adaptive management allows adjustments in management direction as new information becomes available. The combination of natural variability in the hydrologic cycle and the uncertainty associated with a complex system requires that watershed managers be flexible enough to modify implementation approaches based on progress and available information. Watershed characteristics, sources of pollutants, and management approaches are unique, and, therefore, management efforts may not proceed exactly as planned. Adaptive management does not mean that the watershed's water quality goals would be modified based upon lack of progress, but that the results would be used to modify management policies, strategies, practices, and operation and maintenance procedures to reach goals.

Even though priorities are being addressed in a focused manner, it still takes time for management activities to produce quantifiable improvements in water quality. As such, the WURMP includes performance measures and a review mechanism. Performance data collected in subsequent cycles will be used to determine the effectiveness of previous management activities.

The Mission Bay & La Jolla WURMP presents part of the City's long-term efforts to protect and enhance the water quality of the WMA using a watershed-based approach. The WURMP will continue to be developed with stakeholder participation and be integrated with other non-City projects, as appropriate.

6.2 Recommendations

The following presents the City's broad recommendations on continued refinement of the Mission Bay & La Jolla WURMP:

- **Refine and Improve Water Quality Activities**. The City is continually developing and refining its list of watershed activities to more efficiently protect and improve water quality. Table IV-1 in Section 4 of this WURMP represents the City's plan to address the current priority water quality problems in the WMA. Of course, implementation of some of these activities is ultimately subject to funding availability and to modifications based on the results of water quality and effectiveness assessment yet to be performed. The City

will use the best available data to refine and improve the efficiency of its watershed activities.

- **Expand Knowledge of Pollutant Sources**. The City has developed as part of this program an approach to expand understanding of the water quality issues in the Mission Bay and La Jolla WMA (i.e., the pollutant sources and magnitude of the issues), so that the City, other entities, and interested members of the public (its watershed partners) can make more informed decisions and actions. The City's approach for increasing its level of understanding involves two prongs:

    1. *Continue to gather additional water quality monitoring data suitable for conducting assessment at the watershed and subwatershed levels*. In order to effectively assess water quality at both the watershed and subwatershed levels, additional monitoring during both the dry and wet seasons is needed throughout the WMA so that priority water quality problems may be accurately identified, characterized, and prioritized.

    2. *Continue to research and characterize pollutant sources and their loading potential.* A more positive identification of sources and their loading potential would allow the City to modify program activities wisely and devote scarce resources to target specifically the most troublesome sources using the most efficient BMPs.

    To address the above, the City will continue to coordinate with its Copermittees to identify and fill data gaps. Already, the Model Watershed Strategy contributes to addressing this issue by guiding the Copermittees through a process that identifies HAs within the WMAs that need additional monitoring and source characterization activities before load reduction and source abatement activities can be implemented in those HAs.

    To follow up on the data gaps identified by going through the Model Watershed Strategy, the City will continue with the other Copermittees to implement a coordinated program of source identification studies on a regionally. Section 4 of this WURMP describes the watershed-based facility inspections that the City plans on implementing. Data gathered from these inspections can be used to better characterize sources.

    In addition, the Copermittees are set to augment their jurisdictional and collective monitoring programs to address new Municipal Storm Water Permit requirements. This augmentation will further help the City characterize the Mission Bay & La Jolla WMA.

- **Refine and Improve Effectiveness Assessment**. The City has developed a framework to assess the efficiency of its JURMP and WURMP activities. It is built upon the premise that individual activities should be optimized with regards to efficiency, which is defined as pollutant load reduction divided by cost. By knowing the efficiency rates of activities, the City can implement the best suite of activities to maximize load reduction using given resources. Therefore, the City's assessment framework directs activity implementation and assessment to be designed in a manner that will allow for the investigation and verification of efficiency rates. A combined assessment of the different efficiency rates to

come up with the best suite of activities to maximize load reduction will then feed into program assessment to determine if the program goal and objectives have been met. The City will continue to refine and improve this framework through implementation, which is anticipated to lead to more efficient activity implementation and better program results.

6.3 WURMP Update Process

Progress on the implementation of the Mission Bay & La Jolla WURMP will be assessed each fiscal year, and the results will be documented in an annual report following a regionally standardized table of contents and to be appended to this WURMP. The annual report will describe and justify any changes to the WURMP.

Efforts and reporting related to ASBS protection and TMDL requirements will also be integrated into the WURMP to provide a comprehensive overview of the City's total efforts in the WMA to enhance and protect surface water quality.

References

California Regional Water Quality Control Board, San Diego Region. *Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego Regional Airport Authority*. January 2007.

City of San Diego and Weston Solutions, Inc. *Strategic Plan for Watershed Activity Implementation*. November 2007.

San Diego Municipal Storm Water Copermittees. *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*. October 2003.

Weston Solutions, Inc., Larry Walker Associates, and Mikhail Ogawa Engineering. *San Diego Storm Water Copermittees Jurisdictional Urban Runoff Management Program Baseline Long-Term Effectiveness Assessment*. August 2005.

Weston Solutions, Inc. *San Diego County Municipal Copermittees 2006-2007 Urban Runoff Monitoring Report*. December 2007.

Appendix A

Prioritized Menu of Potential Watershed Activities

Prioritized Menu of Watershed Activities

I. Tier I: *Pollution Prevention and Source Control*

A. **Basin Plan Beneficial Use Designation Correction***: Identify and recommend obsolete/inaccurate Beneficial Use (BU) designations be removed from the Basin Plan to allow for concentration of City efforts on achievable BU designation restoration and protection

B. **Enhanced Development Standards***: Review SUSMP and City design standards for new developments, redevelopments, roadway improvements, and parking lots for potential incorporation of LID standards where applicable and based on geotechnical study and analysis of infiltration rates and down-gradient seepage and slope stability

C. **Product Substitution**: Identify products whose use contribute to pollutant loading and water quality degradation; coordinate with appropriate industry groups to implement voluntary movement or legislation towards use of substitute products less harmful to water quality

D. **Watershed Advertisement***: Purchase ad space/time (billboards, transit shelters, radio, television, print) to broadcast messages promoting specific water quality–friendly behaviors to address identified high priority water quality problems

E. **Targeted Outreach Materials***: Develop outreach materials that are pollutant-, source-, activity-, and audience-specific and distribute strategically to achieve increased awareness of urban runoff pollution and elicit appropriate behavioral changes

F. **LID Construction Outreach***: Inform public of water quality–related capital improvement projects coupled with messages promoting specific water quality–friendly behaviors to address identified high priority water quality problems in project area

G. **Municipal Code Modification**: Review and update ordinances to promote water quality–friendly behaviors

H. **Targeted Enforcement**: Focus enforcement efforts by some criteria (e.g., land use, facility type, activity, geography, audience, etc.) to address identified high priority water problems

I. **Targeted Facility Inspections (with education/outreach)**: Identify likely pollutant source facilities based on geospatial analysis of facility locations and monitoring data to focus facility inspections and tailor education/outreach efforts to those problem facilities

J. **Community-Based Social Marketing Pilot Studies**: Research and select specific behaviors among businesses and residents that are detrimental to water quality and identify factors sustaining those behaviors; develop pilot education and outreach programs that specifically address those factors to determine which programs are most effective in eliciting behavioral changes for broader implementation

K. **Inspection-Generated Enforcement**: Identify likely pollutant source facilities based on geospatial analysis of facility locations and monitoring data to focus storm water–associated inspections and enforcement against problem facilities

L. **Enforcement Referrals**: Identify problem facilities and activities exempt from Municipal Code enforcement/prosecution (e.g., schools and upstream sources outside of City) and refer to appropriate agency or jurisdiction for corrective action

M. **Doggie Bag Dispenser Installation**: Identify areas with pet waste problems and install dispensers/promote pet waste collection to reduce bacterial loading

II. Tier II: ***Runoff Volume and Pollutant Reduction***

A. **Shoreline Kelp Removal***: Coordinate with Park and Recreation Department to remove kelp from shoreline locations difficult to access by regularly used tractor rakes/sweepers to reduce bacterial host sites and bacterial loading

B. **Trash/Debris Cleanup**: Sponsor local organizations' cleanup efforts to remove litter from public areas and waterways before being washed out by runoff into local water bodies

C. **Homeless Encampment Removal**: Sponsor local organization efforts to identify and eradicate illegal human settlement camps along water bodies impaired for bacteria, metals, and trash

D. **Targeted Street Sweeping**: Use specialized street sweepers and/or increase street sweeping efforts in areas identified as metals and trash high loading areas due high volumes of vehicular and human traffic and activity to reduce the accumulation of metals and trash before washed into MS4 and local water bodies via runoff

E. **Smart Irrigation Control Incentive Program**: Implement program to disseminate information and promote installation of devices through rebates or giveaways to reduce over-irrigation and prevent irrigation flows from leaving landscaped areas, thereby reducing dry weather runoff volume with capacity to convey pollutants

F. **Downspout Redirection Incentive Program**: Implement program to disseminate information and promote redirection of downspouts to landscaped areas for infiltration of roof runoff, thereby reducing runoff volume with capacity to convey pollutants

G. **Rain Barrel Incentive Program**: Implement program to disseminate information and promote installation of rain water collection containers through rebates or giveaways to harvest rain water for landscaping irrigation and other non-potable uses, thereby reducing runoff volume with capacity to convey pollutants

H. **Roof Rain Water Harvesting/Reuse Incentive Program**: Disseminate information to promote installation of roof and plumbing systems to capture rain water for non-potable reuse within dwellings, thereby reducing runoff volume with capacity to convey pollutants; identify municipal facilities to pilot and study such systems

I. **Inlet Trash/Debris Segregation BMP**: In conjunction with targeted street sweeping, install inlet devices to capture trash/debris prior to conveyance into local water bodies

J. **Green Street – Infiltration**: Replace sidewalks and asphalt paving with porous concrete sidewalks and porous asphalt paving and install planter boxes along residential right of ways in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the "first flush" of urban runoff

K. **Green Mall – Infiltration**: Replace sidewalks and asphalt paving with porous concrete sidewalks and porous asphalt paving and install planter boxes along commercial/industrial right of ways in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the "first flush" of urban runoff

L. **Green Lot – Infiltration**: Replace asphalt paving of parking lots with porous asphalt paving and install planter boxes in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the "first flush" of urban runoff

M. **Infiltration Vault/Pit Installation**: Install underground vaults/pits with associated headworks to capture and store urban runoff and allow it to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the "first flush" of urban runoff

III. Tier III: ***Runoff Treatment***

A. **Bacteria Treatment BMP**: Install devices or facilities to remove bacteria from runoff before discharge from MS4 and into receiving water bodies

B. **Dry Weather Diversion**: Install inlet system to redirect dry weather runoff into sewage system for treatment instead of directly discharging often pollutant-laden dry weather and "first flush" flows into receiving water bodies

C. **Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System**: Install inlet devices to remove gross solids and filter other pollutants, such as oil and bacteria, from low-flow runoff before discharge into MS4

D. **Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System**: Install devices primarily on City property to capture and temporarily store storm flows to allow for settling of pollutants and then treat/filter water before discharge

E. **Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System**: Construct comprehensive and large-scale system on City and/or private property to capture and temporarily store large amounts of storm flows for settling of pollutants and then treat/filter water before discharge

F. **Hydro-Modification Management BMP**: Determine targeted watershed and prioritized drainage areas for erosion and sediment controls based on comparison of estimated "undeveloped" sediment loadings versus current load reduction requirements and requirements for reduction in hydro-modification of downstream channels

G. **Erosion/Sediment Control BMP**: Identify specific sites with erosion/sediment problems and engineer and construct site-specific structural solutions that reduce runoff flow velocity and allow for settling of suspended solids

H. **Detention Basin O&M Sponsorship/Endowment**: Coordinate with non-profit stakeholders to establish endowments to sponsor and fund the operation and maintenance of detention basins to control sediment loading

*Not considered load reduction/source abatement activity

Appendix B

5-Year Plan of Action Matrix

Mission Bay & La Jolla Watershed Management Area
Five-Year Plan of Action Matrix
Water Quality and Education Activities

		Pollutant Categories										Activity Type					Schedule				
ID Number	Activity	Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
MB-1001	Alpha Project Trash Cleanups	X									X			X			I A				
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1003	SDCK Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1004	Targeted Animal-Related Facility Inspections	X				X							X	X		X	P I A	P I A	P I A	P I A	
MB-1005	Targeted Auto-Related Facility Inspections				X								X	X		X	P I A	P I A			
MB-1006	Targeted Landscaping-Related Facility Inspections	X				X							X	X		X	P I A	P I A	P I A	P I A	P I A
MB-1007	Targeted Municipal Facility Inspections	X			X	X							X	X		X	P I A	P I A	P I A	P I A	P I A
MB-1008	Targeted Residential Activity Characterization	X			X	X							X	X		X	P	P I A	P I A		
MB-1009	Targeted Restaurant Facility Inspections	X											X	X		X	P I A	P I A			
MB-1010	Targeted Street Sweeping				X						X		X	X			P	I A	I A		
MB-1011	Municipal Rain Barrel Installation	X				X	X		X	X				X			P I A	I A			
MB-1012	Hydrodynamic Separator Installation	X								X	X			X			P	P	Implementation tentatively planned for FY 2010		
MB-1013	LJ Dry Weather Flow Diversions	X												X			P	P	Implementation tentatively planned for FY 2010		
MB-1014	Kellogg Park Green Lot BMP Retrofit	X			X	X								X			P	P	Implementation planned for FY2010		
MB-1015	Mt. Abernathy Green Street BMP Retrofit	X			X	X								X			P	P I	Implementation tentatively planned for FY 2009/FY2010		
MB-1016	Infiltration LID BMP #1	X			X	X								X			P	P	Implementation tentatively planned for FY 2010		
MB-1017	Infiltration LID BMP #2	X			X	X								X			P	P	Implementation tentatively planned for FY 2011		
MB-2001	Karma/Karma Second Chance Public Service Announcements	X		X							X					X	I	I A	I A	I A	I A
MB-2002	Mobile Advertising (General; Bacteria)	X		X	X		X		X	X	X					X	I A	I A	I A	I A	I A
MB-2003	Business and Residential CBSM Pilots (La Jolla)	X									X		X	X		X	P I A	P I A	I A		
MB-2004	Business CBSM Pilot (Genessee)	X		X	X		X	X		X	X		X	X		X		P	P I A	I A	I A
MB-2005	Mt. Abernathy LID "Green Street" Outreach	X		X												X	P	P	I A	I A	
MB-3001	Tecolote Creek Bacterial Source ID Study	X											X				I A	A			

* High Priority Pollutants

Planning (P)
Implementation (I)
Assessment (A)

Appendix C

Activity Summary Sheets

TITLE: **Alpha Project for the Homeless, Inc. Trash Cleanups**
ID NUMBER: **MB-1001**

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division has partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups and potentially homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2007 and FY 2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with Alpha Project to ensure that sites within the Mission Bay & La Jolla WMA are included in the list of sites to target for cleanups in FY 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Cleanups by Alpha Project will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although the cleanups conducted by Alpha Project focus on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Mission Bay & La Jolla WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship

[1] http://www.epa.gov/owow/oceans/debris/

Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **I Love A Clean San Diego Trash Cleanup Sponsorship**
ID NUMBER: **MB-1002**

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Mission Bay & La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Creek to Bay Cleanup is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Mission Bay & La Jolla WMA through cleanup events, bacteria loading is reduced.

[1] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **San Diego Coastkeeper Trash Cleanup Sponsorship**
ID NUMBER: **MB-1003**

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Mission Bay & La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love A Clean San Diego
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Coastal Cleanup Day is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have

[1] http://www.epa.gov/owow/oceans/debris/

adverse effects on humans. By reducing the amount of trash and debris in the Mission Bay & La Jolla WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Targeted Animal-Related Facility Inspections**
ID NUMBER: **MB-1004**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target animal-related facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at animal-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and nutrients.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at animal-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Auto-Related Facility Inspections**
ID NUMBER: **MB-1005**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target auto-related facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at auto-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and potential TMDL requirements.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies metals as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with metals.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with metals at auto-related facilities. Knowledge and experience gained through this activity will help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Landscaping-Related Facility Inspections**
ID NUMBER: **MB-1006**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target landscaping-related facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at landscaping-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and nutrients.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at landscaping-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Municipal Facility Inspections**
ID NUMBER: **MB-1007**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target municipal facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's municipal facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, nutrients, and metals as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria, nutrients, and metals at municipal facilities.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at municipal facilities. Knowledge and experience gained through this activity would help the City optimize its municipal facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Residential Activity Characterization**
ID NUMBER: **MB-1008**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a an activity to target behaviors at residential sites within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient type of effort to ensure proper BMP implementation and reduce pollutant loading (e.g., education vs. incentives vs. monetary fines)
- Determine the most efficient combination of "enforcement" action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/materials distribution vs. monetary fines vs. onsite direct interactions vs. Community Based Social Marketing methodology)
- Observe and characterize residential sites/activities regarding their contribution to water quality problems to better direct focused education/outreach and enforcement efforts
- Track and analyze observations and efforts to estimate load reductions resulting thereby

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the effort based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Specific residential activities to observe and characterize will be determined. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's education and outreach efforts and jurisdictional residential program to meet Municipal Permit, ASBS protection, and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning and development began in July 2007 and are anticipated to continue through FY 2008. The Storm Water Division anticipates implementation to occur through FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this targeted residential activity characterization will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria, metals, and nutrients.

EXPECTED BENEFITS

This targeted residential activity characterization will contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria, metals, and nutrients at residential sites.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Implementation* (November 2007). Knowledge and experience gained through this activity will help the City optimize its education and outreach efforts and jurisdictional residential program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Does education for effects of specific residential activities result in fewer observed instances of the activity? • Does behavior change effect load reduction? • What is the optimal frequency of education and outreach (point of diminishing returns)? • Would enforcement alter future behavior (fewer observed instances of target behavior)? • How can an estimate of load reduction be made from survey data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized activity frequency • Achieve greater BMP implementation from optimized survey rate (over time)
Assessment Method(s)	• Residential visits (e.g., track number of target behaviors observed, decrease in observed behavior, number of follow-up inspections) • Quantification (e.g., use frequency of observed behavior to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of visits (spot and scheduled) (Outcome Level 1) • Number of outreach materials handed out (Outcome Level 1) • Change (%) in target behavior pre and post-education (Outcome Level 3) • Number of follow-up visits (Outcome Level 1) • Number of follow-up surveys (Outcome Level 1) • How much money spent on the activity (follow ups, initial visits, education)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Restaurant Facility Inspections**
ID NUMBER: **MB-1009**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target restaurant facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at restaurant facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **ASBS and Tecolote Watershed Street Sweeping Project**
ID NUMBER: **MB-1010**

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division (Storm Water Division) is coordinating with the City's Street Division to conduct a 24-month street sweeping effectiveness study in La Jolla and Clairemont communities. The study will investigate the effectiveness of vacuum-assisted street sweepers compared to mechanical sweepers in reducing the accumulation of metals on City streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study is to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study includes the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. This project is being done in coordination with a similar one in the Chollas Creek Watershed.

The City is using the prioritization process that is outlined in its *Strategic Plan for Watershed Activity Implementation* (July 2007) to target areas within the La Jolla and Clairemont communities and simultaneous address Municipal Permit, ASBS, and current and pending TMDL requirements.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The City anticipates sweeping to start within fall 2008 through summer 2010. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies metals as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Targeted increased sweeping will target metals on City streets.

EXPECTED BENEFITS

The street sweeping effectiveness study will consist of acquiring two types of top-tier vacuum-assisted street sweeper to operate in the La Jolla and Clairemont communities and assessing their effectiveness in reducing the accumulation of metals on area streets through an effectiveness assessment monitoring program. This study will augment the City's current sweeping efforts in order to also determine the optimum frequency of sweeping, starting at the present baseline schedule, towards reducing the loading of metals. The monitoring program will include simulated wet weather events for both type of vacuum-assisted sweepers and the mechanical sweepers currently used throughout the City. The amount of debris (in pounds) that is removed by sweeper type and frequency will be assessed during dry and wet periods of the year. The composition of the debris removed will be evaluated through analytical analysis and grain size distribution to determine the specific pollutant load reduction achieved by each method and frequency identified in the work plan.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Which street sweeping machine is most effective in removing contaminants of concern (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in stormwater runoff?
Targeted Measurable Outcome(s)	• Load reduction for sediments and metals based on monitoring information • Receiving water quality improvement
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)
Assessment Measures, Assessment Outcome Levels & Data:	• Tons of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to tons of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)

TITLE: **Municipal Rain Barrel Installation and Downspout Disconnects**
ID NUMBER: **MB-1011**

ACTIVITY DESCRIPTION

This activity will involve the installation of rain barrels and/or the disconnection of downspouts to direct runoff from municipal facility roofs into pervious areas (such as landscaping) for infiltration. Rain barrels, downspout disconnects, and rainwater harvesting/reuse systems help to capture, store, and divert urban runoff to reduce the volume thereof, thus contributing to reduced flooding, erosion, and the contamination of surface water with sediment, fertilizer, metals, and pesticides. In addition, this activity has the added benefit of water conservation; runoff collected and diverted to landscaping would help reduce the amount of potable water needed for irrigation. Roof runoff solutions can be used both in large-scale landscapes, such as municipal buildings, community centers, schools, and commercial sites, as well as in small residential landscapes.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007 and is anticipated to continue until the end of calendar year 2007. Procurement of rain barrels and other items and installation are anticipated to occur beginning in March 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address these high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing runoff volume via capture, retention, and eventual infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of rain barrels, downspout disconnects, and rainwater harvesting/reuse systems to reduce urban runoff volume and pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of rain barrels and downspout disconnects as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	• Reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	• Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data:	• Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

TITLE: **Hydrodynamic Separator Installation**
ID NUMBER: **MB-1012**

ACTIVITY DESCRIPTION

This activity will involve the installation of a hydrodynamic separator in the Mission Bay & La Jolla WMA to treat dry weather flows. Hydrodynamic separators, or baffle boxes, are composed of a series of chambers that clean contaminated water in two ways. The first chamber collects water and allows contaminants, such as trash and sediment, to settle at the bottom before the water overflows into the following chamber to repeat the process. As water flows from chamber to chamber, it also passes through screens to filter out additional pollutants. Eventually, clean water leaves the device and discharges into designated receiving waters. Exact location of installation will be based on monitoring considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Sediment is also identified as a priority water quality problem. Implementation of this activity will address the high priority and priority water quality problems by capturing dry weather flows and slowly releasing them to allow for the settlement of pollutants for later removal.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by capturing dry weather flows and slowly releasing them to allow for the settlement of trash and sediment for later removal.

Also, this activity will address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Mission Bay & La Jolla WMA via collection by the hydrodynamic separator, bacteria loading is reduced.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of hydrodynamic separators to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of hydrodynamic separators as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Which type of separator provides the most efficient removal of trash and debris? • What is the load reduction efficiency of hydrodynamic separators in reducing trash? • How effective are hydrodynamic retrofits at reducing loads of trash?
Targeted Measurable Outcome(s)	• Determination of most efficient and effective hydrodynamic separator • Reduction in trash based on amount removed from hydrodynamic separator • Receiving water quality improvement (less observed trash in receiving water downstream)
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

[1] http://www.epa.gov/owow/oceans/debris/

TITLE: **La Jolla Dry Weather Flow Diversions**
ID NUMBER: **MB-1013**

ACTIVITY DESCRIPTION

The State Water Resources Control Board awarded the City funding in FY07 via the Consolidated Grants Program to install four dry weather flow diversions within the La Jolla Area of Special Biological Significance (ASBS) Watershed. Once installed, the diversions will divert dry weather runoff into the sewer system for treatment before discharging out of storm drain outfalls and into the ASBS.

This project is part of implementation of the La Jolla ASBS Integrated Coastal Watershed Management Plan to meet ASBS protection requirements. The project also conforms to the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which recommends targeting the La Jolla ASBS Watershed area to simultaneously address Municipal Permit, ASBS protection, and current and pending TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design of the diversions is anticipated to occur into FY 2009. Construction is anticipated to occur in FY 2009 or FY 2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EXPECTED BENEFITS

Installation of the diversions will reduce pollutant loading by capturing dry weather flows and treating them of pollutants before discharge into receiving waters.

Furthermore, knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of dry weather diversion as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit, ASBS protection, and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of dry weather diversions? • What is the load reduction efficiency for wet weather diversions?
Targeted Measurable Outcome(s)	• 100% diversion of dry weather flows • Meeting wet weather design flow diversion goals • 100% reduction in pollutant loads due to dry weather flow diversion • Detect water quality improvement in receiving waters downstream of diversion
Assessment Method(s)	• Inspections (e.g., ensure the diversion is working as designed) • Quantification (e.g., use drainage area information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • How much money spent on implementation? (Outcome Level 1) • Receiving water quality improvement downstream (Outcome Level 6)

TITLE: **Kellogg Park "Green Lot" Infiltration BMP Retrofit**
ID NUMBER: **MB-1014**

ACTIVITY DESCRIPTION

This activity will replace the conventional asphalt of the western half of the Kellogg Park parking lot with porous asphalt to allow for the infiltration of urban runoff. The concrete curb around the existing planter areas and the asphalt paving will be removed, and the parking lot will be graded to drain toward the planter areas. Existing palm trees within the planter areas will remain undisturbed, and new concrete gutters will be placed to convey high flows from the ends of each planter area to the existing catch basins at the north and south ends of the parking lot. Pervious concrete will be placed as the new driving and parking surface within the lot. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, ASBS, and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2006, and project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit, ASBS, and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Mount Abernathy Avenue "Green Street" Infiltration BMP Retrofit**
ID NUMBER: **MB-1015**

ACTIVITY DESCRIPTION

This activity will involve the construction of vegetated planter areas between the curb and sidewalk to infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. Cuts will be made into the existing street curb to allow flows to leave the street paved section and enter the planter areas. Additional cuts will be made to permit high flows to exit the planter areas and re-enter the street section. The planter area will be slightly lower than the street gutter elevation to allow the street to drain into the planters. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2006, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Infiltration BMP Retrofit #1**
ID NUMBER: **MB-1016**

ACTIVITY DESCRIPTION

This activity will involve the implementation of an infiltration project in the Mission Bay & La Jolla WMA to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4) • Improvement in MS4 water quality (Outcome Level 5)

TITLE: **Infiltration BMP Retrofit #2**
ID NUMBER: **MB-1017**

ACTIVITY DESCRIPTION

This activity will involve the implementation of an infiltration project in the Mission Bay & La Jolla WMA to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (Novmber 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Public Service Announcements: *Karma* and *Karma Second Chance***
ID NUMBER: **MB-2001**

ACTIVITY DESCRIPTION

The City's Storm Water Division has retained a contract with a film production company to create two Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled, *Karma* and *Karma Second Chance*, and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. These PSAs were developed in FY 2007 and FY 2008 and will be broadcast on several television and radio stations throughout the Mission Bay & La Jolla WMA in FY 2008 and beyond. The PSAs will be broadcast in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate completion of production in FY 2008, and then will work with various broadcast media outlets to distribute and air the PSAs in FY08 and FY09.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay WMA and recommends implementing load reduction/source abatement activities to address it. The *Karma* and *Karma Second Chance* PSAs will result in increased knowledge and awareness directly, future load reduction of trash and debris directly, and future load reduction of bacteria indirectly.

EXPECTED BENEFITS

The PSAs address bacteria directly by focusing on pet waste, food waste, and organic matter, and indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that pathogens are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

[1] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured on a variety of levels, to include the number of households (television) or listeners (radio) reached by the program which will be tabulated. Second, awareness and attitude data will be collected via surveys. Third, once the PSAs have aired, additional surveys will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

Management Questions:	• What changes in awareness/attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of listeners (radio) or homes (television) reached (Outcome Level 1) • Change in knowledge or awareness (Outcome Level 2)

TITLE: **Mobile Advertising**
ID NUMBER: **MB-2002**

ACTIVITY DESCRIPTION

The City's Storm Water Division has retained a contract with a mobile advertising company to advertise Think Blue messages on its static billboard trucks in the Mission Bay & La Jolla WMA. The City intends to create advertisements that target behaviors associated with bacteria and/or metals. The goal of the billboards is to educate the public about causes of these kinds of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the Mission Bay & La Jolla WMA in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Print Services department in the design of the advertisements and will work with the company retained to have the advertisements created and placed on the company's static billboard trucks. The trucks will drive pre-determined routes in the Mission Bay & La Jolla WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and metals as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Utilizing the static billboard trucks will result in increased knowledge and awareness directly and will promote behavior change.

EXPECTED BENEFITS

The billboard advertisements will address bacteria and/or metals to increase knowledge awareness and promote behavior change.

EFFECTIVENESS MEASUREMENTS

Advertisement effectiveness will be measured through the total number of residents reached (based on traffic routes and GPS tracking) as well as via Citywide telephone surveys and focus groups comprised of residents in the Mission Bay & La Jolla WMA.

Management Questions:	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

TITLE: **La Jolla Community-Based Social Marketing Outreach Pilot Project**

ID NUMBER: **MB-2003**

ACTIVITY DESCRIPTION

The City's Storm Water Division found that research indicated that an emerging public education field called Community Based Social Marketing (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has implemented a pilot project using this approach in the La Jolla community to attempt to achieve awareness and behavioral change. The City has retained several professional research consultants to develop and initiate the CBSM pilot project. Research, observations, and surveys are currently underway, with outreach interventions and assessment methods in development. These efforts will result in recommendations for education/outreach strategies, which may include structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In FY 2008, the City will retain and consult with several research consultants, including at least one firm that specializes in CBSM. Research, planning, and outreach implementation will occur in FY 2008, with outreach continuing into FY 2009. Implementation, assessment and evaluation will also continue to occur in FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- Scripps Institution of Oceanography
- University of California, San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. This CBSM effort will target potential sources of bacteria and devise and implement strategies to address them.

EXPECTED BENEFITS

The CBSM pilot project addresses bacteria indirectly by removing two bacterial sources: pet waste and trash. Literature published by the United States Environmental Protection Agency on its website[1] states that pathogens are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

CBSM pilot project effectiveness in La Jolla will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the efforts will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project. Finally, tests such as water monitoring will be conducted to asses if any load reductions are achieved.

Management Questions:	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations? • How much change in awareness and behavior was achieved after implementation? • How does the pilot target area compare to non-pilot areas (based on assessment and result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the residences in the target watershed) • Achieve higher incidence of knowledge and attitude in pilot group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution or behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash or other pollutants removed from study area (Outcome Level 4)

[1] http://www.epa.gov/owow/oceans/factsheets/fact1.html

TITLE: **Genesee Avenue Business Community - Based Social Marketing Outreach Pilot Project**

ID NUMBER: **MB-2004**

ACTIVITY DESCRIPTION

The City's Storm Water Division found that research indicated that an emerging public education field called "Community Based Social Marketing" (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City plans to implement a pilot project using this approach along Genesee Avenue in the Clairemont community of the Mission Bay Watershed Management Area with the goal of achieving awareness and behavioral change among businesses. The City has retained several professional research consultants to develop and initiate the CBSM Pilot Project. Research, observations, and surveys will be conducted, with outreach interventions and assessment methods to follow. Potential results will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In Fiscal Year 2009, the City will retain and consult with several research consultants, including at least one firm that specializes in Community-Based Social Marketing. Research and planning will occur in FY09, with implementation, outreach, assessment and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and trash as high priority water quality problem in the Mission Bay WMA and recommends implementing load reduction/source abatement activities to address it. This effort will target potential sources of bacteria and trash and devise and implement strategies to address them.

EXPECTED BENEFITS

The Community-Based Social Marketing (CBSM) Outreach Pilot will address bacteria indirectly by removing bacterial sources observed in the Watershed, which may include trash and restaurant debris. Literature published by the United States Environmental Protection Agency on its website[1] states that p*athogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in pilot group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash or other pollutants removed from study area (Outcome Level 4)

[1] http://www.epa.gov/owow/oceans/factsheets/fact1.html

TITLE: **Mt. Abernathy Green Street Outreach**
ID NUMBER: **MB-2005**

ACTIVITY DESCRIPTION

Mt. Abernathy Green Street Outreach will be to support the planned "Green Street" construction in a small sub-section of the Clairemont community in the Mission Bay Watershed Management Area. Construction will include modifying the vegetated planter areas between the curb and sidewalks in front of residential homes in order to better infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. The City plans to inform, educate and involve residents who are directly affected by the construction in an attempt to achieve awareness regarding storm water runoff and to create behavioral change among residents. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In Fiscal Year 2009, the City will retain and consult with several outreach consultants, including at least one firm that specializes in Community Outreach. Planning will occur in FY09, with implementation, outreach, and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and trash as high priority water quality problem in the Mission Bay WMA and recommends implementing load reduction/source abatement activities to address it.

EXPECTED BENEFITS

The Mt. Abernathy Greet Street Outreach will address bacteria indirectly by removing bacterial sources observed in the WMA, which may include trash, pet waste and other debris. Literature

published by the United States Environmental Protection Agency on its website[1] states that p*athogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

Outreach effectiveness will be measured on a variety of levels. First, the number of stakeholders, and residents being reached by the program will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys, interviews and observations. Third, once the outreach strategy has been implemented, future surveys may be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project. Finally, tests such as water monitoring will be conducted to asses if any load reductions are achieved.

Management Questions:	• What changes in awareness are reported as a result of the targeted outreach? • What changes in behavior are detected as a result of the targeted outreach? • What amount of reduction of trash and debris are observed in the targeted education area? • Can changes be attributed to the changes in awareness and behavior resulting from the education/outreach component of the activity? • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., involve 50% of local households during LID development and construction) • Achieve higher incidence of knowledge and attitude in local population (by comparing survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash removed from study area (Outcome Level 4) • Reduction of bacteria and trash entering LID (Outcome Level 4)

[1] http://www.epa.gov/owow/oceans/factsheets/fact1.html

TITLE: **Tecolote Creek Bacterial Source Identification Study**
ID NUMBER: **MB-3001**

ACTIVITY DESCRIPTION

This activity will involve the identification of bacterial sources in the Tecolote Creek Watershed through wet and dry weather monitoring surveys including visual observations, spot sampling, and laboratory analysis of data accumulated through monitoring. The study will focus on locating primary sources of high bacterial loading and identify if human contamination is a contributing factor. This study will also provide specific recommendations for source control and pollution prevention/reduction based on the conclusions of the analysis.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Sampling and monitoring associated with this activity began in August 2007 and will continue through April 2008. Data analysis and reporting will begin once monitoring concludes, and the final report is anticipated to be completed in July 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA. Identification of the sources of bacteria in the WMA will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EXPECTED BENEFITS

The study will help the City pinpoint how bacteria is loaded into receiving waters in the Tecolote Watershed and will provide specific management, BMP recommendations, and implementation strategies for reducing bacteria loading at the identified sources.

Appendix D

Watershed Management Area Maps

MISSION BAY
WATERSHED MANAGEMENT AREA

Municipal Separate Storm Sewer System Map (MS4)

Legend

- Watershed Sub-Basins
- (MS4) Point Features
- (MS4) Linear Features
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:

MS4: Various jurisdictions (2007);
MS4 data were provided by individual Copermittees to the County of San Diego. Jurisdictional MS4 layers are in various stages of completion and have been simplified into a simple point and line symbology for the purposes of this map. Some of the MS4 layers shown are still in draft form. Gaps in the MS4 data are most likely a reflection of missing data rather than a true inventory of drainage structures in the watershed. This map is not intended for any use other than to respond to Permit section E.2.b., which requires development of a map of the WMA including MS4 features.

**303(d) Waters / Watersheds: (SWRCB). (2006)
Disclaimer:
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

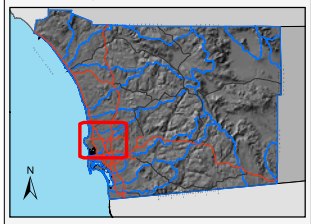

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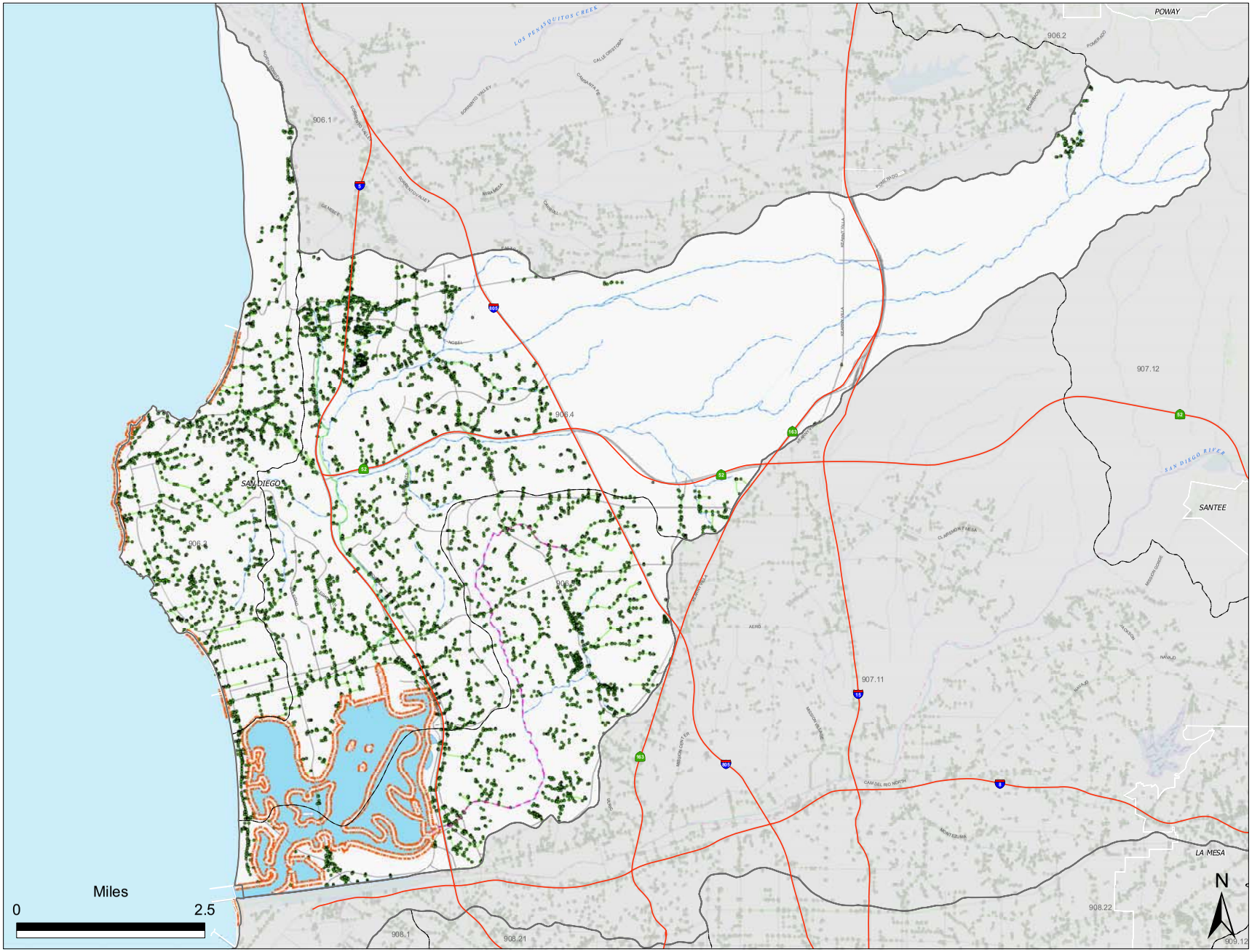

MISSION BAY WATERSHED MANAGEMENT AREA

Land Use Map

Legend

Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)

Disclaimer
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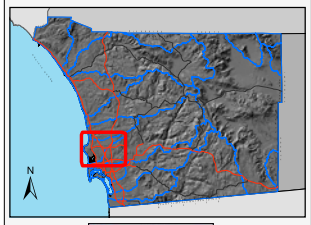

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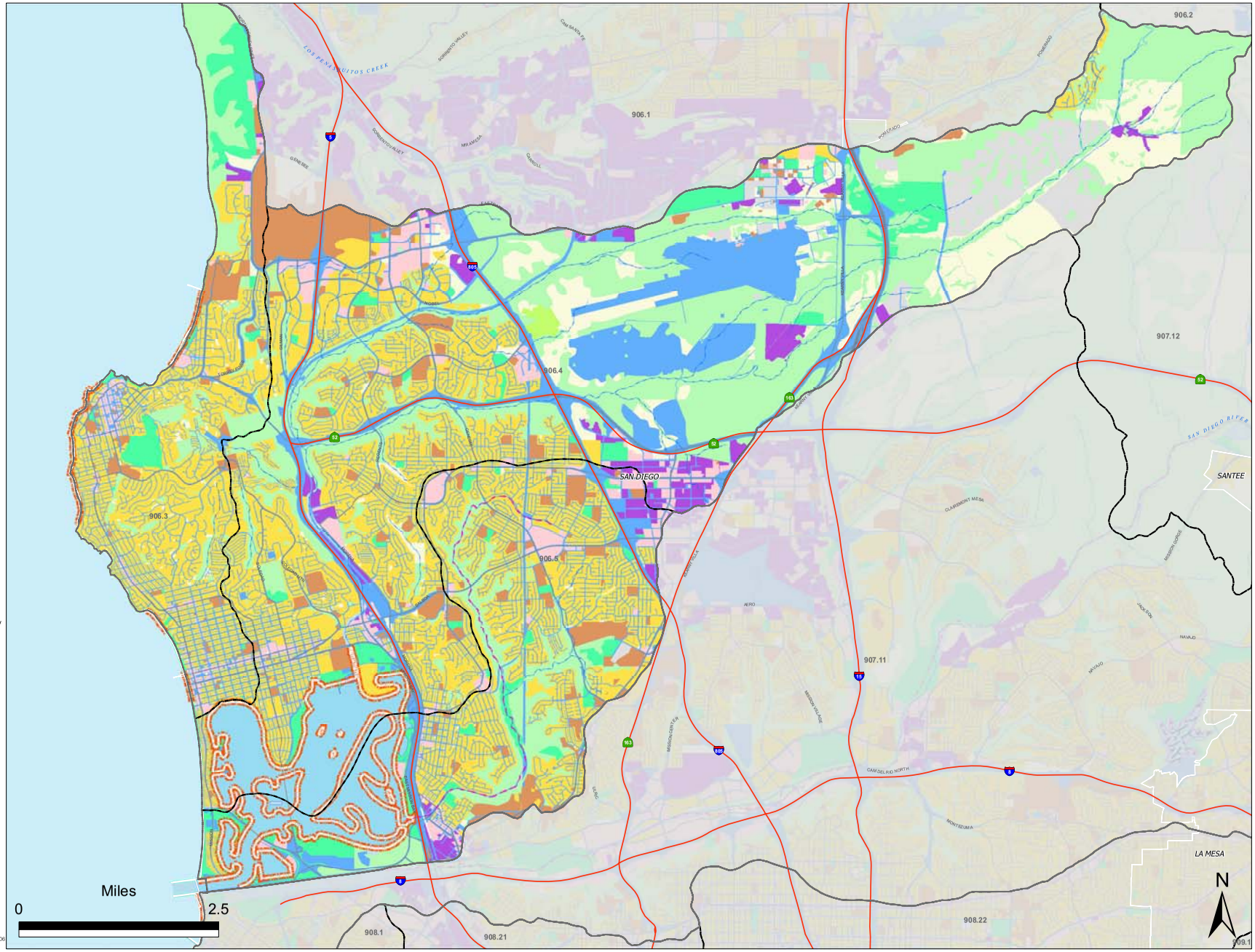

MISSION BAY
WATERSHED MANAGEMENT AREA

Pollutant Source Map

Legend

Watershed Sub-Basins

Potential Pollutant Sources

Baseline Long-Term Effectiveness Assessment (2005)

- Airfield
- AirplaneRepair
- Animal Facilities
- AutoPaint
- AutoRepair
- BoatRepair
- Cemetary
- Food
- Fuel
- GolfCourses
- LandApplication
- Landfill
- MaintenanceYard
- Marina
- Nursery
- POTW
- Paintball
- SolidWasteTransfer
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego / Ogawa Engineering)
**303(d) Waters / Watersheds: (SWRCB), (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

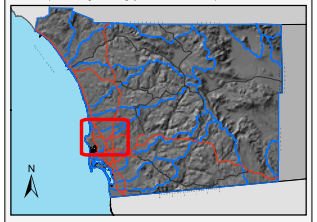

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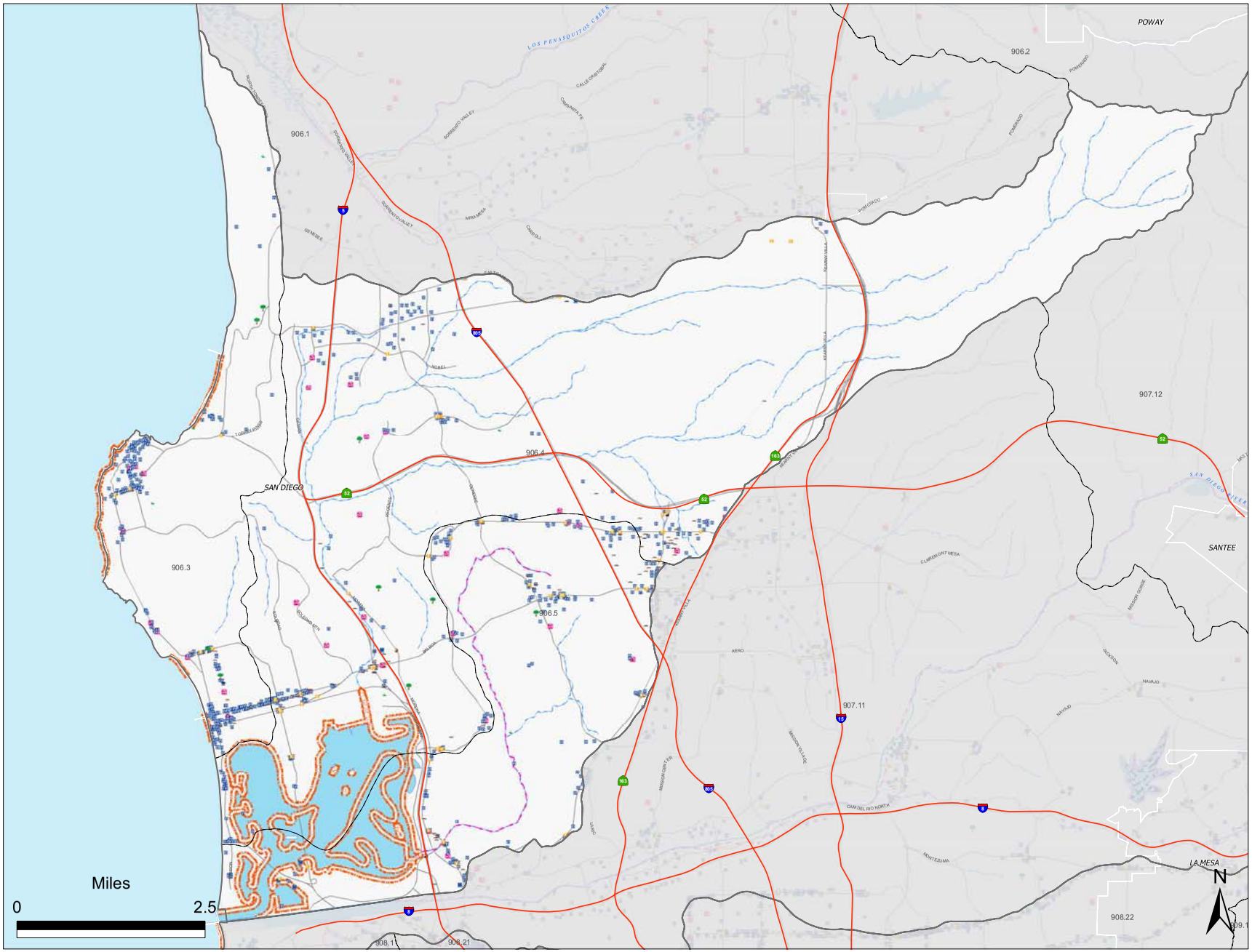

Appendix E

Annual Reports

(To Be Provided in Future Fiscal Years)

MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2008 ANNUAL REPORT

Storm Water Department
City of San Diego

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Appendix B Activity Summary Sheets for Newly Reported Watershed Activities
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THE CITY OF SAN DIEGO

RE: STATEMENT OF CERTIFICATION for the Mission Bay and La Jolla Watershed Urban Runoff Management Program FY 2008 Annual Report

I certify under penalty of law that the Mission Bay and La Jolla Watershed Urban Runoff Management Program FY 2008 Annual Report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

1/28/09
Date

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350

Executive Summary

The Mission Bay and La Jolla Watershed Urban Runoff Management Program (WURMP) Annual Report (Annual Report) describes the actions taken by the City of San Diego (City) in Fiscal Year (FY) 2008 (July 1, 2007, to June 30, 2008) to refine and implement the WURMP and the progress made towards improving both urban runoff quality and receiving water quality in the watershed.

SECTION 1 (INTRODUCTION) provides information about the NPDES Municipal Stormwater Permit and updated Mission Bay and La Jolla WURMP. A discussion regarding Copermittee collaboration and the reasoning behind an updated land use map is included in this section.

SECTION 2 (WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT) is a summary of the assessment of the quality of the water and pollutant sources in the Mission Bay and La Jolla Watershed Management Area (WMA) based on data collected and analyzed from July 2007 through June 2008. To annually assess the water quality of the WMA, the Copermittees have compiled the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report) for FY 2008. Based on the data and findings of the Annual Monitoring Report and the City's *Strategic Plan for Watershed Activity Implementation*, the City has focused its efforts on targeting the following Priority Water Quality Problems for the Mission Bay and La Jolla WMA. The problems that are bolded and italicized are considered High Priority Water Quality Problems.

- ***Bacteria/Pathogens***
- ***Heavy Metals***
- ***Nutrients***
- Pesticides
- Sediment

SECTION 3 (IMPLEMENTATION OF WATERSHED ACTIVITIES) details the water quality, education, public participation activities and the collaborative land-use planning efforts that occurred during the reporting period regarding the implementation of the WURMP. The City continued the planning and design process for several activities, implemented source and design storm studies, continued to sponsor creek and bay trash removal, continued increased commercial/industrial facility inspections, initiated increased street sweeping, and implemented multiple education and public participation activities. All of these activities are anticipated to have a positive impact on water quality.

This section also discusses the Updated 5-Year Strategic Plan. To address the identified Priority Water Quality Problems—and in particular the High Priority Water Quality Problems—the City has developed a five-year plan of action using its *Strategic Plan for Watershed Activity Implementation*. The plan of action outlines various activity types, including: water quality, education, special studies, public participation, and watershed-based land use planning. Water quality activities range from trash cleanup sponsorships, to facility inspections, to targeted street sweeping, to right-of-way porous asphalt pilot projects. Education activities range from public service announcements, to outdoor advertisements and direct outreach, to Community-Based Social Marketing pilot study efforts. The City also continues to encourage the participation and

input of diverse stakeholders and the general public in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP through various means, such as the Think Blue website[1], outreach to established committees and commissions, and partnerships with local not-for-profit groups. As for watershed-based land use planning, the City uses the community plan update process to incorporate general urban runoff management principles into the relevant plans, as needed, to address special concerns identified for the Mission Bay and La Jolla WMA.

SECTION 4 (EFFECTIVENESS ASSESSMENT) provides information regarding the assessment of overall WURMP effectiveness, including details on how the City achieved compliance for FY 2008. To evaluate its efforts at the activity and program levels, the City has developed an assessment framework that emphasizes maximization of activity efficiency and obtainment of knowledge and data associated with activity efficiency. This will help guide future management decisions on how to best allocate the City's resources to obtain the maximum amount of pollutant load reduction from its efforts.

An update on the TMDL progress is also provided in this section. No TMDLs are currently in effect for the Mission Bay and La Jolla WMA. However, the following water bodies in the WMA are currently listed as impaired per Section 303(d) of the Clean Water Act:

- Mission Bay: Bacteria indicators, lead, eutrophication
- Tecolote Creek: Bacteria indicators, cadmium, copper, lead, zinc, toxicity

SECTION 5 (CONCLUSIONS AND RECOMMENDATIONS) offers concluding remarks regarding the accomplishments of the City in FY 2008 in implementing the WURMP and recommendations for further refining the program. This section summarizes how the City achieved compliance with the NPDES Municipal Stormwater Permit and sets forth recommendations for improving the WURMP over time. The City will refine and augment the Mission Bay and La Jolla WURMP as it improves its understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality. Such refinement and augmentation are supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In short, the Annual Report presents an update on the City's long-term efforts to protect and enhance the water quality of the WMA using a watershed-based approach.

[1] http://www.thinkbluesd.org

Section 1 Introduction

The NPDES Municipal Stormwater Permit, San Diego Region Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Mission Bay and La Jolla WMA to collaborate on the development and implementation of a WURMP. This Annual Report will be covering two Permit periods, the previous Order No. 2001-01 and the current Order No. R9-2007-0001. This Annual Report is divided into five sections that highlight the efforts of the City during the FY 2008 reporting period. The reporting period is covered from July 1, 2007 through June 30, 2008.

The updated Mission Bay and La Jolla WURMP was submitted to the San Diego Regional Water Quality Control Board (Regional Board) and implemented in March 2008. The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Mission Bay and La Jolla WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and developing and implementing activities that include pollutant load reduction and pollutant source abatement (Watershed Water Quality Activities); improvements in the public's knowledge, awareness, and behaviors (Watershed Education Activities); as well as public participation and collaborative land use planning.

1.1 Copermittee Collaboration

The Mission Bay and La Jolla WMA is fully within the City's jurisdiction; therefore, the City is the only Copermittee within the WMA. However, significant military presence is located in the eastern part of the WMA as well as the University of California, San Diego (UCSD) in La Jolla. The City works collaboratively with UCSD, which does not operate under the same Permit, on urban runoff and Areas of Special Biological Significance (ASBS) issues.

1.2 Watershed Map Updates

An updated land use map is included in Appendix C for reference for this WMA. The map was redone using 2007 SanGIS data for the purpose of improving size and functionality.

Section 2 Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the Mission Bay and La Jolla WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the WMA's water quality problems and high priority water quality problem(s) during the reporting period. The purpose of the updated water quality assessment is to make possible management decisions that focus resources on the highest water quality problem priorities in the most problematic areas using the best known approaches. This section will also discuss the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the WMA.

2.1 Water Quality Assessment

The monitoring programs that the Copermittees are engaged in can be divided into three major categories: Regional Monitoring, Core Monitoring, and Process Studies.

Regional Monitoring encompasses large spatial areas and looks at many elements potentially impacted by urban runoff. It takes a longer-term view of the ultimate receiving waters, coastal bays, lagoons, and the Pacific Ocean. Regional Monitoring is designed to answer questions concerning broad ecological health and encompasses numerous components, including water and sediment quality, fish, benthos, birds, etc. Examples of Regional Monitoring include:

- Southern California Bight
- Southern California Coastal Water Research Project
- Regional Harbor Monitoring Program

Core Monitoring refers to several long-term monitoring activities conducted by the Copermittees on an annual (or more frequent) basis. These activities are more focused, concentrate on fewer parameters than Regional Monitoring efforts, and are better able to provide data to assess long-term trends within and across WMAs. The Copermittees have designed these monitoring programs under an adaptive strategy that is subject to review as warranted by new data or information. Examples of Core Monitoring include:

- Mass Loading Stations
- Dry Weather
- Coastal Storm Drain Outfalls
- MS4 Outfalls
- Ambient Bay, Lagoon, and Coastal Receiving Water
- Urban Stream Bioassessment

Process Studies supplement both Regional and Core monitoring activities. They are short-term evaluations designed to answer specific questions. Examples include:

- Storm Design Studies
- Bacteria Source Identification

2.1.1 Water Quality Problems

To identify the priority water quality problems within each WMA for this cycle of the Municipal Permit, the Copermittees have used data from the above monitoring programs together with the process outlined in the Model Watershed Strategy for determining appropriate actions to take in each HA. Based on the Copermittees' best professional judgment on the adequacy of monitoring and pollutant source data and the relationship of those data with the alphabetic "water quality priority ratings" (as presented in the 2007–2008 *San Diego County Municipal Copermittees Urban Runoff Monitoring* [Annual Monitoring Report]) determined using the methodology in the BLTEA, the Model Watershed Strategy recommends one of the following actions: load reduction/source abatement activities; monitoring studies; or source characterization studies. An implementation priority (high, medium, low) is also assigned to each monitoring study or source characterization study recommendation.

In essence, water quality problems for which the Model Watershed Strategy recommends load reduction/source abatement activities are "high priority water quality problems" (at least for certain HAs within the WMA). Water quality problems for which the Model Watershed Strategy recommends high and medium priority monitoring studies or source characterization studies are simply "priority water quality problems" (at least for certain HAs within the WMA).

However, instead of using monitoring data in conjunction with the process outlined in the Model Watershed Strategy for the Mission Bay and La Jolla WMA, the City uses the approach detailed in the *Strategic Plan for Watershed Activity Implementation* which includes reviewing available water quality data and ratings and involves assessing the available data spatially to prioritize the problems geographically. This process also includes analyzing high threat sources and locating clusters to be addressed efficiently. The results at the time of initiation of this permit cycle, as outlined in the Mission Bay and La Jolla WURMP, concluded that bacteria/pathogens, heavy metals, nutrients, sediments, and pesticides are priority water quality problems, with the first three determined to be high priority water quality problems. The City implemented activities addressing these high priority water quality problems over FY 2008.

Note that, once the priority and high priority water quality problems have been identified in the WURMP, they are set until the Municipal Permit is re-issued again by the Regional Board. Only major, unforeseen events that the Copermittees judge to be sufficiently significant would prompt a modification to the list of high priority water quality problems. The water quality assessment described in this section will confirm the priority water quality problems as listed above.

2.1.2 Receiving Waters Condition Assessment

To assess yearly the water quality of the WMAs, the Copermittees have been compiling the Annual Monitoring Report. The Annual Monitoring Report presents data and findings from the various Regional Monitoring, Core Monitoring, and Process Studies programs implemented throughout the region by the Copermittees.

Section 2.1.3 below summarizes the results of the Annual Monitoring Report and analysis conducted by Weston Solutions, Inc. on behalf of the San Diego County Municipal Copermittees.

The Annual Monitoring Report is designed to answer the five core management questions.

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

Assessments are conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions (Table 2-1) using a weight-of-evidence approach.

Table 2-1. Summary of WMA Assessment Findings

Monitoring Program Elements	Summary of Findings	Core Questions Addressed
Ambient Receiving Water Assessment	▪ Ambient data has not been analyzed from this program to date. ▪ Altered benthic macroinvertebrate communities (historically, Very Poor IBI ratings) were observed.	1, 2
Wet Weather Receiving Water Assessment	▪ Constituents of concern: – High frequency of occurrence (turbidity, total coliform, and fecal coliform). – Medium frequency of occurrence (enterococci). – Low frequency of occurrence (TSS). ▪ Historically, fecal coliform was the only constituent with a mean magnitude of exceedance by more than five times the benchmark. ▪ No persistent toxicity was observed. ▪ Altered benthic macroinvertebrate communities (historically, Very Poor IBI ratings) were observed.	1, 2
Ambient Urban Runoff Areas Assessment	▪ Constituents of concern: – Medium frequency of occurrence (enterococci) – Low frequency of occurrence (turbidity and orthophosphate)	3, 4
Wet Weather Urban Runoff Areas Assessment	▪ Key findings from the City of San Diego Microbial Source Tracking Study in Tecolote Creek indicate residential land uses in the upper watershed as primary sources of bacteria loading.	3, 4
Triad Assessment	▪ Indications of persistent COC ▪ No persistent toxicity observed. ▪ Benthic alterations may be due to physical impacts, not toxic contamination. ▪ Test organisms were not sensitive to problem pollutants.	1, 2
Receiving Water Trend Assessment	▪ A significantly increasing trend was observed for enterococci. ▪ Significantly decreasing trends were observed for diazinon, oil and grease, nitrate, and BOD.	5
2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence ratings for turbidity, total coliform, and fecal coliform were consistent with the 2001–2006 BLTEA ratings.	5

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Beneficial uses affected by elevated turbidity and indicator bacterial may be impacted. Beneficial uses related to the quality of the natural habitat supporting benthic community diversity may be similarly impacted. However, specific physical or chemical factors could not be linked to the degraded benthic communities. Beneficial uses affected by other physical parameters or chemical constituents are not likely impacted. The chemical constituents monitored were not detected at concentrations expected to cause beneficial use impairments related to toxicity.

2. What is the extent and magnitude of the current or potential receiving water problems?

Turbidity and indicator bacteria were consistently above the benchmarks in wet weather sampling events at the MLS and both received high frequency of occurrence ratings in the wet weather criterion assessment. Historically, fecal coliform was the only constituent to have a mean magnitude of exceedance more than five times its benchmark. From the CSDM assessment, receiving water does not appear impacted during dry weather as there was only one enterococci exceedance and no total coliform or fecal coliform exceedances. Receiving water was more impacted during the wet season, with at least two exceedances each for fecal coliform and enterococci. Still, the percentage of exceedances was low, less than 15% for both constituent. Stream bioassessment data indicate a benthic community impairment of Very Poor at both Rose Creek and Tecolote Creek within the Mission Bay WMA which is typical of the urbanized coastal areas of San Diego County. IBI scores at both of these locations have been consistently Poor or Very Poor since the 2001–2002 Monitoring Season, indicating evidence of benthic impairment.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 is partially answered through the evaluation of urban runoff area assessments. Organic contaminants (e.g., pesticides) are derived from anthropogenic activity; their route to receiving waters occurs through urban runoff, direct dumping, or via indirect sources (e.g., wind or animals, such as birds, coyotes, and rodents). Synthetic pyrethroids were detected at levels above benchmarks during the 2006-2007 Monitoring Season. However, no toxicity was observed during the same monitoring events. Organic compounds have not been identified as COCs in this WMA at this time. Future trash information collected during the 2008 Jurisdictional DWM Program should provide a more robust data set for answering Core Management Question 4 thoroughly.

Key findings of the Tecolote Creek Bacterial Source ID Study (Phase I) indicate residential and land uses and nuisance flows from over-irrigation as significant contributors of bacteria loading (Weston, 2008). Human fecal contamination investigated using *Bacteroides* as an indicator suggested only isolated detections of human bacteria, likely associated with transient encampments. The report was provided to the Regional Board's TMDL staff in fall 2008.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered by examining land use in conjunction with urban runoff area assessments and third-party data from the Tecolote Creek Bacterial Source ID Study (Phase I). Based on the dry weather results from the Tecolote Creek Bacterial Source ID

Study (Phase I), the most significant loads originate from nuisance flows resulting from over-irrigation. This activity was associated with residential and commercial land use. During wet weather, instantaneous loads for fecal coliform and enterococci show that nurseries and the golf course contributed higher loads, though they are a very small percentage of the watershed's total land use area.

The jurisdictional DWM Program and CSDM Program have measures to identify sources and eliminate ICIDs. Future MS4 Outfall Monitoring and Source Identification Monitoring will provide additional data useful in answering Core Management Question 4.

5. Are conditions in receiving waters getting better or worse?

Conditions at the MLS are based on previous monitoring years since there were no data collected under this program from the Mission Bay MLS in the 2007–2008 Monitoring Season. Historically, the conditions of the receiving water have shown one increasing trend (enterococci) and four decreasing trends (diazinon, oil and grease, nitrate, and BOD). There were also jurisdictional DWM and CSDM action level exceedances of indicator bacteria, both in the storm drains and in the receiving waters monitored. The Tecolote Creek Microbial Source Tracking Study Phase I suggests results are similar to previous years and are representative of the land uses in the watershed. Bioassessment data results over the period of monitoring from 2001–2008 indicate a slight decrease in benthic quality ratings with IBI scores of Very Poor occurring since 2003 at the Tecolote Creek bioassessment sampling location. While Tecolote Creek is listed as impaired for toxicity under Section 303d of the Clean Water Act, toxicity has rarely been observed in samples collected from the Tecolote Creek MLS; there is no evidence of persistent toxicity to any of the three toxicity species tested.

2.1.3 Other Monitoring Activities

Other Process Studies supplement both Regional and Core monitoring activities in the La Jolla and Mission Bay WMA. Other monitoring activities in FY 2008, which were also referenced in the above section, include:

- Tecolote Creek Bacterial Source ID Study (Phase I) - This activity involved the identification of bacterial sources in the Tecolote Creek Watershed through wet and dry weather monitoring surveys including visual observations, spot sampling, and laboratory analysis of data accumulated through monitoring. The study focused on locating primary sources of high bacterial loading to identify if human contamination are a contributing factor. This study also provided specific recommendations for source control and pollution prevention/reduction based on the conclusions of the analysis. This report was provided to the Regional Board's TMDL staff in fall 2008.
- Dry Weather Aerial Deposition Study (Phase II) - The City of San Diego conducted an Aerial Deposition Study in several watersheds in the City of San Diego's jurisdiction. This study was conducted to address sources of metal and particulate pollutants that settle out on watershed surfaces and have the potential to wash off. The study was specifically used to address the fact that La Jolla Area of Special Biological Significance (ASBS) must meet a daily maximum Ocean Plan standard of 12 parts per billion for copper for

which there are no identified point sources in the area. The report is being prepared and will be provided to the Regional Board upon finalization.

Activity summary sheets (MB-3001 – Tecolote Creek Bacterial Source ID Study (Phase I) and MB-3007 – Dry Weather Aerial Deposition Study (Phase II)) are located in Appendices A and B, where the findings for both of these monitoring activities are discussed in detail. Watershed water quality activities are also discussed in Section 3 of this Annual Report.

2.2 Pollutant Source Assessment

The Permit requires the City identify the high priority water quality problems and identify the likely sources within the Mission Bay and La Jolla WMA and implement activities that will address these pollutants. The City's *Strategic Plan for Watershed Activity Implementation* lists the following as "constituents of concern" in the Mission Bay and La Jolla WMA. The City has decided to refer to these constituents of concern as "priority water quality problems:"

- Bacteria/Pathogens
- Heavy Metals
- Nutrients
- Pesticides
- Sediment

Of the list above, the City has determined the following water quality problems as "high priority water quality problems" because not only did they each receive a water quality priority rating of A (determined using the methodology in the BLTEA) in the 2007–2008 Annual Monitoring Report, but they also are listed as impaired per Section 303(d) of the Clean Water Act.

- Bacteria/Pathogens
- Heavy Metals
- Nutrients

Though turbidity has consistently exceeded benchmarks established by the Copermittees, turbidity has not been added to the list of priority water quality problems as this list is set for the duration of the Municipal Permit. The City, however, is conducting special studies to gather more information on potential sources including the analysis being conducted for the Tecolote Creek Bacterial Source ID Study (Phase II) and the La Jolla Shores Sediment Source Study.

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* to improve water quality includes a combination of joint and individual jurisdictional efforts to monitor, identify, investigate, educate, implement appropriate BMPs, and enforce where necessary. Table 2-2 below lists the likely pollutant sources adapted from the BLTEA for each of the high priority water quality problems identified in above.

Table 2-2. Likely Sources of High Priority Water Quality Problems in Mission Bay WMA

High Priority Water Quality Problem	Likely Sources
Bacteria/Pathogens	Eating/drinking establishments; animal facilities; landscaping (e.g., parks, golf courses, cemeteries, etc.); publicly owned treatment works (water and wastewater); home and garden care activities, waste disposal
Heavy Metals	Auto mechanical repair, maintenance, fueling, or cleaning; automobile and other vehicle body repair and painting; botanical or zoological gardens and nurseries/greenhouses; fabricated metal; motor freight; boat mechanical repair, maintenance, fueling, or cleaning; roads, streets, highways, and parking facilities
Nutrients	Animal facilities; botanical or zoological gardens and nurseries/greenhouses; landscaping (e.g., parks, golf courses, cemeteries, etc.); pest control services; home and garden care activities, waste disposal; parks and recreation facilities

Monitoring Recommendations

The recommendations for this WMA from the Annual Monitoring Report are to continue monitoring at the MLS to determine long-term trends. The addition of TWAS locations within the Rose Creek Watershed during the 2009–2010 Monitoring Season will provide information about conditions in other areas of the WMA. Furthermore, conducting ambient monitoring at the MLS and future TWAS locations will provide information about the conditions in the receiving water during dry weather. Finally, future MS4 Outfall Monitoring and Source Identification Monitoring will add information about urban runoff during wet weather conditions.

As recommended above, the City intends to continue monitoring where data gaps must be filled as appropriate, and implement load reduction/source abatement activities where sufficient monitoring data is available to determine the sources or general source locations of high priority pollutants to select an appropriate activity type and location. The list of high priority water quality problems remains unchanged over the past year.

Section 3 Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Municipal Permit. The Watershed Activity Implementation Summary Sheets for all watershed water quality and education activities implemented during this reporting period are included in Appendices A and B.

3.1 Watershed Water Quality Activities

Table 3-1 presents the 27 water quality activities and special studies reported on in FY 2008, including 21 activities incorporating load reduction activities, 13 activities including a source investigation, and two activities (the multiple inspections activities shown below were implemented as one program this year) utilizing source abatement. Refer to Appendix A for the Watershed Activity Summary Sheets describing the City's watershed water quality activities and details regarding their anticipated implementation schedule. Note that the list of activities and the accompanying descriptions are subject to change. Progress on each watershed activity has been described in the standardized template and clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems.

Table 3-1. Watershed Water Quality Activities

ID Number	Activity	Pollutant Categories										Activity Type				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education
MB-1001	Alpha Project for the Homeless, Inc. Cleanup Sponsorship	X									X			X		
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X		
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X		
MB-1004	Targeted Animal-Related Facility Inspections	X				X							X	X	X	
MB-1005	Targeted Auto-Related Facility Inspections				X								X	X	X	
MB-1006	Targeted Landscaping-Related Facility Inspections	X				X							X	X	X	
MB-1007	Targeted Municipal Facility Inspections	X			X	X							X	X		
MB-1008**	Targeted Residential Activity Characterization	X			X	X							X	X		
MB-1009	Targeted Restaurant Facility Inspections	X											X	X	X	
MB-1010	Targeted Aggressive Street Sweeping				X						X		X	X		
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect	X				X	X		X	X				X		
MB-1012	Osler Street Hydrodynamic Separator Installation	X								X	X			X		

Table 3-1. Watershed Water Quality Activities

ID Number	Activity	Pollutant Categories										Activity Type				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education
MB-1013	La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV)	X			X	X								X		
MB-1014	Kellogg Park Green Lot BMP Retrofit	X			X	X								X		
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X		
MB-1016	Bannock Ave Streetscape Enhancement & Bacteria Treatment	X			X	X	X				X			X		
MB-1017	Infiltration LID BMP #2	X			X	X								X		
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X			X	X								X		
MB-1019	South Shores RV Pump Out	X												X	X	
MB-1020	Avenida de la Playa Storm Drain Replacement and Low Flow Diversion	X			X	X								X		
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X												X		
MB-3001	Tecolote Creek Bacterial Source ID Study (Phase I)	X											X			
MB-3002	Tecolote Creek Bacterial Source ID Study (Phase II)	X											X			
MB-3003	La Jolla Shores Integrated Coastal Watershed Management Plan	X		X	X		X		X	X		Planning Document				
MB-3004	La Jolla Shores Sediment Source Study									X			X			
MB-3005	La Jolla Design Storm Study	X											X			
MB-3006	Tecolote Creek Design Storm Study	X											X			
MB-3007	Dry Weather Aerial Deposition Study (Phase II)				X							X	X			
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.														

* High Priority Pollutants

** This ID number has been retired. MB-1008 is now being reported as MB-2010 La Jolla Residential CBSM Efforts.

3.2 Watershed Education Activities

The City has recognized the need for education programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Table 3-2 below lists the education activities initiated or implemented in FY 2008. Refer to Appendix A for the Watershed Activity Summary Sheets describing the City's proposed watershed education activities and details regarding their anticipated implementation schedule. Note that the list of activities and the accompanying descriptions are subject to change. Progress on each watershed education activity has been described in the standardized template and clearly identifies what

was accomplished during the reporting period and how it pertains to high priority water quality problems.

Table 3-2. Watershed Education Activities

ID Number	Activity	Pollutant Categories										Activity Type				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		X							X					X
MB-2002	Mobile Advertising	X		X	X		X		X	X	X					X
MB-2003	La Jolla Commercial CBSM Efforts	X									X		X	X		X
MB-2004	Business CBSM Pilot (Genesee)	X		X	X		X	X		X	X		X	X		X
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X												X
MB-2006	Clean Construction Poster and Brochure Distribution	X			X	X				X						
MB-2007	Restaurant BMP Booklet Distribution	X														X
MB-2008	Transit Shelter and Billboard Advertisements	X			X						X			X		X
MB-2009	Mission Bay Focused Outreach	X														
MB-2010	La Jolla Residential CBSM Efforts	X									X		X	X		X

3.3 Public Participation Activities

The City will continue to actively encourage the participation and input of diverse stakeholders in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP. Historically, stakeholders have participated regularly in activity planning and implementation efforts via formal and informal discussions and meetings at the City or stakeholder locales. Because the City is the only Copermittee within the WMA, internal and stakeholder meetings are held on an ad hoc basis. The City values its strong relationships with stakeholders and will continue to use this informal participation as the foundation of its participation and implementation efforts in conjunction with the more formal participation mechanisms outlined below.

The paragraphs below broadly outline the public participation strategy that the City is pursuing to encourage stakeholder engagement in the WURMP.

Specific watershed education activities that involve general public participation are detailed below and in Appendices A and B and include trash cleanup sponsorships, CBSM, and focused outreach.

3.3.1 Non-Governmental Organization Engagement

The City continues to engage non-governmental organizations (NGOs) active in the WMA in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP through a variety of means, including, but not limited to:

- Entering into agreements with NGOs to implement activities, such as trash/debris sponsorships, creation and distribution of education materials, workshop facilitation, research, community events, and presentations. This is reflected in several activity summary sheets included in Appendices A and B.
- Inviting NGO representatives to the City and sending City representatives to NGO meetings to discuss urban runoff pollution prevention efforts, share input, and identify opportunities for coordination. The Storm Water Department meets with the San Diego Coastkeeper every other month to discuss Strategic Planning and City-wide issues including those that may affect the Mission Bay and La Jolla WMA. The City meets with other NGOs on an ad-hoc basis.
- Partnering with NGOs as appropriate in advocating legislation protective of water quality. The City has assisted Sustainable Conservation with sponsorship to advance the Brake Pad Partnership's work in the reduction/elimination of copper in automotive break pads through legislation.

3.3.2 Community Planning Groups and Established Stakeholder Meetings

The Storm Water Department uses meetings established by various stakeholder groups, including Community Planning Groups and the Mission Bay Park Committee, to present specific watershed projects and solicit public participation and feedback. In FY 2008, the Storm Water Department held a workshop to present specific low flow diversion concepts (see Activity Sheet MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV)) for sites that currently undergoing design. Groups such as the La Jolla Town Council, the La Jolla Community Planning Group, the La Jolla Shores Association, San Diego Coastkeeper (a NGO), as well as the general public were invited to attend and provide feedback on the preliminary concepts for the diversions. The Storm Water Department actively attends the quarterly meetings of the Open Space Canyons Advisory Committee, established by City Council Policy to address open space canyons issues including those pertaining to storm water and urban runoff. The Storm Water Department will continue to use established stakeholder groups to engage the public in the WURMP and watershed activities as needed, especially in regard to project implementation.

3.3.3 Project Clean Water

Project Clean Water[1], which was initiated in July 2000 by the Regional Copermittees, established a framework for the broad-based and collaborative development of solutions to local water quality problems. The relationship of Project Clean Water policies to Municipal Permit compliance is important. An underlying tenet of this effort is that Municipal Storm Water Permit compliance alone cannot achieve clean water. As such, Project Clean Water seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. This significantly broadens the base of stakeholder input available to consider issues directly related to Municipal Permit compliance. Opportunities and encouragement for public participation are noticed through a variety of avenues. In addition to general information regarding Project Clean Water, specific contact details are listed for each watershed, encouraging members of the public to contact representatives for information. It is the eventual goal of Project Clean Water to establish this site as a centralized source of water quality information for the San Diego region. The Mission Bay and La Jolla WURMP and annual reports are placed on the website to allow stakeholders to view the documents and submit comments. The City continues to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as it continues to develop and implement the WURMP.

3.3.4 Think Blue

The City's Storm Water Department maintains the Think Blue website[1]. It is available to the public and professional organizations as a resource to help them be compliant with urban runoff regulations and to educate themselves on urban runoff issues and solutions. BMP fact sheets and other informational materials, available in both English and Spanish, are available online. The Storm Water Department has also posted the Mission Bay and La Jolla WURMP on the website, as well as the annual reports to provide stakeholders the opportunity to review and comment on the documents. In addition, solicitations for public participation in meetings and outreach events are posted on the website. The City continues to use this venue to encourage stakeholder participation in the development and implementation of the Mission Bay and La Jolla WURMP..

Think Blue sponsored the Crew Classic in Mission Bay on April 5 and 6, 2008. FY 2008 is the first year that Think Blue has sponsored the Crew Classic. Think Blue felt it was important to sponsor this event as the event aligns with the Mayor's goals for clean water, and the City is the only jurisdiction in the Mission Bay and La Jolla WMA. A visible presence at this event gave the City a chance to educate attendees and spectators. Think Blue manned a booth, distributed materials and discussed the program. Sponsorship for the Crew Classic is planned for FY 2009.

3.3.5 City Council and Council Committee Meetings

The City's Storm Water Department presented items to the San Diego City Council and the Council's Natural Resources and Culture Committee throughout FY 2008. City Council and Committee meetings are open to the public and are forums where the public is encouraged to comment on items being presented. The Storm Water Department presentations included a brief

[1] http://www.projectcleanwater.org

background on its mission as well as specifics associated with the item being presented, which over FY 2008, included the La Jolla Shores Watershed Management Plan, various Memorandums of Understanding, revisions to the Municipal Storm Water Ordinance, watershed capital improvement projects, the WURMPs including the one for Mission Bay and La Jolla WMA, monitoring contracts, education consultant contracts and other project specific contracts. In total, the Storm Water Department presented at least six times at the Natural Resources and Culture Committee meetings and twelve times at the City Council meetings, inviting public participation and comment.

3.4 Collaborative Land-Use Planning Efforts

The City is divided into various politically recognized communities, each with its own community plan prepared by the City Planning & Community Investment Department that implements the planning policies in the City's General Plan. The Mission Bay and La Jolla WMA encompasses nine communities: Linda Vista, Clairemont Mesa, Kearny Mesa, Mission Beach, Pacific Beach, La Jolla, University City, Mission Bay Park, and MCAS Miramar. Of these, seven have community plans (Mission Bay Park and MCAS Miramar are covered under other planning documents). Each community plan is updated periodically to reflect changes in the community, as well as provide fresh direction regarding growth and development. For example, the California Coastal Commission approved the La Jolla Community Plan update in FY 2004, and City staff began its implementation in FY 2005. The La Jolla Community Plan includes extensive storm water policies pertaining to coastal bluffs and steep hills.

The City will use the community plan update process, as needed, to incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the plans to address special concerns identified for the Mission Bay and La Jolla WMA. Updates to the community plans will be primarily reported in the City's JURMP due to their general nature and close relationship with the General Plan. However, highlights will be provided in the WURMP annual report as deemed appropriate; in FY 2008, no updates occurred to community plans with the Mission Bay and La Jolla WMA.

3.5 Updated 5-Year Strategic Plan

The Mission Bay and La Jolla WURMP's five-year strategic plan is assessed annually and has been updated to reflect the current status of watershed activities and modifications to previous versions of the strategic plan.

3.5.1 Five-Year Strategic Plan and New Watershed Activities

The City of San Diego's *Strategic Plan for Watershed Activity Implementation* uses an integrated, tiered, and phased approach with regards to activity implementation. Integrated activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not. Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the *Strategic Plan for Watershed Activity Implementation* included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the 5-Year Strategic Plan presented in the Mission Bay and La Jolla WURMP. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. New activities, as well as those being implemented but were not disclosed in the March 2008 WURMP, include the following:

- MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III
- MB-1019 South Shores RV Pump Out
- MB-1020 Avenida de la Playa Storm Drain Replacement and Low Flow Diversion
- MB-1021 Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades
- MB-2006 Clean Construction Poster and Brochure Distribution
- MB-2007 Restaurant BMP Booklet Distribution
- MB-2008 Transit Shelter and Billboard Advertisements
- MB-2009 Mission Bay Focused Outreach
- MB-3002 Tecolote Creek Bacterial Source ID Study (Phase II)
- MB-3003 La Jolla Shores Integrated Coastal Watershed Management Plan
- MB-3004 La Jolla Shores Sediment Source Study
- MB-3005 La Jolla Design Storm Study
- MB-3006 Tecolote Creek Design Storm Study
- MB-3007 Dry Weather Aerial Deposition Study (Phase II)
- MB-3008 City of San Diego Strategic Plan Implementation

Table 3-3 shows a list of all activities currently being implemented over a five year period in the Mission Bay and La Jolla WMA. The activities identified above are included in the table with red activity sheet ID numbers. Justification on why these activities were not included in the Mission Bay and La Jolla WURMP (March 2008) is given in each Watershed Activity Summary Sheet located in Appendix B.

Table 3-3. 5-Year Watershed Water Quality and Education Activities

		Pollutant Categories										Activity Type					Schedule				
ID Number	Activity	Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
MB-1001	Alpha Project for the Homeless, Inc. Cleanup Sponsorship	X									X			X			I A	**Activity is complete**			
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1004**	Targeted Animal-Related Facility Inspections	X				X							X	X		X	P I A	I A	I A		
MB-1005**	Targeted Auto-Related Facility Inspections				X								X	X		X	P I A	I A	I A	TBD Based On Results of Current Inspection Programs	
MB-1006**	Targeted Landscaping-Related Facility Inspections	X				X							X	X		X	P I A	I A	I A	TBD Based On Results of Current Inspection Programs	
MB-1007	Targeted Municipal Facility Inspections	X			X	X							X	X		X	P	**No longer moving forward under the WURMP**			
MB-1008***	Targeted Residential Activity Characterization	X			X	X							X	X		X	P	MB-1008 is now being reported as MB-2010			
MB-1009**	Targeted Restaurant Facility Inspections	X											X	X		X	P I A	I A		TBD Based On Results of Current Inspection Programs	
MB-1010	Targeted Aggressive Street Sweeping				X						X		X	X			P	I A	I A		
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect	X				X	X		X	X				X			P	I A			
MB-1012	Osler Street Hydrodynamic Separator Installation	X								X	X			X			P	P	Implementation tentatively planned for FY 2013		
MB-1013	La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV)	X			X	X								X			P	P	P	Implementation anticipated in FY 2011	
MB-1014	Kellogg Park Green Lot BMP Retrofit	X			X	X								X			P	P	P	Implementation anticipated in FY2011	
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X			P	P	P	Implementation anticipated in FY2011	
MB-1016	Bannock Ave Streetscape Enhancement & Bacteria Treatment	X			X	X	X				X			X			P	P	P	Implementation anticipated in FY 2013	
MB-1017	Infiltration LID BMP #2	X			X	X								X			P	P	On hold pending additional staffing resources		
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X			X	X								X			P I	I			
MB-1019	South Shores RV Pump Out	X												X	X		I				
MB-1020	Avenida de la Playa Storm Drain Replacement and Low Flow Diversion	X			X	X								X			P	P	P	Implementation anticipated in FY 2013	
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X												X	X		Design complete. Construction will occur once a source of funding is identified.				
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		X							X					X	I	I A	I A	I A	I A
MB-2002	Mobile Advertising	X		X	X		X		X	X	X					X	I A	I A	I A	I A	I A
MB-2003	La Jolla Commercial CBSM Efforts	X									X		X	X		X	P I A	P I A	I A		
MB-2004	Business CBSM Pilot (Genesee)	X		X	X		X	X		X	X		X	X		X		P	P I A	I A	I A
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X												X	P	P	I A	I A	
MB-2006	Clean Construction Poster and Brochure Distribution	X			X	X				X						X	I	I	I	I	I
MB-2007	Restaurant BMP Booklet Distribution	X														X	I	I	I	I	I
MB-2008	Transit Shelter and Billboard Advertisements	X			X											X	I	I	I	I	I
MB-2009	Mission Bay Focused Outreach	X									X					X	I	I			
MB-2010	La Jolla Residential CBSM Efforts																				
MB-3001	Tecolote Creek Bacterial Source ID Study (Phase I)	X											X				I A	A			
MB-3002	Tecolote Creek Bacterial Source ID Study (Phase II)	X											X				P	I A			
MB-3003	La Jolla Shores Integrated Coastal Watershed Management Plan	X		X	X		X		X	X		Planning Document						Activity Planning and Implementation			
MB-3004	La Jolla Shores Sediment Source Study									X			X				P I	I A			
MB-3005	La Jolla Design Storm Study	X											X				P I	I A			
MB-3006	Tecolote Creek Design Storm Study	X											X				P I	I A			
MB-3007	Dry Weather Aerial Deposition Study (Phase II)		X		X							X	X				P I	I A			
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.															The Strategic Plan is implemented through the activities listed here and through activities conceptually and tentatively planned for the future.				

* High Priority Pollutants
** MB-1004, MB-1005, MB-1006, and MB-1009 are being reported on one activity sheet in FY 2008.
*** This ID number has been retired. MB-1008 is now being reported as MB-2010 La Jolla Residential CBSM Efforts.

Activity Sheet ID Numbers highlighted in red are newly reported activities

P= Planning I= Implementation A = Active

3.5.2 WURMP Program Revision

In April 2008, the Regional Board and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego Region. The review focused primarily on the Carlsbad and San Diego Bay watersheds. The final audit report was available for review by the San Diego Regional Copermittees in September 2008. The audit report contents included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The San Diego Regional Copermittees have been working together with Regional Board staff to identify how the WURMPs and WURMP Permit language may be modified to meet the goals of the program more effectively.

One of the key components of the discussions between Copermittees and Regional Board staff involves refocusing the goals of the program is to allow WURMP efforts to increase their focus on watershed activities implementation, rather than be focused on intensive reporting. The City of San Diego is committed to continuing their involvement in this process. In response to the WURMP audit comments, the City is working to better disclose efforts that, while not specifically required by the permit, assist with meeting the overall goals of the program. Additionally, the City has addressed each of the Regional Board's comments to each specific activity within the Activity Implementation section of each Activity Summary Sheet.

Section 4 Effectiveness Assessment

4.1 Assessment of Overall WURMP Effectiveness

The intent of this section is to assess the effectiveness of the Mission Bay and La Jolla WURMP as a whole, and the activities pursuant to its implementation and the requirements of the Municipal Permit.

4.1.1 Approach to Effectiveness Assessment

The overall program goal of the Mission Bay and La Jolla WURMP that the City strives to meet is as follows:

THE OVERALL PROGRAM GOAL OF THE MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM IS TO POSITIVELY AFFECT THE WATER QUALITY OF THE MISSION BAY AND LA JOLLA WATERSHED WHILE BALANCING ECONOMIC, SOCIAL, AND ENVIRONMENTAL CONSTRAINTS.

The City has identified the following sub-objectives to meet this goal:

Implement the best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by:

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The City uses effectiveness assessment as part of an iterative feedback loop that incorporates planning, implementation, and assessment, presented in the *Mission Bay & La Jolla Urban Runoff Management Plan* (March 2008). Achievement of the overall program goal and the effectiveness of the activities are assessed using the assessment framework developed by the Copermittees titled *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs* (October 2003).

In addition to effectiveness assessment, the City believes that it is imperative to assess the efficiency, or the cost effectiveness, with which load reductions are obtained at the individual activity and program-wide levels. It is only through maximizing the efficiency of program efforts that urban runoff programs can truly maximize pollutant load reductions and achieve the ultimate goal—the protection and improvement of water quality in the region's creeks, rivers, beaches, and bays.

4.1.2 Effectiveness Assessment Process

The City views the WURMP and the Jurisdictional Urban Runoff Management Program (JURMP) as integrated components to its overall municipal Storm Water Program. The City's overall Storm Water Program incorporates the WURMP, JURMP, and other programs as needed to implement and comply with the Municipal Permit.

Annually, the City follows the Iterative Program Effectiveness Assessment Process summarized in Figure 1. This process is designed to provide a framework for efficiency maximization that helps answer the over-arching program management questions over the course of five years.

Activities will be selected annually for implementation (based on data needs, water quality problems, and long-term management questions). The City selects pilot activities based on a strategic approach detailed in its *Strategic Plan for Watershed Activity Implementation* (2007) and will fill in data gaps in the Activity Efficiency Ratings Table as activities are completed. This table is intended to serve as a clearinghouse of information about the efficiency and effectiveness of City activities. Pilot activities are selected to gather information on a small scale to determine if an activity is effective and efficient before implementation on a larger watershed scale. These activities are implemented through the WURMP. All activities in compliance with the Permit are implemented accordingly, and activities integral to the program that do not meet the definition for compliance based activities are also included in this report.

Activities piloted during the 2008 WURMP reporting period within the Mission Bay and La Jolla watershed management area will be assessed and refined to achieve or increase load reductions, and/or improve the load reduction to cost ratio, following the process presented in Figure 2. If proven effective in load reduction and cost via a pollutant load reduction to cost ratio, pilot activities may be transferred to the JURMP program for City-wide large scale implementation, or implemented watershed-wide or in multiple watersheds. It is important to note that not all activities implemented in 2008 were "piloted" and efficiency assessment has not been completed for these activities.

During the long-term assessment (five-year intervals), an attempt is made to optimize resources using the process outlined in Figure 3. During this process, information gathered and stored in the Activity Efficiency Ratings Table over the Permit cycle will be summarized into one comprehensive "database" (Section 4.3). This database is a compilation of project efficiency ratings and can be used internally to assist in answering management questions, assessing the City's overall Storm Water Program (JURMP and WURMP), and optimizing the Program.

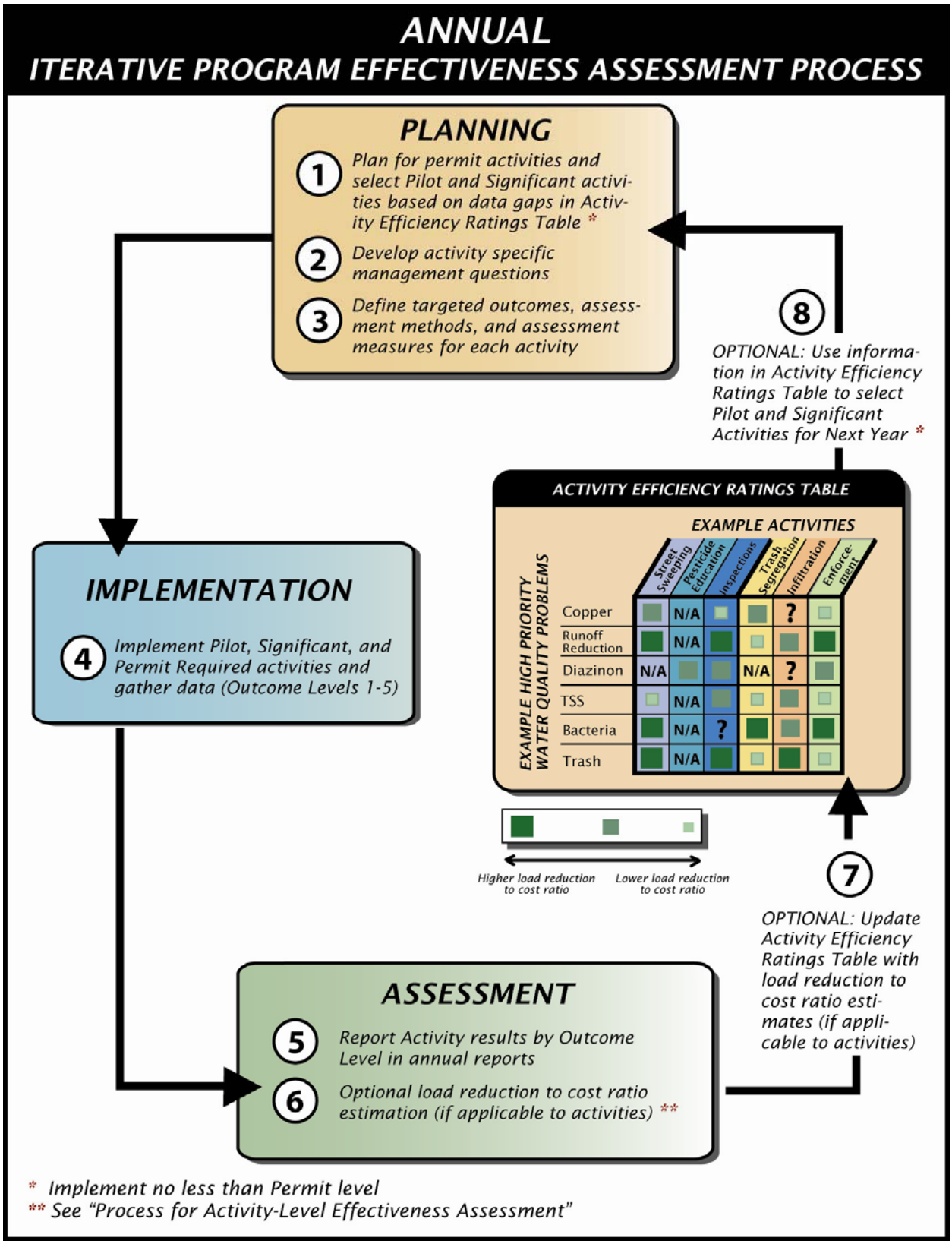

Figure 4-1. Planning, Implementation, and Assessment Process for URMPs

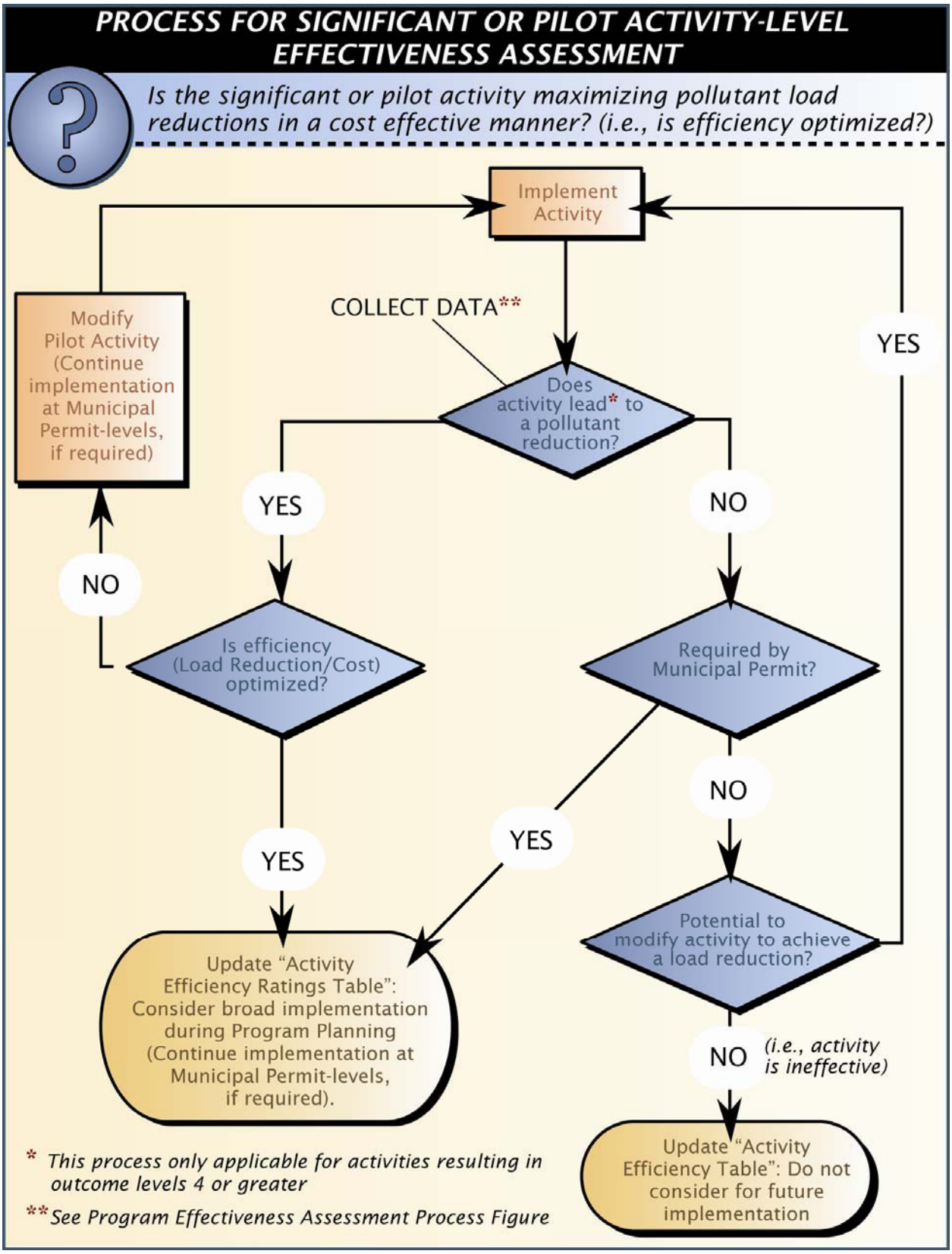

Figure 4-2. Flow Diagram of Activity-Level Effectiveness Assessment

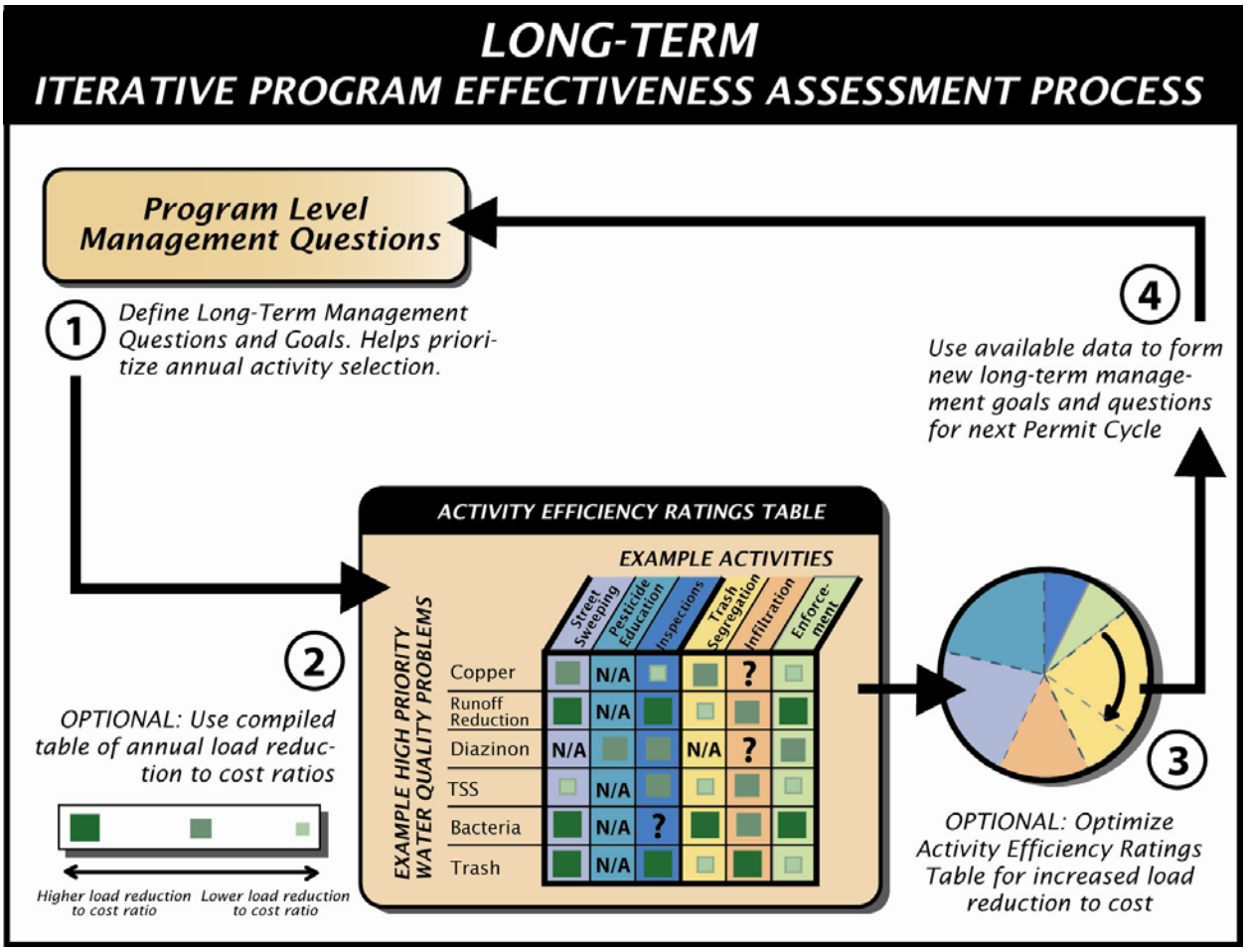

Figure 4-3. Long-Term Program Effectiveness Assessment Process

4.2 Effectiveness Assessment using Targeted Outcome Levels

Section 4.2 describes how the activities conducted during FY 2008 relate to the overall program goal, objectives, and hierarchy of targeted outcomes that were described in Section 4.1. This section is presented by outcome level, to illustrate how all of the activities implemented during FY 2008 work together within the WMA to help increase stormwater awareness, change behaviors to reduce load generating activities, reduce loads, improve runoff, and ultimately improve the quality of receiving waters.

Table 4-1 below presents a summary of the activities implemented during FY 2008 and how they relate to the targeted assessment outcomes. Current activity status is indicated by completed (C), ongoing (O), and new (N) activities (Level 1, Permit Compliance). During FY 2008, the City planned, initiated, or implemented a total of 37 water quality and education activities. Of these thirty-seven activities, the City is including in this section for the purpose of Program effectiveness assessment, 14 activities targeted at protecting and improving water quality in the watershed. This includes six activities resulting in measurable pollutant load reduction or source abatement (Level 4), and twelve activities resulting in changes to public knowledge/awareness or behavior changes (Levels 2 and 3) in FY 2008. The City focused activity selection toward

bacteria (Total and Fecal coliform), nutrients, and metals (Copper, Lead, and Zinc). In addition, the City also focused activity selection on regional pollutants such as trash.

Table 4-1. Summary Table of FY 2008 WURMP Activities Linked with Targeted Outcomes

ID Number	Activity Name	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		Permit Compliance	Awareness	Behavior Change	Load Reduction/Source Abatement	Discharge Quality	Water Quality
MB-1001	Alpha Project Trash Cleanups	C	X*		X		
MB-1002	ILACSD Trash Cleanup Sponsorship	O	X*		X		
MB-1003	SDCK Trash Cleanup Sponsorship (Rose Creek)	O	X*		X		
MB-1004, MB-1005, MB-1006, MB-1009	Mission Bay Watershed Targeted Inspections (four previously identified activities combined)	O	X	X	X		
MB-1010	Targeted Street Sweeping La Jolla ASBS Watershed	O			X		
MB-1019	South Shores RV Pump-Out Station	C			X		
MB-2001	Karma/Karma Second Chance Public Service Announcements	O	X	X			
MB-2002	Mobile Advertising (Bacterial, General)	O	X	X			
MB-2003	La Jolla Shores Commercial CBSM Outreach Pilot	N	X				
MB-2006	Clean Construction Poster Distribution	O	X	X			
MB-2007	Restaurant BMP Booklet Distribution	O	X	X			
MB-2008	Transit Shelter and Billboard Advertisements	O	X	X			
MB-2009	Mission Bay Focused Outreach	N	X				
MB-2010	La Jolla Shores Residential CBSM Outreach Pilot	N	X				

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness.

4.2.1 Level 1: Compliance with Activity-Based Permit Requirements

Within the Mission Bay and La Jolla Watershed, the City fulfilled the WURMP requirements of the Municipal Permit during the FY 2008 reporting period. Table 4-2 relates the activities conducted by the City to the requirements specified in the Municipal Permit.

Table 4-2. Level 1 Permit Compliance

Permit Requirements (§J.3.b.2)	Activities	Status
(a) A description of all activities conducted by the watershed Copermittees	All activities – see activity summary sheets in Appendices A and B	Complete
(b) Any updates to watershed map	Mission Bay and La Jolla Land Use Map located in Appendix C	Complete
(c) Updated assessment of the WMA's water quality data and identification of high priority water quality problems	San Diego County Municipal Copermittees 2007-2008 Urban Runoff Monitoring Report Water Quality Assessment Section 2 of this report	Complete
(d) Identification of the likely sources, pollutant discharges and other factors causing the water quality problems	Section 2 of this report See activity summary sheets pertaining to bacteria and other source identification studies	Complete
(e) Updated list of potential Watershed Water Quality Activities	See Section 3, Table 3-3	Complete
(f) Identification and description of Watershed Water Quality Activities implemented during reporting period	See Activity Summary Sheets in Appendices A and B; MB-1001, 1002, 1003, (1004, ,1005, 1006, 1009 – combined), 1010, 1019	Complete
(g) Updated list of potential Watershed Education Activities	See Section 3, Table 3-3	Complete
(h) Identification and description of Watershed Education Activities implemented during reporting period	See Activity Summary Sheets in Appendices A and B; MB-2001, 2002, 2003, 2006, 2007, 2008, 2009, 2010	Complete
(i) Public participation	See Section 3.3	Complete
(j) Description of Copermittee collaboration efforts	No other agencies are cited in the Municipal Permit as Copermittees. However, the City worked with other agencies not cited as Copermittees, such as UCSD and SIO.	Complete
(k) A description of efforts implemented to encourage collaborative, watershed based, land-use planning.	See activity summary sheets pertaining to the Integrated Coastal Watershed Management Plan (ICWMP) is in its implementation phase, with BMPs and monitoring studies being implemented by the City, UCSD, SIO, and San Diego Coast Keepers	Complete
(l) Description of all TMDL activities implemented	No TMDLs currently in effect. See Section 4.4	N/A
(m) Effectiveness Assessment of the WURMP	This section fulfills this requirement.	Complete

4.2.2 Level 2: Changes in Knowledge / Awareness

As summarized in Table 4-1, during FY 2008 the City implemented twelve (12) activities that resulted in an expected outcome of increased awareness of water quality issues (Level 2). The achievement of this level of effectiveness was measured through surveys, number of education materials distributed, participants, etc. Of the sample of residents in all watersheds who participated in the 2008 *San Diego Storm Water* survey, 45% reported exposure to Stormwater outreach during FY 2008. These measurements are presented in the activity summaries in Appendix A. FY 2008 targeted outcome results for these activities are presented in Table 4-3.

Table 4-3. Level 2 Change in Knowledge/Awareness and Level 3 Change in Behavior

ID Number	Activity Name	Priority Pollutants Addressed	Level 2 Awareness	Level 3 Behavior Change
MB-1001	Alpha Project Trash Cleanups *	Trash, Bacteria	134 participants now more aware**	NA
MB-1002	ILACSD Trash Cleanup Sponsorship *	Trash, Bacteria	55 participants now more aware**	NA
MB-1003	SDCK Trash Cleanup Sponsorship*	Trash, Bacteria	80 participants now more aware**	NA
MB-1004, MB-1005, MB-1006, MB-1009	Mission Bay Watershed Targeted Inspections*	Bacteria, Nutrients, Metals	To Be Reported	Three (3) sites implemented corrective action during inspection
MB-2001	Karma/Karma Second Chance Public Service Announcements	Trash, Bacteria	45% Awareness of *Think Blue* Outreach^	Reported Decrease in Pollutant-Related Behavior^
MB-2002	Mobile Advertising (Bacterial, General)	Trash, Bacteria	45% Awareness of *Think Blue* Outreach^	Reported Decrease in Pollutant-Related Behavior^
MB-2003	La Jolla Shores Commercial CBSM Outreach Pilot	Bacteria, Trash	75% Survey Response Rate 80% Interview Participation	To be reported
MB-2006	Clean Construction Poster Distribution	Sediment	95 poster recipients more aware**	NA
MB-2007	Restaurant BMP Booklet Distribution	Bacteria, Nutrients	597 booklet recipients more aware**	NA
MB-2008	Transit Shelter and Billboard Advertisements	Bacteria, Trash	45% Awareness of *Think Blue* Outreach^	Reported Decrease in Pollutant-Related Behavior^
MB-2009	Mission Bay Focused Outreach	Bacteria, Trash	3,211 participants now more aware***	NA
MB-2010	La Jolla Shores Residential CBSM Outreach Pilot	Bacteria, Trash	62% Survey Response Rate	To be reported

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness.
**Assumed to contribute to overall program success, though the extent of each activity's contribution has not been measured
***Assumed increased level of awareness based on estimated total exposure for all three outreach events during FY 2008.
^Results as reported from 2008 *San Diego Storm Water* survey

These activities provided education on general watershed concepts, as well as information on specific priority pollutants within the Mission Bay and La Jolla WMA, increasing the public's level of knowledge and awareness. The *San Diego Storm Water* survey that the City administers to the public each fiscal year may allow a quantifiable estimate of progress for this tier over a long-term period.

In addition, while many of the special studies and source identification activities listed in Section 3 were not Education Activities in and of themselves, they did include public education and outreach components such as the distribution of informational fact sheets/flyers, web site updates, and reports of findings to the target audiences (residents, businesses and environmental groups and the public at large), all of which contribute to the overall success of the program.

4.2.3 Level 3: Behavioral Change

The education and public participation activities described in this report targeted human behavior through education and active engagement. Based on implementation of several programs, and the *2008 San Diego Storm Water Survey* results reported for FY 2008, it can be reasonably assumed that the City's efforts have had a positive effect on human behavior relating to water quality in the Mission Bay and La Jolla Watershed. The 2008 survey results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a trend towards positive behavioral change as fewer people are engaging in negative storm water practices.

In addition, as presented in Table 4-1, during FY 2008 the City implemented six (6) activities that can be expected or did result in behavioral change that will improve water quality (Level 3). The achievement of this level of effectiveness is measured through surveys, interviews and observational studies. The nature of these measurements were planned or discussed in the activity summaries. For example, the City has begun to implement baseline studies in the La Jolla watershed to assess behaviors creating urban runoff, which leads to pollutant loading to the ASBS. These baseline studies will be used to further assess the effectiveness in achieving behavioral change as the CBSM programs continue to be implemented.

4.2.4 Level 4: Load Reduction/Source Abatement

As shown in Table 4-4, the City implemented six (6) activities that resulted in measurable pollutant load reductions or source abatement (Level 4). These activities were targeted primarily toward trash, bacteria, metals and nutrients. For example, load reductions resulted from the Targeted Aggressive Street Sweeping Project, which swept up to 39,440 pounds of debris over 582 miles. The Mission Bay Watershed Targeted Inspections involved 45 total full equivalent inspections of restaurant, auto, animal and landscaping facilities. As a result, three sites needing corrections implemented corrections during the inspections, which resulted in source abatement. In addition, at the Coastal Cleanup Day event, 80 volunteers prevented 9,020 pounds of debris from entering the waterways. At the Alpha Project for the Homeless, Inc cleanups, a total of 13,680 pounds of trash were removed. In addition, 3,810 pounds of trash were removed during the ILACSD Creek to Bay Cleanup sponsorship, and five pounds were recycled. These efforts

resulted in load reductions and/or source abatement of potential discharges of priority pollutants into receiving waters.

Table 4-4. Level 4 Load Reduction/Source Abatement

ID Number	Activity Name	Priority Pollutants Addressed	Level 4 Load Reduction/Source Abatement	
MB-1001	Alpha Project Trash Cleanups	Trash, Bacteria	Trash Removed	13,680 pounds
MB-1002	ILACSD Creek to Bay Cleanup Sponsorship	Trash, Bacteria	Trash Removed	3,815 pounds
MB-1003	SDCK Coastal Cleanup Day Sponsorship	Trash, Bacteria	Trash Removed	9,020 pounds
MB-1004, MB-1005, MB-1006, MB-1009	Mission Bay Watershed Targeted Inspections	Bacteria, Nutrients, Metals	Source abatement assumed for 3 sites	
MB-1010	Targeted Aggressive Street Sweeping Project	Metals, Trash	Debris removed for mechanical and vacuum-assisted sweepers, grouped by land use	39,440 pounds
MB-1019	South Shores RV Pump-Out Station	Bacteria	Source abated with the upgrades at RV discharge location, including measures to protect the Bay from accidental discharge	

The City will continue tracking load reductions/source abatement and assessing watershed activity effectiveness in FY 2009 for ongoing and new projects.

In addition to the load reduction activity results presented in Table 4-4, several source identification studies are currently underway. These studies will ultimately lead to load reductions, as results of the studies assist the City in understanding of the sources of pollution and how they may be abated.

4.2.5 Level 5: Changes in Discharge Quality

The City has begun implementing activities for which future improvement in water quality of the discharge will be measured and quantified. In the future, projects such as Kellogg Park "Green Lot" Retrofit (see Appendix A) will involve monitoring of discharge points to determine the change in pollutant concentrations in runoff flowing into storm drains and receiving water.

4.2.6 Level 6: Changes in Receiving Water Quality & Assessment Summary

The City continued its monitoring programs in the Mission Bay and La Jolla WMA and made progress in implementing special studies to fill in data gaps.

The Copermittees anticipate using the Threat to Water Quality (TTWQ) rating system in future fiscal years to track changes in receiving water quality with more confidence, although it will always be inherently difficult to draw conclusions that specific upstream WURMP activities change receiving water quality. The Copermittees are addressing this issue at a regional scale.

In the interim, however, it should be noted that the percentage of City-wide beach advisories and closures measured in beach mile days, as compared to total beach mile days[1] possible, has continued to trend downward from calendar years 2000 through 2008 (Figure 4-4). This Level 6 data is an indicator of continued improvement in receiving water quality within the City, which is the ultimate management goal of the Storm Water Department. Although these data represent beaches City-wide, and it is premature to draw conclusive linkages between WURMP program efforts and receiving water quality, it can be inferred from this data that the Storm Water Department's WURMP program efforts have to some degree positively contributed to protection of surface water quality in the Mission Bay and La Jolla WMA.

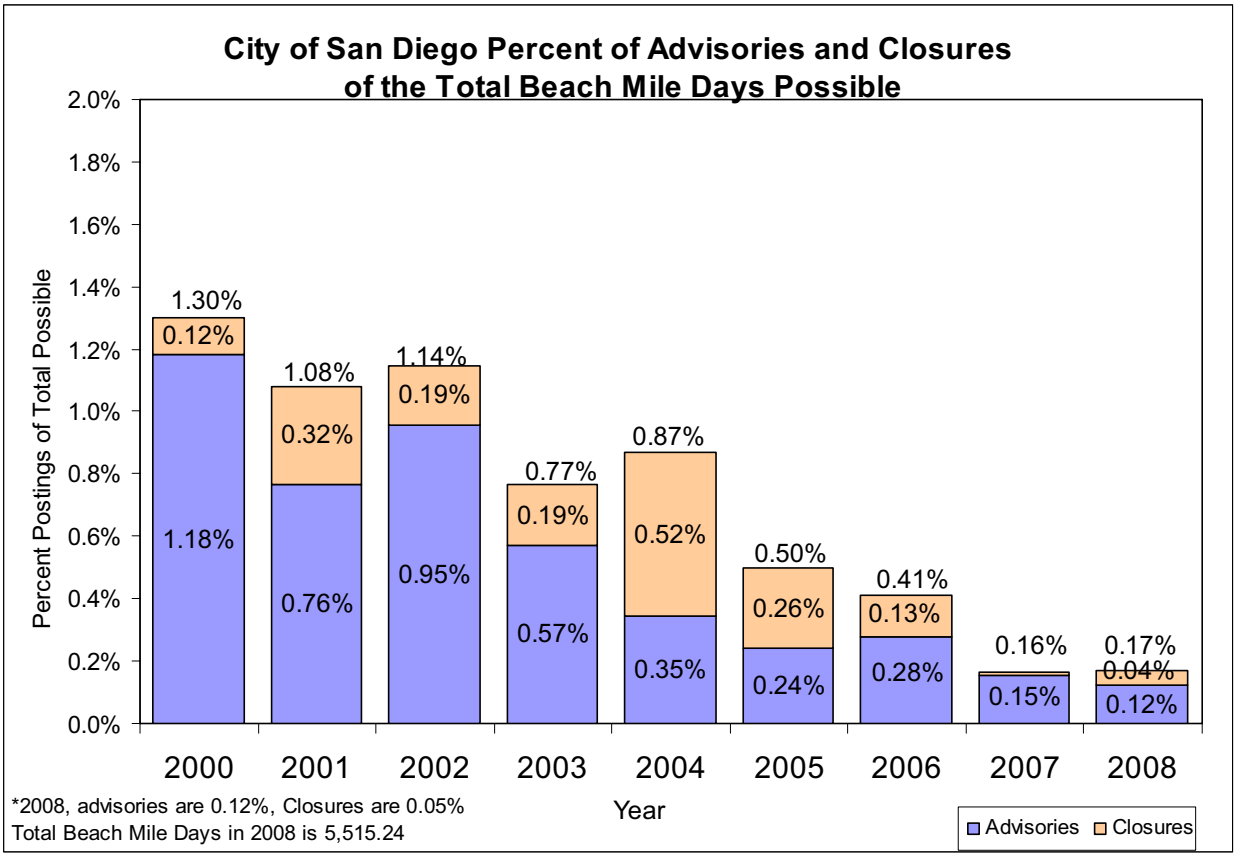

Figure 4-4. Percent of Beach Advisories and Closures as Compared to Total Beach Mile Days Possible

The City continues to identify methods for tracking data that will lend themselves to overall program evaluation. For example, the City has begun planning project-specific monitoring and assessment efforts for activities to be implemented in future fiscal years. The information learned, which may also be gleaned from activities implemented in other watersheds, will then be applied to modifications/improvements in the City's WURMP programs and potentially in the City's Jurisdictional Urban Runoff Management Program.

[1] Beach Mile Days is a metric tracked by the County of San Diego Department of Environmental Health.

4.3 Optional Efficiency Assessment

The City, though not specifically required by the Municipal Permit, selects WURMP activities to assess for cost efficiency, in accordance with its Strategic Plan. As activities are implemented and optimized, the efficiency rating for each activity is entered in the Activity Efficiency Ratings table as shown in Figure 4-1. The goal of this long-term effort is to develop a tool to assist Storm Water Managers in selecting the best suite of activities that provide the most benefits for the cost. Phase I of the Strategic Plan involves development of this tool, while Phase II and beyond involves improving and increasing implementation efforts.

The City initiated this effort in FY 2008. While cost data associated with the activities, as detailed in the activity summary sheets in Appendices A and B is tracked, results at this time are not conclusive as many of the activities initiated will be tracked over multiple years. Additionally, only one activity type, trash cleanups, has enough data currently to make a preliminary determination as to cost efficiency; even this determination is inconclusive at this time as the events analyzed are one time events and the data can be easily skewed. Therefore, the City will continue to analyze cost associated with activities, including trash cleanups, over the rest of the five year permit cycle.

4.4 Assessment of TMDL BMP Implementation Plan Effectiveness

No TMDLs are currently in effect for the Mission Bay and La Jolla WMA. However, the following water bodies in the WMA are currently listed as impaired per Section 303(d) of the Clean Water Act:

- Mission Bay: Bacteria indicators, lead, eutrophication
- Tecolote Creek: Bacteria indicators, cadmium, copper, lead, zinc, toxicity

State ASBS regulations prohibit waste discharges into the designated Areas of Special Biological Significance including the La Jolla State Marine Conservation Area (No. 29) and the San Diego-Scripps State Marine Conservation Area (No. 31), both in the Mission Bay and La Jolla WMA. The City submitted an application for exception for storm water discharges under the regulations. Once the State adopts special conditions for the exception to protect the ASBS, the City will be subject to the conditions including preparation of any action/response plans.

As TMDLs and ASBS special requirements are developed to address the issues for the above water bodies, the City will work to integrate TMDL and ASBS efforts with WURMP efforts to maximize resources and efficiency. TMDL BMP implementation plans affecting the Mission Bay and La Jolla WMA will be described and reported in the Mission Bay and La Jolla WURMP annual reports as required by the Municipal Permit.

It is important to note that the City's Strategic Plan, which comprehensively considers all current and anticipated regulations, including ASBS protection, is being implemented in this WMA. Through the implementation of pilot activities, the City will refine and maximize the efficiency of activities, which will help the City to pro-actively implement the best suite of proven efficient activities when the TMDL regulations and ASBS Special Protections are adopted. For those activities that are currently being implemented see Section 3.0 – Implementation of Watershed Activities for details on the pilot activities, Table 3-3, and Appendices A and B.

Should a TMDL come into effect within the Mission Bay and La Jolla WMA, the City will meet Permit requirements by reporting all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. It should be noted that certain activities in this Annual Report are described as addressing TMDLs that are still in development or whose Implementation Plans are yet to be developed and approved. Although these activities have not yet been integrated into Implementation Plans as of the writing of this Annual Report, it should be recognized that they still contribute to addressing future TMDL requirements and also demonstrate the City's proactive stance in addressing future TMDLs. Whether under the JURMP, WURMP, or RURMP, all activities implemented in the Mission Bay and La Jolla WMA, ultimately play a part of meeting of future TMDL requirements and should be acknowledged appropriately.

Section 5 Conclusions and Recommendations

5.1 Conclusions

The City has taken the appropriate actions to meet the challenges of implementing the Municipal Permit requirements through the Mission Bay and La Jolla WURMP as detailed in this Annual Report.

In FY 2008, the City completed construction of the South Shores RV Dump Site Upgrade which prevents raw sewage spills at the RV dump site from entering directly into Mission Bay. The City worked on six conceptual plans for structural projects, and initiated design for several others. All of the projects implemented, initiated, and reported in FY 2008 are anticipated to boost the efforts of the City to improve the water quality by reducing and/or treating pollutant loads into water bodies.

As detailed in activity summary sheets included in Appendices A and B, the City also implemented several non-structural BMPs in the watershed, including distribution of educational materials, and sponsorship of trash cleanups resulting in 26,515 pounds of trash being removed from waterways. The City initiated two Community Based Social Marketing activities, and engaged 673,222 members of the public through a focused outreach program in Mission Bay. The City also increased awareness through: PSAs with 3,198,751 impressions made in homes through television and 1,025,636 impressions made to the public through radio announcements; mobile advertising with an estimated audience of 638,480 impressions; and with 1,931,720 impressions for transit shelters and 449,400 impressions for billboards. A 5% reported decrease in the percentage of residents hosing down their driveways along with a 2% reported decrease in residents using pesticide or weed killers was reported. The City also continued its Focused Inspections Program, abating three potential sources through correction of inefficient BMPs. These projects help improve water quality by targeting sources (i.e., human activity) through education, outreach, public participation, and enforcement.

Furthermore, the City has made significant progress on special studies and plans. The Phase I Tecolote Creek Bacterial Source Identification Study was completed and planning began for Phase II. Sampling began for the Dry Weather Aerial Deposition Study. The City continued to collaborate with Scripps Institute of Oceanography, UCSD, and San Diego CoastKeeper in implementing the *La Jolla Shores Coastal Watershed Management Plan* for the ASBS drainage area. Planning for design storm studies began for the Tecolote Creek Bacteria TMDL and San Diego Region Beaches and Creeks Bacteria TMDL. These activities will benefit the Mission Bay and La Jolla WMA by providing data and water quality activity recommendations for future implementation efforts.

Based upon the Water Quality Assessment in Section 2, the high priority water quality problems are: bacteria, metals, and nutrients. Though the City cannot conclusively link the specific activities to receiving water quality, beach closures reported City-wide have decreased significantly since 2000. The City believes that its efforts demonstrated in this report, efforts which focused on the high priority water quality problems, likely had positive effects on water quality and, in part, contributed to the decline in beach closures.

The City not only met the minimum requirements of the Municipal Permit, but implemented additional water quality and education activities, and has initiated a Strategic Plan to assess efficiency of these activities in order to better allocate resources in future years for the purpose of achieving the best improvement to water quality with those resources.

5.2 Recommendations

The updated Municipal Permit was adopted in 2007 by the Regional Board with a cycle of five years. To help focus efforts for the recently adopted Permit, the City recommends the following strategy for increasing the level of understanding of pollutants and their sources:

1. Refine and Improve Water Quality Activities. The City is continually developing and refining its list of watershed activities to more efficiently protect and improve water quality. The City is implementing and analyzing different activity types and plans to capture this data in the Activity Efficiency Ratings Table. The City intends to use the best available data to refine and improve its activities including the findings as included in the aforementioned table. Implementation of activities is ultimately subject to funding availability. Modifications based on the results of water quality and effectiveness/efficiency assessment is anticipated to lead to the best allocation of resources leading ultimately to the goal of improving storm water discharges.

2. Expand Knowledge of Pollutant Sources. The City has developed as part of this program an approach to expand understanding of the water quality issues in the Mission Bay and La Jolla WMA (i.e., the pollutant sources and magnitude of the issues), so that the City, other entities, and interested members of the public can make more informed decisions and actions. The City's recommended approach for increasing its level of understanding involves two prongs:

- Continue to gather additional water quality monitoring data suitable for conducting assessment at the watershed and subwatershed levels. In order to effectively assess water quality at both the watershed and subwatershed levels, additional monitoring during both the dry and wet seasons is needed throughout the WMA so that priority water quality problems may be accurately identified, characterized, and prioritized.
- Continue to research and characterize pollutant sources and their loading potential. A more positive identification of sources and their loading potential would allow the City to modify program activities wisely and devote scarce resources to target specifically the most troublesome sources using the most efficient BMPs.

Specific recommendations, which were outlined in the City's Strategic Plan are as follows:

- Complete the Tecolote and La Jolla Design Storm Studies.
- Investigate whether synthetic pyrethroids are an emerging PWQP.
- Finish the investigation of the sources of metal loading to the receiving waters targeting air deposition, light-industrial facilities and auto-related facilities, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
- Continue to investigate anthropogenic sources of bacteria load, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
- Assess the magnitude of bacteria re-growth within the channel.

- Investigate nutrient exceedances trends, loading and potential to verify the priority of this PWQP which is included in the 303d list for both Tecolote Creek and the mouth of Rose Creek.
- Investigate anthropogenic sources of sediment load in Tecolote Creek and the ASBS that is resulting in exceedances of turbidity and determine the loading on a sub-watershed basis to verify the priority sectors.
- Development of an overall mass balance loading estimate for sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

3. Refine and Improve Effectiveness Assessment. The City has developed a framework to assess the efficiency of its JURMP and WURMP activities. It is built upon the premise that individual activities should be optimized with regards to efficiency, which is defined as pollutant load reduction divided by cost. By knowing the efficiency rates of activities, the City can implement the best suite of activities to maximize load reduction using given resources. Therefore, the City's assessment framework directs activity implementation and assessment to be designed in a manner that will allow for the investigation and verification of efficiency rates. A combined assessment of the different efficiency rates that help establish the best suite of activities to maximize load reduction will then feed into program assessment to determine if the program goal and objectives have been met. The City will continue to refine and improve this framework through implementation, which is anticipated to lead to more efficient activity implementation and better program results.

Section 6 References

California Regional Water Quality Control Board, San Diego Region. Order No. 2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego Regional Airport Authority. January 2007.

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Weston Solutions, Inc. *Tier II and Tier III Storm Water Best Management Practices Conceptual Designs.* July 28, 2008.

APPENDIX A
WATERSHED WATER QUALITY AND EDUCATION ACTIVITY SUMMARY SHEETS

TITLE: **Alpha Project for the Homeless, Inc. Cleanup Sponsorship**
ID NUMBER: **MB-1001**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) partnered with Alpha Project for the Homeless, Inc. (Alpha Project), through a Memorandum of Understanding to conduct trash and debris cleanups and potential homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2008.

Alpha Project conducted a cleanup at several locations. The following table shows the FY 2008 dates of the Alpha Project Cleanup, the locations, the amount removed in tons, and the numbers of workers. Based on this information, the effectiveness assessment section, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity.

Table 1 – Alpha Project Cleanups

Date	Location	Amount removed in tons	Number of workers
7/2/2007	Pacific Beach Tourmaline	0.4	4
7/2/2007	Kellogg Park	0.4	4
7/13/2007	Pacific Beach Crystal Pier	0.4	4
7/13/2007	Mission Bay Santa Clara Pt	0.4	4
7/13/2007	Mission Beach - Belmont Park	0.4	4
7/13/2007	Mission Bay Jetty So Mission Beach	0.4	4
7/13/2007	Mission Bay West Bonita Cove	0.4	4
9/10/2007	Mission Bay Park	0.21	5
9/17/2007	Mission Bay Park	0.21	6
9/24/2007	Mission Bay Park	0.21	6
10/1/2007	Mission Bay Drive	0.21	9
10/9/2007	Mission Bay Drive	0.21	5
10/15/2007	Mission Bay Drive	0.21	3
10/24/2007	Mission Bay Drive	0.21	4
10/30/2007	Mission Bay Drive	0.21	4
11/6/2007	Mission Bay Dr	0.21	4
4/25/2008	Genesse and Banrock St	0.06	4
4/25/2008	Lamont St	0.06	4
4/25/2008	Morell & Honeycutt St	0.06	4
4/25/2008	Quincy & Thomas	0.06	4
5/9/2008	Old Meadow Rd	0.26	4
5/9/2008	Mount Ariane Dr	0.26	4
5/16/2008	Genessee & Bannock St	0.07	4
6/20/2008	Fireway Dr	0.07	5
6/20/2008	5060 Santa Fe St	0.07	5
6/20/2008	Mission Bay Dr/Damon Ave	0.07	5
6/20/2008	Morena Blvd	0.07	5
6/27/2008	Marian Bear Open Space & Tecolote	1.04	12
	TOTAL	**6.84**	**134**

In the Regional Board comment letter[1], Regional Board staff indicated that the City would need to provide locations selected and the amount of trash collected at those locations, and that the Copermittees would receive credit only for the first trash cleanup event in the fiscal year. Locations and trash information are provided above. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will not continue the Alpha Project trash cleanup sponsorship in FY 2009. The reporting of this activity will cease with this annual report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy and for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Cleanups by Alpha Project result in load reduction of trash and debris directly and of bacteria indirectly though trash and debris as a source.

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
ALPHA PROJECT FOR THE HOMELESS, INC. CLEANUP SPONSORSHIP **Assess the Efficiency and Effectiveness of Sponsoring Local Cleanup Efforts to Remove Litter from Public Areas and Waterways**		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound)	
Targeted Measurable Outcome(s)	Achieve load reduction of bacteria (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	13,680 pounds
	Number of participants (Outcome Level 1)	134
	Amount of money spent on cleanups (Outcome Level 1)	$6,977
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.51/pound

Objectives
The goal of the activity assessment is to determine the efficiency of load reduction associated with sponsoring trash cleanups.

Analysis and Results
Alpha Project conducted a cleanup at 21 locations in the Mission Bay and La Jolla WMA on 16 different dates (some locations were visited more than once), with an estimated 134 workers. Approximately 13,680 pounds of trash and debris were removed, and at $0.51 per pound the total cost of cleanups was $6,977.

Conclusions
The City's contract with Alpha Project resulted in a load reduction of 13,680 pounds of trash. Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2008.

The City will not continue the Alpha Project Cleanups in FY 2009. The reporting of this activity will cease with this annual report. The project's efficiency was determined by comparing the load reduction to the amount of money spent on the cleanup events as indicated above.

TITLE: **I Love a Clean San Diego Trash Cleanup Sponsorship**
ID NUMBER: **MB-1002**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The City of San Diego (City) sponsored the Rose Creek site in the Mission Bay and La Jolla WMA. 3,810 pounds of trash and debris were removed and 5 pounds of trash and debris was recycled from 4 miles on April 26, 2008 by approximately 55 volunteers.

Based on the information above, the effectiveness assessment section, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity.

In the Regional Board comment letter[1], Regional Board staff indicated that the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Mission Bay and La Jolla Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	• Load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	3,810 pounds
	Pounds of trash recycled (Outcome Level 4)	5 pounds
	Total pounds of trash removed (Outcome Level 4)	3,815 pounds
	Number of participants (Outcome Level 1)	55
	Amount of money spent on cleanups for all WMAs (Outcome Level 1)	$5,000
	Estimated amount of money spent on cleanups for Mission Bay and La Jolla WMA (Outcome Level 1)	$833.33*
	Activity Efficiency (Total Cost/Pounds of Debris Removed)	$0.22/pound

*Calculated by dividing total sponsorship cost by six WMAs.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On April 26, 2008, 55 participants removed approximately 3,810 pounds of trash and debris and recycled approximately 5 pounds of trash and debris from numerous sites in

the Mission Bay and La Jolla WMA. The average estimated sponsorship cost was $833.33 per WMA ($5,000/6 WMAs). Thus, using the 3,815 pound load reduction associated with this sponsorship, an efficiency of $0.22 per pound of trash removed was determined.

Conclusions

The City's sponsorship of the Creek to Bay Cleanup resulted in a load reduction of $3,815 pounds of trash in the Mission Bay and La Jolla WMA. Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2008.

Implementation of this activity and assessment of load reduction as well as further assessment of efficiency will occur again in FY 2009.

TITLE: **SDCK Coastal Cleanup Day Sponsorship**
ID NUMBER: **MB-1003**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. SDCK recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 15, 2007. The City of San Diego sponsored the Rose Creek Pacific Beach site in the La Jolla and Mission Bay Watershed Management Area (WMA). 9,020 pounds of trash and debris were removed (20 pounds of this trash and debris was recycled) by 80 volunteers. Volunteers were asked to track the debris collected by implementing data cards provided by the Ocean Conservancy.

Based on the information above, the effectiveness assessment below, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2008.

In the Regional Board comment letter[1], Regional Board staff indicated that the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK staff to ensure that sites within the Mission

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

Bay and La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- SDCK
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	9,020 pounds
	Number of participants (Outcome Level 1)	80
	Amount of money spent on cleanups for all six WMAs (Outcome Level 1)	$6,000
	Amount of money spent on cleanups for the Mission Bay and La Jolla WMA (Outcome Level 1)	$1,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.11/pound

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

The event's debris removal was tracked using data cards provided by Ocean Conservancy, and a 9,020 pound load reduction recorded for the September 15, 2008 cleanup event. There was a total of $6,000 estimated for the sponsorship cost for all six WMAs within the City's jurisdiction and 80 participants in this watershed. For the cost estimates, it was assumed that each site sponsored at the "Garibaldi Sponsor" level, or $1,000. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the pounds of trash removed, was $0.11 per pound.

Conclusions

The City's sponsorship of Coastal Cleanup Day resulted in a load reduction of $9,020 pounds of trash in the Mission Bay & La Jolla Watershed. Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2008.

Implementation of this activity and assessment of load reduction as well as further assessment of efficiency will occur again in FY 2009.

TITLE: **Targeted Facility Inspections (Combined)**
ID NUMBER: **MB-1004, MB-1005, MB-1006, MB-1009**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a focused inspection program to target facilities that are potential sources of high priority pollutants. In the Mission Bay and La Jolla Watershed Management Area (WMA), the City is focusing on animal facilities, auto shops, landscaping-related facilities, and restaurants. The long-term goals of the program are:

- Determine the most efficient frequency of inspections to ensure proper Best Management Practices (BMPs) implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The City delineated a specific area within the Mission Bay and La Jolla WMA to conduct the targeted inspections based on factors such as facility clustering and proximity to other watershed activities being conducted. The overall approach of the site selection process focused first on the specific business categories within the prioritized sectors in each WMA. If multiple category types were targeted for inspection in a particular WMA, a fairly equal distribution of sites from each category was selected for inspection where possible. In addition, knowledge gained by the City from past inspections was used to consider the likelihood of certain business types and areas of the City to be more problematic than others regarding constituents of concern in each WMA

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected community, only one inspection was conducted at each facility. The inspections that were conducted provide baseline data for comparison to future years' watershed-focused inspection programs. Information gathered during the FY 2008 watershed-focused inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years.

45 full inspection equivalents (35 full inspections and 20 “other site visits”) occurred across the Mission Bay and La Jolla WMA at animal facilities, auto shops, landscaping-related facilities, and restaurants. Full inspection equivalents are equal to the number of full inspections plus one half the number of "other site visits" (site visits that did not result in a full inspection), excluding other site visits where the facility has moved and is gone and a replacement business was found. This metric allows for a more equal comparison of inspection effort among WMAs.

This activity is in active implementation, and source abatement information is included in the effectiveness assessment section of this activity summary sheet. The City requests credit for one of the two required watershed water quality activities for this reporting year with this activity.

The City acknowledges Regional Board staff’s comment[1] that recorded data and assessment are needed regarding the inspections and that the inspections must be above and beyond JURMP requirements. Inspections under this activity were conducted at facilities that were not inspected under the JURMP program. Recorded data and assessment are included in this report.

Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become “business as usual.” However, the City is implementing this non-capital activity over multiple years to optimize the program prior to incorporating the results and recommendations into the JURMP. Specific changes to the JURMP are not yet planned as the study is ongoing at this time. Incorporating this activity into the JURMP at this time would be premature in putting valuable resources toward wide-scale implementation before the program is optimized. With optimization the City anticipates gaining the strongest improvement to storm water discharge quality that is achievable at this point in time. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as “business as usual.”

It should be noted that all of the inspections (animal, automotive, landscaping-related, and restaurant facilities) are being reported on one activity summary sheet for FY 2008 due to the structuring of this year’s program. The inspections were previously detailed as separate activities in the 2008 Mission Bay and La Jolla WURMP. For consistency, the activity numbers are included in the heading of this summary sheet. The City is not expecting to receive four watershed water activity credits (one for each type of facility) for this program year; the City is requesting credit for one of the two required activities in this program year. However, the program may be restructured in the future and depending on the scale of implementation, the City may request credit for different facilities in the future.

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS.” September 23, 2008. (Place Number 710562: L Walsh)

Additionally, Regional Board staff commented that animal-related facility inspections will not be given credit in FY08 since they were completed in FY06/07. This statement is not accurate, as restaurant inspections, not animal facility inspections were implemented in FY 2007. Furthermore, the Municipal Permit does not preclude credit over multiple years for non-capital projects. Section E.2.f.(4) states that "capital projects are in active implementation for the first year of implementation only." There is no reference to non-capital projects.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The City selected and hired a consultant who implemented the watershed-focused project from the end of March through June 2008. The City will continue to evaluate ways to optimize the inspection of various facilities in the future. The City is currently developing its 2009 program and anticipates continuing piloting the targeted inspections through FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Mission Bay and La Jolla inspections target the following high priority water quality problems:

FACILITY TYPE	HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED		
	Nutrients	Bacteria	Metals
Animal		X	
Auto Shops			X
Landscaping-related	X		
Restaurants		X	

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections will contribute to addressing

discharges, correct behaviors, and abate sources associated with bacteria, metals, and nutrients.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Facility Inspections**		
Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect source abatement? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of source abatement be made from inspection data?	
Targeted Measurable Outcome(s)	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	Number of restaurant facility full inspections, spot and scheduled (Outcome Level 1)	21
	Number of restaurant follow-up inspections (Outcome Level 1)	2
	Number of auto facility full inspections, spot and scheduled (Outcome Level 1)	10
	Number of auto follow-up inspections (Outcome Level 1)	1
	Number of animal facility full inspections, spot and scheduled (Outcome Level 1)	2
	Number of animal follow-up inspections (Outcome Level 1)	0
	Number of landscaping facility full inspections, spot and scheduled (Outcome Level 1)	2
	Number of landscaping follow-up inspections (Outcome Level 1)	1
	Number of Sites Needing Corrective Action (Outcome Level 1)	35
	Number of Sites that Implemented Some Corrective Action During Inspection (i.e. BMPs implemented) (Outcome Level 3)	3
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level 4)	3
	Number of missing BMPs (Outcome Level 1)	32
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	0
	Total IC/IDs Receiving Notice of Violation, and therefore abatement (Outcome Level 4)	0
	Total number of full equivalent inspections, spot and scheduled (Outcome Level 1)	45*

Watershed: Mission Bay and La Jolla	
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Facility Inspections**	
Recommended Data	• Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of educational information items passed out (Outcome Level 3) • Potential Pollutant Discharge Assessment (Outcome Level 4)

* Includes "other site" visits in calculation of the total.

Objectives

Goals of this activity assessment include determination of the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections, to ensure proper BMP implementation and reduce pollutant loading.

Analysis and Results

A breakdown of the number of sites needing corrective action and number of sites that implemented at least some corrective action during the inspection were included in the Watershed-Focused Storm Water Compliance Inspection Program Report[2] and is included in Table 1. The table also includes the number of Illegal Connections/Illicit Discharges (IC/ID) observed during inspections, and the total number of IC/IDs abated during inspections. Three of the 35 sites implemented corrective action during the inspection, resulting in source abatement at this facility.

Table 1. Corrective Actions Implemented at Time of Inspection

Area	Number of Sites Needing Corrective Action	Number of Sites That Implemented Some Corrective Action During Inspection	Total IC/IDs Observed	Total IC/IDs Eliminated During Inspection
MB/LJ	35	3	0	N/A

Although a load reduction was not calculated for each location, abatement of potential sources (Outcome Level 4) may be assumed with corrective actions being implemented due to the inspections. Future years' analysis will include a detailed pollutant discharge potential assessment to better show this source abatement. Inspected facilities were assigned a rating to reflect the level of BMP implementation noted at the site, and a separate rating to reflect the facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility.

Table 2 presents a breakdown of the average knowledge and average BMP implementation scores for inspected facilities in each WMA. In the Mission Bay and La Jolla WMA, the Average BMP Implementation Score increased while the Average

[2] D-MAX Engineering, *Watershed-Focused Storm Water Compliance Inspection Program* (September 2008).

Knowledge score decreased. While some conclusions can be drawn based on the results of the FY 2007 and FY 2008 inspection programs, the number of inspections completed, the individual sites visited, and the business types targeted in each WMA were not the same in FY 2008 as in FY 2007. Because of these differences, drawing definitive conclusions is difficult. The City is modifying its strategy for future years, and the use of the new inspection form should provide the ability to derive more solid conclusions in future years to help optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

Table 2. Breakdown of Average Knowledge and BMP Implementation Scores by Area

Area	Average Knowledge Score FY 2007	Average BMP Implementation Score FY 2007	Average Knowledge Score FY 2008	Average BMP Implementation Score FY 2008
MB/LJ	2.1	2.8	1.9	3

Conclusions

The City abated three potential sources of pollutant discharges in the Mission Bay and La Jolla through this activity's implementation in FY 2008.

During FY 2009, additional inspection data will be collected to augment data collected during FY 2008. Further analysis of inspection efficiency, BMP implementation and education, and their source abatement effectiveness is required before further conclusions can be made and will include the cost of inspections, BMP implementations, education data, and enforcement follow-ups.

TITLE: **Targeted Municipal Facility Inspections**
ID NUMBER: **MB-1007**

ACTIVITY IMPLEMENTATION

The Storm Water Department had planned to develop a focused inspection activity to target municipal facilities within the Mission Bay and La Jolla WMA. The purpose of the activity was to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

Based on Regional Board staff comments[1], the Storm Water Department will no longer pursue this activity under the WURMP section of the Municipal Permit. The Storm Water Department may choose to reconsider this as a significant JURMP activity in the future, though staff time and resources are currently allocated to other projects and significant activities. The reporting of this activity will cease with this annual report.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning and implementation is not yet scheduled for this activity. If it moves forward, it would be reported under the JURMP.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

If implemented under the WURMP, the activity would have been consistent based on the City's *Strategic Plan for Watershed Activity Implementation* which identifies bacteria, nutrients, and metals as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity if pursued would contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria, nutrients, and metals at municipal facilities. However, if pursued, the activity would occur under the City's JURMP.

EFFECTIVENESS MEASUREMENTS

Watershed: Mission Bay and La Jolla
TARGETED MUNICIPAL FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Municipal Facility Inspections**

Based on Regional Board staff comments[2], the Storm Water Department will no longer pursue this activity under the WURMP section of the Municipal Permit. The Storm Water Department may choose to reconsider this as a significant JURMP activity in the future, though staff time and resources are currently allocated to other projects and significant activities. The reporting of this activity will cease with this annual report.

[2] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TITLE: **Targeted Aggressive Street Sweeping Project**
ID NUMBER: **MB-1010**

ACTIVITY IMPLEMENTATION

The City of San Diego is conducting a 24-month street sweeping effectiveness study in the La Jolla Shores area. The study investigates the effectiveness of vacuum-assisted street sweepers compared to mechanical sweepers in reducing the accumulation of metals on City streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study is to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study includes the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency.

The City is using the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target areas within the Mission Bay and La Jolla WMA. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study, and meetings held with relevant City staff, the routes that have been selected are in the highest priority sectors of the Mission Bay and La Jolla WMA that have a higher potential for metals loading.

In anticipation of the start of sweeping, the City conducted the following community outreach and information dissemination efforts in FY 2008:

- Community meetings held in April 2008 and June 2008 in Clairemont and La Jolla areas
- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Article on project published in Council District 6 newsletter, *Frye Lights*, in April 2008
- Newspaper display advertisements placed in community newspapers
- Door hangers and brochures distributed in Clairemont
- Information shared with Council Offices

The City installed "no parking" signs along the project sweeping routes in Clairemont in March and April 2008. Sweeping in the Clairemont area began in April 2008. The City's consultant conducted debris baseline monitoring and characterization. Table 1 below summarizes the number of broom miles swept and the pounds of debris removed during the reporting period. Table 1 below also estimates the number of broom miles swept and the pounds of debris removed during the report period above and beyond what would have been swept and removed per JURMP requirements.

Table 1. Estimates of Miles Swept and Pounds of Debris Removed in FY 2008.

	Pounds Debris Removed	Broom Miles Swept***
JURMP Requirement*	39,440	582
Street Sweeping Project**	39,440	582
Total	**78,880**	**1,164**

Notes:
*Assumes JURMP requirement of once-a-month sweeping per side in general for streets included in project.
**Assumes street sweeping project in general increased sweeping frequency from once a month to twice a month.
***"Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Based on this information, the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load reduction of bacteria (a high priority water quality problem in the Mission Bay and La Jolla Watershed Management Area (WMA)), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2008.

The City is in the midst of the street sweeping study and is working to optimize the activity. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as "business as usual" at this time. Additionally, specific changes to the JURMP are not yet planned as the study is ongoing at this time. Once the activity is optimized, the City anticipates incorporating the most efficient activities into the JURMP to gain the strongest improvements regarding storm water discharges.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Sweeping in the Clairemont area started in April 2008 and is anticipated to continue through summer 2010. Sweeping in the La Jolla area will begin in October 2008. Use of vacuum-assisted street sweepers will begin in FY 2009 for these project routes. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identifies metals as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. Targeted increased sweeping targets metals on City streets.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
TARGETED AGGRESSIVE STREET SWEEPING PROJECT Assess the Efficiency of Street Sweeping Frequency and Methods		
Management Questions	• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?	
Targeted Measurable Outcome(s)	• Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement	
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)	
Data Recorded	Total pounds of debris removed for the mechanical sweepers* (Outcome Level 4)	39,440 pounds
	Total broom miles swept for the mechanical sweepers** (Outcome Level 4)	582 mile
	Total pounds of debris removed for mechanical sweepers per mile swept (Outcome Level 4)	68 pounds/mile
Recommended Data	• Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)	

*Assumes street sweeping project in general increased sweeping frequency from once a month to twice a month.

**"Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Objectives

The goal of the assessment is to investigate the effectiveness of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data will also be evaluated for the purpose of establishing optimal sweeping frequencies.

Analysis and Results

The study included the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. A total of 39,440 pounds of debris was removed by mechanical sweepers, over a total of 582 miles swept. Further analysis is underway to address the study objectives during FY 2009.

Conclusions

Conclusions and recommendations will be made in the final report, as sweeping in the Clairemont area started in April 2008 and is anticipated to continue through summer 2010. Sweeping in the La Jolla area will begin in October 2008. Use of vacuum-assisted street sweepers will begin in FY 2009 for these project routes. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets. This effectiveness assessment monitoring will be coordinated with additional air deposition sampling and effectiveness monitoring of combined Tier I and Tier II BMPs in Mission Bay and La Jolla.

TITLE: **Mission Bay Watershed Municipal Rain Barrel Installation and Downspout Disconnect Project**

ID NUMBER: **MB-1011**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities. Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, and effectiveness assessments.

The City is using the prioritization process that is outlined in the *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Mission Bay and La Jolla WMA and other watersheds for this project. Based on this prioritization plan, the two selected sites for rain barrel installation, Kellogg Park and Rose Canyon Purchasing/Central Stores, were in one of the highest priority sectors of the Mission Bay and La Jolla WMA for potential for pollutant loading.

The first phase of this project will focus on installing rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the project will be applied to implementation in residential areas.

Based on these findings, the City may modify its municipal rain barrel installation and downspout disconnect project to increase effectiveness and/or seek City Council approval for additional funding to implement future phases (i.e., incentives) and additional rain barrel/downspout disconnect systems.

A one page information sheet regarding the rain barrels was developed in the summer of 2007. Kellogg Park and Rose Canyon Purchasing/Central Stores were chosen as sites for the installation. The site selection process was long and iterative. Field reconnaissance was required to identify sites with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were also assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for opportunities for education/outreach. Kellogg Park is a publicly accessible City facility located adjacent to the La Jolla ASBS. The Rose Canyon Purchasing/Central Stores site has a 100% impervious surface. This site will be used to assess whether rain barrel/planter combined systems are efficient, effective, and functional as part of an operation and maintenance study.

In a letter[1] documenting its review of the WURMPs, the Regional Board requested that the City provide data on the locations selected, number of barrels installed, and the volume of rain water collected. The location is discussed in this implementation section above. The number of rain barrels has yet to be decided, but will be discussed in future reporting. As the rain barrels are not yet installed, the volume of water captured is not known and will also be discussed in future reporting.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and is anticipated to continue until the end of calendar year 2008. Initially the project was anticipated to be completed in Spring 2008. Planning, site selection, and procurement of the rain barrels took longer than expected. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Procurement of rain barrels and other items and installation started in the second quarter of 2008. Subcontractors will be procured in late 2008. The specifications and installation guidelines will be developed by the end of 2008. A pre-installation meeting will be held at both sites by the end of calendar year 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address these high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROGRAM **Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff**		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems, particularly for metals and bacteria? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of rain barrels for Rose Canyon Purchasing/Central Stores site (Outcome Level 1)	$14,055
	Cost of rain barrels for Kellogg Park site (Outcome Level 1)	$2,000
	Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1)	$13,086
	Estimated cost of effectiveness monitoring for all sites (Outcome Level 1)	$21,526
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results

Procurement of rain barrels and other items and installation started in the second quarter of 2008. Estimated costs for rain barrel preparation, installation and start-up total approximately $16,055 ($14,055 for the Rose Canyon Purchasing/Central Stores site and $2,000 for the Kellogg Park site). Estimated operation and maintenance costs total $13,086 or $2,181 per site for each of the seven sites. Estimated costs for effectiveness

monitoring total $13,086 or $3,587.67 per site for each of the seven sites. Further analysis will be completed after installation of the rain barrels through monitoring.

Conclusions

Effectiveness and efficiency will be determined by load reduction (determined through monitoring efforts) versus cost of barrel installation and maintenance. Conclusions will be made after the assessment is complete.

TITLE: **Osler Street Hydrodynamic Separator Installation Project**
ID NUMBER: **MB-1012**

ACTIVITY IMPLEMENTATION

Osler Street is located on the Northern end of Linda Vista Park in the Mission Bay Watershed Management Area (WMA). The City of San Diego (City) plans to install hydrodynamic separator directly in line with a 24-inch storm drain that traverses the park and discharges into Tecolote Canyon. The 24-inch line is the main collector in a small storm drain network that collects storm flows from the park and associated facilities, neighboring elementary school and the surrounding neighborhood comprised mostly of high density housing. Due to the characteristics of the neighborhood and the observations made during a site visit on December 11, 2007, the storm events in the selected area are likely to gather a variety of trash and other pollutants typical of low income high density residential areas. This played an important part in the site selection making process.

This project includes the installation of a hydrodynamic separator as a retrofit within the existing storm drain system. The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

Site selection and concept planning occurred in FY 2008.

In the Regional Board Comment letter[1], Regional Board staff indicated that credit will be given for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City acknowledges that the Municipal Permit currently precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that "capital projects are in active implementation for the first year of implementation only."

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project will be transferred to the City's Engineering and Capital Projects Department in September 2008 for purposes of managing the project through final design, construction and project closeout. A detailed project schedule will be provided from the Engineering and Capital Projects Department in beginning of calendar year 2009. The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated and construction is expected to be completed in FY 2013 instead of being initiated in FY 2010.

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
OSLER STREET HYDRODYNAMIC SEPARATOR INSTALLATION PROJECT **Assess the Efficiency and Effectiveness of the Hydrodynamic Separator**	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the separator at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator to reduce the amount of trash, sediment, oil, and grease flowing into the storm drain system.

Analysis and Results

Assessment is not possible at this time, as the activity is still in its planning phase. However, once the activity is complete, an assessment of effectiveness will be conducted to show the load reduction and cost efficiency associated with hydrodynamic separators.

Conclusions

Conclusions will be made as to future implementation of other similar projects once the project and effectiveness assessment are complete.

TITLE: **La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV)**

ID NUMBER: **MB-1013**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has been installing a low flow storm drain diversion system in phases to serve the Pacific Ocean coast of the La Jolla, Pacific Beach, and Ocean Beach areas. Phases I and II have been completed using grant monies from the Environmental Protection Agency. Phase III is nearly complete. Phase III will include a total of 11 locations from La Jolla Point to Ocean Beach.

Phase IV focuses on the La Jolla ASBS to address the prohibition of dry weather flows under the Ocean Plan Exception Process. Four low flow coastal diversions are planned for this fourth phase: Camino del Oro (Camino del Oro near El Paseo Grande), 7920 Princess St. (Torrey Pines Rd. and Princess St.), Torrey Pines Rd. and Charlotte St. (Torrey Pines and Amalfi), and 1624 Torrey Pines Rd. (Torrey Pines and Coast Walk). The City held a workshop to present the concept for these sites on July 30, 2008 and invited the La Jolla Town Council, the La Jolla Community Planning Group, the La Jolla Shores Association, San Diego Coastkeeper, and the general public.

The UC Regents – UCSD applied to the State Board for an implementation grant under this Consolidated Grant program (Proposition 50) for multiple structural control projects consistent with the La Jolla Shores Integrated Coastal Watershed Management Plan (ICWMP) (see activity summary sheet MB-3003 La Jolla Shores Integrated Coastal Watershed Management Plan) including these low flow diversions. City staff coordinated with UC Regents-UCSD for the City to be a subcontractor on this grant for the implementation of three low flow diversions. The fourth diversion that is part of this phase is funded under an Environmental Protection Agency grant. The State has since suspended many grant programs, including the Consolidated Grants Program and the impact to this project has not yet been determined.

Under the Proposition 50 grant, the City, UCSD, and other entities that contributed to the development of the ICWMP participate in quarterly Technical Advisory Committees, in addition to implementing pollution prevention and structural controls.

In the Regional Board comment letter[1], Regional Board staff indicated the La Jolla Dry Weather Flow Diversions activity will be given a WURMP credit. The City will request credit for this activity when the diversions are constructed and a load reduction determination can be established.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The 60% design for this project will be done by the end FY 2009 (60% design) with 100% design expected in FY 2010. The project was previously anticipated to be completed in FY 2010; however, contract negotiations took longer than anticipated and during the preliminary design, buried storm drains proved difficult to locate, thus delaying the design progress. Construction is now expected to occur in FY 2011. However, due to the suspension of the Consolidate Grants Program, this project may be subject to further delay. As mentioned above, the impact due to suspended grant funding has not yet been determined.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
LA JOLLA SHORES ASBS POLLUTION CONTROL PROGRAM (AKA LOW FLOW DIVERSIONS PHASE IV) **Assess the Efficiency and Effectiveness of the Dry Weather Flow Diversions**	
Management Questions	• What is the load reduction efficiency of the flow diversions? • How effective are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)

	• Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing low flow diversions to divert dry weather runoff into the sewer system for treatment instead of low flows discharging out of storm drain outfalls directly into the ASBS. Targeted high priority pollutants include bacteria, metals and nutrients.

Analysis and Results

Assessment is not possible at this time, as the diversions have not yet been constructed. Prior to construction, monitoring will be conducted to determine baseline conditions. Post-construction monitoring will be conducted as well for comparison to baseline conditions and assessment of effectiveness.

Conclusions

At the end of FY 2008, this project was nearing completion of the pre-design phase. Construction is expected to occur in FY 2011. Once construction and assessment are both complete, conclusions will be made as to the effectiveness and efficiency of the project.

TITLE: **Kellogg Park Green Lot Retrofit Project**
ID NUMBER: **MB-1014**

ACTIVITY IMPLEMENTATION

This project will replace the conventional asphalt of the Kellogg Park parking lot with porous asphalt to allow for the infiltration of urban runoff. Originally the project considered only the western half of the parking lot. In late FY 2008, the project was expanded to include the entire parking lot. The concrete curb around the existing planter areas and the asphalt paving will be removed, and the parking lot will be graded to drain toward the planter areas. Existing palm trees within the planter areas will remain undisturbed, and new concrete gutters will be placed to convey high flows from the ends of each planter area to the existing catch basins at the north and south ends of the parking lot. Pervious concrete will be placed as the new driving and parking surface within the lot. The concept design for the western half of the parking lot was worked on in FY 2008. An additional conceptual design will also be completed in FY 2009 taking into account the replacement of the entire parking lot. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, Area of Special Biological Significance (ASBS), and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Watershed Management Area (WMA).

In the Regional Board comment letter[1], Regional Board staff indicated that construction is anticipated in FY 2010 and a WQA credit will be granted. As indicated in the schedule below, construction, previously anticipated for FY 2010, is expected to be completed in FY 2011.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design for this project will be initiated in the fall of 2008 and is anticipated to be completed in the first half of FY 2010. Construction, previously anticipated for FY 2010, is expected to be completed in FY 2011. The competitive bid process and contract negotiations with the selected design consultant took longer than anticipated. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
KELLOGG PARK GREEN LOT RETROFIT PROJECT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs**	
Management Questions	• What is the load reduction efficiency of retrofits? • How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Change in pollutant concentrations in runoff into storm drains or receiving water (Outcome Level 5) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of LID BMP retrofits through

reduction of runoff volume. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type. High priority pollutants targeted include bacteria, nutrients, and metals.

Analysis and Results

The concept design for this project began in FY 2008 and baseline monitoring was completed. Currently, load estimates are being calculated and will be included in the project report. Once design and construction are complete, additional assessment will be completed to determine the effectiveness of this activity.

Conclusions

As mentioned above, the assessment will be completed after project construction and conclusions will be made at that time. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, ASBS, and current and anticipated TMDLs in the receiving waters of the WMA.

TITLE: **Mt. Abernathy Green Street Retrofit**
ID NUMBER: **MB-1015**

ACTIVITY IMPLEMENTATION

This activity will involve the construction of vegetated planter areas between the curb and sidewalk to infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. Cuts will be made into the existing street curb to allow flows to leave the street paved section and enter the planter areas. Additional cuts will be made to permit high flows to exit the planter areas and re-enter the street section. The planter area will be slightly lower than the street gutter elevation to allow the street to drain into the planters. This system will be designed to collect and infiltrate runoff from the residences and the first-flush portion of storm events from the street through the curb cuts. The use of porous sidewalks and bioretention/planters will increase the porous area and infiltration, thereby reducing the storm flows and pollutant loads. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Watershed Management Area (WMA).

The Mt. Abernathy Neighborhood site was selected after several site reconnaissance visits. This community of approximately 90 homes was selected because the City of San Diego (City) right-of-way has not been improved with landscaping by homeowners or by the City. The community drains to one catchment that can be readily monitored for effectiveness.

The conceptual design for this project began in FY 2008 and will be finished in FY 2009.

In the Regional Board comment letter[1], Regional Board staff indicated that the activity will involve the construction of vegetated planter areas between the curb and sidewalk, and their connection to receive flows from the street to allow for infiltration. The City will request credit when the project is implemented and a determination of load reduction can be reasonably established.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated. The conceptual design for this project will be completed in FY 2009. Construction is expected to be completed in FY 2011 instead of FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MT. ABERNATHY GREEN STREET RETROFIT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Street-type BMPs**	
Management Questions	• What is the load reduction efficiency of the retrofits? • How effective are retrofits at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the analysis is to determine the load reduction efficiency of the retrofits. The load reduction efficiencies will also be estimated and used to determine the efficiency of future BMP implementations. High priority pollutants include bacteria, metals and nutrients.

Analysis and Results

This activity involves the installation of porous sidewalks and vegetative planters in the Mt. Abernathy Neighborhood to reduce runoff volume. This community of approximately 90 homes was selected because the City right-of-way has not been improved with landscaping by homeowners or by the City. The community drains to one catchment that can be readily monitored for effectiveness and assessment will be conducted after the project is constructed.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading. Conclusions will be made after the activity is complete and effectiveness has been determined.

TITLE: **Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project**

ID NUMBER: **MB-1016**

ACTIVITY IMPLEMENTATION

Within the tributary watershed of the Bannock Avenue Neighborhood, vegetated planter areas will be constructed between the existing curb and the sidewalk. Cuts will be made in the existing curbs to allow flow to exit the street paved section as well as enter and exit the planter areas. The planter areas will be filled with cobbles and/or gravel to a depth of approximately 1 foot and planted with landscaping to be determined during final design. The cobbles and/or gravel must be placed to an elevation approximately 1 inch below the adjacent sidewalk and curb to ensure no Americans with Disabilities Act (ADA) access issues are encountered. The cobbles and/or gravel will be prevented from spilling into the street through the curb cut by a metal screen. Some existing sidewalks will be replaced with new pervious concrete sidewalks. The need for temporary or permanent irrigation to establish the planter areas must be determined during final design.

Within North Clairemont Park, a diversion structure will divert flows to a trash segregation unit, followed in series by an AbTech (Bacterial Treatment System) unit. From the AbTech unit, flows will be returned to the natural drainage course at the location of the existing storm drain system outlet headwall. The diversion structure will be sized to divert the 85th percentile storm event in order for it to be treated by the trash segregation and AbTech units. This size storm was selected because this treatment BMP is a pilot project to assess the effectiveness of this treatment technology. The larger storm event would result in a significantly larger system and higher project cost. The City of San Diego (City) determined that the 85th percentile storm was adequate to assess the effectiveness of this treatment technology through the pilot program because this technology has not been proven at larger flows. Should this technology prove cost effective for storm flows, the system may be expanded for a larger design storm.

This project was identified as "Infiltration BMP Retrofit #1" in the 2008 Mission Bay & La Jolla WURMP. In the latter half of FY 2008, a site was selected and conceptual design was completed.

In the Regional Board comment letter[1], Regional Board staff indicated that this activity will be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City acknowledges that the Municipal Permit currently precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that "capital projects are in active implementation for the first year of implementation only."

The Regional Board also indicated that additional information such as the selected location and effectiveness should be reported. The selected location is discussed in the

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

Activity Implementation section of this Activity Summary Sheet. The effectiveness data will be provided to the Regional Board when the pre- and post- installation monitoring is complete and the resulting reporting is finalized.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project will be transferred to the City's Engineering and Capital Projects Department in September 2008 for purposes of managing the project through final design, construction and project closeout. The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated and construction is expected to be completed in FY 2013 instead of being initiated in FY2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
BANNOCK AVENUE STREETSCAPE ENHANCEMENT & BACTERIA TREATMENT PROJECT **Assess the Efficiency and Effectiveness of the Design and Construction of the Enhancement and Bacteria Treatment Project**	
Management Questions:	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads

Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria load with the installation of vegetative planters, trash segregation units, and bacterial treatment systems in the Bannock Avenue Neighborhood.

Analysis and Results

This project is still in the planning phase and has not been implemented yet; therefore effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: **Infiltration BMP Retrofit #2**
ID NUMBER: **MB-1017**

ACTIVITY IMPLEMENTATION

This activity will involve the implementation of an infiltration project in the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other best management practices (BMPs) being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the WMA.

The project did not advance in FY 2008. It is currently on hold due to limited resources that have been allocated to other watershed activities which are moving forward.

In the Regional Board comment letter[1], Regional Board staff indicated that this activity will be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City acknowledges that the Municipal Permit currently precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that "capital projects are in active implementation for the first year of implementation only."

The Regional Board also indicated that additional information such as the selected location and effectiveness should be reported. Site specific details will be provided when the project moves forward and a location is selected. The effectiveness data will be provided to the Regional Board when the pre- and post- installation monitoring is complete and the resulting reporting is finalized.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007; however the project is currently on hold as noted above. When the project moves forward, water quality monitoring may be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. It is anticipated that this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment when the project moves forward.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
INFILTRATION BMP #2 **Assess the Efficiency and Effectiveness of the Design and Construction of the Infiltration BMP**	
Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 4) • Dataset of load contributions for specific activities (Outcome Level 4)

The effectiveness assessment for this activity will be developed and completed when and if this activity moves forward. The above table provides an example of what questions, methods, and measures may be used for the assessment.

TITLE: **Public Service Announcements: Karma, Karma Second Chance, Karma Tourist**

ID NUMBER: **MB-2001**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) secured a contract with film production company, American Dream Cinema to produce three Think Blue Public Service Announcements (PSAs) with a focus on the effects of trash and bacteria to local waterways. The PSAs, entitled *Karma, Karma Second Chance*, and *Karma Tourist,* used humor to convey the importance of the public's role in the proper disposal of trash and the impacts litter and pollution have on local waterways and beaches. Additionally, the PSAs encouraged positive behavioral change by providing simple steps that can be taken to reduce trash and bacteria from entering storm drains and ultimately, the ocean. 3,198,751 impressions were made in homes through television and 1,025,636 impressions were made to the public through radio announcements.

According to Regional Board staff comments[1], the City will need to answer effectiveness measurement questions in the annual report. Effectiveness measurement questions can be found in the Effectiveness Assessment section of this activity summary sheet.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

English and Spanish versions of the PSAs were developed in FY 2007 and FY 2008 and were broadcast on a number of television and radio stations throughout the Mission Bay and La Jolla Watershed Management Area (WMA) from January 2008 to May 2008. The City will continue to work with various broadcast media outlets to distribute and air the PSAs, as well as produce additional pollutant-specific spots in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identifies trash and bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* PSAs will result in both increased knowledge and awareness regarding bacteria and trash and future load reductions of trash and debris directly and bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
PUBLIC SERVICE ANNOUNCEMENTS: KARMA, KARMA SECOND CHANCE, KARMA TOURIST **Assess the Efficiency and Effectiveness of Public Service Announcements**		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in MB/LJ (Outcome Level 1)	3,198,751
	Number of impressions made to the public through radio announcements in MB/LJ (Outcome Level 1)	1,025,636
	Percentage of public who had heard of *Think Blue* during 2008 (Outcome Level 2)	45%
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes*

*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

This goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about causes of bacteria and gross pollutant loading, and in encouraging positive behavioral change.

Analysis and Results

The PSAs were developed in the FY 2008, and broadcast on several TV and radio stations throughout the Mission Bay and La Jolla WMA from February 2008 to April 2008. The PSAs were broadcast in both English and Spanish.

Out of 800 total residents from all WMAs who participated in the random digit-dial *2008 San Diego Storm Water Survey*, 52% of residents became aware of the *Think Blue* message by seeing the television ads, and 13% of residents heard the radio

announcements in FY 2008. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. To estimate the number of impressions made in the Mission Bay and La Jolla WMA, the total number of impressions City-wide (15,680,381 for television and 5,027,700 for radio ads) was multiplied by the proportion of residents living in the Mission Bay and La Jolla WMA (20% of the City's total population). According to the random survey, groups most likely to have seen the television ad were: residents who knew that storm water was untreated (25%); people without college degrees (25%); and residents of the San Diego Bay (26%) and San Diego River (25%) WMAs. Groups most likely to have heard the radio ad were: residents who are white (9%); residents in the 35-49 age group (9%); and people between the ages of 18 and 35 (9%).

Conclusions

The City will work with various broadcast media outlets to continue distribution of the PSAs in FY 2008-2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Mission Bay and La Jolla WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, the *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all WMAs who participated in the random survey, 45% reported exposure in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

It is worth noting that the City's PSAs continue to reach new individuals in the Mission Bay and La Jolla WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE: **Mobile Advertising**
ID NUMBER: **MB-2002**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has retained a contract with a mobile advertising firm, Admobile, to advertise *Think Blue* messages on static billboard trucks in the Mission Bay and La Jolla Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria and trash. The goal of mobile advertising is to educate the public about the impacts litter and pollution have on local waterways and beaches and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the Mission Bay and La Jolla watershed in both English and Spanish. The estimated audience was 638,480 impressions per four-week period. The following image shows the Mission Bay and La Jolla WMA route that was driven using a Billboard Trailer.

According to Regional Board staff comments[1] for other WURMPs (e.g., San Diego River's), the City will need to answer effectiveness measurement questions and provide routes in the annual report. The routes are provided in the Activity Implementation section. Effectiveness will be measured in the Mission Bay and La Jolla WMA in FY 2009. Efficiency will be determined by analyzing advertisement costs.

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

In FY 2008, The City coordinated the design of the advertisements and will have the advertisements created and placed on the company's static billboard trucks. The Billboard Trailer was driven around pre-determined routes in the Mission Bay and La Jolla WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change. The City plans to continue to implement mobile advertising in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy and the *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing mobile advertising will result in increased knowledge and awareness regarding bacteria (and trash as a vector) directly, and will promote behavior change and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

MOBILE ADVERTISING Assess the Efficiency and Effectiveness of Advertisement on Static Billboard Trucks	
Management Questions	• What change in awareness /attitude regarding bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target WMA • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)

MOBILE ADVERTISING Assess the Efficiency and Effectiveness of Advertisement on Static Billboard Trucks		
Data Recorded	Number of impressions in the Mission Bay and La Jolla WMA (Outcome Level 1)	38,750 DEC*
	Percentage of public who had heard of *Think Blue* during 2008 (Outcome Level 2)	45%
	Change in pollutant-related behavior based on survey results (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The estimated audience in the FY 2008 was 638,480 impressions per 4 week period for Mission Bay and La Jolla.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of mobile advertising to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

Analysis and Results

The mobile advertisements were developed in the FY 2008 and displayed throughout Mission Bay and La Jolla in both English and Spanish. The estimated audience was 638,480 total impressions per 4-week period. Out of 800 randomly selected residents from all WMAs who participated in the *Think Blue* survey, approximately 33% of residents became aware of the *Think Blue* message via mobile advertising in FY 2008.

Conclusions

The City plans to continue to implement mobile advertisements in FY 2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Mission Bay and La Jolla WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all WMAs who participated in the random survey, 45% reported exposure to mobile advertising in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

Furthermore, the increase in impressions made in FY 2008 also indicates that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE: **La Jolla Commercial CBSM Efforts**
ID NUMBER: **MB-2003**

ACTIVITY IMPLEMENTATION

In researching methods of public education, the City of San Diego's Storm Water Division (City) found that an emerging field called Community Based Social Marketing (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has retained consultants to develop and initiate CBSM and has implemented a pilot project using this approach in the La Jolla community to attempt to achieve pollution prevention awareness and behavioral change. Research has been completed, and observations, interviews and surveys are currently underway. Outreach interventions and assessment methods are being developed based on research findings to date. Currently, recommendations for education/outreach strategies include structural interventions, public participation, incentives and specific messaging. As the CBSM program in La Jolla developed, it became clear that the CBSM activities needed to be implemented differently for residential and commercial facilities/areas in order to achieve valid, useful, and conclusive data.

During FY 2008, the CBSM activities in the business area of La Jolla Shores included analysis and reporting of observational research to identify target behaviors for the outreach program (July 2007), development of a survey and protocol to assess the prevalence of water-based behaviors engaged in by businesses (August – September 2007), staff training for survey implementation (October 2007), analysis and reporting of business survey results (December 2007), and development of program recommendations (June 2008).

In the Regional Board Comment letter[1], Regional Board staff indicated that the City will need to provide more information about the types of techniques used and provide answers to the effectiveness measurement questions. The types of techniques used are discussed in the Activity Implementation section and the effectiveness measurement questions are answered in the Effectiveness Assessment section in this FY 2008 activity summary sheet.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

During FY 2009, the CBSM activities in the business area of La Jolla Shores will include development of a telephone script and protocol to recruit businesses to participate in an in-person BMP training session, development and scripting of individualized BMP trainings, coordination and participation in "train the trainer" sessions, coordinating and planning for post-intervention outcome observations, training and scheduling for outcome observations, data entry and management, and data coding.

Based on the key findings from the survey of La Jolla businesses, the City will develop a script and protocol to recruit business owners, managers, and employees to participate in BMP training sessions. This community-based outreach approach is designed for in-person delivery, therefore the training will be conducted by City staff and consultants in FY 2009.

Immediately following the BMP trainings, organization and preparation for a second observational study (post-intervention) in La Jolla Shores will take place. The study will be identical to that implemented at the start of the project (Summer 2007) and is intended to provide an assessment of program effectiveness in the pilot area (La Jolla Shores) compared to the control area that did not receive the intervention (WindanSea). Observational data will be collected from a variety of days and times in both the pilot (20 shifts) and control areas (20 shifts) during FY 2009. Data entry and analyses will be performed with results expected in January 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- Scripps Institution of Oceanography
- University of California, San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
LA JOLLA COMMERCIAL CBSM EFFORTS **Assess the Effectiveness of Public Outreach**		
Management Questions	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution?	
Targeted Measurable Outcome(s)	• Reach goal number of people within the WMA, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Observations (un-obtrusive observations to record polluting behavior and/or results of polluting activity in the area) • Interview / Survey (e.g., administer interview survey to assess knowledge and attitude of participants) • Quantification (e.g., number of businesses reached)	
Data Recorded	Amount of pollution and polluting activity observed during two week test period (Outcome Level 1)	1,846
	Number of business owners/managers participating in informational interview (Outcome Level 2)	30
	Percentage of interviewed businesses who felt that pollution is a significant issue and agreed to participation in future education efforts (Outcome Level 1)	75%
Recommended Data	• Change in knowledge or attitude (Outcome Level 2) • Change in commercial outdoor water use (measured by observable decreases in standing water) (Outcome Levels 3 and 4) • Decrease in observable amount of litter (Outcome Level 3 and 4)	

Objectives

The assessment goal is to determine the effectiveness of various methods of intervention based on the CBSM outreach model. The specific project goal is educating the public to increase knowledge and awareness, about causes of trash and bacteria loading based upon targeted pollutant-related behaviors, and eventually create positive attitude and behavioral changes.

Analysis and Results

Based upon observational research results, short-term assessment revealed that a total of 1,846 polluting events were observed in the Commercial area. Litter (trash and cigarette butts) was identified as the number one polluting behavior in the business area of La Jolla Shores. In addition, the combined observations of water from an unknown source (e.g., water in the gutter, wet pavement, etc.) presented a significant concern. Based on the high level of pollution observed, the local businesses were contacted and asked to participate in an interview regarding their knowledge and awareness of pollution, as well as the activities in which their businesses engage.

Water-based behavior survey results reveal that a total of 30 business owners/managers (an 80% response rate) participated in the interview regarding the most frequently reported pollution and/or water-based activities in the area. Over 80% of business agreed that pollution in the area was an issue. Very few businesses self- reported "hosing in front of their business" or "hosing mats or equipment." However, several businesses reported

that they regularly see their neighboring businesses engaging in these behaviors. This interview not only served as a method by which to gather data, it was also used to educate businesses about storm water issues. Seventy five percent (75%) of the businesses interviewed agreed to be contacted in the future to participate in storm water pollution prevention training session. Because of the interviews, more businesses became aware of bacteria and gross pollutant issues. Based on the results of the observations and interviews, a structural intervention targeting trash and cigarette butts and a community-level intervention to target water use by business owners was recommended. Therefore, the Storm Water Department began creating a pollution prevention business-based training module, and also began negotiation with other Departments to provide more trash receptacles in the area.

Conclusions

In FY 2008, the 75% positive response among interview participants indicated that the outreach was effective in raising awareness of storm water issues. It is anticipated that the business-based training module and increase in trash receptacles, both of which began development this year, will lead to a decrease in pollutant behavior as well.

During FY 2009, the CBSM activities in the business area of La Jolla shores will include development of telephone scripts and protocols to recruit businesses to participate in BMP training sessions. The training will be implemented by City and consultant staff in FY 2009. Afterward a second observational study will be organized, and data will be collected in FY 2009. Future effectiveness will be measured by the change in public knowledge, as determined by survey results.

TITLE: **Genesee Commercial CBSM Efforts**
ID NUMBER: **MB-2004**

ACTIVITY IMPLEMENTATION

In researching methods of public education, the City of San Diego's Storm Water Department (City) found that an emerging field called Community Based Social Marketing (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has retained consultants to develop and initiate the CBSM pilot project, and has implemented a pilot project using this approach in the La Jolla community to attempt to achieve pollution prevention awareness and behavioral change.

The resource intensive research which was planned for the Genesee area is currently on hold pending the results and effectiveness assessment of the La Jolla investigation. If and when the project moves forward, research in the Genesee area will be initiated, along with observations and other methods of gathering data in order to determine that best outreach program for the project. Outreach interventions and assessment methods will then be developed based on the research findings.

In the Regional Board Comment letter[1], Regional Board staff indicated that the City will need to provide more information about the types of techniques used and provide answers to the effectiveness measurement questions. The types of techniques used and the effectiveness measurement questions will be included in future reports when and if this activity is implemented.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

As noted above, this activity is on-hold.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identifies bacteria as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly if and when it is implemented.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
GENESEE COMMERCIAL CBSM EFFORTS	
Management Questions:	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in pilot group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash or other pollutants removed from study area (Outcome Level 4)

The effectiveness assessment for this activity will be developed and completed when and if this activity moves forward. The above table provides an example of what questions, methods, and measures may be used for the assessment.

TITLE: **Mt. Abernathy LID Green Street Outreach**
ID NUMBER: **MB-2005**

ACTIVITY IMPLEMENTATION

Mt. Abernathy Green Street Outreach will be performed to support the planned "Green Street" construction in a small sub-section of the Clairemont community in the Mission Bay Watershed Management Area (WMA). Construction will include modifying the vegetated planter areas between the curb and sidewalks in front of residential homes in order to better infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. The City plans to inform, educate and involve residents who are directly affected by the construction in an attempt to achieve awareness regarding storm water runoff and to create behavioral change among residents. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The schedule for this outreach will parallel the Mt. Abernathy Low Impact Development (LID) Green Street Construction. The City anticipates retaining several outreach consultants, including at least one firm that specializes in Community Outreach. Planning will occur in FY 2009, with implementation, outreach, and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identifies bacteria as high priority water quality problems in the WMA. This effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MT. ABERNATHY LID "GREEN STREET" OUTREACH **Assess the Efficiency and Effectiveness of Educating the Public About Green Street-type BMPs**	
Management Questions	• Does education regarding the LID retrofits effectively raise awareness of bacteria, metal and nutrient pollutant issues? • Does education regarding the LID retrofits effectively change pollutant behavior among residents?
Targeted Measurable Outcome(s)	• Reach goal number of people within the Mission Bay and La Jolla WMA, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached)
Data Recorded	• Number of educational information items passed out (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2) • Change in pollutant-related behavior (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness of educating the public on the LID retrofit best management practices (BMPs) in reducing bacteria and gross pollutant loads from runoff in the Mt. Abernathy Neighborhood.

Analysis and Results

Assessment is not possible at this time, as this activity has not yet been implemented. Outreach activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

Conclusions

This activity has not yet been implemented. Effectiveness will be measured by the change in public knowledge and change in pollutant behavior among residents, as determined by survey results, and conclusions will be made once effectiveness is determined.

TITLE: **La Jolla Residential CBSM Efforts**
ID NUMBER: **MB-2010 (Formerly reported as MB-1008 Targeted Residential Activity Characterization)**

ACTIVITY IMPLEMENTATION

In researching methods of public education, the City of San Diego's Storm Water Division (City) found that an emerging field called Community Based Social Marketing (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has retained consultants to develop and initiate CBSM, has implemented a pilot project using this approach in the La Jolla community to attempt to achieve pollution prevention awareness and behavioral change. Research has been completed, and observations, interviews and surveys are currently underway. Outreach interventions and assessment methods are being developed based on research findings to date. Currently, recommendations for education/outreach strategies include structural interventions, public participation, incentives and specific messaging. As the CBSM program in La Jolla developed, it became clear that the CBSM activities needed to be implemented differently for residential and commercial facilities/areas in order to achieve valid, useful, and conclusive data.

During FY 2008, the CBSM activities in the residential area of La Jolla shores included analysis and reporting of observational research aimed at identifying target behaviors for the outreach program (August 2007). Observation results led to the development of a residential survey aimed at assessing barriers to engaging in best practices for outdoor water-use (October 2007). Internal survey protocols were developed (November – December 2007), with City staff and volunteers training for survey implementation (November 2007). The survey was then mailed La Jolla Shores residents (January – February 2008), with analysis and reporting of residential survey results (March 2008), and development of general program recommendations based on the survey data (April – June 2008).

In the Regional Board comment letter[1], Regional Board staff indicated that the City will need to provide more information about the types of techniques used and provide answers to the effectiveness measurement questions. The types of techniques used are discussed in the Activity Implementation section and the effectiveness measurement questions are answered in the Effectiveness Assessment section in this FY 2008 activity summary sheet.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

During FY 2009, the planned CBSM activities in the residential area of La Jolla shores include presentation of residential survey results to Think Blue staff and consultants, development of survey results summary for La Jolla residents who participated, and development of general program recommendations.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- Scripps Institution of Oceanography
- University of California, San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy as well as the City's *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla Watershed Management Area (WMA) identifies bacteria as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
LA JOLLA RESIDENTIAL CBSM EFFORTS Assess the Effectiveness of Public Outreach	
Management Questions	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution?
Targeted Measurable Outcome(s)	• Reach goal number of people within the WMA, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Observations (un-obtrusive observations to record polluting behavior and/or results of polluting activity in the area) • Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached)

Watershed: Mission Bay and La Jolla		
LA JOLLA RESIDENTIAL CBSM EFFORTS **Assess the Effectiveness of Public Outreach**		
Data Recorded	Amount of pollution and polluting activity observed during two week test period	1,127
	Number of resident responses who completed information based surveys (Outcome Level 2)	122 (62%)
Recommended Data	• Change in knowledge or attitude (Outcome Level 2) • Change in residential outdoor water use (measured by observable decreases in standing water) (Outcome Level 3 and 4) • Decrease in observable amount of pet waste (Outcome Level 3 and 4)	

Objectives

The assessment goal is to determine the effectiveness of various methods of intervention based on the CBSM outreach model. The specific project goal is educating the public to increase knowledge and awareness, about causes of trash and bacteria loading based upon targeted pollutant-related behaviors, and eventually create positive attitude and behavioral changes.

Analysis and Results

During FY 2008, the CBSM activities in the residential area of La Jolla shores included analysis and reporting of observational research aimed at identifying target behaviors for the outreach program (August 2007). Other activities included survey development and volunteer training. Based upon observational research results, short-term assessment revealed that a total of 1,127 polluting events were observed in the residential area of La Jolla Shores. Litter was identified as the number one polluting behavior/evidence of behavior in the area. Other frequently observed issues included standing water, wet pavement, and pet waste. Although there was some evidence of over-irrigation, the source for the majority of the observed water could not be identified. Based on the results of the observational data it was hard to make positive source identification. Therefore, a survey methodology to identify self-reported behaviors and barriers to performing best management practices across a range of residential outdoor water use activities (car washing, hosing, pool maintenance, etc.) was developed.

The survey was distributed to approximately 198 residents using a multiple contact mail survey methodology, resulting in 122 completed surveys (62% response rate). Results indicated that while water-based behaviors (such as hosing and car washing) were infrequent, while over watering may be a problem due to residents checking their sprinkler systems incorrectly. Based on these findings, it is recommended that the City provide residents with additional information on appropriate watering times and sprinkler adjustments. Another targeted behavior involved pet waste. Based on the survey's findings, the City plans to implement a combined structural and motivational approach consisting of dog waste bag dispensers, specific messaging and pledges/community commitment.

Conclusions

In FY 2008, the 62% response rate for completed surveys indicated that the outreach was effective in raising awareness of storm water issues. The findings from the survey results have also identified specific pollutant behaviors to be targeted for outreach. It is anticipated that providing residents with information regarding over-watering will lead to a change in residential outdoor water use, measurable by observing decreases in standing water. It is anticipated that targeting pet waste by providing dog waste bag dispensers and outreach to communities will lead to a change in residential handling of pet waste, and a decrease in observable pet waste in the communities.

During FY 2009, the CBSM activities in the residential area of La Jolla shores will include development of specific messaging and materials targeting excessive residential water use and BMPs for outdoor water usage. Other outreach material will focus on pet waste and proper BMPs, as well as the installation of pet trash bag dispensers in the community to realize load reductions of bacteria laden waste and vectors, such as trash and wash water. Once the intervention is complete, a second observational study will be conducted, and data will be collected in FY 2009. Effectiveness will be measured by the change in public knowledge, awareness and reported/observed behavior, as determined by survey results.

TITLE: **Tecolote Creek Bacterial Source Identification Study (Phase I)**
ID NUMBER: **MB-3001**

ACTIVITY IMPLEMENTATION

This activity involved the identification of bacterial sources in the Tecolote Creek Watershed through wet and dry weather monitoring surveys including visual observations, spot sampling, and laboratory analysis of data accumulated through monitoring. The study focused on locating primary sources of high bacterial loading to identify if human contamination are a contributing factor. This study also provided specific recommendations for source control and pollution prevention/reduction based on the conclusions of the analysis.

Sampling and monitoring associated with this activity began in October 2007 and was continued through April 2008. Data analysis and reporting began once monitoring concluded and the final report was completed in August 2008.

A randomized design was used to assess bacterial contributions to Tecolote Creek from likely loading sources as identified in Long Term Baseline Effectiveness Assessment (Weston, 2006). During both dry and wet weather surveys, samples were collected from specific land uses of interest including residential, restaurants, nurseries, schools, and from within the creek. During dry weather, randomized samples were collected to be best representative of the specific targeted land use. During wet weather, samples were taken throughout the storm event and loads were calculated based on drainage areas and modeled flows. Key findings from the assessment of likely bacterial loading source contributions were that, while golf courses and nurseries contributed higher bacterial concentrations during wet weather, their contribution to overall load was a smaller fraction compared with the loading from residential land use areas. Further investigation is required to assess "other" loads entering the creek under wet conditions. During dry weather, nuisance flows from over-irrigation were observed to be the most significant source of bacteria as well as the greatest contributing transport mechanism. Residential and commercial flows were the most frequently observed. However, most residential runoff did not reach the storm drain. In comparison, significant volumes of commercial runoff were observed to reach the storm drain system. Nursery flows, through low, contributed high bacterial concentrations. The results suggest that management of flows from residential and commercial land use will provide the most significant improvement in bacterial transport during both dry and wet weather events.

All samples collected during dry and wet weather sampling tested positive for general *Bacteroides* indicating the presence of recent feces from warm-blooded animals. However, very few samples were positive for human *Bacteroides.* During the two dry weather events, only five samples tested positive for human-specific *Bacteroides.* During follow-ups, no samples retested positive for human *Bacteroides*. This suggests a transient source (i.e., homeless encampments) was likely responsible. Only one site, (Site 4B, at the base of the golf course), tested positive for human *Bacteroides* during both the first and second dry weather event. During the two wet weather events, only one sample tested positive for human-specific *Bacteroides*. This sample occurred during the second storm at

the MLS during peak bacterial concentrations. Throughout the duration of the storm, no further samples tested positive for human-specific *Bacteroides*.

Priority land use activities were investigated in this study. The most significant loads in Tecolote Creek originate from nuisance flows associated with over-irrigation. Control of commercial over-irrigation should be a focus as well as residential over-irrigation. Nursery tailwater concentrations were high, but comparative total loading to the creek is a smaller percent. The results confirm these sources have higher bacterial loading potential and that they should be the focus of education and enforcement activities to promote implementation of minimum baseline BMPs.

The results of this limited investigation into bacterial regrowth suggest that ponded areas of the creek do not contribute significant loads of bacteria. However, some evidence points to sediments as a reservoir of bacterial loading and, as such, may contribute loads during sediment resuspension. Further investigation of these potential natural source will be necessary before management actions can be implemented.

The presence of human fecal contamination was investigated using *Bacteroides* as an indicator. Positive *Bacteroides* presence was observed in four locations where there was evidence of transient populations (evidence included recent toilet paper, trampling and cigarette butts). There was no evidence of sanitary sewer leaks in the creek during the times sampling occurred.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Phase I of this project is complete and will not be reported on in FY 2009. Copies of the report were provided to the Regional Water Quality Control Board's assigned TMDL staff. A Monitoring Plan for Phase II of the Tecolote Creek Bacterial Source Tracking Investigation will be completed in FY 2009. Monitoring will occur between December 2008 and June 2009. Phase II will aim to fill key data gaps identified in the Tecolote Phase I study and further identify bacterial sources in Tecolote Creek. The study will also aim to provide additional data for use in the preparation of the Final Tecolote Bacterial TMDL. Phase II is described in greater detail in MB-3002 - Tecolote Creek Bacterial Source ID Study (Phase II).

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City's *Strategic Plan for Watershed Activity Implementation* and the Copermittees' Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem in the Mission Bay and La Jolla WMA. The *Strategic Plan for Watershed Activity Implementation* identified data gaps in the information known on bacteria source and re-growth in the WMA. This study will fill this data gap by identifying sources of bacteria in the WMA which will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
TECOLOTE CREEK BACTERIAL SOURCE IDENTIFICATION STUDY (PHASE I) **Assess the Effectiveness of the Bacterial Study**	
Expected Outcome(s)	• Findings and assessments will be presented in FY 2009

Effectiveness is not being assessed because this is not a water quality or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

APPENDIX B
ACTIVITY SUMMARY SHEETS FOR NEWLY REPORTED WATERSHED ACTIVITIES

TITLE: **Beach Area Low Flow Storm Drain Diversion Project, Phase III**

ID NUMBER: **MB-1018**

ACTIVITY IMPLEMENTATION

In 1997, the Beach Area Low Flow Diversion Project was created at the request of the San Diego Council Members Wear and Mathis. Storm drain outfalls along the coastline were inventoried and each drain outfall was rated for the potential for human contact with the flow from the drain (i.e. flow crosses the beach). Outfalls, which were labeled by the street name location, were identified as having high or medium potential were studied to determine the feasibility and cost of diverting low flows to the wastewater collection system. High priority sites due to continuous urban runoff flows during dry weather became Phase I of the project. As a result, Phase I low flow diversion facilities included Tourmaline, Bonair/Neptune, Ravina, Avenida de la Playa, Vallecitos, Camino del Oro, and south of Vista de la Playa. These sites became operational in 1998 and 1999 at a cost of $1 million.

Phase II projects included El Paseo Grande, Spindrift, Children's Pool, 711 Coast Boulevard, Coast Boulevard (at lifeguard station), 465 Coast Boulevard, Coast Boulevard at Pump Station 24, Neptune and Belvedere, Neptune and Westbourne, Neptune at Playa Del Norte, Neptune at Playa Del Sur, Neptune at Gravilla, Neptune at Kolmar, Neptune North of Kolmar, Neptune at Rosemont, Neptune at Palomar, Coast Boulevard at Grand, and Ocean Boulevard at Grand. Phase II projects became operational by July of 2007.

Phase III projects include Missouri Street, Chalcedony, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Street, and South of Loring Street. These facilities have been constructed but are not yet operational.

This project was inadvertently left out of the Mission Bay & La Jolla WURMP, submitted to the Regional Board in March 2008. Therefore, the Regional Board did not include comments on this specific project in its comment letter[1]. However the Regional Board did state that another low flow diversion project, the La Jolla Dry Weather Flow Diversions, will be given activity credit. The City will request credit for the diversions described in this activity summary sheet when they are operational and load reduction is achieved.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Phase III projects are expected to be operational in FY 2009.

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
BEACH AREA LOW FLOW STORM DRAIN DIVERSION PROJECT, PHASE III **Assess the Efficiency and Effectiveness of the Flow Diversion Facilities**	
Management Questions	• What is the load reduction efficiency of the storm drain diversions? • How effective are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the Phase III low flow diversion facilities to divert urban runoff flows during dry weather. Targeted high priority pollutants include bacteria, metals and nutrients.

Analysis and Results

Effectiveness assessment is not possible at this time, as the Phase III facilities are not yet operational. Phase III projects include Missouri Street, Chalcedoney, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Avenue, and South of Loring Street. Once the facilities become operational, an effectiveness assessment will be conducted.

Conclusions

Phase III projects are expected to be operational in the FY 2009. Effectiveness and efficiency will be determined by comparing load reduction to implementation costs, and through water quality monitoring. After assessment is complete, conclusions will be made based on the effectiveness and the efficiency of the project.

TITLE: **South Shores RV Pump-Out Station**
ID NUMBER: **MB-1019**

ACTIVITY IMPLEMENTATION

The City of San Diego's South Shores Park is just east of SeaWorld San Diego**.** On the west side, the park includes a large parking lot, boat launch ramp, restrooms, and one RV Dump, which was previously closed due to an apparent faulty design that jeopardized both traffic safety and bay water quality in March 2007. The City's Engineering & Capital Projects' Architectural Engineering Division was asked to evaluate the condition of the closed RV Dump Site and come up with solutions for quickly re-establishing service while addressing the issues of concern.

The following photograph was taken prior to installation upgrades during a period when spills had been observed. There was no barrier between the dump area and a storm drain inlet.

By installing speed bumps at either ends of the newly constructed median/RV lane (that separate the boat towing vehicles from the RV's), all of the overflows mentioned earlier as issues of concern can be contained and properly directed into the sanitary sewer system. The amount of rain flow that would be directed into the sewer system as a result of this design would be minimal and limited to an area equal to about the footprint of the RV. Rain flow should be captured, as it is anticipated that these flows will pick up any overflows the RV leaves behind from its dumping operation.

In order to address the issue of traffic safety, the RV Dump Site was redesigned so that the RV approach is in the direction of traffic flow. This was done by relocating the discharge point to the driver's side of the RV and protecting it within a newly constructed median of stamped concrete. The existing discharge point was kept in service to accommodate the few RV's with their discharge fittings on the passenger side. This eliminated the need for any RV to go against the flow of traffic. In order to ensure traffic

safety, the boat launch lanes as well as the RV lane were striped and signed adequately to separate and direct traffic with "RV Dump Only" and directional arrows.

The following photograph shows the completed upgrades. The constructed berms prevent spills reaching the original inlet and discharging into Mission Bay.

Construction was finished in late calendar year 2007. This project is considered completed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Construction was finished in late calendar year 2007. This project is considered completed and this activity will not be reported on in the future.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem in the Mission

Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address it.

EFFECTIVENESS ASSESSMENT

This activity was initially planned and constructed while Municipal Permit 2001-01, NPDES No. CAS 0108758 was in effect. Therefore, a detailed assessment answering specific management questions was not conducted. However, the redesign of the site eliminates the high potential of raw sewage discharges associated with RV dumping from reaching a storm drain inlet that leads directly to Mission Bay, abating a known source, as the photographs above clearly show.

TITLE: **Avenida De La Playa Storm Drain Replacement and Low Flow Diversion**

ID NUMBER: **MB-1020**

ACTIVITY IMPLEMENTATION

During the City of San Diego's (City's) Beach Area Low Flow Storm Drain Diversion Project Phase I construction (briefly described in Activity Summary Sheet - MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III), a diversion was built upstream from the outfall at the beach on Avenida de la Playa with much of the flow from the large drainage area being diverted. However, there is significant dry weather flow from the area downstream of the diversion. The invert elevation of the existing beach outfall is at the mean sea level and sand regularly blocks all flow, except during the largest winter storms. Dry weather flows collect and stagnate, creating a known source of bacterial discharge to the receiving waters of the La Jolla State Marine Conservation Area (ASBS No. 29). The City is proposing a second dry weather diversion facility closer to the point of discharge at the beach along Avenida de la Playa and replacement of the pipe due to the dry weather issues, tidal intrusion, groundwater intrusion, and other issues associated with the current condition of the pipe.

In late fiscal year 2008, the City prepared a concept proposal, including this project, to apply for funds under the State's Proposition 84 ASBS Grant Program.

The goal of this project is to eliminate bacteria loads and other pollutants, such as metals and nutrients, typically discharged through low flows to the ASBS by replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall.

This activity was not included in the 2008 Mission Bay and La Jolla WURMP as it was initiated after the March submittal date. The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by tiering. It prioritizes the low flows to the ASBS and helps prevent pollutant release.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2008 for the Avenida de la Playa Storm Drain Replacement and Low Flow Diversion Project and is anticipated to continue into FY2010 with design. Project completion is anticipated to occur in FY 2013. However, due to the suspension of the Proposition 84 ASBS Grant Program, this project may be delayed.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. By replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall, sediment will no longer be trapped within the pipe allowing bacteria to grow within the warm waters and sediments contained in the pipe.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
AVENIDA DE LA PLAYA LOW FLOW STORM DRAIN DIVERSION PROJECT **Assess the Efficiency and Effectiveness of the Flow Diversion Facilities**	
Management Questions	• What is the load reduction efficiency of the storm drain diversions? • How efficient are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this analysis is to determine the diversion project's effectiveness and efficiency in reducing pollutant loads.

Analysis and Results

Assessment is not possible at this time, as the project is still in the design phase. Planning began in FY 2008 for the Avenida de la Playa Storm Drain Diversion and Low Flow Diversion Project. Post-construction monitoring will be conducted and effectiveness assessment will be completed once the project is complete. Efficiency will be determined by comparing load reduction to implementation costs.

Conclusions

Once the project is complete and the effectiveness assessment has been conducted, conclusions will be made as to future implementation of other similar activities.

TITLE: **Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades**

ID NUMBER: **MB-1021**

ACTIVITY IMPLEMENTATION

In 1987, the City of San Diego (City) committed to expand the low flow diversion system around Mission Bay with the Mission Bay Sewage Interceptor System (MBSIS) project. This initial project provided interception capability for 65 drain outlets within the remaining 10 percent of the tributary drainage basin. At a cost of $9 million, the project was completed in 1994 and expanded the number of facilities to 46 (14 pump stations and 32 gravity systems). A telemetry control system was also included to provide a more efficient operation. The remote telemetry automatically was used to shut down each facility whenever it rains. Therefore, the labor-intensive effort of physically shutting down each facility was avoided. The new storm water pumping station constructed in Mission Beach at Santa Clara Point was constructed with low flow pumps to divert dry weather flows to the wastewater collection system.

The current CIP project provides for the design and construction of upgrades to 31 sites within MBSIS.

Three Congressional Federal Grants were issued through EPA's Appropriations Act totaling approximately $10 million. These grants fund 55% of the design, environmental, and construction costs of MBSIS and coastal low flow (CLF) Phases II, III and IV (see Activity Sheets MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III and MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV) for more information). In order to be eligible for these federal grants, each of the phases must clear the EPA's National Environmental Policy Act (NEPA), a process that can span up to a year. These grants are reimbursable. Upfront funding is required from the City.

As of September 2007, the design for the upgrades was completed. The City is currently looking for construction funding. The activity was not included in the 2008 Mission Bay & La Jolla WURMP because the activity had been on-hold pending construction funding. The City is again actively seeking funding to front the reimbursable construction costs.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to try to get additional funding in FY 2009 so that the reimbursable grants may be utilized and the MBSIS project may be constructed.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem in the Mission Bay and La Jolla WMA. Identification of the sources of bacteria in the WMA will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MISSION BAY AND COASTAL BEACHES SEWAGE INTERCEPTOR SYSTEM UPGRADES **Assess the Efficiency and Effectiveness of the Flow Diversion System**	
Management Questions	• What is the load reduction/source abatement efficiency of the upgrades? • How effective are the upgrades at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in level of potential discharges/load reduction due to implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the upgrades to the MBSIS flow diversion system in reducing bacteria load and improving water quality.

Analysis and Results

.As of September 2007, the design for the upgrades was completed. The City will continue efforts to secure construction funding in FY 2009 so that the reimbursable grants may be utilized and the MBSIS upgrades may be completed. Effectiveness will be

determined after the upgrades are completed through an assessment of load reduction/source abatement.

Conclusions

Conclusions will be made at the completion of the activity, after implementation and assessment is complete.

TITLE: **Clean Construction Poster and Brochure Distribution**
ID NUMBER: **MB-2006**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) Clean Construction poster and brochure to be handed out to development applicants receiving a grading or public improvement permit from the City of San Diego (City). The poster is large and durable enough to be posted outdoors or indoors to serve as a steady reminder to construction managers and workers of storm water issues and Best Management Practices (BMPs). A double-sided brochure has been developed as well. Both the poster and brochure were updated in FY 2008. Photos on the poster and brochure illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing Clean Construction poster and brochure to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated with Development Services Department staff to distribute the poster in FY 2008 to development applicants receiving a grading or public improvement permit from the City. Based on the number of permits granted, the total number of posters distributed in the Mission Bay and La Jolla Watershed Management Area (WMA) was 95.

The Regional Board provided comments[1] on the March 2008 WURMPs based on an audit conducted by PG Environmental. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit…pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet MB-3008 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

This activity is one of those not previously included in the March 2008 WURMPs because it does not meet the strict requirements for effectiveness assessment for watershed education activities. However, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters and brochures have been distributed over a number of years and the City plans to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the poster and/or brochure to permit applicants in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, sediment, metals, and nutrients as high priority water quality problems throughout the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with erosion and sediment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
CONSTRUCTION BMP POSTER AND BROCHURE DISTRIBUTION **Assess the Efficiency and Effectiveness of Posters in Promoting Awareness**

For FY 2008, the City distributed 95 posters as referenced above in the Activity Implementation section. Due to the nature of this activity, comprehensive effectiveness assessment to show knowledge or behavior change is not being conducted for this activity. The City may continue to report on the distribution of the poster to permit

applicants, but is not requesting credit as a WMA education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **Restaurant Best Management Practices Booklet Distribution**
ID NUMBER: **MB-2007**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission several years ago from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the Mission Bay and La Jolla Watershed Management Area (WMA) during inspections. After review by restaurant employees, the booklet could be kept by owners/managers for reference and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs. The booklets were not modified in FY 2008 but continue to be distributed.

Storm Water Division staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for the continued distribution of the booklet in FY 2008 to City-permitted facilities. The City distributed 597 booklets in the Mission Bay and La Jolla WMA.

The Regional Board provided comments[1] on the March 2008 WURMPs based on an audit conducted by PG Environmental. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit…pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet MB-3008 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these booklets have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with FEWD Program staff for distribution of the booklet in FY 2009 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
RESTAURANT BMP BOOKLET DISTRIBUTION **Assess the Efficiency and Effectiveness of Educational Booklet Distribution**

For FY 2008, the City distributed 597 booklets as referenced above in the Activity Implementation section. Due to the nature of this activity, comprehensive effectiveness assessment to show knowledge or behavior change is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a WMA education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **Transit Shelter and Billboard Advertisements**
ID NUMBER: **MB-2008**

ACTIVITY IMPLEMENTATION

The City of San Diego Storm Water Pollution Prevention Division (City) secured a contract with outdoor advertising company CBS Outdoor to display *Think Blue* billboards and bus shelters located in the Mission Bay and La Jolla Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria. The goal of the billboards is to educate the public about their impact on the causes of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008, and were displayed throughout the Mission Bay and La Jolla watershed in both English and Spanish.

This activity was not included in the 2008 Mission Bay and and La Jolla WURMP, and is a newly reported activity. During the search for location for a similar activity in other WMAs, suitable locations were found in this WMA.

Transit shelter *Think Blue* advertisements were located at four locations in FY 2008:

- W. Mission Bay Dr. and Quivera Rd
- Linda Vista Rd. and Mesa College Dr.
- Clairemont Dr. and Clairemont Mesa Blvd.
- Genesee and Nobel Dr.

Billboards were advertised at one location in FY 2008:

- Ingraham St. and La Playa Ave.

Over the four-week viewing period, there were 1,931,720 impressions for transit shelter advertisements and 449,400 impressions for billboards.

According to Regional Board staff comments[1] on other WURMPs the City is involved in (e.g., San Diego River), the City will need to answer effectiveness measurement questions and provide locations of the billboards and transit centers in the annual report. The locations are provided in the Activity Implementation section. Effectiveness measurement is discussed in the Effectiveness Assessment section.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The City plans to continue to implement transit shelter and billboard advertisements in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy as well as the City's *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla WMA bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness		
Management Questions	• What changes in awareness /attitude regarding bacteria and sediment was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target WMA • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of public reached by ads)	
Data Recorded	Number of billboard advertisement impressions in the Mission Bay and La Jolla WMA (Outcome Level 1)	449,400 DEC*
	Number of transit shelter advertisements impressions in the Mission Bay and La Jolla WMA (Outcome Level 1)	68,990 DEC*
	Number of public participants reached by billboard advertisements in all WMAs (Outcome Level 1)	7%
	Percentage of public who had heard of *Think Blue* during FY 2008 (Outcome Level 2)	45%
	Change in pollutant-related behavior (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 1,931,720 for transit shelter ads and 449,400 for billboards.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence

level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of transit shelter billboards to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

Analysis and Results

Transit shelter *Think Blue* advertisements were located at four locations in the Mission Bay and La Jolla WMA in the FY 2008: W. Mission Bay Dr., Quivira Rd; Linda Vista Rd., Mesa College Dr.; Clairemont Dr., Clairemont Mesa Blvd.; and Genesee, Nobel Dr.. Billboards were advertised at one location in the FY 2008: Ingraham St., La Playa Ave. The number of public reached varied by location. Over the four-week viewing period, there were 1,931,720 impressions for transit shelter advertisements and 449,400 impressions for billboards.

Out of 800 total residents from all WMAs who participated in a random digit-dial *2008 San Diego Storm Water Survey*, 7% became aware of the *Think Blue* message by seeing the billboards in FY 2008. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. According to the survey, groups most likely to have seen the billboard were: residents under 50 years of age, (38%) compared to seniors (24%); Latino women (49%) compared to white men (31%) and white women (32%); and Latino renters (50%) compared to white homeowners (29%).

Conclusions

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all WMAs who participated in the survey, 45% reported exposure in 2008. The survey results correlate well to the daily effective calculation (DEC), estimated to be 68,990 impressions per day for transit shelter advertisements and 16,050 impressions per day for billboards in the Mission Bay and La Jolla WMA.

The 2008 survey results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are engaging in negative storm water practices. The large number of transit shelter advertisement impressions made in FY 2008 also supports the assertion that the transit shelter advertisement program is effective, due to increasing public exposure to bacteria and gross pollutant issues.

Implementation of the advertisements will continue in the FY 2009. Effectiveness will continue to be measured via surveys comprised of a random sample of residents in the Mission Bay and La Jolla WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable

changes in knowledge, awareness and/or change in behavior with the cost of this activity. The continuation of the activity and surveys will allow for longer-term assessment and should provide more complete results on which to base the conclusion of increased awareness and reported behavior changes.

TITLE: **Mission Bay Focused Outreach**
ID NUMBER: **MB-2009**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in Mission Bay in FY 2008, the City of San Diego's (City's) *Think Blue* program implemented a summer outreach campaign that targeted key sources of bacteria pollution in Mission Bay. The campaign provided direct outreach to Mission Bay users, specifically recreational vehicle (RV) users and boaters, in an effort to prevent Mission Bay from being closed due to bacterial pollution during the high-use summer season, as it was in 2006.

During the summer of 2007, a variety of education and outreach methods were employed to reach the key target audiemces, including:

- An outreach greeter station staffed with *Think Blue* staff and consultants, in order to increase direct public education and interaction. The booth was located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza boat launch, and was operational during the Independence Day and Labor Day Holiday weekends.
    - Public education materials available in the booth included Think Blue pollution prevention education materials (such as brochures and tip cards), along with best management practice (BMP) giveaways, such as brooms and dustpans.
- Specialized postcards targeting each Mission Bay user group (RV users, boaters, and general visitors) were developed and available in both English and Spanish.
- One dozen trash receptacles were wrapped with banners at different locations throughout Mission Bay to promote the slogan, "Help Keep Mission Bay Clean and Safe".
- The "*Think Blue*" pollution prevention message was stenciled on over 3 dozen trash receptacles located on Fiesta Island.
- Mobile ad display was visible at the entrance of Mission Bay East during Holiday (Memorial, Independence and Labor Day) weekends.
- Direct outreach and observations occurred at the 2007 Over the Line Tournament at Fiesta Island.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

During FY 2009, the following direct outreach and observations efforts will occur:

- An outreach greeter station staffed with *Think Blue* staff and consultants, in order to increase direct public education and interaction. The booth will be located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza

boat launch, and will be operational during the Independence Day and Labor Day Holiday weekends.
    - Public education materials available in the booth will include *Think Blue* pollution prevention education materials (such as brochures and tip cards), along with BMP giveaways, such as brooms and dustpans.
- Direct contact and collaboration with marinas operating in and serving Mission Bay in order to distribute specialized pollution prevention BMP postcards targeting boaters/boat owners.
- Outreach to RV visitors at the 2008 Over the Line Tournament.
- Mobile ad display at the entrance of Mission Bay East during the Memorial Day, Independence Day, and Labor Day holiday weekends.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- City of San Diego Park & Recreation Department
- City of San Diego Lifeguards
- Mission Bay stakeholder groups (OMBAC, Mission Bay Planning Committee, etc.)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy and the *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla Watershed Management Area (WMA) both identify bacteria as a high priority water quality problem in the WMA. This outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MISSION BAY FOCUSED OUTREACH **Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness**	
Management Questions	• What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys

Watershed: Mission Bay and La Jolla							
MISSION BAY FOCUSED OUTREACH **Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness**							
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)						
Data Recorded	***Think Blue* FY 2008 Mission Bay Outreach Studies**						
	Holiday	*Number of Visitors to Outreach Booth*	*Number of passers-by Observed (daily avg)*	*Number of Visitors Approached*	*Observed Boat Launches*	*Observed Parked RVs*	*Total Materials Distributed*
	Independence Day 2007	463	1,416	966	318	463	2,922 *
	Labor Day 2007	74	1,032	223	113	154	277
	Memorial Day 2008	29	16	6	n/a **	26	12
	Estimated total visitors (impressions) exposed to the *Think Blue* Booth in Mission Bay in FY 2008 (Outcome Level 1)						14,472
	Estimated total visitors (impressions) exposed to the *Think Blue* Mobile Ad during Mission Bay Focused outreach (17 days) in FY 2008 (Outcome Level 1)						658,750
	Number of Surveys administered in FY 2008 *** (Outcome Level 1)						32
	Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3)						60%
Recommended Data	Reported changes in attitudes, awareness and non-pollutant behavior (Outcome Level 3)						

*Includes walkups, visitors approached by staff and materials given to park rangers and lifeguards to distribute (disseminated at July 3 *Think Blue* Press Conference).
** Weather was cold and rainy and booth was closed for 50% of the holiday weekend, therefore very few boat launches were observed
*** Surveys and administration protocol was still under development in FY 2008

Objectives

The goal of this assessment is to determine the effectiveness of the FY 2008 summer outreach campaign in increasing knowledge and awareness in the target audience (RVers, boaters and visitors to Mission Bay) in order create positive behavioral change that will reduce bacteria and gross pollutants.

Analysis and Results

The City's *Think Blue* campaign implemented a summer outreach campaign in FY 2008 that targeted key areas of concern for pollution in Mission Bay. The campaign was conducted during the major summer holidays (Independence Day 2007, Labor Day 2007 and Memorial Day 2008) and provided direct outreach to Mission Bay users, specifically RV users and Boaters. Efforts were made, to increase awareness of pollutants sources (specifically bacteria), in order to reduce those sources, prevent pollution and avoid a

beach closure in Mission Bay during the high-use Summer Season. Examples of outreach activities included informational postcard distribution to both *Think Blue* booth visitors and those in proximity of the booth; mobile ad display at the entrance of Mission Bay East during holiday weekends; and direct outreach and observations to boaters and RV users in the area.

During FY 2008, over 14,000 visitors to East Mission Bay were exposed to the *Think Blue* Mission Bay Outreach, which was promoting the message, "Help Keep Mission Bay Clean and Safe". Over 566 individuals approached the booth to speak with staff; over 1,000 Bay users were approached by staff, with over 3,200 people receiving pollution prevention outreach material. 14,472 individuals passed by the *Think Blue* booth and are estimated to have been exposed to the outreach messaging. The *Think Blue* Mobile Ad that was circulating in the Mission by area and was displayed at the entrance of East Mission Bay during the three holidays (17 days total) is estimated to have been viewed by 658,750 individuals based on traffic counts and pedestrians.

FY 2008 was the second year that *Think Blue* participated in Focused Mission Bay Outreach. Due to the Holiday schedule and staffing availability, data collected across all three holidays is not consistent. For example, during the 4th of July 2007, the booth was available to the public for 10 days, whereas for Labor Day and Memorial Day it was limited to 3 days each weekend. FY 2008 was also the first year that *Think Blue* attempted to perform survey assessment, hence adjustments were made in regard to questions asked as well as survey protocol. Of the 20 individuals who completed the assessment survey, 60% reported a willingness to take steps to engage in behavior that would prevent pollution. Unfortunately, due to the small sample size, this number is not statistically significant, but if verified in future surveys with more respondents, it can be considered an indicator of a Level 3 Outcome.

Furthermore, there were several confounds for Memorial Day 2008. Due to the rain, there were very few visitors observed in East Mission Bay, and on two occasions the booth was removed early due to the inclement weather. In addition, gas prices were $4+ per gallon (travel was decreased as a whole throughout the County as reported by CalTrans) and a temporary beach alcohol ban was in effect, which decreased visitorship to all beaches throughout the City in FY 2008. Therefore, *Think Blue* experienced a noticeable decrease in booth visitors/data for that holiday weekend.

Conclusions

Mission Bay Focused Outreach is proving to be an effective way to reach visitors to East Mission Bay during the major summer holidays. The large numbers of impressions (14,472 exposed to *Think Blue* booth, and 658,750 exposed to mobile advertising) and direct contacts via walkup (556 persons), educational material distribution (3,211 items) and survey participation in FY 2008 support the assertion that the focused outreach program is effective, due to increasing public exposure to bacteria and gross pollutant issues. More of the public is now aware of storm water issues and the *Think Blue* campaign due to this focused outreach.

Implementation of the campaign will continue in FY 2009, and include hosting the outreach booth, in order to distribute specialized informational postcards tailored to RV users, boaters, and general visitors as well as displaying the Mobile Ad at the entrance of the Bay. Assessment survey protocol will be revised, and surveys administered will be increased in an effort to gather statistically valid information regarding knowledge, attitudes and pollution prevention behavior of Mission Bay visitors. Outreach in FY 2009 will expand to include Mission Bay special event outreach as well as targeted Marina and boater outreach. Effectiveness will be measured further via surveys comprised of residents in the Mission Bay and La Jolla WMA to determine awareness, knowledge retention and behavior change.

TITLE: **Tecolote Creek Bacterial Source Identification Study (Phase II)**

ID NUMBER: **MB-3002**

ACTIVITY IMPLEMENTATION

The Tecolote Creek Bacterial Source Identification Study (Phase I) involved the identification of bacterial sources in the Tecolote Creek Watershed through wet and dry weather monitoring surveys including visual observations, spot sampling, and laboratory analysis of data accumulated through monitoring. Data analysis and reporting began once monitoring concluded in April 2008 and the final report will be completed in August 2008. The Phase I study proved a need for for a Phase II bacterial source identification study. Phase II will aim to fill key data gaps identified in the Tecolote Phase I study and further identify bacterial sources in Tecolote Creek.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

A Monitoring Plan for Phase II of the Tecolote Creek Bacterial Source Tracking Investigation will be completed in FY 2009. Monitoring will occur between December 2008 and June 2009. The study will also aim to provide additional data for use in the preparation of the Final Tecolote Bacterial TMDL.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City's *Strategic Plan for Watershed Activity Implementation* and the Copermittees' Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the Mission Bay and La Jolla WMA. The City's *Strategic Plan for Watershed Activity* identified data gaps in the information known on bacteria source and re-growth in the WMA. This study will fill this data gap by identifying sources of bacteria in the WMA which will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
TECOLOTE CREEK BACTERIAL SOURCE IDENTIFICATION STUDY (PHASE II) **Assess the Effectiveness of the Bacterial Study**	
Expected Outcome(s)	• Findings and assessments will be presented in August 2008

Effectiveness is not being assessed as this not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: **Areas of Special Biological Significance Nos. 29 and 31 – Integrated Coastal Watershed Management Plan**

ID NUMBER: **MB-3003**

ACTIVITY IMPLEMENTATION

The California State Water Resources Control Board (SWRCB) has established 34 Areas of Special Biological Significance (ASBS) off of the California coast. Two adjacent ASBS exist within the jurisdiction of the City of San Diego (City): ASBS No. 31 (the San Diego Marine Life Refuge at the Scripps Institution of Oceanography) and ASBS No. 29 (the San Diego–La Jolla Ecological Reserve off the coast of La Jolla Shores). The discharge of constituents or "wastes" contained within storm water discharges into the ASBS is prohibited by the California Ocean Plan. However, the Ocean Plan allows jurisdictions to apply to the SWRCB for exceptions to the prohibition if certain conditions are met. The exception is anticipated to still prohibit the discharge of dry weather flows into the ASBS. Scripps Institution of Oceanography received its exception for ASBS No. 31 in 2004.

The City applied to the SWRCB for its exception for ASBS No. 29 in May 2006. While awaiting approval of the exception, the City is working towards the execution of a three-step program designed to reduce impacts to the receiving waters of both ASBS Nos. 29 and 31. The three steps are: formulation of a management plan; execution of a monitoring program; and implementation of Best Management Practices (BMPs).

The City worked with the La Jolla ASBS Project Team consisting of Scripps Institute of Oceanography (SIO), University of California, San Diego (UCSD) and San Diego CoastKeeper on the development of the Integrated Coastal Watershed Management (ICWMP) for the ASBS Nos. 31 and 29 and the associated La Jolla Shores watershed. The development of the ICWMP was completed under a Proposition 40 Grant through the SWRCB. The ICWMP presents the process by which projects to reduce the impacts to the ASBS are developed, implemented and assessed. This innovative process, entitled the ASBS Protection Model, has been developed by the Project Team to apply not only to the ASBS in La Jolla, but also to the other ASBS in California. The ICWMP presents a phased tiered approach to BMP implementation. The ASBS Protection Model, as detailed in the plan, includes an assessment element that will evaluate the effectiveness of these projects to reduce pollutant loads and potential impact to the ASBS ecosystem.

Tasks Completed in FY 2008 include:

- A public outreach meeting was held in August 2007 to solicit public input on the plan.
- The ICWMP was approved by City Council and the Mayor in June 2008.
- The ICWMP presents a phased tiered approach to BMP implementation through projects that include the following:
    - Kellogg Park Green Lot Retrofit project (see Activity Sheet MB-1014 Kellogg Park Green Lot Retrofit project)

- Increased inspections of restaurants and targeted residential outreach to reduce bacteria loads to the ASBS (see Activity Sheet MB-1004, MB-1005, MB-1006, MB-1009 Target Facility Inspections (Combined)).
- Targeted residential outreach using Community Based Social Marketing methods to reduce bacteria loads to the ASBS occurred (see Activity Sheets MB-2003 La Jolla Commercial CBSM Efforts and MB-2010 La Jolla Residential CBSM Efforts).
- Aggressive street sweeping to reduce metals loading occurred (see Activity Sheet MB-1010 Targeted Aggressive Street Sweeping Project)
- Low Flow Diversions (see Activity Sheets MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV), MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III, and MB-1020 Avenida de la Playa Storm Drain Replacement and Low Flow Diversion).

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Tasks planned for FY 2009 include:

- Agreement for grant funding will be completed. Construction funding for the La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV, Consolidated Grants) will be appropriated in late FY 2009 or early FY2010.
- TAC meetings will continue to be held associated with the grant.
- Continue implementation of the first phase of projects that include Tier I and II BMPs.
- Phase III diversions are expected to be operational in FY 2009.

Activities and BMPs implemented under the ICWMP are and will continue to be reported on in separate activity summary sheets. Since the ICWMP has been adopted and is now in implementation, reporting specific to the ICWMP will cease with this annual report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- UC-Regents UCSD
- Scripps Institute of Oceanography
- Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The following pollutants have been identified as potential constituents of concern (COC) and high priorities are in bold:

- **Bacteria**
- **Metals**
- Dioxins/Furans (expressed as TCDD equivalent)
- Oil and Grease
- Sediment
- Pesticides
- Toxicity
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's *Strategic Plan for Watershed Activity Implementation* includes bacteria, metals, and nutrients as high priority water quality problems and recommends implementing load reduction/source abatement activities to address it.

The ICWMP presents the process for the development, implementation and assessment of management actions that will be taken locally to protect and improve water quality in the two ASBS off the coast of La Jolla. This ICWMP addresses the urban runoff and storm water discharges from these watersheds through identification of the major constituents of concern that potentially impact the ASBS, potential sources of these constituents, identified data gaps, and the recommended first phase of BMPs to reduce the constituent loads and potential impacts to the ASBS. The ASBS Protection Model presented in the ICWMP provides a process to assess the effectiveness of the BMPs implemented to reduce potential impacts to the ASBS.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
ASBS NOS. 29 AND 31: INTEGRATED COASTAL WATERSHED MANAGEMENT PLAN **Assess the Effectiveness of the Management Plan**

The ICWMP is in its implementation phase, with BMPs and monitoring studies being implemented by the City, UCSD, SIO, and San Diego CoastKeeper, and is not assessed as part of this report. Activities implemented under the plan will be assessed as completed. As outlined in the plan, performance is to be measured using BMP effectiveness monitoring, paired watershed studies, ambient receiving water quality changes, qualitative assessments, and Ecosystem Assessment monitoring. Many of these studies are being done by other WMA Management Group members who helped develop the plan.

As outlined in the plan, data gaps will be filled using the following studies and evaluations: Atmospheric Deposition Impact Evaluation; Sediment Loading from open space canyons; design storm studies; benthic marine surveys in coordination with the Southern California Bight 2008 program; bioaccumulation study; sub-tidal, inter-tidal,

and sediment microbial community studies. As with the performance measurements, other Watershed Management Group members are conducting many of these studies. Any activities or studies being conducted by the other group members without City involvement will not be reported under the WURMP in this or future annual reports. The City, however, is conducting or plans to conduct the Atmospheric Deposition study, the Sediment Loading study, the design storm study, in addition to BMP effectiveness monitoring. Please see the appropriate activity summary sheets in this report for more information on these studies and BMP effectiveness monitoring.

TITLE: **La Jolla Shores Sediment Source Study**
ID NUMBER: **MB-3004**

ACTIVITY IMPLEMENTATION

As part of recent efforts to protect coastal resources and areas of special biological significance (ASBS), water quality monitoring has been conducted in areas that discharge urban runoff to the two ASBS in the La Jolla area. These monitoring efforts have resulted in the identification of metals, bacterial, and sediment loads as primary pollutants of concern for waters discharging to the ASBS. However, the studies conducted to date have not identified specific sources of these pollutants nor have they characterized the nature of the particulates causing suspended sediment concentrations to exceed water quality objectives. Although runoff from both residential areas and natural open space areas are thought to be significant contributors to the pollutant loads observed in this urbanized setting, the relative contribution of fine and course sediment fractions from each land use type is not well understood.

The primary goal of the La Jolla Shores Sediment Source Study that the City of San Diego (City) is conducting is to identify sediment sources and to characterize sediment loads from different land use areas within the La Jolla Shores Coastal Watershed during storm events.

The study is designed to answer several key study questions:

1. During storm events, how does land use influence sediment loading?
2. Do sediment loading patterns or the relative grain size proportions change throughout a storm hydrograph?
3. What is the estimated sediment and pollutant load entering the ASBS during a large storm event?
4. What are the water quality and sediment conditions in the ASBS receiving water?
5. Are concentrations of constituents in runoff correlated with specific sediment loads or grain size fractions?
6. What potential BMP solutions are available, applicable, and feasible for implementation in the La Jolla Shores Watershed based upon the data compiled in this study?

Understanding the source and nature of sediments and associated pollutants entering the ASBS from the watershed as well as their fate once they enter the marine environment will help the City establish a baseline to measure the effectiveness of management actions. In addition, the study will help the City prioritize and implement cost-effective best management practices (BMPs) to reduce pollutant loading to the ASBS. Finally, the study will assist the City in meeting current and future ASBS regulatory compliance requirements by assessing sediment and pollutant loads that travel from the La Jolla Shores Coastal Watershed to the nearby ASBS.

Sampling began in FY 2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Data will be collected from sampling events occurring in FY 2009 to fill in data gaps and provide a more robust data set for analysis. Following the FY 2009 sampling, a final report will be produced detailing the results.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City's *Strategic Plan for Watershed Activity Implementation* and the Copermittees' Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) identify sediment and bacteria as water quality problems in the Mission Bay and La Jolla WMA. The City's *Strategic Plan for Watershed Activity Implementation* identified data gaps in the information known on sediment loading and bacteria sources in the WMA. This study will fill these data gaps.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
LA JOLLA SHORES SEDIMENT STUDY **Assess the Effectiveness of the Sediment Study**	
Expected Outcome(s)	• Findings and assessments will be presented in FY 2009

Effectiveness is not being assessed as this is not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: **La Jolla Design Storm Study**
ID NUMBER: MB-3005

ACTIVITY IMPLEMENTATION

As part of the City of San Diego's planning for the San Diego Region Beaches and Creeks Bacteria Total Maximum Daily Load (TMDL), a design storm assessment will be conducted. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm.

Parameters for existing pollutograph sampling scheduled as part of the La Jolla ASBS Sediment project were added to this project in FY 2008. Three sites in the watershed are being monitored: LJCYN (representing open space land use), LJRES (representing residential land use), and LJEND (representing mixed land use). This study was not conducted as part of TMDL monitoring.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This study will include assessment, sampling, analysis, and reporting in FY 2009. Study completion is anticipated in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). The study will help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the priority water quality problems.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
LA JOLLA SHORES DESIGN STORM STUDY **Assess the Effectiveness of the Study**	
Expected Outcome(s)	• Findings and assessments will be presented in FY 2009

Effectiveness is not being assessed because this is not a water quality or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: **Tecolote Creek Design Storm Study**
ID NUMBER: **MB-3006**

ACTIVITY IMPLEMENTATION

As part of planning for the Tecolote Creek Bacteria Total Maximum Daily Load (TMDL), a design storm assessment will be conducted. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm.

Parameters for existing pollutograph sampling scheduled as part of the Tecolote Creek Phase II Bacterial Source ID Study were added to this project. One site at the base of the watershed will be monitored with samples collected for grain size and bacteria. A settling experiment to see how bacteria are transported through a storm event will be conducted. Additionally, a speciation will occur to determine if bacterial species are altered throughout a storm event.

TMDL APPLICABILITY

- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This study will include assessment, sampling, analysis, and reporting in FY 2009. Study completion is anticipated in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). The study will help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the priority water quality problems.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
TECOLOTE CREEK DESIGN STORM STUDY **Assess the Effectiveness of the Study**	
Expected Outcome(s)	• Findings and assessments will be presented in FY 2009

Effectiveness is not being assessed because this is not a water quality or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: **Dry Weather Aerial Deposition Study (Phase II)**
ID NUMBER: **MB-3007**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) conducted an Aerial Deposition Study (Phase II) in several watersheds in the City's jurisdiction in both the San Diego Bay and Mission Bay and La Jolla Watershed Management Areas (WMAs). This study was conducted to address sources of metal and particulate pollutants that settle out on watershed surfaces and have the potential to wash off. The study was specifically used to address the fact that ocean waters within the La Jolla Area of Special Biological Significance (ASBS) must meet a daily maximum Ocean Plan standard of 12 parts per billion for copper for which there are no identified point sources in the area.

Data was collected beginning September 10, 2007. The study was designed to address the following questions:

- Q1 - What is the annual aerial deposition rate in the high loading areas identified in the initial dry weather aerial deposition study?
- Q2 - What is the wet weather aerial deposition rate at the SD8(1) location (located in Chollas Creek)?
- Q3 - What is the solubility of copper, lead, and zing in atmospheric deposition particles during dry and wet conditions?

In the La Jolla and Mission Bay WMA, dry deposition analyses occurred at two high traffic surface streets, and one reference site at the following locations:

- Scripps Institute of Oceanography (SIO) Pier (Reference site and provides direct deposition assessment to the ASBS surface)
- La Jolla Parkway (High traffic surface street, high braking)
- La Jolla Shores Drive (High traffic surface street, high braking)

As of June 30, 2008, the project is approximately 65% complete (field work is approximately 85% complete). The following information summarizes the progress to date:

- Nineteen of 24 annual dry deposition events completed
- Three of three wet deposition events completed
- Three of three solubility events completed

Based on data collected during the study, mean deposition results for copper was highest at La Jolla Parkway (44.8 $\mu g/m^2/day$). Lead deposition rates were infrequently detected or were low in comparison to other metals. Mean zinc deposition rates were highest at La Jolla Parkway (221 $\mu g/m^2/day$). The highest mean net particle deposition rates were found at La Jolla Shores Drive and La Jolla Parkway (188,803 and 150,611 $\mu g/m^2/day$). The SIO Pier reference site had the lowest deposition rates of copper, lead, and zinc.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Sample collection is expected to continue through August 2008. Remaining tasks include data analysis and draft reporting, peer review, and final reporting. The draft report is anticipated to be delivered November 2008 and the final report January 2009.

The City will be conducting a Phase III Aerial Deposition Source Evaluation from January through June 2009. The primary focus is directed to answer specific questions related to metals TMDLs in the City. This study is intended to supplement the initial dry weather aerial deposition study and the annual aerial deposition study. The purpose of this focused effort is to evaluate the potential emission sources that were identified by the previous two studies. The initial dry weather aerial deposition study (Phase I) assessed a three month period during the summer of 2006. The aerial deposition study evaluated the annual variation, solubility of particles, and the wet aerial deposition contribution. The Phase I and Phase II studies used techniques to locate specific assessments of flux conditions but not source specific wind direction assessments.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (specifically Zinc / Copper / Lead)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the La Jolla and Mission Bay WMA identify metals as a high priority water quality problem and identify data gaps in the information known on sources of metals. The aerial deposition study presents the results and findings of the conditions related to aerial deposition as a source. The study data can be used to provide model input data for future BMP evaluations and watershed activities. The report also provides information related to aerial particulate sources and relevance to each watershed.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
DRY WEATHER AERIAL DEPOSITION STUDY **Assess the Efficiency and Effectiveness of the Aerial Deposition Study**	
Expected Outcome(s)	• Findings and assessments will be presented in the final report in 2009

Effectiveness is not being assessed as this not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: **City of San Diego Strategic Plan Implementation**
ID NUMBER: **MB-3008**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table 1 – Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Tecolote Watershed "Green Street" Infiltration Retrofit	Green Street	Water Quality	Structural	Bacteria, Metals & Sediment

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash
Maple Canyon Water Quality Improvement Project	Sustainable Canyons	Water Quality	Structural	Metals, TSS, Bacteria, Pesticides & Trash
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals
Tijuana River Solid Waste Removal and Transfer Facility	Trash/Debris Separation	Water Quality	Structural	Trash, bacteria
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment
Residential Landscaping Retrofit Pilot Project	Residential Landscaping Retrofit	Water Quality	Non-structural	Targeted Multiple Pollutants
Smart Irrigation and Controller Incentive/Giveaway Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Targeted Multiple Pollutants
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A
Pet Waste Dispenser Program	Doggie Bag Dispenser	Water Quality	Non-structural	Bacteria
Posted Street Sweeping Routes	Street Sweeping	Water Quality	Non-structural	Metals, Trash & TSS
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
(1)				
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Commercial Pest Control Art Turf or Product Sub	Product Sub	Water Quality	Non-Structural	Pesticides
Residential Pesticide Management Art Turf or Prod Sub	Product Sub	Water Quality	Non-Structural	Pesticides
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Home Auto Activities (Metals) Code Mod and Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease
Alley Cleanup and Sweeping Pilot Project	Street Sweeping	Water Quality	Non-structural	Bacteria, Trash & Metals

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

- Area of Special Biological Significance Nos. 29 and 31

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

APPENDIX C
UPDATED LAND USE MAP

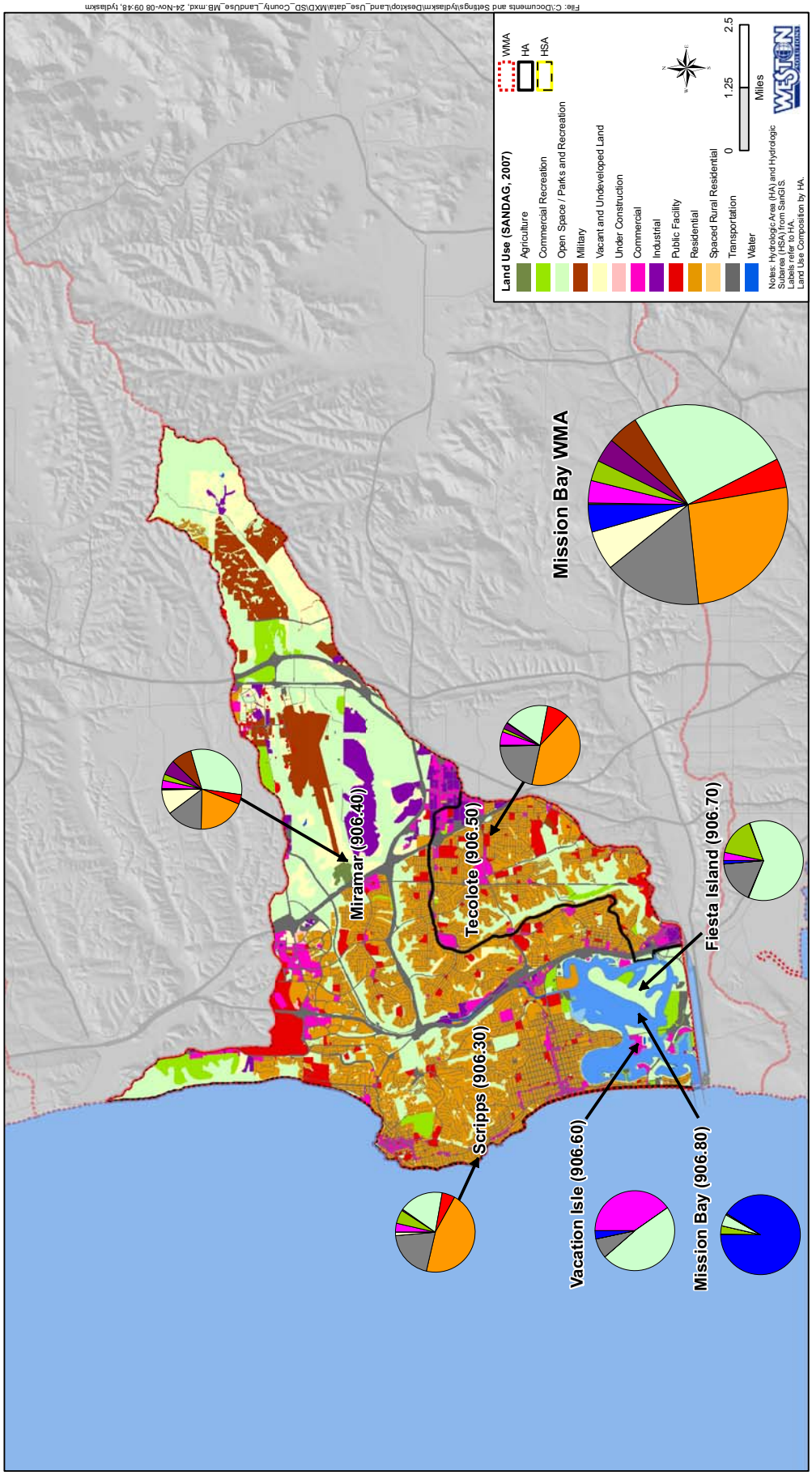

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MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2009 ANNUAL REPORT

Storm Water Department
City of San Diego

THE CITY OF SAN DIEGO

RE: STATEMENT OF CERTIFICATION for the Mission Bay and La Jolla Watershed Urban Runoff Management Program FY 2009 Annual Report

I certify under penalty of law that the Mission Bay and La Jolla Watershed Urban Runoff Management Program FY 2009 Annual Report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

KRIS MCFADDEN
Deputy Director
Storm Water Department
City of San Diego

1/26/10
Date

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350

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Appendix A: Activity Summary Sheets

Executive Summary

The Mission Bay and La Jolla Watershed Urban Runoff Management Program (WURMP) Annual Report (Annual Report) describes the actions taken by the City of San Diego (City) in Fiscal Year (FY) 2009 (July 1, 2008, to June 30, 2009) to refine and implement the WURMP and the progress made towards improving both urban runoff quality and receiving water quality in the watershed management area.

SECTION 1 (INTRODUCTION) provides information about the NPDES Municipal Stormwater Permit and updated Mission Bay and La Jolla WURMP. A discussion regarding Copermittee collaboration and land use map updates is included in this section.

SECTION 2 (WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT) is a summary of the assessment of the quality of the water and pollutant sources in the Mission Bay and La Jolla Watershed Management Area (WMA) based on data collected and analyzed from July 2008 through June 2009. To annually assess the water quality of the WMA, the Copermittees have compiled the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report) for FY 2009. Based on the data and findings of the Annual Monitoring Report and the City's *Strategic Plan for Watershed Activity Implementation*, the City has focused its efforts on targeting the following Priority Water Quality Problems for the Mission Bay and La Jolla WMA. The following problems that are bolded and italicized are considered High Priority Water Quality Problems.

- ***Bacteria/Pathogens***
- ***Heavy Metals***
- ***Nutrients***
- Pesticides
- Sediment

SECTION 3 (IMPLEMENTATION OF WATERSHED ACTIVITIES) details the water quality activities, education activities, public participation activities, and the collaborative land-use planning efforts that occurred during the reporting period regarding the implementation of the WURMP. The City continued the planning and design process for several activities, implemented source identification and special studies, continued to sponsor creek and bay trash removal, continued increased commercial/industrial facility inspections, initiated increased street sweeping, and implemented multiple education and public participation activities. All of these activities are anticipated to have a positive impact on water quality.

This section also includes the Updated 5-Year Strategic Plan. To address the identified Priority Water Quality Problems—and in particular the High Priority Water Quality Problems—the City has developed a five-year plan of action for the WMA using its *Strategic Plan for Watershed Activity Implementation*. The plan of action outlines various activity types including: water quality, education, special studies, public participation, and watershed-based land use planning. Water quality activities range from trash cleanup sponsorships, to facility inspections, to targeted street sweeping, to right-of-way porous asphalt pilot projects. Education activities range from public service announcements, to outdoor advertisements and direct outreach, to Community-Based Social Marketing pilot study efforts. The City also continues to encourage the

participation and input of diverse stakeholders and the general public in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP through various means, such as the Think Blue website[1], outreach to established committees and commissions, and partnerships with local not-for-profit groups. As for watershed-based land use planning, the City uses the community plan update process to incorporate general urban runoff management principles into the relevant plans, as needed, to address special concerns identified for the Mission Bay and La Jolla WMA.

SECTION 4 (EFFECTIVENESS ASSESSMENT) provides information regarding the assessment of overall WURMP effectiveness, including details on how the City achieved compliance for FY 2009. To evaluate its efforts at the activity and program levels, the City has developed an assessment framework that emphasizes maximization of activity efficiency and obtainment of knowledge and data associated with activity efficiency. This will help guide future management decisions on how to best allocate the City's resources to obtain the maximum amount of pollutant load reduction from its efforts.

An update on the TMDL progress is also provided in this section. No TMDLs are currently in effect for the Mission Bay and La Jolla WMA. However, the following water bodies in the WMA are currently listed as impaired per Section 303(d) of the Clean Water Act:

- Mission Bay: Bacteria indicators, lead, eutrophication
- Tecolote Creek: Bacteria indicators, cadmium, copper, lead, zinc, toxicity

Part of the WMA also drains to an Area of Special Biological Significance (ASBS) which is under pending special conditions.

SECTION 5 (CONCLUSIONS AND RECOMMENDATIONS) offers concluding remarks regarding the accomplishments of the City in FY 2009 in implementing the WURMP and recommendations for further refining the program. This section summarizes how the City achieved compliance with the NPDES Municipal Stormwater Permit and sets forth recommendations for improving the WURMP over time. The City will refine and augment the Mission Bay and La Jolla WURMP as it improves its understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality. Such refinement and augmentation are supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In short, the Annual Report presents an update on the City's long-term efforts to protect and enhance the water quality of the WMA using a watershed-based approach.

[1] http://www.thinkbluesd.org

Section 1 Introduction

The NPDES Municipal Stormwater Permit, San Diego Region Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Mission Bay and La Jolla WMA to collaborate on the development and implementation of a WURMP. This Annual Report is divided into five sections that highlight the efforts of the City of San Diego, the only copermittee in the WMA, during the FY 2009 reporting period. The FY 2009 reporting period is from July 1, 2008 through June 30, 2009.

The updated *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) was submitted to the San Diego Regional Water Quality Control Board (Regional Board) and implementation began in March 2008. The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Mission Bay and La Jolla WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and developing and implementing activities that include pollutant load reduction and pollutant source abatement (water quality activities); improvements in the public's knowledge, awareness, and behaviors (watershed education activities); as well as public participation and collaborative land use planning.

1.1 Copermittee Collaboration

The Mission Bay and La Jolla WMA is fully within the City's jurisdiction; therefore, the City is the only Copermittee within the WMA. However, significant military presence is located in the eastern part of the WMA as well as the University of California, San Diego (UCSD) in La Jolla. The City works collaboratively with UCSD, which does not operate under the same Permit, on urban runoff and ASBS issues.

1.2 Watershed Map Updates

No updates to the watershed map are necessary this reporting period.

Section 2 Water Quality and Pollutant Source Assessment

This section provides the updated assessment and analysis of the WMA's current and past applicable water quality data, reports, analyses, and other information, including the identification of the WMA's water quality problems and high priority water quality problems during the reporting period. This section will also identify the likely sources, pollutant discharges, and/or factors causing the high priority water quality problems within the WMA.

2.1 Water Quality Assessment

The Mission Bay and La Jolla WMA is located entirely within the City's jurisdiction and is the smallest WMA in San Diego County. It encompasses three main hydrologic areas (HAs): Scripps, Miramar and Tecolote. The majority of the watershed is drained by Rose Creek and Tecolote Creek which discharge into Mission Bay. The Scripps HA drains to the Pacific Ocean into an ASBS. The Mission Bay and La Jolla WMA 2006 SWRCB Section 303(d) Listed impaired water bodies and TMDL status are provided in Table 2-1. The pollutants causing the impairments include indicator bacteria, nutrients (eutrophication), heavy metals, toxicity and turbidity.

Table 2-1. Mission Bay and La Jolla WMA 2006 SWRCB Section 303(d) Listed Water bodies and TMDL Status

Water body Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Mission Bay Shoreline	Indicator bacteria (added by USEPA, 2006)	**Under Revision**
Mission Bay (area near the mouth of Rose Creek only)	Eutrophic, lead	**Not developed**
Mission Bay (area near the mouth of Tecolote Creek only)	Eutrophic, lead	**Not developed**
Tecolote Creek	Indicator bacteria, cadmium, copper, lead, toxicity, zinc, phosphorus, and turbidity	**Under development for fecal indicator bacteria**

A Baseline Long-Term Effectiveness Assessment (BLTEA) was conducted at the beginning of this permit cycle for the Mission Bay and La Jolla WMA using the water quality data from 2001-2006. The BLTEA is used to guide long-term programmatic watershed activities and is performed on a five-year cycle. For the overall Mission Bay and La Jolla WMA, dissolved minerals (e.g., total dissolved solids), nutrients (e.g., total nitrogen and phosphorous), indicator bacteria, heavy metals and toxicity were identified as high priority (A) rated constituents (Table 2-3). In the Scripps HA, indicator bacteria and nutrients were identified as high priority constituents. In the Miramar HA, heavy metals, nutrients, indicator bacteria, toxicity and dissolved minerals were rated as high priority constituents. In the Tecolote HA, high priority rated constituents included heavy metals, toxicity, indicator bacteria, dissolved minerals, sediments, and benthic alterations.

The Permit requires the City to identify the high priority water quality problems and implement activities that will address these pollutants. The City prioritized the water quality problems geographically using the approach detailed in the *Strategic Plan for Watershed Activity Implementation* which includes reviewing water quality data and ratings and assessing the data spatially. This process also includes analyzing high threat sources and locating clusters to be addressed efficiently. In the FY 2008 Mission Bay and La Jolla WURMP, the City concluded that the priority water quality problems are heavy metals, nutrients, bacteria/pathogens, pesticides and sediments. The following were determined to be the high priority water quality problems because they each received a high priority water quality rating (A) in the BLTEA and are listed on the 303(d) List:

- Heavy Metals
- Nutrients
- Bacteria/Pathogens

Once the high priority water quality problems have been identified in the WURMP they are set until the Permit is re-issued by the Regional Board unless there is sufficient justification to modify them. This allows time to implement watershed activities that will address these pollutants. The 2008-2009 water quality monitoring activities conducted in the Mission Bay WMA are provided in Table 2-2.

Table 2-2. 2008-2009 Monitoring Program Activities in the Mission Bay and La Jolla WMA

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Ambient Monitoring (SMC Program)	Water chemistry and toxicity
Rapid Stream Bioassessments (SMC Program)	Benthic macroinvertebrates, periphyton, and physical habitat
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC
Third Party Data	RHMP - water (general chemistry, bacteria, metals, pesticides) and sediment (chemistry, toxicity, and benthic macroinvertebrates)
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, bacteria, and trash
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria
MS4 Outfall Targeted Monitoring	Chemistry, metals, and bacteria
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria

The WMA assessment methods were applied to the data from the monitoring programs to determine the COCs and to develop a frequency of occurrence ranking of high, medium, or low. The frequency of occurrence ranking was determined using the overall percentage of all samples analyzed that exceeded water quality benchmarks (including all monitoring years' data).

The COCs identified with a high frequency of occurrence are (Table 2-3):

- Total Nitrogen
- Turbidity
- Bifenthrin (synthetic pyrethroid)
- Indicator Bacteria (Total Coliform, Fecal Coliform, Enterococcus)

Total nitrogen (nutrient) and indicator bacteria fall under the high priority water quality problems identified in the WURMP. Bacterial concentrations vary widely in storm water runoff but were found to frequently exceed the water quality benchmarks. The water quality benchmark for total nitrogen (the sum of nitrate, nitrite and TKN) is based on the Basin Plan objective for biostimulatory substances to prevent algae and emergent plant growth which could lead to eutrophication and degradation of water quality. However, it should be noted that the State of California is currently developing nutrient numeric endpoints for assessment of beneficial use impacts from nutrients and the current benchmarks for total nitrogen and total phosphorus may not necessarily indicate a biostimulatory response in the watershed. Heavy metals, the third high priority water quality problem, were not determined to occur frequently in the WMA based on the *2008-2009 Urban Runoff Monitoring Report*.

High turbidity is an indicator of sedimentation, and Bifenthrin is a pesticide. Both are listed as priority water quality problems in the WURMP. Bifenthrin is a synthetic pyrethroid found that is considerably more toxic to aquatic organisms at lower concentrations compared to organophosphates. In recent years, synthetic pyrethroids have largely replaced organophosphates in pesticide usage and are increasingly more common in urban runoff. However, there is no evidence of persistent toxicity in the Mission Bay WMA.

One of the objectives of the annual *Urban Runoff Monitoring Report* is to evaluate whether conditions in the receiving waters are improving or deteriorating (Effectiveness Outcome Level 6). Long-term trends for the Mission Bay and La Jolla WMA were analyzed for chemical, bacterial, and toxicological parameters for wet weather conditions at the Tecolote Creek mass loading station (MLS) and for rapid stream bioassessment.[1] Trends identified during the 2008-2009 Monitoring Season include:

- Moderately increasing trend for enterococcus (magnitude of 667 MPN/100mL/yr).
- Significantly increasing trend for total hardness (magnitude of 2.63 mg/L/yr).
- Significantly decreasing trend for total suspended solids (magnitude of -1.51 mg/L/yr).
- Significantly decreasing trend for Diazinon.
- Long-term trends in the IBI and O/E ratios calculated for the bioassessment station in Rose Creek and for the bioassessment station in Tecolote Creek (at Tecolote Canyon Natural Park) indicate impairment.

[1] In 2008–2009, rapid stream bioassessment was conducted at new Stormwater Monitoring Coalition (SMC) sites and are therefore not directly comparable to historical data collected at the MLS. Thus, for assessing bioassessment trends, the historical results through the 2007–2008 Monitoring Season are presented and do not include the 2008-2009 data.

Figure 2-1. Significant Mann-Kendall Trend for Diazion at the Tecolote Creek MLS

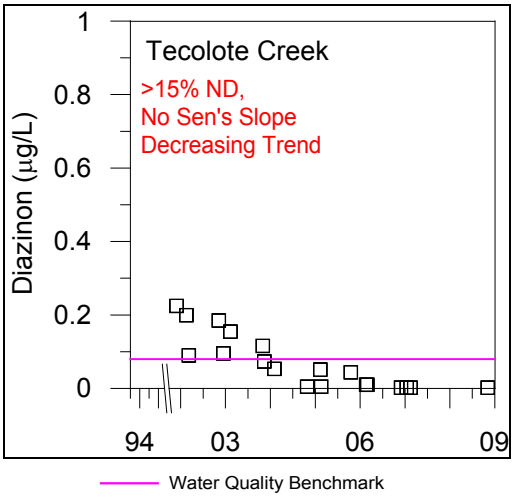

Organophosphate concentrations, including Diazinon, Malithion, and Chlorpyrifos, at the Tecolote Creek MLS have not been greater than the water quality benchmarks since 2003. In 2008-2009, the results for Diazinon were non-detect. As shown on Figure 2-1, Diazinon concentrations have decreased significantly since 1994 but the magnitude of this trend cannot be quantified because the Mann-Kendall trend test does not allow the calculation of Sen's Estimate of Slope for data sets with greater than 15% non-detect values. The decreasing trend for Diazinon corresponds to the USEPA phase-out and full ban on the manufacture and sale of Diazinon-based pesticides and fertilizers. The phase-out began in December 2002 and the ban took full effect on January 1, 2005. Water quality results to date indicated that source control through a legislative ban of a pollutant is effective.

Conditions in the receiving waters can also be evaluated by comparing the 2008-2009 water quality assessment results to past years' results and to the BLTEA. The COCs with a high frequency of occurrence from the water quality assessments are presented in Table 2-3 along with the BLTEA water quality priority ratings for the three main HAs. This table is a tool used by the City to prioritize watershed activities and identify data gaps. The 2008–2009 pattern of high frequency COCs for turbidity (i.e., sediments), total coliforms, and fecal coliforms was similar to previous years. There was also evidence of benthic alteration, but no evidence of persistent toxicity as in previous years. In 2008-2009 enterococcus and Bifenthrin were identified as high frequency of occurrence COCs for the first time. The 2008–2009 results for total nitrogen and indicator bacteria are consistent with the long-term BLTEA ratings for the overall Mission Bay and La Jolla WMA. The high frequency of occurrence rating for turbidity in the Tecolote HA is consistent with the high priority rating assigned to that HA. In contrast to the 2001–2006 BLTEA rating, heavy metals and dissolved minerals were not determined to occur frequently and there was no evidence of persistent toxicity.

Monitoring Recommendations

The recommendations for this WMA are to continue with the requirements of the Permit, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. The addition of TWAS locations within the Mission Bay and La Jolla WMA during the 2009–2010 Monitoring Season will

provide information regarding conditions in other areas of the WMA. Furthermore, conducting ambient weather monitoring at the Tecolote Creek MLS and future TWAS locations will provide information regarding the conditions in the receiving water during dry weather. MS4 Outfall Monitoring and Source Identification Monitoring will augment the data collected during the 2008–2009 Monitoring Season.

Specific recommendations for the Mission Bay and La Jolla WMA are based on the triad assessment in the Permit. Based on wet weather conditions, identifying (monitoring) upstream sources of turbidity and Bifenthrin are recommended. Based on ambient conditions, identifying upstream sources of total nitrogen is recommended. In addition, it is recommended to assess the potential role of urban runoff in causing physical habitat disturbance in response to low IBI ratings with no other apparent cause.

Table 2-3. Mission Bay and La Jolla WMA Water Quality Priority Ratings

Watersheds/ Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Mission Bay WMA	**100%**	***A***	***A***	***D***	***D***	***B***	***D***	***A***	***B***	***A***	***D***	***A***
Scripps HA (906.30)	15%	*C*	*D*	*D*	*D*	*B*	*D*	*A*	*B*	*A*	*D*	*D*
Miramar HA (906.4)	64%	*A*	*A*	*D*	*D*	*B*	*D*	*A*	*B*	*A*	*D*	*A*
Tecolote HA (906.5)	21%	*A*	*A*	*D*	*D*	*A*	*C*	*D*	*B*	*A*	*A*	*A*
2006–2009 High Frequency of Occurrence COCs (from Integrated WMA Assessment)												
2006–2007 High[1] Frequency of Occurrence Ratings and COC	Wet Weather					♦♦♦ Turbidity				♦♦♦ Total coliform Fecal coliform	Very Poor IBI	No
2007–2008 High[1] Frequency of Occurrence Ratings and COC	Wet Weather					♦♦♦ Turbidity				♦♦♦ Total coliform Fecal coliform	Very Poor IBI	No
2008–2009 High[1] Frequency of Occurrence Ratings and COC	Ambient Weather							♦♦♦ TN			Very Poor IBI	NA
	Wet Weather					♦♦♦ Turbidity	♦♦♦ Bifenthrin			♦♦♦ Total coliform Fecal Coliform Enterococci		No

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison.
2. NA – Not assessed

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest – A to Lowest – D)*

High-Priority Level Based on Data

2006 SWRCB Section 303d listing

2.2 Pollutant Source Assessment

The Permit requires the City to identify the likely sources of the pollutants responsible for the high priority water quality problems. Table 2-4 below lists the likely pollutant sources adapted from the BLTEA for each of the High Priority Water Quality Problems identified above.

Table 2-4. Likely Sources of High Priority Water Quality Problems in Mission Bay and La Jolla WMA

High Priority Water Quality Problem	Likely Sources
Bacteria/Pathogens	Eating/drinking establishments; animal facilities; landscaping (e.g., parks, golf courses, cemeteries, etc.); publicly owned treatment works (water and wastewater); home and garden care activities, waste disposal
Heavy Metals	Auto mechanical repair, maintenance, fueling, or cleaning; automobile and other vehicle body repair and painting; botanical or zoological gardens and nurseries/greenhouses; fabricated metal; motor freight; boat mechanical repair, maintenance, fueling, or cleaning; roads, streets, highways, and parking facilities
Nutrients	Animal facilities; botanical or zoological gardens and nurseries/greenhouses; landscaping (e.g., parks, golf courses, cemeteries, etc.); pest control services; home and garden care activities, waste disposal; parks and recreation facilities

Land use is a main factor for determining possible pollutant sources. The results from the MS4 Monitoring Program were used to map pollutant loading along with the identified land use sectors in Figure 2-2. This map will help to determine if there are direct correlations between land use and pollutant loading and help identify hot spots in the WMA where pollutant loading is the greatest. These hot spots can then be targeted for watershed activities to address the pollutants creating the high priority water quality problems. The MS4 was assessed for the first time during the 2008-2009 monitoring season. Hot spots within the MS4 were identified and prioritized (high, medium, low) based on a desktop evaluation of wet and dry weather loads for a subset of pollutants monitored under the different programs, including indicator bacteria, total suspended solids, total phosphorus, total nitrogen, etc. The wet weather hot spots/priority rankings represent single event grab samples from four random monitoring locations across the Mission Bay and La Jolla WMA. No wet weather samples were collected in the Tecolote HA. Wet weather loads were normalized to the load per acre. Dry weather hot spots/priority rankings represent single event grab samples from nine flowing sites for both targeted and random monitoring locations. Six additional targeted dry weather sites had no flow; an instantaneous load (load/min) could not be calculated. It is important to note that these results are for the first year of MS4 Monitoring Program and should be considered preliminary. Additional monitoring conducted in subsequent years will allow for a more robust assessment of the MS4.

The City has conducted several special studies to help identify sources of pollutants including the Sediment Characterization Study, the Tecolote Creek Microbial Source Tracking Study, and an Aerial Deposition Study. Turbidity results have consistently exceeded water quality benchmarks over the years and the Sediment Characterization Study was conducted in the La Jolla Shores Coastal Watershed (Scripps HA) to identify sediment sources and characterize sediment loads

from different land use areas during storm events. The sediment concentration and sediment load per acre were greatest from the open space land use which consisted mostly of steep canyons. The sediment concentration and loads of total metals (i.e., metals bound to sediment particulates) mirrored the hydrograph, peaking with the flow of water. In contrast, concentrations of dissolved metals tended to be greatest before and after the peak of the storm. There was found to be a higher concentration of total lead from the open space land use possibly as a result of erosion of canyon soils that likely contain historical fallout from lead-based gasoline use. Residential land use had substantially higher yields per acre for total and dissolved copper than open space or mixed land use sites. Likely sources of copper within the La Jolla Shores ASBS Watershed include brake pads, copper pipes, cooling systems, and copper-based root control systems; whereas, likely sources of zinc include vehicle tires, galvanized building materials, and paint.

The Tecolote Creek Microbial Source Tracking Study was conducted as a watershed activity to identify sources of specific bacterial pollutants in the watershed. The monitoring results provide a basis to assess the land uses and related activities that contribute bacteria to the Tecolote Creek Watershed. Transportation and residential land uses contributed the highest bacterial loads in Tecolote Creek during wet weather. It was found that irrigation runoff and discharges from dumpster leaks in industrial and commercial areas pose a significant threat to water quality during dry weather conditions. Speciation of enterococci discharged from different land uses during wet weather demonstrated that the likely source was from non-fecal origins such as soils and plants. Biofilm growth experiments within the MS4 showed that enterococci will adhere and grow on storm drain walls and that there was a mix of fecal origin species and species originating from environmental sources.

An Aerial Deposition Study was conducted to evaluate the sources of copper, lead and zinc. Although this study was not primarily focused in the Mission Bay and La Jolla WMA, it identifies possible sources for heavy metals which are a high priority water quality problem. Copper, lead, and zinc concentrations were higher in commercial and industrial land uses compared with residential land uses. Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc. Samples collected from metal rooftops in poor condition (e.g, deteriorating or rust evident) were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area. Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and resuspended dust) and localized parcel-based sources also play a role in metals deposition of lead and zinc in the watershed. The results from these special studies should be included in an update to the table of Likely Sources of High Priority Water Quality Problems when the BLTEA is updated. This will help direct future efforts within the watershed.

Figure 2-2. Wet Weather and Dry Weather Monitoring Results for the 2008-2009 Municipal Separate Storm Sewer System Monitoring Program

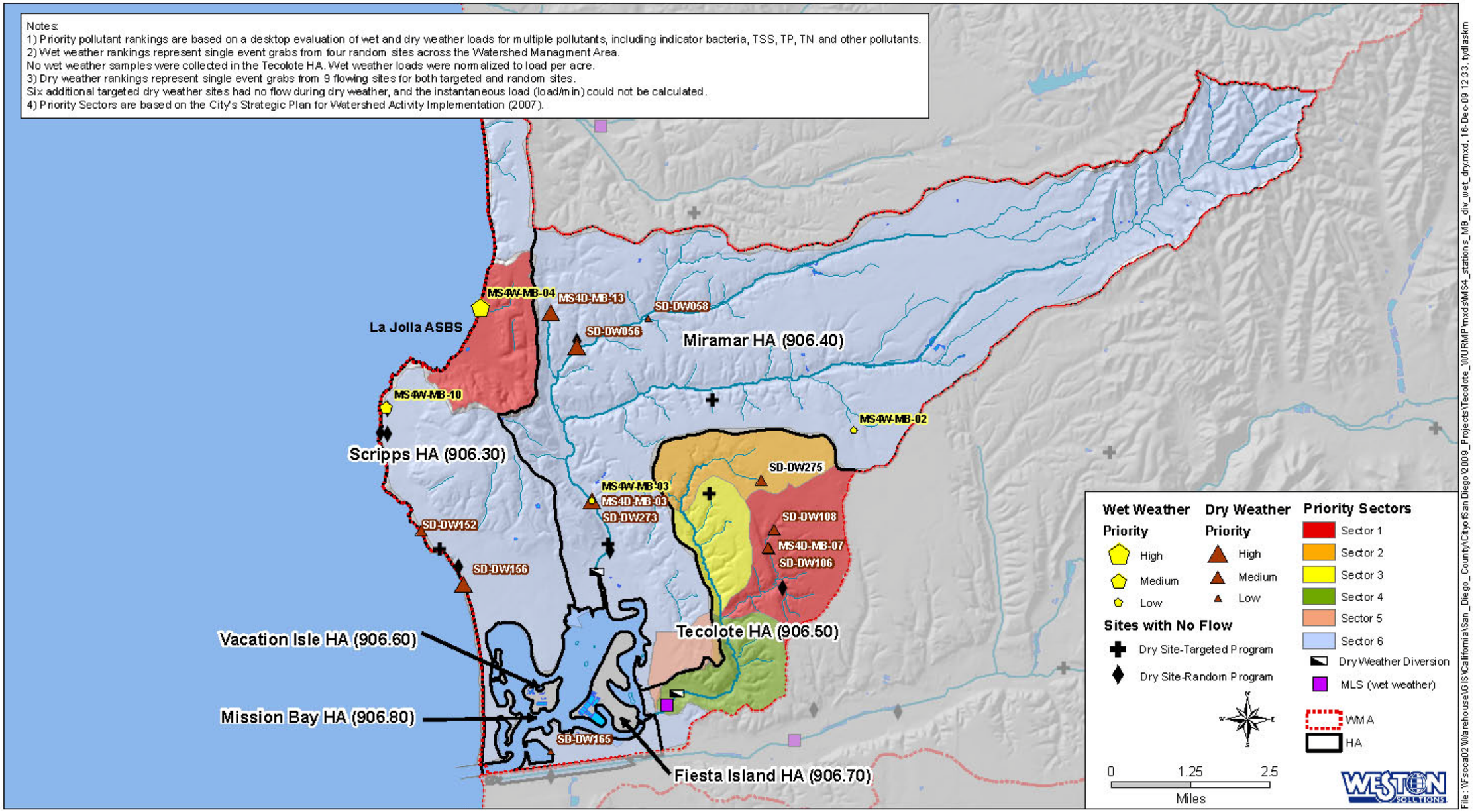

Section 3 Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Municipal Permit. The Watershed Activity Summary Sheets for all watershed water quality and education activities implemented during this reporting period are included in Appendices A.

3.1 Watershed Water Quality Activities

Table 3-1 presents the 22 water quality activities and special studies reported on in FY 2009, including five activities in implementation actively reducing loads and/or abating sources in FY09. Refer to Appendix A for the Watershed Activity Summary Sheets describing the City's watershed water quality activities and details regarding their anticipated implementation schedule. Note that the list of activities and the accompanying descriptions are subject to change. Progress on each watershed activity has been described in the standardized template and clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems.

Table 3-1. Watershed Water Quality Activities

ID Number	Activity	Pollutant Categories										Activity Type				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X		
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X		
MB-1005	Targeted Auto-Related Facility Inspections				X								X	X		X
MB-1006	~~Targeted Landscaping-Related Facility Inspections~~ Geographically Based Business Property and Facility Inspections**	X			X	X							X	X		X
MB-1010	Targeted Aggressive Street Sweeping				X						X		X	X		
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect	X			X	X	X		X	X				X		
MB-1012	Osler Street Hydrodynamic Separator Installation	X								X	X			X		
MB-1013	La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV)	X			X	X								X		
MB-1014	Kellogg Park Green Lot BMP Retrofit	X			X	X								X		
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X		
MB-1016	Bannock Ave Streetscape Enhancement & Bacteria Treatment	X												X		

ID Number	Activity	Pollutant Categories										Activity Type				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education
MB-1017	Infiltration LID BMP #2	X			X	X								X		
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X			X	X								X		
MB-1020	Avenida de la Playa Storm Drain Replacement and Low Flow Diversion	X			X	X								X		
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X												X	X	
MB-3002	Tecolote Creek Bacterial Source ID Study (Phase II)	X											X			
MB-3004	La Jolla Shores Sediment Source Study									X			X			
MB-3005	La Jolla Design Storm Study	X											X			
MB-3006	Tecolote Creek Design Storm Study	X											X			
MB-3007	Dry Weather Aerial Deposition Study (Phase II)		X		X							X	X			
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.														
MB-3009	ASBS Compliance Monitoring											X				

* High Priority Pollutants
** MB-1004, MB-1006, and MB-1009 have been combined into one activity .
Activity Sheet ID Numbers highlighted in red are newly reported activities

3.2 Watershed Education Activities

The City has recognized educational programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Table 3-2 below lists the education activities initiated or implemented in FY 2009, including seven activities that have actively increased awareness and/or changed behaviors of the public. Refer to Appendix A for the Watershed Activity Summary Sheets describing the City's watershed education activities and details regarding their anticipated implementation schedule. Progress on each watershed education activity has been described in the standardized template and clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems.

Think Blue is the City's storm water education program, and is managed by the Pollution Prevention Division's Education and Outreach section. *Think Blue* is a multi-faceted effort which encompasses education and outreach to a variety of audiences. Think Blue conducts activities on a jurisdictional, watershed and regional basis. In addition to the activities listed below, *Think Blue* sponsored the Crew Classic in Mission Bay on April 4 and 5, 2009. FY 2009 is the second year that Think Blue has sponsored the Crew Classic. The event aligns with the Mayor's goals for clean water, and the City is the only jurisdiction in the Mission Bay and La Jolla WMA. A visible presence at this event gave the City a chance to educate attendees and

spectators. *Think Blue* staffed an outreach booth, distributed materials and discussed the program with attendees. Sponsorship for the Crew Classic is planned again for FY 2010.

Table 3-2. Watershed Education Activities

ID Number	Activity	Pollutant Categories										Activity Type				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		X							X					X
MB-2002	Mobile Advertising	X		X	X		X		X	X	X					X
MB-2003	La Jolla Commercial CBSM Efforts	X									X		X	X		X
MB-2004	Business CBSM Pilot (Genesee)	X											X	X		X
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X												X
MB-2006	Clean Construction Poster and Brochure Distribution	X			X	X				X						X
MB-2007	Restaurant BMP Booklet Distribution	X														X
MB-2008	Transit Shelter and Billboard Advertisements	X			X											X
MB-2009	Mission Bay Focused Outreach	X														X
MB-2010	La Jolla Residential CBSM Efforts	X														X
MB-2011	San Diego Crew Classic	X		X	X											X
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X

* High Priority Pollutants
Activity Sheet ID Numbers highlighted in red are newly reported activities

3.3 Public Participation Activities

The City will continue to actively encourage the participation and input of diverse stakeholders in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP. Historically, stakeholders have participated regularly in activity planning and implementation efforts via formal and informal discussions and meetings at the City or stakeholder locales. Because the City is the only Copermittee within the WMA, internal and stakeholder meetings are held on an ad hoc basis. The City values its strong relationships with stakeholders and will continue to use this informal participation as the foundation efforts in conjunction with the more formal participation mechanisms outlined below.

The paragraphs below broadly outline the public participation strategy that the City is pursuing to encourage stakeholder engagement in the WURMP.

Specific watershed education activities that involve general public participation are detailed below and in Appendices A and B and include trash cleanup sponsorships, Community Based-Social Marketing (CBSM) activities, and focused outreach.

3.3.1 Non-Governmental Organization Engagement

The City continues to engage non-governmental organizations (NGOs) active in the WMA in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP through a variety of means, including, but not limited to:

- Entering into agreements with NGOs to implement activities, such as trash/debris sponsorships, creation and distribution of education materials, workshop facilitation, research, community events, and presentations. This is reflected in several activity summary sheets included in Appendices A and B.
- Inviting NGO representatives to the City and sending City representatives to NGO meetings to discuss urban runoff pollution prevention efforts, share input, and identify opportunities for coordination. The Storm Water Department meets with the San Diego Coastkeeper and I Love A Clean San Diego regularly to discuss Strategic Planning and City-wide issues including those that may affect the Mission Bay and La Jolla WMA. The City meets with other NGOs on an ad-hoc basis.
- Partnering with NGOs as appropriate in advocating legislation protective of water quality. The City has assisted Sustainable Conservation with sponsorship to advance the Brake Pad Partnership's work in the reduction/elimination of copper in automotive break pads through legislation.

3.3.2 Community Planning Groups and Established Stakeholder Meetings

The Storm Water Department uses meetings established by various stakeholder groups, including Community Planning Groups, the La Jolla Shores Association and the Mission Bay Park Committee, to present specific watershed projects and solicit public participation and feedback. In FY 2009, the Storm Water Department presented the Mission Bay Sewer Interceptor System Upgrade Project to four community planning groups to alert the community of impacts, location, and timing for construction of the project. The Community Planning Groups included the Pacific Beach, Clairemont, Mission Bay Park, and North Bay Community Planning Groups. The Storm Water Department actively attends the quarterly meetings of the Open Space Canyons Advisory Committee, established by City Council Policy to address open space canyons issues including those pertaining to storm water and urban runoff. The Storm Water Department will continue to use established stakeholder groups to engage the public in the WURMP and watershed activities as needed, especially in regard to project implementation.

3.3.3 Project Clean Water

Project Clean Water[1], which was initiated in July 2000 by the Regional Copermittees, established a framework for the broad-based and collaborative development of solutions to local water quality problems. In addition to general information regarding Project Clean Water, specific contact details are listed for each watershed, encouraging members of the public to contact representatives for information. It is the eventual goal of Project Clean Water to establish this site as a centralized source of water quality information for the San Diego region. The *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) and annual reports are placed on the website to allow stakeholders to view the documents and submit comments. The City continues to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as it continues to develop and implement the WURMP.

3.3.4 Think Blue

The City's Storm Water Department maintains the Think Blue website[2] as a public participation mechanism to provide education and outreach regarding storm water issues. The website is a resource to educate residents and businesses on pollution prevention solutions, and to assist them in being compliant with urban runoff regulations. Brochures, guidebooks and other informational materials are available online in both English and Spanish. The Storm Water Department also posts the *Mission Bay and La Jolla Watershed Urban Runoff Management Plan (March 2008)* on the website, as well as various other annual reports and documents to provide stakeholders the opportunity to review and comment. In addition, solicitations for public participation in meetings and outreach events are posted on the website. The City continues to use the website as a mechanism to encourage stakeholder participation in the development and implementation of the Mission Bay and La Jolla WURMP.

3.3.5 City Council and Council Committee Meetings

The City's Storm Water Department presented items to the San Diego City Council and the Council's Natural Resources and Culture Committee throughout FY 2009. City Council and Committee meetings are open to the public and are forums where the public is encouraged to comment on items being presented. The Storm Water Department presentations included a brief background on its mission as well as specifics associated with the item being presented, which during FY 2009, included the Regional Storm Water Copermittees' Memorandum of Understanding, watershed capital improvement projects, monitoring contracts, engineering and design consultant contracts, a grant for low flow diversions in La Jolla Shores, and other project specific contracts. In total, the Storm Water Department presented at least six times at the Natural Resources and Culture Committee meetings and four times at the City Council meetings, inviting public participation and comment.

[1] http://www.projectcleanwater.org

[2] www.sandiego.gov/thinkblue/index.shtml

3.4 Collaborative Land-Use Planning Efforts

The City is divided into various politically recognized communities, each with its own community plan prepared by the City Planning & Community Investment Department that implements the planning policies in the City's General Plan. The Mission Bay and La Jolla WMA encompasses nine communities: Linda Vista, Clairemont Mesa, Kearny Mesa, Mission Beach, Pacific Beach, La Jolla, University City, Mission Bay Park, and MCAS Miramar. Of these, seven have community plans (Mission Bay Park and MCAS Miramar are covered under other planning documents). Each community plan is updated periodically to reflect changes in the community, as well as provide fresh direction regarding growth and development. For example, the California Coastal Commission approved the La Jolla Community Plan update in FY 2004, and City staff began implementation in FY 2005. The La Jolla Community Plan includes extensive storm water policies pertaining to coastal bluffs and steep hills.

The City will use the community plan update process as needed to incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the plans to address special concerns identified for the Mission Bay and La Jolla WMA. Updates to the community plans will be primarily reported in the City's Jurisdictional Urban Runoff Management Program (JURMP) due to their general nature and close relationship with the General Plan. However, highlights will be provided in the WURMP annual report as deemed appropriate. In FY 2009 no updates occurred to community plans with the Mission Bay and La Jolla WMA.

3.5 Updated 5-Year Strategic Plan

The Mission Bay and La Jolla WURMP's five-year strategic plan is assessed annually and has been updated to reflect the current status of watershed activities and modifications to previous versions of the strategic plan.

3.5.1 Five-Year Strategic Plan and New Watershed Activities

The City of San Diego's *Strategic Plan for Watershed Activity Implementation* uses an integrated, tiered, and phased approach with regards to activity implementation. Integrated activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not. Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the *Strategic Plan for Watershed Activity Implementation* (November 2007) included the formulation of a list of activities to implement during Phase I. These activities have

been integrated into the 5-Year Strategic Plan presented in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. New activities include the following:

- MB-2011 Crew Classic
- MB-2012 Watershed Brochure
- MB-3009 ASBS Compliance Monitoring

Table 3-3 shows a list of all activities currently being implemented over a five year period in the Mission Bay and La Jolla WMA. These new activities are included in the table with red activity sheet ID numbers. Activities that have been completed in years past and are no longer reported are in gray text. Details on each activity can be found in the Watershed Activity Summary Sheets located in Appendices A and B.

Table 3-3. Updated Five Year Strategic Plan

ID Number	Activity	Pollutant Categories										Activity Type					Schedule				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
MB-1001	Alpha Project Trash Cleanups	X									X			X			I A	Activity is complete and no longer reported.			
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1004	Targeted Animal-Related Facility Inspections**	X			X	X							X	X		X	P I A	Inspections are combined into the Geographically Based Inspections activity			
MB-1005	Mission Bay Targeted Automotive Facility Inspections **				X								X	X		X	P I A	P I A	IA		
MB-1006	~~Targeted Landscaping-Related Facility Inspections~~** Geographically Based Business Property and Facility Inspections	X			X	X							X	X		X	P I A	P I A	P I A	P I A	P I A
MB-1007	Targeted Municipal Facility Inspections	X			X	X							X	X		X	P	No longer moving forward under the WURMP			
MB-1008	Targeted Residential Activity Characterization	X			X	X							X	X		X	P	Reported as MB-2010			
MB-1009	Targeted Restaurant Facility Inspections **	X			X	X							X	X		X	P I A	Inspections are combined into the Geographically Based Inspections activity			
MB-1010	Aggressive Street Sweeping				X						X		X	X			P	I A	I A		
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect Project	X			X	X	X		X	X				X			P	I A	A		
MB-1012	Osler Street Hydrodynamic Separator Installation Project	X								X	X			X			P	P	I	I	I
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X			X	X								X			P	P	P	I	I
MB-1014	Kellogg Park Green Lot Retrofit Project	X			X	X								X			P	P	P	I	I
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X			P	P I	P	I	I
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X												X			P	P	Implementation anticipated in FY 2013		
MB-1017	Infiltration BMP Retrofit #2	X			X	X								X			P	P	I	I	I
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X			X	X								X			P I	I	IA		
MB-1019	South Shores RV	X												X	X		I	Activity is complete and no longer reported.			
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Diversion	X			X	X								X			P	P	Implementation anticipated in FY 2014		
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X												X	X		P	P	P	I	I
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		X							X					X	I	I A	I A	I A	I A
MB-2002	Mobile Advertising	X		X	X		X		X	X	X					X	I A	I A			
MB-2003	La Jolla Commercial CBSM Efforts	X									X		X	X		X	P I A	P I A			
MB-2004	Genesee Commercial CBSM Efforts	X											X	X		X	P	P	P I A	I A	I A
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X												X	P	P	I A	I A	
MB-2006	Clean Construction Poster and Brochure Distribution	X			X	X				X						X	I	I	I	I	I
MB-2007	Restaurant Best Management Practices Booklet Distribution	X														X	I	I	I	I	I
MB-2008	Transit Shelter and Billboard Advertisements	X			X											X	P I	A	Activity is complete and no longer reported.		
MB-2009	Mission Bay Focused Outreach	X														X		I	I	I	I
MB-2010	La Jolla Residential CBSM	X														X		I	I		
MB-2011	NEW - San Diego Crew Classic	X			X	X										X		I	I	I	I
MB-2012	NEW - Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X		P	P I	I	I
MB-3001	Tecolote Creek Bacterial Source Identification Study (Phase I)	X											X				I A	Report is complete and no longer reported.			
MB-3002	Tecolote Creek Bacterial Source Identification Study (Phase II)	X											X				P	I A			
MB-3003	La Jolla Shores Integrated Coastal Watershed Management Plan											Planning Document					P	Report is complete and no longer reported.			
MB-3004	La Jolla Shores Sediment Source Study									X			X				P I	I A			
MB-3005	La Jolla Design Storm Study	X											X				P I	I A			
MB-3006	Tecolote Creek Design Storm Study	X											X				P I	I A			
MB-3007	Dry Weather Aerial Deposition Study (Phase II) 2009		X		X							X	X				P I	I A			
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.															Implemented through the activities listed here and through activities conceptually and tentatively planned for the future.				
MB-3009	NEW - ASBS Compliance Monitoring											X									

* High Priority Pollutants

** MB-1004, MB-1006, and MB-1009 have been combined into one activity.

P= Planning I= Implementation A = Assessment

*** This ID number has been retired. MB-1008 is now being reported as MB-2010 La Jolla Residential CBSM Efforts.

Activity Sheet ID Numbers highlighted in red are newly reported activities

Activity Sheet ID Numbers and Titles highlighted in gray are no longer being reported on

3.5.2 WURMP Program Revision

In April 2008, the Regional Board and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego Region. The review focused primarily on the Carlsbad and San Diego Bay watersheds. The final audit report was available for review by the San Diego Regional Copermittees in September 2008. The audit report contents included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The San Diego Regional Copermittees worked together with Regional Board staff to begin the process of identifying how the WURMPs and future WURMP Permit language could be modified to meet the goals of the program more effectively.

One of the key components of the discussions between Copermittees and Regional Board staff involved refocusing the goals of the program is to allow WURMP efforts to increase their focus on watershed activities implementation, rather than be focused on intensive reporting. The City of San Diego is committed to continuing its involvement in this process. The City is working to better disclose efforts that, while not specifically required by the permit, assist with meeting the overall goals of the program. Additionally, the City is working with other Regional Copermittees on the development of a method to integrate reporting (WURMP, JURMP, RURMP efforts) at the watershed level with the goal of better understanding and assessing the water quality problems, sources, and actions that can/are taken to improve water quality.

Section 4 Effectiveness Assessment

4.1 Assessment of Overall WURMP Effectiveness

The intent of this section is to assess the effectiveness of the Mission Bay and La Jolla WURMP as a whole, and the activities pursuant to its implementation and the requirements of the Municipal Permit.

4.1.1 Approach to Effectiveness Assessment

THE OVERALL PROGRAM GOAL OF THE MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM IS TO POSITIVELY AFFECT THE WATER QUALITY OF THE MISSION BAY AND LA JOLLA WATERSHED WHILE BALANCING ECONOMIC, SOCIAL, AND ENVIRONMENTAL CONSTRAINTS.

The City has identified the following objectives to meet this goal:

Implement the best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by:

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The City uses effectiveness assessment as part of an iterative feedback loop that incorporates planning, implementation and assessment as presented in the *Mission Bay & La Jolla Urban Runoff Management Plan* (March 2008). Achievement of the overall program goals and the effectiveness of the activities are assessed using an assessment framework developed by the Copermittees (*A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*, October 2003).

In addition to effectiveness assessment, the City believes that it is imperative to assess the efficiency, or the cost effectiveness, with which load reductions are obtained by both the individual activity and program as a whole. It is only through maximizing the efficiency of program efforts that urban runoff programs can truly maximize pollutant load reductions and achieve the ultimate goal—the protection and improvement of water quality in the region's creeks, rivers, beaches, and bays.

The City views the WURMP and JURMP as integrated components to the Storm Water Department's overall Program. The City's Storm Water Department incorporates the WURMP, JURMP and other programs as needed to implement and comply with the Municipal Permit. Individual assessment of activities can be very challenging and may not always be feasible, particularly when analyzing changes to urban runoff discharges and receiving water quality. In these instances, assessment of program effectiveness incorporates the overlap of these programs.

4.1.2 Program Effectiveness using Objectives

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Sources of the identified High Priority Water Quality Problems (heavy metals, nutrients and bacteria) are discussed in Section 2.2, Pollutant Source Assessment. Six of the water quality and education activities implemented in this reporting period targeted sources of bacteria. Two targeted sources of metals; one targeted sources of two of the three priorities; and two targeted all three of the High Priority Water Quality Problems. One source identification study focused on bacteria and one focused on aerial deposition as a conveyance/source of heavy metals.

Although there are only two watershed activities this reporting period that target sources of nutrients, the City anticipates constructing low flow diversions and low impact development retrofits (infiltration and filtration) that will address all three High Priority Water Quality Problems, in addition to the other non-high priority pollutants. Additionally, the City's Storm Water Department plans to specifically address High Priority Water Quality Problems within the WMA via the JURMP, WURMP, Regional Urban Run-off Management Plan (RURMP) and other programs. For example, a number of activities in the JURMP and RURMP use education and outreach to target sources of nutrients by promoting environmentally friendly gardening practices, such as the use of Integrated Pest Management (IPM) to audiences such as home gardeners.

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

The majority of the load reduction activities that have been planned are still in early development. While the City plans to gather the necessary data, and in several cases has initiated efforts to provide baseline data for specific project sites, load reduction activities are not far enough along for efficiency analysis to be completed. However, the City has developed a process to collect and analyze this data, which is described in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) and the City's *Strategic Plan for Watershed Activity Implementation* (November 2007). This process includes developing specific management questions and assessment mechanisms in the project planning stage in order to collect the necessary information about the activity once implementation and assessment are complete. Implementation involves collecting the data necessary to answer the management questions as the activity is in progress. Additional details on the City's assessment strategy can be found in the two aforementioned documents.

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The optimization of activities is the key to developing a comprehensive program that utilizes resources in the most effective manner in order to maximize improvements to water quality. Specifically, individual activities are optimized through an iterative feedback process. For example, the two inspections programs within the WMA are implemented each year with modifications based on what was learned during the previous year. For example, the Aggressive Street Sweeping Pilot study is testing different sweeping frequencies and sweeper technology to optimize to the City's street overall street sweeping program. Activity optimization is ongoing and will continue to be evaluated each year based on assessment milestones. More information

regarding the assessment of individual activities can be found within each activity summary sheet in Appendix A.

4.2 Effectiveness Assessment using Targeted Outcome Levels

Section 4.2 describes how the activities conducted during FY 2009 relate to the hierarchy of targeted outcomes as required by Section I.2a of the Municipal Permit. This section is presented by outcome level to illustrate the way in which all of the activities implemented during FY 2009 work together within the WMA to help increase storm water awareness, positively change behaviors to reduce load generating activities, reduce runoff and pollutant loads, and ultimately improve the quality of receiving waters.

Table 4-1 presents a summary of the activities in active implementation during FY 2009, and how they relate to the six targeted assessment outcomes. Current activity status is indicated by completed (C), ongoing (O), and new (N) activities (Level 1, Permit Compliance). During FY 2009, the City planned, initiated and/or implemented a total of 34 water quality, education and monitoring activities. Of these activities, 12 achieved a minimum of one of the outcome levels described below. Furthermore, five activities resulted in a measurable pollutant load reduction or source abatement (Level 4), and seven resulted in changes to public knowledge/awareness and/or behavior (Levels 2 and 3). Four of the activities that resulted in load reduction/source abatement also resulted in Level 2 and 3 outcomes. The City focused on activities intended to reduce bacteria (Total and Fecal coliform), nutrients and metals (copper, lead and zinc) for those areas of the WMA that were determined to have the highest priority. In addition, the City also focused activity selection on the regional trash issue.

Table 4-1. Summary Table of FY2009 WURMP Activities Linked with Targeted Outcomes

ID Number	Activity Name	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		Permit Compliance	Awareness	Behavior Change	Load Reduction/Source Abatement	Discharge Quality	Water Quality
MB-1002	ILACSD Trash Cleanup Sponsorship	O	X*		X		
MB-1003	SDCK Trash Cleanup Sponsorship (Rose Creek)	O	X*		X		
MB-1004, MB-1006, MB-1009	Geographically Based Business Property and Facility Inspections	O	X*	X	X		
MB-1005	Focused Auto Facility Inspections	O	X*	X	X		
MB-1010	Aggressive Street Sweeping	O**			X		
MB-2001	Karma/Karma Second Chance Public Service Announcements	O	X	X			
MB-2003	La Jolla Shores Commercial CBSM Outreach Pilot	O	X	X			

MB-2006	Clean Construction Poster Distribution	**O**	**X**				
MB-2007	Restaurant BMP Booklet Distribution	**O**	**X**				
MB-2009	Mission Bay Focused Outreach	**O**	**X**	**X**			
MB-2010	La Jolla Shores Residential CBSM Outreach Pilot	**O**	**X**	**X**			
MB-2011	Crew Classic	**N**	**X**				

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness. Additionally for trash cleanups, behavior change can be assumed with first-time participants; however, this data is not tracked.
**Street sweeping involved public outreach which increases knowledge and awareness, particularly with the extensive media coverage the activity received. However, this activity does not lend itself well to measuring the amount of public reached.

4.2.1 Level 1: Compliance with Activity-Based Permit Requirements

Within the Mission Bay and La Jolla WMA, the City fulfilled all the WURMP requirements of the Municipal Permit during the FY 2009 reporting period. Table 4-2 relates the activities conducted by the City to the requirements specified in the Municipal Permit.

Table 4-2. Level 1 Permit Compliance

Permit Requirements (§J.3.b.2)	Activities	Status
(a) A description of all activities conducted by the watershed Copermittees	All activities – see activity summary sheets in Appendices A and B	Complete
(b) Any updates to watershed map	None this reporting period	N/A
(c) Updated assessment of the WMA's water quality data and identification of high priority water quality problems	San Diego County Municipal Copermittees 2007-2008 Urban Runoff Monitoring Report and Water Quality Assessment Section 2 of this report	Complete
(d) Identification of the likely sources, pollutant discharges and other factors causing the water quality problems	Section 2 of this report See activity summary sheets pertaining to bacteria and other source identification studies	Complete
(e) Updated list of potential Watershed Water Quality Activities	See Section 3, Table 3-3	Complete
(f) Identification and description of Watershed Water Quality Activities implemented during reporting period	See Activity Summary Sheets in Appendices A and B; MB-1002, 1003, (1004, 1006, 1009 – combined), MB-1005, 1010	Complete
(g) Updated list of potential Watershed Education Activities	See Section 3, Table 3-3	Complete
(h) Identification and description of Watershed Education Activities implemented during reporting period	See Activity Summary Sheets in Appendices A and B; MB-2001, 2003, 2006, 2007, 2009, 2010, 2011	Complete
(i) Public participation	See Section 3.3	Complete
(j) Description of Copermittee collaboration efforts	No other agencies are cited in the Municipal Permit as Copermittees. However, the City worked with other agencies not cited as Copermittees, such as UCSD and SIO.	Complete
(k) A description of efforts implemented to encourage collaborative, watershed based, land-use planning.	See Section 3.4	Complete
(l) Description of all TMDL activities implemented	No TMDLs currently in effect. See Section 4.4	N/A
(m) Effectiveness Assessment of the WURMP	This section fulfills this requirement.	Complete

4.2.2 Levels 2 and 3: Changes in Knowledge / Awareness and Behavioral Change

As summarized in Table 4-3, the City implemented five activities during FY 2009 that resulted in increased awareness of water quality issues (Level 2) and six activities that resulted in both increased awareness and reported behavior change (Level 3). The achievement of these levels of effectiveness was measured through surveys, amount of education materials distributed and number of participants,. The City's annual random-digit-dial survey (2009 *San Diego Storm Water Survey)* of 800 total residents from all WMAs also provided assessment information regarding overall knowledge and awareness.

Individual activity effectiveness assessment measurements are presented in the activity summary sheets in Appendix A. FY 2009 targeted outcome results for these activities are presented in Table 4-3. These activities provided education on general watershed concepts, as well as information on specific priority pollutants within the Mission Bay and La Jolla WMA, which increased the public's level of knowledge and awareness. In addition, while some of the water quality and source identification activities listed in Section 3 were not Education Activities in and of themselves, those activities did include public education and outreach components. Nearly all activities included the distribution of informational fact sheets/flyers, web site updates, and reports of findings to the target audiences (residents, businesses and environmental groups), all of which contribute to the overall success of the program. Although the Aggressive Street Sweeping Pilot Program is not listed in Table 4-3 because increase in knowledge and awareness was not being measured for this activity, it should be noted that due to the amount of media coverage the project received, this activity did contribute an increase of knowledge and awareness of storm water issues.

The results of the 2009 annual survey provided a variety of useful assessment data that helped the Department develop and implement outreach activities. Key findings included data that 55% of residents reported that they saw a *Think Blue* PSA last year on television (up from 52%), and 8% of residents reported hearing the radio announcements in FY 2009. Nearly 51% said they prefer to get information about storm water via television. This year's survey also noted that while 44% of residents know that storm water is not treated (i.e. storm water does not get treated as part the sewage system), significant increases in awareness were detected among women over the age of 50, residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their behavior as a result of seeing information about polluted water in storm drains, and the impacts to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue," 40% reported that they were taking steps to change their behaviors.

Based on implementation of the activity information provided in Appendix A, and the *2009 San Diego Storm Water Survey* results reported for FY 2009, it can be deduced that the City's efforts have had a positive effect on awareness, knowledge and behavior change relating to water quality in the Mission Bay and La Jolla WMA.

Table 4-3. Level 2 Change in Knowledge/Awareness and Level 3 Change in Behavior

ID Number	Activity Name	Priority Pollutants Addressed	Level 2 Awareness	Level 3 Behavior Change
MB-1002	ILACSD Trash Cleanup Sponsorship *	Trash, Bacteria	64 participants now more aware**	NA
MB-1003	SDCK Trash Cleanup Sponsorship*	Trash, Bacteria	86 participants now more aware**	NA
MB-1004, MB-1006, MB-1009	Mission Bay Watershed Targeted Inspections*	Bacteria, Nutrients, Heavy Metals	250 businesses inspected	13 sites implemented corrective actions during inspections
MB-1005	Auto Facility Inspections	Heavy Metals	65 auto facilities inspected	2 sites implemented corrective actions during inspections
MB-2001	Karma/Karma Second Chance Public Service Announcements	Trash, Bacteria	25% increased awareness based on PSA experiment	29% reported decrease in pollutant-related behavior^
MB-2003	La Jolla Shores Commercial CBSM Outreach Pilot	Bacteria, Trash	44 staff in 24 businesses participated in BMP Training	100% of interviewed businesses to use BMPs to prevent pollution
				34% decrease in observed pollution
				47% decrease in observations of overflowing dumpsters
				67% decrease in observed amount of standing water in the gutter
MB-2006	Clean Construction Poster Distribution	Sediment	101 poster recipients more aware**	NA
MB-2007	Restaurant BMP Booklet Distribution	Bacteria, Nutrients	560 booklet recipients more aware**	NA
MB-2009	Mission Bay Focused Outreach	Bacteria, Trash	10,029 impressions ***	10% increase from FY 2008 to FY 2009 of individuals surveyed who reported engaging in a behavior that would prevent pollution
			1,211outreach materials distributed	
MB-2010	La Jolla Shores Residential CBSM Outreach Pilot	Bacteria, Trash	334 outreach materials distributed	77% of residents stated willingness to engage in behaviors to prevent pollution

MB-2011	San Diego Crew Classic	Bacteria, Nutrients, Heavy Metals, Trash	2585 outreach materials distributed	NA

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness. Additionally for trash cleanups, behavior change can be assumed with first-time participants; however, this data is not tracked and, therefore, is not included in this table.
**Assumed to contribute to overall program success, though the extent of each activity's contribution has not been measured
***Assumed increased level of awareness based on estimated total exposure for all three outreach events during FY 2008.
^Results as reported from 2009 *San Diego Storm Water* survey

4.2.3 Level 4: Load Reduction/Source Abatement

As shown in Table 4-4, the City implemented five activities that resulted in measurable pollutant load reductions or source abatement (Level 4). These activities were targeted primarily toward trash, bacteria, metals, and nutrients. The Targeted Aggressive Street Sweeping Project removed up to 174,932 kilograms (approximately 384 pounds) of debris over 4,415 miles. The two targeted inspections activities involved inspections at 315 sites within the WMA. As a result of these inspections, 15 sites with noted deficiencies implemented corrective actions during the inspections, which resulted in source abatement. One illicit connection/discharge was also abated through the inspections program. In addition, at the two cleanup events, 150 volunteers removed 1,572 pounds of debris from the WMA. These efforts resulted in load reductions and/or source abatement of potential discharges of priority pollutants into receiving waters.

Table 4-4. Level 4 Load Reduction/Source Abatement

ID Number	Activity Name	Priority Pollutants Addressed	Level 4 Load Reduction/Source Abatement	
MB-1002	ILACSD Creek to Bay Cleanup Sponsorship	Trash, Bacteria	Trash/recycling removed	343 pounds
MB-1003	SDCK Coastal Cleanup Day Sponsorship	Trash, Bacteria	Trash/recycling removed	1,229 pounds
MB-1004, MB-1006, MB-1009	Mission Bay Watershed Targeted Inspections	Bacteria, Nutrients, Metals	Sites that implemented corrective actions during inspections	13
MB-1005	Auto Facilities Inspections	Metals	Sites that implemented corrective actions during inspections	2
			Number of IC/IDs observed/abated	1
MB-1010	Targeted Aggressive Street Sweeping Project	Metals, Trash	Debris removed	174,932 kg (approx 384 lbs)
			Broom miles swept	4,415 mi

The City will continue tracking load reductions/source abatement and assessing watershed activity effectiveness in FY 2010 for both ongoing and new projects.

In addition to the load reduction activity results presented in Table 4-4, several source identification and special studies are currently underway. These studies will ultimately lead to

load reductions, as results of the studies assist the City in understanding of the sources of pollution and how they may be abated.

4.2.4 Level 5: Changes in Discharge Quality

The results from the *2008-2009 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* indicate that urban runoff water quality conditions remained similar to the conditions reported in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). A detailed assessment of discharger quality will be conducted as part of the Long-Term Effectiveness Assessment program which will compare findings over the long term to the Baseline Long-Term Effectiveness Assessment. The Long-Term Effectiveness Assessment program is anticipated to provide more conclusive results that any interim measurements can provide. However, the City believes that interim assessment is important to help identify those areas that may be improving or declining and should be of particular note during the Long-Term Effectiveness Assessment. Therefore, the City has looked to its Coastal Storm Drain Monitoring Program to provide a snapshot loosely indicating any improvements that might be observed during the early stages of the program.

With the start of the new permit cycle in 2008, the Coastal Storm Drain Monitoring Program (CSDM) for the City of San Diego grew tremendously. The City took a proactive approach and added 137 monitoring stations to the existing 12. This analysis analyzes water quality improvements over the past two monitoring years (2008-2009) as shown in Table 4-5 and Figure 4-1. The amount of sites visited per year, which is anticipated to be relatively constant number each year, can be compared to the amount of samples taken when the drains are flowing. That number is then used to determine how many exceeded storm drain action levels (Storm drain action levels are established by the Copermittees). The 95th percentile observations of the most recent year's bacterial results were used to initiate storm drain re-sampling. From 2008 to 2009 a reduction in both the numbers of samples taken and the number of bacterial exceedances in the City's coastal storm drains has been observed possibly indicating that the City's storm water programs overall are having a positive influence on water quality. More information on action levels and the CSDM Program can be found in Appendix N of the 2009 Regional Monitoring Report.

Three notable limitations of this program are, 1) samples are taken only when flow is observed, and therefore, results are only characteristic of those instances; 2) the analysis focuses only on bacterial indicators and does not allow for analysis of all pollutants; and 3) the coastal program is a limited set of outfalls. Despite these acknowledged limitations,, the City plans to use the Coastal Storm Drain Monitoring Program to provide interim assessment.

Table 4-5. City of San Diego 2008-2009 Coastal Storm Drain Exceedances

Analyte	2008			2009		
	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded
Total Coliform	29	252	12	17	186	9
Fecal Coliform	18	247	7	2	182	1
Enterococcus	30	252	12	13	190	7

Figure 4-1. Coastal Storm Drains 2008 and 2009

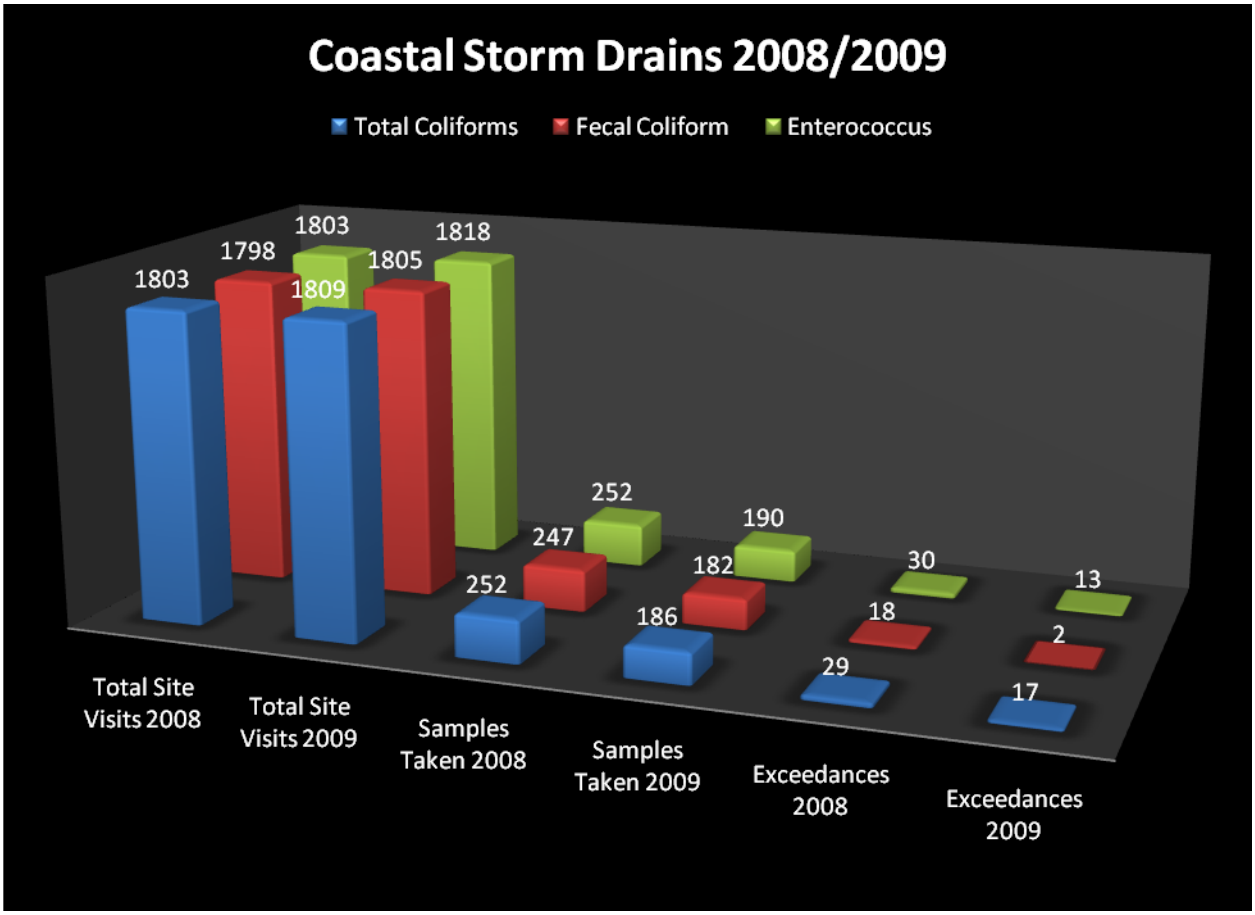

In addition, it should be noted that the City will be measuring discharge water quality as part of the activity effectiveness assessments associated with several Capital Improvement Projects that are currently in the planning stages. Once the data is collected and results are known, the information will be used as part of this assessment.

4.2.5 Level 6: Changes in Receiving Water Quality & Assessment Summary

The City continued its monitoring programs in the Mission Bay and La Jolla WMA and made progress in implementing special studies to fill in data gaps. However, assessment at this level requires an adequate sample size over the long-term, so the San Diego Regional Copermittees are working together to collect receiving water quality data over many years. At year five of the permit cycle, a long-term assessment will be conducted comparing recent data and any observed trends to the Baseline Long-term Effectiveness Assessment that was completed in 2005 to determine if improvement has been observed. At this time, it is premature to make any assumptions regarding receiving water quality changes effected by this WURMP.

4.3 Optional Efficiency Assessment

Although not specifically required by the Municipal Permit, but in accordance with the Strategic Plan, the City selects WURMP activities to assess for cost efficiency. As activities are

implemented and assessed, the efficiency rating for each activity is entered an activity efficiency ratings table as described in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). The goal of this long-term effort is to develop a tool to assist Storm Water Managers in selecting the most cost effective suite of activities for improving water quality. Phase I of the Strategic Plan involves development of this tool, while Phase II and beyond involves improving and increasing implementation efforts.

The City initiated this effort in FY 2008, and cost data associated with all activities is tracked. Results are not conclusive at this time as many of the activities initiated will be tracked over multiple years. Additionally, only trash cleanups provide data that can be used to make preliminary determinations regarding cost efficiency. However, this determination is inconclusive at this time because these activities are onetime events, and therefore, the data can be easily skewed. Furthermore, trash cleanups have non-quantifiable benefits that are challenging to incorporate into an efficiency determination. Therefore, the City will continue to analyze cost associated with activities over the rest of the five year permit cycle, as well as continue to tackle the challenging issue of weighing in non-quantifiable benefits associated with many of its activities.

4.4 Assessment of TMDL BMP Implementation Plan Effectiveness

No TMDLs are currently in effect for the Mission Bay and La Jolla WMA. Should a TMDL come into effect within the Mission Bay and La Jolla WMA, the City will meet Permit requirements by reporting all TMDL activities implemented (including any BMP Implementation Plans or equivalent plan activities) for each approved TMDL in the WMA.

Section 5 Conclusions and Recommendations

5.1 Conclusions

The City has taken the appropriate actions to meet all the Municipal Permit requirements through the Mission Bay and La Jolla WURMP as detailed in this Annual Report.

In FY 2009, the City allocated significant resources and made progress on 34 activities, five of which resulted in load reduction/source abatement and seven of which resulted in an increase in awareness or a positive change in behavior. Collectively, all projects implemented, initiated, and reported in FY 2009 are anticipated to improve water quality by increasing the City's understanding of the WMA's water quality issues, improving the public's knowledge of urban runoff issues and effecting positive behavior changes, and reducing and/or treating pollutant loads before their ultimate discharge into receiving water bodies.

As detailed in the activity summary sheets included in Appendices A and B, activities implemented in the WMA, including the distribution of educational materials and sponsorship of trash cleanups, resulted in 1,229 pounds of trash being removed from waterways. The Aggressive Street Sweeping Project removed 174,932 kilograms (384 pounds) of debris along 4,415 miles of streets. The City also engaged 10,029 members of the public through a focused outreach program in Mission Bay and continued efforts on two Community Based Social Marketing (CBSM) activities. As part of one CBSM, 77% of the participants stated a willingness to engage in behaviors to prevent pollution. The City also increased awareness through PSAs, with 2,234,178 impressions made in homes through television and 3,067,298 impressions made to the public through radio announcements. This year's *Storm Water Survey* also noted that while 44% of residents know that storm water was not treated, significant increases in awareness were detected among women (particularly over the age of 50), residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a positive change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue," 40% reported that they were taking steps to positively change their behavior. The City also continued to implement its Inspections Programs, abating 15 potential sources through correction of inefficient BMPs. These projects help improve water quality by targeting sources (i.e., human activity) through education, outreach, public participation, and enforcement.

Furthermore, the City has made significant progress on special studies and plans. The Phase II Tecolote Creek Bacterial Source Identification, Dry Weather Aerial Deposition Phase II, and the La Jolla Shores Sediment Source Studies were all completed during the reporting period. Monitoring in the ASBS has been increased in preparation for pending ASBS regulations. The City continued to collaborate with Scripps Institute of Oceanography, UCSD and San Diego CoastKeeper in implementing the *La Jolla Shores Coastal Watershed Management Plan* for the ASBS drainage area including the implementation of dry weather diversions under a grant program. These activities will benefit the Mission Bay and La Jolla WMA by providing data and water quality activity recommendations for future implementation efforts.

Based upon the Water Quality Assessment in Section 2, the high priority water quality problems for the WMA remain bacteria, metals and nutrients. Monitoring data shows that most high frequency occurrence constituents of concern correspond to these ratings except for metals. If these trends continue to be observed over the next few monitoring seasons, the Long-term Effectiveness Assessment will analyze them and determine the highest priorities to be addressed during the next permit cycle.

Although the City cannot conclusively link specific activities to improvements in receiving water quality, the City believes that collectively all of its activities are positively influencing water quality. Moreover, the City not only met the minimum requirements of the Municipal Permit, but implemented additional water quality and education activities. The City also created a Strategic Plan to assess the efficiency of these activities in order to best allocate available resources in future years for the purpose of maximizing water quality improvements.

5.2 Recommendations

The updated Municipal Permit was adopted in 2007 by the Regional Board with a cycle of five years. As in previous years, the City recommends the following strategy for increasing the level of understanding of pollutants and their sources to help focus efforts:

1. Refine and Improve Water Quality Activities. The City is continually developing and refining its list of watershed activities to more efficiently protect and improve water quality. The City intends to use the best available data to refine and improve its activities. Implementation of activities is ultimately subject to available funding. Modifications based on the results of water quality and effectiveness/efficiency assessment are anticipated to lead to the best allocation of limited resources.

2. Expand Knowledge of Pollutant Sources. The City has developed an approach to expand understanding of the water quality issues in the Mission Bay and La Jolla WMA (i.e., the pollutant sources and magnitude of the issues) so that the City, other entities and interested members of the public can make more informed decisions. The City's recommended approach for increasing its level of understanding is two-fold:

- Continue to gather additional water quality monitoring data suitable for conducting assessment at the watershed and subwatershed levels. In order to effectively assess water quality at both the watershed and subwatershed levels, additional monitoring during both the dry and wet seasons is needed throughout the WMA so that priority water quality problems may be accurately identified, characterized, and prioritized.
- Continue to research and characterize pollutant sources and their pollutant loading potential. A more positive identification of sources and their loading potential would allow the City to modify program activities wisely and devote available resources to target specifically the highest priority sources using the most efficient BMPs.

Specific Recommendations from the 2008-2009 Annual Monitoring Programs include:

- Identify upstream sources of turbidity and Bifenthrin based on wet weather conditions
- Identify upstream sources of total nitrogen based on ambient conditions

- Assess the potential role of urban runoff in causing physical habitat disturbance in response to low IBI ratings with no other apparent cause.

Sediment, synthetic pyrethroids (including Bifenthrin), nutrients (including total nitrogen), and low bioassessment scores are regional issues and may be investigated and addressed in a regionally coordinated effort.

Recommendations based on the City's Strategic Plan and programmatic progress to date include:

- Continue, as part of the regional effort, investigating whether synthetic pyrethroids are an emerging issue.
- Based on the results of the investigation of the air deposition study, continue supporting Sustainable Conservation's Brake Pad Partnership and look into incentive programs to encourage businesses to cover metal storage areas and replace rusted roofs.
- Continue to investigate anthropogenic sources of bacteria load, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling. Two phases of a bacteria study have been completed in Tecolote Creek and a third is in progress.
- Assess the magnitude of bacteria re-growth within channels. Biofilm growth experiments within the MS4 showed that enterococci will adhere and grow on storm drain walls. Phase III of the bacteria study mentioned above will further explore this.
- Follow the State of California's development of nutrient numeric endpoints for assessment of beneficial use impacts from nutrients. The current benchmarks for total nitrogen and total phosphorus may not necessarily indicate a biostimulatory response in the watershed, and nutrients as a high priority may need to be reassessed once the State completes its study.
- Investigate anthropogenic sources of sediment load in Tecolote Creek and the ASBS that is resulting in exceedances of turbidity and determine the loading on a sub-watershed basis to verify the priority sectors. Past studies have shown that in the ASBS, the source of most of the sediment loading is open space.
- Develop an overall mass balance loading estimate for sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

3. Refine and Improve Effectiveness Assessment. The City has developed a framework to assess the efficiency of its storm water program. This framework is built upon the premise that individual activities should be optimized with regards to efficiency, which is defined as an activity's pollutant load reduction potential divided by its cost. By knowing the efficiency rates of activities, the City can implement the best suite of activities to maximize load reduction using available resources. Therefore, the City's assessment framework directs activity implementation and assessment to be designed in a manner that will allow for the investigation and verification of efficiency rates. A combined assessment of the different efficiency rates to establish the best suite of activities to maximize load reduction will then feed into program assessment to determine if the overall program goals and objectives have been met. The City will continue to

refine and improve this framework through implementation, which is anticipated to lead to more efficient activity assessment, implementation and better program results.

Section 6 References

California Regional Water Quality Control Board, San Diego Region. Order No. 2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego Regional Airport Authority. January 2007.

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APPENDIX A
WATERSHED WATER QUALITY AND EDUCATION ACTIVITY SUMMARY SHEETS

TITLE: **I Love a Clean San Diego Trash Cleanup Sponsorship**
ID NUMBER: **MB-1002**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The City of San Diego (City) sponsored the Rose Canyon site in the Mission Bay and La Jolla WMA. 343 pounds of trash and debris were removed and 97pounds of trash and debris was recycled from eight miles on April 25, 2009 by approximately 64 volunteers.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2009 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Mission Bay and La Jolla Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	• Load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	246 pounds
	Pounds of trash recycled (Outcome Level 4)	97 pounds
	Total pounds of trash removed (Outcome Level 4)	343 pounds
	Number of participants (Outcome Level 1)	64
	Amount of money spent on cleanups for all WMAs (Outcome Level 1)	$30,000
	Estimated amount of money spent on cleanups for Mission Bay and La Jolla WMA (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/Pounds of Debris Removed)	$14.67/pound

*Calculated by dividing total sponsorship cost by six WMAs.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On April 26, 2008, 64 participants removed approximately 246pounds of trash and debris and recycled approximately 97 pounds of trash and debris from numerous sites in the Mission Bay and La Jolla WMA. The average estimated sponsorship cost was $5,000 per WMA ($30,000/6 WMAs). Thus, using the 343 pound load reduction associated with this sponsorship, an efficiency of $14.67 per pound of trash removed was determined.

Conclusions

The City's sponsorship of the Creek to Bay Cleanup resulted in a load reduction of 343 pounds of trash in the Mission Bay and La Jolla WMA. Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2009.

Implementation of this activity and assessment of load reduction as well as further assessment of efficiency will occur again in FY 2010.

TITLE: **SDCK Coastal Cleanup Day Sponsorship**
ID NUMBER: **MB-1003**

ACTIVITY IMPLEMENTATION

Each fall San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. SDCK recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 20, 2008. The City of San Diego and *Think Blue* sponsored six clean-up sites throughout the City. The City of San Diego sponsored the Rose Creek Corridor, Pacific Beach site in the La Jolla and Mission Bay Watershed Management Area (WMA). 1,229 pounds of trash and debris were removed (100 pounds of this trash and debris was recycled) by 86 volunteers. Volunteers were asked to track the debris collected by implementing data cards provided by the Ocean Conservancy.

Think Blue also set up an outreach, education booth at Mission Beach where participants gathered before and after the clean-up for the press conference, breakfast, and activities. With more than 15 other booths present, the layout provided volunteers an opportunity to visit each booth during the event. Informational materials distributed at this event include: *Think Blue* brochures, *Think Blue* laminated tip cards, magnetic notepads, pencils, pet trash bag containers, pet trash bag refills, eco-friendly pens, and backpacks.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2009 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK staff to ensure that sites within the Mission Bay and La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash and debris removed (Outcome Level 4)	1,229 pounds
	Number of participants (Outcome Level 1)	86
	Amount of money spent on cleanups for all six WMAs (Outcome Level 1)	$12,000
	Amount of money spent on cleanups for the Mission Bay and La Jolla WMA (Outcome Level 1)	$2,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$1.62/pound

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

The event's debris removal was tracked using data cards provided by the Ocean Conservancy, a 1,229 pound load reduction was recorded. There was a total of $12,000 estimated for the sponsorship cost for all six WMAs in the City's jurisdiction and 87 participants for this WMA. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by

dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the pounds of trash removed, was $1.62 per pound.

Conclusions

The City's sponsorship of Coastal Cleanup Day resulted in a load reduction of $9,020 pounds of trash in the Mission Bay & La Jolla Watershed. Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2009.

Implementation of this activity and assessment of load reduction as well as further assessment of efficiency will occur again in FY 2010.

TITLE: **Geographically Based Business Property and Facility Inspections**
ID NUMBER: **MB-1004, MB-1006, and MB-1009**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What activities and locations at businesses should be targeted during the inspection?
2) Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?
3) Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?

The focus of the activity was to evaluate/inspect properties as a whole as well as individual business regardless of whether they were included in the City's commercial/industrial inventory. Property and business evaluations were not as in-depth as regular commercial inspections, but rather were observation oriented to quickly assess the outdoor activities and impacts of the properties and businesses.

The major findings included problems in trash enclosures, with irrigated landscaped areas, and outdoor good-housekeeping practices. The findings for the FY 2009 activity implementation do not completely answer the management questions; however, by the end of the program, it is anticipated that these questions will be answered.

In FY 2009 65 full inspections (including supplemental business evaluations), 160 business evaluations only, and 32 property evaluations were conducted in the two geographic areas selected in the Mission Bay/La Jolla Watershed.

Facilities

The following is a summary of the evaluations performed across the participating watersheds:

Number of Evaluated Properties = 190 as follows:

- 48 Shopping Centers
- 63 Office Parks
- 39 Industrial Parks
- 39 Individual Businesses

Number of Businesses Evaluated = 825 including, but not limited to:

- Medical Offices
- Manufacturing
- General Retail
- Automotive
- Contractors
- Bookstores
- Equipment Repair
- Warehouses
- Food Service Establishments
- Hair and Nail Salons
- Janitorial
- Massage Therapists
- Dry Cleaners
- Home Improvement Centers
- Landscaping
- Lodging
- General Offices
- Pest Control
- Printing
- Storage

Public Outreach

The City developed an inspection letter that was distributed to property owners and businesses informing them of the inspection program. In addition, the City advertised its intent to implement this inspection program in various public outreach media forums.

TMDL APPLICABILITY

- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The City conducted its inspection program during FY 2009 and will perform a second round of inspections in FY 2010 to obtain more data to compile and assess. The results of the data analysis will be used to answer the management questions posed by this activity.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Findings

The following represents the primary findings of the activity. Other activity findings are less substantiated and are therefore not presented as a part of this activity. Further studies may be appropriate to develop supported results.

Property Evaluations: Landscaping / Irrigation

- 85% of landscaped areas are watered with spray/rotor delivery irrigation systems
- 94% of landscaped areas show some evidence of over-watering / over-spraying runoff
- Industrial and Office Parks tend to have more evidence of over watering than shopping centers or individual businesses
- Evidence of over watering runoff was rarely observed in areas with no irrigation system or with low flow irrigation

Property Evaluations: Trash/Dumpster Areas

- Shopping centers were most likely property type to have bird guano/feces present
- Shopping centers were somewhat, but not dramatically, more likely to have dirty trash areas
- Cleanliness of the trash area shows the strongest relationship with presence of feces

Property Evaluations: Roof Drains and Parking Areas

- 21% of roof drains discharge to pervious areas
- Almost all parking lots are impervious and directly connected to MS4
- Of the approximately 320 acres of parking lot area inspected:
    - 0% (0 ac.) had porous pavement
    - 1.4% (4.5 ac.) had gravel/dirt
    - 4.9% (15.8 ac.) discharged to pervious areas

Property Evaluations: Outdoor Trash Receptacles

- 25% of outdoor trash receptacles had no cover

All Business Evaluations: Activities and BMP Implementation

- Powerwashing activities – 12% do not implement any BMPs
- Vehicle washing – 43% fully implement BMPs, 34% do not implement BMPs or it is unknown whether BMPs were implemented
- Hosing outdoor areas – 56% do not implement any BMPs
- Loading/unloading areas – 93% uncovered and 25% not protected from run-on

Automotive Business Evaluations: Activities and BMP Implementation

- 10% of Automotive Repair Facilities have outdoor repair activities
    - 50% do not implement coverage BMPs
    - 25% are not protected from run-on
    - 62% partially implemented good-housekeeping BMPs

- 20% of Automotive Repair Facilities have outdoor automotive fluid storage
  - 15% do not implement coverage BMPs
  - 20% do not have any secondary containment

Table 1–Effectiveness Assessment for Activity

Watershed: Mission Bay and La Jolla		
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Facility Inspections**		
Management Questions	• What activities and locations at businesses should be targeted during the inspection? • Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)? • Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the Mission Bay/La Jolla Watershed	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	**Property Evaluations**	
	Number of property evaluations (Outcome Level 1)	32
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	89%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	72%
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	1
	Full Inspections Plus Supplemental Business Evaluation Sheet	
	Number of full inspections plus business evaluations (Outcome Level 1)	65
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	13
	Number of sites needing corrective action (Outcome Level 1)	65
	Number of Sites That Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	4
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	4
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	1
	Business Evaluations Only	
	Number of facility evaluations (Outcome Level 1)	160
	Number of sites needing corrective action (Outcome Level 1)	61
	Number of Sites That Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	3
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	3

	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Assumed Eliminated (Outcome Level 4)	1
Recommended Data	• Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of educational information items passed out (Outcome Level 3) • Potential Pollutant Discharge Assessment (Outcome Level 4)	

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 126 sites. Additionally, the City noted 13 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at seven locations, corrective actions were immediately taken. This demonstrates both a Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcome was achieved as a direct result of this activity. Also, in this watershed, the City confirms that three IC/IDs were observed and called into the City's hotline for response and follow-up for abatement.

The City plans to implement the program in FY 2010 to more obtain more data necessary to answer the management questions associated with the program activity.

TITLE: **Mission Bay Targeted Automotive Facility Inspections**
ID NUMBER: **MB-1005**

ACTIVITY IMPLEMENTATION

Introduction

This activity is part of a larger study in the Mission Bay and La Jolla, San Diego Bay and Tijuana River Watershed Management Areas (WMA). The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
2) Does type of business ownership change the required inspection frequencies?
3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

The focus of the activity during FY 2009 was to develop the activity and implement the first round of inspections that would establish the baseline data set for comparison after the second and third round of inspections are completed.

The initial findings included problems primarily in outdoor storage and activity areas without proper BMP implementation or good-housekeeping practices. The findings for the FY 2009 activity implementation do not completely answer the management questions, however, by the end of the program, it is anticipated that these questions will be answered.

In FY 2009 a total of 65 full inspections were conducted at selected auto shops in the Mission Bay and La JollaWMA.

Facilities

During FY 2009, the City conducted the first round of its automotive facility inspections from February through May 2009. 278 inspections were conducted as follows:

- Mission Bay Watershed – 65 inspections
- Chollas Watershed – 191 inspections
- Tijuana Watershed – 22 inspections

Approximately 50% of these businesses (139) are scheduled to receive a second inspection in FY 2010, starting in August 2009. In addition, all 278 businesses will be re-inspected again starting in February 2010 to be able to compare the results of the inspections for a complete annual cycle.

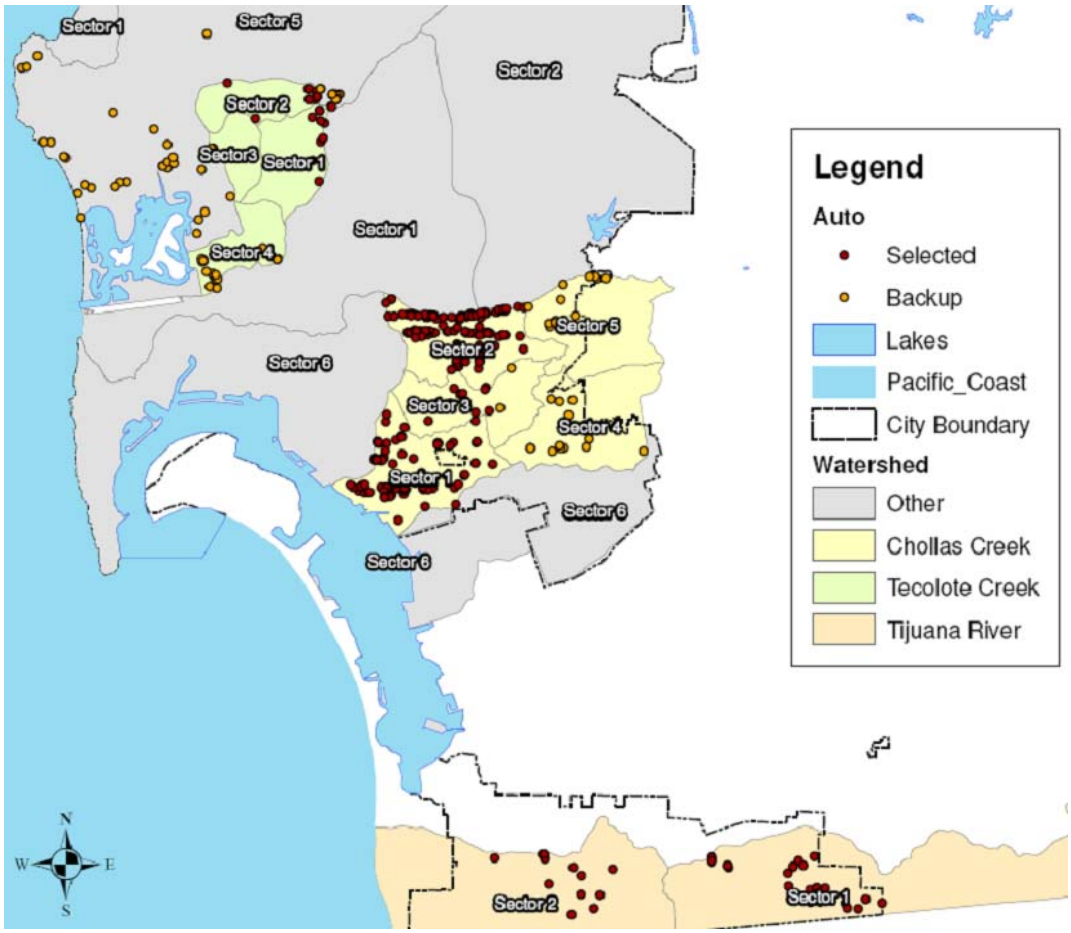

Figure 1 – Mapping of the facilities inspected (all three watershed areas)

During FY 2009, many of the alternative locations were utilized to obtain the 278 inspections due to the lack of primary and secondary sites to be inspected. Many of the businesses were no longer in business or had relocated and were not "inspectable."

Public Outreach

The City sent out a letter to business owners informing them of the inspections. The notice provided basic information about the City's inspection program and informed the recipient that they may be subject to multiple inspections.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The City will conduct its second and third rounds of inspections in August 2009 and February 2010 respectively. Data analysis and activity assessment will occur between April and June 2010 for reporting in the FY 2010 Annual Report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the identifies metals as high priority water quality problems in the Mission Bay and La JollaWMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria and metals.

EFFECTIVENESS ASSESSMENT

Baseline Data

Baseline data collected during FY 2009 will be the basis of comparison for changes in findings when compared to mid-year inspections and annual inspections. Pollutant Discharge Potential Assessment (PDPA), BMP Knowledge and findings of violations will be compared to inspections conducted in FY 2010.

Data Collection Methods – Inspections

The City completed the inspections utilizing existing inspection forms with supplemental questions to capture the information necessary to answer the three management questions.

As with all inspections conducted by the City, during these watershed inspections, if violations were identified, they were noted for follow-up as appropriate. Follow-up inspections will occur as appropriate based on the identified violations. If discharges were identified, the City's inspector immediately reported these incidents to the City's code enforcement group. This enabled the City to take immediate actions to abate sources and have a direct positive impact on load reductions.

Findings

The following represents the primary findings of the activity. Of the 278 inspections conducted:

- One (1) had an illicit discharge identified during the inspections
- 60 had identifiable violations of the City's municipal code/minimum BMPs
- 25 had made at least one correction to violations during the inspections
- 89% (247 sites) implemented BMPs for liquids storage
- 23% (64 sites) performed at least some maintenance outdoors
- 57% (159 sites) have outdoor storage of materials – 29% (46 sites) did not implement any BMPs

In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues

would be resolved if the facilities had structural changes to cover the outdoor operations and activities.

Additionally, the baseline data for the purposes of comparison of the varying inspection frequencies are identified in the table below. These assessment results will be compared to the 6-month inspection results as well as the final annual inspection results to compare and contrast the results based on the frequencies of inspections.

Table 1 – Stormwater Knowledge & BMP Assessments

Inspection Category	Inspections	Average Knowledge*	Average BMP*
FY 2009 WURMP Automotive Inspections	278	1.2	2.8
Automotive inspections – non WURMP	576	2.0	2.8
All Inspections (historic JURMP)	5,082	2.3	3.0

* Scale is from 1 (lowest) to 5 (highest)

Table 2–Effectiveness Assessment for Activity

Watershed: Mission Bay/La Jolla		
TARGETED FACILITY INSPECTIONS Assess Efficiency and Effectiveness of Facility Inspections		
Management Questions	• What is the optimal frequency of inspections for Automotive Repair Facilities? • Does type of business ownership change the required inspection frequencies? • Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?	
Targeted Measurable Outcomes	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from data)	
Data Recorded	Number of full inspections (Outcome Level 1)	65
	Number of facilities recommended for follow-up (Outcome Level 1)	11
	Number of Sites Needing Corrective Action (Outcome Level 1)	65
	Number of Sites that Implemented Some Corrective Action During Inspection (Outcome Level 3)	2
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level 4)	2
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 1)	1*

*IC/ID was not eliminated during the inspection, but all were reported to the City's Storm Water Hotline and are assumed eliminated

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 65 sites. Additionally, the City noted 11 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at 2 locations, corrective actions were immediately taken. This demonstrates both a Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcome was achieved as a direct result of this activity. Also, in this watershed, the City confirms that one IC/ID was observed and called into the City's hotline for response and follow-up for abatement.

The City plans to implement the program in FY2010 to more obtain more data necessary to answer the management questions associated with the program activity.

TITLE: **Targeted Aggressive Street Sweeping Pilot Project**
ID NUMBER: **MB-1010**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is conducting a 24-month street sweeping pilot study in the Mission Bay and La Jolla Watershed Management Area (WMA). The pilot study is part of an ongoing effort to reduce water pollution and maintain the City's compliance with water quality regulations. The goal of the pilot study is to determine the optimal street sweeping frequencies and sweeper machinery that will help the City better comply with local, state and federal Clean Water regulations. Specifically, the study is investigating the effectiveness of using vacuum-assisted street sweepers in place of conventional mechanical sweepers and increasing sweeping frequencies to reduce the accumulation of debris containing metals on City streets. The pilot study includes the purchase of two types of vacuum-assisted sweepers; the training of sweeper operators; the assignment of sweepers to designated routes within the WMA; and a wet-weather monitoring program to assess the effectiveness of the pilot study.

In order to select the appropriate routes, the City of San Diego used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target areas within the Mission Bay and La Jolla WMA. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study, and meetings held with relevant City staff, the three selected routes (MB-1, MB-2 and MB-3) [1] are in the highest priority sectors of the Mission Bay and La Jolla WMA for potential metals loading.

In anticipation of the start of pilot study, the City conducted the following community outreach and information dissemination efforts in FY 2008:

- Community meetings held in April 2008 and June 2008 in Clairemont and La Jolla areas
- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Article on project published in Council District 6 newsletter, *Frye Lights*, in April 2008
- Newspaper display advertisements placed in community newspapers
- Door hangers and brochures distributed in Clairemont
- Information shared with Council Offices

The City installed "no parking" signs along the pilot study routes in Clairemont (MB-2) in April 2008. In May 2008, the City began sweeping MB-2 at a once a week frequency (one time per week on each side of the street) to determine the amount of debris containing metals that could be removed by increasing the frequency of the City's conventional street sweeping program. Implementation of the once a week frequency is

[1] Three pilot routes where selected in the Mission Bay and La Jolla WMA. MB-1 consists of a primarily residential route in the La Jolla Shores area; MB-2 consists of two small residential routes in the Clairemont area; and MB-3 consists of a primarily commercial route in the La Jolla/Clairemont area.

currently ongoing and is scheduled for completion in June 2010. Pollutant load reduction data from this portion of the pilot study is included in the effectiveness assessment section of this activity sheet.

The City installed "no parking" signs along the pilot study routes in the La Jolla Shores (MB-1) and La Jolla/Clairemont (MB-3) areas in the fall of 2008. In October 2008, the City began sweeping MB-1 and MB-3 at an increased frequency (one time per week on each side of the street) to collect additional debris data. Implementation of this frequency is currently ongoing and is also scheduled for completion in June 2010. Pollutant load reduction data for these pilot study routes is included in the effectiveness assessment section of this activity sheet.

This phase of the pilot study also included a comparative analysis of the performance of the City's conventional mechanical street sweepers and the newly acquired vacuum-assisted sweepers. Comparative debris data was collected for each machine type for all three pilot study routes (MB-1, MB-2 and MB-3) in the Mission Bay and La Jolla WMA. The preliminary results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

Based on preliminary results presented in the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load reduction of bacteria (a high priority water quality problem in the Mission Bay and La Jolla WMA), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2009.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Sweeping in the Clairemont area started in April 2008 and is anticipated to continue through June 2010. Sweeping in the La Jolla area began in October 2008. Use of vacuum-assisted street sweepers began in FY 2009 for these pilot study routes. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identify heavy metals as a high

priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Targeted increased sweeping targets metals on City streets.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
TARGETED AGGRESSIVE STREET SWEEPING PILOT STUDY Assess the Efficiency of Street Sweeping Frequencies and Methods		
Management Questions	• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?	
Targeted Measurable Outcome(s)	• Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement	
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)	
Data Recorded	Total kg of debris removed by mechanical sweeper: Total kg of debris removed by regenerative-air sweeper: Total kg of debris removed by vacuum sweeper: **Total kg of debris removed:**	69,073 kg 102,530 kg 3,329 kg **174,932 kg**
	Total broom miles swept by mechanical sweeper:* Total broom miles swept by regenerative-air sweeper: Total broom miles swept by vacuum sweeper: **Total broom miles swept:**	2,137 mi 2,216 mi 62 mi **4,415 mi**
	Total kg of debris removed by mechanical sweeper/mile swept: Total kg of debris removed by regenerative-air sweeper/mile swept: Total kg of debris removed by vacuum sweeper/mile swept: **Average kg of debris removed /mile swept:**	32 kg/mile 46 kg/mile 54 kg/mile **44 kg/mile**
Recommended Data	• Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)	

*"Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Objectives

The goal of the assessment is to investigate the effectiveness of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data will also be evaluated for the purpose of establishing optimal sweeping frequencies.

Analysis and Results

The study included the purchase of two types of vacuum-assisted sweepers; the dedication and training of sweeper operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. A total of 174,932 kg of debris was removed by all three sweeper types during FY09 in the Mission Bay and La Jolla WMA, over a total of 4,415 miles swept. This resulted in an average kg of debris removed per mile swept of 44. Further analysis is underway to address the study objectives during FY 2009.

Conclusions

Conclusions and recommendations will be presented in the final report, which is scheduled for completion by June 2010. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets. This effectiveness assessment monitoring will be coordinated with additional air deposition sampling and effectiveness monitoring of combined Tier I and Tier II BMPs in Mission Bay and La Jolla.

TITLE: **Municipal Rain Barrel Installation and Downspout Disconnect Project**

ID NUMBER: **MB-1011**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities.

Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Mission Bay and La Jolla WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the Mission Bay and La Jolla WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, a service building at the Rose Canyon Operations Yard was selected because it is located in one of the highest priority sectors of the Mission Bay and La Jolla WMA for potential pollutant loading. Through a partnership with USCD, a second site was selected at the Scripps Institute for Oceanography because of its location within the La Jolla Area of Special Biological Significance (ASBS).

In April 2009, a City-approved contractor installed four rain barrel systems at the operations yard. One 75-gallon rain box and concrete planer system was installed and connected to an existing downspout at four locations around the main service building. Each system utilizes an automated timer and pump to release captured runoff from the rain box to the concrete planter.

At the Scripps Institute for Oceanography, one 75-gallon rain box and concrete planer was installed and connected to an existing downspout of a service building near the pier. This system also utilizes an automated timer and pump to release captured runoff from the rain box to the concrete planter.

Rain Box and Planter at Scripps site

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer will be distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer will be posted on the City's *Think Blue* website during the first quarter of FY 2010.

This phase of the pilot project focuses on implementing and assessing the effectiveness of rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the pilot project will be applied to implementation in residential areas.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain

barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring will be preformed from October 2009 to April 2010. Assessment and final reporting for this program will conclude by June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy metals
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address these high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROGRAM **Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff**		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems, particularly for metals and bacteria? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of rain barrels for Rose Canyon Purchasing/Central Stores site	TBD
	Cost of rain barrels for Kellogg Park site	TBD
	Cost of operation and maintenance evaluation for all sites	TBD
	Cost of effectiveness monitoring for all sites	TBD

Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results

The pilot project was not in active implementation during FY 2009. Further analysis will take place after wet-weather monitoring data is collected, which is scheduled for completion by April 2010.

Conclusions

Effectiveness and efficiency will be determined by load reduction (determined through monitoring efforts) versus cost of barrel installation and maintenance. Conclusions will be made after the effectiveness assessment is completed in June 2010. Any recommendations resulting from this pilot project will be reported in the FY 2010 WURMP Annual Report.

TITLE: **Osler Street Hydrodynamic Separator Installation Project**
ID NUMBER: **MB-1012**

ACTIVITY IMPLEMENTATION

Osler Street is located on the Northern end of Linda Vista Park in the Mission Bay and La Jolla Watershed Management Area (WMA). The City of San Diego (City) plans to install hydrodynamic separator directly in line with a 24-inch storm drain that traverses the park and discharges into Tecolote Canyon. The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system. The 24-inch line is the main collector in a small storm drain network that collects storm flows from the park and associated facilities, neighboring elementary school and the surrounding neighborhood comprised mostly of high density housing. Due to the characteristics of the neighborhood and the observations made during a site visit on December 11, 2007, the storm events in the selected area are likely to gather a variety of trash and other pollutants typical of low income high density residential areas. This played an important part in the site selection making process.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design is anticipated to begin in September 2009 and continue through FY 2011. Construction is expected to be completed in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
OSLER STREET HYDRODYNAMIC SEPARATOR INSTALLATION PROJECT **Assess the Efficiency and Effectiveness of the Hydrodynamic Separator**	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the separator at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator to reduce the amount of trash, sediment, oil, and grease flowing into the storm drain system.

Analysis and Results

Assessment is not possible at this time, as the activity is still in its planning phase. However, once the activity is complete, an assessment of effectiveness will be conducted to show the load reduction and cost efficiency associated with hydrodynamic separators.

Conclusions

Conclusions will be made as to future implementation of other similar projects once the project and effectiveness assessment are complete.

TITLE: **La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV)**

ID NUMBER: **MB-1013**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has been installing a low flow storm drain diversion system in phases to serve the Pacific Ocean coast of the La Jolla, Pacific Beach, and Ocean Beach areas. Phases I and II have been completed using grant monies from the Environmental Protection Agency. Phase III, which includes a total of 11 locations from La Jolla Point to Ocean Beach, will be operational in August 2009.

Phase IV focuses on the La Jolla Area of Special Biological Significance (ASBS) to address the prohibition of dry weather flows under the Ocean Plan Exception Process. Four low flow coastal diversions are planned for this fourth phase: Camino del Oro (Camino del Oro near El Paseo Grande), 7920 Princess St. (Torrey Pines Rd. and Princess St.), Torrey Pines Rd. and Charlotte St. (Torrey Pines and Amalfi), and 1624 Torrey Pines Rd. (Torrey Pines and Coast Walk). The City held a workshop to present the concept for these sites on July 30, 2008 and invited the La Jolla Town Council, the La Jolla Community Planning Group, the La Jolla Shores Association, San Diego Coastkeeper, and the general public.

The UC Regents – UCSD applied to the State Board for an implementation grant under this Consolidated Grant program (Proposition 50) for multiple structural control projects consistent with the La Jolla Shores Integrated Coastal Watershed Management Plan (ICWMP) (see activity summary sheet MB-3003 La Jolla Shores Integrated Coastal Watershed Management Plan) including these low flow diversions. City staff coordinated with UC Regents-UCSD for the City to be a subcontractor on this grant for the implementation of three low flow diversions. The fourth diversion that is part of this phase is funded under an Environmental Protection Agency grant. The State suspended many grant programs including the Consolidated Grants Program. The State has since been received federal American Recovery and Reinvestment Act (ARRA) stimulus funds and has contacted UCSD regarding restarting the projects with ARRA funds.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

60% design for this project was completed May 22, 2009. Final design, including the addition of plan check comments and completed specifications, is expected in January 2011. Construction is expected to occur in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
LA JOLLA SHORES ASBS POLLUTION CONTROL PROGRAM (AKA LOW FLOW DIVERSIONS PHASE IV) **Assess the Efficiency and Effectiveness of the Dry Weather Flow Diversions**	
Management Questions	• What is the load reduction efficiency of the flow diversions? • How effective are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing low flow diversions to divert dry weather runoff into the sewer system for treatment instead of low flows discharging out of storm drain outfalls directly into the ASBS. Targeted high priority pollutants include bacteria, metals and nutrients.

Analysis and Results

Assessment is not possible at this time, as the diversions have not yet been constructed. Prior to construction, monitoring will be conducted to determine baseline conditions. Post-construction monitoring will be conducted as well for comparison to baseline conditions and assessment of effectiveness.

Conclusions

Final design is anticipated in FY 2010. Construction is expected to occur in FY 2011. Once construction and assessment are both complete, conclusions will be made as to the effectiveness and efficiency of the project.

TITLE: **Kellogg Park Green Lot Retrofit Project**
ID NUMBER: **MB-1014**

ACTIVITY IMPLEMENTATION

This project will replace a portion of the conventional asphalt of the Kellogg Park parking lot with porous pavers to allow for the infiltration of urban runoff. Originally the project considered only the western half of the parking lot. In late FY 2008, the project was expanded to include the entire parking lot. The concept design for the western half of the parking lot was worked on in FY 2008. An additional conceptual design, showing pervious pavers installed in the north and south ends of the lot, was completed in FY 2009. The middle of the lot will be resurfaced with conventional asphalt. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, Area of Special Biological Significance (ASBS), and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla Watershed Management Area (WMA).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design for this project was initiated in January 2009. The 60% design stage was completed in April 2009 and the project is currently working towards 100% design. Final design is anticipated by the end of FY 2010 and construction is expected to begin in FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy metals and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
KELLOGG PARK GREEN LOT RETROFIT PROJECT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs**	
Management Questions	• What is the load reduction efficiency of retrofits? • How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Change in pollutant concentrations in runoff into storm drains or receiving water (Outcome Level 5) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) retrofits through reduction of runoff volume. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type. High priority pollutants targeted include bacteria, nutrients and heavy metals.

Analysis and Results

The concept design for this project began in FY 2008 and baseline monitoring was completed. Currently, load estimates are being calculated and will be included in the project report. Once design and construction are complete, additional assessment will be completed to determine the effectiveness of this activity.

Conclusions

As mentioned above, the assessment will be completed after project construction and conclusions will be made at that time. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, ASBS, and current and anticipated TMDLs in the receiving waters of the Mission Bay and La Jolla WMA.

TITLE: **Mt. Abernathy Green Street Retrofit**
ID NUMBER: **MB-1015**

ACTIVITY IMPLEMENTATION

This activity will involve the construction of vegetated planter areas between the curb and sidewalk to infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. Cuts will be made into the existing street curb to allow flows to leave the street paved section and enter the planter areas. Additional cuts will be made to permit high flows to exit the planter areas and re-enter the street section. The planter area will be slightly lower than the street gutter elevation to allow the street to drain into the planters. This system will be designed to collect and infiltrate runoff from the residences and the first-flush portion of storm events from the street through the curb cuts. The use of porous sidewalks and bioretention basins/planters will increase the porous area and infiltration footprint, thereby reducing the storm flows and pollutant loads. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla Watershed Management Area (WMA).

The Mt. Abernathy Neighborhood site was selected after several site reconnaissance visits. This community of approximately 90 homes was selected because the City of San Diego (City) right-of-way has not been improved with landscaping by homeowners or by the City. The community drains to one catchment that can be readily monitored for effectiveness.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The conceptual design for this project was completed in FY 2007 and design began in FY 2008. Construction is expected to begin in FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy metals and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MT. ABERNATHY GREEN STREET RETROFIT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Street-type BMPs**	
Management Questions	• What is the load reduction efficiency of the retrofits? • How effective are retrofits at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the analysis is to determine the load reduction efficiency of the retrofits. The load reduction efficiencies will also be estimated and used to determine the efficiency of future Best Management Practice (BMP) implementations. High priority pollutants include bacteria, heavy metals and nutrients.

Analysis and Results

This activity involves the installation of porous sidewalks and vegetative planters in the Mt. Abernathy Neighborhood to reduce runoff volume. This community of approximately 90 homes was selected because the City right-of-way has not been improved with landscaping by homeowners or by the City. The community drains to one catchment that can be readily monitored for effectiveness and assessment will be conducted after the project is constructed.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading. Conclusions will be made after the activity is complete and effectiveness has been determined.

TITLE: **Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project**

ID NUMBER: **MB-1016**

ACTIVITY IMPLEMENTATION

Within the tributary watershed of the Bannock Avenue Neighborhood, vegetated planter areas will be constructed between the existing curb and the sidewalk. Cuts will be made in the existing curbs to allow flow to exit the street paved section as well as enter and exit the planter areas. The planter areas will be filled with cobbles and/or gravel to a depth of approximately 1 foot and planted with landscaping to be determined during final design. The cobbles and/or gravel must be placed to an elevation approximately 1 inch below the adjacent sidewalk and curb to ensure no Americans with Disabilities Act (ADA) access issues are encountered. The cobbles and/or gravel will be prevented from spilling into the street through the curb cut by a metal screen. Some existing sidewalks will be replaced with new pervious concrete sidewalks. The need for temporary or permanent irrigation to establish the planter areas must be determined during final design.

Within North Clairemont Park, a diversion structure will divert flows to a trash segregation unit, followed in series by an AbTech (Bacterial Treatment System) unit. From the AbTech unit, flows will be returned to the natural drainage course at the location of the existing storm drain system outlet headwall. The diversion structure will be sized to divert the 85th percentile storm event in order for it to be treated by the trash segregation and AbTech units. This size storm was selected because this treatment Best Management Practice (BMP) is a pilot project to assess the effectiveness of this treatment technology. The larger storm event would result in a significantly larger system and higher project cost. The City of San Diego (City) determined that the 85th percentile storm was adequate to assess the effectiveness of this treatment technology through the pilot program because this technology has not been proven at larger flows. Should this technology prove cost effective for storm flows, the system may be expanded for a larger design storm.

This project was identified as "Infiltration BMP Retrofit #1" in the 2008 Mission Bay and La Jolla WURMP. In the latter half of FY 2008, a site was selected and conceptual design was completed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the City's Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The project is still going through preliminary engineering. It is expected to be transferred to design in November 2009. Construction is anticipated to be completed in FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
BANNOCK AVENUE STREETSCAPE ENHANCEMENT & BACTERIA TREATMENT PROJECT **Assess the Efficiency and Effectiveness of the Design and Construction of the Enhancement and Bacteria Treatment Project**	
Management Questions:	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria load with the installation of vegetative planters, trash segregation units, and bacterial treatment systems in the Bannock Avenue Neighborhood.

Analysis and Results

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: **Infiltration BMP Retrofit #2**
ID NUMBER: **MB-1017**

ACTIVITY IMPLEMENTATION

This activity will involve the implementation of an infiltration project in the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other best management practices (BMPs) being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla WMA.

The project did not advance in FY 2009. It is currently on hold due to limited resources that have been allocated to other watershed activities which are moving forward.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007; however the project is currently on hold as noted above. When the project moves forward, water quality monitoring may be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) identify bacteria, metals and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them. It is anticipated that this activity will address the high priority water quality problems by reducing and

treating runoff volume of pollutants via infiltration and treatment when the project moves forward.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
INFILTRATION BMP #2 **Assess the Efficiency and Effectiveness of the Design and Construction of the Infiltration BMP**	
Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 4) • Dataset of load contributions for specific activities (Outcome Level 4)

The effectiveness assessment for this activity will be developed and completed when and if this activity moves forward. The above table provides an example of what questions, methods, and measures may be used for the assessment.

TITLE: **Beach Area Low Flow Storm Drain Diversion Project, Phase III**

ID NUMBER: **MB-1018**

ACTIVITY IMPLEMENTATION

In 1997, the Beach Area Low Flow Diversion Project was created at the request of the San Diego Council Members Wear and Mathis. Storm drain outfalls along the coastline were inventoried and each drain outfall was rated for the potential for human contact with the flow from the drain (i.e. flow crosses the beach). Outfalls, which were labeled by the street name location, were identified as having high or medium potential were studied to determine the feasibility and cost of diverting low flows to the wastewater collection system. High priority sites due to continuous urban runoff flows during dry weather became Phase I of the project. As a result, Phase I low flow diversion facilities included Tourmaline, Bonair/Neptune, Ravina, Avenida de la Playa, Vallecitos, Camino del Oro, and south of Vista de la Playa. These sites became operational in 1998 and 1999 at a cost of $1 million.

Phase II projects included El Paseo Grande, Spindrift, Children's Pool, 711 Coast Boulevard, Coast Boulevard (at lifeguard station), 465 Coast Boulevard, Coast Boulevard at Pump Station 24, Neptune and Belvedere, Neptune and Westbourne, Neptune at Playa Del Norte, Neptune at Playa Del Sur, Neptune at Gravilla, Neptune at Kolmar, Neptune North of Kolmar, Neptune at Rosemont, Neptune at Palomar, Coast Boulevard at Grand, and Ocean Boulevard at Grand. Phase II projects became operational by July of 2007.

Phase III projects include Missouri Street, Chalcedony, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Street, and South of Loring Street. These facilities have been constructed but are not yet operational.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Phase III projects are currently going through operational testing and are expected to be operational in early FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
BEACH AREA LOW FLOW STORM DRAIN DIVERSION PROJECT, PHASE III **Assess the Efficiency and Effectiveness of the Flow Diversion Facilities**	
Management Questions	• What is the load reduction efficiency of the storm drain diversions? • How effective are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the Phase III low flow diversion facilities to divert urban runoff flows during dry weather. Targeted high priority pollutants include bacteria, metals and nutrients.

Analysis and Results

Effectiveness assessment is not possible at this time, as the Phase III facilities are not yet operational. Phase III projects include Missouri Street, Chalcedoney, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Avenue, and South of Loring Street. Once the facilities become operational, an effectiveness assessment will be conducted.

Conclusions

Phase III projects are expected to be operational in early FY 2010. Effectiveness and efficiency will be determined by comparing load reduction to implementation costs, and through water quality monitoring. After assessment is complete, conclusions will be made based on the effectiveness and the efficiency of the project.

TITLE: **Avenida De La Playa Storm Drain Replacement and Low Flow Diversion**

ID NUMBER: **MB-1020**

ACTIVITY IMPLEMENTATION

During the City of San Diego's (City's) Beach Area Low Flow Storm Drain Diversion Project Phase I construction (briefly described in Activity Summary Sheet - MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III), a diversion was built upstream from the outfall at the beach on Avenida de la Playa with much of the flow from the large drainage area being diverted. However, there is significant dry weather flow from the area downstream of the diversion. The invert elevation of the existing beach outfall is at the mean sea level and sand regularly blocks all flow, except during the largest winter storms. Dry weather flows collect and stagnate, creating a known source of bacterial discharge to the receiving waters of the La Jolla State Marine Conservation Area (Area of Special Biological Significance (ASBS) No. 29). The City is proposing a second dry weather diversion facility closer to the point of discharge at the beach along Avenida de la Playa and replacement of the pipe due to the dry weather issues, tidal intrusion, groundwater intrusion, and other issues associated with the current condition of the pipe.

In late FY 2008, the City prepared a concept proposal, including this project, to apply for funds under the State's Proposition 84 ASBS Grant Program.

The goal of this project is to eliminate bacteria loads and other pollutants, such as metals and nutrients, typically discharged through low flows to the ASBS by replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through design, construction and project close out. Preliminary engineering was completed in April 2009 and the project was transferred to design in June 2009. Design is expected to continue through FY 2011 with construction completion in FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. By replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall, sediment will no longer be trapped within the pipe allowing bacteria to grow within the warm waters and sediments contained in the pipe.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
AVENIDA DE LA PLAYA LOW FLOW STORM DRAIN DIVERSION PROJECT **Assess the Efficiency and Effectiveness of the Flow Diversion Facilities**	
Management Questions	• What is the load reduction efficiency of the storm drain diversions? • How efficient are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this analysis is to determine the diversion project's effectiveness and efficiency in reducing pollutant loads.

Analysis and Results

Assessment is not possible at this time, as the project is still in the design phase. Post-construction monitoring will be conducted and effectiveness assessment will be completed once the project is complete. Efficiency will be determined by comparing load reduction to implementation costs.

Conclusions

Once the project is complete and the effectiveness assessment has been conducted, conclusions will be made as to future implementation of other similar activities.

TITLE: **Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades**

ID NUMBER: **MB-1021**

ACTIVITY IMPLEMENTATION

In 1987, the City of San Diego (City) committed to expand the low flow diversion system around Mission Bay with the Mission Bay Sewage Interceptor System (MBSIS) project. This initial project provided interception capability for 65 drain outlets within the remaining 10 percent of the tributary drainage basin. At a cost of $9 million, the project was completed in 1994 and expanded the number of facilities to 46 (14 pump stations and 32 gravity systems). A telemetry control system was also included to provide a more efficient operation. The remote telemetry automatically was used to shut down each facility whenever it rains. Therefore, the labor-intensive effort of physically shutting down each facility was avoided. The new storm water pumping station constructed in Mission Beach at Santa Clara Point was constructed with low flow pumps to divert dry weather flows to the wastewater collection system.

The current CIP project provides for the design and construction of upgrades to 31 sites within MBSIS.

Three Congressional Federal Grants were issued through EPA's Appropriations Act totaling approximately $10 million. These grants fund 55% of the design, environmental, and construction costs of Coastal Low Flow (CLF) Phases II, III and IV (see Activity Sheets MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III and MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV) for more information) as well as the design and environmental costs for MBSIS. In order to be eligible for these federal grants, each of the phases must clear the EPA's National Environmental Policy Act (NEPA), a process that can span up to a year. These grants are reimbursable. The construction costs for MBSIS will be paid by the Deferred Maintenance Bond (Bond).

The design of MBSIS is complete and the project is waiting for Bond funds to be accepted and moved into the project's account before advertising for construction bids.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Construction funds are anticipated in October 2009. Construction is anticipated to begin in April 2010 and be completed in April 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem in the WMA. Identification of the sources of bacteria in the WMA will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MISSION BAY AND COASTAL BEACHES SEWAGE INTERCEPTOR SYSTEM UPGRADES **Assess the Efficiency and Effectiveness of the Flow Diversion System**	
Management Questions	• How effective are the upgrades at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., outfall monitoring programs) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in level of potential discharges/load reduction due to implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the upgrades to the MBSIS flow diversion system in reducing bacteria load and improving water quality.

Analysis and Results

Design for this project is complete and construction is expected to begin in late FY 2010 and be completed in FY 2011. Effectiveness will be determined after the upgrades are completed through an assessment of load reduction/source abatement.

Conclusions

Conclusions will be made at the completion of the activity, after implementation and assessment is complete.

TITLE: **Public Service Announcements: Karma, Karma Second Chance, Karma Tourist**

ID NUMBER: **MB-2001**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Mission Bay Watershed Management Area (WMA) from August 2008 to April 2009. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Mission Bay & La Jolla Watershed Management Area (WMA) during FY 2009 from August 2008 to April 2009. The City will work with various broadcast media outlets to distribute and air the PSAs during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay & La Jolla WMA identify bacteria as high priority water quality problems in the WMA. The *Karma, Karma Second Chance,* and *Karma Tourist* PSAs will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay & La Jolla		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST **Assess the Efficiency and Effectiveness of Public Service Announcements**		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in Mission Bay & La Jolla WMA (Outcome Level 1)	2,234,178
	Number of impressions made to the public through radio announcements in Mission Bay & La Jolla WMA (Outcome Level 1)	3,067,298
	Change in knowledge or attitude from survey results (Outcome Level 2)	44%
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes**

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The city conducted an effectiveness assessment of *Think Blue* PSAs and storm water messages via field experiment in which 309 individuals were shown eight different *Think Blue* PSAs (including the *Karma, Karma Second Chance* PSAs). Participants were then asked questions to determine storm water knowledge, awareness and possible changes to future behavior as a result of the PSA. The results of the field experiment demonstrate the messages in the PSAs are effective in increasing public knowledge that storm water is not treated. 25% of participants were more likely to answer that storm water is not treated than those who had answered the question prior to watching the PSA. Additionally, awareness that storm water pollution is an important issue in San Diego also increased after watching the PSA. Lastly, the *Karma Second Chance* PSA scored the highest of the PSAs in motivating participants to take specific actions to prevent storm water pollution.

The city also obtained assessment information from its annual random-digit dial 2009 *San Diego Storm Water Survey* of 800 total residents from all WMAs. 55% of residents said they saw a *Think Blue* PSA last year (up from 52%) on television while 8% of residents heard the radio announcements in FY 2009. 51% said they prefer to get information about storm water via television. This year's survey also noted that while 44% of residents know that storm water was not treated, significant increases in awareness were detected among women (particularly over the age of 50), residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the city as a whole. To estimate the number of impressions in the Mission Bay & La Jolla WMA, the total number of estimated city-wide impressions, (11,170,888 for television and 15,336,488 for radio ads) was multiplied by the proportion of residents living in the Mission Bay & La Jolla WMA (20%) of the city's total population.

Conclusions

Based on assessment from both the survey and the field experiment as well as feedback from the public, *Think Blue* PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the city will continue to monitor public perception and feedback to determine if this is actually occurring. The city will continue to work with appropriate broadcast media outlets to air *Think Blue* television and radio PSAs during FY 2010.

Additionally, the city continued to measure public awareness of the *Think Blue* program via surveys comprised of a random digit dial sample of the residents living in the Mission Bay & La Jolla WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, while the *2009 San Diego Storm Water Survey* indicated that 39% had heard the phrase 'Think Blue" during 2009, awareness that storm water is not treated increased. These results, coupled with a continued decrease in the percentage of residents hosing down their driveways, and in residents using pesticide or weed killers, demonstrate that the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the Mission & La Jolla Bay WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey

indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE: **Mobile Advertising**
ID NUMBER: **MB-2002**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a mobile advertising firm, AdTruks, to advertise Think Blue messages on static billboard trucks in the Mission Bay and La Jolla Watershed Management Area (WMA) in FY08. The City created advertisements that targeted behaviors associated with bacteria and trash. The goal of mobile advertising was to educate the public about the impacts litter and pollution have on local waterways and beaches and to encourage positive behavioral change.

Based on results from the 2009 Storm Water Survey in which 17% of participants stated they received Think Blue messages via mobile advertising, it was determined that the program was not as effective in generating sufficient knowledge and awareness of the program or storm water issues. Additionally, the Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. Therefore, the city did not conduct mobile advertising in the Mission Bay WMA in FY09, and has discontinued this activity.

TITLE: **La Jolla Commercial CBSM Efforts**
ID NUMBER: **MB-2003**

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department, Pollution Prevention Division (City) has been using Community Based Social Marketing (CBSM) strategies since FY 2008 to attempt to increase knowledge and change behaviors in target populations and communities. CBSM is an environmental social science model which includes research, pilot programs, data gathering, and assessment that has been successful in environmental sustainability programs throughout the United States. The City has implemented a pilot project using this approach in the La Jolla community to address sources of bacteria and trash. Research observations and surveys were completed in FY 2009.

During FY 2009, the City's Think Blue program created a short but meaningful BMP training/presentation aimed at educating businesses about the importance of storm water issues and pollution prevention. Several modules were created, which allowed each business to choose their BMP training of choice, based on their needs and business type. When previously contacted, 75% of the businesses along Avenida de la Playa had agreed to participate. Upon follow up, Think Blue consultants made contact with a total of 37 La Jolla Shores businesses. Of those, 24 (65%) participated and scheduled a training. A total of 44 staff participated in the training sessions.

The BMP Business trainings were given by City staff, consultants and San Diego Coastkeeper. Trainings lasted approximately 20 minutes, and included verbal instruction, visuals and a brief demonstration. Staff also conducted an on-site "walk-through" to identify potential areas or activities of concern. Each business that participated received BMP educational (brochures and a poster) and storm water hotline materials, a certificate of completion and a "Think Blue Partner" window decal.

As a final assessment, observations were conducted again in the business, commercial and tourist areas (the same as the pre-observations). A total of 1,222 polluting or evidence of polluting events were recorded, which was a 34% decrease from the pre-intervention observations. Results showed that some behaviors (or evidence of behaviors) changed over time in both pilot and control areas and some behaviors did not change at all. Most importantly, however, there were several behaviors that changed exclusively in the pilot area and were therefore likely due to the intervention.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This activity is considered completed in FY09.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- Scripps Institution of Oceanography
- University of California, San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria and trash as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
LA JOLLA COMMERCIAL CBSM EFFORTS **Assess the Effectiveness of Public Outreach**		
Management Questions	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution?	
Targeted Measurable Outcome(s)	• Number of business reached within the WMA • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Training (e.g., administer training to assess knowledge and gain participation of participants) • Quantification (e.g., number of businesses reached)	
Data Recorded	Number of business owners/managers who participated in Storm Water BMP training (Outcome Level 2)	24 (44 staff)
	Percentage of interviewed businesses who agreed to utilize Storm Water BMPs to prevent pollution (Outcome Level 3)	100%
	Amount of pollution and polluting events observed during two week follow-up period (Outcome Level 1)	1,222
	Decrease in observed evidence and acts of pollution in the treatment area (Outcome Levels 3 and 4)	34%
	Decrease in observable amount of litter (trash and cigarette butts) in the treatment area (Outcome Level 3 and 4)	0%
	Decrease in observable amount of overflowing dumpsters in the treatment area (Outcome Level 3 and 4)	47%
	Decrease in observable amount of standing water in the gutter in the treatment area (Outcome Level 3 and 4)	67%

Objectives

The assessment goal is to determine the effectiveness of various methods of intervention based on the CBSM outreach model. The specific project goal is educating the public to increase knowledge and awareness about causes of trash and bacteria loading based upon targeted pollutant-related behaviors, and to eventually create positive attitude and behavioral changes.

Analysis and Results

As described above, the training program was implemented in the CBSM pilot area of La Jolla only (La Jolla Shores). Businesses in Windansea did not receive any of the intervention materials or trainings. This was done so that the effects of the behavior change program could be evaluated exclusive of seasonal or historical changes. To evaluate the campaign, post-intervention outcome observations were conducted in both the La Jolla Shores (pilot) and Windansea (control) study areas. To enable valid comparisons, the outcome observations were conducted using the identical protocol and procedures that were used in the baseline observations (conducted during FY08).

Observations were conducted across a range of week and weekend days and times between October and November of 2008. During each observation shift, observer pairs walked a pre-designated route and coded behaviors or evidence of behavior into one of several categories. The specific location of the observed behavior (or evidence) was also recorded. A total of 1,222 events were recorded: 602 in La Jolla Shores and 459 in Windansea. Both business and commercial areas were observed in the commercial business area. Additional observations were made in the tourist areas where a total of 161 events were recorded: 84 in La Jolla Shores and 77 in Windansea.

In order to assess the impact of the business intervention program specifically, the frequency of each behavior observed during the post-test observations in the business zone was compared to baseline measures collected in both pilot and control areas. Using this approach eliminated confounds due to seasonal effects (such as weather). As a result, we could be more confident that any changes that occurred in La Jolla Shores that were not reflected in Windansea were most likely due to the intervention.

Data from the post-test observation were entered and coded in the same manner used for the baseline observation data. Post-test data from pilot and control areas were then compared to the baseline observations. Results showed that some behaviors (or evidence of behaviors) changed over time in both pilot and control areas and some behaviors did not change at all. Most importantly, however, there were several behaviors that changed exclusively in the pilot area and were therefore likely due to the intervention.

Behaviors that changed only in the pilot area and were likely due to the intervention

- Water in the gutter (67% significant decrease in LJS, 44% decrease in WNS not significant)
- Weep holes draining (67% significant decrease in LJS, 23% increase in WNS not significant)
- Washing water sport equipment (89% decrease in LJS, significant)

- Plant material (77% significant decrease in LJS, 29% increase in WNS not significant).

Behaviors that changed over time in both pilot and control areas:

- Water in the street decreased (30% decrease in LJS and 76% decrease in WNS, changes not significant at standard levels, $p<.05$)
- Overflowing dumpsters significantly decreased (47% decrease in LJS and 70% decrease in WNS)
- Pet waste increased (100% significant increase in LJS and 54% increase in WNS, not significant).

Behaviors that did not change

- Trash and cigarette butts (0% change in LJS, 41% increase in WNS, but not significant)
- Wet pavement (47% increase in LJS, 21% decrease in WNS, but not significant)
- Puddles in alleys (15% increase in LJS, 5% increase in WNS, but not significant)
- Plant overwatering (5% increase in LJS, 19% decrease in WNS, but not significant)

Conclusions

In FY 2009, through this effort, the City was able to educate the businesses in the La Jolla Shores area using a high touch, positive methodology that is intended to increase awareness and promote stewardship and behaviors geared towards pollution prevention. Ultimately, the goal is for the awareness and training to translate into behavior change, and therefore reduce storm water discharges and prevent pollution in La Jolla Shores.

During FY 2009, the observational results of the CBSM pilot in La Jolla Shores provided encouraging behavioral evidence regarding the effectiveness of the business outreach program. Specifically, there was quantitative evidence for a reduction in water-related behaviors that was observed exclusively in La Jolla Shores, indicating a general reduction in water that was directed into the gutter and toward storm drains in the pilot area. This pattern was not reflected in Windansea, so there is certainty that the change does not merely reflect a seasonal or historical variation in water usage. Additionally, while the study did not specifically target landscaping waste or plant materials in the business outreach program, there was a significant reduction in plant material in La Jolla Shores that was not mirrored in Windansea. This suggests that other efforts unique to La Jolla Shores (such as increased street sweeping) might be credited with this change.

TITLE: **Genesee Commercial CBSM Efforts**
ID NUMBER: **MB-2004**

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department, Pollution Prevention Division (City) has been using Community Based Social Marketing (CBSM) strategies since FY 2008 in attempt to increase knowledge and change behaviors among various target audiences. CBSM is an environmental social science method of outreach which includes comprehensive research, data gathering, and assessment measures to develop more effective outreach strategies. It has been successful in environmental sustainability programs throughout the United States. The City has retained consultants to develop and initiate CBSM pilot projects, and has implemented a pilot project using this approach in the La Jolla community to attempt to achieve pollution prevention awareness and behavioral change.

The resource intensive research which was planned for the Genesee area is currently on hold pending the results and effectiveness assessment of the La Jolla investigation. If and when the project moves forward, research in the Genesee area will be initiated, along with observations and other methods of gathering data in order to determine that best outreach program for the project. Outreach interventions and assessment methods will then be developed based on the research findings.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

As noted above, this activity is on-hold.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the *Strategic Plan for Watershed Activity Implementation* identify bacteria and trash as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly if and when it is implemented.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
GENESEE COMMERCIAL CBSM EFFORTS	
Management Questions:	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in pilot group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash or other pollutants removed from study area (Outcome Level 4)

The effectiveness assessment for this activity will be developed and completed when and if this activity moves forward. The above table provides an example of what questions, methods, and measures may be used for the assessment.

TITLE: **Mt. Abernathy LID Green Street Outreach**
ID NUMBER: **MB-2005**

ACTIVITY IMPLEMENTATION

Mt. Abernathy Green Street Outreach will be performed to support the planned "Green Street" construction in a small sub-section of the Clairemont community in the Mission Bay and La Jolla Watershed Management Area (WMA). Construction may include modifying the vegetated planter areas between the curb and sidewalks in front of residential homes in order to better infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. The City plans to inform, educate and involve residents who are directly affected by the construction in an attempt to achieve awareness regarding storm water runoff and to create behavioral change among residents. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities will include public participation and outreach, education regarding structural interventions, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The schedule for this outreach will parallel the Mt. Abernathy Low Impact Development (LID) Green Street Construction. The City anticipates retaining several outreach consultants, including at least one firm that specializes in Community Outreach. Planning occurred in FY 2009 and will continue in FY 2010, with implementation, outreach, and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) identify bacteria and trash as high priority water quality problems in the WMA. This effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MT. ABERNATHY LID "GREEN STREET" OUTREACH **Assess the Efficiency and Effectiveness of Educating the Public About Green Street-type BMPs**	
Management Questions	• Does education regarding the LID retrofits effectively raise awareness of bacteria, metal and nutrient pollutant issues? • Does education regarding the LID retrofits effectively change pollutant behavior among residents?
Targeted Measurable Outcome(s)	• Reach goal number of people within the Mission Bay and La Jolla WMA, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached)
Data Recorded	• Number of educational information items passed out (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2) • Change in pollutant-related behavior (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness of educating the public on the LID retrofit best management practices (BMPs) in reducing bacteria and gross pollutant loads from runoff in the Mt. Abernathy Neighborhood.

Analysis and Results

Assessment is not possible at this time, as this activity has not yet been implemented. Outreach activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

Conclusions

This activity has not yet been implemented. Effectiveness will be measured by the change in public knowledge and change in pollutant behavior among residents, as determined by survey results, and conclusions will be made once effectiveness is determined.

TITLE: **Clean Construction Poster and Brochure Distribution**
ID NUMBER: **MB-2006**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper Best Management Practices (BMPs). The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and BMPs for construction. Photos on the brochure and poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally with Development Services Department staff to distribute the poster in FY 2009 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of posters distributed in the Mission Bay and La Jolla Watershed Management Area (WMA) was 101. The number of posters distributed by Storm Water inspectors was 16 (11 in English and 5 in Spanish).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

City staff will continue to distribute the poster and/or brochure to permit applicants in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy metals and nutrients as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with erosion and sediment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
CONSTRUCTION BMP POSTER AND BROCHURE DISTRIBUTION **Assess the Efficiency and Effectiveness of Posters in Promoting Awareness**

For FY 2009, the City distributed 101 posters as referenced above in the Activity Implementation section. Due to the nature of this activity, comprehensive effectiveness assessment to show knowledge or behavior change is not being conducted for this activity. The City may continue to report on the distribution of the poster to permit applicants, but is not requesting credit as a WMA education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **Restaurant Best Management Practices Booklet Distribution**
ID NUMBER: **MB-2007**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission several years ago from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the Mission Bay and La Jolla Watershed Management Area (WMA) during inspections. After review by restaurant employees, the booklet could be kept by owners/managers for reference and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs. The booklets were not modified in FY 2009, but continue to be distributed.

Storm Water Division staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for the continued distribution of the booklet in FY 2009 to City-permitted facilities. The City distributed 560 booklets in the Mission Bay and La Jolla WMA.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these booklets have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with FEWD Program staff for distribution of the booklet in FY 2010 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused

education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
RESTAURANT BMP BOOKLET DISTRIBUTION **Assess the Efficiency and Effectiveness of Educational Booklet Distribution**

In FY 2009, the City distributed 560 booklets as referenced above in the Activity Implementation section. Due to the nature of this activity, comprehensive effectiveness assessment to show knowledge or behavior change is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a WMA education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **Transit Shelter and Billboard Advertisements**
ID NUMBER: **MB-2008**

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego (City) retained a contract with an outdoor advertising company to advertise *Think Blue* messages on billboards and bus shelters located in the Mission Bay and La Jolla Watershed Management Area (WMA). The City created advertisements in English and Spanish that target behaviors associated with bacteria profiled as a vector. The goal of the billboards was to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed and implemented during FY 2008 throughout the Mission Bay and La Jolla WMA. In FY 2009, it was determined that transit shelters and billboard advertisements were not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. The City will continue to monitor outdoor advertising opportunities in the future and may reconsider the use of this activity in the Mission Bay and La Jolla WMA.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City no longer plans to use billboards and transit shelters as part of its watershed program.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City no longer plans to use billboards and transit shelters as part of its watershed program; therefore, no assessment was conducted in FY 2009.

TITLE: **Mission Bay Focused Outreach**
ID NUMBER: **MB-2009**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in Mission Bay, the City of San Diego's (City's) *Think Blue* program implemented a summer outreach campaign in FY 2008 that targeted key sources of bacteria pollution in Mission Bay. In FY 2009, the campaign provided direct outreach during the major summer holidays (Labor Day 2008, Memorial Day 2009 and Independence Day 2009) to Mission Bay visitors, specifically recreational vehicle (RV) users and boaters. The education focused on reducing pollution and bay closures as a result of contamination due to bacteria sources. In addition, direct outreach and materials distribution were conducted to marinas located in Mission Bay as an additional way to reach the target audience.

During the summers of 2008 and 2009, a variety of education and outreach methods were employed to reach the key target audiences including:

- An outreach greeter station staffed with *Think Blue* staff and consultants, in order to increase direct public education and interaction. The booth was located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza boat launch, and was operational during the Memorial Day, Independence Day and Labor Day Holiday weekends.

- Public education materials available in the booth included *Think Blue* pollution prevention education materials (such as brochures and tip cards), along with best management practice (BMP) giveaways, such as brooms and dustpans.

- Specialized postcards targeting each Mission Bay user group (RV users, boaters, and general visitors) were developed and available in both English and Spanish.

- Mobile ad display was visible at the entrance of Mission Bay East during each of the three Holiday weekends (Memorial Day, Independence Day and Labor Day).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Labor Day 2008, Memorial Day 2009 and Independence Day 2009: An outreach greeter station staffed with *Think Blue* staff and consultants was located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza boat launch. Public education materials were distributed, including *Think Blue* pollution prevention education materials (such as brochures and tip cards), along with BMP giveaways, such as brooms and dustpans. A Mobile ad was also displayed at the entrance of Mission Bay East during the holiday weekends.

July 2008 - September 2008, and from May 2009 - June 2009: Direct contact was made with marinas operating in and serving Mission Bay. Collaboration was established in order to distribute specialized pollution prevention BMP postcards targeting boaters/boat owners.

This activity is scheduled to continue in FY 2010 (during the summer of 2009 and 2010).

PARTICIPATING WATERSHED COPERMITTEES

City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- City of San Diego Park & Recreation Department
- City of San Diego Lifeguards
- Mission Bay stakeholder groups (OMBAC, Mission Bay Planning Committee, etc.)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy and the *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla Watershed Management Area (WMA) both identify bacteria as a high priority water quality problem in the WMA. This outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MISSION BAY FOCUSED OUTREACH **Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness**	
Management Questions	• What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

Data Recorded

***Think Blue* FY 2009 Mission Bay Outreach Studies**

Holiday	*Number of Visitors to Outreach Booth*	*Number of passers-by Observed*	*Number of Visitors Approached*	*Observed Boat Launches*	*Observed Parked RVs*	*Total Materials Distributed*
Independence Day 2008	247	4,623	123	152	164	189
Labor Day 2008	198	2,256	212	171	80	244
Memorial Day 2009	191	3,150	198	29	82	279

Estimated total visitors (impressions) exposed to the *Think Blue* Booth in Mission Bay in FY 2009 (Outcome Level 1)	10,029
Estimated total visitors (impressions) exposed to the *Think Blue* Mobile Ad during Mission Bay Focused outreach (9 days) in FY 2009 (Outcome Level 1)	248,650
Number of marinas and boating businesses who participated in Mission Bay Outreach Campaign (Outcome Level 2)	40
Number of boating outreach materials distributed to businesses (Outcome Level 1)	875
Number of Surveys administered in FY 2009 (Outcome Level 1)	309
Percentage of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3)	70%
Percent increase from FY 2008 to FY 2009 of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3)	10%

*Includes walkups, visitors approached by staff and materials given to park rangers and lifeguards to distribute.

Objectives

The goal of this activity is increasing knowledge and awareness in the target audience (RVers, boaters and visitors to Mission Bay) in order create positive behavioral change that will reduce the presence of bacteria and gross pollutants in Mission Bay. Assessment was conducted to determine the effectiveness of the FY 2009 summer outreach campaign on creating increases in knowledge and changes in behavior.

Analysis and Results

The City's *Think Blue* campaign implemented a summer outreach campaign in FY 2009 that targeted key areas of concern for pollution in Mission Bay. The campaign was conducted during the major summer holidays (Independence Day 2008, Labor Day 2008 and Memorial Day 2009) and provided direct outreach to Mission Bay users, specifically RV users and Boaters. Efforts were made to increase awareness of pollutants sources (specifically bacteria), in order to reduce those sources, prevent pollution and avoid a beach closure in Mission Bay during the high-use summer season. Examples of outreach activities included educational material distribution to both *Think Blue* booth visitors, mobile ad display at the entrance of Mission Bay East, and direct outreach and observations to boaters and RV users in the area, and direct outreach to local marinas and boating businesses located in Mission Bay.

During FY 2009, approximately 10,000 visitors to East Mission Bay were exposed to *Think Blue's* Focused Mission Bay Outreach, which was promoting the message, "Help Keep Mission Bay Clean and Safe." Over 636 individuals approached the booth to speak with staff; over 833 Bay users were approached by staff, with over 1,200 people receiving pollution prevention outreach material and items. The *Think Blue* Mobile Ad that was parked in the Mission by area at the entrance of East Mission Bay during the three holidays (9 days total) is estimated to have been viewed by 248,650 individuals based on traffic and pedestrians counts.

FY 2009 was the third year that *Think Blue* conducted Focused Mission Bay Outreach. *Think Blue* engaged in 9 days of direct outreach in FY 2009, as opposed to 17 days in FY 2008. In FY 2008, the booth was open during the entire week of July 4th, but booth visitors and boat launches observed were not frequent enough to justify the level of staffing to support a mid-week effort. Therefore, due to the fact that all three holidays in FY 2009 encompassed 3-day weekends, staffing was adjusted such that the booth was only open during the 3 days of each long weekend. This provided a total of 9 days of direct outreach in FY 2009, as opposed to 17 days in FY 2008. The decrease in the amount of booth visitors and materials distributed is roughly proportional to the decrease in days that the booth was open. In addition, the alcohol beach ban was approved during FY 2009, and beach attendance decreased overall across the City.

FY 2009 was the second year that *Think Blue* performed survey assessments. Of the 309 individuals who completed the assessment survey, 70% reported taking steps to prevent pollution. This is an increase from 60% in FY 2008 who reported engaging in these behaviors. This result can be considered an indicator of a Level 3 Outcome.

Conclusions

Mission Bay Focused Outreach is proving to be an effective way to reach visitors in East Mission Bay during the major summer holidays. The large numbers of impressions (over 10,000 exposed to *Think Blue* booth, and 248,650 exposed to mobile advertising), direct contacts (approx 600 persons), educational materials distributed (1,211 items) and survey participation in FY 2009 support the assertion that the focused outreach program is effective at increasing public exposure to bacteria and gross pollutant issues. More of the public is now aware of storm water issues and the *Think Blue* campaign due to this focused outreach.

Implementation of the campaign will continue in FY 2010, to include hosting the outreach booth and continued distribution of the specialized informational postcards tailored to RV users, boaters, and general visitors. Assessment surveys will continue at and increased effort to gather statistically valid information regarding knowledge, attitudes and pollution prevention behavior of Mission Bay visitors. Outreach in FY 2010 will continue with expanded targeted Marina and boater outreach. Effectiveness will be measured further via surveys comprised of residents in the Mission Bay and La Jolla WMA to determine awareness, knowledge retention and behavior change.

TITLE: **La Jolla Residential CBSM Efforts**
ID NUMBER: **MB-2010 (Formerly reported as MB-1008 Targeted Residential Activity Characterization)**

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department, Pollution Prevention Division (City) has been using Community Based Social Marketing (CBSM) strategies since 2008 to attempt to increase knowledge and change behaviors in target populations and communities. CBSM is an environmental social science model which includes comprehensive research, pilot programs, data gathering, and assessment measures that has been successful in environmental sustainability programs throughout the United States. The City has implemented a pilot project using this approach in the La Jolla community to address sources of bacteria and trash. Research observations and surveys were completed in FY 2008.

During FY 2009, the CBSM activities in the residential area of La Jolla Shores included a presentation of residential survey results to *Think Blue* staff and consultants (July 2008) in order to strategize next steps. Development of a survey results summary for La Jolla residents who participated in the mail survey was completed in July 2008, as well as the development of general program recommendations. Recommendations included structural interventions such as the addition of trash cans, dog waste bag dispensers and additional street sweeping. Additional recommendations included creating signage and outreach materials with messages focused on creating social norms to encourage picking up after pets and disposing of trash properly.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

During FY 2009, the CBSM activities in the residential area of La Jolla Shores included a presentation of residential survey results to *Think Blue* staff and consultants (July 2008) in order to strategize next steps. Development of a survey results summary for La Jolla residents who participated in the mail survey was completed in July 2008, as well as the development of general program recommendations. The City will continue street sweeping in La Jolla Shores in FY 2010, as well as continue to work internally to provide additional trash cans and doggie bag dispensers. This activity is scheduled to end in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- Scripps Institution of Oceanography
- University of California, San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy and the City's *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla Watershed Management Area (WMA) identify bacteria and trash as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
LA JOLLA RESIDENTIAL CBSM EFFORTS **Assess the Effectiveness of Public Outreach**		
Management Questions	• What changes in awareness, attitudes and behavior regarding trash and bacteria were achieved?	
Targeted Measurable Outcome(s)	• Increased level of knowledge/attitude based on post-activity assessment	
Assessment Method(s)	• Observations (un-obtrusive observations to record polluting behavior and/or results of polluting activity in the area) • Quantification (e.g., number of residents reached or structures installed)	
Data Recorded	Amount of pollution prevention educational materials distributed	232
	Amount of pollution prevention BMP materials distributed (reusable bags, dog bag carriers, etc.)	102
	Number of resident responses who completed information based surveys (Outcome Level 2)	121
	Percent of residents stating willingness to engage in behaviors to prevent pollution (Outcome Level 3)	77%
Recommended Data	• Change in residential outdoor water use (measured by observable decreases in standing water) (Outcome Level 3 and 4) • Decrease in observable amount of pet waste (Outcome Level 3 and 4)	

Objectives

The assessment goal is to determine the effectiveness of various methods of interventions based on recommendations from the CBSM outreach model. The specific project goal is to educate the public about causes of trash and bacteria to increase knowledge and awareness, and eventually create positive attitude and behavioral changes.

Analysis and Results

FY 2009 activities were a direct result of FY 2008 activities. During FY 2008, the CBSM activities included conducting observations, as well implementing a residential survey. Based on the findings from the observations and survey, recommendations included structural interventions such as the addition of trash cans, dog waste bag dispensers and additional street

sweeping. Additional recommendations included creating signage and outreach materials with messages focused on creating social norms to encourage picking up after pets and disposing of trash properly. In FY 2009, the City provided residents with additional information on appropriate non-polluting behaviors focused on bacteria and trash. The City also began to make plans to implement a combined structural and motivational approach consisting of dog waste bag dispensers, specific messaging and pledges/community commitment.

To address trash and bacteria, street sweeping was implemented in La Jolla Shores in September of 2008 and will continue into FY 2010. Street sweeping was focused on removing trash and sediment form residential roadways. In addition, the City developed a series of Residential Guidebooks for pollution prevention, three of which focused on sources of bacteria (wash water, over-irrigation and pet waste). As a part of the recommended strategy, the City participated in World Oceans Day in La Jolla Shores in June 2009. World Oceans Day is an event focused on water quality, and gave the city an opportunity to do direct outreach with residents. *Think Blue* had an interactive booth, and distributed outreach materials. Behaviors targeted were littering and picking up after pets.

Several recommendations and activities were not completed in FY 2009. Difficulties were encountered when attempting to install additional trash cans, dog bag dispensers and signage in the community. Due to budget cuts in FY 2009, neither the Environmental Services Department nor the Park and Recreation Department could provide the maintenance needed to support additional trash cans or dog waste bag dispensers in the area. In addition, the City of San Diego's signage ordinance is very restrictive, so no progress was made toward creating and installing signs with the desired messaging.

Conclusion

In FY 2009, the City provided residents with additional information on appropriate non-polluting behaviors focused on preventing bacteria and trash. Throughout the year, and at the World Oceans Day in La Jolla Shores, the City was able to distribute over 250 educational materials and give-away items. More than three quarters of residents (77%) who attended the event reported that they would engage in behaviors to prevent pollution. The City was unable to attain and place additional trash cans and dog waste bag dispensers. This effort will continue in FY 2010, and is expected to conclude at the end of FY 2010.

TITLE: **San Diego Crew Classic**
ID NUMBER: **MB-2011**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution the Mission Bay and La Jolla Watershed Management Area (WMA) in FY 2009, the City of San Diego's *Think Blue* program participated in the San Diego Crew Classic, a rowing regatta for residents of San Diego targeting key sources of bacteria in Mission Bay. The campaign provided direct outreach dedicated to preserving water quality in San Diego primarily focused in Mission Bay. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain.

With more than 15,000 people in attendance, our presence provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

Think Blue participated as the official Program and Trophy Sponsor of the City of San Diego Cup, also known as the Men's Club Championship. Guests were invited to join *Think Blue* in the Hospitality Tent in the designated viewing section of the main lawn.

Materials distributed included brochures and tip cards, along with best management practice (BMP) items that help promote behavior change such as dust pans, pet trash bag containers and pet trash bag refills. Promotional giveaways included eco-friendly pens, Frisbees, backpacks, and rally towels.

Other items included:

- Specialized postcards targeting Mission Bay boaters were developed and available in both English and Spanish.
- One dozen trash receptacles were wrapped with banners at different locations throughout Mission Bay to promote the slogan, "Help Keep Mission Bay Clean and Safe".

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue plans to participate in the Crew Classic during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Bay stakeholder groups (OMBAC, Mission Bay Planning Committee, etc.)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla							
SAN DIEGO CREW CLASSIC **Assess the effectiveness of direct public outreach to increase awareness about storm drain pollution and prevention.**							
Management Questions	• What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?						
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys						
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)						
Data Recorded	***Think Blue* FY 2009 Crew Classic Survey**						
		Number of Visitors to Outreach Booth	***Gender***	***Heard of Think Blue?***	***How have you heard about Think Blue?***	***Total Materials Distributed***	
	Crew Classic, 2009	279	260 Reported 36% Male 64% Female	23% Yes 77% No	26% TV 34% Other Event	2585 *	
	Estimated total visitors exposed to the *Think Blue* Booth at the Crew Classic in FY 2009 (Outcome Level 1)						15,000
	Number of Surveys administered in FY 2009 (Outcome Level 1)						279
	Percentage of individuals surveyed that believed storm water was an extremely important issue (Outcome Level 2)						87%
	Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2)						53%
	Percentage of individuals able to name a concrete action to prevent storm water pollution (Outcome Level 3)						75%
	Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3)						97%

Objectives

The goal of this assessment was to determine community knowledge and awareness about storm water issues and whether or not residents would adopt non-polluting behaviors. Another goal was to create positive behavior change that will reduce bacteria and gross sediment in water bodies in the Mission Bay and La Jolla WMA.

Analysis and Results

The campaign targeted key areas of concern for pollutants in the Mission Bay and La Jolla WMA. The event provided direct outreach to residents living within the Mission Bay area. Based on assessment, many citizens (87%) knew about pollution issues. However, approximately 47% were unaware the sewer system and storm drain system are not connected, and that water in the storm drain system is not treated. Efforts were made to educate attendees and increase awareness of pollutant sources and pollution prevention methods to reduce pollutant loads.

Conclusions

The Crew Classic attracted mainly residents living in the local watershed areas. *Think Blue* provided a booth for continued outreach dedicated to preserving water quality in San Diego. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain. With more than 15,000 people in attendance, the event provided a great opportunity to interact with citizens and visitors about the benefits of pollution prevention.

TITLE: **Mission Bay and La Jolla Watershed Brochure**
ID NUMBER: **MB- 2012**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2010. Implementation and distribution is expected to occur in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern

Tijuana River	San Diego River	San Diego Bay	Mission Bay	San Dieguito River	Los Penasquitos
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants		Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City plans to continue to implement the brochure program in FY 2010. Effectiveness assessments will be conducted after the watershed brochures are implemented in FY 2010. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: **Tecolote Creek Bacterial Source Identification Study (Phase II)**

ID NUMBER: **MB-3002**

ACTIVITY IMPLEMENTATION

The Clean Water Act's Section 303(d) list identifies the Tecolote Creek as impaired due to elevated indicator bacteria counts above REC-1 standards. Phase II of the Tecolote Creek Microbial Source Tracking Study was conducted throughout the watershed to further investigate bacterial loads in the creek and to assess specific priority activity contributions.

Phase II objectives:

1. Gather additional flow, rainfall, and bacterial concentration data and calculate loads to remodel/refine the proposed Tecolote Creek total maximum daily load (TMDL) and develop best management practices (BMPs) design storm specifications.
2. Assess the impact and role of sediments on bacterial transport throughout storm hydrographs such that BMPs can be designed to reduce wet weather loads.
3. Identify and confirm other sources, which accounted for 51% of the fecal indicator bacteria (FIB) loads in Phase I, including industrial, commercial, transit corridors, and municipal separate storm sewer system (MS4) inputs.
4. Conduct source identification investigations at key creek locations that were found to have continued temporally elevated bacterial concentrations.

Results and Findings

- Analysis of all available historical data for Tecolote Creek suggests that a number of analytes (total copper, TSS, enterococci and fecal coliforms) surpass the allowable number of exceedances.
- An additional seven storm events need to be monitored in order to have a data set suitable for Section 303 (d) de-listing.

Role of sediments

- Sediment and grain size analysis showed that Tecolote Creek discharges predominantly fine grains during wet weather. The settling of these suspended solids did not reduce bacterial concentrations in stormwater.
- Treatment of solids in wet weather flows in Tecolote Creek, through settling, would not be likely to reduce bacterial loads, or meet TMDL requirements.

Bacterial sources - Contribution from different sectors and land uses

- Transportation and residential lands uses contributed the highest bacterial loads in Tecolote Creek during wet weather.
- Specific land use threats to water quality were identified as industrial and commercial runoff and dumpster leakages.
- Wet weather loads from different observed land uses accounted for the total loads estimated at the base of Tecolote Creek.

Bacterial sources - impact of environmental enterococci species:

- Speciation of enterococci discharged from different land uses during wet weather demonstrated that the majority of enterococci species were likely sources from non-fecal origins such as soils and plants.
- Biofilm growth experiments within the MS4 showed that enterococci will adhere and grow on storm drain walls and that the enterococci species were a mix of fecal origin species and species originating from environmental sources.
- These results suggest that calculated bacterial loads in Tecolote Creek overestimate the potential threat to REC-1 and REC-2 beneficial uses because of the significant presence of fecal indicator bacteria from environmental sources such as soils and plants.

Source identification studies

- Point sources were not identified in areas with elevated bacterial concentrations during this study.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria Project 1-TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The study was conducted November 2008 through May 2009 and encompassed two wet weather sampling surveys and four dry weather sampling surveys. In addition, special studies were conducted throughout this timeframe. The study aimed at providing additional data for use in the preparation of the Final Tecolote Creek Bacterial TMDL.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will identify the potential sources or areas that are impacting water quality within Mission Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: **La Jolla Shores Sediment Source Study**
ID NUMBER: **MB-3004**

ACTIVITY IMPLEMENTATION

The La Jolla Shores Sediment Characterization Study (Study) was conducted to identify sediment sources and characterize sediment loads from different land use areas within the La Jolla Shores Coastal Watershed during storm events and to assess how sediment and related contaminants affect the two Areas of Special Biological Significance (ASBS) at the base of the watershed. The Study was designed to both develop specific Best Management Practices (BMPs) to address sediment loading that may impact the beneficial uses of the La Jolla ASBS and as a Tier II watershed activity identified in the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) (Weston, 2007a). The Strategic Plan identifies priority pollutants of concern and source identification data gaps for the La Jolla ASBS and is in alignment with the La Jolla Shores Coastal Watershed Management Plan that has been developed for the area (SIO et al., 2008).

The following objectives were developed for this study:

1. Identify how land use influences sediment loading.
2. Identify whether sediment loading patterns or the relative grain size proportions change throughout a storm hydrograph.
3. Calculate the estimated sediment and pollutant load entering the ASBS during a large storm event.
4. Determine if concentrations of constituents in runoff are correlated with specific sediment loads or grain size fractions.
5. Characterize the water quality and sediment conditions in the ASBS receiving water.
6. Recommend BMPs to protect the ASBS.

Results and Findings

1. Three subwatersheds were monitored in the La Jolla Shores Coastal Watershed during two storm events for this study: Open Space (a minimally developed canyon at the base of Mount Soledad), Residential (low density residential off La Jolla Shores Drive), and Mixed Use (the largest drainage in the Watershed, representing open space canyon and low density residential land uses).
2. Among the three subwatersheds monitored, sediment concentrations and sediment load per acre were greatest from the Open Space site, suggesting that the open space land use, represented by steep canyons in the La Jolla Coastal Watershed, are the primary sources of sediment to the ocean receiving waters in the ASBS..
3. Sediment loading patterns changed throughout the hydrograph. At all three sites, sediment concentration and load mirrored the hydrograph, peaking with the flow of water as the storm progressed.
4. Median grain size varied with location. Among the three sites, the largest grain size was measured at the Residential Site, which consisted primarily of sand. Median grain size in the Canyon and Mixed Use Sites were smaller, consisting

primarily of silts and clays. There was not a strong relationship between grain size and the hydrograph.

5. The greatest copper, lead, and zinc concentrations were associated primarily with sediments in the 5-35 micron size range.
6. Concentrations and loads of total metals (i.e., metals bound to sediment particulates) were correlated with the sediment concentration and the hydrograph (i.e., as the storms peaked so did sediment and total metals). In contrast, concentrations of dissolved metals (metals in solution, not bound to particulates) tended to be greatest before and after the peak of the storm.
7. Within approximately 48 hours following a storm event, water quality and sediment conditions within the ASBS appeared to be close to pre-storm conditions. Water samples collected just beyond the surf zone two days after a storm event had very low detectable concentrations within water quality objectives of heavy metals and trace amounts of PAHs. No detectable concentration of PCBs (aroclors or individual PCB congeners), pesticides, organotins, synthetic pyrethroids, volatiles, or semi-volatile compounds were present in offshore water samples. Exposure to offshore water collected one day following a storm event did not produce acute or chronic toxicity to mysid shrimp and did not produce chronic toxicity to giant kelp or sea urchin fertilization.
8. Sediment within the ASBS did not contain detectable concentrations of PAHs, PCBs (aroclors or individual PCB congeners), pesticides, organotins, synthetic pyrethroids, volatiles, or semi-volatile compounds. Concentrations of heavy metals were detected but all were below established levels in which toxic effects to benthic infauna would be expected. No toxicity was observed in E. estuarius exposure to ASBS sediments.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Data was collected from sampling events occurring in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediments

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay WMA identify sediments as a high priority

water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the Mission Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this is not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of this characterization study will be reported as separate activities.

TITLE: **La Jolla Design Storm Study**
ID NUMBER: MB-3005

ACTIVITY IMPLEMENTATION

As part of the City of San Diego's planning for the San Diego Region Beaches and Creeks Bacteria Total Maximum Daily Load (TMDL), a design storm assessment was conducted in FY2009 using monitoring sites from three watersheds: Tecolote Creek, La Jolla Shores, and Chollas Creek.. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm.

Parameters for existing pollutograph sampling scheduled as part of the La Jolla ASBS Sediment project were added to this project in FY 2008. Three sites in the watershed have been monitored: LJCYN (representing open space land use), LJRES (representing residential land use), and LJEND (representing mixed land use). This study was not conducted as part of TMDL monitoring.

Key findings from the study include that bacteria concentrations are relatively unaffected by fluctuations in the storm hydrograph. Also, dissolved metals tend to decrease as the hydrograph rises and increase as the hydrograph decreases. Total Suspended Solids (TSS) levels tend to closely follow the rises and falls of the hydrograph. Lastly, the majority of the mass for copper, lead and zinc is associated with the particles smaller that 35 microns (clay and silt size fraction).

The report also recommends that treatment BMPs should only be implemented to both the overall extent (in terms of total magnitude of implementation), and geospatial extent where Tier I and Tier II BMPs do not meet the compliance standards or reach a diminishing return with regard to incremental pollutant reduction vs. cost of that reduction. In terms of implementation, this means that:

- Overall BMP implementation is a tiered approach, where the City will attempt to meet compliance standards through implementation of more cost effective pollution prevention and source controls (Tier I and Tier II). The treatment BMP approaches (Tier III) will be used to the extent that compliance is not anticipated to be achieved through Tier I and Tier II watershed activities alone due either to reaching the pollution reduction capability or cost efficiency of the suite of these type of BMPs.
- Because pollutant sources are not evenly distributed throughout the City, the City may choose to use Tier III treatment BMPs in higher polluting areas (in addition to implementing Tier I and Tier II BMPs), while relying only on Tier I and Tier II BMPs in other areas.

It is suggested that further assessment of the anticipated and necessary efficiency of Tier II and III BMPs be conducted using the available baseline data presented in the Study report. The results of the preliminary evaluation show that the required level of treatment

or the most cost effective combination of tiered BMPs to achieve the pollutant reduction goals will be specific to each location. Additionally, the results show that where high efficiency levels such as infiltration are not achieved by Tier II and III BMPs, a more integrated approach using more cost effective Tier I source controls and pollution prevention BMPs is needed. Furthermore, as greater efficiency is needed to meet aggressive pollutant removals under TMDLs, cost efficiency analysis is likely to play a larger role in determining the solutions to achieve the remaining load reductions. These cost efficiency analyses may lead to consideration of less traditional approaches such as water harvesting and use, hardness adjustment to meet metals WQO, and development of receiving water specific objectives.

The recommendations presented in the Study report focused on the Design Storm provided a target storm volume or flow rate for which BMPs are designed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This study will include assessment, sampling, analysis, and reporting in FY 2009. Study completion was completed in FY 2009. Design storm recommendations will be used on future structural BMP's as applicable.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). The study will help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the priority water quality problems.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
LA JOLLA SHORES DESIGN STORM STUDY **Assess the Effectiveness of the Study**	
Expected Outcome(s)	• Findings and assessments are presented in the report and summarized above.

Effectiveness is not being assessed because this is not a water quality or education activity. This study is filling pollutant source data gaps as identified above. It is anticipated that the recommendations and outcomes of the study will assist in making BMPs efficient. Future activities implemented will be reported as separate activities.

TITLE: **Tecolote Creek Design Storm Study**
ID NUMBER: **MB-3006**

ACTIVITY IMPLEMENTATION

As part of planning for the Tecolote Creek Bacteria Total Maximum Daily Load (TMDL), a design storm assessment was conducted in FY 2009 using monitoring sites from three watersheds: Tecolote Creek, La Jolla Shores, and Chollas Creek. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm.

Parameters for existing pollutograph sampling scheduled as part of the Tecolote Creek Phase II Bacterial Source ID Study were added to this project. One site at the base of the watershed was monitored with samples collected for grain size and bacteria. A settling experiment to see how bacteria are transported through a storm event was conducted. Additionally, a speciation was conducted to determine if bacterial species are altered throughout a storm event.

Key findings from the study include that bacteria concentrations are relatively unaffected by fluctuations in the storm hydrograph. Also, dissolved metals tend to decrease as the hydrograph rises and increase as the hydrograph decreases. Total Suspended Solids (TSS) levels tend to closely follow the rises and falls of the hydrograph. Lastly, the majority of the mass for copper, lead and zinc is associated with the particles smaller that 35 microns (clay and silt size fraction).

The report also recommends that treatment BMPs should only be implemented to both the overall extent (in terms of total magnitude of implementation), and geospatial extent where Tier I and Tier II BMPs do not meet the compliance standards or reach a diminishing return with regard to incremental pollutant reduction vs. cost of that reduction. In terms of implementation, this means that:

- Overall BMP implementation is a tiered approach, where the City will attempt to meet compliance standards through implementation of more cost effective pollution prevention and source controls (Tier I and Tier II). The treatment BMP approaches (Tier III) will be used to the extent that compliance is not anticipated to be achieved through Tier I and Tier II watershed activities alone due either to reaching the pollution reduction capability or cost efficiency of the suite of these type of BMPs.
- Because pollutant sources are not evenly distributed throughout the City, the City may choose to use Tier III treatment BMPs in higher polluting areas (in addition to implementing Tier I and Tier II BMPs), while relying only on Tier I and Tier II BMPs in other areas.

It is suggested that further assessment of the anticipated and necessary efficiency of Tier II and III BMPs be conducted using the available baseline data presented in the Study

report. The results of the preliminary evaluation show that the required level of treatment or the most cost effective combination of tiered BMPs to achieve the pollutant reduction goals will be specific to each location. Additionally, the results show that where high efficiency levels such as infiltration are not achieved by Tier II and III BMPs, a more integrated approach using more cost effective Tier I source controls and pollution prevention BMPs is needed. Furthermore, as greater efficiency is needed to meet aggressive pollutant removals under TMDLs, cost efficiency analysis is likely to play a larger role in determining the solutions to achieve the remaining load reductions. These cost efficiency analyses may lead to consideration of less traditional approaches such as water harvesting and use, hardness adjustment to meet metals WQO, and development of receiving water specific objectives.

The recommendations presented in the Study report focused on the Design Storm provided a target storm volume or flow rate for which BMPs are designed.

TMDL APPLICABILITY

- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This study included assessment, sampling, analysis, and reporting in FY 2009. The study was completed in FY 2009. Design storm recommendations will be used on future structural BMP's as applicable.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). The study will help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the priority water quality problems.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
TECOLOTE CREEK DESIGN STORM STUDY **Assess the Effectiveness of the Study**	
Expected Outcome(s)	• Findings and assessments are presented in the report and summarized above.

Effectiveness is not being assessed because this is not a water quality or education activity. This study is filling pollutant source data gaps as identified above. It is anticipated that the recommendations and outcomes of the study will assist in making BMPs efficient. Future activities implemented will be reported as separate activities.

TITLE: **Dry Weather Aerial Deposition Study (Phase II) 2009**
ID NUMBER: **MB-3007**

ACTIVITY IMPLEMENTATION

The primary focus of this phase of the aerial deposition study is to answer specific questions relating to total maximum daily loads (TMDLs), State Water Resources Control Board 303(d) listings (primarily related to metals), and Ocean Plan requirements for the La Jolla Area of Special Biological Significance (ASBS) in the City of San Diego. Currently, Chollas Creek has a TMDL for dissolved copper, lead, and zinc with no known point sources, with the exception of the municipal separate storm sewer system (MS4). TMDLs are also being developed for San Diego Bay at the mouth of Chollas Creek, Switzer Creek, and Paleta Creek. Tecolote Creek is on the 2006 State Water Resources Control Board Section 303(d) list for cadmium, copper, lead, and zinc, and Mission Bay is on the 2006 State Water Resources Control Board Section 303(d) list for lead. The La Jolla ASBS has had copper concentrations in storm water runoff above the Ocean Plan criteria. Indirect and direct aerial deposition of metals is thought to be a contributor (to an unknown degree) to the pollutant load in this highly urbanized setting.

The second phase of this study is intended to help the City of San Diego further its understanding of the contribution of metals from aerial deposition both within the Pueblo San Diego Watershed and the La Jolla ASBS. The study results will provide information related to potential sources and therefore represents a Tier II Source Investigation Watershed Activity in accordance with the City's Strategic Plan for Watershed Activity Implementation (Strategic Plan). The study also provides baseline data for assessing future BMP effectiveness, such as the implementation of Phase I street sweeping programs (Tier II BMP), and Tier III BMP placement to assess these Phase I activities per the Strategic Plan. The data will also provide supporting evidence for needed legislative measures, such as reduction of copper in the brake pad manufacturing process as part of the Tier I Product Substitution Watershed Activity.

Aerial deposition rates of copper, zinc, and net deposition at the La Jolla sites were in the upper ranges of the deposition rates measured at all sites. Bromine, chlorine, and sodium deposition were highly correlated to ocean water with west, southwest, and south wind direction at LJS Drive, while copper deposition was highly correlated with east wind directions which correspond to transportation and residential land uses. At the La Jolla Parkway Site, copper deposition was highly correlated with southeast wind directions, while strontium deposition was highly correlated with north, northeast, east, and southeast wind directions corresponding to residential land use. Of particular interest is the relatively high median net deposition measured at the Scripps Institute of Oceanography (SIO) Pier Site, which is considered an additional reference site for copper, lead, and zinc measurements. The La Jolla Parkway and La Jolla Shores sites had the study's highest net deposition results with high variability. The Scripps Pier Site had the fourth highest mean net deposition of all sites (113 $mg/m^2/day$). Based on microscopic observation of deposition plates, it is likely that wind-blown sand from area beaches in the vicinity of the plates may be the reason for the elevated net deposition

rates observed. This hypothesis is also supported by correlation analysis linking net deposition to crustal and seawater elements at SIO Pier.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This study was conducted from September 2007 to August 2008 within the City of San Diego. The monitoring program included an annual dry deposition study, a wet deposition study, and a particle solubility study.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (specifically Zinc / Copper / Lead)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify metals as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the WMA, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness of this activity is not being assessed since it is a source identification and characterization study. This study will contribute to filling in pollutant source data gaps as identified above to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

TITLE: **City of San Diego Strategic Plan Implementation**
ID NUMBER: **MB-3008**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table 1 – Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Irrigation Hardware Giveaway and Cash for Plants Program	Smart Irrigation Control Incentive	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, Implementation, and assessment is anticipated to be

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
	Program				completed in FY2013. WMA: TBD.
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash	Pre-planning
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals	Sponsorship of the Brake Pad Partnership is in progress.
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment	Cancelled
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
	Filtration				
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Educatio n	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Educatio n	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Educatio n	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-	Low-Flow Storm Drain	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Pollutant Treatment System (1)	Inlet Multi-Pollutant Train				
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: **La Jolla ASBS Compliance Monitoring**
ID NUMBER: **MB-3009**

ACTIVITY IMPLEMENTATION

This study is designed to assess potential impacts to the ASBS from storm water runoff generated from the watershed and in compliance with the Regional Areas of Special Biological Significance (ASBS) Work Plan. The model provided in the report serves as an initial, predictive tool that can be built on in the future as additional data become available and can be used to test the effectiveness of best management practices (BMPs) that may be used to address impacts to the ASBS.

The goal of the ASBS program is to answer three primary questions; range of 'natural conditions' at reference locations, range of natural conditions compared to conditions at ASBS sites, and extent of impact in ASBS with and without discharges?

Results and Findings

Samples were collected before, during, and after three storm events and were analyzed for a suite of common water quality constituents. The results of the pre-storm and post-storm monitoring indicate that, for all three storm events, there were no exceedances of any Ocean Plan water quality objectives (WQOs), and there was no toxicity associated with any sample. Thus, water quality in the ocean receiving waters of the ASBS before and after storm events was similar to that defined in the Ocean Plan as protective of coastal marine resources. Since Ocean Plan WQOs are considered a conservative estimate of water quality in the ocean without the influence of storm water discharge, it is likely that they will be more stringent than concentrations that the State Board will use to define "natural water quality" since these standards will be based on concentrations observed at a reference site during a storm event. Concentrations of constituents from samples collected during pre-storm and post-storm monitoring as part of this study will be compared to those that comprise natural water quality when it is defined by the State Board.

A series of grab samples were collected over the course of three storm events in the ASBS ocean receiving waters at the same location as the pre-storm and post-storm samples (i.e., directly in front of the Avenida de la Playa storm drain outfall) and were analyzed for the same suite of water quality constituents. The results were compared to Ocean Plan WQOs. The results suggest that WQOs for some constituents were exceeded, but only in one or two samples at the peak of the storm. For metals, the instantaneous maxima for cadmium, copper, lead, and zinc were exceeded in a single sample during Storm 2. Concentrations of organophosphorus (OP) and pyrethroid pesticides were also detected during the peak of all three storms. Concentrations of OP pesticides were well below published toxicity benchmarks in the literature (Ocean Plan WQOs are not available for these constituents). However, concentrations of pyrethroids in the ocean receiving waters exceeded published LC50 values (the concentration at which 50% of the test organisms expire) for several marine species. The extent to which pyrethroids impact the marine biota in the ASBS is unclear, but the short pulse of elevated pyrethroid concentrations during all three storm events suggests that impacts are not widespread. Polycyclic aromatic hydrocarbons (PAHs) were detected in several samples over the

courses of all three storm events. Total PAH concentrations were variable, but in some cases exceeded Ocean Plan WQOs for the protection of human health, which are based on a 30-day mean rather than instantaneous maxima as measured in this study. Thus, the impact to marine biota from PAHs is difficult to assess. Chlorinated hydrocarbons and Polychlorinated biphenyls (PCBs) were not detected in any sample over the course of the three-storm study.

Purple sea urchins (native marine species) were exposed to seawater taken from post-storm samples after the three storm events. If toxicity was detected in the test organisms, toxicity investigation evaluations (TIEs) would have been conducted to identify the source of toxicity in the sample. However, the results showed that there was no toxicity associated with any of the post-storm samples, and it was therefore unnecessary to conduct TIEs. Concentrations of constituents taken over the course of the storm events were generally low relative to established WQOs and benchmarks established in the literature. In addition, concentrations surpassed WQOs for short periods of time centered around the peak of the storm event. These results suggest that runoff from the Avenida de la Playa MS4 outfall during the storm events monitored may have had little or no impact on marine biota in the ASBS.

In addition to the results outline above, a Storm Water Management Model was created for the La Jolla Shores Coastal Watershed based on the results of this study and related efforts to identify sources of pollutants in the watershed. The results of the modeling effort were in good agreement with loads estimated from three land use areas in the watershed and will be an available tool for assessing BMPs that may implemented in the future.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- La Jolla Shores ASBS Regional Compliance Monitoring

TIME SCHEDULE FOR IMPLEMENTATION

This report presents and summarizes data collected from sampling events that occurred during the 2008–2009 storm season.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment source investigation and ocean receiving water monitoring

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify sediment as a high

priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the WMA, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness of this activity is not being assessed as this not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2010 ANNUAL REPORT

Storm Water Department
City of San Diego

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THE CITY OF SAN DIEGO

RE: Statement of Certification for the Mission Bay and La Jolla Watershed Urban Runoff Management Program FY 2010 Annual Report

I certify under penalty of law that the Mission Bay and La Jolla Watershed Urban Runoff Management Program FY 2010 Annual Report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Transportation & Storm Water Department
Storm Water Division

1/11/11
Date

DIVERSITY BRINGS US ALL TOGETHER

Storm Water Department
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Appendix A: Activity Summary Sheets

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Executive Summary

The Mission Bay and La Jolla Watershed Urban Runoff Management Program (WURMP) Annual Report (Annual Report) describes the actions taken by the City of San Diego (City) in Fiscal Year (FY) 2010 (July 1, 2009, to June 30, 2010) to refine and implement the WURMP and the progress made towards improving both urban runoff quality and receiving water quality in the watershed management area (WMA).

SECTION 1 (INTRODUCTION) provides information about the National Pollutant Discharge Elimination System Municipal Stormwater Permit and updated Mission Bay and La Jolla WURMP. A discussion regarding Copermittee collaboration and land use map updates is included in this section.

SECTION 2 (WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT) is a summary of the assessment of the quality of the water and pollutant sources in the Mission Bay and La Jolla WMA based on data collected and analyzed from July 2009 through June 2010. To annually assess the water quality of the WMA, the Copermittees have compiled the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report) for 2009-2010. Based on the data and findings of the Annual Monitoring Report and the City's *Strategic Plan for Watershed Activity Implementation*, the City has focused its efforts on targeting the following Priority Water Quality Problems for the Mission Bay and La Jolla WMA. The problems bolded and italicized are considered High Priority Water Quality Problems.

- ***Bacteria/Pathogens***
- ***Heavy Metals***
- ***Nutrients***
- Pesticides
- Sediment

SECTION 3 (IMPLEMENTATION OF WATERSHED ACTIVITIES) details the water quality activities, education activities, public participation activities, and the collaborative land-use planning efforts that occurred during the reporting period regarding the implementation of the WURMP. The City continued the planning and design process for several activities, implemented source identification and special studies, continued to sponsor creek and bay trash removal, continued increased commercial/industrial facility inspections, initiated increased street sweeping, and implemented multiple education and public participation activities. All of these activities are anticipated to have a positive impact on water quality.

This section also includes the updated 5-Year Strategic Plan that outlines various activities, public participation, and watershed-based land use planning the City plans to implement over the permit cycle.

SECTION 4 (EFFECTIVENESS ASSESSMENT) provides an assessment of the overall effectiveness of the WURMP, including details on how the City achieved compliance for FY 2010. To evaluate its efforts at the activity and program levels, the City developed an assessment framework that emphasizes maximization of activity efficiency and obtainment of knowledge and data associated with activity efficiency. This process will help guide future management

decisions on how to best allocate the City's resources to obtain the maximum amount of pollutant load reduction for every dollar spent.

This section also details how the City's program is effective in helping protect and improve water quality.

An update on the TMDL progress is required in this section. No TMDLs are currently in effect for the Mission Bay and La Jolla WMA. However, the following water bodies in the WMA are currently listed as impaired per Section 303(d) of the Clean Water Act:

- Mission Bay: Bacteria indicators, lead, eutrophication
- Tecolote Creek: Bacteria indicators, cadmium, copper, lead, zinc, toxicity

Part of the WMA also drains to an Area of Special Biological Significance (ASBS) which is under pending special conditions.

SECTION 5 (CONCLUSIONS AND RECOMMENDATIONS) offers concluding remarks regarding the accomplishments of the City in FY 2010 in implementing the WURMP and recommendations for further refining the program. This section summarizes how the City achieved compliance with the NPDES Municipal Stormwater Permit and sets forth recommendations for improving the WURMP over time.

Overall, the annual report concludes that the City's efforts as part of the WURMP program have continued to be effective in protecting and improving water quality in the watershed. The City will refine and augment the Mission Bay and La Jolla WURMP as it increases its understanding of the complex issues affecting the WMA in a continued effort to enhance its effectiveness in protecting and improving water quality. Such refinement and augmentation are supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In addition, the report details recommendations in three key areas:

1. Refine and Improve Water Quality Activities through a watershed master planning approach;
2. Expand Knowledge of Pollutant Sources; and
3. Refine and Improve Effectiveness Assessment.

Section 1 Introduction

The NPDES Municipal Stormwater Permit, San Diego Region Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Mission Bay and La Jolla WMA to collaborate on the development and implementation of a WURMP. This Annual Report is divided into five sections that highlight the efforts of the City of San Diego, the only copermittee in the WMA, during the FY 2010 reporting period. The FY 2010 reporting period is from July 1, 2009 through June 30, 2010.

The updated *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) was submitted to the San Diego Regional Water Quality Control Board (Regional Board) and implementation began in March 2008. The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Mission Bay and La Jolla WMA. The program includes identifying and addressing High Priority Water Quality Problems in the WMA, and developing and implementing activities that include pollutant load reduction and pollutant source abatement (water quality activities); improvements in the public's knowledge, awareness, and behaviors (watershed education activities); as well as public participation and collaborative land use planning.

1.1 Copermittee Collaboration

The Mission Bay and La Jolla WMA is fully within the City's jurisdiction; therefore, the City is the only Copermittee within the WMA. However, significant military presence is located in the eastern part of the WMA as well as the University of California, San Diego (UCSD) in La Jolla. The City works collaboratively with UCSD, which does operates under a separate Permit, on urban runoff and ASBS issues.

1.2 Watershed Map Updates

No updates to the watershed map are necessary this reporting period.

Section 2 Water Quality and Pollutant Source Assessment

This section provides the updated assessment and analysis of the WMA's current and past applicable water quality data, reports, analyses, and other information, including the identification of the WMA's water quality problems and High Priority Water Quality Problems during the reporting period. This section also identifies the likely sources, pollutant discharges, and/or factors causing the High Priority Water Quality Problems within the WMA.

2.1 Water Quality Assessment

The Mission Bay and La Jolla WMA is located entirely within the City's jurisdiction and is the smallest and most densely populated in San Diego County. The three largest hydrologic areas (HAs) include: Scripps, Miramar and Tecolote. The Scripps HA drains directly to the Pacific Ocean into an ASBS. The Miramar and Tecolote HAs flow into Rose and Tecolote Creeks which discharge into Mission Bay. Land use is classified primarily as open space / parks and recreation (26%), residential (26%), and transportation (16%). The NPDES Permit requires the City to identify High Priority Water Quality Problems in the WMA and implement activities to address them. To allow time for implementing these activities, the selected High Priority Water Quality Problems are set for the current Permit unless there is sufficient justification to modify them.

2.1.1 Water Quality Problems

The High Priority Water Quality Problems were identified in the FY 2008 Mission Bay and La Jolla WURMP using the 2006 State Water Resources Control Board (SWRCB) Section 303(d) Listings (Table 2-1) along with the results from the Baseline Long-Term Effectiveness Assessment (BLTEA) of water quality data from 2001-2006 (Table 2-2). The High Priority Water Quality Problems were determined to be heavy metals, nutrients, and bacteria/pathogens. Other priority water quality problems include pesticides and sediments.

Table 2-1. Mission Bay and La Jolla WMA Waterbodies on the 2006 SWRCB Section 303(d) List

Waterbody Name	HA	HA No.	Pollutant/Stressor	TMDL Status
Mission Bay Shoreline	Scripps	906.30	Indicator bacteria (added by USEPA, 2006)	**Approved by SWRCB, pending Office of Administrative Law approval.**
Pacific Ocean Shoreline (3.9 miles of the Children's Pool Beach)	Scripps	906.30	Indicator bacteria	**Not developed**
Mission Bay (mouth of Rose Creek)	Miramar	906.40	Eutrophic and lead	**Not developed**
Mission Bay (mouth of Tecolote Creek)	Tecolote	906.50	Eutrophic and lead	**Not developed**
Tecolote Creek	Tecolote	906.50	Indicator bacteria, cadmium, copper, lead, toxicity, zinc,	**Bacteria TMDL approved by SWRCB, pending Office of**

Waterbody Name	HA	HA No.	Pollutant/Stressor	TMDL Status
			phosphorus, and turbidity	**Administrative Law approval.**
TMDL – total maximum daily load Source: SWRCB, 2006.				

Table 2-2. Mission Bay and La Jolla WMA BLTEA Water Quality Priority Ratings

Watersheds/ Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Mission Bay WMA	**100%**	***A***	***A***	***D***	***D***	***B***	***D***	***A***	***B***	***A***	***D***	***A***
Scripps HA (906.30)	15%	*C*	*D*	*D*	*D*	*B*	*D*	*A*	*B*	*A*	*D*	*D*
Miramar HA (906.4)	64%	*A*	*A*	*D*	*D*	*B*	*D*	*A*	*B*	*A*	*D*	*A*
Tecolote HA (906.5)	21%	*A*	*A*	*D*	*D*	*A*	*C*	*D*	*B*	*A*	*A*	*A*
2006–2009 High Frequency of Occurrence COCs (from Integrated WMA Assessment)												
2006–2007 High[1] Frequency of Occurrence Ratings and COC	Wet Weather					♦♦♦ Turbidity				♦♦♦ Total coliform Fecal coliform	Very Poor IBI	No
2007–2008 High[1] Frequency of Occurrence Ratings and COC	Wet Weather					♦♦♦ Turbidity				♦♦♦ Total coliform Fecal coliform	Very Poor IBI	No
2008–2009 High[1] Frequency of Occurrence Ratings and COC	Ambient Weather							♦♦♦ TN			Very Poor IBI	NA
	Wet Weather					♦♦♦ Turbidity	♦♦♦ Bifenthrin			♦♦♦ Total coliform Fecal Coliform Enterococci		No

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison.
2. NA – Not assessed

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = BLTEA Priority Level (Highest – A to Lowest – D)*

High-Priority Level Based on Data

2006 SWRCB Section 303d listing

The 2008-2010 303(d) list is currently under review with the EPA and should be available for next year's water quality assessment. The LTEA will be conducted for the five-year cycle with water quality data collected from 2007-2012. Water quality monitoring is ongoing for the Permit under the Receiving Water and Urban Runoff Monitoring Program. The 2009-2010 water quality monitoring activities conducted in the Mission Bay and La Jolla WMA are provided in Table 2-3.

Table 2-3. 2009–2010 Mission Bay and La Jolla WMA Monitoring Program Activities

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**5**
Ambient Monitoring	Water chemistry, bacteria, toxicity, and trash	1-MLS, 2-temporary watershed assessment station (TWAS), and 1-Storm water Monitoring Coalition (SMC) Sites
Rapid Stream Bioassessment and SMC Regional Monitoring Participation	Benthic macroinvertebrates, periphyton, and physical habitat	1-MLS, 2-TWAS, and 1-SMC Sites
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	1-MLS and 2-TWAS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and total organic carbon (TOC)	1-MLS and 2-TWAS
Urban Runoff Monitoring		**300**
Jurisdictional Dry Weather Monitoring	Field, analytical chemistry, and trash	111
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	13 randomly selected outfalls visited, 10 sites dry, and 3 flowing sites sampled
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	6 randomly selected outfalls
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, and bacteria	24
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	1 site
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	2 sites (from residential only areas of regionally applicable land uses)
Coastal Storm Drain Monitoring (CSDM) Program	Coastal Outfall and Receiving Waters	143

2.1.2 Receiving Waters Condition Assessment Description

During the 2009–2010 Monitoring Season, data were collected and assessed in receiving waters in San Diego County during both ambient weather (i.e., dry weather) and wet weather conditions. Ambient weather conditions in the receiving waters were assessed using data collected as part of compliance monitoring and the SMC Regional Monitoring Program. The program uses the following three major components of the assessment triad to evaluate the receiving waters: water quality, toxicity, and rapid stream bioassessment. The water quality and toxicity results were evaluated by comparison to benchmarks and magnitudes of exceedance. The rapid stream bioassessment uses the following four major components: macroinvertebrate community structure, attached algae (i.e., periphyton) community metrics, physical habitat, and riparian condition.

The wet weather evaluation of the receiving waters in 2009–2010 also included several components. Wet weather monitoring at the MLS was conducted during two storm events, and the water quality and toxicity data were evaluated by comparison to benchmarks. A trend

assessment was conducted for all wet weather data that have been collected at the Tecolote Creek MLS, including the 2009–2010 data set. Samples of sediment were collected at the MLS and TWAS following the first storm event and were analyzed for synthetic pyrethroids. The data were compared to toxicity benchmarks for pyrethroids established in the literature.

2.1.3 Urban Runoff and Discharges Water Quality Assessment Description

The Jurisdictional Dry Weather Monitoring (DWM) Program was conducted in 2009 to fulfill Order No. R9-2007-0001, which requires each Copermittee to conduct a dry weather field screening and analytical monitoring program. The goal of the program is to detect and eliminate illegal connection and illicit discharges (ICIDs) to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow-up investigations. The data are also useful in assessing the spatial distribution of the constituents analyzed. The MS4 Outfall Monitoring Program incorporates both targeted sample locations and randomly selected sample locations during wet and dry weather conditions to characterize the relative contribution of constituents to the receiving waters. The Regional Source Identification Program was conducted in single family residential land use drainages within the San Luis Rey and Los Peñasquitos WMAs. The Coastal Monitoring sub-workgroup prepares an annual monitoring report on coastal outfall monitoring, which is in progress.

2.1.4 Water Quality Assessment Conclusions

The assessment of the watershed during both ambient and wet weather conditions is presented in an integrated manner to provide an overall assessment of the WMA and summarize the overall findings. The integrated assessment also identifies which constituents of concern (COCs) overlap between receiving waters and urban runoff. The WMA assessment methods were applied to the data from the monitoring programs to determine the COCs and to develop a frequency of occurrence ranking of high, medium, or low. The frequency of occurrence ranking was determined using the overall percentage of all samples analyzed that exceeded water quality benchmarks (including all monitoring years' data). It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as data become available in future years. Integrated watershed assessments results are presented by MLS and TWAS in Table 2-4, Table 2-5, and Table 2-6. See Figure 2-1 for the sampling locations.

Figure 2-1. TWAS and MLS Monitoring Station Locations

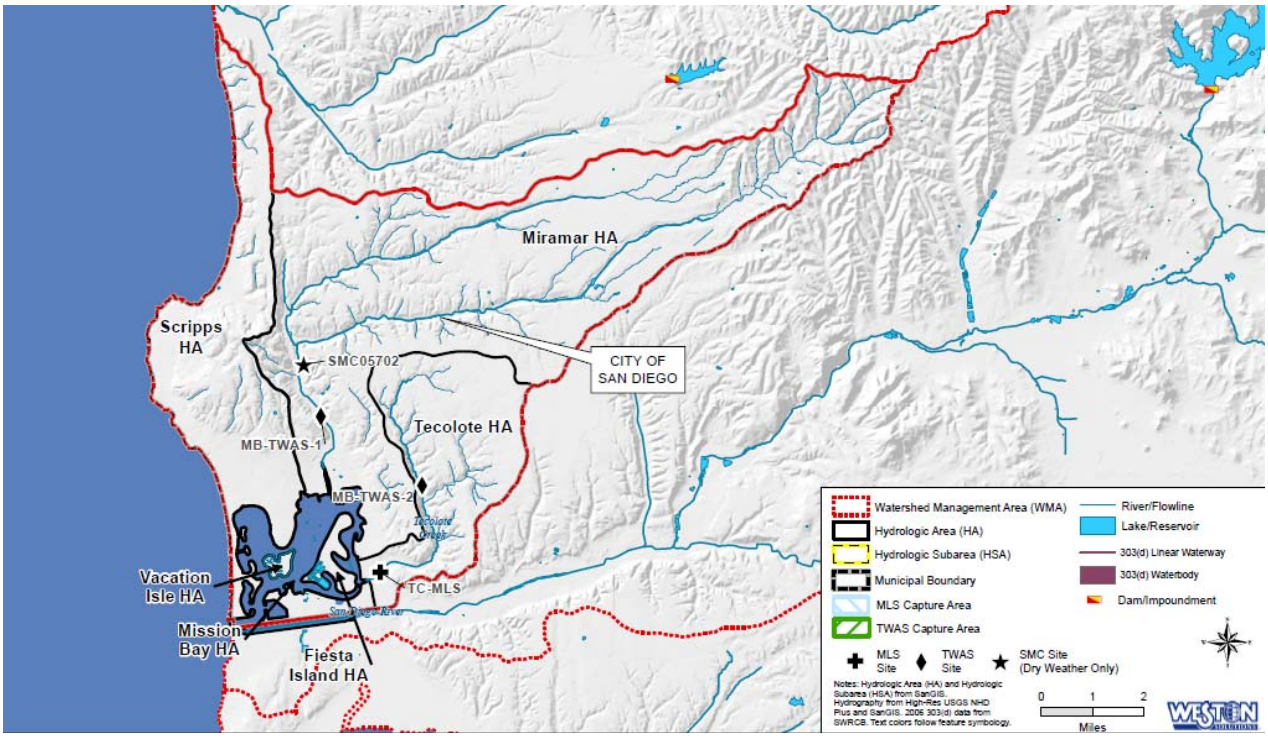

Table 2-4. MB-TWAS-1 (Rose Creek) Drainage Area Assessment Findings

Mission Bay TWAS-1 (Rose Creek in Miramar HA)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Urban Runoff Monitoring (MS4 Outfall and DWM)	• Chemistry – Total Phosphorus, Total Nitrogen, TDS • Bacteria – Enterococci	• Chemistry – TDS, TSS • Bacteria – Fecal Coliform
		Regional Residential Land Use Source ID Study • TSS, Turbidity, Dissolved Copper (site specific) • Fecal Coliform • Synthetic Pyrethroids – Bifenthrin, Cyfluthrin, L-Cyhalothrin, Permethrin

Mission Bay TWAS-1 (Rose Creek in Miramar HA)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Receiving Water Monitoring (MLS, TWAS, and SMC)	• Chemistry – Chloride, Sulfate, TDS • Bacteria – None • Biology – Very Poor IBI • Toxicity – *C. dubia* acute, chronic, reproduction, S. capricornutum (Med) • Synthetic Pyrethroids Assessment – Bifenthrin (sediment)	• Chemistry – Turbidity, Bifenthrin, TDS (Med), TSS (Med), BOD (Med), Permethrin (Med) • Bacteria – Fecal Coliform • Toxicity – None

*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data.

1: Constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

Med - Medium Priority Constituent

Table 2-5. TC-MLS (Tecolote Creek) Drainage Area Assessment Findings

Tecolote Creek MLS (Tecolote HA)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Urban Runoff Monitoring (MS4 Outfall and DWM)	• Chemistry – Total Phosphorus, Total Nitrogen (Nitrate), TDS • Bacteria – Enterococci	• Chemistry – None • Bacteria – Fecal Coliform
		Regional Residential Land Use Source ID Study • TSS, Turbidity, Dissolved Copper (site specific) • Fecal Coliform • Synthetic Pyrethroids – Bifenthrin, Cyfluthrin, L-Cyhalothrin, Permethrin

Tecolote Creek MLS (Tecolote HA)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Receiving Water Monitoring (MLS, TWAS, and SMC)	• Chemistry – Total Phosphorus (Med) • Bacteria – None • Biology – Very Poor IBI • Toxicity – *C. dubia* reproduction • Synthetic Pyrethroids Assessment – Bifenthrin (sediment)	• Chemistry – Turbidity, Bifenthrin, TDS, TSS (Med), MBAS (Med), Permethrin (Med) • Bacteria – Fecal Coliform (Med) • Toxicity – C. dubia (acute, chronic, and reproductive) (Med)

MLS Trends*		
Increasing	Total Hardness	5
Decreasing	Ammonia, TSS, Diazinon	

*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data.

1: Constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

Med - Medium Priority Constituent

Table 2-6. MB-TWAS-2 (Tecolote Creek) Drainage Area Assessment Findings

Mission Bay TWAS-2 (Tecolote Creek)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Urban Runoff Monitoring (MS4 Outfall and DWM)	• Chemistry – Total Phosphorus, Total Nitrogen (Med) • Bacteria – Enterococci	• Chemistry – No Samples in This Drainage Area • Bacteria – No Samples in This Drainage Area
		Regional Residential Land Use Source ID Study • TSS, Turbidity, Dissolved Copper (site specific) • Fecal Coliform • Synthetic Pyrethroids – Bifenthrin, Cyfluthrin, L-Cyhalothrin, Permethrin

Mission Bay TWAS-2 (Tecolote Creek)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Receiving Water Monitoring (MLS, TWAS, and SMC)	• Chemistry – TDS, Selenium (Med) • Bacteria – Enterococci, Fecal Coliform • Biology – Very Poor IBI • Toxicity – *C. dubia* acute, chronic, reproduction, S. capricornutum • Synthetic Pyrethroids Assessment – Below benchmarks	• Chemistry – TSS, Turbidity, Bifenthrin, TDS, Malathion (Med), BOD (Med), Permethrin (Med) • Bacteria – Fecal Coliform • Toxicity – *C. dubia* acute, chronic, reproduction

*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data.

1: Constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

Med - Medium Priority Constituent

The triad decision matrix incorporates the chemistry data from dry weather and wet weather monitoring events with the toxicity and bioassessment results to provide indications of pollutant loading, potential impacts to organisms, and the ecological health of the watershed. The triad assessment presents possible conclusions regarding the watershed and provides possible actions or decisions for future monitoring and assessment. Table 2-7 and Table 2-8 summarize these results.

Table 2-7. Mission Bay and La Jolla WMA Dry Weather Triad Decision Matrix Results

Site	Chemistry	Toxicity	Bioassessment	Action
MB-TWAS-1 (Rose Creek)	No persistent exceedances of water quality objectives.	Evidence of persistent toxicity (*C. Dubia* acute, chronic survival, and reproduction).	Indications of alteration.	Toxicity identification evaluation (TIE) to identify contaminants of concern NOT recommended because High TDS (6,200 mg/L avg) is the likely issue. Address upstream sources as a high priority. Address potential role of urban runoff causing physical habitat disturbance.
TC-MLS (Upstream of Diversion)	No persistent exceedances of water quality objectives.	Evidence of persistent toxicity (*S. Capricornutum* growth and *C. Dubia* reproduction).	Indications of alteration.	Toxicity identification evaluation (TIE) to identify contaminants of concern NOT recommended because High TDS (3,300 mg/L avg) is the likely issue. No TDS criteria in Basin Plan for Tecolote Creek) Address upstream sources as a high priority. Address potential role of urban runoff

				causing physical habitat disturbance.
MB-TWAS-2 (Tecolote Creek at Mt. Acadia Blvd.)	No persistent exceedances of water quality objectives.	Evidence of persistent toxicity (*S. Capricornutum* growth and *C. Dubia* chronic survival and reproduction).	Indications of alteration.	Toxicity identification evaluation (TIE) to identify contaminants of concern NOT recommended because High TDS (4,300 mg/L avg) is the likely issue. No TDS criteria in Basin Plan for Tecolote Creek) Address upstream sources as a high priority. Address potential role of urban runoff causing physical habitat disturbance.

Table 2-8. Mission Bay and La Jolla WMA Wet Weather Triad Decision Matrix Results

Site	Chemistry	Toxicity	Bioassessment	Action
MB-TWAS-1 (Rose Creek)	Persistent exceedance of water quality objectives (Turbidity, Bifenthrin)	No evidence of persistent toxicity.	Indications of alteration.	Address upstream source as a high priority.
TC-MLS (Tecolote Creek)	Persistent exceedance of water quality objectives (Turbidity, Bifenthrin)	No evidence of persistent toxicity.	Indications of alteration.	Address upstream source as a high priority.
MB-TWAS-2 (Tecolote Creek at Mt. Acadia Blvd.)	Persistent exceedance of water quality objectives (TSS, Turbidity, Bifenthrin)	No evidence of persistent toxicity.	Indications of alteration.	Address upstream source as a high priority.

Conclusions based on the results of monitoring in the watershed are as follows:

Chemistry – No persistent toxic chemicals were identified during ambient conditions. However, selenium at MB-TWAS-2 in Tecolote Creek was measured above the benchmark during the March 17, 2010 ambient event. Chloride and sulfate were measured above the benchmark at one location in Rose Creek as part of the SMC Regional Bioassessment Monitoring. During wet weather conditions, turbidity and bifenthrin were identified as high priority wet weather constituents at sites MB-TWAS-1, TC-MLS, and MB-TWAS-2. TSS was also identified as a high priority wet weather constituent at MB-TWAS-2. Medium priority constituents were identified at sites MB-TWAS-1 (TSS, BOD, and Permethrin), TC-MLS (TSS, MBAS, and

Permethrin), and MB-TWAS-2 (malathion, BOD, and permethrin). At the TC-MLS site, decreasing trends of ammonia, TSS, and diazinon were identified and increasing trends of total hardness.

Bacteria – Fecal coliform was identified as a high priority constituent during wet weather at MBTWAS-1 and MB-TWAS-2 and a medium priority constituent at TC-MLS. During ambient conditions, enterococci were identified as a high priority constituent, and fecal coliform was identified as a medium priority constituent at MB-TWAS-2. Bacteria results were below benchmarks at MB-TWAS-1 and TC-MLS. Dry weather flows are diverted to the sanitary sewer, which is located just east of Morena Blvd. and upstream of the TC-MLS site. Enterococci were identified as a high priority MS4 outfall constituent in all drainages areas of the MLS and TWAS, whereas fecal coliform was a medium priority from MS4 samples in MB-TWAS-1. Wet weather results from the MS4 also confirmed fecal coliform as a high priority in the MB-TWAS-1 drainage area and a medium priority in the TC-MLS drainage area. Extensive bacterial source investigations have been conducted by the City of San Diego in the Tecolote Creek HA (City of San Diego, 2008; City of San Diego, 2009; and City of San Diego, 2010). These studies have provided valuable insight into the potential sources, including natural sources, regrowth, and anthropogenic activities that may contribute to bacteria water quality problems.

Toxicity – Persistent wet weather toxicity was not observed for any site in the Mission Bay and La Jolla WMA. However, toxicity to *C. dubia* was identified as a persistent ambient weather issue at all sites in the Mission Bay and La Jolla WMA. Toxicity to *S. capricornutum* was also identified as a persistent issue during ambient conditions at TC-MLS and MB-TWAS-2. Both *C. dubia* and *S. capricornutum* are known to have a low tolerance to high TDS. *C. dubia* has a low tolerance for elevated TDS and ion imbalances (Mount et al., 1997). Although the triad recommendations suggest TIEs may be of use, the level of toxicity observed did not warrant conducting a TIE in light of the high TDS values observed.

Biology – Bioassessment IBI ratings were Very Poor at all monitoring stations. Similarly,observed to expected ratio (O/E) results suggested impaired conditions and were in agreement with IBI scores. California Rapid Assessment Method (CRAM) scores were mostly in the moderate range, with only one site in the Miramar HA having a high (good) score (SMC05702). These results suggest that the physical habitat is generally good at this location and other factors may be influencing the poor biological scores (e.g., TDS and ion imbalance).

TDS – Elevated TDS results were recorded at all monitoring stations during both ambient and wet weather conditions. Although there is no basin plan standard for TDS in Tecolote Creek, the elevated concentrations observed are a potential factor influencing poor bioassessment results. However, further study is needed to support this theory. The SMC ambient monitoring program results suggest that elevated TDS, as measured by high conductivity, is a likely cause of observed toxicity to *C. dubia* during ambient monitoring in the region.

Nutrients – During ambient monitoring, total and dissolved phosphorus were identified as medium priority constituents at TC-MLS. Nutrient scores were below the benchmarks at the MB-TWAS-1 and MB-TWAS-2 sites. Although wet weather discharges provide elevated loads of nutrients, the nutrient concentrations were below the wet weather benchmarks. MS4 outfall

monitoring suggests a potential link between ambient receiving water concentrations and MS4 Outfall discharges. Nitrate in groundwater seeps has been documented as a known source in the San Diego Region (SDCRC, 2010). Nutrients are known to contribute to eutrophic conditions in low flowing waters, and several listings are noted in the Mission Bay areas near the mouths of Rose Creek and Tecolote Creek.

Watershed monitoring results were compared to the 2006 303(d) listings in the watershed to provide an assessment of current conditions (Table 2-9).

Table 2-9. Mission Bay and La Jolla WMA Assessment Conclusions in Relation to 2006 Section 303(d) Listings

Waterbody Name	HA	HA No.	303(d) Listed Pollutant/Stressor	Monitoring Assessment Conclusions
Mission Bay Shoreline	Scripps	906.30	Indicator bacteria (added by USEPA, 2006)	CSDM Program addresses coastal discharges.
Pacific Ocean Shoreline (3.9 miles of the Children's Pool Beach area)	Scripps	906.30	Indicator bacteria	CSDM Program addresses coastal discharges.
Mission Bay (mouth of Rose Creek)	Miramar	906.40	Eutrophic and lead	Nutrient concentrations were not identified as high priority constituents in the receiving waters at MB-TWAS-1. However, ambient nutrient concentrations from MS4 Outfalls were identified as high priority constituents. Lead was below the benchmarks during all monitoring. Studies are needed to further assess the watershed inputs and area of impairment.
Mission Bay (mouth of Tecolote Creek)	Tecolote	906.50	Eutrophic and lead	Nutrient concentrations were not identified as high priority constituents in the receiving waters at TC-MLS. However, ambient nutrient concentrations from MS4 Outfalls were identified as high priority constituents. Ambient flows are diverted to the sanitary sewer in Tecolote Creek. Lead was below the benchmarks during all monitoring. Studies are needed to further assess the watershed inputs and area of impairment.
Tecolote Creek	Tecolote	906.50	Indicator bacteria, cadmium, copper, lead, toxicity, zinc, phosphorus, and turbidity	Indicator bacteria have been extensively investigated as part of a three-phase study by the City of San Diego. Monitoring results for metals were below the California Toxics Rule (CTR) benchmarks. Although toxicity is a persistent concern, it is likely associated with the elevated TDS. *C. dubia* is not tolerant of elevated TDS. Because wet weather toxicity was not identified as a

Waterbody Name	HA	HA No.	303(d) Listed Pollutant/Stressor	Monitoring Assessment Conclusions
				persistent issue and dry weather flows are diverted to the sanitary sewer, this listing may warrant further review of the impairment area and organisms selected.

Listing Source: SWRCB, 2006.

Monitoring Recommendations

The recommendations for this WMA are to continue with the requirements of the Permit, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. The TWAS locations within the Mission Bay and La Jolla WMA during the 2009–2010 Monitoring Season provided valuable information regarding conditions in other areas of the WMA. Future monitoring locations may be useful to assess specific land use activities or other tributary areas. Specific recommendations for the Mission Bay and La Jolla WMA are based on the triad assessment in the Permit. Based on wet weather conditions, addressing upstream sources of turbidity is recommended. For ambient conditions, evaluating sources of elevated TDS and other ionic concentrations may provide valuable information for the assessment of toxicity tests and bioassessment scores. In addition, it is recommended to address the potential role of urban runoff in causing physical habitat disturbance.

2.2 Pollutant Source Assessment

The Permit requires the City to identify the likely sources of the pollutants responsible for the High Priority Water Quality Problems. Table 2-4 below lists the likely pollutant sources adapted from the BLTEA for each of the High Priority Water Quality Problems identified above.

Table 2-10. Likely Sources of High Priority Water Quality Problems in Mission Bay and La Jolla WMA

High Priority Water Quality Problem	Likely Sources
Bacteria/Pathogens	Eating/drinking establishments; animal facilities; landscaping (e.g., parks, golf courses, cemeteries, etc.); publicly owned treatment works (water and wastewater); home and garden care activities, waste disposal
Heavy Metals	Auto mechanical repair, maintenance, fueling, or cleaning; automobile and other vehicle body repair and painting; botanical or zoological gardens and nurseries/greenhouses; fabricated metal; motor freight; boat mechanical repair, maintenance, fueling, or cleaning; roads, streets, highways, and parking facilities
Nutrients	Animal facilities; botanical or zoological gardens and nurseries/greenhouses; landscaping (e.g., parks, golf courses, cemeteries, etc.); pest control services; home and garden care activities, waste disposal; parks and recreation facilities

Additionally, during the 2009-2010 Monitoring Season, the Regional Source Identification Program was conducted in single family residential land use drainages within the San Luis Rey and Los Peñasquitos WMAs. Results suggest that single family residential land uses are likely contributors of the following constituents during wet weather events:

- TSS, Turbidity, Dissolved Copper
- Bifenthrin, Cyfluthrin, L-Cyhalothrin, Permethrin
- Fecal Coliforms

Other Activities

The City has conducted additional monitoring and special studies to help identify sources of pollutants, including ASBS Compliance Monitoring, Tecolote Creek Bioassessment Monitoring, Tecolote Creek Microbial Source Tracking Study, and the Aerial Deposition Study that was used to support the proposed Brake Pad Senate Bill 346 for Source Control of Copper Water Pollutants.

The ASBS Compliance Monitoring for the Regional ASBS Work Plan was designed to assess potential impacts to the ASBS from storm water runoff generated from the watershed. The watershed model created serves as an initial, predictive tool that can be improved in the future as additional data become available and used to test the effectiveness of best management practices (BMPs) for addressing impacts to the ASBS. The results of the pre-storm and post-storm monitoring indicated that, for three storm events, there were no exceedances of any Ocean Plan Water Quality Objectives, and there was no toxicity associated with any sample. Constituent concentrations in compliance samples and reference samples were generally similar. Thus, water quality in the ocean receiving waters of the ASBS before and after storm events was similar to that defined in the Ocean Plan as protective of coastal marine resources. Grab samples were collected from the five major storm drain outfalls in the La Jolla Shores Coastal Watershed during three storm events. The results indicated that most metal concentrations were below or

only slightly above California Ocean Plan WQOs. Synthetic pyrethroids were detected in all core discharge samples at concentrations greater than published LC_{50} values (concentration in water having 50% chance of causing death) for marine invertebrates. Aside from Malathion, no other OP pesticides were detected and PCB concentrations were below reporting limits. PAH compounds were detected in all storm drain samples, but were more than two orders of magnitude below the most conservative LC_{50} values found in the literature for marine invertebrates. Bacteria samples collected from each of the five monitored storm drain outfalls during a storm event were above California Ocean Plan WQOs for total coliforms, fecal coliforms, and enterococci. To determine potential sources of toxicity to endemic marine organisms, purple sea urchins were exposed to seawater taken from post-storm samples following three storm events and blue mussels were exposed to storm drain effluent collected during two storm events for this monitoring element. No toxicity was detected in sea urchin exposures to post-storm seawater samples. Bivalve development tests indicated toxicity associated with normal shell development in bivalve larvae exposures to storm water from three storm drains during the February 27, 2010 storm event and five storm drains during the April 1, 2010 storm event. TIE results were site-specific and suggested more than one potential source of toxicity. Dry weather seep samples did not have detectable levels of PAHs, chlorinated herbicides, chlorinated pesticides, OP pesticides, Aroclors, or synthetic pyrethroids. Although all of the seep samples did contain detectable concentrations of heavy metals, only selenium in Seep 4 was measured above the California Ocean Plan WQO. Seep 4 appears to be a natural groundwater seep and may pick up selenium as it flows over selenium-rich deposits in natural geologic formations. Other seeps that are close to Seep 4 appear to receive most of their flow as a result of surface runoff from storm drain outfalls. Thus, except for selenium, which may leach naturally from local geological formations, seep discharges appear to be predominantly free of contamination and would not be expected to impact water quality within the ASBS.

Historical bioassessment studies in Tecolote Creek have shown consistently impaired benthic macro-invertebrate (BMI) communities and there are several constituents on the State Water Resources Control Board (State Board) 303(d) list of impaired waterbodies. The study objectives were three fold to comprehensively document biological conditions and community structure of BMI throughout the Tecolote Creek Watershed and its tributaries; assess possible stressors by analyzing the physical habitat conditions as well as water quality constituents that could prevent the establishment of sensitive BMI taxa; and determine the most important limiting factors for achieving potential biological objectives. Analysis of seven bioassessment sites in the Tecolote Watershed indicated that there was biological impairment throughout the watershed. Physical habitat ratings were good to very good for BMI colonization. TDS (Total Dissolved Solids) exceeded the WQOs (as described in the Basin Plan) throughout the watershed. Specific conductivity and salinity were also very high at six of the seven sites (relative to reference conditions in San Diego County). The most important limiting factors for achieving potential biological objectives were high levels of TDS, specific conductivity, and salinity. Further monitoring recommendations include determining the source(s) of elevated TDS, specific conductivity, and salinity in the Tecolote Creek Watershed.

The Tecolote Creek Microbial Source Tracking Study was conducted from 2007 through 2010 in three phases throughout the watershed to investigate and identify bacterial sources, origins, and loads in the Tecolote Creek Watershed and to assess and characterize specific priority activity

contributions. The results provide background for the City to address bacterial load and concentration reduction strategies to comply with the *Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Bacterial Project I – Twenty Beaches and Creeks in San Diego Region, Including Tecolote Creek* (Bacterial Project I TMDL) recently adopted by the San Diego Regional Water Quality Control Board (Regional Board). The monitoring results provide a basis to assess the land uses and related activities that contribute bacteria to the Tecolote Creek Watershed. An evaluation of all historical data indicated that a number of State Board §303(d)-listed pollutants could be removed from the list based on the number of exceedances observed. The results indicate that dissolved cadmium, copper, lead, and zinc are eligible for delisting from the State Board §303(d) list. However total selenium, bacteria, nutrients, and turbidity did not meet delisting requirements. Sector prioritization, undertaken both through the BLTEA and Strategic Planning process, suggested that two sectors presented the highest threat to water quality with a higher presence of potential pollutant sources through specific land use activities. Assessments of pollutant loads during both dry weather and wet weather indicated that these two sectors discharge higher loads of pollutants when compared with other sectors. During dry weather, one sector was found to contribute the highest loads of copper, zinc, and total dissolved solids (TDS). During wet weather, the other sector was found to contribute some of the highest loads of bacteria, zinc, lead, and total suspended solids (TSS). Management of land use activities in these sectors should be the focus of any comprehensive load reduction strategies. Wet weather bacteria loads from individual land uses indicated that there were no significant differences between different land uses with flows merging and combining throughout drainage areas. There was some indication that higher loads were attributable to transportation corridors, commercial areas, and industrial land uses. Dry weather bacteria loads were higher in residential and commercial areas with specific activities identified, particularly poorly maintained dumpsters and catch basins. Over-irrigation was a key transport mechanism that was prominent in commercial and industrial areas. A comprehensive assessment of water quality throughout Tecolote Creek was undertaken to assess the presence of human fecal contamination. The assessment was performed using human-specific *Bacteroides* and quantitative polymerase chain reaction (Q-PCR). During dry weather, five positive samples were obtained. Each follow-up investigation failed to locate a point source and in every instance there was evidence of transient human activity. During wet weather, only one sample (of a total of 37 samples collected during nine storms) was found to be positive for *Bacteroides*. This sample was collected during the early phase of the storm flows in an area known to be a transient area. A number of investigations were undertaken in Tecolote Creek to assess the presence of environmental species of fecal indicator bacteria. Ponds were not found to be a significant reservoir for environmental indicator species. However, sediments and biofilms within the creek and MS4 system were found to be significant bacterial reservoirs. Biofilms on the walls of the MS4 system in particular were found to grow rapidly and contain high numbers of enterococci. Speciation of these enterococci determined that the origins were most likely environmental rather than fecal. Further investigation determined that the storm water, with high numbers of enterococci of fecal origin, was the primary inoculation mechanism, and that biofilms matured rapidly into complex communities with a variety of species present. The high flows generated during wet weather caused significant biofilm sloughing. The impact of biofilms on wet weather loads of indicator bacteria into receiving waters appeared to be significant. Load and concentration reduction strategies are currently being developed through the Tecolote Creek Implementation Framework.

An Aerial Deposition Study was conducted to evaluate the sources of copper, lead and zinc to identify possible sources for heavy metals which are a high priority water quality problem. Copper, lead, and zinc concentrations were higher in commercial and industrial land uses compared with residential land uses. Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc. Samples collected from metal rooftops in poor condition (e.g., deteriorating or rust evident) were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area. Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and resuspended dust) and localized parcel-based sources play a role in metals deposition in the watershed. The investigations determined that copper from automotive brake pads was a major contributor of dissolved copper to San Diego waterways. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments through the California Stormwater Quality Association to achieve true source control by reducing copper at its source. It was determined that the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads. During this reporting period, the City assisted with drafting the legislation, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

Section 3 Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Municipal Permit. The Watershed Activity Summary Sheets for all watershed water quality and education activities implemented during this reporting period are included in Appendix A.

3.1 Watershed Water Quality Activities

Table 3-1 presents the 24 water quality activities and special studies reported on in FY 2010, including eight activities in implementation that are actively reducing loads and/or abating sources in FY2010. Refer to Appendix A for details regarding an activity's anticipated implementation schedule. Progress on each watershed activity has been described in the standardized template and identifies what was accomplished during the reporting period and how it pertains to High Priority Water Quality Problems.

Table 3-1. Watershed Water Quality Activities

ID Number	Activity	Pollutant Categories										Activity Type				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X		
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X		
MB-1005	Mission Bay Targeted Automotive Facility Inspections				X								X	X		X
MB-1006	~~Targeted Landscaping Related Facility Inspections~~** Geographically Based Business Property and Facility Inspections	X			X	X							X	X		X
MB-1010	Aggressive Street Sweeping				X						X		X	X		
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect Project	X			X	X	X		X	X				X		
MB-1012	Osler Street Hydrodynamic Separator Installation Project	X								X	X			X		
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X			X	X								X		
MB-1014	Kellogg Park Green Lot Retrofit Project	X			X	X								X		
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X		
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X												X		
MB-1017	Infiltration BMP Retrofit #2	X			X	X								X		
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X			X	X								X		
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Diversion	X			X	X								X		
MB-1021	Upgrades	X												X	X	
MB-1022	Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X		
MB-1023	La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X		
MB-1024	Median Sweeping Pilot Study				X									X		
MB-1025	Pet Waste Bag Dispenser Program	X												X		
MB-1026	Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials				X										X	
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.														
MB-3009	La Jolla Shores ASBS Compliance Monitoring											X				
MB-3010	Bioassessment Monitoring of the Tecolote Creek Watershed											X				
MB-3011	Tecolote Creek Microbial Source Tracking Study	X										X				

* High Priority Pollutants

** MB-1004, MB-1006, and MB-1009 have been combined into one activitiy.

Activity Sheet ID Numbers highlighted in red are newly reported activities

3.2 Watershed Education Activities

The City recognizes educational programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Table 3-2 below lists the nine education activities initiated or implemented in FY 2010, including six activities that have actively increased awareness and/or changed behaviors of the public during the reporting period. Refer to Appendix A for details regarding an activity's anticipated implementation schedule.

Think Blue is the City's storm water education program, and is managed by the Pollution Prevention Division's Education and Outreach section. *Think Blue* is a multi-faceted effort which encompasses education and outreach to a variety of audiences. Think Blue conducts activities on a jurisdictional, watershed and regional basis

Table 3-2. Watershed Education Activities

ID Number	Activity	Pollutant Categories										Activity Type				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		X							X					X
MB-2004	Genesee Commercial CBSM Efforts	X											X	X		X
MB-2005	Mt. Abernathy LID Green Street	X		X												X
MB-2006	Clean Construction Poster and	X			X	X				X						X
MB-2007	Restaurant Best Management	X														X
MB-2009	Mission Bay Focused Outreach	X														X
MB-2010	La Jolla Residential CBSM	X														X
MB-2011	San Diego Crew Classic	X			X	X										X
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X
	* High Priority Pollutants															

3.3 Public Participation Activities

The City will continue to actively encourage the participation and input of diverse stakeholders in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP. Historically, stakeholders have participated regularly in activity planning and implementation efforts via formal and informal discussions and meetings at the City or stakeholder locales. Because the City is the only Copermittee within the WMA, internal and stakeholder meetings are held on an ad hoc basis. The City values its strong relationships with stakeholders and will continue to use this informal participation as the foundation of its collaborative efforts in conjunction with the more formal participation mechanisms described in the following sections.

Sections 3.3.1 – 3.3.5 broadly outline the public participation strategy that the City is pursuing to encourage stakeholder engagement in the WURMP.

Specific watershed education activities that involve general public participation are described below and in Appendices A and B, and include trash cleanup sponsorships, Community Based-Social Marketing (CBSM) activities, and focused outreach.

3.3.1 Non-Governmental Organization Engagement

The City continues to engage non-governmental organizations (NGOs) active in the WMA in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP through a variety of means, including, but not limited to:

- Entering into agreements with NGOs to implement activities, such as trash/debris sponsorships, creation and distribution of education materials, workshop facilitation, research, community events, and presentations.
- Inviting NGO representatives to the City and sending City representatives to NGO meetings to discuss urban runoff pollution prevention efforts, share input, and identify opportunities for coordination. The Storm Water Department meets with San Diego Coastkeeper and I Love A Clean San Diego regularly to discuss strategic planning and City-wide issues including those that may affect the Mission Bay and La Jolla WMA. The City meets with other NGOs on an ad-hoc basis.
- Partnering with NGOs as appropriate in advocating legislation protective of water quality. The City assisted Sustainable Conservation with a sponsorship to advance the Brake Pad Partnership's work in the reduction/elimination of copper in automotive brake pads through legislation that was ultimately passed in September 2010.

3.3.2 Community Planning Groups and Established Stakeholder Meetings

The Storm Water Department uses meetings established by various stakeholder groups, including Community Planning Groups, the La Jolla Shores Association and the Mission Bay Park Committee, to present specific watershed projects and solicit public participation and feedback. In FY 2010, the Storm Water Department and Engineering and Capital Projects Deparment presented the Mission Bay Sewer Interceptor System Upgrade Project, the Kellogg Park Parking Lot Infiltration Project, and the ASBS Dry Weather Flow Diversions Projects to five community planning groups and park committees to alert the community of impacts, location, and timing for construction of these projects. Public feedback was then incorporated as appropriate.

The Storm Water Department actively attends the quarterly meetings of the Open Space Canyons Advisory Committee, established by City Council Policy to address open space canyons issues including those pertaining to storm water and urban runoff. The Storm Water Department will continue to use established stakeholder groups to engage the public in the WURMP and specific watershed activities as needed, especially regarding project implementation.

3.3.3 Project Clean Water

Project Clean Water (http://www.projectcleanwater.org), which was initiated in July 2000 by the Regional Copermittees, established a framework for the broad-based and collaborative development of solutions to local water quality problems. In addition to general information regarding Project Clean Water, specific contact details are listed for each watershed, encouraging members of the public to contact representatives for information. It is the eventual goal of Project Clean Water to establish this site as a centralized source of water quality information for the San Diego region. The *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) and annual reports are placed on the website to allow stakeholders to view the documents and submit comments. The City continues to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as it continues to develop and implement the WURMP.

3.3.4 Think Blue

The City's Storm Water Department maintains the Think Blue website (http://www.sandiego.gov/thinkblue/) as a public participation mechanism to provide education and outreach regarding storm water issues. The website is a resource to educate residents and businesses on pollution prevention solutions, and to assist them in being compliant with urban runoff regulations. Brochures, guidebooks and other informational materials are available online in both English and Spanish. The Storm Water Department also posts the *Mission Bay and La Jolla Watershed Urban Runoff Management Plan (March 2008)* on the City's website (http://www.sandiego.gov/stormwater/plansreports/wurmp.shtml), as well as various other annual reports and documents to provide stakeholders the opportunity to review and comment. In addition, solicitations for public participation in meetings and outreach events are posted on the website. The City continues to use the website as a mechanism to encourage stakeholder participation in the development and implementation of the Mission Bay and La Jolla WURMP.

3.3.5 City Council and Council Committee Meetings

The City's Storm Water Department and Engineering and Capital Projects Department, working on storm water pollution prevention projects, presented items to the San Diego City Council and the Council's Natural Resources and Culture Committee throughout FY 2010. City Council and Committee meetings are open to the public and are forums where the public is encouraged to comment on items being presented. Presentations included a brief background on the Storm Water Department mission as well as specifics associated with the item being presented, which during FY 2010 included the Regional Storm Water Copermittees' Memorandum of Understanding, watershed capital improvement projects including the ASBS dry weather flow diversions, monitoring contracts, engineering and design consultant contracts, a grant for the Kellogg Park Green Lot Project, and other project specific contracts. In total, the Storm Water Department appeared and/or presented eleven times at the Natural Resources and Culture Committee meetings and four times at the City Council meetings, inviting public participation and comment.

3.4 Collaborative Land-Use Planning Efforts

The City is divided into various politically recognized communities, each with its own community plan prepared by the City Planning & Community Investment Department that implements the planning policies in the City's General Plan. The Mission Bay and La Jolla WMA encompasses nine communities: Linda Vista, Clairemont Mesa, Kearny Mesa, Mission Beach, Pacific Beach, La Jolla, University City, Mission Bay Park, and MCAS Miramar. Of these, seven have community plans (Mission Bay Park and MCAS Miramar are covered under other planning documents). Each community plan is updated periodically to reflect changes in the community, as well as provide fresh direction regarding growth and development. For example, the California Coastal Commission approved the La Jolla Community Plan update in FY 2004, and City staff began implementation in FY 2005. The La Jolla Community Plan includes extensive storm water policies pertaining to coastal bluffs and steep hills.

The City will use the community plan update process as needed to incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the

plans to address special concerns identified for the Mission Bay and La Jolla WMA. Updates to the community plans will be primarily reported in the City's Jurisdictional Urban Runoff Management Program (JURMP) due to their general nature and close relationship with the General Plan. However, highlights will be provided in the WURMP annual report as appropriate. In FY 2010 no updates occurred to community plans with the Mission Bay and La Jolla WMA; however, in Feb 2010, the Torrey Pines City Park Advisory Board recommended approval of the Torrey Pines City Park General Development Plan (GDP) by the City of San Diego Park & Recreation Board. It is anticipated that the Board will take action on the GDP this winter after a draft environmental document has been written. The GDP addresses the regional concerns of the site for recreation (various forms of soaring), historic and cultural resources, and for preservation and restoration of the site's natural resources. The plan will address the site concerns with storm water runoff that directly impact the adjacent ocean bluffs and associated beaches.

Of significant note, Storm Water Department staff in FY2010 began efforts to make the connections between land use planning and improvements/protection of water resources more clear to City staff involved in long range planning for the City. Opportunities for encouraging low impact development (LID) friendly planning are being identified as part of a multi-year LID Regulatory Barriers and Solutions Project that Storm Water staff initiated in FY2010.

Storm Water Department staff presented on the connection between land use planning and water resources at the April meeting of the San Diego Integrated Regional Water Management Program's Regional Advisory Committee workgroup meeting.

3.5 Updated 5-Year Strategic Plan

The Mission Bay and La Jolla WURMP's five-year strategic plan is assessed annually and has been updated to reflect the current status of watershed activities and modifications to previous versions of the strategic plan.

3.5.1 Five-Year Strategic Plan and New Watershed Activities

The City of San Diego's *Strategic Plan for Watershed Activity Implementation* (November 2007) uses an integrated, tiered, and phased approach for activity implementation. Integrated activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not. Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City believes that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the 5-Year Strategic Plan presented in

the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. New activities include the following:

- MB-1022 Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment
- MB-1023 La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment
- MB-1024 Median Sweeping Study
- MB-1026 Source Control of Copper Water Pollutants, Senate Bill 346,Motor Vehicle Brake Fiction Materials
- MB-3010 Bioassessment Monitoring of the Tecolote Creek Watershed
- MB-3011 Tecolote Creek Microbial Source Tracking Study

Table 3-3 shows a list of all activities currently being implemented over a five year period in the Mission Bay and La Jolla WMA. New activities are included in the table with red activity sheet ID numbers. Activities that have been completed in years past and are no longer reported are in gray text. Details on each activity can be found in the Watershed Activity Summary Sheets located in Appendices A and B.

Table 3-3. Updated Five Year Strategic Plan

ID Number	Activity	Pollutant Categories										Activity Type					Schedule				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
MB-1001	Alpha Project Trash Cleanups	X									X			X			I A	Activity is complete and no longer reported.			
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1004	Targeted Animal-Related Facility Inspections**	X			X	X							X	X		X	P I A	Inspections are combined into the Geographically Based Inspections activity			
MB-1005	Mission Bay Targeted Automotive Facility Inspections **				X								X	X		X	P I A	P I A	IA	Complete	
MB-1006	~~Targeted Landscaping Related Facility Inspections~~** Geographically Based Business Property and Facility Inspections	X			X	X							X	X		X	P I A	P I A	P I A	P I A	P I A
MB-1007	Targeted Municipal Facility Inspections	X			X	X							X	X		X	P	No longer moving forward under the WURMP			
MB-1008	Targeted Residential Activity Characterization	X			X	X							X	X		X	P	Reported as MB-2010			
MB-1009	Targeted Restaurant Facility Inspections **	X			X	X							X	X		X	P I A	Inspections are combined into the Geographically Based Inspections activity			
MB-1010	Aggressive Street Sweeping				X						X		X	X			P	I A	I A	Complete	
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect Project	X			X	X	X		X	X				X			P	I A	IA	Complete	
MB-1012	Osler Street Hydrodynamic Separator Installation Project	X								X	X			X			P	P	P	P	P (I -2013)
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X			X	X								X			P	P	P	P	I
MB-1014	Kellogg Park Green Lot Retrofit Project	X			X	X								X			P	P	P	I	I
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X			P	P	P	I	I
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X												X			P	P	P	Implementation anticipated in FY 2014	
MB-1017	Infiltration BMP Retrofit #2	X			X	X								X			P	P	P	P	I
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X			X	X								X			P I	I	IA		
MB-1019	South Shores RV	X												X	X		I	Activity is complete and no longer reported.			
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Diversion	X			X	X								X			P	P	P	Implementation anticipated in FY 2013	
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X												X	X		P	P	P	I	IA
MB-1022	Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X					P	P	P
MB-1023	La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X					P	P	P
MB-1024	Median Sweeping Pilot Study				X									X				P	PIA		
MB-1025	Pet Waste Bag Dispenser Program	X												X					P	IA	
MB-1026	Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials				X										X				Legislation passed in 2010. Longterm improvements anticipated; the first milestone for reductions is 2021.		
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		X							X					X	I	I A	I A	No longer reporting.	
MB-2002	Mobile Advertising	X		X	X		X		X	X	X					X	I A	I A	Complete		
MB-2003	La Jolla Commercial CBSM Efforts	X									X		X	X		X	P I A	P I A	Complete		
MB-2004	Genesee Commercial CBSM Efforts	X											X	X		X	P	P	P	On-Hold	
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X												X	P	P	P	I A	
MB-2006	Clean Construction Poster and Brochure Distribution	X			X	X				X						X	I	I	I	Complete	
MB-2007	Restaurant Best Management Practices Booklet Distribution	X														X	I	I	I	Complete	
MB-2008	Transit Shelter and Billboard Advertisements	X			X											X	P I	A	Study is complete and no longer reported.		
MB-2009	Mission Bay Focused Outreach	X														X		I	I	I	I
MB-2010	La Jolla Residential CBSM	X														X		I	I		
MB-2011	San Diego Crew Classic	X			X	X										X		I	I	I	I
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X		P	P	I	I
MB-3001	Tecolote Creek Bacterial Source Identification Study (Phase I)	X											X				I A	Study is complete and no longer reported.			
MB-3002	Tecolote Creek Bacterial Source Identification Study (Phase II)	X											X				P	I A	Study is complete and no longer reported.		
MB-3003	La Jolla Shores Integrated Coastal Watershed Management Plan											Planning Document					P	Plan is complete and no longer reported.			
MB-3004	La Jolla Shores Sediment Source Study									X			X				P I	I A			
MB-3005	La Jolla Design Storm Study	X											X				P I	I A	Study is complete and no longer reported.		
MB-3006	Tecolote Creek Design Storm Study	X											X				P I	I A	Study is complete and no longer reported.		
MB-3007	Dry Weather Aerial Deposition Study (Phase II) 2009		X		X							X	X				P I	I A	Study is complete and no longer reported.		
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.															Implemented through the activities listed here and through activities conceptually and tentatively				
MB-3009	La Jolla Shores ASBS Compliance Monitoring											X							I	I	I
MB-3010	Bioassessment Monitoring of the Tecolote Creek Watershed											X									
MB-3011	Tecolote Creek Microbial Source Tracking Study											X							I		

* High Priority Pollutants

** MB-1004, MB-1006, and MB-1009 have been combined into one activity.

*** This ID number has been retired. MB-1008 is now being reported as MB-2010 La Jolla Residential CBSM Efforts.

Activity Sheet ID Numbers highlighted in red are newly reported activities

Activity Sheet ID Numbers and Titles highlighted in gray are no longer being reported on

P= Planning I= Implementation A= Assessment

3.5.2 WURMP Program Revision

New activities are shown in the above table. The City is continuously evaluating activities implemented under this WURMP as well as activities under other WURMPs to improve its overall storm water program.

Additionally, the City is currently working with other Regional Copermittees on the development of a method to use jurisdictional and regional data at the watershed level with the goal of better understanding and assessing the water quality problems, sources, and actions that can/are taken to improve water quality.

Section 4 Effectiveness Assessment

4.1 Assessment of Overall WURMP Effectiveness

The intent of this section is to assess the effectiveness of the Mission Bay and La Jolla WURMP as a whole, and the activities pursuant to its implementation and the requirements of the Municipal Permit.

4.1.1 Approach to Effectiveness Assessment

THE OVERALL PROGRAM GOAL OF THE MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM IS TO POSITIVELY AFFECT THE WATER QUALITY OF THE MISSION BAY AND LA JOLLA WATERSHED WHILE BALANCING ECONOMIC, SOCIAL, AND ENVIRONMENTAL CONSTRAINTS.

The City has identified the following objectives to meet this goal:

Implement the best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by:

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The City uses effectiveness assessment as part of an iterative feedback loop that incorporates planning, implementation and assessment as presented in the *Mission Bay & La Jolla Urban Runoff Management Plan* (March 2008). Achievement of the overall program goals and the effectiveness of the activities are assessed using an assessment framework developed by the Copermittees (*A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs,* October 2003).

In addition to effectiveness assessment, the City believes that it is imperative to assess the efficiency, or the cost effectiveness, with which load reductions are obtained by both the individual activity and program as a whole. It is only through maximizing the efficiency of program efforts that urban runoff programs can sustainably maximize pollutant load reductions and achieve the ultimate goal—the protection and improvement of water quality in the region's creeks, rivers, beaches, and bays.

The City views the WURMP and JURMP as integrated components to the Storm Water Department's overall program. The City's Storm Water Department incorporates the WURMP, JURMP and other programs as needed to implement and comply with the Municipal Permit. Individual assessment of activities can be very challenging and may not always be feasible, particularly when analyzing changes to urban runoff discharges and receiving water quality. In these instances, assessment of program effectiveness incorporates the overlap of these programs.

4.1.2 Program Effectiveness using WURMP Objectives

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Sources of the identified High Priority Water Quality Problems (heavy metals, nutrients and bacteria) are discussed in Section 2.2, Pollutant Source Assessment. Six of the water quality and education activities implemented in this reporting period targeted sources of bacteria. Four targeted sources of metals and five targeted all three of the High Priority Water Quality Problems. One source identification study focused on bacteria. See Table 4-1 below.

In addition to BMPs targeting specific pollutants, the City's Storm Water Program involves the development of BMPs that will address all three High Priority Water Quality Problems, in addition to the other non-high priority pollutants – essentially all pollutants would be addressed because flows would be targeted. These BMPs include low flow diversions and low impact development retrofits (infiltration and filtration).

Further, the City's Storm Water Department specifically addresses High Priority Water Quality Problems within the WMA via the JURMP, Regional Urban Run-off Management Plan (RURMP) and other programs in addition to the WURMP. For example, a number of activities in the JURMP and RURMP use education and outreach to target sources of nutrients by promoting environmentally friendly gardening practices, such as the use of Integrated Pest Management (IPM) to audiences such as home gardeners.

Table 4-1 Activities targeting High Priority Water Quality Problems (Pollutants)

ID Number	Activity	Pollutant		
		Bacteria*	Heavy Metals*	Nutrients*
MB-1002	ILACSD Trash Cleanup Sponsorship	X		
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X		
MB-1005	Mission Bay Targeted Automotive Facility Inspections		X	
MB-1006	~~Targeted Landscaping-Related Facility Inspections~~** Geographically Based Business Property and Facility Inspections	X	X	X
MB-1010	Aggressive Street Sweeping		X	
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect Project	X	X	X
MB-1017	Infiltration BMP Retrofit #2	X	X	X
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X	X	X
MB-1024	Median Sweeping Pilot Study		X	
MB-1026	Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials		X	
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		
MB-2006	Clean Construction Poster and Brochure Distribution	X	X	X
MB-2007	Restaurant Best Management Practices Booklet Distribution	X		
MB-2009	Mission Bay Focused Outreach	X		
MB-2010	La Jolla Residential CBSM	X		
MB-2011	San Diego Crew Classic	X	X	X
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.		
MB-3009	La Jolla Shores ASBS Compliance Monitoring			
MB-3010	Bioassessment Monitoring of the Tecolote Creek Watershed			
MB-3011	Tecolote Creek Microbial Source Tracking Study	X		
	* High Priority Pollutants			
	** MB-1004, MB-1006, and MB-1009 have been combined into one activitiy.			
	Activity Sheet ID Numbers highlighted in red are newly reported activities			

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

The City has developed a process to collect and analyze this data, which is described in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) and the City's *Strategic Plan for Watershed Activity Implementation* (November 2007). This process includes developing specific management questions and assessment mechanisms in the project planning stage in order to collect the necessary information about the activity once implementation and assessment are complete. Implementation involves collecting the data necessary to answer the management questions as the activity is in progress. Additional details on the City's assessment strategy can be found in the two aforementioned documents.

The majority of the load reduction activities that have been planned are still in early development. While the City plans to gather the necessary data, and in several cases has initiated efforts to provide baseline data for specific project sites, many load reduction activities are not far enough along for efficiency analysis to be completed. Only the street sweeping, facility inspections, and rain barrel activities have enough data to analyze efficiency. See Activity Summary Sheets MB-1005, MB-1006, MB-1010, MB-1011, and MB-1024 for details on the assessment outcomes of these projects.

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The optimization of activities is the key to developing a comprehensive program that utilizes resources in the most effective manner in order to maximize improvements to water quality. Specifically, individual activities are optimized through an iterative feedback process. For example, the two inspections programs within the WMA have been implemented each year with modifications based on what was learned during the previous year. Additionally, the Aggressive Street Sweeping Pilot study tested different sweeping frequencies and sweeper technology to optimize to the City's street overall street sweeping program. A median sweeping and sweeper speed study were also planned and conducted based on recommendations from the previous study. Activity optimization is ongoing and will continue to be evaluated each year based on assessment milestones. More information regarding the assessment of individual activities can be found within each activity summary sheet in Appendix A.

4.2 Effectiveness Assessment using Targeted Outcome Levels

Section 4.2 describes how the activities conducted during FY 2010 relate to the hierarchy of targeted outcomes as required by Section I.2a of the Municipal Permit. This section is presented by outcome level to illustrate the way in which all of the activities implemented during FY 2010 work together within the WMA to help increase storm water awareness, positively change behaviors to reduce load generating activities, reduce runoff and pollutant loads, and ultimately improve the quality of receiving waters.

Table 4-1 presents a summary of the activities in active implementation during FY 2010, and how they relate to the six targeted assessment outcomes. Current activity status is indicated by completed (C), ongoing (O), and new (N) activities (Level 1, Permit Compliance). During FY 2010, the City planned, initiated and/or implemented a total of 33 water quality, education and monitoring activities. Of these activities, 15 achieved, or are assumed to have achieved, a minimum of one of the outcome levels described below. Furthermore, seven activities resulted in a measurable pollutant load reduction or source abatement (Level 4), one is assumed to have resulted in a load reduction but data was not tracked, five resulted in changes to public knowledge/awareness and/or behavior (Levels 2 and 3) and one assumes a change in public awareness and/or behavior. Four of the activities that resulted in load reduction/source abatement also resulted in Level 2 and 3 outcomes. The City focused on activities intended to reduce bacteria (Total and Fecal coliform), nutrients and metals (copper, lead and zinc) for those areas of the WMA that were determined to have the highest priority. In addition, the City also focused activity selection on the regional trash issue.

Table 4-2. Summary Table of FY2010 WURMP Activities Linked with Targeted Outcomes

ID Number	Activity Name	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		Permit Compliance	Awareness	Behavior Change	Load Reduction/Source Abatement	Discharge Quality	Water Quality
MB-1002	ILACSD Trash Cleanup Sponsorship	O	X*		X		
MB-1003	SDCK Trash Cleanup Sponsorship	O	X*		X		
MB-1005	Focused Auto Facility Inspections	C	X*	X	X		
MB-1006	Geographically Based Business Property and Facility Inspections	O	X*	X	X		
MB-1010	Aggressive Street Sweeping	C**			X		
MB-1011	Municipal Rain Barrel Installation	C			X		
MB-1018	Beach Area Low Flow Diversions, Phase III	O			X***		
MB-1024	Median Sweeping Pilot Study	N/C			X		
MB-1026	Source Control of Copper, SB 346: Motor Vehicle Brake Friction Materials	N	Expected to result in long-term improvements not measurable at this time.				
MB-2001	Karma/Karma Second Chance PSAs	C	X***	X***			
MB-2006	Clean Construction Poster Distribution	O	X				
MB-2007	Restaurant BMP Booklet Distribution	O	X				
MB-2009	Mission Bay Focused Outreach	O	X	X			
MB-2010	La Jolla Shores Residential CBSM	O	X	X			
MB-2011	Crew Classic	O	X	X			

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness. Additionally for trash cleanups, behavior change can be assumed with first-time participants; however, this data is not tracked.
**Street sweeping involved public outreach which increases knowledge and awareness, particularly with the extensive media coverage the activity received. However, this activity does not lend itself well to measuring the amount of public reached.
***Data not tracked, but an improvement is assumed.

4.2.1 Level 1: Compliance with Activity-Based Permit Requirements

Within the Mission Bay and La Jolla WMA, the City fulfilled all the WURMP requirements of the Municipal Permit during the FY 2010 reporting period and, therefore, is in compliance. Table 4-2 relates the activities conducted by the City to the requirements specified in the Municipal Permit.

Table 4-3. Level 1 Permit Compliance

Permit Requirements (§J.3.b.2)	Activities	Status
(a) A description of all activities conducted by the watershed Copermittees	All activities – see activity summary sheets in Appendices A and B	Complete
(b) Any updates to watershed map	None this reporting period	N/A
(c) Updated assessment of the WMA's water quality data and identification of High Priority Water Quality Problems	San Diego County Municipal Copermittees 2007-2008 Urban Runoff Monitoring Report and Water Quality Assessment Section 2 of this report	Complete
(d) Identification of the likely sources, pollutant discharges and other factors causing the water quality problems	Section 2 of this report See activity summary sheets pertaining to bacteria and other source identification studies	Complete
(e) Updated list of potential Watershed Water Quality Activities	See Section 3, Table 3-3	Complete
(f) Identification and description of Watershed Water Quality Activities implemented during reporting period	See Activity Summary Sheets in Appendices A and B; MB-1002, 1003, 1005, 1006, 1010, 1011, 1018, 1024, 1026	Complete
(g) Updated list of potential Watershed Education Activities	See Section 3, Table 3-3	Complete
(h) Identification and description of Watershed Education Activities implemented during reporting period	See Activity Summary Sheets in Appendices A and B; MB-2001, 2006, 2007, 2009, 2010, 2011	Complete
(i) Public participation	See Section 3.3	Complete
(j) Description of Copermittee collaboration efforts	No other agencies are cited in the Municipal Permit as Copermittees. However, the City worked with other agencies not cited as Copermittees, such as UCSD and SIO.	Complete
(k) A description of efforts implemented to encourage collaborative, watershed based, land-use planning.	See Section 3.4	Complete
(l) Description of all TMDL activities implemented	No TMDLs currently in effect. See Section 4.4	N/A
(m) Effectiveness Assessment of the WURMP	This section fulfills this requirement.	Complete

4.2.2 Levels 2 and 3: Changes in Knowledge / Awareness and Behavioral Change

As summarized in Table 4-3, the City implemented four activities during FY 2010 that resulted in increased awareness of water quality issues (Level 2) and six activities that resulted in both increased awareness and reported behavior change (Level 3). The achievement of these levels of effectiveness was measured through surveys, amount of education materials distributed and number of participants,

Individual activity effectiveness assessment measurements are presented in the activity summary sheets in Appendix A. FY 2010 targeted outcome results for these activities are presented in Table 4-3. These activities provided education on general watershed concepts, as well as information on specific priority pollutants within the Mission Bay and La Jolla WMA, which increased the public's level of knowledge and awareness. In addition, while some of the water quality and source identification activities listed in Section 3 were not Education Activities in and of themselves, those activities did include public education and outreach components. Nearly all activities included the distribution of informational fact sheets/flyers, web site updates, and reports of findings to the target audiences (residents, businesses and environmental groups), all of which contribute to the overall success of the program. Although the Aggressive Street Sweeping Pilot Program is not listed in Table 4-3 because increase in knowledge and awareness

was not being measured for this activity, it should be noted that due to the amount of media coverage the project received, this activity did contribute to an increase of knowledge and awareness of storm water issues. The results of the 2010 annual random-digit dial telephone survey provided assessment data that helped the Department adjust, develop and implement outreach activities. In 2010, approximately 12-15% of the residents surveyed reported living in the Mission Bay and La Jolla WMA. Key findings of the survey include; 47% of all San Diego residents have heard of *Think Blue*, up from 39% in FY2009 (a 52% increase since 2001). In addition, 52% of residents know that storm water is not treated, which is an increase from 44% in FY2009 and up from 39% in FY2008. Nearly a third of San Diego City residents said they had made a behavior change in the past year, and those who had heard the Think Blue slogan were 19% more likely than others to make a change. Specific to addressing and assessing the High Priority Water Quality Problems within the WMA, one quarter of survey respondents said they were more carefully washing their cars, either by taking their car to a car wash or washing their car on their lawn to keep the runoff out of storm drains. Approximately 17% reported picking up trash and litter or cleaning trash out of gutters and off the street. Ninety-five percent of dog owners said they always take a bag with them to pick up pet waste and more than four out of five said they either rarely (7%) or never (77%) leave waste behind without picking it up.

In order to conduct assessment at community events, *Think Blue* encourages booth visitors to fill out one of several versions of a short 5-6 question storm water survey card. In FY2010, *Think Blue* developed three new survey cards focused on specific pollutants, including pet waste, automotive waste and litter, to add to the general event survey card previously used. *Think Blue* event survey cards were collected from booth visitors at a variety of events in the Mission Bay and La Jolla WMA, such as San Diego Crew Classic (MB-2011).

For example, at the 2010 Crew Classic event in Mission Bay, 260 Think Blue booth visitors completed an event survey assessment card, comprised of general surveys, and surveys specific to pet waste and automotive pollution. Of the 260 surveys conducted, eight were completed in Spanish. Fifty percent of all survey participants knew that storm water wasn't treated, while 10% said it was treated and 37% stated that they didn't know. Fifty-six percent of Pet Waste Survey participants said they do own a dog, and 97% said they do see waste in their community that is not cleaned up. Ninety-five percent agreed that dog waste contributes to pollution of local waterways. The largest percentage (88%) of respondents said that a correct method of disposing of pet waste is to put it in the trash can. When asked how often they clean up their own dog's waste, 82% said always, and 13% said usually or sometimes. The most common answers were for not picking up dog waste were; "Did not have bag/Ran out of bag" (43%), and "Never/I always pick it up" (17%).

One hundred percent of respondents who took the Automotive Survey believed that automotive fluids do contribute at least some amount to pollution. Eighty-seven percent correctly responded that the best method is to soak it up with absorbent material and throw it in the trash, while 9% said a correct method is to hose it off immediately. The largest percentage of car owners (58%) said they use a carwash to wash their vehicle, followed by 34% who said they wash it in the street or driveway. Ninety-one respondents provided a concrete action they could take to prevent automotive pollution. The most common responses were "Maintain Auto" (11%), "Drive Less/Walk/Bike/Use Public Transportation" (10%) and "Use Absorbents/Drip Pans" (10%).

More information is available in Appendix A on each of the activities implemented in the Mission Bay and La Jolla WMA this fiscal year. Based on implementation of the activity information provided in Appendix A, the *2010 San Diego Storm Water Survey* results and the Event Survey results reported for FY 2010, it can be deduced that the City's efforts have had a positive effect on awareness, knowledge and behavior change relating to water quality in the Mission Bay and La Jolla WMA.

Table 4-4. Level 2 Change in Knowledge/Awareness and Level 3 Change in Behavior

ID Number	Activity Name	Priority Pollutants Addressed	Level 2 Awareness	Level 3 Behavior Change
MB-1002	ILACSD Trash Cleanup Sponsorship *	Trash, Bacteria	50 participants now more aware**	NA
MB-1003	SDCK Trash Cleanup Sponsorship*	Trash, Bacteria	94 participants now more aware**	NA
MB-1005	Auto Facility Inspections	Heavy Metals	57 auto facilities inspected	1 site implemented corrective actions during inspections
, MB-1006,	Mission Bay Watershed Targeted Inspections*	Bacteria, Nutrients, Heavy Metals	100 businesses inspected	4 sites implemented corrective actions during inspections
MB-2001	Karma/Karma Second Chance Public Service Announcements	Trash, Bacteria	Data not tracked	
MB-2006	Clean Construction Poster Distribution	Sediment	68 poster recipients more aware**	NA
MB-2007	Restaurant BMP Booklet Distribution	Bacteria, Nutrients	576 booklet recipients more aware**	NA
MB-2009	Mission Bay Focused Outreach	Bacteria, Trash	215,791 impressions *** 2,348 outreach materials distributed	10% increase from FY 2009 to FY 2010of individuals surveyed who reported engaging in a behavior that would prevent pollution
MB-2010	La Jolla Shores Residential CBSM Outreach Pilot	Bacteria, Trash	177 outreach materials distributed	87% of survey participants stated a willingness to to engage in behaviors to prevent pollution
MB-2011	San Diego Crew Classic	Bacteria, Nutrients, Heavy Metals, Trash	1000 booth visitors, 15,000 attendees 2429 outreach materials distributed	95% survey participants reported picking up after their dog, 77% reported would take steps to prevent auto pollution

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness. Additionally for trash cleanups, behavior change can be assumed with first-time participants; however, this data is not tracked and, therefore, is not included in this table.
**Assumed to contribute to overall program success, though the extent of each activity's contribution has not been measured
***Assumed increased level of awareness based on estimated total exposure for all three outreach events and Mobile Ad display

4.2.3 Level 4: Load Reduction/Source Abatement

As shown in Table 4-4, the City implemented seven activities that resulted in measurable pollutant load reductions or source abatement (Level 4), one activity that can be reasonably assumed to reduce loads, and one activity that will result in long-term improvements. These activities were targeted primarily toward trash, bacteria, metals, and nutrients. The two street sweeping projects removed up to 593,040 pounds of debris. The two targeted inspections activities involved inspections at 157 sites within the WMA. As a result of these inspections, five sites with noted deficiencies implemented corrective actions during the inspections, which resulted in source abatement. In addition, at the two cleanup events, 144 volunteers removed 1,907 pounds of debris from the WMA. These efforts resulted in load reductions and/or source abatement of potential discharges of priority pollutants into receiving waters.

One activity, the Beach Area Low Flow Diversions, diverted dry weather flows from the MS4 to the sanitary sewer system. Though data was not tracked this year (the City plans to conduct a comprehensive effectiveness assessment next year), it can be reasonably assumed that this project resulted in a load reduction. One other activity involving financial and staff support from the City resulted in the passage of Senate Bill 346 which will reduce copper in brake pads from 10% to 0.5% by weight by 2025. Brake pads are a significant source of copper in regional waterways, based on past studies that the City has conducted.

Table 4-5. Level 4 Load Reduction/Source Abatement

ID Number	Activity Name	Priority Pollutants Addressed	Level 4 Load Reduction/Source Abatement	
MB-1002	ILACSD Creek to Bay Cleanup Sponsorship	Trash, Bacteria	Trash/recycling removed	247 lbs
MB-1003	SDCK Coastal Cleanup Day Sponsorship	Trash, Bacteria	Trash/recycling removed	1660 lbs
MB-1005	Auto Facilities Inspections	Metals	Sites that implemented corrective actions during inspections	1
MB-1006,	Mission Bay Watershed Targeted Inspections	Bacteria, Nutrients, Metals	Sites that implemented corrective actions during inspections	4
MB-1010	Targeted Aggressive Street Sweeping Project	Metals, Trash	Debris removed	561,040 lbs
MB-1011	Municipal Rain Barrel Installation	Bacteria, Metals, Nutrients	Metals removed	0.2 grams of Zinc
			Volume of storm water captured/attenuated	67.8 cu ft over two storm events
MB-1018	Beach Area Low Flow Diversions, Phase III	Bacteria, Metals, Nutrients	Dry weather flows diverted; no additional data is tracked	
MB-1024	Median Sweeping Pilot Study	Metals	Debris removed	32,000 lbs
MB-1026	Source Control of Copper, SB 346: Motor Vehicle Brake Friction Materials	Metals	Expected to result in long-term improvements not measurable at this time.	

The City will continue tracking load reductions/source abatement and assessing watershed activity effectiveness in FY 2010 for both ongoing and new projects.

In addition to the load reduction activity results presented in Table 4-4, several source identification and special studies are currently underway. These studies will ultimately lead to load reductions, as results of the studies assist the City in understanding of the sources of pollution and how they may be abated.

4.2.4 Level 5: Changes in Discharge Quality

The results from the *2009-2010 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* indicate that urban runoff water quality conditions remained similar to the conditions reported in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). A detailed assessment of discharger quality will be conducted as part of the Long-Term Effectiveness Assessment program which will compare findings over the long term to the Baseline Long-Term Effectiveness Assessment. The Long-Term Effectiveness Assessment program is anticipated to provide more conclusive results than any interim measurements can provide. However, the City believes that interim assessment is important to help identify those areas that may be improving or declining and should be of particular note during the Long-Term Effectiveness Assessment. Therefore, the City has looked to its Coastal Storm Drain Monitoring Program to provide a snapshot loosely indicating any improvements that might be observed during the early stages of the program.

With the start of the new permit cycle in 2008, the Coastal Storm Drain Monitoring Program (CSDM) for the City of San Diego grew tremendously. The City took a proactive approach and added 137 monitoring stations to the existing 12. This section analyzes water quality improvements over the past three monitoring years (2008-2010) as shown in Table 4-5 and Figure 4-1. In March 2010 the City began participating in Sample Frequency Reduction Criteria (SFRC), allowing the city the visit chronic dry sites on a bi-monthly basis. One hundred and five sites were added to SFRC. SFRC has allowed the City to focus resources on other water quality projects. The amount of sites visited per year can be compared to the amount of samples taken when the drains are flowing. That number is then used to determine how many exceeded storm drain action levels (Storm drain action levels are established by the Copermittees). The 95th percentile observations of the most recent year's bacterial results were used to initiate storm drain re-sampling. From 2008 to 2010 a reduction in both the numbers of samples taken and the number of bacterial exceedances in the City's coastal storm drains has been observed possibly indicating that the City's storm water programs overall are having a positive influence on water quality. More information on action levels and the CSDM Program can be found in Appendix N of the 2009 Regional Monitoring Report.

Three notable limitations of this program include: 1) samples are taken only when flow is observed, and therefore, results are only characteristic of those instances; 2) the analysis focuses only on bacterial indicators and does not allow for analysis of all pollutants; and 3) the coastal program is a limited set of outfalls. Despite these acknowledged limitations, the City will continue to use the Coastal Storm Drain Monitoring Program to provide interim assessment.

Table 4-6. City of San Diego 2008-2010 Coastal Storm Drain Exceedances

Analyte	2008			2009			2010		
	Number of Action Level Exceedances	Total Number of Samples[1]	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples[1]	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples[1]	% of Samples that Exceeded
Total Coliforms	29	252	12	17	186	9	5	128	4
Fecal Coliforms	18	247	7	2	182	1	3	127	2
Enterococcus	30	252	12	13	190	7	8	135	6

[1]Sample totals may be different due to exceedances per analyte. A routine sample is collected and analyzed for Total, fecal, and enterococcus. If one analyte exceeds, a resample is collected for that analyte only.

Figure 4-1. Coastal Storm Drains 2008 -2010

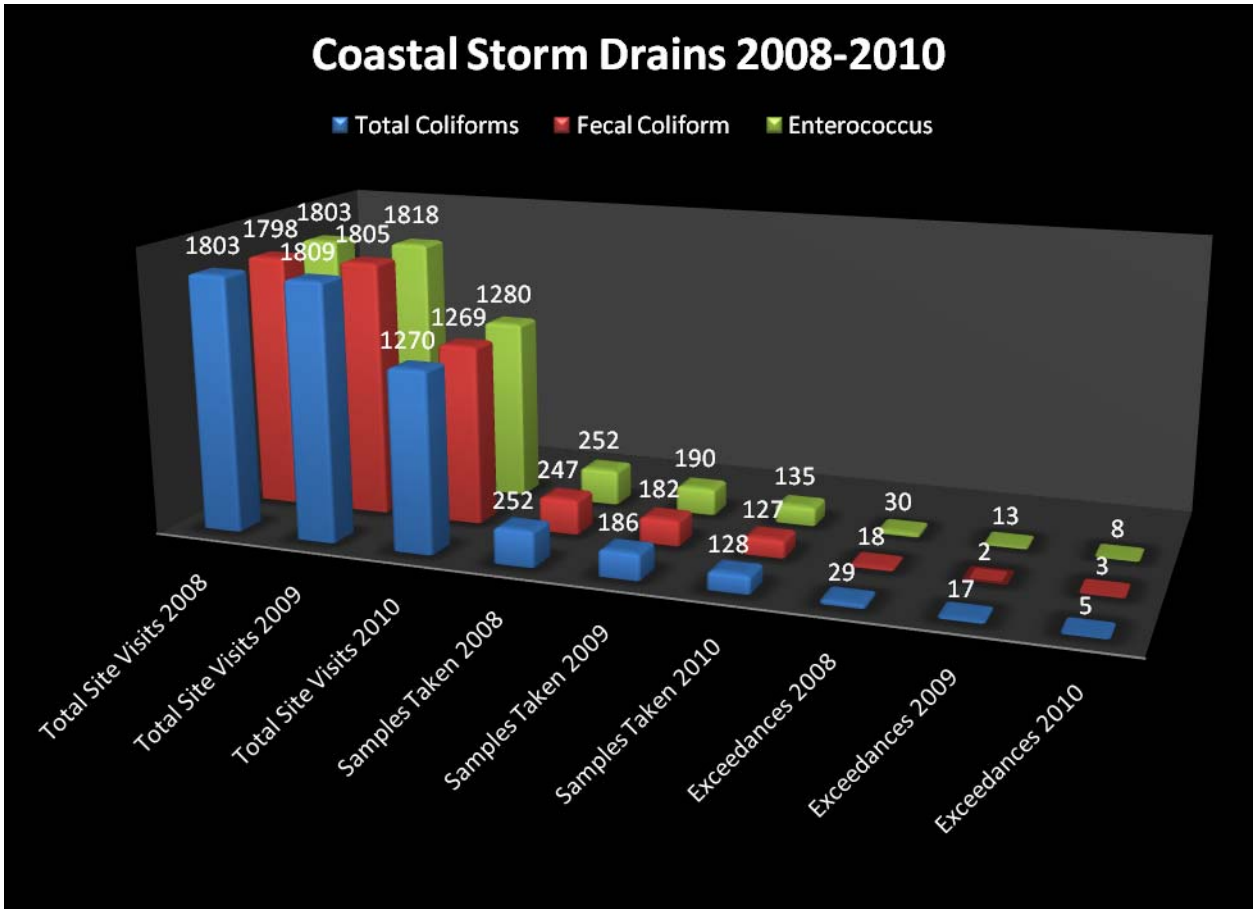

In addition, it should be noted that the City will be measuring discharge water quality as part of the activity effectiveness assessments associated with several Capital Improvement Projects that

are currently in the planning stages. Once the data is collected and results are known, the information will be used as part of this assessment.

4.2.5 Level 6: Changes in Receiving Water Quality & Assessment Summary

The City continued its monitoring programs in the Mission Bay and La Jolla WMA and made progress in implementing special studies to fill in data gaps. However, assessment at this level requires an adequate sample size over the long-term, so the San Diego Regional Copermittees are working together to collect receiving water quality data over many years. At year five of the permit cycle, a long-term assessment will be conducted comparing recent data and any observed trends to the Baseline Long-term Effectiveness Assessment that was completed in 2005 to determine if improvement has been observed. At this time, it is premature to make any assumptions regarding receiving water quality changes effected by this WURMP.

4.3 Optional Efficiency Assessment

Although not specifically required by the Municipal Permit, but in accordance with its Strategic Plan, the City selects WURMP activities to assess for cost efficiency. As activities are implemented and assessed, the efficiency rating for each activity is entered into an activity efficiency ratings table as described in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). The goal of this long-term effort is to develop a tool to assist Storm Water Managers in selecting the most cost effective suite of activities for improving water quality. Phase I of the Strategic Plan involves development of this tool, while Phase II and beyond involves improving and increasing implementation efforts.

The City initiated this effort in FY 2008, and cost data associated with all activities is tracked and reported in the activity summary sheets in Appendices A and B. Results are not conclusive at this time as many of the activities initiated will be tracked over multiple years. Additionally, only trash cleanups provide data that can be used to make preliminary determinations regarding cost efficiency. However, this determination is inconclusive at this time because these activities are onetime events, and therefore, the data can be easily skewed. Furthermore, trash cleanups have non-quantifiable benefits that are challenging to incorporate into an efficiency determination. Therefore, the City will continue to analyze cost associated with activities over the rest of the five year permit cycle, as well as continue to tackle the challenging issue of weighing in non-quantifiable benefits associated with many of its activities.

4.4 Assessment of TMDL BMP Implementation Plan Effectiveness

No TMDLs are currently in effect for the Mission Bay and La Jolla WMA. The San Diego Region Beaches and Creeks Bacteria TMDL has been adopted by the Regional Board and was adopted by the State Water Resources Control Board in December 2010 pending the State Office of Administrative Law approval. Should a TMDL such as this one come into effect within the Mission Bay and La Jolla WMA, the City will meet Permit requirements by reporting all TMDL activities implemented (including any BMP Implementation Plans or equivalent plan activities) for each approved TMDL in the WMA.

Section 5 Conclusions and Recommendations

5.1 Conclusions

The City has taken the appropriate actions to meet all the Municipal Permit requirements through the Mission Bay and La Jolla WURMP as detailed in this Annual Report and is, therefore, in compliance with the Municipal Permit.

In FY 2010, the City allocated significant resources and made progress on 24 activities, seven that resulted in measurable pollutant load reductions or source abatement (Level 4), one that can be reasonably assumed to reduce loads, and one activity that will result in long-term improvements. Four activities were implemented that resulted in increased awareness of water quality issues and five activities that resulted in both measured increased awareness and reported behavior change. One education activity, though expected to result in increased awareness, did not involve collecting data this year.

Collectively, all projects implemented, initiated, and reported in FY 2010 are anticipated to improve water quality by increasing the City's understanding of the WMA's water quality issues, improving the public's knowledge of urban runoff issues and effecting positive behavior changes, and reducing and/or treating pollutant loads before their ultimate discharge into receiving water bodies.

As detailed in the activity summary sheets included in Appendix A, activities implemented in the WMA, including the distribution of educational materials and sponsorship of trash cleanups, resulted in 1,907 pounds of trash being removed from waterways. The two Street Sweeping Projects removed 593,040 pounds of debris from street gutters and medians. The City also engaged over 200,000 members of the public through a focused outreach program in Mission Bay as well as attendance at the San Diego Crew Classic event. Surveys administered during the Mission Bay Focused Outreach showed a 10% increase from FY 2009 to FY 2010 of individuals who reported engaging in a behavior that would prevent pollution. Efforts continued on two Community Based Social Marketing (CBSM) activities. As part of one CBSM, 87% of the participants stated a willingness to engage in behaviors to prevent pollution.

Furthermore, the City has made significant progress on special studies and plans. The Tecolote Creek Microbial Source Tracking Study and Tecolote Creek Bioassessment Monitoring were completed. Monitoring in the ASBS has been increased in preparation for pending ASBS regulations. The City continued to collaborate with Scripps Institute of Oceanography, UCSD and San Diego CoastKeeper in implementing the *La Jolla Shores Coastal Watershed Management Plan* for the ASBS drainage area including the implementation of dry weather diversions under a grant program. All of these efforts will benefit the Mission Bay and La Jolla WMA by providing data and water quality activity recommendations for future implementation efforts.

Of special note, the City also worked diligently with Sustainable Conservation's Brake Pad Partnership to ensure the passage of Senate Bill 346: Motor Vehicle Brake Friction Materials which addresses a significant source of copper in our water ways. This bill is anticipated to provide long-term improvements in our receiving waters by limiting the amount of copper that can be used in brake pads, which gets released as brake pad dust settling onto street surfaces.

Based upon the Water Quality Assessment in Section 2, the High Priority Water Quality Problems for the WMA remain bacteria, metals and nutrients. Monitoring data shows that most high frequency occurrence constituents of concern correspond to these ratings except for metals, which has not been observed at high levels. If these trends continue to be observed over the next few monitoring seasons, the Long-term Effectiveness Assessment will analyze them and determine the highest priorities to be addressed during the next permit cycle.

Although the City cannot conclusively link specific activities to improvements in receiving water quality, the City believes that collectively all of its activities are positively influencing water quality. Moreover, the City not only met the minimum requirements of the Municipal Permit, but implemented additional water quality and education activities. The City also created a Strategic Plan for Watershed Activity Implementation to assess the efficiency of these activities in order to best allocate available resources in future years for the purpose of maximizing water quality improvements.

5.2 Recommendations

The Municipal Permit was adopted in 2007 by the Regional Board with a cycle of five years. As in previous years, the City recommends continuing the following strategy for increasing the level of understanding of pollutants and their sources to help focus efforts:

1. Refine and Improve Water Quality Activities. The City is continually developing and refining its list of watershed activities to more efficiently protect and improve water quality. The City intends to use the best available data to refine and improve its activities; however, implementation of activities is ultimately subject to available funding. Modifications based on the results of water quality and effectiveness/efficiency assessment are anticipated to lead to the best allocation of limited resources.

2. Expand Knowledge of Pollutant Sources. The City has developed an approach to expand understanding of the water quality issues in the Mission Bay and La Jolla WMA (i.e., the pollutant sources and magnitude of the issues) so that the City, other entities and interested members of the public can make more informed decisions. The City's recommended approach for increasing its level of understanding is two-fold:

- Continue to gather additional water quality monitoring data suitable for conducting assessment at the watershed and subwatershed levels. In order to effectively assess water quality at both the watershed and subwatershed levels, additional monitoring during both the dry and wet seasons is needed throughout the WMA so that priority water quality problems may be accurately identified, characterized, and prioritized.
- Continue to research and characterize pollutant sources and their pollutant loading potential. A more positive identification of sources and their loading potential would allow the City to modify program activities wisely and devote available resources to target specifically the highest priority sources using the most efficient BMPs.

Specific Recommendations from the 2009-2010 Annual Monitoring Programs include:

- Identify upstream sources of turbidity based on wet weather conditions.

- Identify sources of elevated TDS and other ionic concentrations for ambient conditions.
- Assess the potential role of urban runoff in causing physical habitat disturbance in response to low IBI ratings with no other apparent cause.

Sediment, synthetic pyrethroids (including Bifenthrin), nutrients (including total nitrogen), and low bioassessment scores are regional issues and may be investigated and addressed in a regionally coordinated effort.

Recommendations based on the City's Strategic Plan and programmatic progress to date include:

- Continue, as part of the regional effort, investigating whether synthetic pyrethroids are an emerging issue.
- Based on the results of the air deposition study, continue to look into incentive programs to encourage businesses to cover metal storage areas and replace rusted roofs.
- Continue to investigate anthropogenic sources of bacteria load, and verify priority sectors based on estimated pollutant loading through sub-watershed sampling.
- Assess the magnitude of bacteria re-growth within channels. Biofilm growth experiments within the MS4 showed that enterococci will adhere and grow on storm drain walls.
- Follow the State of California's development of nutrient numeric endpoints for assessment of beneficial use impacts from nutrients. The current benchmarks for total nitrogen and total phosphorus may not necessarily indicate a biostimulatory response in the watershed, and nutrients as a high priority may need to be reassessed once the State completes its study.
- Investigate anthropogenic sources of sediment load in Tecolote Creek and the ASBS that is resulting in exceedances of turbidity and determine the loading on a sub-watershed basis to verify the priority sectors. Past studies have shown that in the ASBS, the source of most of the sediment loading is open space.
- Develop an overall mass balance loading estimate for sources to prioritize management actions and develop effective pollution prevention, source control and treatment control measures.

3. Refine and Improve Effectiveness Assessment. The City has developed a framework to assess the efficiency of its storm water program. This framework is built upon the premise that individual activities should be optimized with regards to efficiency, which is evaluated by considering an activity's pollutant load reduction potential, cost, and its impacts and benefits to the community (this is otherwise known as the "triple bottom line" and is often referred to as a sustainability analysis). By knowing the efficiency rates of activities, the City can implement the best suite of activities to maximize load reduction using available resources. Therefore, the City's assessment framework directs activity implementation and assessment to be designed in a manner that will allow for the investigation and verification of efficiency rates. A combined assessment of the different efficiency rates to establish the best suite of activities to maximize load reduction will then feed into program assessment to determine if the overall program goals and objectives have been met. The City will continue to refine and improve this framework through implementation, which is anticipated to lead to more efficient activity assessment, implementation and better program results.

Section 6 References

California Regional Water Quality Control Board, San Diego Region. Order No. 2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego Regional Airport Authority. January 2007.

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APPENDIX A
WATERSHED WATER QUALITY AND EDUCATION ACTIVITY SUMMARY SHEETS

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TITLE: **I Love a Clean San Diego Trash Cleanup Sponsorship**
ID Number: **MB-1002**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 24, 2010. The City of San Diego (City) sponsored the Marian Bear Memorial Park site in the Mission Bay and La Jolla Watershed Management Area (WMA). Approximately 50 volunteers removed 211 lbs of trash and debris and recycled 36 pounds of trash and debris over a two-mile area.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2010 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Mission Bay and La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	211 lbs
	Pounds of trash recycled (Outcome Level 4)	36 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	247 lbs
	Number of participants (Outcome Level 1)	50
	Amount of money spent on cleanups for all watersheds (Outcome Level 1)	$30,000
	Estimated Amount of money spent on cleanups for the Mission Bay and La Jolla watershed management area (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	$20.24/lb

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On April 24, 2010, 50 participants removed approximately 211 pounds of trash and debris and recycled approximately 36 pounds of trash and debris from numerous sites in the Mission Bay and La Jolla WMA. The average estimated sponsorship cost was $5,000 per watershed ($30,000/6 watersheds). Thus, there was a 247 pound load reduction associated with sponsorship per yearly event, and an efficiency of $20.24 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the total pounds of trash removed and recycled.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2010.

TITLE: **Coastal Cleanup Day Sponsorship**
ID NUMBER: **MB-1003**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 19, 2009. The City of San Diego (City) sponsored the Rose Creek Corridor, Pacific Beach site in the Mission Bay and La Jolla Watershed Management Area (WMA). Approximately 94 volunteers removed 1,560 pounds of trash and debris and recycled 100 pounds of trash and debris over a three-mile area. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

Think Blue also set up an outreach, education booth at Mission Beach where participants gathered before and after the clean-up for the press conference, breakfast, and activities. With more than 15 other booths present, the layout provided volunteers an opportunity to visit each booth during the event. Informational materials distributed at this event include: *Think Blue* brochures, *Think Blue* laminated tip cards, magnetic notepads, pencils, pet trash bag containers, pet trash bag refills, eco-friendly pens, and backpacks.

Based on the information above, the effectiveness assessment below, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills credit as a watershed water quality activity for FY 2010.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Mission Bay and La Jolla WMA are included in the list for cleanups, and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDKC's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	1,460 lbs
	Pounds of trash recycled (Outcome Level 4)	100 lbs
	Total pounds of trash removed (Outcome Level 4)	1,560 lbs
	Number of participants (Outcome Level 1)	94
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$30,000
	Estimated Amount of money spent on cleanups for the Mission Bay and La Jolla watershed management area (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	$3.21/lbs

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

The event's debris removal was tracked using data cards provided by the Ocean Conservancy; 94 participants removed 1,460 pounds of trash and debris and recycled 100 lbs of trash and debris. The average estimated sponsorship cost was $5,000 per watershed ($30,000/6 watersheds); thus, there was a 1,560 pound load reduction and an efficiency of $3.21 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the total pounds of trash removed and recycled. It is anticipated that the sponsorship fee at that level would remain the same for subsequent years.

Conclusions

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2010.

TITLE: **Mission Bay Targeted Automotive Facility Inspections**
ID NUMBER: **MB-1005**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the Mission Bay and La Jolla, San Diego Bay and Tijuana River Watershed Management Areas (WMA). The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
2) Does type of business ownership change the required inspection frequencies?
3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

This activity included three rounds of inspections and spanned both FY 2009 and FY 2010. In FY 2009, this activity was developed and implemented Round 1 inspections to establish the baseline data for future inspections. All automotive facilities selected to be part of this activity were inspected. In FY 2010, Round 2 and Round 3 inspections were performed. Round 2 inspections occurred at approximately half of the sites selected for inspection. The sites inspected in Round 2 were selected via random number generation. These sites received two inspections in FY 2010 (Round 2 and Round 3). Round 3 inspections occurred at all automotive facilities selected to be part of this activity. These sites received one inspection in FY 2010 (Round 3 only). Inspections under this activity were not counted toward the Jurisdictional Urban Runoff Management Program (JURMP) inspection requirements unless inspected facilities were high threat to water quality sites that the Permit requires be inspected annually.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2009 and FY 2010. Assessment and final reporting for this activity concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity* Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identifies metals as a high priority water quality problem in the Mission Bay and La Jolla WMA, and recommends implementing load reduction/source abatement activities to address them. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with metals.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay/La Jolla		
TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Automotive Inspections		
Management Questions	• What is the optimal frequency of inspections for Automotive Repair Facilities? • Does type of business ownership change the required inspection frequencies? • Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the Mission Bay/La Jolla Watershed • Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from data)	
Data Recorded	**Automotive Inspections (Round 2)**	
	Number of full inspections (Outcome Level 1)	27
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	10
	Number of sites needing corrective action (Outcome Level 1)	100
	Number of sites that implemented some corrective action during inspection (Outcome Level 3)	0
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	N/A
	Total IC/IDs observed (Outcome Level 1)	0
	Total IC/IDs eliminated during inspection (Outcome Level 4)	N/A
	Automotive Inspections (Round 3)	
	Number of full inspections (Outcome Level 1)	57
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	18
	Number of sites needing corrective action (Outcome Level 1)	56
	Number of sites that implemented some corrective action during inspection (Outcome Level 3)	1
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	1
	Total IC/IDs observed (Outcome Level 1)	0
	Total IC/IDs eliminated during inspection (Outcome Level 4)	N/A

Objectives
The goal of this focused inspection activity on automotive facilities was to determine the most efficient frequency to ensure proper BMP implementation and reduce pollutant loads.

Analysis and Results
For all rounds of inspections, facility BMP implementation was evaluated for 27 different BMPs at each inspected facility. Inspected facilities were assigned a rating to reflect the level of BMP implementation at the site, and a separate rating to reflect the facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility. Table 2 presents a breakdown of the average knowledge and average BMP implementation scores for the inspected facilities during each period of implementation.

Table 2 Breakdown of Average Knowledge and BMP Implementation Scores by Area (Automotive Inspections)

Average Knowledge Round 1	Average BMP Implementation Score Round 1	Average Knowledge Score Round 2	Average BMP Implementation Score Round 2	Average Knowledge Score Round 3	Average BMP Implementation Score Round 3
1.2	2.7	2.0	2.7	2.4	2.8

There was no significant change in BMP implementation rates observed with increased inspections when comparing the facilities that received one inspection to facilities receiving two inspections in one fiscal year, or three inspections from FY 2009 data. In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues would be resolved if the facilities had structural changes to cover the outdoor operations and activities. These changes would likely be economically infeasible for the businesses to implement.

Each inspected facility was evaluated for their potential to discharge specific pollutant types, such as sediment, metals, and trash. Results of the pollutant discharge potential assessment (PDPA) performed during each inspection were also compared; there were no significant differences in any PDPA constituents assessed during this activity.

Conclusions
This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

The increased inspection frequency did not yield improved compliance behavior at the inspected facilities. However, the inspection process is a viable mechanism for identifying non-compliance issues and potential discharge conditions at inspected facilities. Inspections have also proven to be an effective mechanism for identifying and prioritizing follow-up inspections, and contact necessary to further evaluate compliance and non-compliance issues at facilities. Inspections can be enhanced by having enforcement, with an option for an incentive, for achieving change in compliance behavior.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 84 sites. The increased inspections at the facilities increased knowledge and it was determined during a focus group study for automotive businesses that one of their sources of storm water knowledge came through inspections; thus, this activity raised awareness, Level Two. Additionally, the City noted 28 sites that needed follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at one location, corrective actions were immediately taken. This demonstrates both a Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcome was achieved as a direct result of this activity.

TITLE: **Geographically Based Business Property and Facility Inspections**
ID NUMBER: **MB-1006**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What activities and locations at businesses should be targeted during the inspection based on the severity of observed/report issues?
2) Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?
3) Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?

The City delineated a specific area within the Mission Bay and La Jolla WMA. Inspections were conducted within this geographic area, both inspecting properties as a whole, and evaluating and inspecting individual businesses regardless of whether they were included in the City's commercial/industrial inventory. A mixture of individual businesses and multi-suite complexes, such as industrial parks and shopping centers, were located in this selected geographic area. Two types of data collection were performed at the overall property level: geographic property evaluations and property inspections. Two types of additional data collection at the individual business level on these properties were also conducted: pre-contact and post-contact inspections. Details of these evaluations and inspections are included below:

- Property level data collection:
  - Geographic property evaluations, referred to as "geographic evaluations" for short, recorded detailed information about landscaping, trash/disposal areas, and storm drains within a given property. The purpose of the property evaluations was to characterize the area and collect data additional data beyond the scope of a typical inspection to be used for assessment purposes. For example, a typical inspection answers the question of whether trash areas at a site are clean enough to meet the City's BMP requirements. During property evaluations, more detailed information was recorded: the number of trash areas at a property and the type(s) and quantities of trash observed in them (outside the dumpsters) were recorded.

  - Property inspections were performed at shopping centers and industrial parks. Property inspections gathered information about shared areas such as landscaping, trash/dumpster areas, parking lots, outdoor material storage, and high threat to water quality activities. Typically, these areas are the responsibility of the property owner or property management company. These inspections were based solely on information gathered through observations and focused mainly on compliance evaluation.

- Individual business level data collection:
  - Pre-contact business inspections were performed based on the inspectors' observations only and before speaking with facility representatives. These inspections were performed at all types of businesses on the City's industrial and commercial inventory. Pre-contact business inspections were not conducted at facilities for which site access required contact with site personnel or for facilities that appeared likely not to be inventoried.

  - Post-contact business compliance inspections were conducted at businesses that inspectors determined were or would likely need to be included on the City's industrial and commercial inventory based on pre-contact inspection results and were completed after the pre-contact inspections. The post-contact business inspection involved the same steps as a standard industrial and commercial inspection under the City's JURMP industrial and commercial inspection program. A post-inspection was only conducted if a pre-contact inspection was completed. Educational material was distributed, as applicable, during post-contact inspections.

In FY 2010, 42 geographic evaluations, 27 property inspections, 39 pre-contact business inspections and 31 post-contact industrial/commercial inspections, were conducted in the area selected in the Mission Bay/La Jolla WMA.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2009 and FY2010. Assessment and reporting on this activity were completed in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load

reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay/La Jolla		
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Facility Inspections**		
Management Questions	• What activities and locations at businesses should be targeted during the inspection based on the severity of observed/reported issues? • Can the City increase its commercial/industrial program efficiency by using a tiered inspection process (variable inspection forms & procedures) based on site specific characteristics of the businesses? • Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the Mission Bay/La Jolla Watershed	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	**Geographic Evaluations**	
	Number of geographic evaluations (Outcome Level 1)	42
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	18%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	52%
	Percent of storm drains with observed trash, debris, and/or sediment (Outcome Level 1)	48%
	Property Inspections	
	Number of property inspections (Outcome Level 1)	27
	Percent of facilities recommended for follow-up inspection (Outcome Level 1)	22%
	Percent of sites needing corrective action (Outcome Level 1)	100%
	Percent of properties identified of sources of bacteria (Outcome Level 1)	7%
	Percent of properties identified of sources of nutrients (Outcome Level 1)	0%
	Percent of properties identified of sources of heavy metals (Outcome Level 1)	0%
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Pre-Contact Business Inspections	
	Number of full inspections (Outcome Level 1)	39
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	9
	Number of sites needing corrective action (Outcome Level 1)	37
	Number of sites identified of sources of bacteria (Outcome Level 1)	2

Data Recorded (continued)	**Pre-Contact Business Inspections (continued)**	
	Number of sites identified of sources of nutrients (Outcome Level 1)	0
	Number of sites identified of sources of heavy metals (Outcome Level 1)	0
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	1
	Post-Contact Business Inspections	
	Number of full inspections (Outcome Level 1)	31
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	10
	Number of sites needing corrective action (Outcome Level 1)	31
	Number of sites identified of sources of bacteria (Outcome Level 1)	4
	Number of sites identified of sources of nutrients (Outcome Level 1)	0
	Number of sites identified of sources of heavy metals (Outcome Level 1)	0
	Number of Sites that Implemented Some Corrective Action During Inspection (i.e. BMPs implemented) (Outcome Level 3)	3
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level 4)	3
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A

Objectives

The goal of this assessment is to determine if evaluating facilities based on observation only is an effective and efficient method for identifying and eliminating storm water pollution sources generated on industrial/commercial sites. Furthermore, this program aimed to identify potential sources of constituents of concern in the Mission Bay/La Jolla watershed by assessing industrial and commercial areas, businesses, and activities in the selected geographic areas.

Analysis and Results

A total of 52% properties evaluated during geographic evaluations were observed to have trash areas observed with accumulated trash, debris, and/or sediment. Additionally, 48% of storm drains were observed to have some level of accumulated trash, litter, and/or sediment. Lastly, 18% of landscaped areas were observed to have some evidence of over-irrigation.

All of the properties that received property inspections had at least one corrective action. Most were relatively minor corrections, but 22% of the properties that received property inspections had corrective actions requiring further follow-up. Based on the inspections performed and the recorded time for each inspection, it appears that a property inspection is an effective and efficient method for identifying major outdoor activities and storage that contribute to storm water pollutant runoff. Overall property inspections do not provide much ability to assess BMPs for activities outside accessible common areas, but at shopping centers and industrial parks, it is very rare for activities with potential to influence storm water quality to occur outside areas that can be accessed without first contacting a business representative. Occasionally, it was difficult for the inspectors to clearly delineate a property. Different parcels located close to one another can appear to be part of the same property complex, but may actually have different parcel owners.

As previously mentioned, business inspections were conducted in two parts, the pre-contact inspection and the post-contact inspection. Pre-contact inspections are faster and were effective at identifying outdoor BMP implementation deficiencies at properties, such as shopping centers

and industrial parks with accessible areas. Pre-contact inspections were not as effective at identifying BMP deficiencies at sites that are more difficult to access or where potentially pollutant-generating activities are conducted in areas closed off to the general public, such as auto repair shops. It should be noted that during pre-contact inspections BMP implementation problems could be identified, but it was often not possible to identify the responsible party without talking to personnel at the site. The number of pre-contact inspections is greater than the number of post-contact inspections because in several instances the pre-contact inspection was performed, but after talking with facility personnel during the post-contact inspection the inspector determined that the facility was not conducting activities for which inclusion on the industrial/commercial inventory was required. The percentage of sites that required corrective actions increased slightly between the pre-contact and post-contact inspections, 95% and 100% respectively.

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

Based on the gathered information, pre-contact inspections of an overall complex assessment with shared areas is an efficient and effective in identifying BMP implementation deficiencies in outdoor areas for shopping centers and industrial parks, but less so for individual businesses that are more difficult to access or areas closed to the public, such as contractor storage yards or automotive repair shops.

Based upon the two year inspections results, the primary areas and activities that should be focused on during inspections are: 1) Over-Irrigation; 2) Trash Areas; and 3) Storm Drains. In addition, there were no other businesses warranted to be on the industrial/commercial inventory.

As a result of this activity during the post-contact business inspections, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 31 sites. Additionally, the City noted 10 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify at three locations, corrective actions were immediately taken. This demonstrates both Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcomes were achieved as a direct result of this activity. Also during the pre-contact inspections, the City confirms one IC/ID was observed and called into the City's hotline for response and follow-up for abatement.

TITLE: **Targeted Aggressive Street Sweeping Pilot Project**
ID NUMBER: **MB-1010**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) completed a 24-month street sweeping pilot study in the Mission Bay and La Jolla Watershed Management Area (WMA). The pilot study is part of an ongoing effort to reduce water pollution and maintain the City's compliance with water quality regulations. The goal of the pilot study was to determine the optimal street sweeping frequencies and sweeper machinery that will help the City better comply with local, state and federal Clean Water regulations. Specifically, the study investigated the effectiveness of using vacuum-assisted street sweepers in place of conventional mechanical sweepers and increasing sweeping frequencies to reduce the accumulation of debris containing metals on City streets. The pilot study included the purchase of two types of vacuum-assisted sweepers; the training of sweeper operators; the assignment of sweepers to designated routes within the WMA; and a wet-weather monitoring program to assess the effectiveness of the pilot study.

In order to select the appropriate routes, the City of San Diego used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target areas within the Mission Bay and La Jolla WMA. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study, and meetings held with relevant City staff, the three selected routes (MB-1, MB-2 and MB-3) [1] were in the highest priority sectors of the Mission Bay and La Jolla WMA for potential metals loading.

In anticipation of the start of pilot study, the City conducted the following community outreach and information dissemination efforts in FY 2008:

- Community meetings held in April 2008 and June 2008 in Clairemont and La Jolla areas
- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Article on project published in Council District 6 newsletter, *Frye Lights*, in April 2008
- Newspaper display advertisements placed in community newspapers
- Door hangers and brochures distributed in Clairemont
- Information shared with Council Offices

The City installed "no parking" signs along the pilot study routes in Clairemont (MB-2) in April 2008. In May 2008, the City began sweeping MB-2 at a once a week frequency (one time per week on each side of the street) to determine the amount of debris containing metals that could be removed by increasing the frequency of the City's

[1] Three pilot routes where selected in the Mission Bay and La Jolla WMA. MB-1 consisted of a primarily residential route in the La Jolla Shores area; MB-2 consisted of two small residential routes in the Clairemont area; and MB-3 consisted of a primarily commercial route in the La Jolla/Clairemont area.

conventional street sweeping program. Implementation of the once a week frequency concluded in June 2010. Pollutant load reduction data from this portion of the pilot study is included in the effectiveness assessment section of this activity sheet.

The City installed "no parking" signs along the pilot study routes in the La Jolla Shores (MB-1) and La Jolla/Clairemont (MB-3) areas in the fall of 2008. In October 2008, the City began sweeping MB-1 and MB-3 at an increased frequency (one time per week on each side of the street) to collect additional debris data. Implementation of this frequency also concluded in June 2010. Pollutant load reduction data for these pilot study routes is included in the effectiveness assessment section of this activity sheet.

This phase of the pilot study also included a comparative analysis of the performance of the City's conventional mechanical street sweepers and the newly acquired vacuum-assisted sweepers. Comparative debris data was collected for each machine type for all three pilot study routes (MB-1, MB-2 and MB-3) in the Mission Bay and La Jolla WMA. The results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

Based on results presented in the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load reduction of bacteria (a high priority water quality problem in the Mission Bay and La Jolla WMA), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2010.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Sweeping in the Clairemont area started in April 2008 and concluded in June 2010. Sweeping in the La Jolla area began in October 2008. Use of vacuum-assisted street sweepers began in FY 2009 for these pilot study routes. Debris testing and water quality monitoring was conducted during FY 2010 to assess effectiveness in removing metals from City streets. This project is complete, and will no longer be included in future reporting updates.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy metals

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identify heavy metals as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Targeted increased sweeping targets metals on City streets.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
TARGETED AGGRESSIVE STREET SWEEPING PILOT STUDY Assess the Efficiency of Street Sweeping Frequencies and Methods		
Management Questions	• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?	
Targeted Measurable Outcome(s)	• Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement	
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)	
Data Recorded	Total lbs of debris removed by mechanical sweeper: Total lbs of debris removed by regenerative-air sweeper: Total lbs of debris removed by vacuum sweeper: **Total lbs of debris removed:**	233,820 lbs 257,980 lbs 69,240 lbs **561,040 lbs**
	Total broom miles swept by mechanical sweeper:* Total broom miles swept by regenerative-air sweeper: Total broom miles swept by vacuum sweeper: **Total broom miles swept:**	3,230 mi 2,528 mi 745 mi **6,503 mi**
	Total lbs of debris removed by mechanical sweeper/mile swept: Total lbs of debris removed by regenerative-air sweeper/mile swept: Total lbs of debris removed by vacuum sweeper/mile swept: **Average lbs of debris removed /mile swept:**	72 lbs/mile 102 lbs/mile 93 lbs/mile **89 lbs/mile**
Recommended Data	• Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)	

*"Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator.

Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Objectives

The goal of the assessment was to investigate the effectiveness of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data was also evaluated for the purpose of establishing optimal sweeping frequencies.

Analysis and Results

The study included the purchase of two types of vacuum-assisted sweepers; the dedication and training of sweeper operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. A total of 561,040 lbs of debris was removed by all three sweeper types during the two-year study in the Mission Bay and La Jolla WMA, over a total of 6,503 miles swept. This resulted in an average of 89 lbs of debris removed per mile swept.

Conclusions

The results of the study concluded that the vacuum-assisted sweepers are generally more effective at removing both debris and heavy metals from road surfaces, especially on flat routes. However, the vacuum sweepers performed equally as well as the City's conventional mechanical sweepers on hilly routes. Furthermore, it was determined that the vacuum sweepers are more effective at removing debris and metals with aggressive (i.e., twice per week) sweeping. Specifically, data collected during the pilot study indicated that the mechanical sweepers did not remove as much debris or metals when operated at an increased frequency. Finally, wet weather monitoring indicated that street sweeping is an effective BMP for improving water quality as the data showed direct improvements to runoff collected at inlets along swept roads versus those roads that were not swept. Based on an analysis that demonstrates that the activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

TITLE: **Municipal Rain Barrel Installation and Downspout Disconnect Project**

ID NUMBER: **MB-1011**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) completed a municipal rain barrel installation and downspout disconnect project that reduced pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project consisted of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. The project included site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Mission Bay and La Jolla WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the Mission Bay and La Jolla WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, a service building at the Rose Canyon Operations Yard was selected because it is located in one of the highest priority sectors of the Mission Bay and La Jolla WMA for potential pollutant loading. Through a partnership with USCD, a second site was selected at the Scripps Institute for Oceanography because of its location within the La Jolla Area of Special Biological Significance (ASBS).

In April 2009, a City-approved contractor installed four rain barrel systems at the operations yard. One 75-gallon rain box and concrete planer system was installed and connected to an existing downspout at four locations around the main service building. Each system utilizes an automated timer and pump to release captured runoff from the rain box to the concrete planter.

At the Scripps Institute for Oceanography, one 75-gallon rain box and concrete planer was installed and connected to an existing downspout of a service building near the pier. This system also utilizes an automated timer and pump to release captured runoff from the rain box to the concrete planter.

Rain Box and Planter at Scripps site

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer was distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer were posted on the City's *Think Blue* website during the first quarter of FY 2010.

During FY 2010 the City assessed the effectiveness of the rain barrel/rain harvesting systems at the Scripps Institute of Oceanography. Assessment could not be completed for the Rose Canyon site because access issues prevented the collection of the necessary data. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring was performed from October

2009 to April 2010. Assessment and final reporting for this program concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy metals
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity addressed these high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROGRAM Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff		
Management Questions	• What is the effectiveness of rain barrel/downspout disconnect systems in reducing pollutant loads and storm water runoff volume? • What are the potential pollutant load and volume reductions for the three system configurations tested? • Which system configuration is the most cost-efficient?	
Targeted Measurable Outcome(s)	• Pollutant load reductions due to rain barrel/downspout disconnect installation • Runoff reduction due to rain barrel/downspout disconnect installation	
Cost Data[1]	Cost of site preparation, installation and start-up for Scripps site	$4,720
	Cost of operation and maintenance evaluation for Scripps site	$125

[1] The data recorded does not include information for the Rose Canyon site.

	Cost of effectiveness monitoring for Scripps site	$3,421
Data Collected At Scripps Site	Number/type of barrels installed (Outcome Level 1)	1 system
	Volume of storm water captured/attenuated (Outcome Level 4)	67.8 cu ft over two storm events
	Average concentrations of metals in rainwater or runoff (µg/L) (Outcome Level 4)	11 µg/L Cu 1 µg/L Pb 5,693 µg/L Zn
	Pollutant load reductions for metals for each system configuration (grams) (Outcome Level 4)	0.2 grams of zinc

Objectives

The goal of the rain barrel and rain harvesting assessment was to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results

The pilot project was assessed in FY 2010 based on monitoring data from two storm events collected over one wet-weather season. The one system at Scripps captured and attenuated 67.8 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from corrugated metal roof were 11 µg/L for copper, 1 µg/L for lead, and 5,693 µg/L for zinc. Over the two monitored storm events, the 75-gallon capacity gravity-flow planter box system at Scripps (UCSD-1) resulted in load reduction of 0.2 grams of zinc and no measurable reductions of copper.

The total cost of installation, operation, maintenance, and effectiveness assessment for the system at Scripps was approximately $8,266.

Assessment data at this site shows that the gravity-flow system configuration, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, is more effective and reducing pollutant loads and attenuating wet weather flows than other systems tested. Overall, the study found that gravity-flow systems can attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Furthermore, this configuration was the least expensive of the three tested, which makes it the most cost-efficient. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively.

Conclusions

Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Although less effective than gravity-flow systems at addressing pollutant loads, rain barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas. Based on an analysis that demonstrates that the

activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

TITLE: **Osler Street Hydrodynamic Separator Installation Project**
ID NUMBER: **MB-1012**

ACTIVITY IMPLEMENTATION

Osler Street is located on the Northern end of Linda Vista Park in the Mission Bay and La Jolla Watershed Management Area (WMA). The City of San Diego (City) plans to install hydrodynamic separator directly in line with a 24-inch storm drain that traverses the park and discharges into Tecolote Canyon. The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system. The 24-inch line is the main collector in a small storm drain network that collects storm flows from the park and associated facilities, neighboring elementary school and the surrounding neighborhood comprised mostly of high density housing. Due to the characteristics of the neighborhood and the observations made during a site visit on December 11, 2007, the storm events in the selected area are likely to gather a variety of trash and other pollutants typical of low income high density residential areas. This played an important part in the site selection making process.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design began February 2010 and is anticipated to continue through FY 2011. Construction is expected to be completed in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source

abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
OSLER STREET HYDRODYNAMIC SEPARATOR INSTALLATION PROJECT **Assess the Efficiency and Effectiveness of the Hydrodynamic Separator**	
Management Questions	• What is the load reduction efficiency of the hydrodynamic separator? • How effective is the separator at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the hydrodynamic separator is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator to reduce the amount of trash, sediment, oil, and grease flowing into the storm drain system.

Analysis and Results

Assessment is not possible at this time, as the activity is still in its planning phase. However, once the activity is complete, an assessment of effectiveness will be conducted to show the load reduction and cost efficiency associated with hydrodynamic separators.

Conclusions

Conclusions will be made as to future implementation of other similar projects once the project and effectiveness assessment are complete.

TITLE: **La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV)**

ID NUMBER: **MB-1013**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has been installing a low flow storm drain diversion system in phases to serve the Pacific Ocean coast of the La Jolla, Pacific Beach, and Ocean Beach areas. Phases I and II have been completed using grant monies from the Environmental Protection Agency. Phase III, which includes a total of 11 locations from La Jolla Point to Ocean Beach, will be operational in August 2009.

Phase IV focuses on the La Jolla Area of Special Biological Significance (ASBS) to address the prohibition of dry weather flows under the Ocean Plan Exception Process. Four low flow coastal diversions are planned for this fourth phase: Camino del Oro (Camino del Oro near El Paseo Grande), 7920 Princess St. (Torrey Pines Rd. and Princess St.), Torrey Pines Rd. and Charlotte St. (Torrey Pines and Amalfi), and 1624 Torrey Pines Rd. (Torrey Pines and Coast Walk). The City held a workshop to present the concept for these sites on July 30, 2008 and invited the La Jolla Town Council, the La Jolla Community Planning Group, the La Jolla Shores Association, San Diego Coastkeeper, and the general public.

The UC Regents – UCSD applied to the State Board for an implementation grant under this Consolidated Grant program (Proposition 50) for multiple structural control projects consistent with the La Jolla Shores Integrated Coastal Watershed Management Plan (ICWMP) (see activity summary sheet MB-3003 La Jolla Shores Integrated Coastal Watershed Management Plan) including these low flow diversions. City staff coordinated with UC Regents-UCSD for the City to be a subcontractor on this grant for the implementation of three low flow diversions. The fourth diversion that is part of this phase is funded by the Storm Water Department's General Fund contributions. The State suspended many grant programs including the Consolidated Grants Program. The State has since been received federal American Recovery and Reinvestment Act (ARRA) stimulus funds and has contacted UCSD regarding restarting the projects with ARRA funds.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design was completed in November 2009. The project began the process for advertising for construction bids in June 2010. It is anticipated that a contractor will be awarded the project in March 2011. Construction will follow but is expected to pause in May 2011 due to the summer beach moratorium. It is anticipated that construction will be completed in FY12.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
LA JOLLA SHORES ASBS POLLUTION CONTROL PROGRAM (AKA LOW FLOW DIVERSIONS PHASE IV) **Assess the Efficiency and Effectiveness of the Dry Weather Flow Diversions**	
Management Questions	• What is the load reduction efficiency of the flow diversions? • How effective are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing low flow diversions to divert dry weather runoff into the sewer system for treatment instead of low flows discharging out of storm drain outfalls directly into the ASBS. Targeted high priority pollutants include bacteria, metals and nutrients.

Analysis and Results

Assessment is not possible at this time, as the diversions have not yet been constructed. Prior to construction, monitoring will be conducted to determine baseline conditions. Post-construction monitoring will be conducted as well for comparison to baseline conditions and assessment of effectiveness.

Conclusions

Design was completed in FY11. Construction is expected to begin in FY 2011 and finish in FY2012. Once construction and assessment are both complete, conclusions will be made as to the effectiveness and efficiency of the project.

TITLE: **Kellogg Park Green Lot Retrofit Project**
ID NUMBER: **MB-1014**

ACTIVITY IMPLEMENTATION

This project will replace a portion of the conventional asphalt of the Kellogg Park parking lot with porous pavers to allow for the infiltration of urban runoff. Originally the project considered only the western half of the parking lot. In late FY 2008, the project was expanded to include the entire parking lot. The concept design for the western half of the parking lot was worked on in FY 2008. An additional conceptual design, showing pervious pavers installed in the north and south ends of the lot, was completed in FY 2009. The middle of the lot will be resurfaced with conventional asphalt. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, Area of Special Biological Significance (ASBS), and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla Watershed Management Area (WMA).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design for this project was initiated in January 2009. Design was completed in February 2010. The process of advertising the project for construction began in March 2010 and the award of the project is expected in November 2010. Construction is anticipated to finish before the end of FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy

metals and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
KELLOGG PARK GREEN LOT RETROFIT PROJECT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs**	
Management Questions	• What is the load reduction efficiency of retrofits? • How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Change in pollutant concentrations in runoff into storm drains or receiving water (Outcome Level 5) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) retrofits through reduction of runoff volume. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type. High priority pollutants targeted include bacteria, nutrients and heavy metals.

Analysis and Results

The concept design for this project began in FY 2008 and baseline monitoring was completed. Currently, load estimates are being calculated and will be included in the project report. Once design and construction are complete, additional assessment will be completed to determine the effectiveness of this activity.

Conclusions

As mentioned above, the assessment will be completed after project construction and conclusions will be made at that time. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, ASBS, and current and anticipated TMDLs in the receiving waters of the Mission Bay and La Jolla WMA.

TITLE: **Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project**

ID NUMBER: **MB-1016**

ACTIVITY IMPLEMENTATION

Within the tributary watershed of the Bannock Avenue Neighborhood, vegetated planter areas will be constructed between the existing curb and the sidewalk. Cuts will be made in the existing curbs to allow flow to exit the street paved section as well as enter and exit the planter areas. The planter areas will be filled with cobbles and/or gravel to a depth of approximately 1 foot and planted with landscaping to be determined during final design. The cobbles and/or gravel must be placed to an elevation approximately 1 inch below the adjacent sidewalk and curb to ensure no Americans with Disabilities Act (ADA) access issues are encountered. The cobbles and/or gravel will be prevented from spilling into the street through the curb cut by a metal screen. Some existing sidewalks will be replaced with new pervious concrete sidewalks. The need for temporary or permanent irrigation to establish the planter areas must be determined during final design.

Within North Clairemont Park, a diversion structure will divert flows to a trash segregation unit, followed in series by a bacteria treatment system. From this system, flows will be returned to the natural drainage course at the location of the existing storm drain system outlet headwall. The diversion structure will be sized to divert the 85th percentile storm event in order for it to be treated by the trash segregation and AbTech units. This size storm was selected because this treatment Best Management Practice (BMP) is a pilot project to assess the effectiveness of this treatment technology. The larger storm event would result in a significantly larger system and higher project cost. The City of San Diego (City) determined that the 85th percentile storm was adequate to assess the effectiveness of this treatment technology through the pilot program because this technology has not been proven at larger flows. Should this technology prove cost effective for storm flows, the system may be expanded for a larger design storm.

This project was identified as "Infiltration BMP Retrofit #1" in the 2008 Mission Bay and La Jolla WURMP. In the latter half of FY 2008, a site was selected and conceptual design was completed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the City's Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The project completed preliminary engineering and transferred to design in February 2010. The project is currently in the process of hiring a design consultant. Construction is anticipated to be completed in FY 2014.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
BANNOCK AVENUE STREETSCAPE ENHANCEMENT & BACTERIA TREATMENT PROJECT Assess the Efficiency and Effectiveness of the Design and Construction of the Enhancement and Bacteria Treatment Project	
Management Questions:	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria load with the installation of vegetative planters, trash segregation units, and bacterial treatment systems in the Bannock Avenue Neighborhood.

Analysis and Results

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: **Infiltration BMP Retrofit #2**
ID NUMBER: **MB-1017**

ACTIVITY IMPLEMENTATION

This activity will involve the implementation of an infiltration project in the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other best management practices (BMPs) being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla WMA.

The project did not advance in FY 2009. It is currently on hold due to limited resources that have been allocated to other watershed activities which are moving forward.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. This project will begin moving forward again in FY11 and staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) identify bacteria, metals and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them. It is anticipated that this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment when the project moves forward.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
INFILTRATION BMP #2 **Assess the Efficiency and Effectiveness of the Design and Construction of the Infiltration BMP**	
Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 4) • Dataset of load contributions for specific activities (Outcome Level 4)

The effectiveness assessment for this activity will be developed and completed when and if this activity moves forward. The above table provides an example of what questions, methods, and measures may be used for the assessment.

TITLE: **Beach Area Low Flow Storm Drain Diversion Project, Phase III**

ID NUMBER: **MB-1018**

ACTIVITY IMPLEMENTATION

In 1997, the Beach Area Low Flow Diversion Project was created at the request of the San Diego Council Members Wear and Mathis. Storm drain outfalls along the coastline were inventoried and each drain outfall was rated for the potential for human contact with the flow from the drain (i.e. flow crosses the beach). Outfalls, which were labeled by the street name location, were identified as having high or medium potential were studied to determine the feasibility and cost of diverting low flows to the wastewater collection system. High priority sites due to continuous urban runoff flows during dry weather became Phase I of the project. As a result, Phase I low flow diversion facilities included Tourmaline, Bonair/Neptune, Ravina, Avenida de la Playa, Vallecitos, Camino del Oro, and south of Vista de la Playa. These sites became operational in 1998 and 1999 at a cost of $1 million.

Phase II projects included El Paseo Grande, Spindrift, Children's Pool, 711 Coast Boulevard, Coast Boulevard (at lifeguard station), 465 Coast Boulevard, Coast Boulevard at Pump Station 24, Neptune and Belvedere, Neptune and Westbourne, Neptune at Playa Del Norte, Neptune at Playa Del Sur, Neptune at Gravilla, Neptune at Kolmar, Neptune North of Kolmar, Neptune at Rosemont, Neptune at Palomar, Coast Boulevard at Grand, and Ocean Boulevard at Grand. Phase II projects became operational by July of 2007.

Phase III projects include Missouri Street, Chalcedony, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Street, and South of Loring Street. These facilities became operational in August 2009. The warranty period on the construction will expire in August 2010.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Phase III projects are operational and are expected to be out of the warranty period in early FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
BEACH AREA LOW FLOW STORM DRAIN DIVERSION PROJECT, PHASE III **Assess the Efficiency and Effectiveness of the Flow Diversion Facilities**	
Management Questions	• What is the load reduction efficiency of the storm drain diversions? • How effective are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the Phase III low flow diversion facilities to divert urban runoff flows during dry weather. Targeted high priority pollutants include bacteria, metals and nutrients.

Analysis and Results

Phase III projects include Missouri Street, Chalcedoney, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Avenue, and South of Loring Street. An effectiveness assessment will be conducted.

Conclusions

Phase III projects have been operational since early FY 2010. Effectiveness and efficiency will be determined by comparing load reduction to implementation costs, and through water quality monitoring. After assessment is complete, conclusions will be made based on the effectiveness and the efficiency of the project.

TITLE: **Avenida De La Playa Storm Drain Replacement and Low Flow Diversion**

ID NUMBER: **MB-1020**

ACTIVITY IMPLEMENTATION

During the City of San Diego's (City's) Beach Area Low Flow Storm Drain Diversion Project Phase I construction (briefly described in Activity Summary Sheet - MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III), a diversion was built upstream from the outfall at the beach on Avenida de la Playa with much of the flow from the large drainage area being diverted. However, there is significant dry weather flow from the area downstream of the diversion. The invert elevation of the existing beach outfall is at the mean sea level and sand regularly blocks all flow, except during the largest winter storms. Dry weather flows collect and stagnate, creating a known source of bacterial discharge to the receiving waters of the La Jolla State Marine Conservation Area (Area of Special Biological Significance (ASBS) No. 29). The City is proposing a second dry weather diversion facility closer to the point of discharge at the beach along Avenida de la Playa and replacement of the pipe due to the dry weather issues, tidal intrusion, groundwater intrusion, and other issues associated with the current condition of the pipe.

In late FY 2008, the City prepared a concept proposal, including this project, to apply for funds under the State's Proposition 84 ASBS Grant Program.

The goal of this project is to eliminate bacteria loads and other pollutants, such as metals and nutrients, typically discharged through low flows to the ASBS by replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through design, construction and project close out. Preliminary engineering was completed in April 2009 and the project was transferred to design in June 2009. A design consultant was hired and the project is currently working on 30% design. Design is anticipated to finish in April 2011 with construction finishing in November 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. By replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall, sediment will no longer be trapped within the pipe allowing bacteria to grow within the warm waters and sediments contained in the pipe.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
AVENIDA DE LA PLAYA LOW FLOW STORM DRAIN DIVERSION PROJECT **Assess the Efficiency and Effectiveness of the Flow Diversion Facilities**	
Management Questions	• What is the load reduction efficiency of the storm drain diversions? • How efficient are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this analysis is to determine the diversion project's effectiveness and efficiency in reducing pollutant loads.

Analysis and Results

Assessment is not possible at this time, as the project is still in the design phase. Post-construction monitoring will be conducted and effectiveness assessment will be completed once the project is complete. Efficiency will be determined by comparing load reduction to implementation costs.

Conclusions

Once the project is complete and the effectiveness assessment has been conducted, conclusions will be made as to future implementation of other similar activities.

TITLE: **Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades**

ID NUMBER: **MB-1021**

ACTIVITY IMPLEMENTATION

In 1987, the City of San Diego (City) committed to expand the low flow diversion system around Mission Bay with the Mission Bay Sewage Interceptor System (MBSIS) project. This initial project provided interception capability for 65 drain outlets within the remaining 10 percent of the tributary drainage basin. At a cost of $9 million, the project was completed in 1994 and expanded the number of facilities to 46 (14 pump stations and 32 gravity systems). A telemetry control system was also included to provide a more efficient operation. The remote telemetry automatically was used to shut down each facility whenever it rains. Therefore, the labor-intensive effort of physically shutting down each facility was avoided. The new storm water pumping station constructed in Mission Beach at Santa Clara Point was constructed with low flow pumps to divert dry weather flows to the wastewater collection system.

The current CIP project provides for the design and construction of upgrades to 31 sites within MBSIS.

Three Congressional Federal Grants were issued through EPA's Appropriations Act totaling approximately $10 million. These grants fund 55% of the design, environmental, and construction costs of Coastal Low Flow (CLF) Phases II, III and IV (see Activity Sheets MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III and MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV) for more information) as well as the design and environmental costs for MBSIS. In order to be eligible for these federal grants, each of the phases must clear the EPA's National Environmental Policy Act (NEPA), a process that can span up to a year. These grants are reimbursable. The matching funds for the grant are being paid by the Deferred Maintenance Bond (Bond).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Upon receiving enough funding to move forward, the project advertised for construction bids in November 2009. The project was awarded to the lowest responsible bidder in June 2009. Construction is anticipated to begin in August 2010 and continue until May 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem in the WMA. Identification of the sources of bacteria in the WMA will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MISSION BAY AND COASTAL BEACHES SEWAGE INTERCEPTOR SYSTEM UPGRADES Assess the Efficiency and Effectiveness of the Flow Diversion System	
Management Questions	• How effective are the upgrades at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., outfall monitoring programs) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in level of potential discharges/load reduction due to implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the upgrades to the MBSIS flow diversion system in reducing bacteria load and improving water quality.

Analysis and Results

Effectiveness will be determined after the upgrades are completed through an assessment of load reduction/source abatement.

Conclusions

Conclusions will be made at the completion of the activity, after implementation and assessment is complete.

TITLE: **Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment**

ID #: **MB-1022**

ACTIVITY IMPLEMENTATION

This project will implement a proprietary inlet treatment device at Lindbergh Park. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in late FY 2011. Construction is anticipated in FY 2015.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area identify bacteria and nutrients as high priority water quality problems throughout the Mission Bay and La Jolla WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
Lindbergh Park Limited Low Flow Storm Drain Inlet	
Management Questions	• What is the bacteria and nutrient load reduction efficiency?

Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data to be Recorded	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives
The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis and Results
This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions
Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: **La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment**

ID #: **MB- 1023**

ACTIVITY IMPLEMENTATION

This project will implement a proprietary inlet treatment device at the La Jolla Shores Lane. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks TMDL
- ASBS Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in late FY 2011. Construction is anticipated in FY 2015.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify heavy metals, nutrient, and bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
LA JOLLA SHORES LANE LIMITED LOW FLOW STORM DRAIN INLET

Management Questions	• What is the bacteria and nutrient load reduction efficiency?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives
The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis and Results
This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions
Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: **Median Sweeping Pilot Study**
ID NUMBER: **MB-1024**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) implemented a one-year pilot study to assess the effectiveness of modifying its street sweeping program to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study specifically focused on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with this proposed programmatic change to the City's street sweeping program.

The pilot study specifically looked at expanding current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change allowed calculation of potential pollutant removal efficiency afforded by sweeper access to what was found to be heavily polluted areas.

The overall pilot study was designed to answer the following management questions:

- What is the relative cost-efficiency of integrating additional median sweeping into the City street sweeping program?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does median sweeping provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study was used to determine whether sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring was conducted to allow for assessment. This activity took place in multiple watersheds, including La Jolla Village Drive in the Mission Bay and La Jolla WMA.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Median Sweeping Pilot Study was piloted first to determine whether median sweeping improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2009 and continued into the first quarter of FY 2010. Implementation and assessment took place during FY 2010. This project is complete, and will no longer be included in future reporting updates.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identify heavy metals as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Median sweeping targets metals on City streets.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MEDIAN SWEEPING PILOT STUDY Assess the Effectiveness of Sweeping Medians on Improving Street Sweeping Activities	
Management Questions	• What is the relative cost-efficiency of integrating median sweeping into the City street sweeping program? • What level and type of debris can be removed by sweeping high volume median areas? • What level of metals removal benefit does median sweeping provide? • What type of sweeping equipment optimizes debris removal in or on high volume median areas?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)

Data Collected[1]	• Total pounds of debris removed (Outcome Level 4)	• 32,000 lbs
	• Total broom miles swept (Outcome Level 4)	• 30.5 miles
	• Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)	• 568 lbs/mile swept[2]
	• COC concentrations in debris collected (Outcome Level 4)	• See report posted at http://www.sandiego.gov/thinkblue/special-projects/streetsweeping.shtml

[1]Data, except as noted, is from two routes partially within the WMA.
[2] As calculated per combined route data for baseline sweeping.

Objectives

The goal of the assessment was to investigate whether sweeping medians improves the effectiveness of the City's current street sweeping activities.

Analysis and Results

A baseline sweep of the four pilot median areas, which included two routes in the Mission Bay and La Jolla WMA, along La Jolla Village Drive, Balboa Ave, Clairemont Mesa Blvd, and Morena Blvd,, resulted in the removal of 32,460 lbs of debris over a total of 58 miles with an average of 560 lbs of debris removed per mile swept. After the initial baseline sweep, each route was swept four more times over an approximate three month period (with roughly three weeks between sweeps). A total of 32,560 lbs of debris was removed over these three months over all four routes. Along one route, with approximately half of the 14.6 mile route in the Mission Bay and La Jolla WMA, over 19,000 lbs of debris was removed during the entire study period. Along the second route, with approximately three-fourths of the 15.9 mile route in the WMA, over 13,000 lbs of debris was removed. The remaining routes were not in the WMA.

Conclusions

The study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic City roadways. The initial baseline median sweep collected 3-5 times more debris than the subsequent 3-week interval sweeps. This suggests that there is a significant buildup of debris adjacent to median areas. Furthermore, debris sampling confirmed the presence of heavy metals, nutrients and hydrocarbons in the debris collected. This leads the City to believe that median sweeping may provide a significant benefit for controlling the input of high priority water quality problems from impacting receiving waters. Based on an analysis that demonstrates that the activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

TITLE: **Pet Waste Bag Dispenser Program**
ID NUMBER: **MB-1025**

ACTIVITY IMPLEMENTATION

This activity will target areas frequented by pet owners such as apartment complexes, condominiums, mixed-use locations, and public right of way in the Mission Bay and La Jolla Watershed Management Area (WMA). When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones.

This project was in its planning stage during FY 2010. Watershed maps were developed and utilized to assist in the selection of potential installation locations. Criteria used were:

a) Canine related activity, e.g. dogs being walked
b) Cleanliness (observed pet waste)
c) Presence of trash receptacles
d) Presence of pet waste bag dispensers
e) Areas draining to a water body impaired for bacteria, phosphorus or nitrogen
f) Potential for Partnership
g) Areas of Complaints/Chronic Pet Waste Observations

Three watershed management areas (WMAs) were selected for implementation in FY 2011: Mission Bay and La Jolla, San Diego Bay, and San Diego River.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2010. Program implementation is anticipated to occur in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
PET WASTE BAG DISPENSER PROGRAM **Assess the Effectiveness of Pet Waste Bag Dispensers**	
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	• Change (%) in load reduction pre and post implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results

The pilot project was not in active implementation during FY 2010. Program launch is anticipated to occur in FY 2011.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

TITLE: **Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials**

ID #: **MB-1026**

ACTIVITY IMPLEMENTATION

Previous City of San Diego (City) investigations determined that copper from automotive brake pads was a major contributor of dissolved copper, a high priority water quality pollutant, to San Diego waterways within City jurisdiction. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments, through California Stormwater Quality Association, to achieve true source control by reducing copper at its source. It was determined that the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads.

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

SB346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. It is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- CASQA - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Coalition for Practical Regulation - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development,

participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.

- Alameda County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.
- Contra Costa County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.
- Many San Diego Regional Copermittees provided letters in support of the legislation.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY The City's *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla WMA identifies metals as a high priority water quality problem throughout the Chollas Creek WMA, and recommends implementing source control activities to address it. This activity's objective is to reduce the amount of copper that reaches our storm drains and receiving waters to improve and restore water quality for our citizens.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials Removal of Copper in Automotive Brake Pads	
Targeted Measurable Outcome(s)	Evidence of reductions of copper starting in 2022.

Objectives
The goal of this legislation is to reduce the amount of copper released into the environment from automotive brake pads.

Analysis and Results/Conclusions
The authorization of this proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

TITLE: **Public Service Announcements: Karma, Karma Second Chance, Karma Tourist**

ID NUMBER: **MB-2001**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Mission Bay Watershed Management Area (WMA) in FY 2009 and FY 2010. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

The City will continue to run the *Karma* public service announcements; however, this activity will no longer be included in future reporting updates.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Mission Bay WMA in FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in both increased knowledge and awareness

regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City will continue to run the *Karma* public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program, therefore no assessment was conducted in FY 2010.

TITLE: **Genesee Commercial CBSM Efforts**
ID NUMBER: **MB-2004**

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department, Pollution Prevention Division (City) has been using Community Based Social Marketing (CBSM) strategies since FY 2008 in attempt to increase knowledge and change behaviors among various target audiences. CBSM is an environmental social science method of outreach which includes comprehensive research, data gathering, and assessment measures to develop more effective outreach strategies. The City has implemented several pilot projects in various communities, and assessment has confirmed success in achieving pollution prevention awareness and behavioral change.

In FY 2010, the City conducted focus group research with three business types found along the Genesee Ave. corridor; restaurants, automotive shops and landscapers. The research planned for the Genesee area is currently on hold based on the focus group feedback and the creation of an implementation plan. If and when the project moves forward, research and outreach in the Genesee area will be initiated. Outreach interventions and assessment methods will then be developed based on the research findings.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

As noted above, this activity is on-hold.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the *Strategic Plan for Watershed Activity Implementation* identify bacteria and trash as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly if and when it is implemented.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
GENESEE COMMERCIAL CBSM EFFORTS	
Management Questions:	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in pilot group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash or other pollutants removed from study area (Outcome Level 4)

The effectiveness assessment for this activity will be developed and completed when and if this activity moves forward. The above table provides an example of what questions, methods, and measures may be used for the assessment.

TITLE: **Mt. Abernathy LID Green Street Outreach**
ID NUMBER: **MB-2005**

ACTIVITY IMPLEMENTATION

Mt. Abernathy Green Street Outreach will be performed to support the planned "Green Street" construction in a small sub-section of the Clairemont community in the Mission Bay and La Jolla Watershed Management Area (WMA). Construction may include modifying the vegetated planter areas between the curb and sidewalks in front of residential homes in order to better infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. The City plans to inform, educate and involve residents who are directly affected by the construction in an attempt to achieve awareness regarding storm water runoff and to create behavioral change among residents. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities may include public participation and outreach, education regarding structural interventions, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The schedule for this outreach will parallel the Mt. Abernathy Low Impact Development (LID) Green Street Construction. The City anticipates retaining several outreach consultants, including at least one firm that specializes in Community Outreach. Planning occurred in FY 2009 and FY 2010, with implementation, outreach, and evaluation planned for FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) identify bacteria and trash as high priority water quality problems in the WMA. This effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MT. ABERNATHY LID "GREEN STREET" OUTREACH **Assess the Efficiency and Effectiveness of Educating the Public About Green Street-type BMPs**	
Management Questions	• Does education regarding the LID retrofits effectively raise awareness of bacteria, metal and nutrient pollutant issues? • Does education regarding the LID retrofits effectively change pollutant behavior among residents?
Targeted Measurable Outcome(s)	• Reach goal number of people within the Mission Bay and La Jolla WMA, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached)
Data Recorded	• Number of educational information items passed out (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2) • Change in pollutant-related behavior (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness of educating the public on the LID retrofit best management practices (BMPs) in reducing bacteria and gross pollutant loads from runoff in the Mt. Abernathy Neighborhood.

Analysis and Results

Assessment is not possible at this time, as this activity has not yet been implemented. Outreach activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

Conclusions

This activity has not yet been implemented. Effectiveness will be measured by the change in public knowledge and change in pollutant behavior among residents, as determined by survey results, and conclusions will be made once effectiveness is determined.

TITLE: **Clean Construction Poster and Brochure Distribution**
ID NUMBER: **MB-2006**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper BMPs. The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and Best Management Practices (BMPs) for construction. Photos on the brochure and poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally with Development Services Department staff to distribute the poster in FY 2010 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of posters distributed in the Mission Bay and La Jolla Watershed Management Area (WMA) was 68. The number of posters distributed by Storm Water inspectors was 9 (7 in English and 2 in Spanish).

At the current time, this activity does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years with positive feedback from users, so the City plans to continue their distribution. The City will discontinue reporting on this activity after FY 2010.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the poster and/or brochure to permit applicants in FY 2011, but will not be reporting on it in the future.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, sediment, metals, and nutrients as high priority water quality problems throughout the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with erosion and sediment.

EFFECTIVENESS ASSESSMENT

The City distributed approximately 68 erosion and sediment control brochures and posters in FY 2010. After FY 2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **Restaurant Best Management Practices Booklet Distribution**
ID NUMBER: **MB-2007**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission several years ago from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the Mission Bay and La Jolla Watershed Management Area (WMA) during inspections. After review by restaurant employees, the booklet could be kept by owners/managers for reference and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs. The booklets were not modified in FY 2010, and continue to be distributed.

Storm Water Pollution Prevention Division staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for the continued distribution of the booklet in FY 2010 to City-permitted facilities. The City distributed 576 booklets in the Mission Bay and La Jolla WMA.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these booklets have been distributed over a number of years and the City plan to continue their distribution. The booklets will continue to be distributed in the future; however, the City will not be reporting on this activity.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with FEWD Program staff for distribution of the booklet in FY 2011 to City-permitted facilities but will discontinue the reporting of this activity.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

In FY 2010, the City distributed 576 booklets as referenced above in the Activity Implementation section. Due to the nature of this activity, comprehensive effectiveness assessment to show knowledge or behavior change is not being conducted for this activity. After FY2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **Mission Bay Focused Outreach**
ID NUMBER: **MB-2009**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in Mission Bay, the City of San Diego's (City's) *Think Blue* program implemented a summer outreach campaign in FY 2007 that targeted key sources of bacteria pollution in Mission Bay. In FY 2010, the campaign provided direct outreach during the major summer holidays (Independence Day 2009, Labor Day 2009 and Memorial Day 2010) to Mission Bay visitors, specifically recreational vehicle (RV) users and boaters. The outreach program is held according to the summer holidays in a calendar year, but reported according to Fiscal Years. The education focused on reducing pollution and bay closures as a result of contamination due to bacteria sources. In addition, direct outreach and materials distribution were conducted to marinas located in Mission Bay as an additional way to reach the target audience.

During the summers of 2009 and 2010, education and outreach included:

- An outreach greeter station (booth) was staffed with *Think Blue* / Storm Water Department staff and consultants, in order to increase direct public education and interaction. The booth was located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza boat launch, and was operational during the Memorial Day, Independence Day and Labor Day holiday weekends. Public education materials available in the booth included *Think Blue* pollution prevention education materials (such as brochures and tip cards), along with best management practice (BMP) giveaways, such as brooms and dustpans.

- Specific on-site outreach was conducted with marinas and boating businesses located in and around Mission Bay. Each operator was offered pollution prevention postcards and posters that targeted BMP specific to sources of pollution generated by boats.

- Specialized postcards targeting each Mission Bay user group (RV users, boaters, and general visitors) were developed and available in both English and Spanish.

- Mobile ad display was visible at the entrance of Mission Bay East during each of the three Holiday weekends (Memorial Day, Independence Day and Labor Day).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Independence Day 2009, Labor Day 2009 and Memorial Day 2010: An outreach greeter station staffed with *Think Blue* staff, consultants and representatives from San Diego Coastkeeper was located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza boat launch. Public education materials were distributed, including *Think Blue* pollution prevention education materials (such as brochures and tip

cards), along with BMP giveaways, such as brooms and dustpans. A Mobile ad was also displayed at the entrance of Mission Bay East during the holiday weekends.

July 2009 – October 2009: Direct contact was made with marinas operating in and serving Mission Bay. Collaboration was established in order to distribute specialized pollution prevention BMP postcards and posters targeting boaters/boat owners.

This activity is scheduled to continue in FY 2011 (summers of 2010 and 2011).

PARTICIPATING WATERSHED COPERMITTEES

City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- City of San Diego Park & Recreation Department
- City of San Diego Lifeguards
- Mission Bay stakeholder groups (OMBAC, Mission Bay Planning Committee, etc.)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy and the *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla Watershed Management Area (WMA) both identify bacteria as a high priority water quality problem in the WMA. This outreach effort will potentially result in both increased direct knowledge and awareness regarding bacteria and trash as a vector, and indirect future load reduction of trash and debris as they relate to bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MISSION BAY FOCUSED OUTREACH **Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness**	
Management Questions	• What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

Watershed: Mission Bay and La Jolla							
MISSION BAY FOCUSED OUTREACH **Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness**							
Data Recorded	***Think Blue* FY 2009 Mission Bay Outreach Studies**						
	Holiday	*Number of Visitors to Outreach Booth*	*Number of passers-by Observed*	*Number of Visitors Approached*	*Observed Boat Launches*	*Observed Parked RVs*	*Total Materials Distributed*
	Independence Day 2009	213	2,500	71	102	117	636
	Labor Day 2009	171	1,900	102	122	75	519
	Memorial Day 2010	198	2,000	85	48	80	598
	Estimated total visitors (impressions) exposed to the *Think Blue* Booth in Mission Bay in FY 2010 (Outcome Level 1)						6,500
	Estimated total visitors (impressions) exposed to the *Think Blue* Mobile Ad during Mission Bay Focused outreach (9 days) in FY 2010 (Outcome Level 1)						209,249
	Number of marinas and boating businesses who participated in Mission Bay Outreach Campaign in FY2010 (Outcome Level 2)						42
	Number of boating outreach materials distributed to businesses (Outcome Level 1)						1750
	Number of Surveys administered in FY 2010 (Outcome Level 1)						251
	Percentage of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3)						80%
	Percent increase from FY 2009 to FY 2010 of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3)						10%

*Includes walkups, visitors approached by staff and materials given to park rangers and lifeguards to distribute.

Objectives

The goal of this activity is increasing knowledge and awareness in the target audience (Marinas, RVers, boaters and visitors in Mission Bay) in order create positive behavioral change that will reduce the presence of bacteria and gross pollutants in Mission Bay. Assessment was conducted to determine the effectiveness of the FY 2010 outreach campaign on creating increases in knowledge and changes in behavior.

Analysis and Results

The City's *Think Blue* campaign implemented an on-going summer outreach campaign in FY 2010 that targeted key areas of concern for pollution in Mission Bay. The campaign was conducted during the major summer holidays (Independence Day 2009, Labor Day 2009 and Memorial Day 2010) and provided direct outreach to Mission Bay users,

specifically RV users and boaters. Efforts were made to increase awareness of pollutants sources (specifically bacteria), in order to reduce those sources, prevent pollution and avoid beach closures in Mission Bay. Examples of outreach activities included educational material distribution at the *Think Blue* booth, mobile ad display at the entrance of East Mission Bay, direct outreach to boaters and RV users in the area, and direct outreach to local marinas and boating businesses located in Mission Bay.

During FY 2010, approximately 6,500 visitors to East Mission Bay were exposed to *Think Blue's* Focused Mission Bay Outreach, which was promoting the message, "Help Keep Mission Bay Clean and Safe." Over 582 individuals approached the booth to speak with staff; over 258 Bay users were approached by staff, with over 1,700 people receiving pollution prevention outreach materials and items. The *Think Blue* Mobile Ad that was parked in the Mission by area at the entrance of East Mission Bay during the three holidays (9 days total) is estimated to have been viewed by 209,249 individuals based on traffic and pedestrians counts.

FY 2010 was the fourth year that *Think Blue* conducted Focused Mission Bay Outreach. *Think Blue* engaged in 9 days of direct outreach due to the fact that all three holidays in FY 2010 encompassed 3-day weekends. The alcohol beach ban that was approved during FY 2009, seems to continue to impact beach attendance, with decreased levels shown across City beaches. FY 2010 was the third year that *Think Blue* performed survey assessments. Of the 251 individuals who completed the assessment survey, 80% reported taking steps to prevent pollution. This is an increase from 70% in FY 2009. This result can be considered an indicator of a Level 3 Outcome.

Conclusions

Mission Bay Focused Outreach is an effective way to reach visitors in East Mission Bay during the major summer holidays. The large numbers of impressions (over 6,500 exposed to *Think Blue* booth, and 209,249 exposed to mobile advertising), direct contacts (approx 600 persons), educational materials distributed (1,742 items) and survey participation in FY 2010 support the assertion that the focused outreach program is effective at increasing public exposure to bacteria and gross pollutant issues. More of the public is now aware of storm water issues and the *Think Blue* campaign due to this focused outreach.

Implementation of the campaign will continue in FY 2011, to include hosting the outreach booth and continued distribution of the specialized informational postcards tailored to RV users, boaters, and general visitors. Assessment surveys will continue and increased effort to gather statistically valid information regarding knowledge, attitudes and pollution prevention behavior of Mission Bay visitors. Outreach in FY 2011 will continue with expanded targeted Marina and boater outreach. Effectiveness will be measured further via surveys comprised of residents in the Mission Bay and La Jolla WMA to determine awareness, knowledge retention and behavior change.

TITLE: **San Diego Crew Classic**
ID NUMBER: **MB-2011**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in the Mission Bay Management Area (WMA) in FY 2010, the City of San Diego's *Think Blue* program participated in the San Diego Crew Classic, a rowing regatta held in Crown Point Shores in Mission Bay. The outreach campaign provided direct outreach dedicated to preserving water quality in San Diego, primarily targeting key sources of bacteria in Mission Bay. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain system and ultimately Mission Bay. With more than 15,000 people in attendance, our presence provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

Think Blue participated in the event by hosting a booth during both days of the event. Think Blue once again served as the official Program Sponsor in FY 2010, as well as the Trophy Sponsor of the City of San Diego Cup, also known as the Men's Club Championship. The outreach booth provided direct education and materials regarding water quality protection. Materials distributed included brochures and tip cards, along with best management practice (BMP) items such as dust pans, pet trash bag containers and pet trash bag refills that help promote behavior change. Promotional giveaways included eco-friendly pens, Frisbees, backpacks, and rally towels.

Other outreach items and activities included:

- Specialized postcards targeting Mission Bay RV users and boaters, which were available in both English and Spanish
- Placement of a 10 foot Think Blue banner at the official race finish line which was visible on camera on national TV
- A Think Blue PSA was broadcast multiple times on the JumboTron screen which was broadcasting live coverage of the event
- Over 50 recycling bins at the event were marked with Think Blue stickers that indicated, "Recycle Here"
- Think Blue donated the Think Blue Hospitality tent for use by several local non-profits such as Coastkeeper and San Diego Ocean's Foundation so that they could provide education and information to spectators at no charge
- Event surveys were collected from over 250 booth visitors to gather assessment information about knowledge, awareness, attitudes and behaviors regarding storm water pollution prevention

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue plans to participate in the Crew Classic during FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Bay stakeholder groups (OMBAC, ZLAC Rowing Club, Mission Bay Planning Committee, etc.)
- Several local non-profit corporations (San Diego Coastkeeper, San Diego Ocean's Foundation, I Love A Clean San Diego, etc.)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash, debris and bacteria.

EFFECTIVENESS ASSESSMENT

	Watershed: Mission Bay and La Jolla						
	SAN DIEGO CREW CLASSIC **Assess the effectiveness of direct public outreach to increase awareness about storm drain pollution and prevention.**						
Management Questions	• What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?						
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys						
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)						
Data Recorded	***Think Blue* FY 2010 Crew Classic Event**						
		Number of Booth Visitors	***Gender***	***Number of Surveys Given***	***How have you heard about Think Blue?***	***Is storm water treated?***	***Total # of Materials Distributed***
	Crew Classic, 2010	1,000+	Approx 40% Male 60% Female	8 General (Span) 135 Pet 117 Auto 260 Total	30% TV/radio 41% Events 29% Other	51% No 11% Yes 38% DK	2,429
	Estimated total visitors exposed to the *Think Blue* Booth at the Crew Classic in FY 2010						15,000

	Watershed: Mission Bay and La Jolla	
	SAN DIEGO CREW CLASSIC **Assess the effectiveness of direct public outreach to increase awareness about storm drain pollution and prevention.**	
	(Outcome Level 1)	
	Number of surveys administered in FY 2010 (Outcome Level 1)	260
	Percentage of individuals surveyed that believed that pet waste contributes to storm water pollution (Outcome Level 2)	95%
	Percentage of individuals surveyed that believed that automotive fluids contribute to storm water pollution (Outcome Level 2)	100%
	Percentage of individuals able to name a concrete action (either general or automotive) to prevent storm water pollution (Outcome Level 3)	80%
	Percentage of individuals surveyed who reported picking up after their dog (always or sometimes) to prevent pollution (Outcome Level 3)	95%
	Percentage of individuals surveyed who reported that they would take steps (such as maintain their car, drive less and use drip pans) to prevent automotive pollution (Outcome Level 3)	77%

Objectives

The goal of this assessment was to determine community knowledge and awareness about storm water issues and whether or not residents and visitors would adopt non-polluting behaviors. Another goal was to create positive behavior change that will reduce bacteria and gross sediment in water bodies in the Mission Bay and La Jolla WMA.

Analysis and Results

The campaign targeted key audiences and areas of concern for pollutants in the Mission Bay WMA. The event provided direct outreach to residents living within the Mission Bay area as well as visitors to the event. It should be noted that this event is an international collegiate regatta (rowing competition), therefore although this event attracts a local crowd, many attendees are from other areas outside of San Diego.

A total of 260 Think Blue booth visitors completed the event survey assessment cards, comprised of general surveys, and surveys specific to pet waste and automotive pollution. Of the 260 surveys conducted, 8 were in Spanish by individuals who live in Mexico. Of the remaining 252 survey participants, 166 (66%) were from San Diego County, and the rest were from outside of San Diego County. Fifty percent of all survey participants knew that storm water wasn't treated, while 10% said it was treated and 37% stated that they didn't know. A total of 114 survey participants (44%) provided an address, e-mail, or phone number to receive more information and/or future Think Blue promotions.

General Survey Results

Eight participants completed the General Survey. All participants completed the survey in Spanish, and reported their residency as being in Mexico. 88% were male and 12% were female, and the average age was 20 years. Every participant responded to the question "What is the slogan asking you to do?" The most common responses were "General Environmental" (38%), and "Good Slogan/Message Quality" (25%). All of the respondents who answered this question believed that storm water was an important issue (Extremely important =13%= Very important = 75%, Somewhat important=12%).

Eighty-eight percent of respondents said that they were at least somewhat likely to take actions to prevent storm water pollution as a result of attending the event (Extremely Likely=13%, Very Likely=75%,). All the participants (N=8) were able to name a concrete action they could take to prevent storm water pollution. The most common actions listed by participants were, "use trash can/don't litter" (75%) and "keep clean (general)/don't pollute" (25%).

Pet Waste Survey Results

Of the 135 Pet Waste Survey participants, 100% were completed in English. One hundred and thirty participants reported their gender. Of these, 37% were male and 63% were female, and the average age of participants was 35 years. Fifty-six percent of respondents said they do own a dog, and 132 people responded to the question "How often do you see dog waste in your community that is not cleaned up?" 97% said they do see waste that is not cleaned up (Always=8%, Often=21%, Sometimes=53%, Rarely=15%), and 3% said Never. Ninety-five percent said that dog waste contributes to pollution of local waterways (A lot=29%, Moderate=44%, Small amount=22%).

The largest percentage (88%) of respondents said that a correct method of disposing of pet waste is to put it in the trash can. 14% believe that it is correct to bury it, followed by 7% who said it is correct to leave it to decompose. When asked how often they clean up their own dog's waste, 82% said always, and 13% said usually or sometimes. 5% said they never clean up their dog's waste. Fifty-four people provided an answer as to why they didn't pick up their dog waste in the past. The most common answers were; "Did not have bag/Ran out of bag" (43%), and "Never/I always pick it up" (17%).

Automotive Survey Results

Of the 117 individuals who took the Automotive Survey, 111 participants reported their gender (42% were male and 58% were female), and the average age of participants was 37 years. When asked how much automotive fluids contribute to pollution, 100% of respondents believed they do contribute at least some amount to pollution (A lot=70%, Moderate amount=27%, Small amount=3%). Respondents could check multiple answers when asked "Which of the following are correct methods for cleaning up automotive fluids?" Eighty-seven percent correctly responded that the best method is to soak it up with absorbent material and throw it in the trash, while 9% said a correct method is to hose it off immediately.

Seventy-four percent of respondents said that they do own a car, truck, or SUV, and 77% reported that a mechanic changes the oil in their car, followed by 14% who said they do it themselves. Seven percent reported that a friend or relative changes their oil. When asked "Where do you wash your car?" respondents could check multiple answers. The largest percentage (58%) said they use a carwash, followed by 34% who said they wash it in the street or driveway. Ninety-one respondents provided a concrete action they could take to prevent automotive pollution. The most common responses were "Maintain Auto" (11%), "Drive Less/Walk/Bike/Use Public Transportation" (10%) and "Use Absorbents/Drip Pans" (10%).

Conclusions

The San Diego Crew Classic attracted a large number of residents living in the local watershed areas as well as visitors from outside the area. *Think Blue's* booth provided a mechanism for continued outreach dedicated to preserving water quality in San Diego. The goal was to provide education to increased knowledge and awareness and encourage everyone to take positive steps in preventing pollution from entering the storm drain. With more than 15,000 people in attendance, the event provided a great opportunity to interact with citizens and visitors about the benefits of pollution prevention.

TITLE: **Mission Bay and La Jolla Watershed Brochure**
ID NUMBER: **MB- 2012**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay and La Jolla
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2011. Implementation and distribution is expected to occur in late FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	**San Diego River**	**San Diego Bay**	**Mission Bay & La**	**San Dieguito**	**Los Peñasquito**

			Jolla	River	s
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants		Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2011. Effectiveness assessments are scheduled to begin in FY 2011. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: **City of San Diego Strategic Plan Implementation**
ID NUMBER: **MB-3008**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target. Because these are so conceptual in nature, the City does not report on them as specific activities. One activity is far enough into planning for a description to be provided, but locations are unknown. The Outdoor Water Conservation Rebate Program involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity

monitoring (runoff volume) will be conducted both at the pre and post irrigation modification stage. The rebate program is scheduled to be implemented in FY11.

The remaining activities that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table 1 – Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, Implementation, and assessment is anticipated to be completed in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: **La Jolla ASBS Compliance Monitoring**
ID NUMBER: **MB-3009**

ACTIVITY IMPLEMENTATION

This study is designed to assess potential impacts to the ASBS from storm water runoff generated from the watershed and in compliance with the Regional Areas of Special Biological Significance (ASBS) Work Plan. The model provided in the report serves as an initial, predictive tool that can be built on in the future as additional data become available and can be used to test the effectiveness of best management practices (BMPs) that may be used to address impacts to the ASBS.

The goal of the ASBS program is to answer the following questions; how do receiving water conditions compare to natural conditions during storm events, how drain discharges compare during storm events to California Ocean Plan water quality objectives (WQOs), range of natural conditions compared to conditions at ASBS sites, potential sources of toxicity to endemic marine organisms from storm water runoff and dry weather seep discharges along the rocky intertidal area of La Jolla Caves.

Results and Findings

The results of the pre-storm and post-storm monitoring indicated that, for three storm events, there were no exceedances of any Ocean Plan WQOs, and there was no toxicity associated with any sample. Constituent concentrations in compliance samples and reference samples were generally similar. Thus, water quality in the ocean receiving waters of the ASBS before and after storm events was similar to that defined in the Ocean Plan as protective of coastal marine resources. Grab samples were collected from the five major storm drain outfalls in the La Jolla Shores Coastal Watershed during three storm events. The results indicated that most metal concentrations were below or only slightly above California Ocean Plan WQOs.

Synthetic pyrethroids were detected in all core discharge samples at concentrations greater than published LC_{50} values for marine invertebrates. Aside from Malathion, no other OP pesticides were detected and PCB concentrations were below reporting limits.
PAH compounds were detected in all storm drain samples, but were more than two orders of magnitude below the most conservative LC_{50} values found in the literature for marine invertebrates. Bacteria samples collected from each of the five monitored storm drain outfalls during a storm event were above California Ocean Plan WQOs for total coliforms, fecal coliforms, and enterococci.

To determine potential sources of toxicity to endemic marine organisms, purple sea urchins were exposed to seawater taken from post-storm samples following three storm events and blue mussels were exposed to storm drain effluent collected during two storm events for this monitoring element. Since no toxicity was detected in sea urchin exposures to post-storm seawater samples. Bivalve development tests indicated toxicity associated with normal shell development in bivalve larvae exposures to storm water from three storm drains during the February 27, 2010, storm event and five storm drains during the April 1, 2010 storm event. TIE results were site-specific and suggested more than one potential source of toxicity.

Dry weather seep samples did not have detectable levels of PAHs, chlorinated herbicides, chlorinated pesticides, OP pesticides, PAHs, Aroclors, or synthetic pyrethroids. Although all of the seep samples did contain detectable concentrations of heavy metals, only selenium in Seep 4 was measured above the California Ocean Plan WQO. Seep 4 appears to be a natural groundwater seep and may pick up selenium as it flows over selenium-rich deposits in natural geologic formations. Other seeps that are close to Seep 4 appear to receive most of their flow as a result of surface runoff from storm drain outfalls. Thus, except for selenium, which may leach naturally from local geological formations, seep discharges appear to be predominantly free of contamination and would not be expected to impact water quality within the ASBS.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- La Jolla Shores ASBS Regional Compliance Monitoring

TIME SCHEDULE FOR IMPLEMENTATION

This report presents and summarizes data collected from sampling events that occurred during the 2009–2010 Wet Weather Monitoring Season.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment source investigation and ocean receiving water monitoring

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify sediment as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the WMA, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness of this activity is not being assessed as this not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: **Bioassessment Monitoring of the Tecolote Creek Watershed**
ID #: **MB-3010**

ACTIVITY IMPLEMENTATION

Historical bioassessment studies in Tecolote Creek have shown consistently impaired benthic macro-invertebrate (BMI) communities and there are several constituents on the State Water Resources Control Board (State Board) 303(d) list of impaired waterbodies. Objectives, findings, and recommendations based on bioassessment monitoring conducted in Tecolote Creek are summarized below.

Objectives

1. Comprehensively document biological conditions and community structure of BMI throughout the Tecolote Creek Watershed and its tributaries.
2. Assess possible stressors to the BMI communities by analyzing the physical habitat conditions as well as water quality constituents that could prevent the establishment of sensitive BMI taxa and non-impaired BMI communities.
3. Determine the most important limiting factors for achieving potential biological objectives.

Key Findings

1. Analysis of seven bioassessment sites in the Tecolote Watershed indicated that there was biological impairment throughout the watershed.
2. Physical habitat ratings were good to very good for BMI colonization. TDS (Total Dissolved Solids) exceeded the water quality objectives (as described in the Basin Plan) throughout the watershed. Specific conductivity and salinity were also very high at six of the seven sites (relative to reference conditions in San Diego County).
3. The most important limiting factors for achieving potential biological objectives were high levels of TDS, specific conductivity, and salinity.

Recommendations

1. Determine the source(s) of elevated TDS specific conductivity and salinity in the Tecolote Watershed.
2. Assess the potential efforts and costs required for addressing water quality limitations which are impacting the biological integrity in the creek.

TMDL APPLICABILITY

- Tecolote Creek Integrated TMDL; demonstrates a proactive approach to the anticipated enforcement of biological objectives by the State and Regional Boards.
- Potentially provides a model to apply to other biologically impaired water bodies for determining which limiting factors may or may not be mitigable.

TIME SCHEDULE FOR IMPLEMENTATION

The initial study was completed in FY2010 and provides a strong basis for a focused follow-up study to provide specific recommendations for TMDL implementation planning. Future studies will be implemented as funding is available.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify metals, nutrients, and bacteria as high priority water quality problems throughout Tecolote Creek and the Mission Bay and La Jolla WMA.

EFFECTIVENESS ASSESSMENT

Due to the nature of this monitoring study, an activity effectiveness assessment has not been conducted.

TITLE: **Tecolote Creek Microbial Source Tracking Study**
ID #: **MB-3011**

ACTIVITY IMPLEMENTATION

This study was conducted from 2007 through 2010 in three phases throughout the watershed to investigate and identify bacterial sources, origins, and loads in the Tecolote Creek Watershed and to assess and characterize specific priority activity contributions. The results provide background for the City of San Diego (City) to address bacterial load and concentration reduction strategies to comply with the *Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Bacterial Project I – Twenty Beaches and Creeks in San Diego Region, Including Tecolote Creek* (Bacterial Project I TMDL) recently adopted by the San Diego Regional Water Quality Control Board (Regional Board).

The Tecolote Creek Microbial Source Tracking Study aimed to identify sources of specific bacterial pollutants in the watershed. Objectives and findings are summarized below.

Objectives

1. Gather further information for the refinement of the Bacterial Project I TMDL and State Board §303(d) list documentation.
2. Verify Priority Sectors identified in the Strategic Plan through characterization of bacterial loadings to Tecolote Creek Watershed by targeting primary sources of high bacterial loading (e.g., anthropogenic and non-anthropogenic sources).
3. Determine the presence or absence of human contamination within the wateshedm and pinpoint any sources of human contamination.
4. Determine the relative contribution and origin of bacterial regrowth to bacterial loading in the creek during wet weather and dry weather.
5. Further develop bacterial load and concentration reduction strategies for Tecolote Creek based on the results of study elements designed around the four previous objectives.

Key Findings

1. An evaluation of all historical data indicated that a number of State Board §303(d)-listed pollutants could be removed from the list based on the number of exceedances observed. The results indicate that dissolved cadmium, copper, lead, and zinc are eligible for delisting from the State Board §303(d) list. However total selenium, bacteria, nutrients, and turbidity did not meet delisting requirements.

2. Sector prioritization—undertaken both through the Baseline Long-Term Effectiveness Assessment and Strategic Planning process—suggested that Sectors 1 and 2 presented the highest threat to water quality with a higher presence of potential pollutant sources through specific land use activities. Assessments of pollutant loads during both dry weather and wet weather indicated that these two sectors discharge higher loads of pollutants when compared with Sectors 3 and 4. During dry weather, Sector 1 was found to contribute the highest loads of copper, zinc, and total dissolved solids (TDS). During wet weather, Sector 2 was found to contribute some of the highest loads of bacteria, zinc, lead, and total suspended solids (TSS). Management of land use activities in Sectors 1 and 2 should be the focus of any comprehensive load reduction strategies.

Wet weather bacteria loads from individual land uses indicated that there were no significant differences between different land uses with flows merging and combining throughout drainage areas. There was some indication that higher loads were attributable to transportation corridors, commercial areas, and industrial land uses.

Dry weather bacteria loads were higher in residential and commercial areas with specific activities identified, particularly poorly maintained dumpsters and catch basins. Over-irrigation was a key transport mechanism that was prominent in commercial and industrial areas.

3. A comprehensive assessment of water quality throughout Tecolote Creek was undertaken to assess the presence of human fecal contamination. The assessment was performed using human-specific *Bacteroides* and quantitative polymerase chain reaction (Q-PCR). During dry weather, five positive samples were obtained. Each follow-up investigation failed to locate a point source and in every instance there was evidence of transient human activity. During wet weather, only one sample (of a total of 37 samples collected during nine storms) was found to be positive for *Bacteroides*. This sample was collected during the early phase of the storm flows in an area known to be a transient area.

4. A number of investigations were undertaken in Tecolote Creek to assess the presence of environmental species of fecal indicator bacteria. Ponds were not found to be a significant reservoir for environmental indicator species. However, sediments and biofilms within the creek and MS4 system were found to be significant bacterial reservoirs.

   Biofilms on the walls of the MS4 system in particular were found to grow rapidly and contain high numbers of enterococci. Speciation of these enterococci determined that the origins were most likely environmental rather than fecal. Further investigation determined that the storm water, with high numbers of enterococci of fecal origin, was the primary inoculation mechanism, and that biofilms matured rapidly into complex communities with a variety of species present. The high flows generated during wet weather caused significant biofilm sloughing. The impact of biofilms on wet weather loads of indicator bacteria into receiving waters appeared to be significant.
5. Load and concentration reduction strategies are currently being developed through the Tecolote Creek Implementation Framework.

TMDL APPLICABILITY

- Total Maximum Daily Loads for Indicator Bacteria, Bacterial Project I – Twenty Beaches and Creeks in the San Diego Region, Including Tecolote Creek.

TIME SCHEDULE FOR IMPLEMENTATION

The data collected in Tecolote Creek are being used to develop an implementation planning framework. Once the framework is completed, the framework will be considered for use as a management tool in developing a comprehensive load reduction plan for the Bacteria Project I TMDL. The framework may also be considered as a

guidance document for developing implementation plans for other TMDLs with similar characteristics.

Data collected during the three phases of the investigation are currently being compiled with all available historical data for submittal to the Regional Board for inclusion in the State Board §303(d)-list database. This submittal will ensure that revisions to the State Board §303(d) list will be made using the most recent and relevant data available.

During the initial sampling of catchbasins in commercial and industrial land use areas, specific locations were found to have elevated concentrations of some pollutants. Follow-up inspections at these locations are recommended to assess potential sources and impact of these discharges on the receiving environment.

Compliance monitoring for indicator bacteria will be continued in Tecolote Creek to support the Bacterial Project I TMDL as well as other constituents of concern.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA, and recommend implementing specific management and Best Management Practices (BMPs) strategies to reduce the identified sources.

EFFECTIVENESS ASSESSMENT

This study supports other Storm Water Department programs and cost-effectiveness efforts including the *San Diego River Phase I and Phase II Microbial Source Identification Study*. The results of this program complement results collated under the 2009 and 2010 San Diego River Study.

MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2011 ANNUAL REPORT

Transportation & Storm Water Department
Storm Water Division
City of San Diego

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THE CITY OF SAN DIEGO

RE: Statement of Certification for the Mission Bay and La Jolla Watershed Urban Runoff Management Program FY 2011 Annual Report

I certify under penalty of law that the Mission Bay and La Jolla Watershed Urban Runoff Management Program FY 2011 Annual Report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden

Kris McFadden
Deputy Director
Transportation & Storm Water Department
Storm Water Division

1/17/12
Date

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Appendix A: Activity Summary Sheets

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Executive Summary

The Mission Bay and La Jolla Watershed Urban Runoff Management Program (WURMP) Annual Report (Annual Report) describes the actions taken by the City of San Diego (City) in Fiscal Year (FY) 2011 (July 1, 2010 to June 30, 2011) to refine and implement the WURMP and the progress made towards improving both urban runoff quality and receiving water quality in the watershed management area (WMA).

SECTION 1 (INTRODUCTION) provides information about the National Pollutant Discharge Elimination System Municipal Stormwater Permit and updated Mission Bay and La Jolla WURMP. A discussion regarding Copermittee collaboration and land use map updates is included in this section.

SECTION 2 (WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT) is a summary of the assessment of the water quality and pollutant sources in the Mission Bay and La Jolla WMA based on data collected and analyzed from July 2010 through June 2011. To annually assess the water quality of the WMA, the Copermittees have compiled the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report) for 20010-2011. Based on the data and findings of the Annual Monitoring Report and the City's *Strategic Plan for Watershed Activity Implementation*, the City has focused its efforts on targeting the following Priority Water Quality Problems for the Mission Bay and La Jolla WMA. The problems bolded and italicized are considered High Priority Water Quality Problems.

- ***Bacteria/Pathogens***
- ***Heavy Metals***
- ***Nutrients***
- Pesticides
- Sediment

SECTION 3 (IMPLEMENTATION OF WATERSHED ACTIVITIES) details the water quality activities, education activities, public participation activities, and the collaborative land-use planning efforts that occurred during the reporting period regarding the implementation of the WURMP. The City continued the planning and design process for several activities, implemented source identification and special studies, continued to sponsor creek and bay trash removal, continued increased commercial/industrial facility inspections, initiated increased street sweeping, and implemented multiple education and public participation activities. All of these activities are anticipated to have a positive impact on water quality.

This section also includes the updated 5-Year Strategic Plan that outlines various activities, public participation, and watershed-based land use planning the City plans to implement over the permit cycle.

SECTION 4 (EFFECTIVENESS ASSESSMENT) provides an assessment of the overall effectiveness of the WURMP, including details on how the City achieved compliance for FY 2011. To evaluate its efforts at the activity and program levels, the City developed an assessment framework that emphasizes adaptive management. That is, data associated with activity efficiency that is gathered primarily through pilot project assessments is used to guide program improvement with the implementation of the most efficient activities. This process will help

guide future management decisions on how to best allocate the City's resources to obtain the maximum amount of pollutant load reduction for every dollar spent.

This section also details how the City's program is effective in helping protect and improve water quality.

An update on the TMDL progress is presented in this section. The San Diego Region Beaches and Creeks Indicator Bacteria TMDL was adopted in FY 2011 and covers numerous water bodies including Tecolote Creek and portions of the Scripps HA Pacific Ocean shoreline. Additionally, the following water bodies in the WMA are currently listed as impaired per Section 303(d) of the Clean Water Act:

- Mission Bay and shoreline: Bacteria indicators, eutrophication, lead
- Rose Creek: Selenium, toxicity
- Tecolote Creek: Bacteria indicators, cadmium, copper, lead, nitrogen, phosphorus, selenium, turbidity, toxicity, zinc

Part of the WMA also drains to an Area of Special Biological Significance (ASBS) which is under pending special conditions.

SECTION 5 (CONCLUSIONS AND RECOMMENDATIONS) offers concluding remarks regarding the accomplishments of the City in FY 2011 in implementing the WURMP and recommendations for further refining the program. This section summarizes how the City achieved compliance with the NPDES Municipal Stormwater Permit and sets forth recommendations for improving the WURMP over time.

Overall, the annual report concludes that the City's efforts as part of the WURMP program have continued to be effective in protecting and improving water quality in the WMA. The City will refine and augment the Mission Bay and La Jolla WURMP as it increases its understanding of the complex issues affecting the WMA in a continued effort to enhance its effectiveness in protecting and improving water quality. Such refinement and augmentation are supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In addition, the report details recommendations in three key areas:

1. Refine and improve water quality activities through a watershed master planning approach;
2. Expand knowledge of pollutant sources; and
3. Refine and improve effectiveness assessment.
4. Coordinate and integrate the WURMP with the Bacteria TMDL Comprehensive Load Reduction Planning process

Section 1 Introduction

The NPDES Municipal Stormwater Permit, San Diego Region Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Mission Bay and La Jolla WMA to collaborate on the development and implementation of a WURMP. This Annual Report is divided into five sections that highlight the efforts of the City of San Diego, the only copermittee in the WMA, during the FY 2011 reporting period. The FY 2011 reporting period is from July 1, 2010 through June 30, 2011.

The *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) was submitted to the San Diego Regional Water Quality Control Board (Regional Board) and implementation began in March 2008. The WURMP is a plan of action to address high priority surface water quality issues throughout the Mission Bay and La Jolla WMA. The program includes identifying and addressing High Priority Water Quality Problems in the WMA, and developing and implementing activities that include pollutant load reduction and pollutant source abatement (water quality activities); improvements in the public's knowledge, awareness, and behaviors (watershed education activities); as well as public participation and collaborative land use planning.

1.1 Copermittee Collaboration

The Mission Bay and La Jolla WMA is fully within the City's jurisdiction; therefore, the City is the only Copermittee within the WMA. However, significant military presence is located in the eastern part of the WMA as well as the University of California, San Diego (UCSD) in La Jolla. The City works collaboratively with UCSD, which operates under a separate Permit, on urban runoff and ASBS issues.

1.2 Watershed Map Updates

No updates to the watershed map are necessary this reporting period.

Section 2 Water Quality and Pollutant Source Assessment

This section provides the updated assessment and analysis of the WMA's current and past applicable water quality data, reports, analyses, and other information, including the identification of the WMA's High Priority Water Quality Problems during the reporting period. This section also identifies the likely sources, pollutant discharges, and/or factors causing the High Priority Water Quality Problems within the WMA.

2.1 Water Quality Assessment

The Mission Bay and La Jolla WMA is located entirely within the City's jurisdiction and is the smallest in San Diego County. The three largest hydrologic areas (HAs) include: Scripps, Miramar and Tecolote. The Scripps HA drains directly to the Pacific Ocean into an ASBS. The Miramar and Tecolote HAs flow into Rose and Tecolote Creeks which discharge into Mission Bay. Land use is classified primarily as open space / parks and recreation (26%), residential (26%), and transportation (16%). The NPDES Permit requires the City to identify High Priority Water Quality Problems in the WMA and implement activities to address them. To allow time for implementing these activities, the selected High Priority Water Quality Problems are set for the current Permit unless there is sufficient justification to modify them.

2.1.1 Water Quality Problems

The High Priority Water Quality Problems were identified in the FY 2008 Mission Bay and La Jolla WURMP as bacteria, metals, and nutrients using the 2006 State Water Resources Control Board (SWRCB) Section 303(d) Listings along with the results from the Baseline Long-Term Effectiveness Assessment (BLTEA) of water quality data from 2001-2006. The problems listed from both the BLTEA and 303(d) listings are compared to Long-Term Effectiveness Assessment (LTEA) (Tables 2-1) wet weather and (Table 2-2) dry weather. LTEA data was collected from receiving waters within the Mission Bay and La Jolla WMA from 2005 through the 2010 monitoring season. These comparisons will help shape future management decisions and activities in the WMA.

Table 2-1. Mission Bay and La Jolla WMA BLTEA vs LTEA Water Quality Priority Ratings-Wet Weather

Constituent Groups	BLTEA Mission Bay WMA	Wet Weather Receiving Water LTEA Results		
		MB-TWAS-1 (Rose Creek)	TC-MLS (Tecolote Creek)	MB-TWAS-2 (Tecolote Creek)
Gross Pollutants	***B***	BOD		BOD
Oil & Grease	***D***			
Metals	***A***			
Pesticides	***D***	Bifenthrin, Permethrin	Bifenthrin	Bifenthrin, Malathion, Permethrin
Organics	***D***			
Toxicity	***A***			*Ceriodaphnia dubia* acute, *Ceriodaphnia dubia* chronic, *Ceriodaphnia dubia* reproduction
Benthic Alterations	***D***	Poor IBI, O/E, CRAM	Poor IBI, O/E, CRAM	Poor IBI, O/E, CRAM
Bacteriological	***A***	Fecal Coliforms	Fecal Coliforms	Fecal Coliforms
Nutrients	***A***			
Dissolved Minerals	***A***	TDS		
Sediments	***B***	Turbidity, TSS	Turbidity, TSS	Turbidity, TSS

Yellow font indicates medium priority constituent, however it is within a group with a high priority constituent.

BLTEA KEY	LTEA KEY	
A - High Priority	High	> 50% Above Benchmark
B or C Priority	Medium	> 25% and ≤ 50% Above Benchmark
D Priority	Low	≤ 25% Above Benchmark
D Priority	NA	Not Available / Not Applicable
303d listing (BLTEA)		

BOD = biological oxygen demand
IBI = Index of Biotic Integrity
MLS = mass loading station
O/E = observed / expected ratio

TDS = total dissolved solids
TSS = total suspended solids
TWAS = temporary watershed assessment station
WMA = watershed management area

Table 2-2. Mission Bay and La Jolla WMA BLTEA vs LTEA Water Quality Priority Ratings-Dry Weather

Constituent Groups	BLTEA Mission Bay WMA	Dry Weather Receiving Water LTEA Results		
		MB-TWAS-1 (Rose Creek)	TC-MLS (Tecolote Creek)	MB-TWAS-2 (Tecolote Creek)
Gross Pollutants	*B*			
Oil & Grease	*D*			
Metals	*A*			Selenium
Pesticides	*D*	Bifenthrin [1]*		
Organics	*D*			
Toxicity	*A*	*Ceriodaphnia dubia* acute, *Ceriodaphnia dubia* chronic, *Ceriodaphnia dubia* reproduction, *Selenastrum* acute	*Selenastrum* acute, *Ceriodaphnia dubia* reproduction, *Ceriodaphnia dubia* chronic [2]*	*Selenastrum* acute, *Ceriodaphnia dubia* acute, *Ceriodaphnia dubia* reproduction, *Ceriodaphnia dubia* chronic survival
Benthic Alterations	*D*	Poor IBI, O/E, CRAM	Poor IBI, O/E, CRAM	Poor IBI, O/E, CRAM
Bacteriological	*A*			Enterococci Fecal Coliforms
Nutrients	*A*	Total Nitrogen, [1]* Total Phosphorus [1]*	Total Nitrogen, [1]* Total Phosphorus	Benthic Algae
Dissolved Minerals	*A*	TDS, Chloride, [1]* Sulfate [1]*		
Sediments	*B*			

Yellow font indicates medium priority constituent, however it is within a group with a high priority constituent.
1. Priority based on SMC Data. NPDES station had no data for analyte or low priority score.
2. NPDES score was Med. (shown); SMC score was High priority.
* One station was used in the summary.

BLTEA KEY	LTEA KEY	
A - High Priority	High	> 50% Above Benchmark
B or C Priority	Medium	> 25% and ≤ 50% Above Benchmark
D Priority	Low	≤ 25% Above Benchmark
D Priority	NA	Not Available / Not Applicable
303d listing (BLTEA)		

CRAM = california rapid assessment method
IBI = Index of Biotic Integrity
MLS = mass loading station
O/E = observed / expected ratio
TDS = total dissolved solids
TWAS = temporary watershed assessment station
WMA = watershed management area

The 2010 303(d) list (Table 2-3 below) was recently approved by the EPA. New listings include eutrophication and lead at the mouths of Rose and Tecolote Creeks, selenium and toxicity in Rose Creek, and nitrogen and selenium in Tecolote Creek. Water quality monitoring is ongoing for the Permit under the Receiving Water and Urban Runoff Monitoring Program. The 2010-2011 water quality monitoring activities conducted in the Mission Bay and La Jolla WMA are provided in Table 2-4.

Table 2-3. Mission Bay and La Jolla WMA Waterbodies on the 2010 SWRCB Section 303(d) List

Waterbody Name	HA	HA No.	Pollutant/Stressor	TMDL Status
Pacific Ocean Shoreline, Avenida de la Playa	Scripps	906.30	Total coliform	**Approved 6/2011**

Waterbody Name	HA	HA No.	Pollutant/Stressor	TMDL Status
Pacific Ocean Shoreline, Children's Pool	Scripps	906.30	Enterococcus, total coliform, fecal coliform	**Approved 6/2011**
Pacific Ocean Shoreline, La Jolla Cove	Scripps	906.30	Total coliform	**Expected completion 1/2019**
Pacific Ocean Shoreline, Pacific Beach Point	Scripps	906.30	Enterococcus, total coliform, fecal coliform	**Expected completion 1/2019**
Pacific Ocean Shoreline, Ravina	Scripps	906.30	Total coliform	**Approved 6/2011**
Pacific Ocean Shoreline, Vallecitos Court	Scripps	906.30	Total coliform	**Approved 6/2011**
Mission Bay Shoreline, Bahia Point	Scripps	906.30	Enterococcus, total coliform, fecal coliform	**Expected completion 1/2019**
Mission Bay Shoreline, Bonita Cove	Scripps	906.30	Enterococcus and total coliform	**Expected completion 1/2019**
			Fecal coliform	**Expected completion 1/2021**
Mission Bay Shoreline, Fanual Park	Scripps	906.30	Total coliform	**Expected completion 1/2019**
			Enterococcus	**Expected completion 1/2021**
Mission Bay, mouth of Rose Creek	Miramar	906.40	Eutrophic and lead	**Expected completion 1/2019**
Mission Bay Shoreline, Campland	Miramar	906.40	Enterococcus, total coliform, fecal coliform	**Expected completion 1/2019**
Mission Bay Shoreline, De Anza Cove	Miramar	906.40	Enterococcus, total coliform, fecal coliform	**Expected completion 1/2019**
Mission Bay Shoreline, Leisure Lagoon	Miramar	906.40	Enterococcus and total coliform	**Expected completion 1/2019**
Mission Bay Shoreline, North Crown Point	Miramar	906.40	Enterococcus and total coliform	**Expected completion 1/2019**
Mission Bay Shoreline, Visitors Center	Miramar	906.40	Enterococcus, total coliform, fecal coliform	**Expected completion 1/2019**
Rose Creek	Miramar	906.40	Selenium and toxicity	**Expected completion 1/2021**
Mission Bay, mouth of Tecolote Creek	Tecolote	906.50	Eutrophic and lead	**Expected completion 1/2019**
Mission Bay Shoreline, Tecolote Shores	Tecolote	906.50	Enterococcus and total coliform	**Expected completion 1/2019**

Waterbody Name	HA	HA No.	Pollutant/Stressor	TMDL Status
Tecolote Creek	Tecolote	906.50	Indicator bacteria	**Approved 6/2011**
			Cadmium, copper, lead, phosphorus, toxicity, turbidity, zinc	**Expected completion 1/2019**
			Nitrogen and selenium	**Expected completion 1/2021**
Mission Bay, Quivera Basin	Fiesta Island	906.70	Copper	**Expected completion 1/2021**
Source: SWRCB, 2010. TMDL – total maximum daily load				

Table 2-4. 2009–2010 Mission Bay and La Jolla WMA Monitoring Program Activities

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**7**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	0
SMC Regional Monitoring	Water chemistry, toxicity, bacteria, rapid stream bioassessment	0
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	0
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	0
Third-Party Data (Coastkeeper)	General chemistry and bacteria	7-Coastkeeper
Urban Runoff Monitoring		**422**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	101
Jurisdictional Dry Weather Monitoring – Trash Assessment	Trash	161
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	1
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	5
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, and bacteria	10
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	0
Coastal Storm Drain Monitoring (CSDM) Program	Coastal outfall and receiving waters	144
SMC – Stormwater Monitoring Coalition TOC – total organic carbon CSDM – Coastal Storm Drain Monitoring		

2.1.2 Receiving Waters Condition Assessment Description

The Mission Bay and La Jolla WMA was off-rotation during the 2010–2011 Monitoring Season. Therefore, no receiving water was conducted at the TWAS or MLS stations in this WMA. Third

party ambient weather receiving water data was collected by San Diego Coastkeeper. The results can be found in the 2010-2011 Receiving Waters and Urban Runoff Monitoring Report.

2.1.3 Urban Runoff and Discharges Water Quality Assessment Description

The Jurisdictional Dry Weather Monitoring (DWM) Program was conducted in 2010 to fulfill Order No. R9-2007-0001, which requires each Copermittee to conduct a dry weather field screening and analytical monitoring program. The goal of the program is to detect and eliminate illegal connections and illicit discharges (ICIDs) to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow-up investigations. The data are also useful in assessing the spatial distribution of the constituents analyzed. The MS4 Outfall Monitoring Program incorporates both targeted sample locations and randomly selected sample locations during wet and dry weather conditions to characterize the relative contribution of constituents to the receiving waters. The Coastal Monitoring sub-workgroup prepares an annual monitoring report on coastal outfall monitoring, which is in progress and can be found in Appendix N of the Receiving Waters and Urban Runoff Monitoring Report.

2.1.4 Water Quality Assessment Conclusions

The assessment of the watershed during both ambient and wet weather conditions is presented in an integrated manner to provide an overall assessment of the WMA. The integrated assessment also identifies which constituents of concern (COCs) overlap between receiving waters and urban runoff. The WMA assessment methods were applied to the data from the monitoring programs to determine the COCs and to develop a frequency of occurrence ranking of high, medium, or low. The frequency of occurrence ranking was determined using the overall percentage of all samples analyzed that exceeded water quality benchmarks (including all monitoring years' data). It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as data become available in future years. Integrated watershed assessments results are presented by MLS and TWAS in Table 2-4, Table 2-5, and Table 2-6. See Figure 2-1 for the sampling locations.

Figure 2-1. TWAS and MLS Monitoring Station Locations

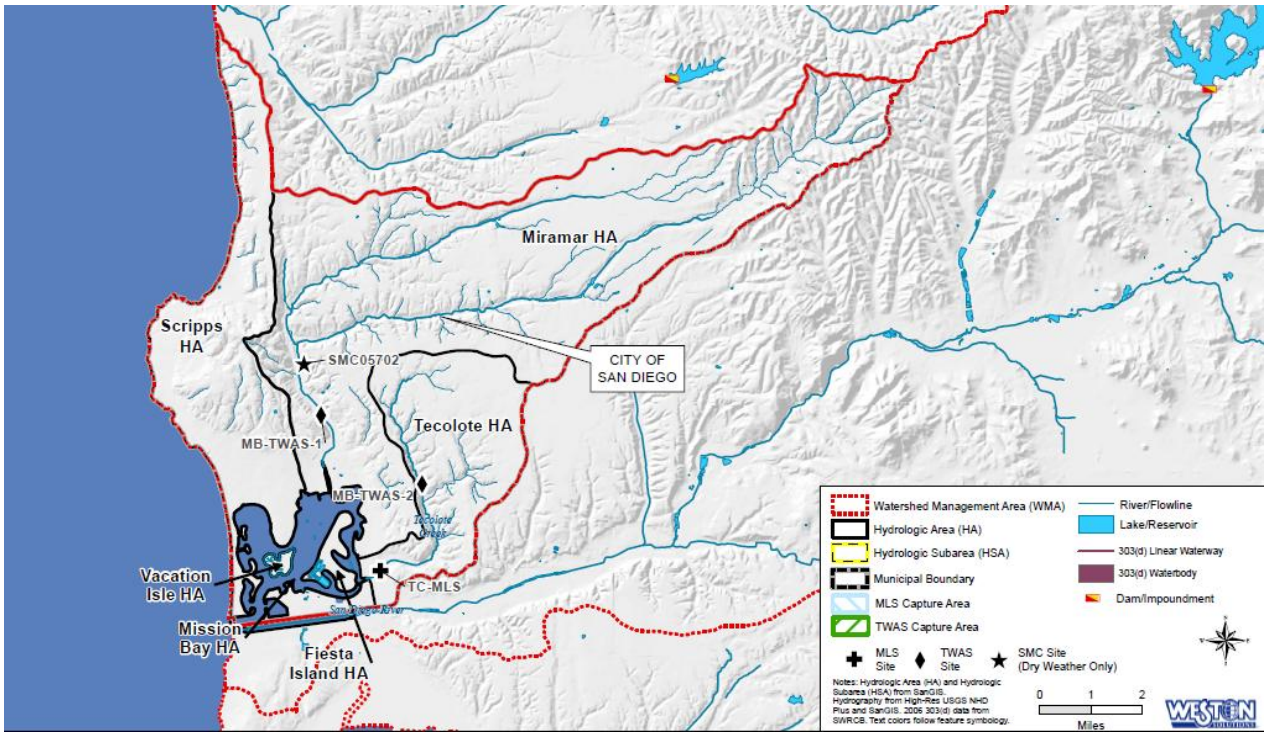

Table 2-5. MB-TWAS-1 (Rose Creek) Drainage Area Assessment Findings

Mission Bay TWAS-1 (Rose Creek in Miramar HA)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Urban Runoff Monitoring (MS4 Outfall and DWM)	• No Data	• Chemistry – None • Bacteria – Fecal Coliform

Mission Bay TWAS-1 (Rose Creek in Miramar HA)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Receiving Water Monitoring (MLS, TWAS, and SMC)	• No Data	• No Data

*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data.

1: Constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

Med - Medium Priority Constituent

Table 2-6. TC-MLS (Tecolote Creek) Drainage Area Assessment Findings

Tecolote Creek MLS (Tecolote HA)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Urban Runoff Monitoring (MS4 Outfall and DWM)	• Chemistry – Total Phosphorus, Total Nitrogen (Nitrate), TDS • Bacteria – Enterococci	• Chemistry – None • Bacteria – Fecal Coliform
Receiving Water Monitoring (MLS, TWAS, and SMC)	• No Data	• No Data
MLS Trends*		
Increasing		Total Hardness

Tecolote Creek MLS (Tecolote HA)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Decreasing		Ammonia, TSS, Diazinon

Table 2-7. MB-TWAS-2 (Tecolote Creek) Drainage Area Assessment Findings

Mission Bay TWAS-2 (Tecolote Creek)		
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**
Urban Runoff Monitoring (MS4 Outfall and DWM)	• Chemistry –Total Nitrogen • Bacteria – Enterococci	• No Data
Receiving Water Monitoring (MLS, TWAS, and SMC)	• No Data	• No Data

*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data.

1: Constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

Bacteria – Fecal coliform was identified as a high priority constituent during wet weather MS4 monitoring in the Mission Bay and La Jolla WMA. Dry weather MS4 monitoring showed enterococci as a priority constituent. Most of the Dry weather flows are diverted to the sanitary sewer in this WMA. Extensive bacterial source investigations have been conducted by the City

of San Diego in the Tecolote Creek HA (City of San Diego, 2008; City of San Diego, 2009; and City of San Diego, 2010). These studies have provided valuable insight into the potential sources, including natural sources, regrowth, and anthropogenic activities that may contribute to bacteria water quality problems.

TDS – Elevated TDS results were recorded at all monitoring stations during both ambient and wet weather conditions. Although there is no basin plan standard for TDS in Tecolote Creek, the elevated concentrations observed are a potential factor influencing poor historic bioassessment results. However, further study is needed to support this theory. TSS was a medium-priority constituent during wet weather MS4 monitoring in the Miramar (906.4) drainage area.

Nutrients – During dry weather MS4 monitoring, total phosphorus and total nitrogen were identified as priority constituents in the Rose Creek (TWAS-1) and Tecolote Creek (MLS) drainage areas although, total phosphorus was not seen as a priority constituent in the MB-TWAS-2 drainage area. Nitrate in groundwater seeps has been documented as a known source in the San Diego Region (SDCRC, 2010). Nutrients are known to contribute to eutrophic conditions in low flowing waters, and several listings are noted in the Mission Bay areas near the mouths of Rose Creek and Tecolote Creek.

Monitoring Recommendations

The recommendations for this WMA are to continue with the requirements of the Permit, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. Future monitoring locations may be useful to assess specific land use activities or other tributary areas. Specific recommendations for the Mission Bay and La Jolla WMA are based on the triad assessment in the Permit. The triad assessment was not done this year due to the rotational basis of the Urban Runoff Monitoring Program.

2.2 Pollutant Source Assessment

The Permit requires the City to identify the likely sources of the pollutants responsible for the High Priority Water Quality Problems. Table 2-8 below lists the likely pollutant sources adapted from the BLTEA for each of the High Priority Water Quality Problems identified above.

Table 2-8. Likely Sources of High Priority Water Quality Problems in Mission Bay and La Jolla WMA

High Priority Water Quality Problem	Likely Sources
Bacteria/Pathogens	Eating/drinking establishments; animal facilities; landscaping (e.g., parks, golf courses, cemeteries, etc.); publicly owned treatment works (water and wastewater); home and garden care activities, waste disposal
Heavy Metals	Auto mechanical repair, maintenance, fueling, or cleaning; automobile and other vehicle body repair and painting; botanical or zoological gardens and nurseries/greenhouses; fabricated metal; motor freight; boat mechanical repair, maintenance, fueling, or cleaning; roads, streets, highways, and parking facilities
Nutrients	Animal facilities; botanical or zoological gardens and nurseries/greenhouses; landscaping (e.g., parks, golf courses, cemeteries, etc.); pest control services; home and garden care activities, waste disposal; parks and recreation facilities

Conclusions and Additional Activities

This reporting period saw limited monitoring due to the rotational status of this WMA. Data was collected for the MS4 program during wet and dry conditions. Fecal Coliform was identified as a priority constituent during wet weather MS4 monitoring near the Tecolote MLS and TWAS-1 (Miramar) drainage areas. Fecal Coliform was not a priority constituent above the MB-TWAS-2.

Dry weather MS4 monitoring identified Enterococcus and total nitrogen as priority constituents above the MLS and both TWAS locations. Total phosphorus was identified as high priority in the TWAS-1 and MLS drainage areas. The LTEA identified total phosphorus as high priority in all MS4 outfalls, yet this year's results did not show high total phosphorus at MS4 monitoring stations in the TWAS-2 drainage area. The City has conducted additional monitoring and special studies to help identify sources of pollutants, including ASBS Compliance Monitoring, Tecolote Creek Bioassessment Monitoring, Tecolote Creek Microbial Source Tracking Study, and the Aerial Deposition Study that was used to support the proposed Brake Pad Senate Bill 346 for Source Control of Copper Water Pollutants. Previous years WURMP Annual Reports have more information on these projects.

Historical bioassessment studies in Tecolote Creek have shown consistently impaired benthic macro-invertebrate (BMI) communities and there are several constituents in the Tecolote Creek that are on the State Water Resources Control Board (State Board) 303(d) list of impaired waterbodies. The study objectives were three fold to comprehensively document biological conditions and community structure of BMI throughout the Tecolote Creek Watershed and its tributaries; assess possible stressors by analyzing the physical habitat conditions as well as water quality constituents that could prevent the establishment of sensitive BMI taxa; and determine the most important limiting factors for achieving potential biological objectives. Analysis of seven bioassessment sites in the Tecolote Watershed indicated that there was biological impairment throughout the watershed. Physical habitat ratings were good to very good for BMI

colonization. TDS (Total Dissolved Solids) exceeded the WQOs (as described in the Basin Plan) throughout the watershed. Specific conductivity and salinity were also very high at six of the seven sites (relative to reference conditions in San Diego County). The most important limiting factors for achieving potential biological objectives were high levels of TDS, specific conductivity, and salinity. Further monitoring recommendations include determining the source(s) of elevated TDS, specific conductivity, and salinity in the Tecolote Creek Watershed. Salinity source tracking in the Tecolote watershed was conducted in 2011 to determine specific areas of high specific conductivity, TDS, and salinity. At this point the findings are inconclusive and no point sources have been identified. Preliminary data shows small spikes in TDS, salinity, and specific conductivity as ambient stream flows enter residential areas. Further analysis of the data collected is impending.

The Tecolote Creek Microbial Source Tracking Study was conducted from 2007 through 2010 in three phases throughout the watershed to investigate and identify bacterial sources, origins, and loads in the Tecolote Creek Watershed and to assess and characterize specific priority activity contributions. The results provide background for the City to address bacterial load and concentration reduction strategies to comply with the *Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Bacterial Project I – Twenty Beaches and Creeks in San Diego Region, Including Tecolote Creek* (Bacterial Project I TMDL) recently adopted by the San Diego Regional Water Quality Control Board (Regional Board). The monitoring results provide a basis to assess the land uses and related activities that contribute bacteria to the Tecolote Creek Watershed. Sector prioritization, undertaken both through the BLTEA and Strategic Planning process, suggested that two sectors presented the highest threat to water quality with a higher presence of potential pollutant sources through specific land use activities. Assessments of pollutant loads during both dry and wet weather indicated that these two sectors discharge higher loads of pollutants when compared with other sectors. During dry weather, one sector was found to contribute the highest loads of copper, zinc, and total dissolved solids (TDS). During wet weather, the other sector was found to contribute some of the highest loads of bacteria, zinc, lead, and total suspended solids (TSS). Management of land use activities in these sectors should be the focus of any comprehensive load reduction strategies. Wet weather bacteria loads from individual land uses indicated that there were no significant differences between different land uses with flows merging and combining throughout the drainage areas. There was some indication that higher loads were attributable to transportation corridors, commercial areas, and industrial land uses. Dry weather bacteria loads were higher in residential and commercial areas with specific activities identified, particularly poorly maintained dumpsters and catch basins. Over-irrigation was a key transport mechanism that was prominent in commercial and industrial areas.

<u>City of San Diego Studies</u>

Through four studies performed by the City of San Diego (*City of San Diego, 2010, Tecolote Creek Microbial Source Tracking Summary, Phases I, II, and III; City of San Diego, 2010, San Diego River Source Tracking Investigation – Phase I; and, City of San Diego, 2009, Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek by Weston Solutions Inc.; San Diego County Enterococcus Regrowth Study by Southern California Coastal Water Research Project (SCCWRP)*), it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher

in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates regrowth in catch basins is a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[1], was found to provide both a bacteria transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishi et al., 2007; Yamahara et al., 2009).

[1] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

Section 3 Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Municipal Permit. The Watershed Activity Summary Sheets for all watershed water quality and education activities implemented during this reporting period are included in Appendix A.

3.1 Watershed Water Quality Activities

Table 3-1 presents the 22 water quality activities and special studies reported on in FY 2011, including five activities in implementation that are actively reducing loads and/or abating sources. One activity was cancelled and three activities are on-hold. The remaining 13 are in various stages of implementation. Refer to Appendix A for details regarding each activity's anticipated implementation schedule. Progress on each watershed activity has been described in Appendix A via the standardized regional template and identifies what was accomplished during the reporting period as well as how it pertains to WMA's High Priority Water Quality Problems.

Table 3-1. Watershed Water Quality Activities

ID Number	Activity	Pollutant Categories								Activity Type					FY 2011 Status
		Bacteria*	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	
MB-1002	ILACSD Trash Cleanup Sponsorship	X							X			X			IA
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X							X			X			IA
MB-1012	Osler Street Hydrodynamic Separator Installation Project	X						X	X			X			cancelled
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X	X	X								X			P
MB-1014	Kellogg Park Green Lot Retrofit Project	X	X	X								X			P
MB-1015	Mt. Abernathy Green Street Retrofit	X	X	X								X			P
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X										X			P
MB-1017	Infiltration BMP Retrofit #2	X	X	X								X			on hold
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X	X	X								X			I
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Diversion	X	X	X								X			P
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X										X	X		P
MB-1022	Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X		X								X			P
MB-1023	La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X		X								X			P
MB-1025	Pet Waste Bag Dispenser Program	X										X			I
MB-1026	Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials		X										X		I**
MB-1027	Targeted Catch Basin Cleaning Study	X		X					X			X			P
MB-1028	Property-based Watershed Inspections	X			X			X	X		X	X		X	IA
MB-1029	Rainwater Harvesting Rebate Pilot Program											X			P
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.													I** (plan)
MB-3009	La Jolla Shores ASBS Compliance Monitoring		X			X	X			X					I
MB-3010	Bioassessment Monitoring of the Tecolote Creek Waters	X	X	X						X					onhold
MB-3011	Tecolote Creek Microbial Source Tracking Study	X	X	X						X					onhold
	Activity Sheet ID Numbers highlighted in red are newly reported activities						P - Planning								
	* High Priority Pollutants						I - Implementation								
	**Implemented over the longterm						A - Assessment								

3.2 Watershed Education Activities

The City recognizes educational programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Table 3-2 below lists the five education activities reported on in FY 2011, including two activities that have actively increased awareness and/or changed behaviors of the public during the reporting period. One education activity is on-hold. The remaining two are in various stages of implementation. Refer to Appendix A for details regarding an activity's anticipated implementation schedule.

Think Blue is the City's storm water education program, and is managed by the Storm Water Division's Education and Outreach group. *Think Blue* is a multi-faceted effort which encompasses education and outreach to a variety of audiences. *Think Blue* conducts activities on a jurisdictional, watershed and regional basis.

Table 3-2. Watershed Education Activities

ID Number	Activity	Pollutant Categories										Activity Type					
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2011
MB-2004	Genesee Commercial CBSM Efforts	X											X	X		X	On-hold
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X												X	I
MB-2009	Mission Bay Focused Outreach	X														X	I
MB-2011	San Diego Crew Classic	X			X	X										X	I
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X	P
	* High Priority Pollutants																

3.3 Public Participation Activities

The City will continue to actively encourage the participation and input of diverse stakeholders in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP. Historically, stakeholders have participated regularly in activity planning and implementation efforts via formal and informal discussions and meetings at the City or stakeholder locales. Because the City is the only Copermittee within the WMA, internal and stakeholder meetings are held on an ad hoc basis. The City values its strong relationships with stakeholders and will continue to use this informal participation as the foundation of its collaborative efforts in conjunction with the more formal participation mechanisms described in the following sections.

Sections 3.3.1 – 3.3.5 broadly outline the public participation strategy that the City is pursuing to encourage stakeholder engagement in the WURMP.

Specific watershed education activities that involve general public participation are described below and in Appendix A, and include trash cleanup sponsorships, Community Based-Social Marketing (CBSM) activities, and focused outreach.

3.3.1 Non-Governmental Organization Engagement

The City's Storm Water Division continues to engage non-governmental organizations (NGOs) active in the WMA in the development, implementation, and assessment of the Mission Bay and La Jolla WURMP through a variety of means, including, but not limited to:

- Entering into agreements with NGOs to implement activities, such as trash/debris cleanup sponsorships, creation and distribution of education materials, workshop facilitation, research, community events, and presentations.
- Inviting NGO representatives to the City and sending City representatives to NGO meetings to discuss urban runoff pollution prevention efforts, share input, and identify opportunities for coordination. The Storm Water Division meets with San Diego Coastkeeper and I Love A Clean San Diego regularly to discuss strategic planning and City-wide issues including those that may affect the Mission Bay and La Jolla WMA. The City meets with other NGOs on an ad-hoc basis.
- Partnering with NGOs as appropriate in advocating legislation protective of water quality. The City assisted Sustainable Conservation in FY 2010 with a sponsorship to advance the Brake Pad Partnership's work in the reduction/elimination of copper in automotive brake pads through legislation that was ultimately passed in September 2010.

- Partnering with NGOs as appropriate to complete community improvement, water quality and Low Impact Development (LID) projects. The City works with the University of California San Diego (UCSD) and the Scripps Institution of Oceanography in the Areas of Special Biological Significance (ASBS) via an Integrated Watershed Management Plan (ICWM) that has qualified for funding under several state and federal grants.

3.3.2 Community Planning Groups and Established Stakeholder Meetings

The Storm Water Division uses meetings established by various stakeholder groups, including Community Planning Groups, the La Jolla Shores Association and the Mission Bay Park Committee, to present specific watershed projects and solicit public participation and feedback. In FY 2011, the Storm Water Division and the Engineering & Capital Projects Department presented the Kellogg Park Parking Lot Infiltration Project, Pump Station N Retrofits, the Avenida de la Playa Infrastructure Replacement Project, and the ASBS Dry Weather Flow Diversions Projects to four community planning groups and park committees to alert the community of impacts, location, and timing for construction of these projects. In addition, the Division held a separate City sponsored community meeting regarding the Avenida de la Playa Infrastructure Replacement Project. Public feedback was then incorporated as appropriate.

The Storm Water Division actively attends the quarterly meetings of the Open Space Canyons Advisory Committee, established by City Council Policy to address open space canyons issues including those pertaining to storm water and urban runoff. The Storm Water Division will continue to use established stakeholder groups to engage the public in the WURMP and specific watershed activities as needed, especially regarding project implementation.

3.3.3 Project Clean Water

Project Clean Water (http://www.projectcleanwater.org), which was initiated in July 2000 by the Regional Copermittees, established a framework for the broad-based and collaborative development of solutions to local water quality problems. In addition to general information regarding Project Clean Water, specific contact details are listed for each watershed, encouraging members of the public to contact representatives for information. It is the eventual goal of Project Clean Water to establish this site as a centralized source of water quality information for the San Diego region. The *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) and annual reports are placed on the website to allow stakeholders to view the documents and submit comments. The City continues to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as it continues to implement the WURMP.

3.3.4 Think Blue

The City's Storm Water Division maintains the *Think Blue* website (http://www.sandiego.gov/thinkblue/) as a public participation mechanism to provide education and outreach regarding storm water issues. The website is a resource to educate residents and businesses on pollution prevention solutions, and to assist them in being compliant with urban runoff regulations. Brochures, guidebooks and other informational materials are available online in both English and Spanish. The Storm Water Division also posts the *Mission Bay and La Jolla Watershed Urban Runoff Management Plan* (March 2008) on the City's website

(http://www.sandiego.gov/stormwater/plansreports/wurmp.shtml), as well as various reports and documents to provide stakeholders the opportunity to review and comment. In addition, solicitations for public participation in meetings and outreach events are posted on the website. The City continues to use the website as a mechanism to encourage stakeholder participation in the development and implementation of the Mission Bay and La Jolla WURMP.

3.3.5 City Council and Council Committee Meetings

The City's Storm Water Division and the Engineering & Capital Projects Department, working on storm water pollution prevention projects, presented items to the San Diego City Council and the Council's Natural Resources and Culture Committee throughout FY 2011. City Council and Committee meetings are open to the public and are forums where the public is encouraged to comment on items being presented. Presentations included a brief background on the Storm Water Division's mission as well as specifics associated with the item being presented. During FY 2011, several watershed capital improvement projects were presented, including Prop 84 ASBS Grant Acceptance, the ASBS Low Flow Diversions Advertising and Grant Funds Appropriation, outreach research consultant contracts, and other project specific contracts. In addition, Storm Water and E&CP staff met twice with Council District 1 representatives to address specific project concerns. In total, the Storm Water Division appeared and/or presented three times at the Natural Resources and Culture Committee meetings and four times at the City Council meetings, inviting public participation and comment.

3.4 Collaborative Land-Use Planning Efforts

The City is divided into various politically recognized communities, each with its own community plan prepared by the City Planning & Community Investment Department that implements the planning policies in the City's General Plan. The Mission Bay and La Jolla WMA encompasses nine communities: Linda Vista, Clairemont Mesa, Kearny Mesa, Mission Beach, Pacific Beach, La Jolla, University City, Mission Bay Park, and MCAS Miramar. Of these, seven have community plans (Mission Bay Park and MCAS Miramar are covered under other planning documents). Each community plan is updated periodically to reflect changes in the community, as well as provide fresh direction regarding growth and development. For example, the California Coastal Commission approved the La Jolla Community Plan update in FY 2004, and City staff began implementation in FY 2005. The La Jolla Community Plan includes extensive storm water policies pertaining to coastal bluffs and steep hills.

The City will use the community plan update process as needed to incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the plans to address special concerns identified for the Mission Bay and La Jolla WMA. Updates to the community plans will be primarily reported in the City's Jurisdictional Urban Runoff Management Program (JURMP) due to their general nature and close relationship with the General Plan. However, highlights will be provided in the WURMP annual report as appropriate. In FY 2011 no updates occurred to community plans with the Mission Bay and La Jolla WMA.

Of significant note, Storm Water Division staff has undertaken efforts to make the connections between land use planning and improvements/protection of water resources more clear to City staff involved in long range planning for the City. Opportunities for encouraging low impact

development (LID) friendly planning have been identified as part of a multi-year LID Regulatory Barriers and Solutions Project that Storm Water staff initiated in FY 2010. The opportunities identified will be considered during the development and implementation of Comprehensive Load Reduction Plans, required under the San Diego Region Beaches and Creeks Bacteria TMDL.

Storm Water Division staff presented to the City's Planning Division on the connection between land use planning and water resources to encourage continued consideration of water quality during community planning efforts. Discussion points included using Low Impact Development (LID) and the leveraging of complimentary efforts such as smart growth and the "Complete Streets" concept to help further improvements to water quality.

3.5 Updated 5-Year Strategic Plan

The Mission Bay and La Jolla WURMP's five-year strategic plan is assessed annually and has been updated to reflect the current status of watershed activities and modifications to previous versions of the strategic plan.

3.5.1 Five-Year Strategic Plan and New Watershed Activities

The City of San Diego's *Strategic Plan for Watershed Activity Implementation* (November 2007) uses an integrated, tiered, and phased approach for activity implementation. Integrated activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not. Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City believes that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the 5-Year Strategic Plan presented in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Two new activities, MB-1027 Targeted Catch Basin Cleaning Study and MB-1028 Property Based Watershed Inspections, were initiated in FY 2011.

Table 3-3 shows a list of all activities currently being implemented over a five year period in the Mission Bay and La Jolla WMA. New activities are included in the table with red activity sheet ID numbers. Activities that have been completed in years past and are no longer reported are in gray text. Details on each activity can be found in the Watershed Activity Summary Sheets located in Appendix A.

Table 3-3. Updated Five Year Strategic Plan.

ID Number	Activity	Pollutant Categories										Activity Type					Schedule				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
MB-1001	Alpha Project Trash Cleanups	X									X			X			I A	Activity is complete and no longer reported.			
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1004	Targeted Animal-Related Facility Inspections**	X			X	X							X	X		X	P I A	Inspections are combined into the Geographically			
MB-1005	Mission Bay Targeted Automotive Facility Inspections **				X								X	X		X	P I A	P I A	IA	Complete	
MB-1006	Geographically Based Business Property and Facility Inspections	X			X	X							X	X		X	P I A	P I A	P I A	Complete	
MB-1007	Targeted Municipal Facility Inspections	X			X	X							X	X		X	P	No longer moving forward under the WURMP			
MB-1008	Targeted Residential Activity Characterization	X			X	X							X	X		X	P	Reported as MB-2010			
MB-1009	Targeted Restaurant Facility Inspections **	X			X	X							X	X		X	P I A	Inspections are combined into the Geographically			
MB-1010	Aggressive Street Sweeping				X						X		X	X			P	I A	I A	Complete	
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect Project	X			X	X	X		X	X				X			P	I A	IA	Complete	
MB-1012	Osler Street Hydrodynamic Separator Installation Project	X								X	X			X			P	P	P	CANCELLED	
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X			X	X								X			P	P	P	P	I
MB-1014	Kellogg Park Green Lot Retrofit Project	X			X	X								X			P	P	P	PI	I
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X			P	P	P	P	I
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X												X			P	P	P	Implementation anticipated in	
MB-1017	Infiltration BMP Retrofit #2	X			X	X								X			P	P	P	On -hold	
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X			X	X								X			P I	I	IA	Complete	
MB-1019	South Shores RV	X												X	X		I	Activity is complete and no longer reported.			
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Diversion	X			X	X								X			P	P	P	Implementation anticipated in	
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X												X	X		P	P	P	PI	IA
MB-1022	Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X					P	P	P
MB-1023	La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X					P	P	P
MB-1024	Median Sweeping Pilot Study				X									X				P	PIA		
MB-1025	Pet Waste Bag Dispenser Program	X												X					P	IA	Complete
MB-1026	Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials				X										X				Legislation passed in 2010. Longterm improvements anticipated; the first		
MB-1027	Targeted Catch Basin Cleaning Study	X				X					X			X						P	I
MB-1028	Property-Based Watershed Inspections	X					X			X	X		X	X		X				P I A	P I A
MB-1029	Rainwater Harvesting Rebate Pilot Program													X		X				P	I
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		X							X					X	I	I A	I A	No longer reporting.	
MB-2002	Mobile Advertising	X		X	X		X		X	X	X					X	I A	I A	Complete		
MB-2003	La Jolla Commercial CBSM Efforts	X									X		X	X		X	P I A	P I A	Complete		
MB-2004	Genesee Commercial CBSM Efforts	X											X	X		X	P	P	P	On-Hold	
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X												X	P	P	P	I	I
MB-2006	Clean Construction Poster and Brochure Distribution	X			X	X				X						X	I	I	I	Complete	
MB-2007	Restaurant Best Management Practices Booklet Distribution	X														X	I	I	I	Complete	
MB-2008	Transit Shelter and Billboard Advertisements	X			X											X	P I	A	Study is complete and no longer		
MB-2009	Mission Bay Focused Outreach	X														X		I	I	I	I
MB-2010	La Jolla Residential CBSM	X														X		I	I	Complete	
MB-2011	San Diego Crew Classic	X			X	X										X		I	I	I	I
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X		P	P	P	I
MB-3001	Tecolote Creek Bacterial Source Identification Study (Phase I)	X											X				I A	Study is complete and no longer reported.			
MB-3002	Tecolote Creek Bacterial Source Identification Study (Phase II)	X											X				P	I A	Study is complete and no longer		
MB-3003	La Jolla Shores Integrated Coastal Watershed Management Plan											Planning Document					P	Plan is complete and no longer reported.			
MB-3004	La Jolla Shores Sediment Source Study									X			X				P I	I A	Study is complete and no longer		
MB-3005	La Jolla Design Storm Study	X											X				P I	I A	Study is complete and no longer		
MB-3006	Tecolote Creek Design Storm Study	X											X				P I	I A	Study is complete and no longer		
MB-3007	Dry Weather Aerial Deposition Study (Phase II) 2009		X		X							X	X				P I	I A	Study is complete and no longer		
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.															Implemented through the activities listed here and through				
MB-3009	La Jolla Shores ASBS Compliance Monitoring				X			X	X			X							I	I	I
MB-3010	Bioassessment Monitoring of the Tecolote Creek Watershed	X			X	X						X								On hold	
MB-3011	Tecolote Creek Microbial Source Tracking Study	X			X	X						X							I	On hold	

* High Priority Pollutants

Activity Sheet ID Numbers highlighted in red are new ly reported activities

** MB-1004, MB-1006, and MB-1009 have been combined into one activitiy.

Activity Sheet ID Numbers and Titles highlighted in gray are no longer being reported on

*** This ID number has been retired. MB-1008 is now being reported as MB-2010 La Jolla Residential CBSM Efforts.

P= Planning I= Implementation A= Assessment

3.5.2 WURMP Program Revision

New activities are shown in the above table. The City is continuously evaluating activities implemented under this WURMP as well as activities under other WURMPs to improve its overall storm water program.

Additionally, the City is currently working with other Regional Copermittees on the development of a method to use jurisdictional and regional data at the watershed level with the goal of better understanding and assessing the water quality problems, sources, and actions that can/are taken to improve water quality.

Section 4 Effectiveness Assessment

4.1 Assessment of Overall WURMP Effectiveness

The intent of this section is to assess the effectiveness of the Mission Bay and La Jolla WURMP as a whole, and the activities pursuant to its implementation and the requirements of the Municipal Permit.

4.1.1 Approach to Effectiveness Assessment

THE OVERALL PROGRAM GOAL OF THE MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM IS TO POSITIVELY AFFECT THE WATER QUALITY OF THE MISSION BAY AND LA JOLLA WATERSHED WHILE BALANCING ECONOMIC, SOCIAL, AND ENVIRONMENTAL CONSTRAINTS.

The City has identified the following objectives to meet this goal:

Implement the best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by:

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The City uses effectiveness assessment as part of an iterative feedback loop that incorporates planning, implementation and assessment as presented in the *Mission Bay & La Jolla Urban Runoff Management Plan* (March 2008). Achievement of the overall program goals and the effectiveness of the activities are assessed using an assessment framework developed by the Copermittees (*A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*, October 2003).

In addition to effectiveness assessment, the City believes that it is imperative to assess the efficiency, or the cost effectiveness, with which load reductions are obtained by both the individual activity and program as a whole. It is only through maximizing the efficiency of program efforts that urban runoff programs can sustainably maximize pollutant load reductions and achieve the ultimate goal—the protection and improvement of water quality in the region's creeks, rivers, beaches, and bays.

The City views the WURMP and JURMP as integrated components to the Storm Water Division's overall program. The City's Storm Water Division incorporates the WURMP, JURMP and other programs as needed to implement and comply with the Municipal Permit. Individual assessment of activities can be very challenging and may not always be feasible, particularly when analyzing changes to urban runoff discharges and receiving water quality. In these instances, assessment of program effectiveness incorporates the overlap of these programs.

4.1.2 Program Effectiveness using WURMP Objectives

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Sources of the identified High Priority Water Quality Problems (heavy metals, nutrients and bacteria) are discussed in Section 2.2, Pollutant Source Assessment. Of activities that progressed in FY 2011, seven of the water quality and education activities targeted sources of bacteria, two targeted sources of metals, three targeted bacteria and nutrients, and eight targeted all three of the High Priority Water Quality Problems. Of those activities that were in active implementation in FY 2011, three targeted bacteria and two targeted all High Priority Water Quality Problems. One activity targeting metals will show improvements in the long-term. See Table 4-1 below.

In addition to BMPs targeting specific pollutants, the City's Storm Water Program involves the development of BMPs that will address all three High Priority Water Quality Problems, in addition to the other non-high priority pollutants – essentially all pollutants would be addressed because flows would be targeted. These BMPs include low flow diversions and low impact development retrofits (infiltration and filtration).

Further, the City's Storm Water Division specifically addresses High Priority Water Quality Problems within the WMA via the JURMP, Regional Urban Run-off Management Plan (RURMP) and other programs in addition to the WURMP. For example, a number of activities in the JURMP and RURMP use education and outreach to target sources of nutrients by promoting environmentally friendly gardening practices, such as the use of Integrated Pest Management (IPM) to audiences such as home gardeners.

Table 4-1. Activities targeting High Priority Water Quality Problems (Pollutants)

ID Number	Activity	Pollutant			Schedule	
		Bacteria*	Heavy Metals*	Nutrients*	FY 2011	FY 2012
MB-1002	ILACSD Trash Cleanup Sponsorship	X			I A	I A
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X			I A	I A
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X	X	X	P	I
MB-1014	Kellogg Park Green Lot Retrofit Project	X	X	X	PI	I
MB-1015	Mt. Abernathy Green Street Retrofit	X	X	X	P	I
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X			Implementation anticipated in FY 2014	
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X	X	X	Complete	
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Div	X	X	X	Implementation anticipated in FY 2013 or 2014	
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System	X			PI	IA
MB-1022	Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X		X	P	P
MB-1023	La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X		X	P	P
MB-1025	Pet Waste Bag Dispenser Program	X			IA	
MB-1026	Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials		X		Legislation passed in 2010. Longterm improvements anticipated; the first	
MB-1027	Targeted Catch Basin Cleaning Study	X		X	P	I
MB-1028	Property-based Watershed Inspections	X			P I A	P I A
MB-2005	Mt. Abernathy LID Green Street Outreach	X			I	I
MB-2009	Mission Bay Focused Outreach	X			I	I
MB-2011	San Diego Crew Classic	X	X	X	I	I
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	P	I
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants			Implemented through the activities listed here and	
MB-3009	La Jolla Shores ASBS Compliance Monitoring		X		I	I
	* High Priority Pollutants					
	Activity Sheet ID Numbers highlighted in red are new ly reported activities					

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

The City has developed a process to collect and analyze this data, which is described in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) and the City's *Strategic Plan for Watershed Activity Implementation* (November 2007). This process includes developing specific management questions and assessment mechanisms in the project planning stage in order to collect the necessary information about the activity once implementation and assessment are complete. Implementation involves collecting the data necessary to answer the management questions as the activity is in progress. Additional details on the City's assessment strategy can be found in the two aforementioned documents.

The majority of the load reduction activities that have been planned are still in development. While the City plans to gather the necessary data, and in several cases has initiated efforts to

provide baseline data for specific project sites, many load reduction activities are not far enough along for efficiency analysis to be completed. Activities that do have sufficient data for this analysis include street sweeping, facility inspections, and rain barrel activities, all reported on in previous years. See Activity Summary Sheets MB-1005, MB-1006, MB-1010, MB-1011, and MB-1024 in past annual reports for details on the assessment outcomes of these projects.

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The optimization of activities is the key to developing a comprehensive program that utilizes resources in the most effective manner in order to maximize improvements to water quality. Specifically, individual activities are optimized through an iterative feedback process. For example, two inspections programs within the WMA have been implemented each year with modifications based on what was learned during the previous year. The lessons learned from the two programs resulted in a property based inspection program implemented in FY 2011. Additionally, the Targeted Aggressive Street Sweeping Pilot Program tested different sweeping frequencies and sweeper technologies in an effort to optimize the City's overall street sweeping program. A median sweeping and sweeper speed study were also planned and conducted based on recommendations from the previous study. Recommendations from these studies have already resulted in program changes, such as the reallocation of sweeper technology to take advantage of their strengths and increased public outreach associated with communities that want more sweeping service..

Activity optimization is ongoing and will continue to be evaluated each year based on assessment milestones. More information regarding the assessment of individual activities can be found within each activity summary sheet in Appendix A.

4.2 Effectiveness Assessment using Targeted Outcome Levels

Section 4.2 describes how the activities conducted during FY 2011 relate to the hierarchy of targeted outcomes as required by Section I.2.a of the Municipal Permit. This section is presented by outcome level to illustrate the way in which all of the activities implemented during FY 2011 work together within the WMA to help increase storm water awareness, positively change behaviors to reduce load generating activities, reduce runoff and pollutant loads, and ultimately improve the quality of receiving waters.

Table 4-2 presents a summary of the activities in active implementation during FY 2011, and how they relate to the six targeted assessment outcomes. Current activity status is indicated by completed (C), ongoing (O), and new (N) activities (Level 1, Permit Compliance). During FY 2011, the City made progress on or implemented a total of 26 water quality, education and monitoring activities. Of these activities, eight achieved, or are assumed to have achieved, a minimum of one of the outcome levels described below. Furthermore, four activities resulted in a measurable pollutant load reduction or source abatement (Level 4), one is assumed to have resulted in a load reduction but data was not tracked, and six resulted in changes to public knowledge/awareness and/or behavior (Levels 2 and 3). One activity that has been implemented will show long-term improvements in future years. The City focused on activities intended to reduce bacteria (Total and Fecal coliform), nutrients and metals (copper, lead and zinc) for those

areas of the WMA that were determined to have the highest priority. In addition, the City also focused activity selection on the regional trash issue.

Table 4-2. Summary Table of FY 2010 WURMP Activities Linked with Targeted Outcomes

ID Number	Activity Name	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		Permit Compliance	Awareness	Behavior Change	Load Reduction/Source Abatement	Discharge Quality	Water Quality
MB-1002	ILACSD Trash Cleanup Sponsorship	O	X*		X		
MB-1003	SDCK Trash Cleanup Sponsorship	O	X*		X		
MB-1018	Beach Area Low Flow Diversions, Phase III	C			X**		
MB-1025	Pet Waste Bag Dispenser Program	O	X	X	X		
MB-1026	Source Control of Copper, SB 346: Motor Vehicle Brake Friction Materials	O	Expected to result in long-term improvements not measurable at this time.				
MB-1028	Property-based Watershed Inspections	O	X*	X	X		
MB-2009	Mission Bay Focused Outreach	O	X	X			
MB-2011	Crew Classic	O	X	X			

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness. Additionally for trash cleanups, behavior change can be assumed with first-time participants; however, this data is not tracked.
**Data not tracked, but an improvement is assumed.

4.2.1 Level 1: Compliance with Activity-Based Permit Requirements

Within the Mission Bay and La Jolla WMA, the City fulfilled all the WURMP requirements of the Municipal Permit during the FY 2011 reporting period, and therefore is in compliance. Table 4-2 relates the activities conducted by the City to the requirements specified in the Municipal Permit.

Table 4-3. Level 1 Permit Compliance

Permit Requirements (§J.3.b.2)	Activities	Status
(a) A description of all activities conducted by the watershed Copermittees	All activities – see activity summary sheets in Appendix A	Complete
(b) Any updates to watershed map	None this reporting period	N/A
(c) Updated assessment of the WMA's water quality data and identification of High Priority Water Quality Problems	San Diego County Municipal Copermittees 2010-2011 Urban Runoff Monitoring Report and Water Quality Assessment Section 2 of this report	Complete
(d) Identification of the likely sources, pollutant discharges and other factors causing the water quality problems	Section 2 of this report See activity summary sheets pertaining to bacteria and other source identification studies (Appendix A)	Complete
(e) Updated list of potential Watershed Water Quality Activities	See Section 3, Table 3-3	Complete
(f) Identification and description of Watershed Water Quality Activities implemented during	See Activity Summary Sheets in Appendix A; MB-1002, 1003, 1006, 1018, 1025, 1026, 1028	Complete

Permit Requirements (§J.3.b.2)	Activities	Status
reporting period		
(g) Updated list of potential Watershed Education Activities	See Section 3, Table 3-3	Complete
(h) Identification and description of Watershed Education Activities implemented during reporting period	See Activity Summary Sheets in Appendix A; MB- 2009, 2011	Complete
(i) Public participation	See Section 3.3	Complete
(j) Description of Copermittee collaboration efforts	No other agencies are cited in the Municipal Permit as Copermittees. However, the City worked with other agencies not cited as Copermittees, such as UCSD and SIO.	Complete
(k) A description of efforts implemented to encourage collaborative, watershed based, land-use planning.	See Section 3.4	Complete
(l) Description of all TMDL activities implemented	See Section 4.4	Complete
(m) Effectiveness Assessment of the WURMP	This section fulfills this requirement.	Complete

4.2.2 Levels 2 and 3: Changes in Knowledge / Awareness and Behavioral Change

As summarized in Table 4-4, the City implemented two activities during FY 2011 that resulted in increased awareness of water quality issues (Level 2) and four activities that resulted in both increased awareness and reported behavior change (Level 3). The achievement of these levels of effectiveness was measured through surveys, amount of education materials distributed, and number of participants.

Individual activity effectiveness assessment measurements are presented in the activity summary sheets in Appendix A. FY 2011 targeted outcome results for these activities are presented in Table 4-2. These activities provided education on general watershed concepts, as well as information on specific priority pollutants within the Mission Bay and La Jolla WMA, which increased the public's level of knowledge and awareness. In addition, while some of the water quality and source identification activities listed in Section 3 were not Education Activities in and of themselves, those activities did include public education and outreach components. Nearly all activities included the distribution of informational fact sheets/flyers, web site updates, and reports of findings to the target audiences (residents, businesses and environmental groups), all of which contribute to the overall success of the program. The results of the 2011 annual random-digit dial telephone survey provided assessment data that helped the Division adjust, develop and implement outreach activities. In 2010, approximately 11-12% of the residents surveyed reported living in the Mission Bay and La Jolla WMA. Key findings of the survey include; 53% of all San Diego residents have heard of *Think Blue*, up from 47% in FY 2010 and 39% in FY 2009. This is the highest level of awareness ever recorded and nearly a 60% increase since 2001. In addition, 57% of residents know that storm water is not treated, which is an increase from 52% in FY 2010, 44% in FY 2009, and up from 39% in FY 2008. A third of San Diego City residents said they had made a behavior change in the past year as a result of seeing or hearing information from Think Blue. Specific to addressing and assessing the High Priority Water Quality Problems within the WMA, the reported changes in behavior that were made include using less water (28%), using a carwash instead of washing cars at home (19%), picking up trash and litter (18%), recycling more (13%), disposing of used motor oil properly (10%), and disposing of dog waste properly (4%). Reports of the latter two actions, which were the focus of

Think Blue outreach efforts in 2010, were small but still greatly increased over what was seen in the 2010 survey.

Think Blue also conducts assessment at community events, via several versions of a short 5-6 question storm water survey card. In FY 2011, *Think Blue* utilized three survey cards focused on specific pollutants, including pet waste, automotive waste and litter, to add to the general event survey card previously used. *Think Blue* event survey cards were collected from booth visitors at a variety of events in the Mission Bay and La Jolla WMA, such as San Diego Crew Classic (MB-2011).

A summary of survey results are included in Table 4-4. More details can be found in the Activity Summaries in Appendix A.

Based on implementation of the activity information provided in Appendix A, the *2011 San Diego Storm Water Survey* results and the Event Survey results reported for FY 2011, it can be deduced that the City's efforts have had a positive effect on awareness, knowledge and behavior change relating to water quality in the Mission Bay and La Jolla WMA.

Table 4-4. Level 2 Change in Knowledge/Awareness and Level 3 Change in Behavior

ID Number	Activity Name	Priority Pollutants Addressed	Level 2 Awareness	Level 3 Behavior Change
MB-1002	ILACSD Trash Cleanup Sponsorship *	Trash, Bacteria	48 participants now more aware**	NA
MB-1003	SDCK Trash Cleanup Sponsorship*	Trash, Bacteria	619 participants now more aware**	NA
MB-1025	Pet Waste Bag Dispenser Program Phase II	Bacteria	Percent waste reduction (Turquoise Street): 50% Percent waste reduction (UTC Residential (sign only)): 43% With the installation of signs and dispensers, people are more aware of pet waste issues, and therefore picked up after their pets.	
MB-1028	Property-based Watershed Inspections	Bacteria, Nutrients, Heavy Metals	16 businesses inspected	Improvements in BMP compliance shown in the project in several watersheds
MB-2009	Mission Bay Focused Outreach	Bacteria, Trash	190,374 impressions *** 2,211outreach materials distributed	5% increase from FY 2010 to FY 2011 of individuals surveyed who reported engaging in a behavior that would prevent pollution
MB-2011	San Diego Crew Classic	Bacteria, Nutrients, Heavy Metals, Trash	500 booth visitors, 15,000 attendees 482 outreach materials distributed	96% survey participants reported picking up after their dog, 79% reported would take steps to prevent auto pollution

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness. Additionally for trash cleanups, behavior change can be assumed with first-time participants; however, this data is not tracked and, therefore, is not included in this table.
**Assumed to contribute to overall program success, though the extent of each activity's contribution has not been measured
***Assumed increased level of awareness based on estimated total exposure for all three outreach events, Mobile Ad display, and the marinas outreach participants

4.2.3 Level 4: Load Reduction/Source Abatement

As shown in Table 4-5, the City implemented three activities that resulted in measurable pollutant load reductions or source abatement (Level 4), two activities that can be reasonably assumed to reduce loads/abate sources, and one activity that will result in long-term improvements. These activities were targeted primarily toward trash, bacteria, metals, and nutrients. At two cleanup events, 667 volunteers removed 3,073 pounds of debris from the WMA. Pet waste dispensers and signage installed at two locations resulted in measured reductions in piles of waste observed. The inspections project which built upon past inspections

programs over the years showed improvements in BMP compliance when studying facilities throughout the City. The dry weather diversions installed divert all dry weather flows, which typically contain numerous pollutants, from storm drains into the sanitary sewer system for treatment. These efforts resulted in load reductions and/or source abatement of potential discharges of priority pollutants into receiving waters.

One activity involving financial and staff support from the City resulted in the passage of Senate Bill 346 which will reduce copper in brake pads from 10% to 0.5% by weight by 2025. Brake pads are a significant source of copper in regional waterways, based on past studies that the City has conducted.

Table 4-5. Level 4 Load Reduction/Source Abatement

ID Number	Activity Name	Priority Pollutants Addressed	Level 4 Load Reduction/Source Abatement	
MB-1002	ILACSD Creek to Bay Cleanup Sponsorship	Trash, Bacteria	Trash/recycling removed	375 lbs
MB-1003	SDCK Coastal Cleanup Day Sponsorship	Trash, Bacteria	Trash/recycling removed	2,698 lbs
MB-1018	Beach Area Low Flow Diversions, Phase III	Bacteria, Metals, Nutrients	Dry weather flows diverted; no additional data is tracked	
MB-1025	Pet Waste Bag Dispenser Program	Bacteria	Percent waste reduction (Turquoise Street): 50% Percent waste reduction (UTC Residential (sign only)): 43%	
MB-1026	Source Control of Copper, SB 346: Motor Vehicle Brake Friction Materials	Metals	Expected to result in long-term improvements not measurable at this time.	
MB-1028	Property-based Watershed Inspections	Bacteria, Nutrients, Heavy Metals	Improvements in BMP compliance shown in the project in several watersheds which abates potential sources.	

The City will continue tracking load reductions/source abatement and assessing watershed activity effectiveness in FY 2011 for both ongoing and new projects.

4.2.4 Level 5: Changes in Discharge Quality

The results from the *20010-2011 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* indicate that urban runoff water quality conditions remained similar to the conditions reported in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). A detailed assessment of discharger quality will be conducted as part of the Long-Term Effectiveness Assessment program which will compare findings over the long term to the Baseline Long-Term Effectiveness Assessment. The Long-Term Effectiveness Assessment program is anticipated to provide more conclusive results than any interim measurements can provide. However, the City believes that interim assessment is important to help identify those areas that may be improving or declining and should be of particular note during the Long-Term Effectiveness Assessment. Therefore, the City has looked to its Coastal Storm Drain Monitoring Program to provide a snapshot loosely indicating any improvements that might be observed during the early stages of the program.

With the start of the new permit cycle in 2008, the Coastal Storm Drain Monitoring Program (CSDM) for the City of San Diego grew tremendously. The City took a proactive approach and added 136 monitoring stations to the existing 12. This section analyzes water quality improvements over the past four monitoring years (2008-2011) as shown in Table 4-5 and Figure 4-1. In March 2010 the City began participating in Sample Frequency Reduction Criteria (SFRC), allowing the city the visit chronic dry sites on a bi-monthly basis. One hundred and five sites were added to SFRC in 2010. SFRC has allowed the City to focus resources on other water quality projects. The amount of sites visited per year can be compared to the amount of samples taken when the drains are flowing. That number is then used to determine how many exceeded storm drain action levels (Storm drain action levels are established by the Copermittees). The 95th percentile observations of the most recent year's bacterial results were used to initiate storm drain re-sampling. From 2008 to 2011 a reduction in both the numbers of samples taken and the number of bacterial exceedances in the City's coastal storm drains has been observed possibly indicating that the City's storm water programs overall are having a positive influence on water quality. More information on action levels and the CSDM Program can be found in Appendix N of the 2010 Regional Monitoring Report.

Three notable limitations of this program include: 1) samples are taken only when flow is observed, and therefore, results are only characteristic of those instances; 2) the analysis focuses only on bacterial indicators and does not allow for analysis of all pollutants; and 3) the coastal program is a limited set of outfalls. Despite these acknowledged limitations, the City will continue to use the Coastal Storm Drain Monitoring Program to provide interim assessment.

Table 4-6. City of San Diego 2008-2011 Coastal Storm Drain Exceedances

Analyte	2008			2009			2010			2011		
	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded
Total Coliforms	29	252	12	17	186	9	5	128	4	1	86	1
Fecal Coliforms	18	247	7	2	182	1	3	127	2	2	86	2
Enterococcus	30	252	12	13	190	7	8	135	6	7	90	8

[1]Sample totals may be different due to exceedances per analyte. A routine sample is collected and analyzed for Total, fecal, and enterococcus. If one analyte exceeds, a resample is collected for that analyte only.

Figure 4-1. Coastal Storm Drains 2008 -2011

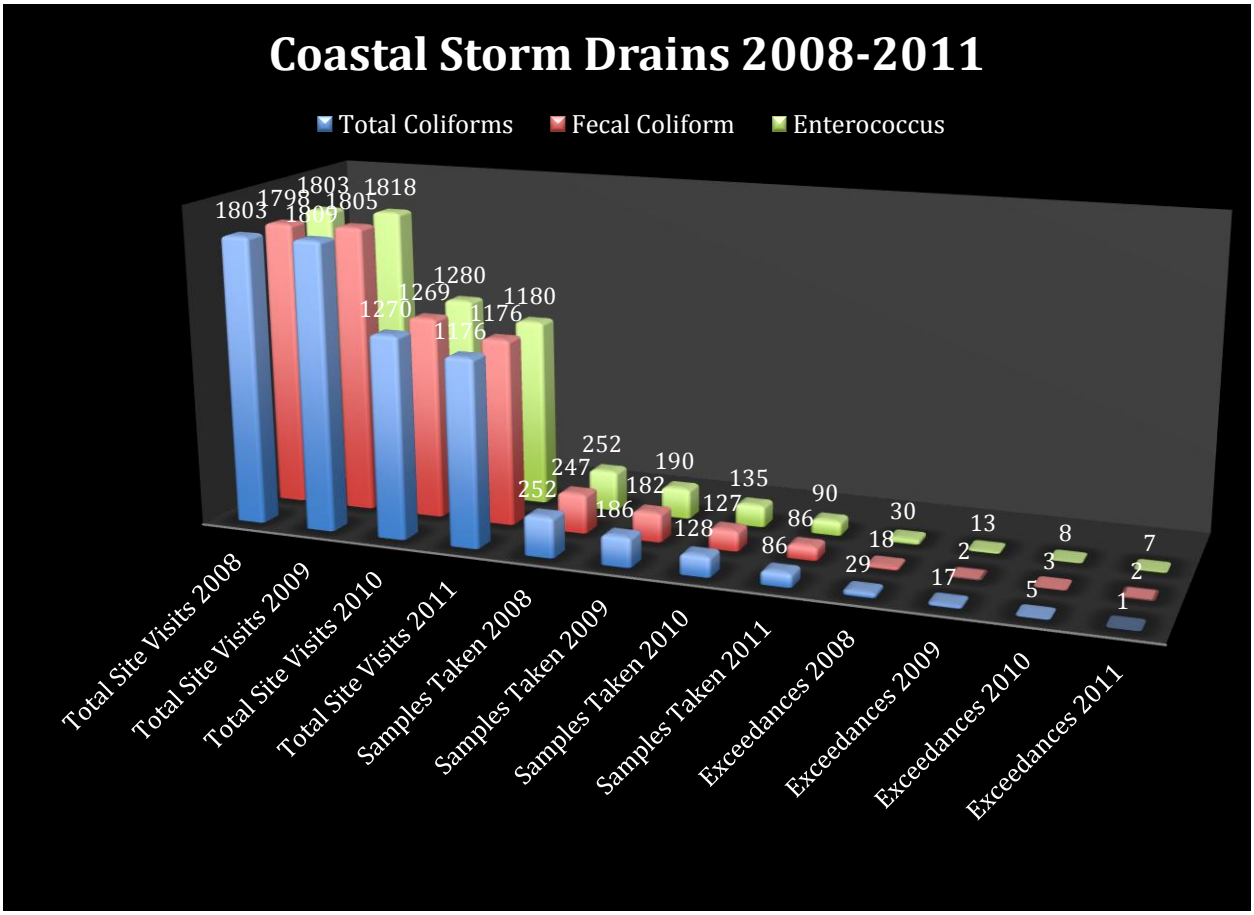

In addition, it should be noted that the City will be measuring discharge water quality as part of the activity effectiveness assessments associated with several Capital Improvement Projects that are currently in the planning stages. Once the data is collected and results are known, the information will be used as part of this assessment.

4.2.5 Level 6: Changes in Receiving Water Quality & Assessment Summary

A Level 6 assessment involves the evaluation of changes in water quality with respect to established regulatory benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the San Diego Regional Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. The San Diego Regional Copermittees conducted a Long-Term Effectiveness Assessment (LTEA) and submitted it to the Regional Board in June 2011. As part of the LTEA analysis there were some receiving water trends (based on available data) that were identified, where applicable and appropriate. See Table 4-7 below. While there is no direct linkage to Copermittee watershed activities at this time, the trends are important to note and more detailed information can be found in the report, specifically Section 7 which covers the Mission Bay and La Jolla Watershed (Weston, MOE, LWA June 2011).

Table 4-7. Constituent Trends Identified in the 2005-2010 LTEA (June 2011)

Location	Increasing Trends by Priority Constituent	Decreasing Trends by Priority Constituent
Tecolote Creek MLS	Total Hardness Enterococci	Diazinon Total Suspended Solids
Mission Bay TWAS- 1 (Rose Creek)	No trends identified	No trends identified
Mission Bay TWAS-2 (Tecolote Creek)	No trends identified	No trends identified

4.3 Optional Efficiency Assessment

Although not specifically required by the Municipal Permit, but in accordance with its Strategic Plan, the City selects WURMP activities to assess for cost efficiency. As activities are implemented and assessed, the efficiency rating for each activity is entered into an activity efficiency ratings table as described in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). The goal of this long-term effort is to develop a tool to assist Storm Water Managers in selecting the most cost effective suite of activities for improving water quality. Phase I of the Strategic Plan involves development of this tool, while Phase II and beyond involves improving and increasing implementation efforts.

The City initiated this effort in FY 2008, and cost data associated with all activities is tracked and reported in the activity summary sheets in Appendix A. Results are not conclusive at this time as many of the activities initiated will be tracked over multiple years. Additionally, only trash cleanups, street sweeping, and rain barrel activities provide data that can be used to make preliminary determinations regarding cost efficiency. However, the City plans to compare individual activities cost efficiencies against each other as well as the quantity of each of these activities needed to effect adequate improvements to water quality as part of a comprehensive load reduction planning effort associated with the San Diego Region Beaches and Creeks Bacteria TMDL. Therefore, the City will continue to analyze cost associated with activities through this planning effort.

4.4 Assessment of TMDL BMP Implementation Plan Effectiveness

The San Diego Region Beaches and Creeks Bacteria TMDL took effect in April 2011 after it was adopted by the Regional Board, the State Water Resources Control Board and subsequently approved by the State Office of Administrative Law. The required load reduction plans are currently in development for both Tecolote Creek and the Scripps Hydrologic Area Pacific Ocean Shoreline.

Section 5 Conclusions and Recommendations

5.1 Conclusions

The City of San Diego has taken the appropriate actions to meet all the Municipal Permit requirements through the Mission Bay and La Jolla WURMP as detailed in this Annual Report and is, therefore, in compliance with the Municipal Permit.

In FY 2011, the City allocated significant resources and made progress on 27 activities, four that resulted in measurable pollutant load reductions or source abatement (Level 4), one that can be reasonably assumed to reduce loads, and one activity that will result in long-term improvements. Six activities resulted in increased awareness associated with water quality issues and/or reported behavior change.

Collectively, all projects implemented, initiated, and reported in FY 2011 are anticipated to improve water quality by increasing the City's understanding of the WMA's water quality issues, improving the public's knowledge of urban runoff issues and effecting positive behavior changes, and reducing and/or treating pollutant loads before their ultimate discharge into receiving water bodies.

As detailed in the activity summary sheets included in Appendix A, activities implemented in the WMA, including the distribution of educational materials and sponsorship of trash cleanups, resulted in 3,073 pounds of trash being removed from waterways. The Pet Waste Dispenser project resulted in a 50% waste reduction at one location and a 43% waste reduction at second location. The City also engaged over 200,000 members of the public through a focused outreach program in Mission Bay as well as attendance at the San Diego Crew Classic event. Surveys administered during the Mission Bay Focused Outreach showed a 5% increase from FY 2010 to FY 2011 of individuals who reported engaging in a behavior that would prevent pollution.

The City continued to collaborate with Scripps Institute of Oceanography, UCSD and San Diego CoastKeeper in implementing the *La Jolla Shores Coastal Watershed Management Plan* for the ASBS drainage area including the implementation of dry weather diversions under a grant program and special monitoring of the ASBS. These efforts will benefit the Mission Bay and La Jolla WMA by providing data and water quality activity recommendations for future implementation efforts.

Of special note, the City also worked diligently with Sustainable Conservation's Brake Pad Partnership to ensure the passage of Senate Bill 346: Motor Vehicle Brake Friction Materials in September 2010 which addresses a significant source of copper in our water ways. This bill is anticipated to provide long-term improvements in our receiving waters by limiting the amount of copper that can be used in brake pads, which gets released as brake pad dust settling onto street surfaces.

Based upon the Water Quality Assessment in Section 2, the High Priority Water Quality Problems for the WMA remain bacteria, metals and nutrients. Monitoring data shows that most high frequency occurrence constituents of concern correspond to these ratings except for metals, which has not been observed at high levels.

Although the City cannot conclusively link specific activities to improvements in receiving water quality, the City believes that collectively all of its activities are positively influencing water quality. Moreover, the City not only met the minimum requirements of the Municipal Permit, but implemented additional activities. The City also created a *Strategic Plan for Watershed Activity Implementation* to assess the efficiency of these activities in order to best allocate available resources in future years for the purpose of maximizing water quality improvements.

5.2 Recommendations

The Municipal Permit was adopted in 2007 by the Regional Board with a cycle of five years. With the next permit, and the report of waste discharge process, the Regional Copermittees are moving towards an adaptive management process in all watersheds and also working towards integrating the various regulatory programs into a single program for efficiency.

As in previous years under the current Municipal Permit, the City recommends continuing the following strategy for increasing the level of understanding of pollutants and their sources to help focus efforts:

1. Refine and Improve Water Quality Activities. The City is continually developing and refining its list of watershed activities to more efficiently protect and improve water quality. The City intends to use the best available data to refine and improve its activities; however, implementation of activities is ultimately subject to available funding. Modifications based on the results of water quality and effectiveness/efficiency assessment are anticipated to lead to the best allocation of limited resources.

2. Expand Knowledge of Pollutant Sources. The City has developed an approach to expand understanding of the water quality issues in the Mission Bay and La Jolla WMA (i.e., the pollutant sources and magnitude of the issues) so that the City, other entities and interested members of the public can make more informed decisions. The City's recommended approach for increasing its level of understanding is two-fold:

- Continue to gather additional water quality monitoring data suitable for conducting assessment at the watershed and subwatershed levels. In order to effectively assess water quality at both the watershed and subwatershed levels, additional monitoring during both the dry and wet seasons is needed throughout the WMA so that water quality problems may be accurately identified, characterized, and prioritized.
- Continue to research and characterize pollutant sources and their pollutant loading potential. A more positive identification of sources and their loading potential would allow the City to modify program activities wisely and devote available resources to target specifically the highest priority sources using the most efficient BMPs.

3. Refine and Improve Effectiveness Assessment. The City has developed a framework to assess the efficiency of its storm water program. This framework is built upon the premise that individual activities should be optimized with regards to efficiency, which is evaluated by considering an activity's pollutant load reduction potential, cost, and impacts and benefits to the community (this is otherwise known as the "triple bottom line" and is often referred to as a sustainability analysis). By knowing the efficiency rates of activities, the City can implement the best suite of activities to maximize load reduction using available resources. Therefore, the City's assessment framework directs activity implementation and assessment to be designed in a

manner that will allow for the investigation and verification of efficiency rates. A combined assessment of the different efficiency rates to establish the best suite of activities to maximize load reduction will then feed into program assessment to determine if the overall program goals and objectives have been met. The City will continue to refine and improve this framework through implementation, which is anticipated to lead to more efficient activity implementation, assessment, and program results.

4. Coordinate and Integrate the WURMP with the Bacteria TMDL Comprehensive Load Reduction Planning process. One last item of note is the ongoing effort associated with the development of load reduction plans for the San Diego Region Beaches and Creeks Indicator Bacteria TMDL. Tecolote Creek and the Scripps Hydrologic Area shoreline are impacted by this TMDL. The City has embarked on a comprehensive effort, building upon the Strategic Plan and Mission Bay & La Jolla WURMP, to identify the most efficient suite of BMPs that upon implementation will achieve the required storm water quality standards for priority pollutants in WMA. This comprehensive and quantitative modeling effort will help identify these BMPs which will be incorporated into the TMDL-required load reduction plans.

Section 6 References

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APPENDIX A
WATERSHED WATER QUALITY AND EDUCATION ACTIVITY SUMMARY SHEETS

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TITLE:	**I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP**
ID #:	**MB-1002**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 30, 2011. The City of San Diego (City) sponsored the Marian Bear Memorial Park site in the Mission Bay and La Jolla Watershed Management Area (WMA). Approximately 48 volunteers removed 350 pounds of trash and debris and recycled 25 pounds of trash and debris in a one mile area.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Indicator Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to the event, the City coordinates with ILACSD staff to ensure that a site within the Mission Bay/La Jolla WMA is included in the list for cleanups.

LEAD WATERSHED COPERMITTEE

- City of City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s)

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

1) Pounds of trash removed (Outcome Level 4): 350 lbs
2) Pounds of trash recycled (Outcome Level 4): 25 lbs
3) Total pounds of trash removed and recycled (Outcome Level 4): 375 lbs
4) Number of participants (Outcome Level 1): 48
5) Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
6) Estimated amount of money spent on cleanups for the Mission Bay/La Jolla watershed (Outcome Level 1): $5,000
7) Efficiency (Total Cost/Total Pounds Removed): $13.33/lb

EXPECTED BENEFITS

Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS

At the event, 48 participants removed 350 pounds of trash and debris and recycled 25 pounds of trash and debris. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 375 pound load reduction and an efficiency of $13.33 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This trash cleanup activity fulfills a watershed water quality activity for FY2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 375 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE:	**COASTAL CLEANUP DAY SPONSORSHIP**
ID #:	**MB-1003**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 25, 2010. The City of San Diego (City) sponsored the Rose Creek Corridor, Pacific Beach site in the Mission Bay and La Jolla Watershed Management Area (WMA). Approximately 619 volunteers removed 2,364 pounds of trash and debris and recycled 334 pounds of trash and debris.

TMDL APPLICABILITY

- Indicator Bacteria - Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City coordinates with SDCK and ILACSD staff to ensure that sites within the Mission Bay and La Jolla WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- San Diego Coastkeeper
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority

water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s)

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

1) Pounds of trash removed (Outcome Level 4): 2,364 lbs
2) Pounds of trash recycled (Outcome Level 4): 334 lbs
3) Total pounds of trash removed and recycled (Outcome Level 4): 2,698 lbs
4) Number of participants (Outcome Level 1): 619
5) Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
6) Estimated amount of money spent on cleanups for the Mission Bay/La Jolla watershed (Outcome Level 1): $5,000
7) Efficiency (Total Cost/Total Pounds Removed): $1.85/lb

EXPECTED BENEFITS

Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS

At the event, 619 participants removed 2,364 pounds of trash and debris and recycled 334 pounds of trash and debris, which was tracked using data cards provided by the Ocean Conservancy. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 2,698 pound load reduction and an efficiency of $1.85 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This trash cleanup activity fulfills a watershed water quality activity for FY2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 2,698 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE: OSLER STREET HYDRODYNAMIC SEPARATOR INSTALLATION PROJECT
ID #: MB-1012

ACTIVITY IMPLEMENTATION

Osler Street is located on the Northern end of Linda Vista Park in the Mission Bay and La Jolla Watershed Management Area (WMA). The City of San Diego (City) planned to install hydrodynamic separator directly in line with a 24-inch storm drain that traverses the park and discharges into Tecolote Canyon. The hydrodynamic separator would have been used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

Upon further review, this project was found to be redundant and has been cancelled. The City did not need another pilot project involving a hydrodynamic separator. Additionally, the expected load reduction was not worth the difficulty of construction at this site.

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design began February 2010. This project was cancelled in FY2011.

TITLE: LA JOLLA SHORES ASBS POLLUTION CONTROL PROGRAM (AKA LOW FLOW DIVERSIONS PHASE IV)
ID #: MB-1013

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has been installing a low flow storm drain diversion system in phases to serve the Pacific Ocean coast of the La Jolla, Pacific Beach, and Ocean Beach areas. Phases I, II, and III have been completed using grant monies from the Environmental Protection Agency.

Phase IV focuses on the La Jolla Area of Special Biological Significance (ASBS) to address the prohibition of dry weather flows under the Ocean Plan Exception Process. Four low flow coastal diversions are planned for this fourth phase: Camino del Oro (Camino del Oro near El Paseo Grande), 7920 Princess St. (Torrey Pines Rd. and Princess St.), Torrey Pines Rd. and Charlotte St. (Torrey Pines and Amalfi), and 1624 Torrey Pines Rd. (Torrey Pines and Coast Walk). The City held a workshop to present the concept for these sites on July 30, 2008 and invited the La Jolla Town Council, the La Jolla Community Planning Group, the La Jolla Shores Association, San Diego Coastkeeper, and the general public.

The UC Regents - UCSD applied to the State Board for an implementation grant under this Consolidated Grant program (Proposition 50) for multiple structural control projects consistent with the La Jolla Shores Integrated Coastal Watershed Management Plan (ICWMP) (see activity summary sheet MB-3003 La Jolla Shores Integrated Coastal Watershed Management Plan) including these low flow diversions. City staff coordinated with UC Regents-UCSD for the City to be a subcontractor on this grant for the implementation of the low flow diversions. Design was completed in November 2009. The project began the process for advertising for construction bids in June 2010. Unfortunately, all the bidders were disqualified. Re-advertisement will commence in Winter 2011 when the new grant funding is available in the project. It is anticipated that construction will be completed in FY12.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design was completed in November 2009. The project began the process for advertising for construction bids in June 2010. Unfortunately, all the bidders were disqualified. Re-advertisement will commence in Winter 2011 when the new grant funding is available in the project. It is anticipated that construction will be completed in FY12.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of the flow diversions?
2) How effective are these diversions at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the system upgrades are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness and efficiency of installing low flow diversions to divert dry weather runoff into the sewer system for treatment instead of low flows discharging out of storm drain outfalls directly into the ASBS. Targeted high priority pollutants include bacteria, metals and nutrients.

ANALYSIS RESULTS

Assessment is not possible at this time, as the diversions have not yet been constructed. Prior to construction, monitoring will be conducted to determine baseline conditions. Post-construction monitoring will be conducted as well for comparison to baseline conditions and assessment of effectiveness.

CONCLUSIONS

Design was completed in FY11. Construction is expected to begin in FY 2011 and finish in FY2012. Once construction and assessment are both complete, conclusions will be made as to the effectiveness and efficiency of the project.

TITLE:	**KELLOGG PARK GREEN LOT RETROFIT PROJECT**
ID #:	**MB-1014**

ACTIVITY IMPLEMENTATION

This project will replace a portion of the conventional asphalt of the Kellogg Park parking lot with porous pavers to allow for the infiltration of urban runoff. Originally the project considered only the western half of the parking lot. In late FY 2008, the project was expanded to include the entire parking lot. The concept design for the western half of the parking lot was worked on in FY 2008. An additional conceptual design, showing pervious pavers installed in the north and south ends of the lot, was completed in FY 2009. The middle of the lot will be resurfaced with conventional asphalt. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, Area of Special Biological Significance (ASBS), and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla Watershed Management Area (WMA).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design for this project was initiated in January 2009. Design was completed in February 2010. The process of advertising the project for construction began in March 2010 and the project was awarded to a contractor in March 2011. Construction began in FY11 and will continue into FY12. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy metals and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of retrofits?
2) How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the retrofit is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) retrofits through reduction of runoff volume. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type. High priority pollutants targeted include bacteria, nutrients and heavy metals.

ANALYSIS RESULTS

The concept design for this project began in FY 2008 and baseline monitoring was completed. Currently, load estimates are being calculated and will be included in the project report. Once design and construction are complete, additional assessment will be completed to determine the effectiveness of this activity.

CONCLUSIONS

As mentioned above, the assessment will be completed after project construction and conclusions will be made at that time. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, ASBS, and current and anticipated TMDLs in the receiving waters of the Mission Bay and La Jolla WMA.

TITLE:	**MT ABERNATHY GREEN STREET RETROFIT**
ID #:	**MB-1015**

ACTIVITY IMPLEMENTATION

This activity will involve the implementation of an infiltration project in the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce runoff volume. The activity will be implemented in a residential right of way ("Green Street"). Exact location and type has been based on monitoring and geotechnical considerations, proximity to other best management practices (BMPs) being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. This project is working on 100% Design plans. Construction is expected to begin in FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the bacteria load reduction efficiency?
2) How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria, metals, and nutrient loads with the installation of various vegetative planters in the Mt Abernathy neighborhood.

ANALYSIS RESULTS

This project is still in the design phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS

Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: BANNOCK AVENUE STREETSCAPE ENHANCEMENT & BACTERIA TREATMENT PROJECT
ID #: MB-1016

ACTIVITY IMPLEMENTATION

Within the tributary watershed of the Bannock Avenue Neighborhood, vegetated planter areas will be constructed between the existing curb and the sidewalk. Cuts will be made in the existing curbs to allow flow to exit the street paved section as well as enter and exit the planter areas. The planter areas will be filled with cobbles and/or gravel to a depth of approximately 1 foot and planted with landscaping to be determined during final design. The cobbles and/or gravel must be placed to an elevation approximately 1 inch below the adjacent sidewalk and curb to ensure no Americans with Disabilities Act (ADA) access issues are encountered. The cobbles and/or gravel will be prevented from spilling into the street through the curb cut by a metal screen.. The need for temporary or permanent irrigation to establish the planter areas must be determined during final design.

Within North Clairemont Park, a diversion structure was proposed to divert flows to a trash segregation unit, followed in series by a bacteria treatment system. From this system, flows would have been returned to the natural drainage course at the location of the existing storm drain system outlet headwall. Upon further review, the bacteria treatment system was eliminated from the project. A literature review did not indicate that the proposed system would provide any additional treatment.

This project was identified as "Infiltration BMP Retrofit #1" in the 2008 Mission Bay and La Jolla WURMP. In the latter half of FY 2008, a site was selected and conceptual design was completed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the City's Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The project completed preliminary engineering and transferred to design in February 2010. Design began in FY2011 and will continue in FY2013. Construction is anticipated to be completed in FY 2014.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's of *San Diego Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the bacteria load reduction efficiency?
2) How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the project effectiveness and efficiency for reducing bacteria load with the installation of vegetative planters, and trash segregation units in the Bannock Avenue Neighborhood.

ANALYSIS RESULTS

This project is still in the design phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS

Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE:	**INFILTRATION BMP RETROFIT #2**
ID #:	**MB-1017**

ACTIVITY IMPLEMENTATION

This activity will involve the implementation of an infiltration project in the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce runoff volume. The activity will be implemented in a residential right of way ("Green Street"). Exact location and type wil be based on monitoring and geotechnical considerations, proximity to other best management practices (BMPs) being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla WMA.

The project did not advance in FY 2011. It is currently on hold due to limited resources that have been allocated to other watershed activities which are moving forward.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. This project is on hold.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this

activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the bacteria load reduction efficiency?
2) How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment will be to determine the project's effectiveness and efficiency for reducing bacteria, metals, and nutrient loads.

ANALYSIS RESULTS

This project is still in the design phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS

Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: BEACH AREA LOW FLOW STORM DRAIN DIVERSION PROJECT, PHASE III
ID #: MB-1018

ACTIVITY IMPLEMENTATION

In 1997, the Beach Area Low Flow Diversion Project was created at the request of the San Diego Council Members Wear and Mathis. Storm drain outfalls along the coastline were inventoried and each drain outfall was rated for the potential for human contact with the flow from the drain (i.e. flow crosses the beach). Outfalls, which were labeled by the street name location, were identified as having high or medium potential were studied to determine the feasibility and cost of diverting low flows to the wastewater collection system. High priority sites due to continuous urban runoff flows during dry weather became Phase I of the project. As a result, Phase I low flow diversion facilities included Tourmaline, Bonair/Neptune, Ravina, Avenida de la Playa, Vallecitos, Camino del Oro, and south of Vista de la Playa. These sites became operational in 1998 and 1999 at a cost of $1 million.

Phase II projects included El Paseo Grande, Spindrift, Children's Pool, 711 Coast Boulevard, Coast Boulevard (at lifeguard station), 465 Coast Boulevard, Coast Boulevard at Pump Station 24, Neptune and Belvedere, Neptune and Westbourne, Neptune at Playa Del Norte, Neptune at Playa Del Sur, Neptune at Gravilla, Neptune at Kolmar, Neptune North of Kolmar, Neptune at Rosemont, Neptune at Palomar, Coast Boulevard at Grand, and Ocean Boulevard at Grand. Phase II projects became operational by July of 2007.

Phase III projects include Missouri Street, Chalcedony, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Street, and South of Loring Street. These facilities became operational in August 2009. The warranty period on the construction expired in August 2010.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Phase III projects are operational and out of the warranty period. This project is complete.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS MEASUREMENTS

Phase III projects include Missouri Street, Chalcedoney, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Avenue, and South of Loring Street. All locations are diverting low flows and their associated pollutants to the sewer system.

TITLE: AVENIDA DE LA PLAYA STORM DRAIN REPLACEMENT AND LOW FLOW DIVERSION
ID #: MB-1020

ACTIVITY IMPLEMENTATION

During the City of San Diego's (City's) Beach Area Low Flow Storm Drain Diversion Project Phase I construction (briefly described in Activity Summary Sheet - MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III), a diversion was built upstream from the outfall at the beach on Avenida de la Playa with much of the flow from the large drainage area being diverted. However, there is significant dry weather flow from the area downstream of the diversion. The invert elevation of the existing beach outfall is at the mean sea level and sand regularly blocks all flow, except during the largest winter storms. Dry weather flows collect and stagnate, creating a known source of bacterial discharge to the receiving waters of the La Jolla State Marine Conservation Area (Area of Special Biological Significance (ASBS) No. 29). The City is proposing a second dry weather diversion facility closer to the point of discharge at the beach along Avenida de la Playa and replacement of the pipe due to the dry weather issues, tidal intrusion, groundwater intrusion, and other issues associated with the current condition of the pipe.

In late FY 2008, the City prepared a concept proposal, including this project, to apply for funds under the State's Proposition 84 ASBS Grant Program.

The goal of this project is to eliminate bacteria loads and other pollutants, such as metals and nutrients, typically discharged through low flows to the ASBS by replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through design, construction and project close out. Preliminary engineering was completed in April 2009 and the project was transferred to design in June 2009. A design consultant was hired and the project is currently working on 30% design. Design is anticipated to finish in September 2012 with construction following.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. By replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall, sediment will no longer be trapped within the pipe allowing bacteria to grow within the warm waters and sediments contained in the pipe.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of the storm drain diversions?
2) How efficient are these diversions at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the system upgrades are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance) 5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this analysis is to determine the diversion project's effectiveness and efficiency in reducing pollutant loads.

ANALYSIS RESULTS

Assessment is not possible at this time, as the project is still in the design phase. Post-construction monitoring will be conducted and effectiveness assessment will be completed once the project is complete. Efficiency will be determined by comparing load reduction to implementation costs.

CONCLUSIONS

Once the project is complete and the effectiveness assessment has been conducted, conclusions will be made as to future implementation of other similar activities.

TITLE: MISSION BAY AND COASTAL BEACHES SEWER INTERCEPTOR SYSTEM UPGRADES
ID #: MB-1021

ACTIVITY IMPLEMENTATION

In 1987, the City of San Diego (City) committed to expand the low flow diversion system around Mission Bay with the Mission Bay Sewage Interceptor System (MBSIS) project. This initial project provided interception capability for 65 drain outlets within the remaining 10 percent of the tributary drainage basin. At a cost of $9 million, the project was completed in 1994 and expanded the number of facilities to 46 (14 pump stations and 32 gravity systems). A telemetry control system was also included to provide a more efficient operation. The remote telemetry automatically was used to shut down each facility whenever it rains. Therefore, the labor-intensive effort of physically shutting down each facility was avoided. The new storm water pumping station constructed in Mission Beach at Santa Clara Point was constructed with low flow pumps to divert dry weather flows to the wastewater collection system.

The current CIP project provides for the design and construction of upgrades to 31 sites within MBSIS.

Three Congressional Federal Grants were issued through EPA's Appropriations Act totaling approximately $10 million. These grants fund 55% of the design, environmental, and construction costs of Coastal Low Flow (CLF) Phases II, III and IV (see Activity Sheets MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III and MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV) for more information) as well as the design and environmental costs for MBSIS. In order to be eligible for these federal grants, each of the phases must clear the EPA's National Environmental Policy Act (NEPA), a process that can span up to a year. These grants are reimbursable. The matching funds for the grant are being paid by the Deferred Maintenance Bond (Bond).

Upon receiving enough funding to move forward, the project advertised for construction bids in November 2009 and was awarded to the lowest responsible bidder in June 2010. Construction was completed in Spring 2011.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was awarded to the lowest responsible bidder in June 2010. Construction began in August 2010 and finished in Spring 2011. Effectiveness assessment is expected in FY12.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem in the WMA. Identification of the sources of bacteria in the WMA will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) How effective are the upgrades at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the system upgrades are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., outfall monitoring programs)
4) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness and efficiency of the upgrades to the MBSIS flow diversion system in reducing bacteria load and improving water quality.

ANALYSIS RESULTS

Effectiveness will be determined after the upgrades are completed through an assessment of load reduction/source abatement.

CONCLUSIONS

Conclusions will be made at the completion of the activity, after implementation and assessment is complete.

TITLE: LINDBERGH PARK LIMITED LOW FLOW STORM DRAIN INLET MULTI-POLLUTANT TREATMENT
ID #: MB-1022

ACTIVITY IMPLEMENTATION

This project will implement a proprietary inlet treatment device at Lindbergh Park. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in FY 2013. Construction is anticipated in FY 2016.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area identify bacteria and nutrients as high priority water quality problems throughout the Mission Bay and La Jolla WMA

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the bacteria and nutrient load reduction efficiency?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)

2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

ANALYSIS RESULTS

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: LA JOLLA SHORES LANE LIMITED LOW FLOW STORM DRAIN INLET MULTI-POLLUTANT TREATMENT
ID #: MB-1023

ACTIVITY IMPLEMENTATION

This project will implement a proprietary inlet treatment device at La Jolla Shores Lane. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks TMDL
- ASBS Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in FY 2013. Construction is anticipated in FY 2016.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area identify bacteria and nutrients as high priority water quality problems throughout the Mission Bay and La Jolla WMA

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the bacteria and nutrient load reduction efficiency?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)

2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

ANALYSIS RESULTS

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE:	**PET WASTE BAG DISPENSER PROGRAM PHASE II**
ID #:	**MB-1025**

ACTIVITY IMPLEMENTATION

The purpose of the activity is to assess the effectiveness of installing pet waste stations at Home Owners Associations and Business improvement Districts. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. The assessment focused on evaluating the installation of pet waste stations as a best management practice (BMP) in reducing pollutant loading in correlation with the number of bags deployed. The project includes site evaluations and selections, the installation of pet waste bag dispensers and all-in-one pet stations (dispenser and trash receptacle), pre- and post- site observations for the effectiveness assessments.

The sites were evaluated using a two-step process to screen and select potential project sites. An initial desktop site screening process was performed to identify candidate sites. Site visits were conducted at these locations to further assess the location and gather information used in the selection process.

Initial criteria used to identify the sites included: 1) areas of concentrated dog use adjacent to residential neighborhoods, 2) community and Storm Water Division staff input, 3) potential for partnerships to conduct ongoing operation and maintenance, and 4) positive community acceptance.

Geographical Information System maps depicting potential residential areas, trails, parks, schools, dog parks, and other points of interest, as well as water bodies that are 303(d) listed as impaired for bacterial indicators, nitrogen, and phosphorous, were used during the screening process to develop an initial list of potential project locations.

Based on the results of the initial screening and site assessment visits, the preliminary project locations for each watershed were further evaluated for: 1) dog-related activities within each area, 2) the availability of trash receptacles 3) the absence of pet waste receptacles, 4) the degree of pet waste observed, 5) the potential for vandalism, 6) the priority within the watershed, and 7) the potential for a site-specific contact group to be the point of contact at each site. Mission Bay and La Jolla WMA were selected: site in the Turquoise Street Business District in the Pacific Beach Community and another in the UTC Residential neighborhood in the community of University City at a SDGE utility easement. During the initial assessments for site selection, a moderate degree (between 10 and 20 piles) of pet waste was observed at the Turquoise Street location; a high degree (more than 20 piles) of pet waste was observed at the UTC location.

One pet waste bag dispenser station with sign was installed at the Turquoise Street location. At the UTC location a sign only was installed. This allowed an assessment to be conducted to determine whether signs are an effective implementation technique in reducing pet waste.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2010. Installation of the pet waste bag dispensers and the effectiveness assessment concluded during FY 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What are the high pet waste use areas throughout the City where pet waste creates a pollution issue?
2) What is the most cost-effective pet waste station configuration?
3) What are the installation and operations and maintenance costs associated with pet waste stations?
4) What types of opportunities for partnerships exist for businesses, HOAs, and other community groups to sponsor pet waste stations operations and maintenance?

Targeted Measurable Outcome(s)

1) Reduction in pet waste from installation of pet waste stations.
2) Assessment of pollutant load reduction.
3) Decrease in pet waste through awareness from signage.

Assessment Method(s)

1) Monitor the pet waste reduction from pre-installation to post-installation.
2) Monitor overall pollutant load reduction from pet waste installations.
3) Monitor outcomes from sign only installation versus pet waste station installation.

Data Recorded

1) Weekly average of waste piles observed prior to installation (Turquoise Street): 13.3
2) Weekly average of waste piles observed prior to installation (UTC Residential (sign only)): 7.3
3) Weekly average of waste piles observed after installation (Turquoise Street): 6.7

4) Weekly average of waste piles observed after installation (UTC Residential (sign only)): 4.2
5) Weekly average number of bags dispensed (Turquoise Street): 14.3
6) Weekly average number of bags dispensed (UTC Residential (sign only)): N/A
7) Average Weekly waste pile reduction (Turquoise Street): 6.7
8) Average Weekly waste pile reduction (UTC Residential (sign only)): 3.1
9) Percent waste reduction (Turquoise Street): 50%
10) Percent waste reduction (UTC Residential (sign only)): 43%
11) Ratio of bags dispensed to pet waste piles removed (Turquoise Street): 2.2
12) Ratio of bags dispensed to pet waste piles removed (UTC Residential (sign only)): N/A

EXPECTED BENEFITS

The City of San Diego Transportation & Storm Water Department, Storm Water Division (Storm Water Division) commissioned the Pet Waste Bag Dispenser Station Design and Implementation Project to assess the effectiveness of the installation of pet waste bag dispenser stations as a Best Management Practice (BMP) for reducing bacteria in the watersheds within the City of San Diego?s jurisdiction. The first phase of the Project emphasized installing pet waste bag dispensers in partnership with the Parks and Recreation Department in community parks and at open space trailheads. This second phase of the Project focused on the installation of pet waste stations in residential housing areas in partnership with Homeowners Associations (HOA), Business Improvement Districts (BIDs), and other community groups. The intent was to assess the potential for community partnerships to assist with ongoing maintenance and operation of the bag dispenser stations.

ANALYSIS RESULTS

Observations and pet waste pile counts were conducted for a total of twelve weeks. For six weeks prior to the installation of the pet waste bag dispensers, weekly observations and cleaning were conducted to assess the conditions at each site. An additional six weeks of observations were conducted after the installations. One of the locations was a site with signs only installed to assess the effectiveness of a sign only approach as an alternative. Prior to the installation of the pet waste bag dispensers a weekly average of 13.3 and 7.3 piles were observed at the Turquoise (dispenser and sign) and UTC (sign only) locations respectively.

After the installation of the pet waste bag dispenser and signage, a weekly average of 6.7 piles and 4.2 piles were observed at the Turquoise Street (dispenser and sign) and UTC (sign only) locations respectively. The observations show an average weekly reduction of 6.7 and 3.1 piles at the Turquoise (dispenser and sign) and UTC (sign only) locations respectively.

The average weekly reduction was calculated by subtracting the pre-installation average count of observed waste and the post-installation average count of observed waste. This translates to 50% reduction at the Turquoise Street location (dispenser and sign) and 43% reduction at the UTC (sign only) locations in the amount of pet waste piles observed.

CONCLUSIONS

A review of the collected data revealed the installation of the pet waste bag stations and the installation of signs contributed to the reduction of pet waste piles within the study area. The

average number of bags dispensed weekly at the Turquoise Street (dispenser and sign) to an estimated removal of 2.9 pounds of pet waste per week, respectively. At the sign only site at UTC, reflected a weekly reduction of 3.1 piles.

Overall, this activity demonstrated that there are positive, measureable pollutant load reductions due to the installation of pet waste bag dispensers and related signage.

TITLE: SOURCE CONTROL OF COPPER WATER POLLUTANTS,
SENATE BILL 346: MOTOR VEHICLE BRAKE FRICTION MATERIALS
ID #: MB-1026

ACTIVITY IMPLEMENTATION

Previous City of San Diego (City) investigations determined that copper from automotive brake pads was a major contributor of dissolved copper, a high priority water quality pollutant, to San Diego waterways within City jurisdiction. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments, through California Stormwater Quality Association, to achieve true source control by reducing copper at its source. It was determined that the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads.

The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. On September 25, 2010, SB346 was passed by both houses, signed into legislation by the governor, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50. Work has concluded on this legislation bill.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

SB346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. It is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- CASQA - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Coalition for Practical Regulation - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development,

participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.

- Alameda County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.
- Contra Costa County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.
- Many San Diego Regional Copermittees provided letters in support of the legislation.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City's *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla WMA identifies metals as a high priority water quality problem throughout the Chollas Creek WMA, and recommends implementing source control activities to address it. The activity's objective is to reduce the amount of copper that reaches our storm drains and receiving waters to improve and restore water quality for our citizens.

EFFECTIVENESS MEASUREMENTS

Management Question

N/A

Targeted Measurable Outcome(s)

1) Evidence of reductions of copper starting in 2022

Assessment Method(s)

N/A

Data Recorded

N/A

OBJECTIVES

The goal of this legislation is to reduce the amount of copper released into the environment from automotive brake pads.

ANALYSIS RESULTS/CONCLUSIONS

The authorization of this proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

TITLE: **TARGETED CATCH BASIN CLEANING PILOT STUDY**
ID #: **MB-1027**

ACTIVITY IMPLEMENTATION

The City of San Diego Storm Water Division began the planning of a catch basin cleaning pilot study in FY2011. The purpose of the project is to understand the potential water quality improvements and load reduction associated with catch basin cleaning by evaluating the quantity and quality of materials removed from the storm drains from four pilot areas. The areas were selected to be representative of different land uses within the City limits. Additionally two cleaning methods will be evaluated - manual and using vactor equipment. One of the pilot areas is within the Mission Bay & La Jolla WMA near the Mesa College campus.

Composite samples collected from the material removed from the targeted catch basins will be analyzed for metals, nutrients, organics, and bacteria.

TMDL APPLICABILITY

- San Diego Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment is scheduled for FY2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay & La Jolla WMA identify bacteria, metals, and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address these constituents. This project will result in a quantifiable load reduction of sediment and will evaluate the amount of bacteria and metals reduced as part of catch basin cleaning.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) To what extent do changes in catch basin cleaning frequency affect the amount of pollutants collected?
2) What is the annual calculated load reduction based on pilot scale data collection with catch basin cleaning?
3) Which cleaning method, manual versus mechanical is the most cost effective method for removing sediment from catch basins?

Targeted Measurable Outcome(s)

1) Reduction in bacteria exported from the catch basin.
2) Reduction in sediment exported from the catch basin.
3) Reduction in nutrients associated with the catch basin.

Assessment Method(s)

1) Evaluate the volume of material currently removed from each catch basin.
2) Evaluate the correction in cleaning results with land use category, impervious area, watershed size, and surface water impairments.

Data Recorded

1) Volume Removed
2) Location
3) Sediment sample analysis

EXPECTED BENEFITS

The project is expected to result in measured a load reduction.

ANALYSIS RESULTS

The project will be implemented in FY2012 and results will be provided at the conclusion of the project.

CONCLUSIONS

The project will be implemented in FY2012 and conclusions will be reported at the end of the project.

TITLE:	**PROPERTY-BASED WATERSHED INSPECTIONS**
ID #:	**MB-1028**

ACTIVITY IMPLEMENTATION

This activity builds upon the Geographically Based Business Property and Facility Inspections implemented in FY2010. See activity sheet MB-1006 from past annual reports. The current activity is part of a larger study in the San Dieguito River, Los Penasquitos, Mission Bay and La Jolla, San Diego River and Tijuana River watershed management areas (WMAs).

The City of San Diego (City) performed an inspection program activity specifically focused on properties with multi-businesses. The activity involved inspecting properties and the businesses located on the properties regardless whether they are part of the City's commercial and industrial inventory. Traditionally, the City performs individual business inspections in the City's commercial and industrial inventory.

The City developed and implemented a focused inspection activity designed to evaluate the effectiveness of performing multi-business property-based inspections and answer the following management questions related to the commercial and industrial inspections program:

1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

The areas selected for inspection were shopping centers, industrial parks, and office parks within the five watershed areas.

The inspections occurred over two phases. Property inspections and business investigations were conducted during both phases. During the first phase, inspectors performed a full inspection of each property. Properties were inspected for BMP compliance, general site observations, pollutant discharge potential, and illicit connections/illegal discharges (IC/IDs) similar to an individual business inspection. Site observations and BMP deficiencies were noted on the inspection form. When an issue was noted during the property inspection and could be associated to a particular business, the inspector initiated an investigation of the business, or businesses. These individual business inspections were limited to investigating the significant deficiencies observed. If an issue could not be associated to one or more businesses on the property, the issue was considered to be the responsibility of the property owner or management company, and no business inspections were performed.

The property inspection reports were sent to the property management company, or to the property owner on file. Where applicable, business inspections reports were sent to corporate offices. If a business was not part of a corporation, the report was sent directly to the business at its physical location, or mailing address.

In phase two of the activity, selected properties from phase one that were determined to be high priority follow-ups were inspected. Each property was inspected using the same procedures

utilized in the initial inspections. As a part of phase two, business investigations were also performed to those businesses likely responsible for potential storm water issue(s) in the area.

During both phases, if violations were identified, they were recorded for appropriate follow-up. Follow-up inspections occurred based on the severity of the identified violations. If discharges were identified, they were immediately reported to the City's Storm Water hotline number. Lastly, education material was distributed, as applicable, during phase one and two of the inspection activity.

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Indicator Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment took place during FY2011. This project is complete, and will no longer be included in future reporting updates.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of the property inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

Targeted Measurable Outcome(s)

1) Identification of sources of constituents of concern in the Mission Bay and La Jolla Watershed

Assessment Method(s)

- Inspections
- Quantification
- Monitoring
- Tabulation
- Reporting

Data Recorded

Phase One Property Inspections
Number of property inspections = 13
Number of properties recommended for follow-up inspection= 1
Total IC/IDs Observed = 0
Total IC/IDs Eliminated During Inspection = N/A

Phase One Business Investigations
Number of business investigations = 3
Number of sites recommended for follow-up inspection = 1
Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 0
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = N/A
Total IC/IDs Observed = 0
Total IC/IDs Eliminated During Inspection = N/A

Phase Two Property Inspections
Number of property inspections = 0
Number of properties recommended for follow-up inspection = N/A
Total IC/IDs Observed = N/A Total IC/IDs
Eliminated During Inspection = N/A

Phase Two Business Investigations
Number of business investigations = 0
Number of sites recommended for follow-up inspection = N/A
Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = N/A
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = N/A
Total IC/IDs Observed = N/A
Total IC/IDs Eliminated During Inspection = N/A
Overall Number of Sites That Implemented Some Corrective Action between the Two Phases (Outcome Level 3) = N/A

Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness of property-based inspections as a method to conduct inspections, which includes identifying and eliminating potential sources of storm water pollution.

ANALYSIS RESULTS

During phase one, thirteen property inspections and three business inspections were conducted in the Mission Bay and La Jolla WMA. The analysis of the phase one inspection data showed no IC/IDs documented and only one follow-up inspection identified. With no IC/IDs and no high priority follow-up inspections found in this watershed, there were no phase two property and business inspections conducted. Budget and resources efforts were conducted in other watershed areas identified with greater BMP deficiencies, IC/IDs and higher follow-up inspections priorities.

Property inspections are an efficient and effective method to assess shared areas and evaluate visible, outdoor areas for BMP implementation at shopping centers, industrial parks, and office parks. There are some BMPs normally addressed during business inspections that did not apply to property inspections, as they require input from a business representative, or are requirements specific to business operations, such as employee training. Lastly, common areas that have the highest threat to water quality, such as trash, landscaping, and storm drain areas, can be effectively evaluated during a property inspection.

CONCLUSIONS

Overall, property-based commercial and industrial inspections provide efficiency in both cost and coverage, with the ability to inspect a large area with multiple businesses in a short amount of time. Also common areas of high pollutant generating activities are addressed during these inspections, including IC/IDs, trash areas, landscaping and storm drain issues. There were no IC/IDs found during the first phase property inspections and business investigations in the Mission Bay and La Jolla River WMA. As an overall outcome in conducting this inspection activity in four other watersheds, there was a reduction of IC/IDs between the two phases of inspections. BMP implementation generally improved and follow-up inspection priorities improved between the inspection phases. The City can verify some business inspections also resulted in corrective actions taken immediately. Properties implemented some corrective action between the two phases of inspections. In total, three IC/IDs were eliminated during inspection. Although a load reduction was not calculated, abatement of potential sources may be assumed with corrective actions being implemented and IC/IDs eliminated; therefore, demonstrating both Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcomes being achieved as a result of conducting the property-based inspection activity.

TITLE: Rainwater Harvesting Rebate Pilot Program
ID #: MB-1029

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). During this reporting period staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program will be open to the residents of the City of San Diego on a first come first serve basis and will provide a rebate of .50c per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department will administer the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in the last quarter of FY 11 with a tentative implementation start date in FY12.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- City of San Diego Public Utilities Department

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identifies several water quality problems throughout the watershed. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

Data to be recorded

1) Most common water catchment device installed
2) Average size of water catchment device installed

EXPECTED BENEFITS

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

The project is currently being planned so there are no conclusions to report.

TITLE:	**GENESEE COMMERCIAL CBSM EFFORTS**
ID #:	**MB-2004**

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department, Pollution Prevention Division (City) has been using Community Based Social Marketing (CBSM) strategies since FY 2008 in attempt to increase knowledge and change behaviors among various target audiences. CBSM is an environmental social science method of outreach which includes comprehensive research, data gathering, and assessment measures to develop more effective outreach strategies. The City has implemented several pilot projects in various communities, and assessment has confirmed success in achieving pollution prevention awareness and behavioral change.

In FY 2010, the City conducted focus group research with three business types found along the Genesee Ave. corridor; restaurants, automotive shops and landscapers. The research planned for the Genesee area is currently on hold based on the focus group feedback and the creation of an implementation plan. If and when the project moves forward, research and outreach in the Genesee area will be initiated. Outreach interventions and assessment methods will then be developed based on the research findings.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

As noted above, this activity is on-hold.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the *Strategic Plan for Watershed Activity Implementation* identify bacteria and trash as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly if and when it is implemented.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations?
2) How much change in awareness was achieved?
3) What changes in levels of behavior was achieved after implementation?
4) How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons)
5) How do the survey results change pre and post activity implementation?

Targeted Measurable Outcome(s)

1) Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed)
2) Achieve higher incidence of knowledge and attitude in pilot group when compared to general public
3) Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)

Assessment Method(s)

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)
2) Quantification (e.g., count observable pollution and behavior of participants in program)
3) Monitoring (e.g., water quality monitoring at base of targeted watershed)
4) Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached)
5) Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)

Data Recorded

N/A

EXPECTED BENEFITS

The project is designed to reduce trash and bacteria from businesses along Genesee St. In addition to actual load reduction efforts, the project's outreach element will inform and educate business about the effects its work processes and employees have on the area its potential impacts to human health and the environment as a whole.

ANALYSIS RESULTS

There are no analysis results as of this reporting period.

CONCLUSIONS

There are no conclusions as of this reporting period.

TITLE:	**MT. ABERNATHY LID GREEN STREET OUTREACH**
ID #:	**MB-2005**

ACTIVITY IMPLEMENTATION

Mt. Abernathy Green Street Outreach will be performed to support the planned "Green Street" construction in a small sub-section of the Clairemont community in the Mission Bay and La Jolla Watershed Management Area (WMA). Construction may include modifying the vegetated planter areas between the curb and sidewalks in front of residential homes in order to better infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. The City plans to inform, educate and involve residents who are directly affected by the construction in an attempt to achieve awareness regarding storm water runoff and to create behavioral change among residents. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities may include public participation and outreach, education regarding structural interventions, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The schedule for this outreach will parallel the Mt. Abernathy Low Impact Development (LID) Green Street Construction. Currently that project is on hold.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) identify bacteria and trash as high priority water quality problems in the WMA. This effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) Does education regarding the LID retrofits effectively raise awareness of bacteria, metal and nutrient pollutant issues?

2) Does education regarding the LID retrofits effectively change pollutant behavior among residents?

Targeted Measurable Outcome(s)

1) Reach goal number of people within the Mission Bay and La Jolla WMA, based on survey results
2) Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)
2) Quantification (e.g., number of residents reached)

Data Recorded

1) Number of educational information items passed out (Outcome Level 1)
2) Change in knowledge or attitude (Outcome Level 2)
3) Change in pollutant-related behavior (Outcome Level 3)

EXPECTED BENEFITS

Increase the level of awareness of storm water issues through the construction and advertisement of municipal LID BMPs.

TITLE:	**MISSION BAY FOCUSED OUTREACH**
ID #:	**MB-2009**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in Mission Bay, the City of San Diego's (City's) *Think Blue program* implemented a summer outreach campaign in FY 2007 that targeted key sources of bacteria pollution in Mission Bay. In FY 2011, the campaign provided direct outreach during the major summer holidays (Independence Day 2010, Labor Day 2010 and Memorial Day 2011) to Mission Bay visitors, specifically recreational vehicle (RV) users and boaters. The outreach program is held according to the summer holidays in a calendar year, but reported according to Fiscal Years. The education focused on reducing pollution and bay closures as a result of contamination due to bacteria sources. In addition, direct outreach and materials distribution were conducted to marinas located in Mission Bay as an additional way to reach the target audience.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning was completed in 2007. Implementation was completed in 2011. Assessment was conducted in 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy and the *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla Watershed Management Area (WMA) both identify bacteria as a high priority water quality problem in the WMA. This outreach effort will potentially result in both increased direct knowledge and awareness regarding bacteria and trash as a vector, and indirect future load reduction of trash and debris as they relate to bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation?
2) How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s)

1) Reach pre-set percentage of residents within target watershed
2) Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)

N/A

Data Recorded

Think Blue FY 2009 Mission Bay Outreach Studies

Holiday:

Independence Day 2010

1) Number of Visitors to Outreach Booth: 197
2) Number of passers-by Observed: 1,700
3) Number of Visitors Approached: 61
4) Observed Boat Launches: 85
5) Observed Parked RVs: 103
6) Total Materials Distributed: 231

Labor Day 2010

1) Number of Visitors to Outreach Booth: 171
2) Number of passers-by Observed: 1,800
3) Number of Visitors Approached: 93
4) Observed Boat Launches: 113
5) Observed Parked RVs: 70
6) Total Materials Distributed: 197

Memorial Day 2011

1) Number of Visitors to Outreach Booth: 164
2) Number of passers-by Observed: 1,100
3) Number of Visitors Approached: 58
4) Observed Boat Launches: 40
5) Observed Parked RVs: 62
6) Total Materials Distributed: 183

- Estimated total visitors (impressions) exposed to the *Think Blue* Booth in Mission Bay in FY 2011 (Outcome Level 1): 4,600
- Estimated total visitors (impressions) exposed to the *Think Blue* Mobile Ad during Mission Bay Focused outreach (9 days) in FY 2011 (Outcome Level 1): 185,732
- Number of marinas and boating businesses who participated in Mission Bay Outreach Campaign in FY2011 (Outcome Level 2): 42
- Number of boating outreach materials distributed to businesses (Outcome Level 1): 1600
- Number of Surveys administered in FY 2011 (Outcome Level 1): 493
- Percentage of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3): 78%
- Percent increase from FY 2010 to FY 2011 of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3): 5%

EXPECTED BENEFITS

The activity has demonstrated an increase in knowledge and awareness in the target audience (Marinas, RVers, boaters and visitors in Mission Bay) and created positive behavioral change to reduce the presence of bacteria and gross pollutants in Mission Bay. Assessment was conducted to determine the effectiveness of the FY 2011 outreach campaign on creating increases in knowledge and changes in behavior.

ANALYSIS RESULTS

The City's *Think Blue* campaign implemented an on-going summer outreach campaign in FY 2011 that targeted key areas of concern for pollution in Mission Bay. The campaign was conducted during the major summer holidays (Independence Day 2010, Labor Day 2010 and Memorial Day 2011) and provided direct outreach to Mission Bay users, specifically RV users and boaters. Efforts were made to increase awareness of pollutants sources (specifically bacteria), in order to reduce those sources, prevent pollution and avoid beach closures in Mission Bay. Examples of outreach activities included educational material distribution at the *Think Blue* booth, mobile ad display at the entrance of East Mission Bay, direct outreach to boaters and RV users in the area, and direct outreach to local marinas and boating businesses located in Mission Bay.

During FY 2011, approximately 4,600 visitors to East Mission Bay were exposed to *Think Blue's* Focused Mission Bay Outreach, which was promoting the message, "Help Keep Mission Bay Clean and Safe." Over 430 individuals approached the booth to speak with staff; over 200 Bay users were approached by staff, with over 1,700 people receiving pollution prevention outreach materials and items. The *Think Blue* Mobile Ad that was parked in the Mission by area at the entrance of East Mission Bay during the three holidays (9 days total) is estimated to have been viewed by 185,732 individuals based on traffic and pedestrians counts.

FY 2011 was the fifth year that *Think Blue* conducted Focused Mission Bay Outreach. *Think Blue* engaged in 9 days of direct outreach due to the fact that all three holidays in FY 2010 encompassed 3-day weekends. The alcohol beach ban that was approved during FY 2009, seems to continue to impact beach attendance, with decreased levels shown across City beaches. FY 2011 was the third year that *Think Blue* performed survey assessments. Of the 251 individuals who completed the assessment survey, 78% reported taking steps to prevent pollution. This result can be considered an indicator of a Level 3 Outcome.

CONCLUSIONS

Mission Bay Focused Outreach is an effective way to reach visitors in East Mission Bay during the major summer holidays. The large numbers of impressions (over 4,600 exposed to *Think Blue* booth, and 185,732 exposed to mobile advertising), direct contacts (approx 600 persons), educational materials distributed (1,742 items) and survey participation in FY 2011 support the assertion that the focused outreach program is effective at increasing public exposure to bacteria and gross pollutant issues. More of the public is now aware of storm water issues and the *Think Blue* campaign due to this focused outreach.

RECOMMENDATIONS

Implementation of the campaign will continue in FY 2012, to include hosting the outreach booth and continued distribution of the specialized informational postcards tailored to RV users, boaters, and general visitors. The program intends to move to another location in Mission Bay to reach boaters and tourists who may not have come in contact with the outreach program in the past. Assessment surveys will continue and increased effort to gather statistically valid information regarding knowledge, attitudes and pollution prevention behavior of Mission Bay visitors. Outreach in FY 2012 will continue with expanded targeted Marina and boater outreach. Effectiveness will be measured further via surveys comprised of residents in the Mission Bay and La Jolla WMA to determine awareness, knowledge retention and behavior change.

TITLE:	**SAN DIEGO CREW CLASSIC**
ID #:	**MB-2011**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in the Mission Bay & La Jolla Watershed Management Area (WMA) in FY 2011, the City of San Diego's *Think Blue* program participated in the San Diego Crew Classic, a rowing regatta held in Crown Point Shores in Mission Bay. The outreach campaign provided direct outreach dedicated to preserving water quality in San Diego, primarily targeting key sources of bacteria in Mission Bay. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain system and ultimately Mission Bay. With more than 15,000 people in attendance, our presence provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

Think Blue participated in the event by hosting a booth during both days of the event. *Think Blue* once again served as the Official Program Sponsor in FY 2011, as well as the Trophy Sponsor of the City of San Diego Cup, also known as the Men's Club Championship. The outreach booth provided direct education and materials regarding water quality protection. Materials distributed included brochures and tip cards, along with best management practice (BMP) items such as dust pans, pet trash bag containers and pet trash bag refills that help promote behavior change. Promotional giveaways included eco-friendly pens, Frisbees, backpacks, and rally towels.

Other outreach items and activities included:

1) Specialized postcards targeting Mission Bay RV users and boaters, which were available in both English and Spanish
2) Placement of a 10 foot *Think Blue* banner at the official race finish line which was visible on camera on national TV. Placement of six additional banners throughout the event venue.
3) A Think Blue PSA was broadcast multiple times on the JumboTron screen which was broadcasting live coverage of the event. In addition, ythe event was re-broadcast on ESPNU, and several Think Blue PSA's were aired during the national broadcast.
4) Over 50 recycling bins at the event were marked with *Think Blue* stickers that indicated, "Recycle Here"
5) *Think Blue* donated the Think Blue Hospitality tent for use by the Men's National (Olympic) Rowing Team. The team assisted in promoting pollution prevention and sustainability, which allowed the partnership with Crew Classic to promote increased awareness of Think Blue amoung young adults in the watershed.
6) Event surveys were collected from over 500 booth visitors to gather assessment information about knowledge, awareness, attitudes and behaviors regarding storm water pollution prevention

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue plans to participate in the Crew Classic during FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- N/A

OTHER PARTICIPATING ENTITIES

- Mission Bay stakeholder groups (OMBAC, ZLAC Rowing Club, Mission Bay Planning Committee, etc.)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash, debris and bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation?
2) How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s)

1) Reach pre-set percentage of residents within target watershed
2) Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)

1) Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants)
2) Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

Data Recorded

Think Blue FY 2010 Crew Classic Event

Crew Classic, 2010:

1) Number of Booth Visitors: 500+
2) Gender: Approx. 38% Male; 62% Female
3) Number of Surveys Given: 194 Litter; 161 Pet; 104 Auto; 459 Total
4) How have you heard about Think Blue?: 30% TV/radio; 41% Events; 29% Others
5) Is stormwater treated?: 50% No; 11% Yes; 38% DK

6) Total number of Materials Distributed: 482

- Estimated total visitors exposed to the Think Blue Booth at the Crew Classic in FY 2010 (Outcome Level 1): 15,000
- Number of surveys administered in FY 2010 (Outcome Level 1): 459
- Percentage of individuals surveyed that believed that pet waste contributes to storm water pollution (Outcome Level 2): 99%
- Percentage of individuals surveyed that believed that automotive fluids contribute to storm water pollution (Outcome Level 2): 98%
- Percentage of individuals able to name a concrete action (either general or automotive) to prevent storm water pollution (Outcome Level 3): 80%
- Percentage of individuals surveyed who reported picking up after their dog (always or sometimes) to prevent pollution (Outcome Level 3): 96%
- Percentage of individuals surveyed who reported that they would take steps (such as maintain their car, drive less and use drip pans) to prevent automotive pollution (Outcome Level 3): 79%

EXPECTED BENEFITS

Think Blue's booth provides a mechanism for continued outreach dedicated to preserving water quality in San Diego, and specifically Mission Bay. The goal was to provide education to increase knowledge and awareness and encourage everyone to take positive steps in preventing pollution from entering the storm drain.

ANALYSIS RESULTS

The campaign targeted key audiences and areas of concern for pollutants in the Mission Bay WMA. The event provided direct outreach to residents living within the Mission Bay area as well as visitors to the event. It should be noted that this event is an international collegiate regatta (rowing competition), therefore although this event attracts a local crowd, many attendees are from other areas outside of San Diego.

A total of 459 *Think Blue* booth visitors completed the event survey assessment cards in FY2011, comprised of surveys specific to pet waste, litter and automotive pollution. Of the 459 surveys conducted 36% were from San Diego County, and the rest were from outside of San Diego County. 50% of all survey participants knew that storm water wasn?t treated, while 15% said it was treated and 35% stated that they didn?t know.

FY 2011: Crew Classic (Litter) Survey Participant Characteristics

- A total of 194 surveys were completed at the Crew Classic event on April 1, 2 and 3, 2011 (99% English, 1% Spanish).
- 190 participants provided their gender. Of these, 34% were male and 66% were female.
- The average age of respondents was 38 years (N=185).
- Of the respondents who provided residency information, 75% were from the state of California, and 32% reported being from San Diego County (N=188) (North County=6%, South County=1%, East County=3%, Central County=22%).
- 41 respondents (22%) listed an address in the City of San Diego.
- 13% of participants provided an address or e-mail to be added to the Think Blue mailing list.

Knowledge and Awareness

- 31% of respondents had seen or heard of Think Blue before attending the event, 69% had not heard of Think Blue.
    - Of those who had heard of Think Blue before, 36% saw or heard of it on television, 17% heard of it at another event and 7% heard of it at school.
- 48% of respondents knew that storm water is not treated, 13% believed it was treated, and 39% reported that they did not know.
- When asked "How often do you see litter in your community that is not cleaned up?" 86% said that they see litter at least sometimes (Always=10%, Often=36%, Sometimes=40%, Rarely=12%, Never=2%) (M=3.41 on a 5-pt scale).
- When asked how much litter contributes to pollution of local waterways, 61% said a lot, 33% said a moderate amount and 6% said a small amount or not at all (M=3.55 out of 4).

Behavior

- Just under half of respondents (47%) reported that they always or often pick up litter in their community and put it in the trash can. 41% reported that they sometimes do, and 12% said rarely or never (M=3.45 on a 5-pt scale).
- Respondents were asked to identify which items they may have dropped on the ground in the past year. The highest percentage (42%) said they littered fruit or vegetable peels, followed by 27% who admitted they had dropped gum, and 19% who said they littered coffee or some other liquid.
- 146 participants (75%) provided an answer when asked to name a reason they had littered in the past. 35% said they never litter, 19% said there was no trash receptacle nearby and 11% said they were lazy or careless.
- When asked to rate how strong of an obligation they feel to NOT litter, 65% said they feel a very strong obligation, 25% said they feel a strong obligation, 9% said they feel some obligation and 1% said they feel no obligation.

FY 2011: Crew Classic (Automotive) Survey Participant

Characteristics

- A total of 104 surveys were completed at the Crew Classic event on April 1, 2 and 3, 2010 (100% English).
- 102 participants provided their gender. Of these, 32% were male and 68% were female.
- The average age of respondents was 37 years (N=101).
- Of the respondents who provided residency information, 76% were from the state of California, and 38% reported being from San Diego County (N=101) (North County=5%, South County=1%, East County=7%, Central County=25%).
- 25 respondents (25%) listed an address in the City of San Diego. 6) 21% of participants provided an address or e-mail to be added to the Think Blue mailing list.

Knowledge and Awareness

- 44% of respondents had seen or heard of Think Blue before attending the event, 56% had not heard of Think Blue.
    - Of those who had heard of Think Blue before, 39% saw or heard of it at another event, 21% saw or heard of it on television and 7% heard of it at school.

- 56% of respondents knew that storm water is not treated, 13% believed it was treated and 31% reported that they did not know.
- When asked how much automotive fluids contribute to pollution of local waterways, 56% responded a lot, 34% said a moderate amount, 8% said a small amount and 2% responded not at all (M=3.44 out of 4).
- Respondents could check multiple answers when asked "Which of the following are correct methods for cleaning up automotive fluids?" 86% correctly responded that the best method is to soak it up with absorbent material and throw it in the trash, 12% responded that it is correct to hose it off immediately and 5% responded that leaving it to dry was correct.
- When asked how often they see automotive fluids leaked onto streets, 21% said often, 52% responded sometimes, 19% said rarely and 8% responded never (M=2.86 on a 5-pt scale).

Behavior

- 88% of respondents said that they do own a car, truck or SUV.
- 77% reported that a mechanic changes the oil in their vehicle, followed by 11% who said a friend or relative changes it and 11% who said that they change it themselves.
- Respondents could check multiple answers when asked "Where do you wash your car?" The largest percentage (63%) said they use a carwash, followed by 33% who said they wash it in the driveway or street and 9% who said they wash it on the lawn.
- 88 respondents (85%) provided a concrete action they could take to prevent pollution caused by automotive fluids. The most common responses were Maintain Auto (28%), Recycle/Dispose of Used Oil Properly (13%) and Drive Less (10%).

FY 2011:
Crew Classic (Pet) Survey Participant

Characteristics

- A total of 161 surveys were completed at the Crew Classic event on April 1 through April 3, 2011 (100% English).
- 155 participants provided their gender. Of these, 42% were male and 58% were female.
- The average age of respondents was 40 years (N=151).
- Of the respondents who provided residency information, 78% were from the state of California, and 36% reported being from San Diego County (N=151) (North County=11%, East County=2%, Central County=23%).
- 35 respondents (23%) listed an address in the City of San Diego. 6) 18% of participants provided an address or e-mail to be added to the Think Blue mailing list.

Knowledge and Awareness

- 35% of respondents had seen or heard of Think Blue before attending the event, 65% had not heard of Think Blue. Of those who had heard of Think Blue before, 35% saw or heard of it on television, 26% heard of it at another event and 9% heard of it at school.
- 55% of respondents knew that storm water is not treated, 16% believed it was treated, and 29% reported that they did not know.

- When asked "How often do you see dog waste in your community that is not cleaned up?" 78% said that they see dog waste at least sometimes (Always=7%, Often=35%, Sometimes=36%, Rarely=19%, Never=3%) (M=3.24 on a 5-pt scale).
- When asked how much dog waste contributes to pollution of local waterways, 25% responded a lot, 47% said a moderate amount, 27% said a small amount and 1% responded not at all (M=2.95 out of 4).
- Respondents could check multiple answers when asked "Which of the following are correct methods of disposing dog waste?" 83% correctly responded that the best method is to put it in the trash can, 21% responded that it is correct to bury it and 8% responded moving it to a landscaped area was correct.

Behavior

- 57% of respondents said that they do have a dog.
- Respondents could select multiple answers when asked "Where do you most often walk your dog?" 79% reported that they walk their dog in their neighborhood, followed by 22% who said they walk their dog in the park and 12% who said they walk their dog at the beach.
- 84% of respondents reported that they always pick up after their dog while on walks, 8% said they usually do, 4% said they sometimes do and 4% responded they never do (M=3.72 out of 4).

CONCLUSIONS

The San Diego Crew Classic attracts a large number of residents living in the local watershed areas as well as visitors from outside the area. The event provides a great opportunity to interact with citizens and visitors about the benefits of pollution prevention. With more than 15,000 people in attendance and the significant increase in surveys collected from FY 10, *Think Blue* will continue to sponsor this event in FY12.

TITLE:	**MISSION BAY AND LA JOLLA WATERSHED BROCHURE**
ID #:	**MB-2012**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the understanding of basic watersehd principals of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay
5) San Dieguito River
6) Los Peñasquitos

TMDL APPLICABILITY

- Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2012. Implementation and distribution is expected to occur in early FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions

- Dissolved Minerals
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?
2) Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

Targeted Measurable Outcome(s)

1) Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.
2) Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.
3) Increased intent to act to prevent storm water pollution after reading the watershed brochure.

Assessment Method(s)

1) Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

ANALYSIS RESULTS

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

CONCLUSIONS

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2012. In FY 2011 it was determined that the watershed brochures for all 6 watersheds within the City of San Diego would need to be revised, including the already completed Tijuana and San Diego River watershed brochures. Watershed brochure revision will be completed in FY2012. Effectiveness assessments are scheduled to begin in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE:	**CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**
ID #:	**MB-3008**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program conducted by the Public Utilities Department involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. The rebate program was implemented in FY11.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the support of storm water and urban

runoff pollution management efforts of the public. Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, implementation and assessment completion anticipated in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping	Targeted	Water	Non-	Nutrients &	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Targeted Enforcement	Enforcement	Quality	structural	Pesticides	
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City Strategic Plan and the Copermittees Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS MEASUREMENTS

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: LA JOLLA ASBS 201-2011 REGIONAL COMPLIANCE MONITORING
ID #: MB-3009

ACTIVITY IMPLEMENTATION

The objective of this project was to address the following study questions:

1) What are the conditions of storm water effluent in the storm drain prior to being discharged to the ocean receiving waters?
2) Are short-duration exposures to contaminants during storm events toxic to species living within the rocky intertidal zone?
3) Do sediment contaminant concentrations differ between ASBS sites adjacent to storm water discharges and reference sites?
4) Do the rocky intertidal biological communities differ between sites that are influenced by storm water runoff and those that are not?

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- La Jolla Shores ASBS Regional Compliance Monitoring

TIME SCHEDULE FOR IMPLEMENTATION

This study was designed to be in compliance with the Committee's Regional ASBS Work Plan with additional monitoring and assessment activities specific to the needs of the City in accordance with the *Strategic Plan for Watershed Activity Implementation*.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Organics
- Pesticides

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Strategic Plan represents the City's Storm Water Division's implementation strategy for watershed activities within the City's jurisdictional boundaries from 2007 through 2012. Among the prioritized watershed activities identified in The Strategic Plan, eight projects pertained directly to the protection and enhancement of beneficial uses for ASBS 29 and ASBS 31. These projects included dry weather flow diversion, runoff reduction, ecosystem assessment, and street sweeping. The City recently received a Proposition 84 Grant to partially fund these projects.

EFFECTIVENESS MEASUREMENTS

Effectiveness of this activity is not being assessed as this not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

ANALYSIS RESULTS

1) "End of pipe" storm drain effluent samples (prior to mixing with the ocean receiving waters) were collected during a storm event from each of the five major storm drain outfalls that drain to ASBS 29. Most metal concentrations were below California Ocean Plan water quality objectives (WQOs) (as required in the Special Protections), except for those of total zinc and copper. Organophosphate pesticides were not detected, but synthetic pyrethroid concentrations were high, exceeding LC50 values by two to three orders of magnitude in some cases. Thus, reductions in the concentrations of some metals and pyrethroids may be required in the future to meet the requirements of the Special Protections.
2) The results of the pollutograph monitoring indicate that concentrations of some metals exceeded Ocean Plan WQOs and synthetic pyrethroid concentrations exceeded values in the literature shown to be toxic to marine organisms, by as much as three orders of magnitude. Elevated concentrations of these constituents were measured in the storm water effluent taken directly from the storm drain as well as in the tide pools in the ocean receiving waters. Toxicity evaluations indicated that storm water effluent was toxic to native marine species at concentrations observed in the receiving waters. However, further assessment suggested that the freshwater associated with storm water runoff may be the predominant source of toxicity observed in this study. Further assessment is needed to understand the impacts of storm water runoff on the beneficial uses of the ASBS.
3) Surficial sediment samples were collected from the upper and lower intertidal zone in front of each of the five major storm drain outfalls that discharge to ASBS 29 following a storm event. Samples were analyzed for grain size and a suite of constituents. Chemistry results indicated that sediments had low concentrations of the constituents analyzed. Concentrations of PCBs, OP pesticides, pyrethroids, and PAHs were all less than reporting limits and metal concentrations were one or more orders of magnitude below ER-L (effects range low) values. The grain sizes of all upper and lower intertidal sediment samples consisted of greater than 95% sand and gravel. The results suggest that contaminants associated with storm water runoff are not accumulating in the intertidal sediments of the ASBS. Additional data will be necessary to confirm if these results are consistent over varying spatial and temporal gradients.
4) Surveys were conducted to characterize the biological communities in the rocky intertidal habitats at the storm drain-influenced site (SDL-186 within ASBS 29) and two sites that are not influenced by storm drains. Results revealed that each site was significantly different from each other using numerous parameters. Biodiversity of macrophytes (macroscopic algae) and macroinvertebrates was lowest at the ASBS site while patterns were mixed for meiofaunal (small, macroscopic invertebrates that live within the sediments) diversity, with diversity sometimes being higher at the ASBS site. Multi-variate statistical analyses revealed that the ASBS site was clearly differentiated from the

other two sites, but the sites may differ due to several factors, not just the presence of storm drain runoff. Despite some differences, evidence of obvious and consistent storm water impacts at the SDL-186 site relative to the reference sites is relatively weak. However, differences among sites warrant possible future examinations in a more robust manner using multiple impacted and non-impact sites and concentrating some sampling on non-turf habitats, such as intertidal tidepools.

CONCLUSIONS

This Phase I Source Study provides the following benefits to the City:

1) Supports ASBS compliance monitoring requirements for the La Jolla ASBS.
2) Supports regional and jurisdictional management plans.
3) Identifies constituents during storm events that may be toxic to the resident biological community and may influence community level parameters, such as abundance and diversity.

TITLE: BIOASSESSMENT MONITORING OF THE TECOLOTE CREEK WATERSHED
ID #: MB-3010

ACTIVITY IMPLEMENTATION

Historical bioassessment studies in Tecolote Creek have shown consistently impaired benthic macro-invertebrate (BMI) communities and there are several constituents on the State Water Resources Control Board (State Board) 303(d) list of impaired waterbodies.

Due to budget constraints, this project was put on hold. The initial study was completed in FY2010 and provides a strong basis for a focused follow-up study to provide specific recommendations for TMDL implementation planning. Future studies will be implemented as funding is available.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Indicator Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Due to budget contraints, this project was put on hold. Initial study was completed in 2010. future studies will be implemented as funding is available.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify metals, nutrients, and bacteria as high priority water quality problems throughout Tecolote Creek and the Mission Bay and La Jolla WMA.

EFFECTIVENESS MEASUREMENTS

Due to the nature of this monitoring study, effectiveness is not being measured.

EXPECTED BENEFITS

Objectives, findings, and recommendations based on bioassessment monitoring conducted in Tecolote Creek are summarized below.

Objectives

1) Comprehensively document biological conditions and community structure of BMI throughout the Tecolote Creek Watershed and its tributaries.
2) Assess possible stressors to the BMI communities by analyzing the physical habitat conditions as well as water quality constituents that could prevent the establishment of sensitive BMI taxa and non-impaired BMI communities.
3) Determine the most important limiting factors for achieving potential biological objectives.

ANALYSIS RESULTS

1) Analysis of seven bioassessment sites in the Tecolote Watershed indicated that there was biological impairment throughout the watershed.
2) Physical habitat ratings were good to very good for BMI colonization. TDS (Total Dissolved Solids) exceeded the water quality objectives (as described in the Basin Plan) throughout the watershed. Specific conductivity and salinity were also very high at six of the seven sites (relative to reference conditions in San Diego County).
3) The most important limiting factors for achieving potential biological objectives were high levels of TDS, specific conductivity, and salinity.

CONCLUSIONS

1) Determine the source(s) of elevated TDS specific conductivity and salinity in the Tecolote Watershed.
2) Assess the potential efforts and costs required for addressing water quality limitations which are impacting the biological integrity in the creek.

TITLE:	**TECOLOTE CREEK MICROBIAL SOURCE TRACKING STUDY**
ID #:	**MB-3011**

ACTIVITY IMPLEMENTATION

This study was conducted from 2007 through 2010 in three phases throughout the watershed to investigate and identify bacterial sources, origins, and loads in the Tecolote Creek Watershed and to assess and characterize specific priority activity contributions. The results provide background for the City of San Diego (City) to address bacterial load and concentration reduction strategies to comply with the *Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Bacterial Project I - Twenty Beaches and Creeks in San Diego Region, Including Tecolote Creek* (Bacterial Project I TMDL) recently adopted by the San Diego Regional Water Quality Control Board (Regional Board).

The Tecolote Creek Microbial Source Tracking Study aimed to identify sources of specific bacterial pollutants in the watershed. Objectives and findings are summarized below.

Objectives

1) Gather further information for the refinement of the Bacterial Project I TMDL and State Board §303(d) list documentation.
2) Verify Priority Sectors identified in the Strategic Plan through characterization of bacterial loadings to Tecolote Creek Watershed by targeting primary sources of high bacterial loading (e.g., anthropogenic and non-anthropogenic sources).
3) Determine the presence or absence of human contamination within the wateshedm and pinpoint any sources of human contamination.
4) Determine the relative contribution and origin of bacterial regrowth to bacterial loading in the creek during wet weather and dry weather.
5) Further develop bacterial load and concentration reduction strategies for Tecolote Creek based on the results of study elements designed around the four previous objectives.

Due to budget constraints, this project was put on hold. When funds become available the data collected in Tecolote Creek will be used to develop an implementation planning framework. Once the framework is completed, the framework will be considered for use as a management tool in developing a comprehensive load reduction plan for the Bacteria Project I TMDL. The framework may also be considered as a guidance document for developing implementation plans for other TMDLs with similar characteristics.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Indicator Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Due to budget constraints, this project was put on hold.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES
N/A

OTHER PARTICIPATING ENTITIES
- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA, and recommend implementing specific management and Best Management Practices (BMPs) strategies to reduce the identified sources.

EFFECTIVENESS MEASUREMENTS
Due to the nature of this monitoring study, effectiveness is not being measured.

EXPECTED BENEFITS
The data collected during the three phases of the investigation will be compiled with all available historical data for submittal to the Regional Board for inclusion in the State Board §303(d)-list database. This submittal will ensure that revisions to the State Board §303(d) list will be made using the most recent and relevant data available.

ANALYSIS RESULTS
1) An evaluation of all historical data indicated that a number of State Board §303(d)-listed pollutants could be removed from the list based on the number of exceedances observed. The results indicate that dissolved cadmium, copper, lead, and zinc are eligible for delisting from the State Board §303(d) list. However total selenium, bacteria, nutrients, and turbidity did not meet delisting requirements.
2) Sector prioritization–undertaken both through the Baseline Long-Term Effectiveness Assessment and Strategic Planning process–suggested that Sectors 1 and 2 presented the highest threat to water quality with a higher presence of potential pollutant sources through specific land use activities. Assessments of pollutant loads during both dry weather and wet weather indicated that these two sectors discharge higher loads of pollutants when compared with Sectors 3 and 4. During dry weather, Sector 1 was found to contribute the highest loads of copper, zinc, and total dissolved solids (TDS). During wet weather, Sector 2 was found to contribute some of the highest loads of bacteria, zinc, lead, and total suspended solids (TSS). Management of land use activities in Sectors 1 and 2 should be the focus of any comprehensive load reduction strategies.

   Wet weather bacteria loads from individual land uses indicated that there were no significant differences between different land uses with flows merging and combining

throughout drainage areas. There was some indication that higher loads were attributable to transportation corridors, commercial areas, and industrial land uses.

Dry weather bacteria loads were higher in residential and commercial areas with specific activities identified, particularly poorly maintained dumpsters and catch basins. Over-irrigation was a key transport mechanism that was prominent in commercial and industrial areas.

3) A comprehensive assessment of water quality throughout Tecolote Creek was undertaken to assess the presence of human fecal contamination. The assessment was performed using human-specific *Bacteroides* and quantitative polymerase chain reaction (Q-PCR). During dry weather, five positive samples were obtained. Each follow-up investigation failed to locate a point source and in every instance there was evidence of transient human activity. During wet weather, only one sample (of a total of 37 samples collected during nine storms) was found to be positive for *Bacteroides*. This sample was collected during the early phase of the storm flows in an area known to be a transient area.
4) A number of investigations were undertaken in Tecolote Creek to assess the presence of environmental species of fecal indicator bacteria. Ponds were not found to be a significant reservoir for environmental indicator species. However, sediments and biofilms within the creek and MS4 system were found to be significant bacterial reservoirs. Biofilms on the walls of the MS4 system in particular were found to grow rapidly and contain high numbers of enterococci. Speciation of these enterococci determined that the origins were most likely environmental rather than fecal. Further investigation determined that the storm water, with high numbers of enterococci of fecal origin, was the primary inoculation mechanism, and that biofilms matured rapidly into complex communities with a variety of species present. The high flows generated during wet weather caused significant biofilm sloughing. The impact of biofilms on wet weather loads of indicator bacteria into receiving waters appeared to be significant.
5) Load and concentration reduction strategies are currently being developed through the Tecolote Creek Implementation Framework.

CONCLUSIONS

Once the framework is completed, the framework will be considered for use as a management tool in developing a comprehensive load reduction plan for the Bacteria Project I TMDL. The framework may also be considered as a guidance document for developing implementation plans for other TMDLs with similar characteristics.

MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2012 ANNUAL REPORT

Transportation & Storm Water Department
Storm Water Division
City of San Diego

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THE CITY OF SAN DIEGO

January 18, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the Mission Bay and La Jolla Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the Mission Bay and La Jolla Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden

Kris McFadden
Deputy Director
City of San Diego

1/18/13
Date

DIVERSITY

Transportation & Storm Water Department
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Executive Summary

The Mission Bay and La Jolla Watershed Urban Runoff Management Program (WURMP) Annual Report (Annual Report) describes the actions taken by the City of San Diego (City) in Fiscal Year (FY) 2012 (July 1, 2011 to June 30, 2012) to refine and implement the WURMP and the progress made towards improving both urban runoff quality and receiving water quality in the Mission Bay/La Jolla watershed management area (WMA).

SECTION 1 (INTRODUCTION) provides information about the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit and updated Mission Bay and La Jolla WURMP. A discussion regarding Regional Copermittees (Copermittees) collaboration and land use map updates is included in this section.

SECTION 2 (WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT) is a summary of the assessment of the water quality and pollutant sources in the WMA based on data collected and analyzed from July 2011 through June 2012. To annually assess the water quality of the WMA, the Copermittees prepared the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report) for 2011-2012. Based on the data and findings of the Annual Monitoring Report and the City's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan), the City focused its efforts on targeting the following Priority Water Quality Problems for the WMA:

- ***Bacteria/Pathogens (High Priority Water Quality Problem)***
- ***Heavy Metals (High Priority Water Quality Problem)***
- ***Nutrients (High Priority Water Quality Problem)***
- Pesticides
- Sediment

SECTION 3 (IMPLEMENTATION OF WATERSHED ACTIVITIES) details the water quality activities, education activities, public participation activities, and the collaborative land-use planning efforts that occurred during the reporting period regarding the implementation of the WURMP. The City continued the planning and design process for several activities, implemented source identification and special studies, continued to sponsor creek and bay trash removal, implemented a third cleanup activity, continued the catch basin cleaning study and the rainwater harvesting rebate program, and implemented multiple education and public participation activities. All of these activities are anticipated to have a positive impact on water quality.

This section also includes the updated Strategic Plan that outlines various activities, public participation, and watershed-based land use planning the City plans to implement over the permit cycle.

SECTION 4 (EFFECTIVENESS ASSESSMENT) provides an assessment of the overall effectiveness of the WURMP, including details on how the City achieved compliance for FY 2012. To evaluate its efforts at the activity and program levels, the City developed an assessment framework that emphasizes adaptive management. That is, data associated with activity efficiency that is gathered primarily through pilot project assessments is used to guide program improvement with the implementation of the most efficient activities. This process will help

guide future management decisions on how to best allocate the City's resources to obtain the maximum amount of pollutant load reduction for every dollar spent.

This section also details how the City's program is effective in helping protect and improve water quality.

An update on the TMDL progress is further presented in this section. The *Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Bacterial Project I – Twenty Beaches and Creeks in San Diego Region (Including Tecolote Creek)* (Bacteria TMDL) as adopted in FY 2011 and covers numerous water bodies including Tecolote Creek and portions of the Scripps Hydrologic Area (HA) Pacific Ocean shoreline. Additionally, the following water bodies in the WMA are currently listed as impaired per Section 303(d) of the Clean Water Act:

- Mission Bay and shoreline: Bacteria indicators, eutrophication, lead
- Rose Creek: Selenium, toxicity
- Tecolote Creek: Bacteria indicators, cadmium, copper, lead, nitrogen, phosphorus, selenium, turbidity, toxicity, zinc

Part of the WMA also drains to an Area of Special Biological Significance (ASBS) which is under special protection pursuant to the ASBS Special Exemptions to the Ocean Plan, adopted on March 20, 2012 by the State Water Quality Control Board (State Board).

SECTION 5 (CONCLUSIONS AND RECOMMENDATIONS) offers concluding remarks regarding the accomplishments of the City in FY 2012 in implementing the WURMP and recommendations for further program refinement. This section summarizes how the City achieved compliance with the NPDES Municipal Stormwater Permit and sets forth recommendations for improving the WURMP over time.

Overall, the annual report concludes that the City's efforts as part of the WURMP program have continued to be effective in protecting and improving water quality in the WMA. The City will refine the Mission Bay and La Jolla WURMP as it increases its understanding of the complex issues affecting the WMA in a continued effort to enhance its effectiveness in protecting and improving water quality. Such refinement is supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In addition, the report details recommendations in four key areas:

1. Refine and improve water quality activities through a watershed master planning approach;
2. Expand knowledge of pollutant sources;
3. Refine and improve effectiveness assessment; and
4. Coordinate and integrate the WURMP, ASBS and TMDL planning. This is anticipated to occur as part of the development of the Water Quality Improvement Plan that is contemplated in the draft Municipal Storm Water Permit (Tentative Order No. R9-2013-0001).

Section 1 Introduction

The NPDES Municipal Stormwater Permit, San Diego Region Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Mission Bay and La Jolla WMA to collaborate on the development and implementation of a WURMP. This Annual Report is divided into five sections that highlight the efforts of the City of San Diego, the only copermittee in the WMA, during the FY 2012 reporting period. The FY 2012 reporting period is from July 1, 2011 through June 30, 2012.

The *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) was submitted to the San Diego Regional Water Quality Control Board (Regional Board) and implementation began in March 2008. The WURMP is a plan of action to address high priority surface water quality issues throughout the Mission Bay and La Jolla WMA. The program includes identifying and addressing High Priority Water Quality Problems in the WMA, and developing and implementing activities that include pollutant load reduction and pollutant source abatement (water quality activities); improvements in the public's knowledge, awareness, and behaviors (watershed education activities); as well as public participation and collaborative land use planning.

1.1 Copermittee Collaboration

The Mission Bay and La Jolla WMA is fully within the City's jurisdiction; therefore, the City is the only Copermittee within the WMA. The University of California, San Diego (UCSD) in La Jolla is within the WMA, as is a significant military presence, which is primarily located in the eastern part of the WMA. The City works collaboratively with UCSD and the Scripps Institution of Oceanography, which both operate under a separate Permit, on urban runoff and ASBS issues.

1.2 Watershed Map Updates

No updates to the watershed map are necessary this reporting period.

Section 2 Water Quality and Pollutant Source Assessment

This section provides the updated assessment and analysis of the WMA's current and past applicable water quality data, reports, analyses, and other information, including the identification of the WMA's High Priority Water Quality Problems during the reporting period. This section also identifies the likely sources, pollutant discharges, and/or factors causing the High Priority Water Quality Problems within the WMA.

2.1 Water Quality Assessment

The WMA is located entirely within the City's jurisdiction and is the smallest in San Diego County. The three largest HAs include: Scripps, Miramar and Tecolote. The Scripps HA drains directly to the Pacific Ocean into an ASBS. The Miramar and Tecolote HAs flow into Rose and Tecolote Creeks which discharge into Mission Bay. Land use is classified primarily as open space / parks and recreation (26%), residential (26%), and transportation (16%). The Permit requires the City to identify High Priority Water Quality Problems in the WMA and implement activities to address them. To allow time for implementing these activities, the selected High Priority Water Quality Problems are set for the current Permit unless there is sufficient justification to modify them.

2.1.1 Water Quality Problems

The High Priority Water Quality Problems were identified in the FY 2008 WURMP as bacteria, metals, and nutrients using the 2006 State Board Section 303(d) Listings along with the results from the Baseline Long-Term Effectiveness Assessment (BLTEA) of water quality data from 2001-2006. The problems listed from both the BLTEA and 303(d) listings are compared to the Long-Term Effectiveness Assessment (LTEA) water quality priority ratings for wet weather (Table 2-1) and dry weather (Table 2-2). LTEA data was collected from receiving waters within the WMA from the 2005 through 2010 monitoring seasons. These comparisons will help shape future management decisions and activities in the WMA.

Table 2-1. Mission Bay and La Jolla WMA BLTEA vs LTEA Water Quality Priority Ratings-Wet Weather

Constituent Groups	BLTEA Mission Bay WMA	Wet Weather Receiving Water LTEA Results		
		MB-TWAS-1 (Rose Creek)	TC-MLS (Tecolote Creek)	MB-TWAS-2 (Tecolote Creek)
Gross Pollutants	***B***	BOD		BOD
Oil & Grease	***D***			
Metals	***A***			
Pesticides	***D***	Bifenthrin, Permethrin	Bifenthrin	Bifenthrin, Malathion, Permethrin
Organics	***D***			
Toxicity	***A***			*Ceriodaphnia dubia* acute, *Ceriodaphnia dubia* chronic, *Ceriodaphnia dubia* reproduction
Benthic Alterations	***D***	Poor IBI, O/E, CRAM	Poor IBI, O/E, CRAM	Poor IBI, O/E, CRAM
Bacteriological	***A***	Fecal Coliforms	Fecal Coliforms	Fecal Coliforms
Nutrients	***A***			
Dissolved Minerals	***A***	TDS		
Sediments	***B***	Turbidity, TSS	Turbidity, TSS	Turbidity, TSS

Yellow font indicates medium priority constituent, however it is within a group with a high priority constituent.

BLTEA KEY	LTEA KEY	
A - High Priority	High	> 50% Above Benchmark
B or C Priority	Medium	> 25% and ≤ 50% Above Benchmark
D Priority	Low	≤ 25% Above Benchmark
D Priority	NA	Not Available / Not Applicable
303d listing (BLTEA)		

BOD = biological oxygen demand
IBI = Index of Biotic Integrity
MLS = mass loading station
O/E = observed / expected ratio
TDS = total dissolved solids
TSS = total suspended solids
TWAS = temporary watershed assessment station
WMA = watershed management area

Table 2-2. Mission Bay and La Jolla WMA BLTEA vs LTEA Water Quality Priority Ratings-Dry Weather

Constituent Groups	BLTEA Mission Bay WMA	Dry Weather Receiving Water LTEA Results		
		MB-TWAS-1 (Rose Creek)	TC-MLS (Tecolote Creek)	MB-TWAS-2 (Tecolote Creek)
Gross Pollutants	*B*			
Oil & Grease	*D*			
Metals	*A*			Selenium
Pesticides	*D*	Bifenthrin [1]*		
Organics	*D*			
Toxicity	*A*	*Ceriodaphnia dubia* acute, *Ceriodaphnia dubia* chronic, *Ceriodaphnia dubia* reproduction, *Selenastrum* acute	*Selenastrum* acute, *Ceriodaphnia dubia* reproduction, *Ceriodaphnia dubia* chronic [2]*	*Selenastrum* acute, *Ceriodaphnia dubia* acute, *Ceriodaphnia dubia* reproduction, *Ceriodaphnia dubia* chronic survival
Benthic Alterations	*D*	Poor IBI, O/E, CRAM	Poor IBI, O/E, CRAM	Poor IBI, O/E, CRAM
Bacteriological	*A*			Enterococci Fecal Coliforms
Nutrients	*A*	Total Nitrogen, [1]* Total Phosphorus [1]*	Total Nitrogen, [1]* Total Phosphorus	Benthic Algae
Dissolved Minerals	*A*	TDS, Chloride, [1]* Sulfate [1]*		
Sediments	*B*			

Yellow font indicates medium priority constituent, however it is within a group with a high priority constituent.
1. Priority based on SMC Data. NPDES station had no data for analyte or low priority score.
2. NPDES score was Med. (shown); SMC score was High priority.
* One station was used in the summary.

BLTEA KEY	LTEA KEY	
A - High Priority	High	> 50% Above Benchmark
B or C Priority	Medium	> 25% and ≤ 50% Above Benchmark
D Priority	Low	≤ 25% Above Benchmark
D Priority	NA	Not Available / Not Applicable
303d listing (BLTEA)		

CRAM = california rapid assessment method
IBI = Index of Biotic Integrity
MLS = mass loading station
O/E = observed / expected ratio
TDS = total dissolved solids
TWAS = temporary watershed assessment station
WMA = watershed management area

The 2010 303(d) list (Table 2-3 below) was recently approved by the United States Environmental Protection Agency (EPA). New listings include eutrophication and lead at the mouths of Rose and Tecolote Creeks, selenium and toxicity in Rose Creek, and nitrogen and selenium in Tecolote Creek. Water quality monitoring is ongoing for the Permit under the Annual Monitoring Program. The 2011-2012 water quality monitoring activities conducted in the WMA are provided in Table 2-4.

Table 2-3. Mission Bay and La Jolla WMA Waterbodies on the 2010 SWRCB Section 303(d) List

Waterbody Name	HA	HA No.	Pollutant/Stressor	TMDL Status
Pacific Ocean Shoreline, Avenida de la Playa	Scripps	906.30	Total coliform	**Effective 4/2011**

Waterbody Name	HA	HA No.	Pollutant/Stressor	TMDL Status
Pacific Ocean Shoreline, Children's Pool	Scripps	906.30	*Enterococcus*, total coliform, fecal coliform	**Effective 4/2011**
Pacific Ocean Shoreline, La Jolla Cove	Scripps	906.30	Total coliform	**Expected completion 1/2019**
Pacific Ocean Shoreline, Pacific Beach Point	Scripps	906.30	*Enterococcus*, total coliform, fecal coliform	**Expected completion 1/2019**
Pacific Ocean Shoreline, Ravina	Scripps	906.30	Total coliform	**Effective 4/2011**
Pacific Ocean Shoreline, Vallecitos Court	Scripps	906.30	Total coliform	**Effective 4/2011**
Mission Bay Shoreline, Bahia Point	Scripps	906.30	*Enterococcus*, total coliform, fecal coliform	**Expected completion 1/2019**
Mission Bay Shoreline, Bonita Cove	Scripps	906.30	*Enterococcus* and total coliform	**Expected completion 1/2019**
			Fecal coliform	**Expected completion 1/2021**
Mission Bay Shoreline, Fanual Park	Scripps	906.30	Total coliform	**Expected completion 1/2019**
			Enterococcus	**Expected completion 1/2021**
Mission Bay, mouth of Rose Creek	Miramar	906.40	Eutrophic and lead	**Expected completion 1/2019**
Mission Bay Shoreline, Campland	Miramar	906.40	*Enterococcus*, total coliform, fecal coliform	**Expected completion 1/2019**
Mission Bay Shoreline, De Anza Cove	Miramar	906.40	*Enterococcus*, total coliform, fecal coliform	**Expected completion 1/2019**
Mission Bay Shoreline, Leisure Lagoon	Miramar	906.40	*Enterococcus* and total coliform	**Expected completion 1/2019**
Mission Bay Shoreline, North Crown Point	Miramar	906.40	*Enterococcus* and total coliform	**Expected completion 1/2019**
Mission Bay Shoreline, Visitors Center	Miramar	906.40	*Enterococcus*, total coliform, fecal coliform	**Expected completion 1/2019**
Rose Creek	Miramar	906.40	Selenium and toxicity	**Expected completion 1/2021**
Mission Bay, mouth of Tecolote Creek	Tecolote	906.50	Eutrophic and lead	**Expected completion 1/2019**
Mission Bay Shoreline, Tecolote Shores	Tecolote	906.50	*Enterococcus* and total coliform	**Expected completion 1/2019**

Waterbody Name	HA	HA No.	Pollutant/Stressor	TMDL Status
Tecolote Creek	Tecolote	906.50	Indicator bacteria	**Effective 4/2011**
			Cadmium, copper, lead, phosphorus, toxicity, turbidity, zinc	**Expected completion 1/2019**
			Nitrogen and selenium	**Expected completion 1/2021**
Mission Bay, Quivera Basin	Fiesta Island	906.70	Copper	**Expected completion 1/2021**

Source: SWRCB, 2010.
TMDL – total maximum daily load
HA – hydrologic area

Table 2-4. 2011–2012 Mission Bay and La Jolla WMA Monitoring Program Activities

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**7**
Ambient (Dry) Monitoring	Water chemistry, toxicity, bacteria, rapid stream bioassessment, and trash	1-MLS, 2-TWAS
SMC Regional Monitoring	Water chemistry, toxicity, rapid stream bioassessment	1-SMC*
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	1-MLS, 2-TWAS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	1-MLS, 2-TWAS
Third-Party Data (Coastkeeper)	General chemistry and bacteria	3-Coastkeeper
Urban Runoff Monitoring		**321**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	157
Jurisdictional Dry Weather Monitoring – Trash Assessment	Trash	107
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	6
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	5
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, and bacteria	9
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
Coastal Storm Drain Monitoring (CSDM) Program	Coastal outfall and receiving waters	144

CSDM – Coastal Storm Drain Monitoring
MLS – mass loading station
MS4 – municipal separate storm sewer system
SMC – Stormwater Monitoring Coalition
TOC – total organic carbon
TWAS – temporary watershed assessment station
*The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over 5 years (http://socalsmc.org/ProjectThree.aspx).

2.1.2 Receiving Waters Condition Assessment Description

Samples were collected for the WMA during the 2011–2012 Monitoring Season. Wet and dry weather monitoring was conducted at the temporary watershed assessment station (TWAS) and

mass loading station (MLS) in this WMA, along with Stormwater Monitoring Coalition (SMC) dry weather monitoring. Third party ambient weather receiving water data was collected by San Diego Coastkeeper (Coastkeeper). The results can be found in the 2011-2012 Annual Monitoring Report.

2.1.3 Urban Runoff and Discharges Water Quality Assessment Description

The Jurisdictional Dry Weather Monitoring (DWM) Program was conducted in 2012 to fulfill the Permit, which requires each Copermittee to conduct a dry weather field screening and analytical monitoring program. The goal of the program is to detect and eliminate illegal connections and illicit discharges (ICIDs) to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow-up investigations. The data is also useful in assessing the spatial distribution of the constituents analyzed. The MS4 Outfall Monitoring Program incorporates both targeted sample locations and randomly selected sample locations during wet and dry weather conditions to characterize the relative contribution of constituents to the receiving waters. The Coastal Monitoring sub-workgroup prepares an annual monitoring report on coastal outfall monitoring, which is in progress and can be found in Appendix N of the Annual Monitoring Report.

2.1.4 Water Quality Assessment Conclusions

The assessment of the watershed during both ambient and wet weather conditions is presented in an integrated manner to provide an overall assessment of the WMA. The integrated assessment also identifies which constituents of concern (COCs) overlap between receiving waters and urban runoff. The WMA assessment methods were applied to the data from the monitoring programs to determine the COCs and to develop a frequency of occurrence ranking of high, medium, or low. The frequency of occurrence ranking was determined using the overall percentage of all samples analyzed that exceeded water quality benchmarks (including all monitoring years' data). It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as data becomes available in future years. Integrated watershed assessments results are presented by TWAS and MLS in Table 2-5, Table 2-6, and Table 2-7. See Figure 2-1 for the sampling locations.

Figure 2-1. TWAS and MLS Monitoring Station Locations

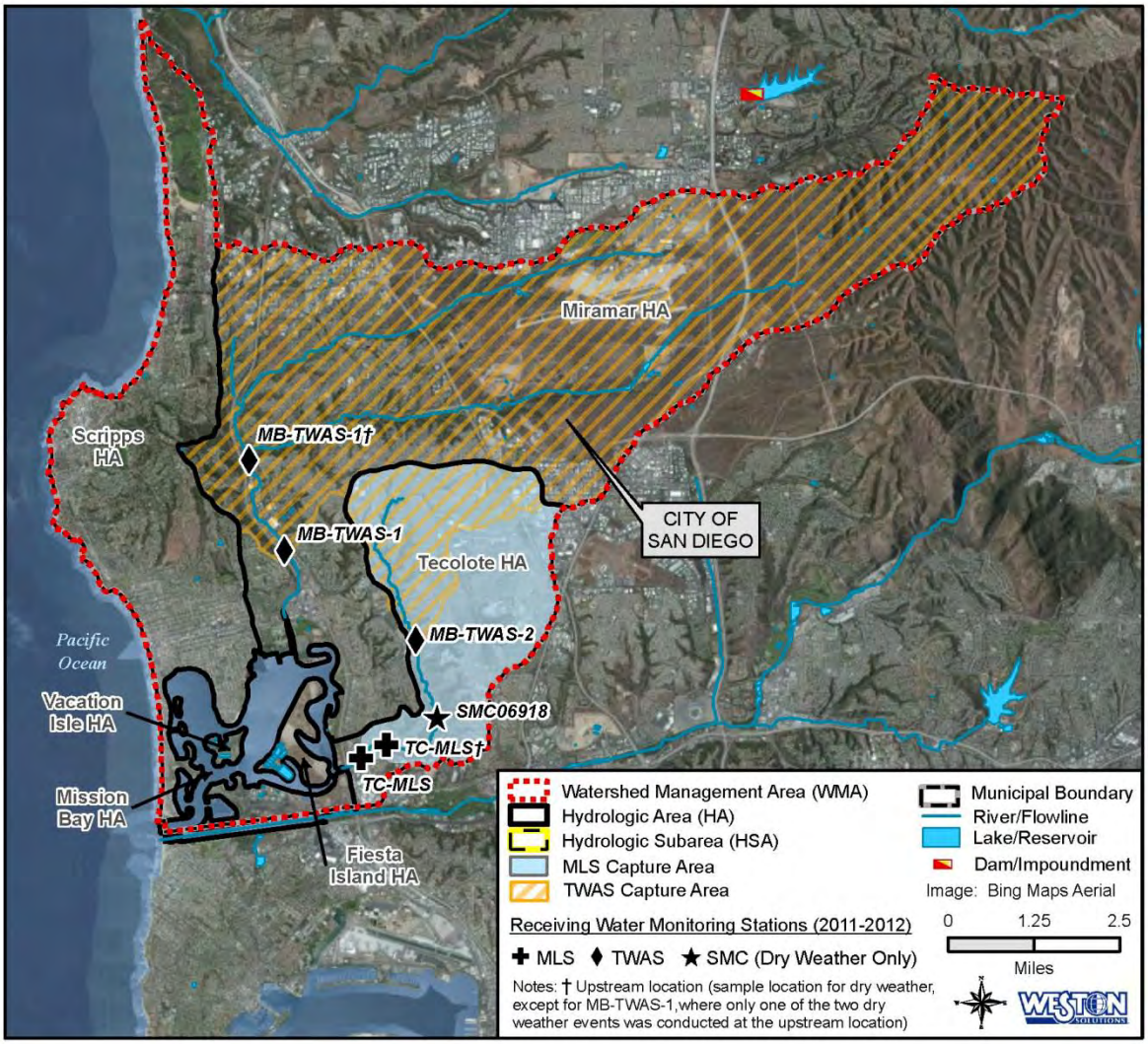

Table 2-5. MB-TWAS-1 (Rose Creek) Drainage Area Assessment Findings

Mission Bay TWAS-1			
System Assessed	Dry Weather Priority Constituents[1]	Wet Weather Priority Constituents[1]	Core Management Question(s) Addressed
Receiving Water Monitoring	NPDES Program[2] • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction, *S. capricornutum* growth *C. dubia* acute survival (Med), *C. dubia* chronic survival (Med) • Biology – Very Poor IBI[3] • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – TDS SMC Program • No samples collected upstream of MB-TWAS-1 Third-Party Data – (Coastkeeper)[4] The following constituents did not meet Basin Plan benchmarks: • Chemistry – Dissolved Oxygen • Bacteria – *Enterococcus*	NPDES Program • Chemistry – Turbidity, Bifenthrin TSS (Med), Permethrin (Med) • Toxicity – No toxicity observed • Biology – Very Poor IBI[3] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – TDS Synthetic Pyrethroids in Sediment* • No priority constituents identified	1, 2
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform, *Enterococcus* • Nutrients – Total Nitrogen, Total Phosphorus • TDS – TDS	MS4 Program • No samples collected upstream of MB-TWAS-1	3, 4
Lagoon/ Estuary/ Bay Monitoring	Not Applicable	Not Applicable	1, 2

Note: Results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables.

[2] Due to lack of flow, MB-TWAS-1 was moved upstream for the second dry weather event sampling.

[3] One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.

[4] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples. Constituent list for third-party data is provided in Appendix M. Indicator bacteria analyzed for Coastkeeper include: *E. coli*, *Enterococcus*, total coliform.

* One sample used in analysis.

Med – medium-priority constituent	TDS – total dissolved solids
MS4 – municipal separate storm sewer system	TWAS – temporary watershed assessment station
NPDES – National Pollutant Discharge Elimination System	TSS – total suspended solids
SMC – Stormwater Monitoring Coalition	IBI – Index of Biotic Integrity

Table 2-6. TC-MLS (Tecolote Creek) Drainage Area Assessment Findings

Tecolote Creek MLS			
System Assessed	Dry Weather Priority Constituents[1]	Wet Weather Priority Constituents[1]	Core Management Question(s) Addressed
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction, *S. capricornutum* growth • Biology – Very Poor IBI[2] • Bacteria – *Enterococcus* • Nutrients – No priority constituents identified • TDS – Not Applicable SMC Program (one sample, SMC06918)* • Chemistry – No priority constituents identified • Toxicity – *C.dubia* reproduction (Med) • Biology – Very Poor IBI • Bacteria – Not analyzed • Nutrients – Total Phosphorus • TDS – Not Applicable Third-Party Data ▪ No samples collected upstream of TC-MLS	NPDES Program • Chemistry – TSS, Turbidity, Bifenthrin, Permethrin COD (Med) • Toxicity – No toxicity observed • Biology – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – Not Applicable Synthetic Pyrethroids in Sediment* • No priority constituents identified	1, 2
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – Total Nitrogen, Total Phosphorus • TDS – No data	MS4 Program • No samples collected upstream of TC-MLS	3, 4
Lagoon/ Estuary/ Bay Monitoring	Not Applicable	Not Applicable	1, 2
Trends[3]			
Increasing		Total Hardness	5
Decreasing[4,5]		Ammonia, Diazinon	

Note: Results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables.
[2] One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.
[3] Trends based on wet weather historical data, including data from the 2011-2012 monitoring year.
[4] Ammonia concentrations are consistently below the water quality benchmark (WQB).
[5] Diazinon concentrations have not exceeded the WQB since 2003.
*One sample used in analysis.

COD – chemical oxygen demand
Med – medium-priority constituent
MLS – mass loading station
MS4 – municipal separate storm sewer system
NPDES – National Pollutant Discharge Elimination System
SMC – Stormwater Monitoring Coalition
TDS – total dissolved solids
TSS – total suspended solids

Table 2-7. MB-TWAS-2 (Tecolote Creek) Drainage Area Assessment Findings

Mission Bay TWAS-2			
System Assessed	Dry Weather Priority Constituents[1]	Wet Weather Priority Constituents[1]	Core Management Question(s) Addressed
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *C. dubia* chronic survival, *C. dubia* reproduction, *S. capricornutum* growth • Biology – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – No priority constituents identified • TDS – Not Applicable SMC Program • No samples collected upstream of MB-TWAS-2 Third-Party Data ▪ No samples collected upstream of MB-TWAS-2	NPDES Program • Chemistry – Turbidity, Bifenthrin COD (Med), TSS (Med), Permethrin (Med) • Toxicity – *S. capricornutum* growth (Med) • Biology – Very Poor IBI[2] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Not Applicable Synthetic Pyrethroids in Sediment* • No priority constituents identified	1, 2
Urban Runoff Monitoring	MS4 Program* • Chemistry – No priority constituents identified • Bacteria – *Enterococcus* Fecal Coliform, (Med) • Nutrients – Total Nitrogen, Total Phosphorus • TDS – Not Applicable	MS4 Program ▪ No samples collected upstream of MB-TWAS-2	3, 4
Lagoon/ Estuary/ Bay Monitoring	Not Applicable	Not Applicable	1, 2

Note: Results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables.
[2] One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.
*One sample used in analysis.

COD – chemical oxygen demand
Med – medium-priority constituent
MLS – mass loading station
MS4 – municipal separate storm sewer system
NPDES – National Pollutant Discharge Elimination System
SMC – Stormwater Monitoring Coalition
TDS – total dissolved solids
TSS – total suspended solids

Bacteria – *Enterococcus* was identified as a high priority constituent at most dry weather receiving water locations and was seen during dry weather MS4 monitoring. Historically fecal indicator bacteria has been above the wet weather benchmarks in the Tecolote Hydrologic Subarea (HSA), but was only seen as a high priority at Mission Bay (TWAS-2). Most of the Dry weather flows are diverted to the sanitary sewer in this WMA. Extensive bacterial source

investigations have been conducted by the City of San Diego in the Tecolote Creek HA (City of San Diego, 2008; City of San Diego, 2009; and City of San Diego, 2010). These studies have provided valuable insight into the potential sources, including natural sources, regrowth, and anthropogenic activities that may contribute to bacteria water quality problems.

Total Dissolved Solids (TDS) – Elevated TDS results were recorded at all monitoring stations during both ambient and wet weather conditions. Although there is no basin plan standard for TDS in Tecolote Creek, the elevated concentrations observed are a potential factor influencing poor historic bioassessment results. However, further study is needed to support this theory. Turbidity and total suspended solids (TSS) were high priority constituents during the first wet weather event at the Tecolote Canyon (MLS).

Nutrients – During dry weather MS4 monitoring, total phosphorus and total nitrogen were identified as high to medium priority constituents in the WMA. Nitrate in groundwater seeps has been documented as a known source in the San Diego Region [*Long Term Effectiveness Assessment, San Diego County Regional Copermittees (SDCRC), 2011*]. Nutrients are known to contribute to eutrophic conditions in low flowing waters, and several listings are noted in the Mission Bay areas near the mouths of Rose Creek and Tecolote Creek.

Pesticides – During wet weather sampling bifenthrin persistently exceeded water quality objectives (WQO) at Tecolote Canyon (MLS), Mission Bay (TWAS-1) and Mission Bay (TWAS-2). Permethrin also exceeded WQO at the Tecolote Canyon (MLS). Permethrin was a medium priority at TWAS-1.

Monitoring Recommendations

The recommendations for this WMA are to continue with the requirements of the Permit, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. Future monitoring locations may be useful to assess specific land use activities or other tributary areas. Specific recommendations for the WMA are based on the triad assessment in the Permit. The triad assessment indicates high TDS and hardness as a cause for increased toxicity.

2.2 Pollutant Source Assessment

The Permit requires the City to identify the likely sources of the pollutants responsible for the water quality problems. Table 2-8 below lists the likely pollutant sources adapted from the BLTEA for each of the water quality problems identified above, including High Priority Water Quality Problems.

Table 2-8. Likely Sources of Water Quality Problems in Mission Bay and La Jolla WMA

Water Quality Problem	Likely Sources
Bacteria/Pathogens*	Eating/drinking establishments; animal facilities; landscaping (e.g., parks, golf courses, cemeteries, etc.); publicly owned treatment works (water and wastewater); home and garden care activities; waste disposal
Heavy Metals*	Auto mechanical repair, maintenance, fueling, or cleaning; automobile and other vehicle body repair and painting; botanical or zoological gardens and nurseries/greenhouses; fabricated metal; motor freight; boat mechanical repair, maintenance, fueling, or cleaning; roads, streets, highways, and parking facilities
Nutrients*	Animal facilities; botanical or zoological gardens and nurseries/greenhouses; landscaping (e.g., parks, golf courses, cemeteries, etc.); pest control services; home and garden care activities, waste disposal; parks and recreation facilities
Pesticides	Farming; botanical or zoological gardens and nurseries/greenhouses; landscaping (e.g., parks, golf courses, cemeteries, etc.); pest control services; home and garden care activities, waste disposal; parks and recreation facilities
Sediment	Land use alteration; hydromodification; construction, landscaping; home and garden care activities; farming; nurseries; park and recreation facilities.

*High Priority Water Quality Problems

Conclusions and Additional Activities

High Priority Water Quality Problems were identified through the 2011-2012 wet and dry monitoring seasons in both receiving waters and MS4 locations in the WMA. Additional dry weather monitoring was collected at one SMC location and three Coastkeeper locations in the WMA. *Enterococcus* and total phosphorus stood out with medium to high priority during dry weather MS4 and receiving water monitoring in this WMA.

Results of the triad decision matrix showed no dry weather exceedances of WQOs for chemistry. Wet weather chemistry showed turbidity and permethrin exceeding WQO's at both TWAS locations and at the MLS. TSS persistently exceeded WQOs at the Tecolote Canyon (MLS) and bifenthrin persistently exceeded WQOs at the TWAS-1 location. Toxicity was seen at all locations during dry weather, possibly due to higher levels of TDS. Very Poor Index of Biotic Integrity (IBI) scores were observed at all locations during wet and dry monitoring, which may stem from elevated TDS levels in the WMA.

The City has conducted additional monitoring and special studies to help identify sources of pollutants, including ASBS Compliance Monitoring, Tecolote Creek Bioassessment Monitoring, Tecolote Creek Microbial Source Tracking Study, and the Aerial Deposition Study that was used to support the proposed Brake Pad Senate Bill 346 for Source Control of Copper Water Pollutants. Previous years' WURMP Annual Reports have more information on these projects.

Historical bioassessment studies in Tecolote Creek have shown consistently impaired benthic macro-invertebrate (BMI) communities and there are several constituents in the Tecolote Creek that are on the State Board's 303(d) list of impaired waterbodies. The study objectives were three fold: 1) Comprehensively document biological conditions and community structure of BMI throughout the Tecolote Creek Watershed and its tributaries; 2) Assess possible stressors by analyzing the physical habitat conditions as well as water quality constituents that could prevent the establishment of sensitive BMI taxa; and 3) Determine the most important limiting factors for achieving potential biological objectives. Analysis of seven bioassessment sites in the Tecolote Watershed indicated that there was biological impairment throughout the watershed. Physical habitat ratings were good to very good for BMI colonization. TDS exceeded the WQOs [as described in the Water Quality Control Plan for the San Diego Basin (Basin Plan)] throughout the watershed. Specific conductivity and salinity were also very high at six of the seven sites (relative to reference conditions in San Diego County). The most important limiting factors for achieving potential biological objectives were high levels of TDS, specific conductivity, and salinity. Further monitoring recommendations include determining the source(s) of elevated TDS, specific conductivity, and salinity in the Tecolote Creek Watershed. Salinity source tracking in the Tecolote watershed was conducted in 2011 to determine areas of high specific conductivity, TDS, and salinity. At this point the findings are inconclusive and no point sources have been identified. Preliminary data shows small spikes in TDS, salinity, and specific conductivity as ambient stream flows enter residential areas. Further studies are planned to increase our understanding of the effect of TDS, specific conductivity, and salinity levels in Tecolote Creek.

The Tecolote Creek Microbial Source Tracking Study was conducted from 2007 through 2010 in three phases throughout the watershed to investigate and identify bacterial sources, origins, and loads in the Tecolote Creek Watershed and to assess and characterize specific priority activity contributions. The results provide background for the City to address bacterial load and concentration reduction strategies to comply with the Bacteria TMDL recently adopted by the Regional Board. The monitoring results provide a basis to assess the land uses and related activities that contribute bacteria to the Tecolote Creek Watershed. Sector prioritization, undertaken both through the BLTEA and Strategic Planning process, suggested that two sectors presented the highest threat to water quality with a higher presence of potential pollutant sources through specific land use activities. Assessments of pollutant loads during both dry and wet weather indicated that these two sectors discharge higher loads of pollutants when compared with other sectors. During dry weather, one sector was found to contribute the highest loads of copper, zinc, and TDS. During wet weather, the other sector was found to contribute some of the highest loads of bacteria, zinc, lead, and TSS. Management of land use activities in these sectors should be the focus of any comprehensive load reduction strategies. Wet weather bacteria loads from individual land uses indicated that there were no significant differences between different land uses with flows merging and combining throughout the drainage areas. There was some indication that higher loads were attributable to transportation corridors, commercial areas, and industrial land uses. Dry weather bacteria loads were higher in residential and commercial areas with specific activities identified, particularly poorly maintained dumpsters and catch basins. Over-irrigation was a key transport mechanism that was prominent in commercial and industrial areas.

City of San Diego Studies

Through four studies performed by the City of San Diego (*City of San Diego, 2010, Tecolote Creek Microbial Source Tracking Summary, Phases I, II, and III; City of San Diego, 2010, San Diego River Source Tracking Investigation – Phase I; and, City of San Diego, 2009, Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek by Weston Solutions Inc.; San Diego County Enterococcus Regrowth Study by Southern California Coastal Water Research Project (SCCWRP)*), it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates regrowth in catch basins is a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[1], was found to provide both a bacteria transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishi et al., 2007; Yamahara et al., 2009).

Using the microbial source tracking data from the above previous studies, the next logical step is to prepare a workplan for a quantitative microbial risk assessment (QMRA) study and create site specific objectives (SSOs) for bacteria concentrations in Tecolote Creek. The City will initiate this study in FY 2013, which will involve multiple stakeholders including the Regional Board and EPA.

Also in response to the previous studies in Tecolote Creek, the City will conduct a high and low flow suspension study. This study will examine the hydrology of Tecolote Creek in order to determine whether the recreational water contact beneficial use is supported during times of low flow (e.g., water is too shallow for wading) or high flow (e.g., flow and velocity are too high and unsafe for wading).

[1] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

Section 3 Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Municipal Permit. The Watershed Activity Summary Sheets for all watershed water quality and education activities implemented during this reporting period are included in Appendix A.

3.1 Watershed Water Quality Activities

Table 3-1 presents the 24 water quality activities and special studies reported on in FY 2012, including six activities in implementation that are actively reducing loads and/or abating sources. Two activities were cancelled, two activities are on-hold, and one activity was combined with another existing activity. The remaining 13 are in various stages of implementation. Refer to Appendix A for details regarding each activity's anticipated implementation schedule. Progress on each watershed activity has been described in Appendix A via the standardized regional template and identifies what was accomplished during the reporting period as well as how it pertains to WMA's High Priority Water Quality Problems.

3.2 Watershed Education Activities

The City recognizes educational programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Table 3-2 below lists the three education activities reported on in FY 2012. Two of the activities have actively increased awareness and/or changed behaviors of the public during the reporting period. One education activity has not yet been assessed and is currently in the implementation stage. Refer to Appendix A for details regarding an activity's anticipated implementation schedule.

Think Blue is the City's storm water education program, and is managed by City's Education and Outreach group. *Think Blue* is a multi-faceted effort which encompasses education and outreach to a variety of audiences. *Think Blue* conducts activities on a jurisdictional, watershed and regional basis.

Table 3-1. Watershed Water Quality Activities

ID Number	Activity	Pollutant Categories										Activity Type					Schedule
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2012
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X			I A
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X			I A
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X			X	X				X				X			P
MB-1014	Kellogg Park Green Lot Retrofit Project	X			X	X				X				X			P I
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X			P
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X								X	X			X			P
MB-1017	Infiltration BMP Retrofit #2**	X			X	X								X			Reported as MB-1015
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Diversion	X			X	X					X			X			P
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X									X			X	X		I A
MB-1022	Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X			P
MB-1023	La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X			CANCELLED
MB-1027	Targeted Catch Basin Cleaning Study	X			X	X				X	X			X			I A
MB-1029	Rainwater Harvesting Rebate Pilot Program	X		X	X	X	X	X	X	X				X		X	I A
MB-1030	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	X									X			X			P I A
MB-2004	Genesee Commercial CBSM Efforts	X					X						X	X		X	CANCELLED
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X	X	X					X					X	No longer reporting.
MB-2009	Mission Bay Focused Outreach	X			X						X					X	I
MB-2011	San Diego Crew Classic	X					X				X					X	I
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X	P I
MB-3009	La Jolla Shores ASBS Compliance Monitoring				X			X	X			X					I
MB-3010	Bioassessment Monitoring of the Tecolote Creek Watershed	X			X	X						X					On hold
MB-3011	Tecolote Creek Microbial Source Tracking Study	X			X	X						X					On hold
MB-3012	La Jolla ASBS Wet Weather Receiving Water Evaluation of the Devil's Slide Area	X	X		X	X	X	X	X	X		X					P I
MB-3013	La Jolla ASBS Bioaccumulation Study	X	X		X	X	X	X	X	X		X					P I

* High Priority Pollutants

**This project is now being reported as MB-1015 Mt. Abernathy Green Street Retrofit.

Activity Sheet ID Numbers highlighted in red are newly reported activities.

P= Planning I= Implementation A = Assessment

Table 3-2. Watershed Education Activities

ID Number	Activity	Pollutant Categories										Activity Type					FY
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	2012
MB-2009	Mission Bay Focused Outreach	X			X						X					X	IA
MB-2011	San Diego Crew Classic	X					X				X					X	IA
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X	P I

3.3 Public Participation Activities

The City will continue to actively encourage the participation and input of diverse stakeholders in the development, implementation and assessment of the WURMP. Historically, stakeholders have participated regularly in activity planning and implementation efforts via formal and informal discussions and meetings at the City or stakeholder locales. Because the City is the only Copermittee within the WMA, internal and stakeholder meetings are held on an ad-hoc basis. The City values its strong relationships with stakeholders and will continue to use this informal participation as the foundation of its collaborative efforts in conjunction with the more formal participation mechanisms described in the following sections.

Sections 3.3.1 – 3.3.5 broadly outline the public participation strategy that the City is pursuing to encourage stakeholder engagement in the WURMP.

Specific watershed education activities that involve general public participation, which include trash cleanup sponsorships and focused outreach, are described below and in Appendix A.

3.3.1 Non-Governmental Organization Engagement

The City continues to engage non-governmental organizations (NGOs) active in the WMA in the development, implementation and assessment of the WURMP through a variety of means, including, but not limited to:

- Entering into agreements with NGOs to implement activities, such as trash/debris cleanup sponsorships, creation and distribution of education materials, workshop facilitation, research, community events, and presentations.
- Inviting NGO representatives to the City and sending City representatives to NGO meetings to discuss urban runoff pollution prevention efforts, share input, and identify opportunities for coordination. The City meets with Coastkeeper and I Love A Clean San Diego regularly to discuss strategic planning and City-wide issues including those that may affect the WMA. The City meets with other NGOs on an ad-hoc basis.
- Partnering with NGOs as appropriate in advocating legislation protective of water quality. The City assisted Sustainable Conservation in FY 2010 with a sponsorship to

advance the Brake Pad Partnership's work in the reduction/elimination of copper in automotive brake pads through legislation that was ultimately passed in September 2010.

- Partnering with NGOs as appropriate to complete community improvement, water quality and Low Impact Development (LID) projects. The City works with UCSD and the Scripps Institution of Oceanography in the ASBS via an Integrated Watershed Management Plan (IWMP) that has qualified for funding under several state and federal grants.

3.3.2 Community Planning Groups and Established Stakeholder Meetings

The City uses meetings hosted and established by various stakeholder groups, including Community Planning Groups, the La Jolla Shores Association and the Mission Bay Park Committee, to present specific watershed projects and solicit public participation and feedback. In FY 2012, the City presented the La Jolla Shores ASBS Low Flow Diversions, Mt. Abernathy Green Street Retrofit, and Bannock Avenue Streetscape Enhancement and Bacteria Treatment Projects to two community planning groups to alert the community of impacts, location, and timing for construction of these projects. In addition, the City held multiple community meetings regarding the Avenida de la Playa Infrastructure Replacement and Pump Station N Retrofits Projects to the La Jolla Construction Mitigation Advisory Group and Women's Club, respectively. Public feedback was then incorporated as appropriate.

The City actively attends the quarterly meetings of the Open Space Canyons Advisory Committee, established by City Council Policy to address open space canyons issues including those pertaining to storm water and urban runoff. The City also actively attends the Regulatory Workgroup of the San Diego Integrated Regional Water Management (IRWM) Program to provide input on how the IRWM Program might collaborate with the Regional Board on issues and the Integrated Flood Management Workgroup, which encourages a watershed approach to allow for flood control strategies that can address "beneficial uses" as well as watershed functions. The City will continue to use established stakeholder groups to engage the public in the WURMP and specific watershed activities as needed, especially regarding project implementation.

3.3.3 Project Clean Water

Project Clean Water (http://www.projectcleanwater.org), which was initiated in July 2000 by the Copermittees, established a framework for the broad-based and collaborative development of solutions to local water quality problems. In addition to general information regarding Project Clean Water, specific contact details are listed for each watershed, encouraging members of the public to contact representatives for information. It is the eventual goal of Project Clean Water to establish this site as a centralized source of water quality information for the San Diego region. The *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) and annual reports are placed on the website to allow stakeholders to view the documents and submit comments. The City continues to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as it continues to implement the WURMP.

3.3.4 Think Blue

The City maintains the *Think Blue* website (http://www.sandiego.gov/thinkblue/) as a public participation mechanism to provide education and outreach regarding storm water issues. The website is a resource to educate residents and businesses on pollution prevention solutions, and to assist them in being compliant with urban runoff regulations. Brochures, guidebooks and other informational materials are available online in both English and Spanish. The City also posts the *Mission Bay and La Jolla Watershed Urban Runoff Management Plan* (March 2008) on the City's website (http://www.sandiego.gov/stormwater/plansreports/wurmp.shtml), as well as various reports and documents to provide stakeholders the opportunity to review and comment. In addition, solicitations for public participation in meetings and outreach events are posted on the website. The City continues to use the website as a mechanism to encourage stakeholder participation in the development and implementation of the WURMP.

3.3.5 City Council and Council Committee Meetings

The City's Storm Water Division and the Engineering & Capital Projects Department, working on storm water pollution prevention projects, presented items to the San Diego City Council and the Council's Natural Resources and Culture Committee throughout FY 2012. City Council and Committee meetings are open to the public and are forums where the public is encouraged to comment on items being presented. During FY 2012, presentations on two watershed capital improvement projects occurred; specifically, the La Jolla Shores ASBS Low Flow Diversions Advertising and Grant Funds Appropriation and the Kellogg Park Green Lot Retrofit Project. Presentations included a brief background on the City's mission as well as specifics associated with the item being presented. In addition, City staff met a minimum of 12 times with Council District 1 representatives to address specific project concerns. In total, the City appeared and/or presented three times at the City Council meetings, inviting public participation and comment.

3.4 Collaborative Land-Use Planning Efforts

The City is divided into various politically recognized communities, each with its own community plan prepared by the City Planning & Community Investment Department that implements the planning policies in the City's General Plan. The WMA encompasses nine communities: Linda Vista, Clairemont Mesa, Kearny Mesa, Mission Beach, Pacific Beach, La Jolla, University City, Mission Bay Park, and MCAS Miramar. Of these, seven have community plans (Mission Bay Park and MCAS Miramar are covered under other planning documents). Each community plan is updated periodically to reflect changes in the community, as well as provide fresh direction regarding growth and development. For example, the California Coastal Commission approved the La Jolla Community Plan update in FY 2004, and City staff began implementation in FY 2005. The La Jolla Community Plan includes extensive storm water policies pertaining to coastal bluffs and steep hills.

The City will use the community plan update process as needed to incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the plans to address special concerns identified for the WMA. Updates to the community plans will be primarily reported in the City's Jurisdictional Urban Runoff Management Program (JURMP) due to their general nature and close relationship with the General Plan. However, highlights will

be provided in the Annual Report as appropriate. In FY 2012 no updates occurred to community plans with the WMA.

Of significant note, City staff has undertaken efforts to make the connections between land use planning and improvements/protection of water resources more clear to City staff involved in current and long range planning for the City. Opportunities for encouraging low impact development (LID) friendly planning have been identified as part of a multi-year LID Regulatory Barriers and Solutions Project that City staff initiated in FY 2010. The opportunities identified will also be considered during the development and implementation of Comprehensive Load Reduction Plans, required under the Bacteria TMDL.

During FY 2012, the City completed the draft LID Design Manual. It is anticipated that the LID manual requirements will be published and available on the City's website in FY 2013 to assist the public in meeting storm water requirements. Further, the City plans to have staff apply the draft LID Design Manual recommendations to City projects to obtain staff's feedback in the trial implementation of the draft LID Design Manual.

3.5 Updated 5-Year Strategic Plan

The WURMP's five-year strategic plan is assessed annually and has been updated to reflect the current status of watershed activities and modifications to previous versions of the strategic plan.

3.5.1 Five-Year Strategic Plan and New Watershed Activities

In spring 2006, the City initiated efforts to proactively address present and anticipated TMDL, ASBS protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the Strategic Plan. Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the WMAs within the City's jurisdiction and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regard to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various WURMPs that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific watershed focus. Because these are so conceptual in nature,

the City does not report on them as specific watershed activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in Table 3-3 below, as are all activities currently being implemented over a six year period in the WMA. New activities are indicated in red text. Activities that have been completed in years past and are no longer reported are in gray text. Details on each activity can be found in the activity summary sheets located in Appendix A.

3.5.2 WURMP Program Revision

New activities initiated in FY 2012 include: 1) MB-1030 Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship; 2) MB-3012 La Jolla ASBS Wet Weather Receiving Water Evaluation of Devil's Slide Area; and 3) MB-3013 La Jolla ASBS Bioaccumulation Study. The City is continuously evaluating activities implemented under this WURMP as well as activities under other WURMPs to improve its overall storm water program.

Additionally, the City is currently working with other Copermittees on the development of a method to use jurisdictional and regional data at the watershed level with the goal of better understanding and assessing the water quality problems, sources, and actions that can/are taken to improve water quality.

Table 3-3. Updated Five Year Strategic Plan.

ID Number	Activity	Pollutant										Activity Type					Schedule					
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY2013
MB-1001	Alpha Project Trash Cleanups	X									X			X			I A	Activity is complete and no longer reported.				
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A	I A
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X									X			X			I A	I A	I A	I A	I A	I A
MB-1004	Targeted Animal-Related Facility Inspections**	X			X	X							X	X		X	P I A	Inspections are combined into the Geographically Based Inspections activity MB-1006				
MB-1005	Mission Bay Targeted Automotive Facility Inspections **				X								X	X		X	P I A	P I A	IA	Complete		
MB-1006	Geographically Based Business Property and Facility Inspections	X			X	X							X	X		X	P I A	P I A	P I A	Complete		
MB-1007	Targeted Municipal Facility Inspections	X			X	X							X	X		X	P	No longer moving forward under the WURMP				
MB-1008	Targeted Residential Activity Characterization	X			X	X							X	X		X	P	Reported as MB-2010				
MB-1009	Targeted Restaurant Facility Inspections **	X			X	X							X	X		X	P I A	Inspections are combined into the Geographically Based Inspections activity MB-1006				
MB-1010	Aggressive Street Sweeping				X						X		X	X			P	I A	I A	Complete		
MB-1011	Municipal Rain Barrel Installation and Downspout Disconnect Project	X			X	X	X		X	X				X			P	I A	IA	Complete		
MB-1012	Osler Street Hydrodynamic Separator Installation Project	X								X	X			X			P	P	P	CANCELLED		
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X			X	X				X				X			P	P	P	P	P	P
MB-1014	Kellogg Park Green Lot Retrofit Project	X			X	X				X				X			P	P	P	P	P I	I A
MB-1015	Mt. Abernathy Green Street Retrofit	X			X	X								X			P	P	P	P	P	P
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X								X	X			X			P	P	P	P	P	P
MB-1017	Infiltration BMP Retrofit #2**	X			X	X								X			P	P	P	On -hold	Reported as MB-1015	
MB-1018	Beach Area Low Flow Storm Drain Diversion Project, Phase III	X			X	X								X			P I	I	IA	Complete		
MB-1019	South Shores RV	X												X	X		I	Activity is complete and no longer reported.				
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Diversion	X			X	X					X			X			P	P	P	P	P	P
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X									X			X	X		P	P	P	P I	I A	Complete
MB-1022	Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X					P	P	P	P
MB-1023	La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X				X								X					P	P	CANCELLED	
MB-1024	Median Sweeping Pilot Study				X									X				P	PIA	Complete		
MB-1025	Pet Waste Bag Dispenser Program	X												X					P	IA	Complete	
MB-1026	Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials				X										X				Legislation passed in 2010. Long-term improvements anticipated; the first milestone for reductions is 2021.			
MB-1027	Targeted Catch Basin Cleaning Study	X			X	X				X	X			X						P	I A	I A
MB-1028	Property-Based Watershed Inspections	X					X			X	X		X	X		X				P I A	Complete	
MB-1029	Rainwater Harvesting Rebate Pilot Program	X		X	X	X	X	X	X	X				X		X				P	I A	I A
MB-1030	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	X									X			X						P	P I A	I A
MB-2001	Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	X		X							X					X	I	I A	I A	No longer reporting.		
MB-2002	Mobile Advertising	X		X	X		X		X	X	X					X	I A	I A	Complete			
MB-2003	La Jolla Commercial CBSM Efforts	X									X		X	X		X	P I A	P I A	Complete			
MB-2004	Genesee Commercial CBSM Efforts	X					X						X	X		X	P	P	P	On-Hold	CANCELLED	
MB-2005	Mt. Abernathy LID Green Street Outreach	X		X	X	X					X					X	P	P	P	P	No longer reporting.	
MB-2006	Clean Construction Poster and Brochure Distribution	X			X	X				X						X	I	I	I	Complete		
MB-2007	Restaurant Best Management Practices Booklet Distribution	X														X	I	I	I	Complete		

ID Number	Activity	Pollutant										Activity Type					Schedule					
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY2013
MB-2008	Transit Shelter and Billboard Advertisements	X			X											X	P I	A	Study is complete and no longer reported.			
MB-2009	Mission Bay Focused Outreach	X			X						X					X		I	I	I	I A	I A
MB-2010	La Jolla Residential CBSM	X														X		I	I	Complete		
MB-2011	San Diego Crew Classic	X					X				X					X		I	I	I	I A	I A
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	X	X	X	X	X	X	X					X		P	P	P	P I	I
MB-3001	Tecolote Creek Bacterial Source Identification Study (Phase I)	X											X				I A	Study is complete and no longer reported.				
MB-3002	Tecolote Creek Bacterial Source Identification Study (Phase II)	X											X				P	I A	Study is complete and no longer reported.			
MB-3003	La Jolla Shores Integrated Coastal Watershed Management Plan											Planning Document					P	Plan is complete and no longer reported.				
MB-3004	La Jolla Shores Sediment Source Study									X			X				P I	I A	Study is complete and no longer reported.			
MB-3005	La Jolla Design Storm Study	X											X				P I	I A	Study is complete and no longer reported.			
MB-3006	Tecolote Creek Design Storm Study	X											X				P I	I A	Study is complete and no longer reported.			
MB-3007	Dry Weather Aerial Deposition Study (Phase II) 2009		X		X							X	X				P I	I A	Study is complete and no longer reported.			
MB-3008	City of San Diego Strategic Plan Implementation	All pollutants are strategically targeted.															Implemented through the activities listed here and through activities conceptually and tentatively planned for the future.					
MB-3009	La Jolla Shores ASBS Compliance Monitoring				X			X	X			X							I	I	I	I
MB-3010	Bioassessment Monitoring of the Tecolote Creek Watershed	X			X	X						X								On-Hold		
MB-3011	Tecolote Creek Microbial Source Tracking Study	X			X	X						X							I	On-Hold		
MB-3012	La Jolla ASBS Wet Weather Receiving Water Evaluation of the Devil's Slide Area	X	X		X	X	X	X	X	X		X									P I	I
MB-3013	La Jolla ASBS Bioaccumulation Study	X	X		X	X	X	X	X	X		X									P I	I

* High Priority Pollutants
**This project is now being reported as MB-1015 Mt. Abernathy Green Street Retrofit.

Activity Sheet ID Numbers highlighted in red are newly reported activities

Activity Sheet ID Numbers and Titles highlighted in gray are no longer being reported on
P= Planning I= Implementation A = Assessment

Section 4 Effectiveness Assessment

4.1 Assessment of Overall WURMP Effectiveness

The intent of this section is to assess the effectiveness of the WURMP as a whole, and the activities pursuant to its implementation and the requirements of the Municipal Permit.

4.1.1 Approach to Effectiveness Assessment

THE OVERALL PROGRAM GOAL OF THE MISSION BAY AND LA JOLLA WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM IS TO POSITIVELY AFFECT THE WATER QUALITY OF THE MISSION BAY AND LA JOLLA WATERSHED WHILE BALANCING ECONOMIC, SOCIAL, AND ENVIRONMENTAL CONSTRAINTS.

The City has identified the following objectives to meet this goal:

Implement the best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by:

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The City uses effectiveness assessment as part of an iterative feedback loop that incorporates planning, implementation and assessment as presented in the *Mission Bay & La Jolla Urban Runoff Management Plan* (March 2008). Achievement of the overall program goals and the effectiveness of the activities are assessed using an assessment framework developed by the Copermittees (*A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*, October 2003).

In addition to effectiveness assessment, the City believes that it is imperative to assess the efficiency, or the cost effectiveness, with which load reductions are obtained by both the individual activity and program as a whole. It is only through maximizing the efficiency of program efforts that urban runoff programs can sustainably maximize pollutant load reductions and achieve the ultimate goal—the protection and improvement of water quality in the region's creeks, rivers, beaches, and bays.

The City views the WURMP and JURMP as integrated components to the City's overall program. The City incorporates the WURMP, JURMP and other programs as needed to implement and comply with the Permit. Individual assessment of activities can be very challenging and may not always be feasible, particularly when analyzing changes to urban runoff discharges and receiving water quality. In these instances, assessment of program effectiveness incorporates the overlap of these programs.

4.1.2 Program Effectiveness using WURMP Objectives

Objective 1. Targeting sources/causes of identified priority water quality problems strategically

Sources of the identified High Priority Water Quality Problems (heavy metals, nutrients and bacteria) are discussed in Section 2.2, Pollutant Source Assessment. Of activities that progressed in FY 2012, seven of the water quality and education activities targeted sources of bacteria, one targeted heavy metals, one targeted bacteria and metals, two targeted bacteria and nutrients, and thirteen targeted all three of the High Priority Water Quality Problems. Of those activities that were in active implementation in FY 2012, five targeted bacteria, one targeted heavy metals and bacteria, and three targeted all High Priority Water Quality Problems. For example, the City's residential rebate program for rain barrels is designed to encourage homeowners to capture roof runoff during storm events. Capturing roof runoff prevents the water from entering the City's MS4 and is an important water conservation and pollutant reduction strategy the City is aggressively pursuing. See Table 4-1 below.

In addition to BMPs targeting specific pollutants, the City involves the development of BMPs that will address all three High Priority Water Quality Problems, in addition to the other non-high priority pollutants – essentially all pollutants would be addressed because flows would be targeted. These BMPs include low flow diversions and low impact development retrofits (infiltration and filtration).

Further, the City specifically addresses High Priority Water Quality Problems within the WMA via the JURMP, Regional Urban Runoff Management Plan (RURMP) and other programs in addition to the WURMP. For example, a number of activities in the JURMP and RURMP use education and outreach to target sources of nutrients by promoting environmentally friendly gardening practices [e.g., Integrated Pest Management (IPM)] to audiences, such as home gardeners.

Objective 2. Gathering data necessary to determine the efficiency of load reduction activities

The City has developed a process to collect and analyze this data, which is described in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008) and the City's *Strategic Plan* (November 2007). This process includes developing specific management questions and assessment mechanisms in the project planning stage in order to collect the necessary information about the activity once implementation and assessment are complete. Implementation involves collecting the data necessary to answer the management questions as the activity is in progress. Additional details on the City's assessment strategy can be found in the two aforementioned documents.

The majority of the load reduction activities that have been planned are still in development. While the City plans to gather the necessary data, and in several cases has initiated efforts to provide baseline data for specific project sites, many load reduction activities are not far enough along for efficiency analysis to be completed. Activities that do have sufficient data for this

Table 4-1. Activities Targeting High Priority Water Quality Problems (Pollutants)

ID Number	Activity	Pollutant Categories			Schedule	
		Bacteria*	Heavy Metals*	Nutrients*	FY 2012	FY2013
MB-1002	ILACSD Trash Cleanup Sponsorship	X			I A	I A
MB-1003	SDCK Coastal Cleanup Day Sponsorship	X			I A	I A
MB-1013	La Jolla Shores ASBS Pollution Control Program, Low Flow Diversions Phase IV	X	X	X	P	P
MB-1014	Kellogg Park Green Lot Retrofit Project	X	X	X	P I	I A
MB-1015	Mt. Abernathy Green Street Retrofit	X	X	X	P	P
MB-1016	Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project	X			P	P
MB-1017	Infiltration BMP Retrofit #2**	X	X	X	Reported as MB-1015	
MB-1020	Avenida De La Playa Storm Drain Replacement and Low Flow Diversion	X	X	X	P	P
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	X			I A	Complete
MB-1022	Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X		X	P	P
MB-1023	La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	X		X	CANCELLED	
MB-1027	Targeted Catch Basin Cleaning Study	X	X	X	I A	I A
MB-1029	Rainwater Harvesting Rebate Pilot Program	X	X	X	I A	I A
MB-1030	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	X			P I A	I A
MB-2004	Genesee Commercial CBSM Efforts	X			CANCELLED	
MB-2005	Mt. Abernathy LID Green Street Outreach	X	X	X	No longer reporting	
MB-2009	Mission Bay Focused Outreach	X	X		I A	I A
MB-2011	San Diego Crew Classic	X			I A	I A
MB-2012	Mission Bay and La Jolla Watershed Brochure	X	X	X	P I	I
MB-3009	La Jolla Shores ASBS Compliance Monitoring		X		I	I
MB-3010	Bioassessment Monitoring of the Tecolote Creek Watershed	X	X	X	On-Hold	
MB-3011	Tecolote Creek Microbial Source Tracking Study	X	X	X	On-Hold	
MB-3012	La Jolla ASBS Wet Weather Receiving Water Evaluation of the Devil's Slide Area	X	X	X	P I	I
MB-3013	La Jolla ASBS Bioaccumulation Study	X	X	X	P I	I

* High Priority Pollutants

**This project is now being reported as MB-1015 Mt. Abernathy Green Street Retrofit.

Activity Sheet ID numbers highlighted in red are newly reported activities.

analysis include street sweeping and rain barrel activities, both reported on in previous years. See Activity Summary Sheets MB-1005, MB-1006, MB-1010, MB-1011, and MB-1024 in past annual reports for details on the assessment outcomes of these projects.

The City also implemented the first phase of a two year pilot study during the reporting period to assess the effectiveness of its catch basin cleaning practices and collected preliminary data that can be used for assessment purposes. This pilot study will continue in FY 2013 and will include a full assessment and report.

Objective 3. Optimizing the efficiency of activities in addressing priority water quality problems

The optimization of activities is the key to developing a comprehensive program that utilizes resources in the most effective manner in order to maximize improvements to water quality. Specifically, individual activities are optimized through an iterative feedback process. For example, two inspections programs within the WMA have been implemented each year with modifications based on what was learned during the previous year. The lessons learned from the two programs resulted in a property based inspection program implemented in FY 2011. Additionally, the Targeted Aggressive Street Sweeping Pilot Program tested different sweeping frequencies and sweeper technologies in an effort to optimize the City's overall street sweeping program. A median sweeping and sweeper speed study were also planned and conducted based on recommendations from the previous study. Recommendations from these studies have already resulted in program changes, such as the reallocation of sweeper technology to take advantage of their strengths and increased public outreach associated with communities that want more sweeping. The City plans to use its assessment of the ongoing catch basin cleaning pilot study to recommend potential programmatic changes on how to conduct catch basin inlet cleanings in the most efficient manner possible.

Activity optimization is ongoing and will continue to be evaluated each year based on assessment milestones. More information regarding the assessment of individual activities can be found within each activity summary sheet in Appendix A.

4.2 Effectiveness Assessment using Targeted Outcome Levels

Section 4.2 describes how the activities conducted during FY 2012 relate to the hierarchy of targeted outcomes as required by Section I.2.a of the Municipal Permit. This section is presented by outcome level to illustrate the way in which all of the activities implemented during FY 2012 work together within the WMA to help increase storm water awareness, positively change behaviors to reduce load generating activities, reduce runoff and pollutant loads, and ultimately improve the quality of receiving waters.

Table 4-2 presents a summary of the activities in active implementation during FY 2012, and how they relate to the six targeted assessment outcomes. Current activity status is indicated by completed (C), ongoing (O), and new (N) activities (Level 1, Permit Compliance). During FY 2012, the City made progress on or implemented a total of 24 water quality, education and monitoring activities. Of these activities, eight achieved, or are assumed to have achieved, a minimum of one of the outcome levels described below. Furthermore, five activities resulted in a measurable pollutant load reduction or source abatement (Level 4), one is assumed to have resulted in a load reduction but data was not tracked, and six resulted in changes to public knowledge/awareness and/or behavior (Levels 2 and 3). The City focused on activities intended

to reduce bacteria (Total and Fecal coliform), nutrients and metals (copper, lead and zinc) for those areas of the WMA that were determined to have the highest priority. In addition, the City also focused activity selection on the regional trash issue.

Table 4-2. Summary Table of FY 2012 WURMP Activities Linked with Targeted Outcomes

ID Number	Activity Name	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
		Permit Compliance	Awareness	Behavior Change	Load Reduction/Source Abatement	Discharge Quality	Water Quality
MB-1002	ILACSD Trash Cleanup Sponsorship	**O**	**X***		**X**		
MB-1003	SDCK Trash Cleanup Sponsorship	**O**	**X***		**X**		
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	**O**			**X****		
MB-1027	Targeted Catch Basin Cleaning Study	**O**			**X**		
MB-1029	Rainwater Harvesting Rebate Pilot Program	**O**	**X**	**X**	**X**		
MB-1030	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	**N**	**X***		**X**		
MB-2009	Mission Bay Focused Outreach	**O**	**X**	**X**			
MB-2011	Crew Classic	**O**	**X**	**X**			

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness. Additionally for trash cleanups, behavior change can be assumed with first-time participants; however, this data is not tracked.
**Data not tracked, but an improvement is assumed.

4.2.1 Level 1: Compliance with Activity-Based Permit Requirements

Within the WMA, the City fulfilled all the WURMP requirements of the Permit during the FY 2012 reporting period, and therefore is in compliance. Table 4-3 relates the activities conducted by the City to the requirements specified in the Permit.

Table 4-3. Level 1 Permit Compliance

Permit Requirements (§J.3.b.2)	Activities	Status
(a) A description of all activities conducted by the watershed Copermittees	All activities – see activity summary sheets in Appendix A	Complete
(b) Any updates to watershed map	None this reporting period	N/A
(c) Updated assessment of the WMA's water quality data and identification of High Priority Water Quality Problems	San Diego County Municipal Copermittees 2011-2012 Urban Runoff Monitoring Report and Water Quality Assessment Section 2 of this report	Complete
(d) Identification of the likely sources, pollutant discharges and other factors causing the water quality problems	Section 2 of this report See activity summary sheets pertaining to bacteria and other source identification studies (Appendix A)	Complete
(e) Updated list of potential Watershed Water	See Section 3, Table 3-3	Complete

Permit Requirements (§J.3.b.2)	Activities	Status
Quality Activities		
(f) Identification and description of Watershed Water Quality Activities implemented during reporting period	See Activity Summary Sheets in Appendix A; MB-1002, 1003,1021, 1027, & 1029, 1030, 3009, 3012, 3013	Complete
(g) Updated list of potential Watershed Education Activities	See Section 3, Table 3-3	Complete
(h) Identification and description of Watershed Education Activities implemented during reporting period	See Activity Summary Sheets in Appendix A; MB- 2009, 2011, & 2012	Complete
(i) Public participation	See Section 3.3	Complete
(j) Description of Copermittee collaboration efforts	No other agencies are cited in the Municipal Permit as Copermittees. However, the City worked with other agencies not cited as Copermittees, such as UCSD and SIO.	Complete
(k) A description of efforts implemented to encourage collaborative, watershed based, land-use planning.	See Section 3.4	Complete
(l) Description of all TMDL activities implemented	See Section 4.4	Complete
(m) Effectiveness Assessment of the WURMP	This section fulfills this requirement.	Complete

4.2.2 Levels 2 and 3: Changes in Knowledge / Awareness and Behavioral Change

As summarized in Table 4-4, the City implemented seven activities during FY 2012 that resulted in increased awareness of water quality issues (Level 2) and three activities that resulted in both increased awareness and reported behavior change (Level 3). The achievement of these levels of effectiveness was measured through surveys, amount of education materials distributed, and number of participants.

Individual activity effectiveness assessment measurements are presented in the activity summary sheets in Appendix A. FY 2012 targeted outcome results for these activities are presented in Table 4-2. These activities provided education on general watershed concepts, as well as information on specific priority pollutants within the WMA, which increased the public's level of knowledge and awareness. In addition, while some of the water quality and source identification activities listed in Section 3 were not Education Activities in and of themselves; those activities did include public education and outreach components. Nearly all activities included the distribution of informational fact sheets/flyers, web site updates, and reports of findings to the target audiences (residents, businesses and environmental groups), all of which contribute to the overall success of the program.

The results of the 2012 annual random-digit dial telephone survey provided assessment data that helped the City adjust, develop and implement outreach activities. Key findings of the 2012 survey include: 51% of all San Diego residents have heard of *Think Blue*, down slightly from 2011 but still the highest percentage of awareness in any other year since 2004. Additionally, 51% of residents know that storm water is not treated, which is also down from 57% in 2011. While awareness numbers have declined slightly, those who have seen or heard the *Think Blue* communications are more likely to know that storm water is not treated and to change their behavior to prevent pollution-demonstrating that exposure to *Think Blue* messages continues to succeed in bringing about increased knowledge of storm water issues and desired behavioral change. Specific to addressing and assessing the High Priority Water Quality Problems within

the WMA, when asked what changes the public had made to prevent pollution, slightly higher proportions than in 2011 mentioned taking their car to a carwash (24% up from 19%), picking up trash and litter (23% up from 18%) and properly disposing of used motor oil (14% up from 10%).

Think Blue also conducts assessments at community events, via several versions of a short 5-6 question storm water survey card. In FY 2012, *Think Blue* continued to utilize three survey cards focused on specific pollutants, including pet waste, automotive waste and litter, to add to the general event survey card previously used. *Think Blue* event survey cards were collected from booth visitors at a variety of events in the WMA, such as San Diego Crew Classic (MB-2011).

A summary of survey results are included in Table 4-4. More details can be found in the activity summary sheets in Appendix A.

Based on implementation of the activity information provided in Appendix A, the *2012 San Diego Storm Water Survey* results, and the Event Survey results reported for FY 2012, it can be deduced that the City's efforts have had a positive effect on awareness, knowledge and behavior change relating to water quality in the WMA.

Table 4-4. Level 2 Change in Knowledge/Awareness and Level 3 Change in Behavior

ID Number	Activity Name	Priority Pollutants Addressed	Level 2 Awareness	Level 3 Behavior Change
MB-1002	ILACSD Trash Cleanup Sponsorship *	Trash, Bacteria	128 participants now more aware**	NA
MB-1003	SDCK Trash Cleanup Sponsorship*	Trash, Bacteria	95 participants now more aware**	NA
MB-1029	Rainwater Harvesting Rebate Pilot Program	Bacteria, Sediment, Nutrients, Metals, Pesticides, Oil & Grease, Organics, and Gross Pollutants	10 participants now more aware**	10 participants' behaviors changed.
MB-1030	Qualcomm Stadium Drop off Community Cleanup and Recycling Event Sponsorship	Trash, Bacteria	68,000 lbs. of trash removed 44,000 lbs of trash recycled	NA
MB-2009	Mission Bay Focused Outreach	Trash, Bacteria, Metals	187,146 impressions *** 1,742 outreach materials distributed	74% of individuals surveyed who reported engaging in a behavior that would prevent pollution
MB-2011	San Diego Crew Classic	Bacteria, Oil & Grease, Trash	15,000 attendees 340 surveys completed 482 outreach materials distributed	91% of survey participants reported a strong obligation not to litter, 87% reported they would pick up litter in their community.
MB-2012	Mission Bay and La Jolla Watershed Brochure	Bacteria, Heavy Metals, Nutrients, Gross Pollutants, Dissolved Minerals, Oil & Grease, Organics, Pesticides, Sediment, Trash	85 brochures distributed**	NA

*Primarily a Level 4 Load Reduction/Source Abatement Activity, but a component did involve public outreach/participation which increases knowledge and awareness. Additionally for trash cleanups, behavior change can be assumed with first-time participants; however, this data is not tracked and, therefore, is not included in this table.
**Assumed to contribute to overall program success, though the extent of each activity's contribution has not been measured
***Assumed increased level of awareness based on estimated total exposure for all three outreach events, Mobile Ad display, and the marinas outreach participants

4.2.3 Level 4: Load Reduction/Source Abatement

As shown in Table 4-5, the City implemented five activities that resulted in measurable pollutant load reductions or source abatement (Level 4), and one activity that can be reasonably assumed to reduce loads/abate sources. These activities were targeted primarily toward trash, bacteria, metals, and nutrients. At two cleanup events, 223 volunteers removed 14,383 pounds of debris

from the WMA. A third cleanup event that was initiated in FY 2012 removed 112,000 lbs. of debris from the entire City of San Diego. Although not tracked, it is reasonably assumed that a portion of the debris was from residents located in the WMA. The Rainwater Harvesting Rebate Pilot Program prevented approximately 2,160 gallons of water from entering the MS4. The inspections program which builds upon past inspection pilot programs over the years continues to show improvements in BMP compliance when studying facilities throughout the City. The dry weather diversions installed divert all dry weather flows, which typically contain numerous pollutants, from storm drains into the sanitary sewer system for treatment. Finally, the catch basin pilot study resulted in the removal of 132 lbs. of debris and sediment from the City's MS4. These efforts resulted in load reductions and/or source abatement of potential discharges of priority pollutants into receiving waters.

A previous activity involving financial and staff support from the City resulted in the passage of Senate Bill 346 which will reduce copper in brake pads from 10% to 0.5% by weight by 2025. Brake pads are a significant source of copper in regional waterways based on past studies that the City has conducted.

Table 4-5. Level 4 Load Reduction/Source Abatement

ID Number	Activity Name	Priority Pollutants Addressed	Level 4 Load Reduction/Source Abatement	
MB-1002	ILACSD Creek to Bay Cleanup Sponsorship	Trash, Bacteria	Trash/recycling removed	12,340 lbs
MB-1003	SDCK Coastal Cleanup Day Sponsorship	Trash, Bacteria	Trash/recycling removed	2,043 lbs
MB-1021	Mission Bay and Coastal Beaches Sewer Interceptor System Upgrades	Trash, Bacteria	Dry weather flows diverted; no additional data is tracked	
MB-1027	Targeted Catch Basin Cleaning Study	Bacteria, Trash, Sediment, Nutrients, Metals	Debris/sediment removed	132 lbs
MB-1029	Rainwater Harvesting Rebate Pilot Program	Bacteria, Sediment, Nutrients, Metals, Pesticides, Oil & Grease, Organics, and Gross Pollutants	Average rain barrel size installed: 60 gallon. Total rain barrel gallons rebated: 17,400*	10 participants' residential flows removed
MB-1030	Qualcomm Stadium Drop off Community Cleanup and Recycling Event Sponsorship	Trash, Bacteria	Trash/recycling removed	112,000 lbs*

*Data shown accounts for the entire City of San Diego and is not specific to the Mission Bay/La Jolla WMA

The City will continue tracking load reductions/source abatement and assessing watershed activity effectiveness in FY 2013 for both ongoing and new projects.

4.2.4 Level 5: Changes in Discharge Water Quality

The results from the 2011-2012 Annual Monitoring Report indicate that urban runoff water quality conditions remained similar to the conditions reported in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). A detailed assessment of discharge water quality will be conducted as part of the LTEA program which will compare findings over

the long term to the BLTEA. The LTEA program is anticipated to provide more conclusive results than any interim measurements can provide. However, the City believes that interim assessment is important to help identify those areas that may be improving or declining and should be of particular note during the LTEA. Therefore, the City has looked to its Coastal Storm Drain Monitoring (CSDM) Program to provide a snapshot loosely indicating any improvements that might be observed during the early stages of the program.

With the start of the new permit cycle in 2008, the CSDM Program for the City of San Diego grew tremendously. The City took a proactive approach and added 136 monitoring stations to the existing 12. This section analyzes water quality improvements over the past five monitoring years (2008-2012) as shown in Table 4-6 and Figure 4-1. In March 2010 the City began participating in Sample Frequency Reduction Criteria (SFRC), allowing the city the visit chronic dry sites on a bi-monthly basis. One hundred and five sites were added to SFRC in 2010. SFRC has allowed the City to focus resources on other water quality projects. The amount of sites visited per year can be compared to the amount of samples taken when the drains are flowing. That number is then used to determine how many exceeded storm drain action levels (storm drain action levels are established by the Copermittees). The 95th percentile observations of the most recent year's bacterial results were used to initiate storm drain re-sampling. From 2008 to 2012 a reduction in both the numbers of samples taken and the number of bacterial exceedances in the City's coastal storm drains has been observed possibly indicating that the City's storm water programs overall are having a positive influence on water quality. More information on action levels and the CSDM Program can be found in Appendix N of the 2011-2012 Annual Monitoring Report.

Three notable limitations of this program include: 1) samples are taken only when flow is observed, and therefore, results are only characteristic of those instances; 2) the analysis focuses only on bacterial indicators and does not allow for analysis of all pollutants; and 3) the coastal program is a limited set of outfalls. Despite these acknowledged limitations, the City will continue to use the CSDM Program to provide interim assessment.

In addition, it should be noted that the City will be measuring discharge water quality as part of the activity effectiveness assessments associated with several Capital Improvement Projects that are currently in the planning stages. Once the data is collected and results are known, the information will be used as part of this assessment.

Table 4-6. City of San Diego 2008-2012 Coastal Storm Drain Exceedances

Analyte	2008			2009			2010			2011			2012		
	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded	Number of Action Level Exceedances	Total Number of Samples	% of Samples that Exceeded
Total Coliforms	29	252	12	17	186	9	5	128	4	1	86	1	3	97	3
Fecal Coliforms	18	247	7	2	182	1	3	127	2	2	86	2	5	101	5
Enterococcus	30	252	12	13	190	7	8	135	6	7	90	7	6	102	6

Figure 4-1. Coastal Storm Drains 2008 - 2012

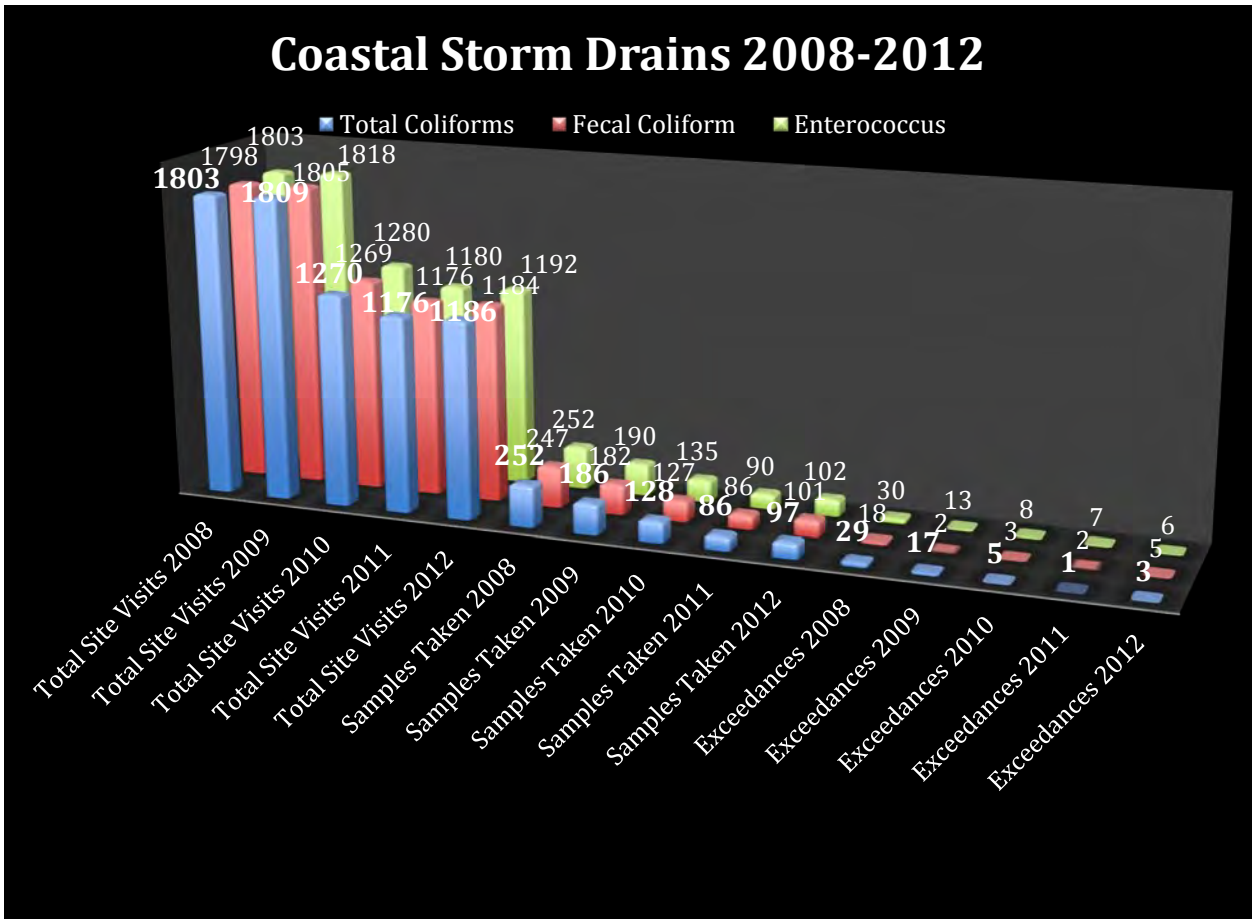

[1]Sample totals may be different due to exceedances per analyte. A routine sample is collected and analyzed for Total, fecal, and enterococcus. If one analyte exceeds, a resample is collected for that analyte only.

4.2.5 Level 6: Changes in Receiving Water Quality & Assessment Summary

A Level 6 assessment involves the evaluation of changes in water quality with respect to established regulatory benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. The Copermittees conducted a LTEA and submitted it to the Regional Board in June 2011. As part of the LTEA analysis there were some receiving water trends (based on available data) that were identified, where applicable and appropriate (See Table 4-7 below). While there is no direct linkage to Copermittee watershed activities at this time, the trends are important to note and more detailed information can be found in the report, specifically Section 7 which covers the Mission Bay and La Jolla Watershed (Weston, MOE, LWA June 2011).

Table 4-7. Constituent Trends Identified in the 2005-2010 LTEA (June 2011)

Location	Increasing Trends by Priority Constituent	Decreasing Trends by Priority Constituent
Tecolote Creek MLS	Total Hardness Enterococci	Diazinon Total Suspended Solids
Mission Bay TWAS- 1 (Rose Creek)	No trends identified	No trends identified
Mission Bay TWAS-2 (Tecolote Creek)	No trends identified	No trends identified

4.3 Optional Efficiency Assessment

Although not specifically required by the Permit, but in accordance with the Strategic Plan, the City selects WURMP activities to assess for cost efficiency. As activities are implemented and assessed, the efficiency rating for each activity is entered into an activity efficiency ratings table as described in the *Mission Bay & La Jolla Watershed Urban Runoff Management Plan* (March 2008). The goal of this long-term effort is to develop a tool to assist the City in selecting the most cost effective suite of activities for improving water quality. Phase I of the Strategic Plan involves development of this tool, while Phase II and beyond involves improving and increasing implementation efforts.

The City initiated this effort in FY 2008, and cost data associated with all activities is tracked and reported in the activity summary sheets in Appendix A. Results are not conclusive at this time as many of the activities initiated will be tracked over multiple years. For example, the City implemented the first phase of a two-year pilot study during the reporting period to assess the effectiveness of its catch basin cleaning practices. The City plans to use the future assessment of this pilot study pilot study to recommend potential programmatic changes on how to conduct catch basin inlet cleanings in the most efficient manner possible. Until that study is complete, only trash cleanups, street sweeping, and rain barrel activities provide data that can be used to make preliminary determinations regarding cost efficiency. However, the City plans to compare individual activities cost efficiencies against each other as well as the quantity of each of these activities needed to effect adequate improvements to water quality as part of its TMDL planning

efforts associated with the Bacteria TMDL. Therefore, the City will continue to analyze cost associated with activities through this planning effort.

4.4 Assessment of TMDL BMP Implementation Plan Effectiveness

The Bacteria TMDL took effect in April 2011 after it was adopted by the Regional Board, the State Board and subsequently approved by the State Office of Administrative Law. The required load reduction plans were developed for both Tecolote Creek HA and the Scripps HA (Pacific Ocean Shoreline), and are described in more detail below.

4.4.1 Comprehensive Load Reduction Plans

In FY 2012 the City, in collaboration with Caltrans, developed a Comprehensive Load Reduction Plan (CLRP) for the Tecolote HA. The City also developed a CLRP for the Scripps HA. The CLRPs were submitted to the Regional Board in June 2012. These CLRPs represent integrated water quality plans combining multiple permit-based and voluntary strategies and best management practices (BMPs) into a comprehensive approach for achieving compliance with the Bacteria TMDL which was approved by the Regional Board and took effect April 4, 2011. The City will use these CLRPs to develop watershed implementation programs, evaluate their effectiveness, and make adjustments over a twenty-year implementation period (through 2031).

The CLRPs are compliance plans with suites of potential non-structural and structural BMPs that may be implemented. These BMPs were developed and selected based on their applicability to the specific pollutants, impairments and conditions addressed; and the specific land use conditions and availability of land in the watersheds. By incorporating a comprehensive approach to all of the pollutants, impairments and concerns, the CLRPs are intended to improve the efficiency and effectiveness of BMP planning, and as a result, reduce the overall cost of implementation and compliance monitoring.

Each activity identified in the CLRPs has its own specific implementation schedule. However, the first scheduled activities will be implemented FY 2014 and will continue through 2031. Each activity will be assessed independently, and programmatic assessment will occur annually in this section of future years' WURMP annual reports.

Section 5 Conclusions and Recommendations

5.1 Conclusions

The City has taken the appropriate actions to meet all the Permit requirements through the WURMP as detailed in this Annual Report and is, therefore, in compliance with the Permit.

In FY 2012, the City allocated significant resources and made progress on 24 activities, five that resulted in measurable pollutant load reductions or source abatement (Level 4) and one that can be reasonably assumed to reduce loads. Seven activities resulted in increased awareness associated with water quality issues and/or reported behavioral changes.

Collectively, all projects implemented, initiated, and reported in FY 2012 are anticipated to improve water quality by increasing the City's understanding of the WMA's water quality issues, improving the public's knowledge of urban runoff issues and effecting positive behavior changes, and reducing and/or treating pollutant loads before their ultimate discharge into receiving water bodies.

As detailed in the activity summary sheets included in Appendix A, activities implemented in the WMA, including the distribution of educational materials and sponsorship of trash cleanups, resulted in 14,383 pounds of trash being removed from waterways. A new cleanup activity collected approximately 122,000 lbs. of debris from San Diego City limits, of which a portion is assumed to have been collected from the WMA. The Targeted Catch Basin Cleaning Study removed 132 lbs. of debris/sediment from the City's MS4. Approximately 2,160 gallons of water were diverted from the MS4 due to being captured in rain barrels installed by residents in the WMA. The City also engaged over 200,000 members of the public through a focused outreach program in Mission Bay as well as attendance at the San Diego Crew Classic event. Surveys administered during the Mission Bay Focused Outreach showed that 74% of individuals reported engaging in a behavior that would prevent pollution. Additionally, the residential rebate program for rain barrels during the reporting period continued to encourage homeowners to capture roof runoff during storm events.

The City continued to collaborate with Scripps Institution of Oceanography, UCSD and Coastkeeper in implementing the *La Jolla Shores Coastal Watershed Management Plan* for the ASBS drainage area, including the implementation of dry weather diversions under a grant program and special monitoring of the ASBS. These efforts will benefit the WMA by providing data and water quality activity recommendations for future implementation efforts.

Based upon the Water Quality Assessment in Section 2, bacteria and nutrients remain the High Priority Water Quality Problems for the WMA. However, FY 2012 monitoring data shows that metals were not observed at historically high levels. In contrast, increases in the levels of pesticides, specifically, Bifenthrin and Permethrin, were observed.

The City believes that collectively all of its activities are positively influencing water quality. Moreover, the City not only met the minimum requirements of the Municipal Permit, but implemented additional activities. The City also created a Strategic Plan to assess the efficiency of these activities in order to best allocate available resources in future years for the purpose of maximizing water quality improvements.

Finally, the City developed CLRPs for both the Tecolote Creek and the Scripps HAs in response to the Bacteria TMDL. These CLRPs represent integrated water quality plans combining multiple permit-based and voluntary strategies and BMPs into a comprehensive approach for achieving compliance with the TMDL.

5.2 Recommendations

The Permit was adopted in 2007 by the Regional Board with a cycle of five years. With the next permit, and the report of waste discharge process, the Copermittees are moving towards an adaptive management process in all watersheds and also working towards integrating the various regulatory programs into a single program for efficiency.

As in previous years under the current Permit, the City recommends continuing the following strategies for increasing the level of understanding of pollutants and their sources to help focus efforts:

1. Refine and Improve Water Quality Activities. The City is continually developing and refining its list of watershed activities to more efficiently protect and improve water quality. The City intends to use the best available data to refine and improve its activities; however, implementation of activities is ultimately subject to available funding. Modifications based on the results of water quality and effectiveness/efficiency assessment are anticipated to lead to the best allocation of limited resources.

2. Expand Knowledge of Pollutant Sources. The City has developed an approach to expand understanding of the water quality issues in the WMA (i.e., the pollutant sources and magnitude of the issues) so that the City, other entities and interested members of the public can make more informed decisions. The City's recommended approach for increasing its level of understanding is two-fold:

- Continue to gather additional water quality monitoring data suitable for conducting assessment at the watershed and subwatershed levels. In order to effectively assess water quality at both the watershed and subwatershed levels, additional monitoring during both the dry and wet seasons is needed throughout the WMA so that water quality problems may be accurately identified, characterized, and prioritized.
- Continue to research and characterize pollutant sources and their pollutant loading potential. A more positive identification of sources and their loading potential would allow the City to modify program activities wisely and devote available resources to target specifically the highest priority sources using the most efficient BMPs.

3. Refine and Improve Effectiveness Assessment. The City has developed a framework to assess the efficiency of its storm water program. This framework is built upon the premise that individual activities should be optimized with regards to efficiency, which is evaluated by considering an activity's pollutant load reduction potential, cost, and impacts and benefits to the community (this is otherwise known as the "triple bottom line" and is often referred to as a sustainability analysis). By knowing the efficiency rates of activities, the City can implement the best suite of activities to maximize load reduction using available resources. Therefore, the City's assessment framework directs activity implementation and assessment to be designed in a manner that will allow for the investigation and verification of efficiency rates. A combined assessment of the different efficiency rates to establish the best suite of activities to maximize

load reduction will then feed into program assessment to determine if the overall program goals and objectives have been met. The City will continue to refine and improve this framework through implementation, which is anticipated to lead to more efficient activity implementation, assessment, and program results.

4. Coordinate and Integrate the WURMP with ASBS and TMDL Planning. One last item of note is the ongoing effort associated with the load reduction plans for the Bacteria TMDL and ASBS regulations. As mentioned in this report, Tecolote Creek and the Scripps HAs are impacted by this TMDL, and the Scripps HA is subject to the ASBS regulations. The City applied a comprehensive approach, building upon the Strategic Plan and the WURMP, to identify the most efficient suite of BMPs that upon implementation, will achieve the required storm water quality standards for priority pollutants in WMA. This comprehensive and quantitative modeling approach identified the BMPs in the plans, which will be assessed and updated annually as part of the City's commitment to adaptive management.

Section 6 References

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APPENDIX A

WATERSHED WATER QUALITY AND EDUCATION ACTIVITY SUMMARY SHEETS

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TITLE: I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP
ID #: MB-1002

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 28, 2012. The City of San Diego (City) sponsored the Rose Creek Cleanup site, with two meeting points, in the Mission Bay and La Jolla Watershed Management Area (WMA). Approximately 128 volunteers removed 12,240 pounds of trash and debris; recycled 100 pounds of trash and debris; and removed 3,000 pounds of green waste in a five-mile area. The cleanup occurred at Rose Creek Cleanup site with two meeting points.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Indicator Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Mission Bay and La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

LEAD WATERSHED COPERMITTEE

- City of City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the load reduction associated with sponsorship?
- What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s)

- Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

- Tabulation (e.g., number of participants)
- Quantification (e.g., pounds of trash collected)

Data Recorded

- Pounds of trash removed (Outcome Level 4): 12,240 lbs
- Pounds of trash recycled (Outcome Level 4): 100 lbs
- Total pounds of trash removed and recycled (Outcome Level 4): 12,340 lbs
- Number of participants (Outcome Level 1): 128
- Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $15,000
- Estimated amount of money spent on cleanups for the Mission Bay/La Jolla watershed (Outcome Level 1): $2,500
- Efficiency (Total Cost/Total Pounds Removed): $0.16/lb

Expected Benefits

Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

Analysis Results

At the event, 128 participants removed 12,240 pounds of trash and debris; recycled 100 pounds of trash and debris; and removed 3,000 pounds of green waste. The average estimated sponsorship cost was $2,500 per watershed; thus, there was a 15,340 pound load reduction and an efficiency of $0.16 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the total pounds of trash removed and recycled.

Conclusions

This trash cleanup activity fulfills a watershed water quality activity for FY2012 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 15,340 pounds of trash and green waste removed, and trash recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

TITLE: COASTAL CLEANUP DAY SPONSORSHIP
ID #: MB-1003

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 17, 2011. The City of San Diego (City) sponsored the Rose Creek Corridor, Pacific Beach site in the Mission Bay and La Jolla Watershed Management Area (WMA). Approximately 95 volunteers removed 2,000 pounds of trash and debris and recycled 43 pounds of trash and debris. Coastal Cleanup day occurred at Rose Creek Corridor and Pacific Beach.

TMDL APPLICABILITY

Indicator Bacteria - Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City coordinates with SDCK and ILACSD staff to ensure that sites within the Mission Bay and La Jolla WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego San Diego Coastkeeper Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the load reduction associated with sponsorship?
- What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s)

- Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

- Tabulation (e.g., number of participants)
- Quantification (e.g., pounds of trash collected)

Data Recorded

- Pounds of trash removed (Outcome Level 4): 2,000 lbs
- Pounds of trash recycled (Outcome Level 4): 43 lbs
- Total pounds of trash removed and recycled (Outcome Level 4): 2,043 lbs
- Number of participants (Outcome Level 1): 95
- Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $15,000
- Estimated amount of money spent on cleanups for the Mission Bay/La Jolla watershed (Outcome Level 1): $2,500
- Efficiency (Total Cost/Total Pounds Removed): $1.22/lb

Expected Benefits

Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly. Analysis Results At the event, 95 participants removed 2,000 pounds of trash and debris and recycled 43 pounds of trash and debris, which was tracked using data cards provided by the Ocean Conservancy. The average estimated sponsorship cost was $2,500 per watershed; thus, there was a 2,043 pound load reduction and an efficiency of $1.22 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the total pounds of trash removed and recycled.

Conclusions

This trash cleanup activity fulfills a watershed water quality activity for FY2012 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 2,043 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

TITLE: LA JOLLA SHORES ASBS POLLUTION CONTROL PROGRAM (AKA LOW FLOW DIVERSIONS PHASE IV)
ID #: MB-1013

ACTIVITY DESCRIPTION

The City of San Diego (City) has been installing a low flow storm drain diversion system in phases to serve the Pacific Ocean coast of the La Jolla, Pacific Beach, and Ocean Beach areas. Phases I, II, and III have been completed using grant monies from the Environmental Protection Agency. Phase IV was partially funded by a California Water Resource Control Board Proposition 84 ASBS grant and focuses on the La Jolla Area of Special Biological Significance (ASBS) to address the prohibition of dry weather flows under the Ocean Plan Exception Process. Four low flow coastal diversions are planned for this fourth phase: Camino del Oro (Camino del Oro near El Paseo Grande), 7920 Princess Street (Torrey Pines Road and Princess Street), Torrey Pines Road and Charlotte Street (Torrey Pines and Amalfi), and 1624 Torrey Pines Road (Torrey Pines and Coast Walk). The City held a workshop to present the concept for these sites on July 30, 2008 and invited the La Jolla Town Council, the La Jolla Community Planning Group, the La Jolla Shores Association, San Diego Coastkeeper, and the general public. The UC Regents-UCSD, applied to the State Board for an implementation grant under this Consolidated Grant program (Proposition 50) for multiple structural control projects consistent with the La Jolla Shores Integrated Coastal Watershed Management Plan (ICWMP) (see activity summary sheet MB-3003 La Jolla Shores Integrated Coastal Watershed Management Plan) including these low flow diversions. City staff coordinated with UC Regents-UCSD for the City to be a subcontractor on this grant for the implementation of the low flow diversions.

TMDL APPLICABILITY

San Diego Region Beaches and Creek Bacteria TMDL
Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design was completed in November 2009. The project began the process for advertising for construction bids in June 2010. Unfortunately, all the bidders were disqualified. Re-advertisement was completed in Spring 2012. The project is in the process of awarding the construction contract. It is anticipated that construction will begin in FY 2013 and will be completed in FY 2014.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's Strategic Plan for Watershed Activity Implementation identify bacteria, heavy metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the load reduction efficiency of the flow diversions?
- How effective are these diversions at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

- Reduction in priority pollutant loads

Assessment Method(s)

- Inspections (e.g., ensure the system upgrades are working as designed)
- Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
- Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
- Tabulation (e.g., amount of money spent on implementation and maintenance)
- Reporting (e.g., estimates of load reduction from 3rd party data)

Expected Benefits

The goal of this assessment is to determine the effectiveness and efficiency of installing low flow diversions to divert dry weather runoff into the sewer system for treatment instead of low flows discharging out of storm drain outfalls directly into the ASBS. Targeted high priority pollutants include bacteria, metals and nutrients.

Analysis Results

Assessment is not possible at this time, as the diversions have not yet been constructed. Prior to construction, monitoring will be conducted to determine baseline conditions. Post-construction monitoring will be conducted as well for comparison to baseline conditions and assessment of effectiveness.

Conclusions

Design was completed in FY 2011. Construction is expected to begin in FY 2013 and finish in FY 2014. Once construction and assessment are both complete, conclusions will be made as to the effectiveness and efficiency of the project.

TITLE: KELLOGG PARK GREEN LOT RETROFIT PROJECT
ID #: MB-1014

ACTIVITY DESCRIPTION

This project will replace a portion of the conventional asphalt of the Kellogg Park parking lot with porous pavers to allow for the infiltration of urban runoff. Originally the project considered only the western half of the parking lot. In late FY 2008, the project was expanded to include the entire parking lot. The concept design for the western half of the parking lot was worked on in FY 2008. An additional conceptual design, showing pervious pavers installed in the north and south ends of the lot, was completed in FY 2009. The middle of the lot will be resurfaced with conventional asphalt. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, Area of Special Biological Significance (ASBS), and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla Watershed Management Area (WMA). The project will be implemented at Camino del Oro and El Paseo Grande.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL
Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design for this project occurred from January 2009 to February 2010. Advertisement and award occurred from March 2010 to 2011. Construction began in FY 2011 and was completed FY 2012. Water quality monitoring and assessment will be conducted in FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's Strategic Plan for Watershed Activity Implementation identify bacteria, heavy metals and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the load reduction efficiency of retrofits?
- How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?

Targeted Measurable Outcome(s)

- Reduction in priority pollutant loads

Assessment Method(s)

- Inspections (e.g., ensure the retrofit is working as designed)
- Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
- Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
- Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
- Reporting (e.g., estimates of load reduction from 3rd party data)

Expected Benefits

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) retrofits through reduction of runoff volume. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type. High priority pollutants targeted include bacteria, nutrients and heavy metals.

Analysis Results

The concept design for this project began in FY 2008 and baseline monitoring was completed. Currently, load estimates are being calculated and will be included in the project report. Once design and construction are complete, additional assessment will be completed to determine the effectiveness of this activity.

Conclusions

As mentioned above, the assessment will be completed after project construction and conclusions will be made at that time. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, ASBS, and current and anticipated TMDLs in the receiving waters of the Mission Bay and La Jolla WMA.

TITLE: MT. ABERNATHY GREEN STREET RETROFIT
ID #: MB-1015

ACTIVITY DESCRIPTION

This activity will involve the implementation of an infiltration project in the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce runoff volume. The activity will be implemented in a residential right-of-way (Green Street). Exact location and type has been based on monitoring and geotechnical considerations, proximity to other best management practices (BMPs) being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla WMA. The project will occur in the neighborhood around Mt. Abernathy Avenue.

This project was initiated under the former name of "Infiltration BMP Retrofit #2 MB-1017". Any future updates for this project will be updated under this name and ID number (i.e., Mt. Abernathy Green Street Retrofit MB-1015).

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's Strategic Plan for Watershed Activity Implementation. The design was completed in FY 2012 and the project is in the award phase. Construction is expected to begin in FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City Strategic Plan for Watershed Activity Implementation identify bacteria as a high priority water quality problem, and recommend

implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the bacteria load reduction efficiency?
- How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

- Reduction in priority pollutant loads

Assessment Method(s)

- Inspections (e.g., ensure the treatment is working as designed)
- Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
- Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
- Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
- Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

There is no data available at this point in time.

Expected Benefits

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria, metals, and nutrient loads with the installation of various vegetative planters in the Mt. Abernathy neighborhood.

Analysis Results

This project is still in the design phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: BANNOCK AVENUE STREETSCAPE ENHANCEMENT & BACTERIA TREATMENT PROJECT
ID #: MB-1016

ACTIVITY DESCRIPTION

Within the tributary watershed of the Bannock Avenue neighborhood, vegetated planter areas will be constructed between the existing curb and the sidewalk. Cuts will be made in the existing curbs to allow flow to exit the street paved section as well as enter and exit the planter areas. The planter areas will be filled with cobbles and/or gravel to a depth of approximately 1-foot and planted with landscaping to be determined during final design. The cobbles and/or gravel must be placed to an elevation approximately 1-inch below the adjacent sidewalk and curb to ensure no Americans with Disabilities Act (ADA) access issues are encountered. The cobbles and/or gravel will be prevented from spilling into the street through the curb cut by a metal screen. The need for temporary or permanent irrigation to establish the planter areas must be determined during final design. Within North Clairemont Park, a diversion structure was proposed to divert flows to a trash segregation unit, followed in series by a bacteria treatment system. From this system, flows would have been returned to the natural drainage course at the location of the existing storm drain system outlet headwall. Upon further review, the bacteria treatment system was eliminated from the project. A literature review did not indicate that the proposed system would provide any additional treatment. This project was identified as Infiltration BMP Retrofit #1 in the 2008 Mission Bay and La Jolla WURMP. In the latter half of FY 2008, a site was selected and conceptual design was completed.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the City's Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The project completed preliminary engineering and transferred to design in February 2010. Design began in FY 2011 and will continue into FY 2013. Construction is anticipated to be completed in FY 2014 with assessment to follow.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA), as well as the City of San Diego Strategic Plan for Watershed Activity Implementation identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the bacteria load reduction efficiency?
- How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

- Reduction in priority pollutant loads

Assessment Method(s)

- Inspections (e.g., ensure the treatment is working as designed)
- Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
- Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
- Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
- Reporting (e.g., estimates of load reduction from 3rd party data)

Expected Benefits

The goal of this assessment is to determine the project effectiveness and efficiency for reducing bacteria load with the installation of vegetative planters, and trash segregation units in the Bannock Avenue neighborhood.

Analysis Results

This project is still in the design phase and has not been implemented; therefore, an effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: INFILTRATION BMP RETROFIT #2 - CANCELLED
ID #: MB-1017

ACTIVITY DESCRIPTION

This activity will involve the implementation of an infiltration project in the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce runoff volume. The activity will be implemented in a residential right of way (Green Street). Exact location and type wil be based on monitoring and geotechnical considerations, proximity to other best management practices (BMPs) being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Mission Bay and La Jolla WMA.

The project did not advance in FY 2012. It is currently on hold due to limited resources that have been allocated to other watershed activities which are moving forward.

This project was initiated as "Infiltration BMP Retrofit #2 MB-1017" but was renamed to "Mt. Abernathy Green Street Retrofit MB-1015". For future updates to this project see the activity sheet for "Mt. Abernathy Green Street Retrofit MB-1015".

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project is on hold.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City Strategic Plan for Watershed Activity Implementation identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this

activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the bacteria load reduction efficiency?
2) How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

Expected Benefits

The goal of this assessment will be to determine the project's effectiveness and efficiency for reducing bacteria, metals, and nutrient loads.

Analysis Results

This project is still in the design phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: AVENIDA DE LA PLAYA STORM DRAIN REPLACEMENT AND LOW FLOW DIVERSION
ID #: MB-1020

ACTIVITY DESCRIPTION

During the City of San Diego (City) Beach Area Low Flow Storm Drain Diversion Project Phase I construction (briefly described in Activity Summary Sheet - MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III), a diversion was built upstream from the outfall at the beach on Avenida de la Playa with much of the flow from the large drainage area being diverted. However, there is significant dry weather flow from the area downstream of the diversion. The invert elevation of the existing beach outfall is at the mean sea level and sand regularly blocks all flow, except during the largest winter storms. Dry weather flows collect and stagnate, creating a known source of bacterial discharge to the receiving waters of the La Jolla State Marine Conservation Area (Area of Special Biological Significance (ASBS) No. 29). The City is proposing a second dry weather diversion facility closer to the point of discharge at the beach along Avenida de la Playa and replacement of the pipe due to the dry weather issues, tidal intrusion, groundwater intrusion, and other issues associated with the current condition of the pipe. The goal of this project is to eliminate bacteria loads and other pollutants, such as metals and nutrients, typically discharged through low flows to the ASBS by replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall. The project is located at the western terminus of Avenida de la Playa.

Project funding was sought from the Integrated Regional Water Management Proposition 1E Flood Control Grant Program; however, the request was not granted.

TMDL APPLICABILITY

San Diego Region Beaches and Creek Bacteria TMDL
Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through design, construction and project close out. Preliminary engineering was completed in April 2009 and the project was transferred to design in June 2009. A design consultant was hired and the project is currently working on 100% design. Design is anticipated to finish in December 2012 with construction beginning September 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City Strategic Plan for Watershed Activity Implementation identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. By replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall, sediment will no longer be trapped within the pipe allowing bacteria to grow within the warm waters and sediments contained in the pipe.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the load reduction efficiency of the storm drain diversions?
- How efficient are these diversions at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

- Reduction in priority pollutant loads

Assessment Method(s)

- Inspections (e.g., ensure the system upgrades are working as designed)
- Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
- Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
- Tabulation (e.g., amount of money spent on implementation and maintenance)
- Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

Expected Benefits

The goal of this analysis is to determine the diversion project's effectiveness and efficiency in reducing pollutant loads.

Analysis Results

Assessment is not possible at this time, as the project is still in the design phase. Post-construction monitoring will be conducted and effectiveness assessment will be completed once the project is complete. Efficiency will be determined by comparing load reduction to implementation costs.

Conclusions

Once the project is complete and the effectiveness assessment has been conducted, conclusions will be made as to future implementation of other similar activities.

TITLE: MISSION BAY AND COASTAL BEACHES SEWER INTERCEPTOR SYSTEM UPGRADES
ID #: MB-1021

ACTIVITY DESCRIPTION

In 1987, the City of San Diego (City) committed to expand the low flow diversion system around Mission Bay with the Mission Bay Sewage Interceptor System (MBSIS) project. This initial project provided interception capability for 65 drain outlets within the remaining 10 percent of the tributary drainage basin. At a cost of $9 million, the project was completed in 1994 and expanded the number of facilities to 46 (14 pump stations and 32 gravity systems). A telemetry control system was also included to provide a more efficient operation. The remote telemetry automatically was used to shut down each facility whenever it rains. Therefore, the labor-intensive effort of physically shutting down each facility was avoided. The new storm water pumping station constructed in Mission Beach at Santa Clara Point was constructed with low flow pumps to divert dry weather flows to the wastewater collection system.

The current CIP project provides for the design and construction of upgrades to 31 sites within MBSIS. Three Congressional Federal Grants were issued through EPA's Appropriations Act totaling approximately $10 million. These grants fund 55% of the design, environmental, and construction costs of Coastal Low Flow (CLF) Phases II, III and IV (see Activity Sheets MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III and MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV) for more information) as well as the design and environmental costs for MBSIS. In order to be eligible for these federal grants, each of the phases must clear the EPA's National Environmental Policy Act (NEPA), a process that can span up to a year. These grants are reimbursable. The matching funds for the grant are being paid by the Deferred Maintenance Bond (Bond). Upon receiving enough funding to move forward, the project advertised for construction bids in November 2009 and was awarded to the lowest responsible bidder in June 2010. Construction was completed in Spring 2011 with the effectiveness assessment completed in FY 2012.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL
Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was awarded to the lowest responsible bidder in June 2010. Construction began in August 2010 and finished in Spring 2011. An effectiveness assessment was complete in FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City Strategic Plan for Watershed Activity Implementation identify bacteria as a high priority water quality problem in the WMA. Identification of the sources of bacteria in the WMA will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EFFECTIVENESS MEASUREMENTS

Management Questions

- How effective are the upgrades at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

- Reduction in priority pollutant loads

Assessment Method(s)

- Inspections (e.g., ensure the system upgrades are working as designed)
- Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
- Monitoring (e.g., outfall monitoring programs)
- Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

Expected Benefits

The goal of this assessment is to determine the effectiveness and efficiency of the upgrades to the MBSIS flow diversion system in reducing bacteria load and improving water quality. The project is expected to remove 100% of the dry weather flow; therefore, 100% removal of pollutants from dry weather flow is expected.

Analysis Results

An operational check of all sites was completed before the contractor was issued their Notice of Completion. All sites were operational at the time. All sites have since been checked multiple times and all sites are still functioning as expected.

Conclusions

The project is effective at removing all targeted pollutants. Because all sites continue to remove 100% of the dry weather flow, a 100% removal rate of all pollutants (including the pollutants of concern for Mission Bay) is assumed.

Recommendations

Low flow diversions are extremely effective at eliminating dry weather flows and the pollutants associated with those flows. Though expensive, diversions can be implemented nearly anywhere a storm drain is located.

TITLE: LINDBERGH PARK LIMITED LOW FLOW STORM DRAIN INLET MULTI-POLLUTANT TREATMENT
ID #: MB-1022

ACTIVITY DESCRIPTION

This project will implement a proprietary inlet treatment device at Lindbergh Park. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain. The project is to occur on the western side of Lindbergh Park.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in FY 2013. Construction is anticipated in FY 2016.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area identify bacteria and nutrients as high priority water quality problems throughout the Mission Bay and La Jolla WMA.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the bacteria and nutrient load reduction efficiency?

Targeted Measurable Outcome(s)

- Reduction in priority pollutant loads

Assessment Method(s)

- Inspections (e.g., ensure the treatment is working as designed)
- Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
- Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
- Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
- Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

Expected Benefits

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis Results

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: LA JOLLA SHORES LANE LIMITED LOW FLOW STORM DRAIN INLET MULTI-POLLUTANT TREATMENT - CANCELLED
ID #: MB-1023

ACTIVITY DESCRIPTION

This project will implement a proprietary inlet treatment device at La Jolla Shores Lane. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain. The location of the project is the western side of Lindbergh Park.

TMDL APPLICABILITY

1) San Diego Region Beaches and Creeks TMDL
2) ASBS Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Additional analysis on the concept plan determined that this project is feasible but redundant. The location of this BMP was proposed in a drainage area that already has a low flow diversion. Thus the runoff from this area is already diverted away from the ASBS. As a result, this project has been cancelled. Another site will be chosen for this inlet device, although there is no assurance that the new site will be located in the Mission Bay/La Jolla Watershed.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) identify bacteria and nutrients as high priority water quality problems throughout the Mission Bay and La Jolla WMA.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the bacteria and nutrient load reduction efficiency?

Targeted Measurable Outcome(s)

- Reduction in priority pollutant loads Assessment Method(s)
- Inspections (e.g., ensure the treatment is working as designed)
- Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
- Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
- Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
- Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

There is no data available at this time.

Expected Benefits

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis Results

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: TARGETED CATCH BASIN CLEANING PILOT STUDY
ID #: MB-1027

ACTIVITY DESCRIPTION

The City of San Diego Storm Water Division began the planning of a catch basin cleaning pilot study in FY 2011 and implementation of Phase I occurred in FY 2012. The purpose of the project is to understand the potential water quality improvements and load reduction associated with catch basin cleaning by evaluating the quantity and quality of materials removed from the storm drains from four (4) pilot areas. The areas were selected to be representative of different land uses within the City limits. Additionally two cleaning methods will be evaluated; manual and vactor equipment. One of the pilot areas is within the San Diego Bay WMA in a mixed use area of the downtown. Composite samples collected from the material removed from the targeted catch basins will be analyzed for metals, nutrients, organics, and bacteria.

The City's literature review and draft work plan development project in 2011 (Tetra Tech 2011) highlighted some of the nuances of catch basin cleaning methods and frequencies that can affect pollutant removal and municipal costs. There is evidence from the literature survey that optimizing catch basin cleaning, both by using the most effective and efficient cleaning techniques and by tailoring frequencies to different drainage areas, can maximize the return on investment in terms of both pollutant reduction, and municipal labor and funds. Data collection and GIS analysis, which the City improved substantially in 2011 on a city-wide basis by establishing a unique identifier for each inlet, are vital to this type of optimization.

With the diversity of land use types, neighborhoods, and drainage system ages and conditions found throughout the City of San Diego, developing a more specific or tailored plan for catch basin cleaning frequency and techniques requires some understanding of how accumulation rates and pollutant concentrations in catch basin materials differ among land use types and settings. Identifying land use settings or areas with rapid rates of pollutant accumulation and potential mobilization, as well as areas with high concentrations of pollutants of concern, may be used to suggest the most efficient and effective timing, frequency, and method of catch basin cleaning. Land use settings or areas where pollutants accumulate slowly, with minimal mobilization, or low concentrations of pollutants of concern for a particular watershed, would suggest different maintenance schedules to achieve the same water quality results.

Catch basin cleaning in San Diego also must be addressed in light of the region's weather pattern, typified by a long dry season (roughly May through October) during which catch basin materials are expected to accumulate without mobilization into the MS4, followed by a wet weather season with sporadic but occasionally very significant rain events (i.e., greater than one inch of precipitation in a 24-hour period). While this Pilot Study Phase I did not begin until December 2011, which was after substantial precipitation had fallen, the information base nonetheless will be useful, particularly if and when the City is able to complete an end of season cleaning before rain events begin. Sampling prior to intensive rainfall may have yielded different results, possibly greater concentrations of analytes that accumulate over time and are not easily re-suspended (such as metals). Microbiology samples might also be different during the dry season, especially if incubation is dependent on wet sumps. The activity occurred near Mesa College.

TMDL APPLICABILITY

San Diego Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment for Phase I was conducted in FY 2012. It was determined a Phase II would be implemented and assessed in FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- N/A

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria, sediment and metals as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address these constituents. This project will result in a quantifiable load reduction of sediment and will evaluate the amount of bacteria and metals reduced as part of catch basin cleaning.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) To what extent do changes in catch basin cleaning frequency affect the amount of pollutants collected?
2) What is the annual calculated load reduction based on pilot scale data collection with catch basin cleaning?
3) Which cleaning method, manual versus mechanical is the most cost effective method for removing sediment from catch basins?

Targeted Measurable Outcome(s)

- Reduction in bacteria exported from the catch basin.
- Reduction in sediment exported from the catch basin.
- Reduction in nutrients associated with the catch basin.

Assessment Method(s)

- Evaluate the volume of material currently removed from each catch basin.

- Evaluate the correction in cleaning results with land use category, impervious area, watershed size, and surface water impairments.

Data Recorded

1) Volume Removed: 132 lbs. of debris/sediment - The total amounts of nutrients and metals removed during the clean-out process were calculated by multiplying analyte concentrations by the weight of the material removed. The estimates for each analyte in each clean-out event were standardized to a 30-day accumulation period and 10 acre drainage area:
   - Nitrogen - 40g
   - Phosphorus - 12g
   - Copper - 1.83g
   - Lead - 1.35g
   - Zinc - 6.88g
1) Location
   - Near Mesa College
2) Sediment sample analysis
   - Sediment - 50%
   - Trash - 10%
   - Organics - 40% of material removed

Expected Benefits

The objectives of the project were to:

1) Provide baseline information on the amounts and characteristics of materials removed from catch basins in four study areas.
2) Determine patterns in quantity and quality of materials removed, especially in relation to prevalent land uses, sampling methods, clean-out timing, and frequency.
3) Recommend potential strategies to optimize efficiency of clean-outs for specific land use categories, pollutants, and catch basin configurations.
4) Propose ongoing monitoring protocols to improve on the baseline information and refine clean-out strategies.

Analysis Results

Results of the monitoring efforts for catch basin cleaning in four (4) areas with different land use patterns, catch basin configurations, and cleaning methods show variations in amounts of materials and concentrations of analytes collected in each area and over time. The observations suggest overarching patterns and provide baseline information for ongoing monitoring and analysis. Because the samples were not sufficiently replicated, it is not possible to attribute statistical significance to any of the observed differences among treatments (area, timing, frequency, method, or catch basin configuration).

Nutrients accumulated quickly between clean-outs and concentrations generally reached a plateau. That suggests that nutrients are commonly available in the contributing storm water runoff (hence the rapid accumulation) and may be easily washed though the drainage system (hence the plateau). Cadmium concentrations in the Tecolote area (the only area where it was measured) were relatively low. The Tecolote area had the lowest nutrient loads and the highest in Metal and Enterococcus concentrations as well as.

Comparison of vactor and manual clean-out methods: The vactor method was used in the Downtown and Scripps Poway Parkway areas and the manual method was used in the San Ysidro and Tecolote areas. To the extent an inference about the difference in methods can be drawn from this study, the results from the two mixed-use land use areas (Scripps Poway Parkway and Tecolote Creek) can be compared. The vactor method produced greater amounts of materials in the Scripps Poway Parkway area than did manual cleaning in the Tecolote area. Because the amounts retrieved by vactor from the Downtown area were not much greater than the amounts retrieved using manual methods, it is suspected that differences in amounts of materials removed are due to factors other than the clean-out method, particularly the capacities of the catch basin sumps. Moreover, observation in the Scripps Poway Parkway area, which has significant topography, suggests that physical and soil conditions may be playing a role in the volume of material observed.

Conclusions

This pilot study demonstrates that there are differences in amounts of materials and pollutants that can be removed from catch basin inlets. Attributing those differences to factors such as removal methods, categorical land uses, timing in relation to rain events, frequency of cleaning, or a number of unmeasured factors is difficult given the small sample size and confounding factors. The costs and benefits associated with methods, schedules, or targeted locations in relation to sediment and pollutant removal would be better quantified with ongoing monitoring. Within the catch basin clean-out program that is ongoing in San Diego, there may be opportunities to collect valuable information with only a little extra effort. Other data collection for specific analyses will require a targeted monitoring program.

Recommendations

A major limitation of the pilot study is that we did not sample before the first significant rain event. Additional data should be collected after a dry season accumulation, clean-out, and sampling. The additional data should then be re-processed to determine clean-out procedures relative to dry season accumulation.

We assume that accumulation of sediments and pollutants is greatest during the wet season. The wet season is therefore the time to focus on frequent clean-outs. However, until dry season monitoring and analysis is complete, we cannot discount the importance of also scheduling clean-outs before the first wet season rains wash accumulated materials out of the systems. This may be especially important for metals. In residential areas or areas expected to have applied fertilizers, the middle of the growing season may be a critical time for clean-outs to maximize removal of nutrients.

In FY 2013 Dry Weather Clean-Out and Monitoring will be identical to the protocols observed in the FY 2012 Pilot Study Phase I so that the City has the benefit of a full year's profile of catch basin materials, characteristics and pollutants removed in each of the four (4) study areas.

TITLE: RAINWATER HARVESTING REBATE PILOT PROGRAM
ID #: MB-1029

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division in FY 2011 collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). Staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program was implemented in FY 2012 and was open to the residents of the City of San Diego on a first-come first-served basis and provided a rebate of 0.50 cents per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department administered the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program. In the Mission Bay and La Jolla Watershed there were 10 participants rebating a total of 36 rain barrels.

In addition to Rain Barrels Rebate Program, an Outdoor Water Conservation Rebate Program was also offered to the residents of the City of San Diego. The Outdoor Water Conservation Rebate Program involved a rebate program to assist residents and businesses to conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation, and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first-come first-served basis until funds are exhausted.

TMDL APPLICABILITY

San Diego Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in FY 2011, implementation occurred in FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation

EFFECTIVENESS MEASUREMENTS

Expected Benefits

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Reduction in runoff can be achieved with the installation of irrigation smart controllers, micro-irrigation, and turf conversion to low water use plants.

Analysis Results

Data recorded

1) Total amount of Rain Barrels rebated
   - 196 rain barrels
2) Average size of Rain Barrels installed
   - 60 gallons
3) Total Rain Barrel gallons rebated
   - 17,400 gallons
4) Number of Outdoor Water Conservation items rebated:
   - 297 rebates
     - Smart Controllers -106
     - Micro Irrigation - 93
     - Turf Conversion - 98

Conclusions

The rebate program is ongoing.

Recommendations

No recommedations at this point in time.

TITLE: **QUALCOMM STADIUM DROP-OFF COMMUNITY CLEANUP AND RECYCLING EVENT SPONSORSHIP**
ID #: **MB-1030**

ACTIVITY DESCRIPTION

The City of San Diego Environmental Services Department (ESD) conducted a drop off clean up event in March. The event was open to all City residents and targeted items like appliances, metals, junk furniture, mattresses and tires. The Qualcomm Stadium parking lot was the site for the drop off and ESD staff conducted both events. This event was selected based upon citizen requests, pledges of community involvement and previous citizen participation levels.

A total of 112,000 pounds were collected, of which, 44,000 pounds were recycled. Some of the items collected were refrigerators, microwaves, stoves, window air conditioners, clothes washers and dryers, dishwashers, and tires.

TMDL APPLICABILITY

Indicator Bacteria - Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

This event took place in March and was in the planning stages for approximately 2-3 months. The planning portion of the event included scheduling and coordinating available dates at Qualcomm stadium, writing traffic control patterns if needed, reserving equipment for the use and scheduling of drivers, creating a site map of the staging area and traffic flow pattern, for ease of use.

This event was open to all City of San Diego residents. The location for the drop off was a designated location in the parking lot of Qualcomm Stadium.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay/La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of these Cleanup events will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What is the load reduction associated with sponsorship?
- What is the efficiency of the sponsored cleanup? ($/lb collected)

Targeted Measurable Outcome(s)

Load reduction due to reduction of trash (any amount).

Assessment Method(s)

- Quantification (e.g., pounds of trash collected)
- Pounds of trash removed (Outcome Level 4): 68,000 lbs
- Pounds of trash recycled (Outcome Level 4): 44,000 lbs
- Total pounds of trash removed and recycled (Outcome Level 4): 112,000 lbs
- Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $2,200
- Total money spent on the cleanup for the Mission Bay/La Jolla watershed (Outcome Level 1): $367
- Efficiency (Total Cost/Total Pounds Removed and Recycled): $0.03/lb

Expected Benefits

The goal of this assessment is to determine the effectiveness and efficiency of free drop -off clean-up and recycling events. In sponsoring these clean up events, the City is providing a convenient drop off location for the free drop off/disposal of furniture, appliances and tires. These community cleanup events are also intended to deter residents from illegally dumping unwanted items in streets and alley rights-of-way, canyons, creeks and riverbeds, as well as other locations throughout the City. They also replace a house by house bulky item pick-up.

Analysis Results

ESD staff collected a total of 112,000 lbs of metals, appliances, junk furniture and mattresses. Disposed of 68,000 lbs and recycled 44,000 lbs. The sponsorship from the City of San Diego Transportation and Storm Water Department, Storm Water Division for this event was $2,200. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay/La Jolla WMA by the total pounds of trash removed and recycled.

Conclusions

This activity fulfills a watershed water quality activity for FY 2012 and as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 112,000 pounds during the reporting period.

Recommendations

There are no recommendations at this time.

TITLE: GENESEE COMMERCIAL CBSM EFFORTS – NO LONGER REPORTED
ID #: MB-2004

ACTIVITY DESCRIPTION

The City of San Diego's Storm Water Department, Pollution Prevention Division (City) has been using Community Based Social Marketing (CBSM) strategies since FY 2008 in attempt to increase knowledge and change behaviors among various target audiences. CBSM is an environmental social science method of outreach which includes comprehensive research, data gathering, and assessment measures to develop more effective outreach strategies. The City has implemented several pilot projects in various communities, and assessment has confirmed success in achieving pollution prevention awareness and behavioral change.

In FY 2010, the City conducted focus group research with three business types found along the Genesee Ave. corridor; restaurants, automotive shops and landscapers. The research planned for the Genesee area is currently on hold based on the focus group feedback and the creation of an implementation plan.

No activity occurred on this project during FY 2012 and it has been determined that this project will no longer be reported as an activity.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL
Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

As noted above, this activity will no longer be reported.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the Strategic Plan for Watershed Activity Implementation identify bacteria and trash as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a

vector and future load reduction of trash and debris directly and of bacteria indirectly if and when it is implemented.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations?
2) How much change in awareness was achieved?
3) What changes in levels of behavior was achieved after implementation?
4) How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons)
5) How do the survey results change pre and post activity implementation?

Targeted Measurable Outcome(s)

1) Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed)
2) Achieve higher incidence of knowledge and attitude in pilot group when compared to general public
3) Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)

Assessment Method(s)

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)
2) Quantification (e.g., count observable pollution and behavior of participants in program)
3) Monitoring (e.g., water quality monitoring at base of targeted watershed)
4) Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached)
5) Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)

Expected Benefits

The project is designed to reduce trash and bacteria from businesses along Genesee St. In addition to actual load reduction efforts, the project's outreach element will inform and educate business about the effects its work processes and employees have on the area its potential impacts to human health and the environment as a whole.

Analysis Results

There are no analysis results as of this reporting period.

Conclusions

There are no conclusions as of this reporting period.

TITLE: MT. ABERNATHY LID GREEN STREET OUTREACH - CANCELLED
ID #: MB-2005

ACTIVITY DESCRIPTION

Mt. Abernathy Green Street Outreach will be performed to support the planned Green Street construction in a small sub-section of the Clairemont community in the Mission Bay and La Jolla Watershed Management Area (WMA). Construction may include modifying the vegetated planter areas between the curb and sidewalks in front of residential homes in order to better infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. The City plans to inform, educate and involve residents who are directly affected by the construction in an attempt to achieve awareness regarding storm water runoff and to create behavioral change among residents. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities may include public participation and outreach, education regarding structural interventions, incentives and specific messaging.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The schedule for this outreach will parallel the Mt. Abernathy Low Impact Development (LID) Green Street Construction. The project is currently being constructed (FY 2013) but it has been determined that the educational component will not be counted as an educational WURMP activity. As a result, this activity is cancelled and will no longer be reported.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the Strategic Plan for Watershed Activity Implementation (Strategic Plan) identify bacteria and trash as high priority water quality problems in the WMA. This effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

Management Questions

- Does education regarding the LID retrofits effectively raise awareness of bacteria, metal and nutrient pollutant issues?
- Does education regarding the LID retrofits effectively change pollutant behavior among residents?

Targeted Measurable Outcome(s)

- Reach goal number of people within the Mission Bay and La Jolla WMA, based on survey results
- Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)

- Survey (e.g., administer survey to assess knowledge and attitude of participants)
- Quantification (e.g., number of residents reached)

Data Recorded

- Number of educational information items passed out (Outcome Level 1)
- Change in knowledge or attitude (Outcome Level 2)
- Change in pollutant-related behavior (Outcome Level 3)

Expected Benefits

Increase the level of awareness of storm water issues through the construction and advertisement of municipal LID BMPs.

Analysis Results

N/A

Conclusions

N/A

TITLE: MISSION BAY FOCUSED OUTREACH
ID #: MB-2009

ACTIVITY DESCRIPTION

In order to prevent bacteria pollution in Mission Bay, the City of San Diego's (City's) Think Blue program implemented a summer outreach campaign in FY 2007 that targeted key sources of bacteria pollution in Mission Bay. In FY 2012, the campaign provided direct outreach during the major summer holidays (Independence Day 2011, Labor Day 2011 and Memorial Day 2012) to Mission Bay visitors, specifically recreational vehicle (RV) users and boaters. The outreach program is held according to the summer holidays in a calendar year, but reported according to Fiscal Years. The education focused on reducing pollution and bay closures as a result of contamination due to bacteria sources. In addition, direct outreach and materials distribution were conducted to marinas located in Mission Bay as an additional way to reach the target audience.

During the summers of 2010 through 2012, education and outreach included:

1) An outreach greeter station (booth) was staffed with Think Blue/Storm Water Department staff and consultants, in order to increase direct public education and interaction. The booth was located in East Mission Bay, just north of the Visitor's Center, adjacent to the De Anza boat launch and Ski Beach located in Mission Bay. The booth was operational during the Memorial Day, Independence Day and Labor Day holiday weekends. Public education materials available in the booth included Think Blue pollution prevention education materials (such as brochures and tip cards), along with best management practice (BMP) giveaways, such as brooms and dustpans.
2) Specific on-site outreach was conducted with marinas and boating businesses located in and around Mission Bay. Each operator was offered pollution prevention postcards and posters that targeted BMP specific to sources of pollution generated by boats.
3) Specialized postcards targeting each Mission Bay user group (RV users, boaters, and general visitors) were developed and available in both English and Spanish.
4) Mobile ad display was visible at the entrance of Mission Bay East during each of the three Holiday weekends (Memorial Day, Independence Day and Labor Day).

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL
Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning was completed in 2007. Implementation was completed in FY 2012. Assessment was conducted in FY 2012. This is a yearly on-going event.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy and the Strategic Plan for Watershed Activity Implementation for the Mission Bay and La Jolla Watershed Management Area (WMA) both identify bacteria as a high priority water quality problem in the WMA. This outreach effort will potentially result in both increased direct knowledge and awareness regarding bacteria and trash as a vector, and indirect future load reduction of trash and debris as they relate to bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What change in awareness/attitude regarding bacteria and trash pollutants was achieved after implementation?
- How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s)

- Reach pre-set percentage of residents within target watershed
- Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)

Think Blue FY 2012 Mission Bay Outreach Studies

- Independence Day 2011
- Number of Visitors to Outreach Booth: N/A
- Number of Passer-bys Observed: N/A
- Number of Visitors Approached: N/A
- Observed Boat Launches: N/A
- Observed Parked RVs: N/A
- Total Materials Distributed: N/A

Labor Day 2011

- Number of Visitors to Outreach Booth: N/A
- Number of Passer-bys Observed: 1,700
- Number of Visitors Approached: N/A
- Observed Boat Launches: 143
- Observed Parked RVs: 32
- Total Materials Distributed: N/A

Memorial Day 2012

- Number of Visitors to Outreach Booth: N/A

- Number of Passer-bys Observed: 1,360
- Number of Visitors Approached: N/A
- Observed Boat Launches: N/A
- Observed Parked RVs: 10
- Total Materials Distributed: N/A

Estimated total visitors (impressions) exposed to the Think Blue Booth in Mission Bay in FY 2012 (Outcome Level 1): 4,500

Estimated total visitors (impressions) exposed to the Think Blue Mobile Ad during Mission Bay Focused outreach (9 days) in FY 2012 (Outcome Level 1): 182,646

Number of marinas and boating businesses who participated in Mission Bay Outreach Campaign in FY2012 (Outcome Level 2): 33

Number of boating outreach materials distributed to businesses (Outcome Level 1): 1,500

Number of Surveys administered in FY 2012 (Outcome Level 1): 412

Percentage of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3): 74%

Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3) 83%

Expected Benefits

The activity has demonstrated an increase in knowledge and awareness in the target audience (Marinas, RVers, boaters and visitors in Mission Bay) and created positive behavioral change to reduce the presence of bacteria and gross pollutants in Mission Bay. Assessment was conducted to determine the effectiveness of the FY 2012 outreach campaign on creating increases in knowledge and changes in behavior.

Analysis Results

The City's Think Blue campaign implemented an on-going summer outreach campaign in FY 2012 that targeted key areas of concern for pollution in Mission Bay. The campaign was conducted during the major summer holidays (Independence Day 2011, Labor Day 2011 and Memorial Day 2012) and provided direct outreach to Mission Bay users, specifically RV users and boaters. Efforts were made to increase awareness of pollutants sources (specifically bacteria), in order to reduce those sources, prevent pollution and avoid beach closures in Mission Bay. Examples of outreach activities included educational material distribution at the Think Blue booth, mobile ad display at the entrance of East Mission Bay, direct outreach to boaters and RV users in the area, and direct outreach to local marinas and boating businesses located in Mission Bay. During FY 2012 approximately 4,500 visitors to East Mission Bay were exposed to Think Blue's Focused Mission Bay Outreach, which was promoting the message, "Help Keep Mission Bay Clean and Safe". Over 400 individuals approached the booth to speak with staff; over 125 Bay users were approached by staff, with over 1,500 people receiving pollution prevention

outreach materials and items. The Think Blue Mobile Ad that was parked in the Mission Bay area at the entrance of East Mission Bay and the entrance to Ski Beach during the three holidays (9 days total) is estimated to have been viewed by 182,646 individuals based on traffic and pedestrians counts. FY 2012 was the sixth year that Think Blue conducted Focused Mission Bay Outreach. The alcohol beach ban that was approved during FY 2009, seems to continue to impact beach attendance, with decreased levels shown across City beaches. FY 2012 was the fourth year that Think Blue performed survey assessments. Of the 412 individuals who completed the assessment survey, 74% reported taking steps to prevent pollution. This result can be considered an indicator of a Level 3 Outcome.

Conclusions

Mission Bay Focused Outreach is an effective way to reach visitors in East Mission Bay during the major summer holidays. The large numbers of impressions (over 4,500 exposed to Think Blue booth, and 182,646 exposed to mobile advertising), direct contacts (approx 500 persons), educational materials distributed (1,742 items) and survey participation in FY 2012 support the assertion that the focused outreach program is effective at increasing public exposure to bacteria and gross pollutant issues. More of the public is now aware of storm water issues and the Think Blue campaign due to this focused outreach.

Recommendations

Implementation of the campaign will continue in FY 2013, to include hosting the outreach booth and continued distribution of the specialized informational postcards tailored to RV users, boaters, and general visitors. The program intends to move to another location in Mission Bay to reach boaters and tourists who may not have come in contact with the outreach program in the past. Assessment surveys will continue and increased effort to gather statistically valid information regarding knowledge, attitudes and pollution prevention behavior of Mission Bay visitors. Outreach in FY 2013 will continue with expanded targeted Marina and boater outreach. Effectiveness will be measured further via surveys comprised of residents in the Mission Bay and La Jolla WMA to determine awareness, knowledge retention and behavior change.

TITLE: SAN DIEGO CREW CLASSIC
ID #: MB-2011

ACTIVITY DESCRIPTION

In order to prevent bacteria pollution in the Mission Bay & La Jolla Watershed Management Area (WMA) in FY 2012, the City of San Diego's Think Blue program participated in the San Diego Crew Classic, a rowing regatta held in Crown Point Shores in Mission Bay. The outreach campaign provided direct outreach dedicated to preserving water quality in San Diego, primarily targeting key sources of bacteria in Mission Bay. The goal was to encourage the public to take positive steps in preventing pollution from entering the storm drain system and ultimately Mission Bay. With more than 15,000 people in attendance, the event provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

Think Blue participated in the event by hosting a booth during both days of the event. Think Blue once again served as the official Program Sponsor in FY 2012, as well as the Trophy Sponsor of the City of San Diego Cup, also known as the Men Club Championship. The outreach booth provided direct education and materials regarding water quality protection. Materials distributed included brochures and tip cards, along with best management practice (BMP) items such as dust pans, pet trash bag containers and pet trash bag refills that help promote behavior change. Promotional giveaways included eco-friendly pens, Frisbees, backpacks, and rally towels.

Other outreach items and activities included:

1) Specialized postcards targeting Mission Bay RV users and boaters, which were available in both English and Spanish.
2) Placement of a 10 foot Think Blue banner at the official race finish line which was visible on camera on national TV .
3) A Think Blue PSA was broadcast multiple times on the JumboTron screen which was broadcasting live coverage of the event The Crew Classic is located at Crown Point Shores in Mission Bay. The event is held over two days and the estimated attendance is 15,000 residents and tourists.Think Blue plans to participate in the Crew Classic during FY 2013.
4) Over 50 recycling bins at the event were marked with Think Blue stickers that indicated, "Recycle Here".
5) Event surveys were collected from over 340 booth visitors to gather assessment information about knowledge, awareness, attitudes and behaviors regarding storm water pollution prevention.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue plans to participate in the Crew Classic during FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Bay stakeholder groups (OMBAC, ZLAC Rowing Club, Mission Bay Planning Committee, etc.)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash, debris and bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

- What change in awareness/attitude regarding bacteria and trash pollutants was achieved after implementation?
- How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s)

- Reach pre-set percentage of residents within target watershed
- Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)

- Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants)
- Quantification (e.g., number of residents/visitors reached and number of materials distributed)

Data Recorded

Think Blue FY 2012 Crew Classic Event

- Estimated total visitors exposed to the Think Blue Booth at the Crew Classic in FY 2012 (Outcome Level 1): 15,000
- Number of Surveys administered in FY2012 (Outcome Level 1): 340
- Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2): 58%

- Percentage of individuals surveyed who feel that litter contributes to pollution at least a moderate amount (Outcome Level 2): 93%
- Percentage of individuals surveyed who reported that they feel a very strong or strong obligation to not litter (Outcome Level 2): 91%
- Percentage of individuals surveyed who reported that they pick up litter they see in their community and throw it away at least sometimes (Outcome Level 3): 87%

Expected Benefits

Think Blue's booth provides a mechanism for continued outreach dedicated to preserving water quality in San Diego. The goal was to provide education to increase knowledge and awareness and encourage everyone to take positive steps in preventing pollution from entering the storm drain.

Analysis Results

The campaign targeted key audiences and areas of concern for pollutants in the Mission Bay WMA. The event provided direct outreach to residents living within the Mission Bay area as well as visitors to the event. It should be noted that this event is an international collegiate regatta (rowing competition), therefore although this event attracts a local crowd, many attendees are from other areas outside of San Diego.

A total of 340 Think Blue booth visitors completed the event survey assessment cards specific tolitter. Of the 340 surveys conducted 34% were from San Diego County, and the rest were from outside of San Diego County. 58% of all survey participants knew that storm water wasn't treated (up from 53% in FY 2011), while 7% said it was treated and 35% stated that they didn't know.

Conclusions

The San Diego Crew Classic attracts a large number of residents living in the local watershed areas as well as visitors from outside the area. The event provides a great opportunity to interact with citizens and visitors about the benefits of pollution prevention. With more than 15,000 people in attendance and the significant number of surveys collected since FY 2010, Think Blue will continue to sponsor this event in FY 2013.

TITLE: MISSION BAY AND LA JOLLA WATERSHED BROCHURE
ID #: MB-2012

ACTIVITY DESCRIPTION

The City of San Diego (City) and Think Blue has implemented a brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures are used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. They will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the attention of the audience, enhance the understanding of basic watershed principals of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:
1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay
5) San Dieguito River
6) Los Penasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and continued through FY 2012. Implementation and distribution occured in FY 2012 and will continue through FY 2015. Assessment is proposed in FY 2015.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

Management Questions

- Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?
- Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

Targeted Measurable Outcome(s)

- Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.
- Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.
- Increased intent to act to prevent storm water pollution after reading the watershed brochure.

Assessment Method(s)

- Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Data Recorded

N/A

Expected Benefits

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

Analysis Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochures have not been distributed to enough residents within the Watershed Management Area. Data will be collected throughout FY 2012 - FY 2015

Conclusions

All six watershed brochures were completed in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: LA JOLLA ASBS 2011-2012 REGIONAL COMPLIANCE MONITORING
ID #: MB-3009

ACTIVITY DESCRIPTION

Since 1983, the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) (State Water Resources Control Board [SWRCB], 2009) has prohibited the discharge of waste into Areas of Special Biological Significance (ASBS) along the California Coast. The SWRCB produced a revised guidance document for monitoring discharges to ASBS, SWRCB Resolution Number 2012-0012, Approving Exceptions to the California Ocean Plan for Selected Discharges into Areas of Special Biological Significance, Including Special Protections for Beneficial Uses, and Certifying a Program Environmental Impact Report (SWRCB, 2012b) (Special Protections Document). The City has initiated monitoring in accordance with the Special Protections Document. The primary objectives of the 2011/2012 La Jolla ASBS Compliance Monitoring Program are outlined below:

- Determine how storm drain discharges from three primary discharge points in the La Jolla Coastal Watershed compares to Ocean Plan water quality objectives (WQOs) during monitored storm events.
- Determine how receiving water mixing zones near three primary discharge points in the La Jolla Coastal Watershed compare to the Ocean Plan WQOs during monitored storm events.
- Determine constituent concentrations in intertidal sediments at sites associated with storm drain discharge points.
- Determine how constituents of potential concern (COPCs) in storm water from three primary discharge points in the La Jolla Coastal Watershed compares to concentrations in the receiving water mixing zone, after initial mixing.
- Determine how COPCs in receiving water mixing zones near three primary discharge points in the La Jolla Coastal Watershed compare to prior concentrations measured in local receiving waters during both dry weather and pre-storm conditions.
- Determine how COPCs in receiving water mixing zone near three primary discharge points in the La Jolla Coastal Watershed compare to previous regional ASBS studies.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL
La Jolla Shores ASBS Regional Compliance Monitoring

TIME SCHEDULE FOR IMPLEMENTATION

This study was designed to be in compliance with the Committee's Regional ASBS Work Plan with additional monitoring and assessment activities specific to the needs of the City in accordance with the Strategic Plan for Watershed Activity Implementation.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Strategic Plan represents the City's Storm Water Pollution Prevention Programs implementation strategy for watershed activities within the City's jurisdictional boundaries from 2007 through 2012. Among the prioritized watershed activities identified in The Strategic Plan, eight projects pertained directly to the protection and enhancement of beneficial uses for ASBS 29 and ASBS 31. These projects included dry weather flow diversion, runoff reduction, ecosystem assessment, and street sweeping. The City recently received a Proposition 84 Grant to partially fund these projects.

EFFECTIVENESS MEASUREMENTS

Analysis Results Outfall Discharge WQO Comparison Summary:

- Instantaneous Maximum WQOs were exceeded by Enterococcus, fecal coliform, total coliform, TSS, turbidity, and copper.
- Daily Maximum, 7-day average, and 30-day average WQOs were exceeded by Enterococcus, fecal coliform, total coliform, TSS, turbidity, chromium, copper, lead, zinc, and estimated values of total residual chlorine.
- Exceeded the *A. bahia* LC50 concentrations in outfall discharge samples for the synthetic pyrethroids Bifenthrin, Cypermenthrin, Cyfuthrin, and Permethrin.
- Toxicity was observed to purple sea urchin embryos in all outfall discharge samples collected. Among the three monitored outfall discharge locations, the greatest effects were observed in samples from SDL-186.
- Phase I Toxicity Identification Evaluations (TIE) identified cationic trace metals as the sole cause for toxicity. These effects were likely due to copper and zinc in both samples, based on their measured concentrations.

Receiving Water Mixing Zone WQO Comparison Summary:

- Instantaneous Maximum WQOs were exceeded by Enterococcus and fecal coliform.
- Daily Maximum, 7-day average, and 30-day average WQOs were exceeded by Enterococcus, total coliform, fecal coliform, and estimated values of total residual chlorine (detected below reporting limit).
- Exceeded the *A. bahia* LC50 concentration in receiving water samples of the mixing zones associated with primary outfalls for the synthetic pyrethroids Bifenthrin, Cypermenthrin, Cyfuthrin, and Permethrin without associated toxicity. This would indicate that synthetic pyrethroids are not sufficiently bioavailable to cause acute toxicity.
- The magnitude and frequency of toxicity observed in the receiving water mixing zone was considerably less than that observed in the outfall discharge samples.
- Toxicity in the receiving water mixing zone samples was transient, rapidly dissipating within a few days.

- 13 percent of receiving water mixing zone samples exceeded WQOs (mostly FIB analytes) and synthetic pyrethroid LC50 concentrations, compared to 49 percent of outfall discharge samples. This reflects a 73 percent drop in exceedance rates between the outfall discharge and the receiving water mixing zone.

Constituent Concentrations in Receiving Water Mixing Zone Sediments:

- Concentrations in the receiving water sediments were low or non-detect and not toxic to the marine amphipod Eohaustorius estuarius.

Receiving Water Mixing Zone Comparisons with "Natural" Water Quality:
A preliminary assessment of the protection of "natural" water quality of the La Jolla ASBS was conducted by comparing available historic winter dry weather data for ASBS 29, the adjacent ASBS 31, and available recent data from other southern California reference shoreline locations. Data was also compared to the findings of the Bight'08 natural water quality study of ASBS in southern California (Schiff et al. 2011).

The data overall showed elevated concentrations of several constituents in the receiving water mixing zone during storms relative to dry weather and pre-storm ambient conditions, as would be expected. However, there was still considerable overlap among the data distributions relative to summer dry weather and winter dry weather data. These findings suggest that the degree of influence from COPCs appears minimal during storm water runoff conditions relative to ambient non-storm conditions.

Samples showed similar or lower rates of exceeding the 85th percentile of reference site data compared with post-storm samples from the Schiff et al. study.

Conclusions
The findings suggest that water quality in ASBS 29 is in line with reference conditions as reported by Schiff et al. (2011). Furthermore, the overall result indicate that, although there is a signature of chemical constituents in the receiving water mixing zone in front of storm drain discharges, the effect appears minimal in magnitude and likely very transient in nature within the La Jolla ASBS 29.

Recommendations

- Continue to monitor the La Jolla Coastal Watershed and La Jolla ASBS in accordance with the revised Individual Monitoring Program requirements of the Special Protections Document.
- Participate in the Bight 13 regional monitoring program in order to meet the special protections document requirements.
- Conduct a mixing zone study in the La Jolla ASBS to determine a reasonable and protective dilution zone for future compliance requirements.
- Analyze metals using EPA 1640 for receiving waters samples to provide lower detection limits and provide improved low-level comparison with historical datasets.
- Initiate select TIE treatments (EDTA (Ethylenediaminetetraacetic acid) and C18 extractions) concurrent to initial baseline receiving water mixing zone tests. This

procedure will enable the successful identification of the cause of toxicity in the receiving water mixing zone samples where toxicity has been found to be extremely transient.

- Refine the flow model by: (1) Including more detailed drainage area delineation resolution using one- to three-foot topographic elevation; (2) Improve impervious resolution cover; and (3) Select flow monitoring points within the watershed that will improve calibration capabilities.

TITLE: **BIOASSESSMENT MONITORING OF THE TECOLOTE CREEK WATERSHED**
ID #: **MB-3010**

ACTIVITY DESCRIPTION

Historical bioassessment studies in Tecolote Creek have shown consistently impaired benthic macro-invertebrate (BMI) communities and there are several constituents on the State Water Resources Control Board (State Board) 303(d) list of impaired waterbodies. Due to budget constraints, this project was put on hold. The initial study was completed in FY 2010 and provides a strong basis for a focused follow-up study to provide specific recommendations for TMDL implementation planning. This is on hold. Future studies will be implemented as funding is available.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Indicator Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Due to budget contraints, this project is on hold. The initial study was completed in 2010. Future studies will be implemented as funding is available.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify metals, nutrients, and bacteria as high priority water quality problems throughout Tecolote Creek and the Mission Bay and La Jolla WMA.

EFFECTIVENESS MEASUREMENTS

Expected Benefits Objectives, findings, and recommendations based on bioassessment monitoring conducted in Tecolote Creek are summarized below.

Objectives

1) Comprehensively document biological conditions and community structure of BMI throughout the Tecolote Creek Watershed and its tributaries.
2) Assess possible stressors to the BMI communities by analyzing the physical habitat conditions as well as water quality constituents that could prevent the establishment of sensitive BMI taxa and non-impaired BMI communities.
3) Determine the most important limiting factors for achieving potential biological objectives.

Analysis Results

1) Analysis of seven bioassessment sites in the Tecolote Watershed indicated that there was biological impairment throughout the watershed.
2) Physical habitat ratings were good to very good for BMI colonization. TDS (Total Dissolved Solids) exceeded the water quality objectives (as described in the Basin Plan) throughout the watershed. Specific conductivity and salinity were also very high at six of the seven sites (relative to reference conditions in San Diego County).
3) The most important limiting factors for achieving potential biological objectives were high levels of TDS, specific conductivity, and salinity.

Conclusions

1) Determine the source(s) of elevated TDS specific conductivity and salinity in the Tecolote Watershed.
2) Assess the potential efforts and costs required for addressing water quality limitations which are impacting the biological integrity in the creek.

TITLE: TECOLOTE CREEK MICROBIAL SOURCE TRACKING STUDY
ID #: MB-3011

ACTIVITY DESCRIPTION

This study was conducted from 2007 through 2010 in three phases throughout the watershed to investigate and identify bacterial sources, origins, and loads in the Tecolote Creek Watershed and to assess and characterize specific priority activity contributions. The results provide background for the City of San Diego (City) to address bacterial load and concentration reduction strategies to comply with the Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Bacterial Project I - Twenty Beaches and Creeks in San Diego Region, Including Tecolote Creek (Bacterial Project I TMDL) recently adopted by the San Diego Regional Water Quality Control Board (Regional Board).

The Tecolote Creek Microbial Source Tracking Study aimed to identify sources of specific bacterial pollutants in the watershed. Objectives and findings are summarized below.

Objectives

1) Gather further information for the refinement of the Bacterial Project I TMDL and State Board 303(d) list documentation.
2) Verify Priority Sectors identified in the Strategic Plan through characterization of bacterial loadings to Tecolote Creek Watershed by targeting primary sources of high bacterial loading (e.g., anthropogenic and non-anthropogenic sources).
3) Determine the presence or absence of human contamination within the wateshed and pinpoint any sources of human contamination.
4) Determine the relative contribution and origin of bacterial regrowth to bacterial loading in the creek during wet weather and dry weather.
5) Further develop bacterial load and concentration reduction strategies for Tecolote Creek based on the results of study elements designed around the four previous objectives.

Due to budget constraints, this project is on hold. When funds become available the data collected in Tecolote Creek will be used to develop an implementation planning framework. Once the framework is completed, the framework will be considered for use as a management tool in developing a comprehensive load reduction plan for the Bacteria Project I TMDL. The framework may also be considered as a guidance document for developing implementation plans for other TMDLs with similar characteristics.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Indicator Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Due to budget constraints, this project is on hold.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA, and recommend implementing specific management and Best Management Practices (BMPs) strategies to reduce the identified sources.

EFFECTIVENESS MEASUREMENTS

Expected Benefits

The data collected during the three phases of the investigation will be compiled with all available historical data for submittal to the Regional Board for inclusion in the State Board 303(d) list database. This submittal will ensure that revisions to the State Board 303(d) list will be made using the most recent and relevant data available.

Analysis Results

1) An evaluation of all historical data indicated that a number of State Board 303(d) listed pollutants could be removed from the list based on the number of exceedances observed. The results indicate that dissolved cadmium, copper, lead, and zinc are eligible for delisting from the State Board 303(d) list. However total selenium, bacteria, nutrients, and turbidity did not meet de-listing requirements.
2) Sector prioritization, undertaken both through the Baseline Long-Term Effectiveness Assessment and Strategic Planning process, suggested that Sectors 1 and 2 presented the highest threat to water quality with a higher presence of potential pollutant sources through specific land use activities. Assessments of pollutant loads during both dry weather and wet weather indicated that these two sectors discharge higher loads of pollutants when compared with Sectors 3 and 4. During dry weather, Sector 1 was found to contribute the highest loads of copper, zinc, and total dissolved solids (TDS). During wet weather, Sector 2 was found to contribute some of the highest loads of bacteria, zinc, lead, and total suspended solids (TSS). Management of land use activities in Sectors 1 and 2 should be the focus of any comprehensive load reduction strategies. Wet weather bacteria loads from individual land uses indicated that there were no significant differences between different land uses with flows merging and combining throughout drainage areas. There was some indication that higher loads were attributable to transportation corridors, commercial areas, and industrial land uses. Dry weather bacteria loads were higher in residential and commercial areas with specific activities identified,

particularly poorly maintained dumpsters and catch basins. Over-irrigation was a key transport mechanism that was prominent in commercial and industrial areas.

3) A comprehensive assessment of water quality throughout Tecolote Creek was undertaken to assess the presence of human fecal contamination. The assessment was performed using human-specific Bacteroides and quantitative polymerase chain reaction (Q-PCR). During dry weather, five positive samples were obtained. Each follow-up investigation failed to locate a point source and in every instance there was evidence of transient human activity. During wet weather, only one sample (of a total of 37 samples collected during nine storms) was found to be positive for Bacteroides. This sample was collected during the early phase of the storm flows in an area known to be a transient area.
4) A number of investigations were undertaken in Tecolote Creek to assess the presence of environmental species of fecal indicator bacteria. Ponds were not found to be a significant reservoir for environmental indicator species. However, sediments and biofilms within the creek and MS4 system were found to be significant bacterial reservoirs. Biofilms on the walls of the MS4 system in particular were found to grow rapidly and contain high numbers of enterococci. Speciation of these enterococci determined that the origins were most likely from naturally occuring environmental rather than human fecal sources. Further investigation determined that the storm water, with high numbers of enterococci of fecal origin, was the primary inoculation mechanism, and that biofilms matured rapidly into complex communities with a variety of species present. The high flows generated during wet weather caused significant biofilm sloughing. The impact of biofilms on wet weather loads of indicator bacteria into receiving waters appeared to be significant.
5) Load and concentration reduction strategies are currently being developed through the Tecolote Creek Implementation Framework.

Conclusions

Once the framework is completed, the framework will be considered for use as a management tool in developing a comprehensive load reduction plan for the Bacteria Project I TMDL. The framework may also be considered as a guidance document for developing implementation plans for other TMDLs with similar characteristics.

TITLE: LA JOLLA ASBS WET WEATHER RECEIVING WATER EVALUATION OF THE DEVIL'S SLIDE AREA (EXTENSION OF PROP 84)
ID #: MB-3012

ACTIVITY DESCRIPTION

This interim report summarizes methods and initial findings from a special study focused on evaluating toxicity and physical/chemical dynamics in the immediate receiving water during and after a storm event in the southwest corner of the La Jolla Area of Special Biological Significance (ASBS). The area, known as the Devil's Slide, consists of a shallow flat rocky intertidal area in a relatively calm, protected area of the coastline. A single 36-inch storm water outfall pipe and several natural drainages enter the area. The upper intertidal zone is inundated with freshwater during periods of heavy rainfall under low tide conditions.

This special study leverages and expands upon two other concurrent evaluations being conducted by the City of San Diego to: 1) Assess compliance with recently finalized monitoring requirements prepared by the State of California as a new amendment to the California Ocean Plan (ASBS Special Protections, State Water Resources Control Board (SWRCB) Resolution No. 2012-0012); and 2) Monitor under a State of California Proposition Proposition 84 funded program, with an overarching goal of protecting the beneficial uses of the La Jolla coastal region in San Diego.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL
La Jolla Shores ASBS Regional Compliance Monitoring

TIME SCHEDULE FOR IMPLEMENTATION

This special study substantially expands upon both the ASBS Compliance and Prop 84 monitoring activities. Results from this interim report will be combined into a comprehensive final document after the conclusion of the second year of proposed Proposition 84 monitoring activities to occur during the summer of 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- University of California, San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients
-

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This bioaccumulation study is designed to provide supporting lines of evidence consistent with regulatory guidance in the State Water Resources Control Board Resolution No 2012-0012, Approving Exceptions to the California Ocean Plan for Selected Discharges into Areas of Special Biological Significance, Including Special Protections for Beneficial Uses and Certifying a Program Environmental Impact Report (SWRCB, March 16, 2012). In addition, this study is relevant to ongoing City plans and programs including the La Jolla Shores Coastal Watershed Management Plan, Watershed and Jurisdictional Urban Runoff Management Program, Strategic Plan for Watershed Activity Implementation, and the La Jolla Shores ASBS Protection Implementation Program administered under Proposition 84 funding (Grant agreement No 10-413-550) (City, 2008a; City 2008b; La Jolla Shores Watershed Management Group [LJSWMG], 2008; City, 2007).

EFFECTIVENESS MEASUREMENTS

Expected Benefits

This information can be used to implement future best management practices (BMPs) that will be cost-effective, justified, and have an effective measurable outcome. By employing multiple lines of evidence, this prioritization approach will be proposed as an alternative to blanket monitoring requirements currently outlined in the ASBS Special Protections document.

Analysis Results

1. The mixing of storm water in the immediate receiving waters is extremely dynamic both spatially and temporally. The duration and magnitude of the plume monitored was limited beyond the intertidal zone. Heavy storm water runoff during a low tide condition results in freshwater inundation of the shallow rocky intertidal zone at Devil's Slide. The magnitude of the freshwater impact at low tide rapidly decreases immediately off of the shallow flat intertidal shelf due to mixing with marine receiving waters. At high tide, a slight freshwater signature was confined to a small mixing zone along the edge of the ocean/beach interface. A secondary plume was observed at several sites where a freshwater signature arrived with the incoming tide approximately 30 hours after the main pulse of heavy rainfall. Salinity at these sites returned to ambient conditions during the outgoing tide several hours later, at the next high tide. The magnitude and source of this freshwater plume is not currently known, but it is likely a combination of local and far field sources (e.g. coastal lagoons). A site-specific mixing zone study is recommended to derive an acceptable dilution factor that reflects these rapid dynamics and is protective of marine life.
2. Several trace metals in the undiluted storm water exceeded Ocean Plan water quality objectives (WQOs), and synthetic pyrethroid concentrations were detected at levels above those that have been found to cause toxicity to mysid shrimp in laboratory tests. Concentrations in all marine receiving water samples tested; however, were below Ocean Plan daily and instantaneous maximum WQOs, and published toxic concentrations of concern.
3. Storm water was toxic to sea urchin embryos, with toxicity likely attributed to copper and zinc. A single grab sample from a tide pool site inundated with freshwater during runoff at low tide was toxic to both mysids and sea urchin embryos. The cause of toxicity in the tide pool sample to sea urchin embryos was also likely attributable to

the cationic trace metals copper and zinc. The cause of toxicity to mysids appears to be related to synthetic pyrethroid pesticides (final results pending).

4. Several pre-storm and post-storm receiving water samples exhibited effects to sea urchin embryos. Toxicity of the pre-storm/ dry weather samples was removed by filtration and was specific to the embryo development endpoint, not affecting egg fertilization using the same species. Trace metals and non-polar organic compounds have been ruled out as likely causes of toxicity. It is currently hypothesized that an algae species (possibly Licomorpha gracilis), may have been responsible for the effects observed in these samples. These results will be summarized and reported under separate cover at a later date.

Conclusions

A comprehensive goal currently underway is an integration of relevant information from all study efforts in the La Jolla ASBS in a manner that will lead towards efficient future prioritization and scaling of activities. Proposed future activities should focus only on those areas and/or constituents that have the most uncertainty or need the most attention. This information can then be used to implement future best management practices (BMPs) that will be cost-effective, justified, and have an effective measurable outcome. By employing multiple lines of evidence, this prioritization approach will be proposed as an alternative to blanket monitoring requirements currently outlined in the ASBS Special Protections document.

Recommendations

1. Re-assess *in situ* mounting methods for the salinity sondes to ensure there are no obstacles that might inhibit mixing and interference with the probe;
2. Conduct salinity only monitoring at all locations during additional storms to better characterize freshwater plumes in the area;
3. Verify the rate of water movement *in situ* through the sea urchin embryo development test chambers to ensure rapid equilibrium under natural conditions;
4. Modify the protective coverings of the salinity meters to ensure rapid equilibrium under natural conditions;
5. Ensure there are no potential leaks from the threaded plugs on the sea urchin embryo development test chambers;
6. Conduct a freshwater tolerance assay for the mysid shrimp *H. costata* and purple urchin embryos, mimicking the magnitude and durations observed at the 186 tide pool location;
7. Investigate possible effects on sea urchin embryo development due to the algae species *Licomorpha gracilis*; and
8. Initiate limited TIE procedures immediately upon screening of receiving water samples (e.g. EDTA, filtration, C18 extraction). This proactive method will avoid the chronic problems to date associated with the loss of toxicity in marine receiving water samples.

TITLE: LA JOLLA ASBS BIOACCUMULATION STUDY
ID #: MB-3013

ACTIVITY DESCRIPTION

The experimental design of this study consisted of the collection of several local intertidal species to evaluate bioaccumulation potential for several known constituents of potential concern (COPCs), in the Devil's Slide area of the La Jolla Shores Area of Special Biological Significance (ASBS) No. 29. Tissues from these test species were processed and analyzed for key COPCs, specifically, metals and synthetic pyrethroid pesticides. This study utilizes the California mussel (Mytilus californianus) as the primary invertebrate indicator species for the core of the bioaccumulation monitoring. This mussel species is prescribed in the recent Special Protections No 2012-0012 as adopted on March 20, 2012 by the State Water Resources Control Board. Since this ASBS does not support mussels along a majority of the intertidal zone, several other local plants and invertebrates were tested as potential secondary bioindicator species as part of a pilot study. The pilot study results compared the COPC tissue concentration in the same species from nearby reference areas to areas that are less influenced from storm water runoff.

The La Jolla Shores Coastal Watershed is located in La Jolla, California, within San Diego city limits. The watershed covers 1,639 acres and is composed of primarily residential and institutional land uses. Within the watershed's boundaries are 32 distinct sub-drainage areas, which drain west into two areas of special biological significance (ASBS), including the San Diego-Scripps State Marine Conservation Area (ASBS 31) and the La Jolla State Marine Conservation Area (ASBS 29). The majority of the runoff within the watershed is conveyed through a network of storm drains before it is discharged at several locations along the beach. The central and largest portion of the watershed drains to a single storm drain outfall that discharges at Avenida de la Playa.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL
La Jolla Shores ASBS Regional Compliance Monitoring

TIME SCHEDULE FOR IMPLEMENTATION

The study is anticipated to be complete by June 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- University of California, San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Nutrients

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This study is relevant to ongoing City plans and programs including the La Jolla Shores Coastal Watershed Management Plan, Watershed and Jurisdictional Urban Runoff Management Program, Strategic Plan for Watershed Activity Implementation, and the La Jolla Shores ASBS Protection Implementation Program administered under Prop 84 funding (Grant agreement No 10-413-550) (City, 2008a; City 2008b; La Jolla Shores Watershed Management Group [LJSWMG], 2008; City, 2007).

EFFECTIVENESS MEASUREMENTS

Expected Benefits

These screening results will be used to guide future collection of samples based on both the ability and differences in uptake of COPCs in selected bioindicator species between the outfall (SDL-186) and far field reference locations.

Analysis Results

The metals suite selected for this study included Silver (Ag), Arsenic (As), Cadmium (Cd), Cr, Cu, Iron (Fe), Mercury (Hg), Manganese (Mn), Nickel (Ni), Pb, Antimony (Sb), Selenium (Se), Thallium (Tl), and Zn. Metals concentrations ranged several orders of magnitude and are presented on a logarithmic scale (Figure 3-2). Initial screening results found that the tissue concentrations for metals were in general comparable in magnitude between the samples collected near the SDL-186 outfall area and those collected from the reference site at Dike Rock. Samples were analyzed for metals using National Oceanic and Atmospheric Administration (NOAA) Status and Trends methodology modifed for the various matrices. The data presented in this technical memorandum is provided in preliminary form. No specific data quality issues have been identified at this time, with the exception of possible low level zinc contamination in select samples. Three species of invertebrates (Tegula funebralia, Anthropleura sola, and Lottia gigantia) and one red algae (Caulacanthus ustulatus) were submitted for synthetic pyrethriod testing. Only one algal species was tested since bioaccumulation burdens are typically significantly higher in invertebrate species due to biomagnification.

Based on these screening results, there was no detectable tissue bioaccumulation of synthetic pyrethriods in the pilot test species. Results for an additonal two mussel species (Septifer bifurcates and Mytilus californianus) are pending.

Conclusions

The results that will be obtained from the bioindicator sample collections to date are considered representative of a potential spatial gradient based on seasonal exposure to storm water for the 2011-2012 wet weather season. While this event will provide a comprehensive snapshot of wet weather season exposure for multiple bioindicator species, the spatial information will provide a single line of evidence. A companion dry weather study will provide a second line of temporal evidence to assess if and how much of the COPCs may be depurating or accumulating from the selected bioindicators during dry conditions, and provide a second comparative spatial data set.

Recommendations

Results from the core monitoring are pending. Based on review of these results, the species and number of replicate samples per site collected for metals may be modified for future sampling events depending on statistical significance. Synthetic pyrethroids have not been identified in four species to date. Additional results for the two mussel species at two locations are pending. Should no measurable synthetic pyrethroids be measured in these samples, no further testing is recommended for the dry weather event. Bioaccumulation of COPCs in the species selected in this study can be compared to published tissue residue threshold effects concentrations for the same or similar species. These results can be used to provide another line of evidence to indicate the potential for biological impacts.

San Diego Bay Watershed Urban Runoff Management Program Document

A Collaborative Effort of:

City of Chula Vista
City of Coronado
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of San Diego
County of San Diego
Port of San Diego
San Diego County Regional Airport Authority

March 24, 2008

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Document for was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

Signed certification statements for the participating San Diego Bay Copermittees are located in Appendix A of this report.

Acknowledgements

The development and production of this Watershed Urban Runoff Management Program Document for the San Diego Bay Watershed Management Area (San Diego Bay WMA) are the result of the talents and experience of numerous individuals. Their contributions and insight made this document a collective success for the environment and for the watersheds. The primary authors of the text include:

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The San Diego Bay Copermittees also wish to recognize the public for their continued expressed concern for the protection and conservation of the San Diego Bay WMAs environmental resources.

The San Diego Bay Watershed Copermittees also wish to recognize and thank Paul Hardwick of SANDAG and the public for their continued expressed concern for the protection and conservation of the San Diego Bay Watershed's environmental resources.

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ACRONYMS AND ABBREVIATIONS

303(d)	Section of the Clean Water Act
ABLM	Ambient Bay and Lagoon Monitoring Program
BLTEA	Baseline Long-Term Effectiveness Assessment
BMP	Best Management Practices
BOD	Biologic Oxygen Demand
BWE	Baseline Watershed Evaluation
CBSM	Community Based Social Marketing
CDFG	California Department of Fish and Game
COC	Constituent of Concern
Copermittees	The 18 cities within San Diego County, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority
CSDM	Coastal Storm Drain Monitoring Program
CWA	Clean Water Act
DFMP	Drainage Facilities Master Plan
DWM	Dry Weather Monitoring
DEH	County of San Diego Department of Environmental Health
DPR	Department of Parks and Recreation
EPA	Environmental Protection Agency
FY	Fiscal Year
GIS	Geographic Information Systems
HA	Hydrologic Area
HMP	Hydromodification Management Plan
HOA	Home Owners Association
HU	Hydrologic Unit
IBI	Index of Biological Integrity
ILACSD	I Love a Clean San Diego
IPM	Integrated Pest Management
JURMP	Jurisdictional Urban Runoff Management Program
LID	Low Impact Development
MBAS	Methylene Blue Active Substances
MLS	Mass Loading Station
MS4	Municipal Separate Storm Sewer System
MSCP	Multiple Species Conservation Plan
Municipal Permit	San Diego Regional Water Quality Control Board Order 2001-01
NPDES	National Pollution Discharge Elimination System
PCW	Project Clean Water
PSA	Public Service Announcement
RHMP	Regional Harbor Monitoring Program
RURMP	Regional Urban Runoff Management Plan
RWQCB	Regional Water Quality Control Board

SANDAG	San Diego Association of Governments
San Diego Bay Copermittees	The County of San Diego, the Port of San Diego, and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego, and SDCRAA
SDA	Special Drainage Area
SDCK	San Diego Coast Keeper
SDCRAA	San Diego County Regional Airport Authority
SIYB	Shelter Island Yacht Basin
SMC	Southern California Monitoring Coalition
SWAMP	Surface Water Ambient Monitoring Program
SWELL	Stewardship Watershed Education for Lifelong Leadership
SWRCB	State Water Resources Control Board
SWQMP	Storm Water Quality Master Plan
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
TTWQ	Threat to Water Quality
TWAS	Temporary Watershed Assessment Stations
USD	United States Dollar
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WLA	Waste Load Allocation
WMA	Watershed Management Area
WQO	Water Quality Objective
WQP	Water Quality Priority
WURMP	Watershed Urban Runoff Management Program

Executive Summary

Since January 2002, the San Diego Bay Copermittees have been actively implementing a Watershed Urban Runoff Management Program (WURMP). The County of San Diego, Port of San Diego, San Diego County Regional Airport Authority, and the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) are continuing their efforts to develop and implement watershed-based programs in the San Diego Bay Watershed Management Area (WMA). This document discusses the San Diego Bay Copermittees' efforts to meet the requirements of Section E of Municipal Stormwater Permit, Order Number R9-2007-0001, as well as reduce municipal separate storm sewer systems (MS4) discharge, and prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

The Watershed Urban Runoff Management Program's primary goal is to cooperatively and through collaborative strategic planning decrease the sources and reduce the discharge of pollutants from the MS4 that have been identified as causing high priority water quality problems. The Program identifies five primary objectives to strive towards this goal: (1) develop and expand methods to assess and improve water quality within the watershed; (2) Implement activities to address the WMA high priority water quality problems; (3) integrate watershed principles into land use planning; (4) enhance public understanding of sources of water pollution within the watershed; and (5) encourage and enhance stakeholder involvement within the watershed. To help reach these goals and objectives, the San Diego Bay Watershed Workgroup will work to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as land use planning watershed-based mechanisms, to properly target high priority water quality problems and their sources.

Three major watersheds comprise the San Diego Bay WMA: Pueblo San Diego (908 HU), Sweetwater (909 HU), and Otay (910 HU). Each of the watersheds is further divided into three Hydrologic Areas (HAs). These watersheds vary greatly in size, land use, and population, and have different water quality issues as a result. Using data from several monitoring programs being conducted, the San Diego Bay WMA water quality assessment focuses on analyzing data from receiving water bodies under ambient conditions (a Level 6 outcome asssessment) and urban runoff discharges, which can provide information related to Load Reductions (Level 4 outcome) and changes in discharge quality (Level 5 outcome). The data obtained from these monitoring programs may indicate elevated pollutant levels, toxicity problems, and ecological impacts that may be influencing urban runoff contributions to the receiving water quality issues.

The San Diego Bay Copermittees utilized the Model Watershed Strategy to select activities appropriate for implementation within each HA. The information from the water quality assessments was used to identify the high priority water quality problems of the WMA, select watershed activities appropriate for each HA, and used in the subsequent effectiveness

assessments of those activities. In order to identify the high priority water quality problems in the San Diego Bay WMA, the Copermittees used both monitoring data and likely source information to conduct a Baseline Watershed Evaluation (BWE) for each HA. Those pollutant categories receiving an "A" BLTEA TTWQ rating coupled with a large number of likely or unknown sources were considered a high priority water quality problem for that HA. When pollutant categories received a "B" BLTEA TTWQ rating and also had likely sources present, the San Diego Bay Copermittees used their judgment to determine whether those pollutant categories should be considered high priority. High priority water quality problems for each HA in the San Diego Bay WMA were:

- 908.1: Bacteria, Gross Pollutants, Metals, Oil and Grease, and Pesticides
- 908.2: Bacteria, Metals, Sediment, Trash, Pesticides
- 908.3: Bacteria, Sediment, Trash
- 909.1: Bacteria
- 909.2: Pesticides
- 910.1: Bacteria and gross pollutants
- 910.2: Bacteria

The San Diego Bay Copermittees identified the jurisdictions representing each HA, their contributions to the HA's pollutant issues relative to their jurisdictional authority, and the management actions required for each pollutant category that is high priority water quality problems in their respective HA(s). This information has assisted the Copermittees in the effort to effectively and appropriately implement either load reducing, source identification, or additional monitoring types of activities to address the high priority water quality problems in each HA.

The San Diego Bay Copermittees utilized a Five-Year Strategic Plan to facilitate the coordinated selection of appropriate activities to address high priority water quality problems in each HA. The watershed activities selected for implementation will be pursuant to established schedules, with no less than two watershed water quality and two watershed education activities in active implementation in each Permit year. Four collaborative watershed-based activities were selected for enhanced coordination and standardization due to commonality in these jurisdictional activities. These include cleanup events, stormdrain litter control techniques, street sweeping enhancements, and municipal best management practices. These four collaborative activities overlapped in several HAs or were being implemented by multiple jurisdictions in the same fashion. Each jurisdiction retains control over implementing the activity and the manner of implementation will vary according to scale, location, and/or time. The San Diego Bay Copermittees will be able to achieve a watershed-level effectiveness assessment for these collaborative watershed activities.

The San Diego Bay Copermittees will conduct an effectiveness assessment for each watershed water quality and watershed education activity implemented and on the implementation of the

WURMP as a whole in terms of Outcome Levels 1-6. The Copermittees will detail the performance measures and review mechanism for each watershed activity in their particular jurisdiction as watershed activities may vary widely in the identified target outcomes applicable for each activity, and the pollutant(s), pollutant source(s) and HA addressed.

It is expected that the program objectives and management actions will be revised as the program evolves and matures. This will allow the Copermittees to respond to changing water quality conditions or adjust activities that have not performed as anticipated. The Copermittees are dedicated to evaluating water quality and pollutant trends which may occur in each HA, and assess whether management actions and/or activities are effective, or modifications and improvements are needed. Any changes or modifications to the San Diego WURMP will be described in WURMP Annual Reports. Therefore, over time, the WURMP and all Annual Reports will be considered one unified, living document.

Section 1: Introduction

Watersheds are "readily identifiable landscape units that integrate terrestrial, aquatic, geologic, and atmospheric processes" (Clements et al., 1996). Because water moves downstream in a watershed, any activity that affects water quality, quantity, or rate of movement at one location can affect the receiving waters at downstream locations and the rest of the watershed. Watershed-level planning is appropriate for water quality management as watersheds represent geographic units of hydrological processes and urban runoff does not recognize jurisdictional boundaries within a watershed. Watershed management practices can provide an integrated approach to protect water quality. A collaborative strategy among all municipalities within the watershed boundaries is critical to the success of the individual management efforts as well as the overall health of the watershed.

On January 24, 2007, the San Diego Regional Water Quality Control Board (RWQCB) adopted Order No. R9-2007-0001, NPDES No. CAS0108758, the third Municipal Stormwater Permit for San Diego County. This Order will be referred to throughout this document as the "Municipal Permit" or the "Permit". The Municipal Permit named 18 municipalities, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority as Copermittees (collectively referred to throughout this document as "Regional Copermittees"). It requires the Regional Copermittees to collaboratively develop and implement a Watershed Urban Runoff Management Program (WURMP) for each of the ten San Diego Region Watershed Management Area (WMA). These WURMP programs must be designed to meet the requirements of Section E of the Permit, as well as reduce municipal separate storm sewer system (MS4) discharge, and prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

1.1 Program Framework

The Copermittees within the San Diego Bay WMA (collectively referred to throughout this document as "San Diego Bay Copermittees") have been actively implementing a WURMP in the San Diego Bay WMA since January 2002. The San Diego Bay WURMP document presented herein incorporates many of the programs that were initially developed under the previous Permit (2001). These programs provided the initial structure for addressing urban runoff related problems on a watershed scale. As such, they have become the framework for this document. Where necessary, these programs have been updated, enhanced, or restructured to ensure that they fully comply with the new Municipal Permit requirements.

1.1.1 Goals and Objectives

The purpose of the WURMP is to cooperatively and through collaborative strategic planning decrease the sources and reduce the discharge of pollutants from the MS4 that have been identified as causing high priority water quality problems. The WURMP provides guidance and

coordination for water quality, education, land use planning activities, and program implementation to efficiently achieve the greatest protection of beneficial use of receiving water bodies. A key component of the WURMP is the development of a collective Watershed Strategy to guide the selection and implementation of appropriate watershed activities that adequately address the WMA's high priority water quality problems. Annual assessments of water quality through various monitoring programs during both wet and dry seasons provide results that are evaluated and placed within a historical context for trend analyses, which help determine whether or not watershed activities are working effectively to reduce and prevent water pollution.

The following objectives have been identified for the San Diego Bay WURMP:

- *Develop and/or expand methods to assess and improve water quality within the watershed*
- *Implement activities to address the WMA high priority water quality problems*
- *Integrate watershed principles into land use planning*
- *Enhance public understanding of sources of water pollution*
- *Encourage and develop stakeholder participation*

The San Diego Bay Copermittees will meet these objectives by working to identify, implement, and assess appropriate watershed water quality and education activities to properly target high priority water quality problems and their sources.

1.1.2 Watershed Collaboration

WURMP development and implementation is a collaborative effort by all of the San Diego Bay Copermittees, as the Municipal Permit lays emphasis on a watershed-based approach to urban runoff management. The Port of San Diego is the lead watershed Copermittee for the San Diego Bay WMA, serving as a liaison between the San Diego Bay Copermittees and RWQCB. The San Diego Bay Copermittees consist of the following ten jurisdictions:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority

The San Diego Bay Copermittees will meet on a quarterly basis (at a minimum) to discuss the status and implementation of the Watershed Strategy, potential watershed and outreach activities, water quality results, RWQCB updates, and items pertinent to watershed management. These meetings will take place at a site agreed upon by all members.

1.1.3 San Diego Bay WURMP Document

The San Diego Bay WURMP document represents the San Diego Bay Copermittees' collaborative efforts to develop a WURMP program to address watershed requirements and stormwater discharges from MS4s. This document was prepared in accordance with the Municipal Permit requirements in Section J. The format used herein is the standardized format for WURMPs developed by the Regional Copermittees, pursuant to Permit Section M.6. Specifically the document contains the following sections, the contents of which are summarized below.

Section 1 – Introduction. This section describes the purpose of the WURMP, identifies the San Diego Bay Copermittees, identifies the lead watershed Copermittee, discusses the overall collaborative process, and identifies how the Municipal Permit requirements are addressed in this document. The section also contains a general San Diego Bay WMA overview and map of the major watershed features.

Section 2 – Collective Watershed Strategy. This section describes both the regional and San Diego Bay-specific Collective Watershed Strategy, as mandated by Permit Section J.1.b.(4)(g). It includes Information on how the San Diego Bay Copermittees adapted the regional Model Watershed Strategy to assist with the identification of high priority water quality problems within each hydrologic area (HA) of the watershed, selecting and prioritizing activities, and filling existing data gaps. Finally, it details how the Watershed Strategy is being used to guide the selection and implementation of watershed water quality activities and watershed education activities.

Section 3 – Water Quality and Pollutant Source Assessment. This section will identify and describe the water quality data, reports, analyses, and other information that will be used to assess receiving water quality within the watershed, as well as explain how this information will be evaluated on an annual basis pursuant to Section I.2.b of the Permit. It will also discuss the methodology used to identify high priority water quality problems and likely pollutant sources within each HA of the San Diego Bay WMA.

Section 4 – Five-Year Strategic Plan. This section provides detail on how the Watershed Strategy was used to develop a five-year strategic plan to guide program implementation. This section also includes information on the watershed water quality, education, and public participation programs and activities that are proposed as part of the Five-Year Strategic Plan. Information on the activities that will be implemented during Year One and Year Two of the Permit is also contained in this section. Finally, this section includes the mechanisms

to be used to encourage collaborative, watershed-based, land-use planning among jurisdictional planning departments.

Section 5 – Program Effectiveness Assessment. This section discusses the approach that will be used to assess the effectiveness of watershed water quality and education activities, and the effectiveness of WURMP implementation as a whole. It should be noted that activity-specific discussions contained within this section will focus on the process used for assessment, while activity-specific assessment approaches will be described in individual Proposed Watershed Activity Summary Sheets and may vary widely from one activity to another. Where applicable, this section will also describe how Total Maximum Daily Load (TMDL) Best Management Practice (BMP) Implementation Plans will be assessed utilizing measurable targeted outcomes, assessment measures, and assessment methods.

Section 6 – Program Review and Modification. This section will describe the process for reviewing and modifying the San Diego Bay WURMP. The section will discuss how all changes to the WURMP (i.e., modified priorities, implementation schedule changes, map updates) will be described and justified in WURMP Annual Reports.

Section 7 – Conclusions and Recommendations. This section is required by the Permit and includes conclusions and recommendations as determined applicable by the San Diego Bay Copermittees.

This material is submitted pursuant to the Municipal Permit, and is subject to Attachment B Section 6 of the Municipal Permit concerning enforceability. In addition, the document includes material describing San Diego Bay Copermittees' plans to go beyond the requirements of the Municipal Permit.

1.2 San Diego Bay Watershed Description

The San Diego Bay WMA consists of three separate watersheds and encompasses a 415 square mile area that extends easterly from the San Diego Bay for more than 50 miles to the Laguna Mountains. The WMA ranges in elevation from sea level at San Diego Bay and reaches a maximum elevation of approximately 6,000 feet above sea level at the eastern boundary. The majority of the WMA land area generally lies north of the Tijuana River WMA, south of the San Diego River WMA, west of the Anza Borrego WMA, and west to the Pacific Ocean. The headwaters of the WMA begin in the unincorporated area of the County, and then transect all or portions of seven cities, namely San Diego, National City, Chula Vista, Imperial Beach, Coronado, Lemon Grove, and La Mesa. Table 1-1 provides data on the percentage of each jurisdiction within the WMA at the watershed and subwatershed level. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) prepared by the RWQCB defines the San Diego Bay WMA as being comprised of three watersheds (or hydrological units), namely the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed (Figure 1-1).

Table 1-1. San Diego Bay WMA Jurisdictional Breakdown (By Area)

Jurisdiction	Percentage of Jurisdictional Acreage per Hydrologic Unit			Percentage of Jurisdictional Acreage per San Diego Bay WMA
	Pueblo San Diego (35,941 ac.)	Sweetwater (148,040 ac.)	Otay (98,352 ac.)	
San Diego County Regional Airport Authority	1.29%			0.16%
Chula Vista		9.44%	17.71%	11.12%
Coronado			4.70%	1.64%
Imperial Beach			0.71%	0.25%
La Mesa	4.49%	0.77%		0.97%
Lemon Grove	4.58%	0.58%		0.89%
National City	6.93%	1.23%		1.53%
Port of San Diego	3.31%	0.47%	1.59%	1.22%
San Diego	79.07%	1.38%	5.77%	12.80%
Unincorporated	0.34%	86.12%	69.52%	69.42%

Source: SANDAG data included "Hydrologic Basins", "Watersheds", and "Cities" combined with the Port and Airport's Parcel Boundary.

San Diego Bay is the largest tidewater in San Diego County and has been extensively developed as a port. It covers 10,532 acres of water and 4,419 acres of tidelands. Only seventeen to eighteen percent (17 to 18%) of the original bay floor remains undisturbed by dredge or fill. The major watercourses feeding San Diego Bay include the Sweetwater River, the Otay River, Chollas Creek, Paleta Creek, Paradise Creek, and Switzer Creek. The majority of freshwater input to the Bay is from surface runoff from urban areas and intermittent flow from these rivers and creeks during rain events. It should also be noted that dams and extensive use of groundwater in the Sweetwater and Otay Rivers has reduced the input from these rivers to the Bay by seventy-six percent (76%). Additionally, there are over 200 storm drains that discharge into San Diego Bay. The current and forecasted population growth through 2030 within each subwatershed is displayed in Table 1-2.

Table 1-2. San Diego Bay Watershed Population

Watershed	2000 Census	Forecasted Population 2010	Forecasted Population 2020	Forecasted Population 2030
Pueblo San Diego	480,247	520,324	589,050	651,552
Sweetwater	303,768	343,578	370,489	402,953
Otay	124,271	204,508	247,064	267,583

Source: Developed by the County of San Diego.

The San Diego Bay WMA contains a diverse assemblage of natural communities. Pine forests and oak woodlands are found in the mountains that form the headwaters of the Sweetwater and

Otay Rivers. These forests are managed primarily for recreation and preservation, with campgrounds, off-road biking and hiking trails, and scenic overlooks. The Cleveland National Forest and Cuyamaca Rancho State Park are other public lands found in the watershed. Grassland meadows in these areas provide vegetation for wildlife, horses, and cattle. In the central part of the watershed, riparian vegetation containing willow, cottonwood, and sycamore trees provides habitat for the endangered least Bell's vireo. Hillsides along the river are covered with dense growths of chaparral vegetation and coastal sage scrub vegetation. Coastal sage scrub in this area provides habitat for one of the largest known populations of the threatened California gnatcatcher. In the western part of the watershed, the confluence of the Sweetwater River and the San Diego Bay forms a coastal salt marsh and brackish marsh. These marshes provide habitat for the light-footed clapper rail, the western snowy plover, Belding's savannah sparrow, and brown pelicans. Ninety percent (90%) of the original salt marshes and fifty percent (50%) of the original mudflats around San Diego Bay have been filled or dredged for development. The endangered California least tern and the threatened green sea turtle are just two of the many species that find suitable habitat in and around San Diego Bay itself.

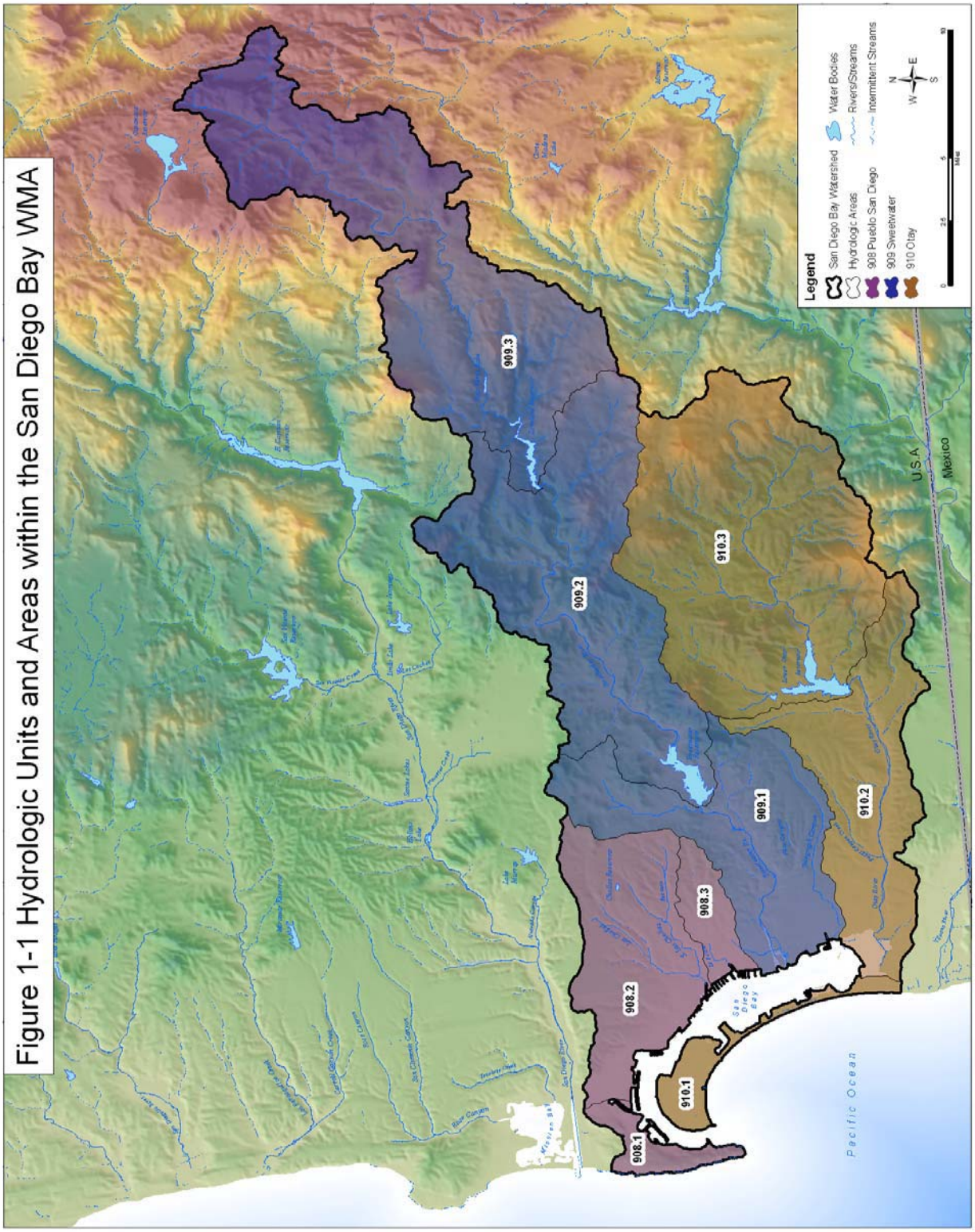

Figure 1-1 Hydrologic Units and Areas within the San Diego Bay WMA

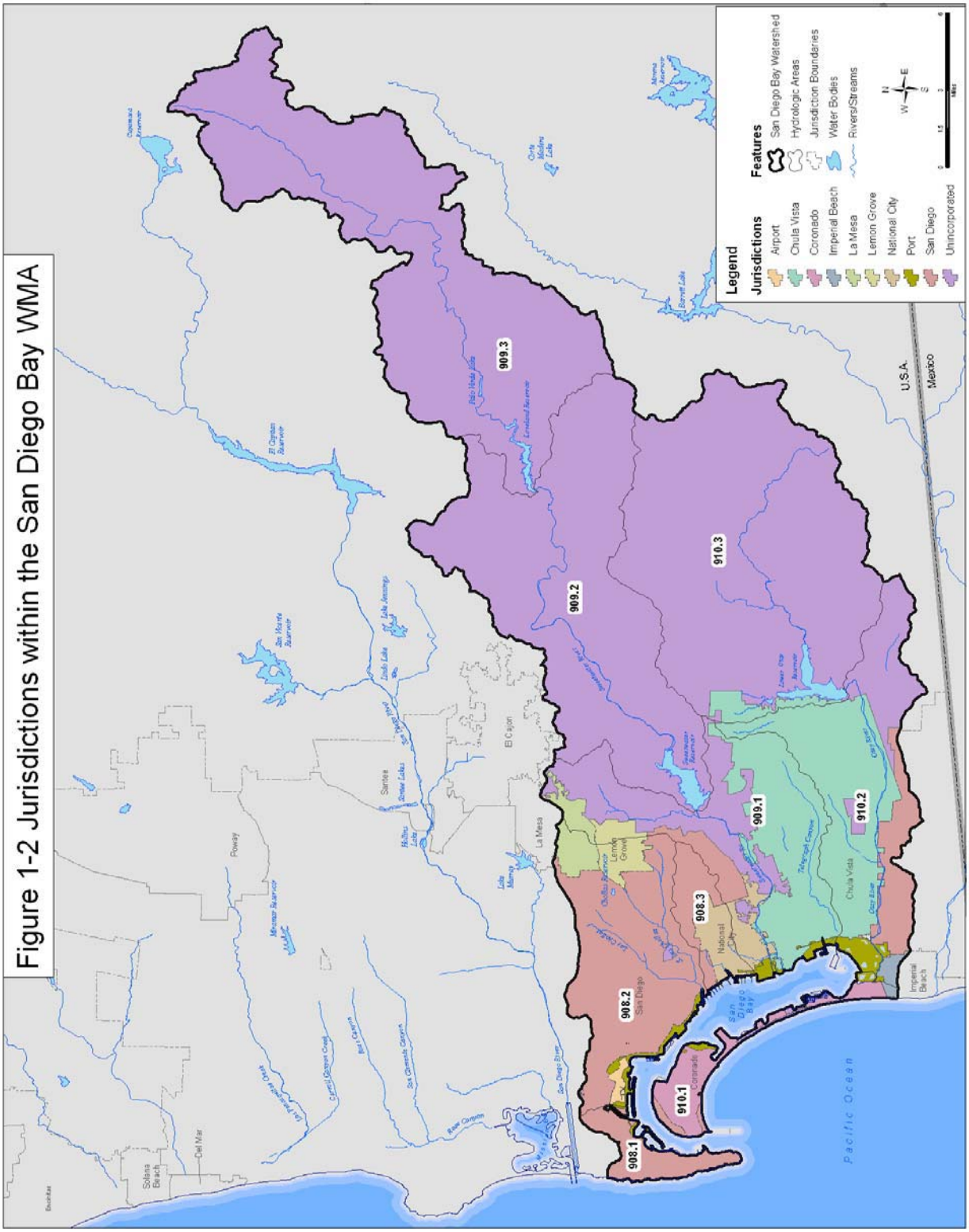

Figure 1-2 Jurisdictions within the San Diego Bay WMA

1.2.1 Pueblo San Diego Watershed

The Pueblo San Diego Watershed encompasses an area of approximately 60 square miles with no central stream system. San Diego River Watershed borders it to the north and the Sweetwater River Watershed borders it to the south (Figure 1-1). The major population center is the City of San Diego (Figure 1-2).

1.2.1.1 Pueblo San Diego Drainage (908)

The Basin Plan identifies the Pueblo San Diego Watershed as the smallest of the three San Diego Bay watersheds, covering approximately 36,000 acres. It is comprised of three HAs: Point Loma (908.1), San Diego Mesa (908.2), and National City (908.3). Major water features include Chollas Creek, Paleta Creek, and San Diego Bay. The majority of the water from the Pueblo San Diego Watershed drains to San Diego Bay, although a portion of the Point Loma HA drains directly to the Pacific Ocean.

1.2.1.2 Pueblo San Diego Land Use Inventory

Table 1-3 depicts the existing land use in the Pueblo San Diego Watershed at the HA level and is based on Year 2006 data from the San Diego Association of Governments (SANDAG). The dominant land uses within the HAs are as follows:

Point Loma HA (908.1) – Within this HA, Residential uses make up approximately thirty-two percent (32%) of the land uses followed by Vacant/Undeveloped land at nineteen percent (19%), Transportation at sixteen percent (16%), and Military uses at fourteen percent (14%). The remaining nineteen percent (19%) consists primarily of Commercial Businesses, Public Facilities, Open Space/Preserves, and Schools.

San Diego Mesa HA (908.2) – Within this HA, Residential comprises approximately forty percent (40%) of the land uses followed by Transportation at twenty-nine percent (29%), and Commercial/Office Business are approximately eight percent (8%) of the land use while Industrial Businesses are five percent (5%). Open Space/Preserves comprise approximately six percent (6%) of the HA. The remaining twelve percent (12%) consists of multiple uses including Public Facilities, Schools, and Parks.

National City HA (908.3) – Within this HA, Residential makes up forty-six percent (46%) followed by Transportation at twenty-three percent (23%). Military consists of nine percent (9%), while Schools make up nearly five percent (5%). Commercial/Office Businesses are four percent (4%) and Industrial Business is three percent (3%). The remaining ten percent (10%) consists of multiple uses including Parks and Open Space/Preserves.

According to Table 1-1, most of the Pueblo San Diego Watershed falls within the jurisdiction of the City of San Diego (79.1%). Other jurisdictions include within this watershed include: National City (6.9%), Lemon Grove (4.6%), La Mesa (4.5%), Port of San Diego (3.3%), the

Regional Airport Authority (1.3%), and the County of San Diego (0.3%). This watershed is the most developed and most densely populated watershed in the San Diego Bay WMA. The population in the Pueblo San Diego Watershed is expected to reach over 651,552 by the year 2030 (Table 1-2). Given the extent of existing development, there is little new development forecasted for the Pueblo San Diego Watershed over the next 15 years.

Table 1-3. Land Use Inventory for the Pueblo San Diego Watershed

HA	Land Use Category	Acreage	Percentage of Total Acreage
908.1	Commercial/Office	240.4	5.5%
	Industrial	7.6	0.2%
	Military	617.9	14.0%
	Open Space/Preserves	194.4	4.4%
	Parks	51.5	1.2%
	Public Facilities	200.1	4.5%
	Residential	1,400.4	31.8%
	Schools	154.8	3.5%
	Transportation	725.1	16.4%
	Under Construction	1.2	0.03%
	Undeveloped/Vacant	816.0	18.5%
	TOTAL	4,409.5	100%
908.2	Agriculture	14.8	0.1%
	Commercial/Office	1,963.1	7.6%
	Industrial	1,244.1	4.8%
	Military	429.9	1.7%
	Open Space/Preserves	1,504.0	5.8%
	Parks	574.2	2.2%
	Public Facilities	1,059.1	4.1%
	Residential	10,312.8	39.8%
	Schools	726.7	2.8%
	Transportation	7,289.9	28.2%
	Under Construction	68.2	0.3%
	Undeveloped/Vacant	703.5	2.7%
	TOTAL	25,890.3	100%
908.3	Commercial/Office	229.1	4.1%
	Industrial	143.3	2.5%
	Military	500.6	8.9%
	Open Space/Preserves	158.1	2.8%
	Parks	196.0	3.5%
	Public Facilities	115.1	2.0%
	Residential	2,592.1	46.1%
	Schools	258.5	4.6%
	Transportation	1,308.8	23.3%
	Under Construction	0.3	0.01%
	Undeveloped/Vacant	126.2	2.2%
	TOTAL	5,628.2	100%

Source: SANDAG Year 2006 Land Use data.

1.2.2 Sweetwater Watershed (909)

The Sweetwater Watershed encompasses approximately 230 square miles, with the Sweetwater River comprising the central drainage system. As shown in Figure 1-1, the Pueblo San Diego Watershed is located to the north of the Sweetwater Watershed and the Otay Watershed is located to the south. The most urbanized parts of the Sweetwater Watershed include portions of the City of Chula Vista, City of Lemon Grove, National City, and the unincorporated communities of Spring Valley and Rancho San Diego (Figure 1-2).

1.2.2.1 Sweetwater Watershed Drainage

The Basin Plan identifies the Sweetwater Watershed as the largest of the three San Diego Bay watersheds, encompassing over 148,000 acres. The watershed is comprised of three HAs: Lower Sweetwater (909.1), Middle Sweetwater (909.2), and Upper Sweetwater (909.3). Major water bodies within the Sweetwater Watershed include the Sweetwater River, Sweetwater Reservoir, Loveland Reservoir, and San Diego Bay, all of which support important wildlife habitat and provide public recreational opportunities.

1.2.2.2 Sweetwater Watershed Land Use Inventory

Table 1-4 shows the existing land use in the Sweetwater Watershed at the HA level based on Year 2006 data from SANDAG. The dominant land uses within the HAs are as follows:

Lower Sweetwater HA (909.1): Within this HA, Residential comprises approximately forty-four percent (44%), followed by Transportation at eighteen percent (18%) and Open Space/Preserves at thirteen percent (13%). The remaining twenty-five percent (25%) consists of multiple uses including Commercial and Industrial Businesses, Schools, and Undeveloped/Vacant Land.

Middle Sweetwater HA (909.2): Within this HA, Undeveloped or Vacant land dominated with approximately thirty-eight percent (38%), followed by Residential consisting of twenty-eight percent (28%) and Open Space/Preserves at twenty-five percent (25%). The remaining eight percent (8%) consists of multiple uses including Commercial Businesses and Transportation.

Upper Sweetwater HA (909.3): The majority of the land within this HA is Undeveloped or Vacant land (50%), while Open Space/Preserves comprise thirty-two percent (32%) of land use. Twelve percent (12%) of the remaining area consists of Residential and four percent (4%) is Agriculture.

The majority of the Sweetwater Watershed lies within the County of San Diego's jurisdictional area (Table 1-1). Other jurisdictions within the subwatershed include the Port of San Diego and the cities of Chula Vista, La Mesa, Lemon Grove, National City, and San Diego. Approximately forty-one percent (41%) of the land within the Sweetwater Watershed is administered by state

and federal agencies, or is controlled by Indian tribes. The unincorporated communities of Jamul, Pine Valley, Descanso, and Alpine, the Cleveland National Forest, Cuyamaca Rancho State Park, and the Viejas Indian Reservation occupy much of the undeveloped land in the Sweetwater Watershed. Currently, the population of the Sweetwater Watershed is approximately 340,000, and is expected to grow to an estimated 403,000 people by the year 2030 (Table 1-2).

Table 1-4. Sweetwater Watershed Land Use Inventory

HA	Land-Use Category	Acreage	Percentage of Total Acreage
909.1	Agriculture	77.9	0.2%
	Commercial/Office	1,867.5	5.9%
	Industrial	837.3	2.6%
	Open Space/Preserves	4,072.5	12.8%
	Parks	994.2	3.1%
	Public Facilities	919.4	2.9%
	Residential	14,086.7	44.1%
	Schools	1,073.5	3.4%
	Transportation	5,829.9	18.3%
	Under Construction	90.8	0.3%
	Undeveloped/Vacant	2,069.7	6.5%
	TOTAL	31,919.5	100%
909.2	Agriculture	685.9	1.3%
	Commercial/Office	1,189.9	2.2%
	Industrial	441.0	0.8%
	Open Space/Preserves	13,215.5	24.7%
	Parks	216.5	0.4%
	Public Facilities	350.3	0.7%
	Residential	14,888.0	27.8%
	Schools	476.4	0.9%
	Transportation	1,788.6	3.3%
	Under Construction	29.8	0.1%
	Undeveloped/Vacant	20,206.3	37.8%
	TOTAL	53,488.3	100%
909.3	Agriculture	2,212.0	3.5%
	Commercial/Office	257.9	0.4%
	Industrial	7.8	0.01%
	Open Space/Preserves	19,959.7	31.9%
	Parks	11.7	0.02%
	Public Facilities	147.0	0.2%
	Residential	7,317.4	11.7%
	Schools	5.3	0.01%
	Transportation	1,207.1	1.9%
	Under Construction	19.2	0.03%
	Undeveloped/Vacant	31,443.9	50.2%
	TOTAL	62,589.0	100%

Source: SANDAG Year 2006 Land Use data.

1.2.3 Otay Watershed (910)

The Otay Watershed encompasses approximately 180 square miles, with the Otay River comprising the central drainage system (Figure 1-1). The Sweetwater Watershed is located to the north and the Tijuana River Watershed is located to the south. The major population centers for the Otay Watershed include the City of San Diego, City of Imperial Beach, and the City Chula Vista (Figure 1-2).

1.2.3.1 Otay Watershed Drainage

The *Basin Plan* identifies the Otay Watershed as the second largest of the three San Diego Bay watersheds. It is comprised of three HAs: Coronado (910.1), Otay (910.2), and Dulzura (910.3). The Otay Watershed consists of approximately 98,500 acres. Major water bodies include the Upper and Lower Otay Reservoirs, Otay River, and San Diego Bay. The two major reservoirs in the Otay Watershed supply water, important wildlife habitat, and recreational opportunities. A large percentage of the water within the Otay Watershed is actually imported from Morena and Barrett Reservoirs, which are physically located in the Tijuana River Watershed. The Dulzura flume delivers water from the Barrett Reservoir to Dulzura Creek in the Otay Watershed. Morena Reservoir is connected to Barrett Reservoir by Cottonwood Creek. Water in Dulzura Creek drains into the Lower Otay Reservoir, which is owned and operated by the City of San Diego.

1.2.3.2 Otay Watershed Land Use Inventory

Table 1-5 depicts the existing land use in the Otay Watershed at the HA level, and is based on Year 2006 data from SANDAG. The dominant land uses within the HAs are as follows:

Coronado HA (910.1): Military uses comprise approximately fifty-two percent (52%) of land in this HA. Other significant land uses include Residential at fifteen percent (15%), followed by Transportation at twelve percent (12%), and Commercial/Office at eight percent (8%). Open Space/Preserves and Parks account for a combined ten (10%) percent of land uses. The remaining three percent (3%) consists of multiple uses including Undeveloped/Vacant land, Schools, and Public Facilities.

Otay HA (910.2): Within this HA, Undeveloped/Vacant land accounts for twenty-five percent (25%) and Open Space/Preserves make up twenty-four percent (24%) of the land use. Other significant land uses include Residential at eighteen percent (18%), Transportation and Industrial at nine percent (9%) respectively, Public Facilities at five percent (5%), and Commercial/Office at four percent (4%). The remaining six percent (6%) consists of multiple uses including Agriculture and Schools.

Dulzura HA (910.3): Within this HA, Open Space/Preserves make up the majority of land use at forty-eight percent (48%), followed by Undeveloped or Vacant land at thirty-seven percent (37%), and Residential at twelve percent (12%). The remaining three percent (3%)

consists of multiple uses including Commercial and Industrial Businesses, Agriculture, and Transportation.

Over sixty-nine percent (69.5%) of the Otay Watershed is unincorporated area. The other thirty-one percent (30.5%) is divided between the following jurisdictions: the Port of San Diego, and the cities of Chula Vista, Coronado, Imperial Beach, National City, and San Diego. Land ownership within the Otay Watershed is predominantly private with a small percentage of local, state, and federally owned lands.

The Otay Watershed is one of the three least populated watersheds in San Diego County, with a population of approximately 200,000 people. This population is expected to increase to approximately 268,000 by the year 2030 (Table 1-2).

Table 1-5. Land Use Inventory for the Otay Subwatershed

HA	Land-Use Category	Acreage	Percentage of Total Acreage
910.1	Commercial/Office	431.2	7.9%
	Industrial	0.1	0.002%
	Military	2,822.8	51.6%
	Open Space/Preserves	295.6	5.4%
	Parks	234.4	4.3%
	Public Facilities	46.7	0.9%
	Residential	843.2	15.4%
	Schools	42.4	0.8%
	Transportation	634.7	11.6%
	Under Construction	5.8	0.1%
	Undeveloped/Vacant	115.0	2.1%
	TOTAL	5,471.8	100%
910.2	Agriculture	506.7	1.7%
	Commercial/Office	1,047.9	3.5%
	Industrial	2,685.2	9.1%
	Open Space/Preserves	7,166.1	24.2%
	Parks	646.9	2.2%
	Public Facilities	1,605.9	5.4%
	Residential	5,221.9	17.6%
	Schools	535.7	1.8%
	Transportation	2,738.8	9.2%
	Under Construction	7.1	0.02%
	Undeveloped/Vacant	7,460.8	25.2%
	TOTAL	29,623.1	100%
910.3	Agriculture	835.3	1.3%
	Commercial/Office	453.4	0.7%
	Industrial	112.8	0.2%
	Open Space/Preserves	30,342.1	48.0%
	Parks	70.6	0.1%
	Public Facilities	69.9	0.1%
	Residential	7,323.2	11.6%
	Schools	62.6	0.1%
	Transportation	588.9	0.9%
	Undeveloped/Vacant	23,398.4	37.0%
	TOTAL	63,257.3	100%

Source: SANDAG Year 2006 Land Use data.

1.3 Watershed Mapping

Section E.2.b of the Municipal Permit states that watershed Copermittees should develop a map of the WMA to facilitate planning, assessment, and collaborative decision making. The map should include features such as receiving waters, Clean Water Act (CWA) Section 303(d) impaired waters, MS4s, major roads, jurisdictional boundaries, and inventories as determined appropriate.

Appendix B of the San Diego Bay WURMP provides three maps of the San Diego Bay WMA, which are described below.

- Map 1: Identifies receiving waters; CWA Section 303(d) impaired waters, land uses, major highways, and jurisdictional boundaries.
- Map 2: Contains the San Diego Bay Copermittees' MS4 and other related features (receiving waters, 303(d) listed waters, major highways).
- Map 3: Includes inventoried commercial, industrial, and municipal sites.

It should be noted that the inventoried facility information was generated from the Baseline Long-term Evaluation Assessment (BLTEA) Document that was completed in 2005 because inventory information in geodatabase format is not readily available from all the Copermittees. As such, the mapped facilities represent only those facility types that had geocoded site location information. While this is a significant advancement from the last WURMP in which inventory information was presented only as land use data, it should not be interpreted to represent a complete list of all facilities operating within the San Diego Bay WMA.

Section 2: Collective Watershed Strategy

2.1 Model Watershed Strategy

Pursuant to the Municipal Permit, the Regional Copermittees have developed a Model Watershed Strategy to guide the selection and implementation of Watershed Activities. The goal of the Model Watershed Strategy is to provide regional consistency to the activity selection and implementation process in a manner that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. This document is included in the Regional Urban Runoff Management Plan (RURMP) Document as Attachment 3. It should be noted that all Model Watershed Strategy templates, tools, and worksheets are fully discussed in the RURMP Attachment 3 and not presented here.

The Model Watershed Strategy provides standard definitions for the types of activities that can be implemented within a watershed. It also distinguishes between those activities that can be used toward fulfilling Permit requirements, and those activities that watersheds may elect to implement and report upon to provide valuable watershed benefits that do not receive Permit compliance credit. By standardizing activity types, Copermittees can develop consistent reporting and data tracking practices that can further enhance watershed activity and programmatic assessments.

The Model Watershed Strategy also defines a standard approach for selecting activities appropriate for implementation within each watershed. This approach includes conducting a baseline analysis, identifying appropriate management actions, and selecting watershed activities. The Model Watershed Strategy identifies several tools that are valuable in the determination of management actions and activity selection. Where appropriate, the Model Watershed Strategy also discusses effective mechanisms to fill existing data gaps. The approach takes into consideration the appropriate scale at which a management action should be implemented as well as the identification of the Copermittees responsible for undertaking the determined management action. Finally, the Model Watershed Strategy presents a standard format for developing an implementation schedule for all watershed activities.

2.2 San Diego Bay Watershed Strategy

The San Diego Bay Copermittees have used the Model Watershed Strategy to conduct their baseline watershed evaluation, identify management actions to be conducted at a HA scale, and select watershed activities to address the high priority water quality problems within the San Diego Bay WMA. The San Diego Bay Copermittees used the standard activity types as defined in the Model Watershed Strategy and the standard planning tables/formats for presenting this information. The details on how the San Diego Bay Copermittees used the Model Watershed Strategy's activity selection process are discussed within this section.

2.2.1 Baseline Watershed Evaluation

The San Diego Bay Copermittees spent several meetings conducting a Baseline Watershed Evaluation (BWE), thoroughly evaluating each HA, each pollutant category and the likely sources present with respect to the pollutant category. The San Diego Bay Copermittees looked at the BLTEA information and additional recent monitoring information to identify the number of exceedances occurring within each HA and the exceedance rate (percentage) associated with each pollutant category. Water quality monitoring information for each of the pollutant categories was evaluated to confirm or contradict the BLTEA Water Quality Priority (WQP) ratings. A count of "Likely" and "Unknown" sources were also assessed to confirm whether pollutant sources within each HA were adequately characterized. The San Diego Bay Copermittees then compared this information to the identified geocoded likely and unlikely sources (Appendix C) to see whether the monitoring information was indicative of the pollutant sources within each HA.

2.2.2 Management Action Identification

Once the BWE information was compiled and assessed, the San Diego Bay Copermittees used the Model Watershed Strategy's *Watershed Activity Decision Matrix* and followed the guidance provided in the *Watershed Strategy Flowchart* to determine the appropriate management action required for each pollutant category in each HA. Upon determination of the proper management actions, appropriate specific activities addressing the high priority water quality problems can be selected (see Section 3.3. and 3.4). The matrix identified the appropriate management action based upon the amount of water quality data available, the exceedances present, existing BLTEA ratings, and the number of likely and unknown sources present. The following management actions were identified: Water Quality Activities (i.e. Load Reduction/Source Abatement Activities), Watershed Education Activities, Source Identification or Characterization Studies, and Additional Water Quality Monitoring. When there is sufficient information available, then the matrix would suggest Water Quality or Educational Activities. However, when gaps in either water quality information or known sources information existed, additional monitoring, source characterization, and/or investigations are recommended prior to initiating load reduction activities. When data indicated that the water quality data adequately conveyed the water quality conditions within the HA, and likely sources were present, load reduction or source abatement management actions were identified. Table 2-1 shows a list of pollutant categories within each HA and the suggested management action to be considered.

Table 2-1. Watershed Action for Pollutants for each Hydrologic Area

Watershed	Pollutant Category	BLTEA Rating	Action	BLTEA Rating	Action	BLTEA Rating	Action
		908.1		**908.2**		**908.3**	
Pueblo San Diego	Pesticides	B	Additional Monitoring	A	Source Identification	C	Source Identification
	Metals	A	Additional Monitoring	A	Load Reductions	C	Additional Monitoring
	Sediment	C	Source Identification	A	Source Identification	B	Source Identification
	Bacteria/Pathogens	A	Additional Monitoring	A	Load Reductions	A	Load Reductions
	Gross Pollutants	A	Additional Monitoring	B	Load Reductions	C	Additional Monitoring
	Nutrients	D	Source Identification	C	Source Identification	B	Source Identification
	Oil and Grease	B	Additional Monitoring	D	Additional Monitoring	C	Additional Monitoring
		909.1		**909.2**		**909.3**	
Sweetwater	Pesticides	B	Source Identification	A	Additional Monitoring	C	Additional Monitoring
	Metals	D	Additional Monitoring	D	Additional Monitoring	D	Additional Monitoring
	Sediment	C	Source Identification	C	Additional Monitoring	C	Source Identification
	Bacteria/Pathogens	A	Load Reductions	C	Additional Monitoring	C	Additional Monitoring
	Gross Pollutants	D	Additional Monitoring	D	Additional Monitoring	C	Additional Monitoring
	Nutrients	D	Source Identification	D	Source Identification	D	Additional Monitoring
	Oil and Grease	D	Additional Monitoring	D	Additional Monitoring	D	Additional Monitoring
		910.1		**910.2**		**910.3**	
Otay	Pesticides	D	Source Identification	D	Source Identification	D	Source Identification
	Metals	B	Additional Monitoring	C	Additional Monitoring	D	Additional Monitoring
	Sediment	C	Additional Monitoring	C	Additional Monitoring	C	Additional Monitoring
	Bacteria/Pathogens	A	Load Reductions	A	Source Identification	D	Additional Monitoring
	Gross Pollutants	B	Source Identification	C	Additional Monitoring	D	Additional Monitoring
	Nutrients	D	Source Identification	C	Source Identification	D	Additional Monitoring
	Oil and Grease	B	Additional Monitoring	D	Additional Monitoring	D	Additional Monitoring

Note: Trash, Dissolved Minerals, and Organics were not evaluated during this process.

2.2.3 Activity Selection

Upon identification of the HA management actions, the San Diego Bay Copermittees then took the following steps to select appropriate activities. First, the San Diego Bay Copermittees representing each HA were identified (Table 2-2). This step was important because it enabled each Copermittee to identify contributions relative to their jurisdictional authority. Next, Copermittees were directed to assess the management actions required for each pollutant in their respective HA(s). Each San Diego Bay Copermittee reviewed existing or previously identified activities (as noted in the 2006-2007 WURMP Annual Report) to determine whether they 1) were applicable to new Permit requirements, 2) would continue to be implemented (or in active implementation phase), and 3) addressed the respective HA high priority water quality problems.

Table 2-2. Hydrologic Area Responsibilities

Copermittee	San Diego Bay Watershed Hydrologic Areas								
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3
San Diego County Regional Airport Authority		■							
Chula Vista				■				■	■
County		■		■	■	■		■	■
Coronado							■		
Imperial Beach							■	■	
La Mesa		■		■					
Lemon Grove		■		■					
National City			■	■					
Port of San Diego	■	■	■	■			■		
San Diego	■	■	■	■				■	

Note: The shaded squares denotes the HA each jurisdiction occupies.

The San Diego Bay Copermittees selected activities feasible to implement in their jurisdictions and appropriate for their relative contribution to the HA's high priority water quality problems. In general, the Copermittees took the approach to consider pollution prevention and source control BMPs as the primary and best defense against water quality degradation, followed by selective implementation of treatment control BMPs where determined necessary. Activities included those that went above and beyond jurisdictional Permit requirements and addressed watershed high priority water quality problems and identified capital improvement projects as well that meet the requirements for watershed water quality activity. A key component of the activity selection was determining the appropriate mechanism(s) to assess effectiveness of the activity and ensuring that measurable outcomes could be obtained.

2.2.4 Collaborative Watershed-based Activities

During the workgroup activity review, San Diego Bay Copermittees discovered that many potential activities either 1) overlapped several HA, or 2) were being implemented by multiple jurisdictions in very similar fashion. Noting this commonality, the San Diego Bay Copermittees worked together to determine the most effective manner in which to present this information. From this, the "Collaborative Watershed-based Activities" concept was created.

The "Collaborative Watershed-based Activities" concept focuses on the coordination and standardization of common jurisdictional activities to identify watershed-based impacts from similar jurisdictional efforts, and improve upon overall watershed assessments from these efforts. It acknowledges that each Copermittee will be implementing the activity jurisdictionally and the manner in which efforts occur may vary. The benefits to using a collaborative concept are that the individual jurisdiction retains control over implementation (scale, location, and timing), while including an enhanced overall watershed assessment into its activities. By including some element of standardization into its activities, jurisdictional activities can be compared to one another and an overall load reduction for the collaborative effort(s) can be determined. The overall value of the activity to the watershed in meeting the required management actions and addressing the high priority water quality problems is better emphasized.

2.2.5 Activity Summary Sheets

The San Diego Bay Copermittees utilized the Model Watershed Strategy's *Standard Activity Summary Sheet* template to describe proposed activities for their jurisdiction. This format includes a comprehensive description of each activity, the proposed implementation timeline, the relationship and benefits to the watershed's high priority water quality problems, and an assessment mechanism to evaluate the activity's effectiveness. Each Copermittee was responsible for documenting their activities utilizing this format. Additionally, specific details on how each Copermittee will implement their efforts and individually assess the effectiveness of each of their activities are included in the Activity Sheet. Detailed discussions of activities, including the collaborative activities, are found in Section 4 of this document. Individual Activity Sheets are found in Appendix D.

2.2.6 Five Year Strategic Plan Development

The final step of the Watershed Strategy was the development of a Five-Year Strategic Plan for the San Diego Bay WMA. The San Diego Bay Copermittees used the Model Watershed Strategy's *Five-Year Strategic Plan* template to present the information in a manner consistent with other watersheds. The San Diego Bay Copermittees worked collaboratively during workgroup meetings to develop the San Diego Bay WMA Five-Year Strategic Plan. This involved: 1) reviewing activity templates; 2) ensuring that the activities were focused on addressing the high priority water quality problems; 3) ensuring that individual Copermittees were conducting activities that addressed their contributions to the high priority water quality

problems; and 4) ensuring that the Permit requirements for two water quality and two education activities in active implementation phase during each reporting period were met. It should be noted that individual activity implementation timelines were not decided as a workgroup; rather, they took into account individual Copermittee budgets, resources, and other relevant factors.

The San Diego Bay WMA Five-Year Strategic Plan contains information on each activity planned for implementation. It identifies the watershed activities planned for implementation during the ensuing year and also includes information on activity implementation beyond the first year of implementation, where appropriate. It also identifies the HA(s) in which the activity will occur, the pollutants it will address and the type of activity that will be implemented, as well as whether an activity is in active implementation phase to easily distinguish which activities can be considered towards Permit compliance. Finally, the San Diego Bay WMA Five-Year Strategic Plan provides a mechanism to provide general information on potential activities that could occur in the future. The San Diego Bay WMA Five-Year Strategic Plan is presented and discussed in detail in Section 4 of this document.

It should be noted that the San Diego Bay WMA Five-Year Strategic Plan is subject to change on an annual basis due to factors such as available funding, staffing issues, or new information regarding water quality or likely pollutant sources. The San Diego Bay Copermittees will review the San Diego Bay WMA Five-Year Strategic Plan annually as a group. When activities are completed, additional activities are identified, or timelines are modified, the plan will be updated as applicable. All updates to the San Diego Bay WMA Five-Year Strategic Plan will be described in the San Diego Bay WURMP Annual Reports submitted to the RWQCB in January of each year.

Section 3: Water Quality and Pollutant Source Assessment

3.1 Water Quality Assessment Approach

An assessment of existing water quality data and likely sources of watershed pollutants provides an initial understanding of the current status and long-term trends in receiving water body water quality conditions of the San Diego Bay WMA. The San Diego Bay Copermittees' approach to evaluating water quality and sources, and targeting high priority water quality problems, is discussed in this section.

Water quality assessments are useful in identifying high priority water quality problems and receiving water body conditions for the San Diego Bay WMA. Long-term assessments enable Copermittees to identify and prioritize water quality problems and source loading potential by comparing water quality data once every Permit cycle. It should be noted that sometimes years of data are necessary before trends in discharge water quality (Level 5 assessment) and/or receiving water quality (Level 6 assessment) can be observed. Annual assessments present the most current conditions, enabling the Copermittees to evaluate changes in pollutant loads and discharge water quality for each Permit year, evaluate the frequency of exceedance of Water Quality Objectives (WQO) for any particular pollutant, and enable Copermittees to identify emerging or continuing trends in water quality. The analysis of basic status and trend information over time is a continuous process that when assessed annually, will increase the knowledge of the type of management efforts required to address high priority water quality problems.

The watershed water quality assessment methodology used by the San Diego Bay Copermittees includes separate components for receiving waters and urban runoff discharges. This organization follows the general format of the Permit, making the results of the assessment more meaningful by providing a closer linkage to the Core Management Questions as well as avoiding mixing data sets from programs undertaken for very different reasons. Knowledge of baseline conditions through the various monitoring programs occurring within the watershed will allow Copermittees to evaluate current conditions and long-term trends in receiving water quality conditions.

3.1.1 Water Quality Monitoring Programs and Data

Monitoring data is one of the most useful pieces of information for assessing the pollutants within a watershed. Data collected under the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Permit can indicate the elevated pollutant levels, toxicity problems, or ecological impacts that may be influencing urban runoff contributions to the receiving water quality issues. The San Diego Bay Copermittees will utilize data from several

monitoring programs as part of the San Diego Bay WMA assessment, which are outlined in Table 3-1.

Table 3-1. San Diego Bay WMA Assessment Data

Program	Constituents Measured
Mass Loading Stations (MLS)	Toxicity, Chemistry
Toxicity Identification Evaluations (TIE)	Toxicity
Rapid Stream Bioassessments	Benthos
Dry Weather Monitoring (DWM)	Chemistry
Coastal Storm Drain Monitoring	Bacteria
Ambient Bay and Lagoon Monitoring (ABLM)	Sediment Chemistry, Toxicity, Benthos
Regional Harbor Monitoring Program (RHMP)	Sediment Chemistry, Toxicity, Benthos
Surface Water Ambient Monitoring Program (SWAMP)	Bacteria, Chemistry, Toxicity, Benthos
Temporary Watershed Assessment Stations	Sediment Chemistry, Toxicity, Benthos
Department of Environmental Heath (DEH) AB411 Program	Bacteria
Metals TMDL	Metals
Diazinon TMDL	Pesticides

As discussed in Section 1.2, the San Diego Bay WMA consists of three major watersheds that vary greatly in terms of size, population, and land use, and have different water quality issues as a result. Because the amount and type of data available in each watershed may not be the same, the San Diego Bay Copermittees have attempted to assess each watershed independently to provide a more accurate assessment of the San Diego Bay WMA as a whole.

For purposes of the San Diego Bay WMA water quality assessment, the San Diego Bay Copermittees plan to evaluate constituents from the following pollutant categories used in the Regional Urban Runoff Monitoring Report: Metals (includes Dissolved and Total), Dissolved Minerals, Organics, Oil and Grease, Sediments, Pesticides, Nutrients, Gross Pollutants, and Bacteria/Pathogens. Trash will also be evaluated by the San Diego Bay Copermittees. It should be noted that the data available for assessment may vary each year based upon the programs being conducted in each HA and the availability and quality of the data. The San Diego Bay Copermittees recognize that there are many other issues that are generally part of a typical watershed assessment that may have a negative impact on habitat. These issues may include invasive species, wildlife and habitat protection, climate change, and physical changes to natural conveyances due to hydromodification. Regionally, the Copermittees are developing a hydromodification management plan (HMP) to help address the hydromodification issues. All of these issues are often coupled with water quality and will be addressed herein whenever applicable and feasible.

3.1.2 Water Quality Problem Prioritization

Water quality problems will be identified and prioritized through the BWE process identified in Section 2 of this document. The BWE process utilizes both monitoring data and source information to determine whether a pollutant contributes to a high priority water quality problem. Water quality information consists of long-term trend assessment data and other data sets that comprise the BLTEA WQP ratings. Source information includes the likely and unknown sources and their potential Threat to Water Quality (TTWQ), both of which are taken from the BLTEA.

The San Diego Bay Copermittees conducted the BWE assessment for the San Diego Bay WMA to understand the constituents that most significantly exceed WQOs or impact beneficial uses. These constituents contribute to the high priority water quality problems and are considered pollutants. Using the Model Watershed Strategy as guidance, the San Diego Bay Copermittees intend to identify the high priority water quality problems specific to each HA, rather than for the entire watershed itself. By focusing on the HA level, efforts are able to be directed to the implementation of watershed activities that will have the most influence in abating the sources and reducing the discharge of pollutants contributing to the high priority water quality problems in question. Pollutants categories receiving an “A” BLTEA TTWQ rating coupled with a large number of likely or unknown sources were considered high priority water quality problems for that HA. In circumstances in which a pollutant category receives a “B” BLTEA TTWQ rating and there are likely sources present, the San Diego Bay Copermittees may elect to act conservatively and assign a high priority water quality problem rating. The A or B rated pollutants contributing to high priority water quality problems will be referred to as “high priority pollutants” in this document.

During annual monitoring assessments, the San Diego Bay Copermittees may identify other constituents that exhibit occasional exceedances of WQO or appear to be indicative of increasing trends. These constituents will be considered water quality problems, and as such, may be evaluated in conjunction with source category data during the next long-term BWE assessment process to determine whether a high priority rating is warranted.

3.1.3 Receiving Water Body Water Quality Assessment

One component of San Diego Bay WMA water quality assessment focuses on analyzing data collected from receiving water bodies under ambient conditions. This component will evaluate current receiving water conditions and track long-term changes in receiving water quality. Analysis of the data is intended to answer the Core Management Questions listed below, which are numbered as listed in the Municipal Permit. Note that the answer to Question 5 will also provide information on changes in receiving water quality (Level 6) of the effectiveness assessment. Core Management Questions 3 and 4 are addressed through urban runoff discharges monitoring, which is discussed below in 3.1.4.

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

2. What is the extent and magnitude of the current or potential receiving water problems?
5. Are conditions in receiving waters getting better or worse?

Receiving waters assessments will be conducted both annually and over several years to determine current receiving water conditions and long-term trends. The Regional Urban Runoff Monitoring Program will conduct the assessment of receiving waters conditions. The Regional Monitoring Program utilizes some or all of the following factors when attempting to answer the Core Management Questions. The factors include: 1) identification of the frequency, magnitude, and duration of water quality reference value exceedances; 2) the historical record of Mass Loading Stations (MLS) data; 3) statistical analysis to reveal any trends in exceedences; and 4) the weight-of-evidence approach or triad-decision matrix which evaluates chemistry, toxicity, and stream bioassessment. The details of how this assessment approach will be presented are still in development. This process is currently being revised to ensure that it adequately addresses all new Permit requirements. As such, the San Diego Bay Copermittees are collaboratively working with the regional monitoring contractor and the San Diego Regional Copermittees to maintain consistency in assessment methodology.

The monitoring programs that may be evaluated for receiving water condition by the Regional Urban Runoff Monitoring Program include the following:

- Bioassessment data
- Toxicity, chemistry, and trash assessment data from MLS and Temporary Watershed Assessment Stations (TWAS)
- Ambient Bay and Lagoon Monitoring Program (ABLM) data
- Surface Water Ambient Monitoring Program (SWAMP) data
- Regional Harbor Monitoring Program (RHMP) data
- Receiving water data from the Coastal Storm Drain Monitoring Program

Applicable data from third party sources, such as volunteer monitoring or water district monitoring, will also be included where the data is available and meets the quality control standards generally applied to data collected by State or Copermittee monitoring programs. Receiving water data from special Copermittee or RWQCB studies may also be included where it is comparable in purpose to the above listed programs and/or helps answer the Core Management Questions listed above. Data collected within 72 hours of a rain event that is not representative of the urban runoff response may also be incorporated as applicable. Each year, the watershed Copermittees will evaluate additional data sources beyond those listed above to determine what, if any, additional data is available and suited for inclusion in the water quality assessment data set.

3.1.4 Urban Runoff Discharges Water Quality Assessment

Monitoring and assessing urban runoff discharges from MS4s is the other component used in the San Diego Bay WMA assessment. This is further broken into two elements, evaluating dry

weather discharges and wet weather discharges. Both elements are targeted at answering the following Core Management Questions, which are numbered as listed in the Municipal Permit:

3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Assessment of urban runoff discharge monitoring also can provide information related to Load Reductions (Level 4) and Changes in Discharge Quality (Level 5) of the effectiveness assessment.

Data collected for the urban runoff discharge component of the water quality assessment is separated into wet weather data and dry weather data because the mechanisms and extent of pollutant mobilization are somewhat different for the two types of conditions. For example, a facility with exposed pollutant sources may not have non-stormwater discharges that could transport pollutants during dry weather; therefore, under those conditions it might not be a significant pollutant source. During rain, however, pollutants from the exposed sources may be mobilized and transported. Also, it is possible that certain pollutants are discharged to a relatively large degree in wet weather but not in dry weather, or vice versa. These distinctions are important when attempting to identify the degree to which urban runoff affects receiving water bodies and what the sources of the urban runoff are.

Data collected in the MS4 as part of the following programs is used in the assessment of dry weather urban runoff discharges by the Regional Urban Runoff Monitoring Program:

- Coastal Storm Drain Monitoring Program (CSDM)
- Dry Weather Field Screening and Analytical Monitoring Programs (DWM), including trash assessment
- MS4 Monitoring
- Source Identification Monitoring

Special studies including TMDL monitoring and data from volunteer organizations may also be used where applicable and where it meets appropriate quality control standards.

The wet weather urban runoff discharge assessment is intended to provide data about the urban runoff discharges associated with storm events. Data used for this assessment comes from programs where sampling starts as the flow rate begins to rise at the beginning of the storm and ends as the urban runoff response is deemed to have subsided. As such, these monitoring programs are primarily targeted at measuring the quality of stormwater discharges from MS4s and non-point sources that may also contribute runoff to the sampling station. Data from programs primarily directed at assessing receiving water quality within 72 hours of a storm, but after the urban runoff response has subsided, are not included in the data set for this assessment. Data from the following sources is used in the assessment of wet weather urban runoff discharges:

- MS4 Monitoring
- MLS and TWAS monitoring in wet weather
- TMDL monitoring

Assessments of urban runoff discharges will be conducted annually and over several years to determine current conditions and long-term trends for high priority water quality problems, and are generally based on the evaluation of data from the monitoring programs as discussed in 3.1.3.

3.2 Water Quality Conditions

This section will provide information on the current condition of receiving waters within the three watersheds comprising the San Diego Bay WMA. The details regarding available receiving water analytical data results in the San Diego Bay WMA are described in the Regional Urban Runoff Monitoring Report (Weston Solutions, 2008) and only summarized here. Information on 303(d) listings and TMDLs will also be presented here.

3.2.1 San Diego Bay WMA BLTEA Ratings

As discussed in 3.1.2, water quality problems identified in one area of the WMA may not necessarily be appropriate for the rest of the San Diego Bay WMA. Therefore, identification of high priority water quality problems at the HA level allows for a better understanding of the overall baseline water quality conditions relative to pollutant sources. This information will enable the San Diego Bay Copermittees to develop activities addressing the high priority water quality problems in the HAs that fall within their jurisdictions. Table 3-2 shows the BLTEA ratings for each HA. Pollutant categories and stressor groups were ranked from A to D with A being the highest priority rating and D the lowest priority rating, and were based on the data record from 2001-2006.

Table 3-2. San Diego Bay Watershed BLTEA Ratings

Watersheds/ Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Pollutant Categories									Stressor Groups	
		Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
San Diego Bay WMA	100%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*D*	*B*	*C*	*B*
Point Loma HA (908.10)	2%	*A*	*D*	*D*	*B*	*C*	*B*	*D*	*D*	*A*	*A*	*A*
San Diego Mesa HA (908.20)	9%	*A*	*D*	*A*	*D*	*A*	*A*	*C*	*B*	*A*	*A*	*A*
National City HA (908.30)	2%	*C*	*D*	*D*	*C*	*B*	*C*	*B*	*C*	*A*	*A*	*A*
Lower Sweetwater HA (909.10)	11%	*D*	*A*	*D*	*D*	*C*	*B*	*D*	*D*	*A*	*A*	*B*
Middle Sweetwater HA (909.20)	19%	*D*	*B*	*D*	*D*	*C*	*A*	*D*	*D*	*C*	*B*	*B*
Upper Sweetwater HA (909.30)	22%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*C*	*C*	*B*	*B*
Coronado HA (910.10)	2%	*D*	*D*	*D*	*D*	*C*	*D*	*D*	*B*	*A*	*D*	*D*
Otay Valley HA (910.20)	10%	*D*	*D*	*D*	*D*	*C*	*D*	*C*	*C*	*A*	*D*	*D*
Dulzura HA (910.30)	22%	*D*	*B*	*D*	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*C*
2006-07 High[1] Frequency of Occurrence Ratings		♦♦♦				♦♦♦				♦♦♦		
Constituents of Concern		Copper Lead Zinc				Turbidity				Total Coliform Fecal Coliform *Entero-coccus*		

[1] High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

303d listing (Based on the 2002 303(d) List)

3.2.2 303(d) Listed Water Bodies

The San Diego Bay Copermittees also reviewed the 2006 303(d) listings within the San Diego Bay WMA to identify pollutants or stressors in the WMA. Table 3-3 lists the 303(d) listed pollutants or stressors based on the number of times it was listed within the WMA.

Table 3-3. Water Bodies on the SWRCB 303(d) List in the San Diego Bay WMA

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor
San Diego Bay Shoreline, Near Sub Base	Point Loma	908.10	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Shelter Island Shoreline Park	Point Loma	908.10	Bacteria Indicators
San Diego Bay Shoreline, Harbor Island (West Basin)	Point Loma	908.10	Copper
San Diego Bay Shoreline, G St. Pier	Lindbergh	908.21	Bacteria Indicators
San Diego Bay Shoreline, Near Switzer Creek	Lindbergh	908.21	Chlordane, Lindane/Hexachlorocyclohexane, PAHs
San Diego Bay Shoreline, Vicinity of B St. and Broadway Piers	Lindbergh	908.21	Bacteria Indicators, Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Downtown Anchorage	Lindbergh	908.21	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Harbor Island (East Basin)	Lindbergh	908.21	Copper
San Diego Bay Shoreline, Marriott Marina	Lindbergh	908.21	Copper
San Diego Bay Shoreline, America's Cup Harbor	Chollas	908.22	Copper
Chollas Creek	Chollas	908.22	Bacteria Indicators, Copper, Lead, Zinc
San Diego Bay Shoreline, Near Chollas Creek	Chollas	908.22	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, 32nd St. Naval Station	Chollas	908.22	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Between Sampson and 28th Streets	Chollas	908.22	Copper, Mercury, PAHs, PCBs, Zinc
San Diego Bay Shoreline, Near Coronado Bridge	Chollas	908.22	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Seventh St. Channel	El Toyan	908.31	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, North of 24th St. Marine Terminal	Paradise	908.32	Benthic Community Effects, Sediment Toxicity
San Diego Bay Shoreline, Bayside Park (J St.)	Telegraph	909.11	Indicator Bacteria
San Diego Bay Shoreline, Chula Vista Marina	La Nacion	909.12	Copper
Sweetwater Reservoir	Jamacha	909.21	Dissolved Oxygen
Loveland Reservoir	Loveland	909.31	Aluminum, Manganese, Dissolved Oxygen
Pacific Ocean Shoreline, Imperial Beach Pier	Coronado	910.10	PCBs
San Diego Bay	Coronado	910.10	PCBs
San Diego Bay Shoreline, Coronado Cays	Coronado	910.10	Copper
San Diego Bay Shoreline, Glorietta Bay	Coronado	910.10	Copper
Pogi Canyon Creek	Otay Valley	910.20	DDT
Otay Reservoir, Lower	Savage	910.31	Color, Iron, Manganese, Nitrogen ammonia (total ammonia), pH (high)

Source: SWRCB, 2006

3.2.3 San Diego Bay WMA TMDLs

Several TMDLs have been adopted or are under development for the listings presented in Table 3-3. These are listed below:

- Diazinon in Chollas Creek (August 2002).
- Dissolved copper in the Shelter Island Yacht Basin (SIYB) (February 2005).
- Dissolved copper, lead, and zinc in Chollas Creek (June 2005). The dissolved metals TMDL for Chollas Creek still requires State Board Office of Administrative Law and U.S. EPA approval for final adoption and Basin Plan amendment.
- TMDLs are currently being finalized for bacterial indicators in Chollas Creek.
- TMDLs for the mouths of Chollas Creek, Paleta Creek (Seventh Street Channel), and Switzer Creek are under development. These TMDLs are generally related to sediment toxicity.

3.2.4 Pueblo San Diego Watershed Water Quality

Mass Loading Stations (MLS) – Sixteen constituents exceeded WQO at least one time during MLS sampling at Chollas Creek during the 2006-2007 monitoring season. Total Suspended Solid (TSS), turbidity, total copper, total lead, total zinc, and dissolved copper concentrations exceeded WQO during all three monitoring events. Monitoring data showed only one WQO exceedance for diazinon, Biological Oxygen Demand (BOD), malathion, and dissolved lead. It should be noted that this was the first time that diazinon has exceeded the WQO in the past three monitoring years. *Hyalella* toxicity occurred during all monitoring events, while chronic toxicity to *Ceriodephnia* (7-day survival test) occurred during only a single monitoring event. Analytical data from the Chollas Creek MLS are included in Appendix E-1.

Toxicity Identification Evaluations (TIE) – Chollas Creek was identified as a site where TIEs were needed based on toxicity testing during previous years. The 2005-2006 monitoring season TIE indicated that synthetic pyrethroids were the likely causative agents of toxicity in Chollas Creek stormwater samples. Results of the 2006-2007 TIEs confirmed that synthetic pyrethroids were present in Chollas Creek stormwater samples, and that they are the likely cause of toxicity within the samples. This finding is consistent with recent changes in insecticide formulations where synthetic pyrethroids have replaced traditional organophosphate pesticides.

Dry Weather Monitoring (DWM) – A total of ninety-three (93) DWM sites were visited in the Pueblo San Diego Watershed during the 2006 dry weather season. The numbers of samples collected for each constituent were variable; for example, samples are submitted for analyses at approximately twenty-five percent (25%) of the sites visited for field screening. To allow for more meaningful comparisons, the results are presented here as exceedance percentages of dry weather action levels rather than raw numbers of exceedances. None of the constituents exceeded action levels in more than half of the samples. Total coliform exceeded the action level forty-seven percent (47%) of the time. *Enterococcus* and fecal coliform exceeded the

action levels thirty-two percent (32%) and twenty-six percent (26%) of the time, respectively. Exceedances were recorded in sixteen percent (16%) of MBAS samples, whereas oil and grease, pH, ammonia, orthophosphate, and nitrate exceeded in less than ten percent of the samples collected. There were no exceedances of dissolved zinc, dissolved lead, dissolved cadmium, dissolved copper, diazinon, hardness, or chlorpyrifos.

Rapid Stream Bioassessment – One bioassessment monitoring site was sampled in Chollas Creek within the Pueblo San Diego Watershed. The Index of Biotic Integrity (IBI) at this site was rated Poor in October 2006 and Very Poor in May 2007 with IBI scores of 15 and 10, respectively. It is estimated that the benthic community has lost fifty to fifty-four percent (50-54%) of the biodiversity expected to occur at this site.

Coastal Storm Drain Monitoring – Coastal monitoring (per Permit Section P.1) was conducted at four beach sites along San Diego Bay within the Pueblo San Diego Watershed. Each site was visited thirteen times during the reporting period. Of the sites visited, samples were only collected on two occasions at Shelter Island coastal outfalls. Storm drain samples did not exceed action levels during any event. A receiving water sample exceeded the fecal coliform WQO on one occasion at Shelter Island (6/18/07). A follow-up inspection was conducted on 6/21/07 and a receiving water sample was collected. The results did not exceed the WQO for any of the constituents sampled.

County DEH AB411 Monitoring – DEH sampled receiving water at four beach sites within the Pueblo San Diego Watershed (Spanish Landing, Shelter Island, Lawrence Street Beach, and Bessemer Street Beach). Bessemer Street Beach was sampled a total of six times whereas the other locations were each sampled approximately thirty-six times during the reporting period. There were no exceedences of total coliform recorded at any of the sites. Fecal Coliform exceeded the WQO on six occasions at Shelter Island and on five sampling dates at Spanish Landing. *Enterococcus* exceeded the WQO on six occasions at Shelter Island, four times at Spanish Landing, and once at Lawrence Street and Bessemer Street.

Diazinon TMDL – Diazinon monitoring for the Chollas Creek TMDL was conducted at two water quality sampling sites during three storm events. Diazinon was recorded above the TMDL waste load allocation (WLA) of 0.45 µg/L during the first storm event on 10/14/06 at site SD8(1). This instance represents the first exceedance of diazinon above the WLA in three reporting years. Diazinon was not detected at the second site (DPR2) during any of the 2006-2007 sampling events. Analytical data from the Chollas Creek TMDL are included in Appendix E-2.

Dissolved Metals TMDL – Monitoring for dissolved cadmium, copper, and zinc was conducted at two water quality sites during three storm events for the Chollas Creek Dissolved Metals TMDL. Dissolved cadmium and dissolved zinc were below their respective WQO during all three storm events. Dissolved copper was above the WQO during all three sampling events at SD8(1) and during one sampling event at site DPR2 on 2/19/07. Dissolved lead was measured above the WQO during one sampling event at site SD8(1) on 10/14/06 and one sampling event at site DPR2 on 2/19/07. Analytical data from the Chollas Creek TMDL are included in Appendix E-2.

3.2.5 Sweetwater Watershed Water Quality

Mass Loading Stations (MLS) – The Sweetwater River MLS had very few exceedances during the 2006-2007 monitoring season. Six constituents exceeded WQO over the three sampling events. Fecal coliform, TDS, and turbidity exceeded WQO during two of the three monitoring events, while BOD *Enterococcus* and total coliform exceeded on only a single occurrence. Toxicity was also present to *Ceridaphnia* (7-day reproduction) on a single occasion. None of the WQO for nutrients, pesticides, or total or dissolved metals were exceeded at the Sweetwater River MLS during 2006-2007. Analytical data from the Sweetwater River MLS are included in Appendix E-1.

Toxicity Identification Evaluations (TIE) – Toxicity was not observed for *Selenastrum, Hyalella, Ceriodaphnia 96-hr*, or *Ceriodaphnia* 7-day survival endpoint during any of the storm events during the 2006-2007 wet weather monitoring season. However, toxicity was observed for the *Ceriodaphnia* 7-day reproduction endpoint during the first monitoring event on October 14, 2006. A TIE was not initiated during the 2006-2007 monitoring season.

Dry Weather Monitoring (DWM) – A total of twenty-six (26) DWM sites were visited in the Sweetwater River Watershed during the 2006 dry weather season. The number of samples collected for each constituent were variable, therefore the results are presented here as exceedance percentages of dry weather action levels. Nitrate (NO3-N) exceeded the WQO in eleven percent (11%) of the samples. *Enterococcus*, fecal coliform, and total coliform exceeded in ten percent (10%) or less of the samples collected. There were no exceedances of MBAS, diazinon, chlorpyrifos, or any dissolved metals.

Rapid Stream Bioassessment – Two bioassessment monitoring sites were sampled in the Sweetwater River. Both monitoring sites had an IBI rating of Very Poor during the October 2006 and May 2007 surveys. It was estimated that the benthic community has lost forty-nine to sixty-three percent (49-63%) of the biodiversity expected to occur at each site.

Coastal Storm Drain Monitoring – Coastal monitoring was conducted at one beach site along San Diego Bay within the Sweetwater Watershed. The site was visited thirteen times during the reporting period. Samples were collected at Bayside Park on two occasions; the remaining monitoring events had dry storm drains, thus no samples were collected. Receiving water samples did not exceed the WQO during any event. Samples exceeded the storm drain action levels for total coliform and fecal coliform on one occasion, August 15, 2006. This exceedance, however, did not result in a receiving water exceedance.

County DEH AB411 Monitoring – DEH sampled receiving water at one beach site within the Sweetwater Watershed along San Diego Bay. The Bayside Park site was sampled thirty-five times during the reporting period. Exceedences of WQO were found for fecal coliform on a single occasion and for *Enterococcus* on two occasions. Total coliform did not exceed WQO on any occasion.

3.2.6 Otay Watershed Water Quality

Dry Weather Monitoring (DWM) – A total of thirty-four (34) DWM sites were visited in the Otay Watershed during the 2006 dry weather season. The numbers of samples collected for each constituent were variable, therefore the results are presented here as exceedance percentages of dry weather action levels. Total coliform was the only constituents that exceeded action levels in more than thirty percent (30%) of the samples, while dissolved copper exceeded action levels in just under thirty percent (30%) of the samples. *Enterococcus* and fecal coliform exceeded action levels in twenty-three percent (23%) and eighteen percent (18%) of the samples, respectively. Ammonia, nitrate, ortho-phosphate, pH, and MBAS exceeded in less than ten percent (10%) of the samples collected. There were no exceedances of oil and grease, diazinon, chlorpyrifos, or any of the dissolved metals except for dissolved copper.

Coastal Storm Drain Monitoring – Coastal monitoring was conducted at one beach site (Tidelands Park) within the Otay Watershed. The site was visited thirteen times during the reporting period. Samples were collected during two monitoring events. *Enterococcus* exceeded the storm drain action level on 12/4/06 and 5/21/07; however, exceedences were not found in the receiving water samples on either occasion. Total and fecal coliform did not exceed WQO or action levels in the receiving water or storm drain on any occasion.

County DEH AB411 Monitoring – DEH sampled receiving water at three beach sites (Glorietta Bay, Silver Strand, and Tidelands Park) within the Otay Watershed. The sites were sampled between twenty-six and thirty-one times. The fecal coliform WQO was exceeded on one occasion at Tidelands Park. There were two exceedances for *Enterococcus* at Tidelands Park and one exceedance for Glorietta Bay.

3.3 Likely Pollutant Sources

The Permit requires the Copermittees to identify potential sources of the high priority water quality problems that may impact water quality. Knowledge of potential sources will help the Copermittees develop activities to decrease pollutant discharges to the MS4 and receiving waters, target geographic areas and specific businesses for BMP implementation and education, and better correlate water quality conditions with surrounding land use. The San Diego Bay Copermittees have identified sources for the high priority water quality problems causing in the manner described below.

Table 3-4 provides details on five major pollutant source categories determined through the BLTEA to be significant sources of pollution within the San Diego Bay WMA. The categories are comparable to the categories in the Permit and include business sources (industrial and commercial), residential inputs, construction related inputs, streets and roadways, and parks. Municipal facilities other than parks, such as maintenance yards, are also potential sources. However, due to the comparatively small percentage of the WMA designated as municipal facilities that are not parks, they are not included on the list of major source categories. Each of these source categories represents a unique set of inputs or pollution generating activities which

may contribute to water impairment and which, by their nature, require a different approach to address/minimize their pollutant contributions. While this is not an exhaustive list of the potential sources of pollution, combined, these categories best represent the likely pollutant sources within each HA. Developing activities specific to address these sources provide the most effective means to reduce pollutants from these sources. It should be noted that dischargers not subject to regulation by the Municipal Permit, such as Caltrans and school districts, are also potential sources of pollution in the San Diego Bay WMA. However, these are not accounted for in this section, and will not be addressed in this document.

The extent of each of the five likely pollutant source categories within each HA based on total acreage by category is identified in Table 3-5. The San Diego Bay Copermittees are able to evaluate whether the sources of pollutants causing high priority water quality problems are adequately characterized through the understanding of the land use categories occurring within each HA (based on acreage) and BLTEA rating. This information enables the Copermittees to more effectively select and implement source appropriate activities to reduce pollutant discharges or to implement source identification and/or monitoring efforts necessary to achieve effective load reducing activities in the future.

Due to differences in pollutant generating activities and the accessibility of the source category to implement management actions, each source must be tracked and assessed individually. Some management activities can be quantified as to how much a pollutant load has been reduced. For example, pollutant loads collected at cleanup events within a park can be quantified. Other management activities regarding reduction of pollution loads may not be as easily quantifiable, though estimations via literature review, observation, etc. may be possible. For example, education to reduce pollution may only be measured by the number of employees or the general public who received training regarding stormwater pollution. The San Diego Bay Copermittees intend to work with the information presented in this chapter to develop appropriate assessment techniques within each activity that best addresses the pollutant source category and can show effectiveness in reducing loads.

Table 3-4. Likely Pollutant Source Categories in San Diego Bay Watershed

Source Category	Source Category Description	Likely Pollutants Generated	Pollutant Generating Activities	Management Approaches
Businesses	Business sources refer to commercial and industrial activities. Comprehensive lists of businesses, which may be potential sources of pollution, have been identified in the BLTEA report.	Various, depends on business type. See Appendix C-2 for details.	▪ Outdoor Operations ▪ Outdoor Storage ▪ Parking Areas ▪ Fueling ▪ Vehicle or Equipment Maintenance ▪ Waste Handling	▪ Regulation ▪ BMP Implementation ▪ Inspections ▪ Education ▪ Complaint Investigation ▪ ICID Detection Monitoring
Residential	Residential areas represent single- and multi-family residential areas, mobile home parks, and rural residential areas.	▪ Pesticides ▪ Nutrients ▪ Bacteria ▪ Metals ▪ Organics ▪ Oil and Grease ▪ Sediment ▪ Trash	▪ Over-irrigation of lawns/gardens ▪ Pet Waste ▪ Sewer Overflows ▪ Improper Disposal of HHWs ▪ Trash and Debris ▪ Home and Vehicle Maintenance	▪ BMP Implementation ▪ Education ▪ Hazardous Waste Collection
Construction	Construction activities refer to areas within the watershed which are currently under construction where development can occur.	▪ Sediment ▪ Gross Pollutants ▪ Trash	▪ Demolition ▪ Grading ▪ Storage and Disposal of Hazardous Materials ▪ Fueling ▪ Stockpiling of materials ▪ Loading/Unloading	▪ Regulation ▪ BMP Implementation ▪ Treatment Controls ▪ Inspections/Complaint Investigations ▪ ICID Detection Monitoring ▪ Education
Streets and Roadways	This category includes all local roadways maintained within the jurisdiction of the Copermittees. Due to their great linear extent, pollution caused by roadways is considered a significant threat to water quality within the watershed.	▪ Metals ▪ Organics ▪ Oil and Grease ▪ Sediment ▪ Gross Pollutants ▪ Bacteria ▪ Trash	▪ Vehicle Usage ▪ Trash ▪ Repair Work	▪ BMP Implementation ▪ Treatment Controls ▪ Cleanups
Parks	Parks include golf courses and club houses, active beaches, active parks, landscape open space, and residential recreation.	▪ Metals ▪ Organics ▪ Oil and Grease ▪ Sediment ▪ Gross Pollutants ▪ Bacteria ▪ Nutrients ▪ Pesticides	▪ Storage/Disposal of hazardous materials ▪ Landscape maintenance ▪ Cleaning Facilities	▪ Regulation ▪ BMP Implementation ▪ Inspections/Complaint Investigations ▪ ICID Detection Monitoring ▪ Education

Source: BLTEA (Weston, MOE, & LWA, 2005)

Table 3-5. Major Pollutant Source Category Acreage

Watershed	Business (Acres)[1]	Residential (Acres)[2]	Construction (Acres)[3]	Parks (Acres)[4]	Streets/Roadways (Acres)[5]
San Diego Bay	13,159.58 (5%)	63,985.75 (23%)	222.45 (0.08%)	5,175.87 (2%)	21,569.91 (8%)
Pueblo San Diego (908)	3,827.59 (11%)	14,305.29 (40%)	69.71 (0.19%)	1,040.22 (3%)	8,992.05 (25%)
908.1	247.99 (6%)	1,400.44 (32%)	1.21 (0.03%)	73.88 (2%)	725.09 (16%)
908.2	3,207.19 (12%)	10,312.77 (40%)	68.2 (0.26%)	769.11 (3%)	6,994.78 (27%)
908.3	372.41 (7%)	2,592.08 (46%)	0.3 (0.01%)	197.22 (4%)	1,272.18 (23%)
Sweetwater (909)	4,601.36 (3%)	36,292.15 (25%)	139.8 (0.09%)	2,600.57 (2%)	8,703.94 (6%)
909.1	2,704.81 (8%)	14,086.71 (44%)	90.82 (0.28%)	1,534.75 (5%)	5,720.11 (18%)
909.2	1,630.89 (3%)	14,888.03 (28%)	29.79 (0.06%)	1,054.08 (2%)	1,782.07 (3%)
909.3	265.67 (0.42%)	7,317.4 (12%)	19.19 (0.03%)	11.74 (0.02%)	1,201.77 (2%)
Otay (910)	4,730.62 (5%)	13,388.32 (14%)	12.94 (0.01%)	1,535.08 (2%)	3,873.93 (4%)
910.1	431.26 (8%)	843.24 (15%)	5.8 (0.11%)	484.76 (9%)	632.62 (12%)
910.2	3,733.11 (13%)	5,221.9 (18%)	7.14 (0.02%)	979.71 (3%)	2,652.40 (9%)
910.3	566.25 (1%)	7,323.18 (12%)	0 (0.00%)	70.61 (0.11%)	588.91 (1%)

Source: SANDAG Land Use Data 2006. Percentages represent proportion of land use acreage to watershed unit acreage.
[1] Business Sources consist of a summation of Commercial/Office and Industrial acreage.
[2] Residential Sources consist of a summation of Rural Residential and Residential acreage.
[3] Construction Sources consist of a summation of Under Construction acreage.
[4] Parks Sources consist of the following land uses: Golf Courses and Clubhouses, Active Beaches, Active Parks, Landscape Open Space, and Residential Recreation.
[5] Streets/Roadways is a summation of the following land uses: Freeways, Parking lots-surface, and road right of ways.

3.4 Water Quality Problems

Using the process identified in Section 3.1.2, the San Diego Bay Copermittees have identified the following high priority water quality problems for the San Diego Bay WMA (Table 3-6). This table identifies the BLTEA "A" ratings that were also coupled with a large presence of likely sources (or unknown) within that HA. There were also four instances when BLTEA "B" ratings were considered high priority due to other factors that went into the BWE process. In these circumstances, the San Diego Bay Copermittees assigned a high priority rating to the HA's recommended action. Additionally, Table 3-6 identifies the appropriate jurisdictions within each HA and the management action(s) needed to address the high priority water quality problem. It should be noted that in HAs where the majority of the sources were classified as "Unknown", the action identified was the need for additional source identification or characterization.

Table 3-6. San Diego Bay WMA High Priority Water Quality Problems

HA with High Prioritization		Pollutant Category	Recommended Action	Jurisdictions in HA
Pueblo San Diego	908.1	Bacteria *	Additional Monitoring	Port of San Diego City of San Diego
		Gross Pollutants	Additional Monitoring	
		Metals	Additional Monitoring	
		Oil and Grease *	Additional Monitoring	
		Pesticides	Additional Monitoring	
	908.2	Bacteria	Load Reductions	Port of San Diego City of San Diego Airport Authority County of San Diego City of La Mesa City of Lemon Grove
		Metals	Load Reductions	
		Sediment	Source Identification	
		Trash	Load Reductions	
		Pesticides	Source Identification	
	908.3	Bacteria	Load Reductions	Port of San Diego City of San Diego National City
		Sediment *	Source Identification	
		Trash	Load Reductions	
Sweetwater	909.1	Bacteria	Load Reduction	Port of San Diego City of San Diego National City City of Chula Vista County of San Diego City of La Mesa City of Lemon Grove
	909.2	Pesticides	Additional Monitoring	County of San Diego
Otay	910.1	Bacteria	Load Reduction	Port of San Diego City of Coronado City of Imperial Beach
		Gross Pollutants *	Source Identification	
	910.2	Bacteria	Source Identification	City of San Diego City of Chula Vista County of San Diego City of Imperial Beach

* Denotes pollutant category with a "B" BLTEA TTWQ rating

A brief summary of each HA is presented below describing the high priority water quality problems and the likely pollutant generating activities. Also described are the recommended management actions suggested by the Watershed Activity Decision Matrix in Section 2 to enhance the San Diego Bay WURMP's ability to address the effectiveness questions and the Core Management Questions as discussed in Sections 3.1.3. and 3.1.4.

Pueblo San Diego HU (908)

Point Loma HA (908.1) – The high priority water quality problems in the HA are bacteria, metals, gross pollutants, oil and grease. There are a high number of likely sources of these pollutants. The major categories of likely sources for all of these pollutants in this HA are residential areas, commercial/office businesses, and parks. Fifty-six percent (56%) of the business types consist of food establishments, while boat-related businesses (boat repair and marinas) accounted for approximately twenty-six percent (26 %). Transportation areas (streets and roadways) are also a source of metals, oil, and grease. Effective management efforts will likely require additional monitoring to assess water quality and likely sources to aid in the selection of future load reducing activities designed to properly address the high priority water quality problems.

San Diego Mesa HA (908.2) – Bacteria, metals, pesticides, trash, and sediment are high priority water quality problems in the HA. Businesses (industrial and commercial), parks, and residential areas are likely sources for all of the pollutants causing high priority pollutants in the HA. Likely sources of bacteria include food establishments, which account for seventy-six percent (76%) of the business sources in the HA, landscaping, and nurseries. Landscaping and nurseries are also likely business sources for pesticides and sediment in the San Diego Mesa HA. Metals have a high number of likely sources, while streets/roadways are additional sources of metals and sediment. The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash cleanup measures and programs to be implemented to address trash and other pollutants that may be associated with trash. Efforts will focus on load reduction and source abatement activities for bacteria and metals due to the high proportion of likely sources. In some cases, source identification studies and/or source characterization studies are necessary to identify the high proportion of unknown sources of pesticides and sediment in the HA in order to implement effective load reduction activities in the future.

National City HA (908.3) – The high priority water quality problems in the HA are bacteria, sediment, and trash. A high proportion of likely sources of bacteria are identified from businesses, parks, and residential source categories. Sixty-eight percent (68%) of the commercial businesses were food establishments, while approximately twenty-one percent (21%) of the businesses were auto-related. Streets and roadways are additional likely sources of sediment. Load reduction and source abatement activities are appropriate to address bacteria and trash, as a high proportion of likely sources have been identified. The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash

cleanup measures and programs to be implemented to address trash and other pollutants that may be associated with trash. The identification of sources is the recommended action for sediment.

Sweetwater HU (909)

Lower Sweetwater HA (909.1) – Bacteria is identified as a high priority water quality problem in the HA, with a high proportion of likely sources originating from residential, commercial/office businesses, and parks. Likely sources originating from businesses include food establishments, landscaping, and nurseries. A number of likely sources of bacteria have been identified, and load reduction and source abatement activities will be implemented in strategic areas in the HA.

Middle Sweetwater HA (909.2) – Pesticides are identified as a high priority water quality problem in this HA. In addition to likely sources of this pollutant category from residential areas and parks, likely sources also include landscaping and nursery businesses. Agriculture occurring in this HA is also a potential source of the pesticide pollutants. Construction has been recognized as a potential source of pesticides, but accounts for less than one percent (1%) of the HA's source category acreage. Identification of the likely source of the pesticide is important to applying the proper measures to reduce loads. There is a high proportion of unknown sources in this HA. In order to implement effective load reducing or source abatement activities, additional monitoring and/or source identification efforts should be completed.

Lower Sweetwater HA (909.3) – None of the pollutant categories were identified as a high priority water quality problems for this HA.

Otay HU (910)

Coronado HA (910.1) – Bacteria is the only high priority water quality problem in the HA. Residential land use, commercial/office businesses, and parks are likely sources of bacteria in the HA. Likely commercial business sources of bacteria include food establishments, landscaping, and nurseries. BMP activities focusing on reducing pollutant loads may be implemented to address the high proportion of likely sources of bacteria.

Otay HA (910.2) – Bacteria is the only high priority water quality problem in the HA. A high proportion of likely sources of bacteria are present in the HA and may originate from residential areas, businesses such as food establishments, and agriculture land uses. Construction activities are a major source category in this HA and may be a likely source of the pollutant. Identification of bacteria sources from likely and unknown sources of bacteria in the HA, such as motor freight and recycling businesses, will enable effective selection and placement of BMPs to reduce pollutant loads.

Dulzura HA (910.3) – None of the pollutant categories were identified as a high priority water quality problem for this HA.

Proper implementation of the San Diego Bay Watershed Strategy discussed in Section 2 requires knowledge of the historical and current water quality issues of the WMA and the potential sources of the high priority pollutants within each HA. As discussed earlier in this section, water quality data and land use assessment of the San Diego Bay WMA at the HA level enables Copermittees to tailor management actions to address high priority water quality problems and pollutant generating activities within each HA. Section 4 will present how the San Diego Bay Copermittees are developing and implementing watershed activities in an integrated manner through the Five-Year Strategic Plan to address the pollutant categories causing the high priority water quality problems identified in this section.

Section 4: Five-Year Strategic Plan

The Municipal Permit requires San Diego Bay Copermittees to work together to develop and implement a WURMP that identifies and implements watershed activities to address the high priority water quality problems identified in Section 3.4. As stated in the Municipal Permit, a watershed water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s). The Permit requires that no less than two watershed water quality and two watershed education activities shall be in active implementation phase in each Permit year. For the purposes of implementation, San Diego Bay Copermittees are required to identify watershed activities to implement pursuant to established schedules. It should be noted that capital projects are in active implementation phase, and as such, can be counted toward Permit compliance for the first year of implementation only.

The San Diego Bay Copermittees will collaborate to address the high priority water quality problems in the San Diego Bay WMA, and are taking the initiative to develop and implement appropriate activities based on the pollutant(s) target audiences and pollutant sources. The Model Watershed Strategy presents a standardized method of identifying activities and creating a strategic plan to be implemented over the Municipal Permit cycle. By conducting a BWE to identify high priority water quality problems and the management actions needed to address pollutant sources within each HA, effective management decisions can be made. With the goal of improving receiving water conditions in the WMA, the San Diego Bay Copermittees have used the Watershed Activity Decision Matrix to determine the proper actions (Additional Monitoring, Source Investigation, Load Reduction/Source Abatement) necessary to address high priority water quality problems. San Diego Bay Copermittees recognize that appropriately selected source abatement and load reduction activities can result in decreases of pollutants both in the receiving waters and the MS4 discharges.

This section will discuss how the San Diego Bay Copermittees will select, develop, and implement activities to maintain compliance with the Permit. This section includes a Five-Year Strategic Plan with discussion on the three types of watershed activities.

1. Watershed Water Quality Activities (4.1) – This section describes how the San Diego Bay Copermittees will choose, implement, and report water quality activities, such as load reduction/source abatement activities, source ID activities, and additional monitoring and/or data collection activities.
2. Education Activities Section (4.2) – This section describes the Education Program that will be implemented to enhance the public's understanding of basic watershed principles and sources of surface water pollution, make notable changes in the public's knowledge

and behavior toward pollution generating activities, and address the watershed's high priority water quality problems.

3. Public Participation Activities Section (4.3) – This section provides a description of opportunities available to the public to participate in decisions and activities that affect the San Diego Bay WMA.
4. Land Use Planning (4.4) – This section will discuss how the San Diego Bay Copermittees will update the General Plan, the notification mechanisms used, and the watershed planning mechanisms to integrate watershed management into programs that can be implemented across jurisdictional boundaries.

4.1 Development and Presentation of the Five-Year Strategic Plan

The San Diego Bay WMA Five-Year Strategic Plan is the result of the process described in the Model Watershed Strategy to select, implement, and assess, in an integrated manner, activities that appropriately address each Copermittees' contribution to the high priority water quality problems. The watershed activities proposed by the San Diego Bay Copermittees for the first two years of the Five-Year Strategic Plan are presented in Table 4-1. The table shows the nature of the activity conducted, the pollutants and the HA(s) the activity addresses, and the anticipated time schedule for implementation over year one and two. Each Copermittee is able to identify water quality activities to address the high priority water quality problems within the HA or portions of the HA that their jurisdiction controls. The selected activities identified within this section are consistent with the overall Model Watershed Strategy to reduce high priority water quality problems.

It should be noted that the Five-Year Strategic Plan also identifies monitoring and source identification activities. Where the BWE has determined that there are data gaps that must be filled before successful implementation of a load reduction activity can occur, monitoring and/or source identification activities are necessary to fill the data gap. While the San Diego Bay Copermittees recognize that these are not considered for credit toward Permit compliance, their importance to the overall success of the Watershed Strategy and to address high priority water quality problems cannot be overlooked. They will support future management decisions regarding the planning, implementation, and assessment of watershed activities. As such, the San Diego Bay Copermittees have elected to keep them in the Five-Year Strategic Plan and discuss them within this section of the report. It is also important to note that activities beyond year two of the Permit are contingent upon Copermittee budget approvals and are not considered final until that fiscal year budget is approved.

Table 4-1. Proposed San Diego Bay Watershed Activities for Fiscal Years 2007-2008 and 2008-2009

San Diego Bay Watershed	Hydrologic Area									Pollutants										Fiscal Year					
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	2007-2008			2008-2009		
Watershed Activities Planned for Implementation																									
Municipal BMPs (1)	X	X		X			X	X	X	X				X			X	X		WQ			WQ		
Storm Drain Litter Control Techniques (2)		X	X	X														X	X	WQ			WQ		
Street Sweeping (3)	X	X	X	X			X						X					X	X	WQ			WQ		
Cleanup Events (4)		X	X	X			X	X											X	WQ	PP		WQ	PP	
Enhanced Dry Weather Monitoring Program (5)		X								X	X	X	X	X	X	X	X	X	X	S			S		
Enhanced Construction Oversight (6)		X																X		WQ			WQ		
BMP Effectiveness Monitoring Program (7)		X										X	X		X			X		M			M		
Outdoor Special Event Oversight (8)		X																	X	WQ			WQ		
Trash Disposal Area Capital Improvements (9)		X								X									X	WQ			WQ		
Treatment Control BMP Pilot Projects (10)		X											X							WQ			WQ		
Provide Homeowner's Association Education About Pet Waste Disposal (11)				X				X	X	X										WE			PP	WE	
Stormwater Education Booth at Annual Pet Festival & Doggy Dash (12)				X				X	X	X										WE			WE		
Fats, Oils, and Grease (FOG) Program (13)				X				X	X	X					X					WE			WE		
Storm Drain Stenciling (14)				X				X	X	X	X	X	X	X	X	X	X	X	X	WQ	WE		WQ	WE	
Update Recycling and Solid Waste Ordinance (15)				X				X	X	X				X					X	P			WQ		
Large Special Event Inspection and Cleanup (16)							X			X			X		X				X	WQ	WE		WQ	WE	
Educational Stickers for Public Works Vehicles (17)																				WE			WE		
Inspection Audit (18)																				S			S		
Restaurant Outreach (19)																				S			WE	S	
Policy and Procedure Audit for Illegal Dumping (20)										X			X		X	X			X	S	P		S	P	
Evaluate Code Enforcement Policy for Parking Lot Hosing (21)											X		X		X				X	P			WQ	WE	
Collaborate with Stakeholders for Chollas Creek TMDLs (22)										X			X			X			X	WQ	WE	M	WQ	WE	M
La Mesa Wet Weather & Additional Dry Weather Monitoring Program (23)		X								X	X	X	X	X	X	X	X	X		M			M		
La Mesa Park Kiosk (24)		X								X	X	X	X	X	X	X	X	X	X	WE					
Clean Community Program (25)			X							X		X							X	WQ	WE	S	WQ	WE	S
Additional Dry Season Construction Inspections (26)			X	X														X	X	WQ			WQ		
Chollas Creek WQ Protection & Habitat Enhancement Project (27)		X								X	X	X	X	X	X	X	X	X		WQ	WE	M			
Targeted Auto-Related Facility Inspections (28)		X											X							WQ	WE	S			
Targeted Metals-Related Industrial Facility Inspections 29)		X											X							WQ	WE	S			
Targeted Restaurant Facility Inspections (30)	X	X	X	X				X		X										WQ	WE	S			
Dalbergia "Green Mall" Infiltration Retrofit (31)		X								X			X										WQ	WE	M
Memorial Park "Green Lot" Infiltration Retrofit (32)		X								X			X							M			WQ	WE	M
Targeted Municipal Facility Inspections (33)		X								X			X	X						WQ	WE	S	WQ	WE	S
Karma/Karma Second Chance Public Service Announcements (34)	X	X	X	X				X	X	X		X							X	WE			WE		

San Diego Bay Watershed	Hydrologic Area									Pollutants										Fiscal Year					
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	2007-2008			2008-2009		
Watershed Activities Planned for Implementation																									
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community (35)	X	X	X	X				X	X	X		X	X						X	WQ	WE		WQ	WE	
Outdoor Billboards/Transit Shelters (General; Bacteria) (36)	X	X	X	X				X	X	X									X	WE			WE		
Mobile Advertising (General; Bacteria) (37)	X	X	X	X				X	X	X		X	X		X		X	X	X	WE			WE		
Regional Harbor Monitoring Program (38)	X	X	X	X			X						X					X		M			M		
Inspect All Restaurants (39)							X			X		X		X	X				X				WQ	WE	S
Outreach Booths During Fire Open House (40)							X			X	X	X	X	X	X	X	X	X	X				WE		
Safer Alternatives to Copper Antifoulant Paints Project (41)	X												X							WQ			WQ		
Coordinated Dry Weather Monitoring Programs (42)	X	X								X			X	X		X	X	X	X	M			M		
LID and Watershed Planning Education for Community Planning/Sponsor Groups (43)				X	X	X			X	X	X	X	X	X	X	X	X	X	X	WE			WE		
Clean-up Events, City-wide Volunteer Sponsored (44)		X		X															X	WE			WE		
Potential Watershed Activities Planned for Implementation																									
Municipal Rain Barrel Installation and Downspout Disconnects (45)	X	X	X	X				X		X				X	X		X	X		Dependent upon length of procurement process/installation					
Installation of Trident Curbscreens (46)																X		X	X	Dependant upon grant funding					
Chollas Creek Runoff Reduction and Groundwater Recharge Project (47)		X											X							Contingent upon receipt of IRWM grant funding					
Land Acquisitions (48)				X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	Unable to project land acquisitions in advance					
Special Drainage Area (SDA) 1 Spring Valley Area Stormwater Quality Master Plan (49)				X	X	X			X											Contingent upon Board approval of SDA fee increase					

WQ	Watershed Water Quality Activity
WE	Watershed Education Activity
PP	Watershed Public Participation Activity
LU	Watershed-based Land Use Planning Activity
WQ	Watershed Water Quality Activity (Not Active Implementation)
WE	Watershed Education Activity (Not Active Implementation)
M	Watershed Water Quality Monitoring Activity
S	Source ID/Characterization Study
D	Watershed Data Management/Assessment Activity
P	Watershed Planning Activity

* Collective Activity, please refer to the individual activity summary sheets to identify which Copermittees are implementing this activity during this reporting period.

4.2 Proposed Watershed Water Quality Activities

The San Diego Bay Copermittees relied heavily on the Model Watershed Strategy to guide the selection of watershed water quality activities. As stated previously, each Copermittee has individually decided the activities that are feasible to institute in their jurisdiction, and has selected watershed water quality activities for implementation that are appropriate for their relative contribution to the watershed's high priority water quality problems.

The Copermittees have identified four common jurisdictional water quality activities and will coordinate and standardize these activities at the watershed level. This collaborative approach was utilized because these activities were identified as being beneficial to address the high priority water quality problems, and can be applied within different locations and at different scales of implementation as determined appropriate by each Copermittee within their respective HA. These collaborative activities include:

Municipal Best Management Practices – Municipal areas and related activities have the potential to contribute to the high priority water quality problems within the watershed. The San Diego Bay Copermittees have identified that implementation of BMPs that go above jurisdictional requirements may result in additional watershed benefits and reduce pollutant loading within the watershed. Multiple activities are suggested to be implemented at parks and/or recreational areas to address high priority water quality problems through a variety of mechanisms throughout the HAs. These include:

1. Pet Waste Bags – Providing pet waste bags to citizens enables proper disposal of pet waste and associated pollutant categories such as bacteria and nutrients, resulting in a load reduction.
2. Porous Pavement – The replacement of impervious surfaces with porous pavement will facilitate load reductions of metals, sediment, oil and grease, and bacteria by reducing urban runoff over impervious surfaces.
3. Irrigation Management – Optimizing current irrigation methods or installing more efficient mechanisms will aid in reducing pollutant loads associated with irrigational runoff, such as nutrient, sediment, pesticide, and bacteria.
4. Xeriscaping – This landscaping technique enables Copermittees to convert sections of municipal areas from impermeable surfaces, such as concrete or pavement, to highly permeable California-friendly landscaping. This activity is beneficial in that it reduces pollutant loads associated with urban runoff over impervious surfaces.

Storm Drain Litter Control Techniques – Bacteria, sediment, and trash are present in multiple HAs and are often associated with urban runoff. This activity will go above JURMP requirements by implementing the storm drain litter techniques (i.e. inserts, filters, or other techniques designed to capture and reduce pollutants from entering storm drains) in high input areas within HAs in their jurisdiction. Assessments of the weight or type of litter collected by this activity may enable a watershed-level evaluation of the effectiveness of this activity.

Copermittees recognize that several of these activities are capital projects, and as such, will only consider them in active implementation phase during the first year of implementation.

Street Sweeping Enhancements – The San Diego Bay Copermittees have identified that the San Diego Bay WMA has a large number of roads and streets which can contribute to loading of sediments and metals. While sediments are a high priority water quality problem in only 908.2 HA, metals are high priority water quality problem in multiple HAs. Therefore, increasing street sweeping efforts will address input from these likely pollutant sources. Jurisdictional efforts may go above and beyond the JURMP street sweeping requirements by maintaining a coverage area and/or a frequency greater than what is required in the parts of HAs under their control.

Cleanup Events – Trash was designated as a high priority water quality problem throughout the San Diego Bay WMA, and cleanup events directly address the issue of trash in the watershed. Trash is a common problem in all HAs, and the removal of trash has the added benefit of reducing the source of several high priority water quality problems associated with trash such as metals and bacteria. A watershed-level evaluation to estimate the amount of trash removed from the San Diego Bay WMA during cleanup events is also possible. Cleanup events also provide an opportunity for education through the promotion of the watershed awareness message.

Table 4-1 identifies both the collaborative and individual water quality activities that will be planned and/or implemented during year one and two of the Permit. The collaborative and jurisdictional activities will be implemented by San Diego Bay Copermittees on schedules and in locations that the individual Copermittees deem appropriate to best address the high priority water quality problems within their respective HAs.

Specific details on how each Copermittee intends to implement any activity within their jurisdiction are contained in the Copermittee Activity Summary Sheets in Appendix D. Collaborative activities will be discussed in general terms in this section, though the manner in which the activity is conducted may vary. Information specific to each activity can be found in each separate activity summary sheet, and it is suggested to refer to the activity summary sheets for detailed information. Activities other than the collaborative activities San Diego Bay Copermittees could implement may vary depending on the water quality problems within their HAs and cannot be described in general terms within this section.

Each watershed activity summary sheet will contain the following information:

A. A description of the activity.
B. A time schedule for implementation of the activity, including key milestones.
C. An identification of the specific responsibilities of San Diego Bay Copermittees in completing the activity.
D. A description of how the activity will address the identified high priority water quality problem(s) of the watershed.

E. A description of how the activity is consistent with the collective Watershed Strategy.
F. A description of the expected benefits of implementing the activity.
G. A description of how implementation effectiveness will be measured.

The collaborative water quality activities and individual Copermittee water quality activities will be assessed annually to verify their effectiveness. As stated above, information on how each activity will be assessed is located within the activity summary sheets. Please note that for collaborative activities, Copermittees will individually assess the effectiveness of their portion of the collaborative activity separately. The overall watershed effectiveness assessment will be done by comparing measurable results, such as quantity of trash collected during cleanup events or debris collected at storm drain inserts.

4.3 Proposed Watershed Education Activities

San Diego Bay Copermittees recognize that due to the very nature of non-point source pollution, public education is an essential element for a successful watershed protection strategy. In order to reduce pollution, all those who live, visit, and conduct business within the San Diego Bay watershed must become informed and involved. Making the public aware of the importance of individual actions in protecting our water resources and promoting watershed stewardship are crucial components for the success of this program.

The goal of the San Diego Bay WURMP education program is to enhance public understanding of sources of water pollution. The main objectives needed to meet this goal are to capture audience attention, to impart messages that are understood and retained, and to ultimately prompt behavioral changes. Establishing key messages – or succinct, easily understandable and motivational information – is crucial to program success. As time evolves, these core messages are built upon with new and more detailed information. Generally, educational messages and methods are similar at the jurisdictional, watershed, and regional levels. The overlap between these various program levels is intended to maximize the benefits that can be achieved which will become more apparent in the discussion and tables within this section.

Order 2007-0001 states that a watershed education activity “is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can be reasonably established in target audiences”. The Permit requires that the Copermittees identify the education activities that will be implemented during the first year of the Permit Cycle and provide plans for activity implementation beyond the first year. Additionally, the Permit requires that the Copermittees explain why activities were chosen, and how the activities are expected to directly target the sources and discharges of pollutants causing the high priority water quality problems. A list of the education activities that will be implemented during the first year by each Copermittee, as well as a tentative schedule for future activities, will also be included within this section.

4.3.1 San Diego Bay Education Program

Over the past five years, San Diego Bay Copermittees made enormous strides to develop an appropriate education strategy to meet the needs of the watershed (San Diego Bay WURMP, 2003). The San Diego Bay Copermittees have updated the previous WURMP Education Action Plan to be consistent with the newly developed collective Watershed Strategy. Updates to this education approach have also been incorporated to ensure that it meets all new Permit elements. The updated WURMP Education Action Plan will herein be referred to as the San Diego Bay Education Program.

The San Diego Bay Education Program outlined in Table 4-2 describes the types of WMA education activities to be developed and implemented by the San Diego Bay Copermittees over the short and long-term. The headings in the table relate directly to the Permit requirements for watershed education, including target audiences, the WMA issues addressed, and the assessment method that will be used to assess each general education category. The specific subcategories of activities within each program element are identified in the table as well. Additionally, the table illustrates the relationship of these activities to surface water pollutants, primarily those high priority water quality problems in the San Diego Bay WMA.

The following target audiences have been identified in the Municipal Permit as having the most significant impact on the high priority water quality problems in the San Diego Bay WMA: general public, residents, school children, businesses, municipal staff, and construction-related workers. As such, reaching these audiences will enable San Diego Bay Copermittees to best address the high priority water quality problems for San Diego Bay. While key/core program messages remain consistent throughout all communication vehicles, where appropriate, they will be tailored for individual target audiences. For example, an overall message to “identify and isolate potential flows to a storm drain” is refined for residents to identify typical flow sources around the house. For the business community, the message is focused on typical commercial and industrial activities that result in potential flow to storm drains. As such, it is essential that appropriate activities be implemented to encourage behavior changes within these groups.

Additional details on various tasks and elements of the San Diego Bay Education Program are provided in the summaries that follow. Annual assessments of the education activities implemented by the San Diego Bay Copermittees will also be conducted in a manner similar to that described above. Please note that in an effort to include only watershed activities as defined earlier in this WURMP document, jurisdictional events that did not specifically discuss the San Diego Bay WMA and/or high priority pollutants are not included as WURMP education activities.

Table 4-2. San Diego Bay Education Program

Tasks from the WURMP Education Action Plan	Target audience	Program Elements *	Assessment Mechanism	Jurisdictional, Watershed, or Regional Program	Concepts/Pollutant Categories Addressed					
					Watershed concepts	General Surface Water concepts	Metals (Copper/Zinc)	Pesticide (Diazinon)	Bacteria	Sediment (Turbidity/TSS)
Public Presentations and Media - Watershed Element	General Public, Residential, Commercial/ Industrial, Construction, Municipal	Jurisdiction Stormwater-specific Events	Pre- and post-tests	J, W	x	x	x	x	x	x
		Jurisdiction-Hosted Events	Pre- and post-tests; surveys	J	x	x	x	x	x	x
		Community-Hosted Events	Surveys	J	x	x		x	x	
		Festival Participation	Surveys; County-wide surveys	J, W, R	x	x		x		
		Print Media	County-wide surveys	J, W	x	x	x	x	x	x
		Public Service Announcements	County-wide surveys	R	x	x		x	x	
School Programs	K - 12 children	Jurisdiction Staff Presentations	Pre- and post-tests	W	x	x		x	x	x
		Jurisdiction-Sponsored Presentations	Pre- and post-tests	W	x	x		x		
		Field Trips	Pre- and post-tests	J, W	x	x			x	
		Project SWELL	Pre- and post-tests; surveys	W	x	x	x	x	x	x
Integrated Pest Management	General Public, Residential, Commercial/ Industrial, Municipal	Jurisdictional IPM Seminars	Pre- and post-tests; surveys	J, W, R	x	x		x		
		San Diego Regional IPM Program	County-wide surveys	W, R	x	x		x		
Project Clean Water Watersheds Website	General Public	Website with information related to surface water quality issues, watersheds, and pollutants	County-wide surveys, number of website hits	W, R	x	x	x	x	x	x

					Concepts/Pollutant Categories Addressed					
Tasks from the WURMP Education Action Plan	**Target audience**	**Program Elements ***	**Assessment Mechanism**	**Jurisdictional, Watershed, or Regional Program**	**Watershed concepts**	**General Surface Water concepts**	**Metals (Copper/Zinc)**	**Pesticide (Diazinon)**	**Bacteria**	**Sediment (Turbidity/TSS)**
Partners in Clean Water	General public	Cleanup Events	Surveys, amount of waste collected	J	x	x			x	
		Citizen Monitoring/Training	Pre- and post-tests; surveys	J, W	x	x	x	x	x	x
		Storm Drain Stenciling Events	Pre- and post-tests; surveys, number of drains stenciled	J	x	x			x	x
		Grant Projects	County-wide surveys	W	x	x	x	x	x	x
Watershed Education for Municipal Staff	Municipal Staff	Presentations during staff meetings	Pre- and post-tests	J	x	x		x	x	x
Chollas Creek Enhancement Project	General Public and Commercial/ Industrial	Chollas Creek Enhancement Project		J, W	x	x	x	x	x	x

4.3.1.1 Public Presentations and Media for Watersheds

This element of the San Diego Bay Watershed Education Program was designed to incorporate general watershed, receiving water, and stormwater pollution prevention concepts and principles into existing and planned public presentation and media opportunities at the jurisdictional level, and when appropriate, at the watershed and/or regional level.

Generally, public presentations and media provide an effective means to get a general message to large audiences. Because we are in control of the content and how it is presented, it can be focused on broad watershed-concept based messages, or for smaller audiences, tailored to address specific sources and high priority water quality problems. Specific opportunities for public presentations and media will be evaluated as they become available to determine the appropriate message for the specific target audience. Those opportunities that can provide education concerning San Diego Bay WMA's high priority water quality problems to the target audiences will be selected for inclusion. The Public Presentations and Media element of the San Diego Bay Watershed Education Program has been subcategorized under the six sub-headings described below.

- Jurisdiction Stormwater-Specific Events – These efforts are typically jurisdictional staff presentations to civic and business groups that specifically discuss watershed issues, stormwater water quality problems, BMPs, and stormwater regulatory requirements.
- Jurisdiction-Hosted Events – Efforts to present stormwater and watershed education information at various functions hosted by other departments within a respective jurisdiction, such as a municipal Fire Station Open House.
- Community-Hosted Events – Presentation of watershed and stormwater education at various events hosted by community and private groups within a jurisdiction, such as hosting an information booth at local walking/running race events or trade association conferences.
- Festival Participation – Opportunities to share education materials at events hosted by local community groups or the jurisdictions themselves, community festivals, such as the San Diego County Fair.
- Print Media – Efforts to attract media attention. For example, gaining print media coverage for watershed and stormwater management efforts and the results of jurisdictional programs.
- Public Service Announcements – The THINK BLUE media campaign and other public service announcements (PSAs) broadcast over radio and television.

Public presentations and media opportunities can be assessed in several ways. Some types of public presentations provide an occasion to measure effectiveness through the administration of pre- and post-tests or surveys. Festival participation, print media, and PSAs are more challenging to assess, but opportunities can be identified from watershed-wide and county-wide public opinion surveys in order to determine effectiveness.

4.3.1.2 School Programs: San Diego Bay Watershed

School children are a major focus of the San Diego Bay Watershed Education Program. The San Diego Bay Copermittees continue to focus on efforts to effectively promote watershed awareness and to initiate positive behavioral changes in children. School-related programs will be evaluated for inclusion in the San Diego Bay Watershed Education Program according to their focus on San Diego Bay WMA high priority water quality problems. Those activities that most effectively increase knowledge and/or change behaviors related to the high priority pollutants will be selected. Education programs focusing on BMPs, such as proper cleanup of pet waste and natural pest control methods, will be expected to directly target sources and discharges of high priority pollutants. There are four main subcategories to describe the education/outreach efforts directed at school children.

- Staff Presentations – Staff from the jurisdictions making presentations at schools throughout the watershed can tailor the presentations to address the high priority water quality problems that most impact their jurisdiction.
- Jurisdiction-sponsored Presentations – San Diego Bay Copermittees believe that efforts to partner with others, such as the County Office of Education or the Resource Conservation District of Greater San Diego, to bring watershed awareness opportunities to school children throughout the San Diego Bay Watershed will enhance education efforts, help keep educational messages consistent, and increase community involvement in spreading watershed stewardship.
- Field Trips – San Diego Bay Copermittees efforts to provide local schools with field trip opportunities, such as trips to the Chula Vista Nature Center, the Maritime Museum of San Diego, and local wetlands, as an effective hands-on means of increasing watershed and water quality awareness in students. During field trips, specific pollutants, their sources, and focused pollution prevention information relating specifically to the high priority water quality problems will be disseminated. These details will be tailored to each individual effort as appropriate.
- Project SWELL – Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, the San Diego County Regional Airport Authority, and various non-profit organizations to establish comprehensive water quality and pollution prevention curricula in San Diego City schools. This curriculum is designed to focus on high priority pollutants found throughout the City of San Diego, and mainly focuses on high priority water quality problems such as bacteria, pesticides, and sediment, all of which are high priority water quality problems for the San Diego Bay WMA.

Many of the school programs currently provide some level of assessment indicating that children have incurred either a change in knowledge or a behavior change. Some methods to document changes include the use of pre- and post-tests prior to and following the implementation of a program, or the use of a “commitment-based” method in which students are

asked to commit to implementing one of the identified pollutant prevention measures that were taught within their homes in the future. It is also expected that many children will share information they have learned with their families, thereby expanding the range of the San Diego Bay Education Program.

4.3.1.3 Project Clean Water Watershed Website

The Project Clean Water (PCW) website provides a venue for public education and outreach about the San Diego Bay WMA. In addition, the San Diego Bay Copermittees continue to link their individual jurisdictional websites to PCW. Both the PCW website and the individual Copermittee websites present additional mechanisms for educating the public about watershed issues in general. These may also provide information on BMPs and/or strategies to reduce the loading of high priority pollutants.

This website was selected as an integral part of the San Diego Bay Education Program because it provides specific information on the San Diego Bay WMA's high priority water quality problems, as well as BMPs designed to reduce loading of those contaminants. Therefore, this activity is expected to directly target the sources and discharges of high priority pollutants due to the opportunity to display targeted information geared towards specific watersheds. Although the assessment of websites presents a challenge, opportunities may be available to draw conclusions from county-wide survey results. Additionally, the number of hits for the San Diego Bay WMA portion of the webpage can provide an indication of the number of people that are receiving information about San Diego Bay high priority water quality problems, thus indicating a change in awareness.

4.3.1.4 Partnerships in Clean Water

The San Diego Bay Copermittees continue to focus on efforts to nurture existing partnerships, and to develop new partnerships within our communities. Community involvement is one way of spreading the watershed message more effectively. Additionally, studies have indicated that people are more apt to change a behavior if others within the community are also changing through the establishment of cultural "norms".

In general, activities that fall within these categories will be determined to be effective because they are all geared towards the general public, a target audience of concern. Additionally, the implementation of programs falling within the subcategories listed below will result in decreased high priority pollutant loading, such as bacteria, thereby directly targeting the sources and discharges of pollutants. There are four subcategories to describe the education/outreach efforts focused on community involvement.

- Cleanup Events – In addition to the obvious public participation aspects of a cleanup event, these events provide an opportunity to conduct education and outreach about watershed issues and general stormwater pollutants of concern.

- Citizen Monitoring/Training – Citizen Monitoring Training and Citizen Monitoring events provide opportunities for public participation, as well as education and outreach about watershed issues and general stormwater water quality problems.
- Storm Drain Stenciling Events – Efforts to conduct storm drain stenciling events with the general public. These events are an effective means for increasing watershed and water quality awareness in the community.
- Grants – Grants provide an opportunity to partner with other municipalities, governmental agencies, and non-profit organizations to conduct joint efforts with a common goal. Many grants are available to fund education and outreach projects to target San Diego Bay high priority water quality problems throughout target communities of the San Diego Bay WMA. Efforts will be made to identify potential grant opportunities for the San Diego Bay Watershed Education Program.

Assessment of Partners in Clean Water activities can be achieved through direct measurements, such as the amount of trash removed during a cleanup event, or the amount of storm drains labeled during a stenciling event. Other opportunities may be available to ask participants to fill out post-activity surveys in order to further assess changes in knowledge or behavior.

4.3.1.5 Municipal Staff Training on Watershed Elements

While municipal training is a required JURMP element, the San Diego Bay Copermittees recognize the benefit that can occur by integrating certain watershed elements into municipal staff training as feasible. Watershed-specific training can help target and bring more emphasis on the watershed high priority water quality problems into jurisdictional programs. Additionally, an aggressive program to educate municipal staff has been undertaken by each jurisdiction in the region. It is expected that public agencies will incorporate watershed-specific issues into their training as feasible while the San Diego Bay Copermittees develop a greater understanding of these challenges.

Municipal staff training provides an effective means to get a general message to large audiences, or a specific message out to particular staff that may have an influence on pollutant loads. Messages can either focus on broad watershed-concept based messages, or for more specific audiences, focus on specific sources and pollutants. Specific opportunities for municipal training will be assessed as they become available to determine the appropriate message for the particular target audience. Those opportunities which provide an avenue to provide education concerning San Diego Bay high priority water quality problems to the target audiences will be given priority. Since municipal staff training will usually take place during staff meetings, assessment can be achieved through the administration of pre- and post-tests to determine the level of knowledge gained as a result of the training.

4.3.1.6 Integrated Pest Management (IPM)

IPM promotes the use of integrated, ecologically sound pest management programs. The San Diego Bay Copermittees believe that educating the public to use IPM is an effective way to protect the beneficial uses of receiving waters throughout the watershed from the impacts of diazinon and other pesticides. IPM-focused programs have been selected for inclusion in the San Diego Bay Education Program because these activities specifically target pesticides, one of the San Diego Bay high priority water quality problems. Therefore, funding IPM-focused programs is an effective method by which to target one specific source and discharge of a watershed pollutant. There are two main subcategories to describe the education/outreach efforts related to IPM.

- Jurisdictional IPM Seminars/Events – Efforts to educate the public to use IPM as a way to protect the beneficial uses of receiving waters throughout the watershed. Copermittee efforts to organize or participate in local seminars or events regarding IPM for local residents, businesses, and public agency staff.
- San Diego Regional Program – Monies used on behalf of all the Regional Copermittees to implement an educational program aimed primarily towards the residential sector in order to induce positive changes in residents' attitudes and behaviors concerning pesticide use around their homes. Portions of this regional effort conducted within the San Diego Bay WMA will be considered and reported on during Annual Reports.

Some IPM-focused programs such as Jurisdictional Seminars/Events may provide the opportunity for assessment through the use of pre- and post-tests or surveys. The assessment of the San Diego Regional Program presents a bigger challenge; however, changes in knowledge and behavior can be measured through the implementation of County-wide or watershed-wide surveys.

4.4 Proposed Public Participation Activities

Public participation is encouraged to ensure that stakeholder interests and creative solutions are considered. Public participation involves evaluating input from the public as part of the decision-making process. It includes all aspects of identifying problems and opportunities, developing alternatives, and making decisions. In this definition, the public is any individual or group of individuals, organization, or political entity with an interest in a decision's outcome. They are often referred to collectively as stakeholders.

Broad participation is critical to further development and implementation of the watershed program. While San Diego Bay Copermittees aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process. Furthermore, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own, and that broad partnerships are essential to positively affect the water resources in the watershed. It is only through a

collaborative approach that the San Diego Bay Copermittees will develop a better understanding of these issues and processes affecting water quality in our watersheds.

Utilizing an effective stakeholder public participation process enhances the effectiveness of the San Diego Bay WURMP Program for the following reasons:

1. It encourages appropriate modification of policies and procedures before problems develop.
2. It contributes to sustainable decision making.
3. It provides an early warning system for public concerns and needs.
4. It presents an opportunity for communication between decision makers and the public.
5. It promotes understanding and acceptance of potentially controversial issues by the public.
6. It helps increase public understanding and support for the Port's environmental goals.

The following section is divided into two parts in order to summarize the activities that the San Diego Bay Copermittees will undertake to encourage public participation. The first part, entitled "Public Participation in the Decision-Making Process", provides a description of opportunities in which the general public can play a role in decisions that affect the San Diego Bay WMA. The second part, entitled "Public Involvement in Watershed Events", provides a description of opportunities in which the general public can take part in activities that benefit the San Diego Bay WMA. Many of these programs overlap with those already described in Section 4-2; therefore, extensive detail is not provided in this section. Please note that this section only discusses the activities that are specific to the San Diego Bay watershed.

4.4.1 Public Participation in the Decision-Making Process

Public participation is a critical part of the decision-making process for governmental agencies because many decisions made on a daily basis have the potential to affect the public on a variety of levels. U.S. EPA guidelines recommend that the public be included in developing, implementing, and reviewing stormwater management programs, and that the public participation process should make efforts to reach out and engage various socioeconomic groups. This section will provide descriptions of the known opportunities for members of the public to participate in decisions associated with the San Diego Bay Watershed Education Program and Land Use Activities. As other opportunities arise, these will be identified and discussed within this section of WURMP updates and within WURMP Annual Reports.

4.4.1.1 Project Clean Water – San Diego Bay Watershed Website

The Project Clean Water website (www.projectcleanwater.org) provides a means of public participation on San Diego Bay water quality issues. Each of the three subwatersheds which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have web pages devoted to them. Each web page includes relevant data on the watershed, a list of projects in the watershed, a link to the San Diego Bay WURMP, and an activities section. The activities section lists groups conducting

projects such as cleanups and citizen monitoring, and provides contact information for those groups. The website also acts as a clearinghouse for opportunities by which the public can be involved in the decision-making process, thereby serving as a critical link between the public and the San Diego Bay Copermittees. Other groups conducting water quality activities related to the watershed are also invited to contact the webmaster for inclusion on the site listing.

4.4.1.2 San Diego Bay WURMP Meetings

San Diego Bay WURMP meetings are held regularly to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue for public participation by allowing Copermittees and other stakeholders to interact and discuss local watershed efforts. The meeting dates will be advertised on the county-wide Project Clean Water website, allowing any member of the community to attend and provide input to watershed-wide decisions.

4.4.1.3 Integration and Participation in Local Planning Activities

In recent years water quality management efforts have become increasingly watershed-focused, and several planning activities have been initiated. San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA are participating in the development of planning and/or guidance documents that are intended to improve the water quality in San Diego Bay. Stakeholders in the areas in which these plans focus are given the opportunity to attend regular meetings and can provide valuable input on plan direction.

4.4.1.4 Direct Interaction

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' personnel also interact with the public on a daily basis. Municipal employees receive stormwater training on an ongoing basis, as described in each Copermittee's JURMP. Municipal employees interact with the public within their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about stormwater issues and regulations, as well as answer questions and provide guidance.

4.4.1.5 Assessment of Public Participation in Decision-Making

Effective public participation is driven by ensuring that the stakeholders are engaged at the appropriate level of decision-making. Public input into any decision-making process can be as simple as providing public notification that an initiative will occur, or a complex process that requires them to be intrinsically involved and responsible for the final decision-based outcome, or any level in between. The proper identification of the role of the public is crucial to ensuring the success of any initiative for which public input is sought. Table 4-3 provides a description of

the possible levels of public participation, ranging from simple notifications to empowerment of full decision-making.

Table 4-3. Levels of Public Participation

Public Participation Objectives				
INFORM	**CONSULT**	**INVOLVE**	**COLLABORATE**	**EMPOWER**
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.

An opportunity for assessing public participation is available through the identification of the appropriate level at which to involve stakeholders in decision-making. Prior to embarking on a public participation opportunity, the San Diego Bay Copermittees will establish an objective defining the level at which the public is invited to be involved. The effectiveness of public participation in decisions affecting the San Diego Bay WMA will be assessed through an update on the status of that objective in Annual Reports, the numbers of stakeholders reached through each decision-making opportunity (where applicable), and summaries describing how stakeholders participated in each opportunity.

4.4.2 Public Involvement in Watershed Events

Involving the public in watershed-focused events increases knowledge and awareness throughout the watershed's communities. This involvement can also create cultural "norms" throughout the public, thereby increasing the participation in community events that benefit the watershed. This section will provide descriptions of opportunities for members of the public to participate in events associated with the San Diego Bay Watershed Education Program. Further details on these types of programs are discussed in Section 4.2

4.4.2.1 Workshops, Presentations and Conferences

The San Diego Bay Copermittees regularly conduct educational workshops and presentations addressing stormwater issues. These workshops target representatives from businesses, construction, the general public, and students. Other opportunities for involvement in events include displays or booths at conferences. During these types of events, those in attendance are given opportunities to ask questions, thereby serving as a method for involvement.

4.4.2.2 Community Events

The San Diego Bay Copermittees participate in a number of community events. Many of these events address regional water quality issues that span several watersheds. The San Diego Bay Copermittees feel such broad-based activities play an important role in engaging the public on important water quality issues and that such involvement positively impacts water quality.

4.4.2.3 Clean-up Events and Waste Collection

The San Diego Bay Copermittees sponsor and organize a number of cleanup and waste collection events annually. These events give the public a chance to actively participate in improving the water bodies in their neighborhoods. In addition to the obvious benefits to water quality, such events also give residents a tangible understanding of the link between their actions and impacts on receiving water quality. Active, hands-on experience tends to foster a sense of ownership and deepen participants' sense of responsibility for their local water bodies.

4.4.2.4 Assessment of Public Involvement in Watershed Events

The establishment of cultural "norms" for participating in watershed events can be assessed by examining the number of people in attendance for each event. An increasing number of participants will reveal that the San Diego Bay Copermittees' outreach efforts are effective in achieving public involvement. Assessment of these numbers will occur in Annual Reports by reporting the number of people reached through each event. Increasing numbers in subsequent Annual Reports will reveal the effectiveness of the Public Involvement Component.

It should be noted that public participation activities largely overlap with what is discussed in Section 4.2, Education Activities. For the purposes of assessing public participation effectiveness, annual assessments focused on public participation will only address the numbers of people reached. Other assessment information pertaining to knowledge increases or behavior changes are accounted for within the education assessments.

4.5 Proposed Land-Use Activities

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. Cities and counties "plan" in order to identify important community issues, project future demand for services, anticipate potential problems, and to establish goals and policies for directing and managing growth. Individual jurisdictions use a variety of tools in the planning process including the general plan and a number of different federal, state, and local ordinances (e.g. zoning, subdivision, grading, etc.) and policies.

The Permit requires Copermittees to develop and implement a program for encouraging collaborative, watershed-based land use planning in their jurisdictional departments. Traditional

land use planning is difficult to coordinate across jurisdictional boundaries and using a watershed-based approach. To meet this challenge, the San Diego Bay Copermittees continue to develop and implement alternate mechanisms that address watershed planning issues. The discussion within the following sections explains how the San Diego Bay Copermittees are working together to develop and implement collaborative, watershed-based land use planning mechanisms.

4.5.1 General Plan Updates

State law requires that each jurisdiction adopt "a comprehensive, long-term general plan for [its] physical development." A General Plan is the official city or county policy regarding the potential size and distribution of the jurisdiction's future population – balancing housing, employment, and infrastructure needs with resource protection. The legislative body of each city (the City Council) and each county (Board of Supervisors) adopts zoning, subdivision, and other ordinances to regulate land uses and to carry out the policies of its general plan.

One of the ways that the San Diego Bay Copermittees intend to implement watershed based land-use planning is the incorporation of watershed requirements and/or principles into jurisdictional general plans. To date, many of the San Diego Bay Copermittees have addressed water quality, water protection, and jurisdictional collaboration in their General Plan updates. The San Diego Bay Copermittees continue to incorporate watershed concepts in jurisdictional policies, such as general plans. As updates occur, San Diego Bay Copermittees will provide information to WURMP Annual Reports as to how watershed principles were incorporated.

4.5.2 Notification Mechanisms

Before certain discretionary projects are developed, proposals must be reviewed for conformance with local regulations, environmental effects, and public testimony. Generally speaking, such review is conducted by all jurisdictions (there may be minor procedural differences between municipalities, but the review process is basically the same). The process provides cross-jurisdictional opportunity to comment on developmental projects, as well as increase the awareness in stakeholders of projects so they may have the opportunity to provide comments on the issue.

4.5.3 Watershed Planning and Management Mechanisms

Alternative planning mechanisms used by the San Diego Bay Copermittees focus on consideration for watershed management in programs that can be implemented across jurisdictional boundaries. In general, this includes participation in watershed management plans, watershed workgroups, increasing overall awareness of planning staff, and increasing public participation opportunities. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and ensures a balance of land uses when planning future development. As noted, several of the mechanisms encourage and/or rely on stakeholder input and utilize this input to guide the program.

For watershed issues to be successfully integrated into the land use planning process, effective dialogue must be established between the responsible parties. To this end, stormwater managers within the San Diego Bay WMA (e.g., the Copermittee staff with primary responsibility for completion and implementation of the WURMP) have begun to establish forums to ensure effective communication with planning personnel, both intra- and inter-jurisdictionally. In both instances, the purpose of the forums will be to facilitate the exchange of pertinent watershed-specific information, and to explore the collaborative development of planning strategies between stormwater managers and planners.

Additionally, watershed workgroups such as the San Diego Bay WURMP Workgroup are tasked with developing a watershed based stormwater management plan for the San Diego Bay WMA that identifies high priority water quality problems within the watershed. Once the San Diego Bay WURMP has been submitted to the RWQCB, the group will continue to meet as necessary to coordinate and collaborate on the implementation of the activities outlined in the document that will address the high priority water quality problems.

Section 5: Program Effectiveness Assessment

The requirements of the Municipal Permit specify that the San Diego Bay Copermittees shall annually assess the effectiveness of each Watershed Water Quality Activity, Watershed Education Activity, and the overall Urban Runoff Management Program within the San Diego Bay WMA. This section outlines the approach that the San Diego Bay Copermittees will use to assess the effectiveness of their efforts at improving surface water quality within the San Diego Bay WMA.

This section will focus on general principles of watershed activity assessment, including:

- A description of how the San Diego Bay Copermittees will incorporate Implementation Assessment, Water Quality Assessment, and Integrated Assessment into activity assessments.
- Identification of measurable targeted outcomes, assessment measures, and assessment methods.
- How to determine whether Outcome Levels 1-6 are applicable to specific watershed activities.
- A description of the steps that will be taken to utilize monitoring data to assess the effectiveness of watershed activities.

The common thread throughout the various stages of WURMP effectiveness assessment is the Targeted Outcome Levels 1-6. The 2003 Regional Copermittee document, "*A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*" (Framework), provides a complete description of the effectiveness assessment process and the target outcome concept (County of San Diego, 2003). Table 5-1 below identifies each outcome level and expected methods to measure effectiveness.

Table 5-1. Target Outcomes and Potential Assessment Measures and Methods

Outcome Level	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements	Verification that required activities were implemented.
Level 2: Changes in Knowledge / Awareness	Measure of changes in targeted audiences knowledge and awareness potentially through the use of pre- and post-surveys and observations.
Level 3: Behavioral Change / BMP Implementation	Measure of changes in behavior or BMP implementation potentially through the use of observations or inspections.
Level 4: Load Reductions	Measured or calculated load reductions as a result of changes in behavior or BMP Implementation. Measurements may be supported by water quality data, and calculations may be supported by information and data related to the pollutant generating activities.
Level 5: Changes in Discharge Quality	Historical and statistically supportive trends in the levels of pollutants in the discharges from the MS4. This will be assessed periodically using the results of regional, WMA, and jurisdictional water quality monitoring data.
Level 6: Changes in Receiving Water Quality	Historical and statistically supportive trends in the levels of pollutants in the receiving waters. This will be assessed periodically using the results of regional, WMA, and jurisdictional water quality monitoring data.

It is important to note that as a part of activity/program implementation, data is collected and assessed to determine the measurable outcome. Each activity or program action is unique and their impacts on water quality are equally distinctive. As a result, their measurable outcomes do not follow a linear path (assessing effectiveness at every level) through the Levels 1-6. Instead, activities and their impacts may have only one or two of the targeted outcome levels apply to their assessment. For example, a capital project activity's impact may only be related to a direct load reduction (Level 4) and does not have a change in awareness or change in behavior impact; therefore, the activity would only be assessed for Level 4 targeted outcomes.

5.1 Watershed Activity Assessment

This section describes the San Diego Bay Copermittees' approach to assessing the effectiveness of watershed water quality and education activities. The San Diego Bay Copermittees intend to utilize the standard Activity Summary Sheet template identified in the Model Watershed Strategy to conduct activity assessments. All watershed water quality activities identified within this document have an associated activity summary sheet. Activity-specific approaches, target outcomes, and assessment measures and methods will be described in the Activity Summary Sheets and should include information in the following categories:

- Activity Description – Information here should provide a brief overview of the activity/project, including a description of the project location. It should also state why

the project is being conducted and what will be accomplished. Project history and other relevant watershed information may also be included.

- TMDL Applicability – Identifies whether the activity is planned for implementation in compliance with the TMDL. If it is, identify the TMDL.
- Time Schedule – A proposed time schedule for implementation of the activity and any key milestones will be included here.
- Participating Watershed Copermittees – This portion will identify the specific responsibilities of San Diego Bay Copermittee(s) conducting or participating in the activity.
- Other Participating Entities – This portion will identify any other participating organizations and their responsibilities for completing the activity.
- High Priority Water Quality Problem(s) Addressed – This portion will describe how the activity will address the identified high priority water quality problem(s) of the HA(s) in which it is implemented.
- Consistency with the Collective Watershed Strategy – A description of how the activity is consistent with the Watershed Strategy will be discussed in this section.
- Expected Benefits – This portion will describe the expected benefits of implementing this activity.
- Effectiveness Measurements – This section will describe how implementation effectiveness will be measured. It will identify the targeted outcomes, assessment measures, and assessment methods that will be used to gauge effectiveness. It will also describe how outcome levels 1-6 will be used to assess the effectiveness of the activity. Finally, any monitoring data and analysis from the Receiving Waters Monitoring Program or other applicable studies will be described here to assess the higher outcome levels (Levels 4-6) of activity effectiveness.

Each San Diego Bay Copermittee will evaluate their activities using the above categories as a guide. Annually, the San Diego Bay Copermittees will report progress on their activities using Activity Report Sheets that follow the layout of the Activity Summary Sheet categories described above. The activities and their assessments may vary widely from one activity to another based on the identified targeted outcomes applicable for each activity, the pollutant(s), pollutant source(s) it addresses, and the hydrologic area in which it is located. As stated earlier, it should be noted that each activity is not anticipated to achieve all of the higher target outcomes (Level 4 or higher), but when used in conjunction with other activities or as a stepping stone, those levels for the overall program may be achieved.

The San Diego Bay Copermittees intend to develop and implement effective activities that address the high priority water quality problems. The San Diego Bay Copermittees' approach utilizes the individual Copermittee jurisdictional efforts to achieve a holistic result. The San Diego Bay WMA is large, widespread, and contains numerous subwatersheds. Therefore, watershed activities in general, are easier to implement on a jurisdictional basis. The San Diego

Bay Copermittees are working collaboratively to plan and coordinate programs at the watershed scale, with the understanding that implementation will occur at the jurisdictional level. Each Copermittee is then provided the freedom to evaluate their specific target audience and desired outcome while working within the collective goals. In doing so, it places the responsibility of activity selection, implementation, and assessment on the Copermittee(s) responsible for the high priority water quality problem(s) within the HA. This encourages them to create truly effective activities that can fit into their budgets and priorities. As a result, a vast amount of information is gathered from jurisdictional efforts that the group can utilize when choosing watershed-wide activities. Using this approach, data from individual Activity Report Sheets could also lead to further evaluation and possible additional studies, monitoring, and large scale activities when needed.

Section 4 of this WURMP Document states that activities can be conducted on an individual or collaborative basis. Activities can also be evaluated on numerous levels using both individual and collaborative assessments. The Creek to Bay Cleanup Event is an example of both individual and collaborative participation. The San Diego Bay Copermittees have collaboratively participated as sponsors of the overall event and evaluate the overall results of the efforts as a whole. However, individual Copermittees manage local cleanup sites. As such, activity assessments may include a combination of individual and collective information, when applicable.

Education activities will be assessed using the mechanisms identified in Section 4.3 of this WURMP Document. The San Diego Bay Copermittees initiated this process during the previous Permit; it was determined to be an effective means to identify individual Copermittee efforts and also evaluate entire education programs as a whole. The San Diego Bay Copermittees have reviewed this process and compared it to the requirements in the new Permit, and have determined that it adequately addresses all requirements. As such, tables similar to those education (and public participation) tables currently found in the WURMP Annual Report will be completed for all education efforts. The raw data tables will comprise the individual assessments, when compiled; the summary tables form the program assessment.

At the end of each reporting period, the San Diego Bay Copermittees will complete detailed Activity Report Sheets for each activity. These Activity Report Sheets will identify how effectively the activity met the target outcomes, the measures achieved, and what target levels was achieved. As feasible and deemed appropriate by the Copermittees, certain activities may be chosen for additional assessment regarding efficiency (i.e., load reduction per cost) in addition to the assessments previously stated. This will help in future program planning and assessment. The data from the individual Activity Report Sheets will be included in the WURMP Annual Report and the results will be compiled into the WURMP programmatic assessment as discussed below. Activities will be continued or discontinued at the discretion of the participating Copermittee(s) based on data contained in the Activity Report Sheets, changes in monitoring data, TMDLs, and future unknown impacts on water quality.

5.2 Overall WURMP Assessment

This section describes how the San Diego Bay Copermittees will assess the effectiveness of WURMP implementation as a whole. Overarching management questions are the cornerstone of the San Diego Bay Copermittees' programmatic assessment as it allows for exploring, in detail, the effectiveness of programs and activities. The questions below are designed to assist in evaluating and compiling the activity assessments into a comprehensive WURMP assessment.

- Are the San Diego Bay Copermittees making progress towards achieving their program goals and objectives in a way that maximizes resources, is cost effective, and achieves the maximum water quality benefit possible?
- How well have the San Diego Bay Copermittees maximized the effectiveness of individual activities?
- Are the San Diego Bay Copermittees effectively targeting identified pollutant sources of the identified high priority water quality problems?
- Are the San Diego Bay Copermittees observing an improvement in the water quality – both of urban runoff/discharge and of receiving waters – of the WMA as shown through water quality assessments?

The San Diego Bay Copermittees will utilize the questions presented above and the Activity Report Sheets to analyze the overall program. Overall WURMP Assessment will consider the collective impact of all watershed activities on the high priority water quality problems at the HA scale, as well as how well the collaborative WURMP process is working. Appropriate emphasis will be placed on assessing whether watershed activities are focused on the appropriate high priority water quality problems and sources, or whether additional data is needed to reach such conclusions.

The San Diego Bay Copermittees will compile and evaluate data at a programmatic level using the following potential approaches where applicable. One approach would be to evaluate the overall impacts from numerous activities designed to achieve the same goal, whether it is addressing the same pollutant or the same sources. An example of this type of evaluation would be compiling activity information for both doggie bag dispenser and decreasing homeless encampments activities. Both activities are designed to address bacteria loads, but address different pollutant sources. The programmatic assessment would assess these activities collectively to determine their overall impact on reducing bacteria loads.

The second approach evaluates similar activities occurring on a jurisdictional basis but taking place in various watershed locations. An example of this type of evaluation would be compiling street sweeping or cleanup event data to create a watershed picture of load reductions. The San Diego Bay Copermittees could also utilize this data to create targeted outcomes for future reporting periods.

The San Diego Bay Copermittees will also evaluate monitoring data (both dry and wet weather), where applicable, to determine if the activities can be linked to improvements in discharges and/or receiving water quality. A complete description of the data evaluation approach is described in Section 3 of this Document. The San Diego Bay Copermittees will focus initially on urban run-off discharge assessments to evaluate potential links to sources and high priority pollutants. Urban run-off data is the first indication that a pollutant load is decreasing and may be the best indication of activity effectiveness. That reduction should then become evident in the receiving water monitoring data. The reductions in Diazinon are a good example of this trend. If the programs and activities do not show a decrease in pollutant loads in a certain area, the need for a special study, more monitoring data, or further source identification will be evaluated and implemented if needed.

The reverse is also true. Perhaps a certain area shows a spike in pollutant levels or a growth in potential sources. The San Diego Bay Copermittees would then take that data and develop a series of pilot programs to address the pollutants identified in the monitoring data. These programs might be chosen based on the results of an individual Copermittee activity or perhaps another watershed. By compiling individual data, the San Diego Bay Copermittees broaden their options when new problems are discovered or new TMDLs are issued.

The San Diego Bay Copermittees believe in a chained program approach. Certain activities lead to other activities, which in the end lead to changes in receiving water quality. The overall WURMP assessment aims to achieve Levels 5 and 6, changes in urban runoff discharge quality and changes in receiving water quality, where applicable. A chain approach may be necessary to achieve the higher outcome levels. By keeping this principle in mind during activity selection and implementation, overall improvements in water quality should be achieved.

5.3 TMDL BMP Implementation Plan Assessment

There are currently two approved Total Maximum Daily Loads (TMDLs) in the San Diego Bay WMA:

- Chollas Creek Diazinon TMDL
- Shelter Island Yacht Basin (SIYB) TMDL

The Municipal Permit lists these TMDLs under Section H and requires the Copermittees involved in the implementation of the TMDLs to integrate their TMDL- and WURMP-related efforts. In particular, implementation and assessment of TMDL efforts must be reported in the WURMP Annual Report.

Shelter Island Yacht Basin (SIYB) TMDL

The Shelter Island Yacht Basin TMDL contains a BMP Implementation Plan recommending efforts that stakeholders can implement to achieve compliance with the TMDL. The RWQCB is meeting and working with stakeholders to begin implementation of the said plan. The goal of the

TMDL will be to maintain a total annual copper discharge load of less than or equal to 30 kg per year into the SIYB.

As the relevant Copermittees plan and implement activities pursuant to the SIYB TMDL, they will develop activity summary sheets for each one and incorporate them into the San Diego Bay WURMP Five-Year Strategic Plan. These activities will be assessed by the Copermittees using the same methodology described in Sections 5.1 for assessing individual activities. Because they will be integrated into the WURMP, the activities will also be part of the overall WURMP assessment to be conducted using the methodology described in Section 5.2. BMPs will be assessed for effectiveness and efficiency and modified accordingly. Those found to be effective (i.e., in reducing pollutant loads) and efficient (i.e., in reducing pollutant loads per cost) will be considered for broader implementation, while those found to be less so may be considered for modification and further refinement or dropped in favor of other activities more effective and efficient.

In addition, WURMP activities being implemented pursuant to the SIYB TMDL will be assessed separately as a group at Outcome Level 4 (load reduction) in order to determine the progress in meeting the established numeric pollutant discharge limit requirement per the established schedule. These activities will likely include a special monitoring component that will help the Copermittees accurately determine the activities' effectiveness. The separate assessment of SIYB TMDL-related activities will be reported in the San Diego Bay WURMP Annual Report.

Chollas Creek Diazinon TMDL

The Chollas Creek Diazinon TMDL contains a BMP Implementation Plan to address Diazinon in Chollas Creek. Because the U.S. EPA has banned the further manufacture and sale of Diazinon, the said plan is focused on monitoring the condition of Chollas Creek with regards to the pesticide impairment, and on conducting an IPM campaign to inform residents and businesses regarding the proper use of pesticides so as not to pollute the region's receiving waters. Per the Copermittees' past monitoring data, Diazinon has been significantly reduced in Chollas Creek.

The San Diego Bay Copermittees involved with the Chollas Creek Diazinon TMDL will continue to implement their IPM campaign, not only to target the Chollas Creek area, but also other areas in the WMA that have been identified for pesticide-related impairment. As the relevant Copermittees plan and implement activities pursuant to the TMDL, they will develop activity summary sheets for each one and incorporate them into the San Diego Bay WURMP Five-Year action plan. These activities will be assessed by the Copermittees using the same methodology described in Sections 5.1 for assessing individual activities. Because they will be integrated into the WURMP, the activities will also be part of the overall WURMP assessment to be conducted using the methodology described in Section 5.2. BMPs will be assessed for effectiveness and efficiency and modified accordingly. Those found to be effective (i.e., in reducing pollutant loads) and efficient (i.e., in reducing pollutant loads per cost) will be considered for broader

implementation, while those found to be less so may be considered for modification and further refinement or dropped in favor of other activities more effective and efficient.

In addition to being reported in the San Diego Bay WURMP Annual Report, these efforts will be reported in the annual Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277 (Response), and appended to the San Diego Bay WURMP Annual Report. The Response reports on BMPs and monitoring activities implemented pursuant to the Chollas Creek Diazinon TMDL, and provides water quality-based conclusions as to the progress on meeting the established Diazinon waste load allocations (WLAs) per the established schedule.

Other TMDLs

As other TMDLs are developed to address other issues in the San Diego Bay WMA, the Copermittees will work to integrate TMDL activities with WURMP activities to maximize resources and achieve efficiencies. TMDL efforts affecting the San Diego Bay WMA will be described and integrated in the WURMP, and progress will be reported in the San Diego Bay WURMP Annual Reports.

Section 6: Program Review and Modification

6.1 Program Review

It is expected that the program objectives and management actions stated earlier in this document will be revised as the program evolves and matures. The objectives outlined in this section represent the continuing effort to establish a feedback-loop program that addresses both Municipal Permit compliance and evaluation of management actions relating to water quality issues.

The San Diego Bay Copermittees will submit any amendments and/or revisions to the San Diego RWQCB for review as part of the annual reporting process requirement.

6.2 Annual Reports

As required by the Permit, the Annual Monitoring Report is an annual evaluation of historical and current water quality data carried out to identify high priority water quality problems, and prioritize pollutants and problem areas within the San Diego Bay WMA. The Copermittees are dedicated to evaluating water quality and pollutant trends which may occur in each HA, and assess if management actions and/or activities are effective or if modifications and improvements are needed.

Each WURMP Annual Report will serve as an amendment to the WURMP itself. Consistent with the Municipal Permit, all changes to the WURMP (i.e., modified priorities, implementation schedule changes, map updates) will be described and justified in WURMP Annual Reports. Therefore, over time, the WURMP and all Annual Reports will be considered one unified, living document.

Section 7: Conclusion

The San Diego Bay Copermittees have been actively implementing a WURMP since 2002 to provide a watershed-based approach to addressing high priority water quality problems in the San Diego Bay WMA. The Copermittees have developed the WURMP document to meet the requirements of the Municipal Permit, with the goal to cooperatively and through collaborative strategic planning decrease the sources and reduce the discharge of pollutants from the MS4 that have been identified as causing high priority water quality problems.. The ten San Diego Bay Copermittees are continuing to take steps to gather information on receiving water conditions, pollutant sources, and improve management approaches through coordinated jurisdictional efforts. This collaborative strategy among all municipalities within the watershed boundaries is critical to the success of the individual management efforts as well as the overall health of the watershed.

The WURMP has been developed as an iterative process of watershed assessment, prioritizing water quality problems, establishment of appropriate management actions, monitoring, activity implementation, and assessment. The program framework described in this document provides guidance to the San Diego Bay Copermittees in their efforts to evaluate and prioritize pollutants, improve coordination between jurisdictions, develop appropriate activities to address high priority water quality problems in each HA, and assess the ability to obtain program goals. Even though high priority water quality problems will be targeted in a focused manner, it will take time for management activities to produce a quantifiable improvement in receiving water quality (Level 6 outcome). As such, the San Diego Bay WURMP includes performance measures and a review mechanism for each activity as well as for the program overall. At the conclusion of each yearly cycle, the process begins anew, allowing Copermittees to respond to changing conditions or adjust strategies that have not performed as anticipated. The WURMP and watershed activities will continue to evolve, leading to future activities as new information becomes available regarding the watershed's water quality conditions and effectiveness of previous activities.

This document exemplifies the San Diego Bay Copermittees' commitment to improved water quality, in particular, and environmental policies, in general. Moreover this dedication to environmental concerns is demonstrated by many of the policies and programs that have already been implemented by the Copermittees in their respective jurisdictions, including habitat or species protection, resource conservation, and regional planning efforts. Collectively, these existing policies and programs provide a solid foundation to address the overall WURMP objectives and the goal to positively affect the water resources in the San Diego Bay WMA.

Section 8: References

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San Diego Regional Water Quality Control Board (SDRWQCB). 2007. Waste Discharge Requirements for Storm Water and Urban Runoff. Order No. R9-2007-0001. NPDES No. CAS0108758.

Weston Solutions, Inc. 2008. San Diego County Municipal Copermittees 2006-2007. Final Report. Prepared for the County of San Diego.

Weston Solutions, Inc., Mikhail Ogawa Engineering (MOE), and Larry Walker Associates (LWA). 2005. Baseline Long-Term Effectiveness Assessment. Prepared for the San Diego County Copermitees.

Appendix A

Certification Letters

SAN DIEGO COUNTY
REGIONAL AIRPORT AUTHORITY

P.O. BOX 82776, SAN DIEGO, CA 92138-2776
619.400.2400 WWW.SAN.ORG

March 17, 2008

Subject: Statement of Certification for the 2008 San Diego Bay Watershed Urban Runoff Management Program Document

"I certify under penalty of law that the San Diego County Regional Airport Authority participated in the development of the 2008 San Diego Bay Watershed Urban Runoff Management Program Document. This document and all attachments were prepared in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature:
Printed Name: Paul Manasjan
Title: Director, Environmental Affairs

SAN DIEGO
INTERNATIONAL
AIRPORT

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Document for was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program

I certify under penalty of law that the County of San Diego participated in the development of the San Diego Bay Watershed Urban Runoff Management Program and all attachments. County staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

3-21-08
Date

March 2008

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Maryam Babaki, City Engineer
Engineering Department
City of National City

Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signatory

3-20-08
Date

Name: Graham Mitchell
Title: City Manager for City of Lemon Grove
Phone No: 619-825-3800

CITY OF
LA MESA
JEWEL of the HILLS

OFFICE OF THE CITY MANAGER

San Diego Bay Watershed Urban Runoff Management Program
Statement of Certification

March 24, 2008

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sandra L. Kerl, City Manager
City of La Mesa

8130 ALLISON AVENUE • LA MESA, CA 91941 • TEL: 619.667.1105 FAX: 619.462.7528

The City of Imperial Beach

(619) 423-8311
(619) 429-4861 Fax

PUBLIC WORKS
825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

March 17, 2008

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to the San Diego Bay Watershed Urban Runoff Management Program as directed by the California Regional Water Quality Control Board, San Diego Region, Order No. R9-2007-0001, were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

3/17/08
Date

CITY OF CORONADO

101 "B" Avenue
CORONADO, CALIFORNIA 92118-1510

DEPARTMENT OF PUBLIC SERVICES
(619) 522-7380

March 2008

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott W. Huth
Director of Public Services
City of Coronado

CITY OF
CHULA VISTA

DEPARTMENT OF PUBLIC WORKS OPERATIONS

March 17, 2008
File # 0780-70-KY181

San Diego Bay Watershed Urban Runoff Management Program Document

Statement of Certification

"I certify under penalty of law that the City of Chula Vista participated in the development of the Watershed Urban Runoff Management Program Document for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

DAVE BYERS
DIRECTOR OF PUBLIC WORKS
CITY OF CHULA VISTA

H:\NPDES\Watershed\WURMP\WURMP Program Certified Statement 2008.doc

1800 Maxwell Rd.
Chula Vista, CA 91911
Phone (619) 397-6000

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www.chulavista.gov
Post-Consumer Recycled Paper

THE CITY OF SAN DIEGO

RE: San Diego Bay Watershed Urban Runoff Management Program Statement of Certification

I certify under penalty of law that the City of San Diego participated in the development of the San Diego Bay Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew Kleis

Andrew Kleis
Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
City of San Diego

3/14/08
Date

Storm Water Pollution Prevention Program
1970 B Street, MS 27A • San Diego, CA 92102
Hotline (619) 235-1000 Fax (619) 525-8641

Appendix B

San Diego Bay Watershed Maps

SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Land Use Map

Legend

- Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

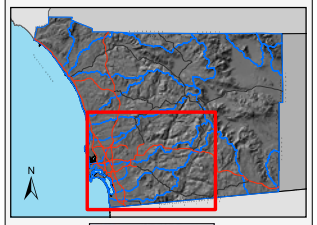

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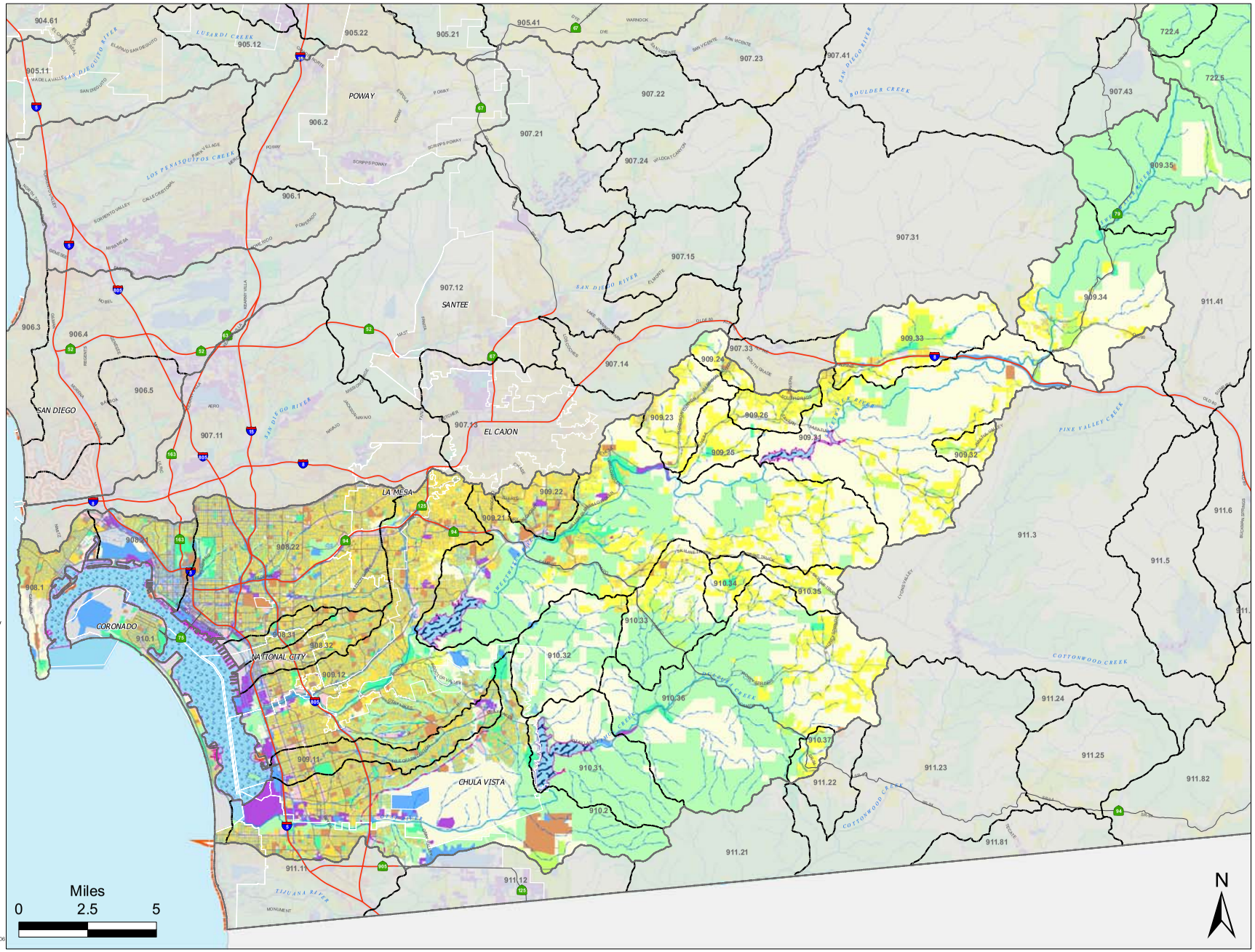

3159

SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Municipal Separate Storm Sewer System Map (MS4)

Legend

- Watershed Sub-Basins
- (MS4) Point Features
- (MS4) Linear Features
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:

MS4: Various jurisdictions (2007);
MS4 data were provided by individual Copermittees to the County of San Diego. Jurisdictional MS4 layers are in various stages of completion and have been simplified into a simple point and line symbology for the purposes of this map. Some of the MS4 layers shown are still in draft form. Gaps in the MS4 data are most likely a reflection of missing data rather than a true inventory of drainage structures in the watershed. This map is not intended for any use other than to respond to Permit section E.2.b., which requires development of a map of the WMA including MS4 features.

**303(d) Waters / Watersheds: (SWRCB). (2006)
Disclaimer:
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

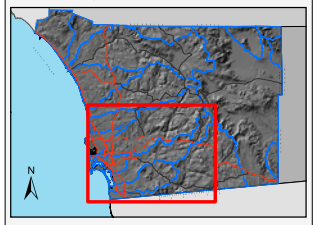

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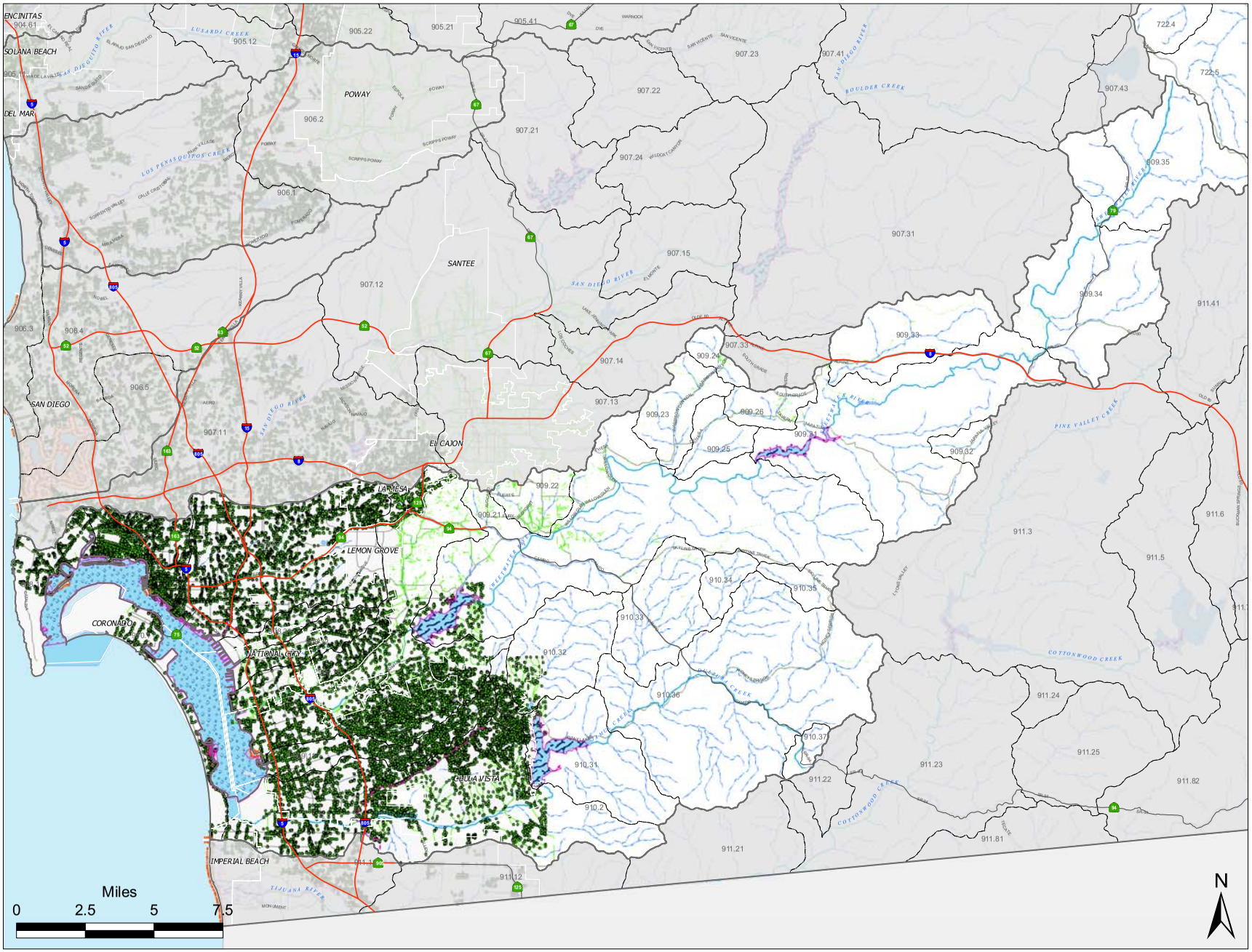

SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Pollutant Source Map

Legend

Watershed Sub-Basins

Potential Pollutant Sources

Baseline Long-Term Effectiveness Assessment (2005)

- Airfield
- AirplaneRepair
- Animal Facilities
- AutoPaint
- AutoRepair
- BoatRepair
- Cemetary
- Food
- Fuel
- GolfCourses
- LandApplication
- Landfill
- MaintenanceYard
- Marina
- Nursery
- POTW
- Paintball
- SolidWasteTransfer
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego / Ogawa Engineering)
**303(d) Waters / Watersheds: (SWRCB), (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the listare provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

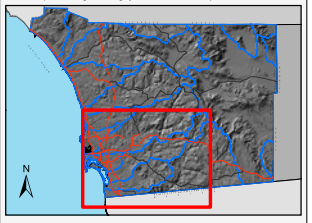

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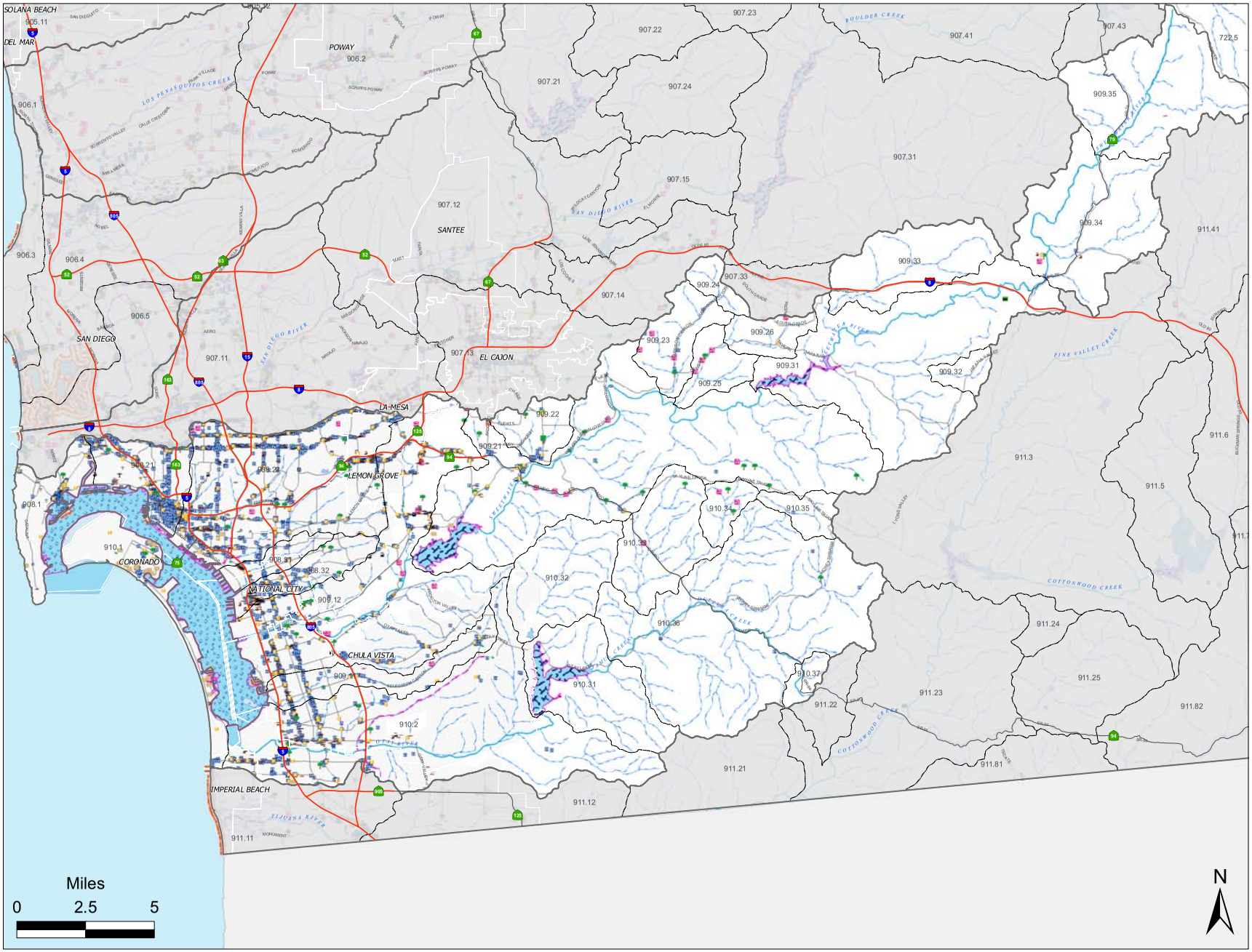

Appendix C

BLTEA Information

Hydrologic Unit 908: Priority Ratings and Sources: Bacteria

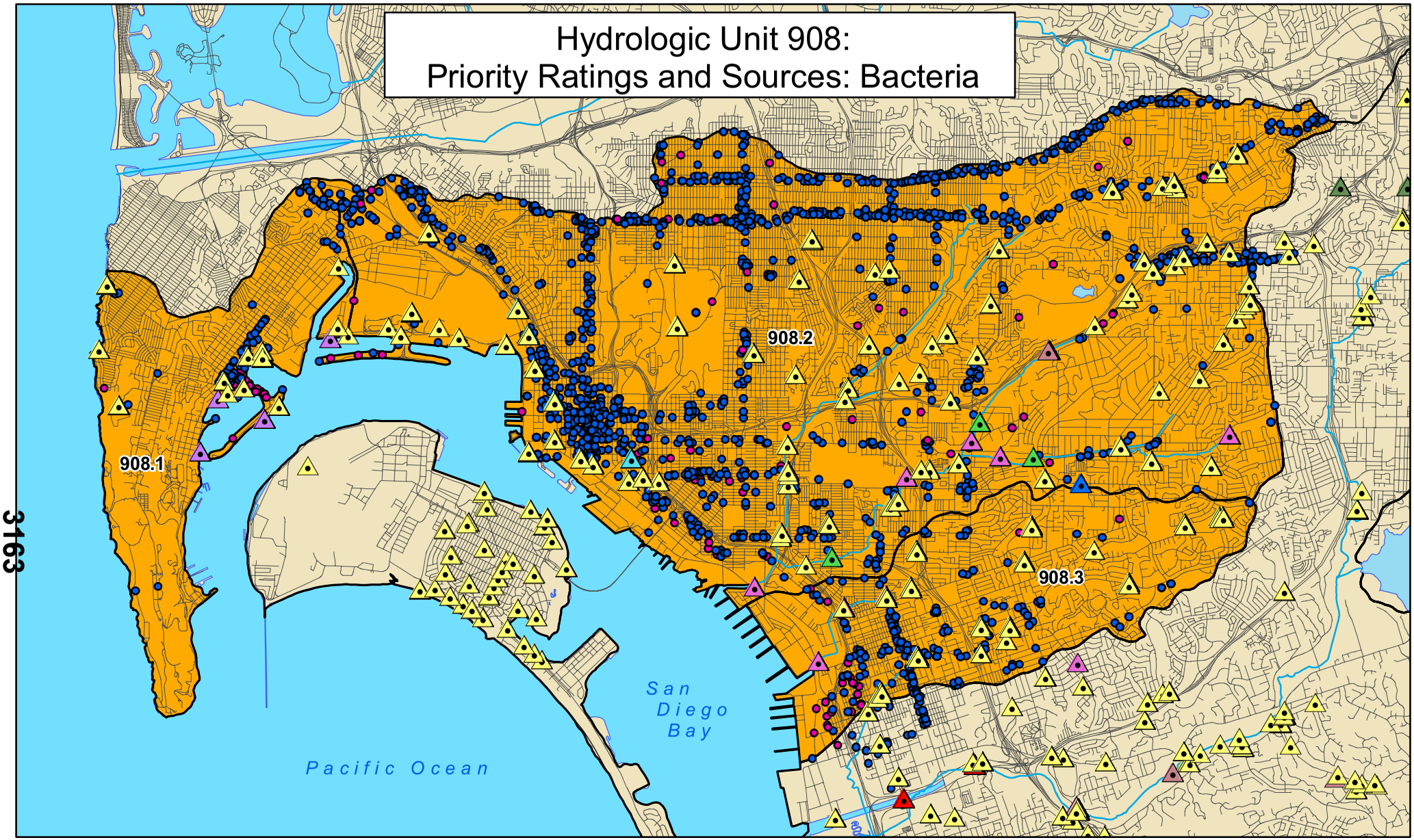

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Bacteria Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority

N

0 1 2 4
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Sediment

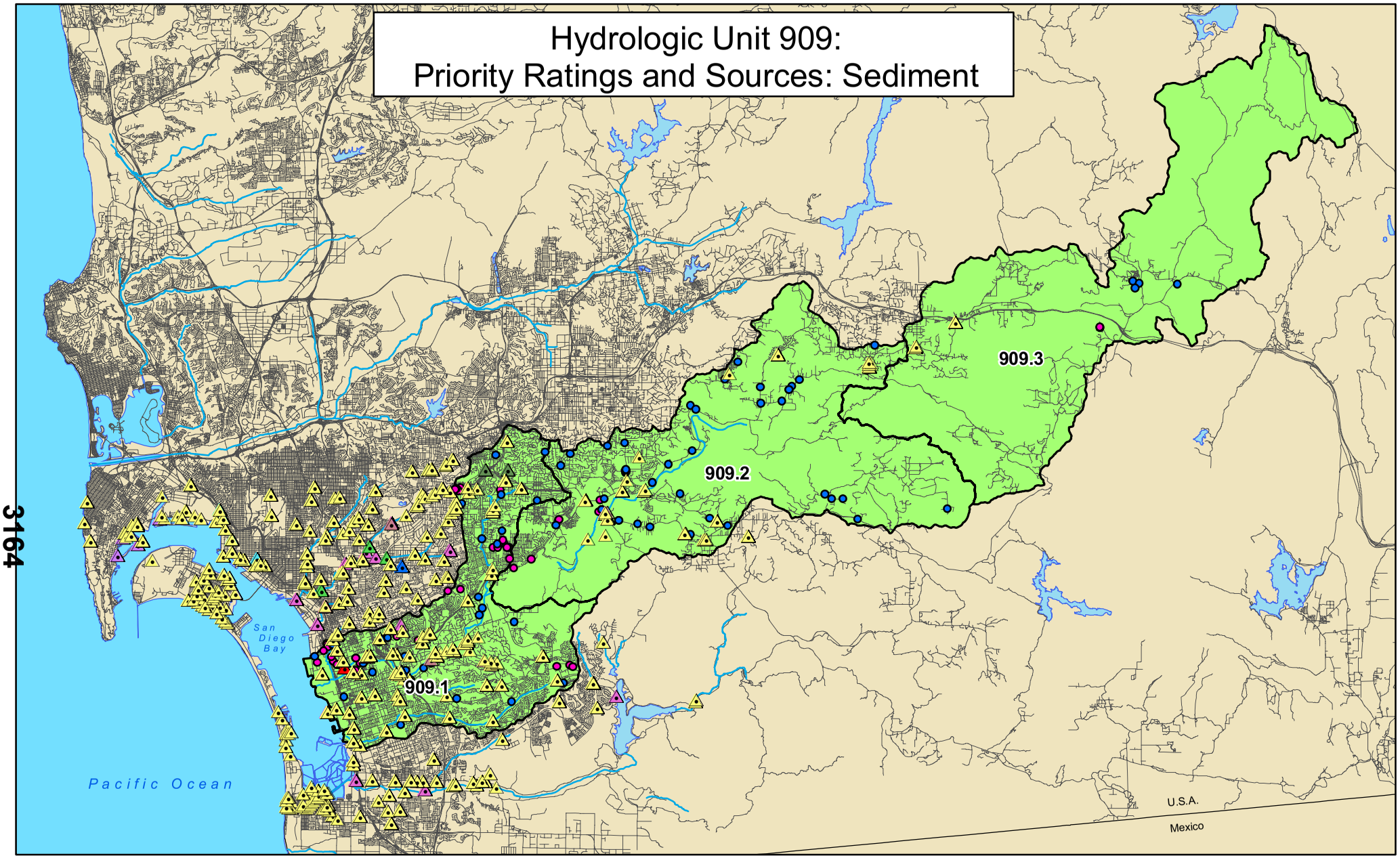

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Sediment Sources

- Likely
- Unknown

Water Quality Priority

- (C) Moderately Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Sediment

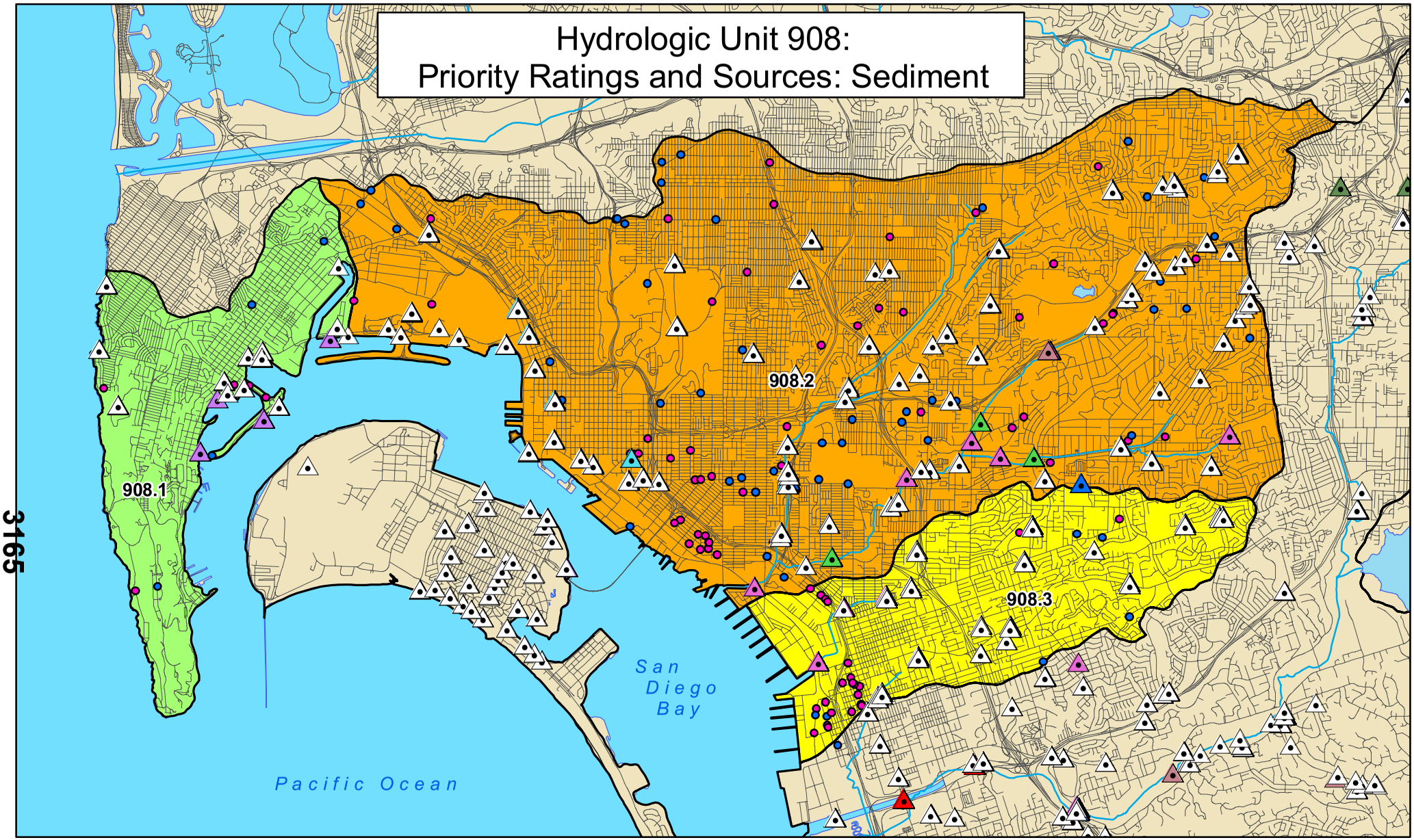

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Sediment Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (B) Moderately High Priority
- (C) Moderately Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Pesticides

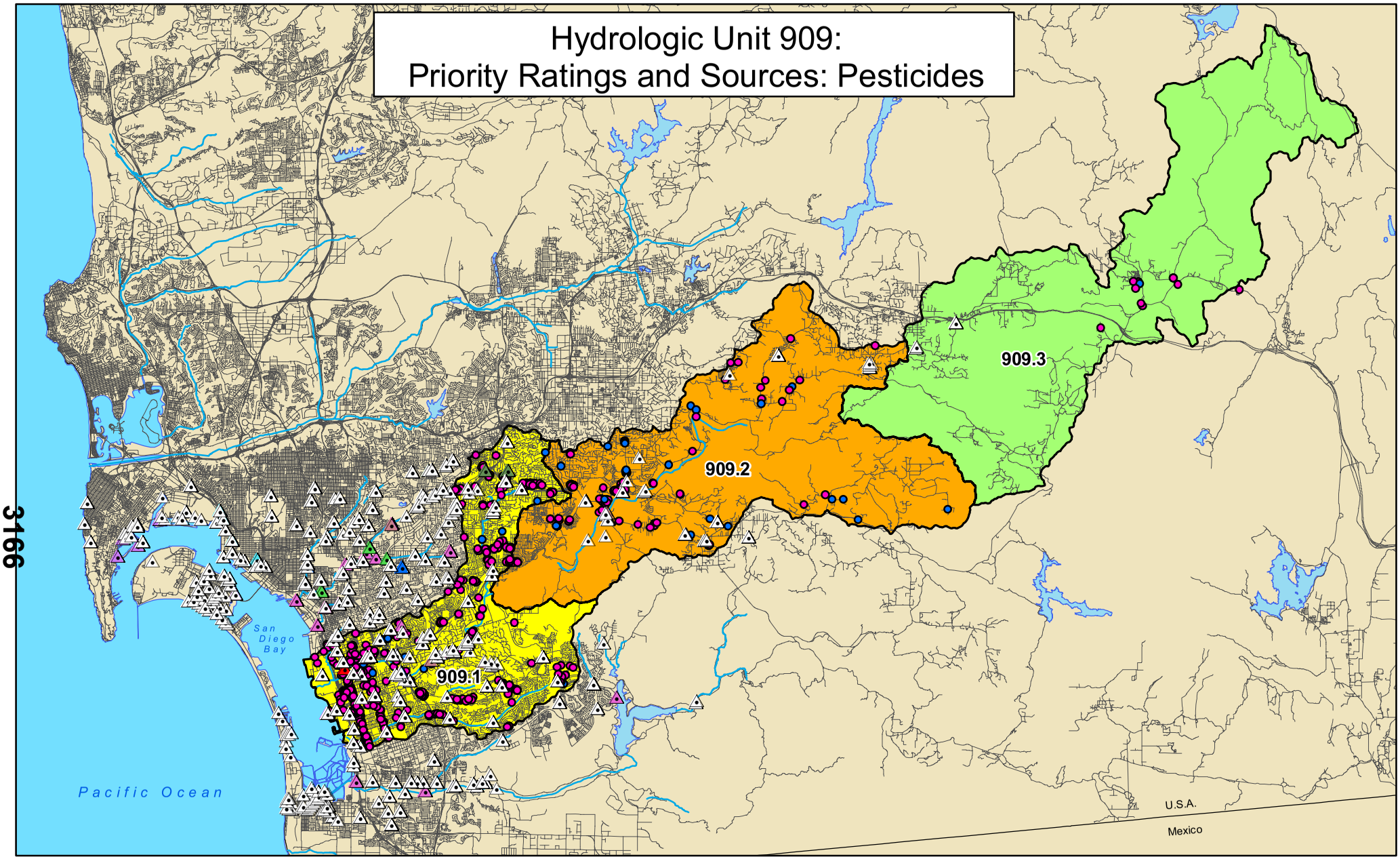

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Pesticide Sources

- Likely
- Unknown

Threat to Water Quality

- (A) High Priority
- (B) Moderately High Priority
- (C) Moderately Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Pesticides

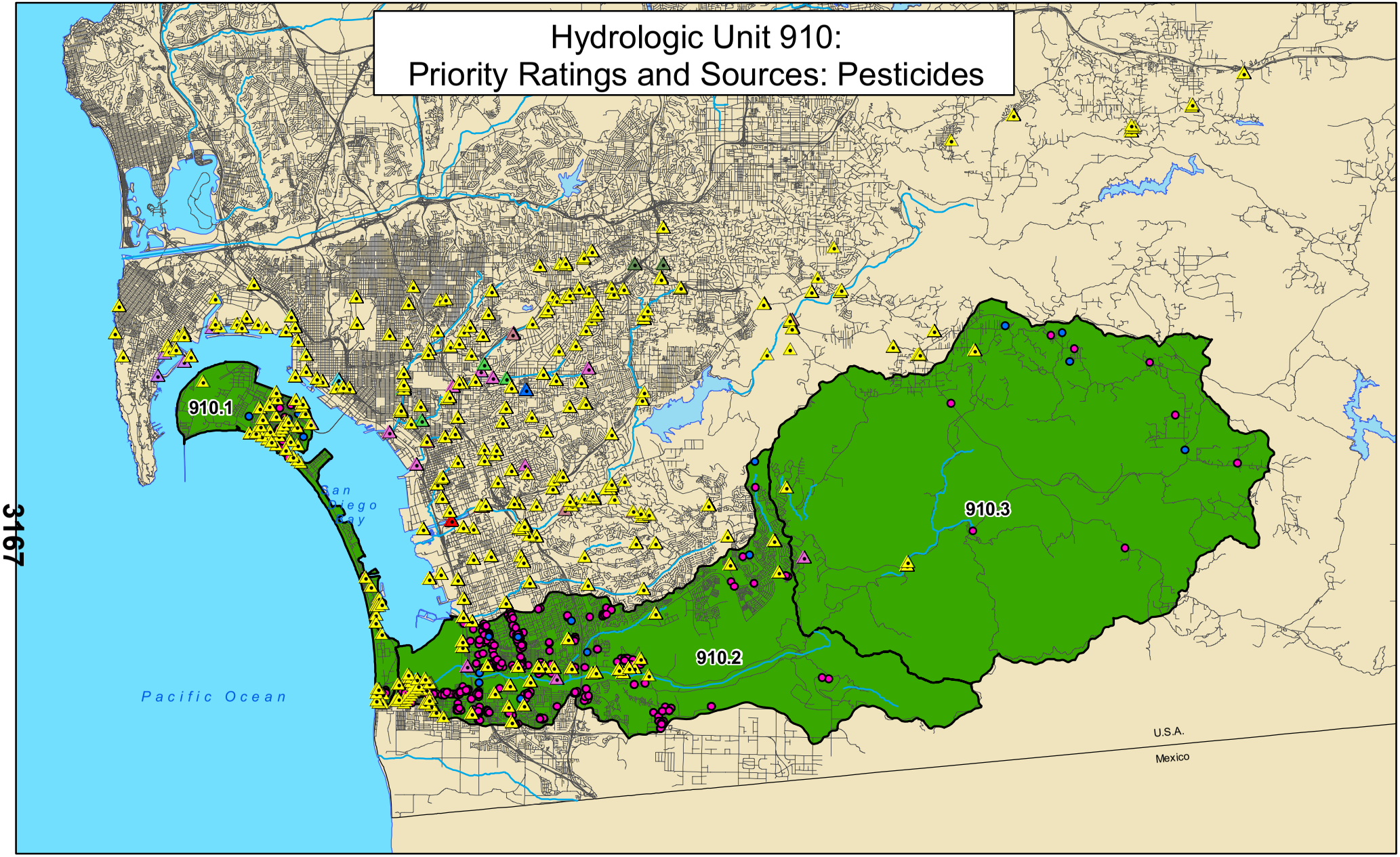

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Pesticide Sources

- Likely
- Unknown

(D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Pesticides

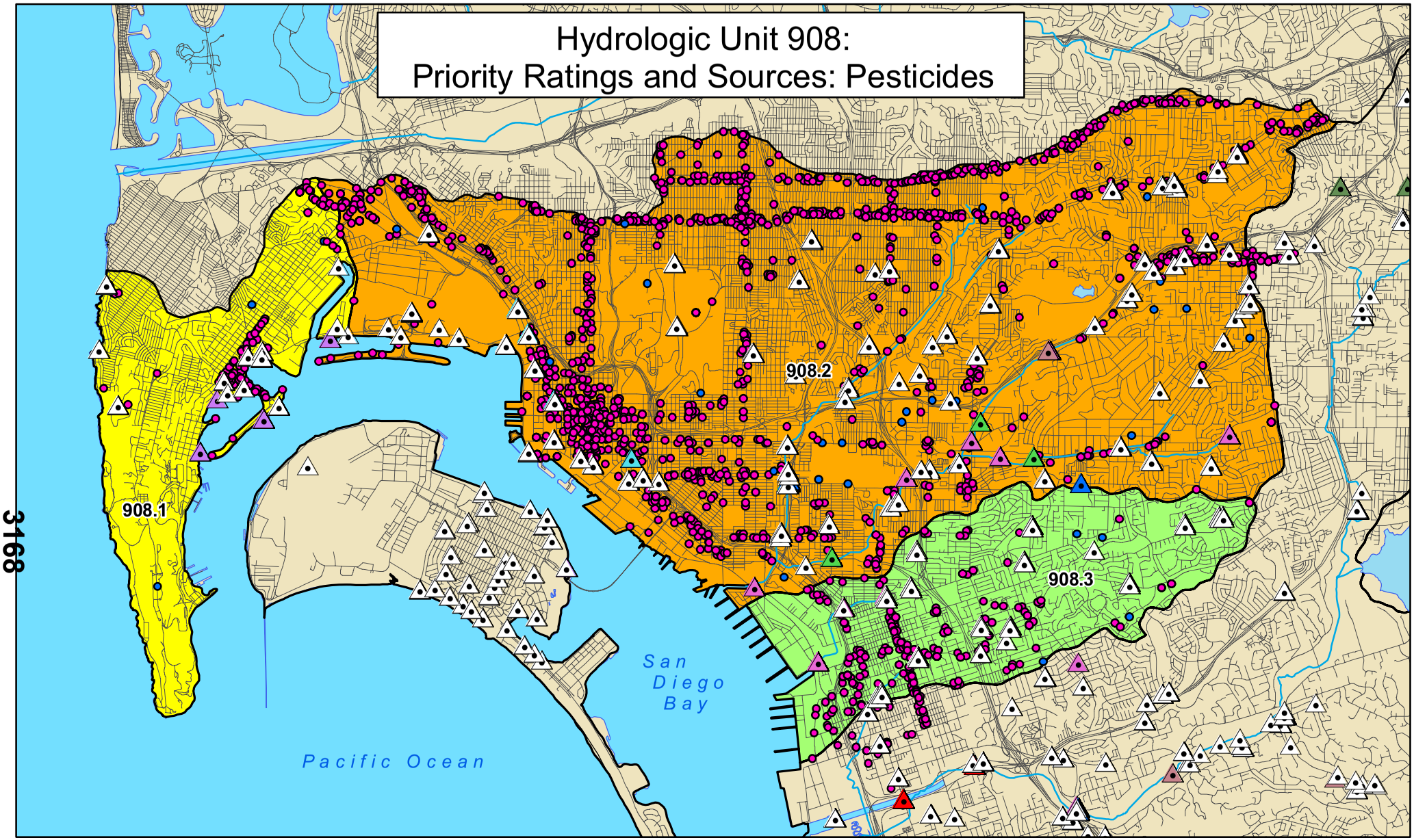

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Pesticide Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (B) Moderately High Priority
- (C) Moderately Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Oil & Grease

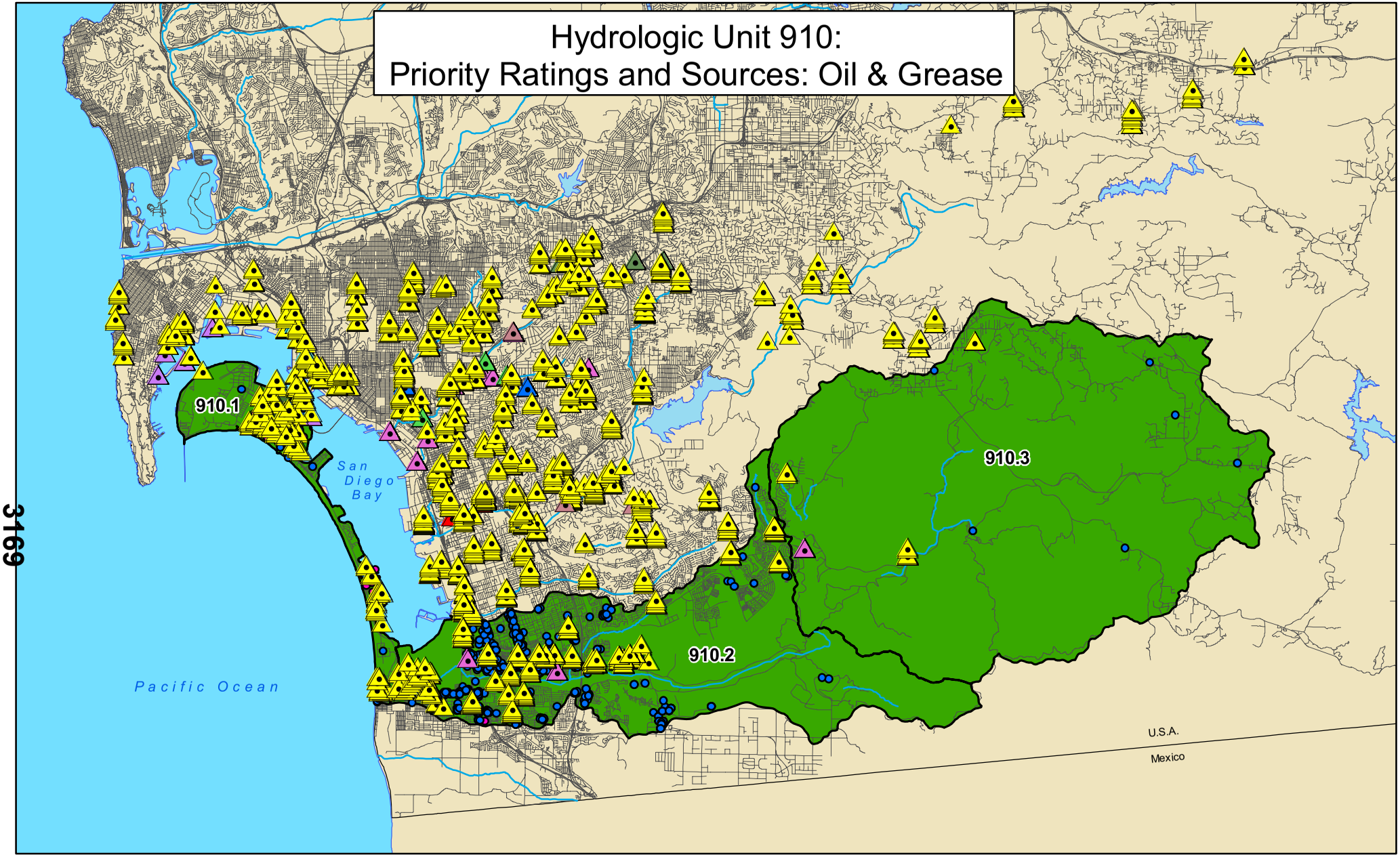

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Oil & Grease Sources

- Likely
- Unknown
- (D) Low Priority

N

0 2.5 5 10 Miles

Hydrologic Unit 909: Priority Ratings and Sources: Oil & Grease

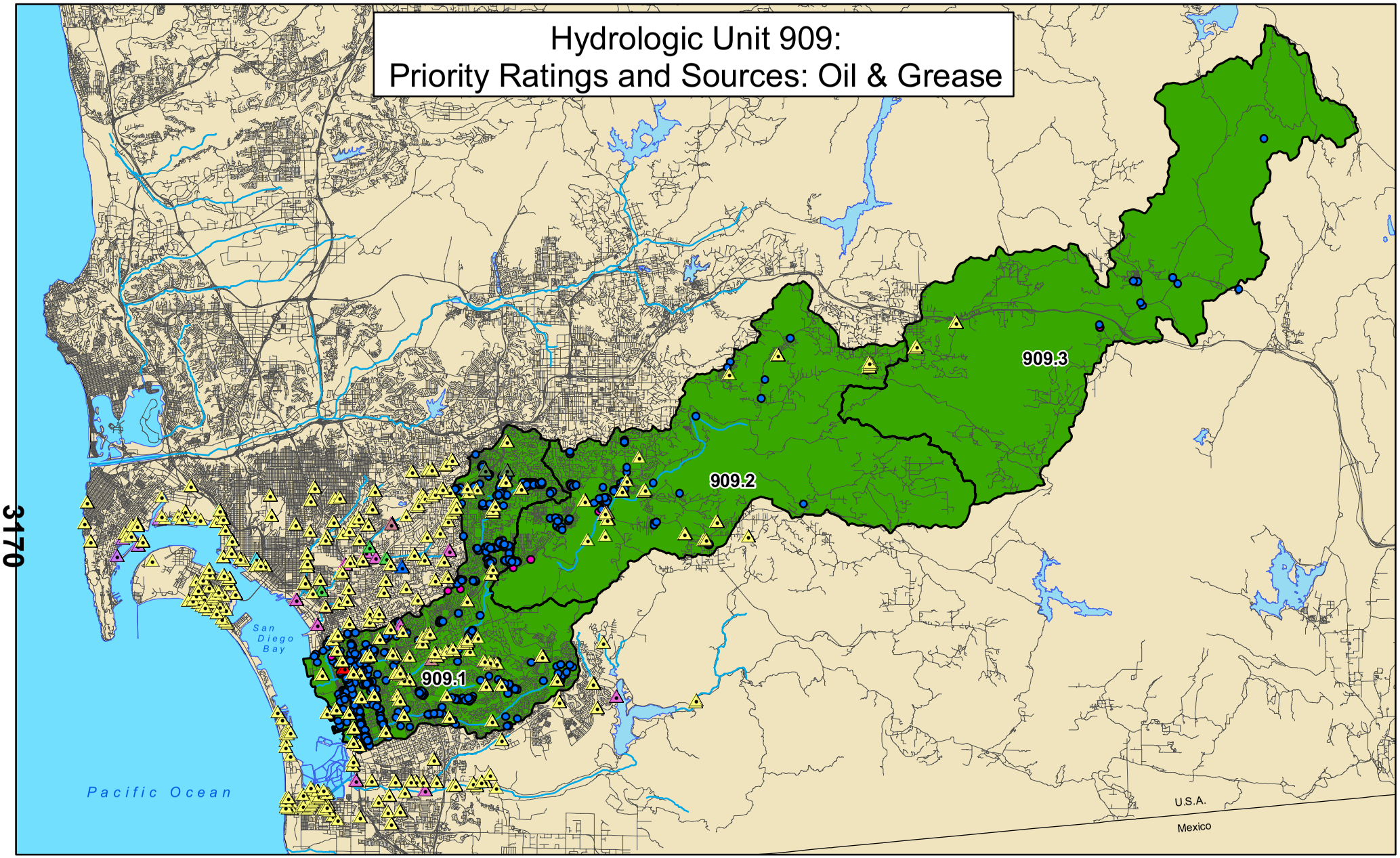

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Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Oil & Grease Sources

- Likely
- Unknown

Water Quality Priority

- (D) Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Oil & Grease

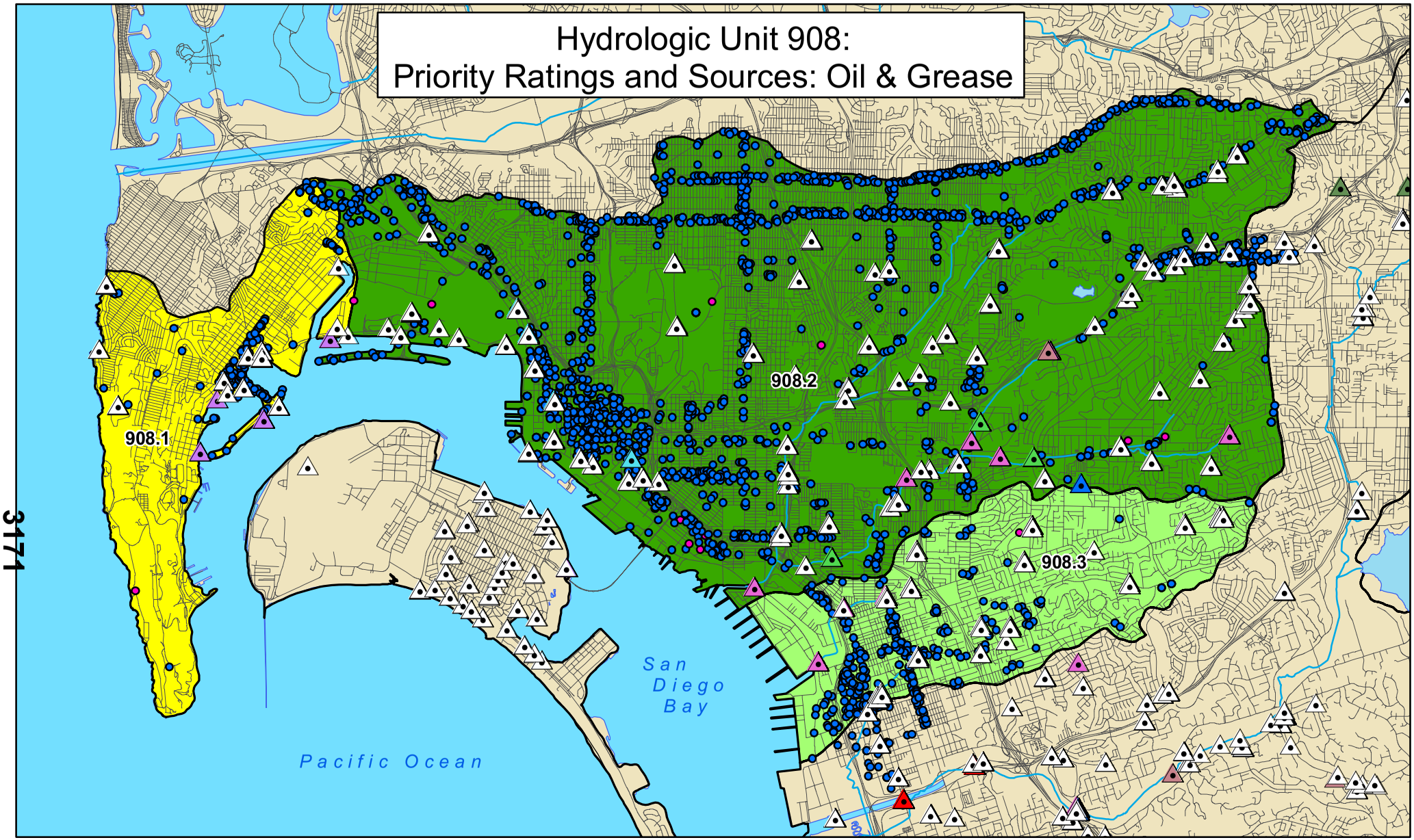

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Oil & Grease Sources

- Likely
- Unknown

Water Quality Priority

- (B) Moderately High Priority
- (C) Moderately Low Priority
- (D) Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Nutrients

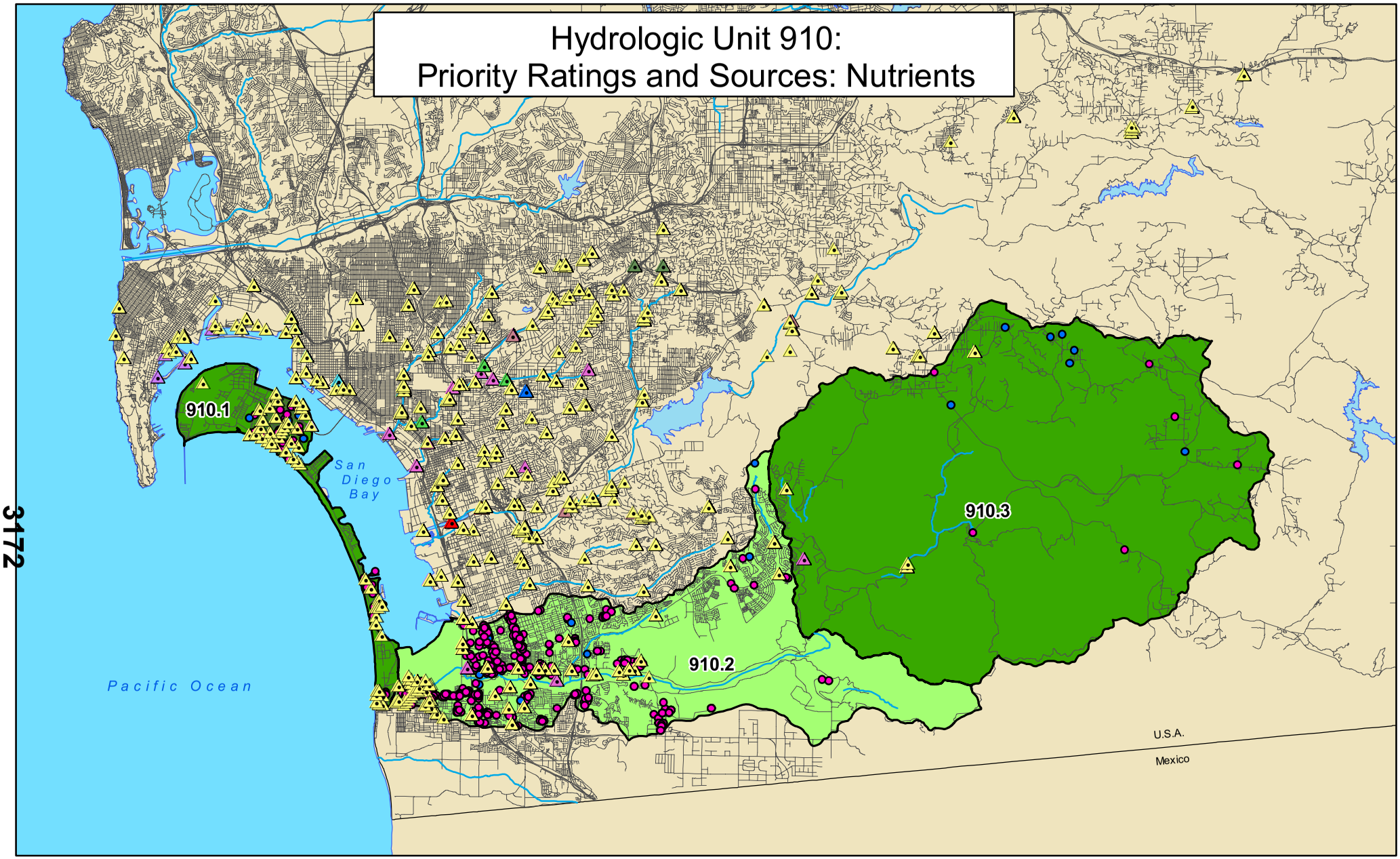

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Nutrient Sources

- Likely
- Unknown

Water Quality Priority

- (C) Moderately Low Priority
- (D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Nutrients

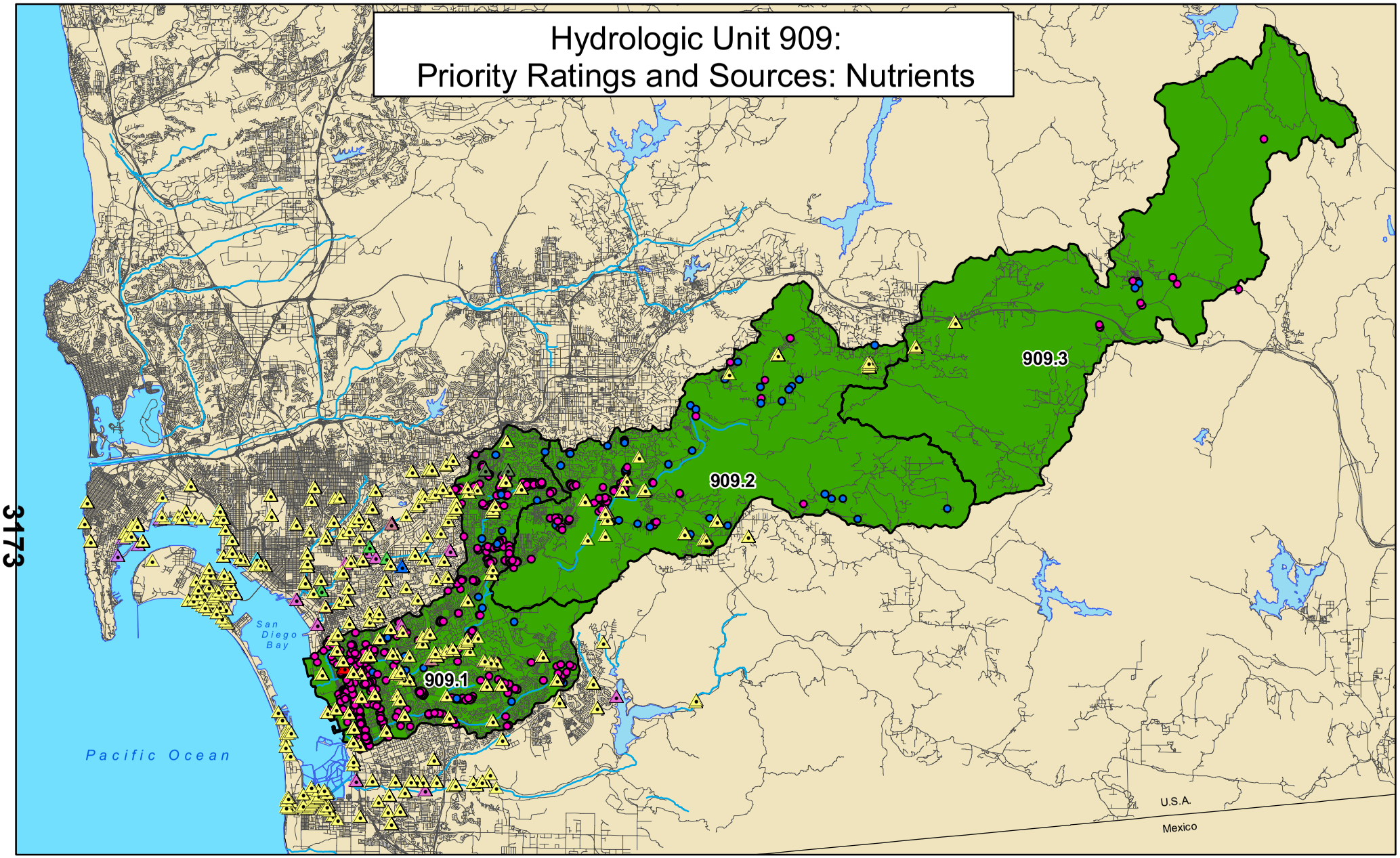

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Nutrient Sources

- Likely
- Unknown

Water Quality Priority

- (D) Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Nutrients

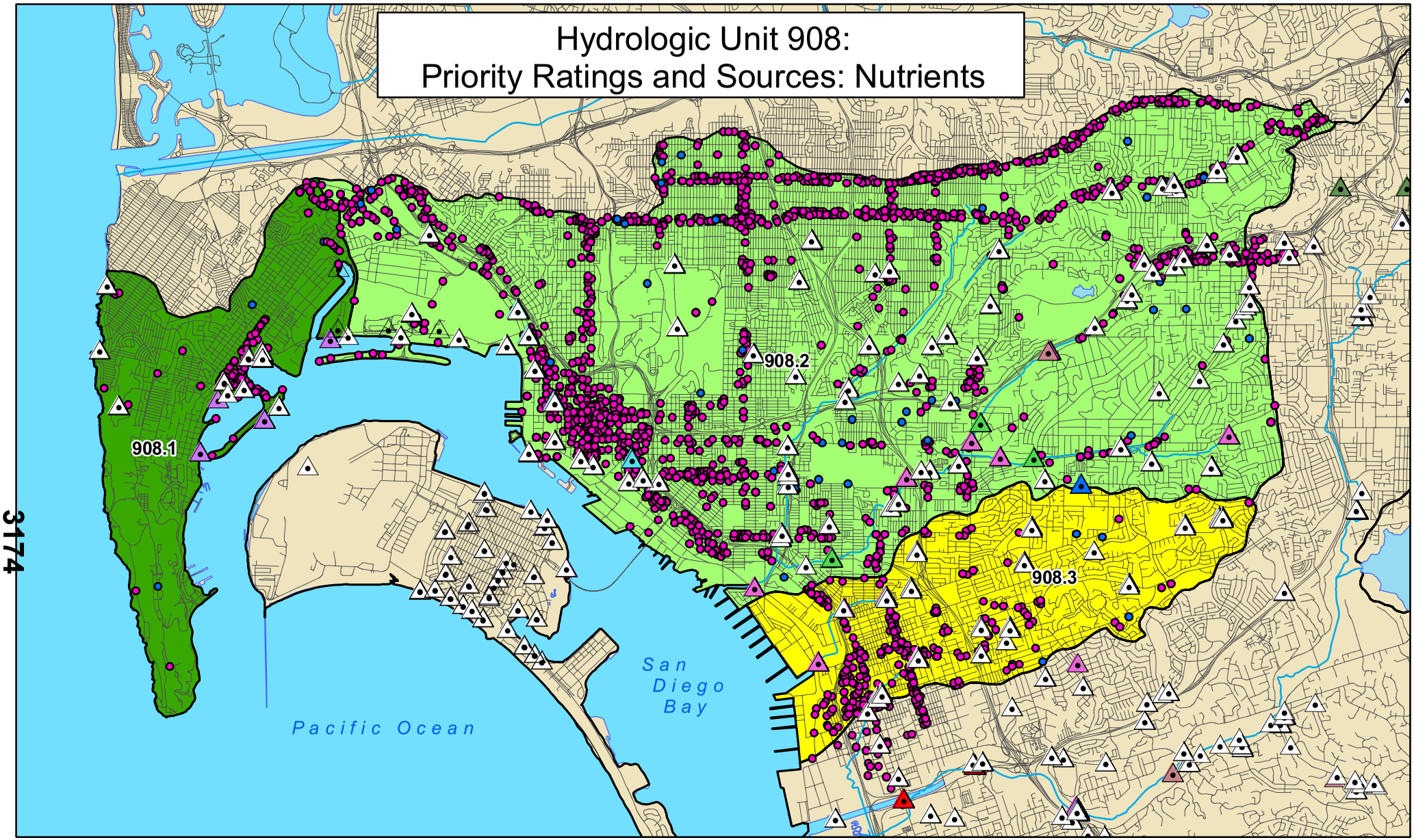

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Nutrient Sources

- Likely
- Unknown

Water Quality Priority

- (B) Moderately High Priority
- (C) Moderately Low Priority
- (D) Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Metals

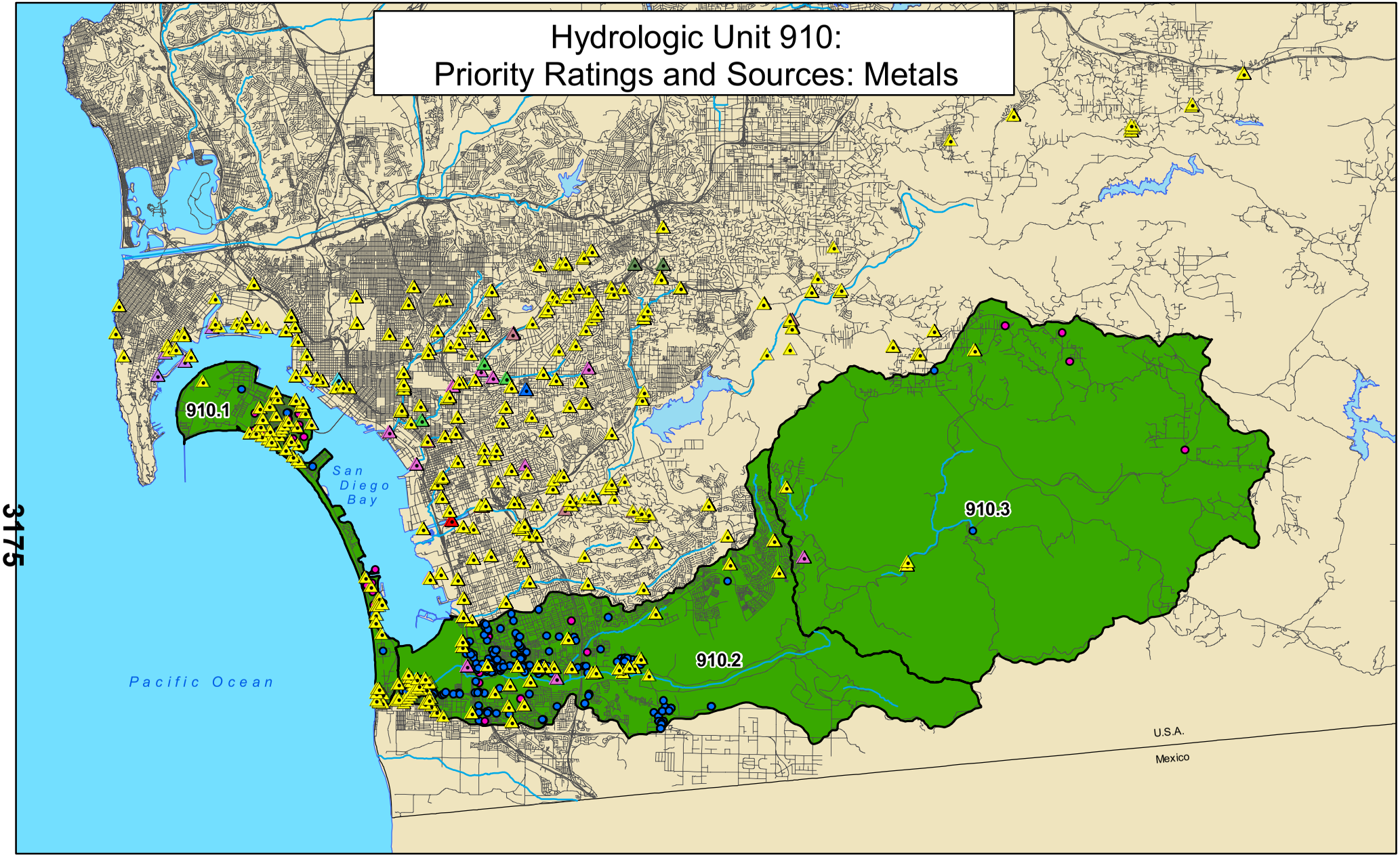

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Heavy Metal Sources

- Likely
- Unknown

(D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Metals

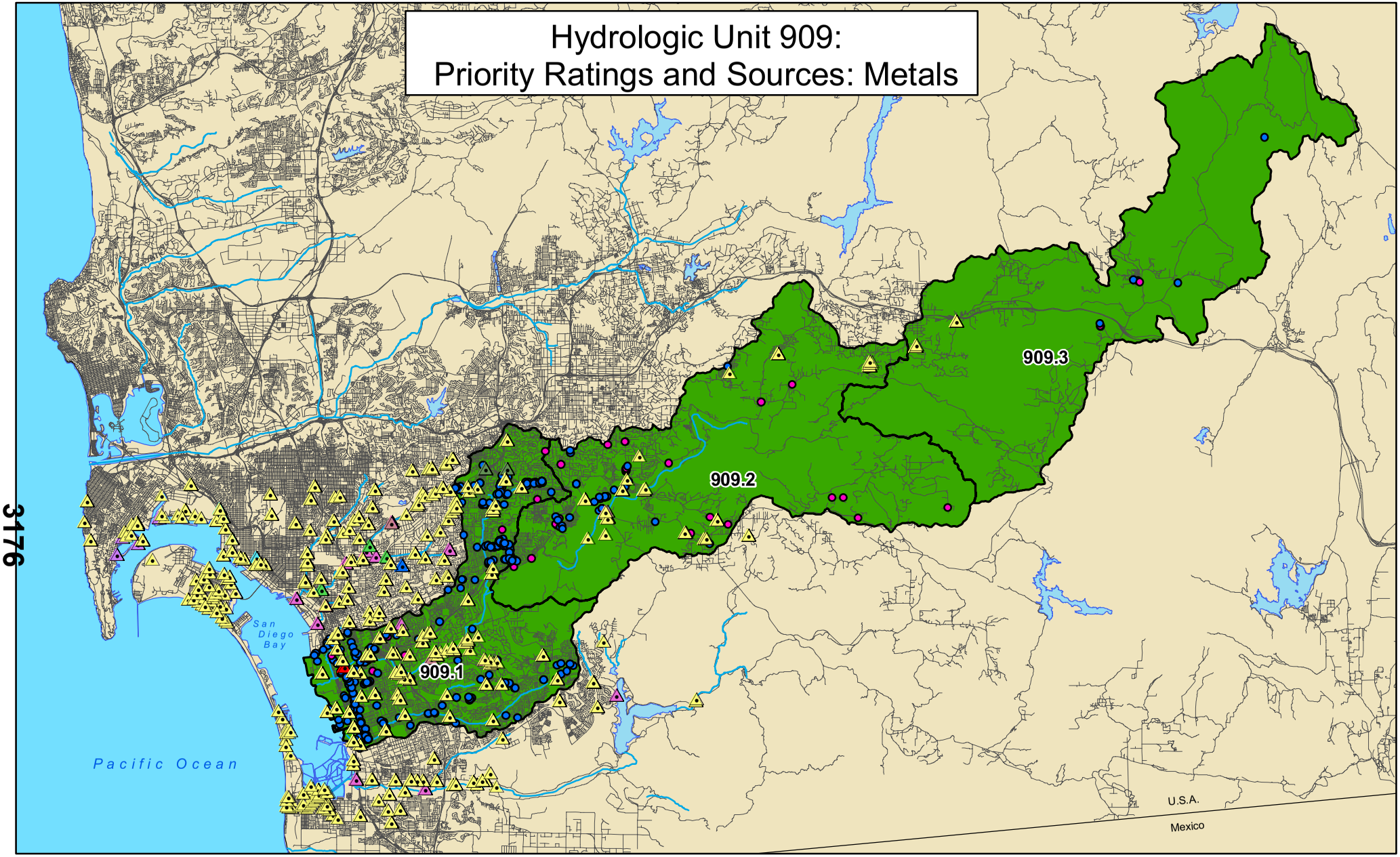

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Heavy Metal Sources

- Likely
- Unknown

Water Quality Priority

- (D) Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Metals

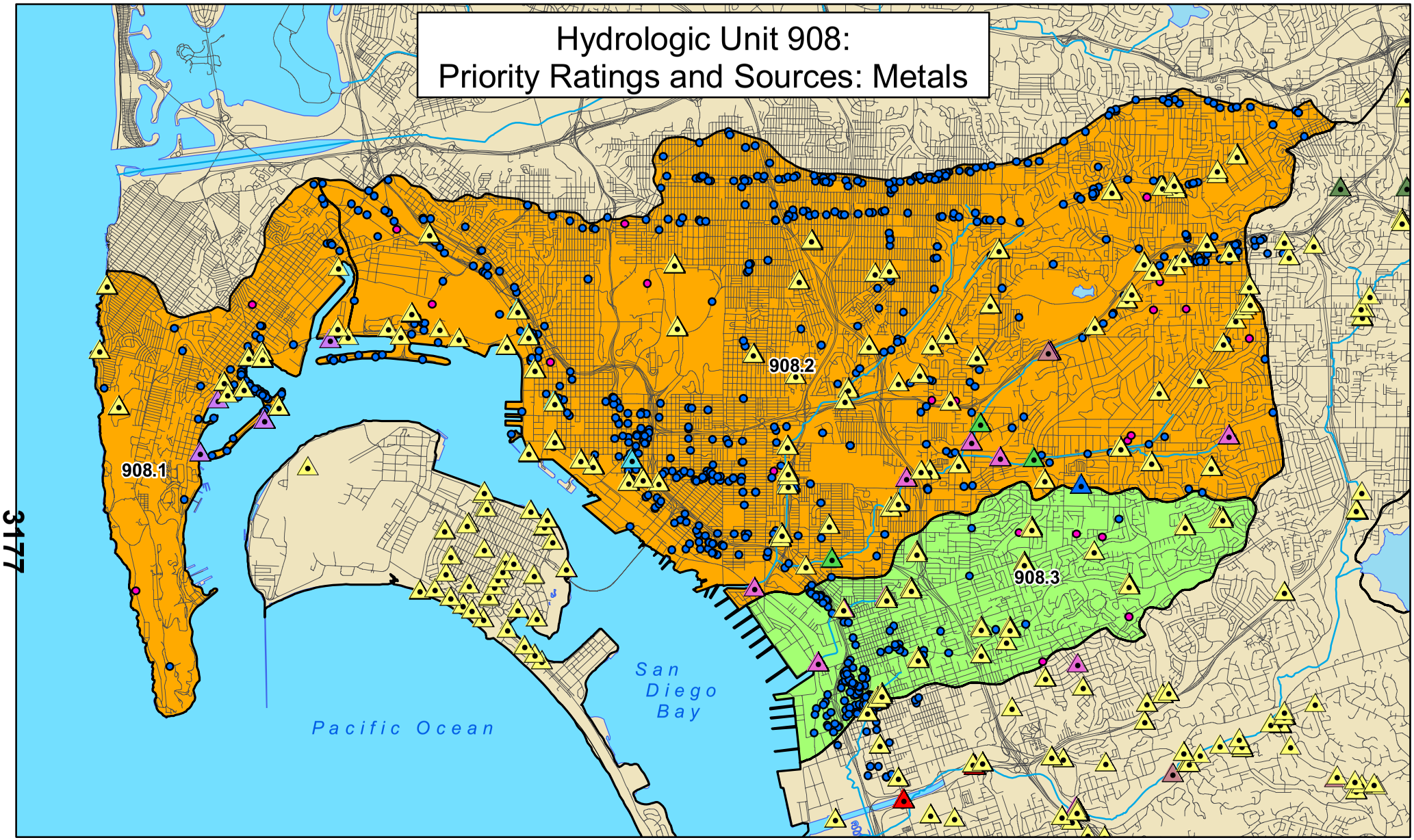

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Heavy Metal Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (C) Moderately Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Gross Pollutants

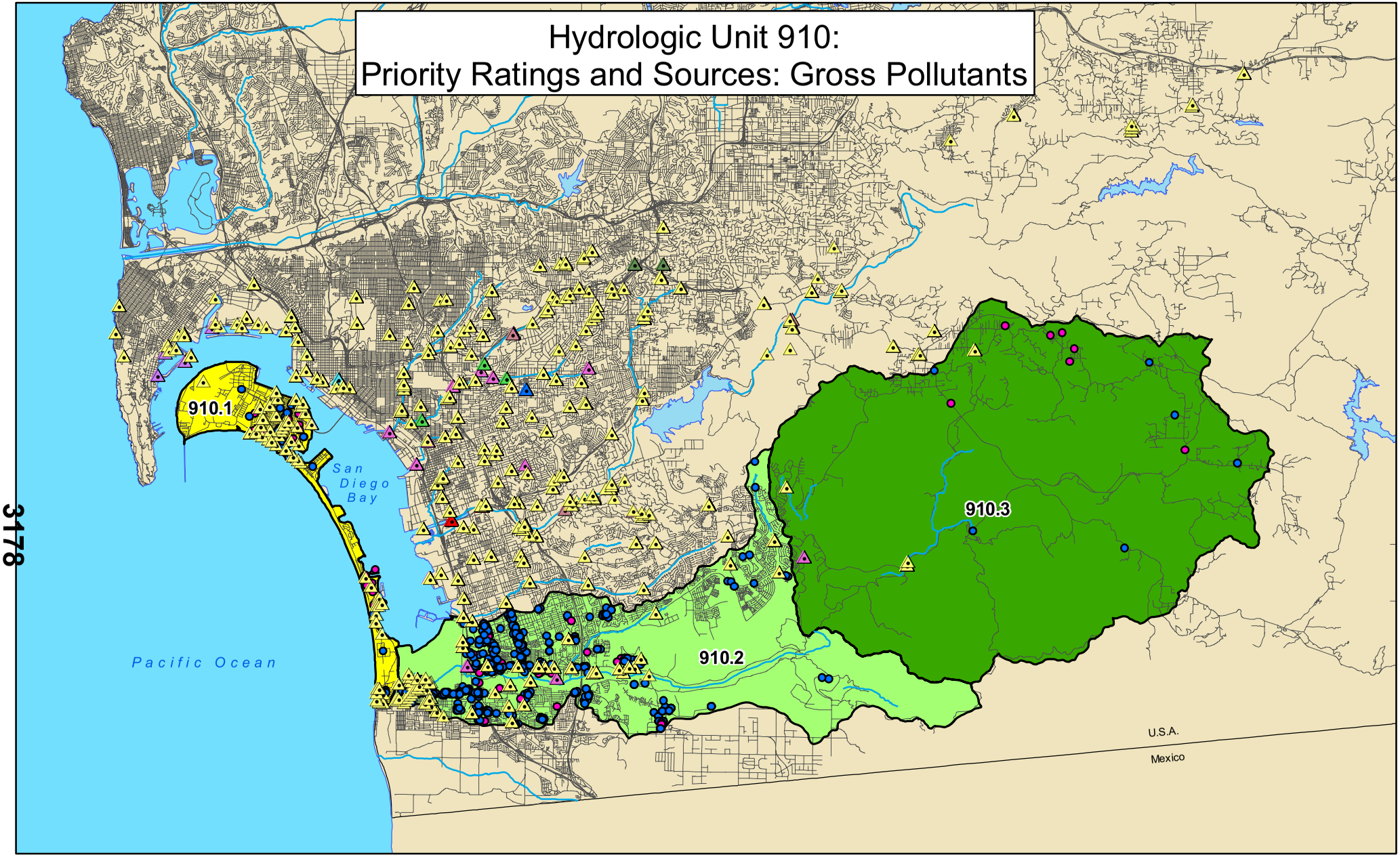

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Gross Pollutant Sources

- Likely
- Unknown

Water Quality Priority

- (B) Moderately High Priority
- (C) Moderately Low Priority
- (D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Gross Pollutants

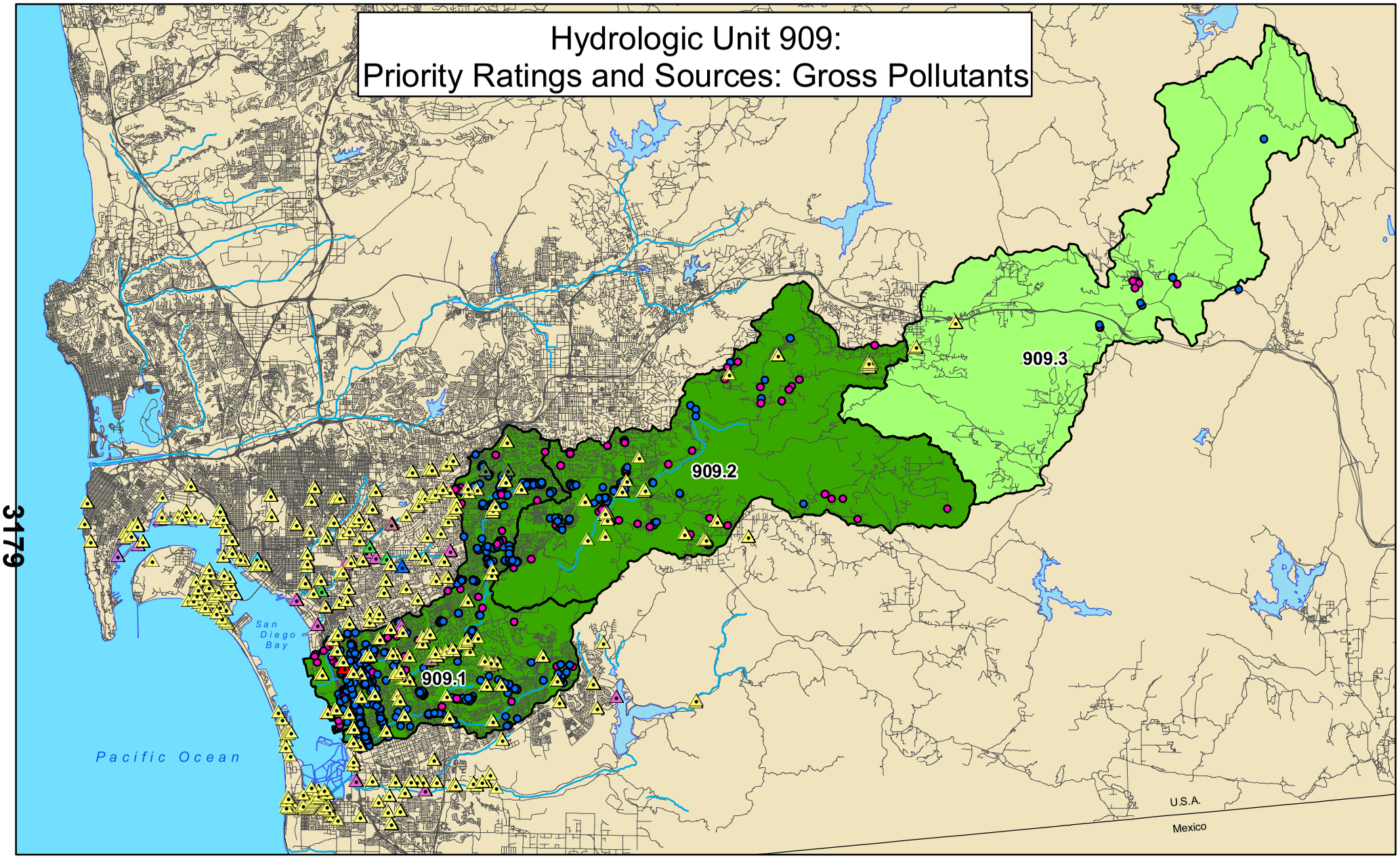

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Gross Pollutant Sources

- Likely
- Unknown

Water Quality Priority

- (C) Moderately Low Priority
- (D) Low Priority

N

0 3 6 12 Miles

Hydrologic Unit 908: Priority Ratings and Sources: Gross Pollutants

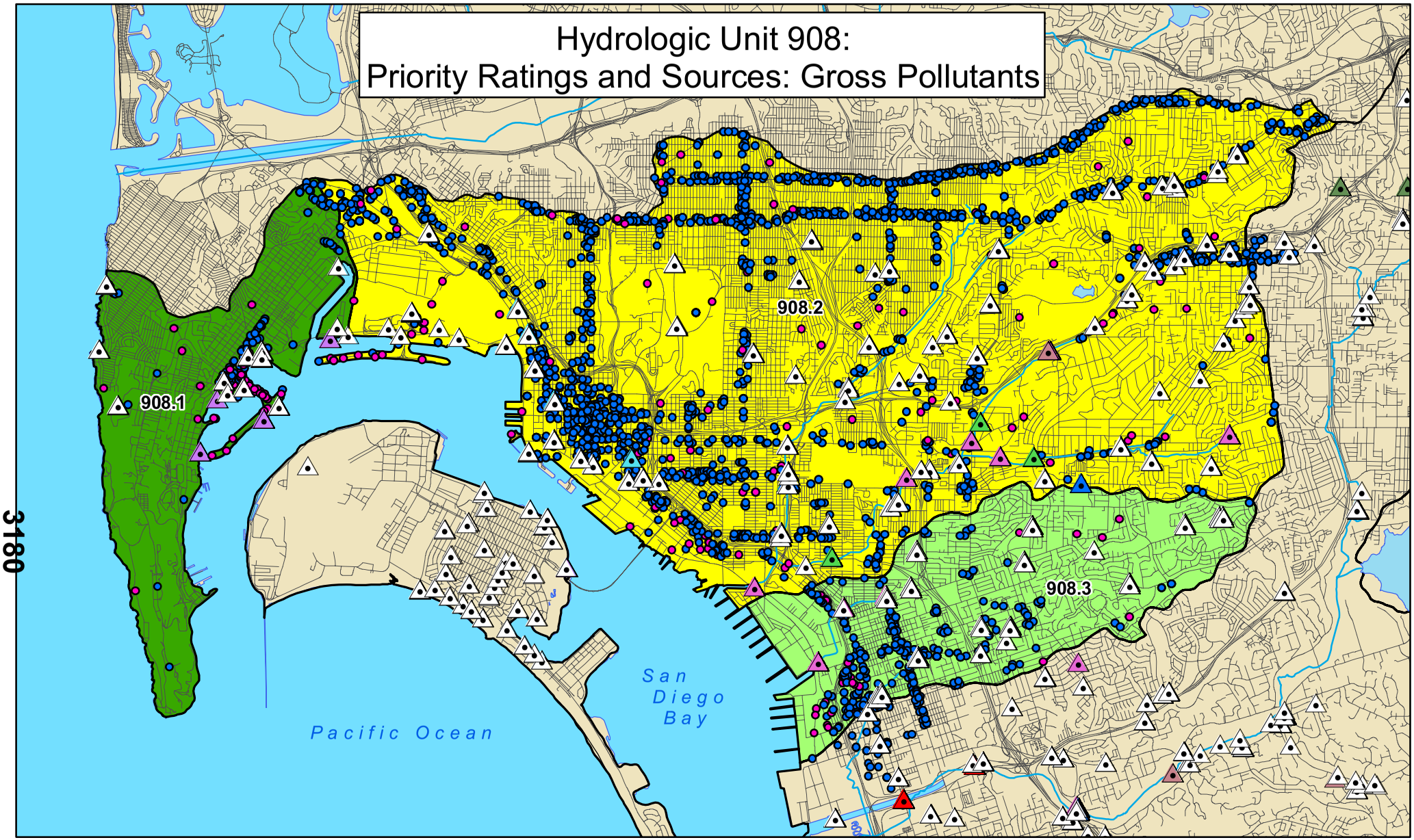

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Gross Pollutant Sources

- Likely
- Unknown

Water Quality Priority

- (B) Moderately High Priority
- (C) Moderately Low Priority
- (D) Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Bacteria

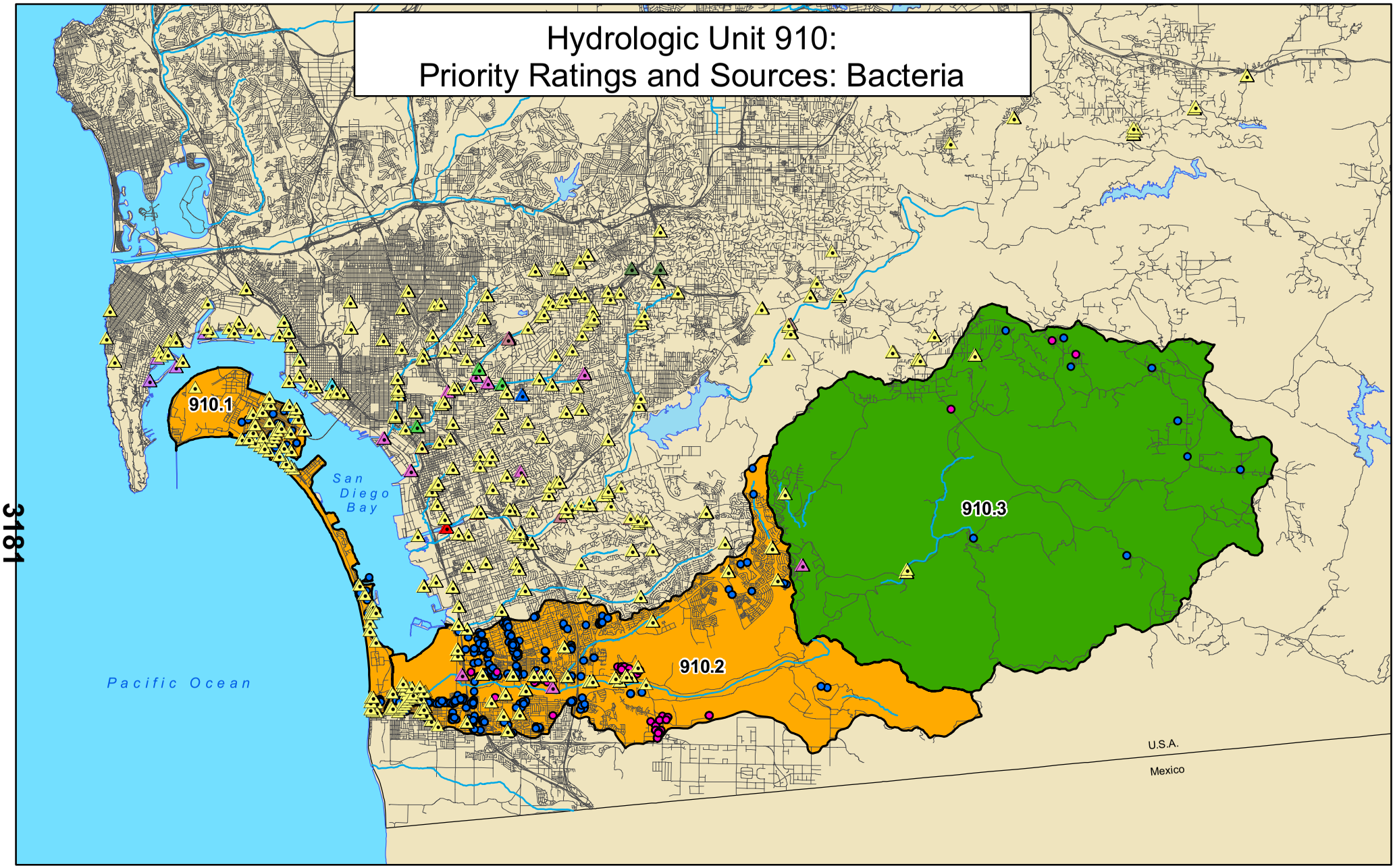

Legend

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Bacteria Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Bacteria

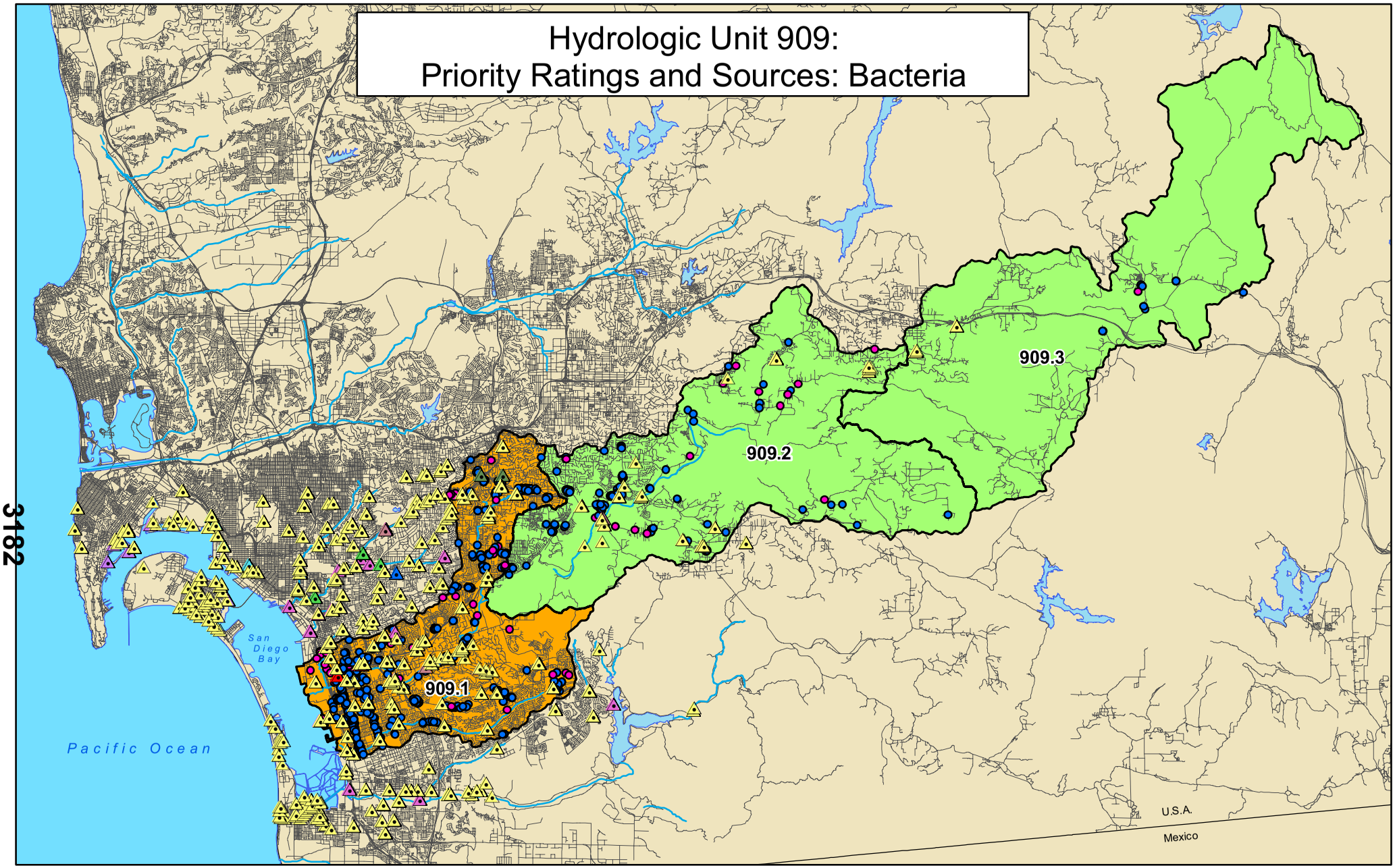

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Bacteria Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (C) Moderately Low Priority

N

0 3.5 7 14
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Sediment

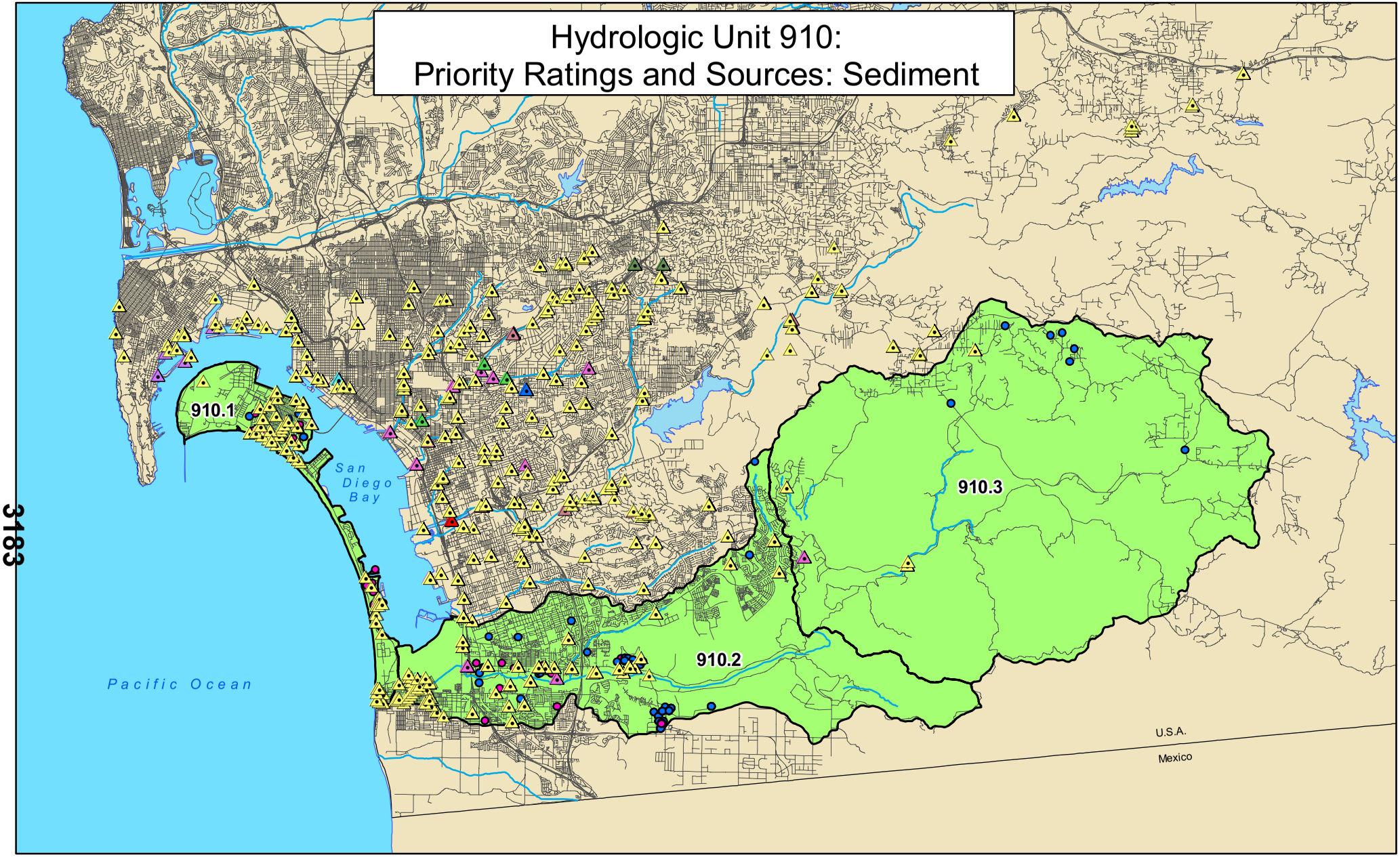

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Sediment Sources

- Likely
- Unknown

(C) Moderately Low Priority

N

0 2.5 5 10
Miles

Appendix C-2

Likely Business Sources for the San Diego Bay Watershed

Table C-2-1. Business Sources within the Pueblo San Diego Sub-Watershed (908)

Type	908.1	908.2	908.3	TOTAL	Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment
Airfield	0	1	0	1	N	UK	UK	UK	UK	UK	UK	UK
Airplane Repair	2	7	0	9	UL	UK	L	UK	L	L	UL	UL
Animal Facilities	0	13	0	13	UK	UK	N	L	UL	L	UK	L
Auto Paint	1	52	27	80	UL	UL	L	UL	L	L	UL	UL
Auto Repair	8	319	78	405	UL	L	L	UK	L	L	UL	UL
Boat Repair	27	20	1	48	UL	UK	L	UL	L	L	UL	UL
Chemical Allied Products	0	0	1	1	UK	UK	UK	UK	UK	L	UK	UK
Equipment	0	3	12	15	UL	L	L	UK	L	L	UL	UL
Fabricated Metal	4	23	13	40	UK	UK	L	UK	L	L	UK	UK
Food	98	1883	339	2320	L	L	N	UK	L	L	UK	UL
Fuel	11	86	10	107	UL	L	L	UL	L	L	UL	UL
Landfill	0	2	0	2	UK	UK	L	UK	UK	L	UK	UK
Landscaping	2	9	0	11	L	L	N	L	UL	N	L	L
Maintenance	1	5	1	7	UL	UK	L	UK	L	L	UK	L
Marina	19	2	0	21	UK	UK	L	UK	L	UK	UK	N
Motor Freight	0	19	6	25	UK	UK	L	UK	L	L	UK	UK
Nursery	1	13	4	18	L	UK	UK	L	UL	UL	L	L
POTW	1	2	0	3	L	UK	UK	UK	UK	UK	N	UK
Primary Metal	0	11	2	13	UL	UK	L	UK	UK	UK	UK	UK
Recycle	0	3	2	5	UK	L	L	UK	L	L	UK	L
Total	175	2473	496									

N = None; L = Likely Source; UL = Unlikely Source; UK = Unknown Source

Source: BLTEA (Weston, MOE, & LWA)

Table C-2-2. Business Sources within the Sweetwater Sub-Watershed (909)

Type	909.1	909.2	909.3	TOTAL	Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment
Animal Facilities	10	15	1	26	UK	UK	N	L	UL	L	UK	L
Auto Paint	18	1	0	19	UL	UL	L	UL	L	L	UL	UL
Auto Repair	161	27	2	190	UL	L	L	UK	L	L	UL	UL
Boat Repair	4	1	0	5	UL	UK	L	UL	L	L	UL	UL
Chemical Allied Products	3	1	0	4	UK	UK	UK	UK	UK	L	UK	UK
Equipment Repair	24	0	0	24	UL	L	L	UK	L	L	UL	UL
Fabricated Metal	10	1	0	11	UK	UK	L	UK	L	L	UK	UK
Food	613	110	7	730	L	L	N	UK	L	L	UK	UL
Fuel	65	11	1	77	UL	L	L	UL	L	L	UL	UL
Landfill	3	1	1	5	UK	UK	L	UK	UK	L	UK	UK
Landscaping	7	5	0	12	L	L	N	L	UL	N	L	L
Maintenance Yard	6	4	2	12	UL	UK	L	UK	L	L	UK	L
Marina	4	0	0	4	UK	UK	L	UK	L	UK	UK	N
Motor Freight	21	0	0	21	UK	UK	L	UK	L	L	UK	UK
Nursery	12	25	1	38	L	UK	UK	L	UL	UL	L	L
POTW	0	4	1	5	L	UK	UK	UK	UK	UK	N	UK
Primary Metal	1	0	0	1	UL	UK	L	UK	UK	UK	UK	UK
Total	962	206	16									

N = None; L = Likely Source; UL = Unlikely Source; UK = Unknown Source

Source: BLTEA (Weston, MOE, & LWA)

Table C-2-3. Business Sources within the Otay Sub-Watershed (910)

Type	910.1	910.2	910.3	TOTAL	Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment
Animal Facilities	0	0	3	3	UK	UK	N	L	UL	L	UK	L
Auto Paint	1	12	0	13	UL	UL	L	UL	L	L	UL	UL
Auto Repair	5	122	2	129	UL	L	L	UK	L	L	UL	UL
Boat Repair	5	1	0	6	UL	UK	L	UL	L	L	UL	UL
Chemical Allied Products	0	0	0	0	UK	UK	UK	UK	UK	L	UK	UK
Equipment Repair	0	18	0	18	UL	L	L	UK	L	L	UL	UL
Food	82	435	7	524	L	L	N	UK	L	L	UK	UL
Fuel	5	38	0	43	UL	L	L	UL	L	L	UL	UL
Landfill	0	1	0	1	UK	UK	L	UK	UK	L	UK	UK
Landscaping	2	2	0	4	L	L	N	L	UL	N	L	L
Maintenance Yard	3	2	0	5	UL	UK	L	UK	L	L	UK	L
Marina	0	1	0	1	UK	UK	L	UK	L	UK	UK	N
Motor Freight	0	15	0	15	UK	UK	L	UK	L	L	UK	UK
Nursery	2	7	4	13	L	UK	UK	L	UL	UL	L	L
POTW	20	1	0	21	L	UK	UK	UK	UK	UK	N	UK
Recycle	0	73	0	73	UK	L	L	UK	L	L	UK	L
Total	125	728	16									

N = None; L = Likely Source; UL = Unlikely Source; UK = Unknown Source

Source: BLTEA (Weston, MOE, & LWA)

Appendix D

San Diego Bay Copermittees' Watershed Activities

MUNICIPAL BEST MANAGEMENT PRACTICES – 1

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees will address high priority water quality problems by coordinating and standardizing activities at the watershed level. One of the identified collaborative efforts is the Municipal BMP activity to address urban runoff from jurisdictional parks and recreational areas. It is believed that parks may be a potential source of high priority water quality problems such as bacteria, pesticides, sediment, and trash. The San Diego Bay Copermittees will take measures to address these high priority water quality problems from the MS4, streams, and water bodies.

This activity consists of multiple projects that address load reductions from parks and recreational areas and are associated with the high priority water quality problems. The list below includes specific projects which can be implemented as part of the Municipal BMP strategy. It is important to note that not every Copermittee participating in this program will institute every activity listed below. Each Copermittee will be implementing the activity jurisdictionally and will decide on the scale, location, and timing of the activities in HAs under their authority. It is the goal of the Municipal BMP activity to address multiple pollutants using a variety of mechanisms throughout the watershed.

Pet Waste Bags: Two important goals are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to clean up after their pets. Each Copermittees will designate how they plan to implement this activity. Providing pet waste bags to citizens may result in load reductions as the activity enables proper disposal of pet waste and associated pollutant categories such as bacteria. The activity could possibly undergo additional assessment by monitoring the number of bags used at each location. Copermittees may elect to post signage to educate the public of the benefits of proper waste management.

Porous Pavement: Porous pavement will facilitate biodegradation of oils and grease from cars and trucks, help rain water infiltrate soil, and reduce pollutant loads of high priority water quality problems. Copermittees may replace traditional impervious pavement in locations such as parking lots with porous pavement. This activity can be implemented to aid in the load reduction of metals, oil and grease, sediment and bacteria associated with impervious surface runoff. The Copermittees may estimate the effectiveness of the BMP by calculating the overall area converted from impervious surfaces to porous pavement. Wet weather monitoring data may also be used to assess the BMP effectiveness.

Irrigation: Copermittees may elect to address methods to reduce nutrient, sediment, pesticide, and bacteria loading associated with irrigation runoff through the implementation of irrigation BMP mechanisms (i.e., drip-irrigation or low-precipitation rate sprinklers) on municipal properties such as parks and recreational areas.

Xeriscaping: With the goal of conserving water, reducing erosion and irrigation runoff, Copermittees may choose to implement this water-wise landscaping technique to convert from lower permeable surfaces, such as grass or concrete, to more permeable landscaping options incorporating California-friendly plant species. Xeriscaping will aid in reducing nutrient, sediment, and bacteria associated with runoff of less pervious surfaces. The Copermittees may estimate the effectiveness of the BMP by calculating the overall area converted from less permeable surfaces to landscaping. Educational signs may be posted where appropriate to educate the public on the basis of the activity.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) Lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria, sediment toxicity and benthic community degradation. TMDLs are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, Bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek. All collaborative municipal BMP activities are applicable to these TMDLs to the extent they address the identification and control of sources of bacteria as a pollutant potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Varies
- Permit Year 2: Varies
- Permit Year 3: Varies
- Permit Year 4: Varies
- Permit Year 5: Varies

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego
- City of Lemon Grove
- City of Coronado
- City of National City
- City of Chula Vista
- City of San Diego
- City of Imperial Beach
- County of San Diego
- City of La Mesa

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Sediment
- Oil and grease
- Pesticides

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. The Watershed Strategy identifies additional monitoring for bacteria within 908.1 HA, while proposing load reduction as the appropriate management action for 908.2, 908.3, 909.1, 909.2, and 910.1 HAs. Source identification was identified as the appropriate management action for bacteria within 910.2 HA. Metals were identified as a high priority water quality problem for 908.1 and 908.2 HA, requiring additional monitoring and source abatement, respectively. Sediment is also identified as a high priority water quality problem at both 908.2 and 908.3 HA. The Watershed Strategy acknowledged identification of the source of the sediment is needed. Oil and grease is considered a high priority water quality problem in 908.1 HA, requiring additional monitoring. Pesticides are recognized by the Watershed Strategy as a high priority water quality problem for 908.1 and 908.2 HA. The Watershed Strategy identifies the necessity for additional monitoring and source identification.

EXPECTED BENEFITS

Pet Waste Bags: The expected outcome of providing means to the proper disposal of pet feces within parks establishes a level 3 outcome, as the education of the public on pollutant load reducing practices promotes behavioral change among the citizens. The dispensers add a reminder and encouragement for dog owners to properly dispose of dog waste. Bacteria load reductions associated with the use of pet waste bags will present a level 4 outcome. Removal of pet waste from the environment reduces nutrient and bacterial loading and improves water quality within the watershed.

Porous Pavement: The expected benefit of installing porous pavement in parking lots is a level 4 outcome by aiding to identify sources and reduce pollutant loads. This activity will contribute to improvements in water quality and source abatement.

Irrigation: The expected outcome will be level 4 and 5 outcomes with the installation of improved irrigation systems and practices. This activity will exhibit load reduction, which will influence discharge water quality.

Xeriscaping: The expected benefits of xeriscaping are level 3 and 4 outcomes, or BMP installation and load reductions.

EFFECTIVENESS MEASUREMENTS

Pet Waste Bags: Providing pet waste bags is an important water quality activity to reduce the nutrients and bacteria loads because it estimates the amount of feces being removed in the watershed (level 4). Bacteria is a high priority water quality problem throughout the San Diego Bay watershed. Changes in knowledge, awareness and behavior of pet owners result in outcome levels 2 and 3 as well. The success of the implementation of pet waste bags may be estimated by quantifying the number of bag dispensers added in each HA as part of this activity or the number of bags removed and used from each of the dispensers.

Porous Pavement: Effectiveness will be assessed through level 4. The amount of area transferred from less permeable material, such as concrete, to porous pavement can be calculated to show efforts undertaken to reduce the amount of area covered by impervious surfaces and reduce the high priority water quality problems in each HA. The Copermittees may elect to do additional monitoring of watershed waters and surface runoff, in order to compare current loads to pre-BMP conditions. Wet weather monitoring data may also be used to assess the BMP effectiveness.

Irrigation: Effectiveness will be assessed through level 4. Copermittees may elect to monitor the high priority water quality problems in surface runoff and compare loads to pre-BMP conditions.

Xeriscaping: Load reductions will be assessed through level 4. The estimation of the area transformed through specialized landscaping may be utilized by Copermittees to show jurisdictional efforts to decrease the amount of impervious ground cover and reduce the high priority water quality problems within each HA.

MUNICIPAL BEST MANAGEMENT PRACTICES/PET WASTE BAGS AT PET RELIEF AREAS – 1A

ACTIVITY SUMMARY

The Airport Authority maintains a Pet Relief Area at the San Diego International Airport and is planning to install a second facility. Pet waste bags are available at the Pet Relief Area. The goals of this program are to reduce the amount of pet waste that might inadvertently enter the stormwater conveyance system and to provide public education about potential stormwater pollution related to pet waste and the need to clean up after their pets. These goals will reduce the amount bacteria and nutrients which could be released in the watershed.

The Pet Waste Bag Program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of feces and associated bacteria and nutrients being removed from the watershed. Pet waste bags are a reminder to and an encouragement for dog owners to properly dispose of dog waste. Removal of dog waste from the environment reduces associated bacteria and nutrient loading and improves water quality within the watershed. Reduction in the amount of bacteria and nutrients in the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. TMDLS are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Pet Waste Bag Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria and nutrients as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high water quality problem and nutrients as a low water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on bacteria and nutrient load reduction through the removal of dog feces in the 908.2 HA. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions, but also increases awareness and education of the public regarding pet waste as a source of stormwater pollution.

EXPECTED BENEFITS

Pet waste bags at the Pet Relief Area target pollutant removal from the public areas of the airport. The public's use of pet waste bags actively decreases the amount of dog feces that might inadvertently enter the stormwater conveyance system. Making pet waste bags available to the public encourages stakeholder buy-in and participation in the Watershed Strategy. The program cultivates of a public sense of ownership and responsibility for the health of local water bodies which in turn leads to the proper disposal of pet waste. By changing the way in which individuals dispose of pet waste, this program results in a level 3 outcome. The program also calculates the reduction in the amount of bacteria and nutrients impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual bacteria and nutrient load reductions by 1) estimating per-bag pollutant loads based on review of the literature and/or other sources and 2) monitoring the number of pet waste bags used annually. The Airport Authority will also be able to track the cost of implementing the program based on the number of bags used.

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT PET WASTE DISPOSAL – 1B

ACTIVITY DESCRIPTION

The City of Chula Vista plans to encourage homeowner's associations to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association newsletters about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials and survey homeowners associations to assess if there is signage and plastic bag dispensers in the neighborhoods regarding proper pet waste disposal.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria has been categorized as a high priority pollutant in the watershed. This activity is consistent with the collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EXPECTED BENEFITS

The HOA and resident education activity aims to locate areas within the City of Chula Vista where neighborhoods need education about pet waste and its potential impact on water quality by incorporating source control measures. By providing signage and educational materials to HOAs and residents, this effort intends to reduce the amount of bacteria that could enter the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 1, 2, and 3. The activity will be assessed by the number of surveyed homeowners associations and the number of homeowners reached through education.

PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS – 1C

ACTIVITY DESCRIPTION

The County of San Diego maintains an inventory of pet waste dispensers in its parks. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. In the San Diego Bay Watershed, there are currently 8 dispensers located in 7 County parks:

- Otay Lake Park, Otay Valley Open Space Preserve – 910.20 (1 dispenser)
- Eucalyptus Park – 909.12 (1 dispenser)
- Goodland Acres Park - 909.12 (1 dispenser)
- Hilton Head – 909.21 (Cottonwood 3) (1 dispenser)
- Lamar Street Park – 909.12 (1 dispenser)
- Spring Valley Park, Community Center and Teen Center – 909.12(1 dispenser)
- Sweetwater Regional Park/Summit – 909.12 (2 dispensers)

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – To be determined

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria has been identified as a priority water quality problem in the San Diego Bay Watershed. Parks have been identified as potential sources of bacteria. Since this activity

addresses a priority water quality problem and a priority source, it is consistent with the collective Watershed Strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (level 1). Bacteria load reductions (Level 4) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

MUNICIPAL DOGGIE BAG DISPENSER PROGRAM – 1D

ACTIVITY DESCRIPTION

The Port of San Diego maintains an inventory of pet waste dispensers in the Port's municipal parks. This is an important activity to address urban runoff from jurisdictional parks and recreational areas. It is believed that parks may be a likely source of high priority pollutants such as bacteria and nutrients. Two important goals are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to clean up after their pets. The activity could possibly undergo additional assessment by monitoring the number of bags used at each location. Signage educating the public of the benefits of proper waste management will be posted where appropriate.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) Lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek. The Pet Waste Bag Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria and nutrients as pollutants potentially impacting water quality in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. The Watershed Strategy identifies additional monitoring for bacteria within 908.1 HA, while proposing load reduction as the appropriate action for 908.2, 908.3, 909.1, 909.2, and 910.1 HAs. Source identification was identified as the appropriate management action for bacteria within 910.2 HA. For those HAs in which load reductions are proposed, this activity will lead to the reduction in the amount of pet feces in the stormwater runoff from the HA.

EXPECTED BENEFITS

This activity focuses on the load reduction of bacteria through the removal of pet feces from Port of San Diego's municipal areas. The public's use of pet waste bags actively decreases the amount of pet feces that might inadvertently enter the stormwater conveyance system. Making pet waste bags available to the public encourages stakeholder buy-in and participation in the Watershed Strategy. The program cultivates of a public sense of ownership and responsibility for the health of local water bodies which in turn leads to the proper disposal of pet waste. By changing the way in which individuals dispose of pet waste, this program results in a level 3 outcome. The program abates sources impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

Providing pet waste bags is an important water quality activity to reduce the nutrients and bacteria loads because it abates sources (level 4). Bacteria is a high priority water quality problem throughout the San Diego Bay watershed. Changes in knowledge, awareness and behavior of pet owners result in outcome levels 2 and 3 as well. The success of the implementation of pet waste bags may be estimated by quantifying the number of bag dispensers added in each HA as part of this activity and/or the number of bags removed and used from each of the dispensers.

ASSESS USE OF PET WASTE BAGS – 1E

ACTIVITY DESCRIPTION

Evaluate usage levels and possible benefits and barriers to proper usage.

TMDL APPLICABILITY

Impending Chollas Creek bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- Annual assessment efforts

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local Watershed Activity

EXPECTED BENEFITS

Increased staff knowledge of effectiveness, improved use by community, and quantifiable load reduction numbers.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

PET WASTE BAGS – 1F

ACTIVITY DESCRIPTION

Installation of dispensers in all public park areas and other public areas such as near City Hall.

TMDL APPLICABILITY

Chollas Creek impending bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- Current Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

High priority pollutant based activity

EXPECTED BENEFITS

Less pet waste entering urban run-off decreasing bacteria.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

MUNICIPAL BEST MANAGEMENT PRACTICES / IRRIGATION / XERISCAPE – 1G

ACTIVITY SUMMARY

The Airport Authority intends to coordinate with the San Diego Bay Copermittees and implement source control BMPs to address urban runoff from landscaped areas. The goal of the Irrigation/Xeriscape program is to reduce the amount nutrients, pesticides, and sediment which could be released in the watershed from landscaped areas at the airport. The Airport Authority intends to implementation irrigation BMPs (e.g., drip-irrigation systems or automatic moisture/precipitation sensing controls) to reduce over-irrigation and the resultant nutrient, pesticide, and sediment contaminated runoff from landscape areas. The Airport Authority also plans to use native plants and xeriscape to the extent possible with the goal of conserving water, reducing erosion and irrigation runoff pollutant loads. This water-wise landscaping technique will limit the need for fertilizers, herbicides, and pesticides, and thereby, reduce nutrient, pesticide, and sediment pollutant loads associated with runoff from these landscaped surfaces.

The Irrigation/Xeriscape Program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of nutrients, pesticides, and sediment being removed from the watershed. A reduction in the amount of fertilizers, herbicides, pesticides, and sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Irrigation/Xeriscape Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of nutrients, pesticides, and sediment as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation

- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems by focusing on nutrient, pesticide, and sediment load reductions resulting from proper irrigation and the installation of xeriscape using native species that generally limit the need for fertilizers, herbicides, and pesticides. The Watershed Strategy identifies pesticides and sediments as high priority water quality problems and nutrients as a low priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions, but also increases awareness and education of the Airport Authority staff regarding over-irrigation and over-application of fertilizers, herbicides, and pesticides as sources of stormwater pollution.

EXPECTED BENEFITS

The Irrigation/Xeriscape Program targets pollutant removal from the landscaped areas of the airport. The proper use of irrigation and limited application of fertilizers, herbicides, and pesticides actively decreases the amount of nutrients, pesticides, and sediment that might inadvertently enter the stormwater conveyance system. Outreach and education to staff regarding proper irrigation and xeriscape encourages stakeholder buy-in and participation in the Watershed Strategy. The program cultivates a sense of ownership and responsibility on the part of staff for the health of local water bodies which in turn leads to proper use of irrigation and limited application of fertilizers, herbicides, and pesticides. By changing the way in which staff operates, this program results in a level 3 outcome. The program also calculates the reduction in the amount of nutrients, pesticides, and sediment impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) monitoring the amount of water, fertilizer, herbicide, and pesticide used for landscape maintenance, and 2) estimating, based on review of the literature and/or other sources, the sediment load per unit volume of irrigation water and landscape area for improperly irrigated landscape areas. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

IMPLEMENTATION OF STORM DRAIN LITTER CONTROL TECHNIQUES – 2

ACTIVITY DESCRIPTION

One of the identified collaborative efforts is the implementation of storm drain litter control techniques. The Copermittees will utilize storm drain inserts, filters, etc. to reduce litter, trash and sediment pollutant loads from entering the San Diego Bay watershed. Each Copermittee will be able to identify and promote feasible site locations and the most effective storm drain litter control methodology within their own jurisdiction if this activity is feasible for implementation. The drain BMPs will prevent trash and sediment from entering into the storm water conveyance system. The Copermittees may be able to evaluate the amount of trash and sediment collected at various inlet locations to ascertain the quantity and type of trash and sediment deposited.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Varies
- Permit Year 2: Varies
- Permit Year 3: Varies
- Permit Year 4: Varies
- Permit Year 5: Varies

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of Coronado
- City of San Diego
- City of Imperial Beach
- County of San Diego
- City of La Mesa
- Port of San Diego
- City of Lemon Grove
- San Diego Regional Airport Authority

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on sediment and trash load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous debris. The Watershed Strategy identifies sediment and trash as high priority water quality problems for the watershed HAs. Sediment is identified as a high priority water quality problem at both 908.2 and 908.3 HAs. The Watershed Strategy acknowledged identification of the source of the sediment is needed in the majority of the San Diego Bay WMA.

EXPECTED BENEFITS

The installation and maintenance of storm drain litter control is beneficial to the San Diego Bay Watershed because sediment, debris, and other harmful materials are prevented from entering receiving waters. The expected benefit of these techniques is a level 4 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality and BLTEA ratings.

EFFECTIVENESS MEASUREMENTS

Pollutant load reductions and discharge quality may be estimated and assessed through water quality monitoring and observation efforts that are integral to level 4. Pollutant load reductions may be assessed by recording the amount and type of debris collected. This will allow a characterization of pollutant loads at each site and enable comparisons between sites within an individual HA and between sites in other HAs.

IMPLEMENTATION OF STORM DRAIN LITTER CONTROL TECHNIQUES – 2A

ACTIVITY DESCRIPTION

The Port of San Diego will utilize storm drain inserts, filters, etc. to reduce litter, trash and sediment pollutant loads from entering the San Diego Bay watershed. The Port will identify and promote feasible site locations and the most effective storm drain litter control methodology within its jurisdictional area. The Port intends to install filters within three parks—Tuna Harbor Park, Embarcadero Marina Park North, and Embarcadero Marina Park South—which are adjacent to the San Diego Bay. These parks receive a significant amount of public use and are locations of special events throughout the year. The storm drain BMPs will prevent trash and sediment from entering into the storm water conveyance system.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Assessment
- Permit Year 3: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The storm drain litter control activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on trash and sediment. The Watershed Strategy identifies both pollutants as high priority water quality problems within HA 908.2. The Watershed Strategy identifies a load reduction action for trash within HA 908.2 and acknowledges that identification of the source of the sediment is needed. Storm drain litter control techniques intend to capture trash, sediment, leaves, yard clippings, and oil and grease and will prevent these pollutants from entering receiving waters.

EXPECTED BENEFITS

The installation and maintenance of storm drain litter control is beneficial to the San Diego Bay Watershed because sediment, trash, debris, and other harmful materials are prevented from

entering receiving waters. The expected benefit of these techniques is a level 4 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality.

EFFECTIVENESS MEASUREMENTS

Pollutant load reductions and discharge quality may be estimated and assessed through water quality monitoring and observation efforts that are integral to levels 4. Pollutant load reductions may be assessed by recording the amount and type of debris collected. Furthermore, discharge water quality may also be assessed through dry or wet weather monitoring. This will allow a characterization of pollutant loads and discharge water quality at each site and enable comparisons between sites within an individual HA and between sites in other HAs.

IMPLEMENTATION OF STORM DRAIN LITTER CONTROL TECHNIQUES/STRATEGIC USE OF STORM DRAIN INLET FILTERS – 2B

ACTIVITY SUMMARY

The Airport Authority intends to install storm drain inlet filters to reduce litter, trash, sediment and associated metals, oil and grease, and bacteria from inadvertently entering the stormwater conveyance system and then into San Diego Bay. The goal of the Strategic Use of Storm Drain Inlet Filters Program is to reduce the amount bacteria, oil and grease, sediment, and trash which could be released in the watershed. The Airport Authority will identify those locations likely to be most effective at controlling litter, trash, and sediment. The Airport Authority will monitor the sites regularly and cleaned at least annually. The amount of trash and sediment collected will be recorded. Knowing the drainage area of each inlet, the amount of trash and sediment collected, and the cost of implementing the program, the cost-effectiveness of each installation can be calculated and used to make overall program improvements.

The program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of bacteria, metals, oil and grease, sediment, and trash being removed from the watershed. A reduction in the amount of litter, trash, and sediment potentially entering the stormwater conveyance system contributes to improving the quality of the stormwater in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Strategic Use of Storm Drain Inlet Filters Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, metals, oil and grease, sediment, and trash as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation

- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Strategic Use of Storm Drain Inlet Filters Program will aid in the physical removal of a quantifiable amount of trash and sediment and associated bacteria, metals, oil and grease from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria, sediment, and trash as high priority water quality problems and oil and grease as a low priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of litter, trash, sediment and associated bacteria, metals, oil and grease. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Strategic Use of Storm Drain Inlet Filters Program targets pollutant removal from the streets, roadways, and parking lots of the airport. The use of storm drain inlet filters actively decreases the amount of litter, trash, sediment and associated bacteria, metals, oil and grease that might inadvertently enter the stormwater conveyance system. The program calculates the reduction in the amount of bacteria, metals, oil and grease, sediment, and trash impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) measuring the weight of trash and sediment collected in the storm drain inlet filters and 2) estimating bacteria, metal, and oil and grease loads per unit weight of trash and sediment collected based on review of the literature and/or other sources. The Airport Authority will also be able to track the cost of implementing the program to determine the cost-effectiveness of the filters and the overall effectiveness of each installation.

STORM DRAIN INSERTS IN COMMERCIAL BUSINESS AREAS – 2C

ACTIVITY SUMMARY

Coronado will utilize storm drain inserts, filters, etc. to reduce litter and trash, sediment, oil and grease, and bacteria pollutant loads from entering the storm water conveyance system, and ultimately preventing pollutants from entering the San Diego Bay watershed. These identified inlets, along Coronado's Orange Avenue pedestrian commercial business route, and side-streets with eating establishments, will be cleaned once monthly to evaluate the amount of trash and sediment collected. Additional sites for consideration include Ocean Boulevard.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations through San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- 2007-2008 monitoring/planning
- 2008-2009 implement
- 2009-2010 implement
- 2010-2011 implement/assess
- 2011-2012 assess

PARTICIPATING WATERSHED COPERMITTEES

- City of Coronado

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on bacteria and sediment load reduction. Littler control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants. The Watershed Strategy identifies bacteria, sediment, and nutrients as either high, medium, or low water quality problems for the watershed Has. Bacteria are categorized as a high priority water quality problem in all HAs with the BLTEA rating of A.

EXPECTED BENEFITS

The installation and maintenance of storm drain litter control is beneficial to the San Diego Bay Watershed because sediment, debris, and other harmful materials are prevented from entering receiving waters. The expected benefit of these techniques is a level 4 and 5 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality and BLTEA ratings.

EFFECTIVENESS MEASUREMENTS

Pollutant load reductions and discharge quality may be estimated and assessed through water quality monitoring and observations efforts that are integral to levels 4-5. Pollutant load reductions may be assessed by recording the amount and type of debris collected. This will allow a characterization of pollutant loads at each site and enable comparisons between sites within an individual HA and between sites in other HAs.

IMPLEMENTATION OF STORM DRAIN LITTER CONTROL TECHNIQUES – 2D

ACTIVITY DESCRIPTION

The City of La Mesa will utilize storm drain inserts to reduce litter and trash, sediment, oil and grease, and bacteria pollutant loads from entering the San Diego Bay watershed. The drain BMPs will prevent trash and sediment; absorb oil and grease, and bacteria from entering into the storm water conveyance system. The City of La Mesa will evaluate the amount of trash and sediment collected at various inlet locations and compares the results to determine the quantity and type of trash and sediment deposited. The City of La Mesa has installed and continues to maintain 22 filter inserts along University Avenue. The filter inserts are inspected and cleaned at a minimum twice a year. The volume of trash recovered from the filter inserts will be recorded as well as the type of debris retrieved.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Monitoring/Planning
- Permit Year 2: Planning
- Permit Year 3: Implementation
- Permit Year 4: Assessment
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on bacteria and sediment load reduction. Litter control

techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants. The Watershed Strategy identifies bacteria, sediment, and nutrients as either high, medium, or low water quality problems for the watershed HAs. Bacteria are categorized as a high priority water quality problem in all HAs with the BLTEA rating of A. The Watershed Strategy identifies additional monitoring for 908.1, while proposing load reduction and source abatement as the appropriate action to be taken for bacteria for all other HAs. Sediment is also identified as a high priority water quality problem at both 908.2 and 908.3 HAs. The Watershed Strategy acknowledged identification of the source of the sediment is needed in the majority of the San Diego Bay watershed.

EXPECTED BENEFITS

The installation and maintenance of storm drain litter control is beneficial to the San Diego Bay Watershed because sediment, debris, and other harmful materials are prevented from entering receiving waters. The expected benefit of these techniques is a level 4 and 5 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality and BLTEA ratings.

EFFECTIVENESS MEASUREMENTS

Pollutant load reductions and discharge quality may be estimated and assessed through water quality monitoring and observation efforts that are integral to levels 4-5. Pollutant load reductions may be assessed by recording the amount and type of debris collected. This will allow a characterization of pollutant loads at each site and enable comparisons between sites within an individual HA and between sites in other HAs.

STREET SWEEPING ENHANCEMENT – 3

ACTIVITY DESCRIPTION

One of the collaborative efforts is street sweeping enhancements. The San Diego Bay Copermittees intend to reduce the accumulation of metals, sediments, and trash by optimizing the efficiency and/or frequency of street sweeping programs. The Street Sweeping activity is focused on enhancing Copermittees' street sweeping program within municipal areas by increasing sweeping frequency and/or area coverage or increasing sweeping efficiencies. According to the jurisdictional requirements presented in the Permit, municipal areas must prioritize locales for street sweeping based upon the amount of trash and debris accumulated. Each Copermittee participating in this activity will work to identify feasible cleaning schedules and locations within their own jurisdiction to implement an expanded street sweeping program to reduce the accumulation of debris on roads, streets, and parking lots. One way this could be accomplished is by increasing the cleaning frequency of roads and streets in HAs in which sediment and/or metals are high priority water quality problems. Another mechanism could be to increase the efficiencies of the sweepers utilized. A reevaluation of the current street sweeper vehicle routes will enable Copermittees to determine if their vehicles are maximizing their pollutant removal capability in high priority areas. Pollutant load reductions can be assessed by recording the volume of debris collected during sweeping and/or the amount of area (mileage) covered by the street sweeping vehicles.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Varies
- Permit Year 2: Varies
- Permit Year 3: Varies
- Permit Year 4: Varies
- Permit Year 5: Varies

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of Coronado
- City of San Diego
- City of Imperial Beach
- County of San Diego
- City of La Mesa
- City of Lemon Grove

- Port of San Diego
- San Diego Regional Airport Authority

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediments
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping activity intends to reduce high priority water quality problems such as metals, sediments, and trash and aid in the improvement of the discharge water quality. Metals were identified as high priority water quality problem for HA 908.1 and HA 908.2, requiring additional monitoring and source abatement respectively. Sediment is also identified as a high priority water quality problem at both 908.2 and 908.3 HAs. The Watershed Strategy acknowledged identification of the source of sediment is needed. The increased frequency of street sweeping would augment the Copermittees' sweeping efforts outlined in the Permit. This effort is consistent with the Collective Watershed Strategy in that it seeks to reduce the loads of these high priority water quality problems and abate pollutant sources from roadways and parking facilities which have yet to be thoroughly addressed by the Copermittees.

EXPECTED BENEFITS

The Street Sweeping activity will contribute to improvements in water quality by reducing the loads of high priority water quality problems such as metals, sediments, and trash that might inadvertently enter the storm water conveyance system of the watershed and receiving waters of the San Diego Bay. This effort will provide baseline data on the accumulation of trash and debris from high and medium, or moderate, priority municipal areas.

EFFECTIVENESS MEASUREMENTS

Primarily, the effectiveness of this activity will be assessed through level 4, which regard load reductions. Pollutant load reductions can be assessed by recording the volume of debris collected during sweeping and/or the amount of area (mileage) covered by the street sweeping vehicles.

STREET SWEEPING ENHANCEMENT/ENHANCED STREET SWEEPING PROGRAM – 3A

ACTIVITY SUMMARY

The Airport Authority intends to reduce the accumulation of metals, oil and grease, organics sediments, and trash on streets, roadways, and parking lots by increasing the frequency of street sweeping. The goal of the Enhanced Street Sweeping Program is to reduce the amount metals, oil and grease, organics, sediment, and trash which could be released in the watershed. According to the Municipal Permit, municipal areas must be prioritized for street sweeping based upon the amount of trash and debris accumulated. Using methodologies developed in conjunction with the San Diego Bay Copermittees to identify feasible cleaning schedules and prioritization schemes, the Enhanced Street Sweeping Program is focused on high and medium priority streets, roadways, and parking lots. Street sweeping activities in high priority municipal areas will be conducted at least once a week, which is more frequent than the two times per month mandated by the Permit for areas generating the highest volumes of trash. The enhanced street sweeping should effectively remove a larger amount of pollutants. The frequency of sweeping roads, streets, highways, and parking facilities generating moderate volumes of trash will also be increased to exceed the monthly minimum mandated by the Permit. The Airport Authority will also evaluate the current types of street sweeping vehicles in use and the routes of sweeping to determine if the vehicles are maximizing their pollutant removal capabilities. Pollutant load reductions will be assessed by recording the volume of street sweeping debris collected and the area (or mileage) covered by the street sweeping vehicles.

The Enhanced Street Sweeping Program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of metals, oil and grease, organics, sediment, and trash being removed from the watershed. A reduction in the amount of trash and debris on the street, roadways, and parking lots within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Street Sweeping Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper, metals, oil and grease, organics, sediment, and

trash as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Street Sweeping Program will aid in the physical removal of a quantifiable amount of debris and associated metals, oil and grease, organics, sediment, and trash from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The enhanced street sweeping activity intends to reduce high priority pollutants such as metals, organics, oil and grease, sediments, and trash and improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals, sediment, and trash as high priority water quality problems and oil and grease and organics as water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Enhanced Street Sweeping Program targets pollutant removal from the high and medium priority streets, roadways, and parking lot areas of the airport. The increased frequency of street sweeping actively decreases the amount of trash, debris, and associated pollutants that might inadvertently enter the stormwater conveyance system. The program calculates the reduction in the amount of metals, oil and grease, organics, sediment, and trash impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) estimating metals, oil and grease, organics, sediment, and trash loads per unit weight of street sweeping debris based on review of the literature and/or other sources and 2) monitoring the weight of street sweeping debris collected and properly disposed annually. The Airport Authority will also be able to track the cost of implementing the program and thereby determine the cost-

effectiveness of the increased street sweeping using the weight of debris collected and the number of hours and/or miles or sweeping.

STREET SWEEPING ENHANCEMENT – 3B

ACTIVITY SUMMARY

Coronado intends to reduce the accumulation of metals, oil and grease, sediments, and trash by optimizing the efficiency and/or frequency of our street sweeping program. According to Permit R9-2007-001, jurisdictions must prioritize street sweeping areas according to the amount of trash and debris accumulated. Coronado will prioritize all streets with either a high, medium, or low rating. All areas rating high will be swept once weekly.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- 2007-2008 monitor/planning/implement
- 2008-2009 implement
- 2009-2010 implement
- 2010-2011 implement/assess
- 2011-2012 assess

PARTICIPATING WATERSHED COPERMITTEES

- City of Coronado

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Organics
- Oil and grease
- Sediments
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping activity intends to reduce high priority pollutants such as metals, organics, oil and grease, sediments, and trash and improving the discharge water quality into the San Diego Bay. Bacteria are categorized as a high priority water quality problem in all HAs. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these priority pollutants and abate sources from roadways and parking facilities.

EXPECTED BENEFITS

The Street Sweeping activity will contribute to improvements in water quality by reducing the loads of high priority pollutants such as metals, organics, oil and grease, sediments, and trash entering the watershed and receiving waters of the San Diego Bay. Information obtained from the street sweeping activity will lead to a better understanding of the sources of many of the priority pollutants and fill gaps in existing data. This effort twill provide baseline data on the accumulations of trash and debris from high and medium, or moderate, priority municipal areas.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be a 4-5, which consider load reductions and discharge water quality. Pollutant load reductions will be measured by pounds of debris collected.

STREET SWEEPING ENHANCEMENT – 3C

ACTIVITY SUMMARY

The City of National City (City) intends to reduce the accumulation of metals, oil and grease, sediments, and trash by conducting more frequent street sweeping. As required by the Municipal Permit, Copermittees must prioritize locales for street sweeping based upon the relative amount of trash and debris accumulated. The Municipal Permit requires that roads, streets, highways, and parking facilities generating the highest volumes of trash be swept at least two times per month. Roads, streets, highways, and parking facilities generating relatively moderate volumes of trash must be swept at least monthly and those generating relatively low volumes of trash and debris must be swept as necessary, but not less than once per year.

The City will sweep its streets more frequently that the minimum jurisdictional requirements of the Municipal Permit to help address watershed water quality problems. The City will sweep Highland Avenue, 8th Street, and National City Boulevard, three of the main roads in the City, daily. All other streets in the City will be swept weekly. Pollutant load reductions will be assessed by recording the volume of debris collected during sweeping and/or the amount of area (mileage) covered by the street sweeping vehicles.

TMDL APPLICABILITY

A TMDL is being developed to address sediment toxicity and benthic community effects at the mouth of Paleta Creek, also known as Seventh Street Channel. Initial research has indicated that organic compounds are the most likely causes of the observed effects in the sediment, although metals may also play a role to some degree. This activity is applicable to the TMDL in that additional street sweeping should result in additional removal of metals that would otherwise be discharged through the City's MS4.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the pollutant loads related to a high priority water quality problem (908.3) and abate pollutant sources from roadways and parking facilities.

EXPECTED BENEFITS

Increased street sweeping should contribute to improvements in water quality by reducing the loads of pollutants such as trash, metals, oil and grease, and sediments entering the City's MS4 and downstream receiving waters.

EFFECTIVENESS MEASUREMENTS

Primarily, the effectiveness of this activity will be assessed through level 4, load reduction. Pollutant load reductions will be assessed by recording the volume or weight of material collected that is attributable to additional sweeping.

CHOLLAS CREEK WATERSHED STREET SWEEPING, PHASE I – 3D

ACTIVITY SUMMARY

The City's Storm Water Pollution Prevention Division (Storm Water Division) is coordinating with the City's Street Division to conduct a 24-month street sweeping effectiveness study in the Chollas Creek Watershed. The study will investigate the effectiveness of vacuum-assisted street sweepers compared to mechanical sweepers in reducing the accumulation of metals on City streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study is to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study includes the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency.

The City is using the prioritization process that is outlined in its *Strategic Plan for Watershed Activity Implementation* (July 2007) to target areas within the Chollas Creek Watershed. Based on this prioritization plan and meetings held with the Street Division, the routes that have been selected are in the two highest priority sectors of the Chollas Creek Watershed that have a higher potential for metals loading.

This aggressive street sweeping project has also been developed based on the findings of the Dry Weather Air Deposition Study that included sites in the Chollas Creek Watershed. The findings of this study indicate a greater than 60% contribution to metals loading from air deposition in Chollas Creek. The sources of the metals depositions are predominately from cars (brakes and tires) and also include potential industrial and commercial sources that are concentrated in the lower portion of the watershed. The City, therefore, is developing this street sweeping program to reduce metals loading and assess the most effective approach to reducing metals loading. This effectiveness assessment monitoring for the street sweeping project would be coordinated with additional air deposition sampling and effectiveness monitoring of combined Tier I and Tier II BMPs in Chollas Creek to develop recommendations regarding modification and possible expansion of these BMPs to meet the TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The City anticipates sweeping to start within winter 2008 through summer 2010. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address it. Targeted increased sweeping will target metals on City streets.

EXPECTED BENEFITS

The street sweeping effectiveness study will consist of acquiring two types of top-tier vacuum-assisted street sweeper to operate within the Chollas Creek Watershed and assessing their effectiveness in reducing the accumulation of metals on area streets through an effectiveness assessment monitoring program. This study will augment the City's current sweeping efforts in order to also determine the optimum frequency of sweeping, starting at the present baseline schedule, towards reducing the loading of metals. The monitoring program will include simulated wet weather events for both type of vacuum-assisted sweepers and the mechanical sweepers currently used throughout the City. The amount of debris (in pounds) that is removed by sweeper type and frequency will be assessed during dry and wet periods of the year. The composition of the debris removed will be evaluated through analytical analysis and grain size distribution to determine the specific pollutant load reduction achieved by each method and frequency identified in the work plan. As discussed above, this study will be performed in coordination with additional air deposition studies and BMP effectiveness monitoring of the MS4 to develop recommendations on the modification and/or expansion of these activities to reduce metals loading to meet the TMDL requirements.

This activity will simultaneously address requirements under the Municipal Permit and Chollas Creek Dissolved Metals TMDL.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Which street sweeping machine is most effective in removing contaminants of concern (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in stormwater runoff?
Targeted Measurable Outcome(s)	• Achieve load reduction for sediments and metals based on monitoring information • Observer receiving water quality improvement
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)
Assessment Measures, Assessment Outcome Levels & Data:	• Tons of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to tons of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)

STREET SWEEPING ENHANCEMENT – 3E

ACTIVITY DESCRIPTION

The Port of San Diego intends to reduce the accumulation of metals, sediments, and trash by optimizing the efficiency and/or frequency of the street sweeping program. The Street Sweeping Enhancement activity is being conducted as part of the collaborative watershed effort. The Port will enhance its street sweeping program within high and medium priority municipal areas by increasing sweeping frequency and/or area coverage. According to the jurisdictional requirements presented in the Permit, municipal areas must prioritize locales for street sweeping based upon the amount of trash and debris accumulated. The Port of San Diego will sweep high priority areas at a frequency higher than the Permit requirement, from two times per month, as mandated by in the Permit, to once a week. The increased frequency of street sweeping would augment the Port's sweeping efforts as outlined in the Permit. Pollutant load reductions can be assessed by recording the volume of debris collected during sweeping events and/or the amount of area (mileage) covered by the street sweeping vehicles.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediments
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping activity intends to reduce high priority water quality problems such as metals, sediments, and trash in the San Diego Bay. Metals were identified as high priority water quality problem for 908.1 and 908.2 HAs, requiring additional monitoring and source abatement respectively. Sediment is also identified as a high priority water quality problem at both 908.2 and 908.3 HAs. The Watershed Strategy acknowledged identification of the source of sediment is needed. This effort is consistent with the collective Watershed Strategy in that it seeks to

reduce the loads of these high priority water quality problems and abate pollutant sources from roadways and parking facilities which have yet to be thoroughly addressed.

EXPECTED BENEFITS

The Street Sweeping activity will contribute to improvements in water quality by reducing the loads of high priority water quality problems such as metals, sediments, and trash that might inadvertently enter the storm water conveyance system of the watershed and receiving waters of the San Diego Bay. This effort will provide baseline data on the accumulation of trash and debris from high and medium priority municipal areas.

EFFECTIVENESS MEASUREMENTS

Primarily, the effectiveness of this activity will be assessed through level 4, which regard load reductions. Pollutant load reductions can be assessed by recording the volume of debris collected during sweeping and/or the amount of area (mileage) covered by the street sweeping vehicles.

STREET SWEEPING PRIORITIZATION – 3F

ACTIVITY DESCRIPTION

Prioritization of streets based on usage level for street sweeping frequency based on standards put forth in the Permit.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Current Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed activity

EXPECTED BENEFITS

Less trash, debris, and pollutants in the MS4 system.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

SAN DIEGO BAY WATERSHED CLEANUP EVENTS – 4

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees intend to participate in a number of cleanup events throughout the San Diego Bay WMA. The cleanup events will physically remove large amounts trash, debris, and other associated pollutants from the watershed creeks, rivers, streams and shorelines. The events will include jurisdictional events as well as watershed-wide efforts that are coordinated by I Love a Clean San Diego (ILACSD) and San Diego Coast Keeper (SDCK). These events will actively promote a clean watershed and may be marketed in all areas of the watershed via a variety of media, including television, radio public service announcements, newspapers, electronic mail, bulletin boards, community outreach activities, and word-of-mouth. The San Diego Bay Copermittees may also provide funding to sponsor various cleanup events and/or participate by soliciting volunteers, working as site captains, and participating in the cleanup events themselves. Cooperative efforts of the Copermittees will enable an assessment of relative trash loads for each event in the watershed and determine whether there is a long-term reduction.

TMDL APPLICABILITY

The RWQCB issued a 13267 order to the cities along Chollas and Paletta Creeks requiring trash cleanup measures and programs to be implemented.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Varies
- Permit Year 2: Varies
- Permit Year 3: Varies
- Permit Year 4: Varies
- Permit Year 5: Varies

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of Coronado
- City of San Diego
- City of Imperial Beach
- County of San Diego
- City of La Mesa
- City of Lemon Grove
- Port of San Diego
- San Diego Regional Airport Authority

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup events will aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, trash often consists of common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances, which may also be reduced as a result of the removal of trash.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies trash as a high priority water quality problem. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions. Increased awareness and education of the public in all HAs is also an important component.

EXPECTED BENEFITS

Cleanup events target large pollutant removal from creeks, rivers, streams, and coastal shorelines. The cleanup activities also represent actions undertaken by citizens that actively decrease the amount of trash and litter, resulting in the cultivation of a sense of ownership and responsibility of the citizens to the health of local water bodies which will lead to the proper disposal of trash.

EFFECTIVENESS MEASUREMENTS

Trash will be reduced through various cleanup events within the San Diego Bay WMA. The cleanup events encourage stakeholder buy-in and participation in implementing the Watershed Strategy, resulting in a level 3 outcome by causing a change in behavior, knowledge, attitude and awareness within the community of how to properly dispose of trash by the individuals involved. Relative pollutant loads within the watershed can be assessed based on the weight of debris collected. The number of people participating and the amount of overall trash collected will enable a calculation of pounds collected per person for each cleanup event. A level 4 outcome may also be possible in all HAs due to the reduction of trash. Comparison of pollutant loads between years and locations within the watershed may aid in determining reductions in pollutant loads associated with trash and the relative success of cleanup efforts.

CREEK TO BAY CLEANUP EVENT AT D STREET FILL – 4A

ACTIVITY SUMMARY

The Port of San Diego will collaborate as a watershed sponsor of the Creek to Bay Cleanup Event on April 26, 2008. The cleanup event will physically remove large amounts of trash, debris and other associated pollutants from the watershed creeks, rivers, streams, and shorelines. The event is a county-wide effort, coordinated by I Love A Clean San Diego (ILACSD), to actively promote clean shorelines and waterways. The Port of San Diego is participating as site captains and soliciting volunteers in the cleanup to remove trash at the D Street Fill location. An assessment of the relative trash loads at the site and a comparison between cleanup sites can be undertaken based on the weight of debris collected. The Port may calculate the weight of the trash collected per person for each cleanup event by evaluating the number of people participating and the amount of overall trash collected each year at the site.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego (ILACSD)

HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses the physical removal of trash from 909.1 HA. At the site, common litter items removed include cigarette butts, plastic bags, food wrappers, auto parts, appliances, furniture, and tires.

EXPECTED BENEFITS

The cleanup event will target trash removal from the D Street Fill location. The cleanup activity also represents actions undertaken by citizens that actively decrease the amount of trash and litter, resulting in the cultivation of a sense of ownership and responsibility of the citizens to the health of local water bodies which will lead to the proper disposal of trash.

EFFECTIVENESS MEASUREMENTS

The cleanup event encourages stakeholder buy-in and participation in implementing the Watershed Strategy. This will result in a level 3 outcome by causing a change in behavior, knowledge, attitude and awareness within the community through the proper disposal of trash by the individuals involved. The result is the cultivation of a sense of ownership and responsibility in the citizens to the health of the local water bodies. A level 4 outcome may also be possible due to the reduction of trash. The Port will assess the relative trash loads at the D Street Fill location and may calculate the weight of the trash collected per person for the cleanup event by evaluating the number of people participating and the amount of overall trash collected each year at the site. A watershed-level assessment can also be completed to compare this site with other cleanup sites.

CLEAN COMMUNITY PROGRAM – 4B

ACTIVITY SUMMARY

The City of National City intends to implement a program to encourage individuals to dispose of waste properly. Events will include disposal events for large items and green waste; neighborhood specific events may also be held when necessary. These events will provide individuals with an avenue for properly disposing of items that might otherwise be illegally dumped. The City will alert residents to these events beforehand. An educational program involving school children in preparing artwork for a calendar with messages about keeping the City and local water bodies clean will also be part of this program. Cleanup and waste disposal events will help reduce pollutant loads in the watershed and promote watershed awareness.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup and disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in HA 908.3. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EXPECTED BENEFITS

Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also

encourage a behavioral change for the community by potentially changing the manner trash in which trash is disposed of by the individuals involved.

EFFECTIVENESS MEASUREMENTS

Effectiveness will primarily be assessed through level 4, load reduction. Load reductions can be assessed through recorded the amount (weight or volume) of trash collected. Additional water quality monitoring, potentially in concert with cleanup events in creek or with dry weather monitoring, may be conducted to assess whether a relationship exists between trash removal and levels of bacteria and gross pollutants.

I LOVE A CLEAN SAN DIEGO TRASH CLEANUP SPONSORSHIP – 4C

ACTIVITY SUMMARY

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Diego Bay Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Creek to Bay Cleanup is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States

Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Diego Bay WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

[1] http://www.epa.gov/owow/oceans/debris/

SAN DIEGO COASTKEEPER TRASH CLEANUP SPONSORSHIP – 4D

ACTIVITY SUMMARY

Each fall, San Diego Coastkeeper conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Diego Bay Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love A Clean San Diego
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Coastal Cleanup Day is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States

Environmental Protection Agency on its website[2] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Diego Bay WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

[2] http://www.epa.gov/owow/oceans/debris/

CITY-WIDE CLEANUP EVENTS – 4E

ACTIVITY SUMMARY

Anthropogenic activities associated with urbanization contribute to the many common stormwater pollutants that can degrade water quality. BMPs such as City-wide Cleanup Events will reduce the discharge of these pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation has begun under the prior stormwater municipal permit 2001-01. City-wide Cleanup Events will continue to be held throughout the City during Years One and Two of Municipal Permit R9-2007-0001. This program will be assessed and refined as necessary during Years Three - Five.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Bacteria and associated pathogens have been rated as high priority water quality problems within the 910.1 and 910.2 watershed hydrologic subareas (watershed HA) of the San Diego Bay WMA. Gross pollutants including trash are a high priority water quality problem and require source identification in the 910.1 watershed HA.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated bacteria was one of two pollutants given a BLTEA A rating in the San Diego Bay WMA, and that additional data collection would be necessary to properly evaluate this watershed. Data for gross pollutants is limited in this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions;

urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants including trash in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Based on the BLTEA, the effectiveness of this program involves the evaluation and measurement of various types of programmatic and environmental outcomes, or results. Six levels of outcomes from those that are activity-based to include those that are water quality-based may be used to evaluate the effectiveness of this BMP.

Targeted outcomes include implementation of programs and activities to prevent or reduce the discharge of pollutants to the stormwater conveyance system which will result in improved receiving water quality. Assessment measures will include the development of a standardized data set that can compare trends in both urban runoff and receiving water quality with the implementation of BMPs. Assessment methods will include making assumptions as to the amount of waste collected in the City at each event. Another method would be to perform a study which would include collecting waste from a representative event and determining volume collected to get the potential loading estimate per event.

Effectiveness of the activity will be addressed through six levels of outcomes to include: compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants in stormwater and ultimately in recreational water.

Activity effectiveness will also be assessed through the Receiving Waters Monitoring Program, which defines the requirements for monitoring including the sampling plan, compliance criteria, laboratory analyses, statistical analyses, and reporting guidelines. Links between source activities/conditions and observed receiving water impacts and recommended future monitoring to address sources of water quality problems will be identified.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS/ON-SITE/OFFSITE CLEANUP EVENTS – 4F

ACTIVITY SUMMARY

The Airport Authority intends to collaborate with the other San Diego Bay Copermittees as watershed sponsors for a series of cleanup events throughout the San Diego Bay Watershed. The cleanup events will physically remove large amounts trash, debris, and other pollutants from the watershed creeks, rivers, streams and shorelines. The events will be a watershed-wide effort, coordinated by I Love a Clean San Diego (ILACSD) and the San Diego Coastkeeper to actively promote a clean watershed. The events will be promoted throughout the watershed via a variety of media, including television and radio announcements, newspapers ads, electronic mail, bulletin boards, and community outreach activities. The Airport Authority and San Diego Bay Copermittees may provide funding to sponsor the cleanup event, may solicit volunteers to participate, and may work as site captains and participate in the cleanup event themselves. The Copermittees will work together to identify and promote feasible site locations within each participating jurisdiction. Similar events may also be planned on the airport property. Continued coordination between Copermittees on these annual cleanup events will help reduce pollutant loads in the watershed and promote public awareness of watershed protection and stormwater pollution prevention.

The On-site/Off-site Cleanup Events are an important water quality activity in the San Diego Bay Watershed because it can be used to measure the amount of trash and debris and associated bacteria and metals actively removed from the watershed. A reduction in the amount of trash and debris within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The On-site/Off-site Cleanup Events are applicable to these TMDLs to the extent they address the identification and control of sources of bacteria, metals, and trash as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The On-site/Offsite Cleanup Events will aid in the physical removal of a quantifiable amount of trash and debris and associated bacteria and metals from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The On-site/Off-site Cleanup Events activity intends to reduce high priority water quality problems such as bacteria, metals, and trash and improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The On-site/Off-site Cleanup Events target pollutant removal from the various areas of the airport. The cleanup events actively decrease the amount of trash, debris, and associated pollutants that might inadvertently enter the stormwater conveyance system. The program calculates the reduction in the amount of trash and associated bacteria and metals impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) measuring the weight of trash and debris collected during cleanup events and 2) estimating bacteria and metal loads per unit weight of trash and debris collected based on review of the literature and/or other sources. The Airport Authority will also be able to track the cost of implementing the program and thereby determine the cost-effectiveness of each event.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS – 4G

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees intend to collaborate as watershed sponsors in a series of cleanup events throughout the San Diego Bay Watershed. The cleanup events will physically remove large amounts trash, debris, and other pollutants from the watershed creeks, rivers, streams and shorelines. The events will be a watershed-wide effort, coordinated by I Love a Clean San Diego (ILACSD) and San Diego Coast Keeper (SDCK) to actively promote a clean watershed and will be marketed in all areas of the watershed via a variety of media, including television, radio public service announcements, newspapers, electronic mail, bulletin boards, community outreach activities, and word-of-mouth. Continued coordination between Copermittees on this annual cleanup event will help reduce pollutant loads in the watershed while promoting the watershed awareness message. Cooperative efforts of the Copermittees will enable an assessment of relative trash loads for each annual event in the watershed and between cleanup site locations and determine whether there is a reduction in trash loads over the years.

The City of La Mesa will continue to sponsor cleanup events/activities. Sponsorship of these activities may include monetary sponsorship, participation of city staff, advertisement of the event, encouragement of volunteers to participate, and distribution of watershed-based education material. The City intends to document the amount of debris collected, type of debris, number of volunteers, number of volunteer participation hours, and number of educational material distributed at these events. The following is a list of cleanup events that present a load reduction for some of the watershed-based high priority water quality problems held in the City of La Mesa.

(1) Creek to Bay Cleanup Day annual onetime event at University Channel (HA 908.2)
(2) California Coastal Cleanup Day annual onetime event at University Channel (HA 908.2)
(3) Park Appreciation Cleanup Day annual onetime event at seven municipal parks (HA 908.2 & 909.1)
(4) Adopt A Park & Adopt A Block programs continuous throughout the year at seven parks, residential and commercial areas (HA 908.2 & 909.1)

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation

- Permit Year 3: Monitoring
- Permit Year 4: Monitoring
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup events will aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, high priority water quality problems such as trash, bacteria, nutrients, and metals often linked to common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances, are also reduced as a result of the removal of trash.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria, metals, and nutrients as either high, medium, or low water quality problems for the watershed HAs. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria are categorized as a high priority water quality problem in all HAs with the BLTEA rating of A. Metals received an A rating as well and are considered a high priority water quality problem for HA 908.1 and 908.2. This activity contributes to improving water quality problems by focusing on bacteria, metals, and nutrient load reduction through the removal of the trash in all HAs. The BLTEA ratings and water quality priority categorization for metals and nutrients vary between HAs, which will affect the degree cleanup efforts undertaken by each Copermittee, will influence these pollutant categories.

EXPECTED BENEFITS

Cleanup events target large pollutant removal from creeks, rivers, streams, and coastal shorelines. The cleanup activities represent actions undertaken by citizens that actively decrease the amount litter. The cleanup events encourage stakeholder buy-in and participation in implementing the Watershed Strategy, resulting in a level 3 outcome by causing a behavioral change for the community in the manner trash is disposed of by the individuals involved. The result is the cultivation of a sense of ownership and responsibility of the citizens to the health of local water bodies which will lead to the proper disposal of trash. A level 4 outcome may also be a long term benefit in all HAs due to the load reduction of bacteria, metals, and nutrients associated with trash.

EFFECTIVENESS MEASUREMENTS

Trash, bacteria, and metals loads will be reduced through cleanup events within the HAs. Relative pollutant loads within the watershed can be assessed based on the weight of debris collected. The number of people participating and the amount of overall trash collected will enable a calculation of pounds collected per person for each cleanup event. Comparison of pollutant loads between years and locations within the watershed may aid in determining reductions in pollutant loads associated with trash and the relative success of cleanup efforts.

CLEANUP EVENTS IN CREEKS AND CHANNELS – 4H

ACTIVITY DESCRIPTION

Cleanup events in active drainage areas with Lemon Grove, i.e., Creek to Bay sponsored by I Love A Clean San Diego.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- N/A

CURRENT IMPLEMENTATION

- N/A

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Regional watershed activity

EXPECTED BENEFITS

Decreased trash in a receiving water body (Chollas Creek).

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

ENHANCED DRY WEATHER MONITORING PROGRAM – 5

ACTIVITY SUMMARY

The Airport Authority will continue to conduct dry weather monitoring at a frequency that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Dry Weather Monitoring Program is to identify sources of stormwater pollution in the watershed. The Airport Authority first began to implement this enhanced program in fiscal year 2005-2006 by increasing the frequency of dry weather monitoring from the Permit requirement of once per dry weather season to at least three times during the dry weather season. The increased frequency increases the chances that illegal discharges and their sources might be identified. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

The Enhanced Dry Weather Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it helps to identify and eliminate sources of illegal discharges in the watershed. Identification and elimination of illegal discharges within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Dry Weather Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, copper, and other pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Dry Weather Monitoring Program will help to identify and eliminate sources of stormwater pollution in the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Dry Weather Monitoring Program intends to identify and eliminate sources of illegal discharges and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, pesticides, sediment, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of pollutant sources, including these high priority pollutants.

EXPECTED BENEFITS

The Enhanced Dry Weather Monitoring Program targets the identification and elimination of illegal discharges to the stormwater conveyance system and the watershed. The increased frequency of monitoring increases the likelihood of identifying and eliminating sources of illegal discharge, which in turn helps to reduce pollutant loading to the watershed and San Diego Bay. Information collected by the Enhanced Dry Weather Monitoring Program is also used to characterize dry weather discharge water quality in general and to influence and assess ongoing watershed management and planning activities. The elimination of illegal discharges generally requires that dischargers gain some awareness of stormwater pollution prevention and understanding of proper BMP implementation. By changing the way in which dischargers implement BMPs, this program results in a level 3 outcome. The program may also be able to estimate the pollutant loads eliminated and thus no longer impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of dry weather monitoring events conducted in excess of the minimum number required by the Municipal Permit, and the number of illegal discharges identified. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the pollutant load abated using the know pollutant discharge concentrations and estimating the discharge duration. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

ENHANCED CONSTRUCTION OVERSIGHT – 6

ACTIVITY SUMMARY

The Airport Authority will continue to oversee construction projects in a manner that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Construction Oversight Program is to abate the amount of sediment potentially released to the watershed from construction sites. The Airport Authority first began to implement this enhanced program in fiscal year 2004-2005. Staff from the Airport Authority Environmental Affairs Department will attend pre-construction meetings and regularly scheduled progress meetings, in addition to inspecting construction sites more frequently than required by the Permit during both the wet and dry seasons. The regular meetings will be used as an opportunity to focus on BMPs directed at preventing the discharge of sediment to the storm drain system. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

The Enhanced Construction Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates construction sites as a source of sediment in the watershed. Abatement of sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Construction Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of sediment as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Construction Oversight Program intends to abate sediment associated with construction sites and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies sediment as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EXPECTED BENEFITS

The Enhanced Construction Oversight Program targets the abatement of construction sites as a source of sediment to the watershed. In addition to increasing construction site inspection frequencies, the program also increases interaction with construction personnel on-site and at weekly progress meetings. Heightened awareness of proper sediment control BMP implementation increases the likelihood of sediment control BMP effectiveness, which in turn helps to abate the amount of sediment loading to San Diego Bay. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of sediment control BMPs. By changing the way in which individuals implement BMPs, this program results in a level 3 outcome. The program also estimates the amount of sediment abated from impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of construction project regular progress meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, and the number of sediment source control BMP issues identified during inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual sediment pollutant load abated by 1) estimating, based on review of the literature and/or other sources, sediment loads per construction site per day when sediment controls are not implemented, and 2) tracking the number of sediment control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

BMP EFFECTIVENESS MONITORING PROGRAM – 7

ACTIVITY SUMMARY

The Airport Authority will continue to collect rain event runoff samples to monitor the performance of both structural and non-structural, discrete and combination BMPs. The long-range goal of the BMP Effectiveness Monitoring Program is improve the water quality of stormwater runoff from the airport into San Diego Bay. The BMP Effectiveness Monitoring Program will assess whether the BMPs being implemented are able to reduce concentrations of, primarily, copper and zinc in stormwater runoff from the airport. Based on a power analysis of 10 years of existing airport runoff water quality data, a minimum number of samples required to allow an effectiveness comparison has been identified. The program allows 3 years to calibrate paired watershed sampling, followed by 3 years of sampling to make an initial assessment of BMP effectiveness. To confidently establish a downward trend, at trend analysis monitoring station has been established to allow for a minimum of 10 years sampling. The first year of the monitoring program began during the rainy season of 2006-2007, during which the runoff from 6 storm events was sampled.

The BMP Effectiveness Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it assesses the effectiveness of BMPs at reducing concentrations of metals in stormwater runoff. Establishing the effectiveness of BMPs in reducing pollutant concentrations in runoff contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The BMP Effectiveness Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation

- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The BMP Effectiveness Monitoring Program intends to assess the effectiveness of BMPs at reducing concentrations of metals, primarily, in stormwater runoff thereby improve the quality of runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals as high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of BMPs effective at reducing metal pollutant loads.

EXPECTED BENEFITS

The BMP Effectiveness Monitoring Program assesses the effectiveness of BMPs at reducing concentrations of metals in runoff discharges in the watershed. The identification of BMPs effective at reducing metals loads in stormwater runoff will help to reduce pollutant loading to the watershed and San Diego Bay. Information gained through the BMP Effectiveness Monitoring Program can aid ongoing watershed management and planning activities. The identification of effective BMPs will generally increase understanding of proper BMP selection. By changing discharger knowledge of BMPs, this program results in a level 2 outcome. The program may also be able to estimate the pollutant loads eliminated by effective BMPs, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to assess the performance of both structural and non-structural, discrete and combination BMPs, by tracking number and types of discrete and combination BMPs will be evaluated, along with the pollutant concentrations in stormwater runoff. Overtime, these data will provide an assessment of the effectiveness of the BMPs. In addition, the Airport Authority intends to estimate the pollutant load reductions resulting from the use of these BMPs. By tracking the cost of BMP implementation, the Airport Authority may be able to determine the cost-effectiveness of the BMPs.

OUTDOOR SPECIAL EVENT OVERSIGHT – 8

ACTIVITY DESCRIPTION

The Airport Authority intends to oversee the manner in which outdoor special events are set up, conducted, and cleaned. The goal of the Outdoor Special Event Oversight Program is to abate the amount of trash and debris potentially released to the watershed from these events. Staff from the Airport Authority Environmental Affairs Department will attend pre-event meetings and/or conduct a pre-event site inspection to ensure that are an adequate number of recycling containers and trash cans properly located at the venue. The site will also be inspected immediately after the event is over to ensure that trash and debris is properly disposed. The meetings and inspections will be used as an opportunity to focus on stormwater pollution prevention in general and properly controlling sources of trash to the storm drain system.

The Outdoor Special Event Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates the trash from these events from entering in the watershed. Abatement of trash within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Outdoor Special Events Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of trash as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Outdoor Special Event Oversight Program intends to abate trash associated with special events and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies trash as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EXPECTED BENEFITS

The Outdoor Special Event Oversight Program targets the abatement of outdoor special events as a source of trash to the watershed. In addition to establishing pre- and post-event inspection activities, the program also increases interaction with event planning and execution staff while on-site. Heightened awareness of proper trash management and source control BMP implementation increases the likelihood of trash control BMP effectiveness, which in turn helps to abate the amount of trash loading to the San Diego Bay watershed. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of trash control BMPs. By changing the way in which individuals implement BMPs, this program results in a level 3 outcome. The program may also estimate the amount of trash abated from impacting stormwater discharge quality, which would be a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of outdoor special events that occur, the number of pre-event meetings attended, the number of pre- and post-event site inspections conducted, and the number of trash source control BMP issues identified during the inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual trash pollutant load abated by 1) estimating, based on review of the literature and/or other sources, trash loads per event when trash management controls are not implemented, and 2) tracking the number of trash control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

TRASH DISPOSAL AREA CAPITAL IMPROVEMENTS – 9

ACTIVITY SUMMARY

The Airport Authority intends to make capital improvements to the current trash/recycling facility east of Terminal 1 East to reduce the amount of and eliminate the potential for trash and associated bacteria that might be inadvertently released to the stormwater conveyance system and then into San Diego Bay. The goal of the Trash Disposal Area Capital Improvements is to reduce the amount bacteria and trash which could be released in the watershed. The project objectives include improved site drainage, a three-sided structure with overhead cover, and sanitary sewer connection, while also providing for safe use of the facility and ease of access.

The program is an important water quality activity in the San Diego Bay Watershed because it will reduce or eliminate the amount of bacteria and trash being inadvertently released to the watershed. A reduction in the amount of trash and associated bacteria potentially entering the stormwater conveyance system contributes to improving the quality of the stormwater in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Trash Disposal Area Capital Improvements are applicable to these TMDLs to the extent they address the identification and control of sources of trash and associated bacteria as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: N/A (Capital projects in active implementation for the first year only)
- Permit Year 5: N/A (Capital projects in active implementation for the first year only)

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Trash Disposal Area Capital Improvements will aid in the physical removal of a quantifiable amount of trash and associated bacteria from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of trash and associated bacteria. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Trash Disposal Area Capital Improvements target pollutant removal from the recycling and trash disposal facilities east of Terminal 1 East at the airport. The capital improvements actively decrease the amount of trash and associated bacteria that might inadvertently enter the stormwater conveyance system. The program will allow for a one-time calculation of the reduction in the amount of trash and bacteria impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate the one-time pollutant load reductions created by the Trash Disposal Area Capital Improvements. The pollutant load reductions will be calculated by 1) comparing before and after photos of the trash disposal area and estimating the weight of trash no longer being inadvertently released to the stormwater conveyance system and 2) estimating, based on review of the literature and/or other sources, bacteria loads per unit weight of trash prevented from being released. The Airport Authority will know the cost of improvements and will be able to estimate their cost-effectiveness.

TREATMENT CONTROL BMP PILOT PROJECTS – 10

ACTIVITY SUMMARY

The Airport Authority intends to implement treatment control BMPs on a pilot-scale to reduce zinc concentrations in the runoff from the roof of Terminal 1 East and to reduce copper and zinc concentrations in runoff from the runway. The goal of the Treatment Control BMP Pilot Projects is to reduce the metal load that is being inadvertently released by galvanized roofing materials and by aircraft tire and brake wear. These metals may be released to the stormwater conveyance system and then into San Diego Bay. The projects include installation of roof runoff downspout filters and modification to a portion of the pavement surfaces adjacent to the runway.

The program is an important water quality activity in the San Diego Bay Watershed because it will reduce or eliminate the amount of metals being inadvertently released to the watershed. A reduction in the amount of metals potentially entering the stormwater conveyance system contributes to improving the quality of the stormwater in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Treatment Control BMP Pilot Projects are applicable to these TMDLs to the extent they address the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: N/A (Capital projects in active implementation for the first year only)
- Permit Year 5: N/A (Capital projects in active implementation for the first year only)

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies metals as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of metals. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Treatment Control BMP Pilot Projects target pollutant removal from the roof of Terminal 1 East and from a portion of the runway at the airport. The pilot projects actively decrease the amount of metals that might inadvertently enter the stormwater conveyance system. If the pilot projects prove effective, then Airport Authority's understanding of cost-effective treatment controls BMPs will generally be increased. By changing discharger knowledge of BMPs and thereby influencing the BMPs being selected for implementation, this program will result in both a level 2 and level 3 outcome. The program will also allow for a one-time calculation of the reduction in the amount of metals impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate the one-time pollutant load reductions created by the Treatment Control BMP Pilot Projects. The pollutant load reductions will be calculated by comparing before and after metal concentrations in roof runoff and runway runoff. The Airport Authority will know the cost of improvements and will be able to estimate the cost-effectiveness of the pilot-scale treatment control BMPs.

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT PET WASTE DISPOSAL – 11

ACTIVITY DESCRIPTION

The City of Chula Vista plans to encourage homeowner's associations to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association newsletters about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials and survey homeowners associations to assess if there is signage and plastic bag dispensers in the neighborhoods regarding proper pet waste disposal.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria has been categorized as a high priority pollutant in the watershed. This activity is consistent with the collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EXPECTED BENEFITS

The HOA and resident education activity aims to locate areas within the City of Chula Vista where neighborhoods need education about pet waste and its potential impact on water quality by incorporating source control measures. By providing signage and educational materials to HOAs and residents, this effort intends to reduce the amount of bacteria that could enter the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 1, 2, and 3. The activity will be assessed by the number of surveyed homeowners associations and the number of homeowners reached through education.

STORM WATER EDUCATION BOOTH AT PET FESTIVAL AND DOGGIE DASH – 12

ACTIVITY DESCRIPTION

The City of Chula Vista plans to educate its residents about proper pet waste disposal and its possible effects on water quality at its annual Pet Festival and Doggy Dash. This outdoor community event involves both pet owners and pets. The City plans to have an educational booth and provide educational materials related to the Chula Vista Clean Program for residents, in particular, those involving the cleanup of pet waste.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by eliminating sources of pollutants.

EXPECTED BENEFITS

This activity aims to provide education about proper pet waste disposal to pet owners.

EFFECTIVENESS MEASUREMENTS

This effectiveness of this activity will be assessed through levels 1 and 2. Compliance with activity based permit requirements and changes in knowledge, attitudes, and awareness will be assessed by the number of educational materials distributed to participants.

FATS, OILS, AND GREASE (FOG) PROGRAM – 13

ACTIVITY DESCRIPTION

The City of Chula Vista is in the process of developing a Fats, Oils, and Grease (FOG) program, which will focus on educating restaurant owners and operators about the importance of proper grease waste management. Increased education and awareness about proper grease waste disposal aims to reduce possible sanitary sewer overflows in the City. Restaurant owners and operators will receive educational materials about grease waste management.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

The City is in the planning stages for this program and plans to implement the program in November 2008.

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by reducing the possible sanitary sewer overflows that result from mismanaged grease waste.

EXPECTED BENEFITS

By implementing this activity, the City aims to reduce the amount of sanitary sewer overflows that could be caused by the mismanagement of grease waste in restaurants. The City also aims to provide education to restaurants about Best Management Practices for grease waste management.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be address through levels 2, 3, and 4. The number of restaurants that receive education will be tracked as well as the number of sanitary sewer overflows.

STORM DRAIN STENCILING – 14

ACTIVITY DESCRIPTION

The City of Chula Vista plans to install 500 thermoplastic storm drain stencils in high pedestrian traffic locations in the City. Stenciling addresses several pollutant categories including bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning/ Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Various pollutant categories

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is a part of the collective Watershed Strategy in that it seeks to contribute to improvements in water quality by reducing the loads of bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash into the storm drain system.

EXPECTED BENEFITS

This activity aims to reduce the amount of pollutants, particularly bacteria, that are introduced into the storm drain system. This activity serves as both a load reduction and education activity because to will deter residents from polluting storm drains and increase awareness of the locations storm drains in their neighborhoods.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through level 2, 3, and 4. The areas where the stencils will be installed will be tracked, as well as the estimated number of pedestrians who walk by these drains.

UPDATE RECYCLING AND SOLID WASTE ORDINANCE – 15

ACTIVITY SUMMARY

In order to address contributions of pollutants, particularly bacteria, from trash and recycling areas from new multi-family residential and commercial land uses, the City of Chula Vista plans to update the design requirements in its recycling and solid waste ordinance. The City is proposing that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment
- The City will propose this amendment to the City Council in the beginning of 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash and recycling areas have the potential to contribute a number of pollutants to storm water runoff, namely bacteria, nutrients, and trash. By building trash enclosures to prevent the contact of storm water with trash, the City aims to reduce the amount of pollutants that could be washed into the storm drain system from trash areas during a rain event.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Updating the Trash and Recycling Ordinance in the City of Chula Vista aims to improve the quality of runoff that enters the storm drain system and eventually San Diego Bay. It intends to reduce high priority pollutants such as bacteria, trash, and nutrients from entering the storm drain system. Bacteria is a high priority pollutant throughout San Diego County and the San Diego Bay watershed. This effort seeks to reduce pollutant sources from trash areas as a source abatement measure.

EXPECTED BENEFITS

The Trash and Recycling Ordinance Update activity will contribute to improvements in water quality by reducing the loads of bacteria, trash, and nutrients entering the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 4 and 5. Pollutant load reductions will be assessed by tracking the number of trash enclosures constructed with the new design criteria within the City.

LARGE SPECIAL EVENT INSPECTION AND CLEANUP – 16

ACTIVITY SUMMARY

Anthropogenic activities associated with urbanization contribute to the many common stormwater pollutants that can degrade water quality. BMPs such as Large Special Event Inspections and Cleanup will reduce the discharge of these pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation has begun under the prior stormwater municipal permit 2001-01. Inspections and Cleanup following large special events will continue to be held throughout the City during Years 1 and 2 of Municipal Permit R9-2007-0001. This program will be assessed and refined as necessary during Years 3 – 5.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Bacteria and associated pathogens have been rated as high priority pollutants within the 910.1 and 910.2 watershed hydrologic subareas (watershed HA) of the San Diego Bay WMA. Gross pollutants including trash are a high priority for source identification in the 910.1 watershed HA.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated bacteria was one of two pollutants given a Priority A rating in the San Diego Bay WMA, and that additional data collection would be necessary to properly evaluate this watershed. Data for gross pollutants is limited in this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions;

urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants including trash in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Targeted outcomes include implementation of programs and activities to prevent or reduce the discharge of pollutants to the stormwater conveyance system which will result in improved receiving water quality. Assessment measures will include the development of a standardized data set that can compare trends in both urban runoff and receiving water quality with the implementation of BMPs. Assessment methods will include making assumptions as to the amount of waste collected in the City at each event. Another method would be to perform a study which would include collecting waste from a representative event and determining volume collected to get the potential loading estimate per event. Inspections following the event will address compliance with the Municipal Permit and City ordinances.

Effectiveness of the activity will be addressed through six levels of outcomes to include: compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants in stormwater and ultimately in recreational water.

Activity effectiveness will also be assessed through the Receiving Waters Monitoring Program, which defines the requirements for monitoring including the sampling plan, compliance criteria, laboratory analyses, statistical analyses, and reporting guidelines. Links between source activities/conditions and observed receiving water impacts and recommended future monitoring to address sources of water quality problems will be identified.

EDUCATION STICKERS FOR PUBLIC WORKS VEHICLES – 17

ACTIVITY DESCRIPTION

Stormwater hotline stickers for Public Works/City vehicles.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation FY 08-09

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- N/A

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local Watershed Activity

EXPECTED BENEFIT

Community education tool, better use of the City's stormwater hotline, improved community knowledge of hotline.

EFFECTIVENESS MEASUREMENTS

Level 3 Change in Knowledge and Behavior

INSPECTION AUDIT – 18

ACTIVITY DESCRIPTION

A review and evaluation of facility inspection lists and questionnaires. Possible revisions to the questionnaire, an evaluation of responses for compliance and the benefits/barriers to proper compliance.

TMDL APPLICABILITY

Improved compliance with Permit requirements therefore improved compliance with Chollas Creek TMDLs.

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation in FY 08-09

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Variable depending on business and applicable BMPs.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed activity, Source ID

EXPECTED BENEFITS

Improved BMP implementation, upkeep, and continued compliance. Fewer potential pollutants entering the MS4 system.

EFFECTIVENESS MEASUREMENTS

Source ID, Level 3 Change in Knowledge and Behavior, and Potential Level 4 Load Reductions with improved BMP implementation.

RESTAURANT OUTREACH – 19

ACTIVITY DESCRIPTION

Improve and increase current outreach and education to local restaurants.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation FY 08-09

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Organics
- Trash
- Oil & Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed education activity

EXPECTED BENEFITS

Better knowledge of water quality issues specific to business type. Improved BMP implementation due to increased knowledge.

EFFECTIVENESS MEASUREMENTS

Level 2 BMP Implementation, Level 3 Change in Behavior and Knowledge, and Potential Level 4 Load Reduction as a consequence of improved implementation over time.

POLICY AND PROCEDURE AUDIT FOR ILLEGAL DUMPING – 20

ACTIVITY DESCRIPTION

Internal audit of policies and procedures related to illegal dumping and code enforcement. Possible revisions to improve effectiveness and a method for receiving community feedback in a continuing manner.

TMDL APPLICABILITY

Chollas Creek impending bacteria TMDL and Chollas Creek metals TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Internal discussions begun, but full implementation not expected until FY 08-09

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Oil & Grease
- Organics
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed activity

EXPECTED BENEFITS

Fewer illegal dumps; better, more efficient policies; on-going dialog with the community to increase long term effectiveness of policy and code enforcement efforts.

EFFECTIVENESS MEASUREMENTS

Level 3 Change in Knowledge and Behavior, and Level 4 Load Reduction.

EVALUATE CODE ENFORCEMENT POLICY FOR PARKING LOT HOSING – 21

ACTIVITY DESCRIPTION

Similar to the evaluation of illegal dumping policies. Designed to evaluate effectiveness, make necessary changes or revisions to the current policy, improve code enforcement efforts, and increase the BMP knowledge of local business owners.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation FY 09-10

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Minerals
- Oil & Grease
- Metals
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local Watershed Activity

EXPECTED BENEFITS

Better more effective City policies and code enforcement options. Less hosing of large parking areas and increased BMP knowledge by local businesses.

EFFECTIVENESS MEASUREMENTS

Level 2 BMP Implementation, Level 3 Change in Knowledge and Behavior, and Potential Level 4 Load Reduction based on improved implementation over time.

COLLABORATE WITH STAKEHOLDERS FOR CHOLLAS CREEK TMDLS – 22

ACTIVITY DESCRIPTION

Joint efforts by named TMDL stakeholders for compliance with various Chollas Creek TMDL implementation efforts.

TMDL APPLICABILITY

- Direct Compliance

TIME SCHEDULE FOR IMPLEMENTATION

Possible implementation 08-09. Dependent on funding, other participating entities, and the approval of the implementation schedules by the RWQCB.

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove
- La Mesa
- City of San Diego

OTHER PARTICIPATING ENTITIES

- Cal Trans
- Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Pesticides (Diazinon)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

TMDL compliance and local watershed activities

EXPECTED BENEFITS

Most effective and complete compliance with existing and impending Chollas Creek TMDLs. Improvements in receiving water quality due to effective implementation strategies.

EFFECTIVENESS MEASUREMENTS

Programs will encompass all levels of effectiveness, but the end goal is Level 6 Changes in Receiving Water Quality.

LA MESA WET WEATHER AND ADDITIONAL DRY WEATHER MONITORING PROGRAM – 23

ACTIVITY SUMMARY

The City of La Mesa has been focused on eliminating pollutants from entering our receiving water bodies by identifying pollutant sources. Consequently, the City is conducting Wet Weather Water Quality Monitoring and additional Dry Weather Monitoring within the San Diego Bay Watershed. The purpose of the monitoring is to evaluate the water quality of the discharged flow. Four Wet Weather discharge locations were identified as sampling points for time-weighted composite samples in La Mesa within the San Diego Bay Watershed. Similarly, five Dry Weather Monitoring locations were selected for grab samples. All water samples are tested for the same suite of constituents measured in the City's Annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303(d) listings and watershed constituents of concern listings in the WURMP. The analytical data will be reviewed in order to identify exceedances, identify pollutants sources, and eliminate pollutant source contributing to exceedances.

TMDL APPLICABILITY

Monitoring is conducted in support of California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). Wet Weather Monitoring Data and additional Dry Weather sampling results support identifying exceedances in pollutant loading for dissolved copper, lead, zinc, and diazinon. Furthermore, data enables the City to identify potential sources and conduct targeted educational outreach.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Monitoring program enables the City collect data on the high priority pollutants in the watershed. Water samples are tested for the same constituents in the City's Annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303(d) listings and watershed constituents of concern listings in the WURMP. The analytical data will be reviewed

in order to identify exceedances, identify pollutants sources, and eliminate pollutant source contributing to exceedances.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is monitoring for these constituents in order to identify sources of potential pollutants/exceedances. Once identified, the City can take the appropriate action. This monitoring activity supports the Watershed Strategy by identifying priority pollutant sources and removing or treating the source.

EXPECTED BENEFITS

The expected benefit is that pollutant sources will be identified through water quality monitoring. Once identified, the pollutant sources can be eliminated and resulting in a load reduction. Additionally, education outreach may also be implemented to target high threat communities (i.e., industrial, commercial, construction, and residential areas).

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Monitoring is not considered a watershed water quality activity based on the Municipal Permit Order 2007-001 definition; however, data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

LA MESA PARK KIOSK – 24

ACTIVITY DESCRIPTION

The City of La Mesa encourages public participation as part of its storm water program. In doing so, the City is working with local eagle scouts to construct and install education outreach kiosks at one of the seven parks within the City in the San Diego Bay Watershed (Vista La Mesa Park). The kiosk is intended for storm water pollution prevention education outreach, including the San Diego Bay Watershed Fact Sheet. The fact sheet provides information on the watershed, pollutants of concern, and tips to prevent storm water pollution.

TMDL APPLICABILITY

Education outreach is a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The kiosk will include a San Diego Bay Watershed Fact Sheet that lists diazinon and metals as pollutants of concern as well as tips to prevent storm water pollution.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- Eagle Scouts

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The watershed fact sheet to be placed in the education outreach kiosk will provide information on the watershed's pollutants of concern including the 303(d) listed pollutants. Pollution prevention tips to address watershed priority pollutants are presented in the fact sheet.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The education outreach kiosk provides pollution prevention tips to address watershed priority pollutants. The kiosk supports the Watershed Strategy by educating residents in the vicinity of the park on good housekeeping measures and best management practices to implement in order to prevent priority pollutants from being discharged into the storm drain system within the watershed.

EXPECTED BENEFITS

The expected benefit is that park-goers and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower

them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the watershed and region. The kiosk will provide the educational outreach material specific to the watershed to address pollution prevention measures. Improvements in water quality in the vicinity of the park based on dry weather monitoring data may be an indication of education outreach/changes in public behavior.

CLEAN COMMUNITY PROGRAM – 25

ACTIVITY SUMMARY

The City of National City intends to implement a program to encourage individuals to dispose of waste properly. Events will include disposal events for large items and green waste; neighborhood specific events may also be held when necessary. These events will provide individuals with an avenue for properly disposing of items that might otherwise be illegally dumped. The City will alert residents to these events beforehand. An educational program involving school children in preparing artwork for a calendar with messages about keeping the City and local water bodies clean will also be part of this program. Cleanup and waste disposal events will help reduce pollutant loads in the watershed and promote watershed awareness.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup and disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in HA 908.3. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EXPECTED BENEFITS

Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also

encourage a behavioral change for the community by potentially changing the manner trash in which trash is disposed of by the individuals involved.

EFFECTIVENESS MEASUREMENTS

Effectiveness will primarily be assessed through level 4, load reduction. Load reductions can be assessed through recorded the amount (weight or volume) of trash collected. Additional water quality monitoring, potentially in concert with cleanup events in creek or with dry weather monitoring, may be conducted to assess whether a relationship exists between trash removal and levels of bacteria and gross pollutants.

ADDITIONAL DRY SEASON CONSTRUCTION INSPECTIONS – 26

ACTIVITY SUMMARY

The City of National City intends to reduce the potential for the discharge of sediment by conducting additional inspections of construction sites during the dry season. According to the jurisdictional requirements presented in the Permit R9-2007-0001, construction sites (any priority) should be inspected as needed during the dry season. Increased frequency of construction inspections during the dry season will be conducted to identify any areas where BMP implementation is not being maintained properly, particularly with respect to control of trash and debris. This program aims to decrease discharges of trash and sediment to the MS4. The chosen dry weather inspection frequency will be evaluated to determine if inspections should be conducted more or less frequently.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity targets trash, which is a high priority pollutants in HA 908.3. The increased frequency of dry season construction inspections would augment the City's wet weather construction inspection program. Increased City presence during the dry season may prevent construction site personnel from becoming inattentive regarding BMP maintenance.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Increased construction inspection frequencies during the dry season are intended to reduce the discharge of trash, a high priority water quality problem. This activity is also likely to reduce sediment discharges from construction sites. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these pollutants and abate pollutant sources.

EXPECTED BENEFITS

Increased construction inspection frequencies during the dry season will contribute to improvements in water quality by reducing the loads of pollutants such as sediment and trash entering the City's MS4 and downstream receiving waters. This effort will promote BMP implementation at construction sites during the dry season and will help prepare construction sites for the upcoming wet season.

EFFECTIVENESS MEASUREMENTS

Primarily, the effectiveness of this activity will be assessed through level 3, which regards behavioral changes. Behavioral changes will be based mainly on BMP implementation rates.

CHOLLAS CREEK WATER QUALITY PROTECTION & HABITAT ENHANCEMENT PROJECT – 27

ACTIVITY SUMMARY

The City's Storm Water Pollution Prevention Division is managing the design and construction of a creek restoration project in Chollas Creek funded by a $2.244 million Proposition 13 grant from the State Water Resources Control Board. The project, titled *Chollas Creek Water Quality Protection & Habitat Enhancement Project*, will remove approximately 4,600 square feet of concrete and other hardscape in and adjacent to Chollas Creek and restore approximately 1.7 acres of native upland and riparian habitat along a 750 foot-long segment of the Encanto Branch of Chollas Creek. The project includes an approximately $500,000 education and outreach component to eliminate polluting practices of residents and businesses in the community.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City anticipates construction to start in September 2007 and terminate in November 2007. Water quality monitoring will be conducted afterwards to assess effectiveness in removing pollutants from Chollas Creek.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego
- City of La Mesa

OTHER PARTICIPATING ENTITIES

- State of California
- San Diego Coastkeeper
- Community members

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to

address them. This creek restoration project will help treat runoff of bacteria, metals, and other pollutants.

EXPECTED BENEFITS

The project contributes to the implementation of the City's Chollas Creek Enhancement Program, a watershed-based planning effort to restore the natural functions and beneficial uses of Chollas Creek and create a linear park for the community. By removing concretized portions, widening the bed to reduce scour and flow velocities, and re-vegetating with native plants, the restoration effort would improve the bio-filtration processes (i.e., filtering and removing pollutants from flows by plant uptake and natural filtration through soils) in the creek. The project will also create a linear park for the community so that the creek becomes a natural asset for the community to protect and not pollute.

In addition, knowledge and experience gained through this project will help the City document the benefits, limitations, and challenges of creek restoration as an urban runoff pollution control to meet Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Does education help reduce pollutant loads from urban runoff? • What is the efficiency of pollutant load reductions with targeted educational programs in the Chollas Creek watershed? • Does habitat enhancement help reduce pollutant loads to San Diego Bay?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized habitat enhancement • Reach a set percentage of target resident population
Assessment Method(s)	• Tabulation (e.g., dollars spent on education, dollars spent to implement habitat enhancement) • Monitoring (e.g., concentration of COCs, flow in creek, used to compare upstream/downstream loads) • Quantification (e.g, calculation of load upstream/downstream of enhancement) • Survey (e.g., knowledge of residents pre/post education outreach)
Assessment Measures, Assessment Outcome Levels & Data:	• Flow data from within Chollas Creek, upstream and downstream of enhancement (Outcome Level 4) • Chemistry data from Chollas Creek, upstream and downstream of enhancement and study area (Outcome Level 4) • Number of educational materials handed out (Outcome Level 1) • Survey of residents (Outcome Level 2) • Cost to implement education program (Outcome Level 1) • Cost to implement habitat enhancement (Outcome Level 1) • Number of volunteers associated with monitoring and education outreach (Outcome Level 1) • Number of citizens approached (Outcome Level 1) • Ecological health improvements due to habitat enhancement (macro invertebrate analysis)

TARGETED AUTO-RELATED FACILITY INSPECTIONS – 28

ACTIVITY SUMMARY

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target auto-related facilities within the San Diego Bay WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at auto-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity in spring 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with metals.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with metals at auto-related facilities. Knowledge and experience gained through this activity will help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TARGETED METALS-RELATED INDUSTRIAL FACILITY INSPECTIONS – 29

ACTIVITY SUMMARY

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target metals-related industrial facilities within the San Diego Bay WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at metals-related industrial facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity in spring 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with metals.

EXPECTED BENEFITS

This focused inspection activity will contribute to addressing discharges, characterizing activities, correcting behaviors, and abating sources associated with metals at metals-related industrial facilities. Knowledge and experience gained through this activity will help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TARGETED RESTAURANT FACILITY INSPECTIONS – 30

ACTIVITY SUMMARY

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target restaurant facilities within the San Diego Bay WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at restaurant metals-related industrial facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity in spring 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

DALBERGIA STREET "GREEN MALL" INFILTRATION BMP RETROFIT – 31

ACTIVITY SUMMARY

This project will remove conventional asphalt paving along Dalbergia Street and Thor Street (industrial/commercial area) and replace it with pervious concrete paving. In addition, the existing curb and gutter along portions of Dalbergia Street will be moved 12 feet into the right of way, and, in between the existing and new curb lines, bio-retention planter boxes will be placed and filled with crushed rock. Both the pervious concrete and bio-retention planter boxes will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters. The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Green Mall" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Design and award of contract are anticipated to occur April 2008 through May 2010. Construction is anticipated to occur June through October 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter
- Groundwork San Diego-Chollas Creek – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to

address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of infiltration BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

MEMORIAL PARK "GREEN LOT" INFILTRATION BMP RETROFIT – 32

ACTIVITY SUMMARY

This activity will involve the installation of a large underground chamber to collect and then slowly infiltrate urban runoff into the underlying subsoils. This underground system will be located within Memorial Park, thereby transforming the recreational facility into a dual-use site for both urban runoff pollution reduction and recreation. The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed. The City has named this model approach for Low Impact Development (LID) as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Design and award of contract are anticipated to occur April 2008 through May 2010. Construction is anticipated to occur June through October 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to

address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TARGETED MUNICIPAL FACILITY INSPECTIONS – 33

ACTIVITY SUMMARY

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target municipal facilities within the San Diego Bay WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's municipal facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and metals at municipal facilities.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at municipal facilities. Knowledge and experience gained through this activity would help the City optimize its municipal facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

PUBLIC SERVICE ANNOUNCEMENT: KARMA AND KARMA SECOND CHANCE – 34

ACTIVITY SUMMARY

The City's Storm Water Division has retained a contract with a film production company to create two Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled, *Karma* and *Karma Second Chance*, and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. These PSAs were developed in FY 2007 and FY 2008, and will be broadcast on several TV and radio stations throughout the San Diego Bay WMA in FY 2008. The PSAs will be broadcast in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate completion of production in FY 2008, and then will work with various broadcast media outlets to distribute and air the PSAs in FY 2008 and FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various TV and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and gross pollutants as high priority water quality problems in the WMA. The *Karma* and *Karma Second Chance* Public Service Announcements will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

The PSAs address bacteria directly by focusing on pet waste, food waste and organic matter, and indirectly by removing a bacterial source: trash. Literature published by the United States

Environmental Protection Agency on its website[3] states that *pathogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured on a variety of levels, to include the number of households (television) or listeners (radio) reached by the program will be tabulated. Second, awareness, attitude data will be collected via surveys. Third, once the PSAs have aired, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

Management Questions:	• What changes in awareness/attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of listeners (radio) or homes (television) reached (Outcome Level 1) • Change in knowledge or awareness (Outcome Level 2)

[3] http://www.epa.gov/owow/oceans/debris/

COMMUNITY-BASED SOCIAL MARKETING OUTREACH PILOT PROJECT CHOLLAS CREEK COMMUNITY – 35

ACTIVITY SUMMARY

The City's Storm Water Pollution Prevention Division found that research indicated that an emerging public education field called "Community Based Social Marketing" (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City plans to implement a pilot project using this approach in the Chollas Creek community of San Diego to attempt to achieve awareness and behavioral change. The City will retain professional research consultants to develop and initiate the Pilot Project. The project will include research, observations, surveys, interventions, and assessment methods. These efforts will result in recommendations for outreach strategies, which may include structural interventions, public participation, incentives, and specific messaging.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Research and initial planning will occur in FY08, with outreach implementation occurring in FY09. Implementation, assessment and evaluation will also continue to occur in FY09.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- Sierra Club, San Diego Chapter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2). Implementation of this activity will address both high priority water quality problems

by identifying the behaviors in the WMA contributing to metals and bacteria loading and testing outreach strategies to determine their effectiveness in reducing loading before broad-scale implementation.

EXPECTED BENEFITS

This CBSM pilot project will address bacteria and metals by researching the behaviors in the San Diego Bay WMA that contribute to their loading. By knowing more precisely the behaviors to target, efforts can be more focused and effective. Piloting outreach efforts will also enable the Copermittees to know which efforts will be most effective in reducing loads before broad-scale implementation.

EFFECTIVENESS MEASUREMENTS

The CBSM pilot project effectiveness in the Chollas Creek area will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project. Finally, tests such as water monitoring will be conducted to asses if any load reductions are achieved.

Management Questions:	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in pilot group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash or other pollutants removed from study area (Outcome Level 4)

OUTDOOR BILLBOARDS AND TRANSIT SHELTERS – 36

ACTIVITY SUMMARY

The City's Storm Water Pollution Prevention Division has retained a contract with an outdoor advertising company advertise *Think Blue* messages on billboards and bus shelters located in the San Diego Bay WMA. The City intends to create advertisements that target behaviors associated with bacteria and gross pollutants (trash) profiled as a vector. The goal of the billboards is to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the San Diego Bay watershed in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Printing Services Division in the design of the advertisements and will work with an outdoor advertising company to have the advertisements created and placed on billboards and transit areas throughout the San Diego Bay WMA in FY 2008 and beyond.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

The advertisements will address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[4]

[4] http://www.epa.gov/owow/oceans/debris/

states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured via a Citywide telephone surveys and focus groups comprised of residents in the San Diego Bay WMA to determine awareness, knowledge retention and behavior change.

Management Questions:	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

MOBILE ADVERTISING – 37

ACTIVITY SUMMARY

The City's Storm Water Division has retained a contract with a mobile advertising firm to advertise *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The City intends to create advertisements that target behaviors associated with bacteria and/or metals. The goal of the billboards is to educate the public about causes of these kinds of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the San Diego Bay WMA in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Print Services department in the design of the advertisements and have the advertisements created and placed on the company's static billboard trucks. The Mobile truck will drive pre-determined routes in the San Diego Bay WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria and metals as high priority water quality problems in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing the Mobile static billboard truck will result in increased knowledge and awareness directly, and will promote behavior change.

EXPECTED BENEFITS

The mobile advertisements will address bacteria and/or metals to increase knowledge awareness and promote behavior change.

EFFECTIVENESS MEASUREMENTS

Mobile advertisement effectiveness will be measured via a citywide telephone surveys and focus groups comprised of residents in the San Diego Bay WMA.

Management Questions:	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

REGIONAL HARBOR MONITORING PROGRAM – 38

ACTIVITY SUMMARY

In July 2003, the RWQCB, under §13225 of the California Water Code, requested the development of a coordinated and comprehensive harbor water quality monitoring program for harbors in the San Diego region. San Diego Bay is one of the four harbors included in the Regional Harbor Monitoring Program (RHMP). The objectives of the RHMP are:

1. Determine the contributions and spatial distributions of inputs of pollutants to harbors in the San Diego Region and how these inputs vary over time.
2. Determine whether the waters in harbors safe for body contact activities.
3. Determine whether fish in harbors safe to eat.
4. Determine whether the waters and sediments in the harbors sustain healthy biota.
5. Determine the long-term trends in water quality for each harbor.

The program will include monitoring for metals, bacteria, organic compounds, and toxicity that will improve assessments of the watershed high priority water quality problems and provide a program from which to assess overall water quality improvements.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) Lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria, metals, and sediment toxicity. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Monitoring
- Permit Year 2: Monitoring

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (Copper and Zinc)
- Bacteria
- Sediment (TSS)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The RHMP is considered a beneficial water quality activity in the San Diego Bay WMA because it will enable water quality improvements or degradations to be more readily identifiable. The monitoring will also provide trend information by being repeated at a specified frequency to obtain statistical trend data for the indicators. Furthermore, the RHMP is designed to integrate with existing monitoring that is regularly conducted in the region, including stormwater monitoring, other permit compliance monitoring, regional Bight monitoring, and special focused studies and is designed to integrate with the State's Surface Water Ambient Monitoring Program (SWAMP). The program directly addresses the watershed high priority pollutant, Copper, and is intended to evaluate the loads and the toxic effects of the Copper inputs. Continued monitoring within the marinas stratum (included in the RHMP) will enable Copermittees to assess load reductions (Level 4) after anticipated BMP implementation.

EXPECTED BENEFITS

The development of this monitoring program will greatly assist the Copermittees in establishing a baseline for receiving water conditions in the San Diego Bay WMA and determine where potential upstream impacts may be present.

EFFECTIVENESS MEASUREMENTS

While this program does not specifically reduce loads of high priority pollutants, it is an important step toward establishing future actions to promote load reductions (Level 4). The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay.

INSPECT ALL FOOD ESTABLISHMENTS – 39

ACTIVITY SUMMARY

The City of Coronado will inspect all food establishments within its jurisdiction. Inspections will focus on the presence of adequate grease removal equipment, cleaning frequency, recordkeeping, housekeeping measures, dumpster area cleanliness, and employee training. The goal of inspecting all food establishments is to ensure grease is being removed from the waste system and thereby reducing the chance of overflows. Additionally, site inspections will document potential pollutant runoff and poor housekeeping habits requiring immediate mitigation.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- 2007/2008 planning/implement
- 2008/2009 implement/monitor
- 2009/2010 implement/monitor/assess
- 2010/2011 implement/monitor/assess
- 2011/2012 implement/monitor/assess

PARTICIPATING WATERSHED COPERMITTEES

- City of Coronado

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Oil and Grease
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on bacteria, grease, and trash load reductions.

EXPECTED BENEFITS

100 percent participation, awareness, and compliance from food establishments will benefit the San Diego Bay Watershed because best management practices will be implemented by all in a uniform and consistent manner; reducing the potential of pollutant runoff.

EFFECTIVENESS MEASUREMENTS

Inspections, overflows, other types of site discharges, and complaints are tracked by site, monitored, and mitigated by means of enforcement action. Effectiveness assessment levels 2-3 behavioral changes and 4-5 load reductions will be sued as a measurement.

OUTREACH BOOTH FOR FIRE OPEN HOUSE – 40

ACTIVITY SUMMARY

Annually, the Fire Department has an Open House event and receives a fair amount of participation from the residents and local schools. Although the event is geared towards show-casing the Fire Department, it also provides an excellent opportunity to educate the public on pollution prevention. Currently, Coronado staffs an outreach booth for the annual Flower Show and intends to extend our outreach efforts to the Fire Open House. Staff will be on hand to distribute business BMP brochures, residential manuals, recycling and household hazardous information, and answer any questions relating to water quality management. Promotional items will be available.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- 2007-2008 planning/implement
- 2008-2009 implement/monitor
- 2009-2010 implement/monitor
- 2010-2011 implement/monitor
- 2011-2012 assess

PARTICIPATING WATERSHED COPERMITTEES

- City of Coronado

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are a water quality concern for all HAs. By educating the public, behavioral change will reduce the load of bacteria in the watershed. I

EXPECTED BENEFITS

The expected benefit of staffing an educational booth at the Fire Open house is to provide awareness of pollution prevention and is consistent with a level 3 outcome. Ultimately, the

education booths are geared to promote behavioral change that will reduce bacteria loads in the San Diego Bay.

EFFECTIVENESS MEASUREMENTS

Primarily, this activity will be assessed through levels 2-3, which regard awareness and change in behavior. Counts of distributed pamphlets and visits to the booth will be documented. Surveys and educational games may be used to measure increased knowledge.

SAFER ALTERNATIVES TO COPPER ANTIFOULANT PAINTS PROJECT – 41

ACTIVITY SUMMARY

Dissolved copper exceeds the Water Quality Objective in the Shelter Island Yacht Basin (SIYB) and in 1999 the RWQCB initiated the development of a TMDL for dissolved copper. To date, a technical TMDL has been issued which identifies 95% of the copper is from passive leaching of boat hull paints, while approximately 5% is due to hull cleaning. A TMDL implementation plan has been approved by the SWRCB, which requires a 76% reduction in copper loading over the next 20 years. The Port of San Diego is actively working with the RWQCB and other local stakeholders to address this issue.

The Port of San Diego and other stakeholders are taking a proactive stance on this issue. Over the next two years, the Port will be involved in a study to identify, test, and demonstrate safer alternative non-copper hull coatings. The goal of this project is to test and evaluate alternative hull paints on recreational boats within the SIYB. A transition to non-copper antifouling hull coatings will be crucial in decreasing copper loading in the SIYB. This activity will build on previous research through the identification, investigation, testing and evaluation of newly emerging or recently developed non-copper hull paints.

TMDL APPLICABILITY

The SIYB portion of the San Diego Bay was included on the 2006 CWA Section 303(d) Lists of impaired water bodies due to the elevated levels of dissolved copper (Cu) in the water column. A TMDL requiring a final target loading of 1.6 kilograms/day (kg/day) or 567 kilograms/yr (kg/yr), or 76% reduction in 17 years, was adopted to address this impairment for copper discharge in SIYB. The expected outcome for Phase 2 of the TMDL implementation plan for copper within the SIYB requires a 10% load reduction to occur during a five-year period (2007-2012).

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementing

PARTICIPATING JURISDICTIONS

- Port of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (Copper)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Copper-based hull paints have been identified as a likely source of copper, a high priority pollutant in SIYB and 908.1 (HA). The Port is working towards a copper load reduction as a

result of minimizing copper-based paints use as the primary antifoulant mechanism on recreational boats.

EXPECTED BENEFITS

The Safer Alternatives to Copper Antifoulant Paints Project will be investigating the use of alternative hull coatings to reduce copper loading in the SIYB. The goal is to ultimately reduce copper concentrations to meet WQOs as required by the SIYB TMDL for dissolved copper.

EFFECTIVENESS MEASUREMENTS

A level 3 outcome will result from the educational and outreach efforts to provide valuable information and guidance to the boating industry on alternative non-copper-based antifoulant paints and the associated maintenance strategies. The goal of the activity is to provide a list of safer alternative antifoulant paints that may be voluntarily applied to boat hulls by the SIYB boating community. By the end of this Permit cycle, which corresponds with the end of the second stage of the SIYB TMDL for dissolved copper, a level 4 outcome may be possible. As required by the SIYB TMDL for dissolved copper, monitoring will be used to assess compliance in SIYB with the specified copper load.

COORDINATED DRY WEATHER MONITORING PROGRAMS – 42

ACTIVITY SUMMARY

Each Copermittee is required to implement a Jurisdictional Dry Weather Monitoring (DWM) Program as part of the Illicit Discharge Detection and Elimination Component of the Municipal Stormwater Permit (Order No. 2001-01). Each Copermittee has developed and implemented a DWM program as required by the Permit but due to logistical constraints, site monitoring and sample collection within each jurisdiction often are conducted independent of other jurisdictions. The San Diego Bay Copermittees recognize that coordinated DWM efforts could be more effective because illicit discharges may cross jurisdictional boundaries. Therefore, San Diego Bay Copermittees conducted a pilot study during 2004-2005 to determine the feasibility of coordinating DWM locations and sampling dates across jurisdictions, and expanded the program with additional sites and jurisdictions during 2006-2007.

As part of the pilot program, the City of San Diego and the Port of San Diego coordinated dry weather monitoring activities at three locations within each jurisdiction during 2004-2005. The City of San Diego, the San Diego County Regional Airport Authority, and the Port will continue to coordinate dry weather monitoring activities at five locations. In addition, field tests and analytical samples will be collected at all coordinated sites where water was present. By simultaneously monitoring at the outfall (Port jurisdiction) and at a site upstream (City and Airport jurisdiction), the goal is to identify potential illicit discharges and facilitate upstream source identification.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) Lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Monitoring
- Permit Year 2: Monitoring

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego
- San Diego County Regional Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The coordination of DWM programs is considered a beneficial water quality activity in the San Diego Bay WMA because it provides comprehensive detection, analysis, and investigation of pollutant discharges at a watershed level. Current jurisdictional DWM programs are effectively identifying and eliminating illicit discharges. When discharges cross jurisdictional boundaries, however, the follow-up investigation is passed from one jurisdiction to another, creating a potential lag time in the response. Coordinated efforts increase the efficiency and effectiveness of jurisdictional programs and allow analysis at a watershed level.

EXPECTED BENEFITS

The Dry Weather Monitoring Program targets the identification and elimination of illegal discharges to the stormwater conveyance system and the watershed. Information collected by the Dry Weather Monitoring Program is also used to characterize dry weather discharge water quality in general and to influence and assess ongoing watershed management and planning activities.

EFFECTIVENESS MEASUREMENTS

The Copermittees intend to coordinate dry weather field tests and collection of analytical samples. By simultaneously monitoring at the outfall (Port jurisdiction) and at a site upstream (City and Airport jurisdiction), they will be to identify potential illicit discharges and facilitate upstream source identification. The elimination of illegal discharges generally requires that dischargers gain some awareness of stormwater pollution prevention and understanding of proper BMP implementation. By changing the way in which dischargers implement BMPs, this program results in a level 3 outcome. The program may also be able to estimate the pollutant loads eliminated and thus no longer impacting stormwater discharge quality, which is a level 4 outcome.

LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS – 43

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the San Diego Bay Watershed include:

- Jamul-Dulzura (909.2, 910.3)
- Alpine (909.2, 909.3)
- Cuyamaca (909.3)
- Descanso (909.3)
- Pine Valley (909.3)
- Crest-Dehesa (909.2
- Valle de Oro (909.2)
- Sweetwater (909.1)
- Spring Valley (909.1, 909.2)
- Lakeside (909.2)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective Watershed Strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcomes). The County will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2 Outcome).

MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECTS – 44

ACTIVITY SUMMARY

This activity will involve the installation of rain barrels and/or the disconnection of downspouts to direct runoff from municipal facility roofs into pervious areas (such as landscaping) for infiltration. Rain barrels, downspout disconnects, and rainwater harvesting/reuse systems help to capture, store, and divert urban runoff to reduce the volume thereof, thus contributing to reduced flooding, erosion, and the contamination of surface water with sediment, fertilizer, metals, and pesticides. In addition, this activity has the added benefit of water conservation; runoff collected and diverted to landscaping would help reduce the amount of potable water needed for irrigation. Roof runoff solutions can be used both in large-scale landscapes, such as municipal buildings, community centers, schools, and commercial sites, as well as in small residential landscapes.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007 and is anticipated to continue until the end of calendar year 2007. Procurement of rain barrels and other items and installation are anticipated to occur from November 2007 through February 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing runoff volume via capture, retention, and eventual infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of rain barrels, downspout disconnects, and rainwater harvesting/reuse systems to reduce urban runoff volume and pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of rain barrels and downspout disconnects as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	• Achieve reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	• Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data:	• Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

INSTALLATION OF TRIDENT CURBSCREENS – 45

ACTIVITY DESCRIPTION

The installation of curbscreens that prevent trash, debris, oil & grease, large particle sediment, organics from entering curb inlets.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation FY 08-09, grant dependent

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Debris
- Oil & Grease
- Sediment
- Organics

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed activity

EXPECTED BENEFITS

More effective street sweeping, fewer pollutants in the MS4 system.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

CLEANUP EVENTS, CITY-WIDE VOLUNTEER SPONSORED – 46

ACTIVITY DESCRIPTION

Cleanup events in any city location, generally sponsored by local organizations.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Current Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Regional watershed activity

EXPECTED BENEFITS

Decreased trash in the MS4 system including gutters.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

CHOLLAS CREEK RUNOFF REDUCTION AND GROUNDWATER RECHARGE PROJECT – 47

ACTIVITY DESCRIPTION

This project is designed to reduce runoff from three existing County of San Diego facilities within the Pueblo San Diego Watershed (HA 908.2). Currently, these three facilities are highly impervious. The purpose of this activity is to retrofit existing impervious areas (parking lots) with porous pavements over stone reservoirs and to implement other LID practices to capture runoff from these areas as well as landscape elements such as rain gardens and bio-swales. A goal of this demonstration project is employ techniques to capture and infiltrate/evaporate rainfall. The objective of the activity is to prevent transportation of potentially polluted runoff (Metals, specifically with cooper, lead, and zinc) from leaving these facilities and entering the storm water system and particularly Chollas Creek.

TMDL APPLICABILITY

This project would be implemented in compliance with the Chollas Creek Metals TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Planning & Design: July 2008 - May 2009
- Construction: June 2009 - October 2009
- Environmental Review & Permitting: July 2008 - January 2009
- Monitoring: October 2009 - December 2010 (14 mos.)
- Demonstration Project: July 2008 - December 2010 (2 ½ yrs)

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This Project is consistent with the collective Watershed Strategy because it addresses metals (copper, lead and zinc), which are considered as high priority water quality problem within the 908.2 Hydrologic Area.

EXPECTED BENEFITS

This project provides benefits to surface water quality and groundwater quantity by capturing, reusing and/or infiltrating rainfall that otherwise would be urban runoff that would transport potential pollutants specifically metals to sensitive receiving waters.

EFFECTIVENESS MEASUREMENTS

This project includes 14 months of monitoring of the water quality from the site. This monitoring will provide evidence of the overall amount of reduction of metals from entering the storm system.

LAND ACQUISITIONS SAN DIEGO BAY (909.1, 909.2, 909.3, 910.2, 910.3) – 48

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the southwestern portion of San Diego County. Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective Watershed Strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

SPECIAL DRAINAGE AREA (SDA) 1 SPRING VALLEY AREA STORMWATER QUALITY MASTER PLAN – 49

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego Bay Watershed include:

- SDA 1 - Spring Valley (909.1)
- SDA 2 - Valle de Oro (909.2)
- SDA 3 - Sweetwater (909.1)
- SDA 4 - Jamul (909.2, 910.3)
- SDA 7 - Alpine (909.2, 909.3)

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur anytime before FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined.

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined.

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Appendix E

Data

Appendix E-1

Data Tables

Table 11-25. Analytes Measured at the Sweetwater Mass Loading Station.

ANALYTE	UNITS	WQO[1]	SOURCE	2001-2002			2002-2003			2003-2004			2004-2005			2005-2006			2006-2007			Frequency Above WQO	Mean Ratio to WQO
				02/17/02	03/17/02	04/25/02	12/16/02	02/11/03	02/25/03	11/12/03	02/03/04	02/18/04	10/17/04	02/11/05	02/18/05	10/18/05	01/02/06	02/19/06	10/14/06	1/30/07	2/19/07		
General / Physical / Organic																							
Electrical Conductivity	umhos/cm			3820	3430	2980	2990	2760	1955	3040	1742	1995	529	5070	3260	3430	4090	2690	1890	4100	3520		
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	1	1	1	4.47	2	1	4.43	<1	1.05	<1	<1	<1	<1	<1	<1	<5	<5	<5	0%	0.10
pH	pH Units	6.5-8.5	Basin Plan	7.5	7.4	7.3	7.56	6.87	6.94	7.20	7.83	7.58	7.24	7.52	7.49	7.66	8.14	8.09	7.8	7.79	7.60	0%	0.00
Bacteriological																							
Enterococci	MPN/100 mL			300	16,000	9,000	8,000	14,000	30,000	18,792	1,879	17,000	800	3,000	50,000	50,000	5,000	13,000	110,000	3,000	1,300		
Fecal Coliform	MPN/100 mL	400	Basin Plan	130	**500**	**11,000**	**23,000**	**7,000**	**1,700**	**4,000**	**2,200**	**2,300**	300	**1,300**	**1,300**	**3,000**	**8,000**	**2,300**	**8,000**	170	**5,000**	83%	11.28
Total Coliform	MPN/100 mL			23,000	5,000	230,000	30,000	30,000	170,000	300,000	130,000	130,000	30,000	13,000	28,000	130,000	30,000	80,000	50,000	3,000	30,000		
Wet Chemistry																							
Ammonia As N	mg/L			0.16	0.3	0.2	0.25	0.28	0.19	0.16	0.1	0.15	0.39	0.14	0.14	<0.1	<0.1	0.19	0.79	0.67	1.24		
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan				2.28	0.64	0.42	0.67	1.44	1.55	1.0	0.8	1.1	0.7	1.8	4.9	14.2	8.1	11.3	0%	0.14
Biochemical Oxygen Demand	mg/L	30	USEPA Multi-Sector General Permit	2	14.2	4.7	<2.0	20.4	5.89	9.32	**46.7**	15.3	19.8	2.57	3.42	4.96	3.72	2.22	**115**	3.66	3.36	11%	0.52
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	70	63	55	59	85	39	104	69	86	44	**123**	74	47	44	102	119	54	45	6%	0.59
Dissolved Organic Carbon	mg/L						9.68	25.2	8.94	21.9	7.94	88.2	25.7	5.24	6.19	5.04	19	10.5	86.9	13.6	12.8		
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	<0.05	0.2	0.1	0.34	0.20	0.10	0.4	0.18	0.12	0.2	0.18	0.45	0.26	0.43	0.24	0.28	0.21	0.32	0%	0.12
Nitrate As N	mg/L	10	Basin Plan	0.4	0.3	0.2	0.54	0.81	0.39	2.19	0.25	0.27	0.07	1.02	1.93	0.55	1.52	1.44	1.36	<0.05	0.74	0%	0.08
Nitrite As N	mg/L	1	Basin Plan	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	0%	0.03
Surfactants (MBAS)	mg/L	0.5	Basin Plan	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0%	0.43
Total Dissolved Solids	mg/L	1500	Basin Plan	**2000**	1050	**2870**	793	**1660**	1150	**1880**	**1780**	**2230**	**2860**	**2370**	1410	**2640**	**2140**	**2070**	**1990**	**2060**	1290	72%	1.27
Total Kjeldahl Nitrogen	mg/L			1.5	3	1.2	1.0	1.0	0.8	2.8	<0.5	0.7	2.1	1.4	1.8	1	1.7	2.5	2.2	1.4	2.4		
Total Organic Carbon	mg/L						40.7	12.9	6.72	20.8	12.5	96.4	30.1	10.9	11.7	12.1	14	13.2	88.8	13.8	13		
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.18	0.29	0.1	0.54	0.22	0.14	0.43	0.22	0.16	0.25	0.57	0.47	0.52	0.45	0.54	0.4	0.28	0.39	0%	0.17
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	21	47	23	74	14	51	<20	<20	<20	20	26	**102**	<20	<20	<20	45	<20	91	6%	0.32
Turbidity	NTU	20	Basin Plan	7.7	**20.2**	8.24	**62.9**	13	**46.5**	15.2	11.5	16.8	4.03	5.8	**48.8**	11.4	9.07	**21.7**	**32.2**	9.6	**65.8**	39%	1.14
Pesticides																							
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game	<0.03*	<0.03*	**0.03**	**0.053**	**0.059**	<0.03*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.002	<0.002	<0.002	20%	0.66
Diazinon	µg/L	0.08	CA Dept. of Fish & Game	**0.10**	**0.27**	<0.03	**0.301**	**0.146**	**0.171**	**0.084**	<0.01	0.026	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.004	<0.004	<0.004	33%	0.80
Malathion	µg/L	0.43	CA Dept. of Fish & Game				0.24	<0.10	<0.10	0.423	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	0.097	0.063	<0.006	0%	0.15
Hardness																							
Total Hardness	mg CaCO3/L			932	499	1010	344	758	549	817	728	816	1210	991	556	1130	1020	966	807	999	626		
Total Metals																							
Antimony	mg/L	0.006	Basin Plan	<0.002	<0.002	<0.002	0.004	0.004	0.003	<0.005	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	0.002	0.004	0%	0.42
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	0.002	0.002	0.003	0.004	0.002	0.003	0.005	0.007	0.005	0.004	0.005	<0.002	0.008	0.005	0.005	0.011	0.002	0.003	0%	0.09
Cadmium	mg/L	(b)	40 CFR 131	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	0%	0.09
Chromium	mg/L	(b)	CTR (Cr VI)	<0.005	0.007	<0.005	0.009	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0%	0.01
Copper	mg/L	(b)	40 CFR 131	<0.005	0.010	0.006	0.010	0.018	0.007	0.009	0.013	0.012	<0.005	<0.005	0.005	<0.005	0.005	0.005	0.011	0.006	0.012	0%	0.26
Lead	mg/L	(b)	40 CFR 131	0.002	0.006	0.003	0.010	0.003	<0.002	0.002	<0.002	0.003	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	0.003	<0.001	0.004	0%	0.14
Nickel	mg/L	(b)/0.1	40 CFR 131/ Basin Plan	0.003	0.003	0.004	<0.002	0.002	<0.002	0.004	0.002	<0.002	0.002	0.003	0.002	0.007	0.004	0.003	0.004	0.003	0.004	0%	0.02
Selenium	mg/L	0.02	40 CFR 131	0.003	<0.002	<0.002	<0.004	<0.004	<0.004	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005	<0.004	<0.004	<0.004	0%	0.11
Zinc	mg/L	(b)	40 CFR 131	<0.02	0.045	<0.020	0.042	0.029	0.025	0.036	<0.02	0.029	<0.02	<0.02	<0.02	0.044	<0.02	<0.02	0.047	0.022	0.047	0%	0.06
Dissolved Metals																							
Antimony	mg/L	(e)	40 CFR 131	<0.002	<0.002	<0.002	0.006	<0.002	0.004	<0.005	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	0.002		
Arsenic	mg/L	0.34 (c)	40 CFR 131	<0.001	0.001	0.003	0.003	0.003	0.003	0.003	0.004	0.003	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0%	0.01
Cadmium	mg/L	(b)	40 CFR 131	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0%	0.08
Chromium	mg/L	(b)	40 CFR 131	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0%	0.01
Copper	mg/L	(b)	40 CFR 131	<0.005	<0.005	<0.005	0.007	0.025	0.008	0.005	0.006	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.004	0.005	0%	0.18
Lead	mg/L	(b)	40 CFR 131	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	0%	0.09
Nickel	mg/L	(b)	40 CFR 131	0.004	<0.002	0.003	<0.002	0.002	<0.002	0.003	0.002	<0.002	0.002	0.003	0.002	<0.002	0.004	0.003	0.004	<0.002	0.002	0%	0.01
Selenium	mg/L	0.02 (d)	40 CFR 131	<0.002	<0.002	<0.002	<0.004	<0.004	<0.004	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005	<0.004	<0.004	<0.004	0%	0.01
Zinc	mg/L	(b)	40 CFR 131	<0.020	<0.020	<0.020	0.043	0.097	0.021	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	0.023	<0.02	<0.02	0%	0.05
Toxicity																							
Ceriodaphnia 96-hr	LC50 (%)	100		>100	**70.71**	>100	**72.22**	>100	>100	>100	>100	>100	**50**	>100	>100	>100	>100	>100	>100	>100	>100	17%	0.27
Ceriodaphnia 7-day survival	NOEC (%)	100		100	**25**	100	**50**	100	100	100	100	100	**25**	100	100	100	100	100	100	100	100	17%	0.56
Ceriodaphnia 7-day reproduction	NOEC (%)	100		100	**50**	**50**	**50**	100	100	100	100	100	**12.5**	**50**	100	100	100	100	**6.25**	100	100	33%	1.78
Hyalella 96-hr	NOEC (%)	100		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0%	0.00
Selenastrum 96-hr	NOEC (%)	100		**50**	**50**	**25**	**12.5**	100	100	100	100	**50**	**50**	100	100	**50**	100	100	100	100	100	39%	1.22

See last page for footnotes and source references.

Table 11-25. Analytes Measured at the Sweetwater Mass Loading Station.

Blank spaces have been verified and no data is available due to changes in the monitoring program.

[1] The Water Quality Objectives (WQO) are benchmarks for comparison of storm water results and were selected by the Copermittee Monitoring Workgroup for this program.

(a) Un-ionized Ammonia is a calculated value, non-detectable values calculated at the detection limit. Basin Plan WQO is 0.025 mg/L; values shown here have been converted to μg/L.
(b) Water Quality Objective for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(c) Water Quality Objectives for dissolved metal fractions are based on water effects ratios (WER) and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(d) Water Quality Objective is based on the total recoverable form as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(e) USEPA has not published an aquatic life criterion value.

Shaded text – bold values are above the **CCC** water quality objective and bold/underlined results are above the **CMC** water quality objective.

* Indicates detection limit above water quality objective, and not included in frequency above water quality objective calculation.

Sources
USEPA National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities, 65 Federal Register (FR) 64746, Final
Siepmann and Finlayson 2000.
Basin Plan, September 8, 1994.
Assembly Bill 411 - Title 17 of the California Code of Regulations, Section 7958.
USEPA Federal Register Document 40 CFR Part 131, May 18, 2000.

Table 11-8. Analytes Measured at the Chollas Creek Mass Loading Station.

ANALYTE	UNITS	WQO[1]	SOURCE	1993-1994			1994-1995				1995-1996				1996-1997		1997-1998		
				02/17/94	03/24/94	04/24/94	11/10/94	01/11/95	02/14/95	04/16/95	11/01/95	01/22/96	01/31/96	03/05/96	12/09/96	01/16/97	11/10/97	12/06/97	03/14/98
General / Physical / Organic																			
Electrical Conductivity	umhos/cm						447	176.3	110	193	693	179		427	334	487	310	155	1146
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	2.2	0.6	0.7	1.93	2.11	2.43	1.2	3.3	3.4		3.1	6	1.8	6.9	<0.5	4.56
pH	pH Units	6.5-8.5	Basin Plan																
Bacteriological																			
Enterococci	MPN/100 mL																		
Fecal Coliform	MPN/100 mL	4000	Basin Plan	9,300	24,000	24,000	17,000	28,000	50,000	50,000	16,000	16,000		16,000	16,000	16,000	16,000	9,450	
Total Coliform	MPN/100 mL			240,000	240,000	240,000	160,000	160,000	90,000	160,000	16,000			16,000	16,000	16,000	160,000	20,000	
Wet Chemistry																			
Ammonia As N	mg/L			0.4		0.9	1.4	0.3	0.7	0.6	0.64	0.31	<0.2	1.8	<0.2	<0.2	1.3	0.4	10
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan																
Biochemical Oxygen Demand	mg/L	30	USEPA Multi-Sector General Permit	10	<3	38.9	30	25	13.3	18.1	14.5	6	<5	16	7.8	15	49	24	40
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	47		149	284	88	187	192	122	90	87	321	31	73	146	44	135
Dissolved Organic Carbon	mg/L																		
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.2	0.2	0.4	0.3	0.4	0.4	0.3	0.5	0.6	0.7		0.2	0.3	0.4	<0.1	1.41
Nitrate As N	mg/L	10	Basin Plan	2.7		1.4	2.7	0.7	1.2	0.98	1.8	1.2	0.91	0.82	0.8	0.81	3.5	0.52	0.4
Nitrite As N	mg/L	1	Basin Plan	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05								0.08	<0.05
Surfactants (MBAS)	mg/L	0.5	Basin Plan	0.12	0.47	0.69	0.41	0.07	0.07	0.3	0.16		<0.1	1.00	<0.1	<0.1	<0.1	0.07	0.66
Total Dissolved Solids	mg/L	500	Basin Plan	250	150	270	460	180	250	250	250	264	148	204	194	278	374	250	344
Total Kjeldahl Nitrogen	mg/L			4.3		4.4	3.9	1.6	<1	7.1	3.4	1.9	1.8	2.7	1.1	1.8	1.6	<1	15
Total Organic Carbon	mg/L																		
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.4	0.7	0.9	0.5	0.6	0.6	0.9	0.7	0.3	0.3	1.1	0.3	0.5	0.7	<0.1	2.2
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	220	700	400	650	330	1200	470	75	184	92	130	92	488	182	315	805
Turbidity	NTU	20	Basin Plan	86	54	54	40	64	85	66	54.2	68.3	5.7	18.4	37	290	90	29	24
Pesticides																			
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game																
Diazinon	µg/L	0.08	CA Dept. of Fish & Game																
Malathion	µg/L	0.43	CA Dept. of Fish & Game																
Hardness																			
Total Hardness	mg CaCO3/L			120	71	110	150	58	100	120	91	74.5	52.2	78.6	57.4	61.5	116	39	96.4
Total Metals																			
Antimony	mg/L	0.006	Basin Plan	<0.001	0.0013	<0.001	0.0023	<0.001	<0.001		0.001				<0.003	<0.003	0.0016	<32*	<32*
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	<0.005	<0.005	<0.005	<0.005	0.011	0.008	0.006	0.006				0.004	0.005	0.002	<0.053*	<0.053*
Cadmium	mg/L	(b)	40 CFR 131	0.002	0.002	0.001	0.001	0.001	0.002	0.003	0.001				0.0006	0.0007	0.0003	<0.004*	<0.004*
Chromium	mg/L	(b)	CTR (Cr VI)	0.005	0.006	0.008	0.004	0.003	0.01	0.007	<0.005				<0.010	0.010	<0.005	<0.007	0.011
Copper	mg/L	(b)	40 CFR 131	0.034	0.029	0.044	0.036	0.017	0.04	0.085	0.046				0.02	0.01	0.017	0.028	0.028
Lead	mg/L	(b)	40 CFR 131	0.11	0.14	0.07	0.035	0.044	0.11	0.14	0.023				0.016	0.058	0.003	<0.042*	0.095
Nickel	mg/L	(b)/0.1	40 CFR 131/ Basin Plan	0.011	0.008	0.014	0.016	0.006	0.011	0.013	0.011				<0.010	<0.010	0.009	<0.015	<0.015
Selenium	mg/L	0.02	40 CFR 131	<0.0005	<0.0005	<0.0005	<0.0005	0.001	0.001		0.002				<0.004	<0.003	0.001	<0.075*	<0.075*
Zinc	mg/L	(b)	40 CFR 131	0.26	0.24	0.32	0.18	0.15	0.36	0.56	<0.025				0.07	0.20	0.176	0.11	0.092
Dissolved Metals																			
Antimony	mg/L	(e)	40 CFR 131				0.0022	<0.001	<0.001	<0.001		<0.0015	<0.0015	<0.0015	<0.003	<0.003			
Arsenic	mg/L	0.34 (c)	40 CFR 131				<0.005	<0.005	<0.005	<0.005		0.004	0.003	0.002	0.005	<0.003			
Cadmium	mg/L	(b)	40 CFR 131				0.0002	<0.0002	<0.0002	<0.0002		<0.00025	<0.00025	0.00044	0.0005	0.0012			
Chromium	mg/L	(b)	40 CFR 131				0.002	0.0012	<0.001	0.001		<0.005	<0.005	<0.005	<0.010	<0.010			
Copper	mg/L	(b)	40 CFR 131				0.013	<0.005	0.005	0.010		0.012	0.008	0.034	0.01	0.02			
Lead	mg/L	(b)	40 CFR 131				0.003	<0.001	<0.001	<0.001		0.002	0.002	0.018	0.015	0.007			
Nickel	mg/L	(b)	40 CFR 131				0.013	<0.005	<0.005	<0.005		<0.005	<0.005	0.009	<0.010	0.020			
Selenium	mg/L	0.02 (d)	40 CFR 131				<0.0005	0.001	<0.0005	<0.0005		<0.001	<0.001	<0.001	<0.002	<0.003			
Zinc	mg/L	(b)	40 CFR 131				0.07	0.014	0.012	0.069		<0.025	0.032	0.141	0.08	0.040			
Toxicity																			
Ceriodaphnia 96-hr	LC50 (%)	100																	
Ceriodaphnia 7-day survival	NOEC (%)	100																	
Ceriodaphnia 7-day reproduction	NOEC (%)	100																	
Hyalella 96-hr	NOEC (%)	100																	
Selenastrum 96-hr	NOEC (%)	100																	

See last page for footnotes and source references.

Table 11-8. Analytes Measured at the Chollas Creek Mass Loading Station.

ANALYTE	UNITS	WQO[1]	SOURCE	1998-1999			1999-2000			2000-2001			2001-2002			2002-2003		
				11/08/98	01/25/99	03/15/99	02/12/00	03/05/00	04/17/00	10/27/00	01/08/01	02/13/01	11/29/01	02/17/02	03/08/02	11/08/02	02/11/03	02/25/03
General / Physical / Organic																		
Electrical Conductivity	umhos/cm			286	270	215	186	187	185	258	319	279	155	310	242	315	211	91.2
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	1.29	1.56	0.95	1.92	2.04	1.48	12	4	1	5	10	8	4.24	3.54	2.47
pH	pH Units	6.5-8.5	Basin Plan										7.4	7.4	8	6.96	7.58	7.41
Bacteriological																		
Enterococci	MPN/100 mL									130,000	26,000	80,000	170,000	110,000	220,000	30,000	50,000	80,000
Fecal Coliform	MPN/100 mL	4000	Basin Plan	1,600	1,600	1,600	<2	1,600	1,600	70,000	27,000	14,000	30,000	23,000	70,000	50,000	30,000	13,000
Total Coliform	MPN/100 mL			241,900	298,700	2,419,000	500	1,600	1,600	1,100,000	500,000	30,000	80,000	300,000	300,000	2,400,000	230,000	300,000
Wet Chemistry																		
Ammonia As N	mg/L			1	0.78	1.06	1.65	<0.1	0.21	1.2	1.5	0.6	0.7	2.14	1.04	0.54	0.79	0.52
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan													1.52	8.93	3.12
Biochemical Oxygen Demand	mg/L	30	USEPA Multi-Sector General Permit	19	6	11	7.8	2.54	6.1	15	32.2	<2	27	73.3	29	8.01	31.8	21.0
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	59	41	85	41	104	57	150	109	100	71	244	488	119	184	43
Dissolved Organic Carbon	mg/L															11.3	19.2	10.8
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	1.07	0.27	0.22	0.33	0.26	0.22	0.08	0.94	0.39	0.9	0.75	0.46	0.41	0.40	0.14
Nitrate As N	mg/L	10	Basin Plan	1.1	0.98	0.44	3.22	1.04	3.1	0.8	2.1	0.8	1.2	1.6	1.3	0.71	1.04	0.45
Nitrite As N	mg/L	1	Basin Plan	0.06	0.12	0.14	0.086	<0.05	<0.05	0.21	0.22	0.05	0.11	0.22	0.18	0.09	0.12	0.07
Surfactants (MBAS)	mg/L	0.5	Basin Plan	0.48	0.19	0.07	0.35	0.22	0.13	0.7	<0.5	<0.5	<0.5	0.7	<0.5	0.3	0.2	<0.1
Total Dissolved Solids	mg/L	500	Basin Plan	249	125	222	120	111	140	191	236	173	71	254	199	195	121	87
Total Kjeldahl Nitrogen	mg/L			0.44	1.25	3.61	2.98	3.1	2.36	2.37	5.9	0.97	4.6	5.7	9.1	2.5	2.4	1.6
Total Organic Carbon	mg/L															22.8	27.0	5.45
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	1.28	0.3	0.17	0.46	0.33	0.6	0.12	0.96	0.49	1.08	1.55	2.08	0.68	0.67	0.76
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	7.58	280	159	457	62	200	67	294	139	67	151	493	63	193	295
Turbidity	NTU	20	Basin Plan	69	38	21	50	27	38	72.2	200	96	63.3	36.5	121	57.1	121	178
Pesticides																		
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game	0.1		<0.5*	<0.5*	<0.5*	<0.5*	<0.5*	<0.5*	<0.5*	0.04	0.13	0.04	0.111	<0.03*	0.038
Diazinon	µg/L	0.08	CA Dept. of Fish & Game	0.46	0.46	0.53	<0.5*	<0.5*	<0.5*	0.75	<0.5*	<0.5*	0.68	0.82	0.61	0.424	0.26	0.09
Malathion	µg/L	0.43	CA Dept. of Fish & Game													0.25	0.28	<0.10
Hardness																		
Total Hardness	mg CaCO3/L			77	42.5	90.8	40.9	35.1	45.5	85	78	59	68	111	148	69.1	78	44
Total Metals																		
Antimony	mg/L	0.006	Basin Plan	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.003	0.003	0.002	<0.002	0.003	0.005	<0.002	0.005	0.004
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	0.006	0.0018	0.003	<0.001	0.007	0.005	0.004	0.006	0.004	0.002	0.004	0.006	0.003	0.004	0.003
Cadmium	mg/L	(b)	40 CFR 131	0.002	<0.00025	<0.00025	<0.00025	0.002	<0.00025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	(b)	CTR (Cr VI)	<0.005	0.015	0.035	<0.005	<0.005	<0.005	0.007	0.013	0.007	0.012	0.009	0.019	<0.005	0.010	<0.005
Copper	mg/L	(b)	40 CFR 131	0.006	<0.005	0.015	0.029	0.016	0.014	0.027	0.049	0.016	0.027	0.053	0.056	0.028	0.033	0.016
Lead	mg/L	(b)	40 CFR 131	<0.001	0.007	0.082	0.015	<0.001*	<0.005*	0.022	0.055	0.027	0.028	0.032	0.061	0.017	0.029	0.023
Nickel	mg/L	(b)/0.1	40 CFR 131/ Basin Plan	0.04	0.028	0.016	<0.005	<0.005	<0.005	0.012	0.014	0.005	0.009	0.015	0.017	0.007	0.008	0.004
Selenium	mg/L	0.02	40 CFR 131	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.004	<0.004	<0.004
Zinc	mg/L	(b)	40 CFR 131	0.03	0.048	0.21	0.096	0.05	0.08	0.150	0.290	0.12	0.162	0.314	0.430	0.118	0.230	0.154
Dissolved Metals																		
Antimony	mg/L	(e)	40 CFR 131				<0.0015	<0.0015	<0.0015	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.002	0.002
Arsenic	mg/L	0.34 (c)	40 CFR 131				<0.001	0.005	<0.001	0.003	0.002	0.003	<0.001	<0.001	0.003	0.003	0.002	0.002
Cadmium	mg/L	(b)	40 CFR 131				<0.00025	<0.00025	<0.00025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	(b)	40 CFR 131				<0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	mg/L	(b)	40 CFR 131				<0.005*	<0.005*	<0.005*	0.017	0.013	<0.005	0.009	0.024	0.018	0.022	0.052	0.008
Lead	mg/L	(b)	40 CFR 131				<0.001*	<0.001*	<0.005*	0.003	0.002	0.014	<0.002*	<0.002	0.002	0.006	<0.002*	<0.002*
Nickel	mg/L	(b)	40 CFR 131				<0.005	<0.005	<0.005	0.011	0.007	0.002	0.004	0.010	0.008	0.006	0.004	<0.002
Selenium	mg/L	0.02 (d)	40 CFR 131				<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.004	<0.004	<0.004
Zinc	mg/L	(b)	40 CFR 131				0.019	0.028	0.008	0.090	0.110	0.030	0.053	0.118	0.079	0.152	0.139	0.018
Toxicity																		
Ceriodaphnia 96-hr	LC50 (%)	100								50	25	100	75	50	75	77.78	>100	>100
Ceriodaphnia 7-day survival	NOEC (%)	100								50	25	100	25	25	25	25	50	100
Ceriodaphnia 7-day reproduction	NOEC (%)	100											25	12.5	25	50	100	100
Hyalella 96-hr	NOEC (%)	100								50	6.25	12.5	100	50	50	50	100	100
Selenastrum 96-hr	NOEC (%)	100											100	100	100	100	100	100

See last page for footnotes and source references.

Table 11-8. Analytes Measured at the Chollas Creek Mass Loading Station.

ANALYTE	UNITS	WQO[1]	SOURCE	2003-2004			2004-2005			2005-2006			2006-2007			Frequency Above WQO	Mean Ratio to WQO
				02/03/04	02/18/04	03/02/04	10/17/04	02/11/05	02/18/05	10/18/05	01/02/06	02/19/06	10/14/06	12/10/06	2/19/07		
General / Physical / Organic																	
Electrical Conductivity	umhos/cm			152.5	148	231	565	348	159	444	228	184.9	510	319	239		
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	1.61	2.17	3.43	4.17	1.12	<1	<1	1.19	<1	<5	<5	<5	0%	0.19
pH	pH Units	6.5-8.5	Basin Plan	4.05	6.57	6.96	7.09	7.61	7.81	7.55	8.17	7.76	7.65	8.09	8.40	6%	0.06
Bacteriological																	
Enterococci	MPN/100 mL			50,000	220,000	17,000	170,000	30,000	80,000	800,000	170,000	23,000	500,000	50,000	80,000		
Fecal Coliform	MPN/100 mL	4000	Basin Plan	22,000	30,000	17,000	140,000	11,000	70,000	500,000	70,000	8,000	110,000	23,000	3,000	83%	10.04
Total Coliform	MPN/100 mL			110,000	80,000	800,000	3,000,000	130,000	170,000	800,000	2,400,000	170,000	280,000	90,000	130,000		
Wet Chemistry																	
Ammonia As N	mg/L			0.52	0.58	3.1	2.13	0.28	0.19	1.41	0.67	0.58	1.64	2.12	1.53		
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan	0.00	0.59	6.53	2.4	5.9	46.7	18.6	27.7	6.9	23.9	64.1	87.7	27%	0.28
Biochemical Oxygen Demand	mg/L	30	USEPA Multi-Sector General Permit	41.4	2.25	34.6	138	4.83	3.79	49.5	21	4.26	17.3	25.2	31.2	26%	0.76
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	222	271	69	501	89	<25	168	65	106	447	266	94	43%	1.23
Dissolved Organic Carbon	mg/L			5.8	11.6	6.07	134	2.22	2.86	32.3	18	17	47.9	29.7	9.67		
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.51	0.32	0.21	1.68	0.2	<0.05	0.68	0.44	0.38	0.88	0.64	0.32	0%	0.23
Nitrate As N	mg/L	10	Basin Plan	0.83	0.79	0.37	4.38	0.62	0.61	3.09	1.09	0.98	2.4	0.27	<0.05	0%	0.13
Nitrite As N	mg/L	1	Basin Plan	0.06	0.08	<0.05	0.15	0.05	0.05	0.18	0.09	0.06	0.1	0.06	0.07	0%	0.07
Surfactants (MBAS)	mg/L	0.5	Basin Plan	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.5	<0.5	<0.5	12%	0.56
Total Dissolved Solids	mg/L	500	Basin Plan	134	222	129	665	122	112	396	210	104	210	210	104	2%	0.43
Total Kjeldahl Nitrogen	mg/L			3	3.6	3.8	18.6	5.4	3.4	6.2	1.6	2.6	4.2	4.5	3.7		
Total Organic Carbon	mg/L			21.9	20.9	15.9	190	7.58	10.7	73	9.74	22.4	64	33.3	11.3		
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.91	0.63	0.45	1.85	0.3	0.45	0.91	0.74	0.65	1.22	1.24	0.61	5%	0.37
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	24	290	56	753	135	275	214	252	386	438	418	239	77%	2.96
Turbidity	NTU	20	Basin Plan	259	102	37.5	300	40.1	82.2	46.8	64.7	80.2	168	129	123	95%	4.29
Pesticides																	
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.002	<0.002	<0.002	33%	1.28
Diazinon	µg/L	0.08	CA Dept. of Fish & Game	0.081	0.158	0.088	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	0.100	<0.004	<0.004	64%	3.13
Malathion	µg/L	0.43	CA Dept. of Fish & Game	0.164	0.162	0.168	0.601	0.091	0.065	0.461	0.205	0.074	0.949	0.270	0.095	20%	0.60
Hardness																	
Total Hardness	mg CaCO3/L			87	88	74	244	40	46	170	101	<100	89	101	60		
Total Metals																	
Antimony	mg/L	0.006	Basin Plan	<0.005	<0.006	<0.005	0.005	<0.005	<0.005	<0.005	0.008	<0.005	0.005	0.005	0.004	3%	0.39
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	0.009	0.006	0.003	0.007	0.004	<0.002	0.005	0.006	<0.001	0.012	<0.001	0.002	0%	0.09
Cadmium	mg/L	(b)	40 CFR 131	0.001	0.002	0.001	0.003	<0.001	<0.001	0.001	0.001	<0.001	0.003	0.007	<0.001	8%	0.50
Chromium	mg/L	(b)	CTR (Cr VI)	0.025	0.019	<0.005	<0.005	<0.005	<0.005	<0.005	0.017	<0.005	0.011	0.02	0.011	0%	0.05
Copper	mg/L	(b)	40 CFR 131	0.07	0.068	0.036	0.122	0.009	0.015	0.062	0.065	0.027	0.071	0.115	0.04	97%	4.61
Lead	mg/L	(b)	40 CFR 131	0.079	0.096	0.057	0.079	0.008	0.018	0.032	0.064	0.024	0.072	0.071	0.034	95%	18.99
Nickel	mg/L	(b)/0.1	40 CFR 131/ Basin Plan	0.016	0.014	0.002	0.040	0.003	0.003	0.019	0.016	0.005	0.017	0.021	0.009	3%	0.26
Selenium	mg/L	0.02	40 CFR 131	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005	<0.004	<0.004	<0.004	0%	0.07
Zinc	mg/L	(b)	40 CFR 131	0.496	0.561	0.394	1.18	0.054	0.100	0.421	0.402	0.181	0.515	0.659	0.233	85%	2.31
Dissolved Metals																	
Antimony	mg/L	(e)	40 CFR 131	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.002	0.003		
Arsenic	mg/L	0.34 (c)	40 CFR 131	0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0%	0.01
Cadmium	mg/L	(b)	40 CFR 131	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0%	0.21
Chromium	mg/L	(b)	40 CFR 131	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0%	0.05
Copper	mg/L	(b)	40 CFR 131	0.005	0.009	0.005	0.024	0.006	<0.005*	0.024	0.008	0.012	0.014	0.014	0.007	76%	1.78
Lead	mg/L	(b)	40 CFR 131	<0.002	<0.002	<0.002*	0.004	<0.002*	<0.002*	0.003	<0.002	<0.002	0.004	0.002	<0.001	42%	2.15
Nickel	mg/L	(b)	40 CFR 131	<0.002	0.002	<0.002	0.027	<0.002	<0.002	0.01	0.003	0.003	0.007	0.006	0.002	0%	0.12
Selenium	mg/L	0.02 (d)	40 CFR 131	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005	<0.004	<0.004	<0.004	0%	0.01
Zinc	mg/L	(b)	40 CFR 131	<0.02	0.034	<0.02	0.267	0.023	<0.02	0.193	0.032	0.049	0.092	0.072	0.021	21%	0.59
Toxicity																	
Ceriodaphnia 96-hr	LC50 (%)	100		>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	29%	0.57
Ceriodaphnia 7-day survival	NOEC (%)	100		100	100	100	100	100	100	100	100	100	50	100	100	38%	1.24
Ceriodaphnia 7-day reproduction	NOEC (%)	100		100	100	100	25	100	100	50	100	100	100	100	100	33%	1.33
Hyalella 96-hr	NOEC (%)	100		50	50	100	50	100	100	25	50	25	6.25	25	25	71%	3.43
Selenastrum 96-hr	NOEC (%)	100		100	100	100	100	100	100	>100	100	100	100	100	100	0%	0.00

See last page for footnotes and source references.

Table 11-8. Analytes Measured at the Chollas Creek Mass Loading Station.

Blank spaces have been verified and no data is available due to changes in the monitoring program.

[1] The Water Quality Objectives (WQO) are benchmarks for comparison of storm water results and were selected by the Copermittee Monitoring Workgroup for this program.

(a) Un-ionized Ammonia is a calculated value, non-detectable values calculated at the detection limit. Basin Plan WQO is 0.025 mg/L; values shown here have been converted to μg/L.
(b) Water Quality Objective for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(c) Water Quality Objectives for dissolved metal fractions are based on water effects ratios (WER) and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(d) Water Quality Objective is based on the total recoverable form as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(e) USEPA has not published an aquatic life criterion value.

Shaded text – bold values are above the **CCC** water quality objective and bold/underlined results are above the **CMC** water quality objective.

* Indicates detection limit above water quality objective, and not included in frequency above water quality objective calculation.

Sources
USEPA National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities, 65 Federal Register (FR) 64746, Final Reissuance, October 30, 2000. Table 3 - Parameter benchmark values.
Siepmann and Finlayson 2000.
Basin Plan, September 8, 1994.
Assembly Bill 411 - Title 17 of the California Code of Regulations, Section 7958.
USEPA Federal Register Document 40 CFR Part 131, May 18, 2000.

Appendix E-2

Chollas Creek TMDL
Monitoring Data

Due to document size,
the Chollas Creek Diazinon &
Dissolved Metals TMDL report
is submitted electronically.

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Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277

2006-2007 Water Quality Monitoring Data Summary for Chollas Creek

Final Report

Prepared For:
State Water Resources Control Board

In Coordination With:
Chollas Creek Watershed Municipal Copermittees
City of Lemon Grove
City of La Mesa
City of San Diego
County of San Diego
Port of San Diego

Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277

2006-2007 Water Quality Monitoring Data Summary for Chollas Creek

Final Report

In Coordination with:

Chollas Creek Watershed Copermittees
City of Lemon Grove
City of La Mesa
City of San Diego
County of San Diego
Port of San Diego

Prepared By:

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January 11, 2008

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EXECUTIVE SUMMARY

This report summarizes the activities conducted by the Chollas Creek Watershed Municipal Workgroup to comply with Regional Water Quality Control Board Order No. R9-2004-0277 during the 2006-2007 monitoring season. The activities conducted are provided as follows:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and dry weather IC/ID investigations.
- Jurisdictions performed education and outreach to area residents.
- Jurisdictions have conducted water quality monitoring during three storm events at Sites SD8(1) and DPR2.

Education and outreach activities included 17 community events, targeted strategic audiences in the Chollas Creek Watershed, and an extensive media (Television and Radio) and print campaign. This included just over 1500 public service announcements promoting the Think Blue Website and the "Ants in your Plants" theme. The Integrated Pest Management (IPM) Pest Tip Cards were the primary outreach materials. Residents were very pleased with the cards and the information they provided. The City of San Diego received numerous requests to provide additional cards to community groups who, in turn, facilitated distribution to residents.

Water quality monitoring study results are presented to comply with RWQCB Order No. R9-2004-0277 requirements. Water quality monitoring was specifically conducted under this program to quantitatively assess potential changes in pesticide use and to quantitatively assess the concentration of metals in Chollas Creek.

Storm water monitoring samples were collected at two mass loading stations in Chollas Creek during three separate storm water events. Site SD8(1) was located in the North Fork of Chollas Creek and site DPR2 was located in the south fork of Chollas Creek. Water quality objective exceedances were noted for total organic carbon (TOC), total suspended solids (TSS), diazinon, malathion, total and dissolved copper, total and dissolved lead, total zinc, and total cadmium. There were no exceedances of the WQO for either dissolved cadmium or dissolved zinc. Synthetic pyrethroids were detected in concentrations above published LC50s for *Hyalella azteca* during all three monitoring events during the 2006-2007 monitoring season.

Acute toxicity to *Ceriodaphnia dubia* survival was not observed at either site SD8(1) or DPR2 during the 2006-2007 monitoring season. Chronic toxicity to *Ceriodaphnia dubia* survival was observed during the first storm event on 10/14/06 at both sites and is likely associated with the combined detections of malathion, diazinon and synthetic pyrethroids during this first event. Toxicity to *Hyalella azteca* was observed during all three events at site SD8(1) and during two events at site DPR2. Toxicity identification evaluations conducted as part of the Regional Monitoring Program indicate the causative agent of toxicity at site SD8(1) is the synthetic pyrethroid class of compounds (Weston, 2007).

Mann-Kendall trend analysis performed on the long term data set at site SD8(1) indicate significant decreasing trends for diazinon and toxicity to *Ceriodaphnia dubia.* However, increasing trends are noted for turbidity, total copper, total zinc and toxicity to *Hyalella azteca*.

It is evident that the concentrations of diazinon have been decreasing with time and that storm water samples are apparently less toxic to *Ceriodaphnia dubia* than in previous years when diazinon was available. However, it is also apparent that detections above the WQO may continue based on the data collected during the 2006-2007 monitoring season. It is expected that the residual supply will eventually be exhausted and detections of diazinon should continue to decrease due to the EPA ban on the manufacture and retail sale of this product. It is evident that synthetic pyrethroids are present in storm water runoff which warrants concern. With this evidence, education and outreach to area residents and businesses should continue in order to reduce the impacts of pesticide use in the Chollas Creek Watershed. With regards to the implementation of the TMDLs for metals for Chollas Creek, it is apparent that toxicity to *Ceriodaphnia dubia* was not observed in the later storms where both dissolved copper and dissolved zinc were frequently measured above the WQO, based on the low hardness concentrations. With regards to these observations, the development of site specific objectives for dissolved metals would be useful.

Special studies were also conducted to answer specific management questions at the jurisdictional level. These additional studies include monitoring at the jurisdictional boundaries of La Mesa and Lemon Grove, an aerial deposition study within Chollas Creek, and storm drain and receiving water monitoring in La Mesa.

1.0 INTRODUCTION

The Chollas Creek Watershed is located within a highly urbanized area of San Diego County having a predominantly residential land use. The Chollas Creek Watershed is a part of the San Diego Mesa Hydrologic Area, which is a part of the Pueblo San Diego Hydrologic Unit. Located south and east of downtown San Diego, the watershed is approximately 30 sq. miles, and the main stem of the creek is approximately 9 mi. long.

Chollas Creek discharges to San Diego Bay and consists of two main tributaries, the North and South fork. The lower approximate 1.0 mi. of the creek is tidally influenced and branches near the upstream extent of the tidal influence. The main stem of Chollas Creek trends north from this point for approximately 1.5 mi. then bends towards the northeast. A few smaller tributaries enter the main stem. The second or southern stem, of Chollas Creek tends generally east-northeasterly, itself branching into two creeks. The creek is a mix of highly developed earthen channels and concrete channels. It tends to be an ephemeral creek, flowing during the wet season, primarily as a conduit for storm water runoff.

The Cities of San Diego, Lemon Grove, and La Mesa, the County of San Diego, and the Port of San Diego are municipal dischargers to the Chollas Creek watershed. The California Department of Transportation and the U.S. Navy also discharge urban runoff to the watershed. Water quality problems in the watershed are primarily related to pesticides, total and dissolved copper, lead, and zinc, fecal bacteria indicators, and water column toxicity to *Hyalella azteca.*

This report provides the activities conducted as part of the annual monitoring and reporting requirements for San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277.

Studies conducted in the Chollas Creek Watershed during the 2006-2007 monitoring year include the following:

- Copermittees Legal Authority
- Public Outreach and Education
- Water quality monitoring at Site DPR2 in the south fork of Chollas Creek to satisfy RWQCB Order R9-2004-0277.
- Water quality monitoring at Site SD8(1) in the north fork of Chollas Creek as part of the Regional Monitoring and Reporting Program. This data is also required to be reported under RWQCB Order R9-2004-0277.
- Water quality monitoring at the jurisdictional boundaries of Lemon Grove and La Mesa to understand the jurisdictional contributions of constituents.
- An aerial deposition study to assess the contribution of metals from aerial deposition.
- Water quality monitoring conducted within the City of La Mesa to determine loading characteristics from specific drainage basins.

1.1 Water Quality Background

The Water Quality Control Plan for the San Diego Region (Basin Plan) lists the beneficial uses of Chollas Creek as REC-2 (supports Non-Contact Water Recreation), WARM (supports Warm Freshwater Habitat) and WILD (supports Wildlife Habitat). Chollas Creek has the potential to support the REC-1 beneficial use (Contact Water Recreation). The 2006 Clean Water Act (CWA) Section 303(d) list identifies bacterial indicators, copper, lead and zinc as pollutants within Chollas Creek. Water quality monitoring data indicate that the pesticide diazinon historically exceeded water quality standards in most of the region's watersheds, including Chollas Creek, until recent years. While diazinon was identified as the primary agent associated with pesticide pollution in the San Diego region, diazinon was phased out of manufacturing and is no longer available for retail sale since December 2004. The San Diego Regional Water Quality Control Board (RWQCB) adopted a Total Maximum Daily Load (TMDL) for diazinon in Chollas Creek (Resolution No. R9-2002-0123) in 2002. However, the use of synthetic pyrethroids as a replacement pesticide is evident and has been identified as the current causative agent of toxicity to *H. azteca* in Chollas Creek (Weston, 2007).

Metals have also frequently exceeded the California Toxics Rule (CTR) criteria in Chollas Creek. Both dissolved copper and dissolved zinc have been linked to toxicity of freshwater organisms in Chollas Creek. The San Diego Regional Water Quality Control Board (RWQCB) adopted a Total Maximum Daily Load (TMDL) for dissolved copper, lead, and zinc in Chollas Creek (Resolution No. R9-2007-0043) in 2007. RWQCB Order No. R9-2004-0277 requires monitoring for metals (in addition to diazinon and toxicity) to further assess the condition of metals in Chollas Creek for future use in the development of TMDLs for metals and toxicity in San Diego Bay at the mouth of Chollas Creek. Under RWQCB Order No. R9-2004-0277, annual storm water quality monitoring is required to be performed at the downstream mass loading stations in the north fork [Site SD8(1)] and south fork [Site DPR2] of Chollas Creek.

Monitoring performed under RWQCB Order No. R9-2004-0277 and the San Diego County Municipal Permit indicate that diazinon concentrations have significantly decreased and have been measured above the TMDL waste load allocation only once over the past three monitoring years. Acute and chronic toxicity to *Ceriodaphnia dubia* has also significantly decreased. However, toxicity to *H. azteca* has remained persistent and total and dissolved copper and zinc concentrations are frequently above the water quality objectives based on the California Toxics Rule (CTR). Lead is also listed in the Chollas Creek Metals TMDL and concentrations are measured above the CTR less frequently than copper and zinc. Fecal coliform densities are also frequently above the Basin Plan water quality objective.

1.2 Copermittees Legal Authority

Under California Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277 (item 2-a), the order requires the reporting of information on how the Copermittees have implemented their legal authority to remedy the condition of pollution. This is accomplished primarily through the current dry weather monitoring program and facility inspections conducted under NPDES Order No. 2001-01. Dry weather monitoring is conducted throughout Chollas

Creek to identify and mitigate illicit discharges and illicit connections. As part of the dry weather monitoring program, diazinon and metals are monitored and any illicit discharge of diazinon or metals would be mitigated through this program by issues of violations and/or citations.

Each of the Chollas Creek Watershed Copermittees has ordinances in place to enforce the illegal and unauthorized discharge of wastes into their storm drain systems. For instance, The City of San Diego Municipal Code includes Storm Water Management and Discharge Control (§43.0301), and Storm Water Runoff and Drainage Regulations (§142.01 and §142.02) both of which protect citizens and water quality by prohibiting pollutants from entering the storm water conveyance system. The Storm Water Program's Code Compliance Section enforces the City's storm water ordinance and implements the administrative civil penalties and citation process.

1.3 Diazinon Toxicity Control Plan

California Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277 (item 2-c), requires the reporting of information on the implementation and efficacy of a Diazinon Toxicity Control Plan.

Per Investigation Order No. R9-2004-0277, the "pesticide component" of the education program can serve as the Diazinon Toxicity Control Plan required by the TMDL. See Section 1.4.

1.4 Diazinon Public Outreach/Education Program

Under California Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277 (item 2-c), the order required the reporting of information on the implementation and efficacy of a Diazinon Public Outreach/Education Program.

This Program was a joint effort by the Chollas Creek Watershed Copermittees. It was funded by a State Water Resources Control Board Proposition 13 Grant and uses a network of staff from the County of San Diego, the University of California Cooperative Extension (UCCE), and the City of San Diego to publicize less harmful ways to kill pests. All of the Copermittees were project partners and the Outreach Workgroup serves as the technical advisory committee to the Program's goals and objective. The Copermittees contributed $78,000 of in-kind shared costs to the reproduction of "Healthy Garden, Healthy Home" outreach materials and to the development and air-time for Think Blue IPM Public Service Announcement (PSA). The PSA launched in June 2006 in concert with a watershed-theme PSA in order to leverage air-time costs and to intertwine messages about IPM and water quality.

The City of San Diego participated in twelve workshops and distributed IPM cards (Appendix A) to educate Chollas Creek Watershed residents and other members of the public in San Diego County about using IPM solutions to reduce pesticide levels found in our waterways. IPM uses environmentally sound ways to keep pests under control without harming people, pets, or the environment. These materials were designed to encourage positive behavior changes and attitudes of San Diego residents when dealing with pesticides in their homes and gardens.

The City of La Mesa participated in five outreach/education programs. The City of La Mesa developed and distributed the San Diego Bay Watershed Fact Sheet (Appendix A). This Fact Sheet was designed to encourage residents to practice good housekeeping and storm water pollution prevention measures such as efficient irrigation. IPM cards were also distributed at the three educational events.

Events in which Copermittees have participated are detailed in Table 1-1.

Table 1-1. Community Events (FY 2006-07)

Date	Copermittee	Watershed	Event Type	Event Title	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Aug. 12, 2006	City of San Diego	San Diego Bay (All)	Street Fair	Marine Corps Recruit Depot Bayfest	General Public	800	Marine Corps Recruit Depot	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
Aug. 19, 2006	City of San Diego	San Diego Bay (Chollas Creek)	Street Fair	Encanto Cultural Arts Festival	General Public	~50,000	Imperial Ave, San Diego	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
Sept. 7, 2006	City of San Diego	San Diego Bay (Chollas Creek)	Street Fair	Filipino Heritage Festival	General Public	~10,000	Paradise Valley Road	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
Sept. 16, 2006	City of La Mesa	San Diego Bay	Creek Cleanup	California Coastal Cleanup Day	General Public	5	University Channel, La Mesa	San Diego Bay Watershed Fact Sheet
Sept. 30, 2006	City of La Mesa	San Diego Bay	Education for Children	Kids Care Fest La Mesa	General Public	1,200	Briercrest Park, La Mesa	IPM Cards, San Diego Bay Fact Sheet
Oct. 6-8, 2006	City of La Mesa	San Diego Bay	Festival	Ocktoberfest La Mesa	General Public	180,000	La Mesa Blvd	IPM Cards, San Diego Bay Fact Sheet
Oct. 13, 2006	City of La Mesa	San Diego Bay	Outreach-School	Inter-generational Games	La Mesa Middle School and General Public	140	La Mesa Middle School	IPM Cards, San Diego Bay Fact Sheet

Date	Copermittee	Watershed	Event Type	Event Title	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
31-Mar-07	City of San Diego	San Diego Bay (Chollas Creek)	Street Fair	Cesar Chavez Festival	General Public	~20,000		IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
5-Apr-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Normal Heights Planning Committee	Committee Members	20	North Park Library	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
10-Apr-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Mountain View Park Recreation Council	Committee Members	20	Mountain View Recreation Center	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
17-Apr-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Webster Community Council	Committee Members	20	Webster Community Center	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
25-Apr-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Encanto Recreation Council	Committee Members	20	Encanto Recreation Center	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
28-Apr-07	City of La Mesa	San Diego Bay	Cleanup Event	Creek to Bay Cleanup	General Public	3	University Channel, La Mesa	San Diego Bay Fact Sheet
8-May-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Eastern Area Communities Planning Committee	Committee Members	20	2755 55th Street	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
15-May-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Greater North Park Planning Committee	Committee Members	20	2901 North Park Way	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items

Date	Copermittee	Watershed	Event Type	Event Title	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
12-Jun-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Monthly Meeting	Committee Members	20	Oak Park Community Center	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items

1.5 Public Outreach Plan

This report includes a description of outreach and education strategies for the Chollas Creek Watershed component of the program led by the City of San Diego Storm Water Pollution Prevention Program.

1.6 Project Outreach and Education Strategy

Strategic Objectives

Based on the research and general principles of behavioral change through public outreach programs, the outreach and education strategy sought to continue to meet the following objectives:

- Raise awareness among target audiences of the benefits of using IPM practices.
- Provide tools and information that make it easy for target audiences to use IPM.
- Identify third-party spokespeople in the community to help spread information about IPM and reinforce IPM use.

Audiences

Priority audiences for the project's outreach and education strategy included the following members of the Chollas Creek Watershed:

- Residents who use pesticides.
- Community organizations that influence local residents, including ecumenical groups, ethnic organizations and neighborhood groups.
- Property managers.

NOTE: Since partnerships with retail outlets and gardeners are being handled by San Diego County, these audiences are not included in the strategy. However, the broad based regional outreach by the San Diego County and University of California Cooperative Extension should continue to provide valuable messages to San Diego County Residents. Education and outreach materials provided by San Diego County of are included in Appendix A.

Messages

Messages that were stressed in outreach efforts included:

- Chollas Creek is polluted from overuse of pesticides.
- Safe alternatives to pesticides are better for your family and the environment, today and for future generations.
- Using natural methods is easy and inexpensive.

Tools and Tactics

The City of San Diego continued to use the following tools and tactics to achieve the strategic objectives.

Informational Materials
Reproduced educational and informational materials specific to Chollas Creek watershed outreach were used, based upon the University of California Cooperative Extension (UCCE) Statewide IPM model. The Pest Tip Cards were the primary outreach materials. Residents were very pleased with the cards and the information they provided. The City of San Diego received numerous requests to provide additional cards to community groups who, in turn, facilitated distribution to residents.

Media

For the large Hispanic community in the watershed, a special effort was made to get information to Spanish radio and television media, including:

- Español Radio KLNV 106.5 FM
- KLQV 102.9 FM
- XEWT (Hispanic)

Public Service Announcement Development
The City of San Diego placed advertising on local television and radio outlets. The City designed the ad, "Ants in Your Plants" (funded by the San Diego Regional Storm Water Copermittees (Copermittees) and features IPM tips and suggestions the public should implement to control ants.

The “Ants in Your Plants” PSA was placed on the following television and radio stations:

Television
- Cox Media – Cable Stations: HGTV, TNT, Channel 4, Lifetime, USA
- CW - 5
- KFMB
- KNSD
- KUSI
- XEWT (Hispanic)

Radio

- KIFM
- KLNV
- KLQV
- KMYI (Star 94.1)
- KPRI
- KSON
- KYXY

Outdoor Media

The following table (Table 1-2) details the City of San Diego's radio and television Media Buy for Fiscal Year 2007. The highlighted column represents the number of PSAs that aired that related to IPM.

Table 1-2. Think Blue FISCAL YEAR 2007 Media Buy Year End Summary

Station	IPM PSA
Television	
KIFM-Jazz 98.1	207
KLNV	26
KLQV	56
KMYI	27
KPRI 102.1	57
KSON	63
KYXY	42
Radio	
COX NETWORK	800
CW-5	34
KFMB	10
KNSD	29
KUSI TV 9/51	78
XEWT 12 *	72
TOTALS:	**1501**

Think Blue Website

The City of San Diego posted IPM outreach materials developed for the project on the Think Blue Website on an on-going basis throughout the duration of the grant, to provide City of San Diego residents easy access to these materials.

The Think Blue Website featured a link from the home page to the Chollas Creek efforts and IPM information. Web materials included a Fact Sheet that details the overall efforts to reduce pesticides in the Chollas Creek Watershed, a Fact Sheet on How to Hire a Pest Control Service and an electronic version of all of the Tip Cards.

Site visits averaged 11,469 a month with an average of 1,462 also visiting an IPM pest card information page.

1.7 Sampling Locations

The two sampling locations required by Order R9-2004-0277 are depicted in Figure 1-1. Site DPR2 is located in the south fork of Chollas Creek and Site SD8(1) is located in the north fork of Chollas Creek.

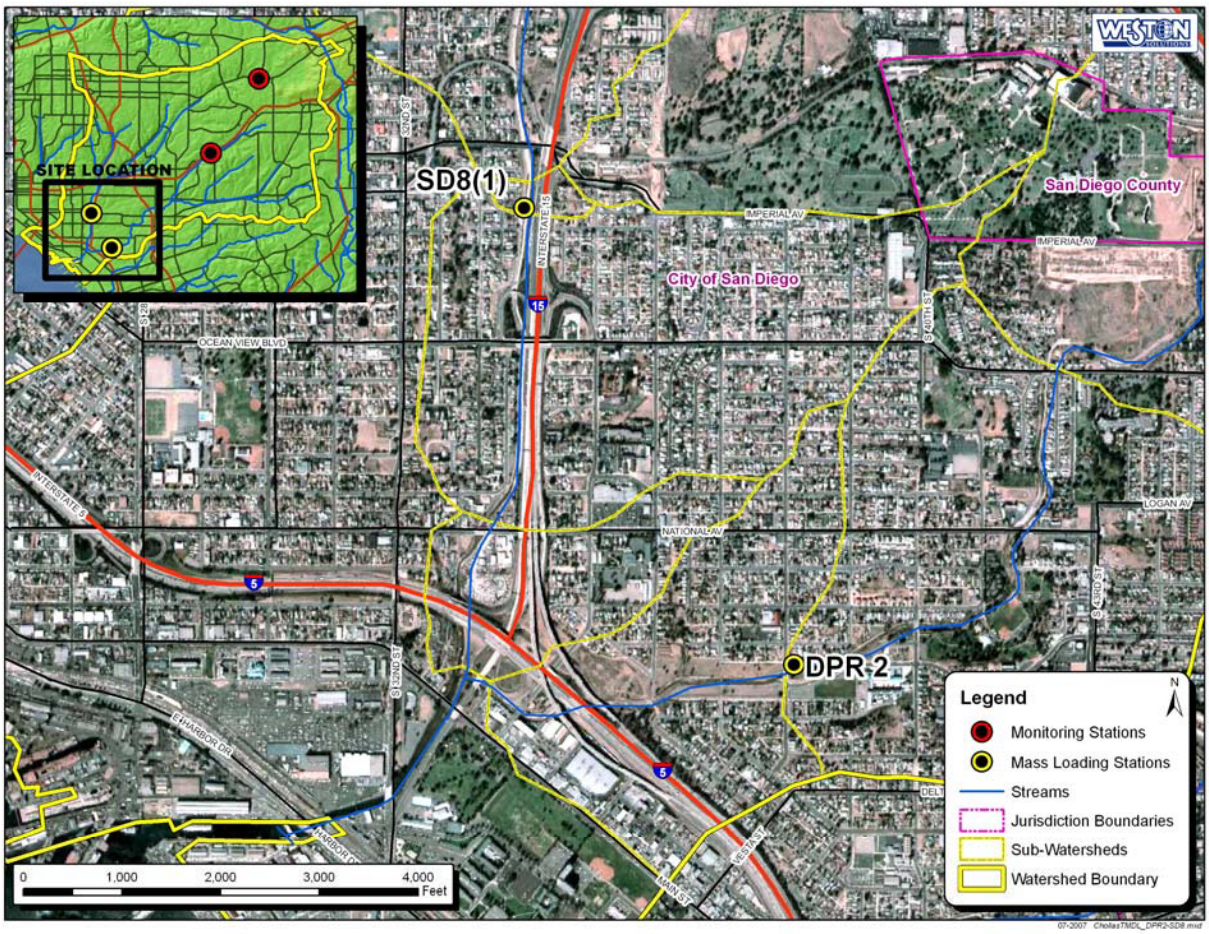

Figure 1-1. DPR2 and SD8(1) Mass Loading Stations (Monitoring Locations)

1.8 Drainage Area and Land Use

The Chollas sub-watershed is divided into two drainage areas. The north fork drains approximately 9,276 acres and the south fork drains approximately 6,997 acres. The drainage areas captured from each station is presented in the Table 1-3. Land use consists of residential (67%), commercial (5%), industrial use (7%), and roadways (4%). The majority of the remaining area is open space (16%) (RWQCB, 2002).

Table 1-3. Estimated Drainage Areas

Watershed	Monitoring Locations	Drainage Areas (acres)
North Fork	SD8(1)	6,198
South Fork	DPR2	5,825

1.9 Rainfall Data

As previously mentioned, Order R9-2004-0277 requires monitoring to be performed at sites SD8(1) and DPR2 for the 1st and 2nd rainfall events of the storm season and the first rainfall after February 1st. Estimation of a representative storm event in the San Diego region was based on the statistical evaluation of the long-term data records from the National Weather Service rain gauge located at Lindbergh Field. Based on the results of this statistical analysis, the "typical" storm event at Lindbergh Field yields 0.19 to 0.57 inches of rain and lasts 6 to 12 hours. Since the depth and duration of a typical storm event varies in different parts of the county where monitoring stations are located, storm events that were preceded by 72 hours of dry weather and were forecast to be greater than 0.10 inches were considered viable events for monitoring.

1.10 Rainfall Data 2006-2007

The total rainfall for the 2006-2007 monitoring year shows that representative storm events that were suitable to monitor occurred in October, January, and February. Figure 1-2 through Figure 1-4 summarize the daily rainfall totals and distributions within San Diego County and specifically for Chollas Creek. The monitored storm event was preceded by at least 72 hours of dry weather. The area received an average rainfall of 5.70 inches for the year. The total annual volumes of water received at the DPR2 and SD8(1) mass loading stations respectively were estimated at 120,525,075 ft^3 and 128,242,818 ft^3. Three storm events were monitored as part of the program on October 14th 2006, December 10th 2006, and February 19th 2007.

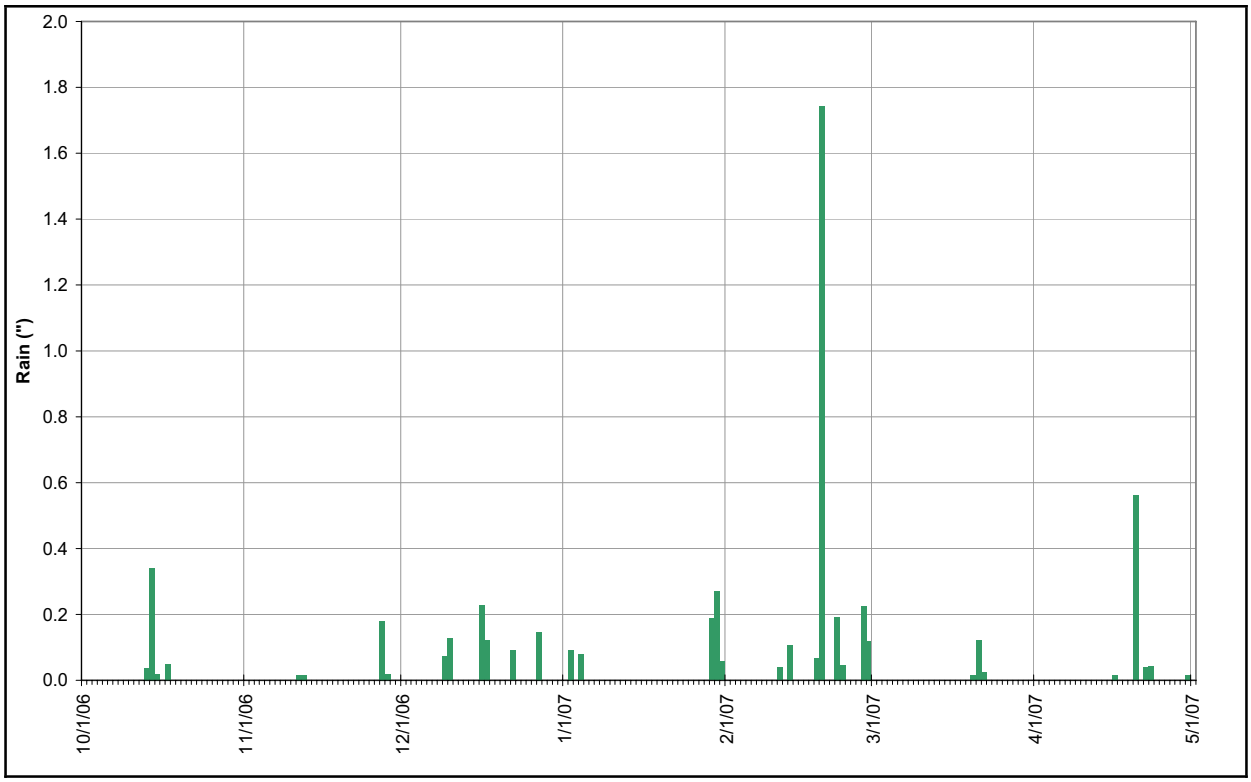

Figure 1-2. 2006-2007 Rainfall Totals (inches) for the Chollas Creek Watershed

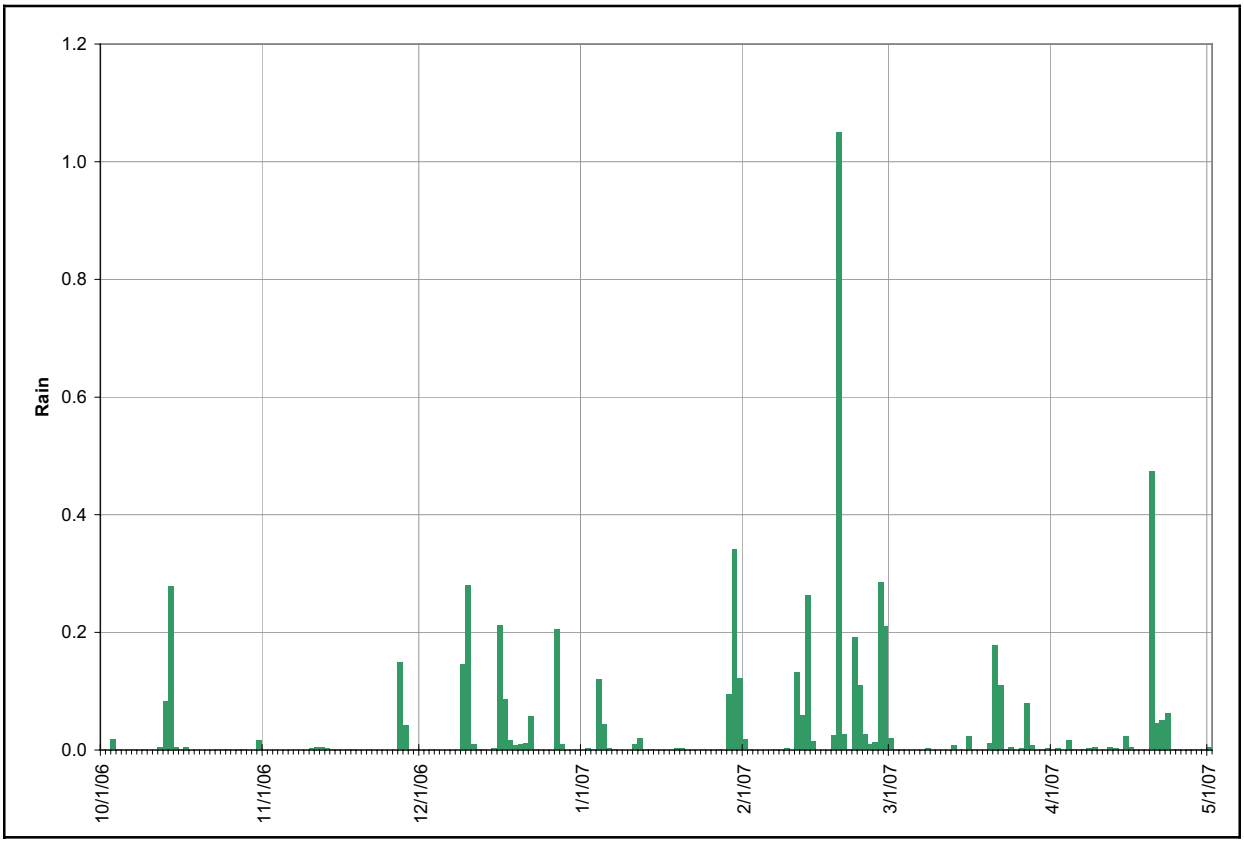

Figure 1-3. 2006-2007 Rainfall Totals (inches) for San Diego County

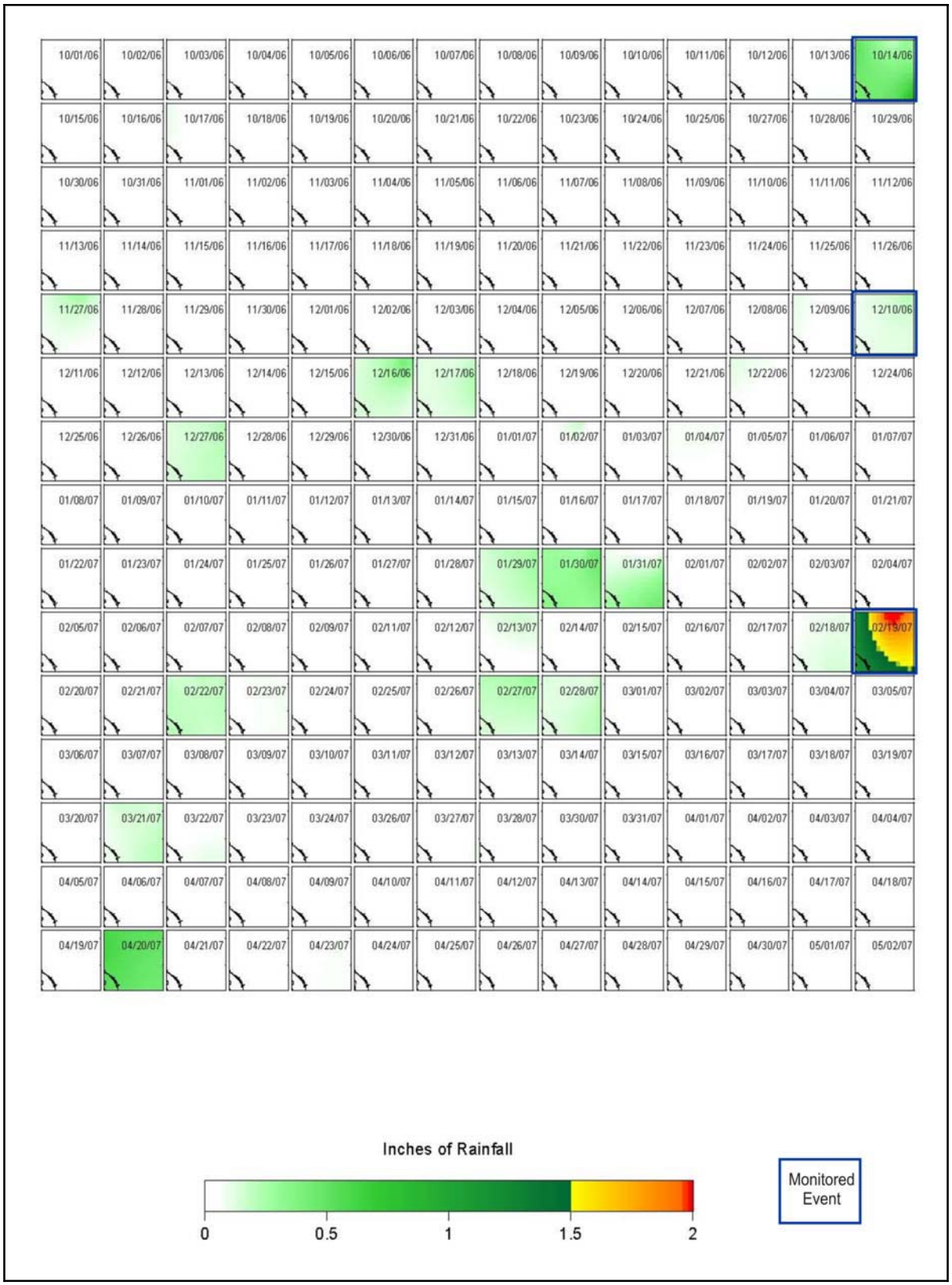

Figure 1-4. Rainfall Events and Distribution for DPR2 and SD8(1) During the 2006-2007 Wet Weather Monitoring Period

2.0 SAMPLING AND ANALYTICAL METHODS

2.1 Sampling Methods

Storm water runoff was collected using flow-weighted composite techniques over the duration of runoff. Sample collection was terminated when the storm flow returned to near 10 % of the base flow condition, upon the end of the precipitation event, and cessation of storm water flow.

2.2 Storm Water Quality Monitoring

Automated flow and sampling equipment were installed at each site to collect flow-weighted composite samples during storm events. American Sigma flow meters with pressure transducers or bubblers were used to measure velocity and stage height. The flow sensors were installed on the channel bottom in the center of the channel.

Using the data collected by the flow meters, sample intervals were set to collect approximately 40-liters of water throughout the storm event. The sample intake point was located adjacent to the flow meter, on the channel bottom in the center of the channel. American Sigma automated samplers were used to collect 1-liter sample grabs at a flow dependent rate. The 1-liter grabs were composited into 20-liter borosilicate glass sample bottles.

The automated sampler collects grab samples via a peristaltic pumping mechanism. Water samples are pumped through a Teflon intake device and Teflon tubing into a 20-liter borosilicate glass sample bottle. Bottles were kept on ice during the storm event. Field crews maintained and replaced the sampling bottles as they filled to capacity. Multiple bottles are composited at Weston's facility and subsampled for delivery to the laboratory for chemistry and bioassay toxicity analyses.

Flow-weighted composite samples were collected and analyzed for the constituents listed in Table 2-1. Bioassay samples were collected for acute and chronic toxicity analyses using the organism *C. dubia* and acute toxicity to *Hyalella azteca*.

Grab samples were collected for those constituents that are not conducive to automated composite sampling. These constituents are pH, temperature, conductivity and fecal indicator bacteria (Table 2-1). Grab samples were collected from the horizontal and vertical center of the channel where possible.

A field data log was completed at each site (Appendix B). The field data log includes empirical observations of the site and water quality characteristics. Observations include parameters such as meteorological conditions at time of sampling; odor, color, and general turbidity of the runoff; and changes in vegetation condition or erosion along the channel's side slope.

Table 2-1. Water Quality Analytical Parameters for the DPR2 and SD8(1) Sites

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical, temperature, light protected)	Maximum Holding Time: Preparation/ Analysis
pH	N/A	N/A	Analyzed in Field	N/A	N/A
Temperature	N/A	N/A	Analyzed in Field	N/A	N/A
Conductivity	N/A	N/A	Analyzed in Field	N/A	N/A
Total Coliform	SM 9221 B, E	100 ml	Plastic	Store Cool at <4ºC	6 Hours
Fecal Coliform	SM 9221 B, E	100 ml	Plastic	Store Cool at <4ºC	6 Hours
Enterococci	SM 9320	100 ml	Plastic	Store Cool at <4ºC	6 Hours
TSS	SM 2540D	1L	Plastic	Store Cool at <4ºC	7 Days
Total Hardness	SM 2340-B	100 mL	Plastic	HNO_3	6 Months
Nitrate - N	SM 4500-NO_3	100 mL	Plastic or Glass	Store Cool at <4ºC	48 Hours
Nitrite - N	SM 4500-NO_2	100 mL	Plastic or Glass	Store Cool at <4ºC	48 Hours
TKN	EPA 351.3	500 mL	Amber Glass	Acidify to <2 with H_2S0_4	28 Days
Ammonia - N	SM 4500-NH_3	250 mL	Plastic or Glass	Acidify to <2 with H_2S0_4	28 Days
TOC	EPA 415.1	250 mL	Clear Glass	Acidify to <2 with H_2S0_4	28 Days
Organophosphorus Pesticides	EPA 625	2L	Amber Glass	Store Cool at <4ºC	Extraction-7 Days Analysis-40 Days
Synthetic Pyrethroids	EPA 625-NCI	2L	Amber Glass	Store Cool at <4ºC	Extraction-7 Days Analysis-40 Days
Total & Dissolved Cadmium	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Total & Dissolved Copper	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Total & Dissolved Lead	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Total & Dissolved Zinc	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Acute Toxicity *C. Dubia* and *H. Azteca*	EPA 821-R-02-012	10L	10L Glass	Store Cool at <6ºC	36 Hours
Chronic Toxicity *C. Dubia*	EPA 821-R-02-013	20L	20L Glass	Store Cool at <6ºC	36 Hours

2.3 QA/QC Procedures

Field measurements for pH, conductivity, and temperature were made using an Oakton CON10 pH/temperature/conductivity meter according to manufacturer's specifications. Calibration of the instruments was conducted prior to each sampling event.

Quality assurance and quality control (QA/QC) for sampling processes included proper collection of the samples in order to minimize the possibility of contamination. All samples were collected in laboratory supplied, laboratory-certified, contaminant free sample bottles while wearing powder free nitrile gloves. All sampling personnel were trained according to the field sampling SOPs. Field staff was made aware of the significance of the project detection limits and the requirement to avoid contamination of samples at all times.

A temperature blank was utilized to ensure sample holding temperatures were maintained from sample collection to delivering to the laboratory.

2.4 Chain-of-Custody Procedures

Chain-of-custody (COC) procedures were used for all samples throughout the collection, transport, and analytical process. Samples were considered to be in custody if they were (1) in the custodian's possession or view, (2) retained in a secured place (under lock) with restricted access, or (3) placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal. The principal documents used to identify samples and to document possession were COC records, field logbooks, and field tracking forms.

The COC procedures were initiated during sample collection. A COC record was provided with each sample or group of samples. Each person who had custody of the samples signed the form and ensured the samples were not left unattended unless properly secured. Documentation of sample handling and custody included the following:

- Sample identifier
- Sample collection date and time
- Any special notations on sample characteristics or analysis
- Initials of the person collecting the sample
- Date the sample was sent to the analytical laboratory
- Shipping company and waybill information.

Completed COC forms were placed in a plastic envelope and kept inside the container with the samples. Once delivered to the analytical laboratory, the COC form was signed by the person receiving the samples. The condition of the samples (i.e., confirming all samples were accounted for and properly labeled, the temperature of the samples, and integrity of the sample jars) was noted and recorded by the receiver. COC records were included in the final reports prepared by the analytical laboratories and are considered an integral part of the report.

3.0 MONITORING RESULTS AND ASSESSMENT

This section presents the water quality monitoring results for sites DPR2 and SD8(1) to satisfy the requirements of RWQCB Order No. R9-2004-0277. The criteria for which results are assessed are also presented.

3.1 Water Quality Criteria

Water chemistry results will be compared to criteria from the following references to determine the magnitude of any impacts from storm water runoff to Chollas Creek:

- Water Quality Control Plan (Basin Plan, RWQCB, 1994) for the San Diego Region
- Title 40 of the Code of Federal Regulations (Part 131; Water Quality Standards) (USEPA, 2000a)
- The National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit (USEPA, 2000b)
- Water quality criteria for diazinon, chlorpyrifos, and malathion (CDFG, 2000)

Table 3-1 lists the constituents that were monitored during this project and their respective water quality objectives.

Table 3-1. Water Quality Criteria

Constituent	Criteria	Source
Water Samples		
pH	6.5 – 8.5	Basin Plan (RWQCB, 1994)
Conductivity	-	
Temperature	-	
Total Coliform	-	-
Fecal Coliform	4000	Basin Plan (RWQCB, 1994)
Enterococci	-	-
Total Organic Carbon (TOC)	50 mg/L	Multi-Sector General Permit (USEPA, 2000b)
Total Suspended Solids (TSS)	100 mg/L	Multi-Sector General Permit (USEPA, 2000b)
Total and Dissolved Cadmium	(a)	40 CFR 131 (USEPA, 2000a)
Total and Dissolved Copper	(a)	40 CFR 131 (USEPA, 2000a)
Total and Dissolved Lead	(a)	40 CFR 131 (USEPA, 2000a)
Total and Dissolved Zinc	(a)	40 CFR 131 (USEPA, 2000a)
Hardness	-	
Diazinon	72 ng/L/45 ng/L	Resolution No. R9-2002-0123(b)
Chlorpyrifos	20 ng/L	CDFG (2000)
Malathion	430 ng/L	CDFG (2000)
Ammonia (unionized)	0.025 mg/L	Basin Plan (RWQCB, 1994)
Nitrate	10 mg/L	Basin Plan (RWQCB, 1994)
Nitrite	1 mg/L	Basin Plan (RWQCB, 1994)
Total Kjeldahl Nitrogen (TKN)	-	-
Acute Toxicity *Ceriodaphnia dubia*	LC_{50}	-
Acute toxicity *Hyalella azteca*	100 NOEC (%)	-

Constituent	Criteria	Source
Chronic Toxicity *Ceriodaphnia dubia*	100 NOEC (%)	-

(a) Water Quality Objective for total and dissolved metal fractions are based on Total Hardness (as CaCO3) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). Samples are compared to both the acute (CMC) and Chronic (CCC) criteria.
(b) For the Chollas Creek TMDL (Resolution No. R9-2002-0123), the WLA is set at 72 ng/L for acute exposures and 45 ng/L for chronic exposures. The 45 ng/L chronic exposure is applied to samples collected using a flow weighted composite method.

3.2 Sampling Summary

Samples of urban runoff were collected from three storm event during the 2006-2007 wet weather monitoring season (10/14/2006, 12/10/2006 and 02/19/2007). The storm event was considered viable for monitoring if it achieved greater than 0.1 inches of rainfall and was expected to create measurable run-off. Flow-weighted composite samples were collected at the initial flush of runoff and sampling continued throughout the entirety of the storm event. Hydrographs from the monitored storm events for the DPR2 and SD8(1) sites are presented in Figure 3-1 through Figure 3-6.

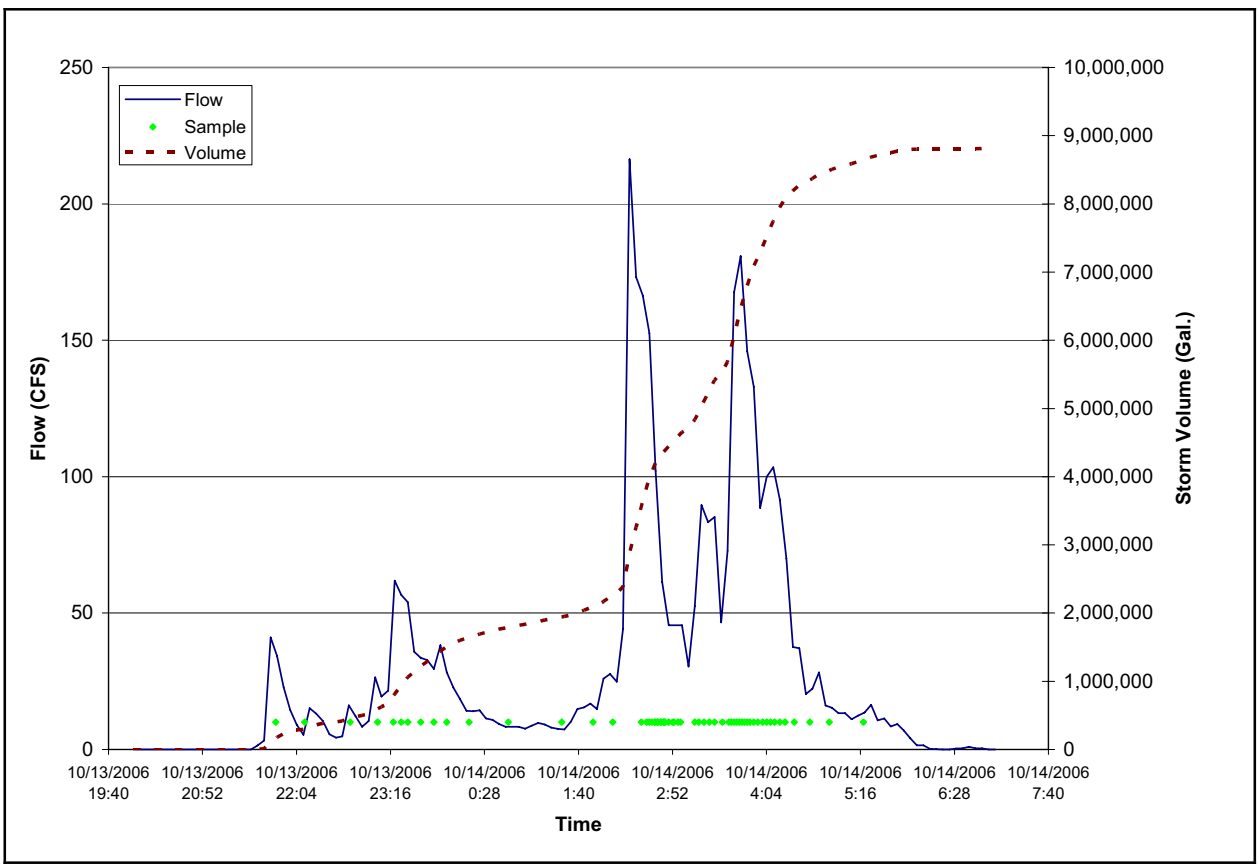

Figure 3-1. Chollas Creek North Fork Downstream Mass Loading Station – SD8(1), October 14, 2006

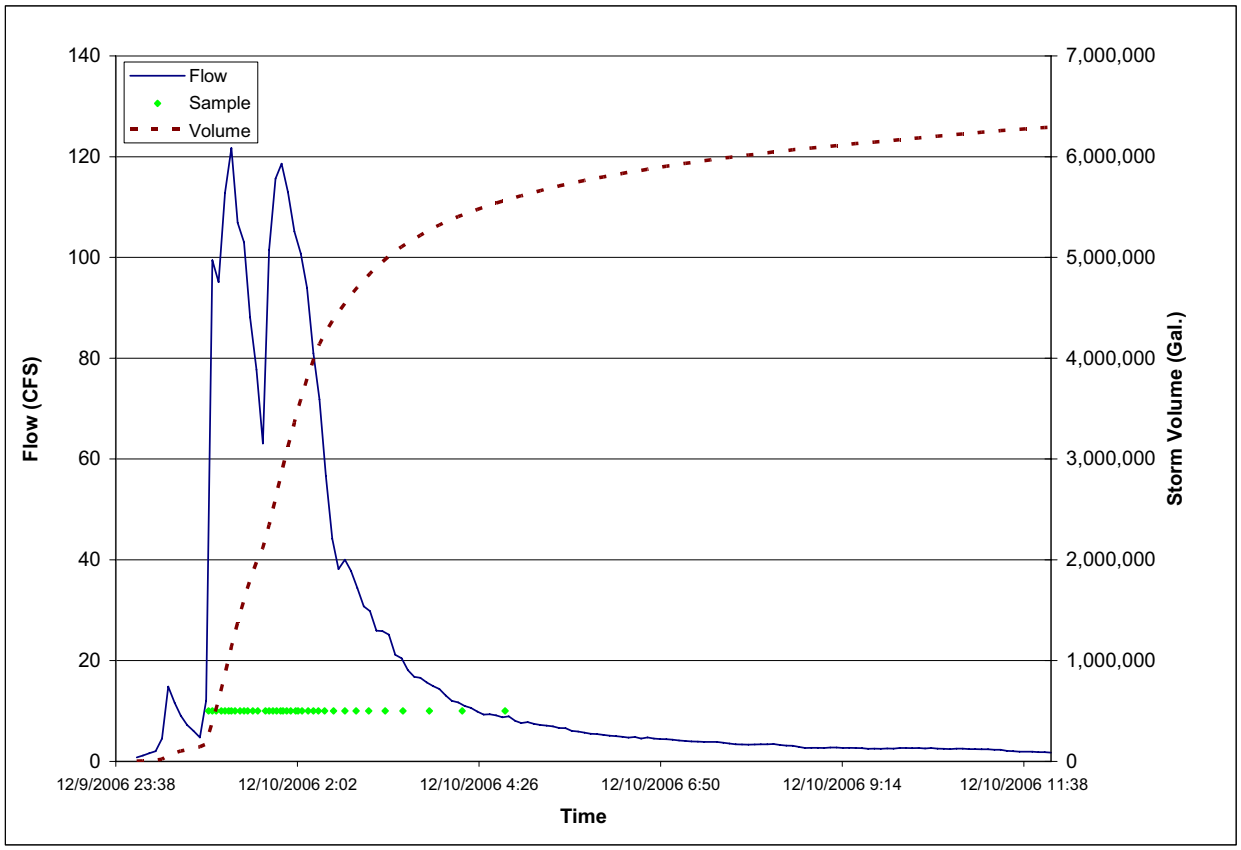

Figure 3-2. Chollas Creek North Fork Downstream Mass Loading Station – SD8(1), December 10, 2006

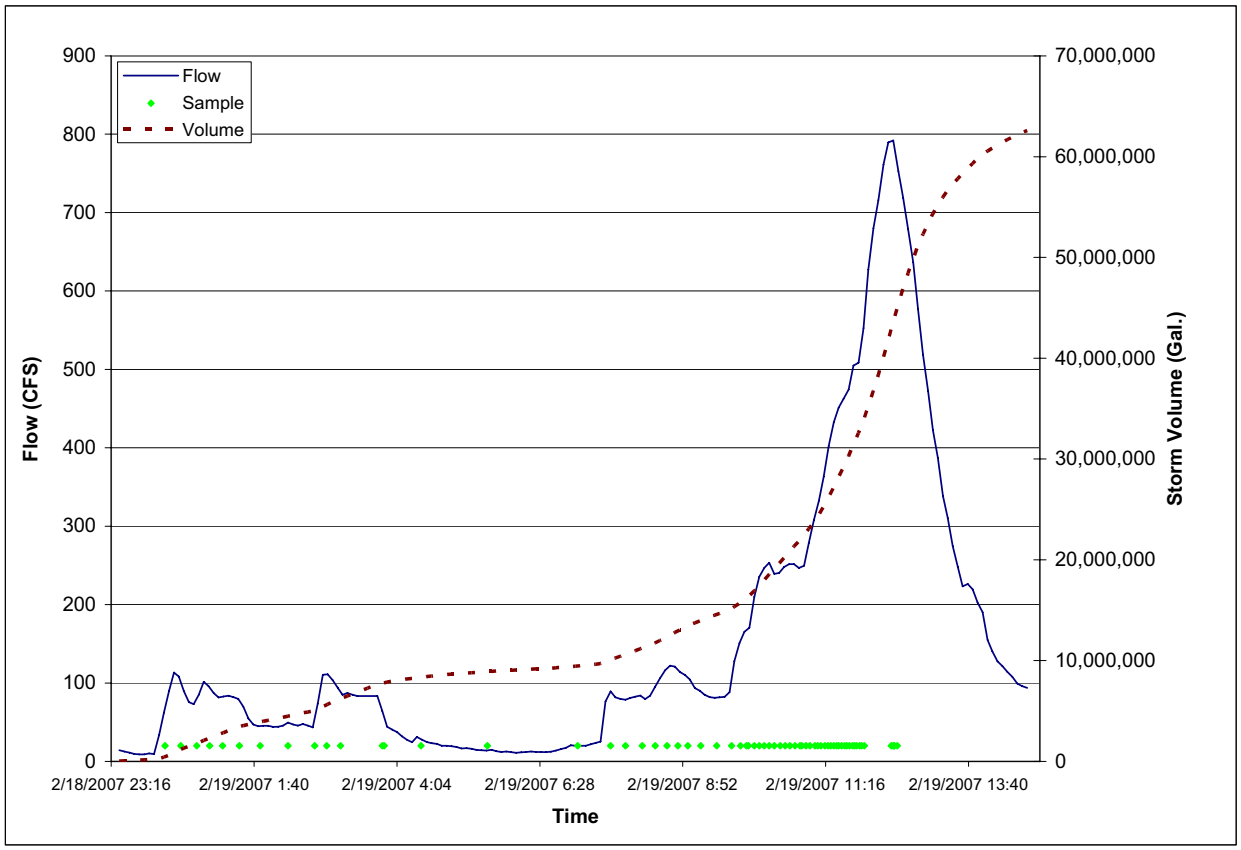

Figure 3-3. Chollas Creek North Fork Downstream Mass Loading Station – SD8(1), February 19, 2007

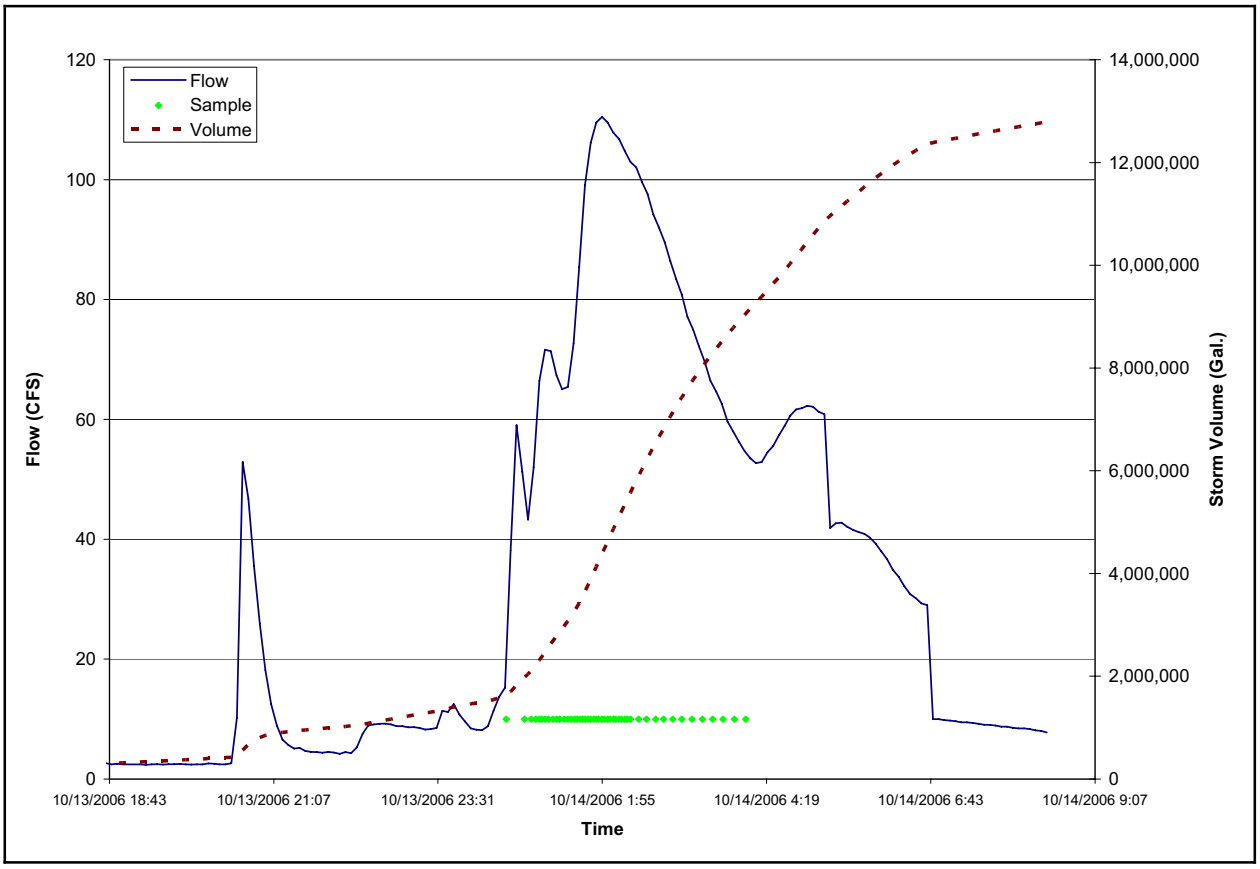

Figure 3-4. Chollas Creek South Fork Downstream – DPR2 Mass Loading Station, October 14, 2006

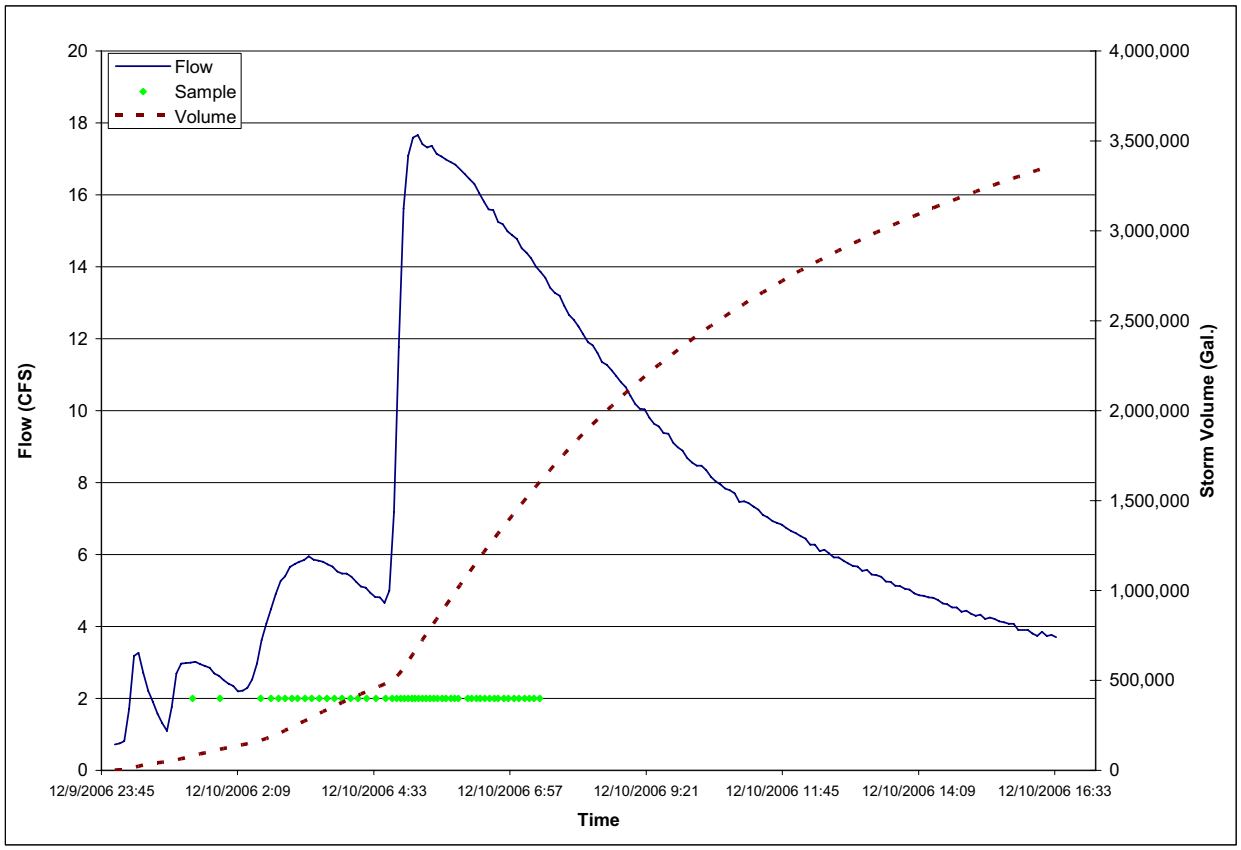

Figure 3-5. Chollas Creek South Fork Downstream – DPR2 Mass Loading Station, December 10, 2006

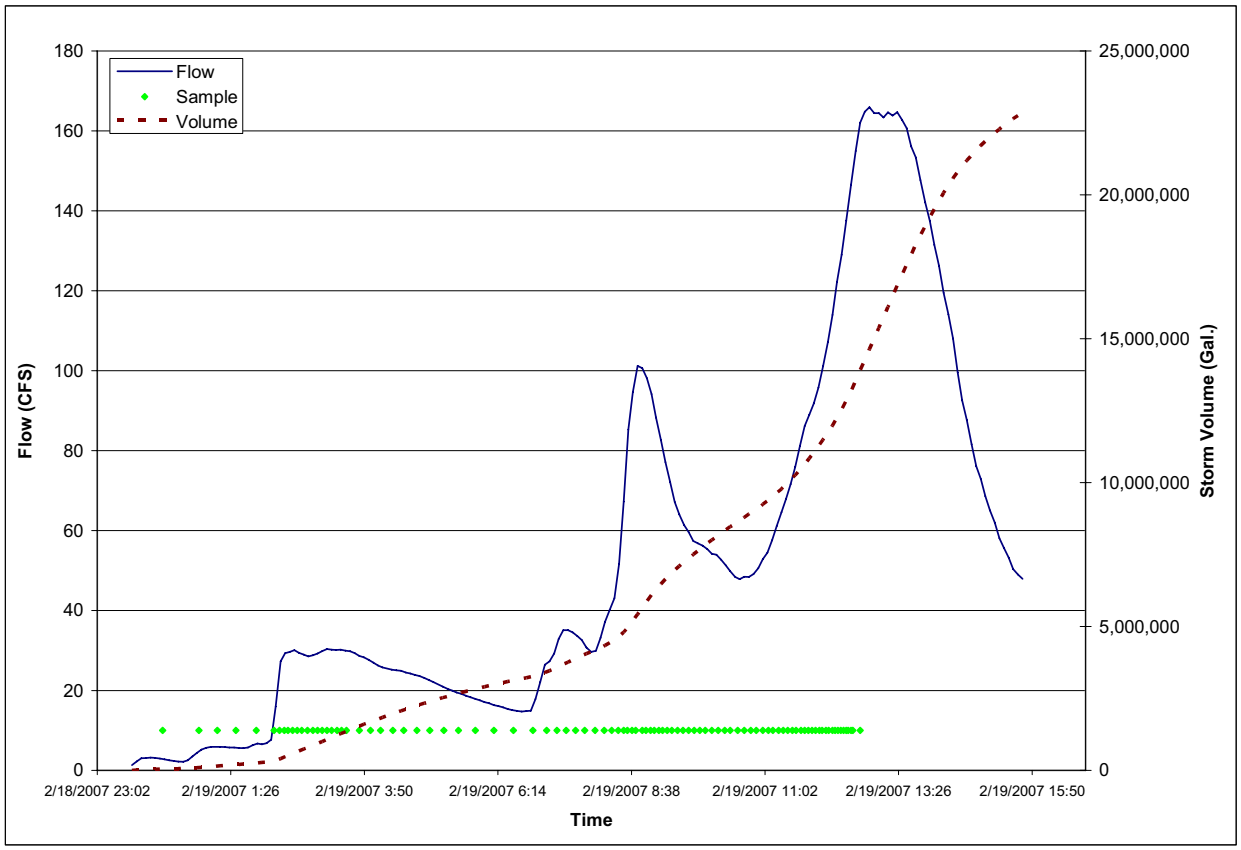

Figure 3-6. Chollas Creek South Fork Downstream – DPR2 Mass Loading Station, February 19, 2007

3.3 Sample Results and Discussion

The bacteria, chemistry, and biological toxicity results for the storm events monitored are presented in Table 3-2 through Table 3-4 respectively. Sample results were compared to the water quality objective benchmark (WQO) in Table 3-1. Values above the WQO are bolded and shaded.

Bacteria

DPR2 Fecal Coliform counts were higher than the Basin Plan's WQO of 4,000 MPN/100 ml for all events sampled. Total Coliform results ranged between 110,000 and 500,000 for the three storm events monitored. Enterococcus results ranged between 50,000 and 230,000 for the same storms. Bacteria results at SD8(1) were above the WQO for two of the three storms monitored. Total coliform and enterococcus results were slightly lower than the south fork site DPR2 but were within the same order of magnitude.

Chemistry

Sample results for general chemistry were above the WQO for total organic carbon (TOC) during the first monitoring event (10/14/2006) at both sites SD8(1) and DPR2. Total suspended solids were above the WQO at both sites during the third monitoring event (2/19/07) which was

also the largest rainfall event of the three storms monitored. All other general chemistry results were below their respective WQO.

Diazinon was above the TMDL waste load allocation (WLA) of 0.45 µg/L during the first storm event (10/14/06) at site SD8(1). This is the first value measured above the TMDL WLA in the past three monitoring years at this site. The TMDL allows for one exceedance every three years. Diazinon was not detected during any other storm event or at site DPR2 during the 2006-2007 monitoring season. Malathion was detected during all storm events at both sites and was above the WQO at site DPR2 and SD8(1) on the first monitoring event (10/14/06). All other organophosphate pesticides analyzed were below their respective detection limits.

Several synthetic pyrethroids were detected during all three storm events at both sites DRP2 and SD8(1). Several values were above the published literature values for LC50s for *Hyalella azteca*. Toxicity identification evaluations performed during the 2005-2006 monitoring period as part of the Regional Monitoring Program identified synthetic pyrethroids as the causative agent of toxicity to *Hyalella azteca* (Weston, 2007). Based on these findings, synthetic pyrethroids and toxicity to *H. azteca* were added as part of the analytical constituent list.

Several metals were detected during the 2006-2007 monitoring period and were similar to historical values detected in the watershed. Total copper and total lead were above the hardness based WQO during all events at both sites SD8(1) and DPR2. Total zinc was above the WQO during two events at site SD8(1) (12/10/06 and 2/19/07 respectively) and one event at site DPR2 (2/19/07). Total cadmium was above the WQO at site SD8(1) during the first two monitoring events. Dissolved copper was above the WQO during all three sample events at site SD8(1) and during one event only at site DPR2. Dissolved lead was above the WQO during the first event at site SD8(1) (10/14/06) and the last event at site DPR2 (2/19/07). Dissolved zinc and dissolved cadmium were below their respective WQO during all monitoring events at both sites.

For ease of comparison to the hardness based water quality objective, the total and dissolved metals results were divided by their respective WQO and are presented in Figure 3-7. This figure presents the magnitude to which the results are above or below the WQO and also shows the mean, upper 25th percentile, and lower 25th percentiles of the historical data (in gray). Chronic WQOs for total and dissolved metals were calculated for each monitoring event at SD8(1) and DPR2, during the current sampling year (2006-2007) and are graphed along with the average WQO ratio. The average WQO ratio for SD8(1) is for the time period of 2001-2007, and for DPR2 2004-2007.

During the current monitoring year, total metals ratios tended to be higher at SD8(1) when compared to DPR2. However, for the third storm of the year (2/19/07) both stations had similar ratios to WQO for total copper, lead, and zinc. Dissolved metals were generally similar to the historical mean WQO ratios for both sites.

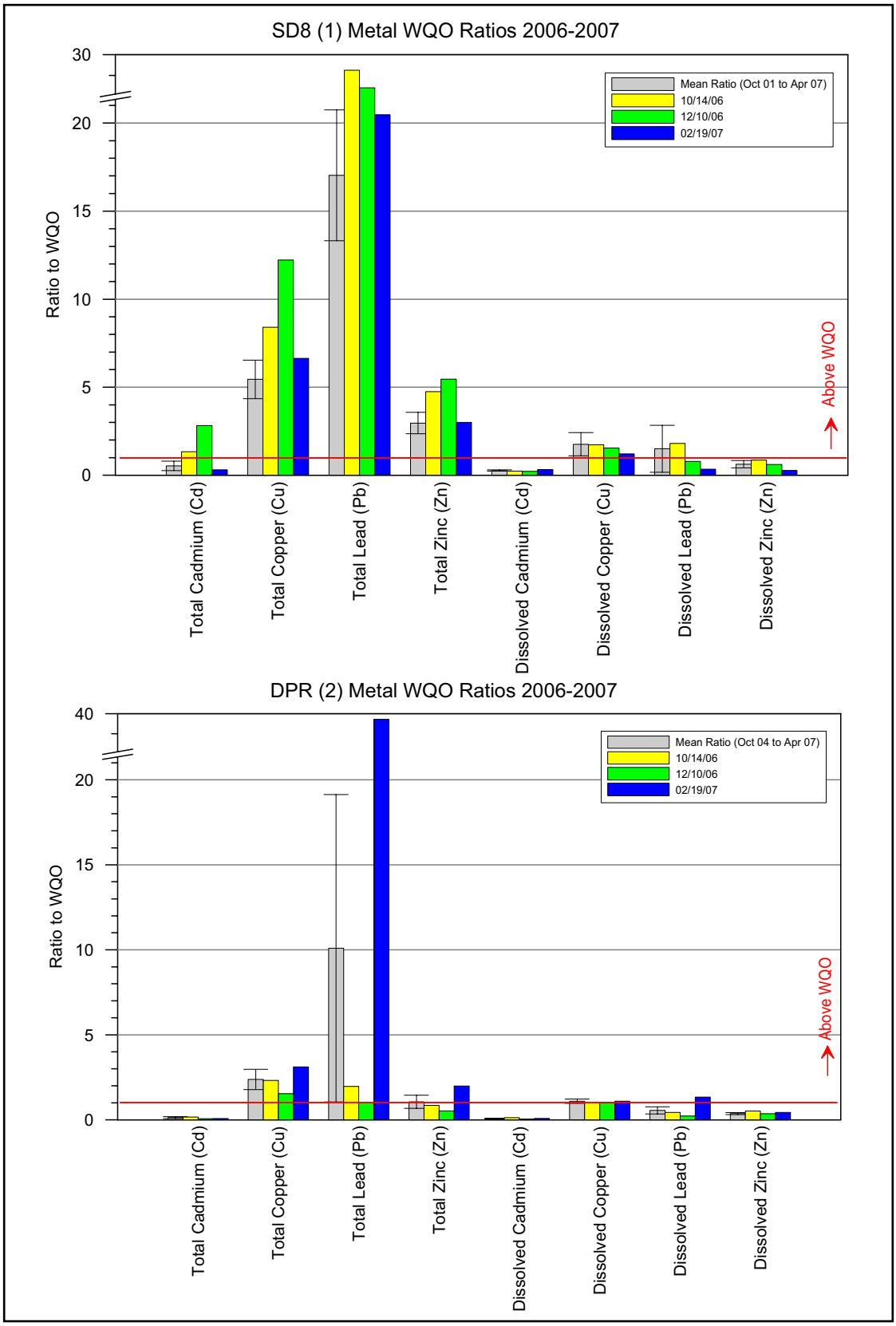

Figure 3-7. Chollas Creek 2006-2007 metals water quality ratios for sites SD8(1) and DPR2.

Toxicity

Toxicity results are presented in Table 3-3 and Table 3-4 for *Ceriodaphnia dubia* and *Hyalella azteca* respectively. RWQCB Order No. R9-2004-0277 requires the Watershed Copermittees to analyze for toxicity to *Ceriodaphnia dubia.* Toxicity to *Hyalella azteca* has been added due to the noted shift in pesticide use from diazinon to synthetic pyrethroids and the resulting toxic effects observed to this organism. Acute toxicity to *Ceriodaphnia dubia* was not observed at either site DPR2 or SD8(1) during the 2006-2007 monitoring season. However, chronic survival toxicity was observed at both sites DPR2 and SD8(1) during the first rainfall event on 10/14/2006 (NOEC=50% for both sites). Reproductive toxicity was observed during the first event only at site DPR2 (NOEC=50%). Diazinon was above the WQO during one storm event at site SD8(1) during the first storm event but below the effects threshold value of 250 ng/L that has been observed to cause acute toxicity to *Ceriodaphnia dubia* (Weston, 2006). Malathion was also above the WQO during the first storm event at both SD8(1) and DPR2. Several synthetic pyrethroids were detected at both location and the possible synergistic effects may play a role in chronic and reproductive toxicity observed to *Ceriodaphnia dubia*.

Toxicity to *Hyalella azteca* was observed at site SD8(1) during all three events monitored. Toxicity to *Hyalella azteca* was observed at site DPR2 was observed during the first rainfall event on 10/14/06 and the third rainfall event monitored on 2/19/07. Toxicity was greatest at site SD8(1) during the first rainfall event and in comparison to results from site DPR2. The higher toxicity to *Hyalella azteca* during the 10/18/06 event at site SD8(1) is likely due to the combination of the pesticides detected (diazinon, malathion, and synthetic pyrethroids) during this event.

Table 3-2. Chemistry Analytical Results for Site DPR2 and Site SD8(1)

Parameters	Fraction	Units	MDL	RL	DPR (2)			SD8 (1)		
					10/14/2006	12/10/2006	2/19/2007	10/14/2006	12/10/2006	2/19/2007
Field Measurement										
pH		pH units	-	-	7.33	7.60	7.84	8.09	8.40	7.80
Conductivity		µS/cm	-	-	693*	579	326	319	239	1890
Temperature		°C	-	-	17.0	12.4	12.8	17.9	14.3	13.7
Bacteria										
Total Coliform	Total	MPN/100ml	20	20	230,000	110,000	500,000	50,000	80,000	110,000
Fecal Coliform	Total	MPN/100ml	20	20	**17,000**	**50,000**	**22,000**	**23,000**	**3,000**	**8,000**
Enterococci	Total	MPN/100ml	20	20	220,000	50,000	230,000	90,000	130,000	50,000
General Chemistry										
TOC	Total	mg/L	2	2	**73.0**	43.0	16.0	**64.0**	33.3	11.3
TKN	Total	mg/L	0.5	0.5	7.10	3.10	2.20	4.20	4.50	3.70
Ammonia-N	Total	mg/L	0.01	0.05	0.59	0.42	0.40	1.64	2.12	1.53
Nitrate-N	Total	mg/L	0.02	0.05	1.40	1.39	0.67	2.40	0.27	<0.05
Nitrite-N	Total	mg/L	0.02	0.05	0.06	0.06	0.06	0.10	0.06	0.07
Total Hardness as $CaCO_3$	Total	mg/L	1	5	160	113	44.3	89.0	101	60.0
Total Suspended Solids	Total	mg/L	0.5	0.5	74.0	15.5	**106**	438	418	**239**
Oil and Grease		mg/L	1	5	<1	J 2.4	J 2.6	<5	<5	<5
Organophosphorus Pesticides										
Bolstar (Sulprofos)	Total	ng/L	2	4	<2	<2	<2	<2	<2	<2
Chloropyrifos	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Demeton	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Diazinon	Total	ng/L	2	4	<2	<2	<2	**100**	<2	<2
Dichlorvos	Total	ng/L	3	6	<3	<3	<3	<3	<3	<3
Dimethoate	Total	ng/L	3	6	<3	<3	<3	<3	<3	<3
Disulfoton	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Ethoprop (Ethoprofos)	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Fenchlorphos (Ronnel)	Total	ng/L	2	4	<2	<2	<2	<2	<2	<2
Fensulfothion	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Fenthion	Total	ng/L	2	4	<2	<2	<2	<2	<2	<2
Malathion	Total	ng/L	3	6	**535**	92.4	147	**949**	270	95.0
Merphos	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Methyl Parathion	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Mevinphos (Phosdrin)	Total	ng/L	8	16	<8	<8	<8	<8	<8	<8
Phorate	Total	ng/L	6	12	<6	<6	<6	<6	<6	<6
Tetrachlorvinphos (Stirofos)	Total	ng/L	2	4	<2	<2	<2	<2	<2	<2
Tokuthion	Total	ng/L	3	6	<3	<3	<3	<3	<3	<3
Trichloronate	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Synthetic Pyrethroids										
Allethrin	Total	ng/L	0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bifenthrin	Total	ng/L	0.5	2	**11.9**	7.20	**374**	**90.0**	**57.0**	**398**
Cyfluthrin	Total	ng/L	0.5	2	5.48	21.0	87.0	191	354	165
Cypermethrin	Total	ng/L	0.5	2	10.6	**31.9**	**93.5**	**131**	**451**	**116**
Danitol	Total	ng/L	0.5	2	<0.5	7.90	<0.5	<0.5	<0.5	<0.5
Deltamethrin	Total	ng/L	0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Parameters	Fraction	Units	MDL	RL	DPR (2)			SD8 (1)		
					10/14/2006	12/10/2006	2/19/2007	10/14/2006	12/10/2006	2/19/2007
Esfenvalerate	Total	ng/L	0.5	2	<0.5	<0.5	6.70	<0.5	<0.5	5.00
Fenvalerate	Total	ng/L	0.5	2	<0.5	<0.5	3.90	<0.5	<0.5	3.00
L-Cyhalothrin	Total	ng/L	0.5	2	<0.5	8.70	42.1	<0.5	<0.5	0.31
Permethrin	Total	ng/L	0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prallethrin	Total	ng/L	0.5	2	4.10	3.50	<0.5	<0.5	287	10.6
Trace Metals										
Cadmium (Cd)	Dissolved	µg/L	0.20	0.40	0.40	<0.2	<0.2	<1.0	1.00	<1.0
Copper (Cu)	Dissolved	µg/L	0.40	0.80	13.7	9.80	**4.90**	**14.0**	**14.0**	**7.00**
Lead (Pb)	Dissolved	µg/L	0.10	0.50	1.80	0.65	**1.37**	**4.00**	2.00	<1.00
Zinc (Zn)	Dissolved	µg/L	0.10	0.50	92.0	47.0	25.5	92.0	72.0	21.0
Cadmium (Cd)	Total	µg/L	0.20	0.40	0.60	J 0.2	<0.2	**3.00**	**7.00**	<1.00
Copper (Cu)	Total	µg/L	0.40	0.80	**32.4**	**15.9**	**14.5**	**71.0**	**115**	**40.0**
Lead (Pb)	Total	µg/L	0.10	0.50	**11.4**	**3.80**	**42.0**	**72.0**	**71.0**	**34.0**
Zinc (Zn)	Total	µg/L	0.10	0.50	152	70.1	**120**	51.5	**659**	**233**
Metals WQO										
Cadmium (Cd)	Dissolved	µg/L	0.20	0.40	3.17	2.45	1.23	2.05	2.25	1.53
Copper (Cu)	Dissolved	µg/L	0.40	0.80	13.80	9.93	4.47	8.11	9.03	5.79
Lead (Pb)	Dissolved	µg/L	0.10	0.50	4.18	2.87	1.03	2.22	2.54	1.44
Zinc (Zn)	Dissolved	µg/L	0.10	0.50	175.93	130.83	59.26	107.03	119.14	76.63
Cadmium (Cd)	Total	µg/L	0.20	0.40	3.56	2.71	1.30	2.25	2.48	1.65
Copper (Cu)	Total	µg/L	0.40	0.80	13.94	10.34	4.65	8.44	9.41	6.03
Lead (Pb)	Total	µg/L	0.10	0.50	5.79	3.71	1.13	2.74	3.22	1.66
Zinc (Zn)	Total	µg/L	0.10	0.50	178.43	132.69	60.11	108.55	120.83	77.72

Bold and shaded values are above the WQO. Values for Bifenthrin and Cypermethrin are bold if above published LC50 values for *Hyalella azteca.*

* The value was incorporated from the composite sample from the bioassay sample results due to a field sampling error.

J = Value is above the laboratory method detection limit and below the reporting limit. The value is considered an estimate.

(a) Water Quality Objective for total and dissolved metal fractions are based on Total Hardness (as CaCO3) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA 2000). Samples are compared to both the acute (CMC) and Chronic (CCC) criteria.

(b) For the Chollas Creek TMDL (Resolution No. R9-2002-0123), the WLA is set at 72 ng/L for acute exposures and 45 ng/L for chronic exposures. The 45 ng/L chronic exposure is applied to samples collected using a flow weighted composite method.

Table 3-3. Biological Toxicity Results for *Ceriodaphnia dubia*

Test	Reporting Value	Unit	DPR2			SD8(1)		
			10/14/2006	12/10/2006	2/19/2007	10/14/2006	12/10/2006	2/19/2007
96-Hour Acute Toxicity (*C.dubia*)	Mean % Survival for Control	%	100	100	100	100	100	100
96-Hour Acute Toxicity (*C.dubia*)	% Survival in 100% Concentration	%	100	100	100	100	100	100
96-Hour Acute Toxicity (*C.dubia*)	LC_{50}	%	>100	>100	>100	>100	>100	>100
96-Hour Acute Toxicity (*C.dubia*)	LOEC	%	>100	>100	>100	>100	>100	>100
96-Hour Acute Toxicity (*C.dubia*)	TUa		0	0	0	0	0	0
96-Hour Acute Toxicity (*C.dubia*)	LT_{50}	Hours	>96	>96	>96	>96	>96	>96
7-Day Chronic Toxicity (*C.dubia*)	Mean % Survival for Control	%	100	100	100	100	100	100
7-Day Chronic Toxicity (*C.dubia*)	% Survival in 100% Concentration	%	**20**	100	90	**30**	>100	100
7-Day Chronic Toxicity (*C.dubia*)	LC_{50} (survival)	%	**77.11**	>100	>100	**82.03**	>100	>100
7-Day Chronic Toxicity (*C.dubia*)	NOEC (survival)	%	**50**	100	100	**50**	>100	100
7-Day Chronic Toxicity (*C.dubia*)	LOEC (survival)	%	**100**	>100	>100	**100**	>100	>100
7-Day Chronic Toxicity (*C.dubia*)	TUc (survival)		**2**	1	1	**1**	1	1
7-Day Chronic Toxicity (*C.dubia*)	LT_{50}	Hours	**169**	>168	>168	**180**	>168	>168
7-Day Chronic Toxicity (*C.dubia*)	NOEC (reproduction)	%	**50**	100	100	100	100	100
7-Day Chronic Toxicity (*C.dubia*)	LOEC (reproduction)	%	**100**	>100	>100	>100	>100	>100
7-Day Chronic Toxicity (*C.dubia*)	TUc (reproduction)		**2**	1	1	1	1	1

Bold and shaded values are above the WQO

Table 3-4. Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	DPR2			SD8(1)		
			10/14/2006	12/10/2006	2/19/2007	10/14/2006	12/10/2006	2/19/2007
96-Hour Acute Toxicity (*H.azteca*)	Mean % Survival for Control	%	100	100	100	100	87.5	100
96-Hour Acute Toxicity (*H.azteca*)	NOEC	%	**25**	100	**50**	**6.25**	**25**	**25**
96-Hour Acute Toxicity (*H.azteca*)	LC_{50}	%	**70.71**	>100	>100	**28.65**	**56.25**	**54.06**
96-Hour Acute Toxicity (*H.azteca*)	LOEC	%	**50**	>100	100	**12.5**	**50**	**50**
96-Hour Acute Toxicity (*H.azteca*)	TU_a		**1.41**	0.69	0.85	**3.49**	**1.78**	**1.85**

Bold and shaded values are above the WQO

3.3.1 Special Studies

Monitoring results from additional (special) studies conducted by the Chollas Watershed Copermittees, while directly related to the Chollas Creek Watershed, are outside of the current scope of the order requirements and are included as Appendices to this report. The City of San Diego has conducted two special studies as listed below:

- Appendix C (PDF on CD): Chollas Creek Jurisdictional Boundary Water Quality Monitoring Report (Weston Solutions, Inc., 2007).
- Appendix D (PDF on CD): City of San Diego Dry Weather Aerial Deposition Study (Weston Solutions, Inc., 2007)

The City of La Mesa conducted special studies in the north fork of Chollas Creek during dry and wet weather conditions. Monitoring was conducted for diazinon and total metals during the 2006-2007 wet weather monitoring season. Dry weather ambient monitoring was also conducted during the summer of 2007.

Time weighted composite sampling was conducted on 4/20/2007 during the last rainfall event of the season. Results for diazinon were below the detection limit (<0.04 µg/L) at the University Channel Discharge Point. Dissolved lead was below the detection limit (<0.001 mg/L). Dissolved copper (0.011 mg/L), lead (<0.001 mg/L) and zinc (0.054 mg/L) were all below the California Toxics Rule (CTR) hardness based acute and chronic concentration limits per Order 2004-0277 based on the sample hardness of 230 mg CaCO3/L.

During the special dry weather sampling (6/27/07), diazinon (<0.04 µg/L), dissolved lead (<0.001 mg/L) dissolved copper (<0.002 mg/L), and dissolved zinc (<0.01 mg/L) were all below their respective detection limits and metals were below the dissolved CTR acute and chronic limits.

The City of La Mesa is currently drafting a report which will be submitted to the State Water Resources Control Board at a later date.

3.4 Historical Data and Trend Analysis

Historical data have been collected at Site SD8(1) since 1994. Using the long term data set, a non-parametric trend analysis was conducted using the Mann-Kendall trend test to evaluate the presence or absence of significant trends using all available monitoring data. The Mann-Kendall trend analysis was also completed for the three years of data collected at DPR2. This trend test is often employed for analysis of environmental time series data. The test does not assume any single distribution for the data being tested, which is an advantage when analyzing environmental data. The test does not incorporate magnitude, but instead calculates the number of positive and negative differences between samples. The number of positive and negative differences is summed to calculate the S statistic, which is compared to a table value to determine significance.

Sen's estimate of slope is shown on the graphs below to illustrate the median trend of the data per constituent unit per year. This is not a predictive slope, but rather an estimate of the median true slope (change per unit time). This method is not affected by gross outliers or missing data.

Scatterplots with significant trends are shown in Figure 3-7 through Figure 3-10 . Note that because SD8(1) had significant trends, but DPR2 did not, there are no trend plots for DPR2. The results are presented by the constituent groups conventionals, pesticides, metals, and toxicity.

The trend analysis results for conventional constituents show significantly increasing trends for turbidity (S=228). The increasing trend for turbidity has a magnitude of 3.93 NTU/yr.

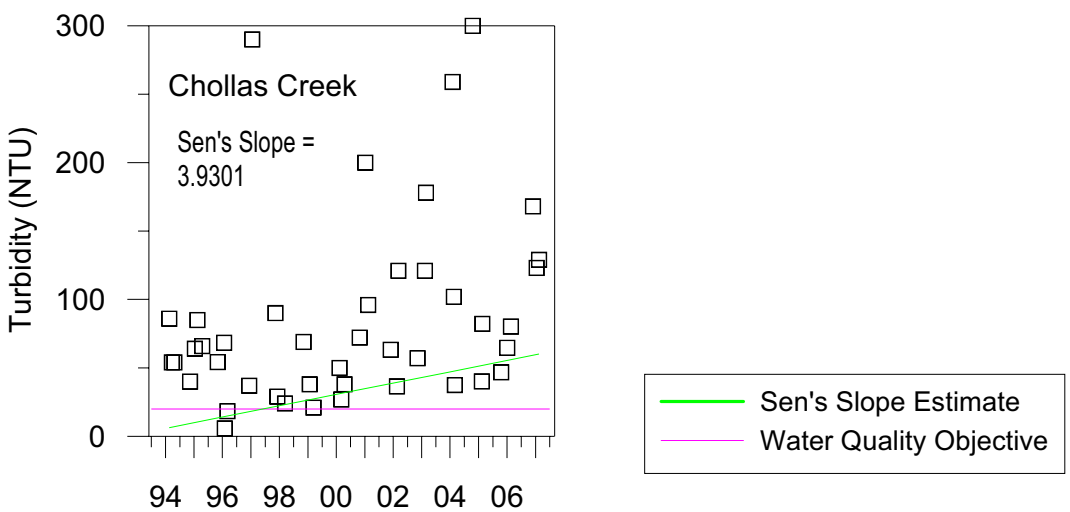

Figure 3-7. Scatterplots of conventional constituents with significant Mann-Kendall Trends and Sen's estimate of slope at the Chollas Creek MLS.

A review of the trend analysis for pesticide constituents indicates a significantly decreasing trend for Diazinon (S=-150) (Figure 3-8) over the monitoring period. However, the Diazinon dataset has greater than 15% non-detect values and so the magnitude of the trend is not reported.

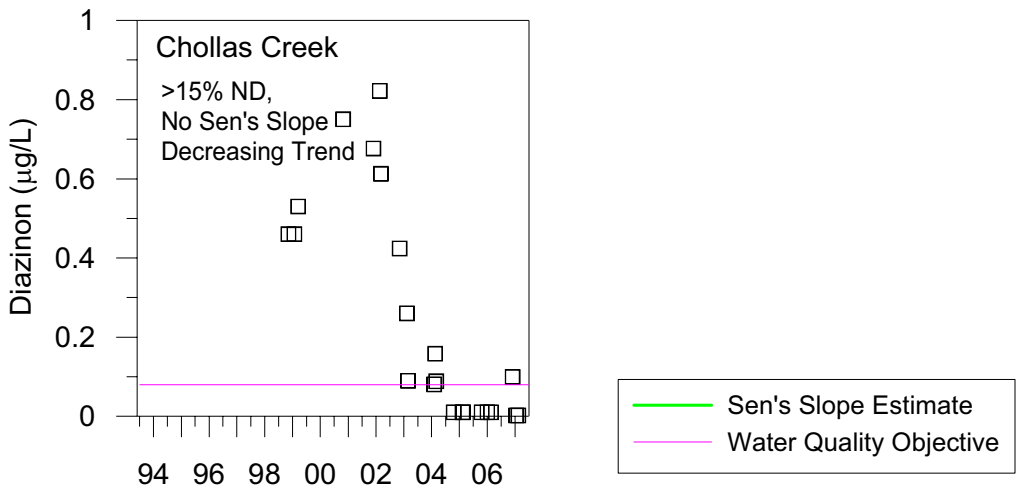

Figure 3-8. Scatterplots of pesticide constituents with significant Mann-Kendall Trends and Sen's estimate of slope at the Chollas Creek MLS.

A review of the trend analysis for metals constituents indicates a significantly increasing trend for total copper and total zinc. The trend for total copper (S=144) has a magnitude of 0.002 mg/L/yr. The trend for total zinc (S=177) has a magnitude of 0.015 mg/L/yr (Figure 3-9).

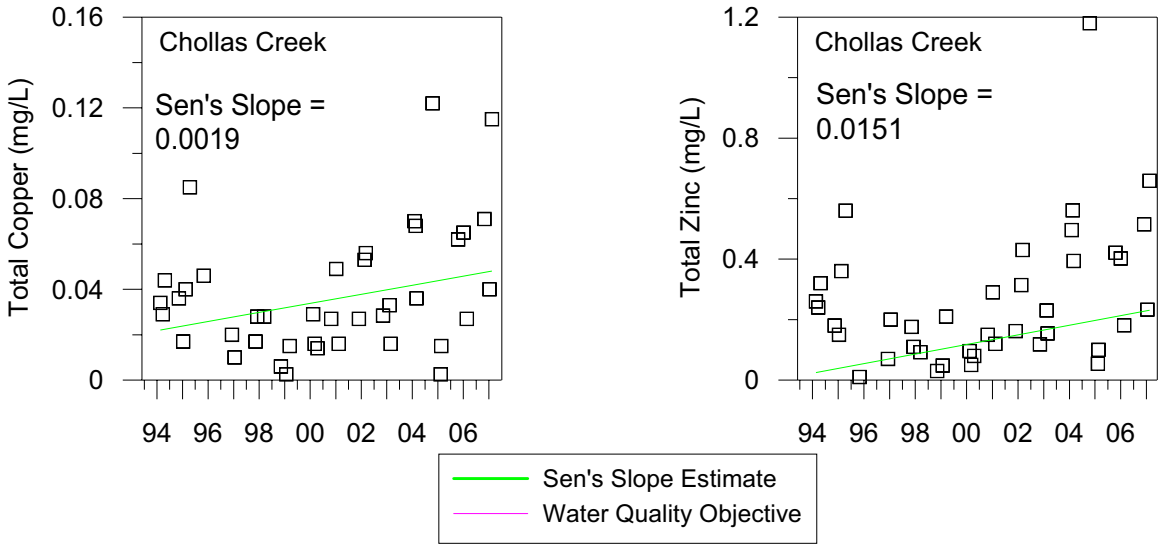

Figure 3-9. Scatterplots of metals constituents with significant Mann-Kendall Trends and Sen's estimate of slope at the Chollas Creek MLS.

A review of the trend analysis for toxicity indicates significantly decreasing trends for the acute *Ceriodaphnia* survival (S=-57), chronic *Ceriodaphnia* survival (-60) and *Ceriodaphnia* reproduction (-55) over the monitoring period. The magnitude of the trends are -2.58 LC50%/yr, -0.377 NOEC%/yr, and -0.033 NOEC%/yr, respectively (Figure 3-10). There is a significantly increasing trend for the acute *Hyalella* survival (S=59) over the monitoring period. The magnitude of the trend is 0.008 NOEC%/yr (Figure 3-10). These trends support the observed shift in pesticide use from diazinon to synthetic pyrethroids.

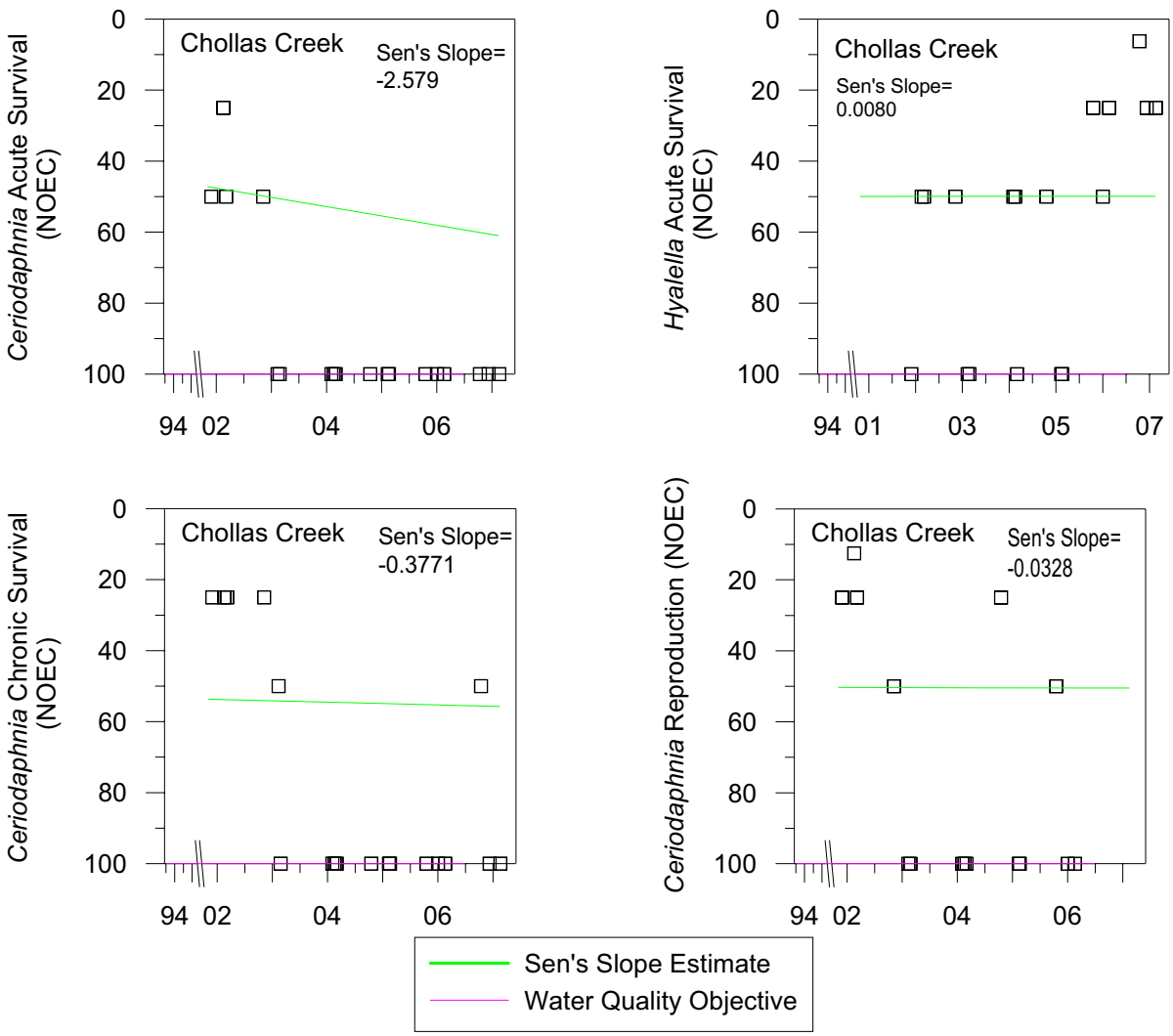

Figure 3-10. Scatterplots of toxicity constituents with significant Mann-Kendall Trends and Sen's estimate of slope at the Chollas Creek

The historical diazinon concentrations observed at sites SD8(1) and DPR2, including the EPA restriction dates, are presented in Figure 3-11. Sampling was conducted at site DPR2 from 2000-2001 as part of a Department of Pesticide Regulation study and in late 2004 as part of the monitoring and reporting requirements of RWQCB Order R9-2004-0277.

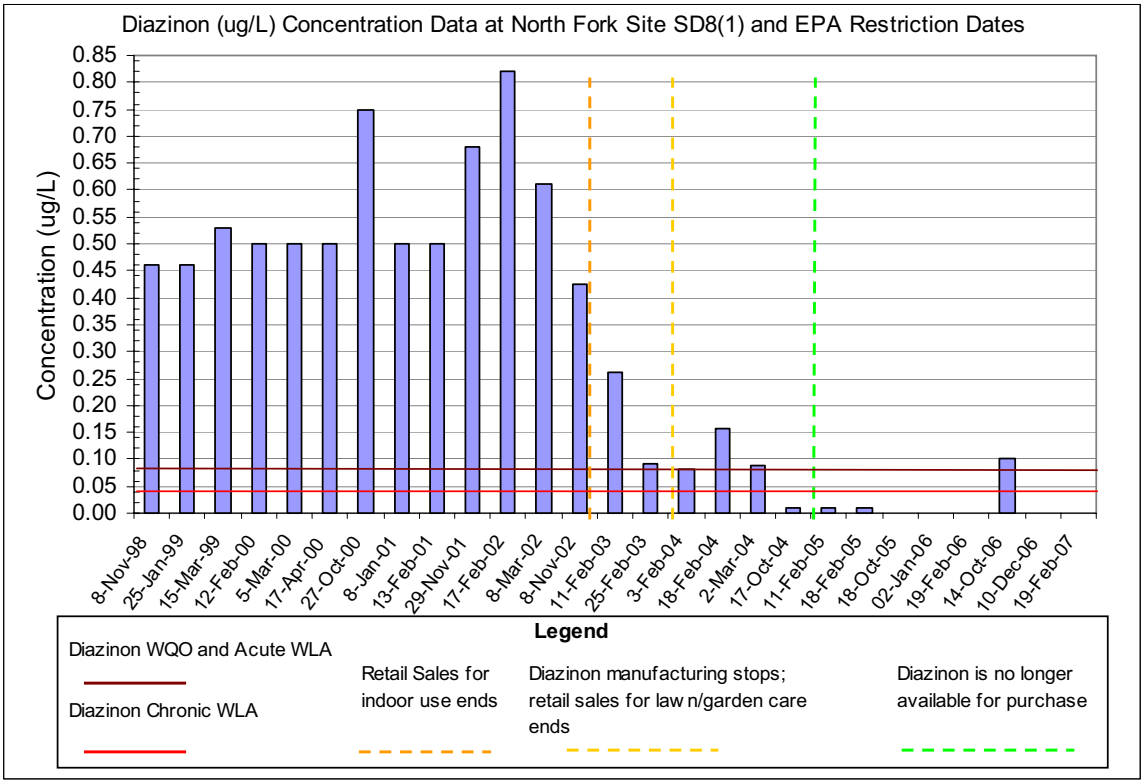

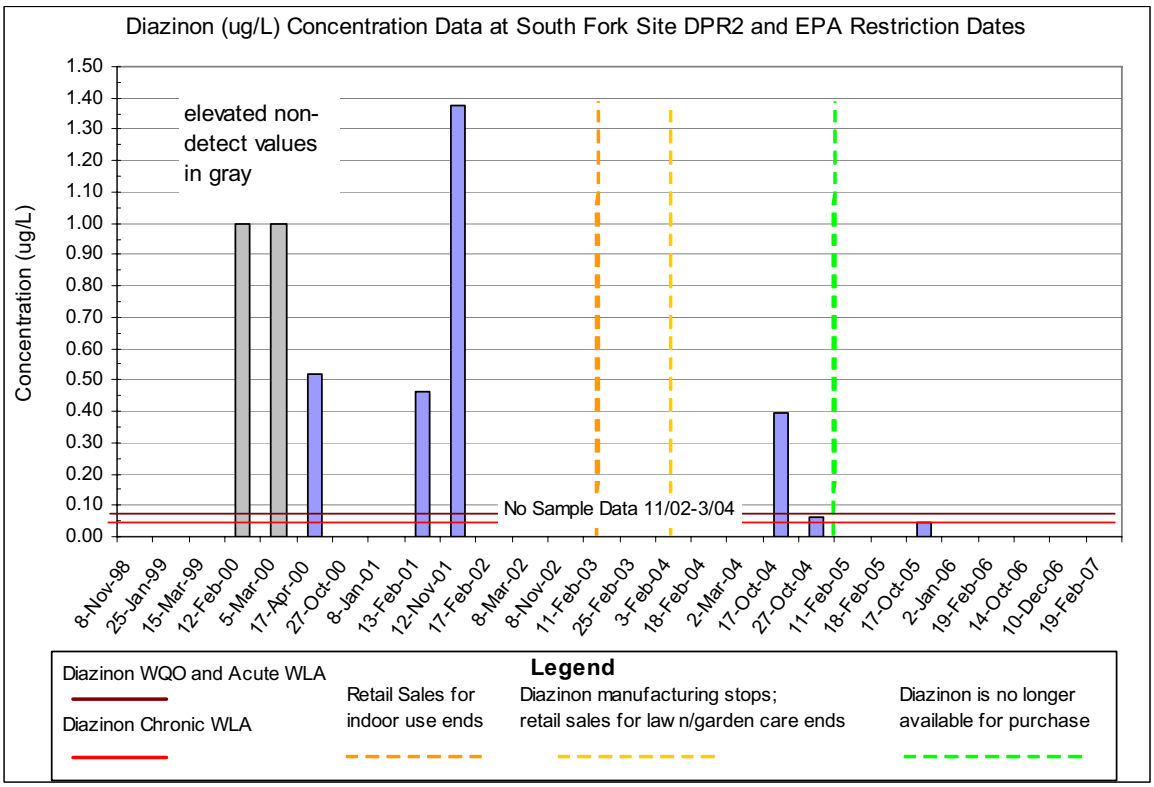

Figure 3-11. Historical Diazinon Concentrations at Sites SD8(1) and DPR2 with Restriction Dates.

The Chollas Creek dissolved metals TMDL sets the numeric targets equal to the California Toxics Rule (CTR) WQO. The CTR is the most current, conservative WQO for dissolved copper, lead, and zinc in fresh water. The CTR WQOs for dissolved and total cadmium, copper, lead, and zinc are comprised of hardness-based equations that can vary depending on sample hardness. The Chollas sub-watershed is unique in that it has significantly lower hardness concentrations and therefore lower WQO, in comparison to other watersheds in San Diego County. The historical mean wet weather hardness concentration at the Chollas Creek MLS is 85 mg $CaCO_3$/L in comparison to other watersheds where the mean wet weather hardness concentrations are approximately 260 mg $CaCO_3$/L. As a result of the low hardness values, it is more likely that slightly elevated wet weather monitoring results for dissolved and total cadmium, copper, lead and zinc will exceed the CTR WQO.

WQOs for total and dissolved metals were calculated for each monitoring event at SD8(1) and DPR2, and the sample result divided by the WQO. The results for the time period of 2001-2007 (at SD8(1)) and 2004-2007 (at DPR2) are presented in Figure 3-12 and Figure 3-13, respectively. The ratios are presented as box-and-whisker plots for each of the eight metal constituents. The purpose of presenting them as such is to illustrate the consistency of some metals (lead and copper, in particular) at levels above the WQO. The pattern between SD8(1) and DPR2 is consistent, with total copper, lead and zinc above the WQO at SD8(1), and total copper and lead above the WQO at DPR2. It is interesting to note that dissolved metals tend to be slightly higher and more variable at SD8(1) when compared to DPR2.

USEPA has provided guidance concerning a procedure that may be used to derive regional aquatic-life criterion such as the CTR into site-specific criterion. The indicator species procedure is based on the assumption that characteristics of ambient water may influence the bioavailability and toxicity of a pollutant. As part of the procedure, acute toxicity in site water and laboratory water is determined in concurrent toxicity tests. The ratio of the ambient to the laboratory water toxicity values, the Water Effects Ratio (WER), would subject the current dissolved metals WQO to a criteria adjustment factor that accounts for the effect of site-specific water characteristics on pollutant bioavailability and toxicity to aquatic life. In Chollas Creek, a WER would likely raise the WQO above the concentrations typically observed for dissolved metals in storm water. This procedure has been used in the Calleguas Creek Watershed which has resulted in WER ranging from 1.51 during dry weather to 3.69 during wet weather conditions (LWA, 2006).

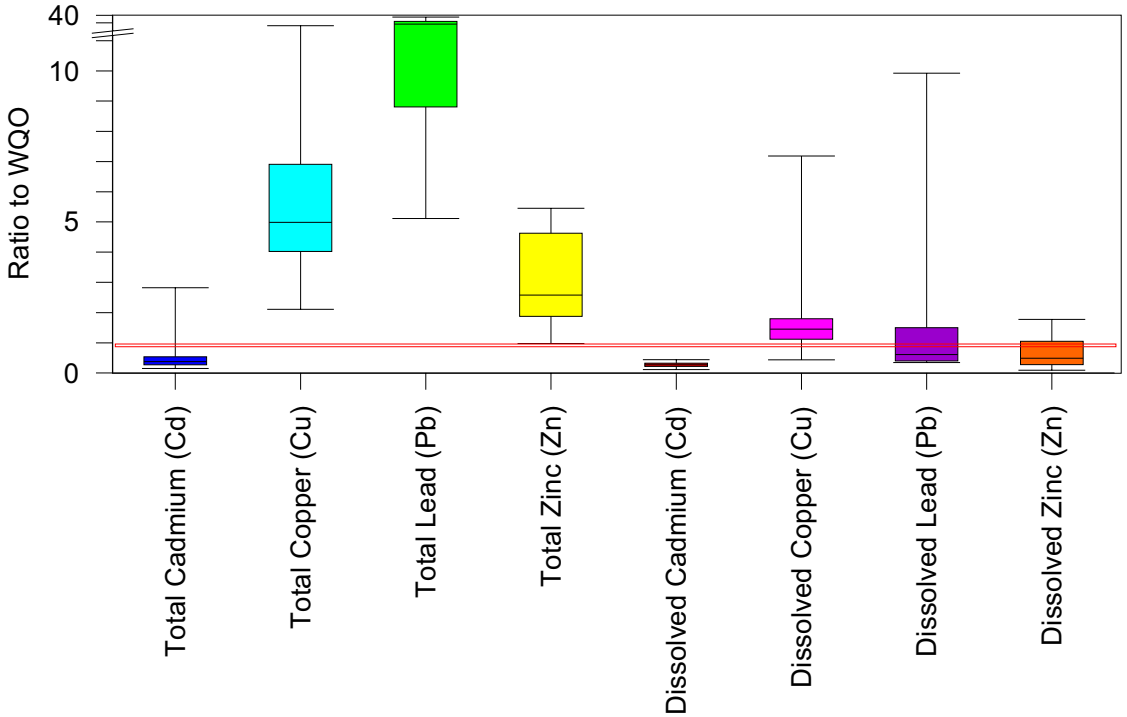

Figure 3-12. Chollas Creek box and whisker plots of metals water quality ratios for site SD8(1).

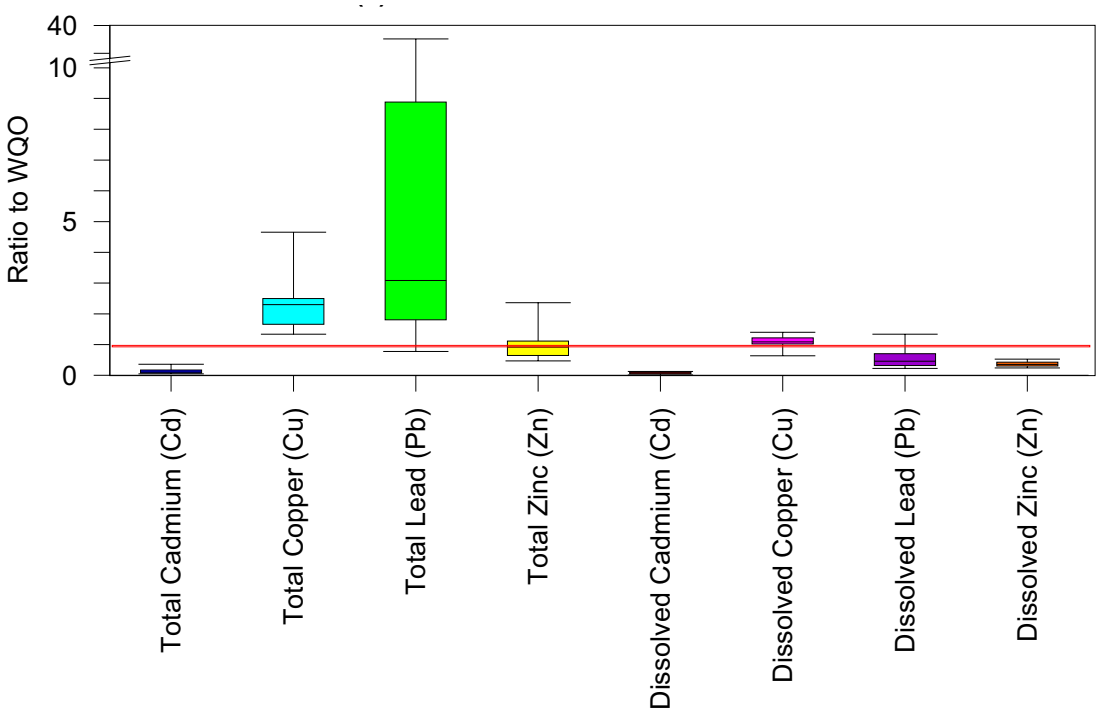

Figure 3-13. Chollas Creek box and whisker plots of metals water quality ratios for site DPR2.

4.0 SUMMARY AND CONCLUSIONS

The Chollas Creek Watershed Municipal Workgroup has complied with RWQCB Order R9-2004-0277 during the 2006-2007 monitoring season by conducting the following activities:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and Dry Weather IC/ID investigations,
- performed education and outreach to area residents,
- and have conducted water quality monitoring during three storm events at Sites SD8(1) and DPR2.

Study results are presented to comply with RWQCB Order No. R9-2004-0277 requirements. Water quality monitoring was specifically conducted under this program to quantitatively assess potential changes in pesticide use and to quantitatively assess the concentration of metals in Chollas Creek.

Storm water monitoring samples were collected at two mass loading stations in Chollas Creek during three separate storm water events. Site SD8(1) was located in the North Fork of Chollas Creek and site DPR2. was located in the south fork of Chollas Creek. Water quality objective exceedances were noted for total organic carbon (TOC), total suspended solids (TSS), diazinon, malathion, total and dissolved copper, total and dissolved lead, total zinc, and total cadmium. There were no exceedances of the WQO for either dissolved cadmium or dissolved zinc. Synthetic pyrethroids were detected in concentrations above published LC50s for *Hyalella azteca* during all three monitoring events during the 2006-2007 monitoring season.

Acute toxicity to *Ceriodaphnia dubia* survival was not observed at either site SD8(1) or DPR2 during the 2006-2007 monitoring season. Chronic toxicity to *Ceriodaphnia dubia* survival was observed during the first storm event on 10/14/06 at both sites and is likely associated with the combined detections of malathion, diazinon and synthetic pyrethroids during this first event. Toxicity to *Hyalella azteca* was observed during all three events at Site SD8(1) and during two events at site DPR2. Toxicity identification evaluations conducted as part of the Regional Monitoring Program indicate the causative agent of toxicity at site SD8(1) is the synthetic pyrethroid class of compounds (Weston, 2007).

Mann-Kendall trend analysis performed on the long term data set at site SD8(1) indicate significant decreasing trends for diazinon and toxicity to *Ceriodaphnia dubia.* However, increasing trends are noted for turbidity, total copper, total zinc and *Hyalella azteca*.

It is evident that the concentrations of diazinon have been decreasing with time and that storm water samples are apparently less toxic to *Ceriodaphnia dubia* than in previous years when diazinon was available. However, it also apparent that detections above the WQO may continue based the data collected during the 2006-2007 monitoring season. It is expected that the residual supply will eventually be exhausted and detections of diazinon should continue to decrease with the EPA ban on the manufacture and retail sale of this product. It is evident that synthetic pyrethroids are present in storm water runoff which warrants concern. With this evidence, education and outreach to area residents and businesses should continue in order to reduce the impacts of pesticide use in the Chollas Creek Watershed. With regards to the implementation of

the TMDLs for metals for Chollas Creek, it is apparent that toxicity to *Ceriodaphnia dubia* was not observed in the later storms where both dissolved copper and dissolved zinc were frequently measured above the WQO, based on the low hardness concentrations. With regards to these observations, the development of site specific objectives for dissolved metals would be useful.

Special studies were also conducted to answer specific management questions at the jurisdictional level. These additional studies include the following and are appended to this report:

- Appendix C (PDF on CD): Chollas Creek Jurisdictional Boundary Water Quality Monitoring Report (Weston Solutions, Inc., 2007)
- Appendix D (PDF on CD): City of San Diego Dry Weather Aerial Deposition Study (Weston Solutions, Inc., 2007)

5.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region (RWQCB). 1994. Water Quality Control Plan for the San Diego Basin. September.

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Weston Solutions, Inc. 2007. *San Diego County Municipal Copermittees 2005-2006 Urban Runoff Monitoring*. Prepared for the County of San Diego. January 2007.

APPENDIX A

Chollas Creek Education and Outreach Materials

APPENDICES B-D are provided on CD

APPENDIX B – Field Data Logs

APPENDIX C – Chollas Creek Jurisdictional Boundary Water Quality Monitoring Report (Weston Solutions, Inc., 2007)

APPENDIX D – City of San Diego Dry Weather Aerial Deposition Study (Weston Solutions, Inc., 2007)

EMPERICAL OBSERVATIONS

General Information:

Station Name: CC (SD 8(1)) | Date: 14OCT06 | Time: 0130-0645

Field Crew: B. Isham C. Lia

Purpose of Visit: ☒ Storm Monitoring o Maintenance

Meteorological Characteristics: (Describe rainfall, wind, temperature, etc.)
Light, spotty Rain, a few downpours, rain ending ~ 0500

Water Quality Appearance: (Check all that apply)

Odor:
o Hydrogen Sulfide ☒ Musty o Sewage o Ammonia o Gasoline o Soap o Chlorine o None

Floating Materials:
☒ Trash or debris o Oil & grease o Organic material o Scum o Suds o Objects (describe) o None

Color:
o Yellow o Green o Blue ☒ Brown o Black o Gray o White o Colorless o Other

Turbidity:
o None o Some cloudiness ☒ Cloudy o Heavy cloudiness, opaque

Water quality appearance comments:
Some trash but not a lot

Erosion and Vegetation: (Describe any visible signs of side slope erosion and/or change in vegetation condition)
NA - Channelized

Grab Sample Time: 0300 **pH:** 7.65 **Temperature(°C):** 17.9 **Conductivity:** 510

Sampling Equipment: (Enter time of bottle changes)

Bottle #1: 0500 **Bottle #3:** _____

Bottle #2: 0621 (0521 on Sampler) **Bottle #4:** _____

Sampling Activities: (Describe all action taken at each site visit and provide additional comments as necessary)
Arrive on site 0130, Sampler running, Removed blanket + card table from pipe-end.
0230 - Little rain squall
0300 grab samples, rain stopped 0330 rain squall
~0400 large flow increase - sudden "wall" of water with a lot of trash, 3 or 4 shopping carts
Note - Sample Volume off ~ 200 ml per Sample. Tried to calibrate but it was inconsistent
0645 finished + left site

Team Leader's Signature: B Isham

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
SD stormwater	12-10-06	D. Renfrew	LC
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
SD8			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
SD8	2315	0800	0230

FIELD TEAM: LC / Ester Goldstein

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)
Partly cloudy, showers - tapering off
cool, wind 10-15 knots West

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☒ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☒ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☒ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:
water turbid / slight musty
lot soft trash floatables

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)
NONE

#2 7.92 14.3 310 µ/s
#3 7.88 14.3 309 µ/s

FIELD MEASUREMENTS: pH 8.09 TEMPERATURE (°C) 14.3 CONDUCTIVITY (µS/cm) 319 µ/s DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0206 BOTTLE #2 0449 BOTTLE #3 _____
BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

#1 0-23 - 0206 - 17 L
grab sample 0230
#2 9 L 24 - 37 - 9 L

TEAM LEADER'S SIGNATURE [signature]

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
Chollas SD Stormwater	19 Feb 2007	D. Renfrew	DO / BE
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
SD8			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
33rd & Durant	0300	1500	0810
FIELD TEAM			
DO/JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

partly cloudy

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☑ OTHER irrigation	
	☐ SOAP	☐ CHLORINE	☐ NONE				
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☑ BROWN	☐ BLACK	☐ OTHER	
	☐ GRAY	☐ WHITE	☐ COLORLESS				
FLOATING MATERIALS	☑ TRASH OR DEBRIS	☑ OIL AND GREASE	☑ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER	
	☐ OBJECTS (DESCRIBE)	leaf debris					
TURBIDITY	☑ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☐ NONE			

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

Vegetation growing in cracks in concrete in creek bed that was covered up by stormwater

FIELD MEASUREMENTS: pH 8.40 TEMPERATURE (°C) 13.7 CONDUCTIVITY (µS/cm) 239 DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0749 (12L) BOTTLE #2 1115 (10L) BOTTLE #3 1450 (1L)

BOTTLE #4 BOTTLE #5 BOTTLE #6

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

2nd half of bottle / sampler volume @ ~500mL/sample.
0950 rinsed/purged sampler tubing - still grabs ~500mL
Lots of trash and debris in creek → doggy stravs
B/w 10:30-11:15 purged b/w samples. Seemed to help some w/ sample collection.
Still lots of debris, pulled <1L samples

TEAM LEADER'S SIGNATURE

Bucket decon
Rinsed w/ Alconox and site water.
Rinsed 3x w/ DI water
Rinsed 3x w/ site water
Rinsed 3x w/ site water
Subsequent samplings
1st Fire

grabs @ 0810

Flowmeter started @ ~ 12:30. Grab of 1L taken → 12:55, 1305, 1315, 1325, 1335, 1345 (10 min pacing)
Grab of 1L taken → 1405, 1425, 1450 (20 min pacing)

Last 9 samples taken as VOC samples

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	19 Feb 2007		
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
DPR 2			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
DPR 2	0320		0900
FIELD TEAM			
DO/JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

partly cloudy

WATER QUALITY APPEARANCE

ODOR	☑ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☑ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☑ TRASH OR DEBRIS	☐ OIL AND GREASE	☑ ORGANIC MATERIAL leaves, grass clippings	☐ SCUM	☐ SUDS	☐ OTHER
	☑ OBJECTS (DESCRIBE) ~~[illegible]~~ Sofa, 2 basketballs, dart board, etc.					
TURBIDITY	☑ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

FIELD MEASUREMENTS: pH 7.84 TEMPERATURE (°C) 12.8 CONDUCTIVITY (µS/cm) 324 DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0325 (19L) BOTTLE #2 0651 (14L) BOTTLE #3 0921 (20L)

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

@ 0921 - 55 samples ~~[illegible]~~ JS 21 from last bottle change but 1 distribution error @ 0924 ~~34~~ JS

@ 0930 - while changing bottle strong smell of feces; not sure of origin

TEAM LEADER'S SIGNATURE [signature]

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	12/10/06		EG
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
DPR2			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
	2315	0730	0430

FIELD TEAM
LC, EG

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)
partly cloudy, cool No Rain 0 mi

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☒ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☒ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☒ CLOUDY		☐ SOME CLOUDINESS	☐ NONE	

WATER QUALITY APPEARANCE COMMENTS:
H2O turbid, trash

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

pH 7.56 Temp 12.3°C Cond 578 mS
pH 7.58 Temp 12.3°C Cond 578 mS

FIELD MEASUREMENTS: pH 7.6 TEMPERATURE (°C) 12.4 °C CONDUCTIVITY (µS/cm) 579 µS DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0435 BOTTLE #2 0612 BOTTLE #3 0728

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

changed #1 0435
Grab - 0430 0730
#2 0612 DONE
#3 0728

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	14OCT06	Renfrew	BI
STATION NAME	NAV DATUM	LATITUDE	LONGITUDE
DPR2			
SAMPLE IDENTIFICATION	TIME STARTED (AT SITE)	TIME FINISHED (AT SITE)	GRAB SAMPLE TIME
	0330	0630	0430

FIELD TEAM: B.Isham Calvin Lia

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)
Patchy Rain then Clearing ~0500

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☒ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☒ TRASH OR DEBRIS not much	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☒ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:
Basically normal looking stormflow

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)
Flow never got real high, no significant erosion

FIELD MEASUREMENTS: pH 7.33 TEMPERATURE (°C) 17.4 CONDUCTIVITY (µS/cm) 474 DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0420 BOTTLE #2 0504 BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)
0430 Grab Samples taken

TEAM LEADER'S SIGNATURE B Isham

Appendix F

Glossary

GLOSSARY

Appendix F provides general terms pertinent to the management of urban runoff. These terms were taken directly from the Municipal Permit.

Beneficial Uses – The uses of water necessary for the survival or well being of man, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals "Beneficial Uses" of the waters of the State that may be protected against include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. Existing beneficial uses are uses that were attained in the surface or ground water on or after November 28, 1975; and potential beneficial uses are uses that would probably develop in future years through the implementation of various control measures. "Beneficial Uses" are equivalent to "Designated Uses" under federal law. [California Water Code Section 13050(f)].

Best Available Technology (BAT) – BAT is the acronym for best available technology economically achievable. BAT is the technology-based standard established by congress in CWA section 402(p)(3)(A) for industrial dischargers of storm water. Technology-based standards establish the level of pollutant reductions that dischargers must achieve, typically by treatment or by a combination of treatment and best management practices, or BMPs. For example, secondary treatment (or the removal of 85% suspended solids and BOD) is the BAT for suspended solid and BOD removal from a sewage treatment plant. BAT generally emphasizes treatment methods first and pollution prevention and source control BMPs secondarily.

The best economically achievable technology that will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants, as determined in accordance with regulations issued by the Environmental Protection Agency Administrator. Factors relating to the assessment of best available technology shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the permitting authority deems appropriate.

Best Conventional Technology (BCT) – BCT is an acronym for Best Conventional Technology. BCT is the treatment techniques, processes and procedure innovations, operating methods that eliminate amounts of chemical, physical, and biological characteristics of pollutant constituents to the degree of reduction attainable through the application of the best management practices to the maximum extent practicable.

Best Management Practices – Best Management Practices (BMPs) are defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In the case of municipal storm water permits, BMPs are typically used in place of numeric effluent limits.

Bioaccumulate – The progressive accumulation of contaminants in the tissues of organisms through any route including respiration, ingestion, or direct contact with contaminated water, sediment, pore water, or dredged material to a higher concentration than in the surrounding environment. Bioaccumulation occurs with exposure and is independent of the tropic level.

Bioassessment – The use of biological community information to evaluate the biological integrity of a water body and its watershed. With respect to aquatic ecosystems, bioassessment is the collection and analysis of samples of the benthic macroinvertebrate community together with physical/habitat quality measurements associated with the sampling site and the watershed to evaluate the biological condition (i.e. biological integrity) of a water body.

Bioconcentration – A process by which there is a net accumulation of a chemical directly from water into aquatic organisms resulting from simultaneous uptake and elimination by gill or epithelial tissue. Bioconcentration differs from bioaccumulation in that bioaccumulation refers to the progressive concentration of contaminants in the tissues of organisms through multiple pathways.

Biocriteria – Under the Clean Water Act, numerical values or narrative expressions that define a desired biological condition for a water body that are legally enforceable. The U.S. EPA defines biocriteria as: "numerical values or narrative expressions that describe the reference biological integrity of aquatic communities inhabiting waters of a given designated aquatic life use…(that)…describe the characteristics of water body segments least impaired by human activities."

Biological Integrity – Defined in Karr J.R. and D.R. Dudley. 1981. Ecological perspective on water quality goals. Environmental Management 5:55-68 as: "A balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitat of the region." Also referred to as ecosystem health.

Biomagnication – The transfer and progressive increase in tissue concentrations of a contaminant along the food chain. Because some pollutants can be transferred to higher trophic levels, carnivores at the top of the food chain, such as predatory fish, birds, and mammals (including humans), obtain most of their pollution burden from aquatic ecosystems by ingestion. Thus, although such pollutants may only be present in receiving waters in low concentrations, they can have a significant impact to the integrity of the ecosystem through biomagnification.

Clean Water Act Section 402(p) – [33 USC 1342(p)] is the federal statute requiring municipal and industrial dischargers to obtain NPDES permits for their discharges of storm water.

Clean Water Act Section 303(d) Water Body – Is an impaired water body in which water quality does not meet applicable water quality standards and/or is not expected to meet water quality standards, even after the application of technology based pollution controls required by the CWA. The discharge of urban runoff to these water bodies by the Copermittees is significant because these discharges can cause or contribute to violations of applicable water quality standards.

Contamination – As defined in the Porter-Cologne Water Quality Control Act, contamination is "an impairment of the quality of waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. 'Contamination' includes any equivalent effect resulting from the disposal of waste whether or not waters of the state are affected."

Designated Waste – Designated waste is defined as a "nonhazardous waste which consists of pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives, or which could cause degradation of waters of the state." [CCR Title 27, Chapter 3, Subchapter 2, Article 2, Section 20210; WC Section 13173]

Effluent Limitations – Limitations on the volume of each waste discharge, and the quantity and concentrations of pollutants in the discharge. The limitations are designed to ensure that the discharge does not cause water quality objectives to be exceeded in the receiving water and does not adversely affect beneficial uses.

Effluent limitations are limitations of the quantity and concentrations of pollutants in a discharge. The limitations are designed to ensure that the discharge does not cause water quality objectives to be exceeded in the receiving water and does not adversely affect beneficial uses. In other words, an effluent limit is the maximum concentration of a pollutant that a discharge can contain. To meet effluent limitations, the effluent typically must undergo one or more forms of treatment to remove pollutants in order to lower the pollutant concentration below the limit. Effluent limits are typically numeric (e.g., 10 mg/l), but can also be narrative (e.g., no toxics in toxic amounts).

Erosion – When land is diminished or warn away due to wind, water, or glacial ice. Often the eroded debris (silt or sediment) becomes a pollutant via storm water runoff. Erosion occurs naturally but can be intensified by land clearing activities such as farming, development, road building, and timber harvesting.

Grading – The cutting and/or filling of the land surface to a desired slope or elevation.

Hazardous Waste – Hazardous waste is defined as "any waste which, under Section 600 of Title 22 of this code, is required to be managed according to Chapter 30 of Division 4.5 of Title 22 of this code." [CCR Title 22, Division 4.5, Chapter 11, Article 1]

Illicit Discharge – Any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges form the municipal separate storm sewer) and discharges resulting from fire fighting activities.

Inert Waste – Inert waste is defined as one that "does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives, and does not contain significant quantities of decomposable waste." [CCR Title 27, Chapter 3, Subchapter 2, Article 2, Section 20230]

MEP – MEP is the acronym for Maximum Extent Practicable. MEP is the technology-based standard established by Congress in CWA section 402(p)(3)(B)(iii) that municipal dischargers of storm water (MS4s) must meet. Technology-based standards establish the level of pollutant reductions that dischargers must achieve, typically by treatment or by a combination of treatment and best management practices (BMPs). MEP generally emphasizes pollution prevention and source control BMPs primarily (as the first line of defense) <u>in combination</u> with treatment methods serving as a backup (additional line of defense). MEP considers economics and is generally, but not necessarily, less stringent than BAT. A definition for MEP is not provided either in the statute or in the regulations. Instead the definition of MEP is dynamic and will be defined by the following process over time: municipalities propose their definition of MEP by way of their Urban Runoff Management Plan. Their total collective and individual activities conducted pursuant to the Urban Runoff Management Plan becomes their proposal for MEP as it applies both to their overall effort, as well as to specific activities (e.g., MEP for street sweeping, or MEP for municipal separate storm sewer system maintenance). In the absence of a proposal acceptable to the SDRWQCB, the SDRWQCB defines MEP.

In a memo dated February 11, 1993, entitled "Definition of Maximum Extent Practicable," Elizabeth Jennings, Senior Staff Counsel, SWRCB addressed the achievement of the MEP standard as follows:

> *"To achieve the MEP standard, municipalities must employ whatever Best Management Practices (BMPs) are technically feasible (i.e., are likely to be effective) and are not cost prohibitive. The major emphasis is on technical feasibility. Reducing pollutants to the MEP means choosing effective BMPs, and rejecting applicable BMPs only where other effective BMPs will serve the same purpose, or the BMPs would not be technically feasible, or the cost would be prohibitive. In selecting BMPs to achieve the MEP standard, the following factors may be useful to consider:*

a. *Effectiveness: Will the BMPs address a pollutant (or pollutant source) of concern?*

b. *Regulatory Compliance: Is the BMP in compliance with storm water regulations as well as other environmental regulations?*

c. *Public Acceptance: Does the BMP have public support?*

d. *Cost: Will the cost of implementing the BMP have a reasonable relationship to the pollution control benefits to be achieved?*

e. *Technical Feasibility: Is the BMP technically feasible considering soils, geography, water resources, etc?*

The final determination regarding whether a municipality has reduced pollutants to the maximum extent practicable can only be made by the Regional or State Water Boards, and not by the municipal discharger. If a municipality reviews a lengthy menu of BMPs and chooses to select only a few of the least expensive, it is likely that MEP has not been met. On the other hand, if a municipal discharger employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit derived, it would have met the standard. Where a choice may be made between two BMPs that should provide generally comparable effectiveness, the discharger may choose the least expensive alternative and exclude the more expensive BMP. However, it would not be acceptable either to reject all BMPs that would address a pollutant source, or to pick a BMP base solely on cost, which would be clearly less effective. In selecting BMPs the municipality must make a serious attempt to comply and practical solutions may not be lightly rejected. In any case, the burden would be on the municipal discharger to show compliance with its permit. After selecting a menu of BMPs, it is the responsibility of the discharger to ensure that all BMPs are implemented."

Municipal Storm Water Conveyance System – (See Municipal Separate Storm Sewer System or MS4).

Municipal Separate Storm Sewer System (MS4) – MS4 is an acronym for Municipal Separate Storm Sewer System. A Municipal Separate Storm Sewer System is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, natural drainage features or channels, modified natural channels, man-made channels, or storm drains): (i) Owned or operated by a State, city town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designated or used for collecting of conveying storm water; (iii) Which is not a

combined sewer; (iv) Which is not part of the Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Historic and current development make use of natural drainage patterns and features as conveyances for urban runoff. Urban streams used in this manner are part of the municipalities MS4 regardless of whether they are natural, man-made, or partially modified features. In these cases, the urban stream is both an MS4 and a receiving water.

National Pollution Discharge Elimination System (NPDES) – These permits pertain to the discharge of waste to surface waters only. All State and Federal NPDES permits are also WDRs.

Non-hazardous Solid Waste – Non-hazardous solid waste means all putrescible and nonputrescible solid, semi-sold, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-sold wastes and other discarded solid or semi-solid waste; provided that such wastes do not contain wastes which must be managed as hazardous wastes, or wastes which contain soluble pollutants in concentration which exceed applicable water quality objectives or could cause degradation of wasters of the state." [CCR Title 27, Chapter 3, Subchapter 2, Article 2, Section 20220]

Non Point Source (NPS) – Non point source refers to diffuse, widespread sources of pollution. These sources may be large or small, but are generally numerous throughout a watershed. Non Point Sources include but are not limited to urban, agricultural, or industrial areas, roads, highways, construction sites, communities served by septic systems, recreational boating activities, timber harvesting, mining, livestock grazing, as well as physical changes to stream channels, and habitat degradation. NPS pollution can occur year round any time rainfall, snowmelt, irrigation, or any other source of water runs over land or through the ground, picks up pollutants from these numerous, diffuse sources and deposits them into rivers, lakes, and coastal waters or introduces them into ground water.

Non-Storm Water – Non-storm water consists of all discharges to and from a storm water conveyance system that do not originate from precipitation events (i.e., all discharges from a conveyance system other than storm water). Non-storm water includes illicit discharges, non-prohibited discharges, and NPDES permitted discharges. An illicit discharge is defined at 40 CFR 122.26(b)(2) as any discharge to a municipal storm water conveyance system that is not composed entirely of storm water except discharges pursuant to a separate NPDES permit and discharges resulting from emergency fire fighting activities.

Nuisance – As defined in the Porter-Cologne Water Quality Control Act a nuisance is "anything which meets all of the following requirements: 1) Is injurious to health, or is indecent, or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property. 2) Affects at the same time an entire community or

neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal. 3) Occurs during, or as a result of, the treatment or disposal of wastes."

Numeric effluent limitations – The typical method by which effluent limits are prescribed for pollutants in waste discharge requirements implementing the federal NPDES regulations. When numeric effluent limits are met at the "end-of-pipe", the effluent discharge generally will not cause water quality standards to be exceeded in the receiving waters (i.e., water quality standards will also be met).

Person – A person is defined as an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof. [40 CFR 122.2].

Point Source – Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operations, landfill leachate collection systems, vessel, or other floating craft from which pollutants are or may be discharged.

Pollution – As defined in the Porter-Cologne Water Quality Control Act, pollution is "the alteration of the quality of the waters of the State by waste, to a degree that unreasonably affects the either of the following: A) The waters for beneficial uses; or 2) Facilities that serve these beneficial uses." Pollution may include contamination.

Pollutant – A pollutant is broadly defined as any agent that may cause or contribute to the degradation of water quality such that a condition of pollution or contamination is created or aggravated.

Pollution Prevention – Pollution prevention is defined as practices and processes that reduce or eliminate the generation of pollutants, in contrast to source control, treatment, or disposal.

Post-Construction BMPs – A subset of BMPs including structural and non-structural controls which detain, retain, filter, or educate to prevent the release of pollutants to surface waters during the final functional life of development.

Pre-Development Runoff Conditions – The runoff conditions that exist onsite immediately before the planned development activities occur. This definition is not intended to be interpreted as that period before any human-induces land activities occurred. This definition pertains to redevelopment as well as initial development.

Receiving Water Limitations – Waste discharge requirements issued by the SDRWQCB typically include both: (1) "Effluent Limitations" (or "Discharge Limitations") that specify the technology-based or water-quality-based effluent limitations; and (2) "Receiving Water Limitations" that specify the water quality objectives in the Basin Plan as well as any other limitations necessary to attain those objectives. In summary, the "Receiving Water Limitations"

provision is the provision used to implement the requirement of CWA section 301(b)(1)(C) that NPDES permits must include any more stringent limitations necessary to meet water quality standards.

Sediment – Soil, sand, and minerals washed from land into water. Sediment resulting from anthropogenic sources (i.e. human induced land disturbance activities) is considered a pollutant. This Order regulates only the discharges of sediment from anthropogenic sources and does not regulate naturally occurring sources of sediment. Sediment can destroy fish-nesting areas, clog animal habitats, and cloud waters so that sunlight does not reach aquatic plants.

Storm Water – "Storm water" is as defined urban runoff and snowmelt runoff consisting only of those discharges which originate from precipitation events. Storm water is that portion of precipitation that flows across a surface to the storm drain system or receiving waters. Examples of this phenomenon include: the water that flows off a building's roof when it rains (runoff from an impervious surface); the water that flows into streams when snow on the ground begins to melt (runoff from a semi-pervious surface); and the water that flows from a vegetated surface when rainfall is in excess of the rate at which it can infiltrate into the underlying soil (runoff from a pervious surface). When all factors are equal, runoff increases as the perviousness of a surface decreases. During precipitation events in urban areas, rain water picks up and transports pollutants through storm water conveyance systems, and ultimately to waters of the United States.

Toxicity – Adverse responses of organisms to chemicals or physical agents ranging from mortality to physiological responses such as impaired reproduction or growth anomalies). The water quality objectives for toxicity provided in the Water Quality Control Plan, San Diego Basin, Region 9, (Basin Plan), state in part…"All waters shall be free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life….The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge"…. Urban runoff discharges from MS4s are considered toxic when (1) the toxic effect observed in an acute toxicity test exceeds zero Toxic Units Acute (Tua=0); or (2) the toxic effect observed in a chronic toxicity test exceeds one Toxic Unit Chronic (Tuc=1). Urban runoff discharges from MS4s often contain pollutants that cause toxicity.

Total Maximum Daily Load (TMDL) – The TMDL is the maximum amount of a pollutant that can be discharged into a water body from all sources (point and non-point) and still maintain water quality standards. Under Clean Water Act section 303(d), TMDLs must be developed for all water bodies that do not meet water quality standards after application of technology-based controls.

Urban Runoff – Urban runoff is defined as all flows in a storm water conveyance system and consists of the following components: (1) storm water (wet weather flows) and (2) non-storm water illicit discharges (dry weather flows).

Waste – As defined in California Water Code Section 13050(d), "waste includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal."

Article 2 of CCR Title 23, Chapter 15 (Chapter 15) contains a waste classification system which applies to solid and semi-solid waste which cannot be discharged directly or indirectly to water of the state and which therefore must be discharged to land for treatment, storage, or disposal in accordance with Chapter 15. There are four classifications of waste (listed in order of highest to lowest threat to water quality): hazardous waste, designated waste, nonhazardous solid waste, and inert waste.

Water Quality Objective – Numerical or narrative limits on constituents or characteristics of water designated to protect designated beneficial uses of the water. [California Water Code Section 13050 (h)]. California's water quality objectives are established by the State and Regional Water Boards in the Water Quality Control Plans.

As stated in the Porter-Cologne Requirements for discharge (CWC 13263): "(Waste discharge) requirements shall implement any relevant water quality control plans that have been adopted, and shall take into consideration the beneficial uses to be protected, the water objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Section 13241."

A more comprehensive list of legal authority containing water quality objectives applicable to this Order can be found in Finding 37 and in Section VII Directives Discussion Underlying Broad Legal Authority for Order 2001-01 pp. 61-63.

Numeric or narrative limits for pollutants or characteristics of water designed to protect the beneficial uses of the water. In other words, a water quality objective is the maximum concentration of a pollutant that can exist in a receiving water and still generally ensure that the beneficial uses of the receiving water remain protected (i.e., not impaired). Since water quality objectives are designed specifically to protect the beneficial uses, when the objectives are violated the beneficial uses are, by definition, no longer protected and become impaired. This is a fundamental concept under the Porter Cologne Act. Equally fundamental is Porter Cologne's definition of pollution. A condition of pollution exists when the water quality needed to support designated beneficial uses has become unreasonably affected or impaired; in other words, when the water quality objectives have been violated. These underlying definitions (regarding beneficial use protection) are the reason why all waste discharge requirements implementing

the federal NPDES regulations require compliance with water quality objectives. (Water quality objectives are also called water quality criteria in the Clean Water Act.)

Water Quality Standards – Are defined as the beneficial uses (e.g., swimming, fishing, municipal drinking water supply, etc.,) of water and the water quality objectives necessary to protect those uses.

Waters of the State – Any water, surface or underground, including saline waters within the boundaries of the State [California Water Code Section 13050 (e)]. The definition of the Waters of the State is broader than that for the Waters of the United States in that all water in the State is considered to be a Waters of the State regardless of circumstances or condition. Under this definition, a Municipal Separate Storm Sewer System (MS4) is always considered to be a Waters of the State.

Waters of the United States – Waters of the United States can be broadly defined as navigable surface waters and all tributary surface waters to navigable surface waters. Groundwater is not considered to be a Waters of the United States. Under this definition (see below), a Municipal Separate Storm Sewer System (MS4) is always considered a Waters of the United States.

As defined in the 40 CFR 122.2, the Waters of the U.S. are defined as: **"(a) All waters, which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;** (b) All interstate waters, including interstate "wetlands;" (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation or destruction of which would affect or could affect interstate or foreign commerce including any such waters: (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes; (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (3) Which are used or could be used for industrial purposes by industries in interstate commerce; (d) All impoundments of waters otherwise defined as waters of the United States under this definition: **(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;** (f) The territorial seas; and (g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA."

Watershed – That geographical area which drains to a specified point on a water course, usually a confluence of streams or rivers (also known as drainage area, catchment, or river basin).

Appendix A

Certification Letters

SAN DIEGO COUNTY
REGIONAL AIRPORT AUTHORITY

P.O. BOX 82776, SAN DIEGO, CA 92138-2776
619.400.2400 WWW.SAN.ORG

March 17, 2008

Subject: Statement of Certification for the 2008 San Diego Bay Watershed Urban Runoff Management Program Document

"I certify under penalty of law that the San Diego County Regional Airport Authority participated in the development of the 2008 San Diego Bay Watershed Urban Runoff Management Program Document. This document and all attachments were prepared in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature:
Printed Name: Paul Manasjan
Title: Director, Environmental Affairs

SAN DIEGO
INTERNATIONAL
AIRPORT

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Document for was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program

I certify under penalty of law that the County of San Diego participated in the development of the San Diego Bay Watershed Urban Runoff Management Program and all attachments. County staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

3-21-08
Date

March 2008

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Maryam Babaki, City Engineer
Engineering Department
City of National City

Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signatory

3-20-08
Date

Name: Graham Mitchell
Title: City Manager for City of Lemon Grove
Phone No: 619-825-3800

CITY OF
LA MESA
JEWEL of the HILLS

OFFICE OF THE CITY MANAGER

San Diego Bay Watershed Urban Runoff Management Program
Statement of Certification

March 24, 2008

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sandra L. Kerl, City Manager
City of La Mesa

8130 ALLISON AVENUE • LA MESA, CA 91941 • TEL: 619.667.1105 FAX: 619.462.7528

The City of Imperial Beach

(619) 423-8311
(619) 429-4861 Fax

PUBLIC WORKS
825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

March 17, 2008

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to the San Diego Bay Watershed Urban Runoff Management Program as directed by the California Regional Water Quality Control Board, San Diego Region, Order No. R9-2007-0001, were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

3/17/08
Date

CITY OF CORONADO

101 "B" Avenue
CORONADO, CALIFORNIA 92118-1510

DEPARTMENT OF PUBLIC SERVICES
(619) 522-7380

March 2008

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott W. Huth
Director of Public Services
City of Coronado

CITY OF
CHULA VISTA

DEPARTMENT OF PUBLIC WORKS OPERATIONS

March 17, 2008
File # 0780-70-KY181

San Diego Bay Watershed Urban Runoff Management Program Document

Statement of Certification

"I certify under penalty of law that the City of Chula Vista participated in the development of the Watershed Urban Runoff Management Program Document for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

DAVE BYERS
DIRECTOR OF PUBLIC WORKS
CITY OF CHULA VISTA

H:\NPDES\Watershed\WURMP\WURMP Program Certified Statement 2008.doc

1800 Maxwell Rd.
Chula Vista, CA 91911
Phone (619) 397-6000

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Post-Consumer Recycled Paper

THE CITY OF SAN DIEGO

RE: San Diego Bay Watershed Urban Runoff Management Program Statement of Certification

I certify under penalty of law that the City of San Diego participated in the development of the San Diego Bay Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew Kleis

Andrew Kleis
Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
City of San Diego

3/14/08
Date

Storm Water Pollution Prevention Program
1970 B Street, MS 27A • San Diego, CA 92102
Hotline (619) 235-1000 Fax (619) 525-8641

Appendix B

San Diego Bay Watershed Maps

SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Land Use Map

Legend

- Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

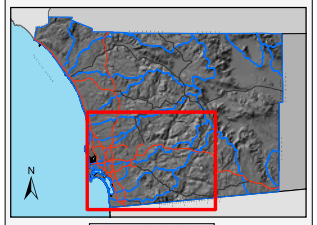

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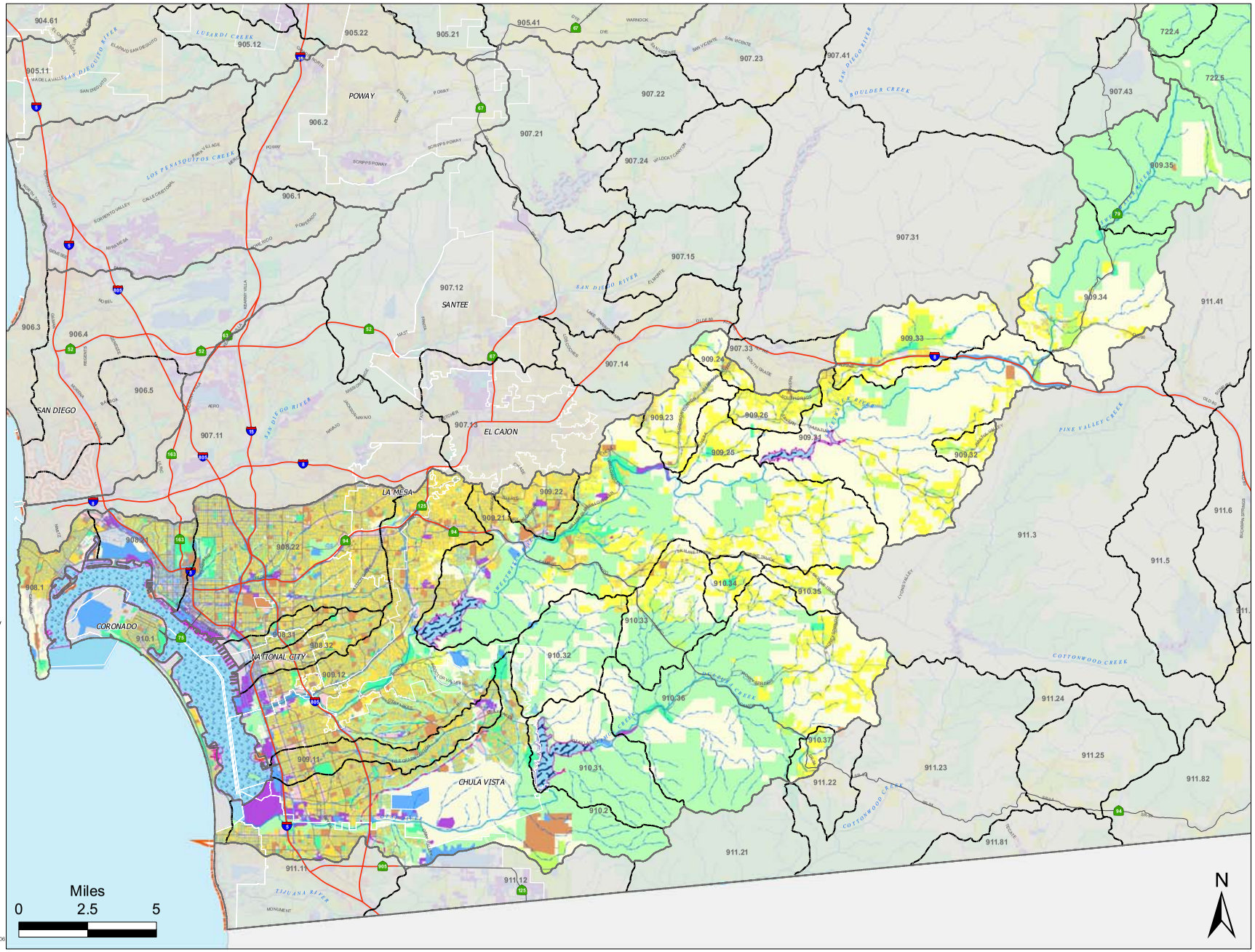

3421

SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Municipal Separate Storm Sewer System Map (MS4)

Legend

- Watershed Sub-Basins
- (MS4) Point Features
- (MS4) Linear Features
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:

MS4: Various jurisdictions (2007);
MS4 data were provided by individual Copermittees to the County of San Diego. Jurisdictional MS4 layers are in various stages of completion and have been simplified into a simple point and line symbology for the purposes of this map. Some of the MS4 layers shown are still in draft form. Gaps in the MS4 data are most likely a reflection of missing data rather than a true inventory of drainage structures in the watershed. This map is not intended for any use other than to respond to Permit section E.2.b., which requires development of a map of the WMA including MS4 features.

**303(d) Waters / Watersheds: (SWRCB). (2006)
Disclaimer:
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

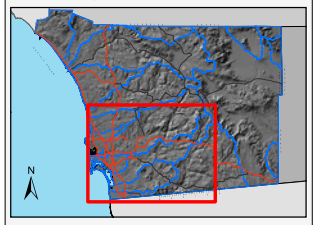

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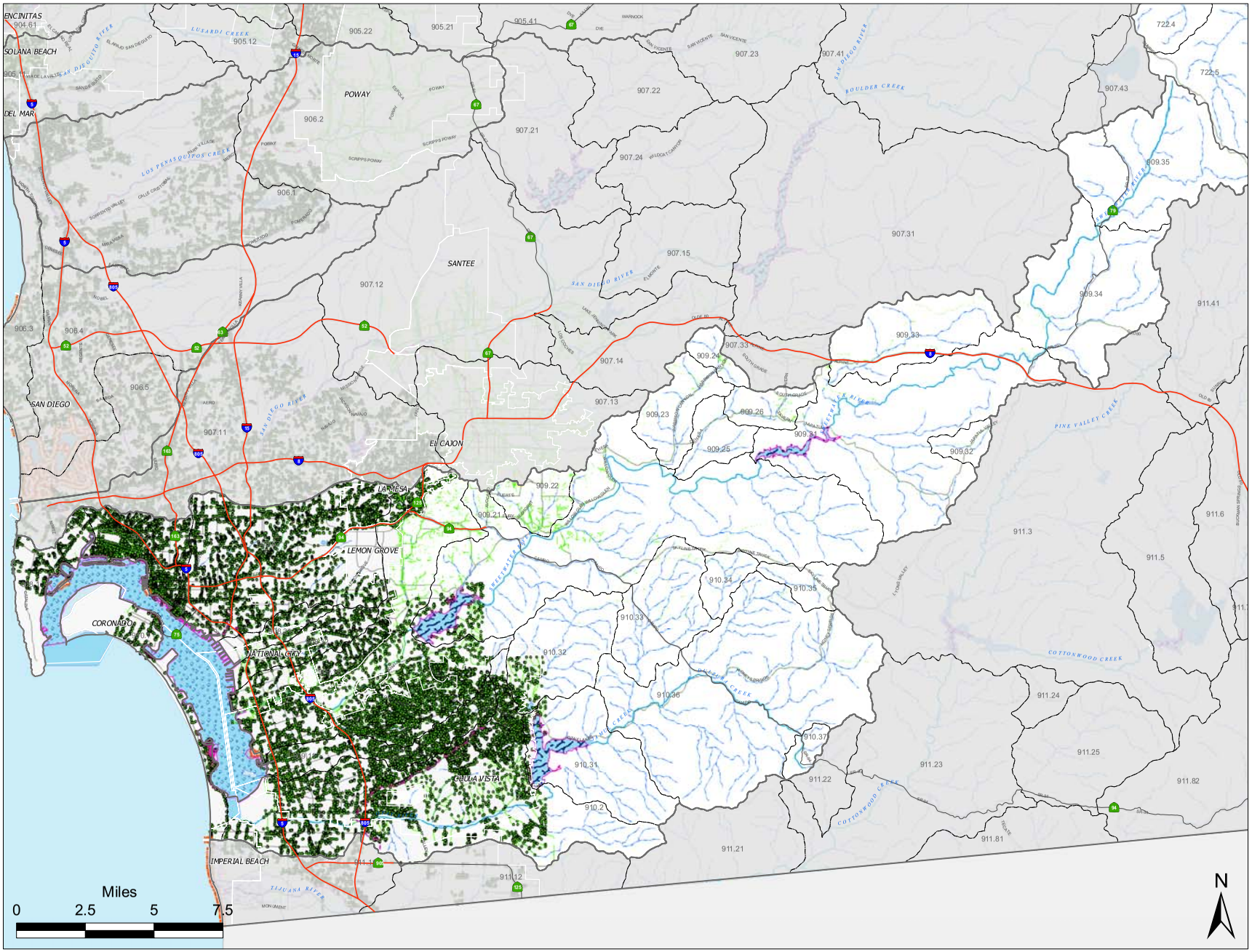

SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Pollutant Source Map

Legend

Watershed Sub-Basins

Potential Pollutant Sources

Baseline Long-Term Effectiveness Assessment (2005)

- Airfield
- AirplaneRepair
- Animal Facilities
- AutoPaint
- AutoRepair
- BoatRepair
- Cemetary
- Food
- Fuel
- GolfCourses
- LandApplication
- Landfill
- MaintenanceYard
- Marina
- Nursery
- POTW
- Paintball
- SolidWasteTransfer
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego / Ogawa Engineering)
**303(d) Waters / Watersheds: (SWRCB), (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

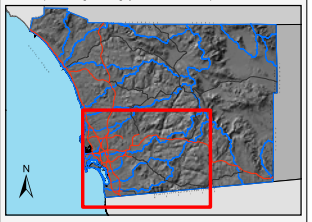

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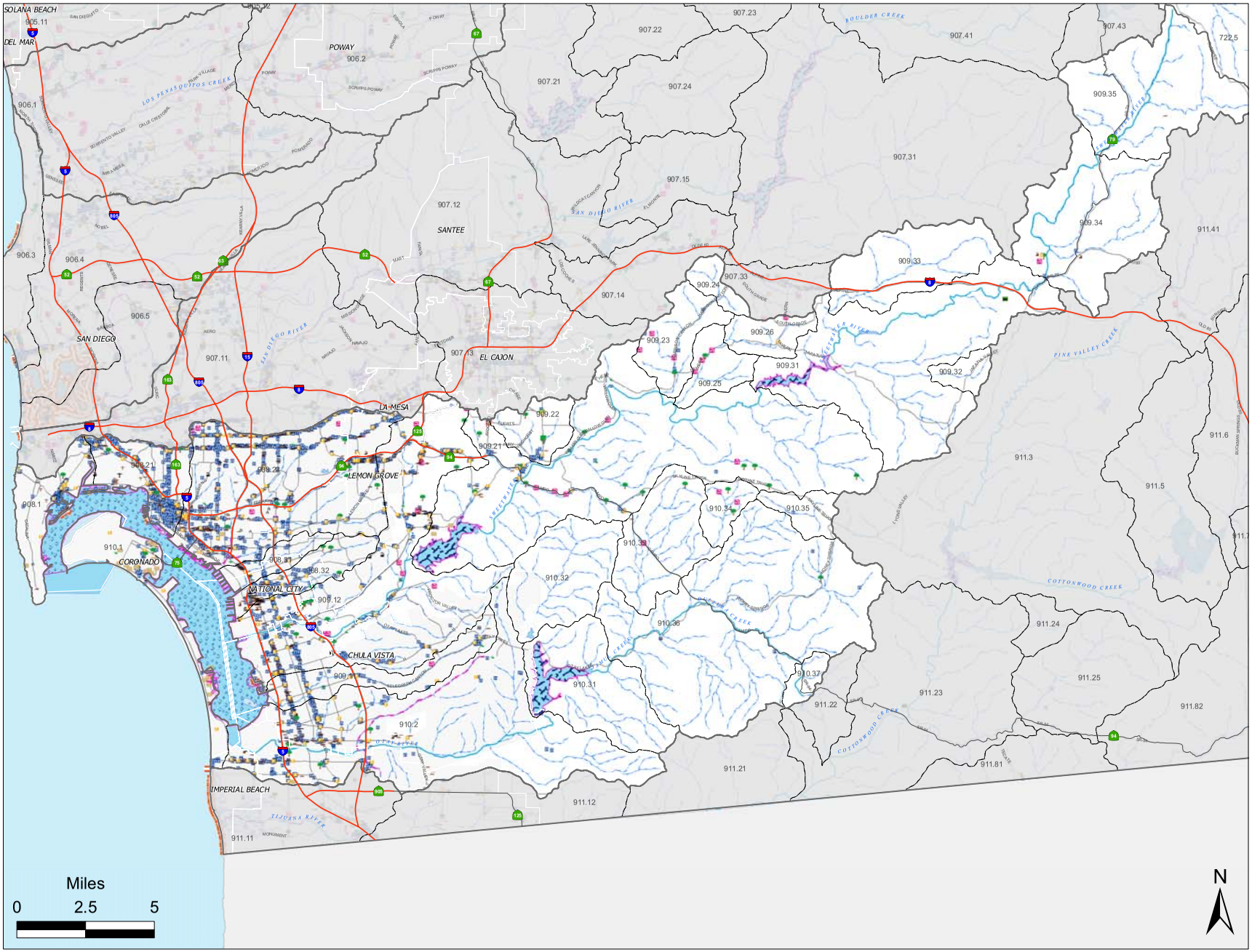

Appendix C

BLTEA Information

Hydrologic Unit 908: Priority Ratings and Sources: Bacteria

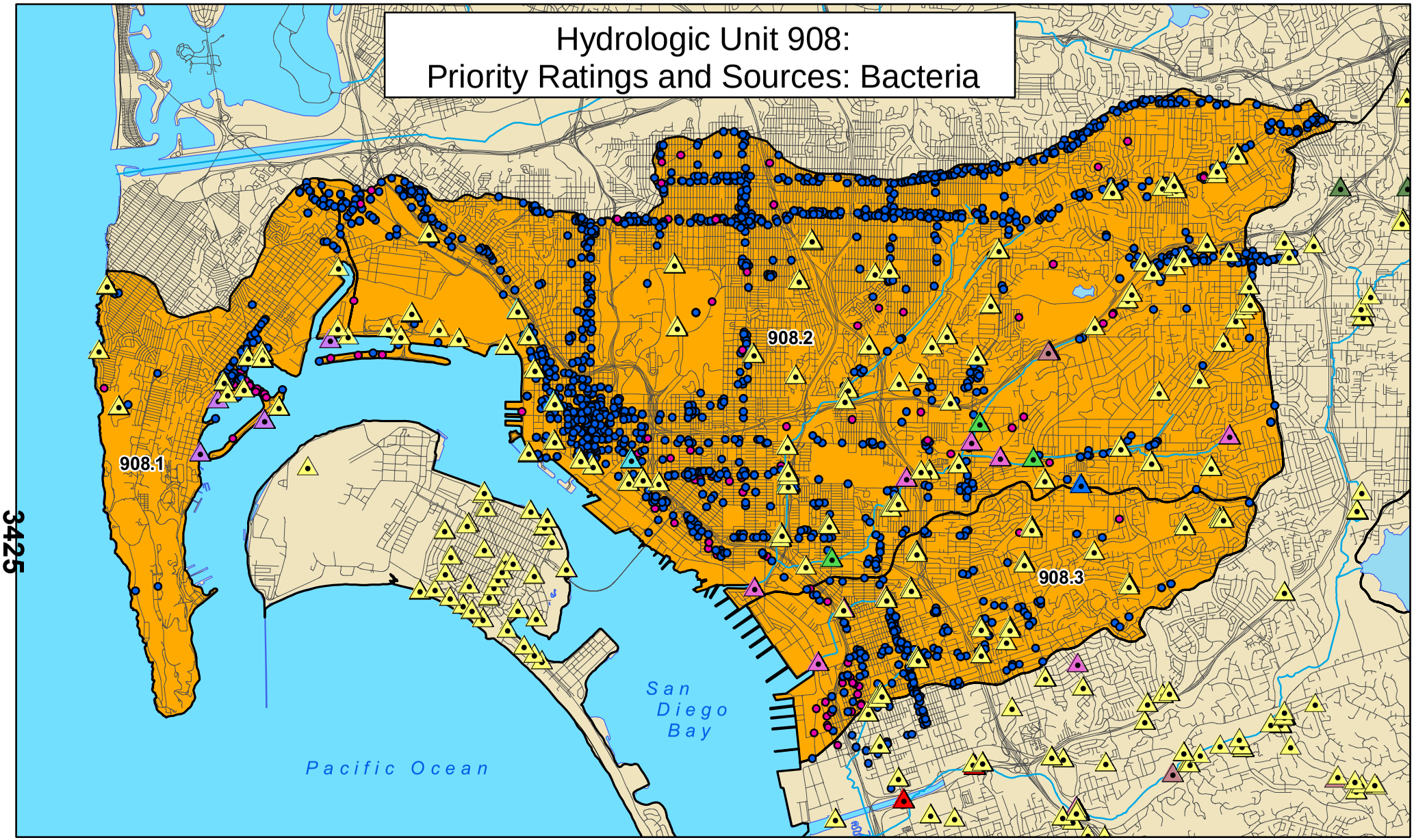

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Bacteria Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority

N

0 1 2 4
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Sediment

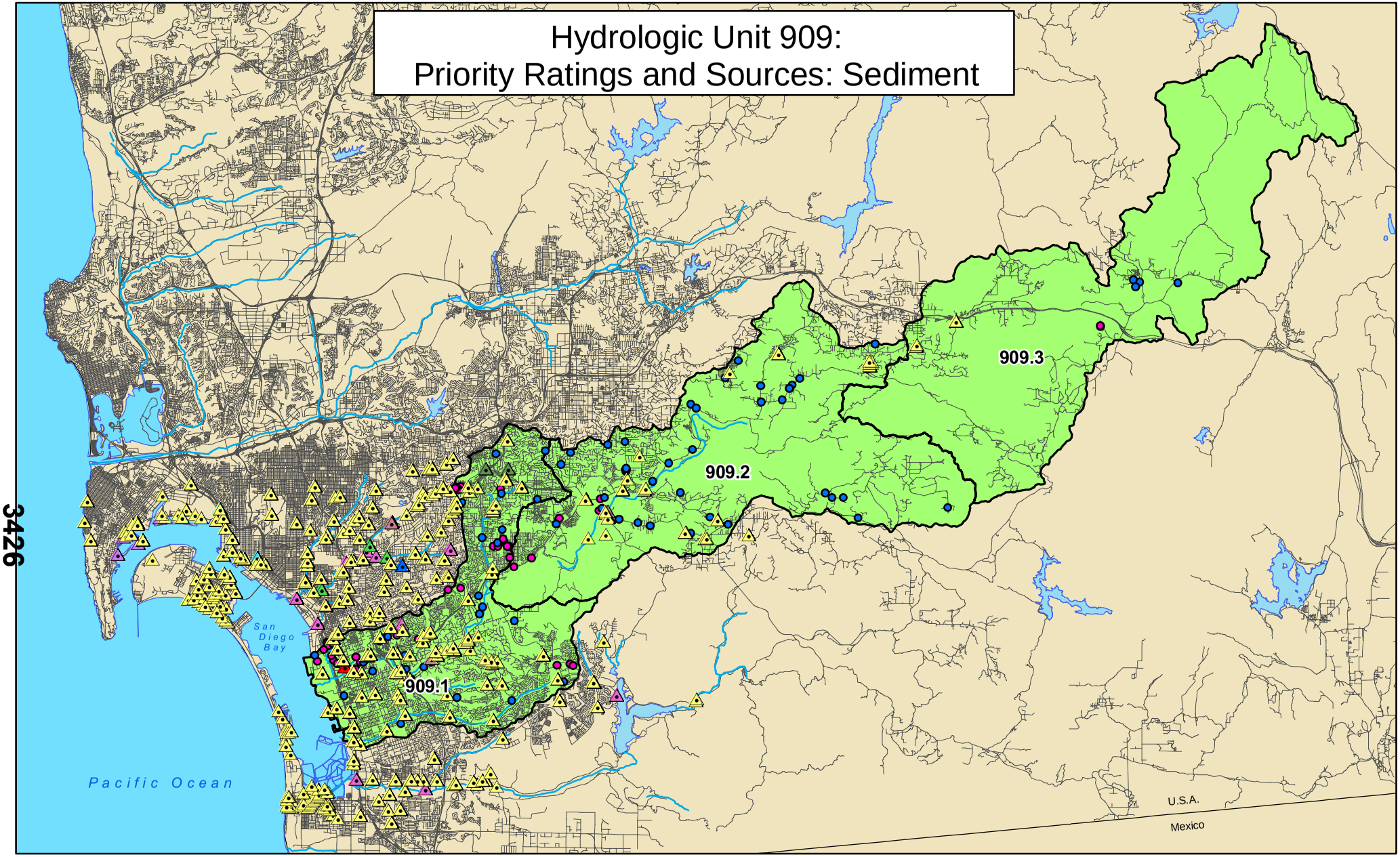

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Sediment Sources

- Likely
- Unknown

Water Quality Priority

- (C) Moderately Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Sediment

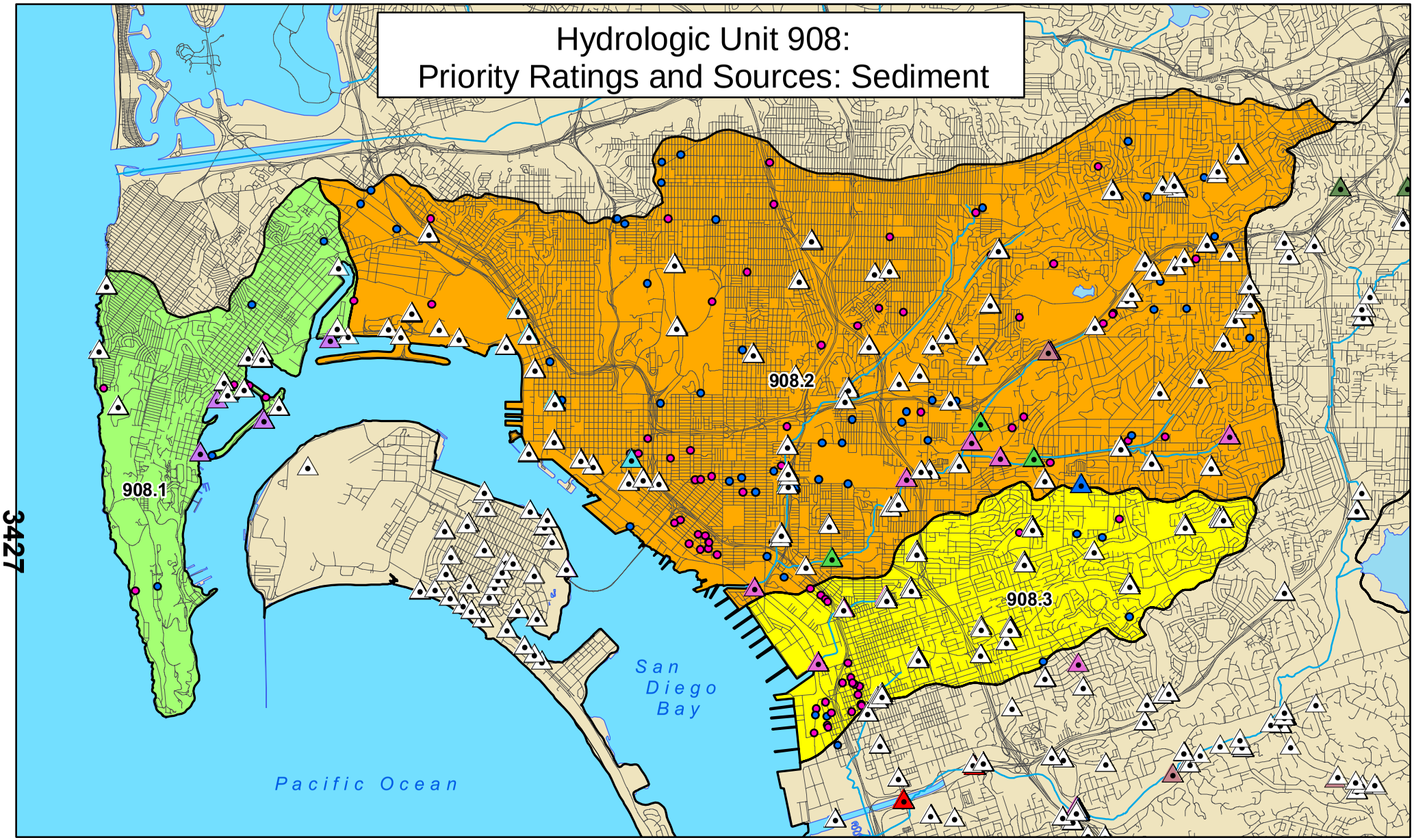

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Sediment Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (B) Moderately High Priority
- (C) Moderately Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Pesticides

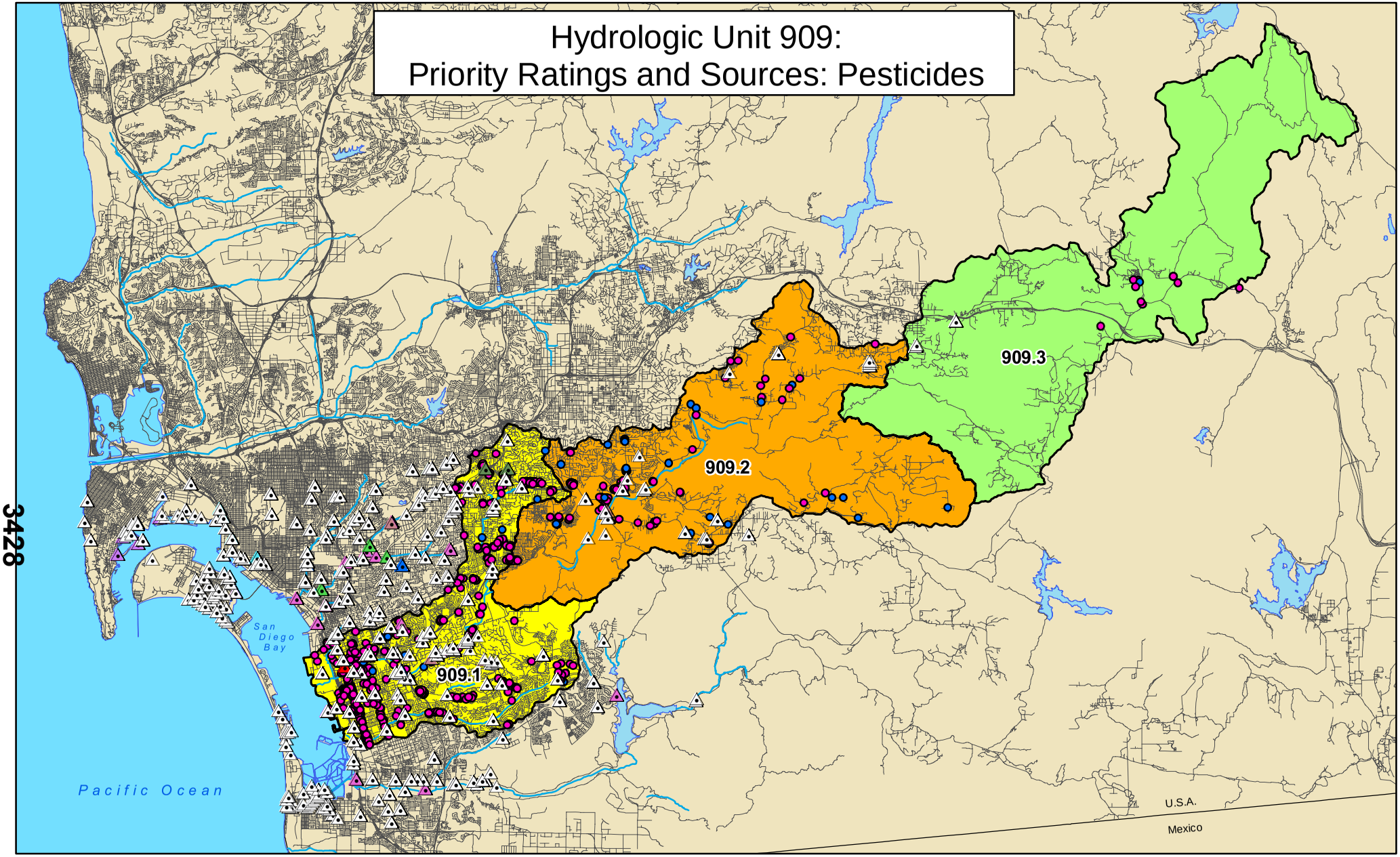

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Pesticide Sources

- Likely
- Unknown

Threat to Water Quality

- (A) High Priority
- (B) Moderately High Priority
- (C) Moderately Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Pesticides

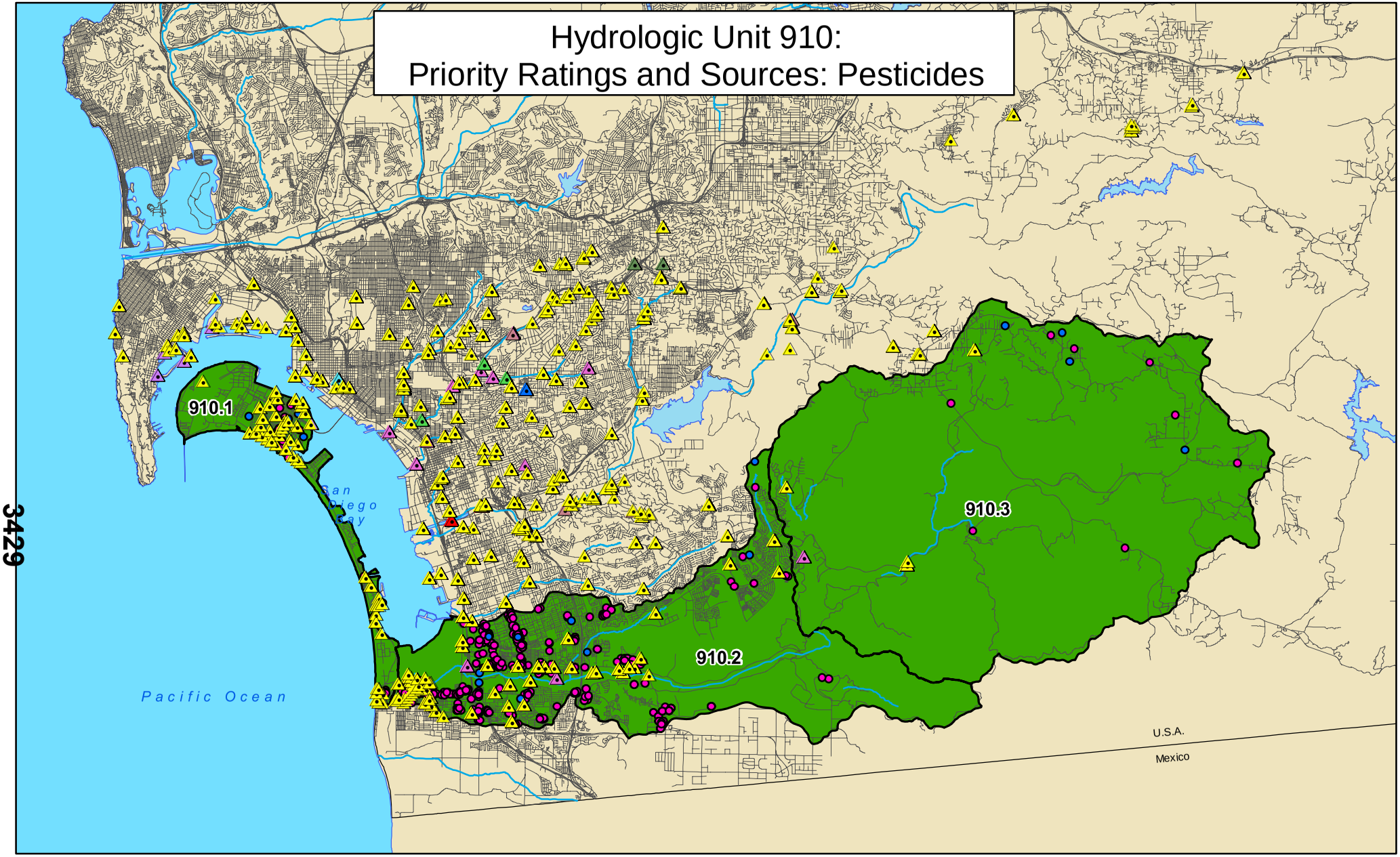

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Pesticide Sources

- Likely
- Unknown

(D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Pesticides

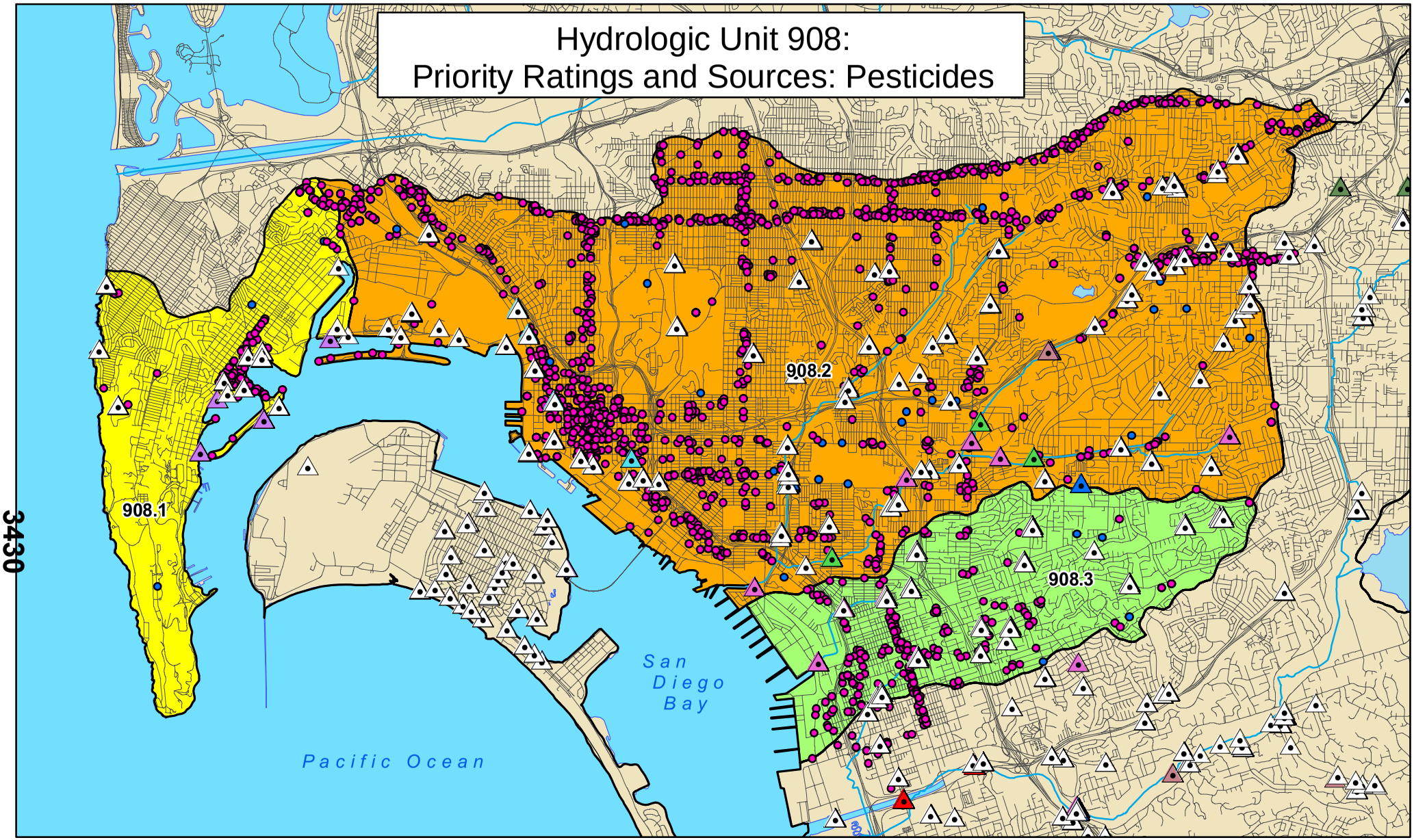

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Pesticide Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (B) Moderately High Priority
- (C) Moderately Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910:
Priority Ratings and Sources: Oil & Grease

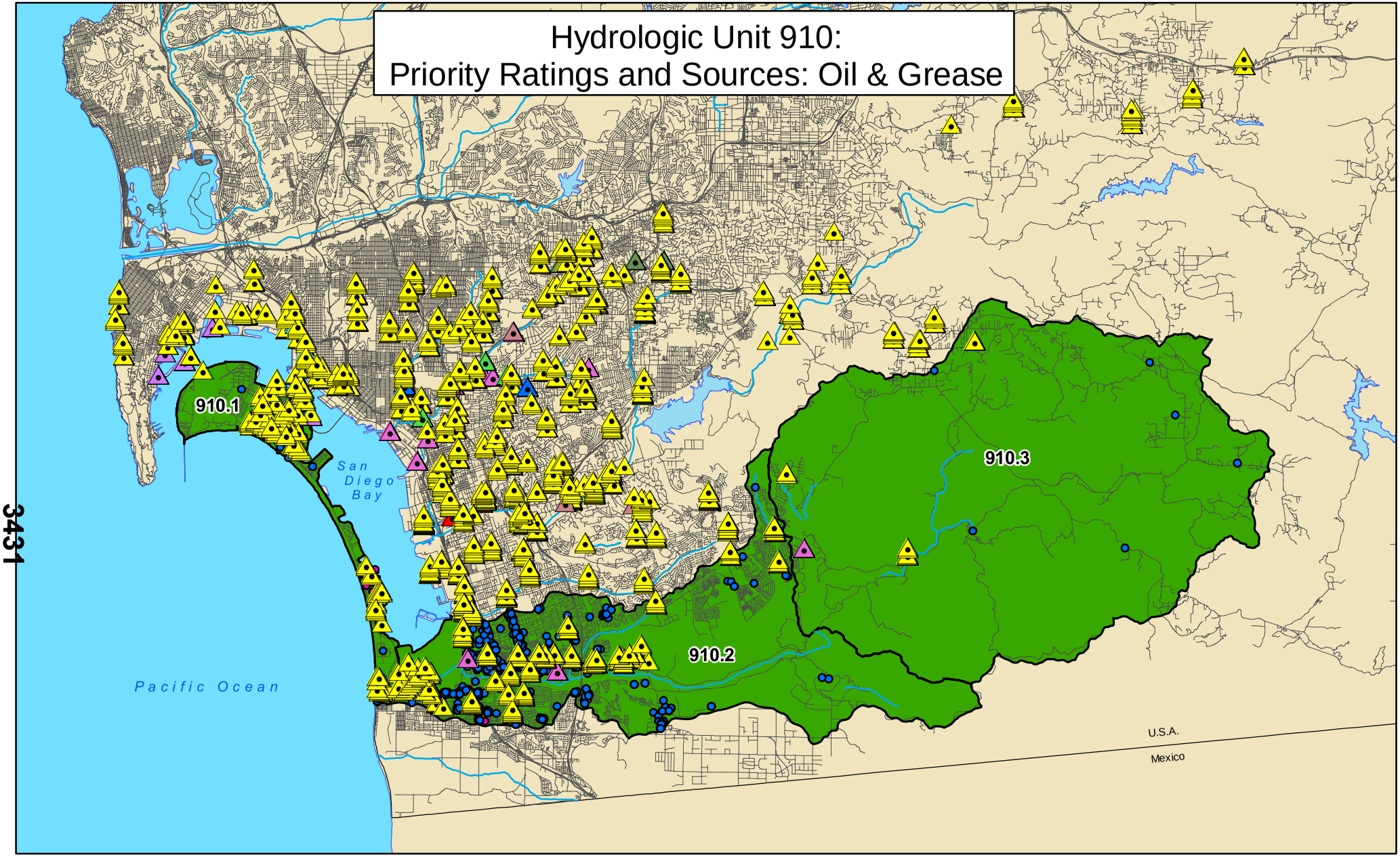

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Oil & Grease Sources

- Likely
- Unknown

(D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909:
Priority Ratings and Sources: Oil & Grease

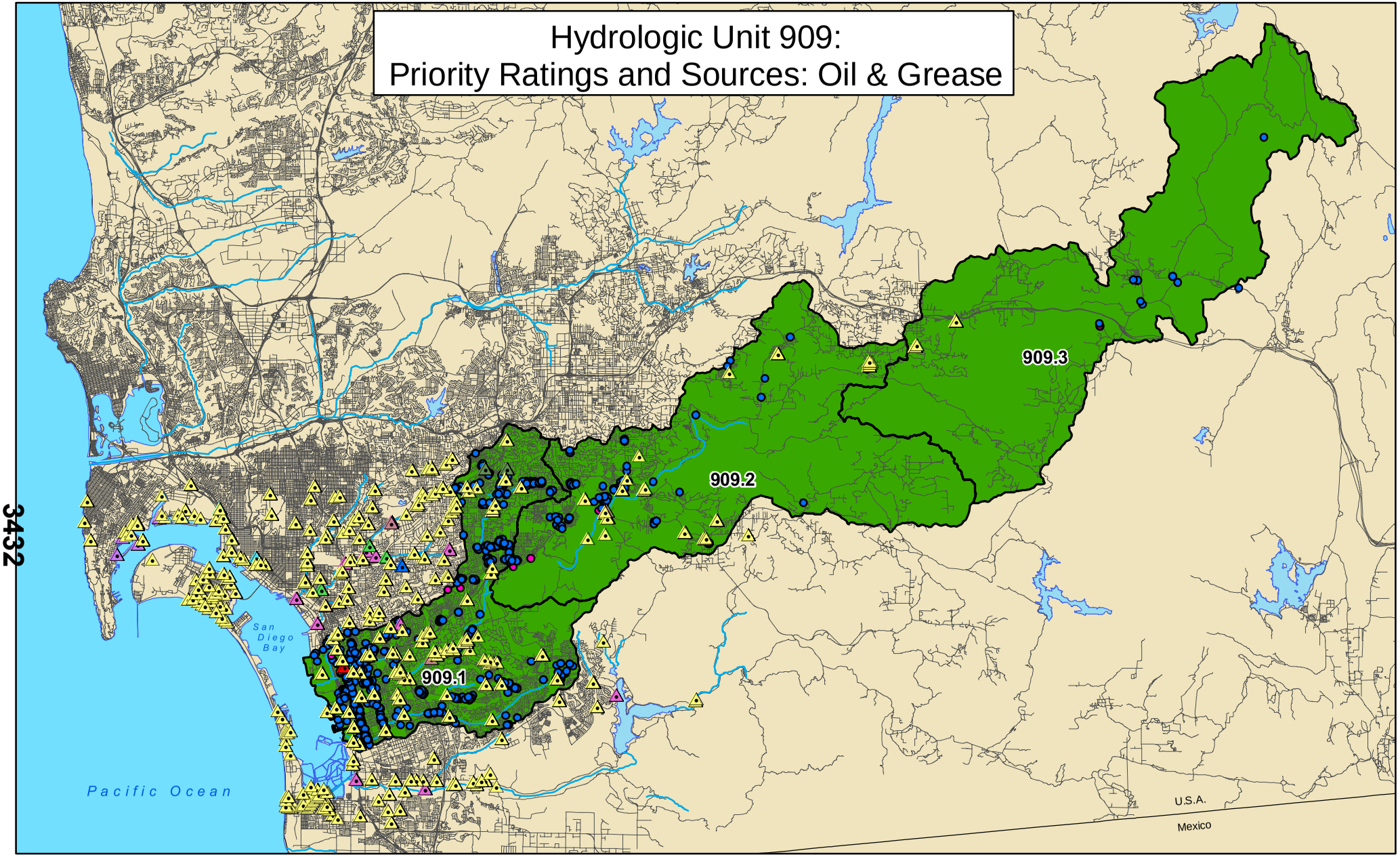

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Oil & Grease Sources

- Likely
- Unknown

Water Quality Priority

- (D) Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Oil & Grease

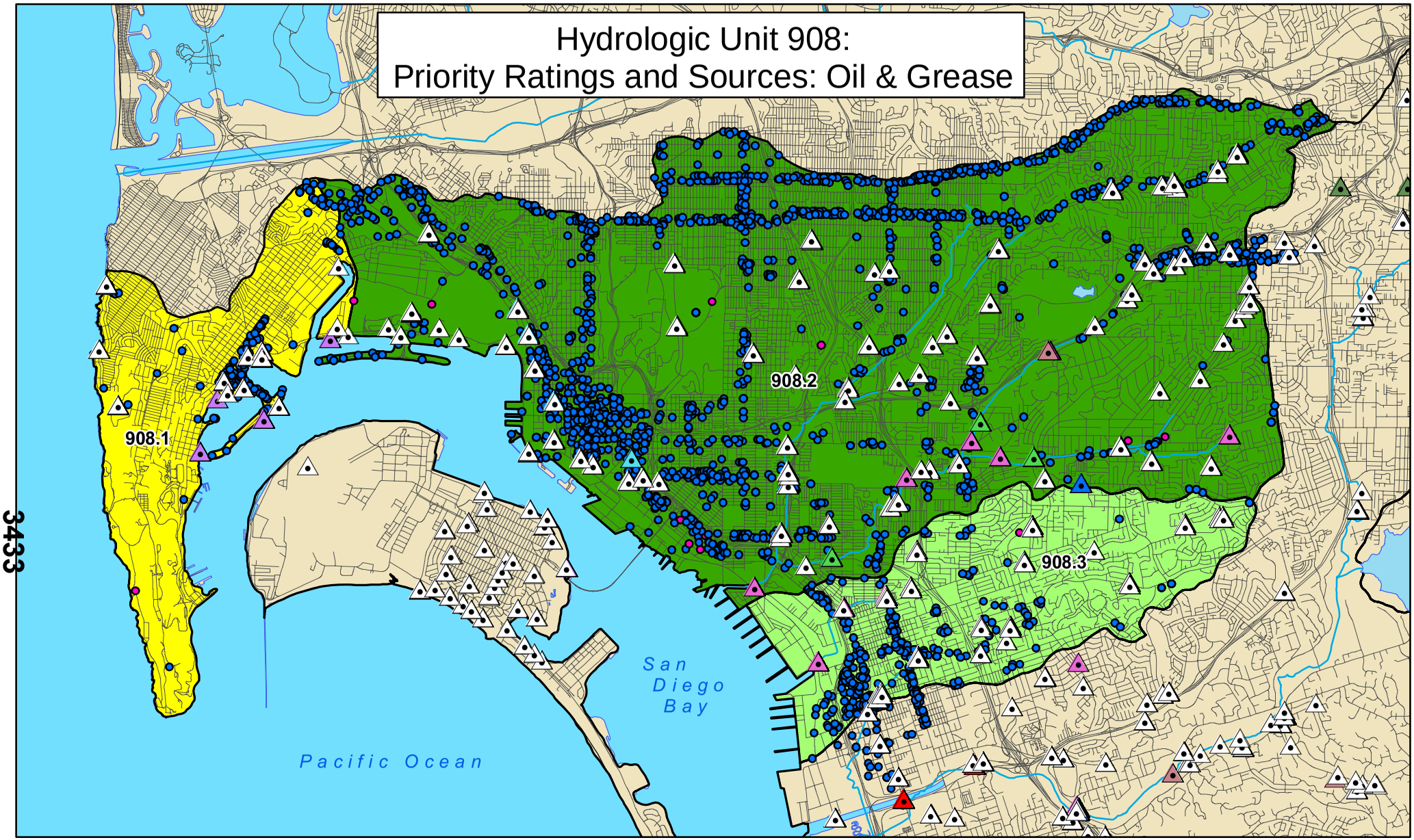

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Oil & Grease Sources

- Likely
- Unknown

Water Quality Priority

- (B) Moderately High Priority
- (C) Moderately Low Priority
- (D) Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Nutrients

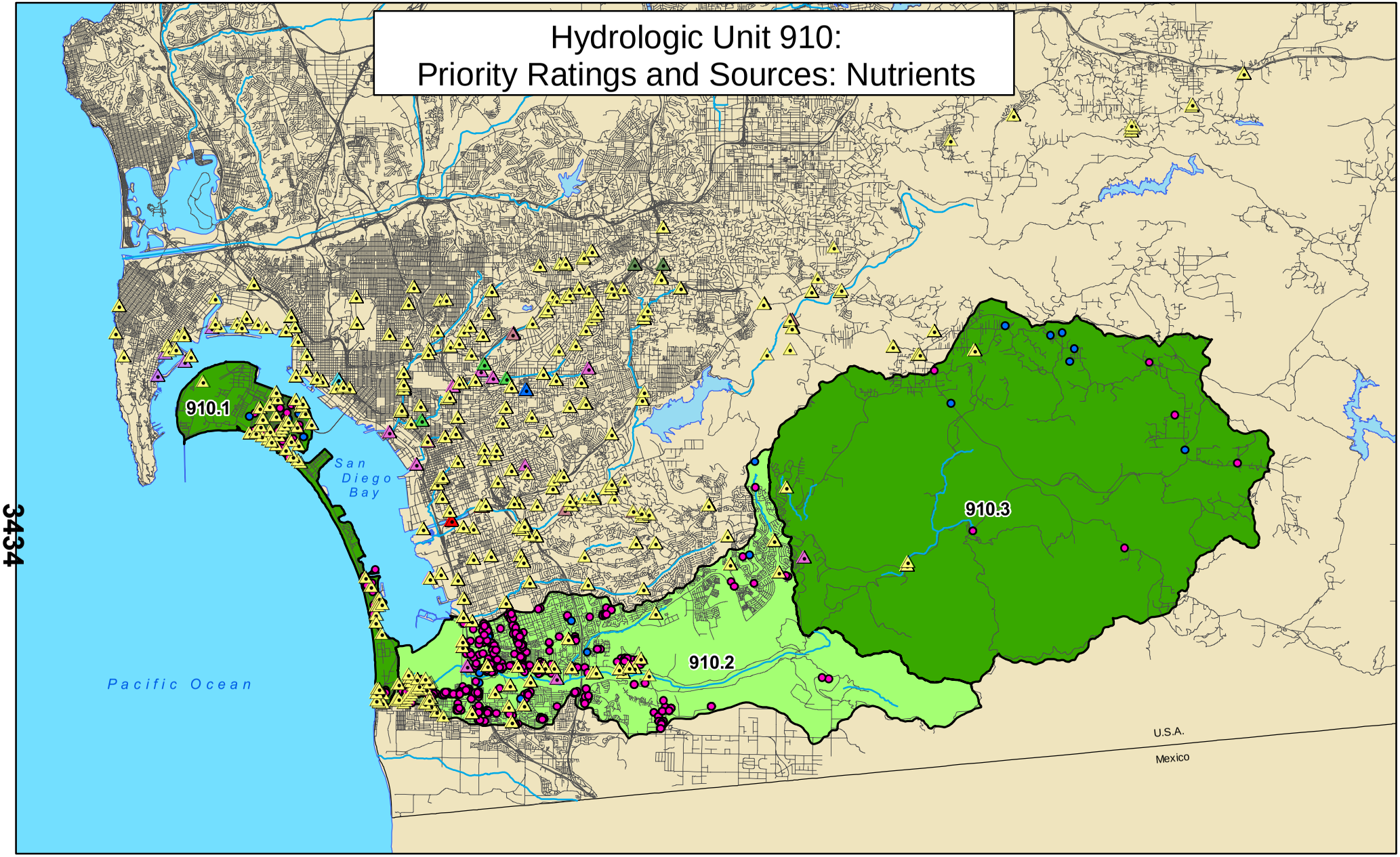

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Nutrient Sources

- Likely
- Unknown

Water Quality Priority

- (C) Moderately Low Priority
- (D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Nutrients

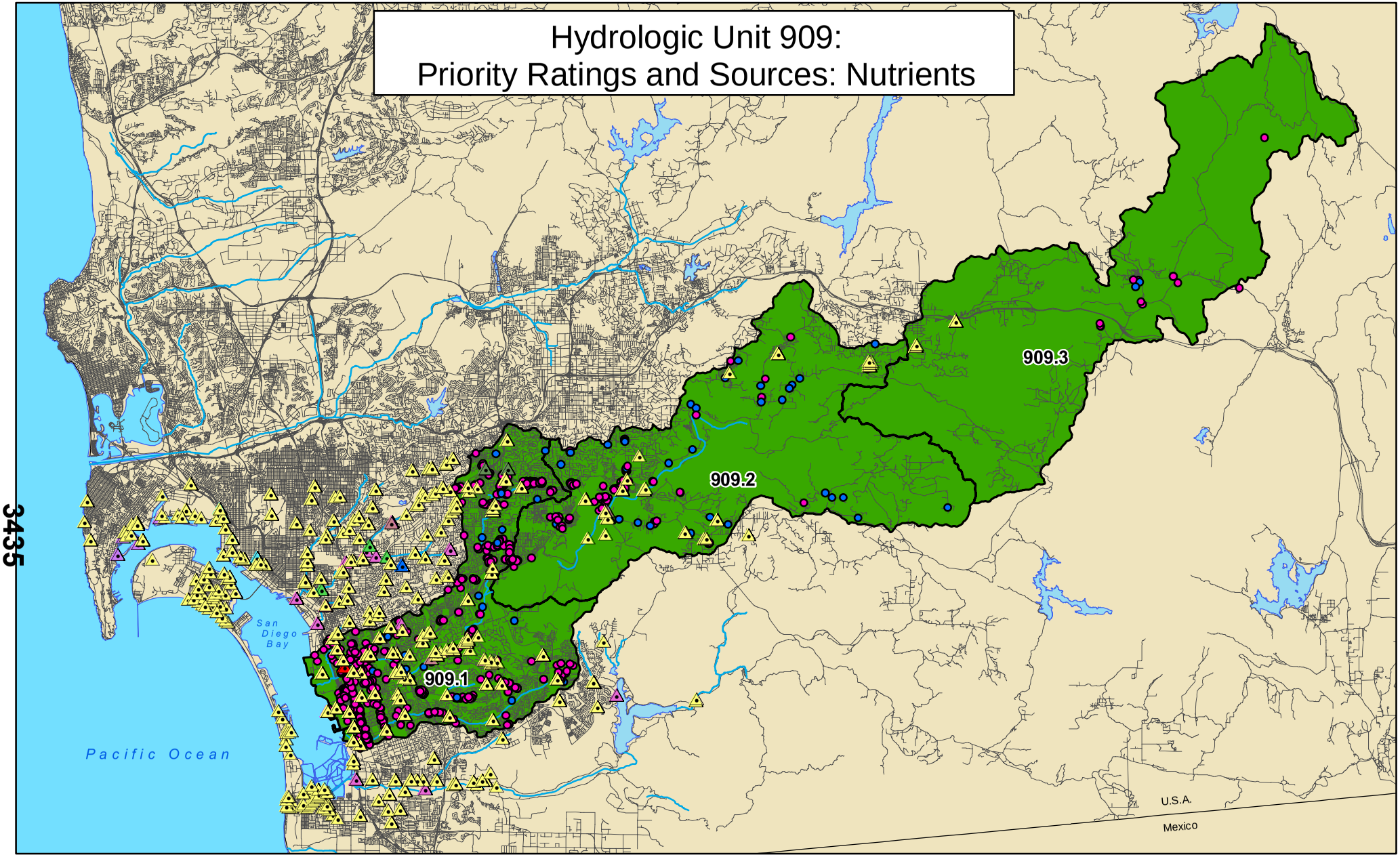

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Nutrient Sources

- Likely
- Unknown

Water Quality Priority

- (D) Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Nutrients

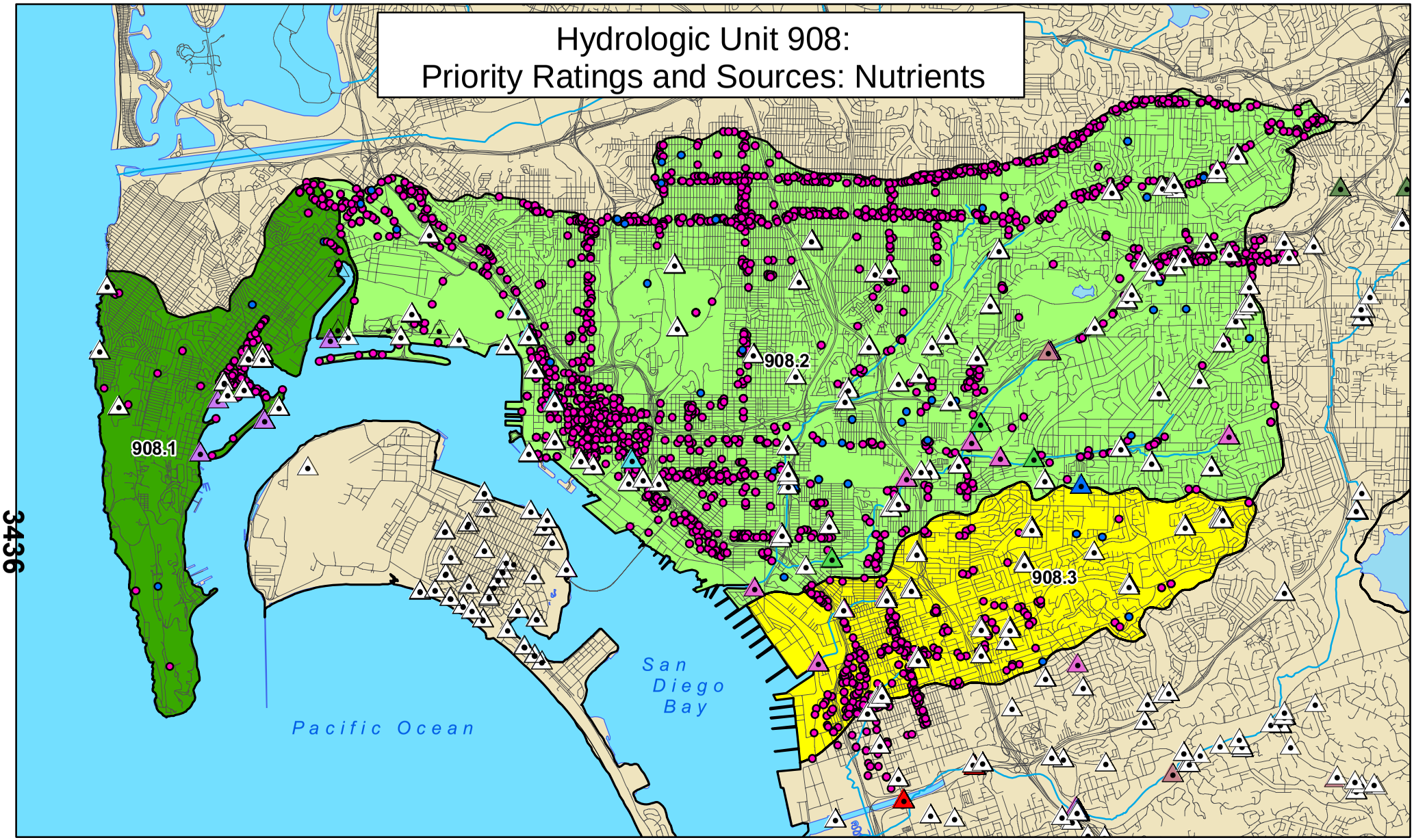

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Nutrient Sources

- Likely
- Unknown

Water Quality Priority

- (B) Moderately High Priority
- (C) Moderately Low Priority
- (D) Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Metals

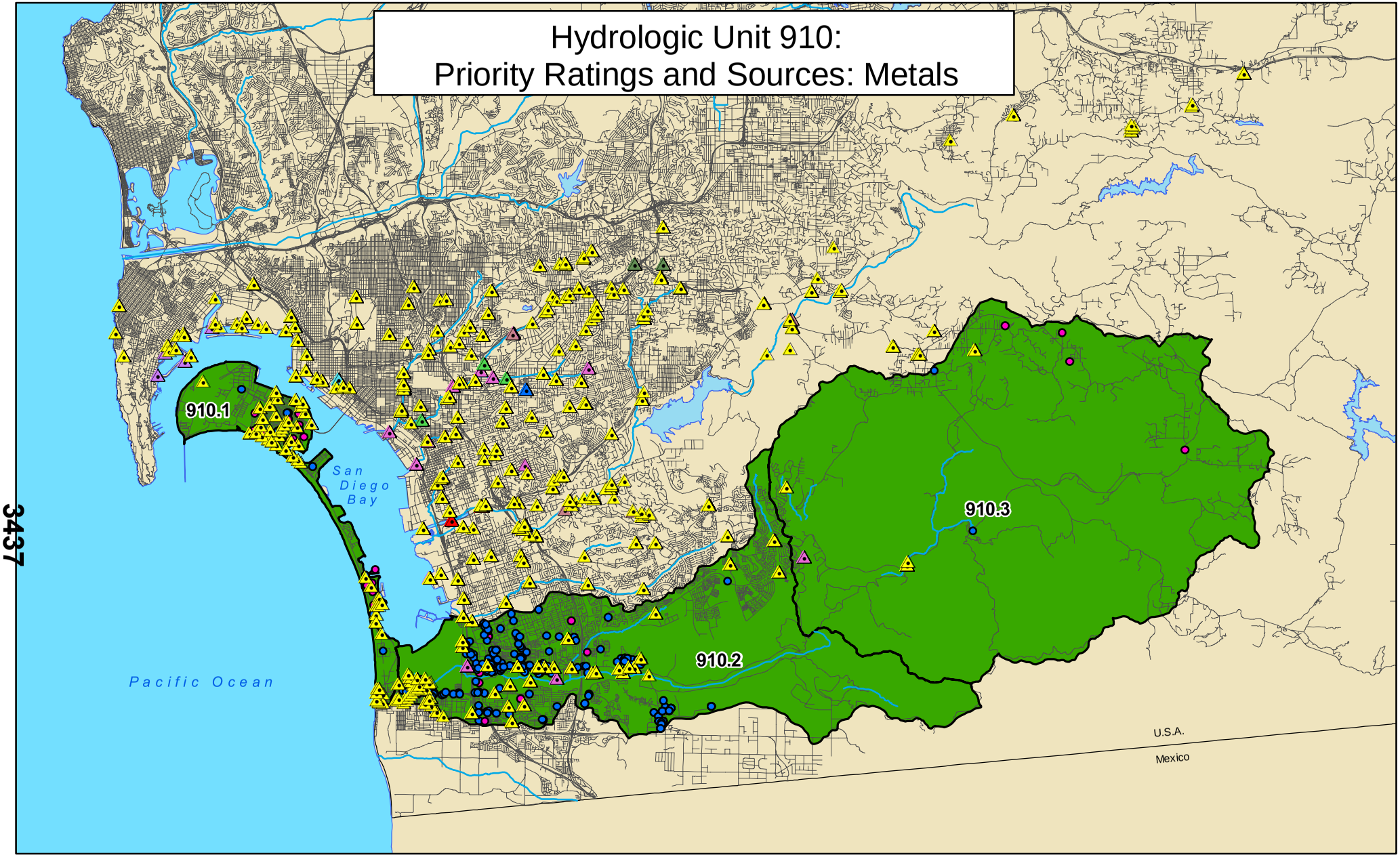

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Heavy Metal Sources

- Likely
- Unknown

(D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Metals

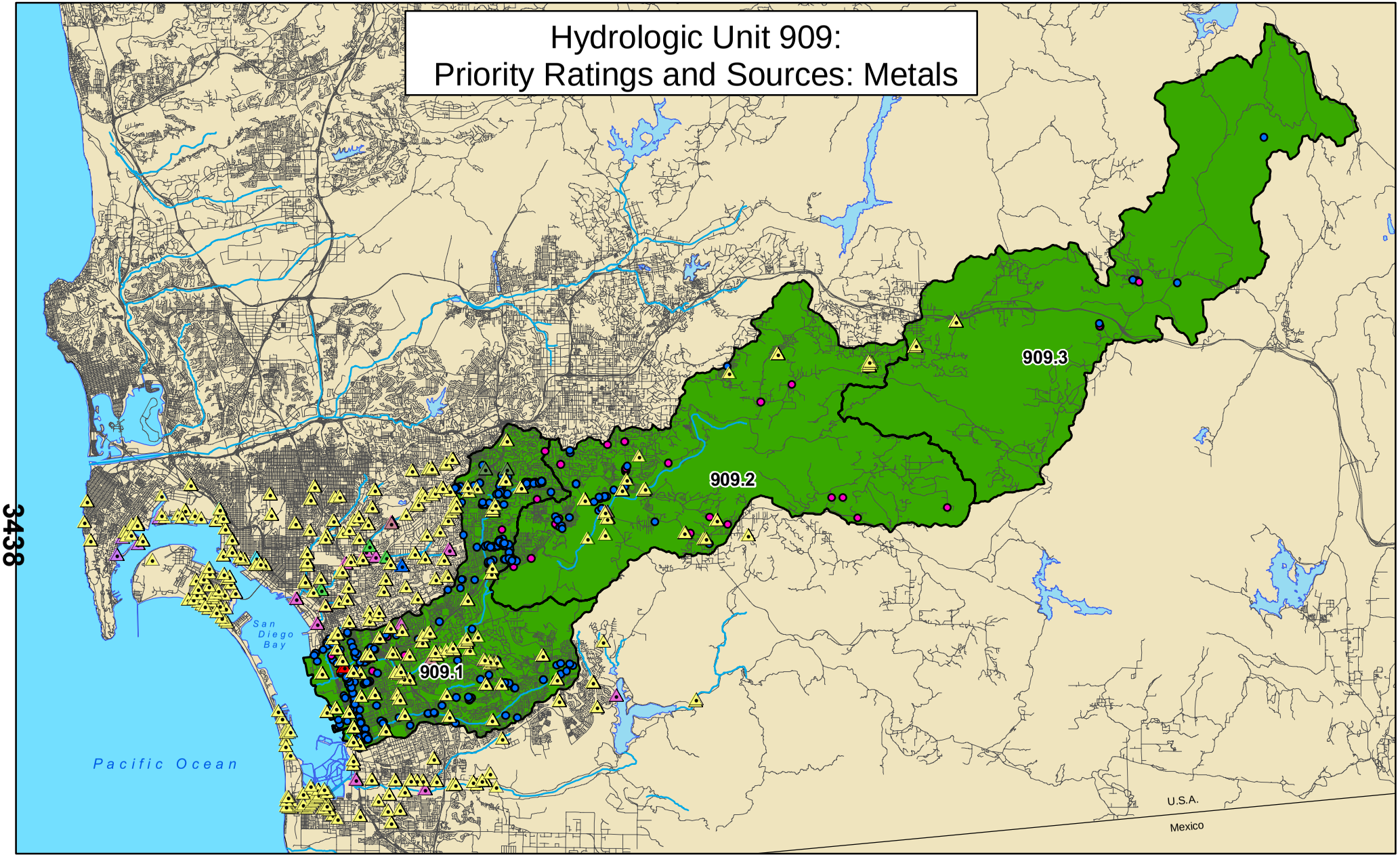

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Heavy Metal Sources

- Likely
- Unknown

Water Quality Priority

- (D) Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908: Priority Ratings and Sources: Metals

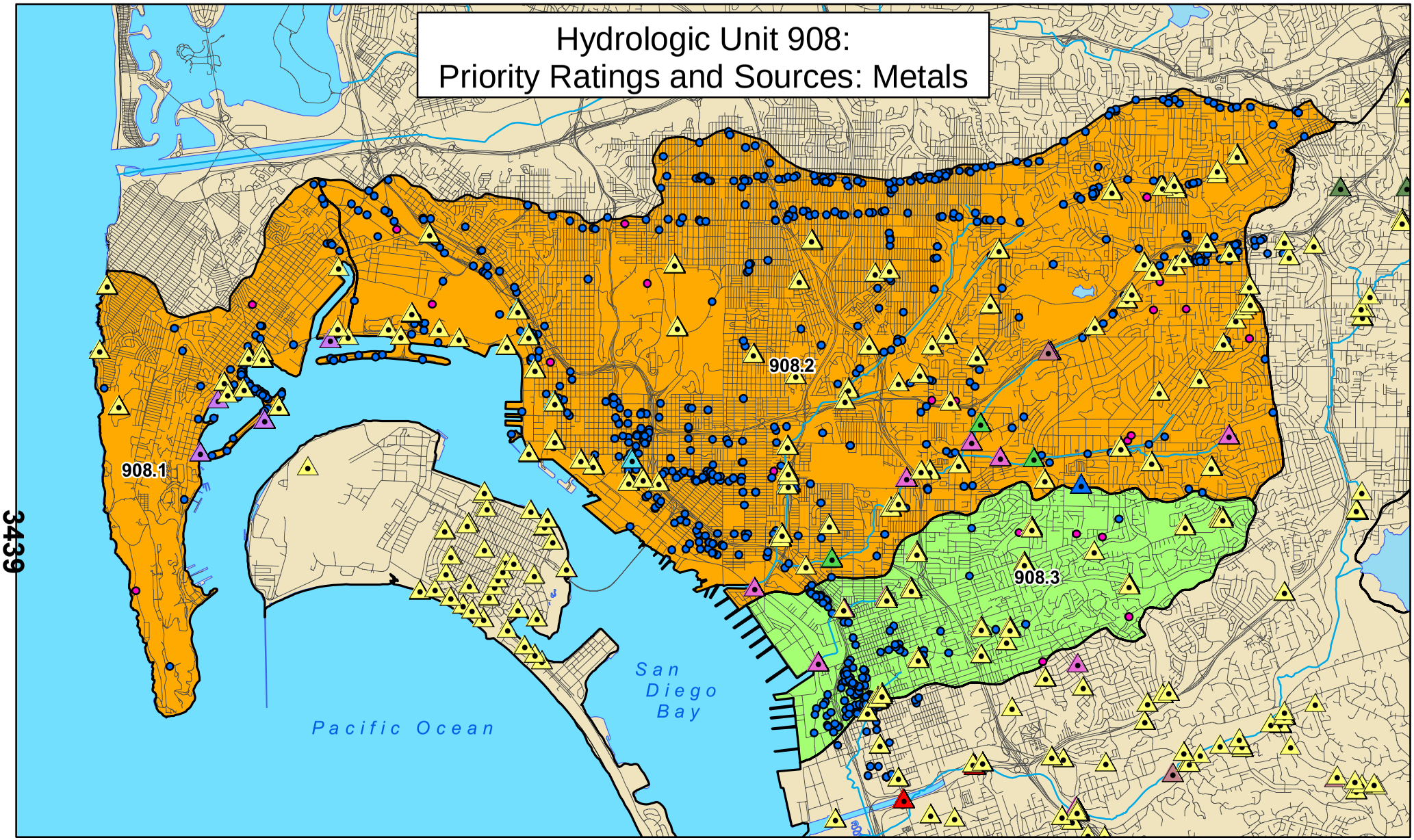

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Heavy Metal Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (C) Moderately Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Gross Pollutants

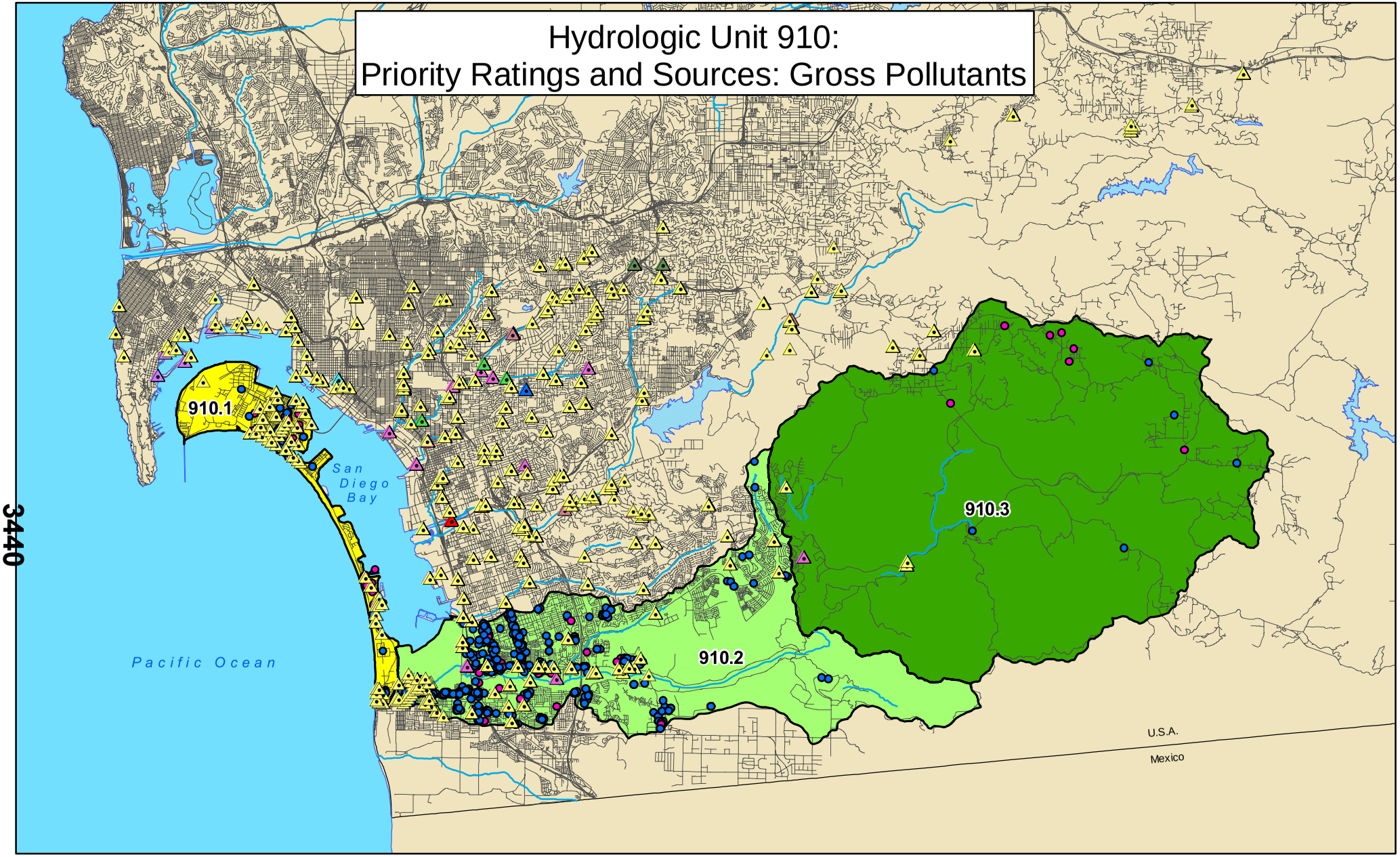

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Gross Pollutant Sources

- Likely
- Unknown

Water Quality Priority

- (B) Moderately High Priority
- (C) Moderately Low Priority
- (D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909:
Priority Ratings and Sources: Gross Pollutants

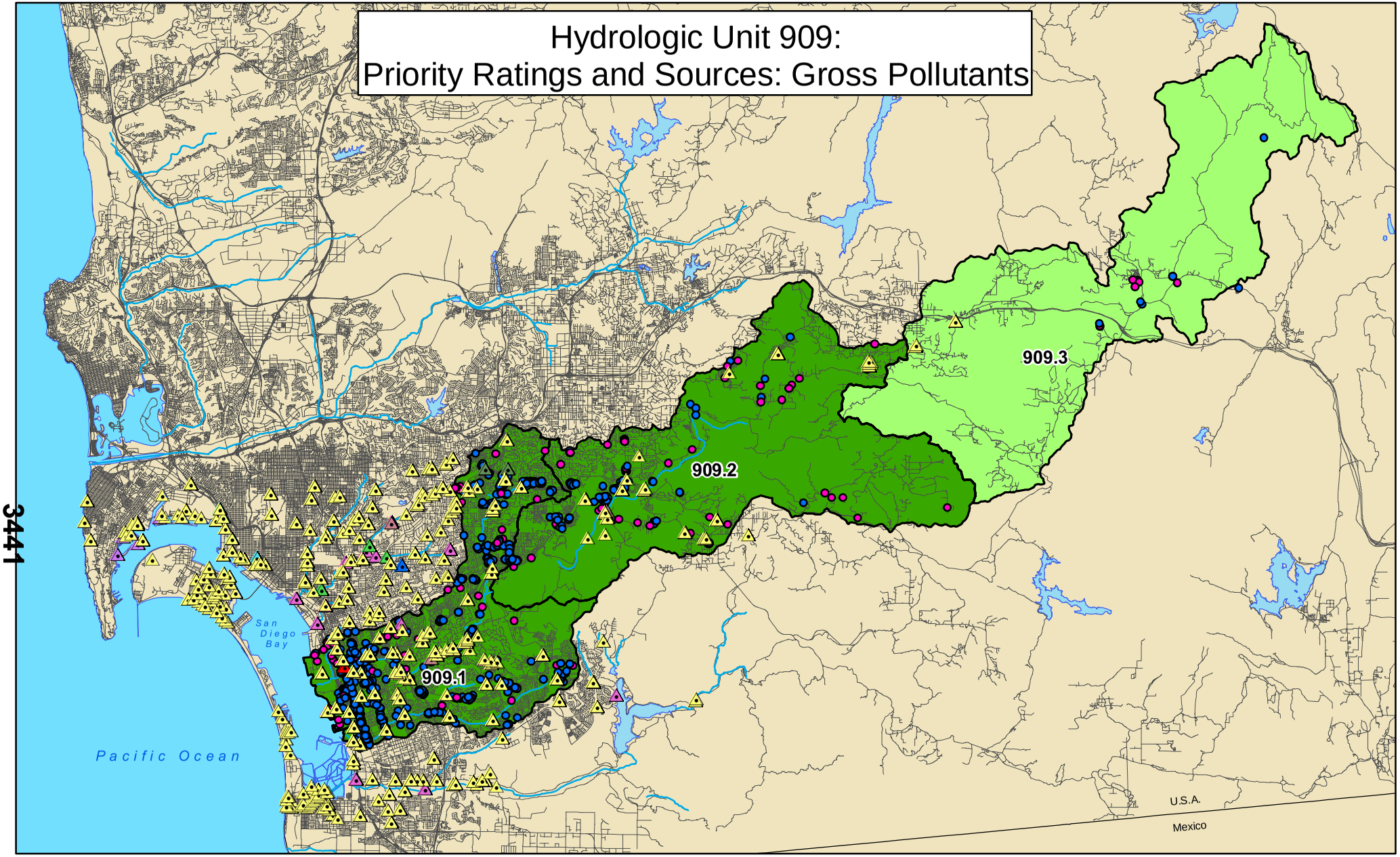

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Gross Pollutant Sources

- Likely
- Unknown

Water Quality Priority

- (C) Moderately Low Priority
- (D) Low Priority

N

0 3 6 12
Miles

Hydrologic Unit 908:
Priority Ratings and Sources: Gross Pollutants

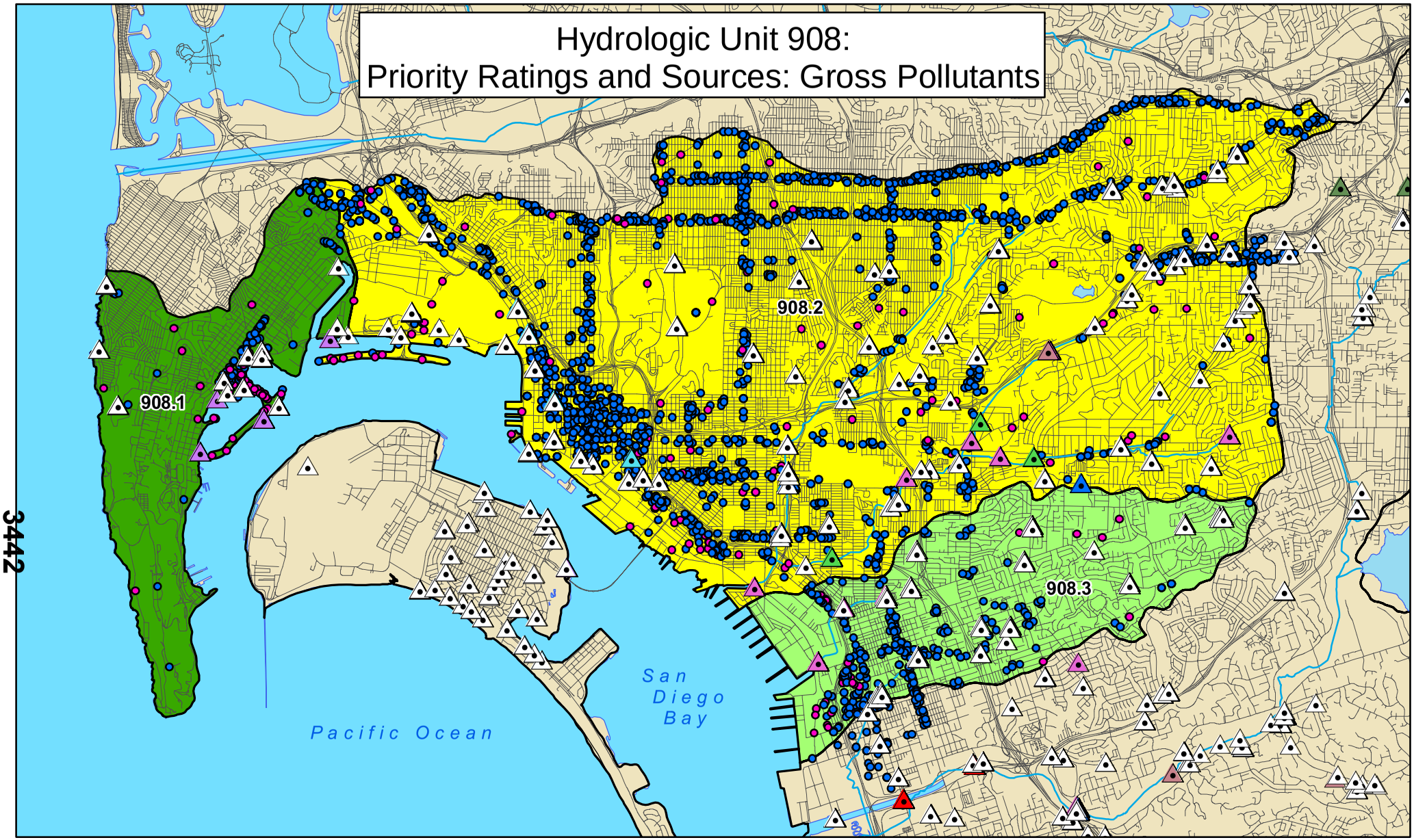

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Gross Pollutant Sources

- Likely
- Unknown

Water Quality Priority

- (B) Moderately High Priority
- (C) Moderately Low Priority
- (D) Low Priority

N

0 1 2 4
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Bacteria

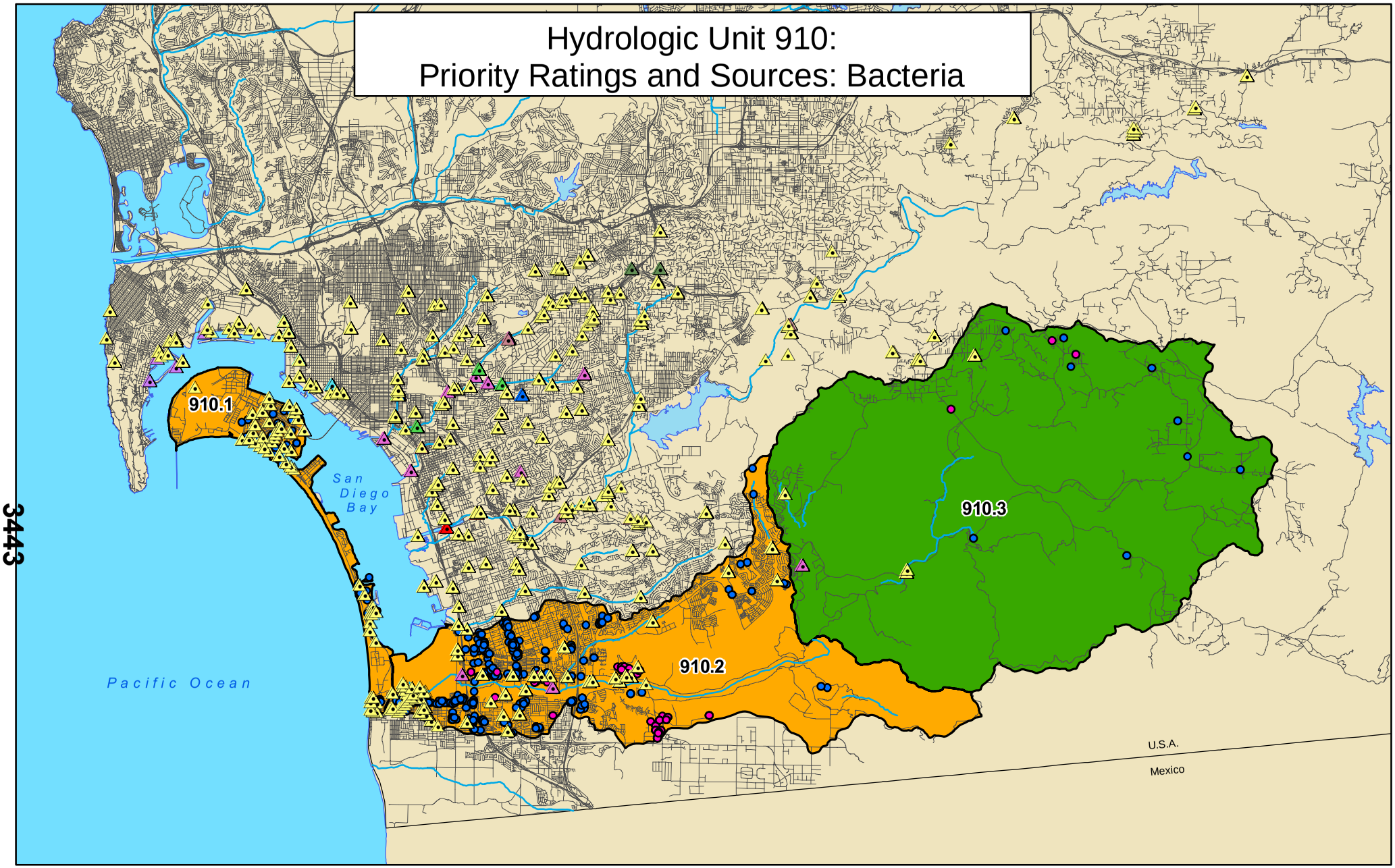

Legend

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Bacteria Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (D) Low Priority

N

0 2.5 5 10
Miles

Hydrologic Unit 909: Priority Ratings and Sources: Bacteria

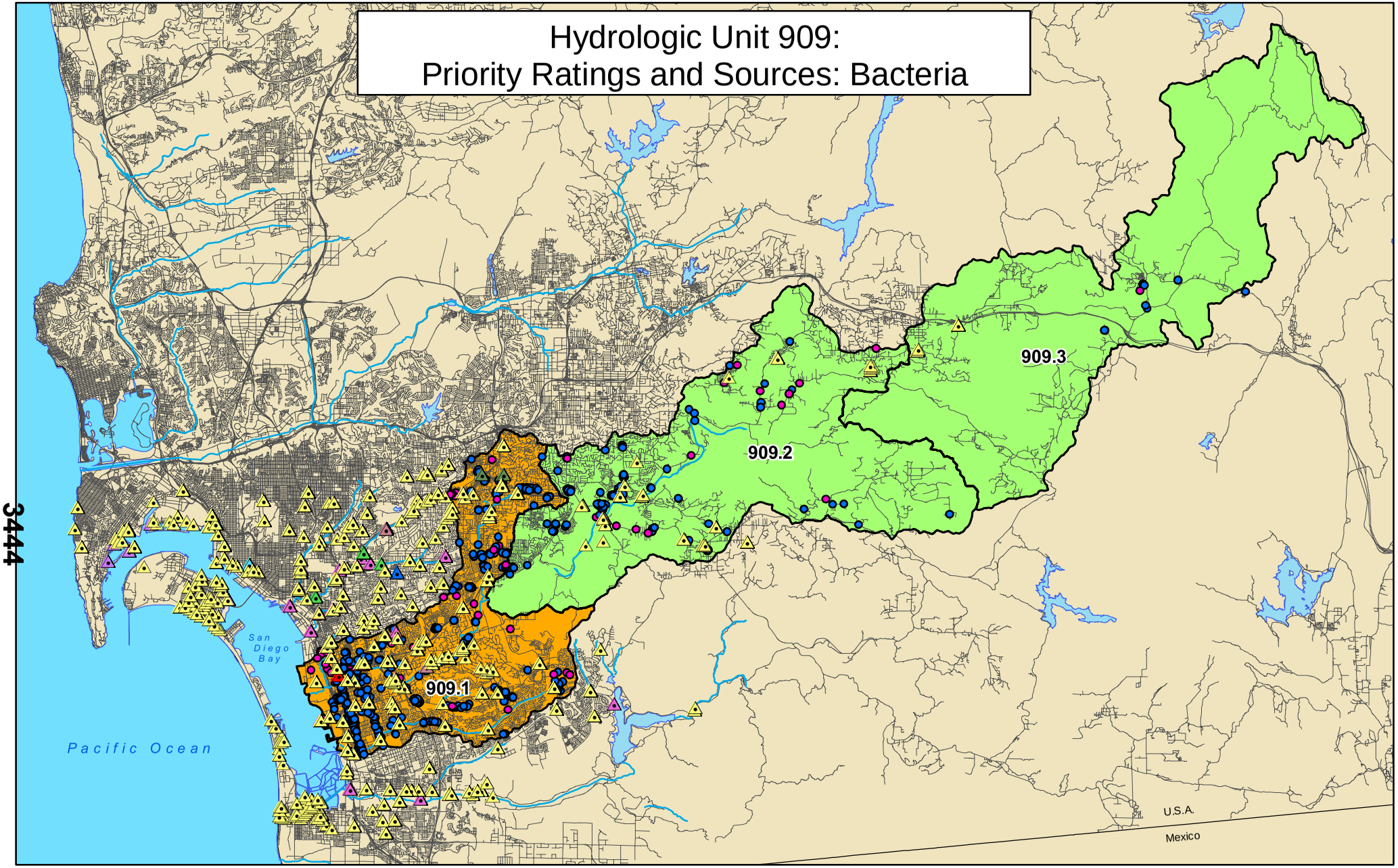

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Bacteria Sources

- Likely
- Unknown

Water Quality Priority

- (A) High Priority
- (C) Moderately Low Priority

N

0 3.5 7 14
Miles

Hydrologic Unit 910: Priority Ratings and Sources: Sediment

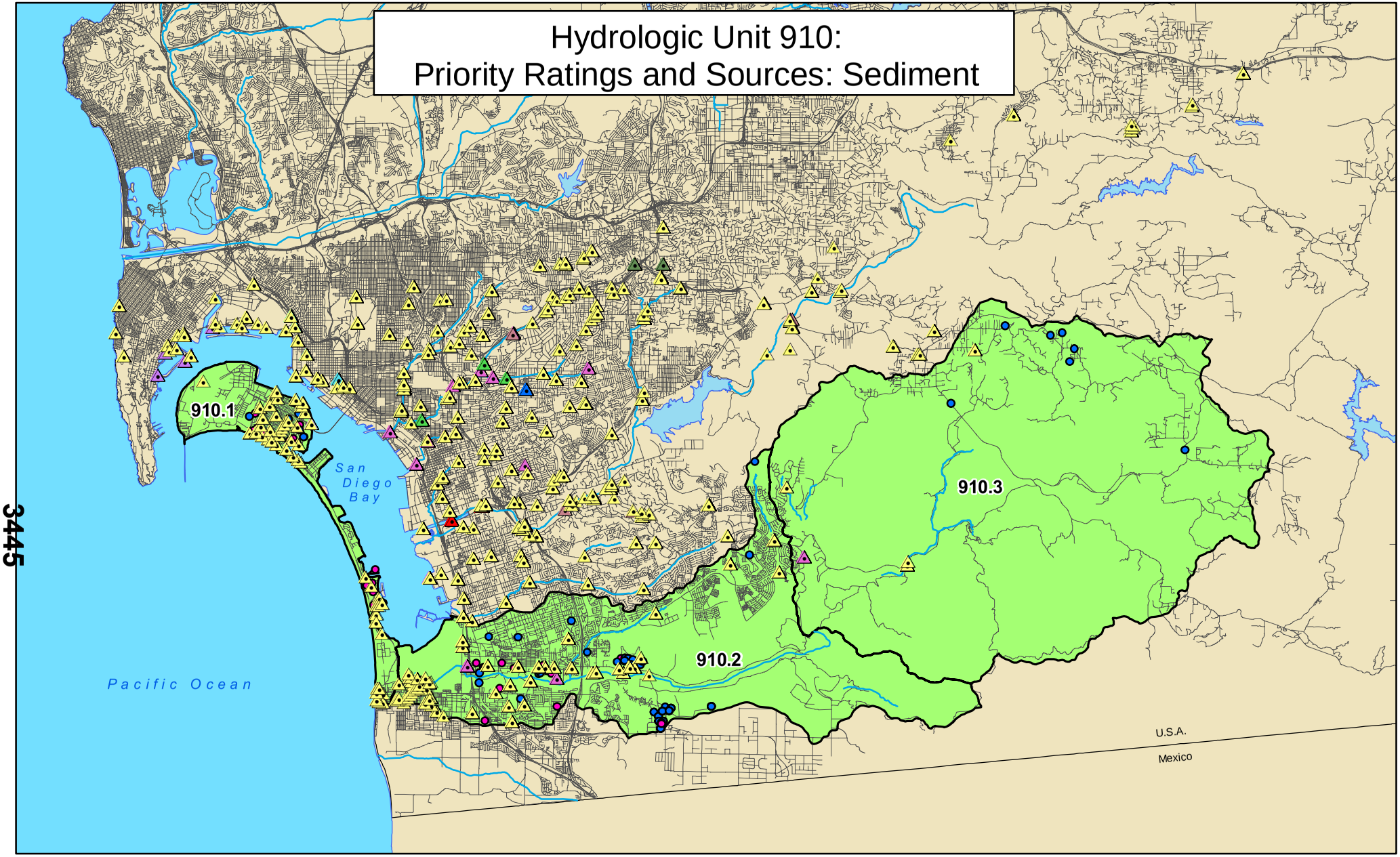

Legend

Monitoring Programs/Sites

- Bioassessment
- Chollas Creek Prism
- Coastal Outfall
- Common Grounds
- Dry Weather
- La Mesa
- SD Stormwater
- SDCWMC
- Sweetwater River

Sediment Sources

- Likely
- Unknown

(C) Moderately Low Priority

N

0 2.5 5 10
Miles

Appendix C-2

Likely Business Sources for the San Diego Bay Watershed

Table C-2-1. Business Sources within the Pueblo San Diego Sub-Watershed (908)

Type	908.1	908.2	908.3	TOTAL	Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment
Airfield	0	1	0	1	N	UK	UK	UK	UK	UK	UK	UK
Airplane Repair	2	7	0	9	UL	UK	L	UK	L	L	UL	UL
Animal Facilities	0	13	0	13	UK	UK	N	L	UL	L	UK	L
Auto Paint	1	52	27	80	UL	UL	L	UL	L	L	UL	UL
Auto Repair	8	319	78	405	UL	L	L	UK	L	L	UL	UL
Boat Repair	27	20	1	48	UL	UK	L	UL	L	L	UL	UL
Chemical Allied Products	0	0	1	1	UK	UK	UK	UK	UK	L	UK	UK
Equipment	0	3	12	15	UL	L	L	UK	L	L	UL	UL
Fabricated Metal	4	23	13	40	UK	UK	L	UK	L	L	UK	UK
Food	98	1883	339	2320	L	L	N	UK	L	L	UK	UL
Fuel	11	86	10	107	UL	L	L	UL	L	L	UL	UL
Landfill	0	2	0	2	UK	UK	L	UK	UK	L	UK	UK
Landscaping	2	9	0	11	L	L	N	L	UL	N	L	L
Maintenance	1	5	1	7	UL	UK	L	UK	L	L	UK	L
Marina	19	2	0	21	UK	UK	L	UK	L	UK	UK	N
Motor Freight	0	19	6	25	UK	UK	L	UK	L	L	UK	UK
Nursery	1	13	4	18	L	UK	UK	L	UL	UL	L	L
POTW	1	2	0	3	L	UK	UK	UK	UK	UK	N	UK
Primary Metal	0	11	2	13	UL	UK	L	UK	UK	UK	UK	UK
Recycle	0	3	2	5	UK	L	L	UK	L	L	UK	L
Total	175	2473	496									

N = None; L = Likely Source; UL = Unlikely Source; UK = Unknown Source

Source: BLTEA (Weston, MOE, & LWA)

Table C-2-2. Business Sources within the Sweetwater Sub-Watershed (909)

Type	909.1	909.2	909.3	TOTAL	Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment
Animal Facilities	10	15	1	26	UK	UK	N	L	UL	L	UK	L
Auto Paint	18	1	0	19	UL	UL	L	UL	L	L	UL	UL
Auto Repair	161	27	2	190	UL	L	L	UK	L	L	UL	UL
Boat Repair	4	1	0	5	UL	UK	L	UL	L	L	UL	UL
Chemical Allied Products	3	1	0	4	UK	UK	UK	UK	UK	L	UK	UK
Equipment Repair	24	0	0	24	UL	L	L	UK	L	L	UL	UL
Fabricated Metal	10	1	0	11	UK	UK	L	UK	L	L	UK	UK
Food	613	110	7	730	L	L	N	UK	L	L	UK	UL
Fuel	65	11	1	77	UL	L	L	UL	L	L	UL	UL
Landfill	3	1	1	5	UK	UK	L	UK	UK	L	UK	UK
Landscaping	7	5	0	12	L	L	N	L	UL	N	L	L
Maintenance Yard	6	4	2	12	UL	UK	L	UK	L	L	UK	L
Marina	4	0	0	4	UK	UK	L	UK	L	UK	UK	N
Motor Freight	21	0	0	21	UK	UK	L	UK	L	L	UK	UK
Nursery	12	25	1	38	L	UK	UK	L	UL	UL	L	L
POTW	0	4	1	5	L	UK	UK	UK	UK	UK	N	UK
Primary Metal	1	0	0	1	UL	UK	L	UK	UK	UK	UK	UK
Total	962	206	16									

N = None; L = Likely Source; UL = Unlikely Source; UK = Unknown Source

Source: BLTEA (Weston, MOE, & LWA)

Table C-2-3. Business Sources within the Otay Sub-Watershed (910)

Type	910.1	910.2	910.3	TOTAL	Bacteria	Gross Pollutants	Heavy Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment
Animal Facilities	0	0	3	3	UK	UK	N	L	UL	L	UK	L
Auto Paint	1	12	0	13	UL	UL	L	UL	L	L	UL	UL
Auto Repair	5	122	2	129	UL	L	L	UK	L	L	UL	UL
Boat Repair	5	1	0	6	UL	UK	L	UL	L	L	UL	UL
Chemical Allied Products	0	0	0	0	UK	UK	UK	UK	UK	L	UK	UK
Equipment Repair	0	18	0	18	UL	L	L	UK	L	L	UL	UL
Food	82	435	7	524	L	L	N	UK	L	L	UK	UL
Fuel	5	38	0	43	UL	L	L	UL	L	L	UL	UL
Landfill	0	1	0	1	UK	UK	L	UK	UK	L	UK	UK
Landscaping	2	2	0	4	L	L	N	L	UL	N	L	L
Maintenance Yard	3	2	0	5	UL	UK	L	UK	L	L	UK	L
Marina	0	1	0	1	UK	UK	L	UK	L	UK	UK	N
Motor Freight	0	15	0	15	UK	UK	L	UK	L	L	UK	UK
Nursery	2	7	4	13	L	UK	UK	L	UL	UL	L	L
POTW	20	1	0	21	L	UK	UK	UK	UK	UK	N	UK
Recycle	0	73	0	73	UK	L	L	UK	L	L	UK	L
Total	125	728	16									

N = None; L = Likely Source; UL = Unlikely Source; UK = Unknown Source

Source: BLTEA (Weston, MOE, & LWA)

Appendix D

San Diego Bay Copermittees' Watershed Activities

MUNICIPAL BEST MANAGEMENT PRACTICES – 1

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees will address high priority water quality problems by coordinating and standardizing activities at the watershed level. One of the identified collaborative efforts is the Municipal BMP activity to address urban runoff from jurisdictional parks and recreational areas. It is believed that parks may be a potential source of high priority water quality problems such as bacteria, pesticides, sediment, and trash. The San Diego Bay Copermittees will take measures to address these high priority water quality problems from the MS4, streams, and water bodies.

This activity consists of multiple projects that address load reductions from parks and recreational areas and are associated with the high priority water quality problems. The list below includes specific projects which can be implemented as part of the Municipal BMP strategy. It is important to note that not every Copermittee participating in this program will institute every activity listed below. Each Copermittee will be implementing the activity jurisdictionally and will decide on the scale, location, and timing of the activities in HAs under their authority. It is the goal of the Municipal BMP activity to address multiple pollutants using a variety of mechanisms throughout the watershed.

Pet Waste Bags: Two important goals are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to clean up after their pets. Each Copermittees will designate how they plan to implement this activity. Providing pet waste bags to citizens may result in load reductions as the activity enables proper disposal of pet waste and associated pollutant categories such as bacteria. The activity could possibly undergo additional assessment by monitoring the number of bags used at each location. Copermittees may elect to post signage to educate the public of the benefits of proper waste management.

Porous Pavement: Porous pavement will facilitate biodegradation of oils and grease from cars and trucks, help rain water infiltrate soil, and reduce pollutant loads of high priority water quality problems. Copermittees may replace traditional impervious pavement in locations such as parking lots with porous pavement. This activity can be implemented to aid in the load reduction of metals, oil and grease, sediment and bacteria associated with impervious surface runoff. The Copermittees may estimate the effectiveness of the BMP by calculating the overall area converted from impervious surfaces to porous pavement. Wet weather monitoring data may also be used to assess the BMP effectiveness.

Irrigation: Copermittees may elect to address methods to reduce nutrient, sediment, pesticide, and bacteria loading associated with irrigation runoff through the implementation of irrigation BMP mechanisms (i.e., drip-irrigation or low-precipitation rate sprinklers) on municipal properties such as parks and recreational areas.

Xeriscaping: With the goal of conserving water, reducing erosion and irrigation runoff, Copermittees may choose to implement this water-wise landscaping technique to convert from lower permeable surfaces, such as grass or concrete, to more permeable landscaping options incorporating California-friendly plant species. Xeriscaping will aid in reducing nutrient, sediment, and bacteria associated with runoff of less pervious surfaces. The Copermittees may estimate the effectiveness of the BMP by calculating the overall area converted from less permeable surfaces to landscaping. Educational signs may be posted where appropriate to educate the public on the basis of the activity.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) Lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria, sediment toxicity and benthic community degradation. TMDLs are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, Bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek. All collaborative municipal BMP activities are applicable to these TMDLs to the extent they address the identification and control of sources of bacteria as a pollutant potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Varies
- Permit Year 2: Varies
- Permit Year 3: Varies
- Permit Year 4: Varies
- Permit Year 5: Varies

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego
- City of Lemon Grove
- City of Coronado
- City of National City
- City of Chula Vista
- City of San Diego
- City of Imperial Beach
- County of San Diego
- City of La Mesa

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Sediment
- Oil and grease
- Pesticides

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. The Watershed Strategy identifies additional monitoring for bacteria within 908.1 HA, while proposing load reduction as the appropriate management action for 908.2, 908.3, 909.1, 909.2, and 910.1 HAs. Source identification was identified as the appropriate management action for bacteria within 910.2 HA. Metals were identified as a high priority water quality problem for 908.1 and 908.2 HA, requiring additional monitoring and source abatement, respectively. Sediment is also identified as a high priority water quality problem at both 908.2 and 908.3 HA. The Watershed Strategy acknowledged identification of the source of the sediment is needed. Oil and grease is considered a high priority water quality problem in 908.1 HA, requiring additional monitoring. Pesticides are recognized by the Watershed Strategy as a high priority water quality problem for 908.1 and 908.2 HA. The Watershed Strategy identifies the necessity for additional monitoring and source identification.

EXPECTED BENEFITS

Pet Waste Bags: The expected outcome of providing means to the proper disposal of pet feces within parks establishes a level 3 outcome, as the education of the public on pollutant load reducing practices promotes behavioral change among the citizens. The dispensers add a reminder and encouragement for dog owners to properly dispose of dog waste. Bacteria load reductions associated with the use of pet waste bags will present a level 4 outcome. Removal of pet waste from the environment reduces nutrient and bacterial loading and improves water quality within the watershed.

Porous Pavement: The expected benefit of installing porous pavement in parking lots is a level 4 outcome by aiding to identify sources and reduce pollutant loads. This activity will contribute to improvements in water quality and source abatement.

Irrigation: The expected outcome will be level 4 and 5 outcomes with the installation of improved irrigation systems and practices. This activity will exhibit load reduction, which will influence discharge water quality.

Xeriscaping: The expected benefits of xeriscaping are level 3 and 4 outcomes, or BMP installation and load reductions.

EFFECTIVENESS MEASUREMENTS

Pet Waste Bags: Providing pet waste bags is an important water quality activity to reduce the nutrients and bacteria loads because it estimates the amount of feces being removed in the watershed (level 4). Bacteria is a high priority water quality problem throughout the San Diego Bay watershed. Changes in knowledge, awareness and behavior of pet owners result in outcome levels 2 and 3 as well. The success of the implementation of pet waste bags may be estimated by quantifying the number of bag dispensers added in each HA as part of this activity or the number of bags removed and used from each of the dispensers.

Porous Pavement: Effectiveness will be assessed through level 4. The amount of area transferred from less permeable material, such as concrete, to porous pavement can be calculated to show efforts undertaken to reduce the amount of area covered by impervious surfaces and reduce the high priority water quality problems in each HA. The Copermittees may elect to do additional monitoring of watershed waters and surface runoff, in order to compare current loads to pre-BMP conditions. Wet weather monitoring data may also be used to assess the BMP effectiveness.

Irrigation: Effectiveness will be assessed through level 4. Copermittees may elect to monitor the high priority water quality problems in surface runoff and compare loads to pre-BMP conditions.

Xeriscaping: Load reductions will be assessed through level 4. The estimation of the area transformed through specialized landscaping may be utilized by Copermittees to show jurisdictional efforts to decrease the amount of impervious ground cover and reduce the high priority water quality problems within each HA.

MUNICIPAL BEST MANAGEMENT PRACTICES/PET WASTE BAGS AT PET RELIEF AREAS – 1A

ACTIVITY SUMMARY

The Airport Authority maintains a Pet Relief Area at the San Diego International Airport and is planning to install a second facility. Pet waste bags are available at the Pet Relief Area. The goals of this program are to reduce the amount of pet waste that might inadvertently enter the stormwater conveyance system and to provide public education about potential stormwater pollution related to pet waste and the need to clean up after their pets. These goals will reduce the amount bacteria and nutrients which could be released in the watershed.

The Pet Waste Bag Program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of feces and associated bacteria and nutrients being removed from the watershed. Pet waste bags are a reminder to and an encouragement for dog owners to properly dispose of dog waste. Removal of dog waste from the environment reduces associated bacteria and nutrient loading and improves water quality within the watershed. Reduction in the amount of bacteria and nutrients in the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. TMDLS are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Pet Waste Bag Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria and nutrients as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high water quality problem and nutrients as a low water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on bacteria and nutrient load reduction through the removal of dog feces in the 908.2 HA. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions, but also increases awareness and education of the public regarding pet waste as a source of stormwater pollution.

EXPECTED BENEFITS

Pet waste bags at the Pet Relief Area target pollutant removal from the public areas of the airport. The public's use of pet waste bags actively decreases the amount of dog feces that might inadvertently enter the stormwater conveyance system. Making pet waste bags available to the public encourages stakeholder buy-in and participation in the Watershed Strategy. The program cultivates of a public sense of ownership and responsibility for the health of local water bodies which in turn leads to the proper disposal of pet waste. By changing the way in which individuals dispose of pet waste, this program results in a level 3 outcome. The program also calculates the reduction in the amount of bacteria and nutrients impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual bacteria and nutrient load reductions by 1) estimating per-bag pollutant loads based on review of the literature and/or other sources and 2) monitoring the number of pet waste bags used annually. The Airport Authority will also be able to track the cost of implementing the program based on the number of bags used.

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT PET WASTE DISPOSAL – 1B

ACTIVITY DESCRIPTION

The City of Chula Vista plans to encourage homeowner's associations to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association newsletters about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials and survey homeowners associations to assess if there is signage and plastic bag dispensers in the neighborhoods regarding proper pet waste disposal.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria has been categorized as a high priority pollutant in the watershed. This activity is consistent with the collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EXPECTED BENEFITS

The HOA and resident education activity aims to locate areas within the City of Chula Vista where neighborhoods need education about pet waste and its potential impact on water quality by incorporating source control measures. By providing signage and educational materials to HOAs and residents, this effort intends to reduce the amount of bacteria that could enter the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 1, 2, and 3. The activity will be assessed by the number of surveyed homeowners associations and the number of homeowners reached through education.

PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS – 1C

ACTIVITY DESCRIPTION

The County of San Diego maintains an inventory of pet waste dispensers in its parks. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. In the San Diego Bay Watershed, there are currently 8 dispensers located in 7 County parks:

- Otay Lake Park, Otay Valley Open Space Preserve – 910.20 (1 dispenser)
- Eucalyptus Park – 909.12 (1 dispenser)
- Goodland Acres Park - 909.12 (1 dispenser)
- Hilton Head – 909.21 (Cottonwood 3) (1 dispenser)
- Lamar Street Park – 909.12 (1 dispenser)
- Spring Valley Park, Community Center and Teen Center – 909.12(1 dispenser)
- Sweetwater Regional Park/Summit – 909.12 (2 dispensers)

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – To be determined

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria has been identified as a priority water quality problem in the San Diego Bay Watershed. Parks have been identified as potential sources of bacteria. Since this activity

addresses a priority water quality problem and a priority source, it is consistent with the collective Watershed Strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (level 1). Bacteria load reductions (Level 4) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

MUNICIPAL DOGGIE BAG DISPENSER PROGRAM – 1D

ACTIVITY DESCRIPTION

The Port of San Diego maintains an inventory of pet waste dispensers in the Port's municipal parks. This is an important activity to address urban runoff from jurisdictional parks and recreational areas. It is believed that parks may be a likely source of high priority pollutants such as bacteria and nutrients. Two important goals are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to clean up after their pets. The activity could possibly undergo additional assessment by monitoring the number of bags used at each location. Signage educating the public of the benefits of proper waste management will be posted where appropriate.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) Lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek. The Pet Waste Bag Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria and nutrients as pollutants potentially impacting water quality in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. The Watershed Strategy identifies additional monitoring for bacteria within 908.1 HA, while proposing load reduction as the appropriate action for 908.2, 908.3, 909.1, 909.2, and 910.1 HAs. Source identification was identified as the appropriate management action for bacteria within 910.2 HA. For those HAs in which load reductions are proposed, this activity will lead to the reduction in the amount of pet feces in the stormwater runoff from the HA.

EXPECTED BENEFITS

This activity focuses on the load reduction of bacteria through the removal of pet feces from Port of San Diego's municipal areas. The public's use of pet waste bags actively decreases the amount of pet feces that might inadvertently enter the stormwater conveyance system. Making pet waste bags available to the public encourages stakeholder buy-in and participation in the Watershed Strategy. The program cultivates of a public sense of ownership and responsibility for the health of local water bodies which in turn leads to the proper disposal of pet waste. By changing the way in which individuals dispose of pet waste, this program results in a level 3 outcome. The program abates sources impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

Providing pet waste bags is an important water quality activity to reduce the nutrients and bacteria loads because it abates sources (level 4). Bacteria is a high priority water quality problem throughout the San Diego Bay watershed. Changes in knowledge, awareness and behavior of pet owners result in outcome levels 2 and 3 as well. The success of the implementation of pet waste bags may be estimated by quantifying the number of bag dispensers added in each HA as part of this activity and/or the number of bags removed and used from each of the dispensers.

ASSESS USE OF PET WASTE BAGS – 1E

ACTIVITY DESCRIPTION

Evaluate usage levels and possible benefits and barriers to proper usage.

TMDL APPLICABILITY

Impending Chollas Creek bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- Annual assessment efforts

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local Watershed Activity

EXPECTED BENEFITS

Increased staff knowledge of effectiveness, improved use by community, and quantifiable load reduction numbers.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

PET WASTE BAGS – 1F

ACTIVITY DESCRIPTION

Installation of dispensers in all public park areas and other public areas such as near City Hall.

TMDL APPLICABILITY

Chollas Creek impending bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- Current Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

High priority pollutant based activity

EXPECTED BENEFITS

Less pet waste entering urban run-off decreasing bacteria.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

MUNICIPAL BEST MANAGEMENT PRACTICES / IRRIGATION / XERISCAPE – 1G

ACTIVITY SUMMARY

The Airport Authority intends to coordinate with the San Diego Bay Copermittees and implement source control BMPs to address urban runoff from landscaped areas. The goal of the Irrigation/Xeriscape program is to reduce the amount nutrients, pesticides, and sediment which could be released in the watershed from landscaped areas at the airport. The Airport Authority intends to implementation irrigation BMPs (e.g., drip-irrigation systems or automatic moisture/precipitation sensing controls) to reduce over-irrigation and the resultant nutrient, pesticide, and sediment contaminated runoff from landscape areas. The Airport Authority also plans to use native plants and xeriscape to the extent possible with the goal of conserving water, reducing erosion and irrigation runoff pollutant loads. This water-wise landscaping technique will limit the need for fertilizers, herbicides, and pesticides, and thereby, reduce nutrient, pesticide, and sediment pollutant loads associated with runoff from these landscaped surfaces.

The Irrigation/Xeriscape Program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of nutrients, pesticides, and sediment being removed from the watershed. A reduction in the amount of fertilizers, herbicides, pesticides, and sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Irrigation/Xeriscape Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of nutrients, pesticides, and sediment as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation

- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems by focusing on nutrient, pesticide, and sediment load reductions resulting from proper irrigation and the installation of xeriscape using native species that generally limit the need for fertilizers, herbicides, and pesticides. The Watershed Strategy identifies pesticides and sediments as high priority water quality problems and nutrients as a low priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions, but also increases awareness and education of the Airport Authority staff regarding over-irrigation and over-application of fertilizers, herbicides, and pesticides as sources of stormwater pollution.

EXPECTED BENEFITS

The Irrigation/Xeriscape Program targets pollutant removal from the landscaped areas of the airport. The proper use of irrigation and limited application of fertilizers, herbicides, and pesticides actively decreases the amount of nutrients, pesticides, and sediment that might inadvertently enter the stormwater conveyance system. Outreach and education to staff regarding proper irrigation and xeriscape encourages stakeholder buy-in and participation in the Watershed Strategy. The program cultivates a sense of ownership and responsibility on the part of staff for the health of local water bodies which in turn leads to proper use of irrigation and limited application of fertilizers, herbicides, and pesticides. By changing the way in which staff operates, this program results in a level 3 outcome. The program also calculates the reduction in the amount of nutrients, pesticides, and sediment impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) monitoring the amount of water, fertilizer, herbicide, and pesticide used for landscape maintenance, and 2) estimating, based on review of the literature and/or other sources, the sediment load per unit volume of irrigation water and landscape area for improperly irrigated landscape areas. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

IMPLEMENTATION OF STORM DRAIN LITTER CONTROL TECHNIQUES – 2

ACTIVITY DESCRIPTION

One of the identified collaborative efforts is the implementation of storm drain litter control techniques. The Copermittees will utilize storm drain inserts, filters, etc. to reduce litter, trash and sediment pollutant loads from entering the San Diego Bay watershed. Each Copermittee will be able to identify and promote feasible site locations and the most effective storm drain litter control methodology within their own jurisdiction if this activity is feasible for implementation. The drain BMPs will prevent trash and sediment from entering into the storm water conveyance system. The Copermittees may be able to evaluate the amount of trash and sediment collected at various inlet locations to ascertain the quantity and type of trash and sediment deposited.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Varies
- Permit Year 2: Varies
- Permit Year 3: Varies
- Permit Year 4: Varies
- Permit Year 5: Varies

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of Coronado
- City of San Diego
- City of Imperial Beach
- County of San Diego
- City of La Mesa
- Port of San Diego
- City of Lemon Grove
- San Diego Regional Airport Authority

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on sediment and trash load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous debris. The Watershed Strategy identifies sediment and trash as high priority water quality problems for the watershed HAs. Sediment is identified as a high priority water quality problem at both 908.2 and 908.3 HAs. The Watershed Strategy acknowledged identification of the source of the sediment is needed in the majority of the San Diego Bay WMA.

EXPECTED BENEFITS

The installation and maintenance of storm drain litter control is beneficial to the San Diego Bay Watershed because sediment, debris, and other harmful materials are prevented from entering receiving waters. The expected benefit of these techniques is a level 4 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality and BLTEA ratings.

EFFECTIVENESS MEASUREMENTS

Pollutant load reductions and discharge quality may be estimated and assessed through water quality monitoring and observation efforts that are integral to level 4. Pollutant load reductions may be assessed by recording the amount and type of debris collected. This will allow a characterization of pollutant loads at each site and enable comparisons between sites within an individual HA and between sites in other HAs.

IMPLEMENTATION OF STORM DRAIN LITTER CONTROL TECHNIQUES – 2A

ACTIVITY DESCRIPTION

The Port of San Diego will utilize storm drain inserts, filters, etc. to reduce litter, trash and sediment pollutant loads from entering the San Diego Bay watershed. The Port will identify and promote feasible site locations and the most effective storm drain litter control methodology within its jurisdictional area. The Port intends to install filters within three parks—Tuna Harbor Park, Embarcadero Marina Park North, and Embarcadero Marina Park South—which are adjacent to the San Diego Bay. These parks receive a significant amount of public use and are locations of special events throughout the year. The storm drain BMPs will prevent trash and sediment from entering into the storm water conveyance system.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Assessment
- Permit Year 3: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The storm drain litter control activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on trash and sediment. The Watershed Strategy identifies both pollutants as high priority water quality problems within HA 908.2. The Watershed Strategy identifies a load reduction action for trash within HA 908.2 and acknowledges that identification of the source of the sediment is needed. Storm drain litter control techniques intend to capture trash, sediment, leaves, yard clippings, and oil and grease and will prevent these pollutants from entering receiving waters.

EXPECTED BENEFITS

The installation and maintenance of storm drain litter control is beneficial to the San Diego Bay Watershed because sediment, trash, debris, and other harmful materials are prevented from

entering receiving waters. The expected benefit of these techniques is a level 4 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality.

EFFECTIVENESS MEASUREMENTS

Pollutant load reductions and discharge quality may be estimated and assessed through water quality monitoring and observation efforts that are integral to levels 4. Pollutant load reductions may be assessed by recording the amount and type of debris collected. Furthermore, discharge water quality may also be assessed through dry or wet weather monitoring. This will allow a characterization of pollutant loads and discharge water quality at each site and enable comparisons between sites within an individual HA and between sites in other HAs.

IMPLEMENTATION OF STORM DRAIN LITTER CONTROL TECHNIQUES/STRATEGIC USE OF STORM DRAIN INLET FILTERS – 2B

ACTIVITY SUMMARY

The Airport Authority intends to install storm drain inlet filters to reduce litter, trash, sediment and associated metals, oil and grease, and bacteria from inadvertently entering the stormwater conveyance system and then into San Diego Bay. The goal of the Strategic Use of Storm Drain Inlet Filters Program is to reduce the amount bacteria, oil and grease, sediment, and trash which could be released in the watershed. The Airport Authority will identify those locations likely to be most effective at controlling litter, trash, and sediment. The Airport Authority will monitor the sites regularly and cleaned at least annually. The amount of trash and sediment collected will be recorded. Knowing the drainage area of each inlet, the amount of trash and sediment collected, and the cost of implementing the program, the cost-effectiveness of each installation can be calculated and used to make overall program improvements.

The program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of bacteria, metals, oil and grease, sediment, and trash being removed from the watershed. A reduction in the amount of litter, trash, and sediment potentially entering the stormwater conveyance system contributes to improving the quality of the stormwater in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Strategic Use of Storm Drain Inlet Filters Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, metals, oil and grease, sediment, and trash as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation

- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Strategic Use of Storm Drain Inlet Filters Program will aid in the physical removal of a quantifiable amount of trash and sediment and associated bacteria, metals, oil and grease from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria, sediment, and trash as high priority water quality problems and oil and grease as a low priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of litter, trash, sediment and associated bacteria, metals, oil and grease. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Strategic Use of Storm Drain Inlet Filters Program targets pollutant removal from the streets, roadways, and parking lots of the airport. The use of storm drain inlet filters actively decreases the amount of litter, trash, sediment and associated bacteria, metals, oil and grease that might inadvertently enter the stormwater conveyance system. The program calculates the reduction in the amount of bacteria, metals, oil and grease, sediment, and trash impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) measuring the weight of trash and sediment collected in the storm drain inlet filters and 2) estimating bacteria, metal, and oil and grease loads per unit weight of trash and sediment collected based on review of the literature and/or other sources. The Airport Authority will also be able to track the cost of implementing the program to determine the cost-effectiveness of the filters and the overall effectiveness of each installation.

STORM DRAIN INSERTS IN COMMERCIAL BUSINESS AREAS – 2C

ACTIVITY SUMMARY

Coronado will utilize storm drain inserts, filters, etc. to reduce litter and trash, sediment, oil and grease, and bacteria pollutant loads from entering the storm water conveyance system, and ultimately preventing pollutants from entering the San Diego Bay watershed. These identified inlets, along Coronado's Orange Avenue pedestrian commercial business route, and side-streets with eating establishments, will be cleaned once monthly to evaluate the amount of trash and sediment collected. Additional sites for consideration include Ocean Boulevard.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations through San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- 2007-2008 monitoring/planning
- 2008-2009 implement
- 2009-2010 implement
- 2010-2011 implement/assess
- 2011-2012 assess

PARTICIPATING WATERSHED COPERMITTEES

- City of Coronado

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on bacteria and sediment load reduction. Littler control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants. The Watershed Strategy identifies bacteria, sediment, and nutrients as either high, medium, or low water quality problems for the watershed Has. Bacteria are categorized as a high priority water quality problem in all HAs with the BLTEA rating of A.

EXPECTED BENEFITS

The installation and maintenance of storm drain litter control is beneficial to the San Diego Bay Watershed because sediment, debris, and other harmful materials are prevented from entering receiving waters. The expected benefit of these techniques is a level 4 and 5 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality and BLTEA ratings.

EFFECTIVENESS MEASUREMENTS

Pollutant load reductions and discharge quality may be estimated and assessed through water quality monitoring and observations efforts that are integral to levels 4-5. Pollutant load reductions may be assessed by recording the amount and type of debris collected. This will allow a characterization of pollutant loads at each site and enable comparisons between sites within an individual HA and between sites in other HAs.

IMPLEMENTATION OF STORM DRAIN LITTER CONTROL TECHNIQUES – 2D

ACTIVITY DESCRIPTION

The City of La Mesa will utilize storm drain inserts to reduce litter and trash, sediment, oil and grease, and bacteria pollutant loads from entering the San Diego Bay watershed. The drain BMPs will prevent trash and sediment; absorb oil and grease, and bacteria from entering into the storm water conveyance system. The City of La Mesa will evaluate the amount of trash and sediment collected at various inlet locations and compares the results to determine the quantity and type of trash and sediment deposited. The City of La Mesa has installed and continues to maintain 22 filter inserts along University Avenue. The filter inserts are inspected and cleaned at a minimum twice a year. The volume of trash recovered from the filter inserts will be recorded as well as the type of debris retrieved.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Monitoring/Planning
- Permit Year 2: Planning
- Permit Year 3: Implementation
- Permit Year 4: Assessment
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on bacteria and sediment load reduction. Litter control

techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants. The Watershed Strategy identifies bacteria, sediment, and nutrients as either high, medium, or low water quality problems for the watershed HAs. Bacteria are categorized as a high priority water quality problem in all HAs with the BLTEA rating of A. The Watershed Strategy identifies additional monitoring for 908.1, while proposing load reduction and source abatement as the appropriate action to be taken for bacteria for all other HAs. Sediment is also identified as a high priority water quality problem at both 908.2 and 908.3 HAs. The Watershed Strategy acknowledged identification of the source of the sediment is needed in the majority of the San Diego Bay watershed.

EXPECTED BENEFITS

The installation and maintenance of storm drain litter control is beneficial to the San Diego Bay Watershed because sediment, debris, and other harmful materials are prevented from entering receiving waters. The expected benefit of these techniques is a level 4 and 5 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality and BLTEA ratings.

EFFECTIVENESS MEASUREMENTS

Pollutant load reductions and discharge quality may be estimated and assessed through water quality monitoring and observation efforts that are integral to levels 4-5. Pollutant load reductions may be assessed by recording the amount and type of debris collected. This will allow a characterization of pollutant loads at each site and enable comparisons between sites within an individual HA and between sites in other HAs.

STREET SWEEPING ENHANCEMENT – 3

ACTIVITY DESCRIPTION

One of the collaborative efforts is street sweeping enhancements. The San Diego Bay Copermittees intend to reduce the accumulation of metals, sediments, and trash by optimizing the efficiency and/or frequency of street sweeping programs. The Street Sweeping activity is focused on enhancing Copermittees' street sweeping program within municipal areas by increasing sweeping frequency and/or area coverage or increasing sweeping efficiencies. According to the jurisdictional requirements presented in the Permit, municipal areas must prioritize locales for street sweeping based upon the amount of trash and debris accumulated. Each Copermittee participating in this activity will work to identify feasible cleaning schedules and locations within their own jurisdiction to implement an expanded street sweeping program to reduce the accumulation of debris on roads, streets, and parking lots. One way this could be accomplished is by increasing the cleaning frequency of roads and streets in HAs in which sediment and/or metals are high priority water quality problems. Another mechanism could be to increase the efficiencies of the sweepers utilized. A reevaluation of the current street sweeper vehicle routes will enable Copermittees to determine if their vehicles are maximizing their pollutant removal capability in high priority areas. Pollutant load reductions can be assessed by recording the volume of debris collected during sweeping and/or the amount of area (mileage) covered by the street sweeping vehicles.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Varies
- Permit Year 2: Varies
- Permit Year 3: Varies
- Permit Year 4: Varies
- Permit Year 5: Varies

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of Coronado
- City of San Diego
- City of Imperial Beach
- County of San Diego
- City of La Mesa
- City of Lemon Grove

- Port of San Diego
- San Diego Regional Airport Authority

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediments
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping activity intends to reduce high priority water quality problems such as metals, sediments, and trash and aid in the improvement of the discharge water quality. Metals were identified as high priority water quality problem for HA 908.1 and HA 908.2, requiring additional monitoring and source abatement respectively. Sediment is also identified as a high priority water quality problem at both 908.2 and 908.3 HAs. The Watershed Strategy acknowledged identification of the source of sediment is needed. The increased frequency of street sweeping would augment the Copermittees' sweeping efforts outlined in the Permit. This effort is consistent with the Collective Watershed Strategy in that it seeks to reduce the loads of these high priority water quality problems and abate pollutant sources from roadways and parking facilities which have yet to be thoroughly addressed by the Copermittees.

EXPECTED BENEFITS

The Street Sweeping activity will contribute to improvements in water quality by reducing the loads of high priority water quality problems such as metals, sediments, and trash that might inadvertently enter the storm water conveyance system of the watershed and receiving waters of the San Diego Bay. This effort will provide baseline data on the accumulation of trash and debris from high and medium, or moderate, priority municipal areas.

EFFECTIVENESS MEASUREMENTS

Primarily, the effectiveness of this activity will be assessed through level 4, which regard load reductions. Pollutant load reductions can be assessed by recording the volume of debris collected during sweeping and/or the amount of area (mileage) covered by the street sweeping vehicles.

STREET SWEEPING ENHANCEMENT/ENHANCED STREET SWEEPING PROGRAM – 3A

ACTIVITY SUMMARY

The Airport Authority intends to reduce the accumulation of metals, oil and grease, organics sediments, and trash on streets, roadways, and parking lots by increasing the frequency of street sweeping. The goal of the Enhanced Street Sweeping Program is to reduce the amount metals, oil and grease, organics, sediment, and trash which could be released in the watershed. According to the Municipal Permit, municipal areas must be prioritized for street sweeping based upon the amount of trash and debris accumulated. Using methodologies developed in conjunction with the San Diego Bay Copermittees to identify feasible cleaning schedules and prioritization schemes, the Enhanced Street Sweeping Program is focused on high and medium priority streets, roadways, and parking lots. Street sweeping activities in high priority municipal areas will be conducted at least once a week, which is more frequent than the two times per month mandated by the Permit for areas generating the highest volumes of trash. The enhanced street sweeping should effectively remove a larger amount of pollutants. The frequency of sweeping roads, streets, highways, and parking facilities generating moderate volumes of trash will also be increased to exceed the monthly minimum mandated by the Permit. The Airport Authority will also evaluate the current types of street sweeping vehicles in use and the routes of sweeping to determine if the vehicles are maximizing their pollutant removal capabilities. Pollutant load reductions will be assessed by recording the volume of street sweeping debris collected and the area (or mileage) covered by the street sweeping vehicles.

The Enhanced Street Sweeping Program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of metals, oil and grease, organics, sediment, and trash being removed from the watershed. A reduction in the amount of trash and debris on the street, roadways, and parking lots within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Street Sweeping Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper, metals, oil and grease, organics, sediment, and

trash as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Street Sweeping Program will aid in the physical removal of a quantifiable amount of debris and associated metals, oil and grease, organics, sediment, and trash from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The enhanced street sweeping activity intends to reduce high priority pollutants such as metals, organics, oil and grease, sediments, and trash and improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals, sediment, and trash as high priority water quality problems and oil and grease and organics as water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Enhanced Street Sweeping Program targets pollutant removal from the high and medium priority streets, roadways, and parking lot areas of the airport. The increased frequency of street sweeping actively decreases the amount of trash, debris, and associated pollutants that might inadvertently enter the stormwater conveyance system. The program calculates the reduction in the amount of metals, oil and grease, organics, sediment, and trash impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) estimating metals, oil and grease, organics, sediment, and trash loads per unit weight of street sweeping debris based on review of the literature and/or other sources and 2) monitoring the weight of street sweeping debris collected and properly disposed annually. The Airport Authority will also be able to track the cost of implementing the program and thereby determine the cost-

effectiveness of the increased street sweeping using the weight of debris collected and the number of hours and/or miles or sweeping.

STREET SWEEPING ENHANCEMENT – 3B

ACTIVITY SUMMARY

Coronado intends to reduce the accumulation of metals, oil and grease, sediments, and trash by optimizing the efficiency and/or frequency of our street sweeping program. According to Permit R9-2007-001, jurisdictions must prioritize street sweeping areas according to the amount of trash and debris accumulated. Coronado will prioritize all streets with either a high, medium, or low rating. All areas rating high will be swept once weekly.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- 2007-2008 monitor/planning/implement
- 2008-2009 implement
- 2009-2010 implement
- 2010-2011 implement/assess
- 2011-2012 assess

PARTICIPATING WATERSHED COPERMITTEES

- City of Coronado

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Organics
- Oil and grease
- Sediments
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping activity intends to reduce high priority pollutants such as metals, organics, oil and grease, sediments, and trash and improving the discharge water quality into the San Diego Bay. Bacteria are categorized as a high priority water quality problem in all HAs. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these priority pollutants and abate sources from roadways and parking facilities.

EXPECTED BENEFITS

The Street Sweeping activity will contribute to improvements in water quality by reducing the loads of high priority pollutants such as metals, organics, oil and grease, sediments, and trash entering the watershed and receiving waters of the San Diego Bay. Information obtained from the street sweeping activity will lead to a better understanding of the sources of many of the priority pollutants and fill gaps in existing data. This effort twill provide baseline data on the accumulations of trash and debris from high and medium, or moderate, priority municipal areas.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be a 4-5, which consider load reductions and discharge water quality. Pollutant load reductions will be measured by pounds of debris collected.

STREET SWEEPING ENHANCEMENT – 3C

ACTIVITY SUMMARY

The City of National City (City) intends to reduce the accumulation of metals, oil and grease, sediments, and trash by conducting more frequent street sweeping. As required by the Municipal Permit, Copermittees must prioritize locales for street sweeping based upon the relative amount of trash and debris accumulated. The Municipal Permit requires that roads, streets, highways, and parking facilities generating the highest volumes of trash be swept at least two times per month. Roads, streets, highways, and parking facilities generating relatively moderate volumes of trash must be swept at least monthly and those generating relatively low volumes of trash and debris must be swept as necessary, but not less than once per year.

The City will sweep its streets more frequently that the minimum jurisdictional requirements of the Municipal Permit to help address watershed water quality problems. The City will sweep Highland Avenue, 8th Street, and National City Boulevard, three of the main roads in the City, daily. All other streets in the City will be swept weekly. Pollutant load reductions will be assessed by recording the volume of debris collected during sweeping and/or the amount of area (mileage) covered by the street sweeping vehicles.

TMDL APPLICABILITY

A TMDL is being developed to address sediment toxicity and benthic community effects at the mouth of Paleta Creek, also known as Seventh Street Channel. Initial research has indicated that organic compounds are the most likely causes of the observed effects in the sediment, although metals may also play a role to some degree. This activity is applicable to the TMDL in that additional street sweeping should result in additional removal of metals that would otherwise be discharged through the City's MS4.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the pollutant loads related to a high priority water quality problem (908.3) and abate pollutant sources from roadways and parking facilities.

EXPECTED BENEFITS

Increased street sweeping should contribute to improvements in water quality by reducing the loads of pollutants such as trash, metals, oil and grease, and sediments entering the City's MS4 and downstream receiving waters.

EFFECTIVENESS MEASUREMENTS

Primarily, the effectiveness of this activity will be assessed through level 4, load reduction. Pollutant load reductions will be assessed by recording the volume or weight of material collected that is attributable to additional sweeping.

CHOLLAS CREEK WATERSHED STREET SWEEPING, PHASE I – 3D

ACTIVITY SUMMARY

The City's Storm Water Pollution Prevention Division (Storm Water Division) is coordinating with the City's Street Division to conduct a 24-month street sweeping effectiveness study in the Chollas Creek Watershed. The study will investigate the effectiveness of vacuum-assisted street sweepers compared to mechanical sweepers in reducing the accumulation of metals on City streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study is to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study includes the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency.

The City is using the prioritization process that is outlined in its *Strategic Plan for Watershed Activity Implementation* (July 2007) to target areas within the Chollas Creek Watershed. Based on this prioritization plan and meetings held with the Street Division, the routes that have been selected are in the two highest priority sectors of the Chollas Creek Watershed that have a higher potential for metals loading.

This aggressive street sweeping project has also been developed based on the findings of the Dry Weather Air Deposition Study that included sites in the Chollas Creek Watershed. The findings of this study indicate a greater than 60% contribution to metals loading from air deposition in Chollas Creek. The sources of the metals depositions are predominately from cars (brakes and tires) and also include potential industrial and commercial sources that are concentrated in the lower portion of the watershed. The City, therefore, is developing this street sweeping program to reduce metals loading and assess the most effective approach to reducing metals loading. This effectiveness assessment monitoring for the street sweeping project would be coordinated with additional air deposition sampling and effectiveness monitoring of combined Tier I and Tier II BMPs in Chollas Creek to develop recommendations regarding modification and possible expansion of these BMPs to meet the TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The City anticipates sweeping to start within winter 2008 through summer 2010. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address it. Targeted increased sweeping will target metals on City streets.

EXPECTED BENEFITS

The street sweeping effectiveness study will consist of acquiring two types of top-tier vacuum-assisted street sweeper to operate within the Chollas Creek Watershed and assessing their effectiveness in reducing the accumulation of metals on area streets through an effectiveness assessment monitoring program. This study will augment the City's current sweeping efforts in order to also determine the optimum frequency of sweeping, starting at the present baseline schedule, towards reducing the loading of metals. The monitoring program will include simulated wet weather events for both type of vacuum-assisted sweepers and the mechanical sweepers currently used throughout the City. The amount of debris (in pounds) that is removed by sweeper type and frequency will be assessed during dry and wet periods of the year. The composition of the debris removed will be evaluated through analytical analysis and grain size distribution to determine the specific pollutant load reduction achieved by each method and frequency identified in the work plan. As discussed above, this study will be performed in coordination with additional air deposition studies and BMP effectiveness monitoring of the MS4 to develop recommendations on the modification and/or expansion of these activities to reduce metals loading to meet the TMDL requirements.

This activity will simultaneously address requirements under the Municipal Permit and Chollas Creek Dissolved Metals TMDL.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Which street sweeping machine is most effective in removing contaminants of concern (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in stormwater runoff?
Targeted Measurable Outcome(s)	• Achieve load reduction for sediments and metals based on monitoring information • Observer receiving water quality improvement
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)
Assessment Measures, Assessment Outcome Levels & Data:	• Tons of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to tons of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)

STREET SWEEPING ENHANCEMENT – 3E

ACTIVITY DESCRIPTION

The Port of San Diego intends to reduce the accumulation of metals, sediments, and trash by optimizing the efficiency and/or frequency of the street sweeping program. The Street Sweeping Enhancement activity is being conducted as part of the collaborative watershed effort. The Port will enhance its street sweeping program within high and medium priority municipal areas by increasing sweeping frequency and/or area coverage. According to the jurisdictional requirements presented in the Permit, municipal areas must prioritize locales for street sweeping based upon the amount of trash and debris accumulated. The Port of San Diego will sweep high priority areas at a frequency higher than the Permit requirement, from two times per month, as mandated by in the Permit, to once a week. The increased frequency of street sweeping would augment the Port's sweeping efforts as outlined in the Permit. Pollutant load reductions can be assessed by recording the volume of debris collected during sweeping events and/or the amount of area (mileage) covered by the street sweeping vehicles.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediments
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping activity intends to reduce high priority water quality problems such as metals, sediments, and trash in the San Diego Bay. Metals were identified as high priority water quality problem for 908.1 and 908.2 HAs, requiring additional monitoring and source abatement respectively. Sediment is also identified as a high priority water quality problem at both 908.2 and 908.3 HAs. The Watershed Strategy acknowledged identification of the source of sediment is needed. This effort is consistent with the collective Watershed Strategy in that it seeks to

reduce the loads of these high priority water quality problems and abate pollutant sources from roadways and parking facilities which have yet to be thoroughly addressed.

EXPECTED BENEFITS

The Street Sweeping activity will contribute to improvements in water quality by reducing the loads of high priority water quality problems such as metals, sediments, and trash that might inadvertently enter the storm water conveyance system of the watershed and receiving waters of the San Diego Bay. This effort will provide baseline data on the accumulation of trash and debris from high and medium priority municipal areas.

EFFECTIVENESS MEASUREMENTS

Primarily, the effectiveness of this activity will be assessed through level 4, which regard load reductions. Pollutant load reductions can be assessed by recording the volume of debris collected during sweeping and/or the amount of area (mileage) covered by the street sweeping vehicles.

STREET SWEEPING PRIORITIZATION – 3F

ACTIVITY DESCRIPTION

Prioritization of streets based on usage level for street sweeping frequency based on standards put forth in the Permit.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Current Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed activity

EXPECTED BENEFITS

Less trash, debris, and pollutants in the MS4 system.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

SAN DIEGO BAY WATERSHED CLEANUP EVENTS – 4

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees intend to participate in a number of cleanup events throughout the San Diego Bay WMA. The cleanup events will physically remove large amounts trash, debris, and other associated pollutants from the watershed creeks, rivers, streams and shorelines. The events will include jurisdictional events as well as watershed-wide efforts that are coordinated by I Love a Clean San Diego (ILACSD) and San Diego Coast Keeper (SDCK). These events will actively promote a clean watershed and may be marketed in all areas of the watershed via a variety of media, including television, radio public service announcements, newspapers, electronic mail, bulletin boards, community outreach activities, and word-of-mouth. The San Diego Bay Copermittees may also provide funding to sponsor various cleanup events and/or participate by soliciting volunteers, working as site captains, and participating in the cleanup events themselves. Cooperative efforts of the Copermittees will enable an assessment of relative trash loads for each event in the watershed and determine whether there is a long-term reduction.

TMDL APPLICABILITY

The RWQCB issued a 13267 order to the cities along Chollas and Paletta Creeks requiring trash cleanup measures and programs to be implemented.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Varies
- Permit Year 2: Varies
- Permit Year 3: Varies
- Permit Year 4: Varies
- Permit Year 5: Varies

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of Coronado
- City of San Diego
- City of Imperial Beach
- County of San Diego
- City of La Mesa
- City of Lemon Grove
- Port of San Diego
- San Diego Regional Airport Authority

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup events will aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, trash often consists of common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances, which may also be reduced as a result of the removal of trash.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies trash as a high priority water quality problem. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions. Increased awareness and education of the public in all HAs is also an important component.

EXPECTED BENEFITS

Cleanup events target large pollutant removal from creeks, rivers, streams, and coastal shorelines. The cleanup activities also represent actions undertaken by citizens that actively decrease the amount of trash and litter, resulting in the cultivation of a sense of ownership and responsibility of the citizens to the health of local water bodies which will lead to the proper disposal of trash.

EFFECTIVENESS MEASUREMENTS

Trash will be reduced through various cleanup events within the San Diego Bay WMA. The cleanup events encourage stakeholder buy-in and participation in implementing the Watershed Strategy, resulting in a level 3 outcome by causing a change in behavior, knowledge, attitude and awareness within the community of how to properly dispose of trash by the individuals involved. Relative pollutant loads within the watershed can be assessed based on the weight of debris collected. The number of people participating and the amount of overall trash collected will enable a calculation of pounds collected per person for each cleanup event. A level 4 outcome may also be possible in all HAs due to the reduction of trash. Comparison of pollutant loads between years and locations within the watershed may aid in determining reductions in pollutant loads associated with trash and the relative success of cleanup efforts.

CREEK TO BAY CLEANUP EVENT AT D STREET FILL – 4A

ACTIVITY SUMMARY

The Port of San Diego will collaborate as a watershed sponsor of the Creek to Bay Cleanup Event on April 26, 2008. The cleanup event will physically remove large amounts of trash, debris and other associated pollutants from the watershed creeks, rivers, streams, and shorelines. The event is a county-wide effort, coordinated by I Love A Clean San Diego (ILACSD), to actively promote clean shorelines and waterways. The Port of San Diego is participating as site captains and soliciting volunteers in the cleanup to remove trash at the D Street Fill location. An assessment of the relative trash loads at the site and a comparison between cleanup sites can be undertaken based on the weight of debris collected. The Port may calculate the weight of the trash collected per person for each cleanup event by evaluating the number of people participating and the amount of overall trash collected each year at the site.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego (ILACSD)

HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses the physical removal of trash from 909.1 HA. At the site, common litter items removed include cigarette butts, plastic bags, food wrappers, auto parts, appliances, furniture, and tires.

EXPECTED BENEFITS

The cleanup event will target trash removal from the D Street Fill location. The cleanup activity also represents actions undertaken by citizens that actively decrease the amount of trash and litter, resulting in the cultivation of a sense of ownership and responsibility of the citizens to the health of local water bodies which will lead to the proper disposal of trash.

EFFECTIVENESS MEASUREMENTS

The cleanup event encourages stakeholder buy-in and participation in implementing the Watershed Strategy. This will result in a level 3 outcome by causing a change in behavior, knowledge, attitude and awareness within the community through the proper disposal of trash by the individuals involved. The result is the cultivation of a sense of ownership and responsibility in the citizens to the health of the local water bodies. A level 4 outcome may also be possible due to the reduction of trash. The Port will assess the relative trash loads at the D Street Fill location and may calculate the weight of the trash collected per person for the cleanup event by evaluating the number of people participating and the amount of overall trash collected each year at the site. A watershed-level assessment can also be completed to compare this site with other cleanup sites.

CLEAN COMMUNITY PROGRAM – 4B

ACTIVITY SUMMARY

The City of National City intends to implement a program to encourage individuals to dispose of waste properly. Events will include disposal events for large items and green waste; neighborhood specific events may also be held when necessary. These events will provide individuals with an avenue for properly disposing of items that might otherwise be illegally dumped. The City will alert residents to these events beforehand. An educational program involving school children in preparing artwork for a calendar with messages about keeping the City and local water bodies clean will also be part of this program. Cleanup and waste disposal events will help reduce pollutant loads in the watershed and promote watershed awareness.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup and disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in HA 908.3. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EXPECTED BENEFITS

Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also

encourage a behavioral change for the community by potentially changing the manner trash in which trash is disposed of by the individuals involved.

EFFECTIVENESS MEASUREMENTS

Effectiveness will primarily be assessed through level 4, load reduction. Load reductions can be assessed through recorded the amount (weight or volume) of trash collected. Additional water quality monitoring, potentially in concert with cleanup events in creek or with dry weather monitoring, may be conducted to assess whether a relationship exists between trash removal and levels of bacteria and gross pollutants.

I LOVE A CLEAN SAN DIEGO TRASH CLEANUP SPONSORSHIP – 4C

ACTIVITY SUMMARY

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Diego Bay Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Creek to Bay Cleanup is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States

Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Diego Bay WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

[1] http://www.epa.gov/owow/oceans/debris/

SAN DIEGO COASTKEEPER TRASH CLEANUP SPONSORSHIP – 4D

ACTIVITY SUMMARY

Each fall, San Diego Coastkeeper conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Diego Bay Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love A Clean San Diego
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Coastal Cleanup Day is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States

Environmental Protection Agency on its website[2] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Diego Bay WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

[2] http://www.epa.gov/owow/oceans/debris/

CITY-WIDE CLEANUP EVENTS – 4E

ACTIVITY SUMMARY

Anthropogenic activities associated with urbanization contribute to the many common stormwater pollutants that can degrade water quality. BMPs such as City-wide Cleanup Events will reduce the discharge of these pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation has begun under the prior stormwater municipal permit 2001-01. City-wide Cleanup Events will continue to be held throughout the City during Years One and Two of Municipal Permit R9-2007-0001. This program will be assessed and refined as necessary during Years Three - Five.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Bacteria and associated pathogens have been rated as high priority water quality problems within the 910.1 and 910.2 watershed hydrologic subareas (watershed HA) of the San Diego Bay WMA. Gross pollutants including trash are a high priority water quality problem and require source identification in the 910.1 watershed HA.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated bacteria was one of two pollutants given a BLTEA A rating in the San Diego Bay WMA, and that additional data collection would be necessary to properly evaluate this watershed. Data for gross pollutants is limited in this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions;

urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants including trash in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Based on the BLTEA, the effectiveness of this program involves the evaluation and measurement of various types of programmatic and environmental outcomes, or results. Six levels of outcomes from those that are activity-based to include those that are water quality-based may be used to evaluate the effectiveness of this BMP.

Targeted outcomes include implementation of programs and activities to prevent or reduce the discharge of pollutants to the stormwater conveyance system which will result in improved receiving water quality. Assessment measures will include the development of a standardized data set that can compare trends in both urban runoff and receiving water quality with the implementation of BMPs. Assessment methods will include making assumptions as to the amount of waste collected in the City at each event. Another method would be to perform a study which would include collecting waste from a representative event and determining volume collected to get the potential loading estimate per event.

Effectiveness of the activity will be addressed through six levels of outcomes to include: compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants in stormwater and ultimately in recreational water.

Activity effectiveness will also be assessed through the Receiving Waters Monitoring Program, which defines the requirements for monitoring including the sampling plan, compliance criteria, laboratory analyses, statistical analyses, and reporting guidelines. Links between source activities/conditions and observed receiving water impacts and recommended future monitoring to address sources of water quality problems will be identified.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS/ON-SITE/OFFSITE CLEANUP EVENTS – 4F

ACTIVITY SUMMARY

The Airport Authority intends to collaborate with the other San Diego Bay Copermittees as watershed sponsors for a series of cleanup events throughout the San Diego Bay Watershed. The cleanup events will physically remove large amounts trash, debris, and other pollutants from the watershed creeks, rivers, streams and shorelines. The events will be a watershed-wide effort, coordinated by I Love a Clean San Diego (ILACSD) and the San Diego Coastkeeper to actively promote a clean watershed. The events will be promoted throughout the watershed via a variety of media, including television and radio announcements, newspapers ads, electronic mail, bulletin boards, and community outreach activities. The Airport Authority and San Diego Bay Copermittees may provide funding to sponsor the cleanup event, may solicit volunteers to participate, and may work as site captains and participate in the cleanup event themselves. The Copermittees will work together to identify and promote feasible site locations within each participating jurisdiction. Similar events may also be planned on the airport property. Continued coordination between Copermittees on these annual cleanup events will help reduce pollutant loads in the watershed and promote public awareness of watershed protection and stormwater pollution prevention.

The On-site/Off-site Cleanup Events are an important water quality activity in the San Diego Bay Watershed because it can be used to measure the amount of trash and debris and associated bacteria and metals actively removed from the watershed. A reduction in the amount of trash and debris within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The On-site/Off-site Cleanup Events are applicable to these TMDLs to the extent they address the identification and control of sources of bacteria, metals, and trash as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The On-site/Offsite Cleanup Events will aid in the physical removal of a quantifiable amount of trash and debris and associated bacteria and metals from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The On-site/Off-site Cleanup Events activity intends to reduce high priority water quality problems such as bacteria, metals, and trash and improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The On-site/Off-site Cleanup Events target pollutant removal from the various areas of the airport. The cleanup events actively decrease the amount of trash, debris, and associated pollutants that might inadvertently enter the stormwater conveyance system. The program calculates the reduction in the amount of trash and associated bacteria and metals impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) measuring the weight of trash and debris collected during cleanup events and 2) estimating bacteria and metal loads per unit weight of trash and debris collected based on review of the literature and/or other sources. The Airport Authority will also be able to track the cost of implementing the program and thereby determine the cost-effectiveness of each event.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS – 4G

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees intend to collaborate as watershed sponsors in a series of cleanup events throughout the San Diego Bay Watershed. The cleanup events will physically remove large amounts trash, debris, and other pollutants from the watershed creeks, rivers, streams and shorelines. The events will be a watershed-wide effort, coordinated by I Love a Clean San Diego (ILACSD) and San Diego Coast Keeper (SDCK) to actively promote a clean watershed and will be marketed in all areas of the watershed via a variety of media, including television, radio public service announcements, newspapers, electronic mail, bulletin boards, community outreach activities, and word-of-mouth. Continued coordination between Copermittees on this annual cleanup event will help reduce pollutant loads in the watershed while promoting the watershed awareness message. Cooperative efforts of the Copermittees will enable an assessment of relative trash loads for each annual event in the watershed and between cleanup site locations and determine whether there is a reduction in trash loads over the years.

The City of La Mesa will continue to sponsor cleanup events/activities. Sponsorship of these activities may include monetary sponsorship, participation of city staff, advertisement of the event, encouragement of volunteers to participate, and distribution of watershed-based education material. The City intends to document the amount of debris collected, type of debris, number of volunteers, number of volunteer participation hours, and number of educational material distributed at these events. The following is a list of cleanup events that present a load reduction for some of the watershed-based high priority water quality problems held in the City of La Mesa.

(1) Creek to Bay Cleanup Day annual onetime event at University Channel (HA 908.2)
(2) California Coastal Cleanup Day annual onetime event at University Channel (HA 908.2)
(3) Park Appreciation Cleanup Day annual onetime event at seven municipal parks (HA 908.2 & 909.1)
(4) Adopt A Park & Adopt A Block programs continuous throughout the year at seven parks, residential and commercial areas (HA 908.2 & 909.1)

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation

- Permit Year 3: Monitoring
- Permit Year 4: Monitoring
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup events will aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, high priority water quality problems such as trash, bacteria, nutrients, and metals often linked to common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances, are also reduced as a result of the removal of trash.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria, metals, and nutrients as either high, medium, or low water quality problems for the watershed HAs. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria are categorized as a high priority water quality problem in all HAs with the BLTEA rating of A. Metals received an A rating as well and are considered a high priority water quality problem for HA 908.1 and 908.2. This activity contributes to improving water quality problems by focusing on bacteria, metals, and nutrient load reduction through the removal of the trash in all HAs. The BLTEA ratings and water quality priority categorization for metals and nutrients vary between HAs, which will affect the degree cleanup efforts undertaken by each Copermittee, will influence these pollutant categories.

EXPECTED BENEFITS

Cleanup events target large pollutant removal from creeks, rivers, streams, and coastal shorelines. The cleanup activities represent actions undertaken by citizens that actively decrease the amount litter. The cleanup events encourage stakeholder buy-in and participation in implementing the Watershed Strategy, resulting in a level 3 outcome by causing a behavioral change for the community in the manner trash is disposed of by the individuals involved. The result is the cultivation of a sense of ownership and responsibility of the citizens to the health of local water bodies which will lead to the proper disposal of trash. A level 4 outcome may also be a long term benefit in all HAs due to the load reduction of bacteria, metals, and nutrients associated with trash.

EFFECTIVENESS MEASUREMENTS

Trash, bacteria, and metals loads will be reduced through cleanup events within the HAs. Relative pollutant loads within the watershed can be assessed based on the weight of debris collected. The number of people participating and the amount of overall trash collected will enable a calculation of pounds collected per person for each cleanup event. Comparison of pollutant loads between years and locations within the watershed may aid in determining reductions in pollutant loads associated with trash and the relative success of cleanup efforts.

CLEANUP EVENTS IN CREEKS AND CHANNELS – 4H

ACTIVITY DESCRIPTION

Cleanup events in active drainage areas with Lemon Grove, i.e., Creek to Bay sponsored by I Love A Clean San Diego.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- N/A

CURRENT IMPLEMENTATION

- N/A

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Regional watershed activity

EXPECTED BENEFITS

Decreased trash in a receiving water body (Chollas Creek).

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

ENHANCED DRY WEATHER MONITORING PROGRAM – 5

ACTIVITY SUMMARY

The Airport Authority will continue to conduct dry weather monitoring at a frequency that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Dry Weather Monitoring Program is to identify sources of stormwater pollution in the watershed. The Airport Authority first began to implement this enhanced program in fiscal year 2005-2006 by increasing the frequency of dry weather monitoring from the Permit requirement of once per dry weather season to at least three times during the dry weather season. The increased frequency increases the chances that illegal discharges and their sources might be identified. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

The Enhanced Dry Weather Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it helps to identify and eliminate sources of illegal discharges in the watershed. Identification and elimination of illegal discharges within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Dry Weather Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, copper, and other pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Dry Weather Monitoring Program will help to identify and eliminate sources of stormwater pollution in the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Dry Weather Monitoring Program intends to identify and eliminate sources of illegal discharges and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, pesticides, sediment, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of pollutant sources, including these high priority pollutants.

EXPECTED BENEFITS

The Enhanced Dry Weather Monitoring Program targets the identification and elimination of illegal discharges to the stormwater conveyance system and the watershed. The increased frequency of monitoring increases the likelihood of identifying and eliminating sources of illegal discharge, which in turn helps to reduce pollutant loading to the watershed and San Diego Bay. Information collected by the Enhanced Dry Weather Monitoring Program is also used to characterize dry weather discharge water quality in general and to influence and assess ongoing watershed management and planning activities. The elimination of illegal discharges generally requires that dischargers gain some awareness of stormwater pollution prevention and understanding of proper BMP implementation. By changing the way in which dischargers implement BMPs, this program results in a level 3 outcome. The program may also be able to estimate the pollutant loads eliminated and thus no longer impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of dry weather monitoring events conducted in excess of the minimum number required by the Municipal Permit, and the number of illegal discharges identified. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the pollutant load abated using the know pollutant discharge concentrations and estimating the discharge duration. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

ENHANCED CONSTRUCTION OVERSIGHT – 6

ACTIVITY SUMMARY

The Airport Authority will continue to oversee construction projects in a manner that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Construction Oversight Program is to abate the amount of sediment potentially released to the watershed from construction sites. The Airport Authority first began to implement this enhanced program in fiscal year 2004-2005. Staff from the Airport Authority Environmental Affairs Department will attend pre-construction meetings and regularly scheduled progress meetings, in addition to inspecting construction sites more frequently than required by the Permit during both the wet and dry seasons. The regular meetings will be used as an opportunity to focus on BMPs directed at preventing the discharge of sediment to the storm drain system. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

The Enhanced Construction Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates construction sites as a source of sediment in the watershed. Abatement of sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Construction Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of sediment as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Construction Oversight Program intends to abate sediment associated with construction sites and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies sediment as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EXPECTED BENEFITS

The Enhanced Construction Oversight Program targets the abatement of construction sites as a source of sediment to the watershed. In addition to increasing construction site inspection frequencies, the program also increases interaction with construction personnel on-site and at weekly progress meetings. Heightened awareness of proper sediment control BMP implementation increases the likelihood of sediment control BMP effectiveness, which in turn helps to abate the amount of sediment loading to San Diego Bay. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of sediment control BMPs. By changing the way in which individuals implement BMPs, this program results in a level 3 outcome. The program also estimates the amount of sediment abated from impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of construction project regular progress meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, and the number of sediment source control BMP issues identified during inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual sediment pollutant load abated by 1) estimating, based on review of the literature and/or other sources, sediment loads per construction site per day when sediment controls are not implemented, and 2) tracking the number of sediment control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

BMP EFFECTIVENESS MONITORING PROGRAM – 7

ACTIVITY SUMMARY

The Airport Authority will continue to collect rain event runoff samples to monitor the performance of both structural and non-structural, discrete and combination BMPs. The long-range goal of the BMP Effectiveness Monitoring Program is improve the water quality of stormwater runoff from the airport into San Diego Bay. The BMP Effectiveness Monitoring Program will assess whether the BMPs being implemented are able to reduce concentrations of, primarily, copper and zinc in stormwater runoff from the airport. Based on a power analysis of 10 years of existing airport runoff water quality data, a minimum number of samples required to allow an effectiveness comparison has been identified. The program allows 3 years to calibrate paired watershed sampling, followed by 3 years of sampling to make an initial assessment of BMP effectiveness. To confidently establish a downward trend, at trend analysis monitoring station has been established to allow for a minimum of 10 years sampling. The first year of the monitoring program began during the rainy season of 2006-2007, during which the runoff from 6 storm events was sampled.

The BMP Effectiveness Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it assesses the effectiveness of BMPs at reducing concentrations of metals in stormwater runoff. Establishing the effectiveness of BMPs in reducing pollutant concentrations in runoff contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The BMP Effectiveness Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation

- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The BMP Effectiveness Monitoring Program intends to assess the effectiveness of BMPs at reducing concentrations of metals, primarily, in stormwater runoff thereby improve the quality of runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals as high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of BMPs effective at reducing metal pollutant loads.

EXPECTED BENEFITS

The BMP Effectiveness Monitoring Program assesses the effectiveness of BMPs at reducing concentrations of metals in runoff discharges in the watershed. The identification of BMPs effective at reducing metals loads in stormwater runoff will help to reduce pollutant loading to the watershed and San Diego Bay. Information gained through the BMP Effectiveness Monitoring Program can aid ongoing watershed management and planning activities. The identification of effective BMPs will generally increase understanding of proper BMP selection. By changing discharger knowledge of BMPs, this program results in a level 2 outcome. The program may also be able to estimate the pollutant loads eliminated by effective BMPs, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to assess the performance of both structural and non-structural, discrete and combination BMPs, by tracking number and types of discrete and combination BMPs will be evaluated, along with the pollutant concentrations in stormwater runoff. Overtime, these data will provide an assessment of the effectiveness of the BMPs. In addition, the Airport Authority intends to estimate the pollutant load reductions resulting from the use of these BMPs. By tracking the cost of BMP implementation, the Airport Authority may be able to determine the cost-effectiveness of the BMPs.

OUTDOOR SPECIAL EVENT OVERSIGHT – 8

ACTIVITY DESCRIPTION

The Airport Authority intends to oversee the manner in which outdoor special events are set up, conducted, and cleaned. The goal of the Outdoor Special Event Oversight Program is to abate the amount of trash and debris potentially released to the watershed from these events. Staff from the Airport Authority Environmental Affairs Department will attend pre-event meetings and/or conduct a pre-event site inspection to ensure that are an adequate number of recycling containers and trash cans properly located at the venue. The site will also be inspected immediately after the event is over to ensure that trash and debris is properly disposed. The meetings and inspections will be used as an opportunity to focus on stormwater pollution prevention in general and properly controlling sources of trash to the storm drain system.

The Outdoor Special Event Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates the trash from these events from entering in the watershed. Abatement of trash within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Outdoor Special Events Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of trash as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Outdoor Special Event Oversight Program intends to abate trash associated with special events and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies trash as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EXPECTED BENEFITS

The Outdoor Special Event Oversight Program targets the abatement of outdoor special events as a source of trash to the watershed. In addition to establishing pre- and post-event inspection activities, the program also increases interaction with event planning and execution staff while on-site. Heightened awareness of proper trash management and source control BMP implementation increases the likelihood of trash control BMP effectiveness, which in turn helps to abate the amount of trash loading to the San Diego Bay watershed. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of trash control BMPs. By changing the way in which individuals implement BMPs, this program results in a level 3 outcome. The program may also estimate the amount of trash abated from impacting stormwater discharge quality, which would be a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of outdoor special events that occur, the number of pre-event meetings attended, the number of pre- and post-event site inspections conducted, and the number of trash source control BMP issues identified during the inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual trash pollutant load abated by 1) estimating, based on review of the literature and/or other sources, trash loads per event when trash management controls are not implemented, and 2) tracking the number of trash control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

TRASH DISPOSAL AREA CAPITAL IMPROVEMENTS – 9

ACTIVITY SUMMARY

The Airport Authority intends to make capital improvements to the current trash/recycling facility east of Terminal 1 East to reduce the amount of and eliminate the potential for trash and associated bacteria that might be inadvertently released to the stormwater conveyance system and then into San Diego Bay. The goal of the Trash Disposal Area Capital Improvements is to reduce the amount bacteria and trash which could be released in the watershed. The project objectives include improved site drainage, a three-sided structure with overhead cover, and sanitary sewer connection, while also providing for safe use of the facility and ease of access.

The program is an important water quality activity in the San Diego Bay Watershed because it will reduce or eliminate the amount of bacteria and trash being inadvertently released to the watershed. A reduction in the amount of trash and associated bacteria potentially entering the stormwater conveyance system contributes to improving the quality of the stormwater in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Trash Disposal Area Capital Improvements are applicable to these TMDLs to the extent they address the identification and control of sources of trash and associated bacteria as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: N/A (Capital projects in active implementation for the first year only)
- Permit Year 5: N/A (Capital projects in active implementation for the first year only)

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Trash Disposal Area Capital Improvements will aid in the physical removal of a quantifiable amount of trash and associated bacteria from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of trash and associated bacteria. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Trash Disposal Area Capital Improvements target pollutant removal from the recycling and trash disposal facilities east of Terminal 1 East at the airport. The capital improvements actively decrease the amount of trash and associated bacteria that might inadvertently enter the stormwater conveyance system. The program will allow for a one-time calculation of the reduction in the amount of trash and bacteria impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate the one-time pollutant load reductions created by the Trash Disposal Area Capital Improvements. The pollutant load reductions will be calculated by 1) comparing before and after photos of the trash disposal area and estimating the weight of trash no longer being inadvertently released to the stormwater conveyance system and 2) estimating, based on review of the literature and/or other sources, bacteria loads per unit weight of trash prevented from being released. The Airport Authority will know the cost of improvements and will be able to estimate their cost-effectiveness.

TREATMENT CONTROL BMP PILOT PROJECTS – 10

ACTIVITY SUMMARY

The Airport Authority intends to implement treatment control BMPs on a pilot-scale to reduce zinc concentrations in the runoff from the roof of Terminal 1 East and to reduce copper and zinc concentrations in runoff from the runway. The goal of the Treatment Control BMP Pilot Projects is to reduce the metal load that is being inadvertently released by galvanized roofing materials and by aircraft tire and brake wear. These metals may be released to the stormwater conveyance system and then into San Diego Bay. The projects include installation of roof runoff downspout filters and modification to a portion of the pavement surfaces adjacent to the runway.

The program is an important water quality activity in the San Diego Bay Watershed because it will reduce or eliminate the amount of metals being inadvertently released to the watershed. A reduction in the amount of metals potentially entering the stormwater conveyance system contributes to improving the quality of the stormwater in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Treatment Control BMP Pilot Projects are applicable to these TMDLs to the extent they address the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: N/A (Capital projects in active implementation for the first year only)
- Permit Year 5: N/A (Capital projects in active implementation for the first year only)

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies metals as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of metals. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Treatment Control BMP Pilot Projects target pollutant removal from the roof of Terminal 1 East and from a portion of the runway at the airport. The pilot projects actively decrease the amount of metals that might inadvertently enter the stormwater conveyance system. If the pilot projects prove effective, then Airport Authority's understanding of cost-effective treatment controls BMPs will generally be increased. By changing discharger knowledge of BMPs and thereby influencing the BMPs being selected for implementation, this program will result in both a level 2 and level 3 outcome. The program will also allow for a one-time calculation of the reduction in the amount of metals impacting stormwater discharge quality, which is a level 4 outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate the one-time pollutant load reductions created by the Treatment Control BMP Pilot Projects. The pollutant load reductions will be calculated by comparing before and after metal concentrations in roof runoff and runway runoff. The Airport Authority will know the cost of improvements and will be able to estimate the cost-effectiveness of the pilot-scale treatment control BMPs.

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT PET WASTE DISPOSAL – 11

ACTIVITY DESCRIPTION

The City of Chula Vista plans to encourage homeowner's associations to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association newsletters about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials and survey homeowners associations to assess if there is signage and plastic bag dispensers in the neighborhoods regarding proper pet waste disposal.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria has been categorized as a high priority pollutant in the watershed. This activity is consistent with the collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EXPECTED BENEFITS

The HOA and resident education activity aims to locate areas within the City of Chula Vista where neighborhoods need education about pet waste and its potential impact on water quality by incorporating source control measures. By providing signage and educational materials to HOAs and residents, this effort intends to reduce the amount of bacteria that could enter the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 1, 2, and 3. The activity will be assessed by the number of surveyed homeowners associations and the number of homeowners reached through education.

STORM WATER EDUCATION BOOTH AT PET FESTIVAL AND DOGGIE DASH – 12

ACTIVITY DESCRIPTION

The City of Chula Vista plans to educate its residents about proper pet waste disposal and its possible effects on water quality at its annual Pet Festival and Doggy Dash. This outdoor community event involves both pet owners and pets. The City plans to have an educational booth and provide educational materials related to the Chula Vista Clean Program for residents, in particular, those involving the cleanup of pet waste.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by eliminating sources of pollutants.

EXPECTED BENEFITS

This activity aims to provide education about proper pet waste disposal to pet owners.

EFFECTIVENESS MEASUREMENTS

This effectiveness of this activity will be assessed through levels 1 and 2. Compliance with activity based permit requirements and changes in knowledge, attitudes, and awareness will be assessed by the number of educational materials distributed to participants.

FATS, OILS, AND GREASE (FOG) PROGRAM – 13

ACTIVITY DESCRIPTION

The City of Chula Vista is in the process of developing a Fats, Oils, and Grease (FOG) program, which will focus on educating restaurant owners and operators about the importance of proper grease waste management. Increased education and awareness about proper grease waste disposal aims to reduce possible sanitary sewer overflows in the City. Restaurant owners and operators will receive educational materials about grease waste management.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

The City is in the planning stages for this program and plans to implement the program in November 2008.

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by reducing the possible sanitary sewer overflows that result from mismanaged grease waste.

EXPECTED BENEFITS

By implementing this activity, the City aims to reduce the amount of sanitary sewer overflows that could be caused by the mismanagement of grease waste in restaurants. The City also aims to provide education to restaurants about Best Management Practices for grease waste management.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be address through levels 2, 3, and 4. The number of restaurants that receive education will be tracked as well as the number of sanitary sewer overflows.

STORM DRAIN STENCILING – 14

ACTIVITY DESCRIPTION

The City of Chula Vista plans to install 500 thermoplastic storm drain stencils in high pedestrian traffic locations in the City. Stenciling addresses several pollutant categories including bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning/ Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Various pollutant categories

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is a part of the collective Watershed Strategy in that it seeks to contribute to improvements in water quality by reducing the loads of bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash into the storm drain system.

EXPECTED BENEFITS

This activity aims to reduce the amount of pollutants, particularly bacteria, that are introduced into the storm drain system. This activity serves as both a load reduction and education activity because to will deter residents from polluting storm drains and increase awareness of the locations storm drains in their neighborhoods.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through level 2, 3, and 4. The areas where the stencils will be installed will be tracked, as well as the estimated number of pedestrians who walk by these drains.

UPDATE RECYCLING AND SOLID WASTE ORDINANCE – 15

ACTIVITY SUMMARY

In order to address contributions of pollutants, particularly bacteria, from trash and recycling areas from new multi-family residential and commercial land uses, the City of Chula Vista plans to update the design requirements in its recycling and solid waste ordinance. The City is proposing that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments designated as impaired for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment
- The City will propose this amendment to the City Council in the beginning of 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash and recycling areas have the potential to contribute a number of pollutants to storm water runoff, namely bacteria, nutrients, and trash. By building trash enclosures to prevent the contact of storm water with trash, the City aims to reduce the amount of pollutants that could be washed into the storm drain system from trash areas during a rain event.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Updating the Trash and Recycling Ordinance in the City of Chula Vista aims to improve the quality of runoff that enters the storm drain system and eventually San Diego Bay. It intends to reduce high priority pollutants such as bacteria, trash, and nutrients from entering the storm drain system. Bacteria is a high priority pollutant throughout San Diego County and the San Diego Bay watershed. This effort seeks to reduce pollutant sources from trash areas as a source abatement measure.

EXPECTED BENEFITS

The Trash and Recycling Ordinance Update activity will contribute to improvements in water quality by reducing the loads of bacteria, trash, and nutrients entering the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 4 and 5. Pollutant load reductions will be assessed by tracking the number of trash enclosures constructed with the new design criteria within the City.

LARGE SPECIAL EVENT INSPECTION AND CLEANUP – 16

ACTIVITY SUMMARY

Anthropogenic activities associated with urbanization contribute to the many common stormwater pollutants that can degrade water quality. BMPs such as Large Special Event Inspections and Cleanup will reduce the discharge of these pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation has begun under the prior stormwater municipal permit 2001-01. Inspections and Cleanup following large special events will continue to be held throughout the City during Years 1 and 2 of Municipal Permit R9-2007-0001. This program will be assessed and refined as necessary during Years 3 – 5.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Bacteria and associated pathogens have been rated as high priority pollutants within the 910.1 and 910.2 watershed hydrologic subareas (watershed HA) of the San Diego Bay WMA. Gross pollutants including trash are a high priority for source identification in the 910.1 watershed HA.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated bacteria was one of two pollutants given a Priority A rating in the San Diego Bay WMA, and that additional data collection would be necessary to properly evaluate this watershed. Data for gross pollutants is limited in this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions;

urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants including trash in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Targeted outcomes include implementation of programs and activities to prevent or reduce the discharge of pollutants to the stormwater conveyance system which will result in improved receiving water quality. Assessment measures will include the development of a standardized data set that can compare trends in both urban runoff and receiving water quality with the implementation of BMPs. Assessment methods will include making assumptions as to the amount of waste collected in the City at each event. Another method would be to perform a study which would include collecting waste from a representative event and determining volume collected to get the potential loading estimate per event. Inspections following the event will address compliance with the Municipal Permit and City ordinances.

Effectiveness of the activity will be addressed through six levels of outcomes to include: compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants in stormwater and ultimately in recreational water.

Activity effectiveness will also be assessed through the Receiving Waters Monitoring Program, which defines the requirements for monitoring including the sampling plan, compliance criteria, laboratory analyses, statistical analyses, and reporting guidelines. Links between source activities/conditions and observed receiving water impacts and recommended future monitoring to address sources of water quality problems will be identified.

EDUCATION STICKERS FOR PUBLIC WORKS VEHICLES – 17

ACTIVITY DESCRIPTION

Stormwater hotline stickers for Public Works/City vehicles.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation FY 08-09

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- N/A

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local Watershed Activity

EXPECTED BENEFIT

Community education tool, better use of the City's stormwater hotline, improved community knowledge of hotline.

EFFECTIVENESS MEASUREMENTS

Level 3 Change in Knowledge and Behavior

INSPECTION AUDIT – 18

ACTIVITY DESCRIPTION

A review and evaluation of facility inspection lists and questionnaires. Possible revisions to the questionnaire, an evaluation of responses for compliance and the benefits/barriers to proper compliance.

TMDL APPLICABILITY

Improved compliance with Permit requirements therefore improved compliance with Chollas Creek TMDLs.

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation in FY 08-09

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Variable depending on business and applicable BMPs.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed activity, Source ID

EXPECTED BENEFITS

Improved BMP implementation, upkeep, and continued compliance. Fewer potential pollutants entering the MS4 system.

EFFECTIVENESS MEASUREMENTS

Source ID, Level 3 Change in Knowledge and Behavior, and Potential Level 4 Load Reductions with improved BMP implementation.

RESTAURANT OUTREACH – 19

ACTIVITY DESCRIPTION

Improve and increase current outreach and education to local restaurants.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation FY 08-09

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Organics
- Trash
- Oil & Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed education activity

EXPECTED BENEFITS

Better knowledge of water quality issues specific to business type. Improved BMP implementation due to increased knowledge.

EFFECTIVENESS MEASUREMENTS

Level 2 BMP Implementation, Level 3 Change in Behavior and Knowledge, and Potential Level 4 Load Reduction as a consequence of improved implementation over time.

POLICY AND PROCEDURE AUDIT FOR ILLEGAL DUMPING – 20

ACTIVITY DESCRIPTION

Internal audit of policies and procedures related to illegal dumping and code enforcement. Possible revisions to improve effectiveness and a method for receiving community feedback in a continuing manner.

TMDL APPLICABILITY

Chollas Creek impending bacteria TMDL and Chollas Creek metals TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Internal discussions begun, but full implementation not expected until FY 08-09

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Oil & Grease
- Organics
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed activity

EXPECTED BENEFITS

Fewer illegal dumps; better, more efficient policies; on-going dialog with the community to increase long term effectiveness of policy and code enforcement efforts.

EFFECTIVENESS MEASUREMENTS

Level 3 Change in Knowledge and Behavior, and Level 4 Load Reduction.

EVALUATE CODE ENFORCEMENT POLICY FOR PARKING LOT HOSING – 21

ACTIVITY DESCRIPTION

Similar to the evaluation of illegal dumping policies. Designed to evaluate effectiveness, make necessary changes or revisions to the current policy, improve code enforcement efforts, and increase the BMP knowledge of local business owners.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation FY 09-10

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Minerals
- Oil & Grease
- Metals
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local Watershed Activity

EXPECTED BENEFITS

Better more effective City policies and code enforcement options. Less hosing of large parking areas and increased BMP knowledge by local businesses.

EFFECTIVENESS MEASUREMENTS

Level 2 BMP Implementation, Level 3 Change in Knowledge and Behavior, and Potential Level 4 Load Reduction based on improved implementation over time.

COLLABORATE WITH STAKEHOLDERS FOR CHOLLAS CREEK TMDLS – 22

ACTIVITY DESCRIPTION

Joint efforts by named TMDL stakeholders for compliance with various Chollas Creek TMDL implementation efforts.

TMDL APPLICABILITY

- Direct Compliance

TIME SCHEDULE FOR IMPLEMENTATION

Possible implementation 08-09. Dependent on funding, other participating entities, and the approval of the implementation schedules by the RWQCB.

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove
- La Mesa
- City of San Diego

OTHER PARTICIPATING ENTITIES

- Cal Trans
- Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Pesticides (Diazinon)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

TMDL compliance and local watershed activities

EXPECTED BENEFITS

Most effective and complete compliance with existing and impending Chollas Creek TMDLs. Improvements in receiving water quality due to effective implementation strategies.

EFFECTIVENESS MEASUREMENTS

Programs will encompass all levels of effectiveness, but the end goal is Level 6 Changes in Receiving Water Quality.

LA MESA WET WEATHER AND ADDITIONAL DRY WEATHER MONITORING PROGRAM – 23

ACTIVITY SUMMARY

The City of La Mesa has been focused on eliminating pollutants from entering our receiving water bodies by identifying pollutant sources. Consequently, the City is conducting Wet Weather Water Quality Monitoring and additional Dry Weather Monitoring within the San Diego Bay Watershed. The purpose of the monitoring is to evaluate the water quality of the discharged flow. Four Wet Weather discharge locations were identified as sampling points for time-weighted composite samples in La Mesa within the San Diego Bay Watershed. Similarly, five Dry Weather Monitoring locations were selected for grab samples. All water samples are tested for the same suite of constituents measured in the City's Annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303(d) listings and watershed constituents of concern listings in the WURMP. The analytical data will be reviewed in order to identify exceedances, identify pollutants sources, and eliminate pollutant source contributing to exceedances.

TMDL APPLICABILITY

Monitoring is conducted in support of California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). Wet Weather Monitoring Data and additional Dry Weather sampling results support identifying exceedances in pollutant loading for dissolved copper, lead, zinc, and diazinon. Furthermore, data enables the City to identify potential sources and conduct targeted educational outreach.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Monitoring program enables the City collect data on the high priority pollutants in the watershed. Water samples are tested for the same constituents in the City's Annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303(d) listings and watershed constituents of concern listings in the WURMP. The analytical data will be reviewed

in order to identify exceedances, identify pollutants sources, and eliminate pollutant source contributing to exceedances.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is monitoring for these constituents in order to identify sources of potential pollutants/exceedances. Once identified, the City can take the appropriate action. This monitoring activity supports the Watershed Strategy by identifying priority pollutant sources and removing or treating the source.

EXPECTED BENEFITS

The expected benefit is that pollutant sources will be identified through water quality monitoring. Once identified, the pollutant sources can be eliminated and resulting in a load reduction. Additionally, education outreach may also be implemented to target high threat communities (i.e., industrial, commercial, construction, and residential areas).

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Monitoring is not considered a watershed water quality activity based on the Municipal Permit Order 2007-001 definition; however, data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

LA MESA PARK KIOSK – 24

ACTIVITY DESCRIPTION

The City of La Mesa encourages public participation as part of its storm water program. In doing so, the City is working with local eagle scouts to construct and install education outreach kiosks at one of the seven parks within the City in the San Diego Bay Watershed (Vista La Mesa Park). The kiosk is intended for storm water pollution prevention education outreach, including the San Diego Bay Watershed Fact Sheet. The fact sheet provides information on the watershed, pollutants of concern, and tips to prevent storm water pollution.

TMDL APPLICABILITY

Education outreach is a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The kiosk will include a San Diego Bay Watershed Fact Sheet that lists diazinon and metals as pollutants of concern as well as tips to prevent storm water pollution.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- Eagle Scouts

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The watershed fact sheet to be placed in the education outreach kiosk will provide information on the watershed's pollutants of concern including the 303(d) listed pollutants. Pollution prevention tips to address watershed priority pollutants are presented in the fact sheet.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The education outreach kiosk provides pollution prevention tips to address watershed priority pollutants. The kiosk supports the Watershed Strategy by educating residents in the vicinity of the park on good housekeeping measures and best management practices to implement in order to prevent priority pollutants from being discharged into the storm drain system within the watershed.

EXPECTED BENEFITS

The expected benefit is that park-goers and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower

them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the watershed and region. The kiosk will provide the educational outreach material specific to the watershed to address pollution prevention measures. Improvements in water quality in the vicinity of the park based on dry weather monitoring data may be an indication of education outreach/changes in public behavior.

CLEAN COMMUNITY PROGRAM – 25

ACTIVITY SUMMARY

The City of National City intends to implement a program to encourage individuals to dispose of waste properly. Events will include disposal events for large items and green waste; neighborhood specific events may also be held when necessary. These events will provide individuals with an avenue for properly disposing of items that might otherwise be illegally dumped. The City will alert residents to these events beforehand. An educational program involving school children in preparing artwork for a calendar with messages about keeping the City and local water bodies clean will also be part of this program. Cleanup and waste disposal events will help reduce pollutant loads in the watershed and promote watershed awareness.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup and disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in HA 908.3. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EXPECTED BENEFITS

Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also

encourage a behavioral change for the community by potentially changing the manner trash in which trash is disposed of by the individuals involved.

EFFECTIVENESS MEASUREMENTS

Effectiveness will primarily be assessed through level 4, load reduction. Load reductions can be assessed through recorded the amount (weight or volume) of trash collected. Additional water quality monitoring, potentially in concert with cleanup events in creek or with dry weather monitoring, may be conducted to assess whether a relationship exists between trash removal and levels of bacteria and gross pollutants.

ADDITIONAL DRY SEASON CONSTRUCTION INSPECTIONS – 26

ACTIVITY SUMMARY

The City of National City intends to reduce the potential for the discharge of sediment by conducting additional inspections of construction sites during the dry season. According to the jurisdictional requirements presented in the Permit R9-2007-0001, construction sites (any priority) should be inspected as needed during the dry season. Increased frequency of construction inspections during the dry season will be conducted to identify any areas where BMP implementation is not being maintained properly, particularly with respect to control of trash and debris. This program aims to decrease discharges of trash and sediment to the MS4. The chosen dry weather inspection frequency will be evaluated to determine if inspections should be conducted more or less frequently.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity targets trash, which is a high priority pollutants in HA 908.3. The increased frequency of dry season construction inspections would augment the City's wet weather construction inspection program. Increased City presence during the dry season may prevent construction site personnel from becoming inattentive regarding BMP maintenance.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Increased construction inspection frequencies during the dry season are intended to reduce the discharge of trash, a high priority water quality problem. This activity is also likely to reduce sediment discharges from construction sites. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these pollutants and abate pollutant sources.

EXPECTED BENEFITS

Increased construction inspection frequencies during the dry season will contribute to improvements in water quality by reducing the loads of pollutants such as sediment and trash entering the City's MS4 and downstream receiving waters. This effort will promote BMP implementation at construction sites during the dry season and will help prepare construction sites for the upcoming wet season.

EFFECTIVENESS MEASUREMENTS

Primarily, the effectiveness of this activity will be assessed through level 3, which regards behavioral changes. Behavioral changes will be based mainly on BMP implementation rates.

CHOLLAS CREEK WATER QUALITY PROTECTION & HABITAT ENHANCEMENT PROJECT – 27

ACTIVITY SUMMARY

The City's Storm Water Pollution Prevention Division is managing the design and construction of a creek restoration project in Chollas Creek funded by a $2.244 million Proposition 13 grant from the State Water Resources Control Board. The project, titled *Chollas Creek Water Quality Protection & Habitat Enhancement Project*, will remove approximately 4,600 square feet of concrete and other hardscape in and adjacent to Chollas Creek and restore approximately 1.7 acres of native upland and riparian habitat along a 750 foot-long segment of the Encanto Branch of Chollas Creek. The project includes an approximately $500,000 education and outreach component to eliminate polluting practices of residents and businesses in the community.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City anticipates construction to start in September 2007 and terminate in November 2007. Water quality monitoring will be conducted afterwards to assess effectiveness in removing pollutants from Chollas Creek.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego
- City of La Mesa

OTHER PARTICIPATING ENTITIES

- State of California
- San Diego Coastkeeper
- Community members

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to

address them. This creek restoration project will help treat runoff of bacteria, metals, and other pollutants.

EXPECTED BENEFITS

The project contributes to the implementation of the City's Chollas Creek Enhancement Program, a watershed-based planning effort to restore the natural functions and beneficial uses of Chollas Creek and create a linear park for the community. By removing concretized portions, widening the bed to reduce scour and flow velocities, and re-vegetating with native plants, the restoration effort would improve the bio-filtration processes (i.e., filtering and removing pollutants from flows by plant uptake and natural filtration through soils) in the creek. The project will also create a linear park for the community so that the creek becomes a natural asset for the community to protect and not pollute.

In addition, knowledge and experience gained through this project will help the City document the benefits, limitations, and challenges of creek restoration as an urban runoff pollution control to meet Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Does education help reduce pollutant loads from urban runoff? • What is the efficiency of pollutant load reductions with targeted educational programs in the Chollas Creek watershed? • Does habitat enhancement help reduce pollutant loads to San Diego Bay?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized habitat enhancement • Reach a set percentage of target resident population
Assessment Method(s)	• Tabulation (e.g., dollars spent on education, dollars spent to implement habitat enhancement) • Monitoring (e.g., concentration of COCs, flow in creek, used to compare upstream/downstream loads) • Quantification (e.g, calculation of load upstream/downstream of enhancement) • Survey (e.g., knowledge of residents pre/post education outreach)
Assessment Measures, Assessment Outcome Levels & Data:	• Flow data from within Chollas Creek, upstream and downstream of enhancement (Outcome Level 4) • Chemistry data from Chollas Creek, upstream and downstream of enhancement and study area (Outcome Level 4) • Number of educational materials handed out (Outcome Level 1) • Survey of residents (Outcome Level 2) • Cost to implement education program (Outcome Level 1) • Cost to implement habitat enhancement (Outcome Level 1) • Number of volunteers associated with monitoring and education outreach (Outcome Level 1) • Number of citizens approached (Outcome Level 1) • Ecological health improvements due to habitat enhancement (macro invertebrate analysis)

TARGETED AUTO-RELATED FACILITY INSPECTIONS – 28

ACTIVITY SUMMARY

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target auto-related facilities within the San Diego Bay WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at auto-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity in spring 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with metals.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with metals at auto-related facilities. Knowledge and experience gained through this activity will help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TARGETED METALS-RELATED INDUSTRIAL FACILITY INSPECTIONS – 29

ACTIVITY SUMMARY

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target metals-related industrial facilities within the San Diego Bay WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at metals-related industrial facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity in spring 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with metals.

EXPECTED BENEFITS

This focused inspection activity will contribute to addressing discharges, characterizing activities, correcting behaviors, and abating sources associated with metals at metals-related industrial facilities. Knowledge and experience gained through this activity will help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TARGETED RESTAURANT FACILITY INSPECTIONS – 30

ACTIVITY SUMMARY

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target restaurant facilities within the San Diego Bay WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at restaurant metals-related industrial facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity in spring 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

DALBERGIA STREET "GREEN MALL" INFILTRATION BMP RETROFIT – 31

ACTIVITY SUMMARY

This project will remove conventional asphalt paving along Dalbergia Street and Thor Street (industrial/commercial area) and replace it with pervious concrete paving. In addition, the existing curb and gutter along portions of Dalbergia Street will be moved 12 feet into the right of way, and, in between the existing and new curb lines, bio-retention planter boxes will be placed and filled with crushed rock. Both the pervious concrete and bio-retention planter boxes will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters. The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Green Mall" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Design and award of contract are anticipated to occur April 2008 through May 2010. Construction is anticipated to occur June through October 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter
- Groundwork San Diego-Chollas Creek – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to

address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of infiltration BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

MEMORIAL PARK "GREEN LOT" INFILTRATION BMP RETROFIT – 32

ACTIVITY SUMMARY

This activity will involve the installation of a large underground chamber to collect and then slowly infiltrate urban runoff into the underlying subsoils. This underground system will be located within Memorial Park, thereby transforming the recreational facility into a dual-use site for both urban runoff pollution reduction and recreation. The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed. The City has named this model approach for Low Impact Development (LID) as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Design and award of contract are anticipated to occur April 2008 through May 2010. Construction is anticipated to occur June through October 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to

address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TARGETED MUNICIPAL FACILITY INSPECTIONS – 33

ACTIVITY SUMMARY

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target municipal facilities within the San Diego Bay WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's municipal facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and metals at municipal facilities.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at municipal facilities. Knowledge and experience gained through this activity would help the City optimize its municipal facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

PUBLIC SERVICE ANNOUNCEMENT: KARMA AND KARMA SECOND CHANCE – 34

ACTIVITY SUMMARY

The City's Storm Water Division has retained a contract with a film production company to create two Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled, *Karma* and *Karma Second Chance*, and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. These PSAs were developed in FY 2007 and FY 2008, and will be broadcast on several TV and radio stations throughout the San Diego Bay WMA in FY 2008. The PSAs will be broadcast in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate completion of production in FY 2008, and then will work with various broadcast media outlets to distribute and air the PSAs in FY 2008 and FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various TV and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and gross pollutants as high priority water quality problems in the WMA. The *Karma* and *Karma Second Chance* Public Service Announcements will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

The PSAs address bacteria directly by focusing on pet waste, food waste and organic matter, and indirectly by removing a bacterial source: trash. Literature published by the United States

Environmental Protection Agency on its website[3] states that *pathogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured on a variety of levels, to include the number of households (television) or listeners (radio) reached by the program will be tabulated. Second, awareness, attitude data will be collected via surveys. Third, once the PSAs have aired, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

Management Questions:	• What changes in awareness/attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of listeners (radio) or homes (television) reached (Outcome Level 1) • Change in knowledge or awareness (Outcome Level 2)

[3] http://www.epa.gov/owow/oceans/debris/

COMMUNITY-BASED SOCIAL MARKETING OUTREACH PILOT PROJECT CHOLLAS CREEK COMMUNITY – 35

ACTIVITY SUMMARY

The City's Storm Water Pollution Prevention Division found that research indicated that an emerging public education field called "Community Based Social Marketing" (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City plans to implement a pilot project using this approach in the Chollas Creek community of San Diego to attempt to achieve awareness and behavioral change. The City will retain professional research consultants to develop and initiate the Pilot Project. The project will include research, observations, surveys, interventions, and assessment methods. These efforts will result in recommendations for outreach strategies, which may include structural interventions, public participation, incentives, and specific messaging.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Research and initial planning will occur in FY08, with outreach implementation occurring in FY09. Implementation, assessment and evaluation will also continue to occur in FY09.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- Sierra Club, San Diego Chapter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2). Implementation of this activity will address both high priority water quality problems

by identifying the behaviors in the WMA contributing to metals and bacteria loading and testing outreach strategies to determine their effectiveness in reducing loading before broad-scale implementation.

EXPECTED BENEFITS

This CBSM pilot project will address bacteria and metals by researching the behaviors in the San Diego Bay WMA that contribute to their loading. By knowing more precisely the behaviors to target, efforts can be more focused and effective. Piloting outreach efforts will also enable the Copermittees to know which efforts will be most effective in reducing loads before broad-scale implementation.

EFFECTIVENESS MEASUREMENTS

The CBSM pilot project effectiveness in the Chollas Creek area will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project. Finally, tests such as water monitoring will be conducted to asses if any load reductions are achieved.

Management Questions:	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in pilot group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash or other pollutants removed from study area (Outcome Level 4)

OUTDOOR BILLBOARDS AND TRANSIT SHELTERS – 36

ACTIVITY SUMMARY

The City's Storm Water Pollution Prevention Division has retained a contract with an outdoor advertising company advertise *Think Blue* messages on billboards and bus shelters located in the San Diego Bay WMA. The City intends to create advertisements that target behaviors associated with bacteria and gross pollutants (trash) profiled as a vector. The goal of the billboards is to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the San Diego Bay watershed in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Printing Services Division in the design of the advertisements and will work with an outdoor advertising company to have the advertisements created and placed on billboards and transit areas throughout the San Diego Bay WMA in FY 2008 and beyond.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

The advertisements will address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[4]

[4] http://www.epa.gov/owow/oceans/debris/

states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured via a Citywide telephone surveys and focus groups comprised of residents in the San Diego Bay WMA to determine awareness, knowledge retention and behavior change.

Management Questions:	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

MOBILE ADVERTISING – 37

ACTIVITY SUMMARY

The City's Storm Water Division has retained a contract with a mobile advertising firm to advertise *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The City intends to create advertisements that target behaviors associated with bacteria and/or metals. The goal of the billboards is to educate the public about causes of these kinds of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the San Diego Bay WMA in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Print Services department in the design of the advertisements and have the advertisements created and placed on the company's static billboard trucks. The Mobile truck will drive pre-determined routes in the San Diego Bay WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria and metals as high priority water quality problems in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing the Mobile static billboard truck will result in increased knowledge and awareness directly, and will promote behavior change.

EXPECTED BENEFITS

The mobile advertisements will address bacteria and/or metals to increase knowledge awareness and promote behavior change.

EFFECTIVENESS MEASUREMENTS

Mobile advertisement effectiveness will be measured via a citywide telephone surveys and focus groups comprised of residents in the San Diego Bay WMA.

Management Questions:	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

REGIONAL HARBOR MONITORING PROGRAM – 38

ACTIVITY SUMMARY

In July 2003, the RWQCB, under §13225 of the California Water Code, requested the development of a coordinated and comprehensive harbor water quality monitoring program for harbors in the San Diego region. San Diego Bay is one of the four harbors included in the Regional Harbor Monitoring Program (RHMP). The objectives of the RHMP are:

1. Determine the contributions and spatial distributions of inputs of pollutants to harbors in the San Diego Region and how these inputs vary over time.
2. Determine whether the waters in harbors safe for body contact activities.
3. Determine whether fish in harbors safe to eat.
4. Determine whether the waters and sediments in the harbors sustain healthy biota.
5. Determine the long-term trends in water quality for each harbor.

The program will include monitoring for metals, bacteria, organic compounds, and toxicity that will improve assessments of the watershed high priority water quality problems and provide a program from which to assess overall water quality improvements.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) Lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria, metals, and sediment toxicity. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Monitoring
- Permit Year 2: Monitoring

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (Copper and Zinc)
- Bacteria
- Sediment (TSS)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The RHMP is considered a beneficial water quality activity in the San Diego Bay WMA because it will enable water quality improvements or degradations to be more readily identifiable. The monitoring will also provide trend information by being repeated at a specified frequency to obtain statistical trend data for the indicators. Furthermore, the RHMP is designed to integrate with existing monitoring that is regularly conducted in the region, including stormwater monitoring, other permit compliance monitoring, regional Bight monitoring, and special focused studies and is designed to integrate with the State's Surface Water Ambient Monitoring Program (SWAMP). The program directly addresses the watershed high priority pollutant, Copper, and is intended to evaluate the loads and the toxic effects of the Copper inputs. Continued monitoring within the marinas stratum (included in the RHMP) will enable Copermittees to assess load reductions (Level 4) after anticipated BMP implementation.

EXPECTED BENEFITS

The development of this monitoring program will greatly assist the Copermittees in establishing a baseline for receiving water conditions in the San Diego Bay WMA and determine where potential upstream impacts may be present.

EFFECTIVENESS MEASUREMENTS

While this program does not specifically reduce loads of high priority pollutants, it is an important step toward establishing future actions to promote load reductions (Level 4). The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay.

INSPECT ALL FOOD ESTABLISHMENTS – 39

ACTIVITY SUMMARY

The City of Coronado will inspect all food establishments within its jurisdiction. Inspections will focus on the presence of adequate grease removal equipment, cleaning frequency, recordkeeping, housekeeping measures, dumpster area cleanliness, and employee training. The goal of inspecting all food establishments is to ensure grease is being removed from the waste system and thereby reducing the chance of overflows. Additionally, site inspections will document potential pollutant runoff and poor housekeeping habits requiring immediate mitigation.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- 2007/2008 planning/implement
- 2008/2009 implement/monitor
- 2009/2010 implement/monitor/assess
- 2010/2011 implement/monitor/assess
- 2011/2012 implement/monitor/assess

PARTICIPATING WATERSHED COPERMITTEES

- City of Coronado

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Oil and Grease
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on bacteria, grease, and trash load reductions.

EXPECTED BENEFITS

100 percent participation, awareness, and compliance from food establishments will benefit the San Diego Bay Watershed because best management practices will be implemented by all in a uniform and consistent manner; reducing the potential of pollutant runoff.

EFFECTIVENESS MEASUREMENTS

Inspections, overflows, other types of site discharges, and complaints are tracked by site, monitored, and mitigated by means of enforcement action. Effectiveness assessment levels 2-3 behavioral changes and 4-5 load reductions will be sued as a measurement.

OUTREACH BOOTH FOR FIRE OPEN HOUSE – 40

ACTIVITY SUMMARY

Annually, the Fire Department has an Open House event and receives a fair amount of participation from the residents and local schools. Although the event is geared towards show-casing the Fire Department, it also provides an excellent opportunity to educate the public on pollution prevention. Currently, Coronado staffs an outreach booth for the annual Flower Show and intends to extend our outreach efforts to the Fire Open House. Staff will be on hand to distribute business BMP brochures, residential manuals, recycling and household hazardous information, and answer any questions relating to water quality management. Promotional items will be available.

TMDL APPLICABILITY

A TMDL for bacteria has been established for the San Diego Bay. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

- 2007-2008 planning/implement
- 2008-2009 implement/monitor
- 2009-2010 implement/monitor
- 2010-2011 implement/monitor
- 2011-2012 assess

PARTICIPATING WATERSHED COPERMITTEES

- City of Coronado

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are a water quality concern for all HAs. By educating the public, behavioral change will reduce the load of bacteria in the watershed. I

EXPECTED BENEFITS

The expected benefit of staffing an educational booth at the Fire Open house is to provide awareness of pollution prevention and is consistent with a level 3 outcome. Ultimately, the

education booths are geared to promote behavioral change that will reduce bacteria loads in the San Diego Bay.

EFFECTIVENESS MEASUREMENTS

Primarily, this activity will be assessed through levels 2-3, which regard awareness and change in behavior. Counts of distributed pamphlets and visits to the booth will be documented. Surveys and educational games may be used to measure increased knowledge.

SAFER ALTERNATIVES TO COPPER ANTIFOULANT PAINTS PROJECT – 41

ACTIVITY SUMMARY

Dissolved copper exceeds the Water Quality Objective in the Shelter Island Yacht Basin (SIYB) and in 1999 the RWQCB initiated the development of a TMDL for dissolved copper. To date, a technical TMDL has been issued which identifies 95% of the copper is from passive leaching of boat hull paints, while approximately 5% is due to hull cleaning. A TMDL implementation plan has been approved by the SWRCB, which requires a 76% reduction in copper loading over the next 20 years. The Port of San Diego is actively working with the RWQCB and other local stakeholders to address this issue.

The Port of San Diego and other stakeholders are taking a proactive stance on this issue. Over the next two years, the Port will be involved in a study to identify, test, and demonstrate safer alternative non-copper hull coatings. The goal of this project is to test and evaluate alternative hull paints on recreational boats within the SIYB. A transition to non-copper antifouling hull coatings will be crucial in decreasing copper loading in the SIYB. This activity will build on previous research through the identification, investigation, testing and evaluation of newly emerging or recently developed non-copper hull paints.

TMDL APPLICABILITY

The SIYB portion of the San Diego Bay was included on the 2006 CWA Section 303(d) Lists of impaired water bodies due to the elevated levels of dissolved copper (Cu) in the water column. A TMDL requiring a final target loading of 1.6 kilograms/day (kg/day) or 567 kilograms/yr (kg/yr), or 76% reduction in 17 years, was adopted to address this impairment for copper discharge in SIYB. The expected outcome for Phase 2 of the TMDL implementation plan for copper within the SIYB requires a 10% load reduction to occur during a five-year period (2007-2012).

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementing

PARTICIPATING JURISDICTIONS

- Port of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (Copper)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Copper-based hull paints have been identified as a likely source of copper, a high priority pollutant in SIYB and 908.1 (HA). The Port is working towards a copper load reduction as a

result of minimizing copper-based paints use as the primary antifoulant mechanism on recreational boats.

EXPECTED BENEFITS

The Safer Alternatives to Copper Antifoulant Paints Project will be investigating the use of alternative hull coatings to reduce copper loading in the SIYB. The goal is to ultimately reduce copper concentrations to meet WQOs as required by the SIYB TMDL for dissolved copper.

EFFECTIVENESS MEASUREMENTS

A level 3 outcome will result from the educational and outreach efforts to provide valuable information and guidance to the boating industry on alternative non-copper-based antifoulant paints and the associated maintenance strategies. The goal of the activity is to provide a list of safer alternative antifoulant paints that may be voluntarily applied to boat hulls by the SIYB boating community. By the end of this Permit cycle, which corresponds with the end of the second stage of the SIYB TMDL for dissolved copper, a level 4 outcome may be possible. As required by the SIYB TMDL for dissolved copper, monitoring will be used to assess compliance in SIYB with the specified copper load.

COORDINATED DRY WEATHER MONITORING PROGRAMS – 42

ACTIVITY SUMMARY

Each Copermittee is required to implement a Jurisdictional Dry Weather Monitoring (DWM) Program as part of the Illicit Discharge Detection and Elimination Component of the Municipal Stormwater Permit (Order No. 2001-01). Each Copermittee has developed and implemented a DWM program as required by the Permit but due to logistical constraints, site monitoring and sample collection within each jurisdiction often are conducted independent of other jurisdictions. The San Diego Bay Copermittees recognize that coordinated DWM efforts could be more effective because illicit discharges may cross jurisdictional boundaries. Therefore, San Diego Bay Copermittees conducted a pilot study during 2004-2005 to determine the feasibility of coordinating DWM locations and sampling dates across jurisdictions, and expanded the program with additional sites and jurisdictions during 2006-2007.

As part of the pilot program, the City of San Diego and the Port of San Diego coordinated dry weather monitoring activities at three locations within each jurisdiction during 2004-2005. The City of San Diego, the San Diego County Regional Airport Authority, and the Port will continue to coordinate dry weather monitoring activities at five locations. In addition, field tests and analytical samples will be collected at all coordinated sites where water was present. By simultaneously monitoring at the outfall (Port jurisdiction) and at a site upstream (City and Airport jurisdiction), the goal is to identify potential illicit discharges and facilitate upstream source identification.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) Lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Monitoring
- Permit Year 2: Monitoring

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego
- San Diego County Regional Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The coordination of DWM programs is considered a beneficial water quality activity in the San Diego Bay WMA because it provides comprehensive detection, analysis, and investigation of pollutant discharges at a watershed level. Current jurisdictional DWM programs are effectively identifying and eliminating illicit discharges. When discharges cross jurisdictional boundaries, however, the follow-up investigation is passed from one jurisdiction to another, creating a potential lag time in the response. Coordinated efforts increase the efficiency and effectiveness of jurisdictional programs and allow analysis at a watershed level.

EXPECTED BENEFITS

The Dry Weather Monitoring Program targets the identification and elimination of illegal discharges to the stormwater conveyance system and the watershed. Information collected by the Dry Weather Monitoring Program is also used to characterize dry weather discharge water quality in general and to influence and assess ongoing watershed management and planning activities.

EFFECTIVENESS MEASUREMENTS

The Copermittees intend to coordinate dry weather field tests and collection of analytical samples. By simultaneously monitoring at the outfall (Port jurisdiction) and at a site upstream (City and Airport jurisdiction), they will be to identify potential illicit discharges and facilitate upstream source identification. The elimination of illegal discharges generally requires that dischargers gain some awareness of stormwater pollution prevention and understanding of proper BMP implementation. By changing the way in which dischargers implement BMPs, this program results in a level 3 outcome. The program may also be able to estimate the pollutant loads eliminated and thus no longer impacting stormwater discharge quality, which is a level 4 outcome.

LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS – 43

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the San Diego Bay Watershed include:

- Jamul-Dulzura (909.2, 910.3)
- Alpine (909.2, 909.3)
- Cuyamaca (909.3)
- Descanso (909.3)
- Pine Valley (909.3)
- Crest-Dehesa (909.2
- Valle de Oro (909.2)
- Sweetwater (909.1)
- Spring Valley (909.1, 909.2)
- Lakeside (909.2)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective Watershed Strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcomes). The County will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2 Outcome).

MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECTS – 44

ACTIVITY SUMMARY

This activity will involve the installation of rain barrels and/or the disconnection of downspouts to direct runoff from municipal facility roofs into pervious areas (such as landscaping) for infiltration. Rain barrels, downspout disconnects, and rainwater harvesting/reuse systems help to capture, store, and divert urban runoff to reduce the volume thereof, thus contributing to reduced flooding, erosion, and the contamination of surface water with sediment, fertilizer, metals, and pesticides. In addition, this activity has the added benefit of water conservation; runoff collected and diverted to landscaping would help reduce the amount of potable water needed for irrigation. Roof runoff solutions can be used both in large-scale landscapes, such as municipal buildings, community centers, schools, and commercial sites, as well as in small residential landscapes.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007 and is anticipated to continue until the end of calendar year 2007. Procurement of rain barrels and other items and installation are anticipated to occur from November 2007 through February 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing runoff volume via capture, retention, and eventual infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of rain barrels, downspout disconnects, and rainwater harvesting/reuse systems to reduce urban runoff volume and pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of rain barrels and downspout disconnects as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	• Achieve reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	• Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data:	• Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

INSTALLATION OF TRIDENT CURBSCREENS – 45

ACTIVITY DESCRIPTION

The installation of curbscreens that prevent trash, debris, oil & grease, large particle sediment, organics from entering curb inlets.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation FY 08-09, grant dependent

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Debris
- Oil & Grease
- Sediment
- Organics

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Local watershed activity

EXPECTED BENEFITS

More effective street sweeping, fewer pollutants in the MS4 system.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

CLEANUP EVENTS, CITY-WIDE VOLUNTEER SPONSORED – 46

ACTIVITY DESCRIPTION

Cleanup events in any city location, generally sponsored by local organizations.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Current Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Lemon Grove

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Regional watershed activity

EXPECTED BENEFITS

Decreased trash in the MS4 system including gutters.

EFFECTIVENESS MEASUREMENTS

Level 4 Load Reduction

CHOLLAS CREEK RUNOFF REDUCTION AND GROUNDWATER RECHARGE PROJECT – 47

ACTIVITY DESCRIPTION

This project is designed to reduce runoff from three existing County of San Diego facilities within the Pueblo San Diego Watershed (HA 908.2). Currently, these three facilities are highly impervious. The purpose of this activity is to retrofit existing impervious areas (parking lots) with porous pavements over stone reservoirs and to implement other LID practices to capture runoff from these areas as well as landscape elements such as rain gardens and bio-swales. A goal of this demonstration project is employ techniques to capture and infiltrate/evaporate rainfall. The objective of the activity is to prevent transportation of potentially polluted runoff (Metals, specifically with cooper, lead, and zinc) from leaving these facilities and entering the storm water system and particularly Chollas Creek.

TMDL APPLICABILITY

This project would be implemented in compliance with the Chollas Creek Metals TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Planning & Design: July 2008 - May 2009
- Construction: June 2009 - October 2009
- Environmental Review & Permitting: July 2008 - January 2009
- Monitoring: October 2009 - December 2010 (14 mos.)
- Demonstration Project: July 2008 - December 2010 (2 ½ yrs)

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This Project is consistent with the collective Watershed Strategy because it addresses metals (copper, lead and zinc), which are considered as high priority water quality problem within the 908.2 Hydrologic Area.

EXPECTED BENEFITS

This project provides benefits to surface water quality and groundwater quantity by capturing, reusing and/or infiltrating rainfall that otherwise would be urban runoff that would transport potential pollutants specifically metals to sensitive receiving waters.

EFFECTIVENESS MEASUREMENTS

This project includes 14 months of monitoring of the water quality from the site. This monitoring will provide evidence of the overall amount of reduction of metals from entering the storm system.

LAND ACQUISITIONS SAN DIEGO BAY (909.1, 909.2, 909.3, 910.2, 910.3) – 48

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the southwestern portion of San Diego County. Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective Watershed Strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

SPECIAL DRAINAGE AREA (SDA) 1 SPRING VALLEY AREA STORMWATER QUALITY MASTER PLAN – 49

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego Bay Watershed include:

- SDA 1 - Spring Valley (909.1)
- SDA 2 - Valle de Oro (909.2)
- SDA 3 - Sweetwater (909.1)
- SDA 4 - Jamul (909.2, 910.3)
- SDA 7 - Alpine (909.2, 909.3)

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur anytime before FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined.

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined.

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Appendix E

Data

Appendix E-1

Data Tables

Table 11-25. Analytes Measured at the Sweetwater Mass Loading Station.

ANALYTE	UNITS	WQO[1]	SOURCE	2001-2002			2002-2003			2003-2004			2004-2005			2005-2006			2006-2007			Frequency Above WQO	Mean Ratio to WQO
				02/17/02	03/17/02	04/25/02	12/16/02	02/11/03	02/25/03	11/12/03	02/03/04	02/18/04	10/17/04	02/11/05	02/18/05	10/18/05	01/02/06	02/19/06	10/14/06	1/30/07	2/19/07		
General / Physical / Organic																							
Electrical Conductivity	umhos/cm			3820	3430	2980	2990	2760	1955	3040	1742	1995	529	5070	3260	3430	4090	2690	1890	4100	3520		
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	1	1	1	4.47	2	1	4.43	<1	1.05	<1	<1	<1	<1	<1	<1	<5	<5	<5	0%	0.10
pH	pH Units	6.5-8.5	Basin Plan	7.5	7.4	7.3	7.56	6.87	6.94	7.20	7.83	7.58	7.24	7.52	7.49	7.66	8.14	8.09	7.8	7.79	7.60	0%	0.00
Bacteriological																							
Enterococci	MPN/100 mL			300	16,000	9,000	8,000	14,000	30,000	18,792	1,879	17,000	800	3,000	50,000	50,000	5,000	13,000	110,000	3,000	1,300		
Fecal Coliform	MPN/100 mL	400	Basin Plan	130	**500**	**11,000**	**23,000**	**7,000**	**1,700**	**4,000**	**2,200**	**2,300**	300	**1,300**	**1,300**	**3,000**	**8,000**	**2,300**	**8,000**	170	**5,000**	83%	11.28
Total Coliform	MPN/100 mL			23,000	5,000	230,000	30,000	30,000	170,000	300,000	130,000	130,000	30,000	13,000	28,000	130,000	30,000	80,000	50,000	3,000	30,000		
Wet Chemistry																							
Ammonia As N	mg/L			0.16	0.3	0.2	0.25	0.28	0.19	0.16	0.1	0.15	0.39	0.14	0.14	<0.1	<0.1	0.19	0.79	0.67	1.24		
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan				2.28	0.64	0.42	0.67	1.44	1.55	1.0	0.8	1.1	0.7	1.8	4.9	14.2	8.1	11.3	0%	0.14
Biochemical Oxygen Demand	mg/L	30	USEPA Multi-Sector General Permit	2	14.2	4.7	<2.0	20.4	5.89	9.32	**46.7**	15.3	19.8	2.57	3.42	4.96	3.72	2.22	**115**	3.66	3.36	11%	0.52
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	70	63	55	59	85	39	104	69	86	44	**123**	74	47	44	102	119	54	45	6%	0.59
Dissolved Organic Carbon	mg/L						9.68	25.2	8.94	21.9	7.94	88.2	25.7	5.24	6.19	5.04	19	10.5	86.9	13.6	12.8		
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	<0.05	0.2	0.1	0.34	0.20	0.10	0.4	0.18	0.12	0.2	0.18	0.45	0.26	0.43	0.24	0.28	0.21	0.32	0%	0.12
Nitrate As N	mg/L	10	Basin Plan	0.4	0.3	0.2	0.54	0.81	0.39	2.19	0.25	0.27	0.07	1.02	1.93	0.55	1.52	1.44	1.36	<0.05	0.74	0%	0.08
Nitrite As N	mg/L	1	Basin Plan	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	0%	0.03
Surfactants (MBAS)	mg/L	0.5	Basin Plan	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0%	0.43
Total Dissolved Solids	mg/L	1500	Basin Plan	**2000**	1050	**2870**	793	**1660**	1150	**1880**	**1780**	**2230**	**2860**	**2370**	1410	**2640**	**2140**	**2070**	**1990**	**2060**	1290	72%	1.27
Total Kjeldahl Nitrogen	mg/L			1.5	3	1.2	1.0	1.0	0.8	2.8	<0.5	0.7	2.1	1.4	1.8	1	1.7	2.5	2.2	1.4	2.4		
Total Organic Carbon	mg/L						40.7	12.9	6.72	20.8	12.5	96.4	30.1	10.9	11.7	12.1	14	13.2	88.8	13.8	13		
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.18	0.29	0.1	0.54	0.22	0.14	0.43	0.22	0.16	0.25	0.57	0.47	0.52	0.45	0.54	0.4	0.28	0.39	0%	0.17
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	21	47	23	74	14	51	<20	<20	<20	20	26	**102**	<20	<20	<20	45	<20	91	6%	0.32
Turbidity	NTU	20	Basin Plan	7.7	**20.2**	8.24	**62.9**	13	**46.5**	15.2	11.5	16.8	4.03	5.8	**48.8**	11.4	9.07	**21.7**	**32.2**	9.6	**65.8**	39%	1.14
Pesticides																							
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game	<0.03*	<0.03*	**0.03**	**0.053**	**0.059**	<0.03*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.002	<0.002	<0.002	20%	0.66
Diazinon	µg/L	0.08	CA Dept. of Fish & Game	**0.10**	**0.27**	<0.03	**0.301**	**0.146**	**0.171**	**0.084**	<0.01	0.026	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.004	<0.004	<0.004	33%	0.80
Malathion	µg/L	0.43	CA Dept. of Fish & Game				0.24	<0.10	<0.10	0.423	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	0.097	0.063	<0.006	0%	0.15
Hardness																							
Total Hardness	mg CaCO3/L			932	499	1010	344	758	549	817	728	816	1210	991	556	1130	1020	966	807	999	626		
Total Metals																							
Antimony	mg/L	0.006	Basin Plan	<0.002	<0.002	<0.002	0.004	0.004	0.003	<0.005	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	0.002	0.004	0%	0.42
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	0.002	0.002	0.003	0.004	0.002	0.003	0.005	0.007	0.005	0.004	0.005	<0.002	0.008	0.005	0.005	0.011	0.002	0.003	0%	0.09
Cadmium	mg/L	(b)	40 CFR 131	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	0%	0.09
Chromium	mg/L	(b)	CTR (Cr VI)	<0.005	0.007	<0.005	0.009	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0%	0.01
Copper	mg/L	(b)	40 CFR 131	<0.005	0.010	0.006	0.010	0.018	0.007	0.009	0.013	0.012	<0.005	<0.005	0.005	<0.005	0.005	0.005	0.011	0.006	0.012	0%	0.26
Lead	mg/L	(b)	40 CFR 131	0.002	0.006	0.003	0.010	0.003	<0.002	0.002	<0.002	0.003	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	0.003	<0.001	0.004	0%	0.14
Nickel	mg/L	(b)/0.1	40 CFR 131/ Basin Plan	0.003	0.003	0.004	<0.002	0.002	<0.002	0.004	0.002	<0.002	0.002	0.003	0.002	0.007	0.004	0.003	0.004	0.003	0.004	0%	0.02
Selenium	mg/L	0.02	40 CFR 131	0.003	<0.002	<0.002	<0.004	<0.004	<0.004	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005	<0.004	<0.004	<0.004	0%	0.11
Zinc	mg/L	(b)	40 CFR 131	<0.02	0.045	<0.020	0.042	0.029	0.025	0.036	<0.02	0.029	<0.02	<0.02	<0.02	0.044	<0.02	<0.02	0.047	0.022	0.047	0%	0.06
Dissolved Metals																							
Antimony	mg/L	(e)	40 CFR 131	<0.002	<0.002	<0.002	0.006	<0.002	0.004	<0.005	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	0.002		
Arsenic	mg/L	0.34 (c)	40 CFR 131	<0.001	0.001	0.003	0.003	0.003	0.003	0.003	0.004	0.003	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0%	0.01
Cadmium	mg/L	(b)	40 CFR 131	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0%	0.08
Chromium	mg/L	(b)	40 CFR 131	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0%	0.01
Copper	mg/L	(b)	40 CFR 131	<0.005	<0.005	<0.005	0.007	0.025	0.008	0.005	0.006	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.004	0.005	0%	0.18
Lead	mg/L	(b)	40 CFR 131	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	0%	0.09
Nickel	mg/L	(b)	40 CFR 131	0.004	<0.002	0.003	<0.002	0.002	<0.002	0.003	0.002	<0.002	0.002	0.003	0.002	<0.002	0.004	0.003	0.004	<0.002	0.002	0%	0.01
Selenium	mg/L	0.02 (d)	40 CFR 131	<0.002	<0.002	<0.002	<0.004	<0.004	<0.004	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005	<0.004	<0.004	<0.004	0%	0.01
Zinc	mg/L	(b)	40 CFR 131	<0.020	<0.020	<0.020	0.043	0.097	0.021	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	0.023	<0.02	<0.02	0%	0.05
Toxicity																							
Ceriodaphnia 96-hr	LC50 (%)	100		>100	**70.71**	>100	**72.22**	>100	>100	>100	>100	>100	**50**	>100	>100	>100	>100	>100	>100	>100	>100	17%	0.27
Ceriodaphnia 7-day survival	NOEC (%)	100		100	**25**	100	**50**	100	100	100	100	100	**25**	100	100	100	100	100	100	100	100	17%	0.56
Ceriodaphnia 7-day reproduction	NOEC (%)	100		100	**50**	**50**	**50**	100	100	100	100	100	**12.5**	**50**	100	100	100	100	**6.25**	100	100	33%	1.78
Hyalella 96-hr	NOEC (%)	100		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0%	0.00
Selenastrum 96-hr	NOEC (%)	100		**50**	**50**	**25**	**12.5**	100	100	100	100	**50**	**50**	100	100	**50**	100	100	100	100	100	39%	1.22

See last page for footnotes and source references.

Table 11-25. Analytes Measured at the Sweetwater Mass Loading Station.

Blank spaces have been verified and no data is available due to changes in the monitoring program.

[1] The Water Quality Objectives (WQO) are benchmarks for comparison of storm water results and were selected by the Copermittee Monitoring Workgroup for this program.

(a) Un-ionized Ammonia is a calculated value, non-detectable values calculated at the detection limit. Basin Plan WQO is 0.025 mg/L; values shown here have been converted to μg/L.
(b) Water Quality Objective for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(c) Water Quality Objectives for dissolved metal fractions are based on water effects ratios (WER) and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(d) Water Quality Objective is based on the total recoverable form as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(e) USEPA has not published an aquatic life criterion value.

Shaded text – bold values are above the **CCC** water quality objective and bold/underlined results are above the **CMC** water quality objective.

* Indicates detection limit above water quality objective, and not included in frequency above water quality objective calculation.

Sources
USEPA National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities, 65 Federal Register (FR) 64746, Final
Siepmann and Finlayson 2000.
Basin Plan, September 8, 1994.
Assembly Bill 411 - Title 17 of the California Code of Regulations, Section 7958.
USEPA Federal Register Document 40 CFR Part 131, May 18, 2000.

Table 11-8. Analytes Measured at the Chollas Creek Mass Loading Station.

ANALYTE	UNITS	WQO[1]	SOURCE	1993-1994			1994-1995				1995-1996				1996-1997		1997-1998		
				02/17/94	03/24/94	04/24/94	11/10/94	01/11/95	02/14/95	04/16/95	11/01/95	01/22/96	01/31/96	03/05/96	12/09/96	01/16/97	11/10/97	12/06/97	03/14/98
General / Physical / Organic																			
Electrical Conductivity	umhos/cm						447	176.3	110	193	693	179		427	334	487	310	155	1146
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	2.2	0.6	0.7	1.93	2.11	2.43	1.2	3.3	3.4		3.1	6	1.8	6.9	<0.5	4.56
pH	pH Units	6.5-8.5	Basin Plan																
Bacteriological																			
Enterococci	MPN/100 mL																		
Fecal Coliform	MPN/100 mL	4000	Basin Plan	9,300	24,000	24,000	17,000	28,000	50,000	50,000	16,000	16,000		16,000	16,000	16,000	16,000	9,450	
Total Coliform	MPN/100 mL			240,000	240,000	240,000	160,000	160,000	90,000	160,000	16,000			16,000	16,000	16,000	160,000	20,000	
Wet Chemistry																			
Ammonia As N	mg/L			0.4		0.9	1.4	0.3	0.7	0.6	0.64	0.31	<0.2	1.8	<0.2	<0.2	1.3	0.4	10
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan																
Biochemical Oxygen Demand	mg/L	30	USEPA Multi-Sector General Permit	10	<3	38.9	30	25	13.3	18.1	14.5	6	<5	16	7.8	15	49	24	40
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	47		149	284	88	187	192	122	90	87	321	31	73	146	44	135
Dissolved Organic Carbon	mg/L																		
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.2	0.2	0.4	0.3	0.4	0.4	0.3	0.5	0.6	0.7		0.2	0.3	0.4	<0.1	1.41
Nitrate As N	mg/L	10	Basin Plan	2.7		1.4	2.7	0.7	1.2	0.98	1.8	1.2	0.91	0.82	0.8	0.81	3.5	0.52	0.4
Nitrite As N	mg/L	1	Basin Plan	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05								0.08	<0.05
Surfactants (MBAS)	mg/L	0.5	Basin Plan	0.12	0.47	0.69	0.41	0.07	0.07	0.3	0.16		<0.1	1.00	<0.1	<0.1	<0.1	0.07	0.66
Total Dissolved Solids	mg/L	500	Basin Plan	250	150	270	460	180	250	250	250	264	148	204	194	278	374	250	344
Total Kjeldahl Nitrogen	mg/L			4.3		4.4	3.9	1.6	<1	7.1	3.4	1.9	1.8	2.7	1.1	1.8	1.6	<1	15
Total Organic Carbon	mg/L																		
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.4	0.7	0.9	0.5	0.6	0.6	0.9	0.7	0.3	0.3	1.1	0.3	0.5	0.7	<0.1	2.2
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	220	700	400	650	330	1200	470	75	184	92	130	92	488	182	315	805
Turbidity	NTU	20	Basin Plan	86	54	54	40	64	85	66	54.2	68.3	5.7	18.4	37	290	90	29	24
Pesticides																			
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game																
Diazinon	µg/L	0.08	CA Dept. of Fish & Game																
Malathion	µg/L	0.43	CA Dept. of Fish & Game																
Hardness																			
Total Hardness	mg CaCO3/L			120	71	110	150	58	100	120	91	74.5	52.2	78.6	57.4	61.5	116	39	96.4
Total Metals																			
Antimony	mg/L	0.006	Basin Plan	<0.001	0.0013	<0.001	0.0023	<0.001	<0.001		0.001				<0.003	<0.003	0.0016	<32*	<32*
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	<0.005	<0.005	<0.005	<0.005	0.011	0.008	0.006	0.006				0.004	0.005	0.002	<0.053*	<0.053*
Cadmium	mg/L	(b)	40 CFR 131	0.002	0.002	0.001	0.001	0.001	0.002	0.003	0.001				0.0006	0.0007	0.0003	<0.004*	<0.004*
Chromium	mg/L	(b)	CTR (Cr VI)	0.005	0.006	0.008	0.004	0.003	0.01	0.007	<0.005				<0.010	0.010	<0.005	<0.007	0.011
Copper	mg/L	(b)	40 CFR 131	0.034	0.029	0.044	0.036	0.017	0.04	0.085	0.046				0.02	0.01	0.017	0.028	0.028
Lead	mg/L	(b)	40 CFR 131	0.11	0.14	0.07	0.035	0.044	0.11	0.14	0.023				0.016	0.058	0.003	<0.042*	0.095
Nickel	mg/L	(b)/0.1	40 CFR 131/ Basin Plan	0.011	0.008	0.014	0.016	0.006	0.011	0.013	0.011				<0.010	<0.010	0.009	<0.015	<0.015
Selenium	mg/L	0.02	40 CFR 131	<0.0005	<0.0005	<0.0005	<0.0005	0.001	0.001		0.002				<0.004	<0.003	0.001	<0.075*	<0.075*
Zinc	mg/L	(b)	40 CFR 131	0.26	0.24	0.32	0.18	0.15	0.36	0.56	<0.025				0.07	0.20	0.176	0.11	0.092
Dissolved Metals																			
Antimony	mg/L	(e)	40 CFR 131				0.0022	<0.001	<0.001	<0.001		<0.0015	<0.0015	<0.0015	<0.003	<0.003			
Arsenic	mg/L	0.34 (c)	40 CFR 131				<0.005	<0.005	<0.005	<0.005		0.004	0.003	0.002	0.005	<0.003			
Cadmium	mg/L	(b)	40 CFR 131				0.0002	<0.0002	<0.0002	<0.0002		<0.00025	<0.00025	0.00044	0.0005	0.0012			
Chromium	mg/L	(b)	40 CFR 131				0.002	0.0012	<0.001	0.001		<0.005	<0.005	<0.005	<0.010	<0.010			
Copper	mg/L	(b)	40 CFR 131				0.013	<0.005	0.005	0.010		0.012	0.008	0.034	0.01	0.02			
Lead	mg/L	(b)	40 CFR 131				0.003	<0.001	<0.001	<0.001		0.002	0.002	0.018	0.015	0.007			
Nickel	mg/L	(b)	40 CFR 131				0.013	<0.005	<0.005	<0.005		<0.005	<0.005	0.009	<0.010	0.020			
Selenium	mg/L	0.02 (d)	40 CFR 131				<0.0005	0.001	<0.0005	<0.0005		<0.001	<0.001	<0.001	<0.002	<0.003			
Zinc	mg/L	(b)	40 CFR 131				0.07	0.014	0.012	0.069		<0.025	0.032	0.141	0.08	0.040			
Toxicity																			
Ceriodaphnia 96-hr	LC50 (%)	100																	
Ceriodaphnia 7-day survival	NOEC (%)	100																	
Ceriodaphnia 7-day reproduction	NOEC (%)	100																	
Hyalella 96-hr	NOEC (%)	100																	
Selenastrum 96-hr	NOEC (%)	100																	

See last page for footnotes and source references.

Table 11-8. Analytes Measured at the Chollas Creek Mass Loading Station.

ANALYTE	UNITS	WQO[1]	SOURCE	1998-1999			1999-2000			2000-2001			2001-2002			2002-2003		
				11/08/98	01/25/99	03/15/99	02/12/00	03/05/00	04/17/00	10/27/00	01/08/01	02/13/01	11/29/01	02/17/02	03/08/02	11/08/02	02/11/03	02/25/03
General / Physical / Organic																		
Electrical Conductivity	umhos/cm			286	270	215	186	187	185	258	319	279	155	310	242	315	211	91.2
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	1.29	1.56	0.95	1.92	2.04	1.48	12	4	1	5	10	8	4.24	3.54	2.47
pH	pH Units	6.5-8.5	Basin Plan										7.4	7.4	8	6.96	7.58	7.41
Bacteriological																		
Enterococci	MPN/100 mL									130,000	26,000	80,000	170,000	110,000	220,000	30,000	50,000	80,000
Fecal Coliform	MPN/100 mL	4000	Basin Plan	1,600	1,600	1,600	<2	1,600	1,600	70,000	27,000	14,000	30,000	23,000	70,000	50,000	30,000	13,000
Total Coliform	MPN/100 mL			241,900	298,700	2,419,000	500	1,600	1,600	1,100,000	500,000	30,000	80,000	300,000	300,000	2,400,000	230,000	300,000
Wet Chemistry																		
Ammonia As N	mg/L			1	0.78	1.06	1.65	<0.1	0.21	1.2	1.5	0.6	0.7	2.14	1.04	0.54	0.79	0.52
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan													1.52	8.93	3.12
Biochemical Oxygen Demand	mg/L	30	USEPA Multi-Sector General Permit	19	6	11	7.8	2.54	6.1	15	32.2	<2	27	73.3	29	8.01	31.8	21.0
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	59	41	85	41	104	57	150	109	100	71	244	488	119	184	43
Dissolved Organic Carbon	mg/L															11.3	19.2	10.8
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	1.07	0.27	0.22	0.33	0.26	0.22	0.08	0.94	0.39	0.9	0.75	0.46	0.41	0.40	0.14
Nitrate As N	mg/L	10	Basin Plan	1.1	0.98	0.44	3.22	1.04	3.1	0.8	2.1	0.8	1.2	1.6	1.3	0.71	1.04	0.45
Nitrite As N	mg/L	1	Basin Plan	0.06	0.12	0.14	0.086	<0.05	<0.05	0.21	0.22	0.05	0.11	0.22	0.18	0.09	0.12	0.07
Surfactants (MBAS)	mg/L	0.5	Basin Plan	0.48	0.19	0.07	0.35	0.22	0.13	0.7	<0.5	<0.5	<0.5	0.7	<0.5	0.3	0.2	<0.1
Total Dissolved Solids	mg/L	500	Basin Plan	249	125	222	120	111	140	191	236	173	71	254	199	195	121	87
Total Kjeldahl Nitrogen	mg/L			0.44	1.25	3.61	2.98	3.1	2.36	2.37	5.9	0.97	4.6	5.7	9.1	2.5	2.4	1.6
Total Organic Carbon	mg/L															22.8	27.0	5.45
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	1.28	0.3	0.17	0.46	0.33	0.6	0.12	0.96	0.49	1.08	1.55	2.08	0.68	0.67	0.76
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	7.58	280	159	457	62	200	67	294	139	67	151	493	63	193	295
Turbidity	NTU	20	Basin Plan	69	38	21	50	27	38	72.2	200	96	63.3	36.5	121	57.1	121	178
Pesticides																		
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game	0.1		<0.5*	<0.5*	<0.5*	<0.5*	<0.5*	<0.5*	<0.5*	0.04	0.13	0.04	0.111	<0.03*	0.038
Diazinon	µg/L	0.08	CA Dept. of Fish & Game	0.46	0.46	0.53	<0.5*	<0.5*	<0.5*	0.75	<0.5*	<0.5*	0.68	0.82	0.61	0.424	0.26	0.09
Malathion	µg/L	0.43	CA Dept. of Fish & Game													0.25	0.28	<0.10
Hardness																		
Total Hardness	mg CaCO3/L			77	42.5	90.8	40.9	35.1	45.5	85	78	59	68	111	148	69.1	78	44
Total Metals																		
Antimony	mg/L	0.006	Basin Plan	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.003	0.003	0.002	<0.002	0.003	0.005	<0.002	0.005	0.004
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	0.006	0.0018	0.003	<0.001	0.007	0.005	0.004	0.006	0.004	0.002	0.004	0.006	0.003	0.004	0.003
Cadmium	mg/L	(b)	40 CFR 131	0.002	<0.00025	<0.00025	<0.00025	0.002	<0.00025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	(b)	CTR (Cr VI)	<0.005	0.015	0.035	<0.005	<0.005	<0.005	0.007	0.013	0.007	0.012	0.009	0.019	<0.005	0.010	<0.005
Copper	mg/L	(b)	40 CFR 131	0.006	<0.005	0.015	0.029	0.016	0.014	0.027	0.049	0.016	0.027	0.053	0.056	0.028	0.033	0.016
Lead	mg/L	(b)	40 CFR 131	<0.001	0.007	0.082	0.015	<0.001*	<0.005*	0.022	0.055	0.027	0.028	0.032	0.061	0.017	0.029	0.023
Nickel	mg/L	(b)/0.1	40 CFR 131/ Basin Plan	0.04	0.028	0.016	<0.005	<0.005	<0.005	0.012	0.014	0.005	0.009	0.015	0.017	0.007	0.008	0.004
Selenium	mg/L	0.02	40 CFR 131	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.004	<0.004	<0.004
Zinc	mg/L	(b)	40 CFR 131	0.03	0.048	0.21	0.096	0.05	0.08	0.150	0.290	0.12	0.162	0.314	0.430	0.118	0.230	0.154
Dissolved Metals																		
Antimony	mg/L	(e)	40 CFR 131				<0.0015	<0.0015	<0.0015	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.002	0.002
Arsenic	mg/L	0.34 (c)	40 CFR 131				<0.001	0.005	<0.001	0.003	0.002	0.003	<0.001	<0.001	0.003	0.003	0.002	0.002
Cadmium	mg/L	(b)	40 CFR 131				<0.00025	<0.00025	<0.00025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	(b)	40 CFR 131				<0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	mg/L	(b)	40 CFR 131				<0.005*	<0.005*	<0.005*	0.017	0.013	<0.005	0.009	0.024	0.018	0.022	0.052	0.008
Lead	mg/L	(b)	40 CFR 131				<0.001*	<0.001*	<0.005*	0.003	0.002	0.014	<0.002*	<0.002	0.002	0.006	<0.002*	<0.002*
Nickel	mg/L	(b)	40 CFR 131				<0.005	<0.005	<0.005	0.011	0.007	0.002	0.004	0.010	0.008	0.006	0.004	<0.002
Selenium	mg/L	0.02 (d)	40 CFR 131				<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.004	<0.004	<0.004
Zinc	mg/L	(b)	40 CFR 131				0.019	0.028	0.008	0.090	0.110	0.030	0.053	0.118	0.079	0.152	0.139	0.018
Toxicity																		
Ceriodaphnia 96-hr	LC50 (%)	100								50	25	100	75	50	75	77.78	>100	>100
Ceriodaphnia 7-day survival	NOEC (%)	100								50	25	100	25	25	25	25	50	100
Ceriodaphnia 7-day reproduction	NOEC (%)	100											25	12.5	25	50	100	100
Hyalella 96-hr	NOEC (%)	100								50	6.25	12.5	100	50	50	50	100	100
Selenastrum 96-hr	NOEC (%)	100											100	100	100	100	100	100

See last page for footnotes and source references.

Table 11-8. Analytes Measured at the Chollas Creek Mass Loading Station.

ANALYTE	UNITS	WQO[1]	SOURCE	2003-2004			2004-2005			2005-2006			2006-2007			Frequency Above WQO	Mean Ratio to WQO
				02/03/04	02/18/04	03/02/04	10/17/04	02/11/05	02/18/05	10/18/05	01/02/06	02/19/06	10/14/06	12/10/06	2/19/07		
General / Physical / Organic																	
Electrical Conductivity	umhos/cm			152.5	148	231	565	348	159	444	228	184.9	510	319	239		
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	1.61	2.17	3.43	4.17	1.12	<1	<1	1.19	<1	<5	<5	<5	0%	0.19
pH	pH Units	6.5-8.5	Basin Plan	4.05	6.57	6.96	7.09	7.61	7.81	7.55	8.17	7.76	7.65	8.09	8.40	6%	0.06
Bacteriological																	
Enterococci	MPN/100 mL			50,000	220,000	17,000	170,000	30,000	80,000	800,000	170,000	23,000	500,000	50,000	80,000		
Fecal Coliform	MPN/100 mL	4000	Basin Plan	22,000	30,000	17,000	140,000	11,000	70,000	500,000	70,000	8,000	110,000	23,000	3,000	83%	10.04
Total Coliform	MPN/100 mL			110,000	80,000	800,000	3,000,000	130,000	170,000	800,000	2,400,000	170,000	280,000	90,000	130,000		
Wet Chemistry																	
Ammonia As N	mg/L			0.52	0.58	3.1	2.13	0.28	0.19	1.41	0.67	0.58	1.64	2.12	1.53		
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan	0.00	0.59	6.53	2.4	5.9	46.7	18.6	27.7	6.9	23.9	64.1	87.7	27%	0.28
Biochemical Oxygen Demand	mg/L	30	USEPA Multi-Sector General Permit	41.4	2.25	34.6	138	4.83	3.79	49.5	21	4.26	17.3	25.2	31.2	26%	0.76
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	222	271	69	501	89	<25	168	65	106	447	266	94	43%	1.23
Dissolved Organic Carbon	mg/L			5.8	11.6	6.07	134	2.22	2.86	32.3	18	17	47.9	29.7	9.67		
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.51	0.32	0.21	1.68	0.2	<0.05	0.68	0.44	0.38	0.88	0.64	0.32	0%	0.23
Nitrate As N	mg/L	10	Basin Plan	0.83	0.79	0.37	4.38	0.62	0.61	3.09	1.09	0.98	2.4	0.27	<0.05	0%	0.13
Nitrite As N	mg/L	1	Basin Plan	0.06	0.08	<0.05	0.15	0.05	0.05	0.18	0.09	0.06	0.1	0.06	0.07	0%	0.07
Surfactants (MBAS)	mg/L	0.5	Basin Plan	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.5	<0.5	<0.5	12%	0.56
Total Dissolved Solids	mg/L	500	Basin Plan	134	222	129	665	122	112	396	210	104	210	210	104	2%	0.43
Total Kjeldahl Nitrogen	mg/L			3	3.6	3.8	18.6	5.4	3.4	6.2	1.6	2.6	4.2	4.5	3.7		
Total Organic Carbon	mg/L			21.9	20.9	15.9	190	7.58	10.7	73	9.74	22.4	64	33.3	11.3		
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	0.91	0.63	0.45	1.85	0.3	0.45	0.91	0.74	0.65	1.22	1.24	0.61	5%	0.37
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	24	290	56	753	135	275	214	252	386	438	418	239	77%	2.96
Turbidity	NTU	20	Basin Plan	259	102	37.5	300	40.1	82.2	46.8	64.7	80.2	168	129	123	95%	4.29
Pesticides																	
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.002	<0.002	<0.002	33%	1.28
Diazinon	µg/L	0.08	CA Dept. of Fish & Game	0.081	0.158	0.088	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	0.100	<0.004	<0.004	64%	3.13
Malathion	µg/L	0.43	CA Dept. of Fish & Game	0.164	0.162	0.168	0.601	0.091	0.065	0.461	0.205	0.074	0.949	0.270	0.095	20%	0.60
Hardness																	
Total Hardness	mg CaCO3/L			87	88	74	244	40	46	170	101	<100	89	101	60		
Total Metals																	
Antimony	mg/L	0.006	Basin Plan	<0.005	<0.006	<0.005	0.005	<0.005	<0.005	<0.005	0.008	<0.005	0.005	0.005	0.004	3%	0.39
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	0.009	0.006	0.003	0.007	0.004	<0.002	0.005	0.006	<0.001	0.012	<0.001	0.002	0%	0.09
Cadmium	mg/L	(b)	40 CFR 131	0.001	0.002	0.001	0.003	<0.001	<0.001	0.001	0.001	<0.001	0.003	0.007	<0.001	8%	0.50
Chromium	mg/L	(b)	CTR (Cr VI)	0.025	0.019	<0.005	<0.005	<0.005	<0.005	<0.005	0.017	<0.005	0.011	0.02	0.011	0%	0.05
Copper	mg/L	(b)	40 CFR 131	0.07	0.068	0.036	0.122	0.009	0.015	0.062	0.065	0.027	0.071	0.115	0.04	97%	4.61
Lead	mg/L	(b)	40 CFR 131	0.079	0.096	0.057	0.079	0.008	0.018	0.032	0.064	0.024	0.072	0.071	0.034	95%	18.99
Nickel	mg/L	(b)/0.1	40 CFR 131/ Basin Plan	0.016	0.014	0.002	0.040	0.003	0.003	0.019	0.016	0.005	0.017	0.021	0.009	3%	0.26
Selenium	mg/L	0.02	40 CFR 131	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005	<0.004	<0.004	<0.004	0%	0.07
Zinc	mg/L	(b)	40 CFR 131	0.496	0.561	0.394	1.18	0.054	0.100	0.421	0.402	0.181	0.515	0.659	0.233	85%	2.31
Dissolved Metals																	
Antimony	mg/L	(e)	40 CFR 131	<0.005	<0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.002	0.003		
Arsenic	mg/L	0.34 (c)	40 CFR 131	0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0%	0.01
Cadmium	mg/L	(b)	40 CFR 131	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0%	0.21
Chromium	mg/L	(b)	40 CFR 131	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0%	0.05
Copper	mg/L	(b)	40 CFR 131	0.005	0.009	0.005	0.024	0.006	<0.005*	0.024	0.008	0.012	0.014	0.014	0.007	76%	1.78
Lead	mg/L	(b)	40 CFR 131	<0.002	<0.002	<0.002*	0.004	<0.002*	<0.002*	0.003	<0.002	<0.002	0.004	0.002	<0.001	42%	2.15
Nickel	mg/L	(b)	40 CFR 131	<0.002	0.002	<0.002	0.027	<0.002	<0.002	0.01	0.003	0.003	0.007	0.006	0.002	0%	0.12
Selenium	mg/L	0.02 (d)	40 CFR 131	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.005	<0.004	<0.004	<0.004	0%	0.01
Zinc	mg/L	(b)	40 CFR 131	<0.02	0.034	<0.02	0.267	0.023	<0.02	0.193	0.032	0.049	0.092	0.072	0.021	21%	0.59
Toxicity																	
Ceriodaphnia 96-hr	LC50 (%)	100		>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	>100	29%	0.57
Ceriodaphnia 7-day survival	NOEC (%)	100		100	100	100	100	100	100	100	100	100	50	100	100	38%	1.24
Ceriodaphnia 7-day reproduction	NOEC (%)	100		100	100	100	25	100	100	50	100	100	100	100	100	33%	1.33
Hyalella 96-hr	NOEC (%)	100		50	50	100	50	100	100	25	50	25	6.25	25	25	71%	3.43
Selenastrum 96-hr	NOEC (%)	100		100	100	100	100	100	100	>100	100	100	100	100	100	0%	0.00

See last page for footnotes and source references.

Table 11-8. Analytes Measured at the Chollas Creek Mass Loading Station.

Blank spaces have been verified and no data is available due to changes in the monitoring program.

[1] The Water Quality Objectives (WQO) are benchmarks for comparison of storm water results and were selected by the Copermittee Monitoring Workgroup for this program.

(a) Un-ionized Ammonia is a calculated value, non-detectable values calculated at the detection limit. Basin Plan WQO is 0.025 mg/L; values shown here have been converted to μg/L.
(b) Water Quality Objective for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(c) Water Quality Objectives for dissolved metal fractions are based on water effects ratios (WER) and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(d) Water Quality Objective is based on the total recoverable form as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(e) USEPA has not published an aquatic life criterion value.

Shaded text – bold values are above the **CCC** water quality objective and bold/underlined results are above the **CMC** water quality objective.

* Indicates detection limit above water quality objective, and not included in frequency above water quality objective calculation.

Sources
USEPA National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities, 65 Federal Register (FR) 64746, Final Reissuance, October 30, 2000. Table 3 - Parameter benchmark values.
Siepmann and Finlayson 2000.
Basin Plan, September 8, 1994.
Assembly Bill 411 - Title 17 of the California Code of Regulations, Section 7958.
USEPA Federal Register Document 40 CFR Part 131, May 18, 2000.

Appendix E-2

Chollas Creek TMDL
Monitoring Data

Due to document size,
the Chollas Creek Diazinon &
Dissolved Metals TMDL report
is submitted electronically.

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Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277

2006-2007 Water Quality Monitoring Data Summary for Chollas Creek

Final Report

Prepared For:
State Water Resources Control Board

In Coordination With:
Chollas Creek Watershed Municipal Copermittees
City of Lemon Grove
City of La Mesa
City of San Diego
County of San Diego
Port of San Diego

Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277

2006-2007 Water Quality Monitoring Data Summary for Chollas Creek

Final Report

In Coordination with:

Chollas Creek Watershed Copermittees
City of Lemon Grove
City of La Mesa
City of San Diego
County of San Diego
Port of San Diego

Prepared By:

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January 11, 2008

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EXECUTIVE SUMMARY

This report summarizes the activities conducted by the Chollas Creek Watershed Municipal Workgroup to comply with Regional Water Quality Control Board Order No. R9-2004-0277 during the 2006-2007 monitoring season. The activities conducted are provided as follows:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and dry weather IC/ID investigations.
- Jurisdictions performed education and outreach to area residents.
- Jurisdictions have conducted water quality monitoring during three storm events at Sites SD8(1) and DPR2.

Education and outreach activities included 17 community events, targeted strategic audiences in the Chollas Creek Watershed, and an extensive media (Television and Radio) and print campaign. This included just over 1500 public service announcements promoting the Think Blue Website and the "Ants in your Plants" theme. The Integrated Pest Management (IPM) Pest Tip Cards were the primary outreach materials. Residents were very pleased with the cards and the information they provided. The City of San Diego received numerous requests to provide additional cards to community groups who, in turn, facilitated distribution to residents.

Water quality monitoring study results are presented to comply with RWQCB Order No. R9-2004-0277 requirements. Water quality monitoring was specifically conducted under this program to quantitatively assess potential changes in pesticide use and to quantitatively assess the concentration of metals in Chollas Creek.

Storm water monitoring samples were collected at two mass loading stations in Chollas Creek during three separate storm water events. Site SD8(1) was located in the North Fork of Chollas Creek and site DPR2 was located in the south fork of Chollas Creek. Water quality objective exceedances were noted for total organic carbon (TOC), total suspended solids (TSS), diazinon, malathion, total and dissolved copper, total and dissolved lead, total zinc, and total cadmium. There were no exceedances of the WQO for either dissolved cadmium or dissolved zinc. Synthetic pyrethroids were detected in concentrations above published LC50s for *Hyalella azteca* during all three monitoring events during the 2006-2007 monitoring season.

Acute toxicity to *Ceriodaphnia dubia* survival was not observed at either site SD8(1) or DPR2 during the 2006-2007 monitoring season. Chronic toxicity to *Ceriodaphnia dubia* survival was observed during the first storm event on 10/14/06 at both sites and is likely associated with the combined detections of malathion, diazinon and synthetic pyrethroids during this first event. Toxicity to *Hyalella azteca* was observed during all three events at site SD8(1) and during two events at site DPR2. Toxicity identification evaluations conducted as part of the Regional Monitoring Program indicate the causative agent of toxicity at site SD8(1) is the synthetic pyrethroid class of compounds (Weston, 2007).

Mann-Kendall trend analysis performed on the long term data set at site SD8(1) indicate significant decreasing trends for diazinon and toxicity to *Ceriodaphnia dubia.* However, increasing trends are noted for turbidity, total copper, total zinc and toxicity to *Hyalella azteca*.

It is evident that the concentrations of diazinon have been decreasing with time and that storm water samples are apparently less toxic to *Ceriodaphnia dubia* than in previous years when diazinon was available. However, it is also apparent that detections above the WQO may continue based on the data collected during the 2006-2007 monitoring season. It is expected that the residual supply will eventually be exhausted and detections of diazinon should continue to decrease due to the EPA ban on the manufacture and retail sale of this product. It is evident that synthetic pyrethroids are present in storm water runoff which warrants concern. With this evidence, education and outreach to area residents and businesses should continue in order to reduce the impacts of pesticide use in the Chollas Creek Watershed. With regards to the implementation of the TMDLs for metals for Chollas Creek, it is apparent that toxicity to *Ceriodaphnia dubia* was not observed in the later storms where both dissolved copper and dissolved zinc were frequently measured above the WQO, based on the low hardness concentrations. With regards to these observations, the development of site specific objectives for dissolved metals would be useful.

Special studies were also conducted to answer specific management questions at the jurisdictional level. These additional studies include monitoring at the jurisdictional boundaries of La Mesa and Lemon Grove, an aerial deposition study within Chollas Creek, and storm drain and receiving water monitoring in La Mesa.

1.0 INTRODUCTION

The Chollas Creek Watershed is located within a highly urbanized area of San Diego County having a predominantly residential land use. The Chollas Creek Watershed is a part of the San Diego Mesa Hydrologic Area, which is a part of the Pueblo San Diego Hydrologic Unit. Located south and east of downtown San Diego, the watershed is approximately 30 sq. miles, and the main stem of the creek is approximately 9 mi. long.

Chollas Creek discharges to San Diego Bay and consists of two main tributaries, the North and South fork. The lower approximate 1.0 mi. of the creek is tidally influenced and branches near the upstream extent of the tidal influence. The main stem of Chollas Creek trends north from this point for approximately 1.5 mi. then bends towards the northeast. A few smaller tributaries enter the main stem. The second or southern stem, of Chollas Creek tends generally east-northeasterly, itself branching into two creeks. The creek is a mix of highly developed earthen channels and concrete channels. It tends to be an ephemeral creek, flowing during the wet season, primarily as a conduit for storm water runoff.

The Cities of San Diego, Lemon Grove, and La Mesa, the County of San Diego, and the Port of San Diego are municipal dischargers to the Chollas Creek watershed. The California Department of Transportation and the U.S. Navy also discharge urban runoff to the watershed. Water quality problems in the watershed are primarily related to pesticides, total and dissolved copper, lead, and zinc, fecal bacteria indicators, and water column toxicity to *Hyalella azteca.*

This report provides the activities conducted as part of the annual monitoring and reporting requirements for San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277.

Studies conducted in the Chollas Creek Watershed during the 2006-2007 monitoring year include the following:

- Copermittees Legal Authority
- Public Outreach and Education
- Water quality monitoring at Site DPR2 in the south fork of Chollas Creek to satisfy RWQCB Order R9-2004-0277.
- Water quality monitoring at Site SD8(1) in the north fork of Chollas Creek as part of the Regional Monitoring and Reporting Program. This data is also required to be reported under RWQCB Order R9-2004-0277.
- Water quality monitoring at the jurisdictional boundaries of Lemon Grove and La Mesa to understand the jurisdictional contributions of constituents.
- An aerial deposition study to assess the contribution of metals from aerial deposition.
- Water quality monitoring conducted within the City of La Mesa to determine loading characteristics from specific drainage basins.

1.1 Water Quality Background

The Water Quality Control Plan for the San Diego Region (Basin Plan) lists the beneficial uses of Chollas Creek as REC-2 (supports Non-Contact Water Recreation), WARM (supports Warm Freshwater Habitat) and WILD (supports Wildlife Habitat). Chollas Creek has the potential to support the REC-1 beneficial use (Contact Water Recreation). The 2006 Clean Water Act (CWA) Section 303(d) list identifies bacterial indicators, copper, lead and zinc as pollutants within Chollas Creek. Water quality monitoring data indicate that the pesticide diazinon historically exceeded water quality standards in most of the region's watersheds, including Chollas Creek, until recent years. While diazinon was identified as the primary agent associated with pesticide pollution in the San Diego region, diazinon was phased out of manufacturing and is no longer available for retail sale since December 2004. The San Diego Regional Water Quality Control Board (RWQCB) adopted a Total Maximum Daily Load (TMDL) for diazinon in Chollas Creek (Resolution No. R9-2002-0123) in 2002. However, the use of synthetic pyrethroids as a replacement pesticide is evident and has been identified as the current causative agent of toxicity to *H. azteca* in Chollas Creek (Weston, 2007).

Metals have also frequently exceeded the California Toxics Rule (CTR) criteria in Chollas Creek. Both dissolved copper and dissolved zinc have been linked to toxicity of freshwater organisms in Chollas Creek. The San Diego Regional Water Quality Control Board (RWQCB) adopted a Total Maximum Daily Load (TMDL) for dissolved copper, lead, and zinc in Chollas Creek (Resolution No. R9-2007-0043) in 2007. RWQCB Order No. R9-2004-0277 requires monitoring for metals (in addition to diazinon and toxicity) to further assess the condition of metals in Chollas Creek for future use in the development of TMDLs for metals and toxicity in San Diego Bay at the mouth of Chollas Creek. Under RWQCB Order No. R9-2004-0277, annual storm water quality monitoring is required to be performed at the downstream mass loading stations in the north fork [Site SD8(1)] and south fork [Site DPR2] of Chollas Creek.

Monitoring performed under RWQCB Order No. R9-2004-0277 and the San Diego County Municipal Permit indicate that diazinon concentrations have significantly decreased and have been measured above the TMDL waste load allocation only once over the past three monitoring years. Acute and chronic toxicity to *Ceriodaphnia dubia* has also significantly decreased. However, toxicity to *H. azteca* has remained persistent and total and dissolved copper and zinc concentrations are frequently above the water quality objectives based on the California Toxics Rule (CTR). Lead is also listed in the Chollas Creek Metals TMDL and concentrations are measured above the CTR less frequently than copper and zinc. Fecal coliform densities are also frequently above the Basin Plan water quality objective.

1.2 Copermittees Legal Authority

Under California Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277 (item 2-a), the order requires the reporting of information on how the Copermittees have implemented their legal authority to remedy the condition of pollution. This is accomplished primarily through the current dry weather monitoring program and facility inspections conducted under NPDES Order No. 2001-01. Dry weather monitoring is conducted throughout Chollas

Creek to identify and mitigate illicit discharges and illicit connections. As part of the dry weather monitoring program, diazinon and metals are monitored and any illicit discharge of diazinon or metals would be mitigated through this program by issues of violations and/or citations.

Each of the Chollas Creek Watershed Copermittees has ordinances in place to enforce the illegal and unauthorized discharge of wastes into their storm drain systems. For instance, The City of San Diego Municipal Code includes Storm Water Management and Discharge Control (§43.0301), and Storm Water Runoff and Drainage Regulations (§142.01 and §142.02) both of which protect citizens and water quality by prohibiting pollutants from entering the storm water conveyance system. The Storm Water Program's Code Compliance Section enforces the City's storm water ordinance and implements the administrative civil penalties and citation process.

1.3 Diazinon Toxicity Control Plan

California Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277 (item 2-c), requires the reporting of information on the implementation and efficacy of a Diazinon Toxicity Control Plan.

Per Investigation Order No. R9-2004-0277, the "pesticide component" of the education program can serve as the Diazinon Toxicity Control Plan required by the TMDL. See Section 1.4.

1.4 Diazinon Public Outreach/Education Program

Under California Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277 (item 2-c), the order required the reporting of information on the implementation and efficacy of a Diazinon Public Outreach/Education Program.

This Program was a joint effort by the Chollas Creek Watershed Copermittees. It was funded by a State Water Resources Control Board Proposition 13 Grant and uses a network of staff from the County of San Diego, the University of California Cooperative Extension (UCCE), and the City of San Diego to publicize less harmful ways to kill pests. All of the Copermittees were project partners and the Outreach Workgroup serves as the technical advisory committee to the Program's goals and objective. The Copermittees contributed $78,000 of in-kind shared costs to the reproduction of "Healthy Garden, Healthy Home" outreach materials and to the development and air-time for Think Blue IPM Public Service Announcement (PSA). The PSA launched in June 2006 in concert with a watershed-theme PSA in order to leverage air-time costs and to intertwine messages about IPM and water quality.

The City of San Diego participated in twelve workshops and distributed IPM cards (Appendix A) to educate Chollas Creek Watershed residents and other members of the public in San Diego County about using IPM solutions to reduce pesticide levels found in our waterways. IPM uses environmentally sound ways to keep pests under control without harming people, pets, or the environment. These materials were designed to encourage positive behavior changes and attitudes of San Diego residents when dealing with pesticides in their homes and gardens.

The City of La Mesa participated in five outreach/education programs. The City of La Mesa developed and distributed the San Diego Bay Watershed Fact Sheet (Appendix A). This Fact Sheet was designed to encourage residents to practice good housekeeping and storm water pollution prevention measures such as efficient irrigation. IPM cards were also distributed at the three educational events.

Events in which Copermittees have participated are detailed in Table 1-1.

Table 1-1. Community Events (FY 2006-07)

Date	Copermittee	Watershed	Event Type	Event Title	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Aug. 12, 2006	City of San Diego	San Diego Bay (All)	Street Fair	Marine Corps Recruit Depot Bayfest	General Public	800	Marine Corps Recruit Depot	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
Aug. 19, 2006	City of San Diego	San Diego Bay (Chollas Creek)	Street Fair	Encanto Cultural Arts Festival	General Public	~50,000	Imperial Ave, San Diego	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
Sept. 7, 2006	City of San Diego	San Diego Bay (Chollas Creek)	Street Fair	Filipino Heritage Festival	General Public	~10,000	Paradise Valley Road	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
Sept. 16, 2006	City of La Mesa	San Diego Bay	Creek Cleanup	California Coastal Cleanup Day	General Public	5	University Channel, La Mesa	San Diego Bay Watershed Fact Sheet
Sept. 30, 2006	City of La Mesa	San Diego Bay	Education for Children	Kids Care Fest La Mesa	General Public	1,200	Briercrest Park, La Mesa	IPM Cards, San Diego Bay Fact Sheet
Oct. 6-8, 2006	City of La Mesa	San Diego Bay	Festival	Ocktoberfest La Mesa	General Public	180,000	La Mesa Blvd	IPM Cards, San Diego Bay Fact Sheet
Oct. 13, 2006	City of La Mesa	San Diego Bay	Outreach-School	Inter-generational Games	La Mesa Middle School and General Public	140	La Mesa Middle School	IPM Cards, San Diego Bay Fact Sheet

Date	Copermittee	Watershed	Event Type	Event Title	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
31-Mar-07	City of San Diego	San Diego Bay (Chollas Creek)	Street Fair	Cesar Chavez Festival	General Public	~20,000		IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
5-Apr-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Normal Heights Planning Committee	Committee Members	20	North Park Library	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
10-Apr-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Mountain View Park Recreation Council	Committee Members	20	Mountain View Recreation Center	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
17-Apr-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Webster Community Council	Committee Members	20	Webster Community Center	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
25-Apr-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Encanto Recreation Council	Committee Members	20	Encanto Recreation Center	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
28-Apr-07	City of La Mesa	San Diego Bay	Cleanup Event	Creek to Bay Cleanup	General Public	3	University Channel, La Mesa	San Diego Bay Fact Sheet
8-May-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Eastern Area Communities Planning Committee	Committee Members	20	2755 55th Street	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items
15-May-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Greater North Park Planning Committee	Committee Members	20	2901 North Park Way	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items

Date	Copermittee	Watershed	Event Type	Event Title	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
12-Jun-07	City of San Diego	San Diego Bay (Chollas Creek)	Community Meeting	Monthly Meeting	Committee Members	20	Oak Park Community Center	IPM Pest Tip Cards, Pest Cards Feedback Forms, Promotional items

1.5 Public Outreach Plan

This report includes a description of outreach and education strategies for the Chollas Creek Watershed component of the program led by the City of San Diego Storm Water Pollution Prevention Program.

1.6 Project Outreach and Education Strategy

Strategic Objectives

Based on the research and general principles of behavioral change through public outreach programs, the outreach and education strategy sought to continue to meet the following objectives:

- Raise awareness among target audiences of the benefits of using IPM practices.
- Provide tools and information that make it easy for target audiences to use IPM.
- Identify third-party spokespeople in the community to help spread information about IPM and reinforce IPM use.

Audiences

Priority audiences for the project's outreach and education strategy included the following members of the Chollas Creek Watershed:

- Residents who use pesticides.
- Community organizations that influence local residents, including ecumenical groups, ethnic organizations and neighborhood groups.
- Property managers.

NOTE: Since partnerships with retail outlets and gardeners are being handled by San Diego County, these audiences are not included in the strategy. However, the broad based regional outreach by the San Diego County and University of California Cooperative Extension should continue to provide valuable messages to San Diego County Residents. Education and outreach materials provided by San Diego County of are included in Appendix A.

Messages

Messages that were stressed in outreach efforts included:

- Chollas Creek is polluted from overuse of pesticides.
- Safe alternatives to pesticides are better for your family and the environment, today and for future generations.
- Using natural methods is easy and inexpensive.

Tools and Tactics

The City of San Diego continued to use the following tools and tactics to achieve the strategic objectives.

Informational Materials
Reproduced educational and informational materials specific to Chollas Creek watershed outreach were used, based upon the University of California Cooperative Extension (UCCE) Statewide IPM model. The Pest Tip Cards were the primary outreach materials. Residents were very pleased with the cards and the information they provided. The City of San Diego received numerous requests to provide additional cards to community groups who, in turn, facilitated distribution to residents.

Media

For the large Hispanic community in the watershed, a special effort was made to get information to Spanish radio and television media, including:

- Español Radio KLNV 106.5 FM
- KLQV 102.9 FM
- XEWT (Hispanic)

Public Service Announcement Development
The City of San Diego placed advertising on local television and radio outlets. The City designed the ad, "Ants in Your Plants" (funded by the San Diego Regional Storm Water Copermittees (Copermittees) and features IPM tips and suggestions the public should implement to control ants.

The “Ants in Your Plants” PSA was placed on the following television and radio stations:

Television
- Cox Media – Cable Stations: HGTV, TNT, Channel 4, Lifetime, USA
- CW - 5
- KFMB
- KNSD
- KUSI
- XEWT (Hispanic)

Radio

- KIFM
- KLNV
- KLQV
- KMYI (Star 94.1)
- KPRI
- KSON
- KYXY

Outdoor Media

The following table (Table 1-2) details the City of San Diego's radio and television Media Buy for Fiscal Year 2007. The highlighted column represents the number of PSAs that aired that related to IPM.

Table 1-2. Think Blue FISCAL YEAR 2007 Media Buy Year End Summary

Station	IPM PSA
Television	
KIFM-Jazz 98.1	207
KLNV	26
KLQV	56
KMYI	27
KPRI 102.1	57
KSON	63
KYXY	42
Radio	
COX NETWORK	800
CW-5	34
KFMB	10
KNSD	29
KUSI TV 9/51	78
XEWT 12 *	72
TOTALS:	**1501**

Think Blue Website

The City of San Diego posted IPM outreach materials developed for the project on the Think Blue Website on an on-going basis throughout the duration of the grant, to provide City of San Diego residents easy access to these materials.

The Think Blue Website featured a link from the home page to the Chollas Creek efforts and IPM information. Web materials included a Fact Sheet that details the overall efforts to reduce pesticides in the Chollas Creek Watershed, a Fact Sheet on How to Hire a Pest Control Service and an electronic version of all of the Tip Cards.

Site visits averaged 11,469 a month with an average of 1,462 also visiting an IPM pest card information page.

1.7 Sampling Locations

The two sampling locations required by Order R9-2004-0277 are depicted in Figure 1-1. Site DPR2 is located in the south fork of Chollas Creek and Site SD8(1) is located in the north fork of Chollas Creek.

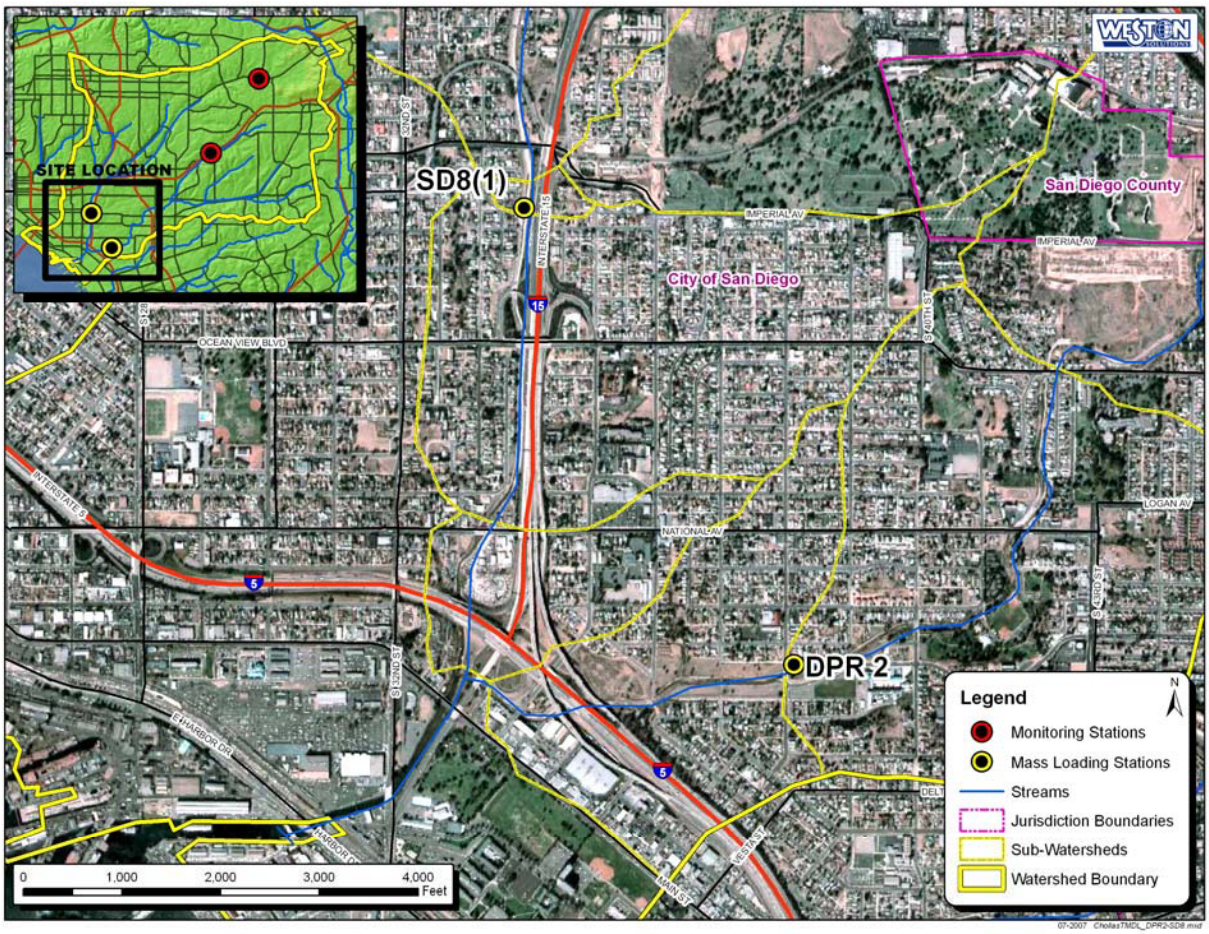

Figure 1-1. DPR2 and SD8(1) Mass Loading Stations (Monitoring Locations)

1.8 Drainage Area and Land Use

The Chollas sub-watershed is divided into two drainage areas. The north fork drains approximately 9,276 acres and the south fork drains approximately 6,997 acres. The drainage areas captured from each station is presented in the Table 1-3. Land use consists of residential (67%), commercial (5%), industrial use (7%), and roadways (4%). The majority of the remaining area is open space (16%) (RWQCB, 2002).

Table 1-3. Estimated Drainage Areas

Watershed	Monitoring Locations	Drainage Areas (acres)
North Fork	SD8(1)	6,198
South Fork	DPR2	5,825

1.9 Rainfall Data

As previously mentioned, Order R9-2004-0277 requires monitoring to be performed at sites SD8(1) and DPR2 for the 1st and 2nd rainfall events of the storm season and the first rainfall after February 1st. Estimation of a representative storm event in the San Diego region was based on the statistical evaluation of the long-term data records from the National Weather Service rain gauge located at Lindbergh Field. Based on the results of this statistical analysis, the "typical" storm event at Lindbergh Field yields 0.19 to 0.57 inches of rain and lasts 6 to 12 hours. Since the depth and duration of a typical storm event varies in different parts of the county where monitoring stations are located, storm events that were preceded by 72 hours of dry weather and were forecast to be greater than 0.10 inches were considered viable events for monitoring.

1.10 Rainfall Data 2006-2007

The total rainfall for the 2006-2007 monitoring year shows that representative storm events that were suitable to monitor occurred in October, January, and February. Figure 1-2 through Figure 1-4 summarize the daily rainfall totals and distributions within San Diego County and specifically for Chollas Creek. The monitored storm event was preceded by at least 72 hours of dry weather. The area received an average rainfall of 5.70 inches for the year. The total annual volumes of water received at the DPR2 and SD8(1) mass loading stations respectively were estimated at 120,525,075 ft^3 and 128,242,818 ft^3. Three storm events were monitored as part of the program on October 14th 2006, December 10th 2006, and February 19th 2007.

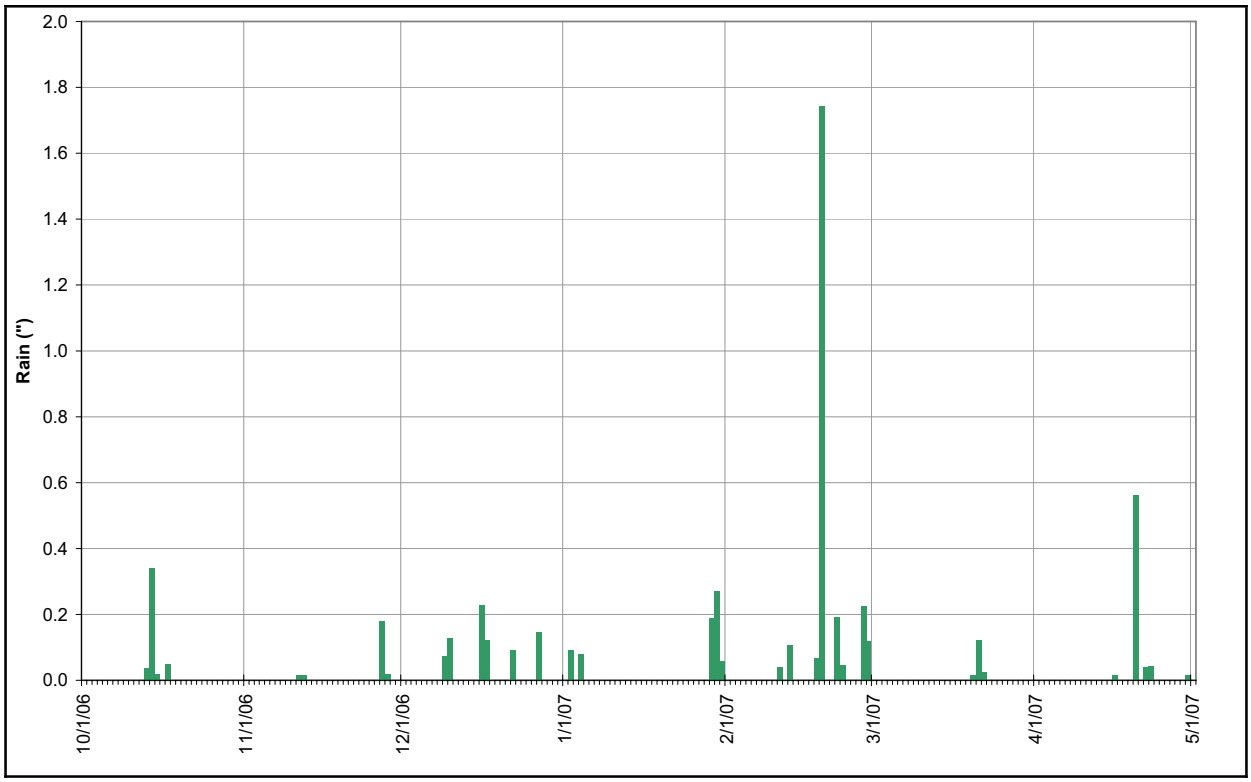

Figure 1-2. 2006-2007 Rainfall Totals (inches) for the Chollas Creek Watershed

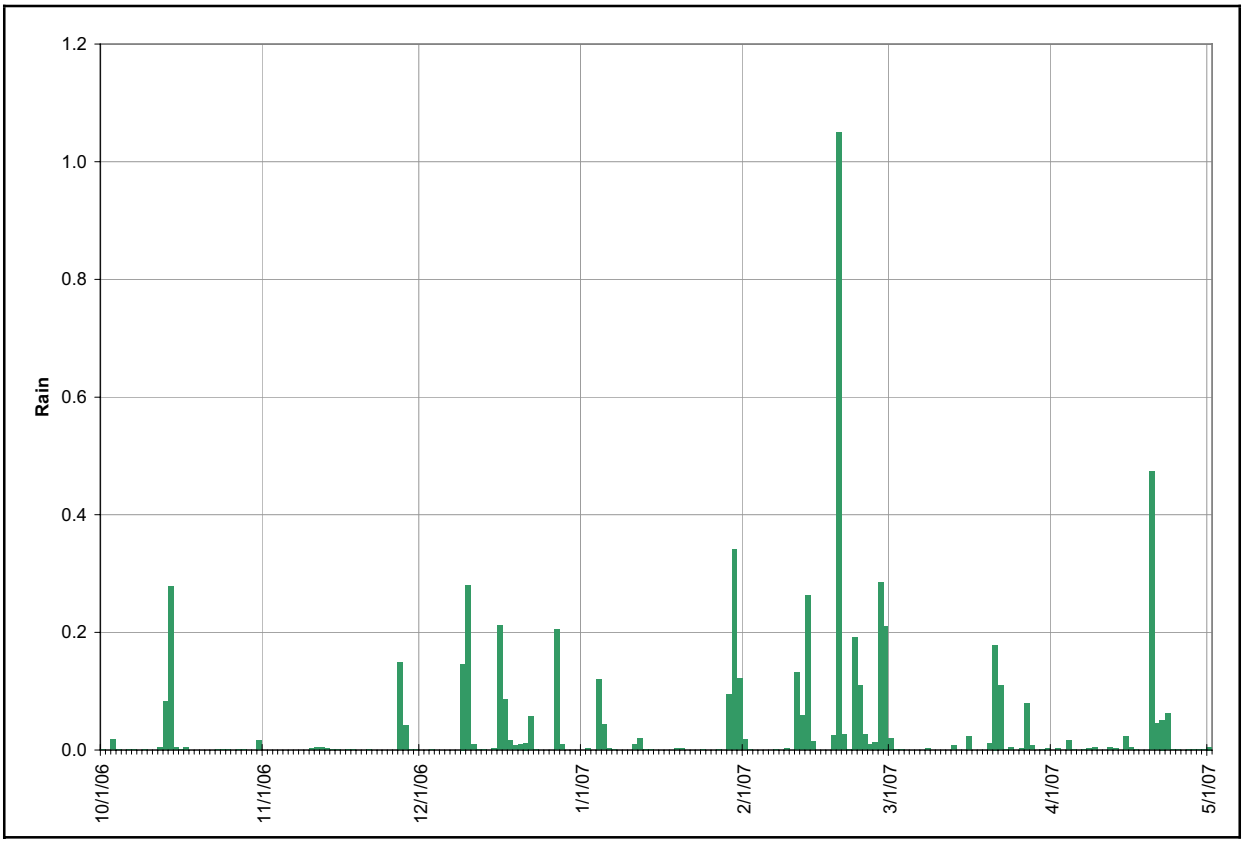

Figure 1-3. 2006-2007 Rainfall Totals (inches) for San Diego County

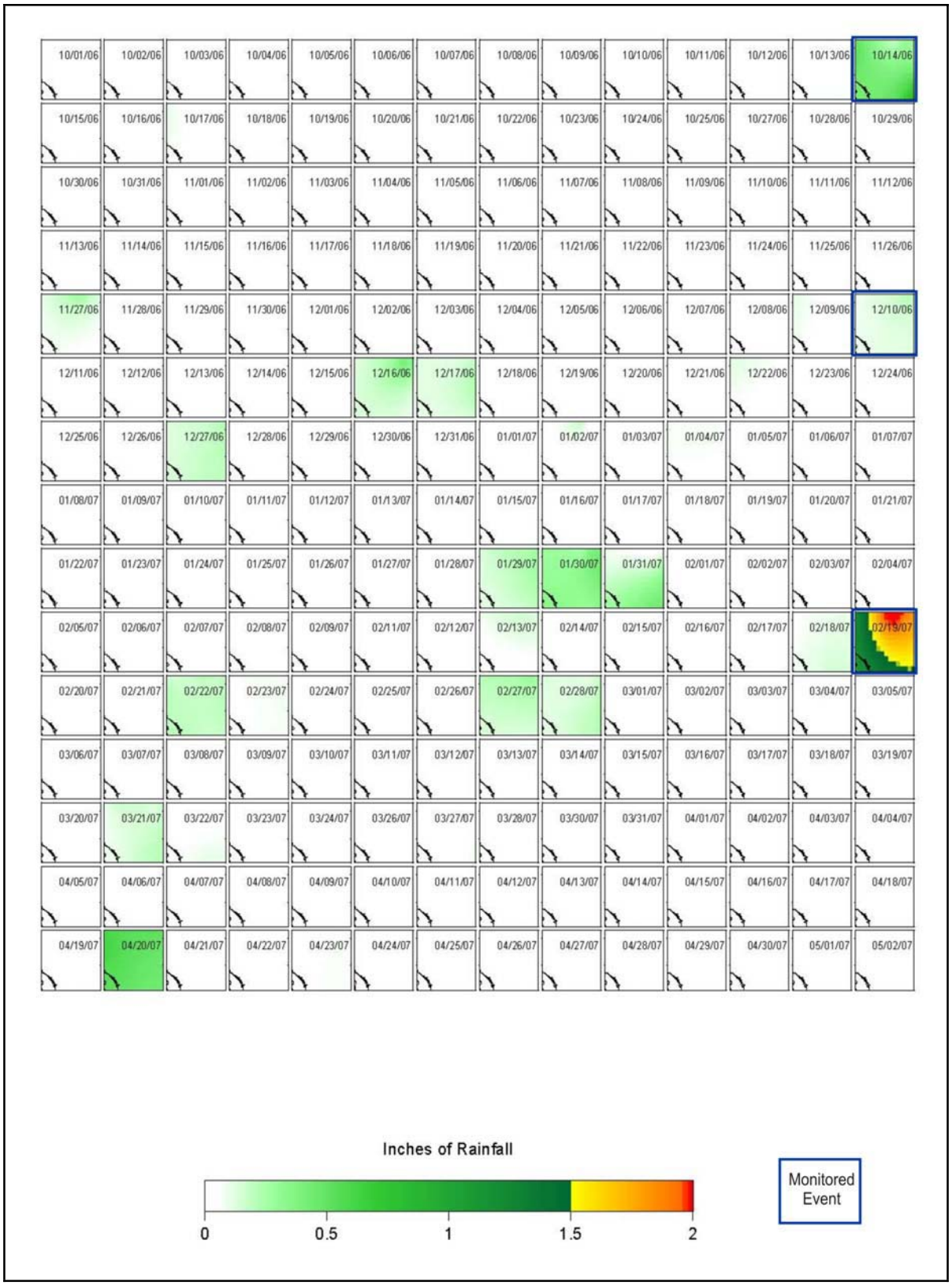

Figure 1-4. Rainfall Events and Distribution for DPR2 and SD8(1) During the 2006-2007 Wet Weather Monitoring Period

2.0 SAMPLING AND ANALYTICAL METHODS

2.1 Sampling Methods

Storm water runoff was collected using flow-weighted composite techniques over the duration of runoff. Sample collection was terminated when the storm flow returned to near 10 % of the base flow condition, upon the end of the precipitation event, and cessation of storm water flow.

2.2 Storm Water Quality Monitoring

Automated flow and sampling equipment were installed at each site to collect flow-weighted composite samples during storm events. American Sigma flow meters with pressure transducers or bubblers were used to measure velocity and stage height. The flow sensors were installed on the channel bottom in the center of the channel.

Using the data collected by the flow meters, sample intervals were set to collect approximately 40-liters of water throughout the storm event. The sample intake point was located adjacent to the flow meter, on the channel bottom in the center of the channel. American Sigma automated samplers were used to collect 1-liter sample grabs at a flow dependent rate. The 1-liter grabs were composited into 20-liter borosilicate glass sample bottles.

The automated sampler collects grab samples via a peristaltic pumping mechanism. Water samples are pumped through a Teflon intake device and Teflon tubing into a 20-liter borosilicate glass sample bottle. Bottles were kept on ice during the storm event. Field crews maintained and replaced the sampling bottles as they filled to capacity. Multiple bottles are composited at Weston's facility and subsampled for delivery to the laboratory for chemistry and bioassay toxicity analyses.

Flow-weighted composite samples were collected and analyzed for the constituents listed in Table 2-1. Bioassay samples were collected for acute and chronic toxicity analyses using the organism *C. dubia* and acute toxicity to *Hyalella azteca*.

Grab samples were collected for those constituents that are not conducive to automated composite sampling. These constituents are pH, temperature, conductivity and fecal indicator bacteria (Table 2-1). Grab samples were collected from the horizontal and vertical center of the channel where possible.

A field data log was completed at each site (Appendix B). The field data log includes empirical observations of the site and water quality characteristics. Observations include parameters such as meteorological conditions at time of sampling; odor, color, and general turbidity of the runoff; and changes in vegetation condition or erosion along the channel's side slope.

Table 2-1. Water Quality Analytical Parameters for the DPR2 and SD8(1) Sites

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical, temperature, light protected)	Maximum Holding Time: Preparation/ Analysis
pH	N/A	N/A	Analyzed in Field	N/A	N/A
Temperature	N/A	N/A	Analyzed in Field	N/A	N/A
Conductivity	N/A	N/A	Analyzed in Field	N/A	N/A
Total Coliform	SM 9221 B, E	100 ml	Plastic	Store Cool at <4ºC	6 Hours
Fecal Coliform	SM 9221 B, E	100 ml	Plastic	Store Cool at <4ºC	6 Hours
Enterococci	SM 9320	100 ml	Plastic	Store Cool at <4ºC	6 Hours
TSS	SM 2540D	1L	Plastic	Store Cool at <4ºC	7 Days
Total Hardness	SM 2340-B	100 mL	Plastic	HNO_3	6 Months
Nitrate - N	SM 4500-NO_3	100 mL	Plastic or Glass	Store Cool at <4ºC	48 Hours
Nitrite - N	SM 4500-NO_2	100 mL	Plastic or Glass	Store Cool at <4ºC	48 Hours
TKN	EPA 351.3	500 mL	Amber Glass	Acidify to <2 with H_2S0_4	28 Days
Ammonia - N	SM 4500-NH_3	250 mL	Plastic or Glass	Acidify to <2 with H_2S0_4	28 Days
TOC	EPA 415.1	250 mL	Clear Glass	Acidify to <2 with H_2S0_4	28 Days
Organophosphorus Pesticides	EPA 625	2L	Amber Glass	Store Cool at <4ºC	Extraction-7 Days Analysis-40 Days
Synthetic Pyrethroids	EPA 625-NCI	2L	Amber Glass	Store Cool at <4ºC	Extraction-7 Days Analysis-40 Days
Total & Dissolved Cadmium	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Total & Dissolved Copper	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Total & Dissolved Lead	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Total & Dissolved Zinc	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Acute Toxicity *C. Dubia* and *H. Azteca*	EPA 821-R-02-012	10L	10L Glass	Store Cool at <6ºC	36 Hours
Chronic Toxicity *C. Dubia*	EPA 821-R-02-013	20L	20L Glass	Store Cool at <6ºC	36 Hours

2.3 QA/QC Procedures

Field measurements for pH, conductivity, and temperature were made using an Oakton CON10 pH/temperature/conductivity meter according to manufacturer's specifications. Calibration of the instruments was conducted prior to each sampling event.

Quality assurance and quality control (QA/QC) for sampling processes included proper collection of the samples in order to minimize the possibility of contamination. All samples were collected in laboratory supplied, laboratory-certified, contaminant free sample bottles while wearing powder free nitrile gloves. All sampling personnel were trained according to the field sampling SOPs. Field staff was made aware of the significance of the project detection limits and the requirement to avoid contamination of samples at all times.

A temperature blank was utilized to ensure sample holding temperatures were maintained from sample collection to delivering to the laboratory.

2.4 Chain-of-Custody Procedures

Chain-of-custody (COC) procedures were used for all samples throughout the collection, transport, and analytical process. Samples were considered to be in custody if they were (1) in the custodian's possession or view, (2) retained in a secured place (under lock) with restricted access, or (3) placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal. The principal documents used to identify samples and to document possession were COC records, field logbooks, and field tracking forms.

The COC procedures were initiated during sample collection. A COC record was provided with each sample or group of samples. Each person who had custody of the samples signed the form and ensured the samples were not left unattended unless properly secured. Documentation of sample handling and custody included the following:

- Sample identifier
- Sample collection date and time
- Any special notations on sample characteristics or analysis
- Initials of the person collecting the sample
- Date the sample was sent to the analytical laboratory
- Shipping company and waybill information.

Completed COC forms were placed in a plastic envelope and kept inside the container with the samples. Once delivered to the analytical laboratory, the COC form was signed by the person receiving the samples. The condition of the samples (i.e., confirming all samples were accounted for and properly labeled, the temperature of the samples, and integrity of the sample jars) was noted and recorded by the receiver. COC records were included in the final reports prepared by the analytical laboratories and are considered an integral part of the report.

3.0 MONITORING RESULTS AND ASSESSMENT

This section presents the water quality monitoring results for sites DPR2 and SD8(1) to satisfy the requirements of RWQCB Order No. R9-2004-0277. The criteria for which results are assessed are also presented.

3.1 Water Quality Criteria

Water chemistry results will be compared to criteria from the following references to determine the magnitude of any impacts from storm water runoff to Chollas Creek:

- Water Quality Control Plan (Basin Plan, RWQCB, 1994) for the San Diego Region
- Title 40 of the Code of Federal Regulations (Part 131; Water Quality Standards) (USEPA, 2000a)
- The National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit (USEPA, 2000b)
- Water quality criteria for diazinon, chlorpyrifos, and malathion (CDFG, 2000)

Table 3-1 lists the constituents that were monitored during this project and their respective water quality objectives.

Table 3-1. Water Quality Criteria

Constituent	Criteria	Source
Water Samples		
pH	6.5 – 8.5	Basin Plan (RWQCB, 1994)
Conductivity	-	
Temperature	-	
Total Coliform	-	-
Fecal Coliform	4000	Basin Plan (RWQCB, 1994)
Enterococci	-	-
Total Organic Carbon (TOC)	50 mg/L	Multi-Sector General Permit (USEPA, 2000b)
Total Suspended Solids (TSS)	100 mg/L	Multi-Sector General Permit (USEPA, 2000b)
Total and Dissolved Cadmium	(a)	40 CFR 131 (USEPA, 2000a)
Total and Dissolved Copper	(a)	40 CFR 131 (USEPA, 2000a)
Total and Dissolved Lead	(a)	40 CFR 131 (USEPA, 2000a)
Total and Dissolved Zinc	(a)	40 CFR 131 (USEPA, 2000a)
Hardness	-	
Diazinon	72 ng/L/45 ng/L	Resolution No. R9-2002-0123(b)
Chlorpyrifos	20 ng/L	CDFG (2000)
Malathion	430 ng/L	CDFG (2000)
Ammonia (unionized)	0.025 mg/L	Basin Plan (RWQCB, 1994)
Nitrate	10 mg/L	Basin Plan (RWQCB, 1994)
Nitrite	1 mg/L	Basin Plan (RWQCB, 1994)
Total Kjeldahl Nitrogen (TKN)	-	-
Acute Toxicity *Ceriodaphnia dubia*	LC_{50}	-
Acute toxicity *Hyalella azteca*	100 NOEC (%)	-

Constituent	Criteria	Source
Chronic Toxicity *Ceriodaphnia dubia*	100 NOEC (%)	-

(a) Water Quality Objective for total and dissolved metal fractions are based on Total Hardness (as CaCO3) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). Samples are compared to both the acute (CMC) and Chronic (CCC) criteria.
(b) For the Chollas Creek TMDL (Resolution No. R9-2002-0123), the WLA is set at 72 ng/L for acute exposures and 45 ng/L for chronic exposures. The 45 ng/L chronic exposure is applied to samples collected using a flow weighted composite method.

3.2 Sampling Summary

Samples of urban runoff were collected from three storm event during the 2006-2007 wet weather monitoring season (10/14/2006, 12/10/2006 and 02/19/2007). The storm event was considered viable for monitoring if it achieved greater than 0.1 inches of rainfall and was expected to create measurable run-off. Flow-weighted composite samples were collected at the initial flush of runoff and sampling continued throughout the entirety of the storm event. Hydrographs from the monitored storm events for the DPR2 and SD8(1) sites are presented in Figure 3-1 through Figure 3-6.

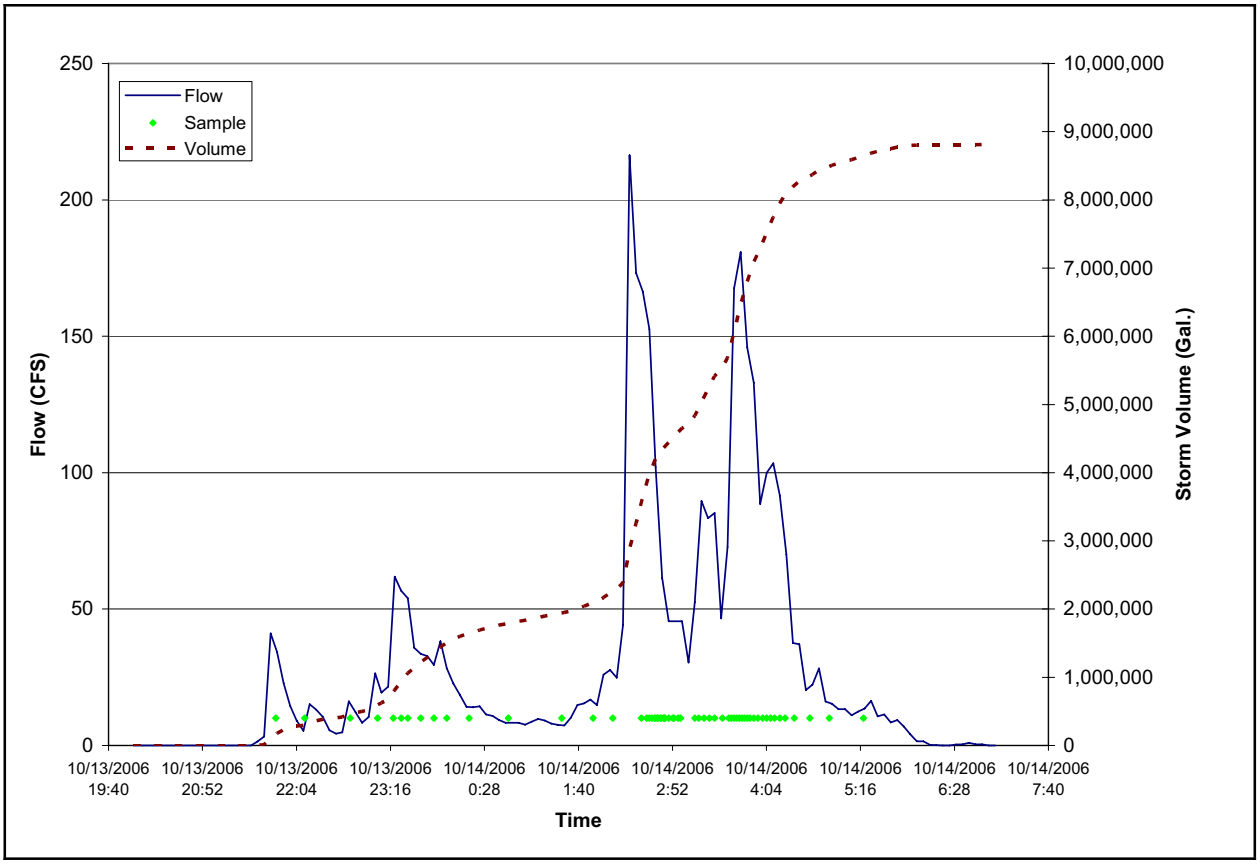

Figure 3-1. Chollas Creek North Fork Downstream Mass Loading Station – SD8(1), October 14, 2006

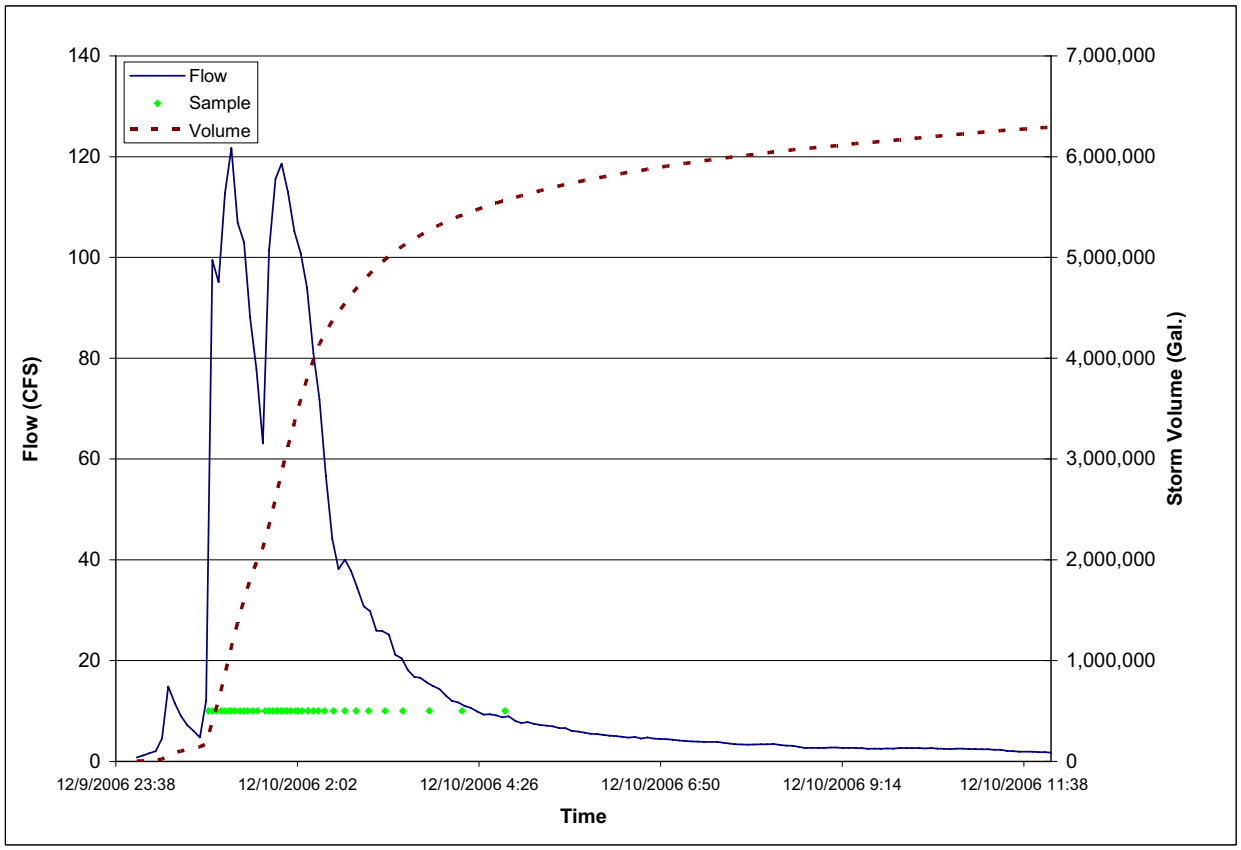

Figure 3-2. Chollas Creek North Fork Downstream Mass Loading Station – SD8(1), December 10, 2006

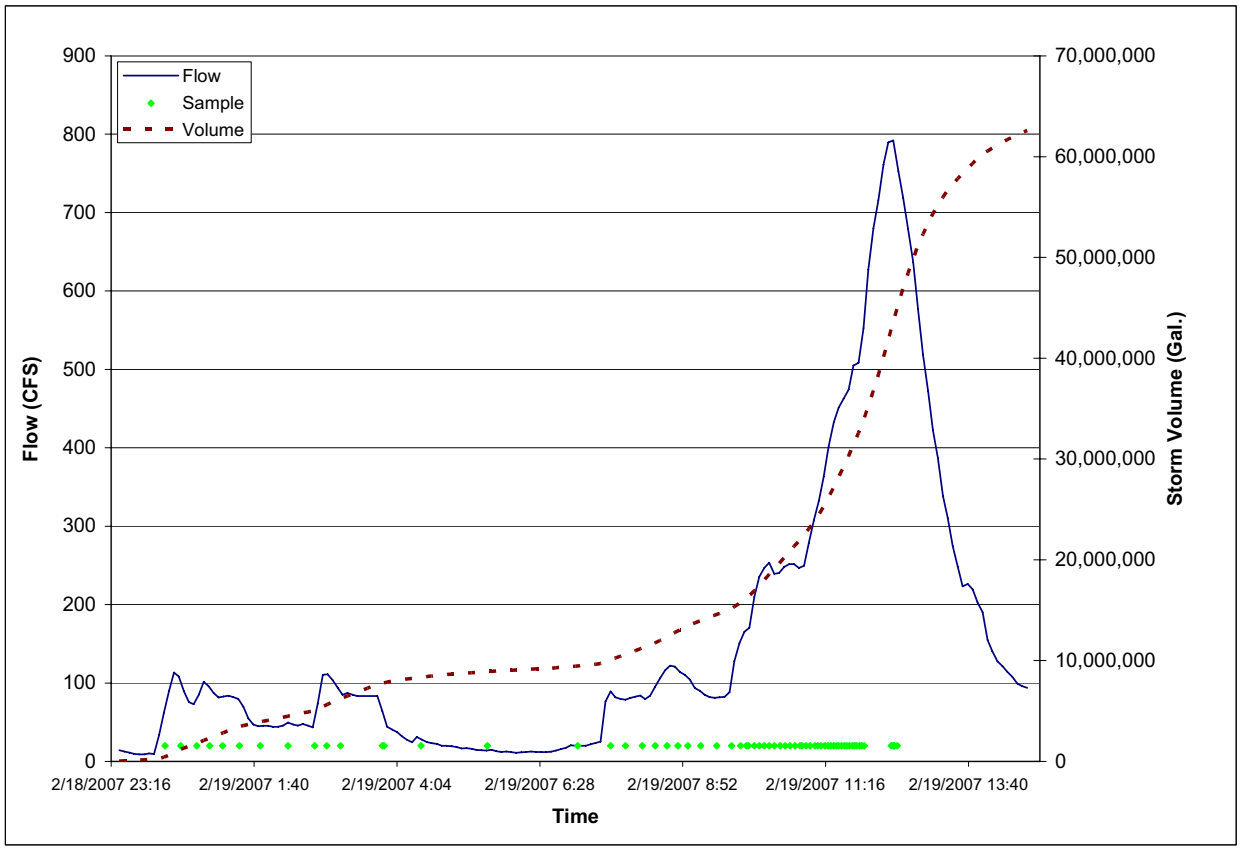

Figure 3-3. Chollas Creek North Fork Downstream Mass Loading Station – SD8(1), February 19, 2007

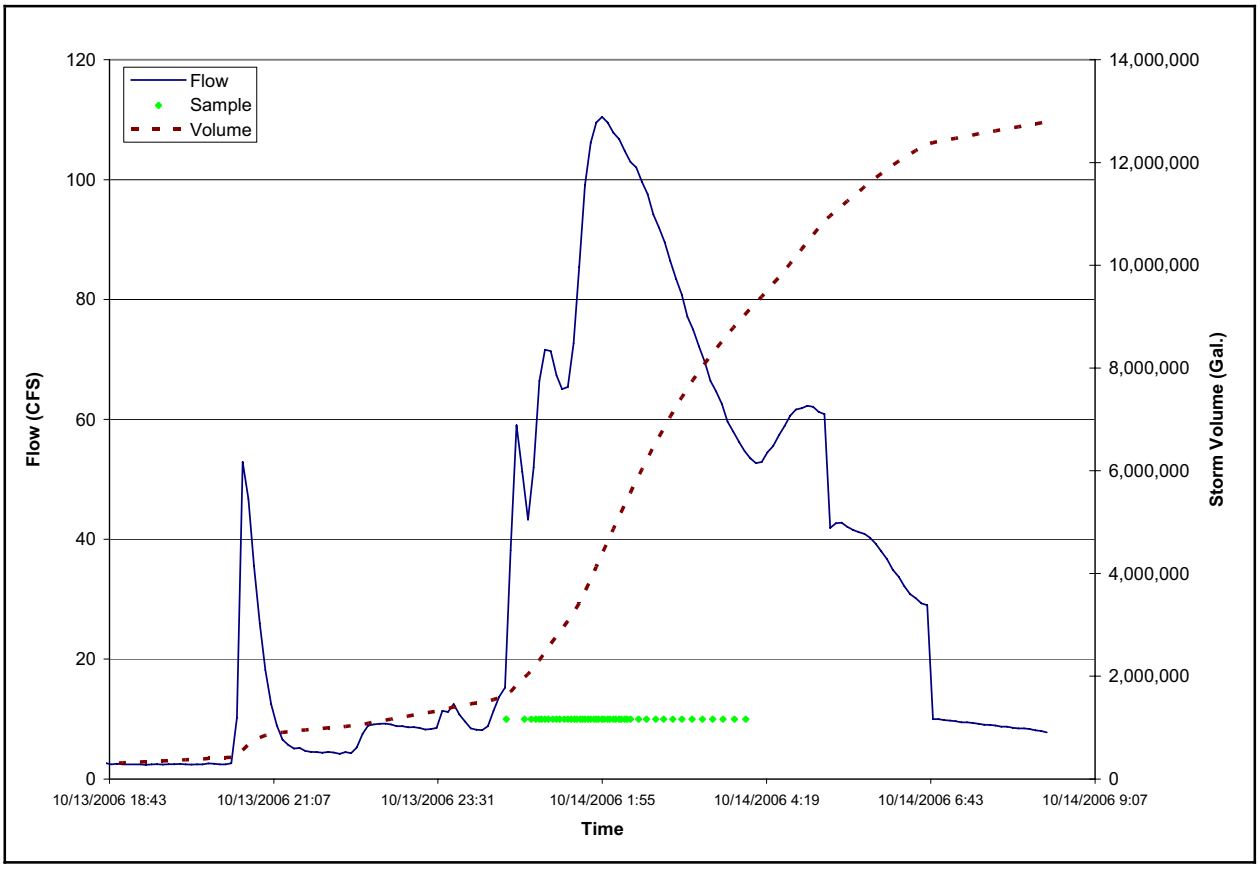

Figure 3-4. Chollas Creek South Fork Downstream – DPR2 Mass Loading Station, October 14, 2006

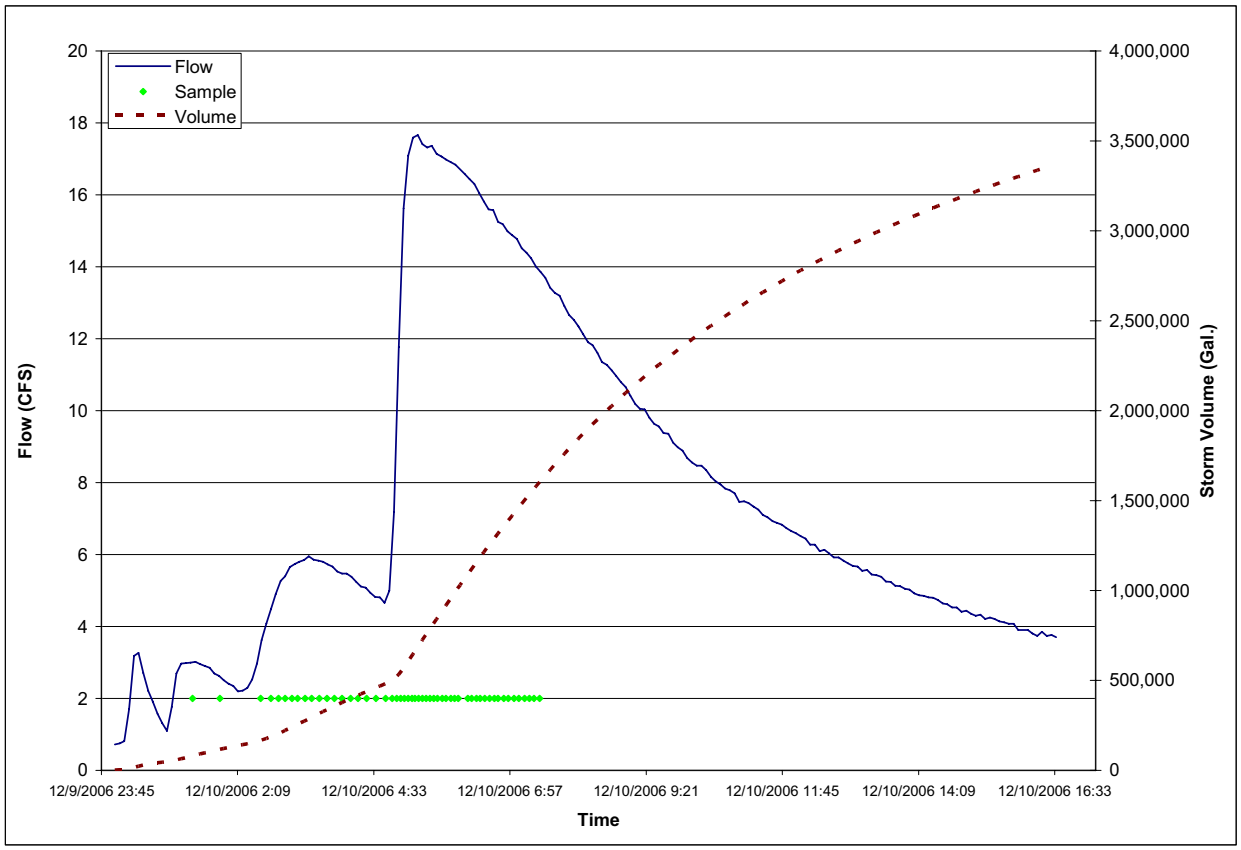

Figure 3-5. Chollas Creek South Fork Downstream – DPR2 Mass Loading Station, December 10, 2006

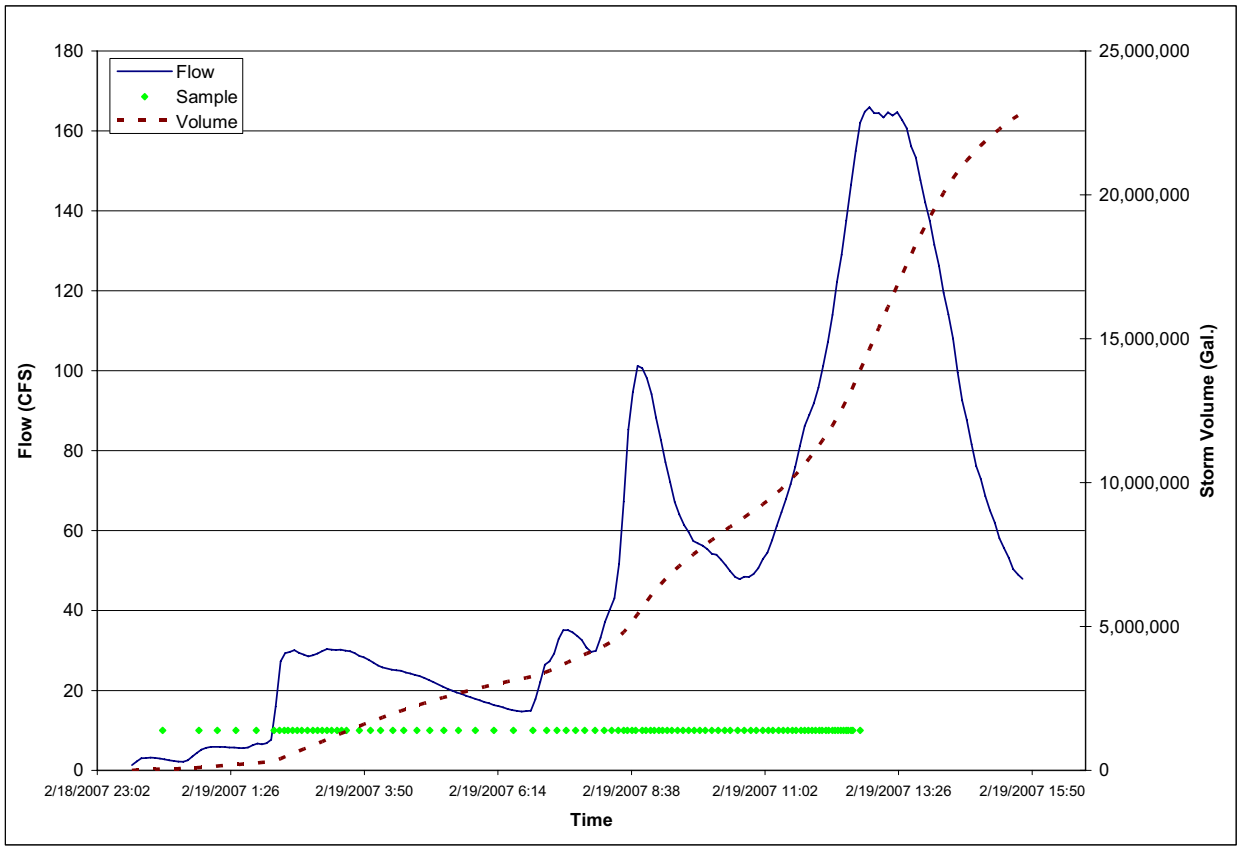

Figure 3-6. Chollas Creek South Fork Downstream – DPR2 Mass Loading Station, February 19, 2007

3.3 Sample Results and Discussion

The bacteria, chemistry, and biological toxicity results for the storm events monitored are presented in Table 3-2 through Table 3-4 respectively. Sample results were compared to the water quality objective benchmark (WQO) in Table 3-1. Values above the WQO are bolded and shaded.

Bacteria

DPR2 Fecal Coliform counts were higher than the Basin Plan's WQO of 4,000 MPN/100 ml for all events sampled. Total Coliform results ranged between 110,000 and 500,000 for the three storm events monitored. Enterococcus results ranged between 50,000 and 230,000 for the same storms. Bacteria results at SD8(1) were above the WQO for two of the three storms monitored. Total coliform and enterococcus results were slightly lower than the south fork site DPR2 but were within the same order of magnitude.

Chemistry

Sample results for general chemistry were above the WQO for total organic carbon (TOC) during the first monitoring event (10/14/2006) at both sites SD8(1) and DPR2. Total suspended solids were above the WQO at both sites during the third monitoring event (2/19/07) which was

also the largest rainfall event of the three storms monitored. All other general chemistry results were below their respective WQO.

Diazinon was above the TMDL waste load allocation (WLA) of 0.45 µg/L during the first storm event (10/14/06) at site SD8(1). This is the first value measured above the TMDL WLA in the past three monitoring years at this site. The TMDL allows for one exceedance every three years. Diazinon was not detected during any other storm event or at site DPR2 during the 2006-2007 monitoring season. Malathion was detected during all storm events at both sites and was above the WQO at site DPR2 and SD8(1) on the first monitoring event (10/14/06). All other organophosphate pesticides analyzed were below their respective detection limits.

Several synthetic pyrethroids were detected during all three storm events at both sites DRP2 and SD8(1). Several values were above the published literature values for LC50s for *Hyalella azteca*. Toxicity identification evaluations performed during the 2005-2006 monitoring period as part of the Regional Monitoring Program identified synthetic pyrethroids as the causative agent of toxicity to *Hyalella azteca* (Weston, 2007). Based on these findings, synthetic pyrethroids and toxicity to *H. azteca* were added as part of the analytical constituent list.

Several metals were detected during the 2006-2007 monitoring period and were similar to historical values detected in the watershed. Total copper and total lead were above the hardness based WQO during all events at both sites SD8(1) and DPR2. Total zinc was above the WQO during two events at site SD8(1) (12/10/06 and 2/19/07 respectively) and one event at site DPR2 (2/19/07). Total cadmium was above the WQO at site SD8(1) during the first two monitoring events. Dissolved copper was above the WQO during all three sample events at site SD8(1) and during one event only at site DPR2. Dissolved lead was above the WQO during the first event at site SD8(1) (10/14/06) and the last event at site DPR2 (2/19/07). Dissolved zinc and dissolved cadmium were below their respective WQO during all monitoring events at both sites.

For ease of comparison to the hardness based water quality objective, the total and dissolved metals results were divided by their respective WQO and are presented in Figure 3-7. This figure presents the magnitude to which the results are above or below the WQO and also shows the mean, upper 25th percentile, and lower 25th percentiles of the historical data (in gray). Chronic WQOs for total and dissolved metals were calculated for each monitoring event at SD8(1) and DPR2, during the current sampling year (2006-2007) and are graphed along with the average WQO ratio. The average WQO ratio for SD8(1) is for the time period of 2001-2007, and for DPR2 2004-2007.

During the current monitoring year, total metals ratios tended to be higher at SD8(1) when compared to DPR2. However, for the third storm of the year (2/19/07) both stations had similar ratios to WQO for total copper, lead, and zinc. Dissolved metals were generally similar to the historical mean WQO ratios for both sites.

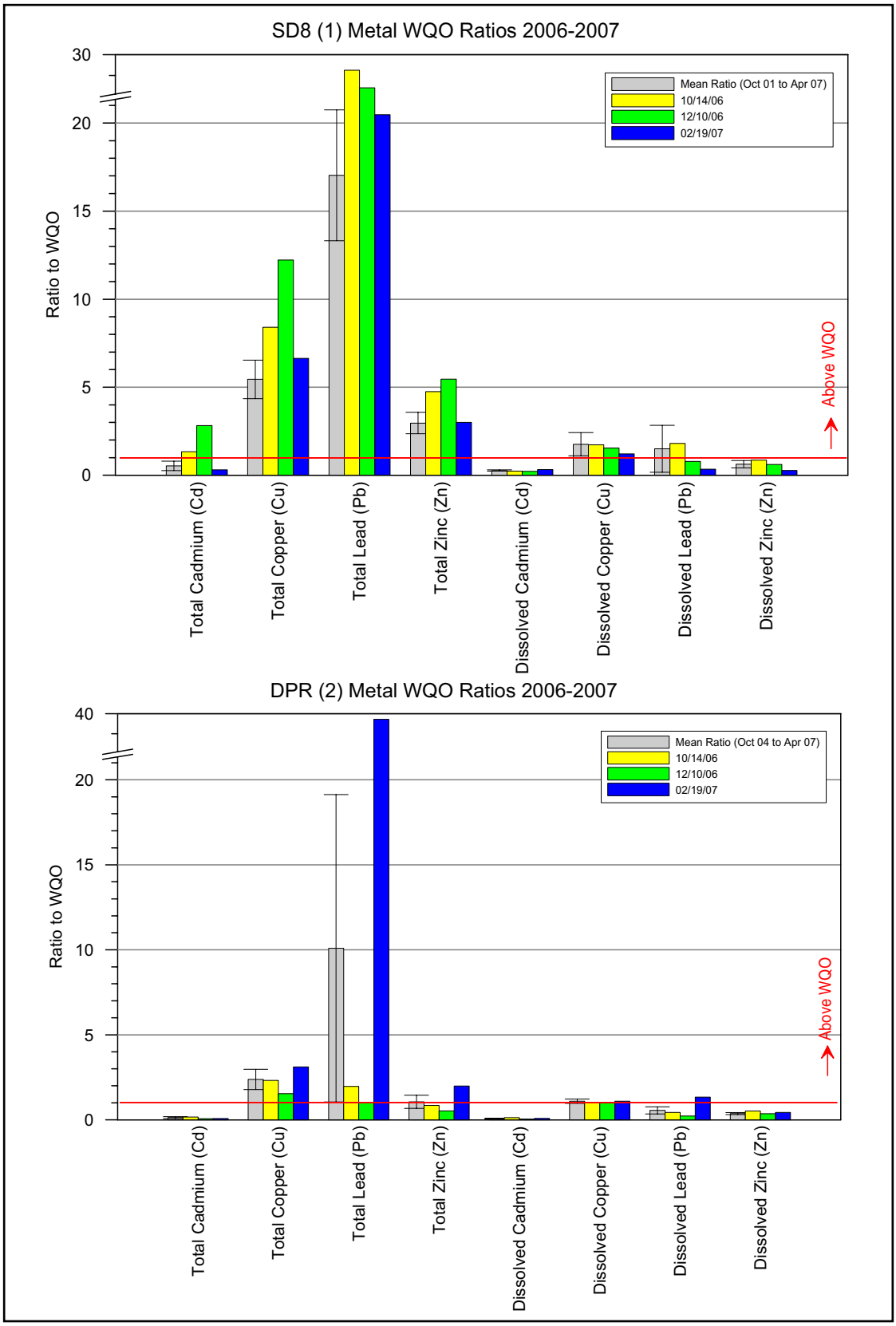

Figure 3-7. Chollas Creek 2006-2007 metals water quality ratios for sites SD8(1) and DPR2.

Toxicity

Toxicity results are presented in Table 3-3 and Table 3-4 for *Ceriodaphnia dubia* and *Hyalella azteca* respectively. RWQCB Order No. R9-2004-0277 requires the Watershed Copermittees to analyze for toxicity to *Ceriodaphnia dubia.* Toxicity to *Hyalella azteca* has been added due to the noted shift in pesticide use from diazinon to synthetic pyrethroids and the resulting toxic effects observed to this organism. Acute toxicity to *Ceriodaphnia dubia* was not observed at either site DPR2 or SD8(1) during the 2006-2007 monitoring season. However, chronic survival toxicity was observed at both sites DPR2 and SD8(1) during the first rainfall event on 10/14/2006 (NOEC=50% for both sites). Reproductive toxicity was observed during the first event only at site DPR2 (NOEC=50%). Diazinon was above the WQO during one storm event at site SD8(1) during the first storm event but below the effects threshold value of 250 ng/L that has been observed to cause acute toxicity to *Ceriodaphnia dubia* (Weston, 2006). Malathion was also above the WQO during the first storm event at both SD8(1) and DPR2. Several synthetic pyrethroids were detected at both location and the possible synergistic effects may play a role in chronic and reproductive toxicity observed to *Ceriodaphnia dubia*.

Toxicity to *Hyalella azteca* was observed at site SD8(1) during all three events monitored. Toxicity to *Hyalella azteca* was observed at site DPR2 was observed during the first rainfall event on 10/14/06 and the third rainfall event monitored on 2/19/07. Toxicity was greatest at site SD8(1) during the first rainfall event and in comparison to results from site DPR2. The higher toxicity to *Hyalella azteca* during the 10/18/06 event at site SD8(1) is likely due to the combination of the pesticides detected (diazinon, malathion, and synthetic pyrethroids) during this event.

Table 3-2. Chemistry Analytical Results for Site DPR2 and Site SD8(1)

Parameters	Fraction	Units	MDL	RL	DPR (2)			SD8 (1)		
					10/14/2006	12/10/2006	2/19/2007	10/14/2006	12/10/2006	2/19/2007
Field Measurement										
pH		pH units	-	-	7.33	7.60	7.84	8.09	8.40	7.80
Conductivity		µS/cm	-	-	693*	579	326	319	239	1890
Temperature		°C	-	-	17.0	12.4	12.8	17.9	14.3	13.7
Bacteria										
Total Coliform	Total	MPN/100ml	20	20	230,000	110,000	500,000	50,000	80,000	110,000
Fecal Coliform	Total	MPN/100ml	20	20	**17,000**	**50,000**	**22,000**	**23,000**	**3,000**	**8,000**
Enterococci	Total	MPN/100ml	20	20	220,000	50,000	230,000	90,000	130,000	50,000
General Chemistry										
TOC	Total	mg/L	2	2	**73.0**	43.0	16.0	**64.0**	33.3	11.3
TKN	Total	mg/L	0.5	0.5	7.10	3.10	2.20	4.20	4.50	3.70
Ammonia-N	Total	mg/L	0.01	0.05	0.59	0.42	0.40	1.64	2.12	1.53
Nitrate-N	Total	mg/L	0.02	0.05	1.40	1.39	0.67	2.40	0.27	<0.05
Nitrite-N	Total	mg/L	0.02	0.05	0.06	0.06	0.06	0.10	0.06	0.07
Total Hardness as $CaCO_3$	Total	mg/L	1	5	160	113	44.3	89.0	101	60.0
Total Suspended Solids	Total	mg/L	0.5	0.5	74.0	15.5	**106**	438	418	**239**
Oil and Grease		mg/L	1	5	<1	J 2.4	J 2.6	<5	<5	<5
Organophosphorus Pesticides										
Bolstar (Sulprofos)	Total	ng/L	2	4	<2	<2	<2	<2	<2	<2
Chloropyrifos	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Demeton	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Diazinon	Total	ng/L	2	4	<2	<2	<2	**100**	<2	<2
Dichlorvos	Total	ng/L	3	6	<3	<3	<3	<3	<3	<3
Dimethoate	Total	ng/L	3	6	<3	<3	<3	<3	<3	<3
Disulfoton	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Ethoprop (Ethoprofos)	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Fenchlorphos (Ronnel)	Total	ng/L	2	4	<2	<2	<2	<2	<2	<2
Fensulfothion	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Fenthion	Total	ng/L	2	4	<2	<2	<2	<2	<2	<2
Malathion	Total	ng/L	3	6	**535**	92.4	147	**949**	270	95.0
Merphos	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Methyl Parathion	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Mevinphos (Phosdrin)	Total	ng/L	8	16	<8	<8	<8	<8	<8	<8
Phorate	Total	ng/L	6	12	<6	<6	<6	<6	<6	<6
Tetrachlorvinphos (Stirofos)	Total	ng/L	2	4	<2	<2	<2	<2	<2	<2
Tokuthion	Total	ng/L	3	6	<3	<3	<3	<3	<3	<3
Trichloronate	Total	ng/L	1	2	<1	<1	<1	<1	<1	<1
Synthetic Pyrethroids										
Allethrin	Total	ng/L	0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bifenthrin	Total	ng/L	0.5	2	**11.9**	7.20	**374**	**90.0**	**57.0**	**398**
Cyfluthrin	Total	ng/L	0.5	2	5.48	21.0	87.0	191	354	165
Cypermethrin	Total	ng/L	0.5	2	10.6	**31.9**	**93.5**	**131**	**451**	**116**
Danitol	Total	ng/L	0.5	2	<0.5	7.90	<0.5	<0.5	<0.5	<0.5
Deltamethrin	Total	ng/L	0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Parameters	Fraction	Units	MDL	RL	DPR (2)			SD8 (1)		
					10/14/2006	12/10/2006	2/19/2007	10/14/2006	12/10/2006	2/19/2007
Esfenvalerate	Total	ng/L	0.5	2	<0.5	<0.5	6.70	<0.5	<0.5	5.00
Fenvalerate	Total	ng/L	0.5	2	<0.5	<0.5	3.90	<0.5	<0.5	3.00
L-Cyhalothrin	Total	ng/L	0.5	2	<0.5	8.70	42.1	<0.5	<0.5	0.31
Permethrin	Total	ng/L	0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prallethrin	Total	ng/L	0.5	2	4.10	3.50	<0.5	<0.5	287	10.6
Trace Metals										
Cadmium (Cd)	Dissolved	µg/L	0.20	0.40	0.40	<0.2	<0.2	<1.0	1.00	<1.0
Copper (Cu)	Dissolved	µg/L	0.40	0.80	13.7	9.80	**4.90**	**14.0**	**14.0**	**7.00**
Lead (Pb)	Dissolved	µg/L	0.10	0.50	1.80	0.65	**1.37**	**4.00**	2.00	<1.00
Zinc (Zn)	Dissolved	µg/L	0.10	0.50	92.0	47.0	25.5	92.0	72.0	21.0
Cadmium (Cd)	Total	µg/L	0.20	0.40	0.60	J 0.2	<0.2	**3.00**	**7.00**	<1.00
Copper (Cu)	Total	µg/L	0.40	0.80	**32.4**	**15.9**	**14.5**	**71.0**	**115**	**40.0**
Lead (Pb)	Total	µg/L	0.10	0.50	**11.4**	**3.80**	**42.0**	**72.0**	**71.0**	**34.0**
Zinc (Zn)	Total	µg/L	0.10	0.50	152	70.1	**120**	51.5	**659**	**233**
Metals WQO										
Cadmium (Cd)	Dissolved	µg/L	0.20	0.40	3.17	2.45	1.23	2.05	2.25	1.53
Copper (Cu)	Dissolved	µg/L	0.40	0.80	13.80	9.93	4.47	8.11	9.03	5.79
Lead (Pb)	Dissolved	µg/L	0.10	0.50	4.18	2.87	1.03	2.22	2.54	1.44
Zinc (Zn)	Dissolved	µg/L	0.10	0.50	175.93	130.83	59.26	107.03	119.14	76.63
Cadmium (Cd)	Total	µg/L	0.20	0.40	3.56	2.71	1.30	2.25	2.48	1.65
Copper (Cu)	Total	µg/L	0.40	0.80	13.94	10.34	4.65	8.44	9.41	6.03
Lead (Pb)	Total	µg/L	0.10	0.50	5.79	3.71	1.13	2.74	3.22	1.66
Zinc (Zn)	Total	µg/L	0.10	0.50	178.43	132.69	60.11	108.55	120.83	77.72

Bold and shaded values are above the WQO. Values for Bifenthrin and Cypermethrin are bold if above published LC50 values for *Hyalella azteca.*

* The value was incorporated from the composite sample from the bioassay sample results due to a field sampling error.

J = Value is above the laboratory method detection limit and below the reporting limit. The value is considered an estimate.

(a) Water Quality Objective for total and dissolved metal fractions are based on Total Hardness (as CaCO3) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA 2000). Samples are compared to both the acute (CMC) and Chronic (CCC) criteria.

(b) For the Chollas Creek TMDL (Resolution No. R9-2002-0123), the WLA is set at 72 ng/L for acute exposures and 45 ng/L for chronic exposures. The 45 ng/L chronic exposure is applied to samples collected using a flow weighted composite method.

Table 3-3. Biological Toxicity Results for *Ceriodaphnia dubia*

Test	Reporting Value	Unit	DPR2			SD8(1)		
			10/14/2006	12/10/2006	2/19/2007	10/14/2006	12/10/2006	2/19/2007
96-Hour Acute Toxicity (*C.dubia*)	Mean % Survival for Control	%	100	100	100	100	100	100
96-Hour Acute Toxicity (*C.dubia*)	% Survival in 100% Concentration	%	100	100	100	100	100	100
96-Hour Acute Toxicity (*C.dubia*)	LC_{50}	%	>100	>100	>100	>100	>100	>100
96-Hour Acute Toxicity (*C.dubia*)	LOEC	%	>100	>100	>100	>100	>100	>100
96-Hour Acute Toxicity (*C.dubia*)	TUa		0	0	0	0	0	0
96-Hour Acute Toxicity (*C.dubia*)	LT_{50}	Hours	>96	>96	>96	>96	>96	>96
7-Day Chronic Toxicity (*C.dubia*)	Mean % Survival for Control	%	100	100	100	100	100	100
7-Day Chronic Toxicity (*C.dubia*)	% Survival in 100% Concentration	%	**20**	100	90	**30**	>100	100
7-Day Chronic Toxicity (*C.dubia*)	LC_{50} (survival)	%	**77.11**	>100	>100	**82.03**	>100	>100
7-Day Chronic Toxicity (*C.dubia*)	NOEC (survival)	%	**50**	100	100	**50**	>100	100
7-Day Chronic Toxicity (*C.dubia*)	LOEC (survival)	%	**100**	>100	>100	**100**	>100	>100
7-Day Chronic Toxicity (*C.dubia*)	TUc (survival)		**2**	1	1	**1**	1	1
7-Day Chronic Toxicity (*C.dubia*)	LT_{50}	Hours	**169**	>168	>168	**180**	>168	>168
7-Day Chronic Toxicity (*C.dubia*)	NOEC (reproduction)	%	**50**	100	100	100	100	100
7-Day Chronic Toxicity (*C.dubia*)	LOEC (reproduction)	%	**100**	>100	>100	>100	>100	>100
7-Day Chronic Toxicity (*C.dubia*)	TUc (reproduction)		**2**	1	1	1	1	1

Bold and shaded values are above the WQO

Table 3-4. Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	DPR2			SD8(1)		
			10/14/2006	12/10/2006	2/19/2007	10/14/2006	12/10/2006	2/19/2007
96-Hour Acute Toxicity (*H.azteca*)	Mean % Survival for Control	%	100	100	100	100	87.5	100
96-Hour Acute Toxicity (*H.azteca*)	NOEC	%	**25**	100	**50**	**6.25**	**25**	**25**
96-Hour Acute Toxicity (*H.azteca*)	LC_{50}	%	**70.71**	>100	>100	**28.65**	**56.25**	**54.06**
96-Hour Acute Toxicity (*H.azteca*)	LOEC	%	**50**	>100	100	**12.5**	**50**	**50**
96-Hour Acute Toxicity (*H.azteca*)	TU_a		**1.41**	0.69	0.85	**3.49**	**1.78**	**1.85**

Bold and shaded values are above the WQO

3.3.1 Special Studies

Monitoring results from additional (special) studies conducted by the Chollas Watershed Copermittees, while directly related to the Chollas Creek Watershed, are outside of the current scope of the order requirements and are included as Appendices to this report. The City of San Diego has conducted two special studies as listed below:

- Appendix C (PDF on CD): Chollas Creek Jurisdictional Boundary Water Quality Monitoring Report (Weston Solutions, Inc., 2007).
- Appendix D (PDF on CD): City of San Diego Dry Weather Aerial Deposition Study (Weston Solutions, Inc., 2007)

The City of La Mesa conducted special studies in the north fork of Chollas Creek during dry and wet weather conditions. Monitoring was conducted for diazinon and total metals during the 2006-2007 wet weather monitoring season. Dry weather ambient monitoring was also conducted during the summer of 2007.

Time weighted composite sampling was conducted on 4/20/2007 during the last rainfall event of the season. Results for diazinon were below the detection limit (<0.04 µg/L) at the University Channel Discharge Point. Dissolved lead was below the detection limit (<0.001 mg/L). Dissolved copper (0.011 mg/L), lead (<0.001 mg/L) and zinc (0.054 mg/L) were all below the California Toxics Rule (CTR) hardness based acute and chronic concentration limits per Order 2004-0277 based on the sample hardness of 230 mg CaCO3/L.

During the special dry weather sampling (6/27/07), diazinon (<0.04 µg/L), dissolved lead (<0.001 mg/L) dissolved copper (<0.002 mg/L), and dissolved zinc (<0.01 mg/L) were all below their respective detection limits and metals were below the dissolved CTR acute and chronic limits.

The City of La Mesa is currently drafting a report which will be submitted to the State Water Resources Control Board at a later date.

3.4 Historical Data and Trend Analysis

Historical data have been collected at Site SD8(1) since 1994. Using the long term data set, a non-parametric trend analysis was conducted using the Mann-Kendall trend test to evaluate the presence or absence of significant trends using all available monitoring data. The Mann-Kendall trend analysis was also completed for the three years of data collected at DPR2. This trend test is often employed for analysis of environmental time series data. The test does not assume any single distribution for the data being tested, which is an advantage when analyzing environmental data. The test does not incorporate magnitude, but instead calculates the number of positive and negative differences between samples. The number of positive and negative differences is summed to calculate the S statistic, which is compared to a table value to determine significance.

Sen's estimate of slope is shown on the graphs below to illustrate the median trend of the data per constituent unit per year. This is not a predictive slope, but rather an estimate of the median true slope (change per unit time). This method is not affected by gross outliers or missing data.

Scatterplots with significant trends are shown in Figure 3-7 through Figure 3-10 . Note that because SD8(1) had significant trends, but DPR2 did not, there are no trend plots for DPR2. The results are presented by the constituent groups conventionals, pesticides, metals, and toxicity.

The trend analysis results for conventional constituents show significantly increasing trends for turbidity (S=228). The increasing trend for turbidity has a magnitude of 3.93 NTU/yr.

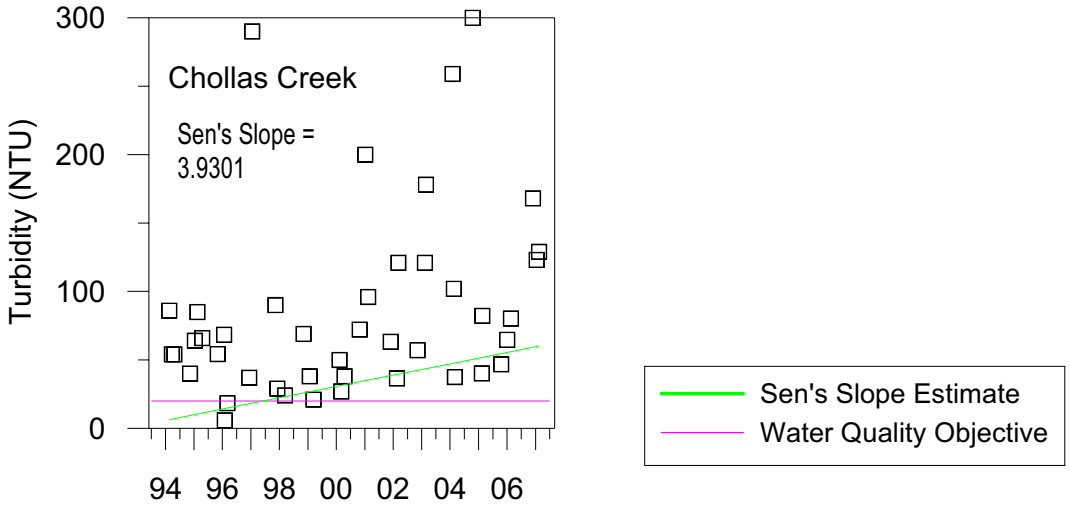

Figure 3-7. Scatterplots of conventional constituents with significant Mann-Kendall Trends and Sen's estimate of slope at the Chollas Creek MLS.

A review of the trend analysis for pesticide constituents indicates a significantly decreasing trend for Diazinon (S=-150) (Figure 3-8) over the monitoring period. However, the Diazinon dataset has greater than 15% non-detect values and so the magnitude of the trend is not reported.

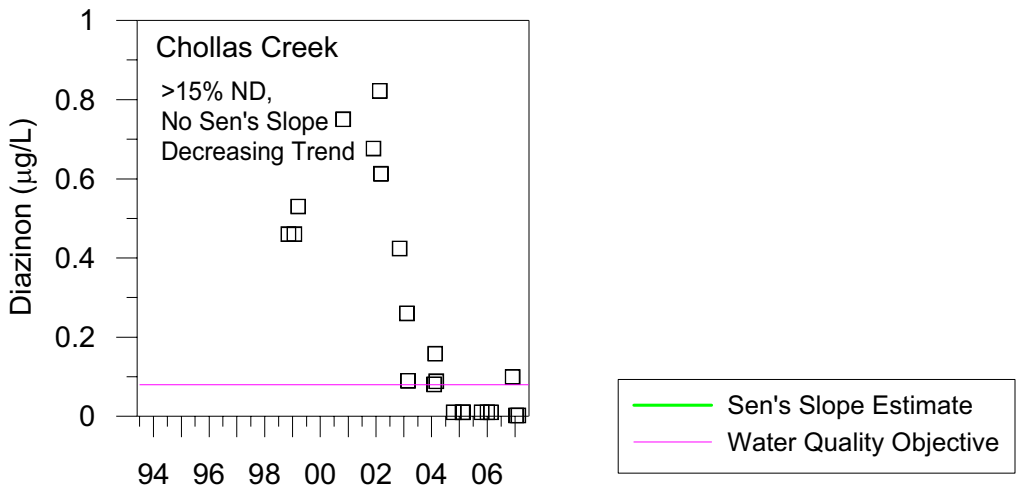

Figure 3-8. Scatterplots of pesticide constituents with significant Mann-Kendall Trends and Sen's estimate of slope at the Chollas Creek MLS.

A review of the trend analysis for metals constituents indicates a significantly increasing trend for total copper and total zinc. The trend for total copper (S=144) has a magnitude of 0.002 mg/L/yr. The trend for total zinc (S=177) has a magnitude of 0.015 mg/L/yr (Figure 3-9).

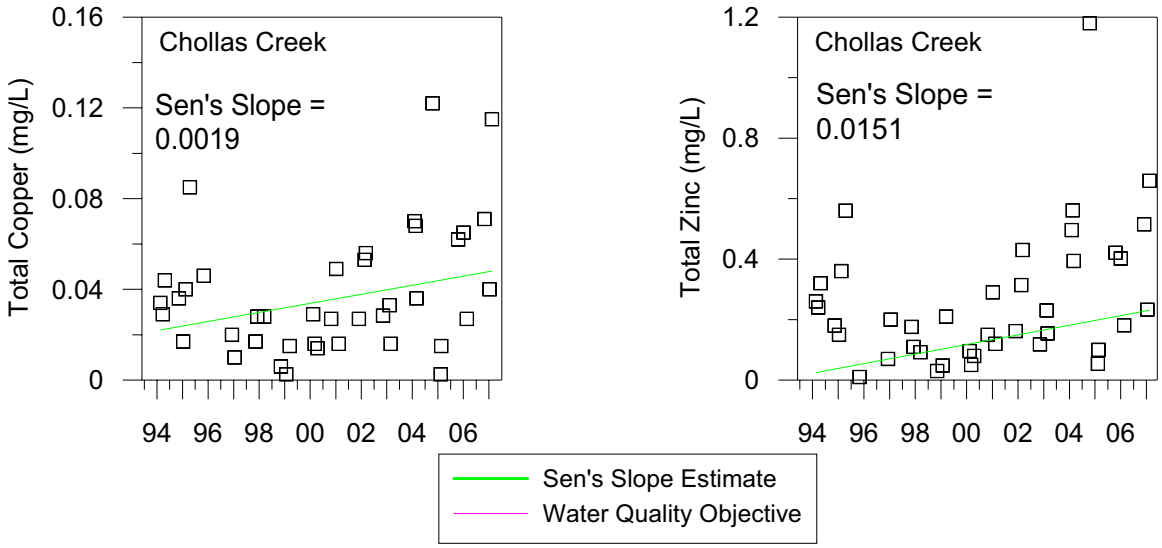

Figure 3-9. Scatterplots of metals constituents with significant Mann-Kendall Trends and Sen's estimate of slope at the Chollas Creek MLS.

A review of the trend analysis for toxicity indicates significantly decreasing trends for the acute *Ceriodaphnia* survival (S=-57), chronic *Ceriodaphnia* survival (-60) and *Ceriodaphnia* reproduction (-55) over the monitoring period. The magnitude of the trends are -2.58 LC50%/yr, -0.377 NOEC%/yr, and -0.033 NOEC%/yr, respectively (Figure 3-10). There is a significantly increasing trend for the acute *Hyalella* survival (S=59) over the monitoring period. The magnitude of the trend is 0.008 NOEC%/yr (Figure 3-10). These trends support the observed shift in pesticide use from diazinon to synthetic pyrethroids.

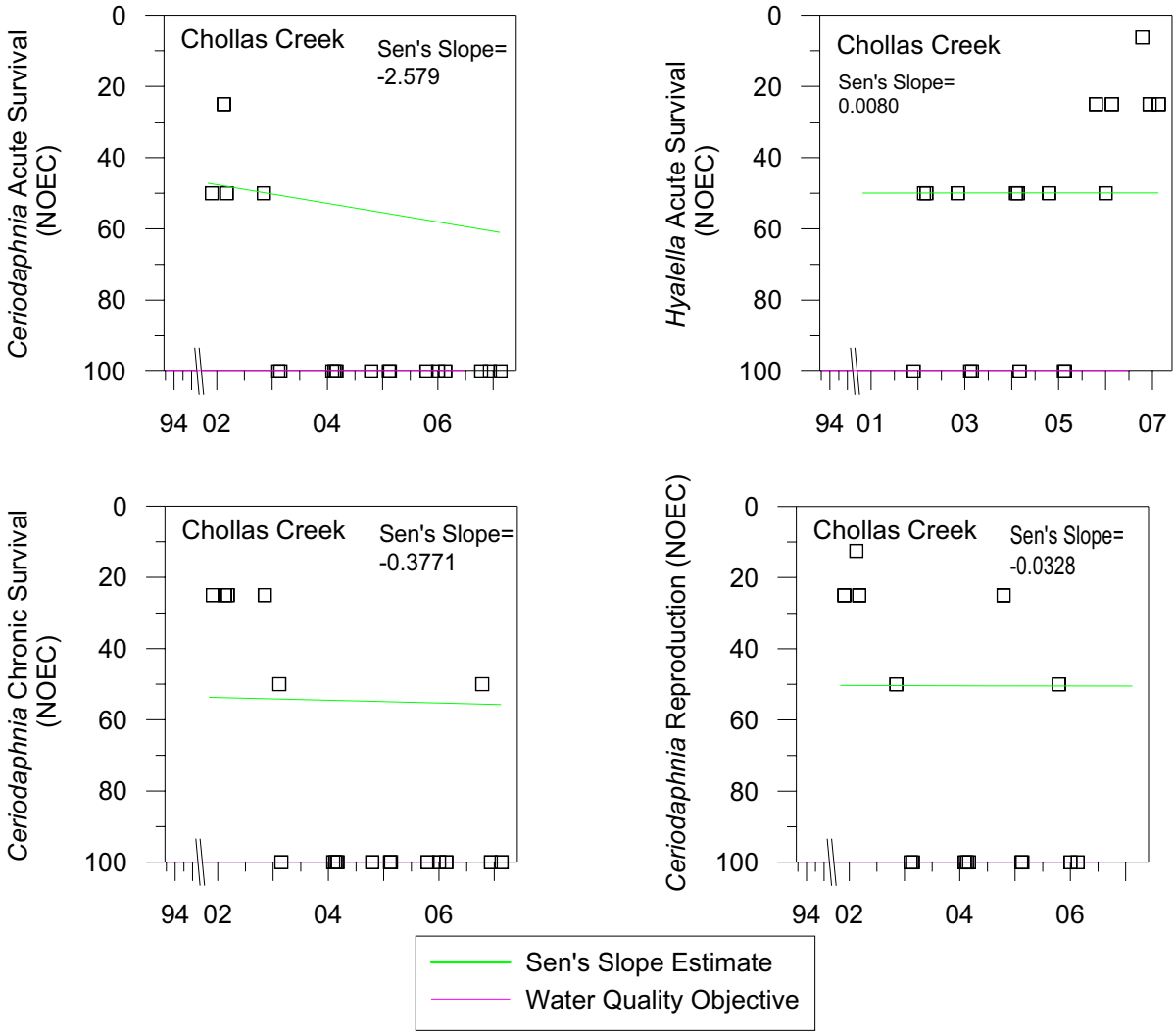

Figure 3-10. Scatterplots of toxicity constituents with significant Mann-Kendall Trends and Sen's estimate of slope at the Chollas Creek

The historical diazinon concentrations observed at sites SD8(1) and DPR2, including the EPA restriction dates, are presented in Figure 3-11. Sampling was conducted at site DPR2 from 2000-2001 as part of a Department of Pesticide Regulation study and in late 2004 as part of the monitoring and reporting requirements of RWQCB Order R9-2004-0277.

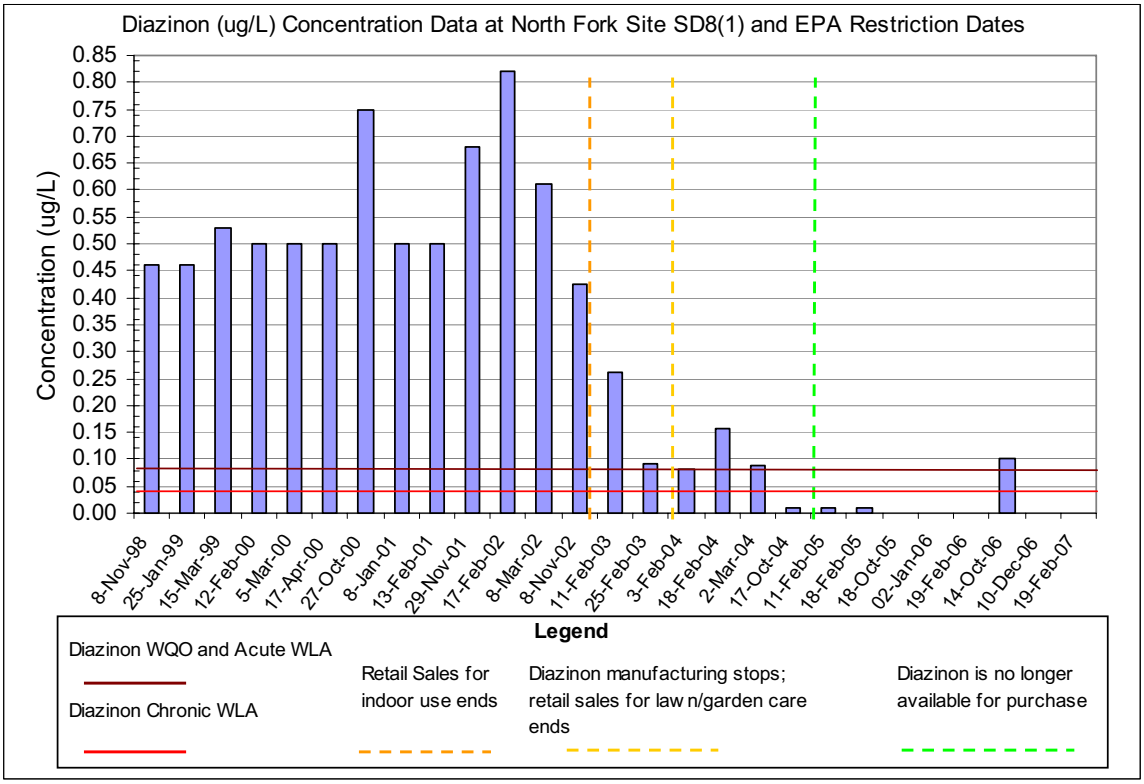

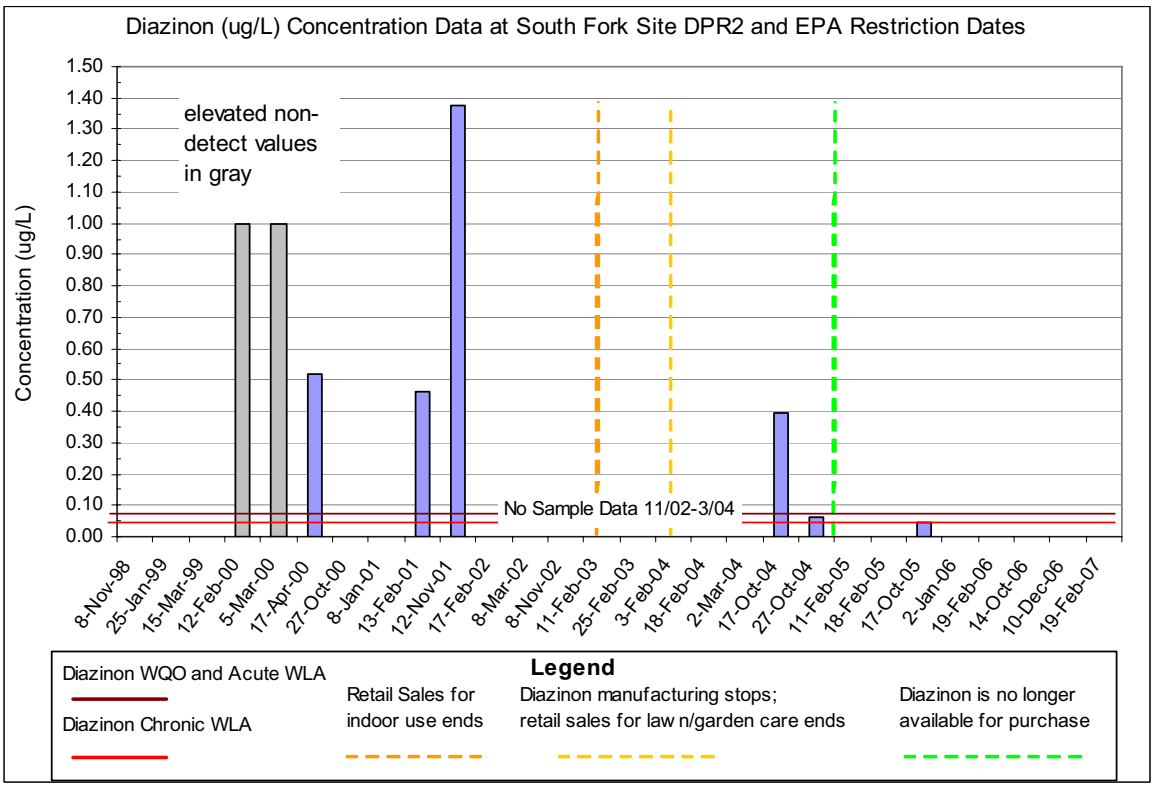

Figure 3-11. Historical Diazinon Concentrations at Sites SD8(1) and DPR2 with Restriction Dates.

The Chollas Creek dissolved metals TMDL sets the numeric targets equal to the California Toxics Rule (CTR) WQO. The CTR is the most current, conservative WQO for dissolved copper, lead, and zinc in fresh water. The CTR WQOs for dissolved and total cadmium, copper, lead, and zinc are comprised of hardness-based equations that can vary depending on sample hardness. The Chollas sub-watershed is unique in that it has significantly lower hardness concentrations and therefore lower WQO, in comparison to other watersheds in San Diego County. The historical mean wet weather hardness concentration at the Chollas Creek MLS is 85 mg $CaCO_3$/L in comparison to other watersheds where the mean wet weather hardness concentrations are approximately 260 mg $CaCO_3$/L. As a result of the low hardness values, it is more likely that slightly elevated wet weather monitoring results for dissolved and total cadmium, copper, lead and zinc will exceed the CTR WQO.

WQOs for total and dissolved metals were calculated for each monitoring event at SD8(1) and DPR2, and the sample result divided by the WQO. The results for the time period of 2001-2007 (at SD8(1)) and 2004-2007 (at DPR2) are presented in Figure 3-12 and Figure 3-13, respectively. The ratios are presented as box-and-whisker plots for each of the eight metal constituents. The purpose of presenting them as such is to illustrate the consistency of some metals (lead and copper, in particular) at levels above the WQO. The pattern between SD8(1) and DPR2 is consistent, with total copper, lead and zinc above the WQO at SD8(1), and total copper and lead above the WQO at DPR2. It is interesting to note that dissolved metals tend to be slightly higher and more variable at SD8(1) when compared to DPR2.

USEPA has provided guidance concerning a procedure that may be used to derive regional aquatic-life criterion such as the CTR into site-specific criterion. The indicator species procedure is based on the assumption that characteristics of ambient water may influence the bioavailability and toxicity of a pollutant. As part of the procedure, acute toxicity in site water and laboratory water is determined in concurrent toxicity tests. The ratio of the ambient to the laboratory water toxicity values, the Water Effects Ratio (WER), would subject the current dissolved metals WQO to a criteria adjustment factor that accounts for the effect of site-specific water characteristics on pollutant bioavailability and toxicity to aquatic life. In Chollas Creek, a WER would likely raise the WQO above the concentrations typically observed for dissolved metals in storm water. This procedure has been used in the Calleguas Creek Watershed which has resulted in WER ranging from 1.51 during dry weather to 3.69 during wet weather conditions (LWA, 2006).

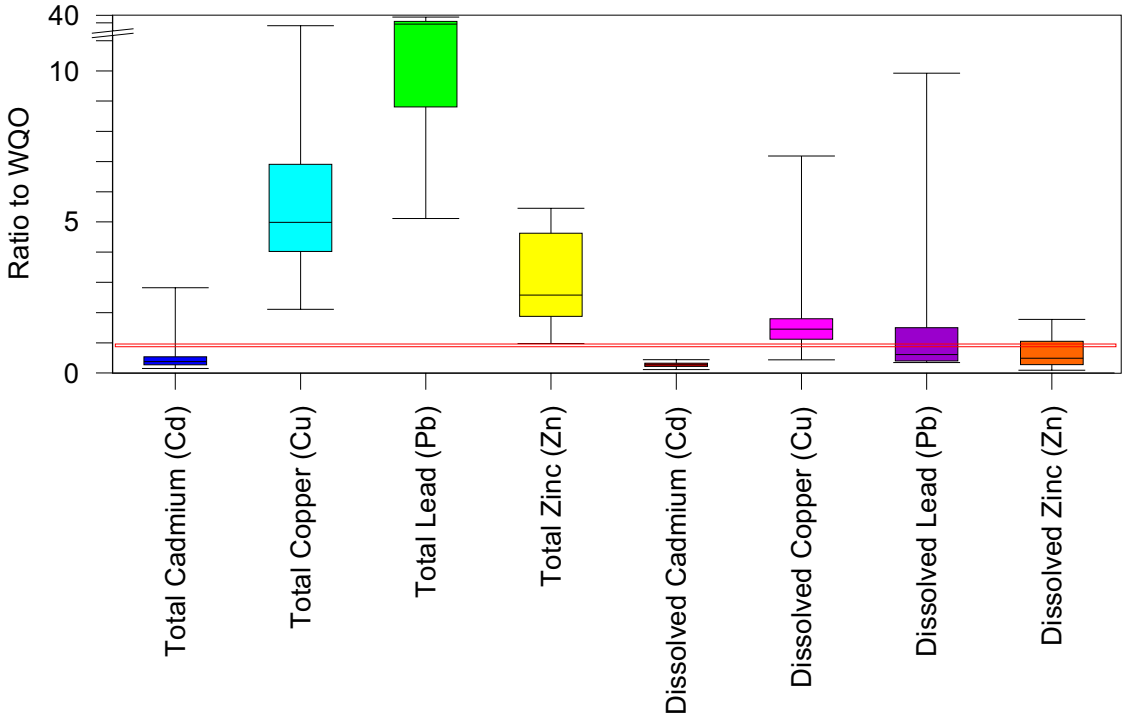

Figure 3-12. Chollas Creek box and whisker plots of metals water quality ratios for site SD8(1).

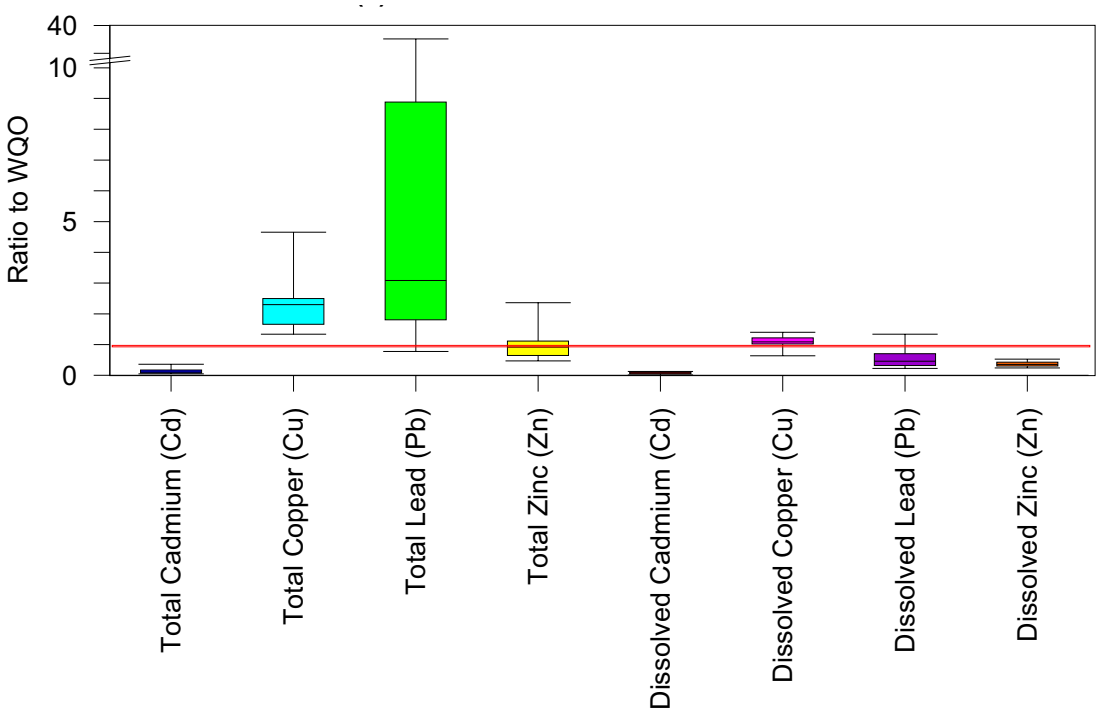

Figure 3-13. Chollas Creek box and whisker plots of metals water quality ratios for site DPR2.

4.0 SUMMARY AND CONCLUSIONS

The Chollas Creek Watershed Municipal Workgroup has complied with RWQCB Order R9-2004-0277 during the 2006-2007 monitoring season by conducting the following activities:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and Dry Weather IC/ID investigations,
- performed education and outreach to area residents,
- and have conducted water quality monitoring during three storm events at Sites SD8(1) and DPR2.

Study results are presented to comply with RWQCB Order No. R9-2004-0277 requirements. Water quality monitoring was specifically conducted under this program to quantitatively assess potential changes in pesticide use and to quantitatively assess the concentration of metals in Chollas Creek.

Storm water monitoring samples were collected at two mass loading stations in Chollas Creek during three separate storm water events. Site SD8(1) was located in the North Fork of Chollas Creek and site DPR2. was located in the south fork of Chollas Creek. Water quality objective exceedances were noted for total organic carbon (TOC), total suspended solids (TSS), diazinon, malathion, total and dissolved copper, total and dissolved lead, total zinc, and total cadmium. There were no exceedances of the WQO for either dissolved cadmium or dissolved zinc. Synthetic pyrethroids were detected in concentrations above published LC50s for *Hyalella azteca* during all three monitoring events during the 2006-2007 monitoring season.

Acute toxicity to *Ceriodaphnia dubia* survival was not observed at either site SD8(1) or DPR2 during the 2006-2007 monitoring season. Chronic toxicity to *Ceriodaphnia dubia* survival was observed during the first storm event on 10/14/06 at both sites and is likely associated with the combined detections of malathion, diazinon and synthetic pyrethroids during this first event. Toxicity to *Hyalella azteca* was observed during all three events at Site SD8(1) and during two events at site DPR2. Toxicity identification evaluations conducted as part of the Regional Monitoring Program indicate the causative agent of toxicity at site SD8(1) is the synthetic pyrethroid class of compounds (Weston, 2007).

Mann-Kendall trend analysis performed on the long term data set at site SD8(1) indicate significant decreasing trends for diazinon and toxicity to *Ceriodaphnia dubia.* However, increasing trends are noted for turbidity, total copper, total zinc and *Hyalella azteca*.

It is evident that the concentrations of diazinon have been decreasing with time and that storm water samples are apparently less toxic to *Ceriodaphnia dubia* than in previous years when diazinon was available. However, it also apparent that detections above the WQO may continue based the data collected during the 2006-2007 monitoring season. It is expected that the residual supply will eventually be exhausted and detections of diazinon should continue to decrease with the EPA ban on the manufacture and retail sale of this product. It is evident that synthetic pyrethroids are present in storm water runoff which warrants concern. With this evidence, education and outreach to area residents and businesses should continue in order to reduce the impacts of pesticide use in the Chollas Creek Watershed. With regards to the implementation of

the TMDLs for metals for Chollas Creek, it is apparent that toxicity to *Ceriodaphnia dubia* was not observed in the later storms where both dissolved copper and dissolved zinc were frequently measured above the WQO, based on the low hardness concentrations. With regards to these observations, the development of site specific objectives for dissolved metals would be useful.

Special studies were also conducted to answer specific management questions at the jurisdictional level. These additional studies include the following and are appended to this report:

- Appendix C (PDF on CD): Chollas Creek Jurisdictional Boundary Water Quality Monitoring Report (Weston Solutions, Inc., 2007)
- Appendix D (PDF on CD): City of San Diego Dry Weather Aerial Deposition Study (Weston Solutions, Inc., 2007)

5.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region (RWQCB). 1994. Water Quality Control Plan for the San Diego Basin. September.

California Regional Water Quality Control Board, San Diego Region. 2001. Order No. 2001-01, NPDES No. CAS0108758. Waste Discharge Requirements for Discharges of Urban Runoff from The Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, The Incorporated Cities of San Diego County, and the San Diego Unified Port District.

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Weston Solutions, Inc. 2006. Aquatic Bioassay Laboratory Data Developed for the Evaluation of Technical Grade Bifenthrin for Toxicity Identification Evaluations.

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APPENDIX A

Chollas Creek Education and Outreach Materials

APPENDICES B-D are provided on CD

APPENDIX B – Field Data Logs

APPENDIX C – Chollas Creek Jurisdictional Boundary Water Quality Monitoring Report (Weston Solutions, Inc., 2007)

APPENDIX D – City of San Diego Dry Weather Aerial Deposition Study (Weston Solutions, Inc., 2007)

EMPERICAL OBSERVATIONS

General Information:

Station Name: CC (SD 8(1)) | Date: 14 OCT 06 | Time: 0130-0645

Field Crew: B. Isham C. Lia

Purpose of Visit: ☒ Storm Monitoring o Maintenance

Meteorological Characteristics: (Describe rainfall, wind, temperature, etc.)
Light, spotty Rain, a few downpours, rain ending ~ 0500

Water Quality Appearance: (Check all that apply)

Odor:
o Hydrogen Sulfide ☒ Musty o Sewage o Ammonia o Gasoline o Soap o Chlorine o None

Floating Materials:
☒ Trash or debris o Oil & grease o Organic material o Scum o Suds o Objects (describe) o None

Color:
o Yellow o Green o Blue ☒ Brown o Black o Gray o White o Colorless o Other

Turbidity:
o None o Some cloudiness ☒ Cloudy o Heavy cloudiness, opaque

Water quality appearance comments:
Some trash but not a lot

Erosion and Vegetation: (Describe any visible signs of side slope erosion and/or change in vegetation condition)
NA - Channelized

Grab Sample Time: 0300 **pH:** 7.65 **Temperature(°C):** 17.9 **Conductivity:** 510

Sampling Equipment: (Enter time of bottle changes)

Bottle #1: 0500 **Bottle #3:** _____

Bottle #2: 0621 (0521 on Sampler) **Bottle #4:** _____

Sampling Activities: (Describe all action taken at each site visit and provide additional comments as necessary)
Arrive on site 0130, Sampler running, Removed blanket + card table from pipe-end.
0230 - Little rain squall
0300 grab samples, rain stopped 0330 rain squall
~0400 large flow increase - sudden "wall" of water with a lot of trash, 3 or 4 shopping carts
Note - Sample Volume off ~ 200 ml per Sample. Tried to calibrate but it was inconsistent
0645 finished + left site

Team Leader's Signature: B Isham

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
SD stormwater	12-10-06	D. Renfrew	LC
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
SD8			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
SD8	2315	0800	0230

FIELD TEAM: LC / Ester Goldstein

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)
Partly cloudy, showers - tapering off
cool, wind 10-15 knots West

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☒ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☒ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☒ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:
water turbid / slight musty
lot soft trash floatables

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)
NONE

#2 7.92 14.3 310 µ/s
#3 7.88 14.3 309 µ/s

FIELD MEASUREMENTS: pH 8.09 TEMPERATURE (°C) 14.3 CONDUCTIVITY (µS/cm) 319 µ/s DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0206 BOTTLE #2 0449 BOTTLE #3 _____
BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

#1 0-23 - 0206 - 17 L
grab sample 0230
#2 9 L 24 - 37 - 9 L

TEAM LEADER'S SIGNATURE [signature]

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
Chollas SD Stormwater	19 Feb 2007	D. Renfrew	DO / BE
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
SD8			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
33rd & Durant	0300	1500	0810
FIELD TEAM			
DO/JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

partly cloudy

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☑ OTHER irrigation	
	☐ SOAP	☐ CHLORINE	☐ NONE				
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☑ BROWN	☐ BLACK	☐ OTHER	
	☐ GRAY	☐ WHITE	☐ COLORLESS				
FLOATING MATERIALS	☑ TRASH OR DEBRIS	☑ OIL AND GREASE	☑ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER	
	☐ OBJECTS (DESCRIBE)	leaf debris					
TURBIDITY	☑ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☐ NONE			

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

Vegetation growing in cracks in concrete in creek bed that was covered up by stormwater

FIELD MEASUREMENTS: pH 8.40 TEMPERATURE (°C) 13.7 CONDUCTIVITY (µS/cm) 239 DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0749 (12L) BOTTLE #2 1115 (10L) BOTTLE #3 1450 (1L)

BOTTLE #4 BOTTLE #5 BOTTLE #6

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

2nd half of bottle / sampler volume @ ~500mL/sample.
0950 rinsed/purged sampler tubing - still grabs ~500mL
Lots of trash and debris in creek → doggy stravs
B/w 10:30-11:15 purged b/w samples. Seemed to help some w/ sample collection.
Still lots of debris, pulled <1L samples

TEAM LEADER'S SIGNATURE

Bucket decon
Rinsed w/ Alconox and site water.
Rinsed 3x w/ DI water
Rinsed 3x w/ site water
1st Fwd

Rinsed 3x w/ site water
Subsequent samplings

grabs @ 0810

Flowmeter started @ ~ 12:30. Grab of 1L taken → 12:55, 1305, 1315, 1325, 1335, 1345 (10 min pacing)
Grab of 1L taken → 1405, 1425, 1450 (20 min pacing)

Last 9 samples taken as VOC samples

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	19 Feb 2007		
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
DPR 2			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
DPR 2	0320		0900

FIELD TEAM: DO/JS

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

partly cloudy

WATER QUALITY APPEARANCE

ODOR	☑ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☑ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☑ TRASH OR DEBRIS	☐ OIL AND GREASE	☑ ORGANIC MATERIAL leaves, grass clippings	☐ SCUM	☐ SUDS	☐ OTHER
	☑ OBJECTS (DESCRIBE) ~~[illegible]~~ Sofa, 2 basketballs, dart board, etc.					
TURBIDITY	☑ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

FIELD MEASUREMENTS: pH 7.84 TEMPERATURE (°C) 12.8 CONDUCTIVITY (µS/cm) 324 DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0325 (19L) BOTTLE #2 0651 (14L) BOTTLE #3 0921 (20L)

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

@ 0921 - 55 samples ~~[illegible]~~ JS 21 from last bottle change but 1 distribution error @ 0924 ~~34~~ JS

@ 0930 - while changing bottle strong smell of feces; not sure of origin

TEAM LEADER'S SIGNATURE [signature]

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	12/10/06		EG
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
DPR2			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
	2315	0730	0430

FIELD TEAM
LC, EG

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)
partly cloudy, cool No Rain 0 mi

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☒ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☒ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☒ CLOUDY		☐ SOME CLOUDINESS	☐ NONE	

WATER QUALITY APPEARANCE COMMENTS:
H2O turbid, trash

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

pH 7.56 Temp 12.3°C Cond 578 mS
pH 7.58 Temp 12.3°C Cond 578 mS

FIELD MEASUREMENTS: pH 7.6 TEMPERATURE (°C) 12.4 °C CONDUCTIVITY (µS/cm) 579 µS DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0435 BOTTLE #2 0612 BOTTLE #3 0728

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

changed #1 0435
Grab - 0430 0730
#2 0612 DONE
#3 0728

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	14OCT06	Renfrew	BI
STATION NAME	NAV DATUM	LATITUDE	LONGITUDE
DPR2			
SAMPLE IDENTIFICATION	TIME STARTED (AT SITE)	TIME FINISHED (AT SITE)	GRAB SAMPLE TIME
	0330	0630	0430

FIELD TEAM: B.Isham Calvin Lia

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)
Patchy Rain then Clearing ~0500

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☒ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☒ TRASH OR DEBRIS not much	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☒ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:
Basically normal looking stormflow

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)
Flow never got real high, no significant erosion

FIELD MEASUREMENTS: pH 7.33 TEMPERATURE (°C) 17.4 CONDUCTIVITY (µS/cm) 474 DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0420 BOTTLE #2 0504 BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)
0430 Grab Samples taken

TEAM LEADER'S SIGNATURE B.Isham

Appendix F

Glossary

GLOSSARY

Appendix F provides general terms pertinent to the management of urban runoff. These terms were taken directly from the Municipal Permit.

Beneficial Uses – The uses of water necessary for the survival or well being of man, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals "Beneficial Uses" of the waters of the State that may be protected against include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. Existing beneficial uses are uses that were attained in the surface or ground water on or after November 28, 1975; and potential beneficial uses are uses that would probably develop in future years through the implementation of various control measures. "Beneficial Uses" are equivalent to "Designated Uses" under federal law. [California Water Code Section 13050(f)].

Best Available Technology (BAT) – BAT is the acronym for best available technology economically achievable. BAT is the technology-based standard established by congress in CWA section 402(p)(3)(A) for industrial dischargers of storm water. Technology-based standards establish the level of pollutant reductions that dischargers must achieve, typically by treatment or by a combination of treatment and best management practices, or BMPs. For example, secondary treatment (or the removal of 85% suspended solids and BOD) is the BAT for suspended solid and BOD removal from a sewage treatment plant. BAT generally emphasizes treatment methods first and pollution prevention and source control BMPs secondarily.

The best economically achievable technology that will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants, as determined in accordance with regulations issued by the Environmental Protection Agency Administrator. Factors relating to the assessment of best available technology shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the permitting authority deems appropriate.

Best Conventional Technology (BCT) – BCT is an acronym for Best Conventional Technology. BCT is the treatment techniques, processes and procedure innovations, operating methods that eliminate amounts of chemical, physical, and biological characteristics of pollutant constituents to the degree of reduction attainable through the application of the best management practices to the maximum extent practicable.

Best Management Practices – Best Management Practices (BMPs) are defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In the case of municipal storm water permits, BMPs are typically used in place of numeric effluent limits.

Bioaccumulate – The progressive accumulation of contaminants in the tissues of organisms through any route including respiration, ingestion, or direct contact with contaminated water, sediment, pore water, or dredged material to a higher concentration than in the surrounding environment. Bioaccumulation occurs with exposure and is independent of the tropic level.

Bioassessment – The use of biological community information to evaluate the biological integrity of a water body and its watershed. With respect to aquatic ecosystems, bioassessment is the collection and analysis of samples of the benthic macroinvertebrate community together with physical/habitat quality measurements associated with the sampling site and the watershed to evaluate the biological condition (i.e. biological integrity) of a water body.

Bioconcentration – A process by which there is a net accumulation of a chemical directly from water into aquatic organisms resulting from simultaneous uptake and elimination by gill or epithelial tissue. Bioconcentration differs from bioaccumulation in that bioaccumulation refers to the progressive concentration of contaminants in the tissues of organisms through multiple pathways.

Biocriteria – Under the Clean Water Act, numerical values or narrative expressions that define a desired biological condition for a water body that are legally enforceable. The U.S. EPA defines biocriteria as: "numerical values or narrative expressions that describe the reference biological integrity of aquatic communities inhabiting waters of a given designated aquatic life use…(that)…describe the characteristics of water body segments least impaired by human activities."

Biological Integrity – Defined in Karr J.R. and D.R. Dudley. 1981. Ecological perspective on water quality goals. Environmental Management 5:55-68 as: "A balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of natural habitat of the region." Also referred to as ecosystem health.

Biomagnication – The transfer and progressive increase in tissue concentrations of a contaminant along the food chain. Because some pollutants can be transferred to higher trophic levels, carnivores at the top of the food chain, such as predatory fish, birds, and mammals (including humans), obtain most of their pollution burden from aquatic ecosystems by ingestion. Thus, although such pollutants may only be present in receiving waters in low concentrations, they can have a significant impact to the integrity of the ecosystem through biomagnification.

Clean Water Act Section 402(p) – [33 USC 1342(p)] is the federal statute requiring municipal and industrial dischargers to obtain NPDES permits for their discharges of storm water.

Clean Water Act Section 303(d) Water Body – Is an impaired water body in which water quality does not meet applicable water quality standards and/or is not expected to meet water quality standards, even after the application of technology based pollution controls required by the CWA. The discharge of urban runoff to these water bodies by the Copermittees is significant because these discharges can cause or contribute to violations of applicable water quality standards.

Contamination – As defined in the Porter-Cologne Water Quality Control Act, contamination is "an impairment of the quality of waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. 'Contamination' includes any equivalent effect resulting from the disposal of waste whether or not waters of the state are affected."

Designated Waste – Designated waste is defined as a "nonhazardous waste which consists of pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives, or which could cause degradation of waters of the state." [CCR Title 27, Chapter 3, Subchapter 2, Article 2, Section 20210; WC Section 13173]

Effluent Limitations – Limitations on the volume of each waste discharge, and the quantity and concentrations of pollutants in the discharge. The limitations are designed to ensure that the discharge does not cause water quality objectives to be exceeded in the receiving water and does not adversely affect beneficial uses.

Effluent limitations are limitations of the quantity and concentrations of pollutants in a discharge. The limitations are designed to ensure that the discharge does not cause water quality objectives to be exceeded in the receiving water and does not adversely affect beneficial uses. In other words, an effluent limit is the maximum concentration of a pollutant that a discharge can contain. To meet effluent limitations, the effluent typically must undergo one or more forms of treatment to remove pollutants in order to lower the pollutant concentration below the limit. Effluent limits are typically numeric (e.g., 10 mg/l), but can also be narrative (e.g., no toxics in toxic amounts).

Erosion – When land is diminished or warn away due to wind, water, or glacial ice. Often the eroded debris (silt or sediment) becomes a pollutant via storm water runoff. Erosion occurs naturally but can be intensified by land clearing activities such as farming, development, road building, and timber harvesting.

Grading – The cutting and/or filling of the land surface to a desired slope or elevation.

Hazardous Waste – Hazardous waste is defined as "any waste which, under Section 600 of Title 22 of this code, is required to be managed according to Chapter 30 of Division 4.5 of Title 22 of this code." [CCR Title 22, Division 4.5, Chapter 11, Article 1]

Illicit Discharge – Any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges form the municipal separate storm sewer) and discharges resulting from fire fighting activities.

Inert Waste – Inert waste is defined as one that "does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives, and does not contain significant quantities of decomposable waste." [CCR Title 27, Chapter 3, Subchapter 2, Article 2, Section 20230]

MEP – MEP is the acronym for Maximum Extent Practicable. MEP is the technology-based standard established by Congress in CWA section 402(p)(3)(B)(iii) that municipal dischargers of storm water (MS4s) must meet. Technology-based standards establish the level of pollutant reductions that dischargers must achieve, typically by treatment or by a combination of treatment and best management practices (BMPs). MEP generally emphasizes pollution prevention and source control BMPs primarily (as the first line of defense) <u>in combination</u> with treatment methods serving as a backup (additional line of defense). MEP considers economics and is generally, but not necessarily, less stringent than BAT. A definition for MEP is not provided either in the statute or in the regulations. Instead the definition of MEP is dynamic and will be defined by the following process over time: municipalities propose their definition of MEP by way of their Urban Runoff Management Plan. Their total collective and individual activities conducted pursuant to the Urban Runoff Management Plan becomes their proposal for MEP as it applies both to their overall effort, as well as to specific activities (e.g., MEP for street sweeping, or MEP for municipal separate storm sewer system maintenance). In the absence of a proposal acceptable to the SDRWQCB, the SDRWQCB defines MEP.

In a memo dated February 11, 1993, entitled "Definition of Maximum Extent Practicable," Elizabeth Jennings, Senior Staff Counsel, SWRCB addressed the achievement of the MEP standard as follows:

> *"To achieve the MEP standard, municipalities must employ whatever Best Management Practices (BMPs) are technically feasible (i.e., are likely to be effective) and are not cost prohibitive. The major emphasis is on technical feasibility. Reducing pollutants to the MEP means choosing effective BMPs, and rejecting applicable BMPs only where other effective BMPs will serve the same purpose, or the BMPs would not be technically feasible, or the cost would be prohibitive. In selecting BMPs to achieve the MEP standard, the following factors may be useful to consider:*

a. *Effectiveness: Will the BMPs address a pollutant (or pollutant source) of concern?*

b. *Regulatory Compliance: Is the BMP in compliance with storm water regulations as well as other environmental regulations?*

c. *Public Acceptance: Does the BMP have public support?*

d. *Cost: Will the cost of implementing the BMP have a reasonable relationship to the pollution control benefits to be achieved?*

e. *Technical Feasibility: Is the BMP technically feasible considering soils, geography, water resources, etc?*

The final determination regarding whether a municipality has reduced pollutants to the maximum extent practicable can only be made by the Regional or State Water Boards, and not by the municipal discharger. If a municipality reviews a lengthy menu of BMPs and chooses to select only a few of the least expensive, it is likely that MEP has not been met. On the other hand, if a municipal discharger employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit derived, it would have met the standard. Where a choice may be made between two BMPs that should provide generally comparable effectiveness, the discharger may choose the least expensive alternative and exclude the more expensive BMP. However, it would not be acceptable either to reject all BMPs that would address a pollutant source, or to pick a BMP base solely on cost, which would be clearly less effective. In selecting BMPs the municipality must make a serious attempt to comply and practical solutions may not be lightly rejected. In any case, the burden would be on the municipal discharger to show compliance with its permit. After selecting a menu of BMPs, it is the responsibility of the discharger to ensure that all BMPs are implemented."

Municipal Storm Water Conveyance System – (See Municipal Separate Storm Sewer System or MS4).

Municipal Separate Storm Sewer System (MS4) – MS4 is an acronym for Municipal Separate Storm Sewer System. A Municipal Separate Storm Sewer System is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, natural drainage features or channels, modified natural channels, man-made channels, or storm drains): (i) Owned or operated by a State, city town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designated or used for collecting of conveying storm water; (iii) Which is not a

combined sewer; (iv) Which is not part of the Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Historic and current development make use of natural drainage patterns and features as conveyances for urban runoff. Urban streams used in this manner are part of the municipalities MS4 regardless of whether they are natural, man-made, or partially modified features. In these cases, the urban stream is both an MS4 and a receiving water.

National Pollution Discharge Elimination System (NPDES) – These permits pertain to the discharge of waste to surface waters only. All State and Federal NPDES permits are also WDRs.

Non-hazardous Solid Waste – Non-hazardous solid waste means all putrescible and nonputrescible solid, semi-sold, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-sold wastes and other discarded solid or semi-solid waste; provided that such wastes do not contain wastes which must be managed as hazardous wastes, or wastes which contain soluble pollutants in concentration which exceed applicable water quality objectives or could cause degradation of wasters of the state." [CCR Title 27, Chapter 3, Subchapter 2, Article 2, Section 20220]

Non Point Source (NPS) – Non point source refers to diffuse, widespread sources of pollution. These sources may be large or small, but are generally numerous throughout a watershed. Non Point Sources include but are not limited to urban, agricultural, or industrial areas, roads, highways, construction sites, communities served by septic systems, recreational boating activities, timber harvesting, mining, livestock grazing, as well as physical changes to stream channels, and habitat degradation. NPS pollution can occur year round any time rainfall, snowmelt, irrigation, or any other source of water runs over land or through the ground, picks up pollutants from these numerous, diffuse sources and deposits them into rivers, lakes, and coastal waters or introduces them into ground water.

Non-Storm Water – Non-storm water consists of all discharges to and from a storm water conveyance system that do not originate from precipitation events (i.e., all discharges from a conveyance system other than storm water). Non-storm water includes illicit discharges, non-prohibited discharges, and NPDES permitted discharges. An illicit discharge is defined at 40 CFR 122.26(b)(2) as any discharge to a municipal storm water conveyance system that is not composed entirely of storm water except discharges pursuant to a separate NPDES permit and discharges resulting from emergency fire fighting activities.

Nuisance – As defined in the Porter-Cologne Water Quality Control Act a nuisance is "anything which meets all of the following requirements: 1) Is injurious to health, or is indecent, or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property. 2) Affects at the same time an entire community or

neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal. 3) Occurs during, or as a result of, the treatment or disposal of wastes."

Numeric effluent limitations – The typical method by which effluent limits are prescribed for pollutants in waste discharge requirements implementing the federal NPDES regulations. When numeric effluent limits are met at the "end-of-pipe", the effluent discharge generally will not cause water quality standards to be exceeded in the receiving waters (i.e., water quality standards will also be met).

Person – A person is defined as an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof. [40 CFR 122.2].

Point Source – Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operations, landfill leachate collection systems, vessel, or other floating craft from which pollutants are or may be discharged.

Pollution – As defined in the Porter-Cologne Water Quality Control Act, pollution is "the alteration of the quality of the waters of the State by waste, to a degree that unreasonably affects the either of the following: A) The waters for beneficial uses; or 2) Facilities that serve these beneficial uses." Pollution may include contamination.

Pollutant – A pollutant is broadly defined as any agent that may cause or contribute to the degradation of water quality such that a condition of pollution or contamination is created or aggravated.

Pollution Prevention – Pollution prevention is defined as practices and processes that reduce or eliminate the generation of pollutants, in contrast to source control, treatment, or disposal.

Post-Construction BMPs – A subset of BMPs including structural and non-structural controls which detain, retain, filter, or educate to prevent the release of pollutants to surface waters during the final functional life of development.

Pre-Development Runoff Conditions – The runoff conditions that exist onsite immediately before the planned development activities occur. This definition is not intended to be interpreted as that period before any human-induces land activities occurred. This definition pertains to redevelopment as well as initial development.

Receiving Water Limitations – Waste discharge requirements issued by the SDRWQCB typically include both: (1) "Effluent Limitations" (or "Discharge Limitations") that specify the technology-based or water-quality-based effluent limitations; and (2) "Receiving Water Limitations" that specify the water quality objectives in the Basin Plan as well as any other limitations necessary to attain those objectives. In summary, the "Receiving Water Limitations"

provision is the provision used to implement the requirement of CWA section 301(b)(1)(C) that NPDES permits must include any more stringent limitations necessary to meet water quality standards.

Sediment – Soil, sand, and minerals washed from land into water. Sediment resulting from anthropogenic sources (i.e. human induced land disturbance activities) is considered a pollutant. This Order regulates only the discharges of sediment from anthropogenic sources and does not regulate naturally occurring sources of sediment. Sediment can destroy fish-nesting areas, clog animal habitats, and cloud waters so that sunlight does not reach aquatic plants.

Storm Water – "Storm water" is as defined urban runoff and snowmelt runoff consisting only of those discharges which originate from precipitation events. Storm water is that portion of precipitation that flows across a surface to the storm drain system or receiving waters. Examples of this phenomenon include: the water that flows off a building's roof when it rains (runoff from an impervious surface); the water that flows into streams when snow on the ground begins to melt (runoff from a semi-pervious surface); and the water that flows from a vegetated surface when rainfall is in excess of the rate at which it can infiltrate into the underlying soil (runoff from a pervious surface). When all factors are equal, runoff increases as the perviousness of a surface decreases. During precipitation events in urban areas, rain water picks up and transports pollutants through storm water conveyance systems, and ultimately to waters of the United States.

Toxicity – Adverse responses of organisms to chemicals or physical agents ranging from mortality to physiological responses such as impaired reproduction or growth anomalies). The water quality objectives for toxicity provided in the Water Quality Control Plan, San Diego Basin, Region 9, (Basin Plan), state in part…"All waters shall be free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life….The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge"…. Urban runoff discharges from MS4s are considered toxic when (1) the toxic effect observed in an acute toxicity test exceeds zero Toxic Units Acute (Tua=0); or (2) the toxic effect observed in a chronic toxicity test exceeds one Toxic Unit Chronic (Tuc=1). Urban runoff discharges from MS4s often contain pollutants that cause toxicity.

Total Maximum Daily Load (TMDL) – The TMDL is the maximum amount of a pollutant that can be discharged into a water body from all sources (point and non-point) and still maintain water quality standards. Under Clean Water Act section 303(d), TMDLs must be developed for all water bodies that do not meet water quality standards after application of technology-based controls.

Urban Runoff – Urban runoff is defined as all flows in a storm water conveyance system and consists of the following components: (1) storm water (wet weather flows) and (2) non-storm water illicit discharges (dry weather flows).

Waste – As defined in California Water Code Section 13050(d), "waste includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal."

Article 2 of CCR Title 23, Chapter 15 (Chapter 15) contains a waste classification system which applies to solid and semi-solid waste which cannot be discharged directly or indirectly to water of the state and which therefore must be discharged to land for treatment, storage, or disposal in accordance with Chapter 15. There are four classifications of waste (listed in order of highest to lowest threat to water quality): hazardous waste, designated waste, nonhazardous solid waste, and inert waste.

Water Quality Objective – Numerical or narrative limits on constituents or characteristics of water designated to protect designated beneficial uses of the water. [California Water Code Section 13050 (h)]. California's water quality objectives are established by the State and Regional Water Boards in the Water Quality Control Plans.

As stated in the Porter-Cologne Requirements for discharge (CWC 13263): "(Waste discharge) requirements shall implement any relevant water quality control plans that have been adopted, and shall take into consideration the beneficial uses to be protected, the water objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Section 13241."

A more comprehensive list of legal authority containing water quality objectives applicable to this Order can be found in Finding 37 and in Section VII Directives Discussion Underlying Broad Legal Authority for Order 2001-01 pp. 61-63.

Numeric or narrative limits for pollutants or characteristics of water designed to protect the beneficial uses of the water. In other words, a water quality objective is the maximum concentration of a pollutant that can exist in a receiving water and still generally ensure that the beneficial uses of the receiving water remain protected (i.e., not impaired). Since water quality objectives are designed specifically to protect the beneficial uses, when the objectives are violated the beneficial uses are, by definition, no longer protected and become impaired. This is a fundamental concept under the Porter Cologne Act. Equally fundamental is Porter Cologne's definition of pollution. A condition of pollution exists when the water quality needed to support designated beneficial uses has become unreasonably affected or impaired; in other words, when the water quality objectives have been violated. These underlying definitions (regarding beneficial use protection) are the reason why all waste discharge requirements implementing

the federal NPDES regulations require compliance with water quality objectives. (Water quality objectives are also called water quality criteria in the Clean Water Act.)

Water Quality Standards – Are defined as the beneficial uses (e.g., swimming, fishing, municipal drinking water supply, etc.,) of water and the water quality objectives necessary to protect those uses.

Waters of the State – Any water, surface or underground, including saline waters within the boundaries of the State [California Water Code Section 13050 (e)]. The definition of the Waters of the State is broader than that for the Waters of the United States in that all water in the State is considered to be a Waters of the State regardless of circumstances or condition. Under this definition, a Municipal Separate Storm Sewer System (MS4) is always considered to be a Waters of the State.

Waters of the United States – Waters of the United States can be broadly defined as navigable surface waters and all tributary surface waters to navigable surface waters. Groundwater is not considered to be a Waters of the United States. Under this definition (see below), a Municipal Separate Storm Sewer System (MS4) is always considered a Waters of the United States.

As defined in the 40 CFR 122.2, the Waters of the U.S. are defined as: **"(a) All waters, which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;** (b) All interstate waters, including interstate "wetlands;" (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation or destruction of which would affect or could affect interstate or foreign commerce including any such waters: (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes; (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (3) Which are used or could be used for industrial purposes by industries in interstate commerce; (d) All impoundments of waters otherwise defined as waters of the United States under this definition: **(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;** (f) The territorial seas; and (g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA."

Watershed – That geographical area which drains to a specified point on a water course, usually a confluence of streams or rivers (also known as drainage area, catchment, or river basin).

San Diego Bay Watershed Urban Runoff Management Program 2007-2008 Annual Report

A Collaborative Effort of:

City of Chula Vista
City of Coronado
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of San Diego
County of San Diego
Port of San Diego
San Diego County Regional Airport Authority

January 29, 2009

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

Signed certification statements for the participating San Diego Bay Copermittees are located in Appendix A of this report.

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Acknowledgements

The development and production of this Watershed Urban Runoff Management Program Document for the San Diego Bay Watershed Management Area (San Diego Bay WMA) are the result of the talents and experience of numerous individuals. Their contributions and insight made this document a collective success for the environment and for the watersheds. The primary authors of the text include:

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The San Diego Bay Copermittees also wish to recognize the public for their continued expressed concern for the protection and conservation of the San Diego Bay WMAs environmental resources.

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ACRONYMS AND ABBREVIATIONS

303(d)	Section of the Clean Water Act
BIA	Building Industry Association
BLTEA	Baseline Long-Term Effectiveness Assessment
BMP	Best Management Practices
BOD	Biologic Oxygen Demand
BWE	Baseline Watershed Evaluation
CBSM	Community Based Social Marketing
COC	Constituent of Concern
Copermittees	The 18 cities within San Diego County, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority
CSDM	Coastal Storm Drain Monitoring
CWA	Clean Water Act
DWM	Dry Weather Monitoring
DEH	County of San Diego Department of Environmental Health
EIS	Environmental Impact Assessment
EPA	Environmental Protection Agency
FOG	Fats, Oils, and Grease Program
FY	Fiscal Year
HHW	Household Hazardous Waste
HA	Hydrologic Area
HOA	Homeowners Association
HU	Hydrologic Unit
IBI	Index of Biological Integrity
IC/ID	Illicit Connection / Illicit Discharge
ILACSD	I Love A Clean San Diego
IPM	Integrated Pest Management
IRTA	Institute for Research and Technical Assistance
JURMP	Jurisdictional Urban Runoff Management Program
LID	Low Impact Development
MBAS	Methylene Blue Active Substances
MLS	Mass Loading Station
MS4	Municipal Separate Storm Sewer System
MUSLE	Modified Universal Soil Loss Equation
Municipal Permit or Permit	San Diego Regional Water Quality Control Board Order 2007-0001
NGO	Non-Governmental Organization
NNE	Numeric Nutrient Endpoint
NOEC	No Observed Effect Concentration
NPDES	National Pollution Discharge Elimination System
OAL	Office of Administrative Law
ORCA	Online Research Coastal Academy
ORWMP	Otay River Watershed Management Plan
PCW	Project Clean Water

PDP	Pollutant Discharge Potential
PSA	Public Service Announcement
PWQP	Priority Water Quality Problems
RHMP	Regional Harbor Monitoring Program
RUMP	Regional Urban Runoff Management Plan
RWQCB	Regional Water Quality Control Board
SAG	Stakeholder Advisory Group
SAMP	Special Area Management Plan
San Diego Bay Copermittees	The County of San Diego, the Port of San Diego, and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego, and Airport Authority
SDB	San Diego Bay
SDCRAA	San Diego County Regional Airport Authority (Airport Authority)
SDRWQCB	San Diego Regional Water Quality Control Board
SHELL	Shellfish Beneficial Use
SIYB	Shelter Island Yacht Basin
SSMP	Sewer System Management Plan
SUSMP	Standard Urban Stormwater Management Plan
SWAMP	Surface Water Ambient Monitoring Program
SWELL	Stewardship Watershed Education for Lifelong Leadership
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
TWAS	Temporary Watershed Assessment Station
UCCE	University of California Cooperative Extension
URMP	Urban Runoff Management Program
WARM	Warm Fresh Water Habitat
WILD	Wildlife Habitat
WMA	Watershed Management Area
WQA	Water Quality Activity
WQO	Water Quality Objective
WQTR	Water Quality Technical Report
WURMP	Watershed Urban Runoff Management Program

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Executive Summary

Since January 2002, the County of San Diego, Port of San Diego, the San Diego County Regional Airport Authority (Airport Authority), and the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) have been active in developing and implementing watershed-based programs in the San Diego Bay watershed management area (WMA). This Annual Report represents the San Diego Bay Copermittees' efforts during Fiscal Year (FY) 2007-2008 to meet the requirements of Section E of the Municipal Storm Water Permit Order Number 2007-0001 (Municipal Permit or Permit) and develop and implement the San Diego Bay Watershed Urban Runoff Management Program (WURMP).

The San Diego Bay Copermittees successfully completed the watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. Due to the success of the programs implemented during FY 2007-2008, the San Diego Bay WURMP achieved the following objectives: 1) continued implementation of activities to specifically address the sources of water quality problems at a watershed and hydrologic area (HA) level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a watershed and HA level; 4) continued refinement of the watershed program; and 5) continue progress toward meeting WURMP goals and objectives. The San Diego Bay Copermittees have worked to identify, implement, and assess watershed water quality, education, and public participation activities, as well as land use planning watershed-based mechanisms targeting high priority water quality problems and their sources.

During this reporting period, the San Diego Bay Copermittees continued improvements on the water quality assessment for the San Diego Bay WMA. Three major sub-watersheds, or hydrologic units (HU), comprise the WMA: the Pueblo San Diego (908 HU), Sweetwater (909 HU), and Otay (910 HU). The watersheds vary greatly in size, land use, and population, and have different water quality issues as a result. During the 2007-2008 monitoring year, total suspended solids (TSS), turbidity, total and fecal coliforms, *enterococci*, dissolved copper, and total dissolved solids (TDS) were identified as high frequency of occurrence constituents of concern (COCs) in the Pueblo San Diego HU. These results are similar to past reporting periods with the exception of a reduction of the frequency of occurrence for dissolved lead and zinc and an increase in the frequency of occurrence for TSS and TDS. The results of monitoring regarding pesticides remained similar to past reporting periods, as Diazinon and Malathion concentrations were detected below the acute benchmarks. During the 2007-2008 monitoring year, monitoring data was limited to dry weather monitoring (DWM), Coastal Storm Drain Monitoring (CSDM), and the Department of Environmental Health (DEH) AB411 programs in the Sweetwater or Otay HUs. There have not been any significant changes to the COCs identified for the Sweetwater HU, though fecal coliform remains a high frequency of occurrence COC. There have not been any significant changes to the COCs identified for the Otay HU.

Future monitoring, including a temporary watershed assessment station (TWAS) location, will be conducted within this watershed during the 2009-2010 monitoring year and will provide the Copermittees with a more robust dataset to analyze trends and water quality problems.

The San Diego Bay Copermittees continue to improve watershed efforts in the San Diego Bay WMA, using innovative methods and new tools as they become available. The overarching goal for the San Diego Bay WURMP is to cooperatively and through collaborative strategic planning decrease the potential sources and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) that have been identified as causing high priority water quality problems. The Copermittees relied heavily on the Watershed Strategy to guide the selection of activities. Each Copermittee individually selected activities that were feasible to institute in their jurisdiction, and selected activities for implementation that are appropriate for their relative contribution to the watershed's high priority water quality problem. The San Diego Bay Copermittees have implemented a number of water quality and education activities during this reporting year. There were 15 Load Reduction/Source Abatement activities, five Targeted Special Studies, four Total Maximum Daily Load (TMDL) related activities, and eight Monitoring/Source Identification activities implemented. Of the short and long-term educational activities occurring within the San Diego Bay WMA, there were 14 education activities, trainings, and events in which assessments showed Copermittees efforts are positively impacting the public and leading to changes in knowledge about storm water quality issues. Additional information on all watershed activities is provided in Section 3 of this Annual Report.

The 2007-2008 program assessment conducted by the San Diego Bay Copermittees continued to utilize the Framework Document and demonstrated program effectiveness at many levels. The Copermittees assessed effectiveness by: 1) evaluation of individual activities, 2) a comprehensive assessment at a HA level, and 3) a comprehensive assessment at the watershed level. An integrated assessment of activity effectiveness within each HA was conducted to determine the collective impact of the activities on the targeted high priority pollutants and/or pollutant sources. This evaluation has revealed where Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting identified pollutant sources in each HA. The Copermittees' assessments of the individual activities indicate nearly all of the water quality activities were able to achieve the stated goals and were effective in obtaining Outcome Levels Three and Four.

Comprehensive assessment at the HA level revealed that Pueblo San Diego HU had the largest number of activities among the three watersheds. Copermittees were successful in implementing activities addressing nearly all of the high priority pollutants in the HAs, as all but Gross Pollutants (908.1 HA) were addressed by one or more water quality activity. In particular, the Copermittees were not only successful in implementing activities that collectively addressed all of the high priority pollutant water quality problems in 908.2 HA, but were also effective in targeting a variety of pollutant sources. During this reporting year, the Copermittees have implemented numerous activities in this heavily urbanized HA such as the Chollas Creek Water Quality Protection and Habitat Enhancement Project and the Enhanced Street Sweeping

Activity, which have been effective in addressing the high priority water quality problems and reducing pollutant loads based on quantities of trash and debris removed. A number of the activities implemented in this HA resulted in Level Four Outcomes for bacteria, metals, sediment, and trash. In addition, the Dry Weather Aerial Deposition Study provided important source information for metals and sediment. Data resulting from this monitoring will enable the Copermittees to make more informed decisions on the best management practice (BMP) implementation that targets these high priority pollutants in the future. The Sweetwater and Otay HUs had fewer high priority water quality problems relative to Pueblo San Diego HU. As such, there were fewer water quality activities implemented in these watersheds. However, the activities that were implemented addressed bacteria in these HAs in which it was identified as a high priority water quality problem. Copermittees identified and targeted a common source of bacteria by implementing the Pet Waste Bags Program in these HUs. In addition, additional activities targeted other likely sources of bacteria in 909.1 and 910.2 HAs. Collectively, these activities were considered to be effective in reducing the loading of bacteria into the MS4. Though no water quality activities addressing pesticides were implemented in the Sweetwater HU during this reporting period, educational efforts did occur which provided Integrated Pest Management (IPM) program information to residents and businesses within the HUs.

The Copermittees have achieved the Outcome Levels One through Four during this reporting period. Educational activities such as Earth Day at Imperial Beach Pier and the Integrated Pest Management for Landscape Professionals training courses, as well as the water quality activities such as Pet Waste Bags and Enhanced Inspections demonstrated changes in knowledge and behavior (Levels Two and Three). The San Diego Bay Copermittees also achieved load reductions (Level Four) through various programs that either targeted the pollutants of concern or the pollutant sources. Notably, **416.8** tons of trash and debris were collected throughout the WMA during cleanup events this reporting year. Assessment of trash and debris related activities such as Pet Waste Bags, Storm Drain Litter Control Techniques, Enhanced Street Sweeping, and Cleanup Events resulted in a cross-programmatic watershed analysis of the effectiveness of these programs to address particular high priority pollutants originating from a variety of sources. These are fully detailed in Section 4 of this Annual Report. Activities such as public participation at cleanup events, the general public's use of household hazardous waste (HHW) collection facilities and pet waste bags scaled multiple levels of assessment resulting in increases in awareness, behavior changes, and load reductions. The Copermittees assessed the effectiveness of the BMP implementation plans for the three adopted TMDLs in the San Diego WMA. Based on the monitoring results from the Chollas Creek Diazinon TMDL, the San Diego Bay Copermittees' efforts to address Diazinon through education and outreach programs are adequate for meeting the goals of the TMDL. The implementation plans for the Chollas Creek Dissolved Metals TMDL and the Shelter Island Yacht Basin are still under development; therefore, the Copermittees were unable to assess the effectiveness of these BMP implementation plans.

Utilizing the effectiveness assessment and monitoring data, Copermittees will continue to identify future collaborative watershed activities to address high priority water quality problems

on a watershed and HA level. To this end, Copermittees will strive to gather additional water quality data suitable for assessments, as well as research the sources of pollutants of concern and their loading potential. A more thorough identification of sources and their loading potential will enable the San Diego Bay Copermittees to modify WURMP program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

Section 1: Introduction

The NPDES Municipal Storm Water Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the San Diego Bay Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). This Annual Report will be covering two permit periods, the previous San Diego Region Order No. 2001-01 and the current San Diego Region Order No. R9-2007-0001. The updated San Diego Bay WURMP began implementation on March 24, 2008. The WURMP is a collaborative effort to address high priority surface water quality issues throughout the San Diego Bay WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report is divided into five sections that highlight the efforts of the San Diego Bay Watershed Copermittees, referred to throughout this document as San Diego Bay Copermittees, during the FY 07-08 reporting period. The reporting period is from July 1, 2007, through June 30, 2008.

Section 1: Provides an overview of the information included in this report, and summarizes the ongoing collaboration among San Diego Bay Copermittees.

Section 2: Provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3: Describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period as well as any public participation or collaborative land use planning that took place.

Section 4: Discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among San Diego Bay Copermittees; 2) determine whether watershed activities are focused on appropriate water quality problems; 3) assess whether targeted outcomes are being achieved; and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale. Section 4 also includes specific information regarding an assessment of Chollas Creek TMDL implementation.

Section 5: Provides a discussion of conclusions reached during FY 07-08 as well as recommendations for future reporting periods.

1.1 Copermittee Collaboration

WURMP development and implementation is a collaborative effort by all of the following San Diego Bay Copermittees:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority (Airport Authority)

The Port of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among San Diego Bay Copermittees and liaison between Copermittees and Regional Water Quality Control Board (RWQCB) staff.

The San Diego Bay Copermittees met 12 times during this reporting period. Appendix B provides a summary of the dates and general topics of discussion. The majority of the meetings focused on developing the updated San Diego Bay WURMP submitted to the RWQCB on March 24, 2008.

During this reporting period, the San Diego Bay Copermittees collaborated extensively on the development of a watershed strategy that guides WURMP activity selection. An extensive explanation of the San Diego Bay Watershed Strategy was presented in the San Diego Bay WURMP document. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) prepared by the RWQCB defines the San Diego Bay WMA as being comprised of three watersheds (or hydrologic units (HU)). They are the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed, and are further divided into HAs. The San Diego Bay Copermittees developed a database of baseline information consisting of land use, water quality monitoring data, and other information on potential pollutant sources, and identified the high priority water quality problems on a HA level.

The San Diego Bay Copermittees used the information from the Watershed Strategy to identify four common water quality activities which have been coordinated and standardized at the HA level. These activities were identified as beneficial to address high priority water quality problems and can be applied within different locations at different scales of implementation as

determined by each Copermittee within their respective HAs. These activities include Pet Waste Bag Programs, Storm Drain Litter Control Techniques, Street Sweeping Enhancements, and Cleanup Events. This approach allowed for greater flexibility for each of the Copermittees to participate in coordinated watershed activities. Each of these activities would collect similar data to show how these programs were being effective at the both the HA and WMA level. In addition to the collaborative activities mentioned above, each Copermittee initiated or completed individual activities that target high priority water quality problems within the HAs their jurisdictions fall in, such as targeted facility inspections and pilot BMP projects. Furthermore, collaboration on the watershed strategy enabled the San Diego Bay Copermittees to identify data gaps by reviewing existing monitoring and land use data. Such data provided the basis for developing additional water quality monitoring and source identification activities such as the coordinated dry weather monitoring program being implemented by the City of San Diego, the Port of San Diego, and the Airport Authority. Section 3 provides specific detail on each program that was initiated or completed during the FY 07-08 reporting period.

1.2 San Diego Bay Watershed Map Updates

There will be no San Diego Bay Watershed map updates included in the FY 07-08 Annual Report. An enlarged San Diego Bay land use map is located in Appendix C.

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Section 2: Water Quality and Pollutant Source Assessment

The San Diego Bay Copermittees are working to ensure implementation of water quality assessment strategies that will result in meaningful data and allow determination of long-term water quality changes in the San Diego Bay WMA. This section of the report describes information collected by the San Diego Bay Copermittees to meet the requirements stated in Section J.3.b.2.c. of the Permit.

The San Diego Regional Copermittees tasked a consultant with compiling and analyzing water quality data from the San Diego region. In addition to analyzing data on a regional basis, the consultant also assimilated information and analyzed data for each of the nine WMAs within San Diego County. The results of these tasks are described in the *2007-2008 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* prepared for the San Diego County Municipal Copermittees. The report is structured to answer the following five Core Management Questions presented in Section I.B of the Receiving Waters and Urban Runoff Monitoring and Reporting Program:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

To achieve this end, the report provides analyses from various monitoring programs and the results are applied to the Core Management Questions. The San Diego Bay WMA is described in Section 10 of the 2007-2008 Urban Runoff Monitoring Report. Please refer to the *2007-2008 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* for more specific information regarding analytical assessments. Please note that most of the text from the report included here is reported verbatim.

2.1 Water Quality Assessment Approach

The watershed water quality assessment methodology used by the San Diego Bay Copermittees includes separate evaluations for receiving waters and urban runoff discharges. This organization follows the general format of the Permit, making the results of the assessment more meaningful by providing a closer linkage to the Core Management Questions as well as avoiding mixing datasets from programs undertaken for different reasons. Knowledge of baseline conditions through the various monitoring programs occurring within the watershed will

allow the San Diego Bay Copermittees to evaluate current conditions and long-term trends in receiving water quality conditions.

2.1.1 Water Quality Monitoring Programs and Data

Monitoring data is one of the most useful pieces of information for assessing the pollutants within a watershed. Data collected under the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Permit can indicate elevated pollutant levels, toxicity problems, or ecological impacts that may be influencing urban runoff contributions to the receiving water quality issues. The San Diego Bay Copermittees have utilized data from several monitoring programs as part of the 2007-2008 San Diego Bay WMA assessment, which are outlined in Table 2-1.

Table 2-1. San Diego Bay WMA Assessment Data.

Program	Type of Assessment	Constituents Measured
Mass Loading Stations (MLS) Ambient and Storm Monitoring	Receiving Water and Urban Runoff	Toxicity, Chemistry, Trash
Post-storm Sediment Pyrethroid Monitoring	Receiving Water	Grain size, pesticides, TOC
Rapid Stream Bioassessments	Receiving Water	Benthos
Dry Weather Monitoring (DWM)	Urban Runoff	Chemistry, Metals, Bacteria
Coastal Storm Drain Monitoring (CSDM)	Receiving/Urban Runoff	Bacteria
Regional Harbor Monitoring Program (RHMP)	Receiving Water	Sediment Chemistry, Toxicity, Benthos
Department of Environmental Heath (DEH) AB411 Program	Receiving Water	Bacteria
Metals TMDL	Urban Runoff	Metals
Diazinon TMDL	Urban Runoff	Pesticides
Additional Studies	Urban Runoff	Bacteria, Metals, Pesticides

The San Diego Bay WMA consists of three major watersheds that vary greatly in terms of size, population, and land use, and have different water quality issues as a result. Because the amount and type of data available in each watershed may not be the same, the San Diego Bay Copermittees have attempted to assess each watershed independently to provide a more accurate assessment of the San Diego Bay WMA as a whole.

Assessments were conducted using data from the various monitoring programs and the results were applied to the relevant core management questions using a weight-of-evidence approach. Wet weather monitoring was not conducted in the Sweetwater and Otay HUs during the 2007-

2008 monitoring season because this monitoring was not required by the rotational monitoring under Order R9-2007-0001. As a result, assessment is limited to historical receiving water monitoring data, jurisdictional DWM data, and CSDM data. Although MLS monitoring data has been collected and assessed within the Pueblo San Diego and Sweetwater HUs, the San Diego Bay Copermittees have not accrued this data for the Otay HU since the 2001-2002 monitoring season due to insufficient flow. A Temporary Watershed Assessment Station (TWAS) station within the lower Otay HU will be monitored during 2009-2010. This will provide useful information needed to address data gaps and to establish a comprehensive assessment of the Otay HU.

Water bodies in the San Diego Bay WMA and constituents that have been placed on the SWRCB 2006 Section 303(d) list are presented in Table 2-2. The table includes the water bodies that are listed in which a total maximum daily load (TMDL) has been either adopted or is in development.

Table 2-2. San Diego Bay WMA SWRCB Section 303(d) Listed Water Bodies and TMDL Status.

Water Body Name	Pollutant/Stressor	TMDL Status
Pueblo San Diego HU		
San Diego Bay Shoreline, near Sub-Base	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, Shelter Island Shoreline Park	Indicator bacteria	In development
San Diego bay Shoreline, at Harbor Island (West Basin)	Copper	Not developed
San Diego Bay Shoreline, G Street Pier	Indicator bacteria	In development
San Diego Bay Shoreline, near Switzer Creek	Chlordane, Lindane/Hexachlorocyclohexane, and PAHs	In development
San Diego Bay Shoreline, vicinity of B Street and Broadway Piers	Indicator bacteria, benthic community effects, and sediment toxicity	In development
San Diego Bay Shoreline, Downtown Anchorage	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, at Harbor Island (East Basin)	Copper	Not developed
San Diego Bay Shoreline, at Marriott Marina	Copper	Not developed
San Diego Bay Shoreline, at America's Cup Harbor	Copper	Not developed
Shelter Island Yacht Basin	Copper	TMDL adopted
Chollas Creek	Copper, lead, zinc, and diazinon	TMDLs adopted
Chollas Creek	Indicator bacteria	In development
San Diego Bay Shoreline, near Chollas Creek	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, 32nd Street Naval Station	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, between Sampson Street and 28th Street	Copper, mercury, PAHs, PCBs, and zinc	In development
San Diego Bay Shoreline, Near Coronado Bridge	Benthic community effects and sediment toxicity	Not developed
San Diego Bay Shoreline, Seventh Street Channel	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, north of 24th Street Marine Terminal	Benthic community effects and sediment toxicity	Not developed
Sweetwater HU		
San Diego Bay Shoreline, at Bayside Park (J Street)	Indicator bacteria	In development
San Diego Bay Shoreline, at Chula Vista Marina	Copper	Not developed
Sweetwater Reservoir	Dissolved oxygen	Not developed
Loveland Reservoir	Aluminum, manganese, and dissolved oxygen	Not developed
Otay HU		
Pacific Ocean Shoreline, Imperial Beach Pier	PCBs	Not developed
San Diego Bay	PCBs	Not developed
San Diego Bay Shoreline, at Coronado Cays	Copper	Not developed
San Diego Bay Shoreline, at Glorietta Bay	Copper	Not developed
Pogi Canyon Creek	DDT	Not developed
Otay Reservoir, Lower	Color, iron, manganese, nitrogen ammonia (total ammonia), and pH (high)	Not developed

2.1.2 Receiving Water Body Water Quality Assessment

One component of San Diego Bay WMA water quality assessment focuses on analyzing data collected from receiving water bodies under ambient conditions. This component evaluates current receiving water conditions and tracks long-term changes in receiving water quality. Analysis of the data is intended to answer the Core Management Questions listed below, which are numbered as listed in the Municipal Permit.

As stated in Section 2.1.1, to accomplish the goals of the new Permit, monitoring was scheduled to alternate between the north and south portions of San Diego County each year. Receiving water monitoring and bioassessment monitoring was conducted in the Pueblo San Diego HU during the 2007-2008 monitoring season, but were not conducted in the Sweetwater and Otay HUs. DWM, CSDM, and third-party monitoring, however, were conducted during the 2007-2008 monitoring season in the Sweetwater and Otay HUs. Due to a lack of historical data associated with monitoring in the Otay HU, the summaries presented below are limited to the Pueblo San Diego and Sweetwater HUs.

2.1.2.1 Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Pueblo San Diego HU

The conditions in the Pueblo San Diego HU indicate that beneficial use impairments exist or have the potential to exist. Elevated concentrations of heavy metals, fecal indicator bacteria, TSS, and turbidity continue to be measured above their respective benchmarks. Dissolved copper, TSS, and dissolved zinc exceedances may act as impairments to biological beneficial uses, such as estuarine habitat, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and marine habitat. Fecal indicator bacteria measured above their respective benchmarks during both ambient and wet weather conditions within the Pueblo San Diego HU indicate possible impairment of the REC-2 Beneficial Use. While Chollas Creek is not currently listed as a REC-1 water body, it is listed as having a potential REC-1 Beneficial Use.

CSDM data did not indicate that fecal indicator bacteria from coastal storm drains were impacting coastal receiving waters with any regularity. Monitoring completed by the County of San Diego Department of Environmental Health (DEH) at three beach sites within the Pueblo San Diego HU as part of the AB411 Monitoring Program indicated eight occurrences where indicator bacteria levels exceeded action levels. The causes of these exceedances are mainly unknown; however, three of the instances are likely to be attributed to urban runoff from a storm event and maintenance to a nearby water main line.

The stream bioassessment results indicate evidence of benthic community impairment with Very Poor Index of Biological Integrity (IBI) ratings at the Chollas Creek MLS. However, constituents not measured under this program or physical habitat disturbances may also act as stressors to the benthic community. Use of the numeric nutrient endpoint (NNE) assessment

tool indicated that secondary indicators of eutrophication were protective of beneficial uses. Current nutrient concentrations at the MLS do not appear to be inducing low dissolved oxygen or elevated biomass. Potential impairment of the WARM Beneficial Use was indicated by a measured pH level above 9.0 pH units.

Toxicity was not observed to *C. dubia* in exposures to storm water collected during the 2007-2008 monitoring season. However, toxicity to *H. azteca* was observed in greater than 50% of the samples, providing evidence of persistent toxicity. The increasing trend in *H. azteca* toxicity is likely attributed to the presence of synthetic pyrethroids, based on Toxic Identification Evaluations (TIE) performed on Chollas Creek storm water in 2006. Chemistry results from the 2007-2008 monitoring season indicate Bifenthrin concentrations were above the water quality benchmark during both storm events. Similarly, post-storm sediment analyses detected Bifenthrin above the sediment benchmark value of 3.0 ng/g. Cyfluthrin, Cypermethrin, and Permethrin were detected above reporting limits but were below sediment benchmarks.

Sweetwater HU

Because wet weather monitoring was not conducted at southern San Diego County stations during the 2007-2008 monitoring season, historical water quality results from 2001-2007 were assessed. Based on the monitoring and data analyses conducted (limited to jurisdictional DWM, CSDM, and historical receiving water data), the conditions in the Sweetwater HU indicate that beneficial use impairments exist or have the potential to exist. Nitrate exceedances in urban runoff present potential threats to receiving water ecosystems, such as estuarine habitat, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and marine habitat. Similarly, persistent TDS and turbidity benchmark exceedances represent potential impairments to these same biological beneficial uses. Fecal indicator bacteria are persistently above their respective benchmarks during wet weather conditions within the Sweetwater HU, indicating possible impairment of the REC-1 Beneficial Use during storm events. CSDM data did not indicate that fecal indicator bacteria from coastal storm drains was impacting coastal receiving waters with any regularity. In addition, the County of San Diego DEH AB411 Monitoring Program reported three exceedances of indicator bacteria during the 2007-2008 monitoring period.

The stream bioassessment results indicate evidence of benthic community impairment with IBI ratings of Very Poor at the Highway 94 Site and at the Bonita Road Site on Sweetwater River. Monitoring results have not shown evidence of persistent toxicity.

Otay HU

Data associated with receiving water quality is limited within the Otay HU. CSDM data collected within the Otay HU did not indicate that fecal indicator bacteria from coastal storm drains was impacting coastal receiving waters with any regularity. The County of San Diego DEH AB411 Monitoring occurred at three locations within the Otay HU, resulting in seven indicator bacteria exceedances.

Regional Harbor Monitoring Program Findings

The Regional Harbor Monitoring Program (RHMP) was developed by the Port of San Diego, the City of San Diego, the City of Oceanside, and the County of Orange to address questions regarding the general water quality and condition of aquatic life in the four harbors within State Water Resources Control Board (SWRCB) Region 9 (San Diego). San Diego Bay was one of the four harbors sampled in this project. Key findings that help to answer Core Management Question 1 include:

- Copper concentrations in marinas were above water quality benchmarks, while concentrations of other metals and polyaromatic hydrocarbons were below water quality benchmarks.
- All bacterial concentrations were below AB 411 levels, which support REC-1 beneficial uses.
- The majority of physical water column measures occurred at levels suitable to support healthy biota.
- Sediment concentrations of copper in marinas and zinc in freshwater-influenced and marina strata occurred at levels likely to cause adverse biological effects.
- Polyaromatic hydrocarbons and all other sediment metals (except arsenic and mercury) primarily occurred at concentrations that were not likely to result in adverse biological effects.
- The majority of the freshwater-influenced and marina areas contained sediments that were not toxic.
- Benthic infaunal communities in both strata occurred at intermediate levels of disturbance.
- In the marina stratum, the primary surface water, sediment, and benthic infaunal community indicators occurred at levels that were worse than harbor-wide historical conditions.
- Toxicity levels in the marina sediments were generally better than harbor-wide historical conditions.
- In the freshwater-influenced stratum, primary surface water, sediment, and toxicity indicators were better than historical conditions; only benthic infauna indicators were worse.
- The marina stratum tended to have higher concentrations of surface water and sediment chemistry indicators when compared with the freshwater-influenced stratum.
- Toxicity levels and benthic infaunal communities did not differ between the two strata.
- From 2005-2007, no negative short-term trends were evident for any indicator of a degrading condition.

2.1.2.2 Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

An assessment of the extent and magnitude of receiving water quality problems is important to understand which constituents represent a significant majority of receiving water problems as well as to understand those spatial and temporal characteristics which may be attributed to water quality problems. To answer the extent and magnitude of receiving water problems, sample results were compared using magnitude of exceedance ratios.

Pueblo San Diego HU

Magnitudes of exceedances in Chollas Creek during wet weather were higher during the first flush event than during the February event for the COCs, with the exception of the *H. azteca* No Observed Effect Concentration (NOEC) values. For one or more of the storm events, turbidity, fecal coliform, and *H. azteca* toxicity were greater than five times the benchmark, while TSS, dissolved copper, and dissolved zinc were two to four times the benchmark. Although concentrations of the banned pesticides Chlorpyrifos and diazinon were detected during both 2007-2008 monitored storm events, concentrations were below water quality benchmarks. However, synthetic pyrethroids were detected during every sample collected in Chollas Creek, including third-party samples collected from both forks in the upper watershed.

Recent studies suggest that as a consequence of its highly urbanized location, Chollas Creek may receive a significant portion of its total copper load from aerial deposition of roadway dust (copper is a main component of automotive brake wear), industrial emissions (WESTON, 2007), and air conditioner condensate (City of San Diego, 2008). Third-party data taken from a sampling location upstream of the Chollas Creek MLS indicated that upstream and downstream dissolved metals concentrations were fairly consistent within the north fork and south fork of Chollas Creek. Dissolved copper and dissolved zinc were slightly higher in the upper watershed than at the base of the watershed during some storm events, while for other storm events, the opposite was true.

Monitoring during ambient conditions at the Chollas Creek MLS occurred twice during the reporting period during March and June of 2008. While the results from the March monitoring event yielded several analytes above benchmark values, water quality during the June ambient weather event was markedly improved. Stream bioassessment data indicate a benthic community impairment rating of Very Poor at the MLS. The nearest reference site, Boulder Creek, had an IBI score rating of Fair.

Sweetwater HU

To answer the extent and magnitude of receiving water problems, historical sample results were compared using magnitude of exceedance ratios. In 2006-2007, constituents that were above water quality benchmarks consisted of TDS, turbidity, biologic oxygen demand (BOD), fecal coliform, and *C. dubia* reproduction NOECs. The *C. dubia* reproduction NOEC (15 times the

benchmark) and BOD (four times the benchmark) were highest during the first flush event, while turbidity (three times the benchmark) was highest during the February 2007 event. Fecal coliform concentrations were measured at approximately 20 times the benchmark during the October 2006 and February 2007 events. Stream bioassessment data from the 2006-2007 monitoring season rates the benthic community as Very Poor on the Sweetwater River at both Highway 94 and at Bonita Road. These ratings were consistent with previous ratings at these locations since 2001.

Regional Harbor Monitoring Program Findings

Key RHMP findings that help to answer the extent and magnitude of water quality problems include:

- All bacterial concentrations were below AB 411 levels, which support REC-1 beneficial uses.
- Sediment concentrations of copper in marinas and zinc in freshwater-influenced and marina strata occurred at levels likely to cause adverse biological effects.
- The majority of the freshwater-influenced and marina strata contained sediments that were not toxic.
- Benthic infaunal communities in both strata occurred at intermediate levels of disturbance.
- The marina stratum tended to have higher concentrations of surface water and sediment chemistry indicators than the freshwater-influenced stratum.
- Toxicity levels and benthic infaunal communities did not differ between the two strata.

2.1.2.3 Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Pueblo San Diego HU

In general terms, the conditions of the receiving water appear to have remained consistent with those of previous monitoring years. Significantly increasing trends were noted for turbidity, total copper, total zinc, and *H. azteca* toxicity. Decreasing trends were noted for nitrate and TDS. Although the yearly increase in turbidity is slight, turbidity values are above the benchmark. Both copper and zinc are associated with atmospheric deposition stemming from transportation and industrial land uses in this watershed. Increasing trends of copper and zinc may be associated with drier than normal conditions where resuspension of particulates and continued buildup prior to the wet season results in higher concentrations in storm water runoff.

H. azteca toxicity responses have been attributed to the use of synthetic pyrethroids within the watershed. The NOEC for *H. azteca* has been decreasing in recent years, representing increased toxicity to the benthic community. Toxicity to *C. dubia* from exposure to water

collected at the Chollas Creek MLS was not observed in 2007-2008, but has occasionally been observed in previous years associated with diazinon detections. With fewer exceedances of diazinon over time, it is evident that *C. dubia* survivorship has improved.

Bioassessment data results over the period of monitoring from 2001-2008 do not indicate any observed changes in benthic quality ratings. The MLS has had IBI ratings of Very Poor for the past three years and has been rated either Poor or Very Poor since 2001-2002.

Sweetwater HU

Trend evaluation at the Sweetwater MLS was based on previous monitoring years. In general terms, the conditions of the receiving water showed only two constituents, pH and dissolved phosphorus, with increasing trends. Although there is an increasing trend for pH, it remains within the center of the pH range (6.5-8.5 pH units); dissolved phosphorus remains below the water quality benchmark value of 2.0 mg/L.

Bioassessment results over the period of monitoring from 2001-2007 at both Sweetwater River locations indicate that conditions within the benthic community have remained relatively static with regard to IBI ratings. IBI ratings of Very Poor have been recorded in both spring and fall surveys, with one exception at both Sweetwater River bioassessment locations since 2002. Similarly, observed to expected (O/E) taxa ratios have been representative of substantially impaired communities.

As previously mentioned, toxicity has been observed in samples collected from the Sweetwater River MLS. The exceedance rate for toxicity for *C. dubia* survival was 17% in both acute and chronic testing, while the exceedance rate for reproductive toxicity was 33%. Toxicity was observed in *S. capricornutum* in 39% of the bioassay tests performed since 2001. However, in the past two years, only two of 18 tests have shown toxicity; therefore, there is evidence that survivorship of bioassay tests conducted at the Sweetwater River MLS during storm water events is improving.

Regional Harbor Monitoring Program Findings

The RHMP key findings that help to determine trends in receiving waters include:

- In the marina areas, the primary surface water, sediment, and benthic infaunal community indicators occurred at levels that were worse than harbor-wide historical conditions.
- Toxicity levels in the marina sediments were generally better than harbor-wide historical conditions.
- In the freshwater-influenced stratum, primary surface water, sediment, and toxicity indicators were better than historical conditions; only benthic infauna indicators were worse.

- From 2005-2007, no negative short-term trends were evident for any indicator of a degrading condition.

2.1.3 Urban Runoff Discharges Water Quality Assessment

An evaluation of urban runoff discharge water quality from MS4s is the second component of the San Diego Bay WMA assessment. Urban runoff discharges are evaluated for dry weather discharges and wet weather discharges. Data collected for the urban runoff discharge component of the water quality assessment is separated into wet weather data and dry weather data because the mechanisms and extent of pollutant mobilization are somewhat different for the two types of conditions.

2.1.3.1 Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?

Pueblo San Diego HU

Core Management Question 3 is partially answered through the evaluation of DWM Program data and CSDM Program data, trash assessments, and pyrethroid monitoring assessments. Data from the jurisdictional DWM show that within the Pueblo San Diego HU, several constituents, including conductivity, fecal indicator bacteria, and turbidity frequently exceeded water quality benchmarks. Fecal coliform, *enterococci*, and turbidity were also identified as an either high or medium frequency of occurrence COC at the Chollas Creek MLS, suggesting urban runoff is contributing to the receiving water problems.

During the CSDM Program, no wet weather fecal indicator bacteria exceedances were detected at storm drains discharging to coastal receiving waters. One of two storm drain samples collected during dry weather conditions exceeded the dry weather action level for fecal coliform. However, receiving water samples remained below benchmarks. As a result, the coastal storm drains within the Pueblo San Diego HU do not appear to be adversely affecting receiving waters with respect to fecal indicator bacteria.

Trash and synthetic pyrethroids are solely anthropogenic in nature, and their route to receiving waters occurs through urban runoff, direct dumping, or via indirect sources (e.g., wind or animals such as birds, coyotes, and rodents). An increasing trend in *H. azteca* toxicity has been attributed to the presence of synthetic pyrethroids. Bifenthrin was above the water quality benchmark during both storm events and in post-storm sediment analyses. While it appears likely that pesticide use will continue within the watershed, the active ingredients comprising these compounds may change over time based on regulations, availability, price, and effectiveness. Trash surveys taken at the Chollas MLS rated the site Marginal 75% of the time and Optimal 25% of the time.

Sweetwater HU

In the Sweetwater HU, only DWM data and CSDM data are available for the 2007 DWM monitoring season. Data from the DWM indicate that within the Sweetwater HU, several constituents, including conductivity, fecal indicator bacteria, nitrate, and turbidity frequently exceeded water quality benchmarks. Fecal coliform was also identified as a high frequency of occurrence COC within the Sweetwater receiving water, suggesting that urban runoff may be contributing to the receiving water problems.

During the CSDM Program, only one sample was collected from the storm drain and one sample was collected from the receiving water. The low number of samples was likely due to dry conditions at either the storm drain outfall or the receiving water. Although fecal coliform and total coliform concentrations were above dry weather action levels at the storm drain, no exceedances were measured at the receiving water. Due to the limited number of samples (one sample) collected in the CSDM Program, it is difficult to accurately assess whether coastal receiving waters are being impacted by fecal indicator bacteria contained in urban runoff.

Otay HU

In the Otay HU, only jurisdictional DWM data and the CSDM Program data were available for the 2007 DWM monitoring season. Constituent results above dry weather action levels at the DWM Program sites included ammonia, conductivity, *enterococci*, total coliform, fecal coliform, orthophosphate, nitrate, and surfactants (MBAS). Nearly half of the dry weather monitoring stations sampled had bacterial concentrations that were above action levels. Exceedances were generally located in the northern portion of the Coronado HA and Lower Otay Valley HA.

Results of CSDM conducted within the Otay HU during the 2007 DWM season did not showcase exceedances of indicator bacteria. Due to the limited amount of monitoring data located within Otay HU, a direct association between urban runoff discharge and receiving water quality could not be made.

2.1.3.2 Core Management Question #4 – What are the sources of urban runoff that contribute to receiving water problem(s)?

Pueblo San Diego HU

A variety of analyses can be used to determine the sources of urban runoff that contributes to receiving water quality problems including, but not limited to, storm water program monitoring and land use data. The DWM and CSDM Programs provide some measure of urban runoff sources. The lower watershed sites are located in areas downstream of residential and transportation land uses which have the highest potential for contributing pollutants to receiving waters. Trash assessments conducted at the Chollas Creek MLS site included three Marginal rankings and one Optimal ranking, which indicated that the most prevalent trash observed was household waste. The potential routes indicated for these assessments was determined to be

through dumping or littering, while other potential sources were unable to be determined. However, due to the limited dataset, this assessment is only limited to the area in close proximity of the MLS. Future trash information collected during the 2008 DWM Program should provide a more robust dataset to address Core Management Question 4. The DWM Program and the CSDM Program have measures to identify sources and eliminate illicit discharges (IC/ID). Future MS4 Outfall Monitoring and Source Identification Monitoring will also provide additional data useful in answering Core Management Question 4.

Additionally, the City of San Diego conducted an aerial deposition study to determine if fallout from aerial deposition represents a significant pathway for metals pollutant loading in various waterways within Pueblo San Diego HU. Results indicate the following:

- Sites along Chollas Creek have the highest loading deposition rates.
- Santa Ana winds and local wildfires may cause significant higher deposition rates within areas of the City of San Diego as a result of ash fallout and higher resuspension rates.
- Wet weather deposition rates are low but may be a contributing factor in wet weather exceedances of dissolved copper and zinc in Chollas Creek based on the low compliance levels set by the California Toxics Rule. Additionally, wet weather deposition of copper and zinc may be more influential for Chollas Creek than studies from other regions have indicated.
- Indirect aerial deposition particulates account for the majority of copper, zinc, and to a lesser degree, lead that is found in storm water runoff. Copper and lead were found to have relatively low solubility in their freshly deposited state—11% and 2.5%, respectively, were the highest solubility rates measured—while zinc solubility was considerably higher (88% of the total zinc concentration).

Sweetwater and Otay HUs

Due to the limited amount of data collected in the Sweetwater and Otay HUs during 2007-2008, an accurate assessment of the sources of urban runoff discharges has not been conducted. The Sweetwater MLS and the future TWAS within the Otay HU are located in areas downstream of primarily residential and transportation land uses, which have the highest potential for contributing pollutants to receiving waters. Future assessments likely to provide more insight into sources of urban runoff include trash assessments, the MS4 Outfall Monitoring Program, and the Source Identification Program.

2.1.4 Prioritization of Water Quality Issues

The San Diego Bay Copermittees presented a Baseline Watershed Evaluation (BWE) assessment in the San Diego Bay WURMP document. The BWE process utilized Baseline Long-Term Evaluation Assessment (BLTEA) ratings, monitoring data, and source information to determine water quality problems throughout the San Diego Bay WMA. The evaluation was conducted at the HA scale so that management actions could be better focused to address

water quality problems. Section 3 of the San Diego Bay WURMP document provides a summary of the baseline conditions.

The results of the BWE are intended to serve as guidance throughout the course of the Permit. In addition, the results of the BWE serve as a metric to which annual monitoring assessments of current conditions can be compared. Annual assessments intend to portray changes in the frequency of occurrence and trends for constituents as well as overall water quality. Using annual assessments of water quality allows the San Diego Bay Copermittees to track improvements associated with watershed activities or determine increasing trends of pollutants which require specific management actions.

Table 2-3 portrays the BLTEA ratings which are updated on a five-year cycle and are used to guide long-term programmatic watershed activities. The table also provides a comparison of 2006-2007 and 2007-2008 high frequency of occurrence ratings. The results are compared to evaluate whether or not water quality improvements occur on an annual basis. The following text provides a summary of the annual assessment compared to the baseline metric reported in the San Diego Bay WURMP document.

Table 2-3. BLTEA Ratings for the San Diego Bay WMA.

Watersheds/Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
San Diego Bay WMA	**100%**	***D***	***B***	***D***	***D***	***C***	***C***	***D***	***D***	***B***	***C***	***B***
Point Loma HA (908.10)	2%	*A*	*D*	*D*	*B*	*C*	*B*	*D*	*D*	*A*	*A*	*A*
San Diego Mesa HA (908.20)	9%	*A*	*D*	*A*	*D*	*A*	*A*	*C*	*B*	*A*	*A*	*A*
National City HA (908.30)	2%	*C*	*D*	*D*	*C*	*B*	*C*	*B*	*C*	*A*	*A*	*A*
Lower Sweetwater HA (909.10)	11%	*D*	*A*	*D*	*D*	*C*	*B*	*D*	*D*	*A*	*A*	*B*
Middle Sweetwater HA (909.20)	19%	*D*	*B*	*D*	*D*	*C*	*A*	*D*	*D*	*C*	*B*	*B*
Upper Sweetwater HA (909.30)	22%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*C*	*C*	*B*	*B*
Coronado HA (910.10)	2%	*D*	*D*	*D*	*D*	*C*	*D*	*D*	*B*	*A*	*D*	*D*
Otay Valley HA (910.20)	10%	*D*	*D*	*D*	*D*	*C*	*D*	*C*	*C*	*A*	*D*	*D*
Dulzura HA (910.30)	22%	*D*	*B*	*D*	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*C*
2006-2008 Diamond Ratings												
2006-2007 monitoring season High[1] Frequency of Occurrence Ratings and COCs	Wet weather	♦♦♦ Copper Lead Zinc				♦♦♦ Tur-bidity				♦♦♦ Total coliform Fecal coliform *Entero-cocci*	Very Poor IBI	
2007-2008 monitoring season Pueblo San Diego HU High[1] Frequency of Occurrence Ratings and COCs	Wet weather					♦♦♦ TSS Tur-bidity				♦♦♦ Total coliform Fecal coliform *Entero-cocci*	Very Poor IBI	Yes
	Ambient	♦♦♦ Copper	♦♦♦ TDS									
2007-2008 monitoring season Sweetwater HU High[1] Frequency of Occurrence Ratings and COCs	Wet weather									♦♦♦ Fecal coliform	Very Poor IBI[2]	
	Ambient											

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.
2. This rating based on 2006-2007 monitoring information. No new data was collected during FY 07-08.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

2006 SWRCB Section 303d listing

Pueblo San Diego

During the 2007-2008 monitoring year, both wet weather and ambient conditions were evaluated within the Pueblo San Diego HU. TSS, turbidity, total and fecal coliforms, *enterococci*, dissolved copper, and TDS were identified as high frequency of occurrence COCs. As presented in Table 2-2, these results are similar to past reporting periods with the exception of a reduction of the frequency of occurrence for dissolved lead and zinc and an increase in the frequency of occurrence for TSS and TDS. Dissolved lead did not exceed benchmark values during two wet weather monitoring events. Dissolved zinc was rated as a low frequency of occurrence during wet weather monitoring.

The results of monitoring regarding pesticides remained similar to past reporting periods. Diazinon and Malathion concentrations were detected below the acute benchmarks. The shift in use patterns from diazinon to readily available synthetic pyrethroids is evident. The synthetic pyrethroid Bifenthrin was above the benchmark during both storm events monitored, while three other pyrethroids were detected during the first flush storm event.

A review of the statistical trends for constituents in the Pueblo San Diego HU shows significantly increasing trends for turbidity, total copper, and *H. azteca* acute toxicity. The significantly increasing trend for *H. azteca* toxicity is likely associated with the increased use of synthetic pyrethroids. Significantly decreasing trends are evident for TDS and nitrates.

Bioassessment monitoring was conducted at one monitoring site in the Pueblo San Diego HU, located in Chollas Creek at Federal Blvd. The Chollas Creek Site had IBI ratings of Very Poor during both spring and fall surveys. The O/E ratios of the site also indicated that the site had degraded macroinvertebrate communities.

Sweetwater HU

During the 2007-2008 monitoring year, receiving water monitoring and bioassessment monitoring were not conducted in the Sweetwater HU. Monitoring data was limited to DWM, CSDM, and DEH AB411 monitoring data. Due to the lack of monitoring data during this period, there have not been any significant changes to the COCs identified for the Sweetwater HU. Fecal coliform remains a high frequency of occurrence COC for the Sweetwater HU. Future monitoring at the Sweetwater River MLS station will occur during 2008-2009 and 2009-2010.

Otay HU

Receiving water monitoring and bioassessment monitoring have not been conducted in the Otay HU since the 2001-2002 monitoring season. Monitoring data for 2007-2008 was limited to DWM, CSDM, and DEH AB411 monitoring data. Results from the DWM program indicate that nearly half of the samples collected had exceedances of bacteria. The overall DWM exceedance percentage is similar to that observed within the Pueblo San Diego Watershed. Future monitoring including a TWAS location will be conducted within this watershed during the

2009-2010 monitoring year and will provide the San Diego Bay Copermittees with a more robust dataset to analyze trends and water quality problems. Due to the lack of monitoring data during this period, there have not been any significant changes to the COCs identified for the Otay HU. As a result, the high priority water quality problems remain as reported in the San Diego Bay WURMP document.

2.2 Pollutant Source Assessment

The Permit requires the San Diego Bay Copermittees to identify the high priority water quality problems and identify the likely sources within the San Diego Bay WMA, then implement activities that will address these pollutants. A key component of identifying pollutants is knowledge of the land uses for each HA and the pollutant-generating activities generally associated with these specific land uses.

In an effort to increase the effectiveness of the likely sources information presented in Tables 3-4 and 3-5 within Section 3.3 of the San Diego Bay WURMP document, the San Diego Bay Copermittees have streamlined the information and presented the source information at the HA level in Table D-1 and D-2 in Appendix D of this Annual Report. Table D-1 identifies the high priority pollutants within each HA, land use percentages, pollutant-generating activities, and the Watershed Strategy recommendation for improving water quality in these HAs. The categories consist of commercial, residential, streets and roadways, parks, and construction site activities. Table D-2 details the pollutants generated by business sources within each HA.

Although common business activities tend to produce similar pollutants, land uses vary in each HA and impact water quality differently, which requires strategic planning and coordination of watershed water quality activities and watershed education. This understanding of land use activity and associated pollutants, coupled with the BLTEA ratings allows the San Diego Bay Copermittees to identify appropriate programs to address the high priority water quality problems within the San Diego Bay WMA.

The San Diego Bay Watershed Strategy to improve water quality includes a combination of joint and individual jurisdictional efforts to monitor, identify, investigate, educate, implement appropriate BMPs, and enforce where necessary. The information presented in this section will assist in developing appropriate assessment techniques and programs to improve impaired water quality.

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Section 3: Implementation of Watershed Activities

3.1 Watershed Water Quality Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. Watershed Activity Implementation Summary Sheets for all watershed activities implemented during this reporting period, including activities implemented in compliance with a TMDL, are located in Appendices E and G of this Annual Report. The format of the activity summary template utilized by the San Diego Bay Copermittees is presented in the San Diego Bay WURMP document.

The San Diego Bay Copermittees relied on the Watershed Strategy to guide the selection of watershed water quality activities. Each Copermittee has individually decided which activities are feasible to institute in their jurisdiction, and has selected watershed water quality activities for implementation that are appropriate for their relative contribution to the watershed's high priority water quality problems.

Table 3-1 presents the water quality activities implemented in FY 07-08. During this reporting period, the San Diego Bay Copermittees implemented 15 Load Reduction and Source Abatement Activities, six Targeted Special Studies, four TMDL related Activities, and eight Monitoring and Source Identification Activities. Progress has been described for each watershed activity and the Copermittees have identified what was accomplished during the reporting period and how it pertains to high priority water quality problems in particular HAs.

As part of the collective effort, the Copermittees identified four common jurisdictional water quality activities and began the process of coordinating and standardizing these activities at the watershed level during this reporting period. This collaborative approach was utilized because these activities were identified as being beneficial to address the high priority water quality problems, and can be applied within different locations and at different scales of implementation as determined appropriate by each Copermittee within their respective HA. The collaborative activities included Pet Waste Bags, Storm Drain Litter Control Techniques, Enhanced Street Sweeping and Cleanup Events. The benefit of this approach is that it allows an assessment of the activity at both the jurisdictional level as well as at a HA or watershed level.

Table 3-1. San Diego Bay WURMP Water Quality Activities in FY 07-08.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																			
Trash and Debris Related Activities																			
Pet Waste Bag Collaborative Watershed Activities (1)	X	X		X			X	X	X	●				●					
Storm Drain Litter Control Techniques Collaborative Watershed Activity (2)		X	X	X														●	●
Enhanced Street Sweeping Collaborative Watershed Activities (3)	X	X	X	X			X						●					●	●
Collaborative Cleanup Events (4)		X	X	X			X	X											●
Clean Community Program (5)			X							●		●							●
Trash Containment Boom Cleaning Agreement with US Navy (6)		X	X							●									●
Enhanced Inspection Activities																			
Additional Dry Season Construction Inspections (7)			X	X														●	●
San Diego Bay Watershed Targeted Facility Inspections (8)	X	X	X	X				X		●			●						
Enhanced Construction Oversight (9)		X																●	
La Mesa Business Inspection Supplemental Watershed Questionnaire (10)			X	X						●			●				●		
Targeted Special Studies																			
Chollas Creek Water Quality Protection & Habitat Enhancement Project (11)		X								●	●	●	●	●	●	●	●	●	
Municipal Rain Barrel Installation and Downspout Disconnects (12)	X	X	X	X				X		●				●	●		●	●	
Dalbergia "Green Mall" Infiltration Retrofit (13)		X								●			●						
Southcrest Park Green Lot Infiltration Project (14)		X								●			●						
Memorial Park "Green Lot" Infiltration Retrofit Activity (15)		X								●			●						
TMDL Activities																			
Shelter Island Yacht Basin Dissolved Copper TMDL (16)	X												●						
Chollas - Switzer - Paleta Creek Mouths TMDL (17)	X	X											●			●			
Chollas Creek Diazinon TMDL (18)	X	X															●		
Chollas Creek Dissolved Metals TMDL (19)		X											●						

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																			
Enhanced Dry Weather Monitoring Program (20)		X								•	•	•	•	•	•	•	•	•	•
Coordinated Dry Weather Monitoring Programs (21)	X	X								•			•	•		•	•	•	•
La Mesa Water Quality Monitoring Program (22)		X								•	•	•	•	•	•	•	•	•	
BMP Effectiveness Monitoring Program (23)		X										•	•		•			•	
Dry Weather Aerial Deposition Study (24)		X											•					•	
Regional Harbor Monitoring Program (25)	X	X	X	X			X			•	•	•	•		•			•	
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (26)		X								•								•	
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (27)		X								•									

* Numbers in parenthesis () indicate the order in which the watershed water quality activity summary sheets are presented in this Annual Report.

Currently, there are four TMDLs that have either been adopted or are in the final stages of development, as indicated by Table 2-2. Activity summary sheets have been prepared in order to provide updated information on the efforts by the San Diego Bay Copermittees during this reporting period to meet the requirements set forth in Section J.3.b.l. of the Permit. Further assessment of TMDL BMP implementation efforts is presented in Section 4.2 of this Annual Report.

The Watershed Strategy indicates that where there are data gaps that must be filled before successful implementation of a load reduction activity can occur, monitoring and/or source identification activities are necessary. Eight monitoring and source identification activities were implemented during this reporting period. While the San Diego Bay Copermittees recognize that these types of activities are not considered for credit toward Permit compliance, the importance of the monitoring information to the overall success of the Watershed Strategy and the Copermittees' ability to address high priority water quality problems cannot be overlooked. Monitoring information will support future management decisions regarding the planning, implementation, and assessment of watershed activities.

3.2 Watershed Education Activities

The San Diego Bay Copermittees have recognized the need for education programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Section 3.2.1 details the Watershed Education Activities that the Copermittees have implemented this reporting year.

3.2.1 San Diego Bay Education Program

The San Diego Bay Education Program is outlined in the San Diego Bay WURMP document. The program's focus is to educate the public about the San Diego Bay WMA and the high priority water quality problems within the watershed. The San Diego Bay Copermittees have implemented several short and long-term educational tasks that address watershed concepts and watershed pollutants. These tasks also overlap several programs within Municipal Permit compliance on a jurisdictional, watershed, or regional level.

Table 3-2 provides a summary of the education tasks that the San Diego Bay Copermittees implemented this reporting year. Each of the tasks is further described in Sections 3.2.2.1 – 3.2.2.6. Rather than listing the number of individuals estimated to have been reached by each subcategory activity, the table lists the number of events as a more representative summation of the education and outreach efforts. Additionally, the overlapping nature of these educational activities across jurisdictional, watershed, and regional boundaries is presented. The table also provides an indication of the jurisdiction(s) that participated or provided the opportunities for certain types of educational activities, as well as the relationship of these educational activities to watershed concepts and/or surface water pollutants, especially those pollutants found to be pollutants of concern in the San Diego Bay WMA. Information on specific education events can

be found in Appendix F of this report. Additionally, activity implementation summary sheets for educational activities listed for implementation in FY 07-08 in the San Diego Bay WURMP document are located in Appendix G. Please note that in an effort to include only San Diego Bay WURMP watershed education activities, events that did not specifically discuss the San Diego Bay WMA and/or watershed pollutants of concern were excluded from both Table 3-2 and Appendix F.

3.2.1.1 Public Presentations and Media for Watersheds

The Public Presentations and Media Watershed Elements of the San Diego Bay Education Program were designed to incorporate general watershed, receiving water, and storm water pollution prevention concepts and principles into existing and planned public presentation and media opportunities at the jurisdictional level. The San Diego Bay Copermittees have used a variety of means to meet this objective and will continue to evaluate and improve their effectiveness. For purposes of this Annual Report, the Public Presentation and Media element of the Education Action Plan has been subcategorized under six sub-headings as shown in Table 3-2 and described below. Further detail on these activities is provided in Appendix F.

Jurisdiction Storm Water Specific Events – These efforts were typically jurisdictional staff presentations to civic and business groups that specifically discuss watershed issues, storm water pollutants, BMPs, and storm water regulatory requirements. The San Diego Bay Copermittees held 21 events over eight different jurisdictions. Examples of these types of events implemented in FY 07-08 include: The Negocio Verde Pollution Prevention (P2) Workshop for Marinas and Boaters; the Standard Urban Storm water Mitigation Plan (SUSMP) workshop for the development, planning, and construction community; and the Building Industry Association Seminar-Preparation of a Storm Water Pollution Prevention Program (SWPPP) and Sampling Program using the Building Industry Association (BIA) Template for construction site owners and developers.

Jurisdiction-Hosted Events – The San Diego Bay Copermittees have made efforts to present storm water and watershed education information at various functions hosted by other departments within their respective jurisdictions. Examples of this type of activity include: the municipal Fire Station Open House in Coronado at which storm water BMP information was disseminated, Construction BMP Training for City storm water staff at a BIA workshop, and training on the SUSMP Updates for the new Municipal Permit in which Engineering and Land Development Staff learned about the updated SUSMP, Water Quality Technical Reports (WQTR), pollutants of concern, BMP selection, maintenance, Construction Permit, and phased grading.

Community-Hosted Events – The San Diego Bay Copermittees have presented watershed and storm water education at various events hosted by community and private groups within their jurisdiction, such as hosting an information booth at local walking/running race events or trade association conferences.

Festival Participation – Similar to the opportunities to share education materials at events hosted by local community groups or the jurisdictions themselves, community festivals, such as the San Diego County Fair, provide another venue for public outreach and education. The San Diego Bay Copermittees were involved in 17 different events this reporting period, including the Fourth Annual Kids for Clean Water Menehune Surf Fest and the Inaugural Earth Day at the Imperial Beach Pier event.

Print Media – Several of the San Diego Bay Copermittees have made efforts to attract media attention. The Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, and San Diego, as well as the Port of San Diego and the Airport Authority have been successful at gaining print media coverage for their watershed and storm water management efforts and the results of their programs. Articles in the Coronado Eagle and Journal, the Imperial Beach Eagle and Times, and the EDCO Environmental Times were printed during this reporting period. In addition, Copermittees have presented watershed concepts through pamphlets, brochures, and displays or kiosks in public areas. Notably, the Think Blue program messages were advertised on transit shelters and billboards, and on mobile ads on static billboard trucks roaming within the Chollas Creek. Additional information on these activities is located in Appendix G. The San Diego Bay Copermittees continue to explore opportunities at making coordinated efforts to garner print media coverage as an outreach and education mechanism.

Public Service Announcements (PSAs) – The County of San Diego aired three different PSAs this reporting year, which focused on water conservation, gardening, and manure composting. There were a total of 221 airings in the County of San Diego. Additionally, the Think Blue media campaign continues to be a mechanism for conducting watershed and storm water pollution prevention education and outreach throughout the San Diego Bay WMA and the entire region. The 2007-2008 reporting period represents the seventh straight year that Think Blue has been in operation. Think Blue provides outreach to the general public through public service announcements in both English and Spanish. Refer to Appendix G for the activity summary sheet on the *Karma*, *Karma Second Chance*, and *Karma Tourist* PSAs produced and broadcasted by the City of San Diego. In addition to running Think Blue PSA videos on television screens at the Terminal 2 Baggage Claim area, the Airport Authority also displayed "Don't Trash California" anti-littering PSA posters throughout the airport terminals.

Table 3-2. Summary of Education Activities.

						Concepts/Constituents of Concern Addressed					
Tasks from the WURMP Education Action Plan	**Target Audience**	**Program Elements**	**Number of Events**	**Jurisdictional, Watershed, or Regional Program**	**Participating Jurisdictions**	**Watershed concepts**	**General Surface Water concepts**	**Copper/Zinc**	**Pesticides**	**Bacteria**	**Sediment**
Public Presentations and Media - Watershed Element	General Public, Residential, Commercial/ Industrial, Construction, Municipal	Jurisdiction Storm water-specific Events	21	J, W	Chula Vista, Coronado, County, Imperial Beach, National City, Port of San Diego, San Diego, Airport Authority	x	x	x	x	x	x
		Jurisdiction-Hosted Events	13	J, W	Chula Vista, Coronado, Lemon Grove, Airport Authority	x	x	x	x	x	x
		Community-Hosted Events	15	J, W	Coronado, County, La Mesa, Port of San Diego, San Diego	x	x	x	x	x	x
		Festival Participation	17	J, W, R	All	x	x	x	x	x	x
		Print/Electronic Media	51	J, W	Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, Port of San Diego, San Diego, Airport Authority	x	x	x	x	x	x
		Public Service Announcements	8	W, R	All	x	x				
School Programs	K - 12 children	Jurisdiction Staff Presentations	5	J, W	Chula Vista, Airport Authority, Port of San Diego	x	x				

						Concepts/Constituents of Concern Addressed					
Tasks from the WURMP Education Action Plan	**Target Audience**	**Program Elements**	**Number of Events**	**Jurisdictional, Watershed, or Regional Program**	**Participating Jurisdictions**	**Watershed concepts**	**General Surface Water concepts**	**Copper/Zinc**	**Pesticides**	**Bacteria**	**Sediment**
		Jurisdiction-Sponsored Presentations	26	J, W	County, Imperial Beach, La Mesa, National City, Port of San Diego, Airport Authority	x	x	x	x	x	x
		Field Trips	14	J, W	Chula Vista, Coronado, County, Imperial Beach, Port of San Diego	x	x		x	x	
		Project SWELL	2**	W, R	Port of San Diego, Airport Authority, City of San Diego	x	x				
Integrated Pest Management	General Public, Residential, Commercial/ Industrial, Municipal	Jurisdictional IPM Seminars/Events	5	J, W, R	Coronado, Port of San Diego, San Diego	x	x		x		
		San Diego Regional IPM Program	4	W, R	All	x	x		x		
Project Clean Water Watersheds Website	General Public	Website with information related to surface water quality issues, watersheds, and pollutants	6,283	W, R	All	x	x	x	x	x	x
Partners in Clean Water	General Public	Cleanup Events	8	J, W	Chula Vista, Coronado, La Mesa, National City, Port of San Diego, San Diego, Airport Authority	x	x	x	x	x	x
		Citizen Monitoring/ Training	10	J, W	All	x	x	x	x	x	x

3.2.1.2 School Programs: San Diego Bay WMA

School children are a primary focus of the San Diego Bay Education Program. The San Diego Bay Copermittees continue to focus on efforts to effectively promote watershed awareness and to initiate positive behavioral changes in children. The San Diego Bay Watershed Education Program (represented in Table 3-2) shows the four main sub-categories used to describe the education and outreach efforts directed at school children during this reporting period.

Jurisdiction Staff Presentations – Staff from the jurisdictions in the San Diego Bay WMA made a number of presentations at schools throughout the watershed. During these presentations which addressed students at all levels from elementary school to college, staff emphasized watershed issues, recycling, and the general storm water pollutants of concern. The events were estimated to reach over 4,000 students.

Jurisdiction-sponsored Presentations – In addition to conducting presentations or outreach for school children themselves, the San Diego Bay Copermittees also sponsored and/or participated in several additional outreach events. The total attendance at these events was more than 6,000 students.

Field Trips – The San Diego Bay Copermittees provided field trips to the Chula Vista Nature Center, the Maritime Museum, and local wetlands as an effective hands-on means of increasing watershed and water quality awareness in their students. Attendance at these field trips was more than 17,000 students.

Project SWELL – Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, Airport Authority, other municipalities, and non-profit organizations to establish comprehensive water quality and pollution prevention curricula in City schools. Started in May 2003, Project SWELL seeks to educate local school children about our region's watersheds while also fostering a sense of stewardship in these future leaders that will provide long-term solutions to the region's water quality problems. During 2007-2008, Project SWELL reached 10,000 5th graders, 10,000 6th graders, 10,500 4th graders, and 9,000 2nd graders. In all, Project SWELL reached more than 40,000 school children during the reporting period.

3.2.1.3 Integrated Pest Management (IPM)

The San Diego Bay Copermittees believe that public education about IPM is an effective way to protect receiving waters from the impacts of diazinon and other pesticides. IPM promotes the use of integrated, ecologically sound pest management programs. Two main categories are used to describe education efforts related to IPM.

Jurisdictional IPM Seminars and Events – Efforts to educate the public to use IPM as a way to protect the beneficial uses of receiving waters throughout the watershed. This includes

Copermittee efforts to organize or participate in local seminars or events regarding IPM for local residents, businesses, and public agency staff.

San Diego Regional IPM Program – On behalf of the San Diego Regional Copermittees, grant money was used to implement an educational program aimed primarily towards the residential sector to induce positive changes in residents' attitudes and behaviors concerning pesticide use around their homes. During this reporting year and into the next, the San Diego Regional Copermittees participated in a booth and co-sponsored the San Diego County Fair. At the fair, the Copermittees distributed IPM pest tips cards as the main education focus along with other storm water information and giveaways.

3.2.1.4 Project Clean Water Watershed Website

As in previous years, the Project Clean Water (PCW) website (www.projectcleanwater.org) provided a venue for public education and outreach about the San Diego Bay WMA. In addition, the San Diego Bay Copermittees continue to link their individual jurisdictional websites to PCW. Each of these websites presents another mechanism for educating the public about watershed issues. These websites also function as public participation mechanisms. Please refer to the Public Participation section of this Annual Report (Section 3.3) for more information on this aspect of the PCW website for the San Diego Bay WMA.

3.2.1.5 Partners in Clean Water

The San Diego Bay Copermittees continue to nurture new and existing partnerships with individuals and groups within our communities that share our concern for the environment and our watershed. Table 3-2 shows the three main sub-categories used to describe the education and outreach efforts directed at these types of community partnerships during this reporting period.

Cleanup Events – In addition to the obvious public participation aspects of a cleanup event, these events provided an opportunity to conduct education and outreach about watershed issues and general storm water pollutants of concern. All the San Diego Bay Copermittees collectively sponsored the Creek to Bay Cleanup for the fourth year in a row. San Diego Bay Copermittees worked together to help fund and staff cleanup sites within the San Diego Bay WMA. Several of the San Diego Bay Copermittees also participated in Coastal Cleanup Day, as well as a number of smaller, jurisdiction-specific cleanup events. Additional information on the watershed cleanup events is located in Activity Summary Four in Appendix E.

Citizen Monitoring/Training – Citizen Monitoring Training and Citizen Monitoring events also provide opportunities for public participation, as well as education and outreach about watershed issues and general storm water pollutants of concern. The City of Coronado conducted Citizen Monitoring events during this reporting period.

3.2.1.6 Watershed Education for Municipal Staff

The San Diego Bay Copermittees continue to provide storm water education to municipal staff, especially to those staff dealing directly with pollutants of concern in the watershed. Watershed training for municipal staff can be focused on more general concepts or on specific pollutants, depending on the audience. Incorporating watershed education into the required municipal staff training of the Jurisdictional Urban Runoff Management Plan (JURMP) helps the Copermittees address the high priority water quality problems in San Diego Bay. For more information on municipal staff training, please refer to each of the San Diego Bay Copermittee's individual JURMP.

3.3 Public Participation Activities

Public participation during the development and implementation of the San Diego Bay WURMP has been, and continues to be, encouraged to ensure that stakeholder interests and creative solutions are considered. Broad participation is critical to further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process. Further, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own and that broad partnerships are essential to positively affect the water resources in the watershed. It is only through a collaborative approach that we will develop a better understanding of these issues and processes affecting water quality in our watersheds.

Effective public participation is driven by ensuring that the stakeholders are engaged at the appropriate level of decision-making. Public input into any decision-making process can be as simple as providing public notification that an initiative will occur, or a complex process that requires them to be intrinsically involved and responsible for the final decision-based outcome, or any level in between. The proper identification of the role of the public is crucial to ensuring the success of any initiative for which public input is sought. Table 3-3 provides a description of the possible levels of public participation, ranging from simple notifications to empowerment of full decision-making.

Table 3-3. Levels of Public Participation.

Public Participation Objectives				
INFORM	**CONSULT**	**INVOLVE**	**COLLABORATE**	**EMPOWER**
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.

An opportunity for assessing public participation is available through the identification of the appropriate level at which to involve stakeholders in decision-making. Prior to embarking on a public participation opportunity, San Diego Bay Copermittees establish an objective defining the level at which the public is invited to be involved. The effectiveness of public participation in decisions affecting the San Diego Bay WMA can be assessed through an update on the status of that objective in Annual Reports by understanding the numbers of stakeholders reached through each decision-making opportunity (where applicable), and summaries describing how stakeholders participated in each opportunity.

The following section summarizes the activities and efforts made by the San Diego Bay Copermittees to encourage public participation during this reporting period. A complete list of public participation activities conducted within the watershed is included in Appendix H. Please note that this section only discusses the activities that were identified in the Public Participation section of the WURMP and relate to the San Diego Bay WMA. The San Diego Bay Copermittees have also conducted a number of regional programs and events involving the public in general water quality issues. Many municipalities have worked with stakeholders on efforts such as grant applications and water quality data collection.

3.3.1 Storm Water Copermittee Collaboration and Community Workshops

Stakeholder participation is vital to the success of watershed activities. The San Diego Bay Copermittees provided several forums during FY 07-08 that allowed various stakeholder groups to participate in WURMP activities. Community workshops and activities that enhanced collaboration among San Diego Bay Copermittees are discussed below.

San Diego Bay WURMP Meetings

San Diego Bay WURMP meetings were held regularly to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue for public participation by allowing Copermittees and other stakeholders to interact and discuss

local watershed efforts. Appendix B presents a summary of the meetings held by the workgroup during FY 07-08, including an outline of the principal agenda items.

Workshops and Conferences

Several San Diego Bay Copermittees conducted educational workshops addressing storm water issues. These workshops targeted representative from businesses, the construction industry, and the general public. The topics ranged from simple BMP implementation to SWPPP preparation, and many were tailored to specific audiences. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues. The San Diego Bay Copermittees also targeted specific groups by setting up booths at various conferences and city festivals. Educational materials were distributed and personnel at the booths answered questions. More information about these booths is provided below under "Community Events."

Presentations

The San Diego Bay Copermittees conducted a variety of presentations during the reporting period, targeting many different types of audiences. These educational presentations provided educational media as well as a venue for questions about storm water issues to be discussed. Individuals who have a greater awareness and understanding of storm water issues will likely also be more active in taking measures to protect storm water quality and influencing others around them to do the same.

Community Events

During this reporting period, the San Diego Bay Copermittees participated in a number of community events. Many of these events addressed regional water quality issues that spanned several watersheds. The San Diego Bay Copermittees feel such broad based activities play an important role in engaging the public on important water quality issues and that such public participation does positively impact water quality both in the San Diego region as a whole and in San Diego Bay.

Cleanup Events and Waste Collection

Cleanup events give the public a chance to actively participate in improving the water bodies in their neighborhoods. In addition to the obvious benefits to water quality, such events also give residents a tangible understanding of the link between their actions and receiving water impacts. Active, hands-on experience tends to foster a sense of ownership and deepen participants' sense of responsibility for their local water bodies.

The San Diego Bay Copermittees have listed trash as a constituent of concern for the Pueblo Watershed. The Copermittees continue to implement a variety of activities to address this issue where applicable and, as a proactive measure, throughout the entire San Diego Bay WMA.

Cleanup events are an effective means of not only involving the community in protecting water quality, but also specifically removing trash from water bodies in urban settings. During cleanup events, participants are typically provided with educational material regarding watershed concepts and have the opportunity to discuss storm water issues with city staff and knowledgeable volunteers.

Free collection of household hazardous waste (HHW), electronic, and universal waste has occurred during FY 07-08. Often residents illegally dump these materials due to a combination of economic pressures, inconvenience, and/or lack of knowledge regarding where to go to dispose of the items. Waste collection events provide an avenue for the public to properly dispose of used oil, appliances, and other items for which they might otherwise have had to pay fees or transport for long distances.

Table 3-4 below details the number of workshops, conferences, presentations, and community events that were held and the number of people reached through these events. Note that an exact numeric attendance was not possible for all events. For a more detailed description of the events that occurred in each one of these categories, refer to Table H-1 in Appendix H.

Table 3-4. Summary of Activities.

Type of Activity	Number of Events	Number of People Reached*
Workshops/Conferences	8	264
Presentations	6	255
Community Events	12	41,976
Cleanup Events	26	6,878
Waste Collection Events	weekly	2,255

* These totals do not include the numbers for some events for which attendance was not recorded.

3.3.2 Websites

The Project Clean Water (PCW) website provides a means of public participation on San Diego Bay water quality issues. Each of the three sub-watersheds which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have pages devoted to them that are available for both the San Diego Bay Copermittees and public viewing. The San Diego Bay WURMP page includes downloadable WURMP and WURMP Annual Report documents, as well as land use and MS4 maps. The page specifically states that the San Diego Bay Copermittees are seeking public comment on the program and provides mail, email, and telephone contact information for the Lead Copermittee.

During the reporting period, 6,283 hits were recorded for the four main PCW web pages related to San Diego Bay WMA, which is comparable to the number of hits during the last reporting

period. The Pueblo Watershed received 1,309 hits, Sweetwater Watershed received 1,765 hits, and the Otay Watershed link received 1,685 hits.

In addition to the PCW website, several other websites with San Diego Bay WMA content have been developed. The City of San Diego worked with San Diego State University and San Diego Coastkeeper to continue to provide the San Diego Bay Watershed's Common Ground website (http://www.sdbay.sdsu.edu), which has interactive water quality maps, access to a variety of water quality data collected within the watershed, a watershed tour feature, and a variety of other watershed specific educational content. The Port of San Diego continues to display the Project ORCA (Online Research Coastal Academy) site, which provides interactive, San Diego Bay focused, environmental education targeted at children. Other San Diego Bay Copermittees' storm water websites, including the City of Coronado's, also provide information about San Diego Bay.

3.3.3 Integration And Participation in Local Planning Activities

During the reporting period, San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA continued to participate in the development of plans intended to improve the water quality in San Diego Bay, including:

- Otay River Watershed Management Plan (ORWMP)
- Otay River Special Area Management Plan (SAMP)

Stakeholders in the areas in which these plans focus have attended regular meetings and providing valuable input on plan direction. Additional information on these planning activities will be discussed in Section 3.4 of this Annual Report.

Links to pages discussing the ORWMP and the Otay River SAMP are included on the Project Clean Water website. The sites include a variety of plan-related documents for public review and announcements of public meetings.

3.3.4 Direct Interaction

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' staff also interacts with the public on a daily basis. Municipal employees receive storm water training on an ongoing basis, as described in each JURMP. Staff with program implementation responsibilities receives the most intensive training, but other employees are educated about storm water issues as well. Municipal employees interact with the public in their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about storm water issues and regulations, as well as answer questions and provide guidance. This day-to-day personal interaction is an important component of the San Diego Bay Copermittees public participation activities.

3.4 Collaborative Land-Use Planning Efforts

In recent years water quality management efforts have become increasingly watershed-focused, and the San Diego Bay Copermittees are working to integrate watershed management concepts into programs that can be implemented across jurisdictional boundaries. In general, this effort includes participation in watershed management plans, utilizing regional guidance documents, and increasing public participation. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and ensures a balance of land uses when planning future development. Several planning activities have been initiated.

During the reporting period, San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA continued to develop land-use plans intended to improve the water quality in San Diego Bay, including the following:

- Otay River Watershed Management Plan (ORWMP)
- Otay River Special Area Management Plan (SAMP)

The ORWMP has been approved by the Port of San Diego, the County of San Diego, and City of Imperial Beach. The Plan was approved by the City of San Diego in FY 08-09 and is still under consideration for approval by the City of Chula Vista. Therefore, there are no new action items to report for this reporting period. An interim Watershed Council will be established once the ORWMP has been approved.

In regards to the SAMP, the County of San Diego (through their consultant team) is preparing some of the technical information that is necessary to complete the 404(b)(1) process of the Clean Water Act. In addition, the Army Corps has received some funding to spend more time on this project. They are currently working through their contract process to hire a consultant to prepare the Environmental Impact Statement (EIS). It is hoped that the EIS will be underway by mid-summer 2009.

3.5 Updated Five-Year San Diego Bay WURMP Strategic Plan

3.5.1 New Activities

The San Diego Bay Copermittees added six new water quality activities to the San Diego Bay WURMP Strategic Plan during FY 07-08. Five of the water quality activities were implemented during this reporting period. The Trash Containment Boom Cleaning Agreement with the U.S. Navy was a load reducing activity targeting trash and associated pollutants of concern. The La Mesa Business Inspection Supplemental Watershed Questionnaire was implemented to address commercial sources of pollutants of concern. Three new monitoring activities were also added to the Strategic Plan. They were: 1) Dry Weather Aerial Deposition Study, 2) the Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study, and 3) the Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study. The activity summary sheets for these activities are presented in

Appendix E. The 43rd and Logan Biofiltration Project (37) is a new activity in the Strategic Plan which is expected to be implemented in FY 09-10 and is included in Appendix I. An activity summary sheet (38) recapitulating how the City of San Diego is implementing its *Strategic Plan for Watershed Activity Implementation* (November 2007) is also included in Appendix I. Note that, although this City of San Diego document is separate from the San Diego Bay WURMP Strategic Plan, activities identified in the former are integrated into the latter as sufficient progress on activity implementation is made.

3.5.2 Updated 5-Year San Diego Bay WURMP Strategic Plan

On an annual basis, the San Diego Bay WURMP's Strategic Plan will be assessed and may be updated to reflect the current status of watershed activities and any modifications to previous versions of the Strategic Plan. During this reporting period, the San Diego Bay Copermittees have been committed to implementing the watershed water quality and education activities presented in Sections 3.1 through 3.4 of this Annual Report. In addition, the Copermittees are progressing towards making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding WURMP permit language.

3.5.2.1 Updates to San Diego Bay WURMP Strategic Plan

In the San Diego Bay WURMP document, the San Diego Bay Copermittees presented watershed activities to be implemented in FY 07-08 or FY 08-09 of the Municipal Permit. A number of the watershed activities scheduled for implementation in FY 08-09 require an updated activity summary sheet as changes to these activities have occurred since the Copermittees submitted the San Diego Bay WURMP document. Appendix I presents the activities for which updating is necessary and are summarized in Table 3-5.

Table 3-5. Updated Watershed Activities from the San Diego Bay WURMP Document.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
WATER QUALITY ACTIVITIES																			
Storm Drain Litter Control Techniques – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (2-08)		X								●								●	●
Treatment Control BMP Pilot Projects (34)		X											●						
Update Recycling and Solid Waste Ordinance (35)				X				X	X	●				●					●
Targeted Municipal Facility Inspections (36)		X								●			●	●					
43rd and Logan Biofiltration Project (37) (NEW)		X								●			●						
City of San Diego Strategic Plan Implementation (38) (NEW)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●
EDUCATION ACTIVITIES																			
Provide Homeowner's Association Education About Pet Waste Disposal (39)				X				X	X	●									
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (40)				X				X	X	●									
Fats, Oils, and Grease (FOG) Program (41)				X				X	X	●					●				

* Numbers in parenthesis () indicate the order in which the watershed activity summary sheets are presented in this Annual Report.

The allotted identification numbers assigned to each of the watershed activities, as presented in Tables 3-1 and 3-5 in this Annual Report, will start sequentially starting this reporting period. When a new watershed activity is implemented and is added to the San Diego Bay WURMP Strategic Plan during this permit cycle, it will be assigned the next available identification number. The San Diego Bay Copermittees have made some modifications to the original 2008 WURMP Strategic Plan. One modification to the presentation of the Strategic Plan was to organize activity summaries to better demonstrate Copermittee collaboration. Unified activity summary sheets for efforts such as enhanced and expanded street sweeping programs and cleanup events were developed to show how the programs in various individual jurisdictions are related to each other.

Another modification was articulating the collective Watershed Strategy more clearly. The San Diego Bay Copermittees revised the Strategic Plan table to better demonstrate how BMPs and other types of activities relate to the high priority water quality problems at a sub-watershed or HA level. The Copermittees organized the water quality activities under two categories: 1) Load Reducing and Source Abatement or 2) Additional Monitoring and Source Identification. Then, similar activities within the Load Reducing and Source Abatement Category were further grouped into subcategories. These subcategories include: Trash and Debris-related activities, Enhanced Inspection Activities, Targeted Special Study Activities, and TMDL-related Activities. By structuring the water quality activities in this manner, the Copermittees demonstrate how existing activities fit within the collective watershed strategy and can determine whether these efforts are utilizing available resources efficiently and effectively. This modification will also aid the Copermittees during the planning and development of future activities.

3.5.2.2 WURMP Program Revision

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay WMAs. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. It also recommended that a dialogue be initiated between RWQCB staff and San Diego Regional Copermittees to amend permit language where necessary to better meet program goals.

The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The San Diego Bay Copermittees are committed to continue their involvement in this process during the 2008-2009 reporting period and subsequent years. It is anticipated that some changes to the Five-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the San Diego Regional Copermittees and the RWQCB.

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Section 4: Effectiveness Assessment

An effectiveness assessment is an integral part of WURMP implementation because it helps determine whether receiving water quality improvements can be associated with WURMP activities. It also enhances program planning by providing feedback on activities and strategies, and by identifying program areas needing improvement. The following section presents the mechanisms used by the San Diego Bay Copermittees to assess the effectiveness of the WURMP as required by Section J.1.b. of the Municipal Permit.

Effective implementation of the WURMP is dependent on the establishment of comprehensive and program-wide goals as well as objectives and tasks. The San Diego Bay WURMP specifies four overarching management questions that are the cornerstone of the San Diego Bay Copermittees' programmatic assessment. The questions below are designed to assist in evaluating the activities in order to conduct a comprehensive WURMP assessment.

1. Are the San Diego Bay Copermittees making progress towards achieving their program goals and objectives in a way that maximizes resources, is cost effective, and achieves the maximum water quality benefit possible?
2. How well have the San Diego Bay Copermittees maximized the effectiveness of individual activities?
3. Are the San Diego Bay Copermittees effectively targeting identified pollutant sources of high priority water quality problems?
4. Are the San Diego Bay Copermittees observing an improvement in the water quality – both urban and receiving waters – of the WMA as shown through water quality assessments?

These management questions enable the San Diego Bay Copermittees to explore, in detail, the effectiveness of programs and activities implemented within the San Diego Bay WMA.

4.1 Assessment of Overall WURMP Effectiveness

4.1.1 Integrated WURMP Activities Assessment

In accordance with the San Diego Bay WURMP document, Copermittees selected activities and the associated effectiveness assessment mechanisms to implement in their individual jurisdictions while working within the collective goals of the WURMP. The activities and their assessments vary from one activity to another based on the identified targeted outcomes applicable to each activity, the pollutant(s), pollutant source addressed, and the HA in which it is located. The goals and objectives of the individual activities ensure individual accountability, provide direction, and allow for meaningful assessment. In this section, the San Diego Bay

Copermittees will assess whether they were able to maximize the effectiveness of these individual activities on a watershed level.

The Copermittees measured the effectiveness of the watershed activities as a whole, by compiling the data and detailed information from each individual activity's assessment or at a programmatic level to present a comprehensive assessment of activities. A thorough evaluation of the activities, their relevance to each other and to the high priority water quality problems and their sources will enable the Copermittees to determine if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary.

The San Diego Bay Copermittees have been successful in implementing watershed water quality and education activities that resulted in reduced discharge loads, abatement of potential sources, or in other quantifiable benefits to receiving water quality during this reporting period. As discussed in Section 3.1 and 3.2, each Copermittee determined the appropriate assessment mechanisms for each of their activities. Table 4-1 presents each individual water quality activity's effectiveness assessment mechanisms and identifies whether or not the activity achieved the stated goals. The Copermittees' assessments of the individual activities indicate nearly all of the water quality activities were able to achieve the stated goals and were effective in obtaining targeted Outcome Levels Three and/or Four. Copermittees were able to show their activities were effectively addressing high priority water quality problems by providing assessment data for programs such as the Pet Waste Bags Programs, Enhanced Street Sweeping, Cleanup Events, Enhanced Inspections, and the Chollas Creek Water Quality Protection and Habitat Enhancement Special Targeted Study. The activities not meeting their stated goals were unable to complete all of the listed assessment mechanisms during this reporting period. This included the quantification of either the amount of debris collected or the estimated load reductions of either metals or bacteria through the determination of the optimal frequency of inspections. In addition, four of the five Targeted Special Studies implemented during this reporting period were either in planning stages or were acquiring necessary equipment. Therefore, these activities were unable to provide the appropriate assessment data.

The comprehensive evaluation of existing activities, BMPs, and assessment strategies pertaining to watershed programming provides the San Diego Bay Copermittees with a valuable resource and a laundry list of effective, efficient BMPs and activities. By compiling this data in one place, the Copermittees have the opportunity to access multiple activities and their potential applicability for watershed-wide implementation. This resource can then be shared with other watersheds and jurisdictions to improve programming on a regional basis and further increase the list of BMPs. Sharing the evaluation methods will also help watersheds and jurisdictions improve and enhance their programming. The collaborative and group assessment of the activities also encourages Targeted Special Studies and comprehensive thinking when planning future cooperative activities.

Table 4-1. Watershed Water Quality Activity Assessment.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
1	Pet Waste Bag Programs	Level 3 and 4	Quantity of bags removed or new dispensers added	Yes	All estimated quantity of bags used while some copermittees added new dispensers. Two copermittees also estimated per bag pollutant load.
2	Enhanced Street Sweeping	Level 4	Amount of debris collected and curb miles covered	Yes	Amount of debris and curb miles/broom miles tallied but special study to determine optimal frequency is ongoing.
3	Storm Drain Litter Control Techniques	Level 4	Type and amount of debris collected	No	Recorded the type of debris but not the amount of debris.
4	Cleanup Activities	Level 3 and 4	Amount of trash and number of people	Yes	Recorded amount of trash (lb) and number of people.
5	Clean Community Program	Level 4	Amount of debris collected or water quality monitoring	No	Debris was collected but not quantified.
6	Trash Containment Boom Cleaning with US Navy	Level 4	Inspections, quantification, monitoring, tabulation, reporting	Yes	Routine inspections completed but no collection, efficiency or effectiveness information was available as trash was blocked upstream (no trash on site).
7	Additional Dry Season Construction Inspections	Level 3	Implementation rates, increased inspection frequencies	Yes	Completed 15 inspections. Helped contractors stay vigilant about implementing BMPs during dry season.
8	Targeted Auto-related Facility Inspections	Level 3 and 4	Achieve greater BMP implementation from optimized inspection rates. Inspections, quantification, monitoring, tabulation, reporting	Yes Level 3 No Level 4	One inspection per facility only. Completed 15 inspections (Level 1), 7 follow-up inspections (Level 1). Optimal inspection frequency to be studied in future.
	Targeted Metals-related Industrial Facility Inspections	Level 3 and 4	Achieve greater BMP implementation from optimized inspection rates. Inspections, quantification, monitoring, tabulation, reporting	Yes Level 3 No Level 4	One inspection per facility only. Completed 13 inspections, 2 follow up inspections. Optimal inspection frequency to be studied in future.
	Targeted Restaurant Inspections	Level 3 and 4	Achieve greater BMP implementation from optimized inspection rates. Inspections, quantification, monitoring, tabulation, reporting	Yes Level 3 No Level 4	One inspection per facility only. Completed 17 inspections, 0 follow up inspections. Optimal inspection frequency to be studied in future.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
9	Enhanced Construction Oversight	Level 3	1) Estimating sediment loads per construction site per day when sediment controls are not implemented 2) tracking the number of sediment control BMP implementation issues identified during inspections	Yes	135 inspections were conducted. This was 122 more inspections than required by the Municipal Permit Determined to be effective at ensuring proper BMP implementation at construction sites.
10	La Mesa Business Inspection Supplemental Watershed Questionnaire	Level 2 and 3	Inspections and questionnaires	Yes	The supplemental watershed questionnaire was used for the first time during inspections in 2007-2008.
11	Chollas Creek Water Quality Protection & Habitat Enhancement Project	Level 4	Inspections, quantification, monitoring, tabulation, reporting	Yes	6,000 sq. ft. of stream bed enhanced, 1.5 plus tons of trash and debris removed, Chemistry data shows trend of reduced metals and diazinon.
12	Municipal Rain Barrel Installation and Downspout	Level 4	Inspections, quantification, monitoring, tabulation, reporting	No	Procurement of rain barrels, planter boxes, and rain chains began in the second quarter of 2008. No installation occurred in FY 2008.
13	Dalbergia Street Green Mall Infiltration Project	Level 4	Inspections, quantification, monitoring, tabulation, reporting	No	The work performed in FY 2008 included advertising the project, interviewing design consultants, and approving the selection of the design consultant.
14	Southcrest Park Green Lot Infiltration Project	Level 4	Inspections, quantification, monitoring, tabulation, reporting	No	Project planning began in FY 2007 and was continued in FY 2008.
15	Memorial Park Green Lot Infiltration Project	Level 4	Inspections, quantification, monitoring, tabulation, reporting	No	Project planning occurred in FY 2008.

For this annual San Diego Bay WURMP assessment, the San Diego Bay Copermittees addressed the components identified in the San Diego Bay WURMP document to the best extent possible. This allowed the Copermittees to determine compliance with the Permit and strive to attain the long-term goal of decreasing the sources and reducing the discharge of pollutants from the MS4. The following sections summarize WURMP activities within each HA and evaluate progress of the San Diego Bay WURMP toward meeting Target Outcome Levels One through Six.

4.1.1.1 HA Assessment

The San Diego Bay Copermittees assessed how well the activities targeted the high priority water quality problems and their sources on a HA level. The Copermittees assessed activities occurring within each HA in order to determine the collective impact the activities have on the targeted high priority pollutants and/or pollutant sources. Table 4-2 presents the water quality activities occurring in each HA, the pollutants each activity addresses, and how the activity fits in with the overall Watershed Strategy set forth in the San Diego Bay WURMP document. This evaluation revealed where the San Diego Bay Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting identified pollutant sources in each HA during this reporting period.

Evaluation at an HA level provided an assessment of the effectiveness of the San Diego Bay Copermittees' collective efforts for a number of the activities that were implemented across several HAs. These activities presented universal solutions to address high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern, allowing for greater flexibility for each of the Copermittees to participate in coordinated watershed activities. Each of these activities collected similar data to show how these programs were being effective at the both the HA and WMA level. These activities can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. During this reporting period, the Copermittees identified and implemented four collaborative water quality activities which occurred across multiple HAs, including Pet Waste Bags, Cleanups, Enhanced Street Sweeping, and Storm Drain Litter Control Techniques. Additionally, Copermittees addressed bacteria on a watershed scale by implementing activities targeting various pollutant sources in all HAs.

The San Diego Bay Copermittees may implement different approaches or activities which result in addressing the same pollutant of concern and/or pollutant sources in a HA. The combined effect results in a greater impact on the targeted high priority water quality problems and positively influences the effectiveness and efficiency of the San Diego Bay WURMP. Notably, trash has been effectively addressed through such activities as Cleanup Events, Enhanced Street Sweeping, and Storm Drain Litter Control Techniques. These activities directly addressed the RWQCB 13267 Order requiring cities along Chollas and Paleta Creeks to establish trash cleanup measures and implement programs to address trash and other pollutants.

Pueblo San Diego HU (908)

Pueblo San Diego HU had the largest number of activities among the three watersheds. The San Diego Bay Copermittees were successful in implementing activities that addressed nearly all of the high priority pollutants in each of the HAs, and all but Gross Pollutants (908.1 HA) were addressed by one or more water quality activity. In particular, the Copermittees were not only successful in implementing activities that collectively addressed all of the high priority pollutant water quality problems in 908.2 HA, but the activities were also effective in targeting a variety of pollutant sources. During this reporting year, the Copermittees have implemented numerous activities such as the Chollas Creek Water Quality Protection and Habitat Enhancement Project and the Enhanced Street Sweeping Activity that have been effective in addressing the high priority water quality problems and reducing pollutant loads in this heavily urbanized HA. A number of the activities implemented in this HA resulted in Level Four Outcomes for bacteria, metals, sediment, and trash. In addition, the Dry Weather Aerial Deposition Study provided important source information for metals and sediment. Data resulting from this monitoring will enable the Copermittees to make more informed decisions on the BMP implementation that targets these high priority pollutants in the future.

Sweetwater HU (909) and Otay HU (910)

The Sweetwater and Otay HUs had fewer high priority water quality problems compared to Pueblo San Diego HU. As such, there were fewer water quality activities implemented in these watersheds. However, the activities implemented addressed bacteria in the HAs in which it was identified as a high priority water quality problem. The San Diego Bay Copermittees targeted and identified a common source of bacteria by implementing the Pet Waste Bags Program in all three HAs. Additional activities targeted other likely sources of bacteria in 909.1 and 910.2 HAs as well. There were no water quality activities addressing Pesticides or Gross Pollutants in the HAs in which the Watershed Strategy determined them to be high priority water quality problems. Future monitoring efforts will aid the Copermittees in determining the appropriate activities to implement to address these issues. The San Diego Bay Copermittees were active in educational efforts addressing pesticides which included providing IPM program information to residents and businesses within the HUs.

Table 4-2. Water Quality Activities by HA.

HA	High Priority Water Quality Problems	Watershed Strategy Management Action	# of Load Reducing Activities	Load Reduction/Source Abatement Activities	# of monitoring Activities	Monitoring/Source Identification Activities
908.1	Bacteria	Additional Monitoring	3	• Pet Waste Bag Programs • Targeted Restaurant Inspections • Municipal Rain Barrel Installation	1	• Coordinated Dry Weather Monitoring
	Gross Pollutants	Additional Monitoring	0		0	
	Metals	Additional Monitoring	1	• Enhanced Street Sweeping	1	• Coordinated Dry Weather Monitoring
	Oil and Grease	Additional Monitoring	1	• Municipal Rain Barrel Installation	0	
	Pesticides	Additional Monitoring	1	• Municipal Rain Barrel Installation	1	• Coordinated Dry Weather Monitoring
908.2	Bacteria	Load Reductions	8	• Pet Waste Bag Programs • Trash Containment Boom Cleaning • Targeted Restaurant Inspections • Chollas Creek Water Quality Protection & Habitat Enhancement Project • Dalbergia Street Green Mall Infiltration Project • Municipal Rain Barrel Installation • Southcrest Park Green Lot Infiltration Project • Memorial Park Green Lot Infiltration Project	3	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring
	Metals	Load Reductions	7	• Enhanced Street Sweeping • Targeted Auto-related Facility Inspections • Targeted Metals-related Industrial Facility Inspections • Chollas Creek Water Quality Protection & Habitat Enhancement Project • Dalbergia Street Green Mall Infiltration Project • Southcrest Park Green Lot Infiltration Project • Memorial Park Green Lot Infiltration Project	5	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring • BMP effectiveness Monitoring • Dry Weather Aerial Deposition
	Sediment	Source Identification	5	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Enhanced construction oversight • Chollas Creek Water Quality Protection & Habitat Enhancement Project • Municipal Rain Barrel Installation	5	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring • BMP effectiveness Monitoring • Dry Weather Aerial Deposition
	Pesticides	Source Identification	2	• Chollas Creek Water Quality Protection & Habitat Enhancement Project • Municipal Rain Barrel Installation	3	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring

HA	High Priority Water Quality Problems	Watershed Strategy Management Action	# of Load Reducing Activities	Load Reduction/Source Abatement Activities	# of monitoring Activities	Monitoring/Source Identification Activities
908.2	Trash	Load Reductions	4	• Storm Drain Litter Techniques • Enhanced Street Sweeping • Cleanup Events • Trash Containment Boom Cleaning	2	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring
908.3	Bacteria	Load Reductions	5	• Clean Community • Trash Containment Boom Cleaning • Targeted Restaurant Inspections • Supplemental Inspection Questionnaire • Municipal Rain Barrel Installation	0	
	Sediment	Source Identification	4	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Add. DW inspections • Municipal Rain Barrel Installation	0	
	Trash	Load Reductions	6	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Cleanup Events • Clean Community • Trash Containment Boom Cleaning • Add. Dry Weather Inspections	0	
909.1	Bacteria	Load Reductions	4	• Pet Waste Bag Programs • Targeted Restaurant Inspections • Inspection Questionnaire • Municipal Rain Barrel Installation	0	
909.2	Pesticides	Additional Monitoring	0		0	
910.1	Bacteria	Load Reductions	1	• Pet Waste Bag Programs	0	
	Gross Pollutants	Source Identification	0		0	
910.2	Bacteria	Source Identification	3	• Pet Waste Bag Programs • Targeted Restaurant Inspections • Municipal Rain Barrel Installation	0	

4.1.2 Targeted Outcome Assessment

In the following sections, the San Diego Bay Copermittees will assess their ability to meet Permit requirements during this reporting period. A comprehensive evaluation of the San Diego Bay WURMP program will enable the Copermittees to determine if the targeted Outcome Levels One through Six were addressed.

4.1.2.1 Level One Outcome – Compliance with Activity-Based Permit Requirements

A Level One assessment addresses the fundamental requirements prescribed in the Permit, including programs and activities that are intended to benefit water quality. Table 4-3 lists how the San Diego Bay Copermittees have met Level One objectives and maintained compliance with the Permit requirements.

Table 4-3. Level One Outcomes.

Permit Requirements	Objective	Activities	Status
Provide a comprehensive description of activities conducted to meet requirements of Section J of the Permit	Assessment of receiving water quality	• 2007-2008 Urban Runoff Monitoring Report	**Complete** 2007-2008
	Implementation of long- and short-term activities to address high priority water quality problems	• See Section 3 of this Annual Report	On-going
	Implementation of watershed-based education program	• Public Presentations and Media/Watershed Element • IPM Campaign • School Programs • Project Clean Water • Partners in Clean Water	On-going On-going On-going On-going On-going
Develop mechanism or public participation	Enhance public understanding of sources of water pollution	• Project Clean Water • Watershed URMP Workgroup • Integration/Participation in Land Use Planning • Otay Special Area Mgmt Plan • Otay River Watershed Mgmt Plan • Discretionary Project Review Process • Direct Interaction • Cleanup Events • Community Events • Presentations • Workshops and Conferences • Watershed Stewards Program	On-going On-going On-going On-going On-going On-going On-going On-going On-going On-going On-going Complete
Develop mechanism to facilitate collaborative "watershed-based" land use planning	Integrate watershed principles into land use planning	• General Plan Updates • Otay River Watershed Mgmt Plan • Otay Special Area Mgmt Plan	On-going On-going On-going
WURMP Update	Develop/expand methods to assess and improve water quality	• See the WURMP Update and Annual Report	On-going
Identify watershed efforts not included in annual monitoring report (e.g., special investigations)	Develop/expand methods to assess and improve water quality	• Regional Harbor Monitoring Program	On-going
Identify water quality improvements or degradations	Develop/expand methods to assess and improve water quality	• 2007-2008 Urban Runoff Monitoring Report	**Complete** 2007-2008

4.1.2.2 Level Two Outcome – Changes in Knowledge/Awareness and Level Three Outcome – Behavioral Change/BMP Implementation

The Permit states that Watershed Education Activities are in active implementation phase when "changes in attitudes, knowledge, awareness, or behavior can be reasonably established in target audiences." This definition corresponds with Level Two and Three Outcomes discussed in the WURMP document. In order to assess education activities, the San Diego Bay Copermittees have established and used several means, such as collecting data, for evaluating education program effectiveness. Data collected during this reporting year includes the amount of trash picked up at cleanup events, the number of participants, and pre- and post-tests and surveys. In addition, Copermittees provided storm water educational materials (i.e. brochures, fliers, and various giveaways) at many events such as the Earth Day at Imperial Beach Pier event and cleanups. Copermittees were also involved in supplemental educational activities that provided watershed information such as posting ads on transit shelters, billboards, and mobile ads.

Table 4-4 is a list of the activities that were in active implementation phase during the reporting year and in which assessment data was collected during this reporting period. The table also list the HA(s) where the activities take place and the high priority pollutants addressed. Details on each of the implemented education activities are in Appendix G. Table 4-5 provides overall assessment data information collected for education activities during this reporting period. The assessment information can be used by the San Diego Bay Copermittees as a tool for planning future education activities and events that are able to reach Level Two and Three Outcomes.

During this reporting year, there were 14 education activities, trainings, and events in which assessment data was collected. Overall, the collected data shows that education activities are positively impacting the public and leading to changes in knowledge about storm water. Notably, the San Diego Bay Copermittees showed significant success in promoting positive behavior change in school children through school programs and outreach.

An education highlight of the reporting year was that the San Diego Bay Copermittees, along with other watersheds, collaborated on the co-sponsorship of the San Diego County Fair, including the staffing of a booth and distributing IPM education information. A region-wide survey was implemented at the San Diego County Fair, the results of which will be reported in the FY 08-09 Regional Urban Runoff Management Program (RURMP) Annual Report.

Table 4-4. San Diego Bay WURMP Watershed Education Activities in FY 07-08.

San Diego Bay Watershed Education Activities	Hydrologic Area									High Priority Pollutant Categories										Assessment Data
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	
Outreach Booth for Fire Open House							X			X										Hotline calls increased by approximately 23% from FY06-07 to FY 07-08
Earth Day at the Imperial Beach Pier (April 30, 2008)							X	X		X	X	X	X	X	X	X	X	X	X	500 attended
Hotel Engineers Association Storm Water Training	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	Pre- and Post Tests: Knowledge increased by 8% (Level 2)
SEAL Tour Guide Training	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	Survey: 100% of participants indicated seminar was useful and protecting water quality was important. (Level 2)
Aquatic Adventures – SEA Series Initiative	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	Survey: Test scores improved by 31% (Level 2)
Resource Conservation District – Watershed Education Program	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	Pre- and Post-Tests: Knowledge increase of 20% (Level 2)
Chula Vista Nature Center – Field Trips	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	Pre- and Post-Tests: Knowledge increased by 14% (Level 2)
Aquatic Adventures – Wetland Avengers Field Trips	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	Pre- and Post-Tests: Knowledge increased by 9% (Level 2)
Maritime Museum of San Diego – *Pilot* Boat Program	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	Pre- and Post-Tests: Knowledge increased by 172% (Level 2)
Pro Peninsula – Sea Turtle Education Program	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	Pre- and Post-Tests: Knowledge increased by 32% (Level 2)
Operation Clean Sweep	X	X	X	X			X			X									X	Sign-in Sheet: 900 people participated-decrease of 10% (Level 3)
BMPs for Mitigation of Pesticide Runoff from Urban Landscapes	X	X	X	X			X										X			Survey: 100% of participants indicated seminar was useful (Level 2)
Integrated Pest Management for Landscape Professionals	X	X	X	X			X										X			Survey: 100% of participants indicated seminar was useful (Level 2)
San Diego County Fair	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Survey: 1,200 surveys completed – analysis in FY 08-09 Annual Report

The San Diego Bay Copermittees feel that they are making strides towards implementing education activities that result in Level Two Outcomes. The San Diego Bay Copermittees will continue to evaluate their education programs in order to improve public knowledge and awareness.

Table 4-5. Assessment of the San Diego Bay Education Program FY 07-08.

Program	Number of Events	Events with Assessment Data	Average Change in Knowledge or BMP Implementation	Number of Participants/ Web Hits	Total Waste Collected/ Recycled
Public Presentations and Media	125	7	54% increase in knowledge. 2110 gal recycled, 181 tons of trash and debris collected, 500 people at Earth Day	1,210,000	N/A
School Programs and Outreach	16	6	46% increase	78,000	N/A
Partners in Clean Water	18	2	10% Decrease in participation	20,000	73,000 lbs
Integrated Pest Management	9	3	100% said seminar was useful. Regional - over 1,200 Surveys collected at SD County Fair	15,000	N/A
Project Clean Water Website	N/A	N/A	N/A	6,283	N/A

Several water quality activities also demonstrated a Level Three Outcome during this reporting period. Through the Enhanced Inspection Activities, the San Diego Bay Copermittees were able to use the inspection data to ascertain if the activity was effective in ensuring the proper BMP implementation in their jurisdictions. Routine inspections of industrial, commercial, and construction sites by the Copermittees provide a tool for assessing behavioral changes and ensuring the proper implementation of appropriate BMPs by businesses and construction site managers. Several San Diego Bay Copermittees have enhanced their inspection programs to address specific watershed concerns. Site inspections have allowed the Copermittees to assess the level of knowledge these businesses and construction site managers have with respect to storm water pollution prevention.

Positive changes in behavior and improved BMP implementation were also noted from the following activities: Additional Dry Season Construction Inspections; the Targeted Auto, Industrial, and Restaurant Facility Inspections; the Enhanced Construction Oversight; and La

Mesa's Business Inspection Supplemental Questionnaire Activity. Additional information on these inspection activities is presented in Section 3 and Appendix E of this Annual Report.

The number of people using publicly available HHW collection facilities located within the San Diego Bay WMA and the amount of waste collected at these facilities provides another tool to assess behavioral change and proper BMP implementation. The amount of HHW collected represents a quantity of potential storm water pollutants from residential areas that have been captured and removed from the waste stream. Data collected from San Diego Bay Copermittees shows that more than 6,000 individuals made use of HHW collection facilities in the San Diego Bay WMA and disposed of approximately 195.8 tons of HHW during FY 07-08.

The Pet Waste Bag activity was also successful at meeting a Level Three Outcome. The increased use of pet waste bags by pet owners is another example of positive behavioral change and the implementation of appropriate BMPs. The San Diego Bay Copermittees provided pet waste bags at various public locations, typically parks and public walkways. By providing pet waste bags, the San Diego Bay Copermittees have been able to increase public awareness of pet waste as a source of bacteria and increase the implementation and use of this BMP by the general public. The use of pet waste bags helps to reduce pet waste from entering the storm water conveyance system.

4.1.2.3 Level Four Outcome – Load Reduction

In order to determine whether an activity reached a Level Four Outcome, the San Diego Bay Copermittees collected information that measured load reductions resulting from changes in behavior or BMP implementation. The San Diego Bay Copermittees have implemented water quality activities that allow for a quantification of high priority pollutants that are intercepted or prevented from entering the MS4 or receiving water in order to provide a measure of load reduction. Overall, the San Diego Bay Copermittees accomplished the goals set forth in the majority of load reduction activities. Data was collected to show reductions of high priority pollutant loads for the Pet Waste Bag, Enhanced Street Sweeping, and Cleanup activities. Though information was provided on the type of debris collected by the Storm Drain Litter Control Techniques Activity, the amount of debris was not quantified. Future efforts will focus on obtaining the appropriate information.

Individual or group-sponsored cleanup events represent another activity that significantly reduced pollutant loads within the WMA. Cleanup activities conducted throughout the San Diego Bay WMA during FY 07-08 removed approximately **416.8 tons** of trash and debris from the watershed's main tributaries, tidelands, and the San Diego Bay. Approximately **7.67 tons** were collected during the 2008 Creek to Bay Cleanup. This was the fourth year in a row in which the San Diego Bay Copermittees co-sponsored this cleanup event. In addition to resulting in a significant load reduction, these cleanup activities also provided an important outreach opportunity to citizens within the WMA. The San Diego Bay Copermittees will continue to conduct cleanup events in all jurisdictions.

The Enhanced Street Sweeping Activities significantly reduced the amount of high priority pollutants associated with roads and parking lots entering the storm water conveyance systems throughout the WMA. For this reporting period, the San Diego Bay Copermittees removed an additional **1,767 tons** of material and covered an additional 19,861 curb miles (1,270 broom miles in City of San Diego) by increasing the frequency of street sweeping beyond jurisdictional requirements. This information can be used to indicate the Copermittees are implementing activities to address pollutant load reductions within the watershed. Sweeping for the special study, the Targeted Aggressive Street Sweeping Pilot Project began in the spring of 2008 and is anticipated to continue through the summer of 2010. The goal of this activity is to evaluate the effectiveness of new street sweeping equipment and different sweeping frequencies which may result in more efficient pollutant removal.

A targeted special study implemented in the San Diego Bay WMA was also successful in demonstrating a Level Four Outcome during this reporting year. Chemistry data from Chollas Creek upstream and downstream of the Chollas Creek Water Quality Protection and Habitat Enhancement Project study area indicated a trend of reduced metals and diazinon concentrations. This multi-faceted special study includes outreach, education, stewardship development, and habitat restoration which included the enhancement of approximately 6,000 sq ft of channel and the removal of 1.5 tons of trash and debris.

Based on water quality measurements within the San Diego Bay WMA, diazinon concentrations show a continued decreasing trend. A decrease in concentrations of diazinon also represents a load reduction. The discussion of Level Five effectiveness presented below provides additional information on decreases in diazinon concentrations within the WMA.

Based on Level Four assessment discussed above, the San Diego Bay Copermittees believe that the current programs are effective in protecting and improving water quality. The Copermittees expect that future agreement and collaboration on data standards and reporting will allow for trend analyses that further describe the effectiveness of the San Diego Bay WURMP.

4.1.2.4 Level Five Outcome – Changes in Urban Runoff and Discharge Quality

The results from the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* indicate that urban runoff water quality remained similar to conditions reported in the WURMP document. Organophosphate pesticides (Diazinon, Chlorpyrifos, and Malathion) were below their respective benchmarks. The continued downward trend of diazinon concentrations in storm water is a positive indication that the San Diego Bay Copermittees' current education and outreach efforts to address diazinon are adequate. The San Diego Bay Copermittees believe that overall, the concentration of diazinon will continue to decrease. Even though diazinon was banned from sales, it is possible that there are still unused diazinon-containing products being stored and used by residents and businesses. As residual diazinon public supply and use is

exhausted, it is possible to see transient, isolated incidents such as this. Diazinon will continue to be monitored and sampled to determine overall statistical trends.

4.1.2.5 Level Six Outcome – Changes in Receiving Water Quality

A Level Six assessment involves direct measurement of overall water quality in receiving water bodies and evaluates changes in water quality with respect to established regulatory benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the San Diego Regional Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. Table 2-2 outlines the water quality ratings for the San Diego Bay WMA and the individual HUs of the watershed based on data collected between 2001-2006 and presented in the Regional Urban Runoff Monitoring Report (Weston Solutions, 2009).

4.2 Assessment of TMDL BMP Implementation Plan Effectiveness

There are three TMDLs adopted by the RWQCB within the San Diego Bay WMA. These TMDLs include:

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL

A brief summary of the current status and the assessment of the Implementation Plans of each TMDL are presented below.

4.2.1 Chollas Creek Diazinon TMDL

Status

The Implementation Plan for the Chollas Creek Diazinon TMDL was completed in September 2004 and is currently being implemented. The Copermittees within the Chollas Creek watershed (a sub-watershed of the Pueblo San Diego HU (908)) continue to monitor diazinon discharges into the creek and implement an education and outreach program to raise awareness among key audiences regarding the harmful effects of pesticides on the environment. The Copermittees also continue to promote the use of Integrated Pest Management (IPM) practices to reduce pesticide loading into Chollas Creek.

Assessment

To address diazinon in FY 07-08, the Copermittees continued to promote IPM through jurisdictional IPM seminars and events and through the San Diego regional IPM program. Refer to Section 3.2.1.3 and Table 3-2 of this Annual Report for more details.

A report has also been prepared on the public outreach program and the results of the water quality monitoring conducted in FY 07-08. Refer to Appendix J for the complete report. Highlights demonstrating how the Copermittees successfully contributed to obtaining the TMDL's goal of reducing pesticide loading into Chollas Creek through education and outreach in FY 07-08 include:

- IPM materials were distributed at 25 community events targeting specific audience groups.
- The Copermittees continued to work with the University of California Cooperative Extension (UCCE) to disseminate information on IPM and water quality in both English and Spanish using PSAs, tips cards, and other outreach materials.

The Copermittees continued to conduct monitoring for the Chollas Creek Diazinon TMDL. In summary, diazinon was detected during one storm event (46.6 ng/L on November 30, 2007) at monitoring site SD8(1) above the published chronic benchmark of 45 ng/L, indicating that pesticide applications of diazinon are still occurring within the watershed; however, this result was below the acute benchmark of 75 ng/L. No toxicity was observed in *C. dubia* acute toxicity tests or *C. dubia* chronic toxicity tests during any of the three wet weather monitoring events. As the residual supply of diazinon becomes exhausted, detections of this banned pesticide should continue to decrease, as evident in the monitoring results. The Copermittees have noted a shift in pesticide usage has occurred in recent years toward synthetic pyrethroids. These compounds represent an emerging constituent of concern within San Diego County and should continue to be monitored. A significantly increasing trend in *H. azteca* toxicity has been noted and is correlated to the increasing use of synthetic pyrethroids, which were detected above benchmarks at all sites during all wet weather events.

Based on the monitoring results presented above, the San Diego Bay Copermittees' efforts to address diazinon through education and outreach programs are adequate for meeting the goals of the TMDL. Education and outreach programs and events for area residents and businesses should continue in order to help further reduce pesticide usage within the Chollas Creek watershed and proactively address the observed shift in pesticide usage that has occurred in recent years toward synthetic pyrethroids.

4.2.2 Chollas Creek Dissolved Metals TMDL

Status

The Regional Board adopted the Chollas Creek Dissolved Metals TMDL Basin Plan Amendment (BPA) on June 13, 2007. The Office of Administrative Law (OAL) approved the BPA on October 22, 2008. Environmental Protection Agency (EPA) approved the BPA on December 18, 2008. The San Diego Bay Copermittees involved in the TMDL are currently working together to produce an Implementation Plan, which will outline the efforts to be implemented by the jurisdictions to meet the requirements in the TMDL.

Assessment

A full summary of the efforts associated with the Chollas Creek Dissolved Metals TMDL that occurred during FY 07-08 can be found in Appendix E, activity summary 19. The Implementation Plan, which will include an assessment monitoring strategy, is currently being developed by the Copermittees in the Chollas Creek watershed. Therefore, an assessment of the effectiveness of the Implementation Plan for the TMDL is not possible at this time. However, these Copermittees have been successful in proactively addressing the requirements of the TMDL in FY 07-08. Highlights include:

- The Copermittees in the Chollas Creek watershed continued to participate in public comment periods and RWQCB hearings regarding the Chollas Creek Dissolved Metals TMDL in FY 07-08. Participation will contribute to the successful implementation of the TMDL in the future by ensuring that the Copermittees understand the implications of the TMDL in order to be able to proactively and appropriately plan for it.
- The on-going monitoring program for the TMDL contributed to further narrowing data gaps, which will result in the implementation of appropriate, effective, and efficient BMPs.
- The reduction of 1,767 tons of trash and debris in the right-of-ways of the San Diego Bay WMA through enhanced street sweeping activities. These activities addressed the goals of the Chollas Creek Dissolved Metals TMDL by contributing to the reduction of metals through the removal of sediment and debris that metals may bind to.
- The Copermittees in the Chollas Creek watershed proactively began the development of an Implementation Plan using an integrated, tiered, and phased approach to address TMDL and WURMP requirements for the Chollas Creek watershed. The Implementation Plan will guide and focus the efforts of the Copermittees, enabling them to be successful in achieving the goals of the Chollas Creek Dissolved Metals TMDL.

Monitoring information addressing the Chollas Creek Dissolved Metals TMDL is presented in the *2007–2008 Water Quality Monitoring Data Summary for Chollas Creek* report in Appendix J. In summary, monitoring data indicate dissolved copper and dissolved zinc were detected above the Water Quality Objective (WQO) across all sampling locations during wet weather, with the exception of zinc at monitoring site DPR2. Significantly increasing trends were noted for total copper and total zinc at monitoring site SD8(1). Dissolved copper was also detected above WQO concentrations at SD8(1) during ambient weather monitoring. With the exception of dissolved lead, which was low across all storm events and all sites in relation to benchmark values, there was not a clear relationship between upstream and downstream dissolved metals concentrations in either the north fork or south fork of Chollas Creek. For some storm events, dissolved copper and dissolved zinc were higher in the upper watershed sampling locations than at the base of the watershed, while for other storm events, the opposite was true. In addition, aerial deposition may represent a significant pathway for metals pollutant loading in Chollas Creek based on a 2007–2008 Phase II study. Water quality activity summary 24

provides additional detail on the aerial deposition study and is located in Appendix E. Continued monitoring to determine likely sources for metals contamination is recommended.

As the Implementation Plan is still in development, the Copermittees are unable to utilize the above monitoring information to assess the effectiveness of the plan. The FY 07-08 monitoring data will be useful as baseline data against which the Copermittees will be able to measure the effectiveness of the Implementation Plan. This will ensure that the Copermittees are maximizing the effectiveness and efficiency of the activities presented in the Chollas Creek Dissolved Metals TMDL Implementation Plan.

4.2.3 Shelter Island Yacht Basin Dissolved Copper TMDL

Status

The relevant San Diego Bay Copermittees are working with the RWQCB and other local stakeholders to develop the Shelter Island Yacht Basin Dissolved Copper TMDL Implementation Plan. The goal of the Implementation Plan will be to achieve a 76% reduction in dissolved copper discharges into the Shelter Island Yacht Basin (SIYB) over the next 20 years.

Assessment

A full summary of the efforts that occurred in FY 07-08 associated with this TMDL can be found in the SIYB Dissolved Copper TMDL activity summary 16 in Appendix E. The Implementation Plan is being developed; therefore, an assessment of the Implementation Plan is not possible at this time. However, the Copermittees have been successful in proactively addressing the requirements of the TMDL in FY 07-08. Highlights include:

- The Port of San Diego entered into an EPA grant to find viable alternatives to copper-based hull coatings. Transitioning from copper-based hull coatings to alternative coatings will greatly contribute to the reduction of copper loading within the SIYB. The goal of the study is to evaluate new and emerging alternative boat hull coatings in order to provide a list of safer alternative antifouling paints that may be voluntarily applied to boat hulls by the SIYB boating community. The educational and outreach efforts will provide valuable information and guidance to the boating industry on alternative non-copper based antifouling paints and maintenance strategies, resulting in a Level Three Outcome. The transition away from copper-based coatings would aid in the reduction of copper loading into the SIYB, thereby enabling the possibility of a Level Four Outcome by the end of this Permit cycle.

- The Port of San Diego and the consultant, Institute for Research and Technical Assistance (IRTA), held three stakeholder workgroup meetings in FY 07-08 to discuss the Safer Alternative to Copper Antifouling Paints Study and determine the panel field testing protocol that was to be used to evaluate the paints. The panel field testing

protocol was finalized in May 2008. Forty-six non-copper paints were identified for evaluation and static field testing on fiberglass panels was initiated in June 2008.

- The RHMP collected monitoring data within the SIYB in order to characterize current conditions. In addition, the Copermittees plan to use the monitoring data when performing long-term water quality assessments for the SIYB and continue to participate in the RHMP. Detailed information is provided in the water quality activity summary 25 located in Appendix E.

Section 5: Conclusions and Recommendations

5.1 Conclusions

The San Diego Bay Copermittees successfully completed the watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. Due to the success of the programs implemented during FY 07-08, the San Diego Bay WURMP achieved the following objectives: 1) continued implementation of activities to specifically address the sources of water quality problems at a watershed and HA level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a watershed and HA level; 4) continued refinement of the watershed program; and 5) continue progress toward meeting WURMP goals and objectives. In addition, the San Diego Bay Copermittees continued improvements on the water quality assessment for the San Diego Bay WMA during this reporting period.

The San Diego Bay Copermittees have been successful in implementing watershed water quality and education activities that resulted in reduced discharge loads, abatement of potential sources, or in other quantifiable benefits to receiving water quality during this reporting period. The San Diego Bay Copermittees developed or implemented 15 Load Reduction and Source Abatement activities, five of which were Targeted Special Studies. Review of the results of the implemented Targeted Special Studies will provide important information that will enable Copermittees to evaluate if the BMPs are most efficient and effective in dealing with the high priority water quality problems and feasible to implement within their individual jurisdictions. In addition to the on-going educational programs set up under the San Diego Bay Education Program, the Copermittees implemented 14 outreach and training activities targeting audiences identified in the Municipal Permit as having the most significant impact on the high priority water quality problems in the San Diego Bay. During this reporting period, four TMDL related activities and eight Monitoring and Source Identification activities were implemented. The San Diego Bay Copermittees believe these activities provided important monitoring information which is essential to the overall success of the Watershed Strategy. Monitoring information will support future management decisions regarding the planning, implementation, and assessment of watershed activities.

The San Diego Bay Copermittees' assessments of the individual activities indicate nearly all of the water quality activities were able to achieve the stated goals and were effective in obtaining targeted Outcome Levels Three and/or Four. Copermittees were able to show their activities were effectively addressing high priority water quality problems by providing assessment data for programs such as the Pet Waste Bags Programs, Enhanced Street Sweeping, Cleanup Events, Enhanced Inspections, and the Chollas Creek Water Quality Protection and Habitat Enhancement Special Targeted Study.

The Copermittees assessed the effectiveness of the WURMP at an HA level in order to determine the collective impact the activities have on the targeted high priority pollutants and/or pollutant sources. Evaluation of the water quality activities at an HA level provided an assessment of the effectiveness of the San Diego Bay Copermittees' collective efforts for a number of the activities that were implemented across several HAs. These activities presented universal solutions to address high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern. The Copermittees identified jurisdictional water quality activities which were implemented across multiple HAs, such as Pet Waste Bags, Cleanups, Enhanced Street Sweeping, and Enhanced Inspections. Copermittees may also implement different approaches or activities which focused on the same pollutant of concern and/or pollutant sources in a HA. The combined effect results in a greater impact on the targeted high priority water quality problems and positively influences the effectiveness and efficiency of the WURMP program. Notably, trash has been effectively addressed through such activities as Cleanup Events, Enhanced Street Sweeping, and Storm Drain Litter Control Techniques. These activities directly addressed the RWQCB 13267 Order requiring cities along Chollas and Paleta Creeks to establish trash cleanup measures and implement programs to address trash and other pollutants that may be associated with trash. Notably, 416.8 tons of trash and debris were collected throughout the San Diego Bay WMA during cleanup events this reporting year. Of that amount, 7.67 tons were collected during the April 2008 Creek to Bay Cleanup event. In addition, the Enhanced Street Sweeping activity went above and beyond permit requirements and removed an additional 1,724 tons of material and covered an additional 27,403 curb miles (1,270 broom miles for the City of San Diego) within the San Diego Bay WMA. Copermittees have also implemented activities targeting bacteria in all HAs in which the pollutant was identified as a high priority water quality problem.

The 2007-2008 effectiveness assessment conducted by the San Diego Bay Copermittees continued to utilize the Framework Document and demonstrated program effectiveness at many levels. Compliance with activity-based permit requirements is documented (Level One). Examples of activities demonstrating changes in knowledge and behavior, such as Earth Day at Imperial Beach Pier, Integrated Pest Management for Landscape Professionals, Pet Waste Bags, and Enhanced Inspections, are presented (Levels Two and Three) and are fully detailed in Section 4 of this Annual Report. The San Diego Bay Copermittees also assessed load reductions (Level Four) through various programs that either targeted the high priority water quality problems or the pollutant sources. Assessment of trash and debris related activities such as Pet Waste Bags, Storm Drain Litter Control Techniques, Enhanced Street Sweeping, and Cleanup Events resulted in a cross-programmatic watershed analysis of the effectiveness of these programs to address high priority pollutants originating from a variety of sources. Activities such as public participation at cleanup events, the general public's use of household hazardous waste collection facilities, and pet waste bags scaled multiple levels of assessment resulting in increases in awareness, behavior changes, and load reductions.

Although the San Diego Bay Copermittees attempted to further assess changes in receiving water quality during 2007-2008, more thorough assessments will be conducted as additional

water quality information becomes available. Overall, the 2007-2008 effectiveness assessment allowed the San Diego Bay Copermittees to conclude that their watershed activities and program are having positive effects on water quality.

5.2 Program Improvements and Recommendations

The most important contribution that watershed programs can make is to protect and improve water quality in each WMA, including the San Diego Bay WMA. To do this, San Diego Bay Copermittees must first expand the understanding of the water quality issues in the WMA (i.e. the sources and magnitude of the issues), allowing for more informed decisions and actions. This information will allow the San Diego Bay Copermittees, other entities, and watershed partners to make more informed decisions and actions. The comprehensive evaluation of existing activities, BMPs, and assessment strategies pertaining to watershed programming provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. This resource can then be shared with other watersheds and jurisdictions to improve programming on a regional basis and further increase the list of BMPs Copermittees may potentially implement. Sharing the evaluation methods will also help other watersheds and jurisdictions improve and enhance their programming and vice versa.

The San Diego Bay Copermittees and other entities will continue to utilize the information on watershed pollutants and sources when evaluating and determining which watershed activities to implement. The Watershed Strategy, a key component required for the San Diego Bay WURMP document, provides a consistent mechanism for prioritizing pollutants, identifying sources of pollution, maximizing available resources, and developing and implementing activities. The San Diego Bay Copermittees will continue to gather additional water quality data suitable for assessments at the watershed, sub-watershed, and HA levels, as well as research COC sources and their loading potential. A more thorough identification of sources and their loading potential will enable the San Diego Bay Copermittees to modify program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs. The San Diego Bay Copermittees will also continue to coordinate to improve data collection and monitoring.

The next step in the evaluation process will be to look at the watershed activities and decide if they are optimized or whether the activities may be further developed to achieve even greater load reductions. The San Diego Bay Copermittees will further evaluate the standardization of incoming data available through the activity summary sheets and comprehensive assessments. The Copermittees could begin to compare activities to each other, deciding if certain activities are able to be combined to increase effectiveness and efficiency, and the activity's ability to address multiple pollutants. This information when combined with monitoring and source identification may promote the positioning of strategically placed watershed BMPs and comprehensive watershed activities. This process entails improving existing data and assessment strategies, which will lead to improved source identification and improvements in

water quality. Monitoring data will help confirm sources and the effectiveness of activities where applicable and feasible.

To this end, the San Diego Bay Copermittees will continue to track existing BMP programs through the use of the activity summary sheets. The overall efficiency of individual watershed BMP programs and of larger scale cross jurisdictional BMP programs will continue to be evaluated as well. The knowledge gained through this evaluation will allow the San Diego Bay Copermittees to further evaluate on-going and newly implemented activities, and learn of new programs initiated on the jurisdictional level that would work well on the watershed or HA level. The potential also exists for the combining of single BMPs into more comprehensive BMPs that tackle multiple pollutants.

Finally, the San Diego Regional Copermittees, through the Regional WURMP Workgroup, will continue dialogue with RWQCB staff to discuss amending permit language where necessary to better meet program goals. The San Diego Bay Copermittees are committed to continuing their involvement in the 2008-2009 reporting period and subsequent years. It is anticipated that some changes to the Five-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the San Diego Regional Copermittees and the RWQCB.

Section 6: References

Baseline Long-Term Effectiveness Assessment: San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program. Prepared for the San Diego County Copermittees. August 2005.

California Regional Water Quality Control Board, San Diego Region (RWQCB), 1994. Water Quality Control Plan for the San Diego Basin.

California Regional Water Quality Control Board, San Diego Region (RWQCB), 2007. Order No. 2007-0001.

California Regional Water Quality Control Board, San Diego Region (RWQCB), 2001. Order No. 2001-01.

California State Water Resources Control Board (CSWRCB), 2003. 2002 CWA Section 303(d) List of Water Quality Limited Segments.

California State Assembly Bill 411 – Title 17 of the California Code of Federal Regulations, Section 7958.

MEC-Weston, 2004. Harbor Monitoring Program for San Diego Region: San Diego Bay, Mission Bay, Oceanside Harbor, and Dana Point Harbor. Prepared for the Port of San Diego, City of San Diego, City of Oceanside, and County of Orange. Prepared by MEC-Weston Solutions, Inc. February 2004. 35 p. plus appendices.

Weston Solutions, 2009. San Diego County Municipal Copermittees 2007-2008 Urban Runoff Monitoring Report. Prepared for the County of San Diego. January 2009.

Weston Solutions, 2007. Regional Harbor Monitoring Program Pilot Program 2006-2007 Final Report. Prepared for the RHMP Agencies. June 2007.

Weston Solutions, 2009. 2007-2008 Water Quality Monitoring Data Summary for Chollas Creek. Prepared for the Chollas Creek Municipal Copermittees. January 2009.

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Appendix A

Signed Certification Statements

January 2009

SUBJECT: STATEMENT OF CERTIFICATION FOR THE SAN DIEGO BAY WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FOR FISCAL YEAR 2007-2008

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott W. Huth
Director of Public Services
City of Coronado

SAN DIEGO COUNTY
REGIONAL AIRPORT AUTHORITY

P.O. BOX 82776, SAN DIEGO, CA 92138-2776
619.400.2400 WWW.SAN.ORG

January 20, 2009

Subject: Statement of Certification for the 2007-2008 San Diego Bay Watershed URMP Annual Report

I certify under penalty of law that the San Diego County Regional Airport Authority participated in the development of the fiscal year 2007-2008 Watershed Urban Runoff Management Program Annual Report for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paul Manasjan
Director, Environmental Affairs Department
San Diego County Regional Airport Authority

SAN DIEGO
INTERNATIONAL
AIRPORT

THE CITY OF SAN DIEGO

RE: Statement of Certification
San Diego Bay Watershed Urban Runoff Management Program
Fiscal Year 2008 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2008 San Diego Bay Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

1/23/09
Date

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350

CITY OF CHULA VISTA
Public Works Department

January 23, 2009
File # 0780-72-KY181

San Diego Bay Watershed Urban Runoff Management Program
Annual Report for Fiscal Year 2007-2008

Statement of Certification

"I certify under penalty of law that the City of Chula Vista participated in the development of the Fiscal Year 2007-2008 Watershed Urban Runoff Management Program Annual Report for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

MATT LITTLE
ASSISTANT DIRECTOR OF PUBLIC WORKS
CITY OF CHULA VISTA

H:\NPDES\Watershed\WURMP Certified Statement 2009.doc

1800 Maxwell Road, Chula Vista, CA 91911 | www.chulavistaca.gov | (619) 397-6000 | fax (619) 397-6259

The City of Imperial Beach

(619) 423-8311
(619) 429-4861 Fax

PUBLIC WORKS
825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

January 22, 2009

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for FY 2007-2008 were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

CITY OF
LA MESA
JEWEL of the HILLS

SANDRA L. KERL
CITY MANAGER

January 2009

RE: STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sandra L. Kerl
City Manager

8130 ALLISON AVENUE • LA MESA, CA 91941 • TEL: 619.667.1105 FAX: 619.462.7528

Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signatory

Jan. 23, 2009
Date

Name: Graham Mitchell
Title: City Manager for City of Lemon Grove
Phone No: 619-825-3800

January 2009

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Maryam Babaki, City Engineer
Engineering Department
City of National City

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Plan (WURMP) FY 2007-2008 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2007-2008 San Diego Bay Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-21-09
Date

Appendix B

San Diego Bay WURMP Meeting Schedule

Table B-1. San Diego Bay WURMP Meeting Summary.

MEETING DATES	GENERAL TOPICS
August 21, 2007	• Watershed Strategy – Finalize Baseline Evaluations • Draft WURMP Document Responsibilities • Discussion of RCD Watershed Council Proposal for the Upper San Diego Bay WMA
September 25, 2007	• Watershed Strategy – Discussion of Activities • Draft WURMP Review Schedule • Schedule Monthly Meetings
October 22, 2007	• Draft WURMP – Strategy & Activities, Review & Timelines • 2006-07 Annual Report – Timelines & Responsibilities
November 5, 2007	• Draft WURMP – Strategy & Activities, Review & Timeline • 2006-07 Annual Report – Timelines & Responsibilities
November 28, 2007	• Regional WURMP Update – Weston Water Quality Report • Draft Annual Report • Draft WURMP
December 12, 2007	• Draft Annual Report – Update on progress • Draft WURMP – Draft Review & Comments
January 15, 2008	• Draft Annual Report – Reviews complete, Final next week, Certification Statements due • Draft WURMP – Review Comments (Sects. 1,3,4), Status (Sects. 2 & 5) • Creek to Bay Cleanup
February 12, 2008	• Creek to Bay Presentation – ILACSD • Final WURMP Distribution • Draft WURMP – Section Updates
March 6, 2008	• Draft WURMP – Final Section Review • Certification Statements Due Date
April 10, 2008	• Distribute Final WURMP • Creek to Bay Update • MS4 Targeted Monitoring Discussion • Weston Water Quality Report Presentation
May 15, 2008	• Regional Board Audit Presentation • MS4 Targeted Monitoring Sites Update • Source ID Studies
June 5, 2008	• Elementary Institute of Sciences – Presentation on School Mentoring Program • Region Board – WURMP Audit Update • WESTON Presentation – Monitoring Report Format Changes • Watershed Activities Discussion • Update on Port of San Diego Monitoring Data

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Appendix C

Updated Land Use Map

SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Land Use Map

Legend

- Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)
Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

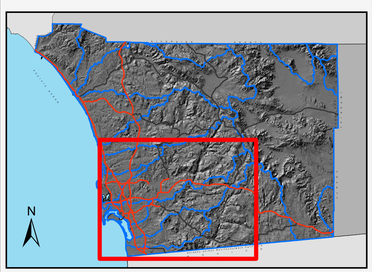

County of San Diego
Department of Planning and Land Use
DPLU GIS
SanGIS

PRINTED : 02/04/2008

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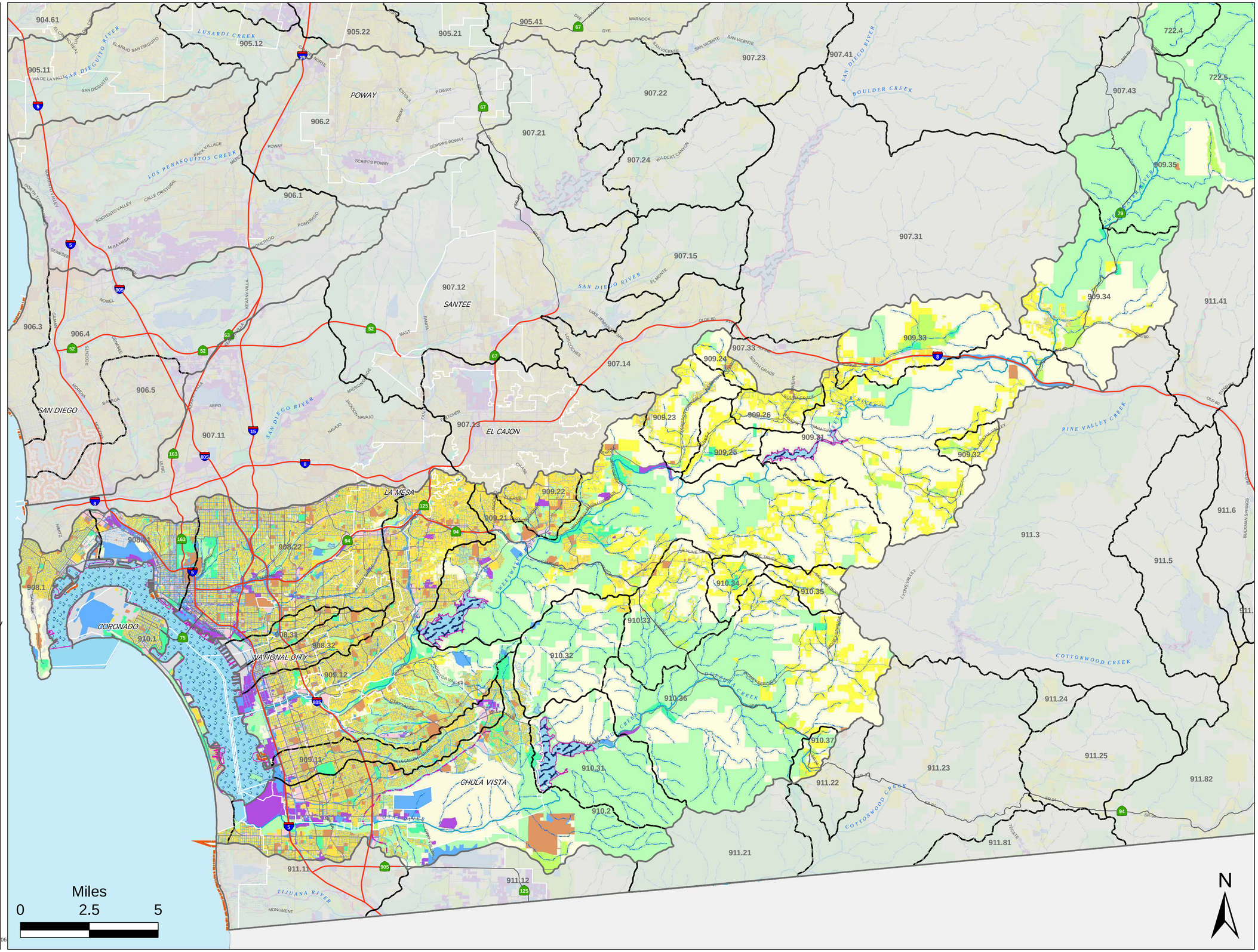

Appendix D

Likely Pollutant Sources

Table D-1. Likely Sources of Pollutants.

HA	Pollutant	Watershed Strategy Recommendation	Land Use Category	Pollutant Generating Activities
908.1	Bacteria	Additional Monitoring	Business (6%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (32%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (16%)	Trash
			Parks (2%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
	Gross Pollutants	Additional Monitoring	Construction (.03%)	Demolition, Storage and Disposal of Hazardous Materials, Fueling, Stockpiling of Materials
			Streets and Roadways (16%)	Trash, Repair Work
			Parks (2%)	Storage and Disposal of Hazardous Materials, Cleaning Facilities
	Metals	Additional Monitoring	Business (6%)	Outdoor Operations, Outdoor Storage, Waste Handling, Parking Areas, Vehicle/Equipment Maintenance
			Residential (32%)	Trash and Debris, Improper Disposal of Hazardous Household Waste, Home and Vehicle or Maintenance
			Streets and Roadways (16%)	Vehicle Usage, Repair Work
			Parks (2%)	Storage and Disposal of Hazardous Materials, Landscape Maintenance, Cleaning Facilities
	Oil & Grease	Additional Monitoring	Business (6%)	Outdoor Operations, Outdoor Storage, Waste Handling, Parking Areas, Vehicle or Equipment Maintenance, Fueling
			Residential (32%)	Trash and Debris, Improper Disposal of Hazardous Household Waste, Home and Vehicle Maintenance
			Streets and Roadways (16%)	Vehicle Usage, Repair Work
			Parks (2%)	Storage and Disposal of Hazardous Materials, Cleaning Facilities
	Pesticides	Additional Monitoring	Business (6%)	Outdoor Operations, Outdoor Storage, Landscaping, Over-Irrigation of Lawns
			Residential (32%)	Landscaping, Over-Irrigation of Lawns
			Parks (2%)	Improper Disposal of Hazardous Household Waste

HA	Pollutant	Watershed Strategy Recommendation	Land Use Category	Pollutant Generating Activities
908.2	Bacteria	Load Reductions	Business (12%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (40%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (27%)	Trash
			Parks (3%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
	Metals	Load Reductions	Business (12%)	Outdoor Operations, Outdoor Storage, Waste Handling, Parking Areas, Vehicle or Equipment Maintenance
			Residential (40%)	Trash and Debris, Improper Disposal of Hazardous, Household Waste, Home and Vehicle or Maintenance
			Streets and Roadways (27%)	Vehicle Usage, Repair Work
			Parks (3%)	Storage and Disposal of Hazardous Materials, Landscape Maintenance, Cleaning Facilities
	Sediment	Source Identification	Business (12%)	Outdoor Operations, Parking Areas
			Residential (40%)	Landscaping, Over-Irrigation of Lawns, Trash and Debris
			Construction (.26%)	Grading, Stockpiling of Materials, Loading/Unloading
			Streets and Roadways (27%)	Trash, Repair Work
			Parks (3%)	Landscape Maintenance
	Pesticides	Source Identification	Business (12%)	Outdoor Operations, Outdoor Storage, Landscaping, Over-Irrigation of Lawns
			Residential (40%)	Landscaping, Over-Irrigation of Lawns, Improper Disposal of Hazardous Household Waste
			Parks (3%)	Storage and Disposal of Hazardous Materials, Landscape Maintenance
908.3	Bacteria	Load Reductions	Business (7%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (46%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (23%)	Trash and Debris
			Parks (4%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
	Sediment	Source Identification	Business (7%)	Outdoor Operations, Parking Areas
			Residential (46%)	Landscaping, Over-Irrigation of Lawns, Trash and Debris
			Construction (4%)	Grading, Stockpiling of Materials, Loading/Unloading

HA	Pollutant	Watershed Strategy Recommendation	Land Use Category	Pollutant Generating Activities
			Streets and Roadways (23%)	Trash, Repair Work
			Parks (4%)	Landscape Maintenance
909.1	Bacteria	Load Reductions	Business (8%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (44%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (18%)	Trash and Debris
			Parks (5%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
909.2	Pesticides	Load Reductions	Business (3%)	Outdoor Operations, Outdoor Storage, Landscaping, Over-Irrigation of Lawns
			Residential (28%)	Landscaping, Over-Irrigation of Lawns, Improper Disposal of Hazardous Household Waste
			Parks (2%)	Storage and Disposal of Hazardous Materials, Landscape Maintenance
910.1	Bacteria	Load Reductions	Business (8%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (15%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (12%)	Trash and Debris
			Parks (9%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
	Gross Pollutants	Source Identification	Construction (.11%)	Demolition, Storage and Disposal of Hazardous Materials, Fueling, Stockpiling of Materials
			Streets and Roadways (12%)	Trash and Debris, Repair Work
			Parks (9%)	Storage and Disposal of Hazardous Materials, Cleaning Facilities
910.2	Bacteria	Source Identification	Business (13%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (18%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (9%)	Trash and Debris
			Parks (3%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities

Table D-2. Likely Business Sources.

HA	Pollutant	Likely Sources	Unknown Sources
908.1	Bacteria	Food, landscaping, nursery, POTW	Fabricated metal and marinas
	Gross Pollutants	Auto repair, food, fuel, and landscaping	Airplane repair, boat repair, fabricated metals, maintenance, marina, nursery, POTW
	Metals	Auto repair, auto paint, auto repair, boat repair, fabricated metal, fuel, maintenance, marina	Nursery and POTW
	Oil and Grease	Airplane repair, auto paint, auto repair, boat repair, fabricated metal, food, fuel, maintenance, marina	POTW
	Pesticides	Landscaping and nursery	Fabricated metal , food, maintenance, and marina
908.2	Bacteria	Food, landscaping, Nursery, and POTW	Animal facilities, fabricated metals, landfill, marina, motor freight, recycle
	Metals	Airplane repair, auto paint, auto repair, boat repair, equipment, fabricated metal, fuel, landfill, maintenance, marina, motor freight, primary metal, recycle	Airfield, nursery and POTW
	Sediment	Animal facilities, landscaping, maintenance, nursery, recycle	Airfield, fabricated metal, landfill, motor freight, POTW, and primary metal
	Pesticides	Landscaping and nursery	Airfield, animal facilities, fabricated metals, food, landfill, maintenance, marina, motor freight, primary metal, and recycle
908.3	Bacteria	Food, nursery, and recycle	Chemical allied products, fabricated metal, and motor freight
	Sediment	Maintenance, nursery, and recycle	Chemical allied products, fabricated metal, motor freight, and primary metal
909.1	Bacteria	Food, landscaping, nursery, and POTW	Animal facilities, chemical allied products, fabricated metal, landfill, marina, and motor freight
909.2	Pesticides	Nursery and landscaping	Animal facilities, chemical allied products, fabricated metal, food, landfill, and maintenance yard
910.1	Bacteria	Food, landscaping, nursery, and POTW	Recycle
	Gross Pollutants	Auto repair, food, fuel, and landscaping	Boat repair, maintenance yard, nursery, and POTW
910.2	Bacteria	Food, landscaping, nursery, and POTW	Landfill, marina, motor freight, and recycle

Appendix E

Water Quality Activity Summary Sheets

LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES

TRASH AND DEBRIS-RELATED ACTIVITIES

PET WASTE BAG COLLABORATIVE WATERSHED ACTIVITY – 1

ACTIVITY DESCRIPTION

The Pet Waste Bag Collaborative Watershed Activity addresses urban runoff from jurisdictional parks and recreational areas. It is believed that pet waste may be a potential source of high priority water quality problems such as bacteria. The use of pet waste bags helps to reduce pet waste from entering the storm water conveyance system, thereby addressing the high priority water quality problem, bacteria. Two important goals of this activity are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to cleanup after their pets. Providing pet waste bags to citizens may result in load reductions as the activity enables proper disposal of pet waste and associated pollutant categories such as bacteria.

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of pet waste bag dispensers added by a Copermittee as part of this activity or, 2) the number of bags removed and used from each of the dispensers, or 3) by estimating the bacteria loading based on the number of bags distributed. Implementation of educational elements of this activity may include new and/or improved signage in municipal parks describing the environmental benefits of using the pet waste bags.

New dispensers were added to the San Diego Bay WMA by three Copermittees. The Airport Authority installed one pet waste bag dispenser in their second pet relief area that was installed this year within their jurisdiction, while the City of Lemon Grove installed one new doggie bag dispenser in front of their city hall. The County of San Diego also installed eight new dispensers and added six new parks into their program in FY 07-08.

In addition, the City of Chula Vista evaluated their parks and trails to determine if pet waste bags were being utilized by park and trail users. During the FY 07-08, the City of Chula Vista visited 48 municipal parks and noted whether or not there was a pet waste dispenser in each and if the dispensers were being used. The County and the Airport Authority also estimated the amount of pet waste removed in their jurisdictions. Please refer to the San Diego Bay WURMP document's Pet Waste Bags summary sheets (1A through 1E) for more information on the individual Copermittees' Pet Waste Bag activities.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. TMDLs are being

developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, Bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek.

TIME SCHEDULE FOR IMPLEMENTATION

Table E-1 below lists the San Diego Bay Copermittees participating in the Pet Waste Bag Collaborative Watershed Activity during this reporting period and in which HA(s) the activity is being conducted.

Table E-1. San Diego Bay Copermittees Participation in Pet Waste Bag Watershed Activity.

	Hydrologic Area								
Copermittee	**908.1**	**908.2**	**908.3**	**909.1**	**909.2**	**909.3**	**910.1**	**910.2**	**910.3**
Airport Authority		X							
City of Lemon Grove		X		X					
City of Chula Vista				X				X	X
City of La Mesa		X		X					
City of Coronado							X		
County of San Diego				X	X	X		X	X
Port of San Diego	X	X	X	X			X		

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of Lemon Grove
- Port of San Diego
- City of La Mesa
- Airport Authority
- City of Coronado
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. This activity directly addresses and abates a source of bacteria in all HAs.

EFFECTIVENESS ASSESSMENT

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of pet waste bag dispensers added within their jurisdiction, 2) identifying the number of bags removed and used from newly added and existing dispensers, and/or 3) estimating annual bacteria load reductions. For additional effectiveness assessment information for the County of San Diego's Pet Waste Bag Program, please refer to Activity Sheet 1A in this Annual Report

Additional Dispensers

Table E-2 presents the three San Diego Bay Copermittees that implemented additional pet waste bag dispensers in the San Diego Bay WMA. There were ten dispensers added during the FY 07-08.

Table E-2. Pet waste Dispensers Added in FY 07-08.

Copermittees	New Dispensers	Locations
City of Lemon Grove	1	• In front of the Lemon Grove City Hall
Airport Authority	1	• In a newly added pet relief area
County of San Diego	8	• Hilton Head, Cottonwood 3 (Existing Location, 1 new dispenser) • Hillsdale Park (New Location, 1 dispenser) • Lonnie Brewer Park (New Location, 1 dispenser) • Steele Canyon Park (New Location, 1 dispenser) • Cottonwood Park (New Location, 1 dispenser) • Woodhaven Park (New Location, 2 dispensers) • Nancy Jane Park (New Location, 1 dispenser)

Pet Waste Bags Dispensed

The San Diego Bay Copermittees maintained their existing pet waste bag dispensers in FY 07-08. Table E-3 list the total number of pet waste bags dispensed per Copermittee. The total number of pet waste bags dispensed during FY 07-08 was approximately 705,480.

Table E-3. Number of Pet Waste Bags Dispensed.

Copermittees	Number of Pet Waste Bags Used
Port of San Diego	354,000
City of Lemon Grove	500
City of La Mesa	9,000
City of Chula Vista	10,000
City of Coronado	280,000
Airport Authority	300
County of San Diego	51, 680
City of National City	*
City of Imperial Beach	**

* Number of doggie bag dispensed unknown
** Pet waste bag dispensers were maintained by a private citizen, number of pet waste bags dispensed unknown for FY 07-08

The use of pet waste bags helps to reduce bacteria from entering the storm water conveyance system. The increased use of pet waste bags by pet owners is another example of positive behavioral change. Eight of the ten San Diego Bay Copermittees provided pet waste bags at various public locations, typically, parks and public walkways. By providing pet waste bags and the appropriate educational signage describing the environmental benefits of the activity, the San Diego Bay Copermittees may be able to increase public awareness that removal of pet waste is a beneficial activity for water quality that all pet owners can be involved in.

The manner in which pet waste bag data is recorded can vary from each of the jurisdictions, leaving room for variability in the data from year to year. Some jurisdictions report the number of pet waste bags that are purchased during the fiscal year, while others report the number of bags used during the fiscal year. This can cause data variation because some jurisdictions may be starting up new pet waste programs, causing an increase in the number of pet waste bags reported. Others may have well-established programs and just maintain their existing pet waste stations.

During this reporting period, the City of Chula Vista storm water management section staff also evaluated 48 municipal parks for the presence of pet waste bag stations. Eleven were found to have pet waste stations. In parks where these stations were used, it was noted that there was less pet waste left on the ground compared to those without stations. It was found that the pet waste bag stations have signage and plastic bags inserted into PVC piping or metal bins to hold plastic bags, which are filled and maintained by citizens. The signage on the pet waste stations encourages pet owners to pick up after their pet(s) and reminds them that it is the law according to Chula Vista Municipal Code. Based on the findings, City storm water staff will work with the Parks Department to encourage installation of these stations at all parks.

Bacteria Load Reductions

The County of San Diego and the Airport Authority calculated the annual bacteria load reductions. Utilizing the assumptions from the San Elijo Lagoon Report the County estimated 51,680 pet waste bags were utilized from the sixteen bag dispensers in their jurisdictions in FY 07-08. By using the assumptions above, the County estimated the amount of pet waste removed to be 10,336 lbs. The Airport Authority based on a separate literature search that approximately 0.25 lb of pet feces contained 2.6×10^9 fecal coliform bacteria. Based on the literature values, the estimated load reduction was approximately 75 lbs. of pet waste and approximately 7.8×10^{11} fecal coliform bacteria associated with the waste.

PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS – 1A

ACTIVITY IMPLEMENTATION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County maintains 16 stations at a total of 13 parks, including 6 new locations (parks) and 7 new dispensers within the San Diego Bay WMA. The parks and the number of dispensers include:

- Otay Lake Park, Otay Valley Open Space Preserve & Regional Park (1 dispenser)
- Eucalyptus Park (1 dispenser)
- Goodland Acres Park (1 dispenser)
- Hilton Head Park (2 dispensers, 1 new)
- Lamar Street Park (1 dispenser)
- Spring Valley Park, Community & Teen Center (1 dispenser)
- Sweetwater Regional Park/Summit (2 dispensers)
- Hillsdale Park (new location, 1 new dispenser)
- Lonnie Brewer Park (new location, 1 new dispenser)
- Steele Canyon Park (new location, 1 new dispenser)
- Cottonwood Park (new location, 1 new dispenser)
- Woodhaven Park (new location, 2 new dispensers)
- Nancy Jane Park (new location, 1 new dispenser)

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a priority water quality problem in the San Diego Bay WMA. Parks and pet waste in particular are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Table E-4. County of San Diego Pet Waste Program FY 07-08.

Facility Name	FY 07-08		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Otay Lake Park, Otay Valley Open Space Preserve & Regional Park	1	4,199	840
Eucalyptus Park	1	4,199	840
Goodland Acres Park	1	4,199	840
Hilton Head Park	2	8,398	1,680
Lamar Street Park	1	4,199	840
Spring Valley Park, Community Center and Teen Center	1	4,199	840
Sweetwater Regional Park/Summit	2	8,398	1,680
Hillsdale Park	1	4,199	840
Lonnie Brewer Park	1	4,199	840
Steele Canyon Park	1	4,199	840
Cottonwood Park	1	4,199	840
Woodhaven Park	2	8,398	1,680
Nancy Jane Park	1	4,199	840
Total	**16**	**67,184**	**13,437**

Cumulatively, the County maintains 16 stations among 13 County Parks within the San Diego Bay WMA. These stations distributed approximately 67,184 bags during the FY 07-08 reporting period, preventing an estimated 13,437 lbs. of pet waste from entering the watershed as

presented on Table E-4. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

STORM DRAIN LITTER CONTROL TECHNIQUES – 2

ACTIVITY DESCRIPTION

One of the collaborative efforts the San Diego Bay Copermittees identified in the WURMP Program is the implementation of storm drain litter control techniques. Storm drain inserts, filters, and other techniques are being used to reduce litter, trash and sediment pollutant loads from entering the San Diego Bay WMA.

During this reporting period, the Port of San Diego installed 25 storm drain filters in three parks adjacent to the San Diego Bay — Tuna Harbor Park, Embarcadero Marina Park North, and Embarcadero Marina Park South. The Port of San Diego identified these locations because they experience significant levels of public use and are locations of special events throughout the year. The storm drain BMPs installed at the parks were designed to absorb oil and grease and prevent trash and sediment from entering into the storm water conveyance system. The storm drains were visually inspected on a number of occasions to determine cleaning needs. Cleaning of the filters occurred on one occasion within two of the three parks prior to the end of FY 07-08. The amount and types of trash and debris collected in each filter varied among the three locations where filters were installed.

The Airport Authority, the City of San Diego, and the City of Coronado were involved in the planning stage of this activity during this reporting period. Please refer to the San Diego Bay WURMP Document's Implementation of Storm Drain Litter Control Techniques summary sheets (2A through 2D) for more information on the individual Copermittees' Storm Drain Litter Control activities.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Jurisdiction	Permit Year 07-08	Permit Year 08-09
Port of San Diego	Implementation	Assessment
Airport Authority	Planning	Implementation
City of Coronado	Planning	Implementation
City of San Diego	Planning	Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego
- Airport Authority
- City of San Diego
- City of Coronado

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on sediment and trash load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous debris. The Watershed Strategy identifies sediment and trash as high priority water quality problems for the watershed HAs. Though sediment is identified as a high priority water quality problem in both 908.2 and 908.3 HAs, all HAs will benefit from this activity. While this activity may quantifiably demonstrate the reduction of sediment and trash loads, other priority pollutants known to be associated with sediment, such as bacteria and metals, may also be reduced. The Watershed Strategy acknowledges the identification of the source of sediment is needed in the majority of the San Diego Bay WMA. The Storm Drain Litter Control Technique Activity is an important method to reducing pollutant loading throughout the San Diego Bay WMA.

EFFECTIVENESS ASSESSMENT

During this reporting period, the Port of San Diego developed measures to assess the effectiveness of the storm drain filters. The measures include:

1. Characterize the general activities which occur in the parks
2. Evaluate the types of trash and debris collected
3. Determine the effectiveness of the filters to capture trash and other debris
4. Establish the frequency of cleaning
5. Quantify the amount of trash and debris removed
6. Determine feasibility of maintenance

The locations where the storm drain filters were implemented were chosen due to the levels of use by the public and their use as sites for numerous special events throughout the year. Visual inspections of the filters allowed Port of San Diego staff to begin to assess the ability of the filters to capture debris and determine the type of debris collected in the storm drains. The debris collected consisted primarily of trash, leaves, and sediment. The data obtained through the visual inspections will be useful in the determination of an adequate cleaning frequency at these locations. The storm drain filters were inspected on a number of occasions to determine the frequency at which the filters should be cleaned. The storm drain filters were installed in March and April 2008, and required only a single cleaning prior to the end of FY 07-08. Cleaning of the storm drain filters took place within two of the three parks at that time by the Port of San Diego's General Services staff in FY 07-08. Visual assessments will continue during FY 08-09 in order to collect more data to determine the feasibility and required cleaning frequency. While a qualitative evaluation of the type of debris collected was completed, a quantitative assessment was not completed during this reporting period.

ENHANCED STREET SWEEPING ACTIVITIES – 3

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees have implemented street sweeping-focused activities to reduce the accumulation of metals, sediments, and trash. This watershed collaborative activity includes efforts undertaken by Copermittees to enhance their jurisdictional street sweeping programs. The San Diego Bay Copermittees participated as part of this collaborative activity by either 1) increasing the frequency of street sweeping in their jurisdictions above the minimum required jurisdictional frequencies, or 2) utilizing more effective street sweeping equipment. This activity summary includes the individual Copermittee efforts described in the WURMP Document activities 3A-3F.

Increased Frequency

According to the jurisdictional requirements presented in the Municipal Permit, municipal areas must prioritize and sweep streets and parking lots based upon the amount of trash and debris accumulated. All Copermittees participating in this watershed activity have prioritized areas and have undertaken additional sweeping that is more frequent than the Municipal Permit's jurisdictional requirements. The Airport Authority was in the planning phase of this activity in FY 07-08 and will be implementing this activity within their jurisdiction in FY 08-09. The City of Imperial Beach is scheduled to be in the planning phase of this activity in FY 08-09.

Targeted Aggressive Street Sweeping Project

A 24-month street sweeping effectiveness study, or the Targeted Aggressive Street Sweeping Project, was initiated by the City of San Diego to evaluate the effectiveness of new street sweeping equipment and different sweeping frequencies which may result in more efficient pollutant removal. The study investigates the effectiveness of vacuum-assisted street sweepers compared to mechanical sweepers in reducing the accumulation of metals on City of San Diego streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study is to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study includes the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency.

The City of San Diego is using the prioritization process that is outlined in its *Strategic Plan for Watershed Activity Implementation* (November 2007) to target areas within the Chollas Creek Watershed. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study, and meetings held with relevant City staff, the routes that have been selected

are in the two highest priority sectors of the Chollas Creek Watershed that have a higher potential for metals loading.

In anticipation of the start of sweeping, the City of San Diego conducted the following community outreach and information dissemination efforts in FY 2008:

- Community presentation held in March 2008 in Chollas Creek area
- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Newspaper display advertisements placed in community newspapers
- Door hangers distributed in Chollas Creek area
- Information shared with Council Offices
- Press event and release conducted by Mayor's Office
- E-mail blasts and calls made to inform stakeholders of project

The City installed "no parking" signs along the project sweeping route in the Chollas Creek area from December 2007 through March 2008. Sweeping in the Chollas Creek area began in April 2008 along with "no parking" sign enforcement. The City's consultant conducted debris baseline monitoring and characterization. Table E-5 below summarizes the number of broom miles swept and the pounds of debris removed during the reporting period. Table E-5 also estimates the number of broom miles swept and the pounds of debris removed during the report period above and beyond what would have been swept and removed per JURMP requirements.

Table E-5. Estimates of Miles Swept and Pounds of Debris Removed in FY 2008.

	Pounds Debris Removed	Broom Miles Swept***
JURMP Requirement*	51,460	1,073
Street Sweeping Project**	74,340	1,270
Total	125,800	2,343

Notes:
* Assumes JURMP requirement of once-a-week sweeping per side in general for streets included in project.
** Assumes street sweeping project in general increased sweeping frequency from once a week to twice a week. Figures also include additional pounds and miles not used in estimating pounds and miles under JURMP requirement.
*** Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Based on this information, the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load reduction of metals (a high priority water quality problem in the San Diego Bay WMA), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2008.

According to the Regional Board's comments[1] for the Mission Bay and La Jolla WURMP, the improvements from street sweeping are expected to become "business as usual" and incorporated into the JURMP. The City is currently still in the midst of the street sweeping study and is working to optimize the activity. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as "business as usual" at this time. Additionally, specific changes to the JURMP are not yet planned as the study is ongoing at this time. Once the activity is optimized, the City anticipates incorporating the most efficient activities into the JURMP to gain the strongest improvements regarding storm water discharges. For further background information on the study, please refer to the WURMP Document watershed activity 3D.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303(d) lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for sediment toxicity, benthic community effects, and the metals copper, lead and zinc. Two total Maximum Daily Loads (TMDLS) have been established for metals in the San Diego Bay under the Shelter Island Yacht Basin Dissolved Copper TMDL and the Chollas Creek Dissolved Copper, Lead, and Zinc TMDL. The RWQCB is also developing additional TMDLs in Paleta, Switzer and Chollas Creek.

Street sweeping enhancement activities may have beneficial effects by reducing the loading of pollutants such as sediment, metals, and trash that are discharged to MS4s. A variety of other pollutants are known to be associated with sediment, such as bacteria, may also be reduced. The Enhanced Street Sweeping Program is applicable to these TMDLs to the extent it addresses the control of sources of copper and other metals, trash, sediment, and other pollutants that may be associated with sediments, such as oil and grease and organics, as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

The implementation schedule for the enhanced street sweeping water quality activity is presented for FY 07-08 and FY 08-09.

Jurisdiction	Permit Year 07-08	Permit Year 08/09
Port of San Diego	Implementation	Assessment
Airport Authority	Planning	Implementation
City of Coronado	Planning	Implementation
City of La Mesa	Implementation	Implementation
City of San Diego	Planning/Implementation	Implementation
City of Imperial Beach	-	Planning
City of National City	Implementation	Implementation

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

The City of Imperial Beach is scheduled to be in the planning phase of this activity in FY 08-09 and, if necessary, will increase street sweeping frequency in FY 09-10. The City of Imperial Beach will focus on increasing sweeping following storm events, in order to capture sediment and trash that then causes flooding and increased movement of sediment from dirt alleys and "unimproved" land into the storm drains. Planning for the City of San Diego's pilot project began in September 2006. Sweeping started in the spring of 2008 and is anticipated to continue through the summer of 2010. Debris testing and water quality monitoring is being conducted throughout the pilot project to assess effectiveness in removing metals from City of San Diego streets.

PARTICIPATING WATERSHED COPERMITTEES

Table E-6 below lists the San Diego Bay Copermittees participating in the street sweeping activity during this reporting period, the enhancement that was used, and the HA(s) where the activity occurred.

Table E-6. San Diego Bay Copermittee Participation in Street Sweeping.

Copermittee	Hydrologic Area									Enhancement Mechanism	
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Increased Sweeping Frequency	Higher Efficiency Equipment
City of National City			X	X						X	
City of Coronado							X			X	
City of San Diego		X								X	X
City of La Mesa		X		X						X	
Port of San Diego	X	X	X	X				X		X	

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping Enhancement activity targets reduction of high priority water quality problems such as metals, sediments, and trash. Metals were identified as a high priority water quality problem for HA 908.1 and HA 908.2. Sediment and trash were identified as high priority water quality problems in HAs 908.2 and 908.3. Streets are identified as a major source

category comprising approximately 20% of the acreage within each HA. Additionally, street sweeping may also address residential pollution that accumulates in gutters along residential thoroughfares. Residential acreage in these HAs also comprises a large percentage. By increasing sweeping frequencies or using more efficient equipment, Copermittees undertaking this activity improved their ability to reduce pollutant loading from major sources within the high priority hydrologic areas.

EFFECTIVENESS ASSESSMENT

Increased Frequency

The effectiveness of this activity has been assessed by evaluating the additional amount of materials that were removed from the watershed's streets and roadways. Load reductions comprise a level four assessment through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Table E-7 shows the increase in materials removed due to greater frequency of street sweeping by each participating Copermittee.

Table E-7. Estimation of Pollutant Load Reduction Due to Increased Frequency.

Jurisdiction	JURMP Baseline Material (lb)	Additional Materials Removed (lb)	JURMP Baseline Curb Miles	Additional Curb Miles 07/08
City of National City	442,000	1,860,000	2,970	12,530
City of Coronado	27,549	376,051	553	7542
City of San Diego	51,460	74,340	1,073*	1,270*
City of La Mesa	326,405	1,057,595	1,954	6,331
Port of San Diego	40,000	80,000	500	1,000

* "Broom miles" and not "curb miles" were used to track the distance swept.

Weight of baseline and additional material were estimated based on the overall amount of material removed during the year and the relative proportions of the overall sweeping attributable to JURMP baseline sweeping and to additional sweeping. For example, if 100,000 pounds were removed, 3,000 miles of JURMP baseline sweeping was done, and 2,000 miles of additional sweeping was done, the baseline material would be recorded as 60,000 pounds (60% of the overall amount) and the additional sweeping material would be recorded at 40,000 pounds (40% of the overall amount). The City of San Diego estimated the weight of baseline and additional material by using "broom miles". A "broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. The broom mileage does not translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

During this reporting period, the San Diego Bay Copermittees removed an additional 1,724 tons of material and covered and additional 27,403 curb miles (1,270 broom miles for the City of San Diego) within the San Diego Bay WMA through the increased frequency of street sweeping.

Targeted Aggressive Street Sweeping Project

Objectives

The goal of the assessment is to investigate the effectiveness and efficiency of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data will also be evaluated for the purposes of establishing optimal sweeping frequencies.

Results and Analysis

The study included the purchase of two types of vacuum-assisted sweepers; the dedication of Motor Sweeper Operators to the study; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. In FY 2008, a total of 74,340 pounds of debris were removed by mechanical sweepers and a total of 1,270 broom miles were swept.

Conclusions

Further analysis in FY 2009 is underway to address the study objectives, which will include continued debris testing and water quality monitoring.

Watershed: San Diego Bay		
TARGETED AGGRESSIVE STREET SWEEPING PROJECT Assess Effectiveness and Efficiency of Street Sweeping in Reducing Metals Loading		
Management Questions	• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?	
Targeted Measurable Outcomes	• Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement	
Assessment Methods	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)	
Data Recorded	Total pounds of debris removed by mechanical sweepers* (Outcome Level 4)	74,340 pounds
	Total broom miles swept for mechanical sweepers** (Outcome Level 4)	1,270 miles
	Total pounds of debris removed by mechanical sweepers per mile swept (Outcome Level 4)	59 pounds/ mile
Recommended Data	• Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)	

* Assumes street sweeping project in general increased sweeping frequency from once a month to twice a month.
** Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS – 4

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees participated in a number of cleanup events throughout the San Diego Bay WMA. The cleanup events physically removed large amounts trash, debris, and other associated pollutants from the watershed creeks, rivers, streams and shorelines. The events included jurisdictional events as well as watershed-wide efforts that were coordinated by I Love a Clean San Diego and San Diego Coast Keeper. The San Diego Bay Copermittees provided funding by sponsoring various cleanup events and/or participated by soliciting volunteers, working as site captains, and participating in the cleanup events themselves. These events actively promoted a sense of watershed stewardship to the general public and resulted in trash load reductions. Figure E-1 presents the locations of cleanup activities in the San Diego Bay WMA. Cooperative efforts enable the San Diego Bay Copermittees to assess the relative trash loads for each event in each HA and the San Diego Bay WMA and determine whether there is a long-term reduction. Please refer to the San Diego Bay WURMP Document's Cleanup Activity summary sheets (4A through 4H) for more information on the individual Copermittees' Cleanup activities.

In addition, The City of San Diego had planned to implement the Alpha Project for the Homeless, Inc. Cleanup Sponsorship activity in FY 2008 and beyond, but it was inadvertently left out of the San Diego Bay WURMP document and was not included in the Five-Year Strategic Plan. The City of San Diego implemented the activity in FY 2008; however, it will not continue to contract Alpha Project to conduct trash cleanups in FY 2009 and beyond but instead will channel its trash cleanups efforts into other venues. The reporting of this activity will cease with this Annual Report.

In the Regional Board Comment letter[2], Regional Board staff indicated that the locations selected would need to be provided, amount of trash collected at those locations and that the San Diego Bay Copermittees would receive credit only for the first trash cleanup event in the fiscal year. Locations and trash information are provided in the Activity Implementation subsection of this summary sheet. The Copermittees, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the Copermittees also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the Copermittees may choose to continue to implement and report on more than one trash cleanup each year.

[2] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

Figure E-1. San Diego Bay WMA Cleanup Activity Sites.

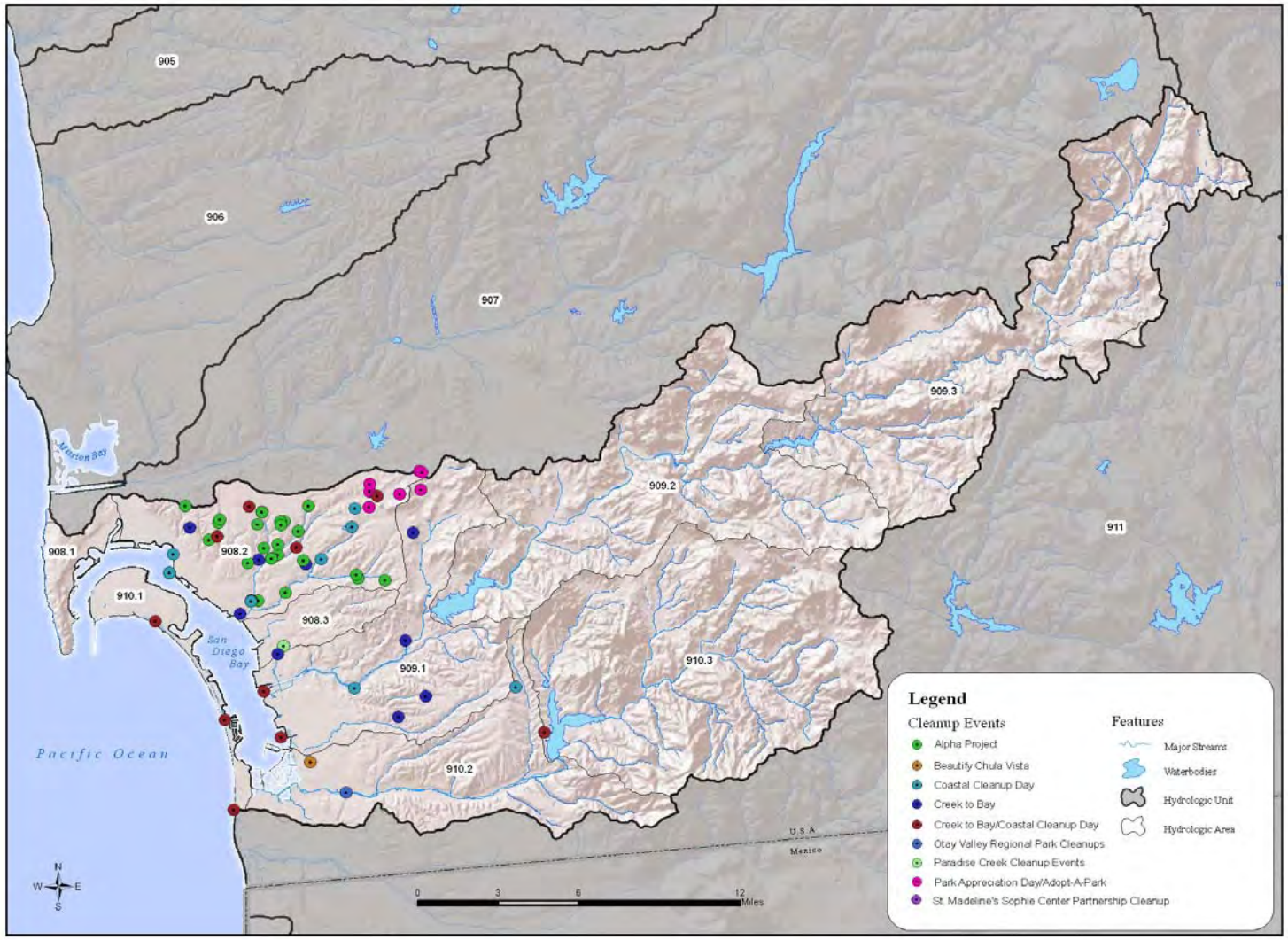

TMDL APPLICABILITY

The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash cleanup measures and programs to be implemented. The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria, sediment toxicity, and benthic community effects. These impairments may be indirectly reduced through the cleanups. The RWQCB is developing TMDLs to protect beneficial uses in the 303d listed impaired water body segments, including Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines and the Paleta, Switzer and Chollas Creek for sediments.

TIME SCHEDULE FOR IMPLEMENTATION

All San Diego Bay Copermittees have actively implemented cleanup events during this reporting period. They recognize the value in cleanup activities and plan to continue to implement this type of activity in all jurisdictions over the next four years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of San Diego
- City of Imperial Beach
- City of Lemon Grove
- County of San Diego
- City of La Mesa
- City of Coronado
- Port of San Diego
- Airport Authority

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash has been identified in the San Diego Bay WURMP document as a high priority water quality problem in 908.2 and 908.3 HAs. Cleanup events aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, bacteria and metals are other high

priority water quality problems that may be reduced indirectly as a result of the removal of trash. Trash often consisted of common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies trash as a high priority water quality problem. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions. Increased awareness and education of the public in all HAs is also an important component. Sponsorship of cleanup events resulted in load reduction of trash and debris directly and bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The cleanup events encouraged stakeholder buy-in and participation in implementing the Watershed Strategy. This often resulted in a level 3 outcome by causing a change in behavior, knowledge, attitude and awareness within the community of how to properly dispose of trash by the individuals involved. A level 4 outcome was also identified in all HAs due to the collection and removal of trash from the conveyance system. Relative pollutant load reductions within the watershed were assessed based on the weight of debris collected.

Table E-8 describes the cleanup event activities the San Diego Bay Copermittees actively implemented during this reporting period, the HA the cleanup event was located, the number of participants, and the amount (lb) of trash removed.

To assess the effectiveness of cleanup activities, the number of people participating as well as the total amount of trash collected has been calculated. The number of people participating in cleanups is utilized to convey a level three outcome to demonstrate changes in behavior in those involved in the cleanups in the San Diego Bay WMA. For a couple of the events hosted by individual Copermittees, participation was accounted for by logging the number of labor hours instead of the number of people present. The amount of overall trash collected was utilized to estimate the load reductions of trash, a level four outcome level, occurring during FY 07-08.

Table E-8. Cleanup Activities for FY 07-08 within the San Diego Bay WMA.

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
Multiple jurisdictions in the San Diego Bay WMA including: City of Coronado, City of La Mesa, Port of San Diego, City of San Diego, Airport Authority	908.2, 908.3, 909.1, 910.1, 910.3	9/15/07	*Coastal Cleanup Day*: • Coronado Central Beach • University Channel in La Mesa • D St. Fill • Chollas Creek • National Avenue	300	10,869
Multiple jurisdictions in the San Diego Bay WMA including: City of Chula Vista, City of Coronado, City of La Mesa, City of National City, Port of San Diego, City of San Diego, Airport Authority	908.2, 908.3, 909.1, 909.2, 910.1	4/26/08	*Creek to Bay*: • Lemon Grove • Chollas Creek (3 locations) • La Mesa • University Channel • Coronado City Beach • Silver Strand State Beach • Barrio Logan • D Street Fill • Paradise Creek Educational Park • Del Rey Canyon • Rice Canyon • J Street Marina • Otay Regional Park (Lower Otay Lake) • Dairy Mart Road • Morrison Pond County Park	600	15,332
Port of San Diego	Multiple Locations	6/07/08	Operation Clean Sweep - A-8 Anchorage	900	3,300
City of La Mesa	908.2, 909.1	3/29/08	Park Appreciation Cleanup Day – 7 municipal parks	-	5 tons
City of La Mesa	908.2, 909.1	Multiple Dates	Adopt A Park and Adopt a Block	1,347 labor hours	-

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
City of Lemon Grove	908.2	5/08	Drainage area at intersection of Ensenada and Bakersfield	-	219
City of Imperial Beach	910.1, 910.2	5/3/08	Home Front Cleanup*	742	356,000
City of San Diego	Multiple Locations**	Multiple Dates	Alpha Project for the Homeless, Inc. Cleanups	180	45,290
City of San Diego	908.2	1/13/08	City Heights Urban Cleanup	37	515
City of Chula Vista	910.2	10/06/07	Beautify Chula Vista	800	2,000
City of Chula Vista	910.2	Multiple Dates	Otay Valley Regional Park Cleanup	5,843 labor hours	390,000
City of Coronado	910.1	6/31/08	Trash cleanup at Coronado Central Beach	30	60

* This was an annual large waste drop off event at one location.
** Alpha Project conducted a cleanup at various locations (G Street Pier Downtown, Florida Canyon, Balboa Park, 47th, National Ave N of 35th, Chollas Creek at 3316 National, Chollas Creek at National, Market Place and Oceanview, City Heights at 43rd and Lexington, City Heights at University and 50th, City Heights at University and 50th, 4907 A Street, Fir Street, Madrone Ave, Akins Ave and 66th, San Vicente, Chollas Creek, University between Front and Al, 1725 Robertson St, Front and Albatross, Upas and Florida, 4402 Federal Blvd, 1970 Panay Ct, Home and Federal, Home and Federal between Fern/31st, Frederick and Whaley, 3678 Wilson Ave, 42nd and Thorn, 3121 Boundary, 3678 Wilson Ave, Lexington, 42nd, 32nd St (and C), and Commercial (7 sites)) in the San Diego Bay WMA at 35 locations on 21 different dates between July 2007 and June 2008.

- Approximately 3,589 people participated in cleanups throughout the San Diego Bay WMA.
- The number of labor hours recorded was 7,190 for the Adopt A Park, Adopt a Block, and Otay Valley Regional Park Cleanup Events.
- The overall amount of trash collected throughout the San Diego Bay WMA during FY 07-08 was 416.8 tons.
- The watershed-wide sponsored cleanup events Creek to Bay coordinated by I Love A Clean San Diego on April 26, 2008 collected 15,332 lbs of trash and involved approximately 600 volunteers.

Additional Assessments - Alpha Project for the Homeless, Inc. Cleanup Activity

Objectives

The City of San Diego partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups throughout the City's jurisdiction in various watersheds in FY 2008. The goal of this assessment is to determine how effective and efficient contracting with NGOs is in removing trash and debris vis-à-vis other means, such as sponsorship of cleanup events.

Watershed: San Diego Bay		
ALPHA PROJECT FOR THE HOMELESS, INC. CLEANUP Assess Efficiency and Effectiveness of Contracting with NGOs to Remove Trash and Debris from Public Areas and Waterways		
Management Questions	• How much load reduction can be achieved by contracting with NGOs? • What is the efficiency of trash cleanups conducted by NGOs?	
Targeted Measurable Outcome	Achieve load reduction of trash and debris (any amount)	
Assessment Methods	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	45,920 pounds
	Number of participants (Outcome Level 1)	180
	Efficiency of cleanup cost per pound of trash removed (Outcome Level 4)	$0.51/pound
	Amount of money spent on cleanups (Outcome Level 1)	$23,098
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.51/pound

Results and Analysis

Alpha Project conducted cleanups at various locations, with an estimated 180 workers participating. Approximately 45,290 pounds of trash and debris were removed during a series of 19 cleanup events in FY 2008 at cost of $23,098. Cleanups with Alpha Project had a cost efficiency of $0.51 per pound of trash and debris.

Conclusions

The City will not continue the Alpha Project in FY 2009. The reporting of this activity will cease with this Annual Report.

The cost efficiency of the activity was determined to be $0.51 per pound of trash and debris removed. As the efficiency of other means of trash and debris removal (such as cleanup sponsorships and street sweeping) is determined in the future, efficiency comparisons can then be made to determine the best means for removing trash and debris from public areas and waterways.

CLEAN COMMUNITY PROGRAM – 5

ACTIVITY SUMMARY

The City of National City has implemented a program to encourage individuals to dispose of waste properly. Events included two disposal events for large items and green waste. These events provided individuals with an avenue for properly disposing of items that might otherwise have been illegally dumped. The City alerted residents to these events beforehand via notices in their trash bills. The City has also hired a company to clean Paradise Creek twice per month. The cleaning mainly involves checking for the presence of trash and debris and removing trash that is noted. Finally, the City also participated in the Creek to Bay Cleanup.

The City also held an art contest for school children in all the elementary schools in the City. The contest involved preparing artwork for a calendar with messages about keeping the City and local water bodies clean. Twelve winners were selected, and selected drawings are being incorporated into the City's 2009 storm water educational calendar. The 2008 storm water educational calendar was distributed to all the elementary schools in the City in 2007-2008, and the City plans to also distribute copies of the 2009 calendar to the schools in 2008-2009.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup and disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in HA 908.3. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EXPECTED BENEFITS

Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also encourage a behavioral change for the community by potentially changing the manner trash in which trash is disposed of by the individuals involved.

EFFECTIVENESS MEASUREMENTS

Two thousand calendars were distributed to elementary students in the City of National City. Teachers in all third grade classrooms introduced the City's calendar contest and distributed handouts that explained the guidelines of the contest. The handouts also included storm water educational information. A significant amount of material was collected at the large item disposal days and Paradise Creek cleanups, but the exact quantities of materials were not recorded. Information about the Creek to Bay Cleanup is discussed in the regional activity write-up.

TRASH CONTAINMENT BOOM CLEANING AGREEMENT WITH U.S. NAVY – 6

ACTIVITY IMPLEMENTATION

Since FY 2002, the City of San Diego has been entering into annual agreements with the United States Navy to remove trash and debris flowing through Chollas and Paleta creeks into Navy property. Street Division and Storm Water Pollution Prevention Division staff back then met with Navy representatives to formulate an action plan addressing floating material traveling through the creeks. It was agreed upon that the Street Division would provide funds to the Navy for the removal of trash and debris using containment booms cleaned prior to the rainy season.

During the FY 2008 reporting period, the trash booms were in place for continued operation. However, routine inspections resulted in no trash and debris to be collected and disposed. This was likely due to the willows located upstream in the concrete apron which might have blocked trash from moving downstream.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Diego will maintain its agreements with the United States Navy for continued operations and maintenance of the booms and will report the collected and disposed amounts of trash and debris in the next Annual Report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- United States Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Trash accumulates within the storm water

conveyance system during periods of dry weather and then washes downstream during rain events. There is a cause-and-effect relationship between litter and water quality in the San Diego Bay WMA. Trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. Literature published by the United States Environmental Protection Agency on its web site[3] states that debris may be contaminated by pathogens that have adverse effects on humans. Reduction in the amount of litter within the watershed contributes to improvement in the quality of the storm water/runoff that ultimately discharges into San Diego Bay.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS AND PALETA CREEKS NAVY TRASH BOOM Assess Efficiency and Effectiveness of Containment Booms in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved using trash containment booms? • How efficient are the containment booms in reducing pollutant loads?
Targeted Measurable Outcome	• Reduction in pollutant loads
Assessment Methods	• Inspections (e.g., ensure booms working as designed) • Quantification (e.g., estimate tons of trash and debris removed) • Monitoring (e.g., monitor types of trash and debris removed to help identify source) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4)

Objectives

The goal of the assessment is to determine the efficiency of containment booms in removing trash and debris from creeks to improve water quality.

Results and Analysis

During the FY 2008 reporting period, the trash booms were in place for continued operation. However, routine inspections resulted in no trash and debris to be collected and disposed of. This was likely due to the willows located upstream in the concrete apron which might have

[3] http://www.epa.gov/owow/oceans/debris/

blocked trash from moving downstream. Therefore, the effectiveness and efficiency of the booms could not be measured for the FY 2008 reporting period.

Conclusions

Recommended data for determining the trash containment booms' effectiveness and efficiency include the number of inspections change in load reduction pre- and post-implementation, number of educational items passed out, and the cost of inspections and maintenance. Effectiveness and efficiency of this activity in reducing trash and debris loads will be determined upon collection of the data, and comparisons can then be made with those of other trash and debris removal activities, such as cleanup sponsorships.

ENHANCED INSPECTIONS ACTIVITIES

ADDITIONAL DRY SEASON CONSTRUCTION INSPECTIONS – 7

ACTIVITY SUMMARY

During 2007-2008 the City of National City (City) conducted additional inspections of construction sites during the dry season to reduce the potential for the discharge of sediment. According to the jurisdictional requirements presented in the Municipal Permit, construction sites (any priority) should be inspected as needed during the dry season. Additional construction inspections were conducted during the dry season to identify any areas where BMP implementation is not being maintained properly, particularly toward the end of the dry season when sites need to be preparing for the wet season. This program aims to decrease discharges of trash and sediment to the MS4.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Increased construction inspection frequencies during the dry season are intended to reduce the discharge of trash and sediment, which have been listed as high priority water quality problems in HA 908.3. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these pollutants and abate pollutant sources.

EFFECTIVENESS MEASUREMENTS

Excluding complaint investigations, the City completed 15 inspections at construction sites during the portions of the 2007 and 2008 dry seasons that fell within the 2007-2008 reporting period: July 1, 2007, through September 30, 2007, and May 1, 2008, through June 30, 2008. Inspectors found these inspections helped contractors stay vigilant about implementing BMPs during the dry season and that they were especially helpful toward the end of the dry season, when the inspectors could also remind the responsible parties of applicable wet season requirements.

SAN DIEGO BAY WATERSHED MANAGEMENT AREA TARGETED INSPECTIONS – 8

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a focused inspection program to target facilities that are potential sources of high priority pollutants. In the San Diego Bay WMA for FY 2008, the City focused on potential industrial sources of heavy metals, auto shops, and restaurants. The long-term goals of the program are:

- Determine the most efficient frequency of inspections to ensure proper Best Management Practices (BMPs) implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The City delineated a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors such as facility clustering and proximity to other watershed activities being conducted. The overall approach of the site selection process focused first on the specific business categories within the prioritized sectors in each WMA. If multiple category types were targeted for inspection in a particular WMA, a fairly equal distribution of sites from each category was selected for inspection where possible. In addition, knowledge gained by the City from past inspections was used to consider the likelihood of certain business types and areas of the City to be more problematic than others regarding constituents of concern in each WMA

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected community, only one inspection was conducted at each facility. The inspections that were conducted provide baseline data for comparison to future years' watershed-focused inspection programs. Information gathered during the FY 2008 watershed-focused inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years.

Forty-six full inspection equivalents (45 full inspections and 3 “other site visits”) occurred across the San Diego Bay WMA at potential industrial sources of heavy metals, auto shops, and restaurants. Full inspection equivalents are equal to the number of full inspections plus one half the number of "other site visits" (site visits that did not result in a full inspection), excluding other site visits where the facility has moved and is gone and a replacement business was found. This metric allows for a more equal comparison of inspection effort among WMAs.

This activity is in active implementation, and source abatement information is included in the effectiveness assessment section of this activity summary sheet. The City requests credit for one of the two required watershed water quality activities for this reporting year with this activity.

The City acknowledges Regional Board staff’s comment[4] for other WURMPS (e.g., Mission Bay and La Jolla’s) that recorded data and assessment is needed regarding the inspections and that the inspections must be above and beyond JURMP requirements. Inspections under this activity occurred to facilities that were not inspected under the JURMP program. Recorded data and assessment is included in this report.

Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become “business and usual.” However, the City is implementing this non-capital activity over multiple years in order to optimize the program prior to incorporating the results and recommendations into the JURMP. Specific changes to the JURMP are not yet planned as the study is ongoing at this time. Incorporating this activity into the JURMP at this time would be premature in putting valuable resources toward wide-scale implementation before the program is optimized. With optimization the City anticipates gaining the strongest improvement to storm water discharge quality that is achievable at this point in time. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as “business as usual.”

It should be noted that all of the inspections (potential industrial sources of heavy metals, automotive facilities, and restaurants) are being reported on one activity summary sheet for FY 2008 due to the structuring of this year’s program. The inspections were previously detailed as separate activities in the 2008 San Diego Bay WURMP. For consistency, the activity numbers are included in the heading of this summary sheet. The City is not expecting to receive three watershed water activity credits (one for each type of facility) for this program year; the City is requesting credit for one of the two required activities in this program year. However, the program may be restructured in the future and depending on the scale of implementation, the City may request credit for different facilities in the future.

[4] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS.” September 23, 2008. (Place Number 710562: L Walsh)

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The City selected and hired a consultant who implemented the watershed-focused project from the end of March through June 2008. The City will continue to evaluate ways to optimize the inspection of various facilities in the future. The City is currently developing its 2009 program and anticipates continuing piloting the targeted inspections through FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The San Diego Bay inspections target the following high priority water quality problems:

FACILITY TYPE	HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED	
	Bacteria	Metals
Industrial		X
Auto Shops		X
Restaurants	X	

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria, and metals as high priority water quality problems in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria and metals.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
TARGETED FACILITY INSPECTIONS **Assess Efficiency and Effectiveness of Facility Inspections**		
Management Questions	• Do inspections increase the rate of BMP implementation? • Does an increased rate of BMP implementation result in source abatement? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase the rate of BMP implementation? • How can an estimate of source abatement be made from inspection data?	
Targeted Measurable Outcomes	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from third-party data)	
Data Recorded	Number of restaurant facility full inspections, spot and scheduled (Outcome Level 1)	16
	Number of restaurant follow-up inspections (Outcome Level 1)	0
	Number of auto facility full inspections, spot and scheduled (Outcome Level 1)	13
	Number of auto follow-up inspections (Outcome Level 1)	7
	Number of industrial facility full inspections, spot and scheduled (Outcome Level 1)	16*
	Number of industrial follow-up inspections (Outcome Level 1)	2
	Number of Sites Needing Corrective Action (i.e. number of BMPs implemented) (Outcome Level 1)	45
	Number of Sites that Implemented Some Corrective Action During Inspection (Outcome Level 3)	5
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	5
	Total IC/IDs Observed (Outcome Level 1)	0
	Number of missing BMPs (Outcome Level 1)	40
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	0
	Total IC/IDs Receiving Notice of Violation, and therefore abatement (Outcome Level 4)	0
	Total number of full equivalent inspections, spot and scheduled (Outcome Level 1)	46**
Recommended Data	• Percent change in BMP implementation pre- and post-education (Outcome Level 3) • Number of educational items passed out (Outcome Level 3) • Pollutant Discharge Potential Assessment (Outcome Level 4) • Amount of money spent on inspections (Outcome Level 1)	

* Includes manufacturing, equipment repair, and other contractor facilities.
** Includes three “other site” visits in calculation of the total.

Objectives

The goals of this activity assessment include determining of the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections, ensuring proper BMP implementation, and reducing pollutant loading.

Results and Analysis

A breakdown of the number of sites needing corrective action and the number of sites that implemented at least some corrective action during the inspection were included in the Watershed-Focused Storm Water Compliance Inspection Program Report[5] (see Table E-9). The table also includes the number of Illegal Connections/Illicit Discharges (IC/ID) observed during the inspections and the total number of IC/IDs abated during the inspections. Five of the 45 sites implemented corrective action during the inspection, resulting in source abatement at these facilities.

Table E-9. Corrective Actions Implemented at Time of Inspections.

Area	Number of Sites Needing Corrective Action	Number of Sites that Implemented Some Corrective Action During Inspection	Total IC/IDs Observed	Total IC/IDs Eliminated During Inspection
San Diego Bay WMA	45	5	0	N/A

Although a load reduction was not calculated for each location, abatement of potential sources (Outcome Level 4) may be assumed with corrective actions being implemented due to the inspections. Future years' analysis will include a detailed Pollutant Discharge Potential Assessment to better show this source abatement. Inspected facilities were assigned a rating to reflect the level of BMP implementation noted at the site, and a separate rating to reflect the facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility.

Table E-10 presents a breakdown of the average knowledge and average BMP implementation scores for the inspected facilities. In the San Diego Bay WMA, the Average BMP Implementation Score remained the same while the Average Knowledge score decreased. While some conclusions can be drawn based on the results of the FY 2007 and FY 2008 inspection programs, the number of inspections completed, the individual sites visited, and the business types targeted in each WMA were not the same in FY 2008 as in FY 2007. Because of these differences, drawing definitive conclusions is difficult. The City is modifying its strategy for future years, and the use of the a inspection form should provide the ability to derive more solid

[5] D-MAX Engineering, *Watershed-Focused Storm Water Compliance Inspection Program* (September 2008).

conclusions in future years to help optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

Table E-10. Breakdown of Average Knowledge and BMP Implementation Scores by Area.

Area	Average Knowledge Score FY 2007	Average BMP Implementation Score FY 2007	Average Knowledge Score FY 2008	Average BMP Implementation Score FY 2008
San Diego Bay WMA	1.7	2.6	1.5	2.6

Conclusions

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected communities, only one inspection was conducted at each facility. However, the inspections that were conducted in the San Diego Bay WMA will provide baseline data for comparison to future years' watershed-focused inspection programs in the WMA. More inspection data is anticipated in FY 2009 to build on what was gathered in FY 2008. Further analysis of inspection efficiency, BMP implementation and education, and their source abatement effectiveness is required before conclusions can be made and will include the cost of inspections, BMP implementations, education data, and enforcement follow-ups.

ENHANCED CONSTRUCTION OVERSIGHT – 9

ACTIVITY SUMMARY

The Airport Authority will continue to oversee construction projects in a manner that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Construction Oversight Program is to abate the amount of sediment potentially released to the watershed from construction sites. The Airport Authority first began to implement this enhanced program in fiscal year 2004-2005. Staff from the Airport Authority Environmental Affairs Department will attend pre-construction meetings and regularly scheduled progress meetings, in addition to inspecting construction sites more frequently than required by the Permit during both the wet and dry seasons. The regular meetings will be used as an opportunity to focus on BMPs directed at preventing the discharge of sediment to the storm drain system. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

The Enhanced Construction Oversight Program is an important water quality activity in the San Diego Bay WMA because it abates construction sites as a source of sediment in the watershed. Abatement of sediment within the watershed contributes to improving the quality of the storm water ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Construction Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of sediment as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Construction Oversight Program intends to abate sediment associated with construction sites and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies sediment as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay WMA in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of construction project regular progress meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, and the number of sediment source control BMP issues identified during inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual sediment pollutant load abated by 1) estimating, based on review of the literature and/or other sources, sediment loads per construction site per day when sediment controls are not implemented, and 2) tracking the number of sediment control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

EFFECTIVENESS ASSESSMENT

There were ten construction projects underway at San Diego International Airport during FY 07-08. Staff from the Authority Environmental Affairs Department attended 67 construction project meetings related to these 10 projects during FY 07-08 and a total of 135 inspections were conducted. The Authority conducted 122 more inspections than required by the Municipal Permit. Problems or concerns related to sediment control were identified 31 times during those 135 inspections (or approximately 23% of the time). Given that issues/concerns regarding sediment control were identified during 1 of 4 inspections on average, the Enhanced Construction Oversight Program appears to be effective at ensuring construction site sediment control BMPs are properly implemented over the life of the construction project.

To estimate the reduction in sediment load to the watershed resulting from implementation of the Enhanced Construction Oversight Program, the Authority used the method outlined in the State Water Resources Control Board March 18, 2008, Draft NPDES Construction General Permit (Draft Permit). Page 49 and Attachment A of the Fact Sheet present a methodology

using the Modified Universal Soil Loss Equation (MUSLE) to estimate soil loss from exposed soil that is being protected by BMPs. The Authority used this equation to compare the sediment load from a construction site without proper BMPs to the sediment load from a construction site with properly implemented BMPs. The difference between the two calculations is the estimated reduction in sediment load to the watershed. The MUSLE equation can be expressed as:

Erosion Estimate (sediment load) in tons/acre/year = R•K•LS•C•P

Where: R = rainfall intensity factor

K = soil erodibility factor

LS = length-slope factor

C = cover factor (erosion controls)

P = management operations and support practices factor (sediment controls)

Attachment A of the Draft Permit notes that values of R have been calculated for any time period for more than 1000 locations in the Western U.S. and are available at http://ei.tamu.edu/. The Airport Authority used the one year period July 1, 2007, to June 30, 2007, to determine the R factor for the airport site (R = 21). Attachment A also notes that soils having a high silt content are especially susceptible to erosion and have high K values. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. K values for silty soils can exceed 0.45 and can be as large as 0.65. The Airport Authority assumed a K value equal to 0.45 for the airport site, so as not to over-estimate the amount of soil potentially being eroded, and in turn, so as not to over-estimate the sediment load reduction achieved by the Enhanced Construction Oversight Program. Attachment A to the Draft Permit discusses the effect of topography on erosion in terms of the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. Attachment A includes a table of LS factors. Given the relatively flat topography at the airport, the Airport Authority selected an LS value appropriate to such a shallow hillslope gradient (LS = 0.06).

The cover factor (C) and the management operations and support practices factor (P) can then be modified to calculate erosion estimates assuming 1) no controls and 2) proper controls. The cover factor (C) and the management operations and support practices factor (P) are calculated as "1 - % effectiveness of control expressed in decimal form." If controls are not effective, then C and P equal 1. The Draft Permit Fact Sheet notes that dischargers should use a C factor of 0.5 to simulate minimal erosion control BMPs on all exposed soil (for example, dust binder, temporary seeding, etc.). This would mean that the erosion control BMPs have an efficiency of 50% (C = 1 - 0.5 = 0.5). The Draft Permit notes that discharges should us a P factor of 0.2 to simulate an appropriately designed sediment basin. This means that the sediment control BMPs have an efficiency of 80% (P = 1 – 0.8 = 0.2). These C and P factors came from removal efficiency data from a Washington State Department of Transportation Document entitled

"Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control" (http://www.wsdot.wa.gov/research/reports/fullreports/200.1.pdf)

Thus, the estimated sediment load (erosion estimate) that would have likely been generated from construction projects at the airport that had no erosion controls (that is, C = 1 – 0 =1) and no sediment controls (that is, P = 1 – 0 = 1) during FY 07-08 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21•0.45•0.06•1•1

Erosion Estimate (sediment load) in tons/acre = 0.567

The Airport Authority estimates that the 10 construction projects underway at the airport during FY 07-08 covered approximately 14 acres of surface area. As such, the amount of sediment that could have been released to the watershed by construction projects underway at the airport during FY 07-08 equals:

Erosion Estimate (sediment load) = 0.567 tons/acre •14 acres = 7.938 tons

Similarly, the estimated sediment load (erosion estimate) that was likely generated from construction projects at the airport that did implement effective erosion controls (that is, C = 0.5) and sediment controls (that is, P = 0.2) during FY 07-08 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21•0.45•0.06•0.5•0.2

Erosion Estimate (sediment load) in tons/acre = 0.0567

As such, the amount of sediment that was likely released to the watershed by construction projects underway at the airport during FY 07-08, despite the effective implementation of appropriate BMPs, equals:

Erosion Estimate (sediment load) = 0.0567 tons/acre •14 acres = 0.7938 tons

Therefore, the sediment load reduction resulting from the implementation of the Enhanced Construction Oversight Program equals the difference between the amount of sediment that would have been released from construction sites without BMPs and the amount of sediment that was likely released despite the implementation of adequate and effective BMPs. For the FY 07-08 reporting period, the sediment load reduction would be equal to:

Sediment load reduction = 7.938 tons - 0.7938 tons = 7.1442 tons

In light of this significant reduction, the Authority believes that the Enhanced Construction Oversight Program is effective at ensuring proper BMP implementation at construction sites.

LA MESA BUSINESS INSPECTION SUPPLEMENTAL WATERSHED QUESTIONNAIRE – 10

ACTIVITY SUMMARY

To gather more information regarding the level of storm water awareness of business owners/operators and to collect additional information regarding the condition of industrial and commercial sites, the City of La Mesa (City) completed an additional one-page supplement to the standard industrial and commercial inspection form. The first five questions on the form gathered information from business owners/operators regarding their knowledge of storm water, water quality issues, sources of pollutants, and whether or not they had previously received information regarding storm water. The inspector was prompted to make observations regarding the types of sprinkler heads on site, the percent of the pervious area that was landscaped, if there was any evidence of non-storm water discharges, and the business owner/operators attitude toward compliance with storm water regulations. The last question on the Supplemental Watershed Assessment Questionnaire and Inspection Form prompts the inspector to assign either significant or not significant to the overall source ranking for watershed pollutants of concern. This box was checked "Significant" when two or more of the watershed pollutants of concern were assigned a pollutant discharge potential (PDP) of three (3) or higher or one watershed pollutant of concern was assigned a PDP of a four (4) or higher. If the site did not meet the aforementioned criteria, the box was checked "Not Significant." The City intends to use the data to identify groups and/or areas in need of increased and more focused outreach and to identify potential pollutant sources.

TMDL APPLICABILITY

TMDLs for metals and diazinon have been adopted for the Chollas Creek subwatershed. The data collected as part of this watershed activity enables the City to identify and address potential sources of watershed priority pollutants, including metals and pesticides.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to gain additional information about businesses' potential to contribute watershed pollutants of concern, including metals, pesticides, and bacteria.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The City is identifying potentially significant sources of these pollutants during its industrial and commercial storm water compliance inspection program. The City can use this information to target specific businesses and business types.

EXPECTED BENEFITS

The information gathered from the Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to collect additional information regarding the specific knowledge of business owners/operators and to identify sites that are potentially significant sources of watershed pollutants of concern. The City intends to use the collected data to develop more effective outreach measures and to identify potential sources of watershed pollutants of concern. Inspectors also give businesses corrective actions based on the findings; implementing corrective actions should result in a reduction of pollutants discharged to the storm drain system.

EFFECTIVENESS MEASUREMENTS

The supplemental watershed questionnaire was used for the first time during inspections in 2007-2008. The City plans to continue to collect this data in future years, and the 2007-2008 data will be used as a baseline for comparison. Because the questionnaire includes information to assess both storm water awareness and BMP implementation, it is anticipated that assessments of both level 2 (change in knowledge or awareness) and level 3 (change in behavior) outcomes will be possible.

TARGETED SPECIAL STUDIES

CHOLLAS CREEK WATER QUALITY PROTECTION & HABITAT ENHANCEMENT PROJECT TARGETED STUDIES – 11

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Pollution Prevention Division managed the design and construction of a creek restoration project in Chollas Creek funded by a $2.244 million Proposition 13 grant from the State Water Resources Control Board. The project, titled *Chollas Creek Water Quality Protection and Habitat Enhancement* project at the youth park site was developed to improve beneficial uses within San Diego Bay and Chollas Creek through a multi-faceted approach that includes outreach, education, stewardship development, and habitat restoration. The restoration process included removing approximately 6,000 sq ft of concrete channel and invasive plant species at the youth park site located at Euclid Avenue and Market Street. The channel was widened, the creek bed was lined with cobble stones and the area was seeded with native habitat. It was anticipated that these improvements would improve water quality in the Chollas Creek, with the ultimate goal of delisting the Chollas Creek watershed from the Clean Water Act (CWA) Section 303(d) for bacterial indicators, metals (cadmium, copper, lead and zinc) and diazinon. The project included approximately $500,000 education and outreach component to eliminate polluting practices of residents and businesses in the community.

The water quality program proposed to assess the physical enhancement of Chollas Creek consisted of three components: storm water monitoring, an assessment of dry weather data collected by the City of San Diego as part of their Dry Weather Monitoring Program, and a modified biological monitoring program. The report prepared presents the water quality monitoring data collected during this program. One storm event was sampled in January 2008 to assess the post-project water quality. Dry weather sampling was conducted by the City of San Diego during the 2005, 2006, and 2007 dry weather monitoring periods. Samples were collected within the drainage area of the project. A post-construction habitat assessment was also conducted in January 2008.

The City of San Diego conducted a Chollas Creek Restoration Event on April 4, 2008 The City of San Diego installed and discussed signage at Chollas Creek site detailing need for restoration and benefits to the community.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL
- Chollas Creek Diazinon TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Construction started in September 2007 and was terminated in February 2008. A post-construction habitat assessment was also conducted in January 2008 to assess effectiveness in removing pollutants from Chollas Creek. This activity is complete and will not be reported in FY 2009. The Chollas Creek Restoration Event is not planned for implementation in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of La Mesa
- Port of San Diego
- City of Lemon Grove
- San Diego Coastkeeper

OTHER PARTICIPATING ENTITIES

- State of California
- San Diego Coastkeeper
- Community members
- Environmental Health Coalition

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Pesticides
- Metals
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. This creek restoration project will help treat runoff of bacteria, metals, and other pollutants.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
CHOLLAS CREEK WATER QUALITY PROTECTION & HABITAT ENHANCEMENT PROJECT **Assess the Efficiency and Effectiveness of the Design and Construction of the Creek Restoration Project**		
Management Questions:	• Does education help reduce pollutant loads from urban runoff? • What is the efficiency of pollutant load reductions with targeted educational programs in the Chollas Creek watershed? • Does habitat enhancement help reduce pollutant loads to San Diego Bay?	
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized habitat enhancement • Reach a set percentage of target resident population	
Assessment Method(s)	• Tabulation (e.g., dollars spent on education, dollars spent to implement habitat enhancement) • Monitoring (e.g., concentration of COCs, flow in creek, used to compare upstream/downstream loads) • Quantification (e.g, calculation of load upstream/downstream of enhancement) • Survey (e.g., knowledge of residents pre/post education outreach)	
Data	Number of educational materials handed out (Outcome Level 1)	Posters and information cards translated to Spanish, Somali, and Vietnamese.
	Number of Project SWELL educational presentations (Level 1)	45+
	Survey of residents (Outcome Level 1)	Four focus group sessions identified baseline behaviors and resulted in pilot education and training program.
	Number of citizens approached (Outcome Level 1)	3,200 (a)
	Area of Chollas Creek enhanced	6,000 sq. ft.
	Load reduction, trash and debris removal	1.5+ tons
	Chemistry data from Chollas Creek upstream and downstream of enhancement study area (Outcome Level 4)	Trend of reduced metals and diazinon concentrations
	Ecological health improvements due to habitat enhancement (macro invertebrate analysis)	+11 points
	Cost to implement habitat enhancement, grant funding only (Outcome Level 1)	$2,244,000
	Cost of education and public outreach, grant funding only (Outcome Level 1)	$500,000

(a) Number of citizens approached was estimated using the estimated number of students impacted by the educational programs and approximately 100 citizens per major community event and 25 per community organization or focus group. These values were based on JURMP data for similar events. This number does not include visitors to the Think Blue website.

Objectives

The goal of this activity assessment is to determine whether education is an effective and efficient means to reduce pollutant load in the long-term, and to determine the effectiveness and efficiency of habitat enhancement for load reduction.

Analysis and Results

Outreach/Education

The overwhelming success and continued outreach and educational efforts by San Diego Coastkeeper serve as a model for educating communities and future area residents. In total, Coastkeeper made 44 Project SWELL presentations in 20 classrooms in 8 schools throughout San Diego County. Coastkeeper worked with local non-profits in the Chollas Creek watershed to define the hands-on SWELL curriculum taught at the Gompers Earthlab. The hands-on Project SWELL manager from Coastkeeper teaches the curriculum (approximately 50 schoolchildren per class) to elementary school students from Webster Elementary & Gompers Middle School. This effort impacted an estimated 2,200 students. Coastkeeper also presented a one hour hands-on lesson to 15 high school students in a marine biology class at Garfield High School. The less covered topics including diazinon, non-point source pollution and information on the Chollas Creek watershed and the San Diego Bay WMA.

Four focus group sessions were held to help further develop outreach strategies. The focus groups included: Commercial Businesses – small variety; Commercial Businesses-large variety; Community Based Organization group; and Spanish speaking residents. Businesses interest prompted a pilot storm water education and training program. Business outreach tactics included developing and presenting a power point to 11 community organizations, and translating English storm water educational materials into Spanish, Somali, and Vietnamese. These materials were distributed at six major community events (impacting approximately 600 citizens) and were made available on the www.ThinkBluesd.org website. Education and outreach efforts also resulted in the formation of a Neighborhood Council which held six public meetings (impacting approximately 275 citizens). The cost of the education and outreach component to eliminate polluting practices of residents and businesses in the community was approximately $500,000.

Watershed Cleanup and Enhancement

The City of San Diego and the Project Partners removed an estimated 6,000 square feet of impervious concrete channel, removed non-native invasive plant species, and restored the creek channel and cobble stream bed. The natural park-like area provides community residents and visitors a location to view educational signage related to the preservation and protection of Chollas Creek beneficial uses. Additionally, with the assistance of local businesses and residents, the partners conducted two creek cleanup events. During the first event, 50 participants removed more than one ton of debris, including more than 100 bags of trash, a sofa

bed, 30 shopping carts, and a water heater. During the second event, six participants removed approximately 500 pounds of trash and debris, including an oven, large car parts, shopping cart, and other large items. During the Chollas Creek Restoration event, signage promoting awareness was installed and discussed. The general audience for this event was reached through the press coverage with messaging on pollutant removal. It is assumed that this achieved an increase in community awareness and knowledge.

Water Quality and Biological Assessment

Construction of the Enhancement Project was completed by late December 2007 but the vegetation was not established by the post-construction storm event on January 5, 2008, or the post-construction photo and biological survey conducted on January 10, 2008. Results reported in the February 2008 Final Report were not conclusive with regard to determining statistically significant improvements in water quality between the two monitoring sites. Review of the pre- and post-construction results suggest metals concentrations generally decreased and diazinon concentrations were detected less frequently and generally below the TMDL waste load allocation. Bacteria concentrations were slightly lower but not significantly different. Once the vegetation becomes established TSS and the pollutants associated with TSS (e.g. metals and pesticides) will also likely decrease.

During the post-construction biological assessment, seven of the ten metrics used were applied to create a potential score of 140 points. The pre-construction physical habitat received a score of 71 of 140 potential points. The post-construction survey resulted in a score of 82 of 140 potential points. This was a net improvement of 11 points.

Long-Term Assessment

Long-term monitoring in the South Fork of Chollas Creek, as required by Order R9-2004-0277, will be used to evaluate the long-term water and biological quality trends. If water quality and load reduction does not improve, management actions may be needed to address specific water quality constituents. The Chollas Creek Restoration event is not planned for implementation in FY 2009.

MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECTS – 12

ACTIVITY IMPLEMENTATION

The City of San Diego is undertaking a rain barrel and rain harvesting study and implementation program to reduce pollutant loading at municipal facilities. The rain barrel/rain harvesting study will consist of implementing rain barrel systems, including downspout disconnects and infiltration systems, within the San Diego Bay WMA to reduce pollutant loading from urban runoff during storm events. Rain barrels, downspout disconnects and rainwater harvesting/reuse systems help to capture, store and divert storm water to reduce the volume of rainwater runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, and pesticides in rainfall runoff. Rain barrels and underground storage systems (cisterns) collect storm water runoff from buildings and residential rooftops and store until discharged. The barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff waters away from existing structures and utilities. Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The study will investigate the effectiveness of rain barrels/rain harvesting systems in reducing loading and will assist the City in attaining its water quality goals. The Study includes site evaluations and selections, the purchase of rain barrel/rain harvesting systems and infiltration systems, rain barrel installation, and effectiveness evaluations.

The City is using the prioritization process that is outlined in the *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Diego Bay WMA and other watersheds for this study. Based on this prioritization plan, the selected San Diego Bay WMA site for rain barrel implementation, Southcrest Park, will be in the highest priority sector of the Chollas Creek Watershed in the San Diego Bay WMA for potential for pollutant loading.

The primary goal of this project is to reduce runoff volumes and pollutant loading from storm water urban runoff. The first phase of this project will focus on implementing rain barrel/rain harvesting systems at selected municipal facilities as part of a pilot program. Ultimately, the City of San Diego would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during the pilot program will be applied to implementation in residential areas.

Based on these findings, the City of San Diego may modify its rain barrel/rain harvesting program to increase effectiveness and/or seek City Council approval for additional funding to implement additional rain barrel/rain harvesting systems.

A one-page information sheet regarding the rain barrels were developed in the summer of 2007 for the City of San Diego. Project planning, including site selection, began in July 2007. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes, and rain chains began in the second quarter of 2008. No installation occurred in FY 2008.

According to Regional Board comments[6] for other WURMPs (e.g., Mission Bay and La Jolla's), the City must provide data on the locations selected, number of barrels installed, and the volume of rain water collected. The location is discussed in this section. The number of rain barrels has yet to be decided, but will be discussed in future reporting. As the rain barrels are not yet installed, the volume of water captured is not known and will also be discussed in future reporting.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and is anticipated to continue until the end of calendar year 2008. Initially the project was anticipated to be completed in spring 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Procurement of rain barrels and other items and installation started in the second quarter of 2008. Subcontractors will be procured in late 2008. The specifications and installation guidelines will be developed by the end of 2008. A pre-installation meeting will be held at Southcrest Recreation Center site by the end of 2008. Two traditional barrels and one planter barrel will be installed at this site in early 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

[6] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM **Assess Efficiency and Effectiveness of Rain Barrel Water Collection Containers in Reducing Runoff**		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems, particularly for metals and bacteria? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcomes	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of rain barrel systems (Outcome Level 1)	$57,000
Recommended Data	• Cost of maintenance/upkeep (Outcome Level 1) • Cost of implementation (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Results and Analysis

This study will include site evaluations and selections, the purchase of rain barrel/rain harvesting systems and infiltration systems, rain barrel installation, and effectiveness evaluations. Procurement of rain barrels, planter boxes, and rain chains began in the second quarter of 2008. The project has a current estimated total cost of $57,000, which includes both

materials and construction costs. Construction services for the installation of twenty (20) urban runoff reduction/pollution prevention systems, including rain barrels and planter boxes at seven (7) municipal sites around San Diego, has been estimated to cost $50,000 and is schedule to take place in January/February of 2009. In FY 2008, this activity was not in active implementation. Therefore, load reduction assessment is not possible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing urban runoff and pollutant loads can be made at this time. Effectiveness and efficiency will be determined by load reduction (determined by monitoring efforts) versus cost of barrel installation and maintenance, and conclusions will be made after the assessment is complete

DALBERGIA STREET GREEN MALL INFILTRATION PROJECT – 13

ACTIVITY IMPLEMENTATION

This project will remove conventional asphalt paving along Dalbergia Street and Thor Street (industrial/commercial area) and replace it with pervious concrete paving. In addition, the existing curb and gutter along portions of Dalbergia Street will be moved 12 feet into the right of way, and, in between the existing and new curb lines, bioretention planter boxes will be placed and filled with crushed rock. Both the pervious concrete and bio-retention planter boxes will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters. The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Green Mall" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

This project was one of two City of San Diego projects approved as a Proposition 50-granted funded project in May 2008 via the San Diego Integrated Regional Water Management Plan. The work performed in FY 2008 included project advertisement, design consultant interviews, and design consultant selection.

According to Regional Board staff comments[7], the City will receive a WQA credit. The City agrees with this conclusion.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The work performed in FY 2008 included advertising the project, interviewing design consultants, and approving the selection of the design consultant. The design consultant will start work in FY 2009. Construction is anticipated to occur February through September 2010. Water quality monitoring is anticipated be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[7] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved copper, lead, and zinc
- Bacteria Indicators
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
DALBERGIA STREET "GREEN MALL" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Malls in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the effectiveness and efficiency of the Dalbergia Street Green Mall Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2008. Therefore, assessment is not possible at this time. Project design will continue in FY 2009.

Conclusions

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

SOUTHCREST PARK GREEN LOT INFILTRATION PROJECT – 14

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a below-grade storage and infiltration basin the grassy areas of Southcrest Park. Diversion structures will divert runoff from the existing storm drain system that runs through the parking area to the infiltration areas. The site design has incorporated various LID approaches in an integrated manner. These approaches include replacing existing asphalt roads and parking lot with porous pavement as well as rain barrels and planters to collect roof drainage. This site was selected for its likely higher permeability soils and location next to the creek. Infiltration from the underground units will seep into the creek and will not impact down-gradient structures. This project also has the option for restoration including approximately 500 linear feet of the reach of South Chollas Creek passing through the western portion of the site.

The project will be designed according to the integrated approach outlined in the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (November 2007) of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, help meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay WMA. The City of San Diego has named this model approach for LID as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

In FY 2008, the City of San Diego continued work on the conceptual design, which included delineating drainage area limits, formulating performance specifications, and estimating construction and operations and maintenance costs.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2007 and continued in FY 2008. The planned implementation date is FY 2010 to 2011. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
SOUTHCREST PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt, underground storm water storage vaults, and rain barrels? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the efficiency of the Southcrest Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2008. Therefore, assessment is not feasible at this time. Project design will continue in FY 2009.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time. The planned implementation date is FY 2010 to 2011. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

MEMORIAL PARK GREEN LOT INFILTRATION PROJECT – 15

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a large underground chamber to collect and then slowly infiltrate urban runoff into the underlying subsoils. This underground system will be located within Memorial Park, thereby transforming the recreational facility into a dual-use site for both urban runoff pollution reduction and recreation. The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay WMA. The City has named this model approach for Low Impact Development (LID) as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

Project planning continued in FY 2008. Design and award of contract are anticipated in FY 2009. According to Regional Board staff comments[8], the City will receive a WQA credit. The City agrees with this conclusion.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Design and award of contract are anticipated to occur August 2008 through February 2010. Construction is anticipated to occur February through October 2010. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

[8] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
MEMORIAL PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt and underground storm water storage vaults? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Data Recorded	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the efficiency of the Memorial Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2008. Therefore, assessment is not feasible at this time. Project design will continue in FY 2009.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

TMDL-RELATED ACTIVITIES

SHELTER ISLAND YACHT BASIN DISSOLVED COPPER TMDL – 16

ACTIVITY SUMMARY

The Total Maximum Daily Load (TMDL) enforcement program requires that the Shelter Island Yacht Basin stakeholders make a substantial reduction in the copper loading in the basin. A critical element to reducing copper loads is having boats transition from copper-based antifouling paints to non-copper paints. To successfully do so, viable alternatives to copper-based paints must be identified so that a phase out of copper is possible.

The San Diego Bay Copermittees and other stakeholders are taking a proactive stance on this issue. During FY 07-08, the Safer Alternative to Copper Antifouling Paints Study was initiated to identify, test, and demonstrate safer alternative non-copper hull coatings. This study will test and evaluate alternative hull paints on recreational boats within the SIYB and determine cost effective non-copper alternatives. By providing this information, voluntary transition away from copper-based paints can increase. A transition to non-copper antifouling hull coatings is needed to decrease copper loading in the SIYB. The results may be directly applicable to other 303d listed marinas within the San Diego Bay with copper impairments. This activity will build on previous research through the identification, investigation, testing and evaluation of newly emerging or recently developed non-copper hull paints.

TMDL APPLICABILITY

The implementation plan for the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL requires a 76% overall reduction of copper loading to SIYB over a 17-year staged compliance schedule period. The implementation plan describes alternative strategies and management practices that may be developed and implemented by the dischargers to reduce dissolved copper loading into the SIYB. The San Diego Bay Copermittees are actively working with the RWQCB and other local stakeholders to address this issue.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementing
- Permit Year 08-09: Implementing

PARTICIPATING JURISDICTIONS

- Port of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Copper

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Copper-based hull paints have been identified as a likely source of copper, a high priority pollutant in SIYB and 908.1 (HA). The Port of San Diego is working towards a copper load reduction as a result of minimizing copper-based paints use as the primary antifoulant mechanism on recreational boats state-wide.

EFFECTIVENESS ASSESSMENT

The goal of the activity is to evaluate new and emerging alternative boat hull coatings in order to provide a list of safer alternative antifouling paints that may be voluntarily applied to boat hulls by the SYIB boating community. A level three outcome will result from the educational and outreach efforts to provide valuable information and guidance to the boating industry on alternative non-copper based antifouling paints and maintenance strategies during the current Permit. The transition away from copper-based coatings would aid in the reduction of copper loading into the SIYB, thereby enabling the possibility of a level four outcome by the end of this Permit cycle.

During the FY 07-08, the Port of San Diego and the consultant, Institute for Technical Assistance (IRTA), held three stakeholder workgroup meetings to discuss the Safer Alternative to Copper Antifouling Paints Study and determine the panel field testing protocol that was to be used to evaluate the paints. The panel field testing protocol was finalized in May 2008. Forty six non-copper paints were identified to be evaluated and field testing was initiated in June 2008.

CHOLLAS/PALETA/SWITZER CREEK MOUTHS TMDL – 17

ACTIVITY IMPLEMENTATION

In 1998, the sediments at the mouths of Chollas and Paleta creeks were listed in the Clean Water Act 303(d) List of Water Quality Limited Segments for toxicity and benthic community degradation. The San Diego Regional Water Quality Control Board (Regional Board) initiated the development of a Total Maximum Daily Load (TMDL) in 2000 by coordinating monitoring efforts with various stakeholders. The goal of the TMDL is to restore the sediment and water quality of the creek mouths and protect their beneficial uses through the implementation of a monitoring program and Best Management Practices (BMPs). In the fall of 2005, the Regional Board modified the TMDL to include the mouth of Switzer Creek. This modified TMDL consolidates the previous work at all three creek mouths because of their similarities.

FY 2008 implemented activities include:

- The City worked with their consultant in developing and implementing a pesticide distribution study in the subject drainage areas to further assess potential sources and possible BMPs to reduce pollutant loads to the mouth of the subject creeks.
- The City continued the planning of the "Green Mall" at Dalbergia and Thor Streets, the dual-use infiltration project at Memorial Park, and the Southcrest Park large scale infiltration LID project in Chollas Creek watershed.
- The Draft Watershed Modeling for Simulation of Loadings to San Diego Bay Report was released on June 10, 2008.
- Eighteen sites were sampled in a one-time pesticide study titled "Pesticide Investigation in the Pueblo Watershed" in Switzer Creek on June 24 and 25, 2008.
- A San Diego Bay Sediment TMDLs Work Group Meeting was held on September 15, 2008. Two presentations titled "TMDLs for Toxic Pollutants in Sediment for the Mouths of Paleta, Chollas, and Switzer Creeks" and "Watershed Modeling for Simulation of Loadings to the San Diego Bay and Receiving Water Model Configuration and Evaluation for the San Diego Bay" were given.

TMDL APPLICABILITY

- Chollas-Paleta-Switzer Creek Mouths TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned FY 2009 implemented activities include:

- An informal SAG meeting will be held in September 2008.

- The City will continue to work with their consultant in developing and implementing a pesticide distribution study in the subject drainage areas to further assess potential sources and possible BMPs to reduce pollutant loads to the mouth of the subject creeks.
- The City of San Diego anticipates the design and award of the "Green Mall" at Dalbergia and Thor Streets contract to occur August 2008 through February 2010.
- The City of San Diego anticipates the design and award of the dual-use infiltration project at Memorial Park to occur August 2008 through February 2010.
- The City of San Diego anticipates planned implementation date of the Southcrest Park large scale infiltration LID project to be FY 2010 to 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Lemon Grove
- City of La Mesa
- City of National City
- City of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- United States Navy
- Southern California Coastal Waters Research Project
- San Diego Regional Water Quality Control Board

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Benthic community impacts
- Toxicity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and pesticides as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities, source studies, and monitoring to address them. Development of this TMDL will contribute to addressing those problems with the recommended efforts described in the San Diego Bay WURMP.

EFFECTIVENESS ASSESSMENT

This TMDL is in the development phase and has not yet been adopted into the *Water Quality Control Plan for the San Diego Basin 9* (Basin Plan). After adoption into the Basin Plan, an Implementation Plan will be developed, which will outline the activities to be conducted to meet the requirements of the TMDL. Assessment of the effectiveness of this TMDL in protecting and restoring beneficial uses is not possible at this time. Once assessment is possible, it will be presented in Section 4 of the San Diego Bay WURMP Annual Report.

CHOLLAS CREEK DIAZINON TMDL – 18

ACTIVITY IMPLEMENTATION

In 1996, Chollas Creek was placed on the Clean Water Act Section 303(d) List of Water Quality Limited Segments for toxicity due to the pesticide diazinon. Diazinon is an organophosphate insecticide with indoor, residential, landscape, and agricultural applications. Urban storm water flows serve as the primary transport mechanism of the pesticide to Chollas Creek.

The San Diego Regional Water Quality Control (Regional Board) subsequently developed and in August 2002 adopted the Chollas Creek Diazinon Total Maximum Daily Load (TMDL) to meet water quality objectives at Chollas Creek with regards to diazinon and protect the Creek's beneficial uses from impairment by the pesticide. The Implementation Action Plan of the TMDL requires the Copermittees within the Chollas Creek watershed (a sub-watershed within the San Diego Bay WMA) to monitor and reduce diazinon discharges into the Creek through activities done pursuant to the Municipal Storm Water Permit and Investigation Order No. R9-2004-0277.

FY 2008 implemented activities include:

- The 2006–2007 Annual Report for Order No. R9-2004-0277 was completed and submitted to the Regional Board in January 2008, which detailed the activities done by the Copermittees in FY 2007 to monitor reduce diazinon discharges into Chollas Creek.
- Monitoring activities pursuant to Investigation Order No. R9-2004-0277 were conducted.
- The City of San Diego continued coordination with other Copermittees on developing an integrated approach to address current and likely TMDL and WURMP requirements for the Chollas Creek Watershed.
- The City of San Diego continued with the planning and implementation of TMDL activities.
- The City continued the planning of the "Green Mall" at Dalbergia and Thor Streets, the dual-use infiltration project at Memorial Park, and the Southcrest Park large scale infiltration LID project in Chollas Creek watershed.

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned FY 2009 implemented activities include:

- The 2007–2008 Annual Report for Order No. R9-2004-0277 will be completed and submitted to the Regional Board in January 2009, which will detail the activities done by

the Copermittees in Fiscal Year 2008 to monitor and reduce diazinon discharges into Chollas Creek.

- Monitoring activities pursuant to Investigation Order No. R9-2004-0277 will be conducted.
- The City of San Diego will continue coordination with other Copermittees on developing an integrated approach to address current and likely TMDL and WURMP requirements for the Chollas Creek Watershed.
- The City of San Diego will continue with the planning and implementation of TMDL activities.
- The City of San Diego anticipates the design and award of the "Green Mall" at Dalbergia and Thor Streets contract to occur August 2008 through February 2010.
- The City of San Diego anticipates the design and award of the dual-use infiltration project at Memorial Park to occur August 2008 through February 2010.
- The City of San Diego anticipates the planned implementation date of the Southcrest Park large scale infiltration LID project to be within FY 2010 through 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of Lemon Grove
- City of La Mesa
- County of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Pesticides (diazinon)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Pesticides are recognized by the Collective Watershed Strategy as a high priority water quality problem for 908.1 and 908.2 HA. The Collective Watershed Strategy identifies the necessity for additional monitoring and source identification.

The Chollas Creek Diazinon TMDL is considered an important water quality activity in the San Diego Bay WMA because it involves the implementation of Best Management Practices (BMPs)

and the monitoring of water quality to assess BMP effectiveness and load reductions. The implementation of activities to monitor and reduce diazinon discharges into Chollas Creek will contribute to restoration of its beneficial uses (WARM and WILD).

Since Chollas Creek is a natural drainage system that traverses inner-city neighborhoods within the City of San Diego from its headwaters in La Mesa and Lemon Grove to San Diego Bay, improving the water quality of the Creek ultimately positively impacts the water quality of San Diego Bay.

EFFECTIVENESS ASSESSMENT

Assessment of this TMDL is discussed in Section 4.2 of the San Diego Bay WURMP Annual Report.

CHOLLAS CREEK DISSOLVED METALS TMDL – 19

ACTIVITY IMPLEMENTATION

Chollas Creek is an urban coastal stream in southern San Diego County and tributary to San Diego Bay. In 1996, it was placed on the Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments for toxicity due to copper, lead, and zinc. A Total Maximum Daily Load (TMDL) is currently in the process of development, public review, and adoption, which aims to attain water quality objectives for copper, lead, and zinc and restore and protect the beneficial uses (REC-2, WARM, WILD, and potentially REC-1) of Chollas Creek through monitoring, waste load and load allocations, and an Implementation Action Plan that describes the pollutant reduction actions that must be taken by various responsible parties to meet the waste load and load allocations within a set timeline.

FY 2008 implemented activities include:

- The Copermittees continued to participate in public comment periods and Regional Board hearings regarding the Chollas Creek Dissolved Metals TMDL.
- The monitoring program for the TMDL continued to be conducted.
- The City of San Diego continued the planning of the “Green Mall” at Dalbergia and Thor Streets, the dual-use infiltration project at Memorial Park, and the Southcrest Park large scale infiltration LID project in Chollas Creek watershed.
- A program of increased inspections occurred at auto-related facilities and industrial facilities that are potential sources of heavy metals.
- The City of San Diego coordinated with other Copermittees on the continued development of an integrated approach to address current and likely TMDL and WURMP requirements for the Chollas Creek Watershed using its *Strategic Plan* as a guideline. The resulting product will serve as the Implementation Plan for the TMDL.
- The City of San Diego continued with the planning and implementation of TMDL activities.
- The City of San Diego became a partner with the Sustainable Conservation Brake Pad Partnership.
- The City of San Diego sent a letter to the State Water Resources Control Board on July 7, 2008, with comments regarding the Chollas Creek Dissolved Metals TMDL. The City of San Diego asked for the same considerations in the resolution as those found in the Los Angeles River Metals TMDL, Resolution No. 2008-0046.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned FY 2009 implemented activities include:

- The Copermittees will continue to participate in upcoming public comment periods and Regional Board hearings regarding the Chollas Creek Dissolved Metals TMDL.
- Monthly meetings regarding the Implementation Plan will begin in FY 2008.
- Stakeholder meetings will be held in FY 2009 as the Implementation Plan is developed.
- The monitoring program for the TMDL will continue to be conducted and further refined.
- A program of increased inspections will occur at auto-related facilities in FY 2009 to target metals.
- The City of San Diego will continue to coordinate with other Copermittees on the continued development of an integrated approach to address current and likely TMDL and WURMP requirements for the Chollas Creek Watershed using its *Strategic Plan* as a guideline.
- The City of San Diego will continue with the planning and implementation of TMDL activities.
- The City of San Diego anticipates the design and award of the "Green Mall" at Dalbergia and Thor Streets contract to occur August 2008 through February 2010.
- The City of San Diego anticipates the design and award of the dual-use infiltration project at Memorial Park to occur August 2008 through February 2010.
- The City of San Diego anticipates the planned implementation date of the Southcrest Park large scale infiltration LID project to be within FY 2010 through 2011.
- The City of San Diego will continue to partner with the Sustainable Conservation Brake Pad Partnership.

PARTICIPATING WATERSHED COPERMITTEES

- City of Lemon Grove
- City of La Mesa
- City of San Diego
- County of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- Caltrans
- United States Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved copper, lead, and zinc (Metals)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Development and implementation of the Chollas Creek Dissolved Metals TMDL will lead to the identification and implementation of activities addressing the loading of metals into Chollas Creek.

EFFECTIVENESS ASSESSMENT

The Implementation Plan for this TMDL is in the development phase and has not yet been completed. Assessment of the effectiveness of this TMDL in protecting and restoring beneficial uses is not possible at this time. Refer to Section 4.2 of the San Diego Bay WURMP Annual Report for further discussion.

MONITORING AND SOURCE IDENTIFICATION ACTIVITIES

ENHANCED DRY WEATHER MONITORING PROGRAM – 20

ACTIVITY SUMMARY

The Airport Authority continues to conduct dry weather monitoring at a frequency that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Dry Weather Monitoring Program is to identify sources of storm water pollution in the watershed. The Airport Authority first began to implement this enhanced program in fiscal year 2005-2006 by increasing the frequency of dry weather monitoring from the Permit requirement of once per dry weather season to at least three times during the dry weather season. The increased frequency increases the chances that illegal discharges and their sources might be identified. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

The Enhanced Dry Weather Monitoring Program is an important water quality activity in the San Diego Bay WMA because it helps to identify and eliminate sources of illegal discharges in the watershed. Identification and elimination of illegal discharges within the watershed contributes to improving the quality of the storm water ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Dry Weather Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, copper, and other pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Dry Weather Monitoring Program will help to identify and eliminate sources of storm water pollution in the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Dry Weather Monitoring Program intends to identify and eliminate sources of illegal discharges and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, pesticides, sediment, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay WMA in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of pollutant sources, including these high priority pollutants.

EFFECTIVENESS ASSESSMENT

During FY 07-08, the Authority conducted three monitoring events and one follow up event as part of the enhanced dry weather monitoring program. The dry weather monitoring was conducted three times as frequent as required by the Municipal Permit. Since no illegal discharges were identified during FY 07-08 reporting period, there are no discharge durations to associate with pollutant discharge concentrations, and thus, no estimate of a load reduction can be made. Conversely, since no illegal discharges were identified, it is assumed there was no increase in pollutant loading to the watershed and/or San Diego Bay.

COORDINATED DRY WEATHER MONITORING PROGRAMS – 21

ACTIVITY SUMMARY

Each Copermittee is required to implement a Jurisdictional Dry Weather Monitoring (DWM) Program as part of the Illicit Discharge Detection and Elimination Component of the Municipal Storm Water Permit (Order No. 2007-0001). Each Copermittee has developed and implemented a DWM program as required by the Permit but due to logistical constraints, site monitoring and sample collection within each jurisdiction often are conducted independent of other jurisdictions. The San Diego Bay Copermittees recognize that coordinated DWM efforts could be more effective because illicit discharges may cross jurisdictional boundaries. Therefore, San Diego Bay Copermittees conducted a pilot study during 2004-2005 to determine the feasibility of coordinating DWM locations and sampling dates across jurisdictions. As part of the pilot program, the City of San Diego and the Port of San Diego coordinated monitoring activities at three locations within each jurisdiction during 2004-2005. The program was expanded to include the Airport Authority in 2005-2006.

The Port of San Diego and the Airport Authority continued to coordinate dry weather sampling activities within 908.2 HA on three occasions during the 2008 dry weather monitoring season (May 1 to September 30). Coordinated dry weather monitoring occurred on 05/08/008, 06/20/08, and 08/04/08. Figure E-2 portrays the coordinated sites sampled by the Airport Authority and the Port of San Diego. By simultaneously monitoring at the outfall (Port jurisdiction) and at a site upstream (Airport Authority jurisdiction), the Copermittees intend to identify potential illicit discharges and facilitate upstream source identification.

Figure E-2. Coordinated Dry Weather Monitoring Sites.

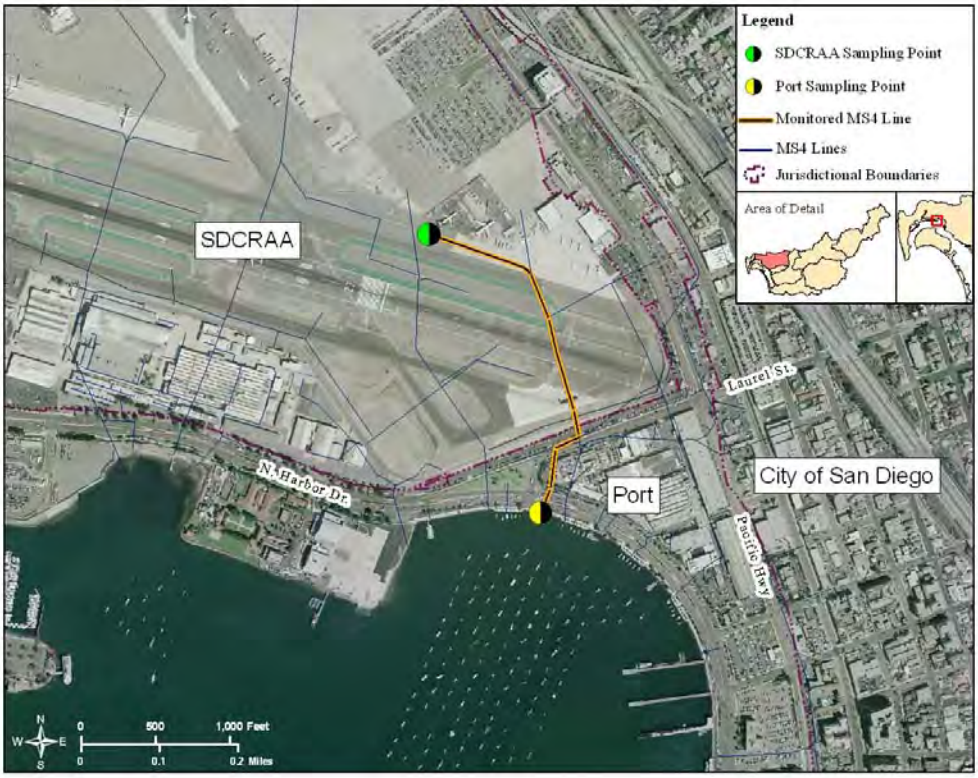

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- Airport Authority

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Turbidity
- MBAS
- Nutrients

- Pesticides
- Metals
- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The coordination of DWM programs is considered a beneficial water quality activity in the San Diego Bay WMA because it provides comprehensive detection, analysis, and investigation of pollutant discharges at a watershed level. Current jurisdictional DWM programs are effectively identifying and eliminating illicit discharges. When discharges cross jurisdictional boundaries, however, the follow-up investigation is passed from one jurisdiction to another, creating a potential lag time in the response. Coordinated efforts increase the efficiency and effectiveness of jurisdictional programs and allow analysis at a watershed level.

EFFECTIVENESS ASSESSMENT

The Port of San Diego and the Airport Authority coordinated dry weather monitoring on three dates during the 2008 dry weather monitoring season: 05/08/08, 06/20/08, and 08/04/08. As part of the coordinated effort, the Port of San Diego monitored an outfall downstream of the Airport Authority's sampling site. The site monitored by the Airport Authority was adjacent to the runway within the airport property. The Port of San Diego's sampling site was along San Diego Bay near the intersection of Harbor Drive and Laurel Street.

The Airport Authority collected samples for field and laboratory analysis on 05/08/08 and 06/20/08. Action levels exceeded for pH, ammonia, and MBAS on first occasion ponded water was found. Laboratory analyses of the ponded water collected at the site reported copper and zinc concentrations exceeded the action levels. There was no evidence of illegal discharge in the vicinity of the monitoring site.

The Port of San Diego attempted to monitor the outfall downstream of the Airport Authority's sampling site, however during all three sampling dates the outfall was tidally inundated. Therefore, sampling did not occur at the Port of San Diego's coordinated site. Due to the lack of sufficient monitoring data, a correlation between the Airport Authority and Port of San Diego's dry weather results cannot be made for 2008.

With many of the MS4 lines crossing jurisdictional boundaries from the Airport Authority to the Port of San Diego, the two Copermittees believe that coordinating monitoring dates is beneficial to investigate exceedances which may occur along shared lines. The Airport Authority and the Port of San Diego will assess the monitoring site locations and modify as needed to improve the coordinated dry weather monitoring program for the 2009 dry weather monitoring season.

LA MESA WATER QUALITY MONITORING PROGRAM – 22

ACTIVITY SUMMARY

To more effectively characterize source of pollutants, the City of La Mesa (City) has conducted additional water quality monitoring within the San Diego Bay WMA. Four Wet Weather discharge locations in the University Drainage Basin, which eventually drains to Chollas Creek, were identified as sampling points for time-weighted composite samples. In previous years additional sampling was done at these sites during dry weather conditions. In 2008, these four sites were added to the City's dry weather monitoring program to ensure that dry weather data will also be collected each year. Samples taken from these sites during wet and dry weather conditions are analyzed for watershed constituents of concern. The City intends to use the data to identify exceedances and to identify potential pollutant sources.

TMDL APPLICABILITY

Monitoring is conducted in support of California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). Wet weather monitoring data and dry weather sampling results support identifying exceedances in pollutant loading for dissolved copper, lead, zinc, and diazinon. Furthermore, data enables the City to identify potential sources and conduct targeted educational outreach.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Monitoring program enables the City to collect data on the high priority pollutants in the watershed, particularly metals, sediment, bacteria, and pesticides. The City intends to use the collected data to identify pollutant sources and to target education and best management practice implementation efforts.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is monitoring for these constituents in order to identify sources of potential pollutants/exceedances. Once identified, the City can take the appropriate action. This monitoring activity supports the Watershed Strategy by identifying priority pollutant sources; the City can then use this information to target activities.

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Monitoring is not considered a watershed water quality activity based on the Municipal Permit Order 2007-001 definition; however, data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

BMP EFFECTIVENESS MONITORING PROGRAM – 23

ACTIVITY SUMMARY

The Airport Authority continues to collect rain event runoff samples to monitor the performance of both structural and non-structural, discrete and combination BMPs. The long-range goal of the BMP Effectiveness Monitoring Program is improve the water quality of storm water runoff from the airport into San Diego Bay. The BMP Effectiveness Monitoring Program will assess whether the BMPs being implemented are able to reduce concentrations of, primarily, copper and zinc in storm water runoff from the airport. Based on a power analysis of 10 years of existing airport runoff water quality data, a minimum number of samples required to allow an effectiveness comparison has been identified. The program allows 3 years to calibrate paired watershed sampling, followed by 3 years of sampling to make an initial assessment of BMP effectiveness. To confidently establish a downward trend, at trend analysis monitoring station has been established to allow for a minimum of 10 years sampling. The first year of the monitoring program began during the rainy season of 2006-2007, during which the runoff from 6 storm events was sampled.

The BMP Effectiveness Monitoring Program is an important water quality activity in the San Diego Bay WMA because it assesses the effectiveness of BMPs at reducing concentrations of metals in storm water runoff. Establishing the effectiveness of BMPs in reducing pollutant concentrations in runoff contributes to improving the quality of the storm water ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The BMP Effectiveness Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation

- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The BMP Effectiveness Monitoring Program intends to assess the effectiveness of BMPs at reducing concentrations of metals, primarily, in storm water runoff thereby improve the quality of runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals as high priority water quality problem for the 908.2 HA portion of the San Diego Bay WMA in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of BMPs effective at reducing metal pollutant loads.

EFFECTIVENESS ASSESSMENT

The rainy season of FY 07-08 was only the second year of the monitoring. The runoff from six storm events was sampled. The third and last season of the 3-year calibration period is now underway during FY 08-09. As such, .the Authority continues to collect baseline data. While data on pollutant loads is also being collected currently, statistically valid estimates of total reductions will not be possible for several more years.

DRY WEATHER AERIAL DEPOSITION STUDY – 24

ACTIVITY IMPLEMENTATION

The City of San Diego conducted an Aerial Deposition Study in several watersheds in the City of San Diego's jurisdiction. This study was conducted to address sources of metal and particulate pollutants that settle out on watershed surfaces and have the potential to wash off. The study was specifically used to address source related information for the Chollas Creek Metals TMDL.

Data was collected from September 10, 2007, through May 19, 2008. The study was designed to address the following questions, identified as unanswered during the initial Dry Weather Aerial Deposition Study:

1. What is the annual aerial deposition rate in the high loading areas identified in the initial dry weather aerial deposition study?
2. What is the wet weather aerial deposition rate at the SD8(1) location?
3. What is the solubility of copper, lead, and zing in atmospheric deposition particles during dry and wet conditions?

Wet weather depositional monitoring occurred at the SD8 (1) location in Chollas Creek. Dry deposition analyses occur at high loading (industrial) sites, two high traffic surface streets, and two reference sites at the following locations:

- Area near the mouth of Chollas Creek
- Switzer Creek adjacent to Interstate 5
- SD8(1) – Chollas North Fork
- DPR(2) – Chollas South Fork
- Commercial Street (Industrial corridor in Chollas Creek)
- Scripps Institute of Oceanography (SIO) Pier (Reference site and provides direct deposition assessment to the ASBS surface)
- La Jolla Parkway (High traffic surface street, high braking)
- La Jolla Shores Drive (High traffic surface street, high braking)

As of June 30, 2008, the project is approximately 65% complete (field work is approximately 85% complete). The following information summarizes the progress to date:

- Nineteen of 24 annual dry deposition events completed
- Three of three wet deposition events completed
- Three of three solubility events completed

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Sample collection is expected to continue through August 2008. Remaining tasks include data analysis and draft reporting, peer review, and final reporting. The draft report is anticipated to be delivered November 2008 and the final report January 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (specifically zinc, copper, lead)
- Total Suspended Solids (TSS)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities and additional monitoring to address them. The aerial deposition study presents the results and findings of the conditions related to aerial deposition in the San Diego Bay WMA. The study data can be used to provide model input data for future BMP evaluations and watershed activities. The report also provides information related to aerial particulate sources and relevance to each watershed.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
DRY WEATHER AERIAL DEPOSITION STUDY **Characterize Contribution of Aerial Deposition to Metals Loading**	
Expected Outcome	• Findings to be presented in final report to be released by late FY 2009

Assessment of this activity is not being conducted since it is a source identification and characterization study. This study will contribute to filling in pollutant source data gaps as identified above to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

REGIONAL HARBOR MONITORING PROGRAM – 25

ACTIVITY SUMMARY

In July 2003, the RWQCB, under §13225 of the California Water Code, requested the development of a coordinated and comprehensive harbor water quality monitoring program for harbors in the San Diego region. San Diego Bay is one of the four harbors included in the Regional Harbor Monitoring Program (RHMP). The objectives of the RHMP are:

1. Determine the contributions and spatial distributions of inputs of pollutants to harbors in the San Diego Region and how these inputs vary over time.
2. Determine whether the waters in harbors safe for body contact activities.
3. Determine whether fish in harbors safe to eat.
4. Determine whether the waters and sediments in the harbors sustain healthy biota.
5. Determine the long-term trends in water quality for each harbor.

The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay. The program includes monitoring for metals, bacteria, organic compounds, and toxicity will improve assessments of the watershed priority pollutants and will provide a program from which to assess overall water quality improvements. While this program does not specifically reduce loads of high priority pollutants, data collected will provide important information to the Copermittees on the ambient receiving water conditions. During FY 07-08, the RHMP Pilot Study was completed. Preparation for the core monitoring program was also initiated in the spring of 2008. The study design was developed and integrated into the Bight 08 Regional Monitoring Program. Field sampling was scheduled to occur in August of 2008. The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Copper
- Zinc
- Bacteria
- Pesticide
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The RHMP is considered a beneficial water quality activity in the San Diego Bay WMA because it will enable water quality improvements or degradations to be more readily identifiable. The monitoring will also provide trend information by being repeated at a specified frequency to obtain statistical trend data for the indicators. Furthermore, the RHMP is designed to integrate with existing monitoring that is regularly conducted in the region, including storm water monitoring, other permit compliance monitoring, regional Bight monitoring, and special focused studies and is designed to integrate with the State's Surface Water Ambient Monitoring Program (SWAMP).

EFFECTIVENESS ASSESSMENT

1) The RHMP Pilot Study was completed during FY 07-08. The Port of San Diego and the City of San Diego, County of Orange and the City of Oceanside evaluated monitoring data from marina and freshwater influenced sites within all four harbors in order to determine the validity of the sample design to be used in the core monitoring program. It was determined the monitoring program could accurately meet the RHMP objectives.

2) The Port of San Diego and the City of San Diego, County of Orange and the City of Oceanside coordinated with the Bight 08 regional monitoring program to develop the core monitoring program for RHMP to be implemented in August 2008. The core monitoring program design included:

- 60 monitoring locations throughout the San Diego Bay

- Study design included dividing the San Diego Bay into five different strata: Freshwater-influenced, marina, port, deep water, and shallow water.
- A wide array of constituents will be analyzed, including bacteria, metals, PAHs, and pesticides.

Participating agencies collaborated during the planning phase of the core monitoring program during the consultant selection process and MOU development. The group also held four meetings to discuss RHMP monitoring activities to occur in August 2008.

CHOLLAS CREEK DESIGN STORM STUDY AND SEDIMENT AND BACTERIA RELATIONSHIP SOURCE STUDY – 26

ACTIVITY IMPLEMENTATION

Water quality monitoring data collected in Chollas Creek has resulted in the listing of creek segments on the 2006 Clean Water Act (CWA) Section 303(d) list of impaired water bodies. Based on the Basin Plan 2006 SWRCB 303(d) listings, four total maximum daily loads (TMDLs) have been adopted for Chollas Creek: the pesticide TMDL (for Diazinon) and the three dissolved metals TMDLs (copper, lead, and zinc). These TMDLs are in response to San Diego Regional Water Quality Control Board (RWQCB) Basin Plan Resolutions R9-2002-0123 and R9-2007-043, respectively. In addition, a draft TMDL for indicator bacteria is currently being revised.

As part of the Implementation Plan for the Diazinon TMDL, a design storm assessment will be conducted. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm. To gather this data, discrete grab samples will be collected and analyzed at two sites in Chollas Creek (SD 8(1) and DPR2) over the course of a storm event (i.e., a pollutograph).

There are three study questions that will be addressed by this study:

1. How do sediment and pollutant concentrations and loads vary over the course of a storm?
2. What sediment grain size classes are associated with the greatest pollutant concentration in storm water runoff?
3. Are there water quality correlates that influence the sediment/pollutant relationship?

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source will be conducted in FY 2009. This study will include assessment, sampling, analysis, and reporting. Study completion is anticipated in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacterial
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them.

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). This study will address several of the Priority Water Quality Problems (PWQP) identified for Chollas Creek in the Strategic Plan, including bacteria, heavy metals, pesticides, and sediments. It will also help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the PWQP. According to the Strategic Plan, the study is a Tier II BMP, which will provide information for the development of a design storm for Tier III BMP development.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS CREEK DESIGN STORM STUDY AND SEDIMENT AND BACTERIA RELATIONSHIP SOURCE STUDY **Identify Appropriate Design Storm to Use for Project Design and Characterize Transport Relationship Between Bacteria and Sediment**	
Expected Outcomes	• Findings to be presented in final report to be released in FY 2009

Assessment of this activity is not being conducted since it is a bacteria and sediment relationship characterization study and a design storm identification study. This study will contribute to filling in data gaps to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

CHOLLAS CREEK BENEFICIAL USE DESIGNATION/ATTAINABILITY STUDY AND MOUTH OF CHOLLAS CREEK BACTERIA SOURCE ID STUDY – 27

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego (City) began to conduct a Use Attainability Analysis (UAA) in Chollas Creek to assess the applicability of the Shellfish (SHELL) Beneficial Use. The objectives of the UAA were to evaluate the designated Beneficial Uses of Chollas Creek, review the historical record of previous existing Beneficial Uses in the Creek, summarize the Creek's historical uses, and assess the criteria for beneficial use designation.

The driving force of the UAA was an expectation that the San Diego Regional Water Quality Control Board (RWQCB) was pursuing an amendment to the Basin Plan that would have required the City to meet water quality objectives at the mouth of Chollas Creek as defined by the SHELL Beneficial Use (related to the harvesting of shellfish: clams, oysters, mussels, etc.). The anticipated amendment was expected to be introduced to the Basin Plan via the Bacteria I TMDL (Beaches and Creeks in the San Diego Region), which initially required that the SHELL water quality objective for total coliform be met at the mouths of all drainages. However, the final version of the TMDL and the subsequent Basin Plan amendment required that the REC-1 water quality objectives for bacteria be met rather than the SHELL objective. This amendment to the Basin Plan was accepted by the RWQCB in December 2007.

Therefore, the current Beneficial Use for the mouth of Chollas Creek has not changed from its original designation as potential REC-1. Although the current designation remains REC-1, there are indications in the Bacteria I TMDL that the RWQCB may pursue the SHELL Beneficial Use designation for Chollas Creek in the future. In addition, a recent biological survey at the mouth of Chollas Creek suggested that there is appropriate habitat for shellfish in the area and several filter-feeding bivalves were identified at the mouth just below the confluence of the north and south forks of the Creek. Because harvestable filter-feeding bivalves (clams, mussels, oysters, etc.) in the San Diego region require a marine environment, the point of compliance for assessing the SHELL water quality objective is just above the tidal prism (the volume of water between the low and high tides).

Given the potential for a future SHELL designation for the mouth of Chollas Creek, it is advantageous for the City to understand the freshwater inputs to this area and their associated bacterial densities. Understanding these inputs will allow the City to be pro-active in implementing BMPs to reduce bacterial loading to the mouth of Chollas Creek, should a SHELL standard be imposed. Therefore, the remaining funds for the Chollas Creek UAA will be utilized to understand the sources of dry weather runoff that reach the mouth of Chollas Creek and an estimate of the associated bacterial loads. This Bacterial Source Identification Study at the mouth of Chollas Creek will be considered the next phase of the UAA and will be reported on in FY 2009.

There are two questions Mouth of Chollas Creek Bacteria Source ID Study will address:

1. What are the sources and magnitudes of dry weather urban runoff, and associated indicator bacteria, that influence water quality at the mouth of Chollas Creek?
2. What BMPs may be put in place to reduce or eliminate the influence of dry weather urban runoff at the mouth of Chollas Creek?

The study designed to answer these questions has four main tasks: project management, sub-watershed assessment and sampling, laboratory analysis, and reporting.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The UAA is considered completed. The Bacterial Source Identification Study at the mouth of Chollas Creek will be conducted and completed in FY 2009. This Study will include assessment, sampling, analysis, and reporting.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacterial

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them.

The City of San Diego has adopted an integrated, tiered, and phased strategy (*Strategic Plan for Watershed Activity Implementation*) to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by performing a prioritized study to understand the freshwater inputs to this area and their associated bacterial densities inputs, which will allow the City to be pro-active in implementing BMPs to reduce bacterial loading to the mouth of Chollas Creek.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS CREEK BENEFICIAL USE DESIGNATION (UAA) STUDY / MOUTH OF CHOLLAS CREEK BACTERIA SOURCE IDENTIFICATION STUDY **Identify Sources of Bacteria at Mouth of Chollas Creek**	
Expected Outcome	• Findings to be presented in final report anticipated to be released in FY 2010

Assessment of this activity is not being conducted since it is a bacteria source identification study. This study will contribute to filling in data gaps to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

Appendix F

Education Activity Tables

Table F-1. 2007-2008 Public Presentations and Media Data.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
8/12/07	City of Chula Vista	Festival Participation	Lemon Festival	City staff manned a booth and distributed storm water pollution prevention and recycling information	General Public	Family	1,000	Downtown Chula Vista	IPM Pest Tip cards, pollution prevention information, and the CLEAN brochures
9/8/07	City of Chula Vista	Festival Participation	Kid's Festival	City staff manned a booth and distributed information about pollution prevention and used oil recycling	General Public	Children	800	New Hope Community Church	Storm water pollution prevention and used oil recycling brochures
9/29/07	City of Chula Vista	Festival Participation	Bonitafest	City staff manned a booth and distributed pollution prevention education	General Public	Residents	5,000	Bonita Road Shopping Center	CLEAN brochures, pollution prevention education, and IPM Pest Tip Cards
10/6/07	City of Chula Vista	Jurisdiction-hosted event	Chula Vista Fire Department Open House	Storm water staff had a booth at the open house and provided pollution prevention training to citizens	General Public	Residents	500	Fire Station 4	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message
10/6/07	City of Chula Vista	Festival Participation	Go Green and Clean Day	Staff provided training on pollution prevention and provided CLEAN brochures and IPM Pest Tip cards	General Public	Residents	500	Otay Ranch Town Center	Staff provided training on pollution prevention and provided CLEAN brochures and IPM Pest Tip cards
10/17/07	City of Chula Vista	Jurisdiction-hosted event	Citizen's Academy	City staff provided storm water training to citizens about storm water pollution prevention	General Public	Citizen's Academy	50	Chula Vista Public Works Center	CLEAN brochures, pollution prevention information, recycling information
11/07	City of Chula Vista	Print Media	Trail Display	The trail displays show how the City is in the Otay and Sweetwater Watersheds and emphasizes the need to protect environmental resources in the City	General Public	Residents	1,000s	Various locations throughout the City of Chula Vista	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
11/8/07	City of Chula Vista	Jurisdiction-hosted event	Construction BMP Training	City storm water staff provided construction BMP training at a BIA workshop which focused on pollutants of concern	Builders, Developers		50	Metropolitan Waste Water District	
01/11/08	City of Chula Vista	Jurisdiction-hosted event	Construction Inspector Training	Storm water inspection training for staff who perform inspections during the building phase of construction projects, focusing on pollutants of concern	Staff	Inspectors	10	Chula Vista PWC	
3/14/08	City of Chula Vista	Jurisdiction-hosted event	New Municipal Permit – SUSMP Updates	Storm water staff provided training to Engineering and Land Development Staff about the updated SUSMP, WQTRs, pollutants of concern, BMP selection, maintenance, Construction Permit, and phased grading.	City Staff	Engineers	6	Chula Vista PWC	
4/12/08	City of Chula Vista	Festival Participation	Day of the Child/ Put Your Butt in the Right Place	City staff manned a booth and provided storm water pollution prevention education	General Public	Children, adults	800	Memorial Park	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message
4/19/08	City of Chula Vista	Festival Participation	Festival del Sol	City storm water staff had a booth at the event and provided information about storm water pollution prevention	General Public	Residents	800	Otay Ranch Town Center	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
4/30/08	Multiple jurisdictions in the San Diego Bay Watershed	Festival Participation	Earth Day	City staff manned a booth at the events and provided education on hazardous waste disposal and pollution prevention	General Public	School Children	400	Imperial Beach Pier	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message
5/7/08	City of Chula Vista	Jurisdiction-hosted event	Citizen's Academy	City staff provided storm water training to citizens about storm water pollution prevention	General Public	Citizen's Academy	50	City of Chula Vista	CLEAN brochures, pollution prevention information, recycling information
5/14/08	City of Chula Vista	Festival Participation	Cinco de Mayo	City staff manned at booth at the event and provided storm water pollution prevention training	General Public	Residents	1,000	3rd Avenue – Downtown Chula Vista	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message
5/13/08	City of Chula Vista	Jurisdiction-hosted event	WQTR Training	Storm water staff provided training to Engineering Staff about WQTRs and pollutants of concern	City staff	Engineers	1	Chula Vista PWC	
5/30/08	City of Chula Vista	Jurisdiction-hosted event	Program Effectiveness Assessment Training	Storm water staff and San Diego Bay Copermittees received training on Program Effectiveness Assessment	Copermittees		40	Chula Vista PWC	Program Effectiveness Assessment Handbook
6/3/08	City of Chula Vista	Jurisdiction Storm Water Specific Events	Tow Yard Training	City staff provided training to tow yard owners and managers about general storm water concepts and storm water inspections	Business Owners	Tow yard workers	20	Chula Vista Police Department	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
7/3/07 - 7/4/07	City of Coronado	Festival Participation	Coronado Yacht Club Junior Sailing 4th of July Trash Pickup	Storm water BMP information	Boaters and Residential	Coronado residents and visitors	150	Coronado Yacht Club, City of Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, beach balls, Frisbees, coozies) as well as garbage bags and oil soak pads.
Week of 8/15/07	City of Coronado	Print Media	"Coronado Beaches and Bays Ace Water Quality Report Card" *Coronado Eagle & Journal, p.11*	Storm water's impact on California's oceans is graded by Heal the Bay, a non-profit organization.	Residential	Coronado residents and visitors	12,500 circulation	City of Coronado	After describing the City's aggressive efforts to maintain the City's high ratings by Heal the Bay such as installing 11 diverters, and twice per week water quality monitoring, the City's describes the overall results of the Heal the Bay Report Card for the State's beaches.
9/29/07	City of Coronado	Jurisdiction Hosted Event	Fire Services Department Open House	Storm water BMP information	Residential	Coronado residents and visitors	4,000	City of Coronado, Dept. of Fire Services	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as hands-on interaction with a portable watershed model that demonstrated how urban runoff flows into the watershed (Enviroscape®)
Week of 10/18/07	City of Coronado	Print Media	"Jim Reilly Surfing Contest Celebrates 25 Years" *Coronado Eagle & Journal*	Storm water information related to a forthcoming surf competition	Residential	Coronado residents and visitors	12,500 circulation	City of Coronado	In addition to describing the forthcoming surfing competition events, this article reported one of the primary purposes of this event as "raising awareness of the condition of our ocean and its impact on the health of our children."

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
11/07	City of Coronado	Print Media	Coronado's Beach and Bay Areas Bring Home an A+ on Report Card *South County Briefings*	Storm water's impact on California's oceans is graded by Heal the Bay, a non-profit organization.	General Public w/ an interest in beach water quality and associated environmental issues	California residents and visitors	u/k	City of Coronado	This report graded all five of Coronado's beaches with an A or A+ during both dry and wet weather. This is an indicator that the City's ongoing water quality improvement efforts, including the operation of dry/wet weather diverters, the diversion of urban runoff and nuisance water to the sewer system, and regular street sweeping, all of which prevent debris, urban runoff and nuisance water from reaching receiving waters, as well as our daily beach maintenance, continue to be successful in enhancing beach water quality.
11/1/07	City of Coronado	Jurisdiction Storm water-specific Event	BMP Brochure Mass Mail-out w/ Business License Renewals	Storm water BMP information	Business	All Coronado business license holders	2,600	San Diego Region	BMP-specific brochures and flyers were e-mailed as links along with the e-mailed Coronado business license renewal forms to every Coronado business license holder. These brochures included the following business types: Business, Construction, Food Service, Landscaping, Mobile Businesses and Property Management.
11/3/07	City of Coronado	Festival Participation	25th Annual J.R. Memorial Surf Classic	Storm water BMP information	Residential	Coronado residents and visitors	270	City of Coronado	Coronado Clean Coastlines promotional items (oil funnels, beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures, were placed in the bags each participant received after participating in his/her event.

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Week of 11/15/07	City of Coronado	Print Media	"International Surf Stars in Coronado for Surf Contest" *Coronado Eagle & Journal*	Storm water information related to a recently held surf competition	Residential	Coronado residents and visitors	12,500 circulation	City of Coronado	In addition to describing the results of the recently held surfing competition, this article reported one of the primary purposes of this event as "raising awareness of the condition of our ocean and its impact on the health of our children."
4/19/08 and 4/20/08	City of Coronado	Community Hosted Event	Annual Flower Show	Storm water BMP information	Residential	Coronado residents and visitors	4,000	Spreckels Park, Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as Integrated Pest Management Pest Tip Cards were distributed from a Department of Public Services booth.
4/20/08	City of Coronado	Community Hosted Event	Annual Car Show	Storm water BMP information	Residential	Coronado residents and visitors	4,000	Spreckels Park, Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.), and Integrated Pest Management Pest Tip Cards were distributed. An Enviro-scape® interactive model was displayed at a Department of Public Services booth shared with EDCO staff.
4/27/08	City of Coronado	Festival Participation	4th Annual Kids for Clean Water Menehune Surf Fest	Storm water information as it related to a surf competition	Residential	South Bay residents and visitors	260	City of Coronado	Coronado Clean Coastlines promotional items (beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures were placed in the bags each child received after participating in his/her event.

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5/08	City of Coronado	Print Media	Coronado's Central Beach named as one of the "Top 10 Best Beaches" by Dr. Stephen Leatherman a.k.a. "Dr. Beach"	Storm water's impact on California's oceans is seen as directly correlated to the beach's value as a tourist site.	General Public w/ an interest in beach water quality and associated environmental issues	Tourists interested in visiting a world-renowned beach as well as local residents	u/k	City of Coronado	The Top 10 Beaches in the U.S. was reported by *Travel Channel USA, the Today Show, Yahoo Travel,* TravelChannel*.com* and *About.com: Southeast US Travel.* It is unknown what the total audience size for these television channels and internet sites is but they are all very well known to the general public.
6/14/08 to 7/6/08	San Diego Region	Festival Participation	San Diego County Regional Fair	Storm water BMP information	General Public	General Public with an interest in pollution prevention and / or environmental issues	u/k	Del Mar, California	As a copermittee, the City of Coronado assisted with staff support for the public education booth which included BMP specific brochures and Integrated Pest Management (IPM) information cards.
2007-2008	San Diego Region	PSA	San Diego Regional Storm water Pollution Prevention Program	THINK BLUE media campaign	General Public	General Public with an interest in pollution prevention and / or environmental issues	u/k	Broadcast to San Diego Region	As a copermittee, the City of Coronado contributed financially to THINK Blue's media campaign. However the summary of those events will not be available from the City of San Diego until December 2008.
9/11/07	County of San Diego	Jurisdictional Stormwater Specific Event	Presentation to the Geranium Society of SD	General IPM	General Public	Gardener's	35	Geranium Society of SD	
7/7/07	County of San Diego	Jurisdictional Stormwater Specific Event	P2 workshop for Marinas & Boaters	Negacio Verde	Marine Business & Boaters	Marina Managers, Boaters & Contractors	11	Bay Club Marina	
9/9/07	County of San Diego	Community Event	North Park Block Party	Master Gardener Booth	General Public	Residents	200	33rd Street @ Thorn	

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10/13/07	County of San Diego	Community Event	Nazarene University Community Day	Master Gardener Booth	General Public	Residents	200	Point Loma	
11/1/07	County of San Diego	Jurisdictional Stormwater Specific Event	Presentation to Educators and School Staff	Watershed & P2 information	Education	HS Teachers	34	SD County Health Services Complex	
1/9/08	County of San Diego	Jurisdictional Stormwater Specific Event	Point Loma Garden Club	General IPM	General Public	Gardeners	49	Point Loma Garden Club	
3/22/08	County of San Diego	Community Event	World Water Awareness Day	Staffed Booth	General Public	General Public	1500	Rueben H. Fleet Science Center	
4/19/08	County of San Diego	Community Event	Coronado Flower Show	Master Gardener Booth	General Public	Gardeners	100	Spreckles Park	
4/20/08	County of San Diego	Community Event	Earth Fair	Master Gardeners Booth	General Public	General Public	1000	Balboa Park	
4/26/08	County of San Diego	Community Event	Point Loma Garden Club	Master Gardeners Booth	General Public	General Public	100	Point Loma	
5/17/08	County of San Diego	Community Event	Garden of the Senses Celebration	Master Gardeners Booth	General Public	General Public	750	San Diego Zoo	

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FY07-08	County of San Diego	PSA	County Chronicles – Outdoor Water Conservation	Aired on the County Television Network - 3-minute program providing outdoor water conservation tips to help conserve water and minimize polluted run-off. A total of 85 airings.	General Public				
FY07-08	County of San Diego	PSA	Down to Earth	Aired on the County Television Network - 24-minute program PCW-sponsored environmentally friendly home gardening tips. A total of 120 airings.	General Public				
FY07-08	County of San Diego	PSA	How to Manage Manure	Aired on the County Television Network - 13-minute video titled "How to Manage Manure: Composting for Horse Owners." A total of 16 airings.	General Public				
8/07	City of Imperial Beach	Electronic Media	E-Waste / Universal Waste event	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on upcoming event.
10/07	City of Imperial Beach	Electronic Media	Safe Cleanup of Ash	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on proper cleanup of ash.
9/07	City of Imperial Beach	Electronic Media	Proper Disposal of Batteries	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on proper disposal of used batteries.
10/07	City of Imperial Beach	Electronic Media	Tijuana River Bacteria Source Identification Study	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on study to determine sources of bacteria.

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1/08	City of Imperial Beach	Electronic Media	Update on the JURMP Annual Report	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail update on the JURMP Annual Report.
1/08	City of Imperial Beach	Jurisdiction Stormwater-specific event	Update on the JURMP Annual Report	Informative presentation	General Public	City Employees, Council members, General Public	40	City of Imperial Beach	Presentation to City Council members, City employees, and public on stormwater pollution prevention efforts in the City during the previous reporting cycle.
2/08	City of Imperial Beach	Jurisdiction Stormwater-specific Event	Presentation to the Imperial Beach Kiwanis Club	Watershed concepts, issues and stormwater pollution prevention	General Public	Residents	30	Boys & Girls Club, Imperial Beach	Brochures: Stormwater Pollution Prevention- Pet Waste, Yard Waste; IPM cards; ink pens with stormwater hotline imprint
Spring 2008	City of Imperial Beach	Print Media	Creek to Bay Clean Up Will Be Held April 26, 2008	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how the City of Imperial Beach was joining with I Love a Clean San Diego efforts to clean up the beaches and waterways,
Spring 2008	City of Imperial Beach	Print Media	Free Oil Filter Exchanges	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how the City of Imperial Beach was implementing stormwater BMPs through a free oil filter exchange with Kragen auto parts stores,
Spring 2008	City of Imperial Beach	Print Media	April is Recycling Month in Imperial Beach	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how the City of Imperial Beach was coordinating their annual events, which included the Citywide Garage Sale, Earth Day Celebration, and Home Front Cleanup.

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Spring 2008	City of Imperial Beach	Print Media	Put Toxic Waste in Its Place	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how residents could properly dispose of their household cleaners, paints, etc. without environmental damage.
Spring 2008	City of Imperial Beach	Print Media	South Bay Household Hazardous Waste Collection Facility Now Open on Wednesdays	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how residents could properly dispose of their household cleaners, paints, etc. without environmental damage on Wednesdays in addition to Saturdays.
4/08	City of Imperial Beach	Electronic Media	Earth Day	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on the upcoming Earth Day Celebration at the Imperial Beach Pier.
5/08	City of Imperial Beach	Print Media	Earth Day at the Imperial Beach Pier held April 30th brings large crowds	Article in the Imperial Beach Eagle & Times	General Public	Imperial Beach residents and tourists	28,000	City of Imperial Beach	Newspaper
5/08	City of Imperial Beach	Electronic Media	Earth Day	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail update on the Earth Day Celebration at the Imperial Beach Pier.
6/08	City of Imperial Beach	Jurisdiction Stormwater-specific Event	Presentation to the Imperial Beach Senior Center	Watershed concepts, issues and stormwater pollution prevention	General Public	Residents	20	Senior Center, Imperial Beach	Brochures: Stormwater Pollution Prevention- Pet Waste, Yard Waste; IPM cards; ink pens with stormwater hotline imprint; key chains

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6/08	City of Imperial Beach	Electronic Media	Trash and Sediment	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on effects of trash and sediment on water quality.
6/08	City of Imperial Beach	Electronic Media	Help Reduce Stormwater Pollution	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on stormwater pollution prevention BMPs.
6/08	City of Imperial Beach	Electronic Media	Water Conservation and Stormwater Pollution	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on how water conservation could be a stormwater pollution prevention BMP.
Ongoing	City of La Mesa	Print Media	Preventing Urban Runoff Trifold	Description of storm drain and sanitary sewer system, including contact information for further BMP resources	Residential, Ind/Com	Residents and Businesses in La Mesa	552	Distributed during inspections, complaint investigations, public events, posted on Bulletin Board	Preventing Urban Runoff Trifold
Ongoing	City of La Mesa	Print Media	San Diego Bay Watershed Fact Sheet	Defines a watershed as well as the possible sources of pollutants and provides methods for preventing urban runoff pollution	Residential, Ind/Com	Residents and Businesses in La Mesa	953	Distributed during inspections, complaint investigations, public events, posted on Bulletin Board	SD Bay Watershed Fact Sheet
Ongoing	City of La Mesa	Print Media	Chollas Creek TMDL Fact Sheet	Provides information on the TMDL for Chollas Creek and how it may affect businesses and residents	Residential, Ind/Com	Residents and Businesses in La Mesa	40	Distributed during inspections, complaint investigations, public events, posted on Bulletin Board	Chollas Creek TMDL Fact Sheet

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Ongoing	City of La Mesa	Print Media	Storm Water Bulletin Board	Displayed in the Engineering Department counter at City Hall – displays storm water information, including watershed information, and provides educational materials for individuals to take	Residential, Ind/Com, Development Planning, Construction	Residents, Businesses, Project proponents, and Construction Sites in La Mesa	40	Engineering Counter, City Hall	Various City educational outreach material is displayed, including the Chollas Creek TMDL fact sheet and the San Diego Bay fact sheet.
Ongoing	City of La Mesa	Print Media	Informational Storm Water Kiosk	Kiosk displaying storm water information, including watershed information	Residential	Residents	100	Vista La Mesa Park	Various City educational outreach material is displayed
8/07	City of La Mesa	Print Media	*One Phone call can Help Stop Storm Water Pollution*	Articles described BMPs for residents, ind/com businesses, and construction sites	Residential, Ind/Com, Construction	Residents, Businesses, and Construction Sites in La Mesa	15,000	Distributed in the mail and by e-mail	*La Mesa Focus* newsletter, August 2007
11/07	City of La Mesa	Print Media	*Be Aware of What you Wash Down the Storm Drain*	Tips to prevent pollutants from entering our waterways	Residential, Ind/Com	Residents and Businesses in La Mesa	15,000	Distributed in the mail and by e-mail	*La Mesa Focus* newsletter, November 2007
2/08	City of La Mesa	Print Media	*Storm Water: Did You Know?*	Discusses the local watersheds, channels and inlets in the City and promotes the use of pollution prevention measures	Residential, Ind/Com	Residents and Businesses in La Mesa	315	Distributed in the mail and by e-mail	*La Mesa Focus* newsletter, February 2008
5/08	City of La Mesa	Print Media	*Update to the City's Storm Water Program*	Included updates made to the JURMP and gave a break down of requirements by audience type	Residential, Ind/Com, Construction	Residents, Businesses, and Construction Sites in La Mesa	315	Distributed in the mail and by e-mail	*La Mesa Focus* newsletter, May 2008

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
10/5/07 to 10/7/07	City of La Mesa	Community-Hosted Event	Oktoberfest	City hosted booth and handed out a variety of educational materials	General Public	Residents of La Mesa	Event held over three full days	La Mesa	IPM cards, Urban Runoff Trifolds, San Diego Bay Watershed Fact Sheets
4/20/08	City of La Mesa	Festival Participation	Earth Fair	City contributed money to help pay for educational materials and provided Watershed Fact Sheets to Earth Fair Booth	General Public	Residents	Unknown	Balboa Park	San Diego Bay Watershed Fact Sheets
10/12/07	City of La Mesa	Festival Participation	Inter-generational games	ILACSD presented the Enviroscape Model	General Public	Residents and School Children	140	La Mesa Middle School	IPM Cards and San Diego Bay Watershed Fact Sheets
4/13/08	City of La Mesa	Community-Hosted Event	Creek to Bay Cleanup	City presented information on SD Bay Watershed and Chollas Creek TMDL	General Public	Residents of La Mesa	5	University Channel in La Mesa	San Diego Bay Watershed Fact sheets
9/15/07	City of La Mesa	Community-Hosted Event	California Coastal Cleanup Day	City presented information on San Diego Bay Watershed and Chollas Creek TMDL	General Public	Residents of La Mesa	25	University Channel in La Mesa	San Diego Bay Watershed Fact sheets
8/8/07	City of Lemon Grove	Print Media	Bi-annual City Newsletter	FOG, rainy season residential BMPs, disposal of medicine, HHW, e-waste	Residential and Business	All Lemon Grove residents and businesses	9,500	City-wide	Bi-annual City Newsletter contains an Environmental page with stormwater information.
10/7/07	City of Lemon Grove	Jurisdictional Hosted Event	Fire Station Open House	Stormwater Information Booth	Residential	Lemon Grove citizens and guests	60	Fire Department	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including sponges, and bookmarks with the hotline and oil-recycling information. Also distributed were the IPM tip cards.

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12/7/07	City of Lemon Grove	Jurisdictional Hosted Event	Winter Bonfire	Stormwater Information Booth	Residential and Business	Lemon Grove citizens and guests	800	Park on Main St.	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including sponges, bookmarks, and pens with the hotline and oil-recycling information.
3/8/07	City of Lemon Grove	Print Media	Bi-annual City Newsletter	Creek to Bay announcement, shade trees, HhW, e-waste, reusable shopping bags, home improvement BMPs	Residential and Business	All Lemon Grove residents and businesses	9,500	City-wide	Bi-annual City Newsletter contains an Environmental page with stormwater information.
7/7/07	City of National City	Jurisdiction Stormwater-specific Event	Presentation to the National City Kiwanis Club	Watershed concepts, issues, regulatory information, and storm water pollution prevention	General Public	Residents in National City	16	Restaurant at corner of Plaza and 805	None
2/28/08	City of National City	Jurisdiction Stormwater-specific Event	SUSMP Workshop	SUSMP requirements, Writing a SWMP, Common problems with SUSMP reports, LID concepts, Examples of treatment control BMPs, Project resources, What to expect from City inspections	General Public	Development Planning and Construction Community in National City	13	Martin Luther King Community Center	SUSMP Checklist, 2008 Storm Water Calendar, City SUSMP Ordinance, Self Checklist
2007/ 2008	City of National City	Print Media	2008 Storm Water Program Calendar	Includes intro to urban runoff pollution concepts, BMPs, and resources for waste disposal and workshop reservations. Bilingual.	General Public	Residents, Ind/Com Businesses in National City	2000	City of National City	12 month calendar encourages protecting San Diego Bay from pollution
2007/ 2008	City of National City	Print Media	Everything that flows down into a storm drain goes untreated directly into our creeks, lagoons, and SD Bay	Bilingual handout detailing sources of pollution and how individuals can help prevent pollution by changing wash water and trash disposal methods	General Public	Residents in National City	800	City of National City	"Everything that flows down into a storm drain goes untreated directly into our creeks, lagoons, and San Diego Bay" handout

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11/6/07	Port of San Diego	Jurisdiction Stormwater-specific Event	Building Industry Association Seminar-Preparation of a SWPPP and Sampling Program using the BIA Template	Permit requirements, SWPPP preparation, monitoring, implementation, and compliance	Construction	Construction Site Owners and Developers	21	Unknown	Handbooks
11/8/07	Port of San Diego	Jurisdiction Stormwater-specific Event	Building Industry Association Seminar - SWPPP Implementation and Compliance Techniques	Permit requirements, SWPPP preparation, monitoring, implementation, and compliance	Construction	Construction Site Owners and Developers	33	Unknown	Handbooks
11/13/07	Port of San Diego	Jurisdiction Stormwater-specific Event	Building Industry Association Seminar - Additional NPDES Topics Including the New Draft Preliminary Construction Stormwater Permit	Permit requirements, SWPPP preparation, monitoring, implementation, and compliance	Construction	Construction Site Owners and Developers	46	Unknown	Handbooks
8/3/07	Port of San Diego	Jurisdiction Stormwater-specific Event	Stormwater Training for the San Diego Marriott Events Staff	Permit requirements, stormwater BMPs implementation, and compliance	Industrial and Commercial Owners	Hotel Staff	8	San Diego Marriott	None

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2/20/08	Port of San Diego	Jurisdiction Stormwater-specific Event	Hotel Engineers Association Stormwater Training	Permit requirements, stormwater BMPs implementation, and compliance	Industrial and Commercial Owners	Hotel Engineers	46	Manchester Grand Hyatt	None
7/7/07	Port of San Diego	Jurisdiction Stormwater-specific Event	*Negocio Verde* Pollution Prevention Workshop	BMPs regarding Marina and boating practices	Industrial, Commercial Owners, and General Public	Marina staff and boaters	11	Unknown	San Diego Bay Boaters Guide
11/15/07	Port of San Diego	Print Media	*San Diego Family Magazine* – "Healthy Planet, Healthy Seas" article	Watershed concepts and wildlife	General Public	General Public	300,000	N/A	N/A
5/23/08	Port of San Diego	Jurisdiction Stormwater-specific Event	SEAL Tour Guide Training	History of water quality impacts and watershed concepts	Industrial and Commercial Owners	SEAL tour guides	6	Old Town Trolley Tours Headquarters	Stormwater Residential BMP Brochures
7/07-6/08	Port of San Diego	Print Media	Project ORCA Website	Website educating children about wildlife of San Diego Bay	General Public	Children	175	N/A	N/A
7/07-6/08	Port of San Diego	Community Hosted Event	Maritime Museum of San Diego Adult *Pilot* Boat Tours	Water quality and watershed concepts	General Public	General Public	9,258	Maritime Museum of San Diego	Stormwater Residential BMP Brochures
FY07-08	City of San Diego	Print Media	Ad mobile	Stormwater pollution prevention principles	General Public	Residents	522,300 impressions per 4 week period	San Diego Bay Watershed/ Chollas Creek	Mobile Billboard Message (Think Blue)

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FY07-08	City of San Diego	PSA	Karma TV Campaign (Karma, Karma 2nd Chance, Karma Tourist)	General Pollutant Awareness – Watershed Concepts in SD Bay	General Public	Residents / Commercial and Industrial Operators	County Wide	County Wide	Video PSAs in English and Spanish
FY07-08	City of San Diego	PSA	Karma Radio Campaign (Karma, Karma Tourist)	General Pollutant Awareness – Watershed Concepts in SD Bay	General Public	Residents / Commercial and Industrial Operators	County Wide	County Wide	Radio PSAs in English and Spanish
FY07-08	City of San Diego	Print Media	Poster Distribution	Erosion and Sediment Control Concepts	Development Permittees	Development and Construction Community	200	San Diego Bay Watershed	148 Erosion and Sediment Control Posters distributed – for more information, please see the activity sheet
FY07-08	City of San Diego	Print Media	Guidebook Distribution	BMPs for Food Establishments	Business Owners / Operators	Restaurant Personnel	2,000	San Diego Bay Watershed	1,200 What's Cookin' Booklets were issued – for more information, please see the activity sheet
FY07-08	City of San Diego	Print Media	Pamphlet Distribution	Water responsibility concepts	General Public	Residents	1,222	San Diego Bay Watershed	Pamphlet entitled "Our Water, Our Responsibility" is made available at all San Diego City Lakes as an insert inside a map of the area
4/6/08	City of San Diego	Jurisdiction Stormwater-specific Events	Walk the Watershed	Provided information about pending stormwater projects.	General public, stakeholders	Residents	50	Chollas Creek	Verbal information provided
3/12/08	City of San Diego	Jurisdiction Stormwater-specific Events	Street Sweeping Outreach	Provided background on the street sweeping project and touched on general watershed concepts	Stakeholders	El Cajon Boulevard Business Improvement Association	6	El Cajon Boulevard	Disseminated street sweeping study information and touched on general stormwater issues

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FY07-08	City of San Diego	Print Media	Transit Shelter Advertisements	Think Blue advertisements in transit shelters	General Public	Residents	Varies per location	Hillcrest (Park/University), San Diego (4th/Hawthorne), San Diego (13th/ Imperial)	Transit shelter advertisement
FY07-08	City of San Diego	Print Media	Billboard Advertisements	Think Blue Billboards	General Public	Residents	Varies per location	North Park (University/ Wilson), Hillcrest (University/ Herbert), San Diego (Fairmount/ University), San Diego (El Cajon/52nd St.), San Diego (Pacific Hwy/ Washington St)	Billboard
4/4/08	City of San Diego	Community-Hosted Event	Chollas Creek Restoration Event	Installed and discussed signage at Chollas Creek site detailing need for restoration and benefits to the community	General Public	Residents, business community	60	Chollas Creek	Verbal information about signage provided
4/1/08 to current	City of San Diego	Community-Hosted Event	Street Sweeping Pilot Study	Distributed verbal information about the pilot study including impacts in the community	General Public	Residents	15	San Diego Bay	Verbal information
5/5/08	City of San Diego	Festival Participation	Cinco De Mayo	IPM Pest Tip Cards, Pest Cards feedback forms, promotional items	General Public	General Public	100,000	Old Town	IPM Pest Tip Cards, Pest Cards feedback forms, promotional items
FY07-08	Airport Authority	Print Media	Authority SWMP	SDCRAA website	General Public, Authority, and SDIA staff	General Public		San Diego International Airport	SDCRAA Environmental webpage provided information and links to the Authority's SWMP which discusses storm water management at SDIA

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FY07-08	Airport Authority	Print Media	Airport Recycling Guide	SDCRAA website and in print	Authority and SDIA employees	Authority and SDIA employees	300	San Diego International Airport	Recycling guide was on the SDCRAA website and provided in print in the terminals and at various employee out reach events.
10/2/07-2/4/08	Airport Authority	Print Media	Draft Environmental Impact Report	SDCRAA website	General Public	General Public		San Diego International Airport	The Draft Environmental Impact Report for the Airport Master Plan was available on the Authority's website.
FY07-08	Airport Authority	Print Media	Coastal Cleanup Day Billboard	SDIA Terminals	General Public	General Public		San Diego International Airport Terminals	California Coastal Cleanup Day billboards were displayed throughout Terminals during entire reporting period
FY07-08	Airport Authority	Print Media	"Don't Trash California" anti-litter campaign billboards	SDIA Terminals	General Public	General Public		San Diego International Airport Terminals	"Don't Trash California" anti-litter campaign billboards were displayed throughout the terminals during the entire reporting period.
FY07-08	Airport Authority	PSA	Think Blue PSA	PSA at baggage claim	General Public	Traveling Public		San Diego International Airport baggage claim area	Think Blue PSA aired in the Terminal 2-West baggage claim area.
FY07-08	Airport Authority	PSA	"Don't Trash California" anti-litter campaign PSA	PSA at baggage claim	General Public	Traveling Public		San Diego International Airport baggage claim area	"Don't Trash California" anti-litter campaign PSA aired in the Terminal 2-West baggage claim area.
4/28/08	Airport Authority	Festival Participation	Imperial Beach Earth Day Event	SDCRAA Environmental Affairs and Port of San Diego ran a booth at the event and provided educational materials on the watershed to Imperial Beach School children	General Public	School Children	400 students	Imperial Beach	

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6/28/08	Airport Authority	Festival Participation	Del Mar Fair	Authority Staff participated in the San Diego County Fair Regional Outreach Event at the Del Mar Fair.	General Public	Fair participants	13,028 people	Del Mar Fair Grounds	Think Blue survey cards were distributed.
6/12/08	Airport Authority	Jurisdiction-Hosted event	Annual Division Open House	Environmental Affairs staff provided outreach and educational materials regarding the Authority's storm water management program.	Authority Employees	Authority Employees	300	San Diego International Airport	
FY07-08	Airport Authority	Print Media	Protect San Diego Coastal Wildlife billboards	Protect San Diego Coastal Wildlife billboards were on display throughout the terminals during the entire reporting period.	General Public	Traveling Public		San Diego International Airport	
5/29/08	Airport Authority	Jurisdiction-Hosted event	NOAA/ Wildcoast Artists Reception	The Authority hosted a joint reception for an environmental artist from NOAA and a children's art display from Wildcoast.	General Public	Traveling Public		San Diego International Airport	
FY07-08	Airport Authority	Print Media	Youth Art Wall	SDIA Youth Art Wall displayed the City of San Diego Water Department's Children's Water Conservation Poster Contest.	General Public	Traveling Public		San Diego International Airport	
2/08-3/08	Airport Authority	Jurisdiction storm water specific event	Tenant SWMP Training	Environmental Affairs provided training regarding revisions to the SWMP and storm water pollution prevention.	Airport Tenants		31	San Diego International Airport	

Table F-2. 2007-2008 School Programs and Outreach Data.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Year-round	City of Chula Vista	Field Trip	Nature Center Field Trips	Organized School Group Visitors to the Chula Vista Nature Center. Watershed, Recycling, Storm Drain Pollution Education	Schools	Kindergarten through college age	K-6th grade - 15,000; 7-12th grade - 2,000; College - 2,000	Chula Vista Nature Center	
5/30/08	City of Chula Vista and SDCRAA	Jurisdiction-Staff Presentation	AVID Presentation	City staff in collaboration with SDCRAA, provided information about environmental jobs and storm water principles to middle school kids.	Residents	Middle school children	60	Ocean View Hills School	Don't Trash CA bag, CLEAN footballs and calculators, SDCRAA rechargeable flashlights
6/31/08	City of Coronado	Field Trip	Beach Cleanup	Students in the University of San Diego High School Immaculata Youth Group participated in a beach cleanup, and learned how trash and other pollutants affect the flora and fauna at the receiving waters.	School (High School)	High School Youth Group	30	University of San Diego High School Immaculata Youth Group and City of Coronado	Coronado Clean Coastlines promotional items such as Frisbees, surfboard-shaped key chains, pens pencils and rules, were distributed to the students. City staff also provided trash pickers, trash bags, disposable gloves and a dumpster for depositing their trash bags. 60 lbs. of trash were picked up from the Coronado Central Beach
10/6/07	County of San Diego	Field Trip	Beautify Chula Vista	Planting Native Oaks & Habitat Restoration	Boy & Girl Scouts	Children	15	Otay	
4/26/08	County of San Diego	Field Trip	P2 I love a Clean SD	Water Quality	Boy & Girl Scout	Children	20	Otay	
11/29/07	County of San Diego	Field Trip	Your Neighborhood the Sweetwater River	Watershed Awareness	Students	Students	75	Sweetwater	
4/26/08	County of San Diego	Field Trip	Sweetwater Trash Clean Up	Water Quality	Students	Elementary	26	Sweetwater	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
4/9/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	105	Otay	
4/10/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	87	Otay	
11/4/08	County of San Diego	Field Trip	Fall Back Festival	Water Quality	Students		400	Rancho Guajome Adobe	Stormwater Brochures
7/19/07	County of San Diego	Jurisdiction Sponsored Presentation	Recycling and HHW Presentation	Water Quality	Students	Elementary	25	Camp Oliver	
2/26/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	126	Los Coches Creek Middle School	
3/25/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	102	Allen Day Academy	
4/15/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	112	Riverview School	
5/8/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	126	Kempton Street School	
5/22/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	83	Casa De Oro Elementary	
6/5/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	74	La Presa Elementary	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
6/10/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	68	Valley Vista Elementary	
6/12/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	79	Sweetwater Springs Comm. School	
6/16/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	88	Sweetwater Springs Comm. School	
6/16/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	134	La Presa Middle	
6/17/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	122	Rancho	
6/18/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	57	Loma	
6/18/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	90	Loma	
6/19/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	97	Casa De Oro Elementary	
6/20/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	99	Murdock Elementary	
6/21/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	50	Southwestern College	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
July 2007-June 2008	City of Imperial Beach	Field trip	Habitat Heroes for the South Bay Wildlife Refuge Restoration Project	Students visited the south end of the San Diego Bay and learned how trash and other pollutants affect the flora and fauna at the receiving waters.	School (Elementary)	2nd – 6th grade	1000	San Diego Bay Wildlife Refuge	
April 2008	City of Imperial Beach	Jurisdiction Sponsored Presentation	Earth Day at the Imperial Beach Pier	Watershed concepts, issues and stormwater pollution prevention	General Public	School Children, Businesses, Residents	500	City of Imperial Beach	Informational Earth Day Celebration with exhibits at the Imperial Beach Pier geared toward school children.
June 2008	City of Imperial Beach	Jurisdiction Sponsored Presentation	San Diego County Fair	Watershed concepts, issues and stormwater pollution prevention	General Public	Residents	1,235,698 over 21 days	Del Mar Fairgrounds	Brochures: Stormwater Pollution Prevention- Pet Waste, Yard Waste; IPM cards; ink pens with stormwater hotline imprint; Media: newspaper advertisements, electronic messaging over Jumbo Tron, website logos and links, PA system announcements, and over 500 locations with Think Blue logo depicted on banners, planter box displays, and recycle bin stickers
10/12/07	City of La Mesa	Jurisdiction-sponsored Presentation	Inter-generational Games	Booth and ILACSD demonstration of Enviroscape model	Adults and children	School children and general public	60	La Mesa Middle School	SD Bay Watershed fact sheets, Urban Runoff Trifolds
Thru-out 2007/ 2008	City of National City	Jurisdiction-sponsored presentation	2009 Calendar Development	3rd grade classes at public schools in National City involved in "keep our community clean" art contest to provide images for the City's 2009 Storm Water Program Calendar	School (elementary)	3rd grade	860	Public elementary schools in National City	Teachers were provided guidelines for the contest, and were provided ideas on how they could incorporate storm water concepts into their lesson plans. An informational flyer was provided to the students that outlined the rules of the contest and presented some storm water concepts; all students that submitted an entry received a certificate of participation signed by the mayor.
8/14/07	Port of San Diego	Jurisdictional Staff Presentation	Sweetwater High School Environmental Fair	Watershed concepts	School-High School	High School	2,500	Sweetwater High School	Residential Stormwater BMP Guide

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
7/07-6/08	Port of San Diego	Field Trips	Aquatic Adventures–SEA Series Initiative	Watershed/wetland concepts and wildlife education	School - Elementary	Elementary School	2,456	San Diego City Schools	Various curriculum materials
7/07-6/08	Port of San Diego	Jurisdiction Sponsored Presentation	Wildcoast–Sea Turtle Education Program	Wildlife Education	School - Elementary	Kindergarten	452	Various schools & Bayside Park (Chula Vista)	Various curriculum materials
7/07-6/08	Port of San Diego	Jurisdiction Sponsored Presentation	The Green Machine–IPM Education Program	IPM, the water cycle, and soil science	School – Elementary	First Grade	2,635	Chollas Creek watershed schools	Various curriculum materials
7/07-6/08	Port of San Diego	Jurisdiction Sponsored Presentation	Resource Conservation District–Watershed Education Program	Wildlife and watershed concepts	School – Elementary	Second & Sixth Grade	1,516	San Diego Bay watershed schools	Various curriculum materials
7/07-6/08	Port of San Diego	Field Trips	Chula Vista Nature Center- Field Trips	Watershed/wetland concepts and wildlife protection	School – Elementary	Third Grade	2,755	Chula Vista Nature Center	Various curriculum materials
7/07-6/08	Port of San Diego	Field Trips	Aquatic Adventures–Wetland Avengers Field Trips	Watershed/wetland concepts and wildlife protection	School – Elementary	Fourth Grade	314	South Bay wetlands	Various curriculum materials
7/07-6/08	Port of San Diego	Field Trips	Maritime Museum of San Diego–*Pilot* Boat Program	Environmental history of San Diego Bay, water quality monitoring aboard a boat	School – Elementary	Fifth Grade	913	Maritime Museum of San Diego	Various curriculum materials

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
7/07-6/08	Port of San Diego	Field Trips	Pro Peninsula–Sea Turtle Education Program	Wildlife education	School – Elementary	Sixth Grade	561	South Bay Power Plant	Various curriculum materials
7/07-6/08	Port of San Diego	Project SWELL	Project SWELL	Watershed concepts	School – Elementary	Elementary School	40,000	San Diego City Schools	Various curriculum materials
7/07-6/08	Port of San Diego	Jurisdiction Sponsored Presentation	High Tech High – Book Sponsorship	Wildlife and watershed education	School – High School	High School	68	High Tech High	Various curriculum materials
7/07-6/08	Port of San Diego	Field Trips	Habitat Heroes	Wildlife and watershed education	School – Elementary	Bayside Elementary School	272	Bayside Elementary School	Various curriculum materials
FY07-08	Airport Authority	Project SWELL	Project SWELL	Authority Continued to sponsor project SWELL	General Public	General Public, Schools			
FY07-08	Airport Authority	Jurisdiction Sponsored Presentations	Wildlife Outreach Program	Authority supported Wildcoast's "Wildlife Outreach Program"	General Public	General Public, Schools			
10/17/07	Airport Authority	Jurisdiction Staff Presentation	Aaron Price Fellows environmental presentation	Authority Employees gave a presentation to the "Aaron Price Fellows" group of high school students on environmental issues at the airport, including storm water	High school students	Aaron Price Fellow group	35 students		

Table F-3. 2007-2008 Partners in Clean Water Events/Programs/Outreach.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
9/15/07	Multiple jurisdictions in the San Diego Bay Watershed including: City of Coronado, City of La Mesa, Port of San Diego, City of San Diego, SDCRAA	Cleanup Event	23rd Annual Coastal Cleanup Day	Trash and debris removal and recycling	General Public	Residents and Visitors	300	Coronado Central Beach, University Channel in La Mesa D St. Fill, Chollas Creek, National Avenue	Coronado Clean Coastlines brochures and promotional items (pens, pencils, frisbees, beach balls, beverage "coozies", etc.) *Total of 369 lbs. of trash including 208 lbs. of trash* and *160 lbs of recyclables*: specific details 2,227 cigarette butts, 637 bottles and 2 tires. La Mesa SD Bay Watershed fact sheets Residential Stormwater BMP Guides Volunteers are asked to track the debris collected by implementing data cards provided by the Ocean Conservancy.
4/26/08	Multiple Jurisdictions in the San Diego Bay Watershed including: City of Chula Vista, City of Coronado, City of La Mesa, City of National City, Port of San Diego, City of San Diego, SDCRAA	Cleanup Event	ILACSD 6th Annual Creek to Bay Cleanup Annual Creek to Bay Cleanup	Volunteers cleaned trash from inland and coastal waterways in the San Diego Bay Watershed. The San Diego Bay Watershed Copermittees were co-sponsors of this clean up event.	General Public	Residents	4,000	Lemon Grove, Chollas Creek (3 locations), La Mesa at University Channel, La Mesa at Alvarado Channel, Los Coches, Lakeside Linkage Open Space, El Cajon, Coronado City Beach, Silver Strand State Beach, Barrio Logan, D Street Fill, Paradise Creek Educational Park, Del Rey Canyon, Rice Canyon, J Street Marina, Otay Regional Park (Lower Otay Lake), Dairy Mart Road, Morrison Pond County Park	Coronado Clean Coastlines brochures and promotional items (pens, pencils, frisbees, beach balls, beverage "coozies", etc.) *244 Total lbs. of trash including 200 lbs. of trash and 44 lbs. Of recyclables.* La Mesa SD Bay Watershed fact sheets Residential Stormwater BMP Guides

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
10/6/07	City of Chula Vista	Cleanup Event/ Stenciling Event	Beautify Chula Vista	Cleanup of trash from streets and waterways, graffiti removal, storm drain stenciling	General Public	Residents	800	Southwest Chula Vista	
7/3/07-7/4/07	City of Coronado	Citizen Monitoring/ Training	4th of July weekend Coronado Yacht Club Jr. Sailing Program Activities	Trash cleanup generated from boats docked at local yacht club and from general 4th of July activities in that marina.	General Public with an interest in boating	Residents and Visitors	150	Coronado Yacht Club	Coronado Clean Coastlines promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies", etc.) as well as flyers describing specific Boating BMP's. *200 lbs.* of trash collected
9/29/07	City of Coronado	Citizen Monitoring/ Training	Fire Services Department Open House	This family-oriented event focused on fire prevention but also provided an opportunity for City staff to distribute storm water-related BMP's information as well as to provide hands-on interaction with a portable watershed model	General Public	Visitors, Residents and their Families	4,000	Coronado Fire Dept.	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as hands-on interaction with a portable watershed model that demonstrated how urban runoff flows into the watershed (Enviroscape®)
11/1/07	City of Coronado	Citizen Monitoring/ Training	Mass BMP Information E-Mail	Mass BMP E-Mail to all Coronado Business Licensees	Business	All Coronado Business Licensees	2,600	San Diego Region	Business–specific BMP brochures and flyers e-mailed as links along with the e-mailed Coronado business license renewal application forms to every Coronado business license holder. These brochures were specific to: general business, construction, food service, landscaping and real estate sales/property management

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
11/3/07	City of Coronado	Citizen Monitoring/ Training	25th Annual J.R. Memorial Surf Classic	Storm water pollutants of concern, especially as they relate to surfing	General Public	San Diego Region Visitors and Coronado Residents	270	Coronado	Coronado Clean Coastlines promotional items (oil funnels, beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures, targeted to a residential audience were placed in the bags each participant received after participating in his/her event.
4/19/08-4/20/08	City of Coronado	Citizen Monitoring/ Training	Annual Flower Show	This annual community event provides City staff an opportunity to educate the public about watershed issues and storm water pollution prevention.	General Public	San Diego Region Visitors and Coronado Residents	4,000	Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as Integrated Pest Management Pest (IPM) Tip Cards were distributed from a Department of Public Services booth located in a central area of the Flower Show.
4/20/08	City of Coronado	Citizen Monitoring/ Training	Annual Car Show	This annual community event provides City staff an opportunity to educate the public about watershed issues and storm water pollution prevention.	General Public	San Diego Region Visitors and Coronado Residents	4,000	Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as Integrated Pest Management Pest (IPM) Tip Cards were distributed from a booth shared with staff from EDCO, Coronado's Recycling and Trash Collection Agency, and located in a central area of the Car Show.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
4/27/08	City of Coronado	Citizen Monitoring/ Training	4th Annual Kids for Clean Water Menehune Surf Fest	Storm water pollutants of concern, especially as they relate to surfing	General Public	San Diego Region Visitors and Coronado Residents	260	Coronado	Coronado Clean Coastlines promotional items (beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures targeted to a residential audience were placed in the bags each participant received after participating in his/her event.
6/14//08 to 7/6/08	San Diego Region	Citizen Monitoring/ Training	San Diego County Regional Fair	This annual regional event provides copermittee representatives with an opportunity to educate the public about watershed issues and storm water pollution prevention.	General Public	San Diego Region Residents and Visitors	u/k	Del Mar	BMP specific brochures as well as Integrated Pest Management (IPM) Information Cards
6/31/08	City of Coronado	Cleanup Event	Beach Cleanup	Trash cleanup at Coronado Central Beach	University of San Diego High School Immaculata Youth Group	High School Students and Teachers	30	Coronado	Coronado Clean Coastlines promotional items such as frisbees, surfboard-shaped key chains, pens, pencils and rulers. City staff also provided trash pickers, trash bags, disposable gloves and a dumpster. ~ 60 lbs. of trash were collected during this event.
3/29/08	City of La Mesa	Clean up Events	Park Appreciation Day	Clean up at the 7City parks in the San Diego Bay WMA	General Public	Residents of La Mesa	Unknown	The 7 City parks in the SD Bay watershed	
4/12/08 and 4/19/08	City of La Mesa	Clean up events	La Mesa Spring cleanup	Non-HHW waste disposal for residents of La Mesa	General Public	Residents of La Mesa	Unknown	EDCO	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
6/7/08	Port of San Diego	Cleanup Event	Operation Clean Sweep	Trash Cleanup	General Public	Residents	900	Various throughout San Diego	Residential Stormwater BMP Guides
3/12/08	City of San Diego	Cleanup Event	City Heights Urban Cleanup	Trash and debris removal	General Public	General Public	37	City Heights	
8/17/07	Airport Authority	Citizen Monitoring/ Training	Hold on to your butt day	Airport employees participated in this at SDIA.	General Public	Airport patrons		SDIA	Brochures, t-shirts, bumper stickers, personal cigarette ashtrays, information cards
1/29/08	Airport Authority	Citizen Training	Coming Clean, Going Green	The Authority presented at the Coming Clean, Going Green event	General Public	Government agencies, universities, businesses	200		

Table F-4. 2007-2008 Integrated Pest Management Events/Programs/Outreach.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
4/19/08 and 4/20/08	City of Coronado	Jurisdiction IPM Seminar/ Event	Annual Flower Show	City employees staffed booth at flower show	General Public	Attendees at annual flower show This includes residents and visitors	4,000	City of Coronado, Spreckels Park	Along with Coronado Clean Coastlines storm water pollution prevention promotional items, 12 different integrated pest management cards in English and Spanish were distributed. Pest cards include information on: ants, aphids, cockroaches, earwigs, fleas, gardening with good bugs, head lice, lawn insects, safe use and disposal of pesticides, snails and slugs, spiders, and termites.
4/20/08	City of Coronado	Jurisdiction IPM Seminar/ Event	Annual Car Show	City employees staffed booth at car show along with EDCO staff, Coronado's recycling and trash collection agency.	General Public	Attendees at annual car show This includes residents and visitors	4,000	City of Coronado	Along with Coronado Clean Coastlines storm water pollution prevention promotional items, 12 different integrated pest management cards in English and Spanish were distributed. Pest cards include information on: ants, aphids, cockroaches, earwigs, fleas, gardening with good bugs, head lice, lawn insects, safe use and disposal of pesticides, snails and slugs, spiders, and termites.
6/14/08 to 7/6/08	San Diego Region	San Diego Regional IPM Program	Annual San Diego County Regional Fair	City employees staffed booth	General Public with an interest in pollution prevention and/or environmental issues.	Attendees at annual County Regional Fair	u/k	Del Mar	Along with Coronado Clean Coastlines storm water pollution prevention promotional items, 12 different integrated pest management cards in English and Spanish were distributed. Pest cards include information on: ants, aphids, cockroaches, earwigs, fleas, gardening with good bugs, head lice, lawn insects, safe use and disposal of pesticides, snails and slugs, spiders, and termites.
9/11/07	County of San Diego	San Diego Regional IPM Program	Presentation to the Geranium Society of San Diego	General IPM	General Public	Gardener's	35	Geranium Society of San Diego	
1/9/08	County of San Diego	San Diego Regional IPM Program	Point Loma Garden Club	General IPM	General Public	Gardeners	49	Point Loma Garden Club	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Ongoing	City of La Mesa	San Diego Regional IPM Program	IPM fact cards	Tip cards describing environmentally sound methods of gardening as well as safe use and disposal of pesticides	Residential	Residents of La Mesa	117 (number of cards distributed)	Target and Dixieline Lumber Garden departments	7 IPM cards: Gardening with Good Bugs, Safe Use and Disposal of Pesticides, Spiders, Termites, Lawn Insects, Snails and Slugs, and Head Lice The cards were printed in both English and Spanish Versions
1/15/08	Port of San Diego	Jurisdiction IPM Seminar/ Event	BMPs for Mitigation of Pesticide Runoff from Urban Landscapes	Pesticide use and water quality impacts	Industrial and Commercial Owners	Landscape Professionals	7	UC Cooperative South Coast Research Center, Irvine	
6/4/08	Port of San Diego	Jurisdiction IPM Seminar/ Event	Integrated Pest Management for Landscape Professionals	Pesticide use and water quality impacts	Industrial and Commercial Owners	Landscape Professionals	187	Holiday Inn on the Bay	Various brochures, PowerPoint presentations, Residential Stormwater BMP Guides.
Ongoing	City of San Diego	Jurisdiction IPM Seminar/ Event	Think Blue Website	Updated Information on the Chollas Creek Water Quality Protection and Habitat Enhancement Project	Residents and Commercial	General Public	Approx. 600 per month	Think Blue Website	IPM Tip Cards in English and Spanish

Appendix G

Education Activity Summary Sheets

STORM DRAIN STENCILING – 28

ACTIVITY PLANNING

During FY 07-08, the City of Chula Vista was in the process of planning to install 500 thermoplastic storm drain stencils in high pedestrian traffic locations in the City. Stenciling addresses several pollutant categories including bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash.

At the end of FY 07-08, the City installed 500 thermoplastic storm drain stencils throughout the City. The stencils were installed on storm drains along major roads within Chula Vista such as Telegraph Canyon Road, Otay Lakes Road, H and East H Street, and East Palomar Street. The City plans to install 150 more storm drain stencils in FY 08-09.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Planning/Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Various pollutant categories

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is a part of the collective Watershed Strategy in that it seeks to contribute to improvements in water quality by reducing the loads of bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash into the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 2 and 3. The City is currently tracking the locations of these stencils in a database and plans to produce a map of these locations. It is estimated that tens of thousands of pedestrians pass these stencils on a yearly basis, which reminds them that their daily actions can impact water quality within the City. By installing these stencils along major streets in the City, the goal is to reduce the amount of pollutants that can potentially enter the storm drain system from pedestrians as well as showing citizens that they live near rivers and streams.

PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST – 29

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department retained a contract with a film production company to create two *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego Bay WMA from February 2008 to April 2008. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

According to Regional Board staff comments[1], the City will need to answer effectiveness measurement questions in the Annual Report. Effectiveness measurement questions can be found in the Effectiveness Assessment section of this activity summary sheet.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego Bay WMA from February 2008 to April 2008. The City will work with various broadcast media outlets to distribute and air the PSAs in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross pollutants

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and gross pollutants as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST Assess Efficiency and Effectiveness of Public Service Announcements		
Management Questions	• What changes in awareness/attitude regarding trash and bacteria were achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcomes	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in San Diego Bay WMA (Outcome Level 1)	6,027,210
	Number of impressions made to the public through radio announcements in San Diego Bay WMA (Outcome Level 1)	1,932,542
	Change in knowledge or attitude from survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes*

*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and in encouraging positive behavioral change.

Results and Analysis

The PSAs were developed in the FY 07-08, and broadcast on several TV and radio stations throughout the San Diego Bay WMA from February 2008 to April 2008. The PSAs were broadcast in both English and Spanish.

In FY 2008, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, 52% of residents became aware of the *Think Blue* message by seeing the television ads, and 13% of residents heard the radio announcements. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. Based on the total number of impressions estimated for the entire City of San Diego, (15,680,381 for television and 5,027,700 for radio ads) the proportion of residents in San Diego Bay WMA (38%) was multiplied by the total number of impressions to estimate impressions per watershed. According to the random survey, groups most likely to have seen the television ad were: residents who knew that storm water was untreated (25%); people without college degrees (25%); and residents of the San Diego Bay (26%) and San Diego River (25%) WMAs. Groups most likely to have heard the radio ad were: residents who are white (9%); residents in the 35-49 age group (9%); and people between the ages of 18 and 35 (9%).

Long-Term Assessment and Conclusions

The City will work with various broadcast media outlets to distribute and air the PSAs in the FY 08-09. Effectiveness is measured on a variety of levels, including the tabulated number of households (television) or listeners (radio) reached by the program. The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure in 2008.

The 2008 results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices. The PSA activity also exposes many individuals in the San Diego Bay WMA to storm water pollution prevention issues, based on the estimated number of individual impressions from television and radio announcements. Although the statistical correlation may not be shown at this time, the number of impressions along with the survey results does indicate that the PSA activity is effective in reaching residents and disseminating information to increase knowledge and awareness of storm water pollution prevention. The activity as well as surveys will be continued and longer-term assessment should provide more complete results.

TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS – 30

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department retained a contract with an outdoor advertising company to advertise *Think Blue* messages on billboards and transit shelters located in the San Diego Bay WMA. The City of San Diego created advertisements targeting behaviors associated with bacteria and gross pollutants (trash) profiled as a vector. The goal of the billboards and transit shelter advertisements was to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the San Diego Bay WMA in both English and Spanish.

Transit shelter *Think Blue* advertisements were installed at three locations in FY 2008:

- Park Avenue/University Avenue
- 4th Street/Hawthorne Street
- 13th Street/Imperial Avenue

Billboards were installed at five locations in FY 2008:

- University Avenue/Wilson Avenue
- University Avenue/Herbert Street
- Fairmount Avenue/University Avenue
- El Cajon Boulevard/52nd Street
- Pacific Highway/Washington Street

The audience number varied by location.

According to Regional Board staff comments[2] on other WURMPs the City is involved in (e.g., San Diego River), the City will need to answer effectiveness measurement questions and provide locations of the billboards and transit centers in the Annual Report. The locations are provided in the Activity Implementation section. Effectiveness measurement is discussed in the Effectiveness Assessment section.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

[2] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Diego plans to continue to implement transit shelter and billboard advertisements in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS **Assess Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness**		
Management Questions	• What changes in awareness /attitude regarding bacteria and sediment was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcomes	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of public reached by ads)	
Data Recorded	Number of billboard advertisements impressions in the San Diego Bay WMA (Outcome Level 1)	93,440 DEC*
	Number of transit shelter advertisements impressions in the San Diego Bay WMA (Outcome Level 1)	27,110 DEC*
	Number of public participants reached by billboard advertisements in all watersheds (Outcome Level 1)	7%
	Change in knowledge or attitude (Outcome Level 2)	45% increase
	Change in pollutant-related behavior (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 759,080 for transit shelter ads and 2,616,320 for billboards.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the billboards to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008, and were to be displayed throughout the San Diego Bay WMA in both English and Spanish.

Results and Analysis

Transit shelter *Think Blue* advertisements were located at three San Diego locations in FY 2008: Park/University, 4th/Hawthorne, and 13th/ Imperial. Billboards were advertised at five

locations in FY 2008: North Park (University/Wilson), Hillcrest (University/Herbert), San Diego (Fairmount/University), San Diego (El Cajon/52nd), and San Diego (Pacific Highway/Washington). The number of public reached varied by location. Over the four-week viewing period, there were 759,080 impressions for transit shelter advertisements and 2,616,320 impressions for billboards.

In FY 2008, out of 800 total residents from all watersheds who participated in a random digit-dial *Think Blue* survey, 7% became aware of the *Think Blue* message by seeing the billboards. According to the survey, groups most likely to have seen the billboard were: residents under 50 years of age, (38%) compared to seniors (24%); Latino women (49%) compared to white men (31%) and white women (32%); and Latino renters (50%) compared to white homeowners (29%).

Long-Term Assessment and Conclusions

Implementation of the advertisements will continue in the FY 2009. Effectiveness will be measured via surveys in the San Diego Bay WMA to determine awareness, knowledge retention and behavior change.

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for City-wide results. Of the percentage of residents in all watersheds who participated in the survey, 45% reported exposure in 2008. The survey results correlate well to the daily effective calculation (DEC), estimated to be 93,440 impressions per day for transit shelter advertisements, and 27,110 billboard advertisements impressions per day in San Diego Bay WMA.

The 2008 results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices. The large number of transit shelter advertisement impressions made in FY 2008 also supports the assertion that the transit shelter advertisement program is effective, due to increasing public exposure to bacteria and gross pollutant issues. Surveys will be continued in future fiscal years, and longer-term assessment should provide more complete results on which to base the conclusion of increased awareness.

MOBILE ADVERTISING – 31

ACTIVITY IMPLEMENTATION

The City of San Diego Storm Water Department retained a contract with a mobile advertising firm in FY 2008 to advertise *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The City of San Diego created advertisements targeting behaviors associated with bacteria and/or metals. The goal of the billboards was to educate the public about the causes of these kinds of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the Chollas Creek watershed route in both English and Spanish on July 16, 17, 18, 19, 24, and 25, 2007. The estimated audience was 522,300 impressions per 4-week period. The following image shows the Chollas Creek route.

According to Regional Board staff comments[3], the City will need to answer effectiveness measurement questions and provide routes in the Annual Report. The routes are provided above. Effectiveness will be measured via surveys in FY 2009. Efficiency will be determined by analyzing advertisement costs.

TMDL APPLICABILITY

- N/A

[3] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The City plans to continue to conduct mobile advertising in FY 2009 and to target high priority areas within the Chollas Creek watershed to increase awareness and promote positive behavior change.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria as a high priority water quality problem in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing mobile advertising will result in increased knowledge and awareness directly, and will promote behavior change.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MOBILE ADVERTISING Assess Efficiency and Effectiveness of Advertisement on Static Billboard Trucks		
Management Questions	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcomes	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)	
Data Recorded	Number of impressions San Diego Bay (Outcome Level 1)	43,038 DEC*
	Number of impressions Chollas Creek (Outcome Level 1)	26,115 DEC
	Change in knowledge or attitude based on survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior based on survey results (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewer ship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 757,420.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of mobile advertising for *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The advertisements target behaviors associated with trash and bacteria.

Results and Analysis

The advertisements were developed in the FY 2008 and displayed throughout the San Diego Bay WMA in both English and Spanish. The estimated audience was 860,700 total impressions per 4-week period for San Diego Bay as a whole, and 522,300 for Chollas Creek. In FY 2008, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue*

survey, approximately 33% of residents became aware of the Think Blue message by seeing mobile advertising.

Long-Term Assessment and Conclusions

The City plans to continue to implement transit shelter advertisements in FY 2009. Effectiveness will be measured via citywide telephone surveys and focus groups comprised of residents in the San Diego Bay WMA, and efficiency will be determined by advertisement costs. The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure in 2008. The survey results correlate well to the estimated daily effective calculation (DEC) results of 43,038 mobile advertising impressions per day in the San Diego Bay WMA.

The 2008 results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices. The large number of mobile advertisement impressions made in FY 2008 also supports the assertion that the mobile advertisement program is effective, due to increasing public exposure to bacteria issues. The activity as well as surveys will be continued and longer-term assessment should provide more complete results.

PROPOSED COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT STUDY IN CHOLLAS CREEK – 32

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego retained professional research consultants to develop an education and outreach strategy to address trash in the Chollas Creek watershed using Community-Based Social Marketing (CBSM). This strategy will include observations, interventions, and assessment methods and will result in identification of barriers to public participation against littering, the steps needed to remove those barriers, and solutions which may include structural interventions and/or additional education and outreach strategies to residences and businesses.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

During FY 2009, CBSM activities in Chollas Creek will include consulting on the selection of pilot and control areas of Chollas Creek and identification of litter as a target behavior, development of an observational research protocol for assessing litter behavior and barriers, development of materials for data collection, developing and conducting a training session for Think Blue and I Love A Clean San Diego (ILACSD) staff and volunteers, coordinating and scheduling observation sessions, as well as data collection, entry, and management. An observational research protocol will be developed to identify the sources of litter, establish a baseline littering rate, identify the target population associated with litter, and identify avenues for intervention that will maximize efforts to prevent litter from contaminating the storm drain system.

The Regional Board[4] requested more detail about this activity. Details have been added in this activity summary sheet, and updates to the implementation schedule have been made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[4] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego (ILACSD)
- San Diego Coastkeeper
- Sierra Club, San Diego Chapter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2). Implementation of this activity will address the high priority water quality problem by identifying the behaviors in the WMA contributing to trash loading (which acts a bacteria vector) and testing outreach strategies to determine their effectiveness in reducing loads before broad-scale implementation.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
COMMUNITY-BASED SOCIAL MARKETING PILOT STUDY IN CHOLLAS CREEK Assess Effectiveness of CBSM in Changing Awareness, Attitudes, and Behaviors	
Management Question	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution? • What changes in behaviors were observed after CBSM implementation?
Targeted Measurable Outcomes	• Reach goal number of people within the watershed, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by pamphlet)
Recommended Data	• Number of educational materials distributed in business areas (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2) • Change in behaviors (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness of the Community-Based Social Marketing (CBSM) outreach in educating the public about the causes of trash and bacteria loading and changing their pollutant-loading behaviors.

Results and Analysis

Short-term analysis is not possible at this time, as implementation has yet to begin. The City of San Diego retained professional research consultants to develop the pilot project proposal in the FY 2008. Development of the proposal was finalized in July 2008. The project will include research, observations, surveys, interventions, and assessment methods. These efforts will result in recommendations for outreach strategies, which may include structural interventions, public participation, incentives, and specific messaging.

Long-Term Assessment and Conclusions

The City anticipates beginning the implementation of this activity in FY 2009. This activity will include five phases: baseline observations; development of CBSM intervention; community cleanup; CBSM intervention implementation; and follow-up observations. Effectiveness will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

CITY OF CORONADO FIRE DEPARTMENT OPEN HOUSE – 33

ACTIVITY DESCRIPTION

This activity, an interactive educational booth at the Fire Department's Open House, was an opportunity to increase pollution prevention awareness for the residents of Coronado. The Open House drew many participants, 89 of which obtained storm water BMPs and household hazardous waste disposal pamphlets. By providing educational booths, City staff is able to address questions and concerns

TMDL APPLICABILITY

- N/A

PARTICIPATING WATERSHED COPERMITTEES

- Coronado

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria is a water quality concern for all HA's. Providing education increases awareness and optimally produces behavioral change.

EFFECTIVENESS MEASUREMENTS

The number of people visiting the booth and obtaining educational literature was tracked. Through the use of our work order system, we are able to see a trend in residential awareness by the increase of storm water related calls. In FY 07-08 residential calls increased to 80 from 65 during FY 06-07.

Appendix H

Public Participation Activities Table

Table H-1. San Diego Bay WMA 2007-2008 Public Participation Events.

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Cleanup Events	California Coastal Cleanup Day	1 event	Authority staff and their families participated in this event.	Coast Keeper and Airport Authority	September 15, 2007
Cleanup Events	Creek to Bay Cleanup	1 event	Authority staff and their families participated in this event.	ILACSD and Airport Authority	April 28, 2008
Cleanup Event	Creek to Bay Cleanup	45 participants	Clean up in Paradise Creek	ILACSD and City of National City	4/26/2008
Cleanup Event	Beach Cleanup	30 participants	60 lbs. of trash picked up from Coronado Central Beach	University of San Diego High School Immaculata Youth Group and City of Coronado	6/31/08
Cleanup Event	6th Annual Creek to Bay Cleanup in Coronado and Silver Strand State Beaches	75 participants	Cleanup at Coronado Central Beach and Silver Strand State Beach 244 total lbs. of trash collected.	City of Coronado, I Love A Clean San Diego, and County of San Diego	Annual Event This year held on 4/26/08
Cleanup Event	23rd Annual Coastal Cleanup Day at Coronado Central Beach	139 participants	Cleanup at Coronado Central Beach. 369 lbs. trash including 160 lbs. recyclables.	City of Coronado, I Love A Clean San Diego, WildCoast, Baykeeper and resident volunteers	Annual Event This year held on 9/15/07
Cleanup Event	ILACSD Creek to Bay Cleanup	1 Event	34,505 lbs of trash and debris removed 2,432 pounds of trash and debris recycled	San Diego Bay WURMP Workgroup, ILACSD, volunteers, general public	4/26/08

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Cleanup Event	ALPHA Project	1 Event	Trash and debris removal – 45,290 lbs of trash and debris	City of San Diego, Alpha Project for the Homeless, Inc. staff	7/11/07, 8/10/07, 9/15/07, 12/3/07,12/5/7, 12/14/07, 12/26/07, 12/28/07, 2/6/08, 2/13/08, 2/29/08, 3/5/08, 3/26/08,4/2/08, 4/16/08, 5/2/08, 5/9/08, 5/16/08, 6/26/08
Cleanup Event	SDCK Coastal Cleanup Day	1 Event	2,000 lbs of trash and debris removed 6,000 pounds of trash and debris recycled	City of San Diego, SDCK, ILACSD, volunteers, general public	9/15/07
Cleanup Event	City Heights Urban Cleanup	1 Event	Trash and debris removal – 515 lbs of trash and debris	City of San Diego, ILACSD	1/13/08
Cleanup Event	Beautify Chula Vista Day	800 participants	Citizens participate in graffiti removal, trash removal, and storm drain stenciling	City of Chula Vista and I Love a Clean San Diego	October 6, 2007
Cleanup Event	Creek to Bay Cleanup Day	4,000 Participants	Volunteers removed trash from inland and coastal waterways throughout the County of San Diego	San Diego Bay Copermittees co-sponsored this event that was coordinated by I Love A Clean San Diego	April 26, 2008
Cleanup Event	Otay Valley Regional Park (OVRP) Cleanup	More than 5,000 labor hours	Several organizations work together to remove trash, remove homeless encampments, plant trees, and place signage to identify the OVRP	City of Chula Vista, OVRP Citizens Advisory Committee, California Conservation Corp, City of San Diego, County of San Diego, Allied Waste, Hanson Aggregates	Year-round

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Cleanup Event	Park Appreciation Day	# Participants unknown	Clean up at the 7 City parks in the SD Bay watershed	City of La Mesa	One time event; 3/29/2008
Cleanup Event	Creek to Bay Cleanup	5 Participants	Clean up of 60 pounds of trash and debris from University Channel	City of La Mesa and I Love A Clean San Diego (ILACSD)	One time event; 4/13/2007
Cleanup Event	California Coastal Cleanup Day	25 Participants	Clean up of 80 pounds of trash and debris from University Channel	City of La Mesa	One time event; 9/15/20007
Cleanup Event	Adopt a Block Program	Volunteers clocked 228 hours throughout reporting period	Regular clean up of neighborhoods, particularly picking up trash on night prior to trash collection day	City of La Mesa	Ongoing
Cleanup Event	Adopt a Park Program	Volunteers clocked 1,119 hours throughout reporting period	Regular clean up of trash and debris	City of La Mesa	Ongoing
Cleanup Event	La Mesa Spring Cleanup	# Participants unknown	Large item and green waste disposal free of charge	City of La Mesa, EDCO	4/12/2008, 4/19/2008
Cleanup Events	Imperial Beach Home Front Clean Up Day	742 participants	City and EDCO-sponsored event where residents dispose of unwanted items free of charge. **178** tons of waste collected.	EDCO, City of Imperial Beach	May 3, 2008
Cleanup Event	River Clean-up	26 participants	Sweetwater Trash Clean Up	County of SD & Students	4/26/2008
Cleanup Event	Coastal Cleanup Day	42	Trash cleanup D St. Fill – 2,280 pounds of trash removed	Port of San Diego, URS Cooperation, I love a Clean San Diego, San Diego Coastkeeper, Coastal Commission	9/15/07

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Cleanup Event	Creek to Bay Cleanup	20	Trash cleanup D St. Fill – 2,160 pounds of trash removed	Port of San Diego, URS Cooperation, I love a Clean San Diego	4/26/08
Cleanup Event	Operation Clean Sweep	900	Trash cleanup Various locations throughout San Diego	Port of San Diego, Port Tenants Association, U.S. Navy, U.S. Coast Guard, Southern California Professional Drivers Association	6/07/08
Community Event	25th Annual J.R. Memorial Surf Classic	270 participants	Storm water BMP promotional items presented to participants. One of the purposes of this event is to educate the public regarding storm water pollutants of concern, especially as they relate to surfing.	Coronado Surfing Association City of Coronado's Dept. of Public Services and WildCoast.	Annual Event This year held on 11/3/07
Community Event	Annual Flower Show	4,000 participants	Storm water BMP brochures, promotional items and Integrated Pest Management pest tip cards presented at booth	City of Coronado and Coronado Floral Association.	Annual Event This year held on 4/19/08 and 4/20/08 Two day event.
Community Event	Annual Car Show	4,000 participants	Storm water BMP brochures, promotional items and Integrated Pest Management pest tip cards presented at booth	City of Coronado and Main Street Limited.	Annual Event. This year held on 4/20/08.

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Community Event	4th Annual Kids for Clean Water Menehune Surf Fest	260 participants	Storm water BMP promotional items presented to participants. One of the purposes of this event is to educate the public regarding storm water pollutants of concern, especially as they relate to surfing.	Coronado Surfing Association City of Coronado's Dep. of Public Services and WildCoast	Annual Event This year held on 4/27/08
Community Event	Coronado Yacht Club Junior Sailing 4th of July Trash Pickup	150 participants	Trash cleanup of trash generated from boats docked at local yacht club and from 4th of July activities in that marina.	Coronado Yacht Club, City of Coronado, U.S. Coast Guard	Annual Event This year held 7/03/07-7/04/07 2-day event
Community Event	San Diego County Regional Fair	u/k	Storm water BMP brochures, promotional items and Integrated Pest Management pest tip cards presented at booth	San Diego County Copermittee Representatives	Annual Event This year held 614/08 to 7/6/08
Community Event	Cinco De Mayo	1 Event	IPM Pest Tip Cards, Pest Cards feedback forms, promotional items	City of San Diego	5/5/08
Community Event	Put Your Butt in the Right Place	400 Participants	10 volunteers provided information to event participants about the effects of cigarette butt pollution on water quality	City of Chula Vista	April 12, 2008
Community Event	Maritime Museum of San Diego Adult *Pilot* Boat Tours	9,258	Watershed and Water Quality concepts presented to the general public aboard *Pilot* Boat Tours	Port of San Diego	7/07 – 6/08

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Community Event	Imperial Beach Earth Day Event	400	Education and demonstration regarding storm water runoff and water quality impacts	Port of San Diego and the San Diego Regional Airport Authority	4/30/08
Community Event	San Diego County Fair Regional Copermittee Booth	Unknown at this time	Education regarding storm water runoff and water quality impacts	San Diego Regional Copermittees	6/13/08 – 6/29/08
Presentation	Tenant SWMP Training	31 tenants participated	Environmental Affairs provided training regarding revisions to the SWMP and storm water pollution prevention.	Airport Authority	Feb. – March 2008
Presentation	Storm water pollution prevention Presentation	60 students	Authority staff and City of Chula Vista Staff gave a presentation to 60 elementary students form Ocean View Hills School on storm water pollution prevention.	Airport Authority and City of Chula Vista	May 30, 2008
Presentation	Children's Art Wall	1 event	Airport Authority Youth Art Wall displayed the City of San Diego Water Department's Children's Water Conservation Poster Contest.	Airport Authority and City of San Diego Water Department	2006-2008
Presentation	Presentation to National City Kiwanis Club	1 event; 16 participants	Watershed concepts, issues, regulatory information, and storm water pollution prevention	National City Kiwanis Club (residents)	7/12/2007
Presentation	Intergenerational Games	140	Presentation of the Enviroscape watershed model	City of La Mesa and I Love A Clean San Diego (ILACSD)	One time event; 10/12/2007

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Presentation	Storm water Training for the San Diego Marriott Events Staff	8	Education regarding storm water BMPs for hotel event staff	Port of San Diego	8/3/07
Waste Collection/ Recycling	Household Hazardous Waste Facility	2,255 households	Residents drop off HHW waste for proper disposal	City of Chula Vista, City of National City, City of Imperial Beach	Every Wednesday and Saturday
Waste Collection/ Recycling	Oil Recycling	2,110 gallons recycled	Kragen Auto Parts and other participating auto parts stores collect used oil and filters from residents...	South Bay residents	Ongoing
Waste Collection/ Recycling	HHW Disposal	6,182 pounds collected	South Bay HHW Collection Facility open on Wednesdays and Saturdays to facilitate proper disposal of HHW.	South Bay residents	Ongoing
Waste Collection/ Recycling	Electronic and Universal Waste Recycling Event	20,552 pounds collected	The Authority held 3 electronic and universal waste recycling events during the FY for Airport employees.	Airport Authority, Airport Authority employees	9/17-21/07, 1/17-18/08, 4/17-18/-8
Website	Airport Authority website	50,000 hits	Authority website has several pages dedicated to environmental issues at Airport, including storm water management.	Airport Authority	FY07-08
Website www.nationalcityca.gov	Storm water pollution prevention information	# hits unknown	Online access allowing citizens to get information about BMPs and how to report an IC/ID	City of National City	Ongoing

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Website http://www.coronado.ca.us Go to the following links: City Services; then Public Services; then Clean Coastlines. Under Clean Coastlines, click on the BMP brochure you are interested in.	Coronado Clean Coastlines BMP industry-specific brochures and other storm water pollution prevention information.	# hits unknown	A website geared towards BMPs as they relate to environmental issues in general and as they specifically relate to the business, construction, food service, landscaping, and mobile businesses, available in both English and Spanish.	City of Coronado	Ongoing
Website	City of Chula Vista CLEAN Website www.chulavistaca.gov/CLEAN	Estimated 1,000 per year	Storm water pollution prevention materials and information on the CLEAN website	City of Chula Vista	Year-round
Website www.cityoflamesa.com	Brochures and other storm water pollution prevention information	# Hits unknown	Online access allowing citizens to download brochures for BMPs.	City of La Mesa	Ongoing
Website		# hits unknown	Online access allowing citizens to file complaints for storm water violations including illegal dumping.38 reports of illegal dumping received.	City of Imperial Beach	Ongoing
Website	Project ORCA Website	175 hits	Website educating children about wildlife of San Diego Bay	Port of San Diego	On-going

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Workshop	Coming Clean, Going Green	1 event	Authority and City of San Diego, on behalf of the San Diego Regional Sustainability Partnership, sponsored the event focused on waste reduction programs for businesses.	City of San Diego, San Diego Regional Sustainability Partnership	January 29, 2008
Workshop	Presentation to development planning/ construction community	1 event; 13 participants	SUSMP requirements, Writing a SWMP, Common problems with SUSMP reports, LID concepts, Examples of treatment control BMPs, Project resources, What to expect from City inspections	Development planning/ construction community in National City	2/28/2008
Workshop	Walk the Watershed	1 Event	Provided information about pending storm water projects	City of San Diego, SDCK Groundwork San Diego-Chollas Creek, general public	4/6/08
Workshop	Street Sweeping Pilot Study Informational Meeting	1 Event	Disseminated street sweeping study information and touched on general storm water issues	City of San Diego, El Cajon Business Improvement District	3/12/08
Workshop	*Negocio Verde* Pollution Prevention Workshop	11	Educated Marina staff and boaters regarding BMPs for marina management and recreational boating	*Negocio Verde,* Port of San Diego	7/7/07
Workshop	BMPs for Mitigation of Pesticide Runoff from Urban Landscapes	7	Education to landscape professionals regarding pesticide use and water quality impacts	Port of San Diego	1/15/08

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Workshop	Integrated Pest Management for Landscape Professionals	187	Education to landscape professionals regarding pesticide use and water quality impacts	Port of San Diego	6/4/08
Workshop	Hotel Engineers Association Storm water Training	46	Education regarding storm water BMPs for hotel staff	Port of San Diego	2/20/08

Appendix I

Updated Watershed Activity Summary Sheets

WATER QUALITY ACTIVITIES

EL CAJON BOULEVARD STORM DRAIN INLET RETROFIT FOR CHOLLAS CREEK WATERSHED PROTECTION PROJECT – 2-08

ACTIVITY IMPLEMENTATION

The four storm drain catchbasins at the intersection of El Cajon Boulevard and Fairmount Avenue will be retrofitted with catchbasin inserts. This site has been selected for its placement along a major arterial, proximity to the ongoing aggressive street sweeping program (Tier I BMP activity) along El Cajon Boulevard, and the adjacent commercial land uses (gas station, two vehicle sales lots, and a clothing thrift shop). The close proximity of the catchbasins will also allow for easier project maintenance.

The City has adopted an integrated, tiered, and phased strategy (*Strategic Plan for Watershed Activity Implementation*) to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by investigating the effectiveness of storm drain inlet retrofits in addressing high priority water quality problems both by itself and in conjunction with other activities to achieve efficiencies.

In FY 2008, inserts were designed with stainless steel baskets that do not obstruct storm flows, that prevent street level flooding, and that maintain the structural integrity of the existing catch basins. Inserts were designed to capture trash and debris that flows from the streets during the first flush of a storm. Product selection began in FY 2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Diego plans to select catch basin inserts and retrofit the catch basins by the FY 2009 storm season.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will contribute to improving water quality problems and is consistent with the Collective Watershed Strategy by focusing on bacteria and sediment load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants, which convey and provide nutrients to bacteria. The Collective Watershed Strategy identifies bacteria, sediment, and nutrients as priority water quality problems in the various hydrologic subareas of the San Diego Bay Watershed Management Area (WMA).

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
EL CAJON BOULEVARD STORM DRAIN FILTER INSERT PROJECT Assess Efficiency and Effectiveness of Storm Drain Filter Inserts in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved by retrofitting storm drains with filter inserts? • How efficient are filter inserts in reducing pollutant loads? • What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure filter inserts working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality (Outcome Level 5)

Objectives

The goal of the assessment is to determine the load reduction effectiveness and efficiency of storm drain filter inserts, both by themselves and in combination with aggressive street sweeping.

Results and Analysis

This activity was in the planning phase and not in active implementation in FY 2008. Therefore, assessment is not feasible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

TREATMENT CONTROL BMP PILOT PROJECTS – 34

ACTIVITY SUMMARY

The Airport Authority intends to implement treatment control BMPs on a pilot-scale to reduce zinc concentrations in the runoff from the roof of Terminal 1 East and to reduce copper and zinc concentrations in runoff from the runway. The goal of the Treatment Control BMP Pilot Projects is to reduce the metal load that is being inadvertently released by galvanized roofing materials and by aircraft tire and brake wear. These metals may be released to the storm water conveyance system and then into San Diego Bay. The projects include installation of roof runoff downspout filters and modification to a portion of the pavement surfaces adjacent to the runway.

The program is an important water quality activity in the San Diego Bay WMA because it will reduce or eliminate the amount of metals being inadvertently released to the watershed. A reduction in the amount of metals potentially entering the storm water conveyance system contributes to improving the quality of the storm water in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Treatment Control BMP Pilot Projects are applicable to these TMDLs to the extent they address the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Assessment
- Permit Year 10-11: N/A (Capital projects in active implementation for the first year only)
- Permit Year 11-12: N/A (Capital projects in active implementation for the first year only)

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies metals as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay WMA in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of metals. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EFFECTIVENESS ASSESSMENT

During FY 07-08 the Authority initiated the planning phase of the Treatment Control BMP Pilot Project. Tasks completed include: 1) identification of the downspout filter equipment to be installed and the locations for installation; and 2) preliminary identification of potential runway runoff control BMPs. Schedules and logistics for installation of the downspout filter BMPs were developed and a sampling and analysis plan was created. Since the downspout filtering BMPs were not installed or sampled until after the end of the fiscal year, we cannot begin effectiveness assessment until the FY 08-09 reporting period.

UPDATE RECYCLING AND SOLID WASTE PLANNING MANUAL – 35

ACTIVITY PLANNING

In order to address contributions of pollutants, particularly bacteria, from trash and recycling areas from new multi-family residential and commercial land uses, the City of Chula Vista plans to update the design requirements in its Recycling and Solid Waste Planning Manual. The City will require that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas.

During this reporting year, City Storm Water Management Section staff worked closely with the Environmental Services staff to update the manual in order to include this requirement for new development and redevelopment projects with trash enclosures. The updated manual was planned for presentation to City Council in the fall of 2008. Subsequently, in September 2008, City Council approved the updated manual and it became a part of Chula Vista Municipal Code.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash and recycling areas have the potential to contribute a number of pollutants to storm water runoff, namely bacteria, nutrients, and trash. By building trash enclosures to prevent the contact of storm water with trash, the City aims to reduce the amount of pollutants that could be washed into the storm drain system from trash areas during a rain event.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Updating the Recycling and Solid Waste Planning Manual in the City of Chula Vista aims to improve the quality of runoff that enters the storm drain system and eventually San Diego Bay. It intends to reduce high priority pollutants such as bacteria, trash, and nutrients from entering the storm drain system. Bacteria are a high priority pollutant throughout San Diego County and the San Diego Bay WMA. This effort seeks to reduce pollutant sources from trash areas as a source abatement measure.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels three and four. BMP implementation and pollutant load reductions will be assessed by tracking the number of trash enclosures constructed with the new design criteria within the City. Also, estimations can be made about the amount of trash generated per person based on the number of dwellings within a project. The estimated amount of trash that could have possibly come in contact with storm water before the updates to the manual will be assessed as a load reduction.

TARGETED MUNICIPAL FACILITY INSPECTIONS – 36

ACTIVITY IMPLEMENTATION

The Storm Water Department had planned to develop a focused inspection activity to target municipal facilities within the San Diego Bay WMA. The purpose of the activity was to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

Based on Regional Board staff comments[1], the Storm Water Department will no longer pursue this activity under the WURMP section of the Municipal Permit. The Storm Water Department may choose to reconsider this as a significant JURMP activity in the future, though staff time and resources are currently allocated to other projects and significant activities. The reporting of this activity will cease with this Annual Report.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning and implementation is not yet scheduled for this activity. If it moves forward, it would be reported under the JURMP.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

If implemented under the WURMP, the activity would have been consistent based on the Collective Watershed Strategy, which identifies bacteria and metals as high priority water quality problems in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity if pursued would contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and sediment at municipal facilities. However, if pursued, the activity would occur under the City's JURMP.

EFFECTIVENESS MEASUREMENTS

Watershed: San Diego Bay	
TARGETED MUNICIPAL FACILITY INSPECTIONS Assess Efficiency and Effectiveness of Municipal Facility Inspections	
Management Questions	• Do inspections increase the rate of BMP implementation? • Does an increased rate of BMP implementation result in source abatement? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase the rate of BMP implementation?
Targeted Measurable Outcomes	• Achieve source abatement from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from third-party data)
Recommended Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Percent change in BMP implementation pre- and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of educational items passed out (Outcome Level 1) • Dollar amount spent on inspections (follow ups, initial inspections) (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of Pollutant Discharge Potential Assessment (Level 4). (Outcome Level 4)

Objectives

Goals of this assessment included determination of the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections to ensure proper BMP implementation and reduce pollutant loading from municipal facilities.

Results and Analysis

This activity was not implemented in FY 2008 due to staffing constraints, and, therefore, assessment is not possible. The City will reconsider implementation of this activity as part of its JURMP efforts.

Conclusions

The City has decided to discontinue implementation and assessment of this activity as part of its WURMP efforts and will cease to report on this activity. Per comments from Regional Board staff, this activity is an internal audit and not a Watershed Water Quality Activity. The City may reconsider implementing this activity in the future as a significant JURMP activity. Results, analysis, and conclusions would be reported in the City's JURMP Annual Report.

43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION – 37 (NEW)

ACTIVITY IMPLEMENTATION

The 43rd Street and Logan Avenue Biofiltration Project will consist of two main low impact development (LID) features: filtration planters along the curbside of 43rd Street and Logan Avenue and biofiltration basins on the undeveloped and vacant northwest corner lot at 43rd Street and Logan. Storm water runoff will be diverted from adjacent streets to the two LID features. The water will flow through a vegetated soil layer (three to four feet thick) for natural removal of pollutants with a projected 70% to 80% removal efficiency.

This project is a roadway realignment project that the Right of Way Division of the Engineering and Capital Projects Department will design in FY 2009. This Tier II project (according to the City of San Diego's *Strategic Plan for Watershed Activity Implementation*) will be implemented to achieve a high level of effectiveness in reducing pollutant loads. This project will address metals and bacteria in line with the City of San Diego's *Strategic Plan for Watershed Activity Implementation*.

A deed agreement must be received in FY 2009 from the San Diego Community College District for the biofiltration basin as the road realignment project needs to go forward to construction. If the deed agreement is finalized, design is anticipated to be finished in FY 2009 and construction to occur in the late summer of calendar year 2009.

This activity was not included in the 2008 San Diego Bay WURMP as it was initiated after the March submittal date. The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by integration. This project addresses infrastructure needs and regulation compliance simultaneously.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project design is anticipated to be completed in FY 2009. Construction is anticipated to occur late in the summer of 2009 if the deed agreement is finalized. Water quality monitoring is anticipated be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved copper, lead, and zinc
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via biofiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION Assess Effectiveness and Efficiency of Filtration Planters and Biofiltration Basins		
Management Questions	• How much load reduction can be achieved using filtration planters and biofiltration basins? • How much reduction in runoff volume can be achieved using filtration planters and biofiltration basins? • How efficient are planters and basins in reducing pollutant loads?	
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality	
Assessment Methods	• Inspections (e.g., ensure planters and basins working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)	
Data Recorded	Estimated construction cost (Outcome Level 1)	$800,000
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)	

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of filtration planters and biofiltration basins in reducing bacteria and dissolved metals pollutant loading relative to other BMPs.

Results and Analysis

Project planning and design occurred in FY 2008. Therefore, assessment is not possible at this time. Pollutant loading reduction and water quality monitoring results are anticipated to be available in late FY 2010.

Conclusions

No conclusions are available at this time. Project design is anticipated to be completed in FY 2009. Construction is anticipated to occur in the summer of 2009 if the necessary deed agreement is finalized with the San Diego Community College District. Monitoring is anticipated to be conducted before and after construction to assess the effectiveness and efficiency of this project in reducing runoff volume and pollutant loading and improving discharge quality.

CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION - 38 (NEW)

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the WMAs that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in Table I-1 below.

Table I-1. Strategic Plan Activities.

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Tecolote Watershed "Green Street" Infiltration Retrofit	Green Street	Water Quality	Structural	All
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	All
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	All
Maple Canyon Water Quality Improvement Project	Sustainable Canyons	Water Quality	Structural	Sediment, Bacteria
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	All
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	All
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals
Tijuana River Solid Waste Removal and Transfer Facility	Trash/Debris Separation	Water Quality	Structural	Trash, bacteria
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria; Dissolved Minerals; Gross Pollutants; Metals; Nutrients; Oil & Grease; Organics; Pesticides; Sediment
Residential Landscaping Retrofit Pilot Project	Residential Landscaping Retrofit	Water Quality	Non-structural	All
Smart Irrigation and Controller Incentive/Giveaway Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	All
Basin Plan Triennial Review	Basin Plan Beneficial Use Designation Correction	Monitoring	Non-structural	N/A
Pet Waste Dispenser Program	Doggie Bag Dispenser	Water Quality	Non-structural	Bacteria
Posted Street Sweeping Routes	Street Sweeping	Water Quality	Non-structural	Metals, Trash

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Municipal Park Artificial Turf Pilot Project	Artificial Turf	Water Quality	Non-structural	All
Municipal Park Artificial Turf Pilot Project	Artificial Turf	Water Quality	Non-structural	All
Municipal Park Artificial Turf Pilot Project	Artificial Turf	Water Quality	Non-structural	All
Targeted Mobile Hazardous Household Waste Collection Centers	Haz Waste Collection	Water Quality	Non-structural	Metals, trash, oil
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	All
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	All
Rain Garden, Xeriscaping, and Landscape Filtration	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	All
Rain Garden, Xeriscaping, and Landscape Filtration	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	All
Sediment Basin Endowment Fund	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Sediment Basin Endowment Fund	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Commercial Pest Control Art Turf or Product Sub	Product Sub	Water Quality	Non-Structural	Pesticides
Residential Pesticide Management Art Turf or Prod Sub	Product Sub	Water Quality	Non-Structural	Pesticides
LID Regulatory Barriers and Solutions	Code Modification	Water Quality	Non-structural	All
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	All
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	All

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	All
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria, trash
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	All
Infiltration Vault/Pit Installation	Infiltration Vault/Pit	Water Quality	Structural	All
Infiltration Vault/Pit Installation	Infiltration Vault/Pit	Water Quality	Structural	All
Green Street Filtration	Green Street Filtration	Water Quality	Structural	All
Green Lot Filtration	Green Lot Filtration	Water Quality	Structural	All
Green Mall Filtration	Green Mall Filtration	Water Quality	Structural	All
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	All
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	All
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	All
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System	Small Scale Treatment Train	Water Quality	Structural	All
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System	Small Scale Treatment Train	Water Quality	Structural	All
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System	Small Scale Treatment Train	Water Quality	Structural	All
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System	Large Scale Treatment Train	Water Quality	Structural	All

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System	Large Scale Treatment Train	Water Quality	Structural	All
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System	Large Scale Treatment Train	Water Quality	Structural	All
Hydromodification BMP	Hydro mod BMP	Water Quality	Structural	All
Hydromodification BMP	Hydro mod BMP	Water Quality	Structural	Sediment, metals
Hydromodification BMP	Hydro mod BMP	Water Quality	Structural	Sediment, metals
Erosion/Sediment Control BMP	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, metals
Erosion/Sediment Control BMP	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, metals
Home Auto Activities (Metals) Code Mod and Outreach	Outreach	Education	Non-structural	Metals
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients, pesticides
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Enforcement or Outreach	Water Quality	Structural or Non-Structural	Metals
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	All
Alley Cleanup and Sweeping Pilot Project	Street Sweeping	Water Quality	Non-structural	Bacteria, trash, metals

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to

help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the San Diego Bay WURMP Annual Report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

EDUCATION ACTIVITIES

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT PET WASTE DISPOSAL – 39

ACTIVITY PLANNING

The City of Chula Vista plans to encourage homeowner's associations to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association newsletters about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials and survey homeowners associations to assess if there is signage and plastic bag dispensers in the neighborhoods regarding proper pet waste disposal.

During the current reporting year, the City compiled contact information about the HOAs within the City as well as looked at the potential methods for reaching HOAs in the City. A phased approach over the remaining permit cycle will be used to reach the various HOAs within the City.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria has been categorized as a high priority pollutant in the watershed. This activity is

consistent with the collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity can be assessed through levels 1-3. This activity will be assessed by the number of surveyed homeowners associations and the number of homeowners reached through education.

STORM WATER EDUCATION BOOTH AT PET FESTIVAL AND DOGGIE DASH – 40

ACTIVITY PLANNING

The City of Chula Vista plans to educate its residents about proper pet waste disposal and its possible effects on water quality at its annual Pet Festival and Doggy Dash. This outdoor community event involves both pet owners and pets. The City plans to have an educational booth and provide educational materials related to the Chula Vista Clean Program for residents, in particular, those involving the cleanup of pet waste.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by eliminating sources of pollutants.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 1 and 2. Compliance with activity based permit requirements and changes in knowledge, attitudes, and awareness will be assessed by the number of educational materials distributed to participants. The City is also considering the possibility of implementing a survey at this event to assess if owners regularly pick up after their pet(s).

FATS, OILS, AND GREASE (FOG) PROGRAM – 41

ACTIVITY PLANNING

The City of Chula Vista is in the process of developing a Fats, Oils, and Grease (FOG) program as a part of its Sewer System Management Plan (SSMP). The FOG program will focus on educating restaurant owners and operators about the importance of proper grease waste management. Increased education and awareness about proper grease waste disposal aims to reduce possible sanitary sewer overflows in the City. Restaurant owners and operators will receive educational materials about grease waste management.

During this reporting year, the City was in the process of developing the FOG portion of its SSMP. In order to understand the current methods used to reduce FOG by restaurants, the City implemented a survey that asked restaurants about the use and maintenance of grease pre-treatment devices. Based on the findings, the City will tailor its education programs to educate restaurants to use pre-treatment devices, then focus on the maintenance of these devices. Education outreach efforts are expected to begin in 2009.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Assessment
- Permit Year 10-11: Assessment
- Permit Year 11-12: Assessment

Based on the Regional Board letter "Comments on the March 2008 Watershed Urban Runoff Management Plan (WURMP) and US EPA/Regional Board April 2008 WURMP Assessments," the City of Chula Vista will implement this activity once.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by reducing the possible sanitary sewer overflows that result from mismanaged grease waste.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be addressed through levels 2, 3, and 4. The number of restaurants that receive education will be tracked as well as the number of sanitary sewer overflows. As a part of the planning process, the City surveyed over 200 restaurants to find out what types of pre-treatment mechanisms they have in place.

Appendix J

Chollas Creek TMDL Monitoring Report

Due to document size,
the Chollas Creek Diazinon &
Dissolved Metals TMDL report
is submitted electronically.

APPENDIX A

Chollas Creek Education and Outreach Materials

APPENDIX B

Daily Rainfall Totals

APPENDIX C

Letter to RWQCB Regarding First Storm of 2007–2008

APPENDIX D

Field Logs

APPENDIX E

Hydrographs

APPENDIX F

Wet Weather and Ambient Weather Chemistry Results

APPENDIX G

Scatterplots and Trend Tables

APPENDIX H

City of La Mesa Monitoring Data

Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277

2007–2008 Water Quality Monitoring Data Summary for Chollas Creek

Final Report

Prepared for:
San Diego Regional Water Quality Control Board

In coordination with:
The Chollas Creek Watershed Municipal Copermittees
City of Lemon Grove
City of La Mesa
City of San Diego
County of San Diego
Port of San Diego

January 22, 2009

Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277

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Final Report

In coordination with:

The Chollas Creek Watershed Copermittees
City of Lemon Grove
City of La Mesa
City of San Diego
County of San Diego
Port of San Diego

Prepared by:

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January 22, 2009

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EXECUTIVE SUMMARY

This report summarizes the activities conducted by the Chollas Creek Watershed Municipal Copermittees in compliance with Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277 during the 2007–2008 Monitoring Season. The activities conducted are provided as follows:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and dry weather illegal connection and illicit discharge (ICID) investigations.
- Jurisdictions performed education and outreach to area residents.
- Jurisdictions have conducted water quality monitoring during three storm events at the required monitoring sites SD8(1) and DPR2.
- Jurisdictions have conducted water quality monitoring during three storm events at monitoring sites LM-1 and LG-1.
- Jurisdictions have conducted ambient weather monitoring during two events (March 2008 and June 2008) at sites SD8(1), LM-1, and LG-1.

Education and outreach activities included 15 community events targeting strategic audiences in the Chollas Creek Watershed and an extensive media (television and radio) and print campaign. This included over 1,450 public service announcements (PSAs) promoting the Think Blue Website and the "Ants in Your Plants" theme. The integrated pest management (IPM) pest tip cards were the primary outreach materials.

Water quality monitoring results are presented in compliance with RWQCB Order No. R9-2004-0277 requirements. Water quality monitoring was specifically conducted under this program to quantitatively assess potential changes in pesticide use and to quantitatively assess the concentration of metals in Chollas Creek. Upstream sampling locations in La Mesa (north fork) and in Lemon Grove (south fork) were added in 2007–2008 to assess jurisdictional contributions of constituents of concern to Chollas Creek's water quality. The City of La Mesa also collected additional data at Site LM-1, which is presented in an appendix.

Storm water monitoring samples were collected at two upstream and two downstream mass loading stations (MLSs) in Chollas Creek during three separate storm water events. Sites LM-1 and SD8(1) were located in the north fork of Chollas Creek, while sites LG-1 and DPR2 were located in the south fork of Chollas Creek. Wet weather water quality objective (WQO_w) exceedances were noted for total suspended solids (TSS), oil and grease, Diazinon (SD8(1) only), dissolved copper, dissolved zinc, and fecal coliform. There were no exceedances of the WQO_w for either dissolved cadmium or dissolved lead. Synthetic pyrethroids were detected above published LC_{50}s for *Hyalella azteca* across all sites in the three monitored events during the 2007–2008 storm season. In general, metals concentrations were similar across all monitored sites. Concentrations of synthetic pyrethroids were higher at north fork sampling locations than at south fork locations. Over the three storm events, TSS was higher at SD8(1) and LG-1 than at LM-1 or DPR2. Fecal coliform concentrations were highest during the first flush event at all sights with the exception of DPR2.

Toxicity to *Ceriodaphnia dubia* was not observed at either SD8(1) or DPR2 during the 2007–2008 wet weather monitoring events. Toxicity to *H. azteca* was observed during all three storm

events at the north fork sites LM-1 and SD8(1) and at the south fork sites LG-1 during the November 30, 2007 storm event and at DPR2 during the November 30, 2007 and February 3, 2008 storm events. Toxicity identification evaluations (TIEs) conducted as part of the Regional Monitoring Program indicate the causative agent of toxicity at Site SD8(1) is the synthetic pyrethroid class of compounds (WESTON, 2007).

Toxicity tests were performed on ambient weather water samples collected in March 2008 and June 2008 at Site SD8(1) only. Toxicity to *C. dubia*, *H. azteca*, and *Selenastrum capricornutum* was observed in the SD8(1) sample collected on March 4, 2008. Toxicity was not observed to any of the three test species during the June 2008 ambient monitoring event at SD8(1). Water chemistry from March 4, 2008, indicated levels of oil and grease and dissolved copper above ambient weather water quality objectives (WQO_a). No pesticides were detected in ambient weather water samples collected during the March and June monitoring events.

Mann-Kendall trend analysis performed on the long-term data set at Site SD8(1) indicated significantly decreasing trends for nitrate and *H. azteca* survival and significantly increasing trends for total copper and total zinc. At DPR2, concentrations of Chlorpyrifos and Diazinon have significantly decreased over the last four years of monitoring.

General chemistry, bacteria, and metals were the only constituent groups that had measurable results above method reporting limits in ambient weather analyses from sites SD8(1), LM-1, and LG-1. No ambient weather samples were collected at DPR2. SD8(1) had significantly higher total organic carbon (TOC), DOC, TSS, and total and dissolved ambient weather metal concentrations than either LM-1 or LG-1. Total metal and dissolved metal concentrations were below benchmarks at both LM-1 and LG-1, while at SD8(1), concentrations of dissolved copper were above the benchmark during both ambient weather events. Enterococcus concentrations were above the benchmark at LM-1 and LG-1 during both ambient weather monitoring events and were above the benchmark at SD8(1) during only the March ambient monitoring event.

Diazinon was detected during one storm event (46.6 ng/L on November 30, 2007) at SD8(1) above the published chronic benchmark of 45 ng/L, indicating that pesticide applications of Diazinon are still occurring within the watershed; however, this result was below the acute benchmark of 75 ng/L. No toxicity was observed in *C. dubia* acute toxicity tests or *C. dubia* chronic toxicity tests during any of the three wet weather monitoring events. As the residual supply of Diazinon becomes exhausted, detections of this banned pesticide should continue to decrease and is evident in the monitoring results collected (Figure ES-1). A shift in pesticide usage has occurred in recent years toward synthetic pyrethroids. These compounds represent an emerging constituent of concern within San Diego County and should continue to be monitored. A significantly increasing trend in *H. azteca* toxicity has been noted and is correlated to the increasing use of synthetic pyrethroids, which were detected above benchmarks at all sites during all wet weather events. Education and outreach programs and events for area residents and businesses should continue in order to help reduce pesticide usage within the Chollas Creek Watershed.

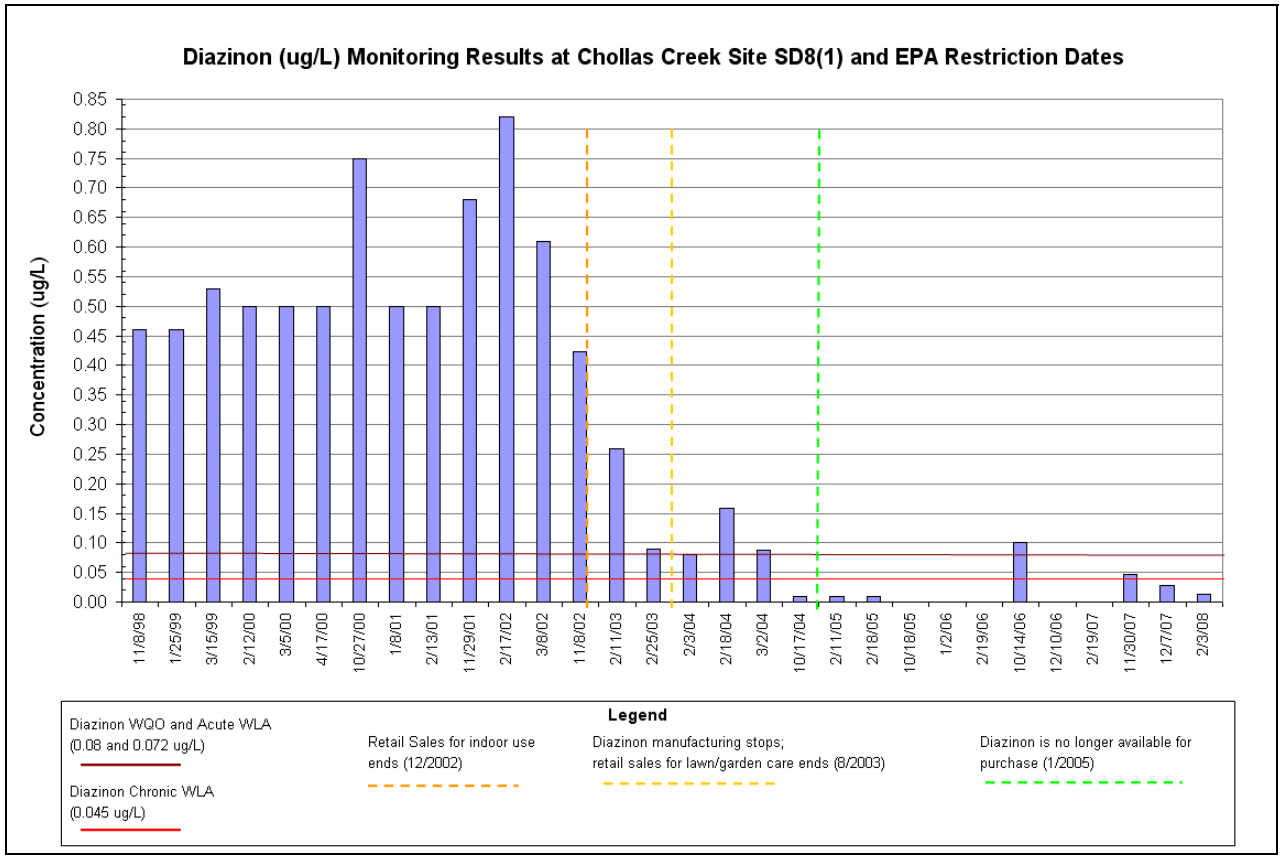

Figure ES-1. Historical Diazinon Concentrations at Site SD8(1) with Restriction Dates

1.0 INTRODUCTION

Chollas Creek is located south and east of downtown San Diego in a highly urbanized portion of San Diego County. Overall, the Chollas Creek Watershed covers approximately 30 square miles and is predominantly residential in land use. The Chollas Creek Watershed resides within the San Diego Mesa Hydrologic Area within the Pueblo San Diego Hydrologic Unit. The main stem of Chollas Creek extends approximately 9 miles from its headwaters (located near the City of La Mesa) to its mouth at San Diego Bay (Figure 1-1).

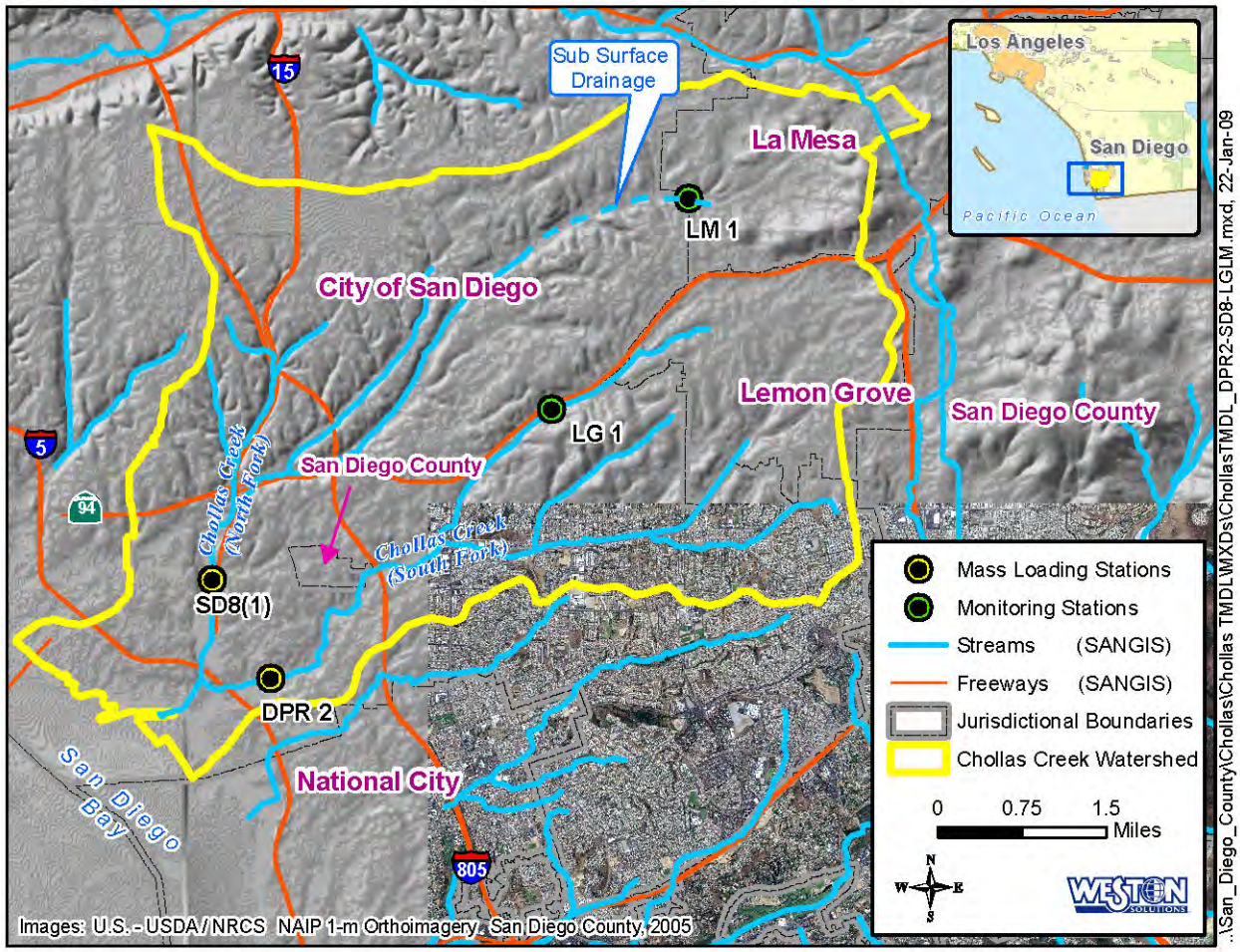

Figure 1-1. Chollas Creek Watershed with Jurisdictional Boundaries

Chollas Creek consists of two main tributaries, the north fork and the south fork. The headwaters of the north fork originate approximately 1.5 miles west of the jurisdictional boundary of the City of La Mesa. From this point, the north fork flows in a southwesterly direction for approximately 3 miles before it is joined by several smaller tributaries feeding into the main stem. The creek then flows in a southerly direction for approximately 1.5 miles before discharging into San Diego Bay. The south fork of Chollas Creek flows from an east–northeasterly direction from its headwaters in Lemon Grove and is the product of two smaller creek branches. The north fork and south fork merge approximately 0.8 mile east of the creek's

mouth, near the upper extent of the tidal influence from San Diego Bay. In general, Chollas Creek is a mix of highly developed earthen channels and concrete channels. The creek is somewhat ephemeral in nature, flowing primarily during the wet season as a conduit for storm water runoff.

The City of San Diego, the City of Lemon Grove, the City of La Mesa, the County of San Diego, and the Port of San Diego are municipal dischargers to the Chollas Creek Watershed. The California Department of Transportation and the United States Navy also discharge urban runoff to the watershed. Water quality problems in the watershed are attributed to pesticides, heavy metals (total and dissolved copper, lead, and zinc), fecal indicator bacteria, and persistent water column toxicity to *H. azteca*. Freshwater amphipod toxicity in Chollas Creek has been linked to exposures to synthetic pyrethroids.

This report provides the activities conducted as part of the annual monitoring and reporting requirements for San Diego RWQCB Order No. R9-2004-0277. Studies conducted in the Chollas Creek Watershed during the 2007–2008 Monitoring Season include the following:

- Copermittees legal authority.
- Public outreach and education.
- Water quality monitoring at Site DPR2 in the south fork of Chollas Creek to satisfy RWQCB Order R9-2004-0277.
- Water quality monitoring at Site SD8(1) in the north fork of Chollas Creek as part of the Regional Monitoring and Reporting Program. These data are also required to be reported under RWQCB Order R9-2004-0277.
- Ambient weather monitoring at Site SD8(1) to evaluate contaminant contributions of dry weather flow.
- Additional Chollas Creek water quality monitoring at upstream sampling locations in Lemon Grove and La Mesa to understand jurisdictional and subdrainage contributions to contaminant loading.
- An aerial deposition study to assess the contribution of metals from aerial deposition.

1.1 Water Quality Background

The Water Quality Control Plan for the San Diego Region (Basin Plan) lists the Inland Surface Water beneficial uses of Chollas Creek as REC-2 (supports non-contact water recreation), WARM (supports warm freshwater habitat) and WILD (supports wildlife habitat). Chollas Creek has the potential to support the REC-1 Beneficial Use (contact water recreation). The 2006 Clean Water Act (CWA) State Water Resources Control Board (SWRCB) Section 303(d) list identifies indicator bacteria, copper, lead, and zinc as pollutants within Chollas Creek. Water quality monitoring data indicate that the pesticide Diazinon historically exceeded water quality standards in most of San Diego County's watersheds, including Chollas Creek, until recent years. While Diazinon was identified as the primary agent associated with pesticide pollution in San Diego County, Diazinon was phased out of manufacturing and is no longer available for retail sale as of December 2004. In recent years, synthetic pyrethroids have replaced Diazinon as a pesticide and have been identified as the current causative agent of toxicity to the freshwater amphipod, *H. azteca,* in Chollas Creek (WESTON, 2007). Metals have also frequently exceeded the California

Toxics Rule (CTR) criteria in Chollas Creek. Both dissolved copper and dissolved zinc have been linked with toxicity to freshwater organisms in Chollas Creek.

1.1.1 DPR2 and SD8(1)—Required Monitoring

The San Diego RWQCB adopted a total maximum daily load (TMDL) for Diazinon in Chollas Creek (Resolution No. R9-2002-0123) in 2002 and adopted a TMDL for dissolved copper, lead, and zinc in Chollas Creek (Resolution No. R9-2007-0043) in 2007. The Chollas Creek metals TMDL was approved by Office of Administrative Law on October 22, 2008. RWQCB Order No. R9-2004-0277 requires monitoring for metals (in addition to Diazinon and toxicity) to further assess the concentrations of metals in Chollas Creek for future development of TMDLs for metals and toxicity in San Diego Bay at the mouth of Chollas Creek. Under RWQCB Order No. R9-2004-0277, annual storm water quality monitoring is required at the downstream MLSs in the north fork (Site SD8(1)) and south fork (Site DPR2) of Chollas Creek.

Previous monitoring performed under RWQCB Order No. R9-2004-0277 and under the San Diego County Municipal Permit indicate that Diazinon concentrations have significantly decreased and have rarely been measured above the TMDL waste load allocation (WLA) during the past four monitoring years. Significant decreases in acute toxicity and chronic toxicity to *C. dubia* have also been observed in the past three years of monitoring, although toxicity to *H. azteca* has remained persistent. Total and dissolved copper and zinc concentrations have frequently been detected above the water quality objectives (WQOs) based on the CTR. Lead concentrations detected above the CTR have occurred less frequently than concentrations of copper or zinc, but are also listed in the Chollas Creek metals TMDL. Fecal coliform densities are frequently detected above the Basin Plan WQO.

1.1.2 Lemon Grove and La Mesa—Additional Monitoring (not required)

In addition to the required monitoring that has occurred in the lower reaches of Chollas Creek, upstream monitoring has been performed in recent years to gain a better understanding of jurisdictional contributions to overall contaminant loads. Two monitoring stations were installed at the City of San Diego's upstream boundary on the north and south forks of Chollas Creek. Site LM-1 was located in the north fork of Chollas Creek at the La Mesa–City of San Diego border, while Site LG-1 was located in the south fork of Chollas Creek at the Lemon Grove–City of San Diego border. Data from these two upstream stations can be directly compared with downstream data from DPR(2) and SD8(1).

Previous monitoring at sites LM-1 and LG-1 was performed during the 2006–2007 storm season during the first flush storm event on October 14, 2006. When compared with downstream sampling locations, LG-1 had higher concentrations of total metals and synthetic pyrethroids than DPR2, while LM-1 had higher concentrations of dissolved and total zinc and lower concentrations of Malathion and Diazinon than SD8(1). Fecal indicator bacteria had similar concentrations and similar loads across upstream and downstream sampling locations as well as across north fork and south fork sampling locations. Please note that the previous monitoring consists of sampling conducted during this one storm in the Fall of 2006, and a discussion of data trends is premature at this time.

1.2 Copermittees Legal Authority

California RWQCB Order No. R9-2004-0277 (item 2-a) requires reports of information on how the Copermittees implemented legal authority to remedy the condition of pollution. This is accomplished primarily through the current Dry Weather Monitoring (DWM) Program and facility inspections conducted under National Pollutant Discharge Elimination System (NPDES) Order No. R9-2007-0001 (RWQCB, 2007). DWM is conducted throughout Chollas Creek to identify and mitigate ICIDs. As part of the DWM Program, Diazinon and metals are monitored, and any illicit discharge of Diazinon or metals is mitigated through this program by the issuing of violations and/or citations.

Each Chollas Creek Watershed Copermittee has ordinances in place to enforce the illegal and unauthorized discharge of waste into their storm drain systems. For instance, the City of San Diego Municipal Code includes Storm Water Management and Discharge Control (§43.0301) and Storm Water Runoff and Drainage Regulations (§142.01 and §142.02), both of which protect citizens and water quality by prohibiting pollutants from entering the storm water conveyance system. The Storm Water Program's Code Compliance Section enforces the City of San Diego's storm water ordinance and implements the administrative civil penalties and citation process.

1.3 Diazinon Toxicity Control Plan

California RWQCB Order No. R9-2004-0277 (item 2-c) requires reports of information on the implementation and efficacy of a Diazinon Toxicity Control Plan.

Per Investigation Order No. R9-2004-0277, the pesticide component of the education program can serve as the Diazinon Toxicity Control Plan required by the TMDL (Section 1.4).

1.4 Diazinon Public Outreach/Education Program

The California RWQCB Order No. R9-2004-0277 (item 2-c) requires reports of information on the implementation and efficacy of a Diazinon Public Outreach/Education Program.

This program was a joint effort by the Chollas Creek Watershed Copermittees. It was previously funded by a SWRCB Proposition 13 Grant and used a network of staff from the County of San Diego, the University of California Cooperative Extension (UCCE), and the City of San Diego to publicize less harmful ways to kill pests. All of the Copermittees were project partners, and the Outreach Workgroup served as the Technical Advisory Committee to the program's goals and objectives. The Copermittees contributed $78,000 of in-kind shared costs to the reproduction of "Healthy Garden, Healthy Home" outreach materials and to the development and airtime for Think Blue IPM PSA. The PSA was launched in June 2006 in concert with a watershed-theme PSA to leverage airtime costs and to intertwine messages regarding IPM and water quality.

The City of San Diego participated in three events during 2007–2008 and distributed IPM cards (Appendix A) to educate Chollas Creek Watershed residents and other members of the public in San Diego County regarding the use of IPM solutions to reduce pesticide concentrations found in San Diego County waterways. IPM uses environmentally sound ways to keep pests under control without harming people, pets, or the environment. These materials were designed to encourage positive behavior changes and attitudes of San Diego residents when dealing with pesticides in their homes and gardens.

The City of La Mesa participated in 20 outreach/education programs. The City of La Mesa developed and distributed the San Diego Bay Watershed Fact Sheet (Appendix A). This fact sheet was designed to encourage residents to practice good housekeeping and storm water pollution prevention measures, such as efficient irrigation. IPM cards were also distributed at the three educational events. The City of La Mesa also developed a Chollas Creek TMDL Fact Sheet and supplemental watershed inspection questionnaire. The Chollas Creek TMDL Fact Sheet was distributed during industrial and commercial inspections in 2007-2008, and the questionnaire was also used during inspections in 2007-2008. The City of La Mesa also installed an educational outreach kiosk in a park in the Chollas Creek Watershed; the kiosk included both the San Diego Bay Watershed Fact Sheet and the Chollas Creek TMDL Fact Sheet.

Events in which Copermittees have participated during Fiscal Year 2007–2008 are detailed in Table 1-1.

Table 1-1. Community Events (Fiscal Year 2007–2008)

Date	Copermittee	Event Type	Event Title	Specific Audience	Estimated Audience No.	Site Name/ Location	Materials Distributed
April 13, 2007	City of La Mesa and I Love A Clean San Diego (ILACSD)	Cleanup event	Creek to Bay Cleanup		5 Participants	Clean up of 60 pounds of trash and debris from University Channel	
August 2007	City of La Mesa	*One Phone call can Help Stop Storm Water Pollution*	Articles described BMPs for residents, industrial and commercial businesses, and construction sites	Residents, businesses, and construction sites in La Mesa	15,000	Distributed in the mail and by email	*La Mesa Focus* newsletter, August 2007
September 15, 2007	City of La Mesa	Cleanup event	California Coastal Cleanup Day		25 Participants	Clean up of 80 pounds of trash and debris from University Channel	
September 15, 2007	City of La Mesa	California Coastal Cleanup Day	City of La Mesa presented information on San Diego Bay Watershed and Chollas Creek TMDL	Residents of La Mesa	25	University Channel in La Mesa	San Diego Bay Watershed fact sheets
October 5, 2007 to October 7, 2007	City of La Mesa	Oktoberfest	City of La Mesa hosted booth and handed out a variety of educational materials	Residents of La Mesa	Event held over three full days	La Mesa	IPM cards, Urban Runoff Trifolds, San Diego Bay Watershed fact sheets
October 12, 2007	City of La Mesa	Intergenerational games	Booth and ILACSD demonstration of Enviroscape model	School children and general public	60	La Mesa Middle School	San Diego Bay Watershed fact sheets, Urban Runoff trifolds
October 12, 2007	City of La Mesa	Intergenerational games	ILACSD presented the Enviroscape Model	Residents and school children	140	La Mesa Middle School	IPM Cards and San Diego Bay Watershed fact sheets
October 12, 2007	City of La Mesa and I Love A Clean San Diego (ILACSD)	Presentation	Intergenerational games		140	Presentation of the Enviroscape watershed model	
November 2007	City of La Mesa	*Be Aware of What you Wash Down the Storm Drain*	Tips to prevent pollutants from entering our waterways	Residents and businesses in La Mesa	15,000	Distributed in the mail and by email	*La Mesa Focus* newsletter, November 2007
December 5, 2007	City of San Diego	Community event	December Nights	General public	200,000	Balboa Park, San Diego	IPM pest tip cards, pest cards feedback forms, promotional items
February 2008	City of La Mesa	*Storm Water: Did You Know?*	Discusses the local watersheds, channels, and inlets in the City of La Mesa, and promotes the use of pollution prevention measures	Residents and businesses in La Mesa	315	Distributed in the mail and by email	*La Mesa Focus* newsletter, February 2008
March 29, 2008	City of La Mesa	Cleanup event	Park Appreciation Day		Number of participants unknown	Clean up at the seven City of La Mesa parks in the San Diego Bay Watershed	
April 12, 2008, April 19, 2008	City of La Mesa, EDCO	Cleanup event	La Mesa Spring Cleanup		Number of participants unknown	Large item and green waste disposal free of charge	
April 13, 2008	City of La Mesa	Creek to Bay Cleanup	City of La Mesa presented information on San Diego Bay Watershed and Chollas Creek TMDL	Residents of La Mesa	5	University Channel in La Mesa	San Diego Bay Watershed fact sheets
April 20, 2008	City of La Mesa	Earth Fair	City of La Mesa contributed money to help pay for educational materials and provided Watershed fact sheets to Earth Fair booth	Residents	Unknown	Balboa Park	San Diego Bay Watershed fact sheets
May 2008	City of La Mesa	*Update to the City's Storm Water Program*	Included updates made to the JURMP, and gave a break down of requirements by audience type	Residents, businesses, and construction sites in La Mesa	315	Distributed in the mail and by email	*La Mesa Focus* newsletter, May 2008
May 5, 2008	City of San Diego	Community events	Cinco De Mayo	General public	100,000	Old Town	IPM pest tip cards, pest cards feedback forms, promotional items
May 24, 2008	City of San Diego	Festival	San Diego Jazz Festival	General public	80,000	Downtown	IPM pest tip cards, promotional items
Ongoing	City of La Mesa	IPM fact cards	Tip cards describing environmentally sound methods of gardening as well as safe use and disposal of pesticides	Residents of La Mesa	117 (number of cards distributed)	Target and Dixieline Lumber Garden departments	Seven IPM cards: Gardening with Good Bugs, Safe Use and Disposal of Pesticides, Spiders, Termites, Lawn Insects, Snails and Slugs, and Head Lice. The cards were printed in both English and Spanish Versions
Ongoing	City of La Mesa	Preventing Urban Runoff trifold	Description of storm drain and sanitary sewer system, including contact information for further BMP resources	Residents and businesses in La Mesa	552	Distributed during inspections, complaint investigations, public events, posted on bulletin board	Preventing Urban Runoff trifold
Ongoing	City of La Mesa	San Diego Bay Watershed Fact Sheet	Defines a watershed as well as the possible sources of pollutants and provides methods for preventing urban runoff pollution	Residents and businesses in La Mesa	953	Distributed during inspections, complaint investigations, public events, posted on bulletin board	San Diego Bay Watershed Fact Sheet
Ongoing	City of La Mesa	Chollas Creek TMDL Fact Sheet	Provides information on the TMDL for Chollas Creek and how it may affect businesses and residents	Residents and businesses in La Mesa	40	Distributed during inspections, complaint investigations, public events, posted on bulletin board	Chollas Creek TMDL Fact Sheet
Ongoing	City of La Mesa	Storm Water Bulletin Board	Displayed in the Engineering Department counter at City Hall; displays storm water information, including watershed information, and provides educational materials for individuals to take	Residents, businesses, project proponents, and construction sites in La Mesa	40	Engineering Counter, City Hall	Various City of La Mesa educational outreach materials are displayed, including the Chollas Creek TMDL Fact Sheet and the San Diego Bay Fact Sheet.
Ongoing	City of La Mesa	Informational Storm Water Kiosk	Kiosk displaying storm water information, including watershed information	Residents	100	Vista La Mesa Park	Various City of La Mesa educational outreach materials are displayed

1.5 Public Outreach Plan

This report includes a description of outreach and education strategies for the Chollas Creek Watershed component of the program led by the City of San Diego Storm Water Pollution Prevention Program.

1.6 Project Outreach and Education Strategy

Strategic Objectives

Based on the research and general principles of behavioral change through public outreach programs, the outreach and education strategy sought to continue to meet the following objectives:

- Raise awareness among target audiences of the benefits of using IPM practices.
- Provide tools and information that make it easy for target audiences to use IPM.
- Identify third-party spokespeople in the community to help spread information regarding IPM and reinforce IPM use.

Audiences

Priority audiences for the project's outreach and education strategy included the following members of the Chollas Creek Watershed:

- Residents who use pesticides.
- Community organizations that influence local residents, including ecumenical groups, ethnic organizations, and neighborhood groups.
- Property managers.

Since partnerships with retail outlets and gardeners are being handled by the County of San Diego, these audiences are not included in the strategy. However, the broad-based regional outreach by the County of San Diego and UCCE should continue to provide valuable messages to San Diego County residents. Education and outreach materials provided by the County of San Diego are included in Appendix A.

Messages

Messages that were stressed in outreach efforts included:

- Chollas Creek is polluted from overuse of pesticides.
- Safe alternatives to pesticides are better for your family and the environment, today and for future generations.
- Using natural methods is easy and inexpensive.

Tools and Tactics

The City of San Diego continued to use the following tools and tactics to achieve the strategic objectives.

Informational Materials
Reproduced educational and informational materials specific to Chollas Creek Watershed outreach were used, based upon the UCCE statewide IPM model. The pest tip cards were the primary outreach materials. Residents were very pleased with the cards and the information they provided. The City of San Diego received numerous requests to provide additional cards to community groups who, in turn, facilitated distribution to residents. The City of San Diego is planning more extensive outreach into the area in the next fiscal year in conjunction with the pending metals TMDL as well as initiating a pilot study in an effort to reduce trash in the area.

Media
For the Hispanic community in the watershed, a special effort was made to get information to Spanish radio and television media, including:

- Español Radio KLNV 106.5 FM.
- KLQV 102.9 FM.
- XEWT (Hispanic).

Public Service Announcement Development
The City of San Diego placed advertising on local television and radio outlets. The City of San Diego designed the ad, "Ants in Your Plants" (funded by the San Diego Regional Storm Water Copermittees) and features IPM tips and suggestions the public should implement to control ants. The “Ants in Your Plants” PSA was placed on the following television and radio stations:

Television
- Cox Media – Cable Stations: HGTV, TNT, Channel 4, Lifetime, USA.
- CW – 5.
- KFMB.
- KNSD.
- KUSI.
- XEWT (Hispanic).

Radio
- KIFM.
- KLNV.
- KLQV.
- KMYI (Star 94.1).
- KPRI.
- KSON.
- KYXY.

Outdoor Media
Table 1-2 details the City of San Diego's radio and television media buy for Fiscal Year 2008. The highlighted column represents the number of PSAs that aired and were related to IPM.

Think Blue Website
The City of San Diego posted IPM outreach materials developed for the project on the Think Blue Website on an ongoing basis to provide City of San Diego residents easy access to these materials.

The Think Blue Website featured a link from the home page to the Chollas Creek efforts and IPM information. Web materials included a fact sheet that details the overall efforts to reduce pesticides in the Chollas Creek Watershed, a fact sheet on how to hire a pest control service and an electronic version of all of the tip cards.

Site visits averaged 20,312 a month with an average of 1,023 also visiting an IPM pest card information page.

Table 1-2. Think Blue Fiscal Year 2008 Media Buy Year End Summary

Station	IPM PSA
Television	
KIFM-Jazz 98.1	182
KLNV	42
KLQV	42
KMYI	83
KPRI 102.1	91
KSON	107
KYXY	132
Radio	
COX NETWORK	211
CW-5	183
KFMB	105
KNSD	133
KUSI TV 9/51	84
XEWT 12 *	81
TOTALS	1,476

1.7 Sampling Locations

The two sampling locations required by Order R9-2004-0277 are depicted on Figure 1-2. Site DPR2 is located at the base of the south fork of Chollas Creek, while Site SD8(1) is located at the base of the north fork of Chollas Creek. Additional sampling sites, located along the upstream jurisdictional boundaries of the two main Chollas Creek forks, are also depicted on Figure 1-2. Sampling location LM-1 is located upstream of SD8(1) on the jurisdictional boundary between the City of San Diego and the City of La Mesa. Sampling location LG-1 is located approximately 3 miles upstream from DPR2, on the jurisdictional boundary between the City of San Diego and the City of Lemon Grove.

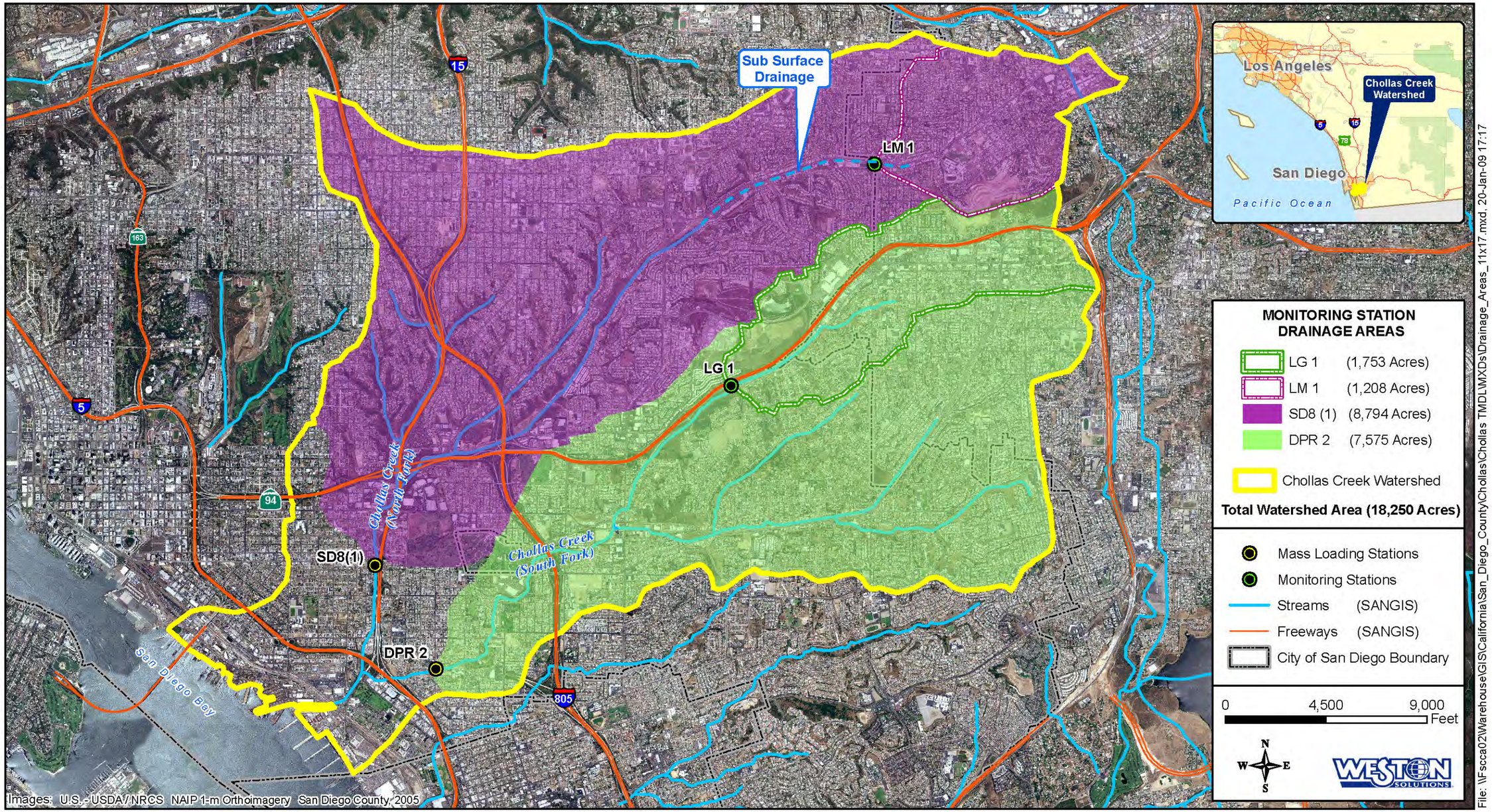

Figure 1-2. DPR2 and SD8(1) Mass Loading Stations (monitoring locations)

1.8 Drainage Area and Land Use

The Chollas Creek Subwatershed is divided into two drainage areas separated by the northern and southern forks of Chollas Creek. Approximately 1,208 acres drain into Site LM-1, located in the upper reaches of the north fork's drainage area. Site SD8(1) is located at the base of the north fork and drains a total of approximately 8,794 acres. Within the south fork, the LG-1 sampling location in the creek's northern reaches drains approximately 1,753 acres, while DPR2 at the base of the south fork drains approximately 7,575 acres. The drainage areas captured from each site are presented in the Table 1-3. Land use within the Chollas Creek Watershed is comprised of residential (48%), roadways and utilities (27%), commercial (5%), and industrial (2%) land use (Figure 1-3). The majority of the remaining land use (18%) within the watershed is characterized as open space / parks and recreation (SANDAG, 2007). The freeway land use is 5.1%.

Table 1-3. Estimated Drainage Areas

Watershed	Monitoring Locations	Drainage Areas (acres)	Percentage of Chollas Creek Drainage Area
North fork	LM-1	1,208	7%
	SD8(1)	8,794	48%
South fork	LG-1	1,753	10%
	DPR2	7,575	42%

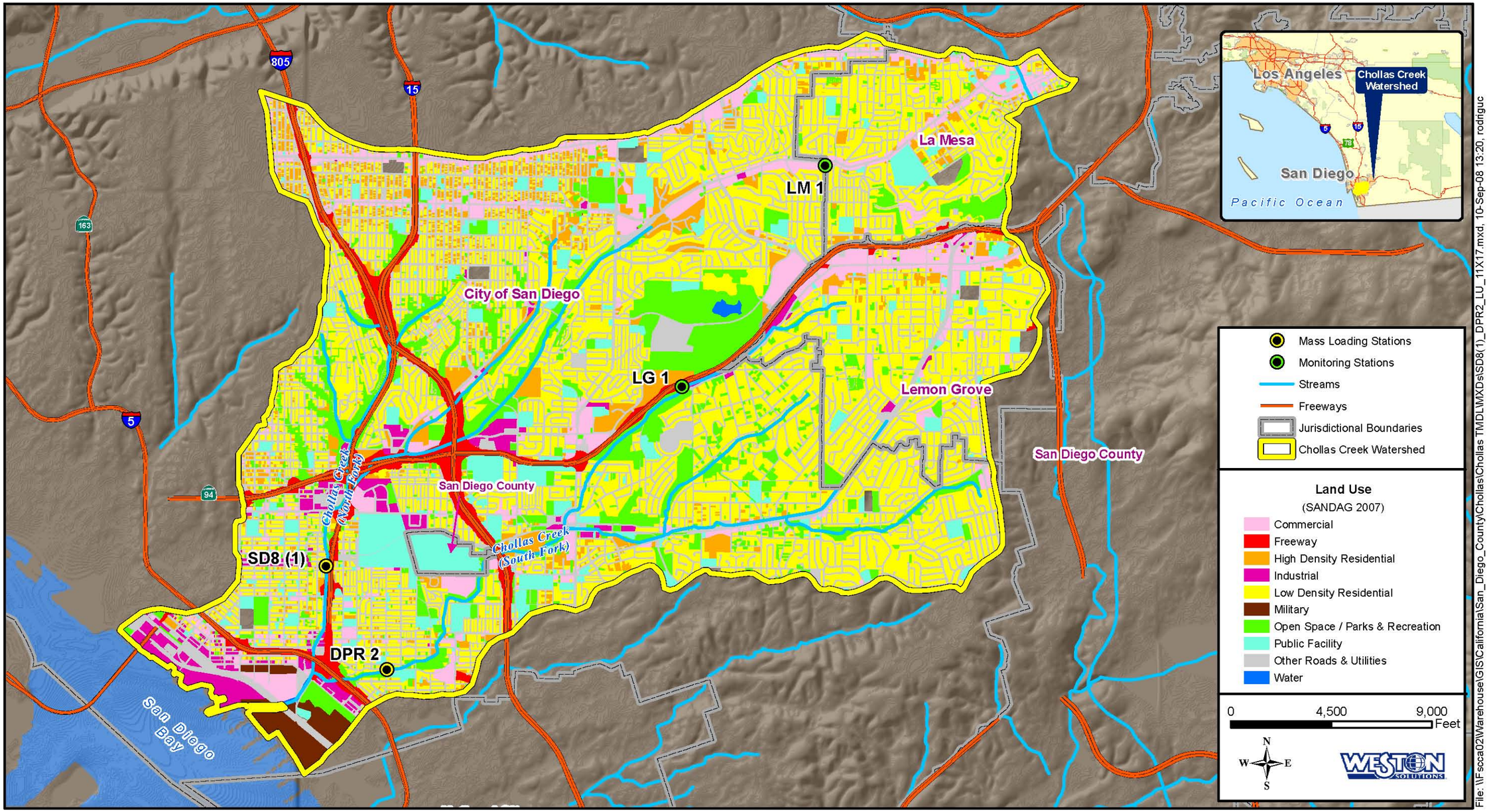

Figure 1-3. Chollas Creek Watershed Land Use

1.9 Rainfall Data

As previously mentioned, Order R9-2004-0277 requires monitoring at sites SD8(1) and DPR2 for the first and second rainfall events of the storm season after October 1 and the first rainfall event after February 1. Estimation of a representative storm event in San Diego County was based on a statistical evaluation of the long-term data records from the National Weather Service rain gauge located at Lindbergh Field. Statistically, the typical storm event at Lindbergh Field yields 0.19–0.57 inch of rain and lasts six to 12 hours. Since the depth and duration of a typical storm event varies depending on the monitoring station's location within San Diego County, storm events that were preceded by 72 hours of dry weather and were forecast to be greater than 0.10 inch were considered viable events for monitoring.

On the morning of Saturday, October 13, 2007, a storm system affected the Chollas Creek Watershed with rainfall of 0.20 inch and 0.22 inch at sites DPR2 and SD8(1), respectively, and between 0.12–0.15 inch at sites LM-1 and LG-1. Sampling was not performed for this storm due to quantitative precipitation forecasts (QPFs) obtained from the National Weather Service predicting less than 0.1 inch for the San Diego coastal and valley areas the day before rain occurred. This was the first storm event following October 1, 2007, which met the requirement for sampling under San Diego RWQCB Order No. R9-2004-0277. Significant flows were not recorded at either Site DPR2 or Site SD8(1). As such, this storm was not monitored. A letter explaining why the storm was not monitored was prepared and submitted to the City of San Diego (Appendix B). Additionally, the RWQCB was notified via email by the Regional Monitoring Workgroup Co-Chair (L. Busse, pers comm, 2007).

1.10 Rainfall Data 2007–2008

Rainfall events measured at Chollas Creek for the 2007–2008 Monitoring Season are shown on Table 1-4. Raindrops on Figure 1-4 indicate monitored storm events. Each monitored storm event was preceded by at least 72 hours of dry weather. A total of three storm events, occurring on November 30, 2007, December 7, 2007, and February 3, 2008, were monitored over the course of the 2007–2008 storm season. Rainfall totals for each monitored storm event as well as the seasonal rainfall totals for each sampling site are provided in Table 1-4. Daily rainfall totals for each sampling site are provided in Appendix C. North fork sampling locations received 11.62 inches of rain at LM-1 and 6.45 inches of rain at SD8(1). South fork sampling locations received 7.72 inches of rainfall at LG-1 and 8.35 inches of rainfall at DPR2. The rain gauge at SD8(1) was inoperable from January 23, 2008 to February 8, 2008, and therefore did not record any rainfall over that period of time.

Table 1-4. Rainfall Totals for Chollas Creek Sampling Sites

Storm Event Date	North Fork Sampling Sites		South Fork Sampling Sites	
	LM-1 (inches)	SD8(1) (inches)	LG-1 (inches)	DPR2 (inches)
11/30/07	1.31	0.96	1.11	0.86
12/07/07	0.41	0.39	0.50	0.41
02/03/08	0.33	0.39	0.68	0.39
2007–2008 Storm Season Total Rainfall	11.62	6.4	7.72	8.35

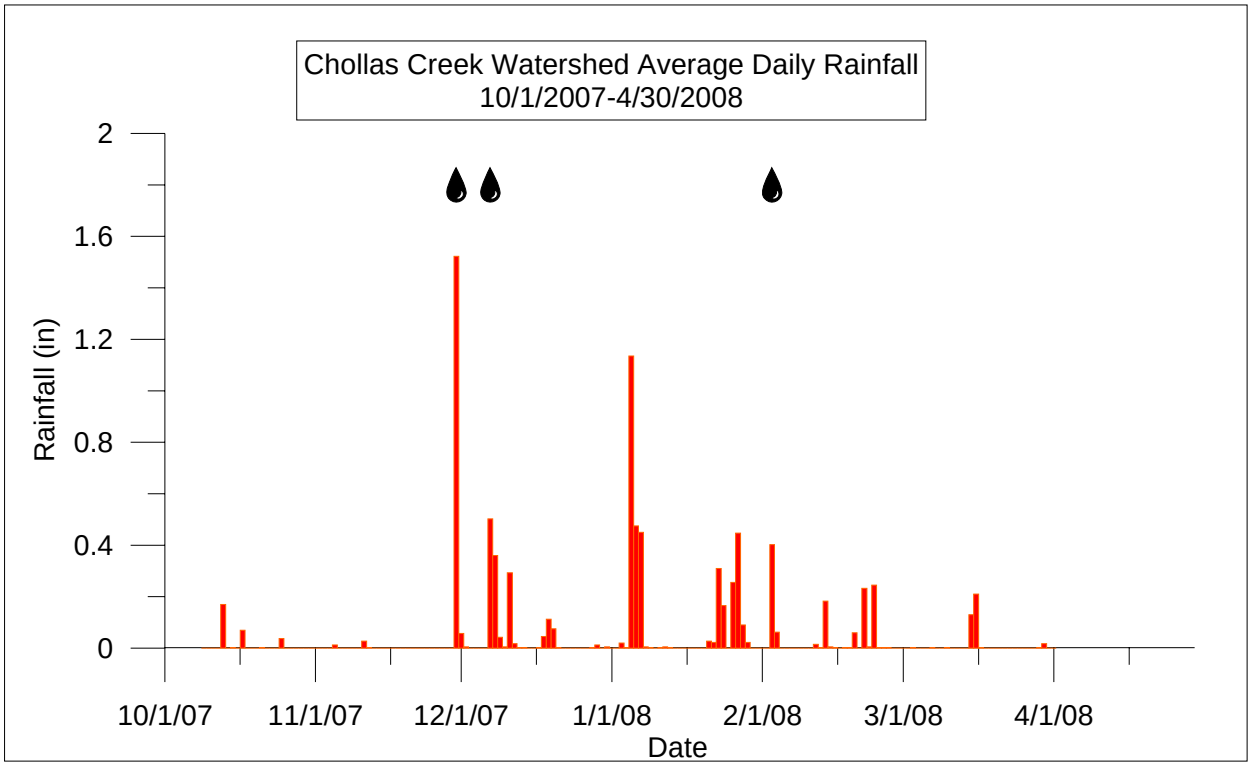

Raindrops indicate date of sample collection

Figure 1-4. 2007–2008 Average Rainfall Totals (inches) across the Chollas Creek Watershed

2.0 SAMPLING AND ANALYTICAL METHODS

The following subsections describe the sampling and analytical methods used by Weston Solutions. The City of La Mesa collected additional data at Site LM-1 during 2007-2008; sampling and analytical methods associated with the City of La Mesa's study are discussed in Appendix H.

2.1 Sampling Methods

Storm water runoff was collected using flow-weighted composite techniques over the duration of each storm event. Sample collection was terminated when the storm flow returned to within approximately 10% of the base flow condition, indicating the end of the precipitation event and the cessation of storm water flow.

2.2 Storm Water Quality Monitoring

Automated flow and sampling equipment were installed at each site to collect flow-weighted composite samples during storm events. American Sigma flowmeters with pressure transducers or bubblers were used to measure velocity and stage height. The flow sensors were installed on the channel bottom in the center of the channel. In the event that a flow sensor was rendered inoperable, meter tapes were used to measure stage height and slope of the main channel to determine velocity of the flow. During storm events, instream equipment damage is common at Site SD8(1) due to high velocity debris.

Using the data collected by the flowmeters, sample intervals were set to collect approximately 40 liters of water throughout the storm event. The sample intake point was located adjacent to the flowmeter, on the channel bottom in the center of the channel. American Sigma automated samplers were used to collect 1-L sample grabs at a flow dependent rate. The 1-L grab samples were composited into 20-L borosilicate glass sample bottles.

The automated sampler collects grab samples via a peristaltic pumping mechanism. Water samples are pumped through a Teflon intake device and Teflon tubing into a 20-L borosilicate glass sample bottle. Bottles were kept on ice during the storm event. Field crews maintained and replaced the sampling bottles as they filled to capacity. Multiple bottles are composited at Weston Solutions, Inc.'s (WESTON's®) facility and subsampled for delivery to the laboratory for chemistry and bioassay toxicity analyses.

Flow-weighted composite samples were collected and analyzed for the constituents listed on Table 2-1. Bioassay water samples were collected for use in acute and chronic toxicity tests using *C. dubia* and acute toxicity tests using *H. azteca*. Although RWQCB Order No. R9-2004-0277 did not require analysis of synthetic pyrethroids or bioassay testing of *H. azteca*, these analyses were added to the suite of tests being performed in this study as a response to observed shifts in pesticide use and in toxicity results as part of the regional monitoring conducted at Site SD8(1).

Grab samples were collected for those constituents that are not conducive to automated composite sampling. These constituents are pH, temperature, conductivity, and fecal indicator bacteria (Table 2-1). Grab samples were collected from the horizontal and vertical center of the channel, where possible.

A field data log was completed at each site (Appendix C). The field data log includes empirical observations of the site and water quality characteristics. Observations include parameters such as meteorological conditions at time of sampling and odor, color, and general turbidity of the runoff. Changes in the condition of vegetation as well as any observed erosion along the channel's side slopes were also noted on field data logs.

Table 2-1. Wet Weather Water Quality Analytical Parameters for Chollas Creek Sites LG-1, LM-1, DPR2, and SD8(1)

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature/light-protected)	Maximum Holding Time: Preparation/ Analysis
pH	N/A	N/A	Analyzed in field	N/A	N/A
Temperature	N/A	N/A	Analyzed in field	N/A	N/A
Conductivity	N/A	N/A	Analyzed in field	N/A	N/A
Total coliform	SM 9221 B, E	100 ml	Plastic	Store cool at <4ºC	Six hours
Fecal coliform	SM 9221 B, E	100 ml	Plastic	Store cool at <4ºC	Six hours
Enterococci	SM 9320	100 ml	Plastic	Store cool at <4ºC	Six hours
TSS	SM 2540D	1L	Plastic	Store Cool at <4ºC	Seven days
Total hardness	SM 2340-B	100 mL	Plastic	HNO_3	Six months
Nitrate (N)	SM 4500-NO_3	100 mL	Plastic or glass	Store Cool at <4ºC	48 hours
Nitrite (N)	SM 4500-NO_2	100 mL	Plastic or glass	Store Cool at <4ºC	48 hours
Total kjeldahl nitrogen (TKN)	EPA 351.3	500 mL	Amber glass	Acidify to <2 with H_2S0_4	28 days
Ammonia (N)	SM 4500-NH_3	250 mL	Plastic or glass	Acidify to <2 with H_2S0_4	28 days
TOC	EPA 415.1	250 mL	Clear glass	Acidify to <2 with H_2S0_4	28 days
Organophosphorus pesticides	EPA 625	2 L	Amber glass	Store Cool at <4ºC	Extraction – seven days; analysis – 40 days
Synthetic pyrethroids	EPA 625-NCI	2 L	Amber glass	Store Cool at <4ºC	Extraction – seven days; analysis – 40 days
Total and dissolved cadmium	EPA 200.8	1 L	Plastic	Store Cool at <4ºC	Six months
Total and dissolved copper	EPA 200.8	1 L	Plastic	Store Cool at <4ºC	Six months
Total and dissolved lead	EPA 200.8	1 L	Plastic	Store Cool at <4ºC	Six months
Total and dissolved zinc	EPA 200.8	1 L	Plastic	Store Cool at <4ºC	Six months
Acute toxicity *H. azteca*	EPA 821-R-02-012	10 L	10 L glass	Store Cool at <6ºC	36 hours
Acute toxicity *C. dubia*	EPA 821-R-02-012	10 L	10 L glass	Store Cool at <6ºC	36 hours
Chronic toxicity *C. dubia*	EPA 821-R-02-013	20 L	20 L glass	Store Cool at <6ºC	36 hours

2.3 Ambient Water Quality Monitoring

Automated flow and sampling equipment that were installed at each site for wet weather monitoring were also used to collect composite samples during DWM events. Sites LM-1, LG-1, and SD8(1) were sampled during the two DWM events. Site DPR2 was not sampled. For dry weather sampling at Site SD8(1), sand bags were placed in a horseshoe pattern around the sample intake point to ensure sufficient water depth at the sampling location. The sample pacing on the autosamplers was adjusted to allow for samples to be collected at regular intervals throughout the 24-hour sampling event based on flowmeter data from the previous 24 hours. The sample intake point was located adjacent to the flowmeter, on the channel bottom in the center of the channel. American Sigma automated samplers were used to collect 250-mL sample grabs at a flow dependent rate. The 250-mL grab samples were composited into 20-L borosilicate glass sample bottles.

Dry weather grab samples were collected in the same manner as wet weather grab samples. Flow-weighted composite samples were collected and analyzed for the constituents listed on Table 2-2. Bioassay water samples were collected under the Regional Monitoring Program at Site SD8(1) for tests with *H. azteca, C. dubia, and S. capricornutum*. A field data log was completed at each site (Appendix C). The field data log includes empirical observations of the site and water quality characteristics. Observations included meteorological conditions at the time of sampling and odor, color, and general turbidity of the runoff.

Table 2-2. Ambient Water Quality Analytical Parameters for Chollas Creek Sites LG-1, LM-1, and SD8(1)

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature/light-protected)	Maximum Holding Time: Preparation/ Analysis
pH	N/A	N/A	Analyzed in field	N/A	N/A
Temperature	N/A	N/A	Analyzed in field	N/A	N/A
Conductivity	N/A	N/A	Analyzed in field	N/A	N/A
Total coliform	SM 9221 B, E	100 mL	Plastic	Store cool at <4ºC	Six hours
Fecal coliform	SM 9221 B, E	100 mL	Plastic	Store cool at <4ºC	Six hours
Enterococci	SM 9320	100 mL	Plastic	Store cool at <4ºC	Six hours
TSS	SM 2540D	1 L	Plastic	Store cool at <4ºC	Seven days
Total hardness	SM 2340-B	100 mL	Plastic	HNO_3	Six months
Nitrate (N)	SM 4500-NO_3	100 mL	Plastic or glass	Store cool at <4ºC	48 hours
Nitrite (N)	SM 4500-NO_2	100 mL	Plastic or glass	Store cool at <4ºC	48 hours
TKN	EPA 351.3	500 mL	Amber glass	Acidify to <2 with H_2S0_4	28 days
Ammonia (N)	SM 4500-NH_3	250 mL	Plastic or glass	Acidify to <2 with H_2S0_4	28 days
TOC	EPA 415.1	250 mL	Clear glass	Acidify to <2 with H_2S0_4	28 days
Organophosphorus pesticides	EPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; analysis – 40 days

Table 2-2. Ambient Water Quality Analytical Parameters for Chollas Creek Sites LG-1, LM-1, and SD8(1)

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature/light-protected)	Maximum Holding Time: Preparation/ Analysis
Total and dissolved cadmium	EPA 200.8	1 L	Plastic	Store cool at <4ºC	Six months
Total and dissolved copper	EPA 200.8	1 L	Plastic	Store cool at <4ºC	Six months
Total and dissolved lead	EPA 200.8	1 L	Plastic	Store cool at <4ºC	Six months
Total and dissolved zinc	EPA 200.8	1 L	Plastic	Store cool at <4ºC	Six months
Acute toxicity *H. azteca* (Site SD8(1) only)	EPA 821-R-02-012	10 L	10 L glass	Store cool at <6ºC	36 hours
Chronic toxicity *C. dubia* (Site SD8(1) only)	EPA 821-R-02-013	10 L	10 L glass	Store cool at <6ºC	36 hours
Chronic Toxicity *S. capricornutum* (Site SD8(1) only)	EPA 821-R-02-013	10 L	10 L glass	Store cool at <6ºC	36 hours

2.4 Quality Assurance / Quality Control Procedures

Field measurements for pH, conductivity, and temperature were made using an Oakton CON10 pH/temperature/conductivity meter according to manufacturer specifications. Calibration of the instruments was conducted prior to each sampling event.

Quality assurance (QA) and quality control (QC) for sampling processes included proper collection of the samples to minimize the possibility of contamination. All samples were collected in clean, contaminant-free sample bottles. Field staff wore powder-free nitrile gloves at all times during sample collection. Sampling personnel were trained according to the field sampling SOPs. Additionally, the field staff was made aware of the significance of the project's detection limits and the requirement to avoid contamination of samples at all times. A temperature blank was used to ensure sample holding temperatures were maintained from sample collection to delivering to the laboratory.

2.5 Chain-of-Custody Procedures

Chain-of-custody (COC) procedures were used for all samples throughout the collection, transport, and analytical process. Samples were considered to be in custody if they were in the custodian's possession or view, retained in a secured place (under lock) with restricted access, or placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal. The principal documents used to identify samples and to document possession were COC records, field logbooks, and field tracking forms.

The COC procedures were initiated during sample collection. A COC record was provided with each sample or group of samples. Each person who had custody of the samples signed the form and ensured the samples were not left unattended unless properly secured. Documentation of sample handling and custody included the following:

- Sample identifier.
- Sample collection date and time.
- Any special notations on sample characteristics or analyses.
- Initials of the person collecting the sample.
- Date the sample was sent to the analytical laboratory.
- Shipping company and waybill information.

Completed COC forms were placed in a plastic envelope and kept inside the container with the samples. Once delivered to the analytical laboratory, the COC form was signed by the person receiving the samples. The condition of the samples (i.e., confirming all samples were accounted for and properly labeled, the temperature of the samples, and the integrity of the sample jars) was noted and recorded by the receiver. COC records were included in the final reports prepared by the analytical laboratories and are considered an integral part of the report.

3.0 MONITORING RESULTS AND ASSESSMENT

This section presents the water quality monitoring results for sites DPR2 and SD8(1) to satisfy the requirements of RWQCB Order No. R9-2004-0277 and also presents water quality monitoring results for sites LM-1 and LG-1 to help determine jurisdictional contributions to overall contaminant loads within Chollas Creek. Note that additional data collected by the City of La Mesa at Site LM-1 is presented in Appendix H. The criteria by which results have been assessed are presented in Section 3.1.

3.1 Water Quality Criteria

Water chemistry results will be compared to criteria from the following references to determine the magnitude of any impacts from storm water runoff to Chollas Creek:

- Water Quality Control Plan (RWQCB, 1994) for San Diego County.
- Title 40 of the Code of Federal Regulations (Part 131; Water Quality Standards) (USEPA, 2000a).
- The NPDES Storm Water Multi-Sector General Permit (USEPA, 2000b).
- Water quality criteria for Diazinon, Chlorpyrifos, and Malathion (CDFG, 2000).

Table 3-1 lists the constituents that were monitored during this project and their respective WQOs.

Table 3-1.Water Quality Objective Criteria for Analyzed Constituents

Constituent List	WQO Criteria	Water Quality Criteria Source
pH	6.5–9.0	Basin Plan (RWQCB, 1994)
Conductivity	–	–
Temperature	–	–
Total coliform	–	–
Fecal coliform	4,000 (REC 2)	Basin Plan (RWQCB, 1994)
Enterococci	151 (dry weather)	Basin Plan (RWQCB, 1994)
TOC	50 mg/L	Multi-Sector General Permit (USEPA, 2000b)
TSS	100 mg/L (wet weather); 58 mg/L (dry weather)	Multi-Sector General Permit (USEPA, 2000b), NSQD
Total and dissolved cadmium	(a)	40 CFR 131 (USEPA, 2000a)
Total and dissolved copper	(a)	40 CFR 131 (USEPA, 2000a)
Total and dissolved lead	(a)	40 CFR 131 (USEPA, 2000a)
Total and dissolved zinc	(a)	40 CFR 131 (USEPA, 2000a)
Hardness	–	
Diazinon	72 ng/L (acute exposure); 45 ng/L (chronic exposure)	Resolution No. R9-2002-0123(b)
Chlorpyrifos	20 ng/L	CDFG (2000)
Malathion	430 ng/L (acute); 100 ng/L (chronic)	CDFG (2000)
Ammonia (N)	*	USEPA water quality criteria
Nitrate	1 mg/L (wet weather); 10 mg/L (dry weather)	Basin Plan (RWQCB, 1994)
Nitrite	1 mg/L	Basin Plan (RWQCB, 1994)
TKN	–	–
Bifenthrin	9.3 ng/L	Anderson et al. in press (wet weather)
Cyfluthrin	344 ng/L	Wheelock et al. 2004 (wet weather)
Cypermethrin	683 ng/L	Wheelock et al. 2004 (wet weather)
Esfenvalerate	250 ng/L	Wheelock et al. 2004 (wet weather)
L-Cyhalothrin	200 ng/L	Wheelock et al. 2004 (wet weather)
Permethrin	21 ng/L	Anderson et al. in press (wet weather)
Acute toxicity *C. dubia*	LC_{50}	–
Acute toxicity *H. azteca*	100 no-observed-effect concentration (NOEC) (%)	RWQCB Order R9-2007-0001
Chronic toxicity *C. dubia*	100 NOEC (%)	RWQCB Order R9-2007-0001
Chronic toxicity *S. capricornutum*	100 NOEC (%)	RWQCB Order R9-2007-0001

(a) WQO for dissolved metal fractions are based on Total Hardness (as $CaCO_3$) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). Samples are compared to the acute (CMC) as storm events are typically representative of short-term conditions only.

(b) For the Chollas Creek TMDL (Resolution No. R9-2002-0123), the WLA is set at 72 ng/L for acute exposures and 45 ng/L for chronic exposures. The 45 ng/L chronic exposure is applied to samples collected using a flow-weighted composite method.

* WQO is based on CMC (salmonids absent) using pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

3.2 Wet Weather Sampling Summary

Samples of storm water runoff were collected from three storm events during the 2007–2008 Wet Weather Monitoring Season (November 30, 2007, December 7, 2007, and February 3, 2008). Hydrographs from monitored storm events at each of the four sampling locations are presented in Appendix D. Due to floating debris incapacitating the instream flow sensor at SD8(1) during the November 30, 2007 storm event, an estimation of flow for this event was calculated based upon manual depth measurements recorded throughout the storm's hydrograph. The rain gauge at SD8(1) became inoperable during the February 3, 2008 storm event. As a result, rainfall data from the DPR2 rain gauge were used for SD8(1) on February 3, 2008. Note that the City of La Mesa also collected samples from Site LM-1 during the November and December storm events; see Appendix H for details.

3.3 Wet Weather Sample Results and Discussion

Chemistry and bacterial results for the three monitored storm events are presented in tabular form in Appendix F. Sample results were compared to the WQO_ws shown in Table 3-1. Any values above the WQO_w in the chemistry and bacterial results tables were bolded and shaded. The City of La Mesa's data, compared to the same WQOs, is presented in Appendix H.

An integrated watershed assessment was used to address TMDLs for Diazinon, dissolved metals, pesticides, and bacteria. This integrated assessment involved chemical, bacterial, and toxicological testing during multiple wet weather sampling events at locations in the lower reaches of the north and south forks of Chollas Creek as part of the Regional Monitoring Program. Chemical and bacterial monitoring in the upper reaches of the north and south forks of Chollas Creek was included in special studies for regional jurisdictions.

Storm Water Chemistry

Sample results for general chemistry within the north fork of Chollas Creek were above the WQO_w for TSS only during the first monitoring event (November 30, 2007) at LM-1, and during the all three monitoring events at SD8(1). All other general chemistry results, with the exception of oil and grease at SD8(1) during the first monitoring event, were below their respective WQO. In the south fork of Chollas Creek, TSS was above the WQO during all three monitored storm events at the upstream monitoring Site (LG-1), while at DPR2, TSS was above the WQO only during the first monitored storm event.

On the north fork of Chollas Creek, dissolved copper and dissolved zinc were above the WQO_w during the first and second monitored storm events at LM-1 and during all events at SD8(1). The City of La Mesa's data for the first two storm events showed dissolved zinc below the WQO_w and dissolved copper above the WQO_w for both events (Appendix H). While dissolved copper was detected above the WQO_w at both south fork sites, dissolved zinc was detected above the WQO_w during the second monitoring event (December 7, 2007) only at LG-1 and was not detected above the WQO_w at DPR2 during any of the monitored storm events. The concentrations of detected total and dissolved metals during the 2007–2008 Monitoring Season were generally similar to previous historical values detected in the watershed.

The pesticides Diazinon and Malathion were detected above reporting limits during one or more storm events at both north fork (SD8(1)) and south fork (LG-1 and DPR-2) sampling locations. Malathion was detected during the November 30, 2007 storm event at site LM-1. With the exception of Site SD8(1) during the November 30, 2007 storm event, detected Diazinon concentrations were all below the chronic exposure WLA of 45 ng/L. During the November 30, 2007 storm event, the Diazinon value at SD8(1) was 46.6 ng/L, which is just above the chronic WLA but below the acute WLA. Although Diazinon concentrations have been detected historically throughout Chollas Creek, they have decreased in recent years since the pesticide was banned from commercial sale in 2005. All other analyzed organophosphate pesticides, with the exception of Tokuthion at SD8(1) and Dichlorvos at DPR-2 during the first storm event, were below detection limits.

Several synthetic pyrethroids were detected during all three monitored storm events at SD8(1) and during the first two monitored storm events at DPR2. Several values for Bifenthrin and Permethrin were above the published LC_{50}s for *H. azteca*. TIEs performed during the 2005–2006 Monitoring Season and the 2006–2007 Monitoring Season as part of the Regional Monitoring Program identified synthetic pyrethroids as the causative agent of toxicity to *H. azteca* (WESTON, 2007). Based on these findings, synthetic pyrethroids and toxicity to *H. azteca* were added to the analytical constituent list.

Bacteria

Fecal coliform concentrations were higher than the REC-2 WQO (4000 MPN/100 mL) in ten of 12 samples analyzed events sampled across all sites (Figure 3-1). Fecal coliform concentrations were higher at LM-1, SD8(1), and DPR2 during the first flush storm event of November 30, 2007, than during the second and third monitored storms. Currently, there are no wet weather WQOs for total coliforms or enterococci. In the north fork, fecal coliform results ranged from 2,300 MPN/100 mL (February 3, 2008) to 80,000 MPN/100 mL (November 30, 2007) at LM-1 and from 11,000 MPN/100 mL (December 7, 2007 and February 3, 2008) to 50,000 MPN/100 mL (November 30, 2007) at SD8(1). Fecal coliform concentrations were higher during the first storm event (November 30, 2007) at LM-1 and SD8(1) than during the two subsequent storm events. No clear pattern was evident in enterococcus concentrations among the upstream and downstream north fork sampling locations, because enterococcus concentrations varied less than one order of magnitude at LM-1 versus SD8(1) during each of the storm events. Similar levels of bacteria were reported from the City of La Mesa's monitoring (Appendix H). South fork enterococcus results at LG-1 and DPR2 were higher during the first storm event than during either of the subsequent storm events. Although total coliform concentrations were higher at DPR2 than at LG-1 for all storm events, upstream (LG-1) values remained within one order of magnitude of downstream (DPR2) values for the storm events of December 7, 2007 and February 3, 2008. Fecal coliform results ranged from 1,879 MPN/100 mL (November 30, 2007) to 30,000 MPN/100 mL (December 7, 2007) at LG-1 and from 13,000 MPN/100 mL (February 3, 2008) to 330,000 MPN/100 mL (November 30, 2007) at DPR2.

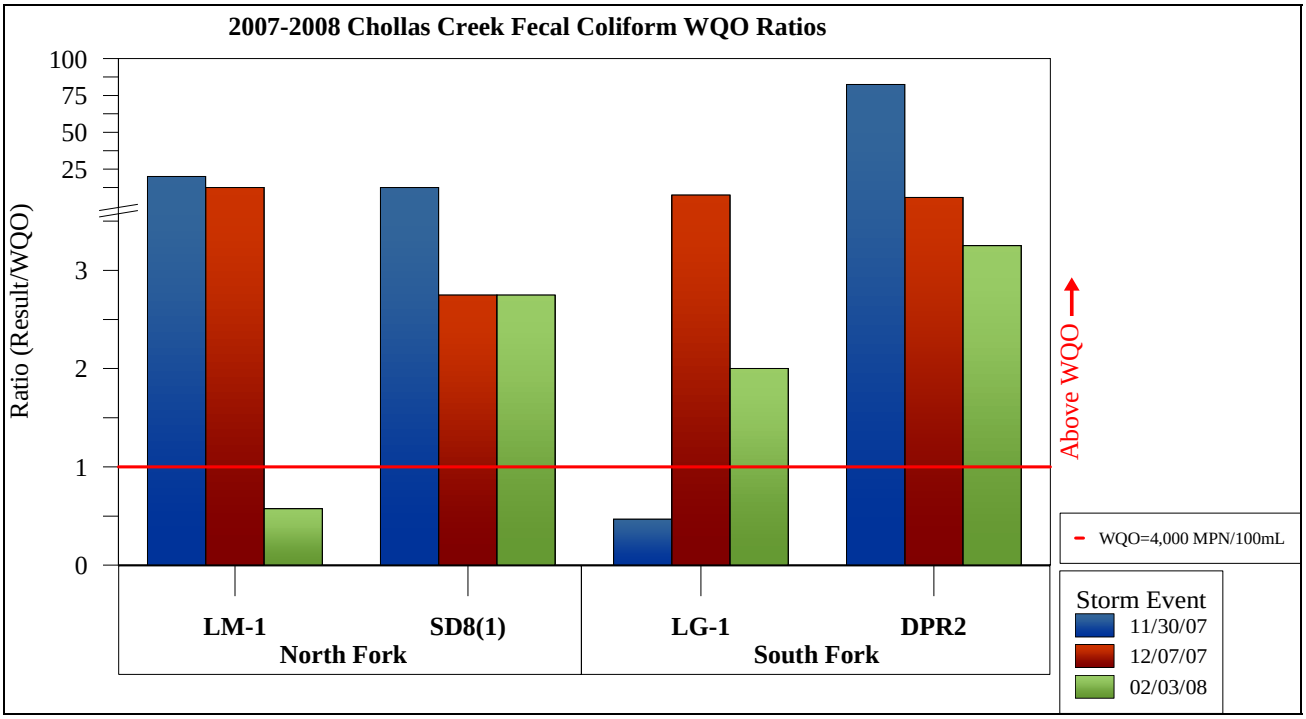

Figure 3-1. Fecal Coliform Water Quality Objective Ratios Across Four Chollas Creek Sites

Toxicity

Toxicity results are presented in Table 3-2 for *C. dubia*. Toxicity testing using *C. dubia* was performed on water from the north fork's downstream site (SD8(1)) and on water from the south fork's downstream site (DPR2) in compliance with RWQCB Order No. R9-2004-0277. Toxicity testing using *H. azteca* was added to the testing program as a result of a shift in pesticide use from Diazinon to synthetic pyrethroids and is presented in Table 3-3. Toxic effects to *H. azteca* and other freshwater and marine invertebrates have been observed in exposures to synthetic pyrethroids (WESTON, 2006; Anderson et al., in press).

Toxicity to *C. dubia* was not observed in either acute or chronic exposures to water collected at sites SD8(1) or DPR2 during the 2007–2008 Monitoring Season. Although low concentrations of the pesticides Diazinon and Malathion were detected at SD8(1), LG-1, and DPR2, they were below the effects threshold value of 250 ng/L that has been observed to cause acute toxicity to *C. dubia* (WESTON, 2007).

Acute toxicity to *H. azteca* was observed at all sites. Water collected from the site tributary to the north fork of Chollas Creek had observed toxicity to *H. azteca* at the upstream site (LM-1) and at the downstream site in the north fork (SD8(1)) on each of the three wet weather monitoring dates. At the upstream monitoring site (LM-1) the water's toxicity was greatest on December 7, 2007, while at the downstream site (SD8(1)) the water's toxicity was greatest on November 30, 2007. Higher toxicity to *H. azteca* during the December 7, 2007 event at Site LM-1 and during the November 30, 2007 event at SD8(1) corresponds to the dates in which the highest concentrations of Malathion and synthetic pyrethroids (Bifenthrin and Permethrin) were measured at each of the sites, respectively. In the south fork of Chollas Creek, toxicity to *H.*

azteca was observed at the upstream site (LG-1) on November 30, 2007, (no-observed-effect concentration (NOEC)= 25%) and at the downstream site (DPR2) on November 30, 2007 and February 3, 2008 (NOEC= 50% on both dates).

Table 3-2. 2007–2008 Chollas Creek Wet Weather Biological Toxicity Results for *Ceriodaphnia dubia*

Test	Reporting Value	Unit	North Fork SD8(1)			South Fork DPR2		
			11/30/2007	12/07/2007	02/03/2008	11/30/2007	12/07/2007	02/03/2008
96-hour acute toxicity (*C. dubia*)	Mean % survival for control	%	100	100	100	90	100	100
	% survival in 100% concentration	%	100	100	100	100	100	100
	LC_{50}	%	>100	>100	>100	>100	>100	>100
	LOEC	%	>100	>100	>100	>100	>100	>100
	TUa		0	0	0	0	0	0
	LT_{50}	Hours	>96	>96	>96	>96	>96	>96
Toxicity Observed			No	No	No	No	No	No
7-day chronic toxicity (*C. dubia*)	Mean % survival for control	%	100	100	100	100	100	100
	% survival in 100% concentration	%	100	100	100	100	100	100
	LC_{50} (survival)	%	>100	>100	>100	>100	>100	>100
	NOEC (survival)	%	100	100	100	100	100	100
	LOEC (survival)	%	>100	>100	>100	>100	>100	>100
	TUc (survival)		1	1	1	1	1	1
	LT_{50}	Hours	>168	>168	>168	>168	>168	>168
	NOEC (reproduction)	%	100	100	100	100	100	100
	LOEC (reproduction)	%	>100	>100	>100	>100	>100	>100
	TUc (reproduction)		1	1	1	1	1	1
Toxicity Observed			No	No	No	No	No	No

Table 3-3. Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	North Fork						South Fork					
			LM-1 (upstream site)			SD8(1) (downstream site)			LG-1 (upstream site)			DPR2 (downstream site)		
			11/30/2007	12/07/2007	02/03/2008	11/30/2007	12/07/2007	02/03/2008	11/30/2007	12/07/2007	02/03/2008	11/30/2007	12/07/2007	02/03/2008
96-hour acute toxicity (*H. azteca*)	Mean % survival for control	%	100	95	100	100	95	100	100	95	100	100	95	100
	NOEC	%	**25**	**6.25**	**50**	**12.5**	**25**	**6.25**	**25**	100	100	**50**	100	**50**
	LC_{50}	%	**90.0**	**12.5**	**81.3**	**46.9**	**63.4**	>100	**68.8**	>100	>100	>100	>100	>100
	LOEC	%	**50**	**14.3**	100	**25**	**50**	**12.5**	**50**	>100	>100	100	>100	100
	TU_a		**1.11**	**7.00**	**1.07**	**2.13**	**1.58**	0.94	**1.45**	0.81	0.23	0.93	0.43	0.59
Toxicity Observed			**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No	No	**Yes**	No	**Yes**

Bold and/or shaded values are above the WQO.

3.4 Ambient Water Quality Sampling Summary

Samples of urban runoff were collected from two ambient weather sampling events in the spring of 2008. Sampling events were 24 hours in duration and occurred on March 5, 2008 and June 3, 2008. Composite samples of urban runoff were flow-weighted based on the previous day's flow and were collected at regular intervals over a 24-hour period. Grab samples were collected for constituents that are not amenable to composite sampling. Ambient sampling was performed at SD8(1) in the lower north fork of Chollas Creek and at LM-1 and LG-1 in the upper reaches of the drainage areas of the north and south forks of Chollas Creek, respectively.

3.5 Ambient Water Quality Sample Results and Discussion

Chemistry and bacterial results for the two ambient weather events are presented in tabular form in Appendix D. Sample results were compared to WQO_as shown in Table 3-1. Any values above WQO_as in the chemistry and bacterial results tables in Appendix C were bolded and shaded.

Chemistry

Ambient weather sample results for general chemistry and field measurements within the north fork of Chollas Creek were above the oil and grease WQO_a on March 5, 2008, at Site SD8(1) and were above the pH WQO_a on June 3, 2008. All other general chemistry and field measurement results on north fork sampling locations were below their respective WQO_a. At the south fork Site LG-1, all general chemistry and field measurement results were below WQO_a.

On the north fork of Chollas Creek, dissolved copper was detected above the WQO during the first and second dry weather events at SD8(1). At Site LM-1, upstream of SD8(1), dissolved copper concentrations were below the WQO_a. No metals concentrations were above the WQO_a at the south fork Site LG-1 during either dry weather sampling event.

No pesticides were detected in dry weather samples at any of the sampling locations. Analysis of synthetic pyrethroids was not performed on dry weather samples at Site SD8(1).

Bacteria

Fecal coliform concentrations were higher than the Basin Plan REC-2 WQO_a of 4,000 MPN/100 mL at SD8(1) on March 5, 2008. Enterococcus concentrations were above the WQO_a of 151 MPN/100 mL at all three monitored sites on March 5, 2008, and at LM-1 and LG-1 on June 3, 2008. Currently, there are no WQO_as for total coliforms. In the north fork, total coliform results were higher at SD8(1) than at LM-1 or LG-1 during both sampling events. Bacterial concentrations of fecal coliforms, enterococci, and total coliforms at SD8(1) during the March 5, 2008 sampling event were between one and two orders of magnitude higher than bacterial concentrations at LG-1 or LM-1. During the sampling event on June 5, 2008, bacterial concentrations of enterococcus and fecal coliform in water collected from LM-1 were approximately one order of magnitude higher than those of SD8(1) or LG-1.

Toxicity

Toxicity testing using *C. dubia*, *H. azteca*, and *S. capricornutum* was performed on ambient weather water from SD8(1) in compliance with RWQCB Order No. R9-2007-0001. Toxicity from ambient weather water samples collected on March 5, 2008, was observed to each of the three test species (*H. azteca*, *C. dubia*, and *S. capricornutum*) (Table 3-4, Table 3-5, and Table 3-6).

Toxicity to *C. dubia* was observed in samples collected during the March sampling event, but was not observed in samples collected during the June sampling event. Similarly, toxicity to *H. azteca* and *S. capricornutum* was also observed at SD8(1) during the March sampling event (NOEC= 12.5% and <6.25%, respectively; LC_{50}= 39.2% and IC_{50}= >100%, respectively). Water chemistry results from the March ambient event detected oil and grease levels and dissolved copper concentrations above WQO_as for these constituents. No pesticides were detected during the March or June sampling events at SD8(1).

Table 3-4. Biological Toxicity Results for *Ceriodaphnia dubia*

Test	Reporting Value	Unit	SD8(1)	
			03/04/2008	06/03/2008
96-hour acute toxicity (*C. dubia*)	Mean % survival for control	%	90	100
	% survival in 100% concentration	%	**30**	100
	LC_{50}	%	**86.4**	>100
	LOEC	%	100	>100
	TUa		**1.16**	0
	LT_{50}	Hours	66	>96
Toxicity Observed			**Yes**	No
7-day chronic toxicity (*C. dubia*)	Mean % survival for control	%	90	100
	% survival in 100% concentration	%	**30**	100
	LC_{50} (survival)	%	**83.2**	>100
	NOEC (survival)	%	**50**	100
	LOEC (survival)	%	100	>100
	TUc (survival)		**2**	1
	LT_{50}	Hours		
	NOEC (reproduction)	%	**25**	100
	LOEC (reproduction)	%	**50**	>100
	TUc (reproduction)		**4**	1
Toxicity Observed			**Yes**	**No**

Bold and/or shaded values are above the WQO.

Table 3-5. Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	SD8(1)	
			03/04/2008	06/03/2008
96-hour acute toxicity (*H. azteca*)	Mean % survival for control	%	92.5	100
	NOEC	%	**12.5**	100
	LC_{50}	%	**39.2**	>100
	LOEC	%	**25**	>100
	TU_a		**2.55**	0
Toxicity Observed			**Yes**	**No**

Bold and/or shaded values are above the WQO.

Table 3-6. Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	SD8(1)	
			03/04/2008	06/03/2008
96-hour chronic toxicity (*S. capricornutum*)	NOEC	%	**<6.25**	100
	IC_{50}	%	**>100**	>100
	LOEC	%	**6.25**	>100
	TU_c		**>16**	1
Toxicity Observed			**Yes**	**No**

Bold and/or shaded values are above the WQO.

3.5.1 Special Studies

In addition to the monitoring required by the order, the City of San Diego conducted additional studies to assess sources of pollutants in the watershed. These studies are directly applicable to the Chollas Creek dissolved metals TMDLs. Final reports from these studies will be submitted upon completion.

3.5.1.1 City of San Diego Aggressive Best Management Practices Effectiveness Phase I—Street Sweeping Study

The City of San Diego is conducting an ongoing BMP effectiveness study as part of its 5-Year Strategic Plan to determine the most effective methods for reducing contaminant loads to watersheds through targeted, aggressive street sweeping.

The study's key questions are:

1. Which street sweeping machine is most effective in removing contaminants of concern, mechanical, regenerative air, or vacuum?
2. What frequency of street sweeping is most effective for debris removal, and how can the frequency be optimized?
3. What impact does street sweeping have on contaminants of concern in runoff?

To answer the key study questions, street sweeping routes in the La Jolla Watershed, the Mission Bay Watershed, and the Chollas Creek Watershed were targeted. Debris samples were collected from mechanical sweeping and analyzed for constituents of concern, weight, and trash type. Samples collected from regenerative and vacuum sweepers were compared to mechanical debris samples. Street sweeping frequency was analyzed using sample collection and analysis to determine the most effective frequency for debris removal.

Preliminary findings of the study are:

- Swept debris is predominantly comprised of sediment and green waste, while the major trash source is cigarette butts and food packaging.
- Grain size analysis indicates silt and fine sand constitutes the majority of particulates collected on routes within the Chollas Creek Subwatershed.
- Low concentrations of synthetic pyrethroids (Bifenthrin, Cypermethrin, and Permethrin) were detected in debris collected from Logan Heights, residential Tecolote, and all Chollas routes.
- The pesticide Chlorpyrifos was detected in debris collected from residential areas in Tecolote.
- Zinc was detected in concentrations five to ten times higher than copper or lead concentrations.
- Vacuum-assisted sweepers remove higher loads of street debris and may be more effective in removal of dissolved metals than other models of sweepers. Vacuum-assisted sweepers were also effective in removing road hydrocarbons.

3.5.1.2 City of San Diego Aerial Deposition Study—Phase II

The City of San Diego conducted a Phase II aerial deposition study to determine if fallout from aerial deposition represents a significant pathway for metals pollutant loading in several waterways. The 2007–2008 Phase II study looked to address questions that were not answered in the initial (Phase I) aerial deposition study. Study questions for Phase II were:

1. What is the annual aerial deposition rate in the high loading areas identified in the initial dry weather aerial deposition study?
2. What is the wet weather aerial deposition rate at the SD8(1) location?
3. What is the solubility of copper, lead, and zinc in atmospheric deposition particles during dry weather and wet weather conditions?
4. What is the direct aerial deposition rate of metals in the La Jolla ASBS?

Southern sampling locations, located in the vicinity of the Pueblo San Diego Watershed, are shown on Figure 3-2.

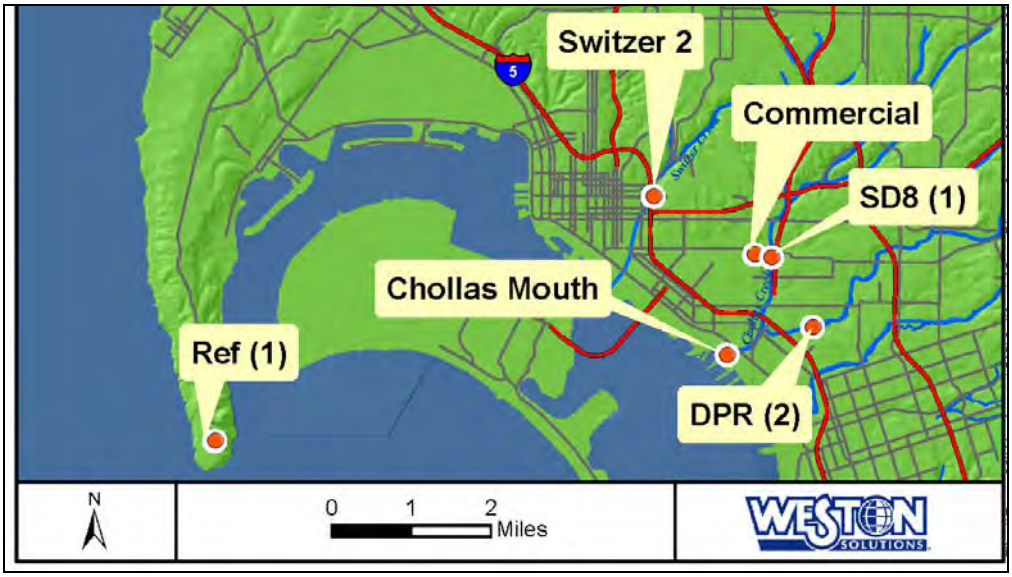

Figure 3-2. Southern Aerial Deposition Sample Locations

Preliminary results of the City of San Diego Aerial Deposition Study—Phase II were:

- SD8(1) and the Chollas mouth sites had the highest mean deposition rates of copper (59.2 µg/m^2/day and 54.9 µg/m^2/day, respectively), while the Commercial Site had the highest deposition rates for lead and zinc (35.2 µg/m^2/day and 258 µg/m^2/day, respectively), which could be indicative of the increased industrial and commercial activities in the area (Figure 3-3, Figure 3-4, and Figure 3-5 respectively).
- Santa Ana winds and local wildfires may cause significantly higher deposition rates within all areas of the City of San Diego as a result ash fallout and higher re-suspension rates.
- Wet weather deposition rates are low but appear to be a contributing factor in wet weather exceedances of dissolved copper and dissolved zinc in Chollas Creek based on the low compliance levels set by the CTR. Additionally, wet weather deposition of copper and zinc may be more influential for Chollas Creek than studies from other regions have previously indicated.
- Indirect aerial deposition particulates account for the majority of the copper and zinc, and to a lesser degree lead, that is found in storm water runoff. Copper and lead were found to have relatively low solubilities in their freshly deposited state (11% and 2.5%, respectively were the highest solubilities measured), while zinc solubility was considerably higher (88% of the total zinc concentration).

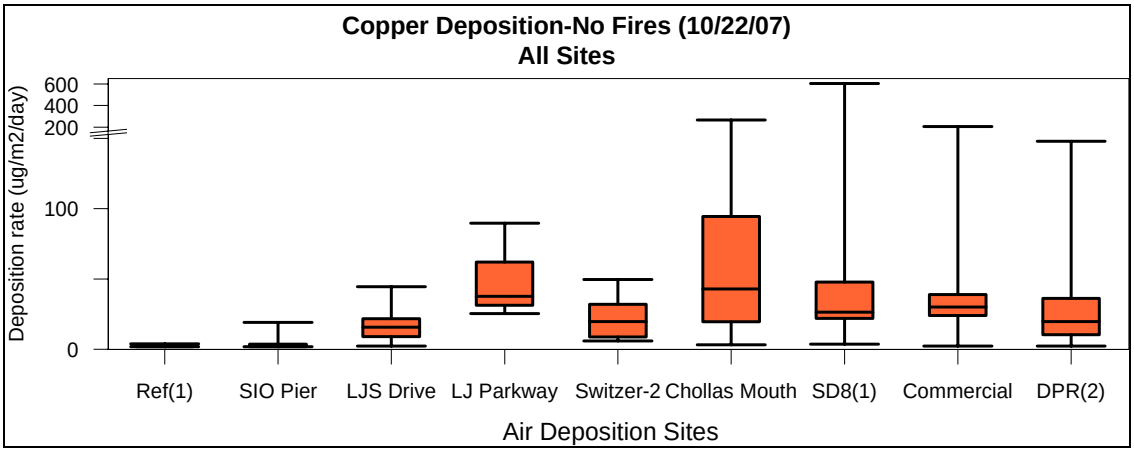

Figure 3-3. Box and Whisker Plots of Copper Deposition Rates for September 2007–May 2008 (fire event excluded)

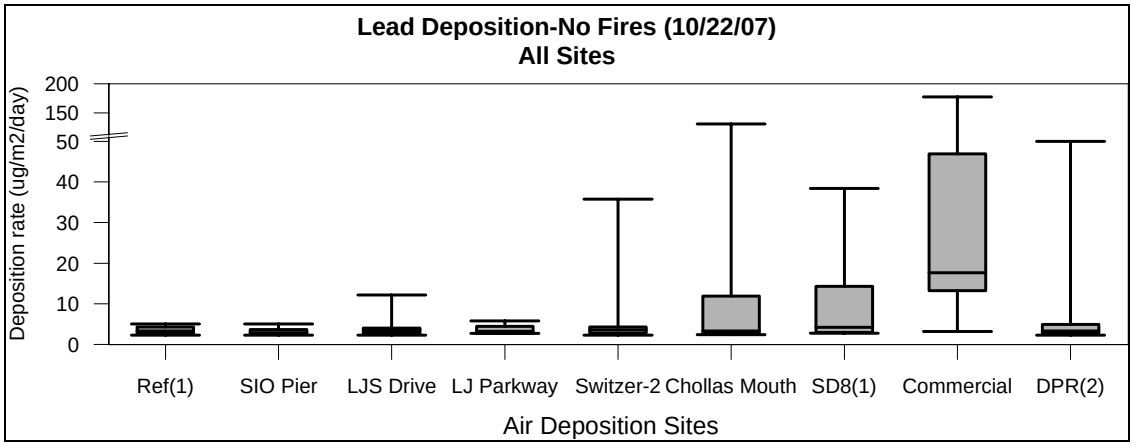

Figure 3-4. Box and Whisker Plots of Lead Deposition Rates for September 2007–May 2008 (fire event excluded)

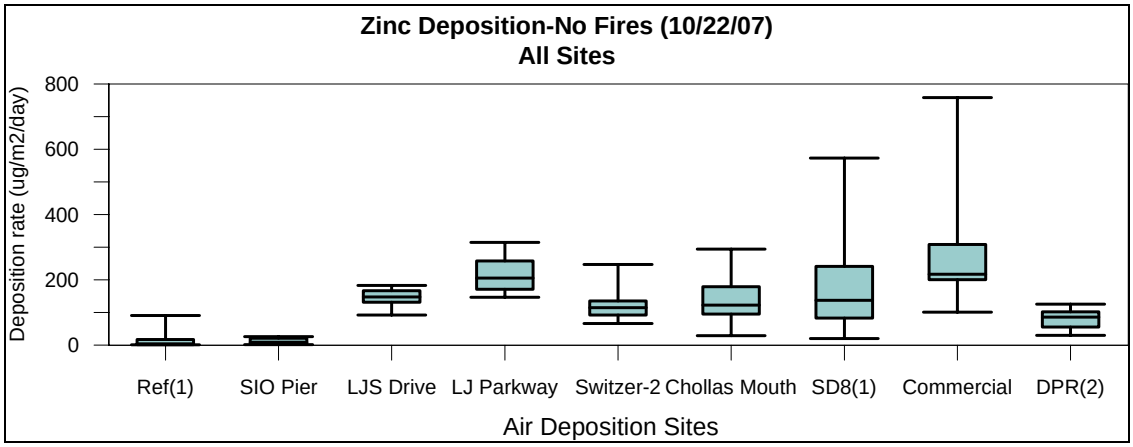

Figure 3-5. Box and Whisker Plots of Zinc Deposition Rates for September 2007–May 2008 (fire event excluded)

3.6 Historical Data and Trend Analysis

Historical data have been collected at Site SD8(1) since 1994. Using the long-term data set, a non-parametric trend analysis was conducted using the Mann-Kendall trend test to evaluate the presence or absence of significant trends using available monitoring data. The Mann-Kendall trend analysis was also completed for the three years of data collected at DPR2. This trend test is often employed for analysis of environmental time series data. The test does not assume any single distribution for the data being tested, which is an advantage when analyzing environmental data. The test does not incorporate magnitude, but instead calculates the number of positive and negative differences between samples. The number of positive and negative differences is summed to calculate the S-statistic, which is compared to a table value to determine significance. Scatterplots with significant trends are shown on Figure 3-6 for DPR2 and Figure 3-7 for SD8(1). Because only one year of ambient weather data has been collected at the Chollas Creek MLS, long-term ambient weather trends could not be analyzed.

Only those constituents with significant trends are shown. At DPR2, significantly decreasing trends were noted for Chlorpyrifos and Diazinon. There were no significantly increasing trends at this site. At SD8(1), significantly increasing trends were noted for total copper, total zinc, and toxicity to *H. azteca*. Significantly decreasing trends were noted only for nitrate. All scatterplots from sites DPR2 and SD8(1) can be found in Appendix E. A table of trend results for each site, including P-values, is also included in Appendix E.

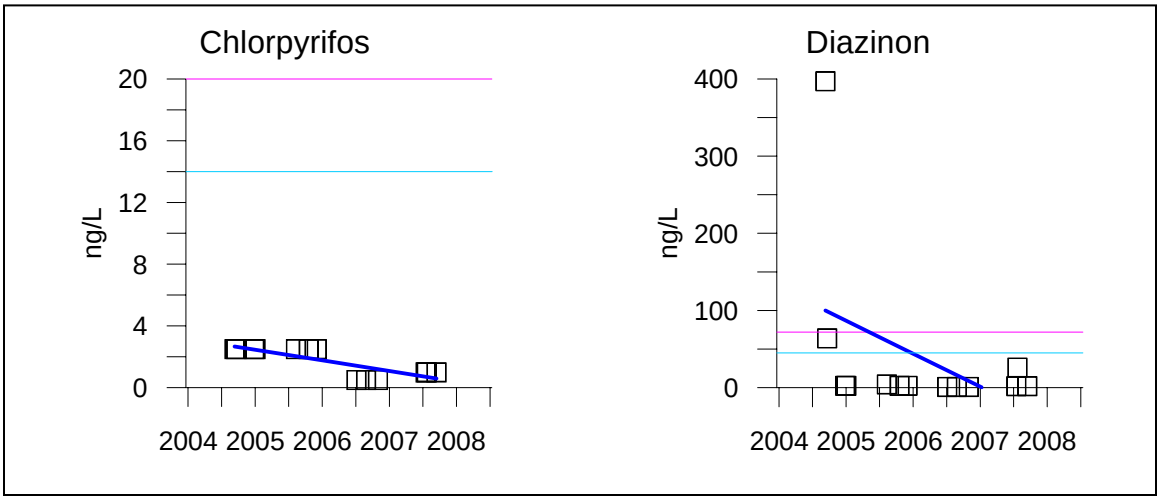

Figure 3-6. Scatterplots of Constituents with Significant Mann-Kendall Trends at Site DPR2

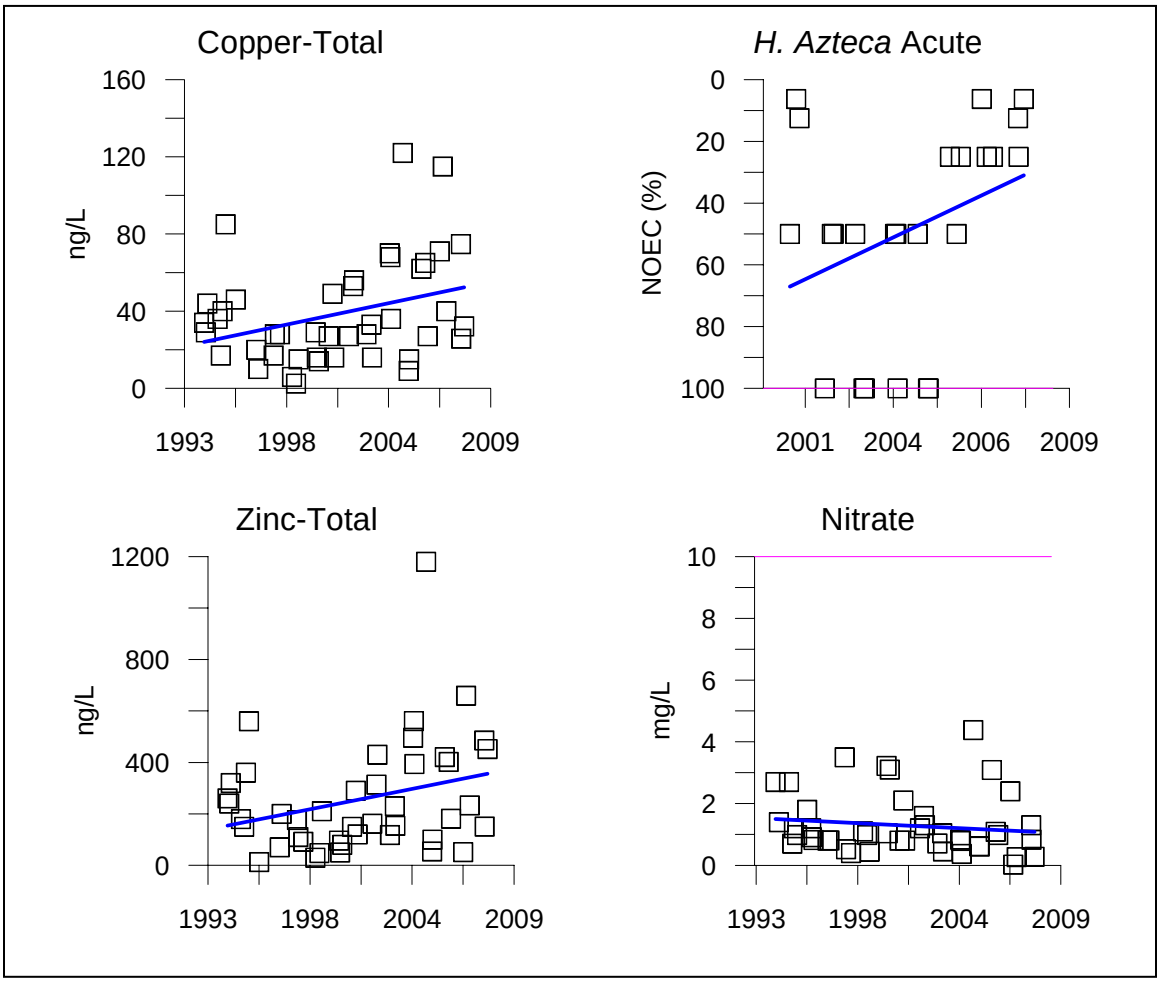

Figure 3-7. Scatterplots of Constituents with Significant Mann-Kendall Trends at Site SD8(1)

For the conventional constituents, a significant trend for nitrate was noted at SD8(1). Nitrate shows a significantly decreasing trend (p=-0.029). There was also a significantly decreasing trend for *H. azteca* survival. Ash fallout from the wildfires that occurred in Fall 2007 within the San Diego Bay WMA drainage area may have influenced water quality results measured during that year's monitoring.

Trend analyses of the monitoring results for metals indicate significantly increasing trends for total copper (p=0.028) and total zinc (p=0.006) for the period 1994-2008 (Figure 3-7). Although there are not presently significant trends for dissolved copper or dissolved zinc, the observed increasing trends for total copper and total zinc may present the need for future management actions in compliance with the TMDL requirements for the mouth of Chollas Creek. Waterborne metals are typically closely correlated with suspended sediment. Consequently, increases in TSS and turbidity may be tied to the observed increasing trends for total copper and total zinc. Future management actions targeting TSS reduction within the Pueblo San Diego Hydrologic Unit may have an ancillary effect in also reducing metal concentrations within the Chollas Creek water column.

The historical Diazinon concentrations observed at sites SD8(1) and DPR2, including the United States Environmental Protection Agency (USEPA) restriction dates, are presented on Figure 3-8 and Figure 3-9. Sampling was conducted at Site DPR2 from 2000–2001 as part of a Department of Pesticide Regulation study and in late 2004 as part of the monitoring and reporting requirements of RWQCB Order R9-2004-0277.

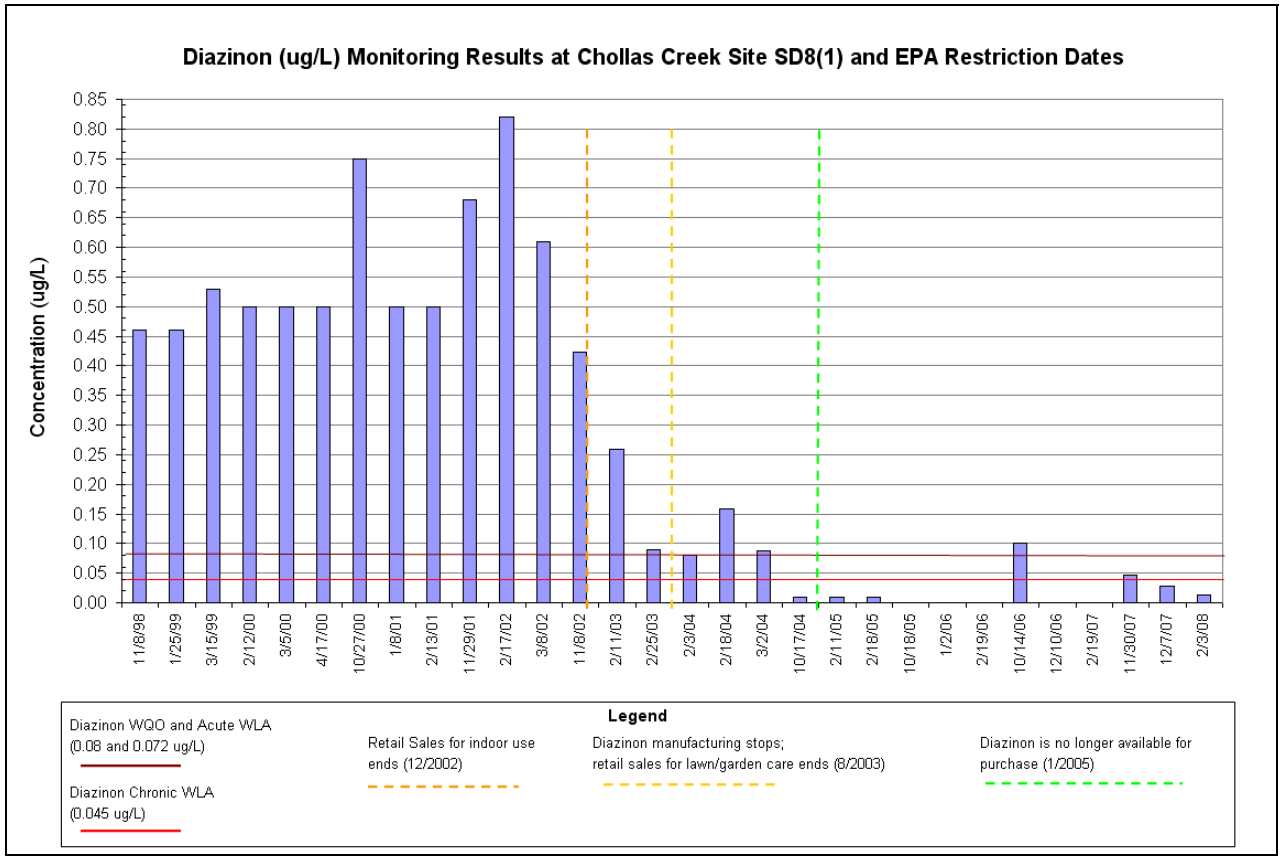

Figure 3-8. Historical Diazinon Concentrations at Site SD8(1) with Restriction Dates

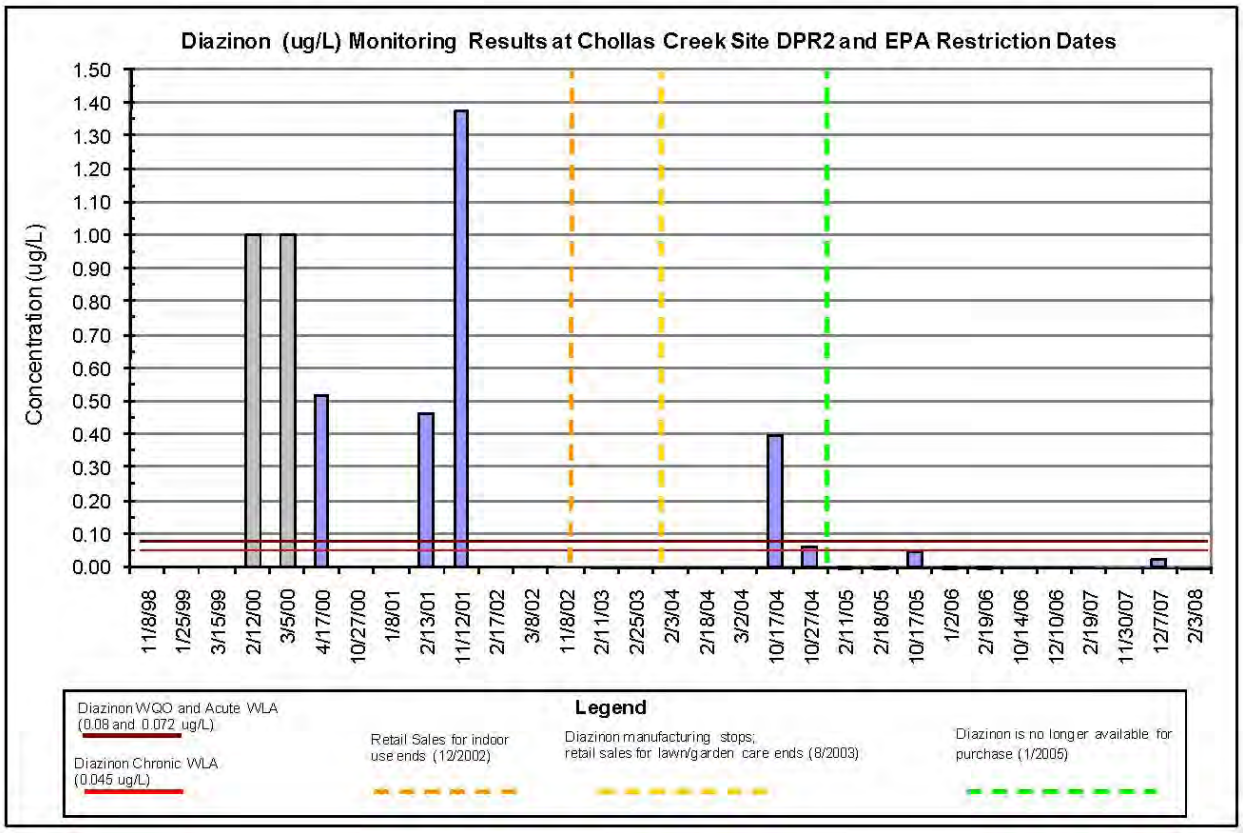

Figure 3-9. Historical Diazinon Concentrations at Site DPR2 with Restriction Dates

For ease of comparison to the hardness-based WQO, dissolved metals results were divided by their respective acute CMC WQO and are presented in Figure 3-10 and Figure 3-11. These figures present the magnitude to which the results are above or below the acute WQO and also shows the mean, upper 25th percentile, and lower 25th percentile of the historical data (in gray). Hardness-based acute WQOs for dissolved metals were calculated for each sampling site during each monitoring event in the current sampling year (2007–2008). Averages of the acute WQOs for dissolved copper, dissolved lead, and dissolved zinc were used in Figure 3-10 and Figure 3-11. Although dissolved cadmium concentrations were also measured, they were not detected during any of the three storm events and, therefore, were not included in Figure 3-10 and Figure 3-11. The average acute WQO ratios for SD8(1) spans the time period of 2001–2008, while the acute WQO ratios for DPR2 spans the time period of 2004–2008. The average acute WQO ratios for LG-1 and LM-1 span the time period of 2006–2008. With the exception of dissolved lead, which was low in relation to the acute WQO across all storm events and all sites, there was not a clear relationship between upstream and downstream dissolved metals concentrations in either the north fork or south fork of Chollas Creek. For some storm events, dissolved copper and dissolved zinc were higher in the upper watershed sampling locations (LG-1 and LM-1) than at the base of the watershed (DPR2 and SD8(1)), while for other storm events, the opposite was true.

North Fork Metals WQO Ratios

Dissolved copper was above the acute WQO during each of the monitored storm events at SD8(1) (Figure 3-10). Upstream from SD8(1), at LM-1, the dissolved copper concentration was above the acute WQO during the first two storm events and peaked at approximately 4.5 times the acute WQO during the storm event of December 7, 2007. Dissolved lead was below the acute WQO at both north fork sampling locations for all three storm events, while dissolved zinc concentrations at LM-1 were above the acute WQO during the storm events of November 30, 2007 and December 7, 2007, and at SD8(1) during the November 30, 2007 storm event. City of La Mesa data for two storm events show no acute WQO exceedances for dissolved zinc and two exceedances of comparatively small magnitude for dissolved copper (Appendix H).

South Fork Metals WQO Ratios

Dissolved copper concentrations at LG-1 were above the acute WQO during the November 30, 2007 and February 3, 2008 storm events, while dissolved zinc was above the acute WQO during the storm of February 3, 2008 only (Figure 3-11). Downstream of LG-1, at DPR2, dissolved copper was above the acute WQO during all three monitored storm events, while dissolved lead and dissolved zinc concentrations were below the acute WQO.

The Chollas Creek dissolved metals TMDL sets the numeric targets equal to the CTR WQO. The CTR is the most current, conservative WQO for dissolved copper, lead, and zinc in fresh water. The CTR WQOs for dissolved cadmium, copper, lead, and zinc are comprised of hardness-based equations that vary depending on sample hardness concentrations. The Chollas Subwatershed is unique in that it has significantly lower hardness concentrations, and therefore lower dissolved metals WQOs, than other watersheds in San Diego County. The historical mean wet weather hardness concentration at the Chollas Creek MLS is 79 mg $CaCO_3$/L compared to other watersheds where the mean wet weather hardness concentrations are approximately 260 mg $CaCO_3$/L. As a result of the low hardness values, it is more likely that slightly elevated wet weather monitoring results for dissolved metals will exceed the CTR WQO.

USEPA has provided guidance concerning a procedure that may be used to derive regional aquatic-life criterion, such as the CTR allows for site-specific criterion to be developed for metals. The indicator species procedure is based on the assumption that characteristics of site specific water may influence the bioavailability and toxicity of a pollutant. As part of the procedure, acute toxicity in site water and laboratory water is determined in concurrent toxicity tests. The water effects ratio (WER) (site water to laboratory water toxicity values) would subject the current dissolved metals WQO to a criteria adjustment factor that accounts for the effect of site-specific water characteristics on pollutant bioavailability and toxicity to aquatic life. In Chollas Creek, a WER would likely raise the WQO above the concentrations typically observed for dissolved metals in storm water. This procedure has been used in the Calleguas Creek Watershed resulting in a WER ranging from 1.51 during dry weather to 3.69 during wet weather conditions (LWA, 2006). Based on the magnitudes of exceedance presented on Figure 3-10 and Figure 3-11, Chollas Creek would benefit from the development of a WER for the north and south forks of Chollas Creek.

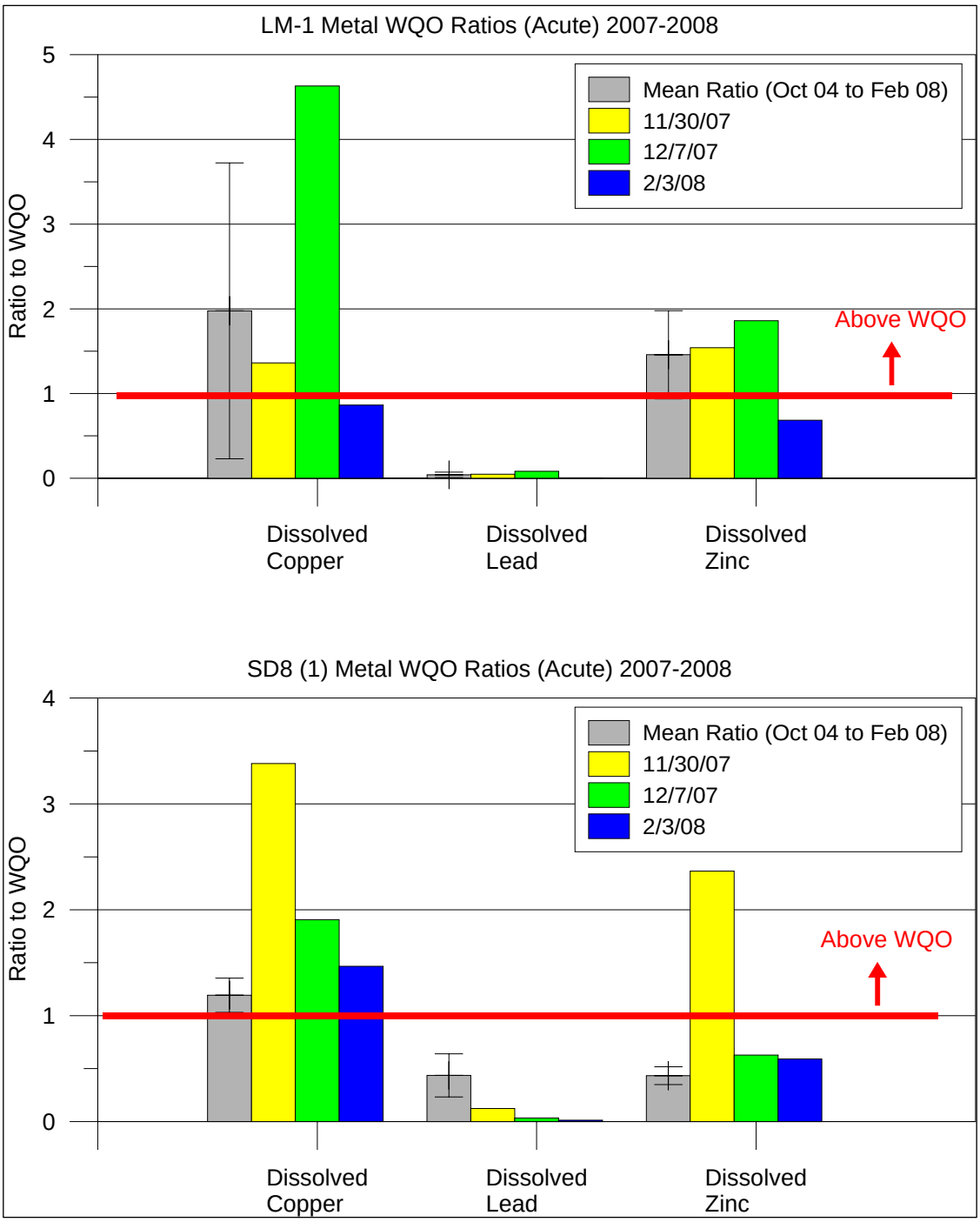

Figure 3-10. Chollas Creek 2007–2008 North Fork Metals Water Quality Ratios

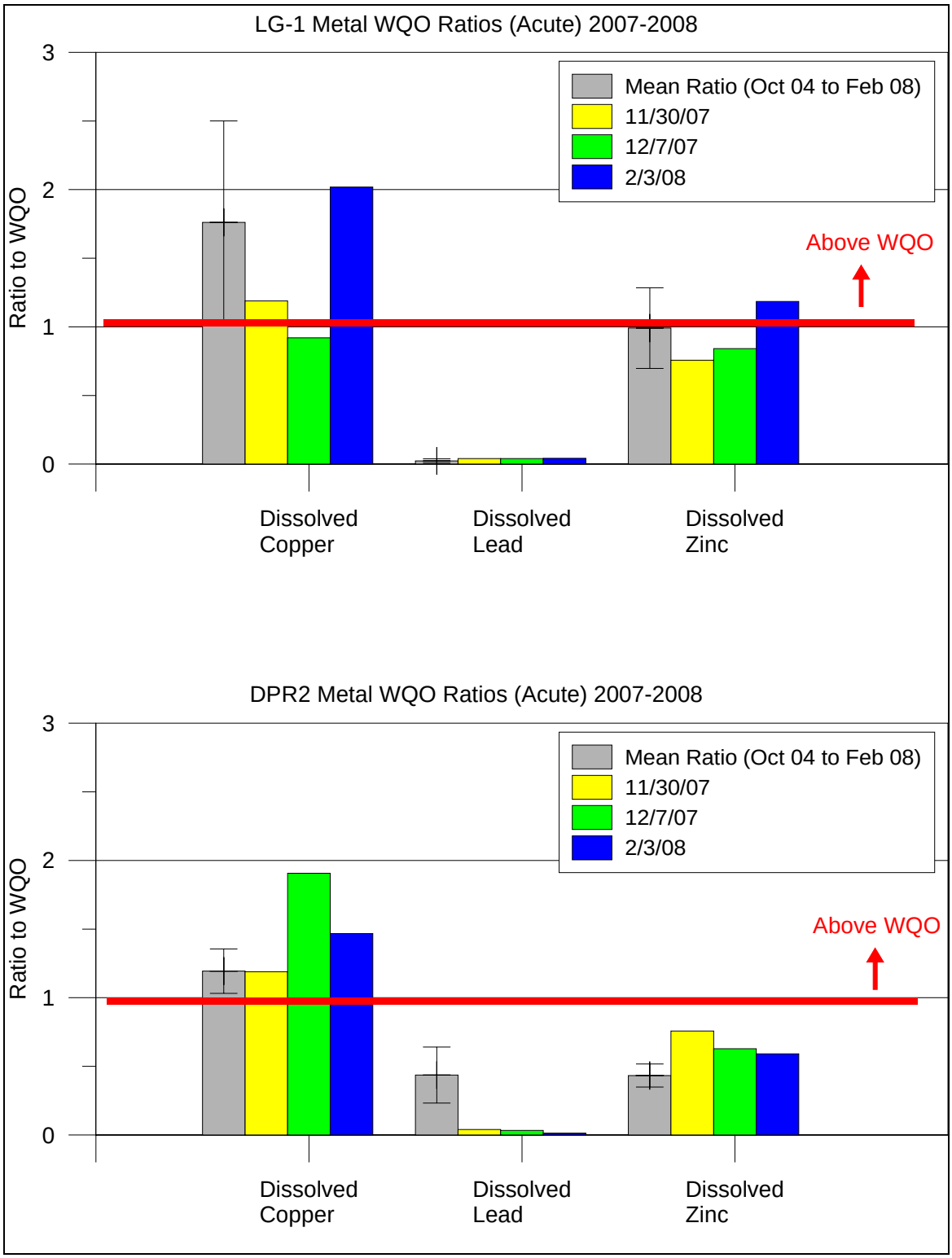

Figure 3-11. Chollas Creek 2007–2008 South Fork Metals Water Quality Ratios

4.0 SUMMARY AND CONCLUSIONS

The Chollas Creek Subwatershed is divided into two drainage areas separated by the northern and southern forks of Chollas Creek. Land use within the Watershed is comprised of residential (48%), roadways and utilities (27%), commercial (5%), and industrial (2%) land uses.

The Chollas Creek Watershed Municipal Copermittees have complied with RWQCB Order R9-2004-0277 during the 2007–2008 Monitoring Season by conducting the following activities:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and dry weather ICID investigations.
- Jurisdictions have performed education and outreach to area residents.
- Jurisdictions have conducted water quality monitoring during three storm events at sites SD8(1) and DPR2.

Wet weather and dry weather water quality monitoring was performed in the upper reaches of the drainage areas of the north and south forks of Chollas Creek near jurisdictional boundary lines between La Mesa and the City of San Diego and between Lemon Grove and the City of San Diego. Water quality monitoring at these additional locations within the Chollas Creek Watershed allows for comparisons between upstream locations and downstream locations as well as between north fork and south fork locations. Study results were presented in compliance with RWQCB Order No. R9-2004-0277 requirements. Water quality monitoring was conducted under this program to quantitatively assess potential changes in pesticide use and to quantitatively assess the concentration of metals in Chollas Creek.

Upstream Results—Sites LM-1 and LG-1

Differences between the upstream north fork and south fork sampling locations (LM-1 and LG-1, respectively) were evident for several constituents. TSS concentrations at Site LG-1 were above the WQO for each monitored storm event and averaged twice the TSS concentration of LM-1. Although both upstream sampling locations had similar concentrations of total zinc and total copper, LM-1 had slightly higher average concentrations of dissolved copper (9.8 μg/L at LM-1 versus 6.7 μg/L at LG-1) and dissolved zinc (66.1 μg/L at LM-1 versus 44.4 μg/L at LG-1). Average metals concentrations of 10.5 μg/L for copper and 57.5 μg/L for zinc were reported by the City of La Mesa for its monitoring at Site LM-1. The banned pesticides Diazinon and Chlorpyrifos were not detected during any of the storm events at LM-1. Diazinon, however, was detected during the initial storm event at LG-1 at a concentration below the TMDL WLA. Malathion was detected during the first storm event at both sites but was below the WQO value. Bifenthrin and Permethrin were measured above WQO values at both upstream sites and were two times higher at LM-1 than at LG-1. City of La Mesa data showed lower levels of Bifenthrin and no detections of Permethrin (Appendix H).

Downstream Results—Sites SD8(1) and DPR2

Site SD8(1) was located at the base of the north fork of Chollas Creek, and Site DPR2 was located at the base of the south fork of Chollas Creek. WQO exceedances at SD8(1) were noted for TSS, dissolved copper, dissolved zinc, Diazinon, Bifenthrin, Permethrin, and fecal coliform bacteria. Synthetic pyrethroids were detected in concentrations above published LC_{50}s for *H. azteca* during all three monitoring events at SD8(1) and during the first and second monitoring

events at DPR2. TSS was above the WQO during each storm event at SD8(1) and was on average three times higher than at DPR2. Fecal coliform concentrations were above the WQO at DPR2 and SD8(1) across all three sampling events. Fecal coliform concentrations were highest during the first flush event.

Biological Toxicity

No acute or chronic toxicity to *C. dubia* was observed at SD8(1) or DPR2 during any of the 2007–2008 monitored storm events. Toxicity to *H. azteca* was observed during all three events on the north fork of Chollas Creek at LM-1 and SD8(1). On the south fork of Chollas Creek, toxicity to *H. azteca* was observed during only the November sampling event at LG-1, while at DPR2 slight toxicity was observed during the November and February storm events. TIEs conducted as part of the 2005–2006 and 2006–2007 Regional Monitoring Program indicate the causative agent of toxicity at Site SD8(1) is the synthetic pyrethroid class of compounds (WESTON, 2007).

Ambient Results

General chemistry, bacterial, and metals results were the only constituent groups that had measurable results above method reporting limits in ambient weather analysis from sites SD8(1), LM-1, and LG-1. No ambient weather samples were collected at DPR2. Dry weather samples collected at the upper watershed locations, LM-1 and LG-1, were similar in concentration for general chemistry parameters while SD8(1) had significantly higher TOC, DOC, and TSS concentrations than either LM-1 or LG-1.

Total and dissolved metal concentrations at LM-1 and at LG-1 were below WQO_as. Concentrations of dissolved copper were above the benchmark during both sampling events at SD8(1). Total and dissolved copper, lead, and zinc concentrations were higher at SD8(1) during the March sampling event than at LM-1 or LG-1. Enterococcus concentrations were above the WQO_a at LM-1 and LG-1 during both DWM events and at SD8(1) during the March event.

Toxicity tests were performed on ambient weather water samples collected in March 2008 and June 2008. Toxicity to *C. dubia*, *H. azteca*, and *S. capricornutum* was observed in samples collected on March 5, 2008. No toxicity was observed in samples collected in June 3, 2008, to any of the three test species. Water chemistry from March 5, 2008, indicated levels of oil and grease and dissolved copper above ambient weather water quality benchmarks. No pesticides were detected in ambient weather water samples during either the March or June monitoring events.

Water Quality Trends

Mann-Kendall trend analysis performed on the long-term data set at Site SD8(1) indicates significantly decreasing trends for nitrate. However, increasing trends were noted for total copper, total zinc, and *H. azteca* toxicity. At DPR2, concentrations of Chlorpyrifos and Diazinon have significantly decreased over the last four years of monitoring.

Diazinon was detected above the published chronic WLA of 45 ng/L but below the acute WLA during one storm event (first flush) at SD8(1), indicating that residual pesticide detections of Diazinon are still occurring within the watershed. Diazinon was also detected during the first storm event at LG-1 and during the December storm monitoring event at DPR2 but was below

the TMDL WLA. As the residual supply of Diazinon becomes exhausted, detections of this banned pesticide should continue to decrease. Synthetic pyrethroid usage within the watershed also warrants attention, as a significantly increasing trend in *H. azteca* toxicity has been noted. Synthetic pyrethroids were detected above benchmarks at all sites for each monitored storm event, with the exception of the February storm event at DPR2. Education and outreach programs and events for area residents and businesses should continue in order to reduce pesticide usage within the Chollas Creek Watershed.

Dissolved copper and dissolved zinc were detected above the WQO_ws across all sampling locations during wet weather, with the exception of zinc at DPR2. Significantly increasing trends were noted for total copper and total zinc at SD8(1). Dissolved copper was also detected above WQO_a concentrations at SD8(1) during ambient weather monitoring. With the exception of dissolved lead, which was low across all storm events and all sites in relation to benchmark values, there was not a clear relationship between upstream and downstream dissolved metals concentrations in either the north fork or south fork of Chollas Creek. No consistent pattern or difference in dissolved copper and zinc concentrations was noted among the four different sampling locations. Aerial deposition may represent a significant pathway for metals pollutant loading in Chollas Creek based on a 2007–2008 Phase II study. Continued monitoring to determine likely sources for metals contamination is recommended.

5.0 REFERENCES

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Cayayaanka Abhidh

HEALTHY GARDEN HEALTHY HOME

Geed kastaaba wuxuu leeyahay nooc ka mid ah cayayaanka Abhidhka oo ku nool oo cuna mararka qaarkood, laakiin tiro abhidh ah oo hoosaysa ama meel dhexaad ahi ma aha mid had iyo goor wax yeelaysa beeraha ama dhirta dhulka. Inkasta oo ay abhidhku caleemaha laabi karaan soona saari karaan wax isjiidanaya, hadana badanaa dhirta ma dilaan had iyo goorna biyo ayaaba lagu maydhi karaa. Markay tirada abhidhku sii siyaado, cadowgooda dabiiciga ah ayaa cuna, taas oo meesha ka saaraysa in loo baahdo sunta cayayaanka. Saabuunta cayayaanka disha iyo saliidaha ayaa ka sun yar sunta cayayaanka ee la isticmaali karo marka ay daruuri noqoto in la daaweeyo.

Abhidhku way joogaan beertaada sababta oo ah:

- Abhidhku waxay jecelyihiin doogga iyo dhirta cusub. Nafaqeeye intii loo baahnaa ka badan ha ku shubin. Isticmaal nafaqeeyeyaasha orgaanikada ah ama waxyaabaha qunyar ku fida.
- Abhidhku waxay ku ururaan mishmishka ubaxa bixiya, ubaxyada, dhirta tuulibka (tulip), karaybka (crape myrtles), tufaaxa, iyo khudrad badan oo kale. Markaad dhirta noocan ah beerto filo abhidh.
- Qudhaanjadu waxay abhidhka ka ilaalisaa cadowgooda dabiiciga ah. Markaas qudhaanjada dhirta ka ilaali si aad uga faa'iidaysatid cayayaankan faa'iidada leh.

Abhidhka si aad u yaraysid:

- Ka goo jiridaha iyo caleemaha uu galo.
- Laa abhidhka adigoo ruxaya dhirta ama ku buufinaya biyo awood leh.
- Ilaali dhirta yaryar ee markaas biqisha adiga oo daboolaya ama ku daadinaya caleemaha ciidda ee alamuuniyamka ah.
- Sug intay hawadu kululaanayso; abhidhka badankoodu kulaylka uma adkaystaan waanay tagaan badhtamaha bisha June.

Ilaali cadawyada dabiiciga ah ee abhidhka:

- Dalandoolida ta waaweyn iyo laarfahaba.
- Layswingis (lacewings)
- Duqsiga Syrphid fly ee laarfaha ah
- Dalandoolida Soldier beetles.
- Duburlaxa yar ee dulinka ah ee abhidhka ka dhiga waxa adag *(Gadaal ka eeg sawirada cayayaanka.)*

Cadowga dabiiciga ah ee abhidhku sida dalandoolida lady beetles iyo layswingis ayaa si dabiici ah beertaada u imaan doona markay abhidhku ku bataan. Ilaali cayayaankan wanaagsan adiga oo ka ilaalinaya sunta cayayaanka ee dili karta cayayaano badan oo kala duwan.

Rệp vừng

HEALTHY GARDEN HEALTHY HOME

Gần như cây nào cũng đều có một hoặc nhiều loài rệp đôi khi sống ký sinh trên cây. Tuy nhiên, số lượng rệp ít hoặc ở mức độ vừa phải thường không gây hại cho vườn cây hoặc cây cảnh. Mặc dù có thể làm quăn lá và sản sinh ra chất dịch ngọt dính, rệp vừng hiếm khi làm chết cây và thường bị nước xối trôi. Khi có nhiều rệp vừng, các kẻ thù tự nhiên thường ăn loài rệp này, do đó không cần phải dùng thuốc trừ sâu. Các loại dầu và xà bông diệt côn trùng thường ít độc hại hơn nên quý vị có thể sử dụng khi cần diệt rệp.

Ta thường thấy rệp vừng trong vườn bởi vì:

- Loài rệp vừng thích nõn cây mỡ màng. Không nên bón phân quá nhiều. Nên dùng các loại phân hữu cơ hoặc phân ngấm dần.
- Loài rệp vừng sinh sôi trên các cây mận, cây hồng, cây hoa tu-líp, cây mía tím, cây táo đang ra hoa, và nhiều cây rau. Nếu quý vị trồng các loại cây này, chắc chắn là sẽ có rệp vừng.
- Kiến bảo vệ loài rệp vừng tránh các kẻ thù tự nhiên của chúng. Tránh để kiến hoạt động trên cây nhằm tận dụng nhiều hơn các loài côn trùng có lợi này.

Để diệt rệp:

- Cắt tỉa những cành lá đã bị rệp cắn.
- Lắc cây hoặc dùng vòi nước có dòng xịt mạnh để đánh bật rệp ra khỏi cây.
- Bảo vệ cây giống bằng cách che chắn hoặc dùng lớp phủ bảo vệ đất bằng nhôm.
- Chờ cho tới khi trời nóng; đa số rệp vừng đều không chịu được nhiệt độ nóng và sẽ chết trước khi tới giữa tháng Sáu.

Bảo vệ kẻ thù tự nhiên của rệp vừng:

- Bọ cánh cứng, kể cả ấu trùng và bọ trưởng thành
- Bọ cánh ren
- Ấu trùng ruồi hoa
- Con xén tóc thợ.
- Ong bắp cày loại nhỏ sống ký sinh, hút kiệt cơ thể của loài rệp vừng (Xem hình vẽ minh hoạ các loài côn trùng ở trang mặt sau.)

Các kẻ thù tự nhiên của rệp vừng như bọ cánh cứng và ruồi hoa sẽ tới vườn nhà quý vị một cách tự nhiên khi trong vườn có nhiều rệp vừng. Hãy bảo vệ các loài côn trùng có lợi này bằng cách tránh dùng các loại thuốc diệt côn trùng có thể độc hại đối với nhiều loại côn trùng.

Áfidos o pulgones

JARDÍN SANO CASA SANA

Casi todas las plantas tienen una o más especies de pulgones o áfidos que a veces se alimentan de ellas; sin embargo, usualmente un número bajo a moderado de pulgones no causan daño en jardines o árboles ornamentales. Aunque los pulgones pueden causar enrollamiento de las hojas y producen una melaza, es raro que maten plantas y, con frecuencia, se pueden quitar con agua. Frecuentemente, cuando hay muchos pulgones, sus enemigos naturales se alimentan de ellos, evitando así tener que usar pesticidas. Los jabones y aceites insecticidas son pesticidas menos tóxicos que pueden usarse si es necesario tratar la planta.

Los pulgones comúnmente habitan su jardín porque:

- Les gustan los nuevos brotes. No fertilice más de lo necesario. Use fertilizantes orgánicos o productos de acción retardada.
- Se multiplican en ciruelos ornamentales, rosas, tulipaneros, árboles de Júpiter o crespón, manzanos y muchas hortalizas. Anticipe tener pulgones en estas plantas.
- Las hormigas protegen a los pulgones de sus enemigos naturales. Mantenga las plantas libres de hormigas para aprovechar mejor estos insectos benéficos.

Para reducir el número de pulgones:

- Pode hojas y tallos infestados.
- Quite los pulgones sacudiendo las plantas o rociándolas con un chorro fuerte de agua.
- Proteja las plántulas cubriéndolas o con coberturas de aluminio.
- Espere que llegue la época de calor; la mayoría de pulgones no toleran el calor y desaparecen a mediados de junio.

Proteja los enemigos naturales de los pulgones:

- Vaquitas o catarinita
- León de áfidos
- Larvas de la mosca sírfida
- Escarabajo soldado
- Avispitas parásitas que momifican a los pulgones

Aphids

HEALTHY GARDEN HEALTHY HOME

Almost every plant has one or more aphid species that occasionally feeds on it, but low to moderate numbers of aphids are usually not damaging in gardens or on landscape trees. Although aphids can curl leaves and produce sticky honeydew, they rarely kill plants and can often be washed off with water. When aphid numbers get high, natural enemies frequently feed on them, eliminating the need for pesticides. Insecticidal soaps and oils are less toxic pesticides that can be used when treatment is necessary.

Aphids are common in your garden because:

- Aphids like lush new growth. Don't over fertilize. Use organic fertilizers or slow-release products.
- Aphids build up on flowering plums, roses, tulip trees, crape myrtles, apples, and many vegetables. Expect aphids when you grow these plants.
- Ants protect aphids from their natural enemies. Keep ants off plants to get more benefit from these beneficial insects.

To reduce aphids:

- Prune out infested leaves and stems.
- Knock aphid populations off plants by shaking or spraying with a strong stream of water.
- Protect seedlings with covers or aluminum soil mulches.
- Wait for hot weather; most aphids are heat-intolerant and will be gone by mid-June.

Protect aphids' natural enemies:

- Lady beetles, both adults and larvae
- Lacewings
- Syrphid fly larvae
- Soldier beetles
- Parasitic mini-wasps that turn aphids into crusty mummies (See reverse for insect drawings.)

Haddii sunta cayayaanku ay daruuri noqoto, isticmaal kuwa ugu ammaansan:

- Hababka kaantaroolka cayayaanka ee aan kimikada ahayn waa in marka hore la isticmaalaa si loo maareeyo abhidhka badanaya. Si kastaba ha ahaatee, haddii aad dareensantahay inay sunta cayayaanku daruuri tahay, dooro kuwa ugu sunta yar.
- Saliidaha iyo saabuunaha cayayaanka dila ayaa ah kuwa ugu ammaansan. Marka si habboon loo isticmaalo, kuwani waxay xallin karaan dhibaatooyinka cayayaanka badankooda.
- Saliidaha iyo saabuunuhu waxay u shaqeeyaan iyaga oo iska hortaaga inay abhidhku bataan oo tarmaan, sidaas darteed waa in la wada gaadhsiiyaa. Ha ku shubin dhirta abaarowday ama markay kulaylka tahay. Dhir aad u yar ayaa xasaasi ku ah daawooyinkan.
- Saabuunta cayayaanka, isku jirka saabuunta – pyrethrum, ama saliidaha ayaa had iyo goor lagu shubaa dhirta khudradda ah ama dhirta yaryar ee sida ubaxyada.
- Saliidaha waxay dilaan yartahay, ee sida parafinic, supreme ama superior ayaa ku habboon dhirta yara waaweyn.
- Saliidaha iyo saabuunuhu ma dilaan abhidhka ku qarsoon caleemaha duubmay. Kuwan waa inaad goysaa. Sunta cayayaanka ee fidda ayaa dili karta abhidhka qarsoon, laakiin suntooda ayaa badan umana diiwaangashana in lagu isticmaalo khudaarta beerta ama dhirta khudradda ah.

abhidh

dalandooli

dulinka ah oo dilaya abhidh

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

UC IPM University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Nếu cần dùng thuốc diệt côn trùng, hãy sử dụng các sản phẩm an toàn:

- Trước hết, nên áp dụng các biện pháp diệt động vật gây hại không dùng hóa chất để diệt rệp vừng. Tuy nhiên, nếu quý vị thấy cần phải dùng tới thuốc diệt côn trùng, hãy chọn các loại sản phẩm ít độc hại hơn.
- Các loại dầu và xà bông diệt côn trùng là an toàn nhất. Nếu sử dụng đúng cách, các chất này có thể diệt được hầu hết các loài động vật gây hại.
- Các loại dầu và xà bông có tác dụng làm ngạt rệp vừng, vì vậy phải sử dụng triệt để. Không bôi lên các loại cây thiếu nước hoặc khi trời rất nóng. Một số loài cây nhạy cảm với các sản phẩm này.
- Người ta thường bôi các loại xà bông diệt côn trùng, chất hỗn hợp xà bông và pyrethrum, hoặc dầu Neem lên thực vật hoặc các bụi cây nhỏ như hoa hồng.
- Các loại dầu sáp, thí dụ như dầu nến, dầu thượng hạng thường thích hợp cho các loài cây lớn.
- Các loại dầu và xà bông không diệt được rệp vừng ẩn náu bên trong lá cuộn. Hãy cắt bỏ những chiếc lá này. Các loại thuốc trừ sâu ngấm qua rễ có thể diệt được những con rệp vừng ẩn náu, nhưng lại độc hại hơn nhiều và không được đăng ký sử dụng cho các loài cây ăn trái hoặc rau.

rệp vừng

bọ cánh cứng

ký sinh ong bắp cày loại nhỏ diệt rệp vừng

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

UC IPM University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Los enemigos naturales de los pulgones o los insectos benéficos como las vaquitas y el león de áfidos, invaden el huerto o jardín cuando hay pulgones en abundancia. Proteja estos insectos benéficos evitando usar insecticidas que pueden ser tóxicos a muchas clases de insectos.

Si usa insecticidas, use los menos tóxicos:

- Para controlar poblaciones de pulgones, primero trate de usar métodos de control que no requieren sustancias químicas. Pero si considera que debe usar insecticidas, escoja los productos menos tóxicos.
- Los productos menos tóxicos son los aceites y jabones insecticidas. Si se usan correctamente, estos productos resuelven la mayoría de los problemas de plagas.
- Los aceites y jabones matan a los pulgones por asfixia; por lo tanto la cobertura debe ser completa. No los aplique a plantas debilitadas por falta de agua o en días muy calurosos. Algunas plantas son sensibles a estos productos.
- Frecuentemente, a las hortalizas o pequeños arbustos como las rosas se les aplica jabones insecticidas, mezclas de jabón y "pyrethrum" o aceite de nim.
- Los aceites livianos, como los parafínicos, Supremos o Superiores son adecuados para árboles grandes.
- Los aceites y jabones no matan a los pulgones escondidos en las hojas enrolladas. Pode estas hojas. Los insecticidas sistémicos pueden matar a los pulgones que están escondidos, pero son mucho más tóxicos y no están aprobados para uso en hortalizas ni en árboles frutales en residencias.

pulgón o áfido

vaquita o catarinita

avispita parásita matando a un pulgón

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

UC IPM Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Natural enemies of aphids such as lady beetles and lacewings will come into your garden naturally when aphids are abundant. Protect these good bugs by avoiding the use of insecticides that may be toxic to a broad variety of insects.

If insecticides seem necessary, use the safest products:

- Nonchemical pest control methods should be used first to manage aphid populations. However, if you feel insecticides are necessary, choose less toxic products.
- Insecticidal oils and soaps are the safest products. When properly used, these materials solve most pest problems.
- Oils and soaps work by smothering aphids, so application must be thorough. Don't apply to drought-stressed plants or when it is very hot. A few plants are sensitive to these products.
- Insecticidal soaps, soap-pyrethrum mixtures, or neem oils are often applied on vegetables or small bushes like roses.
- Narrow range oils, like parafinic, supreme or superior oils, are appropriate for larger trees.
- Oils and soaps don't kill aphids hidden within curled leaves. Prune these out. Systemic insecticides can kill hidden aphids, but they are much more toxic and not registered for use on garden vegetables or fruit trees.

aphid

lady beetle

parasitic mini-wasp killing aphid

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

UC IPM University of California Cooperative Extension

It's the water that connects us!

Appendix A11
County of San Diego Community IPM Workshop
Promotional Items Log

Date Developed/Used	Item	Purpose	
	HGHH Frisbee	IPM and Your Pets	
Mar. 2005 (On-going)	Magnifying Card	Plant Damage Identification	
8/20/2005	Pesticide Measuring Scoop	Irrigation and Lawn Maintenance	
9/17/2005	Water Wise Plant	Plant Selection	
10/15/2005	Fishtail Weeder	Weed Control	
5/20/2005	Copper Band	Backyard Citrus Pests/Snails & Slug Control	
1/21/2006	Fly Swatter and Magnifying Card	How to Hire a Pest Control Service	
2/25/2006	Bait Station	Ant Control	
3/4/2006	Water Wise Plant	Plant Selection	
3/11/2006	Countertop Kitchen Scraps Collection Bin	Composting/Ant Control	
3/18/2006	Green Lacewing Egg Cards	Beneficial Insects	
4/15/2006	Tomato Plant	Tomato Pests and Diseases	
4/22/2006	Bait Station	Ants	
5/13/2006	Kneeling Pad	Weeding and General IPM	
6/10/2006	Rain Guage	Irrigation and Lawn Maintenance	
6/24/2006	Spray Nozzle and Sticky Cards	Whitefly	
7/22/2006	Seed Packets and Sticky Cards	Tomato Pests and Diseases	
9/23/2006	Copper Band	Snails and Slugs	
10/28/2006	Rat Control Starter Kit	Vertebrate Pest Management	
11/11/2006	Copper Band and Sticky Cards	Backyard Citrus Pests/Snails & Slug Control and Whitefly Control	
Ongoing	Pens	Given out at various events including Workshops	
Jun-2006	Magnet and Key Chain	Given out at San Diego County Fair w/ Pest Card Packets	
Apr. 2006	Seed cards	Given out as part of ongoing follow-up survery.	

Appendix A12
County of San Diego Print Media

Date	Item	Title	English	Spanish	Farsi	Viet.
Feb 2005 (On-going)	IPM Tip Cards	Ants	X	X	X	X
Feb 2005 (On-going)	IPM Tip Cards	Aphids	X	X	X	X
Feb 2005 (On-going)	IPM Tip Cards	Cockroaches	X	X	X	X
Feb. 2005 (On-going)	IPM Tip Cards	Earwigs	X	X	X	X
Feb. 2005 (On-going)	IPM Tip Cards	Fleas	X	X	X	X
Jul. 2005 (On-going)	IPM Tip Cards	Gardening with Good Bugs	X	X	X	X
Jan. 2006 (Ongoing)	IPM Tip Cards	Giant Whitefly	X	X	X	X
Feb 2005 (On-going)	IPM Tip Cards	Head lice	X	X	X	X
Feb. 2005 (On-going)	IPM Tip Cards	Lawn Insects	X	X	X	X
Jul-05	IPM Tip Cards	Safe Use and Disposal of Pesticides	X	X	X	X
July 2005 (On-going)	IPM Tip Cards	Snails and Slugs	X	X	X	X
Feb. 2005 (On-going)	IPM Tip Cards	Spiders	X	X	X	X
	IPM Tip Cards	Termites	X	X	X	X
July 2005 (On-going)	IPM Tip Cards	Tree Borers		X		
Oct. 2005	Return Postage Survey Card	Pest Cards Feedback Survey	X			
12/1/2005 (On-Going)	IPM POP Tear-off Sheets	Aphids	X			
8/1/2005 (On-Going)	IPM POP Tear-off Sheets	Ants	X			
Sept 2005 (On-going)	IPM POP Tear-off Sheets	Snails & Slugs	X			
June 2006 (On-going)	IPM POP Tear-off Sheets	Lawn Irrigation	X			
April 2005 (On-going)	IPM POP Tear-off Sheets	General IPM	X			
Jan. 2005 (On-going)	IPM Poster	Child and Ball	X			
Feb. 2006 (On-going)	IPM Poster	5-Pests Identify Pests	X			
Feb. 2006 (On-going)	IPM Poster	5-Pests Identify Plant Damage	X			
	UC IPM Pest Notes	Hiring a Pest Control Company (UC Publication #74125)	X			

Appendix A13
County of San Diego PRISM Grant
Material Distribution Log
Retail Nursery and Garden Centers

Date	Contact	Pest Cards	Tear-Off Pads	Newsletter	Stand	Other Materials	Location	Returned
3/18/2005	Bill Tall	100 of full set of 12			Table Top (3)		City Farmer's Nursery	
Apr-June 05	Patty McDuffy	100 of full set of 12			Standing Rack		Lowe's	6/30/2005
Apr-June 05	John Marsh	100 of full set of 12			Standing Rack		Lowe's	6/30/2005
Apr-June 05	Joyce Gimmell	100 of full set of 12			Standing Rack		Lowe's	6/6/2005
Apr-June 05	Karen Lakomy	100 of full set of 12			None		Lowe's	6/30/2005
Apr-05	Bill Tall		1 Gen				City Farmer's Nursery	
5/13/2005	Kevin Grangetto	4 Feedback Pads	1 Gen		Table Top (3)		Grantetto's	
5/14/2005	Karen Lakomy	1 Feedback Pad					Lowe's	
5/19/2005	Patty McDuffy	1 Feedback Pad					Lowe's	
5/25/2005	John Prues				Table Top (9)		Grantetto's	
6/2/2005	Phil Robinson				Table Top (2)		Grantetto's	
6/2/2005	W. Andersen, Jr	100 of full set of 12	1 Gen		Standing Rack		Walter Andersen's	
7/30/2005	W. Andersen, Jr	100 of full set of 12					Walter Andersen's	
9/15/2005	Managers			Vol. 1, Issue 1 - Sept. 2005			All San Diego Co. Nursery and Garden Centers (142 total)	
9/16/2005	Phil Robinson	100 of full set of 12 Sp. Cards					Grantetto's	
9/23/2005	Bill Tall	100 of full set of 12 Sp. Cards					City Farmer's Nursery	
9/26/2005	Sherri Stead	100 of full set of 12	1 Gen, 1 Snails & Slugs, 1 Ant		Standing Rack		Home Depot Sports Arena	
9/27/2005	Sherri Stead	100 of full set of 12 Sp. Cards					Home Depot Sports Arena	
9/29/2005	Phil Robinson		5 Gen, 5 Snails & Slugs, 5 Ant				Grantetto's	
9/29/2005	Bill Tall		1 Gen, 1 Snails & Slugs, 1 Ant				City Farmer's Nursery	
9/29/2005	W. Andersen, Jr		1 Gen, 1 Snails & Slugs, 1 Ant				Walter Andersen's	
10/15/2005	Managers			Vol. 1, Issue 2 - Oct. 2005			All San Diego Co. Nursery and Garden Centers (142 total)	
11/15/2005	Managers			Vol. 1, Issue 3 - Nov. 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
12/15/2005	Managers			Vol. 1, Issue 4 - Dec. 2005			All San Diego Co. Nursery and Garden Centers (142 total)	
12/15/2006	Nicole	50 of full set of 12 Eng. and Sp.	1 Gen, 1 Snails & Slugs, 1 Ant		Standing Rack		Mission Hills Nursery	
12/15/2006	Nicole	50 of full set of 12 Eng. and Sp.			Standing Rack		Moose Creek Nurery	
12/17/2006	Vicki	100 of full set of Eng.			Standing Rack		Plant World	
1/13/2006	Bill Tall		1 Aphids				City Farmer's Nursery	
1/13/2006	Phil Robinson		5 Aphids				Grantetto's	
1/13/2006	W. Andersen, Jr		1 Aphids				Walter Andersen's	
1/13/2006	Sherri Stead		1 Aphids				Home Depot Sports Arena	
1/13/2006	Nicole		1 Aphids				Mission Hills Nursery	
1/13/2006	Nicole		1 Aphids				Moose Creek Nurery	
1/13/2006	Vicki		1 Aphids				Plant World	
1/15/2006	Managers			Vol. 1, Issue 5 - Jan. 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
2/10/2006	Bill Tall	100 of Giant Whitefly					City Farmer's Nursery	

Appendix A13
County of San Diego PRISM Grant
Material Distribution Log
Retail Nursery and Garden Centers

Date	Contact	Pest Cards	Tear-Off Pads	Newsletter	Stand	Other Materials	Location	Returned
2/10/2006	Phil Robinson	500 of Giant Whitefly					Grantetto's	
2/10/2006	W. Andersen, Jr	100 of Giant Whitefly					Walter Andersen's	
2/10/2006	Sherri Stead	100 of Giant Whitefly					Home Depot Sports Arena	
2/10/2006	Nicole	100 of Giant Whitefly					Mission Hills Nursery	
2/10/2006	Nicole	100 of Giant Whitefly					Moose Creek Nurery	
2/10/2006	Vicki	100 of Giant Whitefly					Plant World	
2/15/2006	Managers			Vol. 1, Issue 6 - Feb. 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
3/8/2006	Managers					5-Pest Posters	All San Diego Co. Nursery and Garden Centers (142 total)	
3/15/2006	Managers			Vol. 1, Issue 7 - Mar. 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
3/23/2006	Managers	1 Giant Whitefly Card (Included in Retail Nursery Newsletter Mailing					All San Diego Co. Nursery and Garden Centers (142 total)	
4/15/2006	Managers			Vol. 1, Issue 8 - April 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
5/10/2006	Tiger	100 of full set of Eng. & Sp.				Wkbk (Eng. & Sp.) and 50 Wksht (Eng. &	Mission Hills Nursery	
5/15/2006	Managers			Vol. 1, Issue 9 - May 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
6/20/2006	Managers			Vol. 1, Issue 10 - June 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
6/20/2006	Managers					Seminar Reg Forms	All San Diego Co. Nursery and Garden Centers (142 total)	
6/23/2006	Tiger					5-Pest PSA's	Mission Hills Nursery	
7/5/2006	Lowell Block and Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bugs, Lawn Insects, and Safe Disp. Of Pest					ACE Hardware, Spring Valley	
7/5/2006	Manager and Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bugs, Lawn Insects, and Safe Disp. Of Pest					Evergreen Nursery, Spring Valley	
7/10/2006	Bill Tall		1 Irrigation				City Farmer's Nursery	
7/10/2006	Phil Robinson		5 Irrigation				Grantetto's	
7/10/2006	W. Andersen, Jr		1 Irrigation				Walter Andersen's	
7/10/2006	Sherri Stead		1 Irrigation				Home Depot Sports Arena	
7/10/2006	Nicole		1 Irrigation				Mission Hills Nursery	
7/10/2006	Nicole		1 Irrigation				Moose Creek Nurery	
7/10/2006	Vicki		1 Irrigation				Plant World	

Appendix A13
County of San Diego PRISM Grant
Material Distribution Log
Retail Nursery and Garden Centers

Date	Contact	Pest Cards	Tear-Off Pads	Newsletter	Stand	Other Materials	Location	Returned
7/11/2006	Manager and Mort E	100 of full set of English 100 Spanish Ants, Good Bugs, Lawn Insects, and Safe Disp. Of Pest					Home Depot Lemon Grove	
7/15/2006	Managers			Vol. 1, Issue 11 - July 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
8/15/2006	Managers			Vol. 1, Issue 12 - August 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
8/17/2006	Barbara	100 of full set of Engish					Poway Nursery	
9/15/2006	Managers			Vol. 2, Issue 1 - September 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
10/16/2006	Managers			Vol. 2, Issue 2 - October 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
10/27/2006	Phil Sapienza	100 of full set of English and Spanish	All 5 Tear-Off		Standing Rack		Lowe's, Oceanside	
10/30/2006	Tom del Hotel	100 of full set of English					Home Depot Lemon Grove	
11/15/2006	Managers			Vol. 2, Issue 3 - November 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
12/5/2006	Joanna McClure	100 of full set of English	All 5 Tear-Off		Standing Rack		Ace Hardware, Rancho Bernardo	
12/11/2006	Joanna McClure	100 of full set of English	All 5 Tear-Off		Standing Rack		Ace Hardware, Del Mar	
12/15/2006	Managers			Vol. 2, Issue 4 - December 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
1/26/2007	Managers	100 each of Rats and Gophers					All 17 active Nursery Display locations	
2/8/2007	Managers			Vol. 2, Issue 5 - Jan/Feb 2007			All San Diego Co. Nursery and Garden Centers (142 total)	

Appendix A14
County of San Diego PRISM Grant
Material Distribution Log
(Pest Cards)

Date	Contact	Cards	Stand	Event	Returned
	Patty McDuffy	100 of full set of 12	Standing Rack	Lowe's	
	John Marsh	100 of full set of 12	Standing Rack	Lowe's	
	Joyce Gimmell	100 of full set of 12	Standing Rack	Lowe's	6/6/2005
	Karen Lakomy	100 of full set of 12	None	Lowe's	
4/26/2005	Paul Davy	100 of full set of 12	Table Top Display (3)	National Horse Show	5/2/2005
	Phil Ash	100 of Safe Disp of Pesticides	None	Rose Club Meeting	
4/29/2005	Margarita Mogollon	400 of full set of 12	Table Top Display (1)	Earth Day	
5/2/2005	Margarita Mogollon	100 of full set of 12	Table Top Display (3)	County Admin. Watershed Awareness Month	
5/12/2005	John Marsh	1 Feedback Pad			
5/12/2005	Rob Hutsel	100 of full set of 12	Table Top Display (3)		
5/12/2005	Rob Hutsel	1 Feedback Pad			
5/12/2005	Joyce Gimmell	1 Feedback Pad			
5/13/2005	Kevin Grangetto	4 Feedback Pads	Table Top Display (3)	Retail Garden Center	
5/14/2005	Karen Lakomy	1 Feedback Pad			
5/19/2005	Patty McDuffy	1 Feedback Pad			
5/23/2005	Paul Davy	25 of full set of 12	None	Ag Weights and Measures Staff	
5/25/2005	Linda Feeley	25 of full set of 12	None	Ag Weights and Measures Staff	
5/26/2005	Paul Davy	25 of full set of 12	None	Ag Weights and Measures Staff	
5/25/2005	John Prues		Table Top Display (9)	Retail Garden Center	
6/2/2005	Phil Robinson		Table Top Display (2)	Retail Garden Center	
6/2/2005	Walter Andersen, Jr.	100 of full set of 12	Standing Rack	Retail Garden Center	
6/16/2005	Carol Graham	600 Ants, 600 Snails, 300 Aphids, 300 Spiders		San Diego County Fair	
6/17/2005	Joyce Gimmell	Full set of Spanish		Tijuana River Valley Community Garden	
6/28/2005	Carol Graham	600 Ants, 600 Snails, and 100 Rats		San Diego County Fair	
July	Wendy Henry-Hovland	100 of full set of 12			
July 9-10, 2005	Carol Graham	100 of full set of 12	Table Top Display (3)	Insect and Garden Fair at Quail Gardens	7/11/2005
7/30/2005	Walter Andersen, Jr.	100 of full set of 12		Retail Garden Center	
8/16/2005	Vikki Denslow	200 Ant Cards		County of San Diego Health Fair	
8/27/2005	Joanna McClure	100 of full set of 12	Table Top Display (3)	Broadway Heights Community Block Party	8/27/2005
Sept. 2005	Betty Waznis	31 sets of 50 Ant, Fleas, and Safe Use Pest Cards as well as Watershed Water Tips Cards	1 Table Top Display at 31 Locations	County of San Diego Public Libraries	
9/8/2005	David Fritz	100 of full set of 12	Standing Rack	Escondido IPM Meeting	Sep-05
9/16/2005	Phil Robinson	100 of full set of 12 Spanish Cards		Retail Garden Center	
9/22/2005	Hawkeye Sheen	100 of full set of 12		Oceanside Water Quality Meeting	
9/23/2005	Bill Tall	100 of full set of 12 Spanish Cards		Retail Garden Center	
9/24/2005	David Shaw	100 of full set of 12	Standing Rack	EnviroFair	9/26/2005
9/24/2005	Joyce Gimmell	100 of full set of 12 English and Spanish	Table Top Display (3)	Bonitafest	9/24/2005
9/26/2005	Sherry	100 of full set of 12	Standing Rack	Home Depot Sports Arena	

Appendix A14
County of San Diego PRISM Grant
Material Distribution Log
(Pest Cards)

Date	Contact	Cards	Stand	Event	Returned
9/27/2005	Sherry	100 of full set of 12 Spanish Cards		Home Depot Sports Arena	
10/18/2005	Martha Deichler	100 of full set of 12 English and Spanish	Table Top Display (6)	Vista Square Insect and Garden Festival	10/18/2005
10/21/2005	Laura Starr	100 of full set plus water tips card	Table Top Display (1)	North Park Library	
10/21/2005	Beverly Vasconcellos	100 of full set plus water tips card	Table Top Display (1)	Scripps Ranch Library	
10/21/2005	Cathy Dery	100 of full set plus water tips card	Table Top Display (1)	University City Community Library	
Nov. 2005	Betty Waznis	31 Sets of 50 Head Lice and Spiders		County of San Diego Public Libraries	
12/16/2005	Laura Starr	100 of 2 full sets plus water tip cards	Table Top Display (2)	Mission Hills Library & University Heights Library	
12/15/2006	Nicole	50 of full set of 12 English and Spanish	Standing Rack	Mission Hills Nursery	
12/15/2006	Nicole	50 of full set of 12 English and Spanish	Standing Rack	Moose Creek Nurery	
12/17/2006	Vicki	100 of full set of English	Standing Rack	Plant World	
12/19/2006	Elle Smith	100 of full set of English and Spanish	Standing Rack	Quail Botanical Gardens	
Jan. 2006	Betty Waznis	31 Sets of 50 Cockroaches and Earwigs		County of San Diego Public Libraries	
1/21/2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Retail Nursery	
2/13/2006	Margarita Mogollon	1600 Giant Whitefly		City Governments	
2/13/2006	Jan Daniels	100 of various English (Ants, Aphids, Giant Whitefly,	Table Top Dispay (2)	Solana Center for Environmental Innovation	
2/14/2006	Cecilia Lyon	200 of Giant Whitefly (English)		City of Coronado	
2/24/2006	Connie Whitney	100 of full set of English and Spanish	Table Top Display (6)	Balboa Park Botanical Garden	
3/1/2006	Betty Waznis	31 Sets of 50 Giant Whitefly and Snails & Slugs		County of San Diego Public Libraries	
3/1/2006	Dorothy Notter	100 of full set of English and Spanish	Table Top Display (6)	Escondido Farmer's Markets & Street Fairs	
3/1/2006	Virginia Sherwood	100 of full set of English and Spanish	Table Top Display (6)	Master Gardener Spring Seminar	10/13/2006
3/1/2006	Vince Lazaneo	950 of full set of English		Master Gardener Spring Seminar	
3/6/2006	Jan Daniels	100 of full set of English and Spanish	Standing Rack	Solana Center for Environmental Innovation	
3/10/2006		154 full sets of English Pest Cards		Eucalyptus Hills Residents, Lakeside, CA, 92040	
3/27/2006	Camomile Meadow	100 of Giant Whitefly (English)		City of Encinitas	
April 1, 2, 22, 29, 30, 2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Carlsbad Flower Fields	
4/8/2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Encinitas Garden Festival	
4/8/2006	Lew Gary	100 of full set of English and Spanish	Table Top Display (6)	Poway Garden Festival	4/10/2006
4/15/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Carlsbad	
4/18/2006	Dorothy Notter	100 of full set of English and Spanish	Table Top Display (6)	Escondido Farmers' Market	4/24/2006
4/22/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Chula Vista	
April 22 & 23, 2006	Susie Heap	100 of full set of English and Spanish	Table Top Display (6)	Coronado Flower Show	4/24/2006
4/23/2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Earth Fair	
5/1/2006	Betty Waznis	31 Sets of 50 Aphids and Lawn Insects		County of San Diego Public Libraries	
5/6/2006	Connie Whitney	100 of full set of English and Spanish	Table Top Display (6)	Buds N Blooms	5/8/2006
5/6/2006	Rosemary Anderson	100 of full set of English and Spanish	Table Top Display (6)	Poway Valley Garden Club	5/6/2006
May 6 & 7, 2006	Jeff Pollard	101 of full set of English and Spanish	Table Top Display (6)	Sage & Songbird Festival	5/8/2006
5/9/2006	Scott Parker	102 of full set of English and Spanish	Table Top Display (6)	IPM Landscaper Seminar	
5/11/2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Gardens of Del Mar	

Appendix A14
County of San Diego PRISM Grant
Material Distribution Log
(Pest Cards)

Date	Contact	Cards	Stand	Event	Returned
5/13/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - El Cajon	
5/16/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	32nd Annual Rental Education EXPO	
5/16/2006	Dorothy Notter	100 of full set of English and Spanish	Standing Rack	Escondido Farmers' Market	
May 19 - 21, 2006	Al Myrick	100 of full set of English and Spanish	Table Top Display (6)	Spring Garden Celebration	5/22/2006
5/20/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Carlsbad	
5/20/2006	Robin Revet	100 of full set of English and Spanish	Table Top Display (6)	Spring Garden Festival	5/22/2006
5/21/2006	Dorothy Notter	100 of full set of English and Spanish	Table Top Display (6)	Spring Escondido Street Fair	
5/28/2006	Rose Crawford	100 of full set of English and Spanish	Table Top Display (6)	The Garden Village Festival	5/29/2006
6/10/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Lakeside	
6/10/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Mission Hills Garden Tour	
June 10 - July 4, 2006 (closed on Mondays except July 3)	Carol Graham	2500 of full set of English and 200 sets of Spanish	None	San Diego County Fair	
6/17/2006	Lew Gary	100 of full set of English and Spanish	Table Top Display (6)	MG Summer Plant Sale	6/19/2006
6/20/2006	Dorothy Notter	100 of full set of English and Spanish	Standing Rack	Escondido Farmers' Market	
6/21/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Chula Vista	
6/24/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Carlsbad	
6/27/2006	Scott Nowak	1 full set of English and Spanish (Review Set)		Trimark Pacific Homes	
7/1/2006	Betty Waznis	31 Sets of Gardening w/ Good Budgs and Termites		County of San Diego Public Libraries	
7/5/2006	Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bu	Standing Rack	ACE Hardware, 3706 S. Barcelona St, Spring Valley, CA 91977	
7/5/2006	Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bu	Standing Rack	Evergreen Nursery, 2657 Sweetwater Springs Blvd, Spring Valley, CA	
7/11/2006	Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bu	Standing Rack	Home Depot Lemon Grove	
8/1/2006	Mort Brigadier	100 of full set of English	Standing Rack	County of San Diego Department of Ag.	
8/17/2006	Barbara	100 of full set of English	Standing Rack	Poway Nursery	
8/17/2006	Jay Vermilya	100 of full set of English	Standing Rack	Fletcher Hills Library	
8/31/2006	Jay Vermilya	100 of full set of English	Standing Rack	San Carlos Library	
9/1/2006	Betty Waznis	31 Sets of Ants and Snails & Slugs		County of San Diego Public Libraries	
9/1/2006	Dorothy Notter	100 of Spanish Ants, Good Bugs, Cockroaches, and	Safe Use and Disposal of	Escondido Farmers' Market	
September - Pending	Barbara Moore	Order Pending	Standing Rack	Chula Vista Nature Center	
10/14/06	Connie Whitney	100 of full set of English and Spanish	Table Top Display (6)	Third Annual Point Loma Nazarene Univ President's Community Day	
10/15/06	Dorothy Notter	100 of full set of English	Standing Rack	Fall Escondido Street Fair	
10/17/06	Dorothy Notter	100 of full set of English	Standing Rack	Escondido Farmers' Market	
10/27/2006		100 of full set of English	Standing Rack	Lowe's of Oceanside	
October 28 & 29, 2006	Clyde Berndsen	100 of full set of English	Table Top Display (3)	Fall Garden Show	
10/30/2006	Tom del Hotel	100 of full set of English		Home Depot of Lemon Grove	
11/1/2006	Betty Waznis	31 Setts of Earwigs and Spiders		County of San Diego Public Libraries	
11/04/06	Lew Gary	100 of full set of English and Spanish	Standing Rack	Fifth Annual Plant Sale SD Hort Society	

Appendix A14
County of San Diego PRISM Grant
Material Distribution Log
(Pest Cards)

Date	Contact	Cards	Stand	Event	Returned
12/5/2006	Joanna McClure	100 of full set of English	Standing Rack	Ace Hardware, Rancho Bernardo	
12/11/2006	Joanna McClure	100 of full set of English	Standing Rack	Ace Hardware, Del Mar	
2/13/2007	Cathy Dery	100 of Rats and Gophers		University City Community Library	
2/13/2007	Laura Starr	100 of Ants, Cockroaches, Fleas, Good Bugs, Rats, Snails & Slugs, Termites, and Safe Disposal		Mission Hills and University Heights Library	

Appendix A15
County of San Diego
Master Gardener
Community Events Schedule
and Public Displays
Outreach Activities

Date	Time	Event or Display (D)	Coordinator	Location	Est. Att.
April 2005 (Ongoing)	9:00 - 5:00 PM	City Farmer's Nursery (D)	Bill Tall	City Farmer's Nursery	
April - June, 2005	8:00 - 5:00 PM (weekends)	Lowe's	Patty McDuffy	Oceanside	
April - June, 2005	8:00 - 5:00 PM (weekends)	Lowe's	John Marsh	Vista	
April - June, 2006	8:00 - 5:00 PM (weekends)	Lowe's	Joyce Gemmell	Santee	
April - June, 2007	8:00 - 5:00 PM (weekends)	Lowe's	Karen Lakomy	Mission Valley	
April 30, 2005		San Diego Rose Society Meeting	Phil Ash	Balboa Park Club	50
May 2005 (Ongoing)	8:00 - 5:00 PM	UCCE Farm and Home Advisors Office (D)	Scott Parker	County Operations Complex	
May 2005 (Ongoing)	8:00 - 5:00 PM	Grangetto's Farm and Garden Supply (D)	Phil Robinson	Escondido (2)	
May 2005 (Ongoing)	8:00 - 5:00 PM	Grangetto's Farm and Garden Supply (D)	Phil Robinson	Valley Center	
May 2005 (Ongoing)	8:00 - 5:00 PM	Grangetto's Farm and Garden Supply (D)	Phil Robinson	Fallbrook	
May 2005 (Ongoing)	8:00 - 5:00 PM	Grangetto's Farm and Garden Supply (D)	Phil Robinson	Encinitas	
May 10, 2005		OASIS Adult Learning Center	Phil Ash	Robinsons-May, Mission Valley	50
June 2005 (Ongoing)	9:00 - 4:00 PM	Cuyamaca Water Conservation Garden (D)	Marty Eberhardt	Cuyamaca College, El Cajon, CA	
June 2005 (Ongoing)	8:00 - 5:00 PM	Walter Andersen Nursery (D)	Walter Andersen, Jr.	Point Loma	
June 4, 2005	9:00 - 4:00 PM	National Home Safety Fair	Marilyn Rummerfield	Lowe's of Santee	50
June 10 - July 4, 2005 (closed on Mondays except July 4)	10:00 AM - 10:00 PM	San Diego County Fair	Carol Graham	San Diego County Fair Grounds, Flower and Garden Show, O'Brien Hall	6000
June 17, 2005	January 0, 1900	Tijuana River Valley Community Garden	Joyce Gemmell	Tijuana River Valley	20
June 18, 2005	10:00 AM - 3:00 PM	Master Gardener Plant Sale	Lew Gary	Balboa Park, Casa del Prado, Room 101	250
July 9-10, 2005	10:00 AM - 4:00 PM	Insect Fair	TBA	Quail Botanical Gardens	500
August 27, 2005	9:00 AM - 5:00 PM	Broadway Heights Community Block Party	Joanna McClure	Broadway Heights	100
September 2005 (Ongoing)	Hours Vary	San Diego County Libraries (D)	Betty Waznis	32 locations throughout the County	
September 2005 (Ongoing)	8:00 - 11:00 PM	The Home Depot (D)	Sherri Stead	Sport Arena Area	
September 22, 2005	11:00 - 11:30 AM	Oceanside Water Qualtiy Meeting	Scott Parker	Libby Lake Community Center	10
September 24, 2005	January 0, 1900	EnviroFair	David Shaw	Del Mar	50
September 24, 2005	9:00 AM - 5:00 PM	Bonita Fest	Joyce Gemmell	Bonita Village Shopping Center	500
September 29, 2005	10:00 - 11:00 AM	Pala Senior Citizens Meeting	Lew Gary	Pala Reservation	6
September 29, 2005	12:00 - 1:00 PM	Pala Child Care Staff	Joanna McClure	Pala Child Care Center	7
October 2005 (Ongoing)	Hours Vary	North Park Library (D)	Laura Starr	North Park	
October 2005 (Ongoing)	Hours Vary	Scripps Ranch Library (D)	Beverly Vasconcellos	Scripps Ranch	
October 2005 (Ongoing)	Hours Vary	University City Library (D)	Cathy Dery	University City	

Appendix A15
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Date	Time	Event or Display (D)	Coordinator	Location	Est. Att.
October 16, 2005	9:00 - 5:00 PM	Escondido Street Fair	Dorothy Notter	Escondido	500
October 22, 2005	9:00 - 5:00 PM	City Farmer's Nursery Pumpkin Contest	Bill Tall	City Farmer's Nursery	50
November 5, 2005	10:00 - 4:30 PM	Annual San Diego Hort.Society Plant Sale	Lew Gary	Rancho Bernardo Winery	250
December 3, 2005	9:00 - 3:00 PM	Water Conservation Garden	Al Myrick	Cuyamaca College, El Cajon, CA	250
December 2005 (ongoing)	10:00 - 4:00 PM	Quail Botanical Gardens (Gift Shop) (D)	Elle Smith	Quail Botanical Gardens	
December 2005 (ongoing)	Hours Vary	University Heights Library (D)	Laura Starr	University Heights	
December 2005 (ongoing)	Hours Vary	Mission Hills Library (D)	Laura Starr	Mission Hills	
February 4, 2006	9:00 - 3:00 PM	Water Conservation Garden	Clara Arvai	Cuyamaca College, El Cajon, CA	100
March 4, 2006	9:00 - 3:00 PM	Water Conservation Garden	Clara Arvai	Cuyamaca College, El Cajon, CA	100
March 15, 2006	8:00 - 3:00 PM	Greening the City Symposium	Laura Starr	Liberty Station, Point Loma	150
March 18, 2006	8:00 - 4:00 PM	Master Gardener Spring Seminar	Lew Gary	University of San Diego	750
March 18, 2006	9:00 - 4:00 PM	California-Friendly Plant Sale	George Yackey	Cuyamaca College, El Cajon, CA	200
March 21, 2006	2:30 - 5:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
April 1, 2, 22, 29, 30, 2006	12:00 - 3:00 PM	Carlsbad Flower Fields	Carol Graham	Carlsbad	1000
April 8, 2006	10:00 - 4:00 PM	Encinitas Garden Festival	Carol Graham	Lucadia Oaks Park	100
April 8, 2006	9:00 - 2:00 PM	Poway Garden Festival	Lew Gary	Old Poway Park	300
April 18, 2006	2:30 - 5:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
April 22 & 23, 2006	1:00 - 5:00 PM, 10:00 - 4:00 PM	Coronado Flower Show	Susie Heap	Coronado	100
April 23, 2006	10:00 - 5:00 PM	Earth Fair	Carol Graham	Balboa Park	1000
Spring/Summer 2006	TBA	Del Cerro Street Fair	Carol Graham	Del Cerro	
May 6, 2006	9:00 - 4:00 PM	Buds N Blooms	Connie Whitney	Balboa Park	100
May 6, 2006	9:30 - 10:30 AM	Poway Valley Garden Club	Rosemary Anderson	Poway	40
May 6 & 7, 2006	10:00 - 4:00 PM	Sage & Songbird Festival	Jeff Pollard	Viejas Outlet Center	150
May 11, 2006	9:00 -3:00 PM	Gardens of Del Mar	Carol Graham	Power House Park, Del Mar	50
May 16, 2006	8:00 - 5:00 PM	32nd Annual Rental Education EXPO	Scott Parker	San Diego Convention Center	500
May 16, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
May 19 - 21, 2006	9:00 - 6:00 PM	Spring Garden Celebration	Al Myrick	San Diego Zoo	750
May 20, 2006	9:00 - 4:00 PM	Spring Garden Festival	Robin Revet	Cuyamaca College, El Cajon, CA	150
May 21, 2006	9:00 - 5:00 PM	Spring Escondido Street Fair	Dorothy Notter	Escondido	500
May 28, 2006	10:00 - 4:00 PM	The Garden Village Festival	Rose Crawford	Lincoln Middle School, Vista, CA	100
June 10 - July 4, 2006 (closed on Mondays except July 3)	10:00 - 7:00 PM	San Diego County Fair	Carol Graham	Del Mar Fairgrounds	2500

Appendix A15
County of San Diego
Master Gardener
Community Events Schedule
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Outreach Activities

Date	Time	Event or Display (D)	Coordinator	Location	Est. Att.
June 17, 2006	9:00 - 3:00 PM	MG Summer Plant Sale	Lew Gary	Balboa Park	250
June 20, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
July 1, 2006	9:00 - 3:00 PM	Water Conservation Garden	Clara Arvai	Cuyamaca College, El Cajon, CA	150
July 15-16, 2006	10:00 - 4:00 PM	Insect and Garden Festival	Scott Parker	Quail Botanical Gardens	600
July 18, 2006	2:30 - 5:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
August 12, 2006	12:00 - 4:00 PM	Weidner's Gardens	Carol Graham	Weidner's Gardens, Encinitas, CA	50
August 12, 2006	2:00 - 6:00 PM	4-S Ranch Open House in Rancho Bernardo	Ed Danico	Rancho Bernardo	50
August 15, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
September 15-17, 2006	12-7PM, 10-7PM & 10-5PM	Fall Home and Garden Show	Carol Graham	Del Mar Fairgrounds	400
September 19, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
September 23, 2006	10:00 - 2:00 PM	Garden of Discovery Day at SeaWorld	Al Myrick	SeaWorld	250
October 14, 2006	10:00 - 2:00 PM	Third Annual Point Loma Nazarene Univ President’s Community Day	Scott Parker	PLNU, Point Loma, CA	100
October 15, 2006	9:00 - 5:00 PM	Fall Escondido Street Fair	Dorothy Notter	Escondido	750
October 17, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
October 28 & 29, 2006	9:00 - 5:00 PM	Fall Garden Show	Clyde Berndsen	San Diego Wild Animal Park	250
November 4, 2006	10:00 - 4:30 PM	Fifth Annual Plant Sale SD Hort Society	Lew Gary	Rancho Bernardo Winery	200
					24333

San Diego Bay Watershed Fact Sheet

What is a watershed? A watershed consists of all land and waterways that drain into the same body of water. There are 11 watersheds within San Diego County. Drainage from La Mesa flows through two of these watersheds: the San Diego Bay and the San Diego River. Your business or facility is located within the San Diego Bay Watershed.

San Diego Bay Watershed

The San Diego Bay Watershed is comprised of 415 square miles. It extends from the Laguna Mountains to San Diego Bay. The watershed falls within the cities of La Mesa, Chula Vista, Coronado, Imperial Beach, Lemon Grove, National City, San Diego, and unincorporated areas of the County. Approximately 4 square miles in the southern portion of the City of La Mesa is part of this watershed. The major discharge sources to San Diego Bay include Sweetwater River, Otay River, Chollas Creek, Paleta Creek, Paradise Creek, and Switzer Creek.

Three drainage basins in the City of La Mesa are part of the San Diego Bay Watershed. Runoff from the Spring Valley Basin flows to the Sweetwater River. Runoff from the University Channel and Lemon Grove Basin contribute to Chollas Creek. The aforementioned creek and river flow into San Diego Bay.

Pollutants of concern associated with the watershed include diazinon, copper and zinc, fecal coliform, turbidity, and total suspended solids. The sources of these pollutants are a result of residential, agriculture or commercial pesticide application, automobiles and industrial waste, sewer spills, encampments, wildlife, erosion, suspended sediment, and fertilizers. Pollutants of concern for Chollas Creek in particular include metals such as copper, lead, zinc, cadmium, and coliform bacteria.

Ensuring that urban runoff is not contaminated with pollutants as a result of your business activities is an integral component in preserving the quality of life in San Diego County. It is your responsibility to help prevent these pollutants from entering the watershed in order to protect the environment and safe guard the natural resources. Introducing pollutants into the environment as a result of your business activities may contribute to beach closures and limit other recreational activities.

What Can You Do?

Remember, the only water that should enter the storm drain is rainwater. Do not hose down your property to ensure pollutants such as sediment, oil and grease, fertilizers, herbicides and pesticides, surfactants (soap), metals, trash, and other debris are not inadvertently flushed into the storm drain contributing to gross contamination of urban runoff. Moreover, store materials properly to ensure it is not exposed to storm water and do not over-irrigate your landscape. If you observe storm water pollution or illegal dumping into a storm drain, you should call the City's Storm Water Pollution prevention hotline at (619) 667-1134 to report the incident or visit the City's Website *www.cityoflamesa.com/Departments/PublicWorks/NPDES.htm*.

Good housekeeping and pollution prevention equates to improved water quality, and a cleaner environment equates to a better quality of life for everyone.

Cayayaanka wanaagsan ee doogga

HEALTHY GARDEN HEALTHY HOME

Beeraha doogga badankoodu waxay ka koobanyihiih noocyo badan oo ah cayayaan faa'iido leh oo ka badan cayayaanka dullinka ah. Cayayaanka faa'iidada leh iyo noolaha kale ee dila cayayaanka dullinka ah waxa la yidhaahdaa cadowga dabiiciga ah. Barnaamij kasta oo ah maamulka cayayaanka dullinka ah ama daryeelka dhirta, waa muhiim in la dhiirigeliyo cadowgan dabiiciga ah iyada oo la iska deynayo cayayaan dilaha sunta ah ee dila iyaga. Waxa kale oo aad dhiiri gelin kartaa cayayaanka faa'iidada leh adiga oo dooranaya dhir iyaga siisa ubax, dhabaq iyo hoy kana ilaalinaya qudhaanjada dhirta ay saameeyaan dullinku. Baro inaad ogaato cayayaanka faa'iidada leh, markay waaweynyihiin iyo markay ugxanta yihiinba.

Cayayaanka wanaagsan ee laga helo beelaha California waxa ka mid ah:

- Dalandoolida (lady beetle): markay waaweynaato iyo markay laarfaha tahayba waxay dishaa abhidhiska.
- Baranbarada (lacewing): laarfihiisu wuxuu cunaa cayayaan dullin ah oo badan; kiisa waaweyn waxa had iyo goor lagu ag arkaa laydhka.
- Duqsiga (Syrphid flies): laarfahiisu wuxuu cunaa abhidhka kiisa waaweyni wuxuu ku dul wareegaa ubaxyada.
- Dubulaxa yar ee dullinka ah: sinjiyo badan oo ah duburlaxa yar ayaa ugxantooda dhiga cayayaanka sida abhidhka ama diirta; laarfahooda dillaacayaa wuxuu cunaa cayayaanka oo dilaa.
- Caarooyinka: dhammaan caarooyinku waxay cunaan cayayaanka ama cayayaanka kale beertana faa'iido ayay u leeyihiin.

(gadaal ka eeg sawirada cayayaanka wanaagsan ee kor lagu magacaabay)

Waa maxay maaraynta cayayaanka ee xidhiidhsani?

Maaraynta cayayaanka ee xidhiidhsani (IPM)waxay isticmaashaa habab deegaan ahaan macquul ah waxtarna leh oo cayayaanka looga ilaaliyo inay kaa cadhaysiiyaan ama dhirta waxyeelo u gaadhsiiyaan. Barnaamijyada maaraynta cayayaanka ee xidhiidhsani waxay sida caadiga ah isu geeyaan dhowr hab oo ah kaantaroolidda cayayaanka si muddada dheer looga hortago loona maareeyo dhibaatooyinka cayayaanka iyadoo oo aanu ku dhibaatayn adiga, qoyskaaga ama deegaantaba – IPM waxa kale oo ay yaraysaa wasakhaynta biyaha California. IPM hirgalaa wuxuu ka bilaabmaa in si sax loo ogaado cayayaanka dullinka ah. Markaas oo keliya ayaa la samayn karaa in la doorto hababka IPMka iyo qalabyada.

Trồng Vườn với Các Loài Côn Trùng Có Lợi

HEALTHY GARDEN HEALTHY HOME

Hầu như khu vườn nào cũng đều có nhiều côn trùng có lợi hơn là côn trùng có hại. Côn trùng có lợi và các loài sinh vật khác có thể diệt côn trùng gây hại được gọi là kẻ thù tự nhiên. Khi áp dụng bất kỳ chương trình chăm sóc cây cỏ hoặc diệt động vật gây hại nào, điều quan trọng là cần phải khuyến khích sự tăng trưởng của các loài kẻ thù tự nhiên này bằng cách tránh dùng các loại thuốc trừ sâu có hại cho chúng. Quý vị cũng có thể chọn trồng các loài cây cung cấp phấn hoa, mật hoa, và nơi trú ngụ, đồng thời không để kiến xâm nhập các loại cây đã bị động vật gây hại. Học cách nhận biết các loại côn trùng có lợi, cả ở giai đoạn trưởng thành lẫn chưa trưởng thành (ấu trùng).

Những loài côn trùng có lợi thường gặp trong các khu vườn ở California là:

- Bọ cánh cứng: Cả bọ trưởng thành và ấu trùng đều ăn rệp vừng.
- Bọ cánh ren (Lacewing): Ấn trùng bọ cánh ren ăn nhiều loại côn trùng gây hại; thường gặp bọ trưởng thành ở những nơi có ánh sáng.
- Ruồi ong: Ấu trùng ruồi ong ăn rệp vừng; thường gặp ruồi ong trưởng thành bay ở những nơi có hoa.
- Ong bắp cày nhỏ sống ký sinh: Nhiều loài ong bắp cày nhỏ đẻ trứng trong các loài côn trùng gây hại như rệp hoặc sâu bướm; ấu trùng ong bắp cày sắp nở ăn và diệt côn trùng gây hại đó.
- Nhện: Tất cả các loài nhện đều ăn côn trùng hoặc động vật chân đốt nên có lợi cho vườn.

(Xin xem hình minh họa ở trang mặt sau về những loài côn trùng có lợi nói trên.)

Những loài côn trùng có lợi thường gặp trong các khu vườn ở California là:

Biện pháp diệt côn trùng gây hại toàn diện (IPM) sử dụng những cách thức có lợi cho môi trường mà vẫn hiệu quả để diệt loài côn trùng gây khó chịu hoặc phá hoại cây cối. Các chương trình IPM thường kết hợp nhiều phương pháp diệt côn trùng gây hại nhằm ngăn ngừa và kiểm soát lâu dài các vấn đề liên quan tới côn trùng gây hại mà không làm tổn hại tới quý — vị, gia đình quý vị hoặc môi trường - IPM cũng giúp giảm bớt tình trạng ô nhiễm hệ thống đường thủy tại California. Để áp dụng chương trình IPM thành công, trước hết chúng ta cần nhận dạng đúng loài côn trùng gây hại đó. Chỉ khi đó mới có thể chọn được phương pháp và chất IMP thích hợp.

Uso y desecho seguro de pesticidas

JARDÍN SANO CASA SANA

Los pesticidas son productos tóxicos para las plagas a controlar, ya sean insectos, malezas u otros invasores del hogar y jardín. Lea siempre con detenimiento las etiquetas de los pesticidas y siga todas las instrucciones sobre su uso, almacenaje y desecho adecuado de recipientes vacíos de pesticida. Las etiquetas son la principal fuente de información sobre el uso seguro y legal del producto, según normas establecidas para la protección personal, familiar y de animales domésticos. La única manera legal de desechar sobrantes de pesticidas es llevándolos a un centro de recolección de desechos domésticos peligrosos. Llame al 1-800-CLEANUP para encontrar el centro más cercano.

Si debe usar pesticidas, siga estas recomendaciones para reducir los efectos de los pesticidas en canales y aguas locales:

- Identifique la plaga causando el problema y escoja el pesticida menos tóxico que logre los resultados esperados. Si necesita ayuda para identificar el método menos tóxico de control de plagas, comuníquese con su oficina local de Extensión Cooperativa de la Universidad de California.
- Determine la cantidad necesaria de pesticida que debe comprar. Si sólo compra la cantidad exacta que va a aplicar, evita tener que almacenar el pesticida que le sobre.
- Siempre que pueda, use el pesticida sólo en el área afectada por la plaga.

En el exterior

- Evite exceso de riego después de aplicar pesticidas. Nunca permita que el agua se lleve los pesticidas a alcantarillas o desagües.
- No aplique pesticidas cuando se pronostica lluvia o hace viento.
- Evite aplicar pesticidas en lugares pavimentados.

En el interior

- No aplique pesticidas en desagües, lavaderos o fregaderos o cerca de ellos.
- No aplique pesticidas en lugares que se lavan, o enjuagan con agua, o donde se preparan o almacenan alimentos.

Safe Use & Disposal of Pesticides

HEALTHY GARDEN HEALTHY HOME

Pesticides are designed to be toxic to the pests they target — insects, weeds, and other unwanted home and garden invaders. Always read pesticide product labels carefully and follow all directions on proper use, storage, and disposal of empty pesticide containers. Product labels are your main source of information on how to use a product safely and legally. They include guidelines needed to protect you, your family, and pets. The only allowable way to dispose of unused pesticides is through a household hazardous waste collection site. For the site nearest you in San Diego County call 1-800-CLEANUP .

If you must use pesticides, follow these tips to reduce pesticide effects on your local waterways:

- Identify your pest problem and choose the least toxic pesticide that targets your pest and achieves the results you want. If you need help identifying the least toxic pest control method, contact your University of California Cooperative Extension office.
- Determine the right amount of pesticide to purchase. Purchasing exactly the amount you need for the application eliminates the need for storing unused pesticides.
- Use spot treatments whenever possible.

Outdoors

- Avoid overwatering after applying pesticides. Never let pesticide runoff flow into storm drains.
- Do not apply pesticides outdoors when rain is forecast or when it is windy.
- Avoid applying pesticides on paved areas.

Indoors

- Avoid applying pesticides in or near floor drains or sinks.
- Avoid applying pesticides on areas that will be washed or mopped with water, or where food is prepared or stored.

Hababka IPMka ee la doorbido waxa ka mid ah:

- Beeritaanka dhirta cayayaanka dullinka ah u adkaysata ama noocyo badan oo dhir ah oo kala duwan sida dhirta wadaniga ah.
- Kahortagga cayayaanka dullinka ah iyadoo la casriyaynayo sida aad u naqshadayso, waraabiso, nafaqayso, una maamusho beertaada.
- Iyada oo wax laga bedelo deegaanta guriga ama beerta si cayayaanka looga joojiyo cuntada, biyaha, hoyga ama waxyaabaha kale ee ay u baahanyihiin inay ku koraan.
- Iyadoo cayayaanka guriga laga ilaalinayo iyo beerta iyadoo la isticmaalayo deyrar, iskiriino iyo xayndaab.
- Burburinta, dabitaanka, maydhitaanka ama jaritaanka cayayaanka.
- Ku tiirsananaanta cayayaanka wanaagsan ee beertaada si ay u cunaan cayayaanka dullinka ah, iyagoo markaa baajinaya baahidii loo qabay sunta cayayaanka ee laga yaabo inay gasho kanaalada biyaheena.

Isticmaalidda sunta cayayaanka:

- Isticmaal sunta cayayaanka oo keliya markaanay waxyaabaha lagu kaantaroolo ee aan kimikada ahayni aanay shaqaynaynin cayayaankuna sii fidayo illaa iyo heer aan loo adkaysan karin.
- Isticmaal sunta cayayaanka iyo hababka kor lagu sharxay.
- U dooro sunta cayayaanka si taxadir leh si markaas ta ugu sunta yar uguna waxtar badan loo isticmaalo si loo ilaaliyo caafimaadka aadamiga iyo deegaantaba.

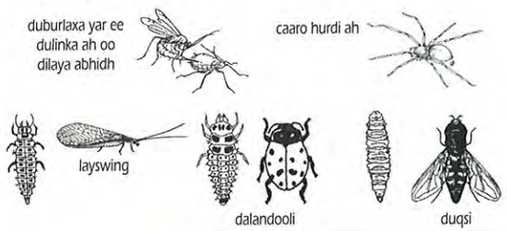

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org. Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Các phương pháp IPM được ưa chuộng bao gồm:

- Trồng các loài cây thích nghi tốt hoặc chịu được côn trùng gây hại như các loài cây nguyên sinh trong vùng.
- Kiểm soát côn trùng gây hại bằng cách thay đổi cách thiết kế, tưới nước, bón phân và quản lý khu vườn.
- Thay đổi vườn hoặc môi trường trong nhà để loại bỏ nguồn thức ăn, nước và nơi trú ngụ của côn trùng gây hại hoặc các điều kiện khác cần thiết để chúng phát triển.
- Dùng các tấm chắn, lưới chắn, và bịt kín để tránh côn trùng gây hại xâm nhập vào nhà.
- Diệt côn trùng gây hại bằng cách đập, đặt bẫy, xối nước hoặc xén tỉa bớt cây cỏ.
- Tận dụng các loài côn trùng có lợi trong vườn để ăn côn trùng gây hại, do đó không cần phải dùng các loại thuốc diệt côn trùng có thể làm ô nhiễm hệ thống đường thủy.

Dùng thuốc diệt côn trùng:

- Chỉ dùng thuốc diệt côn trùng khi các biện pháp diệt côn trùng không sử dụng hóa chất không có hiệu quả và các loài côn trùng gây hại phát triển tới mức không thể chấp nhận được.
- Dùng các loại thuốc diệt côn trùng kết hợp với các phương pháp nói trên.
- Chọn thuốc diệt côn trùng kỹ lưỡng để sử dụng chất ít độc hại nhất mà vẫn hiệu quả nhất để bảo vệ sức khỏe của con người và môi trường.

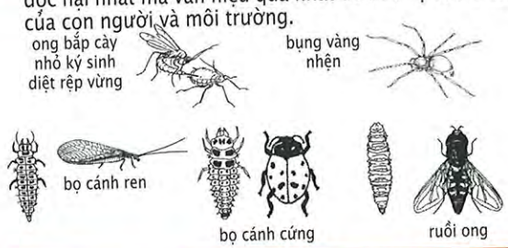

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Tome estas precauciones al usar y almacenar pesticidas:

- Use siempre camisa de manga larga, pantalones y protección para los ojos y todo el equipo recomendado en la etiqueta.
- Cierre bien los envases de pesticidas y guárdelos en un lugar bajo llave y lejos del alcance de los niños y animales domésticos.
- Siempre mantenga los pesticidas en su envase original.
- ¡Sepa a dónde llamar en caso de emergencia!

Desecho de pesticidas:

- Regale el pesticida, fertilizante o herbicida que le sobre a alguna persona que pueda usarlo.
- Las plantas de tratamiento de aguas residuales no están diseñadas para procesar ciertos pesticidas tóxicos como "diazinon y clorpirifos"; por lo tanto nunca se deben desechar pesticidas en alcantarillas, lavadero o fregaderos.
- La única manera legal de desechar sobrantes de pesticida es llevándolos a un centro de recolección de desechos dómesticos peligrosos. Llame a la Línea de Ayuda Ambiental de California al 1-800-CLEANUP para encontrar el centro más cercano.

Cómo encontrar los ingredientes activos en las etiquetas de pesticidas:

La ley exige que las etiquetas de pesticidas muestren los ingredientes activos y sus porcentajes. Evite usar o use al mínimo productos que contengan "diazinon y clorpirifos."

Active Ingredient
Chlorpyrifos..... 4.38%
Inactive Ingredients..... 95.62%
KEEP OUT OF REACH OF CHILDREN
CAUTION See back panel booklet for additional precautionary statements.
NET CONTENTS 32 FL OZ (1 QT) 946 mL

Estas sustancias están contaminando nuestras aguas. ¡Lea siempre la etiqueta antes de comprar el producto!

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

When using and storing pesticides take these precautions:

- Always wear a long-sleeved shirt, pants, and eye protection, and other equipment suggested on the label.
- Store products tightly capped in a locked cabinet out of reach from children and pets.
- Always keep pesticides in their original container.
- Know where to call for help in an emergency!

Pesticide disposal:

- If you cannot use up your pesticides, fertilizers, and weed killers, give them to a friend who may need them.
- Sewage treatment plants are not designed to treat for certain toxic pesticides like diazinon and chlorpyrifos — dumping pesticides into the storm drain or down the sink is never an option.
- The only allowable way to dispose of unused pesticides is through a household hazardous waste collection site. For household pesticide disposal information for San Diego County, call 1-800-CLEANUP.

Finding active ingredients on a pesticide label:

Pesticide labels are required by law to show the active ingredient and its percentage. Minimize or avoid the use of products that contain diazinon and chlorpyrifos – these materials are polluting our waterways. Always read the label before you buy!

Active Ingredient
Chlorpyrifos..... 4.38%
Inactive Ingredients..... 95.62%
KEEP OUT OF REACH OF CHILDREN
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NET CONTENTS 32 FL OZ (1 QT) 946 mL

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Cayayaanka wanaagsan ee doogga

HEALTHY GARDEN HEALTHY HOME

Beeraha doogga badankoodu waxay ka koobanyihiih noocyo badan oo ah cayayaan faa'iido leh oo ka badan cayayaanka dullinka ah. Cayayaanka faa'iidada leh iyo noolaha kale ee dila cayayaanka dullinka ah waxa la yidhaahdaa cadowga dabiiciga ah. Barnaamij kasta oo ah maamulka cayayaanka dullinka ah ama daryeelka dhirta, waa muhiim in la dhiirigeliyo cadowgan dabiiciga ah iyada oo la iska deynayo cayayaan dilaha sunta ah ee dila iyaga. Waxa kale oo aad dhiiri gelin kartaa cayayaanka faa'iidada leh adiga oo dooranaya dhir iyaga siisa ubax, dhabaq iyo hoy kana ilaalinaya qudhaanjada dhirta ay saameeyaan dullinku. Baro inaad ogaato cayayaanka faa'iidada leh, markay waaweynyihiin iyo markay ugxanta yihiinba.

Cayayaanka wanaagsan ee laga helo beelaha California waxa ka mid ah:

- Dalandoolida (lady beetle): markay waaweynaato iyo markay laarfaha tahayba waxay dishaa abhidhiska.
- Baranbarada (lacewing): laarfihiisu wuxuu cunaa cayayaan dullin ah oo badan; kiisa waaweyn waxa had iyo goor lagu ag arkaa laydhka.
- Duqsiga (Syrphid flies): laarfahiisu wuxuu cunaa abhidhka kiisa waaweyni wuxuu ku dul wareegaa ubaxyada.
- Dubulaxa yar ee dullinka ah: sinjiyo badan oo ah duburlaxa yar ayaa ugxantooda dhiga cayayaanka sida abhidhka ama diirta; laarfahooda dillaacayaa wuxuu cunaa cayayaanka oo dilaa.
- Caarooyinka: dhammaan caarooyinku waxay cunaan cayayaanka ama cayayaanka kale beertana faa'iido ayay u leeyihiin.

(gadaal ka eeg sawirada cayayaanka wanaagsan ee kor lagu magacaabay)

Waa maxay maaraynta cayayaanka ee xidhiidhsani?

Maaraynta cayayaanka ee xidhiidhsani (IPM)waxay isticmaashaa habab deegaan ahaan macquul ah waxtarna leh oo cayayaanka looga ilaaliyo inay kaa cadhaysiiyaan ama dhirta waxyeelo u gaadhsiiyaan. Barnaamijyada maaraynta cayayaanka ee xidhiidhsani waxay sida caadiga ah isu geeyaan dhowr hab oo ah kaantaroolidda cayayaanka si muddada dheer looga hortago loona maareeyo dhibaatooyinka cayayaanka iyadoo oo aanu ku dhibaatayn adiga, qoyskaaga ama deegaantaba – IPM waxa kale oo ay yaraysaa wasakhaynta biyaha California. IPM hirgalaa wuxuu ka bilaabmaa in si sax loo ogaado cayayaanka dullinka ah. Markaas oo keliya ayaa la samayn karaa in la doorto hababka IPMka iyo qalabyada.

Trồng Vườn với Các Loài Côn Trùng Có Lợi

HEALTHY GARDEN HEALTHY HOME

Hầu như khu vườn nào cũng đều có nhiều côn trùng có lợi hơn là côn trùng có hại. Côn trùng có lợi và các loài sinh vật khác có thể diệt côn trùng gây hại được gọi là kẻ thù tự nhiên. Khi áp dụng bất kỳ chương trình chăm sóc cây cỏ hoặc diệt động vật gây hại nào, điều quan trọng là cần phải khuyến khích sự tăng trưởng của các loài kẻ thù tự nhiên này bằng cách tránh dùng các loại thuốc trừ sâu có hại cho chúng. Quý vị cũng có thể chọn trồng các loài cây cung cấp phấn hoa, mật hoa, và nơi trú ngụ, đồng thời không để kiến xâm nhập các loại cây đã bị động vật gây hại. Học cách nhận biết các loại côn trùng có lợi, cả ở giai đoạn trưởng thành lẫn chưa trưởng thành (ấu trùng).

Những loài côn trùng có lợi thường gặp trong các khu vườn ở California là:

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- Ruồi ong: Ấu trùng ruồi ong ăn rệp vừng; thường gặp ruồi ong trưởng thành bay ở những nơi có hoa.
- Ong bắp cày nhỏ sống ký sinh: Nhiều loài ong bắp cày nhỏ đẻ trứng trong các loài côn trùng gây hại như rệp hoặc sâu bướm; ấu trùng ong bắp cày sắp nở ăn và diệt côn trùng gây hại đó.
- Nhện: Tất cả các loài nhện đều ăn côn trùng hoặc động vật chân đốt nên có lợi cho vườn.

(Xin xem hình minh họa ở trang mặt sau về những loài côn trùng có lợi nói trên.)

Những loài côn trùng có lợi thường gặp trong các khu vườn ở California là:

Biện pháp diệt côn trùng gây hại toàn diện (IPM) sử dụng những cách thức có lợi cho môi trường mà vẫn hiệu quả để diệt loài côn trùng gây khó chịu hoặc phá hoại cây cối. Các chương trình IPM thường kết hợp nhiều phương pháp diệt côn trùng gây hại nhằm ngăn ngừa và kiểm soát lâu dài các vấn đề liên quan tới côn trùng gây hại mà không làm tổn hại tới quý — vị, gia đình quý vị hoặc môi trường - IPM cũng giúp giảm bớt tình trạng ô nhiễm hệ thống đường thủy tại California. Để áp dụng chương trình IPM thành công, trước hết chúng ta cần nhận dạng đúng loài côn trùng gây hại đó. Chỉ khi đó mới có thể chọn được phương pháp và chất IMP thích hợp.

Manejo integrado de plagas y control biológico

JARDÍN SANO CASA SANA

En la mayoría de los jardines y huertos hay muchos más insectos benéficos que plagas. Se conocen como enemigos naturales a los insectos benéficos y a otros organismos que matan a las plagas. En todo programa de control de plagas o de cuidado de plantas se debe proteger a estos enemigos naturales evitando usar insecticidas que los maten. Usted también puede fomentar los insectos benéficos si incluye plantas que les provean polen, néctar y albergue, y mantiene a las hormigas lejos de plantas infestadas con alguna plaga. Aprenda a identificar los insectos benéficos, tanto a los adultos como a las larvas.

Insectos benéficos que se encuentran en jardines en California:

- Catarinitas: tanto los adultos como las larvas se alimentan de pulgones.
- León de áfidos: Sus larvas se alimentan de muchas plagas; con frecuencia se puede ver a los adultos en las cercanías de luces.
- Moscas sírfidas: sus larvas se alimentan de pulgones; los adultos revolotean alrededor de flores.
- Avispita parásita: muchas clases de avispas diminutas ponen sus huevos en plagas como pulgones, gusanos u orugas.
- Arañas: todas las arañas se alimentan de insectos u otros artrópodos y son benéficas para el jardín.

¿Qué es el manejo integrado de plagas?

El manejo integrado de plagas (IPM en inglés) usa métodos efectivos que no dañan al medio ambiente para evitar las molestias que provocan las plagas y el daño que ellas causan a las plantas. Este tipo de programa usualmente combina varios métodos de control de plagas para prevenir y manejar plagas a largo plazo, sin afectar a las personas o al medio ambiente. El control integrado de plagas reduce también la contaminación de las aguas en California. El éxito con estos métodos empieza con la identificación acertada de la plaga; sólo entonces se puedan escoger los métodos y materiales apropiados para su control.

Gardening with Good Bugs

HEALTHY GARDEN HEALTHY HOME

Most gardens contain far more types of good bugs, or beneficial insects, than pest insects. Beneficial insects and other organisms that kill pest insects are called natural enemies. In any pest management or plant care program, it is important to encourage these natural enemies by avoiding pesticides that kill them. You can also encourage beneficial insects by choosing plants that provide them with pollen, nectar, and shelter and keeping ants out of pest-infested plants. Learn to identify good bugs, both in their adult forms and immature (larval) stages.

Common good bugs found in California gardens include:

- Lady beetles: Both adults and larvae consume aphids.
- Lacewings: Lacewing larvae feed on many insect pests; adults are often seen around lights.
- Syrphid flies: Syrphid fly larvae consume aphids; adults hover around flowers.
- Parasitic mini-wasps: Many species of tiny wasps lay their eggs in pests like aphids or caterpillars; their hatching larvae consume the pest and kill it.
- Spiders: All spiders feed on insects or other arthropods and are beneficial in the garden.

(See reverse for drawings of good bugs mentioned above.)

What is Integrated Pest Management?

Integrated pest management (IPM) uses environmentally sound, yet effective, ways to keep pests from annoying you or damaging plants. IPM programs usually combine several pest control methods for long-term prevention and management of pest problems without harming you, your family, or the environment — IPM also reduces pollution in California waterways. Successful IPM begins with correct identification of the pest. Only then can selection of the appropriate IPM methods and materials be made.

Hababka IPMka ee la doorbido waxa ka mid ah:

- Beeritaanka dhirta cayayaanka dullinka ah u adkaysata ama noocyo badan oo dhir ah oo kala duwan sida dhirta wadaniga ah.
- Kahortagga cayayaanka dullinka ah iyadoo la casriyaynayo sida aad u naqshadayso, waraabiso, nafaqayso, una maamusho beertaada.
- Iyada oo wax laga bedelo deegaanta guriga ama beerta si cayayaanka looga joojiyo cuntada, biyaha, hoyga ama waxyaabaha kale ee ay u baahanyihiin inay ku koraan.
- Iyadoo cayayaanka guriga laga ilaalinayo iyo beerta iyadoo la isticmaalayo deyrar, iskiriino iyo xayndaab.
- Burburinta, dabitaanka, maydhitaanka ama jaritaanka cayayaanka.
- Ku tiirsananaanta cayayaanka wanaagsan ee beertaada si ay u cunaan cayayaanka dullinka ah, iyagoo markaa baajinaya baahidii loo qabay sunta cayayaanka ee laga yaabo inay gasho kanaalada biyaheena.

Isticmaalidda sunta cayayaanka:

- Isticmaal sunta cayayaanka oo keliya markaanay waxyaabaha lagu kaantaroolo ee aan kimikada ahayni aanay shaqaynaynin cayayaankuna sii fidayo illaa iyo heer aan loo adkaysan karin.
- Isticmaal sunta cayayaanka iyo hababka kor lagu sharxay.
- U dooro sunta cayayaanka si taxadir leh si markaas ta ugu sunta yar uguna waxtar badan loo isticmaalo si loo ilaaliyo caafimaadka aadamiga iyo deegaantaba.

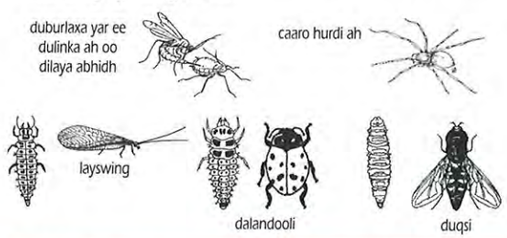

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org. Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Các phương pháp IPM được ưa chuộng bao gồm:

- Trồng các loài cây thích nghi tốt hoặc chịu được côn trùng gây hại như các loài cây nguyên sinh trong vùng.
- Kiểm soát côn trùng gây hại bằng cách thay đổi cách thiết kế, tưới nước, bón phân và quản lý khu vườn.
- Thay đổi vườn hoặc môi trường trong nhà để loại bỏ nguồn thức ăn, nước và nơi trú ngụ của côn trùng gây hại hoặc các điều kiện khác cần thiết để chúng phát triển.
- Dùng các tấm chắn, lưới chắn, và bịt kín để tránh côn trùng gây hại xâm nhập vào nhà.
- Diệt côn trùng gây hại bằng cách đập, đặt bẫy, xối nước hoặc xén tỉa bớt cây cỏ.
- Tận dụng các loài côn trùng có lợi trong vườn để ăn côn trùng gây hại, do đó không cần phải dùng các loại thuốc diệt côn trùng có thể làm ô nhiễm hệ thống đường thủy.

Dùng thuốc diệt côn trùng:

- Chỉ dùng thuốc diệt côn trùng khi các biện pháp diệt côn trùng không sử dụng hóa chất không có hiệu quả và các loài côn trùng gây hại phát triển tới mức không thể chấp nhận được.
- Dùng các loại thuốc diệt côn trùng kết hợp với các phương pháp nói trên.
- Chọn thuốc diệt côn trùng kỹ lưỡng để sử dụng chất ít độc hại nhất mà vẫn hiệu quả nhất để bảo vệ sức khỏe của con người và môi trường.

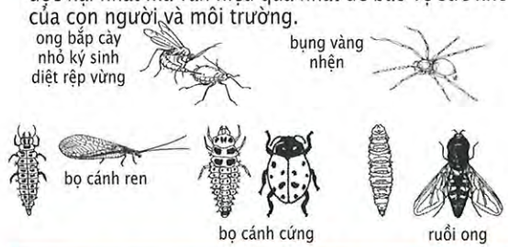

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org. Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Las mejores prácticas de Control Integrado de Plagas:

- Sembrar variedades de plantas bien adaptadas o resistentes a las plagas, como plantas nativas de la región.
- Modificar el diseño, riego, uso de fertilizante y manejo del huerto o jardín para no fomentar plagas.
- Hacer cambios en el jardín, huerto o en el hogar para evitar que las plagas tengan agua, alimento, albergue y demás que necesitan para sobrevivir.
- Usar barreras, tejido de alambre y silicona para mantener a las plagas fuera del hogar y jardín
- Aplastar o atrapar plagas, o quitarlas de las plantas con agua o podando.
- Dejar que los insectos benéficos en el huerto o jardín se coman a las plaga, eliminando así la necesidad de usar insecticidas que puedan llegar a contaminar las aguas.

Si va a usar pesticidas:

- Sólo use pesticidas cuando los métodos sin productos químicos no dan resultado y cuando la cantidad de insectos es intolerable.
- Use pesticidas junto con los métodos mencionados anteriormente.
- Escoja los pesticidas cuidadosamente; use el producto más eficaz contra la plaga pero menos tóxicos para proteger la salud y el medio ambiente.

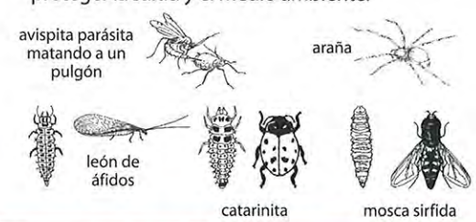

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Preferred Integrated Pest Management (IPM) methods include:

- Planting pest-resistant or well-adapted plant varieties like native plants.
- Discouraging pests by modifying the way you design, irrigate, fertilize, and manage your garden.
- Altering the garden or home environment to deprive pests of the food, water, shelter or other requirements they need to thrive.
- Keeping pests out of the home and garden using barriers, screens, and caulking.
- Squashing, trapping, washing off or pruning out pests.
- Relying on good bugs in your garden to eat pests, thereby eliminating the need for insecticides that may end up in our waterways.

Turning to pesticides:

- Only use pesticides when non-chemical controls are ineffective and pests are reaching intolerable levels.
- Use pesticides in combination with the methods described above.
- Choose pesticides carefully so that the least toxic, most effective material is used to protect human health and the environment.

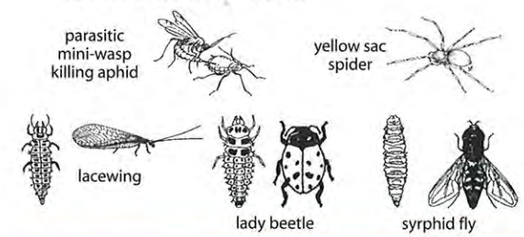

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org. For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

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It's the water that connects us!

Qudhaajada

Qudhaajadu waxaa ay ka mid tahay cayayaanka ku badan California. Inkastoo qudhaanjada ay dhib sidato masna marka ay gudaha soo galaan, waxaa faa'ido ay u leeyihiin dheefinta booddada, aboorka, iyo cayayaanka kale ee ku nool jardiinada. Iyadoo buufiska kiimikada ee aqalka gudihiisa ay waxtar yeelan karto, balse kama ay hortagayso in qudhaajo dheeraad ah ay aqalka soo gasho, iyadoo ay muhiim u tahay xad u yeelista sababtoo ah qudhaajada badankeed dibedda ayeey cuush ku leedahay. Dadaalka xoog saaridda maamulka ee dhismooyinka looga saarayo qudhaajada ama dhirta qiimaha leh.

Waxaad aqalkaaga ka dhigtaa meel ay qudhaajadu ka helin:

- Dildillaacyada kabaha ay kabahu sameeyaan ayaa albaab ay ku soo galaan ah.
- Waxaad cuntada soo jiita ku xareysaa meel xiran.
- Ka nadiifi waxyaabaha daata iyo dufanka.
- Waxaad ka eegtaa islamarkaana aad ka nadiifisaa cushashka ay ku abuurmaan, sida dhirta aqalka gudihiisa taal.
- Bacda qashinka qudhaajada loogu talagalay, waxaa ay leedahay meelo dhegdhegaya oo la mariyey saliidda shidaalka halka hoose iyo suxuun shidaal marsan yahay kuwaasoo la gelinayo xirmo biyo len.
- Ka dhaqaaji waxyaabaha cuntada mac-macaanka laga sameeyo aqalkaaga agagaarkiisa sida cowska cayayaanka iyo khudradda bisil.

Marka ay qudhaajadu aqalkaaga soo weerarto, waxaad qaadataa tallaabooyinka soo socda:

- Waxaad marisaa biyo saabuun leh islamarka ay soo galaan.
- Ka xidh halka ay ka soo galayaan adigoo marinaya saliidda shidaalka ama shey xidha.
- Dhaqaaji dhirta cayayaanka leh.
- Nadiifi halka cuntadu ku jidho
- Waxaad ku tashataa cuntada dabinka si aad xad ugu yeeshid qudhaajada badan
- Buufiska aqalka gudihiisa caadiyan looma baahna.

Kiến

Kiến là một trong những loài gây hại thường gặp nhất tại Tiểu Bang California. Mặc dù mọi người thường khó chịu khi thấy trong nhà có kiến nhưng vẫn có thể coi kiến là động vật có lợi vì chúng ăn bọ chét, mối, và các sinh vật phá hoại khác ở trong vườn. Mặc dù việc xịt hóa chất ở trong nhà có thể khá hiệu quả, nhưng vẫn không ngăn chặn được những con kiến khác xâm nhập vào nhà - đây là điều tối quan trọng trong việc diệt kiến vì đa số kiến đều làm tổ ở bên ngoài nhà. Chú trọng kiểm soát bằng cách đuổi kiến ra khỏi các tòa nhà hoặc các loại cây quý.

Hãy làm cho căn nhà của quý vị ít hấp dẫn kiến hơn:

- Trát kín các vết nứt và kẽ hở tạo thành lối vào bên trong nhà.
- Cất trữ các loại thực phẩm hấp dẫn kiến trong các hộp đựng có nắp đậy kín.
- Lau chùi dầu mỡ và những nơi có dầu mỡ đổ ra ngoài.
- Tìm và loại bỏ những nơi kiến làm tổ bên trong nhà, ví dụ như bên trong chậu cây kiểng.
- Sử dụng loại thùng rác có chất dính trong bếp để chống kiến như bôi thạch dầu hỏa dưới miệng thùng và đặt đĩa đựng thức ăn của thú nuôi trong một chiếc tô đựng nước.
- Loại bỏ các nguồn thức ăn ngọt ở bên cạnh nhà, thí dụ như các bụi cây đã bị rệp cắn và trái cây chín nẫu trên cây.

Khi quý vị thấy có kiến ở trong nhà, hãy thực hiện các bước sau đây:

- Đổ nước xà bông lên kiến ngay khi chúng vào nhà.
- Dùng ma tít hoặc thạch dầu hỏa để nút chặn các đường vào của kiến.
- Loại bỏ các chậu cây kiểng bị kiến phá hoại.
- Lau dọn sạch những nơi có thức ăn đổ ra ngoài.
- Dùng bả để diệt đàn kiến.
- Thường không cần phải xịt thuốc diệt kiến ở trong nhà.

Las hormigas

Las hormigas son una de las plagas más comunes en California. Aunque las hormigas son una molestia dentro del hogar, pueden ser beneficiosas al alimentarse de pulgas, termitas y otras plagas en el huerto o jardín. A pesar de que rociar sustancias químicas puede parecer eficaz para controlar hormigas dentro del hogar, ésto no previene que entren más hormigas, factor clave para su control, ya que la mayoría de hormigas hacen sus hormigueros afuera. Se recomienda concentrar los esfuerzos en excluir las hormigas de edificios y plantas valiosas.

Revise su vivienda para que no atraiga hormigas:

- Rellene o tape grietas y rajaduras que permitan la entrada de hormigas.
- Almacene alimentos que atraen hormigas en recipientes cerrados.
- Limpie grasa y alimento o líquido derramado.
- Busque y elimine lugares en el interior donde las hormigas anidan, como dentro de macetas.
- Para evitar que las hormigas sean atraídas a la cocina, unte el borde del bote de basura con una barrera pegajosa como vaselina (petrolato); coloque los recipientes de comida de animales domésticos dentro de otro recipiente que contenga agua.
- Quite toda fuente de alimento dulce que haya junto a su casa, como arbustos infestados de pulgones o áfidos y fruta madura en los árboles.

Si las hormigas invaden su hogar, tome las siguientes medidas:

- En cuanto entren a la casa, elimínelas con una esponja con agua jabonosa.
- Tape con silicona o vaselina todas las entradas que usan las hormigas.
- Saque las macetas con plantas infestadas.
- No deje nada que pueda servirles de alimento.
- Use cebos para controlar la colonia de hormigas.
- Por lo general, no es necesario rociar productos químicos en el interior.

Ants

Ants are one of the most prevalent pests in California. Although ants are annoying when they come indoors, they can be beneficial by feeding on fleas, termites, and other pests in the garden. While spraying chemicals inside the house may seem effective, it won't prevent more ants from entering your home, which is essential for control because most ants nest outside. Focus management efforts on excluding ants from buildings or valuable plants.

Make your house less attractive to ants:

- Caulk cracks and crevices that provide entry inside.
- Store attractive food in closed containers.
- Clean up grease and spills.
- Look for and remove indoor nesting sites, such as inside potted plants.
- Ant-proof kitchen garbage pails with sticky barriers such as petroleum jelly under the lip and pet dishes by placing them in a moat of water.
- Remove sweet food sources next to your house such as aphid-infested bushes and ripened fruit on trees.

When ants invade your house, take these steps:

- Sponge invaders with soapy water as soon as they enter.
- Plug up ant entryways with caulk or petroleum jelly.
- Remove infested potted plants.
- Clean up food sources.
- Rely on baits to control the ant colony.
- Indoor sprays are not usually necessary.

Sida iyo sababta uu dabinku ugu fiican yahay:

Marka aad isticmaalaysid cuntada dabinka leh, waxaad dhigtaa halka qudhaajadu marto iyo furriinnada cushashka. Qudhaajada shaqaalaha ah waxaa lagu soo jiidanayaa cuntada dabinka ku xiran iyadoo la geynayo illaa salka cushka halkaasoo dhammaan qudhaajada, oo ay boqoradda ku jidho, ku dhimanayaan. Cuntada dabinka ku xiran waa in uu noqdaa mid aayar u shaqeeya si shaqaalaha qudhaajada aysan u dhiman ka hor inta aan salka cushka la gaarsiin. Waxaa laga yaabaa in ay dhowr toddobaad qaadato si natiijadu ay u muuqato. Dilka shaqaalaha qudhaajada cunno doonka ah oo kaliya in yar ayeey ka taraysaa xad u yeelidda qudhaajada badankeeda, sababtoo ah in ka yar boqolkiiba hal ee shaqaalaha qudhaajada cunno doonka ah ayaa karaya in ay cunto ku filan u geeyaan boqorradda iyo kuwa abuurmaya. Cuntada dabinka ah iyo saldhigyada cuntada dabinka ah ama dabinka alwaaxa ah ayaa isticmaalka ugu fudud badbaadana u leh bey'adda.

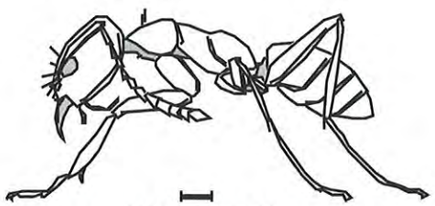

(cabbirka saxda ah)

Waxaad isticmaashaa qaababka AAN KIIMIKADA AHAYN iyo suntan HALISTEEDU UGU YAR TAHAY WAA MAXAY SABABTA? Biyo qaadka aqalkaaga iyo jardiinada waxaa ay biyaha sunta leh geeyaan ilaha, wabiyada, harooyinka iyo badweynta.

Waxaad wax dheeraad ah ka barataa taya da biyaha deegaanka San Diego: www.ThinkBlueSD.org & www.ProjectCleanWater.org. Si aad macluumaad dheeraad ah u heshid waxaad soo booqataa bogga internetka ee IPM Jaamacadda California: www.ipm.ucdavis.edu ama UCCE Master Jardiinooyinka: (858) 694-2860, Isn - Jim, 9 sub to 3 gal

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Bả kiến có tác dụng như thế nào và tại sao bả kiến lại có tác dụng nhất:

Khi dùng bả kiến, đặt bả dọc theo các đường đi của kiến và các cửa ra vào của tổ kiến. Những con kiến thợ sẽ bị bả hấp dẫn và sẽ mang bả về tổ. Sau đó cả đàn kiến, kể cả những con kiến chúa, sẽ bị giết. Bả phải có tác dụng ngấm dần để các con kiến thợ không bị chết trước khi quay về tổ. Có thể phải mất vài tuần mới thấy được kết quả. Nếu chỉ diệt những con kiến thợ quấy phá nhà hoặc vườn của quý vị, việc đó ít có tác dụng kiểm soát đàn kiến, vì chỉ cần một phần trăm số kiến thợ quấy phá cũng có thể cung cấp đủ thức ăn để nuôi sống các con kiến chúa và trứng nằm trong tổ. Bả kiến đặt trong các dụng cụ đánh bả hoặc các cọc diệt kiến là dễ sử dụng nhất và an toàn nhất cho môi trường.

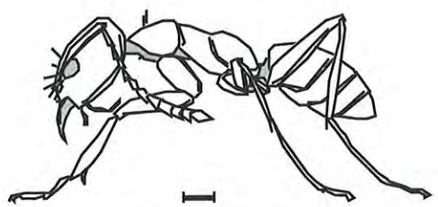

kích thước thực tế

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

¿Cuándo y porqué los cebos son más efectivos?

Coloque el cebo a lo largo del camino de las hormigas y a la entrada del hormiguero. El cebo atraerá a las hormigas obreras, quienes lo llevan al nido donde posiblemente puede matar a toda la colonia, inclusive a la reina. El cebo debe ser de acción retardada para que las hormigas obreras no mueran antes de llegar al hormiguero. Pueden pasar varias semanas antes de ver el resultado. Muy poco se logra controlando a las hormigas obreras forrajeando dentro del hogar o el jardín ya que sólo se requiere el uno por ciento de las obreras de una colonia para alimentar a la reina y las larvas dentro del hormiguero. Las cajillas de cebo o las estacas contra hormigas son fáciles de usar y no afectan el medio ambiente. Busque productos que contengan fipronil, "hydramethylnon" o ácido bórico (boric acid).

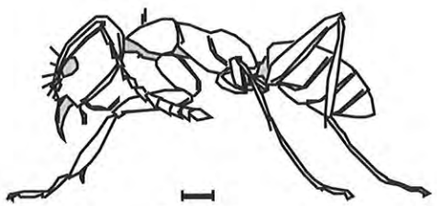

(tamaño real)

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

How and why baits work best:

When using bait, place it along ant trails and at nest openings. Worker ants will be attracted to bait and take it back to the nest where the entire colony, including queens, may be killed. The bait must be slow-acting so workers won't be killed before they get back to the nest. It may take several weeks for results to be evident. Just killing workers foraging in your home or garden does little to control the colony, because as few as one percent of a colony's foraging worker ants are able to provide sufficient food to support nestbound queens and larvae. Baits in bait stations or ant stakes are easiest to use and safest for the environment.

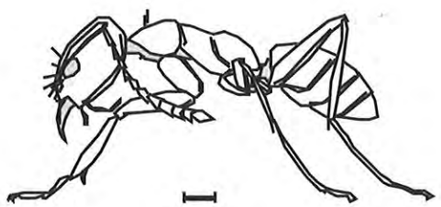

(actual size)

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org. For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Cayayaanka Doogga

HEALTHY GARDEN HEALTHY HOME

Si kasoo horjeedda sida badanaa la aaminsanyahay, cayayaanku ma aha waxa ugu badan ee sababa burburka doogga guryaha ee California. Daryeelka doogga oo hooseeya, gaar ahaan waraabin aan ku habboonayn iyo beeritaanka sinjiga doogga ah ee aan ku habboonayn, ayaa laga yaabaa inay sababaan ama keenaan doogga oo dhinta. Waxyaabaha xanuunka dhaliya, kimiko badan ama aan ku habboonayn oo la isticmaalo sida carro nafaqeeye iyo sunta dhirta, ama kaadida eyda ayaa iyaguna keena doogga oo dhinta oo u eg ka uu cayayaanku keeno. Cayayaan badan oo doogga ku nool ayaa faa'iido leh. Weligaa ha ku daadin sunta cayayaanka iyada oo heerka dhibaatada ee cayayaan la yaqaano la xaqiijiyo. Sunta cayayaanku waxa keliya oo ay shaqeeyaan haddii lagu daadiyo waqtiga ku habboon sida ku habboonna loogu daadiyo, qaar ka mid ah sunta cayayaanka ayaa laga yaabaa inay disho cayayaan wanaagsan.

Sidee ayaad u ogaanaysaa inay cayayaanku dhibaatada keenayaan?

- Meelaha cawl cawlan ee doogga waxa keeni kara biyo badan ama ku yar, cudur dhirta ku dhaca, kimiko si aan habboonayn loogu isticmaalay, ama kaadi ey iyo cayayaanba.
- Xaqiiji inuu ku jiro cayayaan kahor intaanad sunta cayayaanka ku shubin. Cayayaanka aadka u yaryar xididada qod, cayayaanka kale samee baadhitaanka qoynta (gadaal ka eeg.)

Kadhig dooggaaga mid caafimaad qaba adiga oo:

- Beeraya sinji doog ah oo si fiican uga baxa aagaaga
- U waraabinaya si qoto dheer oo joogto ah
- Si joogto ah u dayactiraya madaxyada qalabka biyaha firdhiya
- Qo ku daraya 3 illaa 6 rodol oo naytarojiin ah 1000kii fiit ee laba jibbaaranba sannadkii markaad nafaqaynayso.
- Hawada ku sii deynaya sannadkii mar; ka jar baarka sare haddii uu ka dheeraado ½ iinj
- Jaraya saddexdii meeloodba meel keliya illaa iyo mid badhkii dhererka doogga markasta oo aad goonayso mishiinka jar ilkhiisana soofaynaya

Ka eeg hagaha UC ee Doogga Caafimaadka Qaba
www.ipm.ucdavis.edu

Các Loài Côn Trùng Trong Sân Vườn

HEALTHY GARDEN HEALTHY HOME

Trái với những gì mọi người thường nghĩ, côn trùng thường không phải là nguyên nhân gây hại cho sân vườn ở tiểu bang California. Việc chăm sóc sân vườn không thích hợp, đặc biệt là tưới nước và trồng các loài cỏ không thích hợp thường là nguyên nhân làm cho cây cối bị bệnh hoặc chết. Các chất gây bệnh, việc sử dụng quá nhiều hoặc không thích hợp các loại hóa chất như phân bón và thuốc diệt cỏ, nước tiểu của chó cũng gây hại cho cây cỏ trong vườn giống như côn trùng. Nhiều loài côn trùng trong sân vườn rất có lợi. Không bao giờ dùng thuốc diệt côn trùng trừ khi đã biết chắc độ thiệt hại do một loại côn trùng gây hại mà quý vị biết. Các loại thuốc diệt côn trùng chỉ có tác dụng nếu dùng đúng cách vào thời điểm thích hợp. Một số loại thuốc diệt côn trùng cũng có thể diệt các loài sâu bọ có lợi.

Làm thế nào để biết là côn trùng gây hại?

- Các đốm nâu trong cây cỏ trên sân vườn có thể là do tưới nước quá nhiều hoặc tưới không đủ, do bệnh thực vật, do sử dụng hóa chất không thích hợp, hoặc do nước tiểu của chó cũng như côn trùng.
- Nên kiểm tra sự hiện diện của côn trùng trước khi sử dụng thuốc diệt côn trùng. Để diệt ấu trùng, hãy đào xung quanh rễ cây, hoặc kiểm tra nồng độ để diệt các loại côn trùng khác. (Xin xem mặt sau.)

Giữ cây cỏ trong sân vườn khỏe mạnh bằng cách:

- Trồng loại cỏ phù hợp với vùng đất của quý vị
- Tưới nước xuống thật sâu và không được tưới thường xuyên
- Tiến hành bảo trì đầu vòi phun nước theo định kỳ
- Mỗi năm chỉ bón từ 3 tới 6 pound phân đạm trên mỗi 1000 feet vuông vườn
- Làm thông khí cho sân vườn hàng năm; cắt bỏ lớp mái lờm xờm nếu lớp mái này dài quá 1¦2 inch
- Chỉ cắt từ một phần ba tới một nửa chiều cao của nhánh cỏ mỗi khi xén cỏ và bảo đảm là lưỡi dao của máy xén cỏ vẫn còn sắc

Xin xem Cẩm Nang Hướng Dẫn Cách Bảo Vệ Sân Vườn của UC (UC Giude to Healthy Lawns) tại địa chỉ
www.ipm.ucdavis.edu

Insectos del césped

JARDÍN SANO CASA SANA

Contrario a lo que se cree, los insectos comúnmente no causan daños al césped en California. Lo más probable que cause enfermedad y muerte es el césped mal cuidado, especialmente cuando se riega indebidamente o se usan especies de césped inadecuados. El uso indebido o excesivo de productos químicos como fertilizantes y herbicidas, la orina de perro y agentes causantes de enfermedades, producen daño al césped, parecido al que causan los insectos. Muchos insectos que habitan en el césped son benéficos. Nunca aplique un insecticida a menos que haya confirmado la presencia de una plaga en números dañinos. Los insecticidas son efectivos únicamente si se aplican de la manera y en el momento adecuados. Algunos insecticidas también pueden matar insectos benéficos.

¿Cómo saber si el daño es causado por insectos?

- Las manchas pardas en el césped pueden ser el resultado de insectos, pero también pueden ser debido a riego insuficiente o excesivo, enfermedad, uso inadecuado de productos químicos o la orina de perro.
- Antes de aplicar un insecticida, confirme la presencia de insectos en el césped. Para encontrar larvas de escarabajos, escarbe alrededor de las raíces; para otros insectos, realice la prueba de sumersión.

Para mantener el césped en buen estado:

- Plante especies de césped que crecen bien en su zona.
- Riegue abundantemente y con poca frecuencia.
- Mantenga en buen estado los grifos del sistema de riego.
- Al fertilizar, aplique anualmente no más de 3 a 6 libras total de nitrógeno por cada mil pies cuadrados.
- Anualmente oxigene el césped y quite la paja (tallos, hojas y raíces de césped viejo) si ésta sobrepasa 1/2 pulgada de grosor.
- Al podar el césped, corte no más de 1/3 a 1/2 de su altura y mantenga afiladas las cuchillas de la podadora.

Lawn Insects

HEALTHY GARDEN HEALTHY HOME

Contrary to popular belief, insects are not a common cause of residential lawn damage in California. Poor lawn care, especially improper watering and planting inappropriate grass species, are more likely causes of unhealthy or dying lawns. Disease-causing agents, excess or inappropriate use of chemicals such as fertilizer and herbicides, or dog urine also produce lawn damage resembling that of insects. Many insects in the lawn are beneficial. Never apply an insecticide unless a damaging level of a known insect pest is confirmed. Insecticides are only effective if applied at the right time and in the right manner. Some insecticides may kill good bugs too.

How do you know if insects are causing damage?

- Brown spots in lawns can be caused by over- or under-irrigation, plant disease, improper use of chemicals, or dog urine as well as insects.
- Confirm presence of insects before applying an insecticide. For grubs, dig around roots, for other insects perform a drench test. (See reverse side.)

Keep your lawn healthy by:

- Planting grass species that do well in your area
- Irrigating deeply and infrequently
- Doing routine maintenance on sprinkler heads
- Applying only 3 to 6 pounds of actual nitrogen per 1000 square feet per year when fertilizing
- Aerating your lawn annually; remove thatch if it exceeds 1/2 inch
- Cutting only one-third to one-half of grass height at each mowing and keeping lawnmower blades sharp

See the UC Guide to Healthy Lawns at
www.ipm.ucdavis.edu

Haddii cayayaan dhibaato keenaya la xaqiijiyo, samee waxyaabaha soo socda:

- Dooro sunta cayayaanka oo ku salaysan cayayaanka aad abbaarayso.
- Ogow nooca waxyaabaha ay ka koobantahay sunta cayayaanku ee abbaarta cayayaanka doogga ee gaar ah:
  - Bacillus thuringiensis (Bt) waxay dishaa diirta oo keliya, oo ay ka mid yihiin noocyada kala ah cutworms, lawn moths, iyo cayayaanka.
  - Nimatoodhada cayayaanka dilaa waxay kaantaroolaan diirta iyo cayayaanka dhasha.
  - Azadirachtin waxay kaantarooshaa cayayaanka cutworms, armyworms, iyo laarfaha cayayaanka moths.
  - Imidacloprid waxay wax ka tartaa cayayaanka yaryar ee ku dhasha doogga.
  - Pyrethroids (sida cyfluthrin, bifenthrin) waa cayayaan dile sun ah oo dila cayayaanka chinch, moths iyo cutworms, laakiin waxa kale oo ay dilaan cayayaanka faa'iidada leh waana in la iska daayaa.
- Caawimo ka hel Qaybta Iskaashiga ee UC.

SIDA LOO SAMEEYO BAADHITAANKA QOYAANKA

- Ku qas 3-4 qaado oo ah dareeraha weelka lagu maydho 2 galaan oo biyo ah.
- Labada galaan ku daadi 1 yaardi oo laba jibbaaran oo doogga ah.
- Eeg muddo 10 daqiiqo ah oo tiri inta ay tahay tirada cayayaanka armyworms, cutworms, moths laarfa ee dusha u soo baxa.
- Daawee meesha haddii tirada cayayaanku ay ka bataan 5 armyworms ama cutworms ama 15 moths yaadhkii laba jibbaaranba.

Cayayaanka chinch | laarfaha sod webworm | laarfaha cutworm | laarfaha grub

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Nếu xác định được mức độ thiệt hại do côn trùng gây ra, hãy áp dụng các biện pháp sau đây:

- Chọn một loại thuốc diệt côn trùng tùy vào loài côn trùng gây hại mà quý vị muốn diệt.
- Tìm hiểu xem các thành phần nào trong thuốc diệt côn trùng chuyên diệt các loài côn trùng cụ thể trong sân vườn nhà mình:
  - Bacillus thuringiensis (Bt) chỉ có tác dụng diệt sâu bướm, trong đó bao gồm sâu ngài, sâu bướm sống trong sân vườn, và bướm nâu.
  - Các loại giun tròn tấn công côn trùng có tác dụng diệt sâu bướm hoặc ấu trùng.
  - Azadirachtin có tác dụng diệt sâu ngài đêm, armyworms, và ấu trùng của sâu bướm sống trong sân vườn.
  - Imidacloprid có tác dụng diệt ấu trùng non của sâu bướm sống trong sân vườn.
  - Pyrethroids (thí dụ như cyfluthrin, bifenthrin) là các loại thuốc diệt côn trùng độc hại phổ biến, có tác dụng diệt các loài rệp, sâu bướm sống trong sân vườn, và sâu ngài, nhưng cũng diệt các loài côn trùng có lợi.. Nên tránh dùng các loại thuốc này.
- Liên lạc với UC Cooperative Extension để nhờ giúp đỡ.

CÁCH KIỂM TRA NỒNG ĐỘ

- Pha 3-4 muỗng canh nước rửa chén với 2 gallon nước.
- Tưới đều 2 gallon nước đó trên 1 yard vuông sân vườn.
- Theo dõi vùng đó trong 10 phút và đếm số sâu bướm, sâu ngài đêm hoặc ấu trùng của sâu bướm sống trong sân vườn xuất hiện trên bề mặt.
- Chỉ xử lý vùng đó nếu mỗi yard vuông có nhiều hơn 5 con sâu bướm hoặc sâu ngài hoặc 15 con sâu bướm sống trong sân vườn.

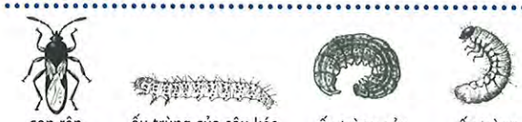

con rệp | ấu trùng của sâu kéo màng sống trong đất | ấu trùng của sâu ngài đêm | ấu trùng giòi

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

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University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Si confirma que hay suficientes insectos para causar daño:

- Escoja el insecticida de acuerdo al insecto a controlar.
- Averigüe cuáles son los ingredientes de los insecticidas que controlan específicamente cada insecto del césped:
  - El *Bacillus thuringiensis* (Bt) mata únicamente a orugas, incluyendo el gusano cortador o rosca, la polilla del césped y ciertas mariposas.
  - Los nemátodos que atacan insectos controlan orugas y las larvas de los escarabajos.
  - El "Azadirachtin" controla gusanos cortadores, gusanos militares y larvas de la polilla del césped.
  - El "Imidacloprid" es efectivo contra las larvas pequeñas de los escarabajos.
  - El acefate y la permetrina son insecticidas de toxicidad de amplio espectro que matan chinches, polillas del césped y gusanos cortadores, pero también matan insectos benéficos.
  - Obtenga asesoría en la Extensión Cooperativa de la Universidad de California.

Cómo llevar a cabo la prueba de sumersión

- Mezcle 3 a 4 cucharadas de detergente líquido para platos en dos galones de agua.
- Aplique de manera uniforme los dos galones a una yarda cuadrada de césped.
- Observe la zona por 10 minutos y cuente el número de gusanos militares, gusanos cortadores o polillas del césped que salen a la superficie.
- Trate la zona únicamente si cuenta más de 5 gusanos cortadores o militares o 15 polillas del césped por yarda cuadrada.

chinche | larva de la polilla del césped | larva del gusano cortador o rosca | larva de los escarabajos

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

If a damaging level of insects is confirmed, do the following:

- Choose an insecticide based on the pest you're targeting.
- Find out which insecticide ingredients target specific lawn insects:
  - *Bacillus thuringiensis* (Bt) kills only caterpillars, including cutworms, lawn moths, and skippers.
  - Insect-attacking nematodes control caterpillars or grubs.
  - Azadirachtin controls cutworms, armyworms, and larvae of lawn moths.
  - Imidacloprid is effective against young lawn grubs.
  - Pyrethroids (e.g., cyfluthrin, bifenthrin) are broadly toxic insecticides that kill chinch bugs, lawn moths, and cutworms, but also kill beneficial insects and should be avoided.
- Get help from UC Cooperative Extension.

HOW TO PERFORM A DRENCH TEST

- Mix 3–4 tablespoons of dishwashing liquid to 2 gallons of water.
- Evenly apply the 2 gallons to 1 square yard of your lawn.
- Monitor the area for 10 minutes and count the number of armyworms, cutworms, or lawn moth larvae that rise to the surface.
- Treat the area only if insect numbers exceed 5 armyworms or cutworms or 15 lawn moths per square yard.

chinch bug | sod webworm larva | cutworm larva | grub larva

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Aboorka

HEALTHY GARDEN HEALTHY HOME

Dhibaatada aadka ah ee ay u geysan karaan qaababka looxa ah darteed, ayuu aboorku yahay ama ka mid yahay cayayaanka ay aadka uga baqaan dadka guryaha lihi. Si kastaba ha ahaatee, xayn aboor ah oo duulaysa macnaheedu ma aha had iyo goor inay dhismahaaga ka buuxaan. Kormeer taxadir leh oo lagu sameeyo dhismaha ayaa loo baahanyahay si loo xaqiijiyo inuu ku jiro iyo in kale. Dadku waxay kaloo ay had iyo goor ku khaldaan xayn qudhaanjo ah oo duulaysa aboorka. Haddii aad ka shakido inuu gurigaaga aboor ka buuxo, u yeedh dadka xirfadda u leh. Waxyaabaha aad adigu soo iibsan karto ee aad ku buufin karto laguma kalsoonaan karo inay yareeyaan aboorka dega ee dhibaatada geysanaya. Aboorka caanka ah ee gobolkan California waa aboorka dhulka hoostiisa dega ee cushashka ka dhista ciidda hoosteeda, aboorka looxa qoyaa ee dega looxa qoyan iyo ciidda, iyo aboorka looxa qalalan ee dega dhulka guudkiisa looxa qalalan dhexdiisa. Maaraynta nooc kasta oo ka mid ah sinjiyada aboorka wuu ka duwanyahay ka kale.

Kala garo qudhaanjada duulaysa iyo aboorka:

- Hubi dareemaha hore (antennae), baalasha iyo dhexda si aad u xaqiijiso in cayayaanku yahay aboor. (fadlan ku noqo oo eeg sawirka qudhaanjada iyo aboorka ee gadaal ku yaalla.)

U dhis gurigaaga si aad uga ilaalinayso aboorka:

- U samee 12 iinj oo sabbad siman ah, ciid ah, ama qalab kale oo u dhexeeya ciidda dusheeda iyo looxa ka hooseeya dhismaha.
- Deyrarka iyo qaababka kale ee taabanaya ciidda u samee oo u dooro loox iska caabiyi kara aboorka.
- Ka qaad looxaanta rasaysan, dhidibada deyrka ee aan la daaweyn, iyo looxaanta aasan dhismaha agtiisa.
- Dhismaha inta dhulka hoostiisa ah u samee meel hawadu ka gasho kana baxdo hana qalalaadeen had iyo goor.
- Isla markiiba dib u samee dillaacyada seeska.

Haddii aboorku ay gurigaaga ku badanayaan oo waxyeelayaan:

- Burburi tuumbooyinka uu aboorka dhulka hoostiisu ka dhistay qoriga ama looxa iyo ciidda dhexdooda.
- Haddii meesha uu degganyahay aboorka looxa qoyani la gaadhi karo, ka saar looxa uu galay kana saar qoyaanka.

Mối mọt

HEALTHY GARDEN HEALTHY HOME

Vì có thể gây thiệt hại nghiêm trọng cho các cấu trúc bằng gỗ, mối là một trong những loài động vật gây hại đáng sợ nhất đối với những vị chủ nhà. Tuy nhiên, những đàn mối bay trong nhà không phải lúc nào cũng có nghĩa là nhà của quý vị bị động vật phá hoại. Phải kiểm tra kỹ lưỡng kết cấu nhà để xác nhận là có động vật gây hại hay không. Mọi người thường nhầm lẫn đàn kiến cánh với đàn mối. Nếu quý vị nghi ngờ nhà mình đã bị động vật gây hại, hãy gọi thợ tới kiểm tra. Không nên tin vào các loại thuốc tự xịt để giảm bớt động vật gây hại. Các loài mối thường gặp tại Tiểu Bang California là mối dưới đất. (xây tổ trong đất), mọt gỗ ướt (làm tổ trong đất và gỗ ẩm), và mọt gỗ khô (làm tổ ở trên mặt đất trong gỗ khô). Mỗi loài mối khác nhau có các biện pháp diệt khác nhau.

Phân biệt giữa kiến cánh và mối:

- Kiểm tra râu, cánh và vùng eo để chắc chắn rằng loài côn trùng gây hại đó là mối. (Xin xem hình vẽ so sánh giữa kiến và mối ở mặt sau.)

Thiết kế nhà cửa sao cho có thể tránh mối:

- Đặt một tấm chắn cao 12 insơ bằng bê tông nhẵn, cát hoặc các loại vật liệu khác giữa bề mặt đất và phần móng nhà bằng gỗ ở dưới.
- Chọn loại gỗ chịu được mối để làm hàng rào hoặc các cấu trúc phải tiếp xúc với đất khác.
- Loại bỏ các cột gỗ, hàng rào chưa được xử lý, và gỗ phế liệu được chôn ở gần khung nhà.
- Áp dụng các biện pháp thông gió thích hợp cho hệ thống móng nhà và giữ móng nhà khô ráo.
- Sửa chữa ngay các vết nứt trong móng nhà.

Nếu mối tấn công nhà quý vị:

- Tiêu diệt các ống làm nơi ẩn náu mà loài mối dưới đất xây giữa đất và các cấu trúc bằng gỗ.
- Nếu có thể tiếp cận được tổ của loài mọt gỗ ướt, hãy tháo phần gỗ bị mọt ăn và loại bỏ tình trạng quá ẩm thấp.
- Có thể diệt các loài mọt gỗ khô bằng nhiệt độ nóng, điện, lò viba (microwaves), bằng cách đông lạnh, phun khói, hoặc bằng hóa chất ở từng điểm.

Las termitas

JARDÍN SANO CASA SANA

Las termitas, conocidas también como comején, son una de las plagas más temidas por propietarios de viviendas debido a que pueden causar serios daños a construcciones de madera. Sin embargo, un enjambre de termitas voladoras no siempre indica que el edificio está infestado. Es necesario hacer una inspección minuciosa para confirmar una infestación. Con frecuencia, se confunden los enjambres de hormigas voladoras con las termitas. Si sospecha una infestación en una casa o edificio, es recomendable llamar a un profesional. Los productos químicos de venta al público no son confiables para reducir una infestación dañina. En California, las termitas más comunes son la termita subterránea que construye su nido en la tierra, la termita de la madera húmeda (dampwood) que anida en madera y tierra húmeda y la termita tropical (dry wood) que establece su nido sobre la tierra en madera seca. El control de cada especie es diferente.

Cómo diferenciar las hormigas voladoras de las termitas:

- Revise las antenas, alas y cintura de la termita para confirmar que en realidad se trata de termitas. (Examine los dibujos de la hormiga y la termita al reverso).

Diseño de la construcción para evitar la entrada de termitas:

- Mantenga una barrera de 12 pulgadas de ancho de hormigón liso, arena u otro material entre la tierra y la sub-estructura de madera del edificio.
- En cercas y demás estructuras que están en contacto con la tierra, use madera tratada que sea resistente a las termitas.
- Quite pilas o montones de madera, postes de cerca y restos de madera enterrada cerca del edificio.
- Proporcione suficiente ventilación y mantenga seca las estructuras de madera.
- Repare de inmediato toda grieta en los cimientos.

Termites

HEALTHY GARDEN HEALTHY HOME

Because of the serious damage they can cause to wooden structures, termites are among the pests most feared by homeowners. However, swarms of flying termites do not always mean your building is infested. A careful inspection of the structure is required to confirm an infestation. People also frequently mistake swarms of flying ants for termites. If you suspect that your house is infested, call a professional. Do-it-yourself sprays cannot be relied on to reduce a damaging infestation. Common termites in California are the subterranean termites that build nests in soil, dampwood termites that nest in moist wood and soil, and drywood termites that nest above ground in dry wood. Management of each termite species is different.

Distinguish flying ants from termites:

- Check the antennae, wings and waist to confirm that pest insects are termites. (Please refer to ant vs. termite drawing on back.)

Design your building to keep termites out:

- Keep a 12-inch barrier of smooth concrete, sand, or other material between the soil surface and substructure wood beneath a building.
- Choose termite-resistant wood for fences or other structures that must contact soil.
- Remove wood piles, untreated fence posts, and buried scrap wood near structures.
- Provide adequate ventilation to substructures and keep them dry.
- Immediately repair foundation cracks.

- Aboorka looxa qalalan waxa lagu kaantarooli karaa kulayl, qabow, koronto, maykarowayfyada, qiiq ku shidid, ama kimiko meesha lagu shubo.
- Wixii gelitaan aboor ah kala xidhiidh dadka xirfadda u leh si ay kuu caawiyaan. Sunta cayayaanka ee uu liisanka siiyo oo keliya in la isticmaalo shaqaalaha kaantaroolka cayayaanka ayaa had iyo goor daruuri u ah in lagu kaantaroolo aboorka gala looxa qoyan iyo ka dhulka hoostiisa.

U isticmaalidda sunta cayayaanka si loogu kaantaroolo aboorka:

- Sunta cayayaanka waxa ku mudi karaa ciidda shaqaalaha ku shuba ee xirfadda u leh iyadoo la daloolinayo ama biro laga taagayo. Waa in habab gaar ah la raacaa si looga hortago in la wasakheeyo dhulka ama biyaha oogada.
- Muditaanka ciidda, waa inaad cidda ku shubaysaa aad ka codsataa oo weydiisataa inay isticmaalaan daawo aan ahayn chlorpyrifos. Noocyada ka cusub ee ah sida fibronil iyo chloronicotinyls ayaa u wacan caafimaadkaaga iyo deegaankaba.
- Dabitaanka ayaa kaysaska qaarkood waxtari kara, laakiin waxay qaadan kartaa dhowr bilood si dhibaatada loo kaantaroolo waa in la daba galaa si joogto ahna loola socdaa.

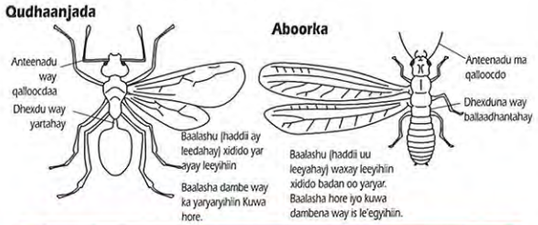

Waxaad isticmaashaa qaababka AAN KIIMIKADA AHAYN iyo suntan HALISTEEDU UGU YAR TAHAY WAA MAXAY SABABTA? Biyo qaadka aqalkaaga iyo jardiinada waxaa ay biyaha sunta leh geeyaan ilaha, wabiyada, harooyinka iyo badweynta.

Waxaad wax dheeraad ah ka barataa taya da biyaha deegaanka San Diego: www.ThinkBlueSD.org & www.ProjectCleanWater.org. Si aad macluumaad dheeraad ah u heshid waxaad soo booqataa bogga internetka ee IPM Jaamacadda California: www.ipm.ucdavis.edu ama UCCE Master Jardiinooyinka: (858) 694-2860, Isn - Jim, 9 sub to 3 gal

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

- Nếu có mối gây hại, hãy gọi thợ đến giúp đỡ. Thường phải sử dụng các loại thuốc trừ sâu mà c... có nhân viên phun thuốc trừ sâu mới được phép sử dụng để diệt mọt gỗ ướt và mối dưới đất.

Sử dụng thuốc trừ sâu để diệt mối:

- Các nhân viên phun thuốc trừ sâu chuyên nghiệp có thể phun thuốc trừ sâu vào trong lòng đất qua phương pháp khoan hoặc đóng cọc. Phải tuân theo các qui trình đặc biệt để tránh gây ô nhiễm mặt đất hoặc nguồn nước lộ thiên.
- Đối với các trường hợp tiêm thuốc trừ sâu vào trong đất, hãy yêu cầu nhân viên phun thuốc trừ sâu sử dụng loại sản phẩm không phải là chlorpyrifos. Các loại sản phẩm mới hơn như fipronil và chloronicotinyls thường an toàn hơn cho sức khỏe và môi trường.
- Phương pháp đánh bả có thể hiệu quả trong một số trường hợp, nhưng có thể phải mất vài tháng mới diệt được hết mối và phải tiếp tục theo dõi thường xuyên.

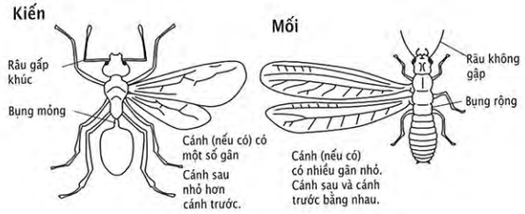

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Chính nước là nguồn liên kết chúng ta!

Si las termitas invaden su hogar:

- Destruya los túneles de albergue que las termitas subterráneas construyen entre la tierra y estructuras de madera.
- Si tiene acceso a los nidos de las termitas de madera húmeda, quite la madera infestada y elimine el exceso de humedad.
- Las termitas tropicales se pueden controlar con calor, congelación, electricidad, microondas, fumigación o con la aplicación directa de sustancias químicas.
- De ocurrir una infestación, pida la ayuda de un profesional. Usualmente cuando se trata de controlar infestaciones de termitas subterráneas y termitas de madera húmeda es necesario utilizar pesticidas aprobados para uso exclusivo de exterminadores profesionales.

Uso de pesticidas para el control de termitas:

- Los exterminadores profesionales pueden inyectar los pesticidas taladrando el suelo o a través del uso de una varilla. Deben seguir procedimientos especiales para evitar la contaminación de aguas subterráneas o superficiales.
- Si va a inyectar pesticidas en el suelo, pida a él que los aplica que no use "chlorpyrifos." Nuevos productos como "pyrethroids" y "chloronicotinyls" son menos dañinos a la salud y al medio ambiente.
- En algunos casos los cebos pueden ser efectivos, pero pueden tomar varios meses para controlar el problema y se deben vigilar constantemente.

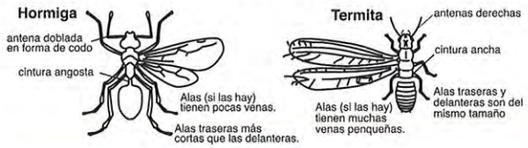

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más ... en la región de ... ción ... le la ... a ... de la Ur... ¡Es ... ...ace!

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If termites are invading your home:

- Destroy shelter tubes that subterranean termites build between soil and wood structures.
- If dampwood termite nests are accessible, remove infested wood and eliminate excess moisture.
- Drywood termites can be controlled with heat, freezing, electricity, microwaves, fumigation, or spot treatments of chemicals.
- For any infestation, contact a professional for help. Pesticides licensed only for use by a pest control operator are usually necessary to control subterranean and dampwood infestations.

Using pesticides for termite control:

- Pesticides may be injected into the soil by professional applicators through drilling or rodding. Special procedures must be followed to prevent contamination of ground or surface water.
- For soil injections, ask your applicator to use a product other than chlorpyrifos. Newer types of products such as fipronil and chloronicotinyls are safer for your health and the environment.
- Baits can be effective in some cases, but may take several months to control the problem and must be followed up with constant monitoring.

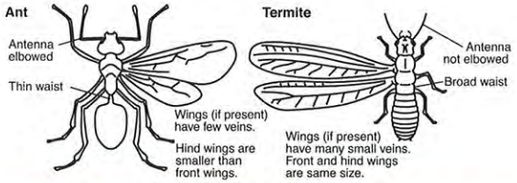

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more ... water quality at: www.T... Water.org.

Storm Water Pollution Prevention Program
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It's the ... us!

Booddada

Booddada si gaar ah ayeey dhibaateysaa dadka iyo cayayaankuba, qaasatan xilliga gu'ga iyo horraanta xagaaga markaasoo tiradoodu ay aad u korodho. Booddada caadiyan laga helo California waa booddo bisadeedka. Magaceeda ka sokow, waxaa ay weerartaa eeyaha iyo bisadduba sidoo kalena waxaa ay qaniintaa aadanaha. Si aad booddada aqalkaaga uga fogeysid, waa in aad la dagaallantaa booddada xayaawaanka rabbaayadda ah ee aad aqalka ku heysatid islamarkaana aad si caadiyan ah u nadiifisid halka uu xayawaanku jiifsado.

Dusha xayawaanka:

Dhawaan, waxaa la soo saaray dawooyin waxtar iyo badbaadaba leh ee lagu xakameyn karayo booddada xayawaanka gasha. Waxaad xasuusnaataa in aad dawooyinka xayawaanka aad raacisid nadaafad joogto ah oo aad aqalka xilliyan aad nadiifinaysid adigoo raacinaya xayawaanka oo aad dusha ka marisid shalada booddada si aad uga eegtid kuwo cusub.

- Dusha xayawaanka ayaa dawo la mariyaa, taasoo booddada ka ilaalinaysa 1 illaa 3 bilood. Waxaa laga helaa dhakhtarka xayawaanka ama qaybta xayawaanka ee dukaannada.
- Dawooyinka booddada lagula dagaallamo, oo aad ka helaysid dhakhtarka xayawaanka ayaa loo siiyaa kaniin ahaan ama in cuntada loogu daro. Inkastoo aysan dilaynin booddada waaweyn, balse waxaa ay ka hortagaysaa in ay tarmaan.
- Kuusha booddada oo sidata waxyaabo ka hortagaya taranka booddada (IGRs) waxaana ay ka badbaadinayaan eyga 6 bilood bisadduna illaa iyo sanad. Waxaad hubisaa in aad xulatid kuul ay ku jidho Methopre ama pyriproxyfen.
- Shaambada iyo saabuunta booddada, boolbaraha iyo boodhka, buufiyaha dareeraha sita, iyo nooca la soo maquufiyo waa ay ka waxtar yar yihiin waana ay uga halis badan yihiin xayawaanka, dadka, iyo bey'adda markii loo eego seddexda nooc ee aynu kor ku soo sheegnay

Dibedda:

Daweynta dibeuda ayaa ah mid aan marwalba loo baahnayn, balse haddii xayawaankaagu uu caadiyan dibedda jiifsado islamarkaana ay booddadu badan tahay, waxaa meelahani lagu daweyn karaa buufiyaha sita pyriproxyfen. Haddii ay suuragal tahay, cadceedda u fur goobta jiifka adigoo ka leexinaya dhirta hadhka u keenaysa. Booddada yar waa ay ku adag tahay in ay ku noolaato goobaha cadceeddu ifiinayso.

Bọ Chét

Bọ chét đặc biệt gây khó chịu cho người và thú nuôi, nhất là vào mùa xuân và đầu mùa hè khi lượng bọ chét thường tăng đáng kể. Loại bọ chét thường gặp tại Tiểu Bang California là loại bọ chét mèo. Mặc dù có tên như vậy, nhưng loại bọ chét này tấn công cả chó và mèo và cũng cắn cả người. Để tránh bọ chét xâm nhập vào nhà quý vị, hãy bắt hết bọ chét trên người thú nuôi và thường xuyên lau dọn nơi ngủ của thú nuôi.

Trên người thú nuôi:

Gần đây, trên thị trường có xuất hiện nhiều sản phẩm mới rất an toàn và hiệu quả để diệt bọ chét trên thú nuôi. Ngoài các biện pháp xử lý cho thú nuôi, đừng quên thường xuyên dọn dẹp nhà cửa và chải lông cho thú nuôi định kỳ bằng loại lược bí dành cho thú nuôi để phát hiện những con bọ chét mới.

- Chấm thuốc pha chế lên lông thú nuôi, thuốc này có tác dụng diệt bọ chét trong từ 1 tới 3 tháng. Quý vị có thể mua các loại thuốc pha chế này từ bác sĩ thú y hoặc mua tại quầy không cần toa.
- Quý vị có thể mua các sản phẩm diệt bọ chét từ các phòng mạch thú y và dùng dưới dạng thuốc viên hoặc trộn lẫn với thức ăn. Thuốc này sẽ được cơ thể thú nuôi hấp thụ. Mặc dù không giết chết bọ chét đã trưởng thành, nhưng các loại thuốc này lại có tác dụng ngăn chặn sự sinh sản.
- Các loại vòng cổ chống bọ chét có chất điều tiết sự phát triển của côn trùng (IGR) có tác dụng bảo vệ trong tới 6 tháng đối với chó và tới một năm đối với mèo. Nhớ chọn loại vòng cổ có chất methoprene hoặc pyriproxyfen.
- Các loại shampoo và xà bông, phấn bột và phấn mịn, các loại chất lỏng dạng xịt, và thuốc chấm ít hiệu quả hơn và nguy hiểm hơn cho thú nuôi, con người, và môi trường so với ba dạng sản phẩm nói trên.

Trong sân:

Hiếm khi cần áp dụng biện pháp xử lý bên ngoài nhà, nhưng nếu thú nuôi của quý vị thường xuyên ngủ ở bên ngoài nhà và có nhiều bọ chét, quý vị có thể xử lý các khu vực này bằng cách dùng thuốc xịt có chất pyriproxyfen. Nếu có thể, mở thông thoáng các khu vực ngủ của thú nuôi và cho tiếp xúc với ánh nắng bằng cách cắt bỏ cây cối sà thấp xuống mặt đất. Những con bọ chét chưa trưởng thành khó có khả năng sống sót ở những khu vực có tiếp xúc với ánh nắng mặt trời.

Las pulgas

Las pulgas son una verdadera molestia para personas y animales, especialmente durante la primavera y principios del verano cuando las pulgas tienden a aumentar de manera dramática. La pulga del gato es la pulga más común en California. A pesar de su nombre, ataca tanto a perros como a gatos y pica también a los humanos. Para mantener a las pulgas fuera del hogar, contrólelas en animales domésticos y limpie regularmente las cobijas donde duermen los animales.

En los animales domésticos:

Hay disponibles desde hace poco tiempo ciertos productos nuevos muy efectivos y seguros para el control de pulgas en los animales domésticos. Aparte de estos tratamientos, es importante limpiar regularmente el hogar y cepillar a los animales con un peine para atrapar pulgas para detectar una nueva infestación.

- Hay productos que se aplican en una pequeña área del pelaje del animal y controlan las pulgas de uno a tres meses. Estos productos están disponibles en tiendas o a través de un veterinario.
- Hay productos sistémicos disponibles en veterinarias que se administran en forma oral a través de pastillas o aditivos alimenticios. Estos no matan pulgas adultas pero evitan su reproducción.
- Los collares contra pulgas contienen reguladores del crecimiento de insectos (siglas IGR en inglés) que protegen a los perros hasta por seis meses y a los gatos hasta por un año. Hay que asegurarse de escoger collares que tengan "methoprene" y "pyriproxyfen".
- Los champúes, jabones, polvos, rocíos y baños contra pulgas son menos efectivos y más peligrosos para animales domésticos, personas y el medio ambiente que los tres tipos de productos mencionados anteriormente.

En el jardín:

Es muy inusual que se necesite aplicar algún tratamiento afuera, pero si los animales domésticos duermen afuera con regularidad y hay muchas pulgas, se puede aplicar a estas zonas un rocío que contenga "pyriproxifen". De ser posible, quite toda la vegetación cerca del suelo para que entre luz solar al lugar donde duermen los animales. Es poco probable que las pulgas inmaduras sobrevivan en lugares a donde llega la luz solar.

Fleas

Fleas are particularly annoying to people and pets, especially during spring and early summer when their numbers tend to increase dramatically. The common flea in California is the cat flea. Despite its name, it attacks both dogs and cats and will also bite humans. To keep fleas out of your home, control fleas on your pet and regularly clean pet sleeping areas.

On the pet:

Recently, a number of very effective and safe new products for flea control on the pet have become available. Remember to supplement pet treatments with regular cleaning of your home and periodic combing with a pet flea comb to detect new infestations.

- Spot-on formulations are applied to the animal's coat, providing flea control for 1 to 3 months. Available from veterinarians or over-the-counter.
- Systemic flea control products, available from vets, are given as a pill or food additive. While they do not kill adult fleas, they prevent reproduction.
- Flea collars containing insect growth regulators (IGRs) give protection for up to 6 months on dogs and up to a year on cats. Be sure to choose collars containing methoprene or pyriproxyfen.
- Flea shampoos and soaps, powders and dusts, spray-on liquids, and dips are less effective and more hazardous to pets, people, and the environment than the three types of products above.

In the yard:

Outdoor treatment is rarely needed, but if your pet regularly sleeps outside and flea numbers are high, these areas can be treated with a spray containing pyriproxyfen. If possible, open sleeping areas to sunlight by removing low hanging vegetation. Immature fleas are unlikely to survive in areas with exposure to sunlight.

Aqalka Gudihiisa:

Haddii aad ogtahay iyo haddii kale in uu aqalkaaga booddo leeyahay, caadiyan katiifadda nadiifi waxaadna dhaqdaa meelaha uu xayawaankaagu ku nasto si ay booddadu ugu taranto. Haddii aad qabtid dhibaato badan ee booddada ah, waxaad xayawaankaaga ku dawaysaa mid ka mid ah waxyaabaha kaadhkan dushiisa ku yaal adigoo raacaya tallaabooyinka hoose:

- Waxaad heshaa meesha ay ku badan yihiin (caadiyan meelaha uu xayawaanku ku nasto) oo xoogga saar in aad halkaa dawada marisid.
- Wada dhaq katiifooyinka iyo gogosha jiifka ee xayawaanka.
- Waxaad faakiyum ku nadiifisaa alaabta dharka ka sameysan, adigoo nadiifinaya barkimaha hoostooda iyo dildillaacyada.
- Waxaad faakiyum gareysaa katiifadaha, qaasatan alaabta hoostooda.
- Waxaad isticmaashaa buufiyaha gacanta ama gasaca aerosol si aad u daweysid cayayaan dilaha sita IGR (methoprene ama pyriproxyfen) katiifadaha dhammaantooda iyo alaabta fadhiga oo dharka saaran yahay oo aan la dhaqi karin. Daweyntani waxaa ay dilaysa kuwa ukumaha ka soo baxa balse ma disho kuwa ka yara weyn, sidaa awadeed booddada waxaa ay sii jiraysaa 2 toddobaad oo kale.
- 2 -da toddobaad soo socda si caadi ah aqalka faakiyum ugu nadiifi si aad uga dhaqaajisid booddada koraysa. Dib h[illegible] marinin dawada cayayaanka disha.
- Si fiican u xidh qashinka faakiyumka si aysan booddada uga soo baxsan.

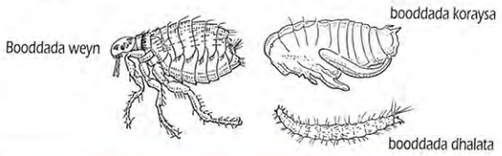

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Trong nhà:

Cho dù có thấy bọ chét trong nhà hay không, quý vị cũng nên thường xuyên hút bụi và vệ sinh các khu vực nơi thú nuôi ngủ để tránh bọ chét tích tụ. Nếu quý vị gặp vấn đề nghiêm trọng về bọ chét, hãy áp dụng một trong các biện pháp xử lý ghi ở mặt trước của thẻ này cho thú nuôi và làm theo các bước dưới đây.

- Tìm các khu vực có nhiều bọ chét (thường là các khu vực nơi thú nuôi ngủ) và tập trung xử lý nơi đó.
- Giặt các tấm thảm và nệm mền của thú nuôi.
- Hút bụi các đồ nội thất có bọc vải, dọn sạch ở dưới nệm và trong các kẽ hở.
- Hút bụi thảm, đặc biệt là bên dưới giường tủ.
- Dùng bình xịt tay hoặc bình phun thuốc diệt côn trùng có chất IGR (methoprene hoặc pyriproxyfen) để xử lý toàn bộ thảm và đồ nội thất bọc vải không giặt được. Phương pháp xử lý này có tác dụng diệt trứng nhưng không diệt được ấu trùng, vì vậy bọ chét có thể lại tiếp tục xuất hiện trong tới 2 tuần.
- Trong 2 tuần tiếp theo, thường xuyên hút bụi để loại bỏ những con bọ chét trưởng thành phát triển từ nhộng. Không xịt lại thuốc diệt côn trùng.
- Bịt kín túi đựng bụi của máy hút bụi và vứt bỏ các túi đó để bọ chét không thể thoát ra ngoài được.

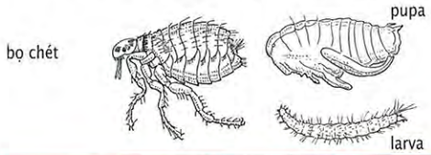

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Dentro del hogar:

Ya sea que usted vea pulgas dentro del hogar, o no, es recomendable pasar la aspiradora y lavar regularmente los lugares donde descansa cualquier animal doméstico para evitar la acumulación de pulgas. Si la infestación es severa, trate al animal con una de las alternativas que se mencionan en esta tarjeta y tome los siguientes pasos:

- Encuentre los lugares más infestados, generalmente donde descansan los animales domésticos, y aplique el tratamiento allí.
- Lave tapetes y ropa de cama de animales domésticos.
  Pase la aspiradora a muebles tapizados, incluso bajo cojines y almohadillas y en hendiduras.
- Pase la aspiradora a las alfombras, especialmente debajo de los muebles.
- Aplique un insecticida que contenga "methoprene" o "pyriproxifen" (IGR) en aerosol o rocío a todas las alfombras y muebles tapizados que no se puedan lavar. Esto mata a las larvas pero no a las pupas, por lo cual las pulgas pueden seguir emergiendo por dos semanas más.
- Pase la aspiradora regularmente durante las siguientes dos semanas para deshacerse de pulgas adultas que se hayan desarrollado de las pupas. No vuelva a aplicar pesticidas.
- Selle y deseche la bolsa recolectora de la aspiradora para que las pulgas no se escapen.

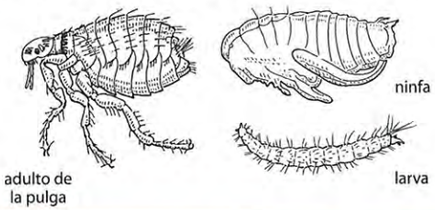

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Inside the home:

Whether or not you are aware of fleas in your home, regularly vacuum and launder areas where your pet rests to avoid flea buildup. If you have a major flea problem, treat your pet with one of the options on the front of this card and follow the steps below.

- Locate heavily infested areas (usually areas where the pet rests) and concentrate treatment there.
- Wash throw rugs and pet bedding.
- Vacuum upholstered furniture, cleaning under cushions and in crevices.
- Vacuum carpets, especially beneath furniture.
- Use a hand sprayer or aerosol to treat all carpets and unwashable upholstered furniture with an insecticide that contains an IGR (methoprene or pyriproxyfen). This treatment kills larvae but not pupae, so fleas may continue to emerge for up to 2 weeks.
- Over the next 2 weeks vacuum regularly to remove adult fleas that emerge from pupae.
  Do not reapply pesticides.
- Seal vacuum bags and discard them so fleas don't escape.

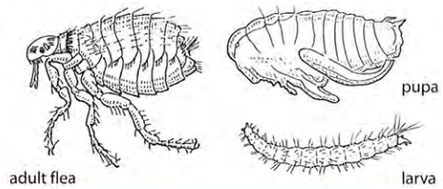

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Baranbaradu

HEALTHY GARDEN HEALTHY HOME

Baranbaradu waxaa ay ku tarantaa Bey'adda ay ka helayso cuntda, biyaha iyo hoy. Baranbaradu waxaa ay ku dhuumataa furiinnada, meelaha cidhiidhka ah, iyo meelaha mugdiga ah marka ay maalin tahay iyadoo soo baxaysa habeenkii si ay wax u cunto. Cayayaan dilaha buufiyaha ah oo kaliya ma lagu xakameyn karayo baranbarada caadiyanna looma baahna. Dabinka cuntada sita ayaa xakameynta kaga habboon. Waa in aad isku dhaftaa istaraatajiyo dhowr ah si uu aqalkaaga u noqdo meel baranbarada looga badbaado. In meelna la dhaafin ayeey xakameyntu ku habboon tahay.

Marka hore waxaad ogaataa nooca ay baranbaradaadu tahay:

- Noocyada maamulka waxtarka leh ayaa kala duwan iyadoo ay ku xiran tahay nooca baranbarada ku xiran tahay.
- Dabinnada baranbarada waa qaab fudud lagu dabo baranbarada si noocoodu loo ogaado.
- Hawlaha xakameynta dibedda (Baranbarada Mareykanka, bariga) iyo kuwa aqalka ku dhex nool (Baranbarada Jarmalka iyo diirimo maariinka) waa ay kala duwan yihiin.
- Si lagaaga saacido waxaad soo booqataa www.ipm.ucdavis.edu.

Cuntada iyo Biyaha ka dhaqaaji:

- Xittaa cuntada daadata ama dheecaanka dildillaacyada ku daata ayaa cunto u ah
- Waxaad cuntada ku xareysaa qaanado xidhmaya
- Qashinka iyo weelasha si fiican ha u daboolnaadan
- Dhuumanka biyaha daaya wada hagaaji.
- Waxaad faakiyum garyesaa dildillaacyada iyo funiinnada maalin kastana dhulka iyo dusha kushiinka nadiifi.

Dhaqaaji meelaha ay baranbarada ku dhuumato:

- Xidh dildillaacyada iyo furiinnada kale si aad uga hortagtid kuwa dibedda ka imaanaya.
- Xidh dildillaacyada iyo daloollada qaanadaha iyo meelaha qarsoon ee gudaha ku yaal.
- Xidh ama nadiifi meelaha kale ee aad ku aragtid baranbarada ama ukumaheeda ay ku qarsoon yihiin.
- Dhaqaaji jaraa'idka duugga ah, sanduuqyada iyo alaabta taal kushiinka iyo suuliga.
- Baranbarada aasiyaanka ah waxaa ay ku dhuumataa meelaha alwaaxda ama hoyga u noqon karaya. Waxaad iska eegtaa in aad qabtid baranbarada noocani ah kana dhaqaaji meelaha dhuumaleysiga dibedda ah iyo dabinnada.

Bọ Gián

HEALTHY GARDEN HEALTHY HOME

Bọ gián phát triển mạnh trong môi trường ấm, có thức ăn, nước, và nơi trú ẩn. Vào ban ngày, bọ gián trú ẩn trong các kẽ hở, những khu vực thấp phải bò, và những nơi tối tăm khác và chúng ra ngoài để kiếm ăn vào ban đêm. Chỉ riêng việc xịt thuốc diệt côn trùng sẽ không đủ để hạn chế bọ gián và các loại thuốc này thường không cần thiết. Các loại bả diệt bọ gián có tác dụng kiểm soát tốt hơn. Quý vị phải kết hợp nhiều biện pháp khác nhau để biến nhà mình trở thành nơi ít hấp dẫn đối với bọ gián. Việc thực hiện triệt để là rất quan trọng để diệt bọ gián hiệu quả.

Trước hết, hãy nhận biết các loài bọ gián trong nhà:

- Các biện pháp diệt bọ gián có tác dụng khác nhau tùy theo từng loài.
- Các dụng cụ bẫy bọ gián là cách bắt bọ gián đơn giản để nhận dạng.
- Các phương pháp diệt bọ gián xâm nhập vào nhà từ bên ngoài (Bọ gián Mỹ, bọ gián phương đông) và các loài bọ gián sống trong nhà (bọ gián có dải nâu và bọ gián Đức) là khác nhau.
- Để biết cách nhận dạng loài bọ gián, xin tới www.ipm.ucdavis.edu.

Dọn sạch các nguồn thực phẩm và nước:

- Ngay cả những mẩu vụn bánh mì rất nhỏ hoặc một chút nước trong các kẽ hở cũng là nguồn cung cấp thực phẩm tốt cho bọ gián.
- Cất giữ thực phẩm trong các hộp đựng được đậy/buộc kín.
- Đựng rác trong các thùng đựng có nắp đậy kín.
- Sửa chữa những nơi rò rỉ trong đường ống nước.
- Hút bụi ở các vết nứt và kẽ hở và lau sàn và mặt kệ tủ hàng ngày.

Loại bỏ những nơi trú ẩn của bọ gián:

- Bịt kín những kẽ hở và những lỗ hở khác để ngăn ngừa bọ gián xâm nhập vào nhà từ bên ngoài.
- Bịt kín các vết nứt ở đáy chạn đựng thức ăn và những nơi trú ẩn khác bên trong nhà của bọ gián.
- Bịt kín hoặc lau dọn các khu vực khác khi quý vị thấy có bọ gián hoặc những ổ trứng của chúng đang ẩn náu.
- Vứt bỏ giấy báo cũ, hộp, và các đồ đạc bừa bộn khác trong bếp và nhà vệ sinh.
- Loài bọ gián phương đông trú ẩn bên ngoài nhà dưới cây thường xuân và nơi khác. Hãy kiểm tra để xem nhà quý vị có loài bọ gián này hay không và loại bỏ những nơi trú ẩn ở bên ngoài nhà hoặc đánh bả.

Las cucarachas

JARDÍN SANO CASA SANA

Las cucarachas se desarrollan mejor en ambientes cálidos donde encuentren agua, abrigo y alimento. Durante el día, se esconden en grietas, rajaduras y en otros lugares obscuros y, de noche, salen en busca de alimento. Las cucarachas no se pueden controlar solamente fumigando pesticidas y generalmente estos no son necesarios. Se obtiene mejor control con cebos. Es necesario usar varias estrategias para lograr que el hogar sea un ambiente menos propicio para las cuarachas. Para lograr un control eficaz es necesario ser meticuloso.

Primero, identifique la especie de cucaracha:

- El método de control varía según la especie.
- Las trampas para cucarachas son una manera fácil de atraparlas para poder identificarlas.
- Los procedimientos de control varían dependiendo si son cucarachas invasoras del exterior (americana, oriental) o cucarachas que viven adentro (de líneas café y alemana).
- Para facilitar su identificación, visite la página en la red: www.ipm.ucdavis.edu

Elimine fuentes de agua y alimento:

- Mijagas o líquidos en grietas y rajaduras, aún en pequeñas cantidades, son buenas fuentes de alimento.
- Guarde los alimentos en recipientes bien tapados o sellados.
- Mantenga la basura en contenedores con tapas herméticas.
- Repare goteos en la tubería.
- Diariamente limpie pisos y mostradores y pase la aspiradora en grietas y rajaduras.

Elimine escondites:

- Rellene grietas y demás orificios para evitar la entrada de cucarachas del exterior.
- Rellene rajaduras en alacenas y armarios con doble fondo y otros escondites en el interior de la casa.
- Quite periódicos viejos, cajas y otros artículos amontonados en la cocina y baños.
- La cucaracha oriental se esconde afuera, bajo la hiedra y en otros lugares que ofrecen refugio. Fíjese si tiene este tipo de cucaracha y elimine escondites en el exterior o use un cebo.

Cockroaches

HEALTHY GARDEN HEALTHY HOME

Cockroaches thrive in warm environments that provide food, water, and shelter. Roaches hide in cracks, crawl spaces, and other dark places during the day and come out at night to feed. Pesticide sprays alone will not control roaches and are not usually required. Baits provide better control. You must integrate several strategies to make your home a less roach-friendly environment. Thoroughness is essential for effective control.

Identify your cockroach species first:

- Effective management options vary according to species.
- Cockroach traps provide an easy way to catch roaches for identification.
- Control practices for outdoor invaders (American, oriental roaches) and indoor residents (brownbanded and German roaches) differ.
- For help with identification go to www.ipm.ucdavis.edu.

Remove food and water sources:

- Even tiny crumbs or liquids in cracks provide good food sources.
- Store food in sealed containers.
- Keep trash in containers with tight lids.
- Eliminate plumbing leaks.
- Vacuum cracks and crevices and clean floors and counters daily.

Remove roach hiding places:

- Seal cracks and other openings to prevent invaders from the outside.
- Seal cracks in false bottoms of cupboards and other indoor hiding places.
- Seal or clean up other areas where you find roaches or their egg cases hiding.
- Remove old newspapers, boxes, and other clutter in kitchens and bathrooms.
- The oriental cockroach hides outdoors under ivy and other shelter. Check to see if you have this roach and remove outdoor hiding places or bait.

Waxaad isticmaashaa dabinnada si aad u kala ogaatid noocyada baranbarada:

- Dabinnada baranbarada waxaad ka helaysaa dukaannada alaabta dayactirka lagu iibiyo.
- Waxaad dabinnada dhigtaa dhulka meel ku dhow geesaha darbiyada, qaanadaha gudahooda iyo meelaha kale ee aad filaysid in ay baranbaradu cunto ka raadsanayso. Waxaad saldhigyada dabinnada aad dhigtaa meelaha aad ku dabtid baranbarada.
- Eeg dabinka maalin walba.
- Dabinnada dhega ee uu ku jiro pheromones waxaa laga yaabaa in ay xakameyaan baranbarada Jarmalka.

Isticmaalka kiimikada si loo xakameeyo baranbarada:

- Ka fogow in aad isticmaashid qaaca, banka, buufiska aerosol — baranbarada ayeey kala fogeynayaan oo kaliya.
- Budada aasidhka ee lagu sii daayo dildillaacyada, furiinnada, daloollada, qaboojiyaha hoostiisa, ama meelaha qarsoon ayeey aad waxtar ugu leedahay. (waxaad u oggolaataa 7 cishood ama ka badan si aad natiijo u aragtid).
- Saldhigyada dabinnada ee sita aasidhka boorik, abamectin, fipronil, ama hydramethylnon oo la dhigo meelaha qarsoon ayaa aad waxtar u leh haddii laga fogeeyo cuntada (waxaad u oggolaataa 7 cishood ama ka badan si aad natiijo u aragtid). Saldhigyada iska beddel markii loo baahdo illaa iyo intii baranbaro laga dabayo.
- Buufiyeyaasha cayayaanka oo kaliya ma ay anfacayaan in muddo fog lagu xakameeyo. Looma baahna haddii qaabab kale sida dabinka iyo budada borik aasidh la isku qasayo iyadoo la raacinayo nadaafad iyo ka dhaqaajinta meelaha qarsoon.
- Waxaad ka xiriirtaa xirfadlaha cayayaanka la dagaallama markii ay jidho xaalad xad dhaaf ah, balse iska hubi in ay isticmaalaan barnaamij isku dhaf ah sida aynu halka sare ku soo sheegnay.

Baranbarada Jarmalka ee Weyn

Jarmal baranbaro yaraanka

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org. Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Nếu cần dùng thuốc diệt côn trùng, hãy sử dụng các sản phẩm an toàn:

- Quý vị có thể mua bẫy bọ gián tại các tiệm bán đồ cơ khí.
- Đặt bẫy bọ gián trên sàn nhà gần mép tường, trong chạn đựng thức ăn và những nơi mà quý vị nghĩ rằng có bọ gián phá hoại. Đặt dụng cụ đánh bả tại những nơi mà quý vị bẫy bọ gián.
- Kiểm tra bẫy hàng ngày.
- Các loại bẫy dính có pheromones có tác dụng diệt bọ gián Đức ở mức độ nhất định.

Sử dụng hóa chất để diệt bọ gián:

- Tránh sử dụng chất keo, chất nổ, hoặc bình phun — các chất này chỉ làm phân tán bọ gián đi khắp nơi.
- Phương pháp thổi bột a-xít bô-ríc (boric acid) vào trong các vết nứt, kẽ hở, tường rỗng, dưới tủ lạnh, hoặc những nơi ẩn náu an toàn khác của bọ gián là rất hiệu quả (sẽ thấy tác dụng sau khoảng 7 ngày).
- Việc đặt các bẫy bọ gián có chất boric acid, abamectin, fipronil, hoặc hydramethylnon ở gần nơi ẩn náu của bọ gián sẽ hiệu quả nếu loại bỏ các nguồn thực phẩm khác (sẽ thấy tác dụng sau khoảng 7 ngày). Thay đổi vị trí các dụng cụ bẫy khi cần thiết miễn là các dụng cụ này vẫn bắt được bọ gián.
- Chỉ riêng các loại thuốc diệt côn trùng dạng xịt sẽ không đủ để diệt bọ gián lâu dài. Các loại thuốc này không cần thiết nếu kết hợp việc lau dọn và loại bỏ những nơi trú ngụ của bọ gián với các phương pháp khác như dùng bả và bột boric acid.
- Đối với các trường hợp phá hoại nghiêm trọng, liên lạc với một hãng chuyên về diệt các loài gây hại, nhưng phải bảo đảm là họ sử dụng một chương trình kết hợp như trên.

German bọ gián nymph

German bọ gián adult

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

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Chính nước là nguồn liên kết chúng ta!

Use trampas para identificar y monitorear poblaciones de cucarachas:

- Las trampas para cucarachas se encuentran a la venta en ferreterías.
- Ponga trampas en el piso, a lo largo de las orillas de las paredes, dentro de alacenas o armarios y en otros lugares donde puedan ir en busca de alimentos. Coloque cajillas de cebos en lugares donde haya atrapado cucarachas.
- Revise las trampas diariamente.
- Las trampas pegajosas con feromonas pueden ayudar a controlar las cucarachas alemanas.

Productos químicos para controlar cucarachas:

- Evite usar insecticidas en aerosol o a presión ya que únicamente hacen que se dispersen las cucarachas.
- El ácido bórico en polvo que se aplica dentro de grietas, rajaduras, paredes huecas, bajo refrigeradores o en otros lugares donde haya poca actividad es muy efectivo (espere por lo menos siete días para ver su efecto).
- Las cajillas de cebo que contienen ácido bórico, abamectin, fipronil o "hydramethylnon", puestas cerca de escondites pueden ser efectivas si se elimina cualquier otra fuente de alimento. (Espere por lo menos siete días para ver el efecto). Mientras que continúe atrapando cucarachas, reemplace las cajillas según sea necesario.
- Usar un insecticida en aerosol no es suficiente, si no se usan otros métodos para el control a largo plazo. No es necesario su uso si se combinan otros métodos como cebos y ácido bórico en polvo, junto con la limpieza y eliminación de escondites.
- En casos de una infestación mayor, llame a un profesional de control de plagas, pero asegúrese de que use un programa de control integrado, tal como el descrito anteriormente.

Cucaracha alemana ninfa

Cucaracha alemana adulto

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Use traps to identify and track cockroach populations:

- Cockroach traps are available in hardware stores.
- Place traps on the floor around edges of walls, in cupboards and other places where you think roaches are foraging. Place bait stations at locations where you trap roaches.
- Check traps daily.
- Sticky traps with pheromones may provide some control of German cockroaches.

Using chemicals to control cockroaches:

- Avoid use of foggers, bombs, or aerosol sprays — they just disperse populations.
- Boric acid powder blown into cracks, crevices, hollow walls, under refrigerators, or other undisturbed hiding places is very effective (allow 7 days or more for an effect to be seen).
- Bait stations containing boric acid, abamectin, fipronil, or hydramethylnon placed near hiding places can be effective if other food sources are removed (allow 7 days or more for an effect to be seen). Replace stations as needed as long as roaches are being caught.
- Insecticide sprays alone do not give long-term control. They are not necessary if other methods such as baits and boric acid powder are combined along with cleanup and removal of hiding places.
- Contact a professional pest control operator for very serious infestations, but be sure they use an integrated program as described above.

German cockroach nymph

German cockroach adult

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

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It's the water that connects us!

Xaaxeeyada iyo Islagiska

HEALTHY GARDEN HEALTHY HOME

Xaaxeeyada iyo islagisku waxay ka mid yihiin dulinka beerta ee loogu necebyahay. Moluskadan dhuudhuubani waxay meesha ay isku qarinayaan kasoo baxaan habeenkii oo ay cunaan oo dalooliyaan caleemaha iyo ubaxa qaar badan oo ka mid ah dhirta beerta ee dhuuxa biyaha ku kaydsada iyo khudradda. Xaaxeeyada iyo islagisku qaab ahaan way isu egyihiin iyo bayoolaji ahaanba, marka laga reebo islagiska oo aan lahayn qolofta xaaxeeyada ee sare oo kale. Maarayntoodu waxay u baahantahay hab feejigan oo xidhiidhsan oo ay ka mid yihiin baabi'inta qoyaanka iyo meelaha ay ku gabadaan, dabitaan, deyrar, iyo gacanta oo lagaga guro. Dabitaanka ayaa noqon kara mid faa'iido leh, laakiin kelidood ha siinin inay beerta kaantaroolaan ka kooban meelo badan oo ay isku qarin karaan, cunto iyo qoyaan.

Sidee ayaad u ogaanaysaa inay xaaxeeyada iyo islagisku ay dhibaato geysanayaan?

- Waxa laga yaabaa inaanad marka hore dulinkan arkin sababta oo ah waxay wax cunaan habeenkii maalintiina way isqariyaan. Dibeda u bax habeenkii ama salaada hore si aad u eegtid iyaga oo wax cunaya.
- Cayayaan kale ayaa daloolo ka samayn kara caleemaha, ubaxyada, iyo khudradda . ka eeg raadka yar ee ah waxa yar ee jiitamaya ee ay xaaxeeyada iyo islagisku ka tagaan.

Waa maxay waxay tahay in la sameeyo si loo yareeyo xaaxeeyada iyo islagiska?

- Ka qaad meelaha ay maalintii ku gaban karaan – xayaabka, dhir hoosaadka, waxyaabaha jajaban, ama looxaanta.
- Si joogto ah uga gur meelaha ay u hoydaan ee aanad ka dhamayn karin sida deyrarka xaggooda hoose, dheegaga, sanaaduuqda mitirada.
- Beertaada dabino dhig oo daadi xaaxeeyada dabinka gashay iyo islagiska maalin walba.
- Yaree oogooyinka qoyan adiga oo u bedelanaya inaad biyo yar gunta kaga waraabiso dhirta subixii halkii aad gelinka dambe ka samayn lahayd.
- Ka fiirso dhirta aanay xaaxeeyadu cunin sida imbayshantis (impatients), jeraniyams (geraniums), begooniyas (begonias), lantana (lantana), nasturtiyams (nasturtiums), iyo dhir kaloo badan oo caleemo adag leh iyo ur badan sida sayj (sage), rowsmari (rosemary) iyo laafender (lavender).

Ốc và Ốc Sên

HEALTHY GARDEN HEALTHY HOME

Ốc và ốc sên là một trong số các loài động vật gây hại trong vườn đáng ghét nhất. Sau khi trú ẩn vào ban ngày, các loài động vật thân mềm có nhớt này xuất hiện vào ban đêm và đục lỗ trên lá và hoa của nhiều loại cây và trái cây mọng nước trong vườn. Ốc và ốc sên có cấu trúc và cơ chế sinh học giống nhau, trừ một đặc điểm là ốc sên không có lớp vỏ xoắn ốc bên ngoài giống như ốc. Để diệt loài ốc gây hại, quý vị cần áp dụng một phương pháp kết hợp triệt để, bao gồm loại bỏ tình trạng ẩm thấp và những chỗ ẩn náu, đặt bẫy, sử dụng các biện pháp ngăn chặn và nhặt bỏ bằng tay. Phương pháp đánh bả cũng có thể hiệu quả, nhưng bản thân phương pháp này không có tác dụng kiểm soát một cách thỏa đáng trong những ngôi vườn có nhiều nơi ẩn náu, thức ăn và độ ẩm cho loài ốc.

Làm thế nào để biết là ốc và ốc sên đang gây hại cho vườn?

- Thoạt đầu quý vị có thể không nhận thấy các loài động vật gây hại này vì chúng đi kiếm ăn vào ban đêm và ẩn náu vào ban ngày. Hãy ra vườn vào ban đêm hoặc sáng sớm để xem hoạt động của loài động vật này.
- Các loài động vật gặm nhấm khác cũng có thể đục lỗ trên lá cây, hoa và trái cây. Hãy tìm các vệt nhớt, bóng mà những con ốc và ốc sên để lại.

Cần phải làm gì để diệt ốc và ốc sên?

- Loại bỏ những nơi ẩn náu vào ban ngày — cây thường xuân, các khu vực có nhiều cỏ dại, vôi gạch vụn, hoặc các tấm bìa cứng.
- Thường xuyên gỡ bỏ ốc ra khỏi những nơi trú ẩn mà quý vị không thể loại bỏ được, ví dụ như những nơi có gờ thấp trên hàng rào, mặt dưới của sàn nhà, các hộp đồng hồ.
- Đặt bẫy trong vườn và vứt bỏ ốc và ốc sên bị mắc bẫy hàng ngày.
- Giảm bớt các bề mặt ẩm ướt bằng cách tưới nước hoặc tưới nước nhỏ giọt vào buổi sáng thay vì vào buổi chiều tối.
- Nên trồng các loại cây chịu được ốc thí dụ như cây bóng nước, cây phong lữ, cây thu hải đường, cây cứt lợn, cây sen cạn và nhiều loại cây có lá cứng và thơm như cây mùi tàu, cây xô thơm, cây hương thảo và cây oải hương.

Caracoles y babosas

JARDÍN SANO CASA SANA

Los caracoles y las babosas figuran entre las plagas de jardín más desagrables. Estos moluscos babosos salen de noche de sus escondites y dejan agujeros en las hojas y flores de muchas frutas y plantas carnosas. La estructura y biología de los caracoles y babosas es similar, pero las babosas no tienen la concha exterior en espiral. Su control requiere un método integrado que incluya la eliminación de escondites y lugares húmedos, el uso de trampas y barreras y recogerlos a mano. Las trampas con cebo pueden ser útiles, pero sin otros métodos no proveen suficiente control en jardines que ofrecen albergue, alimento y humedad en abundancia.

¿Cómo sé que el daño es causado por caracoles y babosas?

- Al principio, tal vez no se percate de la presencia de estas plagas pues se alimentan de noche y se esconden durante el día. Para verlas en acción, salga de noche o temprano en la mañana.

¿Qué puedo hacer para deshacerme de caracoles y babosas?

- Elimine los escondites que usan durante el día: las hiedras, zonas con maleza, desperdicios o tablas.
- Quite con regularidad los caracoles que encuentre en escondites que no puedan eliminarse como repisas, rebordes y travesaños en cercas y vallas, así como la parte inferior de terrazas y en medidores de agua y electricidad.
- Ponga trampas en el jardín y deseche diariamente los caracoles y babosas que queden atrapados.
- Disminuya las superficies húmedas usando un sistema de riego por goteo o regando en la mañana y no a otras horas del día.
- Siembre plantas a prueba de caracoles como geranios, begonias, lantanas, capuchinas y muchas plantas de hojas firmes y follaje de olor intenso como la salvia, el romero y la lavanda.

Snails & Slugs

HEALTHY GARDEN HEALTHY HOME

Snails and slugs rank among our most despised garden pests. These slimy mollusks emerge from hiding at night and chew holes in leaves and flowers of many succulent garden plants and fruit. Slugs and snails are similar in structure and biology, except slugs lack the snails' external spiral shell. Management requires a vigilant and integrated approach that includes eliminating moisture and hiding spots, trapping, barriers, and handpicking. Baits can be helpful, but by themselves, don't provide adequate control in gardens that contain plenty of shelter, food, and moisture.

How do you know snails and slugs are causing damage?

- You may not observe these pests at first because they feed at night and hide during the day. Go out at night or early morning to view them in action.
- Other pests can cause holes in leaves, flowers, and fruit. Look for the shiny, slimy trails slugs and snails leave behind.

What must be done to reduce snails and slugs?

- Remove daytime hiding places — ivy, weedy areas, debris, or boards.
- Regularly remove snails from shelters you cannot eliminate such as low ledges on fences, undersides of decks, meter boxes.
- Place traps in your garden and dispose of trapped snails and slugs daily.
- Reduce moist surfaces by switching to drip irrigation or sprinkling in the morning rather than later in the day.
- Consider snail-proof plants such as impatiens, geraniums, begonias, lantana, nasturtiums, and many plants with stiff leaves and highly scented foliage like sage, rosemary, and lavender.

Sidee ayaan u maarayn karaa xaaxeeyada iyo islagiska aniga oo aan isticmaalin sunta cayayaanka?

- Hubaal kadhig inaanay beertu marka hore molask lahayn kahor intaanad beerin. Kadibna ka taag deyr maar ah oo ku wareeji. Isticmaal mid balladhkeedu yahay 4 illaa iyo 6 iinj ah oo maar ah, oo aad ku aasto ciidda illaa iyo hal iinj dushana aad ka qalloociso ama aad girgirka kaga xidho.
- Beertaada ka beer meesha ugu cadceeda badan ee caqligalka ah. Ka saar walxaha beerta ama dhirta dhinaceeda ah ama daboolada dhulka ee ay hadhsan karaan. Sida ugu badan ee caqligalka ah u yaree oogooyinka qoyan.
- Dhis dabin adiga oo isticmaalaya boodh cabirkiisu yahay 12"x15" oo dhulka ka sarraysa 1 iinj. Markay molaskadu ku soo ururto boodhka hoostiisa. Ka daadi oo laa maalin walba.

Ka warran dabidda cuwaafta?

- Cuwaafta dabinku waxba ma tarayso adiga oo meesha ay gelayaan, cuntada iyo qoyaankana ka baabi'iya mooyee.
- Cuwaafta dabinka ee maadadda Metaldehyde sun ayay ku tahay eyda iyo shimbiraha. Metaldehyde waxqabadkeeda isla markiiba way lumisaa markay cadceedu ku dhacdo ama kadib marka roob da'o ama la waraabiyo beerta.
- Cuwaafta dabinka ee Iron Phosphate ayaa ammaan u ah in lagu ag isticmaalo eyda, carruurta iyo xayawaanka.
- Waraabi kahor intaanad cuwaafta dhigin oo dhig galab ay hawadu diirrantahay oo ay molaskadu firfircoonyihiin.
- Cuwaafta ku daadi qalabka biyaha firdhiya hareerihiisa meelo qoyaan leh oo ay xaaxeeyada iyo islagisku socdaalaan.

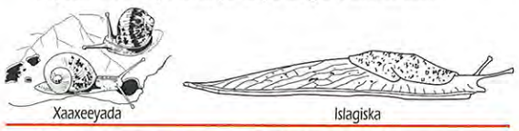

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Làm thế nào để diệt ốc và ốc sên mà không cần dùng thuốc diệt côn trùng?

- Phải bảo đảm là vườn nhà quý vị không có động vật thân mềm trước khi trồng cây. Sau đó dựng một tấm chắn bằng đồng xung quanh cây. Dùng các dải đồng có chiều rộng từ 4- tới 6-inch chôn cách mặt đất một inch và uốn cong ở phía đầu hoặc gắn vào xung quanh cạnh của nền đất cao.
- Chọn khu đất vườn ở nơi có nhiều ánh nắng nhất ở mức có thể được. Loại bỏ các đồ vật trong vườn hoặc cây cối mọc bên cạnh hoặc tấm đậy mặt đất có thể làm nơi ẩn náu cho ốc. Hạn chế các bề mặt ẩm thấp càng nhiều càng tốt.
- Đặt một chiếc bẫy bằng cách sử dụng một miếng bìa cỡ 12"x15", nhô cao lên mặt đất với các đường rãnh sâu 1 inch. Khi các loài động vật thân mềm tụ tập ở dưới tấm bảng đó, hãy bóc chúng ra để diệt hàng ngày.

Vậy còn đánh bả thì sao?

- Phương pháp đánh bả sẽ không phát huy nhiều tác dụng, trừ khi quý vị cũng loại bỏ cả nơi ẩn náu, thức ăn và độ ẩm của chúng.
- Các loại bả làm bằng metaldehyde cực độc với chó và chim. Tuy nhiên, Metaldehyde cũng nhanh chóng bị mất tác dụng dưới ánh nắng mặt trời hoặc sau khi trời mưa hoặc tưới nước.
- Các loại bả làm bằng phốt-pho sắt thường an toàn để sử dụng nếu nhà có chó, trẻ em và động vật hoang dã.
- Tưới nước trước khi rắc bả và rắc bả vào buổi tối vào các ngày nóng khi loài động vật thân mềm hoạt động.
- Rắc bả xung quanh các vòi phun nước và ở những khu vực ẩm thấp được bảo vệ và những nơi là đường đi của ốc và ốc sên.

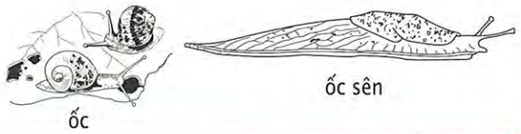

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

¿Cómo puedo controlar los caracoles y babosas sin usar pesticidas?

- Asegúrese que no hayan moluscos babosos en el jardín antes de sembrar. Luego erija una barrera de cobre a su alrededor. Use banda de cobre de unos 5 pulgadas de ancho, que deberá enterrar a una pulgada de profundidad, para luego doblar el otro extremo que se afianzará alrededor del lecho de siembra. Así, los caracoles y las babosas no pasarán.
- Escoja el lugar más soleado para su jardín. Quite objetos de jardín y plantas cercanas que puedan dar un refugio sombreado. Elimine tantas superficies húmedas que pueda.
- Haga una trampa con una tabla de 12 por 15 pulgadas, elevada en rieles de 1 pulgada de alto. Quite y mate diariamente los moluscos que se acumulen en la parte inferior de la tabla.

Y, ¿de los cebos qué?

- Las trampas con cebo no serán muy eficaces a menos que también elimine los escondrijos, alimento y humedad.
- Los cebos de metaldehído son muy venenosos para perros y pájaros. El metaldehído también pierde rápidamente su eficacia bajo la luz solar y después de la lluvia o riego.
- Los cebos de fosfato de hierro no son peligrosos para niños, perros ni la vida silvestre.
- Riegue antes de poner las trampas con cebo. Ponga éstas al atardecer en días cálidos cuando los moluscos estarán más activos.
- Eche el cebo alrededor de los aspersores así como en lugares húmedos y resguardados por donde pasen caracoles y babosas.

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

How can I manage snails and slugs without using pesticides?

- Make sure the garden is mollusk-free before planting. Then erect a copper barrier around it. Use a 4- to 6-inch-wide band of copper, buried an inch below the soil and bent over at the top or attach it around the edge of a raised bed.
- Place your garden in the sunniest spot possible. Remove garden objects or adjacent plants or ground cover that may serve as shady shelter. Reduce moist surfaces as much as possible.
- Build a trap using a 12"x15" board raised off the ground by 1-inch runners. As the mollusks collect under the board, scrape them off and destroy them daily.

What about baits?

- Baits will not be very effective unless you also remove shelter, food, and moisture.
- Metaldehyde baits are especially poisonous to dogs and birds. Metaldehyde also loses its effectiveness rapidly in sunlight and after rain or irrigation.
- Iron phosphate baits are safe for use around dogs, children, and wildlife.
- Irrigate before applying bait and apply in evening on warm days when mollusks are active.
- Scatter bait around sprinklers and in moist and protected areas where snails and slugs travel.

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Caarada

HEALTHY GARDEN HEALTHY HOME

Caarada faa'idada ugu weyn ee ay leeyihiin ayaa ah iyagoo cayayaanka dheefiya. Hase ahaatee, dadka badankood ayaa u haysta in caarada oo dhan ay halis leedahay oo ay wax weerarto. Gobolka California, caarada gaysan karta dhaawac culus ayaa ah nooca carmalada madow (black widow), taasoo badanaa dibedda ku sugan meel aragtida ka fog. Caarada maalintii dibedaha lagu arko waa ay adag tahay sida ay dad ku qaniinaan. Dadaalka la dagaallanka cayayaanka ayaa isku hawlisa dhaqaajinta xuubka caarada iyo meelaha ay ku dhuumato. Caadiyan lagulama taliyo sunta cayayaanka disha.

Waxa aad ka baranaysid caarada:

- Gobolka California, caarada gaysan karta dhaawaca culus ayaa ah nooca carmalada madow (black widow):
  - Carmalada madow (black widow) ee sunta sidata waxaa caadiyan laga helaa dibedaha, meelaha ay ku hoy ka dhigan karto, qalalan, ee cidlada ah alwaaxduna ku badan tahay.
  - Carmalada dheddigga ah waxaa ay qabtaa jidh iftiimaya oo uu xariiq gaduudan ay halka hoose ka marsan tahay.
  - Carmalada madow dheddigga ah ee weyn oo kaliya ayaa dadka dhaawici karta

    Qof kasta ee ay qaniinto caarada carmalada madow waa in uu is xasilliyaa kaddibna uu dhakhtar la taliya raadsadaa, ama uu ka wacaa Xarunta La Dagaallanka Sunta ee California (California's Poison Control Center) 1-800-8 POISON (1-800-876-4766).
- Caarada maariinka ah ee keli noolka ah kuma ay noola California.
- Gowsaha caarada badanaa aad ayeey u yar yihiin si ay dadka u qaniinaan.
- Caarada qaarkood waxaa ay wax qaniinaan marka ay dharku dhexgalaan balse dhaawacu kama badna cuncun ama qaniinyo shinni. Waxaad eegtaa www.ipm.ucdavis.ecu si aad macluumaad dheeraad ah u heshid.

Si aad uga hortagto in caaradu ay aqalkaaga soo gasho, waxaad qaadaa tallaabooyinka soo socda:

- Waxaad xirtaa dildillaaca aasaaska aqalka iyo daldalloolada kale.
- Waxaad baartaa shabaqa dariishadaha in ay si fiican u dheggan yihiin si aysan u soo galin caarada iyo cayayaanka kale ee ay cunaan.
- Alaabada aan isku habeysnayn ka fogee wareegga aasaasla aqalka.

Nhện

HEALTHY GARDEN HEALTHY HOME

Nhện là loài có lợi nhất vì chúng ăn côn trùng có hại. Tuy nhiên, nhiều người nghĩ rằng tất cả các loài nhện đều nguy hiểm và hung hãn. Ở Tiểu Bang California, loài nhện chính có thể gây thương tích nghiêm trọng là loài nhện đen. Loài nhện này thường sống ở ngoài trời và ẩn náu ở những nơi không nhìn thấy được. Những loài nhện nhìn thấy ở bên ngoài trời vào ban ngày thường không cắn người. Khi diệt động vật phá hoại, nên chú trọng tới việc quét mạng nhện và dọn sạch những nơi trú ẩn của nhện. Thuốc diệt côn trùng thường không được khuyến cáo sử dụng.

Những điều cần biết về loài nhện:

- Tại Tiểu Bang California, loài nhện chính có thể gây thương tích nghiêm trọng là nhện đen:
  - Nhện đen độc thường gặp ở bên ngoài nhà, ở những khu vực dễ ẩn náu, khô và an toàn, thí dụ như các cột gỗ.
  - Nhện đen cái có phần thân đen bóng với hình chiếc đồng hồ cát màu đỏ ở phía dưới bụng.
  - Chỉ có những con nhện đen cái cỡ lớn mới có thể gây thương tích cho người.

    Nếu quý vị bị nhện đen cắn, nên giữ bình tĩnh và hỏi ý kiến các chuyên gia y tế, hoặc gọi Trung Tâm Kiểm Soát Chất Độc của Tiểu Bang California (California's Poison Control Center) tại số 1-800-8-POISON (1-800-876-4766).
- Loài nhện nâu không sống ở Tiểu Bang California.
- Đa số các con nhện đều có hàm quá nhỏ nên không thể cắn người được.
- Một số loài nhện khác cắn khi bị mắc kẹt trong quần áo, nhưng phản ứng thường chỉ tới mức gây ngứa hoặc có một vết như ong châm. Xin xem trang mạng điện toán www.ipm.ucdavis.edu để biết thêm chi tiết về các loài nhện này.

Để ngăn chặn nhện xâm nhập vào nhà, quý vị nên áp dụng các bước sau đây:

- Bịt kín các kẽ hở trên nền nhà và các lỗ hở khác mà nhện có thể vào nhà.
- Kiểm tra các tấm lưới chắn cửa sổ và cửa ra vào để bịt kín những lỗ hổng để tránh cho nhện và các côn trùng khác làm mồi của nhện xâm nhập vào nhà.
- Giữ gọn gàng các khu vực quanh móng nhà.

Las arañas

JARDÍN SANO CASA SANA

La mayoría de las arañas son beneficiosas porque se alimentan de insectos que son plagas. Sin embargo, muchas personas piensan que todas las arañas son peligrosas y agresivas. En California, la araña más común capaz de causar lesiones graves es la viuda negra, la cual generalmente se encuentra afuera de la casa y prefiere no ser vista. Es poco probable que las arañas que se dejan ver durante el día piquen a las personas. Concentre sus esfuerzos para controlar las arañas quitando telarañas y escondites. Por lo general, no se recomienda usar pesticidas.

Lo que debe saber sobre las arañas:

- En California, la araña más común capaz de causar lesiones graves es la viuda negra:
  - La viuda negra es venenosa y comúnmente se encuentra en zonas resguardadas, secas y con poca actividad, como en una pila de madera.
  - El cuerpo de la hembra es negro, brillante y tiene una marca roja en forma de reloj de arena en el vientre
  - Sólo aquellas hembras de tamaño grande pueden causar lesiones a las personas.
  - Cuando una persona recibe una picadura de una viuda negra, debe conservar la calma y obtener atención médica o llamar al centro de control de envenenamientos (Poison Control Center) de California al 1-800-8-POISON (1-800-876-4766).
- La araña reclusa parda no vive en California.
- Las mandíbulas de la mayoría de las arañas son demasiado pequeñas para picar a los humanos.
- Algunas otras arañas pican si quedan atrapadas en la ropa, pero, por lo general, la reacción no es más aguda que una comezón o la picadura de una abeja. Visite la página en la red para leer más sobre estas arañas.

Pasos para evitar que las arañas entren al hogar:

- Selle toda grieta o agujero en los cimientos de la casa.
- Inspeccione la malla de las puertas y las ventanas para cerciorarse que estén bien selladas y eviten la entrada de arañas e insectos.
- No deje acumular cosas alrededor de los cimientos.

Spiders

HEALTHY GARDEN HEALTHY HOME

Spiders are mostly beneficial because they feed on pest insects. However, many people think that all spiders are dangerous and aggressive. In California, the main spider capable of causing serious injury is the black widow, which generally remains outdoors and out of sight. Spiders seen out in the open during the day are unlikely to bite people. Focus pest management efforts on removing webs and hiding places. Pesticides are not generally recommended.

What to know about spiders:

- In California, the main spider capable of causing serious injury is the black widow:
  - The poisonous black widow spider is commonly found outdoors, in sheltered, dry, undisturbed areas such as wood piles.
  - Female black widows have shiny black bodies with a red hourglass marking on the underside.
  - Only large female black widows can injure people.
  - Anyone bitten by a black widow spider should remain calm and seek medical advice, or call California's Poison Control Center at 1-800-8-POISON (1-800-876-4766).
- The brown recluse spider does not live in California.
- The jaws of most spiders are too small to bite humans.
- Some other spiders bite when trapped in clothing, but the reaction is usually no more severe than itching or a bee sting. See www.ipm.ucdavis.edu for more information about these spiders.

To prevent spiders from entering your house, take these steps:

- Seal home foundation cracks and other access holes.
- Inspect window and door screens for good seals that keep out spiders and the insects they prey on.
- Keep areas around home foundations free of clutter.

Waxaad caaradu kula dagaallantaa tallaabooyinka soo socda:

- Gudaha, si joogta ah oo aqalka aad u nadiifisid ayaad kula dagaallami kartaa caarada.
- Faakiyum garee caarada iyo xuubkeeda.
- Ka hortag in ay alaabadu si dayacan isu dul saarnaadaan taasoo keeni karta in ay caaradu ku dhuumato.
- Ka dhaqaaji xuubka caarada aqalka dibeddiisa adigoo isticmaalaya xaaqin ama tuubo xoog loogu buufin karo.
- Gudaha, dil caarada ama gasac ku qabo kaddibna dibedda gee.

Marka aad caarada dhaqaajinaysid, la soco in caaradu ay cunto cayayaan kala duwan iyo waxyaabo kale. Caaradu sidoo kale waxaa ay leeyihiin cadow — caarooyinka kale, shimbiraha, qalajisada iyo masaska, iyo waxyaabo kale — kuwaasoo mararka qaarkooda ka hortaga in ay tarmaan.

caarada carmalada madow

longbodied cellar caarada

yellow sac caarada

Waxaad isticmaashaa qaababka AAN KIIMIKADA AHAYN iyo suntan HALISTEEDU UGU YAR TAHAY WAA MAXAY SABABTA? Biyo qaadka aqalkaaga iyo jardiinada waxaa ay biyaha sunta leh geeyaan ilaha, wabiyada, harooyinka iyo badweynta.

Waxaad wax dheeraad ah ka barataa taya da biyaha deegaanka San Diego: www.ThinkBlueSD.org & www.ProjectCleanWater.org. Si aad macluumaad dheeraad ah u heshid waxaad soo booqataa bogga internetka ee IPM Jaamacadda California: www.ipm.ucdavis.edu ama UCCE Master Jardiinooyinka:
(858) 694-2860, Isn - Jim, 9 sub to 3 gal

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Diệt nhện bằng cách áp dụng các lời khuyên sau đây:

- Nếu ở trong nhà, thường xuyên lau dọn nhà cửa để diệt nhện một cách thích hợp.
- Hút sạch nhện và mạng nhện.
- Tránh tình trạng để đồ vật bừa bộn tạo thành nơi ẩn náu cho nhện.
- Dùng chổi hoặc vòi nước có áp suất cao để quét sạch mạng nhện ở bên ngoài nhà.
- Nếu ở bên trong nhà, nghiền nát nhện hoặc bắt bỏ vào một chiếc lọ và thả nhện ở bên ngoài nhà.

Khi diệt nhện, đừng quên rằng nhện ăn rất nhiều các loại côn trùng phá hoại. Trong tự nhiên, loài nhện cũng có kẻ thù — ong bắp cày, các loài nhện khác, chim, bò sát, và các loài động vật khác — đôi khi những loài này khiến nhện không thể phát triển quá nhiều.

nhện đen

nhện mình dài

nhện túi vàng

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

El control de las arañas:

- Dentro del hogar, basta con una buena limpieza.
- Pase la aspiradora para quitar arañas y telarañas.
- Evite el desorden para no proporcionar escondites.
- Quite telarañas en el exterior con una escoba o manguera de agua a alta presión.
- En el interior, aplaste las arañas o captúrelas con un tarro y luego suéltelas afuera.

Al deshacerse de arañas, tenga en cuenta que se comen una variedad de insectos molestos y plagas. Las arañas tienen también enemigos naturales, como avispas, otras arañas, pájaros, reptiles y demás, que a veces evitan que se vuelvan demasiado numerosas.

viuda negra

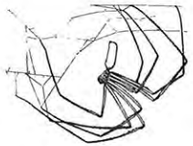

araña de pata larga

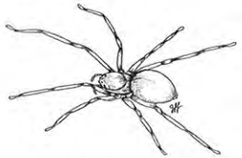

araña de vientre amarillo

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Manage spiders using these tips:

- Indoors, regular housecleaning provides adequate spider control.
- Vacuum up the spider and its web.
- Prevent clutter buildup that can provide hiding places.
- Remove spider webs from the exterior of the house with a broom or high pressure hose.
- Indoors, squash spiders or capture them in a jar and release them outdoors.

When removing spiders, don't overlook the fact that spiders eat a large number and variety of nuisance and pest insects. Spiders also have natural enemies — wasps, other spiders, birds, reptiles, and others — that sometimes keep them from becoming too numerous.

black widow spider

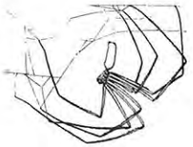

longbodied cellar spider

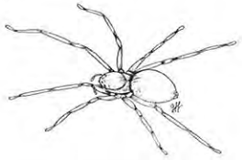

yellow sac spider

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

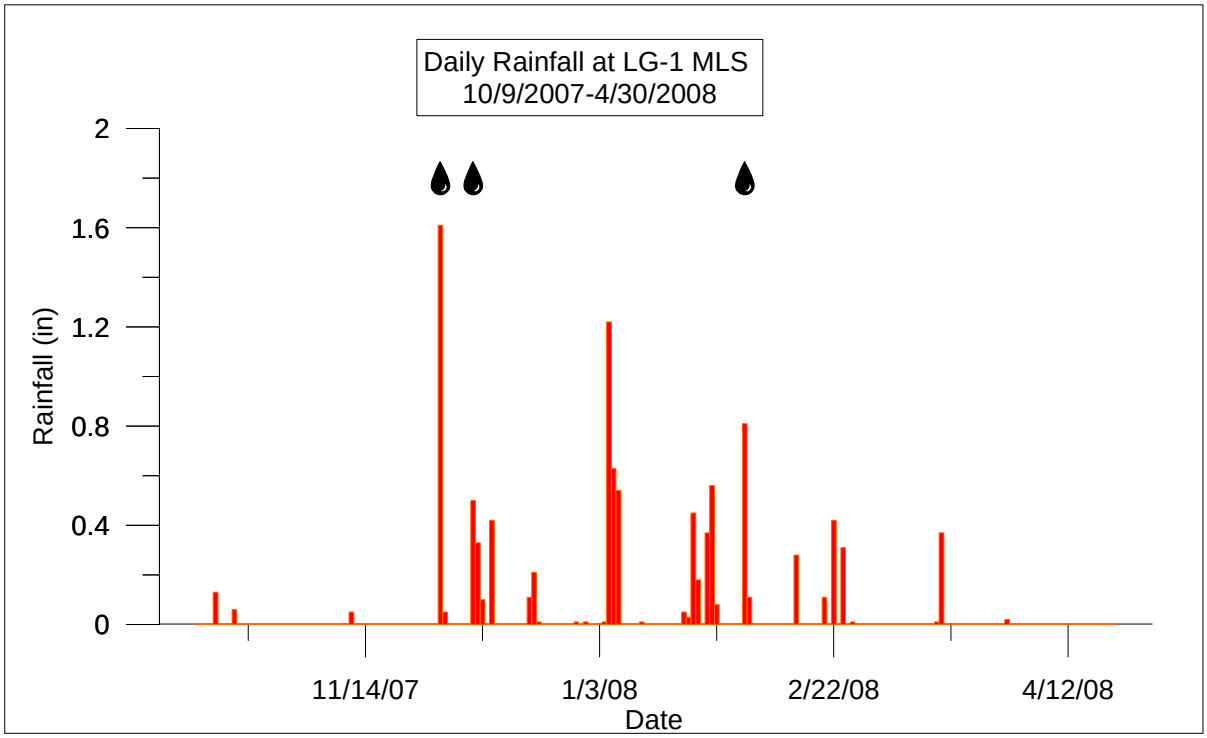
Daily Rainfall at LG-1 MLS
10/9/2007-4/30/2008
Rainfall (in)
2
1.6
1.2
0.8
0.4
0
11/14/07
1/3/08
2/22/08
4/12/08
Date

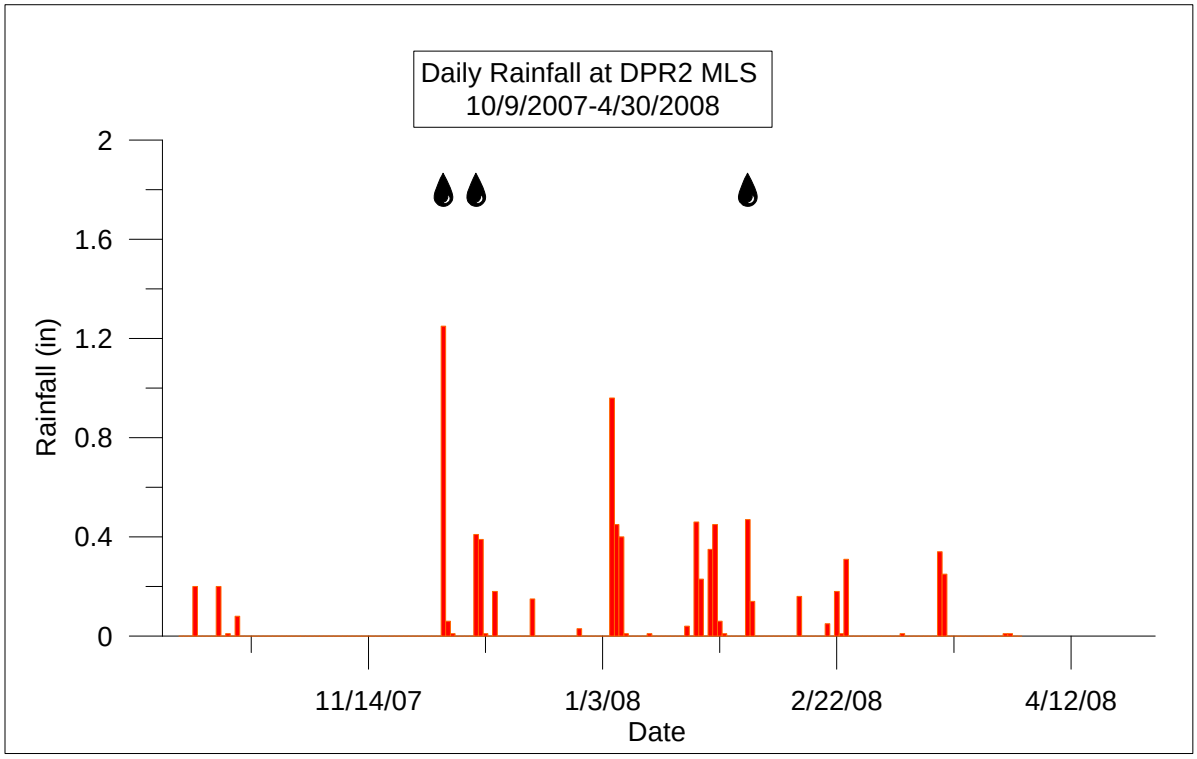
Daily Rainfall at DPR2 MLS
10/9/2007-4/30/2008
Rainfall (in)
2
1.6
1.2
0.8
0.4
0
11/14/07
1/3/08
2/22/08
4/12/08
Date

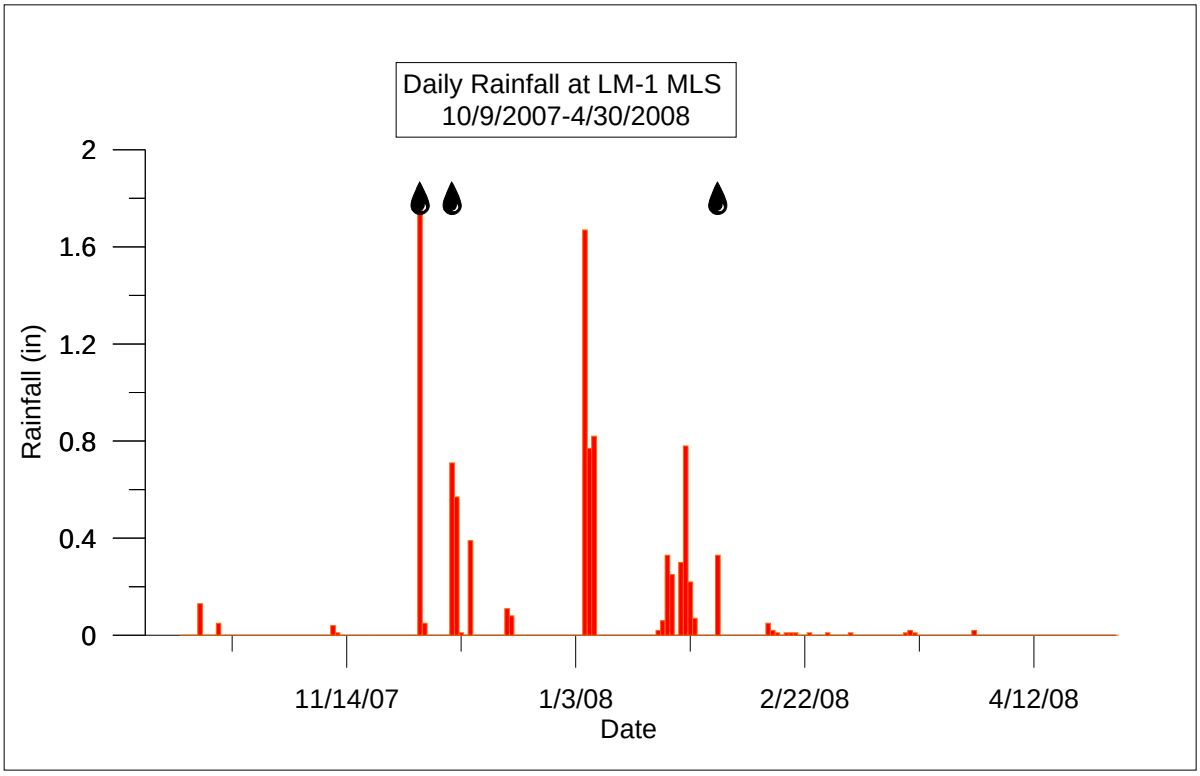
Daily Rainfall at LM-1 MLS
10/9/2007-4/30/2008
Rainfall (in)
2
1.6
1.2
0.8
0.4
0
11/14/07
1/3/08
2/22/08
4/12/08
Date

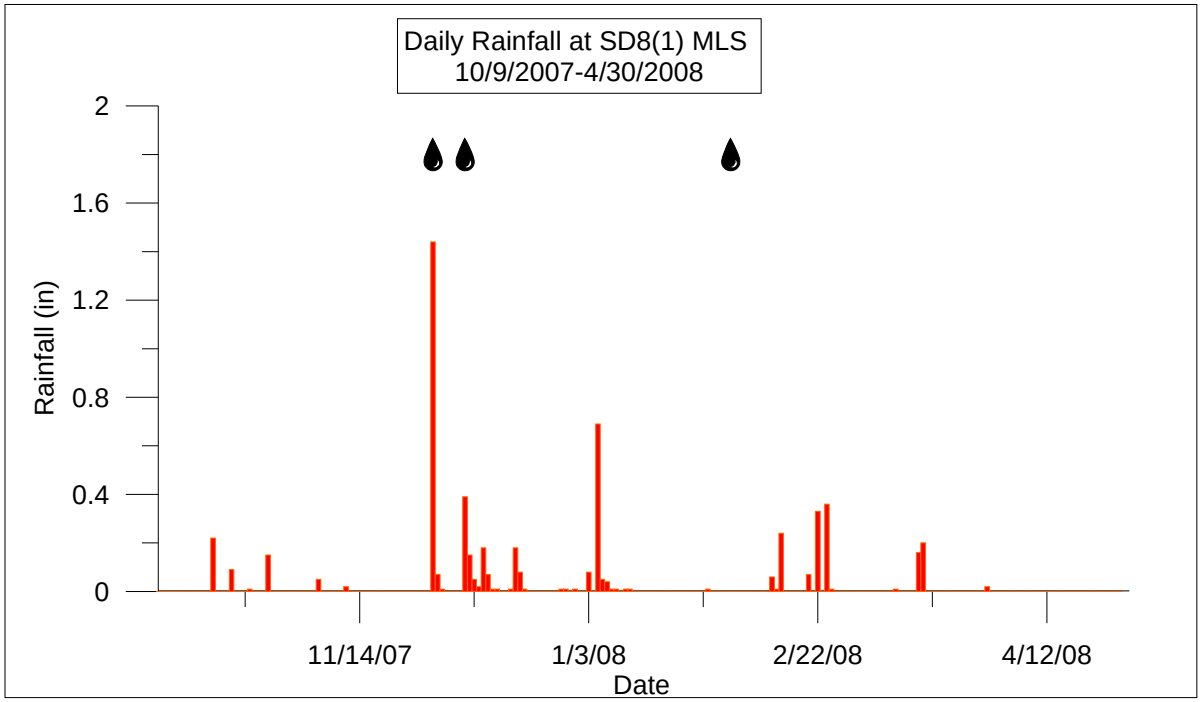
Daily Rainfall at SD8(1) MLS
10/9/2007-4/30/2008
Rainfall (in)
2
1.6
1.2
0.8
0.4
0
11/14/07
1/3/08
2/22/08
4/12/08
Date

FW Storm Event - Saturday October 13

-----Original Message-----
From: Lilian Busse [mailto:lbusse@waterboards.ca.gov]
Sent: Tuesday, October 16, 2007 2:41 PM
To: Weber, Jo Ann
Subject: Re: Storm Event - Saturday, October 13

Jo Ann -
I received your email about the storm event on Oct. 13.
I agree, please wait with the pyrethroid monitoring until after the next storm event.
Thanks, Lilian

****
Lilian B. Busse, Ph.D.
Environmental Scientist
Southern Watershed Unit

San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

phone: 858-467-2971
fax: 858-571-6972
lbusse@waterboards.ca.gov
****

>>> "Weber, Jo Ann" <JoAnn.Weber@sdcounty.ca.gov> 10/16/2007 1:02 PM >>>
Dear Lilian, The storm event on Saturday did exceed the 0.1" threshold as required for sampling in 40CFR122.21(g)(7) and it is always our intent to capture the first event beginning Oct 1 per our permit (Rcv WatersProgramNo. R9-2007-0001;sec II.A.1.c). However, the rain event was predicted to be less than 0.1 inch and therefore, Weston discontinued tracking the storm and did not mobilize storm samplers, which is consistent with our protocol. Details of the tracking are attached and will be included as documentation in our Monitoring Annual Report for 2007-2008. I concur with the decision to discontinue tracking the storm. Mother Nature threw us a loop.

Please advise if you concur with when to sample sediments for pyrethroids. According to our Pyrethroids Monitoring Program submitted to you with our Scope of Work on August 29, 2007, we proposed to sample sediments at stations after the first rain event of the wet season. Weston reports that flows are still very low in watercourses compared to historical flows. I recommend that we hold off on sampling pyrethroids in sediment until after the next storm event. Additionally, by waiting until the next storm event, we will then have water column data on toxicity that is useful in assessing the potential affects of pyrethroids. I thank you in advance for your input.
Please do not hesitate to call me if you have questions or wish to further discuss.
Best regards, Jo Ann

Jo Ann Weber

Supervising Environmental Health Specialist

County of San Diego/DPW/Watershed Protection

5201 Ruffin Road, Suite P

San Diego, CA 92123, MS 0326

Tel: 858-495-5317

Fax: 858-495-5263

joann.weber@sdcounty.ca.gov

WESTON SOLUTIONS, INC.
2433 Impala Drive
Carlsbad, CA 92010
(760) 795-6900 / (760) 931-1580 FAX
www.westonsolutions.com

10/15/07

To: Ruth Kolb, City of San Diego
From: David Renfrew, Weston Solutions, Inc.

Subject: October 13, 2007 Storm Event Not Sampled for Sites DPR2 or SD8(1) for Regional Water Quality Control Board Order R9-2004-0277

On the morning of Saturday, October 13, 2007 a storm system affected the Chollas Creek Watershed with rainfall totals between 0.22 inches at Site SD8(1) to 0.20 inches at Site DPR2. The upper watershed areas near La Mesa and Lemon Grove received 0.12 to 0.15 inches. The county wide average for this storm event was 0.15 inches at the coast and valleys and 0.22 inches in the mountains.

This was the first storm event following October 1, 2007 which met the requirement for sampling under San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277. Weston Solutions, Inc. (Weston), the contractor responsible for monitoring, did not perform sampling due the storm quantitative precipitation forecasts (QPF) obtained from the National Weather Service predicting less than 0.1" for the San Diego coastal and valley areas. Weston uses best professional judgment in making storm event mobilization decisions. It is our opinion that this storm event was unpredictable and of lower magnitude for the purposes of storm event monitoring. This letter details the decisions that were made resulting in the decision for not sampling this storm event.

Weston monitors the National Weather Service (NWS) website at http://www.wrh.noaa.gov/sgx/. Forecasts posted on the website along with discussions of the forecast and QPF are utilized to determine if potential storms will be "chased" for monitoring purposes. If the QPF predicts measurable rain approximating 0.1 inches or more at the coast the day prior to a rain event or within 48 hours of a weekend event, storm event staffing will be notified to be on call and ready to perform monitoring. This decision is based the QPF forecast produced by the National Weather Service and other tools. Other tools that are used by Weston to verify the QPF include infrared satellite imagery, live streaming NEXRAD radar, and pressure gradient maps. Additionally, organisms for toxicity sampling must be ordered to meet the holding times for sampling prior to 1:00 p.m. the Friday before any weekend events. All of these decisions must be made at least 24 to 48 hours prior to a potential storm.

The following is a summary of the forecast tools and decisions made to not mobilize for this storm event. All discussions and precipitation forecasts are attached to this letter.

On Thursday, October 11, 2007, the 14:30 discussion contained the following within it referring to the chances of rain from the approaching system: "RAINFALL TOTALS...IF ANY...SHOULD BE LESS THAN A TENTH OF AN INCH IN MOST AREAS." This was specific to San Diego coastal areas and valleys, which are the focus of monitoring under the RWQCB Order No. R9-2004-0277. Infrared imagery and radar appeared to be tracking the precipitation to north of the San Diego Region.

On Friday, October 12, 2007, the 14:30 discussion contained the following within it referring to the chances of rain from the approaching system: "IF PRECIP DEVELOPS THEN RAINFALL TOTALS SHOULD GENERALLY BE LESS THAN A TENTH OF AN INCH...BUT THERE COULD BE LOCAL AMOUNTS TO NEAR A QUARTER INCH ON WEST FACING LOWER MOUNTAIN SLOPES." Again, infrared imagery and radar appeared to be tracking the precipitation to north of the San Diego Region which appeared to validate the NWS QPF.

Based on 1) these forecasts 2) the use of the phrases "if any" on Thursday and 3) "if precip develops" on Friday and 4) low amounts forecast in the QPF, the decision was made to not mobilize for this storm. This decision was consistent with the guidance provided in RWQCB Order R9-2004-0277 and 40 CFR 122.21(g)(7) since the system was forecast to produce less than 0.10" of rainfall, if any, at the coastal and valley areas of San Diego.

On Friday, October 12, 2007 at 20:26, the NWS issued a QPF with amounts forecast below 0.10" across San Diego County coastal areas and valleys.

Satellite and radar images at approximately 23:00 on Friday, October 12, 2007 were unimpressive and seemed to be in line with the forecast. Thus additional 'just in case' tracking of the storm ceased.

On Saturday, October 13, 2007, the 03:30 discussion contained the following within it referring to the chances of rain from the approaching system: "MANY LOCATIONS WILL GET A SHOT OF MEASURABLE RAIN THIS MORNING AS THE SYSTEM PASSES WITH AMOUNTS GENERALLY 1/10 INCH OR LESS"

Once the storm system began to actually affect San Diego County rainfall totals between approximately 03:00 and 08:00 were essentially double what had been forecast. This produced an event that met monitoring criteria in contrast to what had been forecast. Since staffing and toxicity organisms were not ordered based on the QPF, this storm event was not captured. Significant flows were not recorded at either Site DPR2 or SD8(1). Rainfall totals for this storm event are attached to this letter.

Please call me if you have any questions regarding this memo.

Sincerely,

David S. Renfrew
Project Manager
Weston Solutions, Inc.
760-795-6903 (direct)

Attachments:
Attachments (6)

Attachments:
1. Area Forecast – 10/12/07-0930
2. Area Forecast – 10/12/07-1430
3. Quantitative Precipitation Forecast-10/12/07-2026
4. Area Forecast – 10/13/07-0330
5. Rainfall Totals Text-10/13/07
6. Rainfall Totals-Map-10/13/07

1. Area Forecast – 10/12/07-0930

Note: Links in the text will open a (small) new browser window with more information inside.

Current Version Previous Version: 1 2 3 4 5 6 7 8 9 10

AREA FORECAST DISCUSSION

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FXUS66 KSGX 121554
AFDSGX

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN DIEGO CA
930 AM PDT FRI OCT 12 2007

.SYNOPSIS...
UPPER LEVEL LOW PRESSURE APPROACHING FROM THE NORTHWEST WILL BRING
VARIABLE CLOUDINESS TODAY. CHANCE OF SHOWERS THIS EVENING THROUGH
SATURDAY MORNING...ALONG WITH LOCAL STRONG GUSTY WEST WINDS IN THE
MOUNTAINS AND DESERTS. FAIR AND WARMER SUNDAY UNDER HIGH PRESSURE.
PARTLY CLOUDY AND COOLER EARLY NEXT WEEK THEN FAIR AND WARMER TOWARD
THE END OF THE WEEK.

&&

.DISCUSSION...FOR SOUTHWEST CALIFORNIA INCLUDING SAN DIEGO...
ORANGE...SOUTHWEST SAN BERNARDINO AND WEST RIVERSIDE COUNTIES.

.SHORT TERM (TODAY-MON)...
LOW CLOUDS AND PATCHY FOG WERE INTO THE COASTAL MOUNTAIN SLOPES THIS
MORNING. THERE WERE ALSO HIGH CLOUDS IN THE NRN AREAS. THE 12Z NKX
SOUNDING HAD AN INVERSION BASED NEAR 3500 FT AND SHOWED THE HIGH
LEVEL MOISTURE IN SW WINDS ALOFT. ONSHORE GRADIENTS AND TRENDS WITH
ABOUT 7 MB SAN-IPL.

THE DEEP MARINE LAYER WILL RESULT IN A PARTIAL AND REVERSE CLEARING
PATTERN TODAY. THE UPPER LOW CURRENTLY CENTERED OFF THE NRN CA COAST
WILL DIG SW ACROSS SRN CA TONIGHT. THIS WILL BRING A CHANCE OF
SHOWERS...MAINLY OVER AND W OF THE MOUNTAINS. IF PRECIP DEVELOPS
THEN RAINFALL TOTALS SHOULD GENERALLY BE LESS THAN A TENTH OF AN
INCH...BUT THERE COULD BE LOCAL AMOUNTS TO NEAR A QUARTER INCH ON W
FACING LOWER MOUNTAIN SLOPES. THE CHANCE OF SHOWERS WILL TAPER OFF
SAT MORNING AND MOSTLY END BY AFTERNOON...EXCEPT FOR A FEW SHOWERS
POSSIBLY LINGERING IN THE MOUNTAINS. INCREASING WINDS ALOFT AND
ONSHORE GRADIENTS WILL CAUSE LOCAL GUSTY WINDS...MAINLY IN THE
MOUNTAINS AND DESERTS THIS AFTERNOON THROUGH SAT AND WIND ADVISORIES
```

ARE IN EFFECT. THERE COULD BE A RETURN OF MARINE LAYER CLOUDS SAT NIGHT AND SUN MORNING AND AGAIN SUN NIGHT INTO M0N SINCE THE LOW LEVELS REMAIN MOIST. OTHERWISE...FAIR AND WARMER WITH A SHORT WAVE RIDGE SUN...WEAKENING MON FOR A LITTLE COOLING.

&&

.LONG TERM (TUE-FRI)...
A FAST MOVING SHORT WAVE TROUGH WILL MOVE THROUGH MON NIGHT WITH BRIEF WEAK RIDGING TUE AND THEN ANOTHER BROADER TROUGH WILL MOVE THROUGH TUE NIGHT. THIS WILL MAINTAIN A MODERATELY DEEP MARINE LAYER WITH PARTLY CLOUDY SKIES IN MOST AREAS DURING THE AFTERNOONS AND BELOW SEASONAL TEMPS THROUGH WED. FAIR AND WARMER TOWARD THE END OF NEXT WEEK UNDER HIGH PRESSURE WITH WEAK OFFSHORE FLOW.

&&

.AVIATION...
121430Z...MDCRS SOUNDINGS AND EARLY MORNING TOP REPORTS INDICATE THE MARINE LAYER HAD DEEPENED TO AROUND 4000 FEET. STRATOCU WITH BASES AROUND 3000 TO 3500 FEET MSL EXTENDS FROM THE COASTAL WATERS TO THE COASTAL SLOPES OF THE MOUNTAINS. DEPTH OF THE MARINE LAYER AND CONTINUED ONSHORE FLOW SHOULD KEEP A STRATOCU LAYER OVER THE AREA THROUGH THE AFTERNOON WITH SOME SCATTERING POSSIBLE ALONG THE COAST UNDER A REVERSE CLEARING PATTERN. HOWEVER...ANY CLEARING SHOULD BE BRIEF. CLOUDS SHOULD LOWER AND THICKEN THIS EVENING AND TONIGHT AS A COLD FRONT APPROACHES FROM THE NORTHWEST. THIS COLD FRONT IS EXPECTED TO MOVE THROUGH SOUTHERN CALIFORNIA BETWEEN 12Z AND 15Z ON SATURDAY. THIS FRONT SHOULD BRING SOME SHOWERS LATE TONIGHT INTO SATURDAY MORNING. CLOUDS SHOULD BREAK UP BEHIND THE FRONT ON SATURDAY.

GUSTY SOUTHWEST TO WEST WINDS ACROSS THE MOUNTAINS SHOULD BRING SOME MOUNTAIN WAVE/ROTOR ACTIVITY TO THE ADJACENT DESERT AREAS ESPECIALLY NEAR KPSP TODAY AND TONIGHT. HORTON

&&

.SGX WATCHES/WARNINGS/ADVISORIES...

WIND ADVISORY FOR THE HIGHER MOUNTAINS AND FOR THE DESERTS FROM 2 PM THIS AFTERNOON UNTIL 8 PM SATURDAY. SEE LAXNPWSGX.

&&

$$

PUBLIC...DVA
AVIATION...HORTON

2. Area Forecast – 10/12/07-1430

Note: Links in the text will open a (small) new browser window with more information inside.

Current Version Previous Version: 1 2 3 4 5 6 7 8 9 10

AREA FORECAST DISCUSSION

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FXUS66 KSGX 122031
AFDSGX

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN DIEGO CA
230 PM PDT FRI OCT 12 2007

.SYNOPSIS...
UPPER LEVEL LOW PRESSURE APPROACHING FROM THE NORTHWEST WILL BRING A
CHANCE OF SHOWERS THIS EVENING THROUGH SATURDAY MORNING...ALONG WITH
LOCAL STRONG GUSTY WEST WINDS IN THE MOUNTAINS AND DESERTS. FAIR AND
WARMER SUNDAY UNDER HIGH PRESSURE. PARTLY CLOUDY AND COOLER EARLY
NEXT WEEK THEN FAIR AND WARMER TOWARD THE END OF THE WEEK.

&&

.DISCUSSION...FOR SOUTHWEST CALIFORNIA INCLUDING SAN DIEGO...
ORANGE...SOUTHWEST SAN BERNARDINO AND WEST RIVERSIDE COUNTIES.

.SHORT TERM (TODAY-MON)...
LOW CLOUDS AND PATCHY FOG WERE INTO THE COASTAL MOUNTAIN SLOPES THIS
MORNING. SC BROKE UP IN A REVERSE CLEARING PATTERN BY NOON. EARLY
AFTERNOON ACARS SOUNDINGS INDICATED AN INVERSION BASED NEAR 3800 FT
WITH STRONG WSW WINDS ALOFT. ONSHORE GRADIENTS AND TRENDS WITH
7-8 MB SAN-IPL.

THE UPPER LOW CURRENTLY CENTERED OFF THE CENTRAL CA COAST WILL DIG
SW ACROSS SRN CA TONIGHT. THIS WILL BRING A CHANCE OF
SHOWERS...MAINLY OVER AND W OF THE MOUNTAINS. IF PRECIP DEVELOPS
THEN RAINFALL TOTALS SHOULD GENERALLY BE LESS THAN A TENTH OF AN
INCH...BUT THERE COULD BE LOCAL AMOUNTS TO NEAR A QUARTER INCH ON W
FACING LOWER MOUNTAIN SLOPES. THE CHANCE OF SHOWERS WILL TAPER OFF
SAT MORNING AND MOSTLY END BY AFTERNOON...EXCEPT FOR A FEW SHOWERS
POSSIBLY LINGERING IN THE MOUNTAINS. INCREASING WINDS ALOFT AND
ONSHORE GRADIENTS WILL CAUSE LOCAL GUSTY WINDS...MAINLY IN THE
MOUNTAINS AND DESERTS THIS AFTERNOON THROUGH SAT AND WIND ADVISORIES
ARE IN EFFECT. THERE COULD BE A RETURN OF MARINE LAYER CLOUDS SAT
NIGHT AND SUN MORNING AND AGAIN SUN NIGHT INTO M0N SINCE THE LOW
LEVELS REMAIN MOIST. OTHERWISE...FAIR AND WARMER WITH A SHORT WAVE
RIDGE SUN...WEAKENING MON FOR A LITTLE COOLING.

&&

.LONG TERM (TUE-FRI)...
A FAST MOVING SHORT WAVE TROUGH WILL MOVE THROUGH MON NIGHT WITH
BRIEF WEAK RIDGING TUE AND THEN ANOTHER BROADER TROUGH WILL MOVE
THROUGH TUE NIGHT. THIS WILL MAINTAIN A MODERATELY DEEP MARINE LAYER
```

WITH PARTLY CLOUDY SKIES IN MOST AREAS DURING THE AFTERNOONS AND BELOW SEASONAL TEMPS THROUGH WED. FAIR AND WARMER TOWARD THE END OF NEXT WEEK UNDER HIGH PRESSURE WITH WEAK OFFSHORE FLOW.

&&

.AVIATION...
121930Z...MARINE LAYER DEPTH REMAINS AROUND 4000 FEET BUT SHOULD DEEPEN TO AROUND 6000 FEET TONIGHT. BROKEN STRATOCU WITH BASES AROUND 3500 FEET MSL EXTENDS FROM THE COAST WATERS TO THE COASTAL SLOPES OF THE MOUNTAINS. CLOUDS SHOULD LOWER TO AROUND 1500 TO 2000 FEET MSL THIS EVENING AND TONIGHT AS A COLD FRONT APPROACHES FROM THE NORTHWEST. THIS COLD FRONT WILL WEAKEN AS IT MOVES THROUGH SOUTHERN CALIFORNIA BETWEEN 12Z AND 16Z ON SATURDAY. THIS FRONT SHOULD BRING SCATTERED SHOWERS LATE TONIGHT INTO SATURDAY MORNING. CLOUDS SHOULD BECOME SCATTERED TO BROKEN DURING THE AFTERNOON ON SATURDAY.

GUSTY SOUTHWEST TO WEST WINDS ACROSS THE MOUNTAINS SHOULD BRING SOME MOUNTAIN WAVE/ROTOR ACTIVITY TO THE ADJACENT DESERT AREAS ESPECIALLY NEAR KPSP THROUGH TONIGHT. HORTON

&&

.SGX WATCHES/WARNINGS/ADVISORIES...

WIND ADVISORY FOR THE HIGHER MOUNTAINS AND FOR THE DESERTS UNTIL 8 PM SATURDAY. SEE LAXNPWSGX.

&&

$$

PUBLIC...DVA
AVIATION...HORTON

3. Quantitative Precipitation Forecast-10/12/07-2026

Current Version Previous Version: 1 2 3 4 5

QUANTITATIVE PRECIPITATION STATEMENT

```
FSUS46 KSGX 130326
QPSSGX

QUANTITATIVE PRECIPITATION FORECAST
NATIONAL WEATHER SERVICE SAN DIEGO CA
826 PM PDT FRI OCT 12 2007

PRECIPITATION FORECAST IN INCHES IN 6-HOUR PERIODS...
   [ TIMES IN EACH COLUMN ARE BEGINNING AND ENDING TIMES IN LOCAL TIME...]
   [ FOR EXAMPLE...05THU                                                 ]
   [            ...11THU IS A FORECAST FOR  5 AM TO 11 AM THURSDAY       ]
   [ FOR EXAMPLE...23THU                                                 ]
   [            ...05FRI IS A FORECAST FOR  11 PM THURSDAY TO 5 AM FRIDAY]


   FORECAST PERIODS:
   17FRI 23FRI 05SAT 11SAT 17SAT 23SAT 05SUN 11SUN 17SUN 23SUN
   23FRI 05SAT 11SAT 17SAT 23SAT 05SUN 11SUN 17SUN 23SUN 05MON


...ORANGE COUNTY COASTAL AREAS...
   HUNTINGTON BEACH
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   NEWPORT BEACH
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   LAGUNA BEACH
   0.00  0.07  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SAN CLEMENTE
   0.00  0.06  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   ANAHEIM
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   FULLERTON
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   BREA
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   VILLA PARK
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SANTA ANA MOUNTAINS AND FOOTHILLS...
   FREMONT CANYON
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SANTIAGO PEAK
   0.00  0.10  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SANTA ROSA PLATEAU
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN BERNARDINO AND RIVERSIDE COUNTY VALLEYS-THE INLAND EMPIRE...
   ONTARIO
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SAN BERNARDINO
```

```
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   BEAUMONT
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   RIVERSIDE
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   PERRIS VALLEY CHANNEL
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   PRADO DAM
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   TEMECULA
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   HEMET
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...RIVERSIDE COUNTY MOUNTAINS...
   IDYLLWILD
   0.00  0.12  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...COACHELLA VALLEY...
   PALM SPRINGS
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   THERMAL
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN BERNARDINO COUNTY MOUNTAINS...
   SAN ANTONIO DAM
   0.02  0.09  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   LYTLE CREEK
   0.00  0.07  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   WRIGHTWOOD
   0.02  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   BIG BEAR LAKE
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   BIG MORONGO CANYON
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...APPLE AND LUCERNE VALLEYS...
   HESPERIA
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   VICTORVILLE
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   APPLE VALLEY
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN DIEGO COUNTY COASTAL AREAS...
   OCEANSIDE
   0.00  0.07  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   MIRAMAR
   0.00  0.09  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   LINDBERGH FIELD
   0.00  0.08  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   CHULA VISTA
   0.00  0.08  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SAN YSIDRO
   0.00  0.08  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN DIEGO COUNTY VALLEYS...
   FALLBROOK
```

```
   0.00  0.06  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   RANCHO BERNARDO
   0.00  0.08  0.01  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   LA MESA
   0.00  0.10  0.01  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   EL CAJON
   0.00  0.09  0.02  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN DIEGO COUNTY MOUNTAINS...
   PALOMAR MOUNTAIN
   0.00  0.11  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   JULIAN
   0.00  0.16  0.05  0.02  0.00  0.00  0.00  0.00  0.00  0.00
   MOUNT LAGUNA
   0.00  0.16  0.04  0.02  0.00  0.00  0.00  0.00  0.00  0.00
   CAMPO
   0.00  0.10  0.02  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN DIEGO COUNTY DESERTS...
   BORREGO SPRINGS
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
```

A LOW PRESSURE TROUGH TRACKING ACROSS SOUTHERN CALIFORNIA TONIGHT BRINGING SCATTERED LIGHT SHOWERS THROUGH SATURDAY MORNING. RAINFALL AMOUNT WILL LESS THEN 1/10TH OF AN INCH. WESTERN MOUNTAINS SLOPES WILL HAVE THE BEST CHANCE FOR HEAVIER AMOUNTS...LOCALLY UP TO 2/10THS OF AN INCH.

4. Area Forecast – 10/13/07-0330

Note: Links in the text will open a (small) new browser window with more information inside.

Current Version Previous Version: 1 2 3 4 5 6 7 8 9 10

AREA FORECAST DISCUSSION

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FXUS66 KSGX 131147
AFDSGX

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN DIEGO CA
330 AM PDT SAT OCT 13 2007

.SYNOPSIS...
A LOW PRESSURE TROUGH WILL BRING SCATTERED SHOWERS THIS MORNING...
WITH A COOL AIRMASS TODAY AND LOCAL STRONG GUSTY WEST WINDS IN THE
MOUNTAINS AND DESERTS. SUNDAY WILL BE FAIR AND WARMER UNDER HIGH
PRESSURE. PARTLY CLOUDY EARLY NEXT WEEK WITH NIGHT AND MORNING
MARINE LAYER CLOUDS NEAR THE COAST.

&&

.DISCUSSION...FOR SOUTHWEST CALIFORNIA INCLUDING SAN DIEGO...
ORANGE...SOUTHWEST SAN BERNARDINO AND WEST RIVERSIDE COUNTIES.

.SHORT TERM (TODAY-TUE)...
WELL DEFINED TROUGH AXIS AND ASSOCIATED VORTMAX PASSING DIRECTLY
OVER THE FORECAST AREA EARLY THIS MORNING. RADAR AND SURFACE OBS
SHOWED A LARGE AREA OF LIGHT SHOWERS AND SOME EMBEDDED LOCAL HEAVIER
CELLS MOVING THROUGH THE REGION. MANY LOCATIONS WILL GET A SHOT OF
MEASURABLE RAIN THIS MORNING AS THE SYSTEM PASSES WITH AMOUNTS
GENERALLY 1/10 INCH OR LESS...BUT ALSO LOCAL AMOUNTS TO NEAR A
QUARTER INCH OR SO. BOTH FULLERTON AND ONTARIO TALLIED ABOUT
0.30 INCH. SCATTERED SHOWERS SHOULD TAPER OFF BY NOON EXCEPT A
LINGERING SLIGHT CHANCE IN THE SAN DIEGO MOUNTAINS. REVERSE CLEARING
PATTERN POSSIBLE TODAY WITH BEST CLEARING NEAR THE COAST AND SOME
LINGERING CLOUDS NEAR THE FOOTHILLS/MTNS.

STRONG WINDS ALOFT...ONSHORE GRADIENTS AND SUBSIDENCE WILL CONTINUE
TO CAUSE LOCAL STRONG GUSTY WINDS TODAY IN THE MOUNTAINS AND DESERTS
WHERE WIND ADVISORIES REMAIN IN EFFECT. WINDS WILL DECREASE LATE
TODAY AND TONIGHT AS THE UPPER TROUGH SHIFTS EAST.

AREAS OF MARINE LAYER CLOUDS COULD RETURN LATE TONIGHT INTO SUNDAY
MORNING AND MORESO FOR SUNDAY NIGHT/MONDAY MORN AS LOW LEVELS REMAIN
MOIST. OTHERWISE FAIR AND WARMER SUNDAY AND MONDAY WITH A SHORT WAVE
RIDGE TRANSITIONING THROUGH. A FAST MOVING WEAKER UPPER TROUGH WILL
PASS OVER MON NIGHT AND EARLY TUE FOR SLIGHT COOLING AND DEEPER
MARINE LAYER. TEMPERATURES ON AVERAGE A BIT BELOW SEASONAL NORMALS.

&&

.LONG TERM (WED-SAT)...
```

A PROGRESSIVE UPPER PATTERN WILL CONTINUE WITH AN ACTIVE PACIFIC JET STAYING WELL TO OUR NORTH THROUGH THE PERIOD. DRY WITH TEMPERATURES TRENDING UPWARD. EXPECT A FLAT UPPER RIDGE WED...THEN A BROAD TROUGH PASSES TO THE N WED NIGHT/THU WITH MINIMAL IMPACT...THEN A STRONGER RIDGE AND WARMER ON FRI/SAT.

&&

.AVIATION...
130930Z...APPEARS THAT LAST BAND OF SHOWERS MOVING INTO THE COAST AT THIS TIME. MOSTLY LIGHT RAIN WITH LOCAL MODERATE AND ISOLATED BRIEF HEAVY RAIN MOVING THROUGH NORTHERN ORANGE COUNTY AND SAN BERNARDINO COUNTY AT THIS TIME. VIS 3SM TO 5SM AND LOCALLY BELOW 3SM IN HEAVIER SHOWERS. RAIN UNTIL ABOUT 11-12Z THEN SOME SCATTERED SHOWERS THIS MORNING. SCATTERED TO LOCALLY BROKEN CLOUDS THIS AFTERNOON WITH POSSIBLE SHOWERS IN THE MOUNTAINS. BROKEN CLOUDS MAINLY OVER THE MOUNTAINS WITH HIGHER TERRAIN LOCALLY OBSCURED. BASES AROUND 3K FT MSL WITH LOCAL BASES IN RAIN TO 1000 FT. TOPS MOSTLY AROUND 10K WITH ISOLATED TOPS TO 20K. HIGH PRESSURE ALOFT MOVES OVER SUNDAY WITH VERY WEAK NORTHEAST FLOW IN THE MORNING. STRONG GUSTY WEST TO NORTHWEST WINDS ALOFT EARLY THIS MORNING WILL DECREASE THROUGH AFTERNOON AND TURN TO THE LIGHT NORTH TONIGHT. BECOMING CLEAR TONIGHT. LIGHT NORTHEAST WINDS SUNDAY WITH SUNNY SKIES.

GUSTY WNW WINDS ACROSS THE MOUNTAINS COULD BRING SOME MOUNTAIN WAVE/ROTOR ACTIVITY TO THE ADJACENT DESERT AREAS THIS MORNING.

&&

.SGX WATCHES/WARNINGS/ADVISORIES...

WIND ADVISORY FOR THE HIGHER MOUNTAINS AND FOR THE DESERTS UNTIL 8 PM SATURDAY. SEE LAXNPWSGX.

&&

$$

PUBLIC...LAVIS
AVIATION...WHITLOW

5. Rainfall Totals Text-10/13/07

Current Version Previous Version: 1 2 3 4 5

MISCELLANEOUS HYDROLOGIC DATA

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SGUS46 KSGX 132001
RRMSGX

RAINFALL STORM TOTAL SUMMARY
NATIONAL WEATHER SERVICE SAN DIEGO CA
1 PM PDT SAT OCT 13 2007

...RAINFALL AMOUNTS AS OF NOON TODAY...


------------------------------ ORANGE COUNTY--------------------------------

ORANGE CO COASTAL PLAIN, ZONE CAZ042                    10/13/2007  19:10 UTC
```

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
BREA.....	0	0	0	0.08	0.59	0.59	0.59
BREA OLINDA.....	0	0	0	0.12	0.47	0.47	0.47
FULLERTON AIRPORT.....	0	0.04	0.04	0.08	0.67	0.67	0.67
FULLERTON CREEK.....	0	0	0	0.04	0.39	0.39	0.39
MILLER BASIN.....	0	0	0	0.08	0.51	0.51	0.51
YORBA RESERVOIR.....	0	0	0	0.08	0.55	0.55	0.55
YORBA PARK.....	0	0	0	0.04	0.47	0.47	0.47
GILBERT RETENSION BASIN.....	0	0	0	0	0.47	0.47	0.47
COSTA MESA.....	0	0	0	0.04	0.20	0.20	0.20
ALAMEDA STORM.....	0	0	0	0	0.35	0.35	0.35
VILLA PARK.....	0	0	0	0	0.43	0.43	0.43
GARDEN GROVE.....	0.04	0.04	0.04	0.08	0.55	0.55	0.55
PORTOLA PEAK.....	0	0	0	0.04	1.85	1.85	1.85
ANAHEIM BARBER CITY.....	0	0.04	0.04	0.04	0.59	0.59	0.59
WESTMINSTER.....	0.04	0.04	0.04	0.04	0.55	0.55	0.55
HUNTINGTON BEACH.....	0	0	0	0	0.13	0.13	0.13
OCEANVIEW.....	0	0	0	0.04	0.51	0.51	0.51
EL MODENA IRVINE.....	0	0	0	0	0.16	0.16	0.16
BEE CANYON.....	0	0	0	0	0.12	0.12	0.12
UPPER OSO CREEK.....	0	0	0	0.12	0.24	0.24	0.24
UPPER ALISO CREEK.....	0	0	0	0	0.12	0.12	0.12
SAN DIEGO CREEK AT CULVER...	0	0	0	0	0.04	0.04	0.04
SAND CANYON.....	0	0	0	0	0.16	0.16	0.16
SAN DIEGO CREEK AT CAMPUS...	0	0.04	0.04	0.04	0.24	0.24	0.24
CORONA DEL MAR.....	0	0	0	0	0.08	0.08	0.08
EL TORO.....	0	0	0	0.04	0.20	0.20	0.20
COTO DE CAZA.....	0	0	0	0.08	0.28	0.28	0.28
SAN JUAN GUARD.....	0	0	0	0	0.28	0.28	0.28
LAGUNA BEACH.....	0	0	0	0	0.20	0.20	0.20
LAGUNA NIGUEL PARK.....	0	0	0	0.04	0.20	0.20	0.20
OSO CREEK.....	0	0	0	0.16	0.20	0.20	0.20
LOWER OSO CREEK.....	0	0	0	0.04	0.16	0.16	0.16
LACOUAGE.....	0	0	0	0.04	0.08	0.08	0.08
SAN JUAN CAPISTRANO.....	0	0	0	0.12	0.12	0.12	0.12
PICO RETARDING BASIN.....	0	0	0	0	0.08	0.08	0.08

SEGUNDA DESHECHA.....	0	0	0	0	0.04	0.04	0.04

ORANGE CO SANTA ANA MTNS & FOOTHILLS, ZONE CAZ057 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
UPPER SILVERADO CANYON.....	0	0	0	0	0.16	0.16	0.16

---------- SAN BERNARDINO COUNTY ----------

SAN BERNARDINO CO VALLEYS, ZONE CAZ048 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
DEVORE FIRE STATION.....	0	0	0	0.02	0.02	0.02	0.02
GLEN HELEN REGIONAL PARK....	0	0.04	0.04	0.04	0.08	0.08	0.08
DEER CREEK DAM.....	0	0	0	0	0.31	0.31	0.31
DEMENS CREEK DEBRIS BASIN...	0	0	0	0	0.33	0.33	0.33
AMONGA CRK NR MIRA LOMA..	0	0	0	0	0.10	0.10	0.10

SAN BERNARDINO CO MOUNTAINS, ZONE CAZ055 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
PANORAMA POINT.....	0	0	0	0	0.04	0.04	0.04
HEART BAR.....	0	0.03	0.03	0.03	0.05	0.05	0.05

---------- RIVERSIDE COUNTY ----------

RIVERSIDE CO VALLEYS, ZONE CAZ048 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
PIDGEON PASS DAM.....	0	0	0	0.04	0.16	0.16	0.16
MORENO-CLARK.....	0	0	0	0	0.12	0.12	0.12
WOODCREST DAM.....	0	0	0	0.04	0.12	0.12	0.12
LAKE MATHEWS.....	0	0	0	0	0.15	0.15	0.15
RAILROAD CANYON DAM.....	0	0	0	0.04	0.12	0.12	0.12
MURRIETA CREEK AT TENAJA....	0	0	0	0.04	0.16	0.16	0.16
SKINNER LAKE.....	0	0	0	0.04	0.04	0.04	0.04

RIVERSIDE CO MOUNTAINS, ZONE CAZ056 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
BEAUMONT.....	0	0	0	0.08	0.20	0.20	0.20
BANNING BENCH.....	0	0	0	0.04	0.16	0.16	0.16
TICK RIDGE.....	0	0	0	0	0.04	0.04	0.04
ANGELUS HILL.....	0	0	0	0	0.08	0.08	0.08
ALANDALE.....	0	0	0	0.04	0.16	0.16	0.16
RED MOUNTAIN.....	0	0	0	0.04	0.08	0.08	0.08

RIVERSIDE CO COACHELLA VALLEY, ZONE CAZ061 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
TA GRANDE.....	0	0	0	0	0.12	0.12	0.12
SNOW CREEK W. FORK.....	0	0	0	0.04	0.04	0.04	0.04

---------- SAN DIEGO COUNTY ----------

SAN DIEGO CO COASTS, ZONE CAZ043 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
SAN ONOFRE.....	0	0	0	0	0.04	0.04	0.04
OCEANSIDE.....	0	0	0	0.12	0.20	0.20	0.20
LOMA ALTA.....	0	0	0	0.04	0.12	0.12	0.12
AGUA HEDIONDA.....	0	0	0	0	0.12	0.12	0.12
EL CAMINO DEL NORTE.....	0	0	0	0.04	0.12	0.12	0.12
ENCINITAS.....	0.04	0.04	0.04	0.16	0.20	0.20	0.20
SAN ELIJO LAGOON.....	0	0	0.04	0.12	0.16	0.16	0.16
KEARNY MESA.....	0	0	0	0.12	0.12	0.12	0.12
FASHION VALLEY.....	0	0.08	0.08	0.20	0.24	0.24	0.31
BONITA.....	0	0	0.04	0.08	0.08	0.08	0.08

SAN DIEGO CO VALLEYS, ZONE CAZ050 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
SANDIA CREEK ROAD.....	0	0	0.04	0.12	0.28	0.28	0.28
FALLBROOK.....	0	0	0	0.08	0.24	0.24	0.24
COLE GRADE ROAD.....	0	0	0	0.04	0.12	0.12	0.12
BONSALL CRS.....	0	0	0	0.08	0.20	0.20	0.20
COUSER CYN.....	0	0	0	0.04	0.24	0.24	0.24
OAT FLATS.....	0	0	0	0.12	0.20	0.20	0.20
RINCON SPRINGS F.S.....	0	0	0	0.04	0.12	0.12	0.12
VALLEY CENTER.....	0	0	0	0.04	0.16	0.16	0.16
SKYLINE RANCH.....	0	0	0	0.04	0.20	0.20	0.20
LAKE WOHLFORD.....	0	0	0	0.04	0.16	0.16	0.16
DEER SPRINGS.....	0	0.04	0.04	0.08	0.24	0.24	0.24
SAN MARCOS COUNTY LAND FILL.	0	0	0	0	0.08	0.08	0.08
ESCONDIDO.....	0	0	0	0.04	0.16	0.16	0.16
RAMONA.....	0	0	0	0.10	0.14	0.14	0.14
MT. WOODSON @RAMONA FIRE....	0	0	0	0.12	0.20	0.20	0.20
BARONA.....	0	0	0	0.08	0.08	0.08	0.08
RANCHO BERNARDO, NWS.....	0	0.06	0.06	0.13	0.19	0.19	0.19
POWAY.....	0	0.04	0.04	0.12	0.16	0.16	0.16
SD COUNTRY ESTATES.....	0	0.04	0.08	0.16	0.20	0.20	0.20
RANCHITA MARGARITA.....	0	0.04	0.04	0.12	0.16	0.16	0.16
SAN VICENTE.....	0	0	0	0.04	0.04	0.04	0.04
FLINN SPRINGS CO. PARK.....	0	0	0	0.04	0.04	0.04	0.04
SANTEE.....	0	0	0	0.12	0.12	0.12	0.12
LOS COCHES CREEK.....	0	0	0	0.04	0.04	0.04	0.04
HARBISON CYN.....	0	0	0.04	0.08	0.08	0.08	0.08
LAKE MURRAY.....	0	0	0	0.08	0.08	0.08	0.08
ROADS DIV 1 HDQTRS.....	0	0	0	0.04	0.04	0.04	0.04
THOUSAND TRAILS.....	0	0	0	0.03	0.03	0.03	1.27
DULZURA SUMMIT.....	0	0	0	0.04	0.04	0.04	0.04
POTRERO CNTY PK.....	0.04	0.04	0.04	0.12	0.12	0.12	0.12

SAN DIEGO CO MOUNTAINS, ZONE CAZ058 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
RAINBOW CAMP.....	0	0	0	0.12	0.20	0.20	0.20

PALOMAR OBSERVATORY.....	0	0	0	0.08	0.16	0.16	0.16
BIRCH HILL.....	0	0	0	0.16	0.39	0.39	0.39
LA JOLLA AMAGO.....	0	0	0	0.08	0.24	0.24	0.24
HENSHAW DAM.....	0	0	0	0.04	0.20	0.20	0.20
SUTHERLAND RESERVOIR.....	0.04	0.04	0.04	0.16	0.24	0.24	0.24
SANTA YSABEL.....	0.04	0.08	0.08	0.20	0.35	0.35	0.35
WITCH CREEK FIRE STATION....	0	0	0	0.08	0.08	0.08	0.08
VOLCAN MTN.....	0	0	0.04	0.12	0.24	0.24	0.24
JULIAN.....	0.04	0.04	0.08	0.16	0.31	0.31	0.31
PINE HILLS FS.....	0	0.04	0.08	0.16	0.31	0.31	0.31
CUYAMACA.....	0	0	0.08	0.08	0.16	0.16	0.16
ECHO DELL.....	0	0	0	0.04	0.08	0.08	0.08
DESCANSO R.S.....	0	0	0.04	0.12	0.16	0.16	0.16
MOUNT LAGUNA CRS.....	0	0	0.12	0.12	0.16	0.16	0.16

SAN DIEGO CO DESERTS, ZONE CAZ062 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
RRA DEL SOL.....	0	0	0.04	0.08	0.12	0.12	0.12

BAJA CALIFORNIA, TIJUANA WATERSHED 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
RANCHO TECATE.....	0	0	0.04	0.08	0.08	0.08	0.08

DVA

6. Rainfall Totals-Map-10/13/07

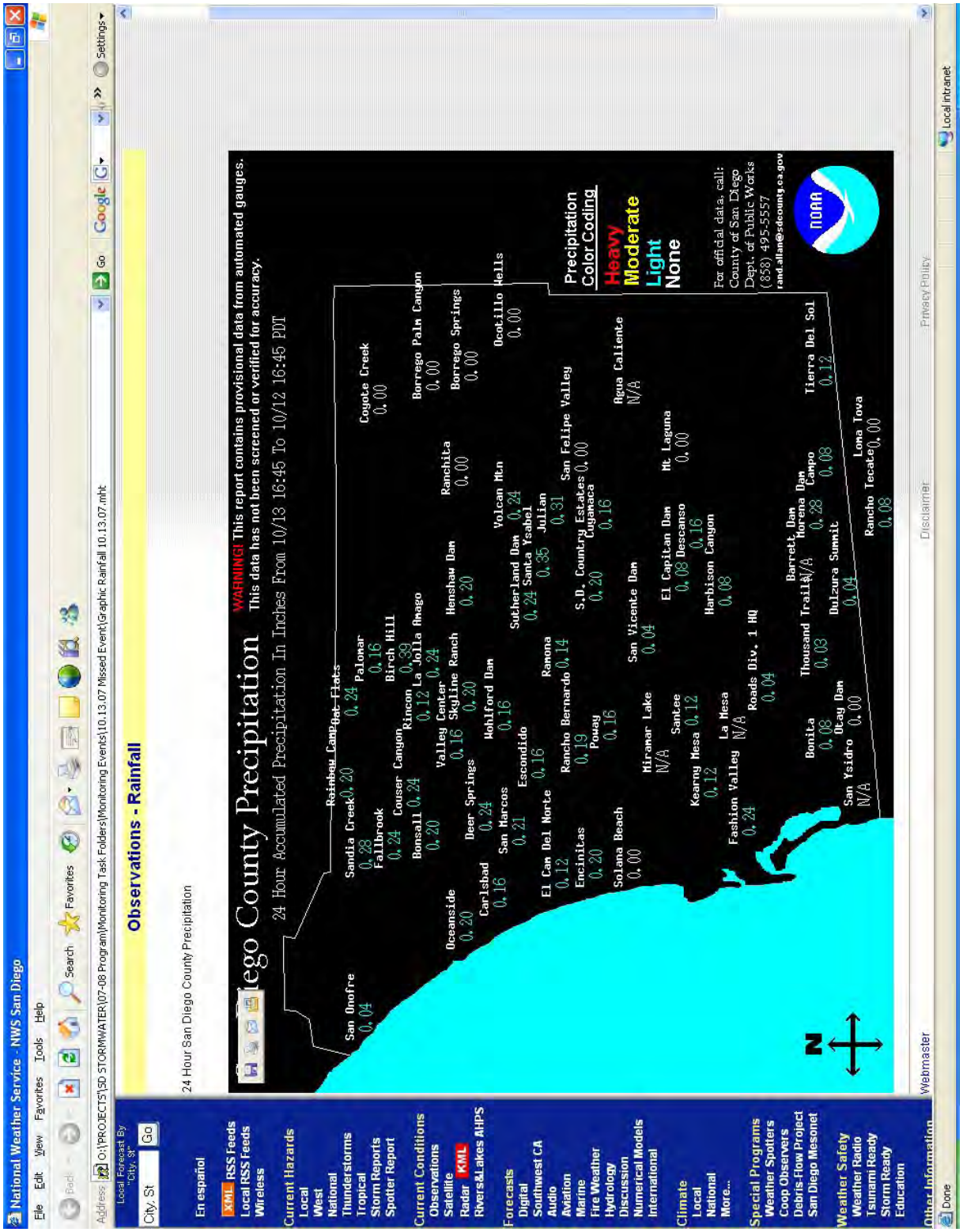

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
County of SD MPDES Dry Weather	3-5-08	D. Renfrew	J. Schollée
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
Lemon Grove (Federal)			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
LG	0815	0	0900
FIELD TEAM			
JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Overcast, no wind

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☑ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☑ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)	None				
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☑ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

Channel doesn't show signs of erosion. Some of the vegetation is matted down.

FIELD MEASUREMENTS: pH 8.24 TEMPERATURE (°C) 12.6 CONDUCTIVITY (µS/cm) 4.41 mS

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 1021 BOTTLE #2 1041 BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Arrived @ site and ~~bottle~~ was full. Sampler running continuously. Changed bottle. Still running continuously. Changed bottle again and dialed into site and reset pacing from 90 cf → 450 cf (x5). Took grab samples and hear sampler pull samples.

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
Candy NPDES	3-5-08	D. Renfrew	J. Schollke
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
La Mesa			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
LM	0930	0955	0950
FIELD TEAM			
JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Overcast

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☑ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☑ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☑ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)	None				
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☑ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

None, lots of vegetation growing

FIELD MEASUREMENTS: pH 8.35 TEMPERATURE (°C) 15.7 CONDUCTIVITY (µS/cm) 3.28 mS

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0923 BOTTLE #2 _____ BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Sample bottle 19L. Charged bottle. Took grab samples. Lots of stringy, filamentous algae in creek, near grab sample location.

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
County of San Diego NPDES sampling	3/5/08	D. Renfrew	J. Schulée
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
SD8			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
SD8	0730	0815	0745
FIELD TEAM			
JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

~~Clear~~ Overcast, no wind

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☑ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☑ OTHER tortilla
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☑ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)	None				
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☑ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

not enough water

FIELD MEASUREMENTS: pH _____ TEMPERATURE (°C) _____ CONDUCTIVITY (µS/cm) _____ DO _____

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

(actually 0715)

BOTTLE #1 0815 BOTTLE #2 _____ BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Arrived @ site. ~~0730~~ @ 0730. Changed 19L sample bottle. Then collected grab samples by syringe in the various pools near both the strainer and bubbler.

TEAM LEADER'S SIGNATURE J E Schulée

WESTON SOLUTIONS

Final

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: Lemon Grove	STATION ID: L6	STATION NAME: SDSW Dry event	
DATE: 6.3.08	TIME STARTED (AT SITE): 1040	TIME FINISHED (AT SITE): 1115	
NAV DATUM:	LATITUDE:	LONGITUDE:	1045
FIELD TEAM: LL		RECORDER: LL	

MONITORING PERIOD: ☒ SUMMER DRY ☐ WINTER DRY ☐ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☒ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☐ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM	
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER	
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ RED	
	☒ COLORLESS	☐ OTHER				
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☒ ALGAE	
	☐ OTHER (DESCRIBE)					
TRASH	☐ NONE	☐ VEGETATION	☐ STYROFOAM	☐ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS)	☒ OTHER (DESCRIBE)
TURBIDITY	☒ CLEAR	☐ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE			

broken hose beer cans

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		
	DEPTH	FT	IN
	WIDTH	FT	IN
	VELOCITY (choose one)	FT/SEC	IN/SEC

NOTES: fish/crawfish observed, algae flow. Homeless camp just upstream of MLS SE side of road

☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: ✓ GRAB COLLECTION TIME: 1045

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.96	19.3	4.26 mS					
	pH 7.92	TEMP (degree C) 19.3	CONDUCTIVITY (uS/cm) 4.25 mS	DISSOLVED OXYGEN	TURBIDITY			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

arrived 1040
Grabs 1045 field measurements photos
Departed 1115
bottle #1 charged 1159 122 samples bottle full

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 full BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☒ YES ☐ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SDSW Dry event	STATION ID: CM	STATION NAME: CA Mesa	
DATE: 6-3-08	TIME STARTED (AT SITE): 1125	TIME FINISHED (AT SITE): 1200	
NAV DATUM:	LATITUDE:	LONGITUDE:	1130
FIELD TEAM: LC		RECORDER: LC	

MONITORING PERIOD: ☒ SUMMER DRY ☐ WINTER DRY ☐ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☒ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☐ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ RED
	☐ COLORLESS	☒ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☒ ALGAE
	☐ OTHER (DESCRIBE)	~~NONE~~ LC			
TRASH	☐ NONE	☐ VEGETATION	☐ STYROFOAM	☐ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☒ CLEAR	☐ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: /

GRAB COLLECTION TIME: 1130

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	8.38	20.5	2.65 mS					
	0.38	20.5	2.65 mS					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

arrived 1125
Grabs 1130 field measurements / Photos
Departed 1140 looks good

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☒ YES ☐ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME	STATION ID	STATION NAME	
SDSW Dry	SD-8	Durant / 33rd	
DATE: 6.3.08	TIME STARTED (AT SITE): 0945	TIME FINISHED (AT SITE): 1030	grabs 1000
NAV DATUM	LATITUDE	LONGITUDE	
FIELD TEAM: CC		RECORDER: CC	

MONITORING PERIOD: ☒ SUMMER DRY ☐ WINTER DRY ☐ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☒ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☐ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM	
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER	
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN slight	☐ RED	
	☐ COLORLESS	☐ OTHER				
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE	
	☐ OTHER (DESCRIBE)	NONE				
TRASH	☐ NONE	☒ VEGETATION	☐ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS)	☒ OTHER (DESCRIBE)
TURBIDITY	☒ CLEAR	☐ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE			

concrete cobble clothing wire glass metal graffiti

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: ✓ GRAB COLLECTION TIME: 1000

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	9.07	25.3	1707 µS					
	9.07	25.3	1711 µS					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

arrived 0945 ✓ box/bottle
Grabs 1000 field measurements/photos

Did observe secondary flow @ 1025 while preparing for departure

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☒ YES ☐ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	Nov 30, 2007		BR
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
Chelles LM1			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
	1100		1105

FIELD TEAM Meredith Rekari, Brian Riley

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Drizzle - Overcast

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☑ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☑ BROWN light	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☑ ORGANIC MATERIAL some	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☑ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:

Turbid Water

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

Lots of vegetation - No apparent erosion

FIELD MEASUREMENTS: pH 7.65 TEMPERATURE (°C) 17.8 CONDUCTIVITY (µS/cm) 226 DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 _____ BOTTLE #2 _____ BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

When we arrived at site at 1100 am - 10 samples had been collected. Collected grab samples at 1105 am.

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater 2007	STATION ID: DPR2	STATION NAME: DPR 2	
DATE: 11-30-07	TIME STARTED (AT SITE): 12:15	TIME FINISHED (AT SITE):	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: Suraj Shankar / AZ Brithin		RECORDER: SKS	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☑ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☑ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☐ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ RED
	☐ COLORLESS	☑ OTHER	Brownish black		
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☑ ORGANIC MATERIAL	☑ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE)				
TRASH	☐ NONE	☑ VEGETATION	☑ STYROFOAM	☑ WOOD	☑ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☐ CLOUDY	☑ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: GRAB COLLECTION TIME:

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.33	17.9	405					
	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.33	17.9	405					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

changed sampling bottle @ 12:45 pm, 2:30 pm, 4:25 pm
Half full @ 6:20 pm, 8:10 pm (Final bottle)
About 0.5 to 1 ft of water in creek.

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☑ NO

PHOTO NUMBERS AND NOTES: _____

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: Chollas Lemon grove	STATION ID	STATION NAME: Lemon grove	
DATE: 11/30/07	TIME STARTED (AT SITE): 10:00	TIME FINISHED (AT SITE)	
NAV DATUM	LATITUDE	LONGITUDE	
FIELD TEAM		RECORDER	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☑ WET WEATHER — RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☑ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☑ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☑ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☑ ORGANIC MATERIAL (some)	☐ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE)				
TRASH	☐ NONE	☐ VEGETATION	☐ STYROFOAM	☐ WOOD	☑ PLASTIC (CUPS, BOTTLES, BAGS) ☑ OTHER (DESCRIBE) (some)
TURBIDITY	☐ CLEAR	☐ CLOUDY	☑ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: GRAB COLLECTION TIME: 10:00

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.6	16.7°C	470					
	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☐ NO

PHOTO NUMBERS AND NOTES: _____

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

4:00 pm Normal Grab sample taken & bottle replaced pump still not working
5:00 pm
6:00 pm
7:00 pm
8:00 pm

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater 2007	STATION ID: CC-SD8	STATION NAME: SD8	
DATE: 11/30/07	TIME STARTED (AT SITE): 10:10 AM	TIME FINISHED (AT SITE):	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: SURAJ SHANKAR / AL Rutkins		RECORDER: SKS	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☑ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☑ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☐ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ RED
	☐ COLORLESS	☑ OTHER Brownish black			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☑ ORGANIC MATERIAL	☑ SCUM	☐ ALGAE
	☑ OTHER (DESCRIBE) grease pollutants, plastic				
TRASH	☐ NONE	☑ VEGETATION	☐ STYROFOAM	☐ WOOD	☑ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☐ CLOUDY	☑ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: GRAB COLLECTION TIME: 10:10 am

FIELD MEASUREMENTS (Taken in duplicate)

	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	6.83	17.1	1621					
	6.82	17.1	1621					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Grab samples - started collecting @ 10:10 am on 11/30/07
BOD, Bacteria & oil & grease samples collected & labelled 'CC-SD8'.
Sampling time (Grab) - 10:10 am, 10:40 am, 11:15 am, 11:45 am, 12:00 pm, 12:15 pm, 1:05 pm, 1:20 pm, 1:35 pm, 1:50 pm, 2:05 pm (pump run reversed & fixed) 2:30 pm, pump not work (3:30 pm)

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 4:00 pm BOTTLE 2 8:00 pm BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☑ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

City of SD Storm H2O

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	2-3-08		CL
STATION NAME: 64th	NAV DATUM	LATITUDE	LONGITUDE
SAMPLE IDENTIFICATION: LM-1	TIME STARTED (AT SITE): ~~1445~~ 0900	TIME FINISHED (AT SITE): 1445	GRAB SAMPLE TIME: 1320
FIELD TEAM: CL			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)
Cloudy, light rain. Wind NW 10-15 knots
60°F

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☒ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN light	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☒ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☒ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:
Sample appeared light brown - somewhat clear
No odor

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)
None noticed

FIELD MEASUREMENTS: pH _____ TEMPERATURE (°C) _____ CONDUCTIVITY (µS/cm) _____ DO _____

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0910 BOTTLE #2 1348 BOTTLE #3 _____
BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)
arrived 0900 changed out first bottle
1320 Grabs/Measurements

pH	7.74	7.75	7.75
Temp	13.7	13.7	13.7
Cond	222 u/s	222	221

TEAM LEADER'S SIGNATURE _____

END # 78 1348 ~ 16L #2

WESTON SOLUTIONS

City

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME	STATION ID	STATION NAME
~~[illegible]~~ SD Storm 1120	Lemon Grove	LG-1
DATE: 2·3·08	TIME STARTED (AT SITE): 0900	TIME FINISHED (AT SITE): 15:00
NAV DATUM:	LATITUDE:	LONGITUDE:
FIELD TEAM: LC		RECORDER: LC 1150

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
	☒ OTHER (DESCRIBE)	Vegetative Debris / TRASH			
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED:	GRAB COLLECTION TIME:
1150	1150

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY
	8.61	13.1	189.3		
	8.48	13.0	187.7		

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

#46 — ~~#63 @ 0910 — 17.2C~~ 8.39 13.1 186.6

arrived 0930 to find teflon tubing kinked along wall / restarted sampler at PVC joint. fixed tubing. sampler sampling rather quickly. Took grabs / measurements 1150

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 ~~0910~~ 1000 BOTTLE 2 1499 BOTTLE 3 1629 #7L BOTTLE 4 ~~#53~~

PHOTOS TAKEN: ☐ YES ☐ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater	STATION ID: DPR(2)	STATION NAME: Chollas @ 38th	
DATE: 3 Feb 08	TIME STARTED (AT SITE): 1100	TIME FINISHED (AT SITE):	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: B. Isham		RECORDER: BI	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☒ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY

SURFACE WATER APPEARANCE						
	ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
		☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
	COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED
		☐ COLORLESS	☐ OTHER			
	FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☒ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
		☐ OTHER (DESCRIBE)				
	TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
	TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)	STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
		DEPTH	FT IN	
		WIDTH	FT IN	
		VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: 1310

GRAB COLLECTION TIME: 1310

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.54	13.1	199.8	–	^			
	7.59	13.1	197.2	–	–			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

On Site @ 1100 - changed first bottle - Sampling Fast

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 1110 BOTTLE 2 1135 BOTTLE 3 1206 BOTTLE 4 1353

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: BIsham

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater	STATION ID: SD8	STATION NAME: Chollas - Durant St.	
DATE: 3 Feb 08	TIME STARTED (AT SITE): 0700	TIME FINISHED (AT SITE):	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: B. Ishar		RECORDER:	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☒ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☒ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE) Trash				
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED:	GRAB COLLECTION TIME:
1245	1245

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.54	13.2	141.8	—	—			
	7.59	13.2	143.1	—	—			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Air Deposition Rain water Jars deployed @ 0700
Closed @ 1410

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 1530 BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: B. Ishar

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME	STATION ID	STATION NAME	
SD Stormwater 07/08	DPR2	Cholla Creek @ 38th	
DATE: 7 Dec 07	TIME STARTED (AT SITE): 0800	TIME FINISHED (AT SITE): 1505	
NAV DATUM	LATITUDE	LONGITUDE	
FIELD TEAM: B. Isham		RECORDER: BI	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☒ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY Steady light rain

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☐ NONE	☐ CHEMICAL	☐ OTHER Muddy
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☒ OILY SHEEN slight	☐ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE)				
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED:	GRAB COLLECTION TIME:
O+G, bac-t	0915

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.09	15.0	316					0920
	7.11	15.0	314					0925

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Trash relatively light

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 1006 BOTTLE 2 ~~1445~~ 1200 BI BOTTLE 3 1445 BOTTLE 4

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater 2007/08	STATION ID: SD8	STATION NAME: Chollas Creek @ Durant St.	
DATE: 7 Dec 07	TIME STARTED (AT SITE): 0700	TIME FINISHED (AT SITE): 1150	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: B. Isham		RECORDER:	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☒ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY Steady light Rain

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM	
	☐ FISH/DECAY	☐ CHLORINE	☐ NONE	☐ CHEMICAL	☒ OTHER Muddy	
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED	
	☐ COLORLESS	☐ OTHER				
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☒ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE	paint cans, balls
	☐ OTHER (DESCRIBE)					
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS)	☒ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE			

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: BOD, O+G, Bac-t

GRAB COLLECTION TIME: 0850

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	6.82	15.1	138.2					
	6.93	15.0	136.0					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 0825 BOTTLE 2 0948 BOTTLE 3 1143 BOTTLE 4

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME: LemonGrove / La Mesa	DATE: 12-7-07	PROJECT MANAGER: Renfrew	RECORDER: BE
STATION NAME: LM-1	NAV DATUM: —	LATITUDE: —	LONGITUDE: —
SAMPLE IDENTIFICATION: LM-1	TIME STARTED (AT SITE): 0915	TIME FINISHED (AT SITE): 1010	GRAB SAMPLE TIME: 0920
FIELD TEAM: BE			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Light rain

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER ____
	☐ SOAP	☐ CHLORINE	☒ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ BLACK	☐ OTHER ____
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER ____
	☒ OBJECTS (DESCRIBE)		Not much			
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☒ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

FIELD MEASUREMENTS: (1) pH 6.8 TEMPERATURE (°C) 14.9 CONDUCTIVITY (µS/cm) 200 u DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 ____ BOTTLE #2 ____ BOTTLE #3 ____

BOTTLE #4 ____ BOTTLE #5 ____ BOTTLE #6 ____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

(2) 6.94 14.8 c 200 u

(3) 7.18 14.9 200 u

Triplicate sample for Temp, Conductivity, pH

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: Lemon Grove/Lo Mesa	STATION ID: LG-1	STATION NAME: LG-1 Lemon Grove	
DATE: 12-7-07	TIME STARTED (AT SITE): 0815	TIME FINISHED (AT SITE): 0855	
NAV DATUM: —	LATITUDE: —	LONGITUDE: —	
FIELD TEAM: BE		RECORDER: BL	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☒ DRIZZLING ☐ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM	
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER	
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED	
	☐ COLORLESS	☐ OTHER				
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE	
	☒ OTHER (DESCRIBE) slight sheen					
TRASH	☐ NONE	☐ VEGETATION	☒ STYROFOAM	☐ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS)	☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE			

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED:	GRAB COLLECTION TIME:
Bot 1 O&G	0835

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.55	14.8	168 u					
	pH 7.52	TEMP (degree C) 14.6	CONDUCTIVITY (uS/cm) 167.9 u	DISSOLVED OXYGEN	TURBIDITY			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

7.48 14.6 164.3 u

Grab Sample collected. Bottle 1 changed. Bottle 2 iced.

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 0850 BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES: _____

TEAM LEADER'S SIGNATURE: Bryan

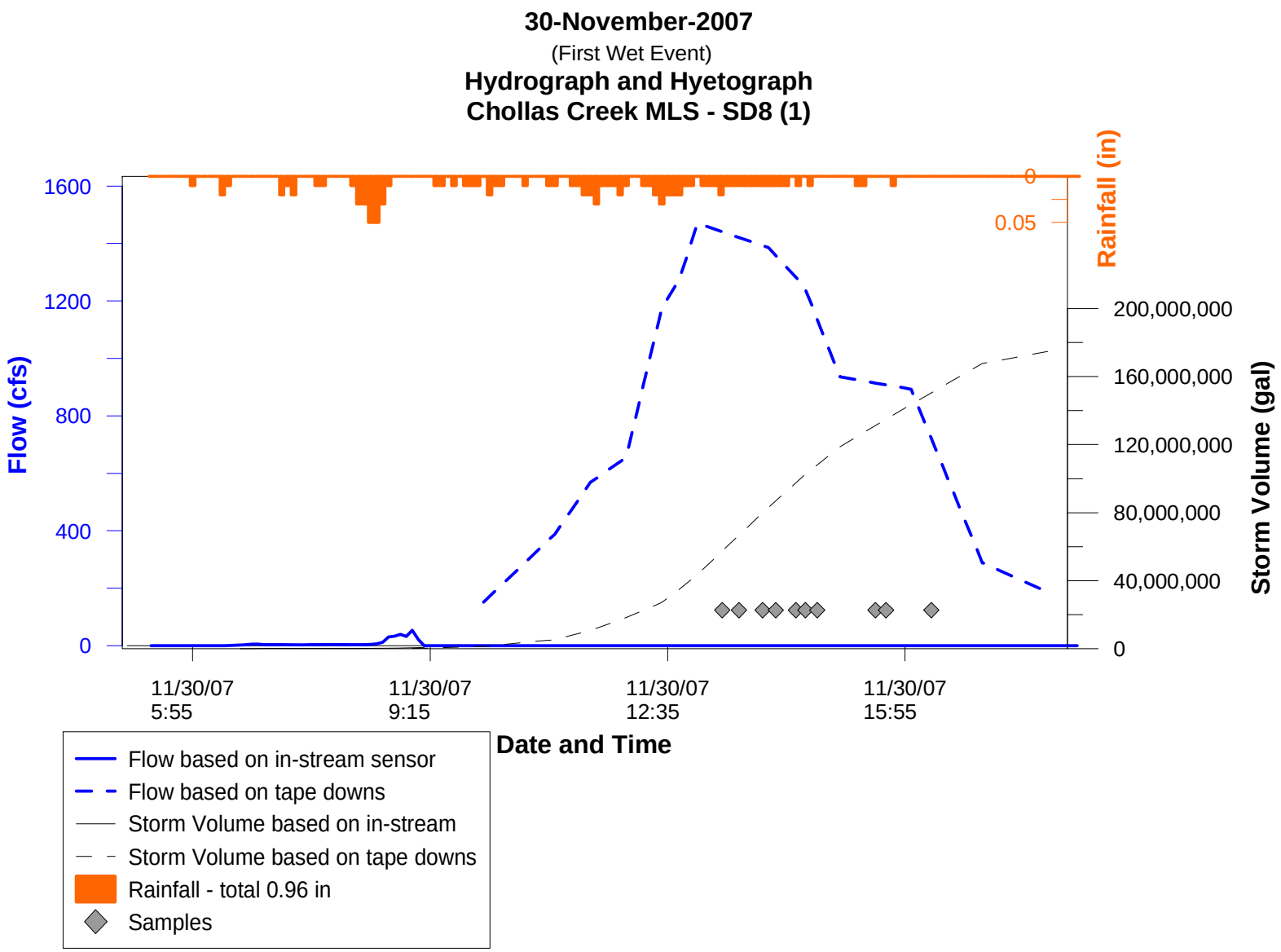
30-November-2007
(First Wet Event)
Hydrograph and Hyetograph
Chollas Creek MLS - SD8 (1)
Flow (cfs)
1600
1200
800
400
0
Rainfall (in)
0
0.05
Storm Volume (gal)
200,000,000
160,000,000
120,000,000
80,000,000
40,000,000
0
11/30/07 5:55
11/30/07 9:15
11/30/07 12:35
11/30/07 15:55
Date and Time
Flow based on in-stream sensor
Flow based on tape downs
Storm Volume based on in-stream
Storm Volume based on tape downs
Rainfall - total 0.96 in
Samples

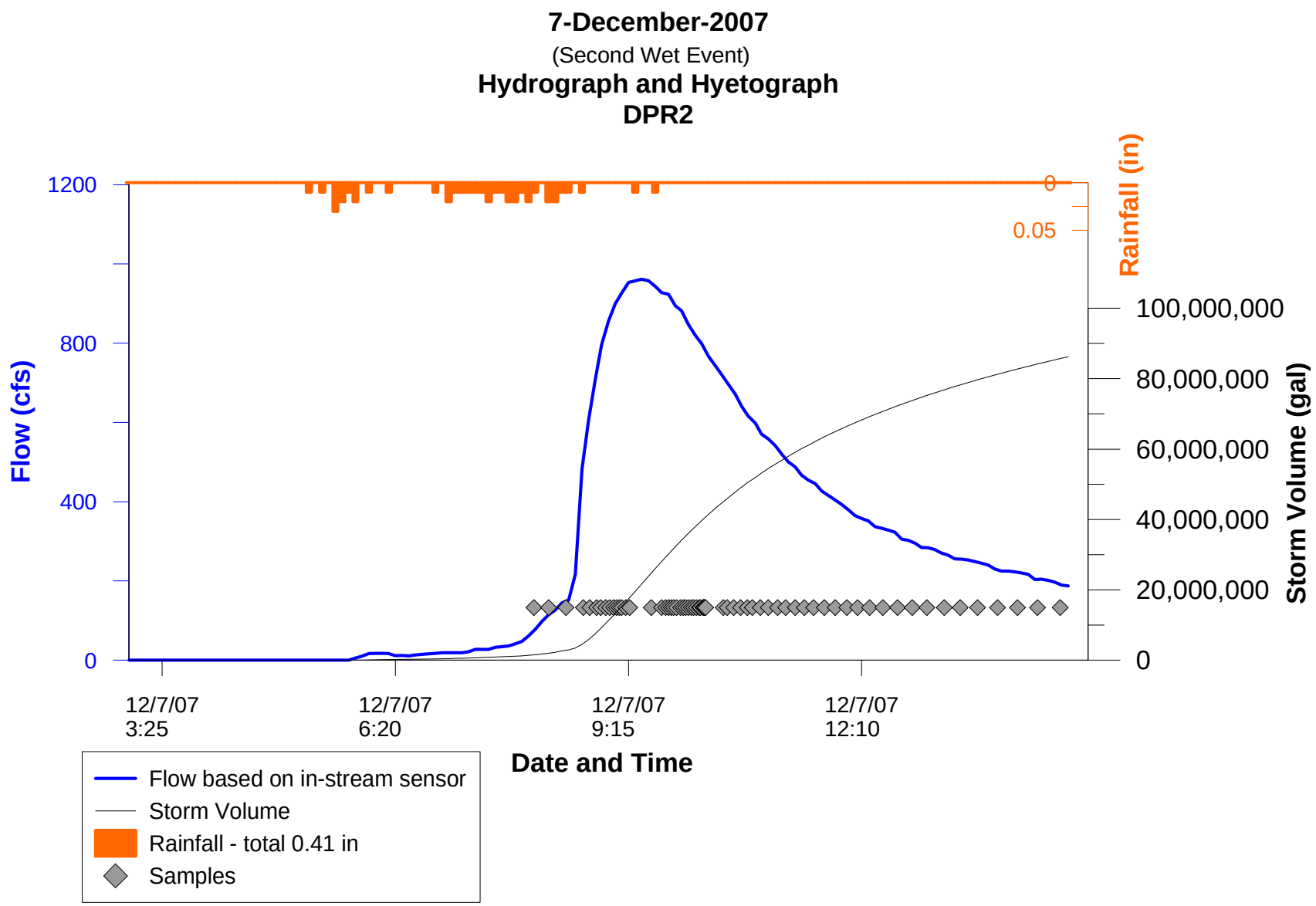
7-December-2007
(Second Wet Event)
Hydrograph and Hyetograph
DPR2
Flow (cfs)
1200
800
400
0
Rainfall (in)
0
0.05
Storm Volume (gal)
100,000,000
80,000,000
60,000,000
40,000,000
20,000,000
0
12/7/07 3:25
12/7/07 6:20
12/7/07 9:15
12/7/07 12:10
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.41 in
Samples

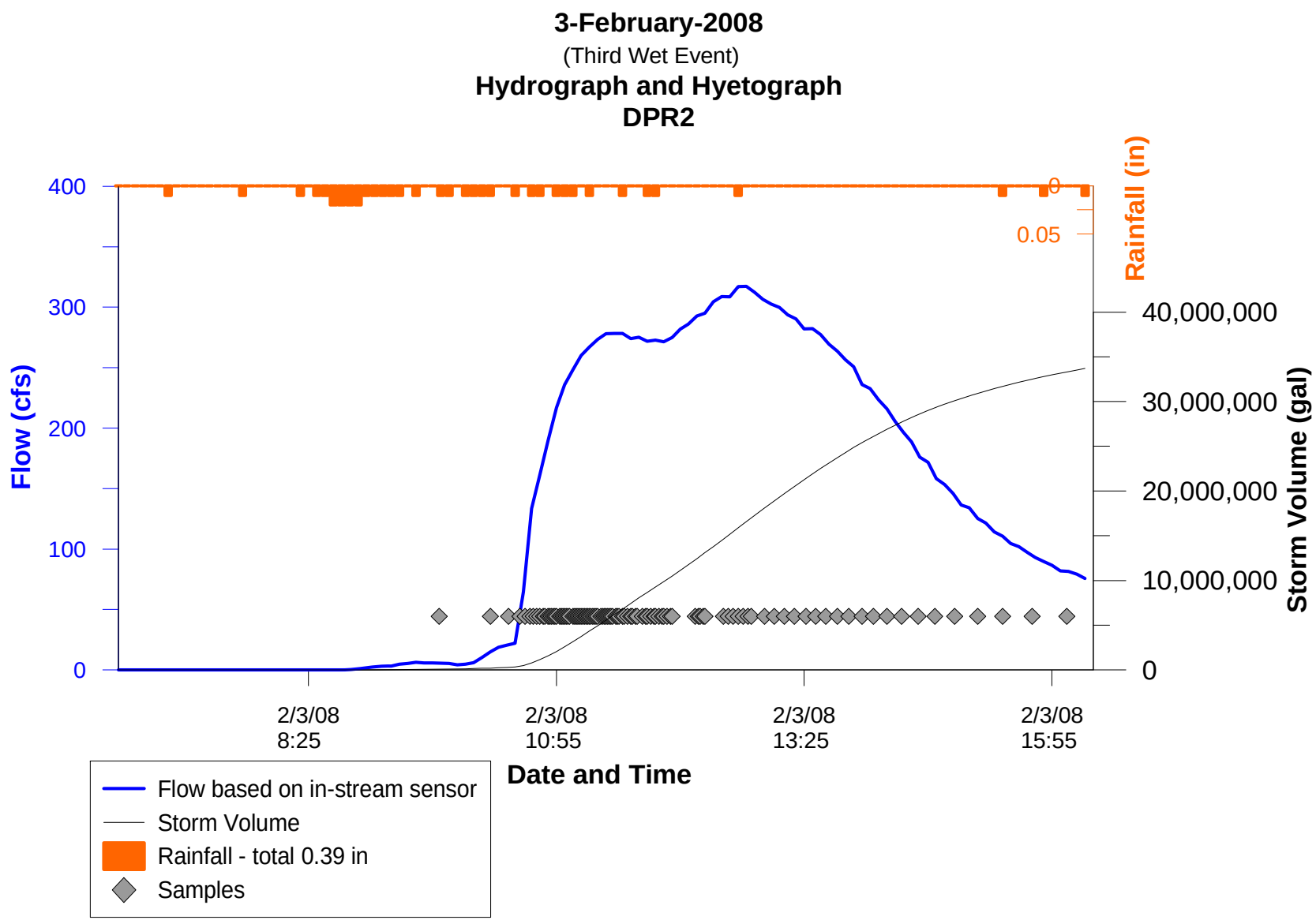
3-February-2008
(Third Wet Event)
Hydrograph and Hyetograph
DPR2
Flow (cfs)
400
300
200
100
0
Rainfall (in)
0
0.05
Storm Volume (gal)
40,000,000
30,000,000
20,000,000
10,000,000
0
2/3/08
8:25
2/3/08
10:55
2/3/08
13:25
2/3/08
15:55
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.39 in
Samples

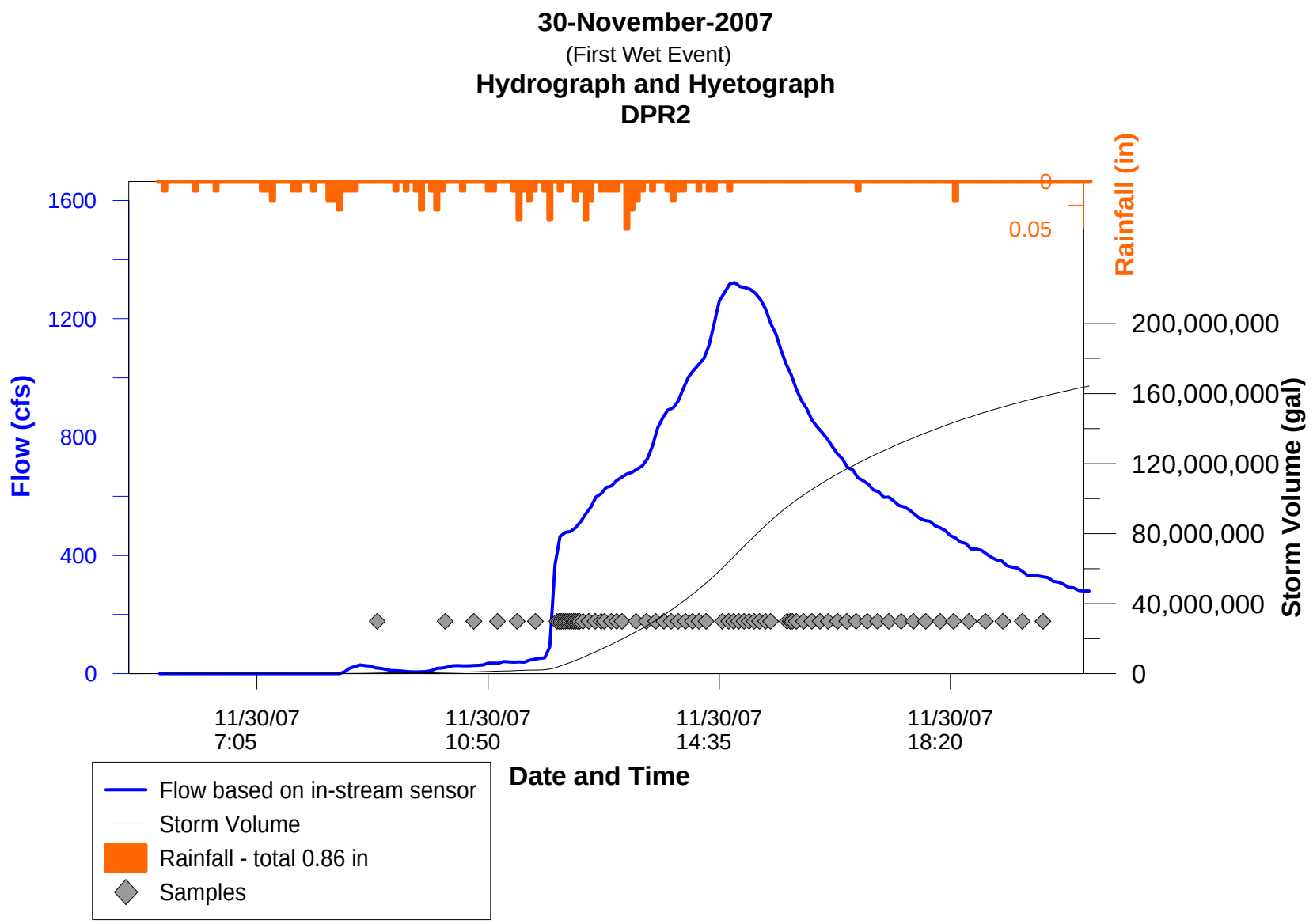
30-November-2007
(First Wet Event)
Hydrograph and Hyetograph
DPR2
Flow (cfs)
1600
1200
800
400
0
Rainfall (in)
0
0.05
Storm Volume (gal)
200,000,000
160,000,000
120,000,000
80,000,000
40,000,000
0
11/30/07
7:05
11/30/07
10:50
11/30/07
14:35
11/30/07
18:20
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.86 in
Samples

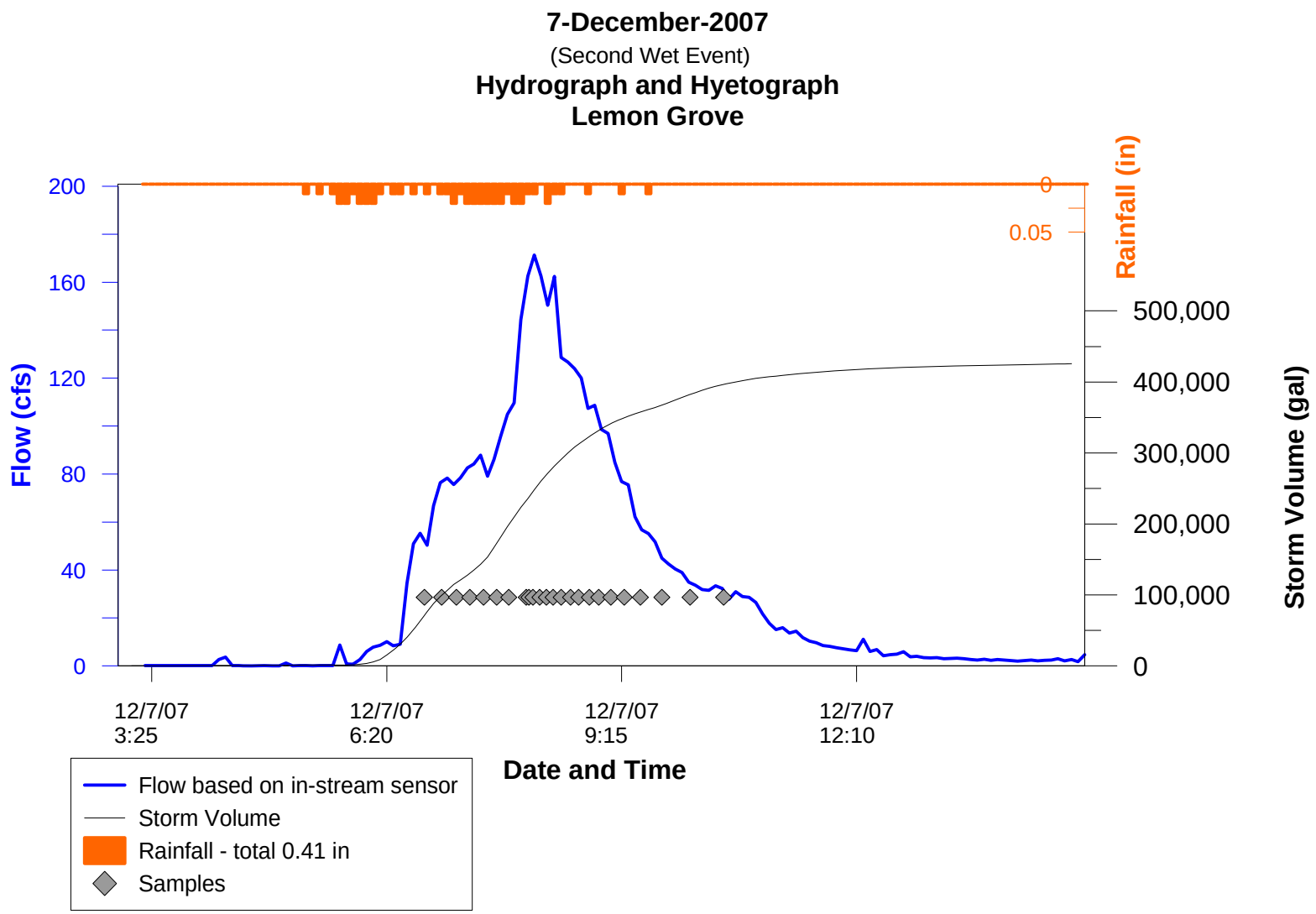
7-December-2007
(Second Wet Event)
Hydrograph and Hyetograph
Lemon Grove
Flow (cfs)
200
160
120
80
40
0
Rainfall (in)
0
0.05
Storm Volume (gal)
500,000
400,000
300,000
200,000
100,000
0
12/7/07
3:25
12/7/07
6:20
12/7/07
9:15
12/7/07
12:10
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.41 in
Samples

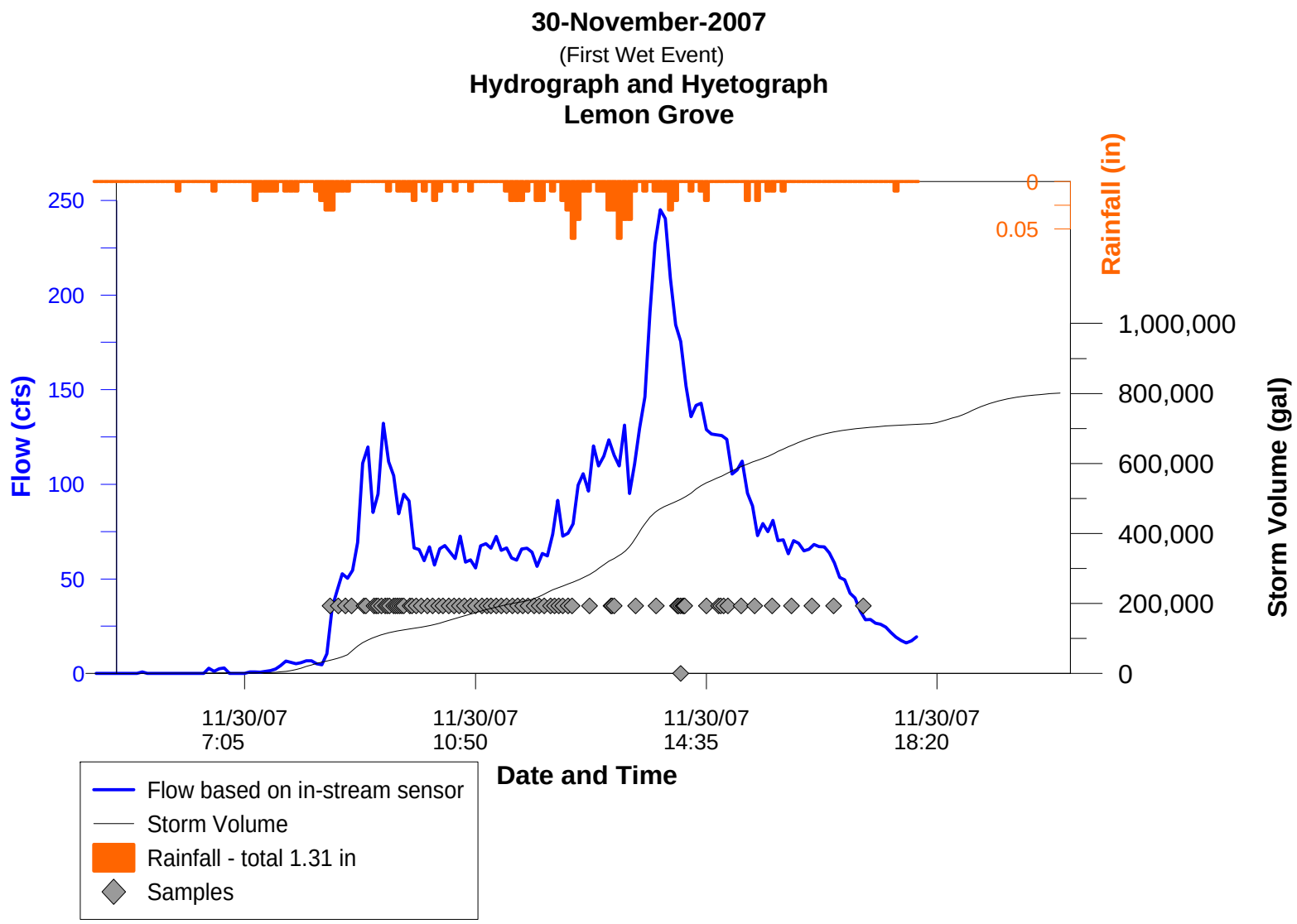
30-November-2007
(First Wet Event)
Hydrograph and Hyetograph
Lemon Grove
Flow (cfs)
250
200
150
100
50
0
Rainfall (in)
0
0.05
Storm Volume (gal)
1,000,000
800,000
600,000
400,000
200,000
0
11/30/07
7:05
11/30/07
10:50
11/30/07
14:35
11/30/07
18:20
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 1.31 in
Samples

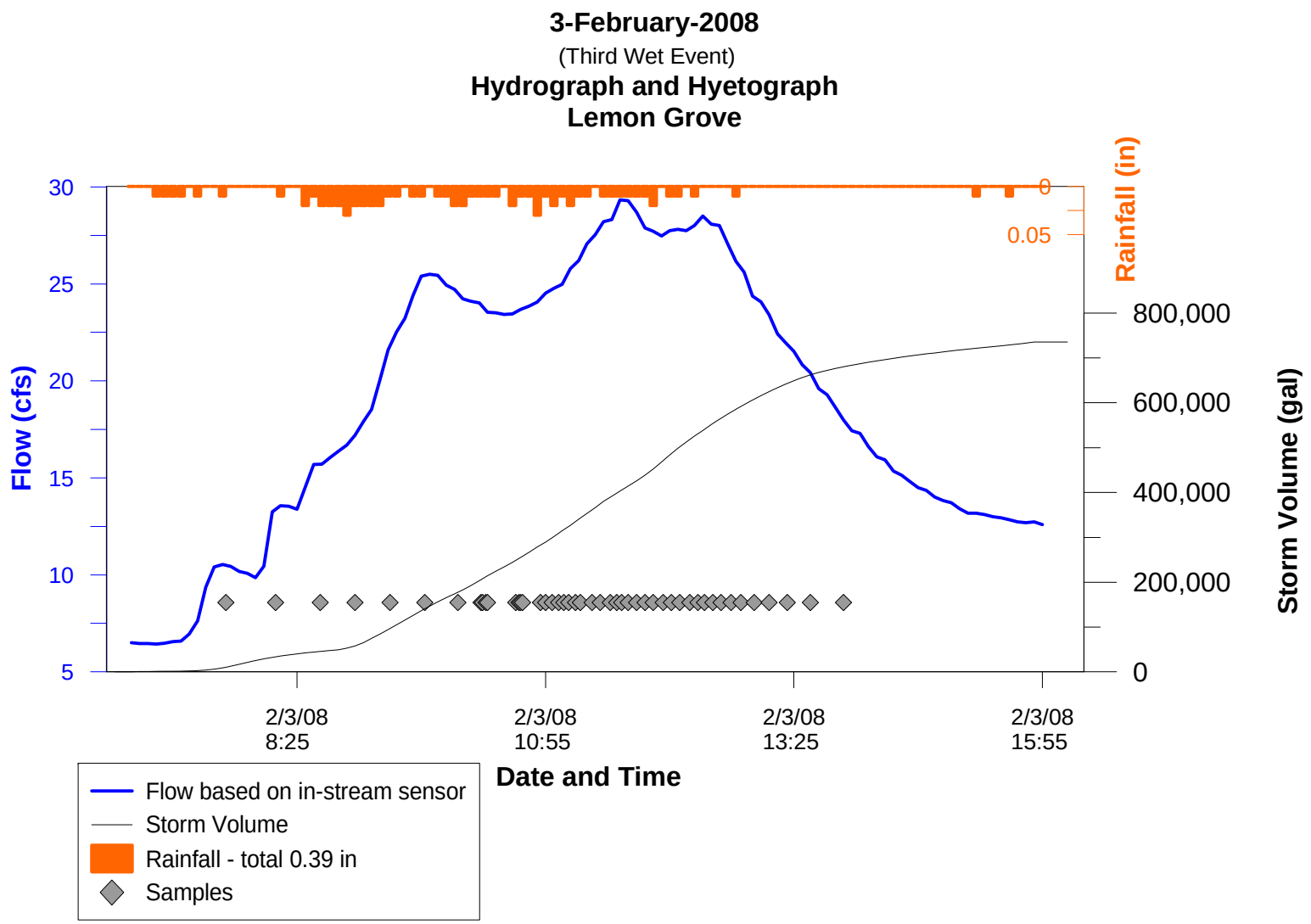
3-February-2008
(Third Wet Event)
Hydrograph and Hyetograph
Lemon Grove
Flow (cfs)
30
25
20
15
10
5
Rainfall (in)
0
0.05
Storm Volume (gal)
800,000
600,000
400,000
200,000
0
2/3/08
8:25
2/3/08
10:55
2/3/08
13:25
2/3/08
15:55
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.39 in
Samples

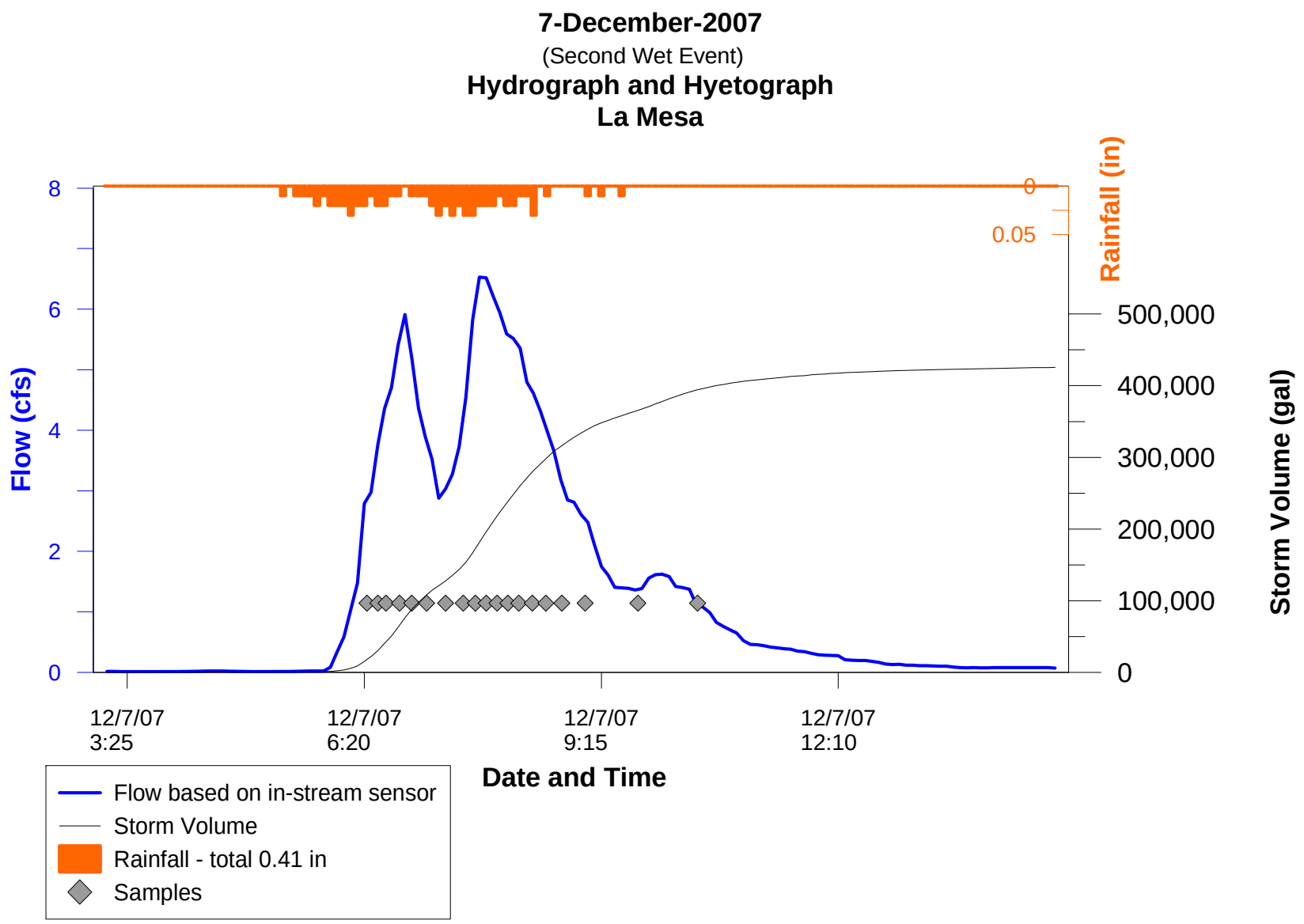
7-December-2007
(Second Wet Event)
Hydrograph and Hyetograph
La Mesa
Flow (cfs)
8
6
4
2
0
Rainfall (in)
0
0.05
Storm Volume (gal)
500,000
400,000
300,000
200,000
100,000
0
12/7/07
3:25
12/7/07
6:20
12/7/07
9:15
12/7/07
12:10
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.41 in
Samples

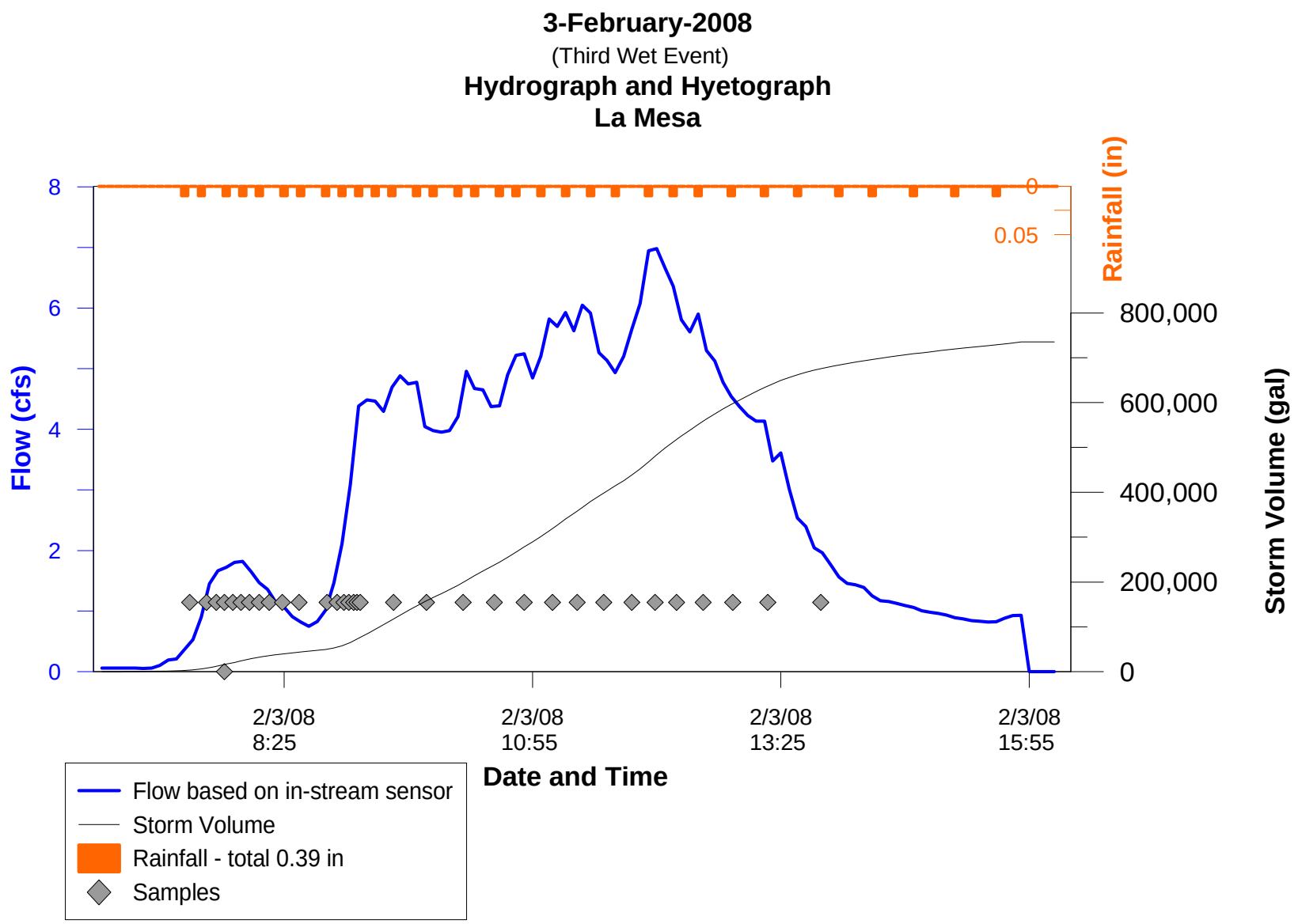
3-February-2008
(Third Wet Event)
Hydrograph and Hyetograph
La Mesa
Flow (cfs)
8
6
4
2
0
Rainfall (in)
0
0.05
Storm Volume (gal)
800,000
600,000
400,000
200,000
0
2/3/08
8:25
2/3/08
10:55
2/3/08
13:25
2/3/08
15:55
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.39 in
Samples

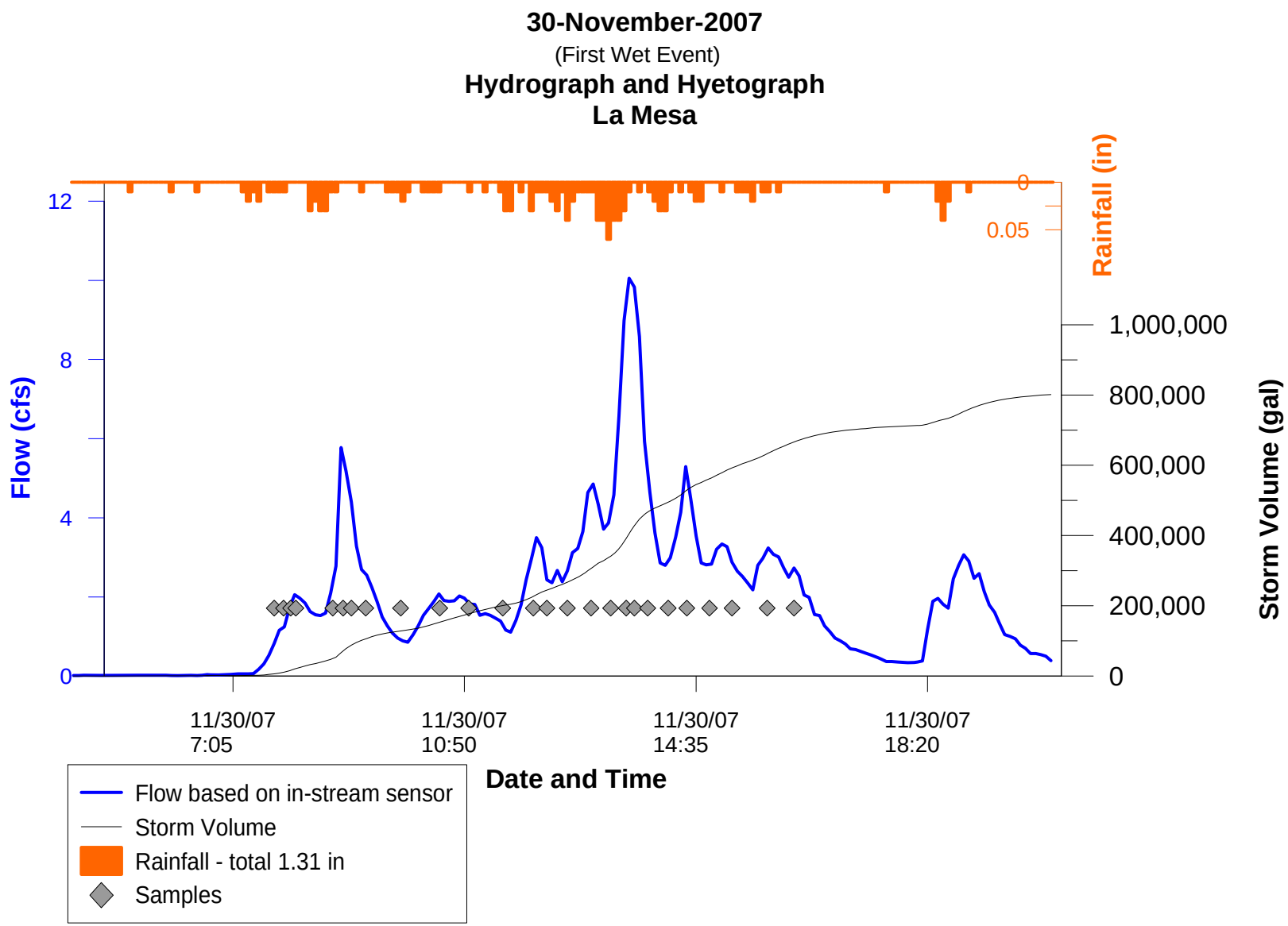
30-November-2007
(First Wet Event)
Hydrograph and Hyetograph
La Mesa
Flow (cfs)
12
8
4
0
Rainfall (in)
0
0.05
Storm Volume (gal)
1,000,000
800,000
600,000
400,000
200,000
0
11/30/07
7:05
11/30/07
10:50
11/30/07
14:35
11/30/07
18:20
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 1.31 in
Samples

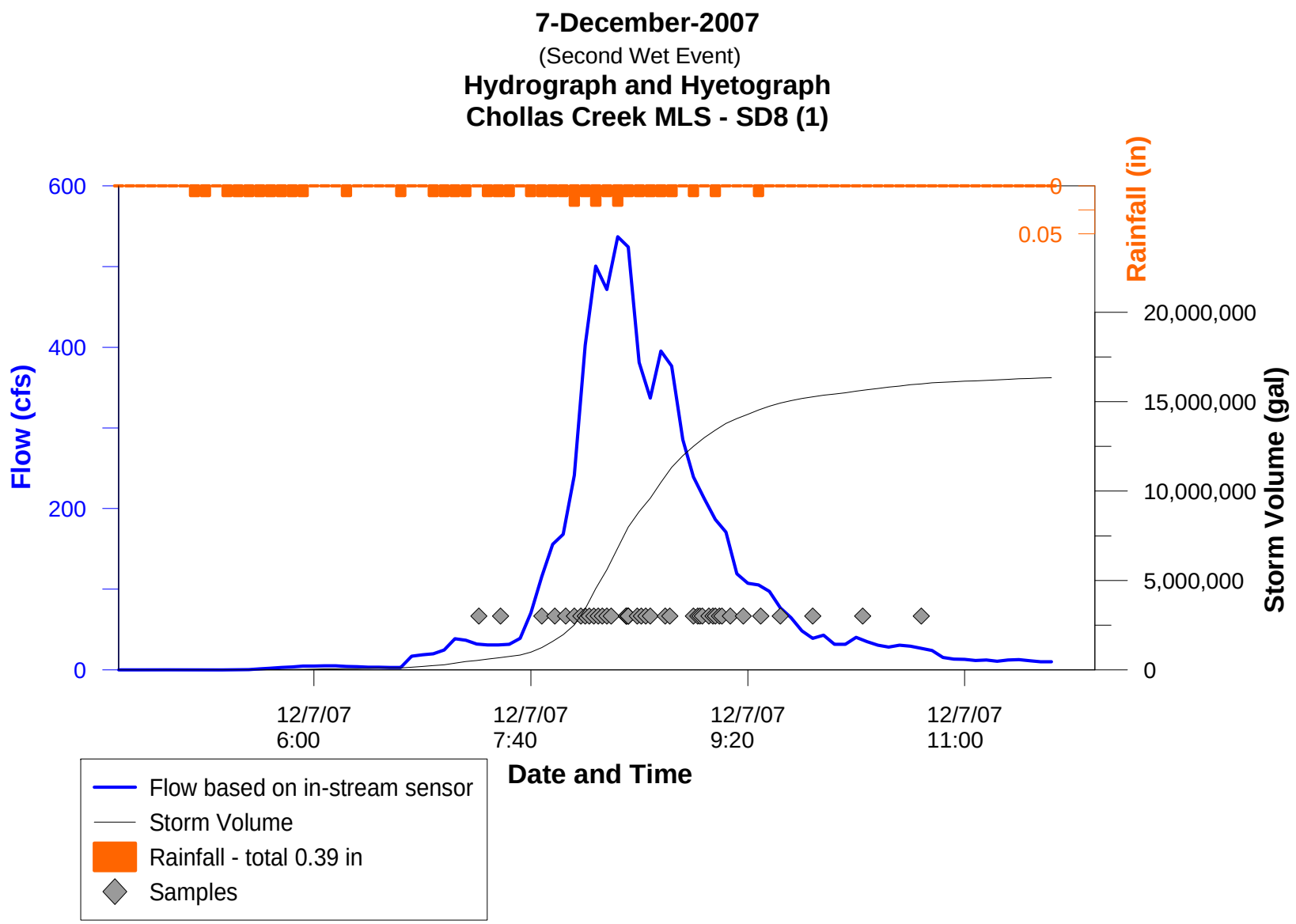
7-December-2007
(Second Wet Event)
Hydrograph and Hyetograph
Chollas Creek MLS - SD8 (1)
Flow (cfs)
600
400
200
0
Rainfall (in)
0
0.05
Storm Volume (gal)
20,000,000
15,000,000
10,000,000
5,000,000
0
12/7/07 6:00
12/7/07 7:40
12/7/07 9:20
12/7/07 11:00
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.39 in
Samples

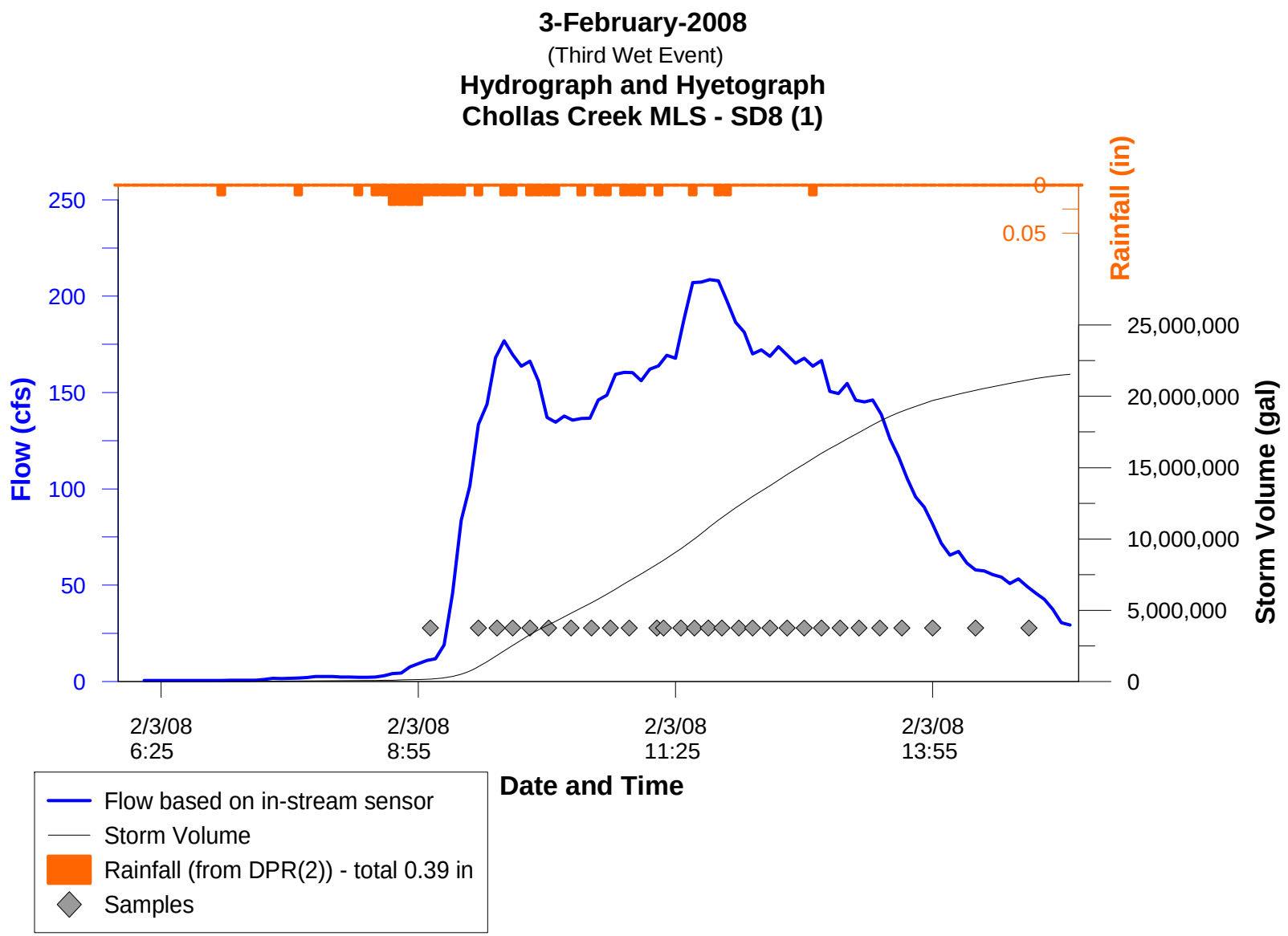
3-February-2008
(Third Wet Event)
Hydrograph and Hyetograph
Chollas Creek MLS - SD8 (1)
Flow (cfs)
250
200
150
100
50
0
Rainfall (in)
0
0.05
Storm Volume (gal)
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
2/3/08 6:25
2/3/08 8:55
2/3/08 11:25
2/3/08 13:55
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall (from DPR(2)) - total 0.39 in
Samples

Appendix F: Dry Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	SD8(1) Dry Weather 3/5/2008	LM-1 Dry Weather 3/5/2008	LG-1 Dry Weather 3/5/2008	SD8(1) Dry Weather 6/3/2008	LM-1 Dry Weather 6/3/2008	LG-1 Dry Weather 6/3/2008
Field Measurements										
pH	pH Units	-	6.5-9.0	Basin Plan	7.9	8.35	8.26	**9.07**	8.38	7.96
Conductivity	S/cm	-			2990	3280	4410	1707	2650	4260
Temperature	^{o}C	-			Not measured	15.7	12.6	25.3	20.5	19.3
General Chemistry										
Ammonia-N	mg/l	-	(a)	U.S. EPA Water Quality Criteria (Freshwater)	1.44	0.03	0.05	0.24	0.13	0.05
Dissolved Organic Carbon	mg/l	0.2			518	8.2	10.4	35.8	7.9	10.3
Nitrate-N	mg/l	0.05	1	Basin Plan	<0.05	**5**	0.03 J	0.07	**3.34**	0.04
Nitrite-N	mg/l	0.05	1	Basin Plan	<0.05	< 0.05	< 0.05	<0.05	<0.01	0.06
Total Hardness as CaCO3	mg/l	5			371.2	416.5	552.1	214.1	369.8	493.9
Total Kjeldahl Nitrogen	mg/l	0.5			24	0.98	0.56	2.8	1.1	1.1
Total Organic Carbon	mg/l	0.2			608	9.4	11.5	38.3	8.6	10.5
Total Suspended Solids	mg/l	5	58	Basin Plan	42.7	2.7 J	1 J	9.7	<0.5	2.3
Oil & Grease	mg/l	5	10	USEPA Multi-Sector General Permit	**18.1**	-	-	1.1J	1J	>5
Metals										
Cadmium (Cd) (dissolved)	ug/l	0.4	(b)	40 CFR 131	0.7	< 0.4	< 0.4	<0.4	<0.2	<0.2
Cadmium (Cd) (total)	ug/l	0.4	5.0	40 CFR 131, Basin Plan	1.2	< 0.4	< 0.4	0.2J	<0.2	<0.2
Copper (Cu) (dissolved)	ug/l	0.8	(b)	40 CFR 131	**68.9**	3.5	2	**23.7**	2.6	1.7
Copper (Cu) (total)	ug/l	0.8	1000	40 CFR 131, Basin Plan	89.8	4	2.8	27.0	3.2	2.5
Lead (Pb) (dissolved)	ug/l	0.1	(b)	40 CFR 131	3.01	< 0.1	0.21	0.3	0.05	0.09
Lead (Pb) (total)	ug/l	0.1			5.4	0.24	0.4	1.0	0.17	0.36
Zinc (Zn) (dissolved)	ug/l	0.5	(b)	40 CFR 131	139	16.7	12.9	6.0	9.2	6.2
Zinc (Zn) (total)	ug/l	0.5	5,000	40 CFR 131, Basin Plan	180	20.2	15.9	12.4	11.6	9.1

Appendix F: Dry Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	SD8(1) Dry Weather 3/5/2008	LM-1 Dry Weather 3/5/2008	LG-1 Dry Weather 3/5/2008	SD8(1) Dry Weather 6/3/2008	LM-1 Dry Weather 6/3/2008	LG-1 Dry Weather 6/3/2008
Organo Pesticides										
Bolstar (Sulprofos)	ng/l	4			<4	< 4	< 4	-	<2	<2
Chlorpyrifos	ng/l	2	20/14	CA Dept. of Fish & Game, 2000 (acute/chronic)	<2	< 2	< 2	< 2	<1	<1
Demeton	ng/l	2			<2	< 2	< 2	-	<1	<1
Diazinon	ng/l	4	72/45	Chollas Creek TMDL for Diazinon (acute/chronic)	<4	< 4	23	< 4	<2	<2
Dichlorvos	ng/l	6			<6	< 6	< 6	-	<3	<3
Dimethoate	ng/l	6			<6	< 6	< 6	-	<3	<3
Disulfoton	ng/l	2			<2	< 2	< 2	-	<1	<1
Ethoprop (Ethoprofos)	ng/l	2			<2	< 2	< 2	-	<1	<1
Fenchlorphos (Ronnel)	ng/l	4			<4	< 4	< 4	-	<2	<2
Fensulfothion	ng/l	2			<2	< 2	< 2	-	<1	<1
Fenthion	ng/l	4			<4	< 4	< 4	-	<2	<2
Malathion	ng/l	6	430/100	CA Dept. of Fish & Game, 1998 (acute/chronic)	<6	< 6	< 6	< 6	<3	<3
Merphos	ng/l	2			<2	< 2	< 2	-	<1	<1
Methyl Parathion	ng/l	2			<2	< 2	< 2	-	<1	<1
Mevinphos (Phosdrin)	ng/l	16			<16	< 16	< 16	-	<8	<8
Phorate	ng/l	12			<12	< 12	< 12	-	<6	<6
Tetrachlorvinphos (Stirofos)	ng/l	4			<4	< 4	< 4	-	<2	<2
Tokuthion	ng/l	6			<6	< 6	< 6	-	<3	<3
Trichloronate	ng/l	2			<2	< 2	< 2	-	<1	<1
Pesticides										
Piperonyl Butoxide	ng/l	20	650,000	El-Merhibi et al. 2004	-	< 20	< 20	-	<5	<5

Appendix F: Dry Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	SD8(1) Dry Weather 3/5/2008	LM-1 Dry Weather 3/5/2008	LG-1 Dry Weather 3/5/2008	SD8(1) Dry Weather 6/3/2008	LM-1 Dry Weather 6/3/2008	LG-1 Dry Weather 6/3/2008
Pyrethroids by NCI										
Allethrin	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Bifenthrin	ng/l	2	9.3	(wet) Anderson et al. in press	-	< 2	< 2	-	<0.5	<0.5
Cyfluthrin	ng/l	2	344	(wet) Wheelock et al. 2004	-	< 2	< 2	-	<0.5	<0.5
Cypermethrin	ng/l	2	683	(wet) Wheelock et al. 2004	-	< 2	< 2	-	<0.5	<0.5
Danitol	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Deltamethrin	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Esfenvalerate	ng/l	2	250	(wet) Wheelock et al. 2004	-	< 2	< 2	-	<0.5	<0.5
Fenvalerate	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Fluvalinate	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
L-Cyhalothrin	ng/l	2	200	(wet) Wheelock et al. 2004	-	< 2	< 2	-	<0.5	<0.5
Permethrin	ng/l	25	21	(wet) Anderson et al. in press	-	< 25	< 25	-	<5	<5
Prallethrin	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Resmethrin	ng/l	25			-	< 25	< 25	-	<5	<5
Bacteria										
Enterococci	MPN/100 ml	20	151	Basin Plan	**80,000**	**500**	**1300**	130	**5,000**	**300**
Fecal Coliforms	MPN/100 ml	20	4000	Basin Plan REC2	**130,000**	170	230	170	2,300	70
Total Coliforms	MPN/100 ml	20			9,000,000	7,000	800	2,200	11,000	8,000

Bold and shaded values are above the WQO. Values for Bifenthrin and Permethrin are bold if above published LC50 values for *Hyalella azteca.*

J = Value is above the laboratory method detection limit and below the reporting limit. The value is considered an estimate.

(a) Water Quality Benchmark for Ammonia-N for wet weather is based on CMC (Salmonid absent) based on pH and Temperature. Benchmark for ambient weather is based on CCC (early life stages present) based on pH and Temperature.

(b) Water Quality Benchmark is based on USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000, water temperature, and pH. Dissolved metals values were compared against chronic WQO values.

- indicates not applicable or not analyzed.

Appendix F: Wet Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	North Fork- Chollas Creek						South Fork- Chollas Creek					
					LM-1 Wet Weather			SD8(1) Wet Weather			LG-1 Wet Weather			DPR2 Wet Weather		
					11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008
Field Measurements																
pH	pH Units	-	6.5-9.0	Basin Plan	7.65	6.81	7.74	6.83	6.82	7.54	7.08	7.55	8.61	7.33	7.09	7.54
Conductivity	uS/cm	-			226	200	222	162	138	142	470	168	189	405	316	200
Temperature	°C	-			17.8	14.9	13.7	17.1	15.1	13.2	16.7	14.8	13.1	17.9	15.0	13.1
General Chemistry																
Ammonia-N	mg/l	-	(a)	U.S. EPA Water Quality Criteria (Freshwater)	1.26	0.52	0.2	0.94	0.44	0.13	1.2	0.42	0.16	0.94	0.38	0.12
Dissolved Organic Carbon	mg/l	0.2			18.6	7.3	8.4	18.2	9.7	5.4	14.9	7.6	5.5	11.8	9.9	5.9
Nitrate-N	mg/l	0.05	10	Basin Plan	1.9	0.84	1.29	1.3	0.83	0.28	1.24	0.69	0.38	1.2	0.83	0.49
Nitrite-N	mg/l	0.05	1	Basin Plan	0.19	0.05	0.36	0.12	0.05	0.03 J	0.19	0.05	<0.05	0.19	0.06	<0.05
Total Hardness as CaCO3	mg/l	5			44.3	19.9	60.3	22.4	20	17.2	52.2	25.2	22.9	48	31	27.8
Total Kjeldahl Nitrogen	mg/l	0.5			6.4	1.5	1.7	5.7	1.4	1.3	5.5	1.4	1.7	4.3	1.4	2
Total Organic Carbon	mg/l	0.2			25	9	9.7	20.4	11.4	5.8	19.7	9.6	6.1	21.7	10.1	6.4
Total Suspended Solids	mg/l	5	100	MSGP 2000	**220**	64	90	**400**	**274**	**124**	**380**	**292**	**169**	**160**	80	6
Oil & Grease	mg/l	5	10	USEPA Multi-Sector General Permit	8	3.3 J	<1.9	**18.7**	5	2.8 J	**19**	4.6 J	<4.4	9.4	5	3.3 J
Metals																
Cadmium (Cd) (dissolved)	ug/l	0.4	(b)	40 CFR 131	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Cadmium (Cd) (total)	ug/l	0.4	5.0 (c)	40 CFR 131, Basin Plan	0.8	<0.4	0.3 J	0.8	0.3 J	0.8	0.8	0.2 J	0.2 J	0.4	<0.4	<0.4
Copper (Cu) (dissolved)	ug/l	0.8	(b)	40 CFR 131	**8.5**	**13.6**	7.2	**11.1**	**9.4**	**6.6**	6.7	**7.4**	**5.9**	**8**	**8.5**	**5.9**
Copper (Cu) (total)	ug/l	0.8	1000 (c)	40 CFR 131, Basin Plan	67.6	16.5	22.9	74.8	25.8	32.1	67.3	22.5	15.5	34.3	14.2	12.4
Lead (Pb) (dissolved)	ug/l	0.1	(b)	40 CFR 131	1.29	0.87	0.2	1.5	0.66	0.41	1.27	0.59	0.29	1.14	0.59	0.21
Lead (Pb) (total)	ug/l	0.1			39	11.26	14.26	49.76	21.62	43.54	59.23	20.91	15.29	27.31	9.76	9.62
Zinc (Zn) (dissolved)	ug/l	0.5	(b)	40 CFR 131	**90.6**	**55.5**	52.3	**78**	**50.3**	**37.6**	56.8	**43.2**	33.3	47.6	27.3	23.4
Zinc (Zn) (total)	ug/l	0.5	5000 (c)	40 CFR 131, Basin Plan	497	126	165	485	151	452	549	155	126	201	64.1	75.5
Organo Pesticides																
Bolstar (Sulprofos)	ng/l	4			<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Chlorpyrifos	ng/l	2	20/14	CA Dept. of Fish & Game, 2000 (acute/chronic)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Demeton	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Diazinon	ng/l	4	72/45	Chollas Creek TMDL for Diazinon (acute/chronic)	<4	<4	<4	**46.6**	27.6	13	23.4	<4	<4	<4	26.2	<4
Dichlorvos	ng/l	6			<6	<6	<6	<6	<6	<6	<6	<6	<6	18.5	<6	<6
Dimethoate	ng/l	6			<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Disulfoton	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Ethoprop (Ethoprofos)	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Fenchlorphos (Ronnel)	ng/l	4			<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fensulfothion	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Fenthion	ng/l	4			<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Malathion	ng/l	6	430/100	CA Dept. of Fish & Game, 1998 (wet, acute/chronic)	160	<6	<6	<6	118	43.2	185	<6	<6	229	138	<6
Merphos	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Methyl Parathion	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Mevinphos (Phosdrin)	ng/l	16			<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16
Phorate	ng/l	12			<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12

Appendix F: Wet Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	North Fork- Chollas Creek						South Fork- Chollas Creek					
					LM-1 Wet Weather			SD8(1) Wet Weather			LG-1 Wet Weather			DPR2 Wet Weather		
					11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008
Tetrachlorvinphos (Stirofos)	ng/l	4			<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Tokuthion	ng/l	6			<6	<6	<6	18.1	<6	<6	<6	<6	<6	<6	<6	<6
Trichloronate	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Pesticides																
Piperonyl Butoxide	ng/l	20	650,000	El-Merhibi et al. 2004	<20	<20	<20	<20	<20	7.4 J	<20	<20	<20	<20	<20	<20
Pyrethroids by NCI																
Allethrin	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Bifenthrin	ng/l	2	9.3	(wet) Anderson et al. in press	**222**	**77.9**	**38.9**	**125**	**39.3**	**26.6**	**97.3**	**17.9**	**14.3**	**55.1**	**19.8**	<2
Cyfluthrin	ng/l	2	344	(wet) Wheelock et al. 2004	95.8	68.5	40.2	84.1	34.7	32.4	38.5	11.5	2.4	23.5	7.1	<2
Cypermethrin	ng/l	2	683	(wet) Wheelock et al. 2004	27	68.4	2 U	34.6	20.6	<2	8.8	<2	<2	14	<2	<2
Danitol	ng/l	2			<2	<2	<2	<2	<2	0.9 J	<2	<2	<2	<2	<2	<2
Deltamethrin	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Esfenvalerate	ng/l	2	250	(wet) Wheelock et al. 2004	<2	<2	<2	1.2 J	<2	<2	<2	<2	<2	-	<2	<2
Fenvalerate	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2
Fluvalinate	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2
L-Cyhalothrin	ng/l	2	200	(wet) Wheelock et al. 2004	6.7	2.7	9	12	<2	2.7	8.4	<2	<2	2.5	<2	<2
Permethrin	ng/l	25	21	(wet) Anderson et al. in press	**449.3**	**167.7**	<25	**213.5**	**168.7**	<25	**194.1**	<25	<25	<25	<25	<25
Prallethrin	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Resmethrin	ng/l	25			-	-	<25	-	-	-	-	-	<25	-	-	-
Bacteria																
Enterococci	MPN/100 ml	20			170,000	23,000	70,000	80,000	110,000	80,000	130,000	80,000	17,000	140,000	30,000	50,000
Fecal Coliforms	MPN/100 ml	20	4000	Basin Plan REC2	**80,000**	**50,000**	2,300	**50,000**	**11,000**	**11,000**	1,879	**30,000**	**8,000**	**330,000**	**23,000**	**13,000**
Total Coliforms	MPN/100 ml	20			230,000	220,000	28,000	500,000	7,5038E	70,000	80,000	280,000	170,000	1,100,000	500,000	500,000

Bold and shaded values are above the WQO. Values for Bifenthrin and Permethrin are bold if above published LC50 values for *Hyalella azteca.*
J = Value is above the laboratory method detection limit and below the reporting limit. The value is considered an estimate.
E= Results for the multiple tube method are derived from Standard Methods Section 9221C, Table 9221.IV. Any results not appearing in the table are calculated using the Thomas Equation and are noted with the letter 'E'.

(a) Water Quality Benchmark is based on CMC (salmonids absent) using pH described in the U.S. EPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

(b) Water Quality Objectives are based on USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000., water temperature, and pH. Wet weather dissolved metals values were compared to acute WQOs.

(c) There is no wet weather Water Quality Objective for total metals. The listed WQO applies to ambient weather conditions.

(d) Water Quality Objective for Enterococi is based on the maximum criteria for an infrequently used freshwater area (Basin Plan, 1994).

- indicates not analyzed.

Appendix H
City of La Mesa Wet Weather Monitoring Results

1.0 Sampling Overview

During 2007-2008 the City of La Mesa (City) collected samples from Site 908-UNI-001. This is the same location designated by the City of San Diego as Site LM-1. This site is located in the channel at 69th Street and Boulevard Drive. Monitoring at this location provides data about the types and quantities of pollutants in storm water runoff as it leaves the City of La Mesa and enters the City of San Diego.

Sampling at Site 908-UNI-001 was completed during storm events on November 30, 2007 and December 7, 2007 during the 2007-2008 fiscal year by D-MAX Engineering, Inc. (D-MAX). Samples were analyzed for dissolved and total metals, bacteria, and pyrethroid pesticides.

2.0 Sampling Procedure and Analytical Methods

2.1 *Sampling Procedure*

A time weighted composite sampling method was used. Samples were collected across the duration of the storm until runoff levels had subsided back to a level similar to that observed before the storm. To obtain a single composite sample for each of the sampling locations, grab samples of one to two liters were taken at 15 to 20 minute intervals. The size of each grab and time between grabs was determined prior to each storm depending on the anticipated size and duration of the rain event. Samples were composited in precleaned containers and then transferred to precleaned bottles obtained from the analytical laboratory. Note that pyrethroids samples were collected and composited using only glass containers and equipment. This procedure was used because pyrethroids are hydrophobic and can be retained in sampling equipment if plastic materials are used. Grab samples were collected for bacteria analyses, since such analyses are not conducive to composite sampling. Sampling staff recorded relevant observations in their field log books.

Samples were submitted to laboratories certified via California's Environmental Laboratory Accreditation Program (ELAP). CRG Marine Labs performed the pyrethroids analyses, while the remaining tests were completed by EnviroMatrix Analytical. Table 2-1 lists the relevant analytical methods used.

TABLE 2-1
LABORATORY ANALYTICAL METHODS

Parameter	Analytical Method	Container/Volume	Preservation	Holding Time	Reporting Limit	Units
Microbiological						
Total Coliform Bacteria	SM 9221	Plastic 100 mL	4°C	6 hours	20	MPN/100mL
Fecal Coliform Bacteria	SM 9221	Plastic 100 mL	4°C	6 hours	20	MPN/100mL

TABLE 2-1
LABORATORY ANALYTICAL METHODS

Parameter	Analytical Method	Container/Volume	Preservation	Holding Time	Reporting Limit	Units
Enterococcus Bacteria	SM 9230	Plastic 100 mL	4°C	6 hours	20	MPN/100mL
Conventional						
Total Hardness	EPA 200.7	Plastic 500 mL	pH<2 HNO_3	6 months	10	mg $CaCO_3$/L
Total Suspended Solids (TSS)	SM 2540 D	Plastic 250 mL	4°C	6 months	20	mg/L
Dissolved Metals						
Copper	EPA 6020	Plastic 500 mL	4°C	6 months	0.005	mg/L
Lead					0.005	mg/L
Zinc					0.020	mg/L
Total Metals						
Copper	EPA 6020	Plastic 500 mL	4°C	6 months	0.050	mg/L
Lead					0.050	mg/L
Zinc					0.050	mg/L
Synthetic Pyrethroids						
Allethrin	EPA 625 - NCI	Amber Glass 2L	4°C	7 days (extraction); 40 days (analysis)	2	ng/L
Bifenthrin					2	ng/L
Cyfluthrin					2	ng/L
Cypermethrin					2	ng/L
Danitol					2	ng/L
Deltamethrin					2	ng/L
Esfenvalerate					2	ng/L
Fenvalerate					2	ng/L
Fluvalinate					2	ng/L
L-Cyhalothrin					2	ng/L
Permethrin					25	ng/L
Prallethrin					2	ng/L
Organophosphorus Pesticides						
Diazinon	EPA 8141 A	Amber Glass 1L	4°C	7 days	0.05	ug/L
Chlorpyrifos					0.05	ug/L
Malathion					0.05	ug/L

2.2 *Quality Assurance and Quality Control Procedures*

Standard quality assurance (QA) and quality control (QC) processes were followed for this project. These processes included collecting samples in using precleaned equipment and containers, including contaminant free bottles obtained from the analytical laboratory. Field staff were trained in all relevant QA/QC procedures, including wearing gloves during sample collection. Chain of custody (COC) forms indicating when and where the samples were collected were completed by the field personnel collecting the samples. The collected samples were then hand delivered to laboratory staff by D-MAX field personnel, at which time the COC forms were also transferred to laboratory staff.

3.0 Sampling Results

During 2007-2008 sampling was completed at Site 980-UNI-001 (same location as LM-1) on November 30, 2007 and on December 7, 2007. Collected data were compared to the same set of water quality objectives (WQO) that has been used in assessments of other data collected for the Chollas Creek TMDL. That set of benchmarks is based on guidance developed by the San Diego Copermittees Regional Monitoring Workgroup and concentration limits set by Chollas Creek TMDLs. Collected data is presented in Table 3-1.

Dissolved lead was not detected in either storm, and no exceedances for dissolved zinc were noted. Dissolved copper was noted above the California Toxics Rule Criteria Maximum Concentration (CTR CMC) during both storms. Figure 3-1 shows the ratio of the detected zinc and copper levels to the CTR CMC for each rain event. Data from a monitored event on April 20, 2007, during which no metals exceedances were recorded, is also included for the sake of comparison. Note that the actual concentration of metals was relatively similar for all three storms, and the main difference in whether or not an exceedances was recorded was mostly due to variations in the measured level of total hardness.

FIGURE 3-1
908-UNI-001 (LM-1) METALS: RATIOS TO CTR CMC

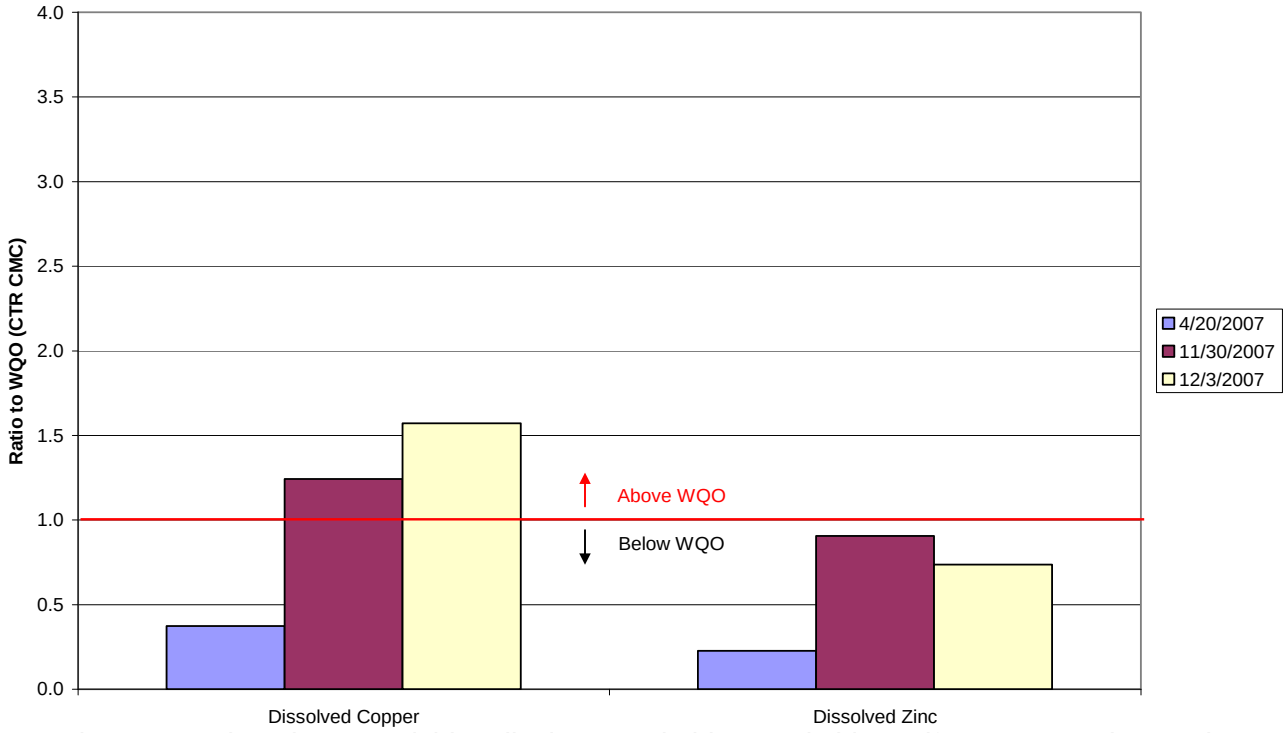

The organophosphate pesticides diazinon, malathion, and chlorpyrifos were not detected in any of the monitored rain events. Pyrethroids pesticides were detected in both the November and December rain events. In general the detected levels of pyrethroids were relatively low, and only Bifenthrin, which has the lowest WQO among the pyrethroid class of pesticides, was detected above its WQO.

TABLE 3-1
LA MESA WET WEATHER MONITORING DATA

Analyte	Units	WQO	La Mesa, 4/20/2007	La Mesa, 11/30/2007	La Mesa, 12/7/2007
TSS	mg/L	100	**118**	**166**	-
Total Hardness as CaCO3	mg/L		230	58	50
Copper (dissolved)	µg/L	CTR CMC	11	**10**	**11**
Copper (total)	µg/L	1,000	<50	<50	<50
Lead (dissolved)	µg/L	CTR CMC	<5	<5	<5
Lead (total)	µg/L		15	25	<10
Zinc (dissolved)	µg/L	CTR CMC	54	67	48
Zinc (total)	µg/L	5,000	178	288	80
Allethrin			-	<2	<2
Bifenthrin	ng/L	9.3	-	**19.8**	**52.4**
Cyfluthrin	ng/L	344	-	10.6	49.4
Cypermethrin	ng/L	683	-	<2	<2
Danitol			-	<2	<2
Deltamethrin			-	<2	<2
Esfenvalerate	ng/L	250	-	<2	<2
Fenvalerate			-	<2	<2
Fluvalinate			-	<2	<2
L-Cyhalothrin	ng/L	200	-	<2	6.6
Permethrin	ng/L	21	-	<25	<25
Prallethrin			-	<2	<2
Diazinon	ng/L	72/45 (acute/chronic)	<50	<50	<50
Chlorpyrifos	ng/L	20/14 (acute/chronic)	<50	<50	<50
Malathion	ng/L	430/100 (acute/chronic)	<50	<50	<50
Total Coliforms	MPN/100 mL		23,000	1,600,000	90,000
Fecal Coliforms	MPN/100 mL	4,000	230	**70,000**	**13,000**
Enterococci	MPN/100 mL		800	160,000	9,000

Notes

1) CTR CMC indicates that the California Toxics Rule Criterion Maximum Concentration was used as the WQO
2) WQO exceedances are indicated by bold font with a gray background
3) "-" indicates not analyzed
4) Data from the 4/20/2007 storm, which is outside the 2007-2008 reporting period, is included for comparison and because it is referenced in the text discussion of sampling data.

Appendix G: Scatterplots

DPR2

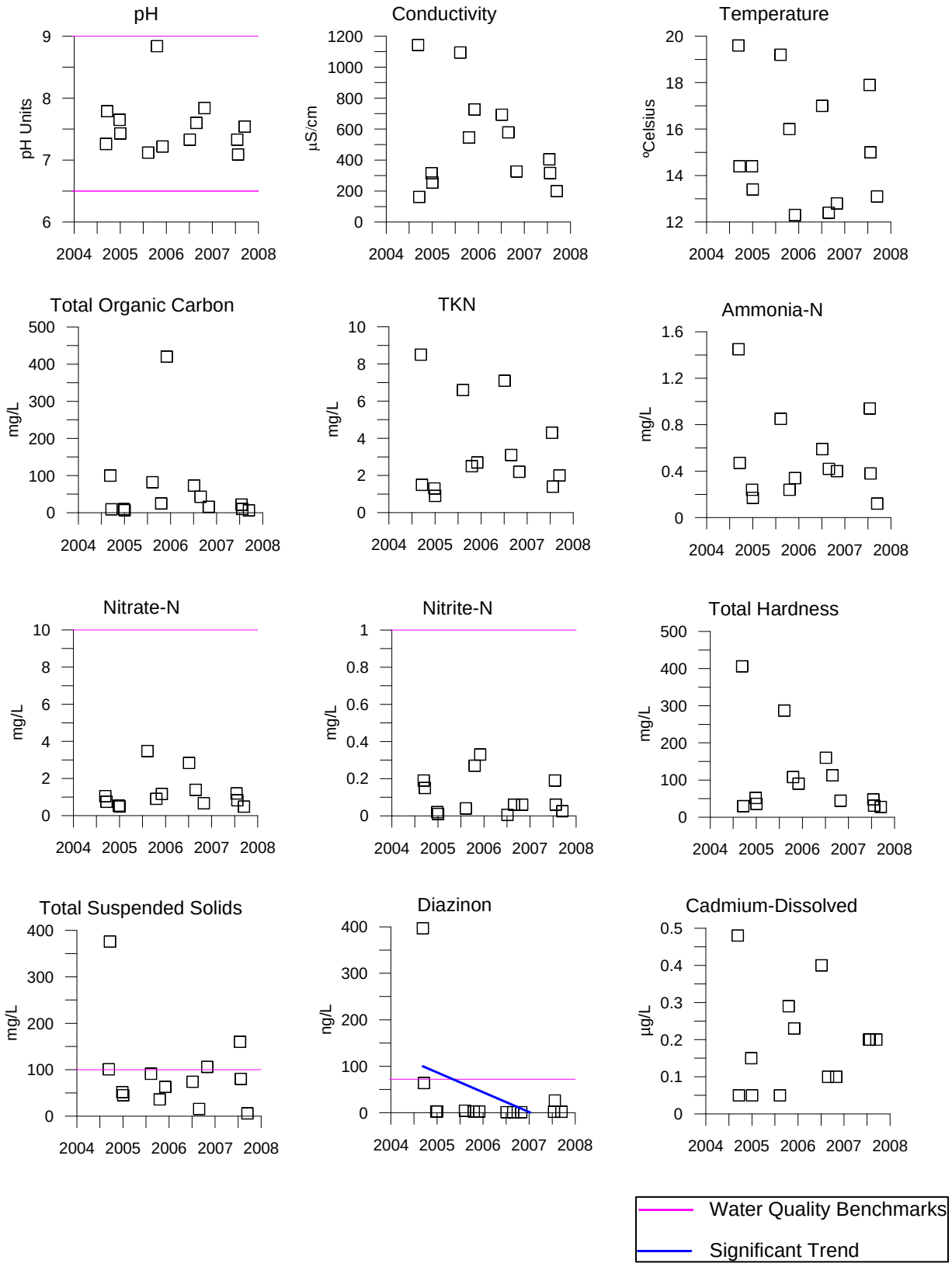

Appendix G: Scatterplots

DPR2

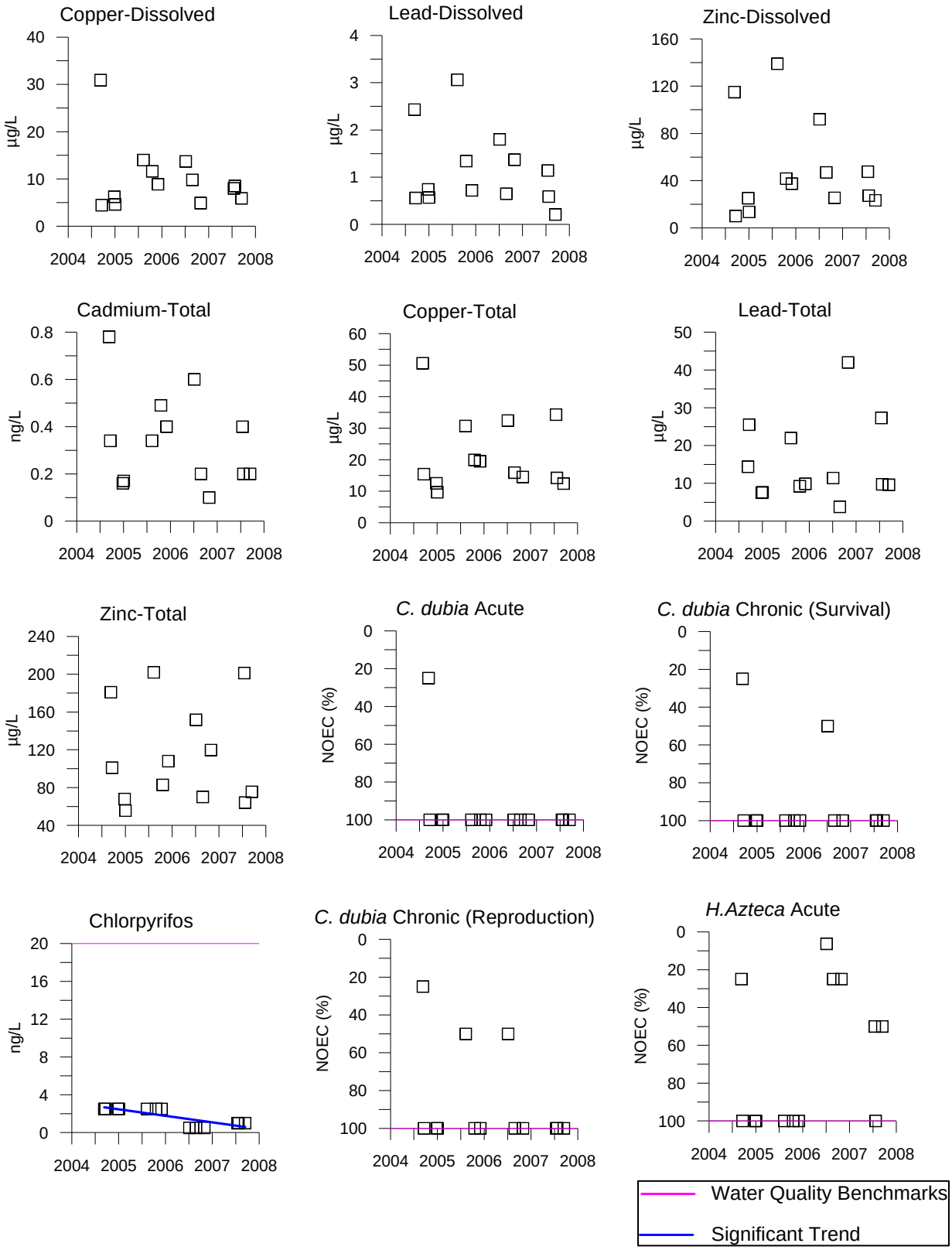

Appendix G: Scatterplots

SD(8)

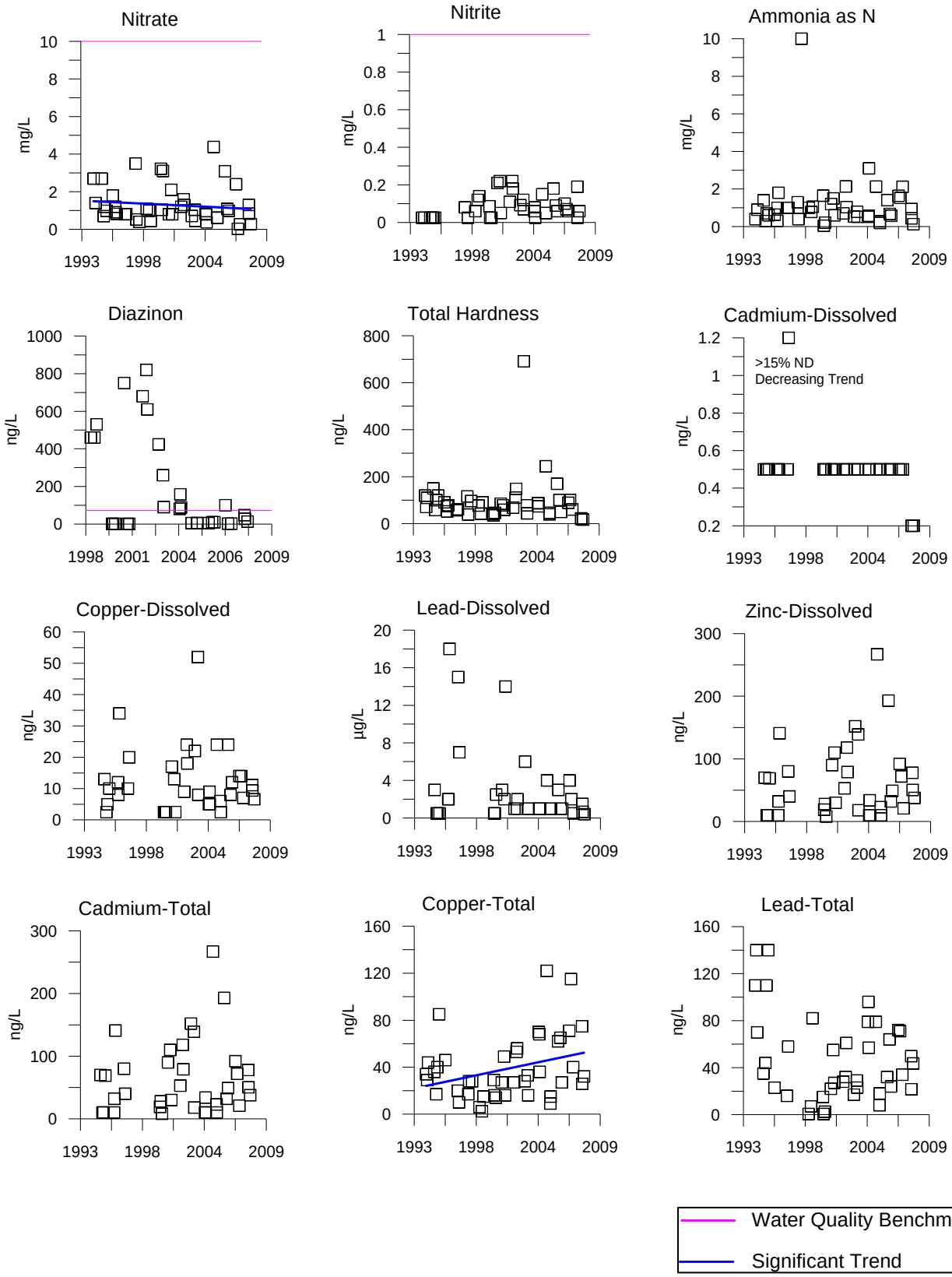

Appendix G: Scatterplots

SD(8)

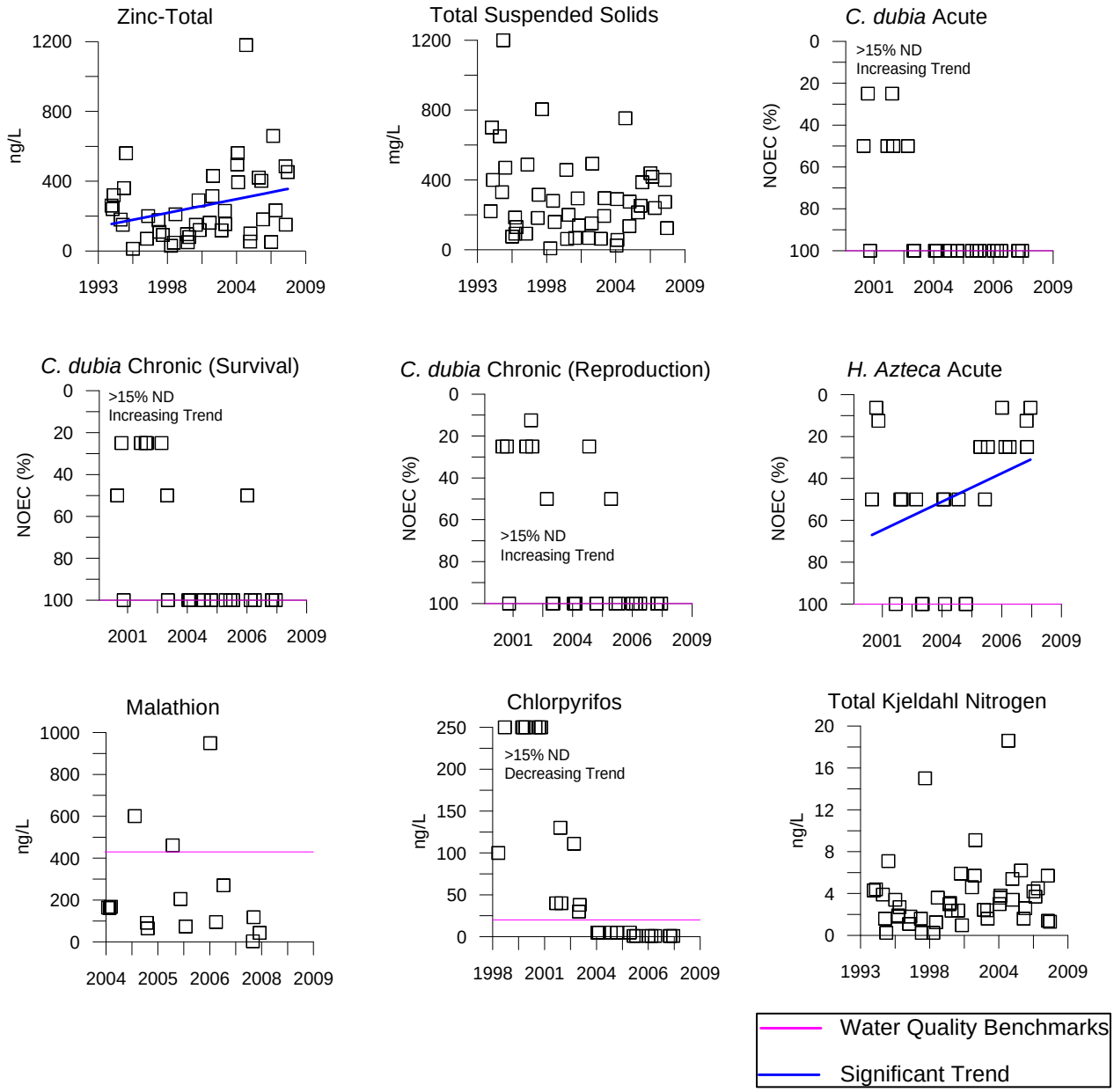

Appendix G: Trends Data

SD8(1) trend results

Analyte		p-value	Trend
Dissolved metals	Cadmium (Cd)	0.002	Decreasing*
	Copper (Cu)	0.361	
	Lead (Pb)	0.136	
	Zinc (Zn)	0.195	
Total Metals	Cadmium (Cd)	0.09	
	Copper (Cu)	0.045	Increasing
	Lead (Pb)	0.381	
	Zinc (Zn)	0.038	Increasing
General Chemistry	Total Hardness as CaCO3	0.061	
	Total Suspended Solids	0.251	
Nutrients	Nitrate	0.029	Decreasing
Pesticides	Chlorpyrifos	<.001	Decreasing*
	Diazinon	0.078	
	Malathion	0.144	
Toxicity	*Ceriodaphnia* Acute	0.006	Increasing*
	Ceriodaphnia Chronic survival	0.007	Increasing*
	Ceriodaphnia Chronic reproduction	0.007	Increasing*
	Hyalella Acute (survival)	0.037	Decreasing

*Because the dataset consisted of greater than 15% non-detect values or greater than 15% NOEC values of 100 percent, trends were not considered to be valid.

DPR2 trend results

Analyte		p-value	trend
Dissolved Metals	Cadmium (Cd)	0.357	
	Copper (Cu)	0.291	
	Lead (Pb)	0.18	
	Zinc (Zn)	0.476	
Total Metals	Cadmium (Cd)	0.214	
	Copper (Cu)	0.214	
	Lead (Pb)	0.476	
	Zinc (Zn)	0.437	
General Chemistry	Total Hardness as CaCO3	0.08	
	Total Suspended Solids	0.251	
Nutrients	Nitrate	0.38	
Pesticides	Chlorpyrifos	0.015	Decreasing
	Diazinon	0.019	Decreasing
	Malathion	0.38	
Toxicity	*Ceriodaphnia* Acute	0.251	
	Ceriodaphnia Chronic survival	0.271	
	Ceriodaphnia Chronic reproduction	0.18	
	Hyalella Acute	0.271	

Appendix A

Signed Certification Statements

January 2009

SUBJECT: STATEMENT OF CERTIFICATION FOR THE SAN DIEGO BAY WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FOR FISCAL YEAR 2007-2008

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott W. Huth
Director of Public Services
City of Coronado

SAN DIEGO COUNTY
REGIONAL AIRPORT AUTHORITY

P.O. BOX 82776, SAN DIEGO, CA 92138-2776
619.400.2400 WWW.SAN.ORG

January 20, 2009

Subject: Statement of Certification for the 2007-2008 San Diego Bay Watershed URMP Annual Report

I certify under penalty of law that the San Diego County Regional Airport Authority participated in the development of the fiscal year 2007-2008 Watershed Urban Runoff Management Program Annual Report for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paul Manasjan
Director, Environmental Affairs Department
San Diego County Regional Airport Authority

SAN DIEGO
INTERNATIONAL
AIRPORT

THE CITY OF SAN DIEGO

RE: Statement of Certification
San Diego Bay Watershed Urban Runoff Management Program
Fiscal Year 2008 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2008 San Diego Bay Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

1/23/09
Date

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350

CITY OF CHULA VISTA
Public Works Department

January 23, 2009
File # 0780-72-KY181

San Diego Bay Watershed Urban Runoff Management Program
Annual Report for Fiscal Year 2007-2008

Statement of Certification

"I certify under penalty of law that the City of Chula Vista participated in the development of the Fiscal Year 2007-2008 Watershed Urban Runoff Management Program Annual Report for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

MATT LITTLE
ASSISTANT DIRECTOR OF PUBLIC WORKS
CITY OF CHULA VISTA

H:\NPDES\Watershed\WURMP Certified Statement 2009.doc

1800 Maxwell Road, Chula Vista, CA 91911 | www.chulavistaca.gov | (619) 397-6000 | fax (619) 397-6259

The City of Imperial Beach

(619) 423-8311
(619) 429-4861 Fax

PUBLIC WORKS
825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

January 22, 2009

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for FY 2007-2008 were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

CITY OF
LA MESA
JEWEL of the HILLS

SANDRA L. KERL
CITY MANAGER

January 2009

RE: STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sandra L. Kerl
City Manager

8130 ALLISON AVENUE • LA MESA, CA 91941 • TEL: 619.667.1105 FAX: 619.462.7528

Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signatory

Jan. 23, 2009
Date

Name: Graham Mitchell
Title: City Manager for City of Lemon Grove
Phone No: 619-825-3800

January 2009

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Maryam Babaki, City Engineer
Engineering Department
City of National City

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2007-2008 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Plan (WURMP) FY 2007-2008 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2007-2008 San Diego Bay Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-21-09
Date

Appendix B

San Diego Bay WURMP Meeting Schedule

Table B-1. San Diego Bay WURMP Meeting Summary.

MEETING DATES	GENERAL TOPICS
August 21, 2007	• Watershed Strategy – Finalize Baseline Evaluations • Draft WURMP Document Responsibilities • Discussion of RCD Watershed Council Proposal for the Upper San Diego Bay WMA
September 25, 2007	• Watershed Strategy – Discussion of Activities • Draft WURMP Review Schedule • Schedule Monthly Meetings
October 22, 2007	• Draft WURMP – Strategy & Activities, Review & Timelines • 2006-07 Annual Report – Timelines & Responsibilities
November 5, 2007	• Draft WURMP – Strategy & Activities, Review & Timeline • 2006-07 Annual Report – Timelines & Responsibilities
November 28, 2007	• Regional WURMP Update – Weston Water Quality Report • Draft Annual Report • Draft WURMP
December 12, 2007	• Draft Annual Report – Update on progress • Draft WURMP – Draft Review & Comments
January 15, 2008	• Draft Annual Report – Reviews complete, Final next week, Certification Statements due • Draft WURMP – Review Comments (Sects. 1,3,4), Status (Sects. 2 & 5) • Creek to Bay Cleanup
February 12, 2008	• Creek to Bay Presentation – ILACSD • Final WURMP Distribution • Draft WURMP – Section Updates
March 6, 2008	• Draft WURMP – Final Section Review • Certification Statements Due Date
April 10, 2008	• Distribute Final WURMP • Creek to Bay Update • MS4 Targeted Monitoring Discussion • Weston Water Quality Report Presentation
May 15, 2008	• Regional Board Audit Presentation • MS4 Targeted Monitoring Sites Update • Source ID Studies
June 5, 2008	• Elementary Institute of Sciences – Presentation on School Mentoring Program • Region Board – WURMP Audit Update • WESTON Presentation – Monitoring Report Format Changes • Watershed Activities Discussion • Update on Port of San Diego Monitoring Data

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Appendix C

Updated Land Use Map

SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Land Use Map

Legend

- Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)
Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

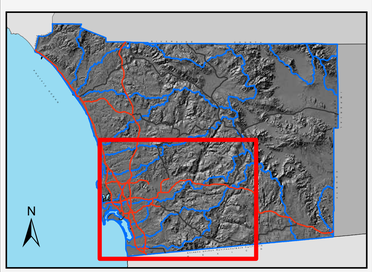

County of San Diego
Department of Planning and Land Use
DPLU GIS
SanGIS

PRINTED : 02/04/2008

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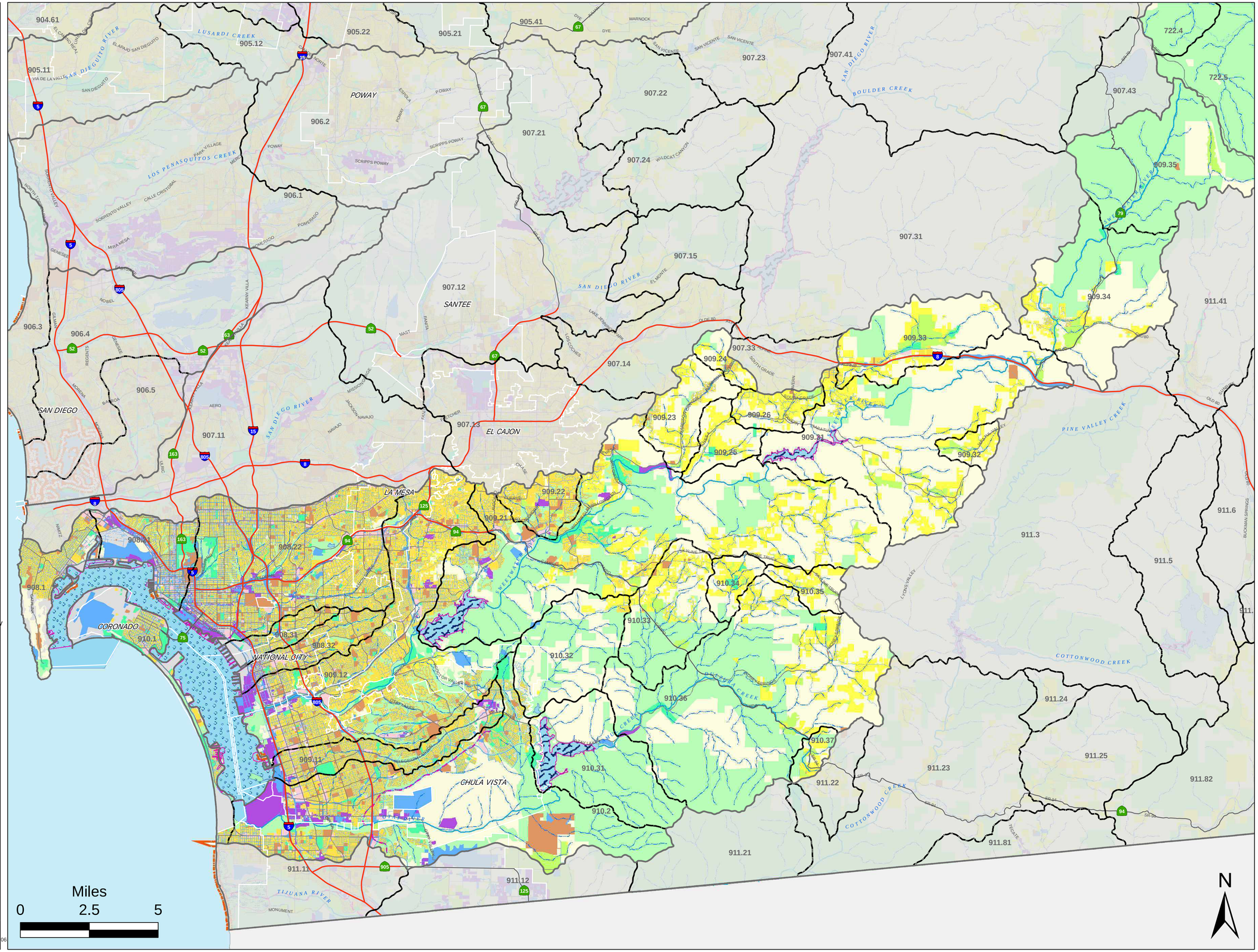

Appendix D

Likely Pollutant Sources

Table D-1. Likely Sources of Pollutants.

HA	Pollutant	Watershed Strategy Recommendation	Land Use Category	Pollutant Generating Activities
908.1	Bacteria	Additional Monitoring	Business (6%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (32%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (16%)	Trash
			Parks (2%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
	Gross Pollutants	Additional Monitoring	Construction (.03%)	Demolition, Storage and Disposal of Hazardous Materials, Fueling, Stockpiling of Materials
			Streets and Roadways (16%)	Trash, Repair Work
			Parks (2%)	Storage and Disposal of Hazardous Materials, Cleaning Facilities
	Metals	Additional Monitoring	Business (6%)	Outdoor Operations, Outdoor Storage, Waste Handling, Parking Areas, Vehicle/Equipment Maintenance
			Residential (32%)	Trash and Debris, Improper Disposal of Hazardous Household Waste, Home and Vehicle or Maintenance
			Streets and Roadways (16%)	Vehicle Usage, Repair Work
			Parks (2%)	Storage and Disposal of Hazardous Materials, Landscape Maintenance, Cleaning Facilities
	Oil & Grease	Additional Monitoring	Business (6%)	Outdoor Operations, Outdoor Storage, Waste Handling, Parking Areas, Vehicle or Equipment Maintenance, Fueling
			Residential (32%)	Trash and Debris, Improper Disposal of Hazardous Household Waste, Home and Vehicle Maintenance
			Streets and Roadways (16%)	Vehicle Usage, Repair Work
			Parks (2%)	Storage and Disposal of Hazardous Materials, Cleaning Facilities
	Pesticides	Additional Monitoring	Business (6%)	Outdoor Operations, Outdoor Storage, Landscaping, Over-Irrigation of Lawns
			Residential (32%)	Landscaping, Over-Irrigation of Lawns
			Parks (2%)	Improper Disposal of Hazardous Household Waste

HA	Pollutant	Watershed Strategy Recommendation	Land Use Category	Pollutant Generating Activities
908.2	Bacteria	Load Reductions	Business (12%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (40%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (27%)	Trash
			Parks (3%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
	Metals	Load Reductions	Business (12%)	Outdoor Operations, Outdoor Storage, Waste Handling, Parking Areas, Vehicle or Equipment Maintenance
			Residential (40%)	Trash and Debris, Improper Disposal of Hazardous, Household Waste, Home and Vehicle or Maintenance
			Streets and Roadways (27%)	Vehicle Usage, Repair Work
			Parks (3%)	Storage and Disposal of Hazardous Materials, Landscape Maintenance, Cleaning Facilities
	Sediment	Source Identification	Business (12%)	Outdoor Operations, Parking Areas
			Residential (40%)	Landscaping, Over-Irrigation of Lawns, Trash and Debris
			Construction (.26%)	Grading, Stockpiling of Materials, Loading/Unloading
			Streets and Roadways (27%)	Trash, Repair Work
			Parks (3%)	Landscape Maintenance
	Pesticides	Source Identification	Business (12%)	Outdoor Operations, Outdoor Storage, Landscaping, Over-Irrigation of Lawns
			Residential (40%)	Landscaping, Over-Irrigation of Lawns, Improper Disposal of Hazardous Household Waste
			Parks (3%)	Storage and Disposal of Hazardous Materials, Landscape Maintenance
908.3	Bacteria	Load Reductions	Business (7%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (46%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (23%)	Trash and Debris
			Parks (4%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
	Sediment	Source Identification	Business (7%)	Outdoor Operations, Parking Areas
			Residential (46%)	Landscaping, Over-Irrigation of Lawns, Trash and Debris
			Construction (4%)	Grading, Stockpiling of Materials, Loading/Unloading

HA	Pollutant	Watershed Strategy Recommendation	Land Use Category	Pollutant Generating Activities
			Streets and Roadways (23%)	Trash, Repair Work
			Parks (4%)	Landscape Maintenance
909.1	Bacteria	Load Reductions	Business (8%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (44%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (18%)	Trash and Debris
			Parks (5%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
909.2	Pesticides	Load Reductions	Business (3%)	Outdoor Operations, Outdoor Storage, Landscaping, Over-Irrigation of Lawns
			Residential (28%)	Landscaping, Over-Irrigation of Lawns, Improper Disposal of Hazardous Household Waste
			Parks (2%)	Storage and Disposal of Hazardous Materials, Landscape Maintenance
910.1	Bacteria	Load Reductions	Business (8%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (15%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (12%)	Trash and Debris
			Parks (9%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities
	Gross Pollutants	Source Identification	Construction (.11%)	Demolition, Storage and Disposal of Hazardous Materials, Fueling, Stockpiling of Materials
			Streets and Roadways (12%)	Trash and Debris, Repair Work
			Parks (9%)	Storage and Disposal of Hazardous Materials, Cleaning Facilities
910.2	Bacteria	Source Identification	Business (13%)	Outdoor Operations, Outdoor Storage, Waste Handling
			Residential (18%)	Trash and Debris, Pet Waste, Sewer Overflows, Over-Irrigation of Lawns/Gardens
			Streets and Roadways (9%)	Trash and Debris
			Parks (3%)	Trash and Debris, Pet Waste, Landscape Maintenance, Cleaning Facilities

Table D-2. Likely Business Sources.

HA	Pollutant	Likely Sources	Unknown Sources
908.1	Bacteria	Food, landscaping, nursery, POTW	Fabricated metal and marinas
	Gross Pollutants	Auto repair, food, fuel, and landscaping	Airplane repair, boat repair, fabricated metals, maintenance, marina, nursery, POTW
	Metals	Auto repair, auto paint, auto repair, boat repair, fabricated metal, fuel, maintenance, marina	Nursery and POTW
	Oil and Grease	Airplane repair, auto paint, auto repair, boat repair, fabricated metal, food, fuel, maintenance, marina	POTW
	Pesticides	Landscaping and nursery	Fabricated metal , food, maintenance, and marina
908.2	Bacteria	Food, landscaping, Nursery, and POTW	Animal facilities, fabricated metals, landfill, marina, motor freight, recycle
	Metals	Airplane repair, auto paint, auto repair, boat repair, equipment, fabricated metal, fuel, landfill, maintenance, marina, motor freight, primary metal, recycle	Airfield, nursery and POTW
	Sediment	Animal facilities, landscaping, maintenance, nursery, recycle	Airfield, fabricated metal, landfill, motor freight, POTW, and primary metal
	Pesticides	Landscaping and nursery	Airfield, animal facilities, fabricated metals, food, landfill, maintenance, marina, motor freight, primary metal, and recycle
908.3	Bacteria	Food, nursery, and recycle	Chemical allied products, fabricated metal, and motor freight
	Sediment	Maintenance, nursery, and recycle	Chemical allied products, fabricated metal, motor freight, and primary metal
909.1	Bacteria	Food, landscaping, nursery, and POTW	Animal facilities, chemical allied products, fabricated metal, landfill, marina, and motor freight
909.2	Pesticides	Nursery and landscaping	Animal facilities, chemical allied products, fabricated metal, food, landfill, and maintenance yard
910.1	Bacteria	Food, landscaping, nursery, and POTW	Recycle
	Gross Pollutants	Auto repair, food, fuel, and landscaping	Boat repair, maintenance yard, nursery, and POTW
910.2	Bacteria	Food, landscaping, nursery, and POTW	Landfill, marina, motor freight, and recycle

Appendix E

Water Quality Activity Summary Sheets

LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES

TRASH AND DEBRIS-RELATED ACTIVITIES

PET WASTE BAG COLLABORATIVE WATERSHED ACTIVITY – 1

ACTIVITY DESCRIPTION

The Pet Waste Bag Collaborative Watershed Activity addresses urban runoff from jurisdictional parks and recreational areas. It is believed that pet waste may be a potential source of high priority water quality problems such as bacteria. The use of pet waste bags helps to reduce pet waste from entering the storm water conveyance system, thereby addressing the high priority water quality problem, bacteria. Two important goals of this activity are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to cleanup after their pets. Providing pet waste bags to citizens may result in load reductions as the activity enables proper disposal of pet waste and associated pollutant categories such as bacteria.

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of pet waste bag dispensers added by a Copermittee as part of this activity or, 2) the number of bags removed and used from each of the dispensers, or 3) by estimating the bacteria loading based on the number of bags distributed. Implementation of educational elements of this activity may include new and/or improved signage in municipal parks describing the environmental benefits of using the pet waste bags.

New dispensers were added to the San Diego Bay WMA by three Copermittees. The Airport Authority installed one pet waste bag dispenser in their second pet relief area that was installed this year within their jurisdiction, while the City of Lemon Grove installed one new doggie bag dispenser in front of their city hall. The County of San Diego also installed eight new dispensers and added six new parks into their program in FY 07-08.

In addition, the City of Chula Vista evaluated their parks and trails to determine if pet waste bags were being utilized by park and trail users. During the FY 07-08, the City of Chula Vista visited 48 municipal parks and noted whether or not there was a pet waste dispenser in each and if the dispensers were being used. The County and the Airport Authority also estimated the amount of pet waste removed in their jurisdictions. Please refer to the San Diego Bay WURMP document's Pet Waste Bags summary sheets (1A through 1E) for more information on the individual Copermittees' Pet Waste Bag activities.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. TMDLs are being

developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, Bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek.

TIME SCHEDULE FOR IMPLEMENTATION

Table E-1 below lists the San Diego Bay Copermittees participating in the Pet Waste Bag Collaborative Watershed Activity during this reporting period and in which HA(s) the activity is being conducted.

Table E-1. San Diego Bay Copermittees Participation in Pet Waste Bag Watershed Activity.

	Hydrologic Area								
Copermittee	**908.1**	**908.2**	**908.3**	**909.1**	**909.2**	**909.3**	**910.1**	**910.2**	**910.3**
Airport Authority		X							
City of Lemon Grove		X		X					
City of Chula Vista				X				X	X
City of La Mesa		X		X					
City of Coronado							X		
County of San Diego				X	X	X		X	X
Port of San Diego	X	X	X	X			X		

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of Lemon Grove
- Port of San Diego
- City of La Mesa
- Airport Authority
- City of Coronado
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. This activity directly addresses and abates a source of bacteria in all HAs.

EFFECTIVENESS ASSESSMENT

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of pet waste bag dispensers added within their jurisdiction, 2) identifying the number of bags removed and used from newly added and existing dispensers, and/or 3) estimating annual bacteria load reductions. For additional effectiveness assessment information for the County of San Diego's Pet Waste Bag Program, please refer to Activity Sheet 1A in this Annual Report

Additional Dispensers

Table E-2 presents the three San Diego Bay Copermittees that implemented additional pet waste bag dispensers in the San Diego Bay WMA. There were ten dispensers added during the FY 07-08.

Table E-2. Pet waste Dispensers Added in FY 07-08.

Copermittees	New Dispensers	Locations
City of Lemon Grove	1	• In front of the Lemon Grove City Hall
Airport Authority	1	• In a newly added pet relief area
County of San Diego	8	• Hilton Head, Cottonwood 3 (Existing Location, 1 new dispenser) • Hillsdale Park (New Location, 1 dispenser) • Lonnie Brewer Park (New Location, 1 dispenser) • Steele Canyon Park (New Location, 1 dispenser) • Cottonwood Park (New Location, 1 dispenser) • Woodhaven Park (New Location, 2 dispensers) • Nancy Jane Park (New Location, 1 dispenser)

Pet Waste Bags Dispensed

The San Diego Bay Copermittees maintained their existing pet waste bag dispensers in FY 07-08. Table E-3 list the total number of pet waste bags dispensed per Copermittee. The total number of pet waste bags dispensed during FY 07-08 was approximately 705,480.

Table E-3. Number of Pet Waste Bags Dispensed.

Copermittees	Number of Pet Waste Bags Used
Port of San Diego	354,000
City of Lemon Grove	500
City of La Mesa	9,000
City of Chula Vista	10,000
City of Coronado	280,000
Airport Authority	300
County of San Diego	51, 680
City of National City	*
City of Imperial Beach	**

* Number of doggie bag dispensed unknown
** Pet waste bag dispensers were maintained by a private citizen, number of pet waste bags dispensed unknown for FY 07-08

The use of pet waste bags helps to reduce bacteria from entering the storm water conveyance system. The increased use of pet waste bags by pet owners is another example of positive behavioral change. Eight of the ten San Diego Bay Copermittees provided pet waste bags at various public locations, typically, parks and public walkways. By providing pet waste bags and the appropriate educational signage describing the environmental benefits of the activity, the San Diego Bay Copermittees may be able to increase public awareness that removal of pet waste is a beneficial activity for water quality that all pet owners can be involved in.

The manner in which pet waste bag data is recorded can vary from each of the jurisdictions, leaving room for variability in the data from year to year. Some jurisdictions report the number of pet waste bags that are purchased during the fiscal year, while others report the number of bags used during the fiscal year. This can cause data variation because some jurisdictions may be starting up new pet waste programs, causing an increase in the number of pet waste bags reported. Others may have well-established programs and just maintain their existing pet waste stations.

During this reporting period, the City of Chula Vista storm water management section staff also evaluated 48 municipal parks for the presence of pet waste bag stations. Eleven were found to have pet waste stations. In parks where these stations were used, it was noted that there was less pet waste left on the ground compared to those without stations. It was found that the pet waste bag stations have signage and plastic bags inserted into PVC piping or metal bins to hold plastic bags, which are filled and maintained by citizens. The signage on the pet waste stations encourages pet owners to pick up after their pet(s) and reminds them that it is the law according to Chula Vista Municipal Code. Based on the findings, City storm water staff will work with the Parks Department to encourage installation of these stations at all parks.

Bacteria Load Reductions

The County of San Diego and the Airport Authority calculated the annual bacteria load reductions. Utilizing the assumptions from the San Elijo Lagoon Report the County estimated 51,680 pet waste bags were utilized from the sixteen bag dispensers in their jurisdictions in FY 07-08. By using the assumptions above, the County estimated the amount of pet waste removed to be 10,336 lbs. The Airport Authority based on a separate literature search that approximately 0.25 lb of pet feces contained 2.6×10^9 fecal coliform bacteria. Based on the literature values, the estimated load reduction was approximately 75 lbs. of pet waste and approximately 7.8×10^{11} fecal coliform bacteria associated with the waste.

PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS – 1A

ACTIVITY IMPLEMENTATION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County maintains 16 stations at a total of 13 parks, including 6 new locations (parks) and 7 new dispensers within the San Diego Bay WMA. The parks and the number of dispensers include:

- Otay Lake Park, Otay Valley Open Space Preserve & Regional Park (1 dispenser)
- Eucalyptus Park (1 dispenser)
- Goodland Acres Park (1 dispenser)
- Hilton Head Park (2 dispensers, 1 new)
- Lamar Street Park (1 dispenser)
- Spring Valley Park, Community & Teen Center (1 dispenser)
- Sweetwater Regional Park/Summit (2 dispensers)
- Hillsdale Park (new location, 1 new dispenser)
- Lonnie Brewer Park (new location, 1 new dispenser)
- Steele Canyon Park (new location, 1 new dispenser)
- Cottonwood Park (new location, 1 new dispenser)
- Woodhaven Park (new location, 2 new dispensers)
- Nancy Jane Park (new location, 1 new dispenser)

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a priority water quality problem in the San Diego Bay WMA. Parks and pet waste in particular are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Table E-4. County of San Diego Pet Waste Program FY 07-08.

Facility Name	FY 07-08		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Otay Lake Park, Otay Valley Open Space Preserve & Regional Park	1	4,199	840
Eucalyptus Park	1	4,199	840
Goodland Acres Park	1	4,199	840
Hilton Head Park	2	8,398	1,680
Lamar Street Park	1	4,199	840
Spring Valley Park, Community Center and Teen Center	1	4,199	840
Sweetwater Regional Park/Summit	2	8,398	1,680
Hillsdale Park	1	4,199	840
Lonnie Brewer Park	1	4,199	840
Steele Canyon Park	1	4,199	840
Cottonwood Park	1	4,199	840
Woodhaven Park	2	8,398	1,680
Nancy Jane Park	1	4,199	840
Total	**16**	**67,184**	**13,437**

Cumulatively, the County maintains 16 stations among 13 County Parks within the San Diego Bay WMA. These stations distributed approximately 67,184 bags during the FY 07-08 reporting period, preventing an estimated 13,437 lbs. of pet waste from entering the watershed as

presented on Table E-4. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

STORM DRAIN LITTER CONTROL TECHNIQUES – 2

ACTIVITY DESCRIPTION

One of the collaborative efforts the San Diego Bay Copermittees identified in the WURMP Program is the implementation of storm drain litter control techniques. Storm drain inserts, filters, and other techniques are being used to reduce litter, trash and sediment pollutant loads from entering the San Diego Bay WMA.

During this reporting period, the Port of San Diego installed 25 storm drain filters in three parks adjacent to the San Diego Bay — Tuna Harbor Park, Embarcadero Marina Park North, and Embarcadero Marina Park South. The Port of San Diego identified these locations because they experience significant levels of public use and are locations of special events throughout the year. The storm drain BMPs installed at the parks were designed to absorb oil and grease and prevent trash and sediment from entering into the storm water conveyance system. The storm drains were visually inspected on a number of occasions to determine cleaning needs. Cleaning of the filters occurred on one occasion within two of the three parks prior to the end of FY 07-08. The amount and types of trash and debris collected in each filter varied among the three locations where filters were installed.

The Airport Authority, the City of San Diego, and the City of Coronado were involved in the planning stage of this activity during this reporting period. Please refer to the San Diego Bay WURMP Document's Implementation of Storm Drain Litter Control Techniques summary sheets (2A through 2D) for more information on the individual Copermittees' Storm Drain Litter Control activities.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Jurisdiction	Permit Year 07-08	Permit Year 08-09
Port of San Diego	Implementation	Assessment
Airport Authority	Planning	Implementation
City of Coronado	Planning	Implementation
City of San Diego	Planning	Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego
- Airport Authority
- City of San Diego
- City of Coronado

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on sediment and trash load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous debris. The Watershed Strategy identifies sediment and trash as high priority water quality problems for the watershed HAs. Though sediment is identified as a high priority water quality problem in both 908.2 and 908.3 HAs, all HAs will benefit from this activity. While this activity may quantifiably demonstrate the reduction of sediment and trash loads, other priority pollutants known to be associated with sediment, such as bacteria and metals, may also be reduced. The Watershed Strategy acknowledges the identification of the source of sediment is needed in the majority of the San Diego Bay WMA. The Storm Drain Litter Control Technique Activity is an important method to reducing pollutant loading throughout the San Diego Bay WMA.

EFFECTIVENESS ASSESSMENT

During this reporting period, the Port of San Diego developed measures to assess the effectiveness of the storm drain filters. The measures include:

1. Characterize the general activities which occur in the parks
2. Evaluate the types of trash and debris collected
3. Determine the effectiveness of the filters to capture trash and other debris
4. Establish the frequency of cleaning
5. Quantify the amount of trash and debris removed
6. Determine feasibility of maintenance

The locations where the storm drain filters were implemented were chosen due to the levels of use by the public and their use as sites for numerous special events throughout the year. Visual inspections of the filters allowed Port of San Diego staff to begin to assess the ability of the filters to capture debris and determine the type of debris collected in the storm drains. The debris collected consisted primarily of trash, leaves, and sediment. The data obtained through the visual inspections will be useful in the determination of an adequate cleaning frequency at these locations. The storm drain filters were inspected on a number of occasions to determine the frequency at which the filters should be cleaned. The storm drain filters were installed in March and April 2008, and required only a single cleaning prior to the end of FY 07-08. Cleaning of the storm drain filters took place within two of the three parks at that time by the Port of San Diego's General Services staff in FY 07-08. Visual assessments will continue during FY 08-09 in order to collect more data to determine the feasibility and required cleaning frequency. While a qualitative evaluation of the type of debris collected was completed, a quantitative assessment was not completed during this reporting period.

ENHANCED STREET SWEEPING ACTIVITIES – 3

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees have implemented street sweeping-focused activities to reduce the accumulation of metals, sediments, and trash. This watershed collaborative activity includes efforts undertaken by Copermittees to enhance their jurisdictional street sweeping programs. The San Diego Bay Copermittees participated as part of this collaborative activity by either 1) increasing the frequency of street sweeping in their jurisdictions above the minimum required jurisdictional frequencies, or 2) utilizing more effective street sweeping equipment. This activity summary includes the individual Copermittee efforts described in the WURMP Document activities 3A-3F.

Increased Frequency

According to the jurisdictional requirements presented in the Municipal Permit, municipal areas must prioritize and sweep streets and parking lots based upon the amount of trash and debris accumulated. All Copermittees participating in this watershed activity have prioritized areas and have undertaken additional sweeping that is more frequent than the Municipal Permit's jurisdictional requirements. The Airport Authority was in the planning phase of this activity in FY 07-08 and will be implementing this activity within their jurisdiction in FY 08-09. The City of Imperial Beach is scheduled to be in the planning phase of this activity in FY 08-09.

Targeted Aggressive Street Sweeping Project

A 24-month street sweeping effectiveness study, or the Targeted Aggressive Street Sweeping Project, was initiated by the City of San Diego to evaluate the effectiveness of new street sweeping equipment and different sweeping frequencies which may result in more efficient pollutant removal. The study investigates the effectiveness of vacuum-assisted street sweepers compared to mechanical sweepers in reducing the accumulation of metals on City of San Diego streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study is to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study includes the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency.

The City of San Diego is using the prioritization process that is outlined in its *Strategic Plan for Watershed Activity Implementation* (November 2007) to target areas within the Chollas Creek Watershed. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study, and meetings held with relevant City staff, the routes that have been selected

are in the two highest priority sectors of the Chollas Creek Watershed that have a higher potential for metals loading.

In anticipation of the start of sweeping, the City of San Diego conducted the following community outreach and information dissemination efforts in FY 2008:

- Community presentation held in March 2008 in Chollas Creek area
- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Newspaper display advertisements placed in community newspapers
- Door hangers distributed in Chollas Creek area
- Information shared with Council Offices
- Press event and release conducted by Mayor's Office
- E-mail blasts and calls made to inform stakeholders of project

The City installed "no parking" signs along the project sweeping route in the Chollas Creek area from December 2007 through March 2008. Sweeping in the Chollas Creek area began in April 2008 along with "no parking" sign enforcement. The City's consultant conducted debris baseline monitoring and characterization. Table E-5 below summarizes the number of broom miles swept and the pounds of debris removed during the reporting period. Table E-5 also estimates the number of broom miles swept and the pounds of debris removed during the report period above and beyond what would have been swept and removed per JURMP requirements.

Table E-5. Estimates of Miles Swept and Pounds of Debris Removed in FY 2008.

	Pounds Debris Removed	Broom Miles Swept***
JURMP Requirement*	51,460	1,073
Street Sweeping Project**	74,340	1,270
Total	125,800	2,343

Notes:
* Assumes JURMP requirement of once-a-week sweeping per side in general for streets included in project.
** Assumes street sweeping project in general increased sweeping frequency from once a week to twice a week. Figures also include additional pounds and miles not used in estimating pounds and miles under JURMP requirement.
*** Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Based on this information, the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load reduction of metals (a high priority water quality problem in the San Diego Bay WMA), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2008.

According to the Regional Board's comments[1] for the Mission Bay and La Jolla WURMP, the improvements from street sweeping are expected to become "business as usual" and incorporated into the JURMP. The City is currently still in the midst of the street sweeping study and is working to optimize the activity. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as "business as usual" at this time. Additionally, specific changes to the JURMP are not yet planned as the study is ongoing at this time. Once the activity is optimized, the City anticipates incorporating the most efficient activities into the JURMP to gain the strongest improvements regarding storm water discharges. For further background information on the study, please refer to the WURMP Document watershed activity 3D.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303(d) lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for sediment toxicity, benthic community effects, and the metals copper, lead and zinc. Two total Maximum Daily Loads (TMDLS) have been established for metals in the San Diego Bay under the Shelter Island Yacht Basin Dissolved Copper TMDL and the Chollas Creek Dissolved Copper, Lead, and Zinc TMDL. The RWQCB is also developing additional TMDLs in Paleta, Switzer and Chollas Creek.

Street sweeping enhancement activities may have beneficial effects by reducing the loading of pollutants such as sediment, metals, and trash that are discharged to MS4s. A variety of other pollutants are known to be associated with sediment, such as bacteria, may also be reduced. The Enhanced Street Sweeping Program is applicable to these TMDLs to the extent it addresses the control of sources of copper and other metals, trash, sediment, and other pollutants that may be associated with sediments, such as oil and grease and organics, as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

The implementation schedule for the enhanced street sweeping water quality activity is presented for FY 07-08 and FY 08-09.

Jurisdiction	Permit Year 07-08	Permit Year 08/09
Port of San Diego	Implementation	Assessment
Airport Authority	Planning	Implementation
City of Coronado	Planning	Implementation
City of La Mesa	Implementation	Implementation
City of San Diego	Planning/Implementation	Implementation
City of Imperial Beach	-	Planning
City of National City	Implementation	Implementation

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

The City of Imperial Beach is scheduled to be in the planning phase of this activity in FY 08-09 and, if necessary, will increase street sweeping frequency in FY 09-10. The City of Imperial Beach will focus on increasing sweeping following storm events, in order to capture sediment and trash that then causes flooding and increased movement of sediment from dirt alleys and "unimproved" land into the storm drains. Planning for the City of San Diego's pilot project began in September 2006. Sweeping started in the spring of 2008 and is anticipated to continue through the summer of 2010. Debris testing and water quality monitoring is being conducted throughout the pilot project to assess effectiveness in removing metals from City of San Diego streets.

PARTICIPATING WATERSHED COPERMITTEES

Table E-6 below lists the San Diego Bay Copermittees participating in the street sweeping activity during this reporting period, the enhancement that was used, and the HA(s) where the activity occurred.

Table E-6. San Diego Bay Copermittee Participation in Street Sweeping.

Copermittee	Hydrologic Area									Enhancement Mechanism	
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Increased Sweeping Frequency	Higher Efficiency Equipment
City of National City			X	X						X	
City of Coronado							X			X	
City of San Diego		X								X	X
City of La Mesa		X		X						X	
Port of San Diego	X	X	X	X				X		X	

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping Enhancement activity targets reduction of high priority water quality problems such as metals, sediments, and trash. Metals were identified as a high priority water quality problem for HA 908.1 and HA 908.2. Sediment and trash were identified as high priority water quality problems in HAs 908.2 and 908.3. Streets are identified as a major source

category comprising approximately 20% of the acreage within each HA. Additionally, street sweeping may also address residential pollution that accumulates in gutters along residential thoroughfares. Residential acreage in these HAs also comprises a large percentage. By increasing sweeping frequencies or using more efficient equipment, Copermittees undertaking this activity improved their ability to reduce pollutant loading from major sources within the high priority hydrologic areas.

EFFECTIVENESS ASSESSMENT

Increased Frequency

The effectiveness of this activity has been assessed by evaluating the additional amount of materials that were removed from the watershed's streets and roadways. Load reductions comprise a level four assessment through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Table E-7 shows the increase in materials removed due to greater frequency of street sweeping by each participating Copermittee.

Table E-7. Estimation of Pollutant Load Reduction Due to Increased Frequency.

Jurisdiction	JURMP Baseline Material (lb)	Additional Materials Removed (lb)	JURMP Baseline Curb Miles	Additional Curb Miles 07/08
City of National City	442,000	1,860,000	2,970	12,530
City of Coronado	27,549	376,051	553	7542
City of San Diego	51,460	74,340	1,073*	1,270*
City of La Mesa	326,405	1,057,595	1,954	6,331
Port of San Diego	40,000	80,000	500	1,000

* "Broom miles" and not "curb miles" were used to track the distance swept.

Weight of baseline and additional material were estimated based on the overall amount of material removed during the year and the relative proportions of the overall sweeping attributable to JURMP baseline sweeping and to additional sweeping. For example, if 100,000 pounds were removed, 3,000 miles of JURMP baseline sweeping was done, and 2,000 miles of additional sweeping was done, the baseline material would be recorded as 60,000 pounds (60% of the overall amount) and the additional sweeping material would be recorded at 40,000 pounds (40% of the overall amount). The City of San Diego estimated the weight of baseline and additional material by using "broom miles". A "broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. The broom mileage does not translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

During this reporting period, the San Diego Bay Copermittees removed an additional 1,724 tons of material and covered and additional 27,403 curb miles (1,270 broom miles for the City of San Diego) within the San Diego Bay WMA through the increased frequency of street sweeping.

Targeted Aggressive Street Sweeping Project

Objectives

The goal of the assessment is to investigate the effectiveness and efficiency of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data will also be evaluated for the purposes of establishing optimal sweeping frequencies.

Results and Analysis

The study included the purchase of two types of vacuum-assisted sweepers; the dedication of Motor Sweeper Operators to the study; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. In FY 2008, a total of 74,340 pounds of debris were removed by mechanical sweepers and a total of 1,270 broom miles were swept.

Conclusions

Further analysis in FY 2009 is underway to address the study objectives, which will include continued debris testing and water quality monitoring.

Watershed: San Diego Bay		
TARGETED AGGRESSIVE STREET SWEEPING PROJECT Assess Effectiveness and Efficiency of Street Sweeping in Reducing Metals Loading		
Management Questions	• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?	
Targeted Measurable Outcomes	• Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement	
Assessment Methods	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)	
Data Recorded	Total pounds of debris removed by mechanical sweepers* (Outcome Level 4)	74,340 pounds
	Total broom miles swept for mechanical sweepers** (Outcome Level 4)	1,270 miles
	Total pounds of debris removed by mechanical sweepers per mile swept (Outcome Level 4)	59 pounds/ mile
Recommended Data	• Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)	

* Assumes street sweeping project in general increased sweeping frequency from once a month to twice a month.
** Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS – 4

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees participated in a number of cleanup events throughout the San Diego Bay WMA. The cleanup events physically removed large amounts trash, debris, and other associated pollutants from the watershed creeks, rivers, streams and shorelines. The events included jurisdictional events as well as watershed-wide efforts that were coordinated by I Love a Clean San Diego and San Diego Coast Keeper. The San Diego Bay Copermittees provided funding by sponsoring various cleanup events and/or participated by soliciting volunteers, working as site captains, and participating in the cleanup events themselves. These events actively promoted a sense of watershed stewardship to the general public and resulted in trash load reductions. Figure E-1 presents the locations of cleanup activities in the San Diego Bay WMA. Cooperative efforts enable the San Diego Bay Copermittees to assess the relative trash loads for each event in each HA and the San Diego Bay WMA and determine whether there is a long-term reduction. Please refer to the San Diego Bay WURMP Document's Cleanup Activity summary sheets (4A through 4H) for more information on the individual Copermittees' Cleanup activities.

In addition, The City of San Diego had planned to implement the Alpha Project for the Homeless, Inc. Cleanup Sponsorship activity in FY 2008 and beyond, but it was inadvertently left out of the San Diego Bay WURMP document and was not included in the Five-Year Strategic Plan. The City of San Diego implemented the activity in FY 2008; however, it will not continue to contract Alpha Project to conduct trash cleanups in FY 2009 and beyond but instead will channel its trash cleanups efforts into other venues. The reporting of this activity will cease with this Annual Report.

In the Regional Board Comment letter[2], Regional Board staff indicated that the locations selected would need to be provided, amount of trash collected at those locations and that the San Diego Bay Copermittees would receive credit only for the first trash cleanup event in the fiscal year. Locations and trash information are provided in the Activity Implementation subsection of this summary sheet. The Copermittees, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the Copermittees also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the Copermittees may choose to continue to implement and report on more than one trash cleanup each year.

[2] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

Figure E-1. San Diego Bay WMA Cleanup Activity Sites.

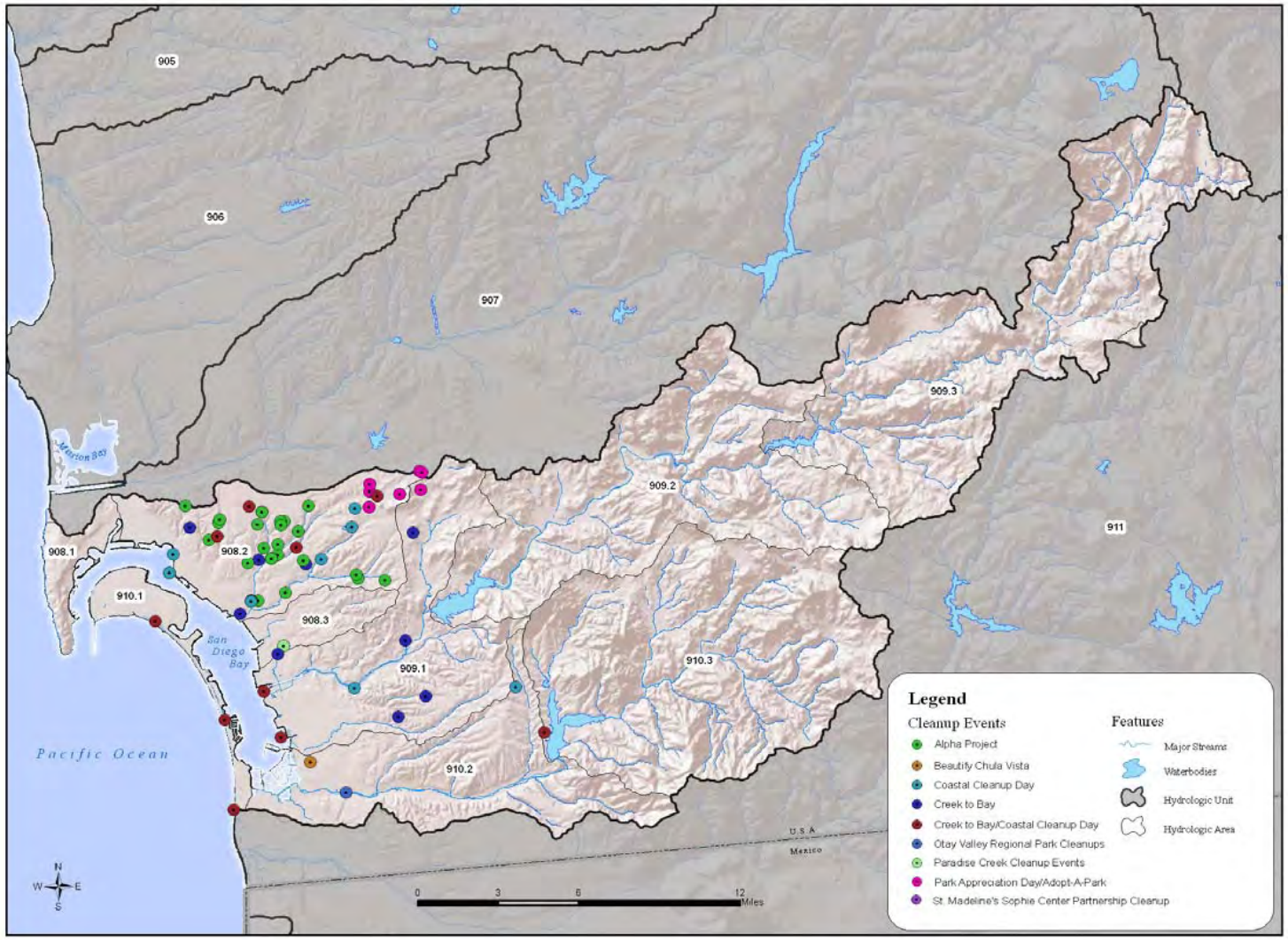

TMDL APPLICABILITY

The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash cleanup measures and programs to be implemented. The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria, sediment toxicity, and benthic community effects. These impairments may be indirectly reduced through the cleanups. The RWQCB is developing TMDLs to protect beneficial uses in the 303d listed impaired water body segments, including Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines and the Paleta, Switzer and Chollas Creek for sediments.

TIME SCHEDULE FOR IMPLEMENTATION

All San Diego Bay Copermittees have actively implemented cleanup events during this reporting period. They recognize the value in cleanup activities and plan to continue to implement this type of activity in all jurisdictions over the next four years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of San Diego
- City of Imperial Beach
- City of Lemon Grove
- County of San Diego
- City of La Mesa
- City of Coronado
- Port of San Diego
- Airport Authority

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash has been identified in the San Diego Bay WURMP document as a high priority water quality problem in 908.2 and 908.3 HAs. Cleanup events aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, bacteria and metals are other high

priority water quality problems that may be reduced indirectly as a result of the removal of trash. Trash often consisted of common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies trash as a high priority water quality problem. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions. Increased awareness and education of the public in all HAs is also an important component. Sponsorship of cleanup events resulted in load reduction of trash and debris directly and bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The cleanup events encouraged stakeholder buy-in and participation in implementing the Watershed Strategy. This often resulted in a level 3 outcome by causing a change in behavior, knowledge, attitude and awareness within the community of how to properly dispose of trash by the individuals involved. A level 4 outcome was also identified in all HAs due to the collection and removal of trash from the conveyance system. Relative pollutant load reductions within the watershed were assessed based on the weight of debris collected.

Table E-8 describes the cleanup event activities the San Diego Bay Copermittees actively implemented during this reporting period, the HA the cleanup event was located, the number of participants, and the amount (lb) of trash removed.

To assess the effectiveness of cleanup activities, the number of people participating as well as the total amount of trash collected has been calculated. The number of people participating in cleanups is utilized to convey a level three outcome to demonstrate changes in behavior in those involved in the cleanups in the San Diego Bay WMA. For a couple of the events hosted by individual Copermittees, participation was accounted for by logging the number of labor hours instead of the number of people present. The amount of overall trash collected was utilized to estimate the load reductions of trash, a level four outcome level, occurring during FY 07-08.

Table E-8. Cleanup Activities for FY 07-08 within the San Diego Bay WMA.

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
Multiple jurisdictions in the San Diego Bay WMA including: City of Coronado, City of La Mesa, Port of San Diego, City of San Diego, Airport Authority	908.2, 908.3, 909.1, 910.1, 910.3	9/15/07	*Coastal Cleanup Day*: • Coronado Central Beach • University Channel in La Mesa • D St. Fill • Chollas Creek • National Avenue	300	10,869
Multiple jurisdictions in the San Diego Bay WMA including: City of Chula Vista, City of Coronado, City of La Mesa, City of National City, Port of San Diego, City of San Diego, Airport Authority	908.2, 908.3, 909.1, 909.2, 910.1	4/26/08	*Creek to Bay*: • Lemon Grove • Chollas Creek (3 locations) • La Mesa • University Channel • Coronado City Beach • Silver Strand State Beach • Barrio Logan • D Street Fill • Paradise Creek Educational Park • Del Rey Canyon • Rice Canyon • J Street Marina • Otay Regional Park (Lower Otay Lake) • Dairy Mart Road • Morrison Pond County Park	600	15,332
Port of San Diego	Multiple Locations	6/07/08	Operation Clean Sweep - A-8 Anchorage	900	3,300
City of La Mesa	908.2, 909.1	3/29/08	Park Appreciation Cleanup Day – 7 municipal parks	-	5 tons
City of La Mesa	908.2, 909.1	Multiple Dates	Adopt A Park and Adopt a Block	1,347 labor hours	-

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
City of Lemon Grove	908.2	5/08	Drainage area at intersection of Ensenada and Bakersfield	-	219
City of Imperial Beach	910.1, 910.2	5/3/08	Home Front Cleanup*	742	356,000
City of San Diego	Multiple Locations**	Multiple Dates	Alpha Project for the Homeless, Inc. Cleanups	180	45,290
City of San Diego	908.2	1/13/08	City Heights Urban Cleanup	37	515
City of Chula Vista	910.2	10/06/07	Beautify Chula Vista	800	2,000
City of Chula Vista	910.2	Multiple Dates	Otay Valley Regional Park Cleanup	5,843 labor hours	390,000
City of Coronado	910.1	6/31/08	Trash cleanup at Coronado Central Beach	30	60

* This was an annual large waste drop off event at one location.
** Alpha Project conducted a cleanup at various locations (G Street Pier Downtown, Florida Canyon, Balboa Park, 47th, National Ave N of 35th, Chollas Creek at 3316 National, Chollas Creek at National, Market Place and Oceanview, City Heights at 43rd and Lexington, City Heights at University and 50th, City Heights at University and 50th, 4907 A Street, Fir Street, Madrone Ave, Akins Ave and 66th, San Vicente, Chollas Creek, University between Front and Al, 1725 Robertson St, Front and Albatross, Upas and Florida, 4402 Federal Blvd, 1970 Panay Ct, Home and Federal, Home and Federal between Fern/31st, Frederick and Whaley, 3678 Wilson Ave, 42nd and Thorn, 3121 Boundary, 3678 Wilson Ave, Lexington, 42nd, 32nd St (and C), and Commercial (7 sites)) in the San Diego Bay WMA at 35 locations on 21 different dates between July 2007 and June 2008.

- Approximately 3,589 people participated in cleanups throughout the San Diego Bay WMA.
- The number of labor hours recorded was 7,190 for the Adopt A Park, Adopt a Block, and Otay Valley Regional Park Cleanup Events.
- The overall amount of trash collected throughout the San Diego Bay WMA during FY 07-08 was 416.8 tons.
- The watershed-wide sponsored cleanup events Creek to Bay coordinated by I Love A Clean San Diego on April 26, 2008 collected 15,332 lbs of trash and involved approximately 600 volunteers.

Additional Assessments - Alpha Project for the Homeless, Inc. Cleanup Activity

Objectives

The City of San Diego partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups throughout the City's jurisdiction in various watersheds in FY 2008. The goal of this assessment is to determine how effective and efficient contracting with NGOs is in removing trash and debris vis-à-vis other means, such as sponsorship of cleanup events.

Watershed: San Diego Bay		
ALPHA PROJECT FOR THE HOMELESS, INC. CLEANUP Assess Efficiency and Effectiveness of Contracting with NGOs to Remove Trash and Debris from Public Areas and Waterways		
Management Questions	• How much load reduction can be achieved by contracting with NGOs? • What is the efficiency of trash cleanups conducted by NGOs?	
Targeted Measurable Outcome	Achieve load reduction of trash and debris (any amount)	
Assessment Methods	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	45,920 pounds
	Number of participants (Outcome Level 1)	180
	Efficiency of cleanup cost per pound of trash removed (Outcome Level 4)	$0.51/pound
	Amount of money spent on cleanups (Outcome Level 1)	$23,098
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.51/pound

Results and Analysis

Alpha Project conducted cleanups at various locations, with an estimated 180 workers participating. Approximately 45,290 pounds of trash and debris were removed during a series of 19 cleanup events in FY 2008 at cost of $23,098. Cleanups with Alpha Project had a cost efficiency of $0.51 per pound of trash and debris.

Conclusions

The City will not continue the Alpha Project in FY 2009. The reporting of this activity will cease with this Annual Report.

The cost efficiency of the activity was determined to be $0.51 per pound of trash and debris removed. As the efficiency of other means of trash and debris removal (such as cleanup sponsorships and street sweeping) is determined in the future, efficiency comparisons can then be made to determine the best means for removing trash and debris from public areas and waterways.

CLEAN COMMUNITY PROGRAM – 5

ACTIVITY SUMMARY

The City of National City has implemented a program to encourage individuals to dispose of waste properly. Events included two disposal events for large items and green waste. These events provided individuals with an avenue for properly disposing of items that might otherwise have been illegally dumped. The City alerted residents to these events beforehand via notices in their trash bills. The City has also hired a company to clean Paradise Creek twice per month. The cleaning mainly involves checking for the presence of trash and debris and removing trash that is noted. Finally, the City also participated in the Creek to Bay Cleanup.

The City also held an art contest for school children in all the elementary schools in the City. The contest involved preparing artwork for a calendar with messages about keeping the City and local water bodies clean. Twelve winners were selected, and selected drawings are being incorporated into the City's 2009 storm water educational calendar. The 2008 storm water educational calendar was distributed to all the elementary schools in the City in 2007-2008, and the City plans to also distribute copies of the 2009 calendar to the schools in 2008-2009.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup and disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in HA 908.3. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EXPECTED BENEFITS

Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also encourage a behavioral change for the community by potentially changing the manner trash in which trash is disposed of by the individuals involved.

EFFECTIVENESS MEASUREMENTS

Two thousand calendars were distributed to elementary students in the City of National City. Teachers in all third grade classrooms introduced the City's calendar contest and distributed handouts that explained the guidelines of the contest. The handouts also included storm water educational information. A significant amount of material was collected at the large item disposal days and Paradise Creek cleanups, but the exact quantities of materials were not recorded. Information about the Creek to Bay Cleanup is discussed in the regional activity write-up.

TRASH CONTAINMENT BOOM CLEANING AGREEMENT WITH U.S. NAVY – 6

ACTIVITY IMPLEMENTATION

Since FY 2002, the City of San Diego has been entering into annual agreements with the United States Navy to remove trash and debris flowing through Chollas and Paleta creeks into Navy property. Street Division and Storm Water Pollution Prevention Division staff back then met with Navy representatives to formulate an action plan addressing floating material traveling through the creeks. It was agreed upon that the Street Division would provide funds to the Navy for the removal of trash and debris using containment booms cleaned prior to the rainy season.

During the FY 2008 reporting period, the trash booms were in place for continued operation. However, routine inspections resulted in no trash and debris to be collected and disposed. This was likely due to the willows located upstream in the concrete apron which might have blocked trash from moving downstream.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Diego will maintain its agreements with the United States Navy for continued operations and maintenance of the booms and will report the collected and disposed amounts of trash and debris in the next Annual Report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- United States Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Trash accumulates within the storm water

conveyance system during periods of dry weather and then washes downstream during rain events. There is a cause-and-effect relationship between litter and water quality in the San Diego Bay WMA. Trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. Literature published by the United States Environmental Protection Agency on its web site[3] states that debris may be contaminated by pathogens that have adverse effects on humans. Reduction in the amount of litter within the watershed contributes to improvement in the quality of the storm water/runoff that ultimately discharges into San Diego Bay.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS AND PALETA CREEKS NAVY TRASH BOOM Assess Efficiency and Effectiveness of Containment Booms in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved using trash containment booms? • How efficient are the containment booms in reducing pollutant loads?
Targeted Measurable Outcome	• Reduction in pollutant loads
Assessment Methods	• Inspections (e.g., ensure booms working as designed) • Quantification (e.g., estimate tons of trash and debris removed) • Monitoring (e.g., monitor types of trash and debris removed to help identify source) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4)

Objectives

The goal of the assessment is to determine the efficiency of containment booms in removing trash and debris from creeks to improve water quality.

Results and Analysis

During the FY 2008 reporting period, the trash booms were in place for continued operation. However, routine inspections resulted in no trash and debris to be collected and disposed of. This was likely due to the willows located upstream in the concrete apron which might have

[3] http://www.epa.gov/owow/oceans/debris/

blocked trash from moving downstream. Therefore, the effectiveness and efficiency of the booms could not be measured for the FY 2008 reporting period.

Conclusions

Recommended data for determining the trash containment booms' effectiveness and efficiency include the number of inspections change in load reduction pre- and post-implementation, number of educational items passed out, and the cost of inspections and maintenance. Effectiveness and efficiency of this activity in reducing trash and debris loads will be determined upon collection of the data, and comparisons can then be made with those of other trash and debris removal activities, such as cleanup sponsorships.

ENHANCED INSPECTIONS ACTIVITIES

ADDITIONAL DRY SEASON CONSTRUCTION INSPECTIONS – 7

ACTIVITY SUMMARY

During 2007-2008 the City of National City (City) conducted additional inspections of construction sites during the dry season to reduce the potential for the discharge of sediment. According to the jurisdictional requirements presented in the Municipal Permit, construction sites (any priority) should be inspected as needed during the dry season. Additional construction inspections were conducted during the dry season to identify any areas where BMP implementation is not being maintained properly, particularly toward the end of the dry season when sites need to be preparing for the wet season. This program aims to decrease discharges of trash and sediment to the MS4.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Increased construction inspection frequencies during the dry season are intended to reduce the discharge of trash and sediment, which have been listed as high priority water quality problems in HA 908.3. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these pollutants and abate pollutant sources.

EFFECTIVENESS MEASUREMENTS

Excluding complaint investigations, the City completed 15 inspections at construction sites during the portions of the 2007 and 2008 dry seasons that fell within the 2007-2008 reporting period: July 1, 2007, through September 30, 2007, and May 1, 2008, through June 30, 2008. Inspectors found these inspections helped contractors stay vigilant about implementing BMPs during the dry season and that they were especially helpful toward the end of the dry season, when the inspectors could also remind the responsible parties of applicable wet season requirements.

SAN DIEGO BAY WATERSHED MANAGEMENT AREA TARGETED INSPECTIONS – 8

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a focused inspection program to target facilities that are potential sources of high priority pollutants. In the San Diego Bay WMA for FY 2008, the City focused on potential industrial sources of heavy metals, auto shops, and restaurants. The long-term goals of the program are:

- Determine the most efficient frequency of inspections to ensure proper Best Management Practices (BMPs) implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The City delineated a specific area within the San Diego Bay WMA to conduct the targeted inspections based on factors such as facility clustering and proximity to other watershed activities being conducted. The overall approach of the site selection process focused first on the specific business categories within the prioritized sectors in each WMA. If multiple category types were targeted for inspection in a particular WMA, a fairly equal distribution of sites from each category was selected for inspection where possible. In addition, knowledge gained by the City from past inspections was used to consider the likelihood of certain business types and areas of the City to be more problematic than others regarding constituents of concern in each WMA

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected community, only one inspection was conducted at each facility. The inspections that were conducted provide baseline data for comparison to future years' watershed-focused inspection programs. Information gathered during the FY 2008 watershed-focused inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years.

Forty-six full inspection equivalents (45 full inspections and 3 “other site visits”) occurred across the San Diego Bay WMA at potential industrial sources of heavy metals, auto shops, and restaurants. Full inspection equivalents are equal to the number of full inspections plus one half the number of "other site visits" (site visits that did not result in a full inspection), excluding other site visits where the facility has moved and is gone and a replacement business was found. This metric allows for a more equal comparison of inspection effort among WMAs.

This activity is in active implementation, and source abatement information is included in the effectiveness assessment section of this activity summary sheet. The City requests credit for one of the two required watershed water quality activities for this reporting year with this activity.

The City acknowledges Regional Board staff’s comment[4] for other WURMPS (e.g., Mission Bay and La Jolla’s) that recorded data and assessment is needed regarding the inspections and that the inspections must be above and beyond JURMP requirements. Inspections under this activity occurred to facilities that were not inspected under the JURMP program. Recorded data and assessment is included in this report.

Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become “business and usual.” However, the City is implementing this non-capital activity over multiple years in order to optimize the program prior to incorporating the results and recommendations into the JURMP. Specific changes to the JURMP are not yet planned as the study is ongoing at this time. Incorporating this activity into the JURMP at this time would be premature in putting valuable resources toward wide-scale implementation before the program is optimized. With optimization the City anticipates gaining the strongest improvement to storm water discharge quality that is achievable at this point in time. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as “business as usual.”

It should be noted that all of the inspections (potential industrial sources of heavy metals, automotive facilities, and restaurants) are being reported on one activity summary sheet for FY 2008 due to the structuring of this year’s program. The inspections were previously detailed as separate activities in the 2008 San Diego Bay WURMP. For consistency, the activity numbers are included in the heading of this summary sheet. The City is not expecting to receive three watershed water activity credits (one for each type of facility) for this program year; the City is requesting credit for one of the two required activities in this program year. However, the program may be restructured in the future and depending on the scale of implementation, the City may request credit for different facilities in the future.

[4] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS.” September 23, 2008. (Place Number 710562: L Walsh)

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The City selected and hired a consultant who implemented the watershed-focused project from the end of March through June 2008. The City will continue to evaluate ways to optimize the inspection of various facilities in the future. The City is currently developing its 2009 program and anticipates continuing piloting the targeted inspections through FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The San Diego Bay inspections target the following high priority water quality problems:

FACILITY TYPE	HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED	
	Bacteria	Metals
Industrial		X
Auto Shops		X
Restaurants	X	

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria, and metals as high priority water quality problems in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria and metals.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
TARGETED FACILITY INSPECTIONS **Assess Efficiency and Effectiveness of Facility Inspections**		
Management Questions	• Do inspections increase the rate of BMP implementation? • Does an increased rate of BMP implementation result in source abatement? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase the rate of BMP implementation? • How can an estimate of source abatement be made from inspection data?	
Targeted Measurable Outcomes	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from third-party data)	
Data Recorded	Number of restaurant facility full inspections, spot and scheduled (Outcome Level 1)	16
	Number of restaurant follow-up inspections (Outcome Level 1)	0
	Number of auto facility full inspections, spot and scheduled (Outcome Level 1)	13
	Number of auto follow-up inspections (Outcome Level 1)	7
	Number of industrial facility full inspections, spot and scheduled (Outcome Level 1)	16*
	Number of industrial follow-up inspections (Outcome Level 1)	2
	Number of Sites Needing Corrective Action (i.e. number of BMPs implemented) (Outcome Level 1)	45
	Number of Sites that Implemented Some Corrective Action During Inspection (Outcome Level 3)	5
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	5
	Total IC/IDs Observed (Outcome Level 1)	0
	Number of missing BMPs (Outcome Level 1)	40
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	0
	Total IC/IDs Receiving Notice of Violation, and therefore abatement (Outcome Level 4)	0
	Total number of full equivalent inspections, spot and scheduled (Outcome Level 1)	46**
Recommended Data	• Percent change in BMP implementation pre- and post-education (Outcome Level 3) • Number of educational items passed out (Outcome Level 3) • Pollutant Discharge Potential Assessment (Outcome Level 4) • Amount of money spent on inspections (Outcome Level 1)	

* Includes manufacturing, equipment repair, and other contractor facilities.
** Includes three "other site" visits in calculation of the total.

Objectives

The goals of this activity assessment include determining of the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections, ensuring proper BMP implementation, and reducing pollutant loading.

Results and Analysis

A breakdown of the number of sites needing corrective action and the number of sites that implemented at least some corrective action during the inspection were included in the Watershed-Focused Storm Water Compliance Inspection Program Report[5] (see Table E-9). The table also includes the number of Illegal Connections/Illicit Discharges (IC/ID) observed during the inspections and the total number of IC/IDs abated during the inspections. Five of the 45 sites implemented corrective action during the inspection, resulting in source abatement at these facilities.

Table E-9. Corrective Actions Implemented at Time of Inspections.

Area	Number of Sites Needing Corrective Action	Number of Sites that Implemented Some Corrective Action During Inspection	Total IC/IDs Observed	Total IC/IDs Eliminated During Inspection
San Diego Bay WMA	45	5	0	N/A

Although a load reduction was not calculated for each location, abatement of potential sources (Outcome Level 4) may be assumed with corrective actions being implemented due to the inspections. Future years' analysis will include a detailed Pollutant Discharge Potential Assessment to better show this source abatement. Inspected facilities were assigned a rating to reflect the level of BMP implementation noted at the site, and a separate rating to reflect the facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility.

Table E-10 presents a breakdown of the average knowledge and average BMP implementation scores for the inspected facilities. In the San Diego Bay WMA, the Average BMP Implementation Score remained the same while the Average Knowledge score decreased. While some conclusions can be drawn based on the results of the FY 2007 and FY 2008 inspection programs, the number of inspections completed, the individual sites visited, and the business types targeted in each WMA were not the same in FY 2008 as in FY 2007. Because of these differences, drawing definitive conclusions is difficult. The City is modifying its strategy for future years, and the use of the a inspection form should provide the ability to derive more solid

[5] D-MAX Engineering, *Watershed-Focused Storm Water Compliance Inspection Program* (September 2008).

conclusions in future years to help optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

Table E-10. Breakdown of Average Knowledge and BMP Implementation Scores by Area.

Area	Average Knowledge Score FY 2007	Average BMP Implementation Score FY 2007	Average Knowledge Score FY 2008	Average BMP Implementation Score FY 2008
San Diego Bay WMA	1.7	2.6	1.5	2.6

Conclusions

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected communities, only one inspection was conducted at each facility. However, the inspections that were conducted in the San Diego Bay WMA will provide baseline data for comparison to future years' watershed-focused inspection programs in the WMA. More inspection data is anticipated in FY 2009 to build on what was gathered in FY 2008. Further analysis of inspection efficiency, BMP implementation and education, and their source abatement effectiveness is required before conclusions can be made and will include the cost of inspections, BMP implementations, education data, and enforcement follow-ups.

ENHANCED CONSTRUCTION OVERSIGHT – 9

ACTIVITY SUMMARY

The Airport Authority will continue to oversee construction projects in a manner that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Construction Oversight Program is to abate the amount of sediment potentially released to the watershed from construction sites. The Airport Authority first began to implement this enhanced program in fiscal year 2004-2005. Staff from the Airport Authority Environmental Affairs Department will attend pre-construction meetings and regularly scheduled progress meetings, in addition to inspecting construction sites more frequently than required by the Permit during both the wet and dry seasons. The regular meetings will be used as an opportunity to focus on BMPs directed at preventing the discharge of sediment to the storm drain system. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

The Enhanced Construction Oversight Program is an important water quality activity in the San Diego Bay WMA because it abates construction sites as a source of sediment in the watershed. Abatement of sediment within the watershed contributes to improving the quality of the storm water ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Construction Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of sediment as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Construction Oversight Program intends to abate sediment associated with construction sites and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies sediment as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay WMA in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of construction project regular progress meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, and the number of sediment source control BMP issues identified during inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual sediment pollutant load abated by 1) estimating, based on review of the literature and/or other sources, sediment loads per construction site per day when sediment controls are not implemented, and 2) tracking the number of sediment control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

EFFECTIVENESS ASSESSMENT

There were ten construction projects underway at San Diego International Airport during FY 07-08. Staff from the Authority Environmental Affairs Department attended 67 construction project meetings related to these 10 projects during FY 07-08 and a total of 135 inspections were conducted. The Authority conducted 122 more inspections than required by the Municipal Permit. Problems or concerns related to sediment control were identified 31 times during those 135 inspections (or approximately 23% of the time). Given that issues/concerns regarding sediment control were identified during 1 of 4 inspections on average, the Enhanced Construction Oversight Program appears to be effective at ensuring construction site sediment control BMPs are properly implemented over the life of the construction project.

To estimate the reduction in sediment load to the watershed resulting from implementation of the Enhanced Construction Oversight Program, the Authority used the method outlined in the State Water Resources Control Board March 18, 2008, Draft NPDES Construction General Permit (Draft Permit). Page 49 and Attachment A of the Fact Sheet present a methodology

using the Modified Universal Soil Loss Equation (MUSLE) to estimate soil loss from exposed soil that is being protected by BMPs. The Authority used this equation to compare the sediment load from a construction site without proper BMPs to the sediment load from a construction site with properly implemented BMPs. The difference between the two calculations is the estimated reduction in sediment load to the watershed. The MUSLE equation can be expressed as:

Erosion Estimate (sediment load) in tons/acre/year = R•K•LS•C•P

Where: R = rainfall intensity factor

K = soil erodibility factor

LS = length-slope factor

C = cover factor (erosion controls)

P = management operations and support practices factor (sediment controls)

Attachment A of the Draft Permit notes that values of R have been calculated for any time period for more than 1000 locations in the Western U.S. and are available at http://ei.tamu.edu/. The Airport Authority used the one year period July 1, 2007, to June 30, 2007, to determine the R factor for the airport site (R = 21). Attachment A also notes that soils having a high silt content are especially susceptible to erosion and have high K values. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. K values for silty soils can exceed 0.45 and can be as large as 0.65. The Airport Authority assumed a K value equal to 0.45 for the airport site, so as not to over-estimate the amount of soil potentially being eroded, and in turn, so as not to over-estimate the sediment load reduction achieved by the Enhanced Construction Oversight Program. Attachment A to the Draft Permit discusses the effect of topography on erosion in terms of the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. Attachment A includes a table of LS factors. Given the relatively flat topography at the airport, the Airport Authority selected an LS value appropriate to such a shallow hillslope gradient (LS = 0.06).

The cover factor (C) and the management operations and support practices factor (P) can then be modified to calculate erosion estimates assuming 1) no controls and 2) proper controls. The cover factor (C) and the management operations and support practices factor (P) are calculated as "1 - % effectiveness of control expressed in decimal form." If controls are not effective, then C and P equal 1. The Draft Permit Fact Sheet notes that dischargers should use a C factor of 0.5 to simulate minimal erosion control BMPs on all exposed soil (for example, dust binder, temporary seeding, etc.). This would mean that the erosion control BMPs have an efficiency of 50% (C = 1 - 0.5 = 0.5). The Draft Permit notes that discharges should us a P factor of 0.2 to simulate an appropriately designed sediment basin. This means that the sediment control BMPs have an efficiency of 80% (P = 1 – 0.8 = 0.2). These C and P factors came from removal efficiency data from a Washington State Department of Transportation Document entitled

"Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control" (http://www.wsdot.wa.gov/research/reports/fullreports/200.1.pdf)

Thus, the estimated sediment load (erosion estimate) that would have likely been generated from construction projects at the airport that had no erosion controls (that is, C = 1 – 0 =1) and no sediment controls (that is, P = 1 – 0 = 1) during FY 07-08 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21•0.45•0.06•1•1

Erosion Estimate (sediment load) in tons/acre = 0.567

The Airport Authority estimates that the 10 construction projects underway at the airport during FY 07-08 covered approximately 14 acres of surface area. As such, the amount of sediment that could have been released to the watershed by construction projects underway at the airport during FY 07-08 equals:

Erosion Estimate (sediment load) = 0.567 tons/acre •14 acres = 7.938 tons

Similarly, the estimated sediment load (erosion estimate) that was likely generated from construction projects at the airport that did implement effective erosion controls (that is, C = 0.5) and sediment controls (that is, P = 0.2) during FY 07-08 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21•0.45•0.06•0.5•0.2

Erosion Estimate (sediment load) in tons/acre = 0.0567

As such, the amount of sediment that was likely released to the watershed by construction projects underway at the airport during FY 07-08, despite the effective implementation of appropriate BMPs, equals:

Erosion Estimate (sediment load) = 0.0567 tons/acre •14 acres = 0.7938 tons

Therefore, the sediment load reduction resulting from the implementation of the Enhanced Construction Oversight Program equals the difference between the amount of sediment that would have been released from construction sites without BMPs and the amount of sediment that was likely released despite the implementation of adequate and effective BMPs. For the FY 07-08 reporting period, the sediment load reduction would be equal to:

Sediment load reduction = 7.938 tons - 0.7938 tons = 7.1442 tons

In light of this significant reduction, the Authority believes that the Enhanced Construction Oversight Program is effective at ensuring proper BMP implementation at construction sites.

LA MESA BUSINESS INSPECTION SUPPLEMENTAL WATERSHED QUESTIONNAIRE – 10

ACTIVITY SUMMARY

To gather more information regarding the level of storm water awareness of business owners/operators and to collect additional information regarding the condition of industrial and commercial sites, the City of La Mesa (City) completed an additional one-page supplement to the standard industrial and commercial inspection form. The first five questions on the form gathered information from business owners/operators regarding their knowledge of storm water, water quality issues, sources of pollutants, and whether or not they had previously received information regarding storm water. The inspector was prompted to make observations regarding the types of sprinkler heads on site, the percent of the pervious area that was landscaped, if there was any evidence of non-storm water discharges, and the business owner/operators attitude toward compliance with storm water regulations. The last question on the Supplemental Watershed Assessment Questionnaire and Inspection Form prompts the inspector to assign either significant or not significant to the overall source ranking for watershed pollutants of concern. This box was checked "Significant" when two or more of the watershed pollutants of concern were assigned a pollutant discharge potential (PDP) of three (3) or higher or one watershed pollutant of concern was assigned a PDP of a four (4) or higher. If the site did not meet the aforementioned criteria, the box was checked "Not Significant." The City intends to use the data to identify groups and/or areas in need of increased and more focused outreach and to identify potential pollutant sources.

TMDL APPLICABILITY

TMDLs for metals and diazinon have been adopted for the Chollas Creek subwatershed. The data collected as part of this watershed activity enables the City to identify and address potential sources of watershed priority pollutants, including metals and pesticides.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to gain additional information about businesses' potential to contribute watershed pollutants of concern, including metals, pesticides, and bacteria.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The City is identifying potentially significant sources of these pollutants during its industrial and commercial storm water compliance inspection program. The City can use this information to target specific businesses and business types.

EXPECTED BENEFITS

The information gathered from the Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to collect additional information regarding the specific knowledge of business owners/operators and to identify sites that are potentially significant sources of watershed pollutants of concern. The City intends to use the collected data to develop more effective outreach measures and to identify potential sources of watershed pollutants of concern. Inspectors also give businesses corrective actions based on the findings; implementing corrective actions should result in a reduction of pollutants discharged to the storm drain system.

EFFECTIVENESS MEASUREMENTS

The supplemental watershed questionnaire was used for the first time during inspections in 2007-2008. The City plans to continue to collect this data in future years, and the 2007-2008 data will be used as a baseline for comparison. Because the questionnaire includes information to assess both storm water awareness and BMP implementation, it is anticipated that assessments of both level 2 (change in knowledge or awareness) and level 3 (change in behavior) outcomes will be possible.

TARGETED SPECIAL STUDIES

CHOLLAS CREEK WATER QUALITY PROTECTION & HABITAT ENHANCEMENT PROJECT TARGETED STUDIES – 11

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Pollution Prevention Division managed the design and construction of a creek restoration project in Chollas Creek funded by a $2.244 million Proposition 13 grant from the State Water Resources Control Board. The project, titled *Chollas Creek Water Quality Protection and Habitat Enhancement* project at the youth park site was developed to improve beneficial uses within San Diego Bay and Chollas Creek through a multi-faceted approach that includes outreach, education, stewardship development, and habitat restoration. The restoration process included removing approximately 6,000 sq ft of concrete channel and invasive plant species at the youth park site located at Euclid Avenue and Market Street. The channel was widened, the creek bed was lined with cobble stones and the area was seeded with native habitat. It was anticipated that these improvements would improve water quality in the Chollas Creek, with the ultimate goal of delisting the Chollas Creek watershed from the Clean Water Act (CWA) Section 303(d) for bacterial indicators, metals (cadmium, copper, lead and zinc) and diazinon. The project included approximately $500,000 education and outreach component to eliminate polluting practices of residents and businesses in the community.

The water quality program proposed to assess the physical enhancement of Chollas Creek consisted of three components: storm water monitoring, an assessment of dry weather data collected by the City of San Diego as part of their Dry Weather Monitoring Program, and a modified biological monitoring program. The report prepared presents the water quality monitoring data collected during this program. One storm event was sampled in January 2008 to assess the post-project water quality. Dry weather sampling was conducted by the City of San Diego during the 2005, 2006, and 2007 dry weather monitoring periods. Samples were collected within the drainage area of the project. A post-construction habitat assessment was also conducted in January 2008.

The City of San Diego conducted a Chollas Creek Restoration Event on April 4, 2008 The City of San Diego installed and discussed signage at Chollas Creek site detailing need for restoration and benefits to the community.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL
- Chollas Creek Diazinon TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Construction started in September 2007 and was terminated in February 2008. A post-construction habitat assessment was also conducted in January 2008 to assess effectiveness in removing pollutants from Chollas Creek. This activity is complete and will not be reported in FY 2009. The Chollas Creek Restoration Event is not planned for implementation in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of La Mesa
- Port of San Diego
- City of Lemon Grove
- San Diego Coastkeeper

OTHER PARTICIPATING ENTITIES

- State of California
- San Diego Coastkeeper
- Community members
- Environmental Health Coalition

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Pesticides
- Metals
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. This creek restoration project will help treat runoff of bacteria, metals, and other pollutants.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
CHOLLAS CREEK WATER QUALITY PROTECTION & HABITAT ENHANCEMENT PROJECT **Assess the Efficiency and Effectiveness of the Design and Construction of the Creek Restoration Project**		
Management Questions:	• Does education help reduce pollutant loads from urban runoff? • What is the efficiency of pollutant load reductions with targeted educational programs in the Chollas Creek watershed? • Does habitat enhancement help reduce pollutant loads to San Diego Bay?	
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized habitat enhancement • Reach a set percentage of target resident population	
Assessment Method(s)	• Tabulation (e.g., dollars spent on education, dollars spent to implement habitat enhancement) • Monitoring (e.g., concentration of COCs, flow in creek, used to compare upstream/downstream loads) • Quantification (e.g, calculation of load upstream/downstream of enhancement) • Survey (e.g., knowledge of residents pre/post education outreach)	
Data	Number of educational materials handed out (Outcome Level 1)	Posters and information cards translated to Spanish, Somali, and Vietnamese.
	Number of Project SWELL educational presentations (Level 1)	45+
	Survey of residents (Outcome Level 1)	Four focus group sessions identified baseline behaviors and resulted in pilot education and training program.
	Number of citizens approached (Outcome Level 1)	3,200 (a)
	Area of Chollas Creek enhanced	6,000 sq. ft.
	Load reduction, trash and debris removal	1.5+ tons
	Chemistry data from Chollas Creek upstream and downstream of enhancement study area (Outcome Level 4)	Trend of reduced metals and diazinon concentrations
	Ecological health improvements due to habitat enhancement (macro invertebrate analysis)	+11 points
	Cost to implement habitat enhancement, grant funding only (Outcome Level 1)	$2,244,000
	Cost of education and public outreach, grant funding only (Outcome Level 1)	$500,000

(a) Number of citizens approached was estimated using the estimated number of students impacted by the educational programs and approximately 100 citizens per major community event and 25 per community organization or focus group. These values were based on JURMP data for similar events. This number does not include visitors to the Think Blue website.

Objectives

The goal of this activity assessment is to determine whether education is an effective and efficient means to reduce pollutant load in the long-term, and to determine the effectiveness and efficiency of habitat enhancement for load reduction.

Analysis and Results

Outreach/Education

The overwhelming success and continued outreach and educational efforts by San Diego Coastkeeper serve as a model for educating communities and future area residents. In total, Coastkeeper made 44 Project SWELL presentations in 20 classrooms in 8 schools throughout San Diego County. Coastkeeper worked with local non-profits in the Chollas Creek watershed to define the hands-on SWELL curriculum taught at the Gompers Earthlab. The hands-on Project SWELL manager from Coastkeeper teaches the curriculum (approximately 50 schoolchildren per class) to elementary school students from Webster Elementary & Gompers Middle School. This effort impacted an estimated 2,200 students. Coastkeeper also presented a one hour hands-on lesson to 15 high school students in a marine biology class at Garfield High School. The less covered topics including diazinon, non-point source pollution and information on the Chollas Creek watershed and the San Diego Bay WMA.

Four focus group sessions were held to help further develop outreach strategies. The focus groups included: Commercial Businesses – small variety; Commercial Businesses-large variety; Community Based Organization group; and Spanish speaking residents. Businesses interest prompted a pilot storm water education and training program. Business outreach tactics included developing and presenting a power point to 11 community organizations, and translating English storm water educational materials into Spanish, Somali, and Vietnamese. These materials were distributed at six major community events (impacting approximately 600 citizens) and were made available on the www.ThinkBluesd.org website. Education and outreach efforts also resulted in the formation of a Neighborhood Council which held six public meetings (impacting approximately 275 citizens). The cost of the education and outreach component to eliminate polluting practices of residents and businesses in the community was approximately $500,000.

Watershed Cleanup and Enhancement

The City of San Diego and the Project Partners removed an estimated 6,000 square feet of impervious concrete channel, removed non-native invasive plant species, and restored the creek channel and cobble stream bed. The natural park-like area provides community residents and visitors a location to view educational signage related to the preservation and protection of Chollas Creek beneficial uses. Additionally, with the assistance of local businesses and residents, the partners conducted two creek cleanup events. During the first event, 50 participants removed more than one ton of debris, including more than 100 bags of trash, a sofa

bed, 30 shopping carts, and a water heater. During the second event, six participants removed approximately 500 pounds of trash and debris, including an oven, large car parts, shopping cart, and other large items. During the Chollas Creek Restoration event, signage promoting awareness was installed and discussed. The general audience for this event was reached through the press coverage with messaging on pollutant removal. It is assumed that this achieved an increase in community awareness and knowledge.

Water Quality and Biological Assessment

Construction of the Enhancement Project was completed by late December 2007 but the vegetation was not established by the post-construction storm event on January 5, 2008, or the post-construction photo and biological survey conducted on January 10, 2008. Results reported in the February 2008 Final Report were not conclusive with regard to determining statistically significant improvements in water quality between the two monitoring sites. Review of the pre- and post-construction results suggest metals concentrations generally decreased and diazinon concentrations were detected less frequently and generally below the TMDL waste load allocation. Bacteria concentrations were slightly lower but not significantly different. Once the vegetation becomes established TSS and the pollutants associated with TSS (e.g. metals and pesticides) will also likely decrease.

During the post-construction biological assessment, seven of the ten metrics used were applied to create a potential score of 140 points. The pre-construction physical habitat received a score of 71 of 140 potential points. The post-construction survey resulted in a score of 82 of 140 potential points. This was a net improvement of 11 points.

Long-Term Assessment

Long-term monitoring in the South Fork of Chollas Creek, as required by Order R9-2004-0277, will be used to evaluate the long-term water and biological quality trends. If water quality and load reduction does not improve, management actions may be needed to address specific water quality constituents. The Chollas Creek Restoration event is not planned for implementation in FY 2009.

MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECTS – 12

ACTIVITY IMPLEMENTATION

The City of San Diego is undertaking a rain barrel and rain harvesting study and implementation program to reduce pollutant loading at municipal facilities. The rain barrel/rain harvesting study will consist of implementing rain barrel systems, including downspout disconnects and infiltration systems, within the San Diego Bay WMA to reduce pollutant loading from urban runoff during storm events. Rain barrels, downspout disconnects and rainwater harvesting/reuse systems help to capture, store and divert storm water to reduce the volume of rainwater runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, and pesticides in rainfall runoff. Rain barrels and underground storage systems (cisterns) collect storm water runoff from buildings and residential rooftops and store until discharged. The barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff waters away from existing structures and utilities. Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The study will investigate the effectiveness of rain barrels/rain harvesting systems in reducing loading and will assist the City in attaining its water quality goals. The Study includes site evaluations and selections, the purchase of rain barrel/rain harvesting systems and infiltration systems, rain barrel installation, and effectiveness evaluations.

The City is using the prioritization process that is outlined in the *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Diego Bay WMA and other watersheds for this study. Based on this prioritization plan, the selected San Diego Bay WMA site for rain barrel implementation, Southcrest Park, will be in the highest priority sector of the Chollas Creek Watershed in the San Diego Bay WMA for potential for pollutant loading.

The primary goal of this project is to reduce runoff volumes and pollutant loading from storm water urban runoff. The first phase of this project will focus on implementing rain barrel/rain harvesting systems at selected municipal facilities as part of a pilot program. Ultimately, the City of San Diego would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during the pilot program will be applied to implementation in residential areas.

Based on these findings, the City of San Diego may modify its rain barrel/rain harvesting program to increase effectiveness and/or seek City Council approval for additional funding to implement additional rain barrel/rain harvesting systems.

A one-page information sheet regarding the rain barrels were developed in the summer of 2007 for the City of San Diego. Project planning, including site selection, began in July 2007. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes, and rain chains began in the second quarter of 2008. No installation occurred in FY 2008.

According to Regional Board comments[6] for other WURMPs (e.g., Mission Bay and La Jolla's), the City must provide data on the locations selected, number of barrels installed, and the volume of rain water collected. The location is discussed in this section. The number of rain barrels has yet to be decided, but will be discussed in future reporting. As the rain barrels are not yet installed, the volume of water captured is not known and will also be discussed in future reporting.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and is anticipated to continue until the end of calendar year 2008. Initially the project was anticipated to be completed in spring 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Procurement of rain barrels and other items and installation started in the second quarter of 2008. Subcontractors will be procured in late 2008. The specifications and installation guidelines will be developed by the end of 2008. A pre-installation meeting will be held at Southcrest Recreation Center site by the end of 2008. Two traditional barrels and one planter barrel will be installed at this site in early 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

[6] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM **Assess Efficiency and Effectiveness of Rain Barrel Water Collection Containers in Reducing Runoff**		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems, particularly for metals and bacteria? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcomes	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of rain barrel systems (Outcome Level 1)	$57,000
Recommended Data	• Cost of maintenance/upkeep (Outcome Level 1) • Cost of implementation (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Results and Analysis

This study will include site evaluations and selections, the purchase of rain barrel/rain harvesting systems and infiltration systems, rain barrel installation, and effectiveness evaluations. Procurement of rain barrels, planter boxes, and rain chains began in the second quarter of 2008. The project has a current estimated total cost of $57,000, which includes both

materials and construction costs. Construction services for the installation of twenty (20) urban runoff reduction/pollution prevention systems, including rain barrels and planter boxes at seven (7) municipal sites around San Diego, has been estimated to cost $50,000 and is schedule to take place in January/February of 2009. In FY 2008, this activity was not in active implementation. Therefore, load reduction assessment is not possible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing urban runoff and pollutant loads can be made at this time. Effectiveness and efficiency will be determined by load reduction (determined by monitoring efforts) versus cost of barrel installation and maintenance, and conclusions will be made after the assessment is complete

DALBERGIA STREET GREEN MALL INFILTRATION PROJECT – 13

ACTIVITY IMPLEMENTATION

This project will remove conventional asphalt paving along Dalbergia Street and Thor Street (industrial/commercial area) and replace it with pervious concrete paving. In addition, the existing curb and gutter along portions of Dalbergia Street will be moved 12 feet into the right of way, and, in between the existing and new curb lines, bioretention planter boxes will be placed and filled with crushed rock. Both the pervious concrete and bio-retention planter boxes will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters. The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Green Mall" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

This project was one of two City of San Diego projects approved as a Proposition 50-granted funded project in May 2008 via the San Diego Integrated Regional Water Management Plan. The work performed in FY 2008 included project advertisement, design consultant interviews, and design consultant selection.

According to Regional Board staff comments[7], the City will receive a WQA credit. The City agrees with this conclusion.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The work performed in FY 2008 included advertising the project, interviewing design consultants, and approving the selection of the design consultant. The design consultant will start work in FY 2009. Construction is anticipated to occur February through September 2010. Water quality monitoring is anticipated be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[7] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved copper, lead, and zinc
- Bacteria Indicators
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
DALBERGIA STREET "GREEN MALL" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Malls in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the effectiveness and efficiency of the Dalbergia Street Green Mall Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2008. Therefore, assessment is not possible at this time. Project design will continue in FY 2009.

Conclusions

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

SOUTHCREST PARK GREEN LOT INFILTRATION PROJECT – 14

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a below-grade storage and infiltration basin the grassy areas of Southcrest Park. Diversion structures will divert runoff from the existing storm drain system that runs through the parking area to the infiltration areas. The site design has incorporated various LID approaches in an integrated manner. These approaches include replacing existing asphalt roads and parking lot with porous pavement as well as rain barrels and planters to collect roof drainage. This site was selected for its likely higher permeability soils and location next to the creek. Infiltration from the underground units will seep into the creek and will not impact down-gradient structures. This project also has the option for restoration including approximately 500 linear feet of the reach of South Chollas Creek passing through the western portion of the site.

The project will be designed according to the integrated approach outlined in the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (November 2007) of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, help meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay WMA. The City of San Diego has named this model approach for LID as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

In FY 2008, the City of San Diego continued work on the conceptual design, which included delineating drainage area limits, formulating performance specifications, and estimating construction and operations and maintenance costs.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2007 and continued in FY 2008. The planned implementation date is FY 2010 to 2011. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
SOUTHCREST PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt, underground storm water storage vaults, and rain barrels? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the efficiency of the Southcrest Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2008. Therefore, assessment is not feasible at this time. Project design will continue in FY 2009.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time. The planned implementation date is FY 2010 to 2011. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

MEMORIAL PARK GREEN LOT INFILTRATION PROJECT – 15

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a large underground chamber to collect and then slowly infiltrate urban runoff into the underlying subsoils. This underground system will be located within Memorial Park, thereby transforming the recreational facility into a dual-use site for both urban runoff pollution reduction and recreation. The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay WMA. The City has named this model approach for Low Impact Development (LID) as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

Project planning continued in FY 2008. Design and award of contract are anticipated in FY 2009. According to Regional Board staff comments[8], the City will receive a WQA credit. The City agrees with this conclusion.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Design and award of contract are anticipated to occur August 2008 through February 2010. Construction is anticipated to occur February through October 2010. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

[8] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
MEMORIAL PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt and underground storm water storage vaults? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Data Recorded	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the efficiency of the Memorial Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2008. Therefore, assessment is not feasible at this time. Project design will continue in FY 2009.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

TMDL-RELATED ACTIVITIES

SHELTER ISLAND YACHT BASIN DISSOLVED COPPER TMDL – 16

ACTIVITY SUMMARY

The Total Maximum Daily Load (TMDL) enforcement program requires that the Shelter Island Yacht Basin stakeholders make a substantial reduction in the copper loading in the basin. A critical element to reducing copper loads is having boats transition from copper-based antifouling paints to non-copper paints. To successfully do so, viable alternatives to copper-based paints must be identified so that a phase out of copper is possible.

The San Diego Bay Copermittees and other stakeholders are taking a proactive stance on this issue. During FY 07-08, the Safer Alternative to Copper Antifouling Paints Study was initiated to identify, test, and demonstrate safer alternative non-copper hull coatings. This study will test and evaluate alternative hull paints on recreational boats within the SIYB and determine cost effective non-copper alternatives. By providing this information, voluntary transition away from copper-based paints can increase. A transition to non-copper antifouling hull coatings is needed to decrease copper loading in the SIYB. The results may be directly applicable to other 303d listed marinas within the San Diego Bay with copper impairments. This activity will build on previous research through the identification, investigation, testing and evaluation of newly emerging or recently developed non-copper hull paints.

TMDL APPLICABILITY

The implementation plan for the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL requires a 76% overall reduction of copper loading to SIYB over a 17-year staged compliance schedule period. The implementation plan describes alternative strategies and management practices that may be developed and implemented by the dischargers to reduce dissolved copper loading into the SIYB. The San Diego Bay Copermittees are actively working with the RWQCB and other local stakeholders to address this issue.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementing
- Permit Year 08-09: Implementing

PARTICIPATING JURISDICTIONS

- Port of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Copper

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Copper-based hull paints have been identified as a likely source of copper, a high priority pollutant in SIYB and 908.1 (HA). The Port of San Diego is working towards a copper load reduction as a result of minimizing copper-based paints use as the primary antifoulant mechanism on recreational boats state-wide.

EFFECTIVENESS ASSESSMENT

The goal of the activity is to evaluate new and emerging alternative boat hull coatings in order to provide a list of safer alternative antifouling paints that may be voluntarily applied to boat hulls by the SYIB boating community. A level three outcome will result from the educational and outreach efforts to provide valuable information and guidance to the boating industry on alternative non-copper based antifouling paints and maintenance strategies during the current Permit. The transition away from copper-based coatings would aid in the reduction of copper loading into the SIYB, thereby enabling the possibility of a level four outcome by the end of this Permit cycle.

During the FY 07-08, the Port of San Diego and the consultant, Institute for Technical Assistance (IRTA), held three stakeholder workgroup meetings to discuss the Safer Alternative to Copper Antifouling Paints Study and determine the panel field testing protocol that was to be used to evaluate the paints. The panel field testing protocol was finalized in May 2008. Forty six non-copper paints were identified to be evaluated and field testing was initiated in June 2008.

CHOLLAS/PALETA/SWITZER CREEK MOUTHS TMDL – 17

ACTIVITY IMPLEMENTATION

In 1998, the sediments at the mouths of Chollas and Paleta creeks were listed in the Clean Water Act 303(d) List of Water Quality Limited Segments for toxicity and benthic community degradation. The San Diego Regional Water Quality Control Board (Regional Board) initiated the development of a Total Maximum Daily Load (TMDL) in 2000 by coordinating monitoring efforts with various stakeholders. The goal of the TMDL is to restore the sediment and water quality of the creek mouths and protect their beneficial uses through the implementation of a monitoring program and Best Management Practices (BMPs). In the fall of 2005, the Regional Board modified the TMDL to include the mouth of Switzer Creek. This modified TMDL consolidates the previous work at all three creek mouths because of their similarities.

FY 2008 implemented activities include:

- The City worked with their consultant in developing and implementing a pesticide distribution study in the subject drainage areas to further assess potential sources and possible BMPs to reduce pollutant loads to the mouth of the subject creeks.
- The City continued the planning of the "Green Mall" at Dalbergia and Thor Streets, the dual-use infiltration project at Memorial Park, and the Southcrest Park large scale infiltration LID project in Chollas Creek watershed.
- The Draft Watershed Modeling for Simulation of Loadings to San Diego Bay Report was released on June 10, 2008.
- Eighteen sites were sampled in a one-time pesticide study titled "Pesticide Investigation in the Pueblo Watershed" in Switzer Creek on June 24 and 25, 2008.
- A San Diego Bay Sediment TMDLs Work Group Meeting was held on September 15, 2008. Two presentations titled "TMDLs for Toxic Pollutants in Sediment for the Mouths of Paleta, Chollas, and Switzer Creeks" and "Watershed Modeling for Simulation of Loadings to the San Diego Bay and Receiving Water Model Configuration and Evaluation for the San Diego Bay" were given.

TMDL APPLICABILITY

- Chollas-Paleta-Switzer Creek Mouths TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned FY 2009 implemented activities include:

- An informal SAG meeting will be held in September 2008.

- The City will continue to work with their consultant in developing and implementing a pesticide distribution study in the subject drainage areas to further assess potential sources and possible BMPs to reduce pollutant loads to the mouth of the subject creeks.
- The City of San Diego anticipates the design and award of the "Green Mall" at Dalbergia and Thor Streets contract to occur August 2008 through February 2010.
- The City of San Diego anticipates the design and award of the dual-use infiltration project at Memorial Park to occur August 2008 through February 2010.
- The City of San Diego anticipates planned implementation date of the Southcrest Park large scale infiltration LID project to be FY 2010 to 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Lemon Grove
- City of La Mesa
- City of National City
- City of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- United States Navy
- Southern California Coastal Waters Research Project
- San Diego Regional Water Quality Control Board

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Benthic community impacts
- Toxicity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and pesticides as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities, source studies, and monitoring to address them. Development of this TMDL will contribute to addressing those problems with the recommended efforts described in the San Diego Bay WURMP.

EFFECTIVENESS ASSESSMENT

This TMDL is in the development phase and has not yet been adopted into the *Water Quality Control Plan for the San Diego Basin 9* (Basin Plan). After adoption into the Basin Plan, an Implementation Plan will be developed, which will outline the activities to be conducted to meet the requirements of the TMDL. Assessment of the effectiveness of this TMDL in protecting and restoring beneficial uses is not possible at this time. Once assessment is possible, it will be presented in Section 4 of the San Diego Bay WURMP Annual Report.

CHOLLAS CREEK DIAZINON TMDL – 18

ACTIVITY IMPLEMENTATION

In 1996, Chollas Creek was placed on the Clean Water Act Section 303(d) List of Water Quality Limited Segments for toxicity due to the pesticide diazinon. Diazinon is an organophosphate insecticide with indoor, residential, landscape, and agricultural applications. Urban storm water flows serve as the primary transport mechanism of the pesticide to Chollas Creek.

The San Diego Regional Water Quality Control (Regional Board) subsequently developed and in August 2002 adopted the Chollas Creek Diazinon Total Maximum Daily Load (TMDL) to meet water quality objectives at Chollas Creek with regards to diazinon and protect the Creek's beneficial uses from impairment by the pesticide. The Implementation Action Plan of the TMDL requires the Copermittees within the Chollas Creek watershed (a sub-watershed within the San Diego Bay WMA) to monitor and reduce diazinon discharges into the Creek through activities done pursuant to the Municipal Storm Water Permit and Investigation Order No. R9-2004-0277.

FY 2008 implemented activities include:

- The 2006–2007 Annual Report for Order No. R9-2004-0277 was completed and submitted to the Regional Board in January 2008, which detailed the activities done by the Copermittees in FY 2007 to monitor reduce diazinon discharges into Chollas Creek.
- Monitoring activities pursuant to Investigation Order No. R9-2004-0277 were conducted.
- The City of San Diego continued coordination with other Copermittees on developing an integrated approach to address current and likely TMDL and WURMP requirements for the Chollas Creek Watershed.
- The City of San Diego continued with the planning and implementation of TMDL activities.
- The City continued the planning of the "Green Mall" at Dalbergia and Thor Streets, the dual-use infiltration project at Memorial Park, and the Southcrest Park large scale infiltration LID project in Chollas Creek watershed.

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned FY 2009 implemented activities include:

- The 2007–2008 Annual Report for Order No. R9-2004-0277 will be completed and submitted to the Regional Board in January 2009, which will detail the activities done by

the Copermittees in Fiscal Year 2008 to monitor and reduce diazinon discharges into Chollas Creek.

- Monitoring activities pursuant to Investigation Order No. R9-2004-0277 will be conducted.
- The City of San Diego will continue coordination with other Copermittees on developing an integrated approach to address current and likely TMDL and WURMP requirements for the Chollas Creek Watershed.
- The City of San Diego will continue with the planning and implementation of TMDL activities.
- The City of San Diego anticipates the design and award of the "Green Mall" at Dalbergia and Thor Streets contract to occur August 2008 through February 2010.
- The City of San Diego anticipates the design and award of the dual-use infiltration project at Memorial Park to occur August 2008 through February 2010.
- The City of San Diego anticipates the planned implementation date of the Southcrest Park large scale infiltration LID project to be within FY 2010 through 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of Lemon Grove
- City of La Mesa
- County of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Pesticides (diazinon)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Pesticides are recognized by the Collective Watershed Strategy as a high priority water quality problem for 908.1 and 908.2 HA. The Collective Watershed Strategy identifies the necessity for additional monitoring and source identification.

The Chollas Creek Diazinon TMDL is considered an important water quality activity in the San Diego Bay WMA because it involves the implementation of Best Management Practices (BMPs)

and the monitoring of water quality to assess BMP effectiveness and load reductions. The implementation of activities to monitor and reduce diazinon discharges into Chollas Creek will contribute to restoration of its beneficial uses (WARM and WILD).

Since Chollas Creek is a natural drainage system that traverses inner-city neighborhoods within the City of San Diego from its headwaters in La Mesa and Lemon Grove to San Diego Bay, improving the water quality of the Creek ultimately positively impacts the water quality of San Diego Bay.

EFFECTIVENESS ASSESSMENT

Assessment of this TMDL is discussed in Section 4.2 of the San Diego Bay WURMP Annual Report.

CHOLLAS CREEK DISSOLVED METALS TMDL – 19

ACTIVITY IMPLEMENTATION

Chollas Creek is an urban coastal stream in southern San Diego County and tributary to San Diego Bay. In 1996, it was placed on the Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments for toxicity due to copper, lead, and zinc. A Total Maximum Daily Load (TMDL) is currently in the process of development, public review, and adoption, which aims to attain water quality objectives for copper, lead, and zinc and restore and protect the beneficial uses (REC-2, WARM, WILD, and potentially REC-1) of Chollas Creek through monitoring, waste load and load allocations, and an Implementation Action Plan that describes the pollutant reduction actions that must be taken by various responsible parties to meet the waste load and load allocations within a set timeline.

FY 2008 implemented activities include:

- The Copermittees continued to participate in public comment periods and Regional Board hearings regarding the Chollas Creek Dissolved Metals TMDL.
- The monitoring program for the TMDL continued to be conducted.
- The City of San Diego continued the planning of the “Green Mall” at Dalbergia and Thor Streets, the dual-use infiltration project at Memorial Park, and the Southcrest Park large scale infiltration LID project in Chollas Creek watershed.
- A program of increased inspections occurred at auto-related facilities and industrial facilities that are potential sources of heavy metals.
- The City of San Diego coordinated with other Copermittees on the continued development of an integrated approach to address current and likely TMDL and WURMP requirements for the Chollas Creek Watershed using its *Strategic Plan* as a guideline. The resulting product will serve as the Implementation Plan for the TMDL.
- The City of San Diego continued with the planning and implementation of TMDL activities.
- The City of San Diego became a partner with the Sustainable Conservation Brake Pad Partnership.
- The City of San Diego sent a letter to the State Water Resources Control Board on July 7, 2008, with comments regarding the Chollas Creek Dissolved Metals TMDL. The City of San Diego asked for the same considerations in the resolution as those found in the Los Angeles River Metals TMDL, Resolution No. 2008-0046.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned FY 2009 implemented activities include:

- The Copermittees will continue to participate in upcoming public comment periods and Regional Board hearings regarding the Chollas Creek Dissolved Metals TMDL.
- Monthly meetings regarding the Implementation Plan will begin in FY 2008.
- Stakeholder meetings will be held in FY 2009 as the Implementation Plan is developed.
- The monitoring program for the TMDL will continue to be conducted and further refined.
- A program of increased inspections will occur at auto-related facilities in FY 2009 to target metals.
- The City of San Diego will continue to coordinate with other Copermittees on the continued development of an integrated approach to address current and likely TMDL and WURMP requirements for the Chollas Creek Watershed using its *Strategic Plan* as a guideline.
- The City of San Diego will continue with the planning and implementation of TMDL activities.
- The City of San Diego anticipates the design and award of the "Green Mall" at Dalbergia and Thor Streets contract to occur August 2008 through February 2010.
- The City of San Diego anticipates the design and award of the dual-use infiltration project at Memorial Park to occur August 2008 through February 2010.
- The City of San Diego anticipates the planned implementation date of the Southcrest Park large scale infiltration LID project to be within FY 2010 through 2011.
- The City of San Diego will continue to partner with the Sustainable Conservation Brake Pad Partnership.

PARTICIPATING WATERSHED COPERMITTEES

- City of Lemon Grove
- City of La Mesa
- City of San Diego
- County of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- Caltrans
- United States Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved copper, lead, and zinc (Metals)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Development and implementation of the Chollas Creek Dissolved Metals TMDL will lead to the identification and implementation of activities addressing the loading of metals into Chollas Creek.

EFFECTIVENESS ASSESSMENT

The Implementation Plan for this TMDL is in the development phase and has not yet been completed. Assessment of the effectiveness of this TMDL in protecting and restoring beneficial uses is not possible at this time. Refer to Section 4.2 of the San Diego Bay WURMP Annual Report for further discussion.

MONITORING AND SOURCE IDENTIFICATION ACTIVITIES

ENHANCED DRY WEATHER MONITORING PROGRAM – 20

ACTIVITY SUMMARY

The Airport Authority continues to conduct dry weather monitoring at a frequency that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Dry Weather Monitoring Program is to identify sources of storm water pollution in the watershed. The Airport Authority first began to implement this enhanced program in fiscal year 2005-2006 by increasing the frequency of dry weather monitoring from the Permit requirement of once per dry weather season to at least three times during the dry weather season. The increased frequency increases the chances that illegal discharges and their sources might be identified. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

The Enhanced Dry Weather Monitoring Program is an important water quality activity in the San Diego Bay WMA because it helps to identify and eliminate sources of illegal discharges in the watershed. Identification and elimination of illegal discharges within the watershed contributes to improving the quality of the storm water ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Dry Weather Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, copper, and other pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Dry Weather Monitoring Program will help to identify and eliminate sources of storm water pollution in the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Dry Weather Monitoring Program intends to identify and eliminate sources of illegal discharges and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, pesticides, sediment, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay WMA in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of pollutant sources, including these high priority pollutants.

EFFECTIVENESS ASSESSMENT

During FY 07-08, the Authority conducted three monitoring events and one follow up event as part of the enhanced dry weather monitoring program. The dry weather monitoring was conducted three times as frequent as required by the Municipal Permit. Since no illegal discharges were identified during FY 07-08 reporting period, there are no discharge durations to associate with pollutant discharge concentrations, and thus, no estimate of a load reduction can be made. Conversely, since no illegal discharges were identified, it is assumed there was no increase in pollutant loading to the watershed and/or San Diego Bay.

COORDINATED DRY WEATHER MONITORING PROGRAMS – 21

ACTIVITY SUMMARY

Each Copermittee is required to implement a Jurisdictional Dry Weather Monitoring (DWM) Program as part of the Illicit Discharge Detection and Elimination Component of the Municipal Storm Water Permit (Order No. 2007-0001). Each Copermittee has developed and implemented a DWM program as required by the Permit but due to logistical constraints, site monitoring and sample collection within each jurisdiction often are conducted independent of other jurisdictions. The San Diego Bay Copermittees recognize that coordinated DWM efforts could be more effective because illicit discharges may cross jurisdictional boundaries. Therefore, San Diego Bay Copermittees conducted a pilot study during 2004-2005 to determine the feasibility of coordinating DWM locations and sampling dates across jurisdictions. As part of the pilot program, the City of San Diego and the Port of San Diego coordinated monitoring activities at three locations within each jurisdiction during 2004-2005. The program was expanded to include the Airport Authority in 2005-2006.

The Port of San Diego and the Airport Authority continued to coordinate dry weather sampling activities within 908.2 HA on three occasions during the 2008 dry weather monitoring season (May 1 to September 30). Coordinated dry weather monitoring occurred on 05/08/008, 06/20/08, and 08/04/08. Figure E-2 portrays the coordinated sites sampled by the Airport Authority and the Port of San Diego. By simultaneously monitoring at the outfall (Port jurisdiction) and at a site upstream (Airport Authority jurisdiction), the Copermittees intend to identify potential illicit discharges and facilitate upstream source identification.

Figure E-2. Coordinated Dry Weather Monitoring Sites.

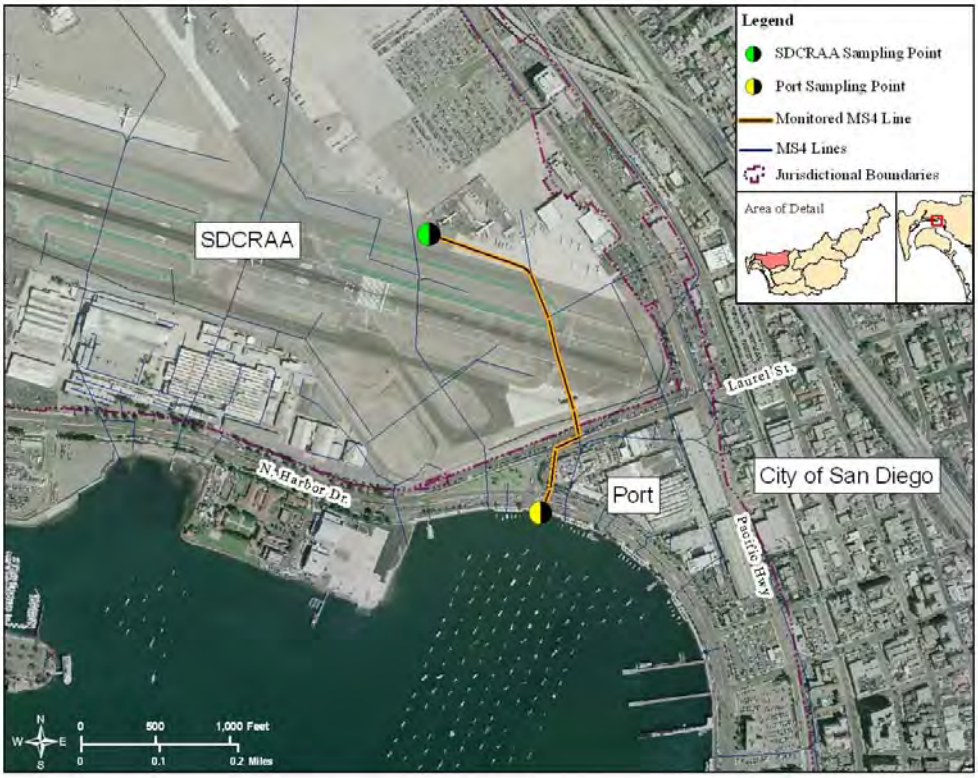

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- Airport Authority

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Turbidity
- MBAS
- Nutrients

- Pesticides
- Metals
- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The coordination of DWM programs is considered a beneficial water quality activity in the San Diego Bay WMA because it provides comprehensive detection, analysis, and investigation of pollutant discharges at a watershed level. Current jurisdictional DWM programs are effectively identifying and eliminating illicit discharges. When discharges cross jurisdictional boundaries, however, the follow-up investigation is passed from one jurisdiction to another, creating a potential lag time in the response. Coordinated efforts increase the efficiency and effectiveness of jurisdictional programs and allow analysis at a watershed level.

EFFECTIVENESS ASSESSMENT

The Port of San Diego and the Airport Authority coordinated dry weather monitoring on three dates during the 2008 dry weather monitoring season: 05/08/08, 06/20/08, and 08/04/08. As part of the coordinated effort, the Port of San Diego monitored an outfall downstream of the Airport Authority's sampling site. The site monitored by the Airport Authority was adjacent to the runway within the airport property. The Port of San Diego's sampling site was along San Diego Bay near the intersection of Harbor Drive and Laurel Street.

The Airport Authority collected samples for field and laboratory analysis on 05/08/08 and 06/20/08. Action levels exceeded for pH, ammonia, and MBAS on first occasion ponded water was found. Laboratory analyses of the ponded water collected at the site reported copper and zinc concentrations exceeded the action levels. There was no evidence of illegal discharge in the vicinity of the monitoring site.

The Port of San Diego attempted to monitor the outfall downstream of the Airport Authority's sampling site, however during all three sampling dates the outfall was tidally inundated. Therefore, sampling did not occur at the Port of San Diego's coordinated site. Due to the lack of sufficient monitoring data, a correlation between the Airport Authority and Port of San Diego's dry weather results cannot be made for 2008.

With many of the MS4 lines crossing jurisdictional boundaries from the Airport Authority to the Port of San Diego, the two Copermittees believe that coordinating monitoring dates is beneficial to investigate exceedances which may occur along shared lines. The Airport Authority and the Port of San Diego will assess the monitoring site locations and modify as needed to improve the coordinated dry weather monitoring program for the 2009 dry weather monitoring season.

LA MESA WATER QUALITY MONITORING PROGRAM – 22

ACTIVITY SUMMARY

To more effectively characterize source of pollutants, the City of La Mesa (City) has conducted additional water quality monitoring within the San Diego Bay WMA. Four Wet Weather discharge locations in the University Drainage Basin, which eventually drains to Chollas Creek, were identified as sampling points for time-weighted composite samples. In previous years additional sampling was done at these sites during dry weather conditions. In 2008, these four sites were added to the City's dry weather monitoring program to ensure that dry weather data will also be collected each year. Samples taken from these sites during wet and dry weather conditions are analyzed for watershed constituents of concern. The City intends to use the data to identify exceedances and to identify potential pollutant sources.

TMDL APPLICABILITY

Monitoring is conducted in support of California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). Wet weather monitoring data and dry weather sampling results support identifying exceedances in pollutant loading for dissolved copper, lead, zinc, and diazinon. Furthermore, data enables the City to identify potential sources and conduct targeted educational outreach.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Monitoring program enables the City to collect data on the high priority pollutants in the watershed, particularly metals, sediment, bacteria, and pesticides. The City intends to use the collected data to identify pollutant sources and to target education and best management practice implementation efforts.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is monitoring for these constituents in order to identify sources of potential pollutants/exceedances. Once identified, the City can take the appropriate action. This monitoring activity supports the Watershed Strategy by identifying priority pollutant sources; the City can then use this information to target activities.

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Monitoring is not considered a watershed water quality activity based on the Municipal Permit Order 2007-001 definition; however, data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

BMP EFFECTIVENESS MONITORING PROGRAM – 23

ACTIVITY SUMMARY

The Airport Authority continues to collect rain event runoff samples to monitor the performance of both structural and non-structural, discrete and combination BMPs. The long-range goal of the BMP Effectiveness Monitoring Program is improve the water quality of storm water runoff from the airport into San Diego Bay. The BMP Effectiveness Monitoring Program will assess whether the BMPs being implemented are able to reduce concentrations of, primarily, copper and zinc in storm water runoff from the airport. Based on a power analysis of 10 years of existing airport runoff water quality data, a minimum number of samples required to allow an effectiveness comparison has been identified. The program allows 3 years to calibrate paired watershed sampling, followed by 3 years of sampling to make an initial assessment of BMP effectiveness. To confidently establish a downward trend, at trend analysis monitoring station has been established to allow for a minimum of 10 years sampling. The first year of the monitoring program began during the rainy season of 2006-2007, during which the runoff from 6 storm events was sampled.

The BMP Effectiveness Monitoring Program is an important water quality activity in the San Diego Bay WMA because it assesses the effectiveness of BMPs at reducing concentrations of metals in storm water runoff. Establishing the effectiveness of BMPs in reducing pollutant concentrations in runoff contributes to improving the quality of the storm water ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The BMP Effectiveness Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation

- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The BMP Effectiveness Monitoring Program intends to assess the effectiveness of BMPs at reducing concentrations of metals, primarily, in storm water runoff thereby improve the quality of runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals as high priority water quality problem for the 908.2 HA portion of the San Diego Bay WMA in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of BMPs effective at reducing metal pollutant loads.

EFFECTIVENESS ASSESSMENT

The rainy season of FY 07-08 was only the second year of the monitoring. The runoff from six storm events was sampled. The third and last season of the 3-year calibration period is now underway during FY 08-09. As such, .the Authority continues to collect baseline data. While data on pollutant loads is also being collected currently, statistically valid estimates of total reductions will not be possible for several more years.

DRY WEATHER AERIAL DEPOSITION STUDY – 24

ACTIVITY IMPLEMENTATION

The City of San Diego conducted an Aerial Deposition Study in several watersheds in the City of San Diego's jurisdiction. This study was conducted to address sources of metal and particulate pollutants that settle out on watershed surfaces and have the potential to wash off. The study was specifically used to address source related information for the Chollas Creek Metals TMDL.

Data was collected from September 10, 2007, through May 19, 2008. The study was designed to address the following questions, identified as unanswered during the initial Dry Weather Aerial Deposition Study:

1. What is the annual aerial deposition rate in the high loading areas identified in the initial dry weather aerial deposition study?
2. What is the wet weather aerial deposition rate at the SD8(1) location?
3. What is the solubility of copper, lead, and zing in atmospheric deposition particles during dry and wet conditions?

Wet weather depositional monitoring occurred at the SD8 (1) location in Chollas Creek. Dry deposition analyses occur at high loading (industrial) sites, two high traffic surface streets, and two reference sites at the following locations:

- Area near the mouth of Chollas Creek
- Switzer Creek adjacent to Interstate 5
- SD8(1) – Chollas North Fork
- DPR(2) – Chollas South Fork
- Commercial Street (Industrial corridor in Chollas Creek)
- Scripps Institute of Oceanography (SIO) Pier (Reference site and provides direct deposition assessment to the ASBS surface)
- La Jolla Parkway (High traffic surface street, high braking)
- La Jolla Shores Drive (High traffic surface street, high braking)

As of June 30, 2008, the project is approximately 65% complete (field work is approximately 85% complete). The following information summarizes the progress to date:

- Nineteen of 24 annual dry deposition events completed
- Three of three wet deposition events completed
- Three of three solubility events completed

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Sample collection is expected to continue through August 2008. Remaining tasks include data analysis and draft reporting, peer review, and final reporting. The draft report is anticipated to be delivered November 2008 and the final report January 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (specifically zinc, copper, lead)
- Total Suspended Solids (TSS)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities and additional monitoring to address them. The aerial deposition study presents the results and findings of the conditions related to aerial deposition in the San Diego Bay WMA. The study data can be used to provide model input data for future BMP evaluations and watershed activities. The report also provides information related to aerial particulate sources and relevance to each watershed.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
DRY WEATHER AERIAL DEPOSITION STUDY **Characterize Contribution of Aerial Deposition to Metals Loading**	
Expected Outcome	• Findings to be presented in final report to be released by late FY 2009

Assessment of this activity is not being conducted since it is a source identification and characterization study. This study will contribute to filling in pollutant source data gaps as identified above to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

REGIONAL HARBOR MONITORING PROGRAM – 25

ACTIVITY SUMMARY

In July 2003, the RWQCB, under §13225 of the California Water Code, requested the development of a coordinated and comprehensive harbor water quality monitoring program for harbors in the San Diego region. San Diego Bay is one of the four harbors included in the Regional Harbor Monitoring Program (RHMP). The objectives of the RHMP are:

1. Determine the contributions and spatial distributions of inputs of pollutants to harbors in the San Diego Region and how these inputs vary over time.
2. Determine whether the waters in harbors safe for body contact activities.
3. Determine whether fish in harbors safe to eat.
4. Determine whether the waters and sediments in the harbors sustain healthy biota.
5. Determine the long-term trends in water quality for each harbor.

The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay. The program includes monitoring for metals, bacteria, organic compounds, and toxicity will improve assessments of the watershed priority pollutants and will provide a program from which to assess overall water quality improvements. While this program does not specifically reduce loads of high priority pollutants, data collected will provide important information to the Copermittees on the ambient receiving water conditions. During FY 07-08, the RHMP Pilot Study was completed. Preparation for the core monitoring program was also initiated in the spring of 2008. The study design was developed and integrated into the Bight 08 Regional Monitoring Program. Field sampling was scheduled to occur in August of 2008. The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Copper
- Zinc
- Bacteria
- Pesticide
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The RHMP is considered a beneficial water quality activity in the San Diego Bay WMA because it will enable water quality improvements or degradations to be more readily identifiable. The monitoring will also provide trend information by being repeated at a specified frequency to obtain statistical trend data for the indicators. Furthermore, the RHMP is designed to integrate with existing monitoring that is regularly conducted in the region, including storm water monitoring, other permit compliance monitoring, regional Bight monitoring, and special focused studies and is designed to integrate with the State's Surface Water Ambient Monitoring Program (SWAMP).

EFFECTIVENESS ASSESSMENT

1) The RHMP Pilot Study was completed during FY 07-08. The Port of San Diego and the City of San Diego, County of Orange and the City of Oceanside evaluated monitoring data from marina and freshwater influenced sites within all four harbors in order to determine the validity of the sample design to be used in the core monitoring program. It was determined the monitoring program could accurately meet the RHMP objectives.

2) The Port of San Diego and the City of San Diego, County of Orange and the City of Oceanside coordinated with the Bight 08 regional monitoring program to develop the core monitoring program for RHMP to be implemented in August 2008. The core monitoring program design included:

- 60 monitoring locations throughout the San Diego Bay

- Study design included dividing the San Diego Bay into five different strata: Freshwater-influenced, marina, port, deep water, and shallow water.
- A wide array of constituents will be analyzed, including bacteria, metals, PAHs, and pesticides.

Participating agencies collaborated during the planning phase of the core monitoring program during the consultant selection process and MOU development. The group also held four meetings to discuss RHMP monitoring activities to occur in August 2008.

CHOLLAS CREEK DESIGN STORM STUDY AND SEDIMENT AND BACTERIA RELATIONSHIP SOURCE STUDY – 26

ACTIVITY IMPLEMENTATION

Water quality monitoring data collected in Chollas Creek has resulted in the listing of creek segments on the 2006 Clean Water Act (CWA) Section 303(d) list of impaired water bodies. Based on the Basin Plan 2006 SWRCB 303(d) listings, four total maximum daily loads (TMDLs) have been adopted for Chollas Creek: the pesticide TMDL (for Diazinon) and the three dissolved metals TMDLs (copper, lead, and zinc). These TMDLs are in response to San Diego Regional Water Quality Control Board (RWQCB) Basin Plan Resolutions R9-2002-0123 and R9-2007-043, respectively. In addition, a draft TMDL for indicator bacteria is currently being revised.

As part of the Implementation Plan for the Diazinon TMDL, a design storm assessment will be conducted. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm. To gather this data, discrete grab samples will be collected and analyzed at two sites in Chollas Creek (SD 8(1) and DPR2) over the course of a storm event (i.e., a pollutograph).

There are three study questions that will be addressed by this study:

1. How do sediment and pollutant concentrations and loads vary over the course of a storm?
2. What sediment grain size classes are associated with the greatest pollutant concentration in storm water runoff?
3. Are there water quality correlates that influence the sediment/pollutant relationship?

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source will be conducted in FY 2009. This study will include assessment, sampling, analysis, and reporting. Study completion is anticipated in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacterial
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them.

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). This study will address several of the Priority Water Quality Problems (PWQP) identified for Chollas Creek in the Strategic Plan, including bacteria, heavy metals, pesticides, and sediments. It will also help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the PWQP. According to the Strategic Plan, the study is a Tier II BMP, which will provide information for the development of a design storm for Tier III BMP development.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS CREEK DESIGN STORM STUDY AND SEDIMENT AND BACTERIA RELATIONSHIP SOURCE STUDY **Identify Appropriate Design Storm to Use for Project Design and Characterize Transport Relationship Between Bacteria and Sediment**	
Expected Outcomes	• Findings to be presented in final report to be released in FY 2009

Assessment of this activity is not being conducted since it is a bacteria and sediment relationship characterization study and a design storm identification study. This study will contribute to filling in data gaps to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

CHOLLAS CREEK BENEFICIAL USE DESIGNATION/ATTAINABILITY STUDY AND MOUTH OF CHOLLAS CREEK BACTERIA SOURCE ID STUDY – 27

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego (City) began to conduct a Use Attainability Analysis (UAA) in Chollas Creek to assess the applicability of the Shellfish (SHELL) Beneficial Use. The objectives of the UAA were to evaluate the designated Beneficial Uses of Chollas Creek, review the historical record of previous existing Beneficial Uses in the Creek, summarize the Creek's historical uses, and assess the criteria for beneficial use designation.

The driving force of the UAA was an expectation that the San Diego Regional Water Quality Control Board (RWQCB) was pursuing an amendment to the Basin Plan that would have required the City to meet water quality objectives at the mouth of Chollas Creek as defined by the SHELL Beneficial Use (related to the harvesting of shellfish: clams, oysters, mussels, etc.). The anticipated amendment was expected to be introduced to the Basin Plan via the Bacteria I TMDL (Beaches and Creeks in the San Diego Region), which initially required that the SHELL water quality objective for total coliform be met at the mouths of all drainages. However, the final version of the TMDL and the subsequent Basin Plan amendment required that the REC-1 water quality objectives for bacteria be met rather than the SHELL objective. This amendment to the Basin Plan was accepted by the RWQCB in December 2007.

Therefore, the current Beneficial Use for the mouth of Chollas Creek has not changed from its original designation as potential REC-1. Although the current designation remains REC-1, there are indications in the Bacteria I TMDL that the RWQCB may pursue the SHELL Beneficial Use designation for Chollas Creek in the future. In addition, a recent biological survey at the mouth of Chollas Creek suggested that there is appropriate habitat for shellfish in the area and several filter-feeding bivalves were identified at the mouth just below the confluence of the north and south forks of the Creek. Because harvestable filter-feeding bivalves (clams, mussels, oysters, etc.) in the San Diego region require a marine environment, the point of compliance for assessing the SHELL water quality objective is just above the tidal prism (the volume of water between the low and high tides).

Given the potential for a future SHELL designation for the mouth of Chollas Creek, it is advantageous for the City to understand the freshwater inputs to this area and their associated bacterial densities. Understanding these inputs will allow the City to be pro-active in implementing BMPs to reduce bacterial loading to the mouth of Chollas Creek, should a SHELL standard be imposed. Therefore, the remaining funds for the Chollas Creek UAA will be utilized to understand the sources of dry weather runoff that reach the mouth of Chollas Creek and an estimate of the associated bacterial loads. This Bacterial Source Identification Study at the mouth of Chollas Creek will be considered the next phase of the UAA and will be reported on in FY 2009.

There are two questions Mouth of Chollas Creek Bacteria Source ID Study will address:

1. What are the sources and magnitudes of dry weather urban runoff, and associated indicator bacteria, that influence water quality at the mouth of Chollas Creek?
2. What BMPs may be put in place to reduce or eliminate the influence of dry weather urban runoff at the mouth of Chollas Creek?

The study designed to answer these questions has four main tasks: project management, sub-watershed assessment and sampling, laboratory analysis, and reporting.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The UAA is considered completed. The Bacterial Source Identification Study at the mouth of Chollas Creek will be conducted and completed in FY 2009. This Study will include assessment, sampling, analysis, and reporting.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacterial

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them.

The City of San Diego has adopted an integrated, tiered, and phased strategy (*Strategic Plan for Watershed Activity Implementation*) to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by performing a prioritized study to understand the freshwater inputs to this area and their associated bacterial densities inputs, which will allow the City to be pro-active in implementing BMPs to reduce bacterial loading to the mouth of Chollas Creek.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS CREEK BENEFICIAL USE DESIGNATION (UAA) STUDY / MOUTH OF CHOLLAS CREEK BACTERIA SOURCE IDENTIFICATION STUDY **Identify Sources of Bacteria at Mouth of Chollas Creek**	
Expected Outcome	• Findings to be presented in final report anticipated to be released in FY 2010

Assessment of this activity is not being conducted since it is a bacteria source identification study. This study will contribute to filling in data gaps to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

Appendix F

Education Activity Tables

Table F-1. 2007-2008 Public Presentations and Media Data.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
8/12/07	City of Chula Vista	Festival Participation	Lemon Festival	City staff manned a booth and distributed storm water pollution prevention and recycling information	General Public	Family	1,000	Downtown Chula Vista	IPM Pest Tip cards, pollution prevention information, and the CLEAN brochures
9/8/07	City of Chula Vista	Festival Participation	Kid's Festival	City staff manned a booth and distributed information about pollution prevention and used oil recycling	General Public	Children	800	New Hope Community Church	Storm water pollution prevention and used oil recycling brochures
9/29/07	City of Chula Vista	Festival Participation	Bonitafest	City staff manned a booth and distributed pollution prevention education	General Public	Residents	5,000	Bonita Road Shopping Center	CLEAN brochures, pollution prevention education, and IPM Pest Tip Cards
10/6/07	City of Chula Vista	Jurisdiction-hosted event	Chula Vista Fire Department Open House	Storm water staff had a booth at the open house and provided pollution prevention training to citizens	General Public	Residents	500	Fire Station 4	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message
10/6/07	City of Chula Vista	Festival Participation	Go Green and Clean Day	Staff provided training on pollution prevention and provided CLEAN brochures and IPM Pest Tip cards	General Public	Residents	500	Otay Ranch Town Center	Staff provided training on pollution prevention and provided CLEAN brochures and IPM Pest Tip cards
10/17/07	City of Chula Vista	Jurisdiction-hosted event	Citizen's Academy	City staff provided storm water training to citizens about storm water pollution prevention	General Public	Citizen's Academy	50	Chula Vista Public Works Center	CLEAN brochures, pollution prevention information, recycling information
11/07	City of Chula Vista	Print Media	Trail Display	The trail displays show how the City is in the Otay and Sweetwater Watersheds and emphasizes the need to protect environmental resources in the City	General Public	Residents	1,000s	Various locations throughout the City of Chula Vista	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
11/8/07	City of Chula Vista	Jurisdiction-hosted event	Construction BMP Training	City storm water staff provided construction BMP training at a BIA workshop which focused on pollutants of concern	Builders, Developers		50	Metropolitan Waste Water District	
01/11/08	City of Chula Vista	Jurisdiction-hosted event	Construction Inspector Training	Storm water inspection training for staff who perform inspections during the building phase of construction projects, focusing on pollutants of concern	Staff	Inspectors	10	Chula Vista PWC	
3/14/08	City of Chula Vista	Jurisdiction-hosted event	New Municipal Permit – SUSMP Updates	Storm water staff provided training to Engineering and Land Development Staff about the updated SUSMP, WQTRs, pollutants of concern, BMP selection, maintenance, Construction Permit, and phased grading.	City Staff	Engineers	6	Chula Vista PWC	
4/12/08	City of Chula Vista	Festival Participation	Day of the Child/ Put Your Butt in the Right Place	City staff manned a booth and provided storm water pollution prevention education	General Public	Children, adults	800	Memorial Park	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message
4/19/08	City of Chula Vista	Festival Participation	Festival del Sol	City storm water staff had a booth at the event and provided information about storm water pollution prevention	General Public	Residents	800	Otay Ranch Town Center	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
4/30/08	Multiple jurisdictions in the San Diego Bay Watershed	Festival Participation	Earth Day	City staff manned a booth at the events and provided education on hazardous waste disposal and pollution prevention	General Public	School Children	400	Imperial Beach Pier	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message
5/7/08	City of Chula Vista	Jurisdiction-hosted event	Citizen's Academy	City staff provided storm water training to citizens about storm water pollution prevention	General Public	Citizen's Academy	50	City of Chula Vista	CLEAN brochures, pollution prevention information, recycling information
5/14/08	City of Chula Vista	Festival Participation	Cinco de Mayo	City staff manned at booth at the event and provided storm water pollution prevention training	General Public	Residents	1,000	3rd Avenue – Downtown Chula Vista	CLEAN Mini footballs, calculators, IPM cards, CLEAN brochures, recycling brochures, pens pencils with recycling message
5/13/08	City of Chula Vista	Jurisdiction-hosted event	WQTR Training	Storm water staff provided training to Engineering Staff about WQTRs and pollutants of concern	City staff	Engineers	1	Chula Vista PWC	
5/30/08	City of Chula Vista	Jurisdiction-hosted event	Program Effectiveness Assessment Training	Storm water staff and San Diego Bay Copermittees received training on Program Effectiveness Assessment	Copermittees		40	Chula Vista PWC	Program Effectiveness Assessment Handbook
6/3/08	City of Chula Vista	Jurisdiction Storm Water Specific Events	Tow Yard Training	City staff provided training to tow yard owners and managers about general storm water concepts and storm water inspections	Business Owners	Tow yard workers	20	Chula Vista Police Department	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
7/3/07 - 7/4/07	City of Coronado	Festival Participation	Coronado Yacht Club Junior Sailing 4th of July Trash Pickup	Storm water BMP information	Boaters and Residential	Coronado residents and visitors	150	Coronado Yacht Club, City of Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, beach balls, Frisbees, coozies) as well as garbage bags and oil soak pads.
Week of 8/15/07	City of Coronado	Print Media	"Coronado Beaches and Bays Ace Water Quality Report Card" *Coronado Eagle & Journal, p.11*	Storm water's impact on California's oceans is graded by Heal the Bay, a non-profit organization.	Residential	Coronado residents and visitors	12,500 circulation	City of Coronado	After describing the City's aggressive efforts to maintain the City's high ratings by Heal the Bay such as installing 11 diverters, and twice per week water quality monitoring, the City's describes the overall results of the Heal the Bay Report Card for the State's beaches.
9/29/07	City of Coronado	Jurisdiction Hosted Event	Fire Services Department Open House	Storm water BMP information	Residential	Coronado residents and visitors	4,000	City of Coronado, Dept. of Fire Services	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as hands-on interaction with a portable watershed model that demonstrated how urban runoff flows into the watershed (Enviroscape®)
Week of 10/18/07	City of Coronado	Print Media	"Jim Reilly Surfing Contest Celebrates 25 Years" *Coronado Eagle & Journal*	Storm water information related to a forthcoming surf competition	Residential	Coronado residents and visitors	12,500 circulation	City of Coronado	In addition to describing the forthcoming surfing competition events, this article reported one of the primary purposes of this event as "raising awareness of the condition of our ocean and its impact on the health of our children."

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
11/07	City of Coronado	Print Media	Coronado's Beach and Bay Areas Bring Home an A+ on Report Card *South County Briefings*	Storm water's impact on California's oceans is graded by Heal the Bay, a non-profit organization.	General Public w/ an interest in beach water quality and associated environmental issues	California residents and visitors	u/k	City of Coronado	This report graded all five of Coronado's beaches with an A or A+ during both dry and wet weather. This is an indicator that the City's ongoing water quality improvement efforts, including the operation of dry/wet weather diverters, the diversion of urban runoff and nuisance water to the sewer system, and regular street sweeping, all of which prevent debris, urban runoff and nuisance water from reaching receiving waters, as well as our daily beach maintenance, continue to be successful in enhancing beach water quality.
11/1/07	City of Coronado	Jurisdiction Storm water-specific Event	BMP Brochure Mass Mail-out w/ Business License Renewals	Storm water BMP information	Business	All Coronado business license holders	2,600	San Diego Region	BMP-specific brochures and flyers were e-mailed as links along with the e-mailed Coronado business license renewal forms to every Coronado business license holder. These brochures included the following business types: Business, Construction, Food Service, Landscaping, Mobile Businesses and Property Management.
11/3/07	City of Coronado	Festival Participation	25th Annual J.R. Memorial Surf Classic	Storm water BMP information	Residential	Coronado residents and visitors	270	City of Coronado	Coronado Clean Coastlines promotional items (oil funnels, beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures, were placed in the bags each participant received after participating in his/her event.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Week of 11/15/07	City of Coronado	Print Media	"International Surf Stars in Coronado for Surf Contest" *Coronado Eagle & Journal*	Storm water information related to a recently held surf competition	Residential	Coronado residents and visitors	12,500 circulation	City of Coronado	In addition to describing the results of the recently held surfing competition, this article reported one of the primary purposes of this event as "raising awareness of the condition of our ocean and its impact on the health of our children."
4/19/08 and 4/20/08	City of Coronado	Community Hosted Event	Annual Flower Show	Storm water BMP information	Residential	Coronado residents and visitors	4,000	Spreckels Park, Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as Integrated Pest Management Pest Tip Cards were distributed from a Department of Public Services booth.
4/20/08	City of Coronado	Community Hosted Event	Annual Car Show	Storm water BMP information	Residential	Coronado residents and visitors	4,000	Spreckels Park, Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.), and Integrated Pest Management Pest Tip Cards were distributed. An Enviro-scape® interactive model was displayed at a Department of Public Services booth shared with EDCO staff.
4/27/08	City of Coronado	Festival Participation	4th Annual Kids for Clean Water Menehune Surf Fest	Storm water information as it related to a surf competition	Residential	South Bay residents and visitors	260	City of Coronado	Coronado Clean Coastlines promotional items (beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures were placed in the bags each child received after participating in his/her event.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
5/08	City of Coronado	Print Media	Coronado's Central Beach named as one of the "Top 10 Best Beaches" by Dr. Stephen Leatherman a.k.a. "Dr. Beach"	Storm water's impact on California's oceans is seen as directly correlated to the beach's value as a tourist site.	General Public w/ an interest in beach water quality and associated environmental issues	Tourists interested in visiting a world-renowned beach as well as local residents	u/k	City of Coronado	The Top 10 Beaches in the U.S. was reported by *Travel Channel USA, the Today Show, Yahoo Travel,* TravelChannel*.com* and *About.com: Southeast US Travel.* It is unknown what the total audience size for these television channels and internet sites is but they are all very well known to the general public.
6/14/08 to 7/6/08	San Diego Region	Festival Participation	San Diego County Regional Fair	Storm water BMP information	General Public	General Public with an interest in pollution prevention and / or environmental issues	u/k	Del Mar, California	As a copermittee, the City of Coronado assisted with staff support for the public education booth which included BMP specific brochures and Integrated Pest Management (IPM) information cards.
2007-2008	San Diego Region	PSA	San Diego Regional Storm water Pollution Prevention Program	THINK BLUE media campaign	General Public	General Public with an interest in pollution prevention and / or environmental issues	u/k	Broadcast to San Diego Region	As a copermittee, the City of Coronado contributed financially to THINK Blue's media campaign. However the summary of those events will not be available from the City of San Diego until December 2008.
9/11/07	County of San Diego	Jurisdictional Stormwater Specific Event	Presentation to the Geranium Society of SD	General IPM	General Public	Gardener's	35	Geranium Society of SD	
7/7/07	County of San Diego	Jurisdictional Stormwater Specific Event	P2 workshop for Marinas & Boaters	Negacio Verde	Marine Business & Boaters	Marina Managers, Boaters & Contractors	11	Bay Club Marina	
9/9/07	County of San Diego	Community Event	North Park Block Party	Master Gardener Booth	General Public	Residents	200	33rd Street @ Thorn	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
10/13/07	County of San Diego	Community Event	Nazarene University Community Day	Master Gardener Booth	General Public	Residents	200	Point Loma	
11/1/07	County of San Diego	Jurisdictional Stormwater Specific Event	Presentation to Educators and School Staff	Watershed & P2 information	Education	HS Teachers	34	SD County Health Services Complex	
1/9/08	County of San Diego	Jurisdictional Stormwater Specific Event	Point Loma Garden Club	General IPM	General Public	Gardeners	49	Point Loma Garden Club	
3/22/08	County of San Diego	Community Event	World Water Awareness Day	Staffed Booth	General Public	General Public	1500	Rueben H. Fleet Science Center	
4/19/08	County of San Diego	Community Event	Coronado Flower Show	Master Gardener Booth	General Public	Gardeners	100	Spreckles Park	
4/20/08	County of San Diego	Community Event	Earth Fair	Master Gardeners Booth	General Public	General Public	1000	Balboa Park	
4/26/08	County of San Diego	Community Event	Point Loma Garden Club	Master Gardeners Booth	General Public	General Public	100	Point Loma	
5/17/08	County of San Diego	Community Event	Garden of the Senses Celebration	Master Gardeners Booth	General Public	General Public	750	San Diego Zoo	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
FY07-08	County of San Diego	PSA	County Chronicles – Outdoor Water Conservation	Aired on the County Television Network - 3-minute program providing outdoor water conservation tips to help conserve water and minimize polluted run-off. A total of 85 airings.	General Public				
FY07-08	County of San Diego	PSA	Down to Earth	Aired on the County Television Network - 24-minute program PCW-sponsored environmentally friendly home gardening tips. A total of 120 airings.	General Public				
FY07-08	County of San Diego	PSA	How to Manage Manure	Aired on the County Television Network - 13-minute video titled "How to Manage Manure: Composting for Horse Owners." A total of 16 airings.	General Public				
8/07	City of Imperial Beach	Electronic Media	E-Waste / Universal Waste event	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on upcoming event.
10/07	City of Imperial Beach	Electronic Media	Safe Cleanup of Ash	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on proper cleanup of ash.
9/07	City of Imperial Beach	Electronic Media	Proper Disposal of Batteries	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on proper disposal of used batteries.
10/07	City of Imperial Beach	Electronic Media	Tijuana River Bacteria Source Identification Study	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on study to determine sources of bacteria.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
1/08	City of Imperial Beach	Electronic Media	Update on the JURMP Annual Report	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail update on the JURMP Annual Report.
1/08	City of Imperial Beach	Jurisdiction Stormwater-specific event	Update on the JURMP Annual Report	Informative presentation	General Public	City Employees, Council members, General Public	40	City of Imperial Beach	Presentation to City Council members, City employees, and public on stormwater pollution prevention efforts in the City during the previous reporting cycle.
2/08	City of Imperial Beach	Jurisdiction Stormwater-specific Event	Presentation to the Imperial Beach Kiwanis Club	Watershed concepts, issues and stormwater pollution prevention	General Public	Residents	30	Boys & Girls Club, Imperial Beach	Brochures: Stormwater Pollution Prevention- Pet Waste, Yard Waste; IPM cards; ink pens with stormwater hotline imprint
Spring 2008	City of Imperial Beach	Print Media	Creek to Bay Clean Up Will Be Held April 26, 2008	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how the City of Imperial Beach was joining with I Love a Clean San Diego efforts to clean up the beaches and waterways,
Spring 2008	City of Imperial Beach	Print Media	Free Oil Filter Exchanges	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how the City of Imperial Beach was implementing stormwater BMPs through a free oil filter exchange with Kragen auto parts stores,
Spring 2008	City of Imperial Beach	Print Media	April is Recycling Month in Imperial Beach	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how the City of Imperial Beach was coordinating their annual events, which included the Citywide Garage Sale, Earth Day Celebration, and Home Front Cleanup.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Spring 2008	City of Imperial Beach	Print Media	Put Toxic Waste in Its Place	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how residents could properly dispose of their household cleaners, paints, etc. without environmental damage.
Spring 2008	City of Imperial Beach	Print Media	South Bay Household Hazardous Waste Collection Facility Now Open on Wednesdays	Article in EDCO Environmental Times	General Public	Imperial Beach Residents	28,000	City of Imperial Beach	This article explained how residents could properly dispose of their household cleaners, paints, etc. without environmental damage on Wednesdays in addition to Saturdays.
4/08	City of Imperial Beach	Electronic Media	Earth Day	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on the upcoming Earth Day Celebration at the Imperial Beach Pier.
5/08	City of Imperial Beach	Print Media	Earth Day at the Imperial Beach Pier held April 30th brings large crowds	Article in the Imperial Beach Eagle & Times	General Public	Imperial Beach residents and tourists	28,000	City of Imperial Beach	Newspaper
5/08	City of Imperial Beach	Electronic Media	Earth Day	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail update on the Earth Day Celebration at the Imperial Beach Pier.
6/08	City of Imperial Beach	Jurisdiction Stormwater-specific Event	Presentation to the Imperial Beach Senior Center	Watershed concepts, issues and stormwater pollution prevention	General Public	Residents	20	Senior Center, Imperial Beach	Brochures: Stormwater Pollution Prevention- Pet Waste, Yard Waste; IPM cards; ink pens with stormwater hotline imprint; key chains

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
6/08	City of Imperial Beach	Electronic Media	Trash and Sediment	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on effects of trash and sediment on water quality.
6/08	City of Imperial Beach	Electronic Media	Help Reduce Stormwater Pollution	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on stormwater pollution prevention BMPs.
6/08	City of Imperial Beach	Electronic Media	Water Conservation and Stormwater Pollution	"FYI" from City Manager's Office	General Public	City Employees, Council members	200	City of Imperial Beach	Informational e-mail on how water conservation could be a stormwater pollution prevention BMP.
Ongoing	City of La Mesa	Print Media	Preventing Urban Runoff Trifold	Description of storm drain and sanitary sewer system, including contact information for further BMP resources	Residential, Ind/Com	Residents and Businesses in La Mesa	552	Distributed during inspections, complaint investigations, public events, posted on Bulletin Board	Preventing Urban Runoff Trifold
Ongoing	City of La Mesa	Print Media	San Diego Bay Watershed Fact Sheet	Defines a watershed as well as the possible sources of pollutants and provides methods for preventing urban runoff pollution	Residential, Ind/Com	Residents and Businesses in La Mesa	953	Distributed during inspections, complaint investigations, public events, posted on Bulletin Board	SD Bay Watershed Fact Sheet
Ongoing	City of La Mesa	Print Media	Chollas Creek TMDL Fact Sheet	Provides information on the TMDL for Chollas Creek and how it may affect businesses and residents	Residential, Ind/Com	Residents and Businesses in La Mesa	40	Distributed during inspections, complaint investigations, public events, posted on Bulletin Board	Chollas Creek TMDL Fact Sheet

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Ongoing	City of La Mesa	Print Media	Storm Water Bulletin Board	Displayed in the Engineering Department counter at City Hall – displays storm water information, including watershed information, and provides educational materials for individuals to take	Residential, Ind/Com, Development Planning, Construction	Residents, Businesses, Project proponents, and Construction Sites in La Mesa	40	Engineering Counter, City Hall	Various City educational outreach material is displayed, including the Chollas Creek TMDL fact sheet and the San Diego Bay fact sheet.
Ongoing	City of La Mesa	Print Media	Informational Storm Water Kiosk	Kiosk displaying storm water information, including watershed information	Residential	Residents	100	Vista La Mesa Park	Various City educational outreach material is displayed
8/07	City of La Mesa	Print Media	*One Phone call can Help Stop Storm Water Pollution*	Articles described BMPs for residents, ind/com businesses, and construction sites	Residential, Ind/Com, Construction	Residents, Businesses, and Construction Sites in La Mesa	15,000	Distributed in the mail and by e-mail	*La Mesa Focus* newsletter, August 2007
11/07	City of La Mesa	Print Media	*Be Aware of What you Wash Down the Storm Drain*	Tips to prevent pollutants from entering our waterways	Residential, Ind/Com	Residents and Businesses in La Mesa	15,000	Distributed in the mail and by e-mail	*La Mesa Focus* newsletter, November 2007
2/08	City of La Mesa	Print Media	*Storm Water: Did You Know?*	Discusses the local watersheds, channels and inlets in the City and promotes the use of pollution prevention measures	Residential, Ind/Com	Residents and Businesses in La Mesa	315	Distributed in the mail and by e-mail	*La Mesa Focus* newsletter, February 2008
5/08	City of La Mesa	Print Media	*Update to the City's Storm Water Program*	Included updates made to the JURMP and gave a break down of requirements by audience type	Residential, Ind/Com, Construction	Residents, Businesses, and Construction Sites in La Mesa	315	Distributed in the mail and by e-mail	*La Mesa Focus* newsletter, May 2008

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
10/5/07 to 10/7/07	City of La Mesa	Community-Hosted Event	Oktoberfest	City hosted booth and handed out a variety of educational materials	General Public	Residents of La Mesa	Event held over three full days	La Mesa	IPM cards, Urban Runoff Trifolds, San Diego Bay Watershed Fact Sheets
4/20/08	City of La Mesa	Festival Participation	Earth Fair	City contributed money to help pay for educational materials and provided Watershed Fact Sheets to Earth Fair Booth	General Public	Residents	Unknown	Balboa Park	San Diego Bay Watershed Fact Sheets
10/12/07	City of La Mesa	Festival Participation	Inter-generational games	ILACSD presented the Enviroscape Model	General Public	Residents and School Children	140	La Mesa Middle School	IPM Cards and San Diego Bay Watershed Fact Sheets
4/13/08	City of La Mesa	Community-Hosted Event	Creek to Bay Cleanup	City presented information on SD Bay Watershed and Chollas Creek TMDL	General Public	Residents of La Mesa	5	University Channel in La Mesa	San Diego Bay Watershed Fact sheets
9/15/07	City of La Mesa	Community-Hosted Event	California Coastal Cleanup Day	City presented information on San Diego Bay Watershed and Chollas Creek TMDL	General Public	Residents of La Mesa	25	University Channel in La Mesa	San Diego Bay Watershed Fact sheets
8/8/07	City of Lemon Grove	Print Media	Bi-annual City Newsletter	FOG, rainy season residential BMPs, disposal of medicine, HHW, e-waste	Residential and Business	All Lemon Grove residents and businesses	9,500	City-wide	Bi-annual City Newsletter contains an Environmental page with stormwater information.
10/7/07	City of Lemon Grove	Jurisdictional Hosted Event	Fire Station Open House	Stormwater Information Booth	Residential	Lemon Grove citizens and guests	60	Fire Department	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including sponges, and bookmarks with the hotline and oil-recycling information. Also distributed were the IPM tip cards.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
12/7/07	City of Lemon Grove	Jurisdictional Hosted Event	Winter Bonfire	Stormwater Information Booth	Residential and Business	Lemon Grove citizens and guests	800	Park on Main St.	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including sponges, bookmarks, and pens with the hotline and oil-recycling information.
3/8/07	City of Lemon Grove	Print Media	Bi-annual City Newsletter	Creek to Bay announcement, shade trees, HhW, e-waste, reusable shopping bags, home improvement BMPs	Residential and Business	All Lemon Grove residents and businesses	9,500	City-wide	Bi-annual City Newsletter contains an Environmental page with stormwater information.
7/7/07	City of National City	Jurisdiction Stormwater-specific Event	Presentation to the National City Kiwanis Club	Watershed concepts, issues, regulatory information, and storm water pollution prevention	General Public	Residents in National City	16	Restaurant at corner of Plaza and 805	None
2/28/08	City of National City	Jurisdiction Stormwater-specific Event	SUSMP Workshop	SUSMP requirements, Writing a SWMP, Common problems with SUSMP reports, LID concepts, Examples of treatment control BMPs, Project resources, What to expect from City inspections	General Public	Development Planning and Construction Community in National City	13	Martin Luther King Community Center	SUSMP Checklist, 2008 Storm Water Calendar, City SUSMP Ordinance, Self Checklist
2007/ 2008	City of National City	Print Media	2008 Storm Water Program Calendar	Includes intro to urban runoff pollution concepts, BMPs, and resources for waste disposal and workshop reservations. Bilingual.	General Public	Residents, Ind/Com Businesses in National City	2000	City of National City	12 month calendar encourages protecting San Diego Bay from pollution
2007/ 2008	City of National City	Print Media	Everything that flows down into a storm drain goes untreated directly into our creeks, lagoons, and SD Bay	Bilingual handout detailing sources of pollution and how individuals can help prevent pollution by changing wash water and trash disposal methods	General Public	Residents in National City	800	City of National City	"Everything that flows down into a storm drain goes untreated directly into our creeks, lagoons, and San Diego Bay" handout

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
11/6/07	Port of San Diego	Jurisdiction Stormwater-specific Event	Building Industry Association Seminar-Preparation of a SWPPP and Sampling Program using the BIA Template	Permit requirements, SWPPP preparation, monitoring, implementation, and compliance	Construction	Construction Site Owners and Developers	21	Unknown	Handbooks
11/8/07	Port of San Diego	Jurisdiction Stormwater-specific Event	Building Industry Association Seminar - SWPPP Implementation and Compliance Techniques	Permit requirements, SWPPP preparation, monitoring, implementation, and compliance	Construction	Construction Site Owners and Developers	33	Unknown	Handbooks
11/13/07	Port of San Diego	Jurisdiction Stormwater-specific Event	Building Industry Association Seminar - Additional NPDES Topics Including the New Draft Preliminary Construction Stormwater Permit	Permit requirements, SWPPP preparation, monitoring, implementation, and compliance	Construction	Construction Site Owners and Developers	46	Unknown	Handbooks
8/3/07	Port of San Diego	Jurisdiction Stormwater-specific Event	Stormwater Training for the San Diego Marriott Events Staff	Permit requirements, stormwater BMPs implementation, and compliance	Industrial and Commercial Owners	Hotel Staff	8	San Diego Marriott	None

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
2/20/08	Port of San Diego	Jurisdiction Stormwater-specific Event	Hotel Engineers Association Stormwater Training	Permit requirements, stormwater BMPs implementation, and compliance	Industrial and Commercial Owners	Hotel Engineers	46	Manchester Grand Hyatt	None
7/7/07	Port of San Diego	Jurisdiction Stormwater-specific Event	*Negocio Verde* Pollution Prevention Workshop	BMPs regarding Marina and boating practices	Industrial, Commercial Owners, and General Public	Marina staff and boaters	11	Unknown	San Diego Bay Boaters Guide
11/15/07	Port of San Diego	Print Media	*San Diego Family Magazine* – "Healthy Planet, Healthy Seas" article	Watershed concepts and wildlife	General Public	General Public	300,000	N/A	N/A
5/23/08	Port of San Diego	Jurisdiction Stormwater-specific Event	SEAL Tour Guide Training	History of water quality impacts and watershed concepts	Industrial and Commercial Owners	SEAL tour guides	6	Old Town Trolley Tours Headquarters	Stormwater Residential BMP Brochures
7/07-6/08	Port of San Diego	Print Media	Project ORCA Website	Website educating children about wildlife of San Diego Bay	General Public	Children	175	N/A	N/A
7/07-6/08	Port of San Diego	Community Hosted Event	Maritime Museum of San Diego Adult *Pilot* Boat Tours	Water quality and watershed concepts	General Public	General Public	9,258	Maritime Museum of San Diego	Stormwater Residential BMP Brochures
FY07-08	City of San Diego	Print Media	Ad mobile	Stormwater pollution prevention principles	General Public	Residents	522,300 impressions per 4 week period	San Diego Bay Watershed/ Chollas Creek	Mobile Billboard Message (Think Blue)

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
FY07-08	City of San Diego	PSA	Karma TV Campaign (Karma, Karma 2nd Chance, Karma Tourist)	General Pollutant Awareness – Watershed Concepts in SD Bay	General Public	Residents / Commercial and Industrial Operators	County Wide	County Wide	Video PSAs in English and Spanish
FY07-08	City of San Diego	PSA	Karma Radio Campaign (Karma, Karma Tourist)	General Pollutant Awareness – Watershed Concepts in SD Bay	General Public	Residents / Commercial and Industrial Operators	County Wide	County Wide	Radio PSAs in English and Spanish
FY07-08	City of San Diego	Print Media	Poster Distribution	Erosion and Sediment Control Concepts	Development Permittees	Development and Construction Community	200	San Diego Bay Watershed	148 Erosion and Sediment Control Posters distributed – for more information, please see the activity sheet
FY07-08	City of San Diego	Print Media	Guidebook Distribution	BMPs for Food Establishments	Business Owners / Operators	Restaurant Personnel	2,000	San Diego Bay Watershed	1,200 What's Cookin' Booklets were issued – for more information, please see the activity sheet
FY07-08	City of San Diego	Print Media	Pamphlet Distribution	Water responsibility concepts	General Public	Residents	1,222	San Diego Bay Watershed	Pamphlet entitled "Our Water, Our Responsibility" is made available at all San Diego City Lakes as an insert inside a map of the area
4/6/08	City of San Diego	Jurisdiction Stormwater-specific Events	Walk the Watershed	Provided information about pending stormwater projects.	General public, stakeholders	Residents	50	Chollas Creek	Verbal information provided
3/12/08	City of San Diego	Jurisdiction Stormwater-specific Events	Street Sweeping Outreach	Provided background on the street sweeping project and touched on general watershed concepts	Stakeholders	El Cajon Boulevard Business Improvement Association	6	El Cajon Boulevard	Disseminated street sweeping study information and touched on general stormwater issues

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
FY07-08	City of San Diego	Print Media	Transit Shelter Advertisements	Think Blue advertisements in transit shelters	General Public	Residents	Varies per location	Hillcrest (Park/University), San Diego (4th/Hawthorne), San Diego (13th/ Imperial)	Transit shelter advertisement
FY07-08	City of San Diego	Print Media	Billboard Advertisements	Think Blue Billboards	General Public	Residents	Varies per location	North Park (University/ Wilson), Hillcrest (University/ Herbert), San Diego (Fairmount/ University), San Diego (El Cajon/52nd St.), San Diego (Pacific Hwy/ Washington St)	Billboard
4/4/08	City of San Diego	Community-Hosted Event	Chollas Creek Restoration Event	Installed and discussed signage at Chollas Creek site detailing need for restoration and benefits to the community	General Public	Residents, business community	60	Chollas Creek	Verbal information about signage provided
4/1/08 to current	City of San Diego	Community-Hosted Event	Street Sweeping Pilot Study	Distributed verbal information about the pilot study including impacts in the community	General Public	Residents	15	San Diego Bay	Verbal information
5/5/08	City of San Diego	Festival Participation	Cinco De Mayo	IPM Pest Tip Cards, Pest Cards feedback forms, promotional items	General Public	General Public	100,000	Old Town	IPM Pest Tip Cards, Pest Cards feedback forms, promotional items
FY07-08	Airport Authority	Print Media	Authority SWMP	SDCRAA website	General Public, Authority, and SDIA staff	General Public		San Diego International Airport	SDCRAA Environmental webpage provided information and links to the Authority's SWMP which discusses storm water management at SDIA

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
FY07-08	Airport Authority	Print Media	Airport Recycling Guide	SDCRAA website and in print	Authority and SDIA employees	Authority and SDIA employees	300	San Diego International Airport	Recycling guide was on the SDCRAA website and provided in print in the terminals and at various employee out reach events.
10/2/07-2/4/08	Airport Authority	Print Media	Draft Environmental Impact Report	SDCRAA website	General Public	General Public		San Diego International Airport	The Draft Environmental Impact Report for the Airport Master Plan was available on the Authority's website.
FY07-08	Airport Authority	Print Media	Coastal Cleanup Day Billboard	SDIA Terminals	General Public	General Public		San Diego International Airport Terminals	California Coastal Cleanup Day billboards were displayed throughout Terminals during entire reporting period
FY07-08	Airport Authority	Print Media	"Don't Trash California" anti-litter campaign billboards	SDIA Terminals	General Public	General Public		San Diego International Airport Terminals	"Don't Trash California" anti-litter campaign billboards were displayed throughout the terminals during the entire reporting period.
FY07-08	Airport Authority	PSA	Think Blue PSA	PSA at baggage claim	General Public	Traveling Public		San Diego International Airport baggage claim area	Think Blue PSA aired in the Terminal 2-West baggage claim area.
FY07-08	Airport Authority	PSA	"Don't Trash California" anti-litter campaign PSA	PSA at baggage claim	General Public	Traveling Public		San Diego International Airport baggage claim area	"Don't Trash California" anti-litter campaign PSA aired in the Terminal 2-West baggage claim area.
4/28/08	Airport Authority	Festival Participation	Imperial Beach Earth Day Event	SDCRAA Environmental Affairs and Port of San Diego ran a booth at the event and provided educational materials on the watershed to Imperial Beach School children	General Public	School Children	400 students	Imperial Beach	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
6/28/08	Airport Authority	Festival Participation	Del Mar Fair	Authority Staff participated in the San Diego County Fair Regional Outreach Event at the Del Mar Fair.	General Public	Fair participants	13,028 people	Del Mar Fair Grounds	Think Blue survey cards were distributed.
6/12/08	Airport Authority	Jurisdiction-Hosted event	Annual Division Open House	Environmental Affairs staff provided outreach and educational materials regarding the Authority's storm water management program.	Authority Employees	Authority Employees	300	San Diego International Airport	
FY07-08	Airport Authority	Print Media	Protect San Diego Coastal Wildlife billboards	Protect San Diego Coastal Wildlife billboards were on display throughout the terminals during the entire reporting period.	General Public	Traveling Public		San Diego International Airport	
5/29/08	Airport Authority	Jurisdiction-Hosted event	NOAA/ Wildcoast Artists Reception	The Authority hosted a joint reception for an environmental artist from NOAA and a children's art display from Wildcoast.	General Public	Traveling Public		San Diego International Airport	
FY07-08	Airport Authority	Print Media	Youth Art Wall	SDIA Youth Art Wall displayed the City of San Diego Water Department's Children's Water Conservation Poster Contest.	General Public	Traveling Public		San Diego International Airport	
2/08-3/08	Airport Authority	Jurisdiction storm water specific event	Tenant SWMP Training	Environmental Affairs provided training regarding revisions to the SWMP and storm water pollution prevention.	Airport Tenants		31	San Diego International Airport	

Table F-2. 2007-2008 School Programs and Outreach Data.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Year-round	City of Chula Vista	Field Trip	Nature Center Field Trips	Organized School Group Visitors to the Chula Vista Nature Center. Watershed, Recycling, Storm Drain Pollution Education	Schools	Kindergarten through college age	K-6th grade - 15,000; 7-12th grade - 2,000; College - 2,000	Chula Vista Nature Center	
5/30/08	City of Chula Vista and SDCRAA	Jurisdiction-Staff Presentation	AVID Presentation	City staff in collaboration with SDCRAA, provided information about environmental jobs and storm water principles to middle school kids.	Residents	Middle school children	60	Ocean View Hills School	Don't Trash CA bag, CLEAN footballs and calculators, SDCRAA rechargeable flashlights
6/31/08	City of Coronado	Field Trip	Beach Cleanup	Students in the University of San Diego High School Immaculata Youth Group participated in a beach cleanup, and learned how trash and other pollutants affect the flora and fauna at the receiving waters.	School (High School)	High School Youth Group	30	University of San Diego High School Immaculata Youth Group and City of Coronado	Coronado Clean Coastlines promotional items such as Frisbees, surfboard-shaped key chains, pens pencils and rules, were distributed to the students. City staff also provided trash pickers, trash bags, disposable gloves and a dumpster for depositing their trash bags. 60 lbs. of trash were picked up from the Coronado Central Beach
10/6/07	County of San Diego	Field Trip	Beautify Chula Vista	Planting Native Oaks & Habitat Restoration	Boy & Girl Scouts	Children	15	Otay	
4/26/08	County of San Diego	Field Trip	P2 I love a Clean SD	Water Quality	Boy & Girl Scout	Children	20	Otay	
11/29/07	County of San Diego	Field Trip	Your Neighborhood the Sweetwater River	Watershed Awareness	Students	Students	75	Sweetwater	
4/26/08	County of San Diego	Field Trip	Sweetwater Trash Clean Up	Water Quality	Students	Elementary	26	Sweetwater	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
4/9/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	105	Otay	
4/10/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	87	Otay	
11/4/08	County of San Diego	Field Trip	Fall Back Festival	Water Quality	Students		400	Rancho Guajome Adobe	Stormwater Brochures
7/19/07	County of San Diego	Jurisdiction Sponsored Presentation	Recycling and HHW Presentation	Water Quality	Students	Elementary	25	Camp Oliver	
2/26/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	126	Los Coches Creek Middle School	
3/25/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	102	Allen Day Academy	
4/15/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	112	Riverview School	
5/8/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	126	Kempton Street School	
5/22/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	83	Casa De Oro Elementary	
6/5/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	74	La Presa Elementary	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
6/10/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	68	Valley Vista Elementary	
6/12/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	79	Sweetwater Springs Comm. School	
6/16/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	88	Sweetwater Springs Comm. School	
6/16/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	134	La Presa Middle	
6/17/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	122	Rancho	
6/18/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	57	Loma	
6/18/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	90	Loma	
6/19/08	County of San Diego	Jurisdiction Sponsored Presentation	Green Machine	Water Quality/Watershed Awareness	Students	Elementary	97	Casa De Oro Elementary	
6/20/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	99	Murdock Elementary	
6/21/08	County of San Diego	Jurisdiction Sponsored Presentation	Splash Lab	Water Quality/Watershed Awareness	Students	Elementary	50	Southwestern College	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
July 2007-June 2008	City of Imperial Beach	Field trip	Habitat Heroes for the South Bay Wildlife Refuge Restoration Project	Students visited the south end of the San Diego Bay and learned how trash and other pollutants affect the flora and fauna at the receiving waters.	School (Elementary)	2nd – 6th grade	1000	San Diego Bay Wildlife Refuge	
April 2008	City of Imperial Beach	Jurisdiction Sponsored Presentation	Earth Day at the Imperial Beach Pier	Watershed concepts, issues and stormwater pollution prevention	General Public	School Children, Businesses, Residents	500	City of Imperial Beach	Informational Earth Day Celebration with exhibits at the Imperial Beach Pier geared toward school children.
June 2008	City of Imperial Beach	Jurisdiction Sponsored Presentation	San Diego County Fair	Watershed concepts, issues and stormwater pollution prevention	General Public	Residents	1,235,698 over 21 days	Del Mar Fairgrounds	Brochures: Stormwater Pollution Prevention- Pet Waste, Yard Waste; IPM cards; ink pens with stormwater hotline imprint; Media: newspaper advertisements, electronic messaging over Jumbo Tron, website logos and links, PA system announcements, and over 500 locations with Think Blue logo depicted on banners, planter box displays, and recycle bin stickers
10/12/07	City of La Mesa	Jurisdiction-sponsored Presentation	Inter-generational Games	Booth and ILACSD demonstration of Enviroscape model	Adults and children	School children and general public	60	La Mesa Middle School	SD Bay Watershed fact sheets, Urban Runoff Trifolds
Thru-out 2007/ 2008	City of National City	Jurisdiction-sponsored presentation	2009 Calendar Development	3rd grade classes at public schools in National City involved in "keep our community clean" art contest to provide images for the City's 2009 Storm Water Program Calendar	School (elementary)	3rd grade	860	Public elementary schools in National City	Teachers were provided guidelines for the contest, and were provided ideas on how they could incorporate storm water concepts into their lesson plans. An informational flyer was provided to the students that outlined the rules of the contest and presented some storm water concepts; all students that submitted an entry received a certificate of participation signed by the mayor.
8/14/07	Port of San Diego	Jurisdictional Staff Presentation	Sweetwater High School Environmental Fair	Watershed concepts	School-High School	High School	2,500	Sweetwater High School	Residential Stormwater BMP Guide

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
7/07-6/08	Port of San Diego	Field Trips	Aquatic Adventures–SEA Series Initiative	Watershed/wetland concepts and wildlife education	School - Elementary	Elementary School	2,456	San Diego City Schools	Various curriculum materials
7/07-6/08	Port of San Diego	Jurisdiction Sponsored Presentation	Wildcoast–Sea Turtle Education Program	Wildlife Education	School - Elementary	Kindergarten	452	Various schools & Bayside Park (Chula Vista)	Various curriculum materials
7/07-6/08	Port of San Diego	Jurisdiction Sponsored Presentation	The Green Machine–IPM Education Program	IPM, the water cycle, and soil science	School – Elementary	First Grade	2,635	Chollas Creek watershed schools	Various curriculum materials
7/07-6/08	Port of San Diego	Jurisdiction Sponsored Presentation	Resource Conservation District–Watershed Education Program	Wildlife and watershed concepts	School – Elementary	Second & Sixth Grade	1,516	San Diego Bay watershed schools	Various curriculum materials
7/07-6/08	Port of San Diego	Field Trips	Chula Vista Nature Center- Field Trips	Watershed/wetland concepts and wildlife protection	School – Elementary	Third Grade	2,755	Chula Vista Nature Center	Various curriculum materials
7/07-6/08	Port of San Diego	Field Trips	Aquatic Adventures–Wetland Avengers Field Trips	Watershed/wetland concepts and wildlife protection	School – Elementary	Fourth Grade	314	South Bay wetlands	Various curriculum materials
7/07-6/08	Port of San Diego	Field Trips	Maritime Museum of San Diego–*Pilot* Boat Program	Environmental history of San Diego Bay, water quality monitoring aboard a boat	School – Elementary	Fifth Grade	913	Maritime Museum of San Diego	Various curriculum materials

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
7/07-6/08	Port of San Diego	Field Trips	Pro Peninsula–Sea Turtle Education Program	Wildlife education	School – Elementary	Sixth Grade	561	South Bay Power Plant	Various curriculum materials
7/07-6/08	Port of San Diego	Project SWELL	Project SWELL	Watershed concepts	School – Elementary	Elementary School	40,000	San Diego City Schools	Various curriculum materials
7/07-6/08	Port of San Diego	Jurisdiction Sponsored Presentation	High Tech High – Book Sponsorship	Wildlife and watershed education	School – High School	High School	68	High Tech High	Various curriculum materials
7/07-6/08	Port of San Diego	Field Trips	Habitat Heroes	Wildlife and watershed education	School – Elementary	Bayside Elementary School	272	Bayside Elementary School	Various curriculum materials
FY07-08	Airport Authority	Project SWELL	Project SWELL	Authority Continued to sponsor project SWELL	General Public	General Public, Schools			
FY07-08	Airport Authority	Jurisdiction Sponsored Presentations	Wildlife Outreach Program	Authority supported Wildcoast's "Wildlife Outreach Program"	General Public	General Public, Schools			
10/17/07	Airport Authority	Jurisdiction Staff Presentation	Aaron Price Fellows environmental presentation	Authority Employees gave a presentation to the "Aaron Price Fellows" group of high school students on environmental issues at the airport, including storm water	High school students	Aaron Price Fellow group	35 students		

Table F-3. 2007-2008 Partners in Clean Water Events/Programs/Outreach.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
9/15/07	Multiple jurisdictions in the San Diego Bay Watershed including: City of Coronado, City of La Mesa, Port of San Diego, City of San Diego, SDCRAA	Cleanup Event	23rd Annual Coastal Cleanup Day	Trash and debris removal and recycling	General Public	Residents and Visitors	300	Coronado Central Beach, University Channel in La Mesa D St. Fill, Chollas Creek, National Avenue	Coronado Clean Coastlines brochures and promotional items (pens, pencils, frisbees, beach balls, beverage "coozies", etc.) *Total of 369 lbs. of trash including 208 lbs. of trash* and *160 lbs of recyclables*: specific details 2,227 cigarette butts, 637 bottles and 2 tires. La Mesa SD Bay Watershed fact sheets Residential Stormwater BMP Guides Volunteers are asked to track the debris collected by implementing data cards provided by the Ocean Conservancy.
4/26/08	Multiple Jurisdictions in the San Diego Bay Watershed including: City of Chula Vista, City of Coronado, City of La Mesa, City of National City, Port of San Diego, City of San Diego, SDCRAA	Cleanup Event	ILACSD 6th Annual Creek to Bay Cleanup Annual Creek to Bay Cleanup	Volunteers cleaned trash from inland and coastal waterways in the San Diego Bay Watershed. The San Diego Bay Watershed Copermittees were co-sponsors of this clean up event.	General Public	Residents	4,000	Lemon Grove, Chollas Creek (3 locations), La Mesa at University Channel, La Mesa at Alvarado Channel, Los Coches, Lakeside Linkage Open Space, El Cajon, Coronado City Beach, Silver Strand State Beach, Barrio Logan, D Street Fill, Paradise Creek Educational Park, Del Rey Canyon, Rice Canyon, J Street Marina, Otay Regional Park (Lower Otay Lake), Dairy Mart Road, Morrison Pond County Park	Coronado Clean Coastlines brochures and promotional items (pens, pencils, frisbees, beach balls, beverage "coozies", etc.) *244 Total lbs. of trash including 200 lbs. of trash and 44 lbs. Of recyclables.* La Mesa SD Bay Watershed fact sheets Residential Stormwater BMP Guides

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
10/6/07	City of Chula Vista	Cleanup Event/ Stenciling Event	Beautify Chula Vista	Cleanup of trash from streets and waterways, graffiti removal, storm drain stenciling	General Public	Residents	800	Southwest Chula Vista	
7/3/07-7/4/07	City of Coronado	Citizen Monitoring/ Training	4th of July weekend Coronado Yacht Club Jr. Sailing Program Activities	Trash cleanup generated from boats docked at local yacht club and from general 4th of July activities in that marina.	General Public with an interest in boating	Residents and Visitors	150	Coronado Yacht Club	Coronado Clean Coastlines promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies", etc.) as well as flyers describing specific Boating BMP's. *200 lbs.* of trash collected
9/29/07	City of Coronado	Citizen Monitoring/ Training	Fire Services Department Open House	This family-oriented event focused on fire prevention but also provided an opportunity for City staff to distribute storm water-related BMP's information as well as to provide hands-on interaction with a portable watershed model	General Public	Visitors, Residents and their Families	4,000	Coronado Fire Dept.	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as hands-on interaction with a portable watershed model that demonstrated how urban runoff flows into the watershed (Enviroscape®)
11/1/07	City of Coronado	Citizen Monitoring/ Training	Mass BMP Information E-Mail	Mass BMP E-Mail to all Coronado Business Licensees	Business	All Coronado Business Licensees	2,600	San Diego Region	Business–specific BMP brochures and flyers e-mailed as links along with the e-mailed Coronado business license renewal application forms to every Coronado business license holder. These brochures were specific to: general business, construction, food service, landscaping and real estate sales/property management

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
11/3/07	City of Coronado	Citizen Monitoring/ Training	25th Annual J.R. Memorial Surf Classic	Storm water pollutants of concern, especially as they relate to surfing	General Public	San Diego Region Visitors and Coronado Residents	270	Coronado	Coronado Clean Coastlines promotional items (oil funnels, beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures, targeted to a residential audience were placed in the bags each participant received after participating in his/her event.
4/19/08-4/20/08	City of Coronado	Citizen Monitoring/ Training	Annual Flower Show	This annual community event provides City staff an opportunity to educate the public about watershed issues and storm water pollution prevention.	General Public	San Diego Region Visitors and Coronado Residents	4,000	Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as Integrated Pest Management Pest (IPM) Tip Cards were distributed from a Department of Public Services booth located in a central area of the Flower Show.
4/20/08	City of Coronado	Citizen Monitoring/ Training	Annual Car Show	This annual community event provides City staff an opportunity to educate the public about watershed issues and storm water pollution prevention.	General Public	San Diego Region Visitors and Coronado Residents	4,000	Coronado	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.) as well as Integrated Pest Management Pest (IPM) Tip Cards were distributed from a booth shared with staff from EDCO, Coronado's Recycling and Trash Collection Agency, and located in a central area of the Car Show.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
4/27/08	City of Coronado	Citizen Monitoring/ Training	4th Annual Kids for Clean Water Menehune Surf Fest	Storm water pollutants of concern, especially as they relate to surfing	General Public	San Diego Region Visitors and Coronado Residents	260	Coronado	Coronado Clean Coastlines promotional items (beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures targeted to a residential audience were placed in the bags each participant received after participating in his/her event.
6/14//08 to 7/6/08	San Diego Region	Citizen Monitoring/ Training	San Diego County Regional Fair	This annual regional event provides copermittee representatives with an opportunity to educate the public about watershed issues and storm water pollution prevention.	General Public	San Diego Region Residents and Visitors	u/k	Del Mar	BMP specific brochures as well as Integrated Pest Management (IPM) Information Cards
6/31/08	City of Coronado	Cleanup Event	Beach Cleanup	Trash cleanup at Coronado Central Beach	University of San Diego High School Immaculata Youth Group	High School Students and Teachers	30	Coronado	Coronado Clean Coastlines promotional items such as frisbees, surfboard-shaped key chains, pens, pencils and rulers. City staff also provided trash pickers, trash bags, disposable gloves and a dumpster. ~ 60 lbs. of trash were collected during this event.
3/29/08	City of La Mesa	Clean up Events	Park Appreciation Day	Clean up at the 7City parks in the San Diego Bay WMA	General Public	Residents of La Mesa	Unknown	The 7 City parks in the SD Bay watershed	
4/12/08 and 4/19/08	City of La Mesa	Clean up events	La Mesa Spring cleanup	Non-HHW waste disposal for residents of La Mesa	General Public	Residents of La Mesa	Unknown	EDCO	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
6/7/08	Port of San Diego	Cleanup Event	Operation Clean Sweep	Trash Cleanup	General Public	Residents	900	Various throughout San Diego	Residential Stormwater BMP Guides
3/12/08	City of San Diego	Cleanup Event	City Heights Urban Cleanup	Trash and debris removal	General Public	General Public	37	City Heights	
8/17/07	Airport Authority	Citizen Monitoring/ Training	Hold on to your butt day	Airport employees participated in this at SDIA.	General Public	Airport patrons		SDIA	Brochures, t-shirts, bumper stickers, personal cigarette ashtrays, information cards
1/29/08	Airport Authority	Citizen Training	Coming Clean, Going Green	The Authority presented at the Coming Clean, Going Green event	General Public	Government agencies, universities, businesses	200		

Table F-4. 2007-2008 Integrated Pest Management Events/Programs/Outreach.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
4/19/08 and 4/20/08	City of Coronado	Jurisdiction IPM Seminar/ Event	Annual Flower Show	City employees staffed booth at flower show	General Public	Attendees at annual flower show This includes residents and visitors	4,000	City of Coronado, Spreckels Park	Along with Coronado Clean Coastlines storm water pollution prevention promotional items, 12 different integrated pest management cards in English and Spanish were distributed. Pest cards include information on: ants, aphids, cockroaches, earwigs, fleas, gardening with good bugs, head lice, lawn insects, safe use and disposal of pesticides, snails and slugs, spiders, and termites.
4/20/08	City of Coronado	Jurisdiction IPM Seminar/ Event	Annual Car Show	City employees staffed booth at car show along with EDCO staff, Coronado's recycling and trash collection agency.	General Public	Attendees at annual car show This includes residents and visitors	4,000	City of Coronado	Along with Coronado Clean Coastlines storm water pollution prevention promotional items, 12 different integrated pest management cards in English and Spanish were distributed. Pest cards include information on: ants, aphids, cockroaches, earwigs, fleas, gardening with good bugs, head lice, lawn insects, safe use and disposal of pesticides, snails and slugs, spiders, and termites.
6/14/08 to 7/6/08	San Diego Region	San Diego Regional IPM Program	Annual San Diego County Regional Fair	City employees staffed booth	General Public with an interest in pollution prevention and/or environmental issues.	Attendees at annual County Regional Fair	u/k	Del Mar	Along with Coronado Clean Coastlines storm water pollution prevention promotional items, 12 different integrated pest management cards in English and Spanish were distributed. Pest cards include information on: ants, aphids, cockroaches, earwigs, fleas, gardening with good bugs, head lice, lawn insects, safe use and disposal of pesticides, snails and slugs, spiders, and termites.
9/11/07	County of San Diego	San Diego Regional IPM Program	Presentation to the Geranium Society of San Diego	General IPM	General Public	Gardener's	35	Geranium Society of San Diego	
1/9/08	County of San Diego	San Diego Regional IPM Program	Point Loma Garden Club	General IPM	General Public	Gardeners	49	Point Loma Garden Club	

Date	Jurisdiction	Event Type	Event Title	Comments	Audience Type	Specific Audience	Estimated Audience #	Site Name/ Location	Materials Distributed
Ongoing	City of La Mesa	San Diego Regional IPM Program	IPM fact cards	Tip cards describing environmentally sound methods of gardening as well as safe use and disposal of pesticides	Residential	Residents of La Mesa	117 (number of cards distributed)	Target and Dixieline Lumber Garden departments	7 IPM cards: Gardening with Good Bugs, Safe Use and Disposal of Pesticides, Spiders, Termites, Lawn Insects, Snails and Slugs, and Head Lice The cards were printed in both English and Spanish Versions
1/15/08	Port of San Diego	Jurisdiction IPM Seminar/ Event	BMPs for Mitigation of Pesticide Runoff from Urban Landscapes	Pesticide use and water quality impacts	Industrial and Commercial Owners	Landscape Professionals	7	UC Cooperative South Coast Research Center, Irvine	
6/4/08	Port of San Diego	Jurisdiction IPM Seminar/ Event	Integrated Pest Management for Landscape Professionals	Pesticide use and water quality impacts	Industrial and Commercial Owners	Landscape Professionals	187	Holiday Inn on the Bay	Various brochures, PowerPoint presentations, Residential Stormwater BMP Guides.
Ongoing	City of San Diego	Jurisdiction IPM Seminar/ Event	Think Blue Website	Updated Information on the Chollas Creek Water Quality Protection and Habitat Enhancement Project	Residents and Commercial	General Public	Approx. 600 per month	Think Blue Website	IPM Tip Cards in English and Spanish

Appendix G

Education Activity Summary Sheets

STORM DRAIN STENCILING – 28

ACTIVITY PLANNING

During FY 07-08, the City of Chula Vista was in the process of planning to install 500 thermoplastic storm drain stencils in high pedestrian traffic locations in the City. Stenciling addresses several pollutant categories including bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash.

At the end of FY 07-08, the City installed 500 thermoplastic storm drain stencils throughout the City. The stencils were installed on storm drains along major roads within Chula Vista such as Telegraph Canyon Road, Otay Lakes Road, H and East H Street, and East Palomar Street. The City plans to install 150 more storm drain stencils in FY 08-09.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Planning/Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Various pollutant categories

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is a part of the collective Watershed Strategy in that it seeks to contribute to improvements in water quality by reducing the loads of bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash into the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 2 and 3. The City is currently tracking the locations of these stencils in a database and plans to produce a map of these locations. It is estimated that tens of thousands of pedestrians pass these stencils on a yearly basis, which reminds them that their daily actions can impact water quality within the City. By installing these stencils along major streets in the City, the goal is to reduce the amount of pollutants that can potentially enter the storm drain system from pedestrians as well as showing citizens that they live near rivers and streams.

PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST – 29

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department retained a contract with a film production company to create two *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego Bay WMA from February 2008 to April 2008. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

According to Regional Board staff comments[1], the City will need to answer effectiveness measurement questions in the Annual Report. Effectiveness measurement questions can be found in the Effectiveness Assessment section of this activity summary sheet.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego Bay WMA from February 2008 to April 2008. The City will work with various broadcast media outlets to distribute and air the PSAs in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross pollutants

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and gross pollutants as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST Assess Efficiency and Effectiveness of Public Service Announcements		
Management Questions	• What changes in awareness/attitude regarding trash and bacteria were achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcomes	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in San Diego Bay WMA (Outcome Level 1)	6,027,210
	Number of impressions made to the public through radio announcements in San Diego Bay WMA (Outcome Level 1)	1,932,542
	Change in knowledge or attitude from survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes*

*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and in encouraging positive behavioral change.

Results and Analysis

The PSAs were developed in the FY 07-08, and broadcast on several TV and radio stations throughout the San Diego Bay WMA from February 2008 to April 2008. The PSAs were broadcast in both English and Spanish.

In FY 2008, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, 52% of residents became aware of the *Think Blue* message by seeing the television ads, and 13% of residents heard the radio announcements. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. Based on the total number of impressions estimated for the entire City of San Diego, (15,680,381 for television and 5,027,700 for radio ads) the proportion of residents in San Diego Bay WMA (38%) was multiplied by the total number of impressions to estimate impressions per watershed. According to the random survey, groups most likely to have seen the television ad were: residents who knew that storm water was untreated (25%); people without college degrees (25%); and residents of the San Diego Bay (26%) and San Diego River (25%) WMAs. Groups most likely to have heard the radio ad were: residents who are white (9%); residents in the 35-49 age group (9%); and people between the ages of 18 and 35 (9%).

Long-Term Assessment and Conclusions

The City will work with various broadcast media outlets to distribute and air the PSAs in the FY 08-09. Effectiveness is measured on a variety of levels, including the tabulated number of households (television) or listeners (radio) reached by the program. The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure in 2008.

The 2008 results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices. The PSA activity also exposes many individuals in the San Diego Bay WMA to storm water pollution prevention issues, based on the estimated number of individual impressions from television and radio announcements. Although the statistical correlation may not be shown at this time, the number of impressions along with the survey results does indicate that the PSA activity is effective in reaching residents and disseminating information to increase knowledge and awareness of storm water pollution prevention. The activity as well as surveys will be continued and longer-term assessment should provide more complete results.

TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS – 30

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department retained a contract with an outdoor advertising company to advertise *Think Blue* messages on billboards and transit shelters located in the San Diego Bay WMA. The City of San Diego created advertisements targeting behaviors associated with bacteria and gross pollutants (trash) profiled as a vector. The goal of the billboards and transit shelter advertisements was to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the San Diego Bay WMA in both English and Spanish.

Transit shelter *Think Blue* advertisements were installed at three locations in FY 2008:

- Park Avenue/University Avenue
- 4th Street/Hawthorne Street
- 13th Street/Imperial Avenue

Billboards were installed at five locations in FY 2008:

- University Avenue/Wilson Avenue
- University Avenue/Herbert Street
- Fairmount Avenue/University Avenue
- El Cajon Boulevard/52nd Street
- Pacific Highway/Washington Street

The audience number varied by location.

According to Regional Board staff comments[2] on other WURMPs the City is involved in (e.g., San Diego River), the City will need to answer effectiveness measurement questions and provide locations of the billboards and transit centers in the Annual Report. The locations are provided in the Activity Implementation section. Effectiveness measurement is discussed in the Effectiveness Assessment section.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

[2] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Diego plans to continue to implement transit shelter and billboard advertisements in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS **Assess Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness**		
Management Questions	• What changes in awareness /attitude regarding bacteria and sediment was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcomes	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of public reached by ads)	
Data Recorded	Number of billboard advertisements impressions in the San Diego Bay WMA (Outcome Level 1)	93,440 DEC*
	Number of transit shelter advertisements impressions in the San Diego Bay WMA (Outcome Level 1)	27,110 DEC*
	Number of public participants reached by billboard advertisements in all watersheds (Outcome Level 1)	7%
	Change in knowledge or attitude (Outcome Level 2)	45% increase
	Change in pollutant-related behavior (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 759,080 for transit shelter ads and 2,616,320 for billboards.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the billboards to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008, and were to be displayed throughout the San Diego Bay WMA in both English and Spanish.

Results and Analysis

Transit shelter *Think Blue* advertisements were located at three San Diego locations in FY 2008: Park/University, 4th/Hawthorne, and 13th/ Imperial. Billboards were advertised at five

locations in FY 2008: North Park (University/Wilson), Hillcrest (University/Herbert), San Diego (Fairmount/University), San Diego (El Cajon/52nd), and San Diego (Pacific Highway/Washington). The number of public reached varied by location. Over the four-week viewing period, there were 759,080 impressions for transit shelter advertisements and 2,616,320 impressions for billboards.

In FY 2008, out of 800 total residents from all watersheds who participated in a random digit-dial *Think Blue* survey, 7% became aware of the *Think Blue* message by seeing the billboards. According to the survey, groups most likely to have seen the billboard were: residents under 50 years of age, (38%) compared to seniors (24%); Latino women (49%) compared to white men (31%) and white women (32%); and Latino renters (50%) compared to white homeowners (29%).

Long-Term Assessment and Conclusions

Implementation of the advertisements will continue in the FY 2009. Effectiveness will be measured via surveys in the San Diego Bay WMA to determine awareness, knowledge retention and behavior change.

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for City-wide results. Of the percentage of residents in all watersheds who participated in the survey, 45% reported exposure in 2008. The survey results correlate well to the daily effective calculation (DEC), estimated to be 93,440 impressions per day for transit shelter advertisements, and 27,110 billboard advertisements impressions per day in San Diego Bay WMA.

The 2008 results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices. The large number of transit shelter advertisement impressions made in FY 2008 also supports the assertion that the transit shelter advertisement program is effective, due to increasing public exposure to bacteria and gross pollutant issues. Surveys will be continued in future fiscal years, and longer-term assessment should provide more complete results on which to base the conclusion of increased awareness.

MOBILE ADVERTISING – 31

ACTIVITY IMPLEMENTATION

The City of San Diego Storm Water Department retained a contract with a mobile advertising firm in FY 2008 to advertise *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The City of San Diego created advertisements targeting behaviors associated with bacteria and/or metals. The goal of the billboards was to educate the public about the causes of these kinds of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the Chollas Creek watershed route in both English and Spanish on July 16, 17, 18, 19, 24, and 25, 2007. The estimated audience was 522,300 impressions per 4-week period. The following image shows the Chollas Creek route.

According to Regional Board staff comments[3], the City will need to answer effectiveness measurement questions and provide routes in the Annual Report. The routes are provided above. Effectiveness will be measured via surveys in FY 2009. Efficiency will be determined by analyzing advertisement costs.

TMDL APPLICABILITY

- N/A

[3] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

The City plans to continue to conduct mobile advertising in FY 2009 and to target high priority areas within the Chollas Creek watershed to increase awareness and promote positive behavior change.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria as a high priority water quality problem in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing mobile advertising will result in increased knowledge and awareness directly, and will promote behavior change.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MOBILE ADVERTISING Assess Efficiency and Effectiveness of Advertisement on Static Billboard Trucks		
Management Questions	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcomes	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)	
Data Recorded	Number of impressions San Diego Bay (Outcome Level 1)	43,038 DEC*
	Number of impressions Chollas Creek (Outcome Level 1)	26,115 DEC
	Change in knowledge or attitude based on survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior based on survey results (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewer ship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 757,420.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of mobile advertising for *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The advertisements target behaviors associated with trash and bacteria.

Results and Analysis

The advertisements were developed in the FY 2008 and displayed throughout the San Diego Bay WMA in both English and Spanish. The estimated audience was 860,700 total impressions per 4-week period for San Diego Bay as a whole, and 522,300 for Chollas Creek. In FY 2008, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue*

survey, approximately 33% of residents became aware of the Think Blue message by seeing mobile advertising.

Long-Term Assessment and Conclusions

The City plans to continue to implement transit shelter advertisements in FY 2009. Effectiveness will be measured via citywide telephone surveys and focus groups comprised of residents in the San Diego Bay WMA, and efficiency will be determined by advertisement costs. The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure in 2008. The survey results correlate well to the estimated daily effective calculation (DEC) results of 43,038 mobile advertising impressions per day in the San Diego Bay WMA.

The 2008 results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices. The large number of mobile advertisement impressions made in FY 2008 also supports the assertion that the mobile advertisement program is effective, due to increasing public exposure to bacteria issues. The activity as well as surveys will be continued and longer-term assessment should provide more complete results.

PROPOSED COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT STUDY IN CHOLLAS CREEK – 32

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego retained professional research consultants to develop an education and outreach strategy to address trash in the Chollas Creek watershed using Community-Based Social Marketing (CBSM). This strategy will include observations, interventions, and assessment methods and will result in identification of barriers to public participation against littering, the steps needed to remove those barriers, and solutions which may include structural interventions and/or additional education and outreach strategies to residences and businesses.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

During FY 2009, CBSM activities in Chollas Creek will include consulting on the selection of pilot and control areas of Chollas Creek and identification of litter as a target behavior, development of an observational research protocol for assessing litter behavior and barriers, development of materials for data collection, developing and conducting a training session for Think Blue and I Love A Clean San Diego (ILACSD) staff and volunteers, coordinating and scheduling observation sessions, as well as data collection, entry, and management. An observational research protocol will be developed to identify the sources of litter, establish a baseline littering rate, identify the target population associated with litter, and identify avenues for intervention that will maximize efforts to prevent litter from contaminating the storm drain system.

The Regional Board[4] requested more detail about this activity. Details have been added in this activity summary sheet, and updates to the implementation schedule have been made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[4] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego (ILACSD)
- San Diego Coastkeeper
- Sierra Club, San Diego Chapter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2). Implementation of this activity will address the high priority water quality problem by identifying the behaviors in the WMA contributing to trash loading (which acts a bacteria vector) and testing outreach strategies to determine their effectiveness in reducing loads before broad-scale implementation.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
COMMUNITY-BASED SOCIAL MARKETING PILOT STUDY IN CHOLLAS CREEK Assess Effectiveness of CBSM in Changing Awareness, Attitudes, and Behaviors	
Management Question	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution? • What changes in behaviors were observed after CBSM implementation?
Targeted Measurable Outcomes	• Reach goal number of people within the watershed, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by pamphlet)
Recommended Data	• Number of educational materials distributed in business areas (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2) • Change in behaviors (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness of the Community-Based Social Marketing (CBSM) outreach in educating the public about the causes of trash and bacteria loading and changing their pollutant-loading behaviors.

Results and Analysis

Short-term analysis is not possible at this time, as implementation has yet to begin. The City of San Diego retained professional research consultants to develop the pilot project proposal in the FY 2008. Development of the proposal was finalized in July 2008. The project will include research, observations, surveys, interventions, and assessment methods. These efforts will result in recommendations for outreach strategies, which may include structural interventions, public participation, incentives, and specific messaging.

Long-Term Assessment and Conclusions

The City anticipates beginning the implementation of this activity in FY 2009. This activity will include five phases: baseline observations; development of CBSM intervention; community cleanup; CBSM intervention implementation; and follow-up observations. Effectiveness will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

CITY OF CORONADO FIRE DEPARTMENT OPEN HOUSE – 33

ACTIVITY DESCRIPTION

This activity, an interactive educational booth at the Fire Department's Open House, was an opportunity to increase pollution prevention awareness for the residents of Coronado. The Open House drew many participants, 89 of which obtained storm water BMPs and household hazardous waste disposal pamphlets. By providing educational booths, City staff is able to address questions and concerns

TMDL APPLICABILITY

- N/A

PARTICIPATING WATERSHED COPERMITTEES

- Coronado

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria is a water quality concern for all HA's. Providing education increases awareness and optimally produces behavioral change.

EFFECTIVENESS MEASUREMENTS

The number of people visiting the booth and obtaining educational literature was tracked. Through the use of our work order system, we are able to see a trend in residential awareness by the increase of storm water related calls. In FY 07-08 residential calls increased to 80 from 65 during FY 06-07.

Appendix H

Public Participation Activities Table

Table H-1. San Diego Bay WMA 2007-2008 Public Participation Events.

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Cleanup Events	California Coastal Cleanup Day	1 event	Authority staff and their families participated in this event.	Coast Keeper and Airport Authority	September 15, 2007
Cleanup Events	Creek to Bay Cleanup	1 event	Authority staff and their families participated in this event.	ILACSD and Airport Authority	April 28, 2008
Cleanup Event	Creek to Bay Cleanup	45 participants	Clean up in Paradise Creek	ILACSD and City of National City	4/26/2008
Cleanup Event	Beach Cleanup	30 participants	60 lbs. of trash picked up from Coronado Central Beach	University of San Diego High School Immaculata Youth Group and City of Coronado	6/31/08
Cleanup Event	6th Annual Creek to Bay Cleanup in Coronado and Silver Strand State Beaches	75 participants	Cleanup at Coronado Central Beach and Silver Strand State Beach 244 total lbs. of trash collected.	City of Coronado, I Love A Clean San Diego, and County of San Diego	Annual Event This year held on 4/26/08
Cleanup Event	23rd Annual Coastal Cleanup Day at Coronado Central Beach	139 participants	Cleanup at Coronado Central Beach. 369 lbs. trash including 160 lbs. recyclables.	City of Coronado, I Love A Clean San Diego, WildCoast, Baykeeper and resident volunteers	Annual Event This year held on 9/15/07
Cleanup Event	ILACSD Creek to Bay Cleanup	1 Event	34,505 lbs of trash and debris removed 2,432 pounds of trash and debris recycled	San Diego Bay WURMP Workgroup, ILACSD, volunteers, general public	4/26/08

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Cleanup Event	ALPHA Project	1 Event	Trash and debris removal – 45,290 lbs of trash and debris	City of San Diego, Alpha Project for the Homeless, Inc. staff	7/11/07, 8/10/07, 9/15/07, 12/3/07,12/5/7, 12/14/07, 12/26/07, 12/28/07, 2/6/08, 2/13/08, 2/29/08, 3/5/08, 3/26/08,4/2/08, 4/16/08, 5/2/08, 5/9/08, 5/16/08, 6/26/08
Cleanup Event	SDCK Coastal Cleanup Day	1 Event	2,000 lbs of trash and debris removed 6,000 pounds of trash and debris recycled	City of San Diego, SDCK, ILACSD, volunteers, general public	9/15/07
Cleanup Event	City Heights Urban Cleanup	1 Event	Trash and debris removal – 515 lbs of trash and debris	City of San Diego, ILACSD	1/13/08
Cleanup Event	Beautify Chula Vista Day	800 participants	Citizens participate in graffiti removal, trash removal, and storm drain stenciling	City of Chula Vista and I Love a Clean San Diego	October 6, 2007
Cleanup Event	Creek to Bay Cleanup Day	4,000 Participants	Volunteers removed trash from inland and coastal waterways throughout the County of San Diego	San Diego Bay Copermittees co-sponsored this event that was coordinated by I Love A Clean San Diego	April 26, 2008
Cleanup Event	Otay Valley Regional Park (OVRP) Cleanup	More than 5,000 labor hours	Several organizations work together to remove trash, remove homeless encampments, plant trees, and place signage to identify the OVRP	City of Chula Vista, OVRP Citizens Advisory Committee, California Conservation Corp, City of San Diego, County of San Diego, Allied Waste, Hanson Aggregates	Year-round

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Cleanup Event	Park Appreciation Day	# Participants unknown	Clean up at the 7 City parks in the SD Bay watershed	City of La Mesa	One time event; 3/29/2008
Cleanup Event	Creek to Bay Cleanup	5 Participants	Clean up of 60 pounds of trash and debris from University Channel	City of La Mesa and I Love A Clean San Diego (ILACSD)	One time event; 4/13/2007
Cleanup Event	California Coastal Cleanup Day	25 Participants	Clean up of 80 pounds of trash and debris from University Channel	City of La Mesa	One time event; 9/15/20007
Cleanup Event	Adopt a Block Program	Volunteers clocked 228 hours throughout reporting period	Regular clean up of neighborhoods, particularly picking up trash on night prior to trash collection day	City of La Mesa	Ongoing
Cleanup Event	Adopt a Park Program	Volunteers clocked 1,119 hours throughout reporting period	Regular clean up of trash and debris	City of La Mesa	Ongoing
Cleanup Event	La Mesa Spring Cleanup	# Participants unknown	Large item and green waste disposal free of charge	City of La Mesa, EDCO	4/12/2008, 4/19/2008
Cleanup Events	Imperial Beach Home Front Clean Up Day	742 participants	City and EDCO-sponsored event where residents dispose of unwanted items free of charge. **178** tons of waste collected.	EDCO, City of Imperial Beach	May 3, 2008
Cleanup Event	River Clean-up	26 participants	Sweetwater Trash Clean Up	County of SD & Students	4/26/2008
Cleanup Event	Coastal Cleanup Day	42	Trash cleanup D St. Fill – 2,280 pounds of trash removed	Port of San Diego, URS Cooperation, I love a Clean San Diego, San Diego Coastkeeper, Coastal Commission	9/15/07

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Cleanup Event	Creek to Bay Cleanup	20	Trash cleanup D St. Fill – 2,160 pounds of trash removed	Port of San Diego, URS Cooperation, I love a Clean San Diego	4/26/08
Cleanup Event	Operation Clean Sweep	900	Trash cleanup Various locations throughout San Diego	Port of San Diego, Port Tenants Association, U.S. Navy, U.S. Coast Guard, Southern California Professional Drivers Association	6/07/08
Community Event	25th Annual J.R. Memorial Surf Classic	270 participants	Storm water BMP promotional items presented to participants. One of the purposes of this event is to educate the public regarding storm water pollutants of concern, especially as they relate to surfing.	Coronado Surfing Association City of Coronado's Dept. of Public Services and WildCoast.	Annual Event This year held on 11/3/07
Community Event	Annual Flower Show	4,000 participants	Storm water BMP brochures, promotional items and Integrated Pest Management pest tip cards presented at booth	City of Coronado and Coronado Floral Association.	Annual Event This year held on 4/19/08 and 4/20/08 Two day event.
Community Event	Annual Car Show	4,000 participants	Storm water BMP brochures, promotional items and Integrated Pest Management pest tip cards presented at booth	City of Coronado and Main Street Limited.	Annual Event. This year held on 4/20/08.

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Community Event	4th Annual Kids for Clean Water Menehune Surf Fest	260 participants	Storm water BMP promotional items presented to participants. One of the purposes of this event is to educate the public regarding storm water pollutants of concern, especially as they relate to surfing.	Coronado Surfing Association City of Coronado's Dep. of Public Services and WildCoast	Annual Event This year held on 4/27/08
Community Event	Coronado Yacht Club Junior Sailing 4th of July Trash Pickup	150 participants	Trash cleanup of trash generated from boats docked at local yacht club and from 4th of July activities in that marina.	Coronado Yacht Club, City of Coronado, U.S. Coast Guard	Annual Event This year held 7/03/07-7/04/07 2-day event
Community Event	San Diego County Regional Fair	u/k	Storm water BMP brochures, promotional items and Integrated Pest Management pest tip cards presented at booth	San Diego County Copermittee Representatives	Annual Event This year held 614/08 to 7/6/08
Community Event	Cinco De Mayo	1 Event	IPM Pest Tip Cards, Pest Cards feedback forms, promotional items	City of San Diego	5/5/08
Community Event	Put Your Butt in the Right Place	400 Participants	10 volunteers provided information to event participants about the effects of cigarette butt pollution on water quality	City of Chula Vista	April 12, 2008
Community Event	Maritime Museum of San Diego Adult *Pilot* Boat Tours	9,258	Watershed and Water Quality concepts presented to the general public aboard *Pilot* Boat Tours	Port of San Diego	7/07 – 6/08

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Community Event	Imperial Beach Earth Day Event	400	Education and demonstration regarding storm water runoff and water quality impacts	Port of San Diego and the San Diego Regional Airport Authority	4/30/08
Community Event	San Diego County Fair Regional Copermittee Booth	Unknown at this time	Education regarding storm water runoff and water quality impacts	San Diego Regional Copermittees	6/13/08 – 6/29/08
Presentation	Tenant SWMP Training	31 tenants participated	Environmental Affairs provided training regarding revisions to the SWMP and storm water pollution prevention.	Airport Authority	Feb. – March 2008
Presentation	Storm water pollution prevention Presentation	60 students	Authority staff and City of Chula Vista Staff gave a presentation to 60 elementary students form Ocean View Hills School on storm water pollution prevention.	Airport Authority and City of Chula Vista	May 30, 2008
Presentation	Children's Art Wall	1 event	Airport Authority Youth Art Wall displayed the City of San Diego Water Department's Children's Water Conservation Poster Contest.	Airport Authority and City of San Diego Water Department	2006-2008
Presentation	Presentation to National City Kiwanis Club	1 event; 16 participants	Watershed concepts, issues, regulatory information, and storm water pollution prevention	National City Kiwanis Club (residents)	7/12/2007
Presentation	Intergenerational Games	140	Presentation of the Enviroscape watershed model	City of La Mesa and I Love A Clean San Diego (ILACSD)	One time event; 10/12/2007

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Presentation	Storm water Training for the San Diego Marriott Events Staff	8	Education regarding storm water BMPs for hotel event staff	Port of San Diego	8/3/07
Waste Collection/ Recycling	Household Hazardous Waste Facility	2,255 households	Residents drop off HHW waste for proper disposal	City of Chula Vista, City of National City, City of Imperial Beach	Every Wednesday and Saturday
Waste Collection/ Recycling	Oil Recycling	2,110 gallons recycled	Kragen Auto Parts and other participating auto parts stores collect used oil and filters from residents...	South Bay residents	Ongoing
Waste Collection/ Recycling	HHW Disposal	6,182 pounds collected	South Bay HHW Collection Facility open on Wednesdays and Saturdays to facilitate proper disposal of HHW.	South Bay residents	Ongoing
Waste Collection/ Recycling	Electronic and Universal Waste Recycling Event	20,552 pounds collected	The Authority held 3 electronic and universal waste recycling events during the FY for Airport employees.	Airport Authority, Airport Authority employees	9/17-21/07, 1/17-18/08, 4/17-18/-8
Website	Airport Authority website	50,000 hits	Authority website has several pages dedicated to environmental issues at Airport, including storm water management.	Airport Authority	FY07-08
Website www.nationalcityca.gov	Storm water pollution prevention information	# hits unknown	Online access allowing citizens to get information about BMPs and how to report an IC/ID	City of National City	Ongoing

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Website http://www.coronado.ca.us Go to the following links: City Services; then Public Services; then Clean Coastlines. Under Clean Coastlines, click on the BMP brochure you are interested in.	Coronado Clean Coastlines BMP industry-specific brochures and other storm water pollution prevention information.	# hits unknown	A website geared towards BMPs as they relate to environmental issues in general and as they specifically relate to the business, construction, food service, landscaping, and mobile businesses, available in both English and Spanish.	City of Coronado	Ongoing
Website	City of Chula Vista CLEAN Website www.chulavistaca.gov/CLEAN	Estimated 1,000 per year	Storm water pollution prevention materials and information on the CLEAN website	City of Chula Vista	Year-round
Website www.cityoflamesa.com	Brochures and other storm water pollution prevention information	# Hits unknown	Online access allowing citizens to download brochures for BMPs.	City of La Mesa	Ongoing
Website		# hits unknown	Online access allowing citizens to file complaints for storm water violations including illegal dumping.38 reports of illegal dumping received.	City of Imperial Beach	Ongoing
Website	Project ORCA Website	175 hits	Website educating children about wildlife of San Diego Bay	Port of San Diego	On-going

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Workshop	Coming Clean, Going Green	1 event	Authority and City of San Diego, on behalf of the San Diego Regional Sustainability Partnership, sponsored the event focused on waste reduction programs for businesses.	City of San Diego, San Diego Regional Sustainability Partnership	January 29, 2008
Workshop	Presentation to development planning/ construction community	1 event; 13 participants	SUSMP requirements, Writing a SWMP, Common problems with SUSMP reports, LID concepts, Examples of treatment control BMPs, Project resources, What to expect from City inspections	Development planning/ construction community in National City	2/28/2008
Workshop	Walk the Watershed	1 Event	Provided information about pending storm water projects	City of San Diego, SDCK Groundwork San Diego-Chollas Creek, general public	4/6/08
Workshop	Street Sweeping Pilot Study Informational Meeting	1 Event	Disseminated street sweeping study information and touched on general storm water issues	City of San Diego, El Cajon Business Improvement District	3/12/08
Workshop	*Negocio Verde* Pollution Prevention Workshop	11	Educated Marina staff and boaters regarding BMPs for marina management and recreational boating	*Negocio Verde,* Port of San Diego	7/7/07
Workshop	BMPs for Mitigation of Pesticide Runoff from Urban Landscapes	7	Education to landscape professionals regarding pesticide use and water quality impacts	Port of San Diego	1/15/08

Type of Activity	Public Participation Activity	Number of Events/ Participants/ Web "hits"	Activity Summary	Sponsors/ Participants	Implementation period (i.e. monthly, one time event, etc)
Workshop	Integrated Pest Management for Landscape Professionals	187	Education to landscape professionals regarding pesticide use and water quality impacts	Port of San Diego	6/4/08
Workshop	Hotel Engineers Association Storm water Training	46	Education regarding storm water BMPs for hotel staff	Port of San Diego	2/20/08

Appendix I

Updated Watershed Activity Summary Sheets

WATER QUALITY ACTIVITIES

EL CAJON BOULEVARD STORM DRAIN INLET RETROFIT FOR CHOLLAS CREEK WATERSHED PROTECTION PROJECT – 2-08

ACTIVITY IMPLEMENTATION

The four storm drain catchbasins at the intersection of El Cajon Boulevard and Fairmount Avenue will be retrofitted with catchbasin inserts. This site has been selected for its placement along a major arterial, proximity to the ongoing aggressive street sweeping program (Tier I BMP activity) along El Cajon Boulevard, and the adjacent commercial land uses (gas station, two vehicle sales lots, and a clothing thrift shop). The close proximity of the catchbasins will also allow for easier project maintenance.

The City has adopted an integrated, tiered, and phased strategy (*Strategic Plan for Watershed Activity Implementation*) to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by investigating the effectiveness of storm drain inlet retrofits in addressing high priority water quality problems both by itself and in conjunction with other activities to achieve efficiencies.

In FY 2008, inserts were designed with stainless steel baskets that do not obstruct storm flows, that prevent street level flooding, and that maintain the structural integrity of the existing catch basins. Inserts were designed to capture trash and debris that flows from the streets during the first flush of a storm. Product selection began in FY 2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Diego plans to select catch basin inserts and retrofit the catch basins by the FY 2009 storm season.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will contribute to improving water quality problems and is consistent with the Collective Watershed Strategy by focusing on bacteria and sediment load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants, which convey and provide nutrients to bacteria. The Collective Watershed Strategy identifies bacteria, sediment, and nutrients as priority water quality problems in the various hydrologic subareas of the San Diego Bay Watershed Management Area (WMA).

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
EL CAJON BOULEVARD STORM DRAIN FILTER INSERT PROJECT Assess Efficiency and Effectiveness of Storm Drain Filter Inserts in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved by retrofitting storm drains with filter inserts? • How efficient are filter inserts in reducing pollutant loads? • What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure filter inserts working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality (Outcome Level 5)

Objectives

The goal of the assessment is to determine the load reduction effectiveness and efficiency of storm drain filter inserts, both by themselves and in combination with aggressive street sweeping.

Results and Analysis

This activity was in the planning phase and not in active implementation in FY 2008. Therefore, assessment is not feasible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

TREATMENT CONTROL BMP PILOT PROJECTS – 34

ACTIVITY SUMMARY

The Airport Authority intends to implement treatment control BMPs on a pilot-scale to reduce zinc concentrations in the runoff from the roof of Terminal 1 East and to reduce copper and zinc concentrations in runoff from the runway. The goal of the Treatment Control BMP Pilot Projects is to reduce the metal load that is being inadvertently released by galvanized roofing materials and by aircraft tire and brake wear. These metals may be released to the storm water conveyance system and then into San Diego Bay. The projects include installation of roof runoff downspout filters and modification to a portion of the pavement surfaces adjacent to the runway.

The program is an important water quality activity in the San Diego Bay WMA because it will reduce or eliminate the amount of metals being inadvertently released to the watershed. A reduction in the amount of metals potentially entering the storm water conveyance system contributes to improving the quality of the storm water in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Treatment Control BMP Pilot Projects are applicable to these TMDLs to the extent they address the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Assessment
- Permit Year 10-11: N/A (Capital projects in active implementation for the first year only)
- Permit Year 11-12: N/A (Capital projects in active implementation for the first year only)

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies metals as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay WMA in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of metals. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions.

EFFECTIVENESS ASSESSMENT

During FY 07-08 the Authority initiated the planning phase of the Treatment Control BMP Pilot Project. Tasks completed include: 1) identification of the downspout filter equipment to be installed and the locations for installation; and 2) preliminary identification of potential runway runoff control BMPs. Schedules and logistics for installation of the downspout filter BMPs were developed and a sampling and analysis plan was created. Since the downspout filtering BMPs were not installed or sampled until after the end of the fiscal year, we cannot begin effectiveness assessment until the FY 08-09 reporting period.

UPDATE RECYCLING AND SOLID WASTE PLANNING MANUAL – 35

ACTIVITY PLANNING

In order to address contributions of pollutants, particularly bacteria, from trash and recycling areas from new multi-family residential and commercial land uses, the City of Chula Vista plans to update the design requirements in its Recycling and Solid Waste Planning Manual. The City will require that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas.

During this reporting year, City Storm Water Management Section staff worked closely with the Environmental Services staff to update the manual in order to include this requirement for new development and redevelopment projects with trash enclosures. The updated manual was planned for presentation to City Council in the fall of 2008. Subsequently, in September 2008, City Council approved the updated manual and it became a part of Chula Vista Municipal Code.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash and recycling areas have the potential to contribute a number of pollutants to storm water runoff, namely bacteria, nutrients, and trash. By building trash enclosures to prevent the contact of storm water with trash, the City aims to reduce the amount of pollutants that could be washed into the storm drain system from trash areas during a rain event.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Updating the Recycling and Solid Waste Planning Manual in the City of Chula Vista aims to improve the quality of runoff that enters the storm drain system and eventually San Diego Bay. It intends to reduce high priority pollutants such as bacteria, trash, and nutrients from entering the storm drain system. Bacteria are a high priority pollutant throughout San Diego County and the San Diego Bay WMA. This effort seeks to reduce pollutant sources from trash areas as a source abatement measure.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels three and four. BMP implementation and pollutant load reductions will be assessed by tracking the number of trash enclosures constructed with the new design criteria within the City. Also, estimations can be made about the amount of trash generated per person based on the number of dwellings within a project. The estimated amount of trash that could have possibly come in contact with storm water before the updates to the manual will be assessed as a load reduction.

TARGETED MUNICIPAL FACILITY INSPECTIONS – 36

ACTIVITY IMPLEMENTATION

The Storm Water Department had planned to develop a focused inspection activity to target municipal facilities within the San Diego Bay WMA. The purpose of the activity was to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

Based on Regional Board staff comments[1], the Storm Water Department will no longer pursue this activity under the WURMP section of the Municipal Permit. The Storm Water Department may choose to reconsider this as a significant JURMP activity in the future, though staff time and resources are currently allocated to other projects and significant activities. The reporting of this activity will cease with this Annual Report.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning and implementation is not yet scheduled for this activity. If it moves forward, it would be reported under the JURMP.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

If implemented under the WURMP, the activity would have been consistent based on the Collective Watershed Strategy, which identifies bacteria and metals as high priority water quality problems in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity if pursued would contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and sediment at municipal facilities. However, if pursued, the activity would occur under the City's JURMP.

EFFECTIVENESS MEASUREMENTS

Watershed: San Diego Bay	
TARGETED MUNICIPAL FACILITY INSPECTIONS Assess Efficiency and Effectiveness of Municipal Facility Inspections	
Management Questions	• Do inspections increase the rate of BMP implementation? • Does an increased rate of BMP implementation result in source abatement? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase the rate of BMP implementation?
Targeted Measurable Outcomes	• Achieve source abatement from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from third-party data)
Recommended Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Percent change in BMP implementation pre- and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of educational items passed out (Outcome Level 1) • Dollar amount spent on inspections (follow ups, initial inspections) (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of Pollutant Discharge Potential Assessment (Level 4). (Outcome Level 4)

Objectives

Goals of this assessment included determination of the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections to ensure proper BMP implementation and reduce pollutant loading from municipal facilities.

Results and Analysis

This activity was not implemented in FY 2008 due to staffing constraints, and, therefore, assessment is not possible. The City will reconsider implementation of this activity as part of its JURMP efforts.

Conclusions

The City has decided to discontinue implementation and assessment of this activity as part of its WURMP efforts and will cease to report on this activity. Per comments from Regional Board staff, this activity is an internal audit and not a Watershed Water Quality Activity. The City may reconsider implementing this activity in the future as a significant JURMP activity. Results, analysis, and conclusions would be reported in the City's JURMP Annual Report.

43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION – 37 (NEW)

ACTIVITY IMPLEMENTATION

The 43rd Street and Logan Avenue Biofiltration Project will consist of two main low impact development (LID) features: filtration planters along the curbside of 43rd Street and Logan Avenue and biofiltration basins on the undeveloped and vacant northwest corner lot at 43rd Street and Logan. Storm water runoff will be diverted from adjacent streets to the two LID features. The water will flow through a vegetated soil layer (three to four feet thick) for natural removal of pollutants with a projected 70% to 80% removal efficiency.

This project is a roadway realignment project that the Right of Way Division of the Engineering and Capital Projects Department will design in FY 2009. This Tier II project (according to the City of San Diego's *Strategic Plan for Watershed Activity Implementation*) will be implemented to achieve a high level of effectiveness in reducing pollutant loads. This project will address metals and bacteria in line with the City of San Diego's *Strategic Plan for Watershed Activity Implementation*.

A deed agreement must be received in FY 2009 from the San Diego Community College District for the biofiltration basin as the road realignment project needs to go forward to construction. If the deed agreement is finalized, design is anticipated to be finished in FY 2009 and construction to occur in the late summer of calendar year 2009.

This activity was not included in the 2008 San Diego Bay WURMP as it was initiated after the March submittal date. The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by integration. This project addresses infrastructure needs and regulation compliance simultaneously.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project design is anticipated to be completed in FY 2009. Construction is anticipated to occur late in the summer of 2009 if the deed agreement is finalized. Water quality monitoring is anticipated be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved copper, lead, and zinc
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via biofiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION Assess Effectiveness and Efficiency of Filtration Planters and Biofiltration Basins		
Management Questions	• How much load reduction can be achieved using filtration planters and biofiltration basins? • How much reduction in runoff volume can be achieved using filtration planters and biofiltration basins? • How efficient are planters and basins in reducing pollutant loads?	
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality	
Assessment Methods	• Inspections (e.g., ensure planters and basins working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)	
Data Recorded	Estimated construction cost (Outcome Level 1)	$800,000
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)	

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of filtration planters and biofiltration basins in reducing bacteria and dissolved metals pollutant loading relative to other BMPs.

Results and Analysis

Project planning and design occurred in FY 2008. Therefore, assessment is not possible at this time. Pollutant loading reduction and water quality monitoring results are anticipated to be available in late FY 2010.

Conclusions

No conclusions are available at this time. Project design is anticipated to be completed in FY 2009. Construction is anticipated to occur in the summer of 2009 if the necessary deed agreement is finalized with the San Diego Community College District. Monitoring is anticipated to be conducted before and after construction to assess the effectiveness and efficiency of this project in reducing runoff volume and pollutant loading and improving discharge quality.

CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION - 38 (NEW)

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the WMAs that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in Table I-1 below.

Table I-1. Strategic Plan Activities.

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Tecolote Watershed "Green Street" Infiltration Retrofit	Green Street	Water Quality	Structural	All
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	All
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	All
Maple Canyon Water Quality Improvement Project	Sustainable Canyons	Water Quality	Structural	Sediment, Bacteria
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	All
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	All
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals
Tijuana River Solid Waste Removal and Transfer Facility	Trash/Debris Separation	Water Quality	Structural	Trash, bacteria
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria; Dissolved Minerals; Gross Pollutants; Metals; Nutrients; Oil & Grease; Organics; Pesticides; Sediment
Residential Landscaping Retrofit Pilot Project	Residential Landscaping Retrofit	Water Quality	Non-structural	All
Smart Irrigation and Controller Incentive/Giveaway Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	All
Basin Plan Triennial Review	Basin Plan Beneficial Use Designation Correction	Monitoring	Non-structural	N/A
Pet Waste Dispenser Program	Doggie Bag Dispenser	Water Quality	Non-structural	Bacteria
Posted Street Sweeping Routes	Street Sweeping	Water Quality	Non-structural	Metals, Trash

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Municipal Park Artificial Turf Pilot Project	Artificial Turf	Water Quality	Non-structural	All
Municipal Park Artificial Turf Pilot Project	Artificial Turf	Water Quality	Non-structural	All
Municipal Park Artificial Turf Pilot Project	Artificial Turf	Water Quality	Non-structural	All
Targeted Mobile Hazardous Household Waste Collection Centers	Haz Waste Collection	Water Quality	Non-structural	Metals, trash, oil
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	All
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	All
Rain Garden, Xeriscaping, and Landscape Filtration	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	All
Rain Garden, Xeriscaping, and Landscape Filtration	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	All
Sediment Basin Endowment Fund	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Sediment Basin Endowment Fund	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Commercial Pest Control Art Turf or Product Sub	Product Sub	Water Quality	Non-Structural	Pesticides
Residential Pesticide Management Art Turf or Prod Sub	Product Sub	Water Quality	Non-Structural	Pesticides
LID Regulatory Barriers and Solutions	Code Modification	Water Quality	Non-structural	All
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	All
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	All

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	All
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria, trash
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	All
Infiltration Vault/Pit Installation	Infiltration Vault/Pit	Water Quality	Structural	All
Infiltration Vault/Pit Installation	Infiltration Vault/Pit	Water Quality	Structural	All
Green Street Filtration	Green Street Filtration	Water Quality	Structural	All
Green Lot Filtration	Green Lot Filtration	Water Quality	Structural	All
Green Mall Filtration	Green Mall Filtration	Water Quality	Structural	All
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	All
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	All
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	All
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System	Small Scale Treatment Train	Water Quality	Structural	All
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System	Small Scale Treatment Train	Water Quality	Structural	All
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System	Small Scale Treatment Train	Water Quality	Structural	All
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System	Large Scale Treatment Train	Water Quality	Structural	All

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System	Large Scale Treatment Train	Water Quality	Structural	All
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System	Large Scale Treatment Train	Water Quality	Structural	All
Hydromodification BMP	Hydro mod BMP	Water Quality	Structural	All
Hydromodification BMP	Hydro mod BMP	Water Quality	Structural	Sediment, metals
Hydromodification BMP	Hydro mod BMP	Water Quality	Structural	Sediment, metals
Erosion/Sediment Control BMP	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, metals
Erosion/Sediment Control BMP	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, metals
Home Auto Activities (Metals) Code Mod and Outreach	Outreach	Education	Non-structural	Metals
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients, pesticides
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Enforcement or Outreach	Water Quality	Structural or Non-Structural	Metals
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	All
Alley Cleanup and Sweeping Pilot Project	Street Sweeping	Water Quality	Non-structural	Bacteria, trash, metals

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to

help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the San Diego Bay WURMP Annual Report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

EDUCATION ACTIVITIES

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT PET WASTE DISPOSAL – 39

ACTIVITY PLANNING

The City of Chula Vista plans to encourage homeowner's associations to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association newsletters about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials and survey homeowners associations to assess if there is signage and plastic bag dispensers in the neighborhoods regarding proper pet waste disposal.

During the current reporting year, the City compiled contact information about the HOAs within the City as well as looked at the potential methods for reaching HOAs in the City. A phased approach over the remaining permit cycle will be used to reach the various HOAs within the City.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria has been categorized as a high priority pollutant in the watershed. This activity is

consistent with the collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity can be assessed through levels 1-3. This activity will be assessed by the number of surveyed homeowners associations and the number of homeowners reached through education.

STORM WATER EDUCATION BOOTH AT PET FESTIVAL AND DOGGIE DASH – 40

ACTIVITY PLANNING

The City of Chula Vista plans to educate its residents about proper pet waste disposal and its possible effects on water quality at its annual Pet Festival and Doggy Dash. This outdoor community event involves both pet owners and pets. The City plans to have an educational booth and provide educational materials related to the Chula Vista Clean Program for residents, in particular, those involving the cleanup of pet waste.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by eliminating sources of pollutants.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels 1 and 2. Compliance with activity based permit requirements and changes in knowledge, attitudes, and awareness will be assessed by the number of educational materials distributed to participants. The City is also considering the possibility of implementing a survey at this event to assess if owners regularly pick up after their pet(s).

FATS, OILS, AND GREASE (FOG) PROGRAM – 41

ACTIVITY PLANNING

The City of Chula Vista is in the process of developing a Fats, Oils, and Grease (FOG) program as a part of its Sewer System Management Plan (SSMP). The FOG program will focus on educating restaurant owners and operators about the importance of proper grease waste management. Increased education and awareness about proper grease waste disposal aims to reduce possible sanitary sewer overflows in the City. Restaurant owners and operators will receive educational materials about grease waste management.

During this reporting year, the City was in the process of developing the FOG portion of its SSMP. In order to understand the current methods used to reduce FOG by restaurants, the City implemented a survey that asked restaurants about the use and maintenance of grease pre-treatment devices. Based on the findings, the City will tailor its education programs to educate restaurants to use pre-treatment devices, then focus on the maintenance of these devices. Education outreach efforts are expected to begin in 2009.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Planning
- Permit Year 08-09: Implementation
- Permit Year 09-10: Assessment
- Permit Year 10-11: Assessment
- Permit Year 11-12: Assessment

Based on the Regional Board letter "Comments on the March 2008 Watershed Urban Runoff Management Plan (WURMP) and US EPA/Regional Board April 2008 WURMP Assessments," the City of Chula Vista will implement this activity once.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by reducing the possible sanitary sewer overflows that result from mismanaged grease waste.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be addressed through levels 2, 3, and 4. The number of restaurants that receive education will be tracked as well as the number of sanitary sewer overflows. As a part of the planning process, the City surveyed over 200 restaurants to find out what types of pre-treatment mechanisms they have in place.

Appendix J

Chollas Creek TMDL Monitoring Report

Due to document size,
the Chollas Creek Diazinon &
Dissolved Metals TMDL report
is submitted electronically.

APPENDIX A

Chollas Creek Education and Outreach Materials

APPENDIX B

Daily Rainfall Totals

APPENDIX C

Letter to RWQCB Regarding First Storm of 2007–2008

APPENDIX D

Field Logs

APPENDIX E

Hydrographs

APPENDIX F

Wet Weather and Ambient Weather Chemistry Results

APPENDIX G

Scatterplots and Trend Tables

APPENDIX H

City of La Mesa Monitoring Data

Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277

2007–2008 Water Quality Monitoring Data Summary for Chollas Creek

Final Report

Prepared for:
San Diego Regional Water Quality Control Board

In coordination with:
The Chollas Creek Watershed Municipal Copermittees
City of Lemon Grove
City of La Mesa
City of San Diego
County of San Diego
Port of San Diego

January 22, 2009

Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277

2007–2008 Water Quality Monitoring Data Summary for Chollas Creek

Final Report

In coordination with:

The Chollas Creek Watershed Copermittees
City of Lemon Grove
City of La Mesa
City of San Diego
County of San Diego
Port of San Diego

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January 22, 2009

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EXECUTIVE SUMMARY

This report summarizes the activities conducted by the Chollas Creek Watershed Municipal Copermittees in compliance with Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277 during the 2007–2008 Monitoring Season. The activities conducted are provided as follows:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and dry weather illegal connection and illicit discharge (ICID) investigations.
- Jurisdictions performed education and outreach to area residents.
- Jurisdictions have conducted water quality monitoring during three storm events at the required monitoring sites SD8(1) and DPR2.
- Jurisdictions have conducted water quality monitoring during three storm events at monitoring sites LM-1 and LG-1.
- Jurisdictions have conducted ambient weather monitoring during two events (March 2008 and June 2008) at sites SD8(1), LM-1, and LG-1.

Education and outreach activities included 15 community events targeting strategic audiences in the Chollas Creek Watershed and an extensive media (television and radio) and print campaign. This included over 1,450 public service announcements (PSAs) promoting the Think Blue Website and the "Ants in Your Plants" theme. The integrated pest management (IPM) pest tip cards were the primary outreach materials.

Water quality monitoring results are presented in compliance with RWQCB Order No. R9-2004-0277 requirements. Water quality monitoring was specifically conducted under this program to quantitatively assess potential changes in pesticide use and to quantitatively assess the concentration of metals in Chollas Creek. Upstream sampling locations in La Mesa (north fork) and in Lemon Grove (south fork) were added in 2007–2008 to assess jurisdictional contributions of constituents of concern to Chollas Creek's water quality. The City of La Mesa also collected additional data at Site LM-1, which is presented in an appendix.

Storm water monitoring samples were collected at two upstream and two downstream mass loading stations (MLSs) in Chollas Creek during three separate storm water events. Sites LM-1 and SD8(1) were located in the north fork of Chollas Creek, while sites LG-1 and DPR2 were located in the south fork of Chollas Creek. Wet weather water quality objective (WQO_w) exceedances were noted for total suspended solids (TSS), oil and grease, Diazinon (SD8(1) only), dissolved copper, dissolved zinc, and fecal coliform. There were no exceedances of the WQO_w for either dissolved cadmium or dissolved lead. Synthetic pyrethroids were detected above published LC_{50}s for *Hyalella azteca* across all sites in the three monitored events during the 2007–2008 storm season. In general, metals concentrations were similar across all monitored sites. Concentrations of synthetic pyrethroids were higher at north fork sampling locations than at south fork locations. Over the three storm events, TSS was higher at SD8(1) and LG-1 than at LM-1 or DPR2. Fecal coliform concentrations were highest during the first flush event at all sights with the exception of DPR2.

Toxicity to *Ceriodaphnia dubia* was not observed at either SD8(1) or DPR2 during the 2007–2008 wet weather monitoring events. Toxicity to *H. azteca* was observed during all three storm

events at the north fork sites LM-1 and SD8(1) and at the south fork sites LG-1 during the November 30, 2007 storm event and at DPR2 during the November 30, 2007 and February 3, 2008 storm events. Toxicity identification evaluations (TIEs) conducted as part of the Regional Monitoring Program indicate the causative agent of toxicity at Site SD8(1) is the synthetic pyrethroid class of compounds (WESTON, 2007).

Toxicity tests were performed on ambient weather water samples collected in March 2008 and June 2008 at Site SD8(1) only. Toxicity to *C. dubia*, *H. azteca*, and *Selenastrum capricornutum* was observed in the SD8(1) sample collected on March 4, 2008. Toxicity was not observed to any of the three test species during the June 2008 ambient monitoring event at SD8(1). Water chemistry from March 4, 2008, indicated levels of oil and grease and dissolved copper above ambient weather water quality objectives (WQO_a). No pesticides were detected in ambient weather water samples collected during the March and June monitoring events.

Mann-Kendall trend analysis performed on the long-term data set at Site SD8(1) indicated significantly decreasing trends for nitrate and *H. azteca* survival and significantly increasing trends for total copper and total zinc. At DPR2, concentrations of Chlorpyrifos and Diazinon have significantly decreased over the last four years of monitoring.

General chemistry, bacteria, and metals were the only constituent groups that had measurable results above method reporting limits in ambient weather analyses from sites SD8(1), LM-1, and LG-1. No ambient weather samples were collected at DPR2. SD8(1) had significantly higher total organic carbon (TOC), DOC, TSS, and total and dissolved ambient weather metal concentrations than either LM-1 or LG-1. Total metal and dissolved metal concentrations were below benchmarks at both LM-1 and LG-1, while at SD8(1), concentrations of dissolved copper were above the benchmark during both ambient weather events. Enterococcus concentrations were above the benchmark at LM-1 and LG-1 during both ambient weather monitoring events and were above the benchmark at SD8(1) during only the March ambient monitoring event.

Diazinon was detected during one storm event (46.6 ng/L on November 30, 2007) at SD8(1) above the published chronic benchmark of 45 ng/L, indicating that pesticide applications of Diazinon are still occurring within the watershed; however, this result was below the acute benchmark of 75 ng/L. No toxicity was observed in *C. dubia* acute toxicity tests or *C. dubia* chronic toxicity tests during any of the three wet weather monitoring events. As the residual supply of Diazinon becomes exhausted, detections of this banned pesticide should continue to decrease and is evident in the monitoring results collected (Figure ES-1). A shift in pesticide usage has occurred in recent years toward synthetic pyrethroids. These compounds represent an emerging constituent of concern within San Diego County and should continue to be monitored. A significantly increasing trend in *H. azteca* toxicity has been noted and is correlated to the increasing use of synthetic pyrethroids, which were detected above benchmarks at all sites during all wet weather events. Education and outreach programs and events for area residents and businesses should continue in order to help reduce pesticide usage within the Chollas Creek Watershed.

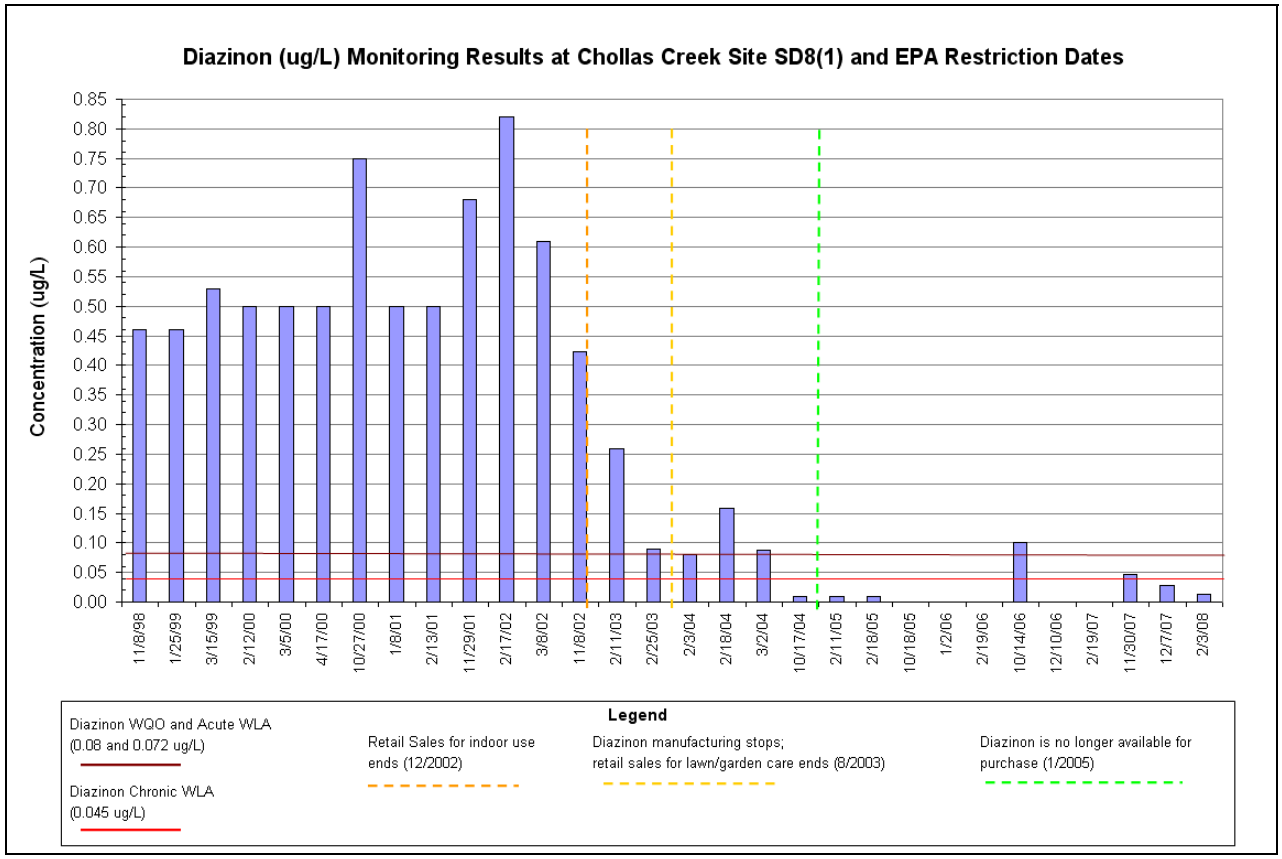

Figure ES-1. Historical Diazinon Concentrations at Site SD8(1) with Restriction Dates

1.0 INTRODUCTION

Chollas Creek is located south and east of downtown San Diego in a highly urbanized portion of San Diego County. Overall, the Chollas Creek Watershed covers approximately 30 square miles and is predominantly residential in land use. The Chollas Creek Watershed resides within the San Diego Mesa Hydrologic Area within the Pueblo San Diego Hydrologic Unit. The main stem of Chollas Creek extends approximately 9 miles from its headwaters (located near the City of La Mesa) to its mouth at San Diego Bay (Figure 1-1).

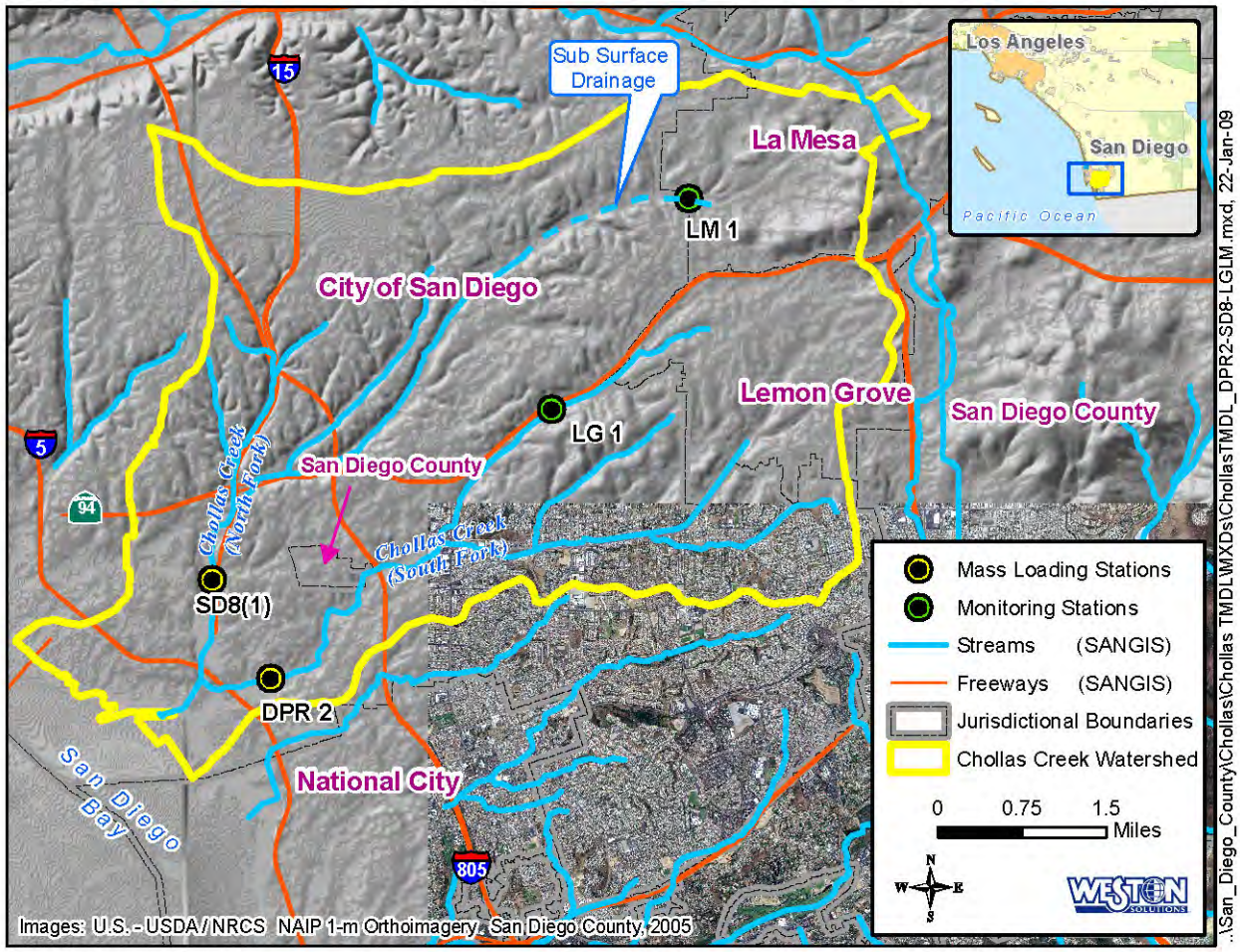

Figure 1-1. Chollas Creek Watershed with Jurisdictional Boundaries

Chollas Creek consists of two main tributaries, the north fork and the south fork. The headwaters of the north fork originate approximately 1.5 miles west of the jurisdictional boundary of the City of La Mesa. From this point, the north fork flows in a southwesterly direction for approximately 3 miles before it is joined by several smaller tributaries feeding into the main stem. The creek then flows in a southerly direction for approximately 1.5 miles before discharging into San Diego Bay. The south fork of Chollas Creek flows from an east–northeasterly direction from its headwaters in Lemon Grove and is the product of two smaller creek branches. The north fork and south fork merge approximately 0.8 mile east of the creek's

mouth, near the upper extent of the tidal influence from San Diego Bay. In general, Chollas Creek is a mix of highly developed earthen channels and concrete channels. The creek is somewhat ephemeral in nature, flowing primarily during the wet season as a conduit for storm water runoff.

The City of San Diego, the City of Lemon Grove, the City of La Mesa, the County of San Diego, and the Port of San Diego are municipal dischargers to the Chollas Creek Watershed. The California Department of Transportation and the United States Navy also discharge urban runoff to the watershed. Water quality problems in the watershed are attributed to pesticides, heavy metals (total and dissolved copper, lead, and zinc), fecal indicator bacteria, and persistent water column toxicity to *H. azteca*. Freshwater amphipod toxicity in Chollas Creek has been linked to exposures to synthetic pyrethroids.

This report provides the activities conducted as part of the annual monitoring and reporting requirements for San Diego RWQCB Order No. R9-2004-0277. Studies conducted in the Chollas Creek Watershed during the 2007–2008 Monitoring Season include the following:

- Copermittees legal authority.
- Public outreach and education.
- Water quality monitoring at Site DPR2 in the south fork of Chollas Creek to satisfy RWQCB Order R9-2004-0277.
- Water quality monitoring at Site SD8(1) in the north fork of Chollas Creek as part of the Regional Monitoring and Reporting Program. These data are also required to be reported under RWQCB Order R9-2004-0277.
- Ambient weather monitoring at Site SD8(1) to evaluate contaminant contributions of dry weather flow.
- Additional Chollas Creek water quality monitoring at upstream sampling locations in Lemon Grove and La Mesa to understand jurisdictional and subdrainage contributions to contaminant loading.
- An aerial deposition study to assess the contribution of metals from aerial deposition.

1.1 Water Quality Background

The Water Quality Control Plan for the San Diego Region (Basin Plan) lists the Inland Surface Water beneficial uses of Chollas Creek as REC-2 (supports non-contact water recreation), WARM (supports warm freshwater habitat) and WILD (supports wildlife habitat). Chollas Creek has the potential to support the REC-1 Beneficial Use (contact water recreation). The 2006 Clean Water Act (CWA) State Water Resources Control Board (SWRCB) Section 303(d) list identifies indicator bacteria, copper, lead, and zinc as pollutants within Chollas Creek. Water quality monitoring data indicate that the pesticide Diazinon historically exceeded water quality standards in most of San Diego County's watersheds, including Chollas Creek, until recent years. While Diazinon was identified as the primary agent associated with pesticide pollution in San Diego County, Diazinon was phased out of manufacturing and is no longer available for retail sale as of December 2004. In recent years, synthetic pyrethroids have replaced Diazinon as a pesticide and have been identified as the current causative agent of toxicity to the freshwater amphipod, *H. azteca*, in Chollas Creek (WESTON, 2007). Metals have also frequently exceeded the California

Toxics Rule (CTR) criteria in Chollas Creek. Both dissolved copper and dissolved zinc have been linked with toxicity to freshwater organisms in Chollas Creek.

1.1.1 DPR2 and SD8(1)—Required Monitoring

The San Diego RWQCB adopted a total maximum daily load (TMDL) for Diazinon in Chollas Creek (Resolution No. R9-2002-0123) in 2002 and adopted a TMDL for dissolved copper, lead, and zinc in Chollas Creek (Resolution No. R9-2007-0043) in 2007. The Chollas Creek metals TMDL was approved by Office of Administrative Law on October 22, 2008. RWQCB Order No. R9-2004-0277 requires monitoring for metals (in addition to Diazinon and toxicity) to further assess the concentrations of metals in Chollas Creek for future development of TMDLs for metals and toxicity in San Diego Bay at the mouth of Chollas Creek. Under RWQCB Order No. R9-2004-0277, annual storm water quality monitoring is required at the downstream MLSs in the north fork (Site SD8(1)) and south fork (Site DPR2) of Chollas Creek.

Previous monitoring performed under RWQCB Order No. R9-2004-0277 and under the San Diego County Municipal Permit indicate that Diazinon concentrations have significantly decreased and have rarely been measured above the TMDL waste load allocation (WLA) during the past four monitoring years. Significant decreases in acute toxicity and chronic toxicity to *C. dubia* have also been observed in the past three years of monitoring, although toxicity to *H. azteca* has remained persistent. Total and dissolved copper and zinc concentrations have frequently been detected above the water quality objectives (WQOs) based on the CTR. Lead concentrations detected above the CTR have occurred less frequently than concentrations of copper or zinc, but are also listed in the Chollas Creek metals TMDL. Fecal coliform densities are frequently detected above the Basin Plan WQO.

1.1.2 Lemon Grove and La Mesa—Additional Monitoring (not required)

In addition to the required monitoring that has occurred in the lower reaches of Chollas Creek, upstream monitoring has been performed in recent years to gain a better understanding of jurisdictional contributions to overall contaminant loads. Two monitoring stations were installed at the City of San Diego's upstream boundary on the north and south forks of Chollas Creek. Site LM-1 was located in the north fork of Chollas Creek at the La Mesa–City of San Diego border, while Site LG-1 was located in the south fork of Chollas Creek at the Lemon Grove–City of San Diego border. Data from these two upstream stations can be directly compared with downstream data from DPR(2) and SD8(1).

Previous monitoring at sites LM-1 and LG-1 was performed during the 2006–2007 storm season during the first flush storm event on October 14, 2006. When compared with downstream sampling locations, LG-1 had higher concentrations of total metals and synthetic pyrethroids than DPR2, while LM-1 had higher concentrations of dissolved and total zinc and lower concentrations of Malathion and Diazinon than SD8(1). Fecal indicator bacteria had similar concentrations and similar loads across upstream and downstream sampling locations as well as across north fork and south fork sampling locations. Please note that the previous monitoring consists of sampling conducted during this one storm in the Fall of 2006, and a discussion of data trends is premature at this time.

1.2 Copermittees Legal Authority

California RWQCB Order No. R9-2004-0277 (item 2-a) requires reports of information on how the Copermittees implemented legal authority to remedy the condition of pollution. This is accomplished primarily through the current Dry Weather Monitoring (DWM) Program and facility inspections conducted under National Pollutant Discharge Elimination System (NPDES) Order No. R9-2007-0001 (RWQCB, 2007). DWM is conducted throughout Chollas Creek to identify and mitigate ICIDs. As part of the DWM Program, Diazinon and metals are monitored, and any illicit discharge of Diazinon or metals is mitigated through this program by the issuing of violations and/or citations.

Each Chollas Creek Watershed Copermittee has ordinances in place to enforce the illegal and unauthorized discharge of waste into their storm drain systems. For instance, the City of San Diego Municipal Code includes Storm Water Management and Discharge Control (§43.0301) and Storm Water Runoff and Drainage Regulations (§142.01 and §142.02), both of which protect citizens and water quality by prohibiting pollutants from entering the storm water conveyance system. The Storm Water Program's Code Compliance Section enforces the City of San Diego's storm water ordinance and implements the administrative civil penalties and citation process.

1.3 Diazinon Toxicity Control Plan

California RWQCB Order No. R9-2004-0277 (item 2-c) requires reports of information on the implementation and efficacy of a Diazinon Toxicity Control Plan.

Per Investigation Order No. R9-2004-0277, the pesticide component of the education program can serve as the Diazinon Toxicity Control Plan required by the TMDL (Section 1.4).

1.4 Diazinon Public Outreach/Education Program

The California RWQCB Order No. R9-2004-0277 (item 2-c) requires reports of information on the implementation and efficacy of a Diazinon Public Outreach/Education Program.

This program was a joint effort by the Chollas Creek Watershed Copermittees. It was previously funded by a SWRCB Proposition 13 Grant and used a network of staff from the County of San Diego, the University of California Cooperative Extension (UCCE), and the City of San Diego to publicize less harmful ways to kill pests. All of the Copermittees were project partners, and the Outreach Workgroup served as the Technical Advisory Committee to the program's goals and objectives. The Copermittees contributed $78,000 of in-kind shared costs to the reproduction of "Healthy Garden, Healthy Home" outreach materials and to the development and airtime for Think Blue IPM PSA. The PSA was launched in June 2006 in concert with a watershed-theme PSA to leverage airtime costs and to intertwine messages regarding IPM and water quality.

The City of San Diego participated in three events during 2007–2008 and distributed IPM cards (Appendix A) to educate Chollas Creek Watershed residents and other members of the public in San Diego County regarding the use of IPM solutions to reduce pesticide concentrations found in San Diego County waterways. IPM uses environmentally sound ways to keep pests under control without harming people, pets, or the environment. These materials were designed to encourage positive behavior changes and attitudes of San Diego residents when dealing with pesticides in their homes and gardens.

The City of La Mesa participated in 20 outreach/education programs. The City of La Mesa developed and distributed the San Diego Bay Watershed Fact Sheet (Appendix A). This fact sheet was designed to encourage residents to practice good housekeeping and storm water pollution prevention measures, such as efficient irrigation. IPM cards were also distributed at the three educational events. The City of La Mesa also developed a Chollas Creek TMDL Fact Sheet and supplemental watershed inspection questionnaire. The Chollas Creek TMDL Fact Sheet was distributed during industrial and commercial inspections in 2007-2008, and the questionnaire was also used during inspections in 2007-2008. The City of La Mesa also installed an educational outreach kiosk in a park in the Chollas Creek Watershed; the kiosk included both the San Diego Bay Watershed Fact Sheet and the Chollas Creek TMDL Fact Sheet.

Events in which Copermittees have participated during Fiscal Year 2007–2008 are detailed in Table 1-1.

Table 1-1. Community Events (Fiscal Year 2007–2008)

Date	Copermittee	Event Type	Event Title	Specific Audience	Estimated Audience No.	Site Name/ Location	Materials Distributed
April 13, 2007	City of La Mesa and I Love A Clean San Diego (ILACSD)	Cleanup event	Creek to Bay Cleanup		5 Participants	Clean up of 60 pounds of trash and debris from University Channel	
August 2007	City of La Mesa	*One Phone call can Help Stop Storm Water Pollution*	Articles described BMPs for residents, industrial and commercial businesses, and construction sites	Residents, businesses, and construction sites in La Mesa	15,000	Distributed in the mail and by email	*La Mesa Focus* newsletter, August 2007
September 15, 2007	City of La Mesa	Cleanup event	California Coastal Cleanup Day		25 Participants	Clean up of 80 pounds of trash and debris from University Channel	
September 15, 2007	City of La Mesa	California Coastal Cleanup Day	City of La Mesa presented information on San Diego Bay Watershed and Chollas Creek TMDL	Residents of La Mesa	25	University Channel in La Mesa	San Diego Bay Watershed fact sheets
October 5, 2007 to October 7, 2007	City of La Mesa	Oktoberfest	City of La Mesa hosted booth and handed out a variety of educational materials	Residents of La Mesa	Event held over three full days	La Mesa	IPM cards, Urban Runoff Trifolds, San Diego Bay Watershed fact sheets
October 12, 2007	City of La Mesa	Intergenerational games	Booth and ILACSD demonstration of Enviroscape model	School children and general public	60	La Mesa Middle School	San Diego Bay Watershed fact sheets, Urban Runoff trifolds
October 12, 2007	City of La Mesa	Intergenerational games	ILACSD presented the Enviroscape Model	Residents and school children	140	La Mesa Middle School	IPM Cards and San Diego Bay Watershed fact sheets
October 12, 2007	City of La Mesa and I Love A Clean San Diego (ILACSD)	Presentation	Intergenerational games		140	Presentation of the Enviroscape watershed model	
November 2007	City of La Mesa	*Be Aware of What you Wash Down the Storm Drain*	Tips to prevent pollutants from entering our waterways	Residents and businesses in La Mesa	15,000	Distributed in the mail and by email	*La Mesa Focus* newsletter, November 2007
December 5, 2007	City of San Diego	Community event	December Nights	General public	200,000	Balboa Park, San Diego	IPM pest tip cards, pest cards feedback forms, promotional items
February 2008	City of La Mesa	*Storm Water: Did You Know?*	Discusses the local watersheds, channels, and inlets in the City of La Mesa, and promotes the use of pollution prevention measures	Residents and businesses in La Mesa	315	Distributed in the mail and by email	*La Mesa Focus* newsletter, February 2008
March 29, 2008	City of La Mesa	Cleanup event	Park Appreciation Day		Number of participants unknown	Clean up at the seven City of La Mesa parks in the San Diego Bay Watershed	
April 12, 2008, April 19, 2008	City of La Mesa, EDCO	Cleanup event	La Mesa Spring Cleanup		Number of participants unknown	Large item and green waste disposal free of charge	
April 13, 2008	City of La Mesa	Creek to Bay Cleanup	City of La Mesa presented information on San Diego Bay Watershed and Chollas Creek TMDL	Residents of La Mesa	5	University Channel in La Mesa	San Diego Bay Watershed fact sheets
April 20, 2008	City of La Mesa	Earth Fair	City of La Mesa contributed money to help pay for educational materials and provided Watershed fact sheets to Earth Fair booth	Residents	Unknown	Balboa Park	San Diego Bay Watershed fact sheets
May 2008	City of La Mesa	*Update to the City's Storm Water Program*	Included updates made to the JURMP, and gave a break down of requirements by audience type	Residents, businesses, and construction sites in La Mesa	315	Distributed in the mail and by email	*La Mesa Focus* newsletter, May 2008
May 5, 2008	City of San Diego	Community events	Cinco De Mayo	General public	100,000	Old Town	IPM pest tip cards, pest cards feedback forms, promotional items
May 24, 2008	City of San Diego	Festival	San Diego Jazz Festival	General public	80,000	Downtown	IPM pest tip cards, promotional items
Ongoing	City of La Mesa	IPM fact cards	Tip cards describing environmentally sound methods of gardening as well as safe use and disposal of pesticides	Residents of La Mesa	117 (number of cards distributed)	Target and Dixieline Lumber Garden departments	Seven IPM cards: Gardening with Good Bugs, Safe Use and Disposal of Pesticides, Spiders, Termites, Lawn Insects, Snails and Slugs, and Head Lice. The cards were printed in both English and Spanish Versions
Ongoing	City of La Mesa	Preventing Urban Runoff trifold	Description of storm drain and sanitary sewer system, including contact information for further BMP resources	Residents and businesses in La Mesa	552	Distributed during inspections, complaint investigations, public events, posted on bulletin board	Preventing Urban Runoff trifold
Ongoing	City of La Mesa	San Diego Bay Watershed Fact Sheet	Defines a watershed as well as the possible sources of pollutants and provides methods for preventing urban runoff pollution	Residents and businesses in La Mesa	953	Distributed during inspections, complaint investigations, public events, posted on bulletin board	San Diego Bay Watershed Fact Sheet
Ongoing	City of La Mesa	Chollas Creek TMDL Fact Sheet	Provides information on the TMDL for Chollas Creek and how it may affect businesses and residents	Residents and businesses in La Mesa	40	Distributed during inspections, complaint investigations, public events, posted on bulletin board	Chollas Creek TMDL Fact Sheet
Ongoing	City of La Mesa	Storm Water Bulletin Board	Displayed in the Engineering Department counter at City Hall; displays storm water information, including watershed information, and provides educational materials for individuals to take	Residents, businesses, project proponents, and construction sites in La Mesa	40	Engineering Counter, City Hall	Various City of La Mesa educational outreach materials are displayed, including the Chollas Creek TMDL Fact Sheet and the San Diego Bay Fact Sheet.
Ongoing	City of La Mesa	Informational Storm Water Kiosk	Kiosk displaying storm water information, including watershed information	Residents	100	Vista La Mesa Park	Various City of La Mesa educational outreach materials are displayed

1.5 Public Outreach Plan

This report includes a description of outreach and education strategies for the Chollas Creek Watershed component of the program led by the City of San Diego Storm Water Pollution Prevention Program.

1.6 Project Outreach and Education Strategy

Strategic Objectives

Based on the research and general principles of behavioral change through public outreach programs, the outreach and education strategy sought to continue to meet the following objectives:

- Raise awareness among target audiences of the benefits of using IPM practices.
- Provide tools and information that make it easy for target audiences to use IPM.
- Identify third-party spokespeople in the community to help spread information regarding IPM and reinforce IPM use.

Audiences

Priority audiences for the project's outreach and education strategy included the following members of the Chollas Creek Watershed:

- Residents who use pesticides.
- Community organizations that influence local residents, including ecumenical groups, ethnic organizations, and neighborhood groups.
- Property managers.

Since partnerships with retail outlets and gardeners are being handled by the County of San Diego, these audiences are not included in the strategy. However, the broad-based regional outreach by the County of San Diego and UCCE should continue to provide valuable messages to San Diego County residents. Education and outreach materials provided by the County of San Diego are included in Appendix A.

Messages

Messages that were stressed in outreach efforts included:

- Chollas Creek is polluted from overuse of pesticides.
- Safe alternatives to pesticides are better for your family and the environment, today and for future generations.
- Using natural methods is easy and inexpensive.

Tools and Tactics

The City of San Diego continued to use the following tools and tactics to achieve the strategic objectives.

Informational Materials
Reproduced educational and informational materials specific to Chollas Creek Watershed outreach were used, based upon the UCCE statewide IPM model. The pest tip cards were the primary outreach materials. Residents were very pleased with the cards and the information they provided. The City of San Diego received numerous requests to provide additional cards to community groups who, in turn, facilitated distribution to residents. The City of San Diego is planning more extensive outreach into the area in the next fiscal year in conjunction with the pending metals TMDL as well as initiating a pilot study in an effort to reduce trash in the area.

Media
For the Hispanic community in the watershed, a special effort was made to get information to Spanish radio and television media, including:

- Español Radio KLNV 106.5 FM.
- KLQV 102.9 FM.
- XEWT (Hispanic).

Public Service Announcement Development
The City of San Diego placed advertising on local television and radio outlets. The City of San Diego designed the ad, "Ants in Your Plants" (funded by the San Diego Regional Storm Water Copermittees) and features IPM tips and suggestions the public should implement to control ants. The “Ants in Your Plants” PSA was placed on the following television and radio stations:

Television
- Cox Media – Cable Stations: HGTV, TNT, Channel 4, Lifetime, USA.
- CW – 5.
- KFMB.
- KNSD.
- KUSI.
- XEWT (Hispanic).

Radio
- KIFM.
- KLNV.
- KLQV.
- KMYI (Star 94.1).
- KPRI.
- KSON.
- KYXY.

Outdoor Media
Table 1-2 details the City of San Diego's radio and television media buy for Fiscal Year 2008. The highlighted column represents the number of PSAs that aired and were related to IPM.

Think Blue Website
The City of San Diego posted IPM outreach materials developed for the project on the Think Blue Website on an ongoing basis to provide City of San Diego residents easy access to these materials.

The Think Blue Website featured a link from the home page to the Chollas Creek efforts and IPM information. Web materials included a fact sheet that details the overall efforts to reduce pesticides in the Chollas Creek Watershed, a fact sheet on how to hire a pest control service and an electronic version of all of the tip cards.

Site visits averaged 20,312 a month with an average of 1,023 also visiting an IPM pest card information page.

Table 1-2. Think Blue Fiscal Year 2008 Media Buy Year End Summary

Station	IPM PSA
Television	
KIFM-Jazz 98.1	182
KLNV	42
KLQV	42
KMYI	83
KPRI 102.1	91
KSON	107
KYXY	132
Radio	
COX NETWORK	211
CW-5	183
KFMB	105
KNSD	133
KUSI TV 9/51	84
XEWT 12 *	81
TOTALS	1,476

1.7 Sampling Locations

The two sampling locations required by Order R9-2004-0277 are depicted on Figure 1-2. Site DPR2 is located at the base of the south fork of Chollas Creek, while Site SD8(1) is located at the base of the north fork of Chollas Creek. Additional sampling sites, located along the upstream jurisdictional boundaries of the two main Chollas Creek forks, are also depicted on Figure 1-2. Sampling location LM-1 is located upstream of SD8(1) on the jurisdictional boundary between the City of San Diego and the City of La Mesa. Sampling location LG-1 is located approximately 3 miles upstream from DPR2, on the jurisdictional boundary between the City of San Diego and the City of Lemon Grove.

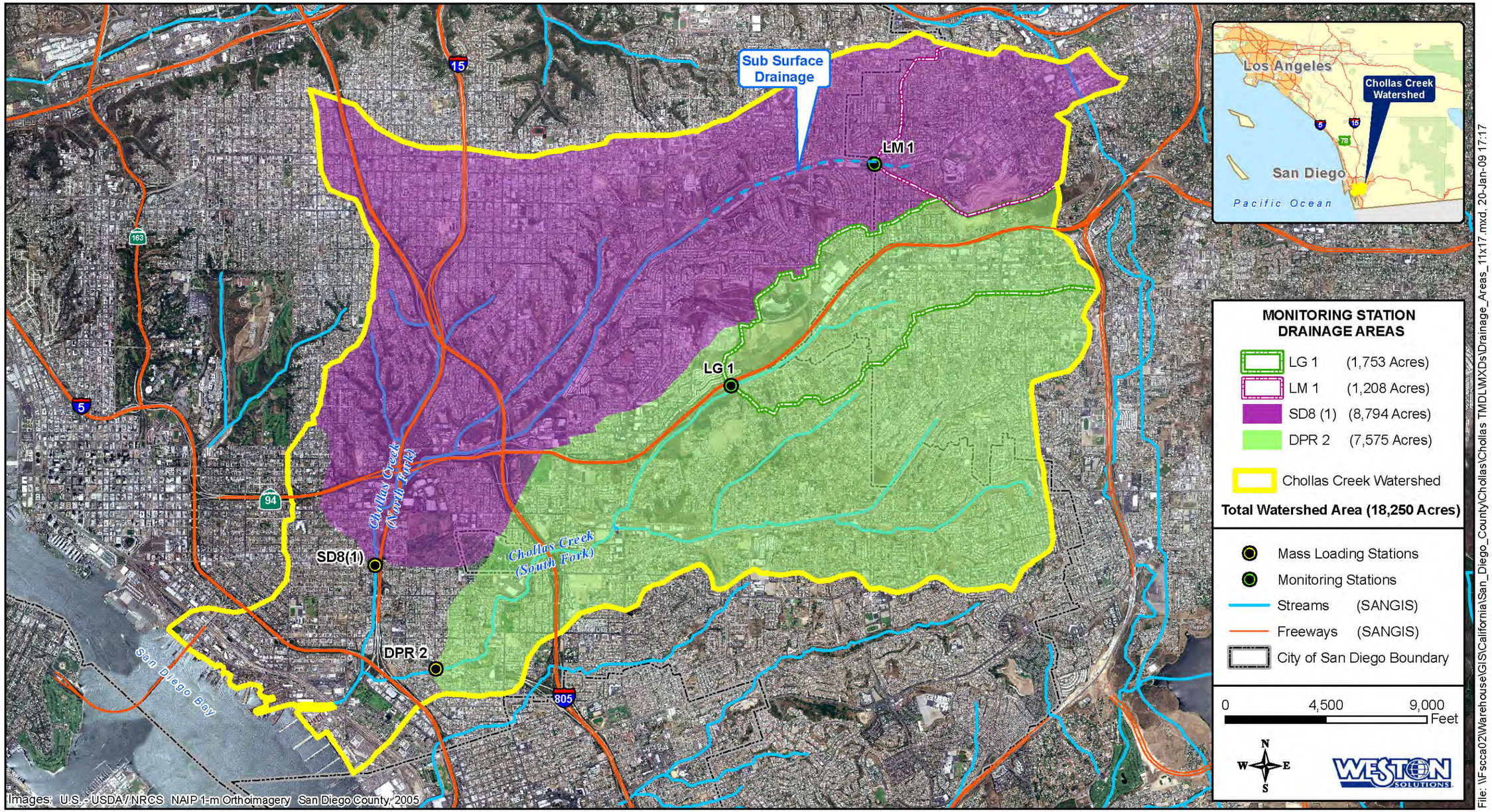

Figure 1-2. DPR2 and SD8(1) Mass Loading Stations (monitoring locations)

1.8 Drainage Area and Land Use

The Chollas Creek Subwatershed is divided into two drainage areas separated by the northern and southern forks of Chollas Creek. Approximately 1,208 acres drain into Site LM-1, located in the upper reaches of the north fork's drainage area. Site SD8(1) is located at the base of the north fork and drains a total of approximately 8,794 acres. Within the south fork, the LG-1 sampling location in the creek's northern reaches drains approximately 1,753 acres, while DPR2 at the base of the south fork drains approximately 7,575 acres. The drainage areas captured from each site are presented in the Table 1-3. Land use within the Chollas Creek Watershed is comprised of residential (48%), roadways and utilities (27%), commercial (5%), and industrial (2%) land use (Figure 1-3). The majority of the remaining land use (18%) within the watershed is characterized as open space / parks and recreation (SANDAG, 2007). The freeway land use is 5.1%.

Table 1-3. Estimated Drainage Areas

Watershed	Monitoring Locations	Drainage Areas (acres)	Percentage of Chollas Creek Drainage Area
North fork	LM-1	1,208	7%
	SD8(1)	8,794	48%
South fork	LG-1	1,753	10%
	DPR2	7,575	42%

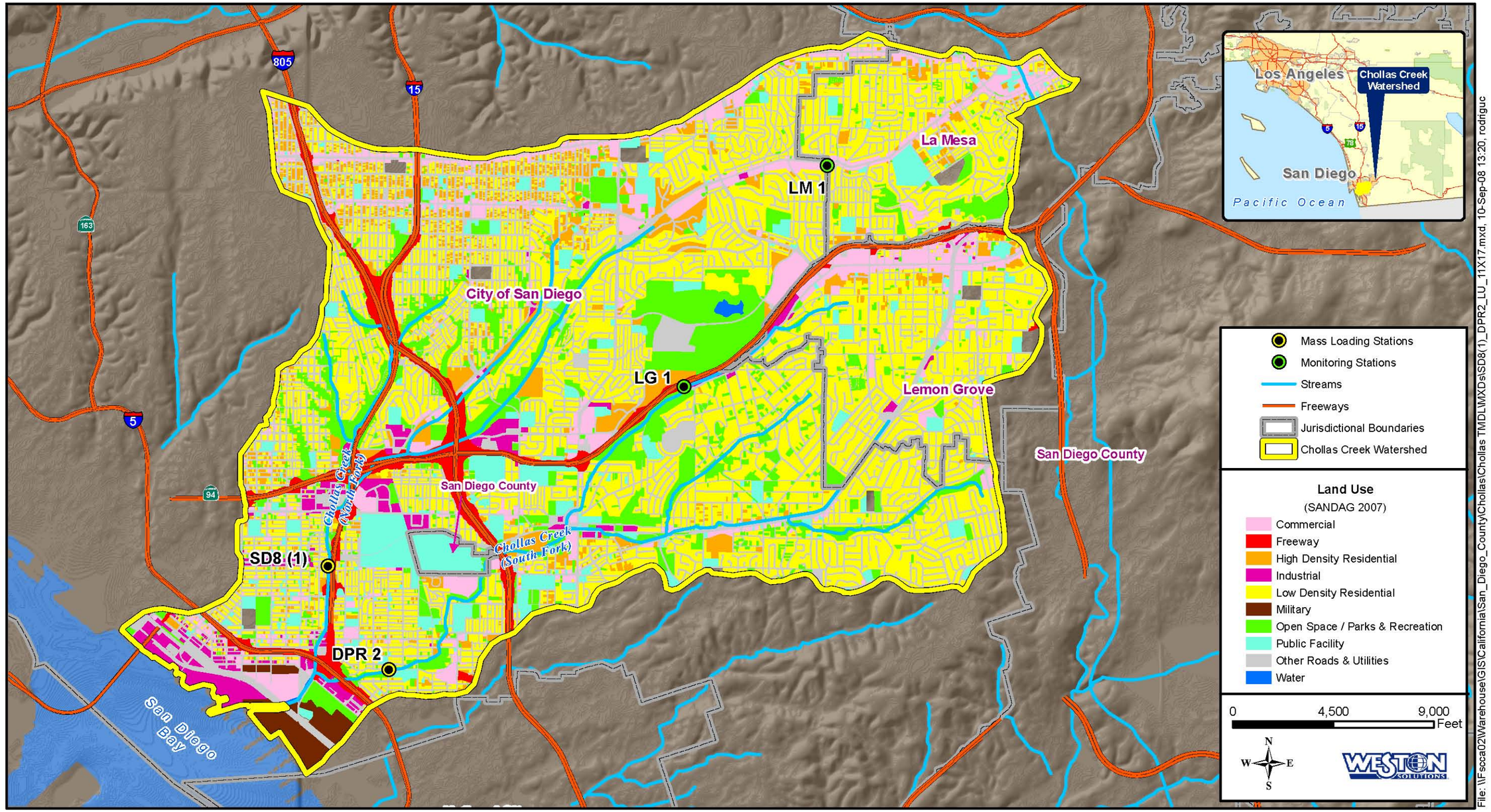

Figure 1-3. Chollas Creek Watershed Land Use

1.9 Rainfall Data

As previously mentioned, Order R9-2004-0277 requires monitoring at sites SD8(1) and DPR2 for the first and second rainfall events of the storm season after October 1 and the first rainfall event after February 1. Estimation of a representative storm event in San Diego County was based on a statistical evaluation of the long-term data records from the National Weather Service rain gauge located at Lindbergh Field. Statistically, the typical storm event at Lindbergh Field yields 0.19–0.57 inch of rain and lasts six to 12 hours. Since the depth and duration of a typical storm event varies depending on the monitoring station's location within San Diego County, storm events that were preceded by 72 hours of dry weather and were forecast to be greater than 0.10 inch were considered viable events for monitoring.

On the morning of Saturday, October 13, 2007, a storm system affected the Chollas Creek Watershed with rainfall of 0.20 inch and 0.22 inch at sites DPR2 and SD8(1), respectively, and between 0.12–0.15 inch at sites LM-1 and LG-1. Sampling was not performed for this storm due to quantitative precipitation forecasts (QPFs) obtained from the National Weather Service predicting less than 0.1 inch for the San Diego coastal and valley areas the day before rain occurred. This was the first storm event following October 1, 2007, which met the requirement for sampling under San Diego RWQCB Order No. R9-2004-0277. Significant flows were not recorded at either Site DPR2 or Site SD8(1). As such, this storm was not monitored. A letter explaining why the storm was not monitored was prepared and submitted to the City of San Diego (Appendix B). Additionally, the RWQCB was notified via email by the Regional Monitoring Workgroup Co-Chair (L. Busse, pers comm, 2007).

1.10 Rainfall Data 2007–2008

Rainfall events measured at Chollas Creek for the 2007–2008 Monitoring Season are shown on Table 1-4. Raindrops on Figure 1-4 indicate monitored storm events. Each monitored storm event was preceded by at least 72 hours of dry weather. A total of three storm events, occurring on November 30, 2007, December 7, 2007, and February 3, 2008, were monitored over the course of the 2007–2008 storm season. Rainfall totals for each monitored storm event as well as the seasonal rainfall totals for each sampling site are provided in Table 1-4. Daily rainfall totals for each sampling site are provided in Appendix C. North fork sampling locations received 11.62 inches of rain at LM-1 and 6.45 inches of rain at SD8(1). South fork sampling locations received 7.72 inches of rainfall at LG-1 and 8.35 inches of rainfall at DPR2. The rain gauge at SD8(1) was inoperable from January 23, 2008 to February 8, 2008, and therefore did not record any rainfall over that period of time.

Table 1-4. Rainfall Totals for Chollas Creek Sampling Sites

Storm Event Date	North Fork Sampling Sites		South Fork Sampling Sites	
	LM-1 (inches)	SD8(1) (inches)	LG-1 (inches)	DPR2 (inches)
11/30/07	1.31	0.96	1.11	0.86
12/07/07	0.41	0.39	0.50	0.41
02/03/08	0.33	0.39	0.68	0.39
2007–2008 Storm Season Total Rainfall	11.62	6.4	7.72	8.35

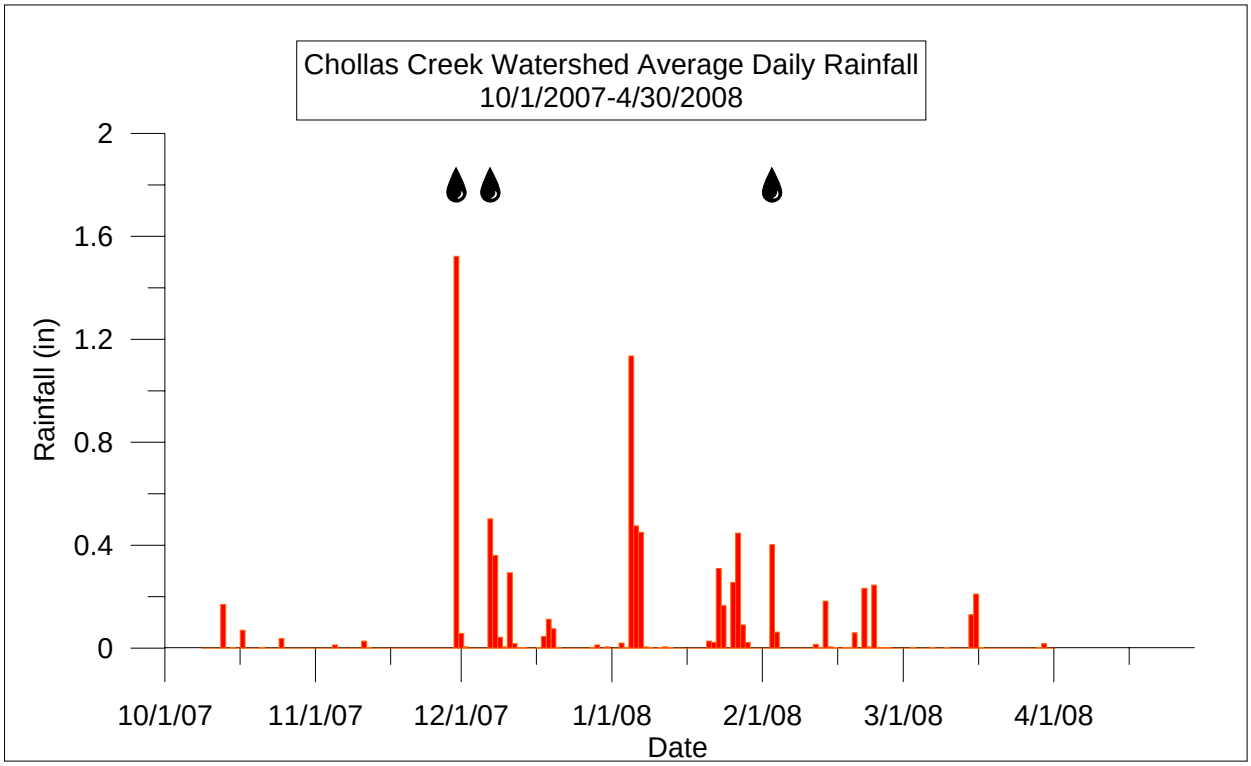

Raindrops indicate date of sample collection

Figure 1-4. 2007–2008 Average Rainfall Totals (inches) across the Chollas Creek Watershed

2.0 SAMPLING AND ANALYTICAL METHODS

The following subsections describe the sampling and analytical methods used by Weston Solutions. The City of La Mesa collected additional data at Site LM-1 during 2007-2008; sampling and analytical methods associated with the City of La Mesa's study are discussed in Appendix H.

2.1 Sampling Methods

Storm water runoff was collected using flow-weighted composite techniques over the duration of each storm event. Sample collection was terminated when the storm flow returned to within approximately 10% of the base flow condition, indicating the end of the precipitation event and the cessation of storm water flow.

2.2 Storm Water Quality Monitoring

Automated flow and sampling equipment were installed at each site to collect flow-weighted composite samples during storm events. American Sigma flowmeters with pressure transducers or bubblers were used to measure velocity and stage height. The flow sensors were installed on the channel bottom in the center of the channel. In the event that a flow sensor was rendered inoperable, meter tapes were used to measure stage height and slope of the main channel to determine velocity of the flow. During storm events, instream equipment damage is common at Site SD8(1) due to high velocity debris.

Using the data collected by the flowmeters, sample intervals were set to collect approximately 40 liters of water throughout the storm event. The sample intake point was located adjacent to the flowmeter, on the channel bottom in the center of the channel. American Sigma automated samplers were used to collect 1-L sample grabs at a flow dependent rate. The 1-L grab samples were composited into 20-L borosilicate glass sample bottles.

The automated sampler collects grab samples via a peristaltic pumping mechanism. Water samples are pumped through a Teflon intake device and Teflon tubing into a 20-L borosilicate glass sample bottle. Bottles were kept on ice during the storm event. Field crews maintained and replaced the sampling bottles as they filled to capacity. Multiple bottles are composited at Weston Solutions, Inc.'s (WESTON's®) facility and subsampled for delivery to the laboratory for chemistry and bioassay toxicity analyses.

Flow-weighted composite samples were collected and analyzed for the constituents listed on Table 2-1. Bioassay water samples were collected for use in acute and chronic toxicity tests using *C. dubia* and acute toxicity tests using *H. azteca*. Although RWQCB Order No. R9-2004-0277 did not require analysis of synthetic pyrethroids or bioassay testing of *H. azteca*, these analyses were added to the suite of tests being performed in this study as a response to observed shifts in pesticide use and in toxicity results as part of the regional monitoring conducted at Site SD8(1).

Grab samples were collected for those constituents that are not conducive to automated composite sampling. These constituents are pH, temperature, conductivity, and fecal indicator bacteria (Table 2-1). Grab samples were collected from the horizontal and vertical center of the channel, where possible.

A field data log was completed at each site (Appendix C). The field data log includes empirical observations of the site and water quality characteristics. Observations include parameters such as meteorological conditions at time of sampling and odor, color, and general turbidity of the runoff. Changes in the condition of vegetation as well as any observed erosion along the channel's side slopes were also noted on field data logs.

Table 2-1. Wet Weather Water Quality Analytical Parameters for Chollas Creek Sites LG-1, LM-1, DPR2, and SD8(1)

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature/light-protected)	Maximum Holding Time: Preparation/ Analysis
pH	N/A	N/A	Analyzed in field	N/A	N/A
Temperature	N/A	N/A	Analyzed in field	N/A	N/A
Conductivity	N/A	N/A	Analyzed in field	N/A	N/A
Total coliform	SM 9221 B, E	100 ml	Plastic	Store cool at <4ºC	Six hours
Fecal coliform	SM 9221 B, E	100 ml	Plastic	Store cool at <4ºC	Six hours
Enterococci	SM 9320	100 ml	Plastic	Store cool at <4ºC	Six hours
TSS	SM 2540D	1L	Plastic	Store Cool at <4ºC	Seven days
Total hardness	SM 2340-B	100 mL	Plastic	HNO_3	Six months
Nitrate (N)	SM 4500-NO_3	100 mL	Plastic or glass	Store Cool at <4ºC	48 hours
Nitrite (N)	SM 4500-NO_2	100 mL	Plastic or glass	Store Cool at <4ºC	48 hours
Total kjeldahl nitrogen (TKN)	EPA 351.3	500 mL	Amber glass	Acidify to <2 with H_2S0_4	28 days
Ammonia (N)	SM 4500-NH_3	250 mL	Plastic or glass	Acidify to <2 with H_2S0_4	28 days
TOC	EPA 415.1	250 mL	Clear glass	Acidify to <2 with H_2S0_4	28 days
Organophosphorus pesticides	EPA 625	2 L	Amber glass	Store Cool at <4ºC	Extraction – seven days; analysis – 40 days
Synthetic pyrethroids	EPA 625-NCI	2 L	Amber glass	Store Cool at <4ºC	Extraction – seven days; analysis – 40 days
Total and dissolved cadmium	EPA 200.8	1 L	Plastic	Store Cool at <4ºC	Six months
Total and dissolved copper	EPA 200.8	1 L	Plastic	Store Cool at <4ºC	Six months
Total and dissolved lead	EPA 200.8	1 L	Plastic	Store Cool at <4ºC	Six months
Total and dissolved zinc	EPA 200.8	1 L	Plastic	Store Cool at <4ºC	Six months
Acute toxicity *H. azteca*	EPA 821-R-02-012	10 L	10 L glass	Store Cool at <6ºC	36 hours
Acute toxicity *C. dubia*	EPA 821-R-02-012	10 L	10 L glass	Store Cool at <6ºC	36 hours
Chronic toxicity *C. dubia*	EPA 821-R-02-013	20 L	20 L glass	Store Cool at <6ºC	36 hours

2.3 Ambient Water Quality Monitoring

Automated flow and sampling equipment that were installed at each site for wet weather monitoring were also used to collect composite samples during DWM events. Sites LM-1, LG-1, and SD8(1) were sampled during the two DWM events. Site DPR2 was not sampled. For dry weather sampling at Site SD8(1), sand bags were placed in a horseshoe pattern around the sample intake point to ensure sufficient water depth at the sampling location. The sample pacing on the autosamplers was adjusted to allow for samples to be collected at regular intervals throughout the 24-hour sampling event based on flowmeter data from the previous 24 hours. The sample intake point was located adjacent to the flowmeter, on the channel bottom in the center of the channel. American Sigma automated samplers were used to collect 250-mL sample grabs at a flow dependent rate. The 250-mL grab samples were composited into 20-L borosilicate glass sample bottles.

Dry weather grab samples were collected in the same manner as wet weather grab samples. Flow-weighted composite samples were collected and analyzed for the constituents listed on Table 2-2. Bioassay water samples were collected under the Regional Monitoring Program at Site SD8(1) for tests with *H. azteca, C. dubia, and S. capricornutum*. A field data log was completed at each site (Appendix C). The field data log includes empirical observations of the site and water quality characteristics. Observations included meteorological conditions at the time of sampling and odor, color, and general turbidity of the runoff.

Table 2-2. Ambient Water Quality Analytical Parameters for Chollas Creek Sites LG-1, LM-1, and SD8(1)

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature/light-protected)	Maximum Holding Time: Preparation/ Analysis
pH	N/A	N/A	Analyzed in field	N/A	N/A
Temperature	N/A	N/A	Analyzed in field	N/A	N/A
Conductivity	N/A	N/A	Analyzed in field	N/A	N/A
Total coliform	SM 9221 B, E	100 mL	Plastic	Store cool at <4ºC	Six hours
Fecal coliform	SM 9221 B, E	100 mL	Plastic	Store cool at <4ºC	Six hours
Enterococci	SM 9320	100 mL	Plastic	Store cool at <4ºC	Six hours
TSS	SM 2540D	1 L	Plastic	Store cool at <4ºC	Seven days
Total hardness	SM 2340-B	100 mL	Plastic	HNO_3	Six months
Nitrate (N)	SM 4500-NO_3	100 mL	Plastic or glass	Store cool at <4ºC	48 hours
Nitrite (N)	SM 4500-NO_2	100 mL	Plastic or glass	Store cool at <4ºC	48 hours
TKN	EPA 351.3	500 mL	Amber glass	Acidify to <2 with H_2S0_4	28 days
Ammonia (N)	SM 4500-NH_3	250 mL	Plastic or glass	Acidify to <2 with H_2S0_4	28 days
TOC	EPA 415.1	250 mL	Clear glass	Acidify to <2 with H_2S0_4	28 days
Organophosphorus pesticides	EPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; analysis – 40 days

Table 2-2. Ambient Water Quality Analytical Parameters for Chollas Creek Sites LG-1, LM-1, and SD8(1)

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature/light-protected)	Maximum Holding Time: Preparation/ Analysis
Total and dissolved cadmium	EPA 200.8	1 L	Plastic	Store cool at <4ºC	Six months
Total and dissolved copper	EPA 200.8	1 L	Plastic	Store cool at <4ºC	Six months
Total and dissolved lead	EPA 200.8	1 L	Plastic	Store cool at <4ºC	Six months
Total and dissolved zinc	EPA 200.8	1 L	Plastic	Store cool at <4ºC	Six months
Acute toxicity *H. azteca* (Site SD8(1) only)	EPA 821-R-02-012	10 L	10 L glass	Store cool at <6ºC	36 hours
Chronic toxicity *C. dubia* (Site SD8(1) only)	EPA 821-R-02-013	10 L	10 L glass	Store cool at <6ºC	36 hours
Chronic Toxicity *S. capricornutum* (Site SD8(1) only)	EPA 821-R-02-013	10 L	10 L glass	Store cool at <6ºC	36 hours

2.4 Quality Assurance / Quality Control Procedures

Field measurements for pH, conductivity, and temperature were made using an Oakton CON10 pH/temperature/conductivity meter according to manufacturer specifications. Calibration of the instruments was conducted prior to each sampling event.

Quality assurance (QA) and quality control (QC) for sampling processes included proper collection of the samples to minimize the possibility of contamination. All samples were collected in clean, contaminant-free sample bottles. Field staff wore powder-free nitrile gloves at all times during sample collection. Sampling personnel were trained according to the field sampling SOPs. Additionally, the field staff was made aware of the significance of the project's detection limits and the requirement to avoid contamination of samples at all times. A temperature blank was used to ensure sample holding temperatures were maintained from sample collection to delivering to the laboratory.

2.5 Chain-of-Custody Procedures

Chain-of-custody (COC) procedures were used for all samples throughout the collection, transport, and analytical process. Samples were considered to be in custody if they were in the custodian's possession or view, retained in a secured place (under lock) with restricted access, or placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal. The principal documents used to identify samples and to document possession were COC records, field logbooks, and field tracking forms.

The COC procedures were initiated during sample collection. A COC record was provided with each sample or group of samples. Each person who had custody of the samples signed the form and ensured the samples were not left unattended unless properly secured. Documentation of sample handling and custody included the following:

- Sample identifier.
- Sample collection date and time.
- Any special notations on sample characteristics or analyses.
- Initials of the person collecting the sample.
- Date the sample was sent to the analytical laboratory.
- Shipping company and waybill information.

Completed COC forms were placed in a plastic envelope and kept inside the container with the samples. Once delivered to the analytical laboratory, the COC form was signed by the person receiving the samples. The condition of the samples (i.e., confirming all samples were accounted for and properly labeled, the temperature of the samples, and the integrity of the sample jars) was noted and recorded by the receiver. COC records were included in the final reports prepared by the analytical laboratories and are considered an integral part of the report.

3.0 MONITORING RESULTS AND ASSESSMENT

This section presents the water quality monitoring results for sites DPR2 and SD8(1) to satisfy the requirements of RWQCB Order No. R9-2004-0277 and also presents water quality monitoring results for sites LM-1 and LG-1 to help determine jurisdictional contributions to overall contaminant loads within Chollas Creek. Note that additional data collected by the City of La Mesa at Site LM-1 is presented in Appendix H. The criteria by which results have been assessed are presented in Section 3.1.

3.1 Water Quality Criteria

Water chemistry results will be compared to criteria from the following references to determine the magnitude of any impacts from storm water runoff to Chollas Creek:

- Water Quality Control Plan (RWQCB, 1994) for San Diego County.
- Title 40 of the Code of Federal Regulations (Part 131; Water Quality Standards) (USEPA, 2000a).
- The NPDES Storm Water Multi-Sector General Permit (USEPA, 2000b).
- Water quality criteria for Diazinon, Chlorpyrifos, and Malathion (CDFG, 2000).

Table 3-1 lists the constituents that were monitored during this project and their respective WQOs.

Table 3-1.Water Quality Objective Criteria for Analyzed Constituents

Constituent List	WQO Criteria	Water Quality Criteria Source
pH	6.5–9.0	Basin Plan (RWQCB, 1994)
Conductivity	–	–
Temperature	–	–
Total coliform	–	–
Fecal coliform	4,000 (REC 2)	Basin Plan (RWQCB, 1994)
Enterococci	151 (dry weather)	Basin Plan (RWQCB, 1994)
TOC	50 mg/L	Multi-Sector General Permit (USEPA, 2000b)
TSS	100 mg/L (wet weather); 58 mg/L (dry weather)	Multi-Sector General Permit (USEPA, 2000b), NSQD
Total and dissolved cadmium	(a)	40 CFR 131 (USEPA, 2000a)
Total and dissolved copper	(a)	40 CFR 131 (USEPA, 2000a)
Total and dissolved lead	(a)	40 CFR 131 (USEPA, 2000a)
Total and dissolved zinc	(a)	40 CFR 131 (USEPA, 2000a)
Hardness	–	
Diazinon	72 ng/L (acute exposure); 45 ng/L (chronic exposure)	Resolution No. R9-2002-0123(b)
Chlorpyrifos	20 ng/L	CDFG (2000)
Malathion	430 ng/L (acute); 100 ng/L (chronic)	CDFG (2000)
Ammonia (N)	*	USEPA water quality criteria
Nitrate	1 mg/L (wet weather); 10 mg/L (dry weather)	Basin Plan (RWQCB, 1994)
Nitrite	1 mg/L	Basin Plan (RWQCB, 1994)
TKN	–	–
Bifenthrin	9.3 ng/L	Anderson et al. in press (wet weather)
Cyfluthrin	344 ng/L	Wheelock et al. 2004 (wet weather)
Cypermethrin	683 ng/L	Wheelock et al. 2004 (wet weather)
Esfenvalerate	250 ng/L	Wheelock et al. 2004 (wet weather)
L-Cyhalothrin	200 ng/L	Wheelock et al. 2004 (wet weather)
Permethrin	21 ng/L	Anderson et al. in press (wet weather)
Acute toxicity *C. dubia*	LC_{50}	–
Acute toxicity *H. azteca*	100 no-observed-effect concentration (NOEC) (%)	RWQCB Order R9-2007-0001
Chronic toxicity *C. dubia*	100 NOEC (%)	RWQCB Order R9-2007-0001
Chronic toxicity *S. capricornutum*	100 NOEC (%)	RWQCB Order R9-2007-0001

(a) WQO for dissolved metal fractions are based on Total Hardness (as $CaCO_3$) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). Samples are compared to the acute (CMC) as storm events are typically representative of short-term conditions only.

(b) For the Chollas Creek TMDL (Resolution No. R9-2002-0123), the WLA is set at 72 ng/L for acute exposures and 45 ng/L for chronic exposures. The 45 ng/L chronic exposure is applied to samples collected using a flow-weighted composite method.

* WQO is based on CMC (salmonids absent) using pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

3.2 Wet Weather Sampling Summary

Samples of storm water runoff were collected from three storm events during the 2007–2008 Wet Weather Monitoring Season (November 30, 2007, December 7, 2007, and February 3, 2008). Hydrographs from monitored storm events at each of the four sampling locations are presented in Appendix D. Due to floating debris incapacitating the instream flow sensor at SD8(1) during the November 30, 2007 storm event, an estimation of flow for this event was calculated based upon manual depth measurements recorded throughout the storm's hydrograph. The rain gauge at SD8(1) became inoperable during the February 3, 2008 storm event. As a result, rainfall data from the DPR2 rain gauge were used for SD8(1) on February 3, 2008. Note that the City of La Mesa also collected samples from Site LM-1 during the November and December storm events; see Appendix H for details.

3.3 Wet Weather Sample Results and Discussion

Chemistry and bacterial results for the three monitored storm events are presented in tabular form in Appendix F. Sample results were compared to the WQO_ws shown in Table 3-1. Any values above the WQO_w in the chemistry and bacterial results tables were bolded and shaded. The City of La Mesa's data, compared to the same WQOs, is presented in Appendix H.

An integrated watershed assessment was used to address TMDLs for Diazinon, dissolved metals, pesticides, and bacteria. This integrated assessment involved chemical, bacterial, and toxicological testing during multiple wet weather sampling events at locations in the lower reaches of the north and south forks of Chollas Creek as part of the Regional Monitoring Program. Chemical and bacterial monitoring in the upper reaches of the north and south forks of Chollas Creek was included in special studies for regional jurisdictions.

Storm Water Chemistry

Sample results for general chemistry within the north fork of Chollas Creek were above the WQO_w for TSS only during the first monitoring event (November 30, 2007) at LM-1, and during the all three monitoring events at SD8(1). All other general chemistry results, with the exception of oil and grease at SD8(1) during the first monitoring event, were below their respective WQO. In the south fork of Chollas Creek, TSS was above the WQO during all three monitored storm events at the upstream monitoring Site (LG-1), while at DPR2, TSS was above the WQO only during the first monitored storm event.

On the north fork of Chollas Creek, dissolved copper and dissolved zinc were above the WQO_w during the first and second monitored storm events at LM-1 and during all events at SD8(1). The City of La Mesa's data for the first two storm events showed dissolved zinc below the WQO_w and dissolved copper above the WQO_w for both events (Appendix H). While dissolved copper was detected above the WQO_w at both south fork sites, dissolved zinc was detected above the WQO_w during the second monitoring event (December 7, 2007) only at LG-1 and was not detected above the WQO_w at DPR2 during any of the monitored storm events. The concentrations of detected total and dissolved metals during the 2007–2008 Monitoring Season were generally similar to previous historical values detected in the watershed.

The pesticides Diazinon and Malathion were detected above reporting limits during one or more storm events at both north fork (SD8(1)) and south fork (LG-1 and DPR-2) sampling locations. Malathion was detected during the November 30, 2007 storm event at site LM-1. With the exception of Site SD8(1) during the November 30, 2007 storm event, detected Diazinon concentrations were all below the chronic exposure WLA of 45 ng/L. During the November 30, 2007 storm event, the Diazinon value at SD8(1) was 46.6 ng/L, which is just above the chronic WLA but below the acute WLA. Although Diazinon concentrations have been detected historically throughout Chollas Creek, they have decreased in recent years since the pesticide was banned from commercial sale in 2005. All other analyzed organophosphate pesticides, with the exception of Tokuthion at SD8(1) and Dichlorvos at DPR-2 during the first storm event, were below detection limits.

Several synthetic pyrethroids were detected during all three monitored storm events at SD8(1) and during the first two monitored storm events at DPR2. Several values for Bifenthrin and Permethrin were above the published LC_{50}s for *H. azteca*. TIEs performed during the 2005–2006 Monitoring Season and the 2006–2007 Monitoring Season as part of the Regional Monitoring Program identified synthetic pyrethroids as the causative agent of toxicity to *H. azteca* (WESTON, 2007). Based on these findings, synthetic pyrethroids and toxicity to *H. azteca* were added to the analytical constituent list.

Bacteria

Fecal coliform concentrations were higher than the REC-2 WQO (4000 MPN/100 mL) in ten of 12 samples analyzed events sampled across all sites (Figure 3-1). Fecal coliform concentrations were higher at LM-1, SD8(1), and DPR2 during the first flush storm event of November 30, 2007, than during the second and third monitored storms. Currently, there are no wet weather WQOs for total coliforms or enterococci. In the north fork, fecal coliform results ranged from 2,300 MPN/100 mL (February 3, 2008) to 80,000 MPN/100 mL (November 30, 2007) at LM-1 and from 11,000 MPN/100 mL (December 7, 2007 and February 3, 2008) to 50,000 MPN/100 mL (November 30, 2007) at SD8(1). Fecal coliform concentrations were higher during the first storm event (November 30, 2007) at LM-1 and SD8(1) than during the two subsequent storm events. No clear pattern was evident in enterococcus concentrations among the upstream and downstream north fork sampling locations, because enterococcus concentrations varied less than one order of magnitude at LM-1 versus SD8(1) during each of the storm events. Similar levels of bacteria were reported from the City of La Mesa's monitoring (Appendix H). South fork enterococcus results at LG-1 and DPR2 were higher during the first storm event than during either of the subsequent storm events. Although total coliform concentrations were higher at DPR2 than at LG-1 for all storm events, upstream (LG-1) values remained within one order of magnitude of downstream (DPR2) values for the storm events of December 7, 2007 and February 3, 2008. Fecal coliform results ranged from 1,879 MPN/100 mL (November 30, 2007) to 30,000 MPN/100 mL (December 7, 2007) at LG-1 and from 13,000 MPN/100 mL (February 3, 2008) to 330,000 MPN/100 mL (November 30, 2007) at DPR2.

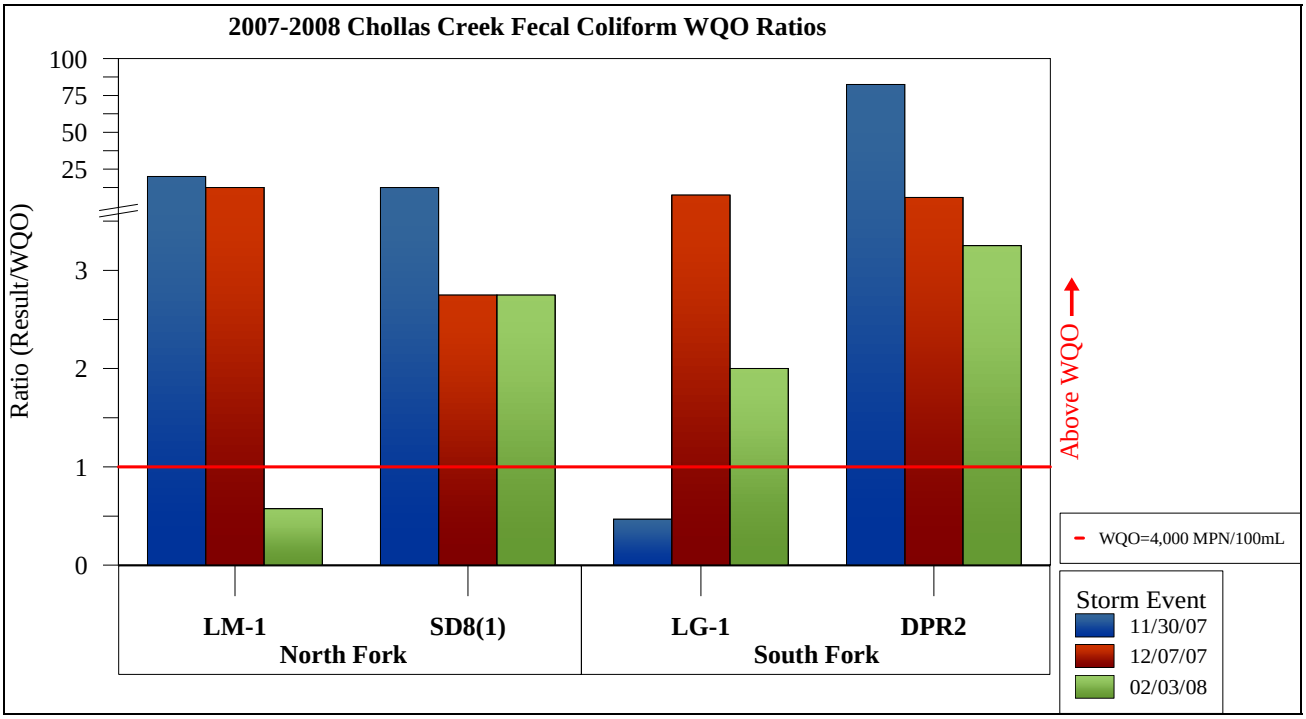

Figure 3-1. Fecal Coliform Water Quality Objective Ratios Across Four Chollas Creek Sites

Toxicity

Toxicity results are presented in Table 3-2 for *C. dubia*. Toxicity testing using *C. dubia* was performed on water from the north fork's downstream site (SD8(1)) and on water from the south fork's downstream site (DPR2) in compliance with RWQCB Order No. R9-2004-0277. Toxicity testing using *H. azteca* was added to the testing program as a result of a shift in pesticide use from Diazinon to synthetic pyrethroids and is presented in Table 3-3. Toxic effects to *H. azteca* and other freshwater and marine invertebrates have been observed in exposures to synthetic pyrethroids (WESTON, 2006; Anderson et al., in press).

Toxicity to *C. dubia* was not observed in either acute or chronic exposures to water collected at sites SD8(1) or DPR2 during the 2007–2008 Monitoring Season. Although low concentrations of the pesticides Diazinon and Malathion were detected at SD8(1), LG-1, and DPR2, they were below the effects threshold value of 250 ng/L that has been observed to cause acute toxicity to *C. dubia* (WESTON, 2007).

Acute toxicity to *H. azteca* was observed at all sites. Water collected from the site tributary to the north fork of Chollas Creek had observed toxicity to *H. azteca* at the upstream site (LM-1) and at the downstream site in the north fork (SD8(1)) on each of the three wet weather monitoring dates. At the upstream monitoring site (LM-1) the water's toxicity was greatest on December 7, 2007, while at the downstream site (SD8(1)) the water's toxicity was greatest on November 30, 2007. Higher toxicity to *H. azteca* during the December 7, 2007 event at Site LM-1 and during the November 30, 2007 event at SD8(1) corresponds to the dates in which the highest concentrations of Malathion and synthetic pyrethroids (Bifenthrin and Permethrin) were measured at each of the sites, respectively. In the south fork of Chollas Creek, toxicity to *H.*

azteca was observed at the upstream site (LG-1) on November 30, 2007, (no-observed-effect concentration (NOEC)= 25%) and at the downstream site (DPR2) on November 30, 2007 and February 3, 2008 (NOEC= 50% on both dates).

Table 3-2. 2007–2008 Chollas Creek Wet Weather Biological Toxicity Results for *Ceriodaphnia dubia*

Test	Reporting Value	Unit	North Fork SD8(1)			South Fork DPR2		
			11/30/2007	12/07/2007	02/03/2008	11/30/2007	12/07/2007	02/03/2008
96-hour acute toxicity (*C. dubia*)	Mean % survival for control	%	100	100	100	90	100	100
	% survival in 100% concentration	%	100	100	100	100	100	100
	LC_{50}	%	>100	>100	>100	>100	>100	>100
	LOEC	%	>100	>100	>100	>100	>100	>100
	TUa		0	0	0	0	0	0
	LT_{50}	Hours	>96	>96	>96	>96	>96	>96
Toxicity Observed			No	No	No	No	No	No
7-day chronic toxicity (*C. dubia*)	Mean % survival for control	%	100	100	100	100	100	100
	% survival in 100% concentration	%	100	100	100	100	100	100
	LC_{50} (survival)	%	>100	>100	>100	>100	>100	>100
	NOEC (survival)	%	100	100	100	100	100	100
	LOEC (survival)	%	>100	>100	>100	>100	>100	>100
	TUc (survival)		1	1	1	1	1	1
	LT_{50}	Hours	>168	>168	>168	>168	>168	>168
	NOEC (reproduction)	%	100	100	100	100	100	100
	LOEC (reproduction)	%	>100	>100	>100	>100	>100	>100
	TUc (reproduction)		1	1	1	1	1	1
Toxicity Observed			No	No	No	No	No	No

Table 3-3. Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	North Fork						South Fork					
			LM-1 (upstream site)			SD8(1) (downstream site)			LG-1 (upstream site)			DPR2 (downstream site)		
			11/30/2007	12/07/2007	02/03/2008	11/30/2007	12/07/2007	02/03/2008	11/30/2007	12/07/2007	02/03/2008	11/30/2007	12/07/2007	02/03/2008
96-hour acute toxicity (*H. azteca*)	Mean % survival for control	%	100	95	100	100	95	100	100	95	100	100	95	100
	NOEC	%	**25**	**6.25**	**50**	**12.5**	**25**	**6.25**	**25**	100	100	**50**	100	**50**
	LC_{50}	%	**90.0**	**12.5**	**81.3**	**46.9**	**63.4**	>100	**68.8**	>100	>100	>100	>100	>100
	LOEC	%	**50**	**14.3**	100	**25**	**50**	**12.5**	**50**	>100	>100	100	>100	100
	TU_a		**1.11**	**7.00**	**1.07**	**2.13**	**1.58**	0.94	**1.45**	0.81	0.23	0.93	0.43	0.59
Toxicity Observed			**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No	No	**Yes**	No	**Yes**

Bold and/or shaded values are above the WQO.

3.4 Ambient Water Quality Sampling Summary

Samples of urban runoff were collected from two ambient weather sampling events in the spring of 2008. Sampling events were 24 hours in duration and occurred on March 5, 2008 and June 3, 2008. Composite samples of urban runoff were flow-weighted based on the previous day's flow and were collected at regular intervals over a 24-hour period. Grab samples were collected for constituents that are not amenable to composite sampling. Ambient sampling was performed at SD8(1) in the lower north fork of Chollas Creek and at LM-1 and LG-1 in the upper reaches of the drainage areas of the north and south forks of Chollas Creek, respectively.

3.5 Ambient Water Quality Sample Results and Discussion

Chemistry and bacterial results for the two ambient weather events are presented in tabular form in Appendix D. Sample results were compared to WQO_as shown in Table 3-1. Any values above WQO_as in the chemistry and bacterial results tables in Appendix C were bolded and shaded.

Chemistry

Ambient weather sample results for general chemistry and field measurements within the north fork of Chollas Creek were above the oil and grease WQO_a on March 5, 2008, at Site SD8(1) and were above the pH WQO_a on June 3, 2008. All other general chemistry and field measurement results on north fork sampling locations were below their respective WQO_a. At the south fork Site LG-1, all general chemistry and field measurement results were below WQO_a.

On the north fork of Chollas Creek, dissolved copper was detected above the WQO during the first and second dry weather events at SD8(1). At Site LM-1, upstream of SD8(1), dissolved copper concentrations were below the WQO_a. No metals concentrations were above the WQO_a at the south fork Site LG-1 during either dry weather sampling event.

No pesticides were detected in dry weather samples at any of the sampling locations. Analysis of synthetic pyrethroids was not performed on dry weather samples at Site SD8(1).

Bacteria

Fecal coliform concentrations were higher than the Basin Plan REC-2 WQO_a of 4,000 MPN/100 mL at SD8(1) on March 5, 2008. Enterococcus concentrations were above the WQO_a of 151 MPN/100 mL at all three monitored sites on March 5, 2008, and at LM-1 and LG-1 on June 3, 2008. Currently, there are no WQO_as for total coliforms. In the north fork, total coliform results were higher at SD8(1) than at LM-1 or LG-1 during both sampling events. Bacterial concentrations of fecal coliforms, enterococci, and total coliforms at SD8(1) during the March 5, 2008 sampling event were between one and two orders of magnitude higher than bacterial concentrations at LG-1 or LM-1. During the sampling event on June 5, 2008, bacterial concentrations of enterococcus and fecal coliform in water collected from LM-1 were approximately one order of magnitude higher than those of SD8(1) or LG-1.

Toxicity

Toxicity testing using *C. dubia*, *H. azteca*, and *S. capricornutum* was performed on ambient weather water from SD8(1) in compliance with RWQCB Order No. R9-2007-0001. Toxicity from ambient weather water samples collected on March 5, 2008, was observed to each of the three test species (*H. azteca*, *C. dubia*, and *S. capricornutum*) (Table 3-4, Table 3-5, and Table 3-6).

Toxicity to *C. dubia* was observed in samples collected during the March sampling event, but was not observed in samples collected during the June sampling event. Similarly, toxicity to *H. azteca* and *S. capricornutum* was also observed at SD8(1) during the March sampling event (NOEC= 12.5% and <6.25%, respectively; LC_{50}= 39.2% and IC_{50}= >100%, respectively). Water chemistry results from the March ambient event detected oil and grease levels and dissolved copper concentrations above WQO_as for these constituents. No pesticides were detected during the March or June sampling events at SD8(1).

Table 3-4. Biological Toxicity Results for *Ceriodaphnia dubia*

Test	Reporting Value	Unit	SD8(1)	
			03/04/2008	06/03/2008
96-hour acute toxicity (*C. dubia*)	Mean % survival for control	%	90	100
	% survival in 100% concentration	%	**30**	100
	LC_{50}	%	**86.4**	>100
	LOEC	%	100	>100
	TUa		**1.16**	0
	LT_{50}	Hours	66	>96
Toxicity Observed			**Yes**	No
7-day chronic toxicity (*C. dubia*)	Mean % survival for control	%	90	100
	% survival in 100% concentration	%	**30**	100
	LC_{50} (survival)	%	**83.2**	>100
	NOEC (survival)	%	**50**	100
	LOEC (survival)	%	100	>100
	TUc (survival)		**2**	1
	LT_{50}	Hours		
	NOEC (reproduction)	%	**25**	100
	LOEC (reproduction)	%	**50**	>100
	TUc (reproduction)		**4**	1
Toxicity Observed			**Yes**	**No**

Bold and/or shaded values are above the WQO.

Table 3-5. Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	SD8(1)	
			03/04/2008	06/03/2008
96-hour acute toxicity (*H. azteca*)	Mean % survival for control	%	92.5	100
	NOEC	%	**12.5**	100
	LC_{50}	%	**39.2**	>100
	LOEC	%	**25**	>100
	TU_a		**2.55**	0
Toxicity Observed			**Yes**	**No**

Bold and/or shaded values are above the WQO.

Table 3-6. Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	SD8(1)	
			03/04/2008	06/03/2008
96-hour chronic toxicity (*S. capricornutum*)	NOEC	%	**<6.25**	100
	IC_{50}	%	**>100**	>100
	LOEC	%	**6.25**	>100
	TU_c		**>16**	1
Toxicity Observed			**Yes**	**No**

Bold and/or shaded values are above the WQO.

3.5.1 Special Studies

In addition to the monitoring required by the order, the City of San Diego conducted additional studies to assess sources of pollutants in the watershed. These studies are directly applicable to the Chollas Creek dissolved metals TMDLs. Final reports from these studies will be submitted upon completion.

3.5.1.1 City of San Diego Aggressive Best Management Practices Effectiveness Phase I—Street Sweeping Study

The City of San Diego is conducting an ongoing BMP effectiveness study as part of its 5-Year Strategic Plan to determine the most effective methods for reducing contaminant loads to watersheds through targeted, aggressive street sweeping.

The study's key questions are:

1. Which street sweeping machine is most effective in removing contaminants of concern, mechanical, regenerative air, or vacuum?
2. What frequency of street sweeping is most effective for debris removal, and how can the frequency be optimized?
3. What impact does street sweeping have on contaminants of concern in runoff?

To answer the key study questions, street sweeping routes in the La Jolla Watershed, the Mission Bay Watershed, and the Chollas Creek Watershed were targeted. Debris samples were collected from mechanical sweeping and analyzed for constituents of concern, weight, and trash type. Samples collected from regenerative and vacuum sweepers were compared to mechanical debris samples. Street sweeping frequency was analyzed using sample collection and analysis to determine the most effective frequency for debris removal.

Preliminary findings of the study are:

- Swept debris is predominantly comprised of sediment and green waste, while the major trash source is cigarette butts and food packaging.
- Grain size analysis indicates silt and fine sand constitutes the majority of particulates collected on routes within the Chollas Creek Subwatershed.
- Low concentrations of synthetic pyrethroids (Bifenthrin, Cypermethrin, and Permethrin) were detected in debris collected from Logan Heights, residential Tecolote, and all Chollas routes.
- The pesticide Chlorpyrifos was detected in debris collected from residential areas in Tecolote.
- Zinc was detected in concentrations five to ten times higher than copper or lead concentrations.
- Vacuum-assisted sweepers remove higher loads of street debris and may be more effective in removal of dissolved metals than other models of sweepers. Vacuum-assisted sweepers were also effective in removing road hydrocarbons.

3.5.1.2 City of San Diego Aerial Deposition Study—Phase II

The City of San Diego conducted a Phase II aerial deposition study to determine if fallout from aerial deposition represents a significant pathway for metals pollutant loading in several waterways. The 2007–2008 Phase II study looked to address questions that were not answered in the initial (Phase I) aerial deposition study. Study questions for Phase II were:

1. What is the annual aerial deposition rate in the high loading areas identified in the initial dry weather aerial deposition study?
2. What is the wet weather aerial deposition rate at the SD8(1) location?
3. What is the solubility of copper, lead, and zinc in atmospheric deposition particles during dry weather and wet weather conditions?
4. What is the direct aerial deposition rate of metals in the La Jolla ASBS?

Southern sampling locations, located in the vicinity of the Pueblo San Diego Watershed, are shown on Figure 3-2.

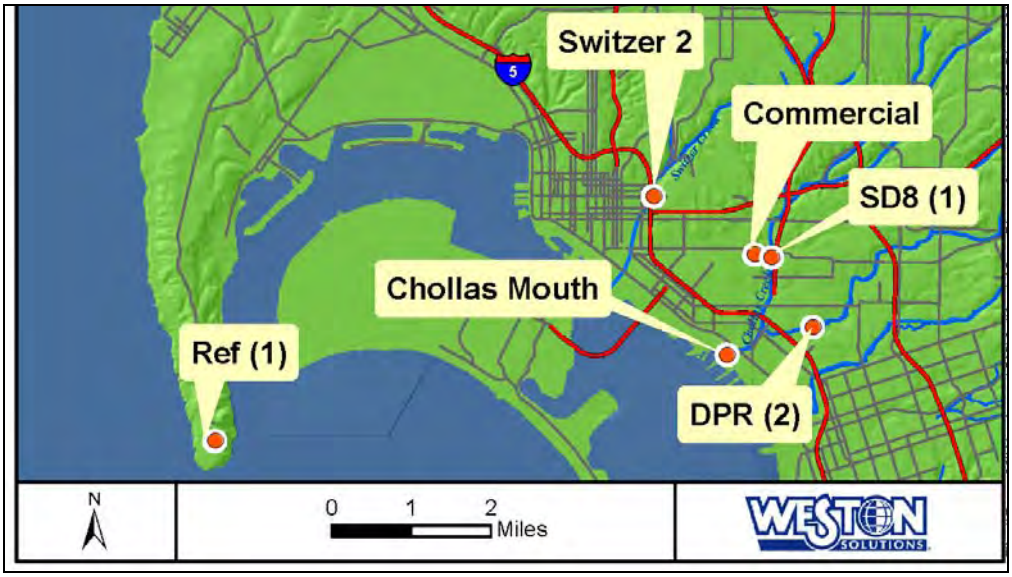

Figure 3-2. Southern Aerial Deposition Sample Locations

Preliminary results of the City of San Diego Aerial Deposition Study—Phase II were:

- SD8(1) and the Chollas mouth sites had the highest mean deposition rates of copper (59.2 µg/m^2/day and 54.9 µg/m^2/day, respectively), while the Commercial Site had the highest deposition rates for lead and zinc (35.2 µg/m^2/day and 258 µg/m^2/day, respectively), which could be indicative of the increased industrial and commercial activities in the area (Figure 3-3, Figure 3-4, and Figure 3-5 respectively).
- Santa Ana winds and local wildfires may cause significantly higher deposition rates within all areas of the City of San Diego as a result ash fallout and higher re-suspension rates.
- Wet weather deposition rates are low but appear to be a contributing factor in wet weather exceedances of dissolved copper and dissolved zinc in Chollas Creek based on the low compliance levels set by the CTR. Additionally, wet weather deposition of copper and zinc may be more influential for Chollas Creek than studies from other regions have previously indicated.
- Indirect aerial deposition particulates account for the majority of the copper and zinc, and to a lesser degree lead, that is found in storm water runoff. Copper and lead were found to have relatively low solubilities in their freshly deposited state (11% and 2.5%, respectively were the highest solubilities measured), while zinc solubility was considerably higher (88% of the total zinc concentration).

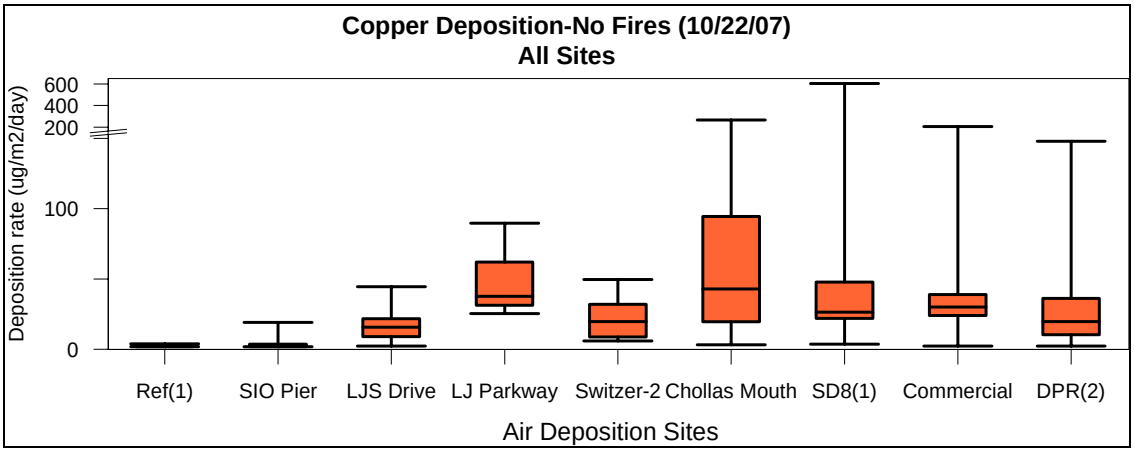

Figure 3-3. Box and Whisker Plots of Copper Deposition Rates for September 2007–May 2008 (fire event excluded)

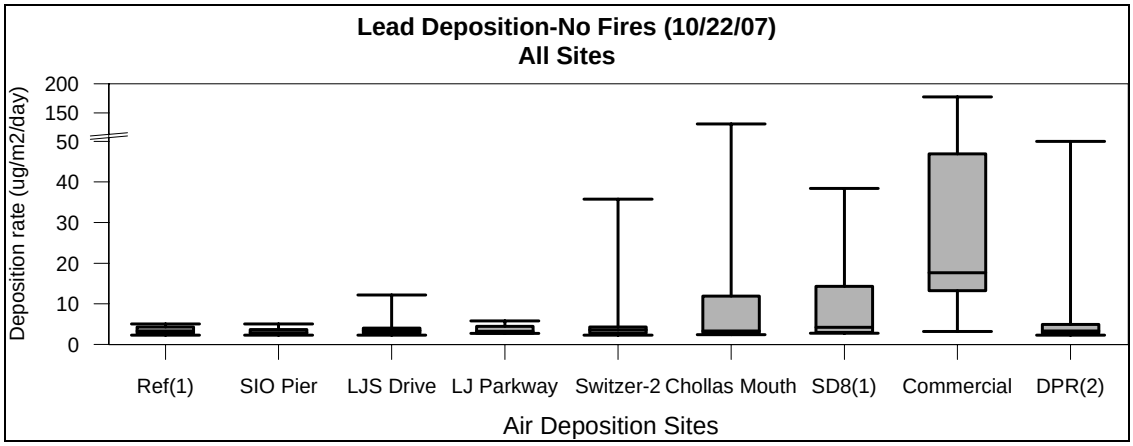

Figure 3-4. Box and Whisker Plots of Lead Deposition Rates for September 2007–May 2008 (fire event excluded)

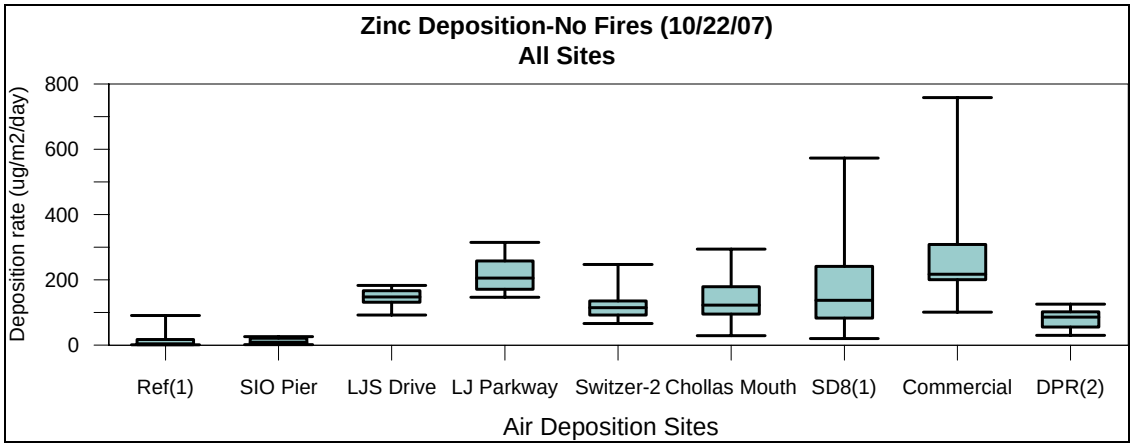

Figure 3-5. Box and Whisker Plots of Zinc Deposition Rates for September 2007–May 2008 (fire event excluded)

3.6 Historical Data and Trend Analysis

Historical data have been collected at Site SD8(1) since 1994. Using the long-term data set, a non-parametric trend analysis was conducted using the Mann-Kendall trend test to evaluate the presence or absence of significant trends using available monitoring data. The Mann-Kendall trend analysis was also completed for the three years of data collected at DPR2. This trend test is often employed for analysis of environmental time series data. The test does not assume any single distribution for the data being tested, which is an advantage when analyzing environmental data. The test does not incorporate magnitude, but instead calculates the number of positive and negative differences between samples. The number of positive and negative differences is summed to calculate the S-statistic, which is compared to a table value to determine significance. Scatterplots with significant trends are shown on Figure 3-6 for DPR2 and Figure 3-7 for SD8(1). Because only one year of ambient weather data has been collected at the Chollas Creek MLS, long-term ambient weather trends could not be analyzed.

Only those constituents with significant trends are shown. At DPR2, significantly decreasing trends were noted for Chlorpyrifos and Diazinon. There were no significantly increasing trends at this site. At SD8(1), significantly increasing trends were noted for total copper, total zinc, and toxicity to *H. azteca*. Significantly decreasing trends were noted only for nitrate. All scatterplots from sites DPR2 and SD8(1) can be found in Appendix E. A table of trend results for each site, including P-values, is also included in Appendix E.

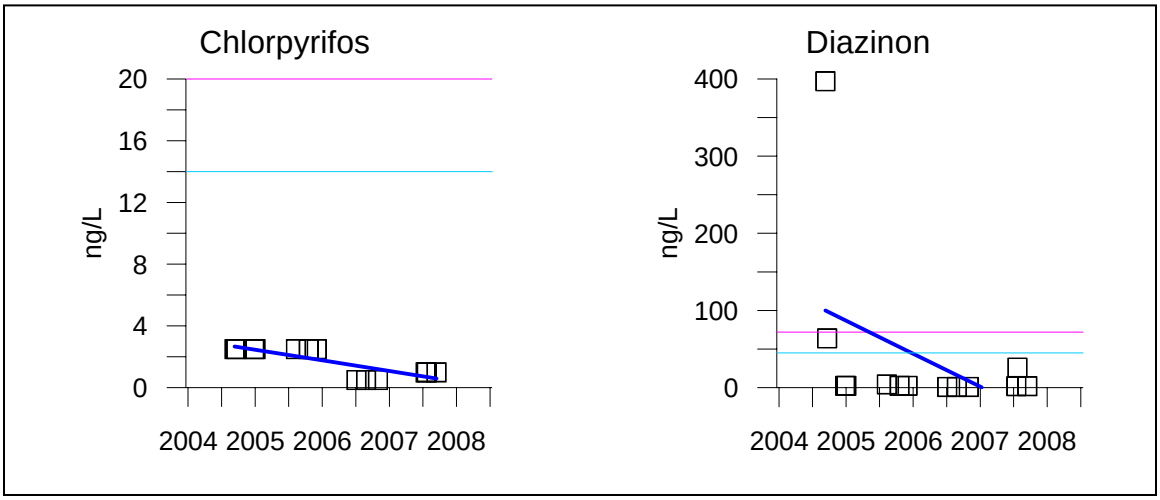

Figure 3-6. Scatterplots of Constituents with Significant Mann-Kendall Trends at Site DPR2

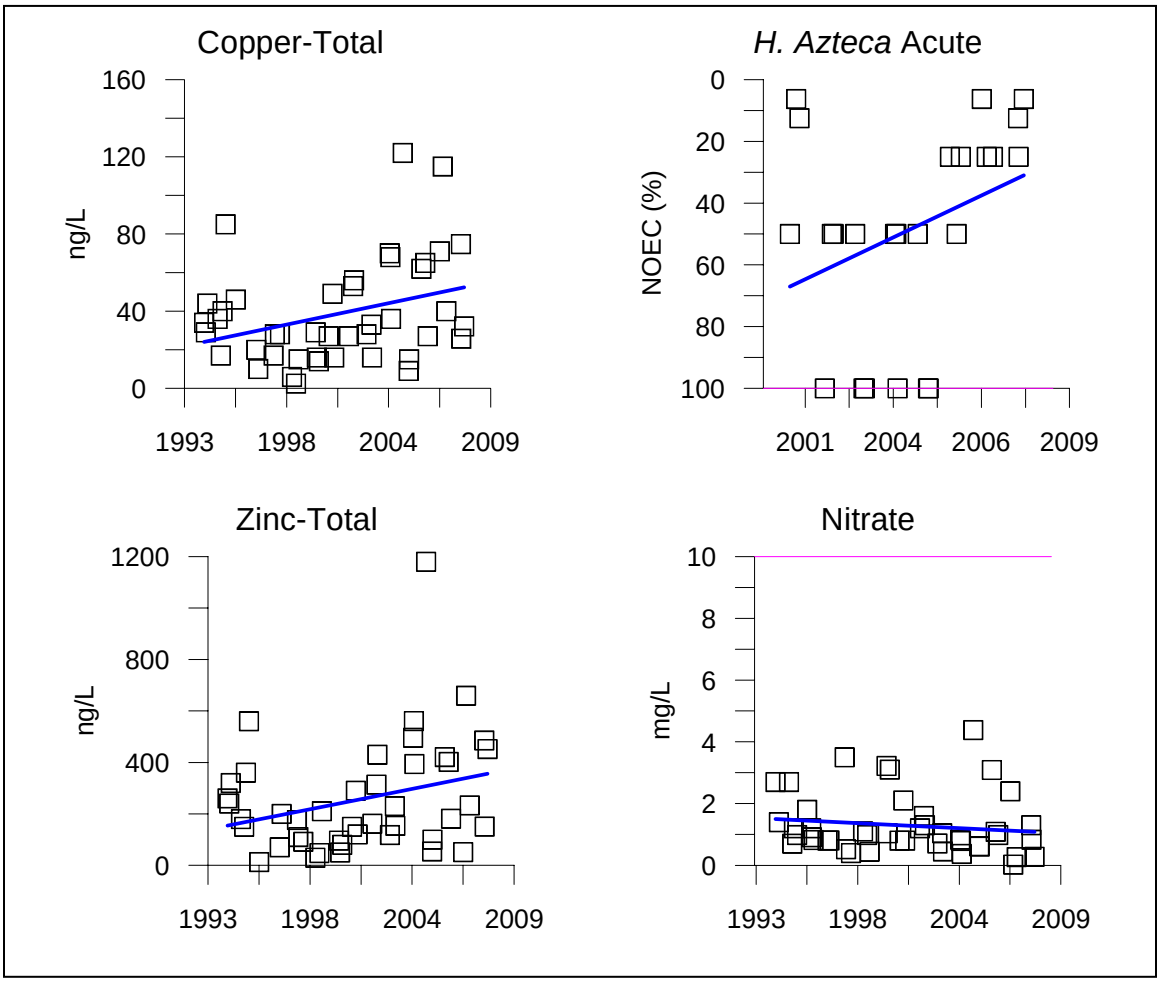

Figure 3-7. Scatterplots of Constituents with Significant Mann-Kendall Trends at Site SD8(1)

For the conventional constituents, a significant trend for nitrate was noted at SD8(1). Nitrate shows a significantly decreasing trend (p=-0.029). There was also a significantly decreasing trend for *H. azteca* survival. Ash fallout from the wildfires that occurred in Fall 2007 within the San Diego Bay WMA drainage area may have influenced water quality results measured during that year's monitoring.

Trend analyses of the monitoring results for metals indicate significantly increasing trends for total copper (p=0.028) and total zinc (p=0.006) for the period 1994-2008 (Figure 3-7). Although there are not presently significant trends for dissolved copper or dissolved zinc, the observed increasing trends for total copper and total zinc may present the need for future management actions in compliance with the TMDL requirements for the mouth of Chollas Creek. Waterborne metals are typically closely correlated with suspended sediment. Consequently, increases in TSS and turbidity may be tied to the observed increasing trends for total copper and total zinc. Future management actions targeting TSS reduction within the Pueblo San Diego Hydrologic Unit may have an ancillary effect in also reducing metal concentrations within the Chollas Creek water column.

The historical Diazinon concentrations observed at sites SD8(1) and DPR2, including the United States Environmental Protection Agency (USEPA) restriction dates, are presented on Figure 3-8 and Figure 3-9. Sampling was conducted at Site DPR2 from 2000–2001 as part of a Department of Pesticide Regulation study and in late 2004 as part of the monitoring and reporting requirements of RWQCB Order R9-2004-0277.

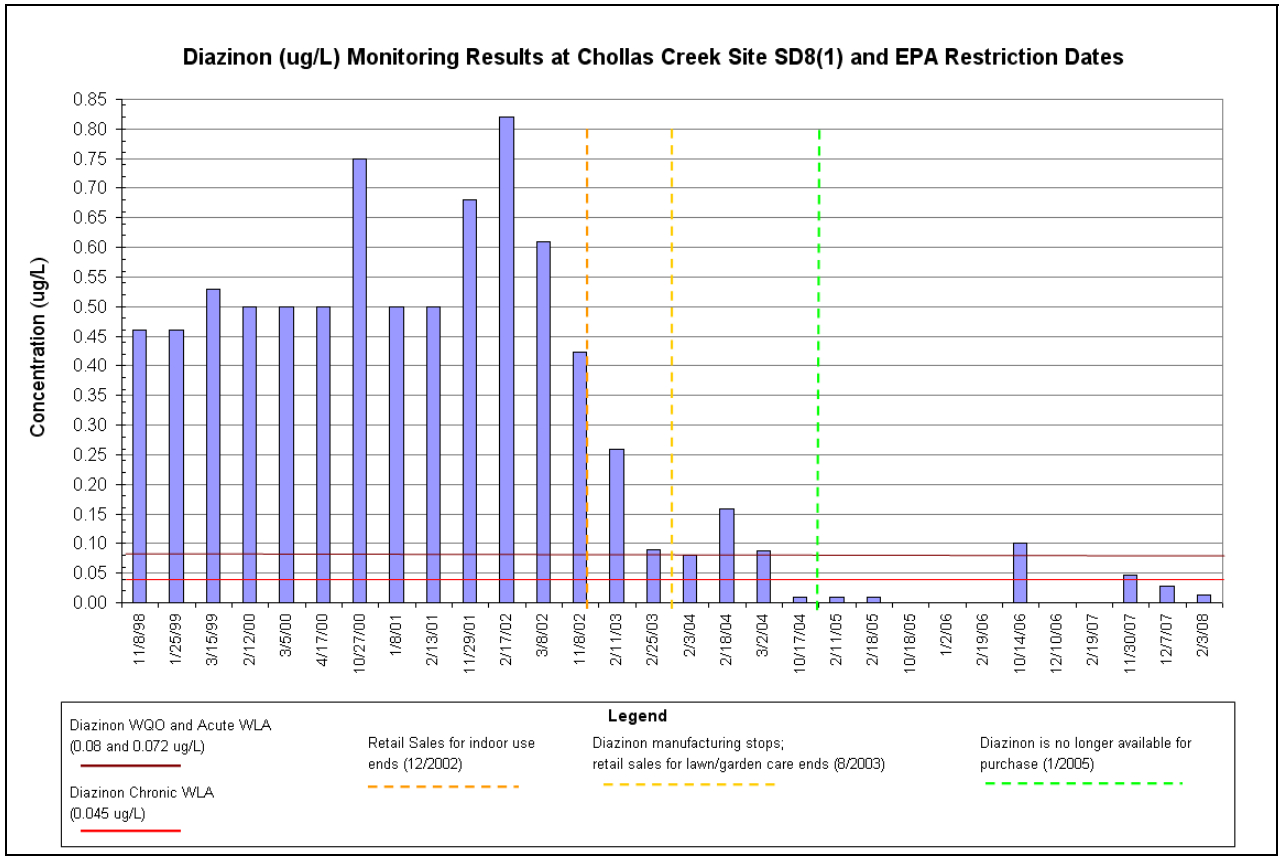

Figure 3-8. Historical Diazinon Concentrations at Site SD8(1) with Restriction Dates

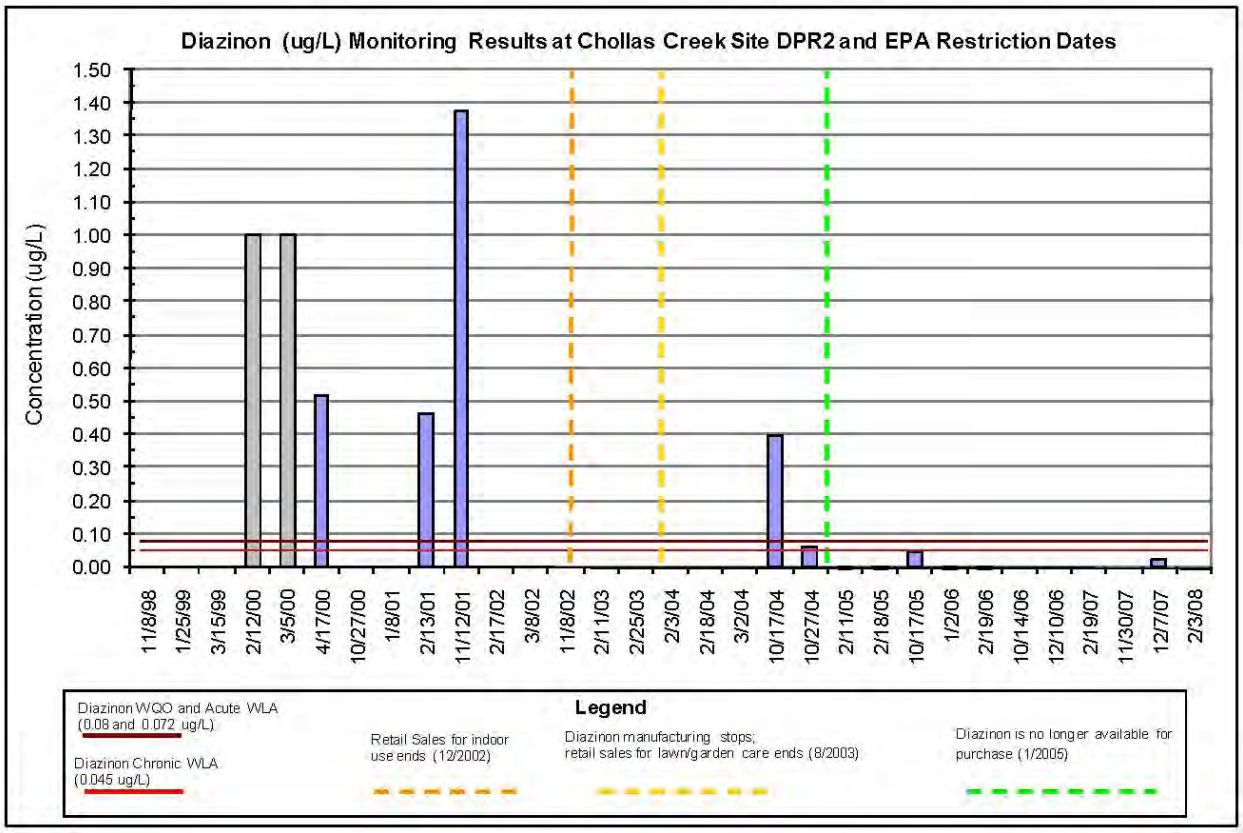

Figure 3-9. Historical Diazinon Concentrations at Site DPR2 with Restriction Dates

For ease of comparison to the hardness-based WQO, dissolved metals results were divided by their respective acute CMC WQO and are presented in Figure 3-10 and Figure 3-11. These figures present the magnitude to which the results are above or below the acute WQO and also shows the mean, upper 25th percentile, and lower 25th percentile of the historical data (in gray). Hardness-based acute WQOs for dissolved metals were calculated for each sampling site during each monitoring event in the current sampling year (2007–2008). Averages of the acute WQOs for dissolved copper, dissolved lead, and dissolved zinc were used in Figure 3-10 and Figure 3-11. Although dissolved cadmium concentrations were also measured, they were not detected during any of the three storm events and, therefore, were not included in Figure 3-10 and Figure 3-11. The average acute WQO ratios for SD8(1) spans the time period of 2001–2008, while the acute WQO ratios for DPR2 spans the time period of 2004–2008. The average acute WQO ratios for LG-1 and LM-1 span the time period of 2006–2008. With the exception of dissolved lead, which was low in relation to the acute WQO across all storm events and all sites, there was not a clear relationship between upstream and downstream dissolved metals concentrations in either the north fork or south fork of Chollas Creek. For some storm events, dissolved copper and dissolved zinc were higher in the upper watershed sampling locations (LG-1 and LM-1) than at the base of the watershed (DPR2 and SD8(1)), while for other storm events, the opposite was true.

North Fork Metals WQO Ratios

Dissolved copper was above the acute WQO during each of the monitored storm events at SD8(1) (Figure 3-10). Upstream from SD8(1), at LM-1, the dissolved copper concentration was above the acute WQO during the first two storm events and peaked at approximately 4.5 times the acute WQO during the storm event of December 7, 2007. Dissolved lead was below the acute WQO at both north fork sampling locations for all three storm events, while dissolved zinc concentrations at LM-1 were above the acute WQO during the storm events of November 30, 2007 and December 7, 2007, and at SD8(1) during the November 30, 2007 storm event. City of La Mesa data for two storm events show no acute WQO exceedances for dissolved zinc and two exceedances of comparatively small magnitude for dissolved copper (Appendix H).

South Fork Metals WQO Ratios

Dissolved copper concentrations at LG-1 were above the acute WQO during the November 30, 2007 and February 3, 2008 storm events, while dissolved zinc was above the acute WQO during the storm of February 3, 2008 only (Figure 3-11). Downstream of LG-1, at DPR2, dissolved copper was above the acute WQO during all three monitored storm events, while dissolved lead and dissolved zinc concentrations were below the acute WQO.

The Chollas Creek dissolved metals TMDL sets the numeric targets equal to the CTR WQO. The CTR is the most current, conservative WQO for dissolved copper, lead, and zinc in fresh water. The CTR WQOs for dissolved cadmium, copper, lead, and zinc are comprised of hardness-based equations that vary depending on sample hardness concentrations. The Chollas Subwatershed is unique in that it has significantly lower hardness concentrations, and therefore lower dissolved metals WQOs, than other watersheds in San Diego County. The historical mean wet weather hardness concentration at the Chollas Creek MLS is 79 mg $CaCO_3$/L compared to other watersheds where the mean wet weather hardness concentrations are approximately 260 mg $CaCO_3$/L. As a result of the low hardness values, it is more likely that slightly elevated wet weather monitoring results for dissolved metals will exceed the CTR WQO.

USEPA has provided guidance concerning a procedure that may be used to derive regional aquatic-life criterion, such as the CTR allows for site-specific criterion to be developed for metals. The indicator species procedure is based on the assumption that characteristics of site specific water may influence the bioavailability and toxicity of a pollutant. As part of the procedure, acute toxicity in site water and laboratory water is determined in concurrent toxicity tests. The water effects ratio (WER) (site water to laboratory water toxicity values) would subject the current dissolved metals WQO to a criteria adjustment factor that accounts for the effect of site-specific water characteristics on pollutant bioavailability and toxicity to aquatic life. In Chollas Creek, a WER would likely raise the WQO above the concentrations typically observed for dissolved metals in storm water. This procedure has been used in the Calleguas Creek Watershed resulting in a WER ranging from 1.51 during dry weather to 3.69 during wet weather conditions (LWA, 2006). Based on the magnitudes of exceedance presented on Figure 3-10 and Figure 3-11, Chollas Creek would benefit from the development of a WER for the north and south forks of Chollas Creek.

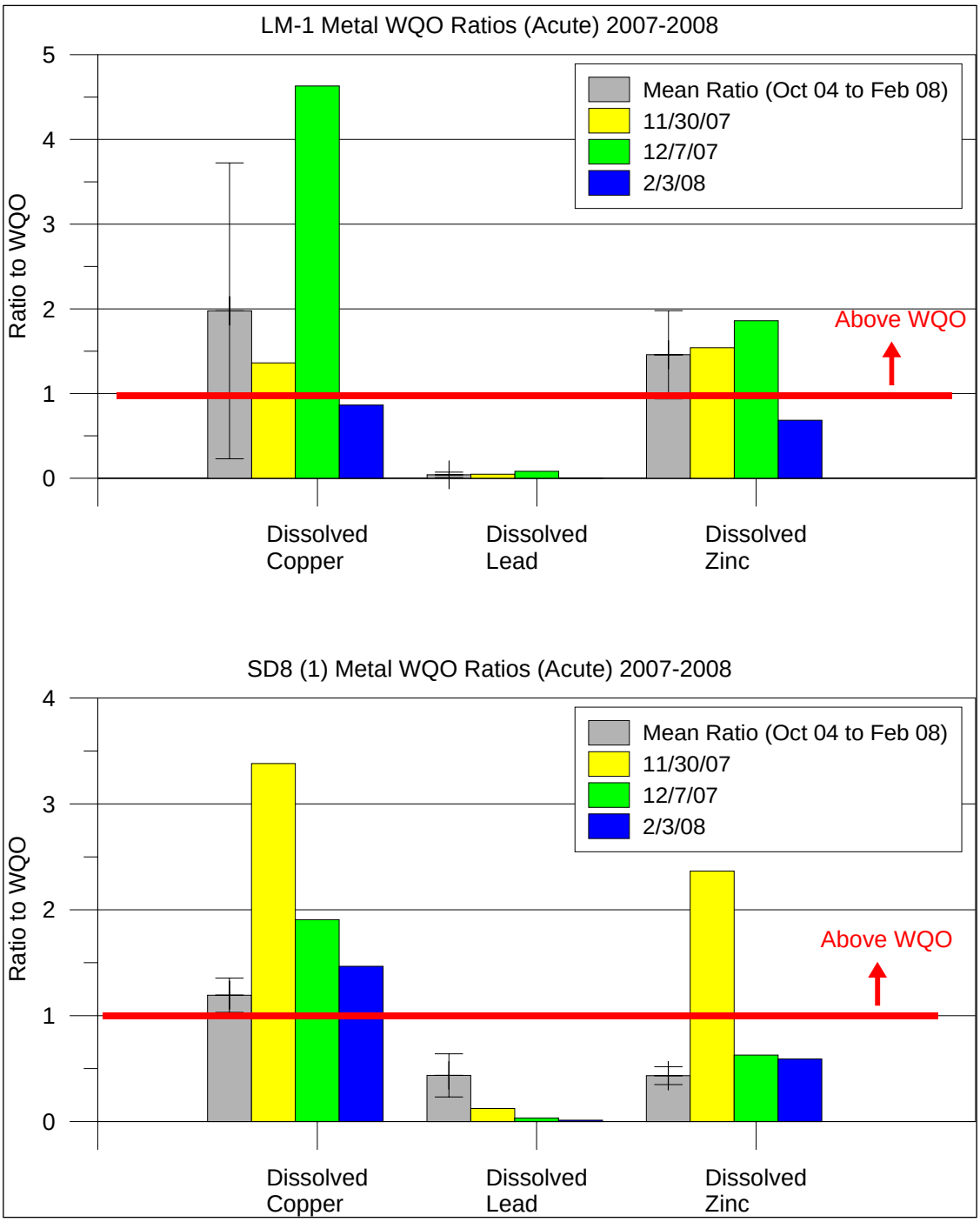

Figure 3-10. Chollas Creek 2007–2008 North Fork Metals Water Quality Ratios

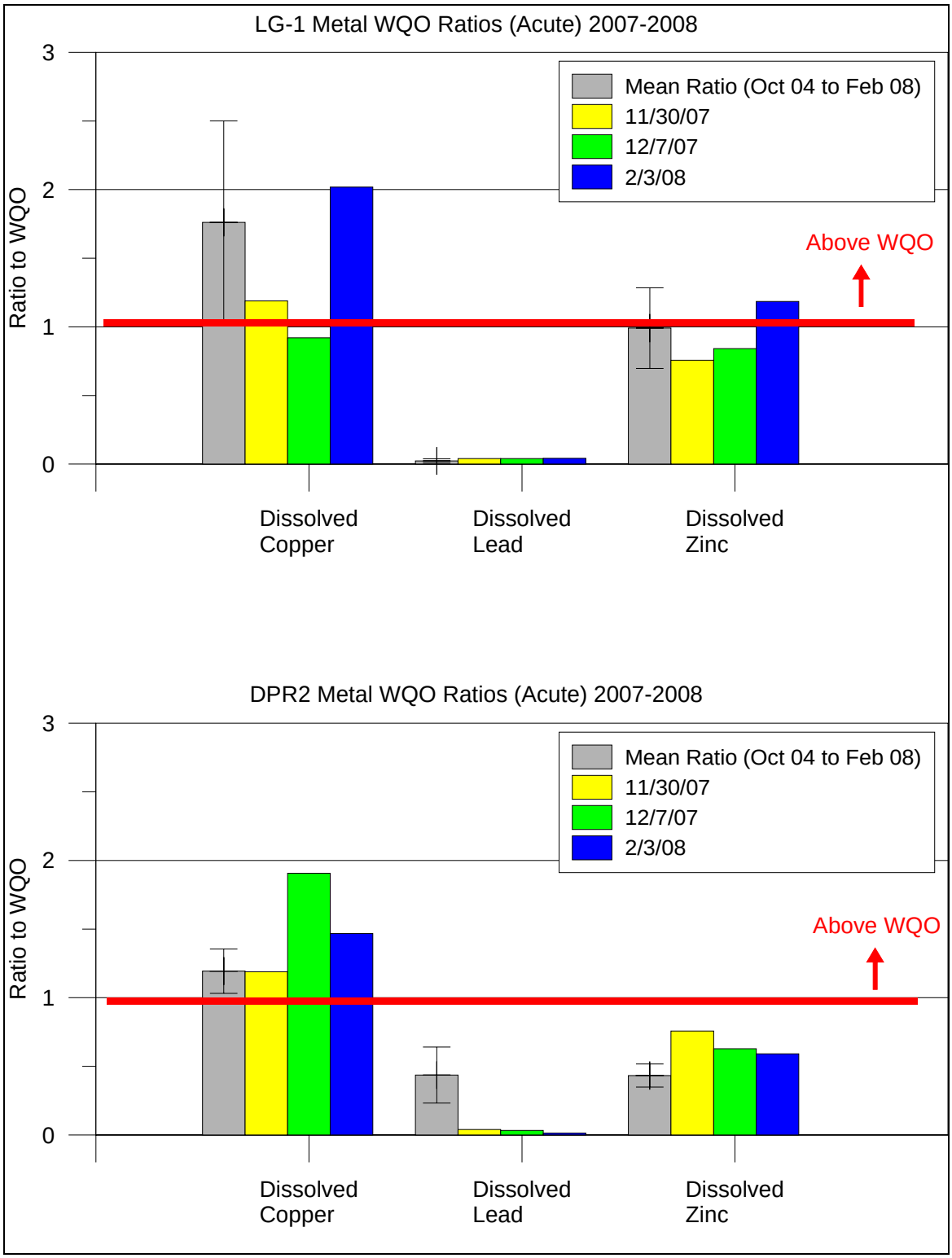

Figure 3-11. Chollas Creek 2007–2008 South Fork Metals Water Quality Ratios

4.0 SUMMARY AND CONCLUSIONS

The Chollas Creek Subwatershed is divided into two drainage areas separated by the northern and southern forks of Chollas Creek. Land use within the Watershed is comprised of residential (48%), roadways and utilities (27%), commercial (5%), and industrial (2%) land uses.

The Chollas Creek Watershed Municipal Copermittees have complied with RWQCB Order R9-2004-0277 during the 2007–2008 Monitoring Season by conducting the following activities:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and dry weather ICID investigations.
- Jurisdictions have performed education and outreach to area residents.
- Jurisdictions have conducted water quality monitoring during three storm events at sites SD8(1) and DPR2.

Wet weather and dry weather water quality monitoring was performed in the upper reaches of the drainage areas of the north and south forks of Chollas Creek near jurisdictional boundary lines between La Mesa and the City of San Diego and between Lemon Grove and the City of San Diego. Water quality monitoring at these additional locations within the Chollas Creek Watershed allows for comparisons between upstream locations and downstream locations as well as between north fork and south fork locations. Study results were presented in compliance with RWQCB Order No. R9-2004-0277 requirements. Water quality monitoring was conducted under this program to quantitatively assess potential changes in pesticide use and to quantitatively assess the concentration of metals in Chollas Creek.

Upstream Results—Sites LM-1 and LG-1

Differences between the upstream north fork and south fork sampling locations (LM-1 and LG-1, respectively) were evident for several constituents. TSS concentrations at Site LG-1 were above the WQO for each monitored storm event and averaged twice the TSS concentration of LM-1. Although both upstream sampling locations had similar concentrations of total zinc and total copper, LM-1 had slightly higher average concentrations of dissolved copper (9.8 μg/L at LM-1 versus 6.7 μg/L at LG-1) and dissolved zinc (66.1 μg/L at LM-1 versus 44.4 μg/L at LG-1). Average metals concentrations of 10.5 μg/L for copper and 57.5 μg/L for zinc were reported by the City of La Mesa for its monitoring at Site LM-1. The banned pesticides Diazinon and Chlorpyrifos were not detected during any of the storm events at LM-1. Diazinon, however, was detected during the initial storm event at LG-1 at a concentration below the TMDL WLA. Malathion was detected during the first storm event at both sites but was below the WQO value. Bifenthrin and Permethrin were measured above WQO values at both upstream sites and were two times higher at LM-1 than at LG-1. City of La Mesa data showed lower levels of Bifenthrin and no detections of Permethrin (Appendix H).

Downstream Results—Sites SD8(1) and DPR2

Site SD8(1) was located at the base of the north fork of Chollas Creek, and Site DPR2 was located at the base of the south fork of Chollas Creek. WQO exceedances at SD8(1) were noted for TSS, dissolved copper, dissolved zinc, Diazinon, Bifenthrin, Permethrin, and fecal coliform bacteria. Synthetic pyrethroids were detected in concentrations above published LC_{50}s for *H. azteca* during all three monitoring events at SD8(1) and during the first and second monitoring

events at DPR2. TSS was above the WQO during each storm event at SD8(1) and was on average three times higher than at DPR2. Fecal coliform concentrations were above the WQO at DPR2 and SD8(1) across all three sampling events. Fecal coliform concentrations were highest during the first flush event.

Biological Toxicity

No acute or chronic toxicity to *C. dubia* was observed at SD8(1) or DPR2 during any of the 2007–2008 monitored storm events. Toxicity to *H. azteca* was observed during all three events on the north fork of Chollas Creek at LM-1 and SD8(1). On the south fork of Chollas Creek, toxicity to *H. azteca* was observed during only the November sampling event at LG-1, while at DPR2 slight toxicity was observed during the November and February storm events. TIEs conducted as part of the 2005–2006 and 2006–2007 Regional Monitoring Program indicate the causative agent of toxicity at Site SD8(1) is the synthetic pyrethroid class of compounds (WESTON, 2007).

Ambient Results

General chemistry, bacterial, and metals results were the only constituent groups that had measurable results above method reporting limits in ambient weather analysis from sites SD8(1), LM-1, and LG-1. No ambient weather samples were collected at DPR2. Dry weather samples collected at the upper watershed locations, LM-1 and LG-1, were similar in concentration for general chemistry parameters while SD8(1) had significantly higher TOC, DOC, and TSS concentrations than either LM-1 or LG-1.

Total and dissolved metal concentrations at LM-1 and at LG-1 were below WQO_as. Concentrations of dissolved copper were above the benchmark during both sampling events at SD8(1). Total and dissolved copper, lead, and zinc concentrations were higher at SD8(1) during the March sampling event than at LM-1 or LG-1. Enterococcus concentrations were above the WQO_a at LM-1 and LG-1 during both DWM events and at SD8(1) during the March event.

Toxicity tests were performed on ambient weather water samples collected in March 2008 and June 2008. Toxicity to *C. dubia*, *H. azteca*, and *S. capricornutum* was observed in samples collected on March 5, 2008. No toxicity was observed in samples collected in June 3, 2008, to any of the three test species. Water chemistry from March 5, 2008, indicated levels of oil and grease and dissolved copper above ambient weather water quality benchmarks. No pesticides were detected in ambient weather water samples during either the March or June monitoring events.

Water Quality Trends

Mann-Kendall trend analysis performed on the long-term data set at Site SD8(1) indicates significantly decreasing trends for nitrate. However, increasing trends were noted for total copper, total zinc, and *H. azteca* toxicity. At DPR2, concentrations of Chlorpyrifos and Diazinon have significantly decreased over the last four years of monitoring.

Diazinon was detected above the published chronic WLA of 45 ng/L but below the acute WLA during one storm event (first flush) at SD8(1), indicating that residual pesticide detections of Diazinon are still occurring within the watershed. Diazinon was also detected during the first storm event at LG-1 and during the December storm monitoring event at DPR2 but was below

the TMDL WLA. As the residual supply of Diazinon becomes exhausted, detections of this banned pesticide should continue to decrease. Synthetic pyrethroid usage within the watershed also warrants attention, as a significantly increasing trend in *H. azteca* toxicity has been noted. Synthetic pyrethroids were detected above benchmarks at all sites for each monitored storm event, with the exception of the February storm event at DPR2. Education and outreach programs and events for area residents and businesses should continue in order to reduce pesticide usage within the Chollas Creek Watershed.

Dissolved copper and dissolved zinc were detected above the WQO_ws across all sampling locations during wet weather, with the exception of zinc at DPR2. Significantly increasing trends were noted for total copper and total zinc at SD8(1). Dissolved copper was also detected above WQO_a concentrations at SD8(1) during ambient weather monitoring. With the exception of dissolved lead, which was low across all storm events and all sites in relation to benchmark values, there was not a clear relationship between upstream and downstream dissolved metals concentrations in either the north fork or south fork of Chollas Creek. No consistent pattern or difference in dissolved copper and zinc concentrations was noted among the four different sampling locations. Aerial deposition may represent a significant pathway for metals pollutant loading in Chollas Creek based on a 2007–2008 Phase II study. Continued monitoring to determine likely sources for metals contamination is recommended.

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Cayayaanka Abhidh

HEALTHY GARDEN HEALTHY HOME

Geed kastaaba wuxuu leeyahay nooc ka mid ah cayayaanka Abhidhka oo ku nool oo cuna mararka qaarkood, laakiin tiro abhidh ah oo hoosaysa ama meel dhexaad ahi ma aha mid had iyo goor wax yeelaysa beeraha ama dhirta dhulka. Inkasta oo ay abhidhku caleemaha laabi karaan soona saari karaan wax isjiidanaya, hadana badanaa dhirta ma dilaan had iyo goorna biyo ayaaba lagu maydhi karaa. Markay tirada abhidhku sii siyaado, cadowgooda dabiiciga ah ayaa cuna, taas oo meesha ka saaraysa in loo baahdo sunta cayayaanka. Saabuunta cayayaanka disha iyo saliidaha ayaa ka sun yar sunta cayayaanka ee la isticmaali karo marka ay daruuri noqoto in la daaweeyo.

Abhidhku way joogaan beertaada sababta oo ah:

- Abhidhku waxay jecelyihiin doogga iyo dhirta cusub. Nafaqeeye intii loo baahnaa ka badan ha ku shubin. Isticmaal nafaqeeyeyaasha orgaanikada ah ama waxyaabaha qunyar ku fida.
- Abhidhku waxay ku ururaan mishmishka ubaxa bixiya, ubaxyada, dhirta tuulibka (tulip), karaybka (crape myrtles), tufaaxa, iyo khudrad badan oo kale. Markaad dhirta noocan ah beerto filo abhidh.
- Qudhaanjadu waxay abhidhka ka ilaalisaa cadowgooda dabiiciga ah. Markaas qudhaanjada dhirta ka ilaali si aad uga faa'iidaysatid cayayaankan faa'iidada leh.

Abhidhka si aad u yaraysid:

- Ka goo jiridaha iyo caleemaha uu galo.
- Laa abhidhka adigoo ruxaya dhirta ama ku buufinaya biyo awood leh.
- Ilaali dhirta yaryar ee markaas biqisha adiga oo daboolaya ama ku daadinaya caleemaha ciidda ee alamuuniyamka ah.
- Sug intay hawadu kululaanayso; abhidhka badankoodu kulaylka uma adkaystaan waanay tagaan badhtamaha bisha June.

Ilaali cadawyada dabiiciga ah ee abhidhka:

- Dalandoolida ta waaweyn iyo laarfahaba.
- Layswingis (lacewings)
- Duqsiga Syrphid fly ee laarfaha ah
- Dalandoolida Soldier beetles.
- Duburlaxa yar ee dulinka ah ee abhidhka ka dhiga waxa adag *(Gadaal ka eeg sawirada cayayaanka.)*

Cadowga dabiiciga ah ee abhidhku sida dalandoolida lady beetles iyo layswingis ayaa si dabiici ah beertaada u imaan doona markay abhidhku ku bataan. Ilaali cayayaankan wanaagsan adiga oo ka ilaalinaya sunta cayayaanka ee dili karta cayayaano badan oo kala duwan.

Rệp vừng

HEALTHY GARDEN HEALTHY HOME

Gần như cây nào cũng đều có một hoặc nhiều loài rệp đôi khi sống ký sinh trên cây. Tuy nhiên, số lượng rệp ít hoặc ở mức độ vừa phải thường không gây hại cho vườn cây hoặc cây cảnh. Mặc dù có thể làm quăn lá và sản sinh ra chất dịch ngọt dính, rệp vừng hiếm khi làm chết cây và thường bị nước xối trôi. Khi có nhiều rệp vừng, các kẻ thù tự nhiên thường ăn loài rệp này, do đó không cần phải dùng thuốc trừ sâu. Các loại dầu và xà bông diệt côn trùng thường ít độc hại hơn nên quý vị có thể sử dụng khi cần diệt rệp.

Ta thường thấy rệp vừng trong vườn bởi vì:

- Loài rệp vừng thích nõn cây mỡ màng. Không nên bón phân quá nhiều. Nên dùng các loại phân hữu cơ hoặc phân ngấm dần.
- Loài rệp vừng sinh sôi trên các cây mận, cây hồng, cây hoa tu-líp, cây mía tím, cây táo đang ra hoa, và nhiều cây rau. Nếu quý vị trồng các loại cây này, chắc chắn là sẽ có rệp vừng.
- Kiến bảo vệ loài rệp vừng tránh các kẻ thù tự nhiên của chúng. Tránh để kiến hoạt động trên cây nhằm tận dụng nhiều hơn các loài côn trùng có lợi này.

Để diệt rệp:

- Cắt tỉa những cành lá đã bị rệp cắn.
- Lắc cây hoặc dùng vòi nước có dòng xịt mạnh để đánh bật rệp ra khỏi cây.
- Bảo vệ cây giống bằng cách che chắn hoặc dùng lớp phủ bảo vệ đất bằng nhôm.
- Chờ cho tới khi trời nóng; đa số rệp vừng đều không chịu được nhiệt độ nóng và sẽ chết trước khi tới giữa tháng Sáu.

Bảo vệ kẻ thù tự nhiên của rệp vừng:

- Bọ cánh cứng, kể cả ấu trùng và bọ trưởng thành
- Bọ cánh ren
- Ấu trùng ruồi hoa
- Con xén tóc thợ.
- Ong bắp cày loại nhỏ sống ký sinh, hút kiệt cơ thể của loài rệp vừng (Xem hình vẽ minh hoạ các loài côn trùng ở trang mặt sau.)

Các kẻ thù tự nhiên của rệp vừng như bọ cánh cứng và ruồi hoa sẽ tới vườn nhà quý vị một cách tự nhiên khi trong vườn có nhiều rệp vừng. Hãy bảo vệ các loài côn trùng có lợi này bằng cách tránh dùng các loại thuốc diệt côn trùng có thể độc hại đối với nhiều loại côn trùng.

Áfidos o pulgones

JARDÍN SANO CASA SANA

Casi todas las plantas tienen una o más especies de pulgones o áfidos que a veces se alimentan de ellas; sin embargo, usualmente un número bajo a moderado de pulgones no causan daño en jardines o árboles ornamentales. Aunque los pulgones pueden causar enrollamiento de las hojas y producen una melaza, es raro que maten plantas y, con frecuencia, se pueden quitar con agua. Frecuentemente, cuando hay muchos pulgones, sus enemigos naturales se alimentan de ellos, evitando así tener que usar pesticidas. Los jabones y aceites insecticidas son pesticidas menos tóxicos que pueden usarse si es necesario tratar la planta.

Los pulgones comúnmente habitan su jardín porque:

- Les gustan los nuevos brotes. No fertilice más de lo necesario. Use fertilizantes orgánicos o productos de acción retardada.
- Se multiplican en ciruelos ornamentales, rosas, tulipaneros, árboles de Júpiter o crespón, manzanos y muchas hortalizas. Anticipe tener pulgones en estas plantas.
- Las hormigas protegen a los pulgones de sus enemigos naturales. Mantenga las plantas libres de hormigas para aprovechar mejor estos insectos benéficos.

Para reducir el número de pulgones:

- Pode hojas y tallos infestados.
- Quite los pulgones sacudiendo las plantas o rociándolas con un chorro fuerte de agua.
- Proteja las plántulas cubriéndolas o con coberturas de aluminio.
- Espere que llegue la época de calor; la mayoría de pulgones no toleran el calor y desaparecen a mediados de junio.

Proteja los enemigos naturales de los pulgones:

- Vaquitas o catarinita
- León de áfidos
- Larvas de la mosca sírfida
- Escarabajo soldado
- Avispitas parásitas que momifican a los pulgones

Aphids

HEALTHY GARDEN HEALTHY HOME

Almost every plant has one or more aphid species that occasionally feeds on it, but low to moderate numbers of aphids are usually not damaging in gardens or on landscape trees. Although aphids can curl leaves and produce sticky honeydew, they rarely kill plants and can often be washed off with water. When aphid numbers get high, natural enemies frequently feed on them, eliminating the need for pesticides. Insecticidal soaps and oils are less toxic pesticides that can be used when treatment is necessary.

Aphids are common in your garden because:

- Aphids like lush new growth. Don't over fertilize. Use organic fertilizers or slow-release products.
- Aphids build up on flowering plums, roses, tulip trees, crape myrtles, apples, and many vegetables. Expect aphids when you grow these plants.
- Ants protect aphids from their natural enemies. Keep ants off plants to get more benefit from these beneficial insects.

To reduce aphids:

- Prune out infested leaves and stems.
- Knock aphid populations off plants by shaking or spraying with a strong stream of water.
- Protect seedlings with covers or aluminum soil mulches.
- Wait for hot weather; most aphids are heat-intolerant and will be gone by mid-June.

Protect aphids' natural enemies:

- Lady beetles, both adults and larvae
- Lacewings
- Syrphid fly larvae
- Soldier beetles
- Parasitic mini-wasps that turn aphids into crusty mummies (See reverse for insect drawings.)

Haddii sunta cayayaanku ay daruuri noqoto, isticmaal kuwa ugu ammaansan:

- Hababka kaantaroolka cayayaanka ee aan kimikada ahayn waa in marka hore la isticmaalaa si loo maareeyo abhidhka badanaya. Si kastaba ha ahaatee, haddii aad dareensantahay inay sunta cayayaanku daruuri tahay, dooro kuwa ugu sunta yar.
- Saliidaha iyo saabuunaha cayayaanka dila ayaa ah kuwa ugu ammaansan. Marka si habboon loo isticmaalo, kuwani waxay xallin karaan dhibaatooyinka cayayaanka badankooda.
- Saliidaha iyo saabuunuhu waxay u shaqeeyaan iyaga oo iska hortaaga inay abhidhku bataan oo tarmaan, sidaas darteed waa in la wada gaadhsiiyaa. Ha ku shubin dhirta abaarowday ama markay kulaylka tahay. Dhir aad u yar ayaa xasaasi ku ah daawooyinkan.
- Saabuunta cayayaanka, isku jirka saabuunta – pyrethrum, ama saliidaha ayaa had iyo goor lagu shubaa dhirta khudradda ah ama dhirta yaryar ee sida ubaxyada.
- Saliidaha waxay dilaan yartahay, ee sida parafinic, supreme ama superior ayaa ku habboon dhirta yara waaweyn.
- Saliidaha iyo saabuunuhu ma dilaan abhidhka ku qarsoon caleemaha duubmay. Kuwan waa inaad goysaa. Sunta cayayaanka ee fidda ayaa dili karta abhidhka qarsoon, laakiin suntooda ayaa badan umana diiwaangashana in lagu isticmaalo khudaarta beerta ama dhirta khudradda ah.

abhidh

dalandooli

dulinka ah oo dilaya abhidh

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

UC IPM University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Nếu cần dùng thuốc diệt côn trùng, hãy sử dụng các sản phẩm an toàn:

- Trước hết, nên áp dụng các biện pháp diệt động vật gây hại không dùng hóa chất để diệt rệp vừng. Tuy nhiên, nếu quý vị thấy cần phải dùng tới thuốc diệt côn trùng, hãy chọn các loại sản phẩm ít độc hại hơn.
- Các loại dầu và xà bông diệt côn trùng là an toàn nhất. Nếu sử dụng đúng cách, các chất này có thể diệt được hầu hết các loài động vật gây hại.
- Các loại dầu và xà bông có tác dụng làm ngạt rệp vừng, vì vậy phải sử dụng triệt để. Không bôi lên các loại cây thiếu nước hoặc khi trời rất nóng. Một số loài cây nhạy cảm với các sản phẩm này.
- Người ta thường bôi các loại xà bông diệt côn trùng, chất hỗn hợp xà bông và pyrethrum, hoặc dầu Neem lên thực vật hoặc các bụi cây nhỏ như hoa hồng.
- Các loại dầu sáp, thí dụ như dầu nến, dầu thượng hạng thường thích hợp cho các loài cây lớn.
- Các loại dầu và xà bông không diệt được rệp vừng ẩn náu bên trong lá cuộn. Hãy cắt bỏ những chiếc lá này. Các loại thuốc trừ sâu ngấm qua rễ có thể diệt được những con rệp vừng ẩn náu, nhưng lại độc hại hơn nhiều và không được đăng ký sử dụng cho các loài cây ăn trái hoặc rau.

rệp vừng

bọ cánh cứng

ký sinh ong bắp cày loại nhỏ diệt rệp vừng

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

UC IPM University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Los enemigos naturales de los pulgones o los insectos benéficos como las vaquitas y el león de áfidos, invaden el huerto o jardín cuando hay pulgones en abundancia. Proteja estos insectos benéficos evitando usar insecticidas que pueden ser tóxicos a muchas clases de insectos.

Si usa insecticidas, use los menos tóxicos:

- Para controlar poblaciones de pulgones, primero trate de usar métodos de control que no requieren sustancias químicas. Pero si considera que debe usar insecticidas, escoja los productos menos tóxicos.
- Los productos menos tóxicos son los aceites y jabones insecticidas. Si se usan correctamente, estos productos resuelven la mayoría de los problemas de plagas.
- Los aceites y jabones matan a los pulgones por asfixia; por lo tanto la cobertura debe ser completa. No los aplique a plantas debilitadas por falta de agua o en días muy calurosos. Algunas plantas son sensibles a estos productos.
- Frecuentemente, a las hortalizas o pequeños arbustos como las rosas se les aplica jabones insecticidas, mezclas de jabón y "pyrethrum" o aceite de nim.
- Los aceites livianos, como los parafínicos, Supremos o Superiores son adecuados para árboles grandes.
- Los aceites y jabones no matan a los pulgones escondidos en las hojas enrolladas. Pode estas hojas. Los insecticidas sistémicos pueden matar a los pulgones que están escondidos, pero son mucho más tóxicos y no están aprobados para uso en hortalizas ni en árboles frutales en residencias.

pulgón o áfido

vaquita o catarinita

avispita parásita matando a un pulgón

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

UC IPM Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Natural enemies of aphids such as lady beetles and lacewings will come into your garden naturally when aphids are abundant. Protect these good bugs by avoiding the use of insecticides that may be toxic to a broad variety of insects.

If insecticides seem necessary, use the safest products:

- Nonchemical pest control methods should be used first to manage aphid populations. However, if you feel insecticides are necessary, choose less toxic products.
- Insecticidal oils and soaps are the safest products. When properly used, these materials solve most pest problems.
- Oils and soaps work by smothering aphids, so application must be thorough. Don't apply to drought-stressed plants or when it is very hot. A few plants are sensitive to these products.
- Insecticidal soaps, soap-pyrethrum mixtures, or neem oils are often applied on vegetables or small bushes like roses.
- Narrow range oils, like parafinic, supreme or superior oils, are appropriate for larger trees.
- Oils and soaps don't kill aphids hidden within curled leaves. Prune these out. Systemic insecticides can kill hidden aphids, but they are much more toxic and not registered for use on garden vegetables or fruit trees.

aphid

lady beetle

parasitic mini-wasp killing aphid

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

UC IPM University of California Cooperative Extension

It's the water that connects us!

Appendix A11
County of San Diego Community IPM Workshop
Promotional Items Log

Date Developed/Used	Item	Purpose	
	HGHH Frisbee	IPM and Your Pets	
Mar. 2005 (On-going)	Magnifying Card	Plant Damage Identification	
8/20/2005	Pesticide Measuring Scoop	Irrigation and Lawn Maintenance	
9/17/2005	Water Wise Plant	Plant Selection	
10/15/2005	Fishtail Weeder	Weed Control	
5/20/2005	Copper Band	Backyard Citrus Pests/Snails & Slug Control	
1/21/2006	Fly Swatter and Magnifying Card	How to Hire a Pest Control Service	
2/25/2006	Bait Station	Ant Control	
3/4/2006	Water Wise Plant	Plant Selection	
3/11/2006	Countertop Kitchen Scraps Collection Bin	Composting/Ant Control	
3/18/2006	Green Lacewing Egg Cards	Beneficial Insects	
4/15/2006	Tomato Plant	Tomato Pests and Diseases	
4/22/2006	Bait Station	Ants	
5/13/2006	Kneeling Pad	Weeding and General IPM	
6/10/2006	Rain Guage	Irrigation and Lawn Maintenance	
6/24/2006	Spray Nozzle and Sticky Cards	Whitefly	
7/22/2006	Seed Packets and Sticky Cards	Tomato Pests and Diseases	
9/23/2006	Copper Band	Snails and Slugs	
10/28/2006	Rat Control Starter Kit	Vertebrate Pest Management	
11/11/2006	Copper Band and Sticky Cards	Backyard Citrus Pests/Snails & Slug Control and Whitefly Control	
Ongoing	Pens	Given out at various events including Workshops	
Jun-2006	Magnet and Key Chain	Given out at San Diego County Fair w/ Pest Card Packets	
Apr. 2006	Seed cards	Given out as part of ongoing follow-up survery.	

Appendix A12
County of San Diego Print Media

Date	Item	Title	English	Spanish	Farsi	Viet.
Feb 2005 (On-going)	IPM Tip Cards	Ants	X	X	X	X
Feb 2005 (On-going)	IPM Tip Cards	Aphids	X	X	X	X
Feb 2005 (On-going)	IPM Tip Cards	Cockroaches	X	X	X	X
Feb. 2005 (On-going)	IPM Tip Cards	Earwigs	X	X	X	X
Feb. 2005 (On-going)	IPM Tip Cards	Fleas	X	X	X	X
Jul. 2005 (On-going)	IPM Tip Cards	Gardening with Good Bugs	X	X	X	X
Jan. 2006 (Ongoing)	IPM Tip Cards	Giant Whitefly	X	X	X	X
Feb 2005 (On-going)	IPM Tip Cards	Head lice	X	X	X	X
Feb. 2005 (On-going)	IPM Tip Cards	Lawn Insects	X	X	X	X
Jul-05	IPM Tip Cards	Safe Use and Disposal of Pesticides	X	X	X	X
July 2005 (On-going)	IPM Tip Cards	Snails and Slugs	X	X	X	X
Feb. 2005 (On-going)	IPM Tip Cards	Spiders	X	X	X	X
	IPM Tip Cards	Termites	X	X	X	X
July 2005 (On-going)	IPM Tip Cards	Tree Borers		X		
Oct. 2005	Return Postage Survey Card	Pest Cards Feedback Survey	X			
12/1/2005 (On-Going)	IPM POP Tear-off Sheets	Aphids	X			
8/1/2005 (On-Going)	IPM POP Tear-off Sheets	Ants	X			
Sept 2005 (On-going)	IPM POP Tear-off Sheets	Snails & Slugs	X			
June 2006 (On-going)	IPM POP Tear-off Sheets	Lawn Irrigation	X			
April 2005 (On-going)	IPM POP Tear-off Sheets	General IPM	X			
Jan. 2005 (On-going)	IPM Poster	Child and Ball	X			
Feb. 2006 (On-going)	IPM Poster	5-Pests Identify Pests	X			
Feb. 2006 (On-going)	IPM Poster	5-Pests Identify Plant Damage	X			
	UC IPM Pest Notes	Hiring a Pest Control Company (UC Publication #74125)	X			

Appendix A13
County of San Diego PRISM Grant
Material Distribution Log
Retail Nursery and Garden Centers

Date	Contact	Pest Cards	Tear-Off Pads	Newsletter	Stand	Other Materials	Location	Returned
3/18/2005	Bill Tall	100 of full set of 12			Table Top (3)		City Farmer's Nursery	
Apr-June 05	Patty McDuffy	100 of full set of 12			Standing Rack		Lowe's	6/30/2005
Apr-June 05	John Marsh	100 of full set of 12			Standing Rack		Lowe's	6/30/2005
Apr-June 05	Joyce Gimmell	100 of full set of 12			Standing Rack		Lowe's	6/6/2005
Apr-June 05	Karen Lakomy	100 of full set of 12			None		Lowe's	6/30/2005
Apr-05	Bill Tall		1 Gen				City Farmer's Nursery	
5/13/2005	Kevin Grangetto	4 Feedback Pads	1 Gen		Table Top (3)		Grantetto's	
5/14/2005	Karen Lakomy	1 Feedback Pad					Lowe's	
5/19/2005	Patty McDuffy	1 Feedback Pad					Lowe's	
5/25/2005	John Prues				Table Top (9)		Grantetto's	
6/2/2005	Phil Robinson				Table Top (2)		Grantetto's	
6/2/2005	W. Andersen, Jr	100 of full set of 12	1 Gen		Standing Rack		Walter Andersen's	
7/30/2005	W. Andersen, Jr	100 of full set of 12					Walter Andersen's	
9/15/2005	Managers			Vol. 1, Issue 1 - Sept. 2005			All San Diego Co. Nursery and Garden Centers (142 total)	
9/16/2005	Phil Robinson	100 of full set of 12 Sp. Cards					Grantetto's	
9/23/2005	Bill Tall	100 of full set of 12 Sp. Cards					City Farmer's Nursery	
9/26/2005	Sherri Stead	100 of full set of 12	1 Gen, 1 Snails & Slugs, 1 Ant		Standing Rack		Home Depot Sports Arena	
9/27/2005	Sherri Stead	100 of full set of 12 Sp. Cards					Home Depot Sports Arena	
9/29/2005	Phil Robinson		5 Gen, 5 Snails & Slugs, 5 Ant				Grantetto's	
9/29/2005	Bill Tall		1 Gen, 1 Snails & Slugs, 1 Ant				City Farmer's Nursery	
9/29/2005	W. Andersen, Jr		1 Gen, 1 Snails & Slugs, 1 Ant				Walter Andersen's	
10/15/2005	Managers			Vol. 1, Issue 2 - Oct. 2005			All San Diego Co. Nursery and Garden Centers (142 total)	
11/15/2005	Managers			Vol. 1, Issue 3 - Nov. 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
12/15/2005	Managers			Vol. 1, Issue 4 - Dec. 2005			All San Diego Co. Nursery and Garden Centers (142 total)	
12/15/2006	Nicole	50 of full set of 12 Eng. and Sp.	1 Gen, 1 Snails & Slugs, 1 Ant		Standing Rack		Mission Hills Nursery	
12/15/2006	Nicole	50 of full set of 12 Eng. and Sp.			Standing Rack		Moose Creek Nurery	
12/17/2006	Vicki	100 of full set of Eng.			Standing Rack		Plant World	
1/13/2006	Bill Tall		1 Aphids				City Farmer's Nursery	
1/13/2006	Phil Robinson		5 Aphids				Grantetto's	
1/13/2006	W. Andersen, Jr		1 Aphids				Walter Andersen's	
1/13/2006	Sherri Stead		1 Aphids				Home Depot Sports Arena	
1/13/2006	Nicole		1 Aphids				Mission Hills Nursery	
1/13/2006	Nicole		1 Aphids				Moose Creek Nurery	
1/13/2006	Vicki		1 Aphids				Plant World	
1/15/2006	Managers			Vol. 1, Issue 5 - Jan. 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
2/10/2006	Bill Tall	100 of Giant Whitefly					City Farmer's Nursery	

Appendix A13
County of San Diego PRISM Grant
Material Distribution Log
Retail Nursery and Garden Centers

Date	Contact	Pest Cards	Tear-Off Pads	Newsletter	Stand	Other Materials	Location	Returned
2/10/2006	Phil Robinson	500 of Giant Whitefly					Grantetto's	
2/10/2006	W. Andersen, Jr	100 of Giant Whitefly					Walter Andersen's	
2/10/2006	Sherri Stead	100 of Giant Whitefly					Home Depot Sports Arena	
2/10/2006	Nicole	100 of Giant Whitefly					Mission Hills Nursery	
2/10/2006	Nicole	100 of Giant Whitefly					Moose Creek Nurery	
2/10/2006	Vicki	100 of Giant Whitefly					Plant World	
2/15/2006	Managers			Vol. 1, Issue 6 - Feb. 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
3/8/2006	Managers					5-Pest Posters	All San Diego Co. Nursery and Garden Centers (142 total)	
3/15/2006	Managers			Vol. 1, Issue 7 - Mar. 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
3/23/2006	Managers	1 Giant Whitefly Card (Included in Retail Nursery Newsletter Mailing					All San Diego Co. Nursery and Garden Centers (142 total)	
4/15/2006	Managers			Vol. 1, Issue 8 - April 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
5/10/2006	Tiger	100 of full set of Eng. & Sp.				Wkbk (Eng. & Sp.) and 50 Wksht (Eng. &	Mission Hills Nursery	
5/15/2006	Managers			Vol. 1, Issue 9 - May 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
6/20/2006	Managers			Vol. 1, Issue 10 - June 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
6/20/2006	Managers					Seminar Reg Forms	All San Diego Co. Nursery and Garden Centers (142 total)	
6/23/2006	Tiger					5-Pest PSA's	Mission Hills Nursery	
7/5/2006	Lowell Block and Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bugs, Lawn Insects, and Safe Disp. Of Pest					ACE Hardware, Spring Valley	
7/5/2006	Manager and Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bugs, Lawn Insects, and Safe Disp. Of Pest					Evergreen Nursery, Spring Valley	
7/10/2006	Bill Tall		1 Irrigation				City Farmer's Nursery	
7/10/2006	Phil Robinson		5 Irrigation				Grantetto's	
7/10/2006	W. Andersen, Jr		1 Irrigation				Walter Andersen's	
7/10/2006	Sherri Stead		1 Irrigation				Home Depot Sports Arena	
7/10/2006	Nicole		1 Irrigation				Mission Hills Nursery	
7/10/2006	Nicole		1 Irrigation				Moose Creek Nurery	
7/10/2006	Vicki		1 Irrigation				Plant World	

Appendix A13
County of San Diego PRISM Grant
Material Distribution Log
Retail Nursery and Garden Centers

Date	Contact	Pest Cards	Tear-Off Pads	Newsletter	Stand	Other Materials	Location	Returned
7/11/2006	Manager and Mort E	100 of full set of English 100 Spanish Ants, Good Bugs, Lawn Insects, and Safe Disp. Of Pest					Home Depot Lemon Grove	
7/15/2006	Managers			Vol. 1, Issue 11 - July 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
8/15/2006	Managers			Vol. 1, Issue 12 - August 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
8/17/2006	Barbara	100 of full set of Engish					Poway Nursery	
9/15/2006	Managers			Vol. 2, Issue 1 - September 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
10/16/2006	Managers			Vol. 2, Issue 2 - October 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
10/27/2006	Phil Sapienza	100 of full set of English and Spanish	All 5 Tear-Off		Standing Rack		Lowe's, Oceanside	
10/30/2006	Tom del Hotel	100 of full set of English					Home Depot Lemon Grove	
11/15/2006	Managers			Vol. 2, Issue 3 - November 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
12/5/2006	Joanna McClure	100 of full set of English	All 5 Tear-Off		Standing Rack		Ace Hardware, Rancho Bernardo	
12/11/2006	Joanna McClure	100 of full set of English	All 5 Tear-Off		Standing Rack		Ace Hardware, Del Mar	
12/15/2006	Managers			Vol. 2, Issue 4 - December 2006			All San Diego Co. Nursery and Garden Centers (142 total)	
1/26/2007	Managers	100 each of Rats and Gophers					All 17 active Nursery Display locations	
2/8/2007	Managers			Vol. 2, Issue 5 - Jan/Feb 2007			All San Diego Co. Nursery and Garden Centers (142 total)	

Appendix A14
County of San Diego PRISM Grant
Material Distribution Log
(Pest Cards)

Date	Contact	Cards	Stand	Event	Returned
	Patty McDuffy	100 of full set of 12	Standing Rack	Lowe's	
	John Marsh	100 of full set of 12	Standing Rack	Lowe's	
	Joyce Gimmell	100 of full set of 12	Standing Rack	Lowe's	6/6/2005
	Karen Lakomy	100 of full set of 12	None	Lowe's	
4/26/2005	Paul Davy	100 of full set of 12	Table Top Display (3)	National Horse Show	5/2/2005
	Phil Ash	100 of Safe Disp of Pesticides	None	Rose Club Meeting	
4/29/2005	Margarita Mogollon	400 of full set of 12	Table Top Display (1)	Earth Day	
5/2/2005	Margarita Mogollon	100 of full set of 12	Table Top Display (3)	County Admin. Watershed Awareness Month	
5/12/2005	John Marsh	1 Feedback Pad			
5/12/2005	Rob Hutsel	100 of full set of 12	Table Top Display (3)		
5/12/2005	Rob Hutsel	1 Feedback Pad			
5/12/2005	Joyce Gimmell	1 Feedback Pad			
5/13/2005	Kevin Grangetto	4 Feedback Pads	Table Top Display (3)	Retail Garden Center	
5/14/2005	Karen Lakomy	1 Feedback Pad			
5/19/2005	Patty McDuffy	1 Feedback Pad			
5/23/2005	Paul Davy	25 of full set of 12	None	Ag Weights and Measures Staff	
5/25/2005	Linda Feeley	25 of full set of 12	None	Ag Weights and Measures Staff	
5/26/2005	Paul Davy	25 of full set of 12	None	Ag Weights and Measures Staff	
5/25/2005	John Prues		Table Top Display (9)	Retail Garden Center	
6/2/2005	Phil Robinson		Table Top Display (2)	Retail Garden Center	
6/2/2005	Walter Andersen, Jr.	100 of full set of 12	Standing Rack	Retail Garden Center	
6/16/2005	Carol Graham	600 Ants, 600 Snails, 300 Aphids, 300 Spiders		San Diego County Fair	
6/17/2005	Joyce Gimmell	Full set of Spanish		Tijuana River Valley Community Garden	
6/28/2005	Carol Graham	600 Ants, 600 Snails, and 100 Rats		San Diego County Fair	
July	Wendy Henry-Hovland	100 of full set of 12			
July 9-10, 2005	Carol Graham	100 of full set of 12	Table Top Display (3)	Insect and Garden Fair at Quail Gardens	7/11/2005
7/30/2005	Walter Andersen, Jr.	100 of full set of 12		Retail Garden Center	
8/16/2005	Vikki Denslow	200 Ant Cards		County of San Diego Health Fair	
8/27/2005	Joanna McClure	100 of full set of 12	Table Top Display (3)	Broadway Heights Community Block Party	8/27/2005
Sept. 2005	Betty Waznis	31 sets of 50 Ant, Fleas, and Safe Use Pest Cards as well as Watershed Water Tips Cards	1 Table Top Display at 31 Locations	County of San Diego Public Libraries	
9/8/2005	David Fritz	100 of full set of 12	Standing Rack	Escondido IPM Meeting	Sep-05
9/16/2005	Phil Robinson	100 of full set of 12 Spanish Cards		Retail Garden Center	
9/22/2005	Hawkeye Sheen	100 of full set of 12		Oceanside Water Quality Meeting	
9/23/2005	Bill Tall	100 of full set of 12 Spanish Cards		Retail Garden Center	
9/24/2005	David Shaw	100 of full set of 12	Standing Rack	EnviroFair	9/26/2005
9/24/2005	Joyce Gimmell	100 of full set of 12 English and Spanish	Table Top Display (3)	Bonitafest	9/24/2005
9/26/2005	Sherry	100 of full set of 12	Standing Rack	Home Depot Sports Arena	

Appendix A14
County of San Diego PRISM Grant
Material Distribution Log
(Pest Cards)

Date	Contact	Cards	Stand	Event	Returned
9/27/2005	Sherry	100 of full set of 12 Spanish Cards		Home Depot Sports Arena	
10/18/2005	Martha Deichler	100 of full set of 12 English and Spanish	Table Top Display (6)	Vista Square Insect and Garden Festival	10/18/2005
10/21/2005	Laura Starr	100 of full set plus water tips card	Table Top Display (1)	North Park Library	
10/21/2005	Beverly Vasconcellos	100 of full set plus water tips card	Table Top Display (1)	Scripps Ranch Library	
10/21/2005	Cathy Dery	100 of full set plus water tips card	Table Top Display (1)	University City Community Library	
Nov. 2005	Betty Waznis	31 Sets of 50 Head Lice and Spiders		County of San Diego Public Libraries	
12/16/2005	Laura Starr	100 of 2 full sets plus water tip cards	Table Top Display (2)	Mission Hills Library & University Heights Library	
12/15/2006	Nicole	50 of full set of 12 English and Spanish	Standing Rack	Mission Hills Nursery	
12/15/2006	Nicole	50 of full set of 12 English and Spanish	Standing Rack	Moose Creek Nurery	
12/17/2006	Vicki	100 of full set of English	Standing Rack	Plant World	
12/19/2006	Elle Smith	100 of full set of English and Spanish	Standing Rack	Quail Botanical Gardens	
Jan. 2006	Betty Waznis	31 Sets of 50 Cockroaches and Earwigs		County of San Diego Public Libraries	
1/21/2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Retail Nursery	
2/13/2006	Margarita Mogollon	1600 Giant Whitefly		City Governments	
2/13/2006	Jan Daniels	100 of various English (Ants, Aphids, Giant Whitefly,	Table Top Dispay (2)	Solana Center for Environmental Innovation	
2/14/2006	Cecilia Lyon	200 of Giant Whitefly (English)		City of Coronado	
2/24/2006	Connie Whitney	100 of full set of English and Spanish	Table Top Display (6)	Balboa Park Botanical Garden	
3/1/2006	Betty Waznis	31 Sets of 50 Giant Whitefly and Snails & Slugs		County of San Diego Public Libraries	
3/1/2006	Dorothy Notter	100 of full set of English and Spanish	Table Top Display (6)	Escondido Farmer's Markets & Street Fairs	
3/1/2006	Virginia Sherwood	100 of full set of English and Spanish	Table Top Display (6)	Master Gardener Spring Seminar	10/13/2006
3/1/2006	Vince Lazaneo	950 of full set of English		Master Gardener Spring Seminar	
3/6/2006	Jan Daniels	100 of full set of English and Spanish	Standing Rack	Solana Center for Environmental Innovation	
3/10/2006		154 full sets of English Pest Cards		Eucalyptus Hills Residents, Lakeside, CA, 92040	
3/27/2006	Camomile Meadow	100 of Giant Whitefly (English)		City of Encinitas	
April 1, 2, 22, 29, 30, 2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Carlsbad Flower Fields	
4/8/2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Encinitas Garden Festival	
4/8/2006	Lew Gary	100 of full set of English and Spanish	Table Top Display (6)	Poway Garden Festival	4/10/2006
4/15/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Carlsbad	
4/18/2006	Dorothy Notter	100 of full set of English and Spanish	Table Top Display (6)	Escondido Farmers' Market	4/24/2006
4/22/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Chula Vista	
April 22 & 23, 2006	Susie Heap	100 of full set of English and Spanish	Table Top Display (6)	Coronado Flower Show	4/24/2006
4/23/2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Earth Fair	
5/1/2006	Betty Waznis	31 Sets of 50 Aphids and Lawn Insects		County of San Diego Public Libraries	
5/6/2006	Connie Whitney	100 of full set of English and Spanish	Table Top Display (6)	Buds N Blooms	5/8/2006
5/6/2006	Rosemary Anderson	100 of full set of English and Spanish	Table Top Display (6)	Poway Valley Garden Club	5/6/2006
May 6 & 7, 2006	Jeff Pollard	101 of full set of English and Spanish	Table Top Display (6)	Sage & Songbird Festival	5/8/2006
5/9/2006	Scott Parker	102 of full set of English and Spanish	Table Top Display (6)	IPM Landscaper Seminar	
5/11/2006	Carol Graham	100 of full set of English and Spanish	Table Top Display (6)	Gardens of Del Mar	

Appendix A14
County of San Diego PRISM Grant
Material Distribution Log
(Pest Cards)

Date	Contact	Cards	Stand	Event	Returned
5/13/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - El Cajon	
5/16/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	32nd Annual Rental Education EXPO	
5/16/2006	Dorothy Notter	100 of full set of English and Spanish	Standing Rack	Escondido Farmers' Market	
May 19 - 21, 2006	Al Myrick	100 of full set of English and Spanish	Table Top Display (6)	Spring Garden Celebration	5/22/2006
5/20/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Carlsbad	
5/20/2006	Robin Revet	100 of full set of English and Spanish	Table Top Display (6)	Spring Garden Festival	5/22/2006
5/21/2006	Dorothy Notter	100 of full set of English and Spanish	Table Top Display (6)	Spring Escondido Street Fair	
5/28/2006	Rose Crawford	100 of full set of English and Spanish	Table Top Display (6)	The Garden Village Festival	5/29/2006
6/10/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Lakeside	
6/10/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Mission Hills Garden Tour	
June 10 - July 4, 2006 (closed on Mondays except July 3)	Carol Graham	2500 of full set of English and 200 sets of Spanish	None	San Diego County Fair	
6/17/2006	Lew Gary	100 of full set of English and Spanish	Table Top Display (6)	MG Summer Plant Sale	6/19/2006
6/20/2006	Dorothy Notter	100 of full set of English and Spanish	Standing Rack	Escondido Farmers' Market	
6/21/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Chula Vista	
6/24/2006	Scott Parker	100 of full set of English and Spanish	Table Top Display (6)	Community IPM Workshop - Carlsbad	
6/27/2006	Scott Nowak	1 full set of English and Spanish (Review Set)		Trimark Pacific Homes	
7/1/2006	Betty Waznis	31 Sets of Gardening w/ Good Budgs and Termites		County of San Diego Public Libraries	
7/5/2006	Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bu	Standing Rack	ACE Hardware, 3706 S. Barcelona St, Spring Valley, CA 91977	
7/5/2006	Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bu	Standing Rack	Evergreen Nursery, 2657 Sweetwater Springs Blvd, Spring Valley, CA	
7/11/2006	Mort Brigadier	100 of full set of English 100 Spanish Ants, Good Bu	Standing Rack	Home Depot Lemon Grove	
8/1/2006	Mort Brigadier	100 of full set of English	Standing Rack	County of San Diego Department of Ag.	
8/17/2006	Barbara	100 of full set of English	Standing Rack	Poway Nursery	
8/17/2006	Jay Vermilya	100 of full set of English	Standing Rack	Fletcher Hills Library	
8/31/2006	Jay Vermilya	100 of full set of English	Standing Rack	San Carlos Library	
9/1/2006	Betty Waznis	31 Sets of Ants and Snails & Slugs		County of San Diego Public Libraries	
9/1/2006	Dorothy Notter	100 of Spanish Ants, Good Bugs, Cockroaches, and	Safe Use and Disposal of	Escondido Farmers' Market	
September - Pending	Barbara Moore	Order Pending	Standing Rack	Chula Vista Nature Center	
10/14/06	Connie Whitney	100 of full set of English and Spanish	Table Top Display (6)	Third Annual Point Loma Nazarene Univ President's Community Day	
10/15/06	Dorothy Notter	100 of full set of English	Standing Rack	Fall Escondido Street Fair	
10/17/06	Dorothy Notter	100 of full set of English	Standing Rack	Escondido Farmers' Market	
10/27/2006		100 of full set of English	Standing Rack	Lowe's of Oceanside	
October 28 & 29, 2006	Clyde Berndsen	100 of full set of English	Table Top Display (3)	Fall Garden Show	
10/30/2006	Tom del Hotel	100 of full set of English		Home Depot of Lemon Grove	
11/1/2006	Betty Waznis	31 Setts of Earwigs and Spiders		County of San Diego Public Libraries	
11/04/06	Lew Gary	100 of full set of English and Spanish	Standing Rack	Fifth Annual Plant Sale SD Hort Society	

Appendix A14
County of San Diego PRISM Grant
Material Distribution Log
(Pest Cards)

Date	Contact	Cards	Stand	Event	Returned
12/5/2006	Joanna McClure	100 of full set of English	Standing Rack	Ace Hardware, Rancho Bernardo	
12/11/2006	Joanna McClure	100 of full set of English	Standing Rack	Ace Hardware, Del Mar	
2/13/2007	Cathy Dery	100 of Rats and Gophers		University City Community Library	
2/13/2007	Laura Starr	100 of Ants, Cockroaches, Fleas, Good Bugs, Rats, Snails & Slugs, Termites, and Safe Disposal		Mission Hills and University Heights Library	

Appendix A15
County of San Diego
Master Gardener
Community Events Schedule
and Public Displays
Outreach Activities

Date	Time	Event or Display (D)	Coordinator	Location	Est. Att.
April 2005 (Ongoing)	9:00 - 5:00 PM	City Farmer's Nursery (D)	Bill Tall	City Farmer's Nursery	
April - June, 2005	8:00 - 5:00 PM (weekends)	Lowe's	Patty McDuffy	Oceanside	
April - June, 2005	8:00 - 5:00 PM (weekends)	Lowe's	John Marsh	Vista	
April - June, 2006	8:00 - 5:00 PM (weekends)	Lowe's	Joyce Gemmell	Santee	
April - June, 2007	8:00 - 5:00 PM (weekends)	Lowe's	Karen Lakomy	Mission Valley	
April 30, 2005		San Diego Rose Society Meeting	Phil Ash	Balboa Park Club	50
May 2005 (Ongoing)	8:00 - 5:00 PM	UCCE Farm and Home Advisors Office (D)	Scott Parker	County Operations Complex	
May 2005 (Ongoing)	8:00 - 5:00 PM	Grangetto's Farm and Garden Supply (D)	Phil Robinson	Escondido (2)	
May 2005 (Ongoing)	8:00 - 5:00 PM	Grangetto's Farm and Garden Supply (D)	Phil Robinson	Valley Center	
May 2005 (Ongoing)	8:00 - 5:00 PM	Grangetto's Farm and Garden Supply (D)	Phil Robinson	Fallbrook	
May 2005 (Ongoing)	8:00 - 5:00 PM	Grangetto's Farm and Garden Supply (D)	Phil Robinson	Encinitas	
May 10, 2005		OASIS Adult Learning Center	Phil Ash	Robinsons-May, Mission Valley	50
June 2005 (Ongoing)	9:00 - 4:00 PM	Cuyamaca Water Conservation Garden (D)	Marty Eberhardt	Cuyamaca College, El Cajon, CA	
June 2005 (Ongoing)	8:00 - 5:00 PM	Walter Andersen Nursery (D)	Walter Andersen, Jr.	Point Loma	
June 4, 2005	9:00 - 4:00 PM	National Home Safety Fair	Marilyn Rummerfield	Lowe's of Santee	50
June 10 - July 4, 2005 (closed on Mondays except July 4)	10:00 AM - 10:00 PM	San Diego County Fair	Carol Graham	San Diego County Fair Grounds, Flower and Garden Show, O'Brien Hall	6000
June 17, 2005	January 0, 1900	Tijuana River Valley Community Garden	Joyce Gemmell	Tijuana River Valley	20
June 18, 2005	10:00 AM - 3:00 PM	Master Gardener Plant Sale	Lew Gary	Balboa Park, Casa del Prado, Room 101	250
July 9-10, 2005	10:00 AM - 4:00 PM	Insect Fair	TBA	Quail Botanical Gardens	500
August 27, 2005	9:00 AM - 5:00 PM	Broadway Heights Community Block Party	Joanna McClure	Broadway Heights	100
September 2005 (Ongoing)	Hours Vary	San Diego County Libraries (D)	Betty Waznis	32 locations throughout the County	
September 2005 (Ongoing)	8:00 - 11:00 PM	The Home Depot (D)	Sherri Stead	Sport Arena Area	
September 22, 2005	11:00 - 11:30 AM	Oceanside Water Qualtiy Meeting	Scott Parker	Libby Lake Community Center	10
September 24, 2005	January 0, 1900	EnviroFair	David Shaw	Del Mar	50
September 24, 2005	9:00 AM - 5:00 PM	Bonita Fest	Joyce Gemmell	Bonita Village Shopping Center	500
September 29, 2005	10:00 - 11:00 AM	Pala Senior Citizens Meeting	Lew Gary	Pala Reservation	6
September 29, 2005	12:00 - 1:00 PM	Pala Child Care Staff	Joanna McClure	Pala Child Care Center	7
October 2005 (Ongoing)	Hours Vary	North Park Library (D)	Laura Starr	North Park	
October 2005 (Ongoing)	Hours Vary	Scripps Ranch Library (D)	Beverly Vasconcellos	Scripps Ranch	
October 2005 (Ongoing)	Hours Vary	University City Library (D)	Cathy Dery	University City	

Appendix A15
County of San Diego
Master Gardener
Community Events Schedule
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Outreach Activities

Date	Time	Event or Display (D)	Coordinator	Location	Est. Att.
October 16, 2005	9:00 - 5:00 PM	Escondido Street Fair	Dorothy Notter	Escondido	500
October 22, 2005	9:00 - 5:00 PM	City Farmer's Nursery Pumpkin Contest	Bill Tall	City Farmer's Nursery	50
November 5, 2005	10:00 - 4:30 PM	Annual San Diego Hort.Society Plant Sale	Lew Gary	Rancho Bernardo Winery	250
December 3, 2005	9:00 - 3:00 PM	Water Conservation Garden	Al Myrick	Cuyamaca College, El Cajon, CA	250
December 2005 (ongoing)	10:00 - 4:00 PM	Quail Botanical Gardens (Gift Shop) (D)	Elle Smith	Quail Botanical Gardens	
December 2005 (ongoing)	Hours Vary	University Heights Library (D)	Laura Starr	University Heights	
December 2005 (ongoing)	Hours Vary	Mission Hills Library (D)	Laura Starr	Mission Hills	
February 4, 2006	9:00 - 3:00 PM	Water Conservation Garden	Clara Arvai	Cuyamaca College, El Cajon, CA	100
March 4, 2006	9:00 - 3:00 PM	Water Conservation Garden	Clara Arvai	Cuyamaca College, El Cajon, CA	100
March 15, 2006	8:00 - 3:00 PM	Greening the City Symposium	Laura Starr	Liberty Station, Point Loma	150
March 18, 2006	8:00 - 4:00 PM	Master Gardener Spring Seminar	Lew Gary	University of San Diego	750
March 18, 2006	9:00 - 4:00 PM	California-Friendly Plant Sale	George Yackey	Cuyamaca College, El Cajon, CA	200
March 21, 2006	2:30 - 5:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
April 1, 2, 22, 29, 30, 2006	12:00 - 3:00 PM	Carlsbad Flower Fields	Carol Graham	Carlsbad	1000
April 8, 2006	10:00 - 4:00 PM	Encinitas Garden Festival	Carol Graham	Lucadia Oaks Park	100
April 8, 2006	9:00 - 2:00 PM	Poway Garden Festival	Lew Gary	Old Poway Park	300
April 18, 2006	2:30 - 5:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
April 22 & 23, 2006	1:00 - 5:00 PM, 10:00 - 4:00 PM	Coronado Flower Show	Susie Heap	Coronado	100
April 23, 2006	10:00 - 5:00 PM	Earth Fair	Carol Graham	Balboa Park	1000
Spring/Summer 2006	TBA	Del Cerro Street Fair	Carol Graham	Del Cerro	
May 6, 2006	9:00 - 4:00 PM	Buds N Blooms	Connie Whitney	Balboa Park	100
May 6, 2006	9:30 - 10:30 AM	Poway Valley Garden Club	Rosemary Anderson	Poway	40
May 6 & 7, 2006	10:00 - 4:00 PM	Sage & Songbird Festival	Jeff Pollard	Viejas Outlet Center	150
May 11, 2006	9:00 -3:00 PM	Gardens of Del Mar	Carol Graham	Power House Park, Del Mar	50
May 16, 2006	8:00 - 5:00 PM	32nd Annual Rental Education EXPO	Scott Parker	San Diego Convention Center	500
May 16, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
May 19 - 21, 2006	9:00 - 6:00 PM	Spring Garden Celebration	Al Myrick	San Diego Zoo	750
May 20, 2006	9:00 - 4:00 PM	Spring Garden Festival	Robin Revet	Cuyamaca College, El Cajon, CA	150
May 21, 2006	9:00 - 5:00 PM	Spring Escondido Street Fair	Dorothy Notter	Escondido	500
May 28, 2006	10:00 - 4:00 PM	The Garden Village Festival	Rose Crawford	Lincoln Middle School, Vista, CA	100
June 10 - July 4, 2006 (closed on Mondays except July 3)	10:00 - 7:00 PM	San Diego County Fair	Carol Graham	Del Mar Fairgrounds	2500

Appendix A15
County of San Diego
Master Gardener
Community Events Schedule
and Public Displays
Outreach Activities

Date	Time	Event or Display (D)	Coordinator	Location	Est. Att.
June 17, 2006	9:00 - 3:00 PM	MG Summer Plant Sale	Lew Gary	Balboa Park	250
June 20, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
July 1, 2006	9:00 - 3:00 PM	Water Conservation Garden	Clara Arvai	Cuyamaca College, El Cajon, CA	150
July 15-16, 2006	10:00 - 4:00 PM	Insect and Garden Festival	Scott Parker	Quail Botanical Gardens	600
July 18, 2006	2:30 - 5:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
August 12, 2006	12:00 - 4:00 PM	Weidner's Gardens	Carol Graham	Weidner's Gardens, Encinitas, CA	50
August 12, 2006	2:00 - 6:00 PM	4-S Ranch Open House in Rancho Bernardo	Ed Danico	Rancho Bernardo	50
August 15, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
September 15-17, 2006	12-7PM, 10-7PM & 10-5PM	Fall Home and Garden Show	Carol Graham	Del Mar Fairgrounds	400
September 19, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
September 23, 2006	10:00 - 2:00 PM	Garden of Discovery Day at SeaWorld	Al Myrick	SeaWorld	250
October 14, 2006	10:00 - 2:00 PM	Third Annual Point Loma Nazarene Univ President’s Community Day	Scott Parker	PLNU, Point Loma, CA	100
October 15, 2006	9:00 - 5:00 PM	Fall Escondido Street Fair	Dorothy Notter	Escondido	750
October 17, 2006	4:00 - 7:00 PM	Escondido Farmers' Market	Dorothy Notter	Escondido	500
October 28 & 29, 2006	9:00 - 5:00 PM	Fall Garden Show	Clyde Berndsen	San Diego Wild Animal Park	250
November 4, 2006	10:00 - 4:30 PM	Fifth Annual Plant Sale SD Hort Society	Lew Gary	Rancho Bernardo Winery	200
					24333

San Diego Bay Watershed Fact Sheet

What is a watershed? A watershed consists of all land and waterways that drain into the same body of water. There are 11 watersheds within San Diego County. Drainage from La Mesa flows through two of these watersheds: the San Diego Bay and the San Diego River. Your business or facility is located within the San Diego Bay Watershed.

San Diego Bay Watershed

The San Diego Bay Watershed is comprised of 415 square miles. It extends from the Laguna Mountains to San Diego Bay. The watershed falls within the cities of La Mesa, Chula Vista, Coronado, Imperial Beach, Lemon Grove, National City, San Diego, and unincorporated areas of the County. Approximately 4 square miles in the southern portion of the City of La Mesa is part of this watershed. The major discharge sources to San Diego Bay include Sweetwater River, Otay River, Chollas Creek, Paleta Creek, Paradise Creek, and Switzer Creek.

Three drainage basins in the City of La Mesa are part of the San Diego Bay Watershed. Runoff from the Spring Valley Basin flows to the Sweetwater River. Runoff from the University Channel and Lemon Grove Basin contribute to Chollas Creek. The aforementioned creek and river flow into San Diego Bay.

Pollutants of concern associated with the watershed include diazinon, copper and zinc, fecal coliform, turbidity, and total suspended solids. The sources of these pollutants are a result of residential, agriculture or commercial pesticide application, automobiles and industrial waste, sewer spills, encampments, wildlife, erosion, suspended sediment, and fertilizers. Pollutants of concern for Chollas Creek in particular include metals such as copper, lead, zinc, cadmium, and coliform bacteria.

Ensuring that urban runoff is not contaminated with pollutants as a result of your business activities is an integral component in preserving the quality of life in San Diego County. It is your responsibility to help prevent these pollutants from entering the watershed in order to protect the environment and safe guard the natural resources. Introducing pollutants into the environment as a result of your business activities may contribute to beach closures and limit other recreational activities.

What Can You Do?

Remember, the only water that should enter the storm drain is rainwater. Do not hose down your property to ensure pollutants such as sediment, oil and grease, fertilizers, herbicides and pesticides, surfactants (soap), metals, trash, and other debris are not inadvertently flushed into the storm drain contributing to gross contamination of urban runoff. Moreover, store materials properly to ensure it is not exposed to storm water and do not over-irrigate your landscape. If you observe storm water pollution or illegal dumping into a storm drain, you should call the City's Storm Water Pollution prevention hotline at (619) 667-1134 to report the incident or visit the City's Website *www.cityoflamesa.com/Departments/PublicWorks/NPDES.htm*.

Good housekeeping and pollution prevention equates to improved water quality, and a cleaner environment equates to a better quality of life for everyone.

Cayayaanka wanaagsan ee doogga

HEALTHY GARDEN HEALTHY HOME

Beeraha doogga badankoodu waxay ka koobanyihiih noocyo badan oo ah cayayaan faa'iido leh oo ka badan cayayaanka dullinka ah. Cayayaanka faa'iidada leh iyo noolaha kale ee dila cayayaanka dullinka ah waxa la yidhaahdaa cadowga dabiiciga ah. Barnaamij kasta oo ah maamulka cayayaanka dullinka ah ama daryeelka dhirta, waa muhiim in la dhiirigeliyo cadowgan dabiiciga ah iyada oo la iska deynayo cayayaan dilaha sunta ah ee dila iyaga. Waxa kale oo aad dhiiri gelin kartaa cayayaanka faa'iidada leh adiga oo dooranaya dhir iyaga siisa ubax, dhabaq iyo hoy kana ilaalinaya qudhaanjada dhirta ay saameeyaan dullinku. Baro inaad ogaato cayayaanka faa'iidada leh, markay waaweynyihiin iyo markay ugxanta yihiinba.

Cayayaanka wanaagsan ee laga helo beelaha California waxa ka mid ah:

- Dalandoolida (lady beetle): markay waaweynaato iyo markay laarfaha tahayba waxay dishaa abhidhiska.
- Baranbarada (lacewing): laarfihiisu wuxuu cunaa cayayaan dullin ah oo badan; kiisa waaweyn waxa had iyo goor lagu ag arkaa laydhka.
- Duqsiga (Syrphid flies): laarfahiisu wuxuu cunaa abhidhka kiisa waaweyni wuxuu ku dul wareegaa ubaxyada.
- Dubulaxa yar ee dullinka ah: sinjiyo badan oo ah duburlaxa yar ayaa ugxantooda dhiga cayayaanka sida abhidhka ama diirta; laarfahooda dillaacayaa wuxuu cunaa cayayaanka oo dilaa.
- Caarooyinka: dhammaan caarooyinku waxay cunaan cayayaanka ama cayayaanka kale beertana faa'iido ayay u leeyihiin.

(gadaal ka eeg sawirada cayayaanka wanaagsan ee kor lagu magacaabay)

Waa maxay maaraynta cayayaanka ee xidhiidhsani?

Maaraynta cayayaanka ee xidhiidhsani (IPM)waxay isticmaashaa nabab deegaan ahaan macquul ah waxtarna leh oo cayayaanka looga ilaaliyo inay kaa cadhaysiiyaan ama dhirta waxyeelo u gaadhsiiyaan. Barnaamijyada maaraynta cayayaanka ee xidhiidhsani waxay sida caadiga ah isu geeyaan dhowr hab oo ah kaantaroolidda cayayaanka si muddada dheer looga hortago loona maareeyo dhibaatooyinka cayayaanka iyadoo oo aanu ku dhibaatayn adiga, qoyskaaga ama deegaantaba – IPM waxa kale oo ay yaraysaa wasakhaynta biyaha California. IPM hirgalaa wuxuu ka bilaabmaa in si sax loo ogaado cayayaanka dullinka ah. Markaas oo keliya ayaa la samayn karaa in la doorto hababka IPMka iyo qalabyada.

Trồng Vườn với Các Loài Côn Trùng Có Lợi

HEALTHY GARDEN HEALTHY HOME

Hầu như khu vườn nào cũng đều có nhiều côn trùng có lợi hơn là côn trùng có hại. Côn trùng có lợi và các loài sinh vật khác có thể diệt côn trùng gây hại được gọi là kẻ thù tự nhiên. Khi áp dụng bất kỳ chương trình chăm sóc cây cỏ hoặc diệt động vật gây hại nào, điều quan trọng là cần phải khuyến khích sự tăng trưởng của các loài kẻ thù tự nhiên này bằng cách tránh dùng các loại thuốc trừ sâu có hại cho chúng. Quý vị cũng có thể chọn trồng các loài cây cung cấp phấn hoa, mật hoa, và nơi trú ngụ, đồng thời không để kiến xâm nhập các loại cây đã bị động vật gây hại. Học cách nhận biết các loại côn trùng có lợi, cả ở giai đoạn trưởng thành lẫn chưa trưởng thành (ấu trùng).

Những loài côn trùng có lợi thường gặp trong các khu vườn ở California là:

- Bọ cánh cứng: Cả bọ trưởng thành và ấu trùng đều ăn rệp vừng.
- Bọ cánh ren (Lacewing): Ấn trùng bọ cánh ren ăn nhiều loại côn trùng gây hại; thường gặp bọ trưởng thành ở những nơi có ánh sáng.
- Ruồi ong: Ấu trùng ruồi ong ăn rệp vừng; thường gặp ruồi ong trưởng thành bay ở những nơi có hoa.
- Ong bắp cày nhỏ sống ký sinh: Nhiều loài ong bắp cày nhỏ đẻ trứng trong các loài côn trùng gây hại như rệp hoặc sâu bướm; ấu trùng ong bắp cày sắp nở ăn và diệt côn trùng gây hại đó.
- Nhện: Tất cả các loài nhện đều ăn côn trùng hoặc động vật chân đốt nên có lợi cho vườn.

(Xin xem hình minh họa ở trang mặt sau về những loài côn trùng có lợi nói trên.)

Những loài côn trùng có lợi thường gặp trong các khu vườn ở California là:

Biện pháp diệt côn trùng gây hại toàn diện (IPM) sử dụng những cách thức có lợi cho môi trường mà vẫn hiệu quả để diệt loài côn trùng gây khó chịu hoặc phá hoại cây cối. Các chương trình IPM thường kết hợp nhiều phương pháp diệt côn trùng gây hại nhằm ngăn ngừa và kiểm soát lâu dài các vấn đề liên quan tới côn trùng gây hại mà không làm tổn hại tới quý — vị, gia đình quý vị hoặc môi trường - IPM cũng giúp giảm bớt tình trạng ô nhiễm hệ thống đường thủy tại California. Để áp dụng chương trình IPM thành công, trước hết chúng ta cần nhận dạng đúng loài côn trùng gây hại đó. Chỉ khi đó mới có thể chọn được phương pháp và chất IMP thích hợp.

Uso y desecho seguro de pesticidas

JARDÍN SANO CASA SANA

Los pesticidas son productos tóxicos para las plagas a controlar, ya sean insectos, malezas u otros invasores del hogar y jardín. Lea siempre con detenimiento las etiquetas de los pesticidas y siga todas las instrucciones sobre su uso, almacenaje y desecho adecuado de recipientes vacíos de pesticida. Las etiquetas son la principal fuente de información sobre el uso seguro y legal del producto, según normas establecidas para la protección personal, familiar y de animales domésticos. La única manera legal de desechar sobrantes de pesticidas es llevándolos a un centro de recolección de desechos domésticos peligrosos. Llame al 1-800-CLEANUP para encontrar el centro más cercano.

Si debe usar pesticidas, siga estas recomendaciones para reducir los efectos de los pesticidas en canales y aguas locales:

- Identifique la plaga causando el problema y escoja el pesticida menos tóxico que logre los resultados esperados. Si necesita ayuda para identificar el método menos tóxico de control de plagas, comuníquese con su oficina local de Extensión Cooperativa de la Universidad de California.
- Determine la cantidad necesaria de pesticida que debe comprar. Si sólo compra la cantidad exacta que va a aplicar, evita tener que almacenar el pesticida que le sobre.
- Siempre que pueda, use el pesticida sólo en el área afectada por la plaga.

En el exterior

- Evite exceso de riego después de aplicar pesticidas. Nunca permita que el agua se lleve los pesticidas a alcantarillas o desagües.
- No aplique pesticidas cuando se pronostica lluvia o hace viento.
- Evite aplicar pesticidas en lugares pavimentados.

En el interior

- No aplique pesticidas en desagües, lavaderos o fregaderos o cerca de ellos.
- No aplique pesticidas en lugares que se lavan, o enjuagan con agua, o donde se preparan o almacenan alimentos.

Safe Use & Disposal of Pesticides

HEALTHY GARDEN HEALTHY HOME

Pesticides are designed to be toxic to the pests they target — insects, weeds, and other unwanted home and garden invaders. Always read pesticide product labels carefully and follow all directions on proper use, storage, and disposal of empty pesticide containers. Product labels are your main source of information on how to use a product safely and legally. They include guidelines needed to protect you, your family, and pets. The only allowable way to dispose of unused pesticides is through a household hazardous waste collection site. For the site nearest you in San Diego County call 1-800-CLEANUP .

If you must use pesticides, follow these tips to reduce pesticide effects on your local waterways:

- Identify your pest problem and choose the least toxic pesticide that targets your pest and achieves the results you want. If you need help identifying the least toxic pest control method, contact your University of California Cooperative Extension office.
- Determine the right amount of pesticide to purchase. Purchasing exactly the amount you need for the application eliminates the need for storing unused pesticides.
- Use spot treatments whenever possible.

Outdoors

- Avoid overwatering after applying pesticides. Never let pesticide runoff flow into storm drains.
- Do not apply pesticides outdoors when rain is forecast or when it is windy.
- Avoid applying pesticides on paved areas.

Indoors

- Avoid applying pesticides in or near floor drains or sinks.
- Avoid applying pesticides on areas that will be washed or mopped with water, or where food is prepared or stored.

Hababka IPMka ee la doorbido waxa ka mid ah:

- Beeritaanka dhirta cayayaanka dullinka ah u adkaysata ama noocyo badan oo dhir ah oo kala duwan sida dhirta wadaniga ah.
- Kahortagga cayayaanka dullinka ah iyadoo la casriyaynayo sida aad u naqshadayso, waraabiso, nafaqayso, una maamusho beertaada.
- Iyada oo wax laga bedelo deegaanta guriga ama beerta si cayayaanka looga joojiyo cuntada, biyaha, hoyga ama waxyaabaha kale ee ay u baahanyihiin inay ku koraan.
- Iyadoo cayayaanka guriga laga ilaalinayo iyo beerta iyadoo la isticmaalayo deyrar, iskiriino iyo xayndaab.
- Burburinta, dabitaanka, maydhitaanka ama jaritaanka cayayaanka.
- Ku tiirsananaanta cayayaanka wanaagsan ee beertaada si ay u cunaan cayayaanka dullinka ah, iyagoo markaa baajinaya baahidii loo qabay sunta cayayaanka ee laga yaabo inay gasho kanaalada biyaheena.

Isticmaalidda sunta cayayaanka:

- Isticmaal sunta cayayaanka oo keliya markaanay waxyaabaha lagu kaantaroolo ee aan kimikada ahayni aanay shaqaynaynin cayayaankuna sii fidayo illaa iyo heer aan loo adkaysan karin.
- Isticmaal sunta cayayaanka iyo hababka kor lagu sharxay.
- U dooro sunta cayayaanka si taxadir leh si markaas ta ugu sunta yar uguna waxtar badan loo isticmaalo si loo ilaaliyo caafimaadka aadamiga iyo deegaantaba.

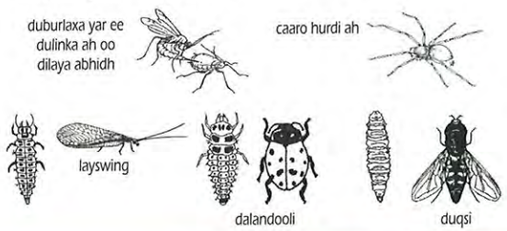

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org. Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Các phương pháp IPM được ưa chuộng bao gồm:

- Trồng các loài cây thích nghi tốt hoặc chịu được côn trùng gây hại như các loài cây nguyên sinh trong vùng.
- Kiểm soát côn trùng gây hại bằng cách thay đổi cách thiết kế, tưới nước, bón phân và quản lý khu vườn.
- Thay đổi vườn hoặc môi trường trong nhà để loại bỏ nguồn thức ăn, nước và nơi trú ngụ của côn trùng gây hại hoặc các điều kiện khác cần thiết để chúng phát triển.
- Dùng các tấm chắn, lưới chắn, và bịt kín để tránh côn trùng gây hại xâm nhập vào nhà.
- Diệt côn trùng gây hại bằng cách đập, đặt bẫy, xối nước hoặc xén tỉa bớt cây cỏ.
- Tận dụng các loài côn trùng có lợi trong vườn để ăn côn trùng gây hại, do đó không cần phải dùng các loại thuốc diệt côn trùng có thể làm ô nhiễm hệ thống đường thủy.

Dùng thuốc diệt côn trùng:

- Chỉ dùng thuốc diệt côn trùng khi các biện pháp diệt côn trùng không sử dụng hóa chất không có hiệu quả và các loài côn trùng gây hại phát triển tới mức không thể chấp nhận được.
- Dùng các loại thuốc diệt côn trùng kết hợp với các phương pháp nói trên.
- Chọn thuốc diệt côn trùng kỹ lưỡng để sử dụng chất ít độc hại nhất mà vẫn hiệu quả nhất để bảo vệ sức khỏe của con người và môi trường.

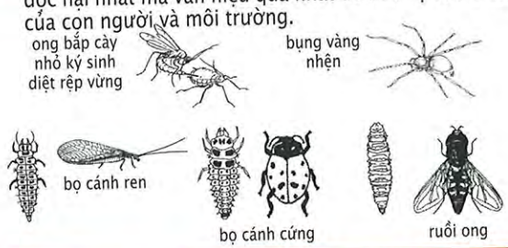

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Tome estas precauciones al usar y almacenar pesticidas:

- Use siempre camisa de manga larga, pantalones y protección para los ojos y todo el equipo recomendado en la etiqueta.
- Cierre bien los envases de pesticidas y guárdelos en un lugar bajo llave y lejos del alcance de los niños y animales domésticos.
- Siempre mantenga los pesticidas en su envase original.
- ¡Sepa a dónde llamar en caso de emergencia!

Desecho de pesticidas:

- Regale el pesticida, fertilizante o herbicida que le sobre a alguna persona que pueda usarlo.
- Las plantas de tratamiento de aguas residuales no están diseñadas para procesar ciertos pesticidas tóxicos como "diazinon y clorpirifos"; por lo tanto nunca se deben desechar pesticidas en alcantarillas, lavadero o fregaderos.
- La única manera legal de desechar sobrantes de pesticida es llevándolos a un centro de recolección de desechos dómesticos peligrosos. Llame a la Línea de Ayuda Ambiental de California al 1-800-CLEANUP para encontrar el centro más cercano.

Cómo encontrar los ingredientes activos en las etiquetas de pesticidas:

La ley exige que las etiquetas de pesticidas muestren los ingredientes activos y sus porcentajes. Evite usar o use al mínimo productos que contengan "diazinon y clorpirifos."

Active Ingredient
Chlorpyrifos..... 4.38%
Inactive Ingredients..... 95.62%
KEEP OUT OF REACH OF CHILDREN
CAUTION See back panel booklet for additional precautionary statements.
NET CONTENTS 32 FL OZ (1 QT) 946 mL

Estas sustancias están contaminando nuestras aguas. ¡Lea siempre la etiqueta antes de comprar el producto!

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

When using and storing pesticides take these precautions:

- Always wear a long-sleeved shirt, pants, and eye protection, and other equipment suggested on the label.
- Store products tightly capped in a locked cabinet out of reach from children and pets.
- Always keep pesticides in their original container.
- Know where to call for help in an emergency!

Pesticide disposal:

- If you cannot use up your pesticides, fertilizers, and weed killers, give them to a friend who may need them.
- Sewage treatment plants are not designed to treat for certain toxic pesticides like diazinon and chlorpyrifos — dumping pesticides into the storm drain or down the sink is never an option.
- The only allowable way to dispose of unused pesticides is through a household hazardous waste collection site. For household pesticide disposal information for San Diego County, call 1-800-CLEANUP.

Finding active ingredients on a pesticide label:

Pesticide labels are required by law to show the active ingredient and its percentage. Minimize or avoid the use of products that contain diazinon and chlorpyrifos – these materials are polluting our waterways. Always read the label before you buy!

Active Ingredient
Chlorpyrifos..... 4.38%
Inactive Ingredients..... 95.62%
KEEP OUT OF REACH OF CHILDREN
CAUTION See back panel booklet for additional precautionary statements
NET CONTENTS 32 FL OZ (1 QT) 946 mL

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

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It's the water that connects us!

Cayayaanka wanaagsan ee doogga

HEALTHY GARDEN HEALTHY HOME

Beeraha doogga badankoodu waxay ka koobanyihiih noocyo badan oo ah cayayaan faa'iido leh oo ka badan cayayaanka dullinka ah. Cayayaanka faa'iidada leh iyo noolaha kale ee dila cayayaanka dullinka ah waxa la yidhaahdaa cadowga dabiiciga ah. Barnaamij kasta oo ah maamulka cayayaanka dullinka ah ama daryeelka dhirta, waa muhiim in la dhiirigeliyo cadowgan dabiiciga ah iyada oo la iska deynayo cayayaan dilaha sunta ah ee dila iyaga. Waxa kale oo aad dhiiri gelin kartaa cayayaanka faa'iidada leh adiga oo dooranaya dhir iyaga siisa ubax, dhabaq iyo hoy kana ilaalinaya qudhaanjada dhirta ay saameeyaan dullinku. Baro inaad ogaato cayayaanka faa'iidada leh, markay waaweynyihiin iyo markay ugxanta yihiinba.

Cayayaanka wanaagsan ee laga helo beelaha California waxa ka mid ah:

- Dalandoolida (lady beetle): markay waaweynaato iyo markay laarfaha tahayba waxay dishaa abhidhiska.
- Baranbarada (lacewing): laarfihiisu wuxuu cunaa cayayaan dullin ah oo badan; kiisa waaweyn waxa had iyo goor lagu ag arkaa laydhka.
- Duqsiga (Syrphid flies): laarfahiisu wuxuu cunaa abhidhka kiisa waaweyni wuxuu ku dul wareegaa ubaxyada.
- Dubulaxa yar ee dullinka ah: sinjiyo badan oo ah duburlaxa yar ayaa ugxantooda dhiga cayayaanka sida abhidhka ama diirta; laarfahooda dillaacayaa wuxuu cunaa cayayaanka oo dilaa.
- Caarooyinka: dhammaan caarooyinku waxay cunaan cayayaanka ama cayayaanka kale beertana faa'iido ayay u leeyihiin.

(gadaal ka eeg sawirada cayayaanka wanaagsan ee kor lagu magacaabay)

Waa maxay maaraynta cayayaanka ee xidhiidhsani?

Maaraynta cayayaanka ee xidhiidhsani (IPM)waxay isticmaashaa habab deegaan ahaan macquul ah waxtarna leh oo cayayaanka looga ilaaliyo inay kaa cadhaysiiyaan ama dhirta waxyeelo u gaadhsiiyaan. Barnaamijyada maaraynta cayayaanka ee xidhiidhsani waxay sida caadiga ah isu geeyaan dhowr hab oo ah kaantaroolidda cayayaanka si muddada dheer looga hortago loona maareeyo dhibaatooyinka cayayaanka iyadoo oo aanu ku dhibaatayn adiga, qoyskaaga ama deegaantaba – IPM waxa kale oo ay yaraysaa wasakhaynta biyaha California. IPM hirgalaa wuxuu ka bilaabmaa in si sax loo ogaado cayayaanka dullinka ah. Markaas oo keliya ayaa la samayn karaa in la doorto hababka IPMka iyo qalabyada.

Trồng Vườn với Các Loài Côn Trùng Có Lợi

HEALTHY GARDEN HEALTHY HOME

Hầu như khu vườn nào cũng đều có nhiều côn trùng có lợi hơn là côn trùng có hại. Côn trùng có lợi và các loài sinh vật khác có thể diệt côn trùng gây hại được gọi là kẻ thù tự nhiên. Khi áp dụng bất kỳ chương trình chăm sóc cây cỏ hoặc diệt động vật gây hại nào, điều quan trọng là cần phải khuyến khích sự tăng trưởng của các loài kẻ thù tự nhiên này bằng cách tránh dùng các loại thuốc trừ sâu có hại cho chúng. Quý vị cũng có thể chọn trồng các loài cây cung cấp phấn hoa, mật hoa, và nơi trú ngụ, đồng thời không để kiến xâm nhập các loại cây đã bị động vật gây hại. Học cách nhận biết các loại côn trùng có lợi, cả ở giai đoạn trưởng thành lẫn chưa trưởng thành (ấu trùng).

Những loài côn trùng có lợi thường gặp trong các khu vườn ở California là:

- Bọ cánh cứng: Cả bọ trưởng thành và ấu trùng đều ăn rệp vừng.
- Bọ cánh ren (Lacewing): Ấn trùng bọ cánh ren ăn nhiều loại côn trùng gây hại; thường gặp bọ trưởng thành ở những nơi có ánh sáng.
- Ruồi ong: Ấu trùng ruồi ong ăn rệp vừng; thường gặp ruồi ong trưởng thành bay ở những nơi có hoa.
- Ong bắp cày nhỏ sống ký sinh: Nhiều loài ong bắp cày nhỏ đẻ trứng trong các loài côn trùng gây hại như rệp hoặc sâu bướm; ấu trùng ong bắp cày sắp nở ăn và diệt côn trùng gây hại đó.
- Nhện: Tất cả các loài nhện đều ăn côn trùng hoặc động vật chân đốt nên có lợi cho vườn.

(Xin xem hình minh họa ở trang mặt sau về những loài côn trùng có lợi nói trên.)

Những loài côn trùng có lợi thường gặp trong các khu vườn ở California là:

Biện pháp diệt côn trùng gây hại toàn diện (IPM) sử dụng những cách thức có lợi cho môi trường mà vẫn hiệu quả để diệt loài côn trùng gây khó chịu hoặc phá hoại cây cối. Các chương trình IPM thường kết hợp nhiều phương pháp diệt côn trùng gây hại nhằm ngăn ngừa và kiểm soát lâu dài các vấn đề liên quan tới côn trùng gây hại mà không làm tổn hại tới quý — vị, gia đình quý vị hoặc môi trường - IPM cũng giúp giảm bớt tình trạng ô nhiễm hệ thống đường thủy tại California. Để áp dụng chương trình IPM thành công, trước hết chúng ta cần nhận dạng đúng loài côn trùng gây hại đó. Chỉ khi đó mới có thể chọn được phương pháp và chất IMP thích hợp.

Manejo integrado de plagas y control biológico

JARDÍN SANO CASA SANA

En la mayoría de los jardines y huertos hay muchos más insectos benéficos que plagas. Se conocen como enemigos naturales a los insectos benéficos y a otros organismos que matan a las plagas. En todo programa de control de plagas o de cuidado de plantas se debe proteger a estos enemigos naturales evitando usar insecticidas que los maten. Usted también puede fomentar los insectos benéficos si incluye plantas que les provean polen, néctar y albergue, y mantiene a las hormigas lejos de plantas infestadas con alguna plaga. Aprenda a identificar los insectos benéficos, tanto a los adultos como a las larvas.

Insectos benéficos que se encuentran en jardines en California:

- Catarinitas: tanto los adultos como las larvas se alimentan de pulgones.
- León de áfidos: Sus larvas se alimentan de muchas plagas; con frecuencia se puede ver a los adultos en las cercanías de luces.
- Moscas sírfidas: sus larvas se alimentan de pulgones; los adultos revolotean alrededor de flores.
- Avispita parásita: muchas clases de avispas diminutas ponen sus huevos en plagas como pulgones, gusanos u orugas.
- Arañas: todas las arañas se alimentan de insectos u otros artrópodos y son benéficas para el jardín.

¿Qué es el manejo integrado de plagas?

El manejo integrado de plagas (IPM en inglés) usa métodos efectivos que no dañan al medio ambiente para evitar las molestias que provocan las plagas y el daño que ellas causan a las plantas. Este tipo de programa usualmente combina varios métodos de control de plagas para prevenir y manejar plagas a largo plazo, sin afectar a las personas o al medio ambiente. El control integrado de plagas reduce también la contaminación de las aguas en California. El éxito con estos métodos empieza con la identificación acertada de la plaga; sólo entonces se puedan escoger los métodos y materiales apropiados para su control.

Gardening with Good Bugs

HEALTHY GARDEN HEALTHY HOME

Most gardens contain far more types of good bugs, or beneficial insects, than pest insects. Beneficial insects and other organisms that kill pest insects are called natural enemies. In any pest management or plant care program, it is important to encourage these natural enemies by avoiding pesticides that kill them. You can also encourage beneficial insects by choosing plants that provide them with pollen, nectar, and shelter and keeping ants out of pest-infested plants. Learn to identify good bugs, both in their adult forms and immature (larval) stages.

Common good bugs found in California gardens include:

- Lady beetles: Both adults and larvae consume aphids.
- Lacewings: Lacewing larvae feed on many insect pests; adults are often seen around lights.
- Syrphid flies: Syrphid fly larvae consume aphids; adults hover around flowers.
- Parasitic mini-wasps: Many species of tiny wasps lay their eggs in pests like aphids or caterpillars; their hatching larvae consume the pest and kill it.
- Spiders: All spiders feed on insects or other arthropods and are beneficial in the garden.

(See reverse for drawings of good bugs mentioned above.)

What is Integrated Pest Management?

Integrated pest management (IPM) uses environmentally sound, yet effective, ways to keep pests from annoying you or damaging plants. IPM programs usually combine several pest control methods for long-term prevention and management of pest problems without harming you, your family, or the environment — IPM also reduces pollution in California waterways. Successful IPM begins with correct identification of the pest. Only then can selection of the appropriate IPM methods and materials be made.

Hababka IPMka ee la doorbido waxa ka mid ah:

- Beeritaanka dhirta cayayaanka dullinka ah u adkaysata ama noocyo badan oo dhir ah oo kala duwan sida dhirta wadaniga ah.
- Kahortagga cayayaanka dullinka ah iyadoo la casriyaynayo sida aad u naqshadayso, waraabiso, nafaqayso, una maamusho beertaada.
- Iyada oo wax laga bedelo deegaanta guriga ama beerta si cayayaanka looga joojiyo cuntada, biyaha, hoyga ama waxyaabaha kale ee ay u baahanyihiin inay ku koraan.
- Iyadoo cayayaanka guriga laga ilaalinayo iyo beerta iyadoo la isticmaalayo deyrar, iskiriino iyo xayndaab.
- Burburinta, dabitaanka, maydhitaanka ama jaritaanka cayayaanka.
- Ku tiirsananaanta cayayaanka wanaagsan ee beertaada si ay u cunaan cayayaanka dullinka ah, iyagoo markaa baajinaya baahidii loo qabay sunta cayayaanka ee laga yaabo inay gasho kanaalada biyaheena.

Isticmaalidda sunta cayayaanka:

- Isticmaal sunta cayayaanka oo keliya markaanay waxyaabaha lagu kaantaroolo ee aan kimikada ahayni aanay shaqaynaynin cayayaankuna sii fidayo illaa iyo heer aan loo adkaysan karin.
- Isticmaal sunta cayayaanka iyo hababka kor lagu sharxay.
- U dooro sunta cayayaanka si taxadir leh si markaas ta ugu sunta yar uguna waxtar badan loo isticmaalo si loo ilaaliyo caafimaadka aadamiga iyo deegaantaba.

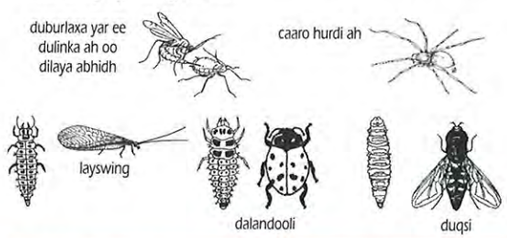

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org. Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Các phương pháp IPM được ưa chuộng bao gồm:

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- Kiểm soát côn trùng gây hại bằng cách thay đổi cách thiết kế, tưới nước, bón phân và quản lý khu vườn.
- Thay đổi vườn hoặc môi trường trong nhà để loại bỏ nguồn thức ăn, nước và nơi trú ngụ của côn trùng gây hại hoặc các điều kiện khác cần thiết để chúng phát triển.
- Dùng các tấm chắn, lưới chắn, và bịt kín để tránh côn trùng gây hại xâm nhập vào nhà.
- Diệt côn trùng gây hại bằng cách đập, đặt bẫy, xối nước hoặc xén tỉa bớt cây cỏ.
- Tận dụng các loài côn trùng có lợi trong vườn để ăn côn trùng gây hại, do đó không cần phải dùng các loại thuốc diệt côn trùng có thể làm ô nhiễm hệ thống đường thủy.

Dùng thuốc diệt côn trùng:

- Chỉ dùng thuốc diệt côn trùng khi các biện pháp diệt côn trùng không sử dụng hóa chất không có hiệu quả và các loài côn trùng gây hại phát triển tới mức không thể chấp nhận được.
- Dùng các loại thuốc diệt côn trùng kết hợp với các phương pháp nói trên.
- Chọn thuốc diệt côn trùng kỹ lưỡng để sử dụng chất ít độc hại nhất mà vẫn hiệu quả nhất để bảo vệ sức khỏe của con người và môi trường.

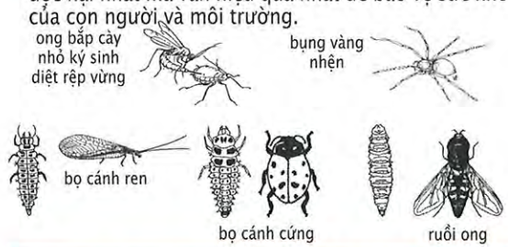

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

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Chính nước là nguồn liên kết chúng ta!

Las mejores prácticas de Control Integrado de Plagas:

- Sembrar variedades de plantas bien adaptadas o resistentes a las plagas, como plantas nativas de la región.
- Modificar el diseño, riego, uso de fertilizante y manejo del huerto o jardín para no fomentar plagas.
- Hacer cambios en el jardín, huerto o en el hogar para evitar que las plagas tengan agua, alimento, albergue y demás que necesitan para sobrevivir.
- Usar barreras, tejido de alambre y silicona para mantener a las plagas fuera del hogar y jardín
- Aplastar o atrapar plagas, o quitarlas de las plantas con agua o podando.
- Dejar que los insectos benéficos en el huerto o jardín se coman a las plaga, eliminando así la necesidad de usar insecticidas que puedan llegar a contaminar las aguas.

Si va a usar pesticidas:

- Sólo use pesticidas cuando los métodos sin productos químicos no dan resultado y cuando la cantidad de insectos es intolerable.
- Use pesticidas junto con los métodos mencionados anteriormente.
- Escoja los pesticidas cuidadosamente; use el producto más eficaz contra la plaga pero menos tóxicos para proteger la salud y el medio ambiente.

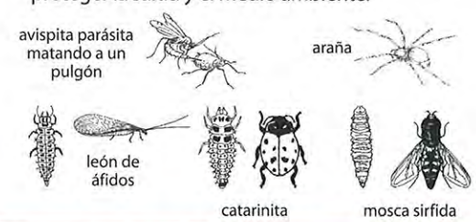

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

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Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Preferred Integrated Pest Management (IPM) methods include:

- Planting pest-resistant or well-adapted plant varieties like native plants.
- Discouraging pests by modifying the way you design, irrigate, fertilize, and manage your garden.
- Altering the garden or home environment to deprive pests of the food, water, shelter or other requirements they need to thrive.
- Keeping pests out of the home and garden using barriers, screens, and caulking.
- Squashing, trapping, washing off or pruning out pests.
- Relying on good bugs in your garden to eat pests, thereby eliminating the need for insecticides that may end up in our waterways.

Turning to pesticides:

- Only use pesticides when non-chemical controls are ineffective and pests are reaching intolerable levels.
- Use pesticides in combination with the methods described above.
- Choose pesticides carefully so that the least toxic, most effective material is used to protect human health and the environment.

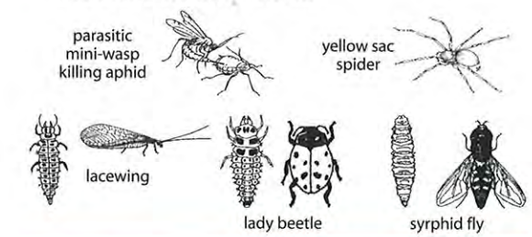

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org. For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Qudhaajada

HEALTHY GARDEN HEALTHY HOME

Qudhaajadu waxaa ay ka mid tahay cayayaanka ku badan California. Inkastoo qudhaanjada ay dhib sidato masna marka ay gudaha soo galaan, waxaa faa'ido ay u leeyihiin dheefinta booddada, aboorka, iyo cayayaanka kale ee ku nool jardiinada. Iyadoo buufiska kiimikada ee aqalka gudihiisa ay waxtar yeelan karto, balse kama ay hortagayso in qudhaajo dheeraad ah ay aqalka soo gasho, iyadoo ay muhiim u tahay xad u yeelista sababtoo ah qudhaajada badankeed dibedda ayeey cuush ku leedahay. Dadaalka xoog saaridda maamulka ee dhismooyinka looga saarayo qudhaajada ama dhirta qiimaha leh.

Waxaad aqalkaaga ka dhigtaa meel ay qudhaajadu ka helin:

- Dildillaacyada kabaha ay kabahu sameeyaan ayaa albaab ay ku soo galaan ah.
- Waxaad cuntada soo jiita ku xareysaa meel xiran.
- Ka nadiifi waxyaabaha daata iyo dufanka.
- Waxaad ka eegtaa islamarkaana aad ka nadiifisaa cushashka ay ku abuurmaan, sida dhirta aqalka gudihiisa taal.
- Bacda qashinka qudhaajada loogu talagalay, waxaa ay leedahay meelo dhegdhegaya oo la mariyey saliidda shidaalka halka hoose iyo suxuun shidaal marsan yahay kuwaasoo la gelinayo xirmo biyo len.
- Ka dhaqaaji waxyaabaha cuntada mac-macaanka laga sameeyo aqalkaaga agagaarkiisa sida cowska cayayaanka iyo khudradda bisil.

Marka ay qudhaajadu aqalkaaga soo weerarto, waxaad qaadataa tallaabooyinka soo socda:

- Waxaad marisaa biyo saabuun leh islamarka ay soo galaan.
- Ka xidh halka ay ka soo galayaan adigoo marinaya saliidda shidaalka ama shey xidhaa.
- Dhaqaaji dhirta cayayaanka leh.
- Nadiifi halka cuntadu ku jidho
- Waxaad ku tashataa cuntada dabinka si aad xad ugu yeeshid qudhaajada badan
- Buufiska aqalka gudihiisa caadiyan looma baahna.

Kiến

HEALTHY GARDEN HEALTHY HOME

Kiến là một trong những loài gây hại thường gặp nhất tại Tiểu Bang California. Mặc dù mọi người thường khó chịu khi thấy trong nhà có kiến nhưng vẫn có thể coi kiến là động vật có lợi vì chúng ăn bọ chét, mối, và các sinh vật phá hoại khác ở trong vườn. Mặc dù việc xịt hóa chất ở trong nhà có thể khá hiệu quả, nhưng vẫn không ngăn chặn được những con kiến khác xâm nhập vào nhà - đây là điều tối quan trọng trong việc diệt kiến vì đa số kiến đều làm tổ ở bên ngoài nhà. Chú trọng kiểm soát bằng cách đuổi kiến ra khỏi các tòa nhà hoặc các loại cây quý.

Hãy làm cho căn nhà của quý vị ít hấp dẫn kiến hơn:

- Trát kín các vết nứt và kẽ hở tạo thành lối vào bên trong nhà.
- Cất trữ các loại thực phẩm hấp dẫn kiến trong các hộp đựng có nắp đậy kín.
- Lau chùi dầu mỡ và những nơi có dầu mỡ đổ ra ngoài.
- Tìm và loại bỏ những nơi kiến làm tổ bên trong nhà, ví dụ như bên trong chậu cây kiểng.
- Sử dụng loại thùng rác có chất dính trong bếp để chống kiến như bôi thạch dầu hỏa dưới miệng thùng và đặt đĩa đựng thức ăn của thú nuôi trong một chiếc tô đựng nước.
- Loại bỏ các nguồn thức ăn ngọt ở bên cạnh nhà, thí dụ như các bụi cây đã bị rệp cắn và trái cây chín nẫu trên cây.

Khi quý vị thấy có kiến ở trong nhà, hãy thực hiện các bước sau đây:

- Đổ nước xà bông lên kiến ngay khi chúng vào nhà.
- Dùng ma tít hoặc thạch dầu hỏa để nút chặn các đường vào của kiến.
- Loại bỏ các chậu cây kiểng bị kiến phá hoại.
- Lau dọn sạch những nơi có thức ăn đổ ra ngoài.
- Dùng bả để diệt đàn kiến.
- Thường không cần phải xịt thuốc diệt kiến ở trong nhà.

Las hormigas

JARDÍN SANO CASA SANA

Las hormigas son una de las plagas más comunes en California. Aunque las hormigas son una molestia dentro del hogar, pueden ser beneficiosas al alimentarse de pulgas, termitas y otras plagas en el huerto o jardín. A pesar de que rociar sustancias químicas puede parecer eficaz para controlar hormigas dentro del hogar, ésto no previene que entren más hormigas, factor clave para su control, ya que la mayoría de hormigas hacen sus hormigueros afuera. Se recomienda concentrar los esfuerzos en excluir las hormigas de edificios y plantas valiosas.

Revise su vivienda para que no atraiga hormigas:

- Rellene o tape grietas y rajaduras que permitan la entrada de hormigas.
- Almacene alimentos que atraen hormigas en recipientes cerrados.
- Limpie grasa y alimento o líquido derramado.
- Busque y elimine lugares en el interior donde las hormigas anidan, como dentro de macetas.
- Para evitar que las hormigas sean atraídas a la cocina, unte el borde del bote de basura con una barrera pegajosa como vaselina (petrolato); coloque los recipientes de comida de animales domésticos dentro de otro recipiente que contenga agua.
- Quite toda fuente de alimento dulce que haya junto a su casa, como arbustos infestados de pulgones o áfidos y fruta madura en los árboles.

Si las hormigas invaden su hogar, tome las siguientes medidas:

- En cuanto entren a la casa, elimínelas con una esponja con agua jabonosa.
- Tape con silicona o vaselina todas las entradas que usan las hormigas.
- Saque las macetas con plantas infestadas.
- No deje nada que pueda servirles de alimento.
- Use cebos para controlar la colonia de hormigas.
- Por lo general, no es necesario rociar productos químicos en el interior.

Ants

HEALTHY GARDEN HEALTHY HOME

Ants are one of the most prevalent pests in California. Although ants are annoying when they come indoors, they can be beneficial by feeding on fleas, termites, and other pests in the garden. While spraying chemicals inside the house may seem effective, it won't prevent more ants from entering your home, which is essential for control because most ants nest outside. Focus management efforts on excluding ants from buildings or valuable plants.

Make your house less attractive to ants:

- Caulk cracks and crevices that provide entry inside.
- Store attractive food in closed containers.
- Clean up grease and spills.
- Look for and remove indoor nesting sites, such as inside potted plants.
- Ant-proof kitchen garbage pails with sticky barriers such as petroleum jelly under the lip and pet dishes by placing them in a moat of water.
- Remove sweet food sources next to your house such as aphid-infested bushes and ripened fruit on trees.

When ants invade your house, take these steps:

- Sponge invaders with soapy water as soon as they enter.
- Plug up ant entryways with caulk or petroleum jelly.
- Remove infested potted plants.
- Clean up food sources.
- Rely on baits to control the ant colony.
- Indoor sprays are not usually necessary.

Sida iyo sababta uu dabinku ugu fiican yahay:

Marka aad isticmaalaysid cuntada dabinka leh, waxaad dhigtaa halka qudhaajadu marto iyo furriinnada cushashka. Qudhaajada shaqaalaha ah waxaa lagu soo jiidanayaa cuntada dabinka ku xiran iyadoo la geynayo illaa salka cushka halkaasoo dhammaan qudhaajada, oo ay boqoradda ku jidho, ku dhimanayaan. Cuntada dabinka ku xiran waa in uu noqdaa mid aayar u shaqeeya si shaqaalaha qudhaajada aysan u dhiman ka hor inta aan salka cushka la gaarsiin. Waxaa laga yaabaa in ay dhowr toddobaad qaadato si natiijadu ay u muuqato. Dilka shaqaalaha qudhaajada cunno doonka ah oo kaliya in yar ayeey ka taraysaa xad u yeelidda qudhaajada badankeeda, sababtoo ah in ka yar boqolkiiba hal ee shaqaalaha qudhaajada cunno doonka ah ayaa karaya in ay cunto ku filan u geeyaan boqorradda iyo kuwa abuurmaya. Cuntada dabinka ah iyo saldhigyada cuntada dabinka ah ama dabinka alwaaxa ah ayaa isticmaalka ugu fudud badbaadana u leh bey'adda.

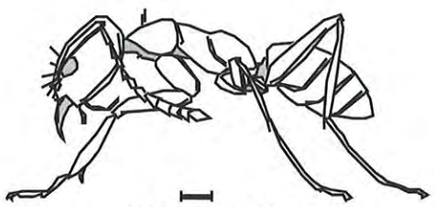

(cabbirka saxda ah)

Waxaad isticmaashaa qaababka AAN KIIMIKADA AHAYN iyo suntan HALISTEEDU UGU YAR TAHAY WAA MAXAY SABABTA? Biyo qaadka aqalkaaga iyo jardiinada waxaa ay biyaha sunta leh geeyaan ilaha, wabiyada, harooyinka iyo badweynta.

Waxaad wax dheeraad ah ka barataa taya da biyaha deegaanka San Diego: www.ThinkBlueSD.org & www.ProjectCleanWater.org. Si aad macluumaad dheeraad ah u heshid waxaad soo booqataa bogga internetka ee IPM Jaamacadda California: www.ipm.ucdavis.edu ama UCCE Master Jardiinooyinka: (858) 694-2860, Isn - Jim, 9 sub to 3 gal

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Bả kiến có tác dụng như thế nào và tại sao bả kiến lại có tác dụng nhất:

Khi dùng bả kiến, đặt bả dọc theo các đường đi của kiến và các cửa ra vào của tổ kiến. Những con kiến thợ sẽ bị bả hấp dẫn và sẽ mang bả về tổ. Sau đó cả đàn kiến, kể cả những con kiến chúa, sẽ bị giết. Bả phải có tác dụng ngấm dần để các con kiến thợ không bị chết trước khi quay về tổ. Có thể phải mất vài tuần mới thấy được kết quả. Nếu chỉ diệt những con kiến thợ quấy phá nhà hoặc vườn của quý vị, việc đó ít có tác dụng kiểm soát đàn kiến, vì chỉ cần một phần trăm số kiến thợ quấy phá cũng có thể cung cấp đủ thức ăn để nuôi sống các con kiến chúa và trứng nằm trong tổ. Bả kiến đặt trong các dụng cụ đánh bả hoặc các cọc diệt kiến là dễ sử dụng nhất và an toàn nhất cho môi trường.

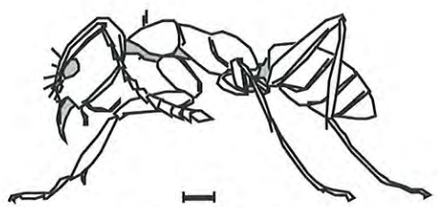

kích thước thực tế

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

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¿Cuándo y porqué los cebos son más efectivos?

Coloque el cebo a lo largo del camino de las hormigas y a la entrada del hormiguero. El cebo atraerá a las hormigas obreras, quienes lo llevan al nido donde posiblemente puede matar a toda la colonia, inclusive a la reina. El cebo debe ser de acción retardada para que las hormigas obreras no mueran antes de llegar al hormiguero. Pueden pasar varias semanas antes de ver el resultado. Muy poco se logra controlando a las hormigas obreras forrajeando dentro del hogar o el jardín ya que sólo se requiere el uno por ciento de las obreras de una colonia para alimentar a la reina y las larvas dentro del hormiguero. Las cajillas de cebo o las estacas contra hormigas son fáciles de usar y no afectan el medio ambiente. Busque productos que contengan fipronil, "hydramethylnon" o ácido bórico (boric acid).

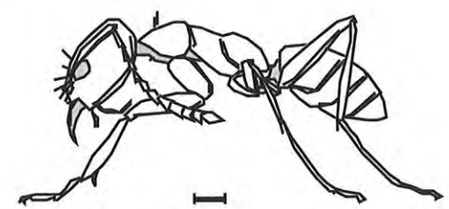

(tamaño real)

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Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

How and why baits work best:

When using bait, place it along ant trails and at nest openings. Worker ants will be attracted to bait and take it back to the nest where the entire colony, including queens, may be killed. The bait must be slow-acting so workers won't be killed before they get back to the nest. It may take several weeks for results to be evident. Just killing workers foraging in your home or garden does little to control the colony, because as few as one percent of a colony's foraging worker ants are able to provide sufficient food to support nestbound queens and larvae. Baits in bait stations or ant stakes are easiest to use and safest for the environment.

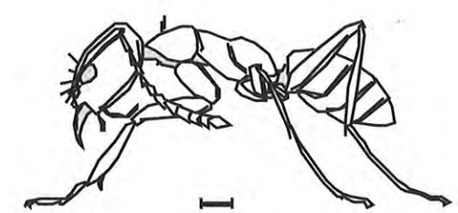

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It's the water that connects us!

Cayayaanka Doogga

HEALTHY GARDEN HEALTHY HOME

Si kasoo horjeedda sida badanaa la aaminsanyahay, cayayaanku ma aha waxa ugu badan ee sababa burburka doogga guryaha ee California. Daryeelka doogga oo hooseeya, gaar ahaan waraabin aan ku habboonayn iyo beeritaanka sinjiga doogga ah ee aan ku habboonayn, ayaa laga yaabaa inay sababaan ama keenaan doogga oo dhinta. Waxyaabaha xanuunka dhaliya, kimiko badan ama aan ku habboonayn oo la isticmaalo sida carro nafaqeeye iyo sunta dhirta, ama kaadida eyda ayaa iyaguna keena doogga oo dhinta oo u eg ka uu cayayaanku keeno. Cayayaan badan oo doogga ku nool ayaa faa'iido leh. Weligaa ha ku daadin sunta cayayaanka iyada oo heerka dhibaatada ee cayayaan la yaqaano la xaqiijiyo. Sunta cayayaanku waxa keliya oo ay shaqeeyaan haddii lagu daadiyo waqtiga ku habboon sida ku habboonna loogu daadiyo, qaar ka mid ah sunta cayayaanka ayaa laga yaabaa inay disho cayayaan wanaagsan.

Sidee ayaad u ogaanaysaa inay cayayaanku dhibaatada keenayaan?

- Meelaha cawl cawlan ee doogga waxa keeni kara biyo badan ama ku yar, cudur dhirta ku dhaca, kimiko si aan habboonayn loogu isticmaalay, ama kaadi ey iyo cayayaanba.
- Xaqiiji inuu ku jiro cayayaan kahor intaanad sunta cayayaanka ku shubin. Cayayaanka aadka u yaryar xididada qod, cayayaanka kale samee baadhitaanka qoynta (gadaal ka eeg.)

Kadhig dooggaaga mid caafimaad qaba adiga oo:

- Beeraya sinji doog ah oo si fiican uga baxa aagaaga
- U waraabinaya si qoto dheer oo joogto ah
- Si joogto ah u dayactiraya madaxyada qalabka biyaha firdhiya
- Qo ku daraya 3 illaa 6 rodol oo naytarojiin ah 1000kii fiit ee laba jibbaaranba sannadkii markaad nafaqaynayso.
- Hawada ku sii deynaya sannadkii mar; ka jar baarka sare haddii uu ka dheeraado ½ iinj
- Jaraya saddexdii meeloodba meel keliya illaa iyo mid badhkii dhererka doogga markasta oo aad goonayso mishiinka jar ilkhiisana soofaynaya

Ka eeg hagaha UC ee Doogga Caafimaadka Qaba
www.ipm.ucdavis.edu

Các Loài Côn Trùng Trong Sân Vườn

HEALTHY GARDEN HEALTHY HOME

Trái với những gì mọi người thường nghĩ, côn trùng thường không phải là nguyên nhân gây hại cho sân vườn ở tiểu bang California. Việc chăm sóc sân vườn không thích hợp, đặc biệt là tưới nước và trồng các loài cỏ không thích hợp thường là nguyên nhân làm cho cây cối bị bệnh hoặc chết. Các chất gây bệnh, việc sử dụng quá nhiều hoặc không thích hợp các loại hóa chất như phân bón và thuốc diệt cỏ, nước tiểu của chó cũng gây hại cho cây cỏ trong vườn giống như côn trùng. Nhiều loài côn trùng trong sân vườn rất có lợi. Không bao giờ dùng thuốc diệt côn trùng trừ khi đã biết chắc độ thiệt hại do một loại côn trùng gây hại mà quý vị biết. Các loại thuốc diệt côn trùng chỉ có tác dụng nếu dùng đúng cách vào thời điểm thích hợp. Một số loại thuốc diệt côn trùng cũng có thể diệt các loài sâu bọ có lợi.

Làm thế nào để biết là côn trùng gây hại?

- Các đốm nâu trong cây cỏ trên sân vườn có thể là do tưới nước quá nhiều hoặc tưới không đủ, do bệnh thực vật, do sử dụng hóa chất không thích hợp, hoặc do nước tiểu của chó cũng như côn trùng.
- Nên kiểm tra sự hiện diện của côn trùng trước khi sử dụng thuốc diệt côn trùng. Để diệt ấu trùng, hãy đào xung quanh rễ cây, hoặc kiểm tra nồng độ để diệt các loại côn trùng khác. (Xin xem mặt sau.)

Giữ cây cỏ trong sân vườn khỏe mạnh bằng cách:

- Trồng loại cỏ phù hợp với vùng đất của quý vị
- Tưới nước xuống thật sâu và không được tưới thường xuyên
- Tiến hành bảo trì đầu vòi phun nước theo định kỳ
- Mỗi năm chỉ bón từ 3 tới 6 pound phân đạm trên mỗi 1000 feet vuông vườn
- Làm thông khí cho sân vườn hàng năm; cắt bỏ lớp mái lờm xờm nếu lớp mái này dài quá 1¦2 inch
- Chỉ cắt từ một phần ba tới một nửa chiều cao của nhánh cỏ mỗi khi xén cỏ và bảo đảm là lưỡi dao của máy xén cỏ vẫn còn sắc

Xin xem Cẩm Nang Hướng Dẫn Cách Bảo Vệ Sân Vườn của UC (UC Giude to Healthy Lawns) tại địa chỉ
www.ipm.ucdavis.edu

Insectos del césped

JARDÍN SANO CASA SANA

Contrario a lo que se cree, los insectos comúnmente no causan daños al césped en California. Lo más probable que cause enfermedad y muerte es el césped mal cuidado, especialmente cuando se riega indebidamente o se usan especies de césped inadecuados. El uso indebido o excesivo de productos químicos como fertilizantes y herbicidas, la orina de perro y agentes causantes de enfermedades, producen daño al césped, parecido al que causan los insectos. Muchos insectos que habitan en el césped son benéficos. Nunca aplique un insecticida a menos que haya confirmado la presencia de una plaga en números dañinos. Los insecticidas son efectivos únicamente si se aplican de la manera y en el momento adecuados. Algunos insecticidas también pueden matar insectos benéficos.

¿Cómo saber si el daño es causado por insectos?

- Las manchas pardas en el césped pueden ser el resultado de insectos, pero también pueden ser debido a riego insuficiente o excesivo, enfermedad, uso inadecuado de productos químicos o la orina de perro.
- Antes de aplicar un insecticida, confirme la presencia de insectos en el césped. Para encontrar larvas de escarabajos, escarbe alrededor de las raíces; para otros insectos, realice la prueba de sumersión.

Para mantener el césped en buen estado:

- Plante especies de césped que crecen bien en su zona.
- Riegue abundantemente y con poca frecuencia.
- Mantenga en buen estado los grifos del sistema de riego.
- Al fertilizar, aplique anualmente no más de 3 a 6 libras total de nitrógeno por cada mil pies cuadrados.
- Anualmente oxigene el césped y quite la paja (tallos, hojas y raíces de césped viejo) si ésta sobrepasa 1/2 pulgada de grosor.
- Al podar el césped, corte no más de 1/3 a 1/2 de su altura y mantenga afiladas las cuchillas de la podadora.

Lawn Insects

HEALTHY GARDEN HEALTHY HOME

Contrary to popular belief, insects are not a common cause of residential lawn damage in California. Poor lawn care, especially improper watering and planting inappropriate grass species, are more likely causes of unhealthy or dying lawns. Disease-causing agents, excess or inappropriate use of chemicals such as fertilizer and herbicides, or dog urine also produce lawn damage resembling that of insects. Many insects in the lawn are beneficial. Never apply an insecticide unless a damaging level of a known insect pest is confirmed. Insecticides are only effective if applied at the right time and in the right manner. Some insecticides may kill good bugs too.

How do you know if insects are causing damage?

- Brown spots in lawns can be caused by over- or under-irrigation, plant disease, improper use of chemicals, or dog urine as well as insects.
- Confirm presence of insects before applying an insecticide. For grubs, dig around roots, for other insects perform a drench test. (See reverse side.)

Keep your lawn healthy by:

- Planting grass species that do well in your area
- Irrigating deeply and infrequently
- Doing routine maintenance on sprinkler heads
- Applying only 3 to 6 pounds of actual nitrogen per 1000 square feet per year when fertilizing
- Aerating your lawn annually; remove thatch if it exceeds 1/2 inch
- Cutting only one-third to one-half of grass height at each mowing and keeping lawnmower blades sharp

See the UC Guide to Healthy Lawns at
www.ipm.ucdavis.edu

Haddii cayayaan dhibaato keenaya la xaqiijiyo, samee waxyaabaha soo socda:

- Dooro sunta cayayaanka oo ku salaysan cayayaanka aad abbaarayso.
- Ogow nooca waxyaabaha ay ka koobantahay sunta cayayaanku ee abbaarta cayayaanka doogga ee gaar ah:
  - Bacillus thuringiensis (Bt) waxay dishaa diirta oo keliya, oo ay ka mid yihiin noocyada kala ah cutworms, lawn moths, iyo cayayaanka.
  - Nimatoodhada cayayaanka dilaa waxay kaantaroolaan diirta iyo cayayaanka dhasha.
  - Azadirachtin waxay kaantarooshaa cayayaanka cutworms, armyworms, iyo laarfaha cayayaanka moths.
  - Imidacloprid waxay wax ka tartaa cayayaanka yaryar ee ku dhasha doogga.
  - Pyrethroids (sida cyfluthrin, bifenthrin) waa cayayaan dile sun ah oo dila cayayaanka chinch, moths iyo cutworms, laakiin waxa kale oo ay dilaan cayayaanka faa'iidada leh waana in la iska daayaa.
- Caawimo ka hel Qaybta Iskaashiga ee UC.

SIDA LOO SAMEEYO BAADHITAANKA QOYAANKA

- Ku qas 3-4 qaado oo ah dareeraha weelka lagu maydho 2 galaan oo biyo ah.
- Labada galaan ku daadi 1 yaardi oo laba jibbaaran oo doogga ah.
- Eeg muddo 10 daqiiqo ah oo tiri inta ay tahay tirada cayayaanka armyworms, cutworms, moths laarfa ee dusha u soo baxa.
- Daawee meesha haddii tirada cayayaanku ay ka bataan 5 armyworms ama cutworms ama 15 moths yaadhkii laba jibbaaranba.

Cayayaanka chinch | laarfaha sod webworm | laarfaha cutworm | laarfaha grub

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Nếu xác định được mức độ thiệt hại do côn trùng gây ra, hãy áp dụng các biện pháp sau đây:

- Chọn một loại thuốc diệt côn trùng tùy vào loài côn trùng gây hại mà quý vị muốn diệt.
- Tìm hiểu xem các thành phần nào trong thuốc diệt côn trùng chuyên diệt các loài côn trùng cụ thể trong sân vườn nhà mình:
  - Bacillus thuringiensis (Bt) chỉ có tác dụng diệt sâu bướm, trong đó bao gồm sâu ngài, sâu bướm sống trong sân vườn, và bướm nâu.
  - Các loại giun tròn tấn công côn trùng có tác dụng diệt sâu bướm hoặc ấu trùng.
  - Azadirachtin có tác dụng diệt sâu ngài đêm, armyworms, và ấu trùng của sâu bướm sống trong sân vườn.
  - Imidacloprid có tác dụng diệt ấu trùng non của sâu bướm sống trong sân vườn.
  - Pyrethroids (thí dụ như cyfluthrin, bifenthrin) là các loại thuốc diệt côn trùng độc hại phổ biến, có tác dụng diệt các loài rệp, sâu bướm sống trong sân vườn, và sâu ngài, nhưng cũng diệt các loài côn trùng có lợi.. Nên tránh dùng các loại thuốc này.
- Liên lạc với UC Cooperative Extension để nhờ giúp đỡ.

CÁCH KIỂM TRA NỒNG ĐỘ

- Pha 3-4 muỗng canh nước rửa chén với 2 gallon nước.
- Tưới đều 2 gallon nước đó trên 1 yard vuông sân vườn.
- Theo dõi vùng đó trong 10 phút và đếm số sâu bướm, sâu ngài đêm hoặc ấu trùng của sâu bướm sống trong sân vườn xuất hiện trên bề mặt.
- Chỉ xử lý vùng đó nếu mỗi yard vuông có nhiều hơn 5 con sâu bướm hoặc sâu ngài hoặc 15 con sâu bướm sống trong sân vườn.

con rệp | ấu trùng của sâu kéo màng sống trong đất | ấu trùng của sâu ngài đêm | ấu trùng giòi

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org. Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Si confirma que hay suficientes insectos para causar daño:

- Escoja el insecticida de acuerdo al insecto a controlar.
- Averigüe cuáles son los ingredientes de los insecticidas que controlan específicamente cada insecto del césped:
  - El *Bacillus thuringiensis* (Bt) mata únicamente a orugas, incluyendo el gusano cortador o rosca, la polilla del césped y ciertas mariposas.
  - Los nemátodos que atacan insectos controlan orugas y las larvas de los escarabajos.
  - El "Azadirachtin" controla gusanos cortadores, gusanos militares y larvas de la polilla del césped.
  - El "Imidacloprid" es efectivo contra las larvas pequeñas de los escarabajos.
  - El acefate y la permetrina son insecticidas de toxicidad de amplio espectro que matan chinches, polillas del césped y gusanos cortadores, pero también matan insectos benéficos.
  - Obtenga asesoría en la Extensión Cooperativa de la Universidad de California.

Cómo llevar a cabo la prueba de sumersión

- Mezcle 3 a 4 cucharadas de detergente líquido para platos en dos galones de agua.
- Aplique de manera uniforme los dos galones a una yarda cuadrada de césped.
- Observe la zona por 10 minutos y cuente el número de gusanos militares, gusanos cortadores o polillas del césped que salen a la superficie.
- Trate la zona únicamente si cuenta más de 5 gusanos cortadores o militares o 15 polillas del césped por yarda cuadrada.

chinche | larva de la polilla del césped | larva del gusano cortador o rosca | larva de los escarabajos

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

If a damaging level of insects is confirmed, do the following:

- Choose an insecticide based on the pest you're targeting.
- Find out which insecticide ingredients target specific lawn insects:
  - *Bacillus thuringiensis* (Bt) kills only caterpillars, including cutworms, lawn moths, and skippers.
  - Insect-attacking nematodes control caterpillars or grubs.
  - Azadirachtin controls cutworms, armyworms, and larvae of lawn moths.
  - Imidacloprid is effective against young lawn grubs.
  - Pyrethroids (e.g., cyfluthrin, bifenthrin) are broadly toxic insecticides that kill chinch bugs, lawn moths, and cutworms, but also kill beneficial insects and should be avoided.
- Get help from UC Cooperative Extension.

HOW TO PERFORM A DRENCH TEST

- Mix 3–4 tablespoons of dishwashing liquid to 2 gallons of water.
- Evenly apply the 2 gallons to 1 square yard of your lawn.
- Monitor the area for 10 minutes and count the number of armyworms, cutworms, or lawn moth larvae that rise to the surface.
- Treat the area only if insect numbers exceed 5 armyworms or cutworms or 15 lawn moths per square yard.

chinch bug | sod webworm larva | cutworm larva | grub larva

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Aboorka

Dhibaatada aadka ah ee ay u geysan karaan qaababka looxa ah darteed, ayuu aboorku yahay ama ka mid yahay cayayaanka ay aadka uga baqaan dadka guryaha lihi. Si kastaba ha ahaatee, xayn aboor ah oo duulaysa macnaheedu ma aha had iyo goor inay dhismahaaga ka buuxaan. Kormeer taxadir leh oo lagu sameeyo dhismaha ayaa loo baahanyahay si loo xaqiijiyo inuu ku jiro iyo in kale. Dadku waxay kaloo ay had iyo goor ku khaldaan xayn qudhaanjo ah oo duulaysa aboorka. Haddii aad ka shakido inuu gurigaaga aboor ka buuxo, u yeedh dadka xirfadda u leh. Waxyaabaha aad adigu soo iibsan karto ee aad ku buufin karto laguma kalsoonaan karo inay yareeyaan aboorka dega ee dhibaatada geysanaya. Aboorka caanka ah ee gobolkan California waa aboorka dhulka hoostiisa dega ee cushashka ka dhista ciidda hoosteeda, aboorka looxa qoyaa ee dega looxa qoyan iyo ciidda, iyo aboorka looxa qalalan ee dega dhulka guudkiisa looxa qalalan dhexdiisa. Maaraynta nooc kasta oo ka mid ah sinjiyada aboorka wuu ka duwanyahay ka kale.

Kala garo qudhaanjada duulaysa iyo aboorka:

- Hubi dareemaha hore (antennae), baalasha iyo dhexda si aad u xaqiijiso in cayayaanku yahay aboor. (fadlan ku noqo oo eeg sawirka qudhaanjada iyo aboorka ee gadaal ku yaalla.)

U dhis gurigaaga si aad uga ilaalinayso aboorka:

- U samee 12 iinj oo sabbad siman ah, ciid ah, ama qalab kale oo u dhexeeya ciidda dusheeda iyo looxa ka hooseeya dhismaha.
- Deyrarka iyo qaababka kale ee taabanaya ciidda u samee oo u dooro loox iska caabiyi kara aboorka.
- Ka qaad looxaanta rasaysan, dhidibada deyrka ee aan la daaweyn, iyo looxaanta aasan dhismaha agtiisa.
- Dhismaha inta dhulka hoostiisa ah u samee meel hawadu ka gasho kana baxdo hana qalalaadeen had iyo goor.
- Isla markiiba dib u samee dillaacyada seeska.

Haddii aboorku ay gurigaaga ku badanayaan oo waxyeelayaan:

- Burburi tuumbooyinka uu aboorka dhulka hoostiisu ka dhistay qoriga ama looxa iyo ciidda dhexdooda.
- Haddii meesha uu degganyahay aboorka looxa qoyani la gaadhi karo, ka saar looxa uu galay kana saar qoyaanka.

Mối mọt

Vì có thể gây thiệt hại nghiêm trọng cho các cấu trúc bằng gỗ, mối là một trong những loài động vật gây hại đáng sợ nhất đối với những vị chủ nhà. Tuy nhiên, những đàn mối bay trong nhà không phải lúc nào cũng có nghĩa là nhà của quý vị bị động vật phá hoại. Phải kiểm tra kỹ lưỡng kết cấu nhà để xác nhận là có động vật gây hại hay không. Mọi người thường nhầm lẫn đàn kiến cánh với đàn mối. Nếu quý vị nghi ngờ nhà mình đã bị động vật gây hại, hãy gọi thợ tới kiểm tra. Không nên tin vào các loại thuốc tự xịt để giảm bớt động vật gây hại. Các loài mối thường gặp tại Tiểu Bang California là mối dưới đất. (xây tổ trong đất), mọt gỗ ướt (làm tổ trong đất và gỗ ẩm), và mọt gỗ khô (làm tổ ở trên mặt đất trong gỗ khô). Mỗi loài mối khác nhau có các biện pháp diệt khác nhau.

Phân biệt giữa kiến cánh và mối:

- Kiểm tra râu, cánh và vùng eo để chắc chắn rằng loài côn trùng gây hại đó là mối. (Xin xem hình vẽ so sánh giữa kiến và mối ở mặt sau.)

Thiết kế nhà cửa sao cho có thể tránh mối:

- Đặt một tấm chắn cao 12 insơ bằng bê tông nhẵn, cát hoặc các loại vật liệu khác giữa bề mặt đất và phần móng nhà bằng gỗ ở dưới.
- Chọn loại gỗ chịu được mối để làm hàng rào hoặc các cấu trúc phải tiếp xúc với đất khác.
- Loại bỏ các cột gỗ, hàng rào chưa được xử lý, và gỗ phế liệu được chôn ở gần khung nhà.
- Áp dụng các biện pháp thông gió thích hợp cho hệ thống móng nhà và giữ móng nhà khô ráo.
- Sửa chữa ngay các vết nứt trong móng nhà.

Nếu mối tấn công nhà quý vị:

- Tiêu diệt các ống làm nơi ẩn náu mà loài mối dưới đất xây giữa đất và các cấu trúc bằng gỗ.
- Nếu có thể tiếp cận được tổ của loài mọt gỗ ướt, hãy tháo phần gỗ bị mọt ăn và loại bỏ tình trạng quá ẩm thấp.
- Có thể diệt các loài mọt gỗ khô bằng nhiệt độ nóng, điện, lò viba (microwaves), bằng cách đông lạnh, phun khói, hoặc bằng hóa chất ở từng điểm.

Las termitas

Las termitas, conocidas también como comején, son una de las plagas más temidas por propietarios de viviendas debido a que pueden causar serios daños a construcciones de madera. Sin embargo, un enjambre de termitas voladoras no siempre indica que el edificio está infestado. Es necesario hacer una inspección minuciosa para confirmar una infestación. Con frecuencia, se confunden los enjambres de hormigas voladoras con las termitas. Si sospecha una infestación en una casa o edificio, es recomendable llamar a un profesional. Los productos químicos de venta al público no son confiables para reducir una infestación dañina. En California, las termitas más comunes son la termita subterránea que construye su nido en la tierra, la termita de la madera húmeda (dampwood) que anida en madera y tierra húmeda y la termita tropical (dry wood) que establece su nido sobre la tierra en madera seca. El control de cada especie es diferente.

Cómo diferenciar las hormigas voladoras de las termitas:

- Revise las antenas, alas y cintura de la termita para confirmar que en realidad se trata de termitas. (Examine los dibujos de la hormiga y la termita al reverso).

Diseño de la construcción para evitar la entrada de termitas:

- Mantenga una barrera de 12 pulgadas de ancho de hormigón liso, arena u otro material entre la tierra y la sub-estructura de madera del edificio.
- En cercas y demás estructuras que están en contacto con la tierra, use madera tratada que sea resistente a las termitas.
- Quite pilas o montones de madera, postes de cerca y restos de madera enterrada cerca del edificio.
- Proporcione suficiente ventilación y mantenga seca las estructuras de madera.
- Repare de inmediato toda grieta en los cimientos.

Termites

Because of the serious damage they can cause to wooden structures, termites are among the pests most feared by homeowners. However, swarms of flying termites do not always mean your building is infested. A careful inspection of the structure is required to confirm an infestation. People also frequently mistake swarms of flying ants for termites. If you suspect that your house is infested, call a professional. Do-it-yourself sprays cannot be relied on to reduce a damaging infestation. Common termites in California are the subterranean termites that build nests in soil, dampwood termites that nest in moist wood and soil, and drywood termites that nest above ground in dry wood. Management of each termite species is different.

Distinguish flying ants from termites:

- Check the antennae, wings and waist to confirm that pest insects are termites. (Please refer to ant vs. termite drawing on back.)

Design your building to keep termites out:

- Keep a 12-inch barrier of smooth concrete, sand, or other material between the soil surface and substructure wood beneath a building.
- Choose termite-resistant wood for fences or other structures that must contact soil.
- Remove wood piles, untreated fence posts, and buried scrap wood near structures.
- Provide adequate ventilation to substructures and keep them dry.
- Immediately repair foundation cracks.

- Aboorka looxa qalalan waxa lagu kaantarooli karaa kulayl, qabow, koronto, maykarowayfyada, qiiq ku shidid, ama kimiko meesha lagu shubo.
- Wixii gelitaan aboor ah kala xidhiidh dadka xirfadda u leh si ay kuu caawiyaan. Sunta cayayaanka ee uu liisanka siiyo oo keliya in la isticmaalo shaqaalaha kaantaroolka cayayaanka ayaa had iyo goor daruuri u ah in lagu kaantaroolo aboorka gala looxa qoyan iyo ka dhulka hoostiisa.

U isticmaalidda sunta cayayaanka si loogu kaantaroolo aboorka:

- Sunta cayayaanka waxa ku mudi karaa ciidda shaqaalaha ku shuba ee xirfadda u leh iyadoo la daloolinayo ama biro laga taagayo. Waa in habab gaar ah la raacaa si looga hortago in la wasakheeyo dhulka ama biyaha oogada.
- Muditaanka ciidda, waa inaad cidda ku shubaysaa aad ka codsataa oo weydiisataa inay isticmaalaan daawo aan ahayn chlorpyrifos. Noocyada ka cusub ee ah sida fibronil iyo chloronicotinyls ayaa u wacan caafimaadkaaga iyo deegaankaba.
- Dabitaanka ayaa kaysaska qaarkood waxtari kara, laakiin waxay qaadan kartaa dhowr bilood si dhibaatada loo kaantaroolo waa in la daba galaa si joogto ahna loola socdaa.

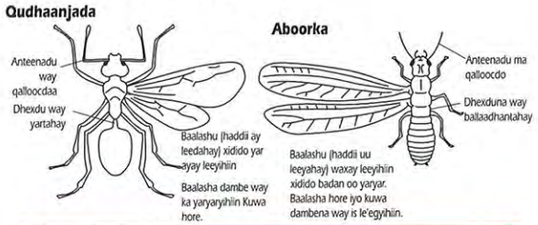

Waxaad isticmaashaa qaababka AAN KIIMIKADA AHAYN iyo suntan HALISTEEDU UGU YAR TAHAY WAA MAXAY SABABTA? Biyo qaadka aqalkaaga iyo jardiinada waxaa ay biyaha sunta leh geeyaan ilaha, wabiyada, harooyinka iyo badweynta.

Waxaad wax dheeraad ah ka barataa taya da biyaha deegaanka San Diego: www.ThinkBlueSD.org & www.ProjectCleanWater.org. Si aad macluumaad dheeraad ah u heshid waxaad soo booqataa bogga internetka ee IPM Jaamacadda California: www.ipm.ucdavis.edu ama UCCE Master Jardiinooyinka: (858) 694-2860, Isn - Jim, 9 sub to 3 gal

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

- Nếu có mối gây hại, hãy gọi thợ đến giúp đỡ. Thường phải sử dụng các loại thuốc trừ sâu mà c... có nhân viên phun thuốc trừ sâu mới được phép sử dụng để diệt mọt gỗ ướt và mối dưới đất.

Sử dụng thuốc trừ sâu để diệt mối:

- Các nhân viên phun thuốc trừ sâu chuyên nghiệp có thể phun thuốc trừ sâu vào trong lòng đất qua phương pháp khoan hoặc đóng cọc. Phải tuân theo các qui trình đặc biệt để tránh gây ô nhiễm mặt đất hoặc nguồn nước lộ thiên.
- Đối với các trường hợp tiêm thuốc trừ sâu vào trong đất, hãy yêu cầu nhân viên phun thuốc trừ sâu sử dụng loại sản phẩm không phải là chlorpyrifos. Các loại sản phẩm mới hơn như fipronil và chloronicotinyls thường an toàn hơn cho sức khỏe và môi trường.
- Phương pháp đánh bả có thể hiệu quả trong một số trường hợp, nhưng có thể phải mất vài tháng mới diệt được hết mối và phải tiếp tục theo dõi thường xuyên.

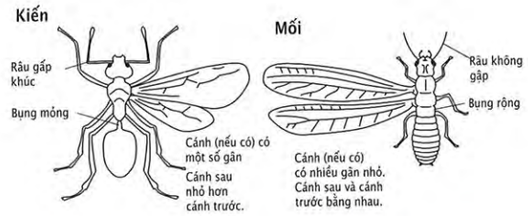

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

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Chính nước là nguồn liên kết chúng ta!

Si las termitas invaden su hogar:

- Destruya los túneles de albergue que las termitas subterráneas construyen entre la tierra y estructuras de madera.
- Si tiene acceso a los nidos de las termitas de madera húmeda, quite la madera infestada y elimine el exceso de humedad.
- Las termitas tropicales se pueden controlar con calor, congelación, electricidad, microondas, fumigación o con la aplicación directa de sustancias químicas.
- De ocurrir una infestación, pida la ayuda de un profesional. Usualmente cuando se trata de controlar infestaciones de termitas subterráneas y termitas de madera húmeda es necesario utilizar pesticidas aprobados para uso exclusivo de exterminadores profesionales.

Uso de pesticidas para el control de termitas:

- Los exterminadores profesionales pueden inyectar los pesticidas taladrando el suelo o a través del uso de una varilla. Deben seguir procedimientos especiales para evitar la contaminación de aguas subterráneas o superficiales.
- Si va a inyectar pesticidas en el suelo, pida a él que los aplica que no use "chlorpyrifos." Nuevos productos como "pyrethroids" y "chloronicotinyls" son menos dañinos a la salud y al medio ambiente.
- En algunos casos los cebos pueden ser efectivos, pero pueden tomar varios meses para controlar el problema y se deben vigilar constantemente.

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más ... en la región de ... la ... ciudad ... ¡Es ... ace!

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If termites are invading your home:

- Destroy shelter tubes that subterranean termites build between soil and wood structures.
- If dampwood termite nests are accessible, remove infested wood and eliminate excess moisture.
- Drywood termites can be controlled with heat, freezing, electricity, microwaves, fumigation, or spot treatments of chemicals.
- For any infestation, contact a professional for help. Pesticides licensed only for use by a pest control operator are usually necessary to control subterranean and dampwood infestations.

Using pesticides for termite control:

- Pesticides may be injected into the soil by professional applicators through drilling or rodding. Special procedures must be followed to prevent contamination of ground or surface water.
- For soil injections, ask your applicator to use a product other than chlorpyrifos. Newer types of products such as fipronil and chloronicotinyls are safer for your health and the environment.
- Baits can be effective in some cases, but may take several months to control the problem and must be followed up with constant monitoring.

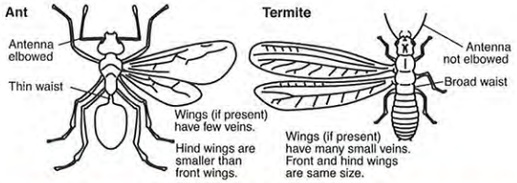

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more ... water quality at: www.T... Water.org.

Storm Water Pollution Prevention Program
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It's the ... us!

Booddada

Booddada si gaar ah ayeey dhibaateysaa dadka iyo cayayaankuba, qaasatan xilliga gu'ga iyo horraanta xagaaga markaasoo tiradoodu ay aad u korodho. Booddada caadiyan laga helo California waa booddo bisadeedka. Magaceeda ka sokow, waxaa ay weerartaa eeyaha iyo bisadduba sidoo kalena waxaa ay qaniintaa aadanaha. Si aad booddada aqalkaaga uga fogeysid, waa in aad la dagaallantaa booddada xayaawaanka rabbaayadda ah ee aad aqalka ku heysatid islamarkaana aad si caadiyan ah u nadiifisid halka uu xayawaanku jiifsado.

Dusha xayawaanka:

Dhawaan, waxaa la soo saaray dawooyin waxtar iyo badbaadaba leh ee lagu xakameyn karayo booddada xayawaanka gasha. Waxaad xasuusnaataa in aad dawooyinka xayawaanka aad raacisid nadaafad joogto ah oo aad aqalka xilliyan aad nadiifinaysid adigoo raacinaya xayawaanka oo aad dusha ka marisid shalada booddada si aad uga eegtid kuwo cusub.

- Dusha xayawaanka ayaa dawo la mariyaa, taasoo booddada ka ilaalinaysa 1 illaa 3 bilood. Waxaa laga helaa dhakhtarka xayawaanka ama qaybta xayawaanka ee dukaannada.
- Dawooyinka booddada lagula dagaallamo, oo aad ka helaysid dhakhtarka xayawaanka ayaa loo siiyaa kaniin ahaan ama in cuntada loogu daro. Inkastoo aysan dilaynin booddada waaweyn, balse waxaa ay ka hortagaysaa in ay tarmaan.
- Kuusha booddada oo sidata waxyaabo ka hortagaya taranka booddada (IGRs) waxaana ay ka badbaadinayaan eyga 6 bilood bisadduna illaa iyo sanad. Waxaad hubisaa in aad xulatid kuul ay ku jidho Methopre ama pyriproxyfen.
- Shaambada iyo saabuunta booddada, boolbaraha iyo boodhka, buufiyaha dareeraha sita, iyo nooca la soo maquufiyo waa ay ka waxtar yar yihiin waana ay uga halis badan yihiin xayawaanka, dadka, iyo bey'adda markii loo eego seddexda nooc ee aynu kor ku soo sheegnay

Dibedda:

Daweynta dibeuda ayaa ah mid aan marwalba loo baahnayn, balse haddii xayawaankaagu uu caadiyan dibedda jiifsado islamarkaana ay booddadu badan tahay, waxaa meelahani lagu daweyn karaa buufiyaha sita pyriproxyfen. Haddii ay suuragal tahay, cadceedda u fur goobta jiifka adigoo ka leexinaya dhirta hadhka u keenaysa. Booddada yar waa ay ku adag tahay in ay ku noolaato goobaha cadceeddu ifiinayso.

Bọ Chét

Bọ chét đặc biệt gây khó chịu cho người và thú nuôi, nhất là vào mùa xuân và đầu mùa hè khi lượng bọ chét thường tăng đáng kể. Loại bọ chét thường gặp tại Tiểu Bang California là loại bọ chét mèo. Mặc dù có tên như vậy, nhưng loại bọ chét này tấn công cả chó và mèo và cũng cắn cả người. Để tránh bọ chét xâm nhập vào nhà quý vị, hãy bắt hết bọ chét trên người thú nuôi và thường xuyên lau dọn nơi ngủ của thú nuôi.

Trên người thú nuôi:

Gần đây, trên thị trường có xuất hiện nhiều sản phẩm mới rất an toàn và hiệu quả để diệt bọ chét trên thú nuôi. Ngoài các biện pháp xử lý cho thú nuôi, đừng quên thường xuyên dọn dẹp nhà cửa và chải lông cho thú nuôi định kỳ bằng loại lược bí dành cho thú nuôi để phát hiện những con bọ chét mới.

- Chấm thuốc pha chế lên lông thú nuôi, thuốc này có tác dụng diệt bọ chét trong từ 1 tới 3 tháng. Quý vị có thể mua các loại thuốc pha chế này từ bác sĩ thú y hoặc mua tại quầy không cần toa.
- Quý vị có thể mua các sản phẩm diệt bọ chét từ các phòng mạch thú y và dùng dưới dạng thuốc viên hoặc trộn lẫn với thức ăn. Thuốc này sẽ được cơ thể thú nuôi hấp thụ. Mặc dù không giết chết bọ chét đã trưởng thành, nhưng các loại thuốc này lại có tác dụng ngăn chặn sự sinh sản.
- Các loại vòng cổ chống bọ chét có chất điều tiết sự phát triển của côn trùng (IGR) có tác dụng bảo vệ trong tới 6 tháng đối với chó và tới một năm đối với mèo. Nhớ chọn loại vòng cổ có chất methoprene hoặc pyriproxyfen.
- Các loại shampoo và xà bông, phấn bột và phấn mịn, các loại chất lỏng dạng xịt, và thuốc chấm ít hiệu quả hơn và nguy hiểm hơn cho thú nuôi, con người, và môi trường so với ba dạng sản phẩm nói trên.

Trong sân:

Hiếm khi cần áp dụng biện pháp xử lý bên ngoài nhà, nhưng nếu thú nuôi của quý vị thường xuyên ngủ ở bên ngoài nhà và có nhiều bọ chét, quý vị có thể xử lý các khu vực này bằng cách dùng thuốc xịt có chất pyriproxyfen. Nếu có thể, mở thông thoáng các khu vực ngủ của thú nuôi và cho tiếp xúc với ánh nắng bằng cách cắt bỏ cây cối sà thấp xuống mặt đất. Những con bọ chét chưa trưởng thành khó có khả năng sống sót ở những khu vực có tiếp xúc với ánh nắng mặt trời.

Las pulgas

Las pulgas son una verdadera molestia para personas y animales, especialmente durante la primavera y principios del verano cuando las pulgas tienden a aumentar de manera dramática. La pulga del gato es la pulga más común en California. A pesar de su nombre, ataca tanto a perros como a gatos y pica también a los humanos. Para mantener a las pulgas fuera del hogar, contrólelas en animales domésticos y limpie regularmente las cobijas donde duermen los animales.

En los animales domésticos:

Hay disponibles desde hace poco tiempo ciertos productos nuevos muy efectivos y seguros para el control de pulgas en los animales domésticos. Aparte de estos tratamientos, es importante limpiar regularmente el hogar y cepillar a los animales con un peine para atrapar pulgas para detectar una nueva infestación.

- Hay productos que se aplican en una pequeña área del pelaje del animal y controlan las pulgas de uno a tres meses. Estos productos están disponibles en tiendas o a través de un veterinario.
- Hay productos sistémicos disponibles en veterinarias que se administran en forma oral a través de pastillas o aditivos alimenticios. Estos no matan pulgas adultas pero evitan su reproducción.
- Los collares contra pulgas contienen reguladores del crecimiento de insectos (siglas IGR en inglés) que protegen a los perros hasta por seis meses y a los gatos hasta por un año. Hay que asegurarse de escoger collares que tengan "methoprene" y "pyriproxyfen".
- Los champúes, jabones, polvos, rocíos y baños contra pulgas son menos efectivos y más peligrosos para animales domésticos, personas y el medio ambiente que los tres tipos de productos mencionados anteriormente.

En el jardín:

Es muy inusual que se necesite aplicar algún tratamiento afuera, pero si los animales domésticos duermen afuera con regularidad y hay muchas pulgas, se puede aplicar a estas zonas un rocío que contenga "pyriproxifen". De ser posible, quite toda la vegetación cerca del suelo para que entre luz solar al lugar donde duermen los animales. Es poco probable que las pulgas inmaduras sobrevivan en lugares a donde llega la luz solar.

Fleas

Fleas are particularly annoying to people and pets, especially during spring and early summer when their numbers tend to increase dramatically. The common flea in California is the cat flea. Despite its name, it attacks both dogs and cats and will also bite humans. To keep fleas out of your home, control fleas on your pet and regularly clean pet sleeping areas.

On the pet:

Recently, a number of very effective and safe new products for flea control on the pet have become available. Remember to supplement pet treatments with regular cleaning of your home and periodic combing with a pet flea comb to detect new infestations.

- Spot-on formulations are applied to the animal's coat, providing flea control for 1 to 3 months. Available from veterinarians or over-the-counter.
- Systemic flea control products, available from vets, are given as a pill or food additive. While they do not kill adult fleas, they prevent reproduction.
- Flea collars containing insect growth regulators (IGRs) give protection for up to 6 months on dogs and up to a year on cats. Be sure to choose collars containing methoprene or pyriproxyfen.
- Flea shampoos and soaps, powders and dusts, spray-on liquids, and dips are less effective and more hazardous to pets, people, and the environment than the three types of products above.

In the yard:

Outdoor treatment is rarely needed, but if your pet regularly sleeps outside and flea numbers are high, these areas can be treated with a spray containing pyriproxyfen. If possible, open sleeping areas to sunlight by removing low hanging vegetation. Immature fleas are unlikely to survive in areas with exposure to sunlight.

Aqalka Gudihiisa:

Haddii aad ogtahay iyo haddii kale in uu aqalkaaga booddo leeyahay, caadiyan katiifadda nadiifi waxaadna dhaqdaa meelaha uu xayawaankaagu ku nasto si ay booddadu ugu taranto. Haddii aad qabtid dhibaato badan ee booddada ah, waxaad xayawaankaaga ku dawaysaa mid ka mid ah waxyaabaha kaadhkan dushiisa ku yaal adigoo raacaya tallaabooyinka hoose:

- Waxaad heshaa meesha ay ku badan yihiin (caadiyan meelaha uu xayawaanku ku nasto) oo xoogga saar in aad halkaa dawada marisid.
- Wada dhaq katiifooyinka iyo gogosha jiifka ee xayawaanka.
- Waxaad faakiyum ku nadiifisaa alaabta dharka ka sameysan, adigoo nadiifinaya barkimaha hoostooda iyo dildillaacyada.
- Waxaad faakiyum gareysaa katiifadaha, qaasatan alaabta hoostooda.
- Waxaad isticmaashaa buufiyaha gacanta ama gasaca aerosol si aad u daweysid cayayaan dilaha sita IGR (methoprene ama pyriproxyfen) katiifadaha dhammaantooda iyo alaabta fadhiga oo dharka saaran yahay oo aan la dhaqi karin. Daweyntani waxaa ay dilaysa kuwa ukumaha ka soo baxa balse ma disho kuwa ka yara weyn, sidaa awadeed booddada waxaa ay sii jiraysaa 2 toddobaad oo kale.
- 2 -da toddobaad soo socda si caadi ah aqalka faakiyum ugu nadiifi si aad uga dhaqaajisid booddada koraysa. Dib h[illegible] marinin dawada cayayaanka disha.
- Si fiican u xidh qashinka faakiyumka si aysan booddada uga soo baxsan.

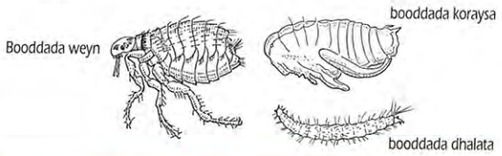

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Trong nhà:

Cho dù có thấy bọ chét trong nhà hay không, quý vị cũng nên thường xuyên hút bụi và vệ sinh các khu vực nơi thú nuôi ngủ để tránh bọ chét tích tụ. Nếu quý vị gặp vấn đề nghiêm trọng về bọ chét, hãy áp dụng một trong các biện pháp xử lý ghi ở mặt trước của thẻ này cho thú nuôi và làm theo các bước dưới đây.

- Tìm các khu vực có nhiều bọ chét (thường là các khu vực nơi thú nuôi ngủ) và tập trung xử lý nơi đó.
- Giặt các tấm thảm và nệm mền của thú nuôi.
- Hút bụi các đồ nội thất có bọc vải, dọn sạch ở dưới nệm và trong các kẽ hở.
- Hút bụi thảm, đặc biệt là bên dưới giường tủ.
- Dùng bình xịt tay hoặc bình phun thuốc diệt côn trùng có chất IGR (methoprene hoặc pyriproxyfen) để xử lý toàn bộ thảm và đồ nội thất bọc vải không giặt được. Phương pháp xử lý này có tác dụng diệt trứng nhưng không diệt được ấu trùng, vì vậy bọ chét có thể lại tiếp tục xuất hiện trong tới 2 tuần.
- Trong 2 tuần tiếp theo, thường xuyên hút bụi để loại bỏ những con bọ chét trưởng thành phát triển từ nhộng. Không xịt lại thuốc diệt côn trùng.
- Bịt kín túi đựng bụi của máy hút bụi và vứt bỏ các túi đó để bọ chét không thể thoát ra ngoài được.

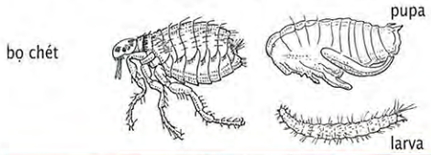

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Dentro del hogar:

Ya sea que usted vea pulgas dentro del hogar, o no, es recomendable pasar la aspiradora y lavar regularmente los lugares donde descansa cualquier animal doméstico para evitar la acumulación de pulgas. Si la infestación es severa, trate al animal con una de las alternativas que se mencionan en esta tarjeta y tome los siguientes pasos:

- Encuentre los lugares más infestados, generalmente donde descansan los animales domésticos, y aplique el tratamiento allí.
- Lave tapetes y ropa de cama de animales domésticos.
  Pase la aspiradora a muebles tapizados, incluso bajo cojines y almohadillas y en hendiduras.
- Pase la aspiradora a las alfombras, especialmente debajo de los muebles.
- Aplique un insecticida que contenga "methoprene" o "pyriproxifen" (IGR) en aerosol o rocío a todas las alfombras y muebles tapizados que no se puedan lavar. Esto mata a las larvas pero no a las pupas, por lo cual las pulgas pueden seguir emergiendo por dos semanas más.
- Pase la aspiradora regularmente durante las siguientes dos semanas para deshacerse de pulgas adultas que se hayan desarrollado de las pupas. No vuelva a aplicar pesticidas.
- Selle y deseche la bolsa recolectora de la aspiradora para que las pulgas no se escapen.

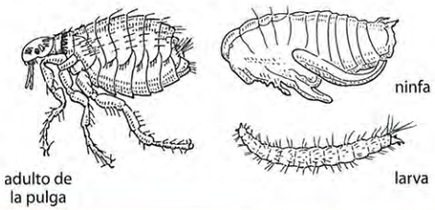

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Inside the home:

Whether or not you are aware of fleas in your home, regularly vacuum and launder areas where your pet rests to avoid flea buildup. If you have a major flea problem, treat your pet with one of the options on the front of this card and follow the steps below.

- Locate heavily infested areas (usually areas where the pet rests) and concentrate treatment there.
- Wash throw rugs and pet bedding.
- Vacuum upholstered furniture, cleaning under cushions and in crevices.
- Vacuum carpets, especially beneath furniture.
- Use a hand sprayer or aerosol to treat all carpets and unwashable upholstered furniture with an insecticide that contains an IGR (methoprene or pyriproxyfen). This treatment kills larvae but not pupae, so fleas may continue to emerge for up to 2 weeks.
- Over the next 2 weeks vacuum regularly to remove adult fleas that emerge from pupae.
  Do not reapply pesticides.
- Seal vacuum bags and discard them so fleas don't escape.

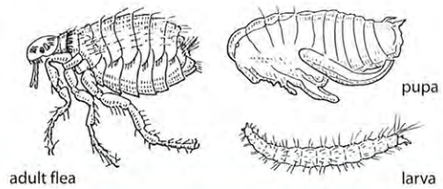

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Baranbaradu

HEALTHY GARDEN HEALTHY HOME

Baranbaradu waxaa ay ku tarantaa Bey'adda ay ka helayso cuntda, biyaha iyo hoy. Baranbaradu waxaa ay ku dhuumataa furiinnada, meelaha cidhiidhka ah, iyo meelaha mugdiga ah marka ay maalin tahay iyadoo soo baxaysa habeenkii si ay wax u cunto. Cayayaan dilaha buufiyaha ah oo kaliya ma lagu xakameyn karayo baranbarada caadiyanna looma baahna. Dabinka cuntada sita ayaa xakameynta kaga habboon. Waa in aad isku dhaftaa istaraatajiyo dhowr ah si uu aqalkaaga u noqdo meel baranbarada looga badbaado. In meelna la dhaafin ayeey xakameyntu ku habboon tahay.

Marka hore waxaad ogaataa nooca ay baranbaradaadu tahay:

- Noocyada maamulka waxtarka leh ayaa kala duwan iyadoo ay ku xiran tahay nooca baranbarada ku xiran tahay.
- Dabinnada baranbarada waa qaab fudud lagu dabo baranbarada si noocoodu loo ogaado.
- Hawlaha xakameynta dibedda (Baranbarada Mareykanka, bariga) iyo kuwa aqalka ku dhex nool (Baranbarada Jarmalka iyo diirimo maariinka) waa ay kala duwan yihiin.
- Si lagaaga saacido waxaad soo booqataa www.ipm.ucdavis.edu.

Cuntada iyo Biyaha ka dhaqaaji:

- Xittaa cuntada daadata ama dheecaanka dildillaacyada ku daata ayaa cunto u ah
- Waxaad cuntada ku xareysaa qaanado xidhmaya
- Qashinka iyo weelasha si fiican ha u daboolnaadan
- Dhuumanka biyaha daaya wada hagaaji.
- Waxaad faakiyum garyesaa dildillaacyada iyo funiinnada maalin kastana dhulka iyo dusha kushiinka nadiifi.

Dhaqaaji meelaha ay baranbarada ku dhuumato:

- Xidh dildillaacyada iyo furiinnada kale si aad uga hortagtid kuwa dibedda ka imaanaya.
- Xidh dildillaacyada iyo daloollada qaanadaha iyo meelaha qarsoon ee gudaha ku yaal.
- Xidh ama nadiifi meelaha kale ee aad ku aragtid baranbarada ama ukumaheeda ay ku qarsoon yihiin.
- Dhaqaaji jaraa'idka duugga ah, sanduuqyada iyo alaabta taal kushiinka iyo suuliga.
- Baranbarada aasiyaanka ah waxaa ay ku dhuumataa meelaha alwaaxda ama hoyga u noqon karaya. Waxaad iska eegtaa in aad qabtid baranbarada noocani ah kana dhaqaaji meelaha dhuumaleysiga dibedda ah iyo dabinnada.

Bọ Gián

HEALTHY GARDEN HEALTHY HOME

Bọ gián phát triển mạnh trong môi trường ấm, có thức ăn, nước, và nơi trú ẩn. Vào ban ngày, bọ gián trú ẩn trong các kẽ hở, những khu vực thấp phải bò, và những nơi tối tăm khác và chúng ra ngoài để kiếm ăn vào ban đêm. Chỉ riêng việc xịt thuốc diệt côn trùng sẽ không đủ để hạn chế bọ gián và các loại thuốc này thường không cần thiết. Các loại bả diệt bọ gián có tác dụng kiểm soát tốt hơn. Quý vị phải kết hợp nhiều biện pháp khác nhau để biến nhà mình trở thành nơi ít hấp dẫn đối với bọ gián. Việc thực hiện triệt để là rất quan trọng để diệt bọ gián hiệu quả.

Trước hết, hãy nhận biết các loài bọ gián trong nhà:

- Các biện pháp diệt bọ gián có tác dụng khác nhau tùy theo từng loài.
- Các dụng cụ bẫy bọ gián là cách bắt bọ gián đơn giản để nhận dạng.
- Các phương pháp diệt bọ gián xâm nhập vào nhà từ bên ngoài (Bọ gián Mỹ, bọ gián phương đông) và các loài bọ gián sống trong nhà (bọ gián có dải nâu và bọ gián Đức) là khác nhau.
- Để biết cách nhận dạng loài bọ gián, xin tới www.ipm.ucdavis.edu.

Dọn sạch các nguồn thực phẩm và nước:

- Ngay cả những mẩu vụn bánh mì rất nhỏ hoặc một chút nước trong các kẽ hở cũng là nguồn cung cấp thực phẩm tốt cho bọ gián.
- Cất giữ thực phẩm trong các hộp đựng được đậy/buộc kín.
- Đựng rác trong các thùng đựng có nắp đậy kín.
- Sửa chữa những nơi rò rỉ trong đường ống nước.
- Hút bụi ở các vết nứt và kẽ hở và lau sàn và mặt kệ tủ hàng ngày.

Loại bỏ những nơi trú ẩn của bọ gián:

- Bịt kín những kẽ hở và những lỗ hở khác để ngăn ngừa bọ gián xâm nhập vào nhà từ bên ngoài.
- Bịt kín các vết nứt ở đáy chạn đựng thức ăn và những nơi trú ẩn khác bên trong nhà của bọ gián.
- Bịt kín hoặc lau dọn các khu vực khác khi quý vị thấy có bọ gián hoặc những ổ trứng của chúng đang ẩn náu.
- Vứt bỏ giấy báo cũ, hộp, và các đồ đạc bừa bộn khác trong bếp và nhà vệ sinh.
- Loài bọ gián phương đông trú ẩn bên ngoài nhà dưới cây thường xuân và nơi khác. Hãy kiểm tra để xem nhà quý vị có loài bọ gián này hay không và loại bỏ những nơi trú ẩn ở bên ngoài nhà hoặc đánh bả.

Las cucarachas

JARDÍN SANO CASA SANA

Las cucarachas se desarrollan mejor en ambientes cálidos donde encuentren agua, abrigo y alimento. Durante el día, se esconden en grietas, rajaduras y en otros lugares obscuros y, de noche, salen en busca de alimento. Las cucarachas no se pueden controlar solamente fumigando pesticidas y generalmente estos no son necesarios. Se obtiene mejor control con cebos. Es necesario usar varias estrategias para lograr que el hogar sea un ambiente menos propicio para las cuarachas. Para lograr un control eficaz es necesario ser meticuloso.

Primero, identifique la especie de cucaracha:

- El método de control varía según la especie.
- Las trampas para cucarachas son una manera fácil de atraparlas para poder identificarlas.
- Los procedimientos de control varían dependiendo si son cucarachas invasoras del exterior (americana, oriental) o cucarachas que viven adentro (de líneas café y alemana).
- Para facilitar su identificación, visite la página en la red: www.ipm.ucdavis.edu

Elimine fuentes de agua y alimento:

- Mijagas o líquidos en grietas y rajaduras, aún en pequeñas cantidades, son buenas fuentes de alimento.
- Guarde los alimentos en recipientes bien tapados o sellados.
- Mantenga la basura en contenedores con tapas herméticas.
- Repare goteos en la tubería.
- Diariamente limpie pisos y mostradores y pase la aspiradora en grietas y rajaduras.

Elimine escondites:

- Rellene grietas y demás orificios para evitar la entrada de cucarachas del exterior.
- Rellene rajaduras en alacenas y armarios con doble fondo y otros escondites en el interior de la casa.
- Quite periódicos viejos, cajas y otros artículos amontonados en la cocina y baños.
- La cucaracha oriental se esconde afuera, bajo la hiedra y en otros lugares que ofrecen refugio. Fíjese si tiene este tipo de cucaracha y elimine escondites en el exterior o use un cebo.

Cockroaches

HEALTHY GARDEN HEALTHY HOME

Cockroaches thrive in warm environments that provide food, water, and shelter. Roaches hide in cracks, crawl spaces, and other dark places during the day and come out at night to feed. Pesticide sprays alone will not control roaches and are not usually required. Baits provide better control. You must integrate several strategies to make your home a less roach-friendly environment. Thoroughness is essential for effective control.

Identify your cockroach species first:

- Effective management options vary according to species.
- Cockroach traps provide an easy way to catch roaches for identification.
- Control practices for outdoor invaders (American, oriental roaches) and indoor residents (brownbanded and German roaches) differ.
- For help with identification go to www.ipm.ucdavis.edu.

Remove food and water sources:

- Even tiny crumbs or liquids in cracks provide good food sources.
- Store food in sealed containers.
- Keep trash in containers with tight lids.
- Eliminate plumbing leaks.
- Vacuum cracks and crevices and clean floors and counters daily.

Remove roach hiding places:

- Seal cracks and other openings to prevent invaders from the outside.
- Seal cracks in false bottoms of cupboards and other indoor hiding places.
- Seal or clean up other areas where you find roaches or their egg cases hiding.
- Remove old newspapers, boxes, and other clutter in kitchens and bathrooms.
- The oriental cockroach hides outdoors under ivy and other shelter. Check to see if you have this roach and remove outdoor hiding places or bait.

Waxaad isticmaashaa dabinnada si aad u kala ogaatid noocyada baranbarada:

- Dabinnada baranbarada waxaad ka helaysaa dukaannada alaabta dayactirka lagu iibiyo.
- Waxaad dabinnada dhigtaa dhulka meel ku dhow geesaha darbiyada, qaanadaha gudahooda iyo meelaha kale ee aad filaysid in ay baranbaradu cunto ka raadsanayso. Waxaad saldhigyada dabinnada aad dhigtaa meelaha aad ku dabtid baranbarada.
- Eeg dabinka maalin walba.
- Dabinnada dhega ee uu ku jiro pheromones waxaa laga yaabaa in ay xakameyaan baranbarada Jarmalka.

Isticmaalka kiimikada si loo xakameeyo baranbarada:

- Ka fogow in aad isticmaashid qaaca, banka, buufiska aerosol — baranbarada ayeey kala fogeynayaan oo kaliya.
- Budada aasidhka ee lagu sii daayo dildillaacyada, furiinnada, daloollada, qaboojiyaha hoostiisa, ama meelaha qarsoon ayeey aad waxtar ugu leedahay. (waxaad u oggolaataa 7 cishood ama ka badan si aad natiijo u aragtid).
- Saldhigyada dabinnada ee sita aasidhka boorik, abamectin, fipronil, ama hydramethylnon oo la dhigo meelaha qarsoon ayaa aad waxtar u leh haddii laga fogeeyo cuntada (waxaad u oggolaataa 7 cishood ama ka badan si aad natiijo u aragtid). Saldhigyada iska beddel markii loo baahdo illaa iyo intii baranbaro laga dabayo.
- Buufiyeyaasha cayayaanka oo kaliya ma ay anfacayaan in muddo fog lagu xakameeyo. Looma baahna haddii qaabab kale sida dabinka iyo budada borik aasidh la isku qasayo iyadoo la raacinayo nadaafad iyo ka dhaqaajinta meelaha qarsoon.
- Waxaad ka xiriirtaa xirfadlaha cayayaanka la dagaallama markii ay jidho xaalad xad dhaaf ah, balse iska hubi in ay isticmaalaan barnaamij isku dhaf ah sida aynu halka sare ku soo sheegnay.

Baranbarada Jarmalka ee Weyn

Jarmal baranbaro yaraanka

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

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University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Nếu cần dùng thuốc diệt côn trùng, hãy sử dụng các sản phẩm an toàn:

- Quý vị có thể mua bẫy bọ gián tại các tiệm bán đồ cơ khí.
- Đặt bẫy bọ gián trên sàn nhà gần mép tường, trong chạn đựng thức ăn và những nơi mà quý vị nghĩ rằng có bọ gián phá hoại. Đặt dụng cụ đánh bả tại những nơi mà quý vị bẫy bọ gián.
- Kiểm tra bẫy hàng ngày.
- Các loại bẫy dính có pheromones có tác dụng diệt bọ gián Đức ở mức độ nhất định.

Sử dụng hóa chất để diệt bọ gián:

- Tránh sử dụng chất keo, chất nổ, hoặc bình phun — các chất này chỉ làm phân tán bọ gián đi khắp nơi.
- Phương pháp thổi bột a-xít bô-ríc (boric acid) vào trong các vết nứt, kẽ hở, tường rỗng, dưới tủ lạnh, hoặc những nơi ẩn náu an toàn khác của bọ gián là rất hiệu quả (sẽ thấy tác dụng sau khoảng 7 ngày).
- Việc đặt các bẫy bọ gián có chất boric acid, abamectin, fipronil, hoặc hydramethylnon ở gần nơi ẩn náu của bọ gián sẽ hiệu quả nếu loại bỏ các nguồn thực phẩm khác (sẽ thấy tác dụng sau khoảng 7 ngày). Thay đổi vị trí các dụng cụ bẫy khi cần thiết miễn là các dụng cụ này vẫn bắt được bọ gián.
- Chỉ riêng các loại thuốc diệt côn trùng dạng xịt sẽ không đủ để diệt bọ gián lâu dài. Các loại thuốc này không cần thiết nếu kết hợp việc lau dọn và loại bỏ những nơi trú ngụ của bọ gián với các phương pháp khác như dùng bả và bột boric acid.
- Đối với các trường hợp phá hoại nghiêm trọng, liên lạc với một hãng chuyên về diệt các loài gây hại, nhưng phải bảo đảm là họ sử dụng một chương trình kết hợp như trên.

German bọ gián nymph

German bọ gián adult

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
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University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

Use trampas para identificar y monitorear poblaciones de cucarachas:

- Las trampas para cucarachas se encuentran a la venta en ferreterías.
- Ponga trampas en el piso, a lo largo de las orillas de las paredes, dentro de alacenas o armarios y en otros lugares donde puedan ir en busca de alimentos. Coloque cajillas de cebos en lugares donde haya atrapado cucarachas.
- Revise las trampas diariamente.
- Las trampas pegajosas con feromonas pueden ayudar a controlar las cucarachas alemanas.

Productos químicos para controlar cucarachas:

- Evite usar insecticidas en aerosol o a presión ya que únicamente hacen que se dispersen las cucarachas.
- El ácido bórico en polvo que se aplica dentro de grietas, rajaduras, paredes huecas, bajo refrigeradores o en otros lugares donde haya poca actividad es muy efectivo (espere por lo menos siete días para ver su efecto).
- Las cajillas de cebo que contienen ácido bórico, abamectin, fipronil o "hydramethylnon", puestas cerca de escondites pueden ser efectivas si se elimina cualquier otra fuente de alimento. (Espere por lo menos siete días para ver el efecto). Mientras que continúe atrapando cucarachas, reemplace las cajillas según sea necesario.
- Usar un insecticida en aerosol no es suficiente, si no se usan otros métodos para el control a largo plazo. No es necesario su uso si se combinan otros métodos como cebos y ácido bórico en polvo, junto con la limpieza y eliminación de escondites.
- En casos de una infestación mayor, llame a un profesional de control de plagas, pero asegúrese de que use un programa de control integrado, tal como el descrito anteriormente.

Cucaracha alemana ninfa

Cucaracha alemana adulto

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Use traps to identify and track cockroach populations:

- Cockroach traps are available in hardware stores.
- Place traps on the floor around edges of walls, in cupboards and other places where you think roaches are foraging. Place bait stations at locations where you trap roaches.
- Check traps daily.
- Sticky traps with pheromones may provide some control of German cockroaches.

Using chemicals to control cockroaches:

- Avoid use of foggers, bombs, or aerosol sprays — they just disperse populations.
- Boric acid powder blown into cracks, crevices, hollow walls, under refrigerators, or other undisturbed hiding places is very effective (allow 7 days or more for an effect to be seen).
- Bait stations containing boric acid, abamectin, fipronil, or hydramethylnon placed near hiding places can be effective if other food sources are removed (allow 7 days or more for an effect to be seen). Replace stations as needed as long as roaches are being caught.
- Insecticide sprays alone do not give long-term control. They are not necessary if other methods such as baits and boric acid powder are combined along with cleanup and removal of hiding places.
- Contact a professional pest control operator for very serious infestations, but be sure they use an integrated program as described above.

German cockroach nymph

German cockroach adult

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

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It's the water that connects us!

Xaaxeeyada iyo Islagiska

HEALTHY GARDEN HEALTHY HOME

Xaaxeeyada iyo islagisku waxay ka mid yihiin dulinka beerta ee loogu necebyahay. Moluskadan dhuudhuubani waxay meesha ay isku qarinayaan kasoo baxaan habeenkii oo ay cunaan oo dalooliyaan caleemaha iyo ubaxa qaar badan oo ka mid ah dhirta beerta ee dhuuxa biyaha ku kaydsada iyo khudradda. Xaaxeeyada iyo islagisku qaab ahaan way isu egyihiin iyo bayoolaji ahaanba, marka laga reebo islagiska oo aan lahayn qolofta xaaxeeyada ee sare oo kale. Maarayntoodu waxay u baahantahay hab feejigan oo xidhiidhsan oo ay ka mid yihiin baabi'inta qoyaanka iyo meelaha ay ku gabadaan, dabitaan, deyrar, iyo gacanta oo lagaga guro. Dabitaanka ayaa noqon kara mid faa'iido leh, laakiin kelidood ha siinin inay beerta kaantaroolaan ka kooban meelo badan oo ay isku qarin karaan, cunto iyo qoyaan.

Sidee ayaad u ogaanaysaa inay xaaxeeyada iyo islagisku ay dhibaato geysanayaan?

- Waxa laga yaabaa inaanad marka hore dulinkan arkin sababta oo ah waxay wax cunaan habeenkii maalintiina way isqariyaan. Dibeda u bax habeenkii ama salaada hore si aad u eegtid iyaga oo wax cunaya.
- Cayayaan kale ayaa daloolo ka samayn kara caleemaha, ubaxyada, iyo khudradda . ka eeg raadka yar ee ah waxa yar ee jiitamaya ee ay xaaxeeyada iyo islagisku ka tagaan.

Waa maxay waxay tahay in la sameeyo si loo yareeyo xaaxeeyada iyo islagiska?

- Ka qaad meelaha ay maalintii ku gaban karaan – xayaabka, dhir hoosaadka, waxyaabaha jajaban, ama looxaanta.
- Si joogto ah uga gur meelaha ay u hoydaan ee aanad ka dhamayn karin sida deyrarka xaggooda hoose, dheegaga, sanaaduuqda mitirada.
- Beertaada dabino dhig oo daadi xaaxeeyada dabinka gashay iyo islagiska maalin walba.
- Yaree oogooyinka qoyan adiga oo u bedelanaya inaad biyo yar gunta kaga waraabiso dhirta subixii halkii aad gelinka dambe ka samayn lahayd.
- Ka fiirso dhirta aanay xaaxeeyadu cunin sida imbayshantis (impatients), jeraniyams (geraniums), begooniyas (begonias), lantana (lantana), nasturtiyams (nasturtiums), iyo dhir kaloo badan oo caleemo adag leh iyo ur badan sida sayj (sage), rowsmari (rosemary) iyo laafender (lavender).

Ốc và Ốc Sên

HEALTHY GARDEN HEALTHY HOME

Ốc và ốc sên là một trong số các loài động vật gây hại trong vườn đáng ghét nhất. Sau khi trú ẩn vào ban ngày, các loài động vật thân mềm có nhớt này xuất hiện vào ban đêm và đục lỗ trên lá và hoa của nhiều loại cây và trái cây mọng nước trong vườn. Ốc và ốc sên có cấu trúc và cơ chế sinh học giống nhau, trừ một đặc điểm là ốc sên không có lớp vỏ xoắn ốc bên ngoài giống như ốc. Để diệt loài ốc gây hại, quý vị cần áp dụng một phương pháp kết hợp triệt để, bao gồm loại bỏ tình trạng ẩm thấp và những chỗ ẩn náu, đặt bẫy, sử dụng các biện pháp ngăn chặn và nhặt bỏ bằng tay. Phương pháp đánh bả cũng có thể hiệu quả, nhưng bản thân phương pháp này không có tác dụng kiểm soát một cách thỏa đáng trong những ngôi vườn có nhiều nơi ẩn náu, thức ăn và độ ẩm cho loài ốc.

Làm thế nào để biết là ốc và ốc sên đang gây hại cho vườn?

- Thoạt đầu quý vị có thể không nhận thấy các loài động vật gây hại này vì chúng đi kiếm ăn vào ban đêm và ẩn náu vào ban ngày. Hãy ra vườn vào ban đêm hoặc sáng sớm để xem hoạt động của loài động vật này.
- Các loài động vật gặm nhấm khác cũng có thể đục lỗ trên lá cây, hoa và trái cây. Hãy tìm các vệt nhớt, bóng mà những con ốc và ốc sên để lại.

Cần phải làm gì để diệt ốc và ốc sên?

- Loại bỏ những nơi ẩn náu vào ban ngày — cây thường xuân, các khu vực có nhiều cỏ dại, vôi gạch vụn, hoặc các tấm bìa cứng.
- Thường xuyên gỡ bỏ ốc ra khỏi những nơi trú ẩn mà quý vị không thể loại bỏ được, ví dụ như những nơi có gờ thấp trên hàng rào, mặt dưới của sàn nhà, các hộp đồng hồ.
- Đặt bẫy trong vườn và vứt bỏ ốc và ốc sên bị mắc bẫy hàng ngày.
- Giảm bớt các bề mặt ẩm ướt bằng cách tưới nước hoặc tưới nước nhỏ giọt vào buổi sáng thay vì vào buổi chiều tối.
- Nên trồng các loại cây chịu được ốc thí dụ như cây bóng nước, cây phong lữ, cây thu hải đường, cây cứt lợn, cây sen cạn và nhiều loại cây có lá cứng và thơm như cây mùi tàu, cây xô thơm, cây hương thảo và cây oải hương.

Caracoles y babosas

JARDÍN SANO CASA SANA

Los caracoles y las babosas figuran entre las plagas de jardín más desagrables. Estos moluscos babosos salen de noche de sus escondites y dejan agujeros en las hojas y flores de muchas frutas y plantas carnosas. La estructura y biología de los caracoles y babosas es similar, pero las babosas no tienen la concha exterior en espiral. Su control requiere un método integrado que incluya la eliminación de escondites y lugares húmedos, el uso de trampas y barreras y recogerlos a mano. Las trampas con cebo pueden ser útiles, pero sin otros métodos no proveen suficiente control en jardines que ofrecen albergue, alimento y humedad en abundancia.

¿Cómo sé que el daño es causado por caracoles y babosas?

- Al principio, tal vez no se percate de la presencia de estas plagas pues se alimentan de noche y se esconden durante el día. Para verlas en acción, salga de noche o temprano en la mañana.

¿Qué puedo hacer para deshacerme de caracoles y babosas?

- Elimine los escondites que usan durante el día: las hiedras, zonas con maleza, desperdicios o tablas.
- Quite con regularidad los caracoles que encuentre en escondites que no puedan eliminarse como repisas, rebordes y travesaños en cercas y vallas, así como la parte inferior de terrazas y en medidores de agua y electricidad.
- Ponga trampas en el jardín y deseche diariamente los caracoles y babosas que queden atrapados.
- Disminuya las superficies húmedas usando un sistema de riego por goteo o regando en la mañana y no a otras horas del día.
- Siembre plantas a prueba de caracoles como geranios, begonias, lantanas, capuchinas y muchas plantas de hojas firmes y follaje de olor intenso como la salvia, el romero y la lavanda.

Snails & Slugs

HEALTHY GARDEN HEALTHY HOME

Snails and slugs rank among our most despised garden pests. These slimy mollusks emerge from hiding at night and chew holes in leaves and flowers of many succulent garden plants and fruit. Slugs and snails are similar in structure and biology, except slugs lack the snails' external spiral shell. Management requires a vigilant and integrated approach that includes eliminating moisture and hiding spots, trapping, barriers, and handpicking. Baits can be helpful, but by themselves, don't provide adequate control in gardens that contain plenty of shelter, food, and moisture.

How do you know snails and slugs are causing damage?

- You may not observe these pests at first because they feed at night and hide during the day. Go out at night or early morning to view them in action.
- Other pests can cause holes in leaves, flowers, and fruit. Look for the shiny, slimy trails slugs and snails leave behind.

What must be done to reduce snails and slugs?

- Remove daytime hiding places — ivy, weedy areas, debris, or boards.
- Regularly remove snails from shelters you cannot eliminate such as low ledges on fences, undersides of decks, meter boxes.
- Place traps in your garden and dispose of trapped snails and slugs daily.
- Reduce moist surfaces by switching to drip irrigation or sprinkling in the morning rather than later in the day.
- Consider snail-proof plants such as impatiens, geraniums, begonias, lantana, nasturtiums, and many plants with stiff leaves and highly scented foliage like sage, rosemary, and lavender.

Sidee ayaan u maarayn karaa xaaxeeyada iyo islagiska aniga oo aan isticmaalin sunta cayayaanka?

- Hubaal kadhig inaanay beertu marka hore molask lahayn kahor intaanad beerin. Kadibna ka taag deyr maar ah oo ku wareeji. Isticmaal mid balladhkeedu yahay 4 illaa iyo 6 iinj ah oo maar ah, oo aad ku aasto ciidda illaa iyo hal iinj dushana aad ka qalloociso ama aad girgirka kaga xidho.
- Beertaada ka beer meesha ugu cadceeda badan ee caqligalka ah. Ka saar walxaha beerta ama dhirta dhinaceeda ah ama daboolada dhulka ee ay hadhsan karaan. Sida ugu badan ee caqligalka ah u yaree oogooyinka qoyan.
- Dhis dabin adiga oo isticmaalaya boodh cabirkiisu yahay 12"x15" oo dhulka ka sarraysa 1 iinj. Markay molaskadu ku soo ururto boodhka hoostiisa. Ka daadi oo laa maalin walba.

Ka warran dabidda cuwaafta?

- Cuwaafta dabinku waxba ma tarayso adiga oo meesha ay gelayaan, cuntada iyo qoyaankana ka baabi'iya mooyee.
- Cuwaafta dabinka ee maadadda Metaldehyde sun ayay ku tahay eyda iyo shimbiraha. Metaldehyde waxqabadkeeda isla markiiba way lumisaa markay cadceedu ku dhacdo ama kadib marka roob da'o ama la waraabiyo beerta.
- Cuwaafta dabinka ee Iron Phosphate ayaa ammaan u ah in lagu ag isticmaalo eyda, carruurta iyo xayawaanka.
- Waraabi kahor intaanad cuwaafta dhigin oo dhig galab ay hawadu diirrantahay oo ay molaskadu firfircoonyihiin.
- Cuwaafta ku daadi qalabka biyaha firdhiya hareerihiisa meelo qoyaan leh oo ay xaaxeeyada iyo islagisku socdaalaan.

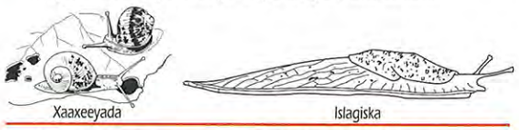

Isticmaal hababka aan KIMIKADA AHAYN iyo sunta xasharaadka ee UGU SUNTA YAR. WAAYO? Biyaha wasakhaysan ee maraya gurigaaga agtiisa iyo beerta waxay sidaan biyo ay ku jiraan sunta xasharaadka oo wasakheeya laagaheena, dooxooyinkeena, harooyinkeena iyo badaheenna.

Wax badan ka ogow tayada biyaha ee gobolka San Diego adiga oo booqanaya www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Macluumaad dheeraad ah oo ku saabsan cayayaanka, booqo Jaamacadda California IPM websaytka ah www.ipm.ucdavis.edu, ama kala xidhiidh UCCE Master Gardners (858) 694-2860, Isniin-Jimce, 9ka subaxnimo illaa iyo 3da galabnimo.

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Làm thế nào để diệt ốc và ốc sên mà không cần dùng thuốc diệt côn trùng?

- Phải bảo đảm là vườn nhà quý vị không có động vật thân mềm trước khi trồng cây. Sau đó dựng một tấm chắn bằng đồng xung quanh cây. Dùng các dải đồng có chiều rộng từ 4- tới 6-inch chôn cách mặt đất một inch và uốn cong ở phía đầu hoặc gắn vào xung quanh cạnh của nền đất cao.
- Chọn khu đất vườn ở nơi có nhiều ánh nắng nhất ở mức có thể được. Loại bỏ các đồ vật trong vườn hoặc cây cối mọc bên cạnh hoặc tấm đậy mặt đất có thể làm nơi ẩn náu cho ốc. Hạn chế các bề mặt ẩm thấp càng nhiều càng tốt.
- Đặt một chiếc bẫy bằng cách sử dụng một miếng bìa cỡ 12"x15", nhô cao lên mặt đất với các đường rãnh sâu 1 inch. Khi các loài động vật thân mềm tụ tập ở dưới tấm bảng đó, hãy bóc chúng ra để diệt hàng ngày.

Vậy còn đánh bả thì sao?

- Phương pháp đánh bả sẽ không phát huy nhiều tác dụng, trừ khi quý vị cũng loại bỏ cả nơi ẩn náu, thức ăn và độ ẩm của chúng.
- Các loại bả làm bằng metaldehyde cực độc với chó và chim. Tuy nhiên, Metaldehyde cũng nhanh chóng bị mất tác dụng dưới ánh nắng mặt trời hoặc sau khi trời mưa hoặc tưới nước.
- Các loại bả làm bằng phốt-pho sắt thường an toàn để sử dụng nếu nhà có chó, trẻ em và động vật hoang dã.
- Tưới nước trước khi rắc bả và rắc bả vào buổi tối vào các ngày nóng khi loài động vật thân mềm hoạt động.
- Rắc bả xung quanh các vòi phun nước và ở những khu vực ẩm thấp được bảo vệ và những nơi là đường đi của ốc và ốc sên.

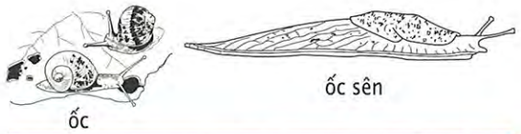

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

¿Cómo puedo controlar los caracoles y babosas sin usar pesticidas?

- Asegúrese que no hayan moluscos babosos en el jardín antes de sembrar. Luego erija una barrera de cobre a su alrededor. Use banda de cobre de unos 5 pulgadas de ancho, que deberá enterrar a una pulgada de profundidad, para luego doblar el otro extremo que se afianzará alrededor del lecho de siembra. Así, los caracoles y las babosas no pasarán.
- Escoja el lugar más soleado para su jardín. Quite objetos de jardín y plantas cercanas que puedan dar un refugio sombreado. Elimine tantas superficies húmedas que pueda.
- Haga una trampa con una tabla de 12 por 15 pulgadas, elevada en rieles de 1 pulgada de alto. Quite y mate diariamente los moluscos que se acumulen en la parte inferior de la tabla.

Y, ¿de los cebos qué?

- Las trampas con cebo no serán muy eficaces a menos que también elimine los escondrijos, alimento y humedad.
- Los cebos de metaldehído son muy venenosos para perros y pájaros. El metaldehído también pierde rápidamente su eficacia bajo la luz solar y después de la lluvia o riego.
- Los cebos de fosfato de hierro no son peligrosos para niños, perros ni la vida silvestre.
- Riegue antes de poner las trampas con cebo. Ponga éstas al atardecer en días cálidos cuando los moluscos estarán más activos.
- Eche el cebo alrededor de los aspersores así como en lugares húmedos y resguardados por donde pasen caracoles y babosas.

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

"Aprende más sobre la calidad de agua en la región de San Diego en: www.ThinkBlueSD.org y www.ProjectCleanWater.org. Para más información sobre el control de plagas visite la página de IPM de la Universidad de California a : www.ipm.ucdavis.edu o a los "Jardineros Expertos" al teléfono: (858) 694-2860, de lunes a viernes de 9 a.m. a 3 p.m."

Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

How can I manage snails and slugs without using pesticides?

- Make sure the garden is mollusk-free before planting. Then erect a copper barrier around it. Use a 4- to 6-inch-wide band of copper, buried an inch below the soil and bent over at the top or attach it around the edge of a raised bed.
- Place your garden in the sunniest spot possible. Remove garden objects or adjacent plants or ground cover that may serve as shady shelter. Reduce moist surfaces as much as possible.
- Build a trap using a 12"x15" board raised off the ground by 1-inch runners. As the mollusks collect under the board, scrape them off and destroy them daily.

What about baits?

- Baits will not be very effective unless you also remove shelter, food, and moisture.
- Metaldehyde baits are especially poisonous to dogs and birds. Metaldehyde also loses its effectiveness rapidly in sunlight and after rain or irrigation.
- Iron phosphate baits are safe for use around dogs, children, and wildlife.
- Irrigate before applying bait and apply in evening on warm days when mollusks are active.
- Scatter bait around sprinklers and in moist and protected areas where snails and slugs travel.

Use NON-CHEMICAL methods & LEAST TOXIC pesticides. WHY? Runoff from around your home and garden carries water containing pesticides that pollute our streams, rivers, lakes and oceans.

Learn more about San Diego regional water quality at: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
For more pest information visit the University of California IPM website at: www.ipm.ucdavis.edu or the UCCE Master Gardeners at: (858) 694-2860, Mon-Fri, 9 a.m. to 3 p.m.

University of California Cooperative Extension

It's the water that connects us!

Caarada

Caarada faa'idada ugu weyn ee ay leeyihiin ayaa ah iyagoo cayayaanka dheefiya. Hase ahaatee, dadka badankood ayaa u haysta in caarada oo dhan ay halis leedahay oo ay wax weerarto. Gobolka California, caarada gaysan karta dhaawac culus ayaa ah nooca carmalada madow (black widow), taasoo badanaa dibedda ku sugan meel aragtida ka fog. Caarada maalintii dibedaha lagu arko waa ay adag tahay sida ay dad ku qaniinaan. Dadaalka la dagaallanka cayayaanka ayaa isku hawlisa dhaqaajinta xuubka caarada iyo meelaha ay ku dhuumato. Caadiyan lagulama taliyo sunta cayayaanka disha.

Waxa aad ka baranaysid caarada:

- Gobolka California, caarada gaysan karta dhaawaca culus ayaa ah nooca carmalada madow (black widow):
  - Carmalada madow (black widow) ee sunta sidata waxaa caadiyan laga helaa dibedaha, meelaha ay ku hoy ka dhigan karto, qalalan, ee cidlada ah alwaaxduna ku badan tahay.
  - Carmalada dheddigga ah waxaa ay qabtaa jidh iftiimaya oo uu xariiq gaduudan ay halka hoose ka marsan tahay.
  - Carmalada madow dheddigga ah ee weyn oo kaliya ayaa dadka dhaawici karta

    Qof kasta ee ay qaniinto caarada carmalada madow waa in uu is xasilliyaa kaddibna uu dhakhtar la taliya raadsadaa, ama uu ka wacaa Xarunta La Dagaallanka Sunta ee California (California's Poison Control Center) 1-800-8 POISON (1-800-876-4766).
- Caarada maariinka ah ee keli noolka ah kuma ay noola California.
- Gowsaha caarada badanaa aad ayeey u yar yihiin si ay dadka u qaniinaan.
- Caarada qaarkood waxaa ay wax qaniinaan marka ay dharku dhexgalaan balse dhaawacu kama badna cuncun ama qaniinyo shinni. Waxaad eegtaa www.ipm.ucdavis.ecu si aad macluumaad dheeraad ah u heshid.

Si aad uga hortagto in caaradu ay aqalkaaga soo gasho, waxaad qaadaa tallaabooyinka soo socda:

- Waxaad xirtaa dildillaaca aasaaska aqalka iyo daldalloolada kale.
- Waxaad baartaa shabaqa dariishadaha in ay si fiican u dheggan yihiin si aysan u soo galin caarada iyo cayayaanka kale ee ay cunaan.
- Alaabada aan isku habeysnayn ka fogee wareegga aasaasla aqalka.

Nhện

Nhện là loài có lợi nhất vì chúng ăn côn trùng có hại. Tuy nhiên, nhiều người nghĩ rằng tất cả các loài nhện đều nguy hiểm và hung hãn. Ở Tiểu Bang California, loài nhện chính có thể gây thương tích nghiêm trọng là loài nhện đen. Loài nhện này thường sống ở ngoài trời và ẩn náu ở những nơi không nhìn thấy được. Những loài nhện nhìn thấy ở bên ngoài trời vào ban ngày thường không cắn người. Khi diệt động vật phá hoại, nên chú trọng tới việc quét mạng nhện và dọn sạch những nơi trú ẩn của nhện. Thuốc diệt côn trùng thường không được khuyến cáo sử dụng.

Những điều cần biết về loài nhện:

- Tại Tiểu Bang California, loài nhện chính có thể gây thương tích nghiêm trọng là nhện đen:
  - Nhện đen độc thường gặp ở bên ngoài nhà, ở những khu vực dễ ẩn náu, khô và an toàn, thí dụ như các cột gỗ.
  - Nhện đen cái có phần thân đen bóng với hình chiếc đồng hồ cát màu đỏ ở phía dưới bụng.
  - Chỉ có những con nhện đen cái cỡ lớn mới có thể gây thương tích cho người.

    Nếu quý vị bị nhện đen cắn, nên giữ bình tĩnh và hỏi ý kiến các chuyên gia y tế, hoặc gọi Trung Tâm Kiểm Soát Chất Độc của Tiểu Bang California (California's Poison Control Center) tại số 1-800-8-POISON (1-800-876-4766).
- Loài nhện nâu không sống ở Tiểu Bang California.
- Đa số các con nhện đều có hàm quá nhỏ nên không thể cắn người được.
- Một số loài nhện khác cắn khi bị mắc kẹt trong quần áo, nhưng phản ứng thường chỉ tới mức gây ngứa hoặc có một vết như ong châm. Xin xem trang mạng điện toán www.ipm.ucdavis.edu để biết thêm chi tiết về các loài nhện này.

Để ngăn chặn nhện xâm nhập vào nhà, quý vị nên áp dụng các bước sau đây:

- Bịt kín các kẽ hở trên nền nhà và các lỗ hở khác mà nhện có thể vào nhà.
- Kiểm tra các tấm lưới chắn cửa sổ và cửa ra vào để bịt kín những lỗ hổng để tránh cho nhện và các côn trùng khác làm mồi của nhện xâm nhập vào nhà.
- Giữ gọn gàng các khu vực quanh móng nhà.

Las arañas

La mayoría de las arañas son beneficiosas porque se alimentan de insectos que son plagas. Sin embargo, muchas personas piensan que todas las arañas son peligrosas y agresivas. En California, la araña más común capaz de causar lesiones graves es la viuda negra, la cual generalmente se encuentra afuera de la casa y prefiere no ser vista. Es poco probable que las arañas que se dejan ver durante el día piquen a las personas. Concentre sus esfuerzos para controlar las arañas quitando telarañas y escondites. Por lo general, no se recomienda usar pesticidas.

Lo que debe saber sobre las arañas:

- En California, la araña más común capaz de causar lesiones graves es la viuda negra:
  - La viuda negra es venenosa y comúnmente se encuentra en zonas resguardadas, secas y con poca actividad, como en una pila de madera.
  - El cuerpo de la hembra es negro, brillante y tiene una marca roja en forma de reloj de arena en el vientre
  - Sólo aquellas hembras de tamaño grande pueden causar lesiones a las personas.
  - Cuando una persona recibe una picadura de una viuda negra, debe conservar la calma y obtener atención médica o llamar al centro de control de envenenamientos (Poison Control Center) de California al 1-800-8-POISON (1-800-876-4766).
- La araña reclusa parda no vive en California.
- Las mandíbulas de la mayoría de las arañas son demasiado pequeñas para picar a los humanos.
- Algunas otras arañas pican si quedan atrapadas en la ropa, pero, por lo general, la reacción no es más aguda que una comezón o la picadura de una abeja. Visite la página en la red para leer más sobre estas arañas.

Pasos para evitar que las arañas entren al hogar:

- Selle toda grieta o agujero en los cimientos de la casa.
- Inspeccione la malla de las puertas y las ventanas para cerciorarse que estén bien selladas y eviten la entrada de arañas e insectos.
- No deje acumular cosas alrededor de los cimientos.

Spiders

Spiders are mostly beneficial because they feed on pest insects. However, many people think that all spiders are dangerous and aggressive. In California, the main spider capable of causing serious injury is the black widow, which generally remains outdoors and out of sight. Spiders seen out in the open during the day are unlikely to bite people. Focus pest management efforts on removing webs and hiding places. Pesticides are not generally recommended.

What to know about spiders:

- In California, the main spider capable of causing serious injury is the black widow:
  - The poisonous black widow spider is commonly found outdoors, in sheltered, dry, undisturbed areas such as wood piles.
  - Female black widows have shiny black bodies with a red hourglass marking on the underside.
  - Only large female black widows can injure people.
  - Anyone bitten by a black widow spider should remain calm and seek medical advice, or call California's Poison Control Center at 1-800-8-POISON (1-800-876-4766).
- The brown recluse spider does not live in California.
- The jaws of most spiders are too small to bite humans.
- Some other spiders bite when trapped in clothing, but the reaction is usually no more severe than itching or a bee sting. See www.ipm.ucdavis.edu for more information about these spiders.

To prevent spiders from entering your house, take these steps:

- Seal home foundation cracks and other access holes.
- Inspect window and door screens for good seals that keep out spiders and the insects they prey on.
- Keep areas around home foundations free of clutter.

Waxaad caaradu kula dagaallantaa tallaabooyinka soo socda:

- Gudaha, si joogta ah oo aqalka aad u nadiifisid ayaad kula dagaallami kartaa caarada.
- Faakiyum garee caarada iyo xuubkeeda.
- Ka hortag in ay alaabadu si dayacan isu dul saarnaadaan taasoo keeni karta in ay caaradu ku dhuumato.
- Ka dhaqaaji xuubka caarada aqalka dibeddiisa adigoo isticmaalaya xaaqin ama tuubo xoog loogu buufin karo.
- Gudaha, dil caarada ama gasac ku qabo kaddibna dibedda gee.

Marka aad caarada dhaqaajinaysid, la soco in caaradu ay cunto cayayaan kala duwan iyo waxyaabo kale. Caaradu sidoo kale waxaa ay leeyihiin cadow — caarooyinka kale, shimbiraha, qalajisada iyo masaska, iyo waxyaabo kale — kuwaasoo mararka qaarkooda ka hortaga in ay tarmaan.

caarada carmalada madow

longbodied cellar caarada

yellow sac caarada

Waxaad isticmaashaa qaababka AAN KIIMIKADA AHAYN iyo suntan HALISTEEDU UGU YAR TAHAY WAA MAXAY SABABTA? Biyo qaadka aqalkaaga iyo jardiinada waxaa ay biyaha sunta leh geeyaan ilaha, wabiyada, harooyinka iyo badweynta.

Waxaad wax dheeraad ah ka barataa taya da biyaha deegaanka San Diego: www.ThinkBlueSD.org & www.ProjectCleanWater.org. Si aad macluumaad dheeraad ah u heshid waxaad soo booqataa bogga internetka ee IPM Jaamacadda California: www.ipm.ucdavis.edu ama UCCE Master Jardiinooyinka: (858) 694-2860, Isn - Jim, 9 sub to 3 gal

University of California Cooperative Extension

Waa biyaha waxa isku keen xidhaa!

Diệt nhện bằng cách áp dụng các lời khuyên sau đây:

- Nếu ở trong nhà, thường xuyên lau dọn nhà cửa để diệt nhện một cách thích hợp.
- Hút sạch nhện và mạng nhện.
- Tránh tình trạng để đồ vật bừa bộn tạo thành nơi ẩn náu cho nhện.
- Dùng chổi hoặc vòi nước có áp suất cao để quét sạch mạng nhện ở bên ngoài nhà.
- Nếu ở bên trong nhà, nghiền nát nhện hoặc bắt bỏ vào một chiếc lọ và thả nhện ở bên ngoài nhà.

Khi diệt nhện, đừng quên rằng nhện ăn rất nhiều các loại côn trùng phá hoại. Trong tự nhiên, loài nhện cũng có kẻ thù — ong bắp cày, các loài nhện khác, chim, bò sát, và các loài động vật khác — đôi khi những loài này khiến nhện không thể phát triển quá nhiều.

nhện đen

nhện mình dài

nhện túi vàng

Sử dụng các phương pháp diệt kiến KHÔNG CÓ HÓA CHẤT và chất diệt côn trùng ÍT ĐỘC HẠI NHẤT. TẠI SAO? Vì nước thải từ khu vực xung quanh nhà và vườn của quý vị sẽ mang theo nước có chứa thuốc diệt côn trùng và gây ô nhiễm cho sông, hồ, suối và đại dương của chúng ta.

Tìm hiểu thêm về phẩm chất nguồn nước khu vực San Diego tại: www.ThinkBlueSD.org & www.ProjectCleanWater.org.
Để biết thêm chi tiết các loài gây hại, xin tới trang web của University of California IPM tại địa chỉ: www.ipm.ucdavis.edu hoặc gọi UCCE Master Gardeners tại số: (858) 694-2860, Thứ Hai tới Thứ Sáu, 9 giờ sáng tới 3 giờ chiều

University of California Cooperative Extension

Chính nước là nguồn liên kết chúng ta!

El control de las arañas:

- Dentro del hogar, basta con una buena limpieza.
- Pase la aspiradora para quitar arañas y telarañas.
- Evite el desorden para no proporcionar escondites.
- Quite telarañas en el exterior con una escoba o manguera de agua a alta presión.
- En el interior, aplaste las arañas o captúrelas con un tarro y luego suéltelas afuera.

Al deshacerse de arañas, tenga en cuenta que se comen una variedad de insectos molestos y plagas. Las arañas tienen también enemigos naturales, como avispas, otras arañas, pájaros, reptiles y demás, que a veces evitan que se vuelvan demasiado numerosas.

viuda negra

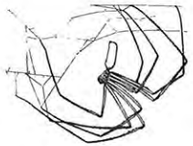

araña de pata larga

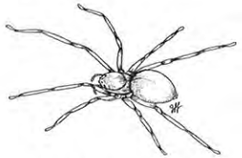

araña de vientre amarillo

"Utilice métodos no químicos y los pesticidas menos tóxicos. ¿PORQUÉ? Los escurrimientos de tu casa y jardín llevan agua contaminada de pesticidas que contaminan nuestros arroyos, ríos, lagos y océano."

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Extensión Cooperativa de la Universidad de California

¡Es el agua que nos enlace!

Manage spiders using these tips:

- Indoors, regular housecleaning provides adequate spider control.
- Vacuum up the spider and its web.
- Prevent clutter buildup that can provide hiding places.
- Remove spider webs from the exterior of the house with a broom or high pressure hose.
- Indoors, squash spiders or capture them in a jar and release them outdoors.

When removing spiders, don't overlook the fact that spiders eat a large number and variety of nuisance and pest insects. Spiders also have natural enemies — wasps, other spiders, birds, reptiles, and others — that sometimes keep them from becoming too numerous.

black widow spider

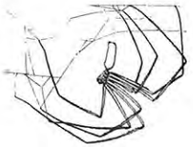

longbodied cellar spider

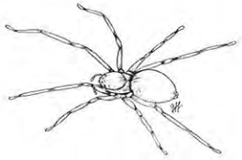

yellow sac spider

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It's the water that connects us!

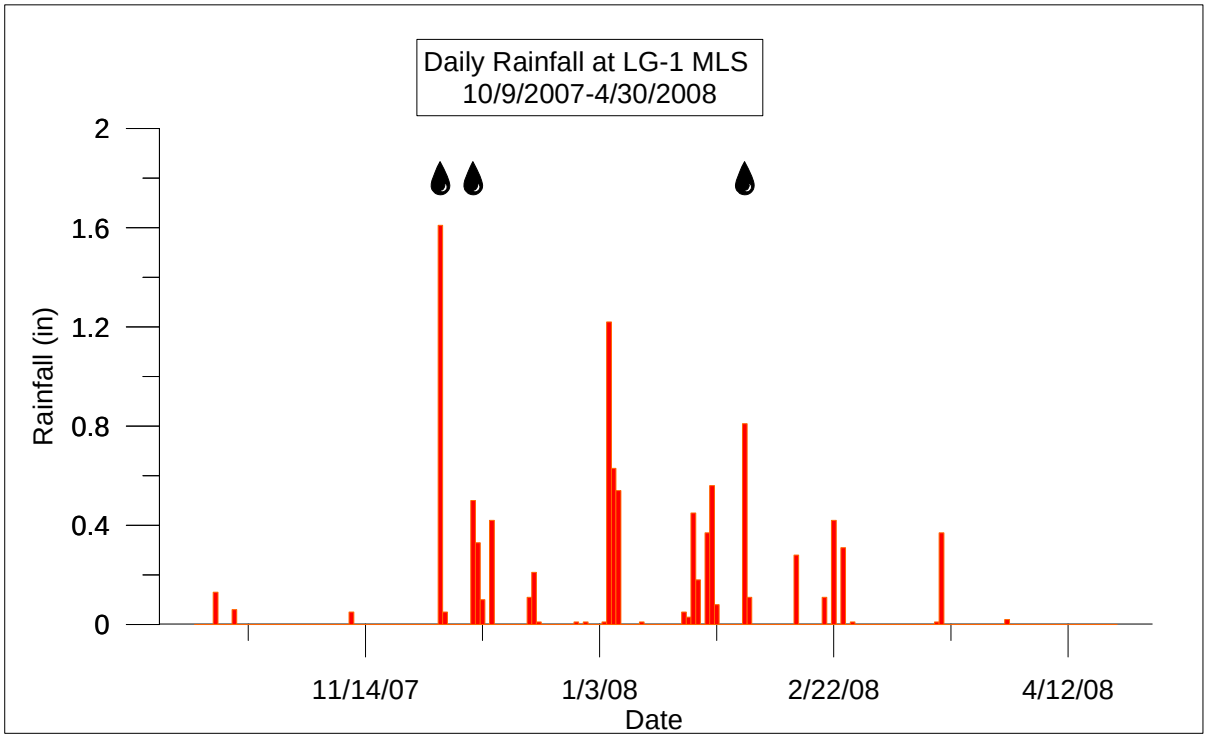
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10/9/2007-4/30/2008
Rainfall (in)
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Date

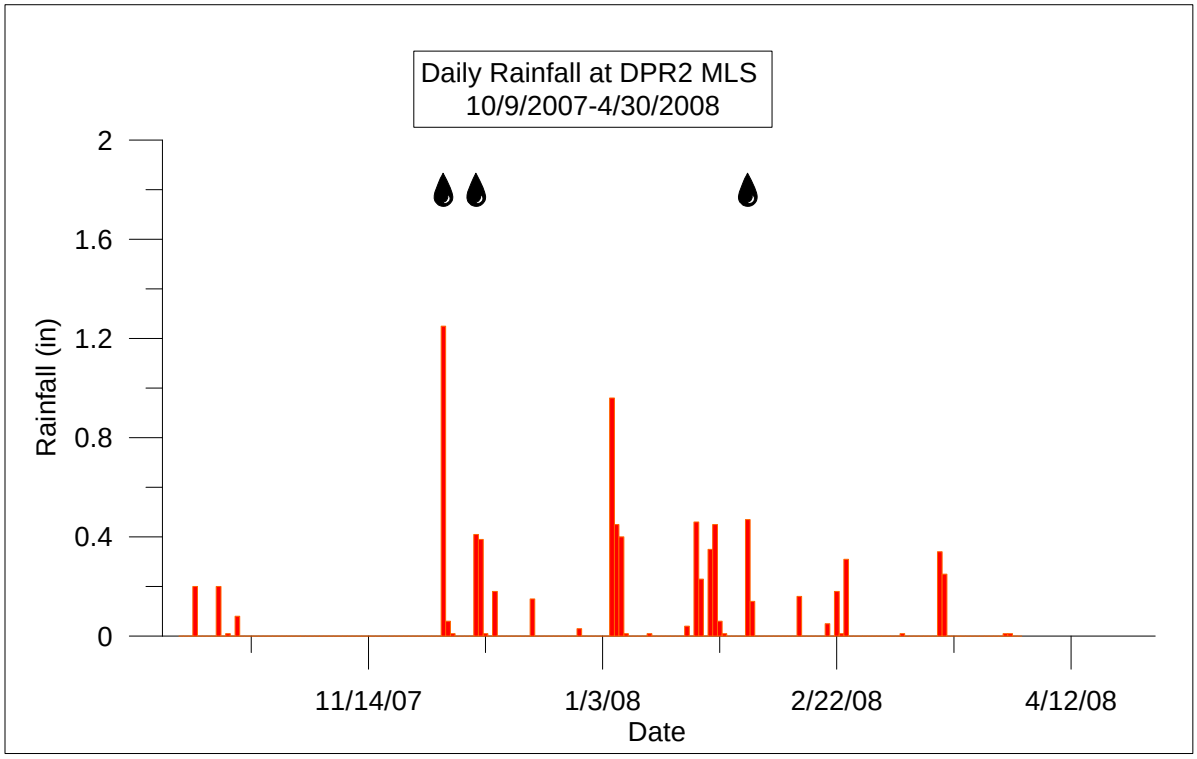
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10/9/2007-4/30/2008
Rainfall (in)
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Date

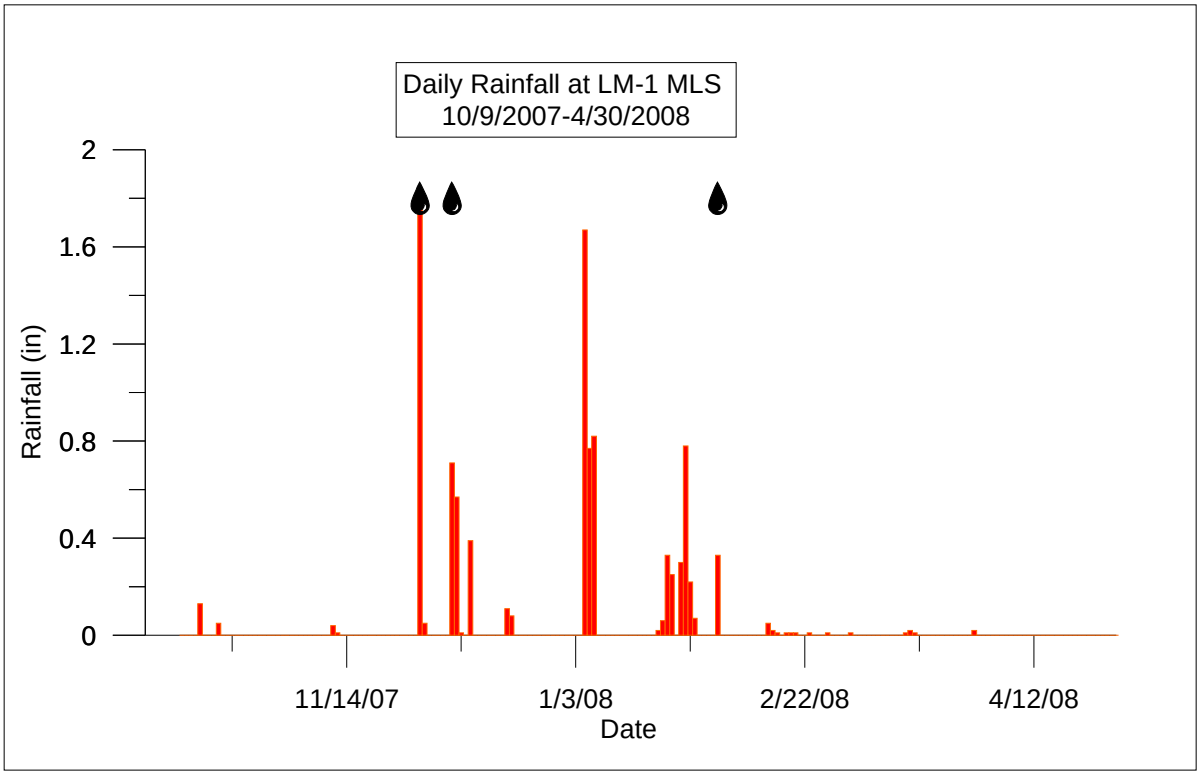
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Date

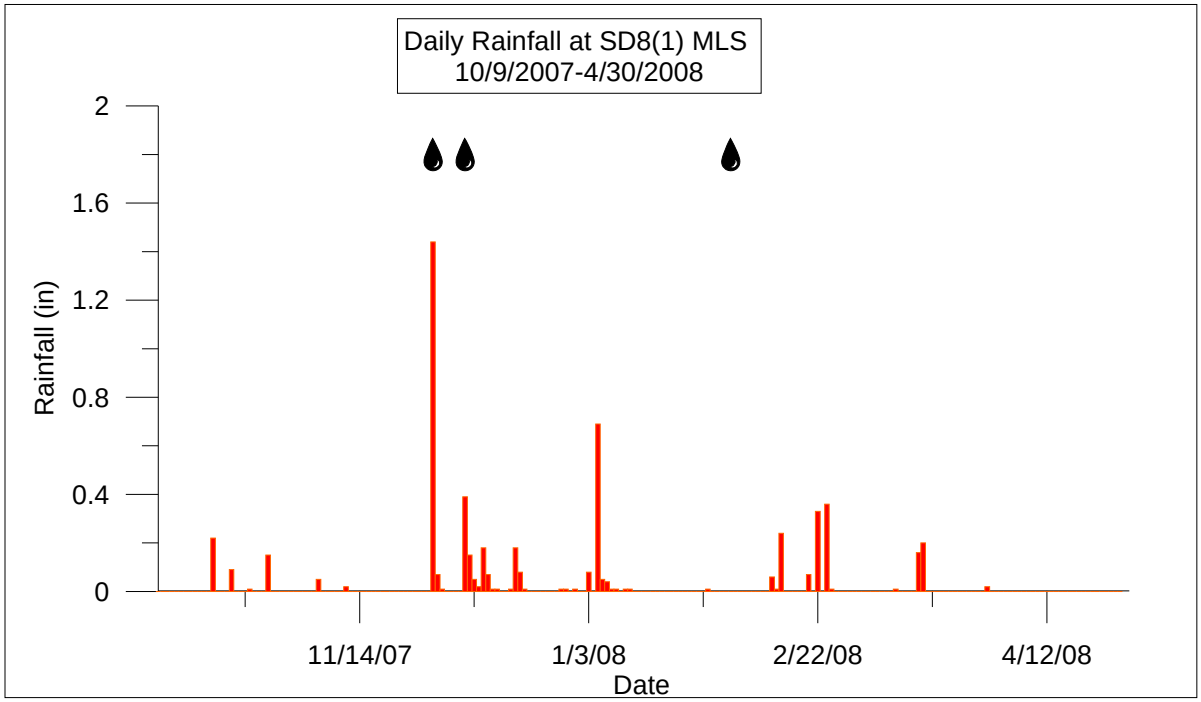
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Rainfall (in)
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11/14/07
1/3/08
2/22/08
4/12/08
Date

FW Storm Event - Saturday October 13

-----Original Message-----
From: Lilian Busse [mailto:lbusse@waterboards.ca.gov]
Sent: Tuesday, October 16, 2007 2:41 PM
To: Weber, Jo Ann
Subject: Re: Storm Event - Saturday, October 13

Jo Ann -
I received your email about the storm event on Oct. 13.
I agree, please wait with the pyrethroid monitoring until after the next storm event.
Thanks, Lilian

****
Lilian B. Busse, Ph.D.
Environmental Scientist
Southern Watershed Unit

San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

phone: 858-467-2971
fax: 858-571-6972
lbusse@waterboards.ca.gov
****

>>> "Weber, Jo Ann" <JoAnn.Weber@sdcounty.ca.gov> 10/16/2007 1:02 PM >>>
Dear Lilian, The storm event on Saturday did exceed the 0.1" threshold as required for sampling in 40CFR122.21(g)(7) and it is always our intent to capture the first event beginning Oct 1 per our permit (Rcv WatersProgramNo. R9-2007-0001;sec II.A.1.c). However, the rain event was predicted to be less than 0.1 inch and therefore, Weston discontinued tracking the storm and did not mobilize storm samplers, which is consistent with our protocol. Details of the tracking are attached and will be included as documentation in our Monitoring Annual Report for 2007-2008. I concur with the decision to discontinue tracking the storm. Mother Nature threw us a loop.

Please advise if you concur with when to sample sediments for pyrethroids. According to our Pyrethroids Monitoring Program submitted to you with our Scope of Work on August 29, 2007, we proposed to sample sediments at stations after the first rain event of the wet season. Weston reports that flows are still very low in watercourses compared to historical flows. I recommend that we hold off on sampling pyrethroids in sediment until after the next storm event. Additionally, by waiting until the next storm event, we will then have water column data on toxicity that is useful in assessing the potential affects of pyrethroids. I thank you in advance for your input.
Please do not hesitate to call me if you have questions or wish to further discuss.
Best regards, Jo Ann

Jo Ann Weber

Supervising Environmental Health Specialist

County of San Diego/DPW/Watershed Protection

5201 Ruffin Road, Suite P

San Diego, CA 92123, MS 0326

Tel: 858-495-5317

Fax: 858-495-5263

joann.weber@sdcounty.ca.gov

WESTON SOLUTIONS, INC.
2433 Impala Drive
Carlsbad, CA 92010
(760) 795-6900 / (760) 931-1580 FAX
www.westonsolutions.com

10/15/07

To: Ruth Kolb, City of San Diego
From: David Renfrew, Weston Solutions, Inc.

Subject: October 13, 2007 Storm Event Not Sampled for Sites DPR2 or SD8(1) for Regional Water Quality Control Board Order R9-2004-0277

On the morning of Saturday, October 13, 2007 a storm system affected the Chollas Creek Watershed with rainfall totals between 0.22 inches at Site SD8(1) to 0.20 inches at Site DPR2. The upper watershed areas near La Mesa and Lemon Grove received 0.12 to 0.15 inches. The county wide average for this storm event was 0.15 inches at the coast and valleys and 0.22 inches in the mountains.

This was the first storm event following October 1, 2007 which met the requirement for sampling under San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2004-0277. Weston Solutions, Inc. (Weston), the contractor responsible for monitoring, did not perform sampling due the storm quantitative precipitation forecasts (QPF) obtained from the National Weather Service predicting less than 0.1" for the San Diego coastal and valley areas. Weston uses best professional judgment in making storm event mobilization decisions. It is our opinion that this storm event was unpredictable and of lower magnitude for the purposes of storm event monitoring. This letter details the decisions that were made resulting in the decision for not sampling this storm event.

Weston monitors the National Weather Service (NWS) website at http://www.wrh.noaa.gov/sgx/. Forecasts posted on the website along with discussions of the forecast and QPF are utilized to determine if potential storms will be "chased" for monitoring purposes. If the QPF predicts measurable rain approximating 0.1 inches or more at the coast the day prior to a rain event or within 48 hours of a weekend event, storm event staffing will be notified to be on call and ready to perform monitoring. This decision is based the QPF forecast produced by the National Weather Service and other tools. Other tools that are used by Weston to verify the QPF include infrared satellite imagery, live streaming NEXRAD radar, and pressure gradient maps. Additionally, organisms for toxicity sampling must be ordered to meet the holding times for sampling prior to 1:00 p.m. the Friday before any weekend events. All of these decisions must be made at least 24 to 48 hours prior to a potential storm.

The following is a summary of the forecast tools and decisions made to not mobilize for this storm event. All discussions and precipitation forecasts are attached to this letter.

On Thursday, October 11, 2007, the 14:30 discussion contained the following within it referring to the chances of rain from the approaching system: "RAINFALL TOTALS...IF ANY...SHOULD BE LESS THAN A TENTH OF AN INCH IN MOST AREAS." This was specific to San Diego coastal areas and valleys, which are the focus of monitoring under the RWQCB Order No. R9-2004-0277. Infrared imagery and radar appeared to be tracking the precipitation to north of the San Diego Region.

On Friday, October 12, 2007, the 14:30 discussion contained the following within it referring to the chances of rain from the approaching system: "IF PRECIP DEVELOPS THEN RAINFALL TOTALS SHOULD GENERALLY BE LESS THAN A TENTH OF AN INCH...BUT THERE COULD BE LOCAL AMOUNTS TO NEAR A QUARTER INCH ON WEST FACING LOWER MOUNTAIN SLOPES." Again, infrared imagery and radar appeared to be tracking the precipitation to north of the San Diego Region which appeared to validate the NWS QPF.

Based on 1) these forecasts 2) the use of the phrases "if any" on Thursday and 3) "if precip develops" on Friday and 4) low amounts forecast in the QPF, the decision was made to not mobilize for this storm. This decision was consistent with the guidance provided in RWQCB Order R9-2004-0277 and 40 CFR 122.21(g)(7) since the system was forecast to produce less than 0.10" of rainfall, if any, at the coastal and valley areas of San Diego.

On Friday, October 12, 2007 at 20:26, the NWS issued a QPF with amounts forecast below 0.10" across San Diego County coastal areas and valleys.

Satellite and radar images at approximately 23:00 on Friday, October 12, 2007 were unimpressive and seemed to be in line with the forecast. Thus additional 'just in case' tracking of the storm ceased.

On Saturday, October 13, 2007, the 03:30 discussion contained the following within it referring to the chances of rain from the approaching system: "MANY LOCATIONS WILL GET A SHOT OF MEASURABLE RAIN THIS MORNING AS THE SYSTEM PASSES WITH AMOUNTS GENERALLY 1/10 INCH OR LESS"

Once the storm system began to actually affect San Diego County rainfall totals between approximately 03:00 and 08:00 were essentially double what had been forecast. This produced an event that met monitoring criteria in contrast to what had been forecast. Since staffing and toxicity organisms were not ordered based on the QPF, this storm event was not captured. Significant flows were not recorded at either Site DPR2 or SD8(1). Rainfall totals for this storm event are attached to this letter.

Please call me if you have any questions regarding this memo.

Sincerely,

David S. Renfrew
Project Manager
Weston Solutions, Inc.
760-795-6903 (direct)

Attachments:
Attachments (6)

Attachments:
1. Area Forecast – 10/12/07-0930
2. Area Forecast – 10/12/07-1430
3. Quantitative Precipitation Forecast-10/12/07-2026
4. Area Forecast – 10/13/07-0330
5. Rainfall Totals Text-10/13/07
6. Rainfall Totals-Map-10/13/07

1. Area Forecast – 10/12/07-0930

Note: Links in the text will open a (small) new browser window with more information inside.

Current Version Previous Version: 1 2 3 4 5 6 7 8 9 10

AREA FORECAST DISCUSSION

```
FXUS66 KSGX 121554
AFDSGX

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN DIEGO CA
930 AM PDT FRI OCT 12 2007

.SYNOPSIS...
UPPER LEVEL LOW PRESSURE APPROACHING FROM THE NORTHWEST WILL BRING
VARIABLE CLOUDINESS TODAY. CHANCE OF SHOWERS THIS EVENING THROUGH
SATURDAY MORNING...ALONG WITH LOCAL STRONG GUSTY WEST WINDS IN THE
MOUNTAINS AND DESERTS. FAIR AND WARMER SUNDAY UNDER HIGH PRESSURE.
PARTLY CLOUDY AND COOLER EARLY NEXT WEEK THEN FAIR AND WARMER TOWARD
THE END OF THE WEEK.

&&

.DISCUSSION...FOR SOUTHWEST CALIFORNIA INCLUDING SAN DIEGO...
ORANGE...SOUTHWEST SAN BERNARDINO AND WEST RIVERSIDE COUNTIES.

.SHORT TERM (TODAY-MON)...
LOW CLOUDS AND PATCHY FOG WERE INTO THE COASTAL MOUNTAIN SLOPES THIS
MORNING. THERE WERE ALSO HIGH CLOUDS IN THE NRN AREAS. THE 12Z NKX
SOUNDING HAD AN INVERSION BASED NEAR 3500 FT AND SHOWED THE HIGH
LEVEL MOISTURE IN SW WINDS ALOFT. ONSHORE GRADIENTS AND TRENDS WITH
ABOUT 7 MB SAN-IPL.

THE DEEP MARINE LAYER WILL RESULT IN A PARTIAL AND REVERSE CLEARING
PATTERN TODAY. THE UPPER LOW CURRENTLY CENTERED OFF THE NRN CA COAST
WILL DIG SW ACROSS SRN CA TONIGHT. THIS WILL BRING A CHANCE OF
SHOWERS...MAINLY OVER AND W OF THE MOUNTAINS. IF PRECIP DEVELOPS
THEN RAINFALL TOTALS SHOULD GENERALLY BE LESS THAN A TENTH OF AN
INCH...BUT THERE COULD BE LOCAL AMOUNTS TO NEAR A QUARTER INCH ON W
FACING LOWER MOUNTAIN SLOPES. THE CHANCE OF SHOWERS WILL TAPER OFF
SAT MORNING AND MOSTLY END BY AFTERNOON...EXCEPT FOR A FEW SHOWERS
POSSIBLY LINGERING IN THE MOUNTAINS. INCREASING WINDS ALOFT AND
ONSHORE GRADIENTS WILL CAUSE LOCAL GUSTY WINDS...MAINLY IN THE
MOUNTAINS AND DESERTS THIS AFTERNOON THROUGH SAT AND WIND ADVISORIES
```

ARE IN EFFECT. THERE COULD BE A RETURN OF MARINE LAYER CLOUDS SAT NIGHT AND SUN MORNING AND AGAIN SUN NIGHT INTO M0N SINCE THE LOW LEVELS REMAIN MOIST. OTHERWISE...FAIR AND WARMER WITH A SHORT WAVE RIDGE SUN...WEAKENING MON FOR A LITTLE COOLING.

&&

.LONG TERM (TUE-FRI)...
A FAST MOVING SHORT WAVE TROUGH WILL MOVE THROUGH MON NIGHT WITH BRIEF WEAK RIDGING TUE AND THEN ANOTHER BROADER TROUGH WILL MOVE THROUGH TUE NIGHT. THIS WILL MAINTAIN A MODERATELY DEEP MARINE LAYER WITH PARTLY CLOUDY SKIES IN MOST AREAS DURING THE AFTERNOONS AND BELOW SEASONAL TEMPS THROUGH WED. FAIR AND WARMER TOWARD THE END OF NEXT WEEK UNDER HIGH PRESSURE WITH WEAK OFFSHORE FLOW.

&&

.AVIATION...
121430Z...MDCRS SOUNDINGS AND EARLY MORNING TOP REPORTS INDICATE THE MARINE LAYER HAD DEEPENED TO AROUND 4000 FEET. STRATOCU WITH BASES AROUND 3000 TO 3500 FEET MSL EXTENDS FROM THE COASTAL WATERS TO THE COASTAL SLOPES OF THE MOUNTAINS. DEPTH OF THE MARINE LAYER AND CONTINUED ONSHORE FLOW SHOULD KEEP A STRATOCU LAYER OVER THE AREA THROUGH THE AFTERNOON WITH SOME SCATTERING POSSIBLE ALONG THE COAST UNDER A REVERSE CLEARING PATTERN. HOWEVER...ANY CLEARING SHOULD BE BRIEF. CLOUDS SHOULD LOWER AND THICKEN THIS EVENING AND TONIGHT AS A COLD FRONT APPROACHES FROM THE NORTHWEST. THIS COLD FRONT IS EXPECTED TO MOVE THROUGH SOUTHERN CALIFORNIA BETWEEN 12Z AND 15Z ON SATURDAY. THIS FRONT SHOULD BRING SOME SHOWERS LATE TONIGHT INTO SATURDAY MORNING. CLOUDS SHOULD BREAK UP BEHIND THE FRONT ON SATURDAY.

GUSTY SOUTHWEST TO WEST WINDS ACROSS THE MOUNTAINS SHOULD BRING SOME MOUNTAIN WAVE/ROTOR ACTIVITY TO THE ADJACENT DESERT AREAS ESPECIALLY NEAR KPSP TODAY AND TONIGHT. HORTON

&&

.SGX WATCHES/WARNINGS/ADVISORIES...

WIND ADVISORY FOR THE HIGHER MOUNTAINS AND FOR THE DESERTS FROM 2 PM THIS AFTERNOON UNTIL 8 PM SATURDAY. SEE LAXNPWSGX.

&&

$$

PUBLIC...DVA
AVIATION...HORTON

2. Area Forecast – 10/12/07-1430

Note: Links in the text will open a (small) new browser window with more information inside.

Current Version Previous Version: 1 2 3 4 5 6 7 8 9 10

AREA FORECAST DISCUSSION

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FXUS66 KSGX 122031
AFDSGX

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN DIEGO CA
230 PM PDT FRI OCT 12 2007

.SYNOPSIS...
UPPER LEVEL LOW PRESSURE APPROACHING FROM THE NORTHWEST WILL BRING A
CHANCE OF SHOWERS THIS EVENING THROUGH SATURDAY MORNING...ALONG WITH
LOCAL STRONG GUSTY WEST WINDS IN THE MOUNTAINS AND DESERTS. FAIR AND
WARMER SUNDAY UNDER HIGH PRESSURE. PARTLY CLOUDY AND COOLER EARLY
NEXT WEEK THEN FAIR AND WARMER TOWARD THE END OF THE WEEK.

&&

.DISCUSSION...FOR SOUTHWEST CALIFORNIA INCLUDING SAN DIEGO...
ORANGE...SOUTHWEST SAN BERNARDINO AND WEST RIVERSIDE COUNTIES.

.SHORT TERM (TODAY-MON)...
LOW CLOUDS AND PATCHY FOG WERE INTO THE COASTAL MOUNTAIN SLOPES THIS
MORNING. SC BROKE UP IN A REVERSE CLEARING PATTERN BY NOON. EARLY
AFTERNOON ACARS SOUNDINGS INDICATED AN INVERSION BASED NEAR 3800 FT
WITH STRONG WSW WINDS ALOFT. ONSHORE GRADIENTS AND TRENDS WITH
7-8 MB SAN-IPL.

THE UPPER LOW CURRENTLY CENTERED OFF THE CENTRAL CA COAST WILL DIG
SW ACROSS SRN CA TONIGHT. THIS WILL BRING A CHANCE OF
SHOWERS...MAINLY OVER AND W OF THE MOUNTAINS. IF PRECIP DEVELOPS
THEN RAINFALL TOTALS SHOULD GENERALLY BE LESS THAN A TENTH OF AN
INCH...BUT THERE COULD BE LOCAL AMOUNTS TO NEAR A QUARTER INCH ON W
FACING LOWER MOUNTAIN SLOPES. THE CHANCE OF SHOWERS WILL TAPER OFF
SAT MORNING AND MOSTLY END BY AFTERNOON...EXCEPT FOR A FEW SHOWERS
POSSIBLY LINGERING IN THE MOUNTAINS. INCREASING WINDS ALOFT AND
ONSHORE GRADIENTS WILL CAUSE LOCAL GUSTY WINDS...MAINLY IN THE
MOUNTAINS AND DESERTS THIS AFTERNOON THROUGH SAT AND WIND ADVISORIES
ARE IN EFFECT. THERE COULD BE A RETURN OF MARINE LAYER CLOUDS SAT
NIGHT AND SUN MORNING AND AGAIN SUN NIGHT INTO M0N SINCE THE LOW
LEVELS REMAIN MOIST. OTHERWISE...FAIR AND WARMER WITH A SHORT WAVE
RIDGE SUN...WEAKENING MON FOR A LITTLE COOLING.

&&

.LONG TERM (TUE-FRI)...
A FAST MOVING SHORT WAVE TROUGH WILL MOVE THROUGH MON NIGHT WITH
BRIEF WEAK RIDGING TUE AND THEN ANOTHER BROADER TROUGH WILL MOVE
THROUGH TUE NIGHT. THIS WILL MAINTAIN A MODERATELY DEEP MARINE LAYER
```

WITH PARTLY CLOUDY SKIES IN MOST AREAS DURING THE AFTERNOONS AND BELOW SEASONAL TEMPS THROUGH WED. FAIR AND WARMER TOWARD THE END OF NEXT WEEK UNDER HIGH PRESSURE WITH WEAK OFFSHORE FLOW.

&&

.AVIATION...
121930Z...MARINE LAYER DEPTH REMAINS AROUND 4000 FEET BUT SHOULD DEEPEN TO AROUND 6000 FEET TONIGHT. BROKEN STRATOCU WITH BASES AROUND 3500 FEET MSL EXTENDS FROM THE COAST WATERS TO THE COASTAL SLOPES OF THE MOUNTAINS. CLOUDS SHOULD LOWER TO AROUND 1500 TO 2000 FEET MSL THIS EVENING AND TONIGHT AS A COLD FRONT APPROACHES FROM THE NORTHWEST. THIS COLD FRONT WILL WEAKEN AS IT MOVES THROUGH SOUTHERN CALIFORNIA BETWEEN 12Z AND 16Z ON SATURDAY. THIS FRONT SHOULD BRING SCATTERED SHOWERS LATE TONIGHT INTO SATURDAY MORNING. CLOUDS SHOULD BECOME SCATTERED TO BROKEN DURING THE AFTERNOON ON SATURDAY.

GUSTY SOUTHWEST TO WEST WINDS ACROSS THE MOUNTAINS SHOULD BRING SOME MOUNTAIN WAVE/ROTOR ACTIVITY TO THE ADJACENT DESERT AREAS ESPECIALLY NEAR KPSP THROUGH TONIGHT. HORTON

&&

.SGX WATCHES/WARNINGS/ADVISORIES...

WIND ADVISORY FOR THE HIGHER MOUNTAINS AND FOR THE DESERTS UNTIL 8 PM SATURDAY. SEE LAXNPWSGX.

&&

$$

PUBLIC...DVA
AVIATION...HORTON

3. Quantitative Precipitation Forecast-10/12/07-2026

Current Version Previous Version: 1 2 3 4 5

QUANTITATIVE PRECIPITATION STATEMENT

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FSUS46 KSGX 130326
QPSSGX

QUANTITATIVE PRECIPITATION FORECAST
NATIONAL WEATHER SERVICE SAN DIEGO CA
826 PM PDT FRI OCT 12 2007

PRECIPITATION FORECAST IN INCHES IN 6-HOUR PERIODS...
   [ TIMES IN EACH COLUMN ARE BEGINNING AND ENDING TIMES IN LOCAL TIME...]
   [ FOR EXAMPLE...05THU                                                 ]
   [            ...11THU IS A FORECAST FOR  5 AM TO 11 AM THURSDAY       ]
   [ FOR EXAMPLE...23THU                                                 ]
   [            ...05FRI IS A FORECAST FOR  11 PM THURSDAY TO 5 AM FRIDAY]


   FORECAST PERIODS:
   17FRI 23FRI 05SAT 11SAT 17SAT 23SAT 05SUN 11SUN 17SUN 23SUN
   23FRI 05SAT 11SAT 17SAT 23SAT 05SUN 11SUN 17SUN 23SUN 05MON


...ORANGE COUNTY COASTAL AREAS...
   HUNTINGTON BEACH
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   NEWPORT BEACH
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   LAGUNA BEACH
   0.00  0.07  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SAN CLEMENTE
   0.00  0.06  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   ANAHEIM
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   FULLERTON
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   BREA
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   VILLA PARK
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SANTA ANA MOUNTAINS AND FOOTHILLS...
   FREMONT CANYON
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SANTIAGO PEAK
   0.00  0.10  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SANTA ROSA PLATEAU
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN BERNARDINO AND RIVERSIDE COUNTY VALLEYS-THE INLAND EMPIRE...
   ONTARIO
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SAN BERNARDINO
```

```
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   BEAUMONT
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   RIVERSIDE
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   PERRIS VALLEY CHANNEL
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   PRADO DAM
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   TEMECULA
   0.00  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   HEMET
   0.00  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...RIVERSIDE COUNTY MOUNTAINS...
   IDYLLWILD
   0.00  0.12  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...COACHELLA VALLEY...
   PALM SPRINGS
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   THERMAL
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN BERNARDINO COUNTY MOUNTAINS...
   SAN ANTONIO DAM
   0.02  0.09  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   LYTLE CREEK
   0.00  0.07  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   WRIGHTWOOD
   0.02  0.05  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   BIG BEAR LAKE
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   BIG MORONGO CANYON
   0.00  0.03  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...APPLE AND LUCERNE VALLEYS...
   HESPERIA
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   VICTORVILLE
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   APPLE VALLEY
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN DIEGO COUNTY COASTAL AREAS...
   OCEANSIDE
   0.00  0.07  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   MIRAMAR
   0.00  0.09  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   LINDBERGH FIELD
   0.00  0.08  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   CHULA VISTA
   0.00  0.08  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   SAN YSIDRO
   0.00  0.08  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN DIEGO COUNTY VALLEYS...
   FALLBROOK
```

```
   0.00  0.06  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   RANCHO BERNARDO
   0.00  0.08  0.01  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   LA MESA
   0.00  0.10  0.01  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   EL CAJON
   0.00  0.09  0.02  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN DIEGO COUNTY MOUNTAINS...
   PALOMAR MOUNTAIN
   0.00  0.11  0.04  0.00  0.00  0.00  0.00  0.00  0.00  0.00
   JULIAN
   0.00  0.16  0.05  0.02  0.00  0.00  0.00  0.00  0.00  0.00
   MOUNT LAGUNA
   0.00  0.16  0.04  0.02  0.00  0.00  0.00  0.00  0.00  0.00
   CAMPO
   0.00  0.10  0.02  0.00  0.00  0.00  0.00  0.00  0.00  0.00

...SAN DIEGO COUNTY DESERTS...
   BORREGO SPRINGS
   0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
```

A LOW PRESSURE TROUGH TRACKING ACROSS SOUTHERN CALIFORNIA TONIGHT BRINGING SCATTERED LIGHT SHOWERS THROUGH SATURDAY MORNING. RAINFALL AMOUNT WILL LESS THEN 1/10TH OF AN INCH. WESTERN MOUNTAINS SLOPES WILL HAVE THE BEST CHANCE FOR HEAVIER AMOUNTS...LOCALLY UP TO 2/10THS OF AN INCH.

4. Area Forecast – 10/13/07-0330

Note: Links in the text will open a (small) new browser window with more information inside.

Current Version Previous Version: 1 2 3 4 5 6 7 8 9 10

AREA FORECAST DISCUSSION

```
FXUS66 KSGX 131147
AFDSGX

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE SAN DIEGO CA
330 AM PDT SAT OCT 13 2007

.SYNOPSIS...
A LOW PRESSURE TROUGH WILL BRING SCATTERED SHOWERS THIS MORNING...
WITH A COOL AIRMASS TODAY AND LOCAL STRONG GUSTY WEST WINDS IN THE
MOUNTAINS AND DESERTS. SUNDAY WILL BE FAIR AND WARMER UNDER HIGH
PRESSURE. PARTLY CLOUDY EARLY NEXT WEEK WITH NIGHT AND MORNING
MARINE LAYER CLOUDS NEAR THE COAST.

&&

.DISCUSSION...FOR SOUTHWEST CALIFORNIA INCLUDING SAN DIEGO...
ORANGE...SOUTHWEST SAN BERNARDINO AND WEST RIVERSIDE COUNTIES.

.SHORT TERM (TODAY-TUE)...
WELL DEFINED TROUGH AXIS AND ASSOCIATED VORTMAX PASSING DIRECTLY
OVER THE FORECAST AREA EARLY THIS MORNING. RADAR AND SURFACE OBS
SHOWED A LARGE AREA OF LIGHT SHOWERS AND SOME EMBEDDED LOCAL HEAVIER
CELLS MOVING THROUGH THE REGION. MANY LOCATIONS WILL GET A SHOT OF
MEASURABLE RAIN THIS MORNING AS THE SYSTEM PASSES WITH AMOUNTS
GENERALLY 1/10 INCH OR LESS...BUT ALSO LOCAL AMOUNTS TO NEAR A
QUARTER INCH OR SO. BOTH FULLERTON AND ONTARIO TALLIED ABOUT
0.30 INCH. SCATTERED SHOWERS SHOULD TAPER OFF BY NOON EXCEPT A
LINGERING SLIGHT CHANCE IN THE SAN DIEGO MOUNTAINS. REVERSE CLEARING
PATTERN POSSIBLE TODAY WITH BEST CLEARING NEAR THE COAST AND SOME
LINGERING CLOUDS NEAR THE FOOTHILLS/MTNS.

STRONG WINDS ALOFT...ONSHORE GRADIENTS AND SUBSIDENCE WILL CONTINUE
TO CAUSE LOCAL STRONG GUSTY WINDS TODAY IN THE MOUNTAINS AND DESERTS
WHERE WIND ADVISORIES REMAIN IN EFFECT. WINDS WILL DECREASE LATE
TODAY AND TONIGHT AS THE UPPER TROUGH SHIFTS EAST.

AREAS OF MARINE LAYER CLOUDS COULD RETURN LATE TONIGHT INTO SUNDAY
MORNING AND MORESO FOR SUNDAY NIGHT/MONDAY MORN AS LOW LEVELS REMAIN
MOIST. OTHERWISE FAIR AND WARMER SUNDAY AND MONDAY WITH A SHORT WAVE
RIDGE TRANSITIONING THROUGH. A FAST MOVING WEAKER UPPER TROUGH WILL
PASS OVER MON NIGHT AND EARLY TUE FOR SLIGHT COOLING AND DEEPER
MARINE LAYER. TEMPERATURES ON AVERAGE A BIT BELOW SEASONAL NORMALS.

&&

.LONG TERM (WED-SAT)...
```

A PROGRESSIVE UPPER PATTERN WILL CONTINUE WITH AN ACTIVE PACIFIC JET STAYING WELL TO OUR NORTH THROUGH THE PERIOD. DRY WITH TEMPERATURES TRENDING UPWARD. EXPECT A FLAT UPPER RIDGE WED...THEN A BROAD TROUGH PASSES TO THE N WED NIGHT/THU WITH MINIMAL IMPACT...THEN A STRONGER RIDGE AND WARMER ON FRI/SAT.

&&

.AVIATION...
130930Z...APPEARS THAT LAST BAND OF SHOWERS MOVING INTO THE COAST AT THIS TIME. MOSTLY LIGHT RAIN WITH LOCAL MODERATE AND ISOLATED BRIEF HEAVY RAIN MOVING THROUGH NORTHERN ORANGE COUNTY AND SAN BERNARDINO COUNTY AT THIS TIME. VIS 3SM TO 5SM AND LOCALLY BELOW 3SM IN HEAVIER SHOWERS. RAIN UNTIL ABOUT 11-12Z THEN SOME SCATTERED SHOWERS THIS MORNING. SCATTERED TO LOCALLY BROKEN CLOUDS THIS AFTERNOON WITH POSSIBLE SHOWERS IN THE MOUNTAINS. BROKEN CLOUDS MAINLY OVER THE MOUNTAINS WITH HIGHER TERRAIN LOCALLY OBSCURED. BASES AROUND 3K FT MSL WITH LOCAL BASES IN RAIN TO 1000 FT. TOPS MOSTLY AROUND 10K WITH ISOLATED TOPS TO 20K. HIGH PRESSURE ALOFT MOVES OVER SUNDAY WITH VERY WEAK NORTHEAST FLOW IN THE MORNING. STRONG GUSTY WEST TO NORTHWEST WINDS ALOFT EARLY THIS MORNING WILL DECREASE THROUGH AFTERNOON AND TURN TO THE LIGHT NORTH TONIGHT. BECOMING CLEAR TONIGHT. LIGHT NORTHEAST WINDS SUNDAY WITH SUNNY SKIES.

GUSTY WNW WINDS ACROSS THE MOUNTAINS COULD BRING SOME MOUNTAIN WAVE/ROTOR ACTIVITY TO THE ADJACENT DESERT AREAS THIS MORNING.

&&

.SGX WATCHES/WARNINGS/ADVISORIES...

WIND ADVISORY FOR THE HIGHER MOUNTAINS AND FOR THE DESERTS UNTIL 8 PM SATURDAY. SEE LAXNPWSGX.

&&

$$

PUBLIC...LAVIS
AVIATION...WHITLOW

5. Rainfall Totals Text-10/13/07

Current Version Previous Version: 1 2 3 4 5

MISCELLANEOUS HYDROLOGIC DATA

```
SGUS46 KSGX 132001
RRMSGX

RAINFALL STORM TOTAL SUMMARY
NATIONAL WEATHER SERVICE SAN DIEGO CA
1 PM PDT SAT OCT 13 2007

...RAINFALL AMOUNTS AS OF NOON TODAY...


------------------------------ ORANGE COUNTY--------------------------------

ORANGE CO COASTAL PLAIN, ZONE CAZ042                    10/13/2007  19:10 UTC
```

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
BREA.....	0	0	0	0.08	0.59	0.59	0.59
BREA OLINDA.....	0	0	0	0.12	0.47	0.47	0.47
FULLERTON AIRPORT.....	0	0.04	0.04	0.08	0.67	0.67	0.67
FULLERTON CREEK.....	0	0	0	0.04	0.39	0.39	0.39
MILLER BASIN.....	0	0	0	0.08	0.51	0.51	0.51
YORBA RESERVOIR.....	0	0	0	0.08	0.55	0.55	0.55
YORBA PARK.....	0	0	0	0.04	0.47	0.47	0.47
GILBERT RETENSION BASIN.....	0	0	0	0	0.47	0.47	0.47
COSTA MESA.....	0	0	0	0.04	0.20	0.20	0.20
ALAMEDA STORM.....	0	0	0	0	0.35	0.35	0.35
VILLA PARK.....	0	0	0	0	0.43	0.43	0.43
GARDEN GROVE.....	0.04	0.04	0.04	0.08	0.55	0.55	0.55
PORTOLA PEAK.....	0	0	0	0.04	1.85	1.85	1.85
ANAHEIM BARBER CITY.....	0	0.04	0.04	0.04	0.59	0.59	0.59
WESTMINSTER.....	0.04	0.04	0.04	0.04	0.55	0.55	0.55
HUNTINGTON BEACH.....	0	0	0	0	0.13	0.13	0.13
OCEANVIEW.....	0	0	0	0.04	0.51	0.51	0.51
EL MODENA IRVINE.....	0	0	0	0	0.16	0.16	0.16
BEE CANYON.....	0	0	0	0	0.12	0.12	0.12
UPPER OSO CREEK.....	0	0	0	0.12	0.24	0.24	0.24
UPPER ALISO CREEK.....	0	0	0	0	0.12	0.12	0.12
SAN DIEGO CREEK AT CULVER...	0	0	0	0	0.04	0.04	0.04
SAND CANYON.....	0	0	0	0	0.16	0.16	0.16
SAN DIEGO CREEK AT CAMPUS...	0	0.04	0.04	0.04	0.24	0.24	0.24
CORONA DEL MAR.....	0	0	0	0	0.08	0.08	0.08
EL TORO.....	0	0	0	0.04	0.20	0.20	0.20
COTO DE CAZA.....	0	0	0	0.08	0.28	0.28	0.28
SAN JUAN GUARD.....	0	0	0	0	0.28	0.28	0.28
LAGUNA BEACH.....	0	0	0	0	0.20	0.20	0.20
LAGUNA NIGUEL PARK.....	0	0	0	0.04	0.20	0.20	0.20
OSO CREEK.....	0	0	0	0.16	0.20	0.20	0.20
LOWER OSO CREEK.....	0	0	0	0.04	0.16	0.16	0.16
LACOUAGE.....	0	0	0	0.04	0.08	0.08	0.08
SAN JUAN CAPISTRANO.....	0	0	0	0.12	0.12	0.12	0.12
PICO RETARDING BASIN.....	0	0	0	0	0.08	0.08	0.08

SEGUNDA DESHECHA.....	0	0	0	0	0.04	0.04	0.04

ORANGE CO SANTA ANA MTNS & FOOTHILLS, ZONE CAZ057 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
UPPER SILVERADO CANYON.....	0	0	0	0	0.16	0.16	0.16

---------- SAN BERNARDINO COUNTY ----------

SAN BERNARDINO CO VALLEYS, ZONE CAZ048 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
DEVORE FIRE STATION.....	0	0	0	0.02	0.02	0.02	0.02
GLEN HELEN REGIONAL PARK....	0	0.04	0.04	0.04	0.08	0.08	0.08
DEER CREEK DAM.....	0	0	0	0	0.31	0.31	0.31
DEMENS CREEK DEBRIS BASIN...	0	0	0	0	0.33	0.33	0.33
AMONGA CRK NR MIRA LOMA..	0	0	0	0	0.10	0.10	0.10

SAN BERNARDINO CO MOUNTAINS, ZONE CAZ055 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
PANORAMA POINT.....	0	0	0	0	0.04	0.04	0.04
HEART BAR.....	0	0.03	0.03	0.03	0.05	0.05	0.05

---------- RIVERSIDE COUNTY ----------

RIVERSIDE CO VALLEYS, ZONE CAZ048 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
PIDGEON PASS DAM.....	0	0	0	0.04	0.16	0.16	0.16
MORENO-CLARK.....	0	0	0	0	0.12	0.12	0.12
WOODCREST DAM.....	0	0	0	0.04	0.12	0.12	0.12
LAKE MATHEWS.....	0	0	0	0	0.15	0.15	0.15
RAILROAD CANYON DAM.....	0	0	0	0.04	0.12	0.12	0.12
MURRIETA CREEK AT TENAJA....	0	0	0	0.04	0.16	0.16	0.16
SKINNER LAKE.....	0	0	0	0.04	0.04	0.04	0.04

RIVERSIDE CO MOUNTAINS, ZONE CAZ056 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
BEAUMONT.....	0	0	0	0.08	0.20	0.20	0.20
BANNING BENCH.....	0	0	0	0.04	0.16	0.16	0.16
TICK RIDGE.....	0	0	0	0	0.04	0.04	0.04
ANGELUS HILL.....	0	0	0	0	0.08	0.08	0.08
ALANDALE.....	0	0	0	0.04	0.16	0.16	0.16
RED MOUNTAIN.....	0	0	0	0.04	0.08	0.08	0.08

RIVERSIDE CO COACHELLA VALLEY, ZONE CAZ061 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
TA GRANDE.....	0	0	0	0	0.12	0.12	0.12
SNOW CREEK W. FORK.....	0	0	0	0.04	0.04	0.04	0.04

---------- SAN DIEGO COUNTY ----------

SAN DIEGO CO COASTS, ZONE CAZ043 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
SAN ONOFRE.....	0	0	0	0	0.04	0.04	0.04
OCEANSIDE.....	0	0	0	0.12	0.20	0.20	0.20
LOMA ALTA.....	0	0	0	0.04	0.12	0.12	0.12
AGUA HEDIONDA.....	0	0	0	0	0.12	0.12	0.12
EL CAMINO DEL NORTE.....	0	0	0	0.04	0.12	0.12	0.12
ENCINITAS.....	0.04	0.04	0.04	0.16	0.20	0.20	0.20
SAN ELIJO LAGOON.....	0	0	0.04	0.12	0.16	0.16	0.16
KEARNY MESA.....	0	0	0	0.12	0.12	0.12	0.12
FASHION VALLEY.....	0	0.08	0.08	0.20	0.24	0.24	0.31
BONITA.....	0	0	0.04	0.08	0.08	0.08	0.08

SAN DIEGO CO VALLEYS, ZONE CAZ050 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
SANDIA CREEK ROAD.....	0	0	0.04	0.12	0.28	0.28	0.28
FALLBROOK.....	0	0	0	0.08	0.24	0.24	0.24
COLE GRADE ROAD.....	0	0	0	0.04	0.12	0.12	0.12
BONSALL CRS.....	0	0	0	0.08	0.20	0.20	0.20
COUSER CYN.....	0	0	0	0.04	0.24	0.24	0.24
OAT FLATS.....	0	0	0	0.12	0.20	0.20	0.20
RINCON SPRINGS F.S.....	0	0	0	0.04	0.12	0.12	0.12
VALLEY CENTER.....	0	0	0	0.04	0.16	0.16	0.16
SKYLINE RANCH.....	0	0	0	0.04	0.20	0.20	0.20
LAKE WOHLFORD.....	0	0	0	0.04	0.16	0.16	0.16
DEER SPRINGS.....	0	0.04	0.04	0.08	0.24	0.24	0.24
SAN MARCOS COUNTY LAND FILL.	0	0	0	0	0.08	0.08	0.08
ESCONDIDO.....	0	0	0	0.04	0.16	0.16	0.16
RAMONA.....	0	0	0	0.10	0.14	0.14	0.14
MT. WOODSON @RAMONA FIRE....	0	0	0	0.12	0.20	0.20	0.20
BARONA.....	0	0	0	0.08	0.08	0.08	0.08
RANCHO BERNARDO, NWS.....	0	0.06	0.06	0.13	0.19	0.19	0.19
POWAY.....	0	0.04	0.04	0.12	0.16	0.16	0.16
SD COUNTRY ESTATES.....	0	0.04	0.08	0.16	0.20	0.20	0.20
RANCHITA MARGARITA.....	0	0.04	0.04	0.12	0.16	0.16	0.16
SAN VICENTE.....	0	0	0	0.04	0.04	0.04	0.04
FLINN SPRINGS CO. PARK.....	0	0	0	0.04	0.04	0.04	0.04
SANTEE.....	0	0	0	0.12	0.12	0.12	0.12
LOS COCHES CREEK.....	0	0	0	0.04	0.04	0.04	0.04
HARBISON CYN.....	0	0	0.04	0.08	0.08	0.08	0.08
LAKE MURRAY.....	0	0	0	0.08	0.08	0.08	0.08
ROADS DIV 1 HDQTRS.....	0	0	0	0.04	0.04	0.04	0.04
THOUSAND TRAILS.....	0	0	0	0.03	0.03	0.03	1.27
DULZURA SUMMIT.....	0	0	0	0.04	0.04	0.04	0.04
POTRERO CNTY PK.....	0.04	0.04	0.04	0.12	0.12	0.12	0.12

SAN DIEGO CO MOUNTAINS, ZONE CAZ058 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
RAINBOW CAMP.....	0	0	0	0.12	0.20	0.20	0.20

PALOMAR OBSERVATORY.....	0	0	0	0.08	0.16	0.16	0.16
BIRCH HILL.....	0	0	0	0.16	0.39	0.39	0.39
LA JOLLA AMAGO.....	0	0	0	0.08	0.24	0.24	0.24
HENSHAW DAM.....	0	0	0	0.04	0.20	0.20	0.20
SUTHERLAND RESERVOIR.....	0.04	0.04	0.04	0.16	0.24	0.24	0.24
SANTA YSABEL.....	0.04	0.08	0.08	0.20	0.35	0.35	0.35
WITCH CREEK FIRE STATION....	0	0	0	0.08	0.08	0.08	0.08
VOLCAN MTN.....	0	0	0.04	0.12	0.24	0.24	0.24
JULIAN.....	0.04	0.04	0.08	0.16	0.31	0.31	0.31
PINE HILLS FS.....	0	0.04	0.08	0.16	0.31	0.31	0.31
CUYAMACA.....	0	0	0.08	0.08	0.16	0.16	0.16
ECHO DELL.....	0	0	0	0.04	0.08	0.08	0.08
DESCANSO R.S.....	0	0	0.04	0.12	0.16	0.16	0.16
MOUNT LAGUNA CRS.....	0	0	0.12	0.12	0.16	0.16	0.16

SAN DIEGO CO DESERTS, ZONE CAZ062 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
RRA DEL SOL.....	0	0	0.04	0.08	0.12	0.12	0.12

BAJA CALIFORNIA, TIJUANA WATERSHED 10/13/2007 19:10 UTC

	1-HR	2-HR	3-HR	6-HR	12-HR	24-HR	48-HR
RANCHO TECATE.....	0	0	0.04	0.08	0.08	0.08	0.08

DVA

6. Rainfall Totals-Map-10/13/07

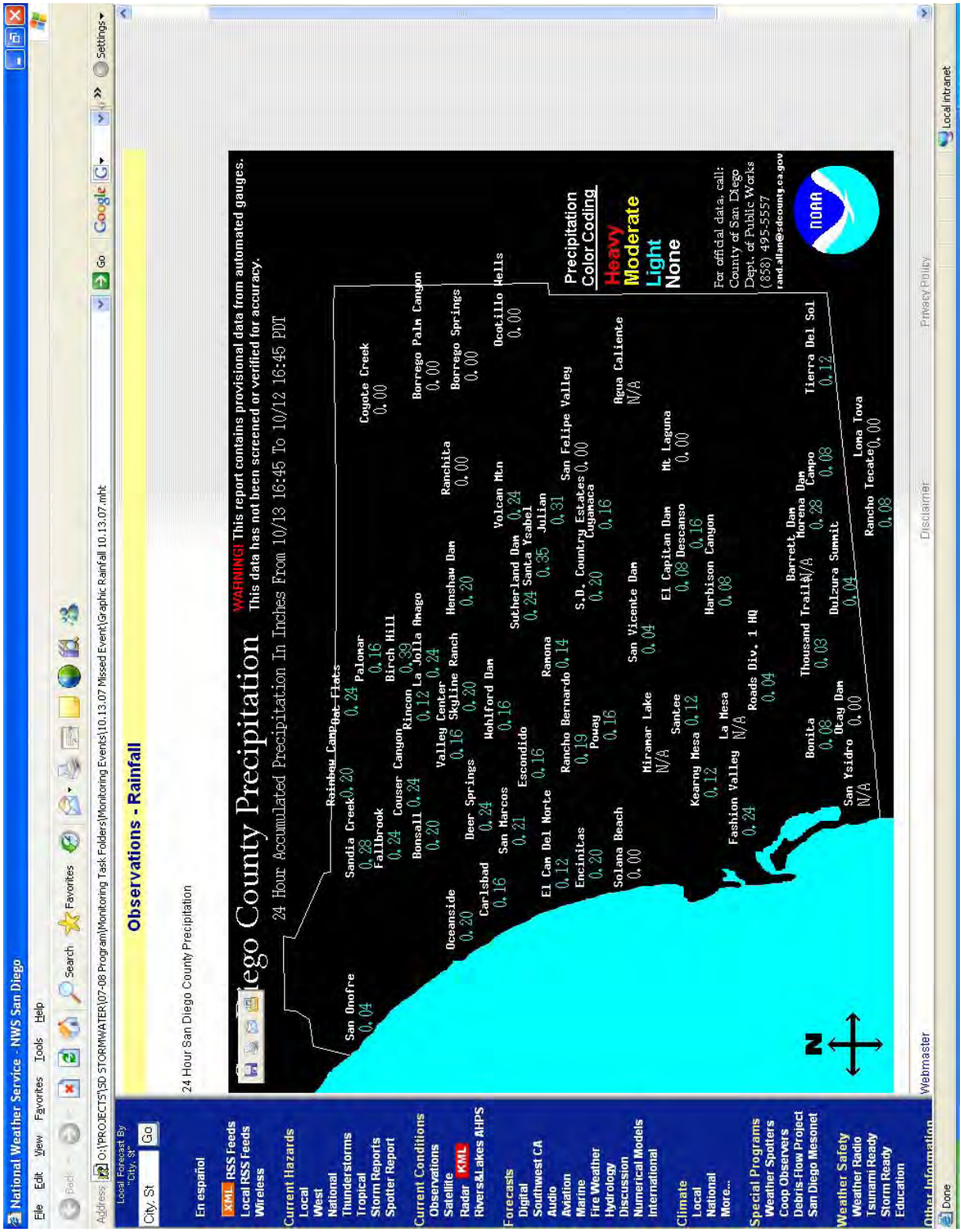

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
County of SD MS4 Dry Weather	3-5-08	D. Renfrew	J. Schollée
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
Lemon Grove (Federal)			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
LG	0815	0	0900
FIELD TEAM			
JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Overcast, no wind

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☑ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☑ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)	None				
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☑ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

Channel doesn't show signs of erosion. Some of the vegetation is matted down.

FIELD MEASUREMENTS: pH 8.24 TEMPERATURE (°C) 12.6 CONDUCTIVITY (µS/cm) 4.41 mS

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 1021 BOTTLE #2 1041 BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Arrived @ site and ~~bottle~~ was full. Sampler running continuously. Changed bottle. Still running continuously. Changed bottle again and dialed into site and reset pacing from 90 cf → 450 cf (x5). Took grab samples and hear sampler pull samples.

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
Candy NPDES	3-5-08	D. Renfrew	J. Schollke
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
La Mesa			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
LM	0930	0955	0950
FIELD TEAM			
JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Overcast

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☑ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☑ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☑ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)	None				
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☐ SOME CLOUDINESS	☑ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

None, lots of vegetation growing

FIELD MEASUREMENTS: pH 8.35 TEMPERATURE (°C) 15.7 CONDUCTIVITY (µS/cm) 3.28 mS

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0923 BOTTLE #2 _____ BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Sample bottle 19L. Charged bottle. Took grab samples. Lots of stringy, filamentous algae in creek, near grab sample location.

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
County of San Diego NPDES sampling	3/5/08	D. Renfrew	J. Schulée
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
SD8			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
SD8	0730	0815	0745
FIELD TEAM			
JS			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

~~Clear~~ Overcast, no wind

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☑ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☑ OTHER tortilla
	☐ SOAP	☐ CHLORINE	☐ NONE			
COLOR	☑ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)	None				
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☑ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

not enough water

FIELD MEASUREMENTS: pH _____ TEMPERATURE (°C) _____ CONDUCTIVITY (µS/cm) _____ DO _____

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

(actually 0715)

BOTTLE #1 0815 BOTTLE #2 _____ BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Arrived @ site. ~~0730~~ 0730. Changed 19L sample bottle. Then collected grab samples by syringe in the various pools near both the strainer and bubbler.

TEAM LEADER'S SIGNATURE J E Schulée

WESTON SOLUTIONS

Final

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME	STATION ID	STATION NAME
Lemon Grove	L6	SDSW Dry event

DATE	TIME STARTED (AT SITE)	TIME FINISHED (AT SITE)
6.3.08	1090	1115

NAV DATUM	LATITUDE	LONGITUDE
		1045

FIELD TEAM	RECORDER
LL	LL

MONITORING PERIOD: ☒ SUMMER DRY ☐ WINTER DRY ☐ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☒ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☐ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ RED
	☒ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☒ ALGAE
	☐ OTHER (DESCRIBE)				
TRASH	☐ NONE	☐ VEGETATION	☐ STYROFOAM	☐ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☒ OTHER (DESCRIBE)
TURBIDITY	☒ CLEAR	☐ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

broken hole beer can

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		
	DEPTH	FT	IN
	WIDTH	FT	IN
	VELOCITY (choose one)	FT/SEC	IN/SEC

NOTES: fish/crawfish observed, algae flow. Homeless camp just upstream of MLS SE side of road

☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: ✓

GRAB COLLECTION TIME: 1045

FIELD MEASUREMENTS (Taken in duplicate)

pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY
7.96	19.3	4.26 mS		
7.92	19.3	4.25 mS		

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

arrived 1040
Grabs 1045 field measurements photos
Departed 1115
bottle #1 changed 1159 122 samples bottle full

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 full BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☒ YES ☐ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SDSW Dry event	STATION ID: CM	STATION NAME: CA Mesa	
DATE: 6-3-08	TIME STARTED (AT SITE): 1125	TIME FINISHED (AT SITE): 1200	
NAV DATUM:	LATITUDE:	LONGITUDE:	1130
FIELD TEAM: LC		RECORDER: LC	

MONITORING PERIOD: ☒ SUMMER DRY ☐ WINTER DRY ☐ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☒ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☐ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ RED
	☐ COLORLESS	☒ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☒ ALGAE
	☐ OTHER (DESCRIBE)	~~NONE~~ LC			
TRASH	☐ NONE	☐ VEGETATION	☐ STYROFOAM	☐ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☒ CLEAR	☐ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: /

GRAB COLLECTION TIME: 1130

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	8.38	20.5	2.65 mS					
	0.38	20.5	2.65 mS					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

arrived 1125
Grabs 1130 field measurements / Photos
Departed 1140 looks good

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☒ YES ☐ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SDSW Dry	STATION ID: SD-8	STATION NAME: Durant / 33rd	
DATE: 6.3.08	TIME STARTED (AT SITE): 0945	TIME FINISHED (AT SITE): 1030	grabs 1000
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: CC		RECORDER: CC	

MONITORING PERIOD: ☒ SUMMER DRY ☐ WINTER DRY ☐ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☒ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☐ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN slight	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE) NONE				
TRASH	☐ NONE	☒ VEGETATION	☐ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☒ OTHER (DESCRIBE)
TURBIDITY	☒ CLEAR	☐ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

concrete cobble clothing wire glass metal graffiti

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: ✓ GRAB COLLECTION TIME: 1000

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	9.07	25.3	1707 µS					
	9.07	25.3	1711 µS					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

arrived 0945 ✓ box/bottle
Grabs 1000 field measurements/photos

Did observe secondary flow @ 1025 while preparing for departure

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☒ YES ☐ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	Nov 30, 2007		BR
STATION NAME	**NAV DATUM**	**LATITUDE**	**LONGITUDE**
Chelles LM1			
SAMPLE IDENTIFICATION	**TIME STARTED (AT SITE)**	**TIME FINISHED (AT SITE)**	**GRAB SAMPLE TIME**
	1100		1105

FIELD TEAM Meredith Rekari, Brian Riley

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Drizzle - Overcast

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☑ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☑ BROWN light	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☑ ORGANIC MATERIAL some	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☑ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS: Turbid Water

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

Lots of vegetation - No apparent erosion

FIELD MEASUREMENTS: pH 7.65 TEMPERATURE (°C) 17.8 CONDUCTIVITY (µS/cm) 226 DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 _____ BOTTLE #2 _____ BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

When we arrived at site at 1100 am - 10 samples have been collected. Collected grab samples at 1105 am.

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater 2007	STATION ID: DPR2	STATION NAME: DPR 2	
DATE: 11-30-07	TIME STARTED (AT SITE): 12:15	TIME FINISHED (AT SITE):	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: Suraj Shankar / AZ Brittain		RECORDER: SKS	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☑ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☑ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☐ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ RED
	☐ COLORLESS	☑ OTHER Brownish black			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☑ ORGANIC MATERIAL	☑ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE)				
TRASH	☐ NONE	☑ VEGETATION	☑ STYROFOAM	☑ WOOD	☑ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☐ CLOUDY	☑ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: GRAB COLLECTION TIME:

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.33	17.9	405					
	pH 7.33	TEMP (degree C) 17.9	CONDUCTIVITY (uS/cm) 405	DISSOLVED OXYGEN	TURBIDITY			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

changed sampling bottle @ 12:45 pm, 2:30 pm, 4:25 pm
Half full @ 6:20 pm, 8:10 pm (Final bottle)
About 0.5 to 1 ft of water in creek.

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☑ NO

PHOTO NUMBERS AND NOTES: _____

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: Chollas Lemon grove	STATION ID	STATION NAME: Lemon grove	
DATE: 11/30/07	TIME STARTED (AT SITE): 10:00	TIME FINISHED (AT SITE)	
NAV DATUM	LATITUDE	LONGITUDE	
FIELD TEAM		RECORDER	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☑ WET WEATHER — RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☑ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☑ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☑ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☑ ORGANIC MATERIAL (some)	☐ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE)				
TRASH	☐ NONE	☐ VEGETATION	☐ STYROFOAM	☐ WOOD	☑ PLASTIC (CUPS, BOTTLES, BAGS) ☑ OTHER (DESCRIBE) (some)
TURBIDITY	☐ CLEAR	☐ CLOUDY	☑ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: GRAB COLLECTION TIME: 10:00

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.0	16.7°C	470					
	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☐ NO

PHOTO NUMBERS AND NOTES: _____

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

4:00 pm Normal Grab sample taken & bottle replaced pump still not working
5:00 pm
6:00 pm
7:00 pm
8:00 pm

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater 2007	STATION ID: CC-SD8	STATION NAME: SD8	
DATE: 11/30/07	TIME STARTED (AT SITE): 10:10 AM	TIME FINISHED (AT SITE):	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: SURAJ SHANKAR / AL Rutkus		RECORDER: SKS	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☑ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☑ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☐ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☐ BROWN	☐ RED
	☐ COLORLESS	☑ OTHER Brownish black			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☑ ORGANIC MATERIAL	☑ SCUM	☐ ALGAE
	☑ OTHER (DESCRIBE) grease pollutants, plastic				
TRASH	☐ NONE	☑ VEGETATION	☐ STYROFOAM	☐ WOOD	☑ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☐ CLOUDY	☑ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: GRAB COLLECTION TIME: 10:10 am

FIELD MEASUREMENTS (Taken in duplicate)

	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	6.83	17.1	1621					
	6.82	17.1	1621					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Grab samples - started collecting @ 10:10 am on 11/30/07
BOD, Bacteria & oil & grease samples collected & labelled 'CC-SD8'.
Sampling time (Grab) - 10:10 am, 10:40 am, 11:15 am, 11:45 am, 12:00 pm, 12:15 pm, 1:05 pm, 1:20 pm, 1:35 pm, 1:50 pm, 2:05 pm (pump run reversed & fixed) 2:30 pm, pump not work (3:30 pm)

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 4:00 pm BOTTLE 2 8:00 pm BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☑ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

City of SD Storm H2O

PROJECT/SURVEY NAME	DATE	PROJECT MANAGER	RECORDER
	2-3-08		CL
STATION NAME: 64th	NAV DATUM	LATITUDE	LONGITUDE
SAMPLE IDENTIFICATION: LM-1	TIME STARTED (AT SITE): ~~1445~~ 0900	TIME FINISHED (AT SITE): 1445	GRAB SAMPLE TIME: 1320
FIELD TEAM: CL			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Cloudy, light rain. Wind WSW 10-15 knots 60°F

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER
	☐ SOAP	☐ CHLORINE	☒ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN light	☐ BLACK	☐ OTHER
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☒ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER
	☐ OBJECTS (DESCRIBE)					
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☐ CLOUDY	☒ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:

Sample appeared light brown - somewhat clear
No odor

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

None noticed

FIELD MEASUREMENTS: pH _____ TEMPERATURE (°C) _____ CONDUCTIVITY (µS/cm) _____ DO _____

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 0910 BOTTLE #2 1348 BOTTLE #3 _____

BOTTLE #4 _____ BOTTLE #5 _____ BOTTLE #6 _____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

arrived 0900 changed out first bottle
1320 Grabs/Measurements

pH	7.74	7.75	7.75
Temp	13.7	13.7	13.7
Cond	222 u/s	222	221

TEAM LEADER'S SIGNATURE _____

END # 78 1348 ~ 16L #2

WESTON SOLUTIONS

City

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME	STATION ID	STATION NAME
~~[illegible]~~ SD Storm 1120	Lemon Grove	LG-1
DATE: 2·3·08	TIME STARTED (AT SITE): 0900	TIME FINISHED (AT SITE): 15:00
NAV DATUM:	LATITUDE:	LONGITUDE:
FIELD TEAM: LC	RECORDER: LC	1150

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
	☒ OTHER (DESCRIBE)	Vegetative Debris / TRASH			
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED:	GRAB COLLECTION TIME:
1150	1150

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY
	8.61	13.1	189.3		
	8.48	13.0	187.7		

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

#46 — ~~#63 @ 0910 — 17.2C~~ 8.39 13.1 186.6

arrived 0930 to find teflon tubing kinked along wall / restarted sampler at PVC joint. fixed tubing. sampler sampling rather quickly. Took grabs / measurements 1150

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 ~~0910~~ 1000 BOTTLE 2 1499 BOTTLE 3 1629 #76 ~~#53~~ BOTTLE 4

PHOTOS TAKEN: ☐ YES ☐ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater	STATION ID: DPR(2)	STATION NAME: Chollas @ 38th	
DATE: 3 Feb 08	TIME STARTED (AT SITE): 1100	TIME FINISHED (AT SITE):	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: B. Isham		RECORDER: BI	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☒ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☒ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE)				
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: 1310

GRAB COLLECTION TIME: 1310

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.54	13.1	199.8	–	^			
	7.59	13.1	197.2	–	–			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

On Site @ 1100 - changed first bottle - Sampling Fast

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 1110 BOTTLE 2 1135 BOTTLE 3 1206 BOTTLE 4 1353

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: BIsham

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: SD Stormwater	STATION ID: SD8	STATION NAME: Chollas - Durant St.	
DATE: 3 Feb 08	TIME STARTED (AT SITE): 0700	TIME FINISHED (AT SITE):	
NAV DATUM:	LATITUDE:	LONGITUDE:	
FIELD TEAM: B. Ishar		RECORDER:	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☒ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☒ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE) Trash				
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: 1245

GRAB COLLECTION TIME: 1245

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.54	13.2	141.8	—	—			
	7.59	13.2	143.1	—	—			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Air Deposition Rain water Jars deployed @ 0700
Closed @ 1410

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 _____ BOTTLE 2 1530 BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES:

TEAM LEADER'S SIGNATURE: B. Ishar

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME	STATION ID	STATION NAME	
SD Stormwater 07/08	DPR2	Cholla Creek @ 38th	
DATE: 7 Dec 07	TIME STARTED (AT SITE): 0800	TIME FINISHED (AT SITE): 1505	
NAV DATUM	LATITUDE	LONGITUDE	
FIELD TEAM: B. Isham		RECORDER: BI	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☒ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY Steady light rain

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM
	☐ FISH/DECAY	☐ CHLORINE	☐ NONE	☐ CHEMICAL	☐ OTHER Muddy
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED
	☐ COLORLESS	☐ OTHER			
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☒ OILY SHEEN slight	☐ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE
	☐ OTHER (DESCRIBE)				
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS) ☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE		

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED:	GRAB COLLECTION TIME:
O+G, bac-t	0915

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.09	15.0	316					0920
	7.11	15.0	314					0925

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

Trash relatively light

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 1006 BOTTLE 2 ~~1445~~ 1200 BI BOTTLE 3 1445 BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES: _____

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME	STATION ID	STATION NAME	
SD Stormwater 2007/08	SD8	Chollas Creek @ Durant St.	
DATE: 7 Dec 07	TIME STARTED (AT SITE): 0700	TIME FINISHED (AT SITE): 1150	
NAV DATUM	LATITUDE	LONGITUDE	
FIELD TEAM: B. Isham		RECORDER	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☒ CLOUDY ☐ FOGGY ☐ DRIZZLING ☒ RAINY Steady light Rain

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM	
	☐ FISH/DECAY	☐ CHLORINE	☐ NONE	☐ CHEMICAL	☒ OTHER Muddy	
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED	
	☐ COLORLESS	☐ OTHER				
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☒ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE	paint cans, balls
	☐ OTHER (DESCRIBE)					
TRASH	☐ NONE	☒ VEGETATION	☒ STYROFOAM	☒ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS)	☒ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE			

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: BOD, O+G, Bac-t

GRAB COLLECTION TIME: 0850

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	6.82	15.1	138.2					
	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	6.93	15.0	136.0					

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 0825 BOTTLE 2 0948 BOTTLE 3 1143 BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES: _____

TEAM LEADER'S SIGNATURE _____

WESTON SOLUTIONS

WATER QUALITY FIELD DATA LOG

PROJECT/SURVEY NAME: LemonGrove / La Mesa	DATE: 12-7-07	PROJECT MANAGER: Renfrew	RECORDER: BE
STATION NAME: LM-1	NAV DATUM: —	LATITUDE: —	LONGITUDE: —
SAMPLE IDENTIFICATION: LM-1	TIME STARTED (AT SITE): 0915	TIME FINISHED (AT SITE): 1010	GRAB SAMPLE TIME: 0920
FIELD TEAM: BE			

METEOROLOGICAL CHARACTERISTICS (DESCRIBE RAINFALL, WIND, TEMPERATURE, ETC.)

Light rain

WATER QUALITY APPEARANCE

ODOR	☐ HYDROGEN SULFIDE	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE	☐ OTHER ____
	☐ SOAP	☐ CHLORINE	☒ NONE			
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ BLACK	☐ OTHER ____
	☐ GRAY	☐ WHITE	☐ COLORLESS			
FLOATING MATERIALS	☐ TRASH OR DEBRIS	☐ OIL AND GREASE	☐ ORGANIC MATERIAL	☐ SCUM	☐ SUDS	☐ OTHER ____
	☒ OBJECTS (DESCRIBE)		Not much			
TURBIDITY	☐ HEAVY CLOUDINESS, OPAQUE	☒ CLOUDY	☐ SOME CLOUDINESS	☐ NONE		

WATER QUALITY APPEARANCE COMMENTS:

EROSION AND VEGETATION (DESCRIBE ANY VISUAL SIGNS OF SLIDE SLOPE EROSION AND/OR CHANGE IN VEGETATION CONDITION)

FIELD MEASUREMENTS: (1) pH 6.8 TEMPERATURE (°C) 14.9 CONDUCTIVITY (µS/cm) 200 u DO

FLOW WEIGHTED COMPOSITE SAMPLE INFORMATION (ENTER TIME OF BOTTLE CHANGES)

BOTTLE #1 ____ BOTTLE #2 ____ BOTTLE #3 ____

BOTTLE #4 ____ BOTTLE #5 ____ BOTTLE #6 ____

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

(2) 6.94 14.8 c 200 u

(3) 7.18 14.9 200 u

Triplicate sample for Temp, Conductivity, pH

TEAM LEADER'S SIGNATURE: [signature]

WESTON SOLUTIONS

County of San Diego Stormwater
FIELD OBSERVATIONS AND TESTING LOG SHEET

PROJECT/SURVEY NAME: Lemon Grove/Lo Mesa	STATION ID: LG-1	STATION NAME: LG-1 Lemon Grove	
DATE: 12-7-07	TIME STARTED (AT SITE): 0815	TIME FINISHED (AT SITE): 0855	
NAV DATUM: —	LATITUDE: —	LONGITUDE: —	
FIELD TEAM: BE		RECORDER: BL	

MONITORING PERIOD: ☐ SUMMER DRY ☐ WINTER DRY ☒ WET WEATHER

RAINFALL AMOUNT (POST-STORM):

WEATHER CONDITIONS: ☐ CLEAR ☐ CLOUDY ☐ FOGGY ☒ DRIZZLING ☐ RAINY

SURFACE WATER APPEARANCE

ODOR	☐ ROTTEN EGG/H2S	☐ MUSTY	☐ SEWAGE	☐ AMMONIA	☐ GASOLINE/PETROLEUM	
	☐ FISH/DECAY	☐ CHLORINE	☒ NONE	☐ CHEMICAL	☐ OTHER	
COLOR	☐ YELLOW	☐ GREEN	☐ BLUE	☒ BROWN	☐ RED	
	☐ COLORLESS	☐ OTHER				
FLOATING MATERIALS (ALL THAT APPLY)	☐ SUDS/FOAM	☐ OILY SHEEN	☐ ORGANIC MATERIAL	☐ SCUM	☐ ALGAE	
	☒ OTHER (DESCRIBE) slight sheen					
TRASH	☐ NONE	☐ VEGETATION	☒ STYROFOAM	☐ WOOD	☒ PLASTIC (CUPS, BOTTLES, BAGS)	☐ OTHER (DESCRIBE)
TURBIDITY	☐ CLEAR	☒ CLOUDY	☐ HEAVY CLOUDINESS, OPAQUE			

FLOW (one method only)

STREAM RATING (SEE OTHER SIDE)	IF STREAM RATING NOT POSSIBLE, AREAxVELOCITY (CREEK/CHANNEL)		NOTES
	DEPTH	FT IN	
	WIDTH	FT IN	
	VELOCITY (choose one)	FT/SEC IN/SEC	☐ FLOW METER PRESENT

QA/QC SAMPLES: ☐ FIELD DUPLICATE ☐ EQUIPMENT BLANK

SAMPLES COLLECTED: Bacti/O&G — GRAB COLLECTION TIME: 0835

FIELD MEASUREMENTS (Taken in duplicate)	pH	TEMP (degree C)	CONDUCTIVITY (uS/cm)	DISSOLVED OXYGEN	TURBIDITY			
	7.55	14.8	168.4					
	pH 7.52	TEMP (degree C) 14.6	CONDUCTIVITY (uS/cm) 167.9	DISSOLVED OXYGEN	TURBIDITY			

SAMPLING ACTIVITIES (DESCRIBE ALL ACTIONS TAKEN AT EACH SITE VISIT AND PROVIDE ADDITIONAL COMMENTS AS NECESSARY)

7.48 14.6 164.3u

Grab Sample collected. Bottle 1 changed. Bottle 2 iced.

IF USING AUTOMATED SAMPLING EQUIPMENT, RECORD LAST SAMPLE TIME FOR EACH BOTTLE

BOTTLE 1 0850 BOTTLE 2 _____ BOTTLE 3 _____ BOTTLE 4 _____

PHOTOS TAKEN: ☐ YES ☒ NO

PHOTO NUMBERS AND NOTES: _____

TEAM LEADER'S SIGNATURE: Bryan

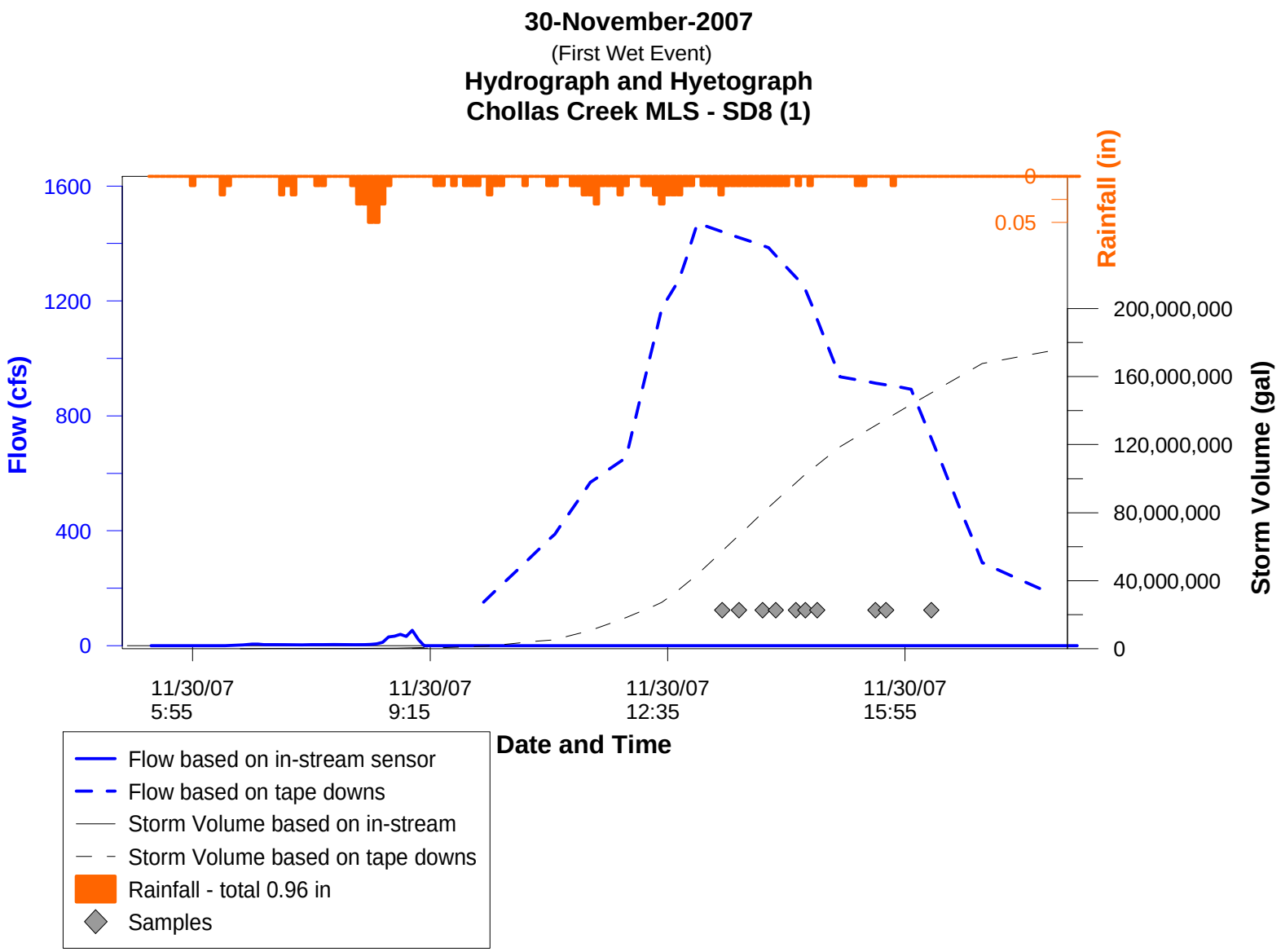
30-November-2007
(First Wet Event)
Hydrograph and Hyetograph
Chollas Creek MLS - SD8 (1)
Flow (cfs)
1600
1200
800
400
0
Rainfall (in)
0
0.05
Storm Volume (gal)
200,000,000
160,000,000
120,000,000
80,000,000
40,000,000
0
11/30/07 5:55
11/30/07 9:15
11/30/07 12:35
11/30/07 15:55
Date and Time
Flow based on in-stream sensor
Flow based on tape downs
Storm Volume based on in-stream
Storm Volume based on tape downs
Rainfall - total 0.96 in
Samples

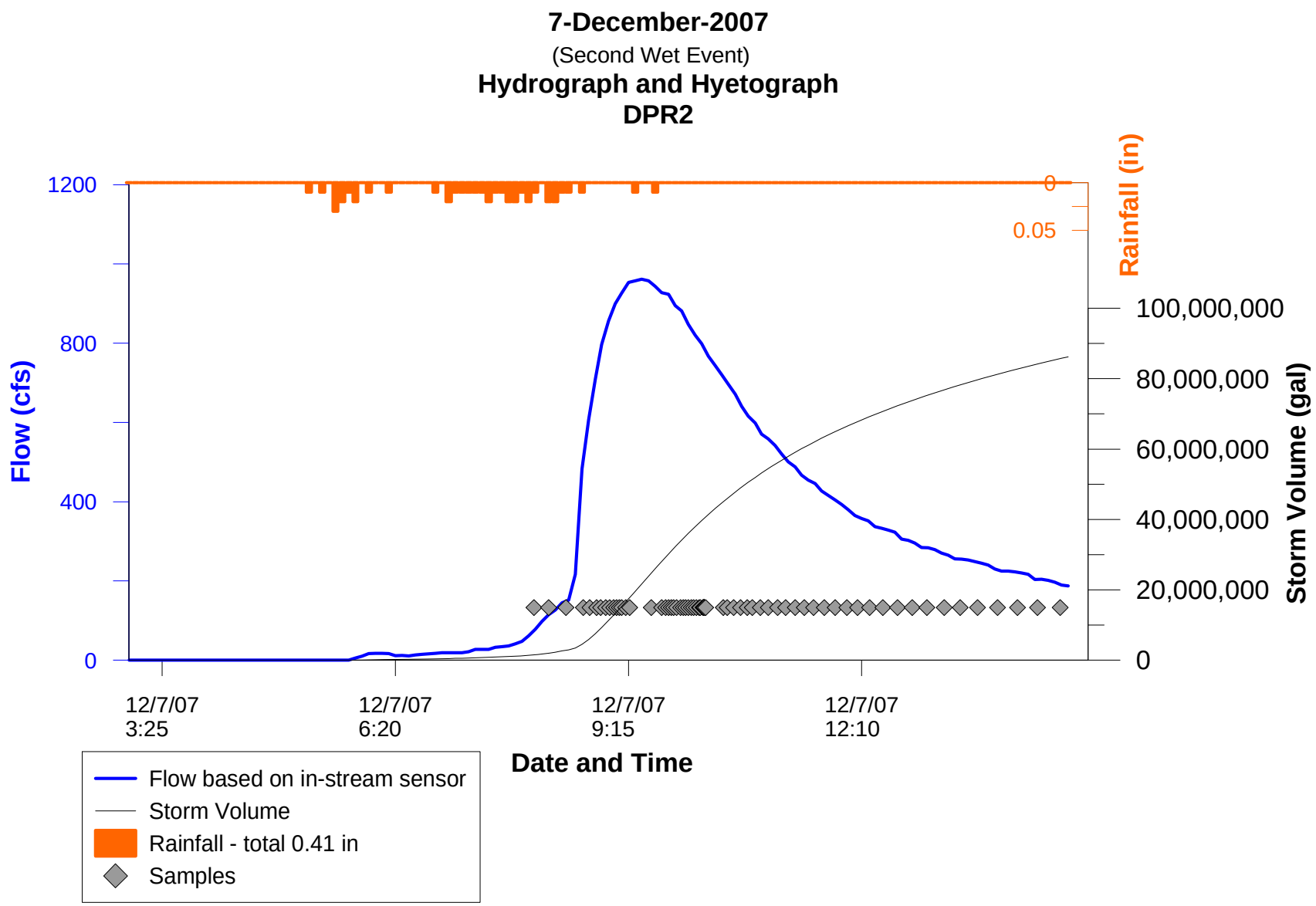
7-December-2007
(Second Wet Event)
Hydrograph and Hyetograph
DPR2
Flow (cfs)
1200
800
400
0
Rainfall (in)
0
0.05
Storm Volume (gal)
100,000,000
80,000,000
60,000,000
40,000,000
20,000,000
0
12/7/07 3:25
12/7/07 6:20
12/7/07 9:15
12/7/07 12:10
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.41 in
Samples

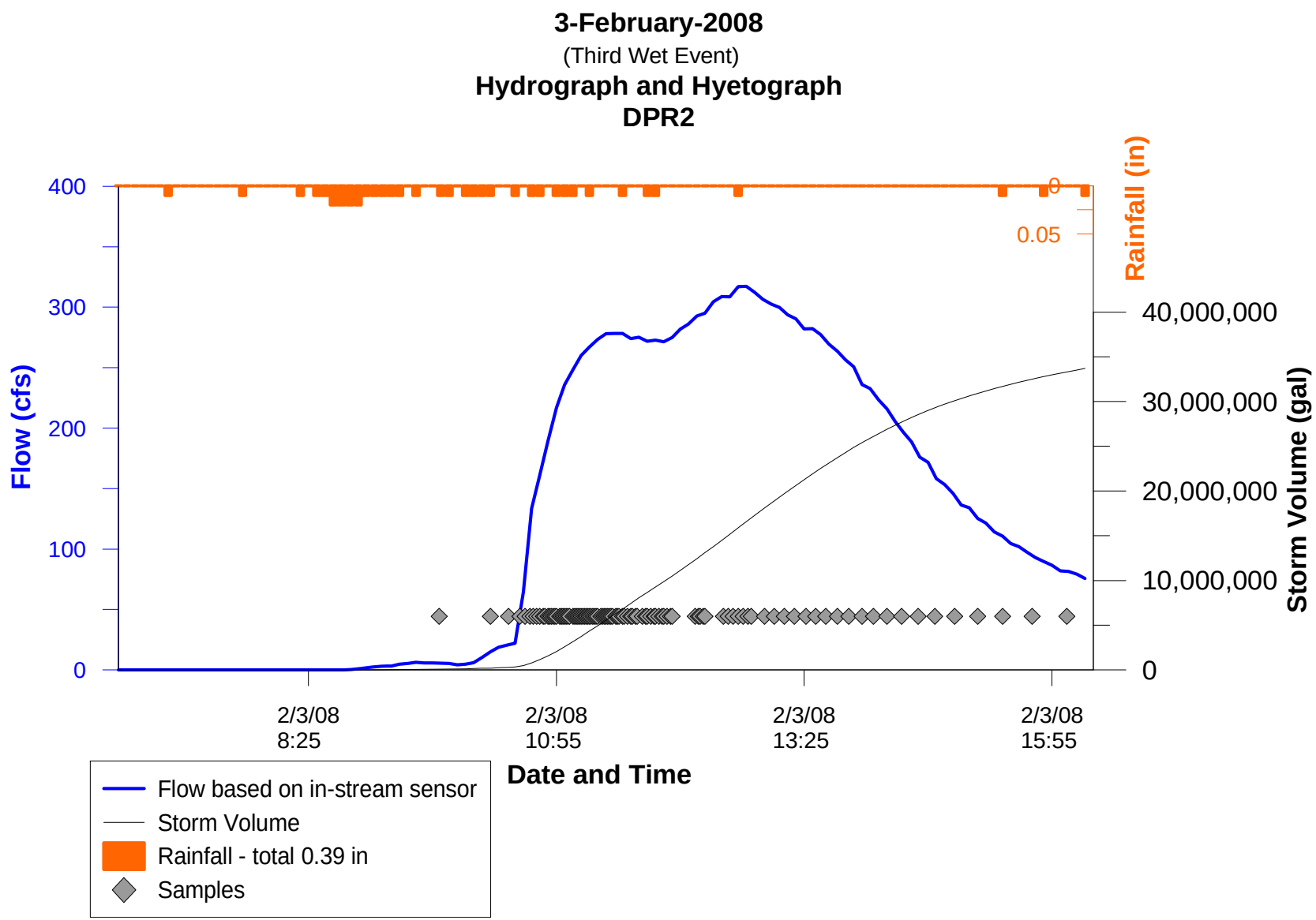
3-February-2008
(Third Wet Event)
Hydrograph and Hyetograph
DPR2
Flow (cfs)
400
300
200
100
0
Rainfall (in)
0
0.05
Storm Volume (gal)
40,000,000
30,000,000
20,000,000
10,000,000
0
2/3/08
8:25
2/3/08
10:55
2/3/08
13:25
2/3/08
15:55
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.39 in
Samples

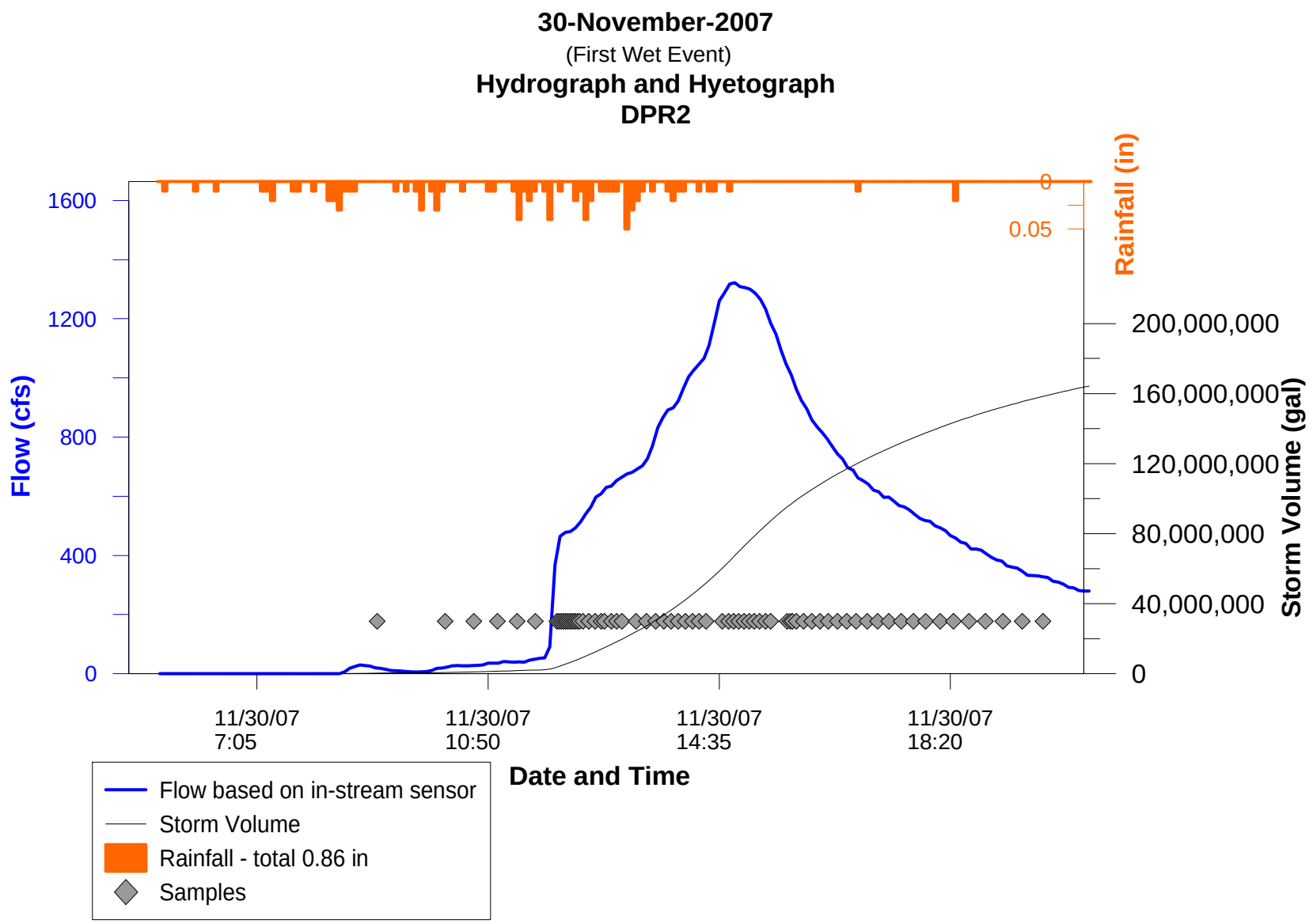
30-November-2007
(First Wet Event)
Hydrograph and Hyetograph
DPR2
Flow (cfs)
1600
1200
800
400
0
Rainfall (in)
0
0.05
Storm Volume (gal)
200,000,000
160,000,000
120,000,000
80,000,000
40,000,000
0
11/30/07
7:05
11/30/07
10:50
11/30/07
14:35
11/30/07
18:20
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.86 in
Samples

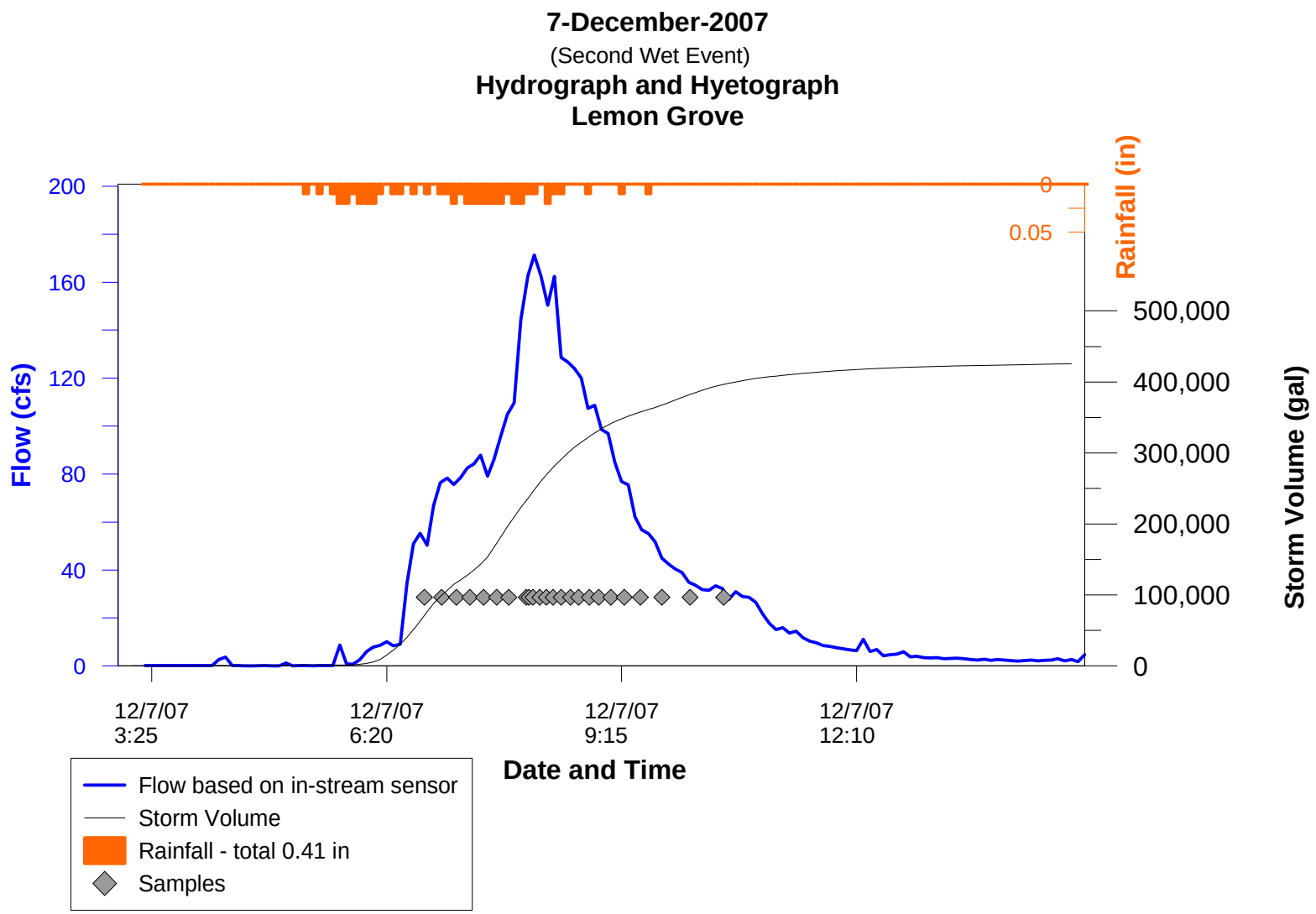
7-December-2007
(Second Wet Event)
Hydrograph and Hyetograph
Lemon Grove
Flow (cfs)
200
160
120
80
40
0
Rainfall (in)
0
0.05
Storm Volume (gal)
500,000
400,000
300,000
200,000
100,000
0
12/7/07
3:25
12/7/07
6:20
12/7/07
9:15
12/7/07
12:10
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.41 in
Samples

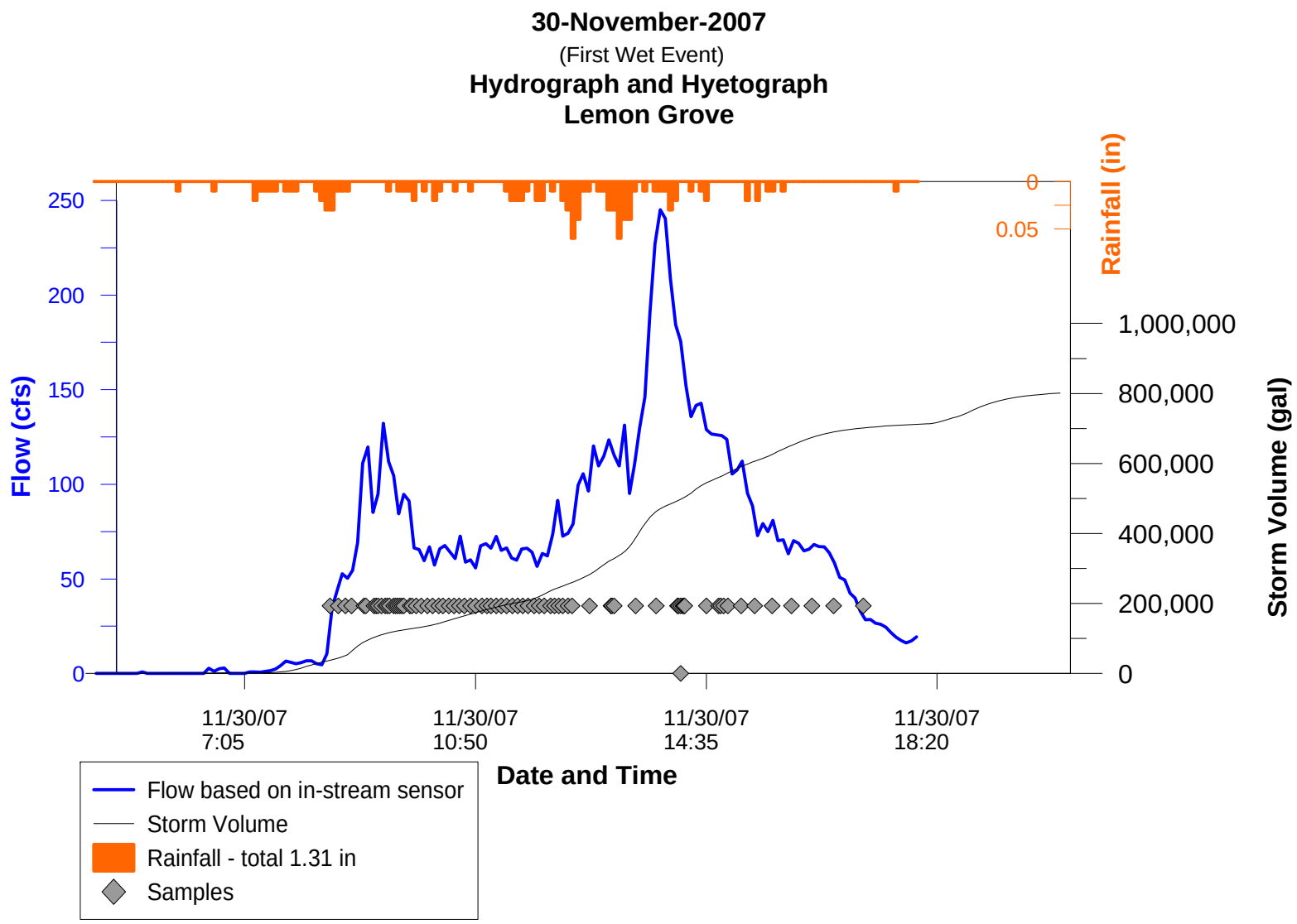
30-November-2007
(First Wet Event)
Hydrograph and Hyetograph
Lemon Grove
Flow (cfs)
250
200
150
100
50
0
Rainfall (in)
0
0.05
Storm Volume (gal)
1,000,000
800,000
600,000
400,000
200,000
0
11/30/07
7:05
11/30/07
10:50
11/30/07
14:35
11/30/07
18:20
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 1.31 in
Samples

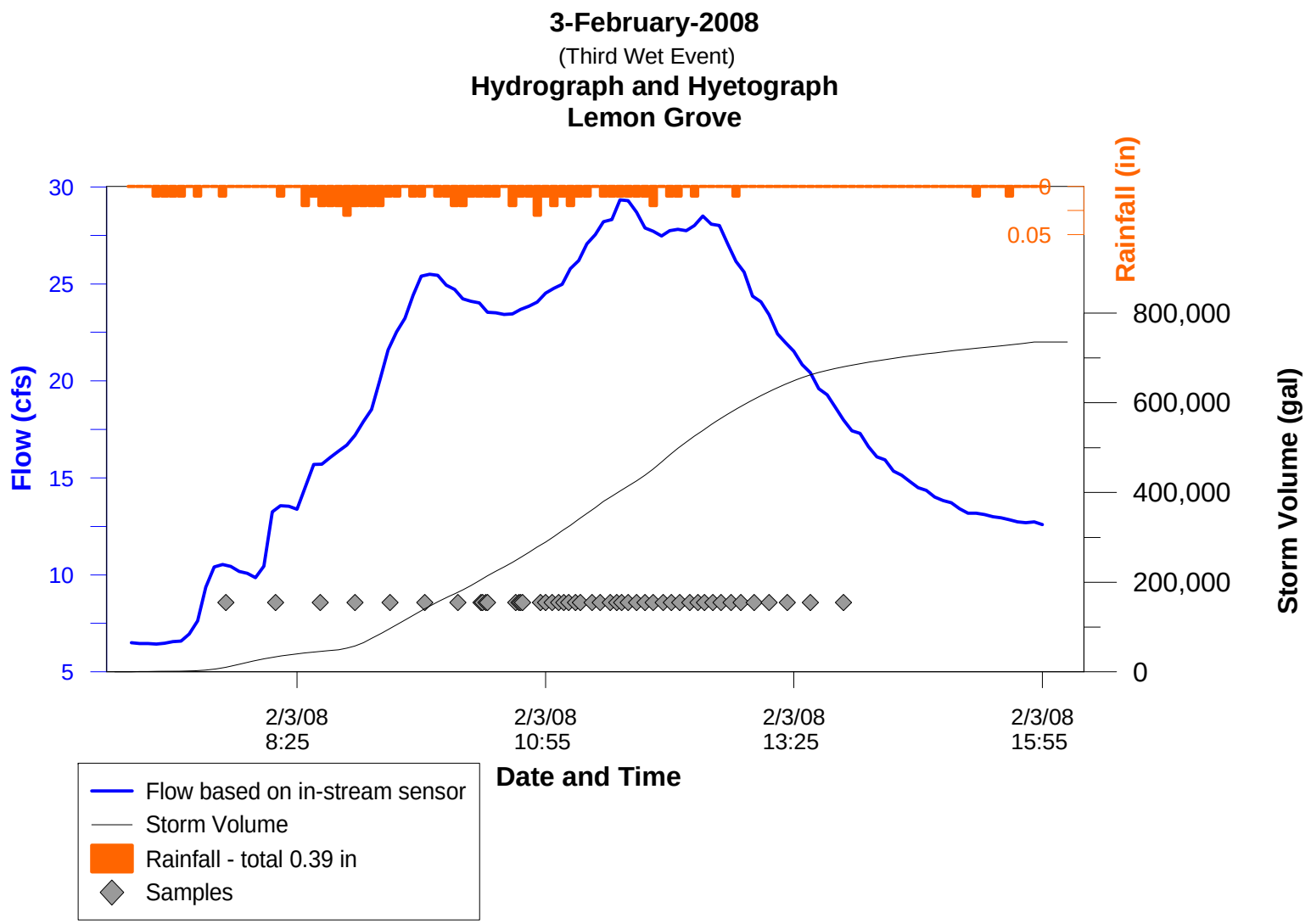
3-February-2008
(Third Wet Event)
Hydrograph and Hyetograph
Lemon Grove
Flow (cfs)
30
25
20
15
10
5
Rainfall (in)
0
0.05
Storm Volume (gal)
800,000
600,000
400,000
200,000
0
2/3/08
8:25
2/3/08
10:55
2/3/08
13:25
2/3/08
15:55
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.39 in
Samples

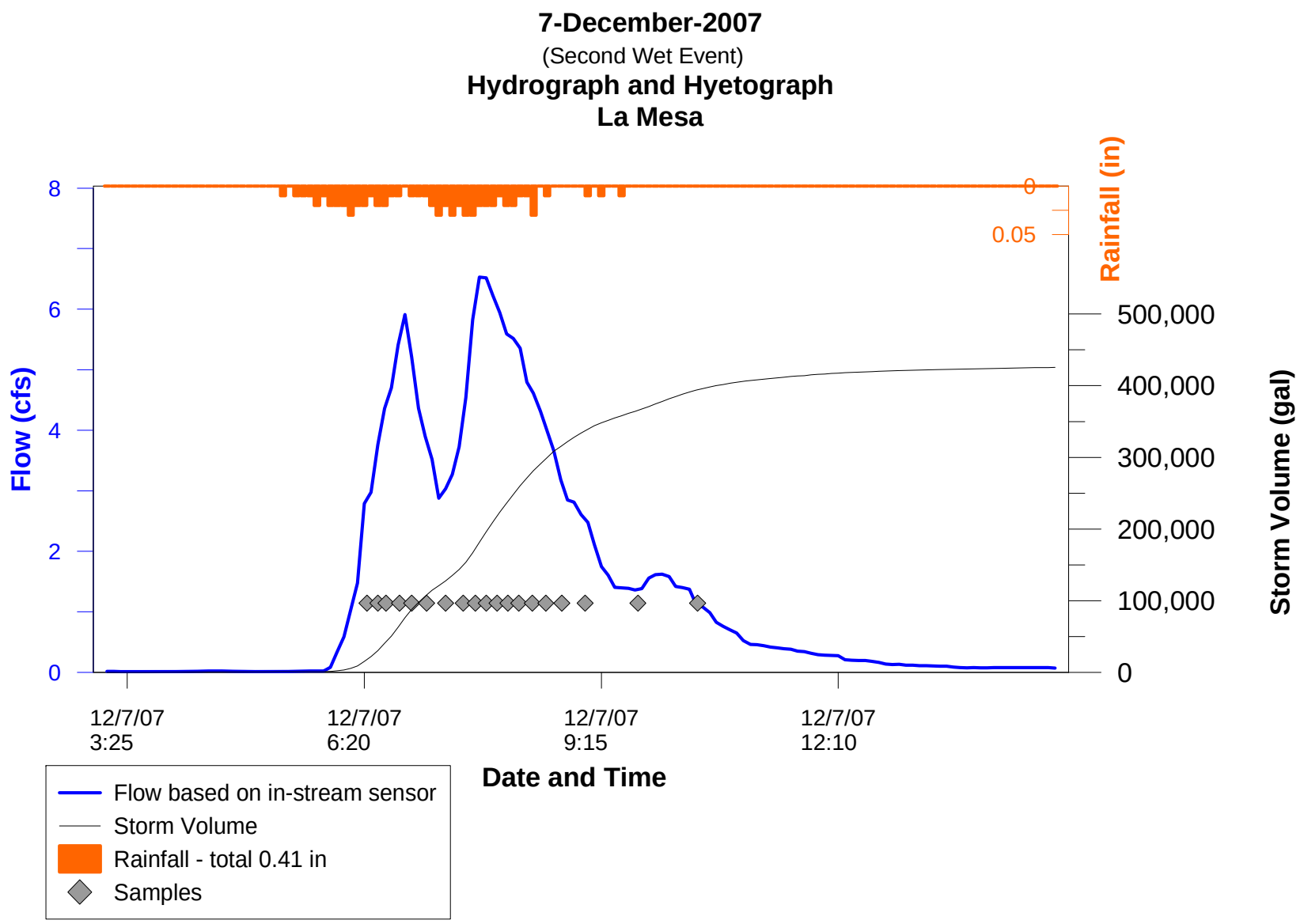
7-December-2007
(Second Wet Event)
Hydrograph and Hyetograph
La Mesa
Flow (cfs)
8
6
4
2
0
Rainfall (in)
0
0.05
Storm Volume (gal)
500,000
400,000
300,000
200,000
100,000
0
12/7/07
3:25
12/7/07
6:20
12/7/07
9:15
12/7/07
12:10
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.41 in
Samples

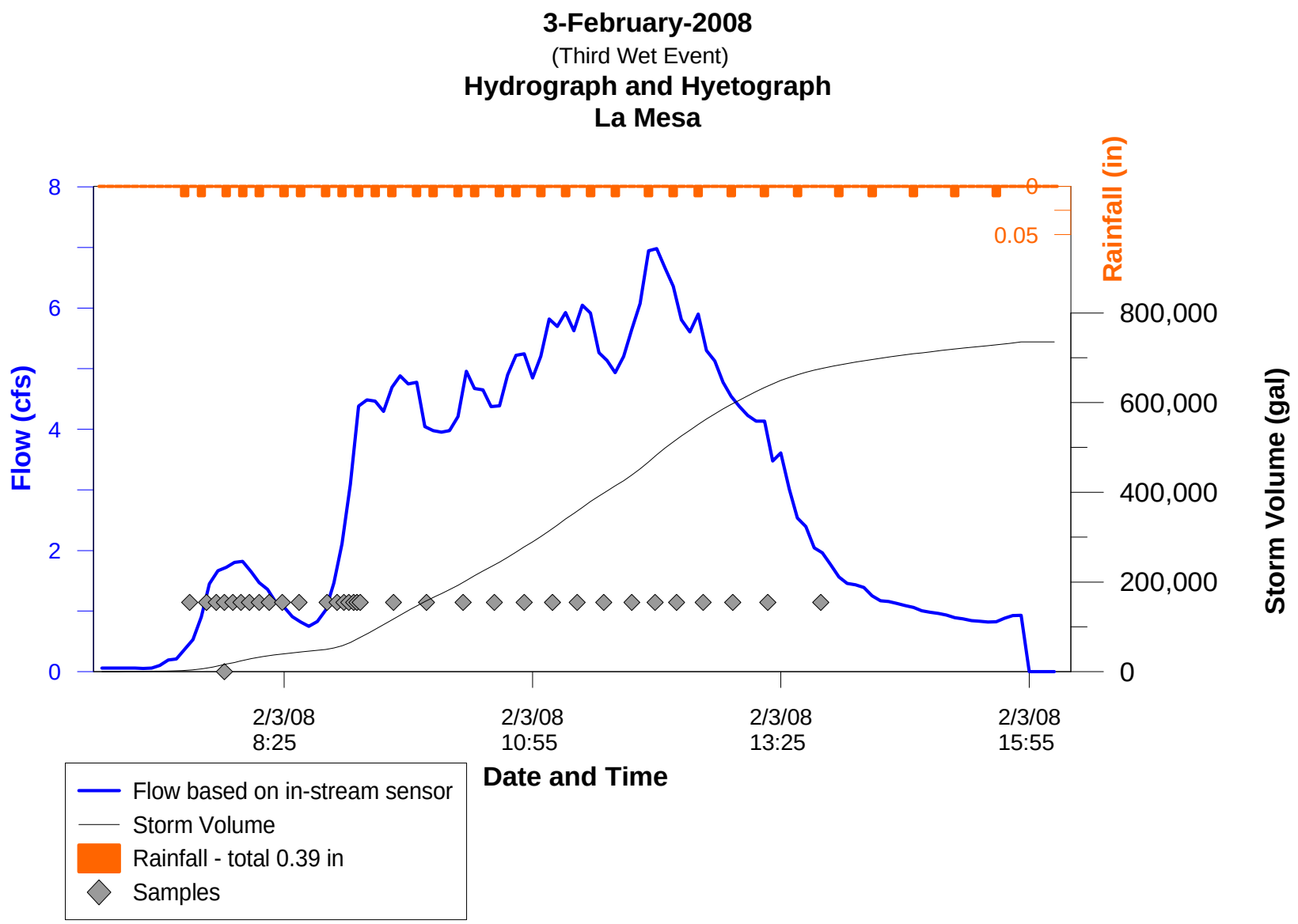
3-February-2008
(Third Wet Event)
Hydrograph and Hyetograph
La Mesa
Flow (cfs)
8
6
4
2
0
Rainfall (in)
0
0.05
Storm Volume (gal)
800,000
600,000
400,000
200,000
0
2/3/08
8:25
2/3/08
10:55
2/3/08
13:25
2/3/08
15:55
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.39 in
Samples

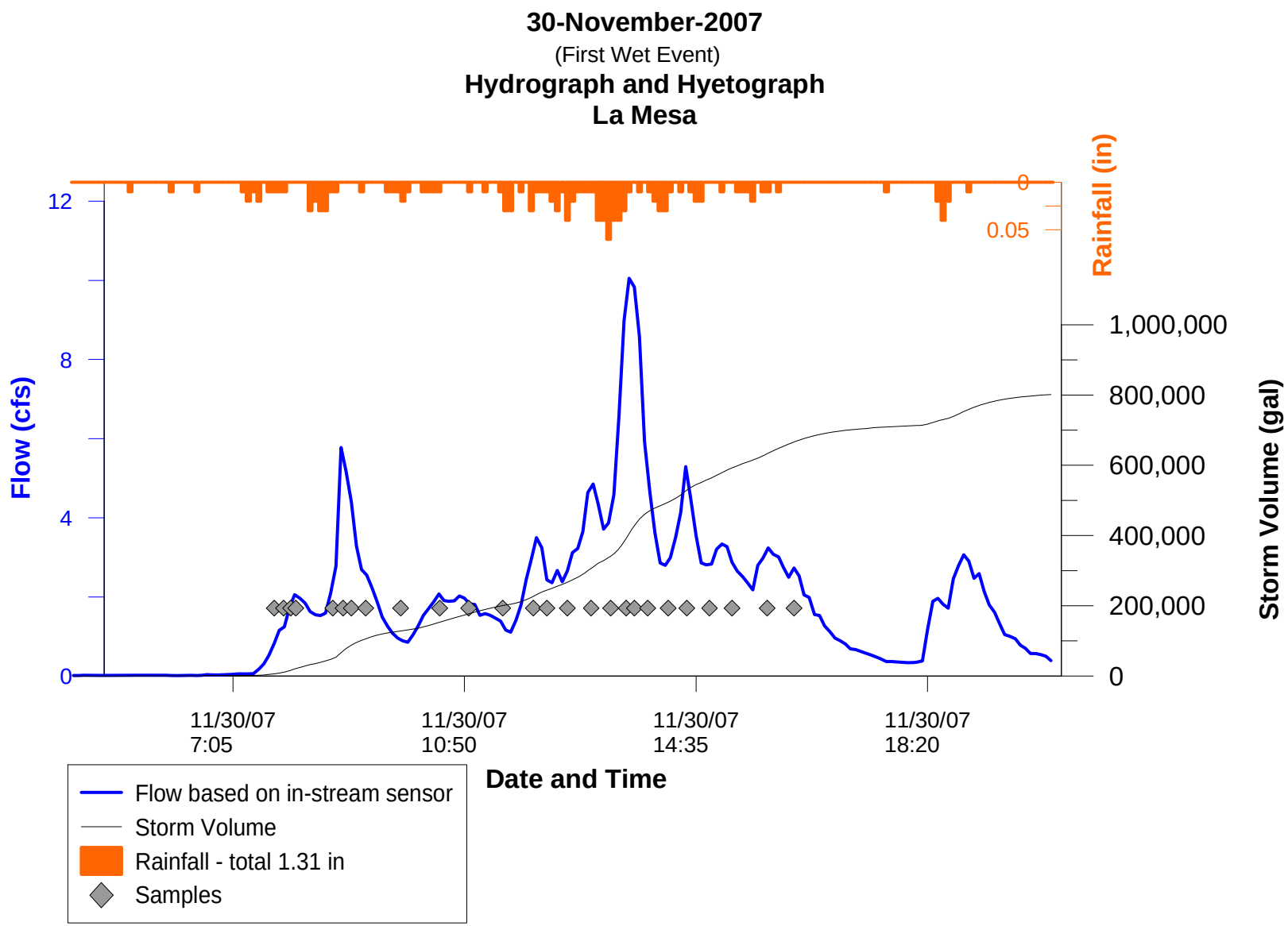
30-November-2007
(First Wet Event)
Hydrograph and Hyetograph
La Mesa
Flow (cfs)
12
8
4
0
Rainfall (in)
0
0.05
Storm Volume (gal)
1,000,000
800,000
600,000
400,000
200,000
0
11/30/07
7:05
11/30/07
10:50
11/30/07
14:35
11/30/07
18:20
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 1.31 in
Samples

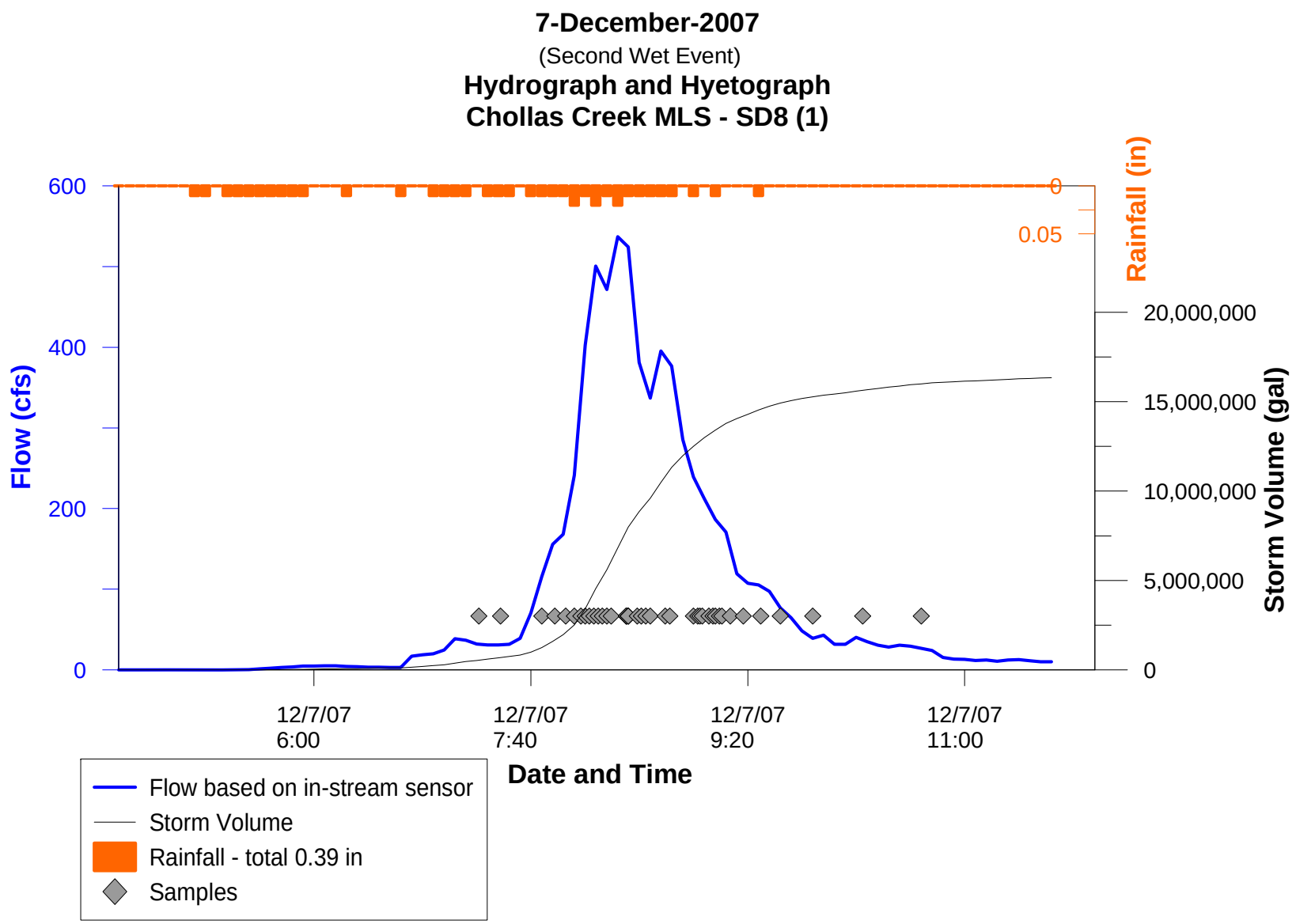
7-December-2007
(Second Wet Event)
Hydrograph and Hyetograph
Chollas Creek MLS - SD8 (1)
Flow (cfs)
600
400
200
0
Rainfall (in)
0
0.05
Storm Volume (gal)
20,000,000
15,000,000
10,000,000
5,000,000
0
12/7/07 6:00
12/7/07 7:40
12/7/07 9:20
12/7/07 11:00
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall - total 0.39 in
Samples

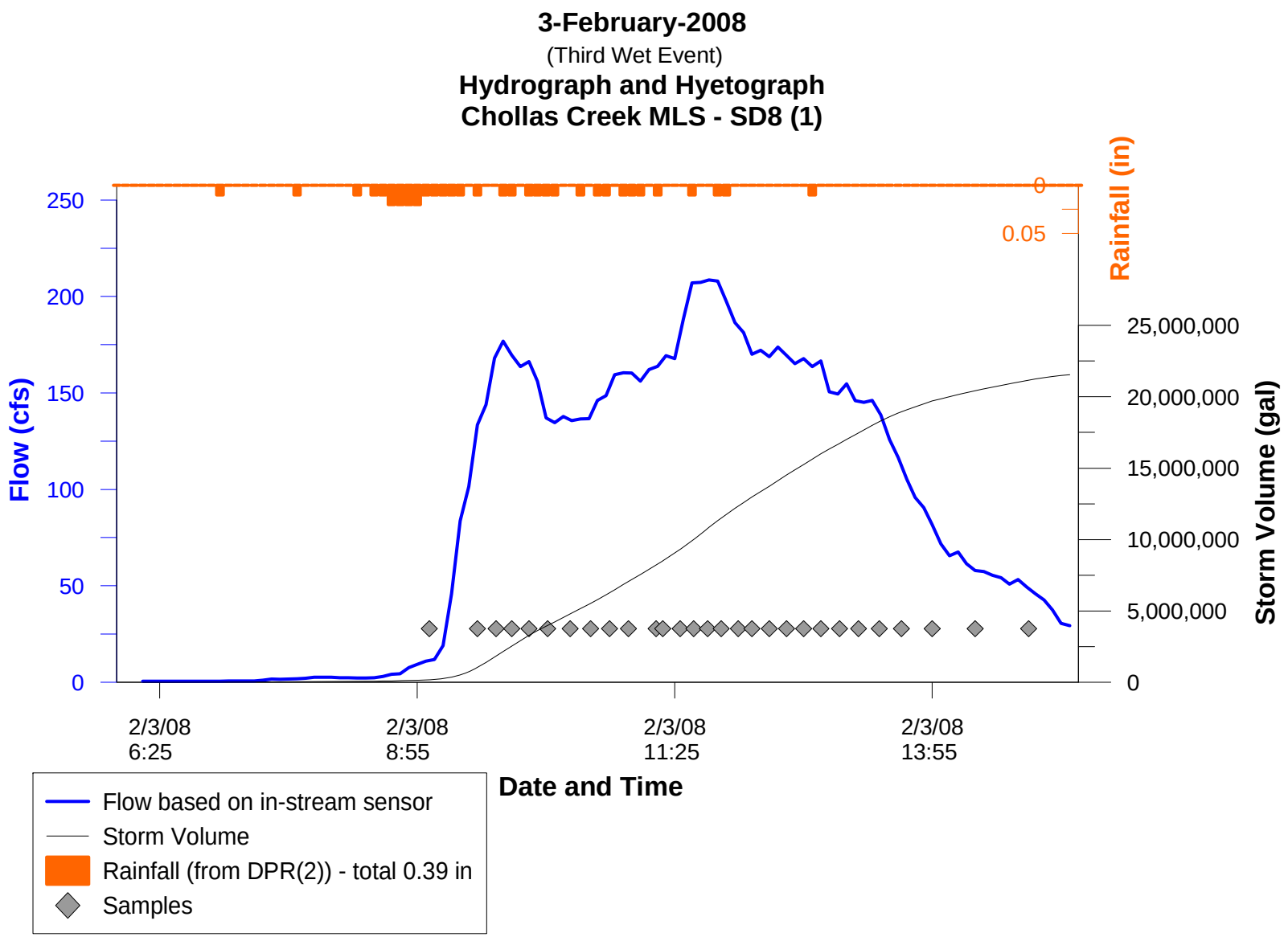
3-February-2008
(Third Wet Event)
Hydrograph and Hyetograph
Chollas Creek MLS - SD8 (1)
Flow (cfs)
250
200
150
100
50
0
Rainfall (in)
0
0.05
Storm Volume (gal)
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
2/3/08 6:25
2/3/08 8:55
2/3/08 11:25
2/3/08 13:55
Date and Time
Flow based on in-stream sensor
Storm Volume
Rainfall (from DPR(2)) - total 0.39 in
Samples

Appendix F: Dry Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	SD8(1) Dry Weather 3/5/2008	LM-1 Dry Weather 3/5/2008	LG-1 Dry Weather 3/5/2008	SD8(1) Dry Weather 6/3/2008	LM-1 Dry Weather 6/3/2008	LG-1 Dry Weather 6/3/2008
Field Measurements										
pH	pH Units	-	6.5-9.0	Basin Plan	7.9	8.35	8.26	**9.07**	8.38	7.96
Conductivity	S/cm	-			2990	3280	4410	1707	2650	4260
Temperature	^{o}C	-			Not measured	15.7	12.6	25.3	20.5	19.3
General Chemistry										
Ammonia-N	mg/l	-	(a)	U.S. EPA Water Quality Criteria (Freshwater)	1.44	0.03	0.05	0.24	0.13	0.05
Dissolved Organic Carbon	mg/l	0.2			518	8.2	10.4	35.8	7.9	10.3
Nitrate-N	mg/l	0.05	1	Basin Plan	<0.05	**5**	0.03 J	0.07	**3.34**	0.04
Nitrite-N	mg/l	0.05	1	Basin Plan	<0.05	< 0.05	< 0.05	<0.05	<0.01	0.06
Total Hardness as CaCO3	mg/l	5			371.2	416.5	552.1	214.1	369.8	493.9
Total Kjeldahl Nitrogen	mg/l	0.5			24	0.98	0.56	2.8	1.1	1.1
Total Organic Carbon	mg/l	0.2			608	9.4	11.5	38.3	8.6	10.5
Total Suspended Solids	mg/l	5	58	Basin Plan	42.7	2.7 J	1 J	9.7	<0.5	2.3
Oil & Grease	mg/l	5	10	USEPA Multi-Sector General Permit	**18.1**	-	-	1.1J	1J	>5
Metals										
Cadmium (Cd) (dissolved)	ug/l	0.4	(b)	40 CFR 131	0.7	< 0.4	< 0.4	<0.4	<0.2	<0.2
Cadmium (Cd) (total)	ug/l	0.4	5.0	40 CFR 131, Basin Plan	1.2	< 0.4	< 0.4	0.2J	<0.2	<0.2
Copper (Cu) (dissolved)	ug/l	0.8	(b)	40 CFR 131	**68.9**	3.5	2	**23.7**	2.6	1.7
Copper (Cu) (total)	ug/l	0.8	1000	40 CFR 131, Basin Plan	89.8	4	2.8	27.0	3.2	2.5
Lead (Pb) (dissolved)	ug/l	0.1	(b)	40 CFR 131	3.01	< 0.1	0.21	0.3	0.05	0.09
Lead (Pb) (total)	ug/l	0.1			5.4	0.24	0.4	1.0	0.17	0.36
Zinc (Zn) (dissolved)	ug/l	0.5	(b)	40 CFR 131	139	16.7	12.9	6.0	9.2	6.2
Zinc (Zn) (total)	ug/l	0.5	5,000	40 CFR 131, Basin Plan	180	20.2	15.9	12.4	11.6	9.1

Appendix F: Dry Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	SD8(1) Dry Weather 3/5/2008	LM-1 Dry Weather 3/5/2008	LG-1 Dry Weather 3/5/2008	SD8(1) Dry Weather 6/3/2008	LM-1 Dry Weather 6/3/2008	LG-1 Dry Weather 6/3/2008
Organo Pesticides										
Bolstar (Sulprofos)	ng/l	4			<4	< 4	< 4	-	<2	<2
Chlorpyrifos	ng/l	2	20/14	CA Dept. of Fish & Game, 2000 (acute/chronic)	<2	< 2	< 2	< 2	<1	<1
Demeton	ng/l	2			<2	< 2	< 2	-	<1	<1
Diazinon	ng/l	4	72/45	Chollas Creek TMDL for Diazinon (acute/chronic)	<4	< 4	23	< 4	<2	<2
Dichlorvos	ng/l	6			<6	< 6	< 6	-	<3	<3
Dimethoate	ng/l	6			<6	< 6	< 6	-	<3	<3
Disulfoton	ng/l	2			<2	< 2	< 2	-	<1	<1
Ethoprop (Ethoprofos)	ng/l	2			<2	< 2	< 2	-	<1	<1
Fenchlorphos (Ronnel)	ng/l	4			<4	< 4	< 4	-	<2	<2
Fensulfothion	ng/l	2			<2	< 2	< 2	-	<1	<1
Fenthion	ng/l	4			<4	< 4	< 4	-	<2	<2
Malathion	ng/l	6	430/100	CA Dept. of Fish & Game, 1998 (acute/chronic)	<6	< 6	< 6	< 6	<3	<3
Merphos	ng/l	2			<2	< 2	< 2	-	<1	<1
Methyl Parathion	ng/l	2			<2	< 2	< 2	-	<1	<1
Mevinphos (Phosdrin)	ng/l	16			<16	< 16	< 16	-	<8	<8
Phorate	ng/l	12			<12	< 12	< 12	-	<6	<6
Tetrachlorvinphos (Stirofos)	ng/l	4			<4	< 4	< 4	-	<2	<2
Tokuthion	ng/l	6			<6	< 6	< 6	-	<3	<3
Trichloronate	ng/l	2			<2	< 2	< 2	-	<1	<1
Pesticides										
Piperonyl Butoxide	ng/l	20	650,000	El-Merhibi et al. 2004	-	< 20	< 20	-	<5	<5

Appendix F: Dry Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	SD8(1) Dry Weather 3/5/2008	LM-1 Dry Weather 3/5/2008	LG-1 Dry Weather 3/5/2008	SD8(1) Dry Weather 6/3/2008	LM-1 Dry Weather 6/3/2008	LG-1 Dry Weather 6/3/2008
Pyrethroids by NCI										
Allethrin	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Bifenthrin	ng/l	2	9.3	(wet) Anderson et al. in press	-	< 2	< 2	-	<0.5	<0.5
Cyfluthrin	ng/l	2	344	(wet) Wheelock et al. 2004	-	< 2	< 2	-	<0.5	<0.5
Cypermethrin	ng/l	2	683	(wet) Wheelock et al. 2004	-	< 2	< 2	-	<0.5	<0.5
Danitol	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Deltamethrin	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Esfenvalerate	ng/l	2	250	(wet) Wheelock et al. 2004	-	< 2	< 2	-	<0.5	<0.5
Fenvalerate	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Fluvalinate	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
L-Cyhalothrin	ng/l	2	200	(wet) Wheelock et al. 2004	-	< 2	< 2	-	<0.5	<0.5
Permethrin	ng/l	25	21	(wet) Anderson et al. in press	-	< 25	< 25	-	<5	<5
Prallethrin	ng/l	2			-	< 2	< 2	-	<0.5	<0.5
Resmethrin	ng/l	25			-	< 25	< 25	-	<5	<5
Bacteria										
Enterococci	MPN/100 ml	20	151	Basin Plan	**80,000**	**500**	**1300**	130	**5,000**	**300**
Fecal Coliforms	MPN/100 ml	20	4000	Basin Plan REC2	**130,000**	170	230	170	2,300	70
Total Coliforms	MPN/100 ml	20			9,000,000	7,000	800	2,200	11,000	8,000

Bold and shaded values are above the WQO. Values for Bifenthrin and Permethrin are bold if above published LC50 values for *Hyalella azteca.*

J = Value is above the laboratory method detection limit and below the reporting limit. The value is considered an estimate.

(a) Water Quality Benchmark for Ammonia-N for wet weather is based on CMC (Salmonid absent) based on pH and Temperature. Benchmark for ambient weather is based on CCC (early life stages present) based on pH and Temperature.

(b) Water Quality Benchmark is based on USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000, water temperature, and pH. Dissolved metals values were compared against chronic WQO values.

- indicates not applicable or not analyzed.

Appendix F: Wet Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	North Fork- Chollas Creek						South Fork- Chollas Creek					
					LM-1 Wet Weather			SD8(1) Wet Weather			LG-1 Wet Weather			DPR2 Wet Weather		
					11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008
Field Measurements																
pH	pH Units	-	6.5-9.0	Basin Plan	7.65	6.81	7.74	6.83	6.82	7.54	7.08	7.55	8.61	7.33	7.09	7.54
Conductivity	uS/cm	-			226	200	222	162	138	142	470	168	189	405	316	200
Temperature	°C	-			17.8	14.9	13.7	17.1	15.1	13.2	16.7	14.8	13.1	17.9	15.0	13.1
General Chemistry																
Ammonia-N	mg/l	-	(a)	U.S. EPA Water Quality Criteria (Freshwater)	1.26	0.52	0.2	0.94	0.44	0.13	1.2	0.42	0.16	0.94	0.38	0.12
Dissolved Organic Carbon	mg/l	0.2			18.6	7.3	8.4	18.2	9.7	5.4	14.9	7.6	5.5	11.8	9.9	5.9
Nitrate-N	mg/l	0.05	10	Basin Plan	1.9	0.84	1.29	1.3	0.83	0.28	1.24	0.69	0.38	1.2	0.83	0.49
Nitrite-N	mg/l	0.05	1	Basin Plan	0.19	0.05	0.36	0.12	0.05	0.03 J	0.19	0.05	<0.05	0.19	0.06	<0.05
Total Hardness as CaCO3	mg/l	5			44.3	19.9	60.3	22.4	20	17.2	52.2	25.2	22.9	48	31	27.8
Total Kjeldahl Nitrogen	mg/l	0.5			6.4	1.5	1.7	5.7	1.4	1.3	5.5	1.4	1.7	4.3	1.4	2
Total Organic Carbon	mg/l	0.2			25	9	9.7	20.4	11.4	5.8	19.7	9.6	6.1	21.7	10.1	6.4
Total Suspended Solids	mg/l	5	100	MSGP 2000	**220**	64	90	**400**	**274**	**124**	**380**	**292**	**169**	**160**	80	6
Oil & Grease	mg/l	5	10	USEPA Multi-Sector General Permit	8	3.3 J	<1.9	**18.7**	5	2.8 J	**19**	4.6 J	<4.4	9.4	5	3.3 J
Metals																
Cadmium (Cd) (dissolved)	ug/l	0.4	(b)	40 CFR 131	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Cadmium (Cd) (total)	ug/l	0.4	5.0 (c)	40 CFR 131, Basin Plan	0.8	<0.4	0.3 J	0.8	0.3 J	0.8	0.8	0.2 J	0.2 J	0.4	<0.4	<0.4
Copper (Cu) (dissolved)	ug/l	0.8	(b)	40 CFR 131	**8.5**	**13.6**	7.2	**11.1**	**9.4**	**6.6**	6.7	**7.4**	**5.9**	**8**	**8.5**	**5.9**
Copper (Cu) (total)	ug/l	0.8	1000 (c)	40 CFR 131, Basin Plan	67.6	16.5	22.9	74.8	25.8	32.1	67.3	22.5	15.5	34.3	14.2	12.4
Lead (Pb) (dissolved)	ug/l	0.1	(b)	40 CFR 131	1.29	0.87	0.2	1.5	0.66	0.41	1.27	0.59	0.29	1.14	0.59	0.21
Lead (Pb) (total)	ug/l	0.1			39	11.26	14.26	49.76	21.62	43.54	59.23	20.91	15.29	27.31	9.76	9.62
Zinc (Zn) (dissolved)	ug/l	0.5	(b)	40 CFR 131	**90.6**	**55.5**	52.3	**78**	**50.3**	**37.6**	56.8	**43.2**	33.3	47.6	27.3	23.4
Zinc (Zn) (total)	ug/l	0.5	5000 (c)	40 CFR 131, Basin Plan	497	126	165	485	151	452	549	155	126	201	64.1	75.5
Organo Pesticides																
Bolstar (Sulprofos)	ng/l	4			<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Chlorpyrifos	ng/l	2	20/14	CA Dept. of Fish & Game, 2000 (acute/chronic)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Demeton	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Diazinon	ng/l	4	72/45	Chollas Creek TMDL for Diazinon (acute/chronic)	<4	<4	<4	**46.6**	27.6	13	23.4	<4	<4	<4	26.2	<4
Dichlorvos	ng/l	6			<6	<6	<6	<6	<6	<6	<6	<6	<6	18.5	<6	<6
Dimethoate	ng/l	6			<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6
Disulfoton	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Ethoprop (Ethoprofos)	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Fenchlorphos (Ronnel)	ng/l	4			<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Fensulfothion	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Fenthion	ng/l	4			<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Malathion	ng/l	6	430/100	CA Dept. of Fish & Game, 1998 (wet, acute/chronic)	160	<6	<6	<6	118	43.2	185	<6	<6	229	138	<6
Merphos	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Methyl Parathion	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Mevinphos (Phosdrin)	ng/l	16			<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16
Phorate	ng/l	12			<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12

Appendix F: Wet Weather Chemistry

ANALYTE	UNITS	RL	Water Quality Objective	SOURCE	North Fork- Chollas Creek						South Fork- Chollas Creek					
					LM-1 Wet Weather			SD8(1) Wet Weather			LG-1 Wet Weather			DPR2 Wet Weather		
					11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008	11/30/2007	12/7/2007	2/3/2008
Tetrachlorvinphos (Stirofos)	ng/l	4			<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Tokuthion	ng/l	6			<6	<6	<6	18.1	<6	<6	<6	<6	<6	<6	<6	<6
Trichloronate	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Pesticides																
Piperonyl Butoxide	ng/l	20	650,000	El-Merhibi et al. 2004	<20	<20	<20	<20	<20	7.4 J	<20	<20	<20	<20	<20	<20
Pyrethroids by NCI																
Allethrin	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Bifenthrin	ng/l	2	9.3	(wet) Anderson et al. in press	**222**	**77.9**	**38.9**	**125**	**39.3**	**26.6**	**97.3**	**17.9**	**14.3**	**55.1**	**19.8**	<2
Cyfluthrin	ng/l	2	344	(wet) Wheelock et al. 2004	95.8	68.5	40.2	84.1	34.7	32.4	38.5	11.5	2.4	23.5	7.1	<2
Cypermethrin	ng/l	2	683	(wet) Wheelock et al. 2004	27	68.4	2 U	34.6	20.6	<2	8.8	<2	<2	14	<2	<2
Danitol	ng/l	2			<2	<2	<2	<2	<2	0.9 J	<2	<2	<2	<2	<2	<2
Deltamethrin	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Esfenvalerate	ng/l	2	250	(wet) Wheelock et al. 2004	<2	<2	<2	1.2 J	<2	<2	<2	<2	<2	-	<2	<2
Fenvalerate	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2
Fluvalinate	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2
L-Cyhalothrin	ng/l	2	200	(wet) Wheelock et al. 2004	6.7	2.7	9	12	<2	2.7	8.4	<2	<2	2.5	<2	<2
Permethrin	ng/l	25	21	(wet) Anderson et al. in press	**449.3**	**167.7**	<25	**213.5**	**168.7**	<25	**194.1**	<25	<25	<25	<25	<25
Prallethrin	ng/l	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Resmethrin	ng/l	25			-	-	<25	-	-	-	-	-	<25	-	-	-
Bacteria																
Enterococci	MPN/100 ml	20			170,000	23,000	70,000	80,000	110,000	80,000	130,000	80,000	17,000	140,000	30,000	50,000
Fecal Coliforms	MPN/100 ml	20	4000	Basin Plan REC2	**80,000**	**50,000**	2,300	**50,000**	**11,000**	**11,000**	1,879	**30,000**	**8,000**	**330,000**	**23,000**	**13,000**
Total Coliforms	MPN/100 ml	20			230,000	220,000	28,000	500,000	7,5038E	70,000	80,000	280,000	170,000	1,100,000	500,000	500,000

Bold and shaded values are above the WQO. Values for Bifenthrin and Permethrin are bold if above published LC50 values for *Hyalella azteca.*
J = Value is above the laboratory method detection limit and below the reporting limit. The value is considered an estimate.
E= Results for the multiple tube method are derived from Standard Methods Section 9221C, Table 9221.IV. Any results not appearing in the table are calculated using the Thomas Equation and are noted with the letter 'E'.

(a) Water Quality Benchmark is based on CMC (salmonids absent) using pH described in the U.S. EPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

(b) Water Quality Objectives are based on USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000., water temperature, and pH. Wet weather dissolved metals values were compared to acute WQOs.

(c) There is no wet weather Water Quality Objective for total metals. The listed WQO applies to ambient weather conditions.

(d) Water Quality Objective for Enterococi is based on the maximum criteria for an infrequently used freshwater area (Basin Plan, 1994).

- indicates not analyzed.

Appendix H
City of La Mesa Wet Weather Monitoring Results

1.0 Sampling Overview

During 2007-2008 the City of La Mesa (City) collected samples from Site 908-UNI-001. This is the same location designated by the City of San Diego as Site LM-1. This site is located in the channel at 69th Street and Boulevard Drive. Monitoring at this location provides data about the types and quantities of pollutants in storm water runoff as it leaves the City of La Mesa and enters the City of San Diego.

Sampling at Site 908-UNI-001 was completed during storm events on November 30, 2007 and December 7, 2007 during the 2007-2008 fiscal year by D-MAX Engineering, Inc. (D-MAX). Samples were analyzed for dissolved and total metals, bacteria, and pyrethroid pesticides.

2.0 Sampling Procedure and Analytical Methods

2.1 *Sampling Procedure*

A time weighted composite sampling method was used. Samples were collected across the duration of the storm until runoff levels had subsided back to a level similar to that observed before the storm. To obtain a single composite sample for each of the sampling locations, grab samples of one to two liters were taken at 15 to 20 minute intervals. The size of each grab and time between grabs was determined prior to each storm depending on the anticipated size and duration of the rain event. Samples were composited in precleaned containers and then transferred to precleaned bottles obtained from the analytical laboratory. Note that pyrethroids samples were collected and composited using only glass containers and equipment. This procedure was used because pyrethroids are hydrophobic and can be retained in sampling equipment if plastic materials are used. Grab samples were collected for bacteria analyses, since such analyses are not conducive to composite sampling. Sampling staff recorded relevant observations in their field log books.

Samples were submitted to laboratories certified via California's Environmental Laboratory Accreditation Program (ELAP). CRG Marine Labs performed the pyrethroids analyses, while the remaining tests were completed by EnviroMatrix Analytical. Table 2-1 lists the relevant analytical methods used.

TABLE 2-1
LABORATORY ANALYTICAL METHODS

Parameter	Analytical Method	Container/Volume	Preservation	Holding Time	Reporting Limit	Units
Microbiological						
Total Coliform Bacteria	SM 9221	Plastic 100 mL	4°C	6 hours	20	MPN/100mL
Fecal Coliform Bacteria	SM 9221	Plastic 100 mL	4°C	6 hours	20	MPN/100mL

TABLE 2-1
LABORATORY ANALYTICAL METHODS

Parameter	Analytical Method	Container/Volume	Preservation	Holding Time	Reporting Limit	Units
Enterococcus Bacteria	SM 9230	Plastic 100 mL	4°C	6 hours	20	MPN/100mL
Conventional						
Total Hardness	EPA 200.7	Plastic 500 mL	pH<2 HNO_3	6 months	10	mg $CaCO_3$/L
Total Suspended Solids (TSS)	SM 2540 D	Plastic 250 mL	4°C	6 months	20	mg/L
Dissolved Metals						
Copper	EPA 6020	Plastic 500 mL	4°C	6 months	0.005	mg/L
Lead					0.005	mg/L
Zinc					0.020	mg/L
Total Metals						
Copper	EPA 6020	Plastic 500 mL	4°C	6 months	0.050	mg/L
Lead					0.050	mg/L
Zinc					0.050	mg/L
Synthetic Pyrethroids						
Allethrin	EPA 625 - NCI	Amber Glass 2L	4°C	7 days (extraction); 40 days (analysis)	2	ng/L
Bifenthrin					2	ng/L
Cyfluthrin					2	ng/L
Cypermethrin					2	ng/L
Danitol					2	ng/L
Deltamethrin					2	ng/L
Esfenvalerate					2	ng/L
Fenvalerate					2	ng/L
Fluvalinate					2	ng/L
L-Cyhalothrin					2	ng/L
Permethrin					25	ng/L
Prallethrin					2	ng/L
Organophosphorus Pesticides						
Diazinon	EPA 8141 A	Amber Glass 1L	4°C	7 days	0.05	ug/L
Chlorpyrifos					0.05	ug/L
Malathion					0.05	ug/L

2.2 *Quality Assurance and Quality Control Procedures*

Standard quality assurance (QA) and quality control (QC) processes were followed for this project. These processes included collecting samples in using precleaned equipment and containers, including contaminant free bottles obtained from the analytical laboratory. Field staff were trained in all relevant QA/QC procedures, including wearing gloves during sample collection. Chain of custody (COC) forms indicating when and where the samples were collected were completed by the field personnel collecting the samples. The collected samples were then hand delivered to laboratory staff by D-MAX field personnel, at which time the COC forms were also transferred to laboratory staff.

3.0 Sampling Results

During 2007-2008 sampling was completed at Site 980-UNI-001 (same location as LM-1) on November 30, 2007 and on December 7, 2007. Collected data were compared to the same set of water quality objectives (WQO) that has been used in assessments of other data collected for the Chollas Creek TMDL. That set of benchmarks is based on guidance developed by the San Diego Copermittees Regional Monitoring Workgroup and concentration limits set by Chollas Creek TMDLs. Collected data is presented in Table 3-1.

Dissolved lead was not detected in either storm, and no exceedances for dissolved zinc were noted. Dissolved copper was noted above the California Toxics Rule Criteria Maximum Concentration (CTR CMC) during both storms. Figure 3-1 shows the ratio of the detected zinc and copper levels to the CTR CMC for each rain event. Data from a monitored event on April 20, 2007, during which no metals exceedances were recorded, is also included for the sake of comparison. Note that the actual concentration of metals was relatively similar for all three storms, and the main difference in whether or not an exceedances was recorded was mostly due to variations in the measured level of total hardness.

FIGURE 3-1
908-UNI-001 (LM-1) METALS: RATIOS TO CTR CMC

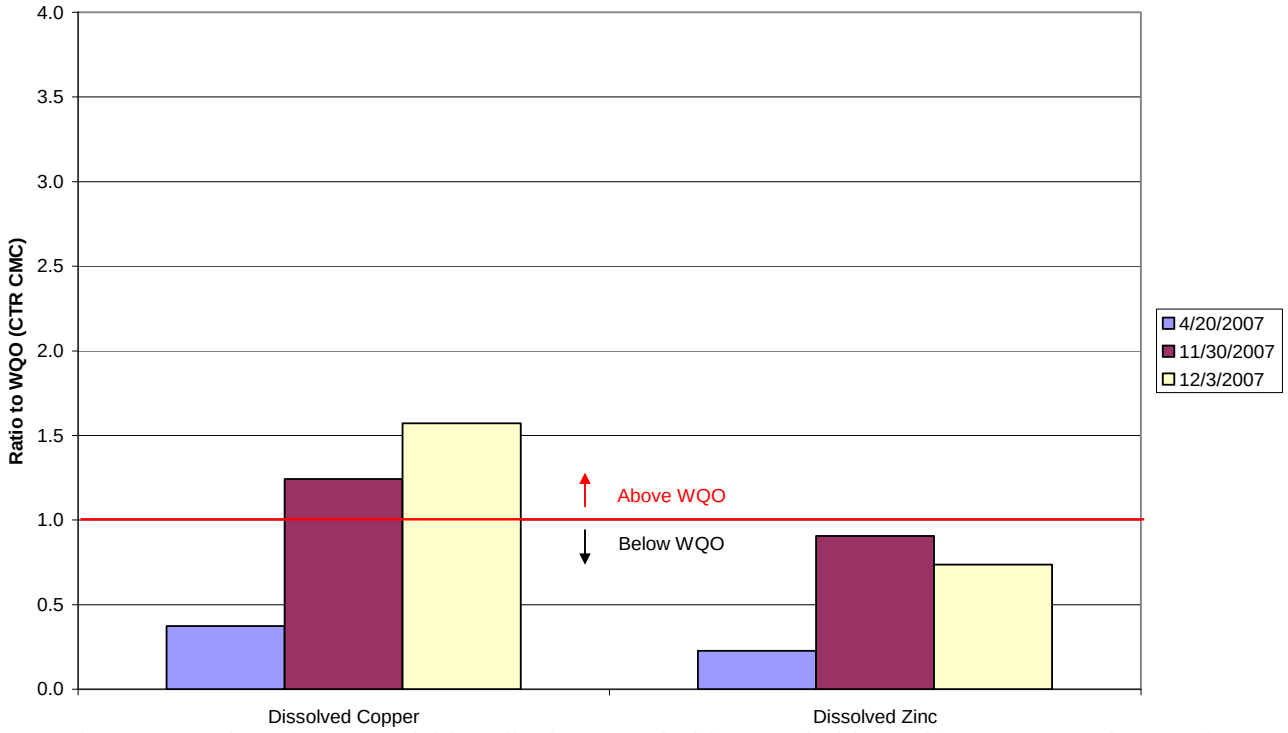

The organophosphate pesticides diazinon, malathion, and chlorpyrifos were not detected in any of the monitored rain events. Pyrethroids pesticides were detected in both the November and December rain events. In general the detected levels of pyrethroids were relatively low, and only Bifenthrin, which has the lowest WQO among the pyrethroid class of pesticides, was detected above its WQO.

TABLE 3-1
LA MESA WET WEATHER MONITORING DATA

Analyte	Units	WQO	La Mesa, 4/20/2007	La Mesa, 11/30/2007	La Mesa, 12/7/2007
TSS	mg/L	100	**118**	**166**	-
Total Hardness as CaCO3	mg/L		230	58	50
Copper (dissolved)	µg/L	CTR CMC	11	**10**	**11**
Copper (total)	µg/L	1,000	<50	<50	<50
Lead (dissolved)	µg/L	CTR CMC	<5	<5	<5
Lead (total)	µg/L		15	25	<10
Zinc (dissolved)	µg/L	CTR CMC	54	67	48
Zinc (total)	µg/L	5,000	178	288	80
Allethrin			-	<2	<2
Bifenthrin	ng/L	9.3	-	**19.8**	**52.4**
Cyfluthrin	ng/L	344	-	10.6	49.4
Cypermethrin	ng/L	683	-	<2	<2
Danitol			-	<2	<2
Deltamethrin			-	<2	<2
Esfenvalerate	ng/L	250	-	<2	<2
Fenvalerate			-	<2	<2
Fluvalinate			-	<2	<2
L-Cyhalothrin	ng/L	200	-	<2	6.6
Permethrin	ng/L	21	-	<25	<25
Prallethrin			-	<2	<2
Diazinon	ng/L	72/45 (acute/chronic)	<50	<50	<50
Chlorpyrifos	ng/L	20/14 (acute/chronic)	<50	<50	<50
Malathion	ng/L	430/100 (acute/chronic)	<50	<50	<50
Total Coliforms	MPN/100 mL		23,000	1,600,000	90,000
Fecal Coliforms	MPN/100 mL	4,000	230	**70,000**	**13,000**
Enterococci	MPN/100 mL		800	160,000	9,000

Notes

1) CTR CMC indicates that the California Toxics Rule Criterion Maximum Concentration was used as the WQO
2) WQO exceedances are indicated by bold font with a gray background
3) "-" indicates not analyzed
4) Data from the 4/20/2007 storm, which is outside the 2007-2008 reporting period, is included for comparison and because it is referenced in the text discussion of sampling data.

Appendix G: Scatterplots

DPR2

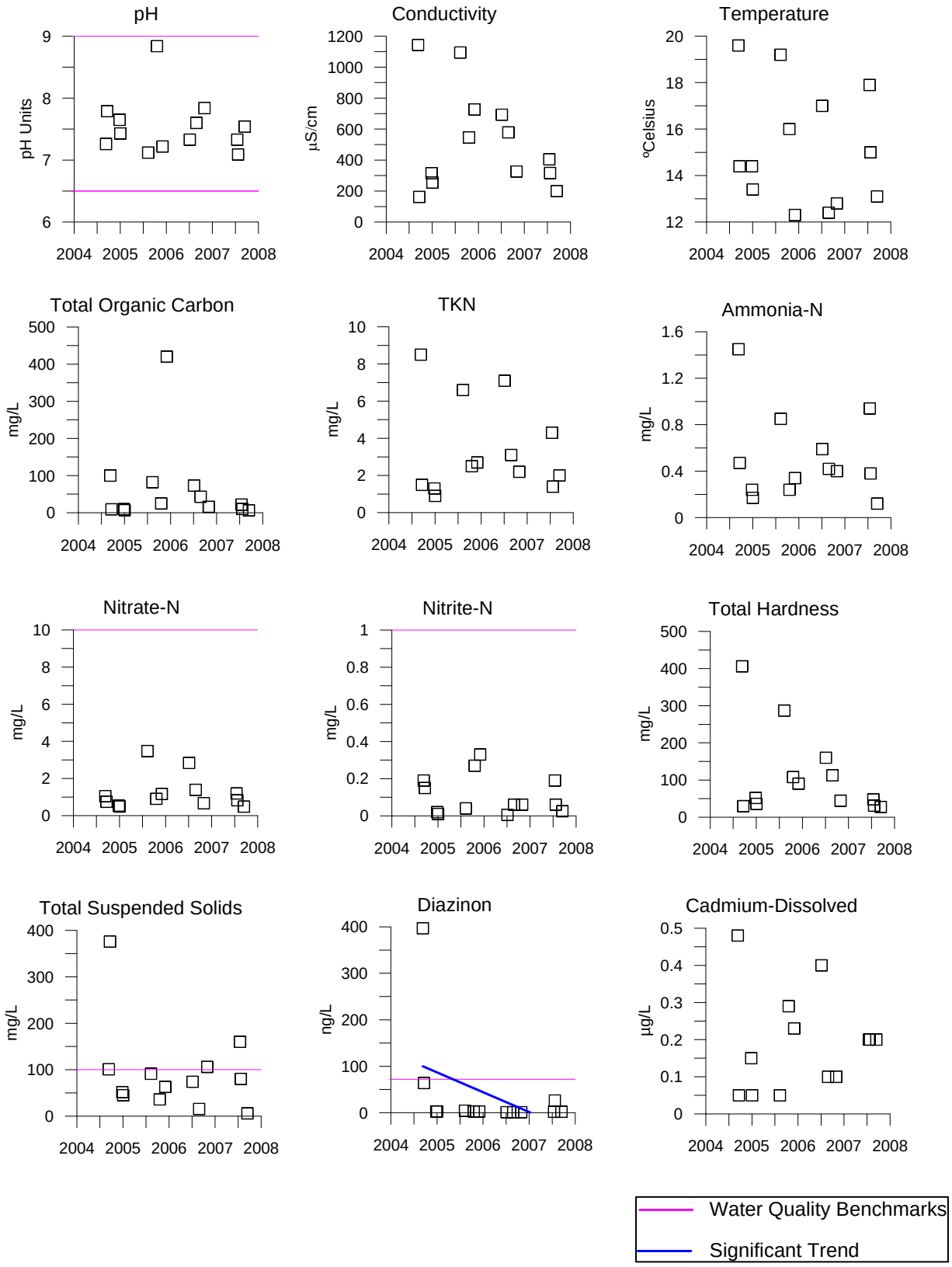

Appendix G: Scatterplots

DPR2

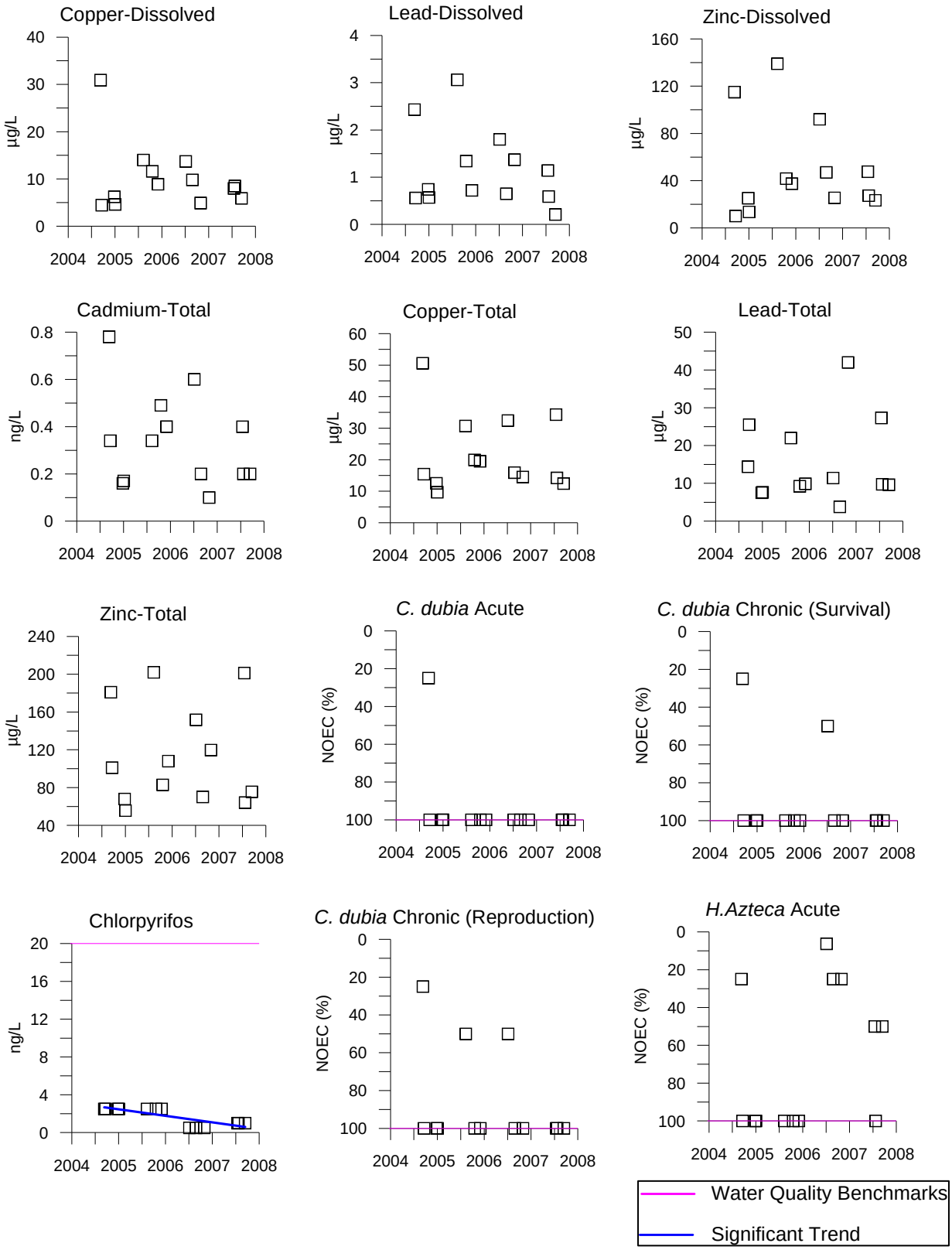

Appendix G: Scatterplots

SD(8)

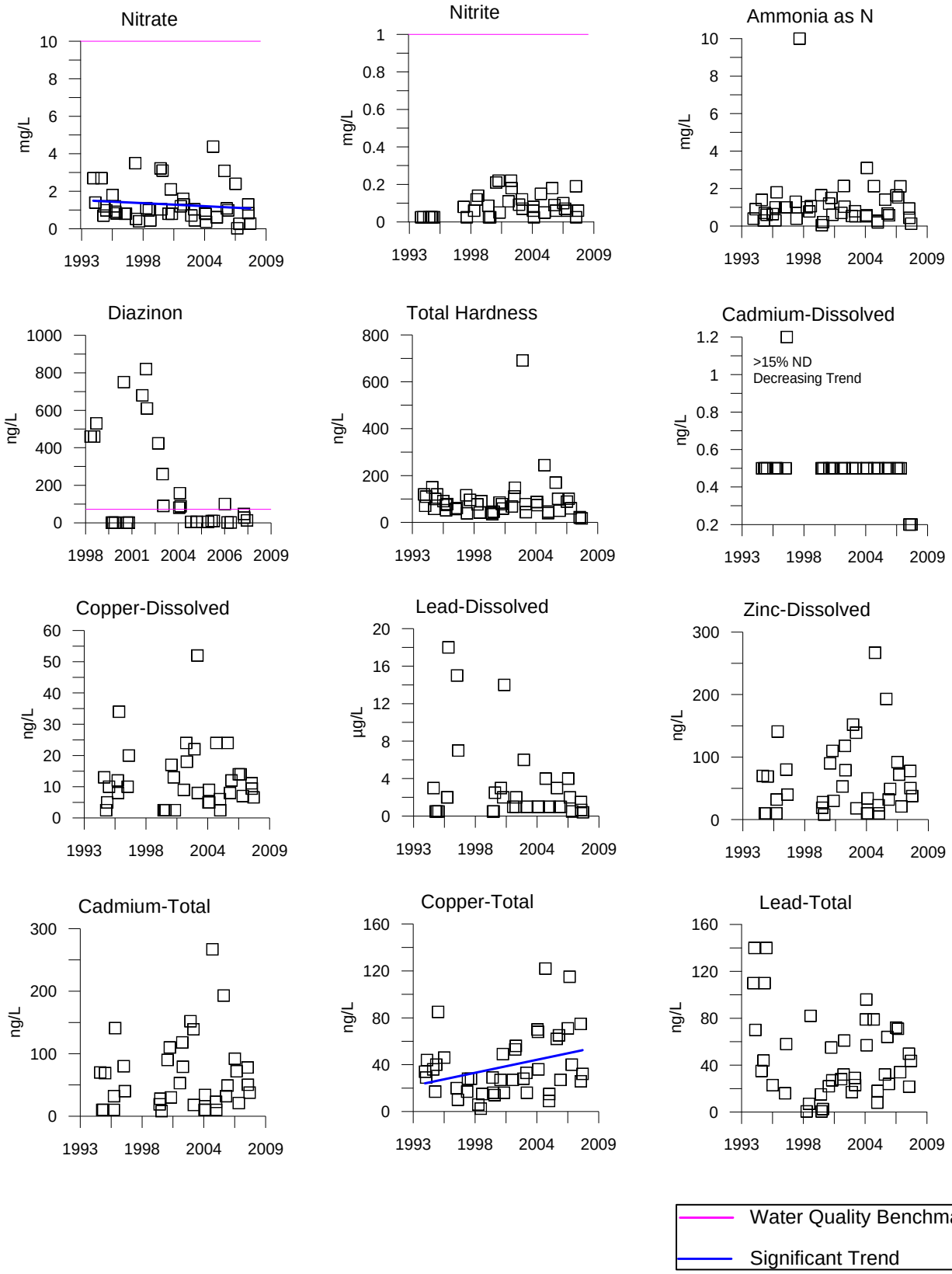

Appendix G: Scatterplots

SD(8)

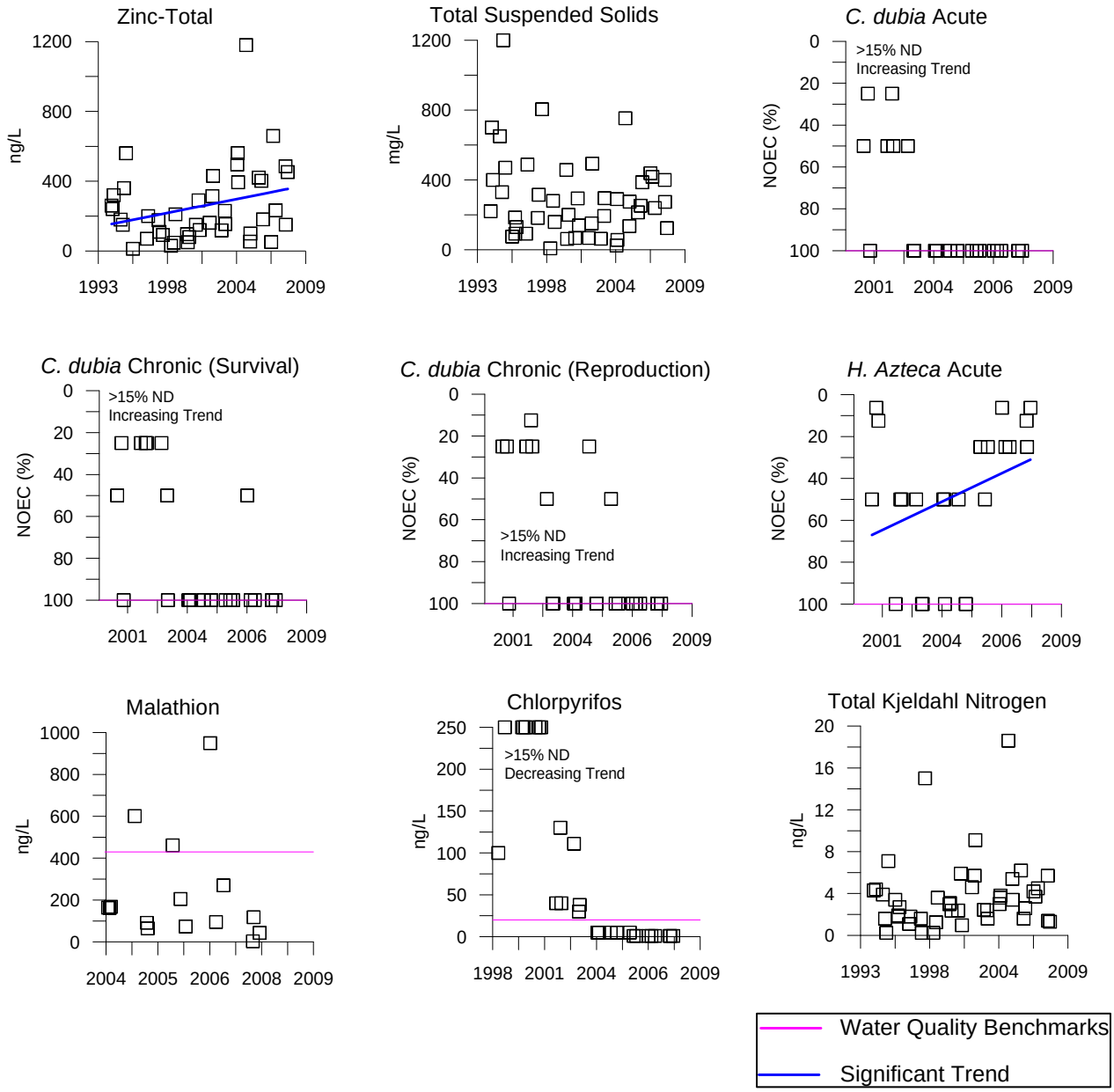

Appendix G: Trends Data

SD8(1) trend results

Analyte		p-value	Trend
Dissolved metals	Cadmium (Cd)	0.002	Decreasing*
	Copper (Cu)	0.361	
	Lead (Pb)	0.136	
	Zinc (Zn)	0.195	
Total Metals	Cadmium (Cd)	0.09	
	Copper (Cu)	0.045	Increasing
	Lead (Pb)	0.381	
	Zinc (Zn)	0.038	Increasing
General Chemistry	Total Hardness as CaCO3	0.061	
	Total Suspended Solids	0.251	
Nutrients	Nitrate	0.029	Decreasing
Pesticides	Chlorpyrifos	<.001	Decreasing*
	Diazinon	0.078	
	Malathion	0.144	
Toxicity	*Ceriodaphnia* Acute	0.006	Increasing*
	Ceriodaphnia Chronic survival	0.007	Increasing*
	Ceriodaphnia Chronic reproduction	0.007	Increasing*
	Hyalella Acute (survival)	0.037	Decreasing

*Because the dataset consisted of greater than 15% non-detect values or greater than 15% NOEC values of 100 percent, trends were not considered to be valid.

DPR2 trend results

Analyte		p-value	trend
Dissolved Metals	Cadmium (Cd)	0.357	
	Copper (Cu)	0.291	
	Lead (Pb)	0.18	
	Zinc (Zn)	0.476	
Total Metals	Cadmium (Cd)	0.214	
	Copper (Cu)	0.214	
	Lead (Pb)	0.476	
	Zinc (Zn)	0.437	
General Chemistry	Total Hardness as CaCO3	0.08	
	Total Suspended Solids	0.251	
Nutrients	Nitrate	0.38	
Pesticides	Chlorpyrifos	0.015	Decreasing
	Diazinon	0.019	Decreasing
	Malathion	0.38	
Toxicity	*Ceriodaphnia* Acute	0.251	
	Ceriodaphnia Chronic survival	0.271	
	Ceriodaphnia Chronic reproduction	0.18	
	Hyalella Acute	0.271	

San Diego Bay Watershed Urban Runoff Management Program 2008-2009 Annual Report

A Collaborative Effort of:

City of Chula Vista
City of Coronado
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of San Diego
County of San Diego
Port of San Diego
San Diego County Regional Airport Authority

January 31, 2010

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2008-2009 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2008-2009 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

Signed certification statements for the participating San Diego Bay Copermittees are located in Appendix A of this report.

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Acknowledgements

The development and production of this Watershed Urban Runoff Management Program Document for the San Diego Bay Watershed Management Area (San Diego Bay WMA) are the result of the talents and experience of numerous individuals. Their contributions and insight made this document a collective success for the environment and for the watersheds. The primary authors of the text include:

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Joe Kuhn	*City of La Mesa*
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Stephanie Bracci	*City of San Diego*
Tracy Cline	*County of San Diego*
Annie Hill	*San Diego County Regional Airport Authority*

The San Diego Bay Copermittees also wish to recognize the public for their continued expressed concern for the protection and conservation of the San Diego Bay WMAs environmental resources.

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ACRONYMS AND ABBREVIATIONS

303(d)	Section of the Clean Water Act
ASBS	Areas of Special Biological Significance
BLTEA	Baseline Long-Term Effectiveness Assessment
BMP	Best Management Practices
BOD	Biologic Oxygen Demand
BWE	Baseline Watershed Evaluation
CALTRANS	California Transportation Department
CASQA	California Stormwater Quality Association
CBI	Clean Beach Initiative
CBSM	Community Based Social Marketing
CCC	California Coastal Commission
CMC	Criterion Maximum Concentration
COC	Constituent of Concern
COD	Chemical Oxygen Demand
Copermittees	The 18 cities within San Diego County, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority
CSDM	Coastal Storm Drain Monitoring
CTR	California Toxics Rule
CWA	Clean Water Act
DDT	Dichlorodiphenyl trichloroethane
DFMP	Drainage Facilities Master Plan
DWM	Dry Weather Monitoring
EIS	Environmental Impact Assessment
EMC	Event Mean Concentration
EPA	Environmental Protection Agency
FOG	Fats, Oils, and Grease Program
FY	Fiscal Year
GIS	Geographical Information System
GPM	Gallons Per Minute
GWSDCC	Groundwork San Diego Chollas Creek
HHW	Household Hazardous Waste
HA	Hydrologic Area
HCH	Hexachlorocyclohexane
HOA	Homeowners Association
HSA	Hyrologic Sub-Area
HU	Hydrologic Unit
IBI	Index of Biological Integrity
IC/ID	Illicit Connection / Illicit Discharge
ILACSD	I Love A Clean San Diego
IPM	Integrated Pest Management
IRTA	Institute for Research and Technical Assistance
JURMP	Jurisdictional Urban Runoff Management Program

LID	Low Impact Development
LS	Length Slope Factor
MBAS	Methylene Blue Active Substances
MLS	Mass Loading Station
MS4	Municipal Separate Storm Sewer System
MSCP	Multiple Species Conservation Program
MUSLE	Modified Universal Soil Loss Equation
Municipal Permit or Permit	San Diego Regional Water Quality Control Board Order 2007-0001
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
OAL	Office of Administrative Law
ORWMP	Otay River Watershed Management Plan
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCO	Pest Control Operators
PCW	Project Clean Water
PDP	Pollutant Discharge Potential
PSA	Public Service Announcement
PWQP	Priority Water Quality Problems
RFI	Request For Proposal
RHMP	Regional Harbor Monitoring Program
RURMP	Regional Urban Runoff Management Plan
RWQCB	Regional Water Quality Control Board
SAG	Stakeholder Advisory Group
SAMP	Special Area Management Plan
San Diego Bay Copermittees	The County of San Diego, the Port of San Diego, and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego, and Airport Authority
SCCWRP	Southern California Coastal Water Research Project
SDA	Special Drainage Area
SDAPCD	San Diego Air Pollution Control District
SDB	San Diego Bay
SDCRAA	San Diego County Regional Airport Authority (Airport Authority)
SDRWQCB	San Diego Regional Water Quality Control Board
SIO	Scripps Institute of Oceanography
SIYB	Shelter Island Yacht Basin
SMC	Stormwater Monitoring Coalition
SQO	Sediment Quality Objective
SSMP	Sewer System Management Plan
SSO	Site Specific Objective
SUSMP	Standard Urban Stormwater Management Plan
SWAMP	Surface Water Ambient Monitoring Program
SWELL	Stewardship Watershed Education for Lifelong Leadership
SWRCB	State Water Resources Control Board

SWQMP	Stormwater Quality Master Plans
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
TWAS	Temporary Watershed Assessment Station
UCCE	University of California Cooperative Extension
URMP	Urban Runoff Management Program
WER	Water Effects Ratio
WLA	Waste Load Allocation
WMA	Watershed Management Area
WQO	Water Quality Objective
WURMP	Watershed Urban Runoff Management Program

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Executive Summary

Since January 2002, the County of San Diego, Port of San Diego, the San Diego County Regional Airport Authority (Airport Authority), and the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) have been active in developing and implementing watershed-based programs in the San Diego Bay Watershed Management Area (WMA). This Annual Report represents the San Diego Bay Copermittees' efforts during Fiscal Year (FY) 2009 to meet the requirements of Section E of the Municipal Storm Water Permit Order Number 2007-0001 (Municipal Permit or Permit) and develop and implement the San Diego Bay Watershed Urban Runoff Management Program (WURMP).

The San Diego Bay Copermittees successfully completed the watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. The San Diego Bay Copermittees have worked to identify, implement, and assess watershed water quality, education, and public participation activities, as well as land use planning watershed-based mechanisms targeting high priority water quality problems and their sources. Due to the success of the programs implemented during FY 2009, the San Diego Bay WURMP achieved the following objectives: 1) implementation of activities to specifically address the sources of water quality problems at a WMA and hydrologic area (HA) level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a watershed and HA level; and 4) continue progress toward meeting WURMP goals and objectives.

Copermittees implemented 12 water quality activities which effectively addressed high priority water quality problems during this reporting period. The San Diego Bay Copermittees implemented six trash and debris related water quality activities focused on reducing the amount of trash entering the MS4. Six other activities focused on implementing enhanced inspections to abate sources of high priority water quality problems associated with construction activities, large special events, or automotive facilities. In the effort to fill data gaps and improve the characterization of urban runoff and receiving water quality, the Copermittees implemented 12 Monitoring/Source Identification activities. Copermittees implemented 11 education activities to supplement the educational activities occurring within the San Diego Bay WMA as part of the San Diego Bay Education Program which incorporates education activities implemented through existing JURMP, RURMP, or other Storm Water Programs. The Copermittees' assessments of the individual activities indicate nearly all the watershed activities were able to achieve the stated goals and were effective in obtaining outcome targets.

The San Diego Bay Copermittees continue to improve watershed efforts in the San Diego Bay WMA, using innovative methods and new tools as they become available. The overarching goal for the San Diego Bay WURMP is to cooperatively and through collaborative strategic planning

decrease the potential sources and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) that have been identified as causing high priority water quality problems. Using the Watershed Strategy developed in the 2008 San Diego Bay WURMP document for guidance, each Copermittee individually selected activities that were feasible to institute in their jurisdiction, and were appropriate for its relative contribution to the watershed's high priority water quality problems.

During this reporting period, the San Diego Bay Copermittees continued improvements on the water quality assessment for the San Diego Bay WMA as the result of additional monitoring efforts. The FY 2009 WURMP program assessment involved: 1) the evaluation of individual activities, 2) a comprehensive assessment at a HA level, and 3) a comprehensive assessment at the watershed level. An integrated assessment of activity effectiveness within each HA was conducted to determine the collective impact of the activities on the targeted high priority pollutants and/or pollutant sources. This evaluation revealed where Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting identified pollutant sources in each HA.

Three major watersheds, or hydrologic units (HU), comprise the WMA: the Pueblo San Diego (908 HU), Sweetwater (909 HU), and Otay (910 HU). The watersheds vary greatly in size, land use, and population, and have different water quality issues as a result. A brief summary of monitoring results and watershed activities implemented in each HU follows.

Pueblo HU (908)

During the 2008-2009 monitoring year, the high frequency (three diamond) COCs in Pueblo San Diego HU were generally similar to previous years and correspond to the high priority water quality problems identified in the WURMP Program document. There appear to be links between receiving water and urban runoff water quality results which may indicate a relationship between MS4 effluent and receiving water quality. However, it is unclear what effect MS4 effluent is having on receiving water quality compared to other sources, such as aerial deposition. Receiving water quality within Pueblo San Diego was assessed in Chollas Creek (908.2 HA) which flows during storm events. Observed flow during ambient conditions within the creek is an indication of urban activities. Turbidity and indicator bacteria were identified as high frequency of occurrence COC during wet weather and ambient conditions suggesting a link between urban runoff and receiving water conditions. Total nitrogen and total phosphorus have been recognized within surface runoff emanating from residential and agricultural land uses as well as groundwater. Analysis of dissolved metals such as copper and zinc which are associated with aerial deposition and by transportation and industrial land uses indicate buildup during ambient conditions and then wash off during storm events. The results of monitoring regarding pesticides remained similar to past reporting periods, with Diazinon and Malathion concentrations detected below the acute benchmarks, though Bifenthrin has been identified as a high frequency of occurrence COC. Trash assessments supported the BLTEA rating for trash

in 908.2 and 908.3 HAs, as observations during Dry Weather Monitoring (DWM) indicated sub marginal and poor designations.

Copermittees were successful in implementing activities addressing the high priority water quality problems and reducing pollutant loads in this HU. Ten water quality activities resulted in source abatement or load reductions for bacteria, metals, sediment, and trash. In addition to education activities implemented through the JURMP and RURMP, Copermittees implemented six educational activities as part of the WURMP to address the high priority pollutants. Ten source identification monitoring studies were conducted during this reporting period. Additional receiving and urban runoff monitoring was conducted in 908.1 HA through the Regional Harbor Monitoring Program, SIYB Urban Runoff Monitoring, and Coordinated Dry Weather Monitoring programs. For 908.2 HA, the Copermittees were not only successful in implementing activities that collectively addressed all of the high priority pollutant water quality problems in this heavily urbanized HA, but were also effective in targeting a variety of pollutant sources. The RHMP was conducted throughout the San Diego Bay to assess receiving water quality and provide data for long-term trend analysis. Data resulting from the monitoring activities will enable the Copermittees to make more informed decisions on the best management practice (BMP) implementation that targets these high priority pollutants in the future.

The Copermittees, and other Named Dischargers, assessed the effectiveness of the BMP implementation plans for three adopted TMDLs: Chollas Creek Diazinon and Dissolved Metals TMDLs (908.2 HA) and the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL (908.1 HA). Based on the monitoring results from the Chollas Creek Diazinon TMDL, the Chollas Creek Dischargers' efforts to address Diazinon through education and outreach programs are adequate for meeting the goals of the TMDL. During this reporting period, the Chollas Creek Dissolved Metals TMDL dischargers collaborated and developed the BMP Implementation Plan. Though the Implementation Plan was not submitted during FY 2009, the named dischargers, including the US Navy and Caltrans, identified and reported on fifty-one water quality, education, and on-going agency-wide activities which were or will be implemented as part of their comprehensive Storm Water Programs to help meet TMDL requirements. The SIYB Dissolved Copper TMDL Implementation Plan was also in development during this reporting period. Named dischargers included the Port of San Diego, City of San Diego, marinas owners/operators, yacht clubs, and hull cleaners. During FY 2009, the named dischargers were involved in the development of the Implementation Plan, studies to identify non-copper alternative hull coatings, and monitoring activities to assess urban runoff and receiving water quality within the SIYB.

<u>Sweetwater HU (909)</u>

There have not been any significant changes to the COCs identified for the Sweetwater HU, though indicator bacteria remain a high frequency of occurrence COC and total coliform was downgraded to a low frequency of occurrence during 2008-2009. Monitoring results are consistent with the BLTEA priority ratings for bacteria in the Lower Sweetwater HA (909.1), but

are not supportive of the A rating for pesticides in the Middle Sweetwater HA (909.2). Organophosphate pesticides including Chlorpyrifos, Malathion, and Diazinon have not been detected at the Sweetwater MLS since 2003. Malathion and Diazinon were detected in receiving water monitoring conducted by the County of San Diego during this reporting year. However, results were below the Basin Plan WQO. Future monitoring, including a temporary watershed assessment station (TWAS) location, will be conducted within this watershed during the 2009-2010 monitoring year and will provide the Copermittees with a more robust dataset to analyze trends and water quality problems.

Copermittees implemented five activities with the goal of reducing loads or abating sources of bacteria in this HU. Two additional monitoring studies were conducted during this reporting period. In addition to education activities implemented through the JURMP and RURMP, Copermittees implemented ten educational activities as part of the WURMP to address the high priority pollutants. Educational efforts focused on a variety of audiences in FY 2009. Efforts included the collaborative ILACSD school presentations to provide watershed focused pollution prevention information to elementary students in 909.1 HA, the LID and Watershed Planning Education for Community Planning and Sponsor Groups and the distribution of Integrated Pest Management (IPM) program information to residents and businesses.

Otay HU (910)

The Otay HU continues to have a limited amount of data available from which to assess water quality. MLS monitoring data has not been collected in the Otay HU since 2001-2002 due to insufficient flow. However, improvements to monitoring efforts continue to occur. During 2008-2009, an improved assessment of urban runoff water quality was conducted through the MS4 Outfall Monitoring Program, although it did not identify any significant changes to the COCs identified for this HU. Monitoring completed during this reporting year detected elevated concentrations of indicator bacteria within MS4 effluent from various locations in the lower Otay HU. These results coincide with the high priority BLTEA rating for bacteria in both Coronado (910.1) and Otay Valley (910.2) HAs. Receiving water quality monitoring conducted at additional mass loading stations upstream of the Lower Otay Reservoir did not showcase elevated concentrations of indicator bacteria during ambient or wet weather conditions. Monitoring conducted through the RHMP will contribute to long-term trend analysis of receiving water condition. Two additional monitoring studies were also conducted during this reporting period in this HU. Future monitoring, including a TWAS location, will be conducted within this watershed during the 2009-2010 monitoring year and will provide the Copermittees with a more robust dataset to analyze trends and water quality problems.

Copermittees identified and targeted a common source of bacteria by implementing the Pet Waste Bag Program in all of the HAs and implemented five water quality activities with the goal of reducing loads or abating sources of bacteria. Copermittees are implementing activities in 910.1 HA which will contribute to bacteria load reductions such as by diverting nuisance storm drain flows to the sanitary sewer system, as well as undertaking source abatement measures to

reduce pollutant sources from trash areas in 910.2 HA. All ten of the watershed education activities implemented in this HU effectively targeted bacteria.

Watershed Assessment

The Copermittees have achieved the Outcome Levels One through Five on a watershed level during this reporting period. Activities such as public participation at cleanup events, the general public's use of household hazardous waste (HHW) collection facilities and pet waste bags scaled multiple levels of assessment resulting in increases in awareness, behavior changes, and load reductions. An increase in knowledge and awareness were demonstrated through various education activities throughout the WMA (Level Two). Through inspection activities, Copermittees were able to demonstrate positive changes in behavior (Level Three). The San Diego Bay Copermittees also achieved load reductions as well as source abatement (Level Four) through various programs that either targeted the pollutants of concern or the pollutant sources. Notably, 530 tons of trash and debris were collected throughout the WMA during cleanup events this reporting year. Assessment of trash and debris related activities such as Pet Waste Bags, Enhanced Street Sweeping, and Cleanup Events resulted in a cross-programmatic watershed analysis of the effectiveness of these programs to address particular high priority pollutants originating from a variety of sources. Also of note, the long-term downward trend of diazinon in stormwater is a positive indication that the concentration of this pesticide will continue to decrease (Level Five).

Utilizing the effectiveness assessment and monitoring data, Copermittees will continue to identify future collaborative watershed activities to address high priority water quality problems on a WMA and HA level. To this end, Copermittees will strive to gather additional water quality data suitable for assessments, as well as research the sources of pollutants of concern and their loading potential. Continuing to identify sources and their loading potential will enable the San Diego Bay Copermittees to modify WURMP program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

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Section 1: Introduction

The NPDES Municipal Storm Water Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit," requires the Copermittees sharing the San Diego Bay Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). Since 2002, the San Diego Bay Watershed Copermittees have worked together to successfully implement the San Diego Bay WURMP, a collaborative effort to address high priority surface water quality issues throughout the San Diego Bay WMA. On March 24, 2008, the San Diego Bay Watershed Copermittees began implementation of the current San Diego Bay WURMP. The program includes identifying and addressing high priority water quality problems in the WMA, developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report highlights the efforts of the San Diego Bay Watershed Copermittees, referred to throughout this document as San Diego Bay Copermittees, during this reporting period from July 1, 2008, through June 30, 2009. This Annual Report is divided into five sections as presented below.

Section 2 This section provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3 This section describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period, collaborative land use planning, and additional education and public participation activities that took place. This section also summarizes the TMDL-related activities implemented by named dischargers of TMDLs within the San Diego Bay WMA. Detailed information on the results and status of each Named Dischargers' TMDL activities is located in Appendix E.

Section 4 This sections discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among San Diego Bay Copermittees; 2) determine whether watershed activities are focused on appropriate water quality problems; 3) assess whether targeted outcomes are being achieved; and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale. This section includes an assessment of compliance with TMDLs in the San Diego Bay WMA and the effectiveness of activities implemented by the Named Dischargers.

Section 5 This section provides conclusions reached during FY 2009 as well as recommendations for future reporting periods.

In addition, this document functions as the primary reporting mechanism for all TMDL activities implemented for each approved TMDL in the San Diego Bay WMA. There are three approved TMDLs in the San Diego Bay WMA: Chollas Creek Diazinon TMDL, Chollas Creek Dissolved Metals TMDL, and the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL. A number of the San Diego Bay Copermittees are Named Dischargers in one or more of these TMDLs. The Named Dischargers of the Chollas Creek Dissolved Metals TMDL, which include Caltrans and the United States Navy, took a holistic approach to planning, implementation, and assessment of targeted watershed activities identified in the Implementation Plan. The Implementation Plan fully integrates with existing watershed, regional, and jurisdictional programs (as well as agency-wide programs for state and federal Dischargers) under existing National Pollutant Discharge Elimination System (NPDES) permit requirements. The integration of these activities provides a comprehensive evaluation of watershed-wide efforts to address a particular TMDL. As a result, this document provides a logical platform for annual reporting of efforts to address TMDLs within the San Diego Bay WMA.

1.1 WURMP Copermittee Collaboration

WURMP development and implementation is a collaborative effort by all of the following San Diego Bay Copermittees:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority (Airport Authority)

The Port of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among San Diego Bay Copermittees and liaison between Copermittees and Regional Water Quality Control Board (RWQCB) staff.

The San Diego Bay Copermittees met 11 times during this reporting period. Appendix B provides a summary of the dates and general topics of discussion. The majority of the meetings focused on development and implementation of the San Diego Bay WURMP.

During this reporting period, the San Diego Bay Copermittees continued to collaborate extensively on the development of the watershed strategy that guides WURMP activity selection. An extensive explanation of the San Diego Bay Watershed Strategy (Watershed Strategy) was presented in the San Diego Bay WURMP document. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) defines the San Diego Bay WMA as being comprised of three watersheds, or hydrologic units (HUs). They are the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed. These HUs are further divided into hydrologic areas (HAs). The San Diego Bay Copermittees developed a database of baseline information consisting of land use, water quality monitoring data, and other information on potential pollutant sources, and identified the high priority water quality problems on a HA level.

The San Diego Bay Copermittees used the information from the Watershed Strategy to identify four common water quality and education activities which have been coordinated and standardized at the HA level. These activities were identified as beneficial to address high priority water quality problems and can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. These activities include Pet Waste Bag Programs, Storm Drain Litter Control Techniques, Street Sweeping Enhancements, and Cleanup Events. This approach allowed for greater flexibility for each of the Copermittees to participate in coordinated watershed activities. Each of these activities collect similar assessment data to show how these programs are being effective at the both the HA and WMA levels. In addition to the collaborative activities mentioned above, each Copermittee initiated or completed jurisdictional activities that targeted high priority water quality problems within the HAs of their respective jurisdictions, such as targeted facility inspections and pilot BMP projects. Furthermore, collaboration on the watershed strategy enabled the San Diego Bay Copermittees to identify data gaps by reviewing existing monitoring and land use data. Such data provided the basis for developing additional water quality monitoring and source identification activities such as the coordinated dry weather monitoring program being implemented by the City of San Diego, the Port of San Diego, and the Airport Authority. Section 3 provides specific detail on each program that was initiated or completed during the FY 2009 reporting period.

1.2 TMDL Named Dischargers Collaboration

<u>Chollas Creek Dissolved Metals and Diazinon TMDLs</u>

This reporting year represents the first year the Chollas Creek Dissolved Metals TMDL is in effect. It was approved by the State Board Office of Administrative Law on October 22, 2008. During the reporting period, the permitted MS4 dischargers named in the TMDL collaborated on

a multi-pollutant strategy for addressing the TMDL as well as the development of the required Implementation Plan. The named dischargers include five watershed Copermittees, Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, Port District, as well as the U.S. Navy and the California Department of Transportation (Caltrans). In addition to the collaborative Implementation Plan, each discharger developed their own list of activities they participated in or will participate in to address the TMDLs. Dischargers met 12 times over the year, one time per month, and held four stakeholder meetings. The Implementation Plan was submitted on October 21, 2009, to the Regional Water Quality Control Board.

Because the strategy for addressing this TMDL is multi-pollutant and watershed based, the reporting of activities under this TMDL will incorporate those activities for the Chollas Creek Diazinon TMDL as well. The named parties under the Diazinon TMDL include the five Copermittees also listed as dischargers under the Metals TMDL as well as Caltrans and the US Navy. Investigation Order R9-2004-0277 requires status reports of specific implementation elements. Further information on these specific elements is included in the Chollas Creek TMDL Compliance Monitoring Investigation Order R9-2004-0277 2008–2009 Water Quality Monitoring Report in Appendix C.

Shelter Island Yacht Basin Dissolved Copper TMDL

Named parties in the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL began the process of cooperatively developing a strategy for addressing the TMDL during this reporting period. The strategy includes developing a collaborative TMDL Implementation Plan and a Compliance Monitoring Plan. The named parties include two watershed Copermittees, the Port District and the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners. A kick-off meeting was held on January 21, 2009. The named parties met on three other occasions during this reporting year: March 10, 2009; May 19, 2009; and June 4, 2009. The draft implementation and compliance monitoring plans are anticipated to be finalized in FY 2010.

1.3 San Diego Bay Watershed Map Updates

There will be no San Diego Bay Watershed map updates included in the FY 2009 Annual Report.

Section 2: Water Quality and Pollutant Source Assessment

The San Diego Bay Copermittees are working to ensure implementation of water quality assessment strategies that will result in meaningful data and allow determination of long-term water quality changes in the San Diego Bay WMA. This section of the report describes information collected by the San Diego Bay Copermittees to meet the requirements stated in Section J.3.b.2.c. of the Permit.

The San Diego Regional Copermittees tasked a consultant with collecting, compiling and analyzing water quality data from the San Diego region. In addition to analyzing data on a regional basis, the consultant also assimilated information and analyzed data for each of the nine WMAs within San Diego County. The results of these tasks are described in the *2008-2009 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Regional Report) prepared for the San Diego County Municipal Copermittees. The Regional Report provides analyses from monitoring programs required by the Permit as well as special studies conducted by various Copermittees. The Regional Report and the data compiled within is structured to answer the following five Core Management Questions presented in Section I.B of the Receiving Waters and Urban Runoff Monitoring and Reporting Program:

1. *Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?*
2. *What is the extent and magnitude of the current or potential receiving water problems?*
3. *What is the relative urban runoff contribution to the receiving water problem(s)?*
4. *What are the sources of urban runoff that contribute to receiving water problem(s)?*
5. *Are conditions in receiving waters getting better or worse?*

The San Diego Bay WMA is described in Section 10 of the Regional Report. The San Diego Bay WMA consists of three major hydrologic units (HU): Pueblo San Diego (908), Sweetwater (909), and Otay (910). Each HU varies greatly in terms of size, population, and land use, and each has different water quality issues as a result. Because the amount and type of data available from each HU is not the same, the San Diego Bay Copermittees have addressed each watershed independently to provide a more accurate assessment of the San Diego Bay WMA as a whole. A summary of the analysis including constituents of concern (COCs) and the San Diego Bay WMA assessment are provided herein.

2.1 Water Quality and Pollutant Source Assessment Approach

The watershed water quality assessment methodology used by the San Diego Bay Copermittees is described in the San Diego Bay WURMP Document. The assessment includes

separate evaluations for receiving waters and urban runoff discharges. This organization follows the general format of the Permit, providing a closer linkage to the Core Management Questions as well as avoiding mixing datasets from programs undertaken for different reasons. Determining the baseline conditions through the various monitoring programs occurring within the watershed allow the San Diego Bay Copermittees to evaluate current conditions and long-term trends in receiving water quality conditions.

Table 2-1 identifies the monitoring programs from which data were used to conduct receiving water and urban runoff water quality assessments. Receiving water quality monitoring programs were used to answer Core Management Questions 1, 2, and 5 whereas Urban Runoff Monitoring Programs were used to answer Core Management Question 3. Various water quality monitoring programs also were used to assess and identify sources of urban runoff. These programs were used to address Core Management Question 4.

Table 2-1. San Diego Bay WMA Assessment Data.

Program	Constituents Measured	Hydrologic Unit		
		908	909	910
Receiving Water Quality Monitoring Programs				
Mass Loading Stations (MLS) Ambient and Storm Monitoring	Toxicity, Chemistry, Bacteria, and Trash	X	X	
Post-storm Sediment Pyrethroid Monitoring	Grain size, Pesticides, TOC	X	X	X
Rapid Stream Bioassessments	Benthos, Periphyton, and Physical Habitat		X	
Bight 08 Estuary Monitoring	Bacteria, Sediment, Chemistry, Toxicity, and Benthos		X	
Diazinon and Metals TMDL Monitoring in Chollas Creek	Metals, Pesticides, and Toxicity	X		
County of San Diego Southern Watersheds Water Monitoring	Chemistry, Bacteria, Metals, and Pesticides		X	X
Regional Harbor Monitoring Program (RHMP)	Sediment Chemistry, Toxicity, Benthos	**San Diego Bay**		
Urban Runoff Monitoring Programs				
Dry Weather Monitoring (DWM) and Trash Assessment	Chemistry, Metals, Bacteria, Trash	X	X	X
Coastal Storm Drain Monitoring (CSDM)	Bacteria	X	X	X
MS4 Outfall Monitoring Program*	Bacteria, Metals, Chemistry, and Pesticides	X	X	X
Regional Source Identification Study	Bacteria, Metals, Chemistry, and Pesticides	X		
City of San Diego Aerial Deposition Monitoring	Metals	X		
City of San Diego Dry Weather Bacteria Source Identification Study	Bacteria	X		
Shelter Island TMDL Urban Runoff Copper Monitoring	Metals	X		

*The MS4 Outfall Monitoring Program consists of wet and dry weather monitoring located at Targeted and Random sites

Water bodies in the San Diego Bay WMA and constituents that have been placed on the SWRCB 2006 Section 303(d) list are presented in Table 2-2. The table includes the water bodies having an adopted TMDL or for which a TMDL is in development.

Sources of pollutants were generally described within Section 3 of the 2008 San Diego Bay WURMP Document. During 2008-2009, water quality monitoring programs and newly implemented source identification studies were conducted to further distinguish sources of pollutants and analyze types of constituents associated with specific land uses. The results of these monitoring programs and source identification studies are intended to aid the Copermittees in the development and implementation of water quality activities and BMPs. A discussion of sources of pollutants is included for each HU.

Table 2-2. San Diego Bay WMA SWRCB Section 303(d) Listed Water Bodies and TMDL Status.

Water Body Name	Pollutant/Stressor	TMDL Status
Pueblo San Diego HU		
San Diego Bay Shoreline, near Sub-Base	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, Shelter Island Shoreline Park	Indicator bacteria	In development
San Diego bay Shoreline, at Harbor Island (West Basin)	Copper	Not developed
San Diego Bay Shoreline, G Street Pier	Indicator bacteria	In development
San Diego Bay Shoreline, near Switzer Creek	Chlordane, Lindane/Hexachlorocyclohexane, and PAHs	In development
San Diego Bay Shoreline, vicinity of B Street and Broadway Piers	Indicator bacteria, benthic community effects, and sediment toxicity	In development
San Diego Bay Shoreline, Downtown Anchorage	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, at Harbor Island (East Basin)	Copper	Not developed
San Diego Bay Shoreline, at Marriott Marina	Copper	Not developed
San Diego Bay Shoreline, at America's Cup Harbor	Copper	Not developed
Shelter Island Yacht Basin	Copper	TMDL adopted
Chollas Creek	Dissolved Copper, lead, zinc, and diazinon	TMDLs adopted
Chollas Creek	Indicator bacteria	In development
San Diego Bay Shoreline, near Chollas Creek	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, 32nd Street Naval Station	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, between Sampson Street and 28th Street	Copper, mercury, PAHs, PCBs, and zinc	In development
San Diego Bay Shoreline, Near Coronado Bridge	Benthic community effects and sediment toxicity	Not developed
San Diego Bay Shoreline, Seventh Street Channel	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, north of 24th Street Marine Terminal	Benthic community effects and sediment toxicity	Not developed
Sweetwater HU		
San Diego Bay Shoreline, at Bayside Park (J Street)	Indicator bacteria	In development
San Diego Bay Shoreline, at Chula Vista Marina	Copper	Not developed
Sweetwater Reservoir	Dissolved oxygen	Not developed
Loveland Reservoir	Aluminum, manganese, and dissolved oxygen	Not developed
Otay HU		
Pacific Ocean Shoreline, Imperial Beach Pier	PCBs	Not developed
San Diego Bay	PCBs	Not developed
San Diego Bay Shoreline, at Coronado Cays	Copper	Not developed
San Diego Bay Shoreline, at Glorietta Bay	Copper	Not developed
Pogi Canyon Creek	DDT	Not developed
Otay Reservoir, Lower	Color, iron, manganese, nitrogen ammonia (total ammonia), and pH (high)	Not developed

2.2 Pueblo San Diego HU

2.2.1 *Receiving Water Body Water Quality Assessment*

Water quality data was collected primarily within the San Diego Mesa Hydrologic Area (908.2 HA) within the Chollas Creek Hydrologic Sub-Area (908.22 HSA). Figure 2-1 portrays monitoring locations throughout the Pueblo San Diego HU. Due to the San Diego Regional Copermittees' participation in the Bight 08 Monitoring Program, the Municipal Permit monitoring requirements were adjusted during 2008-2009. As such, receiving water monitoring conducted at the MLS located within Chollas Creek during wet weather was reduced from two storm events to only a single storm event. Ambient receiving water quality monitoring was not conducted in the Pueblo San Diego HU. Historical data associated with ambient monitoring and wet weather monitoring located at the Chollas Creek MLS site SD8(1) was used to establish frequency of occurrence COCs. In addition, the RHMP (see Activity Summary Sheet SDB-025) and monitoring conducted in accordance with the Chollas Creek Dissolved Metals and Diazinon TMDL (Order R9-2004-0277) contribute to the understanding of the condition of receiving water quality found within the Pueblo San Diego HU. Results of these additional monitoring programs were not incorporated into the analysis of frequency of occurrence COCs. However, the results of these monitoring programs are used to reinforce an understanding of the Core Management Questions. As such, the results of these programs will be explained and presented where applicable.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Water quality data assessments suggest variable impacts to beneficial uses within the Pueblo San Diego HU depending on ambient versus wet conditions as well as specific water bodies where monitoring occurred. Receiving water quality was primarily assessed at the Chollas Creek MLS site SD8(1). Because ambient receiving water quality was not conducted within Chollas Creek during 2008-2009, historical data was used to determine high frequency of occurrence COCs. Those constituents included:

- TDS
- Turbidity
- Total nitrogen
- Total phosphorus
- Indicator bacteria
- Dissolved copper

Chollas Creek is generally dry during non storm conditions but is influenced from urban runoff in localized areas. During wet weather, high frequency COCs include:

- Turbidity
- TSS
- Indicator bacteria
- Bifenthrin

Figure 2-1. Receiving Water And Urban Runoff Monitoring Locations Throughout The Pueblo San Diego Hydrologic Unit.

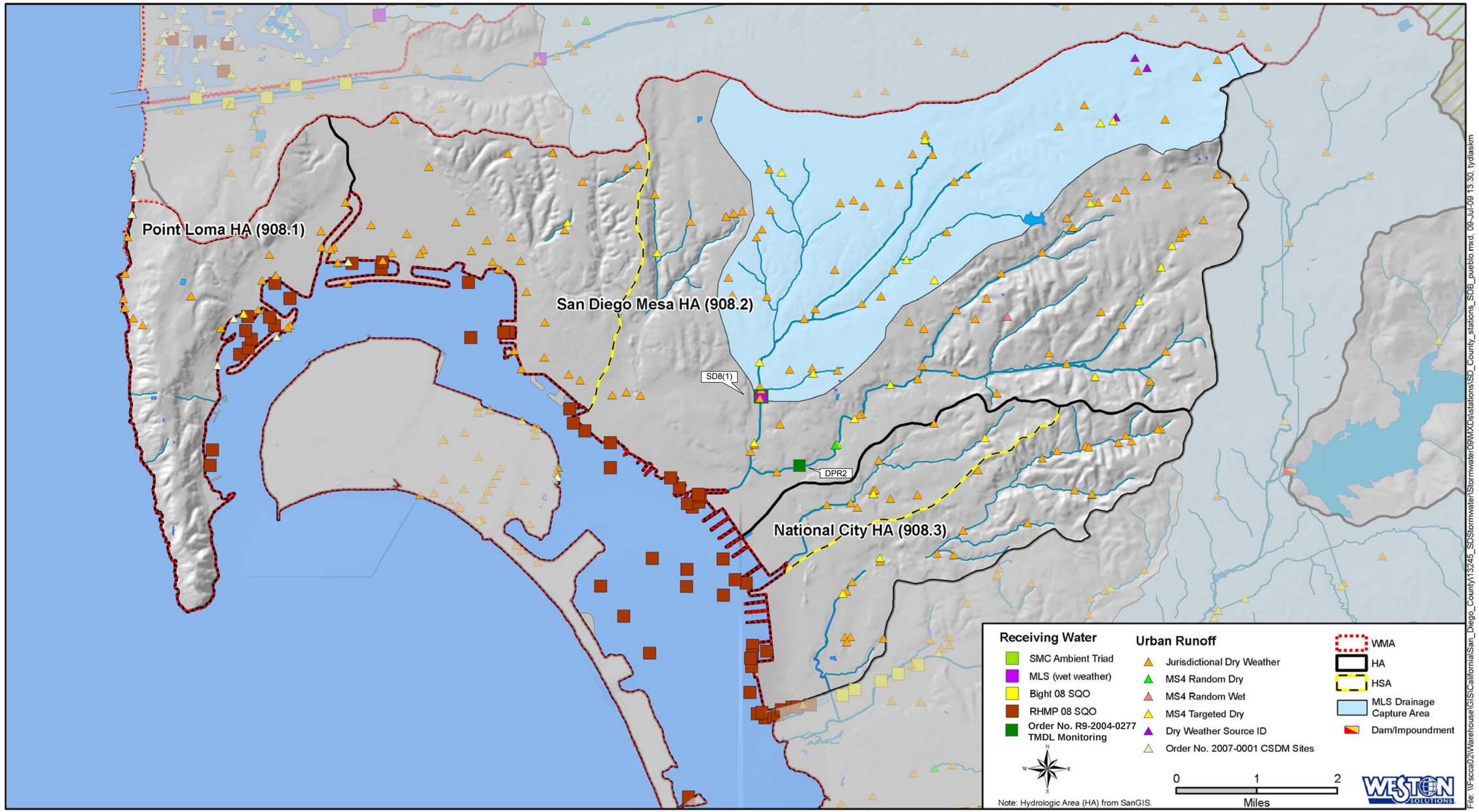

Source Adapted from a figure presented in the San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report. Prepared by WESTON Solutions, Inc. January 2010.

Fecal indicator bacteria has been measured above respective benchmarks during both ambient and wet weather conditions at site SD8(1). During wet weather, the receiving waters are also likely impacted by the presence of a range of Bifenthrin, a synthetic pyrethroid. In previous years, toxicity has been observed frequently for *H. azteca* and sporadically for *C. dubia* at this site. Evidence of persistent toxicity to *H. azteca* was identified in wet weather monitoring as a result storm water runoff.

Historical stream bioassessment results indicated evidence of benthic community impairment in the Pueblo San Diego HU, with Very Poor IBI ratings at the site SD8(1) since 2001. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat and the presence of copper, pesticides—several synthetic pyrethroid compounds were detected during wet weather monitoring—or other constituents not monitored in this program.

Monitoring conducted in accordance with the Diazinon and Dissolved Metals TMDL in Chollas Creek (Order R9-2004-0277) occurred at two sites during three storm events within Chollas Creek. Metals results, which are compared to the California Toxics Rule, indicated dissolved copper and zinc concentrations were greater than the chronic criteria (CCC) and acute criteria (CMC) during all three storms at site SD8(1) located in the north fork of the creek. Dissolved lead was greater than the CCC during two of the three storm events. At site DPR2 in the south fork of Chollas Creek, dissolved copper was recorded above the CMC twice and above the CCC during all three storm events. Observances of toxicity to *H. azteca* at site SD8(1) occurred during all three storms and two out of three observances of toxicity to *H. azteca* occurred at Site DPR2. The synthetic pyrethroid Bifenthrin was detected in all samples where toxicity to *H. azteca* was observed and was detected in every sample at both sites in concentrations sufficient to induce toxicity. Diazinon was not detected in any of the samples during all three storm events.

Results of the RHMP water quality monitoring within San Diego Bay during ambient conditions for indicator bacteria were below AB411 standards. RHMP sediment quality monitoring indicated four of five sites at the mouth of Chollas Creek as unimpacted and one site as possibly impacted. However, toxicity was not observed in the samples collected at the mouth of Chollas Creek and dissolved copper results in water were below the California Toxics Rule (CTR).

Overall, the likelihood of conditions in receiving waters to be protective of beneficial uses may vary depending on wet or ambient conditions and the water body where monitoring was conducted. The results of receiving water quality monitoring indicate that Chollas Creek (908.22 HAS) may not be protective of beneficial uses during both ambient and wet weather conditions. Chollas Creek is currently listed in the Basin Plan for potential REC-1 and existing REC-2 beneficial uses as well as uses of water supportive of aquatic and terrestrial ecosystems. Indicator bacteria, including fecal coliform, have been measured above the Basin Plan benchmarks during both wet and ambient conditions indicating possible impairment of the recreational uses in this HSA. The presence of synthetic pyrethroids detected in Chollas Creek storm water samples and sediments are suspected to be the cause of toxicity observed to

freshwater invertebrates further indicating impairment of beneficial uses within the Chollas Creek. However, the initial results of the RHMP indicate that surface waters in San Diego Bay during ambient conditions may be protective of beneficial uses. Indicator bacteria were not detected in concentrations above AB411 standards and toxicity was not observed in samples collected at the mouth of Chollas Creek. The marina stratum sampled during the RHMP had the highest concentrations of dissolved copper and also had the highest percentage of possibly, likely, and clearly impacted sites primarily as a result of marine vessels with copper-based, in-water hull paints that leach copper to the water column and sediment.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed by evaluating magnitude of exceedance ratios for wet weather conditions in the receiving waters. The greatest concentration-to-benchmark ratios during wet weather conditions in the Pueblo San Diego HU were observed for indicator bacteria, turbidity, COD, and toxicity to *H. azteca* at the Chollas Creek MLS site SD8(1). The fecal coliform concentration during one storm event was more than 20 times greater than the Basin Plan water quality benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at SD8(1) on average have been nine times greater than the benchmark. The turbidity concentration during wet weather in 2008-2009 was approximately four times greater than the benchmark, which is just slightly lower than the historical mean for the site. COD and toxicity to *H. azteca* were each three times their respective benchmark. Historically, COD has been just slightly above the benchmark, while toxicity to *H. azteca* has historically been slightly greater than three times the benchmark.

Historical stream bioassessment ratings conducted in the Pueblo San Diego HU indicate a Very Poor benthic community at SD8(1). Consistent ratings of either Poor or Very Poor since 2002 suggest that the impairment on the benthic community at this station is not an anomaly. This is supported by the 2007-2008 bioassessment results, which also indicated a Very Poor benthic community.

Monitoring conducted in accordance with the Chollas Creek Diazinon and Dissolved Metals TMDL in the San Diego Mesa HA showed that constituent concentrations and magnitude of toxicity are generally higher at the MLS site SD8(1) in the north fork of Chollas Creek in comparison to MLS site DPR-2 located in the south fork of Chollas Creek. The north fork of Chollas Creek is a concrete channel which is an impervious surface whereas the south fork has a natural bottom channel and has had recent restoration work done in portions of the creek.

Ambient surface water quality monitoring within San Diego Bay conducted during the RHMP indicate copper occurred at concentrations above the CTR, primarily within the marina stratum. All stations indicated bacteria results below AB411 standards. Sediment quality objective results from the RHMP indicated that over half of the 60 stations assessed in all of San Diego Bay were classified as unimpacted, 10% were determined to be likely unimpacted, 25% were possibly impacted, 12% were likely impacted, and only one station was clearly impacted which

occurred in Americas Cup Harbor. The marina stratum had the highest concentrations of dissolved copper and also had the highest percentage of possibly, likely, and clearly impacted sites combined, based on the SQO Guidelines.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

An analysis of receiving water quality trends was performed based on monitoring programs conducted within Chollas Creek 908.22 HSA and throughout San Diego Bay. The trend analysis of constituent concentrations from wet weather monitoring at the Chollas Creek MLS site SD8(1) demonstrate that nitrite, TKN, turbidity, total copper, and total zinc have been increasing at this site whereas concentrations of TDS and Diazinon have been decreasing. Although nitrite and TKN appear to be increasing, their concentrations remain well below the respective benchmark values. At the current observed rate of increase, it does not appear that these two constituents will exceed wet weather benchmarks during the current Permit cycle.

Total copper and total zinc have approximately the same trends as observed during 2006-2007 trend assessment. Turbidity results measured during the 2007-2008 monitoring year were slightly lower than in the preceding year. Although turbidity results have been above the benchmark during wet weather events, the projected yearly increase in turbidity indicates that levels are not increasing at a substantial rate. Although the TDS concentration was above the benchmark during the 2008-2009 storm event, the trend has been decreasing over time. Only two storm events since 1994 have had TDS concentrations above the benchmark value. Future monitoring will determine if this decreasing trend can be sustained.

The bioassessment ratings at site SD8(1) have been Very Poor in nearly all assessments conducted from 2002 to 2007 and there are no apparent trends in the benthic community. Toxicity has frequently been observed in samples collected from Chollas Creek. Between 2001 and 2008, toxicity to *C. dubia* was observed in approximately 30% of samples since 2001-2002 and toxicity to *H. azteca* was observed in over 70% of samples collected from site SD8(1). During the 2007-2008 Monitoring Season, toxicity to *H. azteca* survival and *C. dubia* reproduction was observed; however no trends in the data set are apparent. Monitoring conducted in accordance with the Diazinon and Dissolved Metals TMDL in Chollas Creek observed toxicity to *H. azteca* survival and *C. dubia* reproduction as well. Recent Toxicity Identification Evaluations indicate synthetic pyrethroids as the causative agent of toxicity.

The RHMP study was conducted to assess water and sediment quality and evaluate the condition of aquatic life. Monitoring within San Diego Bay occurred between August 4-25, 2008, and included sixty stations bay-wide. One of the core questions of the study was to evaluate long-term trends for water quality. According to the results:

- Water and sediment quality throughout the harbor samples, including San Diego Bay, appears to be improving based on a weight-of-evidence approach.

- Within the four harbors, dissolved and total copper declined significantly from historical conditions. Other metals which had concentrations below the California Toxics Rule thresholds include dissolved and total nickel and dissolved and total zinc.
- Sediment chemistry quality did not significantly change from historical conditions.
- Low toxicity was found across all harbors and benthic community condition, as assessed by the BRI, also significantly improved.
- Lastly, indicator bacteria levels found in San Diego Bay were far below AB411 standards.

Diazinon has not been detected in storm water samples collected in Chollas Creek HSA over the past two years, and has only been detected during one storm event in the last five years at site SD8(1). Diazinon was also not detected during three storm events at sites SD8(1) and DPR-2 conducted in accordance with the Diazinon and Dissolved Metals TMDL in Chollas Creek. Since Diazinon is no longer commercially available, the decreasing trend for this constituent is expected to continue until it eventually is no longer or seldom detected.

2.2.2 *Urban Runoff Discharges Water Quality Assessment*

Urban runoff discharge water quality was evaluated to answer **Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?** As with receiving water quality, urban runoff discharge quality was assessed during ambient and wet weather conditions. Although there are many new monitoring programs, including the MS4 Outfall Monitoring Program, conducted to assess urban runoff, a cause-and-effect relationship between urban runoff and receiving water quality may not be appropriate at this time. As monitoring continues throughout the extent of the Permit, a better evaluation between urban runoff and receiving water quality can be made.

Dry Weather Monitoring (DWM) was conducted throughout the Pueblo San Diego HU during the dry season from May 1, 2008, to September 30, 2008. A total of 188 sites were visited with 126 sites exhibiting flowing or ponded water where samples for field or laboratory analysis could be conducted. Constituent groups that had concentrations greater than dry weather action levels included:

- General chemistry (i.e., conductivity and pH)
- Indicator bacteria (i.e., total coliforms, fecal coliforms, and *enterococci*)
- Nutrients (i.e., ammonia, orthophosphate, and nitrate)
- Turbidity
- Pesticides (i.e., Chlorpyrifos)
- Metals (i.e., dissolved zinc, copper, and cadmium)

Concentrations of oil & grease, the pesticide Diazinon, and dissolved lead were below action levels in all samples analyzed. The measured value for turbidity exceeded the action level the greatest number of times (24 of 87 samples analyzed) and occurred most often along the north fork of Chollas Creek in the San Diego Mesa HA. Indicator bacteria exceeded dry weather action levels mainly within the San Diego Mesa HA.

Trash assessments conducted during DWM within the Pueblo San Diego HU indicated that trash was a relatively wide-spread issue, with Chollas HSA (908.22) having the greatest amount of trash and the largest number of sites rated Submarginal or Poor. This result coincides with the urbanized population centers, which are also found in the lower portion of the HU.

Coastal Storm Drain Monitoring (CSDM) sites were visited once per month during at least 72 hours of dry conditions within the Pueblo San Diego HU. If flow or ponded water was observed, paired samples were taken from the storm drain outfall and the receiving water. During 2008-2009, there were 32 paired samples and four unpaired samples taken from five CSDM sites within the Point Loma 908.1 HA There were no exceedances of indicator bacteria in storm drain samples or receiving water samples.

The MS4 Outfall Monitoring Program conducted in the Pueblo San Diego HU was assessed through the Random Dry, Targeted Dry, and Random Wet Weather Monitoring programs. Water quality benchmarks used in the assessment were developed for the Basin Plan and are applicable to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Of the 12 MS4 outfall sites in the San Diego Bay WMA that were monitored as part of the Random Dry Outfall Monitoring Program in 2008-2009, six were located within the Pueblo San Diego HU. Only one site in the south fork of Chollas Creek was ponded and could be sampled. The results indicated elevated concentrations of total phosphorous and total nitrogen.

A total of 24 sites in the Pueblo San Diego HU were visited as part of the Targeted Dry Weather Outfall Monitoring Program, ten of which were flowing at the time of the survey. Thus, 58% of the targeted dry weather sites were ponded or dry. Drought-related restrictions implemented in the summer of 2009 may have helped to reduce flows from some areas. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving water quality benchmarks for the following constituents: oil & grease, chloride, nitrate, total nitrogen, total phosphorus, TDS, and indicator bacteria (fecal coliform and *enterococcus*). The constituents greater than their respective benchmarks for at least one of the 10 sites assessed were:

- Total nitrogen
- Total phosphorus
- Indicator bacteria (fecal coliform and *enterococcus*)

Concentrations of *enterococci* exceeded the benchmark most frequently followed by fecal coliforms. The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

During the 2008-2009 targeted MS4 monitoring, instantaneous loads were calculated based on constituent concentrations and flow at the time of the survey. In general, flows at all of the sites were very low, ranging from less than 1 GPM to a maximum of 3 GPM. Since this reporting period was the first in which this data was calculated, the results should not yet be considered representative of dry weather MS4 urban runoff to be used to determine the contribution to receiving water quality problems. More meaningful temporal and spatial comparisons as well as analysis to receiving water quality can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

Four sites throughout the San Diego Bay WMA were assessed during storm events as part of the Random Wet Weather Outfall Monitoring Program. Of these, one site was located in the San Diego Mesa 908.2 HA. The following constituents exhibited greater concentrations than water quality benchmarks:

- Total nitrogen
- Total phosphorus
- Indicator bacteria

The City of San Diego conducted a focused study of bacteria sources in the Chollas Creek tidal prism during September and October 2008 (see Activity Summary Sheet SDB-027). The study focused on sources and the magnitude of dry weather urban runoff and its influence to water quality located at the mouth of Chollas Creek. The results of the study indicate that during dry conditions, the mouth of Chollas Creek is not hydrologically connected to the upstream drainage. Therefore, elevated concentrations of bacteria found in receiving waters are the result of sources which flow directly into the Chollas Creek tidal prism. Four of 17 storm drains which empty into the mouth of Chollas Creek exhibited flow and were sampled and results were compared to receiving water samples. Elevated concentrations of bacteria were found within the storm drain flow and coincided with receiving water concentrations of bacteria.

A special study was conducted by the City of San Diego to determine copper loading from the MS4 into the Shelter Island Yacht Basin in San Diego Bay located in the Point Loma 908.1 HA (see Activity Summary Sheet SDB-053). Monitoring of urban runoff was conducted during three wet weather events as well as during dry conditions. During wet weather conditions, dissolved copper concentrations were detected above the Basin Plan WQO. It was determined that the dissolved copper annual load to the receiving water from the MS4 is below the waste load allocation set for urban runoff in the Shelter Island Yacht Basin TMDL.

A study was conducted by the City of San Diego within the Switzer Creek Subwatershed in the San Diego Mesa HA to assess storm drain sediments with a focus on pesticide distributions and

concentrations (see Activity Summary Sheet SDB-054). Pesticides have been associated with toxicity at the mouth of Switzer Creek in San Diego Bay. Elevated concentrations of Chlordane, DDT isomers, synthetic pyrethroids, copper, lead, and zinc were detected during the study and may be causing toxicity to freshwater and marine organisms.

A Regional Source Identification Monitoring study was conducted by the San Diego County Copermittees in accordance with the Permit (Section B.2 of the Receiving Waters and Urban Runoff Monitoring and Reporting Program). The study attempts to characterize analytes found in urban runoff during dry conditions from single family residential land use and took place within two separate jurisdictions: the City of Del Mar located within the Los Penasquitos WMA and the City of La Mesa within the San Diego Bay WMA. The La Mesa study area discharges to the upper reaches of Chollas Creek in the San Diego Mesa 908.2 HA (Figure 2-1).. Sampling for the study occurred within selected MS4 outfalls on three occasions once per month between May and July 2009. The results of the study indicate that two of the three La Mesa sites had elevated bacteria levels, and one site had an elevated permethrin level. However, a sample taken a month prior indicated permethrin levels below the detection level. Another site within La Mesa where continued flow was observed showed elevated concentrations of chloride, TDS, and total hardness which could indicate a possible groundwater influence.

2.2.3 *Pollutant Source Assessment*

The identification of pollutant sources attempts to answer **Core Management Question #4 – What are the sources of urban runoff to receiving water quality problem(s)?** During the 2008-2009 reporting period, a variety of monitoring programs incorporated an evaluation of sources contributing to urban runoff, including: Jurisdictional DWM, CSDM, and special studies. The results of these monitoring programs will strengthen the Copermittees knowledge of sources and aid in the development of appropriate watershed activities and BMPs.

The trash assessment conducted in 2008-2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Pueblo San Diego HU. A total of 185 sites from three HAs (including all five HSAs) were assessed for trash in the Pueblo San Diego HU. The Chollas HSA (908.22) had the greatest number of sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained the greatest amount of trash in the HU. This result coincides with the urbanized population centers, which are also found in the lower portion of the Pueblo San Diego HU. Trash at the eight sites with Submarginal or Poor ratings consisted primarily of food packaging (four sites) and household waste (four sites) potentially as a result of littering and dumping. The sites determined to be Submarginal or Poor as a result of littering occurred mostly within the San Diego Mesa 908.2 HA along Chollas Creek.

Coordinated dry weather monitoring was conducted by the San Diego Regional Airport Authority, Port of San Diego, and the City of San Diego within Pueblo San Diego (see Activity Summary Sheet SDB-021). The coordinated monitoring occurred at storm drains which exist along shared storm drain lines among the three jurisdictions to better identify sources of dry weather urban runoff. The coordinated monitoring activity did not reveal similar exceedances at

sites along shared storm drain lines. Though Copermittees were unable to positively identify specific sources of dry weather urban runoff in this monitoring program during this reporting year, the results will help to narrow the focus of sources of urban runoff causing the dry weather exceedances within the storm drain system.

The Regional Source Identification Monitoring study of single family residences conducted by the San Diego County Copermittees indicated that sources of dry weather flows most likely were a result of landscape over-irrigation. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables associated with residential lawn watering).

The City of San Diego has been conducting studies to determine if fallout from aerial deposition represents a significant pathway for metal pollutant loading into the Chollas HSA in 908.22 (see Activity Summary Sheets SDB-024b and SDB-024c). During 2008-2009, Phase III of the study attempted to identify a correlation between high runoff concentrations of metals to high deposition rate areas and compare metal concentrations within urban runoff from different land uses and facility types within the same aerial deposition area. Wet weather sampling, dry weather roof sampling, and surface dust wipe sampling were conducted to assess areas that may have the potential for metals loading. The results of the study were as follows:

- Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area.
- Copper, lead, and zinc concentrations were higher in commercial and industrial land use areas compared with residential land use.
- Emissions of copper and zinc from stationary facilities near the mouth of Chollas Creek likely contribute to aerial deposition and subsequent runoff of these metals.
- Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc.
- Samples collected from metal rooftops in poor condition (e.g., deteriorating or rust evident) were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Concentrations of copper and lead were relatively low from metal rooftop runoff, but increased in street level runoff, suggesting aerial deposition or other parcel-based sources of copper and lead.
- Average annual aerial emissions of copper from four stationary facilities near the mouth of Chollas Creek are roughly five times higher than the average annual load discharged via storm water runoff. In contrast, lead and zinc emissions were only 1% and 24% of average annual discharge load, respectively.
- Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and re-suspended dust) and localized parcel-based sources also play a role in metals deposition of lead and zinc.

A focused study of sources of bacteria at the mouth of Chollas Creek was conducted by the City of San Diego within Pueblo San Diego (see Activity Summary Sheet SDB-027). It was determined that during dry conditions, there is no hydrologic connection to the mouth of Chollas Creek from the upper portion of the drainage. Therefore, bacteria found within the receiving waters originate from sources which exist or discharge directly into the mouth of the creek. Four of 17 storm drains which exhibited flow to the tidal prism were monitored for bacteria and the results indicate that high concentrations of indicator bacteria found within runoff may have contributed to the high concentrations of bacteria within the receiving water. Sources of the dry weather flows to storm drains were analyzed and include over-irrigation from a commercial strip-mall and a freshwater slough which periodically discharges to a nearby storm drain. In addition, scour ponds associated with storm drains provide depressions within the streambed where indicator bacteria from the surrounding subdrainage can be maintained. Tidal fluctuations maintain a mixture of brackish water and carries bacteria from ponds to other areas within the tidal prism.

2.3 Sweetwater HU

2.3.1 *Receiving Water Body Water Quality Assessment*

Receiving water monitoring was conducted during one wet weather event at the MLS located in Sweetwater River. Figure 2-2 displays monitoring locations throughout the Sweetwater HU. Ambient and rapid stream bioassessment monitoring was conducted at two stations within the Sweetwater HU according to the southern California Stormwater Monitoring Coalition (SMC) Regional Watershed Monitoring Work Plan[1]. Historical data associated with both ambient monitoring and wet weather monitoring located in the Sweetwater River were used to establish frequency of occurrence COCs. Additional water quality monitoring conducted by the County of San Diego also contributed to answering the Core Management Questions though the results were not incorporated into the analysis of high frequency of occurrence COCs The results from additional monitoring will be discussed as appropriate.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed by assessing ambient and wet weather data conducted in the Sweetwater HU Wet weather monitoring was conducted at the Sweetwater River MLS located in the Lower Sweetwater 909.1 HA. Monitoring results indicate that fecal coliform and *enterococci* are high frequency of occurrence COCs while total coliform is a low frequency of occurrence COC during wet weather.

Historical stream bioassessment results previous to 2008-2009 indicated evidence of benthic community impairment in the Sweetwater HU. IBI ratings of Very Poor have been reported at two locations along the Sweetwater River (at Bonita Road located in the Lower Sweetwater HA

[1] Stormwater Monitoring Coalition Bioassessment Working Group. 2007. *Regional Monitoring of Southern California's Coastal Watersheds*. November, 2007.

and at Highway 94 located in the Middle Sweetwater HA) since 2002. A number of factors, including poor in-stream physical habitat or possibly the presence of toxic constituents not monitored in this program may have influenced this low rating.

SMC Stream bioassessment monitoring which occurred during 2009 was conducted at two sites along the Sweetwater River. One site located in the Lower Sweetwater 909.1 HA and the other was located in the Upper Sweetwater 909.3 HA. The upper Sweetwater site received an IBI quality rating of Good and an IBI score of 42 out of 70 possible points. These results indicate that the upper portion of the watershed may be less impacted due less urban development. The lower Sweetwater site, near to the Sweetwater MLS, received an IBI quality rating of Very Poor and an IBI score of 10 out of 70 possible points corresponding to historical bioassessment condition found in the Lower Sweetwater 909.1 HA.

Figure 2-2. Receiving Water And Urban Runoff Monitoring Locations Throughout The Sweetwater Hydrologic Unit.

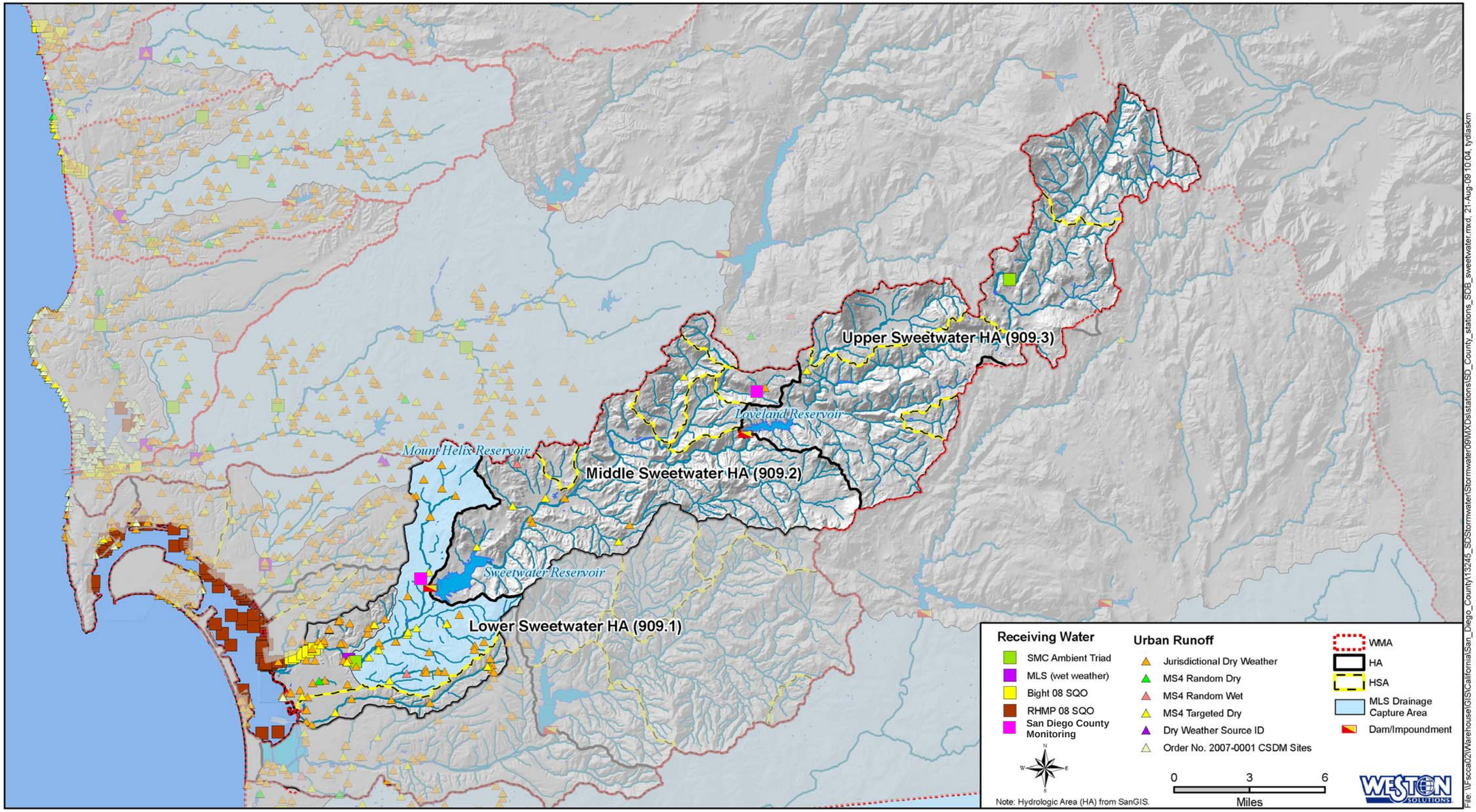

Source Adapted from a figure presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report*. Prepared by WESTON Solutions, Inc. January 2010.

Toxicity to *C. dubia* reproduction and *S. capricornutum* growth during wet weather conditions in the Sweetwater HU was observed on October 5, 2008, at the Sweetwater River MLS. In previous years, toxicity has been sporadic at this site. Since 2001, toxicity to *C. dubia* reproduction has been identified in 37% of samples, and toxicity *S. capricornutum* growth has been observed in 42% of samples. No toxicity to *H. azteca* has been observed since 2001. There is no evidence of persistent toxicity at this site in ambient or wet weather monitoring.

The County of San Diego performed monitoring within the Lower and Middle Sweetwater HA to assess water quality during ambient and wet weather conditions (see Activity Summary Sheet SDB-057). Two ambient events were monitored at both sites resulting in exceedances of Basin Plan benchmarks for Nitrate and TDS during both events at each site. Fecal coliform also exceeded the benchmarks at the Middle Sweetwater HA site during one dry weather event. Both sites were monitored during a single wet weather event with results indicating elevated concentrations of fecal coliform at each location.

Results of the Bight 08 and RHMP programs suggest that the receiving waters of the Sweetwater River Estuary are generally protective of beneficial uses. Of the five sites assessed during Bight 08, one was unimpacted, two were likely unimpacted, and two others located in the middle of the estuary were possibly impacted. These two sites had detections of historical constituents including DDT, chloride, lead, PCBs, and zinc. No clearly impacted sites were determined based on the SQO Guidelines. Sediment chemistry presented a moderate exposure, toxicity was either low or non-toxic, and benthic impacts were low at the two possibly impacted sites. The Bight 08 program also determined that water quality results were below the benchmark for bacteria and TSS. In addition, results of the RHMP monitoring indicate that seven of 9 sites sampled in proximity to the Sweetwater River Estuary were likely unimpacted and two of 9 sites were possibly impacted.

Beneficial uses for much of the Sweetwater River include REC-1, REC-2, and uses of water that are supportive of aquatic and terrestrial ecosystems. Elevated concentrations of indicator bacteria at monitoring stations located in both the lower and middle portions of the river suggest that beneficial uses regarding recreation may not be supportive during wet weather. Results from the 2009 SMC Bioassessment Monitoring confirm historic bioassessments conducted within the Lower Sweetwater HA indicating impairment to the benthic community which may not be protective of beneficial uses. SMC Bioassessment Monitoring conducted in the Upper Sweetwater HA are generally supportive of beneficial uses. Recent water and sediment sampling, including Bight 08 and the RHMP, conducted within the tidal prism of the Sweetwater River during ambient conditions indicate that water quality is likely protective of beneficial uses.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed with magnitude of exceedance ratios for ambient and wet weather conditions in the receiving waters and a spatial analysis of COC during ambient conditions. The greatest exceedance ratios during ambient conditions in the

Sweetwater Watershed HU were observed for total nitrogen and total phosphorus at the monitoring site located in the Lower Sweetwater HA. Exceedance ratios during wet weather at the Sweetwater River MLS were greatest for fecal coliform bacteria. The fecal coliform concentration during the 2008 storm event was more than 500 times greater than the water quality benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at the MLS on average have been 41 times greater than the benchmark. The TDS concentration during wet weather in 2008-2009 was two times greater than the water quality benchmark, which is slightly above the historical mean for the site.

Receiving water spatial patterns in the Sweetwater Watershed HU varied by constituent. During ambient conditions, receiving water concentrations of chloride, total nitrogen, and total phosphorus were greater than their respective benchmarks in the Lower Sweetwater HA, whereas similar constituents were below benchmarks in the Upper Sweetwater HA. These results provide a snapshot of receiving water conditions during the time of the survey. Additional data is needed to provide a more robust assessment of the spatial patterns of water quality constituents within the Sweetwater HU.

Historical stream bioassessment ratings conducted in the Sweetwater Watershed HU indicate a Very Poor benthic community at both monitored locations. The consistent rating of Very Poor at locations along the Sweetwater River at Highway 94 and Bonita Road since 2002 suggests that the extent of the impairment on the benthic community is not isolated to one area. This is supported by the 2008-2009 bioassessment results, which indicate a Very Poor benthic community at all SMC sites monitored within the WMA.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the Sweetwater River MLS. Two constituents in particular have shown trends in receiving water quality. Based on the trend analysis, pH is increasing over time at this site, while total lead is decreasing over time. Although pH appears to be increasing over time, concentrations have remained within the acceptable benchmark range of 6.5 to 8.5 pH units. At the current observed rate of increase, it does not appear that this constituent will exceed its wet weather benchmark during the current Permit cycle.

The concentration of total lead has been decreasing over time at the Sweetwater River MLS. In 2008-2009, the total lead concentration was well below the benchmark and has hovered at values that are near or below the detection limit since monitoring began in 2001.

Toxicity has been sporadic at the Sweetwater River MLS site in the Lower Sweetwater HA. Toxicity to *C. dubia* reproduction and *S. capricornutum* growth during wet weather conditions in the Sweetwater Watershed HU was observed during the 2008-2009 Season. Since 2001, toxicity to *C. dubia* reproduction has been identified in 37% of samples, and toxicity *S.*

capricornutum growth has been observed in 42% of samples. Toxicity to *H. azteca* has not been observed since 2001. There is no evidence of persistent toxicity at this site in ambient or wet weather monitoring and no trends are apparent at this time.

According to the RHMP, water and sediment quality throughout San Diego Bay, appears to be improving based on a weight-of-evidence approach. Primary indicators of long-term water quality, as well as sediment chemistry, toxicity, and benthic infaunal community all showed significant improvements over historical conditions. The results of the Bight 08 program reinforce these findings and will serve as a baseline to evaluate future trends.

2.3.2 *Urban Runoff Discharges Water Quality Assessment*

Urban runoff discharge water quality was evaluated to answer **Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?** As with receiving water quality, urban runoff discharge quality was assessed during ambient and wet weather conditions. Although there are many new monitoring programs, including the MS4 Outfall Monitoring Program, conducted to assess urban runoff, a cause-and-effect relationship between urban runoff and receiving water quality may not be appropriate at this time. As monitoring continues throughout the extent of the Permit, a better evaluation between urban runoff and receiving water quality can be made.

DWM conducted within the Sweetwater HU is primarily located throughout urbanized areas of the watershed within the Lower and Middle Sweetwater HAs. Overall, 72 sites were monitored with 67 sites exhibiting flowing or ponded water where samples could be taken. Constituent groups that had concentrations greater than dry weather action levels included:

- General chemistry (i.e., conductivity and pH)
- Indicator bacteria (i.e., total coliforms, fecal coliforms, and *enterococci*)
- Nutrients (i.e., ammonia, orthophosphate, and nitrate)
- Turbidity

Concentrations of oil & grease, pesticides (i.e., Diazinon and Chlorpyrifos) and metals (i.e., dissolved lead, zinc, and cadmium) were below dry weather action levels in all samples analyzed. The measured value for conductivity exceeded the dry weather action level the greatest number of times (29 of 85 samples analyzed), followed by nitrate (11 of 83 samples analyzed), total coliforms (eight of 32 samples analyzed), and turbidity (seven of 82 samples analyzed).

Trash assessments conducted as part of the DWM program in Sweetwater indicated that while trash was present throughout the HU, the Lower Sweetwater HA had the greatest amount of trash and the largest number of sites rated Submarginal or Poor. Trash at two of the 6 sites with Submarginal or Poor ratings consisted primarily of food packaging, while trash at the remaining

four sites was comprised primarily of household waste, cigarette butts, biohazardous waste, and fabric or clothing.

A single CSDM site, located within the Lower Sweetwater HA along the San Diego Bay, was monitored to assess indicator bacteria through paired sampling of receiving water and urban runoff.. The site was visited once per month and a paired sample was taken from the storm drain outfall and the receiving water if flow or ponded water was observed. During 2008-2009, there was one paired sample taken from the site. There were no exceedances of indicator bacteria in the storm drain sample or receiving water sample during the sampling event.

The MS4 Outfall Monitoring Program which occurred within the Sweetwater HU included the Random Dry, Targeted Dry, and Random Wet Weather components. Four of the 12 sites were visited throughout the San Diego Bay WMA as part of the Random Dry Outfall Monitoring Program located in the Sweetwater HU. Only one of the four random sites was flowing or ponded and could be sampled. The site was located in the Lower Sweetwater HA and results were above the benchmark for total nitrogen, total phosphorus, and indicator bacteria. This site also had the highest nitrate, nitrate-nitrite, and nitrite concentrations, while it had the lowest TKN and total phosphorus in comparison to other sites in the WMA.

Fifteen of the 20 sites in the Sweetwater HU visited as part of the Targeted Dry Weather Outfall Monitoring Program were flowing at the time of the survey. Thus, 25% of the sites were ponded or dry. Drought restrictions implemented in the summer of 2009 may have helped to reduce flows from some areas. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving water quality benchmarks for the following constituents:

- Total nitrogen
- TDS
- Indicator bacteria (fecal coliform and *enterococcus*)

Each of these constituents had concentrations that were greater than their respective benchmarks at one or more of the 15 sites assessed. Concentrations of *enterococcus* exceeded the benchmark most frequently followed by fecal coliform and TDS. The results suggest that discharges from the MS4 have the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were typically greatest where flow rates were highest. Two sites located in the Lower Sweetwater HA had the highest loads of most constituents. MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys.

The 2008-2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the Sweetwater HU; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

Four sites were assessed during storm events as part of the Random Wet Weather Outfall Monitoring Program. Concentrations of several analytes were greater than water quality benchmarks at all four sites, including the following constituents:

- Total nitrogen
- Total phosphorus
- Indicator bacteria

These findings suggest that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the water quality benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents at Site MS4W-SDB-06, located in the Middle Sweetwater HA. This site had the greatest drainage area and is characterized by primarily spaced rural residential, vacant and undeveloped land, and open space land uses.

2.3.3 *Pollutant Source Assessment*

The trash assessment conducted 2008-2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Sweetwater HU. A total of 73 sites were assessed for trash in the HU, including six HSAs. The lower portion of the Sweetwater HU had the greatest proportion of trash and the most sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained the greatest amount of trash. This result coincides with the urbanized population centers, which are also found in the lower portion of the WMA. The potential activities causing trash found at monitoring locations were as follows:

- Littering for four of the sites rated as Submarginal or Poor
- Dumping for four of the sites, and Upstream for one of the sites. The sites listed as Dumping were mostly clustered near the mouth of the Sweetwater River in the 909.12 HSA.

2.4 Otay HU

2.4.1 *Receiving Water Body Water Quality Assessment (Otay HU)*

The San Diego Bay Copermittees have not collected MLS monitoring data in the Otay HU since the 2001-2002 Monitoring Season due to insufficient flow. Post-storm event synthetic pyrethroid monitoring and third-party studies including the RHMP and the County of San Diego Southern Watersheds Water Monitoring Program was performed in the Otay HU during the 2008-2009. Figure 2-3 displays monitoring locations throughout the Otay HU. In the sediment samples collected at the Otay River TWAS, all of the analyzed pyrethroids were below sediment benchmark values. These results suggest that pyrethroids were not present in the sediment following the storm event at concentrations that cause toxicity to benthic infaunal organisms. Otay River sediments were comprised predominantly of sand and had relatively low amounts of TOC, which may have influenced the amount of pyrethroids present in the sediment. County of San Diego Southern Watersheds Water Monitoring Program dry and wet weather sampling events did not measure any constituents above water quality objectives (Activity Summary Sheet SDB-057).

Figure 2-3. Receiving Water And Urban Runoff Monitoring Locations Throughout The Otay Hydrologic Unit.

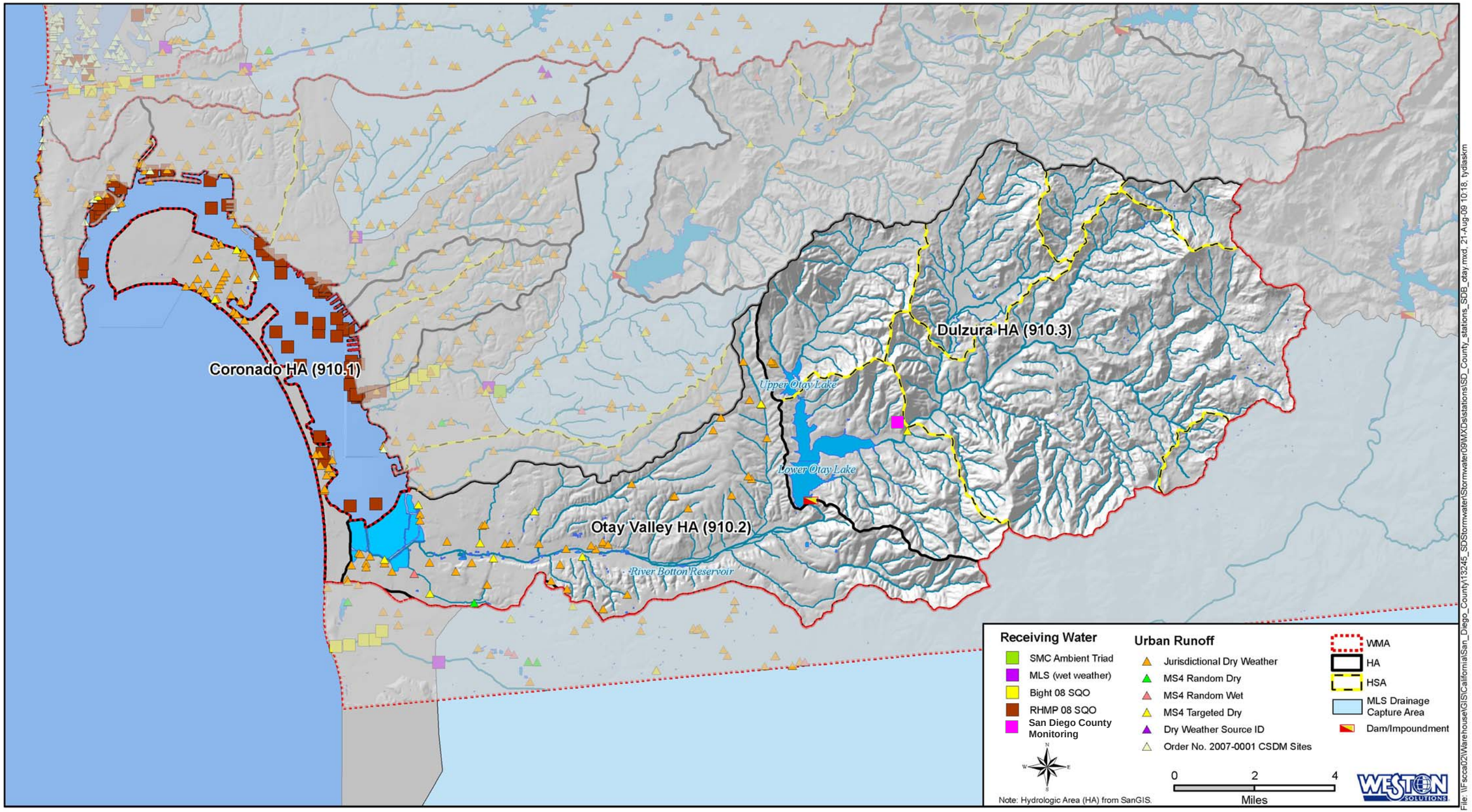

Source Adapted from a figure presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report*. Prepared by WESTON Solutions, Inc. January 2010.

2.4.2 *Urban Runoff Discharges Water Quality Assessment (Otay HU)*

Urban runoff discharge water quality was evaluated to answer **Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?** A better assessment of the MS4s contribution to receiving water quality problems was conducted within the Otay HU during 2008-2009 with the addition of the MS4 Outfall Monitoring Program. Although there are many new monitoring programs conducted to assess urban runoff, a cause-and-effect relationship between urban runoff and receiving water quality may not be appropriate at this time. As monitoring continues throughout the extent of the Permit, a better evaluation between urban runoff and receiving water quality can be made.

DWM primarily occurred in urbanized areas of the watershed within the Coronado HA (910.1) and Otay Valley HA (910.2). Overall, 88 sites were monitored with 47 sites exhibiting flowing or ponded water where samples could be taken for field and/or lab analysis. Constituent groups that had measured values greater than action levels included:

- General chemistry (i.e., conductivity and pH)
- Indicator bacteria (i.e., total coliforms, fecal coliforms, and *enterococci*)
- Nutrients (i.e., ammonia, orthophosphate, and nitrate)
- Turbidity

Concentrations of pesticides (Diazinon and Chlorpyrifos) and metals (dissolved cadmium, dissolved copper, dissolved lead, and dissolved zinc) were below action levels in all samples analyzed.

One CSDM site is located within the Otay HU. The site was visited once per month. If flow or ponded water was observed, a paired sample was taken from the storm drain outfall and the receiving water. During 2008-2009, samples were not collected because neither flowing nor ponded water was observed from the monitoring site.

The MS4 Outfall Monitoring Program which occurred within the Otay HU included the Random Dry, Targeted Dry, and Random Wet programs. One site located within the Otay HU for the Random Dry Weather Outfall Monitoring Program exhibited ponded water from which a sample could be taken. Results of sampling indicated high concentrations of the following analytes at this location:

- Total Phosphorous
- Total Nitrogen,
- indicator bacteria

These results coincide with high priority BLTEA water quality rating for bacteria in the Otay HU.

A total of 12 sites were visited during the Targeted Dry Weather Outfall Monitoring Program during 2008-2009. Eleven of these sites were either flowing or ponded and were sampled for specific constituents. The elevated constituents included:

- Indicator bacteria
- Dissolved copper
- Nitrate and total nitrogen
- Total phosphorus

Elevated concentrations of one or more indicator bacteria were detected at all of the targeted sites sampled. Dissolved copper was detected throughout most samples for which it was analyzed, but all results were below water quality benchmark values. One site located in the upper Otay HU was analyzed for nitrate and total nitrogen. Results indicated a high concentration of total nitrogen. Nitrogen is listed on the 2006 SWRCB Section 303(d) list for the Lower Otay Reservoir. This result suggests that nitrogenous compounds in MS4 dry weather runoff from the targeted dry weather sites may have the potential to contribute to receiving water problems. Similarly, total phosphorous was analyzed at the same site and showcased a high concentration. Total phosphorous is not listed on the 2006 SWRCB Section 303(d) list for waterbodies within the Otay HU.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were typically greatest where flow rates were highest. Sites located in the Coronado HA and Otay Valley HA had the highest flow rates and instantaneous loads for bacteria. MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008-2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the Otay HU; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

During the Random Wet Weather Outfall Monitoring Program, two sites were monitored. Both sites were located within the lower Otay Valley HA. One site was sampled exhibiting high concentrations of the following constituents:

- Total Phosphorous
- Total Nitrogen
- TSS
- Indicator bacteria

2.4.3 *Pollutant Source Assessment (Otay HU)*

The trash assessment conducted during 2008-2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Otay HU. A total of 84 sites were assessed for trash in the HU. A majority of assessment sites occurred within the lower portion of the WMA within the Coronado HA and Otay Valley HA. The Otay Valley HA had the greatest percentage and higher number of sites with Suboptimal, Marginal, or Poor sites. The potential activities resulting in the qualification of Poor rated sites were identified as littering and dumping. Sites rated as Poor were located in a highly urbanized area of the WMA consisting of residential and commercial land uses.

2.5 Prioritization of Water Quality Issues

The San Diego Bay Copermittees presented a Baseline Watershed Evaluation (BWE) assessment in the 2008 San Diego Bay WURMP Document. The BWE process utilized Baseline Long-Term Evaluation Assessment (BLTEA) water quality ratings[2], monitoring data, and source information to determine water quality problems throughout the San Diego Bay WMA. The evaluation was conducted at the HA scale so that management actions could be better focused to address water quality problems. Table 2-3 lists the high priority water quality problems as identified in Section 3 of the San Diego Bay WURMP Document.

[2] WESTON (Weston Solutions, Inc.), MOE (Mikhail Ogawa Engineering), and LWA (Larry Walker Associates). 2005. *Baseline Long-Term Effectiveness Assessment*. Prepared for the San Diego County Copermittees. August 2005.

Table 2-3. San Diego Bay WMA High Priority water Quality Problems.

HA with High Prioritization	Pollutant Category
Pueblo San Diego HU	
908.1	Bacteria
	Gross Pollutants
	Metals
	Oil and Grease
	Pesticides
908.2	Bacteria
	Metals
	Sediment
	Trash
	Pesticides
908.3	Bacteria
	Sediment
	Trash
Sweetwater HU	
909.1	Bacteria
909.2	Pesticides
Otay HU	
910.1	Bacteria
	Gross Pollutants
910.2	Bacteria

The results of the BWE are intended to serve as guidance throughout the course of the Permit. In addition, the results of the BWE serve as a metric to which annual monitoring assessments of current conditions can be compared. Table 2-4 portrays the BLTEA ratings which are updated on a five-year cycle and are used to guide long-term programmatic watershed activities. The table also provides a comparison of previous annual high frequency of occurrence COC rankings. Annual assessments of water quality allow the San Diego Bay Copermittees to track improvements associated with watershed activities or determine increasing trends of pollutants which require specific management actions. The 2008-2009 annual assessment of COCs is presented in this section for comparison purposes to the San Diego WMAs high priority water quality problems.

2.5.1 *Pueblo San Diego HU*

The constituents of concern with frequency of occurrence rankings identified during 2008-2009 are presented in Table 2-5. The 2008-2009 pattern of high frequency (three diamond) COCs in Pueblo San Diego HU are generally similar to previous years and correspond to the high priority water quality problems. Receiving water quality within Pueblo San Diego was assessed in Chollas Creek (908.2) which only flows during storm events. Observed flow during ambient conditions within the creek may be indicative of urban activities. Although there are many new monitoring programs to assess the contribution of urban runoff to receiving water quality

problems, such as the MS4 Outfall Monitoring Program, a cause-and-effect relationship may not be appropriate until further data has been collected and assessed.

Elevated concentrations of total nitrogen, total phosphorus, and *enteroccoci* identified within MS4 effluent may have an impact on receiving water quality. Total nitrogen and total phosphorus have been recognized within surface runoff emanating from residential and agricultural land uses as well as groundwater. Analysis of dissolved metals such as copper and zinc which are greatly associated with aerial deposition caused by transportation and industrial land uses indicate buildup during ambient conditions and then wash off during storm events. Bifenthrin, a synthetic pyrethroid, has been identified as the causative agent of toxicity within Chollas Creek. This is the first year that Bifenthrin has been identified as a high frequency of occurrence COC. Submarginal and Poor designations for trash observed during DWM trash assessments were primarily located within the San Diego Mesa 908.2 HA corresponding to the high priority water quality problems for this HA.

Table 2-4. BLTEA Ratings for the San Diego Bay WMA.

Watersheds/ Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacterial/ Pathogens	Benthic Alterations	Toxicity
San Diego Bay WMA	**100%**	***D***	***B***	***D***	***D***	***C***	***C***	***D***	***D***	***B***	***C***	***B***
Point Loma HA (908.10)	2%	*A*	*D*	*D*	*B*	*C*	*B*	*D*	*D*	*A*	*A*	*A*
San Diego Mesa HA (908.20)	9%	*A*	*D*	*A*	*D*	*A*	*A*	*C*	*B*	*A*	*A*	*A*
National City HA (908.30)	2%	*C*	*D*	*D*	*C*	*B*	*C*	*B*	*C*	*A*	*A*	*A*
Lower Sweetwater HA (909.10)	11%	*D*	*A*	*D*	*D*	*C*	*B*	*D*	*D*	*A*	*A*	*B*
Middle Sweetwater HA (909.20)	19%	*D*	*B*	*D*	*D*	*C*	*A*	*D*	*D*	*C*	*B*	*B*
Upper Sweetwater HA (909.30)	22%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*C*	*C*	*B*	*B*
Coronado HA (910.10)	2%	*D*	*D*	*D*	*D*	*C*	*D*	*D*	*B*	*A*	*D*	*D*
Otay Valley HA (910.20)	10%	*D*	*D*	*D*	*D*	*C*	*D*	*C*	*C*	*A*	*D*	*D*
Dulzura HA (910.30)	22%	*D*	*B*	*D*	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*C*
2006–2009 High Frequency of Occurrence COCs (from Integrated WMA Assessment)												
2006–2007 Monitoring Season Pueblo San Diego HU High[1] Frequency of Occurrence Ratings and COCs	Wet Weather	♦♦♦ Copper Lead Zinc				♦♦♦ TSS Turbidity				♦♦♦ Total coliform Fecal coliform *Enterococci*	Very Poor IBI	No
2007–2008 Monitoring Season Pueblo San Diego HU High[1] Frequency of Occurrence Ratings and COCs	Ambient Weather	♦♦♦ Copper	♦♦♦ TDS					♦♦♦ TN TP			Very Poor IBI	No
	Wet Weather					♦♦♦ TSS Turbidity				♦♦♦ Total coliform Fecal coliform *Enterococci*		Yes
2008–2009 Monitoring Season Pueblo San Diego HU High[1] Frequency of Occurrence Ratings and COCs	Wet Weather					♦♦♦ TSS Turbidity				♦♦♦ Total coliform Fecal coliform *Enterococci*	Very Poor IBI	Yes
2007–2008 Monitoring Season Sweetwater HU High[1] Frequency of Occurrence Ratings and COCs	Wet Weather									♦♦♦ Fecal coliform	Very Poor IBI	No
2008–2009 Monitoring Season Sweetwater HU High[1] Frequency of Occurrence Ratings and COCs	Wet Weather									♦♦♦ Fecal coliform *Enterococci*	Very Poor IBI	No

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

2006 SWRCB Section 303d listing

Source Figure presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report.* Prepared by WESTON Solutions, Inc. January 2010.

Table 2-5. Pueblo San Diego HU Frequency of Occurrence Constituents of Concern.

Assessment	Program	Frequency of Occurrence	Persistent Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	Historical Data at MLS Only[2]	TDS, Turbidity, BOD, COD, MBAS, Total nitrogen, Total phosphorus, Total coliform, Fecal coliform, *Enterococci*, Total selenium, Dissolved copper	*	Yes
Ambient Urban Runoff	Jurisdictional Dry Weather Monitoring	Conductivity, Turbidity, Orthophosphate, Total coliform, Fecal coliform, *Enterococci*	NA	
	MS4 Random Dry and Targeted Dry Monitoring[2]	Total nitrogen, Total phosphorus, Fecal coliform, *Enterococci*	NA	
Wet Weather Receiving Water[1]	MLS and Bioassessment Monitoring	♦♦♦-TSS, Turbidity, Total coliform, Fecal coliform, *Enterococci* ♦♦-Dissolved copper ♦-BOD, COD, Dissolved zinc	Yes *(Hyalella azteca)*	
Wet Weather Urban Runoff	MS4 Random Wet and Targeted Wet Monitoring[2]	Total phosphorus, Total nitrogen, Fecal coliform	NA	

*Ambient sampling as part of normal permit was not monitored due to Bight 2008 participation.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1]Frequency of occurance ratings are only applicable to wet weather receiving water data. A minimum of 3 years of data is needed for other elements of the program to assess frequency of occurance.
[2]Concentration was compared to receiving water benchmarks for comparative purposes only.

Source *Adapted* from a table presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report.* Prepared by WESTON Solutions, Inc. January 2010.

2.5.2 *Sweetwater HU*

The constituents of concern with frequency of occurrence rankings identified during 2008-2009 for the Sweetwater HU are presented in Table 2-6. As during previous years, indicator bacteria remains as the high frequency COC although total coliform was downgraded to a low frequency of occurrence during 2008-2009. These results are consistent with the BLTEA priority ratings for bacteria and benthic alterations, but may not be supportive of the A rating and high priority water quality ranking for pesticides in the Middle Sweetwater HA. While organophosphate pesticides including Chlorpyrifos, Malathion, and Diazinon have not been detected at the Sweetwater MLS since 2003, Malathion and Diazinon were detected in receiving water samples conducted by the County of San Diego (Activity Summary Sheet SDB-057). However, results were below the Basin Plan WQO.

Table 2-6. Sweetwater HU Frequency of Occurrence Constituents of Concern.

Assessment	Program	Frequency of Occurrence	Persistent Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	SMC and Bioassessment Monitoring[2]	Chloride, Total nitrogen, Total phosphorus	*	Yes
Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring	pH, Conductivity, Nitrate as N, Total coliform, Fecal coliform, *Enterococci*	NA	
	MS4 Random Dry and Targeted Dry Monitoring[2]	TDS, Total nitrogen, Total phosphorus, Fecal coliform, *Enterococci*	NA	
Wet Weather Receiving Water[1]	MLS and Bioassessment Monitoring	♦♦♦-Fecal coliform, *Enterococci* ♦♦-TDS ♦-Total coliform, Diazinon	No	
Wet Weather Urban Runoff Areas	MS4 Random Wet and Targeted Wet Monitoring[2]	Total phosphorus, Total nitrogen, Fecal coliform	NA	

*Ambient sampling as part of normal permit was not monitored due to Bight 2008 participation.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1]Frequency of occurance ratings are only applicable to wet weather receiving water data. A minimum of 3 years of data is needed for other elements of the program to assess frequency of occurance.
[2]Concentration was compared to receiving water benchmarks for comparative purposes only.

Source *Adapted* from a figure presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report.* Prepared by WESTON Solutions, Inc. January 2010.

2.5.3 *Otay HU*

The Otay HU was not assessed for high frequency of occurrence COCs during 2008-2009 nor during previous reporting periods due to a lack of data collected from receiving waters. Post-storm event sediment sampling was conducted within Otay HU. Pyrethroids were not present in the sediment at concentrations that could have caused toxicity to benthic infaunal organisms. Elevated concentrations of indicator bacteria were detected within MS4 during urban runoff monitoring from various locations in the Coronado HA and Otay Valley HA. This result supports the BLTEA high priority (A) rating for bacteria the two HAs received. Receiving water quality monitoring conducted by the County of San Diego (Activity Summary Sheet SDB-057), located upstream of the Lower Otay Reservoir, did not showcase elevated concentrations of indicator bacteria during ambient or wet weather conditions. A Temporary Watershed Assessment Station will be monitored within Otay River during FY 2009-2010 and is expected to contribute to the understanding of receiving water quality within the watershed.

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Section 3: Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. Watershed Activity Implementation Summary Sheets for all watershed activities implemented during this reporting period, including activities implemented in compliance with a TMDL, are located in Appendix D of this Annual Report. The format of the activity summary template utilized by the San Diego Bay Copermittees is presented in the 2008 San Diego Bay WURMP Document.

3.1 Watershed Water Quality Activities

The San Diego Bay Copermittees relied on the Watershed Strategy to guide the selection of watershed water quality activities. Each Copermittee has individually decided which activities are feasible to institute within its jurisdiction, and has selected watershed water quality activities for implementation that are appropriate for its relative contribution to the watershed's high priority water quality problems.

Table 3-1 presents the water quality activities implemented in FY 2009. The progress of each activity has been described in activity summary sheets, located in Appendix D-1. The Copermittees have identified what was accomplished during the reporting period for these activities and how the activity addresses high priority water quality problems in particular HAs. During this reporting period, the San Diego Bay Copermittees implemented six trash and debris related water quality activities focused on reducing the amount of trash and debris entering the MS4. Six enhanced inspection activities were implemented to abate sources of high priority water quality problems associated with construction activities, large special events, or automotive facilities. In addition, Copermittees implemented four other water quality activities to either abate sources or reduce loading of high priority pollutants.

One water quality activity, the Trash Containment Boom Agreement with the US Navy (SDB-006) was completed during this reporting period. Copermittees identified as Named Dischargers in the Chollas Creek Dissolved Metals TMDL implemented a number of watershed activities which also address the TMDL. Those watershed activities listed in the TMDL Implementation Plan will be identified in Table 3-1 and will be discussed further in their respective activity summary sheets. Results and updates on the water quality activities implemented by all TMDL Named Dischargers during this reporting period are located in Appendix E.

The Watershed Strategy indicates that where there are data gaps that must be filled before successful implementation of a load reduction activity can occur, monitoring and/or source identification activities are necessary. With this in mind, 12 monitoring and source identification activities were implemented during this reporting period. One monitoring activity, Water Quality

Monitoring at Additional Mass Loading Stations (SDB-057) was completed during this reporting period. While the San Diego Bay Copermittees recognize that these types of activities are not considered for credit toward Permit compliance, the importance of the monitoring information to the overall success of the Watershed Strategy and the Copermittees' ability to address high priority water quality problems cannot be overlooked. Monitoring information will support future management decisions regarding the planning, implementation, and assessment of watershed activities.

The Copermittees have continued to collaborate on the reporting of four common jurisdictional water quality activities at a watershed level. These activities include: Pet Waste Bags, Storm Drain Litter Control Techniques, Enhanced Street Sweeping and Cleanup Events. This collaborative approach was utilized because these activities were identified as being beneficial in addressing high priority water quality problems and can be applied within different locations and at different scales of implementation as determined appropriate by each Copermittee. The benefit of this approach is that it allows an assessment of the activity at both the jurisdictional level as well as at a HA or watershed level.

Table 3-1. San Diego Bay WURMP Water Quality Activities in FY 2009.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																			
Trash and Debris Related Activities																			
Pet Waste Bag Collaborative Watershed Activities (SDB-001)	X	X		X			X	X	X	●				●					
Storm Drain Litter Control Techniques Collaborative Watershed Activity (SDB-002)		X	X	X														●	●
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)*	X	X	X	X			X						●					●	●
Collaborative Cleanup Events (SDB-004)		X	X	X			X	X											●
Clean Community Program (SDB-005)			X							●		●							●
Trash Containment Boom Cleaning Agreement with US Navy (SDB-006)		X	X							●									●
Family Stream Team Initiative Partnership (SDB-051)*		X											●						●
Enhanced Inspection Activities																			
Additional Dry Season Construction Inspections (SDB-007)			X	X														●	●
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)*		X											●						
Enhanced Construction Oversight (SDB-009)		X																●	
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)*			X	X						●			●				●		
Large Sp. Events (Education, Inspections, and Cleanup) (SDB-047)							X			●									
Outdoor Special Event Oversight (SDB-048)		X																	●
Targeted Special Studies																			
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)*		X								●			●						
Dalbergia "Green Mall" Infiltration Retrofit (SDB-013)*		X								●			●						
Southcrest Park Green Lot Infiltration Project (SDB-014)*		X								●			●						
Memorial Park “Green Lot” Infiltration Retrofit Activity (SDB-015)*		X								●			●						

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
43rd and Logan Biofiltration Project (SDB-037)*		X								●			●						
Maple Canyon Water Quality Improvement (SDB-049)*		X								●								●	●
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)*		X											●						
Other Water Quality Activities																			
Update Recycling and Solid Waste Ordinance (SDB-035)				X				X	X	●				●					●
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X	●	●	●	●	●	●	●	●	●	●
Palm Avenue Stormwater Diverter (SDB-052)							X			●			●	●			●	●	
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																			
Enhanced Dry Weather Monitoring Program (SDB-020)		X								●	●	●	●	●	●	●	●	●	●
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								●			●	●		●	●	●	●
La Mesa Additional Water Quality Monitoring Program (SDB-022)*		X								●	●	●	●	●	●	●	●	●	
BMP Effectiveness Monitoring Program (SDB-023)		X										●	●		●			●	
Dry Weather Aerial Deposition Study – Phase II (SDB-024b)*		X											●						
Dry Weather Aerial Deposition Study – Phase III (SDB-024c)*		X											●						
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X			●	●	●	●	●	●	●	●	●	
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (SDB-026)		X								●			●						
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (SDB-027)*		X								●									
Shelter Island Yacht Basin Urban Runoff Monitoring Study (SDB-053)	X												●						
Switzer Creek Pesticide Source Monitoring Study (SDB-054)		X															●		
Water Quality Monitoring at Additional Mass Loading Stations (SDB-057)					X	X			X	●	●	●	●	●		●	●	●	

* Indicates the watershed activities also listed in the Chollas Creek Dissolved Metals TMDL Implementation Plan.

3.2 Watershed Education Activities

The San Diego Bay Copermittees recognize the value of educational programs as an essential element in ensuring future watershed protection efforts. The main focus of the San Diego Bay watershed education program is to make the public aware of the sources of water pollution in order to encourage positive behavioral change. Eleven watershed education activities were implemented in the San Diego Bay WMA during this reporting period (Table 3-2). Activity summary sheets for these activities are located in Appendix D-2. Four education activities were completed during this reporting period (SDB-030, SDB-031, SDB-043, and SDB-044). In addition to these identified educational activities, the Copermittees have continued to participate in other educational activities as part of JURMPs, RURMP or other programs. Section 3.2.1 provides a watershed-wide tabulation of all education activities the Copermittees implemented during the FY 2009 reporting year. This information will be utilized to obtain a comprehensive evaluation of education efforts occurring within the San Diego Bay WMA and aid in the development and/or modification of future watershed education activities.

Table 3-2. Implemented San Diego Bay WURMP Education Activities in FY 2009.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Storm Drain Stenciling (SDB-028)				X				X	X	●	●	●	●	●	●	●	●	●	●
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	●		●							●
Outdoor Billboards/Transit Shelters (SDB-030)	X	X	X	X				X	X	●									●
Mobile Advertising (SDB-031)	X	X	X	X				X	X	●		●	●		●		●	●	●
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	●		●	●						●
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	●									
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	●									
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	●					●				
La Mesa Park Kiosk (SDB-042)		X								●			●				●		
LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043)				X	X	X			X	●	●	●	●	●	●	●	●	●	●
ILACSD Elementary School Watershed Presentations (SDB-044)		X		X			X	X		●	●	●	●	●	●	●	●	●	●

3.2.1 *San Diego Bay Education Program*

The San Diego Bay Education Program is outlined in the San Diego Bay WURMP Document. The education program's focus is to educate the public about the San Diego Bay WMA and the high priority water quality problems within the watershed. The San Diego Bay Copermittees have implemented several short and long-term educational activities that address watershed concepts and watershed pollutants. These tasks also overlap several programs which are required for Municipal Permit compliance on jurisdictional, watershed, or regional levels.

Table 3-2 provides a summary of the education activities that the San Diego Bay Copermittees implemented in the FY 2009 reporting year. Each of the tasks is further described in Sections 3.2.2.1 – 3.2.2.6. Rather than listing the number of individuals estimated to have been reached by each subcategory activity, the table lists the number of events as a more representative summation of the education and outreach efforts. Additionally, the overlapping nature of these educational activities across jurisdictional, watershed, and regional boundaries is presented. The table also provides an indication of the jurisdiction(s) that participated or provided the opportunities for certain types of educational activities, as well as the relationship of these educational activities to watershed concepts and/or surface water pollutants, especially those pollutants found to be pollutants of concern in the San Diego Bay WMA. Information on specific education events can be found in Appendix F of this report. Please note that in an effort to include only San Diego Bay WURMP watershed education activities, events that did not specifically discuss the San Diego Bay WMA and/or watershed pollutants of concern were excluded from both Table 3-2 and Appendix F.

3.2.1.1 *Watershed Public Presentations and Media*

The Public Presentations and Media Watershed Elements of the San Diego Bay Education Program were designed to incorporate general watershed, receiving water, and storm water pollution prevention concepts and principles into existing and planned public presentation and media opportunities at the jurisdictional level. The San Diego Bay Copermittees have used a variety of means to meet this objective and will continue to evaluate and improve their effectiveness. For purposes of this Annual Report, the Public Presentation and Media element of the Education Action Plan has been subcategorized under four sub-headings as shown in Table 3-3 and described below. Further detail on these activities is provided in Appendix F.

<u>Festivals/Community Events</u> – These events are generally hosted by local community groups or jurisdictions; and provide an opportunity to host a booth and to share educational materials. Community events, such as the San Diego County Fair, provide another venue for public outreach and education. The San Diego Bay Copermittees were involved in 55 different events this reporting period, including the Heritage Day Festival and Parade in the City of San Diego, the Intergenerational Games event in the City of La Mesa, the EnviroFair at the San Diego County Fair, the US Open Sand Castle Competition in the City of Imperial Beach, and the Go

Green and Clean Family Day in the City of Chula Vista. A summary of the number of persons reached is included in Table 3.4.

Presentations – This category includes presentations with visual aides given to community organizations or to school children, at their regular meeting or event. Staff from the jurisdictions in the San Diego Bay WMA made a number of presentations for groups throughout the watershed. During these presentations which addressed students at all levels from elementary school to college, staff emphasized watershed issues, recycling, and the general storm water pollutants of concern. One highlight is the collaborative effort between five Copermittees and I Love A Clean San Diego (ILACSD) to provide information on high priority water quality problems and general storm water issues through presentations to elementary school children (Activity Summary Sheet SDB-044). Overall, the San Diego Bay Copermittees conducted 120 different presentations this reporting period which was estimated to reach approximately 27,959 persons.

Print Media – Several of the San Diego Bay Copermittees have made efforts to attract media attention. The Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, and San Diego, as well as the Port of San Diego and the Airport Authority have been successful at gaining print media coverage for their watershed and storm water management efforts and the results of their programs. Articles in the Imperial Beach Eagle and Times, Coronado Currents, South Bay Star News, the La Mesa FOCUS, and the San Diego Union Tribune were printed during this reporting period. In addition, Copermittees have presented watershed concepts through pamphlets, brochures, and displays or kiosks in public areas. Notably, the Think Blue program messages were advertised on transit shelters and billboards, and on mobile ads on static billboard trucks roaming within the Chollas Creek. Additional information on these activities is located in Appendices D and F. The San Diego Bay Copermittees continue to explore opportunities at making coordinated efforts to garner print media coverage as an outreach and education mechanism. The San Diego Bay Copermittees distributed 39 different forms of watershed related print material during this reporting period.

Public Service Announcements (PSAs) – The Think Blue media campaign continues to be a mechanism for conducting watershed and storm water pollution prevention education and outreach throughout the San Diego Bay WMA and the entire region. The FY 2009 reporting period represents the eighth straight year that Think Blue has been in operation. Think Blue provides outreach to the general public through public service announcements in both English and Spanish and estimates 4,471,328 impressions during the 2008-2009 reporting year. The City of San Diego produced and broadcasted the *Karma*, *Karma Second Chance*, and *Karma Tourist* PSAs (Activity Summary Sheet SDB-029) throughout the watershed during FY 2009. In addition to running Think Blue PSA videos on television screens at the Terminal 2 Baggage Claim area, the Airport Authority also displayed “Don’t Trash California” anti-littering PSA posters throughout the airport terminals.

Watershed Education for Municipal Staff – The San Diego Bay Copermittees continue to provide storm water education to municipal staff, especially to those staff dealing directly with

pollutants of concern in the watershed. Watershed training for municipal staff can be focused on more general concepts or on specific pollutants, depending on the audience. Incorporating watershed education into the required municipal staff training of the Jurisdictional Urban Runoff Management Plan (JURMP) helps the Copermittees address the high priority water quality problems in San Diego Bay. The San Diego Bay Copermittees conducted in 15 different Municipal Training Events during this reporting period. For more information on municipal staff training, please refer to each of the San Diego Bay Copermittee's individual JURMP.

Workshops – Several San Diego Bay Copermittees conducted educational workshops addressing storm water issues. These workshops targeted representative from businesses and the general public. Some of the topics included auto facility BMP implementation and water conservation. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues.

Table 3-3. Summary of Education Activities for FY 2009.

						Concepts/Constituents of Concern Addressed					
Tasks from the WURMP Education Action Plan	**Target Audience**	**Program Elements**	**Number of Events**	**Jurisdictional, Watershed, or Regional Program**	**Participating Jurisdictions**	**Watershed concepts**	**General Surface Water concepts**	**Copper/Zinc**	**Pesticides**	**Bacteria**	**Sediment**
Public Presentations and Media - Watershed Element	General Public, Residential, Commercial/ Industrial, Construction, Municipal	Festivals/Community Events	55	J, W, R	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, Port of San Diego, San Diego, County of San Diego	x	x	x	x	x	x
		Presentations	120	J, W	Airport Authority, Imperial Beach, La Mesa, National City, Port of San Diego, County of San Diego	x	x	x	x	x	x
		Print Media	39	J, W	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego	x	x	x	x	x	x
		Public Service Announcements	4	W, R	All	x	x				
		Municipal Staff Training	15	J, W	Airport, Chula Vista, Imperial Beach	x	x	x	x	x	x
		Workshops	15	J, W	La Mesa, National City, Port of San Diego, County of San Diego	x	x	x	x	x	x

						Concepts/Constituents of Concern Addressed					
Tasks from the WURMP Education Action Plan	**Target Audience**	**Program Elements**	**Number of Events**	**Jurisdictional, Watershed, or Regional Program**	**Participating Jurisdictions**	**Watershed concepts**	**General Surface Water concepts**	**Copper/Zinc**	**Pesticides**	**Bacteria**	**Sediment**
School Programs	K - 12 children	Field Trips	18	J, W	Airport Authority, Chula Vista, Coronado, Imperial Beach, Port of San Diego, County of San Diego	x	x		x	x	
		Project SWELL	*	W, R	Port of San Diego, Airport Authority, City of San Diego	x	x				
Integrated Pest Management	General Public, Residential, Commercial/ Industrial, Municipal	IPM Seminars/Events	14	J, W, R	La Mesa, Port of San Diego, City of San Diego	x	x		x		
Project Clean Water Watershed Website	General Public	Website with information related to surface water quality issues, watersheds, and pollutants	N/A	W, R	All	x	x	x	x	x	x

						Concepts/Constituents of Concern Addressed					
Tasks from the WURMP Education Action Plan	**Target Audience**	**Program Elements**	**Number of Events**	**Jurisdictional, Watershed, or Regional Program**	**Participating Jurisdictions**	**Watershed concepts**	**General Surface Water concepts**	**Copper/Zinc**	**Pesticides**	**Bacteria**	**Sediment**
Partners in Clean Water	General Public	Cleanup Events	30	J, W	Airport Authority, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, Port of San Diego, San Diego, Chula Vista	x	x	x	x	x	x
		Citizen Monitoring/ Training	2	J, W	Port of San Diego	x	x	x	x	x	x
		Waste Collection Recycling Events	11	J, W, R	Airport Authority, Chula Vista, La Mesa, Port of San Diego	X	X	X	X	X	X
		Storm Water Stenciling Events	1	J, W	Chula Vista	X	X	X	X	X	X

* Project Swell is reported as the number of students reached and is discussed further in Section 3.2.1.2.

3.2.1.2 *School Programs: San Diego Bay WMA*

School children are a primary focus of the San Diego Bay Education Program. The San Diego Bay Copermittees continue to focus on efforts to effectively promote watershed awareness and to initiate positive behavioral changes in children. The San Diego Bay Watershed Education Program (represented in Table 3-3) shows the four main sub-categories used to describe the education and outreach efforts directed at school children during this reporting period.

Field Trips – The San Diego Bay Copermittees provided field trips to the Chula Vista Nature Center, Wildcoast Sea Turtle Education, the Maritime Museum, and others, as an effective hands-on means of increasing watershed and water quality awareness in their students. Attendance at these field trips was more than 11,600 students.

Project SWELL – Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, Airport Authority, other municipalities, and non-profit organizations to establish comprehensive water quality and pollution prevention curricula in City schools. Started in May 2003, Project SWELL seeks to educate local school children about our region's watersheds while also fostering a sense of stewardship in these future leaders that will provide long-term solutions to the region's water quality problems. In all, Project SWELL reached more than 40,000 school children in the SDUSD during the reporting period.

3.2.1.3 *Integrated Pest Management (IPM)*

The San Diego Bay Copermittees believe that public education about IPM is an effective way to protect receiving waters from the impacts of diazinon and other pesticides. IPM promotes the use of integrated, ecologically sound pest management programs. Two main categories are used to describe education efforts related to IPM.

IPM Seminars and Events – These include efforts to educate the public to use IPM as a way to protect the beneficial uses of receiving waters throughout the watershed. This includes Copermittee efforts to organize or participate in local seminars or events regarding IPM for local residents, businesses, and public agency staff. Events include the Green Port IPM Seminar and County Integrated IPM Training for Landscape Professionals. The San Diego Bay Copermittees participated in three different IPM Seminars/Events during this reporting period.

3.2.1.4 *Project Clean Water Watershed Website*

As in previous years, the Project Clean Water (PCW) website (www.projectcleanwater.org) provided a venue for public education and outreach about the San Diego Bay WMA. In addition, the San Diego Bay Copermittees continue to link their individual jurisdictional websites to PCW. Each of these websites presents another mechanism for educating the public about watershed issues. These websites also function as public participation mechanisms. Please refer to the Public Participation section of this Annual Report (Section 3.3) for more information on this aspect of the PCW website for the San Diego Bay WMA.

3.2.1.5 *Partners in Clean Water*

The San Diego Bay Copermittees continue to nurture new and existing partnerships with individuals and groups within our communities that share our concern for the environment and our watershed. Table 3-3 shows the four main sub-categories as listed below used to describe the education and outreach efforts directed at these types of community partnerships during this reporting period.

Cleanup Events – In addition to the obvious public participation aspects of a cleanup event, these events provided an opportunity to conduct education and outreach about watershed issues and general storm water pollutants of concern. These events usually involve trash removal from inland and coastal areas.

All the San Diego Bay Copermittees collectively sponsored the Creek to Bay Cleanup for the fifth year in a row. San Diego Bay Copermittees worked together to help fund and staff cleanup sites within the San Diego Bay WMA. Several of the San Diego Bay Copermittees also participated in Coastal Cleanup Day, as well as a number of smaller, jurisdiction-specific cleanup events. The San Diego Bay Copermittees participated in 30 Cleanup Events during this reporting period. A summary of the number of persons reached is included in Table 3-4. Additional information on watershed cleanup events is provided in Activity Summary Sheet SDB-004 in Appendix D-1.

Citizen Monitoring/Training – Citizen Monitoring Training and Citizen Monitoring events provide an opportunity for community members to learn how water quality testing is performed, as well as make a connection to the water bodies in their neighborhoods. The Port of San Diego sponsored two programs with Citizen Monitoring components during this reporting period. The Chollas Creek Family Stream Team Initiative Partnership (SDB-051) and the Zoological Society of San Diego's Stream Team Stewards program provided training to citizens within the Chollas Creek watershed (908.2 HA). Further details on these programs are provided in Appendices D-1 and E.

Storm Drain Stenciling Events – These events are an effective means for increasing watershed and water quality awareness in the community. The City of Chula Vista continued to participate in events during FY 2009 where inlets were affixed with storm water related placards or stenciled graphics (SDB-028). In addition to the 500 thermoplastic storm drain markers permanently affixed to storm drain inlets with the prohibitive "No Dumping – Drains to Bay" message during the last fiscal year, citizens stenciled 88 more storm drains during the Beautify Chula Vista Day event in October 2008. Notably, nearly all storm drain structures in the City are identified with stenciling, plastic markers, or permanent concrete stamping.

Waste Collection/Recycling Events – These include special organized events where citizens can properly dispose of their HHW or E-Waste. This does not include regular collection at HHW facilities. The San Diego Bay Copermittees participated in 11 Waste Collection/Recycling Events during this reporting period with a summary of persons reached included in Table 3-5.

3.3 Public Participation Activities

Public participation during the development and implementation of the San Diego Bay WURMP has been, and continues to be, encouraged to ensure that stakeholder interests and creative solutions are considered. Broad participation is critical to further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process. Further, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own and that broad partnerships are essential to positively affect the water resources in the watershed. It is only through a collaborative approach that we will develop a better understanding of these issues and processes affecting water quality in our watersheds.

Effective public participation is driven by ensuring that the stakeholders are engaged at the appropriate level of decision-making. Public input into any decision-making process can be as simple as providing public notification that an initiative will occur, or a complex process that requires them to be intrinsically involved and responsible for the final decision-based outcome, or any level in between. The proper identification of the role of the public is crucial to ensuring the success of any initiative for which public input is sought. Table 3-4 provides a description of the possible levels of public participation, ranging from simple notifications to empowerment of full decision-making.

Table 3-4. Levels of Public Participation.

Public Participation Objectives				
INFORM	**CONSULT**	**INVOLVE**	**COLLABORATE**	**EMPOWER**
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.

An opportunity for assessing public participation is available through the identification of the appropriate level at which to involve stakeholders in decision-making. Prior to embarking on a public participation opportunity, San Diego Bay Copermittees established an objective defining the level at which the public is invited to be involved. The effectiveness of public participation in decisions affecting the San Diego Bay WMA were assessed by understanding the numbers of stakeholders reached through each decision-making opportunity (where applicable), and by providing summaries describing how stakeholders participated in each opportunity.

The following section summarizes the activities and efforts made by the San Diego Bay Copermittees to encourage public participation during this reporting period. A complete list of public participation activities conducted within the watershed is included in Appendix F. Please note that this section only discusses the activities that were identified in the Public Participation section of the WURMP and relate to the San Diego Bay WMA. The San Diego Bay Copermittees have also conducted a number of regional programs and events involving the public in general water quality issues. Many municipalities have worked with stakeholders on efforts such as grant applications and water quality data collection.

3.3.1 *Storm Water Copermittee Collaboration and Community Workshops*

Stakeholder participation is vital to the success of watershed activities. The San Diego Bay Copermittees provided several forums during FY 2009 that allowed various stakeholder groups to participate in WURMP activities. Community workshops and activities that enhanced collaboration among San Diego Bay Copermittees are discussed below.

San Diego Bay WURMP Meetings

San Diego Bay WURMP meetings were held regularly to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue to inform, consult, and involve Copermittees and other stakeholders on local watershed efforts. Appendix B presents a summary of the meetings held by the workgroup during FY 2009, including an outline of the principal agenda items.

Workshops and Conferences

San Diego Bay Copermittees conducted educational workshops addressing storm water issues to inform and involve the public. These workshops targeted representatives from businesses, the construction industry, and the general public. The topics ranged from simple BMP implementation to SWPPP preparation, and many were tailored to specific audiences. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues. The San Diego Bay Copermittees also targeted specific groups by setting up booths at various conferences and city festivals. Educational materials were distributed and personnel at the booths answered questions. The San Diego Bay Copermittees conducted or participated in 15 different watershed related workshops and conferences during this reporting period.

Presentations

The San Diego Bay Copermittees conducted a variety of informational presentations during the reporting period, targeting many different types of audiences. These educational presentations provided educational media as well as a venue for questions about storm water issues to be discussed. Individuals who have a greater awareness and understanding of storm water issues will likely also be more active in taking measures to protect storm water quality and influencing others around them to do the same. The total number of persons attending presentations is estimated at 27,959.

Community Events

During this reporting period, the San Diego Bay Copermittees participated in 55 watershed related community events. Collectively, the community events met all five public participation objectives presented in Table 3-4 and many of these events addressed regional water quality issues that spanned several watersheds. The San Diego Bay Copermittees feel such broad based activities play an important role in engaging the public on important water quality issues and that such public participation does positively impact water quality both in the San Diego region as a whole and in San Diego Bay.

Cleanup Events and Waste Collection

Cleanup events give the public a chance to actively participate in improving the water bodies in their neighborhoods. In addition to the obvious benefits to water quality, such events also give residents a tangible understanding of the link between their actions and receiving water impacts. Active, hands-on experience tends to foster a sense of ownership and deepen participants' sense of responsibility for their local water bodies. As a result, the cleanup events and waste collection events were effective in achieving all of the public participation objectives.

Though the San Diego Bay Copermittees have identified trash as a constituent of concern for the Pueblo HU, the Copermittees continued to implement a variety of activities to address this

issue where applicable and, as a proactive measure, throughout the entire San Diego Bay WMA. Cleanup events are an effective means of not only involving the community in protecting water quality, but also specifically removing trash from water bodies in urban settings. During cleanup events, participants are provided with educational material regarding watershed concepts and have the opportunity to discuss storm water issues with city staff and knowledgeable volunteers. Additional information on watershed cleanup events is provided in Activity Summary Sheet SDB-004 in Appendix D-1.

Notably, the Chollas Creek Stream Team Initiative Partnership (SDB-051) addressed illegal dumping and non-point source trash accumulation within Chollas Creek (908.2 HA) by organizing refuse collection events and community education and outreach efforts. The Initiative successfully implemented public participation elements to inform, involve and empower citizens to participate in proper refuse disposal in order to reduce illegal dumping and trash within the Chollas Creek community.

Free collection of household hazardous waste (HHW), electronic, and universal waste has occurred during FY 2009. Often residents illegally dump these materials due to a combination of economic pressures, inconvenience, and/or lack of knowledge regarding where to go to dispose of the items. Waste collection events provide an avenue for the public to properly dispose of used oil, appliances, and other items for which they might otherwise have had to pay fees or transport for long distances.

Table 3-5 below details the number of workshops, conferences, presentations, and community events that were held and the number of people reached through these events. Note that an exact numeric attendance was not possible for all events. For a more detailed description of the events that occurred in each one of these categories, refer to Appendix F.

Table 3-5. Summary of Activities.

Type of Activity	Number of Events	Number of People Reached*
Workshops/Conferences	15	252
Presentations	120	27,959
Community Events	55	344,227
Cleanup Events	30	7,646
Waste Collection Events	11	4,307

* These totals do not include the numbers for some events for which attendance was not recorded.

3.3.2 *Websites*

The Project Clean Water (PCW) website successfully provides a means of public participation by informing and involving the public on San Diego Bay water quality issues. Each of the three HUs which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have pages devoted to them that

are available for both the San Diego Bay Copermittees and public viewing. The San Diego Bay WURMP page includes downloadable WURMP and WURMP Annual Report documents, as well as land use and MS4 maps. The page specifically states that the San Diego Bay Copermittees are seeking public comment on the program and provides mail, email, and telephone contact information for the Lead Copermittee.

During the reporting period, 6,266 hits were recorded for the four main PCW web pages related to San Diego Bay WMA, which is comparable to the number of hits during the last reporting period. The Pueblo Watershed received 1,559 hits, Sweetwater Watershed received 1,924 hits, and the Otay Watershed link received 1,886 hits.

In addition to the PCW website, several other websites with San Diego Bay WMA content have been developed. The City of San Diego worked with San Diego State University and San Diego Coastkeeper to continue to provide the San Diego Bay Watershed's Common Ground website (http://www.sdbay.sdsu.edu), which has interactive water quality maps, access to a variety of water quality data collected within the watershed, a watershed tour feature, and a variety of other watershed specific educational content. The Port of San Diego continues to display the Project ORCA (Online Research Coastal Academy) site, which provides interactive, San Diego Bay focused, environmental education targeted at children. Other San Diego Bay Copermittees' storm water websites, including the City of Coronado's, also provide information about San Diego Bay.

3.3.3 *Integration And Participation in Local Planning Activities*

During the reporting period, San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA continued to participate in the development of plans intended to improve the water quality in San Diego Bay, including:

- Otay River Watershed Management Plan (ORWMP)
- Otay River Special Area Management Plan (SAMP)

Stakeholders in the areas in which these plans focus have attended regular meetings and providing valuable input on plan direction. By consulting and collaborating with various stakeholders, Copermittees' efforts have empowered the public to be more involved in addressing water quality issues. Additional information on these planning activities will be discussed in Section 3.4 of this Annual Report.

Links to pages discussing the ORWMP and the Otay River SAMP are included on the Project Clean Water website. The sites include a variety of plan-related documents for public review and announcements of public meetings.

3.3.4 *Direct Interaction*

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' staff also interacts with the public on a daily basis. Municipal employees receive storm water training on an ongoing basis, as described in each JURMP. Staff with program implementation responsibilities receives the most intensive training, but other employees are educated about storm water issues as well. Municipal employees interact with the public in their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about storm water issues and regulations, as well as answer questions and provide guidance. This day-to-day personal interaction is an important component of the San Diego Bay Copermittees public participation activities.

3.4 Collaborative Land-Use Planning Efforts

In recent years water quality management efforts have become increasingly watershed-focused, and the San Diego Bay Copermittees are working to integrate watershed management concepts into programs that can be implemented across jurisdictional boundaries. In general, this effort includes participation in watershed management plans, utilizing regional guidance documents, and increasing public participation. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and a balance of land uses when planning future development. Several planning activities have been initiated.

During the reporting period, San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA continued to develop land-use plans intended to improve the water quality in San Diego Bay, including the following:

- Otay River Watershed Management Plan (ORWMP)
- Otay River Special Area Management Plan (SAMP)

The ORWMP has been approved by the Port, the County of San Diego and Imperial Beach. The Plan was approved by the City of San Diego in FY 2009 and is still under consideration for approval by the City of Chula Vista. Therefore, there are no new action items to report for this reporting period. An interim Watershed Council will be established once the ORWMP has been approved.

In regards to the SAMP, the County (through its consultant team) has prepared most of the technical background information that is necessary to complete the 404(b)(1) process of the Clean Water Act, and the SAMP document is scheduled to be prepared in early 2010. In addition, the Army Corps has received additional funding and has hired URS to prepare the Environmental Impact Statement (EIS). The EIS will be underway shortly after the SAMP document is completed.

3.5 Updated Five-Year San Diego Bay WURMP Strategic Plan

3.5.1 *New Activities*

The San Diego Bay Copermittees added new watershed activities to the San Diego Bay WURMP Strategic Plan during FY 2009. Copermittees incorporated 3 new educational activities (Activity Summary Sheets SDB-044, SDB-045, and SDB-055) and four new water quality activities (Activity Summary Sheets SDB-049, SDB-050, SDB-051 and SDB-052). Five new monitoring activities (Activity Summary Sheets SDB-024b, SDB-024c, SDB-053, SDB-054, and SDB-057) were also included. The activity summary sheets for these activities are presented in Appendix D-1 and D-2.

3.5.2 *Updated 5-Year San Diego Bay WURMP Strategic Plan*

The San Diego Bay WURMP's Strategic Plan is assessed on an annual basis and may be updated to reflect the current status of watershed activities and any modifications to previous versions of the Strategic Plan. During this reporting period, the San Diego Bay Copermittees have been committed to implementing the watershed water quality and education activities presented in Sections 3.1 through 3.4 of this Annual Report. The updated Implementation Plan Schedule of San Diego Bay WURMP is presented in Table 3-6 and is intended to supercede the previous version presented in the 2008 San Diego Bay WURMP Document. In addition, the Copermittees are progressing towards making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding WURMP permit language.

3.5.3 *Updates to TMDL Implementation Plan Activities*

Currently, there are three adopted TMDLs in the San Diego Bay WMA (Table 2-2): the Chollas Creek Diazinon TMDL, the Chollas Creek Dissolved Metals TMDL, and the SIYB Dissolved Copper TMDL. The named dischargers of the Chollas Creek Diazinon and Dissolved Metals TMDLs have developed an Implementation Plan defining the approach to planning, implementing, and assessing the effectiveness of best management practices (BMPs) with the goals of attaining the waste load allocations (WLAs) for dissolved metals and restoring the beneficial uses of the Chollas Creek Watershed. The named dischargers of the SIYB Dissolved Copper TMDL initiated the development of an Implementation Plan during this reporting period as well. An assessment of the efforts to address TMDL compliance during this reporting period is presented in Section 4.2 of this Annual Report.

<u>Chollas Creek Dissolved Metals TMDL Implementation Plan Activities</u>

The seven named dischargers, Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, Port District, U.S. Navy, and Caltrans, developed an Implementation Plan which presents the strategy, framework, and activities for the first five years under the TMDL using a multi-

pollutant approach. The first five years, considered Phase I, involve the implementation a range of BMPs designed to address identified priority water quality problems from a range of community, structural, and watershed-level activities. Phase I also includes effectiveness assessments to measure the performance of specific BMPs to assess the long-term performance of the program, and to identify existing pollutant source or BMP design data gaps. The goal is to maximize the effectiveness of specific activities to guide the BMP priority rankings and implementation in subsequent phases with the ultimate goal of achieving TMDL compliance.

Though the Implementation Plan was submitted in October 2009 (outside of this reporting period) the dischargers implemented several activities as part of their comprehensive Storm Water Programs that will help in meeting TMDL compliance for both the Metals TMDL and the Diazinon TMDL. The dischargers also have a number of activities planned over the next few years. Specific activities that the dischargers are implementing are included in tabular format in Appendix E. Fifty-one activities, including water quality, education, and ongoing agency-wide activities, were in implementation in FY 2009. Fifty-two are planned to be implemented or continue into FY 2010, including two Municipal Code review and modification projects. Additionally, there are four collaborative special monitoring studies planned for FY 2010. Activities are further described in the tables included in Appendix E.

While activities implemented to address the Chollas Creek Diazinon TMDL are referenced in the discussion above, the dischargers that are responsible under the Diazinon TMDL must report on specific implementation elements. These updates are included in Appendix C, as part of the annual response to monitoring report. However, specific activities referenced as part of the implementation elements discussion in Appendix C are also included in the Metals TMDL dischargers' tables in Appendix E, demonstrating the multi-pollutant approach to the Metals TMDL.

SIYB Dissolved Copper TMDL Implementation Plan Activities

The named parties, the Port of San Diego, the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners began the development of the TMDL Implementation Plan during this reporting period. The Implementation Plan incorporates a collaborative approach among the named parties to planning, implementing, and assessing BMPs to achieve reductions in copper loading into SIYB. The Implementation Plan will utilize a solutions-oriented strategy of establishing BMPs that help realize the objective of reducing copper loading into the basin in order to preserve and restore the beneficial uses, while simultaneously achieving compliance with the SIYB interim and final dissolved copper loading thresholds. Loading reductions will be achieved through conversion of vessels to non-copper-based paints, reductions of inputs via hull cleaning, and control of upstream inputs. Therefore, the named parties identified BMPs and other activities that can be best implemented within their given facility/operations in order to collectively achieve compliance with TMDL loading targets for the entire basin.

Named Parties are developing individual work plans, identifying BMPs to be implemented to achieve loading reductions, as well as implementation schedules, assessment mechanisms, and effectiveness targets. In the individual BMP Implementation Plans, the named parties have the option of choosing voluntary measures, such as education, outreach, green boater certification programs, and incentives, especially in early stages of the TMDL, while in later stages the inclusion of mandatory measures, such as Port-issued policies, and Regional Board-issued regulations and orders, may be required to meet final loading reduction targets. The decision to incorporate more prescriptive BMPs will be based on individual and collaborative effectiveness assessments, including the results of tracking and monitoring programs.

Table 3-6. Updated San Diego Bay Watershed Activity Implementation Schedule.

San Diego Bay Watershed	Hydrologic Area									Pollutants												
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	FY 2007-2008	FY 2008-2009	FY 2009-2010
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																						
Trash and Debris Related Activities																						
Pet Waste Bag Collaborative Watershed Activity (SDB-001)	X	X		X			X	X	X	●				●						I	I	I
Storm Drain Litter Control Techniques Collaborative Watershed Activity (SDB-002a)		X	X	X														●	●	I	Completed	
Storm Drain Litter Control Techniques Collaborative Watershed Activity – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (SDB-002b)		X	X	X														●	●	P	P	I
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)	X	X	X	X			X						●					●	●	I	I	I
San Diego Bay Cleanup Events Collaborative Activity (SDB-004)		X	X	X			X	X											●	I	I	I
Clean Community Program (SDB-005)			X							●		●							●	I	I	I
Trash Containment Boom Cleaning Agreement with US Navy (SDB-006)		X	X							●									●	I	I	Completed
Chollas Creek Family Stream Team Initiative Partnership (SDB-051)		X											●						●	P	I	I/A
Enhanced Inspection Activities																						
Additional Dry Season Construction Inspections (SDB-007)			X	X														●	●	I	I	I
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)		X											●							P	I	I
Enhanced Construction Oversight (SDB-009)		X																●		I	I	I
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)			X	X						●			●				●			I	I	A
Targeted Municipal Facility Inspections (SDB-036)		X								●			●	●						I	Discontinued	
Large Special Event Inspection and Cleanup (SDB-047)							X			●										I	I	A
Outdoor Special Event Oversight (SDB-048)		X																	●	I	I	I
Targeted Special Studies																						
Chollas Creek Water Quality Protection & Habitat Enhancement Project (SDB-011)		X								●	●	●	●	●	●	●	●	●		I	Completed	
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)	X	X	X	X				X		●				●	●		●	●		P	I	I/A
Dalbergia "Green Mall" Infiltration Retrofit Project (SDB-013)		X								●			●							P	P	P
Southcrest Park "Green Lot" Infiltration Project (SDB-014)		X								●			●							P	P	P
Memorial Park "Green Lot" Infiltration Retrofit Activity (SDB-015)		X								●			●							P	P	P
Treatment Control BMP Pilot Projects (SDB-034)		X											●							P	P	I/A
43rd and Logan Biofiltration Project for Chollas Creek Watershed Protection (SDB-037)		X								●			●							P	P	I
Maple Canyon Water Quality Improvement (SDB-049)		X								●								●	●	P	P	P
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)		X											●							P	I	A
Other Water Quality Activities																						
Shelter Island Yacht Basin Dissolved Copper TMDL (SDB-016)	X												●							Activity Summary sheets will no longer be submitted for TMDL efforts will now be discussed in Sections 3 and 4.		
Chollas - Switzer - Paleta Creek Mouths TMDL (SDB-017)	X	X											●			●						
Chollas Creek Diazinon TMDL (SDB-018)	X	X															●					
Chollas Creek Dissolved Metals TMDL (SDB-019)		X											●									
Update Recycling and Solid Waste Planning Manual (SDB-035)				X				X	X	●				●					●	P	I	I
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●	I	I	I
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	I	I	I

Table 3-6. Updated San Diego Bay Watershed Activity Implementation Schedule.

San Diego Bay Watershed	Hydrologic Area									Pollutants												
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	FY 2007-2008	FY 2008-2009	FY 2009-2010
Palm Avenue Stormwater Diverter (SDB-052)							X			●			●	●			●	●		P	I	A
Stormwater Quality Master Plans for Special Drainage Fee Areas (SDB-056)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●	P	P	I
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																						
Enhanced Dry Weather Monitoring Program (SDB-020)		X								●	●	●	●	●	●	●	●	●	●	I	I	I
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								●			●	●		●	●	●	●	I	I	I
La Mesa Additional Water Quality Monitoring Program (SDB-022)		X								●	●	●	●	●	●	●	●	●		I	I	A
BMP Effectiveness Monitoring Program (SDB-023)		X										●	●		●			●		I	I	I
Dry Weather Aerial Deposition Study – Phase I (SDB-024a)		X											●					●		I	Completed	
Dry Weather Aerial Deposition Study – Phase II (SDB-024b)		X											●					●		P	I	I
Dry Weather Aerial Deposition Study – Phase III (SDB-024c)		X											●					●		P	I	I
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X			●	●	●	●	●	●	●	●	●		I	I	I
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (SDB-026)		X								●								●		I	Completed	
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (SDB-027)		X								●										I	I	I
Shelter Island TMDL Urban Runoff Monitoring Study (SDB-053)	X												●							P	I	I
Switzer Creek Pesticide Source Monitoring Study (SDB-054)		X															●			P	I	I
Water Quality Monitoring at Additional Mass Loading Stations (SDB-057)					X	X			X	●	●	●	●	●		●	●	●		P	I	Completed
EDUCATIONAL ACTIVITIES																						
Storm Drain Stenciling (SDB-028)				X				X	X	●	●	●	●	●	●	●	●	●	●	P	I/A	A
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	●		●							●	P/I	I	I
Outdoor Transit Shelters and Billboards Advertisements (SDB-030)	X	X	X	X				X	X	●									●	P/I	I	Completed
Mobile Advertising (SDB-031)	X	X	X	X				X	X	●		●	●		●		●	●	●	P/I	I/A	Discont.
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	●		●	●						●	P	I	I
City of Coronado Fire Department Open House (SDB-033)							X			●	●	●	●	●	●	●	●	●	●	I	I	I
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	●										P	I	I
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	●										P	I	I
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	●					●					P	I	A
La Mesa Park Kiosk (SDB-042)		X								●			●				●			I	I	I
LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	P	I/A	Completed
ILACSD Elementary School Watershed Presentations (SDB-044)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	P	I	Completed
ILACSD High School Watershed Presentations (SDB-045)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	-	P	I
San Diego Bay Watershed Brochure (SDB-055)	X	X	X	X				X	X	●	●	●	●	●	●	●	●	●	●	-	P	I

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Section 4: Effectiveness Assessment

An effectiveness assessment is an integral part of WURMP implementation because it helps determine whether receiving water quality improvements can be associated with WURMP activities. It also enhances program planning by providing feedback on activities and strategies, and by identifying program areas needing improvement. The following section presents the mechanisms used by the San Diego Bay Copermittees to assess the effectiveness of the WURMP as required by Section J.1.b. of the Municipal Permit and describes the results of this assessment.

Effective implementation of the WURMP is dependent on the establishment of comprehensive and program-wide goals as well as objectives and tasks. The 2008 San Diego Bay WURMP specifies four overarching management questions that are the cornerstone of the San Diego Bay Copermittees' programmatic assessment. The questions below are designed to assist in evaluating the activities in order to conduct a comprehensive WURMP assessment.

1. Are the San Diego Bay Copermittees making progress towards achieving their program goals and objectives in a way that maximizes resources, is cost effective, and achieves the maximum water quality benefit possible?
2. How well have the San Diego Bay Copermittees maximized the effectiveness of individual activities?
3. Are the San Diego Bay Copermittees effectively targeting identified pollutant sources of high priority water quality problems?
4. Are the San Diego Bay Copermittees observing an improvement in the water quality – both urban and receiving waters – of the WMA as shown through water quality assessments?

These management questions enable the San Diego Bay Copermittees to explore, in detail, the effectiveness of programs and activities implemented within the San Diego Bay WMA. For this annual San Diego Bay WURMP assessment, the San Diego Bay Copermittees addressed the management questions to the best extent possible. The assessment verified that the Copermittees have achieved compliance with the Permit and are continuing to work towards attaining the long-term goal of decreasing the sources and reducing the discharge of pollutants from the MS4. The following sections summarize WURMP activities and evaluate progress of the San Diego Bay WURMP toward meeting Target Outcome Levels One through Six.

4.1 Assessment of Overall WURMP Effectiveness

4.1.1 *Integrated WURMP Activities Assessment*

In accordance with the San Diego Bay WURMP document, Copermittees selected activities and the associated effectiveness assessment mechanisms to implement in their individual jurisdictions while working within the collective goals of the WURMP. The activities and their assessments vary from one activity to another based on the identified targeted outcomes applicable to each activity, the pollutant(s), pollutant source addressed, and the HA in which it is located. The goals and objectives of the individual activities ensure individual accountability, provide direction, and allow for meaningful assessment. In this section, the San Diego Bay Copermittees assess whether they were able to maximize the effectiveness of these individual activities on a watershed level.

The Copermittees measured the effectiveness of the watershed activities as a whole by compiling the data and detailed information from each individual activity's assessment, or at a programmatic level to present a comprehensive assessment of activities. By thoroughly evaluating the activities, their relevance to each other and to the high priority water quality problems and their sources, the Copermittees were able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary. The Copermittees not only evaluated the effectiveness of each individual activity implemented during the reporting period, but also evaluated how the activities contributed to the success of the overall program effectiveness.

The process provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. By compiling this data in one place, the Copermittees have the opportunity to access multiple activities and their potential applicability for watershed-wide implementation. This resource can then be shared with other watersheds and jurisdictions to improve programming on a regional basis and further increase the list of BMPs. Sharing the evaluation methods will also help watershed workgroups and jurisdictions improve and enhance their programs. The collaborative and group assessment of the activities also encourages Targeted Special Studies and comprehensive thinking when planning future cooperative activities.

The San Diego Bay Copermittees have been successful in implementing watershed water quality and education activities that resulted in increased awareness and change in behavior, reduced discharge loads, abatement of potential sources, and other quantifiable benefits to receiving water quality during this reporting period. As discussed in Section 3.1 and 3.2, each Copermittee determined the appropriate assessment mechanisms for each of its implemented activities and determined if the effectiveness of the activities have been maximized when possible. Table 4-1 presents each individual watershed activity's effectiveness assessment mechanisms and identifies whether or not the activities were effective and contributed to the success of the overall program. The Copermittees' assessments of the individual activities

indicate nearly all of the water quality activities were able to achieve the stated goals and were effective in obtaining changes in awareness/behavior and/or load reduction/source abatement. Copermittees were able to show their activities were effectively addressing high priority water quality problems by providing assessment data for 12 water quality activities.

It should be noted there were watershed activities implemented that did not have all of the listed assessment mechanisms completed during this reporting period, and effectiveness has not yet been determined. Though considerable resources may be directed to these activities, effectiveness assessments are not yet available for a number of reasons, such as delays in planning/development of an activity or since the activity is still in progress. For example, the Family Stream Team Initiative (SDB-051) held refuse collection events during this reporting year which resulted in load reductions of trash, but the activity is on-going and is scheduled for completion in FY 2009-2010. In addition, assessment was not completed during this reporting period for the Targeted Special Studies (SDB-012, SDB-013, SDB-014, SDB-015, SDB-037, SDB-049, and SDB-050) because the activities were either in planning/design stage or the assessment may be in progress. Please refer to the activity summary sheets in Appendix D-1 for detailed analysis of progress to date for these activities.

Table 4-1. Watershed Activity Assessment.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
Trash and Debris Related Activities					
SDB-001	Pet Waste Bag Programs	Level 3 and 4	Quantity of bags removed or new dispensers added	Yes	Estimated quantity of bags used (approximately 518,327 bags) while the Airport Authority estimated 172 lbs of waste or approximately $1.8x10^{12}$ fecal coliform bacteria pollutant load reduction. The County of San Diego estimated a removal of approximately 10,568 lbs. of waste
SDB-003	Enhanced Street Sweeping	Level 4	Amount of debris collected and curb miles covered	Yes	1,353 tons of debris, 25,692 curb miles, 2,554 broom miles. Special study to determine optimal frequency is ongoing.
SDB-004	Cleanup Activities	Level 3 and 4	Amount of trash and number of people	Yes	Recorded amount of trash (530 tons) and number of people (Approximately 5,696 participants).
SDB-005	Clean Community Program	Level 3 and 4	Amount of trash collected, number of volunteers, contest participation	Yes	118 volunteers removed 4,598 pounds of trash and debris from waterway banks. 43 third grade classrooms participated in a storm water art contest for the 2010 Storm Water Calendar and 5,740 calendars (2009) were distributed.
SDB-006	Trash Containment Boom Cleaning	Level 4	Inspections, quantification, monitoring, tabulation, reporting	Yes	9 tons of trash and debris removed
SDB-051	Family Stream Team Initiative Partnership	Level 4	Amount of trash and non-native vegetation collected, number of flyers distributed, observable changes in debris within creek, number of participants involved	No	Activity is still in progress. Effectiveness assessment has not been completed. To date, approximately 90 tons of debris was collected during 5 events. Approximately 12 tons of non-native vegetation removed. 1,750 flyers distributed.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
Enhanced Inspection Activities					
SDB-007	Additional Dry Season Construction Inspections	Level 3	Implementation rates, increase inspection frequencies	Yes	Completed 19 routine inspections. Helped contractors stay vigilant about implementing BMPs, especially near the end of dry season. BMP deficiencies noted during the dry season inspections were resolved during the first inspection of the wet season.
SDB-008	San Diego Bay Watershed Targeted Facility Inspections -Automotive Facilities	Level 3 and 4	Achieve greater BMP implementation rates from optimized inspection rates. Inspections, quantification, monitoring, tabulation, reporting	Yes	191 inspections at 21 locations immediate corrective actions/source abatement were taken.
SDB-009	Enhanced Construction Oversight	Level 3 and 4	Track number of meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, number of sediment source control BMP issues identified during inspections, estimate the annual sediment pollutant load abated	Yes	Attended 181 meetings, performed 96 more inspections than required by the permit, approximately 1 out of 4 inspections identified sediment source control BMP issues, was able to estimate annual sediment pollutant load reduction as approximately 22 tons.
SDB-010	Business Supplemental Watershed Questionnaire	Level 2	Compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach.	Yes	14% of respondents in 2008/2009 did not know where storm water runoff goes, and 4 percent thought that the water was directed to a treatment facility. Inspectors provided verbal explanations and education about storm water issues and BMPs to individuals during inspections.
SDB-047	Large Special Events Education, Inspections, and Cleanup	Level 3 and 4	Amount of trash and education efforts	Yes	Debris was collected and quantified. BMP information provided to street venders and follow up inspections verified BMP implementation.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-048	Outdoor Special Event Oversight	Levels 3 and 4	Track the number of outdoor special events, track the number of pre-event meetings attended, the number of pre- and post-event site inspections conducted, and the number of trash source control BMP issues identified during the inspections. estimate the annual trash pollutant load abated	Yes	1 outdoor special event, 1 pre event meeting was attended, 1 pre event inspection was conducted, 2 post event inspections were conducted, 0 trash source control BMP issues were identified. No estimate of pollutant load could be completed. For this activity we are currently reaching level 3.
Other Water Quality Activities					
SDB-046	Land Acquisitions – San Diego Bay Watershed	Level 3 and 4	Tracking the number and total acreage of land acquisitions within the watershed on an annual basis	Yes	Acquired 3 properties (385.38 acres) which precludes development from occurring and allows land to retain its natural perviousness, avoiding entirely the introduction of pollutant-generating activities.
SDB-052	Palm Ave Urban Runoff Diverter	Level 4 and 5	Weekly post construction bacterial monitoring and flow analysis	No	Efforts on measuring the effectiveness are currently under way. During the first 6 months of monitoring, 192,000 gallons of urban runoff was diverted into the sanitary sewer. Results from the weekly bacterial analysis also revealed elevated levels of bacteria in the diverted flows. Compared to AB411 monitoring action levels, 85% of the samples were in exceedance of *enterococcus* and 100% of the samples were in exceedance of total coli form bacteria.
Watershed Education Activities					
SDB-028	Storm Drain Stenciling	Level 2	Number of pedestrians who pass these stencils	Yes	Thousands of pedestrians pass these stencils on an annual basis
SDB-029	Public Service Announcements: Karma/Karma Second Chance	Level 2 and 3	Surveys, number of impressions	Yes	4,771,328 impressions. Survey indicated 44% change in knowledge or attitude. Survey also showed 29% of residents reported making a change in behavior as a result of seeing what runoff does to local waterways.
SDB-030	Outdoor Billboards/Transit Shelters	Level 2	Surveys, number of impressions	No	Activity demonstrated a lack of effectiveness of increased awareness of storm water issues.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-031	Mobile Advertising	Level 2	Surveys, number of impressions	Yes	69,153 impressions. Survey indicated 44% change in knowledge or attitude, though survey also indicated that only 17% of the public reported being aware of storm water issues through Mobile Advertising. Therefore, it was determined that this activity is not effective enough to continue to implement.
SDB-039	Provide Homeowner's Association Education about Pet Waste Disposal	Level 2	Number of homeowners and HOAs reached through education efforts	No	Assessment will be conducted in Year 5 of the Permit Cycle FY08-09 – wrote article for HOA magazine with the circulation of 20,000
SDB-040	Storm Water Education Booth at Annual Pet Festival and Doggy Dash	Level 3	Surveyed pet owners who pick up after their pets	Yes	89 surveys completed, 80% of pet owners use a plastic bag to pick up their pet's waste
SDB-041	Fats, Oils and Grease (FOG) Program	Level 1	Number of restaurants surveyed	No	Education assessment will conducted in the FY09-10; 216 surveys completed
SDB-042	Park Kiosk	Level 2	Increased awareness of watershed problems and pollution prevention methods.	Yes	Kiosk was maintained and kept with up to date information. No other assessment data is available.
SDB-043	LID and Watershed Planning Education for Community Planning and Sponsor Groups	Level 2 and 3	Number of presentations conducted; number of participants; number and type of materials distributed	Yes	Seven surveys distributed to 128 participants; 22.86% increase in knowledge.
SDB-044	ILACSD Elementary School Watershed Presentations (SDB-044)	Level 2 and 3	Number of students, Pre-and post-tests	Yes	474 students, Pre- and post-test indicated an average of 14% change in knowledge or attitude.

4.1.2 *HA Assessment*

The San Diego Bay Copermittees assessed how well the activities targeted the high priority water quality problems and their sources on a HA level. The Copermittees assessed activities occurring within each HA in order to determine the collective impact the activities have on the targeted high priority pollutants and/or pollutant sources. Table 4-2 presents the water quality activities occurring in each HA, the pollutants each activity addresses, and how the activity fits in with the overall Watershed Strategy set forth in the 2008 San Diego Bay WURMP document. This evaluation revealed whether the San Diego Bay Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting potential pollutant sources in each HA during this reporting period.

Evaluation at an HA level provided an assessment of the effectiveness of the San Diego Bay Copermittees' collective efforts for a number of the activities that were implemented across several HAs. These activities presented universal solutions to address high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern, allowing for greater flexibility for each of the Copermittees to participate in coordinated watershed activities. Each of these activities collected similar data to show how these programs were effective at both the HA and WMA level. These activities can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. During the previous reporting period, the Copermittees identified and implemented four collaborative water quality activities which occurred across multiple HAs, including Pet Waste Bags (SDB-001), Storm Drain Litter Control Techniques (SDB-002), Enhanced Street Sweeping (SDB-003), and Cleanups (SDB-004). The Copermittees continued the implementation of Pet Waste Bags (SDB-001), Enhanced Street Sweeping (SDB-003), and Cleanups (SDB-004) during FY 2009.

The San Diego Bay Copermittees may implement different approaches or activities which result in addressing the same pollutant of concern and/or pollutant sources in a HA. In particular, Copermittees addressed bacteria on a watershed scale by implementing activities targeting various pollutant sources in all HAs. The combined effect results in a greater impact on the targeted high priority water quality problems and positively influences the effectiveness and efficiency of the San Diego Bay WURMP. Notably, trash is being addressed through such activities as Enhanced Street Sweeping (SDB-003), Cleanup Events (SDB-004), and Family Stream Team Initiative (SDB-051). These activities directly address the RWQCB 13267 Order requiring cities along Chollas and Paleta Creeks to establish trash cleanup measures and implement programs to address trash and other pollutants.

4.1.2.1 *Pueblo San Diego HU (908)*

The Pueblo San Diego Watershed is the smallest HU in San Diego County, encompassing approximately 60 square miles of predominantly urban landscape. The watershed drainage consists of a group of relatively small local creeks and pipe conveyances, many of which are

concrete-lined and drain directly into San Diego Bay. The creeks in the watershed are highly impacted by urban runoff, with two TMDLs adopted (Dissolved Metals and Diazinon) for Chollas Creek in particular.

4.1.2.1.1 *Point Loma HA (908.1)*

The high priority water quality problems in the Point Loma HA are Bacteria, Gross Pollutants, Metals, Oil and Grease, and Pesticides. Activities were implemented that effectively targeted a variety of sources of high priority pollutants. Potential pollutant sources in the Point Loma HA include those related to residential areas, streets and roadways, or commercial business, schools, and public facilities.

Copermittees implemented two water quality activities in the Point Loma HA during FY 2009 that effectively addressed high priority water quality problems. The Pet Waste Bag Collaborative Watershed Activity (SDB-001) targeted a specific source of bacteria within residential and park areas and is believed to be effective in abating this source. Enhanced Street Sweeping (SDB-003) in this HA was also implemented to address load reductions of gross pollutants, metals, and oil and grease into the MS4 from streets and roadways. A variety of other pollutants are known to be associated with sediment, such as bacteria, may also be reduced. Load reductions have been assessed through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Copermittees implemented three monitoring and source identification studies in this HA to supplement MS4 and CSDM monitoring in the HA. Copermittees implemented the RHMP, Coordinated Dry Weather Monitoring, and SIYB Urban Runoff Monitoring Study to evaluate receiving water quality and provide additional information on sources of high priority water quality problems.

An effective watershed education activity implemented at the watershed-level during FY 2009 that was applicable to this HA was the Public Service Announcements (SDB-029). Assessment surveys associated with the Public Service Announcements indicated a 44% change in knowledge watershed-wide, indicating the activity has a positive effective by increasing knowledge and changing behavior in the community, which will likely lessen the their impacts on water quality. While portions of this survey were conducted in this HA, enhanced assessment at the HA level was not completed.

4.1.2.1.2 *San Diego Mesa HA (908.2)*

The San Diego Mesa HA is a heavily urbanized watershed, and includes the Chollas Creek HSA (908.22). The high priority water quality problems in the San Diego Mesa HA are Bacteria, Metals, Sediment, Trash, and Pesticides. Prominent land uses which may contribute to high priority water quality problems in the HA include residential, streets and roadways, and commercial/industrial businesses. Other land uses in the HA include schools, parks, and public facilities. Copermittees have implemented a number of activities that target sources of high priority water quality problems in the HA during this reporting year. Many of these activities

have also been identified to be applicable in addressing the Chollas Creek Dissolved Metals and Diazinon TMDLs.

Copermittees implemented eight water quality activities in this HA that effectively addressed the high priority pollutants. Enhanced Inspection activities such as Targeted Automotive Inspections (SDB-008), Outdoor Special Event Oversight (SDB-048), and Enhanced Construction Oversight (SDB-009) have been identified as effective in abating the sources of high priority water quality problems in this HA. The activities identified specific sources of metals, trash, or sediment and ensured proper BMP implementation in order to effectively reduce sediment loading into the MS4 (Level Four Outcome). For example, there is evidence of reduced erosion and sediment capture on construction sites as a result of the BMPs, although this has not been quantified. Heightened awareness of proper BMP implementation increases the likelihood of BMP effectiveness, which in turn helps to abate the amount of pollutant loading to San Diego Bay. The Enhanced Street Sweeping Activity (SDB-003) may have beneficial effects by reducing the loading of pollutants such as sediment, metals, and trash that are discharged to MS4s. In addition, the Targeted Aggressive Street Sweeping Project (SDB-003) was implemented in this HA to determine the optimal street sweeping frequencies and sweeper machinery. Specifically, the pilot study is investigating the effectiveness of using vacuum-assisted street sweepers in place of conventional mechanical sweepers and increasing sweeping frequencies to reduce the accumulation of debris containing metals on streets and roadways.

The Copermitttees implemented four load reduction/source abatement activities to address trash and debris related sources: Pet Waste Bag (SDB-001), Cleanups (SDB-004), Trash Containment Boom Cleaning (SDB-006) and Family Stream Team Initiative (SDB-051). The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within areas such as residential areas and parks. Cleanup events and similar trash related activities aided in the physical removal of a quantifiable amount of trash from the watershed. Because the accumulation of trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water, it may be assumed that these impairments may be indirectly reduced through the cleanups, though this has not been quantified.

A number of activities have been identified by Copermittees to address the Chollas Creek Dissolved Metals and Diazinon TMDLs, as discussed in Section 3.5.3 and Section 4.2. In the 908.22 HSA, Named Dischargers implemented 51 activities, including water quality, education, and ongoing agency-wide activities, in FY 2009 to address the identified high priority water quality problems. A comprehensive assessment of the activities identified in the TMDL Implementation Plan will be discussed in Section 4.2.1.

The Copermittees implemented education activities in this HA that were found to be effective in increasing awareness and knowledge. As discussed in Section 4.1.2.1.1, the Public Service Announcement (SDB-029) activity was also conducted in this HA. The ILACSD Elementary

School Presentations (SDB-044) provided watershed focused pollution prevention information to 5th and 6th grade elementary students at two elementary/middle schools and one high school in this HA during this reporting year. Assessment of the activity indicated an average increase of 14% change in knowledge and attitude as a result of the presentations.

As noted in Section 2.2, water quality data was collected primarily within the San Diego Mesa HA within the Chollas Creek HSA (908.22). Copermittees implemented a number of monitoring and source identification studies in this HU in addition to the regional Receiving Waters and Urban Runoff Monitoring Program, following management actions identified in the San Diego Bay WURMP Watershed Strategy. These activities are necessary to fill data gaps before implementation of a load reduction activity can occur or to identify the appropriate focus of resources. Copermittees successfully collected data from 9 urban runoff source identification activities within this HU. In addition, the RHMP will provide data useful in long trend analysis of receiving water condition, as discussed in Section 2. Data resulting from this monitoring will enable the Copermittees to make more informed decisions on the BMP implementation that targets high priority pollutants in the future.

4.1.2.1.3 *National City HA (908.3)*

Activities were implemented that effectively targeted a variety of sources of bacteria, sediment and trash from prominent land uses such as residential, streets and roadways, open space and parks, and commercial/industrial businesses. Copermittees implemented six effective water quality activities in the National City HA during FY 2009.

Copermitttees implemented three load reduction/source abatement activities to address trash in this HA. Because trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water, it may be assumed that these activities also result in bacteria load reductions. The Copermittees also effectively addressed two different sources of sediment (construction and streets and roadways) during this reporting year. Copermittees participating in the Enhanced Street Sweeping Activity (SDB-003) increased the frequency of sweeping relative to JURMP requirements, effectively reducing the loading of sediment into the MS4. In addition, Additional Dry Season Construction Inspections (SDB-007) reduced sediment and trash runoff by promoting proper BMP implementation at construction sites during the dry season and helping construction sites prepare for the upcoming wet season. It was determined that most of these inspections helped contractors stay vigilant about implementing BMPs during the dry season and helpful toward the end of the dry season, when responsible parties are reminded of applicable wet season requirements.

Five education activities were implemented which effectively targeted a variety of audiences in this HA during this reporting year. As discussed in Section 4.1.2.1.1, the Public Service Announcement (SDB-029) activity was also conducted in this HA. The activity has a positive effect by increasing knowledge and changing behavior in the community, which will likely lessen

their impacts on water quality. While portions of this watershed-wide survey were conducted in this HA, enhanced assessment at the HA level was not completed.

4.1.2.2 *Sweetwater HU (909)*

Water quality assessment of the Sweetwater HU indicated there have not been any significant changes to the COCs identified for HU during this reporting year. Though monitoring results are consistent with the BLTEA priority ratings for bacteria in the Lower Sweetwater HA (909.1), the results are not supportive of the A rating for pesticides in the Middle Sweetwater HA (909.2).

The Upper Sweetwater HA contains large undeveloped areas within the Cleveland National Forest and Cuyamaca Rancho State Park, the unincorporated communities of Pine Valley, Descanso, and Alpine, and the Viejas Indian Reservation. Unincorporated rural and suburban communities characterize the Middle Sweetwater HA. The lower portion of the Sweetwater Watershed, the Lower Sweetwater HA is the most urbanized. Copermittees implemented activities to address a variety of the high priority pollutant sources, as well as monitoring to help guide the selection and implementation of future watershed activities in this HU as part of the San Diego Bay WURMP.

4.1.2.2.1 *Lower Sweetwater HA (909.1)*

The Lower Sweetwater HA is the most urbanized area of the Sweetwater HU and land use consist primarily of residential, streets and roadways, open space, with the remaining area consisting of a mixture of commercial/industrial businesses, schools and undeveloped land use. The high priority water quality problem in the Lower Sweetwater HA is Bacteria. Residential sources of bacteria include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, trash, and pet waste. Copermittees implemented seven effective water quality activities in the Lower Sweetwater HA during FY 2009. The Pet Waste Bag Activity (SDB-001) was effective in targeting and abating a source of bacteria within areas such as residential areas and parks. Copermitttees implemented Cleanup Events (SDB-004) to address trash from a number of areas in this HA. Trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water. Although monitoring to quantify the expected reductions has not been performed, it may be assumed that these activities also result in bacteria load reductions.

Copermittees effectively targeted a variety of audiences by implementing watershed education activities in the Lower Sweetwater HA. As discussed in Section 4.1.2.1.1, the Public Service Announcement (SDB-029) was also conducted in this HA. In addition, the ILACSD Elementary School Presentations (SDB-044) given to 6th graders at Rancho de la Nacion in National City indicated an average increase of 14% change in knowledge and attitude as a result of the activity.

4.1.2.2.2 *Middle Sweetwater HA (909.2)*

The Middle Sweetwater HA consists primarily of open space and undeveloped land, approximately 63% of the land use, while the rest of the HA is mostly residential use and commercial/industrial and streets and roadway land use. The high priority water quality problem in the Middle Sweetwater HA is Pesticides. There was one water quality activity implemented in this HA during FY 2009. The Land Acquisition Activity (SDB-046) precludes development from occurring and allows land to retain its natural perviousness. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed. Watershed educational efforts to increase awareness of pesticide use issues include the LID and Watershed Planning Education for Community Planning and Sponsor Groups Activity (SDB-043). Surveys indicated there was a 23% increase in knowledge as a result of this activity. Additionally, Copermittees distributed Integrated Pest Management (IPM) program information to residents and businesses.

Additional monitoring and source identification was identified in the Watershed Strategy as an important step in identifying appropriate BMP implementation due to limited data availability. The Water Quality Monitoring at Additional Mass Loading Stations monitoring activity (SDB-057) was implemented to characterize water quality conditions within this HA and fill data gaps. The monitoring results indicated all detections of pesticides were below WQOs. Diazinon and Chlorpyrifos were virtually non-detect in dry weather samples, while Malathion was only detected during wet weather sampling.

4.1.2.2.3 *Upper Sweetwater HA (909.3)*

The Upper Sweetwater HA consists primarily of open space and undeveloped land, or approximately 82% of the land use, while the rest of the HA is mostly residential use and agriculture. Although no pollutant category was classified as high priority in this HA, one water quality activity, the Land Acquisition Activity (SDB-046), was implemented in the Upper Sweetwater HA which directly addressed the prominent land use in this HA. The LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043) was an effective education activity implemented in this HA. Survey results indicated approximately 23% increase in knowledge and attitude as a result of the activity. Additional monitoring and source identification was identified in the Watershed Strategy as an important step in identifying appropriate BMP implementation due to limited data availability. The Water Quality Monitoring at Additional Mass Loading Stations monitoring activity (SDB-057) was implemented to characterize water quality conditions within this HA and fill data gaps.

4.1.2.3 *Otay HU (910)*

The *Basin Plan* identifies the Otay HU as the second largest of the three HUs in the San Diego Bay WMA and is one of the least populated watersheds in the San Diego County. As stated in Section 2.5.3, elevated concentrations of indicator bacteria have been detected within MS4

during urban runoff monitoring from various locations in the Coronado HA and Otay Valley HA. This result supports the BLTEA high priority (A) rating for bacteria in the two HAs.

4.1.2.3.1 *Coronado HA (910.1)*

There were five water quality activities implemented in the Otay HA during FY 2009 which effectively addressed bacteria and gross pollutants from a variety of land use sources. Land use in Otay HA consists primarily of residential, streets and roadways, commercial/industrial, and parks. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas and parks. Cleanup events (SDB-004) occurred in this HA throughout the reporting period that not only effectively remove trash, but could potentially be removing bacteria and other pollutants associated with various categories of trash and debris. The Large Special Event Activity (SDB-047) was effective in enhancing recycling efforts and verifying the implementation of BMPs by vendors through inspections, potentially leading to lower levels of bacteria and trash reaching the MS4.

The Palm Ave Stormwater Diverter (SDB-052) implemented in this HA will contribute to bacteria load reductions by diverting nuisance storm drain flows to the sanitary sewer system. The inlets drain approximately 72.1 acres of residential and light commercial land uses. As such, it would eliminate one potential source of bacteria during dry weather and other low-flow conditions. During the first 6 months of monitoring, 192,000 gallons of urban runoff wad diverted into the sanitary sewer and prevented from flowing to the receiving waters. There was one watershed education activity implemented in the Coronado HA during FY 2009. The ILACSD Elementary School Presentations (SDB-044) provided watershed focused pollution prevention information to 5th and 6th grade elementary students at three schools in 910.1 HA during this reporting year. Assessment of the activity indicated an average increase of 14% change in knowledge and attitude as a result of the presentations.

4.1.2.3.2 *Otay HA (910.2)*

There were four water quality activities implemented in the Otay HA during FY 2009 which effectively addressed bacteria and other high priority pollutants. Land use in Otay HA consists primarily of open space and undeveloped land, or approximately 49% of the land use, while residential, streets and roadways and commercial uses. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas, as well as open spaces. Cleanup events (SDB-004), such as the Home Front Cleanup or the Beautify Chula Vista Cleanup, occurred in this HA during this reporting period. A source abatement measure includes the Updating the Recycling and Solid Waste Ordinance (SDB-035), targets residential and commercial pollutant sources. The ordinance requires that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas.

There were five education activities implemented in this HA during this reporting year which effectively targeted a variety of audiences. As discussed in Section 4.1.2.1.1, the Public Service Announcements (SDB-029) was also conducted in this HA. As part of the ILACSD Elementary School Presentations (SDB-044) activity, the City of Chula Vista sponsored a more extensive four-day after school program called South Bay Water Warriors. Assessment indicated an average increase of 67% change in knowledge and attitude as a result of the after school program.

4.1.2.3.3 *Dulzura HA (910.3)*

The Dulzura HA consists primarily of open space and undeveloped land, or approximately 85% of the land use, while residential and commercial uses comprise nearly 15%. Although no pollutant category was classified as high priority in this HA, there were four water quality activities implemented during FY 2009 which effectively addressed potential sources within these land uses. The Land Acquisition Activity (SDB-046) precludes development from occurring and allows land to retain its natural perviousness. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas, as well as open spaces. The Water Quality Monitoring at Additional Mass Loading Stations monitoring activity (SDB-057) was implemented to provide characterized water quality conditions within this HA and two other HAs and fill data gaps.

There were five education activities implemented in this HA during this reporting year which effectively targeted a variety of audiences. An effective watershed education activity implemented during FY 2009 applicable to the HA was the Public Service Announcements (SDB-029) as discussed in Section 4.1.2.1.1. In addition, the LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043) indicated approximately 23% increase in knowledge and attitude as a result of the activity.

Table 4-2. Water Quality Activities by HA.

HA	High Priority Water Quality Problems	Watershed Strategy Management Action	# of Load Reducing Activities	Load Reduction/Source Abatement Activities	# of monitoring Activities	Monitoring/Source Identification Activities
908.1	Bacteria	Additional Monitoring	1	• Pet Waste Bag Programs	2	• Coordinated Dry Weather Monitoring • RHMP
	Gross Pollutants	Additional Monitoring	0		2	• Coordinated Dry Weather Monitoring • RHMP
	Metals	Additional Monitoring	1	• Enhanced Street Sweeping	3	• Coordinated Dry Weather Monitoring • RHMP • SIYB Urban Runoff Monitoring
	Oil and Grease	Additional Monitoring	0		1	• RHMP
	Pesticides	Additional Monitoring	0		2	• Coordinated Dry Weather Monitoring • RHMP
908.2	Bacteria	Load Reductions	9	• Pet Waste Bag Programs • Trash Containment Boom Cleaning • Targeted Automotive Inspections • Dalbergia Street Green Mall Infiltration Project • Municipal Rain Barrel Installation • Southcrest Park Green Lot Infiltration Project • Memorial Park Green Lot Infiltration Project • 43rd and Logan Biofiltration Project • Maple Canyon Water Quality Improvement	6	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Water Quality Monitoring • RHMP • Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study • Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study
	Metals	Load Reductions	8	• Enhanced Street Sweeping • Targeted Auto-related Facility Inspections • Dalbergia Street Green Mall Infiltration Project • Southcrest Park Green Lot Infiltration Project • Memorial Park Green Lot Infiltration Project • Family Stream Team Initiative Partnership • 43rd and Logan Biofiltration Project • Chollas Creek Runoff Reduction and Groundwater Recharge Project	9	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring • BMP effectiveness Monitoring • Dry Weather Aerial Deposition Study Phase II • Dry Weather Aerial Deposition Study Phase III • RHMP • Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study • Switzer Creek Pesticide Source Monitoring Study
	Sediment	Source Identification	5	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Enhanced construction oversight • Municipal Rain Barrel Installation • Maple Canyon Water Quality Improvement	5	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring • BMP effectiveness Monitoring • RHMP

	High Priority Water Quality Problems	Watershed Strategy Management Action	# of Load Reducing Activities	Load Reduction/Source Abatement Activities	# of monitoring Activities	Monitoring/Source Identification Activities
908.2	Pesticides	Source Identification	1	• Municipal Rain Barrel Installation	5	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring • RHMP • Switzer Creek Pesticide Source Monitoring Study
	Trash	Load Reductions	7	• Storm Drain Litter Techniques • Enhanced Street Sweeping • Cleanup Events • Trash Containment Boom Cleaning • Family Stream Team Initiative • Outdoor Special Event Oversight • Maple Canyon Water Quality Improvement	2	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring
908.3	Bacteria	Load Reductions	3	• Clean Community • Trash Containment Boom Cleaning • Supplemental Inspection Questionnaire	1	• RHMP
	Sediment	Source Identification	3	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Additional Dry Weather Inspections	1	• RHMP
	Trash	Load Reductions	6	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Cleanup Events • Clean Community • Trash Containment Boom Cleaning • Additional Dry Weather Inspections	0	
909.1	Bacteria	Load Reductions	2	• Pet Waste Bag Programs • Inspection Questionnaire	1	• Water Quality Monitoring at Additional Mass Loading Stations
909.2	Pesticides	Additional Monitoring	1	• Land Acquisitions	1	• Water Quality Monitoring at Additional Mass Loading Stations
910.1	Bacteria	Load Reductions	2	• Pet Waste Bag Programs • Palm Ave Stormwater Diverter	1	• RHMP
	Gross Pollutants	Source Identification	0		1	• RHMP
910.2	Bacteria	Source Identification	2	• Pet Waste Bag Programs • Update Recycling and Solid Waste Ordinance	1	• Water Quality Monitoring at Additional Mass Loading Stations

4.1.3 Targeted Outcome Assessment

In the following sections, the San Diego Bay Copermittees will assess their ability to meet Permit requirements during this reporting period. A comprehensive evaluation of the San Diego Bay WURMP program will enable the Copermittees to determine if the targeted Outcome Levels One through Six were addressed.

4.1.3.1 *Level One Outcome – Compliance with Activity-Based Permit Requirements*

A Level One assessment addresses the fundamental requirements prescribed in the Permit, including programs and activities that are intended to benefit water quality. Table 4-3 lists how the San Diego Bay Copermittees have met Level One objectives and maintained compliance with the Permit requirements.

Table 4-3. Permit Component Compliance (Level One Outcome).

Targeted Outcome	Confirmation	Report Section/Appendix
Update any watershed maps.	Completed.	1.3
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	2.1-2.4
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	2.1-2.4
Identify and describe the Watershed Water Quality Activities implemented by Copermittees during the reporting period.	Completed.	3.1
Update list of potential Watershed Water Quality Activities.	Completed.	3.5.1
Identify and describe the Watershed Education Activities implemented by Copermittees during the reporting period.	Completed.	3.2
Update list of potential Watershed Education Activities.	Completed.	3.5.1
Describe the public participation mechanisms used during the reporting period.	Completed.	3.3
A description of Copermittee collaboration efforts including meeting as the San Diego Bay WMA WURMP Workgroup.	Completed.	1.2
Describe the efforts implemented to encourage collaborative, watershed-based, land use planning.	Completed.	3.4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date, incorporating the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Completed.	3.5.3 and 4.2 Appendix E

As shown in the Table 4-1, the San Diego Bay WURMP Copermittees were in compliance with all Level One WURMP related Municipal Permit requirements during FY 2009.

4.1.3.2 *Level Two Outcome – Changes in Knowledge/Awareness and Level Three Outcome – Behavioral Change/BMP Implementation*

The Permit states that Watershed Education Activities are in active implementation phase when "changes in attitudes, knowledge, awareness, or behavior can be reasonably established in target audiences." This definition corresponds with Level Two and Three Outcomes discussed in the 2008 San Diego Bay WURMP document. In order to assess education activities, the San Diego Bay Copermittees have established and used several means, such as conducting surveys, for evaluating education program effectiveness. Data collected during this reporting year includes the amount of trash picked up at cleanup events, the number of participants, and pre- and post-tests and surveys. Through activities such as LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043) and the ILACSD School Presentations Activity (SDB-044), Copermittees effectively demonstrated a Level Two Outcome during this reporting period. In addition, Copermittees provided storm water educational materials (i.e. brochures, fliers, and various giveaways) at many events such as the Go Green and Clean Day event in Chula Vista, the San Diego Natural History Museum Water Family Days, and various cleanups. Copermittees were also involved in supplemental educational activities that provided watershed information such as posting ads on transit shelters, billboards, and mobile ads.

In addition to the watershed education activities in Table 4-2, Copermittees collected assessment data for education activities implemented as part of other urban runoff management programs (Table 4-4) during this reporting period. The assessment information can be used by the San Diego Bay Copermittees to develop a comprehensive watershed-wide evaluation of education activities which can be used as a tool for planning future education activities and events that are able to reach Level Two and Three Outcomes. Overall, the collected data shows that education activities are positively impacting the public and leading to changes in knowledge about storm water. Notably, the San Diego Bay Copermittees showed significant success in promoting positive behavior change in school children through school programs and outreach.

A significant education activity which occurred during this reporting year involved the co-sponsorship of a booth at the Enviro Fair at the San Diego County Fair. San Diego Bay Copermittees, along with other San Diego Region Copermittees, staffed the booth and distributed IPM education information. A region-wide survey was implemented as part of this activity and the detailed results will be reported in the FY 2009 Regional Urban Runoff Management Program (RURMP) Annual Report. A number of key findings were identified and included an assessment that the overall behavioral intention was high with 87% of respondents said they were "very" or "extremely" likely to take actions to prevent storm water pollution as a result of attending the event. In addition, eighty-one percent of respondents were able to list one thing that they could do to help prevent storm water pollution. Responses varied considerably, but the majority of participants named avoiding active polluting behaviors such as littering or pouring things in the streets, gutter, or storm drains.

Table 4-4. Assessment of the San Diego Bay Education Program FY 2009.

Program	Number of Events	Number of Participants	Events with Assessment Data	General Results of Assessment Data*
Presentations and Media	248	7 million + 74 mill from Coronado – Travel Channel program about beaches	108	These programs were assessed via surveys and pre- and post-tests. Overall, results show positive behavior changes and an increase in knowledge. Refer to Appendix D-1 for more information.
School Programs and Outreach	18	Approximately 62,615	9	Pre- and post-tests indicated an increase in knowledge for all events. Refer to Appendix D-1 for more information.
Partners in Clean Water	41	17,129 participants	13	Amounts of waste collected – 6,996 pounds of trash and recyclables; 89,491 pounds of E-waste; 4,558 pounds of U-waste; and 53,970 pounds poison, flammables, paint, car batteries, and aerosols
Integrated Pest Management	3	216	2	Assessment data from both events indicated that 100% of participants deemed the events to be useful. An average 92% of participants indicated that the event influenced them to make a positive environmental behavioral change by using environmentally friendly pest management.
Project Clean Water Website	N/A	5,369 web hits for San Diego Bay	N/A	N/A

* For events where data was available

Several water quality activities also demonstrated a Level Three Outcome during this reporting period. Several San Diego Bay Copermittees have enhanced their inspection programs to address and abate specific watershed concerns, such as sediment, bacteria or metals. Through the Enhanced Inspection Activities, the San Diego Bay Copermittees were able to use the inspection data to ascertain if the activity was effective in ensuring the proper BMP implementation in their jurisdictions. Routine inspections of industrial, commercial, and construction sites by the Copermittees provide a tool for assessing behavioral changes and ensuring the proper implementation of appropriate BMPs by businesses and construction site managers. Positive changes in behavior and improved BMP implementation were noted from the following activities: Additional Dry Season Construction Inspections (SDB-007), Targeted Auto Facility Inspections (SDB-008), Enhanced Construction Oversight (SDB-009), and La Mesa's Business Inspection Supplemental Questionnaire Activity (SDB-010). Site inspections

have allowed the Copermittees to assess the level of knowledge these businesses and construction site managers have with respect to storm water pollution prevention. Additional information on these inspection activities is presented in Section 3 and Appendix D-1 of this Annual Report.

Public participation in the trash and debris related activities such as the San Diego Bay WURMP sponsored Creek to Bay Cleanup event, indicate not only a change in awareness within the community of how to properly dispose of trash by the individuals involved but a change in behavior that will continue into the future. Approximately 5,790 people participated in cleanups throughout the San Diego Bay WMA in FY 2009. The number of people using publicly available HHW collection facilities located within the San Diego Bay WMA and the amount of waste collected at these facilities provides another tool to assess behavioral change and proper BMP implementation. The amount of HHW collected represents a quantity of potential storm water pollutants from residential areas that have been captured and removed from the waste stream. Data collected from San Diego Bay Copermittees shows that approximately 6,500 individuals made use of HHW collection facilities in the San Diego Bay WMA and disposed of approximately 353 tons of HHW during FY 2009[1].

The Pet Waste Bag activity was also successful at meeting a Level Three Outcome. The increased use of pet waste bags by pet owners is another example of positive behavioral change and the implementation of appropriate BMPs. The San Diego Bay Copermittees provided pet waste bags at various public locations, typically parks and public walkways. By providing pet waste bags, the San Diego Bay Copermittees have been able to increase public awareness of pet waste as a source of bacteria and increase the implementation and use of this BMP by the general public. A survey distributed at the Stormwater Education Booth at an Annual Pet Festival and Doggy Dash (SDB-040) revealed 80% of pet owners surveyed use bags to pick up after their pets. This indicates efforts to provide pet waste bags at public locations and to educate the public on the use of pet waste bags helps reduce pet waste from entering the MS4.

Based on the City of San Diego's annual random-digit dial 2009 *San Diego Storm Water Survey,* 29% of residents reported making a change in their behavior as a result of seeing information about the effects polluted water from storm drains has on local rivers, beaches and the ocean associated with the Public Service Announcements (SDB-029). Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors.

It should be noted that many of the activities focused on load reduction/source abatement also contribute to improvements in knowledge and positive behavior changes, though these improvements may not be directly measured. However, it is important to consider this when evaluating the overall effectiveness of the program. For example, Enhanced Street Sweeping (SDB-003) may indirectly improve the public's awareness through the installation of new "No

[1] HHW is collected as part of JURMP programs and not all Copermittees are able to currently estimate collection by WMA.

Parking" signs in neighborhoods, resulting in public inquiry and media attention to understand the basis for additional street sweeping.

The San Diego Bay Copermittees feel that they are making strides towards implementing education activities that result in Level Two and Level Three Outcomes. The San Diego Bay Copermittees will continue to evaluate their education programs in order to improve public knowledge and awareness.

4.1.3.3 *Level Four Outcome – Load Reduction/Source Abatement*

In order to determine whether an activity reached a Level Four Outcome, the San Diego Bay Copermittees collected information that measured load reductions resulting from changes in behavior or BMP implementation. The San Diego Bay Copermittees have implemented water quality activities that allow for a quantification of high priority pollutants that are intercepted or prevented from entering the MS4 or receiving water in order to provide a measure of load reduction. Overall, the San Diego Bay Copermittees accomplished the goals set forth in the majority of load reduction /source abatement activities. Data was collected to show reductions of high priority pollutant loads for the Pet Waste Bag, Enhanced Street Sweeping, Trash Cleanup, and Inspection activities. In addition, Land Acquisitions (SDB-046) are effective in addressing high priority water quality problems in that this activity averts development, thereby eliminating the need for future source abatement or pollutant load reduction activities.

Individual or group-sponsored cleanup events represent another activity that significantly reduced pollutant loads within the WMA. Cleanup activities (SDB-004) conducted throughout the San Diego Bay WMA during FY 2009 removed approximately 531 tons of trash and debris from the watershed's main tributaries, tidelands, and the San Diego Bay. Approximately 35.6 tons were collected during the 2009 Creek to Bay Cleanup. This was the fifth year in a row in which the San Diego Bay Copermittees co-sponsored this cleanup event. In addition to resulting in a significant load reduction, these cleanup activities also provided an important outreach opportunity to citizens within the WMA. The San Diego Bay Copermittees will continue to conduct cleanup events in all jurisdictions.

The Enhanced Street Sweeping Activities (SDB-003) significantly reduced the amount of high priority pollutants associated with roads and parking lots entering the storm water conveyance systems throughout the WMA. For this reporting period, the San Diego Bay Copermittees removed an additional 1,383 tons of material and covered an additional 25,692 curb miles (2,554 broom miles in City of San Diego) by increasing the frequency of street sweeping beyond jurisdictional requirements. This information can be used to indicate the Copermittees are implementing activities to address pollutant load reductions within the watershed. The Targeted Aggressive Street Sweeping Pilot Project (SDB-003) began in the spring of 2008 and is anticipated to continue through the summer of 2010. The goal of this activity is to evaluate the effectiveness of new street sweeping equipment and different sweeping frequencies which may result in more efficient pollutant removal.

These activities contribute to the overall success of the WURMP program and demonstrate the Copermittees are making progress towards achieving their program goals and objectives. Based on Level Four assessment discussed above, the San Diego Bay Copermittees believe that they are making great strides towards improving water quality due to the load reductions observed, sources abated, and the knowledge gained by each Copermittee simply by implementing these activities. Through this knowledge, activities can be improved, optimized, or replaced with more efficient ones, thus leading to the most effective program in protecting and improving water quality. The Copermittees expect that future agreement and collaboration on data standards and reporting will allow for trend analyses that further describe the effectiveness of the San Diego Bay WURMP.

4.1.3.4 *Level Five Outcome – Changes in Urban Runoff and Discharge Quality*

The results from the 2008-2009 *San Diego County Municipal Copermittees Urban Runoff Monitoring Report,* as discussed in Section 2, indicate that urban runoff water quality remained similar to conditions reported in the WURMP document. Organophosphate pesticides (Diazinon, Chlorpyrifos, and Malathion) continue to be below their respective benchmarks. The continued downward trend of diazinon concentrations in storm water is a positive indication that the San Diego Bay Copermittees' current education and outreach efforts to address diazinon are adequate. The San Diego Bay Copermittees believe that overall, the concentration of diazinon will continue to decrease. Even though diazinon was banned from sales, it is possible that there are still unused products containing diazinon being stored and used by residents and businesses. As residual diazinon public supply and use is exhausted, it is possible to see transient, isolated incidents such as this. Diazinon will continue to be monitored and sampled to determine overall statistical trends.

4.1.3.5 *Level Six Outcome – Changes in Receiving Water Quality*

A Level Six assessment involves direct measurement of overall water quality in receiving water bodies and evaluates changes in water quality with respect to established regulatory benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the San Diego Regional Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. Table 2-3 outlines the water quality ratings for the San Diego Bay WMA and the individual HUs of the watershed based on data collected from 2001 to 2006 and presented in the Regional Urban Runoff Monitoring Report (Weston Solutions, 2009).

4.2 Assessment of TMDL Implementation Plan Effectiveness

There are three TMDLs adopted by the RWQCB within the San Diego Bay WMA. These TMDLs include:

- Chollas Creek Diazinon TMDL

- Chollas Creek Dissolved Metals TMDL
- Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL

A brief summary of the current status and the assessment of the Implementation Plans of each TMDL are presented below.

4.2.1 *Chollas Creek Diazinon and Dissolved Metals TMDLs*

Status

The Implementation Plan for the Chollas Creek Diazinon TMDL was completed in September 2004 and is currently being implemented. The Copermittees within the Chollas Creek HSA (a sub-watershed of the Pueblo San Diego HU (908)) continue to monitor diazinon discharges into the creek and implement an education and outreach program to raise awareness among key audiences regarding the harmful effects of pesticides on the environment. The Copermittees also continue to promote the use of Integrated Pest Management (IPM) practices to reduce pesticide loading into Chollas Creek.

The Chollas Creek Dissolved Metals TMDL took effect October 22, 2008 when it was approved as a Basin Plan Amendment by the Office of Administrative Law and subsequently approved by the Environmental Protection Agency in December 2008. As described in Section 1.1, the seven named dischargers collaborated on a multi-pollutant strategy for addressing the TMDL as well as the development of the required BMP Implementation Plan. The Implementation Plan was submitted to the Regional Board on October 21, 2009. The dischargers are currently implementing Phase I of the strategy.

Assessment

To address diazinon in FY 2009, the Copermittees continued to promote IPM through jurisdictional IPM seminars and events and through the San Diego regional IPM program. Refer to Section 3.2.1.3 and Table 3-3 of this Annual Report for more details.

A report has also been prepared on the public outreach program and the results of the water quality monitoring conducted in FY 2009. Refer to Appendix C for the complete report. Highlights demonstrating how the Copermittees successfully contributed to obtaining the TMDLs goal of reducing pesticide and metals loading into Chollas Creek through education and outreach in FY 2008-2009 include:

- IPM materials were distributed at 14 community events targeting specific audience groups.
- The Copermittees continued to work with the University of California Cooperative Extension (UCCE) to disseminate information on IPM and water quality in both English and Spanish using PSAs, tips cards, and other outreach materials.

The Copermittees continue to conduct monitoring for the Chollas Creek Diazinon TMDL. Required compliance monitoring is detailed in Appendix C, the Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Order No. R9-2004-0277 2008–2009 Water Quality Monitoring Report. In summary, exceedances for metals were observed this year and data analysis on the long-term data set at SD8(1) indicates significantly increasing trends for total and dissolved copper and zinc. The magnitude of the zinc trend is greater than for copper, but both trends are relatively shallow. Significant trends for metals were not observed at DPR2. Diazinon was not detected at either location. There are significant, observably decreasing trends for Diazinon in both the north fork and south fork of Chollas Creek since it's been banned by EPA in 2004.

Based on the monitoring results presented above, the San Diego Bay Copermittees' efforts to address diazinon through education and outreach programs are adequate for meeting the goals of the diazinon TMDL. Education and outreach programs and events for area residents and businesses should continue in order to help further reduce pesticide usage within the Chollas Creek Watershed and proactively address the observed shift in pesticide usage that has occurred in recent years toward synthetic pyrethroids.

The key objectives of the Dissolved Metals TMDL dischargers during FY 2009 included collaborating and developing the BMP Implementation Plan and establishing a consensus among stakeholders. These two objectives were accomplished in FY 2009, and the BMP Implementation Plan was submitted to the Regional Board as described above.

Though the Implementation Plan was submitted outside of this reporting period (October 2009), the dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in the TMDL compliance. The Dischargers' approach in addressing the TMDL is an integrated, multi-pollutant based approach targeting metals, trash, bacteria, and pesticides as well as other pollutants. Fifty-one activities, including water quality, education, and ongoing agency-wide activities, were implemented in FY 2009.

Activity details including information on measurable targeted outcomes (Levels 1-6), assessment measures and assessment methods are presented in each discharger's BMP Implementation table located in Appendix E. However, this section includes a collective summary of some notable accomplishments. Discharger activity accomplishments for FY 2009 include:

- The removal of approximately 1980 tons of trash, the removal 12 tons and 765 cubic yards of non-native vegetation from the watershed, with an estimated 500 people participating in trash and vegetation cleanups.
- Over 1900 school children were educated on urban runoff and watershed issues during class presentations and field trips. Dischargers developed outreach booths at 36 local and regional events with a combined estimated 83,000 attendees. Impressions

estimated for the Chollas Creek Watershed for public service announcements, which air regionally, include 6,702,533 through television and 9,201,893 through radio placement.

- Through over 288 commercial, industrial, and municipal facility inspections and audits, 54 deficiencies were noted leading to 54 corrective actions. Corrective actions can include, but are not limited to, stopping/cleaning an active discharge, closing/covering open trash cans, and/or covering and maintain grease bins.
- Through an aggressive street sweeping pilot project, over 2,500 broom miles were swept removing approximately 67 tons of debris. Through the sweeping of freeways twice a month, an estimated 11 cubic yards of debris was collected from 40.8 miles.
- Seven special studies and monitoring activities were conducted, a few of which will have results available next year, and two of the dischargers provided sponsorship to the Sustainable Conservation's Break Pad Partnership to address a major source of copper.

The accomplishments listed above are not comprehensive. Details regarding all the activities that were implemented and/or are planned and made progress in FY 2009 are included in each discharger's activity table included in Appendix E. It is anticipated that over time with implementation of the Dischargers' Dissolved Metals TMDL Implementation Plan, improvements to water quality will be observed. The actions that the Dischargers' have planned are anticipated to reduce pollutant loading and address pollutant sources.

4.2.2 *Shelter Island Yacht Basin Dissolved Copper TMDL*

Status

The Port of San Diego and the City of San Diego are working with the RWQCB and other local stakeholders to develop a collaborative Shelter Island Yacht Basin Dissolved Copper TMDL Implementation Plan. The goal of the Implementation Plan will be to achieve a 76% reduction in dissolved copper discharges into the Shelter Island Yacht Basin (SIYB) over the next 20 years. A kick-off meeting was held on January 21, 2009. The named parties met on three other occasions during this reporting year: March 10, 2009, May 19, 2009, and June 4, 2009.

During this reporting period, a conceptual monitoring plan for conducting compliance monitoring for the SIYB dissolved copper TMDL was under development. The purpose of compliance monitoring within the SIYB is to determine if interim and final loading targets, including both numeric and narrative water quality objectives, are being achieved throughout the SIYB. Long-term tracking of copper loading and water quality is necessary to determine whether TMDL compliance has been attained. Compliance monitoring for the dissolved copper TMDL will include tracking of vessel hull paint conversions to non-copper-based paint; annual water quality assessments of copper levels and toxicity; and monitoring of broader range of water-column, sediment, and biotic indicators on a 5-year basis through integration with the RHMP. The RHMP is further discussed in the Activity Summary Sheet SDB-025 in Appendix D. The primary means of determining compliance with interim loading reduction targets will be tracking the

conversion of vessels from copper-based to non-copper paints on a basin-wide basis. The draft Implementation and Monitoring plans are anticipated to be finalized in FY 2010.

Assessment

The Copermittees and other named dischargers have been in the process of developing the Implementation Plan during this reporting period. Therefore, an assessment of the Implementation Plan is not possible at this time. However, the Copermittees have been successful in proactively addressing the requirements of the TMDL in FY 2009. Accomplishments include:

- The Port of San Diego continued to participate in the EPA-funded "Safer Alternatives to Copper-Based Paints" project. The objectives of the project are to identify environmentally friendly test coatings that are: 1) effective in repelling or preventing fouling growth; 2) relatively easy to clean; and 3) cost effective to apply and maintain. In October 2008, the Port completed a four-month panel testing phase in which 46 non-copper hull coatings were evaluated. Twenty-one of these coatings appeared to perform well in terms of fouling and cleaning expectations. The Port used this information during planning and implementation of the boat testing phase of the project during FY 2008-2009. Ten of the top performing alternative coatings were applied to recreational boats in April and May 2009. The Port developed a boat hull field protocol for conducting long-term testing of alternative coatings, which will be used to determine the effectiveness of the alternative coatings for the duration of the project. The educational and outreach efforts will provide valuable information and guidance to the boating industry on alternative non-copper based antifouling paints and maintenance strategies, resulting in a Level Three Outcome. The transition away from copper-based coatings would aid in the reduction of copper loading into the SIYB, thereby enabling the possibility of a Level Four Outcome by the end of this Permit cycle.
- The Port of San Diego and the consultant, Institute for Research and Technical Assistance (IRTA), held four stakeholder meetings during this reporting period: October 13, 2008, December 10, 2008, January 21, 2009, and April 14, 2009. The objective of the stakeholder meetings was to provide project details to interested parties, as well as obtain input from the workgroup on the upcoming boat hull testing phase.
- The Port of San Diego has continued to participate in the state-wide copper sub-workgroup, led by the Department of Pesticide Regulation (DPR), to increase overall understanding of copper impacts statewide. This workgroup met twice, on January 8, 2009 and April 2, 2009.
- The Port of San Diego developed the framework for a long-term program to evaluate new and emerging hull coatings and technologies. The program will incorporate many of the testing methodologies and assessment protocols developed as part of the EPA Grant Project. The program will also develop mechanisms to continually seek new and emerging products, and develop partnerships with tenants in field testing efforts. As part

of the on-going testing, Port staff contracted several of the paint manufacturers to see if any new products were available for testing. To date, approximately 22 new alternative coatings were identified for panel testing in FY 2009-2010. The coatings to be tested include new products not previously available, as well as reformulations of several coatings from the EPA Grant Project which did not quite meet the panel testing standards.

The Port also collaborated with the SDSU College of Business' MBA Consulting Program to develop a database of interested parties of whom the Port can solicit solutions for innovative boat hull coatings. A Request for Information (RFI) solicitation was developed by the Port and distributed to interested parties in June 2009. The goal of the RFI was to identify innovative approaches to achieving a reduction in copper loading, either through the use of alternative coatings or in the form of concepts that prevent copper from impacting marine life in the area.

- The City of San Diego monitored the MS4 urban runoff contribution to SIYB to verify that the copper loading from this identified source is within the waste load allocation (WLA) and WQOs. Detailed information is provided in Activity Summary Sheet SDB-053, located in Appendix D-1.
- The RHMP collected monitoring data within the SIYB in order to characterize current conditions. In addition, the Copermittees plan to use the monitoring data when performing long-term water quality assessments for the SIYB and continue to participate in the RHMP. Detailed information is provided in Activity Summary Sheet SDB-025, located in Appendix D-1.

Section 5: Conclusions and Recommendations

5.1 Conclusions

The San Diego Bay Copermittees successfully completed all Level One watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. Due to the success of the programs implemented during FY 2009, the San Diego Bay WURMP achieved the following objectives: 1) implementation of activities to specifically address the sources of water quality problems at a WMA and HA level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a WMA and HA level; 4) continued refinement of the watershed program; and 5) continue progress toward meeting WURMP goals and objectives. The comprehensive assessment of educational programs implemented through JURMP, RURMP, and WURMP demonstrates how the Copermittees have been successful in achieving Levels Two and Three by implementing extensive pollution prevention efforts directed at potential sources of high priority pollutants. In FY 2009, the Copermittees supplemented the JURMP and RURMP educational programs by implementing 11 education activities targeting audiences identified in the Municipal Permit as having the most significant impact on the high priority water quality problems in the San Diego Bay.

The Copermittees assessed the effectiveness of the activities individually as well as collectively at the HA and watershed levels in order to determine the combined impact the activities have on the targeted high priority pollutants and/or pollutant sources. Copermittees implemented 12 water quality activities which resulted in achieving Levels Three or Four by changing knowledge or behaviors, reducing discharge loads, abating potential pollutant sources, or through other quantifiable benefits to receiving water quality during FY 2009. Assessment of individual activities indicated nearly all met their assessment targets and were considered to be effective. Evaluation of the water quality activities at an HA level provided an assessment of the San Diego Bay Copermittees' collective efforts for several activities that were implemented across several HAs. These activities presented universal solutions to high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern.

The Copermittees identified jurisdictional water quality activities which were implemented across multiple HAs, such as Pet Waste Bags, Trash Cleanups, Enhanced Street Sweeping, and Enhanced Inspections. Copermittees also implemented different approaches or activities which focused on the same pollutant of concern and/or pollutant sources in a HA. The combined effect resulted in a greater impact on the targeted high priority water quality problems and positively influenced the effectiveness and efficiency of the WURMP program. Assessment of these activities resulted in a cross-programmatic watershed analysis of the effectiveness of these programs. Activities such as public participation at cleanup events, the general public's use of household hazardous waste collection facilities, and pet waste bags scaled multiple

levels of assessment resulting in increases in awareness, behavior changes, and load reductions.

The named dischargers of the Chollas Creek Dissolved Metals and Diazinon TMDLs (908.2 HA) have engaged additional assessment measures. The named dischargers have taken a holistic approach to planning, implementation, and assessment of watershed activities. The holistic approach takes into account watershed activities implemented by named dischargers under WURMP, JURMP, or other stormwater programs. The goal of integrating information from various programs is to compile data from all implemented activities in order to allow a comprehensive evaluation of watershed-wide efforts to address high priority water quality pollutants identified in the TMDL. The involvement of non-Copermittee agencies (i.e., Caltrans and the U.S. Navy) in the Chollas Creek TMDLs enables the incorporation of information on pollutant sources outside of the Copermittees' jurisdictions and the BMPs these agencies have implemented to address these sources. During this reporting period, all named dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in achieving TMDL compliance. The dischargers will share this information and will apply lessons learned in the region with the goal of improving water quality in the Chollas Creek Watershed.

The San Diego Bay Copermittees believe monitoring activities provide important information which is essential to the overall success of the Watershed Strategy. During FY 2009, resources were allocated to the planning of seven Targeted Special Studies focused on high priority water quality problems and their sources within the Chollas Creek watershed (908.2). Future assessments of the Targeted Special Studies will provide information enabling Copermittees to determine the most efficient, feasible, and effective BMPs to implement within their individual jurisdictions. Monitoring results may be used to support future management decisions regarding the planning, implementation, and assessment of watershed activities. During this reporting period, 12 Monitoring and Source Identification activities were implemented. The San Diego Bay Copermittees attempted to further assess changes in receiving water quality during FY 2009, and more thorough assessments will be conducted as additional water quality and pollutant source assessment information becomes available. By acquiring a better understanding of the link between high priority pollutant sources and their impacts to water quality, Copermittees will be able to understand how the watershed activities affect urban runoff discharge and receiving water quality.

5.2 Program Improvements and Recommendations

The most important contribution that watershed programs can make is to protect and improve water quality in each WMA, including the San Diego Bay WMA. To do this, San Diego Bay Copermittees must first expand the understanding of the water quality issues in the WMA (i.e. the sources and magnitude of the issues), allowing for more informed decisions and actions. This information will allow the San Diego Bay Copermittees, watershed partners, and other entities to make more informed decisions and actions. The comprehensive evaluation of existing activities, BMPs, and assessment strategies pertaining to watershed programming

provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. This resource can then be shared with other watersheds, jurisdictions, and non-Copermittee agencies to improve programs on a regional basis and further increase the list of BMPs Copermittees may potentially implement. Sharing the evaluation methods will also help other watersheds and jurisdictions improve and enhance their programs.

The San Diego Bay Copermittees and other entities will continue to utilize information on watershed pollutants and sources when evaluating and determining which watershed activities to implement. The Watershed Strategy, a key component required for the San Diego Bay WURMP document, provides a consistent mechanism for prioritizing pollutants, identifying sources of pollution, maximizing available resources, and developing and implementing activities. The San Diego Bay Copermittees will continue to gather additional water quality data suitable for assessments at the watershed, sub-watershed, and HA levels, as well as research COC sources and their loading potential. Because there is a general lack of water quality data directly related to sources, the San Diego Bay Copermittees will continue to coordinate to improve data collection and monitoring. Efforts to further refine the characterization of source inventories and water quality, such as to the HA level, will provide more useful information to the San Diego Bay WURMP. This improved identification of sources and their loading potential will enable the Copermittees to enhance effectiveness assessments of watershed activities, which will enable Copermittees to modify program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

The next step in the evaluation process will be to look at the watershed activities and decide if they are optimized or whether the activities may be further developed to achieve even greater load reductions. The San Diego Bay Copermittees will evaluate the standardization of incoming data available through the activity summary sheets and comprehensive assessments. The Copermittees could begin to compare activities to each other, deciding if certain activities are able to be combined to increase effectiveness and efficiency, and the activity's ability to address multiple pollutants. This information when combined with monitoring and source identification may promote the positioning of strategically placed watershed BMPs and comprehensive watershed activities. This process entails improving existing data and assessment strategies, which will lead to improved source identification and improvements in water quality. In addition, the Copermittees will continue to collaborate on efforts to integrate information on JURMP related activities information into the San Diego Bay WURMP Annual Report in order to develop a comprehensive evaluation of all activities implemented to address high priority water quality problems under the various urban runoff management programs in the WMA. By evaluating the activities relevance to each other and to the high priority water quality problems and their sources, the Copermittees will be able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary.

The Copermittees will also continue to contribute to efforts focused on making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and

through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding WURMP permit language.

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Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Order No. R9-2004-0277

2008–2009 Water Quality Monitoring

Final Report

Prepared for:
San Diego Regional Water Quality Control Board

Prepared by:
City of San Diego
City of La Mesa
City of Lemon Grove
County of San Diego
San Diego Unified Port District
United States Navy
Caltrans

January 5, 2010

Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Order No. R9-2004-0277

2008–2009 Water Quality Monitoring

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LIST OF ACRONYMS

BMP	best management practice
COC	chain of custody
CCC	criteria continuous concentration
CMC	criteria maximum concentration
CTR	California Toxics Rule
DWM	dry weather monitoring
ICID	illicit connection and illegal discharge
IPM	integrated pest management
NPDES	National Pollutant Discharge Elimination System
PSA	Public Service Announcement
REC-1	contact water recreation (beneficial use)
REC-2	non-contact water recreation (beneficial use)
SOP	standard operating procedure
TIE	toxicity identification evaluation
TKN	total kjeldahl nitrogen
TMDL	total maximum daily load
TSS	total suspended solids
UCCE	University of California Cooperative Extension
WARM	warm freshwater habitat (beneficial use)
WQO	water quality objective
WILD	wildlife habitat (beneficial use)

EXECUTIVE SUMMARY

This report summarizes the activities conducted by the seven Chollas Creek Dischargers in compliance with San Diego Regional Water Quality Control Board (Regional Board) Order No. R9-2004-0277 and the *Total Maximum Daily Loads (TMDLs) for Dissolved Copper, Lead and Zinc in Chollas Creek, Tributary to San Diego Bay* during the 2008–2009 Monitoring Season. The following activities were conducted:

- Public outreach and education.
- Water quality monitoring, including wet weather monitoring for Diazinon, total and dissolved copper, lead, and zinc, hardness, and toxicity to *Ceriodaphnia dubia* at SD8(1) in the north fork of Chollas Creek and at DPR2 in the south fork of Chollas Creek.
- Water quality monitoring at SD8(1) and DPR2 for additional analytes not required under Order No. R9-2004-0277 (e.g., indicator bacteria, synthetic pyrethroids, and toxicity to *Hyalella azteca*)

Summary of Wet Weather Monitoring

Storm water monitoring samples were collected at the two mass loading stations, SD8(1) and DPR2, in the Chollas Creek Watershed during three separate storm water events (October 4, 2008, November 4, 2008, and February 5, 2009). During the 2008–2009 Monitoring Season four analytes named in Order No. R9-2004-0277 exceeded water quality objectives (WQOs): dissolved copper, dissolved lead, dissolved zinc and toxicity to *C. dubia.* The dissolved copper acute criteria WQO (criteria maximum concentration, or CMC) was exceeded three times at SD8(1) and twice at DPR2. The dissolved copper chronic criteria WQO (criteria continuous concentration, or CCC) was exceeded at both sites for all three storm events. There were two CCC exceedances for dissolved lead at SD8(1). The CMC and CCC for dissolved zinc was exceeded at at SD8(1) for all three storm events. There were no exceedances of dissolved lead or dissolved zinc (CMC or CCC) at DPR2. One instance of toxicity to *C. dubia* was observed at SD8(1). There were no exceedances for Diazinon during the 2008–2009 Monitoring Season.

Additional analytes with wet weather WQO exceedances included total suspended solids (TSS), Malathion (both sites, second storm only), oil and grease (first and third storm at SD8(1)), and fecal coliform. TSS concentrations were above the 100 mg/L WQO for all three storm events monitored at SD8(1). Fecal coliform concentrations were highest during the second storm event and WQO exceedances were noted at both sites for all three storm events. In general, synthetic pyrethroids were detected at greater concentrations in the north fork (SD8(1)) than in the south fork (DPR2). Bifenthrin concentrations were above the published LC_{50}s for *H. azteca* at both sites during all three storms. Permethrin exceeded the benchmark during all three storms at SD8(1) only. Toxicity to *H. azteca* was observed at SD8(1) for all three storm events and for the first two storm events at DPR2.

In Chollas Creek, synthetic pyrethroid (Bifenthrin and Permethrin) concentrations and toxicity to *H. azteca* are trending upwards while Diazinon concentrations are decreasing. Mann-Kendall trend analysis performed on the long-term data collected from SD8(1) indicated significantly increasing trends for copper and zinc (total and dissolved phases). At DPR2, TSS concentrations have significantly decreased over the last five years of monitoring.

Conclusions

Dissolved copper and dissolved zinc concentrations at SD8(1) and DPR2 exceeded the concentration-based waste load allocations of the Chollas Creek Dissolved Metals Total Maximum Daily Load. Dissolved lead concentrations exceeded the waste load allocations for the long-term chronic condition at SD8(1) for the first two storm events, but was in compliance for the short-term acute condition. Chronic reproductive toxicity to *C. dubia* was observed at SD8(1) during the third storm event. In general, metals concentrations were similar, with the highest concentration occurring during the October 2008 first flush event.

Steps Forward

The Chollas Creek TMDL Implementation Plan (Implementation Plan) (WESTON, 2009a) was specifically prepared in response to Resolution No. R9-2007-0043 in which the Regional Board incorporated the TMDLs for dissolved copper, lead, and zinc into the Basin Plan. The Implementation Plan uses an iterative and adaptive management strategy for identifying, planning, implementing, and assessing best management practices (BMPs) for the Chollas Creek Watershed over the 20-year compliance schedule. The Implementation Plan was submitted to the Regional Board on October 21, 2009. The seven named TMDL Dischargers, which include the five Chollas Creek Watershed Municipal Copermittees, the US Navy, and Caltrans, will use the Implementation Plan as a framework for the next steps forward, including compliance monitoring and participating in four voluntary special studies during the 2009–2010 Monitoring Season.

1.0 INTRODUCTION

The San Diego Regional Water Quality Control Board (Regional Board) Order No. R9-2004-0277 defines the monitoring and reporting requirements for Diazinon and metals (copper, lead, and zinc) in the Chollas Creek Watershed. Order No. R9-2004-0277 was issued to assess water quality for metal Total Maximum Daily Loads (TMDLs). The purpose of this report is to present the activities conducted as part of the annual monitoring and reporting requirements.[1] Studies conducted in the Chollas Creek Watershed during the 2008–2009 Monitoring Season include the following:

- Public outreach and education.
- Water quality monitoring in accordance with the requirements of Order No. R9-2004-0277. This includes wet weather monitoring for Diazinon, total and dissolved metals (copper, lead, and zinc), hardness, and toxicity to *Ceriodaphnia dubia* at SD8(1) in the north fork of Chollas Creek and at DPR2 in the south fork of Chollas Creek.
- Water quality monitoring at SD8(1) and DPR2 for additional analytes not required under Order No. R9-2004-0277 (e.g., indicator bacteria, synthetic pyrethroids, toxicity to *Hyalella azteca*, nutrients, etc.)

The Chollas Creek Watershed encompasses 18,249 acres consisting predominately of urbanized land located within San Diego County. The Chollas Creek Watershed is located southeast of downtown San Diego, in the San Diego Mesa Hydrologic Area, and within the larger Pueblo San Diego Hydrologic Unit. Though much of the creek has been channelized (a mix of highly developed earthen channels and concrete channels), there have been efforts to restore natural flow in the watershed. The creek is somewhat ephemeral in nature, flowing primarily during the wet season.

Chollas Creek consists of two main tributaries, the north fork and the south fork. The drainage area to the northern fork of the watershed (8,794 acres) is larger than that to the southern fork (7,575 acres). The headwaters of the north fork originate approximately 1.5 miles west of the jurisdictional boundary of the City of La Mesa. From this point, the north fork flows in a southwesterly direction for approximately 3 miles before it is joined by several smaller tributaries which feed into the main stem of the creek. The creek then flows in a southerly direction for approximately 1.5 miles before discharging into San Diego Bay. The south fork of Chollas Creek flows in a west, southwesterly direction from its headwaters in the City of Lemon Grove and is the product of two smaller creek branches. The north fork and south fork merge approximately 0.8 miles east of the creek's mouth, near the upper extent of the tidal influence from San Diego Bay. An aerial representation of the Chollas Creek Watershed is shown on Figure 1-1.

The Chollas Creek Watershed is highly urbanized. Land use in the Chollas Creek Watershed is predominantly residential (48%), roads (22%) and freeways and highways (5%), as shown on

[1] Progress reports for the watershed activities listed in the Chollas Creek Dissolved Metals TMDL Implementation Plan are provided as appendices to Discharger's annual storm water reports, including the San Diego Bay WURMP Annual Report and the Caltrans Stormwater Management Program Annual Report.

Figure 1-2. The remaining watershed land uses consist of commercial and industrial facilities and landfills (7%), open space (7%), schools (3.5%), cemeteries (1.5%), and other miscellaneous land uses.

The California Department of Transportation (Caltrans) is responsible for the California State Highway System, which possesses its own Municipal Separate Storm Sewer System (MS4) Permit (Order No. 99-06-DWQ) (Regional Board, 2005). The United States Navy is responsible for NAVFAC Southwest and possesses its own National Pollutant Discharge Elimination System (NPDES) Permit (Order No. R9-2002-0169). Portions of the cities of San Diego, Lemon Grove, and La Mesa are also located within the watershed. The Unified Port of San Diego, the United States Navy, and the County of San Diego each hold jurisdiction over approximately 1% of the Chollas Creek Watershed. A small portion of the watershed consists of tidelands immediately adjacent to San Diego Bay. Some of this tideland area is under the jurisdiction of the Port, and the remainder falls under the jurisdiction of the Navy.

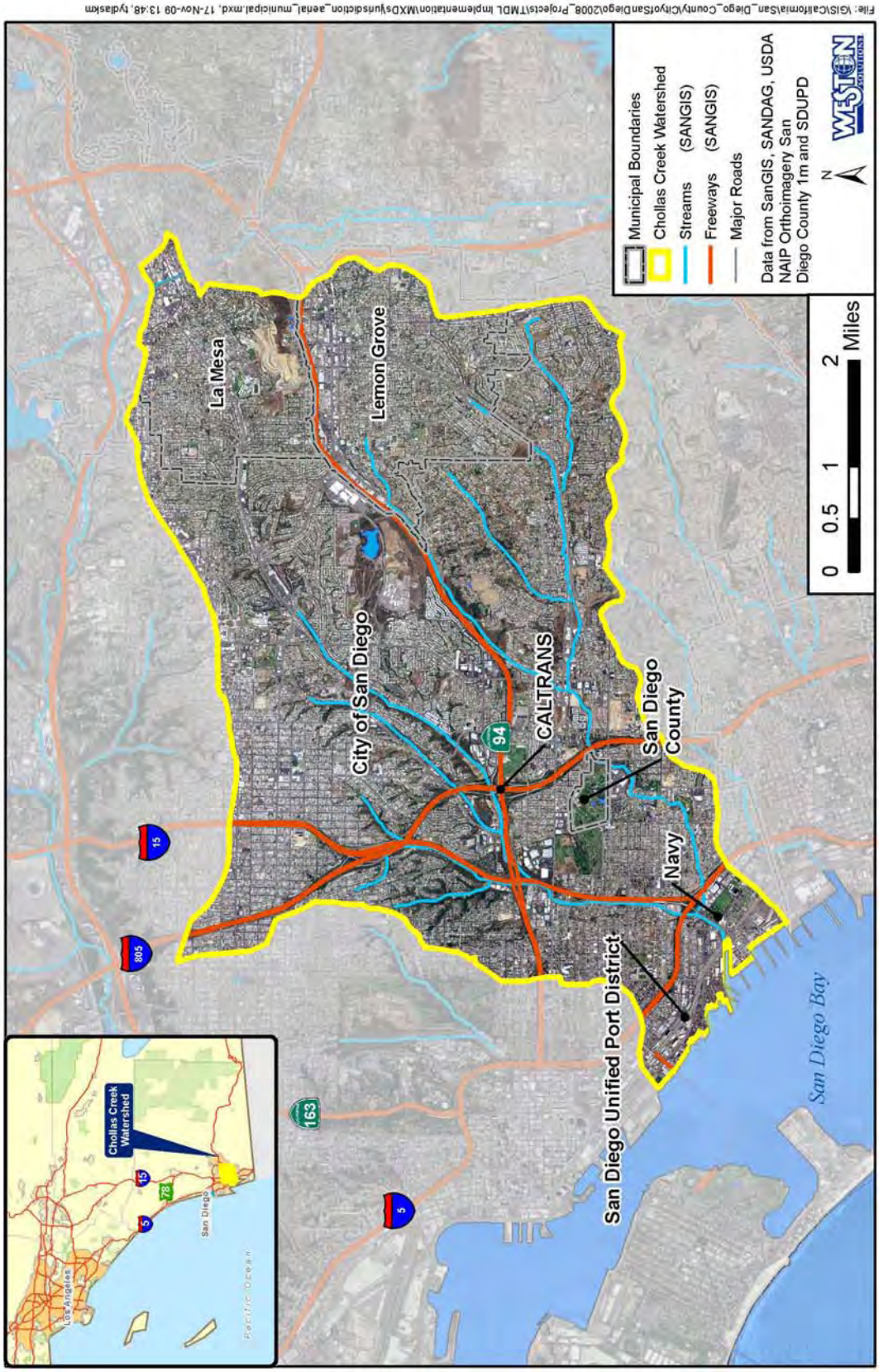

Figure 1-1. Aerial View of the Chollas Creek Watershed

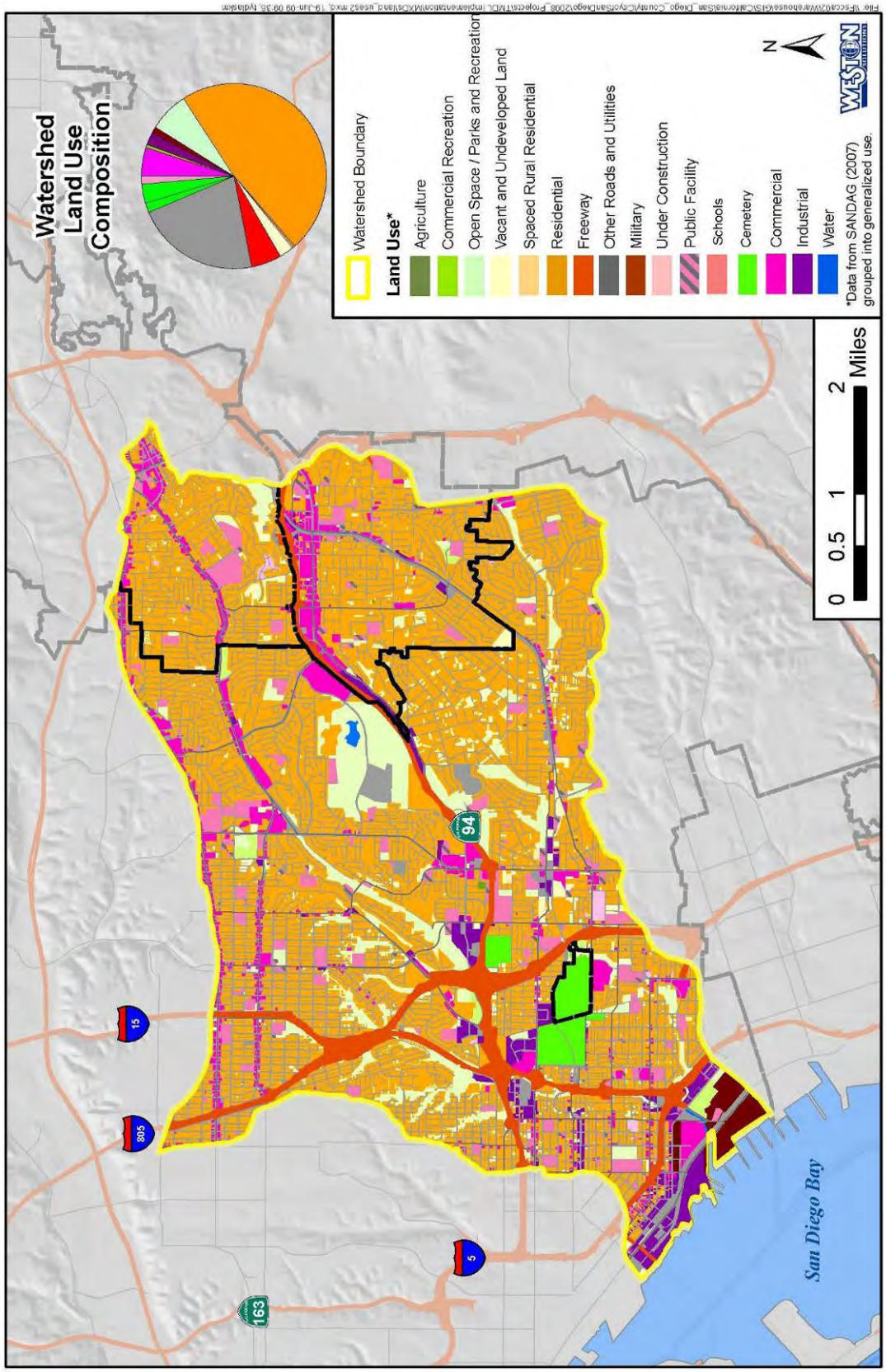

Figure 1-2. Land Uses within the Chollas Creek Watershed

1.1 State Water Resources Control Board Section 303(d) Listings and Total Maximum Daily Load Overview

The Water Quality Control Plan for the San Diego Region (Basin Plan) lists the inland surface water beneficial uses of Chollas Creek as non-contact water recreation (REC-2), warm freshwater habitat (WARM), and wildlife habitat (WILD). The Chollas Creek Watershed also has the potential to support a contact water recreation (REC-1) beneficial use. The 2006 Clean Water Act (CWA) State Water Resources Control (State Board) Board Section 303(d) List identifies dissolved copper, dissolved lead, dissolved zinc, and indicator bacteria as pollutants which impair Chollas Creek. Diazinon appeared on the State Board Section 303(d) list in 1999, but was removed in 2006 after the Diazinon TMDL was developed. Table 1-1 summarizes the State Board Section 303(d) listings and beneficial uses for Chollas Creek above the tidal prism (corresponding to the two branches of the creek).

Table 1-1. Beneficial Uses and State Water Resources Control Board Section 303(d) Listings in the Chollas Creek Watershed

Beneficial Uses (Chollas Creek Watershed, tributary to San Diego Bay)	**Chollas Creek** (3.5 miles)	**Creek State Board Section 303(d) Pollutant**	**San Diego Bay**	**San Diego Bay State Board Section 303(d) Stressor**
Contact water recreation (REC-1)	o	Dissolved copper[1] Dissolved lead[1] Dissolved zinc[1] Indicator bacteria Diazinon[2]	•	Sediment toxicity Benthic community effects
Non-contact water recreation (REC-2)	•		•	
Warm freshwater habitat (WARM)	•		–	
Wildlife habitat (WILD)	•		•	
Rare, threatened, or endangered species	–		•	
Marine habitat	–		•	
Migration of aquatic organisms	–		•	
Preservation of biological habitats of special significance	–		•	
Estuarine habitat	–		•	
Shellfish harvesting	–		•	
Industrial service supply	–		•	
Commercial and sport fishing	–		•	
Navigation	–		•	

• Existing beneficial use o Potential beneficial use – Not applicable

1. These pollutants are on the 2006 State Board Section 303(d) list of Water Quality Limited Segments for the San Diego Bay. In 1996, Chollas Creek was also listed for cadmium, but this pollutant was delisted in 2006.
2. Diazinon was added to the State Board Section 303(d) list in 1996. The Diazinon TMDL was developed in 2002 to address the contribution of this organophosphate pesticide to storm water toxicity.

Federal law requires the Regional Board to develop TMDLs for waters on the State Board Section 303(d) list. The purpose of a TMDL is to attain applicable water quality objectives and to restore the beneficial uses of impaired waters. The pesticide Diazinon historically exceeded water quality standards in most of San Diego County's watersheds, including Chollas Creek. In 2002, the Regional Board adopted the *Chollas Creek TMDL for Diazinon* (Diazinon TMDL) (Resolution No. R9-2002-0123). Diazinon was also phased out of manufacturing and no longer

available for retail sale as of December 2004. Water quality results to date indicate the TMDL and ban have been effective. Diazinon concentrations are trending downward and are no longer frequently detected.

Metals have frequently exceeded the California Toxics Rule (CTR) criteria. The Regional Board issued Order No. R9-2004-0277 to provide additional metals data for the Chollas Creek Watershed. The *TMDL for Dissolved Copper, Lead and Zinc in Chollas Creek, Tributary to San Diego Bay* (Chollas Creek Dissolved Metals TMDL) was adopted by the Regional Board in 2007 (Resolution No. R9-2007-0043) and was approved by the Office of Administrative Law on October 22, 2008.

1.2 Dissolved Metals Total Maximum Daily Load Implementation Plan and Annual Report

The Chollas Creek Dissolved Metals TMDL Implementation Plan (Implementation Plan) (WESTON, 2009a) was specifically prepared in response to Resolution No. R9-2007-0043 in which the Regional Board incorporated the TMDLs for dissolved copper, lead, and zinc into the Basin Plan. The Implementation Plan represents the Discharger's (Table 1-2) strategy for conducting watershed activities within Chollas Creek Watershed to meet TMDL WLA targets. The Implementation Plan uses an iterative, adaptive management strategy for identifying, planning, implementing, and assessing BMPs over the 20-year compliance schedule. The Implementation Plan (available on the City of San Diego's Think Blue website) was submitted to the Regional Board on October 21, 2009.

Table 1-2. Dischargers Named in the Chollas Creek Dissolved Metals Total Maximum Daily Load

TMDL	San Diego Region Municipal Storm Water Copermittees	Dischargers
Chollas Creek Dissolved Metals TMDL	City of San Diego City of La Mesa City of Lemon Grove County of San Diego Unified Port District of San Diego	Caltrans City of San Diego City of La Mesa City of Lemon Grove County of San Diego Unified Port District of San Diego United States Navy

1.3 Legal Authority

As indicated in Table 1-2, five of the seven Dischargers are also San Diego Region Municipal Storm Water Copermittees. Order No. R9-2004-0277 (item 2-a) requires reports of information on how Copermittees implemented their legal authority to remedy the condition of pollution. Copermittees accomplish this primarily through the current Dry Weather Monitoring (DWM) Program and facility inspections conducted under NPDES Order No. R9-2007-0001 (Regional Board, 2007a). DWM is conducted throughout Chollas Creek to identify and eliminate illicit connections and illegal discharges (ICIDs). As part of the DWM Program, Diazinon and metals are monitored, and any illicit discharge of Diazinon or metals is eliminated through this program by the issuing of violations and/or citations. Each Copermittee/Discharger in the Chollas Creek Watershed has ordinances in place to enforce the illegal and unauthorized discharge of waste into their storm drain systems. For more information on enforcement mechanisms, please refer to the Copermittees'/Dischargers' individual Jurisdiction Urban Runoff Management Plans (JURMPs).

2.0 EDUCATION AND OUTREACH PROGRAMS

2.1 Diazinon Toxicity Control Plan

Order No. R9-2004-0277 (item 2-c) requires reports of information on the implementation and efficacy of a Diazinon Toxicity Control Plan. Per Investigation Order No. R9-2004-0277, the pesticide component of the education program can serve as the Diazinon Toxicity Control Plan required by the TMDL.

2.2 Diazinon Public Outreach/Education Program

Order No. R9-2004-0277 (item 2-c) requires reports of information on the implementation and efficacy of a Diazinon Public Outreach/Education Program.

The outreach program was implemented as a joint effort by the Chollas Creek Watershed Copermittees. It was previously funded by a State Board Proposition 13 Grant and used a network of staff from the County of San Diego, the University of California Cooperative Extension (UCCE), and the City of San Diego to publicize less harmful ways to kill pests. All of the Copermittees were project partners, and the Outreach Workgroup served as the Technical Advisory Committee to the program's goals and objectives.

The City of San Diego participated in 11 events during 2008–2009 and distributed Integrated Pest Management (IPM) cards (Appendix A) to educate Chollas Creek Watershed residents and other members of the public in San Diego County regarding the use of IPM solutions to reduce pesticide concentrations found in San Diego County waterways. IPM uses environmentally sound ways to keep pests under control without harming people, pets, or the environment. These materials were designed to encourage positive behavior changes and attitudes of San Diego residents when dealing with pesticides in their homes and gardens.

Events in which Copermittees have participated during Fiscal Year (FY) 2008–2009 are detailed in Table 2-1.

Table 2-1. Community Events (Fiscal Year 2008–2009)

Date	Copermittee	Event Type	Event Title	Audience	Estimated Audience No.	Site Name/Location	Materials Distributed
08/31/08	City of San Diego	Education/outreach	Chihuahua National Race	Pet owners	40,000	Petco Park, San Diego	Think Blue Tips Brochure, 3Cs Card, Laminated Tip Card, IPM Pest Tip Cards, Best Management Practice Giveaways
09/02/08–09/27/08	City of San Diego	Education/outreach	San Diego Film Festival	General public / Business owners	18,000	Gaslamp Quarter, San Diego	Think Blue Tips Brochure, Laminated Tip Cards, IPM Pest Tip Cards, Best Management Practice Giveaways
12/29/08–01/03/09	City of San Diego	Education/outreach	San Diego Auto Show	Auto enthusiasts – male skewed	100,000	San Diego Convention Center	Laminated Tip Cards, IPM Pest Tip Cards, Best Management Practices Giveaways
02/28/09	City of San Diego	Community festival	Heritage Day Festival and Parade	General public	10,000	Market Creek Plaza	Think Blue Tips Brochure, Laminated Tip Cards, IPM Pest Tip Cards, 3Cs Card, Car Washing Fact Sheet, Best Management Practices Giveaways
03/18/09	City of San Diego	Public awareness/ Education	Cesar Chavez Day	General public	1,000	Cesar Chavez Elementary School	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Card, Car Washing Fact Sheet, Kids Worksheet, Best Management Practices Giveaways
03/20/09	City of San Diego	Public awareness/ Education	Cesar Chavez Day	General public	5,000	Logan Avenue	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Card, Car Washing Fact Sheet, Best Management Practices Giveaways
04/06/09	City of San Diego	Children's science fair	Science Festival	School-aged children	100,000	Balboa Park	Think Blue Tips Brochure, Laminated Tip Cards, IPM Pest Tip Card, Kids Worksheets, Best Management Practices Giveaways
04/04/09	City of San Diego	Public awareness	Chollas Creek Walk the Watershed	General public	100	Chollas Creek Watershed	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Cards, Best Management Practices Giveaways
04/19/09	City of San Diego	Environmental fair	Earth Fair 2009	General public	80,000	Balboa Park	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Cards, Best Management Practices Giveaways
04/23/09	City of San Diego	Tree planting event	Arbor Day 2009	General public	250	Balboa Park	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Cards, Best Management Practices Giveaways
04/25/09	City of San Diego	Public awareness/ Clean up	Creek to Bay Clean Up	General public	4,090	Chollas Creek	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Cards, Best Management Practices Giveaways

2.3 Public Outreach Plan

This report includes a description of outreach and education strategies for the Chollas Creek Watershed component of the IPM program led by the City of San Diego Storm Water Pollution Prevention Program.

2.3.1 Project Outreach and Education Strategy

Strategic Objectives
Based on the research and general principles of behavioral change through public outreach programs, the outreach and education strategy sought to continue to meet the following objectives:

- Raise awareness among target audiences of the benefits of using IPM practices.
- Provide tools and information that make it easy for target audiences to use IPM.
- Identify third-party spokespeople in the community to help spread information regarding IPM and reinforce IPM use.

Audiences
Priority audiences for the project's outreach and education strategy included the following members of the Chollas Creek Watershed:

- Residents who use pesticides.
- Community organizations that influence local residents, including ecumenical groups, ethnic organizations, and neighborhood groups.
- Property managers.

Since partnerships with retail outlets and gardeners are being handled by the County of San Diego, these audiences are not included in the strategy. However, the broad-based regional outreach by the County of San Diego and UCCE should continue to provide valuable messages to San Diego County residents.

Messages
The following messages were stressed in outreach efforts:

- Chollas Creek is polluted from overuse of pesticides.
- Safe alternatives to pesticides are better for your family and the environment, today and for future generations.
- Using natural methods is easy and inexpensive.

Tools and Tactics
The City of San Diego continued to use the following tools and tactics to achieve the strategic objectives.

Informational Materials

Reproduced educational and informational materials specific to Chollas Creek Watershed outreach were used, based upon the UCCE statewide IPM model. The pest tip cards were the primary outreach materials. Residents found the cards and the information they provided useful. The City of San Diego received numerous requests to provide additional cards to community groups who, in turn, facilitated distribution to residents. The City of San Diego will incorporate IPM messaging where appropriate as part of its planned outreach for the pending metals TMDL as well as a pilot study to reduce trash in the Chollas Creek area.

Media

For the Hispanic community in the Chollas Creek Watershed, a special effort was made to get information to Spanish radio and television media, including:

- KLNV (106.5 FM).
- KLQV (102.9 FM).
- XEWT-TV (Hispanic).

Public Service Announcement Development

The City of San Diego placed advertising on local television and radio outlets. The City of San Diego designed the ad, "Ants in Your Plants" (funded by the San Diego Regional Storm Water Copermittees) and features IPM tips and suggestions the public should implement to control ants. The “Ants in Your Plants” PSA was placed on the television and radio stations:

Television Stations

- KFMB.
- KGTV.
- KNSD.
- KSWB.
- KUSI.
- XEWT-TV (Hispanic).

Radio Stations

- KIFM (Jazz 98.1).
- KLNV.
- KLQV.
- KMYI (Star 94.1).
- KPRI.
- KSON.
- KYXY.

Outdoor Media

Table 2-2 details the City of San Diego’s radio and television media buy for FY 2009. The highlighted column represents the number of PSAs that aired and were related to IPM.

Table 2-2. Think Blue Fiscal Year 2008 Media Buy Year End Summary

Television Stations	IPM PSA	Radio Stations	IPM PSA
KFMB	85	KIFM (Jazz 98.1)	202
KGTV	19	KLNV	18
KNSD	68	KLQV	61
KSWB	53	KMYI (Star 94.1)	149
KUSI	42	KPRI	39
XEWT-TV (Hispanic)	123	KSON	143
-	-	KYXY	65
TOTAL	**390**	**TOTAL**	**677**

Think Blue Website

The City of San Diego posted IPM outreach materials developed for the project on the Think Blue web site on an ongoing basis to provide City of San Diego residents easy access to these materials. Web materials included a fact sheet on how to hire a pest control service and electronic versions of all of the tip cards. In FY 2009, the IPM pest card information page received 1,090 visits.

3.0 COMPLIANCE MONITORING

Order No. R9-2004-0277 requires water quality monitoring at SD8(1) and DPR2. Compliance with the Chollas Creek Dissolved Metals TMDL and the Diazinon TMDL is determined by water quality at these two locations.

3.1 Monitoring Location Drainage Areas

The Chollas Creek Watershed is divided into two drainage areas separated by the northern and southern forks of Chollas Creek. SD8(1) is the mass loading station located at the base of the north fork and drains a total of approximately 8,794 acres. DPR2 is the mass loading station located at the base of the south fork of Chollas Creek and drains approximately 7,575 acres. The drainage areas captured from each site are presented in Table 3-1 and on Figure 3-1.

Table 3-1. Drainage Area Estimates

Portion of Chollas Creek	Monitoring Locations	Drainage Area (acres)	Percentage of Watershed
North fork	SD8(1)	8,794	48%
South fork	DPR2	7,575	42%

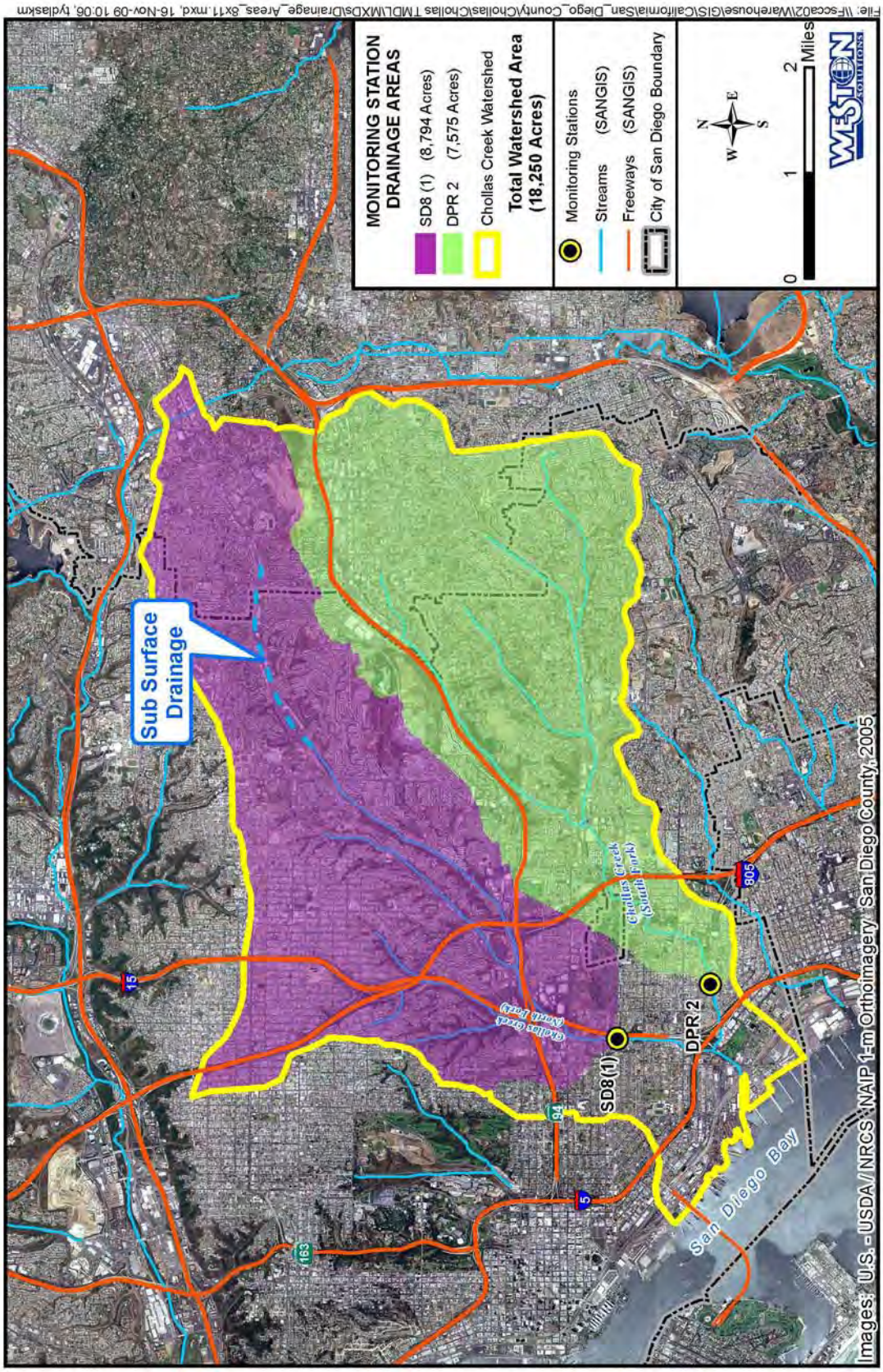

Figure 3-1. Chollas Creek Mass Loading Stations, SD8(1) and DPR2

3.2 Sampling and Analytical Methods

3.2.1 Sampling Methods and Storm Water Quality Monitoring

Storm water runoff was collected using flow-weighted composite techniques over the duration of each storm event. Sample collection was targeted for termination when the storm flow returned to within approximately 10% of the base flow condition, indicating the end of the precipitation event and the cessation of storm water flow. However, the variable nature of storm water monitoring may have resulted in slight protocol deviations where noted.

Automated flow and sampling equipment were installed at each site to collect flow-weighted composite samples during storm events. American Sigma flowmeters with pressure transducers or bubblers were used to measure velocity and stage height. The flow sensors were installed on the channel bottom in the center of the channel. In the event that a flow sensor was rendered inoperable, meter tapes were used to measure stage height and slope of the main channel to determine velocity of the flow. Instream equipment damage during storm events is common at SD8(1) due to high velocity debris. Of particular concern during the 2008–2009 Monitoring Season was the accumulation of approximately 1-ft thick of sediment at SD8(1) where the sampler intake and pressure transducer were located in the channel bottom.

Using the data collected by the flowmeters, sample intervals were set to collect approximately 40 L of water throughout the storm event. The sample intake point was located adjacent to the flowmeter, on the channel bottom in the center of the channel. American Sigma automated samplers were used to collect 1-L sample grabs at a flow dependent rate. The 1-L grab samples were composited into 20-L borosilicate glass sample bottles.

The automated sampler collects grab samples via a peristaltic pumping mechanism. Water samples are pumped through a Teflon intake device and Teflon tubing into a 20-L borosilicate glass sample bottle. Bottles were kept on ice during the storm event. Field crews maintained and replaced the sampling bottles as they filled to capacity. Multiple bottles are composited at Weston Solutions, Inc.'s (WESTON's®) facility and subsampled for delivery to the laboratory for chemistry and bioassay toxicity analyses.

A field data log was completed at each site (Appendix B). The field data log includes empirical observations of the site and water quality characteristics. Observations include parameters such as meteorological conditions at time of sampling and odor, color, and general turbidity of the runoff. Changes in the condition of vegetation as well as any observed erosion along the channel's side slopes were also noted on field data logs.

3.2.1.1 Compliance Monitoring

Flow-weighted composite samples were collected and analyzed for the constituents listed on Table 3-2, in accordance with Order No. R9-2004-0277. Bioassay water samples were collected for use in acute and chronic toxicity tests using *C. dubia*. Grab samples were collected for the field parameters, pH, temperature, and conductivity, which are not conducive to automated composite sampling. Grab samples were collected from the horizontal and vertical center of the channel, where possible.

Table 3-2. Water Quality Analytical Parameters for Field Parameters and Analytes Required Under Order No. R9-2004-0277

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature /light-protected)	Maximum Holding Time: Preparation/ Analysis
pH	N/A	N/A	Analyzed in field	N/A	N/A
Temperature	N/A	N/A	Analyzed in field	N/A	N/A
Conductivity	N/A	N/A	Analyzed in field	N/A	N/A
Total hardness	SM 2340-B	100 mL	Plastic	HNO_3	Six months
Total/dissolved copper	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Total/dissolved lead	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Total/dissolved zinc	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Acute toxicity *C. dubia*	USEPA 821-R-02-012	10 L	10 L glass	Store cool at <6ºC	36 hours
Chronic toxicity *C. dubia*	USEPA 821-R-02-013	20 L	20 L glass	Store cool at <6ºC	36 hours
Diazinon (Organophosphorus pesticide)	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days

N/A = not applicable
* Dissolved metals are filtered with a 0.45 µm filter.

3.2.1.2 Additional Analytes

The flow-weighted composite samples were also analyzed for the additional analytes listed in Table 3-3. Synthetic pyrethroids and bioassay testing of *H. azteca* were added to the suite of tests being performed in this study as a response to shifts in pesticide use and shifts in toxicity results observed during regional monitoring conducted at SD8(1). Nutrients were included in this study for historical continuity, based on past monitoring and reporting requirements of the Chollas Creek Quality Protection and Habitat Enhancement Grant No. 04-015-559-0.

Grab samples were collected for indicator bacteria (Table 3-3). The holding time for indicator bacteria makes them not conducive to automated composite sampling. Grab samples were collected from the horizontal and vertical center of the channel, where possible.

Table 3-3. Water Quality Analytical Parameters for Additional Analytes

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature/ light-protected)	Maximum Holding Time: Preparation/ Analysis
Total Coliforms	SM 9221 B, E	100 mL	Plastic	Store cool at <4ºC	Six hours
Fecal Coliforms	SM 9221 B, E	100 mL	Plastic	Store cool at <4ºC	Six hours
Enterococci	SM 9320	100 mL	Plastic	Store cool at <4ºC	Six hours
Total Suspended Solids	SM 2540D	1 L	Plastic	Store Cool at <4ºC	Seven days
Nitrate	SM 4500-NO3	100 mL	Plastic or glass	Store Cool at <4ºC	48 hours
Nitrite	SM 4500-NO2	100 mL	Plastic or glass	Store Cool at <4ºC	48 hours
Total Kjeldahl Nitrogen	USEPA 351.3	500 mL	Amber glass	Acidify to pH<2 with H2S04	28 days
Ammonia (N)	SM 4500-NH3	250 mL	Plastic or glass	Acidify to pH<2 with H2S04	28 days

Table 3-3. Water Quality Analytical Parameters for Additional Analytes

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (chemical/temperature/ light-protected)	Maximum Holding Time: Preparation/ Analysis
Total Organic Carbon	USEPA 415.1	250 mL	Clear glass	Acidify to pH<2 with H2S04	28 days
Organophosphorus pesticides	USEPA 625	2 L	Amber glass	Store Cool at <4ºC	Extraction – seven days; Analysis – 40 days
Synthetic pyrethroids	USEPA 625-NCI	2 L	Amber glass	Store Cool at <4ºC	Extraction – seven days; Analysis – 40 days
Acute toxicity *H. azteca*	USEPA 821-R-02-012	10 L	10 L glass	Store Cool at <6ºC	36 hours

3.2.2 Quality Assurance / Quality Control Procedures

Field measurements for pH, conductivity, and temperature were made using an Oakton CON10 pH/temperature/conductivity meter according to the manufacturer specifications. Calibration of the instrument was conducted prior to each sampling event.

Quality assurance and quality control for sampling processes included proper collection of the samples to minimize the possibility of contamination. All samples were collected in clean, contaminant-free sample bottles. Field staff wore powder-free nitrile gloves during sample collection. Sampling personnel were trained according to the field sampling standard operating procedures (SOPs). Additionally, the field staff was made aware of the significance of the project's detection limits and the requirement to avoid contamination of samples at all times.

3.2.3 Chain-of-Custody Procedures

Chain-of-custody (COC) procedures were used for all samples throughout the collection, transport, and analytical process. Samples were considered to be in custody if they were in the custodian's possession or view, retained in a secured place (under lock) with restricted access, or placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal. The principal documents used to identify samples and to document possession were COC records, field logbooks, and field tracking forms.

The COC procedures were initiated during sample collection. A COC record was provided with each sample or group of samples. Each person who had custody of the samples signed the form and ensured the samples were not left unattended unless properly secured. Documentation of sample handling and custody included the following:

- Sample identifier.
- Sample collection date and time.
- Any special notations on sample characteristics or analyses.
- Initials of the person collecting the sample.
- Date the sample was sent to the analytical laboratory.
- Shipping company and waybill information.

Completed COC forms were placed in a plastic envelope and kept inside the container with the samples. Once delivered to the analytical laboratory, the COC form was signed by the person receiving the samples. The condition of the samples (i.e., confirming all samples were accounted for and properly labeled, the temperature of the samples, and the integrity of the sample jars) was noted and recorded by the receiver. COC records were included in the final reports prepared by the analytical laboratories and are considered an integral part of the report.

3.2.4 Trend Assessment Methodology

Using the long-term data sets for SD8(1) and DPR2, a non-parametric trend analysis was conducted using the Mann-Kendall trend test to evaluate the presence or absence of significant trends using available monitoring data. This trend test is often employed for analysis of environmental time series data. The test does not assume any single distribution for the data being tested, which is an advantage when analyzing environmental data. The test does not incorporate magnitude, but instead calculates the number of positive and negative differences between samples. The number of positive and negative differences is summed to calculate the S-statistic, which is compared to a table value to determine significance. Sen's slope estimator (Sen, 1968) was used to estimate the magnitude of change over time when a significant trend was observed. Sen's slope estimator is a non-parametric method that is insensitive to outliers and can be used to infer the magnitude of a trend in the data.

The two long-term data sets contain constituent measurements with levels below the detection limit of the analytical method (non-detect results). Large numbers of values below the detection limit may create statistical problems for trend analyses. The Sen slope estimator begins to exhibit noticeable bias when the number of non-detects exceed 15%. At non-detect levels of 15% or less, both the Mann-Kendall test results and the Sen slope estimator were found to be reliable.

4.0 MONITORING RESULTS

Monitoring results were assessed in relation to Regional Board Order No. R9-2004-0277. This assessment involved chemical, bacterial, and toxicological test results from three wet weather sampling events at SD8(1) and DPR2. Rainfall and flow data from the 2008–2009 Monitoring Season are provided in Appendix C. The laboratory chemistry and toxicity results are provided in Appendix D.

Sample results were compared to the water quality objectives (WQOs) shown in Table 4-1. Water chemistry results were compared to criteria from the following references to determine the magnitude of any impacts from storm water runoff to Chollas Creek:

- Water Quality Control Plan (Regional Board, 1994) for San Diego County.
- Title 40 of the Code of Federal Regulations (Part 131; Water Quality Standards) (USEPA, 2000a).
- The NPDES Storm Water Multi-Sector General Permit (USEPA, 2000b).
- Water quality criteria for Chlorpyrifos and Malathion (CDFG, 2000).
- Resolution No. R9-2002-0123, Chollas Creek Total Maximum Daily Loads for Diazinon (Regional Board, 2002).
- Resolution No. R9-2007-0043, Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay Chollas Creek Watershed (Regional Board, 2007b).

Table 4-1.Wet Weather Water Quality Objective Criteria for All Analyzed Constituents

Constituent List	Water Quality Objective Criteria	Criteria Source
pH	6.5–9.0	Basin Plan (Regional Board, 1994)
Conductivity	–	–
Temperature	–	–
Total Coliforms	–	–
Fecal Coliforms	4,000 (REC-2)	Basin Plan (Regional Board, 1994)
Total Organic Carbon	50 mg/L	Multi-Sector General Permit (USEPA, 2000b)
Total Suspended Solids	100 mg/L	Multi-Sector General Permit (USEPA, 2000b), NSQD
Total/dissolved copper	(a)	Resolution No. R9-2007-0043
Total/dissolved lead	(a)	Resolution No. R9-2007-0043
Total/dissolved zinc	(a)	Resolution No. R9-2007-0043
Hardness	–	
Diazinon	72 ng/L (acute exposure); 45 ng/L (chronic exposure)	Resolution No. R9-2002-0123(b)
Chlorpyrifos	20 ng/L	CDFG (2000)
Malathion	430 ng/L (acute); 100 ng/L (chronic)	CDFG (2000)
Ammonia (N)	(c)	USEPA water quality criteria

Table 4-1.Wet Weather Water Quality Objective Criteria for All Analyzed Constituents

Constituent List	Water Quality Objective Criteria	Criteria Source
Nitrate	1 mg/L	Basin Plan (Regional Board, 1994)
Nitrite	1 mg/L	Basin Plan (Regional Board, 1994)
Total Kjeldahl Nitrogen	–	–
Bifenthrin	9.3 ng/L	Anderson et al. in press (wet weather), (d)
Cyfluthrin	344 ng/L	Wheelock et al., 2004 (wet weather), (d)
Cypermethrin	683 ng/L	Wheelock et al., 2004 (wet weather), (d)
Esfenvalerate	250 ng/L	Wheelock et al., 2004 (wet weather), (d)
L-Cyhalothrin	200 ng/L	Wheelock et al., 2004 (wet weather), (d)
Permethrin	21 ng/L	Anderson et al., in press (wet weather), (d)
Acute toxicity *C. dubia*	100 no-observed-effect concentration (NOEC) (%)	Regional Board Order No. R9-2007-0001
Acute toxicity *H. azteca*	100 NOEC (%)	Regional Board Order No. R9-2007-0001
Chronic toxicity *C. dubia*	100 NOEC (%)	Regional Board Order No. R9-2007-0001

(a) WQO for dissolved metal fractions are based on total hardness (as $CaCO_3$) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). Samples collected for the 2008–2009 Monitoring Season are compared to the acute (CMC) and chronic (CCC) condition, multiplied by 0.90 (margin of safety).
(b) For the Diazinon TMDL (Resolution No. R9-2002-0123), the waste load allocation is set at 72 ng/L for acute exposures and 45 ng/L for chronic exposures. The 45 ng/L chronic exposure is applied to samples collected using a flow-weighted composite method.
(c) WQO is based on CMC (salmonids absent) using pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, USEPA-822-R-99-014, December 1999.
(d) The LC50 values for synthetic pyrethroids were used as the WQO for the purposes of this report.

In years past, this report only compared results for dissolved metals to the acute (CMC) criteria which were calculated in accordance with Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). The historical WQOs for copper, lead, and zinc were set to the CMC criteria because storm events typically only represent conditions in the short term.

During the 2008–2009 Monitoring Season, the Chollas Creek Dissolved Metals TMDL was formally adopted. To provide a comparison with future TMDL compliance analyses, this report used the TMDL waste load allocations for the 2008–2009 metals monitoring results. The TMDL waste load allocations for dissolved copper, lead, and zinc are defined by both the CMC and the chronic criteria (CCC) of the CTR, multiplied by a 10% margin of safety. The waste load allocations were only applied to results from the 2008–2009 Monitoring Season.

4.1 2008–2009 Rainfall and Flow Data

Order R9-2004-0277 requires monitoring at SD8(1) and DPR2 for the first and second rainfall events of the storm season after October 1 and the first rainfall event after February 1. Estimation of a representative storm event in San Diego County was based on an evaluation of the long-term data records from the National Weather Service rain gauge located at Lindbergh Field. A typical storm event at Lindbergh Field yields 0.19–0.57 inch of rain and lasts six to 12 hours. Since the depth and duration of a typical storm event varies depending on the monitoring station's location

within San Diego County, storm events that were preceded by at least 72 hours of dry weather and were forecast to be greater than 0.10 inch were considered viable events for monitoring.

Three storm events (October 4, 2008, November 4, 2008, and February 5, 2009) were monitored over the course of the 2008–2009 Monitoring Season. Annual rainfall totals and event-specific rainfall for the 2008–2009 Monitoring Season at SD8(1) and DPR2 are shown on Table 4-2. The watershed received approximately 12.00 inches of rain based on the rain gauge at DPR2. The rain gauge at SD8(1) clogged partially in January and February 2009. A comparison of rainfall patterns between SD8(1) and DPR2 indicate that a portion of the total annual rainfall data for SD8(1) were not recorded.

The average daily rainfall for the Chollas Creek Watershed is shown on Figure 4-1. Monitored storm events are signified by raindrops on Figure 4-1. The total rainfall measured at San Diego's Lindbergh Field from October 1, 2008 to April 30, 2009, was 9.08 inches.

Table 4-2. Rainfall Totals for SD8(1) and DPR2 in the Chollas Creek Watershed

Storm Event Date	SD8(1) (inch)	DPR2 (inch)
10/04/2008–10/05/2008	0.29	0.38
11/04/2008	0.26	0.33
02/05/09–02/06/2009	0.20	0.19
2008–2009 Monitoring Season Total Rainfall	*****	**12.00**

* The rain gauge was inoperable during January and February 2009.

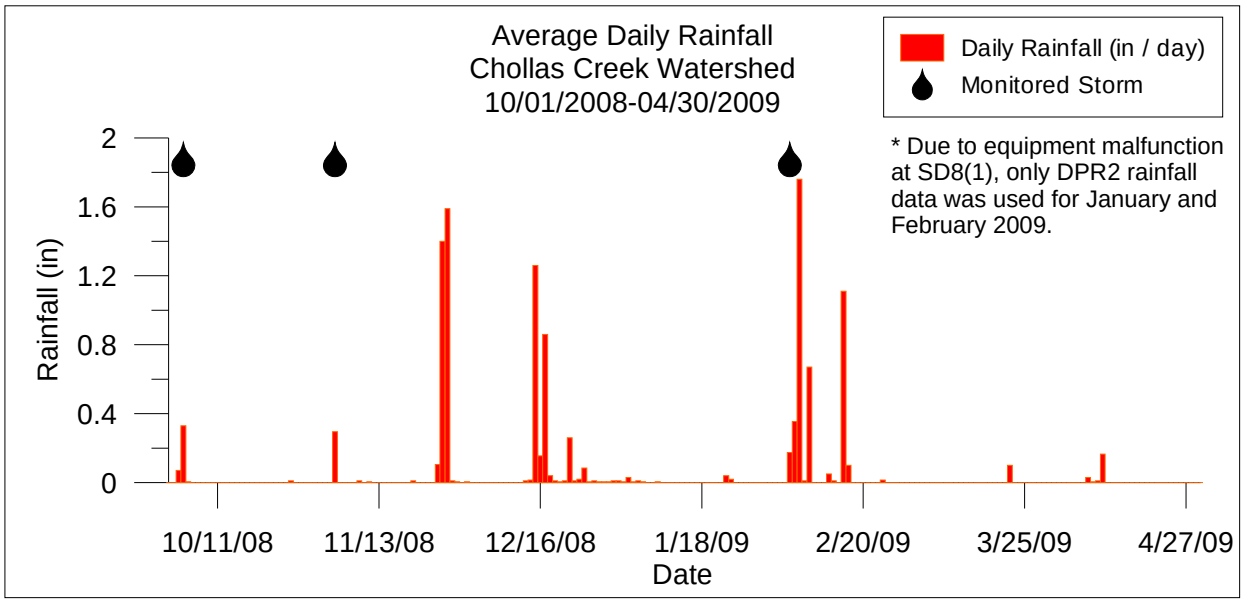

Figure 4-1. 2008–2009 Average Daily Rainfall Totals for the Chollas Creek Watershed

Hydrographs depicting flow rates, rainfall, and sample times for the three storm events monitored at SD8(1) and DPR2 during the 2008–2009 Monitoring Season are presented on Figure 4-2 and Figure 4-3, respectively. Annual hydrographs and season flow data for the sites are presented in Appendix C. Rainfall during the 2008–2009 Monitoring Season occurred

primarily in the lower watershed. Monitoring programs in the City of La Mesa were not implemented due to insufficient rainfall in the upper watershed.

The flow sensors installed at SD8(1) and DPR2 at the beginning of the 2008–2009 Monitoring Season measured date, time, and level. The flow rates were calculated based on the channel dimensions and slope.

Over the course of the 2008–2009 Monitoring Season, cobble and sand deposition occurred at SD8(1). After November 2009, levels and flows at this site were artificially elevated due to ponding upstream of the deposition area. The flow calculations were adjusted to account for the additional cobble.

On Saturday, October 4, 2008, a storm system affected the Chollas Creek Watershed with rainfall of 0.29 inches at SD8(1) and 0.38 inches at DPR2. Based on conditions observed at SD8(1), sampling at DPR2 was discontinued at 02:41, after three storm peaks had passed. After sampling was terminated, a large storm cell resulted in additional flow that was not monitored. However, the sample duration was estimated to be representative of first flush conditions compared to historical flows. The additional flow may be observed by comparing in the annual hydrographs for 2008–2009 (Appendix C).

On Tuesday, November 4, 2008, 0.26 inches and 0.33 inches of rain fell at SD8(1) and DPR2, respectively. Runoff at SD8(1) was characterized by two peak runoff periods. At DPR2, only one large, sustained peak was observed.

The first storm which affected the Chollas Creek Watershed after February 1 was on Thursday, February 5, 2009, where 0.20 inches and 0.19 inches of rain fell at SD8(1) and DPR2, respectively. As shown on the hydrograph (Figure 4-2), all 0.20 inches of rainfall at SD8(1) were recorded at 20:40 which likely was the result of rain gauge clearing due to being clogged with debris. The Manning's roughness coefficient and subsequent flow measurements for the February 2009 storm event were adjusted to account for the cobble which accumulated at this site during the monitoring season.

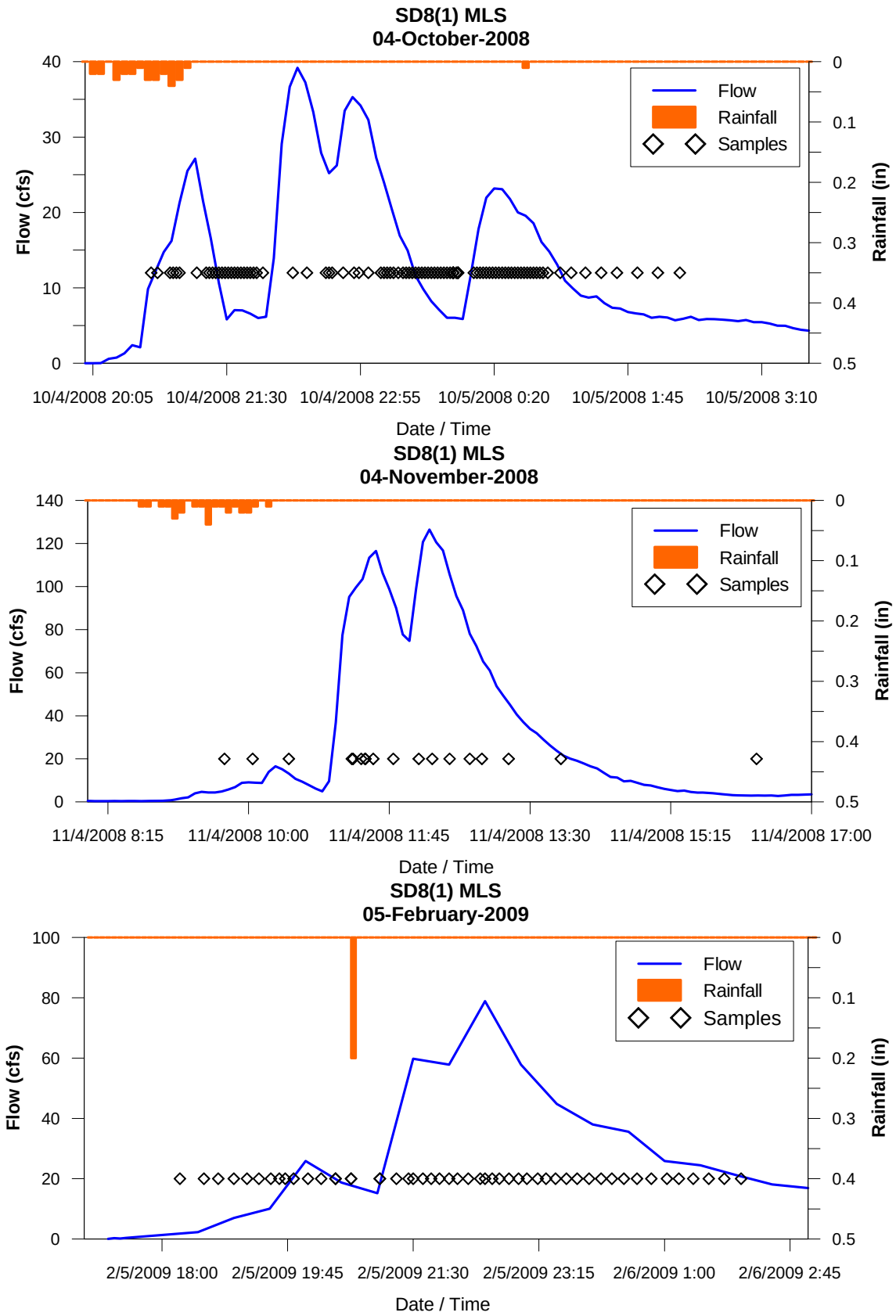

Figure 4-2. 2008–2009 Storm Hydrographs for SD8(1)

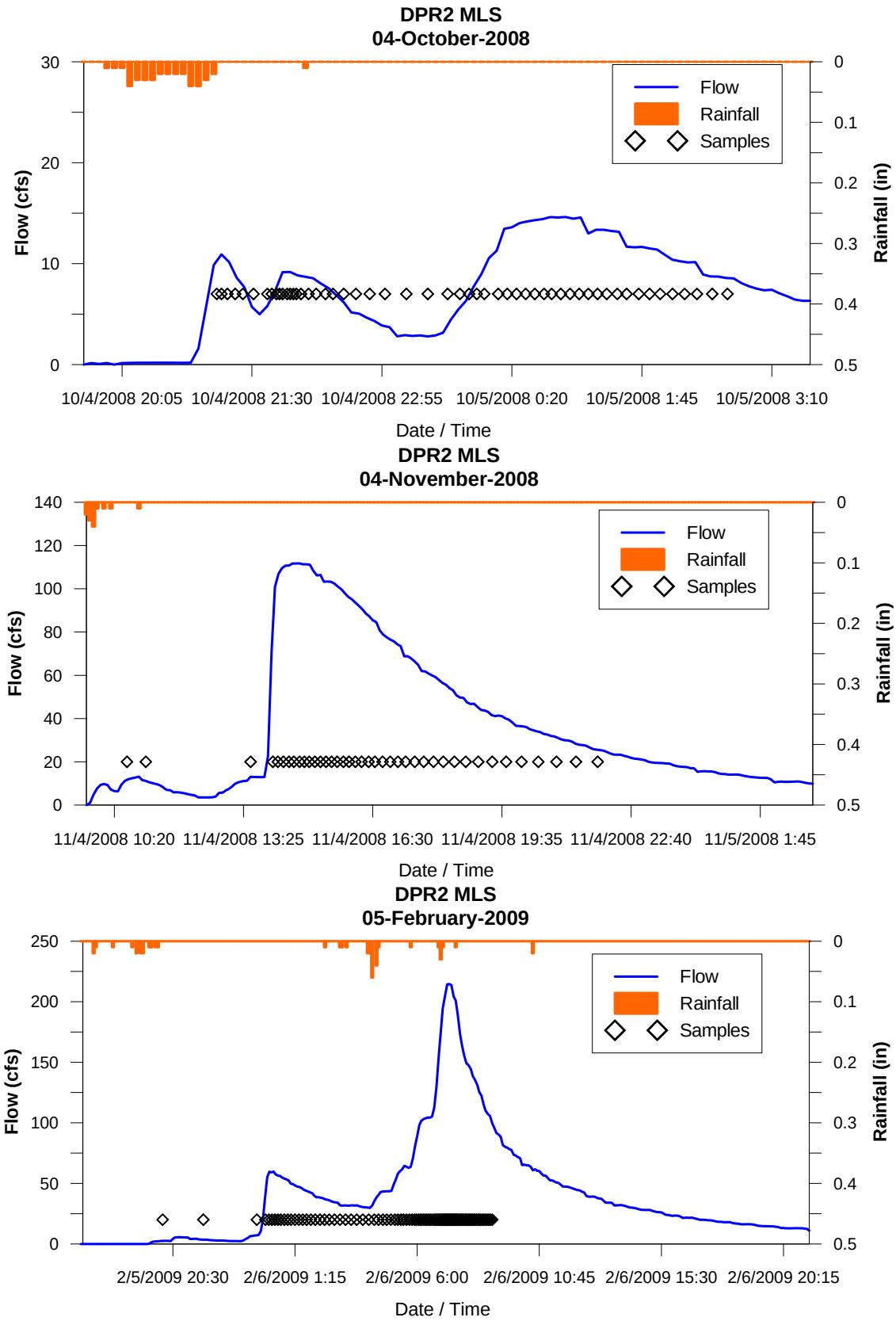

Figure 4-3. 2008–2009 Storm Hydrographs for DPR2

4.2 Compliance Monitoring Results

This section presents the water quality monitoring results for SD8(1) and DPR2 to satisfy the requirements of Order No. R9-2004-0277. Samples were analyzed for conventional field parameters, total and dissolved copper, lead, and zinc, Diazinon, and toxicity to *C. dubia*. Wet weather chemistry results for SD8(1) and DPR2 are presented in Table 4-3. Results for toxicity to *C. dubia* are presented in Table 4-4. Results which were above the WQO were bolded and shaded.

Metals

Dissolved copper and dissolved zinc concentrations were greater than the CMC at SD8(1) for all three storm events. Only dissolved copper was greater than the CMC during the first two storm events monitored at DPR2. Dissolved lead concentrations at SD8(1) and DPR2 were below the CMC for all three storms.

Dissolved copper concentrations were greater than the CCC at SD8(1) and DPR2 for all three storm events. Dissolved lead concentrations were greater than the CCC for the first two storm events at SD8(1) and dissolved zinc concentrations were greater than the CC for all three storms. Dissolved lead and zinc concentrations at DPR2 remained below the CCC during all three monitored storms.

Exceedance ratios at SD8(1) were generally less than three and less than two at DPR2. The largest ratio of 3.27 (CCC for dissolved copper) was observed during the October 2008 first flush storm event at SD8(1).

Diazinon and Toxicity

Diazinon was not detected at either SD8(1) or DPR2 during three monitored storm events. Toxicity was not observed for acute or chronic survival tests. Seven-day chronic reproductive toxicity was observed to *C. dubia* for the February 5, 2008 storm event for water collected from SD8(1). It should be noted that this sample also had the highest concentration of Permethrin (a synthetic pyrethroid) of all the monitored storm events at SD8(1).

Table 4-3. 2008–2009 Chollas Creek Wet Weather Compliance Monitoring Chemistry Results

Parameter	Units	WQO	Source	SD8(1) 10/4/2008-10/5/2008	DPR2 10/4/2008-10/5/2008	SD8(1) 11/4/2008	DPR2 11/4/2008	SD8(1) 2/5/2009-2/6/2009	DPR2 2/5/2009-2/6/2009
Physical Chemistry									
Conductivity	uS/cm	-	-	248	718	184.33	526.67	179.77	473
Temperature	Celsius	-	-	22.97	22.4	19.57	19.7	16.1	14.9
pH	pH Units	6.5-9.0	Basin Plan	7.04	6.92	7.34	7.13	7.54	7.17
General Chemistry									
Total Hardness as $CaCO_3$	mg/L	-	-	143.8	202.7	112.1	122.1	110.7	148.6
CTR Metals									
Total Copper (Cu)	µg/L	-	-	79.9	56.4	50.4	27.4	51	21.4
Total Lead (Pb)	µg/L	-	-	23.67	4.88	24.33	9.21	20.21	4.9
Total Zinc (Zn)	µg/L	-	-	496.5	193.5	299.8	125.2	287	80.3
Dissolved Copper (Cu)	µg/L	(a)	40 CFR 131.38	**40**	**42.5**	**27.6**	**20.3**	**25.1**	**14.9**
Dissolved Lead (Pb)	µg/L	(a)	40 CFR 131.38	**5.15**	1.82	**3.39**	2.11	0.72	0.21
Dissolved Zinc (Zn)	µg/L	(a)	40 CFR 131.38	**358.6**	163.7	**166**	99	**171.4**	53.4
Organophosphorus Pesticides									
Diazinon	ng/L	72/45	Chollas Creek TMDL for Diazinon (acute/chronic)	<4	<4	<4	<4	<4	<4

< = result less than the method detection limit

(a) WQO for dissolved metal fractions are based on Total Hardness (as $CaCO_3$) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). Samples collected for the 2008-2009 Monitoring Season are compared to the CMC and CCC, multiplied by 0.90. This multiplier lowers the CTR value in accordance with the 10% margin of safety which has been incorporated into the concentration-based waste load allocations for the Chollas Creek Metals TMDL.

Shaded and bold=results above the water quality benchmark and the CMC water quality benchmark for metals.

Bold only=results above the CCC water quality benchmark for metals.

Table 4-4. 2008–2009 Chollas Creek Wet Weather Biological Toxicity Results for *Ceriodaphnia dubia*

Test	Reporting Value	Unit	SD8(1)			DPR2		
			10/5/2008	11/4/2008	2/5/2009	10/5/2008	11/4/2008	2/5/2006
96-hour acute toxicity (*C. dubia*)	Mean % survival for control	%	80	100	100	100	100	100
	% survival in 100% concentration	%	100	90	100	100	100	100
	LC_{50}	%	>100	>100	>100	>100	>100	>100
	LOEC	%	>100	>100	>100	>100	>100	>100
	Tu_a		0	0.59	0	0	0	0
	LT_{50}	Hours	>96	>96	>96	>96	>96	>96
Toxicity Observed			No	No	No	No	No	No
7-day chronic toxicity (*C. dubia*)	Mean % survival for control	%	80	100	100	100	100	90
	% survival in 100% concentration	%	100	90	100	100	100	100
	LC_{50} (survival)	%	>100	>100	>100	>100	>100	>100
	NOEC (survival)	%	100	100	100	100	100	100
	LOEC (survival)	%	>100	>100	>100	>100	>100	>100
	Tu_a (survival)		1	1	1	1	1	1
	LT_{50}	Hours	>168	>192	>144	>144	>168	>192
	NOEC (reproduction)	%	100*	100	**50**	100*	100	100
	LOEC (reporduction)	%	>100*	>100	100	>100*	>100	>100
	Tu_c (reproduction)	%	1*	1	2	1*	1	1
Toxicity Observed			No	No	Yes	No	No	No

* Original test did not meet test acceptability criteria for reproduction. This test was re-started as a screen on 10/10/08 (5 days past the 36-hour holding time).

4.3 Additional Analyte Results

Water quality samples were also collected to provide additional relevant information. These samples were analyzed for indicator bacteria, oil and grease, nutrients, organophosphorus pesticides, synthetic pyrethroids, and toxicity to *H. azteca.* Wet weather chemistry results for the additional analytes from SD8(1) and DPR2 are presented in Table 4-5. Results for toxicity to *H. azteca* are presented in Table 4-6. Results which were above the WQO were bolded and shaded.

Wet weather chemistry sample results for SD8(1) were above the WQO for total suspended solids (TSS) during all three of the monitored storm events. TSS concentrations in the north fork were 4.2 to 6.0 times larger than at DPR2. The TSS concentrations at DPR2 did not exceed the WQO for the three monitored storm events for the 2008–2009 Monitoring Season.

Oil and grease results were above the WQO at SD8(1) during the first and third storm events. Generally results were approximately three times greater in the north fork than in the south fork. At DPR2, oil and grease results were below the WQO.

Concentrations of the organophosphorus pesticide Malathion exceeded the WQO during the November 4, 2008 storm event at both sites. Malathion was detected in measurable quantities at DPR2 for the other two monitored storm events. Malathion was also detected at SD8(1) during the February 5, 2009 storm event. In contrast, the other 24 monitored organophosphorus pesticides, including Diazinon and Chlorpyrifos, were not detected.

Fecal coliform bacteria concentrations were higher than the Basin Plan's REC-2 WQO of 4,000 MPN/100 mL for all events sampled at both SD8(1) and DPR2. Concentrations were highest during the second storm event.

In recent years, there has been an observed shift in pesticide use from banned Diazinon products to synthetic pyrethroids. During the 2008–2009 Monitoring Season, Bifenthrin was above the published literature LC_{50} value for *H. azteca* at both sites during all three storm events but was only detected at low concentrations at DPR2 during the first monitored storm. Permethrin was detected at concentrations above the LC_{50} value at SD8(1) during all three storms. As indicated by previously conducted toxicity identification evaluation (TIE) studies, synthetic pyrethroids have been identified as the likely causative agent of toxicity to *H. azteca* in Chollas Creek storm water. Toxicity to *H. azteca* was observed during the three storm events monitored at SD8(1) and during the first two storms monitored at DPR2.

Table 4-5. 2008–2009 Chollas Creek Wet Weather Results for Additional Analytes

Parameter	Units	WQO	Source	SD8(1) 10/4/2008-10/5/2008	DPR2 10/4/2008-10/5/2008	SD8(1) 11/4/2008	DPR2 11/4/2008	SD8(1) 2/5/2008-2/6/2009	DPR2 2/5/2008-2/6/2009
Bacteria									
Enterococci	MPN/100 mL	-	-	130,000	110,000	80,000	50,000	50,000	280,000
Fecal Coliforms	MPN/100 mL	4000	Basin Plan REC-2	**80,000**	**13,000**	**110,000**	**130,000**	**30,000**	**30,000**
Total Coliforms	MPN/100 mL	-	-	170,000	23,000	500,000	800,000	500,000	240,000
General Chemistry									
Ammonia-N	mg/L	(a)	U.S. EPA Water Quality Criteria (Freshwater)	1.37	1.36	1.41	0.81	1.42	0.79
Dissolved Organic Carbon	mg/L	-	-	96.5	69.2	53.7	41.3	25.1	17.1
Nitrate-N by IC	mg/L	10	Basin Plan	3.55	1.98	2.6	2.32	1.48	1.33
Nitrite-N by IC	mg/L	1	Basin Plan	0.17	0.35	0.12	0.2	0.15	0.14
Oil & Grease	mg/L	10	MSGP 2000	**13.5**	4.1	9.2	1.6	**17.2**	6.1
Total Kjeldahl Nitrogen	mg/L	-	-	11	10	5.5	4.1	4.9	2.8
Total Nitrogen	mg/L	1	Basin Plan	**14.72**	**12.33**	**8.22**	**6.62**	**6.53**	**4.27**
Total Organic Carbon	mg/L	-	-	107.4	73.6	64	39.9	35.1	26.1
Total Suspended Solids	mg/L	100	MSGP 2000	**117.6**	27.6	**142.7**	23.8	**161**	29
Organophosphorus Pesticides									
Azinphos Methyl	ng/L	-	-	NA	NA	NA	NA	<100	<100
Bolstar (Sulprofos)	ng/L	-	-	<4	<4	<4	<4	<4	<4
Chlorpyrifos	ng/L	20 / 14	CA Dept. of Fish & Game, 2000 (acute/chronic)	<2	<2	<2	<2	<2	<2
Demeton	ng/L	-	-	<2	<2	<2	<2	<2	<2
Dichlorvos	ng/L	-	-	<6	<6	<6	<6	<6	<6
Dimethoate	ng/L	-	-	<6	<6	<6	<6	<6	<6
Disulfoton	ng/L	-	-	<2	<2	<2	<2	<2	<2
Ethoprop (Ethoprofos)	ng/L	-	-	<2	<2	<2	<2	<2	<2
Ethyl Parathion	ng/L	-	-	NA	NA	NA	NA	<10	<10
Fenchlorphos (Ronnel)	ng/L	-	-	<4	<4	<4	<4	<4	<4
Fenitrothion	ng/L	-	-	NA	NA	NA	NA	<100	<100
Fensulfothion	ng/L	-	-	<2	<2	<2	<2	<2	<2
Fenthion	ng/L	-	-	<4	<4	<4	<4	<4	<4
Malathion	ng/L	430 / 100	CA Dept. of Fish & Game, 1998 (acute/chronic)	<6	42.5	**232.6**	**154.1**	98.5	97.5
Merphos	ng/L	-	-	<2	<2	<2	<2	<2	<2
Methamidophos (Monitor)	ng/L	-	-	NA	NA	NA	NA	<50	<50
Methidathion	ng/L	-	-	NA	NA	NA	NA	<10	<10
Methyl Parathion	ng/L	-	-	<1	<1	<1	<1	<1	<1
Mevinphos (Phosdrin)	ng/L	-	-	<16	<16	<16	<16	<16	<16
Phorate	ng/L	-	-	<12	<12	<12	<12	<12	<12
Phosmet	ng/L	-	-	NA	NA	NA	NA	<50	<50
Tetrachlorvinphos (Stirofos)	ng/L	-	-	<4	<4	<4	<4	<4	<4
Tokuthion	ng/L	-	-	<6	<6	<6	<6	<6	<6
Trichloronate	ng/L	-	-	<2	<2	<2	<2	<2	<2
Pyrethroids									
Allethrin	ng/L	-	-	<2	<2	<2	<2	<2	<2
Bifenthrin	ng/L	9.3	Anderson et al. 2006	**88.7**	**15.1**	**276.1**	**31.1**	**112.3**	**13.1**
Cyfluthrin	ng/L	344	Wheelock et al. 2004	35.3	6.1	70.6	<0.5	61.6	9.4
Cypermethrin	ng/L	683	Wheelock et al. 2004	51	5.9	75.8	<0.5	74.6	10.8
Danitol	ng/L	-	-	<2	<2	<2	<2	<2	<2
Deltamethrin	ng/L	-	-	<2	<2	<2	<2	<2	<2
Esfenvalerate	ng/L	250	Wheelock et al. 2004	<2	<2	<2	<2	<2	<2
Fenvalerate	ng/L	-	-	1.3	<2	<2	<2	<2	<2
Fluvalinate	ng/L	-	-	<2	<2	<2	<2	<2	<2
L-Cyhalothrin	ng/L	200	Wheelock et al. 2004	5	<2	<2	<2	5.4	<2
Permethrin	ng/L	21	Anderson et al. 2006	**295.3**	9.4	**394.6**	<5	**445.7**	<5
Prallethrin	ng/L	-	-	<2	<2	<2	<2	<2	<2
Resmethrin	ng/L	-	-	<25	<25	<25	<25	<25	<25

NA = Not analyzed

< = result less than the method detection limit

(a) Water Quality Benchmark is based on CMC (salmonids absent) using pH described in the U.S. EPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

Shaded and bold=results above the water quality benchmark.

Table 4-6. 2008–2009 Chollas Creek Wet Weather Biological Toxicity Results for *Hyalella azteca*

Test	Reporting Value	Unit	SD8(1)			DPR2		
			10/5/2008	11/4/2008	2/5/2009	10/5/2008	11/4/2008	2/5/2006
96-hour acute toxicity (*H. azteca*)	Mean % survival for control	%	100	100	100	100	100	95
	NOEC	%	**25**	**12.5**	**12.5**	**50**	**50**	100
	LC_{50}	%	61.4	46.4	42.8	90.7	>100	>100
	LOEC	%	50	25	25	100	100	>100
	Tu_a		1.63	2.15	2.34	1.10	0.93	0.92
Toxicity Observed			Yes	Yes	Yes	Yes	Yes	No

5.0 DATA ANALYSIS AND INTERPRETATION

Historical wet weather data have been collected at SD8(1) since 1994 and at DPR2 since 2004. The following sections provide analysis and interpretation of the compliance monitoring and additional analytical results from SD8(1) and DPR2 during the 2008–2009 Monitoring Season as compared to historical data.

Only those constituents with significant trends are shown. All scatterplots from SD8(1) and DPR2 can be found in Appendix E. A table of trend results for each site, including P-values, is also included in Appendix E.

5.1 Compliance Monitoring Analysis

Exceedance Ratios for Metals

The acute CMC condition ratios for 2008–2009 monitoring and mean historical conditions are shown on Figure 5-1; the chronic CCC condition ratios are shown on Figure 5-2. These ratio plots reflect generally understood patterns for the Chollas Creek Watershed, including the following:

- Exceedance ratios in the north fork (SD8(1)) are generally greater than in the south fork (DPR2).
- Metals concentrations have higher rates of exceedance during the first flush storm event of the season. In both the north and the south forks, the acute and chronic ratios for the October 2008 first flush storm event are greater than the mean historical ratio for dissolved copper and zinc.
- Copper has a higher detection rate and exceedance rate (compared to the CMC and CCC criteria) than other metals. The mean historical ratios (acute and chronic) are greater than or equal to one for dissolved copper, but less than one for dissolved zinc.
- The CCC mean ratio for dissolved lead indicates a historical water quality problem at SD8(1) in the north fork of Chollas Creek, but this result is not reflected in the short-term acute condition ratio plot or the 2008–2009 wet weather monitoring results.
- The mean exceedance ratios are less than two for the acute condition at SD8(1) and DPR2. The mean chronic exceedance ratios are less than three for SD8(1) and less than two for DPR2.

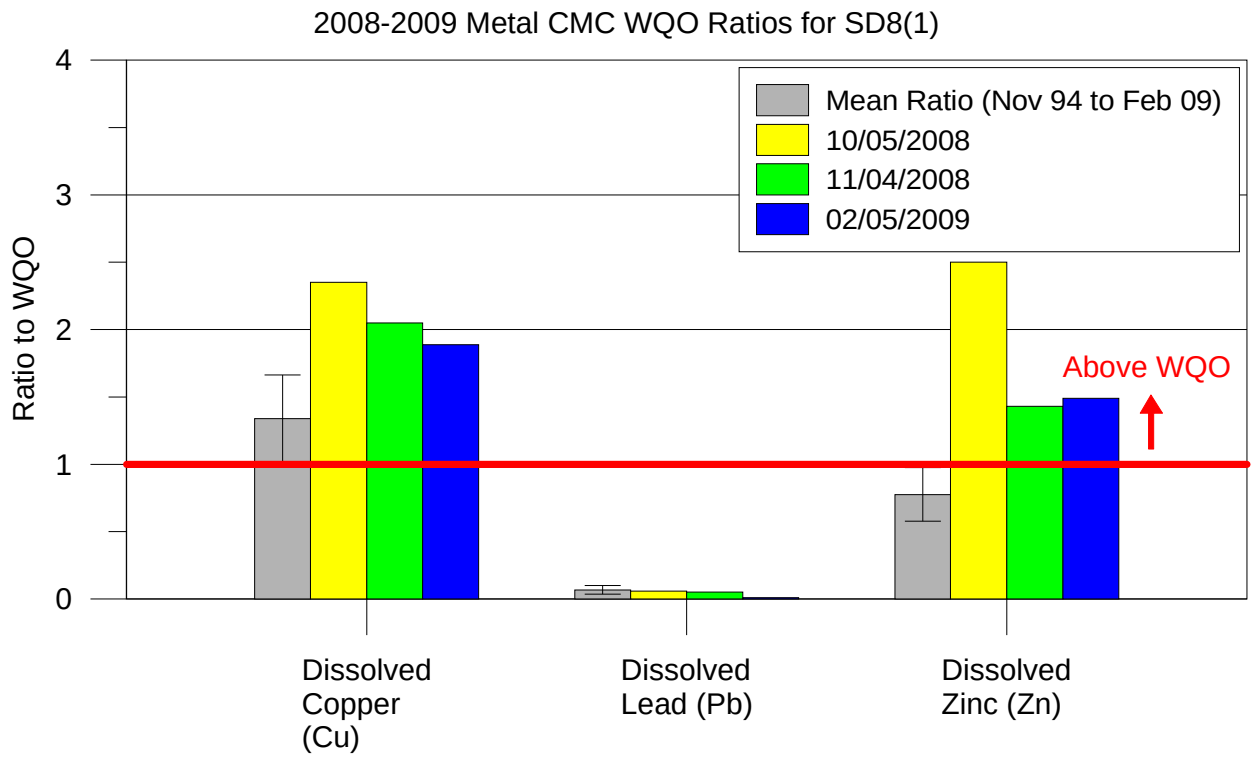

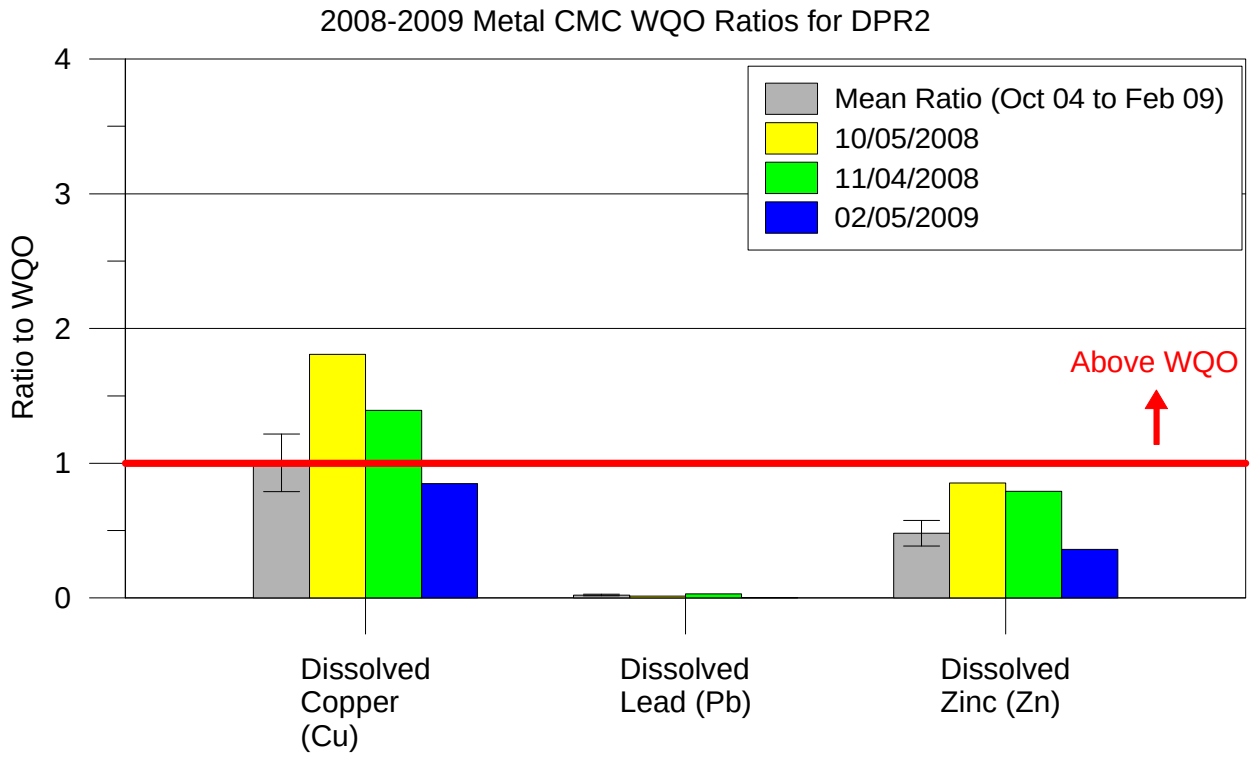

Figure 5-1. 2008–2009 Ratio Plots for Metals Concentrations Compared to the Acute Condition Water Quality Criteria at SD8(1) and DPR2

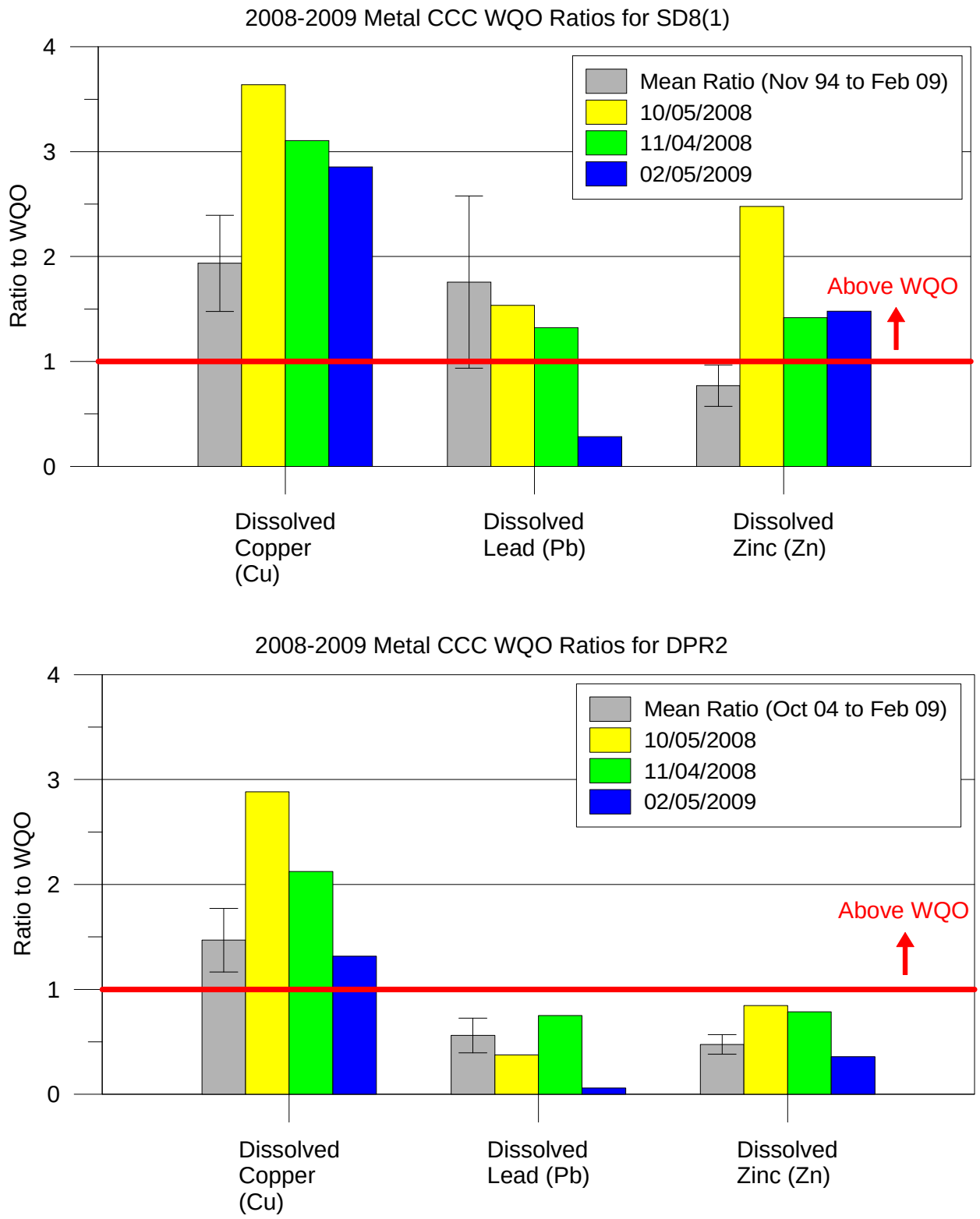

Figure 5-2. 2008–2009 Ratio Plots for Metals Concentrations Compared to the Chronic Condition Water Quality Criteria at SD8(1) and DPR2

Trends for Metals

As shown in Subsection 4.2, the north and south forks of Chollas Creek have WQO exceedances for primarily dissolved copper and dissolved zinc. The Mann-Kendall analysis did not indicate significant water quality trends for metals at DPR2. Similar to 2007–2008 results, trend analyses for the north fork indicate significantly increasing trends for total copper (p=0.006) and total zinc (p=0.002). Unlike previous years, the 1994–2009 analysis also indicates significant increasing trends for dissolved copper and dissolved zinc (p=0.036 for copper and p=0.019 for zinc) at SD8(1). Trend plots for copper and zinc at SD8(1) are shown on Figure 5-3. However, the magnitudes of the trends are relatively low.

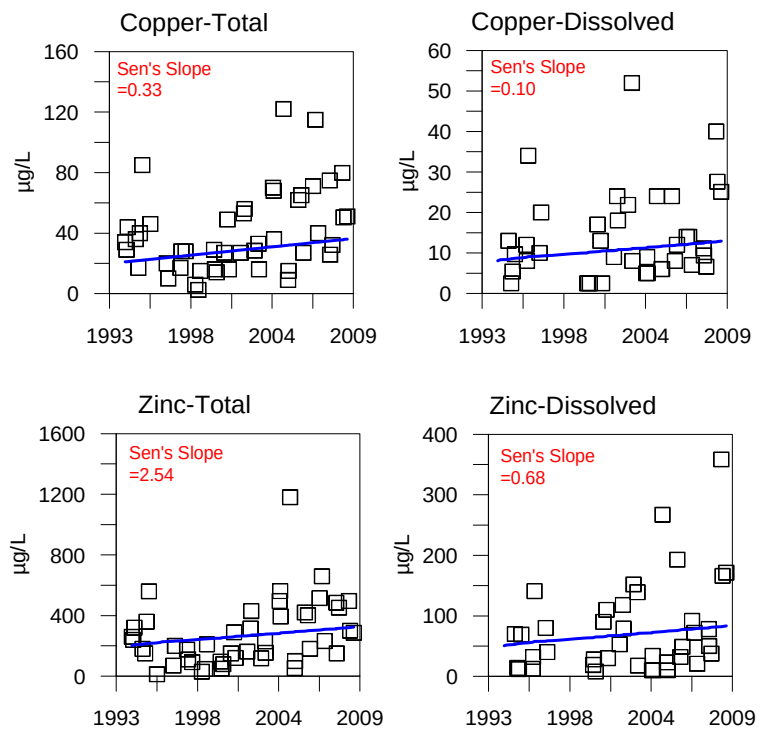

Figure 5-3. SD8(1) Trend Plots for Total and Dissolved Copper and Zinc

The Chollas Creek Dissolved Metals TMDL sets the numeric targets equal to the CTR criteria. The CTR is the most current, conservative WQO for dissolved copper, lead, and zinc in freshwater. The CTR WQOs for dissolved copper, lead, and zinc are comprised of hardness-based equations that vary with sample hardness concentrations, as shown on Figure 5-4. The Chollas Creek Watershed is unique in that it has significantly lower hardness concentrations, and therefore lower dissolved metals WQOs, than other watersheds in San Diego County. The historical mean wet weather hardness concentration at the SD8(1) is 90 mg $CaCO_3$/L compared to other watersheds where the mean wet weather hardness concentrations are approximately 120 mg $CaCO_3$/L. As a result of the low hardness values, it is more likely that slightly elevated wet weather monitoring results for dissolved metals will exceed the CTR WQO. The typically lower hardness results in the north fork (SD8(1)) may also contribute to the greater number of exceedances in comparison to the south fork.

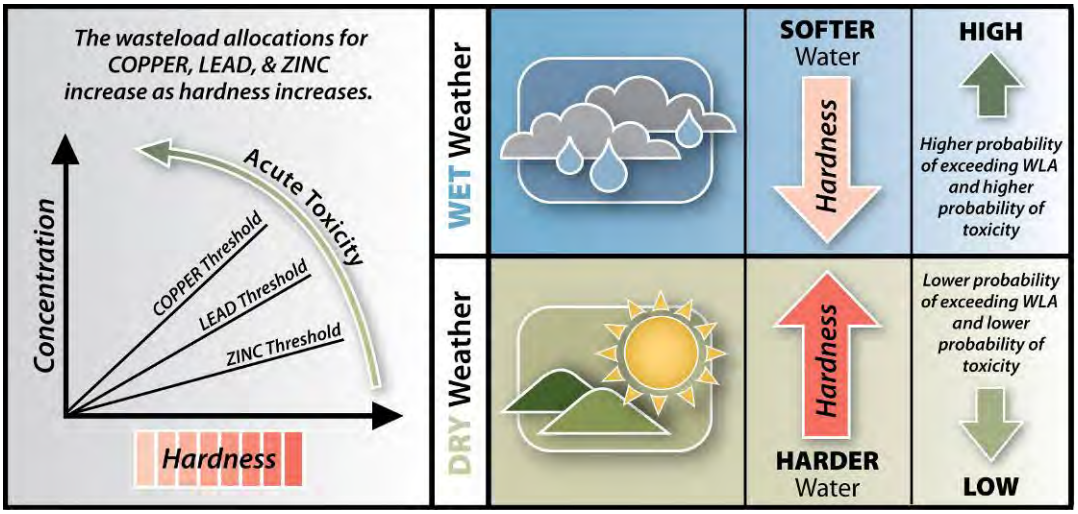

Figure 5-4. Impact of Hardness as a Dominant Variable in the California Toxics Rule Criteria

Trends for Diazinon and Toxicity

The United States Environmental Protection Agency (USEPA) implemented a nationwide ban on the retail sale of pesticides containing Diazinon on January 1, 2005. Trend analysis indicates a significant decreasing trend for SD8(1) ($p < 0.001$) and Diazinon at DPR2 ($p < 0.001$). As shown on Figure 5-5, the magnitude of this trend at DPR2 is relatively small and equal to -0.28 ng/L per year. The magnitude of decrease could not be quantified for SD(1) due to the number of non-detects in the historical data set (48%). The historical Diazinon concentrations and long-term decreasing trends for SD8(1) and DPR2 are shown on Figure 5-6 and Figure 5-7. As the residual supply of Diazinon becomes exhausted, Diazinon concentrations and the frequency of detection should continue to decrease.

No significant trends for toxicity to *C. dubia* were observed for either site. A review of historical data indicates that both sites have high rates of non-toxic results (64–78% at SD8(1) and 81–94% at DPR2).

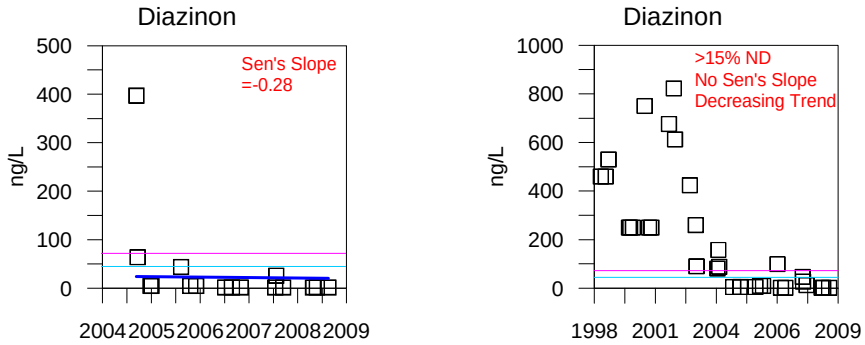

Figure 5-5. Trend Plots for Diazinon (DPR2 on left, SD8(1) on right)

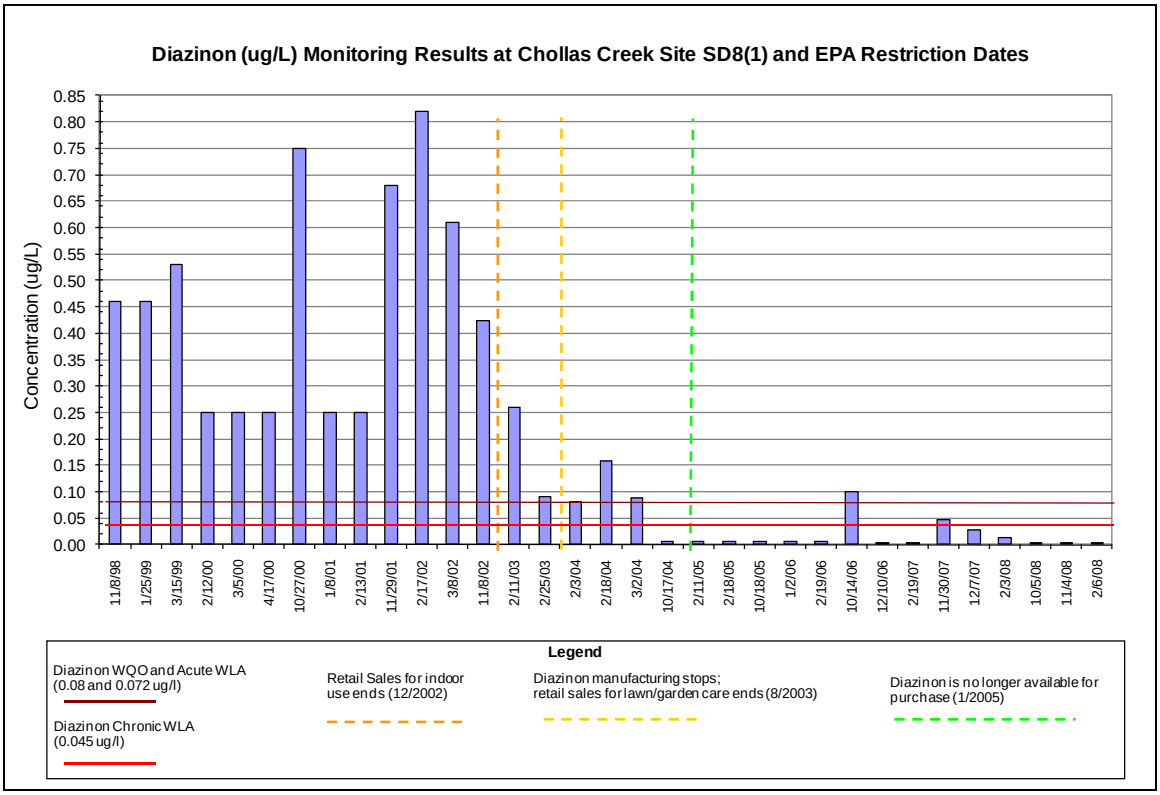

Figure 5-6. Historical Diazinon Concentrations at SD8(1) with Restriction Dates

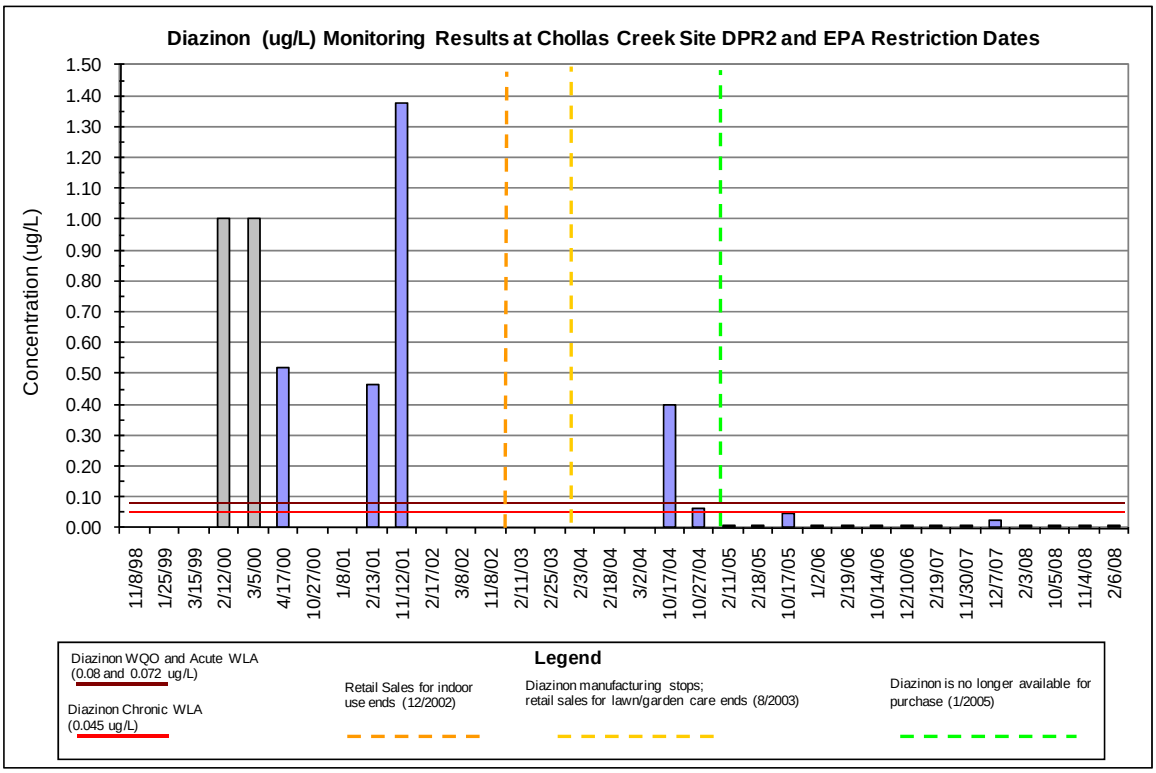

Figure 5-7. Historical Diazinon Concentrations at DPR2 with Restriction Dates

5.2 Additional Analyte Analysis

Exceedance Ratios

The 2008–2009 WQO ratio plots for fecal coliform bacteria for SD8(1) and DPR2 are shown on Figure 5-8. At SD8(1), the largest exceedance ratio of 27.5 corresponds to the largest flow event on November 4, 2008. At DPR2, the largest fecal coliform WQO ratio of 32.5 also occurred on November 4, 2008. However, larger flows were observed at DPR2 during the third storm event. The bacteria grab sample was taken at 23:35 on February 5, 2009 at DPR2, during the trailing portion of the first peak of the hydrograph. The timing of the grab sample may have impacted the concentration. On the other hand, the Design Storm study indicates that bacteria concentrations are relatively unaffected by fluctuations in a storm hydrograph (WESTON, 2009b).

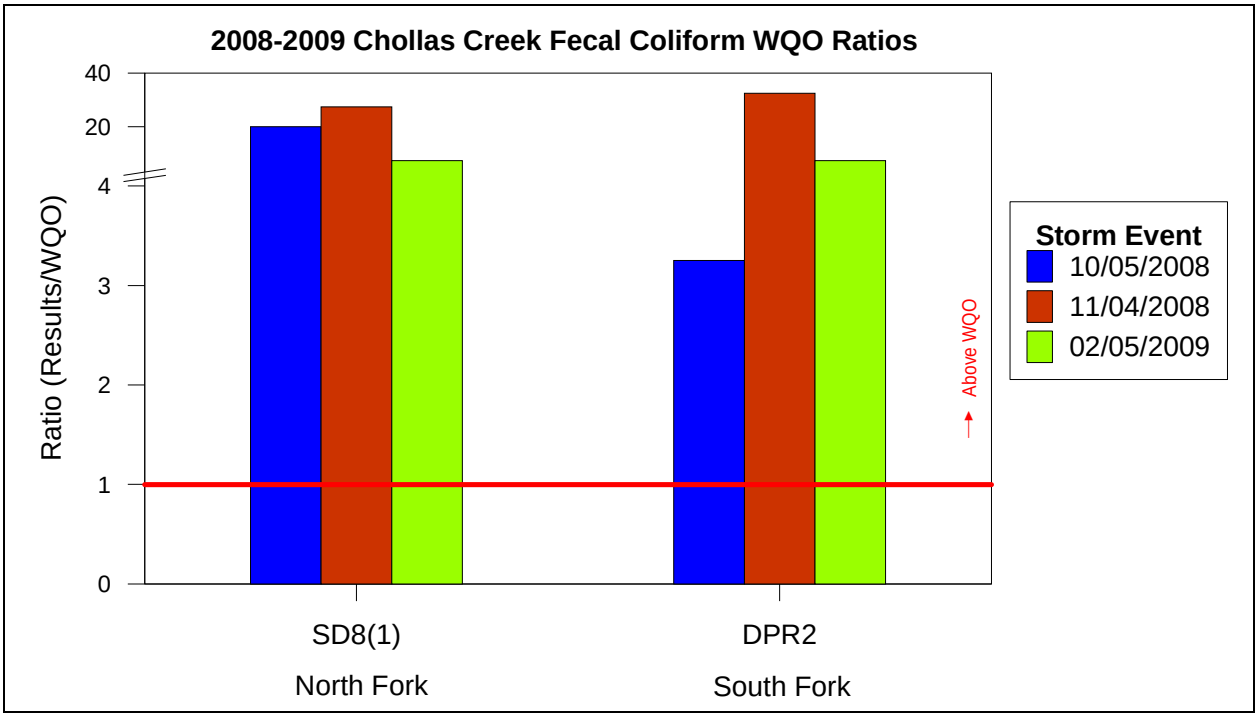

Figure 5-8. 2008–2009 Ratio Plots for Fecal Coliform Bacteria

Trends

During the 2008–2009 Monitoring Season there were no exceedances of the 100 mg/L WQO for TSS at DPR2. Trend analysis indicates a significant decreasing trend for TSS concentrations (p=0.012) at this site. This new decreasing trend may be due to implementation and the successful establishment of channel restoration projects throughout the south fork of Chollas Creek. Construction of the *Chollas Creek Water Quality Protection and Habitat Enhancement* project at the Youth Park site was completed in December 2007. The wide spread TSS results for the 2007–2008 Monitoring Season may be explained by soil disturbance associated with construction and a lack of adult vegetation in the creek. During the 2008–2009 Monitoring Season, vegetation has become established (Figure 5-10).

No other significant trends were observed for additional general chemistry analytes monitored in the 2008–2009.

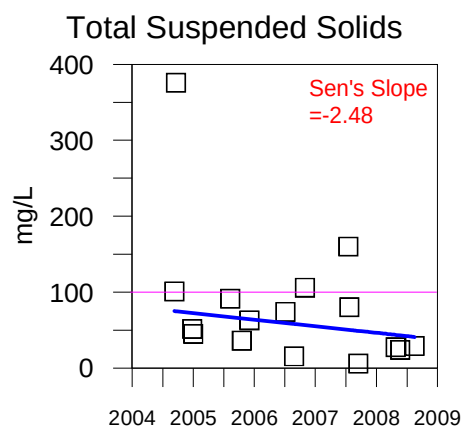

Figure 5-9. DPR2 Trend Plot for Total Suspended Solids

Figure 5-10. Completed Restoration Project at Youth Park Site (June 2008)

As shown in Subsection 4.3, the Chollas Creek Watershed had results above the published literature LC_{50} values for Bifenthrin and Permethrin during all three storm events. Toxicity to *H. azteca* was observed at SD8(1) during all three storm events and at DPR2 during the storms in October and November. Significant increasing trends for concentrations of Bifenthrin and Permethrin and toxicity to *H. azteca* were determined for SD8(1), as shown on Figure 5-11. The magnitude of these increasing trends could not be quantified through a Sen slope analysis due to the high percentage of non-detects in the historical long-term data set (Bifenthrin=33%, Permethrin=44%, toxicity to *H. azteca*=22%). There are no significant trends for synthetic pyrethroids or *H. azteca* for DPR2.

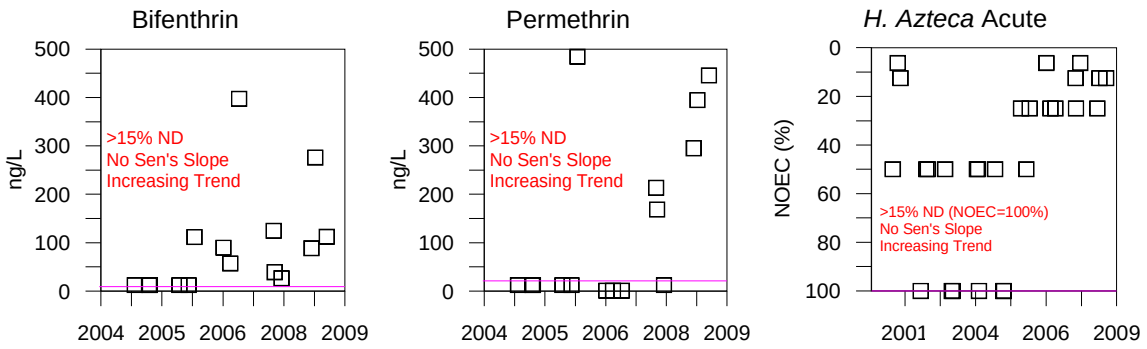

Figure 5-11. SD8(1) Trend Plots for Synthetic Pyrethroids and Toxicity to *Hyalella azteca*

6.0 SUMMARY AND CONCLUSIONS

The Dischargers have complied with Order No. R9-2004-0277 during the 2008–2009 Monitoring Season by conducting the following activities:

- Jurisdictions have exercised their legal authority to regulate pesticide discharges through industrial inspections and dry weather ICID investigations.
- Jurisdictions have performed education and outreach to area residents.
- Jurisdictions have conducted water quality monitoring during three storm events (October 4, 2008, November 4, 2008, and February 5, 2009) at SD8(1) and DPR2.

SD8(1) was located at the base of the north fork of Chollas Creek, and DPR2 was located at the base of the south fork of Chollas Creek. Water quality monitoring was completed for a limited set of analytes which were specifically named in Order No. R9-2004-0277. A suite of additional analytes were assessed to provide the Dischargers supplemental information regarding conditions in the watershed.

Compliance Monitoring

Metals concentrations at SD8(1) and DPR2 during the 2008–2009 Monitoring Season exceeded the concentration-based waste load allocations of the Chollas Creek Dissolved Metals TMDL. The CMC for dissolved copper was exceeded three times at SD8(1) and twice at DPR2. The CCC for dissolved copper was exceeded at both SD8(1) and DPR2 for all three storm events. There were two CCC exceedances for dissolved lead at SD8(1). The CMC for dissolved zinc was exceeded at both sites for all three storm event and the CCC was exceeded at SD8(1) for all three storm events.

Mann-Kendall trend analysis performed on the long-term data set at SD8(1) indicates significantly increasing trends for total and dissolved copper and zinc. The magnitude of the zinc trend is greater than for copper, but both trends are relatively shallow. Significant trends for metals were not observed at DPR2.

The organophosphorus pesticide Diazinon was not detected at either SD8(1) and DPR2. There are significant, observably decreasing trends for Diazinon in both the north fork and south fork. The magnitude of the decreasing trend at DPR2 was quantified to -0.28 ng/L per year. The trend for SD8(1) could not be quantified due to the high number of non-detects. As the residual supply of Diazinon becomes exhausted due to the USEPA ban on Diazinon, concentrations and the frequency of detection in Chollas Creek should continue to decrease.

Acute and chronic survival toxicity to *C. dubia* was not observed at SD8(1) or DPR2. Chronic survival toxicity to *C. dubia* was observed once at SD8(1), during the February 5, 2008 storm event. A review of historical data indicates that both sites have high rates of non-toxic results (64–78% at SD8(1) and 81–94% at DPR2).

Additional Monitoring

WQO exceedances at SD8(1) and DPR2 were observed for the additional analytes Malathion, Bifenthrin, Permethrin, and fecal coliform bacteria. There were no significant trends for water

quality conditions in the south fork for these additional analytes. Due to the high percentage of non-detect values the magnitude of the increasing trends for synthetic pyrethroids (Bifenthrin and Permethrin) could not be quantified at SD8(1). Overall, synthetic pyrethroid usage within the watershed also warrants attention. TIE studies have indicated a link between toxicity to *H. azteca* and detections of synthetic pyrethroids. Toxicity to *H. azteca* was observed in both the north and south forks of Chollas Creek during the 2008–2009 Monitoring Season and this toxicity has persisted even as *C. dubia* toxicity has decreased.

WQO exceedances at SD8(1) were also observed for TSS and oil and grease. No significant trends were observed at SD8(1) for these analytes. The TSS concentrations at DPR2 were below the WQO during the 2008–2009 Monitoring Season. Mann-Kendall trend analysis indicated a significant decreasing trend for TSS for the south fork, which may be the result of stream restoration projects that have been completed in the south fork of Chollas Creek (e.g., *Chollas Creek Water Quality Protection and Habitat Enhancement* project at the Youth Park site).

Recommendations

USEPA has provided guidance concerning a procedure that may be used to derive regional aquatic-life criterion, such as the CTR allows for site-specific criterion to be developed for metals. The indicator species procedure is based on the assumption that characteristics of site specific water may influence the bioavailability and toxicity of a pollutant. As part of the procedure, acute toxicity in site water and laboratory water is determined in concurrent toxicity tests. The water effects ratio (WER) (site water to laboratory water toxicity values) would subject the current TMDL waste load allocations to a criteria adjustment factor that accounts for the effect of site-specific water characteristics on pollutant bioavailability and toxicity to aquatic life. In Chollas Creek, a WER would likely raise the WQO above the concentrations typically observed for dissolved metals in storm water. This statement is based on the fact that higher dissolved organic carbon in Chollas Creek waters would result in higher complexation of metals. Additionally, since toxicity is rarely observed to *C. dubia*, the application of a WER would be beneficial. This procedure has been used in the Calleguas Creek Watershed resulting in a WER ranging from 1.51 during dry weather to 3.69 during wet weather conditions (LWA, 2006). Based on the magnitude of exceedances for dissolved copper and dissolved zinc, the Chollas Creek Watershed would benefit from the development of a WER. The City of San Diego will be conducting a WER special study during the 2009–2010 Monitoring Season.

Education and outreach programs and events for area residents and businesses should continue to reduce pesticide usage within the Chollas Creek Watershed.

Synthetic pyrethroids are currently undergoing pesticide re-registration review by the California Department of Pesticide Regulation at this time. Therefore, gaining a deeper understanding of synthetic pyrethroid usage in the watershed (through special studies) also warrants attention.

As Dischargers begin implementing management programs in accordance with the Implementation Plan, additional water quality monitoring should be implemented to identify the sources of metals, evaluate effectiveness, and monitor trends in water quality.

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Appendix A

Signed Certification Statements

SAN DIEGO COUNTY
REGIONAL AIRPORT AUTHORITY

P.O. BOX 82776, SAN DIEGO, CA 92138-2776
619.400.2400 WWW.SAN.ORG

January 5, 2009

Subject: Statement of Certification for the 2008-2009 San Diego Bay Watershed URMP Annual Report

I certify under penalty of law that the San Diego County Regional Airport Authority participated in the development of the fiscal year 2008-2009 Watershed Urban Runoff Management Program Annual Report for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paul Manasjan
Director, Environmental Affairs Department
San Diego County Regional Airport Authority

SAN DIEGO
INTERNATIONAL
AIRPORT

Date January 25, 2010

Subject: Chollas Creek TMDLs FY 2009 Annual Report as presented in the 2008-2009 San Diego Bay Watershed Urban Runoff Management Program Annual Report

STATEMENT OF CERTIFICATION

I certify under penalty of law that the California Department of Transportation (Caltrans) contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2008-2009, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Susanne Glasgow

SUSANNE GLASGOW
Deputy District Director
Environmental Department
California Department of Transportation (Caltrans)

January 20, 2010
File # 0780-72-KY181

San Diego Bay Watershed Urban Runoff Management Program
Annual Report for Fiscal Year 2008-2009

Statement of Certification

"I certify under penalty of law that the City of Chula Vista participated in the development of the Fiscal Year 2008-2009 Watershed Urban Runoff Management Program Annual Report for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

MATT LITTLE
ASSISTANT DIRECTOR OF PUBLIC WORKS
CITY OF CHULA VISTA

CITY OF
CHULA VISTA

H:\NPDES\Watershed\WURMP Certified Statement 2010.doc

THE CITY OF SAN DIEGO

RE: Statement of Certification
San Diego Bay Watershed Urban Runoff Management Program
Fiscal Year 2008-2009 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2008-2009 San Diego Bay Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

1/22/10
Date

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 • Fax (858) 541-4350

CITY OF CORONADO

101 "B" Avenue
CORONADO, CALIFORNIA 92118-1510

DEPARTMENT OF PUBLIC SERVICES
(619) 522-7380

Date: January 2010

Subject: STATEMENT OF CERTIFICATION
San Diego Bay WURMP

I certify under penalty of law that the City of Coronado participated in the development of the FY 2008-2009 Watershed Urban Runoff Management Program(s) for the San Diego Bay Watershed in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name Scott W. Huth
Title Director of Public Services
Jurisdiction City of Coronado

County of San Diego
LAND USE AND ENVIRONMENT GROUP

CHANDRA L. WALLAR
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256
Fax: (619) 531-5476

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Plan (WURMP) FY 2008-09 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2008-2009 San Diego Bay Watershed Urban Runoff Management Plan (WURMP) Annual Report** and the **FY 2008-2009 Chollas Creek Metals TMDL Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-27-10
Date

The City of Imperial Beach

(619) 423-8311
(619) 429-4861 Fax

PUBLIC WORKS
825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

January 12, 2010

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for FY 2008-2009 were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

CITY OF
LA MESA
JEWEL of the HILLS

DAVID E. WITT, A.I.C.P.
CITY MANAGER

CERTIFICATION STATEMENT

San Diego Bay WURMP Annual Report

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

David E. Witt
City Manager

1/20/10
Date

Telephone Number: (619) 667-1195

8130 ALLISON AVENUE • LA MESA, CA 91942 • TEL: 619.667.1195 FAX: 619.462.7528

Certification Statement

I certify under penalty of law that the City of Lemon Grove's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2008-2009, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signatory _____ Date 20 Jan 2010

Name: Graham Mitchell
Title: City Manager for City of Lemon Grove
Phone No: 619-825-3800

January 2010

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2008-2009 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Maryam Babaki, City Engineer
Engineering Department
City of National City

January 22, 2010

Subject: Chollas Creek TMDLs FY 2009 Annual Report as presented in the 2008-2009 San Diego Bay Watershed Urban Runoff Management Program Annual Report

STATEMENT OF CERTIFICATION

I certify under penalty of law that the U.S. Navy's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2008-2009, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Brian S. Gordon

Brian S. Gordon
Water Program Manager
Environmental N45
Navy Region Southwest

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2008-2009 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2008-2009 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

Appendix B

FY 2008-2009
San Diego Bay WURMP
Meeting Schedule

Table B-1. San Diego Bay FY 2008-2009 WURMP Meeting Summary.

MEETING DATES	GENERAL TOPICS
July 10, 2008	• Trident Curb Screen Presentation • BMP Discussion • WURMP Annual Report • Regional Urban Runoff Report Update
September 11, 2008	• Green Visions Partners BMP Presentation • WURMP Annual Report
October 16, 2008	• BMP Presentation – SDCK and County of San Diego • WURMP Annual Report
November 13, 2008	• Sediment TIE in Sweetwater • WURMP Annual Report
December 11, 2008	• WURMP Annual Report
January 13, 2009	• WURMP Annual Report
February 12, 2009	• I Love A Clean San Diego (ILACSD) Creek to Bay Presentation • WURMP Annual Report • Watershed Activities Discussion
March 12, 2009	• Watershed Activities Discussion • Watershed Education Activity - ILACSD Presentation and Discussion
April 16, 2009	• Third Party Data for the Regional Monitoring Report • TWAS southern watershed locations for 09-10 season • Watershed Activities Discussion
May 21, 2008	• TWAS Southern Watershed Station Locations for 09-10 season • Update on ILACSD Education Presentations and Discussion
June 18, 2009	• MS4 Wet Weather Site Locations • Watershed Activities • Coastal Cleanup Day Watershed Sponsorship

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Appendix C

Chollas Creek
Total Maximum Daily Load Compliance Monitoring Investigation
Order R9-2009-0277

2008-2009
Water Quality Monitoring Report

For access to the Appendices to the Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Report, please contact the San Diego Bay WURMP lead Copermittee, the Port of San Diego.

San Diego Bay Watershed Urban Runoff Management Program 2008-2009 Annual Report

A Collaborative Effort of:

City of Chula Vista
City of Coronado
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of San Diego
County of San Diego
Port of San Diego
San Diego County Regional Airport Authority

January 31, 2010

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2008-2009 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2008-2009 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services Department
San Diego Unified Port District

Signed certification statements for the participating San Diego Bay Copermittees are located in Appendix A of this report.

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Acknowledgements

The development and production of this Watershed Urban Runoff Management Program Document for the San Diego Bay Watershed Management Area (San Diego Bay WMA) are the result of the talents and experience of numerous individuals. Their contributions and insight made this document a collective success for the environment and for the watersheds. The primary authors of the text include:

Stephanie Bauer	*Port of San Diego*
Phil Gibbons	*Port of San Diego*
Stephanie Bracci	*City of San Diego*
Marisa Fontanoz	*City of Chula Vista*
John Quenzer	*D-Max Engineering for National City*
Chris Helmer	*City of Imperial Beach*
Joe Kuhn	*City of La Mesa*
Tracy Cline	*County of San Diego*

Others that provided comment and guidance to the development of this document include:

Karen Holman	*Port of San Diego*
Sara Dadkhah	*D-Max Engineering for National City*

The San Diego Bay Copermittees were represented by:

Stephanie Bauer	*Port of San Diego*
Marisa Fontanoz	*City of Chula Vista*
Kim Godby	*City of Coronado*
Chris Helmer	*City of Imperial Beach*
Joe Kuhn	*City of La Mesa*
Cora Long	*City of Lemon Grove*
Din Daneshfar	*City of National City*
Stephanie Bracci	*City of San Diego*
Tracy Cline	*County of San Diego*
Annie Hill	*San Diego County Regional Airport Authority*

The San Diego Bay Copermittees also wish to recognize the public for their continued expressed concern for the protection and conservation of the San Diego Bay WMAs environmental resources.

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ACRONYMS AND ABBREVIATIONS

303(d)	Section of the Clean Water Act
ASBS	Areas of Special Biological Significance
BLTEA	Baseline Long-Term Effectiveness Assessment
BMP	Best Management Practices
BOD	Biologic Oxygen Demand
BWE	Baseline Watershed Evaluation
CALTRANS	California Transportation Department
CASQA	California Stormwater Quality Association
CBI	Clean Beach Initiative
CBSM	Community Based Social Marketing
CCC	California Coastal Commission
CMC	Criterion Maximum Concentration
COC	Constituent of Concern
COD	Chemical Oxygen Demand
Copermittees	The 18 cities within San Diego County, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority
CSDM	Coastal Storm Drain Monitoring
CTR	California Toxics Rule
CWA	Clean Water Act
DDT	Dichlorodiphenyl trichloroethane
DFMP	Drainage Facilities Master Plan
DWM	Dry Weather Monitoring
EIS	Environmental Impact Assessment
EMC	Event Mean Concentration
EPA	Environmental Protection Agency
FOG	Fats, Oils, and Grease Program
FY	Fiscal Year
GIS	Geographical Information System
GPM	Gallons Per Minute
GWSDCC	Groundwork San Diego Chollas Creek
HHW	Household Hazardous Waste
HA	Hydrologic Area
HCH	Hexachlorocyclohexane
HOA	Homeowners Association
HSA	Hyrologic Sub-Area
HU	Hydrologic Unit
IBI	Index of Biological Integrity
IC/ID	Illicit Connection / Illicit Discharge
ILACSD	I Love A Clean San Diego
IPM	Integrated Pest Management
IRTA	Institute for Research and Technical Assistance
JURMP	Jurisdictional Urban Runoff Management Program

LID	Low Impact Development
LS	Length Slope Factor
MBAS	Methylene Blue Active Substances
MLS	Mass Loading Station
MS4	Municipal Separate Storm Sewer System
MSCP	Multiple Species Conservation Program
MUSLE	Modified Universal Soil Loss Equation
Municipal Permit or Permit	San Diego Regional Water Quality Control Board Order 2007-0001
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
OAL	Office of Administrative Law
ORWMP	Otay River Watershed Management Plan
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCO	Pest Control Operators
PCW	Project Clean Water
PDP	Pollutant Discharge Potential
PSA	Public Service Announcement
PWQP	Priority Water Quality Problems
RFI	Request For Proposal
RHMP	Regional Harbor Monitoring Program
RURMP	Regional Urban Runoff Management Plan
RWQCB	Regional Water Quality Control Board
SAG	Stakeholder Advisory Group
SAMP	Special Area Management Plan
San Diego Bay Copermittees	The County of San Diego, the Port of San Diego, and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego, and Airport Authority
SCCWRP	Southern California Coastal Water Research Project
SDA	Special Drainage Area
SDAPCD	San Diego Air Pollution Control District
SDB	San Diego Bay
SDCRAA	San Diego County Regional Airport Authority (Airport Authority)
SDRWQCB	San Diego Regional Water Quality Control Board
SIO	Scripps Institute of Oceanography
SIYB	Shelter Island Yacht Basin
SMC	Stormwater Monitoring Coalition
SQO	Sediment Quality Objective
SSMP	Sewer System Management Plan
SSO	Site Specific Objective
SUSMP	Standard Urban Stormwater Management Plan
SWAMP	Surface Water Ambient Monitoring Program
SWELL	Stewardship Watershed Education for Lifelong Leadership
SWRCB	State Water Resources Control Board

SWQMP	Stormwater Quality Master Plans
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
TWAS	Temporary Watershed Assessment Station
UCCE	University of California Cooperative Extension
URMP	Urban Runoff Management Program
WER	Water Effects Ratio
WLA	Waste Load Allocation
WMA	Watershed Management Area
WQO	Water Quality Objective
WURMP	Watershed Urban Runoff Management Program

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Executive Summary

Since January 2002, the County of San Diego, Port of San Diego, the San Diego County Regional Airport Authority (Airport Authority), and the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) have been active in developing and implementing watershed-based programs in the San Diego Bay Watershed Management Area (WMA). This Annual Report represents the San Diego Bay Copermittees' efforts during Fiscal Year (FY) 2009 to meet the requirements of Section E of the Municipal Storm Water Permit Order Number 2007-0001 (Municipal Permit or Permit) and develop and implement the San Diego Bay Watershed Urban Runoff Management Program (WURMP).

The San Diego Bay Copermittees successfully completed the watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. The San Diego Bay Copermittees have worked to identify, implement, and assess watershed water quality, education, and public participation activities, as well as land use planning watershed-based mechanisms targeting high priority water quality problems and their sources. Due to the success of the programs implemented during FY 2009, the San Diego Bay WURMP achieved the following objectives: 1) implementation of activities to specifically address the sources of water quality problems at a WMA and hydrologic area (HA) level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a watershed and HA level; and 4) continue progress toward meeting WURMP goals and objectives.

Copermittees implemented 12 water quality activities which effectively addressed high priority water quality problems during this reporting period. The San Diego Bay Copermittees implemented six trash and debris related water quality activities focused on reducing the amount of trash entering the MS4. Six other activities focused on implementing enhanced inspections to abate sources of high priority water quality problems associated with construction activities, large special events, or automotive facilities. In the effort to fill data gaps and improve the characterization of urban runoff and receiving water quality, the Copermittees implemented 12 Monitoring/Source Identification activities. Copermittees implemented 11 education activities to supplement the educational activities occurring within the San Diego Bay WMA as part of the San Diego Bay Education Program which incorporates education activities implemented through existing JURMP, RURMP, or other Storm Water Programs. The Copermittees' assessments of the individual activities indicate nearly all the watershed activities were able to achieve the stated goals and were effective in obtaining outcome targets.

The San Diego Bay Copermittees continue to improve watershed efforts in the San Diego Bay WMA, using innovative methods and new tools as they become available. The overarching goal for the San Diego Bay WURMP is to cooperatively and through collaborative strategic planning

decrease the potential sources and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) that have been identified as causing high priority water quality problems. Using the Watershed Strategy developed in the 2008 San Diego Bay WURMP document for guidance, each Copermittee individually selected activities that were feasible to institute in their jurisdiction, and were appropriate for its relative contribution to the watershed's high priority water quality problems.

During this reporting period, the San Diego Bay Copermittees continued improvements on the water quality assessment for the San Diego Bay WMA as the result of additional monitoring efforts. The FY 2009 WURMP program assessment involved: 1) the evaluation of individual activities, 2) a comprehensive assessment at a HA level, and 3) a comprehensive assessment at the watershed level. An integrated assessment of activity effectiveness within each HA was conducted to determine the collective impact of the activities on the targeted high priority pollutants and/or pollutant sources. This evaluation revealed where Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting identified pollutant sources in each HA.

Three major watersheds, or hydrologic units (HU), comprise the WMA: the Pueblo San Diego (908 HU), Sweetwater (909 HU), and Otay (910 HU). The watersheds vary greatly in size, land use, and population, and have different water quality issues as a result. A brief summary of monitoring results and watershed activities implemented in each HU follows.

Pueblo HU (908)

During the 2008-2009 monitoring year, the high frequency (three diamond) COCs in Pueblo San Diego HU were generally similar to previous years and correspond to the high priority water quality problems identified in the WURMP Program document. There appear to be links between receiving water and urban runoff water quality results which may indicate a relationship between MS4 effluent and receiving water quality. However, it is unclear what effect MS4 effluent is having on receiving water quality compared to other sources, such as aerial deposition. Receiving water quality within Pueblo San Diego was assessed in Chollas Creek (908.2 HA) which flows during storm events. Observed flow during ambient conditions within the creek is an indication of urban activities. Turbidity and indicator bacteria were identified as high frequency of occurrence COC during wet weather and ambient conditions suggesting a link between urban runoff and receiving water conditions. Total nitrogen and total phosphorus have been recognized within surface runoff emanating from residential and agricultural land uses as well as groundwater. Analysis of dissolved metals such as copper and zinc which are associated with aerial deposition and by transportation and industrial land uses indicate buildup during ambient conditions and then wash off during storm events. The results of monitoring regarding pesticides remained similar to past reporting periods, with Diazinon and Malathion concentrations detected below the acute benchmarks, though Bifenthrin has been identified as a high frequency of occurrence COC. Trash assessments supported the BLTEA rating for trash

in 908.2 and 908.3 HAs, as observations during Dry Weather Monitoring (DWM) indicated sub marginal and poor designations.

Copermittees were successful in implementing activities addressing the high priority water quality problems and reducing pollutant loads in this HU. Ten water quality activities resulted in source abatement or load reductions for bacteria, metals, sediment, and trash. In addition to education activities implemented through the JURMP and RURMP, Copermittees implemented six educational activities as part of the WURMP to address the high priority pollutants. Ten source identification monitoring studies were conducted during this reporting period. Additional receiving and urban runoff monitoring was conducted in 908.1 HA through the Regional Harbor Monitoring Program, SIYB Urban Runoff Monitoring, and Coordinated Dry Weather Monitoring programs. For 908.2 HA, the Copermittees were not only successful in implementing activities that collectively addressed all of the high priority pollutant water quality problems in this heavily urbanized HA, but were also effective in targeting a variety of pollutant sources. The RHMP was conducted throughout the San Diego Bay to assess receiving water quality and provide data for long-term trend analysis. Data resulting from the monitoring activities will enable the Copermittees to make more informed decisions on the best management practice (BMP) implementation that targets these high priority pollutants in the future.

The Copermittees, and other Named Dischargers, assessed the effectiveness of the BMP implementation plans for three adopted TMDLs: Chollas Creek Diazinon and Dissolved Metals TMDLs (908.2 HA) and the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL (908.1 HA). Based on the monitoring results from the Chollas Creek Diazinon TMDL, the Chollas Creek Dischargers' efforts to address Diazinon through education and outreach programs are adequate for meeting the goals of the TMDL. During this reporting period, the Chollas Creek Dissolved Metals TMDL dischargers collaborated and developed the BMP Implementation Plan. Though the Implementation Plan was not submitted during FY 2009, the named dischargers, including the US Navy and Caltrans, identified and reported on fifty-one water quality, education, and on-going agency-wide activities which were or will be implemented as part of their comprehensive Storm Water Programs to help meet TMDL requirements. The SIYB Dissolved Copper TMDL Implementation Plan was also in development during this reporting period. Named dischargers included the Port of San Diego, City of San Diego, marinas owners/operators, yacht clubs, and hull cleaners. During FY 2009, the named dischargers were involved in the development of the Implementation Plan, studies to identify non-copper alternative hull coatings, and monitoring activities to assess urban runoff and receiving water quality within the SIYB.

<u>Sweetwater HU (909)</u>

There have not been any significant changes to the COCs identified for the Sweetwater HU, though indicator bacteria remain a high frequency of occurrence COC and total coliform was downgraded to a low frequency of occurrence during 2008-2009. Monitoring results are consistent with the BLTEA priority ratings for bacteria in the Lower Sweetwater HA (909.1), but

are not supportive of the A rating for pesticides in the Middle Sweetwater HA (909.2). Organophosphate pesticides including Chlorpyrifos, Malathion, and Diazinon have not been detected at the Sweetwater MLS since 2003. Malathion and Diazinon were detected in receiving water monitoring conducted by the County of San Diego during this reporting year. However, results were below the Basin Plan WQO. Future monitoring, including a temporary watershed assessment station (TWAS) location, will be conducted within this watershed during the 2009-2010 monitoring year and will provide the Copermittees with a more robust dataset to analyze trends and water quality problems.

Copermittees implemented five activities with the goal of reducing loads or abating sources of bacteria in this HU. Two additional monitoring studies were conducted during this reporting period. In addition to education activities implemented through the JURMP and RURMP, Copermittees implemented ten educational activities as part of the WURMP to address the high priority pollutants. Educational efforts focused on a variety of audiences in FY 2009. Efforts included the collaborative ILACSD school presentations to provide watershed focused pollution prevention information to elementary students in 909.1 HA, the LID and Watershed Planning Education for Community Planning and Sponsor Groups and the distribution of Integrated Pest Management (IPM) program information to residents and businesses.

Otay HU (910)

The Otay HU continues to have a limited amount of data available from which to assess water quality. MLS monitoring data has not been collected in the Otay HU since 2001-2002 due to insufficient flow. However, improvements to monitoring efforts continue to occur. During 2008-2009, an improved assessment of urban runoff water quality was conducted through the MS4 Outfall Monitoring Program, although it did not identify any significant changes to the COCs identified for this HU. Monitoring completed during this reporting year detected elevated concentrations of indicator bacteria within MS4 effluent from various locations in the lower Otay HU. These results coincide with the high priority BLTEA rating for bacteria in both Coronado (910.1) and Otay Valley (910.2) HAs. Receiving water quality monitoring conducted at additional mass loading stations upstream of the Lower Otay Reservoir did not showcase elevated concentrations of indicator bacteria during ambient or wet weather conditions. Monitoring conducted through the RHMP will contribute to long-term trend analysis of receiving water condition. Two additional monitoring studies were also conducted during this reporting period in this HU. Future monitoring, including a TWAS location, will be conducted within this watershed during the 2009-2010 monitoring year and will provide the Copermittees with a more robust dataset to analyze trends and water quality problems.

Copermittees identified and targeted a common source of bacteria by implementing the Pet Waste Bag Program in all of the HAs and implemented five water quality activities with the goal of reducing loads or abating sources of bacteria. Copermittees are implementing activities in 910.1 HA which will contribute to bacteria load reductions such as by diverting nuisance storm drain flows to the sanitary sewer system, as well as undertaking source abatement measures to

reduce pollutant sources from trash areas in 910.2 HA. All ten of the watershed education activities implemented in this HU effectively targeted bacteria.

Watershed Assessment

The Copermittees have achieved the Outcome Levels One through Five on a watershed level during this reporting period. Activities such as public participation at cleanup events, the general public's use of household hazardous waste (HHW) collection facilities and pet waste bags scaled multiple levels of assessment resulting in increases in awareness, behavior changes, and load reductions. An increase in knowledge and awareness were demonstrated through various education activities throughout the WMA (Level Two). Through inspection activities, Copermittees were able to demonstrate positive changes in behavior (Level Three). The San Diego Bay Copermittees also achieved load reductions as well as source abatement (Level Four) through various programs that either targeted the pollutants of concern or the pollutant sources. Notably, 530 tons of trash and debris were collected throughout the WMA during cleanup events this reporting year. Assessment of trash and debris related activities such as Pet Waste Bags, Enhanced Street Sweeping, and Cleanup Events resulted in a cross-programmatic watershed analysis of the effectiveness of these programs to address particular high priority pollutants originating from a variety of sources. Also of note, the long-term downward trend of diazinon in stormwater is a positive indication that the concentration of this pesticide will continue to decrease (Level Five).

Utilizing the effectiveness assessment and monitoring data, Copermittees will continue to identify future collaborative watershed activities to address high priority water quality problems on a WMA and HA level. To this end, Copermittees will strive to gather additional water quality data suitable for assessments, as well as research the sources of pollutants of concern and their loading potential. Continuing to identify sources and their loading potential will enable the San Diego Bay Copermittees to modify WURMP program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

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Section 1: Introduction

The NPDES Municipal Storm Water Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit," requires the Copermittees sharing the San Diego Bay Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). Since 2002, the San Diego Bay Watershed Copermittees have worked together to successfully implement the San Diego Bay WURMP, a collaborative effort to address high priority surface water quality issues throughout the San Diego Bay WMA. On March 24, 2008, the San Diego Bay Watershed Copermittees began implementation of the current San Diego Bay WURMP. The program includes identifying and addressing high priority water quality problems in the WMA, developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report highlights the efforts of the San Diego Bay Watershed Copermittees, referred to throughout this document as San Diego Bay Copermittees, during this reporting period from July 1, 2008, through June 30, 2009. This Annual Report is divided into five sections as presented below.

Section 2 This section provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3 This section describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period, collaborative land use planning, and additional education and public participation activities that took place. This section also summarizes the TMDL-related activities implemented by named dischargers of TMDLs within the San Diego Bay WMA. Detailed information on the results and status of each Named Dischargers' TMDL activities is located in Appendix E.

Section 4 This sections discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among San Diego Bay Copermittees; 2) determine whether watershed activities are focused on appropriate water quality problems; 3) assess whether targeted outcomes are being achieved; and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale. This section includes an assessment of compliance with TMDLs in the San Diego Bay WMA and the effectiveness of activities implemented by the Named Dischargers.

Section 5 This section provides conclusions reached during FY 2009 as well as recommendations for future reporting periods.

In addition, this document functions as the primary reporting mechanism for all TMDL activities implemented for each approved TMDL in the San Diego Bay WMA. There are three approved TMDLs in the San Diego Bay WMA: Chollas Creek Diazinon TMDL, Chollas Creek Dissolved Metals TMDL, and the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL. A number of the San Diego Bay Copermittees are Named Dischargers in one or more of these TMDLs. The Named Dischargers of the Chollas Creek Dissolved Metals TMDL, which include Caltrans and the United States Navy, took a holistic approach to planning, implementation, and assessment of targeted watershed activities identified in the Implementation Plan. The Implementation Plan fully integrates with existing watershed, regional, and jurisdictional programs (as well as agency-wide programs for state and federal Dischargers) under existing National Pollutant Discharge Elimination System (NPDES) permit requirements. The integration of these activities provides a comprehensive evaluation of watershed-wide efforts to address a particular TMDL. As a result, this document provides a logical platform for annual reporting of efforts to address TMDLs within the San Diego Bay WMA.

1.1 WURMP Copermittee Collaboration

WURMP development and implementation is a collaborative effort by all of the following San Diego Bay Copermittees:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority (Airport Authority)

The Port of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among San Diego Bay Copermittees and liaison between Copermittees and Regional Water Quality Control Board (RWQCB) staff.

The San Diego Bay Copermittees met 11 times during this reporting period. Appendix B provides a summary of the dates and general topics of discussion. The majority of the meetings focused on development and implementation of the San Diego Bay WURMP.

During this reporting period, the San Diego Bay Copermittees continued to collaborate extensively on the development of the watershed strategy that guides WURMP activity selection. An extensive explanation of the San Diego Bay Watershed Strategy (Watershed Strategy) was presented in the San Diego Bay WURMP document. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) defines the San Diego Bay WMA as being comprised of three watersheds, or hydrologic units (HUs). They are the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed. These HUs are further divided into hydrologic areas (HAs). The San Diego Bay Copermittees developed a database of baseline information consisting of land use, water quality monitoring data, and other information on potential pollutant sources, and identified the high priority water quality problems on a HA level.

The San Diego Bay Copermittees used the information from the Watershed Strategy to identify four common water quality and education activities which have been coordinated and standardized at the HA level. These activities were identified as beneficial to address high priority water quality problems and can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. These activities include Pet Waste Bag Programs, Storm Drain Litter Control Techniques, Street Sweeping Enhancements, and Cleanup Events. This approach allowed for greater flexibility for each of the Copermittees to participate in coordinated watershed activities. Each of these activities collect similar assessment data to show how these programs are being effective at the both the HA and WMA levels. In addition to the collaborative activities mentioned above, each Copermittee initiated or completed jurisdictional activities that targeted high priority water quality problems within the HAs of their respective jurisdictions, such as targeted facility inspections and pilot BMP projects. Furthermore, collaboration on the watershed strategy enabled the San Diego Bay Copermittees to identify data gaps by reviewing existing monitoring and land use data. Such data provided the basis for developing additional water quality monitoring and source identification activities such as the coordinated dry weather monitoring program being implemented by the City of San Diego, the Port of San Diego, and the Airport Authority. Section 3 provides specific detail on each program that was initiated or completed during the FY 2009 reporting period.

1.2 TMDL Named Dischargers Collaboration

<u>Chollas Creek Dissolved Metals and Diazinon TMDLs</u>

This reporting year represents the first year the Chollas Creek Dissolved Metals TMDL is in effect. It was approved by the State Board Office of Administrative Law on October 22, 2008. During the reporting period, the permitted MS4 dischargers named in the TMDL collaborated on

a multi-pollutant strategy for addressing the TMDL as well as the development of the required Implementation Plan. The named dischargers include five watershed Copermittees, Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, Port District, as well as the U.S. Navy and the California Department of Transportation (Caltrans). In addition to the collaborative Implementation Plan, each discharger developed their own list of activities they participated in or will participate in to address the TMDLs. Dischargers met 12 times over the year, one time per month, and held four stakeholder meetings. The Implementation Plan was submitted on October 21, 2009, to the Regional Water Quality Control Board.

Because the strategy for addressing this TMDL is multi-pollutant and watershed based, the reporting of activities under this TMDL will incorporate those activities for the Chollas Creek Diazinon TMDL as well. The named parties under the Diazinon TMDL include the five Copermittees also listed as dischargers under the Metals TMDL as well as Caltrans and the US Navy. Investigation Order R9-2004-0277 requires status reports of specific implementation elements. Further information on these specific elements is included in the Chollas Creek TMDL Compliance Monitoring Investigation Order R9-2004-0277 2008–2009 Water Quality Monitoring Report in Appendix C.

Shelter Island Yacht Basin Dissolved Copper TMDL

Named parties in the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL began the process of cooperatively developing a strategy for addressing the TMDL during this reporting period. The strategy includes developing a collaborative TMDL Implementation Plan and a Compliance Monitoring Plan. The named parties include two watershed Copermittees, the Port District and the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners. A kick-off meeting was held on January 21, 2009. The named parties met on three other occasions during this reporting year: March 10, 2009; May 19, 2009; and June 4, 2009. The draft implementation and compliance monitoring plans are anticipated to be finalized in FY 2010.

1.3 San Diego Bay Watershed Map Updates

There will be no San Diego Bay Watershed map updates included in the FY 2009 Annual Report.

Section 2: Water Quality and Pollutant Source Assessment

The San Diego Bay Copermittees are working to ensure implementation of water quality assessment strategies that will result in meaningful data and allow determination of long-term water quality changes in the San Diego Bay WMA. This section of the report describes information collected by the San Diego Bay Copermittees to meet the requirements stated in Section J.3.b.2.c. of the Permit.

The San Diego Regional Copermittees tasked a consultant with collecting, compiling and analyzing water quality data from the San Diego region. In addition to analyzing data on a regional basis, the consultant also assimilated information and analyzed data for each of the nine WMAs within San Diego County. The results of these tasks are described in the *2008-2009 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Regional Report) prepared for the San Diego County Municipal Copermittees. The Regional Report provides analyses from monitoring programs required by the Permit as well as special studies conducted by various Copermittees. The Regional Report and the data compiled within is structured to answer the following five Core Management Questions presented in Section I.B of the Receiving Waters and Urban Runoff Monitoring and Reporting Program:

1. *Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?*
2. *What is the extent and magnitude of the current or potential receiving water problems?*
3. *What is the relative urban runoff contribution to the receiving water problem(s)?*
4. *What are the sources of urban runoff that contribute to receiving water problem(s)?*
5. *Are conditions in receiving waters getting better or worse?*

The San Diego Bay WMA is described in Section 10 of the Regional Report. The San Diego Bay WMA consists of three major hydrologic units (HU): Pueblo San Diego (908), Sweetwater (909), and Otay (910). Each HU varies greatly in terms of size, population, and land use, and each has different water quality issues as a result. Because the amount and type of data available from each HU is not the same, the San Diego Bay Copermittees have addressed each watershed independently to provide a more accurate assessment of the San Diego Bay WMA as a whole. A summary of the analysis including constituents of concern (COCs) and the San Diego Bay WMA assessment are provided herein.

2.1 Water Quality and Pollutant Source Assessment Approach

The watershed water quality assessment methodology used by the San Diego Bay Copermittees is described in the San Diego Bay WURMP Document. The assessment includes

separate evaluations for receiving waters and urban runoff discharges. This organization follows the general format of the Permit, providing a closer linkage to the Core Management Questions as well as avoiding mixing datasets from programs undertaken for different reasons. Determining the baseline conditions through the various monitoring programs occurring within the watershed allow the San Diego Bay Copermittees to evaluate current conditions and long-term trends in receiving water quality conditions.

Table 2-1 identifies the monitoring programs from which data were used to conduct receiving water and urban runoff water quality assessments. Receiving water quality monitoring programs were used to answer Core Management Questions 1, 2, and 5 whereas Urban Runoff Monitoring Programs were used to answer Core Management Question 3. Various water quality monitoring programs also were used to assess and identify sources of urban runoff. These programs were used to address Core Management Question 4.

Table 2-1. San Diego Bay WMA Assessment Data.

Program	Constituents Measured	Hydrologic Unit		
		908	909	910
Receiving Water Quality Monitoring Programs				
Mass Loading Stations (MLS) Ambient and Storm Monitoring	Toxicity, Chemistry, Bacteria, and Trash	X	X	
Post-storm Sediment Pyrethroid Monitoring	Grain size, Pesticides, TOC	X	X	X
Rapid Stream Bioassessments	Benthos, Periphyton, and Physical Habitat		X	
Bight 08 Estuary Monitoring	Bacteria, Sediment, Chemistry, Toxicity, and Benthos		X	
Diazinon and Metals TMDL Monitoring in Chollas Creek	Metals, Pesticides, and Toxicity	X		
County of San Diego Southern Watersheds Water Monitoring	Chemistry, Bacteria, Metals, and Pesticides		X	X
Regional Harbor Monitoring Program (RHMP)	Sediment Chemistry, Toxicity, Benthos	**San Diego Bay**		
Urban Runoff Monitoring Programs				
Dry Weather Monitoring (DWM) and Trash Assessment	Chemistry, Metals, Bacteria, Trash	X	X	X
Coastal Storm Drain Monitoring (CSDM)	Bacteria	X	X	X
MS4 Outfall Monitoring Program*	Bacteria, Metals, Chemistry, and Pesticides	X	X	X
Regional Source Identification Study	Bacteria, Metals, Chemistry, and Pesticides	X		
City of San Diego Aerial Deposition Monitoring	Metals	X		
City of San Diego Dry Weather Bacteria Source Identification Study	Bacteria	X		
Shelter Island TMDL Urban Runoff Copper Monitoring	Metals	X		

*The MS4 Outfall Monitoring Program consists of wet and dry weather monitoring located at Targeted and Random sites

Water bodies in the San Diego Bay WMA and constituents that have been placed on the SWRCB 2006 Section 303(d) list are presented in Table 2-2. The table includes the water bodies having an adopted TMDL or for which a TMDL is in development.

Sources of pollutants were generally described within Section 3 of the 2008 San Diego Bay WURMP Document. During 2008-2009, water quality monitoring programs and newly implemented source identification studies were conducted to further distinguish sources of pollutants and analyze types of constituents associated with specific land uses. The results of these monitoring programs and source identification studies are intended to aid the Copermittees in the development and implementation of water quality activities and BMPs. A discussion of sources of pollutants is included for each HU.

Table 2-2. San Diego Bay WMA SWRCB Section 303(d) Listed Water Bodies and TMDL Status.

Water Body Name	Pollutant/Stressor	TMDL Status
Pueblo San Diego HU		
San Diego Bay Shoreline, near Sub-Base	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, Shelter Island Shoreline Park	Indicator bacteria	In development
San Diego bay Shoreline, at Harbor Island (West Basin)	Copper	Not developed
San Diego Bay Shoreline, G Street Pier	Indicator bacteria	In development
San Diego Bay Shoreline, near Switzer Creek	Chlordane, Lindane/Hexachlorocyclohexane, and PAHs	In development
San Diego Bay Shoreline, vicinity of B Street and Broadway Piers	Indicator bacteria, benthic community effects, and sediment toxicity	In development
San Diego Bay Shoreline, Downtown Anchorage	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, at Harbor Island (East Basin)	Copper	Not developed
San Diego Bay Shoreline, at Marriott Marina	Copper	Not developed
San Diego Bay Shoreline, at America's Cup Harbor	Copper	Not developed
Shelter Island Yacht Basin	Copper	TMDL adopted
Chollas Creek	Dissolved Copper, lead, zinc, and diazinon	TMDLs adopted
Chollas Creek	Indicator bacteria	In development
San Diego Bay Shoreline, near Chollas Creek	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, 32nd Street Naval Station	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, between Sampson Street and 28th Street	Copper, mercury, PAHs, PCBs, and zinc	In development
San Diego Bay Shoreline, Near Coronado Bridge	Benthic community effects and sediment toxicity	Not developed
San Diego Bay Shoreline, Seventh Street Channel	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, north of 24th Street Marine Terminal	Benthic community effects and sediment toxicity	Not developed
Sweetwater HU		
San Diego Bay Shoreline, at Bayside Park (J Street)	Indicator bacteria	In development
San Diego Bay Shoreline, at Chula Vista Marina	Copper	Not developed
Sweetwater Reservoir	Dissolved oxygen	Not developed
Loveland Reservoir	Aluminum, manganese, and dissolved oxygen	Not developed
Otay HU		
Pacific Ocean Shoreline, Imperial Beach Pier	PCBs	Not developed
San Diego Bay	PCBs	Not developed
San Diego Bay Shoreline, at Coronado Cays	Copper	Not developed
San Diego Bay Shoreline, at Glorietta Bay	Copper	Not developed
Pogi Canyon Creek	DDT	Not developed
Otay Reservoir, Lower	Color, iron, manganese, nitrogen ammonia (total ammonia), and pH (high)	Not developed

2.2 Pueblo San Diego HU

2.2.1 *Receiving Water Body Water Quality Assessment*

Water quality data was collected primarily within the San Diego Mesa Hydrologic Area (908.2 HA) within the Chollas Creek Hydrologic Sub-Area (908.22 HSA). Figure 2-1 portrays monitoring locations throughout the Pueblo San Diego HU. Due to the San Diego Regional Copermittees' participation in the Bight 08 Monitoring Program, the Municipal Permit monitoring requirements were adjusted during 2008-2009. As such, receiving water monitoring conducted at the MLS located within Chollas Creek during wet weather was reduced from two storm events to only a single storm event. Ambient receiving water quality monitoring was not conducted in the Pueblo San Diego HU. Historical data associated with ambient monitoring and wet weather monitoring located at the Chollas Creek MLS site SD8(1) was used to establish frequency of occurrence COCs. In addition, the RHMP (see Activity Summary Sheet SDB-025) and monitoring conducted in accordance with the Chollas Creek Dissolved Metals and Diazinon TMDL (Order R9-2004-0277) contribute to the understanding of the condition of receiving water quality found within the Pueblo San Diego HU. Results of these additional monitoring programs were not incorporated into the analysis of frequency of occurrence COCs. However, the results of these monitoring programs are used to reinforce an understanding of the Core Management Questions. As such, the results of these programs will be explained and presented where applicable.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Water quality data assessments suggest variable impacts to beneficial uses within the Pueblo San Diego HU depending on ambient versus wet conditions as well as specific water bodies where monitoring occurred. Receiving water quality was primarily assessed at the Chollas Creek MLS site SD8(1). Because ambient receiving water quality was not conducted within Chollas Creek during 2008-2009, historical data was used to determine high frequency of occurrence COCs. Those constituents included:

- TDS
- Turbidity
- Total nitrogen
- Total phosphorus
- Indicator bacteria
- Dissolved copper

Chollas Creek is generally dry during non storm conditions but is influenced from urban runoff in localized areas. During wet weather, high frequency COCs include:

- Turbidity
- TSS
- Indicator bacteria
- Bifenthrin

Figure 2-1. Receiving Water And Urban Runoff Monitoring Locations Throughout The Pueblo San Diego Hydrologic Unit.

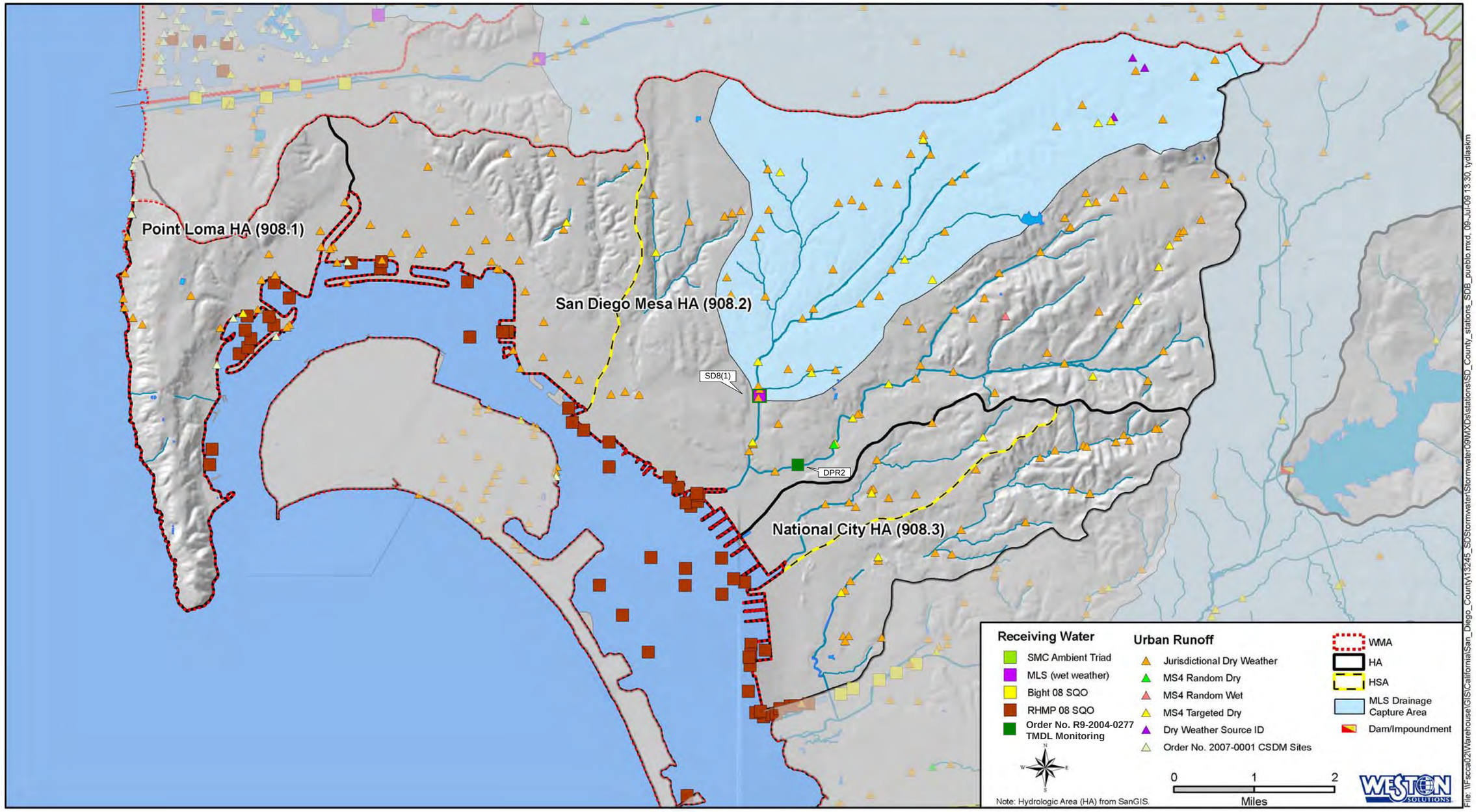

Source Adapted from a figure presented in the San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report. Prepared by WESTON Solutions, Inc. January 2010.

Fecal indicator bacteria has been measured above respective benchmarks during both ambient and wet weather conditions at site SD8(1). During wet weather, the receiving waters are also likely impacted by the presence of a range of Bifenthrin, a synthetic pyrethroid. In previous years, toxicity has been observed frequently for *H. azteca* and sporadically for *C. dubia* at this site. Evidence of persistent toxicity to *H. azteca* was identified in wet weather monitoring as a result storm water runoff.

Historical stream bioassessment results indicated evidence of benthic community impairment in the Pueblo San Diego HU, with Very Poor IBI ratings at the site SD8(1) since 2001. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat and the presence of copper, pesticides—several synthetic pyrethroid compounds were detected during wet weather monitoring—or other constituents not monitored in this program.

Monitoring conducted in accordance with the Diazinon and Dissolved Metals TMDL in Chollas Creek (Order R9-2004-0277) occurred at two sites during three storm events within Chollas Creek. Metals results, which are compared to the California Toxics Rule, indicated dissolved copper and zinc concentrations were greater than the chronic criteria (CCC) and acute criteria (CMC) during all three storms at site SD8(1) located in the north fork of the creek. Dissolved lead was greater than the CCC during two of the three storm events. At site DPR2 in the south fork of Chollas Creek, dissolved copper was recorded above the CMC twice and above the CCC during all three storm events. Observances of toxicity to *H. azteca* at site SD8(1) occurred during all three storms and two out of three observances of toxicity to *H. azteca* occurred at Site DPR2. The synthetic pyrethroid Bifenthrin was detected in all samples where toxicity to *H. azteca* was observed and was detected in every sample at both sites in concentrations sufficient to induce toxicity. Diazinon was not detected in any of the samples during all three storm events.

Results of the RHMP water quality monitoring within San Diego Bay during ambient conditions for indicator bacteria were below AB411 standards. RHMP sediment quality monitoring indicated four of five sites at the mouth of Chollas Creek as unimpacted and one site as possibly impacted. However, toxicity was not observed in the samples collected at the mouth of Chollas Creek and dissolved copper results in water were below the California Toxics Rule (CTR).

Overall, the likelihood of conditions in receiving waters to be protective of beneficial uses may vary depending on wet or ambient conditions and the water body where monitoring was conducted. The results of receiving water quality monitoring indicate that Chollas Creek (908.22 HAS) may not be protective of beneficial uses during both ambient and wet weather conditions. Chollas Creek is currently listed in the Basin Plan for potential REC-1 and existing REC-2 beneficial uses as well as uses of water supportive of aquatic and terrestrial ecosystems. Indicator bacteria, including fecal coliform, have been measured above the Basin Plan benchmarks during both wet and ambient conditions indicating possible impairment of the recreational uses in this HSA. The presence of synthetic pyrethroids detected in Chollas Creek storm water samples and sediments are suspected to be the cause of toxicity observed to

freshwater invertebrates further indicating impairment of beneficial uses within the Chollas Creek. However, the initial results of the RHMP indicate that surface waters in San Diego Bay during ambient conditions may be protective of beneficial uses. Indicator bacteria were not detected in concentrations above AB411 standards and toxicity was not observed in samples collected at the mouth of Chollas Creek. The marina stratum sampled during the RHMP had the highest concentrations of dissolved copper and also had the highest percentage of possibly, likely, and clearly impacted sites primarily as a result of marine vessels with copper-based, in-water hull paints that leach copper to the water column and sediment.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed by evaluating magnitude of exceedance ratios for wet weather conditions in the receiving waters. The greatest concentration-to-benchmark ratios during wet weather conditions in the Pueblo San Diego HU were observed for indicator bacteria, turbidity, COD, and toxicity to *H. azteca* at the Chollas Creek MLS site SD8(1). The fecal coliform concentration during one storm event was more than 20 times greater than the Basin Plan water quality benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at SD8(1) on average have been nine times greater than the benchmark. The turbidity concentration during wet weather in 2008-2009 was approximately four times greater than the benchmark, which is just slightly lower than the historical mean for the site. COD and toxicity to *H. azteca* were each three times their respective benchmark. Historically, COD has been just slightly above the benchmark, while toxicity to *H. azteca* has historically been slightly greater than three times the benchmark.

Historical stream bioassessment ratings conducted in the Pueblo San Diego HU indicate a Very Poor benthic community at SD8(1). Consistent ratings of either Poor or Very Poor since 2002 suggest that the impairment on the benthic community at this station is not an anomaly. This is supported by the 2007-2008 bioassessment results, which also indicated a Very Poor benthic community.

Monitoring conducted in accordance with the Chollas Creek Diazinon and Dissolved Metals TMDL in the San Diego Mesa HA showed that constituent concentrations and magnitude of toxicity are generally higher at the MLS site SD8(1) in the north fork of Chollas Creek in comparison to MLS site DPR-2 located in the south fork of Chollas Creek. The north fork of Chollas Creek is a concrete channel which is an impervious surface whereas the south fork has a natural bottom channel and has had recent restoration work done in portions of the creek.

Ambient surface water quality monitoring within San Diego Bay conducted during the RHMP indicate copper occurred at concentrations above the CTR, primarily within the marina stratum. All stations indicated bacteria results below AB411 standards. Sediment quality objective results from the RHMP indicated that over half of the 60 stations assessed in all of San Diego Bay were classified as unimpacted, 10% were determined to be likely unimpacted, 25% were possibly impacted, 12% were likely impacted, and only one station was clearly impacted which

occurred in Americas Cup Harbor. The marina stratum had the highest concentrations of dissolved copper and also had the highest percentage of possibly, likely, and clearly impacted sites combined, based on the SQO Guidelines.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

An analysis of receiving water quality trends was performed based on monitoring programs conducted within Chollas Creek 908.22 HSA and throughout San Diego Bay. The trend analysis of constituent concentrations from wet weather monitoring at the Chollas Creek MLS site SD8(1) demonstrate that nitrite, TKN, turbidity, total copper, and total zinc have been increasing at this site whereas concentrations of TDS and Diazinon have been decreasing. Although nitrite and TKN appear to be increasing, their concentrations remain well below the respective benchmark values. At the current observed rate of increase, it does not appear that these two constituents will exceed wet weather benchmarks during the current Permit cycle.

Total copper and total zinc have approximately the same trends as observed during 2006-2007 trend assessment. Turbidity results measured during the 2007-2008 monitoring year were slightly lower than in the preceding year. Although turbidity results have been above the benchmark during wet weather events, the projected yearly increase in turbidity indicates that levels are not increasing at a substantial rate. Although the TDS concentration was above the benchmark during the 2008-2009 storm event, the trend has been decreasing over time. Only two storm events since 1994 have had TDS concentrations above the benchmark value. Future monitoring will determine if this decreasing trend can be sustained.

The bioassessment ratings at site SD8(1) have been Very Poor in nearly all assessments conducted from 2002 to 2007 and there are no apparent trends in the benthic community. Toxicity has frequently been observed in samples collected from Chollas Creek. Between 2001 and 2008, toxicity to *C. dubia* was observed in approximately 30% of samples since 2001-2002 and toxicity to *H. azteca* was observed in over 70% of samples collected from site SD8(1). During the 2007-2008 Monitoring Season, toxicity to *H. azteca* survival and *C. dubia* reproduction was observed; however no trends in the data set are apparent. Monitoring conducted in accordance with the Diazinon and Dissolved Metals TMDL in Chollas Creek observed toxicity to *H. azteca* survival and *C. dubia* reproduction as well. Recent Toxicity Identification Evaluations indicate synthetic pyrethroids as the causative agent of toxicity.

The RHMP study was conducted to assess water and sediment quality and evaluate the condition of aquatic life. Monitoring within San Diego Bay occurred between August 4-25, 2008, and included sixty stations bay-wide. One of the core questions of the study was to evaluate long-term trends for water quality. According to the results:

- Water and sediment quality throughout the harbor samples, including San Diego Bay, appears to be improving based on a weight-of-evidence approach.

- Within the four harbors, dissolved and total copper declined significantly from historical conditions. Other metals which had concentrations below the California Toxics Rule thresholds include dissolved and total nickel and dissolved and total zinc.
- Sediment chemistry quality did not significantly change from historical conditions.
- Low toxicity was found across all harbors and benthic community condition, as assessed by the BRI, also significantly improved.
- Lastly, indicator bacteria levels found in San Diego Bay were far below AB411 standards.

Diazinon has not been detected in storm water samples collected in Chollas Creek HSA over the past two years, and has only been detected during one storm event in the last five years at site SD8(1). Diazinon was also not detected during three storm events at sites SD8(1) and DPR-2 conducted in accordance with the Diazinon and Dissolved Metals TMDL in Chollas Creek. Since Diazinon is no longer commercially available, the decreasing trend for this constituent is expected to continue until it eventually is no longer or seldom detected.

2.2.2 *Urban Runoff Discharges Water Quality Assessment*

Urban runoff discharge water quality was evaluated to answer **Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?** As with receiving water quality, urban runoff discharge quality was assessed during ambient and wet weather conditions. Although there are many new monitoring programs, including the MS4 Outfall Monitoring Program, conducted to assess urban runoff, a cause-and-effect relationship between urban runoff and receiving water quality may not be appropriate at this time. As monitoring continues throughout the extent of the Permit, a better evaluation between urban runoff and receiving water quality can be made.

Dry Weather Monitoring (DWM) was conducted throughout the Pueblo San Diego HU during the dry season from May 1, 2008, to September 30, 2008. A total of 188 sites were visited with 126 sites exhibiting flowing or ponded water where samples for field or laboratory analysis could be conducted. Constituent groups that had concentrations greater than dry weather action levels included:

- General chemistry (i.e., conductivity and pH)
- Indicator bacteria (i.e., total coliforms, fecal coliforms, and *enterococci*)
- Nutrients (i.e., ammonia, orthophosphate, and nitrate)
- Turbidity
- Pesticides (i.e., Chlorpyrifos)
- Metals (i.e., dissolved zinc, copper, and cadmium)

Concentrations of oil & grease, the pesticide Diazinon, and dissolved lead were below action levels in all samples analyzed. The measured value for turbidity exceeded the action level the greatest number of times (24 of 87 samples analyzed) and occurred most often along the north fork of Chollas Creek in the San Diego Mesa HA. Indicator bacteria exceeded dry weather action levels mainly within the San Diego Mesa HA.

Trash assessments conducted during DWM within the Pueblo San Diego HU indicated that trash was a relatively wide-spread issue, with Chollas HSA (908.22) having the greatest amount of trash and the largest number of sites rated Submarginal or Poor. This result coincides with the urbanized population centers, which are also found in the lower portion of the HU.

Coastal Storm Drain Monitoring (CSDM) sites were visited once per month during at least 72 hours of dry conditions within the Pueblo San Diego HU. If flow or ponded water was observed, paired samples were taken from the storm drain outfall and the receiving water. During 2008-2009, there were 32 paired samples and four unpaired samples taken from five CSDM sites within the Point Loma 908.1 HA There were no exceedances of indicator bacteria in storm drain samples or receiving water samples.

The MS4 Outfall Monitoring Program conducted in the Pueblo San Diego HU was assessed through the Random Dry, Targeted Dry, and Random Wet Weather Monitoring programs. Water quality benchmarks used in the assessment were developed for the Basin Plan and are applicable to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Of the 12 MS4 outfall sites in the San Diego Bay WMA that were monitored as part of the Random Dry Outfall Monitoring Program in 2008-2009, six were located within the Pueblo San Diego HU. Only one site in the south fork of Chollas Creek was ponded and could be sampled. The results indicated elevated concentrations of total phosphorous and total nitrogen.

A total of 24 sites in the Pueblo San Diego HU were visited as part of the Targeted Dry Weather Outfall Monitoring Program, ten of which were flowing at the time of the survey. Thus, 58% of the targeted dry weather sites were ponded or dry. Drought-related restrictions implemented in the summer of 2009 may have helped to reduce flows from some areas. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving water quality benchmarks for the following constituents: oil & grease, chloride, nitrate, total nitrogen, total phosphorus, TDS, and indicator bacteria (fecal coliform and *enterococcus*). The constituents greater than their respective benchmarks for at least one of the 10 sites assessed were:

- Total nitrogen
- Total phosphorus
- Indicator bacteria (fecal coliform and *enterococcus*)

Concentrations of *enterococci* exceeded the benchmark most frequently followed by fecal coliforms. The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

During the 2008-2009 targeted MS4 monitoring, instantaneous loads were calculated based on constituent concentrations and flow at the time of the survey. In general, flows at all of the sites were very low, ranging from less than 1 GPM to a maximum of 3 GPM. Since this reporting period was the first in which this data was calculated, the results should not yet be considered representative of dry weather MS4 urban runoff to be used to determine the contribution to receiving water quality problems. More meaningful temporal and spatial comparisons as well as analysis to receiving water quality can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

Four sites throughout the San Diego Bay WMA were assessed during storm events as part of the Random Wet Weather Outfall Monitoring Program. Of these, one site was located in the San Diego Mesa 908.2 HA. The following constituents exhibited greater concentrations than water quality benchmarks:

- Total nitrogen
- Total phosphorus
- Indicator bacteria

The City of San Diego conducted a focused study of bacteria sources in the Chollas Creek tidal prism during September and October 2008 (see Activity Summary Sheet SDB-027). The study focused on sources and the magnitude of dry weather urban runoff and its influence to water quality located at the mouth of Chollas Creek. The results of the study indicate that during dry conditions, the mouth of Chollas Creek is not hydrologically connected to the upstream drainage. Therefore, elevated concentrations of bacteria found in receiving waters are the result of sources which flow directly into the Chollas Creek tidal prism. Four of 17 storm drains which empty into the mouth of Chollas Creek exhibited flow and were sampled and results were compared to receiving water samples. Elevated concentrations of bacteria were found within the storm drain flow and coincided with receiving water concentrations of bacteria.

A special study was conducted by the City of San Diego to determine copper loading from the MS4 into the Shelter Island Yacht Basin in San Diego Bay located in the Point Loma 908.1 HA (see Activity Summary Sheet SDB-053). Monitoring of urban runoff was conducted during three wet weather events as well as during dry conditions. During wet weather conditions, dissolved copper concentrations were detected above the Basin Plan WQO. It was determined that the dissolved copper annual load to the receiving water from the MS4 is below the waste load allocation set for urban runoff in the Shelter Island Yacht Basin TMDL.

A study was conducted by the City of San Diego within the Switzer Creek Subwatershed in the San Diego Mesa HA to assess storm drain sediments with a focus on pesticide distributions and

concentrations (see Activity Summary Sheet SDB-054). Pesticides have been associated with toxicity at the mouth of Switzer Creek in San Diego Bay. Elevated concentrations of Chlordane, DDT isomers, synthetic pyrethroids, copper, lead, and zinc were detected during the study and may be causing toxicity to freshwater and marine organisms.

A Regional Source Identification Monitoring study was conducted by the San Diego County Copermittees in accordance with the Permit (Section B.2 of the Receiving Waters and Urban Runoff Monitoring and Reporting Program). The study attempts to characterize analytes found in urban runoff during dry conditions from single family residential land use and took place within two separate jurisdictions: the City of Del Mar located within the Los Penasquitos WMA and the City of La Mesa within the San Diego Bay WMA. The La Mesa study area discharges to the upper reaches of Chollas Creek in the San Diego Mesa 908.2 HA (Figure 2-1).. Sampling for the study occurred within selected MS4 outfalls on three occasions once per month between May and July 2009. The results of the study indicate that two of the three La Mesa sites had elevated bacteria levels, and one site had an elevated permethrin level. However, a sample taken a month prior indicated permethrin levels below the detection level. Another site within La Mesa where continued flow was observed showed elevated concentrations of chloride, TDS, and total hardness which could indicate a possible groundwater influence.

2.2.3 *Pollutant Source Assessment*

The identification of pollutant sources attempts to answer **Core Management Question #4 – What are the sources of urban runoff to receiving water quality problem(s)?** During the 2008-2009 reporting period, a variety of monitoring programs incorporated an evaluation of sources contributing to urban runoff, including: Jurisdictional DWM, CSDM, and special studies. The results of these monitoring programs will strengthen the Copermittees knowledge of sources and aid in the development of appropriate watershed activities and BMPs.

The trash assessment conducted in 2008-2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Pueblo San Diego HU. A total of 185 sites from three HAs (including all five HSAs) were assessed for trash in the Pueblo San Diego HU. The Chollas HSA (908.22) had the greatest number of sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained the greatest amount of trash in the HU. This result coincides with the urbanized population centers, which are also found in the lower portion of the Pueblo San Diego HU. Trash at the eight sites with Submarginal or Poor ratings consisted primarily of food packaging (four sites) and household waste (four sites) potentially as a result of littering and dumping. The sites determined to be Submarginal or Poor as a result of littering occurred mostly within the San Diego Mesa 908.2 HA along Chollas Creek.

Coordinated dry weather monitoring was conducted by the San Diego Regional Airport Authority, Port of San Diego, and the City of San Diego within Pueblo San Diego (see Activity Summary Sheet SDB-021). The coordinated monitoring occurred at storm drains which exist along shared storm drain lines among the three jurisdictions to better identify sources of dry weather urban runoff. The coordinated monitoring activity did not reveal similar exceedances at

sites along shared storm drain lines. Though Copermittees were unable to positively identify specific sources of dry weather urban runoff in this monitoring program during this reporting year, the results will help to narrow the focus of sources of urban runoff causing the dry weather exceedances within the storm drain system.

The Regional Source Identification Monitoring study of single family residences conducted by the San Diego County Copermittees indicated that sources of dry weather flows most likely were a result of landscape over-irrigation. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables associated with residential lawn watering).

The City of San Diego has been conducting studies to determine if fallout from aerial deposition represents a significant pathway for metal pollutant loading into the Chollas HSA in 908.22 (see Activity Summary Sheets SDB-024b and SDB-024c). During 2008-2009, Phase III of the study attempted to identify a correlation between high runoff concentrations of metals to high deposition rate areas and compare metal concentrations within urban runoff from different land uses and facility types within the same aerial deposition area. Wet weather sampling, dry weather roof sampling, and surface dust wipe sampling were conducted to assess areas that may have the potential for metals loading. The results of the study were as follows:

- Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area.
- Copper, lead, and zinc concentrations were higher in commercial and industrial land use areas compared with residential land use.
- Emissions of copper and zinc from stationary facilities near the mouth of Chollas Creek likely contribute to aerial deposition and subsequent runoff of these metals.
- Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc.
- Samples collected from metal rooftops in poor condition (e.g., deteriorating or rust evident) were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Concentrations of copper and lead were relatively low from metal rooftop runoff, but increased in street level runoff, suggesting aerial deposition or other parcel-based sources of copper and lead.
- Average annual aerial emissions of copper from four stationary facilities near the mouth of Chollas Creek are roughly five times higher than the average annual load discharged via storm water runoff. In contrast, lead and zinc emissions were only 1% and 24% of average annual discharge load, respectively.
- Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and re-suspended dust) and localized parcel-based sources also play a role in metals deposition of lead and zinc.

A focused study of sources of bacteria at the mouth of Chollas Creek was conducted by the City of San Diego within Pueblo San Diego (see Activity Summary Sheet SDB-027). It was determined that during dry conditions, there is no hydrologic connection to the mouth of Chollas Creek from the upper portion of the drainage. Therefore, bacteria found within the receiving waters originate from sources which exist or discharge directly into the mouth of the creek. Four of 17 storm drains which exhibited flow to the tidal prism were monitored for bacteria and the results indicate that high concentrations of indicator bacteria found within runoff may have contributed to the high concentrations of bacteria within the receiving water. Sources of the dry weather flows to storm drains were analyzed and include over-irrigation from a commercial strip-mall and a freshwater slough which periodically discharges to a nearby storm drain. In addition, scour ponds associated with storm drains provide depressions within the streambed where indicator bacteria from the surrounding subdrainage can be maintained. Tidal fluctuations maintain a mixture of brackish water and carries bacteria from ponds to other areas within the tidal prism.

2.3 Sweetwater HU

2.3.1 *Receiving Water Body Water Quality Assessment*

Receiving water monitoring was conducted during one wet weather event at the MLS located in Sweetwater River. Figure 2-2 displays monitoring locations throughout the Sweetwater HU. Ambient and rapid stream bioassessment monitoring was conducted at two stations within the Sweetwater HU according to the southern California Stormwater Monitoring Coalition (SMC) Regional Watershed Monitoring Work Plan[1]. Historical data associated with both ambient monitoring and wet weather monitoring located in the Sweetwater River were used to establish frequency of occurrence COCs. Additional water quality monitoring conducted by the County of San Diego also contributed to answering the Core Management Questions though the results were not incorporated into the analysis of high frequency of occurrence COCs The results from additional monitoring will be discussed as appropriate.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed by assessing ambient and wet weather data conducted in the Sweetwater HU Wet weather monitoring was conducted at the Sweetwater River MLS located in the Lower Sweetwater 909.1 HA. Monitoring results indicate that fecal coliform and *enterococci* are high frequency of occurrence COCs while total coliform is a low frequency of occurrence COC during wet weather.

Historical stream bioassessment results previous to 2008-2009 indicated evidence of benthic community impairment in the Sweetwater HU. IBI ratings of Very Poor have been reported at two locations along the Sweetwater River (at Bonita Road located in the Lower Sweetwater HA

[1] Stormwater Monitoring Coalition Bioassessment Working Group. 2007. *Regional Monitoring of Southern California's Coastal Watersheds*. November, 2007.

and at Highway 94 located in the Middle Sweetwater HA) since 2002. A number of factors, including poor in-stream physical habitat or possibly the presence of toxic constituents not monitored in this program may have influenced this low rating.

SMC Stream bioassessment monitoring which occurred during 2009 was conducted at two sites along the Sweetwater River. One site located in the Lower Sweetwater 909.1 HA and the other was located in the Upper Sweetwater 909.3 HA. The upper Sweetwater site received an IBI quality rating of Good and an IBI score of 42 out of 70 possible points. These results indicate that the upper portion of the watershed may be less impacted due less urban development. The lower Sweetwater site, near to the Sweetwater MLS, received an IBI quality rating of Very Poor and an IBI score of 10 out of 70 possible points corresponding to historical bioassessment condition found in the Lower Sweetwater 909.1 HA.

Figure 2-2. Receiving Water And Urban Runoff Monitoring Locations Throughout The Sweetwater Hydrologic Unit.

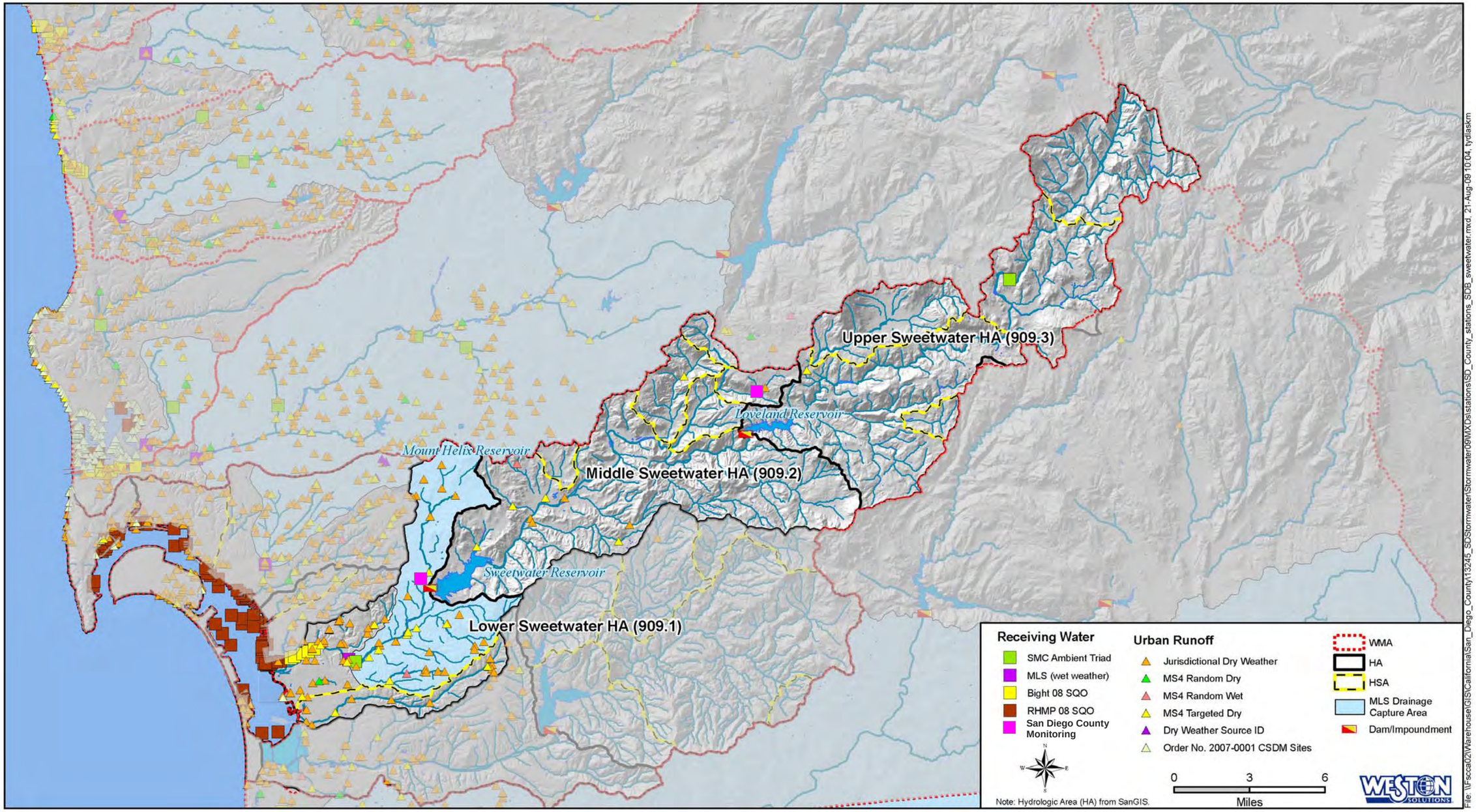

Source Adapted from a figure presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report*. Prepared by WESTON Solutions, Inc. January 2010.

Toxicity to *C. dubia* reproduction and *S. capricornutum* growth during wet weather conditions in the Sweetwater HU was observed on October 5, 2008, at the Sweetwater River MLS. In previous years, toxicity has been sporadic at this site. Since 2001, toxicity to *C. dubia* reproduction has been identified in 37% of samples, and toxicity *S. capricornutum* growth has been observed in 42% of samples. No toxicity to *H. azteca* has been observed since 2001. There is no evidence of persistent toxicity at this site in ambient or wet weather monitoring.

The County of San Diego performed monitoring within the Lower and Middle Sweetwater HA to assess water quality during ambient and wet weather conditions (see Activity Summary Sheet SDB-057). Two ambient events were monitored at both sites resulting in exceedances of Basin Plan benchmarks for Nitrate and TDS during both events at each site. Fecal coliform also exceeded the benchmarks at the Middle Sweetwater HA site during one dry weather event. Both sites were monitored during a single wet weather event with results indicating elevated concentrations of fecal coliform at each location.

Results of the Bight 08 and RHMP programs suggest that the receiving waters of the Sweetwater River Estuary are generally protective of beneficial uses. Of the five sites assessed during Bight 08, one was unimpacted, two were likely unimpacted, and two others located in the middle of the estuary were possibly impacted. These two sites had detections of historical constituents including DDT, chloride, lead, PCBs, and zinc. No clearly impacted sites were determined based on the SQO Guidelines. Sediment chemistry presented a moderate exposure, toxicity was either low or non-toxic, and benthic impacts were low at the two possibly impacted sites. The Bight 08 program also determined that water quality results were below the benchmark for bacteria and TSS. In addition, results of the RHMP monitoring indicate that seven of 9 sites sampled in proximity to the Sweetwater River Estuary were likely unimpacted and two of 9 sites were possibly impacted.

Beneficial uses for much of the Sweetwater River include REC-1, REC-2, and uses of water that are supportive of aquatic and terrestrial ecosystems. Elevated concentrations of indicator bacteria at monitoring stations located in both the lower and middle portions of the river suggest that beneficial uses regarding recreation may not be supportive during wet weather. Results from the 2009 SMC Bioassessment Monitoring confirm historic bioassessments conducted within the Lower Sweetwater HA indicating impairment to the benthic community which may not be protective of beneficial uses. SMC Bioassessment Monitoring conducted in the Upper Sweetwater HA are generally supportive of beneficial uses. Recent water and sediment sampling, including Bight 08 and the RHMP, conducted within the tidal prism of the Sweetwater River during ambient conditions indicate that water quality is likely protective of beneficial uses.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed with magnitude of exceedance ratios for ambient and wet weather conditions in the receiving waters and a spatial analysis of COC during ambient conditions. The greatest exceedance ratios during ambient conditions in the

Sweetwater Watershed HU were observed for total nitrogen and total phosphorus at the monitoring site located in the Lower Sweetwater HA. Exceedance ratios during wet weather at the Sweetwater River MLS were greatest for fecal coliform bacteria. The fecal coliform concentration during the 2008 storm event was more than 500 times greater than the water quality benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at the MLS on average have been 41 times greater than the benchmark. The TDS concentration during wet weather in 2008-2009 was two times greater than the water quality benchmark, which is slightly above the historical mean for the site.

Receiving water spatial patterns in the Sweetwater Watershed HU varied by constituent. During ambient conditions, receiving water concentrations of chloride, total nitrogen, and total phosphorus were greater than their respective benchmarks in the Lower Sweetwater HA, whereas similar constituents were below benchmarks in the Upper Sweetwater HA. These results provide a snapshot of receiving water conditions during the time of the survey. Additional data is needed to provide a more robust assessment of the spatial patterns of water quality constituents within the Sweetwater HU.

Historical stream bioassessment ratings conducted in the Sweetwater Watershed HU indicate a Very Poor benthic community at both monitored locations. The consistent rating of Very Poor at locations along the Sweetwater River at Highway 94 and Bonita Road since 2002 suggests that the extent of the impairment on the benthic community is not isolated to one area. This is supported by the 2008-2009 bioassessment results, which indicate a Very Poor benthic community at all SMC sites monitored within the WMA.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the Sweetwater River MLS. Two constituents in particular have shown trends in receiving water quality. Based on the trend analysis, pH is increasing over time at this site, while total lead is decreasing over time. Although pH appears to be increasing over time, concentrations have remained within the acceptable benchmark range of 6.5 to 8.5 pH units. At the current observed rate of increase, it does not appear that this constituent will exceed its wet weather benchmark during the current Permit cycle.

The concentration of total lead has been decreasing over time at the Sweetwater River MLS. In 2008-2009, the total lead concentration was well below the benchmark and has hovered at values that are near or below the detection limit since monitoring began in 2001.

Toxicity has been sporadic at the Sweetwater River MLS site in the Lower Sweetwater HA. Toxicity to *C. dubia* reproduction and *S. capricornutum* growth during wet weather conditions in the Sweetwater Watershed HU was observed during the 2008-2009 Season. Since 2001, toxicity to *C. dubia* reproduction has been identified in 37% of samples, and toxicity *S.*

capricornutum growth has been observed in 42% of samples. Toxicity to *H. azteca* has not been observed since 2001. There is no evidence of persistent toxicity at this site in ambient or wet weather monitoring and no trends are apparent at this time.

According to the RHMP, water and sediment quality throughout San Diego Bay, appears to be improving based on a weight-of-evidence approach. Primary indicators of long-term water quality, as well as sediment chemistry, toxicity, and benthic infaunal community all showed significant improvements over historical conditions. The results of the Bight 08 program reinforce these findings and will serve as a baseline to evaluate future trends.

2.3.2 *Urban Runoff Discharges Water Quality Assessment*

Urban runoff discharge water quality was evaluated to answer **Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?** As with receiving water quality, urban runoff discharge quality was assessed during ambient and wet weather conditions. Although there are many new monitoring programs, including the MS4 Outfall Monitoring Program, conducted to assess urban runoff, a cause-and-effect relationship between urban runoff and receiving water quality may not be appropriate at this time. As monitoring continues throughout the extent of the Permit, a better evaluation between urban runoff and receiving water quality can be made.

DWM conducted within the Sweetwater HU is primarily located throughout urbanized areas of the watershed within the Lower and Middle Sweetwater HAs. Overall, 72 sites were monitored with 67 sites exhibiting flowing or ponded water where samples could be taken. Constituent groups that had concentrations greater than dry weather action levels included:

- General chemistry (i.e., conductivity and pH)
- Indicator bacteria (i.e., total coliforms, fecal coliforms, and *enterococci*)
- Nutrients (i.e., ammonia, orthophosphate, and nitrate)
- Turbidity

Concentrations of oil & grease, pesticides (i.e., Diazinon and Chlorpyrifos) and metals (i.e., dissolved lead, zinc, and cadmium) were below dry weather action levels in all samples analyzed. The measured value for conductivity exceeded the dry weather action level the greatest number of times (29 of 85 samples analyzed), followed by nitrate (11 of 83 samples analyzed), total coliforms (eight of 32 samples analyzed), and turbidity (seven of 82 samples analyzed).

Trash assessments conducted as part of the DWM program in Sweetwater indicated that while trash was present throughout the HU, the Lower Sweetwater HA had the greatest amount of trash and the largest number of sites rated Submarginal or Poor. Trash at two of the 6 sites with Submarginal or Poor ratings consisted primarily of food packaging, while trash at the remaining

four sites was comprised primarily of household waste, cigarette butts, biohazardous waste, and fabric or clothing.

A single CSDM site, located within the Lower Sweetwater HA along the San Diego Bay, was monitored to assess indicator bacteria through paired sampling of receiving water and urban runoff.. The site was visited once per month and a paired sample was taken from the storm drain outfall and the receiving water if flow or ponded water was observed. During 2008-2009, there was one paired sample taken from the site. There were no exceedances of indicator bacteria in the storm drain sample or receiving water sample during the sampling event.

The MS4 Outfall Monitoring Program which occurred within the Sweetwater HU included the Random Dry, Targeted Dry, and Random Wet Weather components. Four of the 12 sites were visited throughout the San Diego Bay WMA as part of the Random Dry Outfall Monitoring Program located in the Sweetwater HU. Only one of the four random sites was flowing or ponded and could be sampled. The site was located in the Lower Sweetwater HA and results were above the benchmark for total nitrogen, total phosphorus, and indicator bacteria. This site also had the highest nitrate, nitrate-nitrite, and nitrite concentrations, while it had the lowest TKN and total phosphorus in comparison to other sites in the WMA.

Fifteen of the 20 sites in the Sweetwater HU visited as part of the Targeted Dry Weather Outfall Monitoring Program were flowing at the time of the survey. Thus, 25% of the sites were ponded or dry. Drought restrictions implemented in the summer of 2009 may have helped to reduce flows from some areas. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving water quality benchmarks for the following constituents:

- Total nitrogen
- TDS
- Indicator bacteria (fecal coliform and *enterococcus*)

Each of these constituents had concentrations that were greater than their respective benchmarks at one or more of the 15 sites assessed. Concentrations of *enterococcus* exceeded the benchmark most frequently followed by fecal coliform and TDS. The results suggest that discharges from the MS4 have the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were typically greatest where flow rates were highest. Two sites located in the Lower Sweetwater HA had the highest loads of most constituents. MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys.

The 2008-2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the Sweetwater HU; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

Four sites were assessed during storm events as part of the Random Wet Weather Outfall Monitoring Program. Concentrations of several analytes were greater than water quality benchmarks at all four sites, including the following constituents:

- Total nitrogen
- Total phosphorus
- Indicator bacteria

These findings suggest that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the water quality benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents at Site MS4W-SDB-06, located in the Middle Sweetwater HA. This site had the greatest drainage area and is characterized by primarily spaced rural residential, vacant and undeveloped land, and open space land uses.

2.3.3 *Pollutant Source Assessment*

The trash assessment conducted 2008-2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Sweetwater HU. A total of 73 sites were assessed for trash in the HU, including six HSAs. The lower portion of the Sweetwater HU had the greatest proportion of trash and the most sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained the greatest amount of trash. This result coincides with the urbanized population centers, which are also found in the lower portion of the WMA. The potential activities causing trash found at monitoring locations were as follows:

- Littering for four of the sites rated as Submarginal or Poor
- Dumping for four of the sites, and Upstream for one of the sites. The sites listed as Dumping were mostly clustered near the mouth of the Sweetwater River in the 909.12 HSA.

2.4 Otay HU

2.4.1 *Receiving Water Body Water Quality Assessment (Otay HU)*

The San Diego Bay Copermittees have not collected MLS monitoring data in the Otay HU since the 2001-2002 Monitoring Season due to insufficient flow. Post-storm event synthetic pyrethroid monitoring and third-party studies including the RHMP and the County of San Diego Southern Watersheds Water Monitoring Program was performed in the Otay HU during the 2008-2009. Figure 2-3 displays monitoring locations throughout the Otay HU. In the sediment samples collected at the Otay River TWAS, all of the analyzed pyrethroids were below sediment benchmark values. These results suggest that pyrethroids were not present in the sediment following the storm event at concentrations that cause toxicity to benthic infaunal organisms. Otay River sediments were comprised predominantly of sand and had relatively low amounts of TOC, which may have influenced the amount of pyrethroids present in the sediment. County of San Diego Southern Watersheds Water Monitoring Program dry and wet weather sampling events did not measure any constituents above water quality objectives (Activity Summary Sheet SDB-057).

Figure 2-3. Receiving Water And Urban Runoff Monitoring Locations Throughout The Otay Hydrologic Unit.

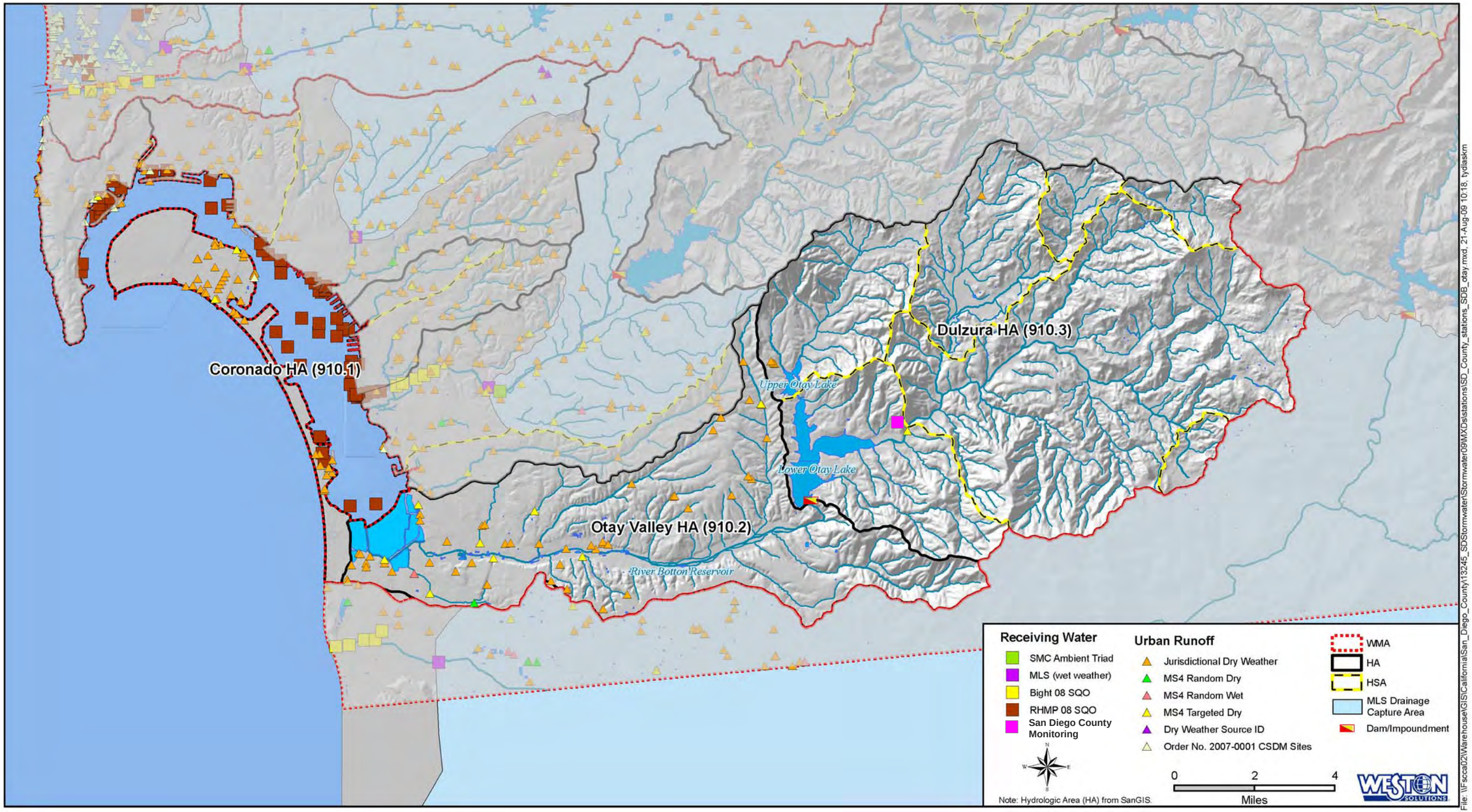

Source Adapted from a figure presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report*. Prepared by WESTON Solutions, Inc. January 2010.

2.4.2 *Urban Runoff Discharges Water Quality Assessment (Otay HU)*

Urban runoff discharge water quality was evaluated to answer **Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?** A better assessment of the MS4s contribution to receiving water quality problems was conducted within the Otay HU during 2008-2009 with the addition of the MS4 Outfall Monitoring Program. Although there are many new monitoring programs conducted to assess urban runoff, a cause-and-effect relationship between urban runoff and receiving water quality may not be appropriate at this time. As monitoring continues throughout the extent of the Permit, a better evaluation between urban runoff and receiving water quality can be made.

DWM primarily occurred in urbanized areas of the watershed within the Coronado HA (910.1) and Otay Valley HA (910.2). Overall, 88 sites were monitored with 47 sites exhibiting flowing or ponded water where samples could be taken for field and/or lab analysis. Constituent groups that had measured values greater than action levels included:

- General chemistry (i.e., conductivity and pH)
- Indicator bacteria (i.e., total coliforms, fecal coliforms, and *enterococci*)
- Nutrients (i.e., ammonia, orthophosphate, and nitrate)
- Turbidity

Concentrations of pesticides (Diazinon and Chlorpyrifos) and metals (dissolved cadmium, dissolved copper, dissolved lead, and dissolved zinc) were below action levels in all samples analyzed.

One CSDM site is located within the Otay HU. The site was visited once per month. If flow or ponded water was observed, a paired sample was taken from the storm drain outfall and the receiving water. During 2008-2009, samples were not collected because neither flowing nor ponded water was observed from the monitoring site.

The MS4 Outfall Monitoring Program which occurred within the Otay HU included the Random Dry, Targeted Dry, and Random Wet programs. One site located within the Otay HU for the Random Dry Weather Outfall Monitoring Program exhibited ponded water from which a sample could be taken. Results of sampling indicated high concentrations of the following analytes at this location:

- Total Phosphorous
- Total Nitrogen,
- indicator bacteria

These results coincide with high priority BLTEA water quality rating for bacteria in the Otay HU.

A total of 12 sites were visited during the Targeted Dry Weather Outfall Monitoring Program during 2008-2009. Eleven of these sites were either flowing or ponded and were sampled for specific constituents. The elevated constituents included:

- Indicator bacteria
- Dissolved copper
- Nitrate and total nitrogen
- Total phosphorus

Elevated concentrations of one or more indicator bacteria were detected at all of the targeted sites sampled. Dissolved copper was detected throughout most samples for which it was analyzed, but all results were below water quality benchmark values. One site located in the upper Otay HU was analyzed for nitrate and total nitrogen. Results indicated a high concentration of total nitrogen. Nitrogen is listed on the 2006 SWRCB Section 303(d) list for the Lower Otay Reservoir. This result suggests that nitrogenous compounds in MS4 dry weather runoff from the targeted dry weather sites may have the potential to contribute to receiving water problems. Similarly, total phosphorous was analyzed at the same site and showcased a high concentration. Total phosphorous is not listed on the 2006 SWRCB Section 303(d) list for waterbodies within the Otay HU.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were typically greatest where flow rates were highest. Sites located in the Coronado HA and Otay Valley HA had the highest flow rates and instantaneous loads for bacteria. MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008-2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the Otay HU; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

During the Random Wet Weather Outfall Monitoring Program, two sites were monitored. Both sites were located within the lower Otay Valley HA. One site was sampled exhibiting high concentrations of the following constituents:

- Total Phosphorous
- Total Nitrogen
- TSS
- Indicator bacteria

2.4.3 *Pollutant Source Assessment (Otay HU)*

The trash assessment conducted during 2008-2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Otay HU. A total of 84 sites were assessed for trash in the HU. A majority of assessment sites occurred within the lower portion of the WMA within the Coronado HA and Otay Valley HA. The Otay Valley HA had the greatest percentage and higher number of sites with Suboptimal, Marginal, or Poor sites. The potential activities resulting in the qualification of Poor rated sites were identified as littering and dumping. Sites rated as Poor were located in a highly urbanized area of the WMA consisting of residential and commercial land uses.

2.5 Prioritization of Water Quality Issues

The San Diego Bay Copermittees presented a Baseline Watershed Evaluation (BWE) assessment in the 2008 San Diego Bay WURMP Document. The BWE process utilized Baseline Long-Term Evaluation Assessment (BLTEA) water quality ratings[2], monitoring data, and source information to determine water quality problems throughout the San Diego Bay WMA. The evaluation was conducted at the HA scale so that management actions could be better focused to address water quality problems. Table 2-3 lists the high priority water quality problems as identified in Section 3 of the San Diego Bay WURMP Document.

[2] WESTON (Weston Solutions, Inc.), MOE (Mikhail Ogawa Engineering), and LWA (Larry Walker Associates). 2005. *Baseline Long-Term Effectiveness Assessment*. Prepared for the San Diego County Copermittees. August 2005.

Table 2-3. San Diego Bay WMA High Priority water Quality Problems.

HA with High Prioritization	Pollutant Category
Pueblo San Diego HU	
908.1	Bacteria
	Gross Pollutants
	Metals
	Oil and Grease
	Pesticides
908.2	Bacteria
	Metals
	Sediment
	Trash
	Pesticides
908.3	Bacteria
	Sediment
	Trash
Sweetwater HU	
909.1	Bacteria
909.2	Pesticides
Otay HU	
910.1	Bacteria
	Gross Pollutants
910.2	Bacteria

The results of the BWE are intended to serve as guidance throughout the course of the Permit. In addition, the results of the BWE serve as a metric to which annual monitoring assessments of current conditions can be compared. Table 2-4 portrays the BLTEA ratings which are updated on a five-year cycle and are used to guide long-term programmatic watershed activities. The table also provides a comparison of previous annual high frequency of occurrence COC rankings. Annual assessments of water quality allow the San Diego Bay Copermittees to track improvements associated with watershed activities or determine increasing trends of pollutants which require specific management actions. The 2008-2009 annual assessment of COCs is presented in this section for comparison purposes to the San Diego WMAs high priority water quality problems.

2.5.1 *Pueblo San Diego HU*

The constituents of concern with frequency of occurrence rankings identified during 2008-2009 are presented in Table 2-5. The 2008-2009 pattern of high frequency (three diamond) COCs in Pueblo San Diego HU are generally similar to previous years and correspond to the high priority water quality problems. Receiving water quality within Pueblo San Diego was assessed in Chollas Creek (908.2) which only flows during storm events. Observed flow during ambient conditions within the creek may be indicative of urban activities. Although there are many new monitoring programs to assess the contribution of urban runoff to receiving water quality

problems, such as the MS4 Outfall Monitoring Program, a cause-and-effect relationship may not be appropriate until further data has been collected and assessed.

Elevated concentrations of total nitrogen, total phosphorus, and *enteroccoci* identified within MS4 effluent may have an impact on receiving water quality. Total nitrogen and total phosphorus have been recognized within surface runoff emanating from residential and agricultural land uses as well as groundwater. Analysis of dissolved metals such as copper and zinc which are greatly associated with aerial deposition caused by transportation and industrial land uses indicate buildup during ambient conditions and then wash off during storm events. Bifenthrin, a synthetic pyrethroid, has been identified as the causative agent of toxicity within Chollas Creek. This is the first year that Bifenthrin has been identified as a high frequency of occurrence COC. Submarginal and Poor designations for trash observed during DWM trash assessments were primarily located within the San Diego Mesa 908.2 HA corresponding to the high priority water quality problems for this HA.

Table 2-4. BLTEA Ratings for the San Diego Bay WMA.

Watersheds/ Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacterial/ Pathogens	Benthic Alterations	Toxicity
San Diego Bay WMA	**100%**	***D***	***B***	***D***	***D***	***C***	***C***	***D***	***D***	***B***	***C***	***B***
Point Loma HA (908.10)	2%	*A*	*D*	*D*	*B*	*C*	*B*	*D*	*D*	*A*	*A*	*A*
San Diego Mesa HA (908.20)	9%	*A*	*D*	*A*	*D*	*A*	*A*	*C*	*B*	*A*	*A*	*A*
National City HA (908.30)	2%	*C*	*D*	*D*	*C*	*B*	*C*	*B*	*C*	*A*	*A*	*A*
Lower Sweetwater HA (909.10)	11%	*D*	*A*	*D*	*D*	*C*	*B*	*D*	*D*	*A*	*A*	*B*
Middle Sweetwater HA (909.20)	19%	*D*	*B*	*D*	*D*	*C*	*A*	*D*	*D*	*C*	*B*	*B*
Upper Sweetwater HA (909.30)	22%	*D*	*B*	*D*	*D*	*C*	*C*	*D*	*C*	*C*	*B*	*B*
Coronado HA (910.10)	2%	*D*	*D*	*D*	*D*	*C*	*D*	*D*	*B*	*A*	*D*	*D*
Otay Valley HA (910.20)	10%	*D*	*D*	*D*	*D*	*C*	*D*	*C*	*C*	*A*	*D*	*D*
Dulzura HA (910.30)	22%	*D*	*B*	*D*	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*C*
2006–2009 High Frequency of Occurrence COCs (from Integrated WMA Assessment)												
2006–2007 Monitoring Season Pueblo San Diego HU High[1] Frequency of Occurrence Ratings and COCs	Wet Weather	♦♦♦ Copper Lead Zinc				♦♦♦ TSS Turbidity				♦♦♦ Total coliform Fecal coliform *Enterococci*	Very Poor IBI	No
2007–2008 Monitoring Season Pueblo San Diego HU High[1] Frequency of Occurrence Ratings and COCs	Ambient Weather	♦♦♦ Copper	♦♦♦ TDS					♦♦♦ TN TP			Very Poor IBI	No
	Wet Weather					♦♦♦ TSS Turbidity				♦♦♦ Total coliform Fecal coliform *Enterococci*		Yes
2008–2009 Monitoring Season Pueblo San Diego HU High[1] Frequency of Occurrence Ratings and COCs	Wet Weather					♦♦♦ TSS Turbidity				♦♦♦ Total coliform Fecal coliform *Enterococci*	Very Poor IBI	Yes
2007–2008 Monitoring Season Sweetwater HU High[1] Frequency of Occurrence Ratings and COCs	Wet Weather									♦♦♦ Fecal coliform	Very Poor IBI	No
2008–2009 Monitoring Season Sweetwater HU High[1] Frequency of Occurrence Ratings and COCs	Wet Weather									♦♦♦ Fecal coliform *Enterococci*	Very Poor IBI	No

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

2006 SWRCB Section 303d listing

Source Figure presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report.* Prepared by WESTON Solutions, Inc. January 2010.

Table 2-5. Pueblo San Diego HU Frequency of Occurrence Constituents of Concern.

Assessment	Program	Frequency of Occurrence	Persistent Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	Historical Data at MLS Only[2]	TDS, Turbidity, BOD, COD, MBAS, Total nitrogen, Total phosphorus, Total coliform, Fecal coliform, *Enterococci*, Total selenium, Dissolved copper	*	Yes
Ambient Urban Runoff	Jurisdictional Dry Weather Monitoring	Conductivity, Turbidity, Orthophosphate, Total coliform, Fecal coliform, *Enterococci*	NA	
	MS4 Random Dry and Targeted Dry Monitoring[2]	Total nitrogen, Total phosphorus, Fecal coliform, *Enterococci*	NA	
Wet Weather Receiving Water[1]	MLS and Bioassessment Monitoring	♦♦♦-TSS, Turbidity, Total coliform, Fecal coliform, *Enterococci* ♦♦-Dissolved copper ♦-BOD, COD, Dissolved zinc	Yes *(Hyalella azteca)*	
Wet Weather Urban Runoff	MS4 Random Wet and Targeted Wet Monitoring[2]	Total phosphorus, Total nitrogen, Fecal coliform	NA	

*Ambient sampling as part of normal permit was not monitored due to Bight 2008 participation.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1]Frequency of occurance ratings are only applicable to wet weather receiving water data. A minimum of 3 years of data is needed for other elements of the program to assess frequency of occurance.
[2]Concentration was compared to receiving water benchmarks for comparative purposes only.

Source *Adapted* from a table presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report.* Prepared by WESTON Solutions, Inc. January 2010.

2.5.2 *Sweetwater HU*

The constituents of concern with frequency of occurrence rankings identified during 2008-2009 for the Sweetwater HU are presented in Table 2-6. As during previous years, indicator bacteria remains as the high frequency COC although total coliform was downgraded to a low frequency of occurrence during 2008-2009. These results are consistent with the BLTEA priority ratings for bacteria and benthic alterations, but may not be supportive of the A rating and high priority water quality ranking for pesticides in the Middle Sweetwater HA. While organophosphate pesticides including Chlorpyrifos, Malathion, and Diazinon have not been detected at the Sweetwater MLS since 2003, Malathion and Diazinon were detected in receiving water samples conducted by the County of San Diego (Activity Summary Sheet SDB-057). However, results were below the Basin Plan WQO.

Table 2-6. Sweetwater HU Frequency of Occurrence Constituents of Concern.

Assessment	Program	Frequency of Occurrence	Persistent Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	SMC and Bioassessment Monitoring[2]	Chloride, Total nitrogen, Total phosphorus	*	Yes
Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring	pH, Conductivity, Nitrate as N, Total coliform, Fecal coliform, *Enterococci*	NA	
	MS4 Random Dry and Targeted Dry Monitoring[2]	TDS, Total nitrogen, Total phosphorus, Fecal coliform, *Enterococci*	NA	
Wet Weather Receiving Water[1]	MLS and Bioassessment Monitoring	♦♦♦-Fecal coliform, *Enterococci* ♦♦-TDS ♦-Total coliform, Diazinon	No	
Wet Weather Urban Runoff Areas	MS4 Random Wet and Targeted Wet Monitoring[2]	Total phosphorus, Total nitrogen, Fecal coliform	NA	

*Ambient sampling as part of normal permit was not monitored due to Bight 2008 participation.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1]Frequency of occurance ratings are only applicable to wet weather receiving water data. A minimum of 3 years of data is needed for other elements of the program to assess frequency of occurance.
[2]Concentration was compared to receiving water benchmarks for comparative purposes only.

Source *Adapted* from a figure presented in the *San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report.* Prepared by WESTON Solutions, Inc. January 2010.

2.5.3 *Otay HU*

The Otay HU was not assessed for high frequency of occurrence COCs during 2008-2009 nor during previous reporting periods due to a lack of data collected from receiving waters. Post-storm event sediment sampling was conducted within Otay HU. Pyrethroids were not present in the sediment at concentrations that could have caused toxicity to benthic infaunal organisms. Elevated concentrations of indicator bacteria were detected within MS4 during urban runoff monitoring from various locations in the Coronado HA and Otay Valley HA. This result supports the BLTEA high priority (A) rating for bacteria the two HAs received. Receiving water quality monitoring conducted by the County of San Diego (Activity Summary Sheet SDB-057), located upstream of the Lower Otay Reservoir, did not showcase elevated concentrations of indicator bacteria during ambient or wet weather conditions. A Temporary Watershed Assessment Station will be monitored within Otay River during FY 2009-2010 and is expected to contribute to the understanding of receiving water quality within the watershed.

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Section 3: Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. Watershed Activity Implementation Summary Sheets for all watershed activities implemented during this reporting period, including activities implemented in compliance with a TMDL, are located in Appendix D of this Annual Report. The format of the activity summary template utilized by the San Diego Bay Copermittees is presented in the 2008 San Diego Bay WURMP Document.

3.1 Watershed Water Quality Activities

The San Diego Bay Copermittees relied on the Watershed Strategy to guide the selection of watershed water quality activities. Each Copermittee has individually decided which activities are feasible to institute within its jurisdiction, and has selected watershed water quality activities for implementation that are appropriate for its relative contribution to the watershed's high priority water quality problems.

Table 3-1 presents the water quality activities implemented in FY 2009. The progress of each activity has been described in activity summary sheets, located in Appendix D-1. The Copermittees have identified what was accomplished during the reporting period for these activities and how the activity addresses high priority water quality problems in particular HAs. During this reporting period, the San Diego Bay Copermittees implemented six trash and debris related water quality activities focused on reducing the amount of trash and debris entering the MS4. Six enhanced inspection activities were implemented to abate sources of high priority water quality problems associated with construction activities, large special events, or automotive facilities. In addition, Copermittees implemented four other water quality activities to either abate sources or reduce loading of high priority pollutants.

One water quality activity, the Trash Containment Boom Agreement with the US Navy (SDB-006) was completed during this reporting period. Copermittees identified as Named Dischargers in the Chollas Creek Dissolved Metals TMDL implemented a number of watershed activities which also address the TMDL. Those watershed activities listed in the TMDL Implementation Plan will be identified in Table 3-1 and will be discussed further in their respective activity summary sheets. Results and updates on the water quality activities implemented by all TMDL Named Dischargers during this reporting period are located in Appendix E.

The Watershed Strategy indicates that where there are data gaps that must be filled before successful implementation of a load reduction activity can occur, monitoring and/or source identification activities are necessary. With this in mind, 12 monitoring and source identification activities were implemented during this reporting period. One monitoring activity, Water Quality

Monitoring at Additional Mass Loading Stations (SDB-057) was completed during this reporting period. While the San Diego Bay Copermittees recognize that these types of activities are not considered for credit toward Permit compliance, the importance of the monitoring information to the overall success of the Watershed Strategy and the Copermittees' ability to address high priority water quality problems cannot be overlooked. Monitoring information will support future management decisions regarding the planning, implementation, and assessment of watershed activities.

The Copermittees have continued to collaborate on the reporting of four common jurisdictional water quality activities at a watershed level. These activities include: Pet Waste Bags, Storm Drain Litter Control Techniques, Enhanced Street Sweeping and Cleanup Events. This collaborative approach was utilized because these activities were identified as being beneficial in addressing high priority water quality problems and can be applied within different locations and at different scales of implementation as determined appropriate by each Copermittee. The benefit of this approach is that it allows an assessment of the activity at both the jurisdictional level as well as at a HA or watershed level.

Table 3-1. San Diego Bay WURMP Water Quality Activities in FY 2009.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																			
Trash and Debris Related Activities																			
Pet Waste Bag Collaborative Watershed Activities (SDB-001)	X	X		X			X	X	X	●				●					
Storm Drain Litter Control Techniques Collaborative Watershed Activity (SDB-002)		X	X	X														●	●
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)*	X	X	X	X			X						●					●	●
Collaborative Cleanup Events (SDB-004)		X	X	X			X	X											●
Clean Community Program (SDB-005)			X							●		●							●
Trash Containment Boom Cleaning Agreement with US Navy (SDB-006)		X	X							●									●
Family Stream Team Initiative Partnership (SDB-051)*		X											●						●
Enhanced Inspection Activities																			
Additional Dry Season Construction Inspections (SDB-007)			X	X														●	●
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)*		X											●						
Enhanced Construction Oversight (SDB-009)		X																●	
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)*			X	X						●			●				●		
Large Sp. Events (Education, Inspections, and Cleanup) (SDB-047)							X			●									
Outdoor Special Event Oversight (SDB-048)		X																	●
Targeted Special Studies																			
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)*		X								●			●						
Dalbergia "Green Mall" Infiltration Retrofit (SDB-013)*		X								●			●						
Southcrest Park Green Lot Infiltration Project (SDB-014)*		X								●			●						
Memorial Park “Green Lot” Infiltration Retrofit Activity (SDB-015)*		X								●			●						

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
43rd and Logan Biofiltration Project (SDB-037)*		X								●			●						
Maple Canyon Water Quality Improvement (SDB-049)*		X								●								●	●
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)*		X											●						
Other Water Quality Activities																			
Update Recycling and Solid Waste Ordinance (SDB-035)				X				X	X	●				●					●
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X	●	●	●	●	●	●	●	●	●	●
Palm Avenue Stormwater Diverter (SDB-052)							X			●			●	●			●	●	
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																			
Enhanced Dry Weather Monitoring Program (SDB-020)		X								●	●	●	●	●	●	●	●	●	●
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								●			●	●		●	●	●	●
La Mesa Additional Water Quality Monitoring Program (SDB-022)*		X								●	●	●	●	●	●	●	●	●	
BMP Effectiveness Monitoring Program (SDB-023)		X										●	●		●			●	
Dry Weather Aerial Deposition Study – Phase II (SDB-024b)*		X											●						
Dry Weather Aerial Deposition Study – Phase III (SDB-024c)*		X											●						
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X			●	●	●	●	●	●	●	●	●	
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (SDB-026)		X								●			●						
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (SDB-027)*		X								●									
Shelter Island Yacht Basin Urban Runoff Monitoring Study (SDB-053)	X												●						
Switzer Creek Pesticide Source Monitoring Study (SDB-054)		X															●		
Water Quality Monitoring at Additional Mass Loading Stations (SDB-057)					X	X			X	●	●	●	●	●		●	●	●	

* Indicates the watershed activities also listed in the Chollas Creek Dissolved Metals TMDL Implementation Plan.

3.2 Watershed Education Activities

The San Diego Bay Copermittees recognize the value of educational programs as an essential element in ensuring future watershed protection efforts. The main focus of the San Diego Bay watershed education program is to make the public aware of the sources of water pollution in order to encourage positive behavioral change. Eleven watershed education activities were implemented in the San Diego Bay WMA during this reporting period (Table 3-2). Activity summary sheets for these activities are located in Appendix D-2. Four education activities were completed during this reporting period (SDB-030, SDB-031, SDB-043, and SDB-044). In addition to these identified educational activities, the Copermittees have continued to participate in other educational activities as part of JURMPs, RURMP or other programs. Section 3.2.1 provides a watershed-wide tabulation of all education activities the Copermittees implemented during the FY 2009 reporting year. This information will be utilized to obtain a comprehensive evaluation of education efforts occurring within the San Diego Bay WMA and aid in the development and/or modification of future watershed education activities.

Table 3-2. Implemented San Diego Bay WURMP Education Activities in FY 2009.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Storm Drain Stenciling (SDB-028)				X				X	X	●	●	●	●	●	●	●	●	●	●
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	●		●							●
Outdoor Billboards/Transit Shelters (SDB-030)	X	X	X	X				X	X	●									●
Mobile Advertising (SDB-031)	X	X	X	X				X	X	●		●	●		●		●	●	●
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	●		●	●						●
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	●									
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	●									
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	●					●				
La Mesa Park Kiosk (SDB-042)		X								●			●				●		
LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043)				X	X	X			X	●	●	●	●	●	●	●	●	●	●
ILACSD Elementary School Watershed Presentations (SDB-044)		X		X			X	X		●	●	●	●	●	●	●	●	●	●

3.2.1 *San Diego Bay Education Program*

The San Diego Bay Education Program is outlined in the San Diego Bay WURMP Document. The education program's focus is to educate the public about the San Diego Bay WMA and the high priority water quality problems within the watershed. The San Diego Bay Copermittees have implemented several short and long-term educational activities that address watershed concepts and watershed pollutants. These tasks also overlap several programs which are required for Municipal Permit compliance on jurisdictional, watershed, or regional levels.

Table 3-2 provides a summary of the education activities that the San Diego Bay Copermittees implemented in the FY 2009 reporting year. Each of the tasks is further described in Sections 3.2.2.1 – 3.2.2.6. Rather than listing the number of individuals estimated to have been reached by each subcategory activity, the table lists the number of events as a more representative summation of the education and outreach efforts. Additionally, the overlapping nature of these educational activities across jurisdictional, watershed, and regional boundaries is presented. The table also provides an indication of the jurisdiction(s) that participated or provided the opportunities for certain types of educational activities, as well as the relationship of these educational activities to watershed concepts and/or surface water pollutants, especially those pollutants found to be pollutants of concern in the San Diego Bay WMA. Information on specific education events can be found in Appendix F of this report. Please note that in an effort to include only San Diego Bay WURMP watershed education activities, events that did not specifically discuss the San Diego Bay WMA and/or watershed pollutants of concern were excluded from both Table 3-2 and Appendix F.

3.2.1.1 *Watershed Public Presentations and Media*

The Public Presentations and Media Watershed Elements of the San Diego Bay Education Program were designed to incorporate general watershed, receiving water, and storm water pollution prevention concepts and principles into existing and planned public presentation and media opportunities at the jurisdictional level. The San Diego Bay Copermittees have used a variety of means to meet this objective and will continue to evaluate and improve their effectiveness. For purposes of this Annual Report, the Public Presentation and Media element of the Education Action Plan has been subcategorized under four sub-headings as shown in Table 3-3 and described below. Further detail on these activities is provided in Appendix F.

<u>Festivals/Community Events</u> – These events are generally hosted by local community groups or jurisdictions; and provide an opportunity to host a booth and to share educational materials. Community events, such as the San Diego County Fair, provide another venue for public outreach and education. The San Diego Bay Copermittees were involved in 55 different events this reporting period, including the Heritage Day Festival and Parade in the City of San Diego, the Intergenerational Games event in the City of La Mesa, the EnviroFair at the San Diego County Fair, the US Open Sand Castle Competition in the City of Imperial Beach, and the Go

Green and Clean Family Day in the City of Chula Vista. A summary of the number of persons reached is included in Table 3.4.

Presentations – This category includes presentations with visual aides given to community organizations or to school children, at their regular meeting or event. Staff from the jurisdictions in the San Diego Bay WMA made a number of presentations for groups throughout the watershed. During these presentations which addressed students at all levels from elementary school to college, staff emphasized watershed issues, recycling, and the general storm water pollutants of concern. One highlight is the collaborative effort between five Copermittees and I Love A Clean San Diego (ILACSD) to provide information on high priority water quality problems and general storm water issues through presentations to elementary school children (Activity Summary Sheet SDB-044). Overall, the San Diego Bay Copermittees conducted 120 different presentations this reporting period which was estimated to reach approximately 27,959 persons.

Print Media – Several of the San Diego Bay Copermittees have made efforts to attract media attention. The Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, and San Diego, as well as the Port of San Diego and the Airport Authority have been successful at gaining print media coverage for their watershed and storm water management efforts and the results of their programs. Articles in the Imperial Beach Eagle and Times, Coronado Currents, South Bay Star News, the La Mesa FOCUS, and the San Diego Union Tribune were printed during this reporting period. In addition, Copermittees have presented watershed concepts through pamphlets, brochures, and displays or kiosks in public areas. Notably, the Think Blue program messages were advertised on transit shelters and billboards, and on mobile ads on static billboard trucks roaming within the Chollas Creek. Additional information on these activities is located in Appendices D and F. The San Diego Bay Copermittees continue to explore opportunities at making coordinated efforts to garner print media coverage as an outreach and education mechanism. The San Diego Bay Copermittees distributed 39 different forms of watershed related print material during this reporting period.

Public Service Announcements (PSAs) – The Think Blue media campaign continues to be a mechanism for conducting watershed and storm water pollution prevention education and outreach throughout the San Diego Bay WMA and the entire region. The FY 2009 reporting period represents the eighth straight year that Think Blue has been in operation. Think Blue provides outreach to the general public through public service announcements in both English and Spanish and estimates 4,471,328 impressions during the 2008-2009 reporting year. The City of San Diego produced and broadcasted the *Karma*, *Karma Second Chance*, and *Karma Tourist* PSAs (Activity Summary Sheet SDB-029) throughout the watershed during FY 2009. In addition to running Think Blue PSA videos on television screens at the Terminal 2 Baggage Claim area, the Airport Authority also displayed “Don’t Trash California” anti-littering PSA posters throughout the airport terminals.

Watershed Education for Municipal Staff – The San Diego Bay Copermittees continue to provide storm water education to municipal staff, especially to those staff dealing directly with

pollutants of concern in the watershed. Watershed training for municipal staff can be focused on more general concepts or on specific pollutants, depending on the audience. Incorporating watershed education into the required municipal staff training of the Jurisdictional Urban Runoff Management Plan (JURMP) helps the Copermittees address the high priority water quality problems in San Diego Bay. The San Diego Bay Copermittees conducted in 15 different Municipal Training Events during this reporting period. For more information on municipal staff training, please refer to each of the San Diego Bay Copermittee's individual JURMP.

Workshops – Several San Diego Bay Copermittees conducted educational workshops addressing storm water issues. These workshops targeted representative from businesses and the general public. Some of the topics included auto facility BMP implementation and water conservation. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues.

Table 3-3. Summary of Education Activities for FY 2009.

						Concepts/Constituents of Concern Addressed					
Tasks from the WURMP Education Action Plan	**Target Audience**	**Program Elements**	**Number of Events**	**Jurisdictional, Watershed, or Regional Program**	**Participating Jurisdictions**	**Watershed concepts**	**General Surface Water concepts**	**Copper/Zinc**	**Pesticides**	**Bacteria**	**Sediment**
Public Presentations and Media - Watershed Element	General Public, Residential, Commercial/ Industrial, Construction, Municipal	Festivals/Community Events	55	J, W, R	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, Port of San Diego, San Diego, County of San Diego	x	x	x	x	x	x
		Presentations	120	J, W	Airport Authority, Imperial Beach, La Mesa, National City, Port of San Diego, County of San Diego	x	x	x	x	x	x
		Print Media	39	J, W	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego	x	x	x	x	x	x
		Public Service Announcements	4	W, R	All	x	x				
		Municipal Staff Training	15	J, W	Airport, Chula Vista, Imperial Beach	x	x	x	x	x	x
		Workshops	15	J, W	La Mesa, National City, Port of San Diego, County of San Diego	x	x	x	x	x	x

						Concepts/Constituents of Concern Addressed					
Tasks from the WURMP Education Action Plan	**Target Audience**	**Program Elements**	**Number of Events**	**Jurisdictional, Watershed, or Regional Program**	**Participating Jurisdictions**	**Watershed concepts**	**General Surface Water concepts**	**Copper/Zinc**	**Pesticides**	**Bacteria**	**Sediment**
School Programs	K - 12 children	Field Trips	18	J, W	Airport Authority, Chula Vista, Coronado, Imperial Beach, Port of San Diego, County of San Diego	x	x		x	x	
		Project SWELL	*	W, R	Port of San Diego, Airport Authority, City of San Diego	x	x				
Integrated Pest Management	General Public, Residential, Commercial/ Industrial, Municipal	IPM Seminars/Events	14	J, W, R	La Mesa, Port of San Diego, City of San Diego	x	x		x		
Project Clean Water Watershed Website	General Public	Website with information related to surface water quality issues, watersheds, and pollutants	N/A	W, R	All	x	x	x	x	x	x

						Concepts/Constituents of Concern Addressed					
Tasks from the WURMP Education Action Plan	**Target Audience**	**Program Elements**	**Number of Events**	**Jurisdictional, Watershed, or Regional Program**	**Participating Jurisdictions**	**Watershed concepts**	**General Surface Water concepts**	**Copper/Zinc**	**Pesticides**	**Bacteria**	**Sediment**
Partners in Clean Water	General Public	Cleanup Events	30	J, W	Airport Authority, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, Port of San Diego, San Diego, Chula Vista	x	x	x	x	x	x
		Citizen Monitoring/ Training	2	J, W	Port of San Diego	x	x	x	x	x	x
		Waste Collection Recycling Events	11	J, W, R	Airport Authority, Chula Vista, La Mesa, Port of San Diego	X	X	X	X	X	X
		Storm Water Stenciling Events	1	J, W	Chula Vista	X	X	X	X	X	X

* Project Swell is reported as the number of students reached and is discussed further in Section 3.2.1.2.

3.2.1.2 *School Programs: San Diego Bay WMA*

School children are a primary focus of the San Diego Bay Education Program. The San Diego Bay Copermittees continue to focus on efforts to effectively promote watershed awareness and to initiate positive behavioral changes in children. The San Diego Bay Watershed Education Program (represented in Table 3-3) shows the four main sub-categories used to describe the education and outreach efforts directed at school children during this reporting period.

Field Trips – The San Diego Bay Copermittees provided field trips to the Chula Vista Nature Center, Wildcoast Sea Turtle Education, the Maritime Museum, and others, as an effective hands-on means of increasing watershed and water quality awareness in their students. Attendance at these field trips was more than 11,600 students.

Project SWELL – Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, Airport Authority, other municipalities, and non-profit organizations to establish comprehensive water quality and pollution prevention curricula in City schools. Started in May 2003, Project SWELL seeks to educate local school children about our region's watersheds while also fostering a sense of stewardship in these future leaders that will provide long-term solutions to the region's water quality problems. In all, Project SWELL reached more than 40,000 school children in the SDUSD during the reporting period.

3.2.1.3 *Integrated Pest Management (IPM)*

The San Diego Bay Copermittees believe that public education about IPM is an effective way to protect receiving waters from the impacts of diazinon and other pesticides. IPM promotes the use of integrated, ecologically sound pest management programs. Two main categories are used to describe education efforts related to IPM.

IPM Seminars and Events – These include efforts to educate the public to use IPM as a way to protect the beneficial uses of receiving waters throughout the watershed. This includes Copermittee efforts to organize or participate in local seminars or events regarding IPM for local residents, businesses, and public agency staff. Events include the Green Port IPM Seminar and County Integrated IPM Training for Landscape Professionals. The San Diego Bay Copermittees participated in three different IPM Seminars/Events during this reporting period.

3.2.1.4 *Project Clean Water Watershed Website*

As in previous years, the Project Clean Water (PCW) website (www.projectcleanwater.org) provided a venue for public education and outreach about the San Diego Bay WMA. In addition, the San Diego Bay Copermittees continue to link their individual jurisdictional websites to PCW. Each of these websites presents another mechanism for educating the public about watershed issues. These websites also function as public participation mechanisms. Please refer to the Public Participation section of this Annual Report (Section 3.3) for more information on this aspect of the PCW website for the San Diego Bay WMA.

3.2.1.5 *Partners in Clean Water*

The San Diego Bay Copermittees continue to nurture new and existing partnerships with individuals and groups within our communities that share our concern for the environment and our watershed. Table 3-3 shows the four main sub-categories as listed below used to describe the education and outreach efforts directed at these types of community partnerships during this reporting period.

Cleanup Events – In addition to the obvious public participation aspects of a cleanup event, these events provided an opportunity to conduct education and outreach about watershed issues and general storm water pollutants of concern. These events usually involve trash removal from inland and coastal areas.

All the San Diego Bay Copermittees collectively sponsored the Creek to Bay Cleanup for the fifth year in a row. San Diego Bay Copermittees worked together to help fund and staff cleanup sites within the San Diego Bay WMA. Several of the San Diego Bay Copermittees also participated in Coastal Cleanup Day, as well as a number of smaller, jurisdiction-specific cleanup events. The San Diego Bay Copermittees participated in 30 Cleanup Events during this reporting period. A summary of the number of persons reached is included in Table 3-4. Additional information on watershed cleanup events is provided in Activity Summary Sheet SDB-004 in Appendix D-1.

Citizen Monitoring/Training – Citizen Monitoring Training and Citizen Monitoring events provide an opportunity for community members to learn how water quality testing is performed, as well as make a connection to the water bodies in their neighborhoods. The Port of San Diego sponsored two programs with Citizen Monitoring components during this reporting period. The Chollas Creek Family Stream Team Initiative Partnership (SDB-051) and the Zoological Society of San Diego's Stream Team Stewards program provided training to citizens within the Chollas Creek watershed (908.2 HA). Further details on these programs are provided in Appendices D-1 and E.

Storm Drain Stenciling Events – These events are an effective means for increasing watershed and water quality awareness in the community. The City of Chula Vista continued to participate in events during FY 2009 where inlets were affixed with storm water related placards or stenciled graphics (SDB-028). In addition to the 500 thermoplastic storm drain markers permanently affixed to storm drain inlets with the prohibitive "No Dumping – Drains to Bay" message during the last fiscal year, citizens stenciled 88 more storm drains during the Beautify Chula Vista Day event in October 2008. Notably, nearly all storm drain structures in the City are identified with stenciling, plastic markers, or permanent concrete stamping.

Waste Collection/Recycling Events – These include special organized events where citizens can properly dispose of their HHW or E-Waste. This does not include regular collection at HHW facilities. The San Diego Bay Copermittees participated in 11 Waste Collection/Recycling Events during this reporting period with a summary of persons reached included in Table 3-5.

3.3 Public Participation Activities

Public participation during the development and implementation of the San Diego Bay WURMP has been, and continues to be, encouraged to ensure that stakeholder interests and creative solutions are considered. Broad participation is critical to further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process. Further, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own and that broad partnerships are essential to positively affect the water resources in the watershed. It is only through a collaborative approach that we will develop a better understanding of these issues and processes affecting water quality in our watersheds.

Effective public participation is driven by ensuring that the stakeholders are engaged at the appropriate level of decision-making. Public input into any decision-making process can be as simple as providing public notification that an initiative will occur, or a complex process that requires them to be intrinsically involved and responsible for the final decision-based outcome, or any level in between. The proper identification of the role of the public is crucial to ensuring the success of any initiative for which public input is sought. Table 3-4 provides a description of the possible levels of public participation, ranging from simple notifications to empowerment of full decision-making.

Table 3-4. Levels of Public Participation.

Public Participation Objectives				
INFORM	**CONSULT**	**INVOLVE**	**COLLABORATE**	**EMPOWER**
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.

An opportunity for assessing public participation is available through the identification of the appropriate level at which to involve stakeholders in decision-making. Prior to embarking on a public participation opportunity, San Diego Bay Copermittees established an objective defining the level at which the public is invited to be involved. The effectiveness of public participation in decisions affecting the San Diego Bay WMA were assessed by understanding the numbers of stakeholders reached through each decision-making opportunity (where applicable), and by providing summaries describing how stakeholders participated in each opportunity.

The following section summarizes the activities and efforts made by the San Diego Bay Copermittees to encourage public participation during this reporting period. A complete list of public participation activities conducted within the watershed is included in Appendix F. Please note that this section only discusses the activities that were identified in the Public Participation section of the WURMP and relate to the San Diego Bay WMA. The San Diego Bay Copermittees have also conducted a number of regional programs and events involving the public in general water quality issues. Many municipalities have worked with stakeholders on efforts such as grant applications and water quality data collection.

3.3.1 *Storm Water Copermittee Collaboration and Community Workshops*

Stakeholder participation is vital to the success of watershed activities. The San Diego Bay Copermittees provided several forums during FY 2009 that allowed various stakeholder groups to participate in WURMP activities. Community workshops and activities that enhanced collaboration among San Diego Bay Copermittees are discussed below.

San Diego Bay WURMP Meetings

San Diego Bay WURMP meetings were held regularly to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue to inform, consult, and involve Copermittees and other stakeholders on local watershed efforts. Appendix B presents a summary of the meetings held by the workgroup during FY 2009, including an outline of the principal agenda items.

Workshops and Conferences

San Diego Bay Copermittees conducted educational workshops addressing storm water issues to inform and involve the public. These workshops targeted representatives from businesses, the construction industry, and the general public. The topics ranged from simple BMP implementation to SWPPP preparation, and many were tailored to specific audiences. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues. The San Diego Bay Copermittees also targeted specific groups by setting up booths at various conferences and city festivals. Educational materials were distributed and personnel at the booths answered questions. The San Diego Bay Copermittees conducted or participated in 15 different watershed related workshops and conferences during this reporting period.

Presentations

The San Diego Bay Copermittees conducted a variety of informational presentations during the reporting period, targeting many different types of audiences. These educational presentations provided educational media as well as a venue for questions about storm water issues to be discussed. Individuals who have a greater awareness and understanding of storm water issues will likely also be more active in taking measures to protect storm water quality and influencing others around them to do the same. The total number of persons attending presentations is estimated at 27,959.

Community Events

During this reporting period, the San Diego Bay Copermittees participated in 55 watershed related community events. Collectively, the community events met all five public participation objectives presented in Table 3-4 and many of these events addressed regional water quality issues that spanned several watersheds. The San Diego Bay Copermittees feel such broad based activities play an important role in engaging the public on important water quality issues and that such public participation does positively impact water quality both in the San Diego region as a whole and in San Diego Bay.

Cleanup Events and Waste Collection

Cleanup events give the public a chance to actively participate in improving the water bodies in their neighborhoods. In addition to the obvious benefits to water quality, such events also give residents a tangible understanding of the link between their actions and receiving water impacts. Active, hands-on experience tends to foster a sense of ownership and deepen participants' sense of responsibility for their local water bodies. As a result, the cleanup events and waste collection events were effective in achieving all of the public participation objectives.

Though the San Diego Bay Copermittees have identified trash as a constituent of concern for the Pueblo HU, the Copermittees continued to implement a variety of activities to address this

issue where applicable and, as a proactive measure, throughout the entire San Diego Bay WMA. Cleanup events are an effective means of not only involving the community in protecting water quality, but also specifically removing trash from water bodies in urban settings. During cleanup events, participants are provided with educational material regarding watershed concepts and have the opportunity to discuss storm water issues with city staff and knowledgeable volunteers. Additional information on watershed cleanup events is provided in Activity Summary Sheet SDB-004 in Appendix D-1.

Notably, the Chollas Creek Stream Team Initiative Partnership (SDB-051) addressed illegal dumping and non-point source trash accumulation within Chollas Creek (908.2 HA) by organizing refuse collection events and community education and outreach efforts. The Initiative successfully implemented public participation elements to inform, involve and empower citizens to participate in proper refuse disposal in order to reduce illegal dumping and trash within the Chollas Creek community.

Free collection of household hazardous waste (HHW), electronic, and universal waste has occurred during FY 2009. Often residents illegally dump these materials due to a combination of economic pressures, inconvenience, and/or lack of knowledge regarding where to go to dispose of the items. Waste collection events provide an avenue for the public to properly dispose of used oil, appliances, and other items for which they might otherwise have had to pay fees or transport for long distances.

Table 3-5 below details the number of workshops, conferences, presentations, and community events that were held and the number of people reached through these events. Note that an exact numeric attendance was not possible for all events. For a more detailed description of the events that occurred in each one of these categories, refer to Appendix F.

Table 3-5. Summary of Activities.

Type of Activity	Number of Events	Number of People Reached*
Workshops/Conferences	15	252
Presentations	120	27,959
Community Events	55	344,227
Cleanup Events	30	7,646
Waste Collection Events	11	4,307

* These totals do not include the numbers for some events for which attendance was not recorded.

3.3.2 *Websites*

The Project Clean Water (PCW) website successfully provides a means of public participation by informing and involving the public on San Diego Bay water quality issues. Each of the three HUs which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have pages devoted to them that

are available for both the San Diego Bay Copermittees and public viewing. The San Diego Bay WURMP page includes downloadable WURMP and WURMP Annual Report documents, as well as land use and MS4 maps. The page specifically states that the San Diego Bay Copermittees are seeking public comment on the program and provides mail, email, and telephone contact information for the Lead Copermittee.

During the reporting period, 6,266 hits were recorded for the four main PCW web pages related to San Diego Bay WMA, which is comparable to the number of hits during the last reporting period. The Pueblo Watershed received 1,559 hits, Sweetwater Watershed received 1,924 hits, and the Otay Watershed link received 1,886 hits.

In addition to the PCW website, several other websites with San Diego Bay WMA content have been developed. The City of San Diego worked with San Diego State University and San Diego Coastkeeper to continue to provide the San Diego Bay Watershed's Common Ground website (http://www.sdbay.sdsu.edu), which has interactive water quality maps, access to a variety of water quality data collected within the watershed, a watershed tour feature, and a variety of other watershed specific educational content. The Port of San Diego continues to display the Project ORCA (Online Research Coastal Academy) site, which provides interactive, San Diego Bay focused, environmental education targeted at children. Other San Diego Bay Copermittees' storm water websites, including the City of Coronado's, also provide information about San Diego Bay.

3.3.3 *Integration And Participation in Local Planning Activities*

During the reporting period, San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA continued to participate in the development of plans intended to improve the water quality in San Diego Bay, including:

- Otay River Watershed Management Plan (ORWMP)
- Otay River Special Area Management Plan (SAMP)

Stakeholders in the areas in which these plans focus have attended regular meetings and providing valuable input on plan direction. By consulting and collaborating with various stakeholders, Copermittees' efforts have empowered the public to be more involved in addressing water quality issues. Additional information on these planning activities will be discussed in Section 3.4 of this Annual Report.

Links to pages discussing the ORWMP and the Otay River SAMP are included on the Project Clean Water website. The sites include a variety of plan-related documents for public review and announcements of public meetings.

3.3.4 *Direct Interaction*

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' staff also interacts with the public on a daily basis. Municipal employees receive storm water training on an ongoing basis, as described in each JURMP. Staff with program implementation responsibilities receives the most intensive training, but other employees are educated about storm water issues as well. Municipal employees interact with the public in their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about storm water issues and regulations, as well as answer questions and provide guidance. This day-to-day personal interaction is an important component of the San Diego Bay Copermittees public participation activities.

3.4 Collaborative Land-Use Planning Efforts

In recent years water quality management efforts have become increasingly watershed-focused, and the San Diego Bay Copermittees are working to integrate watershed management concepts into programs that can be implemented across jurisdictional boundaries. In general, this effort includes participation in watershed management plans, utilizing regional guidance documents, and increasing public participation. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and a balance of land uses when planning future development. Several planning activities have been initiated.

During the reporting period, San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA continued to develop land-use plans intended to improve the water quality in San Diego Bay, including the following:

- Otay River Watershed Management Plan (ORWMP)
- Otay River Special Area Management Plan (SAMP)

The ORWMP has been approved by the Port, the County of San Diego and Imperial Beach. The Plan was approved by the City of San Diego in FY 2009 and is still under consideration for approval by the City of Chula Vista. Therefore, there are no new action items to report for this reporting period. An interim Watershed Council will be established once the ORWMP has been approved.

In regards to the SAMP, the County (through its consultant team) has prepared most of the technical background information that is necessary to complete the 404(b)(1) process of the Clean Water Act, and the SAMP document is scheduled to be prepared in early 2010. In addition, the Army Corps has received additional funding and has hired URS to prepare the Environmental Impact Statement (EIS). The EIS will be underway shortly after the SAMP document is completed.

3.5 Updated Five-Year San Diego Bay WURMP Strategic Plan

3.5.1 *New Activities*

The San Diego Bay Copermittees added new watershed activities to the San Diego Bay WURMP Strategic Plan during FY 2009. Copermittees incorporated 3 new educational activities (Activity Summary Sheets SDB-044, SDB-045, and SDB-055) and four new water quality activities (Activity Summary Sheets SDB-049, SDB-050, SDB-051 and SDB-052). Five new monitoring activities (Activity Summary Sheets SDB-024b, SDB-024c, SDB-053, SDB-054, and SDB-057) were also included. The activity summary sheets for these activities are presented in Appendix D-1 and D-2.

3.5.2 *Updated 5-Year San Diego Bay WURMP Strategic Plan*

The San Diego Bay WURMP's Strategic Plan is assessed on an annual basis and may be updated to reflect the current status of watershed activities and any modifications to previous versions of the Strategic Plan. During this reporting period, the San Diego Bay Copermittees have been committed to implementing the watershed water quality and education activities presented in Sections 3.1 through 3.4 of this Annual Report. The updated Implementation Plan Schedule of San Diego Bay WURMP is presented in Table 3-6 and is intended to supercede the previous version presented in the 2008 San Diego Bay WURMP Document. In addition, the Copermittees are progressing towards making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding WURMP permit language.

3.5.3 *Updates to TMDL Implementation Plan Activities*

Currently, there are three adopted TMDLs in the San Diego Bay WMA (Table 2-2): the Chollas Creek Diazinon TMDL, the Chollas Creek Dissolved Metals TMDL, and the SIYB Dissolved Copper TMDL. The named dischargers of the Chollas Creek Diazinon and Dissolved Metals TMDLs have developed an Implementation Plan defining the approach to planning, implementing, and assessing the effectiveness of best management practices (BMPs) with the goals of attaining the waste load allocations (WLAs) for dissolved metals and restoring the beneficial uses of the Chollas Creek Watershed. The named dischargers of the SIYB Dissolved Copper TMDL initiated the development of an Implementation Plan during this reporting period as well. An assessment of the efforts to address TMDL compliance during this reporting period is presented in Section 4.2 of this Annual Report.

<u>Chollas Creek Dissolved Metals TMDL Implementation Plan Activities</u>

The seven named dischargers, Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, Port District, U.S. Navy, and Caltrans, developed an Implementation Plan which presents the strategy, framework, and activities for the first five years under the TMDL using a multi-

pollutant approach. The first five years, considered Phase I, involve the implementation a range of BMPs designed to address identified priority water quality problems from a range of community, structural, and watershed-level activities. Phase I also includes effectiveness assessments to measure the performance of specific BMPs to assess the long-term performance of the program, and to identify existing pollutant source or BMP design data gaps. The goal is to maximize the effectiveness of specific activities to guide the BMP priority rankings and implementation in subsequent phases with the ultimate goal of achieving TMDL compliance.

Though the Implementation Plan was submitted in October 2009 (outside of this reporting period) the dischargers implemented several activities as part of their comprehensive Storm Water Programs that will help in meeting TMDL compliance for both the Metals TMDL and the Diazinon TMDL. The dischargers also have a number of activities planned over the next few years. Specific activities that the dischargers are implementing are included in tabular format in Appendix E. Fifty-one activities, including water quality, education, and ongoing agency-wide activities, were in implementation in FY 2009. Fifty-two are planned to be implemented or continue into FY 2010, including two Municipal Code review and modification projects. Additionally, there are four collaborative special monitoring studies planned for FY 2010. Activities are further described in the tables included in Appendix E.

While activities implemented to address the Chollas Creek Diazinon TMDL are referenced in the discussion above, the dischargers that are responsible under the Diazinon TMDL must report on specific implementation elements. These updates are included in Appendix C, as part of the annual response to monitoring report. However, specific activities referenced as part of the implementation elements discussion in Appendix C are also included in the Metals TMDL dischargers' tables in Appendix E, demonstrating the multi-pollutant approach to the Metals TMDL.

SIYB Dissolved Copper TMDL Implementation Plan Activities

The named parties, the Port of San Diego, the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners began the development of the TMDL Implementation Plan during this reporting period. The Implementation Plan incorporates a collaborative approach among the named parties to planning, implementing, and assessing BMPs to achieve reductions in copper loading into SIYB. The Implementation Plan will utilize a solutions-oriented strategy of establishing BMPs that help realize the objective of reducing copper loading into the basin in order to preserve and restore the beneficial uses, while simultaneously achieving compliance with the SIYB interim and final dissolved copper loading thresholds. Loading reductions will be achieved through conversion of vessels to non-copper-based paints, reductions of inputs via hull cleaning, and control of upstream inputs. Therefore, the named parties identified BMPs and other activities that can be best implemented within their given facility/operations in order to collectively achieve compliance with TMDL loading targets for the entire basin.

Named Parties are developing individual work plans, identifying BMPs to be implemented to achieve loading reductions, as well as implementation schedules, assessment mechanisms, and effectiveness targets. In the individual BMP Implementation Plans, the named parties have the option of choosing voluntary measures, such as education, outreach, green boater certification programs, and incentives, especially in early stages of the TMDL, while in later stages the inclusion of mandatory measures, such as Port-issued policies, and Regional Board-issued regulations and orders, may be required to meet final loading reduction targets. The decision to incorporate more prescriptive BMPs will be based on individual and collaborative effectiveness assessments, including the results of tracking and monitoring programs.

Table 3-6. Updated San Diego Bay Watershed Activity Implementation Schedule.

San Diego Bay Watershed	Hydrologic Area									Pollutants												
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	FY 2007-2008	FY 2008-2009	FY 2009-2010
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																						
Trash and Debris Related Activities																						
Pet Waste Bag Collaborative Watershed Activity (SDB-001)	X	X		X			X	X	X	●				●						I	I	I
Storm Drain Litter Control Techniques Collaborative Watershed Activity (SDB-002a)		X	X	X														●	●	I	Completed	
Storm Drain Litter Control Techniques Collaborative Watershed Activity – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (SDB-002b)		X	X	X														●	●	P	P	I
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)	X	X	X	X			X						●					●	●	I	I	I
San Diego Bay Cleanup Events Collaborative Activity (SDB-004)		X	X	X			X	X											●	I	I	I
Clean Community Program (SDB-005)			X							●		●							●	I	I	I
Trash Containment Boom Cleaning Agreement with US Navy (SDB-006)		X	X							●									●	I	I	Completed
Chollas Creek Family Stream Team Initiative Partnership (SDB-051)		X											●						●	P	I	I/A
Enhanced Inspection Activities																						
Additional Dry Season Construction Inspections (SDB-007)			X	X														●	●	I	I	I
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)		X											●							P	I	I
Enhanced Construction Oversight (SDB-009)		X																●		I	I	I
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)			X	X						●			●				●			I	I	A
Targeted Municipal Facility Inspections (SDB-036)		X								●			●	●						I	Discontinued	
Large Special Event Inspection and Cleanup (SDB-047)							X			●										I	I	A
Outdoor Special Event Oversight (SDB-048)		X																	●	I	I	I
Targeted Special Studies																						
Chollas Creek Water Quality Protection & Habitat Enhancement Project (SDB-011)		X								●	●	●	●	●	●	●	●	●		I	Completed	
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)	X	X	X	X				X		●				●	●		●	●		P	I	I/A
Dalbergia "Green Mall" Infiltration Retrofit Project (SDB-013)		X								●			●							P	P	P
Southcrest Park "Green Lot" Infiltration Project (SDB-014)		X								●			●							P	P	P
Memorial Park "Green Lot" Infiltration Retrofit Activity (SDB-015)		X								●			●							P	P	P
Treatment Control BMP Pilot Projects (SDB-034)		X											●							P	P	I/A
43rd and Logan Biofiltration Project for Chollas Creek Watershed Protection (SDB-037)		X								●			●							P	P	I
Maple Canyon Water Quality Improvement (SDB-049)		X								●								●	●	P	P	P
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)		X											●							P	I	A
Other Water Quality Activities																						
Shelter Island Yacht Basin Dissolved Copper TMDL (SDB-016)	X												●							Activity Summary sheets will no longer be submitted for TMDL efforts will now be discussed in Sections 3 and 4.		
Chollas - Switzer - Paleta Creek Mouths TMDL (SDB-017)	X	X											●			●						
Chollas Creek Diazinon TMDL (SDB-018)	X	X															●					
Chollas Creek Dissolved Metals TMDL (SDB-019)		X											●									
Update Recycling and Solid Waste Planning Manual (SDB-035)				X				X	X	●				●					●	P	I	I
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●	I	I	I
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	I	I	I

Table 3-6. Updated San Diego Bay Watershed Activity Implementation Schedule.

San Diego Bay Watershed	Hydrologic Area									Pollutants												
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	FY 2007-2008	FY 2008-2009	FY 2009-2010
Palm Avenue Stormwater Diverter (SDB-052)							X			●			●	●			●	●		P	I	A
Stormwater Quality Master Plans for Special Drainage Fee Areas (SDB-056)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●	P	P	I
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																						
Enhanced Dry Weather Monitoring Program (SDB-020)		X								●	●	●	●	●	●	●	●	●	●	I	I	I
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								●			●	●		●	●	●	●	I	I	I
La Mesa Additional Water Quality Monitoring Program (SDB-022)		X								●	●	●	●	●	●	●	●	●		I	I	A
BMP Effectiveness Monitoring Program (SDB-023)		X										●	●		●			●		I	I	I
Dry Weather Aerial Deposition Study – Phase I (SDB-024a)		X											●					●		I	Completed	
Dry Weather Aerial Deposition Study – Phase II (SDB-024b)		X											●					●		P	I	I
Dry Weather Aerial Deposition Study – Phase III (SDB-024c)		X											●					●		P	I	I
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X			●	●	●	●	●	●	●	●	●		I	I	I
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (SDB-026)		X								●								●		I	Completed	
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (SDB-027)		X								●										I	I	I
Shelter Island TMDL Urban Runoff Monitoring Study (SDB-053)	X												●							P	I	I
Switzer Creek Pesticide Source Monitoring Study (SDB-054)		X															●			P	I	I
Water Quality Monitoring at Additional Mass Loading Stations (SDB-057)					X	X			X	●	●	●	●	●		●	●	●		P	I	Completed
EDUCATIONAL ACTIVITIES																						
Storm Drain Stenciling (SDB-028)				X				X	X	●	●	●	●	●	●	●	●	●	●	P	I/A	A
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	●		●							●	P/I	I	I
Outdoor Transit Shelters and Billboards Advertisements (SDB-030)	X	X	X	X				X	X	●									●	P/I	I	Completed
Mobile Advertising (SDB-031)	X	X	X	X				X	X	●		●	●		●		●	●	●	P/I	I/A	Discont.
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	●		●	●						●	P	I	I
City of Coronado Fire Department Open House (SDB-033)							X			●	●	●	●	●	●	●	●	●	●	I	I	I
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	●										P	I	I
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	●										P	I	I
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	●					●					P	I	A
La Mesa Park Kiosk (SDB-042)		X								●			●				●			I	I	I
LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	P	I/A	Completed
ILACSD Elementary School Watershed Presentations (SDB-044)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	P	I	Completed
ILACSD High School Watershed Presentations (SDB-045)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	-	P	I
San Diego Bay Watershed Brochure (SDB-055)	X	X	X	X				X	X	●	●	●	●	●	●	●	●	●	●	-	P	I

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Section 4: Effectiveness Assessment

An effectiveness assessment is an integral part of WURMP implementation because it helps determine whether receiving water quality improvements can be associated with WURMP activities. It also enhances program planning by providing feedback on activities and strategies, and by identifying program areas needing improvement. The following section presents the mechanisms used by the San Diego Bay Copermittees to assess the effectiveness of the WURMP as required by Section J.1.b. of the Municipal Permit and describes the results of this assessment.

Effective implementation of the WURMP is dependent on the establishment of comprehensive and program-wide goals as well as objectives and tasks. The 2008 San Diego Bay WURMP specifies four overarching management questions that are the cornerstone of the San Diego Bay Copermittees' programmatic assessment. The questions below are designed to assist in evaluating the activities in order to conduct a comprehensive WURMP assessment.

1. Are the San Diego Bay Copermittees making progress towards achieving their program goals and objectives in a way that maximizes resources, is cost effective, and achieves the maximum water quality benefit possible?
2. How well have the San Diego Bay Copermittees maximized the effectiveness of individual activities?
3. Are the San Diego Bay Copermittees effectively targeting identified pollutant sources of high priority water quality problems?
4. Are the San Diego Bay Copermittees observing an improvement in the water quality – both urban and receiving waters – of the WMA as shown through water quality assessments?

These management questions enable the San Diego Bay Copermittees to explore, in detail, the effectiveness of programs and activities implemented within the San Diego Bay WMA. For this annual San Diego Bay WURMP assessment, the San Diego Bay Copermittees addressed the management questions to the best extent possible. The assessment verified that the Copermittees have achieved compliance with the Permit and are continuing to work towards attaining the long-term goal of decreasing the sources and reducing the discharge of pollutants from the MS4. The following sections summarize WURMP activities and evaluate progress of the San Diego Bay WURMP toward meeting Target Outcome Levels One through Six.

4.1 Assessment of Overall WURMP Effectiveness

4.1.1 *Integrated WURMP Activities Assessment*

In accordance with the San Diego Bay WURMP document, Copermittees selected activities and the associated effectiveness assessment mechanisms to implement in their individual jurisdictions while working within the collective goals of the WURMP. The activities and their assessments vary from one activity to another based on the identified targeted outcomes applicable to each activity, the pollutant(s), pollutant source addressed, and the HA in which it is located. The goals and objectives of the individual activities ensure individual accountability, provide direction, and allow for meaningful assessment. In this section, the San Diego Bay Copermittees assess whether they were able to maximize the effectiveness of these individual activities on a watershed level.

The Copermittees measured the effectiveness of the watershed activities as a whole by compiling the data and detailed information from each individual activity's assessment, or at a programmatic level to present a comprehensive assessment of activities. By thoroughly evaluating the activities, their relevance to each other and to the high priority water quality problems and their sources, the Copermittees were able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary. The Copermittees not only evaluated the effectiveness of each individual activity implemented during the reporting period, but also evaluated how the activities contributed to the success of the overall program effectiveness.

The process provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. By compiling this data in one place, the Copermittees have the opportunity to access multiple activities and their potential applicability for watershed-wide implementation. This resource can then be shared with other watersheds and jurisdictions to improve programming on a regional basis and further increase the list of BMPs. Sharing the evaluation methods will also help watershed workgroups and jurisdictions improve and enhance their programs. The collaborative and group assessment of the activities also encourages Targeted Special Studies and comprehensive thinking when planning future cooperative activities.

The San Diego Bay Copermittees have been successful in implementing watershed water quality and education activities that resulted in increased awareness and change in behavior, reduced discharge loads, abatement of potential sources, and other quantifiable benefits to receiving water quality during this reporting period. As discussed in Section 3.1 and 3.2, each Copermittee determined the appropriate assessment mechanisms for each of its implemented activities and determined if the effectiveness of the activities have been maximized when possible. Table 4-1 presents each individual watershed activity's effectiveness assessment mechanisms and identifies whether or not the activities were effective and contributed to the success of the overall program. The Copermittees' assessments of the individual activities

indicate nearly all of the water quality activities were able to achieve the stated goals and were effective in obtaining changes in awareness/behavior and/or load reduction/source abatement. Copermittees were able to show their activities were effectively addressing high priority water quality problems by providing assessment data for 12 water quality activities.

It should be noted there were watershed activities implemented that did not have all of the listed assessment mechanisms completed during this reporting period, and effectiveness has not yet been determined. Though considerable resources may be directed to these activities, effectiveness assessments are not yet available for a number of reasons, such as delays in planning/development of an activity or since the activity is still in progress. For example, the Family Stream Team Initiative (SDB-051) held refuse collection events during this reporting year which resulted in load reductions of trash, but the activity is on-going and is scheduled for completion in FY 2009-2010. In addition, assessment was not completed during this reporting period for the Targeted Special Studies (SDB-012, SDB-013, SDB-014, SDB-015, SDB-037, SDB-049, and SDB-050) because the activities were either in planning/design stage or the assessment may be in progress. Please refer to the activity summary sheets in Appendix D-1 for detailed analysis of progress to date for these activities.

Table 4-1. Watershed Activity Assessment.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
Trash and Debris Related Activities					
SDB-001	Pet Waste Bag Programs	Level 3 and 4	Quantity of bags removed or new dispensers added	Yes	Estimated quantity of bags used (approximately 518,327 bags) while the Airport Authority estimated 172 lbs of waste or approximately $1.8x10^{12}$ fecal coliform bacteria pollutant load reduction. The County of San Diego estimated a removal of approximately 10,568 lbs. of waste
SDB-003	Enhanced Street Sweeping	Level 4	Amount of debris collected and curb miles covered	Yes	1,353 tons of debris, 25,692 curb miles, 2,554 broom miles. Special study to determine optimal frequency is ongoing.
SDB-004	Cleanup Activities	Level 3 and 4	Amount of trash and number of people	Yes	Recorded amount of trash (530 tons) and number of people (Approximately 5,696 participants).
SDB-005	Clean Community Program	Level 3 and 4	Amount of trash collected, number of volunteers, contest participation	Yes	118 volunteers removed 4,598 pounds of trash and debris from waterway banks. 43 third grade classrooms participated in a storm water art contest for the 2010 Storm Water Calendar and 5,740 calendars (2009) were distributed.
SDB-006	Trash Containment Boom Cleaning	Level 4	Inspections, quantification, monitoring, tabulation, reporting	Yes	9 tons of trash and debris removed
SDB-051	Family Stream Team Initiative Partnership	Level 4	Amount of trash and non-native vegetation collected, number of flyers distributed, observable changes in debris within creek, number of participants involved	No	Activity is still in progress. Effectiveness assessment has not been completed. To date, approximately 90 tons of debris was collected during 5 events. Approximately 12 tons of non-native vegetation removed. 1,750 flyers distributed.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
Enhanced Inspection Activities					
SDB-007	Additional Dry Season Construction Inspections	Level 3	Implementation rates, increase inspection frequencies	Yes	Completed 19 routine inspections. Helped contractors stay vigilant about implementing BMPs, especially near the end of dry season. BMP deficiencies noted during the dry season inspections were resolved during the first inspection of the wet season.
SDB-008	San Diego Bay Watershed Targeted Facility Inspections -Automotive Facilities	Level 3 and 4	Achieve greater BMP implementation rates from optimized inspection rates. Inspections, quantification, monitoring, tabulation, reporting	Yes	191 inspections at 21 locations immediate corrective actions/source abatement were taken.
SDB-009	Enhanced Construction Oversight	Level 3 and 4	Track number of meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, number of sediment source control BMP issues identified during inspections, estimate the annual sediment pollutant load abated	Yes	Attended 181 meetings, performed 96 more inspections than required by the permit, approximately 1 out of 4 inspections identified sediment source control BMP issues, was able to estimate annual sediment pollutant load reduction as approximately 22 tons.
SDB-010	Business Supplemental Watershed Questionnaire	Level 2	Compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach.	Yes	14% of respondents in 2008/2009 did not know where storm water runoff goes, and 4 percent thought that the water was directed to a treatment facility. Inspectors provided verbal explanations and education about storm water issues and BMPs to individuals during inspections.
SDB-047	Large Special Events Education, Inspections, and Cleanup	Level 3 and 4	Amount of trash and education efforts	Yes	Debris was collected and quantified. BMP information provided to street venders and follow up inspections verified BMP implementation.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-048	Outdoor Special Event Oversight	Levels 3 and 4	Track the number of outdoor special events, track the number of pre-event meetings attended, the number of pre- and post-event site inspections conducted, and the number of trash source control BMP issues identified during the inspections. estimate the annual trash pollutant load abated	Yes	1 outdoor special event, 1 pre event meeting was attended, 1 pre event inspection was conducted, 2 post event inspections were conducted, 0 trash source control BMP issues were identified. No estimate of pollutant load could be completed. For this activity we are currently reaching level 3.
Other Water Quality Activities					
SDB-046	Land Acquisitions – San Diego Bay Watershed	Level 3 and 4	Tracking the number and total acreage of land acquisitions within the watershed on an annual basis	Yes	Acquired 3 properties (385.38 acres) which precludes development from occurring and allows land to retain its natural perviousness, avoiding entirely the introduction of pollutant-generating activities.
SDB-052	Palm Ave Urban Runoff Diverter	Level 4 and 5	Weekly post construction bacterial monitoring and flow analysis	No	Efforts on measuring the effectiveness are currently under way. During the first 6 months of monitoring, 192,000 gallons of urban runoff was diverted into the sanitary sewer. Results from the weekly bacterial analysis also revealed elevated levels of bacteria in the diverted flows. Compared to AB411 monitoring action levels, 85% of the samples were in exceedance of *enterococcus* and 100% of the samples were in exceedance of total coli form bacteria.
Watershed Education Activities					
SDB-028	Storm Drain Stenciling	Level 2	Number of pedestrians who pass these stencils	Yes	Thousands of pedestrians pass these stencils on an annual basis
SDB-029	Public Service Announcements: Karma/Karma Second Chance	Level 2 and 3	Surveys, number of impressions	Yes	4,771,328 impressions. Survey indicated 44% change in knowledge or attitude. Survey also showed 29% of residents reported making a change in behavior as a result of seeing what runoff does to local waterways.
SDB-030	Outdoor Billboards/Transit Shelters	Level 2	Surveys, number of impressions	No	Activity demonstrated a lack of effectiveness of increased awareness of storm water issues.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-031	Mobile Advertising	Level 2	Surveys, number of impressions	Yes	69,153 impressions. Survey indicated 44% change in knowledge or attitude, though survey also indicated that only 17% of the public reported being aware of storm water issues through Mobile Advertising. Therefore, it was determined that this activity is not effective enough to continue to implement.
SDB-039	Provide Homeowner's Association Education about Pet Waste Disposal	Level 2	Number of homeowners and HOAs reached through education efforts	No	Assessment will be conducted in Year 5 of the Permit Cycle FY08-09 – wrote article for HOA magazine with the circulation of 20,000
SDB-040	Storm Water Education Booth at Annual Pet Festival and Doggy Dash	Level 3	Surveyed pet owners who pick up after their pets	Yes	89 surveys completed, 80% of pet owners use a plastic bag to pick up their pet's waste
SDB-041	Fats, Oils and Grease (FOG) Program	Level 1	Number of restaurants surveyed	No	Education assessment will conducted in the FY09-10; 216 surveys completed
SDB-042	Park Kiosk	Level 2	Increased awareness of watershed problems and pollution prevention methods.	Yes	Kiosk was maintained and kept with up to date information. No other assessment data is available.
SDB-043	LID and Watershed Planning Education for Community Planning and Sponsor Groups	Level 2 and 3	Number of presentations conducted; number of participants; number and type of materials distributed	Yes	Seven surveys distributed to 128 participants; 22.86% increase in knowledge.
SDB-044	ILACSD Elementary School Watershed Presentations (SDB-044)	Level 2 and 3	Number of students, Pre-and post-tests	Yes	474 students, Pre- and post-test indicated an average of 14% change in knowledge or attitude.

4.1.2 *HA Assessment*

The San Diego Bay Copermittees assessed how well the activities targeted the high priority water quality problems and their sources on a HA level. The Copermittees assessed activities occurring within each HA in order to determine the collective impact the activities have on the targeted high priority pollutants and/or pollutant sources. Table 4-2 presents the water quality activities occurring in each HA, the pollutants each activity addresses, and how the activity fits in with the overall Watershed Strategy set forth in the 2008 San Diego Bay WURMP document. This evaluation revealed whether the San Diego Bay Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting potential pollutant sources in each HA during this reporting period.

Evaluation at an HA level provided an assessment of the effectiveness of the San Diego Bay Copermittees' collective efforts for a number of the activities that were implemented across several HAs. These activities presented universal solutions to address high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern, allowing for greater flexibility for each of the Copermittees to participate in coordinated watershed activities. Each of these activities collected similar data to show how these programs were effective at both the HA and WMA level. These activities can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. During the previous reporting period, the Copermittees identified and implemented four collaborative water quality activities which occurred across multiple HAs, including Pet Waste Bags (SDB-001), Storm Drain Litter Control Techniques (SDB-002), Enhanced Street Sweeping (SDB-003), and Cleanups (SDB-004). The Copermittees continued the implementation of Pet Waste Bags (SDB-001), Enhanced Street Sweeping (SDB-003), and Cleanups (SDB-004) during FY 2009.

The San Diego Bay Copermittees may implement different approaches or activities which result in addressing the same pollutant of concern and/or pollutant sources in a HA. In particular, Copermittees addressed bacteria on a watershed scale by implementing activities targeting various pollutant sources in all HAs. The combined effect results in a greater impact on the targeted high priority water quality problems and positively influences the effectiveness and efficiency of the San Diego Bay WURMP. Notably, trash is being addressed through such activities as Enhanced Street Sweeping (SDB-003), Cleanup Events (SDB-004), and Family Stream Team Initiative (SDB-051). These activities directly address the RWQCB 13267 Order requiring cities along Chollas and Paleta Creeks to establish trash cleanup measures and implement programs to address trash and other pollutants.

4.1.2.1 *Pueblo San Diego HU (908)*

The Pueblo San Diego Watershed is the smallest HU in San Diego County, encompassing approximately 60 square miles of predominantly urban landscape. The watershed drainage consists of a group of relatively small local creeks and pipe conveyances, many of which are

concrete-lined and drain directly into San Diego Bay. The creeks in the watershed are highly impacted by urban runoff, with two TMDLs adopted (Dissolved Metals and Diazinon) for Chollas Creek in particular.

4.1.2.1.1 *Point Loma HA (908.1)*

The high priority water quality problems in the Point Loma HA are Bacteria, Gross Pollutants, Metals, Oil and Grease, and Pesticides. Activities were implemented that effectively targeted a variety of sources of high priority pollutants. Potential pollutant sources in the Point Loma HA include those related to residential areas, streets and roadways, or commercial business, schools, and public facilities.

Copermittees implemented two water quality activities in the Point Loma HA during FY 2009 that effectively addressed high priority water quality problems. The Pet Waste Bag Collaborative Watershed Activity (SDB-001) targeted a specific source of bacteria within residential and park areas and is believed to be effective in abating this source. Enhanced Street Sweeping (SDB-003) in this HA was also implemented to address load reductions of gross pollutants, metals, and oil and grease into the MS4 from streets and roadways. A variety of other pollutants are known to be associated with sediment, such as bacteria, may also be reduced. Load reductions have been assessed through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Copermittees implemented three monitoring and source identification studies in this HA to supplement MS4 and CSDM monitoring in the HA. Copermittees implemented the RHMP, Coordinated Dry Weather Monitoring, and SIYB Urban Runoff Monitoring Study to evaluate receiving water quality and provide additional information on sources of high priority water quality problems.

An effective watershed education activity implemented at the watershed-level during FY 2009 that was applicable to this HA was the Public Service Announcements (SDB-029). Assessment surveys associated with the Public Service Announcements indicated a 44% change in knowledge watershed-wide, indicating the activity has a positive effective by increasing knowledge and changing behavior in the community, which will likely lessen the their impacts on water quality. While portions of this survey were conducted in this HA, enhanced assessment at the HA level was not completed.

4.1.2.1.2 *San Diego Mesa HA (908.2)*

The San Diego Mesa HA is a heavily urbanized watershed, and includes the Chollas Creek HSA (908.22). The high priority water quality problems in the San Diego Mesa HA are Bacteria, Metals, Sediment, Trash, and Pesticides. Prominent land uses which may contribute to high priority water quality problems in the HA include residential, streets and roadways, and commercial/industrial businesses. Other land uses in the HA include schools, parks, and public facilities. Copermittees have implemented a number of activities that target sources of high priority water quality problems in the HA during this reporting year. Many of these activities

have also been identified to be applicable in addressing the Chollas Creek Dissolved Metals and Diazinon TMDLs.

Copermittees implemented eight water quality activities in this HA that effectively addressed the high priority pollutants. Enhanced Inspection activities such as Targeted Automotive Inspections (SDB-008), Outdoor Special Event Oversight (SDB-048), and Enhanced Construction Oversight (SDB-009) have been identified as effective in abating the sources of high priority water quality problems in this HA. The activities identified specific sources of metals, trash, or sediment and ensured proper BMP implementation in order to effectively reduce sediment loading into the MS4 (Level Four Outcome). For example, there is evidence of reduced erosion and sediment capture on construction sites as a result of the BMPs, although this has not been quantified. Heightened awareness of proper BMP implementation increases the likelihood of BMP effectiveness, which in turn helps to abate the amount of pollutant loading to San Diego Bay. The Enhanced Street Sweeping Activity (SDB-003) may have beneficial effects by reducing the loading of pollutants such as sediment, metals, and trash that are discharged to MS4s. In addition, the Targeted Aggressive Street Sweeping Project (SDB-003) was implemented in this HA to determine the optimal street sweeping frequencies and sweeper machinery. Specifically, the pilot study is investigating the effectiveness of using vacuum-assisted street sweepers in place of conventional mechanical sweepers and increasing sweeping frequencies to reduce the accumulation of debris containing metals on streets and roadways.

The Copermitttees implemented four load reduction/source abatement activities to address trash and debris related sources: Pet Waste Bag (SDB-001), Cleanups (SDB-004), Trash Containment Boom Cleaning (SDB-006) and Family Stream Team Initiative (SDB-051). The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within areas such as residential areas and parks. Cleanup events and similar trash related activities aided in the physical removal of a quantifiable amount of trash from the watershed. Because the accumulation of trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water, it may be assumed that these impairments may be indirectly reduced through the cleanups, though this has not been quantified.

A number of activities have been identified by Copermittees to address the Chollas Creek Dissolved Metals and Diazinon TMDLs, as discussed in Section 3.5.3 and Section 4.2. In the 908.22 HSA, Named Dischargers implemented 51 activities, including water quality, education, and ongoing agency-wide activities, in FY 2009 to address the identified high priority water quality problems. A comprehensive assessment of the activities identified in the TMDL Implementation Plan will be discussed in Section 4.2.1.

The Copermittees implemented education activities in this HA that were found to be effective in increasing awareness and knowledge. As discussed in Section 4.1.2.1.1, the Public Service Announcement (SDB-029) activity was also conducted in this HA. The ILACSD Elementary

School Presentations (SDB-044) provided watershed focused pollution prevention information to 5th and 6th grade elementary students at two elementary/middle schools and one high school in this HA during this reporting year. Assessment of the activity indicated an average increase of 14% change in knowledge and attitude as a result of the presentations.

As noted in Section 2.2, water quality data was collected primarily within the San Diego Mesa HA within the Chollas Creek HSA (908.22). Copermittees implemented a number of monitoring and source identification studies in this HU in addition to the regional Receiving Waters and Urban Runoff Monitoring Program, following management actions identified in the San Diego Bay WURMP Watershed Strategy. These activities are necessary to fill data gaps before implementation of a load reduction activity can occur or to identify the appropriate focus of resources. Copermittees successfully collected data from 9 urban runoff source identification activities within this HU. In addition, the RHMP will provide data useful in long trend analysis of receiving water condition, as discussed in Section 2. Data resulting from this monitoring will enable the Copermittees to make more informed decisions on the BMP implementation that targets high priority pollutants in the future.

4.1.2.1.3 *National City HA (908.3)*

Activities were implemented that effectively targeted a variety of sources of bacteria, sediment and trash from prominent land uses such as residential, streets and roadways, open space and parks, and commercial/industrial businesses. Copermittees implemented six effective water quality activities in the National City HA during FY 2009.

Copermitttees implemented three load reduction/source abatement activities to address trash in this HA. Because trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water, it may be assumed that these activities also result in bacteria load reductions. The Copermittees also effectively addressed two different sources of sediment (construction and streets and roadways) during this reporting year. Copermittees participating in the Enhanced Street Sweeping Activity (SDB-003) increased the frequency of sweeping relative to JURMP requirements, effectively reducing the loading of sediment into the MS4. In addition, Additional Dry Season Construction Inspections (SDB-007) reduced sediment and trash runoff by promoting proper BMP implementation at construction sites during the dry season and helping construction sites prepare for the upcoming wet season. It was determined that most of these inspections helped contractors stay vigilant about implementing BMPs during the dry season and helpful toward the end of the dry season, when responsible parties are reminded of applicable wet season requirements.

Five education activities were implemented which effectively targeted a variety of audiences in this HA during this reporting year. As discussed in Section 4.1.2.1.1, the Public Service Announcement (SDB-029) activity was also conducted in this HA. The activity has a positive effect by increasing knowledge and changing behavior in the community, which will likely lessen

their impacts on water quality. While portions of this watershed-wide survey were conducted in this HA, enhanced assessment at the HA level was not completed.

4.1.2.2 *Sweetwater HU (909)*

Water quality assessment of the Sweetwater HU indicated there have not been any significant changes to the COCs identified for HU during this reporting year. Though monitoring results are consistent with the BLTEA priority ratings for bacteria in the Lower Sweetwater HA (909.1), the results are not supportive of the A rating for pesticides in the Middle Sweetwater HA (909.2).

The Upper Sweetwater HA contains large undeveloped areas within the Cleveland National Forest and Cuyamaca Rancho State Park, the unincorporated communities of Pine Valley, Descanso, and Alpine, and the Viejas Indian Reservation. Unincorporated rural and suburban communities characterize the Middle Sweetwater HA. The lower portion of the Sweetwater Watershed, the Lower Sweetwater HA is the most urbanized. Copermittees implemented activities to address a variety of the high priority pollutant sources, as well as monitoring to help guide the selection and implementation of future watershed activities in this HU as part of the San Diego Bay WURMP.

4.1.2.2.1 *Lower Sweetwater HA (909.1)*

The Lower Sweetwater HA is the most urbanized area of the Sweetwater HU and land use consist primarily of residential, streets and roadways, open space, with the remaining area consisting of a mixture of commercial/industrial businesses, schools and undeveloped land use. The high priority water quality problem in the Lower Sweetwater HA is Bacteria. Residential sources of bacteria include activities such as over irrigation, sanitary sewer overflows and septic system failures, landscape maintenance, various washing activities, trash, and pet waste. Copermittees implemented seven effective water quality activities in the Lower Sweetwater HA during FY 2009. The Pet Waste Bag Activity (SDB-001) was effective in targeting and abating a source of bacteria within areas such as residential areas and parks. Copermitttees implemented Cleanup Events (SDB-004) to address trash from a number of areas in this HA. Trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water. Although monitoring to quantify the expected reductions has not been performed, it may be assumed that these activities also result in bacteria load reductions.

Copermittees effectively targeted a variety of audiences by implementing watershed education activities in the Lower Sweetwater HA. As discussed in Section 4.1.2.1.1, the Public Service Announcement (SDB-029) was also conducted in this HA. In addition, the ILACSD Elementary School Presentations (SDB-044) given to 6th graders at Rancho de la Nacion in National City indicated an average increase of 14% change in knowledge and attitude as a result of the activity.

4.1.2.2.2 *Middle Sweetwater HA (909.2)*

The Middle Sweetwater HA consists primarily of open space and undeveloped land, approximately 63% of the land use, while the rest of the HA is mostly residential use and commercial/industrial and streets and roadway land use. The high priority water quality problem in the Middle Sweetwater HA is Pesticides. There was one water quality activity implemented in this HA during FY 2009. The Land Acquisition Activity (SDB-046) precludes development from occurring and allows land to retain its natural perviousness. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed. Watershed educational efforts to increase awareness of pesticide use issues include the LID and Watershed Planning Education for Community Planning and Sponsor Groups Activity (SDB-043). Surveys indicated there was a 23% increase in knowledge as a result of this activity. Additionally, Copermittees distributed Integrated Pest Management (IPM) program information to residents and businesses.

Additional monitoring and source identification was identified in the Watershed Strategy as an important step in identifying appropriate BMP implementation due to limited data availability. The Water Quality Monitoring at Additional Mass Loading Stations monitoring activity (SDB-057) was implemented to characterize water quality conditions within this HA and fill data gaps. The monitoring results indicated all detections of pesticides were below WQOs. Diazinon and Chlorpyrifos were virtually non-detect in dry weather samples, while Malathion was only detected during wet weather sampling.

4.1.2.2.3 *Upper Sweetwater HA (909.3)*

The Upper Sweetwater HA consists primarily of open space and undeveloped land, or approximately 82% of the land use, while the rest of the HA is mostly residential use and agriculture. Although no pollutant category was classified as high priority in this HA, one water quality activity, the Land Acquisition Activity (SDB-046), was implemented in the Upper Sweetwater HA which directly addressed the prominent land use in this HA. The LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043) was an effective education activity implemented in this HA. Survey results indicated approximately 23% increase in knowledge and attitude as a result of the activity. Additional monitoring and source identification was identified in the Watershed Strategy as an important step in identifying appropriate BMP implementation due to limited data availability. The Water Quality Monitoring at Additional Mass Loading Stations monitoring activity (SDB-057) was implemented to characterize water quality conditions within this HA and fill data gaps.

4.1.2.3 *Otay HU (910)*

The *Basin Plan* identifies the Otay HU as the second largest of the three HUs in the San Diego Bay WMA and is one of the least populated watersheds in the San Diego County. As stated in Section 2.5.3, elevated concentrations of indicator bacteria have been detected within MS4

during urban runoff monitoring from various locations in the Coronado HA and Otay Valley HA. This result supports the BLTEA high priority (A) rating for bacteria in the two HAs.

4.1.2.3.1 *Coronado HA (910.1)*

There were five water quality activities implemented in the Otay HA during FY 2009 which effectively addressed bacteria and gross pollutants from a variety of land use sources. Land use in Otay HA consists primarily of residential, streets and roadways, commercial/industrial, and parks. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas and parks. Cleanup events (SDB-004) occurred in this HA throughout the reporting period that not only effectively remove trash, but could potentially be removing bacteria and other pollutants associated with various categories of trash and debris. The Large Special Event Activity (SDB-047) was effective in enhancing recycling efforts and verifying the implementation of BMPs by vendors through inspections, potentially leading to lower levels of bacteria and trash reaching the MS4.

The Palm Ave Stormwater Diverter (SDB-052) implemented in this HA will contribute to bacteria load reductions by diverting nuisance storm drain flows to the sanitary sewer system. The inlets drain approximately 72.1 acres of residential and light commercial land uses. As such, it would eliminate one potential source of bacteria during dry weather and other low-flow conditions. During the first 6 months of monitoring, 192,000 gallons of urban runoff wad diverted into the sanitary sewer and prevented from flowing to the receiving waters. There was one watershed education activity implemented in the Coronado HA during FY 2009. The ILACSD Elementary School Presentations (SDB-044) provided watershed focused pollution prevention information to 5th and 6th grade elementary students at three schools in 910.1 HA during this reporting year. Assessment of the activity indicated an average increase of 14% change in knowledge and attitude as a result of the presentations.

4.1.2.3.2 *Otay HA (910.2)*

There were four water quality activities implemented in the Otay HA during FY 2009 which effectively addressed bacteria and other high priority pollutants. Land use in Otay HA consists primarily of open space and undeveloped land, or approximately 49% of the land use, while residential, streets and roadways and commercial uses. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas, as well as open spaces. Cleanup events (SDB-004), such as the Home Front Cleanup or the Beautify Chula Vista Cleanup, occurred in this HA during this reporting period. A source abatement measure includes the Updating the Recycling and Solid Waste Ordinance (SDB-035), targets residential and commercial pollutant sources. The ordinance requires that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas.

There were five education activities implemented in this HA during this reporting year which effectively targeted a variety of audiences. As discussed in Section 4.1.2.1.1, the Public Service Announcements (SDB-029) was also conducted in this HA. As part of the ILACSD Elementary School Presentations (SDB-044) activity, the City of Chula Vista sponsored a more extensive four-day after school program called South Bay Water Warriors. Assessment indicated an average increase of 67% change in knowledge and attitude as a result of the after school program.

4.1.2.3.3 *Dulzura HA (910.3)*

The Dulzura HA consists primarily of open space and undeveloped land, or approximately 85% of the land use, while residential and commercial uses comprise nearly 15%. Although no pollutant category was classified as high priority in this HA, there were four water quality activities implemented during FY 2009 which effectively addressed potential sources within these land uses. The Land Acquisition Activity (SDB-046) precludes development from occurring and allows land to retain its natural perviousness. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas, as well as open spaces. The Water Quality Monitoring at Additional Mass Loading Stations monitoring activity (SDB-057) was implemented to provide characterized water quality conditions within this HA and two other HAs and fill data gaps.

There were five education activities implemented in this HA during this reporting year which effectively targeted a variety of audiences. An effective watershed education activity implemented during FY 2009 applicable to the HA was the Public Service Announcements (SDB-029) as discussed in Section 4.1.2.1.1. In addition, the LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043) indicated approximately 23% increase in knowledge and attitude as a result of the activity.

Table 4-2. Water Quality Activities by HA.

HA	High Priority Water Quality Problems	Watershed Strategy Management Action	# of Load Reducing Activities	Load Reduction/Source Abatement Activities	# of monitoring Activities	Monitoring/Source Identification Activities
908.1	Bacteria	Additional Monitoring	1	• Pet Waste Bag Programs	2	• Coordinated Dry Weather Monitoring • RHMP
	Gross Pollutants	Additional Monitoring	0		2	• Coordinated Dry Weather Monitoring • RHMP
	Metals	Additional Monitoring	1	• Enhanced Street Sweeping	3	• Coordinated Dry Weather Monitoring • RHMP • SIYB Urban Runoff Monitoring
	Oil and Grease	Additional Monitoring	0		1	• RHMP
	Pesticides	Additional Monitoring	0		2	• Coordinated Dry Weather Monitoring • RHMP
908.2	Bacteria	Load Reductions	9	• Pet Waste Bag Programs • Trash Containment Boom Cleaning • Targeted Automotive Inspections • Dalbergia Street Green Mall Infiltration Project • Municipal Rain Barrel Installation • Southcrest Park Green Lot Infiltration Project • Memorial Park Green Lot Infiltration Project • 43rd and Logan Biofiltration Project • Maple Canyon Water Quality Improvement	6	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Water Quality Monitoring • RHMP • Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study • Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study
	Metals	Load Reductions	8	• Enhanced Street Sweeping • Targeted Auto-related Facility Inspections • Dalbergia Street Green Mall Infiltration Project • Southcrest Park Green Lot Infiltration Project • Memorial Park Green Lot Infiltration Project • Family Stream Team Initiative Partnership • 43rd and Logan Biofiltration Project • Chollas Creek Runoff Reduction and Groundwater Recharge Project	9	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring • BMP effectiveness Monitoring • Dry Weather Aerial Deposition Study Phase II • Dry Weather Aerial Deposition Study Phase III • RHMP • Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study • Switzer Creek Pesticide Source Monitoring Study
	Sediment	Source Identification	5	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Enhanced construction oversight • Municipal Rain Barrel Installation • Maple Canyon Water Quality Improvement	5	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring • BMP effectiveness Monitoring • RHMP

	High Priority Water Quality Problems	Watershed Strategy Management Action	# of Load Reducing Activities	Load Reduction/Source Abatement Activities	# of monitoring Activities	Monitoring/Source Identification Activities
908.2	Pesticides	Source Identification	1	• Municipal Rain Barrel Installation	5	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Monitoring • RHMP • Switzer Creek Pesticide Source Monitoring Study
	Trash	Load Reductions	7	• Storm Drain Litter Techniques • Enhanced Street Sweeping • Cleanup Events • Trash Containment Boom Cleaning • Family Stream Team Initiative • Outdoor Special Event Oversight • Maple Canyon Water Quality Improvement	2	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring
908.3	Bacteria	Load Reductions	3	• Clean Community • Trash Containment Boom Cleaning • Supplemental Inspection Questionnaire	1	• RHMP
	Sediment	Source Identification	3	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Additional Dry Weather Inspections	1	• RHMP
	Trash	Load Reductions	6	• Storm Drain Litter Control Techniques • Enhanced Street Sweeping • Cleanup Events • Clean Community • Trash Containment Boom Cleaning • Additional Dry Weather Inspections	0	
909.1	Bacteria	Load Reductions	2	• Pet Waste Bag Programs • Inspection Questionnaire	1	• Water Quality Monitoring at Additional Mass Loading Stations
909.2	Pesticides	Additional Monitoring	1	• Land Acquisitions	1	• Water Quality Monitoring at Additional Mass Loading Stations
910.1	Bacteria	Load Reductions	2	• Pet Waste Bag Programs • Palm Ave Stormwater Diverter	1	• RHMP
	Gross Pollutants	Source Identification	0		1	• RHMP
910.2	Bacteria	Source Identification	2	• Pet Waste Bag Programs • Update Recycling and Solid Waste Ordinance	1	• Water Quality Monitoring at Additional Mass Loading Stations

4.1.3 Targeted Outcome Assessment

In the following sections, the San Diego Bay Copermittees will assess their ability to meet Permit requirements during this reporting period. A comprehensive evaluation of the San Diego Bay WURMP program will enable the Copermittees to determine if the targeted Outcome Levels One through Six were addressed.

4.1.3.1 *Level One Outcome – Compliance with Activity-Based Permit Requirements*

A Level One assessment addresses the fundamental requirements prescribed in the Permit, including programs and activities that are intended to benefit water quality. Table 4-3 lists how the San Diego Bay Copermittees have met Level One objectives and maintained compliance with the Permit requirements.

Table 4-3. Permit Component Compliance (Level One Outcome).

Targeted Outcome	Confirmation	Report Section/Appendix
Update any watershed maps.	Completed.	1.3
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	2.1-2.4
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	2.1-2.4
Identify and describe the Watershed Water Quality Activities implemented by Copermittees during the reporting period.	Completed.	3.1
Update list of potential Watershed Water Quality Activities.	Completed.	3.5.1
Identify and describe the Watershed Education Activities implemented by Copermittees during the reporting period.	Completed.	3.2
Update list of potential Watershed Education Activities.	Completed.	3.5.1
Describe the public participation mechanisms used during the reporting period.	Completed.	3.3
A description of Copermittee collaboration efforts including meeting as the San Diego Bay WMA WURMP Workgroup.	Completed.	1.2
Describe the efforts implemented to encourage collaborative, watershed-based, land use planning.	Completed.	3.4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date, incorporating the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Completed.	3.5.3 and 4.2 Appendix E

As shown in the Table 4-1, the San Diego Bay WURMP Copermittees were in compliance with all Level One WURMP related Municipal Permit requirements during FY 2009.

4.1.3.2 *Level Two Outcome – Changes in Knowledge/Awareness and Level Three Outcome – Behavioral Change/BMP Implementation*

The Permit states that Watershed Education Activities are in active implementation phase when "changes in attitudes, knowledge, awareness, or behavior can be reasonably established in target audiences." This definition corresponds with Level Two and Three Outcomes discussed in the 2008 San Diego Bay WURMP document. In order to assess education activities, the San Diego Bay Copermittees have established and used several means, such as conducting surveys, for evaluating education program effectiveness. Data collected during this reporting year includes the amount of trash picked up at cleanup events, the number of participants, and pre- and post-tests and surveys. Through activities such as LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043) and the ILACSD School Presentations Activity (SDB-044), Copermittees effectively demonstrated a Level Two Outcome during this reporting period. In addition, Copermittees provided storm water educational materials (i.e. brochures, fliers, and various giveaways) at many events such as the Go Green and Clean Day event in Chula Vista, the San Diego Natural History Museum Water Family Days, and various cleanups. Copermittees were also involved in supplemental educational activities that provided watershed information such as posting ads on transit shelters, billboards, and mobile ads.

In addition to the watershed education activities in Table 4-2, Copermittees collected assessment data for education activities implemented as part of other urban runoff management programs (Table 4-4) during this reporting period. The assessment information can be used by the San Diego Bay Copermittees to develop a comprehensive watershed-wide evaluation of education activities which can be used as a tool for planning future education activities and events that are able to reach Level Two and Three Outcomes. Overall, the collected data shows that education activities are positively impacting the public and leading to changes in knowledge about storm water. Notably, the San Diego Bay Copermittees showed significant success in promoting positive behavior change in school children through school programs and outreach.

A significant education activity which occurred during this reporting year involved the co-sponsorship of a booth at the Enviro Fair at the San Diego County Fair. San Diego Bay Copermittees, along with other San Diego Region Copermittees, staffed the booth and distributed IPM education information. A region-wide survey was implemented as part of this activity and the detailed results will be reported in the FY 2009 Regional Urban Runoff Management Program (RURMP) Annual Report. A number of key findings were identified and included an assessment that the overall behavioral intention was high with 87% of respondents said they were "very" or "extremely" likely to take actions to prevent storm water pollution as a result of attending the event. In addition, eighty-one percent of respondents were able to list one thing that they could do to help prevent storm water pollution. Responses varied considerably, but the majority of participants named avoiding active polluting behaviors such as littering or pouring things in the streets, gutter, or storm drains.

Table 4-4. Assessment of the San Diego Bay Education Program FY 2009.

Program	Number of Events	Number of Participants	Events with Assessment Data	General Results of Assessment Data*
Presentations and Media	248	7 million + 74 mill from Coronado – Travel Channel program about beaches	108	These programs were assessed via surveys and pre- and post-tests. Overall, results show positive behavior changes and an increase in knowledge. Refer to Appendix D-1 for more information.
School Programs and Outreach	18	Approximately 62,615	9	Pre- and post-tests indicated an increase in knowledge for all events. Refer to Appendix D-1 for more information.
Partners in Clean Water	41	17,129 participants	13	Amounts of waste collected – 6,996 pounds of trash and recyclables; 89,491 pounds of E-waste; 4,558 pounds of U-waste; and 53,970 pounds poison, flammables, paint, car batteries, and aerosols
Integrated Pest Management	3	216	2	Assessment data from both events indicated that 100% of participants deemed the events to be useful. An average 92% of participants indicated that the event influenced them to make a positive environmental behavioral change by using environmentally friendly pest management.
Project Clean Water Website	N/A	5,369 web hits for San Diego Bay	N/A	N/A

* For events where data was available

Several water quality activities also demonstrated a Level Three Outcome during this reporting period. Several San Diego Bay Copermittees have enhanced their inspection programs to address and abate specific watershed concerns, such as sediment, bacteria or metals. Through the Enhanced Inspection Activities, the San Diego Bay Copermittees were able to use the inspection data to ascertain if the activity was effective in ensuring the proper BMP implementation in their jurisdictions. Routine inspections of industrial, commercial, and construction sites by the Copermittees provide a tool for assessing behavioral changes and ensuring the proper implementation of appropriate BMPs by businesses and construction site managers. Positive changes in behavior and improved BMP implementation were noted from the following activities: Additional Dry Season Construction Inspections (SDB-007), Targeted Auto Facility Inspections (SDB-008), Enhanced Construction Oversight (SDB-009), and La Mesa's Business Inspection Supplemental Questionnaire Activity (SDB-010). Site inspections

have allowed the Copermittees to assess the level of knowledge these businesses and construction site managers have with respect to storm water pollution prevention. Additional information on these inspection activities is presented in Section 3 and Appendix D-1 of this Annual Report.

Public participation in the trash and debris related activities such as the San Diego Bay WURMP sponsored Creek to Bay Cleanup event, indicate not only a change in awareness within the community of how to properly dispose of trash by the individuals involved but a change in behavior that will continue into the future. Approximately 5,790 people participated in cleanups throughout the San Diego Bay WMA in FY 2009. The number of people using publicly available HHW collection facilities located within the San Diego Bay WMA and the amount of waste collected at these facilities provides another tool to assess behavioral change and proper BMP implementation. The amount of HHW collected represents a quantity of potential storm water pollutants from residential areas that have been captured and removed from the waste stream. Data collected from San Diego Bay Copermittees shows that approximately 6,500 individuals made use of HHW collection facilities in the San Diego Bay WMA and disposed of approximately 353 tons of HHW during FY 2009[1].

The Pet Waste Bag activity was also successful at meeting a Level Three Outcome. The increased use of pet waste bags by pet owners is another example of positive behavioral change and the implementation of appropriate BMPs. The San Diego Bay Copermittees provided pet waste bags at various public locations, typically parks and public walkways. By providing pet waste bags, the San Diego Bay Copermittees have been able to increase public awareness of pet waste as a source of bacteria and increase the implementation and use of this BMP by the general public. A survey distributed at the Stormwater Education Booth at an Annual Pet Festival and Doggy Dash (SDB-040) revealed 80% of pet owners surveyed use bags to pick up after their pets. This indicates efforts to provide pet waste bags at public locations and to educate the public on the use of pet waste bags helps reduce pet waste from entering the MS4.

Based on the City of San Diego's annual random-digit dial 2009 *San Diego Storm Water Survey,* 29% of residents reported making a change in their behavior as a result of seeing information about the effects polluted water from storm drains has on local rivers, beaches and the ocean associated with the Public Service Announcements (SDB-029). Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors.

It should be noted that many of the activities focused on load reduction/source abatement also contribute to improvements in knowledge and positive behavior changes, though these improvements may not be directly measured. However, it is important to consider this when evaluating the overall effectiveness of the program. For example, Enhanced Street Sweeping (SDB-003) may indirectly improve the public's awareness through the installation of new "No

[1] HHW is collected as part of JURMP programs and not all Copermittees are able to currently estimate collection by WMA.

Parking" signs in neighborhoods, resulting in public inquiry and media attention to understand the basis for additional street sweeping.

The San Diego Bay Copermittees feel that they are making strides towards implementing education activities that result in Level Two and Level Three Outcomes. The San Diego Bay Copermittees will continue to evaluate their education programs in order to improve public knowledge and awareness.

4.1.3.3 *Level Four Outcome – Load Reduction/Source Abatement*

In order to determine whether an activity reached a Level Four Outcome, the San Diego Bay Copermittees collected information that measured load reductions resulting from changes in behavior or BMP implementation. The San Diego Bay Copermittees have implemented water quality activities that allow for a quantification of high priority pollutants that are intercepted or prevented from entering the MS4 or receiving water in order to provide a measure of load reduction. Overall, the San Diego Bay Copermittees accomplished the goals set forth in the majority of load reduction /source abatement activities. Data was collected to show reductions of high priority pollutant loads for the Pet Waste Bag, Enhanced Street Sweeping, Trash Cleanup, and Inspection activities. In addition, Land Acquisitions (SDB-046) are effective in addressing high priority water quality problems in that this activity averts development, thereby eliminating the need for future source abatement or pollutant load reduction activities.

Individual or group-sponsored cleanup events represent another activity that significantly reduced pollutant loads within the WMA. Cleanup activities (SDB-004) conducted throughout the San Diego Bay WMA during FY 2009 removed approximately 531 tons of trash and debris from the watershed's main tributaries, tidelands, and the San Diego Bay. Approximately 35.6 tons were collected during the 2009 Creek to Bay Cleanup. This was the fifth year in a row in which the San Diego Bay Copermittees co-sponsored this cleanup event. In addition to resulting in a significant load reduction, these cleanup activities also provided an important outreach opportunity to citizens within the WMA. The San Diego Bay Copermittees will continue to conduct cleanup events in all jurisdictions.

The Enhanced Street Sweeping Activities (SDB-003) significantly reduced the amount of high priority pollutants associated with roads and parking lots entering the storm water conveyance systems throughout the WMA. For this reporting period, the San Diego Bay Copermittees removed an additional 1,383 tons of material and covered an additional 25,692 curb miles (2,554 broom miles in City of San Diego) by increasing the frequency of street sweeping beyond jurisdictional requirements. This information can be used to indicate the Copermittees are implementing activities to address pollutant load reductions within the watershed. The Targeted Aggressive Street Sweeping Pilot Project (SDB-003) began in the spring of 2008 and is anticipated to continue through the summer of 2010. The goal of this activity is to evaluate the effectiveness of new street sweeping equipment and different sweeping frequencies which may result in more efficient pollutant removal.

These activities contribute to the overall success of the WURMP program and demonstrate the Copermittees are making progress towards achieving their program goals and objectives. Based on Level Four assessment discussed above, the San Diego Bay Copermittees believe that they are making great strides towards improving water quality due to the load reductions observed, sources abated, and the knowledge gained by each Copermittee simply by implementing these activities. Through this knowledge, activities can be improved, optimized, or replaced with more efficient ones, thus leading to the most effective program in protecting and improving water quality. The Copermittees expect that future agreement and collaboration on data standards and reporting will allow for trend analyses that further describe the effectiveness of the San Diego Bay WURMP.

4.1.3.4 *Level Five Outcome – Changes in Urban Runoff and Discharge Quality*

The results from the 2008-2009 *San Diego County Municipal Copermittees Urban Runoff Monitoring Report,* as discussed in Section 2, indicate that urban runoff water quality remained similar to conditions reported in the WURMP document. Organophosphate pesticides (Diazinon, Chlorpyrifos, and Malathion) continue to be below their respective benchmarks. The continued downward trend of diazinon concentrations in storm water is a positive indication that the San Diego Bay Copermittees' current education and outreach efforts to address diazinon are adequate. The San Diego Bay Copermittees believe that overall, the concentration of diazinon will continue to decrease. Even though diazinon was banned from sales, it is possible that there are still unused products containing diazinon being stored and used by residents and businesses. As residual diazinon public supply and use is exhausted, it is possible to see transient, isolated incidents such as this. Diazinon will continue to be monitored and sampled to determine overall statistical trends.

4.1.3.5 *Level Six Outcome – Changes in Receiving Water Quality*

A Level Six assessment involves direct measurement of overall water quality in receiving water bodies and evaluates changes in water quality with respect to established regulatory benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the San Diego Regional Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. Table 2-3 outlines the water quality ratings for the San Diego Bay WMA and the individual HUs of the watershed based on data collected from 2001 to 2006 and presented in the Regional Urban Runoff Monitoring Report (Weston Solutions, 2009).

4.2 Assessment of TMDL Implementation Plan Effectiveness

There are three TMDLs adopted by the RWQCB within the San Diego Bay WMA. These TMDLs include:

- Chollas Creek Diazinon TMDL

- Chollas Creek Dissolved Metals TMDL
- Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL

A brief summary of the current status and the assessment of the Implementation Plans of each TMDL are presented below.

4.2.1 *Chollas Creek Diazinon and Dissolved Metals TMDLs*

Status

The Implementation Plan for the Chollas Creek Diazinon TMDL was completed in September 2004 and is currently being implemented. The Copermittees within the Chollas Creek HSA (a sub-watershed of the Pueblo San Diego HU (908)) continue to monitor diazinon discharges into the creek and implement an education and outreach program to raise awareness among key audiences regarding the harmful effects of pesticides on the environment. The Copermittees also continue to promote the use of Integrated Pest Management (IPM) practices to reduce pesticide loading into Chollas Creek.

The Chollas Creek Dissolved Metals TMDL took effect October 22, 2008 when it was approved as a Basin Plan Amendment by the Office of Administrative Law and subsequently approved by the Environmental Protection Agency in December 2008. As described in Section 1.1, the seven named dischargers collaborated on a multi-pollutant strategy for addressing the TMDL as well as the development of the required BMP Implementation Plan. The Implementation Plan was submitted to the Regional Board on October 21, 2009. The dischargers are currently implementing Phase I of the strategy.

Assessment

To address diazinon in FY 2009, the Copermittees continued to promote IPM through jurisdictional IPM seminars and events and through the San Diego regional IPM program. Refer to Section 3.2.1.3 and Table 3-3 of this Annual Report for more details.

A report has also been prepared on the public outreach program and the results of the water quality monitoring conducted in FY 2009. Refer to Appendix C for the complete report. Highlights demonstrating how the Copermittees successfully contributed to obtaining the TMDLs goal of reducing pesticide and metals loading into Chollas Creek through education and outreach in FY 2008-2009 include:

- IPM materials were distributed at 14 community events targeting specific audience groups.
- The Copermittees continued to work with the University of California Cooperative Extension (UCCE) to disseminate information on IPM and water quality in both English and Spanish using PSAs, tips cards, and other outreach materials.

The Copermittees continue to conduct monitoring for the Chollas Creek Diazinon TMDL. Required compliance monitoring is detailed in Appendix C, the Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Order No. R9-2004-0277 2008–2009 Water Quality Monitoring Report. In summary, exceedances for metals were observed this year and data analysis on the long-term data set at SD8(1) indicates significantly increasing trends for total and dissolved copper and zinc. The magnitude of the zinc trend is greater than for copper, but both trends are relatively shallow. Significant trends for metals were not observed at DPR2. Diazinon was not detected at either location. There are significant, observably decreasing trends for Diazinon in both the north fork and south fork of Chollas Creek since it's been banned by EPA in 2004.

Based on the monitoring results presented above, the San Diego Bay Copermittees' efforts to address diazinon through education and outreach programs are adequate for meeting the goals of the diazinon TMDL. Education and outreach programs and events for area residents and businesses should continue in order to help further reduce pesticide usage within the Chollas Creek Watershed and proactively address the observed shift in pesticide usage that has occurred in recent years toward synthetic pyrethroids.

The key objectives of the Dissolved Metals TMDL dischargers during FY 2009 included collaborating and developing the BMP Implementation Plan and establishing a consensus among stakeholders. These two objectives were accomplished in FY 2009, and the BMP Implementation Plan was submitted to the Regional Board as described above.

Though the Implementation Plan was submitted outside of this reporting period (October 2009), the dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in the TMDL compliance. The Dischargers' approach in addressing the TMDL is an integrated, multi-pollutant based approach targeting metals, trash, bacteria, and pesticides as well as other pollutants. Fifty-one activities, including water quality, education, and ongoing agency-wide activities, were implemented in FY 2009.

Activity details including information on measurable targeted outcomes (Levels 1-6), assessment measures and assessment methods are presented in each discharger's BMP Implementation table located in Appendix E. However, this section includes a collective summary of some notable accomplishments. Discharger activity accomplishments for FY 2009 include:

- The removal of approximately 1980 tons of trash, the removal 12 tons and 765 cubic yards of non-native vegetation from the watershed, with an estimated 500 people participating in trash and vegetation cleanups.
- Over 1900 school children were educated on urban runoff and watershed issues during class presentations and field trips. Dischargers developed outreach booths at 36 local and regional events with a combined estimated 83,000 attendees. Impressions

estimated for the Chollas Creek Watershed for public service announcements, which air regionally, include 6,702,533 through television and 9,201,893 through radio placement.

- Through over 288 commercial, industrial, and municipal facility inspections and audits, 54 deficiencies were noted leading to 54 corrective actions. Corrective actions can include, but are not limited to, stopping/cleaning an active discharge, closing/covering open trash cans, and/or covering and maintain grease bins.
- Through an aggressive street sweeping pilot project, over 2,500 broom miles were swept removing approximately 67 tons of debris. Through the sweeping of freeways twice a month, an estimated 11 cubic yards of debris was collected from 40.8 miles.
- Seven special studies and monitoring activities were conducted, a few of which will have results available next year, and two of the dischargers provided sponsorship to the Sustainable Conservation's Break Pad Partnership to address a major source of copper.

The accomplishments listed above are not comprehensive. Details regarding all the activities that were implemented and/or are planned and made progress in FY 2009 are included in each discharger's activity table included in Appendix E. It is anticipated that over time with implementation of the Dischargers' Dissolved Metals TMDL Implementation Plan, improvements to water quality will be observed. The actions that the Dischargers' have planned are anticipated to reduce pollutant loading and address pollutant sources.

4.2.2 *Shelter Island Yacht Basin Dissolved Copper TMDL*

Status

The Port of San Diego and the City of San Diego are working with the RWQCB and other local stakeholders to develop a collaborative Shelter Island Yacht Basin Dissolved Copper TMDL Implementation Plan. The goal of the Implementation Plan will be to achieve a 76% reduction in dissolved copper discharges into the Shelter Island Yacht Basin (SIYB) over the next 20 years. A kick-off meeting was held on January 21, 2009. The named parties met on three other occasions during this reporting year: March 10, 2009, May 19, 2009, and June 4, 2009.

During this reporting period, a conceptual monitoring plan for conducting compliance monitoring for the SIYB dissolved copper TMDL was under development. The purpose of compliance monitoring within the SIYB is to determine if interim and final loading targets, including both numeric and narrative water quality objectives, are being achieved throughout the SIYB. Long-term tracking of copper loading and water quality is necessary to determine whether TMDL compliance has been attained. Compliance monitoring for the dissolved copper TMDL will include tracking of vessel hull paint conversions to non-copper-based paint; annual water quality assessments of copper levels and toxicity; and monitoring of broader range of water-column, sediment, and biotic indicators on a 5-year basis through integration with the RHMP. The RHMP is further discussed in the Activity Summary Sheet SDB-025 in Appendix D. The primary means of determining compliance with interim loading reduction targets will be tracking the

conversion of vessels from copper-based to non-copper paints on a basin-wide basis. The draft Implementation and Monitoring plans are anticipated to be finalized in FY 2010.

Assessment

The Copermittees and other named dischargers have been in the process of developing the Implementation Plan during this reporting period. Therefore, an assessment of the Implementation Plan is not possible at this time. However, the Copermittees have been successful in proactively addressing the requirements of the TMDL in FY 2009. Accomplishments include:

- The Port of San Diego continued to participate in the EPA-funded "Safer Alternatives to Copper-Based Paints" project. The objectives of the project are to identify environmentally friendly test coatings that are: 1) effective in repelling or preventing fouling growth; 2) relatively easy to clean; and 3) cost effective to apply and maintain. In October 2008, the Port completed a four-month panel testing phase in which 46 non-copper hull coatings were evaluated. Twenty-one of these coatings appeared to perform well in terms of fouling and cleaning expectations. The Port used this information during planning and implementation of the boat testing phase of the project during FY 2008-2009. Ten of the top performing alternative coatings were applied to recreational boats in April and May 2009. The Port developed a boat hull field protocol for conducting long-term testing of alternative coatings, which will be used to determine the effectiveness of the alternative coatings for the duration of the project. The educational and outreach efforts will provide valuable information and guidance to the boating industry on alternative non-copper based antifouling paints and maintenance strategies, resulting in a Level Three Outcome. The transition away from copper-based coatings would aid in the reduction of copper loading into the SIYB, thereby enabling the possibility of a Level Four Outcome by the end of this Permit cycle.
- The Port of San Diego and the consultant, Institute for Research and Technical Assistance (IRTA), held four stakeholder meetings during this reporting period: October 13, 2008, December 10, 2008, January 21, 2009, and April 14, 2009. The objective of the stakeholder meetings was to provide project details to interested parties, as well as obtain input from the workgroup on the upcoming boat hull testing phase.
- The Port of San Diego has continued to participate in the state-wide copper sub-workgroup, led by the Department of Pesticide Regulation (DPR), to increase overall understanding of copper impacts statewide. This workgroup met twice, on January 8, 2009 and April 2, 2009.
- The Port of San Diego developed the framework for a long-term program to evaluate new and emerging hull coatings and technologies. The program will incorporate many of the testing methodologies and assessment protocols developed as part of the EPA Grant Project. The program will also develop mechanisms to continually seek new and emerging products, and develop partnerships with tenants in field testing efforts. As part

of the on-going testing, Port staff contracted several of the paint manufacturers to see if any new products were available for testing. To date, approximately 22 new alternative coatings were identified for panel testing in FY 2009-2010. The coatings to be tested include new products not previously available, as well as reformulations of several coatings from the EPA Grant Project which did not quite meet the panel testing standards.

The Port also collaborated with the SDSU College of Business' MBA Consulting Program to develop a database of interested parties of whom the Port can solicit solutions for innovative boat hull coatings. A Request for Information (RFI) solicitation was developed by the Port and distributed to interested parties in June 2009. The goal of the RFI was to identify innovative approaches to achieving a reduction in copper loading, either through the use of alternative coatings or in the form of concepts that prevent copper from impacting marine life in the area.

- The City of San Diego monitored the MS4 urban runoff contribution to SIYB to verify that the copper loading from this identified source is within the waste load allocation (WLA) and WQOs. Detailed information is provided in Activity Summary Sheet SDB-053, located in Appendix D-1.
- The RHMP collected monitoring data within the SIYB in order to characterize current conditions. In addition, the Copermittees plan to use the monitoring data when performing long-term water quality assessments for the SIYB and continue to participate in the RHMP. Detailed information is provided in Activity Summary Sheet SDB-025, located in Appendix D-1.

Section 5: Conclusions and Recommendations

5.1 Conclusions

The San Diego Bay Copermittees successfully completed all Level One watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. Due to the success of the programs implemented during FY 2009, the San Diego Bay WURMP achieved the following objectives: 1) implementation of activities to specifically address the sources of water quality problems at a WMA and HA level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a WMA and HA level; 4) continued refinement of the watershed program; and 5) continue progress toward meeting WURMP goals and objectives. The comprehensive assessment of educational programs implemented through JURMP, RURMP, and WURMP demonstrates how the Copermittees have been successful in achieving Levels Two and Three by implementing extensive pollution prevention efforts directed at potential sources of high priority pollutants. In FY 2009, the Copermittees supplemented the JURMP and RURMP educational programs by implementing 11 education activities targeting audiences identified in the Municipal Permit as having the most significant impact on the high priority water quality problems in the San Diego Bay.

The Copermittees assessed the effectiveness of the activities individually as well as collectively at the HA and watershed levels in order to determine the combined impact the activities have on the targeted high priority pollutants and/or pollutant sources. Copermittees implemented 12 water quality activities which resulted in achieving Levels Three or Four by changing knowledge or behaviors, reducing discharge loads, abating potential pollutant sources, or through other quantifiable benefits to receiving water quality during FY 2009. Assessment of individual activities indicated nearly all met their assessment targets and were considered to be effective. Evaluation of the water quality activities at an HA level provided an assessment of the San Diego Bay Copermittees' collective efforts for several activities that were implemented across several HAs. These activities presented universal solutions to high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern.

The Copermittees identified jurisdictional water quality activities which were implemented across multiple HAs, such as Pet Waste Bags, Trash Cleanups, Enhanced Street Sweeping, and Enhanced Inspections. Copermittees also implemented different approaches or activities which focused on the same pollutant of concern and/or pollutant sources in a HA. The combined effect resulted in a greater impact on the targeted high priority water quality problems and positively influenced the effectiveness and efficiency of the WURMP program. Assessment of these activities resulted in a cross-programmatic watershed analysis of the effectiveness of these programs. Activities such as public participation at cleanup events, the general public's use of household hazardous waste collection facilities, and pet waste bags scaled multiple

levels of assessment resulting in increases in awareness, behavior changes, and load reductions.

The named dischargers of the Chollas Creek Dissolved Metals and Diazinon TMDLs (908.2 HA) have engaged additional assessment measures. The named dischargers have taken a holistic approach to planning, implementation, and assessment of watershed activities. The holistic approach takes into account watershed activities implemented by named dischargers under WURMP, JURMP, or other stormwater programs. The goal of integrating information from various programs is to compile data from all implemented activities in order to allow a comprehensive evaluation of watershed-wide efforts to address high priority water quality pollutants identified in the TMDL. The involvement of non-Copermittee agencies (i.e., Caltrans and the U.S. Navy) in the Chollas Creek TMDLs enables the incorporation of information on pollutant sources outside of the Copermittees' jurisdictions and the BMPs these agencies have implemented to address these sources. During this reporting period, all named dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in achieving TMDL compliance. The dischargers will share this information and will apply lessons learned in the region with the goal of improving water quality in the Chollas Creek Watershed.

The San Diego Bay Copermittees believe monitoring activities provide important information which is essential to the overall success of the Watershed Strategy. During FY 2009, resources were allocated to the planning of seven Targeted Special Studies focused on high priority water quality problems and their sources within the Chollas Creek watershed (908.2). Future assessments of the Targeted Special Studies will provide information enabling Copermittees to determine the most efficient, feasible, and effective BMPs to implement within their individual jurisdictions. Monitoring results may be used to support future management decisions regarding the planning, implementation, and assessment of watershed activities. During this reporting period, 12 Monitoring and Source Identification activities were implemented. The San Diego Bay Copermittees attempted to further assess changes in receiving water quality during FY 2009, and more thorough assessments will be conducted as additional water quality and pollutant source assessment information becomes available. By acquiring a better understanding of the link between high priority pollutant sources and their impacts to water quality, Copermittees will be able to understand how the watershed activities affect urban runoff discharge and receiving water quality.

5.2 Program Improvements and Recommendations

The most important contribution that watershed programs can make is to protect and improve water quality in each WMA, including the San Diego Bay WMA. To do this, San Diego Bay Copermittees must first expand the understanding of the water quality issues in the WMA (i.e. the sources and magnitude of the issues), allowing for more informed decisions and actions. This information will allow the San Diego Bay Copermittees, watershed partners, and other entities to make more informed decisions and actions. The comprehensive evaluation of existing activities, BMPs, and assessment strategies pertaining to watershed programming

provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. This resource can then be shared with other watersheds, jurisdictions, and non-Copermittee agencies to improve programs on a regional basis and further increase the list of BMPs Copermittees may potentially implement. Sharing the evaluation methods will also help other watersheds and jurisdictions improve and enhance their programs.

The San Diego Bay Copermittees and other entities will continue to utilize information on watershed pollutants and sources when evaluating and determining which watershed activities to implement. The Watershed Strategy, a key component required for the San Diego Bay WURMP document, provides a consistent mechanism for prioritizing pollutants, identifying sources of pollution, maximizing available resources, and developing and implementing activities. The San Diego Bay Copermittees will continue to gather additional water quality data suitable for assessments at the watershed, sub-watershed, and HA levels, as well as research COC sources and their loading potential. Because there is a general lack of water quality data directly related to sources, the San Diego Bay Copermittees will continue to coordinate to improve data collection and monitoring. Efforts to further refine the characterization of source inventories and water quality, such as to the HA level, will provide more useful information to the San Diego Bay WURMP. This improved identification of sources and their loading potential will enable the Copermittees to enhance effectiveness assessments of watershed activities, which will enable Copermittees to modify program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

The next step in the evaluation process will be to look at the watershed activities and decide if they are optimized or whether the activities may be further developed to achieve even greater load reductions. The San Diego Bay Copermittees will evaluate the standardization of incoming data available through the activity summary sheets and comprehensive assessments. The Copermittees could begin to compare activities to each other, deciding if certain activities are able to be combined to increase effectiveness and efficiency, and the activity's ability to address multiple pollutants. This information when combined with monitoring and source identification may promote the positioning of strategically placed watershed BMPs and comprehensive watershed activities. This process entails improving existing data and assessment strategies, which will lead to improved source identification and improvements in water quality. In addition, the Copermittees will continue to collaborate on efforts to integrate information on JURMP related activities information into the San Diego Bay WURMP Annual Report in order to develop a comprehensive evaluation of all activities implemented to address high priority water quality problems under the various urban runoff management programs in the WMA. By evaluating the activities relevance to each other and to the high priority water quality problems and their sources, the Copermittees will be able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary.

The Copermittees will also continue to contribute to efforts focused on making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and

through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding WURMP permit language.

Section 6: References

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Appendix D

San Diego Bay
Watershed Activity Summary Sheets

PET WASTE BAG COLLABORATIVE WATERSHED ACTIVITY (SDB-001)

ACTIVITY DESCRIPTION

The Pet Waste Bag Collaborative Watershed Activity addresses urban runoff from jurisdictional parks and recreational areas. It is believed that pet waste may be a potential source of high priority water quality problems such as bacteria. The use of pet waste bags helps to reduce pet waste from entering the storm water conveyance system, thereby addressing the high priority water quality problem, bacteria. Two important goals of this activity are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to cleanup after their pets. Providing pet waste bags to citizens may result in load reductions as the activity enables proper disposal of pet waste and associated pollutant categories such as bacteria.

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of pet waste bag dispensers added by a Copermittee as part of this activity or, 2) the number of bags removed and used from each of the dispensers, or 3) by estimating the bacteria loading based on the number of bags distributed. Implementation of educational elements of this activity may include new and/or improved signage in municipal parks describing the environmental benefits of using the pet waste bags.

During FY 08-09 the City of Chula Vista conducted three activities targeting pet waste including an evaluation of pet waste bag usage in city parks and trails, an analysis of how pet owners dispose of pet waste, and education directed towards local Home Owners Associations (Activity Summary Sheet SDB-039). Park and trails inspectors as well as storm water management section staff are regularly in the field and can observe if park users are utilizing the pet waste bag dispensers. This reporting year, City storm water management section staff visited 48 municipal parks and noted whether or not there was a pet waste dispenser in each and if it was being used.

No new dispensers were added to the San Diego Bay WMA by the Copermittees. Additional assessment was undertaken by the Airport Authority and the County of San Diego, by estimating the amount of pet waste removed from parks and public areas within their jurisdictions. Please refer to the San Diego Bay WURMP document's Pet Waste Bags summary sheets (1A through 1E) for more information on the individual Copermittees' Pet Waste Bag activities.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. TMDLs are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, Bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek.

TIME SCHEDULE FOR IMPLEMENTATION

Table E-1 below lists the San Diego Bay Copermittees participating in the Pet Waste Bag Collaborative Watershed Activity during this reporting period and in which HA(s) the activity is being conducted.

Table E-1. San Diego Bay Copermittees Participation in Pet Waste Bag Watershed Activity.

	Hydrologic Area								
Copermittee	**908.1**	**908.2**	**908.3**	**909.1**	**909.2**	**909.3**	**910.1**	**910.2**	**910.3**
Airport Authority		X							
City of Chula Vista				X				X	X
City of La Mesa		X		X					
City of Coronado							X		
County of San Diego				X	X	X		X	X
Port of San Diego	X	X	X	X			X		

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- Port of San Diego
- City of La Mesa
- City of Coronado
- Airport Authority
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. This activity directly addresses and abates a source of bacteria in all HAs.

EFFECTIVENESS ASSESSMENT

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) identifying the number of bags removed and used from newly added and existing dispensers, 2) characterizing pet owner's disposal of pet waste, and/or 3) estimating annual bacteria load reductions. For

additional effectiveness assessment information for the County of San Diego's Pet Waste Bag Program, please refer to Activity Sheet SDB-001a in this Annual Report.

Additional Dispensers

No new pet waste bag dispensers were installed during FY 2009 in the San Diego Bay WMA.

Pet Waste Bags Dispensed

The San Diego Bay Copermittees maintained their existing pet waste bag dispensers in FY 2009. Table E-2 lists the total number of pet waste bags dispensed per Copermittee. The total number of pet waste bags dispensed during FY 2009 was approximately 518,327[1].

Table E-2. Number of Pet Waste Bags Dispensed.

Copermittees	Number of Pet Waste Bags Used
Port of San Diego	414,000
City of La Mesa	9,000
City of Chula Vista	9,000
City of Coronado	12,000
Airport Authority	689
County of San Diego	52,838

Proper disposal of pet waste helps to reduce bacteria from entering the storm water conveyance system. The use of pet waste bags by pet owners is another example of positive behavioral change. By providing pet waste bags and the appropriate educational signage describing the environmental benefits of the activity, the San Diego Bay Copermittees may be able to increase public awareness that removal of pet waste is a beneficial activity for water quality that all pet owners can be involved in.

During this reporting period, the City of Chula Vista evaluated 48 municipal parks for the presence of pet waste bag stations. Thirteen parks were found to have pet waste stations. In parks where these stations were used, it was noted that there was less pet waste left on the ground compared to those without stations. Signage presented on the pet waste stations encourages pet owners to pick up after their pet(s) and indicates that it is the law according to Chula Vista Municipal Code. Based on the findings, city storm water staff will continue work with the Parks Department to encourage installation of these stations at all parks.

[1] The manner in which pet waste bag data is recorded can vary from each of the jurisdictions, leaving room for variability in the data from year to year. Some jurisdictions report the number of pet waste bags that are purchased during the fiscal year, while others report the number of bags used during the fiscal year. This can cause data variation because some jurisdictions may be starting up new pet waste programs, causing an increase in the number of pet waste bags reported. Others may have well-established programs and just maintain their existing pet waste stations.

Bacteria Load Reductions

The County of San Diego and the Airport Authority calculated the annual bacteria load reductions. Utilizing the assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve, the County estimated 51,680 pet waste bags were utilized from the sixteen bag dispensers in their jurisdictions in FY 2009. By using the assumptions above, the County estimated the amount of pet waste removed to be 10,568 lbs. Please refer to Activity Summary Sheet SDB-001a for further detail on the County of San Diego's pet waste bag activity efforts. The Airport Authority, based on separate assumptions, estimated that approximately 172 lbs. of pet waste were collected and approximately 1.8×10^{12} fecal coliform bacteria associated with the waste were removed.

PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS (SDB-001A)

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2008 ACTIVITY IMPLEMENTATION

During the FY 2008 reporting period the County of San Diego maintained 16 dispenser stations at 13 parks within the San Diego Bay Watershed.

FY 2009 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009. During this reporting period the County of San Diego continued to maintain 16 dispenser stations at 13 parks within the San Diego Bay Watershed. The parks and the number of dispensers include:

- Otay Lake Park (1 dispenser)
- Eucalyptus Park (1 dispenser)
- Goodland Acres Park (1 dispenser)
- Hilton Head, Cottonwood 3 (2 dispensers)
- Lamar Street Park (1 dispenser)
- Spring Valley Park (1 dispenser)
- Sweetwater Regional Park/Summit (2 dispensers)
- Hillsdale Park (1 dispenser)
- Lonnie Brewer Park (1 dispenser)
- Steele Canyon Park (1 dispenser)
- Cottonwood Park (1 dispenser)
- Woodhaven Park (2 dispensers)
- Nancy Jane Park (1 dispenser)

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria has been identified as a priority water quality problem in the San Diego Bay Watershed. Parks have been identified as potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	# of Stations	# of Bags Used	Waste Removed Lbs.
Otay Lake Park	1	3,230	646
Eucalyptus Park	1	3,230	646
Goodland Acres	1	3,230	646
Hilton Head Park	2	7,120	1,424
Lamar Street Park	1	3,230	646
Spring Valley Park	1	3,230	646
Sweetwater Regional Park/Summit	2	6,460	1,292
Hillsdale Park	1	2,998	598
Lonnie Brewer Park	1	3,340	668
Steele Canyon Park	1	3,340	668
Cottonwood Park	1	3,340	668
Woodhaven Park	2	6,880	1,376
Nancy Jane Park	1	3,220	644
Total	**16**	**52,838**	**10,568**

During the FY 2009 reporting period the County maintained 16 stations among 13 County Parks within the San Diego Bay Watershed. These stations distributed approximately 52,838, preventing an estimated 10,568 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

STORM DRAIN LITTER CONTROL TECHNIQUES – EL CAJON BOULEVARD STORM DRAIN INLET RETROFIT FOR CHOLLAS CREEK WATERSHED PROTECTION PROJECT (SDB-2-08B)

ACTIVITY IMPLEMENTATION

The City of San Diego will retrofit four storm drain catch basins at the intersection of El Cajon Boulevard and Fairmount Avenue with catch basin inserts. This site has been selected for its placement along a major arterial, proximity to the ongoing aggressive street sweeping program (Tier I Best Management Practice activity) along El Cajon Boulevard, and the adjacent commercial land uses (gas station, two vehicle sales lots, and a clothing thrift shop). The close proximity of the catch basins will also allow for easier project maintenance.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Diego plans to select catch basin inserts and it is anticipated that catch basins will be retrofitted during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will contribute to improving water quality problems and is consistent with the Collective Watershed Strategy by focusing on bacteria and sediment load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants, which convey and provide nutrients to bacteria. The Collective Watershed Strategy

identifies bacteria, sediment, and nutrients as priority water quality problems in the various hydrologic subareas of the San Diego Bay Watershed Management Area (WMA).

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
EL CAJON BOULEVARD STORM DRAIN FILTER INSERT PROJECT Assess Efficiency and Effectiveness of Storm Drain Filter Inserts in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved by retrofitting storm drains with filter inserts? • How efficient are filter inserts in reducing pollutant loads? • What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure filter inserts working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality (Outcome Level Five)

Objectives

The goal of the assessment is to determine the load reduction effectiveness and efficiency of storm drain filter inserts both by themselves and in combination with aggressive street sweeping.

Results and Analysis

This activity was in the planning phase and not in active implementation in FY 2008. Therefore, assessment is not feasible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

ENHANCED STREET SWEEPING COLLABORATIVE WATERSHED ACTIVITIES (SDB-003)

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees have implemented street sweeping-focused activities to reduce the accumulation of metals, sediments, and trash. This watershed collaborative activity includes efforts undertaken by Copermittees to enhance their jurisdictional street sweeping programs. The San Diego Bay Copermittees participated as part of this collaborative activity by either 1) increasing the frequency of street sweeping in their jurisdictions above the minimum Permit required jurisdictional frequencies, and/or 2) utilizing more effective street sweeping equipment. This activity summary includes the individual Copermittee efforts described in the WURMP Document activities 3A-3F.

Increased Frequency

According to the jurisdictional requirements presented in the Municipal Permit, municipal areas must prioritize and sweep streets and parking lots based upon the amount of trash and debris accumulated. Copermittees participating in this watershed activity include the Port, Airport Authority, and the Cities of Coronado, La Mesa, San Diego, Imperial Beach, and National City. These Copermittees have undertaken additional sweeping that is more frequent than the Municipal Permit's jurisdictional requirements within prioritized areas

Higher Efficiency Street Sweeping Equipment (Targeted Aggressive Street Sweeping Project)

The City of San Diego (City) continued to conduct a 24-month street sweeping pilot study in the Chollas Creek HSA (908.22) of the San Diego Bay Watershed Management Area (WMA) that not only increased frequencies, but also test different street sweeping machines. The pilot study is part of an ongoing effort to improve water quality and maintain City's compliance with multiple water quality regulations. The goal of the pilot study is to determine the optimal street sweeping frequencies and sweeper machinery that will help the City better comply with local, state and federal Clean Water regulations. Specifically, the study is investigating the effectiveness of using vacuum-assisted street sweepers in place of conventional mechanical sweepers and increasing sweeping frequencies to reduce the accumulation of debris containing metals on City streets. The pilot study includes the purchase of two types of vacuum-assisted sweepers; the training of sweeper operators; the assignment of sweepers to designated routes within the Chollas Creek HSA; and both dry-weather and wet-weather monitoring programs to assess the effectiveness of the pilot study.

In order to select the appropriate route, the City of San Diego used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* (Activity Summary Sheet SDB-038) to target areas within the San Diego Bay WMA. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study Activity Summary Sheets SDB-024A, -

024B, and -024C), and meetings held with relevant City staff, the selected route (CC-1[2]) is in one of the highest priority sectors of the San Diego Bay WMA for potential metals loading.

In anticipation of the start of pilot study, the City conducted the following community outreach and information dissemination efforts in FY 2009:

- Community presentation held in March 2008 in Chollas Creek area
- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Newspaper display advertisements placed in community newspapers
- Door hangers distributed in Chollas Creek area
- Information shared with Council Offices
- Press event and release conducted by Mayor's Office
- E-mail blasts and calls made to inform stakeholders of project

The City installed "no parking" signs along the pilot study route in the Chollas Creek area (CC-1) from December 2007 through March 2008. In April 2008, the City began sweeping CC-1 at a twice a week frequency (two times per week on each side of the street) to determine the amount of debris containing metals that could be removed by increasing the frequency of the City's conventional street sweeping program. Implementation of the twice a week sweeping frequency took place for one calendar year, and concluded in April 2009. In March 2009, the City notified the public that it was reducing the sweeping frequency of CC-1 from twice a week to once a week (one time per week on each side of the street) for the remainder of FY 2010 to gather comparative data for the two frequencies. Public notification was provided via display ads, a press release and an email blast to community groups. The "no parking" signs were also changed to reflect the reduced frequency schedule. Implementation of the once a week sweeping frequency began in April 2009 and is currently ongoing. The preliminary results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

This phase of the pilot study also included a comparative analysis of the performance of the City's conventional mechanical street sweepers and the newly acquired vacuum-assisted sweepers. Comparative debris data was collected for each machine type at both frequencies (twice/week and once/week) for CC-1. The preliminary results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

Based on the preliminary results presented in the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load

[2] CC-1 consists of a mix of residential and commercial land uses in the Greater North Park, Normal Heights, Kensington-Talmadge, and City Heights areas.

reduction of metals (a high priority water quality problem in the San Diego Bay WMA), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2009.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303(d) lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for sediment toxicity, benthic community effects, and the metals copper, lead and zinc. Two total Maximum Daily Loads (TMDLS) have been established for metals in the San Diego Bay under the Shelter Island Yacht Basin Dissolved Copper TMDL and the Chollas Creek Dissolved Copper, Lead, and Zinc TMDL. The RWQCB is also developing additional TMDLs in Paleta, Switzer and Chollas Creek.

Street sweeping enhancement activities may have beneficial effects by reducing the loading of pollutants such as sediment, metals, and trash that are discharged to MS4s. A variety of other pollutants are known to be associated with sediment, such as bacteria, may also be reduced. The Enhanced Street Sweeping Program is applicable to these TMDLs to the extent it addresses the control of sources of copper and other metals, trash, sediment, and other pollutants that may be associated with sediments, such as oil and grease and organics, as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

The implementation schedule for the enhanced street sweeping water quality activity is presented for FY 2008 and FY 2009.

Jurisdiction	Permit Year 2007-2008	Permit Year 2008-2009
Port of San Diego	Implementation	Implementation
Airport Authority	Planning	Implementation
City of Coronado	Planning	Implementation
City of La Mesa	Implementation	Implementation
City of San Diego	Planning/Implementation	Implementation
City of Imperial Beach	-	Implementation
City of National City	Implementation	Implementation

Planning for the City of San Diego's pilot project began in September 2006. Sweeping started in the spring of 2008 and is anticipated to continue through the summer of 2010. Debris testing and water quality monitoring is being conducted throughout the pilot project to assess effectiveness in removing metals from City of San Diego streets.

PARTICIPATING WATERSHED COPERMITTEES

Table E-3 below lists the San Diego Bay Copermittees participating in the street sweeping enhancement activities activity during this reporting period, the enhancement that was used, and the HA(s) where the activity occurred.

Table E-3. San Diego Bay Copermittee Participation in Street Sweeping during FY 2009.

Copermittee	Hydrologic Area									Enhancement Mechanism	
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Increased Sweeping Frequency	Higher Efficiency Equipment
City of National City			X	X						X	
City of Coronado							X			X	
City of Imperial Beach							X	X		X	
City of San Diego		X								X	X
City of La Mesa		X		X						X	
Port of San Diego	X	X	X	X				X		X	
Airport Authority		X								X	

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping Enhancement activity targets reduction of high priority water quality problems such as metals, sediments, and trash. Metals were identified as a high priority water quality problem for 908.1 HA and 908.2 HA. Sediment and trash were identified as high priority water quality problems in 908.2 and 908.3 HAs. Streets are identified as a major source category comprising approximately 20% of the acreage within each HA. Additionally, street sweeping may also address residential pollution that accumulates in gutters along residential thoroughfares. Residential acreage in these HAs also comprises a large percentage. By increasing sweeping frequencies or using more efficient equipment, Copermittees undertaking this activity improved their ability to reduce pollutant loading from major sources within the high priority hydrologic areas.

EFFECTIVENESS ASSESSMENT

Increased Frequency

Effectiveness has been assessed by evaluating the additional amount of materials removed through this activity from the watershed's streets and roadways. Load reductions comprise a level four assessment through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Table E-4 shows the increase in materials removed due to greater frequency of street sweeping by each participating Copermittee[3].

Table E-4. Estimation of Pollutant Load Reduction Due to Increased Frequency.

Jurisdiction	JURMP Baseline Material (lb)	Additional Materials Removed (lb)	JURMP Baseline Curb Miles	Additional Curb Miles 08/09
City of National City	329,000	1,616,000	2,970	11,242
City of Coronado	60,040	305,560	609	7,242
City of Imperial Beach	46,724	143,189	271	830
City of La Mesa	133,960	434,040	971	3,166
Airport Authority	6,600	59,400	192	1,920
Port of San Diego	23,040	72,960	408	1,292
City of San Diego		133,999		2,554*
TOTAL		2,765,148 lbs (or 1,383 tons)		

* "Broom miles" and not "curb miles" were used to track the distance swept.

During this reporting period, the San Diego Bay Copermittees removed an additional 1,383 tons of material and covered and additional 25,692 curb miles (2,554 broom miles for the City of San Diego) within the San Diego Bay WMA through the increased frequency of street sweeping.

[3] Weight of baseline and additional material were estimated based on the overall amount of material removed during the year and the relative proportions of the overall sweeping attributable to JURMP baseline sweeping and to additional sweeping. For example, if 100,000 pounds were removed, 3,000 miles of JURMP baseline sweeping was done, and 2,000 miles of additional sweeping was done, the baseline material would be recorded as 60,000 pounds (60% of the overall amount) and the additional sweeping material would be recorded at 40,000 pounds (40% of the overall amount). The City of San Diego tracked the weight of baseline and additional material by using "broom miles". A "broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. The broom mileage does not translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Targeted Aggressive Street Sweeping Project

Watershed: San Diego Bay		
TARGETED AGGRESSIVE STREET SWEEPING PILOT STUDY **Assess Effectiveness and Efficiency of Street Sweeping in Reducing Metals Loading**		
Management Questions	• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?	
Targeted Measurable Outcomes	• Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement	
Assessment Methods	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)	
Data Recorded	Total kg of debris removed by mechanical sweeper: Total kg of debris removed by regenerative-air sweeper: Total kg of debris removed by vacuum sweeper: **Total kg of debris removed:**	15,068 kg 15,939 kg 29,774 kg **60,781 kg** **(0.066 tons)**
	Total broom miles swept by mechanical sweeper:* Total broom miles swept by regenerative-air sweeper: Total broom miles swept by vacuum sweeper: **Total broom miles swept:**	1,099 mi 706 mi 749 mi **2,554 mi**
	Total kg of debris removed by mechanical sweeper/mile swept: Total kg of debris removed by regenerative-air sweeper/mile swept: Total kg of debris removed by vacuum sweeper/mile swept: **Average kg of debris removed /mile swept:**	14 kg/mile 23 kg/mile 40 kg/mile **26 kg/mile**
Recommended Data	• Cost of sweeper repairs/maintenance (Outcome Level One) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level Four) • Frequency of removal correlated to pounds of debris removed (Outcome Level One and Four) • Post-sweeping COC concentrations in runoff (Outcome Level Four) • Cost of vacuum-assisted sweepers (Outcome Level One) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level One)	

*"Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom

miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Objectives

The goal of the assessment is to investigate the effectiveness of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data will also be evaluated for the purpose of establishing optimal sweeping frequencies.

Analysis and Results

The study included the purchase of two types of vacuum-assisted sweepers; the dedication and training of sweeper operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. A total of 60,781 kg of debris was removed by all three sweeper types during FY09 in the San Diego Bay WMA, over a total of 2,554 miles swept. This resulted in an average kg of debris removed per mile swept of 26. Further analysis is underway to address the study objectives during FY 2010.

Conclusions

Conclusions and recommendations will be presented in the final report, which is scheduled for completion by June 2010. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS COLLABORATIVE ACTIVITY (SDB-004)

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees participated in a number of cleanup events throughout the San Diego Bay WMA. The cleanup events physically removed large amounts trash, debris, and other associated pollutants from the watershed creeks, rivers, streams and shorelines. The events included jurisdictional events as well as watershed-wide efforts that were coordinated by non-profit organizations. The San Diego Bay Copermittees provided funding by sponsoring various cleanup events and/or participated by soliciting volunteers, working as site captains, and participating in the cleanup events themselves. These events actively promoted a sense of watershed stewardship to the general public and resulted in trash load reductions. Figure E–1 presents the locations of cleanup activities in the San Diego Bay WMA. Cooperative efforts enable the San Diego Bay Copermittees to assess the relative trash loads for each event within each HA and the San Diego Bay WMA and determine whether there is a long-term reduction.

The Copermittees, while reporting on multiple trash cleanup events that occurred within the watershed, understand that it will only receive credit for one cleanup activity during the fiscal year. In addition, the Copermittees acknowledge that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the Copermittees may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash cleanup measures and programs to be implemented. The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria, sediment toxicity, and benthic community effects. These impairments may be indirectly reduced through the cleanups. The RWQCB is developing TMDLs to protect beneficial uses in the 303d listed impaired water body segments, including Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines and the Paleta, Switzer and Chollas Creek for sediments.

TIME SCHEDULE FOR IMPLEMENTATION

All San Diego Bay Copermittees have actively implemented cleanup events during this reporting period. They recognize the value in cleanup activities and plan to continue to implement this type of activity in all jurisdictions over the next four years.

Figure E-1. San Diego Bay WMA Cleanup Activity Sites.

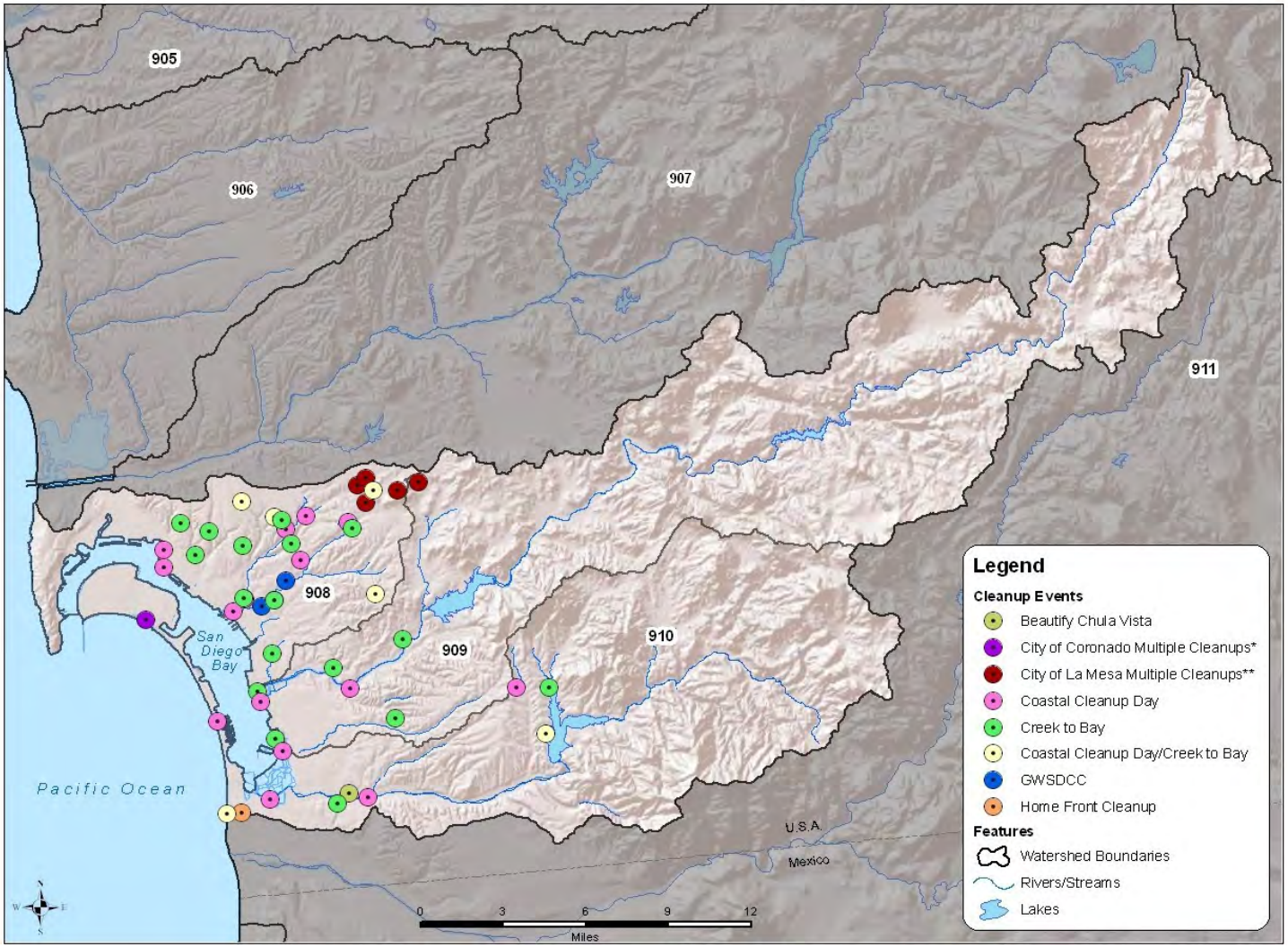

* City of Coronado cleanups included Coastal Cleanup Day, Creek to Bay, Kids Ocean Day, and San Diego Coastkeeper

**City of La Mesa cleanups include Park Appreciation Cleanup Day, Adopt a Park/Block Day, and partnership with Madeline Sophie Center

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of San Diego
- City of Imperial Beach
- City of Lemon Grove
- County of San Diego
- City of La Mesa
- City of Coronado
- Port of San Diego
- Airport Authority

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper
- Groundwork San Diego—Chollas Creek

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash has been identified in the San Diego Bay WURMP document as a high priority water quality problem in 908.2 and 908.3 HAs. Trash is an important issue to address in all HAs. Cleanup events aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, bacteria and metals are other high priority water quality problems that may be reduced indirectly as a result of the removal of trash. Trash often consisted of common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies trash as a high priority water quality problem. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions. Increased awareness and education of the public in all HAs is also an important component. Sponsorship of cleanup events resulted in load reduction of trash and debris directly and bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The cleanup events encouraged stakeholder buy-in and participation in implementing the Watershed Strategy. This often resulted in a Level Three outcome by causing a change in behavior, knowledge, attitude and awareness within the community of how to properly dispose of trash by the individuals involved. A Level Four outcome was also identified in all HAs due to the collection and removal of trash from the conveyance system. Relative pollutant load reductions within the watershed were assessed based on the weight of debris collected.

Table E-5 describes the cleanup event activities the San Diego Bay Copermittees actively implemented during this reporting period, the HA the cleanup event was located, the number of participants, and the amount (lb) of trash removed.

To assess the effectiveness of cleanup activities, the number of people participating as well as the total amount of trash collected has been calculated. The number of people participating in cleanups is utilized to convey a level three outcome to demonstrate changes in behavior in those involved in the cleanups in the San Diego Bay WMA. The amount of overall trash collected was utilized to estimate the load reductions of trash, a Level Four outcome, occurring during FY 2009.

- Approximately 5,790 people participated in cleanups throughout the San Diego Bay WMA.
- The overall amount of trash collected throughout the San Diego Bay WMA during FY 08-09 was approximately 531 tons.
- The Creek to Bay Cleanup, sponsored by the San Diego Bay Copermittees and coordinated by I Love A Clean San Diego on April 25, 2009, removed 71,188 lbs of trash and involved 1,609 volunteers.

Table E-5. Cleanup Activities for FY 2009 within the San Diego Bay WMA.

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)

The following jurisdictions served as site captains for the California Coastal Cleanup Day Event: City of Las Mesa, City of San Diego, Port of San Diego, and City of Coronado. The Airport Authority sponsored the event financially.	908.2
	908.3
	909.1
	910.1
	910.2
	910.3
		9/20/08	Coastal Cleanup Day*:
			• Chollas Lake Park, Oak Park
			• Chollas Creek
			  • National Ave
			  • 54th Street
			  • Earthlab
			  • Barrio Logan
			• Cooper Canyon
			• North Park Urban Cleanup
			• Paradise Canyon
			• G Street Pier to Broadway Pier
			• Swan Canyon
			• Dive Sites - Embarcadero
			• La Mesa, University Channel
			• Chula Vista-SEMPRA
			• Chula Vista Wildlife Reserve
			• Coronado City Beach
			• Imperial Beach Pier
			• Otay Valley Regional Park
			• Otay River
			• Salt Creek, Chula Vista
			• South Bay Wildlife Refuge
			• Sweetwater Regional Park
			• Silver Strand State Beach, Coronado
				1,325	51,083

The San Diego Bay Copermittees sponsored the 2009 Creek to Bay Cleanup Event. The following jurisdictions also served as site captains for the event: City of Las Mesa, City of National City, City of San Diego, Port of San Diego, and City of Coronado.	908.2 908.3 909.1 910.1 910.2 910.3	4/25/09	Creek to Bay: • Morrison Pond County Park • J Street Marina • Otay Valley Regional Park • Florida Canyon • Chollas Creek 47th Street • Coronado City Beach • La Mesa University Channel • Del Rey Canyon • Imperial Beach Pier • D Street Fill • Paradise Creek • North Park • Maple Canyon • Chollas Creek 33rd Street • Cooper Canyon • North Swan Canyon • Paradise Canyon • San Diego High School Campus • South Park • Southcrest Community Park • Lemon Grove • Sweetwater River • Montgomery High School Native Plant Garden • Upper Otay Lake	1,609	71,188

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
City of La Mesa	908.2 909.1	10/24/08	Park Appreciation Cleanup Day	630	447,229
		Various	Adopt A Park and Adopt a Block		
		4/11 &18/09	Partnership with Madeline's Sophie Center		
City of Imperial Beach	910.2	5/2/2009	Home Front Cleanup*	732	308,600
Port of San Diego	908.2	Various	Groundwork San Diego—Chollas Creek (GWSDCC)		180,000
Port of San Diego	908.2 908.3 910.1	Various	Coast Keeper Cleanup Events: • Paradise Educational Park at Paradise Creek • Emory Cove at Salt Pond 20 • Chollas Creek at Market Creek Plaza	94	1,408
City of Chula Vista	910.2		Beautify Chula Vista	500	1,200
City of Coronado	910.1	3/28/09	San Diego Coastkeeper Cleanup	900	639
		6/4/09	Kids Oceans Day Cleanup		

*Shaded California Coastal Cleanup sites were captained by San Diego Bay Copermittees.

**The Home Front Cleanup was an annual large waste drop off event at a single location.

CLEAN COMMUNITY PROGRAM (SDB-005)

ACTIVITY IMPLEMENTATION

The City of National City (City) has implemented a program to encourage individuals to dispose of waste properly. Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also encourage a behavioral change for the community by potentially changing the manner in which trash was disposed of by individuals. This program included two disposal events for large items and green waste. These events provided individuals with an avenue for properly disposing of items that might otherwise have been illegally dumped. The City alerted residents to these events beforehand via notices in their trash bills. The City has also hired a company to clean Paradise Creek twice per month. The cleaning mainly involves checking for the presence of trash and debris and removing trash that is noted. Finally, the City also participated in the Creek to Bay Cleanup.

Additional efforts included holding an art contest for school children in all the elementary schools in the City. The contest involved preparing artwork for the 2010 Storm Water Calendar with messages about keeping the City and local water bodies clean. The twelve winning drawings are being incorporated into the upcoming 2010 Storm Water Calendar. The 2009 Storm Water Calendar was distributed to all the elementary schools in the City, to households in the City's designated high threat to water quality residential areas, and to inspected industrial and commercial businesses. The City also plans to distribute copies of the 2010 calendar during the FY 2010 reporting period.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup and disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in 908.3 HA. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EFFECTIVENESS ASSESSMENT

During FY 2009, the City participated in more cleanup events and experienced a higher level of participation than in past reporting years. As part of the Creek to Bay Cleanup event, 118 volunteers helped to remove over 4,598 pounds of trash and debris from Paradise Creek Educational Park and an open area adjacent to the Sweetwater River. In November 2008 and in June 2009, materials were collected on large item disposal days; however the exact quantities of large items were not recorded. The City has also contracted a company to clean out Paradise Creek bi-monthly, however, information on the quantities of the debris and trash removed is not available for FY 2009.

Approximately 5,740 calendars were distributed to elementary students, high priority residential areas, industrial and commercial businesses, and municipal personnel in the City of National City. For the City's calendar contest, teachers in all 43 third grade classrooms within the City introduced storm water concepts, using presentation materials from the school district representative, and distributed handouts that explained the contest guidelines. The handouts received by each student to take home also included storm water educational information.

TRASH CONTAINMENT BOOM CLEANING AGREEMENT WITH UNITED STATES NAVY (SDB-006)

ACTIVITY IMPLEMENTATION

Since FY 2002, the City of San Diego entered into annual agreements with the United States Navy to remove trash and debris flowing through Chollas and Paleta creeks into Navy property. Street Division and Storm Water Pollution Prevention Division staff back then met with Navy representatives to formulate an action plan addressing floating material traveling through the creeks.

In FY 2008 reporting period, the trash booms were in place for continued operation. However, routine inspections resulted in no trash and debris to be collected and disposed.

In FY 2009 no activity was reported.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Booms will continue be in place, however reporting of this activity will no longer be continued.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- United States Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Trash accumulates within the storm water conveyance system during periods of dry weather and then washes downstream during rain events. There is a cause-and-effect relationship between litter and water quality in the San Diego Bay Watershed. Trash and debris may result in a number of negative impacts that

contribute to increased contamination, such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. Literature published by the United States Environmental Protection Agency on its web site[4] states that debris may be contaminated by pathogens that have adverse effects on humans. Reduction in the amount of litter within the watershed contributes to improvement in the quality of the storm water/runoff that ultimately discharges into San Diego Bay.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS AND PALETA CREEKS NAVY TRASH BOOM **Assess Efficiency and Effectiveness of Containment Booms in Reducing Pollutant Loads**	
Management Questions	• How much load reduction can be achieved using trash containment booms? • How efficient are the containment booms in reducing pollutant loads?
Targeted Measurable Outcome	• Reduction in pollutant loads
Assessment Methods	• Inspections (e.g., ensure booms working as designed) • Quantification (e.g., estimate tons of trash and debris removed) • Monitoring (e.g., monitor types of trash and debris removed to help identify source) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four)

Objectives

The goal of the assessment is to determine the efficiency of containment booms in removing trash and debris from creeks to improve water quality.

Conclusions

Assessment will not be conducted as no activity was reported.

[4] http://www.epa.gov/owow/oceans/debris/

ADDITIONAL DRY SEASON CONSTRUCTION INSPECTIONS (SDB-007)

ACTIVITY IMPLEMENTATION

During FY 2009, the City of National City (City) conducted additional inspections of construction sites during the dry season to reduce the potential for the discharge of sediment. According to the jurisdictional requirements presented in the Municipal Permit, construction sites (any priority) should be inspected as needed during the dry season. Additional construction inspections were conducted during the dry season to identify any areas where BMP implementation is not being maintained properly, particularly toward the end of the dry season when sites need to be preparing for the wet season. This program aims to decrease discharges of trash and sediment to the MS4. Increased construction inspection frequencies during the dry season will contribute to improvements in water quality by reducing the loads of pollutants such as sediment and trash entering the City's MS4 and downstream receiving waters. This effort will promote BMP implementation at construction sites during the dry season and will help prepare construction sites for the upcoming wet season.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Increased construction inspection frequencies during the dry season are intended to reduce the discharge of trash and sediment, which have been listed as high priority water quality problems in 908.3 HA. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these pollutants and abate pollutant sources.

EFFECTIVENESS ASSESSMENT

Excluding complaint investigations, the City completed 19 inspections at construction sites during the portions of the 2008 and 2009 dry seasons that fell within the FY 2009 reporting period: July 1, 2008 through September 30, 2008 and May 1, 2009 through June 30, 2009. Inspectors found most of these inspections helped contractors stay vigilant about implementing BMPs during the dry season and that they were especially helpful toward the end of the dry season, when the inspectors could also remind the responsible parties of applicable wet season requirements. BMP deficiencies noted during the dry season inspections were resolved during the first inspection of the wet season.

SAN DIEGO BAY WATERSHED MANAGEMENT AREA TARGETED INSPECTIONS – AUTOMOTIVE (SDB-008)

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the Mission Bay, San Diego Bay and Tijuana River Watershed Management Areas (WMA). The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
2) Does type of business ownership change the required inspection frequencies?
3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

The focus of the activity during FY 2009 was to develop the activity and implement the first round of inspections that would establish the baseline data set for comparison after the second and third round of inspections are completed.

The initial findings included problems primarily in outdoor storage and activity areas without proper BMP implementation or good-housekeeping practices. The findings for the FY 2009 activity implementation do not completely answer the management questions, however, by the end of the program, it is anticipated that these questions will be answered.

In FY 2009 a total of 191 full inspections were completed at auto shops in the San Diego Bay WMA, specifically the Chollas Creek Hydrologic Area.

<u>Facilities</u>

During FY 2009, the City conducted the first round of its automotive facility inspections from February through May 2009. 278 inspections were conducted as follows:

- Mission Bay Watershed – 65 inspections
- Chollas Watershed – 191 inspections
- Tijuana Watershed – 22 inspections

Approximately 50% of these businesses (139) are scheduled to receive a second inspection in FY 2010, starting in August 2009. In addition, all 278 businesses will be re-inspected again starting in February 2010 to be able to compare the results of the inspections for a complete annual cycle.

Figure E-2 – Mapping of the facilities inspected (all three watershed areas)

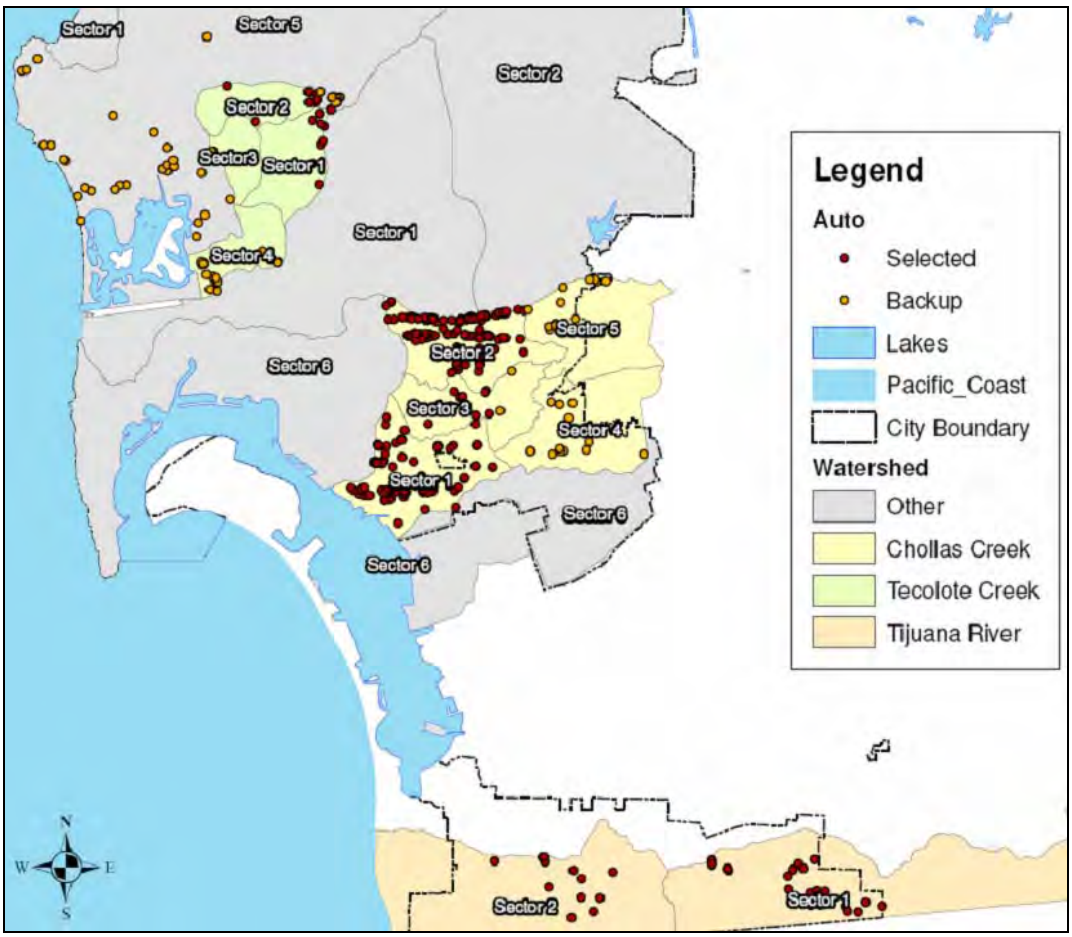

During FY 2009, many of the alternative locations were utilized to obtain the 278 inspections due to the lack of primary and secondary sites to be inspected. Many of the businesses were no longer in business or had relocated and were not “inspectable”.

Public Outreach

The City sent out a letter to business owners informing them of the inspections. The notice provided basic information about the City’s inspection program and informed the recipient that they may be subject to multiple inspections.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will conduct its second and third rounds of inspections in August 2009 and February 2010 respectively. Data analysis and activity assessment will occur between April and June 2010 for reporting in the FY 2010 Annual Report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as high priority water quality problems in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria and metals.

EFFECTIVENESS ASSESSMENT

Baseline Data

Baseline data collected during FY 2009 will be the basis of comparison for changes in findings when compared to mid-year inspections and annual inspections. Pollutant Discharge Potential Assessment (PDPA), BMP Knowledge and findings of violations will be compared to inspections conducted in FY 2010.

Data Collection Methods – Inspections

The City completed the inspections utilizing existing inspection forms with supplemental questions to capture the information necessary to answer the three management questions.

As with all inspections conducted by the City, during these watershed inspections, if violations were identified, they were noted for follow-up as appropriate. Follow-up inspections will occur as appropriate based on the identified violations. If discharges were identified, the City's inspector immediately reported these incidents to the City's code enforcement group. This enabled the City to take immediate actions to abate sources and have a direct positive impact on load reductions.

Findings

The following represents the primary findings of the activity. Of the 278 inspections conducted:

- One (1) had an illicit discharge identified during the inspections
- 60 had identifiable violations of the City's municipal code/minimum BMPs
- 25 had made at least one correction to violations during the inspections
- 89% (247 sites) implemented BMPs for liquids storage
- 23% (64 sites) performed at least some maintenance outdoors
- 57% (159 sites) have outdoor storage of materials – 29% (46 sites) did not implement any BMPs

In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues would be resolved if the facilities had structural changes to cover the outdoor operations and activities.

Additionally, the baseline data for the purposes of comparison of the varying inspection frequencies are identified in the table below. These assessment results will be compared to the 6-month inspection results as well as the final annual inspection results to compare and contrast the results based on the frequencies of inspections.

Table 1 – Stormwater Knowledge & BMP Assessments

Inspection Category	Inspections	Average Knowledge*	Average BMP*
FY 2009 WURMP Automotive Inspections	278	1.2	2.8
Automotive inspections – non WURMP	576	2.0	2.8
All Inspections (historic JURMP)	5,082	2.3	3.0

* Scale is from 1 (lowest) to 5 (highest)

Table 2–Effectiveness Assessment for Activity

Watershed: San Diego Bay		
TARGETED FACILITY INSPECTIONS Assess Efficiency and Effectiveness of Facility Inspections		
Management Questions	• What is the optimal frequency of inspections for Automotive Repair Facilities? • Does type of business ownership change the required inspection frequencies? • Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?	
Targeted Measurable Outcomes	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from data)	
Data Recorded	Number of full inspections (Outcome Level One)	191
	Number of facilities recommended for follow-up (Outcome Level One)	41
	Number of Sites Needing Corrective Action (Outcome Level One)	191
	Number of Sites that Implemented Some Corrective Action During Inspection (Outcome Level Three)	21
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level Four)	21
	Total IC/IDs Observed (Outcome Level One)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level One)	N/A

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area. As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 191 sites. Additionally, the City noted 41 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at 21 locations, corrective actions were immediately taken. This demonstrates both a Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcome was achieved as a direct result of this activity.

The City plans to implement the program in FY 2010 to more obtain more data necessary to answer the management questions associated with the program activity.

ENHANCED CONSTRUCTION OVERSIGHT (SDB-009)

ACTIVITY IMPLEMENTATION

The Airport Authority continues to oversee construction projects in a manner that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Construction Oversight Program is to abate the amount of sediment potentially released to the watershed from construction sites. The Airport Authority first began to implement this enhanced program in fiscal year 2004-2005. In addition to increasing construction site inspection frequencies, staff from the Airport Authority Environmental Affairs Department attends pre-construction meetings and regularly scheduled progress meetings more frequently than required by the Permit during both the wet and dry seasons. The regular meetings are used as an opportunity to focus the attention of project managers on BMPs directed at preventing the discharge of sediment to the storm drain system. During meetings and inspections, staff discusses the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project. Heightened awareness of proper sediment control BMP implementation increases the likelihood of sediment control BMP effectiveness, which in turn helps to abate the amount of sediment loading to San Diego Bay. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of sediment control BMPs. By changing the way in which individuals implement BMPs, this program results in a level Three outcome. The program also estimates the amount of sediment abated from impacting stormwater discharge quality, which is a level Four outcome.

The Airport Authority tracks the number of construction project regular progress meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, and the number of sediment source control BMP issues identified during inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual sediment pollutant load abated by 1) estimating, based on review of the literature and/or other sources, sediment loads per construction site per day when sediment controls are not implemented, and 2) tracking the number of sediment control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

The Enhanced Construction Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates construction sites as a source of sediment in the watershed. Abatement of sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects,

and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Construction Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of sediment as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Construction Oversight Program intends to abate sediment associated with construction sites, thereby improving the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies sediment as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS ASSESSMENT

There were fourteen construction projects underway at San Diego International Airport during FY 2009. Staff from the Authority Environmental Affairs Department attended 181 construction project meetings related to these 14 projects during FY 2009 and conducted a total of 151 inspections (previously incorrectly reported in the Airport Authority FY 2008-2009 Municipal Permit Annual Report as 162 inspections). Based on the requirements of the Municipal Permit, the Authority need have only conducted 55 inspections, which means 96 more inspections were conducted than required by the Municipal Permit. Out of the 151 inspections conducted,

issues or concerns related to sediment control were identified approximately 25% of the time. Given that issues/concerns regarding sediment control were identified during approximately 1 of 4 inspections on average, the Enhanced Construction Oversight Program appears to be effective at ensuring construction site sediment control BMPs are properly implemented over the life of the construction project.

To estimate the reduction in sediment load to the watershed resulting from implementation of the Enhanced Construction Oversight Program, the Authority used the method outlined in the State Water Resources Control Board March 18, 2008 Draft NPDES Construction General Permit (Draft Permit) (http://www.swrcb.ca.gov/water_issues/programs/stormwater/historical.shtml#con). Page 49 and Attachment A of the Fact Sheet presents a methodology using the Modified Universal Soil Loss Equation (MUSLE) to estimate soil loss from exposed soil that is being protected by BMPs. The Authority used this equation to compare the sediment load from a construction site without proper BMPs to the sediment load from a construction site with properly implemented BMPs. The difference between the two calculations is the estimated reduction in sediment load to the watershed. The MUSLE equation can be expressed as:

Erosion Estimate (sediment load) in tons/acre/year = R•K•LS•C•P

Where: R = rainfall intensity factor.

K = soil erodibility factor

LS = length-slope factor

C = cover factor (erosion controls)

P = management operations and support practices factor (sediment controls)

Attachment A of the Draft Permit notes that values of R have been calculated for any time period for more than 1000 locations in the Western U.S. and are available at http://ei.tamu.edu/. The Airport Authority used the one year period July 1, 2007 to June 30, 2007 to determine the R factor for the airport site (R = 21). Attachment A also notes that soils having high silt content are especially susceptible to erosion and have high K values. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. K values for silty soils can exceed 0.45 and can be as large as 0.65. The Airport Authority assumed a K value equal to 0.45 for the airport site, so as not to over-estimate the amount of soil potentially being eroded, and in turn, so as not to over-estimate the sediment load reduction achieved by the Enhanced Construction Oversight Program. Attachment A to the Draft Permit discusses the effect of topography on erosion in terms of the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. Attachment A includes a table of LS factors. Given the relatively flat topography at the airport, the Airport Authority selected an LS value appropriate to such a shallow hillslope gradient (LS = 0.06).

The cover factor (C) and the management operations and support practices factor (P) can then be modified to calculate erosion estimates assuming 1) no controls and 2) proper controls. The cover factor (C) and the management operations and support practices factor (P) are calculated as "1 - % effectiveness of control expressed in decimal form." If controls are not effective, then C and P equal 1. The Permit Fact Sheet notes that dischargers should use a C factor of 0.5 to simulate minimal erosion control BMPs on all exposed soil (for example, dust binder, temporary seeding, etc.). This would mean that the erosion control BMPs have an efficiency of 50% (C = 1 - 0.5 = 0.5). The Draft Permit notes that discharges should us a P factor of 0.2 to simulate an appropriately designed sediment basin. This means that the sediment control BMPs have an efficiency of 80% (P = 1 – 0.8 = 0.2). These C and P factors came from removal efficiency data from a Washington State Department of Transportation Document entitled "Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control" (http://www.wsdot.wa.gov/research/reports/fullreports/200.1.pdf)

Thus, the estimated sediment load (erosion estimate) that would have likely been generated from construction projects at the airport that had no erosion controls (that is, C = 1 – 0 =1) and no sediment controls (that is, P = 1 – 0 = 1) during FY 2009 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21•0.45•0.06•1•1

Erosion Estimate (sediment load) in tons/acre = 0.567

The Airport Authority estimates that the 14 construction projects underway at the airport during FY 2009 covered approximately 43.5 acres of surface area. As such, the amount of sediment that could have been released to the watershed by construction projects underway at the airport during FY08-09 equals:

Erosion Estimate (sediment load) = 0.567 tons/acre • 43.5 acres = 24.665 tons

Similarly, the estimated sediment load (erosion estimate) that was likely generated from construction projects at the airport that did implement effective erosion controls (that is, C = 0.5) and sediment controls (that is, P = 0.2) during FY 2009 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21•0.45•0.06(0.5(0.2)

Erosion Estimate (sediment load) in tons/acre = 0.0567

As such, the amount of sediment that was likely released to the watershed by construction projects underway at the airport during FY 2009 despite the effective implementation of appropriate BMPs, equals:

Erosion Estimate (sediment load) = 0.0567 tons/acre (43.5 acres = 2.4665 tons)

Therefore, the sediment load reduction resulting from the implementation of the Enhanced Construction Oversight Program equals the difference between the amount of sediment that would have been released from construction sites without BMPs and the amount of sediment

that was likely released despite the implementation of adequate and effective BMPs. For the FY 2009 reporting period, the sediment load reduction would be equal to:

Sediment load reduction = 24.665 tons - 2.4665 tons = 22.1985 tons

In light of this significant reduction, the Authority believes that the Enhanced Construction Oversight Program is effective at ensuring proper BMP implementation at construction sites.

LA MESA BUSINESS INSPECTION SUPPLEMENTAL WATERSHED QUESTIONNAIRE (SDB-010)

ACTIVITY IMPLEMENTATION

To gather more information regarding the level of storm water awareness of business owners/operators and to collect additional information regarding the condition of industrial and commercial sites, the City of La Mesa (City) completed an additional one-page supplement to the standard industrial and commercial inspection form. The first five questions on the form gathered information from business owners/operators regarding their knowledge of storm water, water quality issues, sources of pollutants, and whether or not they had previously received information regarding storm water. The inspector was prompted to make observations regarding the types of sprinkler heads on site, the percent of the pervious area that was landscaped, if there was any evidence of non-storm water discharges, and the business owner/operators attitude toward compliance with storm water regulations. The last question on the Supplemental Watershed Assessment Questionnaire and Inspection Form prompts the inspector to assign either significant or not significant to the overall source ranking for watershed pollutants of concern. This box was checked "Significant" when two or more of the watershed pollutants of concern were assigned a pollutant discharge potential (PDP) of three (3) or higher or one watershed pollutant of concern was assigned a PDP of a four (4) or higher. If the site did not meet the aforementioned criteria, the box was checked "Not Significant." The City intends to use the data to identify groups and/or areas in need of increased and more focused outreach and to identify potential pollutant sources.

The information gathered from the Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to collect additional information regarding the specific knowledge of business owners/operators and to identify sites that are potentially significant sources of watershed pollutants of concern. The City intends to use the collected data to develop more effective outreach measures and to identify potential sources of watershed pollutants of concern. Inspectors also give businesses corrective actions based on the findings; implementing corrective actions should result in a reduction of pollutants discharged to the storm drain system.

TMDL APPLICABILITY

TMDLs for metals and diazinon have been adopted for the Chollas Creek subwatershed. The data collected as part of this watershed activity enables the City to identify and address potential sources of watershed priority pollutants, including metals and pesticides.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

- Permit Year 3: Assessment
- Permit Year 4: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to gain additional information about businesses' potential to contribute watershed pollutants of concern, including metals, pesticides, and bacteria.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is identifying potentially significant sources of these pollutants during its industrial and commercial storm water compliance inspection program. The City can use this information to target specific businesses and business types.

EFFECTIVENESS ASSESSMENT

This was the second year that the supplemental watershed questionnaire was used during industrial and commercial inspections. The City plans to use this collected data to compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach. It is anticipated that comparison assessments of both level Two (change in knowledge or awareness) and level Three (change in behavior) outcomes will be possible as future data is collected. When presented with the question about where water goes once it leaves the site, 14 percent of respondents in FY 2009 did not know and four percent thought that the water was directed to a treatment facility before being discharged to a water body. Only four percent of all respondents could correctly identify that their site was located within the San Diego Bay Watershed.

To conclude the survey, inspectors provided verbal explanations and education about storm water issues and BMPs to individuals that were unable to answer the survey questions correctly. The majority of facility personnel were receptive to storm water-related regulations.

MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECTS (SDB-012)

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the San Diego Bay Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities.

Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Diego Bay WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the San Diego Bay WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Southcrest Recreation Center was selected because it is located in one of the highest priority sectors of the San Diego Bay WMA for potential pollutant loading. The recreation center is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed five rain barrel systems at the recreation center. Two serially connected 75-gallon rain boxes were installed and connected to existing

downspouts at two locations along the main entrance side of the building. Each pair of rain boxes utilizes an automated timer and pump to release captured runoff to adjacent landscaping. The installation included re-opening the existing roof drains (which had been roofed over) and securing the systems with protective caging (to discourage vandalism).

Two Rain Boxes with Caging

In addition, one 75-gallon rain box and concrete planer system was installed and connected to existing downspouts at three locations along the back side of the building. Each system utilizes an automated timer and pump to release captured water from the rain barrel to a concrete planer. Concrete planters were used for these locations due to the unavailability of nearby pervious surfaces. As with the installations along the main entrance side of the building, these systems included the re-opening of roof drains and installation of security cages.

Rain Box and Planter with Caging

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer will be distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer will be posted on the City's *Think Blue* website during the first quarter of FY 2010.

This phase of the pilot project focuses on implementing and assessing the effectiveness of rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the pilot project will be applied to implementation in residential areas.

Based on these findings, the City of San Diego may modify its rain barrel/rain harvesting program to increase effectiveness and/or seek City Council approval for additional funding to implement additional rain barrel/rain harvesting systems.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring will be preformed from October 2009 to April 2010. Assessment and final reporting for this program will conclude by June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM Assess Efficiency and Effectiveness of Rain Barrel Water Collection Containers in Reducing Runoff		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems, particularly for metals and bacteria? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcomes	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of rain barrel systems	TBD
Recommended Data	• Cost of maintenance/upkeep (Outcome Level One) • Cost of implementation (Outcome Level One) • Volume of storm water captured/diverted (Outcome Level Four) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level Four) • Percent capture of the different systems (acres drained) (Outcome Level Four)	

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce stormwater runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Results and Analysis

The pilot project was not in active implementation during FY 2009. Further analysis will take place after wet-weather monitoring data is collected, which is scheduled for completion by April 2010.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the rain barrel system. Conclusions will be made after the effectiveness assessment is completed in June 2010. Any recommendations resulting from this pilot project will be reported in the FY 2010 WURMP Annual Report.

DALBERGIA STREET "GREEN MALL" INFILTRATION RETROFIT PROJECT (SDB-013)

ACTIVITY IMPLEMENTATION

The original concept for this project will remove conventional asphalt paving along Dalbergia Street and Thor Street (industrial/commercial area) and replace it with pervious concrete paving. In addition, the existing curb and gutter along portions of Dalbergia Street will be moved 12 feet into the right of way, and, in between the existing and new curb lines, bioretention planter boxes will be placed and filled with crushed rock. Both the pervious concrete and bio-retention planter boxes will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters. The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Green Mall" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay Watershed Management Area (WMA) to comply with both Municipal Permit and TMDL requirements.

In April 2009, contaminated soils were discovered in future infiltration areas. As such, a new location near Dalbergia Street and Vesta Street was chosen for the project. In June 2009, the second site also showed signs of contaminated soils in areas to be used for infiltration. The process of picking a third site is underway.

This project was one of two City of San Diego projects approved as a Proposition 50-granted funded project in May 2008 via the San Diego Integrated Regional Water Management Plan. The work performed in FY 2008 included project advertisement, design consultant interviews, and design consultant selection.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The work performed in FY 2008 included advertising the project, interviewing design consultants, and approving the selection of the design consultant. The design consultant started work in FY 2009 only to find contaminated soil in infiltration areas. The consultant is in the process of picking an uncontaminated site in the same watershed to implement this concept. Design will take place in FY 2010 and FY 2011. Construction is anticipated to be complete in FY 2012. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
DALBERGIA STREET "GREEN MALL" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Malls in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)

Objectives

The goal of the assessment is to determine the effectiveness and efficiency of the Dalbergia Street Green Mall Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not possible at this time. Project design will continue in FY 2010.

Conclusions

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

SOUTHCREST PARK "GREEN LOT" INFILTRATION PROJECT (SDB-014)

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a below-grade storage and infiltration basin the grassy areas of Southcrest Park. Diversion structures will divert runoff from the existing storm drain system that runs through the parking area to the infiltration areas. The site design has incorporated various Low Impact Development (LID) approaches in an integrated manner. These approaches include replacing existing asphalt roads and parking lot with porous pavement as well as rain barrels and planters to collect roof drainage. This site was selected for its likely higher permeability soils and location next to the creek. Infiltration from the underground units will seep into the creek and will not impact down-gradient structures.

The project will be designed according to the integrated approach outlined in the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (November 2007) of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, help meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA). The City of San Diego has named this model approach for LID as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Preliminary engineering is expected to be completed in November 2009. The planned implementation date is FY 2012 to 2013. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
SOUTHCREST PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt, underground storm water storage vaults, and rain barrels? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)

Objectives

The goal of the assessment is to determine the efficiency of the Southcrest Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not feasible at this time. Project design will continue in FY 2010.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time. The planned implementation date is FY 2012 to 2013. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

MEMORIAL PARK "GREEN LOT" INFILTRATION PROJECT (SDB-015)

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a large underground chamber to collect and then slowly infiltrate urban runoff into the underlying subsoils. This underground system will be located within Memorial Park, thereby transforming the recreational facility into a dual-use site for both urban runoff pollution reduction and recreation. The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA). The City has named this model approach for Low Impact Development (LID) as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar Low Impact Development (LID) projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006 and was completed in September 2007. Design started in September 2007 and is expected to finish in FY 2010. Construction is anticipated to begin in April 2010 and finish in October 2010. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
MEMORIAL PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt and underground storm water storage vaults? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Data Recorded	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)

Objectives

The goal of the assessment is to determine the efficiency of the Memorial Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not feasible at this time. Project design will continue in FY 2010.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

ENHANCED DRY WEATHER MONITORING PROGRAM (SDB-020)

ACTIVITY IMPLEMENTATION

The Airport Authority continues to conduct dry weather monitoring at a frequency that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Dry Weather Monitoring Program is to identify sources of stormwater pollution in the watershed. The Airport Authority first began to implement this enhanced program in FY 2005-06 by increasing the frequency of dry weather monitoring from the Permit requirement of once per dry weather season to at least three times during the dry weather season. The increased frequency increases the chances that illegal discharges and their sources might be identified, which in turn helps to reduce pollutant loading to the watershed and San Diego Bay. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

Information collected by the Enhanced Dry Weather Monitoring Program will also be used to characterize dry weather discharge water quality in general and to influence and assess ongoing watershed management and planning activities. The elimination of illegal discharges generally requires that dischargers gain some awareness of stormwater pollution prevention and understanding of proper BMP implementation. By changing the way in which dischargers implement BMPs, this program results in a level Three Outcome. The program may also be able to estimate the pollutant loads eliminated and thus no longer impacting stormwater discharge quality, which is a level Four Outcome.

The Airport Authority intends to track the number of dry weather monitoring events conducted in excess of the minimum number required by the Municipal Permit, and the number of illegal discharges identified. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the pollutant load abated using the known pollutant discharge concentrations and estimating the discharge duration. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

The Enhanced Dry Weather Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it helps to identify and eliminate sources of illegal discharges in the watershed. Identification and elimination of illegal discharges within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of

one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Dry Weather Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, copper, and other pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Dry Weather Monitoring Program will help to identify and eliminate sources of stormwater pollution in the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Dry Weather Monitoring Program intends to identify and eliminate sources of illegal discharges and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, pesticides, sediment, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of pollutant sources, including these high priority pollutants.

EFFECTIVENESS ASSESSMENT

During the 2009 dry weather monitoring season, the Authority conducted three monitoring events as part of the enhanced dry weather monitoring program. The dry weather monitoring was conducted three times more frequently than required by the Municipal Permit. Since no illegal discharges were identified during the 2009 dry season reporting period, there are no discharge durations to associate with pollutant discharge concentrations, and thus, no estimate

of a load reduction can be made. Conversely, since no illegal discharges were identified, it is assumed there was no increase in pollutant loading to the watershed and/or San Diego Bay.

COORDINATED DRY WEATHER MONITORING PROGRAM (SDB-021)

ACTIVITY SUMMARY

Each Copermittee is required to implement a Jurisdictional Dry Weather Monitoring (DWM) Program as part of the Illicit Discharge Detection and Elimination Component of the Municipal Storm Water Permit (Order No. 2007-0001). Each Copermittee has developed and implemented a DWM program as required by the Permit but due to logistical constraints, site monitoring and sample collection within each jurisdiction often are conducted independent of other jurisdictions. The San Diego Bay Copermittees recognize that coordinated DWM efforts could be more effective because illicit discharges may cross jurisdictional boundaries. Since 2004, San Diego Bay Copermittees have made efforts to coordinate their individual jurisdictional DWM sampling efforts for select locations and dates.

The Port of San Diego, the Airport Authority, and the City of San Diego continued to coordinate dry weather sampling activities within 908.2 HA during the 2009 dry weather monitoring season (May 1 to September 30). By simultaneously monitoring at the outfalls (Port jurisdiction) and at sites upstream (Airport Authority and City of San Diego jurisdictions), the Copermittees intend to identify potential illicit discharges and facilitate upstream source identification. The City of San Diego coordinated monitoring with Port of San Diego and the Airport Authority on 05/27/09. Coordinated dry weather monitoring between the Port of San Diego and the Airport Authority occurred on 06/25/09, and 07/23/09. The coordinated sampling sites are shown in Figures E-3 through E-5.

Figure E-3. Coordinated Dry Weather Monitoring System One Sites.

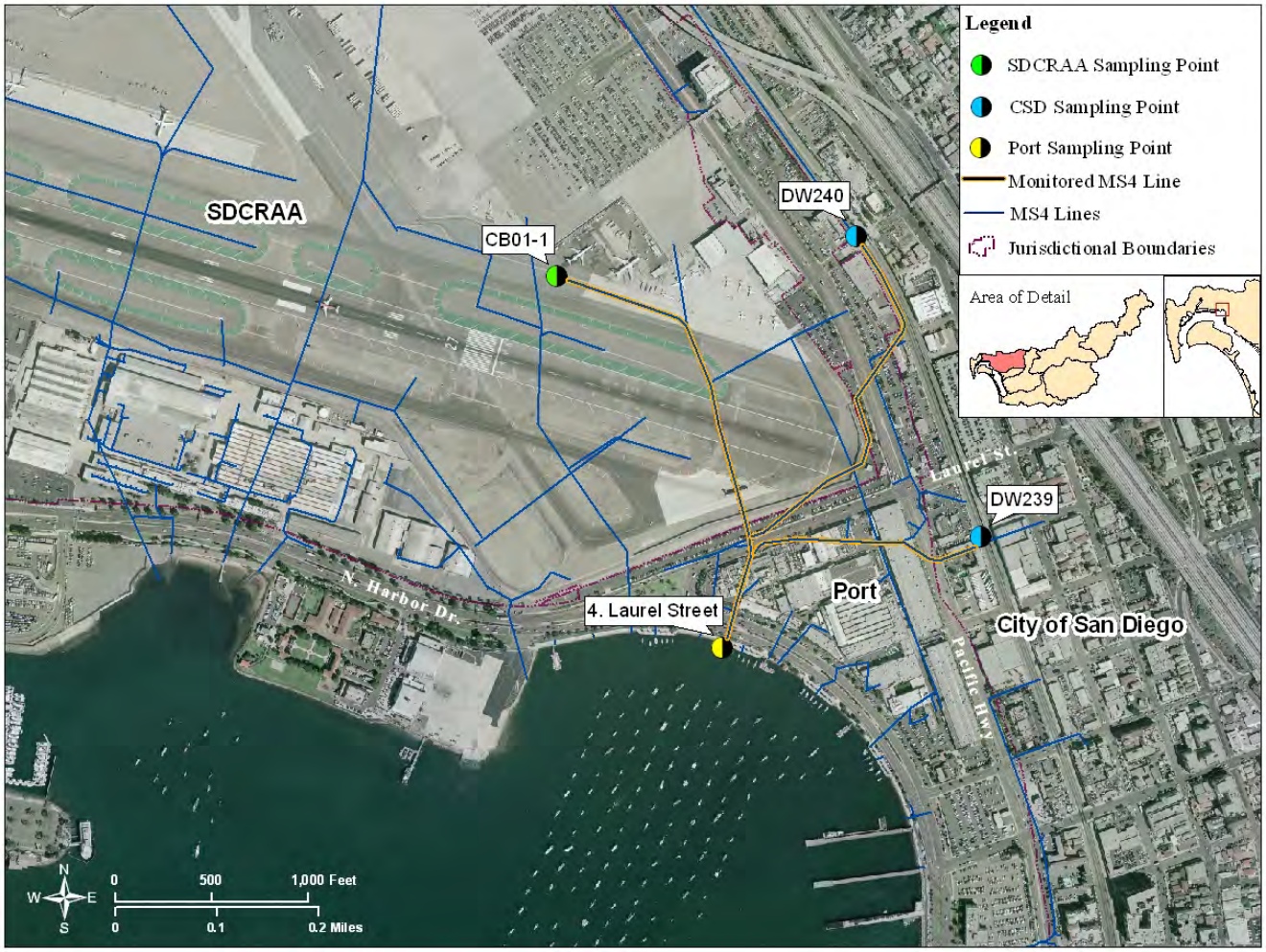

Figure E-4. Coordinated Dry Weather Monitoring System Two Sites.

Figure E-5. Coordinated Dry Weather Monitoring System Three Sites.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The coordination of DWM programs is considered a beneficial water quality activity in the San Diego Bay WMA because it will potentially identify sources of discharges and provides comprehensive detection, analysis, and investigation of pollutant discharges at a watershed level. Current jurisdictional DWM programs are effectively identifying and eliminating illicit discharges. When discharges cross jurisdictional boundaries, however, the follow-up investigation is passed from one jurisdiction to another, creating a potential lag time in the response. Coordinated efforts increase the efficiency and effectiveness of jurisdictional programs and allow analysis at a watershed level.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- Airport Authority
- City of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Nutrients
- Pesticides
- Metals
- Trash
- Bacteria

EFFECTIVENESS ASSESSMENT

Sampling was coordinated on 3 different dates, for 3 exclusive drain systems during the 2009 DWM season as described below.

System 1

The City of San Diego collected samples from flowing (DW239) or ponded (DW240) water for field and laboratory analyses on 05/27/09. The sites monitored by the City of San Diego were located on Palm (DW240) and Laurel (DW239) Streets near where they intersect California Street.

The site monitored by the Airport Authority was adjacent to the runway within the airport property (CB01-1). The Airport Authority collected samples from ponded water for field analysis on all three sampling dates. Laboratory analysis was completed for samples collected on 06/25/09 and 07/23/09.

The Port of San Diego monitored an outfall downstream of the Airport Authority's and City of San Diego's sampling sites. The Port of San Diego's sampling site was near the intersection of Harbor Drive and Laurel Street alongside the San Diego Bay (4. Laurel Street). The Port of San Diego collected samples from flowing water for field and laboratory analyses on 05/27/09 and 06/25/09, while field analysis was completed for samples collected on 07/23/09.

There was no evidence of illegal discharge in the vicinity of the monitoring sites where samples were collected. Constituents with action level exceedances during the coordinated sampling are shown in Table E-6. The conductivity and MBAS exceedances were determined to be the result of receding tidal water.

Table E-6. Constituents with Action Level Exceedances During Coordinated Sampling.

Copermittees	Site ID	05/27/09	06/25/09	07/23/09
City of San Diego*	DW240	Copper Total Coliform *Enterococcus*	NS	NS
	DW239	Total Coliform *Enterococcus*	NS	NS
Airport Authority	CB01-1	No exceedance	Ammonia MBAS Copper	Ammonia MBAS Copper
Port of San Diego	4. Laurel Street	Conductivity MBAS	Conductivity MBAS *Enterococcus*	No exceedance

NS – Site was not monitored by the City of San Diego in coordination with other Copermittees

* City of San Diego nutrient data was lost due to lab accident

System 2

The City of San Diego and the Port of San Diego monitored an additional coordinated site on 05/27/09. The City of San Diego's site is located on L Street near 5th Avenue (DW213). The City of San Diego was unable to collect samples for field or laboratory analyses due to dry conditions. The Port of San Diego's sampling site drains into the Marriott Marina, near the

entrance to South Embarcadero Park (CSD 213). The Port of San Diego collected samples from ponded water for field analysis. Constituents with action level exceedances during the coordinated sampling effort are shown in Table E-7. The exceedances were determined by the Port of San Diego to be the result of receding tidal water.

Table E-7. Constituents with Action Level Exceedances during Coordinated Sampling Effort.

Copermittees	Site ID	05/27/09
City of San Diego	DW213	Dry
Port of San Diego	CSD 213	Conductivity MBAS

System 3

The City of San Diego and the Port of San Diego monitored an additional coordinated site on 05/27/09. The City of San Diego's site is located near the intersection of Rosecrans and Upshurs Streets (DW432). The City of San Diego collected flowing water samples for field and laboratory analyses.

The Port of San Diego's sampling site drains into the Shelter Island Yacht Basin, at the foot of Talbot Street, and was monitored by the Port of San Diego as part of the Regional Targeted MS4 Outfall Monitoring Program. The Port of San Diego collected flowing water samples for field and laboratory analyses. Constituents with action level exceedances during the coordinated sampling effort are shown in Table E-8.

Table E-8. Constituents with Action Level Exceedances during Coordinated Sampling Effort.

Copermittees	Site ID	05/27/09
City of San Diego*	DW432	Total coliform Fecal coliform
Port of San Diego	CSD 145	No exceedance

* City of San Diego nutrient data was lost due to lab accident

Conclusions

Despite success in coordinating the monitoring efforts, a correlation between the Airport Authority, the City of San Diego, and the Port of San Diego's dry weather results cannot be made for 2009. Constituent exceedances on each sampling date did not exhibit a discernable pattern between the upstream and outfall monitoring sites. Often, sites were resampled and found to be within acceptable limits. Furthermore, the copermittees were unable to identify potential sources of the exceedances. With many of the MS4 lines crossing jurisdictional

boundaries, the coordinating DW monitoring is believed to be beneficial in the effort to identify and investigate exceedances which may occur along shared lines.

The Airport Authority, the City of San Diego, and the Port of San Diego will assess and modify the monitoring site locations as needed to improve the coordinated dry weather monitoring program for the 2010 dry weather monitoring season. Coordinated follow-up investigations will also be considered for the 2010 dry weather monitoring season to increase the effectiveness of identifying potential sources of high priority pollutants.

LA MESA ADDITIONAL WATER QUALITY MONITORING PROGRAM (SBD-022)

ACTIVITY IMPLEMENTATION

To more effectively characterize source of pollutants, the City of La Mesa (City) has conducted additional water quality monitoring within the San Diego Bay Watershed. Four Wet Weather discharge locations in the University Drainage Basin, which eventually drains to Chollas Creek, were identified as sampling points for time-weighted composite samples. In previous years additional sampling was done at these sites during dry weather conditions. In 2008, two of these sites were added to the City's dry weather monitoring program to ensure that dry weather data will also be collected each year. Samples taken from these sites during wet and dry weather conditions are analyzed for watershed constituents of concern. The City intends to use the data to identify exceedances and to identify potential pollutant sources.

TMDL APPLICABILITY

Monitoring is conducted in support of California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). Wet weather monitoring data and dry weather sampling results support identifying exceedances in pollutant loading for dissolved copper, lead, zinc, and diazinon. Furthermore, data enables the City to identify potential sources and conduct targeted educational outreach.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4 : Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Monitoring program enables the City to collect data on the high priority pollutants in the watershed, particularly metals, sediment, bacteria, and pesticides. The City intends to use the collected data to identify pollutant sources and to target education and best management practice implementation efforts.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is monitoring for these constituents in order to identify sources of potential pollutants/exceedances. Once identified, the City can take the appropriate action. This monitoring activity supports the Watershed Strategy by identifying priority pollutant sources; the City can then use this information to target activities.

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Monitoring is not considered a watershed water quality activity based on the Municipal Permit Order R9-2007-001 definition; however, data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

BMP EFFECTIVENESS MONITORING PROGRAM (SDB-023)

ACTIVITY IMPLEMENTATION

The Airport Authority continues to collect rain event runoff samples to monitor the performance of both structural and non-structural, discrete and combination BMPs. The long-range goal of the BMP Effectiveness Monitoring Program is to improve the water quality of stormwater runoff from the airport into San Diego Bay. The BMP Effectiveness Monitoring Program will assess whether the BMPs being implemented are able to reduce concentrations of, primarily, copper and zinc in stormwater runoff from the airport. Based on a power analysis of ten years of existing airport runoff water quality data, a minimum number of samples required to allow an effectiveness comparison has been identified. The program allows three years to calibrate paired watershed sampling, followed by three years of sampling to make an initial assessment of BMP effectiveness. To confidently establish a downward trend, at trend analysis monitoring station has been established to allow for a minimum of ten years sampling. The Airport Authority has sampled the stormwater runoff from six storm events per year since the 2006-2007 rainy season.

Information gained through the BMP Effectiveness Monitoring Program can aid ongoing watershed management and planning activities. The identification of effective BMPs will generally increase understanding of proper BMP selection. By changing discharger knowledge of BMPs, this program results in a level Two outcome. The program may also be able to estimate the pollutant loads eliminated by effective BMPs, which is a Level Four Outcome.

The Airport Authority intends to assess the performance of both structural and non-structural, discrete and combination BMPs, by tracking number and types of discrete and combination BMPs will be evaluated, along with the pollutant concentrations in stormwater runoff. Overtime, these data will provide an assessment of the effectiveness of the BMPs. In addition, the Airport Authority intends to estimate the pollutant load reductions resulting from the use of these BMPs. By tracking the cost of BMP implementation, the Airport Authority may be able to determine the cost-effectiveness of the BMPs.

The BMP Effectiveness Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it assesses the effectiveness of BMPs at reducing concentrations of metals in stormwater runoff in the watershed. Establishing the effectiveness of BMPs in reducing pollutant concentrations in runoff contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the

RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The BMP Effectiveness Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The BMP Effectiveness Monitoring Program intends to assess the effectiveness of BMPs at reducing concentrations of metals, primarily, in stormwater runoff thereby improve the quality of runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals as high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of BMPs effective at reducing metal pollutant loads.

EFFECTIVENESS ASSESSMENT

The 2008-2009 rainy season was the third year of monitoring. The runoff from six storm events was sampled. The 2008-2009 rainy season was the third and last season of the three-year calibration period and completes the baseline data collection phase of this program. As such, .the Authority will now begin to modify BMPs to begin monitoring effectiveness. While data on pollutant loads is also being collected currently, statistically valid estimates of total reductions will not be possible for several more years.

DRY WEATHER AERIAL DEPOSITION STUDY: PHASE II (SDB-024B)

ACTIVITY IMPLEMENTATION

Phase II of this study was intended to help the City of San Diego further its understanding of the contribution of metals from aerial deposition both within the San Diego Bay Watershed Management Area (WMA) and the La Jolla ASBS in the Mission Bay and La Jolla WMA. The study results will provide information related to potential sources and therefore represents a Tier II watershed activity identified in the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). The data will also provide supporting evidence for needed legislative measures, such as reduction of copper in the brake pad manufacturing process as part of the Tier I Product Substitution Watershed Activity.

Results and Findings

Dry Deposition Study

There was considerable variation in dry deposition rates of the main target elements across all sites, except for lead. Lead was rarely detected at most sites. However, lead was detected in 75% or more of samples at the Commercial Site in the Chollas Creek Watershed. Copper and zinc were measured at significantly higher levels at all inland sites compared with the reference sites (SIO Pier and Ref(1)) located along the coastline. Also, copper and zinc were detected in less than 75% of samples at the two reference sites.

Results indicate that the mouth of Chollas Creek (Chollas Mouth) had the highest median deposition rates of copper of all the sites in the Chollas Creek Watershed (37.6 $\mu g/m^2/day$). Statistical correlation analysis indicated that copper and zinc at the Chollas Mouth Site were highly correlated to northwest, north, northeast, and easterly wind directions which correspond to commercial, transportation, military, and industrial land uses.

Wet Deposition Study

Wet weather depositional monitoring occurred at Site SD8(1) in Chollas Creek. It is important to confirm previous studies (Sabin, 2005) that indicate the wet depositional load is generally less than 10% of the annual load in this study because of the low compliance levels in the Chollas Creek Watershed which are based on the California Toxics Rule (CTR). In this study, three storm sampling events were monitored.

Particle Solubility Study

Particle solubility was analyzed at one location in the Chollas Creek Watershed. Currently, there have been no known studies of atmospheric deposition. The City of San Diego will be able to determine the impact of aerial deposition in direct relation to the Chollas Creek dissolved metals TMDL and will have a better understanding of the characteristics of aerially deposited particles.

Three dry weather sampling events were monitored at Site SD8(1) concurrently with the dry deposition sampling events as a basis for comparison.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Data was collected from September 2007 through August 2008 within the City of San Diego. The monitoring program included an annual dry deposition study, a wet deposition study, and a particle solubility study.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (specifically Zinc / Copper / Lead)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify metals as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness of this activity is not being assessed since it is a source identification and characterization study. This study will contribute to filling in pollutant source data gaps as identified above to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

DRY WEATHER AERIAL DEPOSITION STUDY: PHASE III (SDB-024C)

ACTIVITY IMPLEMENTATION

Phase III of the City of San Diego's Aerial Deposition study presents the results and data analyses from this multi-media program and builds on the results of previous study phases. The study was conducted throughout the Chollas Creek Watershed to investigate the sources of copper, lead, and zinc that may contribute to receiving water quality impairments.

The objectives for this Phase III Study were as follows:

1. Create a geographic information system (GIS) database of existing watershed inspection, enforcement, and monitoring data.
2. Assess annual emissions data reported to the San Diego Air Pollution Control District (SDAPCD) from stationary emission sources near the mouth of Chollas Creek.
3. Identify potential sources of metals in the watershed based on facility characteristics and land use from the developed GIS database.
4. Verify potential sources of metals identified in the GIS database with field reconnaissance and dry weather surveys. Parcel-based evaluations included documenting facility construction type, outdoor metals storage, evidence of emissions sources, pavement staining indicating runoff of pollutants, and drainage direction and proximity to the nearest storm drain inputs.
5. Conduct wet weather first flush sampling at targeted storm drains from industrial and commercial land uses to verify if they are a high threat to water quality.
6. Compare aerial deposition results to runoff concentrations from residential drains in different priority sectors to determine if effects from facility emissions are evident.

Results and Findings

- Average annual aerial emissions of copper from four stationary facilities near the mouth of Chollas Creek are roughly five times higher than the average annual load discharged via storm water runoff. In contrast, lead and zinc emissions were only 1% and 24% of average annual discharge load.
- Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and resuspended dust) and localized parcel-based sources also play a role in metals deposition of lead and zinc in the watershed.
- Conservative estimates of street sweeping effectiveness in relation to the annual loads deposited from aerial deposition were less than 10% for copper and zinc, and less than 40% for lead. Street sweeping may be more effective for industrial and commercial

areas in Priority Sector One, but may have limited effectiveness for watershed wide metals loading from aerial deposition. Additionally, lead in soils from historical leaded gasoline use may continue to be a source of this metal from erosive soils in canyon areas.

- Samples collected from metal rooftops in poor condition (e.g. deteriorating or rust evident), identified through the GIS desktop exercise, were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Concentrations of copper and lead were relatively low from metal rooftop runoff, but increased in street level runoff suggesting aerial deposition or other parcel-based sources of copper and lead.
- Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area.
- Copper, lead, and zinc concentrations were higher in commercial and industrial land uses compared with residential land uses.
- Copper and zinc concentrations were significantly higher in Priority Sector One compared with other priority sectors. This supports the conclusion that emissions of copper and zinc from stationary facilities near the mouth of Chollas Creek likely contribute to aerial deposition and subsequent runoff of these metals.
- Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc.
- Field surveys suggested that several areas identified within the Chollas Creek Watershed actually drain to other watersheds in Priority Sector One and Priority Sector Two.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- This Phase III Study was conducted from January 2009 to May 2009 of FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (specifically Zinc / Copper / Lead)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify metals as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

An effectiveness assessment of this activity is not being conducted since it is a source identification and characterization study. This study will contribute to filling in pollutant source data gaps as identified above to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

REGIONAL HARBOR MONITORING PROGRAM (SDB-025)

ACTIVITY IMPLEMENTATION

In July 2003, the RWQCB, under §13225 of the California Water Code, requested the development of a coordinated and comprehensive harbor water quality monitoring program for harbors in the San Diego Region. San Diego Bay is one of the four harbors included in the Regional Harbor Monitoring Program (RHMP). The objectives of the RHMP are to:

1. Determine the contributions and spatial distributions of inputs of pollutants to harbors in the San Diego Region and how these inputs vary over time.
2. Determine whether the waters in harbors are safe for body contact activities.
3. Determine whether fish in harbors are safe to eat.
4. Determine whether the waters and sediments in the harbors sustain healthy biota.
5. Determine the long-term trends in water quality for each harbor.

The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay. The program includes monitoring for metals, bacteria, organic compounds, and toxicity and will improve assessments of the watershed priority pollutants and provide a program from which to assess overall water quality improvements. While this program does not specifically reduce loads of high priority pollutants, data collected will provide important information to the Copermittees on the ambient receiving water conditions.

The RHMP involves an ambient, or core, monitoring program to collect water and sediment samples in San Diego Bay and the other harbors to assess the overall condition of the harbors, with supplemental focused studies to answer specific questions. A key item in the program involves dividing the Bay into “stratified” regions to enhance data assessments and refine potential sources of pollutants. The delineation of the harbors allows for an assessment of pollutant sources and inputs based on activities within each stratum. Five strata were identified: marinas, industrial/port, freshwater influenced, shallow water, and deep water. All five strata are present in San Diego Bay. The RHMP core monitoring effort was coordinated with the Bight Regional Monitoring Program and was successfully completed in August 2008.

Focused studies will be used to further investigate and identify particular sources of pollutants and the impacts of pollutants on water quality and aquatic resources. The RHMP focused special studies will target copper in marinas over the next four years. The marina strata are often areas of impaired waters, such as the SIYB in San Diego Bay. The focused special studies will 1) assess the extent of copper contamination within marinas (2009), 2) identify causes of toxicity through toxicity identification evaluations (TIEs) in sediment and overlying water tests (2010), 3) conduct water effects ratio (WER) studies to determine the bioavailability and toxicity of copper and support the development of site-specific water quality objectives (SSOs) (2011), and 4) use laboratory and field studies to determine sediment copper flux

(2012). The core monitoring program will reoccur in coordination with the 2013 Bight Regional Monitoring Program.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- County of Orange
- City of Oceanside

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Copper
- Zinc
- Bacteria
- Pesticide
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The RHMP is considered a beneficial water quality activity in the San Diego Bay WMA because it will enable water quality improvements or degradations to be more readily identifiable. The

monitoring will also provide trend information by repeating at a specified frequency to obtain statistical trend data for the indicators. Furthermore, the RHMP is designed to integrate with existing monitoring that is regularly conducted in the region, including storm water monitoring, other permit compliance monitoring, regional Bight monitoring, special focused studies and is designed to integrate with the State's Surface Water Ambient Monitoring Program (SWAMP).

EFFECTIVENESS ASSESSMENT

1. The Port of San Diego and the City of San Diego, County of Orange and the City of Oceanside coordinated with the Bight 08 regional monitoring program to develop the core monitoring program for RHMP. The RHMP Core Monitoring sampling effort was completed in August 2008. The final report will be available in FY 10.
2. The core monitoring program design effort in FY 2009 included:
    - Water quality and sediment sampling and analysis completed at 60 monitoring locations throughout the San Diego Bay from five different strata: freshwater-influenced, marina, port, deep water, and shallow water
    - Analysis of a wide array of constituents, including bacteria, metals, PAHs, and pesticides.
    - Preliminary core monitoring results and proposed focused studies were presented to RWQCB staff in May 2009.
    - Final core monitoring results specific to San Diego Bay will be assessed over the next reporting period.

CHOLLAS CREEK DESIGN STORM STUDY AND SEDIMENT AND BACTERIA RELATIONSHIP SOURCE STUDY (SDB-026)

ACTIVITY IMPLEMENTATION

Water quality monitoring data collected in Chollas Creek has resulted in the listing of creek segments on the 2006 Clean Water Act (CWA) Section 303(d) list of impaired water bodies. Based on the Basin Plan 2006 SWRCB 303(d) listings, four total maximum daily loads (TMDLs) have been adopted for Chollas Creek: a Diazinon TMDL and three dissolved metals TMDLs for copper, lead, and zinc. In addition, a draft TMDL for indicator bacteria is currently being revised.

As part of the Implementation Plan for the Dissolved Metals TMDL, a design storm assessment was conducted in FY 2009 using monitoring sites from three watersheds: Tecolote Creek, La Jolla Shores, and Chollas Creek. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm. To gather this data, discrete grab samples were collected and analyzed at two sites in Chollas Creek (SD 8(1) and DPR2) over the course of a storm event (i.e., a pollutograph).

Key findings from the study include that bacteria concentrations are relatively unaffected by fluctuations in the storm hydrograph. Also, dissolved metals tend to decrease as the hydrograph rises and increase as the hydrograph decreases. Total Suspended Solids (TSS) levels tend to closely follow the rises and falls of the hydrograph. Lastly, the majority of the mass for copper, lead and zinc is associated with the particles smaller that 35 microns (clay and silt size fraction).

The report also recommends that treatment BMPs should only be implemented to both the overall extent (in terms of total magnitude of implementation), and geospatial extent where Tier I and Tier II BMPs do not meet the compliance standards or reach a diminishing return with regard to incremental pollutant reduction vs. cost of that reduction. In terms of implementation, this means that:

- Overall BMP implementation is a tiered approach, where the City will attempt to meet compliance standards through implementation of more cost effective pollution prevention and source controls (Tier I and Tier II). The treatment BMP approaches (Tier III) will be used to the extent that compliance is not anticipated to be achieved through Tier I and Tier II watershed activities alone due either to reaching the pollution reduction capability or cost efficiency of the suite of these type of BMPs.
- Because pollutant sources are not evenly distributed throughout the City, the City may choose to use Tier III treatment BMPs in higher polluting areas (in addition to

implementing Tier I and Tier II BMPs), while relying only on Tier I and Tier II BMPs in other areas.

It is suggested that further assessment of the anticipated and necessary efficiency of Tier II and III BMPs be conducted using the available baseline data presented in the Study report. The results of the preliminary evaluation show that the required level of treatment or the most cost effective combination of tiered BMPs to achieve the pollutant reduction goals will be specific to each location. Additionally, the results show that where high efficiency levels such as infiltration are not achieved by Tier II and III BMPs, a more integrated approach using more cost effective Tier I source controls and pollution prevention BMPs is needed. Furthermore, as greater efficiency is needed to meet aggressive pollutant removals under TMDLs, cost efficiency analysis is likely to play a larger role in determining the solutions to achieve the remaining load reductions. These cost efficiency analyses may lead to consideration of less traditional approaches such as water harvesting and use, hardness adjustment to meet metals WQO, and development of receiving water specific objectives.

The recommendations presented in the Study report focused on the Design Storm provided a target storm volume or flow rate for which BMPs are designed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Chollas Creek Design Storm Study was completed in FY 2009; however due to budget constraints, the sediment and bacteria relationship component has been postponed. Design storm recommendations will be used on future structural BMPs as applicable.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacterial
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them.

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). This study will address several of the Priority Water Quality Problems (PWQP) identified for Chollas Creek in the Strategic Plan, including bacteria, heavy metals, pesticides, and sediments. It will also help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the PWQP. According to the Strategic Plan, the study is a Tier II BMP, which will provide information for the development of a design storm for Tier III BMP development.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS CREEK DESIGN STORM STUDY AND SEDIMENT AND BACTERIA RELATIONSHIP SOURCE STUDY **Identify Appropriate Design Storm to Use for Project Design and Characterize Transport Relationship Between Bacteria and Sediment**	
Expected Outcomes	• Findings are presented in the report and summarized above.

Assessment of this activity is not being conducted since it is a bacteria and sediment relationship characterization study and a design storm identification study. This study will contribute to filling in data gaps to better design and focus future load reduction and source abatement activities. It is anticipated that the recommendations and outcomes of the study will assist in making BMPs efficient. Future activities implemented will be reported as separate activities.

CHOLLAS CREEK BENEFICIAL USE DESIGNATION ATTAINABILITY STUDY AND MOUTH OF CHOLLAS CREEK BACTERIAL SOURCE IDENTIFICATION STUDY (SDB-027)

ACTIVITY IMPLEMENTATION

The purpose of this study was to identify the sources of indicator bacteria that impact the Chollas Creek tidal prism (that area influenced by the maximal extent of the tide) during dry weather. The study is in alignment with the Integrated Watershed Approach presented in the City of San Diego's *Strategic Plan for Watershed Activity* (Strategic Plan). It addresses indicator bacteria, which is identified as a priority water quality problem (PWQP) for Chollas Creek in the Strategic Plan, and will help to fill data gaps identified in the Strategic Plan, which include investigating anthropogenic sources of bacteria and verifying priority sectors based on estimated pollutant loading through subwatershed sampling. According to the Strategic Plan, this study is a Tier II best management practice (BMP), which will provide information on the sources of indicator bacteria within the Chollas Creek tidal prism.

Results and Findings

Three surveys were conducted in the mouth of Chollas Creek during FY 2009 in September and October of 2008. During each survey, samples were collected from the Chollas Creek receiving waters and any suspected sources of indicator bacteria, such as urban runoff conveyed to the creek via storm drains.

1. During dry weather, there is no hydrologic connection between the mouth of Chollas Creek (the area influenced by tidal action) and the upstream drainage. Thus, bacteria found in the receiving waters of the creek mouth originate from sources that discharge directly to the mouth (i.e., storm drains).
2. In three surveys, 17 storm drains were identified that terminate in the creek mouth. Of these, evidence of flow was apparent in only four: one in the main stem near Main Street, one in the south fork associated with the Interstate 5 off ramp, and two in the north fork near the National Avenue Bridge.
3. The highest bacterial concentrations were associated with the two storm drains near the National Avenue Bridge. Concentrations of indicator bacteria associated with the other identified storm drains were lower, but still contributed to elevated concentrations in the receiving water in the south fork and main stem, respectively.
4. Two sources of flow that contributed to the high bacterial concentrations were identified as follows:
    a. Over-irrigation of landscaping at the strip mall located at National Avenue and 35th Street.
    b. A freshwater slough adjacent to a freeway off ramp that periodically discharges to a storm drain in the south fork of the creek.

5. Scour ponds associated with the storm drains provide depressions within the streambed where high levels of indicator bacteria originating from the surrounding subdrainage can be maintained. As the tide rises and falls, it maintains a reservoir of brackish water (mixture of fresh and saltwater) in the scour ponds and carries bacteria from ponds to other areas within the tidal prism. In this way, the scour ponds serve as a point of inoculation for the mouth of Chollas Creek.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Bacterial Source Identification Study at the mouth of Chollas Creek was completed in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this is neither an implementation nor education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

Watershed: San Diego Bay	
CHOLLAS CREEK BENEFICIAL USE DESIGNATION (UAA) STUDY / MOUTH OF CHOLLAS CREEK BACTERIA SOURCE IDENTIFICATION STUDY **Identify Sources of Bacteria at Mouth of Chollas Creek**	
Expected Outcome	• Findings to be presented in final report anticipated to be released in FY 2010

Assessment of this activity is not being conducted since it is a bacteria source identification study. This study will contribute to filling in data gaps to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

UPDATE RECYCLING AND SOLID WASTE PLANNING MANUAL (SDB-035)

ACTIVITY IMPLEMENTATION

In order to address contributions of pollutants, particularly bacteria, from trash and recycling areas from new multi-family residential and commercial land uses, the City of Chula Vista (City) updated the design requirements in its Recycling and Solid Waste Planning Manual. The City requires that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rainwater from entering the trash areas, as well as eliminate pollutant runoff from these areas.

During the last reporting period, City Storm Water Management Section staff worked closely with the Environmental Services staff to update the manual in order to include this requirement for new development and redevelopment projects with trash enclosures. The updated manual was planned for presentation to City Council in the fall of 2008. Subsequently, in September 2008, City Council approved the updated manual and it became a part of Chula Vista Municipal Code. The Environmental Services Department reviews all projects that are subject to these requirements and ensures that these structures are built.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash and recycling areas have the potential to contribute a number of pollutants to storm water runoff, namely bacteria, nutrients, and trash. By building trash enclosures to prevent the contact of storm water with trash, the City aims to reduce the amount of pollutants that could be washed into the storm drain system from trash areas during a rain event.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Updating the Recycling and Solid Waste Planning Manual in the City of Chula Vista aims to improve the quality of runoff that enters the storm drain system and eventually San Diego Bay. It intends to reduce high priority pollutants such as bacteria, trash, and nutrients from entering the storm drain system. Bacteria is a high priority pollutant throughout San Diego County and the San Diego Bay watershed. This effort seeks to reduce pollutant sources from trash areas as a source abatement measure.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity will be assessed through levels Three and Four. BMP implementation and pollutant load reductions will be assessed by tracking the number of trash enclosures constructed with the new design criteria within the City. Also, estimations can be made about the amount of trash generated per person based on the number of dwellings within a project. The estimated amount of trash that could have possibly come in contact with storm water before the updates to the manual will be assessed as a load reduction.

During this reporting year, there was a significant decrease in development projects coming to the City for review. In the coming years, it is anticipated that development will pick up and there will be more projects that will be subject to these requirements. These projects will be tracked and the number of trash enclosures built will be assessed as a load reduction of bacteria to the storm.

43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION (SDB-037)

ACTIVITY IMPLEMENTATION

The 43rd Street and Logan Avenue Biofiltration Project will consist of two main low impact development (LID) features: filtration planters along the curbside of 43rd Street and Logan Avenue and biofiltration basins on the undeveloped and vacant northwest corner lot at 43rd Street and Logan. Storm water runoff will be diverted from adjacent streets to the two LID features. The water will flow through a vegetated soil layer (three to four feet thick) for natural removal of pollutants with a projected 70% to 80% removal efficiency.

This project is a roadway realignment project that the Right of Way Division of the Engineering and Capital Projects Department. Project design was complete in FY 2009. This Tier II project (according to the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan)) will be implemented to achieve a high level of effectiveness in reducing pollutant loads. This project will address metals and bacteria in line with the City of San Diego's Strategic Plan.

A grant deed is being processed under an agreement with the San Diego Community College District which transfers the lands but allows the biofiltration basin to remain under the City control as drainage infrastructure within an easement.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project design was completed in FY 2009. The date for construction start is dependent on the schedule of the roadway realignment project, which is scheduled to begin in FY 2010, but must first go through a competitive bid process. Water quality monitoring was conducted to assess pre-project pollutant loads. Post-construction monitoring is planned for the rainy season that follows project construction.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via biofiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION **Assess Effectiveness and Efficiency of Filtration Planters and Biofiltration Basins**		
Management Questions	• How much load reduction can be achieved using filtration planters and biofiltration basins? • How much reduction in runoff volume can be achieved using filtration planters and biofiltration basins? • How efficient are planters and basins in reducing pollutant loads?	
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality	
Assessment Methods	• Inspections (e.g., ensure planters and basins working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)	
Data Recorded	Estimated construction cost (Outcome Level One)	$600,000
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)	

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of filtration planters and biofiltration basins in reducing bacteria and dissolved metals pollutant loading relative to other BMPs.

Results and Analysis

Project design is completed and construction is anticipated to start in late FY 2010. Pre-construction monitoring has been conducted and post-construction monitoring is scheduled to occur. Analysis will be completed once the post-construction monitoring occurs.

Conclusions

No conclusions are available at this time. Project design is completed and construction is anticipated to start in late FY 2010. Pollutant loading reduction and water quality monitoring results are anticipated to be available in late FY 2010. Monitoring data will be used to assess the effectiveness and efficiency of this project in reducing runoff volume and pollutant loading and improving discharge quality.

CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION (SDB-038)

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table E-9. Conceptual Projects.

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Irrigation Hardware Giveaway and Cash for Plants Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning. Implementation and assessment is anticipated to be completed in FY2013. WMA: TBD.
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash	Pre-planning
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals	Sponsorship of the Brake Pad Partnership is in progress.
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment	Cancelled
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available

data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the San Diego Bay WURMP Annual Report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

LAND ACQUISITIONS SAN DIEGO BAY WATERSHED (909.1, 909.2, 909.3, 910.2, 910.3) (SDB-046)

ACTIVITY IMPLEMENTATION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY 2008 reporting period there was 0.84 acres of land acquired in the San Diego Bay WMA.

During the FY 2009 reporting period the MSCP acquired 385.38 acres of property located in the San Diego Bay WMA. The current acquisitions are shown in Table E-10.

Table E-10. MSCP Current Acquisitions.

Property	Acres	Date	Watershed ID	APN(S)
US Fish & Wildlife Service	42.72	6/11/2007	909.21	517-030-13
US Fish & Wildlife Service	38.93	6/11/2007	909.21	517-030-15
State of California	303.72	3/15/2007	910.36	600-030-04, 600-031-03
TOTAL	**385.38**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

During the FY 2009 reporting period the MSCP acquired 385.38 acres of property located in Middle Sweetwater HA (909.2) and Dulzura HA (910.3) in the San Diego Bay WMA.

LARGE SPECIAL EVENT INSPECTION AND CLEAN-UP (SDB-047)

ACTIVITY IMPLEMENTATION

The City of Imperial Beach (City) hosts the annual U.S. Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food venders, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street venders for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition.

Expected benefits of enhancing large special event clean up and inspections include compliance with permit requirements, changes in attitudes, knowledge, and awareness of mobile businesses and local community, and reductions in urban runoff and discharge quality by enhancing recycling efforts and implementing storm water BMPs. This activity serves as both an education and water quality activity. Enhancing recycling efforts, increasing education on urban runoff, and verifying the implementation of BMPs through inspections may lead to lower levels of bacteria and trash reaching the storm drain system.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the San Diego Bay. However, the 2006 CWA Section 303d list of impaired water bodies identifies multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation of the activity has begun under the previous storm water permit R9-2001-0001 and since been reviewed and enhanced for the new R9-2007-0001 permit. The City endeavors to increase recycling and urban runoff education targeted at both street venders and general public at large special events. During the previous two years the activity was in active implementation phase. Starting during year three, the activity will be assessed and refined as necessary to maximize the effectiveness.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the San Diego Bay. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors during large special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENTS

The effectiveness of this project meets the requirements of Outcome Level One, Level Two, Level Three, and Level Four compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2009, the City required the proper disposal of recycled waste at all large special events and the implementation of storm water BMPs when appropriate. The City held 12 large special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition, which during the weekend of July 12th-13th drew an estimated crowd of over 800,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event to ensure the implementation of the BMPs. Most street venders were aware of the storm water requirements and were implementing proper storm water BMPs. Vendors not implementing proper BMPs were cited and provided further information to correct behavior. Over the weekend three Notices of Violations (NOVs) were issued.

The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event. The recycling efforts resulted in a total of 1,280 pounds of mixed recyclables and 960 pounds of cardboard being recycled.

As a result of the effectiveness assessment of this activity, the City recognizes a deficiency in education opportunities for the general public. Future efforts will continue implementing the existing large special event clean up and inspection activities while continuing to enhance the opportunities for education, especially for the general public. Program effectiveness for

targeting water quality is expected to continually improve as special event applicants and vendors become familiar with City storm water and recycling programs.

OUTDOOR SPECIAL EVENT OVERSIGHT (SDB-048)

ACTIVITY IMPLEMENTATION

The Airport Authority oversees the manner in which outdoor special events are set up, conducted, and cleaned. The goal of the Outdoor Special Event Oversight Program is to abate the amount of trash and debris potentially released to the watershed from these events. Staff from the Airport Authority Environmental Affairs Department attend pre-event meetings and/or conduct a pre-event site inspection to ensure that there are an adequate number of recycling containers and trash cans properly located at the venue. The site is also inspected immediately after the event is over to ensure that trash and debris have been properly disposed. The meetings and inspections are used as an opportunity to focus on stormwater pollution prevention in general and properly controlling sources of trash to the storm drain system.

In addition to establishing pre- and post-event inspection activities, the program also increases interaction with event planning and execution staff while on-site. Heightened awareness of proper trash management and source control BMP implementation increases the likelihood of trash control BMP effectiveness, which in turn helps to abate the amount of trash loading to the San Diego Bay watershed. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of trash control BMPs. By changing the way in which individuals implement BMPs, this program results in a Level Three Outcome. The program may also estimate the amount of trash abated from impacting stormwater discharge quality, which would be a Level Four Outcome.

The Airport Authority tracks the number of outdoor special events that occur, the number of pre-event meetings attended, the number of pre- and post-event site inspections conducted, and the number of trash source control BMP issues identified during the inspections. Over time, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual trash pollutant load abated by 1) estimating, based on review of the literature and/or other sources, trash loads per event when trash management controls are not implemented, and 2) tracking the number of trash control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

The Outdoor Special Event Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates the trash potentially generated from these events from entering in the watershed. Abatement of trash within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations

near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Outdoor Special Events Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of trash as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Outdoor Special Event Oversight Program intends to abate trash associated with special events and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies trash as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS ASSESSMENT

During FY 2009 the Airport Authority conducted outdoor special event oversight for one event, the Rock and Roll Marathon. One pre-event meeting was attended, one pre-event inspection was conducted and two post event inspections were conducted. No issues related to improper trash source control BMP implementation were identified during the pre or post-event inspections. Literature searches are still being conducted. The Airport Authority has not yet drawn any conclusions on the effectiveness of this program since this was the first year of

implementation of this program, only one special event occurred during the year, and the literature search estimating trash loads per outdoor special event are still being evaluated. An assessment of program effectiveness will be possible once more data have been compiled.

MAPLE STREET CANYON WATER QUALITY IMPROVEMENT PROJECT (SDB-049)

ACTIVITY IMPLEMENTATION

The Maple Street Canyon has a tributary watershed of approximately 90 acres. The watershed is generally located between Walnut Street to the north, Maple Street to the south, 6th Av to the east, and Curlew Street to the west. This project focuses on significantly reducing sediment migration due to highly erosive conditions through channel stabilization and upgrades to the existing basin outfall, and reducing pollutant loading from urban runoff through natural treatment systems, Low Impact Development (LID) Best Management Practices (BMPs), and gross solids removal in the mesas at three of the outfalls.

The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, pesticides and sediment. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA.) The City has named this model approach for LID as "Sustainable Canyons" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2008. Design and award of contract are anticipated to occur in FY 2012. Construction is anticipated to occur from February through October 2012. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
MAPLE STREET CANYON PROJECT Assess Efficiency and Effectiveness of Storm Drain Filter Inserts in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved by retrofitting storm drains with filter inserts? • How efficient are filter inserts in reducing pollutant loads? • What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure filter inserts working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality (Outcome Level Five)

Objectives

The goal of the assessment is to determine the load reduction effectiveness and efficiency of integrated approach of LID.

Results and Analysis

This activity was in the planning phase and not in active implementation in FY 2009. Therefore, assessment is not feasible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

CHOLLAS CREEK RUNOFF REDUCTION AND GROUNDWATER RECHARGE PROJECT (SDB-050)

ACTIVITY IMPLEMENTATION

This project is designed to reduce runoff from three existing County of San Diego facilities within the Pueblo San Diego Watershed (HA 908.2). Currently, these three facilities are highly impervious. The purpose of this activity is to retrofit existing impervious areas (parking lots) with porous pavements over stone reservoirs and to implement other LID practices to capture runoff from these areas as well as landscape elements such as rain gardens and bio-swales. A goal of this demonstration project is employ techniques to capture and infiltrate/evaporate rainfall. The objective of the activity is to prevent transportation of potentially polluted runoff (specifically with cooper, lead, and zinc) from leaving these facilities and entering the storm water system and particularly Chollas Creek.

REVISED ACTIVITY DESCRIPTION FY 2009

Due to the State budget issues, the Prop 50 grant was not activated at the local level until Sept/Oct 2009. The delay has required us to alter our original grant proposal & schedule. The revisions will reduce the number of facilities retrofitted from three to two, the Southeast Family Resource Health Center on Market Street, and the Southeast Health Center at 52nd St/University Ave. Currently, the County is awaiting word from the State on the proposed revisions before commencing any work. If the change is approved we should being in January 2010.

ACTIVITY IMPLEMENTATION FY 2009

Due to State Budget issues that resulted in the delay of approving and funding projects under the Proposition 50 grants, the County of San Diego had to reconsider its' grant application to reduce the number of retrofit projects from three to two and to revise the implementation schedule of the remaining projects. These revisions are highlighted in the discussions above and are reflected in the schedule below.

TMDL APPLICABILITY

This project would be implemented in compliance with the Chollas Creek Metals TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning & Design: July 2008 – May 2009

Environmental Review & Permitting: July 2008 – January 2009

Construction: June 2009 – October 2009

Monitoring: October 2009 – December 2010

Demonstration Project: July 2008 – December 2010

REVISED TIME SCHEDULE FOR IMPLEMENTATION FY 2009-10

Planning & Design: November 2009 – May 2010

Construction: May 2010 – September 2010

Environmental Compliance/Mitigation: January 2010 – April 2010

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This Project is consistent with the collective watershed strategy because it addresses metals (copper, lead and zinc), which are considered as high priority water quality problem within the 908.2 HA.

EXPECTED BENEFITS

This project provides benefits to surface water quality and groundwater quantity by capturing, reusing and/or infiltrating rainfall that otherwise would be urban runoff that would transport potential pollutants specifically metals to sensitive receiving waters.

EFFECTIVENESS MEASUREMENTS

This project includes 14 months of monitoring of the water quality from the site. This monitoring will provide evidence of the overall amount of reduction of metals from entering the storm system.

CHOLLAS CREEK FAMILY STREAM TEAM INITIATIVE (SDB-051)

ACTIVITY IMPLEMENTATION

The Chollas Creek Stream Team Initiative is a project led by Groundwork San Diego – Chollas Creek (GWSDCC) to address illegal dumping, non-point source trash accumulation, and invasive plant species within Chollas Creek (908.22 HSA). The Port of San Diego provided funding to GWSDCC to establish a four-pronged approach focused on trash and litter abatement activities and non-native plant removal. The four key components of the Initiative include refuse collection, habitat restoration, community education and outreach efforts, tracking, and activity assessment. The City of San Diego has been monitoring the trash collection events to gain an improved understanding of the overall impact of this activity on reducing illegal dumping and trash within the Chollas Creek community. This multi-faceted activity is scheduled to be complete in FY 2010.

Refuse Collection and Habitat Restoration

GWSDCC organized refuse collection events twice a month at three alternating locations (Table E-11 and Figure 1) to collect large, unwanted household items, vegetation, and other debris with the intent of preventing illegal dumping of these items into Chollas Creek and surrounding neighborhood. Refuse collection events occurring in 2009 occurred on the following dates and locations:

Table E-11. Refuse Collection Events.

Event Location	Event Date
Southcrest Community Park	4/25/2009
Jackie Robinson YMCA	5/9/2009, 6/27/2009
38th & Alpha Park	5/23/2009, 6/6/2009

Overall, approximately 90 tons of debris was collected during the five refuse collection events, filling approximately sixteen 40-yard roll off dumpsters.

As part of the restoration effort, GWSDCC collaborated with Urban Corp of San Diego in the removal of non-native plants from Chollas Creek, such as *Arundo donax* and Castor Bean. On-going efforts will also focus on aiding residents to replace non-native plants with native, drought tolerant plants. Approximately 12 tons of vegetation was removed from Chollas Creek during this reporting period.

Figure E-6. Refuse Collection Event Locations.

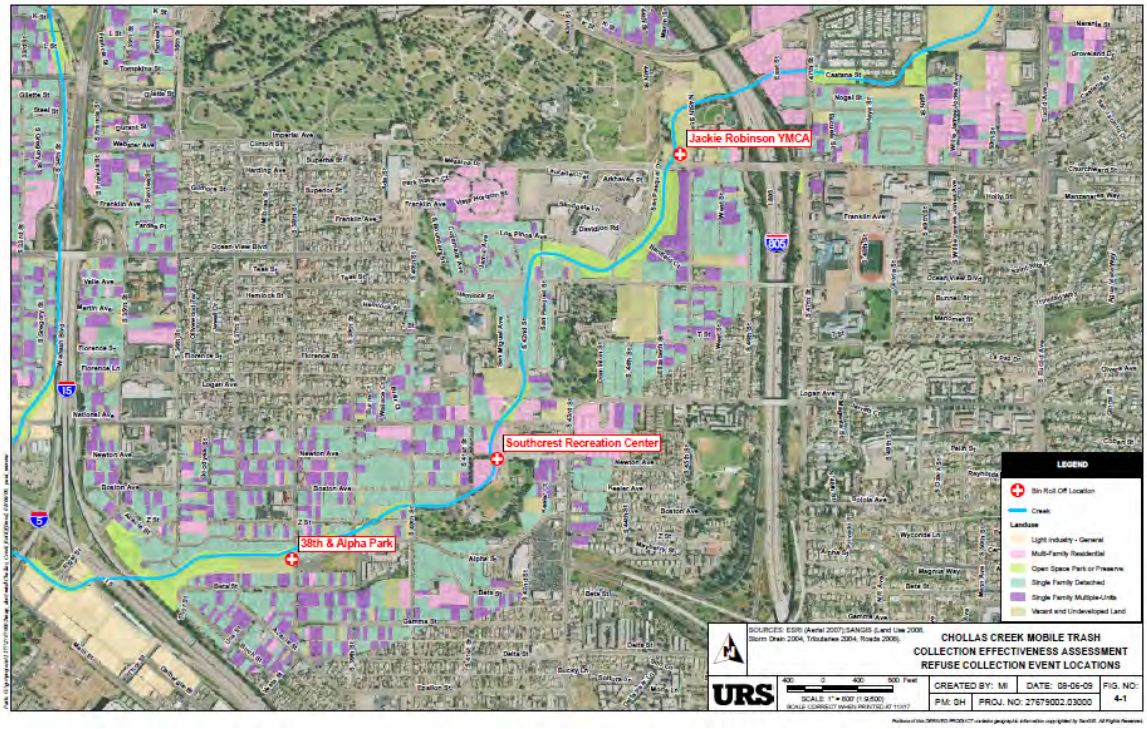

Community education and Outreach

As part of the refuse collection efforts, the Family Stream Team Initiative developed the "Come Dump on Us" campaign. This campaign involves electronic and print messages (in both Spanish and English) reaching approximately 2,500 households in the Chollas Creek watershed, and volunteer cleanup and training events. Each refuse collection event was publicized prior to the occurrence date with publicity being limited to the surrounding community. During this reporting period, approximately 250 bilingual flyers were delivered to residents' homes within a close radius of each event.

Tracking and Assessment

The City of San Diego has been monitoring the trash collection events, surveying participants to assess motivation in participation, relative need for the collection service, general understanding and attitude towards illegal dumping, and potential impediments towards future collection event participation. Surveys are administered in both English and Spanish. During each event, refuse has been characterized by type and relative volume. In addition, the trash collected was weighed and recorded at the landfill after each collection event.

In conjunction with the data collected at the refuse collection events, the City is assessing the effectiveness of this type of activity at abating illegal dumping using visual trash assessment surveys of Chollas Creek. These surveys will be used to evaluate the amount and type of large dumped items, anthropogenic habitation areas, and suspected illegal dumping areas present in

the project area quarterly. The visual trash surveys will document both changes in the amount and type of items present in the projects area as well as identify areas where illegal dumping chronically occurs. The first visual trash survey was conducted on April 22-23, 2009.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The grant was awarded in FY 2009 and will be complete in FY 2010. Refuse collection events began in April 2009 and are scheduled to continue over one year. Assessment of the refuse collection component, including the visual trash assessment surveys, will be completed by the City of San Diego in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- Groundwork San Diego Chollas Creek
- Urban Corps of San Diego
- NASSCO
- San Diego Canyonlands
- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies trash as a high priority water quality problem in 908.2 HA of the Pueblo San Diego HU and recommends implementing load reduction/source abatement activities to address this pollutant. This activity targets illegal dumping and non-point source accumulation of trash.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
Family Stream Team Partnership: Refuse Collection Component Assess the Effectiveness of Sponsoring Local Organization's Refuse Collection Efforts as a Method for Abating Illegal Dumping		
Management Questions	• Does education on trash pollution result in behavioral changes or raise awareness? • What is the total load reduction from refuse collection events? • Are special refuse collection events an efficient way of preventing illegal dumping? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	• Reduction in trash observed within Chollas Creek during year long project • Load reduction (collected trash) due to refuse collection	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected, number of plants removed or planted) • Observation (e.g., change in amount and type of trash observed in Chollas Creek) • Interview/Survey (e.g., participant surveys)	
Data Collected	Amount of trash and debris collected in FY 08-09	90 tons
	Amount of non-native vegetation removed in FY 08-09	12 tons
	Flyer distribution	1,750 flyers

Effectiveness assessment has not been completed at this time as the activity is still in progress. This activity will be completed during the FY 2010 reporting period and results will be available in June 2010.

PALM AVE STORM WATER DIVERTER (SDB-052)

ACTIVITY IMPLEMENTATION

The Palm Avenue Low-Flow Urban Runoff Diversion Project (Palm Avenue Diverter) is the final of three Clean Beaches Initiative (CBI) projects funded in part by a Proposition 13 grant and intended to address elevated levels of bacteria at local beaches. The Palm Avenue Diverter is designed to divert nuisance storm drain flows to the sanitary sewer system prior to reaching ocean receiving waters. The Palm Ave Diverter project is the second storm water diverter system to be installed along the waterfront in Imperial Beach. Storm water diverters provide the ultimate protection of water quality by diverting urban runoff before reaching the receiving waters. As such, it would eliminate one potential source of bacteria during dry weather and other low-flow conditions.

In January 2009 the Palm Avenue Low Flow Urban Runoff Diverter became operational. The diverter consists of a new wet well, pump station, and storm drain improvements that routes low flows into the sanitary sewer system via a four-inch PVC connection and a jockey pump. The Palm Avenue diverter is fed by four curb inlets and 15 grated drains. The inlets drain approximately 72.1 acres of residential and light commercial land uses. Prior to the construction of the Palm Ave Diverter, all flows from these inlets discharged directly onto the beach. Operating at maximum capacity, the Palm Ave diverter can divert flows up to 250 gallons per minute into the sanitary sewer.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the San Diego Bay. However, the 2006 CWA Section 303d list of impaired water bodies identifies multiple locations throughout San Diego Bay and along the Imperial Beach shoreline with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

Active construction on the Palm Ave Diverter project is complete. Current efforts are focused on conducting a post construction effectiveness assessment of the project. As part of the condition on the Grant, the City is conducting weekly post construction water quality monitoring for a one year period from January 2009 through December 2009. Samples are analyzed for bacteria, temperature, pH, conductivity, and filed observations. The volume of diverted runoff is also being tracked.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- PBS&J

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Pesticides
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Palm Avenue Diverter is a long-term solution to improving water quality in the San Diego Bay Watershed because it will completely eliminate one potential source of bacteria and other urban pollutants during dry weather conditions, and will thereby reduce total loads to the Pacific Ocean. By completely diverting runoff, it also has the benefit of addressing all priority pollutants in the watershed. Although the water quality and flow monitoring components of this project are only scheduled for one year following construction, the City of Imperial Beach is committed to maintaining the diverter system so that it continues to operate at maximum capacity.

EFFECTIVENESS ASSESSMENT

The effectiveness of this project meets the requirements of Outcome Level Four and Level Five compliance with activity based permit requirements. With the completion of the Palm Avenue Diverter project and the continued operation of the Date Avenue Diverter, the vast majority (137.2 acres) of the low flow urban runoff and first flush rainwater is diverted before reaching the beach. The only coastal outfall in Imperial Beach not on a diverter system is at the Ebony Street end, which consists of a 12 inch outfall and drains a residential area of 2.2 acres.

Efforts on measuring the effectiveness of the Palm Ave diverter are currently under way. During the first six months of monitoring, 192,000 gallons of urban runoff wad diverted into the sanitary sewer and prevented from flowing to the Pacific. Results from the weekly bacterial analysis also revealed elevated levels of bacteria in the diverted flows. Compared to AB411 monitoring action levels, 85% of the samples were in exceedance of *enterococcus* and 100% of the samples were in exceedance of total coli form bacteria.

SHELTER ISLAND TMDL URBAN RUNOFF COPPER MONITORING STUDY (SDB-053)

ACTIVITY IMPLEMENTATION

A Total Maximum Daily Load (TMDL) for dissolved copper was established for Shelter Island Yacht Basin (SIYB) and was added as an amendment to the San Diego Regional Water Quality Control Board (Regional Board) Water Quality Control Plan for the San Diego Basin (Basin Plan) on February 9, 2005. The City of San Diego (City) is named as a discharger under the TMDL and is responsible for the urban runoff contribution to SIYB from its MS4.

As stated in the TMDL, the marina, under the jurisdiction of the Port of San Diego, is the predominate source of copper loading to the SIYB, whereas the City discharges copper to a much lesser extent from its MS4. The TMDL provides a source analysis, which states that urban runoff from the MS4 accounts for 30 kg/yr of copper loading to SIYB. This contribution translates to only 1% of the total copper loading to SIYB and, therefore, is not listed for further reductions in the TMDL.

The TMDL does stipulate that the concentration of dissolved copper in the SIYB must meet the water quality criteria as set for the California Toxics Rule (CTR). The CTR states that for protection of marine and wildlife habitat, concentration of dissolved copper should not exceed 3.1 micrograms per liter (µg/L) for continuous or chronic exposure and should not exceed 4.8 µg/L for brief or acute exposure. The TMDL requires implementation of best management practices (BMPs) for the reduction of dissolved copper in the SIYB due to levels of dissolved copper that exceed the Basin Plan water quality objectives (WQOs). While no loading reduction is required under the TMDL for urban runoff, the City is taking a proactive position and verifying that the copper loading from its MS4 is within the load allocation WLA and WQOs.

Results and Findings

- There are three City MS4 outfalls that drain into SIYB. Of these three outfalls, one pipe drains 90% of the drainage area, and the other two pipes drain the remaining 10%.
- The first flush sampling event (i.e., the first storm event of the wet weather season) had a higher event mean concentration (EMC) for dissolved copper than either of the other two storm events monitored.
- During the course of a non-first-flush storm, dissolved copper concentrations were higher at the beginning and end of the storm. The middle of a storm event, when the majority of the water is flowing, was when the lowest concentrations were observed.
- Dissolved copper concentrations measured during the storm water events were above the WQOs.
- Dry weather results from a dry weather survey showed that the highest dissolved copper concentrations were seen in the upper areas of the subwatershed.

- Total hardness values during wet weather were low, with the highest concentrations occurring during the beginning of the storms.
- During dry weather, total hardness values were much higher throughout the watershed.
- The wet weather copper load per acre from Shelter Island is much lower than the three other subwatersheds (Chollas Creek, Switzer Creek, and Paleta Creek) within the San Diego Bay Watershed.
- Dissolved copper annual load to SIYB from the MS4 is below the waste load allocation set in the TMDL for urban runoff.

TMDL APPLICABILITY

- Shelter Island TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Annual monitoring and reporting is required.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Copper

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify copper as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this not an implementation or education activities. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

SWITZER CREEK PESTICIDE SOURCE MONITORING (SDB-054)

ACTIVITY IMPLEMENTATION

Currently, a Total Maximum Daily Load (TMDL) is being developed by the San Diego Regional Water Quality Control Board (RWQCB) for sediment toxicity for the mouths of Chollas Creek, Paleta Creek, and Switzer Creek. Switzer Creek was placed on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list for Chlordane, lindane/hexachlorocyclohexane (HCH), and polycyclic aromatic hydrocarbons (PAHs) (SWRCB, 2008). Monitoring data collected for model calibration and validation during the 2005–2006 Wet Weather Monitoring Season by the Southern California Coastal Water Research Project (SCCWRP) detected low concentrations of PAHs, Chlordane, and dichlorodiphenyltrichloroethane (DDT) in storm water runoff (SCCWRP, 2007).

A study was conducted within the Pueblo San Diego Watershed to characterize and assess storm drain sediments with a focus on pesticide distributions and concentrations, specifically within the Switzer Creek Subwatershed. The study was designed to assess four sectors for prioritization and to potentially identify sources or sector areas of the watershed that contribute to constituent loads at the base of the watershed, which ultimately discharge to San Diego Bay. The study has a particular focus on pesticides that have been associated with toxicity at the mouth of Switzer Creek in San Diego Bay.

The studies determined that the pesticides Chlordane, DDT isomers, and synthetic pyrethroids were highest in and most frequently detected in Area 4 (Residential & El Cajon Blvd.) and Area 3 (Residential) which coincide with residential and commercial and uses. Although DDT and its degradation isomers were detected, the concentrations are indicative of historical usage and not indicative of recent application. DDT isomers are generally persistent and have long half lives in soil. The compound 4,4-DDT was detected during the initial sample event, but was not detected during follow-up sampling which further confirms evidence of historical pesticide use and not recent application. Organophosphate pesticides were rarely detected and demonstrates that the USEPA ban on these pesticides is effective in preventing new impacts to water quality.

Copper and lead were highest in Area 1 (Downtown) while zinc was highest in Area 4 (Residential & El Cajon Blvd.). Cadmium was relatively low in comparison to copper, lead, and zinc. However, cadmium, copper, and zinc were highest in Area 4 (Residential & El Cajon Blvd.) and Area 2 (Balboa Park). Lead was highest in Area 1 (Downtown) receiving water locations. PAHs were highest in Area 1 (Downtown) and Area 2 (Balboa Park). PCBs were rarely detected.

Synthetic pyrethroids were detected in all areas. However, organophosphate pesticides were rarely detected or were just above the detection limit. DDT isomers and Chlordane were historically used for pesticide control. Currently, synthetic pyrethroids are the most commonly used pesticides to control ants, termites, and mosquitoes. Because DDT and Chlordane are banned compounds, the elevated levels detected in areas 4 and 3 suggest that these pesticides

were previously applied in areas not subject to environmental exposures until soil excavations, erosion, or building demolition occurred in recent years. Re-sampling of several sites in Area 4 (Residential & El Cajon Blvd.) and Area 3 (Residential) to confirm detections of 4,4-DDT showed no detections of 4,4-DDT and generally lower concentrations of the breakdown products DDE and DDD.

Synthetic pyrethroids are the most readily available retail pesticides and it stands to reason that elevated detections of these compounds would be expected. However, their route to the storm drain network likely occurs through improper applications to impervious surfaces subject to washoff. Applications of these pesticides to impervious surfaces can occur through lawn and garden products, professional pest control operators (PCOs), and via broadcast spraying to control mosquitoes.

Based on the data assessed, it is evident that DDT isomers, Chlordane, synthetic pyrethroids, and metals (copper, lead, and zinc), are being detected at levels above published sediment guidelines in the Switzer Creek Watershed. Although PAHs and infrequent detections of PCBs, Diazinon, and Chlorpyrifos were noted, these compounds were below the effects level expected to cause lethal effects to freshwater or marine organisms.

The results of this study demonstrate that Chlordane, DDT isomers, synthetic pyrethroids, copper, lead, and zinc should be classified as COCs in the Switzer Creek Watershed. Because the watershed is similar to many urbanized settings within the City and County of San Diego, it stands to reason that storm drain sediment results would likely be similar in other watersheds. Synthetic pyrethroids are a known issue on a statewide basis and have been detected in storm water runoff in most areas of San Diego County. The California Storm Water Quality Association (CASQA) Urban Pesticide Subcommittee is actively working with the Department of Pesticide Regulation and EPA to provide information and recommendations during the pyrethroid re-registration process, with the ultimate goal of preventing these compounds from entering the MS4 or receiving waters.

TMDL APPLICABILITY

- Chollas-Paleta-Switzer Creek Mouths TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to work with their consultant in developing and implementing a pesticide distribution study in the subject drainage areas to further assess potential sources and possible BMPs to reduce pollutant loads to the mouth of the subject creeks.

PARTICIPATING WATERSHED COPERMITTEES

- City of Lemon Grove
- City of La Mesa

- City of National City
- City of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- United States Navy
- Southern California Coastal Waters Research Project
- San Diego Regional Water Quality Control Board

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Benthic community impacts
- Toxicity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify pesticide as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

This TMDL is in the development phase and has not yet been adopted into the *Water Quality Control Plan for the San Diego Basin 9* (Basin Plan). After adoption into the Basin Plan, an Implementation Plan will be developed, which will outline the activities to be conducted to meet the requirements of the TMDL. Assessment of the effectiveness of this TMDL in protecting and restoring beneficial uses is not possible at this time. Once assessment is possible, it will be presented in Section 4 of the San Diego Bay WURMP Annual Report.

STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS (SDB-056)

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego Bay Watershed include:

- SDA 1 (Spring Valley)
- SDA 2 (Valle de Oro)
- SDA 3 (Sweetwater)
- SDA 4 (Jamul)
- SDA 5 (Bostonia)
- SDA 7 (Alpine)

FY 2008 ACTIVITY IMPLEMENTATION

Work began on drafting the SWQMPs for individual SDAs.

FY 2009 ACTIVITY IMPLEMENTATION

Work continues on the drafting of the SWQMPs for individual SDAs.

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2010-11. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2012.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

- To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

- To be determined

WATER QUALITY MONITORING AT ADDITIONAL MASS LOADING STATIONS (SDB-057)

ACTIVITY IMPLEMENTATION

This activity consists of the installation and monitoring of five mass loading stations (MLS) in the Sweetwater, Otay and Tijuana watersheds. Approximate locations for the San Diego Bay are described below.

Site Designation	Location Description	Lat.	Long.
SWT21	North Fork of Sweetwater River @ Tavern Road	32.80879	-116.78036
SWT07	Drainage Channel @ Quarry Road & Swap Meet Road	32.70114	-117.00927
OTY03	Dulzura Creek @ Otay Lakes Road	32.63624	-116.88456

The overall purpose of the activity is to acquire more representative data for the southern watersheds which generally only included dry weather grab samples. This will be accomplished through two different sampling methods for dry and wet weather events. For dry weather samples 24 hour continuous sampling will be completed and for wet weather a flow weighted sampling method will be used. Grab samples will be used for all bacteria sampling. A secondary purpose of the study is to compare water quality data from these upper watershed locations with data collected from MLSs which are typically located toward the lower portion of the watershed.

The project was designed to collect both field (5) and laboratory (33) parameters during two storm events and two dry weather events. Field parameters included Temperature, Dissolved Oxygen, pH, Conductivity, and Turbidity. Laboratory parameters measured included: Ammonia-N, Antimony, Arsenic (total/dissolved), Cadmium (total/dissolved), Chlorpyrifos, Chromium (total/dissolved), Coliform (total/fecal) and *Entrococcus*, Copper (total/dissolved), Diazinon, Hardness (total), Iron (total), Lead (total/dissolved), Manganese (total), Malathion, Nickel (total/dissolved), Nitrate-N, Nitrite-N, Orthophosphate-P, Selenium (total/dissolved), TDS, Total Kjeldahl, Nitrogen, Total Phosphate-P, TSS, and Zinc (total/dissolved). In addition to these parameters flow measurements will be taken at each station to develop discharge rates and to calculate a discharge equation.

FY 2008 ACTIVITY IMPLEMENTATION

This activity was planned for the FY 2008 reporting period but due to a large wildfire in October 2007 it was delayed until FY 2009. Activities that occurred during this reporting period were:

July 2007 Agreement between County and Brown and Caldwell signed.

October 2007 Study postponed due to wildfires

FY 2009 ACTIVITY IMPLEMENTATION

Two dry weather and one wet weather events were monitored during FY 2009. A second wet weather monitoring event did not occur due to a lack of measurable rain.

A report describing the methodology, monitoring reporting titled, "County of San Diego Southern Watersheds Water Monitoring Program Report" by Brown and Caldwell is included as Appendix X. This report also included a comparison of the data collected to the Water Quality Objectives established for a numerous constituents. General findings regarding these are listed below:

July 2008	First Dry Weather Monitoring event
February 2009	First Wet Weather Monitoring event
March 2009	Second Dry Weather Monitoring Event

Metals

All of the metals except Cadmium were detected in at least one sample. Iron was the metal with the highest concentrations. Total Metal concentrations of copper and zinc were for the similar as those in the lower Sweetwater MLS, however both were below the WQO's for these constituents. Total metals were higher in wet weather suggesting an association with sediments.

Nutrients

All dry weather results for nutrients were below WQO's, however both dry weather samples at the Alpine station for nitrate were above the Basin Plan objective of 10mg/L.

Bacteria

In general bacteria indicators are found at higher levels during wet weather events. Bacteria levels in Tijuana Watershed are three to four orders of magnitude higher at the MLS location than in the other sites which is indicative of raw sewage.

Pesticides

Diazinon and Chlorpyrifos were virtually non-detect in dry weather samples one hit at Spring Valley. Malathion was only detected during wet weather sampling at Spring Valley and Alpine. All detections were below WQO's.

Solids

TSS was lower during dry weather than wet weather samples. And all were below WQO's. However TSS samples at the Sweetwater MLS exceeded the WQO's in one of six events.

TDS on the other hand appeared at higher levels during dry weather events, especially at the Spring Valley site where exceedances were detected during both dry weather monitoring events. Compared to the Sweetwater MLS which has exceeded the WQO 13 our 18 events monitored.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This project was completed during the FY08-09 reporting period. No further activity is planned.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Nutrients
- Bacteria
- Pesticides
- Solids

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the San Diego Bay WURMP:

- Characterize water quality conditions throughout the watershed. This may be accomplished by conducting special studies where appropriate or by better managing existing data sources.

EFFECTIVENESS ASSESSMENT

Activity effectiveness was measured by confirming successful completion of all project elements (Level One). Project was completed during FY 2009. The final report is located in Appendix G.

STORM DRAIN STENCILING (SDB-028)

ACTIVITY IMPLEMENTATION

As a part of its efforts to improve water quality and increase public awareness, the City has purchased thermoplastic storm drain stencils to be installed in high traffic pedestrian areas throughout the City. These stencils adhere to the concrete curb/gutter by heat treatment and are more durable than paint stencils or plastic markers using adhesive. Stenciling addresses several pollutant categories including bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning/ Implementation
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Pending Funding Sources
- Permit Year 4: Pending Funding Sources
- Permit Year 5: Pending Funding Sources

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Various pollutant categories

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is a part of the Collective Watershed Strategy in that it seeks to contribute to improvements in water quality by reducing the loads of bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash into the storm drain system.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity was assessed through levels Two and Three. During the reporting period, the City purchased an additional 200 thermoplastic storm drain stencils, and plans to install them in the next fiscal year. Last Fiscal Year, 500 thermoplastic storm drain

markers were permanently affixed to storm drain inlets with the prohibitive "No Dumping – Drains to Bay" message in two languages. The stencils were installed on storm drains along major roads within Chula Vista such as Telegraph Canyon Road, Otay Lakes Road, H and East H Street, and East Palomar Street. In addition, citizens participating in Beautify Chula Vista Day in October 2008 stenciled 88 more storm drains. Notably, nearly all storm drain structures in the City are identified with stenciling, plastic markers, or permanent concrete stamping. The City is currently tracking the locations of these stencils in a database and plans to produce a map of these locations. It is estimated that thousands of pedestrians pass these stencils on a yearly basis, which reminds them that their daily actions can impact water quality within the City. By installing these stencils along major streets in the City, the goal is to reduce the amount of pollutants that can potentially enter the storm drain system from pedestrians as well as showing citizens that they live near rivers and streams.

PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE (SDB–029)

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego Bay WMA during FY 2009 from August 2008 to April 2009. The City will work with various broadcast media outlets to distribute and air the PSAs during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as high priority water quality problems in the San Diego Bay WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist*

PSAs will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST **Assess the Efficiency and Effectiveness of Public Service Announcements**		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in San Diego Bay WMA (Outcome Level One)	2,010,760
	Number of impressions made to the public through radio announcements in San Diego Bay WMA (Outcome Level One)	2,760,568
	Change in knowledge or attitude from survey results (Outcome Level Two)	44%
	Change in pollutant-related behavior from survey results (Outcome Level Three)	Yes**

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of “Think Blue” 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year’s survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The City conducted an effectiveness assessment of *Think Blue* PSAs and storm water messages via field experiment in which 309 individuals were shown eight different *Think Blue* PSAs (including the *Karma, Karma Second Chance* PSAs). Participants were then asked questions to determine storm water knowledge, awareness and possible changes to future behavior as a result of the PSA. The results of the field experiment demonstrate the messages in the PSAs are effective in increasing public knowledge that storm water is not treated. 25% of participants were more likely to answer that storm water is not treated than those who had answered the question prior to watching the PSA. Additionally, awareness that storm water pollution is an important issue in San Diego also increased after watching the PSA. Lastly, the *Karma Second Chance* PSA scored the highest of the PSAs in motivating participants to take specific actions to prevent storm water pollution.

The City also obtained assessment information from its annual random-digit dial 2009 *San Diego Storm Water Survey* of 800 total residents from all WMAs. 55% of residents said they saw a *Think Blue* PSA last year (up from 52%) on television while 8% of residents heard the radio announcements in FY 2009. 51% said they prefer to get information about storm water via television. This year's survey also noted that while 44% of residents know that storm water was not treated, significant increases in awareness were detected among women (particularly over the age of 50), residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the city as a whole. To estimate the number of impressions in the San Diego Bay WMA, the total number of estimated city-wide impressions, (11,170,888 for television and 15,336,488 for radio ads) was multiplied by the proportion of residents living in the San Diego Bay WMA (38%) of the city's total population.

Conclusions

Based on assessment from both the survey and the field experiment as well as feedback from the public, *Think Blue* PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the city will continue to monitor public

perception and feedback to determine if this is actually occurring. The city will continue to work with appropriate broadcast media outlets to air *Think Blue* television and radio PSAs during FY 2010.

Additionally, the City continued to measure public awareness of the *Think Blue* program via surveys comprised of a random digit dial sample of the residents living in the San Diego Bay WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, while the *2009 San Diego Storm Water Survey* indicated that 39% had heard the phrase "Think Blue" during FY 2009, awareness that storm water is not treated increased. These results, coupled with a continued decrease in the percentage of residents hosing down their driveways, and in residents using pesticide or weed killers, demonstrate that the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the San Diego Bay WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

OUTDOOR TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS (SDB-030)

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego (City) retained a contract with an outdoor advertising company to advertise *Think Blue* messages on billboards and bus shelters located in the San Diego Bay WMA. The City created advertisements in English and Spanish that target behaviors associated with bacteria profiled as a vector. The goal of the billboards was to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed and implemented in FY 2008 throughout the San Diego Bay WMA. In FY 2009, it was determined that transit shelters and billboard advertisements were not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. The City will continue to monitor outdoor advertising opportunities in the future and may reconsider the use of this activity in the San Diego Bay WMA.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City no longer plans to use billboards and transit shelters as part of its watershed program.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City no longer plans to use billboards and transit shelters as part of its watershed program; therefore, no assessment was conducted in FY 2009.

MOBILE ADVERTISING (SDB-031)

ACTIVITY IMPLEMENTATION

The City of San Diego Storm Water Department (City) retained a contract with a mobile advertising firm in FY 2008 to advertise *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The City created advertisements targeting behaviors associated with bacteria and/or metals. The goal of the billboards was to educate the public about the causes of these kinds of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the Chollas Creek Watershed route in both English and Spanish on August 12, 13, 14, 26, 27, and 28, 2008. The estimated audience was 156,690 impressions over those dates. The following image shows the Chollas Creek route.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The activity was completed in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy identify bacteria as a high priority water quality problem in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing mobile advertising will result in increased knowledge and awareness directly, and will promote behavior change.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MOBILE ADVERTISING Assess Efficiency and Effectiveness of Advertisement on Static Billboard Trucks		
Management Questions	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcomes	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)	
Data Recorded	Number of impressions San Diego Bay (Outcome Level One)	43,038 DEC*
	Number of impressions Chollas Creek (Outcome Level One)	26,115 DEC
	Change in knowledge or attitude from survey results (Outcome Level Two)	44%
	Change in pollutant-related behavior based on survey results (Outcome Level Three)	Yes**
Recommended Data	Advertisement costs (Outcome Level One)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewer ship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2009 was 522,300.

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of mobile advertising for *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The advertisements target behaviors associated with trash and bacteria.

Results and Analysis

The advertisements were developed in the FY 2008 and displayed throughout the San Diego Bay WMA in both English and Spanish in FY 2009. The estimated audience was 860,700 total impressions per 4-week period for San Diego Bay as a whole, and 522,300 for Chollas Creek. In FY 2009, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, approximately 17% of residents became aware of the Think Blue message by seeing mobile advertising.

Long-Term Assessment and Conclusions

In late FY 2009, based on results from the *2009 Storm Water Survey* it was determined that mobile advertising was not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. Additionally, the City's Storm Water Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. The City has discontinued this activity in the San Diego Bay WMA.

COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT PROJECT - CHOLLAS CREEK COMMUNITY (SDB- 032)

ACTIVITY IMPLEMENTATION

In FY 2009, the City of San Diego (City) utilized professional research consultants to develop and implement an education and outreach strategy to address litter in the Chollas Creek Watershed using Community-Based Social Marketing (CBSM). This strategy will use observations, interventions, and assessment methods in an effort to identify barriers to public participation against littering, the steps needed to remove those barriers, and solutions which may include structural interventions and/or additional education and outreach strategies to residences and businesses.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

After initial planning in FY 2008, the city began implementation of the Chollas Creek CBSM pilot project in FY 2009 with an anticipated completion date in FY 2011. Activities in FY 2009 included selection of pilot and control areas of Chollas Creek and identification of trash and litter as a target behavior, development of an observational research protocol for assessing litter behavior and barriers, development of materials for data collection, developing and conducting a training session for *Think Blue* and ILACSD staff and volunteers, coordination and scheduling of observation sessions, as well as observational research protocol development, data collection, entry, and management. Additionally, recommendations for structural interventions and education and outreach strategies were presented to the City. Finally, initial cleanup of the pilot and control areas occurred in FY 2009. It is anticipated that implementation of the structural and educational elements will begin in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego (ILACSD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2). Implementation of this activity will address the high priority water quality problem by identifying the behaviors in the WMA contributing to trash loading (which acts a bacteria vector) and testing outreach strategies to determine their effectiveness in reducing loads before broad-scale implementation.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
COMMUNITY-BASED SOCIAL MARKETING PILOT STUDY IN CHOLLAS CREEK Assess Effectiveness of CBSM in Changing Awareness, Attitudes, and Behaviors	
Management Question	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution? • What changes in behaviors were observed after CBSM implementation?
Targeted Measurable Outcomes	• Reach goal number of people within the watershed, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by pamphlet)
Recommended Data	• Number of educational materials distributed in business areas (Outcome Level One) • Change in knowledge or attitude (Outcome Level Two) • Change in behaviors (Outcome Level Three)

Objectives

The goal of this assessment is to determine the effectiveness of the Community-Based Social Marketing (CBSM) outreach in educating the public about the causes of trash and bacteria loading and changing their pollutant-loading behaviors.

Results and Analysis

Two study areas in Chollas Creek were selected by City of San Diego staff. The two areas were selected to serve as pilot and control areas, and were chosen such that they were similar along key dimensions such as land use, geography, and demographic composition. Area 1 boundaries are: 94 Freeway (N), Interstate 15 (E), L street (S), and 30th street (W). Area 2 boundaries are Hilltop Drive (N), I-805 (E), Mount Hope Cemetery (S), and Allen Park (W).

The observation sites were split between designated pilot and control areas. The purpose of the observational study was to identify the sources of litter, establish a baseline littering rate, identify the target population associated with litter, and identify avenues for outreach and education to reduce and prevent litter. Observations of litter and littering behavior took place during daylight hours between December 2nd and December 10th, 2008, and a total of 9 sites and 714 individuals were observed.

A number of findings were discovered after analyzing the observational data. Among those that are most important, observations showed that people do litter, they do so frequently, and they do so intentionally. However, it was discovered that there also was a general lack of infrastructure for cigarette and waste disposal in both areas. Finally, it was determined that people who were part of a group littered slightly more often than those who were alone at the time of disposal and age was a significant demographic predictor of littering behavior, with younger individuals littering more than older individuals.

Long-Term Assessment and Conclusions

In FY 2009 the baseline observations; development of CBSM intervention; and community cleanup portions of the project were completed. In FY 2010 implementation of the CBSM intervention and follow-up observations are anticipated. Effectiveness will be measured on a variety of levels. First, the number of stakeholders, residents, and businesses being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT PET WASTE DISPOSAL (SDB-039)

ACTIVITY IMPLEMENTATION

The City of Chula Vista (City) plans to encourage homeowner associations (HOAs) to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association newsletters about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials and survey homeowners associations to assess if there is signage regarding proper pet waste disposal and plastic bag dispensers in the neighborhoods.

During the last fiscal year, the City compiled contact information about the HOAs within the City as well as looked at the potential methods for reaching HOAs in the City. This fiscal year, the City contributed a storm water article to the HOA magazines, My Hometown Otay Ranch and My Hometown Eastlake, which focused on general storm water pollution prevention, including proper pet waste pickup. In addition, the City designed a potential questionnaire that could be used to survey HOAs about pet waste. A phased approach over the remaining permit cycle will be used to reach the various HOAs within the City.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria is categorized as a high priority pollutant in the watershed. This activity is consistent with the Collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity was assessed through levels One, Two, and Three. During this fiscal year, the City contributed a storm water article that addressed pet waste to a magazine that reached both the Eastlake and Otay Ranch areas in East Chula Vista. This magazine reaches a large portion of the City, with a circulation of 20,000 households. The City will continue to reach HOAs and explore other methods for providing them with storm water education.

STORM WATER EDUCATION BOOTH AT PET FESTIVAL AND DOGGIE DASH (SDB-040)

ACTIVITY IMPLEMENTATION

The City of Chula Vista (City) plans to educate its residents about proper pet waste disposal and its possible effects on water quality at its annual Pet Festival and Doggy Dash. This outdoor community event involves both pet owners and pets. The City plans to have an educational booth and provide educational materials related to the Chula Vista Clean Program for residents, in particular, those involving the cleanup of pet waste.

During the reporting year, the City Storm Water Management Section had a booth for the first time at the Pet Fest and Doggy Dash on June 20, 2009. At the booth, City staff provided basic storm water education to residents and provided brochures about pollution prevention. A storm water awareness survey was also implemented to assess storm drain awareness and BMP implementation among residents.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning/ Implementation
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Implementation/ Assessment
- Permit Year 4: Implementation/ Assessment
- Permit Year 5: Implementation/ Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Collective Watershed Strategy in that it aims to contribute to improvements in water quality by eliminating sources of pollutants.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels One and Two. Compliance with activity based permit requirements and changes in knowledge, attitudes, and awareness will be assessed. A survey was implemented at the Pet Festival that had a number of questions about storm water pollution prevention and BMP implementation. In order in increase participation, the City had a number of giveaways as an incentive for residents to complete a survey. The main giveaway was a pet waste bag dispenser that clips on to a dog's collar with a printed message to remind them to pick up after their pet. In order for the resident to receive a dispenser, she/he had to complete a survey. A question asked was: How do you dispose of your pet's waste? The available choices were: 1) Rinse off yard/sidewalk into gutter, 2) Flush down the toilet, 3) Bury in the yard/garden, 4) Use a plastic bag and place in trash, 5) I left it where it was, 6) Don't know, and 7) I don't have a pet.

Of the 89 surveys completed at the festival, 80% of survey respondents said that they use a plastic bag and trash to dispose of their pet's waste, showing that residents are implementing BMPs in regards to taking care of pet waste. In addition, they are even more encouraged to pick after their pets when they receive the pet waste bag dispenser. The City will continue to participate in the Pet Fest and Doggy Dash by having a booth and reminding pet owners to pick up after their pets.

FATS, OILS, AND GREASE (FOG) PROGRAM (SDB-041)

ACTIVITY PLANNING

The City of Chula Vista (City) developed a Fats, Oils, and Grease (FOG) program as a part of its Sewer System Management Plan (SSMP). The FOG program focuses on educating restaurant owners and operators about the importance of proper grease waste management. Increased education and awareness about proper grease waste disposal aims to reduce possible sanitary sewer overflows in the City. Restaurant owners and operators will receive educational materials about grease waste management.

During the last reporting year, the City was in the process of developing the FOG portion of its SSMP. During this reporting year, the City implemented a survey that asked restaurants about the use and maintenance of grease pre-treatment devices in order to understand the current methods used to reduce FOG by restaurants. Based on the findings, the City will tailor its education programs to educate restaurants to use pre-treatment devices, followed by focusing on the maintenance of these devices. Education outreach efforts are expected to begin in 2010.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: Assessment
- Permit Year 5: Assessment

Based on the Regional Board letter "Comments on the March 2008 Watershed Urban Runoff Management Plan (WURMP) and USEPA/ Regional Board April 2008 WURMP Assessments," the City will implement this activity once.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Collective Watershed Strategy in that it aims to contribute to improvements in water quality by reducing the possible sanitary sewer overflows that result from mismanaged grease waste.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity will be addressed through levels Two, Three, and Four. The number of restaurants that receive education will be tracked as well as the number of sanitary sewer overflows. As a part of the planning process, the City surveyed restaurants to find out what types of pre-treatment mechanisms they have in place. The City mailed out over 360 surveys to Chula Vista restaurants and received over 200 completed surveys. Of these restaurants, it was found that approximately 60% of them utilize grease pre-treatment devices, and 50% properly maintain and dispose of FOG. Based on these results, the City's FOG outreach and education program will first encourage restaurants to use pre-treatment devices, and then educate them regarding proper routine maintenance and FOG disposal procedures.

In addition, the City is in the process of developing a FOG webpage that will include BMPs and other brochures for restaurants to print out. City staff is also in the process of developing a new FOG ordinance to be included in the City's Municipal Code. In comparing the number of Sanitary Sewer Overflows (SSOs) in the City to the average in the County, the City's average number of SSOs is well below the average of the entire County. The City believes that the low number of SSOs is attributable to the City's diligent preventative maintenance program for the wastewater collection system. Future efforts for the FOG program include education outreach campaigns that focus on the latest FOG pre-treatment devices, maintenance standards, and FOG disposal locations.

LA MESA PARK KIOSK (SDB-042)

ACTIVITY IMPLEMENTATION

During 2008-2009 the City of La Mesa (City) maintained the education outreach kiosk at one of the seven parks within the City in the San Diego Bay Watershed, Vista La Mesa Park. This kiosk was constructed during the previous reporting year with the help of the local Eagle Scouts. The kiosk presents storm water pollution prevention education outreach materials, including the San Diego Bay Watershed Fact Sheet and the Chollas Creek TMDLs Fact Sheet. The watershed fact sheet provides information on the watershed, pollutants of concern, and tips to prevent storm water pollution. The TMDLs fact sheet includes a map indicating which part of La Mesa is in the Chollas Creek HSA, background about the Chollas Creek Dissolved Metals and Diazinon TMDLs, and a list of best management practices that businesses can take that will help reduce the loads of pesticides and metals discharged.

The expected benefit is that park-goers and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

TMDL APPLICABILITY

Education outreach is a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The kiosk includes a San Diego Bay Watershed Fact Sheet that lists diazinon and metals as pollutants of concern as well as tips to prevent storm water pollution. The City's Chollas Creek TMDLs Fact Sheet is also displayed in the kiosk.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- Eagle Scouts

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The watershed fact sheet and TMDLs fact sheet placed in the education outreach kiosk provide information on the watershed's pollutants of concern, including the 303(d) listed pollutants (metals, diazinon, and bacteria) and information about relevant TMDLs. Pollution prevention tips to address watershed priority pollutants are presented in the fact sheets.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The education outreach kiosk provides pollution prevention tips to address those watershed priority pollutants. The kiosk supports the Watershed Strategy by educating residents in the vicinity of the park on good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS ASSESSMENT

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the watershed and region. The kiosk provides educational outreach materials specific to the watershed to address pollution prevention measures.

LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS (SDB-043)

ACTIVITY IMPLEMENTATION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID Handbook, including Management Strategies, the Appendices, and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

Local planning and sponsor groups within the San Diego Bay WMA include:

- Alpine
- Crest-Dehesa
- Cuyamaca
- Descanso
- Jamul-Dulzura
- Spring Valley
- Sweetwater
- Valle de Oro

ACTIVITY IMPLEMENTATION FY 2008

This education program was successfully developed during the spring of FY 2007-08, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2007-08, none were conducted in the San Diego Bay WMA.

ACTIVITY IMPLEMENTATION FY 2009

As documented in the table below, presentations were delivered to eight planning and sponsor groups in the San Diego Bay WMA, which included 128 attendees. A total of 78 pre- and post-surveys were completed by seven of the eight groups.

Community Group	Presentation Date	No. of Attendees	Surveys Completed
Alpine	1/22/09	27	15
Crest-Dehesa	5/11/09	22	14
Cuyamaca	12/9/08	7	5
Descanso	9/18/08	10	10
Jamul-Dulzura	3/24/09	9	8
Spring Valley	8/26/08	19	17
Sweetwater	4/7/09	15	9
Valle de Oro	9/16/08	19	0
Total		**128**	**78**

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was completed during FY 2009. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENTS

Activity effectiveness was assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level One Outcomes). Furthermore, attendees were asked to complete pre- and post- survey forms, which consisted of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area. Survey results were calculated to measures changes in attendee knowledge regarding watershed planning and LID principles (Level Two Outcome).

The table below summarizes results from the seven surveys administered to groups in the San Diego Bay WMA. Improvements on the post- survey ranged from a 2.67% increase to a 22.86% increase. This represents a demonstrable increase in knowledge among the target audience.

Community Group	Date	Total Attendees	# of Surveys Given	Pre-survey % correct	Post-survey % correct	% Increase
Alpine	1/22/09	27	15	65.33%	68%	2.67%
Crest-Dehesa	5/11/09	22	14	61.43%	84.29%	22.86%
Cuyamaca	12/9/08	7	5	76%	88%	12%
Descanso	9/18/08	10	10	82%	88%	6%
Jamul-Dulzura	3/24/09	9	8	75%	92.5%	17.5%
Spring Valley	8/26/08	19	17	61.18%	68.24%	7.06%
Sweetwater	4/7/09	15	9	68.89%	84.44%	15.55%
Valle de Oro	9/16/08	19	0	N/A	N/A	*No survey*

ILACSD ELEMENTARY SCHOOL WATERSHED PRESENTATIONS (SDB-044)

ACTIVITY IMPLEMENTATION

The San Diego Bay WURMP Workgroup recognizes the benefits of providing storm water and watershed education to elementary, middle, and high school children and how this type of watershed activity is an integral part of fostering positive behavioral change. Changing attitudes and behaviors in elementary students can provide long-lasting impressions that follow a child into adulthood. The Cities of Chula Vista, Imperial Beach, La Mesa, National City, and Port of San Diego have collaborated on an education outreach effort to provide presentations to elementary school children that focus on watershed protection, pollution prevention, and BMP implementation. Assisted by I Love a Clean San Diego (ILACSD), the San Diego Bay Copermittees were able to reach over 470 students in the San Diego Bay WMA during the presentations in the reporting year.

The overall goal of this activity was to educate children about the sources of pollution in their neighborhoods so that they will realize how their daily activities may impact their watershed. In turn, the hope is that the children will gain a sense of ownership for their watersheds and influence their families to implement BMPs and good house keeping practices. Pre- and post-test were administered to assess any changes in attitude, knowledge, and awareness of watersheds, storm water, and pollution prevention concepts. A 30-minute presentation was given to the students that reviewed storm water and watershed basics, sources of pollutants, how pollutants get into our waterways, pollution prevention, and recycling.

Presentations given in the Cities of Imperial Beach, National City, La Mesa, and Chula Vista are listed in Table 1.

Table 1. ILACSD Education Presentations.

Copermittee	HA	School (Number of Presentations)	Number of Students/Grade
Port of San Diego	910.1 Imperial Beach	Bayside Elementary (2)	70 - 6th graders
	909.1 National City	Rancho de la Nacion (2)	30 - 6th graders
City of Imperial Beach	910.1 Imperial Beach	Imperial Beach Elementary (3)	154 – 5th and 6th graders
		Central Elementary (3)	
City of La Mesa	908.2 La Mesa	Helix High School (2)	80 – 9th-12th graders
		La Mesa Dale Elementary La Mesa Middle School (3)	86 – 3rd and 6th graders

The City of Chula Vista sponsored a more extensive four-day after school program called South Bay Water Warriors at Montgomery Elementary School. A total of 24 students met on a

Tuesday for four consecutive weeks. The curriculum consisted of the following lesson plans: 1) Introduction to Water and the Watershed, 2) Water Quality, 3) Water Scarcity and Water Use, and 4) Negative human impact and how it can be remedied. A Pre-test was given to students at the beginning of the program and a post-test was administered at the end.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for a number of high priority pollutants. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Concepts in the presentations are applicable to the Chollas Creek Dissolved Metals TMDL and Chollas Creek Diazinon TMDL in the Pueblo Sand Diego HU (908.2 HA).

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Implementation/ Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of Imperial Beach
- City of La Mesa
- City of National City
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- I Love of Clean San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash
- Pesticides
- Sediment
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Consistent with the Collective Watershed Strategy, this activity addresses several high priority water quality problems in the San Diego Bay WMA. This is a source control activity in which the overall goal is to prevent pollution from residential sources by providing education to school children.

EFFECTIVENESS MEASUREMENTS

In order to assess effectiveness of this school education activity, the same questions were asked in the pre- and post-tests given to the children to assess a change in knowledge due to the presentations. A summary is shown in the table below of the schools, number of students, and pre- and post- test results.

San Diego Bay Watershed Copermittees	School	# of Students	Pre-Test Results (%)	Post-Test Results (%)
Chula Vista	Montgomery Elementary	24	56	83
National City	Bayside Elementary	70	79	83
	Rancho de la Nacion Elementary	60	85	93
Imperial Beach	Imperial Beach Elementary	54	75	87
	Central Elementary	100	73	83
La Mesa	Helix High School*	80	N/A	96
	La Mesa Dale Elementary*	28	N/A	70
	La Mesa Dale Elementary	28	58	80
	La Mesa Middle School	30	69	88
TOTAL		474	Average = 71	Average = 85

*Pre-tests were not administered to these groups of students

Assessment of the pre- and post-tests results indicate there was an increase in knowledge when comparing overall scores and among each group of students. The San Diego Bay Copermittees have determined that this activity is effective at increasing knowledge, attitudes, and awareness in school children, and plan to implement this activity in upcoming years, as funding is available. Future efforts may include focusing education on specific age groups or grade levels, and may include interactive activities that reinforce watershed concepts. Efforts will also improve the presentation based on student and teacher feedback, and further tailoring the presentation to address the high priority pollutants of specific hydrologic areas.

SAN DIEGO BAY WATERSHED BROCHURE (SDB-055)

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) WMAs assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2010. Implementation and distribution is expected to occur in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	**San Diego River**	**San Diego Bay**	**Mission Bay**	**San Dieguito River**	**Los Penasquitos**
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria	-	-
Trace Metals	Turbidity	Oil/Grease	-	-	-
Pesticides	Total Dissolved Solids	Pesticides	-	-	-
Gross Pollutants	-	Sediment	-	-	-
Sediment, TSS, Turbidity	-	Trash	-	-	-

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the WMAs.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City plans to continue to implement the brochure program in FY 2010. Effectiveness assessments will be conducted after the watershed brochures are implemented in FY 2010. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

PET WASTE BAG COLLABORATIVE WATERSHED ACTIVITY (SDB-001)

ACTIVITY DESCRIPTION

The Pet Waste Bag Collaborative Watershed Activity addresses urban runoff from jurisdictional parks and recreational areas. It is believed that pet waste may be a potential source of high priority water quality problems such as bacteria. The use of pet waste bags helps to reduce pet waste from entering the storm water conveyance system, thereby addressing the high priority water quality problem, bacteria. Two important goals of this activity are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to cleanup after their pets. Providing pet waste bags to citizens may result in load reductions as the activity enables proper disposal of pet waste and associated pollutant categories such as bacteria.

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of pet waste bag dispensers added by a Copermittee as part of this activity or, 2) the number of bags removed and used from each of the dispensers, or 3) by estimating the bacteria loading based on the number of bags distributed. Implementation of educational elements of this activity may include new and/or improved signage in municipal parks describing the environmental benefits of using the pet waste bags.

During FY 08-09 the City of Chula Vista conducted three activities targeting pet waste including an evaluation of pet waste bag usage in city parks and trails, an analysis of how pet owners dispose of pet waste, and education directed towards local Home Owners Associations (Activity Summary Sheet SDB-039). Park and trails inspectors as well as storm water management section staff are regularly in the field and can observe if park users are utilizing the pet waste bag dispensers. This reporting year, City storm water management section staff visited 48 municipal parks and noted whether or not there was a pet waste dispenser in each and if it was being used.

No new dispensers were added to the San Diego Bay WMA by the Copermittees. Additional assessment was undertaken by the Airport Authority and the County of San Diego, by estimating the amount of pet waste removed from parks and public areas within their jurisdictions. Please refer to the San Diego Bay WURMP document's Pet Waste Bags summary sheets (1A through 1E) for more information on the individual Copermittees' Pet Waste Bag activities.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. TMDLs are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, Bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek.

TIME SCHEDULE FOR IMPLEMENTATION

Table E-1 below lists the San Diego Bay Copermittees participating in the Pet Waste Bag Collaborative Watershed Activity during this reporting period and in which HA(s) the activity is being conducted.

Table E-1. San Diego Bay Copermittees Participation in Pet Waste Bag Watershed Activity.

	Hydrologic Area								
Copermittee	**908.1**	**908.2**	**908.3**	**909.1**	**909.2**	**909.3**	**910.1**	**910.2**	**910.3**
Airport Authority		X							
City of Chula Vista				X				X	X
City of La Mesa		X		X					
City of Coronado							X		
County of San Diego				X	X	X		X	X
Port of San Diego	X	X	X	X			X		

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- Port of San Diego
- City of La Mesa
- City of Coronado
- Airport Authority
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. This activity directly addresses and abates a source of bacteria in all HAs.

EFFECTIVENESS ASSESSMENT

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) identifying the number of bags removed and used from newly added and existing dispensers, 2) characterizing pet owner's disposal of pet waste, and/or 3) estimating annual bacteria load reductions. For

additional effectiveness assessment information for the County of San Diego's Pet Waste Bag Program, please refer to Activity Sheet SDB-001a in this Annual Report.

Additional Dispensers

No new pet waste bag dispensers were installed during FY 2009 in the San Diego Bay WMA.

Pet Waste Bags Dispensed

The San Diego Bay Copermittees maintained their existing pet waste bag dispensers in FY 2009. Table E-2 lists the total number of pet waste bags dispensed per Copermittee. The total number of pet waste bags dispensed during FY 2009 was approximately 518,327[1].

Table E-2. Number of Pet Waste Bags Dispensed.

Copermittees	Number of Pet Waste Bags Used
Port of San Diego	414,000
City of La Mesa	9,000
City of Chula Vista	9,000
City of Coronado	12,000
Airport Authority	689
County of San Diego	52,838

Proper disposal of pet waste helps to reduce bacteria from entering the storm water conveyance system. The use of pet waste bags by pet owners is another example of positive behavioral change. By providing pet waste bags and the appropriate educational signage describing the environmental benefits of the activity, the San Diego Bay Copermittees may be able to increase public awareness that removal of pet waste is a beneficial activity for water quality that all pet owners can be involved in.

During this reporting period, the City of Chula Vista evaluated 48 municipal parks for the presence of pet waste bag stations. Thirteen parks were found to have pet waste stations. In parks where these stations were used, it was noted that there was less pet waste left on the ground compared to those without stations. Signage presented on the pet waste stations encourages pet owners to pick up after their pet(s) and indicates that it is the law according to Chula Vista Municipal Code. Based on the findings, city storm water staff will continue work with the Parks Department to encourage installation of these stations at all parks.

[1] The manner in which pet waste bag data is recorded can vary from each of the jurisdictions, leaving room for variability in the data from year to year. Some jurisdictions report the number of pet waste bags that are purchased during the fiscal year, while others report the number of bags used during the fiscal year. This can cause data variation because some jurisdictions may be starting up new pet waste programs, causing an increase in the number of pet waste bags reported. Others may have well-established programs and just maintain their existing pet waste stations.

Bacteria Load Reductions

The County of San Diego and the Airport Authority calculated the annual bacteria load reductions. Utilizing the assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve, the County estimated 51,680 pet waste bags were utilized from the sixteen bag dispensers in their jurisdictions in FY 2009. By using the assumptions above, the County estimated the amount of pet waste removed to be 10,568 lbs. Please refer to Activity Summary Sheet SDB-001a for further detail on the County of San Diego's pet waste bag activity efforts. The Airport Authority, based on separate assumptions, estimated that approximately 172 lbs. of pet waste were collected and approximately 1.8×10^{12} fecal coliform bacteria associated with the waste were removed.

PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS (SDB-001A)

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2008 ACTIVITY IMPLEMENTATION

During the FY 2008 reporting period the County of San Diego maintained 16 dispenser stations at 13 parks within the San Diego Bay Watershed.

FY 2009 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009. During this reporting period the County of San Diego continued to maintain 16 dispenser stations at 13 parks within the San Diego Bay Watershed. The parks and the number of dispensers include:

- Otay Lake Park (1 dispenser)
- Eucalyptus Park (1 dispenser)
- Goodland Acres Park (1 dispenser)
- Hilton Head, Cottonwood 3 (2 dispensers)
- Lamar Street Park (1 dispenser)
- Spring Valley Park (1 dispenser)
- Sweetwater Regional Park/Summit (2 dispensers)
- Hillsdale Park (1 dispenser)
- Lonnie Brewer Park (1 dispenser)
- Steele Canyon Park (1 dispenser)
- Cottonwood Park (1 dispenser)
- Woodhaven Park (2 dispensers)
- Nancy Jane Park (1 dispenser)

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria has been identified as a priority water quality problem in the San Diego Bay Watershed. Parks have been identified as potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	# of Stations	# of Bags Used	Waste Removed Lbs.
Otay Lake Park	1	3,230	646
Eucalyptus Park	1	3,230	646
Goodland Acres	1	3,230	646
Hilton Head Park	2	7,120	1,424
Lamar Street Park	1	3,230	646
Spring Valley Park	1	3,230	646
Sweetwater Regional Park/Summit	2	6,460	1,292
Hillsdale Park	1	2,998	598
Lonnie Brewer Park	1	3,340	668
Steele Canyon Park	1	3,340	668
Cottonwood Park	1	3,340	668
Woodhaven Park	2	6,880	1,376
Nancy Jane Park	1	3,220	644
Total	**16**	**52,838**	**10,568**

During the FY 2009 reporting period the County maintained 16 stations among 13 County Parks within the San Diego Bay Watershed. These stations distributed approximately 52,838, preventing an estimated 10,568 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

STORM DRAIN LITTER CONTROL TECHNIQUES – EL CAJON BOULEVARD STORM DRAIN INLET RETROFIT FOR CHOLLAS CREEK WATERSHED PROTECTION PROJECT (SDB-2-08B)

ACTIVITY IMPLEMENTATION

The City of San Diego will retrofit four storm drain catch basins at the intersection of El Cajon Boulevard and Fairmount Avenue with catch basin inserts. This site has been selected for its placement along a major arterial, proximity to the ongoing aggressive street sweeping program (Tier I Best Management Practice activity) along El Cajon Boulevard, and the adjacent commercial land uses (gas station, two vehicle sales lots, and a clothing thrift shop). The close proximity of the catch basins will also allow for easier project maintenance.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City of San Diego plans to select catch basin inserts and it is anticipated that catch basins will be retrofitted during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will contribute to improving water quality problems and is consistent with the Collective Watershed Strategy by focusing on bacteria and sediment load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants, which convey and provide nutrients to bacteria. The Collective Watershed Strategy

identifies bacteria, sediment, and nutrients as priority water quality problems in the various hydrologic subareas of the San Diego Bay Watershed Management Area (WMA).

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
EL CAJON BOULEVARD STORM DRAIN FILTER INSERT PROJECT Assess Efficiency and Effectiveness of Storm Drain Filter Inserts in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved by retrofitting storm drains with filter inserts? • How efficient are filter inserts in reducing pollutant loads? • What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure filter inserts working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality (Outcome Level Five)

Objectives

The goal of the assessment is to determine the load reduction effectiveness and efficiency of storm drain filter inserts both by themselves and in combination with aggressive street sweeping.

Results and Analysis

This activity was in the planning phase and not in active implementation in FY 2008. Therefore, assessment is not feasible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

ENHANCED STREET SWEEPING COLLABORATIVE WATERSHED ACTIVITIES (SDB-003)

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees have implemented street sweeping-focused activities to reduce the accumulation of metals, sediments, and trash. This watershed collaborative activity includes efforts undertaken by Copermittees to enhance their jurisdictional street sweeping programs. The San Diego Bay Copermittees participated as part of this collaborative activity by either 1) increasing the frequency of street sweeping in their jurisdictions above the minimum Permit required jurisdictional frequencies, and/or 2) utilizing more effective street sweeping equipment. This activity summary includes the individual Copermittee efforts described in the WURMP Document activities 3A-3F.

Increased Frequency

According to the jurisdictional requirements presented in the Municipal Permit, municipal areas must prioritize and sweep streets and parking lots based upon the amount of trash and debris accumulated. Copermittees participating in this watershed activity include the Port, Airport Authority, and the Cities of Coronado, La Mesa, San Diego, Imperial Beach, and National City. These Copermittees have undertaken additional sweeping that is more frequent than the Municipal Permit's jurisdictional requirements within prioritized areas

Higher Efficiency Street Sweeping Equipment (Targeted Aggressive Street Sweeping Project)

The City of San Diego (City) continued to conduct a 24-month street sweeping pilot study in the Chollas Creek HSA (908.22) of the San Diego Bay Watershed Management Area (WMA) that not only increased frequencies, but also test different street sweeping machines. The pilot study is part of an ongoing effort to improve water quality and maintain City's compliance with multiple water quality regulations. The goal of the pilot study is to determine the optimal street sweeping frequencies and sweeper machinery that will help the City better comply with local, state and federal Clean Water regulations. Specifically, the study is investigating the effectiveness of using vacuum-assisted street sweepers in place of conventional mechanical sweepers and increasing sweeping frequencies to reduce the accumulation of debris containing metals on City streets. The pilot study includes the purchase of two types of vacuum-assisted sweepers; the training of sweeper operators; the assignment of sweepers to designated routes within the Chollas Creek HSA; and both dry-weather and wet-weather monitoring programs to assess the effectiveness of the pilot study.

In order to select the appropriate route, the City of San Diego used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* (Activity Summary Sheet SDB-038) to target areas within the San Diego Bay WMA. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study Activity Summary Sheets SDB-024A, -

024B, and -024C), and meetings held with relevant City staff, the selected route (CC-1[2]) is in one of the highest priority sectors of the San Diego Bay WMA for potential metals loading.

In anticipation of the start of pilot study, the City conducted the following community outreach and information dissemination efforts in FY 2009:

- Community presentation held in March 2008 in Chollas Creek area
- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Newspaper display advertisements placed in community newspapers
- Door hangers distributed in Chollas Creek area
- Information shared with Council Offices
- Press event and release conducted by Mayor's Office
- E-mail blasts and calls made to inform stakeholders of project

The City installed "no parking" signs along the pilot study route in the Chollas Creek area (CC-1) from December 2007 through March 2008. In April 2008, the City began sweeping CC-1 at a twice a week frequency (two times per week on each side of the street) to determine the amount of debris containing metals that could be removed by increasing the frequency of the City's conventional street sweeping program. Implementation of the twice a week sweeping frequency took place for one calendar year, and concluded in April 2009. In March 2009, the City notified the public that it was reducing the sweeping frequency of CC-1 from twice a week to once a week (one time per week on each side of the street) for the remainder of FY 2010 to gather comparative data for the two frequencies. Public notification was provided via display ads, a press release and an email blast to community groups. The "no parking" signs were also changed to reflect the reduced frequency schedule. Implementation of the once a week sweeping frequency began in April 2009 and is currently ongoing. The preliminary results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

This phase of the pilot study also included a comparative analysis of the performance of the City's conventional mechanical street sweepers and the newly acquired vacuum-assisted sweepers. Comparative debris data was collected for each machine type at both frequencies (twice/week and once/week) for CC-1. The preliminary results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

Based on the preliminary results presented in the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load

[2] CC-1 consists of a mix of residential and commercial land uses in the Greater North Park, Normal Heights, Kensington-Talmadge, and City Heights areas.

reduction of metals (a high priority water quality problem in the San Diego Bay WMA), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2009.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303(d) lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for sediment toxicity, benthic community effects, and the metals copper, lead and zinc. Two total Maximum Daily Loads (TMDLS) have been established for metals in the San Diego Bay under the Shelter Island Yacht Basin Dissolved Copper TMDL and the Chollas Creek Dissolved Copper, Lead, and Zinc TMDL. The RWQCB is also developing additional TMDLs in Paleta, Switzer and Chollas Creek.

Street sweeping enhancement activities may have beneficial effects by reducing the loading of pollutants such as sediment, metals, and trash that are discharged to MS4s. A variety of other pollutants are known to be associated with sediment, such as bacteria, may also be reduced. The Enhanced Street Sweeping Program is applicable to these TMDLs to the extent it addresses the control of sources of copper and other metals, trash, sediment, and other pollutants that may be associated with sediments, such as oil and grease and organics, as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

The implementation schedule for the enhanced street sweeping water quality activity is presented for FY 2008 and FY 2009.

Jurisdiction	Permit Year 2007-2008	Permit Year 2008-2009
Port of San Diego	Implementation	Implementation
Airport Authority	Planning	Implementation
City of Coronado	Planning	Implementation
City of La Mesa	Implementation	Implementation
City of San Diego	Planning/Implementation	Implementation
City of Imperial Beach	-	Implementation
City of National City	Implementation	Implementation

Planning for the City of San Diego's pilot project began in September 2006. Sweeping started in the spring of 2008 and is anticipated to continue through the summer of 2010. Debris testing and water quality monitoring is being conducted throughout the pilot project to assess effectiveness in removing metals from City of San Diego streets.

PARTICIPATING WATERSHED COPERMITTEES

Table E-3 below lists the San Diego Bay Copermittees participating in the street sweeping enhancement activities activity during this reporting period, the enhancement that was used, and the HA(s) where the activity occurred.

Table E-3. San Diego Bay Copermittee Participation in Street Sweeping during FY 2009.

Copermittee	Hydrologic Area									Enhancement Mechanism	
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Increased Sweeping Frequency	Higher Efficiency Equipment
City of National City			X	X						X	
City of Coronado							X			X	
City of Imperial Beach							X	X		X	
City of San Diego		X								X	X
City of La Mesa		X		X						X	
Port of San Diego	X	X	X	X				X		X	
Airport Authority		X								X	

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping Enhancement activity targets reduction of high priority water quality problems such as metals, sediments, and trash. Metals were identified as a high priority water quality problem for 908.1 HA and 908.2 HA. Sediment and trash were identified as high priority water quality problems in 908.2 and 908.3 HAs. Streets are identified as a major source category comprising approximately 20% of the acreage within each HA. Additionally, street sweeping may also address residential pollution that accumulates in gutters along residential thoroughfares. Residential acreage in these HAs also comprises a large percentage. By increasing sweeping frequencies or using more efficient equipment, Copermittees undertaking this activity improved their ability to reduce pollutant loading from major sources within the high priority hydrologic areas.

EFFECTIVENESS ASSESSMENT

Increased Frequency

Effectiveness has been assessed by evaluating the additional amount of materials removed through this activity from the watershed's streets and roadways. Load reductions comprise a level four assessment through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Table E-4 shows the increase in materials removed due to greater frequency of street sweeping by each participating Copermittee[3].

Table E-4. Estimation of Pollutant Load Reduction Due to Increased Frequency.

Jurisdiction	JURMP Baseline Material (lb)	Additional Materials Removed (lb)	JURMP Baseline Curb Miles	Additional Curb Miles 08/09
City of National City	329,000	1,616,000	2,970	11,242
City of Coronado	60,040	305,560	609	7,242
City of Imperial Beach	46,724	143,189	271	830
City of La Mesa	133,960	434,040	971	3,166
Airport Authority	6,600	59,400	192	1,920
Port of San Diego	23,040	72,960	408	1,292
City of San Diego		133,999		2,554*
TOTAL		2,765,148 lbs (or 1,383 tons)		

* "Broom miles" and not "curb miles" were used to track the distance swept.

During this reporting period, the San Diego Bay Copermittees removed an additional 1,383 tons of material and covered and additional 25,692 curb miles (2,554 broom miles for the City of San Diego) within the San Diego Bay WMA through the increased frequency of street sweeping.

[3] Weight of baseline and additional material were estimated based on the overall amount of material removed during the year and the relative proportions of the overall sweeping attributable to JURMP baseline sweeping and to additional sweeping. For example, if 100,000 pounds were removed, 3,000 miles of JURMP baseline sweeping was done, and 2,000 miles of additional sweeping was done, the baseline material would be recorded as 60,000 pounds (60% of the overall amount) and the additional sweeping material would be recorded at 40,000 pounds (40% of the overall amount). The City of San Diego tracked the weight of baseline and additional material by using "broom miles". A "broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. The broom mileage does not translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Targeted Aggressive Street Sweeping Project

Watershed: San Diego Bay		
TARGETED AGGRESSIVE STREET SWEEPING PILOT STUDY **Assess Effectiveness and Efficiency of Street Sweeping in Reducing Metals Loading**		
Management Questions	• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?	
Targeted Measurable Outcomes	• Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement	
Assessment Methods	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)	
Data Recorded	Total kg of debris removed by mechanical sweeper: Total kg of debris removed by regenerative-air sweeper: Total kg of debris removed by vacuum sweeper: **Total kg of debris removed:**	15,068 kg 15,939 kg 29,774 kg **60,781 kg** **(0.066 tons)**
	Total broom miles swept by mechanical sweeper:* Total broom miles swept by regenerative-air sweeper: Total broom miles swept by vacuum sweeper: **Total broom miles swept:**	1,099 mi 706 mi 749 mi **2,554 mi**
	Total kg of debris removed by mechanical sweeper/mile swept: Total kg of debris removed by regenerative-air sweeper/mile swept: Total kg of debris removed by vacuum sweeper/mile swept: **Average kg of debris removed /mile swept:**	14 kg/mile 23 kg/mile 40 kg/mile **26 kg/mile**
Recommended Data	• Cost of sweeper repairs/maintenance (Outcome Level One) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level Four) • Frequency of removal correlated to pounds of debris removed (Outcome Level One and Four) • Post-sweeping COC concentrations in runoff (Outcome Level Four) • Cost of vacuum-assisted sweepers (Outcome Level One) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level One)	

*"Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom

miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Objectives

The goal of the assessment is to investigate the effectiveness of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data will also be evaluated for the purpose of establishing optimal sweeping frequencies.

Analysis and Results

The study included the purchase of two types of vacuum-assisted sweepers; the dedication and training of sweeper operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. A total of 60,781 kg of debris was removed by all three sweeper types during FY09 in the San Diego Bay WMA, over a total of 2,554 miles swept. This resulted in an average kg of debris removed per mile swept of 26. Further analysis is underway to address the study objectives during FY 2010.

Conclusions

Conclusions and recommendations will be presented in the final report, which is scheduled for completion by June 2010. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS COLLABORATIVE ACTIVITY (SDB-004)

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees participated in a number of cleanup events throughout the San Diego Bay WMA. The cleanup events physically removed large amounts trash, debris, and other associated pollutants from the watershed creeks, rivers, streams and shorelines. The events included jurisdictional events as well as watershed-wide efforts that were coordinated by non-profit organizations. The San Diego Bay Copermittees provided funding by sponsoring various cleanup events and/or participated by soliciting volunteers, working as site captains, and participating in the cleanup events themselves. These events actively promoted a sense of watershed stewardship to the general public and resulted in trash load reductions. Figure E–1 presents the locations of cleanup activities in the San Diego Bay WMA. Cooperative efforts enable the San Diego Bay Copermittees to assess the relative trash loads for each event within each HA and the San Diego Bay WMA and determine whether there is a long-term reduction.

The Copermittees, while reporting on multiple trash cleanup events that occurred within the watershed, understand that it will only receive credit for one cleanup activity during the fiscal year. In addition, the Copermittees acknowledge that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the Copermittees may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash cleanup measures and programs to be implemented. The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria, sediment toxicity, and benthic community effects. These impairments may be indirectly reduced through the cleanups. The RWQCB is developing TMDLs to protect beneficial uses in the 303d listed impaired water body segments, including Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines and the Paleta, Switzer and Chollas Creek for sediments.

TIME SCHEDULE FOR IMPLEMENTATION

All San Diego Bay Copermittees have actively implemented cleanup events during this reporting period. They recognize the value in cleanup activities and plan to continue to implement this type of activity in all jurisdictions over the next four years.

Figure E-1. San Diego Bay WMA Cleanup Activity Sites.

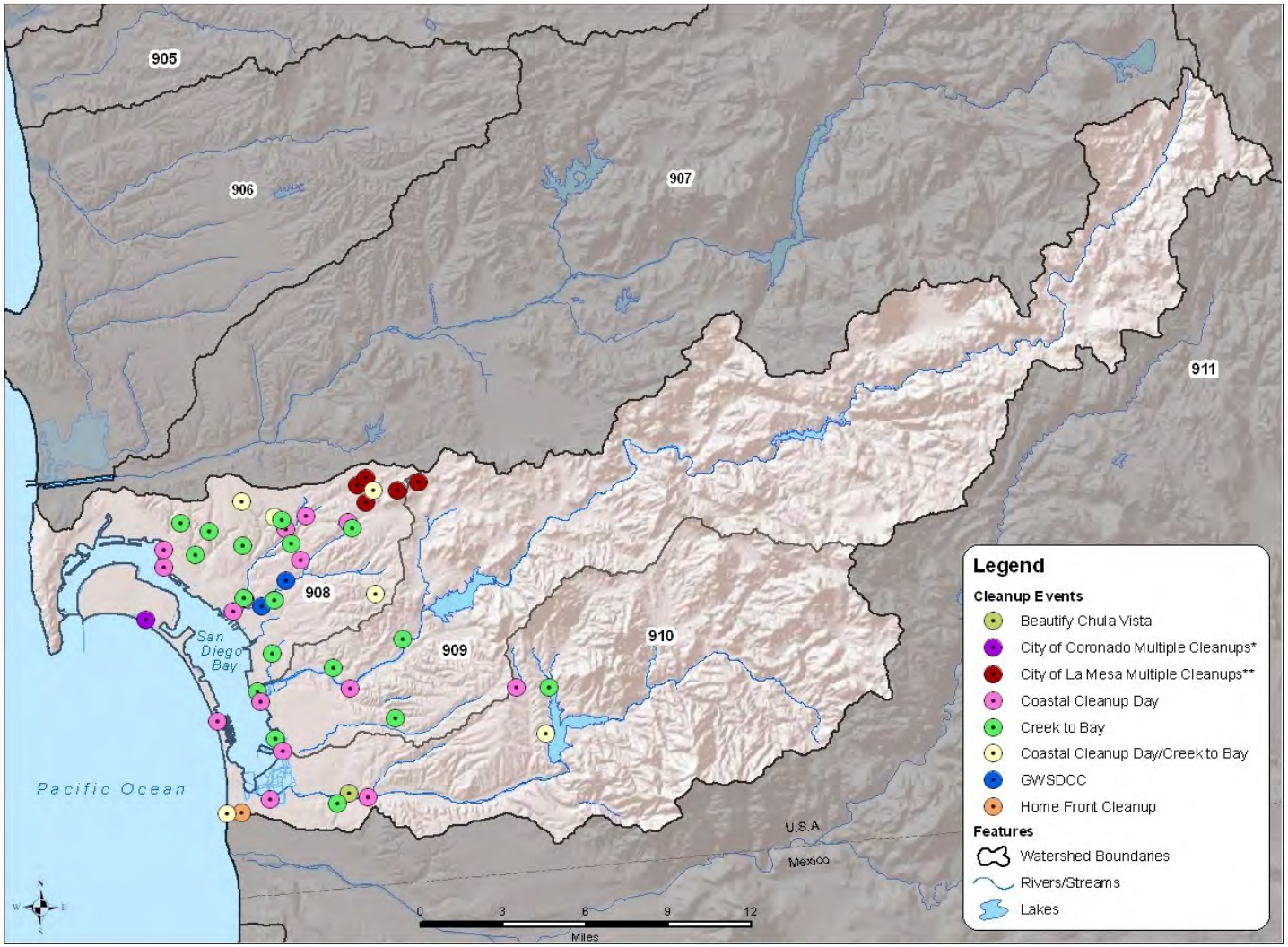

* City of Coronado cleanups included Coastal Cleanup Day, Creek to Bay, Kids Ocean Day, and San Diego Coastkeeper

**City of La Mesa cleanups include Park Appreciation Cleanup Day, Adopt a Park/Block Day, and partnership with Madeline Sophie Center

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of San Diego
- City of Imperial Beach
- City of Lemon Grove
- County of San Diego
- City of La Mesa
- City of Coronado
- Port of San Diego
- Airport Authority

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper
- Groundwork San Diego—Chollas Creek

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash has been identified in the San Diego Bay WURMP document as a high priority water quality problem in 908.2 and 908.3 HAs. Trash is an important issue to address in all HAs. Cleanup events aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, bacteria and metals are other high priority water quality problems that may be reduced indirectly as a result of the removal of trash. Trash often consisted of common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies trash as a high priority water quality problem. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions. Increased awareness and education of the public in all HAs is also an important component. Sponsorship of cleanup events resulted in load reduction of trash and debris directly and bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The cleanup events encouraged stakeholder buy-in and participation in implementing the Watershed Strategy. This often resulted in a Level Three outcome by causing a change in behavior, knowledge, attitude and awareness within the community of how to properly dispose of trash by the individuals involved. A Level Four outcome was also identified in all HAs due to the collection and removal of trash from the conveyance system. Relative pollutant load reductions within the watershed were assessed based on the weight of debris collected.

Table E-5 describes the cleanup event activities the San Diego Bay Copermittees actively implemented during this reporting period, the HA the cleanup event was located, the number of participants, and the amount (lb) of trash removed.

To assess the effectiveness of cleanup activities, the number of people participating as well as the total amount of trash collected has been calculated. The number of people participating in cleanups is utilized to convey a level three outcome to demonstrate changes in behavior in those involved in the cleanups in the San Diego Bay WMA. The amount of overall trash collected was utilized to estimate the load reductions of trash, a Level Four outcome, occurring during FY 2009.

- Approximately 5,790 people participated in cleanups throughout the San Diego Bay WMA.
- The overall amount of trash collected throughout the San Diego Bay WMA during FY 08-09 was approximately 531 tons.
- The Creek to Bay Cleanup, sponsored by the San Diego Bay Copermittees and coordinated by I Love A Clean San Diego on April 25, 2009, removed 71,188 lbs of trash and involved 1,609 volunteers.

Table E-5. Cleanup Activities for FY 2009 within the San Diego Bay WMA.

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)

The following jurisdictions served as site captains for the California Coastal Cleanup Day Event: City of Las Mesa, City of San Diego, Port of San Diego, and City of Coronado. The Airport Authority sponsored the event financially.	908.2
	908.3
	909.1
	910.1
	910.2
	910.3
		9/20/08	Coastal Cleanup Day*:
			• Chollas Lake Park, Oak Park
			• Chollas Creek
			  • National Ave
			  • 54th Street
			  • Earthlab
			  • Barrio Logan
			• Cooper Canyon
			• North Park Urban Cleanup
			• Paradise Canyon
			• G Street Pier to Broadway Pier
			• Swan Canyon
			• Dive Sites - Embarcadero
			• La Mesa, University Channel
			• Chula Vista-SEMPRA
			• Chula Vista Wildlife Reserve
			• Coronado City Beach
			• Imperial Beach Pier
			• Otay Valley Regional Park
			• Otay River
			• Salt Creek, Chula Vista
			• South Bay Wildlife Refuge
			• Sweetwater Regional Park
			• Silver Strand State Beach, Coronado
				1,325	51,083

The San Diego Bay Copermittees sponsored the 2009 Creek to Bay Cleanup Event. The following jurisdictions also served as site captains for the event: City of Las Mesa, City of National City, City of San Diego, Port of San Diego, and City of Coronado.	908.2 908.3 909.1 910.1 910.2 910.3	4/25/09	Creek to Bay: • Morrison Pond County Park • J Street Marina • Otay Valley Regional Park • Florida Canyon • Chollas Creek 47th Street • Coronado City Beach • La Mesa University Channel • Del Rey Canyon • Imperial Beach Pier • D Street Fill • Paradise Creek • North Park • Maple Canyon • Chollas Creek 33rd Street • Cooper Canyon • North Swan Canyon • Paradise Canyon • San Diego High School Campus • South Park • Southcrest Community Park • Lemon Grove • Sweetwater River • Montgomery High School Native Plant Garden • Upper Otay Lake	1,609	71,188

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
City of La Mesa	908.2 909.1	10/24/08	Park Appreciation Cleanup Day	630	447,229
		Various	Adopt A Park and Adopt a Block		
		4/11 &18/09	Partnership with Madeline's Sophie Center		
City of Imperial Beach	910.2	5/2/2009	Home Front Cleanup*	732	308,600
Port of San Diego	908.2	Various	Groundwork San Diego—Chollas Creek (GWSDCC)		180,000
Port of San Diego	908.2 908.3 910.1	Various	Coast Keeper Cleanup Events: • Paradise Educational Park at Paradise Creek • Emory Cove at Salt Pond 20 • Chollas Creek at Market Creek Plaza	94	1,408
City of Chula Vista	910.2		Beautify Chula Vista	500	1,200
City of Coronado	910.1	3/28/09	San Diego Coastkeeper Cleanup	900	639
		6/4/09	Kids Oceans Day Cleanup		

*Shaded California Coastal Cleanup sites were captained by San Diego Bay Copermittees.

**The Home Front Cleanup was an annual large waste drop off event at a single location.

CLEAN COMMUNITY PROGRAM (SDB-005)

ACTIVITY IMPLEMENTATION

The City of National City (City) has implemented a program to encourage individuals to dispose of waste properly. Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also encourage a behavioral change for the community by potentially changing the manner in which trash was disposed of by individuals. This program included two disposal events for large items and green waste. These events provided individuals with an avenue for properly disposing of items that might otherwise have been illegally dumped. The City alerted residents to these events beforehand via notices in their trash bills. The City has also hired a company to clean Paradise Creek twice per month. The cleaning mainly involves checking for the presence of trash and debris and removing trash that is noted. Finally, the City also participated in the Creek to Bay Cleanup.

Additional efforts included holding an art contest for school children in all the elementary schools in the City. The contest involved preparing artwork for the 2010 Storm Water Calendar with messages about keeping the City and local water bodies clean. The twelve winning drawings are being incorporated into the upcoming 2010 Storm Water Calendar. The 2009 Storm Water Calendar was distributed to all the elementary schools in the City, to households in the City's designated high threat to water quality residential areas, and to inspected industrial and commercial businesses. The City also plans to distribute copies of the 2010 calendar during the FY 2010 reporting period.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Cleanup and disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in 908.3 HA. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EFFECTIVENESS ASSESSMENT

During FY 2009, the City participated in more cleanup events and experienced a higher level of participation than in past reporting years. As part of the Creek to Bay Cleanup event, 118 volunteers helped to remove over 4,598 pounds of trash and debris from Paradise Creek Educational Park and an open area adjacent to the Sweetwater River. In November 2008 and in June 2009, materials were collected on large item disposal days; however the exact quantities of large items were not recorded. The City has also contracted a company to clean out Paradise Creek bi-monthly, however, information on the quantities of the debris and trash removed is not available for FY 2009.

Approximately 5,740 calendars were distributed to elementary students, high priority residential areas, industrial and commercial businesses, and municipal personnel in the City of National City. For the City's calendar contest, teachers in all 43 third grade classrooms within the City introduced storm water concepts, using presentation materials from the school district representative, and distributed handouts that explained the contest guidelines. The handouts received by each student to take home also included storm water educational information.

TRASH CONTAINMENT BOOM CLEANING AGREEMENT WITH UNITED STATES NAVY (SDB-006)

ACTIVITY IMPLEMENTATION

Since FY 2002, the City of San Diego entered into annual agreements with the United States Navy to remove trash and debris flowing through Chollas and Paleta creeks into Navy property. Street Division and Storm Water Pollution Prevention Division staff back then met with Navy representatives to formulate an action plan addressing floating material traveling through the creeks.

In FY 2008 reporting period, the trash booms were in place for continued operation. However, routine inspections resulted in no trash and debris to be collected and disposed.

In FY 2009 no activity was reported.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Booms will continue be in place, however reporting of this activity will no longer be continued.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- United States Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Trash accumulates within the storm water conveyance system during periods of dry weather and then washes downstream during rain events. There is a cause-and-effect relationship between litter and water quality in the San Diego Bay Watershed. Trash and debris may result in a number of negative impacts that

contribute to increased contamination, such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. Literature published by the United States Environmental Protection Agency on its web site[4] states that debris may be contaminated by pathogens that have adverse effects on humans. Reduction in the amount of litter within the watershed contributes to improvement in the quality of the storm water/runoff that ultimately discharges into San Diego Bay.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS AND PALETA CREEKS NAVY TRASH BOOM **Assess Efficiency and Effectiveness of Containment Booms in Reducing Pollutant Loads**	
Management Questions	• How much load reduction can be achieved using trash containment booms? • How efficient are the containment booms in reducing pollutant loads?
Targeted Measurable Outcome	• Reduction in pollutant loads
Assessment Methods	• Inspections (e.g., ensure booms working as designed) • Quantification (e.g., estimate tons of trash and debris removed) • Monitoring (e.g., monitor types of trash and debris removed to help identify source) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four)

Objectives

The goal of the assessment is to determine the efficiency of containment booms in removing trash and debris from creeks to improve water quality.

Conclusions

Assessment will not be conducted as no activity was reported.

[4] http://www.epa.gov/owow/oceans/debris/

ADDITIONAL DRY SEASON CONSTRUCTION INSPECTIONS (SDB-007)

ACTIVITY IMPLEMENTATION

During FY 2009, the City of National City (City) conducted additional inspections of construction sites during the dry season to reduce the potential for the discharge of sediment. According to the jurisdictional requirements presented in the Municipal Permit, construction sites (any priority) should be inspected as needed during the dry season. Additional construction inspections were conducted during the dry season to identify any areas where BMP implementation is not being maintained properly, particularly toward the end of the dry season when sites need to be preparing for the wet season. This program aims to decrease discharges of trash and sediment to the MS4. Increased construction inspection frequencies during the dry season will contribute to improvements in water quality by reducing the loads of pollutants such as sediment and trash entering the City's MS4 and downstream receiving waters. This effort will promote BMP implementation at construction sites during the dry season and will help prepare construction sites for the upcoming wet season.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Increased construction inspection frequencies during the dry season are intended to reduce the discharge of trash and sediment, which have been listed as high priority water quality problems in 908.3 HA. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these pollutants and abate pollutant sources.

EFFECTIVENESS ASSESSMENT

Excluding complaint investigations, the City completed 19 inspections at construction sites during the portions of the 2008 and 2009 dry seasons that fell within the FY 2009 reporting period: July 1, 2008 through September 30, 2008 and May 1, 2009 through June 30, 2009. Inspectors found most of these inspections helped contractors stay vigilant about implementing BMPs during the dry season and that they were especially helpful toward the end of the dry season, when the inspectors could also remind the responsible parties of applicable wet season requirements. BMP deficiencies noted during the dry season inspections were resolved during the first inspection of the wet season.

SAN DIEGO BAY WATERSHED MANAGEMENT AREA TARGETED INSPECTIONS – AUTOMOTIVE (SDB-008)

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the Mission Bay, San Diego Bay and Tijuana River Watershed Management Areas (WMA). The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
2) Does type of business ownership change the required inspection frequencies?
3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

The focus of the activity during FY 2009 was to develop the activity and implement the first round of inspections that would establish the baseline data set for comparison after the second and third round of inspections are completed.

The initial findings included problems primarily in outdoor storage and activity areas without proper BMP implementation or good-housekeeping practices. The findings for the FY 2009 activity implementation do not completely answer the management questions, however, by the end of the program, it is anticipated that these questions will be answered.

In FY 2009 a total of 191 full inspections were completed at auto shops in the San Diego Bay WMA, specifically the Chollas Creek Hydrologic Area.

<u>Facilities</u>

During FY 2009, the City conducted the first round of its automotive facility inspections from February through May 2009. 278 inspections were conducted as follows:

- Mission Bay Watershed – 65 inspections
- Chollas Watershed – 191 inspections
- Tijuana Watershed – 22 inspections

Approximately 50% of these businesses (139) are scheduled to receive a second inspection in FY 2010, starting in August 2009. In addition, all 278 businesses will be re-inspected again starting in February 2010 to be able to compare the results of the inspections for a complete annual cycle.

Figure E-2 – Mapping of the facilities inspected (all three watershed areas)

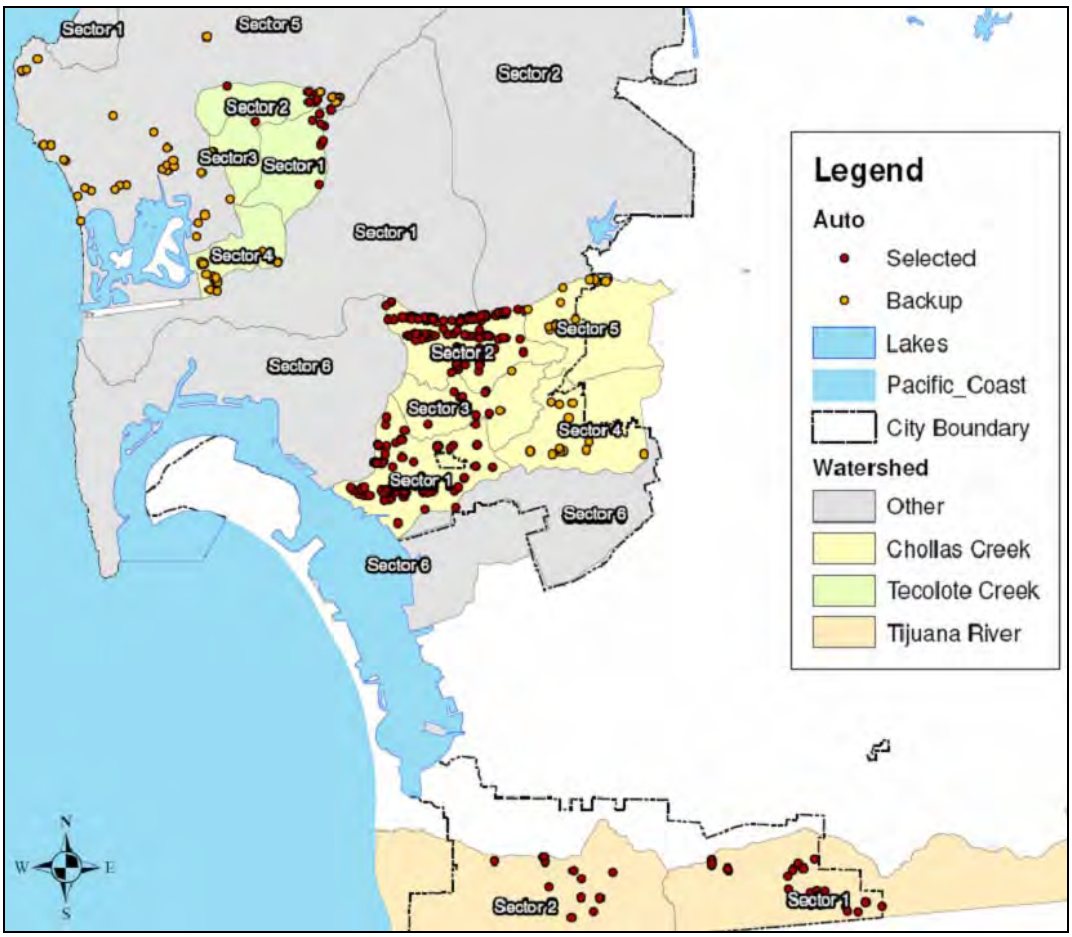

During FY 2009, many of the alternative locations were utilized to obtain the 278 inspections due to the lack of primary and secondary sites to be inspected. Many of the businesses were no longer in business or had relocated and were not “inspectable”.

Public Outreach

The City sent out a letter to business owners informing them of the inspections. The notice provided basic information about the City’s inspection program and informed the recipient that they may be subject to multiple inspections.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will conduct its second and third rounds of inspections in August 2009 and February 2010 respectively. Data analysis and activity assessment will occur between April and June 2010 for reporting in the FY 2010 Annual Report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as high priority water quality problems in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria and metals.

EFFECTIVENESS ASSESSMENT

Baseline Data

Baseline data collected during FY 2009 will be the basis of comparison for changes in findings when compared to mid-year inspections and annual inspections. Pollutant Discharge Potential Assessment (PDPA), BMP Knowledge and findings of violations will be compared to inspections conducted in FY 2010.

Data Collection Methods – Inspections

The City completed the inspections utilizing existing inspection forms with supplemental questions to capture the information necessary to answer the three management questions.

As with all inspections conducted by the City, during these watershed inspections, if violations were identified, they were noted for follow-up as appropriate. Follow-up inspections will occur as appropriate based on the identified violations. If discharges were identified, the City's inspector immediately reported these incidents to the City's code enforcement group. This enabled the City to take immediate actions to abate sources and have a direct positive impact on load reductions.

Findings

The following represents the primary findings of the activity. Of the 278 inspections conducted:

- One (1) had an illicit discharge identified during the inspections
- 60 had identifiable violations of the City's municipal code/minimum BMPs
- 25 had made at least one correction to violations during the inspections
- 89% (247 sites) implemented BMPs for liquids storage
- 23% (64 sites) performed at least some maintenance outdoors
- 57% (159 sites) have outdoor storage of materials – 29% (46 sites) did not implement any BMPs

In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues would be resolved if the facilities had structural changes to cover the outdoor operations and activities.

Additionally, the baseline data for the purposes of comparison of the varying inspection frequencies are identified in the table below. These assessment results will be compared to the 6-month inspection results as well as the final annual inspection results to compare and contrast the results based on the frequencies of inspections.

Table 1 – Stormwater Knowledge & BMP Assessments

Inspection Category	Inspections	Average Knowledge*	Average BMP*
FY 2009 WURMP Automotive Inspections	278	1.2	2.8
Automotive inspections – non WURMP	576	2.0	2.8
All Inspections (historic JURMP)	5,082	2.3	3.0

* Scale is from 1 (lowest) to 5 (highest)

Table 2–Effectiveness Assessment for Activity

Watershed: San Diego Bay		
TARGETED FACILITY INSPECTIONS Assess Efficiency and Effectiveness of Facility Inspections		
Management Questions	• What is the optimal frequency of inspections for Automotive Repair Facilities? • Does type of business ownership change the required inspection frequencies? • Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?	
Targeted Measurable Outcomes	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from data)	
Data Recorded	Number of full inspections (Outcome Level One)	191
	Number of facilities recommended for follow-up (Outcome Level One)	41
	Number of Sites Needing Corrective Action (Outcome Level One)	191
	Number of Sites that Implemented Some Corrective Action During Inspection (Outcome Level Three)	21
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level Four)	21
	Total IC/IDs Observed (Outcome Level One)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level One)	N/A

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area. As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 191 sites. Additionally, the City noted 41 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at 21 locations, corrective actions were immediately taken. This demonstrates both a Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcome was achieved as a direct result of this activity.

The City plans to implement the program in FY 2010 to more obtain more data necessary to answer the management questions associated with the program activity.

ENHANCED CONSTRUCTION OVERSIGHT (SDB-009)

ACTIVITY IMPLEMENTATION

The Airport Authority continues to oversee construction projects in a manner that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Construction Oversight Program is to abate the amount of sediment potentially released to the watershed from construction sites. The Airport Authority first began to implement this enhanced program in fiscal year 2004-2005. In addition to increasing construction site inspection frequencies, staff from the Airport Authority Environmental Affairs Department attends pre-construction meetings and regularly scheduled progress meetings more frequently than required by the Permit during both the wet and dry seasons. The regular meetings are used as an opportunity to focus the attention of project managers on BMPs directed at preventing the discharge of sediment to the storm drain system. During meetings and inspections, staff discusses the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project. Heightened awareness of proper sediment control BMP implementation increases the likelihood of sediment control BMP effectiveness, which in turn helps to abate the amount of sediment loading to San Diego Bay. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of sediment control BMPs. By changing the way in which individuals implement BMPs, this program results in a level Three outcome. The program also estimates the amount of sediment abated from impacting stormwater discharge quality, which is a level Four outcome.

The Airport Authority tracks the number of construction project regular progress meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, and the number of sediment source control BMP issues identified during inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual sediment pollutant load abated by 1) estimating, based on review of the literature and/or other sources, sediment loads per construction site per day when sediment controls are not implemented, and 2) tracking the number of sediment control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

The Enhanced Construction Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates construction sites as a source of sediment in the watershed. Abatement of sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects,

and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Construction Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of sediment as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Construction Oversight Program intends to abate sediment associated with construction sites, thereby improving the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies sediment as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS ASSESSMENT

There were fourteen construction projects underway at San Diego International Airport during FY 2009. Staff from the Authority Environmental Affairs Department attended 181 construction project meetings related to these 14 projects during FY 2009 and conducted a total of 151 inspections (previously incorrectly reported in the Airport Authority FY 2008-2009 Municipal Permit Annual Report as 162 inspections). Based on the requirements of the Municipal Permit, the Authority need have only conducted 55 inspections, which means 96 more inspections were conducted than required by the Municipal Permit. Out of the 151 inspections conducted,

issues or concerns related to sediment control were identified approximately 25% of the time. Given that issues/concerns regarding sediment control were identified during approximately 1 of 4 inspections on average, the Enhanced Construction Oversight Program appears to be effective at ensuring construction site sediment control BMPs are properly implemented over the life of the construction project.

To estimate the reduction in sediment load to the watershed resulting from implementation of the Enhanced Construction Oversight Program, the Authority used the method outlined in the State Water Resources Control Board March 18, 2008 Draft NPDES Construction General Permit (Draft Permit) (http://www.swrcb.ca.gov/water_issues/programs/stormwater/historical.shtml#con). Page 49 and Attachment A of the Fact Sheet presents a methodology using the Modified Universal Soil Loss Equation (MUSLE) to estimate soil loss from exposed soil that is being protected by BMPs. The Authority used this equation to compare the sediment load from a construction site without proper BMPs to the sediment load from a construction site with properly implemented BMPs. The difference between the two calculations is the estimated reduction in sediment load to the watershed. The MUSLE equation can be expressed as:

Erosion Estimate (sediment load) in tons/acre/year = R•K•LS•C•P

Where: R = rainfall intensity factor.

K = soil erodibility factor

LS = length-slope factor

C = cover factor (erosion controls)

P = management operations and support practices factor (sediment controls)

Attachment A of the Draft Permit notes that values of R have been calculated for any time period for more than 1000 locations in the Western U.S. and are available at http://ei.tamu.edu/. The Airport Authority used the one year period July 1, 2007 to June 30, 2007 to determine the R factor for the airport site (R = 21). Attachment A also notes that soils having high silt content are especially susceptible to erosion and have high K values. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. K values for silty soils can exceed 0.45 and can be as large as 0.65. The Airport Authority assumed a K value equal to 0.45 for the airport site, so as not to over-estimate the amount of soil potentially being eroded, and in turn, so as not to over-estimate the sediment load reduction achieved by the Enhanced Construction Oversight Program. Attachment A to the Draft Permit discusses the effect of topography on erosion in terms of the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. Attachment A includes a table of LS factors. Given the relatively flat topography at the airport, the Airport Authority selected an LS value appropriate to such a shallow hillslope gradient (LS = 0.06).

The cover factor (C) and the management operations and support practices factor (P) can then be modified to calculate erosion estimates assuming 1) no controls and 2) proper controls. The cover factor (C) and the management operations and support practices factor (P) are calculated as "1 - % effectiveness of control expressed in decimal form." If controls are not effective, then C and P equal 1. The Permit Fact Sheet notes that dischargers should use a C factor of 0.5 to simulate minimal erosion control BMPs on all exposed soil (for example, dust binder, temporary seeding, etc.). This would mean that the erosion control BMPs have an efficiency of 50% (C = 1 - 0.5 = 0.5). The Draft Permit notes that discharges should us a P factor of 0.2 to simulate an appropriately designed sediment basin. This means that the sediment control BMPs have an efficiency of 80% (P = 1 – 0.8 = 0.2). These C and P factors came from removal efficiency data from a Washington State Department of Transportation Document entitled "Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control" (http://www.wsdot.wa.gov/research/reports/fullreports/200.1.pdf)

Thus, the estimated sediment load (erosion estimate) that would have likely been generated from construction projects at the airport that had no erosion controls (that is, C = 1 – 0 =1) and no sediment controls (that is, P = 1 – 0 = 1) during FY 2009 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21•0.45•0.06•1•1

Erosion Estimate (sediment load) in tons/acre = 0.567

The Airport Authority estimates that the 14 construction projects underway at the airport during FY 2009 covered approximately 43.5 acres of surface area. As such, the amount of sediment that could have been released to the watershed by construction projects underway at the airport during FY08-09 equals:

Erosion Estimate (sediment load) = 0.567 tons/acre • 43.5 acres = 24.665 tons

Similarly, the estimated sediment load (erosion estimate) that was likely generated from construction projects at the airport that did implement effective erosion controls (that is, C = 0.5) and sediment controls (that is, P = 0.2) during FY 2009 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21•0.45•0.06(0.5(0.2)

Erosion Estimate (sediment load) in tons/acre = 0.0567

As such, the amount of sediment that was likely released to the watershed by construction projects underway at the airport during FY 2009 despite the effective implementation of appropriate BMPs, equals:

Erosion Estimate (sediment load) = 0.0567 tons/acre (43.5 acres = 2.4665 tons)

Therefore, the sediment load reduction resulting from the implementation of the Enhanced Construction Oversight Program equals the difference between the amount of sediment that would have been released from construction sites without BMPs and the amount of sediment

that was likely released despite the implementation of adequate and effective BMPs. For the FY 2009 reporting period, the sediment load reduction would be equal to:

Sediment load reduction = 24.665 tons - 2.4665 tons = 22.1985 tons

In light of this significant reduction, the Authority believes that the Enhanced Construction Oversight Program is effective at ensuring proper BMP implementation at construction sites.

LA MESA BUSINESS INSPECTION SUPPLEMENTAL WATERSHED QUESTIONNAIRE (SDB-010)

ACTIVITY IMPLEMENTATION

To gather more information regarding the level of storm water awareness of business owners/operators and to collect additional information regarding the condition of industrial and commercial sites, the City of La Mesa (City) completed an additional one-page supplement to the standard industrial and commercial inspection form. The first five questions on the form gathered information from business owners/operators regarding their knowledge of storm water, water quality issues, sources of pollutants, and whether or not they had previously received information regarding storm water. The inspector was prompted to make observations regarding the types of sprinkler heads on site, the percent of the pervious area that was landscaped, if there was any evidence of non-storm water discharges, and the business owner/operators attitude toward compliance with storm water regulations. The last question on the Supplemental Watershed Assessment Questionnaire and Inspection Form prompts the inspector to assign either significant or not significant to the overall source ranking for watershed pollutants of concern. This box was checked "Significant" when two or more of the watershed pollutants of concern were assigned a pollutant discharge potential (PDP) of three (3) or higher or one watershed pollutant of concern was assigned a PDP of a four (4) or higher. If the site did not meet the aforementioned criteria, the box was checked "Not Significant." The City intends to use the data to identify groups and/or areas in need of increased and more focused outreach and to identify potential pollutant sources.

The information gathered from the Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to collect additional information regarding the specific knowledge of business owners/operators and to identify sites that are potentially significant sources of watershed pollutants of concern. The City intends to use the collected data to develop more effective outreach measures and to identify potential sources of watershed pollutants of concern. Inspectors also give businesses corrective actions based on the findings; implementing corrective actions should result in a reduction of pollutants discharged to the storm drain system.

TMDL APPLICABILITY

TMDLs for metals and diazinon have been adopted for the Chollas Creek subwatershed. The data collected as part of this watershed activity enables the City to identify and address potential sources of watershed priority pollutants, including metals and pesticides.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation

- Permit Year 3: Assessment
- Permit Year 4: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to gain additional information about businesses' potential to contribute watershed pollutants of concern, including metals, pesticides, and bacteria.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is identifying potentially significant sources of these pollutants during its industrial and commercial storm water compliance inspection program. The City can use this information to target specific businesses and business types.

EFFECTIVENESS ASSESSMENT

This was the second year that the supplemental watershed questionnaire was used during industrial and commercial inspections. The City plans to use this collected data to compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach. It is anticipated that comparison assessments of both level Two (change in knowledge or awareness) and level Three (change in behavior) outcomes will be possible as future data is collected. When presented with the question about where water goes once it leaves the site, 14 percent of respondents in FY 2009 did not know and four percent thought that the water was directed to a treatment facility before being discharged to a water body. Only four percent of all respondents could correctly identify that their site was located within the San Diego Bay Watershed.

To conclude the survey, inspectors provided verbal explanations and education about storm water issues and BMPs to individuals that were unable to answer the survey questions correctly. The majority of facility personnel were receptive to storm water-related regulations.

MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECTS (SDB-012)

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the San Diego Bay Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities.

Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Diego Bay WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the San Diego Bay WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Southcrest Recreation Center was selected because it is located in one of the highest priority sectors of the San Diego Bay WMA for potential pollutant loading. The recreation center is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed five rain barrel systems at the recreation center. Two serially connected 75-gallon rain boxes were installed and connected to existing

downspouts at two locations along the main entrance side of the building. Each pair of rain boxes utilizes an automated timer and pump to release captured runoff to adjacent landscaping. The installation included re-opening the existing roof drains (which had been roofed over) and securing the systems with protective caging (to discourage vandalism).

Two Rain Boxes with Caging

In addition, one 75-gallon rain box and concrete planer system was installed and connected to existing downspouts at three locations along the back side of the building. Each system utilizes an automated timer and pump to release captured water from the rain barrel to a concrete planer. Concrete planters were used for these locations due to the unavailability of nearby pervious surfaces. As with the installations along the main entrance side of the building, these systems included the re-opening of roof drains and installation of security cages.

Rain Box and Planter with Caging

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer will be distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer will be posted on the City's *Think Blue* website during the first quarter of FY 2010.

This phase of the pilot project focuses on implementing and assessing the effectiveness of rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the pilot project will be applied to implementation in residential areas.

Based on these findings, the City of San Diego may modify its rain barrel/rain harvesting program to increase effectiveness and/or seek City Council approval for additional funding to implement additional rain barrel/rain harvesting systems.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring will be preformed from October 2009 to April 2010. Assessment and final reporting for this program will conclude by June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM Assess Efficiency and Effectiveness of Rain Barrel Water Collection Containers in Reducing Runoff		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems, particularly for metals and bacteria? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcomes	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of rain barrel systems	TBD
Recommended Data	• Cost of maintenance/upkeep (Outcome Level One) • Cost of implementation (Outcome Level One) • Volume of storm water captured/diverted (Outcome Level Four) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level Four) • Percent capture of the different systems (acres drained) (Outcome Level Four)	

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce stormwater runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Results and Analysis

The pilot project was not in active implementation during FY 2009. Further analysis will take place after wet-weather monitoring data is collected, which is scheduled for completion by April 2010.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the rain barrel system. Conclusions will be made after the effectiveness assessment is completed in June 2010. Any recommendations resulting from this pilot project will be reported in the FY 2010 WURMP Annual Report.

DALBERGIA STREET "GREEN MALL" INFILTRATION RETROFIT PROJECT (SDB-013)

ACTIVITY IMPLEMENTATION

The original concept for this project will remove conventional asphalt paving along Dalbergia Street and Thor Street (industrial/commercial area) and replace it with pervious concrete paving. In addition, the existing curb and gutter along portions of Dalbergia Street will be moved 12 feet into the right of way, and, in between the existing and new curb lines, bioretention planter boxes will be placed and filled with crushed rock. Both the pervious concrete and bio-retention planter boxes will allow urban runoff and the associated pollutants to infiltrate into the ground, thereby reducing pollutant loading into receiving waters. The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Green Mall" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay Watershed Management Area (WMA) to comply with both Municipal Permit and TMDL requirements.

In April 2009, contaminated soils were discovered in future infiltration areas. As such, a new location near Dalbergia Street and Vesta Street was chosen for the project. In June 2009, the second site also showed signs of contaminated soils in areas to be used for infiltration. The process of picking a third site is underway.

This project was one of two City of San Diego projects approved as a Proposition 50-granted funded project in May 2008 via the San Diego Integrated Regional Water Management Plan. The work performed in FY 2008 included project advertisement, design consultant interviews, and design consultant selection.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The work performed in FY 2008 included advertising the project, interviewing design consultants, and approving the selection of the design consultant. The design consultant started work in FY 2009 only to find contaminated soil in infiltration areas. The consultant is in the process of picking an uncontaminated site in the same watershed to implement this concept. Design will take place in FY 2010 and FY 2011. Construction is anticipated to be complete in FY 2012. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
DALBERGIA STREET "GREEN MALL" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Malls in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)

Objectives

The goal of the assessment is to determine the effectiveness and efficiency of the Dalbergia Street Green Mall Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not possible at this time. Project design will continue in FY 2010.

Conclusions

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

SOUTHCREST PARK "GREEN LOT" INFILTRATION PROJECT (SDB-014)

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a below-grade storage and infiltration basin the grassy areas of Southcrest Park. Diversion structures will divert runoff from the existing storm drain system that runs through the parking area to the infiltration areas. The site design has incorporated various Low Impact Development (LID) approaches in an integrated manner. These approaches include replacing existing asphalt roads and parking lot with porous pavement as well as rain barrels and planters to collect roof drainage. This site was selected for its likely higher permeability soils and location next to the creek. Infiltration from the underground units will seep into the creek and will not impact down-gradient structures.

The project will be designed according to the integrated approach outlined in the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (November 2007) of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, help meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA). The City of San Diego has named this model approach for LID as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Preliminary engineering is expected to be completed in November 2009. The planned implementation date is FY 2012 to 2013. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
SOUTHCREST PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt, underground storm water storage vaults, and rain barrels? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)

Objectives

The goal of the assessment is to determine the efficiency of the Southcrest Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not feasible at this time. Project design will continue in FY 2010.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time. The planned implementation date is FY 2012 to 2013. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

MEMORIAL PARK "GREEN LOT" INFILTRATION PROJECT (SDB-015)

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a large underground chamber to collect and then slowly infiltrate urban runoff into the underlying subsoils. This underground system will be located within Memorial Park, thereby transforming the recreational facility into a dual-use site for both urban runoff pollution reduction and recreation. The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA). The City has named this model approach for Low Impact Development (LID) as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar Low Impact Development (LID) projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006 and was completed in September 2007. Design started in September 2007 and is expected to finish in FY 2010. Construction is anticipated to begin in April 2010 and finish in October 2010. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
MEMORIAL PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt and underground storm water storage vaults? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Data Recorded	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)

Objectives

The goal of the assessment is to determine the efficiency of the Memorial Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not feasible at this time. Project design will continue in FY 2010.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

ENHANCED DRY WEATHER MONITORING PROGRAM (SDB-020)

ACTIVITY IMPLEMENTATION

The Airport Authority continues to conduct dry weather monitoring at a frequency that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Dry Weather Monitoring Program is to identify sources of stormwater pollution in the watershed. The Airport Authority first began to implement this enhanced program in FY 2005-06 by increasing the frequency of dry weather monitoring from the Permit requirement of once per dry weather season to at least three times during the dry weather season. The increased frequency increases the chances that illegal discharges and their sources might be identified, which in turn helps to reduce pollutant loading to the watershed and San Diego Bay. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

Information collected by the Enhanced Dry Weather Monitoring Program will also be used to characterize dry weather discharge water quality in general and to influence and assess ongoing watershed management and planning activities. The elimination of illegal discharges generally requires that dischargers gain some awareness of stormwater pollution prevention and understanding of proper BMP implementation. By changing the way in which dischargers implement BMPs, this program results in a level Three Outcome. The program may also be able to estimate the pollutant loads eliminated and thus no longer impacting stormwater discharge quality, which is a level Four Outcome.

The Airport Authority intends to track the number of dry weather monitoring events conducted in excess of the minimum number required by the Municipal Permit, and the number of illegal discharges identified. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the pollutant load abated using the known pollutant discharge concentrations and estimating the discharge duration. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

The Enhanced Dry Weather Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it helps to identify and eliminate sources of illegal discharges in the watershed. Identification and elimination of illegal discharges within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of

one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Dry Weather Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, copper, and other pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Dry Weather Monitoring Program will help to identify and eliminate sources of stormwater pollution in the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Dry Weather Monitoring Program intends to identify and eliminate sources of illegal discharges and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, pesticides, sediment, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of pollutant sources, including these high priority pollutants.

EFFECTIVENESS ASSESSMENT

During the 2009 dry weather monitoring season, the Authority conducted three monitoring events as part of the enhanced dry weather monitoring program. The dry weather monitoring was conducted three times more frequently than required by the Municipal Permit. Since no illegal discharges were identified during the 2009 dry season reporting period, there are no discharge durations to associate with pollutant discharge concentrations, and thus, no estimate

of a load reduction can be made. Conversely, since no illegal discharges were identified, it is assumed there was no increase in pollutant loading to the watershed and/or San Diego Bay.

COORDINATED DRY WEATHER MONITORING PROGRAM (SDB-021)

ACTIVITY SUMMARY

Each Copermittee is required to implement a Jurisdictional Dry Weather Monitoring (DWM) Program as part of the Illicit Discharge Detection and Elimination Component of the Municipal Storm Water Permit (Order No. 2007-0001). Each Copermittee has developed and implemented a DWM program as required by the Permit but due to logistical constraints, site monitoring and sample collection within each jurisdiction often are conducted independent of other jurisdictions. The San Diego Bay Copermittees recognize that coordinated DWM efforts could be more effective because illicit discharges may cross jurisdictional boundaries. Since 2004, San Diego Bay Copermittees have made efforts to coordinate their individual jurisdictional DWM sampling efforts for select locations and dates.

The Port of San Diego, the Airport Authority, and the City of San Diego continued to coordinate dry weather sampling activities within 908.2 HA during the 2009 dry weather monitoring season (May 1 to September 30). By simultaneously monitoring at the outfalls (Port jurisdiction) and at sites upstream (Airport Authority and City of San Diego jurisdictions), the Copermittees intend to identify potential illicit discharges and facilitate upstream source identification. The City of San Diego coordinated monitoring with Port of San Diego and the Airport Authority on 05/27/09. Coordinated dry weather monitoring between the Port of San Diego and the Airport Authority occurred on 06/25/09, and 07/23/09. The coordinated sampling sites are shown in Figures E-3 through E-5.

Figure E-3. Coordinated Dry Weather Monitoring System One Sites.

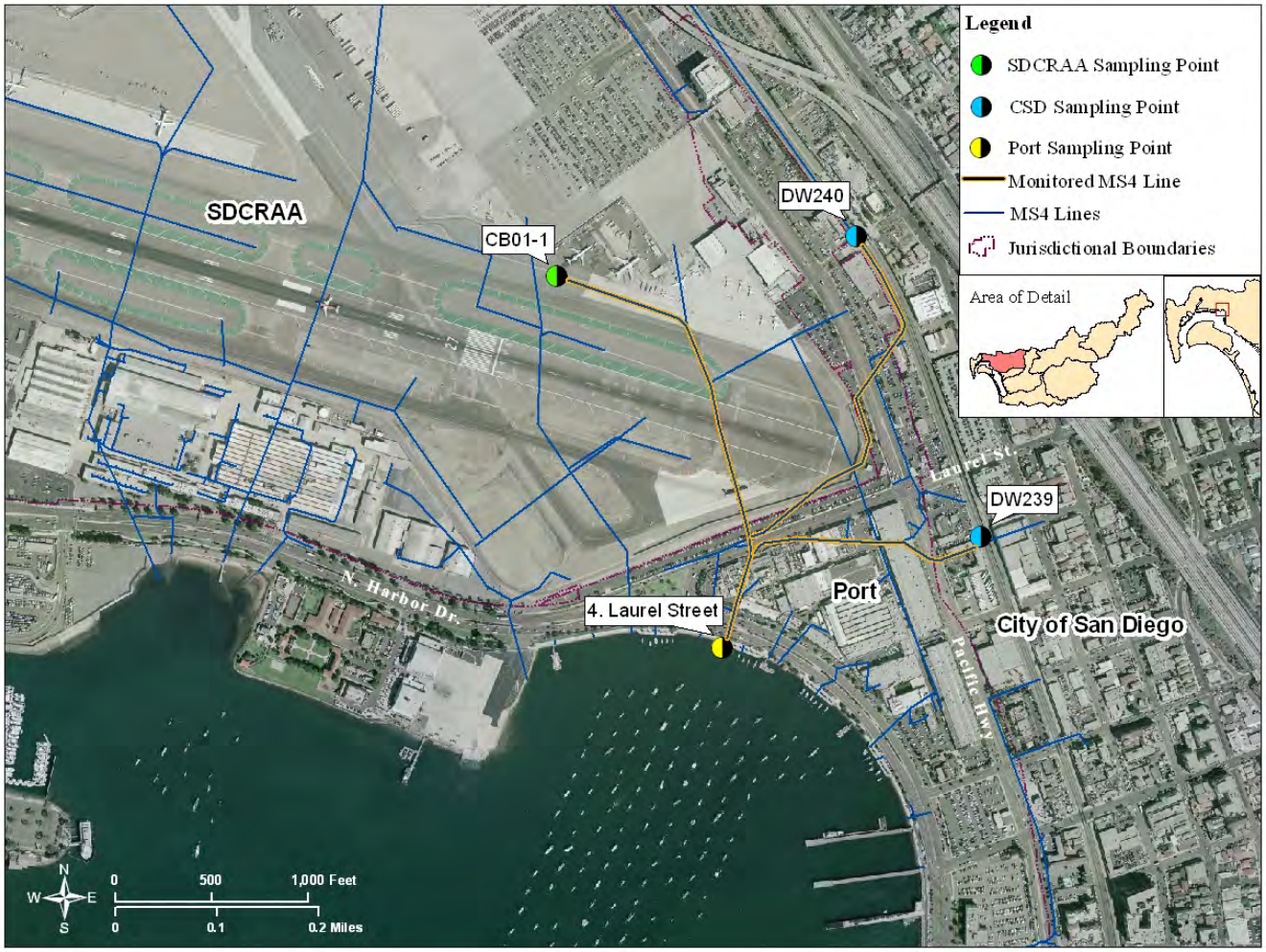

Figure E-4. Coordinated Dry Weather Monitoring System Two Sites.

Figure E-5. Coordinated Dry Weather Monitoring System Three Sites.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The coordination of DWM programs is considered a beneficial water quality activity in the San Diego Bay WMA because it will potentially identify sources of discharges and provides comprehensive detection, analysis, and investigation of pollutant discharges at a watershed level. Current jurisdictional DWM programs are effectively identifying and eliminating illicit discharges. When discharges cross jurisdictional boundaries, however, the follow-up investigation is passed from one jurisdiction to another, creating a potential lag time in the response. Coordinated efforts increase the efficiency and effectiveness of jurisdictional programs and allow analysis at a watershed level.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- Airport Authority
- City of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Nutrients
- Pesticides
- Metals
- Trash
- Bacteria

EFFECTIVENESS ASSESSMENT

Sampling was coordinated on 3 different dates, for 3 exclusive drain systems during the 2009 DWM season as described below.

System 1

The City of San Diego collected samples from flowing (DW239) or ponded (DW240) water for field and laboratory analyses on 05/27/09. The sites monitored by the City of San Diego were located on Palm (DW240) and Laurel (DW239) Streets near where they intersect California Street.

The site monitored by the Airport Authority was adjacent to the runway within the airport property (CB01-1). The Airport Authority collected samples from ponded water for field analysis on all three sampling dates. Laboratory analysis was completed for samples collected on 06/25/09 and 07/23/09.

The Port of San Diego monitored an outfall downstream of the Airport Authority's and City of San Diego's sampling sites. The Port of San Diego's sampling site was near the intersection of Harbor Drive and Laurel Street alongside the San Diego Bay (4. Laurel Street). The Port of San Diego collected samples from flowing water for field and laboratory analyses on 05/27/09 and 06/25/09, while field analysis was completed for samples collected on 07/23/09.

There was no evidence of illegal discharge in the vicinity of the monitoring sites where samples were collected. Constituents with action level exceedances during the coordinated sampling are shown in Table E-6. The conductivity and MBAS exceedances were determined to be the result of receding tidal water.

Table E-6. Constituents with Action Level Exceedances During Coordinated Sampling.

Copermittees	Site ID	05/27/09	06/25/09	07/23/09
City of San Diego*	DW240	Copper Total Coliform *Enterococcus*	NS	NS
	DW239	Total Coliform *Enterococcus*	NS	NS
Airport Authority	CB01-1	No exceedance	Ammonia MBAS Copper	Ammonia MBAS Copper
Port of San Diego	4. Laurel Street	Conductivity MBAS	Conductivity MBAS *Enterococcus*	No exceedance

NS – Site was not monitored by the City of San Diego in coordination with other Copermittees

* City of San Diego nutrient data was lost due to lab accident

System 2

The City of San Diego and the Port of San Diego monitored an additional coordinated site on 05/27/09. The City of San Diego's site is located on L Street near 5th Avenue (DW213). The City of San Diego was unable to collect samples for field or laboratory analyses due to dry conditions. The Port of San Diego's sampling site drains into the Marriott Marina, near the

entrance to South Embarcadero Park (CSD 213). The Port of San Diego collected samples from ponded water for field analysis. Constituents with action level exceedances during the coordinated sampling effort are shown in Table E-7. The exceedances were determined by the Port of San Diego to be the result of receding tidal water.

Table E-7. Constituents with Action Level Exceedances during Coordinated Sampling Effort.

Copermittees	Site ID	05/27/09
City of San Diego	DW213	Dry
Port of San Diego	CSD 213	Conductivity MBAS

System 3

The City of San Diego and the Port of San Diego monitored an additional coordinated site on 05/27/09. The City of San Diego's site is located near the intersection of Rosecrans and Upshurs Streets (DW432). The City of San Diego collected flowing water samples for field and laboratory analyses.

The Port of San Diego's sampling site drains into the Shelter Island Yacht Basin, at the foot of Talbot Street, and was monitored by the Port of San Diego as part of the Regional Targeted MS4 Outfall Monitoring Program. The Port of San Diego collected flowing water samples for field and laboratory analyses. Constituents with action level exceedances during the coordinated sampling effort are shown in Table E-8.

Table E-8. Constituents with Action Level Exceedances during Coordinated Sampling Effort.

Copermittees	Site ID	05/27/09
City of San Diego*	DW432	Total coliform Fecal coliform
Port of San Diego	CSD 145	No exceedance

* City of San Diego nutrient data was lost due to lab accident

Conclusions

Despite success in coordinating the monitoring efforts, a correlation between the Airport Authority, the City of San Diego, and the Port of San Diego's dry weather results cannot be made for 2009. Constituent exceedances on each sampling date did not exhibit a discernable pattern between the upstream and outfall monitoring sites. Often, sites were resampled and found to be within acceptable limits. Furthermore, the copermittees were unable to identify potential sources of the exceedances. With many of the MS4 lines crossing jurisdictional

boundaries, the coordinating DW monitoring is believed to be beneficial in the effort to identify and investigate exceedances which may occur along shared lines.

The Airport Authority, the City of San Diego, and the Port of San Diego will assess and modify the monitoring site locations as needed to improve the coordinated dry weather monitoring program for the 2010 dry weather monitoring season. Coordinated follow-up investigations will also be considered for the 2010 dry weather monitoring season to increase the effectiveness of identifying potential sources of high priority pollutants.

LA MESA ADDITIONAL WATER QUALITY MONITORING PROGRAM (SBD-022)

ACTIVITY IMPLEMENTATION

To more effectively characterize source of pollutants, the City of La Mesa (City) has conducted additional water quality monitoring within the San Diego Bay Watershed. Four Wet Weather discharge locations in the University Drainage Basin, which eventually drains to Chollas Creek, were identified as sampling points for time-weighted composite samples. In previous years additional sampling was done at these sites during dry weather conditions. In 2008, two of these sites were added to the City's dry weather monitoring program to ensure that dry weather data will also be collected each year. Samples taken from these sites during wet and dry weather conditions are analyzed for watershed constituents of concern. The City intends to use the data to identify exceedances and to identify potential pollutant sources.

TMDL APPLICABILITY

Monitoring is conducted in support of California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). Wet weather monitoring data and dry weather sampling results support identifying exceedances in pollutant loading for dissolved copper, lead, zinc, and diazinon. Furthermore, data enables the City to identify potential sources and conduct targeted educational outreach.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4 : Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Monitoring program enables the City to collect data on the high priority pollutants in the watershed, particularly metals, sediment, bacteria, and pesticides. The City intends to use the collected data to identify pollutant sources and to target education and best management practice implementation efforts.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is monitoring for these constituents in order to identify sources of potential pollutants/exceedances. Once identified, the City can take the appropriate action. This monitoring activity supports the Watershed Strategy by identifying priority pollutant sources; the City can then use this information to target activities.

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Monitoring is not considered a watershed water quality activity based on the Municipal Permit Order R9-2007-001 definition; however, data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

BMP EFFECTIVENESS MONITORING PROGRAM (SDB-023)

ACTIVITY IMPLEMENTATION

The Airport Authority continues to collect rain event runoff samples to monitor the performance of both structural and non-structural, discrete and combination BMPs. The long-range goal of the BMP Effectiveness Monitoring Program is to improve the water quality of stormwater runoff from the airport into San Diego Bay. The BMP Effectiveness Monitoring Program will assess whether the BMPs being implemented are able to reduce concentrations of, primarily, copper and zinc in stormwater runoff from the airport. Based on a power analysis of ten years of existing airport runoff water quality data, a minimum number of samples required to allow an effectiveness comparison has been identified. The program allows three years to calibrate paired watershed sampling, followed by three years of sampling to make an initial assessment of BMP effectiveness. To confidently establish a downward trend, at trend analysis monitoring station has been established to allow for a minimum of ten years sampling. The Airport Authority has sampled the stormwater runoff from six storm events per year since the 2006-2007 rainy season.

Information gained through the BMP Effectiveness Monitoring Program can aid ongoing watershed management and planning activities. The identification of effective BMPs will generally increase understanding of proper BMP selection. By changing discharger knowledge of BMPs, this program results in a level Two outcome. The program may also be able to estimate the pollutant loads eliminated by effective BMPs, which is a Level Four Outcome.

The Airport Authority intends to assess the performance of both structural and non-structural, discrete and combination BMPs, by tracking number and types of discrete and combination BMPs will be evaluated, along with the pollutant concentrations in stormwater runoff. Overtime, these data will provide an assessment of the effectiveness of the BMPs. In addition, the Airport Authority intends to estimate the pollutant load reductions resulting from the use of these BMPs. By tracking the cost of BMP implementation, the Airport Authority may be able to determine the cost-effectiveness of the BMPs.

The BMP Effectiveness Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it assesses the effectiveness of BMPs at reducing concentrations of metals in stormwater runoff in the watershed. Establishing the effectiveness of BMPs in reducing pollutant concentrations in runoff contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the

RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The BMP Effectiveness Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The BMP Effectiveness Monitoring Program intends to assess the effectiveness of BMPs at reducing concentrations of metals, primarily, in stormwater runoff thereby improve the quality of runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals as high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of BMPs effective at reducing metal pollutant loads.

EFFECTIVENESS ASSESSMENT

The 2008-2009 rainy season was the third year of monitoring. The runoff from six storm events was sampled. The 2008-2009 rainy season was the third and last season of the three-year calibration period and completes the baseline data collection phase of this program. As such, .the Authority will now begin to modify BMPs to begin monitoring effectiveness. While data on pollutant loads is also being collected currently, statistically valid estimates of total reductions will not be possible for several more years.

DRY WEATHER AERIAL DEPOSITION STUDY: PHASE II (SDB-024B)

ACTIVITY IMPLEMENTATION

Phase II of this study was intended to help the City of San Diego further its understanding of the contribution of metals from aerial deposition both within the San Diego Bay Watershed Management Area (WMA) and the La Jolla ASBS in the Mission Bay and La Jolla WMA. The study results will provide information related to potential sources and therefore represents a Tier II watershed activity identified in the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). The data will also provide supporting evidence for needed legislative measures, such as reduction of copper in the brake pad manufacturing process as part of the Tier I Product Substitution Watershed Activity.

Results and Findings

Dry Deposition Study

There was considerable variation in dry deposition rates of the main target elements across all sites, except for lead. Lead was rarely detected at most sites. However, lead was detected in 75% or more of samples at the Commercial Site in the Chollas Creek Watershed. Copper and zinc were measured at significantly higher levels at all inland sites compared with the reference sites (SIO Pier and Ref(1)) located along the coastline. Also, copper and zinc were detected in less than 75% of samples at the two reference sites.

Results indicate that the mouth of Chollas Creek (Chollas Mouth) had the highest median deposition rates of copper of all the sites in the Chollas Creek Watershed (37.6 $\mu g/m^2/day$). Statistical correlation analysis indicated that copper and zinc at the Chollas Mouth Site were highly correlated to northwest, north, northeast, and easterly wind directions which correspond to commercial, transportation, military, and industrial land uses.

Wet Deposition Study

Wet weather depositional monitoring occurred at Site SD8(1) in Chollas Creek. It is important to confirm previous studies (Sabin, 2005) that indicate the wet depositional load is generally less than 10% of the annual load in this study because of the low compliance levels in the Chollas Creek Watershed which are based on the California Toxics Rule (CTR). In this study, three storm sampling events were monitored.

Particle Solubility Study

Particle solubility was analyzed at one location in the Chollas Creek Watershed. Currently, there have been no known studies of atmospheric deposition. The City of San Diego will be able to determine the impact of aerial deposition in direct relation to the Chollas Creek dissolved metals TMDL and will have a better understanding of the characteristics of aerially deposited particles.

Three dry weather sampling events were monitored at Site SD8(1) concurrently with the dry deposition sampling events as a basis for comparison.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Data was collected from September 2007 through August 2008 within the City of San Diego. The monitoring program included an annual dry deposition study, a wet deposition study, and a particle solubility study.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (specifically Zinc / Copper / Lead)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify metals as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness of this activity is not being assessed since it is a source identification and characterization study. This study will contribute to filling in pollutant source data gaps as identified above to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

DRY WEATHER AERIAL DEPOSITION STUDY: PHASE III (SDB-024C)

ACTIVITY IMPLEMENTATION

Phase III of the City of San Diego's Aerial Deposition study presents the results and data analyses from this multi-media program and builds on the results of previous study phases. The study was conducted throughout the Chollas Creek Watershed to investigate the sources of copper, lead, and zinc that may contribute to receiving water quality impairments.

The objectives for this Phase III Study were as follows:

1. Create a geographic information system (GIS) database of existing watershed inspection, enforcement, and monitoring data.
2. Assess annual emissions data reported to the San Diego Air Pollution Control District (SDAPCD) from stationary emission sources near the mouth of Chollas Creek.
3. Identify potential sources of metals in the watershed based on facility characteristics and land use from the developed GIS database.
4. Verify potential sources of metals identified in the GIS database with field reconnaissance and dry weather surveys. Parcel-based evaluations included documenting facility construction type, outdoor metals storage, evidence of emissions sources, pavement staining indicating runoff of pollutants, and drainage direction and proximity to the nearest storm drain inputs.
5. Conduct wet weather first flush sampling at targeted storm drains from industrial and commercial land uses to verify if they are a high threat to water quality.
6. Compare aerial deposition results to runoff concentrations from residential drains in different priority sectors to determine if effects from facility emissions are evident.

Results and Findings

- Average annual aerial emissions of copper from four stationary facilities near the mouth of Chollas Creek are roughly five times higher than the average annual load discharged via storm water runoff. In contrast, lead and zinc emissions were only 1% and 24% of average annual discharge load.
- Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and resuspended dust) and localized parcel-based sources also play a role in metals deposition of lead and zinc in the watershed.
- Conservative estimates of street sweeping effectiveness in relation to the annual loads deposited from aerial deposition were less than 10% for copper and zinc, and less than 40% for lead. Street sweeping may be more effective for industrial and commercial

areas in Priority Sector One, but may have limited effectiveness for watershed wide metals loading from aerial deposition. Additionally, lead in soils from historical leaded gasoline use may continue to be a source of this metal from erosive soils in canyon areas.

- Samples collected from metal rooftops in poor condition (e.g. deteriorating or rust evident), identified through the GIS desktop exercise, were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Concentrations of copper and lead were relatively low from metal rooftop runoff, but increased in street level runoff suggesting aerial deposition or other parcel-based sources of copper and lead.
- Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area.
- Copper, lead, and zinc concentrations were higher in commercial and industrial land uses compared with residential land uses.
- Copper and zinc concentrations were significantly higher in Priority Sector One compared with other priority sectors. This supports the conclusion that emissions of copper and zinc from stationary facilities near the mouth of Chollas Creek likely contribute to aerial deposition and subsequent runoff of these metals.
- Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc.
- Field surveys suggested that several areas identified within the Chollas Creek Watershed actually drain to other watersheds in Priority Sector One and Priority Sector Two.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- This Phase III Study was conducted from January 2009 to May 2009 of FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (specifically Zinc / Copper / Lead)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify metals as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

An effectiveness assessment of this activity is not being conducted since it is a source identification and characterization study. This study will contribute to filling in pollutant source data gaps as identified above to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

REGIONAL HARBOR MONITORING PROGRAM (SDB-025)

ACTIVITY IMPLEMENTATION

In July 2003, the RWQCB, under §13225 of the California Water Code, requested the development of a coordinated and comprehensive harbor water quality monitoring program for harbors in the San Diego Region. San Diego Bay is one of the four harbors included in the Regional Harbor Monitoring Program (RHMP). The objectives of the RHMP are to:

1. Determine the contributions and spatial distributions of inputs of pollutants to harbors in the San Diego Region and how these inputs vary over time.
2. Determine whether the waters in harbors are safe for body contact activities.
3. Determine whether fish in harbors are safe to eat.
4. Determine whether the waters and sediments in the harbors sustain healthy biota.
5. Determine the long-term trends in water quality for each harbor.

The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay. The program includes monitoring for metals, bacteria, organic compounds, and toxicity and will improve assessments of the watershed priority pollutants and provide a program from which to assess overall water quality improvements. While this program does not specifically reduce loads of high priority pollutants, data collected will provide important information to the Copermittees on the ambient receiving water conditions.

The RHMP involves an ambient, or core, monitoring program to collect water and sediment samples in San Diego Bay and the other harbors to assess the overall condition of the harbors, with supplemental focused studies to answer specific questions. A key item in the program involves dividing the Bay into “stratified” regions to enhance data assessments and refine potential sources of pollutants. The delineation of the harbors allows for an assessment of pollutant sources and inputs based on activities within each stratum. Five strata were identified: marinas, industrial/port, freshwater influenced, shallow water, and deep water. All five strata are present in San Diego Bay. The RHMP core monitoring effort was coordinated with the Bight Regional Monitoring Program and was successfully completed in August 2008.

Focused studies will be used to further investigate and identify particular sources of pollutants and the impacts of pollutants on water quality and aquatic resources. The RHMP focused special studies will target copper in marinas over the next four years. The marina strata are often areas of impaired waters, such as the SIYB in San Diego Bay. The focused special studies will 1) assess the extent of copper contamination within marinas (2009), 2) identify causes of toxicity through toxicity identification evaluations (TIEs) in sediment and overlying water tests (2010), 3) conduct water effects ratio (WER) studies to determine the bioavailability and toxicity of copper and support the development of site-specific water quality objectives (SSOs) (2011), and 4) use laboratory and field studies to determine sediment copper flux

(2012). The core monitoring program will reoccur in coordination with the 2013 Bight Regional Monitoring Program.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- County of Orange
- City of Oceanside

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Copper
- Zinc
- Bacteria
- Pesticide
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The RHMP is considered a beneficial water quality activity in the San Diego Bay WMA because it will enable water quality improvements or degradations to be more readily identifiable. The

monitoring will also provide trend information by repeating at a specified frequency to obtain statistical trend data for the indicators. Furthermore, the RHMP is designed to integrate with existing monitoring that is regularly conducted in the region, including storm water monitoring, other permit compliance monitoring, regional Bight monitoring, special focused studies and is designed to integrate with the State's Surface Water Ambient Monitoring Program (SWAMP).

EFFECTIVENESS ASSESSMENT

1. The Port of San Diego and the City of San Diego, County of Orange and the City of Oceanside coordinated with the Bight 08 regional monitoring program to develop the core monitoring program for RHMP. The RHMP Core Monitoring sampling effort was completed in August 2008. The final report will be available in FY 10.
2. The core monitoring program design effort in FY 2009 included:
    - Water quality and sediment sampling and analysis completed at 60 monitoring locations throughout the San Diego Bay from five different strata: freshwater-influenced, marina, port, deep water, and shallow water
    - Analysis of a wide array of constituents, including bacteria, metals, PAHs, and pesticides.
    - Preliminary core monitoring results and proposed focused studies were presented to RWQCB staff in May 2009.
    - Final core monitoring results specific to San Diego Bay will be assessed over the next reporting period.

CHOLLAS CREEK DESIGN STORM STUDY AND SEDIMENT AND BACTERIA RELATIONSHIP SOURCE STUDY (SDB-026)

ACTIVITY IMPLEMENTATION

Water quality monitoring data collected in Chollas Creek has resulted in the listing of creek segments on the 2006 Clean Water Act (CWA) Section 303(d) list of impaired water bodies. Based on the Basin Plan 2006 SWRCB 303(d) listings, four total maximum daily loads (TMDLs) have been adopted for Chollas Creek: a Diazinon TMDL and three dissolved metals TMDLs for copper, lead, and zinc. In addition, a draft TMDL for indicator bacteria is currently being revised.

As part of the Implementation Plan for the Dissolved Metals TMDL, a design storm assessment was conducted in FY 2009 using monitoring sites from three watersheds: Tecolote Creek, La Jolla Shores, and Chollas Creek. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm. To gather this data, discrete grab samples were collected and analyzed at two sites in Chollas Creek (SD 8(1) and DPR2) over the course of a storm event (i.e., a pollutograph).

Key findings from the study include that bacteria concentrations are relatively unaffected by fluctuations in the storm hydrograph. Also, dissolved metals tend to decrease as the hydrograph rises and increase as the hydrograph decreases. Total Suspended Solids (TSS) levels tend to closely follow the rises and falls of the hydrograph. Lastly, the majority of the mass for copper, lead and zinc is associated with the particles smaller that 35 microns (clay and silt size fraction).

The report also recommends that treatment BMPs should only be implemented to both the overall extent (in terms of total magnitude of implementation), and geospatial extent where Tier I and Tier II BMPs do not meet the compliance standards or reach a diminishing return with regard to incremental pollutant reduction vs. cost of that reduction. In terms of implementation, this means that:

- Overall BMP implementation is a tiered approach, where the City will attempt to meet compliance standards through implementation of more cost effective pollution prevention and source controls (Tier I and Tier II). The treatment BMP approaches (Tier III) will be used to the extent that compliance is not anticipated to be achieved through Tier I and Tier II watershed activities alone due either to reaching the pollution reduction capability or cost efficiency of the suite of these type of BMPs.
- Because pollutant sources are not evenly distributed throughout the City, the City may choose to use Tier III treatment BMPs in higher polluting areas (in addition to

implementing Tier I and Tier II BMPs), while relying only on Tier I and Tier II BMPs in other areas.

It is suggested that further assessment of the anticipated and necessary efficiency of Tier II and III BMPs be conducted using the available baseline data presented in the Study report. The results of the preliminary evaluation show that the required level of treatment or the most cost effective combination of tiered BMPs to achieve the pollutant reduction goals will be specific to each location. Additionally, the results show that where high efficiency levels such as infiltration are not achieved by Tier II and III BMPs, a more integrated approach using more cost effective Tier I source controls and pollution prevention BMPs is needed. Furthermore, as greater efficiency is needed to meet aggressive pollutant removals under TMDLs, cost efficiency analysis is likely to play a larger role in determining the solutions to achieve the remaining load reductions. These cost efficiency analyses may lead to consideration of less traditional approaches such as water harvesting and use, hardness adjustment to meet metals WQO, and development of receiving water specific objectives.

The recommendations presented in the Study report focused on the Design Storm provided a target storm volume or flow rate for which BMPs are designed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Chollas Creek Design Storm Study was completed in FY 2009; however due to budget constraints, the sediment and bacteria relationship component has been postponed. Design storm recommendations will be used on future structural BMPs as applicable.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacterial
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria and metals as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them.

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). This study will address several of the Priority Water Quality Problems (PWQP) identified for Chollas Creek in the Strategic Plan, including bacteria, heavy metals, pesticides, and sediments. It will also help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the PWQP. According to the Strategic Plan, the study is a Tier II BMP, which will provide information for the development of a design storm for Tier III BMP development.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
CHOLLAS CREEK DESIGN STORM STUDY AND SEDIMENT AND BACTERIA RELATIONSHIP SOURCE STUDY **Identify Appropriate Design Storm to Use for Project Design and Characterize Transport Relationship Between Bacteria and Sediment**	
Expected Outcomes	• Findings are presented in the report and summarized above.

Assessment of this activity is not being conducted since it is a bacteria and sediment relationship characterization study and a design storm identification study. This study will contribute to filling in data gaps to better design and focus future load reduction and source abatement activities. It is anticipated that the recommendations and outcomes of the study will assist in making BMPs efficient. Future activities implemented will be reported as separate activities.

CHOLLAS CREEK BENEFICIAL USE DESIGNATION ATTAINABILITY STUDY AND MOUTH OF CHOLLAS CREEK BACTERIAL SOURCE IDENTIFICATION STUDY (SDB-027)

ACTIVITY IMPLEMENTATION

The purpose of this study was to identify the sources of indicator bacteria that impact the Chollas Creek tidal prism (that area influenced by the maximal extent of the tide) during dry weather. The study is in alignment with the Integrated Watershed Approach presented in the City of San Diego's *Strategic Plan for Watershed Activity* (Strategic Plan). It addresses indicator bacteria, which is identified as a priority water quality problem (PWQP) for Chollas Creek in the Strategic Plan, and will help to fill data gaps identified in the Strategic Plan, which include investigating anthropogenic sources of bacteria and verifying priority sectors based on estimated pollutant loading through subwatershed sampling. According to the Strategic Plan, this study is a Tier II best management practice (BMP), which will provide information on the sources of indicator bacteria within the Chollas Creek tidal prism.

Results and Findings

Three surveys were conducted in the mouth of Chollas Creek during FY 2009 in September and October of 2008. During each survey, samples were collected from the Chollas Creek receiving waters and any suspected sources of indicator bacteria, such as urban runoff conveyed to the creek via storm drains.

1. During dry weather, there is no hydrologic connection between the mouth of Chollas Creek (the area influenced by tidal action) and the upstream drainage. Thus, bacteria found in the receiving waters of the creek mouth originate from sources that discharge directly to the mouth (i.e., storm drains).
2. In three surveys, 17 storm drains were identified that terminate in the creek mouth. Of these, evidence of flow was apparent in only four: one in the main stem near Main Street, one in the south fork associated with the Interstate 5 off ramp, and two in the north fork near the National Avenue Bridge.
3. The highest bacterial concentrations were associated with the two storm drains near the National Avenue Bridge. Concentrations of indicator bacteria associated with the other identified storm drains were lower, but still contributed to elevated concentrations in the receiving water in the south fork and main stem, respectively.
4. Two sources of flow that contributed to the high bacterial concentrations were identified as follows:
    a. Over-irrigation of landscaping at the strip mall located at National Avenue and 35th Street.
    b. A freshwater slough adjacent to a freeway off ramp that periodically discharges to a storm drain in the south fork of the creek.

5. Scour ponds associated with the storm drains provide depressions within the streambed where high levels of indicator bacteria originating from the surrounding subdrainage can be maintained. As the tide rises and falls, it maintains a reservoir of brackish water (mixture of fresh and saltwater) in the scour ponds and carries bacteria from ponds to other areas within the tidal prism. In this way, the scour ponds serve as a point of inoculation for the mouth of Chollas Creek.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Bacterial Source Identification Study at the mouth of Chollas Creek was completed in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this is neither an implementation nor education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

Watershed: San Diego Bay	
CHOLLAS CREEK BENEFICIAL USE DESIGNATION (UAA) STUDY / MOUTH OF CHOLLAS CREEK BACTERIA SOURCE IDENTIFICATION STUDY **Identify Sources of Bacteria at Mouth of Chollas Creek**	
Expected Outcome	• Findings to be presented in final report anticipated to be released in FY 2010

Assessment of this activity is not being conducted since it is a bacteria source identification study. This study will contribute to filling in data gaps to better design and focus future load reduction and source abatement activities. Future activities implemented in response to the results of the source identification and characterization study will be reported as separate activities.

UPDATE RECYCLING AND SOLID WASTE PLANNING MANUAL (SDB-035)

ACTIVITY IMPLEMENTATION

In order to address contributions of pollutants, particularly bacteria, from trash and recycling areas from new multi-family residential and commercial land uses, the City of Chula Vista (City) updated the design requirements in its Recycling and Solid Waste Planning Manual. The City requires that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rainwater from entering the trash areas, as well as eliminate pollutant runoff from these areas.

During the last reporting period, City Storm Water Management Section staff worked closely with the Environmental Services staff to update the manual in order to include this requirement for new development and redevelopment projects with trash enclosures. The updated manual was planned for presentation to City Council in the fall of 2008. Subsequently, in September 2008, City Council approved the updated manual and it became a part of Chula Vista Municipal Code. The Environmental Services Department reviews all projects that are subject to these requirements and ensures that these structures are built.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash and recycling areas have the potential to contribute a number of pollutants to storm water runoff, namely bacteria, nutrients, and trash. By building trash enclosures to prevent the contact of storm water with trash, the City aims to reduce the amount of pollutants that could be washed into the storm drain system from trash areas during a rain event.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Updating the Recycling and Solid Waste Planning Manual in the City of Chula Vista aims to improve the quality of runoff that enters the storm drain system and eventually San Diego Bay. It intends to reduce high priority pollutants such as bacteria, trash, and nutrients from entering the storm drain system. Bacteria is a high priority pollutant throughout San Diego County and the San Diego Bay watershed. This effort seeks to reduce pollutant sources from trash areas as a source abatement measure.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity will be assessed through levels Three and Four. BMP implementation and pollutant load reductions will be assessed by tracking the number of trash enclosures constructed with the new design criteria within the City. Also, estimations can be made about the amount of trash generated per person based on the number of dwellings within a project. The estimated amount of trash that could have possibly come in contact with storm water before the updates to the manual will be assessed as a load reduction.

During this reporting year, there was a significant decrease in development projects coming to the City for review. In the coming years, it is anticipated that development will pick up and there will be more projects that will be subject to these requirements. These projects will be tracked and the number of trash enclosures built will be assessed as a load reduction of bacteria to the storm.

43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION (SDB-037)

ACTIVITY IMPLEMENTATION

The 43rd Street and Logan Avenue Biofiltration Project will consist of two main low impact development (LID) features: filtration planters along the curbside of 43rd Street and Logan Avenue and biofiltration basins on the undeveloped and vacant northwest corner lot at 43rd Street and Logan. Storm water runoff will be diverted from adjacent streets to the two LID features. The water will flow through a vegetated soil layer (three to four feet thick) for natural removal of pollutants with a projected 70% to 80% removal efficiency.

This project is a roadway realignment project that the Right of Way Division of the Engineering and Capital Projects Department. Project design was complete in FY 2009. This Tier II project (according to the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan)) will be implemented to achieve a high level of effectiveness in reducing pollutant loads. This project will address metals and bacteria in line with the City of San Diego's Strategic Plan.

A grant deed is being processed under an agreement with the San Diego Community College District which transfers the lands but allows the biofiltration basin to remain under the City control as drainage infrastructure within an easement.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project design was completed in FY 2009. The date for construction start is dependent on the schedule of the roadway realignment project, which is scheduled to begin in FY 2010, but must first go through a competitive bid process. Water quality monitoring was conducted to assess pre-project pollutant loads. Post-construction monitoring is planned for the rainy season that follows project construction.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via biofiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION **Assess Effectiveness and Efficiency of Filtration Planters and Biofiltration Basins**		
Management Questions	• How much load reduction can be achieved using filtration planters and biofiltration basins? • How much reduction in runoff volume can be achieved using filtration planters and biofiltration basins? • How efficient are planters and basins in reducing pollutant loads?	
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality	
Assessment Methods	• Inspections (e.g., ensure planters and basins working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)	
Data Recorded	Estimated construction cost (Outcome Level One)	$600,000
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)	

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of filtration planters and biofiltration basins in reducing bacteria and dissolved metals pollutant loading relative to other BMPs.

Results and Analysis

Project design is completed and construction is anticipated to start in late FY 2010. Pre-construction monitoring has been conducted and post-construction monitoring is scheduled to occur. Analysis will be completed once the post-construction monitoring occurs.

Conclusions

No conclusions are available at this time. Project design is completed and construction is anticipated to start in late FY 2010. Pollutant loading reduction and water quality monitoring results are anticipated to be available in late FY 2010. Monitoring data will be used to assess the effectiveness and efficiency of this project in reducing runoff volume and pollutant loading and improving discharge quality.

CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION (SDB-038)

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table E-9. Conceptual Projects.

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Irrigation Hardware Giveaway and Cash for Plants Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning. Implementation and assessment is anticipated to be completed in FY2013. WMA: TBD.
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash	Pre-planning
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals	Sponsorship of the Brake Pad Partnership is in progress.
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment	Cancelled
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available

data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the San Diego Bay WURMP Annual Report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

LAND ACQUISITIONS SAN DIEGO BAY WATERSHED (909.1, 909.2, 909.3, 910.2, 910.3) (SDB-046)

ACTIVITY IMPLEMENTATION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY 2008 reporting period there was 0.84 acres of land acquired in the San Diego Bay WMA.

During the FY 2009 reporting period the MSCP acquired 385.38 acres of property located in the San Diego Bay WMA. The current acquisitions are shown in Table E-10.

Table E-10. MSCP Current Acquisitions.

Property	Acres	Date	Watershed ID	APN(S)
US Fish & Wildlife Service	42.72	6/11/2007	909.21	517-030-13
US Fish & Wildlife Service	38.93	6/11/2007	909.21	517-030-15
State of California	303.72	3/15/2007	910.36	600-030-04, 600-031-03
TOTAL	**385.38**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

During the FY 2009 reporting period the MSCP acquired 385.38 acres of property located in Middle Sweetwater HA (909.2) and Dulzura HA (910.3) in the San Diego Bay WMA.

LARGE SPECIAL EVENT INSPECTION AND CLEAN-UP (SDB-047)

ACTIVITY IMPLEMENTATION

The City of Imperial Beach (City) hosts the annual U.S. Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food venders, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street venders for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition.

Expected benefits of enhancing large special event clean up and inspections include compliance with permit requirements, changes in attitudes, knowledge, and awareness of mobile businesses and local community, and reductions in urban runoff and discharge quality by enhancing recycling efforts and implementing storm water BMPs. This activity serves as both an education and water quality activity. Enhancing recycling efforts, increasing education on urban runoff, and verifying the implementation of BMPs through inspections may lead to lower levels of bacteria and trash reaching the storm drain system.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the San Diego Bay. However, the 2006 CWA Section 303d list of impaired water bodies identifies multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation of the activity has begun under the previous storm water permit R9-2001-0001 and since been reviewed and enhanced for the new R9-2007-0001 permit. The City endeavors to increase recycling and urban runoff education targeted at both street venders and general public at large special events. During the previous two years the activity was in active implementation phase. Starting during year three, the activity will be assessed and refined as necessary to maximize the effectiveness.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the San Diego Bay. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors during large special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENTS

The effectiveness of this project meets the requirements of Outcome Level One, Level Two, Level Three, and Level Four compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2009, the City required the proper disposal of recycled waste at all large special events and the implementation of storm water BMPs when appropriate. The City held 12 large special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition, which during the weekend of July 12th-13th drew an estimated crowd of over 800,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event to ensure the implementation of the BMPs. Most street venders were aware of the storm water requirements and were implementing proper storm water BMPs. Vendors not implementing proper BMPs were cited and provided further information to correct behavior. Over the weekend three Notices of Violations (NOVs) were issued.

The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event. The recycling efforts resulted in a total of 1,280 pounds of mixed recyclables and 960 pounds of cardboard being recycled.

As a result of the effectiveness assessment of this activity, the City recognizes a deficiency in education opportunities for the general public. Future efforts will continue implementing the existing large special event clean up and inspection activities while continuing to enhance the opportunities for education, especially for the general public. Program effectiveness for

targeting water quality is expected to continually improve as special event applicants and vendors become familiar with City storm water and recycling programs.

OUTDOOR SPECIAL EVENT OVERSIGHT (SDB-048)

ACTIVITY IMPLEMENTATION

The Airport Authority oversees the manner in which outdoor special events are set up, conducted, and cleaned. The goal of the Outdoor Special Event Oversight Program is to abate the amount of trash and debris potentially released to the watershed from these events. Staff from the Airport Authority Environmental Affairs Department attend pre-event meetings and/or conduct a pre-event site inspection to ensure that there are an adequate number of recycling containers and trash cans properly located at the venue. The site is also inspected immediately after the event is over to ensure that trash and debris have been properly disposed. The meetings and inspections are used as an opportunity to focus on stormwater pollution prevention in general and properly controlling sources of trash to the storm drain system.

In addition to establishing pre- and post-event inspection activities, the program also increases interaction with event planning and execution staff while on-site. Heightened awareness of proper trash management and source control BMP implementation increases the likelihood of trash control BMP effectiveness, which in turn helps to abate the amount of trash loading to the San Diego Bay watershed. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of trash control BMPs. By changing the way in which individuals implement BMPs, this program results in a Level Three Outcome. The program may also estimate the amount of trash abated from impacting stormwater discharge quality, which would be a Level Four Outcome.

The Airport Authority tracks the number of outdoor special events that occur, the number of pre-event meetings attended, the number of pre- and post-event site inspections conducted, and the number of trash source control BMP issues identified during the inspections. Over time, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual trash pollutant load abated by 1) estimating, based on review of the literature and/or other sources, trash loads per event when trash management controls are not implemented, and 2) tracking the number of trash control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

The Outdoor Special Event Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates the trash potentially generated from these events from entering in the watershed. Abatement of trash within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations

near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Outdoor Special Events Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of trash as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Outdoor Special Event Oversight Program intends to abate trash associated with special events and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies trash as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS ASSESSMENT

During FY 2009 the Airport Authority conducted outdoor special event oversight for one event, the Rock and Roll Marathon. One pre-event meeting was attended, one pre-event inspection was conducted and two post event inspections were conducted. No issues related to improper trash source control BMP implementation were identified during the pre or post-event inspections. Literature searches are still being conducted. The Airport Authority has not yet drawn any conclusions on the effectiveness of this program since this was the first year of

implementation of this program, only one special event occurred during the year, and the literature search estimating trash loads per outdoor special event are still being evaluated. An assessment of program effectiveness will be possible once more data have been compiled.

MAPLE STREET CANYON WATER QUALITY IMPROVEMENT PROJECT (SDB-049)

ACTIVITY IMPLEMENTATION

The Maple Street Canyon has a tributary watershed of approximately 90 acres. The watershed is generally located between Walnut Street to the north, Maple Street to the south, 6th Av to the east, and Curlew Street to the west. This project focuses on significantly reducing sediment migration due to highly erosive conditions through channel stabilization and upgrades to the existing basin outfall, and reducing pollutant loading from urban runoff through natural treatment systems, Low Impact Development (LID) Best Management Practices (BMPs), and gross solids removal in the mesas at three of the outfalls.

The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, pesticides and sediment. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA.) The City has named this model approach for LID as "Sustainable Canyons" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2008. Design and award of contract are anticipated to occur in FY 2012. Construction is anticipated to occur from February through October 2012. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
MAPLE STREET CANYON PROJECT Assess Efficiency and Effectiveness of Storm Drain Filter Inserts in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved by retrofitting storm drains with filter inserts? • How efficient are filter inserts in reducing pollutant loads? • What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure filter inserts working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality (Outcome Level Five)

Objectives

The goal of the assessment is to determine the load reduction effectiveness and efficiency of integrated approach of LID.

Results and Analysis

This activity was in the planning phase and not in active implementation in FY 2009. Therefore, assessment is not feasible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

CHOLLAS CREEK RUNOFF REDUCTION AND GROUNDWATER RECHARGE PROJECT (SDB-050)

ACTIVITY IMPLEMENTATION

This project is designed to reduce runoff from three existing County of San Diego facilities within the Pueblo San Diego Watershed (HA 908.2). Currently, these three facilities are highly impervious. The purpose of this activity is to retrofit existing impervious areas (parking lots) with porous pavements over stone reservoirs and to implement other LID practices to capture runoff from these areas as well as landscape elements such as rain gardens and bio-swales. A goal of this demonstration project is employ techniques to capture and infiltrate/evaporate rainfall. The objective of the activity is to prevent transportation of potentially polluted runoff (specifically with cooper, lead, and zinc) from leaving these facilities and entering the storm water system and particularly Chollas Creek.

REVISED ACTIVITY DESCRIPTION FY 2009

Due to the State budget issues, the Prop 50 grant was not activated at the local level until Sept/Oct 2009. The delay has required us to alter our original grant proposal & schedule. The revisions will reduce the number of facilities retrofitted from three to two, the Southeast Family Resource Health Center on Market Street, and the Southeast Health Center at 52nd St/University Ave. Currently, the County is awaiting word from the State on the proposed revisions before commencing any work. If the change is approved we should being in January 2010.

ACTIVITY IMPLEMENTATION FY 2009

Due to State Budget issues that resulted in the delay of approving and funding projects under the Proposition 50 grants, the County of San Diego had to reconsider its' grant application to reduce the number of retrofit projects from three to two and to revise the implementation schedule of the remaining projects. These revisions are highlighted in the discussions above and are reflected in the schedule below.

TMDL APPLICABILITY

This project would be implemented in compliance with the Chollas Creek Metals TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning & Design: July 2008 – May 2009

Environmental Review & Permitting: July 2008 – January 2009

Construction: June 2009 – October 2009

Monitoring: October 2009 – December 2010

Demonstration Project: July 2008 – December 2010

REVISED TIME SCHEDULE FOR IMPLEMENTATION FY 2009-10

Planning & Design: November 2009 – May 2010

Construction: May 2010 – September 2010

Environmental Compliance/Mitigation: January 2010 – April 2010

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This Project is consistent with the collective watershed strategy because it addresses metals (copper, lead and zinc), which are considered as high priority water quality problem within the 908.2 HA.

EXPECTED BENEFITS

This project provides benefits to surface water quality and groundwater quantity by capturing, reusing and/or infiltrating rainfall that otherwise would be urban runoff that would transport potential pollutants specifically metals to sensitive receiving waters.

EFFECTIVENESS MEASUREMENTS

This project includes 14 months of monitoring of the water quality from the site. This monitoring will provide evidence of the overall amount of reduction of metals from entering the storm system.

CHOLLAS CREEK FAMILY STREAM TEAM INITIATIVE (SDB-051)

ACTIVITY IMPLEMENTATION

The Chollas Creek Stream Team Initiative is a project led by Groundwork San Diego – Chollas Creek (GWSDCC) to address illegal dumping, non-point source trash accumulation, and invasive plant species within Chollas Creek (908.22 HSA). The Port of San Diego provided funding to GWSDCC to establish a four-pronged approach focused on trash and litter abatement activities and non-native plant removal. The four key components of the Initiative include refuse collection, habitat restoration, community education and outreach efforts, tracking, and activity assessment. The City of San Diego has been monitoring the trash collection events to gain an improved understanding of the overall impact of this activity on reducing illegal dumping and trash within the Chollas Creek community. This multi-faceted activity is scheduled to be complete in FY 2010.

Refuse Collection and Habitat Restoration

GWSDCC organized refuse collection events twice a month at three alternating locations (Table E-11 and Figure 1) to collect large, unwanted household items, vegetation, and other debris with the intent of preventing illegal dumping of these items into Chollas Creek and surrounding neighborhood. Refuse collection events occurring in 2009 occurred on the following dates and locations:

Table E-11. Refuse Collection Events.

Event Location	Event Date
Southcrest Community Park	4/25/2009
Jackie Robinson YMCA	5/9/2009, 6/27/2009
38th & Alpha Park	5/23/2009, 6/6/2009

Overall, approximately 90 tons of debris was collected during the five refuse collection events, filling approximately sixteen 40-yard roll off dumpsters.

As part of the restoration effort, GWSDCC collaborated with Urban Corp of San Diego in the removal of non-native plants from Chollas Creek, such as *Arundo donax* and Castor Bean. On-going efforts will also focus on aiding residents to replace non-native plants with native, drought tolerant plants. Approximately 12 tons of vegetation was removed from Chollas Creek during this reporting period.

Figure E-6. Refuse Collection Event Locations.

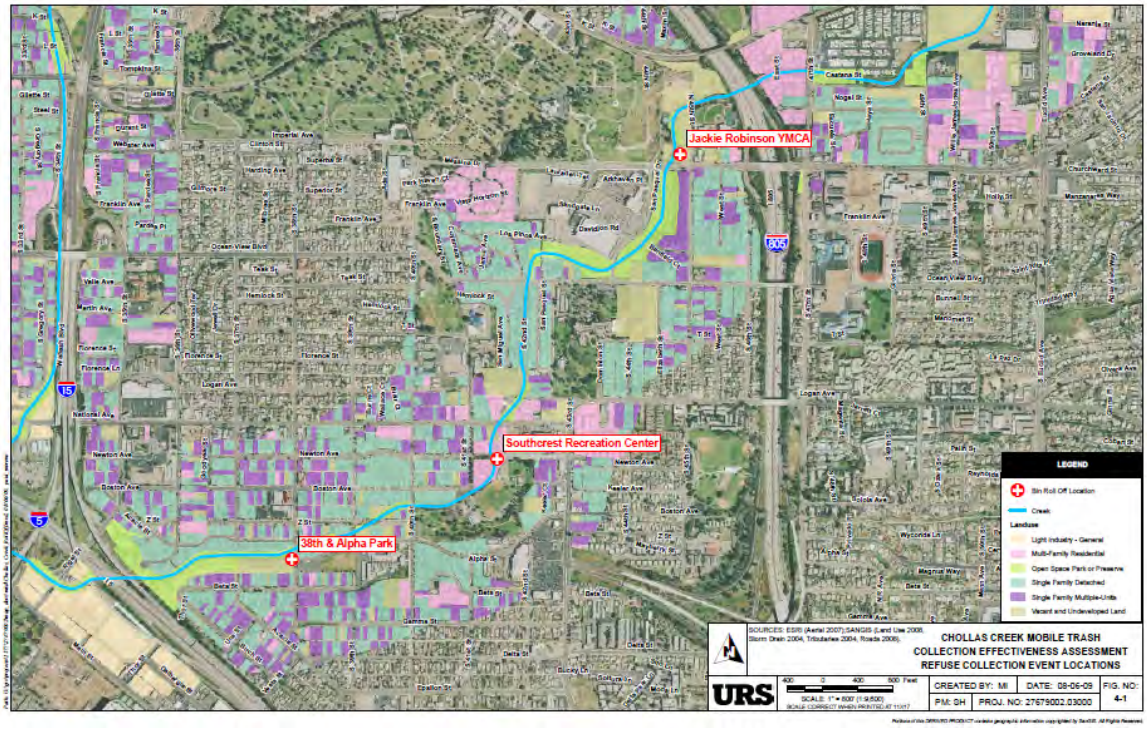

Community education and Outreach

As part of the refuse collection efforts, the Family Stream Team Initiative developed the "Come Dump on Us" campaign. This campaign involves electronic and print messages (in both Spanish and English) reaching approximately 2,500 households in the Chollas Creek watershed, and volunteer cleanup and training events. Each refuse collection event was publicized prior to the occurrence date with publicity being limited to the surrounding community. During this reporting period, approximately 250 bilingual flyers were delivered to residents' homes within a close radius of each event.

Tracking and Assessment

The City of San Diego has been monitoring the trash collection events, surveying participants to assess motivation in participation, relative need for the collection service, general understanding and attitude towards illegal dumping, and potential impediments towards future collection event participation. Surveys are administered in both English and Spanish. During each event, refuse has been characterized by type and relative volume. In addition, the trash collected was weighed and recorded at the landfill after each collection event.

In conjunction with the data collected at the refuse collection events, the City is assessing the effectiveness of this type of activity at abating illegal dumping using visual trash assessment surveys of Chollas Creek. These surveys will be used to evaluate the amount and type of large dumped items, anthropogenic habitation areas, and suspected illegal dumping areas present in

the project area quarterly. The visual trash surveys will document both changes in the amount and type of items present in the projects area as well as identify areas where illegal dumping chronically occurs. The first visual trash survey was conducted on April 22-23, 2009.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The grant was awarded in FY 2009 and will be complete in FY 2010. Refuse collection events began in April 2009 and are scheduled to continue over one year. Assessment of the refuse collection component, including the visual trash assessment surveys, will be completed by the City of San Diego in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- Groundwork San Diego Chollas Creek
- Urban Corps of San Diego
- NASSCO
- San Diego Canyonlands
- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies trash as a high priority water quality problem in 908.2 HA of the Pueblo San Diego HU and recommends implementing load reduction/source abatement activities to address this pollutant. This activity targets illegal dumping and non-point source accumulation of trash.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
Family Stream Team Partnership: Refuse Collection Component Assess the Effectiveness of Sponsoring Local Organization's Refuse Collection Efforts as a Method for Abating Illegal Dumping		
Management Questions	• Does education on trash pollution result in behavioral changes or raise awareness? • What is the total load reduction from refuse collection events? • Are special refuse collection events an efficient way of preventing illegal dumping? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	• Reduction in trash observed within Chollas Creek during year long project • Load reduction (collected trash) due to refuse collection	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected, number of plants removed or planted) • Observation (e.g., change in amount and type of trash observed in Chollas Creek) • Interview/Survey (e.g., participant surveys)	
Data Collected	Amount of trash and debris collected in FY 08-09	90 tons
	Amount of non-native vegetation removed in FY 08-09	12 tons
	Flyer distribution	1,750 flyers

Effectiveness assessment has not been completed at this time as the activity is still in progress. This activity will be completed during the FY 2010 reporting period and results will be available in June 2010.

PALM AVE STORM WATER DIVERTER (SDB-052)

ACTIVITY IMPLEMENTATION

The Palm Avenue Low-Flow Urban Runoff Diversion Project (Palm Avenue Diverter) is the final of three Clean Beaches Initiative (CBI) projects funded in part by a Proposition 13 grant and intended to address elevated levels of bacteria at local beaches. The Palm Avenue Diverter is designed to divert nuisance storm drain flows to the sanitary sewer system prior to reaching ocean receiving waters. The Palm Ave Diverter project is the second storm water diverter system to be installed along the waterfront in Imperial Beach. Storm water diverters provide the ultimate protection of water quality by diverting urban runoff before reaching the receiving waters. As such, it would eliminate one potential source of bacteria during dry weather and other low-flow conditions.

In January 2009 the Palm Avenue Low Flow Urban Runoff Diverter became operational. The diverter consists of a new wet well, pump station, and storm drain improvements that routes low flows into the sanitary sewer system via a four-inch PVC connection and a jockey pump. The Palm Avenue diverter is fed by four curb inlets and 15 grated drains. The inlets drain approximately 72.1 acres of residential and light commercial land uses. Prior to the construction of the Palm Ave Diverter, all flows from these inlets discharged directly onto the beach. Operating at maximum capacity, the Palm Ave diverter can divert flows up to 250 gallons per minute into the sanitary sewer.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the San Diego Bay. However, the 2006 CWA Section 303d list of impaired water bodies identifies multiple locations throughout San Diego Bay and along the Imperial Beach shoreline with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

Active construction on the Palm Ave Diverter project is complete. Current efforts are focused on conducting a post construction effectiveness assessment of the project. As part of the condition on the Grant, the City is conducting weekly post construction water quality monitoring for a one year period from January 2009 through December 2009. Samples are analyzed for bacteria, temperature, pH, conductivity, and filed observations. The volume of diverted runoff is also being tracked.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- PBS&J

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Pesticides
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Palm Avenue Diverter is a long-term solution to improving water quality in the San Diego Bay Watershed because it will completely eliminate one potential source of bacteria and other urban pollutants during dry weather conditions, and will thereby reduce total loads to the Pacific Ocean. By completely diverting runoff, it also has the benefit of addressing all priority pollutants in the watershed. Although the water quality and flow monitoring components of this project are only scheduled for one year following construction, the City of Imperial Beach is committed to maintaining the diverter system so that it continues to operate at maximum capacity.

EFFECTIVENESS ASSESSMENT

The effectiveness of this project meets the requirements of Outcome Level Four and Level Five compliance with activity based permit requirements. With the completion of the Palm Avenue Diverter project and the continued operation of the Date Avenue Diverter, the vast majority (137.2 acres) of the low flow urban runoff and first flush rainwater is diverted before reaching the beach. The only coastal outfall in Imperial Beach not on a diverter system is at the Ebony Street end, which consists of a 12 inch outfall and drains a residential area of 2.2 acres.

Efforts on measuring the effectiveness of the Palm Ave diverter are currently under way. During the first six months of monitoring, 192,000 gallons of urban runoff wad diverted into the sanitary sewer and prevented from flowing to the Pacific. Results from the weekly bacterial analysis also revealed elevated levels of bacteria in the diverted flows. Compared to AB411 monitoring action levels, 85% of the samples were in exceedance of *enterococcus* and 100% of the samples were in exceedance of total coli form bacteria.

SHELTER ISLAND TMDL URBAN RUNOFF COPPER MONITORING STUDY (SDB-053)

ACTIVITY IMPLEMENTATION

A Total Maximum Daily Load (TMDL) for dissolved copper was established for Shelter Island Yacht Basin (SIYB) and was added as an amendment to the San Diego Regional Water Quality Control Board (Regional Board) Water Quality Control Plan for the San Diego Basin (Basin Plan) on February 9, 2005. The City of San Diego (City) is named as a discharger under the TMDL and is responsible for the urban runoff contribution to SIYB from its MS4.

As stated in the TMDL, the marina, under the jurisdiction of the Port of San Diego, is the predominate source of copper loading to the SIYB, whereas the City discharges copper to a much lesser extent from its MS4. The TMDL provides a source analysis, which states that urban runoff from the MS4 accounts for 30 kg/yr of copper loading to SIYB. This contribution translates to only 1% of the total copper loading to SIYB and, therefore, is not listed for further reductions in the TMDL.

The TMDL does stipulate that the concentration of dissolved copper in the SIYB must meet the water quality criteria as set for the California Toxics Rule (CTR). The CTR states that for protection of marine and wildlife habitat, concentration of dissolved copper should not exceed 3.1 micrograms per liter (µg/L) for continuous or chronic exposure and should not exceed 4.8 µg/L for brief or acute exposure. The TMDL requires implementation of best management practices (BMPs) for the reduction of dissolved copper in the SIYB due to levels of dissolved copper that exceed the Basin Plan water quality objectives (WQOs). While no loading reduction is required under the TMDL for urban runoff, the City is taking a proactive position and verifying that the copper loading from its MS4 is within the load allocation WLA and WQOs.

Results and Findings

- There are three City MS4 outfalls that drain into SIYB. Of these three outfalls, one pipe drains 90% of the drainage area, and the other two pipes drain the remaining 10%.
- The first flush sampling event (i.e., the first storm event of the wet weather season) had a higher event mean concentration (EMC) for dissolved copper than either of the other two storm events monitored.
- During the course of a non-first-flush storm, dissolved copper concentrations were higher at the beginning and end of the storm. The middle of a storm event, when the majority of the water is flowing, was when the lowest concentrations were observed.
- Dissolved copper concentrations measured during the storm water events were above the WQOs.
- Dry weather results from a dry weather survey showed that the highest dissolved copper concentrations were seen in the upper areas of the subwatershed.

- Total hardness values during wet weather were low, with the highest concentrations occurring during the beginning of the storms.
- During dry weather, total hardness values were much higher throughout the watershed.
- The wet weather copper load per acre from Shelter Island is much lower than the three other subwatersheds (Chollas Creek, Switzer Creek, and Paleta Creek) within the San Diego Bay Watershed.
- Dissolved copper annual load to SIYB from the MS4 is below the waste load allocation set in the TMDL for urban runoff.

TMDL APPLICABILITY

- Shelter Island TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Annual monitoring and reporting is required.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Copper

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify copper as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this not an implementation or education activities. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

SWITZER CREEK PESTICIDE SOURCE MONITORING (SDB-054)

ACTIVITY IMPLEMENTATION

Currently, a Total Maximum Daily Load (TMDL) is being developed by the San Diego Regional Water Quality Control Board (RWQCB) for sediment toxicity for the mouths of Chollas Creek, Paleta Creek, and Switzer Creek. Switzer Creek was placed on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list for Chlordane, lindane/hexachlorocyclohexane (HCH), and polycyclic aromatic hydrocarbons (PAHs) (SWRCB, 2008). Monitoring data collected for model calibration and validation during the 2005–2006 Wet Weather Monitoring Season by the Southern California Coastal Water Research Project (SCCWRP) detected low concentrations of PAHs, Chlordane, and dichlorodiphenyltrichloroethane (DDT) in storm water runoff (SCCWRP, 2007).

A study was conducted within the Pueblo San Diego Watershed to characterize and assess storm drain sediments with a focus on pesticide distributions and concentrations, specifically within the Switzer Creek Subwatershed. The study was designed to assess four sectors for prioritization and to potentially identify sources or sector areas of the watershed that contribute to constituent loads at the base of the watershed, which ultimately discharge to San Diego Bay. The study has a particular focus on pesticides that have been associated with toxicity at the mouth of Switzer Creek in San Diego Bay.

The studies determined that the pesticides Chlordane, DDT isomers, and synthetic pyrethroids were highest in and most frequently detected in Area 4 (Residential & El Cajon Blvd.) and Area 3 (Residential) which coincide with residential and commercial and uses. Although DDT and its degradation isomers were detected, the concentrations are indicative of historical usage and not indicative of recent application. DDT isomers are generally persistent and have long half lives in soil. The compound 4,4-DDT was detected during the initial sample event, but was not detected during follow-up sampling which further confirms evidence of historical pesticide use and not recent application. Organophosphate pesticides were rarely detected and demonstrates that the USEPA ban on these pesticides is effective in preventing new impacts to water quality.

Copper and lead were highest in Area 1 (Downtown) while zinc was highest in Area 4 (Residential & El Cajon Blvd.). Cadmium was relatively low in comparison to copper, lead, and zinc. However, cadmium, copper, and zinc were highest in Area 4 (Residential & El Cajon Blvd.) and Area 2 (Balboa Park). Lead was highest in Area 1 (Downtown) receiving water locations. PAHs were highest in Area 1 (Downtown) and Area 2 (Balboa Park). PCBs were rarely detected.

Synthetic pyrethroids were detected in all areas. However, organophosphate pesticides were rarely detected or were just above the detection limit. DDT isomers and Chlordane were historically used for pesticide control. Currently, synthetic pyrethroids are the most commonly used pesticides to control ants, termites, and mosquitoes. Because DDT and Chlordane are banned compounds, the elevated levels detected in areas 4 and 3 suggest that these pesticides

were previously applied in areas not subject to environmental exposures until soil excavations, erosion, or building demolition occurred in recent years. Re-sampling of several sites in Area 4 (Residential & El Cajon Blvd.) and Area 3 (Residential) to confirm detections of 4,4-DDT showed no detections of 4,4-DDT and generally lower concentrations of the breakdown products DDE and DDD.

Synthetic pyrethroids are the most readily available retail pesticides and it stands to reason that elevated detections of these compounds would be expected. However, their route to the storm drain network likely occurs through improper applications to impervious surfaces subject to washoff. Applications of these pesticides to impervious surfaces can occur through lawn and garden products, professional pest control operators (PCOs), and via broadcast spraying to control mosquitoes.

Based on the data assessed, it is evident that DDT isomers, Chlordane, synthetic pyrethroids, and metals (copper, lead, and zinc), are being detected at levels above published sediment guidelines in the Switzer Creek Watershed. Although PAHs and infrequent detections of PCBs, Diazinon, and Chlorpyrifos were noted, these compounds were below the effects level expected to cause lethal effects to freshwater or marine organisms.

The results of this study demonstrate that Chlordane, DDT isomers, synthetic pyrethroids, copper, lead, and zinc should be classified as COCs in the Switzer Creek Watershed. Because the watershed is similar to many urbanized settings within the City and County of San Diego, it stands to reason that storm drain sediment results would likely be similar in other watersheds. Synthetic pyrethroids are a known issue on a statewide basis and have been detected in storm water runoff in most areas of San Diego County. The California Storm Water Quality Association (CASQA) Urban Pesticide Subcommittee is actively working with the Department of Pesticide Regulation and EPA to provide information and recommendations during the pyrethroid re-registration process, with the ultimate goal of preventing these compounds from entering the MS4 or receiving waters.

TMDL APPLICABILITY

- Chollas-Paleta-Switzer Creek Mouths TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to work with their consultant in developing and implementing a pesticide distribution study in the subject drainage areas to further assess potential sources and possible BMPs to reduce pollutant loads to the mouth of the subject creeks.

PARTICIPATING WATERSHED COPERMITTEES

- City of Lemon Grove
- City of La Mesa

- City of National City
- City of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- United States Navy
- Southern California Coastal Waters Research Project
- San Diego Regional Water Quality Control Board

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Benthic community impacts
- Toxicity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify pesticide as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

This TMDL is in the development phase and has not yet been adopted into the *Water Quality Control Plan for the San Diego Basin 9* (Basin Plan). After adoption into the Basin Plan, an Implementation Plan will be developed, which will outline the activities to be conducted to meet the requirements of the TMDL. Assessment of the effectiveness of this TMDL in protecting and restoring beneficial uses is not possible at this time. Once assessment is possible, it will be presented in Section 4 of the San Diego Bay WURMP Annual Report.

STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS (SDB-056)

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego Bay Watershed include:

- SDA 1 (Spring Valley)
- SDA 2 (Valle de Oro)
- SDA 3 (Sweetwater)
- SDA 4 (Jamul)
- SDA 5 (Bostonia)
- SDA 7 (Alpine)

FY 2008 ACTIVITY IMPLEMENTATION

Work began on drafting the SWQMPs for individual SDAs.

FY 2009 ACTIVITY IMPLEMENTATION

Work continues on the drafting of the SWQMPs for individual SDAs.

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2010-11. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2012.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

- To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

- To be determined

WATER QUALITY MONITORING AT ADDITIONAL MASS LOADING STATIONS (SDB-057)

ACTIVITY IMPLEMENTATION

This activity consists of the installation and monitoring of five mass loading stations (MLS) in the Sweetwater, Otay and Tijuana watersheds. Approximate locations for the San Diego Bay are described below.

Site Designation	Location Description	Lat.	Long.
SWT21	North Fork of Sweetwater River @ Tavern Road	32.80879	-116.78036
SWT07	Drainage Channel @ Quarry Road & Swap Meet Road	32.70114	-117.00927
OTY03	Dulzura Creek @ Otay Lakes Road	32.63624	-116.88456

The overall purpose of the activity is to acquire more representative data for the southern watersheds which generally only included dry weather grab samples. This will be accomplished through two different sampling methods for dry and wet weather events. For dry weather samples 24 hour continuous sampling will be completed and for wet weather a flow weighted sampling method will be used. Grab samples will be used for all bacteria sampling. A secondary purpose of the study is to compare water quality data from these upper watershed locations with data collected from MLSs which are typically located toward the lower portion of the watershed.

The project was designed to collect both field (5) and laboratory (33) parameters during two storm events and two dry weather events. Field parameters included Temperature, Dissolved Oxygen, pH, Conductivity, and Turbidity. Laboratory parameters measured included: Ammonia-N, Antimony, Arsenic (total/dissolved), Cadmium (total/dissolved), Chlorpyrifos, Chromium (total/dissolved), Coliform (total/fecal) and *Entrococcus*, Copper (total/dissolved), Diazinon, Hardness (total), Iron (total), Lead (total/dissolved), Manganese (total), Malathion, Nickel (total/dissolved), Nitrate-N, Nitrite-N, Orthophosphate-P, Selenium (total/dissolved), TDS, Total Kjeldahl, Nitrogen, Total Phosphate-P, TSS, and Zinc (total/dissolved). In addition to these parameters flow measurements will be taken at each station to develop discharge rates and to calculate a discharge equation.

FY 2008 ACTIVITY IMPLEMENTATION

This activity was planned for the FY 2008 reporting period but due to a large wildfire in October 2007 it was delayed until FY 2009. Activities that occurred during this reporting period were:

July 2007 Agreement between County and Brown and Caldwell signed.

October 2007 Study postponed due to wildfires

FY 2009 ACTIVITY IMPLEMENTATION

Two dry weather and one wet weather events were monitored during FY 2009. A second wet weather monitoring event did not occur due to a lack of measurable rain.

A report describing the methodology, monitoring reporting titled, "County of San Diego Southern Watersheds Water Monitoring Program Report" by Brown and Caldwell is included as Appendix X. This report also included a comparison of the data collected to the Water Quality Objectives established for a numerous constituents. General findings regarding these are listed below:

July 2008	First Dry Weather Monitoring event
February 2009	First Wet Weather Monitoring event
March 2009	Second Dry Weather Monitoring Event

Metals

All of the metals except Cadmium were detected in at least one sample. Iron was the metal with the highest concentrations. Total Metal concentrations of copper and zinc were for the similar as those in the lower Sweetwater MLS, however both were below the WQO's for these constituents. Total metals were higher in wet weather suggesting an association with sediments.

Nutrients

All dry weather results for nutrients were below WQO's, however both dry weather samples at the Alpine station for nitrate were above the Basin Plan objective of 10mg/L.

Bacteria

In general bacteria indicators are found at higher levels during wet weather events. Bacteria levels in Tijuana Watershed are three to four orders of magnitude higher at the MLS location than in the other sites which is indicative of raw sewage.

Pesticides

Diazinon and Chlorpyrifos were virtually non-detect in dry weather samples one hit at Spring Valley. Malathion was only detected during wet weather sampling at Spring Valley and Alpine. All detections were below WQO's.

Solids

TSS was lower during dry weather than wet weather samples. And all were below WQO's. However TSS samples at the Sweetwater MLS exceeded the WQO's in one of six events.

TDS on the other hand appeared at higher levels during dry weather events, especially at the Spring Valley site where exceedances were detected during both dry weather monitoring events. Compared to the Sweetwater MLS which has exceeded the WQO 13 our 18 events monitored.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This project was completed during the FY08-09 reporting period. No further activity is planned.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Nutrients
- Bacteria
- Pesticides
- Solids

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the San Diego Bay WURMP:

- Characterize water quality conditions throughout the watershed. This may be accomplished by conducting special studies where appropriate or by better managing existing data sources.

EFFECTIVENESS ASSESSMENT

Activity effectiveness was measured by confirming successful completion of all project elements (Level One). Project was completed during FY 2009. The final report is located in Appendix G.

STORM DRAIN STENCILING (SDB-028)

ACTIVITY IMPLEMENTATION

As a part of its efforts to improve water quality and increase public awareness, the City has purchased thermoplastic storm drain stencils to be installed in high traffic pedestrian areas throughout the City. These stencils adhere to the concrete curb/gutter by heat treatment and are more durable than paint stencils or plastic markers using adhesive. Stenciling addresses several pollutant categories including bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning/ Implementation
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Pending Funding Sources
- Permit Year 4: Pending Funding Sources
- Permit Year 5: Pending Funding Sources

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Various pollutant categories

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is a part of the Collective Watershed Strategy in that it seeks to contribute to improvements in water quality by reducing the loads of bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash into the storm drain system.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity was assessed through levels Two and Three. During the reporting period, the City purchased an additional 200 thermoplastic storm drain stencils, and plans to install them in the next fiscal year. Last Fiscal Year, 500 thermoplastic storm drain

markers were permanently affixed to storm drain inlets with the prohibitive "No Dumping – Drains to Bay" message in two languages. The stencils were installed on storm drains along major roads within Chula Vista such as Telegraph Canyon Road, Otay Lakes Road, H and East H Street, and East Palomar Street. In addition, citizens participating in Beautify Chula Vista Day in October 2008 stenciled 88 more storm drains. Notably, nearly all storm drain structures in the City are identified with stenciling, plastic markers, or permanent concrete stamping. The City is currently tracking the locations of these stencils in a database and plans to produce a map of these locations. It is estimated that thousands of pedestrians pass these stencils on a yearly basis, which reminds them that their daily actions can impact water quality within the City. By installing these stencils along major streets in the City, the goal is to reduce the amount of pollutants that can potentially enter the storm drain system from pedestrians as well as showing citizens that they live near rivers and streams.

PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE (SDB–029)

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego Bay WMA during FY 2009 from August 2008 to April 2009. The City will work with various broadcast media outlets to distribute and air the PSAs during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as high priority water quality problems in the San Diego Bay WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist*

PSAs will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST **Assess the Efficiency and Effectiveness of Public Service Announcements**		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in San Diego Bay WMA (Outcome Level One)	2,010,760
	Number of impressions made to the public through radio announcements in San Diego Bay WMA (Outcome Level One)	2,760,568
	Change in knowledge or attitude from survey results (Outcome Level Two)	44%
	Change in pollutant-related behavior from survey results (Outcome Level Three)	Yes**

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of “Think Blue” 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year’s survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The City conducted an effectiveness assessment of *Think Blue* PSAs and storm water messages via field experiment in which 309 individuals were shown eight different *Think Blue* PSAs (including the *Karma, Karma Second Chance* PSAs). Participants were then asked questions to determine storm water knowledge, awareness and possible changes to future behavior as a result of the PSA. The results of the field experiment demonstrate the messages in the PSAs are effective in increasing public knowledge that storm water is not treated. 25% of participants were more likely to answer that storm water is not treated than those who had answered the question prior to watching the PSA. Additionally, awareness that storm water pollution is an important issue in San Diego also increased after watching the PSA. Lastly, the *Karma Second Chance* PSA scored the highest of the PSAs in motivating participants to take specific actions to prevent storm water pollution.

The City also obtained assessment information from its annual random-digit dial 2009 *San Diego Storm Water Survey* of 800 total residents from all WMAs. 55% of residents said they saw a *Think Blue* PSA last year (up from 52%) on television while 8% of residents heard the radio announcements in FY 2009. 51% said they prefer to get information about storm water via television. This year's survey also noted that while 44% of residents know that storm water was not treated, significant increases in awareness were detected among women (particularly over the age of 50), residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the city as a whole. To estimate the number of impressions in the San Diego Bay WMA, the total number of estimated city-wide impressions, (11,170,888 for television and 15,336,488 for radio ads) was multiplied by the proportion of residents living in the San Diego Bay WMA (38%) of the city's total population.

Conclusions

Based on assessment from both the survey and the field experiment as well as feedback from the public, *Think Blue* PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the city will continue to monitor public

perception and feedback to determine if this is actually occurring. The city will continue to work with appropriate broadcast media outlets to air *Think Blue* television and radio PSAs during FY 2010.

Additionally, the City continued to measure public awareness of the *Think Blue* program via surveys comprised of a random digit dial sample of the residents living in the San Diego Bay WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, while the *2009 San Diego Storm Water Survey* indicated that 39% had heard the phrase "Think Blue" during FY 2009, awareness that storm water is not treated increased. These results, coupled with a continued decrease in the percentage of residents hosing down their driveways, and in residents using pesticide or weed killers, demonstrate that the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the San Diego Bay WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

OUTDOOR TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS (SDB-030)

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego (City) retained a contract with an outdoor advertising company to advertise *Think Blue* messages on billboards and bus shelters located in the San Diego Bay WMA. The City created advertisements in English and Spanish that target behaviors associated with bacteria profiled as a vector. The goal of the billboards was to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed and implemented in FY 2008 throughout the San Diego Bay WMA. In FY 2009, it was determined that transit shelters and billboard advertisements were not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. The City will continue to monitor outdoor advertising opportunities in the future and may reconsider the use of this activity in the San Diego Bay WMA.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City no longer plans to use billboards and transit shelters as part of its watershed program.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City no longer plans to use billboards and transit shelters as part of its watershed program; therefore, no assessment was conducted in FY 2009.

MOBILE ADVERTISING (SDB-031)

ACTIVITY IMPLEMENTATION

The City of San Diego Storm Water Department (City) retained a contract with a mobile advertising firm in FY 2008 to advertise *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The City created advertisements targeting behaviors associated with bacteria and/or metals. The goal of the billboards was to educate the public about the causes of these kinds of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the Chollas Creek Watershed route in both English and Spanish on August 12, 13, 14, 26, 27, and 28, 2008. The estimated audience was 156,690 impressions over those dates. The following image shows the Chollas Creek route.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The activity was completed in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy identify bacteria as a high priority water quality problem in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing mobile advertising will result in increased knowledge and awareness directly, and will promote behavior change.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MOBILE ADVERTISING Assess Efficiency and Effectiveness of Advertisement on Static Billboard Trucks		
Management Questions	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcomes	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)	
Data Recorded	Number of impressions San Diego Bay (Outcome Level One)	43,038 DEC*
	Number of impressions Chollas Creek (Outcome Level One)	26,115 DEC
	Change in knowledge or attitude from survey results (Outcome Level Two)	44%
	Change in pollutant-related behavior based on survey results (Outcome Level Three)	Yes**
Recommended Data	Advertisement costs (Outcome Level One)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewer ship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2009 was 522,300.

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of mobile advertising for *Think Blue* messages on its static billboard trucks in the San Diego Bay WMA. The advertisements target behaviors associated with trash and bacteria.

Results and Analysis

The advertisements were developed in the FY 2008 and displayed throughout the San Diego Bay WMA in both English and Spanish in FY 2009. The estimated audience was 860,700 total impressions per 4-week period for San Diego Bay as a whole, and 522,300 for Chollas Creek. In FY 2009, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, approximately 17% of residents became aware of the Think Blue message by seeing mobile advertising.

Long-Term Assessment and Conclusions

In late FY 2009, based on results from the *2009 Storm Water Survey* it was determined that mobile advertising was not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. Additionally, the City's Storm Water Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. The City has discontinued this activity in the San Diego Bay WMA.

COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT PROJECT - CHOLLAS CREEK COMMUNITY (SDB- 032)

ACTIVITY IMPLEMENTATION

In FY 2009, the City of San Diego (City) utilized professional research consultants to develop and implement an education and outreach strategy to address litter in the Chollas Creek Watershed using Community-Based Social Marketing (CBSM). This strategy will use observations, interventions, and assessment methods in an effort to identify barriers to public participation against littering, the steps needed to remove those barriers, and solutions which may include structural interventions and/or additional education and outreach strategies to residences and businesses.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

After initial planning in FY 2008, the city began implementation of the Chollas Creek CBSM pilot project in FY 2009 with an anticipated completion date in FY 2011. Activities in FY 2009 included selection of pilot and control areas of Chollas Creek and identification of trash and litter as a target behavior, development of an observational research protocol for assessing litter behavior and barriers, development of materials for data collection, developing and conducting a training session for *Think Blue* and ILACSD staff and volunteers, coordination and scheduling of observation sessions, as well as observational research protocol development, data collection, entry, and management. Additionally, recommendations for structural interventions and education and outreach strategies were presented to the City. Finally, initial cleanup of the pilot and control areas occurred in FY 2009. It is anticipated that implementation of the structural and educational elements will begin in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego (ILACSD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2). Implementation of this activity will address the high priority water quality problem by identifying the behaviors in the WMA contributing to trash loading (which acts a bacteria vector) and testing outreach strategies to determine their effectiveness in reducing loads before broad-scale implementation.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
COMMUNITY-BASED SOCIAL MARKETING PILOT STUDY IN CHOLLAS CREEK Assess Effectiveness of CBSM in Changing Awareness, Attitudes, and Behaviors	
Management Question	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution? • What changes in behaviors were observed after CBSM implementation?
Targeted Measurable Outcomes	• Reach goal number of people within the watershed, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by pamphlet)
Recommended Data	• Number of educational materials distributed in business areas (Outcome Level One) • Change in knowledge or attitude (Outcome Level Two) • Change in behaviors (Outcome Level Three)

Objectives

The goal of this assessment is to determine the effectiveness of the Community-Based Social Marketing (CBSM) outreach in educating the public about the causes of trash and bacteria loading and changing their pollutant-loading behaviors.

Results and Analysis

Two study areas in Chollas Creek were selected by City of San Diego staff. The two areas were selected to serve as pilot and control areas, and were chosen such that they were similar along key dimensions such as land use, geography, and demographic composition. Area 1 boundaries are: 94 Freeway (N), Interstate 15 (E), L street (S), and 30th street (W). Area 2 boundaries are Hilltop Drive (N), I-805 (E), Mount Hope Cemetery (S), and Allen Park (W).

The observation sites were split between designated pilot and control areas. The purpose of the observational study was to identify the sources of litter, establish a baseline littering rate, identify the target population associated with litter, and identify avenues for outreach and education to reduce and prevent litter. Observations of litter and littering behavior took place during daylight hours between December 2nd and December 10th, 2008, and a total of 9 sites and 714 individuals were observed.

A number of findings were discovered after analyzing the observational data. Among those that are most important, observations showed that people do litter, they do so frequently, and they do so intentionally. However, it was discovered that there also was a general lack of infrastructure for cigarette and waste disposal in both areas. Finally, it was determined that people who were part of a group littered slightly more often than those who were alone at the time of disposal and age was a significant demographic predictor of littering behavior, with younger individuals littering more than older individuals.

Long-Term Assessment and Conclusions

In FY 2009 the baseline observations; development of CBSM intervention; and community cleanup portions of the project were completed. In FY 2010 implementation of the CBSM intervention and follow-up observations are anticipated. Effectiveness will be measured on a variety of levels. First, the number of stakeholders, residents, and businesses being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT PET WASTE DISPOSAL (SDB-039)

ACTIVITY IMPLEMENTATION

The City of Chula Vista (City) plans to encourage homeowner associations (HOAs) to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association newsletters about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials and survey homeowners associations to assess if there is signage regarding proper pet waste disposal and plastic bag dispensers in the neighborhoods.

During the last fiscal year, the City compiled contact information about the HOAs within the City as well as looked at the potential methods for reaching HOAs in the City. This fiscal year, the City contributed a storm water article to the HOA magazines, My Hometown Otay Ranch and My Hometown Eastlake, which focused on general storm water pollution prevention, including proper pet waste pickup. In addition, the City designed a potential questionnaire that could be used to survey HOAs about pet waste. A phased approach over the remaining permit cycle will be used to reach the various HOAs within the City.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria is categorized as a high priority pollutant in the watershed. This activity is consistent with the Collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity was assessed through levels One, Two, and Three. During this fiscal year, the City contributed a storm water article that addressed pet waste to a magazine that reached both the Eastlake and Otay Ranch areas in East Chula Vista. This magazine reaches a large portion of the City, with a circulation of 20,000 households. The City will continue to reach HOAs and explore other methods for providing them with storm water education.

STORM WATER EDUCATION BOOTH AT PET FESTIVAL AND DOGGIE DASH (SDB-040)

ACTIVITY IMPLEMENTATION

The City of Chula Vista (City) plans to educate its residents about proper pet waste disposal and its possible effects on water quality at its annual Pet Festival and Doggy Dash. This outdoor community event involves both pet owners and pets. The City plans to have an educational booth and provide educational materials related to the Chula Vista Clean Program for residents, in particular, those involving the cleanup of pet waste.

During the reporting year, the City Storm Water Management Section had a booth for the first time at the Pet Fest and Doggy Dash on June 20, 2009. At the booth, City staff provided basic storm water education to residents and provided brochures about pollution prevention. A storm water awareness survey was also implemented to assess storm drain awareness and BMP implementation among residents.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning/ Implementation
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Implementation/ Assessment
- Permit Year 4: Implementation/ Assessment
- Permit Year 5: Implementation/ Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Collective Watershed Strategy in that it aims to contribute to improvements in water quality by eliminating sources of pollutants.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels One and Two. Compliance with activity based permit requirements and changes in knowledge, attitudes, and awareness will be assessed. A survey was implemented at the Pet Festival that had a number of questions about storm water pollution prevention and BMP implementation. In order in increase participation, the City had a number of giveaways as an incentive for residents to complete a survey. The main giveaway was a pet waste bag dispenser that clips on to a dog's collar with a printed message to remind them to pick up after their pet. In order for the resident to receive a dispenser, she/he had to complete a survey. A question asked was: How do you dispose of your pet's waste? The available choices were: 1) Rinse off yard/sidewalk into gutter, 2) Flush down the toilet, 3) Bury in the yard/garden, 4) Use a plastic bag and place in trash, 5) I left it where it was, 6) Don't know, and 7) I don't have a pet.

Of the 89 surveys completed at the festival, 80% of survey respondents said that they use a plastic bag and trash to dispose of their pet's waste, showing that residents are implementing BMPs in regards to taking care of pet waste. In addition, they are even more encouraged to pick after their pets when they receive the pet waste bag dispenser. The City will continue to participate in the Pet Fest and Doggy Dash by having a booth and reminding pet owners to pick up after their pets.

FATS, OILS, AND GREASE (FOG) PROGRAM (SDB-041)

ACTIVITY PLANNING

The City of Chula Vista (City) developed a Fats, Oils, and Grease (FOG) program as a part of its Sewer System Management Plan (SSMP). The FOG program focuses on educating restaurant owners and operators about the importance of proper grease waste management. Increased education and awareness about proper grease waste disposal aims to reduce possible sanitary sewer overflows in the City. Restaurant owners and operators will receive educational materials about grease waste management.

During the last reporting year, the City was in the process of developing the FOG portion of its SSMP. During this reporting year, the City implemented a survey that asked restaurants about the use and maintenance of grease pre-treatment devices in order to understand the current methods used to reduce FOG by restaurants. Based on the findings, the City will tailor its education programs to educate restaurants to use pre-treatment devices, followed by focusing on the maintenance of these devices. Education outreach efforts are expected to begin in 2010.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: Assessment
- Permit Year 5: Assessment

Based on the Regional Board letter "Comments on the March 2008 Watershed Urban Runoff Management Plan (WURMP) and USEPA/ Regional Board April 2008 WURMP Assessments," the City will implement this activity once.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Collective Watershed Strategy in that it aims to contribute to improvements in water quality by reducing the possible sanitary sewer overflows that result from mismanaged grease waste.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity will be addressed through levels Two, Three, and Four. The number of restaurants that receive education will be tracked as well as the number of sanitary sewer overflows. As a part of the planning process, the City surveyed restaurants to find out what types of pre-treatment mechanisms they have in place. The City mailed out over 360 surveys to Chula Vista restaurants and received over 200 completed surveys. Of these restaurants, it was found that approximately 60% of them utilize grease pre-treatment devices, and 50% properly maintain and dispose of FOG. Based on these results, the City's FOG outreach and education program will first encourage restaurants to use pre-treatment devices, and then educate them regarding proper routine maintenance and FOG disposal procedures.

In addition, the City is in the process of developing a FOG webpage that will include BMPs and other brochures for restaurants to print out. City staff is also in the process of developing a new FOG ordinance to be included in the City's Municipal Code. In comparing the number of Sanitary Sewer Overflows (SSOs) in the City to the average in the County, the City's average number of SSOs is well below the average of the entire County. The City believes that the low number of SSOs is attributable to the City's diligent preventative maintenance program for the wastewater collection system. Future efforts for the FOG program include education outreach campaigns that focus on the latest FOG pre-treatment devices, maintenance standards, and FOG disposal locations.

LA MESA PARK KIOSK (SDB-042)

ACTIVITY IMPLEMENTATION

During 2008-2009 the City of La Mesa (City) maintained the education outreach kiosk at one of the seven parks within the City in the San Diego Bay Watershed, Vista La Mesa Park. This kiosk was constructed during the previous reporting year with the help of the local Eagle Scouts. The kiosk presents storm water pollution prevention education outreach materials, including the San Diego Bay Watershed Fact Sheet and the Chollas Creek TMDLs Fact Sheet. The watershed fact sheet provides information on the watershed, pollutants of concern, and tips to prevent storm water pollution. The TMDLs fact sheet includes a map indicating which part of La Mesa is in the Chollas Creek HSA, background about the Chollas Creek Dissolved Metals and Diazinon TMDLs, and a list of best management practices that businesses can take that will help reduce the loads of pesticides and metals discharged.

The expected benefit is that park-goers and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

TMDL APPLICABILITY

Education outreach is a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The kiosk includes a San Diego Bay Watershed Fact Sheet that lists diazinon and metals as pollutants of concern as well as tips to prevent storm water pollution. The City's Chollas Creek TMDLs Fact Sheet is also displayed in the kiosk.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- Eagle Scouts

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The watershed fact sheet and TMDLs fact sheet placed in the education outreach kiosk provide information on the watershed's pollutants of concern, including the 303(d) listed pollutants (metals, diazinon, and bacteria) and information about relevant TMDLs. Pollution prevention tips to address watershed priority pollutants are presented in the fact sheets.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The education outreach kiosk provides pollution prevention tips to address those watershed priority pollutants. The kiosk supports the Watershed Strategy by educating residents in the vicinity of the park on good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS ASSESSMENT

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the watershed and region. The kiosk provides educational outreach materials specific to the watershed to address pollution prevention measures.

LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS (SDB-043)

ACTIVITY IMPLEMENTATION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID Handbook, including Management Strategies, the Appendices, and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

Local planning and sponsor groups within the San Diego Bay WMA include:

- Alpine
- Crest-Dehesa
- Cuyamaca
- Descanso
- Jamul-Dulzura
- Spring Valley
- Sweetwater
- Valle de Oro

ACTIVITY IMPLEMENTATION FY 2008

This education program was successfully developed during the spring of FY 2007-08, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2007-08, none were conducted in the San Diego Bay WMA.

ACTIVITY IMPLEMENTATION FY 2009

As documented in the table below, presentations were delivered to eight planning and sponsor groups in the San Diego Bay WMA, which included 128 attendees. A total of 78 pre- and post-surveys were completed by seven of the eight groups.

Community Group	Presentation Date	No. of Attendees	Surveys Completed
Alpine	1/22/09	27	15
Crest-Dehesa	5/11/09	22	14
Cuyamaca	12/9/08	7	5
Descanso	9/18/08	10	10
Jamul-Dulzura	3/24/09	9	8
Spring Valley	8/26/08	19	17
Sweetwater	4/7/09	15	9
Valle de Oro	9/16/08	19	0
Total		**128**	**78**

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was completed during FY 2009. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENTS

Activity effectiveness was assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level One Outcomes). Furthermore, attendees were asked to complete pre- and post- survey forms, which consisted of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area. Survey results were calculated to measures changes in attendee knowledge regarding watershed planning and LID principles (Level Two Outcome).

The table below summarizes results from the seven surveys administered to groups in the San Diego Bay WMA. Improvements on the post- survey ranged from a 2.67% increase to a 22.86% increase. This represents a demonstrable increase in knowledge among the target audience.

Community Group	Date	Total Attendees	# of Surveys Given	Pre-survey % correct	Post-survey % correct	% Increase
Alpine	1/22/09	27	15	65.33%	68%	2.67%
Crest-Dehesa	5/11/09	22	14	61.43%	84.29%	22.86%
Cuyamaca	12/9/08	7	5	76%	88%	12%
Descanso	9/18/08	10	10	82%	88%	6%
Jamul-Dulzura	3/24/09	9	8	75%	92.5%	17.5%
Spring Valley	8/26/08	19	17	61.18%	68.24%	7.06%
Sweetwater	4/7/09	15	9	68.89%	84.44%	15.55%
Valle de Oro	9/16/08	19	0	N/A	N/A	*No survey*

ILACSD ELEMENTARY SCHOOL WATERSHED PRESENTATIONS (SDB-044)

ACTIVITY IMPLEMENTATION

The San Diego Bay WURMP Workgroup recognizes the benefits of providing storm water and watershed education to elementary, middle, and high school children and how this type of watershed activity is an integral part of fostering positive behavioral change. Changing attitudes and behaviors in elementary students can provide long-lasting impressions that follow a child into adulthood. The Cities of Chula Vista, Imperial Beach, La Mesa, National City, and Port of San Diego have collaborated on an education outreach effort to provide presentations to elementary school children that focus on watershed protection, pollution prevention, and BMP implementation. Assisted by I Love a Clean San Diego (ILACSD), the San Diego Bay Copermittees were able to reach over 470 students in the San Diego Bay WMA during the presentations in the reporting year.

The overall goal of this activity was to educate children about the sources of pollution in their neighborhoods so that they will realize how their daily activities may impact their watershed. In turn, the hope is that the children will gain a sense of ownership for their watersheds and influence their families to implement BMPs and good house keeping practices. Pre- and post-test were administered to assess any changes in attitude, knowledge, and awareness of watersheds, storm water, and pollution prevention concepts. A 30-minute presentation was given to the students that reviewed storm water and watershed basics, sources of pollutants, how pollutants get into our waterways, pollution prevention, and recycling.

Presentations given in the Cities of Imperial Beach, National City, La Mesa, and Chula Vista are listed in Table 1.

Table 1. ILACSD Education Presentations.

Copermittee	HA	School (Number of Presentations)	Number of Students/Grade
Port of San Diego	910.1 Imperial Beach	Bayside Elementary (2)	70 - 6th graders
	909.1 National City	Rancho de la Nacion (2)	30 - 6th graders
City of Imperial Beach	910.1 Imperial Beach	Imperial Beach Elementary (3)	154 – 5th and 6th graders
		Central Elementary (3)	
City of La Mesa	908.2 La Mesa	Helix High School (2)	80 – 9th-12th graders
		La Mesa Dale Elementary La Mesa Middle School (3)	86 – 3rd and 6th graders

The City of Chula Vista sponsored a more extensive four-day after school program called South Bay Water Warriors at Montgomery Elementary School. A total of 24 students met on a

Tuesday for four consecutive weeks. The curriculum consisted of the following lesson plans: 1) Introduction to Water and the Watershed, 2) Water Quality, 3) Water Scarcity and Water Use, and 4) Negative human impact and how it can be remedied. A Pre-test was given to students at the beginning of the program and a post-test was administered at the end.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for a number of high priority pollutants. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Concepts in the presentations are applicable to the Chollas Creek Dissolved Metals TMDL and Chollas Creek Diazinon TMDL in the Pueblo Sand Diego HU (908.2 HA).

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Implementation/ Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of Imperial Beach
- City of La Mesa
- City of National City
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- I Love of Clean San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash
- Pesticides
- Sediment
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Consistent with the Collective Watershed Strategy, this activity addresses several high priority water quality problems in the San Diego Bay WMA. This is a source control activity in which the overall goal is to prevent pollution from residential sources by providing education to school children.

EFFECTIVENESS MEASUREMENTS

In order to assess effectiveness of this school education activity, the same questions were asked in the pre- and post-tests given to the children to assess a change in knowledge due to the presentations. A summary is shown in the table below of the schools, number of students, and pre- and post- test results.

San Diego Bay Watershed Copermittees	School	# of Students	Pre-Test Results (%)	Post-Test Results (%)
Chula Vista	Montgomery Elementary	24	56	83
National City	Bayside Elementary	70	79	83
	Rancho de la Nacion Elementary	60	85	93
Imperial Beach	Imperial Beach Elementary	54	75	87
	Central Elementary	100	73	83
La Mesa	Helix High School*	80	N/A	96
	La Mesa Dale Elementary*	28	N/A	70
	La Mesa Dale Elementary	28	58	80
	La Mesa Middle School	30	69	88
TOTAL		474	Average = 71	Average = 85

*Pre-tests were not administered to these groups of students

Assessment of the pre- and post-tests results indicate there was an increase in knowledge when comparing overall scores and among each group of students. The San Diego Bay Copermittees have determined that this activity is effective at increasing knowledge, attitudes, and awareness in school children, and plan to implement this activity in upcoming years, as funding is available. Future efforts may include focusing education on specific age groups or grade levels, and may include interactive activities that reinforce watershed concepts. Efforts will also improve the presentation based on student and teacher feedback, and further tailoring the presentation to address the high priority pollutants of specific hydrologic areas.

SAN DIEGO BAY WATERSHED BROCHURE (SDB-055)

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) WMAs assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2010. Implementation and distribution is expected to occur in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	**San Diego River**	**San Diego Bay**	**Mission Bay**	**San Dieguito River**	**Los Penasquitos**
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria	-	-
Trace Metals	Turbidity	Oil/Grease	-	-	-
Pesticides	Total Dissolved Solids	Pesticides	-	-	-
Gross Pollutants	-	Sediment	-	-	-
Sediment, TSS, Turbidity	-	Trash	-	-	-

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the WMAs.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City plans to continue to implement the brochure program in FY 2010. Effectiveness assessments will be conducted after the watershed brochures are implemented in FY 2010. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

Appendix E

Chollas Creek
Dissolved Metals TMDL
Implementation Plans Updates

California Department of Transportation (Caltrans) Watershed Activities Reporting
Year 1, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Facilities Pollution Prevention Plan	Annual inspection of Caltrans maintenance stations for storm water compliance.	Implementation	Level 4	Are there deficiencies in our maintenance facilities where potential pollutants discharged may reach the creek?	Caltrans has one bridge paint maintenance station in the watershed and the results of the inspection conducted on 9/29/09 showed no deficiencies.
Tier II Chollas Watershed sweeping	Sweeping effort in the watershed, especially in priority sectors before the start of the rainy season and before rain events. Efforts to be coordinated with our maintenance staff.	Implementation	Level 4 Level 5	How may miles are swept per year and how much material is swept?	Maintenance crews sweep the freeways twice a month. Number of miles swept in watershed (freeway in both directions) (FY 08-09) =approximately 40.8 miles Materials removed (FY 08-09)=approximately 11 cubic yards based on the district average materials in cubic yards swept per lane mile in San Diego County.
Tier II Homeless Encampment Removal	Eradicate illegal human encampment under bridges along the freeways within the Chollas watershed by paving under bridges and placing cobbles to reduce bacteria, metals and trash loading.	Implementation	Level 4	How many homeless encampments have been removed?	A project has been completed under I-5/SR-94 Viaduct. The project placed concreted rock slope protection under the bridge.
Tier II Collaborative Special Study (Jurisdictional Boundary Monitoring in the Upper Watershed)	Storm water monitoring will be conducted during two storm events during the 2009-2010 wet weather monitoring period. Monitoring will be conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples will be analyzed for organophosphate pesticides (Diazinon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc, and acute and chronic toxicity to *Ceriodaphnia dubia*.	Planning	Level 1	What are the pollutant loads at the jurisdictional boundaries? Can those loads be linked to near by sources?	Monitoring will start in the 09/10 rainy season. Results will be provided as part of next year's WURMP.
Tier II Collaborative Special Study (Activity Assessment Grab Samples for Metals)	Activity assessment grab samples will be collected for source identification studies or for BMP assessments. Samples will be collected from specific land use areas in each priority sector during one wet weather event. Specific locations will be pre-determined prior to the storm monitoring season based on land use, activities, or BMPs and will be decided by the participating Dischargers. Samples will be analyzed for total and dissolved metals, TSS, and hardness.	Planning	Level 1	What's a typical runoff concentration form a specific jurisdiction? What's the pollutant removal effectiveness of a pilot BMP project?	Monitoring will start in the 09/10 rainy season. Results will be provided as part of next year's WURMP.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Collaborative Special Study (Bacteria Monitoring)	Samples will be collected and analyzed for total coliform, fecal coliform, and *enterococci* during storm events at SD8(1) and DPR2 (three storms) and LM-1 and LG-1 (two storms). Samples will be collected as grab samples during the peak flow of the storm event.	Planning	Level 1	What's the bacteria concentration at the jurisdictional boundaries and the two required monitoring stations?	Monitoring will start in the 09/10 rainy season. Results will be provided as part of next year's WURMP.
Ongoing Agency Wide Activities					
Tier I Brake Pad Partnership (BPP)	Caltrans funded work consisting of a watershed modeling effort conducted as part of a larger study examining the potential impact of copper from brake pad wear and debris released to the environment. The objective of the environmental transport and fate modeling is to predict how copper released from brake pads enters the bay and affects both the short-term and long-term concentrations of copper in the bay.	Implementation	Level 4	Are there new products that can replace the current products used for making brake pads?	Caltrans continues to fund the watershed modeling component of the BPP's technical studies and is working with the BPP to augment the modeling efforts of copper in highway environments. Results of the study will benefit in reducing copper concentration in the creek.
Tier I Don't Trash California	Using a comprehensive, multicultural approach, the *Don't Trash California* campaign targets primary offenders of highway littering, as well as the general public, to create a social mindset in California that this State does not tolerate polluting our freeways and highways. The campaign will implement proven strategies in the Chollas Creek Watershed, including billboard, bus advertising, partnerships and community outreach to raise the level of awareness of the effects of littering and encourage the public to avoid littering.	Implementation	Level2 Level 3	How many events did Caltrans participate in within the watershed? How much public education materials were distributed to sponsors in the watershed?	Caltrans participated in one event in the watershed (Walk the Watershed 2009 Chollas Creek) sponsored by San Diego Coast Keepers and Groundwork San Diego-Chollas Creek on March 7th, 2009 . The following "Don't Trash California" collateral items were given to Groundwork San Diego-Chollas Creek for distribution at this events and ongoing education programs: 50 car air fresheners 40 7" x 3" magnets 1 litter bugs poster 100 litter bugs reminder cards 2 blocks of tattoos 1 roll of litter bags 1 box of pens in English 1 box of pens in Spanish 100 each Activity books in Spanish and English 2 T-Shirts (adult size) 10 large & 10 medium trash can stickers
Tier II Ornamental Roadside Vegetated Treatment Sites (ORVTS) Study	The Ornamental Roadside Vegetated Treatment Sites (ORVTS) Pilot Study is comprised of two types of study sites: the Expanded Roadside Vegetated Treatment Sites (ERVTS) and the Groundcover Roadside Vegetated Treatment Sites (GRVTS). The ERVTS sites were constructed to expand the treatment strips at existing site locations of the original Roadside Vegetated Treatment Sites (RVTS) Pilot Study with new groundcover. Existing RVTS data will be utilized as a baseline condition, providing supplemental data on alternate vegetation types.	Planning	Level 1 Level 4 Level 6	For the ERVTS, how effective is the groundcover vegetation species at providing treatment of highway runoff and how do they compare in treatment potential to existing grass and forb vegetation within the Caltrans rights-of-way (ROW)?	The operation, maintenance and monitoring plan has been completed. 2 out of the 9 sampling sites were selected within the SD Region to be monitored for 2-3 years starting the rainy season of 09/10: • I-5 at Carlsbad GRVTS swale • SR-52 GRVTS Strip Flow weighed composite samples will be collected from up to twelve storms. Results of the monitoring could be beneficial in the implementation of BMPs in the Chollas watershed.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Strom Water Monitoring and BMP Development Studies	Caltrans has an ongoing program to develop and monitor treatment BMPs and source control BMPs, as well as conduct storm water characterization studies. Treatment technology pilot studies are designed to gather definitive cost and performance data. Successfully piloted technologies may be considered for approval and listing in the Storm Water Management Plan (SWMP) as BMPs to be implemented in highway projects according to SWMP guidelines. Source control studies follow a similar process.	Implementation	Level 1 Level 4 Level 6	What are the design criteria, Operations, maintenance & construction requirements, treatment effectiveness, costs, advantages and constraints? Treatment effectiveness is based on assessing the following parameters. • Sediment (total suspended solids [TSS]) • Total nitrogen • Total phosphorus • Pesticides • Total metals • Dissolved metals • Microbiological (including pathogens) • Litter • Biochemical oxygen demand (BOD) • Total dissolved solids (TDS)	The study results are being used by Caltrans to assess BMPs for pilot studies. If proven to be effective, BMPs will be approved for statewide use, including Chollas Creek Watershed. The study evaluated "171" BMPs based on design, operation, maintenance, construction, treatment effectiveness, costs, advantages and constraints. Specific BMPs are undergoing full scale pilot studies. For additional information, the report can be found at http://www.dot.ca.gov/hq/env/stormwater/annual_report/2008/annual_report_06-07/attachments/Treatment_BMP_Technology_Rprt.pdf
New Activities					

County of San Diego Watershed Activities Reporting
Year 1, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier II Porous Pavement Project at Central Regional Public Health Facility Parking Lot	Removal and replacement of 14,000 square feet of existing impervious pavement with porous pavement and a stone reservoir to capture runoff from the parking lot at the Central Regional Public Health Facility.	Planning	Level 4	Water quality monitoring	This project is included in the San Diego IRWMP program and is awaiting distribution of Prop 50 funds. Due the State budget crisis this funding was frozen. This will affect the schedule of completion for the project. It is now estimated that the project will be completed by summer 2012.
Tier II Capture and Infiltration Project at Comprehensive Health Care Center	Installation of concrete detention/infiltration vaults or equivalent units under two parking lots at the Comprehensive Health Care Center.	Planning	Level 4	Water quality monitoring	This project is included in the San Diego IRWMP program and is awaiting distribution of Prop 50 funds. Due the State budget crisis this funding was frozen. This will affect the schedule of completion for the project. It is now estimated that the project will be completed by summer 2012.
Tier II Bioswales/ Rain Gardens at Dodson House	Installation of three bioswales and two rain gardens at the Dodson House.	Project has been deleted	Level 4	Water quality monitoring	This project was originally included in the San Diego IRWMP program, but since the property is no longer maintained by the County, it has been removed from IRWMP as a project.
Ongoing Agency Wide Activities					
Tier 1 Commercial Business Inspection & Enforcement	The County of San Diego performs routine inspection and enforcement of commercial businesses as part of its JURMP. There is one commercial business, a cemetery, within the County's portion of the Chollas Creek Watershed. It is inspected approximately annually, with follow ups and enforcement performed as necessary.	Implementation	Level 1 Programmatic Outcomes Level 3 Behavioral Modification	Level 1 # Inspections, # Violations Observed Level 3 # Corrective Actions Implemented	# Inspections – 2 # Violations Observed – 4 # Corrective Actions Implemented – 4
Tier 1 Municipal Facility Inspection & Audits	The County of San Diego performs routine inspection and audits of municipal facilities as part of its JURMP. There are seven* County-owned municipal facilities within the Chollas Creek Watershed. All facilities are inspected twice per year by the department responsible for facility operations. The Department of Public Works supplements routine inspections with periodic audits of facility operations.	Implementation	Level 1 Programmatic Outcomes Level 3 Behavioral Modification	Level 1: # Facilities Inspected, # Inspections, # Deficiencies Observed During Inspections, # Facilities Audited, # Audits, # Deficiencies Observed During Audits Level 3: # Corrective Actions Implemented Following Inspections, # Corrective Actions Implemented Following Audits	# Facilities Inspected – 7 # Inspections – 14 # Deficiencies Observed During Inspections – 10 # Corrective Actions Implemented Following Inspections – 10 # Facilities Audited – 6 # Audits – 6 # Deficiencies Observed During Audits – 12 # Corrective Actions Implemented Following Audits – 12 * The TMDL Implementation Plan indicated that there were 8 County-owned municipal facilities in the Chollas Creek Watershed. The La Mesa Library has recently been removed from the County's inventory because it is now owned and operated by the City of La Mesa.
New Activities					

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates

City of La Mesa Watershed Activities Reporting
Year 1, Phase I of Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Code Modification	Code update/regulations pertaining to Chollas Watershed. For example, new businesses along University Channel will be required to consider BMPs associated with the pollutants identified in the TMDL.	Planning	Level 1: Completion of Code Modification	Code Adoption and Assessment Report.	The code update related to the Chollas Creek Watershed is scheduled to occur in FY 09/10.
Tier II Collaborative Special Study #1 Jurisdictional Boundary Monitoring in the Upper Watershed	Storm water monitoring will be conducted during two storm events during the 2009-2010 wet weather monitoring period. Monitoring will be conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples will be analyzed for organophosphate pesticides (Diazanon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc and acute and chronic toxicity to *Ceriodaphnia dubia*. In collaboration with City of San Diego, City of Lemon Grove, and Caltrans.	Planning	Level 1: Completion of Study and Final Report	Completed study and final report prepared by the City of San Diego's Consultant.	Monitoring will occur during the 09/10 rainy season.
Tier I Residential Educational Kiosk Pilot Study	Educational material about the water quality problems in the Chollas Creek Watershed (Watershed Fact Sheet) will be posted in a specially designed kiosk at Vista La Mesa Park. La Mesa may implement additional educational kiosks at other locations in the future. Collaboration with City of San Diego- Project assessment using survey data for watershed advertisement.	Implementation	Level 2: Change in awareness	City data obtained from residents regarding change of watershed awareness from kiosk fact sheet displays.	Kiosk at Vista La Mesa Park has been constructed and is displaying watershed related information. The City of La Mesa has not begun collecting data regarding change is awareness from information displayed in kiosks. Scheduled for FY 09-10.
Tier II Residential Schools Education and Outreach Program	Education and outreach program at local schools within the Chollas Creek Watershed in partnership with the I Love A Clean San Diego. This program will be implemented at La Mesa Dale Elementary, La Mesa Middle School, and Mt. Helix High School.	Implementation	Level 2: Change in awareness Level 3: Modification of behavior through education and outreach	# of outreach events held (children educated) Survey Results	6 outreach presentations were conducted with 166 children educated. Overall weighted pre test score= 64% Overall weighted post test score = 87% 5/19/09 Mt. Helix High School: 2 presentations, 80 persons, Pre Test: N/A, Post Test 96% 5/27/09 La Mesa Date Elementary: 1 presentations, 28 persons, Pre Test: N/A, Post Test 70% 5/27/09 La Mesa Middle School: 2 presentations, 30 persons, Pre Test: 69%, Post Test 80% 5/28/09 La Mesa Date Elementary: 1 presentations, 80 persons, Pre Test: 58%, Post Test 80%

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Roads, Commercial Metals Source ID Study	This source ID study includes an assessment of urban runoff form a major, mixed use parking lot in La Mesa (super market with additional shops). The load contribution of the parking will be also assessed. This project includes an education and outreach component to open dialogue with property management.	Planning	Level 1: Completed study (understanding of metals sources) Level 2: Change in awareness	Completed study and final report.	Wet weather water quality sampling for Copper, Lead, Zinc, Hardness and TSS was completed at the selected location (Vons Shopping Center , University Ave) was performed in 11/08. Further analysis and education/outreach is scheduled for FY 09/10, and FY 10/11.
Tier III Roads, Residential, Industry, Commercial, Eating/Drinking Bacteria Treatment Insert Pilot Study	Selected catch basins in the Chollas Creek Watershed will be retrofitted with a treatment sponge insert. The number of these inserts (and bacteria sponges) is still to be determined.	Planning	Level 4: Load reduction	Load Reduction based on amount associated with bacteria sponges.	Planned for approximate implementation date of FY11/12.
Ongoing Agency Wide Activities					
Tier II Residential, Commercial Clean Up Events	Cleanup Events will be held twice a year at University Channel (Creek to Bay Clean Up and the California Coastal Day). Each event will include an education and outreach component.	Implementation	Level 2: Public Awareness Level 3: Modification of Behavior Level 4: Runoff and Load Reductions	# of participants Trash Load Reduction Educational Survey	Events held at University Channel: coord. (32.7551, -117.0412) 9/20/08 Costal Clean Up Day: 12 participants, 82 lbs removed, Pre Test 73%, Post Test 95% 4/18/09 Creek to Bay Cleanup: 11 participants, 109 lbs removed, Pre Test 75%, Post Test 84%
Tier I Auto, Roads, Industrial, Commercial, Eating/Drinking Enforcement: Targeted Facility Inspections	Annual business inspections will include a supplemental questionnaire specific to the Chollas Creek Watershed and targeting businesses along University Channel.	Implementation	Level 1: Completion of Inspections Level 2: Public Awareness	# of inspections within the Chollas Creek watershed which included the supplemental watershed questionnaire. # of businesses within the Chollas Creek watershed which implemented corrective actions based on the inspection.	20 Inspections completed within the Chollas Creek watershed which included the supplemental watershed questionnaire. 7 businesses within the Chollas Creek watershed took corrective actions based on the results of the inspections.
New Activities					
N/A					

City of Lemon Grove Watershed Activities Reporting
Year 1, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier II Collaborative Special Study #1: Jurisdictional Monitoring in the Upper Watershed	Storm water monitoring will be conducted during two storm events during the 2009-2010 wet weather monitoring period. Monitoring will be conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples will be analyzed for organophosphate pesticides (Diazinon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc, and acute and chronic toxicity to *Ceriodaphnia dubia*. Partnership with City of San Diego, Caltrans, and City of La Mesa	Planning	Level 1	Completed study and final report prepared by City of San Diego consultant.	Potential delayed participation by the City of Lemon Grove due to severe budget constraints. City is working to collaborate on a solution to maintain participation.
Tier I Legislative: Municipal Code and General Plan Amendments Sustainability Policy and Green Building Policy	To update the City's Municipal Code and General Plans to include green building concepts including LID and create a sustainability policy for overall City functions.	Planning and Implementation	Level 1	Amendment Adoption and Plan Development Approval Process	Development Code amendment adoption by Jan. 2010 Municipal Code amendment adoption by Mar. 2010 General Plan amendment adoption delayed due to quantity of work and necessity of performing work in house (budget constraints prevent the hiring of a consultant)
Ongoing Agency Wide Activities					
Tier I Discharger Facilities Municipal Facility Inspections	Municipal facilities are inspected for compliance with the requirements of the NPDES Permit. During these inspections, facilities are also inspected for activity specific BMPs and all designated pesticide, herbicide, and fertilizer BMPs required by the FY08 JURMP. Municipal Treatment Control BMPs are inspected for completeness, cleanliness, and other factors.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior	Total Inspections Timeliness of Inspections	53 Number of Inspections The City inspects all industrial facilities and all automotive and restaurant facilities within the City's boundaries. 1 inspection was conducted per facility and follow up inspections were performed as necessary
Tier II Residential, Commercial Clean up Events	Clean up events are held annual in the Chollas watershed or more frequently based on volunteer group availability. Each event will now include a brief post clean up survey.	Implementation	Level 2 and 4	# of participants Trash Load Reductions Survey data	Completed Creek to Bay in April 09 and Coastal Clean up Day in Sept. 09. Will participate in these two I Love a Clean San Diego events every year. Approximately 13lbs of trash and debris were collected by 4 volunteers for Creek to Bay. Approximately 600 lbs of trash and debris were collected by 20 volunteers for Coastal Clean up Day.
Tier I Residential City Newsletter	To provide Watershed specific information in the semi-annual City wide Newsletter. The Newsletter is distributed to all residents, business owners and business tenants in the City. The City will provide updates on current programs and TMDL efforts. Will contain a brief survey in future editions pertaining to Watershed knowledge.	Implementation	Level 1 and 2	Data collected from surveys	Newsletters are published biannually by the City and contain an environmental section.
Tier I Residential	To provide water quality and watershed information to the attending public. Obtain survey information pertaining to household BMPs.	Implementation	Level 1, 2, and 3	Data collected from surveys	During FY 08-09, the City had booths at the both the Fire Station open house and the Winter Bonfire. These two events ready approximately 800/900 people, residents and non-residents. The City has participated in one event so far during FY 09-10, the Fire

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Water Quality Booth at City Events					Station Open House. The City will be participating in the Winter Bonfire in Dec. 09.
Tier I Municipal Xeroscaping Municipal Medians	Ongoing rehabilitation of municipal landscaping to include LID concepts, water conservation, and xeroscaping	Implementation	Level 1, 2 and 3 Potential Level 4 based on water saved	Amount of water saved Rehabilitation of all medians	This is an on-going project that was begun in FY 08-09. None of the new xeroscaped areas have been in ground long enough to assess water savings at this time.
New Activities					

United States Navy Watershed Activities Reporting
Year 1, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Pollution Prevention Plan updated for Naval Base San Diego	Project will update existing P2 plan for Naval Base San Diego. P2 Plan will focus on product substitution and source reduction as preferred methods to reduce and eliminate pollutants in storm water runoff to Chollas Creek.	Implementation	Level 2 Change in awareness, Level 3 behavioral change, Level 4 load reduction	Document P2 initiatives implemented. Record pounds and types of waste generated.	Results available after 2009/2010 wet season.
Tier I Evaluation and Minimization Plan for Copper and Zinc in Storm Water	Prepare an evaluation and minimization plan to address sources of copper and zinc in storm water from the base.	Implementation	Level 4 load reduction	Measure copper and zinc in industrial storm water discharges.	Results available after 2009/2010 wet season.
Tier I/II MS4 Storm Water Management Plan	The Navy will prepare a Storm Water Management Plan for Naval Base San Diego to comply with the Statewide General Permit for storm water. The Management Plan will describe BMPs, measurable goals, and timetables for implementation in the following six program areas: 1. Public Education and Outreach; 2. Public Participation/Involvement; 3. Illicit Discharge Detection and Elimination; 4. Construction Site Runoff Control; 5. Post-Construction Runoff Control; and 6. Pollution Prevention/Good Housekeeping.	Planning	Level 2 Change in awareness, Level 3 behavioral change, Level 4 load reduction	Track required inspections, audits, and maintenance activities and document in annual report. Track attendance at training and awareness events.	Navy is presently discussing the conditions for the updated Naval Base San Diego NPDES storm water permit with SDRWQCB. Updated permit should be issued by May 2010.
Ongoing Agency Wide Activities					
Tier II Creek Trash Removal Program	Program to remove accumulated trash and debris from mouth of Chollas Creek. Trash and debris is captured behind booms strung across the creek. Navy personnel utilize cranes and small boats to removal trash and debris which is transported to the local landfill for disposal. Hazardous substances removed from the creek are stored in a secured area and properly disposed of in accordance with Federal and state laws and regulations. Conducted in partnership with City of San Diego.	Implementation	Level 4: load reductions in Creek and San Diego Bay	Report weight (tons) of trash and debris removed from creek.	Total removed in 2008-2009 wet season is approximately 9 tons.
New Activities					
	None				

Port of San Diego Watershed Activities Reporting
Year 1, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier II Chollas Creek Family Stream Team Initiative	The project is a four pronged strategy involving education, restoration, enforcement, and evaluation components. Financial support for this project is provided by the Port of San Diego's Environmental Fund. City of San Diego will be collaborating on this activity by monitoring the refuse collection events, surveying participants' motivation and participants' general understanding and attitude about illegal dumping to assist in efforts to eliminate trash and debris in the Chollas Creek watershed.	Implementing	Level 3 Behavioral Modification; Level 4 Load Reduction	Does education result in behavioral change or raise awareness? Does education result in lower trash pollution? What is the load reduction of trash/debris that is disposed through these efforts? Groundworks San Diego has prepared a progress report on the findings. The progress report includes: Number and/or amount of plants removed or planted; Amount of debris removed; Number of people reached; Participant surveys; Citizen water quality monitoring	Activity Results for FY 2008-2009: • Held seven events • 90 tons of trash and debris, filling sixteen 40-yard roll-off dumpsters • 12 tons of non-native vegetation (i.e., *Arundo donax*) was removed • City of San Diego monitored events, characterized type and volume of trash collected, and surveyed participants Activity Update: This activity will be completed during FY 09-10 reporting period. Water quality monitoring and feasibility study for a trash net collection device scheduled for Fall 2009.
Tier II Chollas Creek Restoration	The restoration project will remove non-native plant species and plant native plant species, cleanup of trash and debris, and provide environmental education. Financial support for this project is provided by the Port of San Diego's Environmental Fund.	Implementing	Level 3 Behavioral Modification; Level 4 Load Reduction	Does education result in behavioral change or raise awareness? Does education result in lower trash pollution? What is the load reduction of trash/debris that is disposed through these efforts? The Urban Corp of San Diego County has prepared a progress report on the on the activity to date. The progress report includes: Number and/or amount of plants removed or planted; Amount and type of debris removed; Number of people reached	Activity Results for FY 2008-2009: • Education: Reached approximately 400 students from Cesar Chavez and Emerson-Bandini Elementary Schools through 6 in-class and 6 field trip experiences at 38th and Alpha Street Park. Students also participated in creating a native species open space supporting wetland habitat. • Public Outreach: Booths at Heritage Day Festival (an event held on February 28, 2009 with an overall attendance of over 11,000 visitors) and Balboa Park Earth Fair Celebration (an event held on April 19, 2009 which draws approximately 70,000 visitors each year); Door to door residential outreach effort to surrounding neighborhoods and businesses. • Restoration: Removal of 765 cubic yards of non-native vegetation (i.e., *Arundo donax*). Planted 50 1-gallon native coastal live oaks. • Cleanups: Coordinated with Groundworks San Diego during the 2009 ILACSD Creek to Bay cleanup event at 38th and Alpha Park. The Urban Corp also cleaned a second site at 33rd and National Ave during this event. Approximately 100 volunteers collected approximately 5 tons of trash and recyclables, filling two 40-yard roll off dumpsters with trash and three 50 gallon bags with recyclables. Activity Update: This activity is ongoing and will be completed during FY 09-10 reporting period.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Stream Team Stewards	The education project for elementary school children consists of a series of in-school and after school classroom sessions and field trips; cleanup, storm drain stenciling and restoration of one acre of the Chollas Creek stream corridor. Financial support for this project is provided by the Port of San Diego's Environmental Fund.	Implementing	Level 3 Behavioral Modification; Level 4 Load Reduction	Does education result in behavioral change or raise awareness? Does education result in lower trash pollution? What is the load reduction of trash/debris that is disposed through these efforts? The San Diego Zoo has prepared a progress report on the activity to date. The progress report includes: Number and/or amount of plants removed or planted; Amount and type of debris removed; Number of people reached	Activity Results for FY 2008-2009: The activity was in the planning phase during this reporting period. Key elements include: • Site and plant species selection for field restoration component • Selection of schools participating in the in-school program: Ceasar Chavez Elementary, Emerson-Bandini Elementary, Horton Elementary, and Chollas-Mead Elementary • Selection of schools participating in the after school program: Carver Elementary, Chollas-Mead Elementary, Encanto Elementary, Nye Elementary, Valencia Park Elementary, and Sherman Elementary • Development of the curriculum and evaluations for the program Activity Update: This activity is ongoing and will be completed during FY 09-10 reporting period. Program implementation for both in-school and after school portions of the program will begin October 2009.
Ongoing Agency Wide Activities					
Tier I Port of San Diego Industrial Inspection Program	The Port of San Diego performs routine inspection and enforcement of industrial facilities as part of its JURMP. During the 2008-2009 reporting period, the Port conducted facility inspections to ensure the impacts of urban runoff from industrial and commercial facilities were reduced or eliminated. There is one industrial facility, NASSCO, within the Port's portion of the Chollas Creek Watershed. This facility is inspected approximately annually, with follow ups and enforcement performed as necessary.	Implementing - Ongoing	Level 1 Programmatic Outcomes; Level 3 Behavioral Modification through enforcement	Is the site continuing to be in compliance with the industrial requirements of the Port of San Diego's JURMP? # Inspections, # Violations Observed # Corrective Actions Implemented	The Port conducted one facility inspection of National Steel and Shipbuilding Company (NASSCO) on April 30, 2009. The site was determined to be in compliance with JURMP requirements, with zero violations observed and zero corrective actions implemented.
Tier I NASSCO Environmental Practices	The NASSCO Shipyard, an industrial facility on Port of San Diego property, identifies and implements BMPs in order to maintain compliance with their NPDES industrial permit requiring zero discharge from the facility.	Implementing - Ongoing	Level 1 Programmatic Outcomes	Are the appropriate BMPs installed to ensure zero discharge of pollutants to the Chollas Creek? Is the facility collecting all of their water or discharges? NPDES Industrial Permit Report (Order NO. R9-2003-005) prepared by NASSCO	Results provided in NASSCO's NPDES Industrial Permit 2009 Annual Reports (Per Order NO. R9-2003-005)
Tier I Booths at major events	The Port annually sponsors booths at various events, such as the Del Mar Fair and San Diego Boat Show	Implementing - Ongoing	Level 2: Change in awareness; Level 3: Modification of Behavior through education and outreach	Are booths at major events an effective outreach tool? What level of awareness does the public have about water quality in Chollas Creek? # posted advertisements or pamphlets distributed Results from public opinion/awareness surveys (as applicable)	San Diego Boat Show on 1/24/09 – 1/27/09. Survey indicates that 50% of participants learned useful information. Survey indicates that 50% of the participants will change one behavior. California Yacht Club Boater Appreciation Party on 7/26/08. 240 people attended. No surveys given.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
New Activities					
Tier II Aquatic Adventures' SEA Series Initiative	The Port of San Diego supported science education for low-income youth in City Heights, a neighborhood in the Chollas Creek watershed, through the SEA Series Initiative. The science education program includes professional development for teachers, hands-on activities, thematic curriculum, books and materials, and an environmental service project the students implement at the end of the program.	Implementing	Level 2 Increase in Awareness; Level 3 Behavioral Modification	Does the education activity result in behavioral change or raise awareness? Aquatic Adventures has prepared a progress report on the activity to date. The progress report includes: # of students and teachers reached, # educational hours; Pre and post test assessments	Activity Results for FY 2008-2009: • Reached 946 low-income students and 30 teachers from schools within the City Heights area • 8,514 total educational hours through SEA Series Initiative • Program provided to 3rd through 6th grade classes at four elementary schools and four middle schools. Six of the schools were in the Chollas Creek watershed. Activity Update: This activity is ongoing and results from the program evaluation will be available in FY 09-10.

City of San Diego Watershed Activities Reporting
Year 1, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Chollas Creek Watershed Storm Drain System Characterization Study	Source ID study for pollutants relating to the pending sediment toxicity and benthic community degradation TMDL at the mouth of Chollas Creek and adjacent areas. Study will assess existing upstream data and determine data gaps. Primary constituents of concern are Chlordane, PCBs, PAHs and pesticides. Monitoring to characterize the storm drain system during wet and dry weather. Wet weather will consist of pollutograph sampling with water column chemistry, sediment chemistry and grain size, and toxicity analyses for two storm events of 0.1 inch of rain. Dry weather will consist of water chemistry, sediment chemistry, and toxicity sample collection.	Planning	Level 1	The findings from this study will allow the City to characterize the pollutants causing sediment toxicity and benthic community degradation, and help identification sources of those pollutants.	In FY09, the City contracted with a consultant to conduct this study. Monitoring and reporting will occur in FY10.
Tier I Identifying and Modifying Barriers to LID Techniques	This project involves a City-wide review of Municipal Code, development regulations, and design standards to determine barriers/conflicts to using LID and other BMP types within new development and redevelopment, where applicable.	Planning	Level 1	Report documenting the barriers to implementing LID and what benefits are associated with modifying these barriers.	The work plan is currently being developed for this activity.
Tier I Brake Pad Partnership	The project involves providing support for bill SB346 which requires for brake pads to contain no more than 5% copper by weight by 2011.	Implementation	Level 4: Load Reduction	Sponsorship of Sustainable Conservation	The City supported Sustainable Conservation's Brake Pad Partnership technical efforts both monetarily and legislatively this reporting period. The City was critical in obtaining Senator Kristine Kehoe's sponsorship of Senate Bill 342. This draft bill was under committee review when it was placed on a two year legislative schedule. Continued hearings on this bill will resume in the winter of 2010.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Public Service Announcement	Project continues the annual Public Service Announcements campaign in the Chollas Creek Watershed. The objective of this campaign is to educate the public about the causes of bacteria and trash loading, and in encouraging positive behavioral change. During FY09, there were 6,702,533 impressions in San Diego Bay (Chollas Creek) due to television advertisements. There were 9,201,893 impressions due to radio announcements.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	# residents reached through PSAs Results from public opinion/awareness surveys	The city conducted an effectiveness assessment of Think Blue PSAs and storm water messages via field experiment in which 309 individuals were shown eight different Think Blue PSAs (including the Karma, Karma Second Chance PSAs). 25% of participants were more likely to answer that storm water is not treated than those who had answered the question prior to watching the PSA. Karma Second Chance PSA scored the highest of the PSAs in motivating participants to take specific actions to prevent storm water pollution. The city also obtained assessment information from its annual random-digit dial 2009 *San Diego Storm Water Survey* of 800 total residents from all WMAs. 55% of residents said they saw a *Think Blue* PSA last year (up from 52%) on television while 8% of residents heard the radio announcements in FY 2009. Significant increases in awareness were detected among women over the age of 50, residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors as well. To estimate the number of impressions for Chollas Creek, is 6,702,533 for television and 9,201,893 for radio ads. The City also worked with the San Diego Regional Stormwater Copermittees to run a pesticide PSA called "Ants in Your Pants."
Tier I CBSM Program for Chollas Creek – Trash	Community Based Social Marketing targeting Chollas Creek Watershed and activities/behaviors in residential and mixed residential and commercial areas that result in water quality issues due to trash. This project includes a trash clean up, a type structural trash intervention (e.g. new trash cans), and targeted education and outreach. The CBSM project is based on the methodology developed for Keep America Beautiful.	Implementation	Level 2: Change in awareness Level 3: Behavioral change in targeted areas Level 4: Load Reduction	Visual Trash Survey Telephone Behavior/Awareness Survey Load reduction - pounds of Trash Removed during clean up effort	In FY 2009 the baseline observations; development of CBSM intervention; and community clean up portions of the project were completed. In FY 2010 implementation of the CBSM intervention and follow-up observations are anticipated. Effectiveness will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Billboards/ Transit Shelters	This project evaluates whether public outreach can be linked to positive behavioral change. These advertisements were displayed in both English and Spanish on billboards and bus shelters, and target behaviors associated with bacteria and gross pollutants (trash) profiled as a vector.	Complete	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	% residents reached through signage Results from public opinion/awareness surveys (randomly selected cohort)	Based on results from the *2009 Storm Water Survey*, only 17% of residents polled recalled encountering Think Blue messages via billboards and mobile advertising. It was determined that transit shelters and billboard advertisements were not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues. The activity is being discontinued in FY 2010.
Tier I Mobile Advertising – Trash and Bacteria	This project evaluates whether public outreach can be linked to positive behavioral change. These advertisements were displayed in both English and Spanish on City-owned static billboard trucks.	Complete	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	% residents reached through signage Results from public opinion/awareness surveys (randomly selected cohort)	The advertisements were displayed throughout the San Diego Bay WMA in both English and Spanish in FY 2009. The estimated audience was 522,300 for Chollas Creek. In FY 2009, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, approximately 17% of residents became aware of the Think Blue message through billboards and mobile advertising. Based on results from the *2009 Storm Water Survey* it was determined that mobile advertising was not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. Additionally, the Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. The city has discontinued this activity.
Tier I Low Impact Development and the Planned BMPs at Southcrest and Memorial Park (to be issued project #)	This education and outreach program will include community meetings, poster presentations, handouts, education materials and give-aways promoting water quality, LID techniques, and descriptions of the planned CIP projects in the Chollas Creek Watershed, including Southcrest Park (City-14-1 and City-14-2), Memorial Park (City-15-1).	Planning	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	Results from public opinion/awareness surveys	A work plan is nearing development for the Memorial Park project. Implementation of Southcrest Park project has been delayed.
Tier I Targeted Metals-Related Facilities – Auto Facility Inspections Pilot Study (City-8-1)	Project is an aggressive inspection program targeted at auto-related facilities for metals-related pollutants loading.	Implementation	Level 1: Completion of Inspections Level 3: Behavior Change Level 4: Source Abatement	# of facilities inspected # of sites with corrective actions # of IC/ID's observed	191 facilities inspected (Level 1) 21 sites implemented corrective actions during inspection (Level 3 and 4) 0 IC/ID's observed during inspections This activity is an ongoing study and will continue through FY10.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Targeted Business Inspections Pilot Study (City-8-2)	Project is a targeted aggressive inspection program targeting various outdoor activities of businesses.	Cancelled			This activity is no longer planned for the Chollas Creek Watershed. Instead, the activity is moving forward in other watershed's within the City of San Diego's jurisdiction. The findings from the activity may be implemented in the Chollas Creek Watershed, and would be reported under the TMDL at that time.
Tier I Collaborative Special Study #1: Jurisdictional Boundary Monitoring in the Upper Watershed (to be issued project #)	Storm water monitoring will be conducted during two storm events during the 2009-2010 wet weather monitoring period. Monitoring will be conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples will be analyzed for organophosphate pesticides (Diazinon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc, and acute and chronic toxicity to *Ceriodaphnia dubia*.	Planning	Level 1	Completed Study	Activity will be implemented during the 2009/2010 wet season.
Tier I Collaborative Special Study #2: Activity Assessment Grab Samples for Metals	Activity assessment grab samples will be collected for source identification studies or for BMP assessments. Samples will be collected from specific land use areas in each priority sector during one wet weather event. Specific locations will be pre-determined prior to the storm monitoring season based on land use, activities, or BMPs and will be decided by the participating Dischargers. Samples will be analyzed for total and dissolved metals, TSS, and hardness.	Planning	Level 1	Completed Study	Activity will be implemented during the 2009/2010 wet season.
Tier I Collaborative Special Study #3: Synthetic Pyrethroid Assessment Monitoring	Additional samples will be collected at SD8(1) and DPR2 (during three events) and LM-1 and LG-1 (during two events) and analyzed for synthetic pyrethroids, TSS, and toxicity to *Hyalella azteca*. The purpose of this study is to collect data that will be submitted to the Department of Pesticide Regulation (DPR) as part of their synthetic pyrethroid re-registration process. The goal of participation with DPR is to have synthetic pyrethroids banned or placed on restricted use.	Planning	Level 1	Completed Study	Activity will be implemented during the 2009/2010 wet season.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Collaborative Special Study #4: Bacteria Monitoring	Samples will be collected and analyzed for total coliform, fecal coliform, and *enterococci* during storm events at SD8(1) and DPR2 (three storms) and LM-1 and LG-1 (two storms). Samples will be collected as grab samples during the peak flow of the storm event.	Planning	Level 1	Completed Study	Activity will be implemented during the 2009/2010 wet season.
Tier I Dry Weather Bacterial Source Identification Study In the Mouth of Chollas Creek (City-27-1)	Bacteria Source Study targeted storm drains and other potential sources of bacteria during three dry weather field surveys. Bacteria samples were be taken from investigation sites and fixed sites located on the three reaches of Chollas Creek. This will help identify the relative bacterial concentrations and flow influencing the Chollas Creek tidal prism (the point of compliance for the SHELL Beneficial Use) can be determined and the most likely sources of bacteria identified.	Complete	Level 1	Completed Study	This study was completed during the last year. Results and findings include: 1. During dry weather, there is no hydrologic connection between the mouth of Chollas Creek (the area influenced by tidal action) and the upstream drainage. Thus, bacteria found in the receiving waters of the creek mouth originate from sources that discharge directly to the mouth (i.e., storm drains). 2. 17 storm drains were identified that terminate in the creek mouth. Of these, evidence of flow was apparent in only four. 3. The highest bacterial concentrations were associated with the two storm drains near the National Avenue Bridge. 4. Two sources of flow that contributed to the high bacterial concentrations: a. Over-irrigation of landscaping at a strip mall b. A freshwater slough adjacent to a freeway off ramp that periodically discharges to a storm drain in the creek. 5. Scour ponds associated with the storm drains provide depressions within the streambed where high levels of indicator bacteria can be maintained. Tidal action carries bacteria from scour ponds to other areas within the tidal prism, serving as a point of inoculation for the mouth of Chollas Creek.
Tier I Tecolote Creek Bacteria Source Study, Phase I (City-5001)	Bacteria Source Study included dry and wet weather investigation of the bacteria loading potential of priority sources in the Tecolote Watershed. This project is directly related to the Chollas Creek Watershed that shares common priority sources for bacteria.	Complete	Level 1	Completed Study.	This study was completed in FY2008. Findings and results included that some sediments may act as a bacterial reservoir. This led to Phase II of the study.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Tecolote Creek Bacteria Source Study, Phase II (City-5002)	Bacteria Source Study included the collection of additional rainfall and bacterial concentration data and further bacterial source investigation. This project is directly related to the Chollas Creek Watershed because it shares common priority sources for bacteria. This work builds upon the bacteroides and source-related findings of the Phase I bacterial source ID study which was completed in August 2008 and complements results being collated under the 2009 San Diego River Phase I Microbial Source ID Study.	Complete	Level 1	Completed Study	**Results and Findings** ▪ An additional seven storm events need to be monitored in order to have a data set suitable for Section 303 (d) de-listing. ▪ Speciation of *enterococci* discharged during wet weather suggest that calculated bacterial loads in Tecolote Creek overestimate the potential threat to REC-1 and REC-2 beneficial uses because of the significant presence of fecal indicator bacteria from environmental sources such as soils and plants.
Tier I Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (City-26-1)	Project includes collecting and analyzing pollutograph samples from Chollas Creek Watershed and two other watersheds to determine a recommended approach to the BMP design storm to be used in TMDL implementation..	Complete	Level 1	Completed Study	The design storm study was completed in FY09. The sediment and bacteria relationship component of the study is on hold due to budget constraints.
Tier 1 TMDL Aerial Deposition Source Evaluation Monitoring Study, Phase III (City-24-1)	This Project evaluated potential sources of metals based on water quality data, previous aerial deposition data, inspection data (from FY07-08 targeted industrial inspections and other programs), and an area reconnaissance (to prioritize potential sources and identify sampling locations for first flush wet weather events). The study considered the impact of roofs and structural galvanizing. The study assessed runoff from up to 20 industrial/commercial sampling locations and up to six residential-only sampling locations for comparison to the industrial/commercial land use.	Complete	Level 1	Completed study.	**Results and Findings** ▪ Average annual aerial emissions of copper from four stationary facilities near the mouth of Chollas Creek are roughly five times higher than the average annual load discharged via storm water runoff. In contrast, lead and zinc emissions were only 1% and 24% of average annual discharge load. ▪ Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and resuspended dust) and localized parcel-based sources also play a role in metals deposition of lead and zinc in the watershed. ▪ Samples collected from deteriorating metal rooftops were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Concentrations of copper and lead were relatively low from metal rooftop runoff, but increased in street level runoff suggesting aerial deposition or other parcel-based sources of copper and lead. ▪ Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area. ▪ Copper, lead, and zinc concentrations were

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
					higher in commercial and industrial land uses compared with residential land uses. ▪ Copper and zinc concentrations were significantly higher in Priority Sector 1 compared with other priority sectors. This supports the conclusion that emissions of copper and zinc from stationary facilities near the mouth of Chollas Creek likely contribute to aerial deposition and subsequent runoff of these metals. ▪ Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc.
Tier I Doggie Bag Dispenser Pilot Program	Evaluation of the most effective form(s) of pet waste stations, identification of optimum installation density and locations, potential pollutant load reductions that may be attributable to the pet waste station installations and development of appropriate effectiveness assessment measures.	Planning	Level 2: Public Awareness Level 3: Behavior Change	To be determined	This activity is currently in development.
Tier I Evapotranspiration Effects Study	This study evaluate to what level evapotranspiration provides a reduction in pollutant loads for street tress. This study may assess different vegetation types or different plant species.	Planning	Level 1: Completion of Study	Completed Study	This activity will be in development in FY11.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Roads, Commercial, Residential Chollas Creek Aggressive Street Sweeping (City-3-1)	Project includes the purchase and deployment on designated routes in Sectors 1 and 2 of a regenerative air and vacuum street sweepers. These sweepers are anticipated to collect additional fines and gross solids compared to more widely used mechanical sweepers. Training of the operators for this new equipment has also been conducted. These two new aggressive sweepers are being used on existing routes and compared to mechanical sweepers regarding their effectiveness to remove debris and the metals contained in the debris. The frequency of the sweeping is also assessed regarding increased pollutant removal as well as acceptance by the public. During the FY08 program, 74,340 pounds of debris was removed from the streets.	Implementation	Level 4: Load Reduction	Load reduction from Debris monitoring data including: - Weight & Volume - # broom miles - physical and analytical characteristics of debris Management Questions: Implementation Cost Are more aggressive regenerative air or vacuum sweepers effective in achieving pollutant load reductions cost effectively? -Methods of measure will be tracked for each sweeper type. What is the most cost effective frequency that is publicly acceptable? - Methods of measure will be tracked at different sweeping frequencies for different sweepers.	The project, a two year study of actively aggressive street sweeping, will be completed in FY2010 with wet weather monitoring being conducted during the rainy season. At the conclusion of the study, the most effective type of sweeper and the most cost effective frequency should be understood. Data collected to date include: Total kg of debris removed by mechanical sweeper: 15,068 kg Total kg of debris removed by regenerative-air sweeper: 15,939 kg Total kg of debris removed by vacuum sweeper: 29,774 **Total kg of debris removed:** 60,781 kg Total broom miles swept by mechanical sweeper:* 1,099 mi Total broom miles swept by regenerative-air sweeper: 706 mi Total broom miles swept by vacuum sweeper: 749 mi **Total broom miles swept:** 2554 mi Total kg of debris removed by mechanical sweeper/mile swept:14kg/mi Total kg of debris removed by regenerative-air sweeper/mile swept: 23 kg/mi Total kg of debris removed by vacuum sweeper/mile swept: 40kg/mi **Average kg of debris removed /mile swept:26kg/mi** Debris testing and water quality monitoring will be completed in FY10.
Tier I Route Posting and Median Sweeping Pilot Project	The purpose of this pilot project is to evaluate the feasibility, potential water quality benefits and cost-effectiveness of the following propose modifications to the City's Street Sweeping Program: 1) posting limited-hour "no parking" signs along non-posted routes; and 2) sweeping street medians.	Planning	Level 4: Load Reduction	To be determined	This activity will be developed in FY10.
Tier I Groundwork San Diego Chollas Creek Family Stream Team Partnership	The Port of San Diego awarded a grant to Ground work San Diego Chollas Creek for education, restoration, and refuse collection. The City of San Diego is collaborating on this activity by collecting data from the refuse collection events, surveys of the creek, and participant surveys.	Implementation	Level 3: Behavior Change Level 4: Load Reduction	Visual Trash Assessment of dump sites within Chollas Creek Participant Surveys Trash and debris characterization and quantification	This activity is in progress. See the Port of San Diego's table for more information regarding the FY09 statistics. The City of San Diego will report on findings of the focused assessment next year, at the conclusion of the program.
Tier II Discharger Facilities Rain Barrels/ Downspout Disconnect Project (City-12-1)	Project will reduce storm water flows by capturing runoff from roof structures and gutters at Southcrest Recreation Center. Project will include two rain barrel systems and three combined rain barrel and bioretention planter system. All systems will be connected to a pump/timer configuration which will irrigate vegetated areas.	Planning	Level 2: Public Awareness Level 4: Load Reduction	Runoff volume captured Load reduction Maintenance Hours Implementation Cost	Five rain barrel systems were installed at Southcrest Park Recreation Center in mid to late FY09. The rain barrel systems will be monitored during the 2009/2010 rainy season and will be assessed for effectiveness at the end of FY10.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Residential Outdoor Water Conservation and Nuisance Flow Reduction Using Smart Irrigation Hardware and Water Harvesting Systems	This project is proposed to reduce the dry weather nuisance flows from irrigation runoff and associated pollutants such as pesticides and nutrients and capture pollutants that deposit and accrete on roofs. Project will involve the planning and implementation of a demonstration project for the installation of "smart" irrigation systems and rain barrels in designated residential communities. Implementation will include outreach and incentive programs, which will be determined during FY10 planning efforts.	Planning	Level 2: Public Awareness Level 4: Load Reduction	To be determined	This activity is in development.
Tier II Eating and Drinking, Commercial, Roads Trash Segregation BMP Installation	This project is coordinated with the targeted aggressive street sweeping program. Inlet devices are installed to capture trash/debris prior to conveyance into local waterbodies. Due to long-term high maintenance issues, this BMP will first be piloted with aggressive street sweeping to assess the maintenance requirements compared to their trash removal effectiveness. The use of a multi-catchment /drainage area approach to trash removal (e.g., hydrodynamic separator at the MS4 outfall) may need to be used as part of a treatment train Tier III approach.	Planning	Level 4: Load Reduction	Load Reduction Maintenance Hours Implementation Cost	The City of San Diego anticipated that catch basins will be retrofitted during FY 2010.
Tier II Auto, Commercial, Roads 43rd and Logan Street Upgrades and "Green Mall" Project	A combined green street and green mall project will be implemented to filtrate a design storm event. Project will include installing bioretention areas and LID filtration techniques and replacing impervious hardscapes with porous concrete sidewalks.	Planning	Level 4: Load Reduction	Load reduction Maintenance hours Implementation cost	The City of San Diego anticipates constructing the project in FY2010.
Tier II Parks, Pesticides, Roads Memorial Park Large "Green Lot" LID (City-15-1)	Project will divert flow from the parking area catch basin to a below grade storage and infiltration device installed within the grassy area of Memorial Park. Flows exceeding the storage and infiltration capacity will bypass the system through an overflow pipe at the downstream end of the infiltration area. Project will be designed to capture and infiltrate up to a five year storm.	Planning	Level 4: Load Reduction	Load reduction Maintenance hours Implementation cost	Design of the project is expected to be completed in FY 2010. Construction is anticipated to begin in April 2010 and finish in October 2010.
Ongoing Agency Wide Activities					
Tier I Auto, Residential, Commercial, Eating and Drinking, Construction, Industrial Modification of City Fact Sheets (City-5004)	The City continues to update Storm water Fact Sheets, as needed. Current efforts focus on changes resulting from the 2007 NPDES permit. The development of the fact sheets has been completed. The program is now focusing on fact sheet distribution. The City is working with other regional Copermittees on these efforts (i.e. partnering with the City of Escondido on the Green Wrench Guide). Future efforts may include information about low impact development or modifications to City codes and/or design standards.	Implementation	Level 2: Change in awareness	Public familiarity with the Fact Sheets (phone survey, questionnaires, inspections, etc)	In FY 2009 the City continues to modify and augment Fact Sheets to inform the public of changes to the City's Storm Water Ordinance. The City expects the updated Fact Sheets to be completed and ready for distribution by Storm Water staff in FY 2010.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Industrial Enforcement Referrals (City-5005)	The City reports any "non-filers" under the General Industrial Permit to the Regional Board found during the annual industrial/commercial inspections program. In the future, the City may initiate dialogue (education and outreach) with the current Permitted industries about the types of water quality data and possibly coordinating efforts on special studies.	Implementation	Level 1 Level 2: Industry Awareness	Number of “non-filers” reported	102 businesses in need of submitting NOI (application for industrial permit) 322 businesses in need of submitting NONA (application for exemption)
Tier I Discharger Facilities Outfall and Selected Canyon Condition Mapping and Assessment (City-5006)	The City is assessing canyons within its jurisdiction, specifically assessing erosion and deferred maintenance issues related to storm drain and MS4 outfalls which discharge to the canyons. This ongoing project will include a field reconnaissance and GIS mapping effort for the Chollas Creek and Los Peñasquitos watersheds.	Planning	Level 1	Updated GIS maps with assessment of selected outfalls.	Delayed due to funding constraints. It is anticipated that this project may move forward in FY2011 if sufficient funding is available.
Tier I Discharger Facilities Updates to Storm Drain Infrastructure Mapping (City-5007)	The City is updating the existing storm drain infrastructure GIS layers. This ongoing project will include a desktop review of as-built storm drain drawings for CIP and private development projects. (Also see City-5009 and City-5010).	Implementation	Level 1	Updated MS4 maps	In FY09, this project was 50% complete. It is anticipated to be completed in FY10.
Tier I Discharger Facilities Master Drainage Mapping (City-5008)	The City is completing a master GIS layer of drainage areas and watershed for the storm drain and MS4 system within the City’s jurisdiction. This ongoing project will include a desktop review of existing drainage maps/studies, field reconnaissance and modeling efforts (as needed), and GIS mapping.	Planning	Level 1	Updated MS4 maps with drainage areas	Planning will occur in FY10.
Tier I Discharger Facilities Corrugated Metal Pipe Assessment (City-5009)	The City is evaluating storm drain and MS4 infrastructure for corrugated metal pipe. The project’s objective is to identify, assess, and prioritize systems which may be replaced with reinforced concrete pipe storm drain. (Also see City-5007 and City-5010).	Implementation	Level 1	Compiled list of existing corrugated metal pipe infrastructure and CIP prioritization	In FY09, the project was 33% complete. The project is anticipated to be 100% complete in FY11.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Discharger Facilities Priority Reinforced Concrete Pipe Assessment (City-5010)	The City is evaluating storm drain and MS4 infrastructure for degraded reinforced concrete pipe. The project's objective is to identify and assess existing infrastructure for deferred maintenance, and then to prioritize systems to be repaired and/or replaced. (Also see City-5007 and City-5009).	Planning	Level 1	Compiled list of high risk reinforced concrete pipe infrastructure and CIP prioritization	Planning occurred in FY09. A workplan for assessment will be completed in FY10.
Tier I Residential, Commercial, Boat Repair, Eating and Drinking, Landscaping Pesticides Booths at major events (City-5011)	During City sponsored events, educational materials are distributed to the public. The City has sponsored booths at the Del Mar Fair, December Nights, San Diego Boat Show. The City has also sponsored a booth at the Adams Ave. Street Fair, Filipino-American Arts & Culture Festival, and the Old House Tour, events in the Chollas Creek Watershed.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	# of materials distributed at events located in Chollas Creek Results from public opinion/awareness surveys (as applicable)	The City participated in 27 events located within the Chollas Creek watershed, distributing more than 9,200 promotional items including brochures, hotline magnets, tip calendar, etc. The 2009 Think Blue Survey indicated that 10% of respondents received Think Blue information at a community event. Of the 27 events, the City distributed outreach materials targeting pesticide usage and integrated pest management practices at 11 events. The estimated combined audience at these events is 358,000 members of the public.
Tier I Construction Construction Site Inspections - Sediment/ Metals (City-5012)	Inspectors within the Field Engineering and Inspection Services Divisions inspect construction sites and issue correction notices and/or stop work orders for code violations. The Field Engineering Division has created and implemented a special correction notice that is issued for storm water violations in need of immediate solution.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through enforcement	Total Inspections	77,063 inspections Citywide 484 corrective action notices and NOV's issued Citywide for construction 19 stop work orders issued 58 enforcement actions taken by Storm Water Code Compliance Officers for construction sites
Tier I Discharger Facilities Municipal Facility Inspections (City-5013)	Municipal facilities are inspected for compliance with the requirements of the NPDES Permit. During these inspections, facilities are also inspected for activity specific BMPs and all designated pesticide, herbicide, and fertilizer BMPs required by the FY08 JURMP. Municipal Treatment Control BMPs are inspected for completeness, cleanliness, and other factors.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through enforcement	Total Inspections Timeliness of Inspections	657 sites inspected twice during the year 70 sites inspected once during the year Timeliness: 1 inspection should occur prior to and one during the rainy season
Tier I Industrial, Commercial Facilities Industrial/ Commercial Inspections Program (City-5014)	The City inspects prioritized industrial and commercial facilities per the Municipal Permit and, for facilities that do not comply with the City's Municipal Code, takes enforcement action.	Implementation	Level 1: Annual Compliance	Number of prioritized facilities inspected	2,608 inspections 28 Priority 1 Follow up Inspections

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Roads Storm Drain Cleaning (City-5015)	Each year the City of San Diego cleans storm drain infrastructure including catch basins, inlets, cleanouts, and pipes. These efforts help reduce the trash and bacterial loading.	Implementation	Level 1: Annual cleaning Level 4: Load Reduction	Tons of debris removed	Approximately 516 tons of waste removed from MS4 Citywide. Approximately 7.08 tons of waste removed from storm drain facilities associated with Municipal Department properties.
Tier II Roads, Commercial. Residential Street Sweeping (City-5016)	Street sweeping is being implemented across the City of San Diego as well as in the Chollas Creek watershed.	Implementation	Level 4: Measurable Load Reduction	Load reduction determined using: Debris Weight # Curb Miles Swept	95,161 curb miles swept Citywide 6,418 tons of debris removed Citywide 469.6 tons of debris removed from Municipal parking lot sweeping Citywide
Tier II Residential Clean Up Events (City-5017)	During City sponsored clean up events (resulting from specific calls for service and community cleanup efforts), volunteers and City workers remove trash and debris from the watershed. Also, during the year, the City removes trash and debris related to calls of service that are not handled through community cleanup events.	Implementation	Level 2: Public Awareness Level 3: Modification of Behavior Level 4: Runoff and Load Reductions	# participants Trash Load reduction	12,312 calls for service related to litter and dumping in watershed 1971.43 tons of debris removed from the watershed from community cleanup events and City efforts 389 participants in community trash cleanups
Tier I Illicit Discharge Detection and Elimination (City-5018)	The City actively seeks and eliminates discharges to the storm water conveyance system. Code Compliance Officers respond to enforce the Storm Water Ordinance and cite/educate businesses and residents who reportedly violate the ordinance with illegal discharges.	Implementation	Level 1: Compliance Level 2: Public Awareness Level 3: Modification of Behavior	Number of calls reported and responded	Of 67 dry weather monitoring sites in the Chollas Creek Watershed, 24 exceeded for one or more analytes. Of those only two had discrete sources and were referred to Code Enforcement Officers for action. Due to understaffing issues, not all referrals are followed up. Code Enforcement Officers prioritize calls based on significance of discharge.
Tier I SUSMP and Development Regulations (City-5019)	The City incorporates SUSMP requirements on applicable development and redevelopment projects City-wide. Depending on the type and size of the projects, SUSMP requirements could include site design, source controls, and treatment controls such as LID.	Implementation	Level 1: Compliance	Projects permitted subject to SUSMP	In FY09 the data tracking system to distinguish SUSMP projects from standard projects and priority development projects was not utilized correctly, and therefore this data is not available.
Tier I Household Hazardous Waste Collection Program (City-5020)	The City's Environmental Services Department runs this program which seeks to eliminate illegal discharges associated with the improper use and disposal of household hazardous materials. Methods include one-day collection events, a permanent collection facility, and education programs.	Implementation	Level 1: Compliance Level 2: Public Awareness Level 3: Modification of Behavior	Tons of household hazardous waste collected	483 tons of household hazardous waste was collected Citywide.
New Activities					
	N/A				

Appendix F

San Diego Bay Education Program Activities Table

Table F-1. Watershed Education and Public Participation Events.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
FY08-09	SDCRAA	Print Media	Authority SWMP	On SDCRAA website	General public, Authority, and SDIA staff	Unknown	San Diego International Airport	NA	N
FY08-09	SDCRAA	Storm Drain Stenciling	Storm Drain Stenciling	"No Dumping" warning signs on storm drain inlets throughout the airport	Authority, and SDIA staff	350	San Diego International Airport	NA	N
FY08-09	SDCRAA	PSA	Think Blue PSA	PSA aired in the Terminal 2-West baggage claim area	General public, Authority, and SDIA staff	Unknown	San Diego International Airport	NA	N
FY08-09	SDCRAA	PSA	Don't Trash California PSA	PSA aired in the Terminal 2-West baggage claim area	General public, Authority, and SDIA staff	Unknown	San Diego International Airport	NA	N
FY08-09	SDCRAA	Municipal Staff Training	Annual Environmental Training	7 presentations given to reach all Authority staff for annual refresher training	Authority Staff	350	San Diego International Airport	BMP handouts	Y – pre/post surveys 70% of the time the percentage of people who answered the question correctly went up after the educational presentation
FY08-09	SDCRAA	Field Trips	WIldCoast Wildlife Outreach Program	Continued collaboration with WiLDCOAST to support the "Wildlife Outreach Program" to encourage conservation of local wildlife and habitats.	School Children	10,000	San Diego Bay Region	NA	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
7/24/08	SDCRAA	Festivals/ Community Events	Annual Safety Fair	Environmental Affairs Department had a booth where stormwater pollution prevention was promoted	Authority, and SDIA staff	350	San Diego International Airport	distributed the brochures "Plastics Are Forever" and "Plastic Debris from Rivers to Seas" and reusable grocery bags	N
8/1/08	SDCRAA	Field Trip/ Presentation	Stormwater Presentation and Tour for Elementary Institute of Science	Partnership with Elementary Institute of Science. Students had an airport tour, presentation on what the Environmental Affairs Department does, and the stormwater research project that the students will be working on throughout the fiscal year.	School Children	20	San Diego International Airport	N	Y – pre survey Final presentation demonstrated an increase in knowledge compared to the initial survey given at the beginning of the program
8/8/2008	SDCRAA	Print Media	"Hold On To Your Butt Day" news release	News Release "San Diego International Airport Teams up with Surfrider Foundation to fight Cigarette Litter"	General public, Authority, and SDIA staff	unknown	San Diego International Airport	NA	N
8/9/08	SDCRAA	Festivals/ Community Events	Hold On To Your Butt Day	Continued collaboration with Surfrider Foundation to support "Hold On To Your Butt" public education campaign about cigarette butts as a stormwater pollutant.	General Public	92	San Diego International Airport	Pocket sized cigarette butt holders	N
8/16/08	SDCRAA	Festivals/ Community Events	30 Days of Blue –SAN Skyfaire	Environmental Affairs Department staffed a booth at the 80th Anniversary with 30 Days of Blue –SAN Skyfaire and provided information on stormwater pollution prevention.	General public, Authority, and SDIA staff	unknown	San Diego International Airport	Green tips cards	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
8/20/08	SDCRAA	Print Media	Tenant Advisory for week long cleanup and 2 day ewaste event	Tenant Advisory email	Authority, and SDIA staff	350	San Diego International Airport	NA	N
9/5/08	SDCRAA	Print Media	Announcement and promotion of Coastal Cleanup Day	Tenant Advisory email	Authority, and SDIA staff	350	San Diego International Airport	NA	N
9/16/08	SDCRAA	Print Media	Announcement of the start of the rainy season	Tenant Advisory email announcing the beginning of the wet season and stormwater pollution prevention reminders	Authority, and SDIA staff	350	San Diego International Airport	NA	N
9/20/08	SDCRAA	Cleanup Events	Annual California Coastal Cleanup day	Continued collaboration with San Diego CoastKeeper and others to participate in the 24th Annual California Coastal Cleanup day Event	General Public	unknown	San Diego International Airport	NA	N
10/18/08	SDCRAA	Festivals/ Community Events	Green Skills for Life Exhibit	Exhibit at the San Diego Air & Space Museum. Environmental Affairs Department provided information on Storm Water Pollution prevention.	General public	unknown	San Diego International Airport	Green Tips informational cards, watershed stickers and reusable grocery bags	N
11/19/08	SDCRAA	Presentations	Stormwater Presentation for LAMC	Environmental Affairs Department presented stormwater management program updates to airline station managers at monthly LAMC meetings:	Airline Station Managers	35	San Diego International Airport	NA	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
12/4/08	SDCRAA	Print Media	Holiday Pollution Prevention Tips	E-Newsletter	Authority, and SDIA staff	350	San Diego International Airport	NA	N
12/18/08	SDCRAA	Festivals/ Community Events	"Day without a Disposable Bag,"	Celebrated a "Day without a Disposable Bag," and handed informational cards and reusable grocery bags.	General public, Authority, and SDIA staff	unknown	San Diego International Airport	informational cards and reusable grocery bags	N
1/8-9/09	SDCRAA	Waste Collection/ Recycling Events	Two-Day Electronic & Universal Waste Collection Event.	Gathered electronic and universal waste from Authority and Airport employees for proper disposal and recycling	Authority, and SDIA staff	unknown	San Diego International Airport	Batteryless flashlights	N
4/16/09	SDCRAA	Print Media	Announcement of the 20 Gallon Challenge display in the Commuter Terminal including water conservation tips.	E-Newsletter & Interactive Display	General public, Authority, and SDIA staff	unknown	San Diego International Airport	NA	N
4/23-24/09	SDCRAA	Waste Collection/ Recycling Events	Two-Day Electronic & Universal Waste Collection Event.	Gathered electronic and universal waste from Authority and Airport employees for proper disposal and recycling	Authority, and SDIA staff	unknown	San Diego International Airport	Batteryless flashlights	N
4/25/09	SDCRAA	Cleanup Events	Creek to Bay Cleanup Event	Continued collaboration with I Love A Clean San Diego to sponsor the 7th Annual Creek to Bay Cleanup Event	General Public	unknown	San Diego International Airport	NA	N
6/7/09	SDCRAA	Festivals/ Community Events	"Eco-Village" Independence Jam Music Festival	collaboration with the San Diego County Copermittees to staff a booth at the "Eco-Village" Independence Jam Music Festival in Oceanside	General Public	unknown	San Diego International Airport	Surveys on watershed knowledge were conducted, and Think Blue logo towels were handed out	Y – surveys were conducted

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
6/20/09	SDCRAA	Festivals/ Community Events	EnviroFair at the San Diego County Fair	collaboration with the San Diego County Copermittees to staff a booth at the EnviroFair at the San Diego County Fair	General Public	unknown	San Diego International Airport	Surveys on watershed knowledge were conducted, pet waste bags, and Green Tips cards were given out	N
8/21-22/09	SDCRAA	Waste Collection/ Recycling Events	Two-Day Electronic & Universal Waste Collection Event.	Gathered electronic and universal waste from Authority and Airport employees for proper disposal and recycling	Authority, and SDIA staff	unknown	San Diego International Airport	Batteryless flashlights	N
07/05/08	City of Chula Vista	Festivals/ Community Events	San Diego County Fair	City staff manned a booth and distributed IPM Pest Tip cards and reusable grocery bags as a part of the collaboration with the Regional Storm Water Copermittees	General Public	1000s	Del Mar Fairgrounds	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures	Y – Surveys
07/29/08	City of Chula Vista	Municipal Staff Training	Orco Block and Brick – Permeable Pavements	City staff received training on permeable pavements and projects that have used permeable pavements	Municipal Staff	2	Bonita Library	N/A	N
08/10/08	City of Chula Vista	Festivals/ Community Events	Lemon Festival	City staff manned a booth and distributed information about pollution prevention	General Public	100s	Downtown Chula Vista	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures	N
08/17/08	City of Chula Vista	Festivals/ Community Events	Go Green and Clean Family Day	City staff manned a booth and distributed CLEAN brochures and IPM Pest Tip Cards and displayed the EnviroScape	General Public	200	Otay Ranch Town Center	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
08/22/08	City of Chula Vista	Print Media	Storm water article in The Star News	Storm water staff contributed an article about pollution prevention in the Green Section of the newspaper	General Public	30,000	Chula Vista	Newspaper	Yes – 30,000 circulation
09/20/08	City of Chula Vista	Festivals/ Community Events	Children's Festival at New Hope Church	Storm water staff had a booth at the festival and provided pollution prevention training to citizens	Children	400	New Hope Church	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures	N
09/27/08	City of Chula Vista	Festivals/ Community Events	BonitaFest	Storm water staff provided pollution prevention training to citizens	General Public	500	Bonita Road Shopping Center	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures	N
10/04/08	City of Chula Vista	Festivals/ Community Events	Beautify Chula Vista	Storm water staff provided pollution prevention training to citizens	General Public	525	Otay Park	City of Chula Vista CLEAN giveaways, various storm water education brochures	Y – 1,270 pounds of litter, 88 storm drains stenciled, Please refer to SDB - 004
10/15/08 10/16/08	City of Chula Vista	Municipal Staff Training	Storm Water Awareness and BMP Implementation Training	City storm water staff provided Public Works staff with training on job-specific BMPs, watershed protection, and showed the "After the Storm" movie.	Municipal Staff	173	City of Chula Vista Public Works Center	None	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
10/16/08 10/17/08	City of Chula Vista	Municipal Staff Training	The University of Wisconsin Madison Department of Engineering Professional Development: Storm Water Detention Basin Design	City engineering staff attended this training on the design of storm water detention basins and implementation techniques	Municipal Staff	2	Las Vegas, NV	N/A	N
10/22/08 10/23/08	City of Chula Vista	Municipal Staff Training	Industrial Environmental Association Seminar	City storm water staff attended this seminar; in addition the City of Chula Vista received an Environmental Stewardship Award for its CLEAN program	Municipal Staff	3	Catamaran Resort – San Diego, CA	N/A	N
Novemb er 2008	City of Chula Vista	Print Media	Your Guide to CLEAN	The CLEAN team put together a mailer that was included in residential trash bills, with environmental information, including storm water pollution prevention	General Public	55,000	Chula Vista	Brochure	Y – 55,000 circulation
11/14/08	City of Chula Vista	Municipal Staff Training	CASQA Quarterly Meeting LID and HMP	City storm water staff attended this one day seminar about LID and HMP Management	Municipal Staff	1	Costa Mesa	N/A	N
12/05/08	City of Chula Vista	Municipal Staff Training	Rain for Rent and Hall & Foreman Storm Water Management Seminar	City storm water staff attended this training on treatment control BMPs, current regulations, and the new Construction Storm Water Permit	Municipal Staff	2	Marriott Old Town San Diego	N/A	N
01/03/09	City of Chula Vista	Waste Collection/ Recycling Events	E and U Waste Collection Event	City Environmental Services staff provided an electronic and universal waste for residents	General Public	816 vehicles	Bonita Vista High School	None	Yes – 56,061 pounds of electronic waste, 2,052 pounds of universal waste

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
02/10/09	City of Chula Vista	Municipal Staff Training	Filterra® Seminar	City storm water, engineering, development, open space, and public works staff attended this presentation on updates to Filterra® systems	Municipal Staff	18	City of Chula Vista Public Works	N/A	N
April 2009	City of Chula Vista	Print Media	Your Guide to Green	The CLEAN team put together a mailer that was included in residential trash bills, with environmental information, including storm water pollution prevention	General Public	55,000	Chula Vista	Brochure	Yes – 55,000 circulation
04/18/09	City of Chula Vista	Waste Collection/ Recycling Events	E and U Waste Collection Event	City Environmental Services staff provided an electronic and universal waste for residents	General Public	409 vehicles	Ken Lee Building, Downtown Chula Vista	None	Yes – 33,430 pounds of electronic waste, 1,211 pounds of universal waste
04/18/09	City of Chula Vista	Festivals/ Community Events	Go Green and Clean Day	Staff provided training on pollution prevention and provided CLEAN brochures and IPM Pest Tip cards, this was a collaborative event of the CLEAN group combined with a E/U Waste collection event	General Public	700	Friendship Park	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures, plants, light bulbs, hose nozzles	Yes – Surveys, 93
04/23/06	City of Chula Vista	Festivals/ Community Events	Earth Day	Storm water staff provided pollution prevention training to students	Children	100s	Eastlake Middle School	City of Chula Vista CLEAN giveaways	N
04/25/09	City of Chula Vista	Festivals/ Community Events	Day of the Child	Storm water staff provided pollution prevention training to citizens	Children	100s	Memorial Park	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures	Yes – Surveys, 127

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
05/03/09	City of Chula Vista	Festivals/ Community Events	Cinco de Mayo	Storm water staff implemented a storm water awareness survey and provided pollution prevention education to citizens	General Public	100s	Downtown Chula Vista, 3rd Avenue	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures	Yes – Surveys, 85
05/03/09	City of Chula Vista	Print Media	Cinco de Mayo Ad in Star News	This ad was sponsored by the CLEAN group and reminded Cinco de Mayo attendees to dispose of their litter properly and to recycle	General Public	1000	Downtown, Chula Vista, 3rd Avenue	Newspaper	N/A
05/21/09	City of Chula Vista	Municipal Staff Training	Bay Saver Technologies Storm Water Treatment and Detention/ Retention Systems	City public works engineering and operations divisions attended this training on storm water treatment and detention/retention systems	Municipal Staff	6	City of Chula Vista Public Works	N/A	N
05/28/09	City of Chula Vista	Municipal Staff Training	Sizing Tool Training	City storm water, public works, and engineering staff attended this training about the HMP process, sizing calculator, and design examples	Municipal Staff	3	City of San Diego Metro Operations Center	N/A	N
06/01/09	City of Chula Vista	Municipal Staff Training	Model SUSMP Training for Municipal Staff and Plan Checkers	City staff attended this training on the Model SUSMP and it application to development projects	Municipal Staff	4	City of San Diego Metro Operations Center	N/A	N
06/8/09 06/09/09 06/10/09	City of Chula Vista	Municipal Staff Training	APWA Hydrologic Simulation Program Fortran (HSPF) Training	City staff attended this training on geomorphology and HSPF computer program developed by the USEPA to develop watershed models	Municipal Staff	2	Balboa Park, USD	N/A	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
06/20/09	City of Chula Vista	Waste Collection/ Recycling Events	Empty Your Dock Box Day	City Environmental Services staff provided an electronic and universal waste for boat residents	General Public	857 vehicles	CA Yacht Marina	None	Yes – 1,295 pounds of universal waste; 9,770 pounds of poison, flammable, and corrosives; 38,400 pounds of paint; 4,00 pounds of car batteries; 1,800 pounds of aerosol
06/20/09	City of Chula Vista	Festivals/ Community Events	Pet Fest and Doggy Dash	Storm water staff implemented a storm water awareness survey and provided pollution prevention education to citizens	General Public (Pet owners)	100s	Memorial Park	City of Chula Vista CLEAN giveaways, IPM Pest Tip Cards, various storm water education brochures	Yes – Surveys, 89 – Please see SBD-040.
Year-round	City of Chula Vista	Field Trips	Watershed, Recycling, Storm Drain Pollution Education	Organized School Group Visitors to the Chula Vista Nature Center	School Children	1000s	Chula Vista Nature Center	None	N
07/03/08 - 07/04/08	City of Coronado	Festival Participation	Coronado Yacht Club Junior Sailing 4th of July Trash Pickup	Storm water BMP information	Boaters and Residential	125	Coronado Yacht Club, City of Coronado, U.S. Coast Guard	Coronado Clean Coastlines BMP-specific brochures, clean boating material and promotional items (oil funnels, beach balls, Frisbees, beverage coozies) as well as garbage bags and oil soak pads.	Yes. 200 lbs. of trash collected from boats docked at local yacht club and from 4th of July activities in that marina

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
09/07/08	San Diego Region sponsored by the Bicycle Coalition and the City of Coronado within Coronado's city limits.	Festival Participation	Bike the Bay	Storm water BMP information	Residential	2,500	South Bay	2,500 bicycle riders started in San Diego and biked over the Coronado bridge and through I.B., Chula Vista, and National City. Public Services staff attended the event & handed out brochures & information re Coronado Clean Coastlines. The Bicycle Coalition provides cycling ed. programs & input to cities to make sure bike paths and lanes are designed & installed correctly. Brochures & information re Coronado Clean Coastlines were distributed at a booth at the finish line staging area in San Diego.	N/A

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09/2008	City of Coronado	Print Media	*Coronado Currents: the Official Publication of the City of Coronado* Volume 20 "Tips for Being a Good Neighbor: A Reminder for Dog Owners"	Stormwater information as it relates pet waste and harmful bacteria entering the storm drain system.	Residential	23,000 circulation		This article summarized "the importance of cleaning up after their…dogs…to prevent harmful bacteria from entering the storm drain system, which goes untreated into the ocean." This article specifically correlated pet waste with harmful bacteria entering the storm drain system and the ocean.	N/A
09/20/08	City of Coronado, I Love A Clean San Diego, San Diego Coastkeeper and WildCoast	Cleanup Event	24th Annual California Coastal Cleanup Day	Annual beach cleanup at City of Coronado Central Beach	General Public w/ an interest in beach water quality and associated environmental issues	177 volunteers	Coronado Central Beach	Coronado Clean Coastlines promotional material distributed: beach balls, Frisbees, pens, pencils and cozies.	Yes. 428 lbs. of trash picked up including 160 lbs. of recyclables

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
09/26/08	City of Coronado	Print Media	*San Diego Union Tribune*, "Report Card: County Beaches at Head of Class, 9.26.08, p. B3	Heal the Bay of Santa Monica. Rated Coronado's five beaches as an A or A+ during both dry and wet weather.	General Public w/ an interest in beach water quality and associated environmental issues	242,700 readers per weekday	City of Coronado	This report graded all five of Coronado's beaches with an A or A+ during both dry and wet weather. This an indicator that the City's ongoing water quality improvement efforts, including the operation of dry/wet weather diverters, the diversion of urban runoff and nuisance water to the sewer system, and regular street sweeping, all of which prevent debris, urban runoff and nuisance water from reaching receiving waters, as well as our daily beach maintenance, continue to be successful in enhancing beach water quality. Results also on: www.healthebay.org	N/A
10/05/08	City of Coronado	Jurisdiction Hosted Event	Fire Services Department Open House	Storm water BMP information	Residential	4,000	City of Coronado, Dept. of Fire Services	Coronado Clean Coastlines BMP-specific brochures and promotional items (oil funnels, pens, pencils, frisbees, beach balls, beverage "coozies," etc.).	N/A

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
11/01/08	City of Coronado	Jurisdiction Storm water-specific Event	BMP Brochure Mass E-Mail-w/ Business License Renewals	Storm water BMP information	Business	-2,000 businesses that renew their licenses every year	San Diego Region	Business-specific BMP brochures were e-mailed as links in conjunction with the e-mailed Coronado business license renewal forms to every Coronado business license holder. The renewals are broken down by the following types of businesses: Business (54%), Construction (24%), Food Service (3%), Landscaping (2%), Mobile Services (3%), and Residential Properties (6%) and Other (8%).	N/A
11/29/08	City of Coronado	Festival Participation	26th Annual J.R. Memorial Surf Classic	Storm water BMP information	Residential	270	City of Coronado	Coronado Clean Coastlines promotional items (beach balls, frisbees, coozies, pens, pencils, rulers, etc. chains) and BMP-specific brochures were placed in the bags each participant received after participating in his/her event.	N/A

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
Week of 12/17/08	City of Coronado	Print Media	"JR Surf Classic Another Success," *Coronado Eagle & Journal*, Editorial Section, p. 8	Storm water information related to a recently held surf competition	Residential	12,500 circulation	City of Coronado	In addition to describing the results of the recently held surfing competition, this article reported one of the primary purposes of this event as "raising awareness of the condition of our ocean and its impact on the health of your children." ." www.coronadosurfingassociation.org	N/A
03/28/09	San Diego Coastkeeper and City of Coronado	Beach Cleanup at City of Coronado Central Beach	San Diego Coastkeeper and City of Coronado Beach Cleanup	Beach Cleanup at City of Coronado Central Beach	General Public w/ an interest in beach water quality and associated environmental issues	336 volunteers	City of Coronado	City staff provided canopies, trash cans & roll-on dumpsters. In addition, City staff provided Coronado Clean Coastlines promotional material: beach balls, Frisbees, pens, pencils and beverage cozies.	Yes. 300 lbs. off trash collected
04/19/09 and 04/20/09	City of Coronado	Community Hosted Event	Annual Flower Show	Storm water BMP information	Residential	4,000	Spreckels Park, Coronado	Coronado Clean Coastlines BMP specific brochures as well as Oil Recycling information and the following promotional items: oil funnels, pens, pencils, frisbees, beach balls, beverage coozies, etc. In addition, Integrated Pest Management Pest Tip Cards were distributed from a Department of Public Services booth.	

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4/20/09	City of Coronado	Community Hosted Event	Annual Car Show "Motorcars on Main Street"	Storm water BMP information	Residential	5,500	Spreckels Park, Coronado	Coronado Clean Coastlines BMP-specific brochures as well as Oil Recycling information and the following promotional items: oil funnels, pens, pencils, frisbees, beach balls, beverage coozies, etc. In addition, Integrated Pest Management Pest Tip Cards were distributed from a Department of Public Service booth shared with EDCO staff.	N/A
04/25/09	City of Coronado & I Love A Clean San Diego	Beach Cleanup at City of Coronado Central Beach	7th Annual Creek to Bay Cleanup	Beach Cleanup at City of Coronado Central Beach & Silver Strand State Beach within City of Coronado	General Public w/ an interest in beach water quality and associated environmental issues	129 volunteers	Central Beach & Silver Strand State Beach	220 lbs. trash (including 76 lbs. recyclables) collected	N/A
4/26/09	City of Coronado, Coronado Surfing Association, Emerald City Surf & Sport and WildCoast	Festival Participation	5th Annual Kids for Clean Water Menehune Surf Fest	Storm water information as it related to a surf competition	Residential	170	City of Coronado	Coronado Clean Coastlines promotional items (beach balls, frisbees, coozies, pens, pencils, rulers, surfboard-shaped key chains) and BMP-specific brochures were placed in the bags each child received after participating in his/her event.	N/A

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05/22/09	City of Coronado	Print Media	Coronado's Central Beach named as one of the "Top 10 Best Beaches" by Dr. Stephen Leatherman a.k.a. "Dr. Beach"	Storm water's impact on California's oceans is seen as directly correlated to the beach's value as a tourist site.	General Public w/ an interest in beach water quality and associated environmental issues	74 mil. homes receive Travel Channel USA. This list was also mentioned on TravelChannel.com	City of Coronado	The Top 10 Beaches in the U.S. was reported by *Travel Channel USA, the Today Show, Yahoo Travel,* TravelChannel*.com* and *About.com: Southeast US Travel.* It is unknown what the total audience size for these television channels and internet sites is but they are all very well-known to the general public.	N/A
06/04/09	City of Coronado, I Love A Clean San Diego	Field Trip / Cleanup Event	Kids Ocean Day	Largest beach cleanup ever held in City of Coronado		900 students from elem. schools throughout the County	City of Coronado Central Beach	Public Services staff provided dumpsters, recycle bins and Coronado Clean Coastlines educational and outreach materials. In addition to picking up trash, the students formed an aerial art formation in the shape of a giant turtle that was photographed from a helicopter. See http://www.cleansd.org	Yes. 200 pounds of trash & recyclables were collected
06/14/09 to 07/06/09	San Diego Region	Festival Participation	San Diego County Regional Fair	Storm water BMP information	General Public	u/k	Del Mar, California	As a copermittee, the City of Coronado assisted with staff support for the public education booth which included BMP specific brochures and Integrated Pest Management (IPM) information cards.	N/A

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2008-2009	San Diego Region	Public Service Announce-ments	San Diego Regional Storm water Pollution Prevention Program	THINK BLUE media campaign	General Public	u/k	Broadcast to San Diego Region	As a copermittee, the City of Coronado contributed financially to THINK Blue's media campaign. However the summary of those events will not be available from the City of San Diego until December 2008.	N/A
FY 08-09	Imperial Beach	Jurisdiction Storm Water Specific Event	New Employee Training	Provide training on storm water to each new employee	Municipal Staff	4	Public Works	Storm Water Brochure	N
FY 08-09	Imperial Beach	Jurisdiction Storm Water Specific Event	Field trip: Habitat Heroes for the South Bay Wildlife Refuge Restoration Project	Students visited the south end of the San Diego Bay and learned how trash and other pollutants affect the flora and fauna at the receiving waters	Elementary School Children	1000	San Diego Bay Wildlife Refuge	Na	N
7/3/08	Imperial Beach	Print Media	City Weekly FYI	Education on the RWQCB trash and sediment workshop	City Council and Municipal Staff	168	City of Imperial Beach	NA	N
7/9/08	Imperial Beach	Print Media	Eagle and Times Newspaper	Urban runoff pollution prevention and storm water pollution tips	Residents	Citywide	City of Imperial Beach	Na	N
7/16/08	Imperial Beach	Community Hosted Event	US Open Sandcastle Competition	Provided information to venders and public at US Open Sandcastle Competition	General Public and Commercial Business	300,000	City of Imperial Beach	Storm Water Vender Packet Information, Storm Water Brochures	N
7/26/08	Imperial Beach	Community Hosted Event	IB Auto Show	Education booth at annual IB Auto Show	General Public	1,000	City of Imperial Beach	Storm Water BMPs and HHW disposal	N

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8/14/08	Imperial Beach	Print Media	City Weekly FYI	Two articles, on e-waste recycling and City recycling program	City Council and Municipal Staff	168	City of Imperial Beach	Na	N
8/25/08	Imperial Beach	Print Media	City Weekly FYI	Waste management of prescriptions and compost	City Council and Municipal Staff	168	City of Imperial Beach	Na	N
9/17/08	Imperial Beach	Jurisdiction Storm Water Specific Event	Municipal staff training for Public Works	JURMP components and requirements	Municipal Staff	23	Public Works	Storm water information	Yes (pre and post test) Average score of 81% on 16 questions
9/23/08	Imperial Beach	Jurisdiction Storm Water Specific Event	Municipal staff training for Community Development Department	JURMP components and requirements	Municipal Staff	12	City Hall	Storm water information	Yes (pre and post test) Average score of 89% on 16 questions
10/17/08	Imperial Beach	Print Media	City Weekly FYI	Article on fats, oil, and grease	City Council and Municipal Staff	168	City of Imperial Beach	Na	N
11/1/08	Imperial Beach	Print Media	Eagle and Times Newspaper	Article on fats, oil, and grease and proper disposal during the holiday season	Residents	Citywide	City of Imperial Beach	Na	N
12/1/08	Imperial Beach	Print Media	City Bi-annual Newsletter	Four articles on storm water, FOG, special events, and recycling	Residents	Citywide	City of Imperial Beach	Na	N
12/12/08	Imperial Beach	Print Media	City Weekly FYI, Eagle and Times Newspaper, and San Diego Union Tribune	Day without a bag regional event	City Council, Municipal Staff, and Residents	Citywide	City of Imperial Beach	Na	N

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1/9/09	Imperial Beach	Print Media	City Weekly FYI	Battery Recycling at County libraries	City Council and Municipal Staff	168	City of Imperial Beach	Na	N
2/4/09	Imperial Beach	Print Media	City Weekly FYI	Advertising e-waste recycling event	City Council and Municipal Staff	168	City of Imperial Beach	Na	N
3/25/09	Imperial Beach	Print Media	Post Card	Advertising e-waste recycling event	Residents	27,000	City of Imperial Beach	Na	N
3/25/09	Imperial Beach	Print Media	City Weekly FYI	Battery collection at County libraries	City Council and Municipal Staff	168	City of Imperial Beach	Na	N
4/1/09	Imperial Beach	Print Media	EDCO Environmental Times	Multiple articles on storm water pollution tips, proper disposal of HHW, advertisement for special events	Residents	27,000	City of Imperial Beach	Na	N
4/25/09	Imperial Beach	Community Hosted Event	Coastal Clean Up Day	Sponsored ILACSD for 7th Annual Coastal Clean Up Day	Residents	4,000	City of Imperial Beach	Na	N
5/2/09	Imperial Beach	Jurisdiction Hosted Event	Home Front Clean Up	Annual home front clean up events for residents to properly dispose of waste	Residents	689	Mar Vista High School	Na	N
5/10/09	Imperial Beach	Print Media	Eagle and Times Newspaper	Advertisement for light bulb exchange	Residents	Citywide	City of Imperial Beach	Na	N
5/14/09	Imperial Beach	Print Media	City Bi-annual news letter	Urban runoff information and pollution prevention tips “After it Rains”	Residents	Citywide	City of Imperial Beach	Na	N
5/20/09	Imperial Beach	Jurisdiction Storm Water Specific Event	ILACSD school presentation	Two 5th grade presentation on storm water pollution	School Children	54	Imperial Beach Elementary	Na	Yes (pre and post test)

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6/4/09	Imperial Beach	Print Media	City Weekly FYI	Water conservation and urban runoff pollution info	City Council and Municipal Staff	168	City of Imperial Beach	Na	N
6/16/09	Imperial Beach	Jurisdiction Storm Water Specific Event	ILACSD school presentation	5th and 6th grade presentation on storm water pollution	School Children	100	Central Elementary	Na	Yes (pre and post test)
10/10/08	City of La Mesa	Festivals/Community Events	Intergenerational Games	Storm Water booth with interactive watershed pollution prevention game.	Students, Residents	250	La Mesa Middle School	25 recycling flyers, 45 storm water pencils, 50 storm water key chains	N
4/19/09	City of La Mesa	Festivals/Community Events	Earth Fair	Booth Sponsorship through the Solana Center.	General Public	Unknown	Balboa Park	6 Preventing Urban Runoff Pollution pamphlets, 1 SD Bay Flyer, 14 Oil Recycling Magnets	N
5/19/09	City of La Mesa	Presentations	ILACSD Watershed Presentation	Watershed concepts presented to high school students.	High School Students	80	Mt. Helix High School	N/A	Y- Post Tests Post Test Score 96%
5/27/09	City of La Mesa	Presentations	ILACSD Watershed Presentation	Watershed concepts presented to 3rd grade students.	3rd Grade Students	28	La Mesa Dale Elementary	N/A	Y - Post Tests Post Test Score 70%
5/27/09	City of La Mesa	Presentations	ILACSD Watershed Presentation	Watershed concepts presented to 6th grade students.	6th Grade Students	30	La Mesa Middle School	N/A	Y – Pre/Post Tests Pre Test Score 69%, Post Test Score 88%
5/28/09	City of La Mesa	Presentations	ILACSD Watershed Presentation	Watershed concepts presented to 3rd grade students.	3rd Grade Students	28	La Mesa Dale Elementary	N/A	Y – Pre/Post Tests Pre Test Score 58% Post Test Score 80%

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4/18/09	City of La Mesa	Cleanup Events	Creek To Bay Cleanup	Removed trash from University Channel	General Public	11	University Channel	N/A	Y – Pre/Post Tests Pre Test Score 75% Post Test Score 84%
9/20/08	City of La Mesa	Cleanup Events	Coastal Cleanup Day	Removed trash from University Channel	General Public	12	University Channel	N/A	Y – Pre/Post Tests Pre Test Score 73% Post Test Score 95%
10/24/08	City of La Mesa	Cleanup Events	Park Appreciation Day	A clean up event occurring in all City Parks.	Residents	153	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park	Pollution Prevention/Watershed Outreach Flyer	N
FY 08/09	City of La Mesa	Cleanup Events	Adopt a Park/Adopt a Block	Individuals and businesses can volunteer to enroll clean up parks and neighborhoods throughout the watershed.	Residents, Businesses	20	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park, City Streets	N/A	N
FY 08/09	City of La Mesa	Cleanup Events	Partnership with St. Madeline's Sophie Center	The City contracts with the Center to employ mentally disabled persons to aid in janitorial responsibilities at local parks. Teams of 3 persons and 1 coach are employed at a time, per site.	Employed Individuals	4 person work crew	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park	N/A	N
4/11/08, 4/18/08	City of La Mesa	Waste Collection/Recycling Events	Spring Cleanup Events	894,840 lbs of items, debris, and trash was collected.	Residents	1261	EDCO Disposal Transfer Station Facility	Flyer regarding HHW Collection and Disposal	N

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8 Events in FY 08/09	City of La Mesa	Waste Collection/Recycling Events	HHW Collection Events	115,842 lbs of HHW was collected.	Residents	804	EDCO Disposal Transfer Station Facility	Flyer regarding HHW Collection and Disposal	N
12/6/08, 6/13/09	City of La Mesa	Waste Collection/Recycling Events	Used Oil Disposal Events at Kragen Auto	85 individuals traded in used oil filters for new ones.	Residents	85	Kragen Auto Parts	A new oil filter for exchange	N
8/2008	City of La Mesa	Print Media	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	812	N/A	Articles Titled: "La Mesa Environmental Awareness Festival", "7th, 24th Annual Coastal Clean up Day", "Park Appreciation Day" "Do the Right Thing (HHW)", and "Recycling Now Available at City Parks".	N
11/2008	City of La Mesa	Print Media	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	812	N/A	Articles Titled: "Recycle Used Oil Filters", "City of La Mesa Park Appreciation Day", "Call Us To Help Stop Storm Water Pollution", "Got Electronics? (HHW)", "California Coastal Clean Up Day in La Mesa", "Do the Right Thing (HHW)", "Sustainability celebrated at the Environmental Awareness Festival".	N

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2/2009	City of La Mesa	Print Media	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	812	N/A	Articles Titled: "Do the Right Thing (HHW)", "La Mesa Receives Grant to Enhance Multifamily Recycling Opportunities", "Announcing Spring Clean Up 2009".	N
5/2009	City of La Mesa	Print Media	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	812	N/A	Articles Titled: "Forecast for La Mesa Restaurants- FOG Clearing", "Mandatory Recycling and You", "Doing our Part to Save H20", " Do the Right Thing", "Free Oil Filters", "Irrigation Water Pollution Prevention in Your Watershed".	N
FY 08/09	City of La Mesa	Print Media	La Mesa Park Kiosk	The Kiosk is updated frequently with new community events regarding recycling and watershed pollution prevention.	Residents	N/A	Vista La Mesa Park	N/A	N
8/28/08	City of La Mesa	Workshops	Code Update Workshop	Updates of storm water pollution prevention and other city codes were explained at the City workshop.	Business Owners/Employees	20	City Hall	Pollution Prevention and Code Compliance Materials	N
5/19/09	City of La Mesa	IPM Seminars/Events	Integrated IPM Training for Landscape Professionals	3 members of City staff attended IPM training.	Municipal Staff	3	County of San Diego	IPM handouts/materials	N
10/08	City of Lemon Grove	Cleanup and Beautification	First Baptist for Lemon Grove Ave Median	Cleanup and relandscaping of the LGA Median near the Massachusetts Trolley Station	Residential	40	LGA at Massachusetts Trolley Station	Median was cleaned for litter and other debris, new drought tolerant plants were installed, mulch was applied	N

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4/08	City of Lemon Grove	Cleanup and Beautification	Georgia Youth Mission for Lemon Grove Park	Litter removal, weed removal, structure repaint and mural repair	Residential	40	Lemon Grove Park	50 lbs trash and debris removal, weed removal, landscaping, bathroom repainted, mural repaired and repainted	N
4/08	City of Lemon Grove	Cleanup Event	I Love a Clean San Diego Creek to Bay Cleanup	Cleanup event in Sweetwater watershed	Residential	4 participants	Intersection of Palm and Camino de las Palmas	10 lbs of trash and debris and 3 lb of recyclables. Near a school, mostly candy wrappers and small litter.	N
10/08	City of Lemon Grove	Fire Department Sponsored Event	Fire Station Open House	Stormwater Information Booth	Residential	60	Fire Department	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including sponges, and bookmarks with the hotline and oil-recycling information. Also distributed were the IPM tip cards.	Y
12/08	City of Lemon Grove	City Sponsored Community Event	Winter Bonfire	Stormwater Information Booth	Residential and Business	800	Park on Main St.	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including sponges, bookmarks, and pens with the hotline and oil-recycling information.	N
4/09	City of Lemon Grove	Cleanup Event	I Love a Clean San Diego Creek to Bay Cleanup	Cleanup event in local Chollas Creek tributaries	Residential	12 participants	Central and Federal Blvd & Bakersfield Ditch	Provided all participants with HHW, recycling and stormwater brochures, along with a verbal presentation.	N

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6/09	City of Lemon Grove	Regional Education Event	San Diego County Fair	Stormwater Information at Regional Booth	Residential and Business	4,500	Downtown streets	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including free oil funnels with the hotline and oil-recycling information. Information on environmentally friendly gardening practices including tips on proper usage of fertilizers and pesticides.	Y
November 2008	City of National City	Cleanup Events	* EDCO Large Item Disposal Event	City residents encouraged to dispose of large unwanted items from their homes such as furniture and appliances	Residents	Unknown	City of National City	None	N
June 2009	City of National City	Cleanup Events	* EDCO Large Item Disposal Event	City residents encouraged to dispose of large unwanted items from their homes such as furniture and appliances	Residents	Unknown	City of National City	None	N
11/17/08	City of National City	Workshops	Negocio Verde Program Workshop	Compliance workshop specifically designed for auto repair/service facilities	Auto repair / service workers	Unknown	Casa de Salud Recreation Center, National City	None	N
2/25/09	City of National City	Workshops	Negocio Verde Program Workshop	Compliance workshop specifically designed for auto repair/service facilities	Auto repair / service workers	Unknown	Martin Luther King, Jr. Community Center, National City	None	N

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4/25/09	City of National City	Cleanup Events	* Creek to Bay Cleanup	Removed trash and debris from Paradise Creek and banks of Sweetwater River	Volunteers	118	Paradise Creek Educational Park, Sweetwater River by Plaza Bonita Road	None	Y – 4,598 pounds of trash
June 2009	City of National City	Presentations	* 2010 Storm Water Calendar Art Contest	Presentations taught watershed concepts, encouraged artistic responses	3rd Grade classrooms	43	Elementary schools, National City	Contest take home flyer with watershed-themed prompt	N
5/13/09	City of National City	Presentations	ILACSD Watershed presentations	Watershed concepts presented to fifth graders	5th grade students	53 (2)	Elementary schools, National City	PowerPoint presentation	Y – Post-tests
April 2009 - May 2009	City of National City	Presentations	High Threat to Water Quality Residential Education Program	Door-to-door survey and presentation of watershed concepts	Residents	318	City of National City	None	Y – Surveys
April 2009 - May 2009	City of National City	Print Media	High Threat to Water Quality Residential Education Program	Door-to-door distribution of educational materials	Households	1,341	City of National City	"Everything that flows down" brochure, "Put toxic waste in its place" brochure, 2009 Storm Water Calendar, Storm Water Hotline card	N
05/19/09	Port of San Diego	IPM Seminar/ Event	Integrated Pest Management for Landscape Professionals	IPM information to reduce pesticide use	Landscape Professionals	186	San Diego Sheraton - Airport	General IPM information from various speakers	Y – survey 100% of participants indicated that the seminar was useful and that they can apply their new knowledge to their work.
09/04/08	Port of San Diego	Workshop	Green Port Seminar: Composting	Composting information to reduce fertilizer use	Port staff	48	Port of San Diego Administration Building	None	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
09/15/08	Port of San Diego	IPM Seminar/ Event	Green Port Seminar: IPM	IPM information to reduce pesticide use	Port staff	27	Port of San Diego Administration Building	Preventing Stormwater Pollution: Integrated Pest Management	Y – survey 100% of participants indicated that the seminar was useful. 83% of participants indicated that they will change at least one behavior to reduce their environmental impact.
09/23/08	Port of San Diego	Workshop	Green Port Seminar: Water Conservation	Reducing water use and runoff	Port staff	22	Port of San Diego Administration Building	Brochures from the San Diego County Water Authority	Y – survey 100% of participants indicated that the seminar was useful. 100% of participants indicated that they will change at least one behavior to reduce their environmental impact.
04/20/09	Port of San Diego	Workshop	Green Port Seminar: Sustainability	General information on sustainability, including reducing runoff	Port staff	20	Port of San Diego Administration Building	Brochures from San Diego Gas & Electric	Y – survey 100% of participants indicated that the seminar was useful. 100% of participants indicated that they will change at least one behavior to reduce their environmental impact.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
09/18/08	Port of San Diego	Waste Collection/ Recycling Event	Electronic Waste Collections Event for Port Employees	Electronic waste education	Port staff	42	Port of San Diego Administration Building	None	Y 42 people participated
04/21/09	Port of San Diego	Waste Collection/ Recycling Event	Electronic Waste Collections Event for Port Employees	Electronic waste education	Port staff	33	Port of San Diego Administration Building	None	Y 33 people participated
07/26/08	Port of San Diego	Festival/Community Event	California Yacht Club Boater Appreciation Party	General information on pollution prevention and watershed issues	San Diego Bay boaters	240	California Yacht Club	Preventing Stormwater Pollution brochures, Copper fact sheets, Green Port Program fact sheets	N
09/20/08	Port of San Diego	Cleanup Event	Coastal Cleanup Day	Port-sponsored site at D Street Fill	Family and friends of Port staff	55	D Street Fill	None	Y 55 people participated
04/26/08	Port of San Diego	Cleanup Event	Creek to Bay Cleanup	Port-sponsored site at Chula Vista Wildlife Refuge	Family and friends of Port staff	45	Chula Vista Wildlife Refuge	None	Y 45 people participated
06/06/09	Port of San Diego	Cleanup Event	Operation Clean Sweep	Port sponsors this bay-wide effort, coordinated by the San Diego Port Tenants Association	Port tenants	700	Sites throughout San Diego Bay	None	Y 700 people participated
07/08 – 06/09	Port of San Diego	Presentation	Maritime Museum of San Diego *Pilot* Boat Tours	Daily tours aboard the *Pilot* Boat for museum guests, which include environmental and watershed information	General public	17,185	Maritime Museum of San Diego	Preventing Stormwater Pollution brochures	N
04/30 – 07/11	Port of San Diego	Presentation	Port of San Diego Bay Tours	Bay tours for the general public, which include environmental and watershed information	General public	3,816	Hornblower and Harbor Excursion	None	Y – survey 98% of the participants ranked the overall tour as valuable and informative.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
07/08 – 06/09	Port of San Diego	Field Trip	Aquatic Adventures – SEA Series	Classroom presentations and field trips to local wetlands, information on watershed issues is included	Students in the San Diego Bay watershed	1,903	Various	Aquatic Adventures handouts	Y – survey **Evaluation information from Aquatic Adventures will be available in January 2010.**
07/08 – 06/09	Port of San Diego	Field Trip	Wildcoast Sea Turtle Education	Field trips to learn about sea turtles and pollution prevention, information on watershed issues is included	Students at Port partner schools and throughout San Diego County	956	Various	Wildcoast handouts	N
07/08 – 06/09	Port of San Diego	Field Trip	The Green Machine IPM Education	Field trips to learn about IPM and the water cycle, information on watershed issues is included	Students at Port partner schools and throughout the Chollas Creek watershed	1,730	Various	Green Machine handouts	N
07/08 – 06/09	Port of San Diego	Field Trip	Resource Conservation District Watershed Education	Field trips to learn about the San Diego Bay watershed (using the Enviroscape model)	Students at Port partner schools and throughout the San Diego Bay watershed	1,749	Various	Resource Conservation District handouts	Y – pre- and post-tests Knowledge was increased by 28%.
07/08 – 06/09	Port of San Diego	Field Trip	Chula Vista Nature Center Wetlands Education	Field trips to learn about the Sweetwater Marsh and watershed	Students at Port partner schools and throughout the San Diego Bay watershed	1,880	Chula Vista Nature Center	Chula Vista Nature Center handouts	Y – pre- and post-tests Knowledge was increased by 9.3%.
07/08 – 06/09	Port of San Diego	Field Trip	Aquatic Adventures Wetland Avengers Program	Field trips to the Chula Vista Wildlife Refuge to learn about wetlands and pollution prevention, information on watershed issues is included	Students at Port partner schools	366	Chula Vista Wildlife Refuge	Aquatic Adventures handouts	Y – pre- and post-tests Knowledge was increased by 9.2%.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
07/08 – 06/09	Port of San Diego	Field Trip	Maritime Museum of San Diego	Field trips to the Maritime Museum of San Diego to learn about San Diego Bay history and pollution prevention, information on watershed issues is included	Students at Port partner schools and throughout the San Diego Bay watershed	874	Maritime Museum of San Diego	Maritime Museum of San Diego handouts	Y – pre- and post-tests Knowledge was increased by 150%.
07/08 – 06/09	Port of San Diego	Field Trip	ProPeninsula	Classroom presentations and field trips to learn about sea turtles and pollution prevention, information on watershed issues is included	Students at Port partner schools and throughout San Diego County	1,046	Various	ProPeninsula handouts	Y – pre- and post-tests Knowledge was increased by 52%.
07/21/08	Port of San Diego	Presentation	Elementary Institute of Science	Presentation on San Diego Bay and its watershed	Elementary Institute of Science students	18	Elementary Institute of Science	None	Y – survey 100% of participants indicated that the seminar was useful. 94% of participants indicated that they will change at least one behavior to reduce their environmental impact.

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
04/23/09	Port of San Diego	Presentation	Take Your Child to Work Day	Presentation on San Diego Bay and pollution prevention, information on watershed issues is included	Family and friends of Port staff	109	Chula Vista Nature Center	None	Y – survey 100% of those surveyed indicated that the environmental presentations were useful. 93% of those surveyed indicated that they will change at least one behavior to reduce their environmental impact.
8/22/08	Port of San Diego	Presentation	Bahia Del Sol	Resource Conservation District presented the Enviroscape Model, which provided watershed information	General public	35	Embarcadero Marina Park North	Resource Conservation District handouts	N
8/30/08	Port of San Diego	Presentation	Backyard Habitat Day	Resource Conservation District presented the Enviroscape Model, which provided watershed information	General public	440	Chula Vista Nature Center	Resource Conservation District handouts	N
10/18/08	Port of San Diego	Presentation	National Wildlife Refuge Week	Resource Conservation District presented the Enviroscape Model, which provided watershed information	General public	600	Chula Vista Nature Center	Resource Conservation District handouts	N
07/08 – 06/09	Port of San Diego	Citizen Monitoring/ Training	Groundworks San Diego – Chollas Creek Family Stream Team	Port Environmental Fund-sponsored program involving water monitoring and cleanup events	General public	2,000	Various	None	N
11/30/08 02/07/09 03/07/09	Port of San Diego	Cleanup Event	San Diego Coastkeeper Beach Cleanups	Port Environmental Fund-sponsored cleanup events throughout San Diego Bay	General public	94	Various	None	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
07/08 – 06/09	Port of San Diego	Cleanup Event	Urban Corps of San Diego – Chollas Creek Restoration Events	Port Environmental Fund-sponsored program involving creek restoration	General public	400	Various	None	N
07/08 – 06/09	Port of San Diego	Festival/Community Event	Wildcoast – Clean Water Campaign	Port Environmental Fund-sponsored program involving booths at community events related to watershed issues	General public	10,000	Various	None	N
07/08 – 06/09	Port of San Diego	Citizen Monitoring/ Training	Zoological Society of San Diego – Stream Team Stewards	Port Environmental Fund-sponsored program involving water monitoring and cleanup events	General public	600	Various	None	N
8/16/08	City of San Diego	Education/ Outreach	30 Days of Blue SAN Skyfaire	JURMP	General Public	1,500	NTC Promenade at Liberty Station	Best Management Practice Giveaways, Think Blue Tips Brochure, Kids Worksheets	N
8/26/08	City of San Diego	Education/ Outreach	Petco's Dog Days of Summer	JURMP	Pet Owners	40,000	Petco Park, San Diego	Think Blue Tips Brochure, 3Cs Card, Laminated Tip Card, Best Management Practice Giveaways	N
8/31/08	City of San Diego	Dog Race/Education/Outreach	Chihuahua National Race	JURMP	Pet Owners	40,000	Petco Park, San Diego	Think Blue Tips Brochure, 3Cs Card, Laminated Tip Card, IPM Pest Tip Cards, Best Management Practice Giveaways	N
9/15/08	City of San Diego	Cleanup	Coastal Clean Up Day	WURMP	General Public	300	Coasts of San Diego	Think Blue Tips Brochure, Laminated Tip Cards, Best Management Practice Giveaways	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
9/02-9/27/08	City of San Diego	Education/ Outreach	San Diego Film Festival	JURMP	General Public/ Business Owners	18,000	Gaslamp Quarter, San Diego	Think Blue Tips Brochure, Laminated Tip Cards, IPM Pest Tip Cards, Best Management Practice Giveaways	N
9/26/08	City of San Diego	Promotional Sponsorship	San Diego Padres Calendar Giveaway	JURMP	General Public	67,544	Petco Park, San Diego	Think Blue Tips Calendar	N
12/07/08	City of San Diego	Community Festival	December Nights	JURMP	General Public	300,000	Balboa Park	Think Blue Tips Brochure, Laminated Tip Card, Best Management Practice Giveways	N
12/30/08	City of San Diego	College Football Game	Holiday Bowl Football Game	JURMP	High Risk College Students, Male Skewed	60,000	Qualcomm Stadium	Best Management Practice Giveaways	N
12/29/08	City of San Diego	Parade	Holiday Bowl Big Balloon Parade	JURMP	General Public	100,000	Harbor Drive, San Diego	Think Blue Laminated Tip Cards, Best Management Practice Giveaways	N
12/29/08-1/03/09	City of San Diego	Education/ Outreach	San Diego Auto Show	JURMP	Auto Enthusiasts, Male Skewed	100,000	San Diego Convention Center	Laminated Tip Cards, IPM Pest Tip Cards, Best Management Practices Giveaways	N
2/28/09	City of San Diego	Community Festival	Heritage Day Festival and Parade	JURMP	Underserved	10,000	Market Creek Plaza	Think Blue Tips Brochure, Laminated Tip Cards, IPM Pest Tip Cards, 3Cs Card, Car Washing Fact Sheet, Best Management Practices Giveaways	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
3/18/09	City of San Diego	Public Awareness/ Education	Cesar Chavez Day	JURMP	Underserved	1,000	Cesar Chavez Elementary School	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Card, Car Washing Fact Sheet, Kids Worksheet, Best Management Practices Giveaways	N
3/20/09	City of San Diego	Public Awareness/ Education	Cesar Chavez Day	JURMP	Underserved	5,000	Logan Ave	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Card, Car Washing Fact Sheet, Best Management Practices Giveaways	N
4/06/09	City of San Diego	Children's Science Fair	Science Festival	JURMP	School Aged Children	100,000	Balboa Park	Think Blue Tips Brochure, Laminated Tip Cards, IPM Pest Tip Card, Kids Worksheets, Best Management Practices Giveaways	N
4/4/09	City of San Diego	Public Awareness	Chollas Creek Walk the Watershed	JURMP	General Public	100	Chollas Creek Watershed	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Cards, Best Management Practices Giveaways	N
04/19/09	City of San Diego	Environmental Fair	Earth Fair 2009	JURMP	General Public	80,000	Balboa Park	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Cards, Best Management Practices Giveaways	N
4/23/09	City of San Diego	Tree Planting Event	Arbor Day 2009	WURMP	General Public	250	Balboa Park	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Cards, Best Management Practices Giveaways	N

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4/25/09	City of San Diego	Public Awareness/ Cleanup	Creek to Bay Cleanup	JURMP	Underserved	4,090	Chollas Creek	Think Blue Tips Brochure, Laminated Tip Cards, 3Cs Card, IPM Pest Tip Cards, Best Management Practices Giveaways	N
5/25/09	City of San Diego	Jazz Festival	Jazz Festival	JURMP	General Public, Female Skew	10,000	San Diego Gaslamp Quarter	Think Blue Tips Brochures, Laminated Tip Cards, Best Management Practices Giveaways	N
6/06/09	City of San Diego	Outreach/ Cleanup	Chollas Creek Cleanup	WURMP	Underserved	100	Chollas Creek	Think Blue Tips Brochure, 3Cs Card, Best management practices Giveaways	N
6/26/09	City of San Diego	Education/ Outreach	SD Movies in the Park	RURMP	General Public	400	Old Town Heritage Park	Think Blue Tips Brochure, Best Management Practices Giveaways	N
Ongoing	City of San Diego	Public Awareness/Education	Public Service Announcements	WURMP	General Public	4,771,328	Various Radio and Television Outlets	Karma, Karma Second Chance, Karma Tourist television and radio spots	Y – 4,771,328 impressions. Survey indicated 44% change in knowledge or attitude. Refer to the Public Service Announcements Activity Sheet SDB-029
Aug 12-14, 26-28	City of San Diego	Public Awareness/Education	Mobile Advertising	WURMP	General Public	43,038	San Diego Bay Watershed	Think Blue Karma Mobile Advertisement	Y – 69,153 impressions. Refer to Mobile Advertisement Activity Sheet SDB-031

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
Ongoing	City of San Diego	Education/Outreach	CBSM Pilot Study in Chollas Creek	WURMP	General Public	488,158	San Diego Bay Watershed	CBSM Pilot Study to reduce trash in the San Diego Bay WMA	Y – In progress. Refer to CBSM Pilot Study in Chollas Creek Activity Sheet, SDB-032
7/11/08	County - San Dieguito	Presentation	Mission Bay Youth Aquatic Camp	Watershed Model Presentation	Students	72	Mission Bay	N/A	N
07/30/08	County - Sweetwater	Presentation	Church Youth Group Boot Camp	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	55	Sweetwater	N/A	N
07/30/08	County - Central Mountain	Presentation	Recycling & HHW Presentation	Recycling & HHW Presentation	Students - High School	74	Camp Oliver	N/A	N
08/09/08	County - Sweetwater	Field Trip	County Dept. of Parks and Recreation Field Trip	Sweetwater Conservation	Boy/Girl Scouts	46	Sweetwater	N/A	N
08/12/08	County - Sweetwater	Festivals/ Community Events	Sweetwater Union High Health Faire	Booth	Students - High School	446	Sweetwater	N/A	N
08/26/08	County - Spring Valley	Presentation	ROP Animal Careers Class	Pollution prevention presentation on BMP's for Animal Facilities for vocational class	Students - High School	23	Steele Canyon High School	N/A	N
09/06/08	County - Sweetwater	Field Trip	County Dept. of Parks and Recreation Field Trip	Eagle Scout Trail Maintenance Project And BMPs	Boy/Girl Scouts	12	Sweetwater	N/A	N
09/06/08	County - Spring Valley	Workshop	Compost Workshop	Workshop included watershed protection messages	General Public	10	Water Conservation Garden	N/A	Y Pre- and Post-Tests

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09/06/08	County - Spring Valley	Workshop	Compost Workshop	Workshop included watershed protection messages	General Public	10	Water Conservation Garden	N/A	Y Pre- and Post- Tests
09/06/08	County - Spring Valley	Workshop	Compost Workshop	Workshop included watershed protection messages	General Public	10	Water Conservation Garden	N/A	Y Pre- and Post- Tests
09/24/08	San Diego	Presentation	EHAB Meeting	Updates On Sharps & U-Waste	Ehab Members	10	DEH, Mills Bldg., Downtown San Diego	N/A	N
9/27/08	County - Bonita	Festivals/ Community Events	Bonitafest	Booth	General Public	?	Bonitafest	N/A	N
10/2/08	San Diego	Workshop	UST Compliance Workshop	UST Compliance Workshop	Industrial Commercial	65	County Of San Diego - Health Services Complex	N/A	N
10/06/08	County - Sweetwater	Presentation	Recycling & HHW Presentation	Recycling & HHW Presentation	Students - Grades 4	60	Valley Vista Elementary	N/A	N
10/11/08	County - Sweetwater	Field Trip	County Dept. of Parks and Recreation Field Trip	Watershed Weed Abatement	Boy/Girl Scouts	2	Sweetwater	N/A	Y Pre- and Post- Tests
10/15/08	County - Otay	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	40	Olympic View Elementary	N/A	N
10/17/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	29	Monte Vista High School	N/A	Y Pre- and Post- Tests

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10/18/08	County - Mountain Empire	Festivals/ Community Events	Vaquero Days	Booth	General Public	150	Granville Martin Tractor Museum	N/A	Y Pet Waste Surveys
10/18/08	County - Sweetwater	Field Trip	County Dept. of Parks and Recreation Field Trip	Water's Journey Through Sweetwater Valley	Boy/Girl Scouts	70	Sweetwater	N/A	N
10/20/08	San Diego	Presentation	SDG&E Seminar For Food Facilities	Focus on Green Business	Restaurant Operators	25	Tom Hamm's Lighthouse	N/A	N
10/25/08	County - El Cajon	Festivals/ Community Events	Fall Festival	Booth	General Public	1700	Water Conservation Garden	N/A	N
10/30/08	County - Spring Valley	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grades 4-5	93	Casa De Oro Elementary	N/A	Y Pre- and Post- Tests
11/1/08	San Diego	Festivals/ Community Events	San Diego Natural History Museum Water Family Days	Booth	General Public	200	San Diego Natural History Museum	N/A	N
11/03/08	County - Spring Valley	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	78	Sweetwater Springs Community School	N/A	N
11/05/08	County - Spring Valley	Presentation	Green Machine	Hands-on mobile science lab and education program for children	Students - Grades 4-5	104	Avondale Elementary	N/A	N
11/05/08	County - Spring Valley	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grades 4-6	194	Santa Sofia Academy	N/A	Y Pre- and Post- Tests

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11/08/08	County - El Cajon	Workshop	Compost Workshop	Workshop included watershed protection messages	General Public	23	Water Conservation Garden	N/A	Y Pre- and Post- Tests
11/10/08	County - Spring Valley	Presentation	Recycling & HHW Presentation	Recycling & HHW Presentation	Students - Grade 1	87	Avondale Elementary	N/A	N
11/17/08	County - Spring Valley	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grades 3-8	88	Trinity Christian School	N/A	Y Pre- and Post- Tests
12/02/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	25	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/02/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	25	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/02/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	25	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/02/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	25	Monte Vista High School	N/A	Y Pre- and Post- Tests

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12/02/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	24	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/03/08	County - Sweetwater	Presentation	Sunnyside Elementary Ranger Careers	Ecology Talk	Students - Grade 2	38	Sweetwater	N/A	N
12/08/08	County - Alpine	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	80	Alpine Elementary	N/A	N
12/12/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	21	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/12/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	21	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/12/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	21	Monte Vista High School	N/A	Y Pre- and Post- Tests

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12/12/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	21	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/12/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	21	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/12/08	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	20	Monte Vista High School	N/A	Y Pre- and Post- Tests
12/15/08	County - Valle De Oro	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	40	Golden Ave. Elementary	N/A	N
12/15/08	County - Valle De Oro	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	40	Golden Ave. Elementary	N/A	N
12/17/08	County - Spring Valley	Presentation	Recycling & HHW Presentation		Students - Grade 6	33	Spring Valley Middle	N/A	N

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01/05/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	28	Monte Vista High School	N/A	Y Pre- and Post- Tests
01/05/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	28	Monte Vista High School	N/A	Y Pre- and Post- Tests
01/05/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	29	Monte Vista High School	N/A	Y Pre- and Post- Tests
01/05/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	29	Monte Vista High School	N/A	Y Pre- and Post- Tests
01/05/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	29	Monte Vista High School	N/A	Y Pre- and Post- Tests

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01/08/09	County - Spring Valley	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	60	Casa De Oro Elementary	N/A	N
01/13/09	County - Spring Valley	Presentation	Association Of Retired Public Employees Mtg.	Focus on HHW	General Public	8	Spring Valley	N/A	N
1/16/09	County - Spring Valley	Festivals/ Community Events	Saving Water And Money For Your HOA	Booth	General Public	30	Otay Water District	N/A	N
01/17/09	County - Sweetwater	Presentation	Flag Retirement Ceremony	Storytelling	Boy/Girl Scouts	22	Sweetwater	N/A	N
01/20/09	County - Rancho San Diego	Presentation	Public Outreach	Presentation for teachers and staff on recycling and litter reduction.	Teachers/ Staff	35	Cuyamaca College	N/A	N
01/27/09	County - Valle De Oro	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	26	Valhalla High School	N/A	Y Pre- and Post- Tests
01/27/09	County - Valle De Oro	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	27	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - Sweetwater	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grade 4	119	Sweetwater Springs Comm. School	N/A	Y Pre- and Post- Tests

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Valhalla High School	N/A	Y Pre- and Post- Tests

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	34	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	34	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	34	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	34	Valhalla High School	N/A	Y Pre- and Post- Tests
02/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Valhalla High School	N/A	Y Pre- and Post- Tests

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
02/18/09	County - Spring Valley	Presentation	Green Machine	Hands-on mobile science lab and education program for children	Students - Grade 5	101	Bancroft Elementary	N/A	N
02/24/09	County - Valle De Oro	Presentation	Food Facility Compliance Workshop	Green Business Overview	Restaurant Operators	20	Cuyamaca College	N/A	N
2/24/09	County - Sweetwater	Workshop	Restaurant Compliance Workshop	Workshop included stormwater compliance	Restaurant Operators	12	Cuyamaca College Student Center	N/A	Y Pre- and Post- Tests
2/24/09	County - Sweetwater	Workshop	Restaurant Compliance Workshop	Workshop included stormwater compliance	Restaurant Operators	12	Cuyamaca College Student Center	N/A	Y Pre- and Post- Tests
03/09/09	County - Sweetwater	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grades 4-6	115	Sunnyside Elementary	N/A	Y Pre- and Post- Tests
03/11/09	Chula Vista	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	60	Hilltop Elementary	N/A	N
03/14/09	County - El Cajon	Festivals/ Community Events	Water Smart Plant Fair	Sponsorship of Bus Tours	General Public and Landscapers	130	Water Conservation Garden	N/A	N
03/16/09	County - Spring Valley	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	40	Loma Elementary	N/A	N
03/16/09	County - Spring Valley	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	40	Loma Elementary	N/A	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
03/30/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Valhalla High School	N/A	Y Pre- and Post- Tests
03/30/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	34	Valhalla High School	N/A	Y Pre- and Post- Tests
04/01/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	28	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
04/01/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	28	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
04/01/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	28	Mt. Miguel High School	N/A	Y Pre- and Post- Tests

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
04/01/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	28	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
04/01/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	27	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
04/03/09	County - Sweetwater	Presentation	County Dept. of Parks and Recreation Presentation at Mt. Miguel High School	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students - High School	14	Sweetwater	N/A	N
04/08/09	County - Sweetwater	Field Trip	County Dept. of Parks and Recreation Field Trip	Eagle Scout Scenic Overlook Bench Project	Boy/Girl Scouts	15	Sweetwater	N/A	N
04/09/09	National City	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	52	St. Michaels Academy	N/A	N
04/14/09	County - Sweetwater	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grades 4-5	111	Allen Daly Academy	N/A	Y Pre- and Post- Tests
04/18/09	County - Sweetwater	Field Trip	County Dept. of Parks and Recreation Field Trip	Eagle Scout Public Safety Cross Hike Additions Project	Boy/Girl Scouts	6	Sweetwater	N/A	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
04/22/09	San Diego	Festivals/ Community Events	Earth Day Event	Focus on Universal Waste Disposal	County Employees	~200	County Admin Center	N/A	N
04/23/09	County - Spring Valley	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	88	La Presa Elementary	N/A	N
05/08/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	20	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
05/08/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	21	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
05/09/09	County - El Cajon	Workshop	Compost Workshop	Workshop included watershed protection messages	General Public	SCEI	Recycling	N/A	Y Pre- and Post- Tests
05/09/09	County - El Cajon	Workshop	Compost Workshop	Workshop included watershed protection messages	General Public	46	Water Conservation Garden	N/A	Y Pre- and Post- Tests
05/12/09	National City	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	80	Knox Elementary	N/A	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
05/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests
05/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests
05/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests
05/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests
05/12/09	County - El Cajon	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	31	Valhalla High School	N/A	Y Pre- and Post- Tests

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
05/16/09	County - Sweetwater	Field Trip	County Dept. of Parks and Recreation Field Trip	Red Hill Hike	Boy/Girl Scouts	40	Sweetwater	N/A	N
05/18/09	County - Spring Valley	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	100	La Presa Elementary	N/A	N
05/18/09	County - Spring Valley	Presentation	Green Machine	Hands-on mobile science lab and education program for children	Students - Grade 2	81	Loma Elementary	N/A	N
05/20/09	County - Otay	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	40	Olympic View Elementary	N/A	N
05/20/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
05/20/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Mt. Miguel High School	N/A	Y Pre- and Post- Tests

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
05/20/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
05/20/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	24	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
05/20/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	25	Mt. Miguel High School	N/A	Y Pre- and Post- Tests
05/26/09	National City	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	60	John Otis Elementary	N/A	N
05/26/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	21	Steele Canyon High School	N/A	Y Pre- and Post- Tests

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
05/26/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	21	Steele Canyon High School	N/A	Y Pre- and Post- Tests
05/26/09	County - Spring Valley	Presentation	Watersheds Presentation	I Love A Clean San Diego is contracted by the County of San Diego to provide watershed stewardship presentations to high schools in the unincorporated area	Students - High School	33	Steele Canyon High School	N/A	Y Pre- and Post- Tests
06/03/09	County - Spring Valley	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grades 4-5	116	La Presa Elementary	N/A	Y Pre- and Post- Tests
06/05/09	County - Central Mountain	Presentation	Green Machine	Hands-on mobile science lab and education program for children	Students - Grades 1-4	71	Descanso Elementary	N/A	N
06/08/09	County - Sweetwater	Presentation	Green Machine	Hands-on mobile science lab and education program for children	Students - Grade 3	129	Valley Vista Elementary	N/A	N
06/08/09	County - Spring Valley	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grades 4-6	118	Kempton Street Elementary	N/A	Y Pre- and Post- Tests
06/09/09	County - Alpine	Presentation	Discovery Program	County Dept. of Parks and Recreation education program for students. Includes watershed protection messages.	Students	84	Boulder Oaks Elementary	N/A	N

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
06/12/09	County - Crest-Dehesa	Presentation	Green Machine	Hands-on mobile science lab and education program for children	Students - Grades 1-3	56	Jamacha Elementary	N/A	N
06/16/09	County - Valle De Oro	Presentation	Green Machine	Hands-on mobile science lab and education program for children	Students - Grades K-3	92	Murdock Elementary	N/A	N
06/16/09	County - Valle De Oro	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grades 3-8	98	Murdock Elementary	N/A	Y Pre- and Post- Tests
06/18/09	County - Spring Valley	Presentation	Splash Lab	Hands-on mobile science lab and education program for children	Students - Grade 6	128	La Presa Middle	N/A	Y Pre- and Post- Tests
6/18/09	County - Spring Valley	Presentation	Spring Valley Citizen's Association	County Dept. of Env. Health gave a presentation to the Citizen's Association. In addition, they handed out watershed materials to the group.	General Public	10	San Miguel Fire Department	N/A	N

Appendix G

County of San Diego
Southern Watersheds
Water Monitoring Program Report

March 2009

Due to document size,
the County of San Diego's
Southern Watersheds Water Monitoring
Program Report
is submitted electronically.

COUNTY OF SAN DIEGO SOUTHERN WATERSHEDS WATER MONITORING PROGRAM REPORT

Prepared for

County of San Diego

Department of Public Works, Watershed Protection Program

March 2009

BROWN AND CALDWELL

9665 Chesapeake Drive, Suite 201
San Diego, California 92123

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   Copies of Field Forms, Analytical Laboratory Reports and QA/QC Documentation A-1

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COUNTY OF SAN DIEGO SOUTHERN WATERSHEDS WATER MONITORING PROGRAM REPORT

1. INTRODUCTION

1.1 Background

The County of San Diego Department of Public Works, Watershed Protection Program (County) desired to collect dry weather and wet-weather samples at five mass loading stations located in creeks in the southern portion of San Diego County. Brown and Caldwell was selected to perform these services, which consisted of verifying the sampling locations, installing automated sampling equipment, collecting the water samples, submitting the samples to an analytical laboratory for analysis, removal of the sampling equipment, and preparation of this report summarizing the activities and findings..

The agreement for this work was signed in July 2007, with the intent that two dry-weather and two wet-weather events be sampled between July 2007 and October 2008. In late October 2007, several major wildfires devastated large portions of the County, including much of the watershed lands draining to the mass loading stations that were to be monitored under this program. Subsequently, the County decided to postpone monitoring activities in these watersheds. The County elected to resume activities under this agreement in February 2008, and monitoring was conducted between July 2008 and March 2009.

1.2 Purpose

The County routinely collects water samples from creeks located throughout San Diego County. However, these samples are generally collected as grab samples that provide data for one point in time only. Also, samples are collected during dry weather only. The monitoring described in this report provides more representative samples because the samples were collected over a longer period of time (24 hours for dry weather samples, and flow-weighted across the duration of storms, with the exception of bacteria which must always be collected as grab samples). The data also provide some information about water quality following a major wildfire.

2. MONITORING PROGRAM DESIGN

This section describes the monitoring program design, including the locations of the monitored sites, equipment used, laboratory analyses conducted, and field procedures implemented to conduct the monitoring.

2.1 Monitoring Locations

The monitoring locations for this project were specified in the Request for Proposals, and included the following sites:

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Table 2-1. Monitoring Site Locations

Site ID	Watershed	Site Location	Latitude	Longitude
SWT21	Sweetwater	North Fork of Sweetwater River @ Tavern Road	32.80879	-116.78036
SWT07	Sweetwater	Drainage Channel @ Quarry Road and Swap Meet Road	32.70114	-117.00927
OTY03	Otay	Dulzura Creek @ Otay Lakes Road	32.63624	-116.88456
TIJ02	Tijuana	Pine Valley Creek @ Old Highway 80	32.83776	-116.53725
TIJ04	Tijuana	Campo Creek @ Highway 94	32.60917	-116.47419

On August 9, 2007, Brown and Caldwell staff conducted a field reconnaissance visit to all 5 sites. The visit was conducted with Steve Di Donna of the County, who was familiar with the specific features of each site. The purpose of the visit was to verify the locations and determine the physical layout of equipment at each of the sites.

Site Descriptions

- **Site SWT21 (North Fork of Sweetwater River at Tavern Road).** This site is located adjacent to the Tavern Road bridge over the river in the unincorporated community of Alpine. The surrounding land use is rural residential, with some equestrian and agricultural uses. At the location of the bridge, the creek is constrained between rock walls and passes through a box culvert beneath the bridge that is divided into two conduits. The monitoring location was sited on the downstream side of the bridge where the creek is not longer constrained by armored banks.

- **Site TIJ02 (Pine Valley Creek @ Old Highway 80).** This site is located beneath the Old Highway 80 bridge spanning Pine Valley Creek in the community of Pine Valley. The area immediately surrounding the site is open space and rural residential. The bridge is approximately 50 feet above the creek, and the valley constraining the creek is several hundred feet across at that point. Due to concerns about the ability of a pump to draw water so far, it was decided that the sampling equipment would be housed on the bank of the creek below the bridge, adjacent to one of the support structures (yet above the level of the creek in wet weather).

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This monitoring site is accessed via a dirt trail from the side of the bridge.

- **Site TIJ04 (Campo Creek at Highway 94).** The site is located adjacent to the Highway 94 crossing of Campo Creek in the community of Campo. At the location of the bridge, the creek is constrained within a box culvert that is divided into three conduits. The area surrounding the creek is heavily vegetated.

Sampling Site TIJ04 (Campo)

- **Site OTY03 (Dulzura Creek @ Otay Lakes Road).** This site is located at the creek crossing of Otay Lakes Rd., northeast of Chula Vista. There is a small box culvert conveying the creek across the road that functions during low flows; however, water flows over the road under high flow conditions. The monitoring equipment was installed along the bank of the creek. This area was severely burned during the Cedar Fire in October 2007, eliminating nearly all vegetation on the surrounding hillsides (except for riparian vegetation along the creek bed).

Sampling Site OTY03 (Otay Lakes)

- **Site SWT07 (Drainage Channel @ Quarry Road and Swap Meet Road).** Site SWT07 is located in the community of Spring Valley, adjacent to newly constructed State Highway 125, and near a vacant parcel used to hold weekend swap meets. The surrounding land uses are residential in nature. The equipment was installed on the bank of the creek (right side of photo).

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Sampling Site SWT07
(Spring Valley)

2.2 Analytical Parameters

The field and laboratory analyses for this project were specified in the RFP. The specific field and laboratory parameters to be analyzed are presented in Tables 2-2 and 2-3, along with information regarding field instrument specifications and laboratory methods, sample volume, preservative, holding time, and reporting limit. The analytical laboratories selected for this project included CRG Marine Laboratories (Torrance, CA) for most analyses, and Weston Solutions (Carlsbad, CA) for bacteria analyses (due to short holding times).

Table 2-2 Field Parameters

Parameter	Principle	Units	Range	TRL	Accuracy	Precision	Recovery	Completeness
Temperature	Thermistor	Degrees Celsius (ºC)	0 – 50 oC	N/A	+/- 0.1 ºC	No SWAMP requirement; will use + 0.5 or 5%	N/A	No SWAMP requirement; will use 90%
Dissolved Oxygen	Membrane/ galvanic cell	mg/L	0 – 19.9	0.2	+/- 0.1 mg/L	No SWAMP requirement; will use + 0.5 or 10%	N/A	No SWAMP requirement; will use 90%
pH	Glass Electrode	s.u.	0 – 14.0	N/A	+/-0.1 s.u.	No SWAMP requirement; will use + 0.5 or 5%	N/A	No SWAMP requirement; will use 90%
Conductivity	Alternating four-electrode	uS/cm	0 - 100	2	+/-1 uS/cm	No SWAMP requirement; will use + 5%	N/A	No SWAMP requirement; will use 90%
Turbidity	Scattering/ transmitting light	NTUs	0 - 800	5	+/-1 NTU	No SWAMP requirement; will use + 10% or 0.1, whichever is greater	N/A	No SWAMP requirement; will use 90%

*Equipment is Horiba U-10 or other multi-parameter meter; accuracy verified with the manufacturer.

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Table 2-3. Laboratory Analytical Requirements					
Parameter	Method	Volume	Preservative	Holding Time	Reporting Limit
Ammonia-N	EPA 350.2	250 mL	Acidify to pH<2 with H2SO4	28 days	0.50 mg/L
Antimony (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Antimony (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L
Arsenic (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	1.0 ug/L
Arsenic (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	1.0 ug/L
Cadmium (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	1.0 ug/L
Cadmium (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	1.0 ug/L
Chlorpyrifos	EPA 8081	1000 mL	None	7 days	0.05 ug/L
Chromium (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Chromium (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L
Coliform (Fecal)	SM 9221 C	100 mL	Na2S2O3	6 hours @ 4ºC	20 MPN/100 mL
Coliform (Total)	SM 9221 C	100 mL	Na2S2O3	6 hours @ 4ºC	20 MPN/100 mL
Copper (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Copper (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L
Diazinon	EPA 8081	1000 mL	None	7 days	0.05 ug/L
Enterococcus	SM 9230 B	100 mL	Na2S2O3	6 hours @ 4ºC	20 MPN/100 mL
Hardness (Total)	SM 2340 C	250 mL	None	6 months	2.0 mg CaCO3/mL
Iron (Total)	EPA 200.7/200.8	250 mL	Acidify to pH<2 with HNO3	6 months	20.0 ug/L
Lead (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	2.0 ug/L
Lead (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	2.0 ug/L
Manganese (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	1.0 ug/L
Malathion	EPA 8081	1000 mL	None	7 days	0.05 ug/L
Nickel (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with	2.0 ug/L

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Table 2-3. Laboratory Analytical Requirements

Parameter	Method	Volume	Preservative	Holding Time	Reporting Limit
				HNO3	
Nickel (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	2.0 ug/L
Nitrate-N	EPA 300.0	250 mL	None	48 hours	0.2 mg/L
Nitrite-N	EPA 354.1	250 mL	None	48 hours	0.005 mg/L
Orthophosphate-P	EPA 365.2	250 mL	None	48 hours	0.02 mg/L
Selenium (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Selenium (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L
Total Dissolved Solids	EPA 160.1	1000 mL	None	7 days	25.0 mg/L
Total Kjeldahl Nitrogen	EPA 351.3	1000 mL	H2SO4	28 days	0.80 mg/L
Total Phosphate-P	EPA 365.3	250 mL	H2SO4	28 days	0.02 mg/L
Total Suspended Solids	EPA 160.2	1000 mL	None	7 days	2.5 mg/L
Zinc (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Zinc (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L

2.3 Field Equipment Installation and Calibration

The monitoring stations were installed at the locations described above during Spring 2008. At each location, a concrete pad measuring approximately 4 feet square was formed and poured in place as a base for the equipment. Knaack utility boxes were then mounted on the pads and bolted from the inside to the concrete pad to provide secure housing for the automated sampling equipment. Flow was monitored at all stations using American Sigma (Hach) autosamplers and flow meters. Field crews measured the flow rate of each stream using a hand held flow meter (Marsh McBirney FloMate). Based on these data, discharge rates were developed for each of the streams at the locations of the monitoring stations. These discharge rates were used to calculate a discharge equation, which was used to program the flow monitoring equipment. Each station was also equipped with a solar panel to recharge the batteries and a rain gauge mounted on a pole to record rainfall at each location. The installations were performed in April, 2008. Most of the installations were straightforward, with the exception of Station TIJ02 (Pine Valley Creek @ Old Highway 80) which required the use of a crane to lower the utility box and equipment down from the bridge to the sampling location.

Autosampler installation at Pine Valley site TIJ04

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3. MONITORING ACTIVITIES AND RESULTS

3.1 Sampling Schedule

Monitoring was conducted on the following dates and stations:

Table 3-1: Sampling Schedule

Date of Sampling	Rainfall Amount*	Type of Sampling	Stations Monitored	Comments
July 30-31, 2008	N/A	Dry-weather, 24-hour time weighted composite	SWT07, SWT21, and TIJ02	Stations OTY03 and TIJ04 were dry.
February 6-7, 2009	1.23 in.	Wet-weather, flow-weighted composite	OTY03, SWT07, SWT21, and TIJ04	Insufficient rainfall at Station TIJ02 to capture the storm event.
March 30-31, 2009	N/A	Dry-weather, 24-hour time weighted composite	OTY03, SWT07, SWT21, TIJ02, and TIJ04	All stations captured.

* Rainfall measured at Campo Rain Gauge No. MCMNC1 (Cameron Fire Station).

This project was intended to capture a second storm event; however, a second event was not sampled due to limited rain events that produced adequate runoff in the southeastern part of the County, or because the rain events occurred on holidays.

3.2 Sampling Protocols

Field Data sheets were completed at each sample location, for each event, and are included in Appendix A. Digital photographs were also taken at each site, showing the actual sample collection point, as well as conditions upstream and downstream of the sampling site.

CRG Marine Laboratories and Weston Solutions provided chain of custody (COC) forms for the project. Sampling crews completed these forms while on site in the field. Copies of all COC forms are included in Appendix A.

In the field, all samples were placed on wet ice or frozen ice packs until shipment. Identification information for each sample was recorded on the field data sheets and chain-of-custody forms). Samples were handled, prepared, transported, and stored in a manner so as to minimize loss, misidentification, contamination, and/or degradation. Samples were transported on ice and in insulated containers (e.g., insulated cooler). All caps and lids were checked for tightness prior to shipping. Efforts were taken to minimize the leakage of any melted ice from the sample shipment container. Sample packaging included the following steps:

- Grab samples (for bacteria) were placed in a sealed plastic bag (Ziploc) to prevent leakage. Ice (double bagged in plastic trash bags) was placed in the cooler with the samples to maintain the samples at 4° C during transport to Weston Solutions' Carlsbad facility for analysis.
- Grab samples were delivered to Weston Solutions in time to meet 6-hour holding times for bacteria.
- 19-liter glass bottles were placed in individual trash containers sized small enough to fit them for transport to CRG Marine Laboratories.

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- The Chain-of-Custody (COC) records were placed in a waterproof plastic bag and placed inside the cooler with the grab samples or taped to the outside of the trash containers (for 19-liter samples).
- 19-liter samples were picked up by the CRG Marine Lab courier in time to meet sample holding times.

The collected samples were delivered to the laboratory for analyses as soon as practicable. Any delay in the receipt of the samples by the laboratory could necessitate a re-sampling and analysis effort.

At the end of the sampling activities, each crew will deliver the samples for chemical analyses with the respective COC forms to Babcock, or coordinate with a reliable courier for sample drop off. Table 4-4 provides contact information and driving directions to Babcock Laboratories. In the event that samples need to be dropped off on a weekend or after standard hours of operation, the Brown and Caldwell Project Manager contacted CRG and Weston to make special arrangements for laboratory staff to be available.

The sample receipt personnel at the laboratory will open the container and perform an initial inspection of the contents to check for evidence of breakage and/or leakage. The container will be inspected for COC documents and any other information or instructions. The sample custodian will verify that all information on the sample bottle labels is correct and in accordance with the COC documents and will sign for receipt. If discrepancies are noted between the COC and the sample labels, the project contact will be notified immediately. Contract laboratories will follow the sample custody procedures outlined in their QA plans. These QA plans are on file with each respective laboratory. All samples will be stored in a refrigerated, secure area. Samples will be removed from storage as needed by the analyst; analysts check out samples by signing a logbook maintained in sample control for tracking samples.

3.3 Quality Assurance/Quality Control

Water quality samples were collected in order to ensure the collection of representative water samples. CRG Marine Laboratories and Weston Solutions implemented quality assurance and quality control programs in accordance with guidelines established by the State of California and the U.S. EPA., and are certified under the State Environmental Laboratory Accreditation Program (ELAP). Field duplicates were collected at the rate of 10 percent and analyzed blind by the laboratories.

3.4 Results

The following sections provide a summary and interpretation of the data collected during the three water sampling events that were analyzed. Laboratory analytical results are summarized in Table 3-2.

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Table 3-2. Analytical Results and Comparison to Water Quality Objectives

			Dry Weather Event July 31, 2008			Dry Weather Event March 2009					Wet Weather Event February 6, 2009			
Parameter/Units	WQO	Source	TIJ02 (Pine Valley)	SWT07 (Spr. Valley)	SWT21 (Alpine)	OTY03 (Otay Lakes)	SWT07 (Spr. Valley)	SWT21 (Alpine)	TIJ02 (Pine Valley)	TIJ04 (Campo)	OTY03 (Otay Lakes)	SWT07 (Spr. Valley)	SWT21 (Alpine)	TIJ04 (Campo)
Ammonia-N, mg/L			ND	0.07	0.05	ND	0.1	ND	0.03	ND	0.03	0.12	0.08	0.12
Antimony (Dissolved), ug/L	calculated	40CFR 131	ND	0.4	0.1	0.1	0.5	0.1	ND	0.1	NA	NA	NA	NA
Antimony (Total), ug/L	6	Basin Plan	ND	0.4	0.1	0.1	0.5	0.1	ND	0.1	NA	NA	NA	NA
Arsenic (Dissolved), ug/L	340	40CFR 131	0.3	4.4	2.2	1.3	4.4	1.9	0.3	1.6	1.3	2.7	1	1.9
Arsenic (Total), ug/L	340/50	40CFR131/ Basin Plan	0.5	4.6	2.3	1.2	4.6	1.7	0.5	1.5	1.4	2.8	1.3	2.6
Cadmium (Dissolved), ug/L	calculated	40CFR 131	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium (Total), ug/L	4.3	40 CFR 131	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpyrifos, ng/L	20	CA Dept. of Fish & Game	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (Dissolved), ug/L	calculated	40CFR 131	ND	0.1	3.9	ND	0.1	5.7	ND	ND	0.1	0.4	0.9	ND
Chromium (Total), ug/L	550	40CFR 131	ND	0.2	4	0.1	0.4	5.7	ND	ND	0.3	1.1	1.8	0.5
Coliform (Fecal), MPN/100 mL	400	Basin Plan	40	170	500	<20	220	40	<20	<20	20	3,500	1,100	160,000
Coliform (Total), MPN/100 mL			500	14,000	700	1,100	8,000	3,000	2,200	1,300	3,500	160,000	13,000	160,000
Copper (Dissolved), ug/L	calculated	40CFR 131	ND	1.8	ND	1.7	2.8	0.8	0.4	0.5	1.4	4.3	2.4	1
Copper (Total), ug/L	13	40CFR 131	0.4	2.7	0.8	1.4	3	0.8	ND	0.5	2.4	10.3	4.9	2.5
Diazinon, ng/L	80	CA Dept. of Fish & Game	ND	35.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Enterococcus. MPN/100 mL			80	80	340	<20	800	220	70	300	500	50,000	5,000	17,000
Hardness (Total), mg/L			149.7	795.1	574.3	321.1	757.8	585.6	137	397.6	354.8	93.6	157.8	385.8
Iron (Total), ug/L			68	80	47	97	70	37	64	86	267	704	897	1046
Lead (Dissolved), ug/L	calculated	40CFR 131	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND
Lead (Total), ug/L	65	40CFR 131	ND	0.19	0.06	0.21	0.21	ND	ND	0.06	1.09	7.71	2.22	3.97
Manganese (Total), ug/L			19.8	102.9	47.6	20.9	134.4	18.1	23.3	62.6	92	82.6	91.5	212.3
Malathion, ng/L	430	CA Dept. of Fish & Game	ND	ND	ND	ND	ND	ND	ND	ND	ND	34.8	18.9	ND
Nickel (Dissolved), ug/L	calculated	40CFR 131	0.4	2.1	0.9	0.4	2.2	1	0.4	0.3	0.5	1.2	0.8	0.6
Nickel (Total),ug/L	100	Basin Plan	0.5	2.2	1.1	0.4	2.2	1	0.4	0.3	0.9	2	1.5	1
Nitrate-N, mg/L	10	Basin Plan	0.8	8.1	16.26	0.03	7.21	14.37	0.47	ND	0.68	1.04	2.96	0.09
Nitrite-N, mg/L	1	Basin Plan	ND	0.07	ND	ND	0.14	ND	ND	ND	ND	0.09	0.09	ND
Orthophosphate-P (Dissolved), mg/L			0.0363	0.0812	0.0644	ND	0.1238	0.0505	0.0075	0.0075	ND	0.1411	0.1208	0.0721
Orthophosphate-P (Total), mg/L			ND	0.07	0.05	0.03	0.16	0.06	0.03	0.1	0.03	0.2	0.19	0.15
Selenium (Dissolved), ug/L	20	40 CFR 131	2.4	6	1.3	0.4	4.8	1.8	2.1	0.2	0.5	0.4	0.3	0.2
Selenium (Total), ug/L	20	40 CFR 131	2.2	5.8	1.2	0.3	4.9	1.5	2.3	ND	0.5	0.4	0.3	0.2
Total Dissolved Solids, mg/L	1500	Basin Plan	388	3226	1116	936	3008	1206	332	1086	994	358	410	1114
Total Kjeldahl Nitrogen, mg/L			0.63	1.8	0.98	0.91	1.1	0.84	0.84	0.98	0.84	1.5	1.7	1.1
Total Suspended Solids, mg/L	100	USEPA Multisector General Permit	1.5	4	8	10	2.3	4	2.3	0.7	51.6	93	86	52

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Table 3-2. Analytical Results and Comparison to Water Quality Objectives														
			Dry Weather Event July 31, 2008			Dry Weather Event March 2009					Wet Weather Event February 6, 2009			
Parameter/Units	WQO	Source	TIJ02 (Pine Valley)	SWT07 (Spr. Valley)	SWT21 (Alpine)	OTY03 (Otay Lakes)	SWT07 (Spr. Valley)	SWT21 (Alpine)	TIJ02 (Pine Valley)	TIJ04 (Campo)	OTY03 (Otay Lakes)	SWT07 (Spr. Valley)	SWT21 (Alpine)	TIJ04 (Campo)
Zinc (Dissolved), ug/L	calculated	40CFR 131	0.6	3.6	0.5	0.1	7.8	ND	0.2	ND	1.5	10.8	4.8	4
Zinc (Total), ug/L	120	40CFR 131	2.3	6.8	4	0.1	10.6	2.2	3.1	ND	12.5	56.7	23.6	21.6

ND: Non-detect NA: Not analyzed

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3.5 Data Interpretation and Comparison to Data from Mass Loading Stations and Water Quality Objectives

The San Diego Stormwater Copermittees conduct dry and wet-weather monitoring for compliance with their areawide NPDES stormwater permit (RWQCB Order 2007-001). This sampling is conducted at mass loading stations (MLS), typically located toward the lower end of each major watershed, above the zone of tidal influence. Data from the southern watersheds study were compared to data collected at the Sweetwater and Tijuana River mass emissions stations reported in the 2006-07 Annual Monitoring Report, the most recent season these stations were monitored. These MLS stations were selected because 2 of the southern watersheds sites are located in the upstream portions of the Sweetwater River watershed, and 2 are located in the Tijuana River watershed. The fifst station is located in the Otay River watershed, but there is no downstream MLS station on the Otay River to compare to. The report provides a comparison of the southern watersheds data with MLS stormwater data collected over 6 years of monitoring (from 2001-02 through 2006-07).

The data from the southern watersheds study were also compared to the Water Quality Objectives (WQOs) established for a number of constituents. The following section provides a summary and discussion of these comparisons.

Metals

Water samples from the southern watersheds sites were analyzed for a large suite of total and dissolved metals including antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, and zinc. All of the metals except cadmium were detected in at least one sample. The highest metals concentrations were observed for iron. Total iron ranged between 137 ug/L and 795.1 ug/L in dry weather samples and between 93.6 ug/L and 385.8 ug/L in wet weather samples. This is likely due to the presence of iron in solids. Total metals concentrations of copper and zinc which are often used as indicators of heavy metals in urban runoff were similar to those observed at the Sweetwater MLS, but lower than those from the Tijuana River MLS. None of the southern watersheds samples exceeded the WQOs for either constituent. Total copper ranged between ND and 2.7 ug/L in dry weather samples and between 2.4 and 10.3 ug/L in wet weather samples. Total zinc ranged between ND and 10.6 ug/L in dry weather samples and between 12.5 and 56.7 ug/L in wet weather samples. By comparison, stormwater samples collected at the Sweetwater MLS ranges from <5 ug/L to 18 ug/L for total copper and between <20 ug/L to 47 ug/L for total zinc. in Total metals were higher in wet weather, suggesting a likely association with sediments. In contrast, stormwater samples at the Tijuana River MLS exceeded the WQO exceeded the WQO for copper in 9 of the 18 samples collected at this station since 2001-02, ranging in concentration from 8 ug/L to 197 ug/L. Similarly, zinc exceeded the WQO 6 times, with concentrations ranging from <20 ug/L to 1,530 ug/L. The Tijuana River receives significant inputs of industrial waste and municipal wastewater, in addition to urban runoff, which likely explains the elevated levels in the downstream portions of that watershed.

Nutrients

Water samples in this study were analyzed for several nutrient indicators (nitrate-N, nitrite-N, total orthophosphate-N, and dissolved orthophosphate-N). All results were below WQOs except both dry weather samples collected from the SWT21 (Alpine) site, which had concentrations of 16.26 mg/L and 14.37 mg/L, both above the Basin Plan objective of 10 mg/L. A possible source of the nitrate could be septic tank leakage from rural residential parcels in this area (this has not been confirmed). Nitrite was ND in 7 of the 8 dry weather samples and 2 of the 4 wet weather samples. All detections were less than or equal to 0.14 mg/L. Total orthophosphate ranged from ND to 0.16 mg/L in dry weather samples and between 0.03 mg/L and 0.2 mg/L in wet weather samples. In comparison the stormwater samples from the MLS stations, none of the

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samples from the Sweetwater or the Tijuana River MLS exceeded the WQO for nitrate. One sample from the Tijuana River MLS exceeded the WQO of 0.1 mg/L for nitrite. The MLS samples were not analyzed for orthophosphate-P.

Bacteria

Bacterial indicators analyzed in this study included total and fecal coliform and enterococcus. In general, bacterial indicators were present at higher levels in wet weather samples than in dry weather samples. Monitoring indicated exceedance of the Basin Plan WQO for fecal colifom (400 MPN/100 mL0 in one dry weather sample and in 3 of the 4 wet weather samples. The highest level of fecal coliform (160,000 MPN/100 mL) was observed in the wet weather sample from site TIJ04 (Campo). Total coliform counts ranged from 500 MPN/100 mL to 14,000 MPN/100 mL in dry weather samples and between 500 MPN/100 mL and 50,000 MPN/100 mL in wet weather samples. Enterococcus counts ranged between <20 and 800 MPN/100 mL in the dry weather samples, with a median level of 80 MPN/100 mL. In wet-weather, counts were higher, from 500 MPN/100 mL at the Otay Lakes (OTY03) site to 50,000 MPN/100 mL at Spring Valley (SWT07). Similar counts of bacterial indicators were observed in stormwater at the Sweetwater River MLS. At the Tijuana River MLS, bacteria levels in stormwater samples were 3-4 orders of magnitude higher than in the southern watersheds samples (as high as >16,000,000 MPN/100 mL). This is consistent with the fact that portions of the Tijuana River receive inputs of sewage.

Pesticides

Diazinon and chlorpyrifos were generally non-detect (diazinon was observed in one dry weather sample from the Spring Valley SWT07 site at a concentration of 35.1 ng/L). Malathion was ND in the dry weather samples, but was detected twice in wet weather (at concentrations of 34.8 ng/L at Spring Valley site SWT07, and 18.9 ng/L at Alpine site SWT21). All pesticide detections were below their respective WQOs. Compared with the MLS data, the following observations were made. At the Sweetwater MLS site, diazinon and chlorpyrifos were detected at levels in excess of the WQOs in samples collected between 2001-02 and 2003-04. However, both pesticides were ND in samples collected since that time. Diazinon was banned for certain uses in the United States beginning in 2003, and the decreased concentrations in stream waters appear to correlate with this ban. In contrast, levels of diazinon at the Tijuana River MLS continued to exceed the WQO in samples collected through 2006-07. This may be partly because Mexico has not banned the use of diazinon and significant portions of this watershed are in Mexico. Over the six year MLS monitoring period, malathion was occasionally detected in stormwater samples from the Sweetwater River MLS (all below the WQO). Malathion was detected at levels above the WQO in 8 of the 15 samples at the Tijuana River MLS over this period.

Solids

Total suspended solids (TSS) concentrations were lower in dry weather than wet weather events. All TSS measurements were below the WQO of 100 mg/L. Specifically, TSS ranged between 0.7 and 15 mg/L in dry weather and between 51.6 and 93 mg/L in wet weather samples. Over the six years of stormwater monitoring at the Sweetwater River MLS, TSS ranges between <20 mg/L and 102 mg/L, with one exceedance of the WQO. By comparison, samples from the Tijuana River MLS exceeded the WQO in 16 of 18 samples, with concentrations ranging between 48 and 8,140 mg/L. Higher TSS levels may be correlative with sewage and industrial waste inputs.

Total dissolved solids (TDS) levels were high, especially in dry weather, and particularly at the Spring Valley site (SWT07), where concentrations exceeded the WQO of 1,500 mg/L during both dry weather events (3,226 mg/L and 3,008 mg/L, respectively).. Wet-weather TDS concentrations were lower, ranging from 358 mg/L at Spring Valley site SWT07 to 1,114 mg/L at the Campo site (TIJ04). Over six years of stormwater

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monitoring at the Sweetwater River MLS, TDS exceeded the WQO in 13 out of 18 samples. In contrast, TDS in stormwater from the Tijuana River MLS did not exceed the WQO in any of the 18 samples.

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APPENDIX A

Copies of Field Forms, Analytical Laboratory Reports and QA/QC Documentation

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APPENDIX B

Copies of Weston Solutions' Wet-Weather Data for Sweetwater River and Tijuana River MLS (from 2006-07 Annual Monitoring Report)

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

A Collaborative Effort of:

City of Chula Vista
City of Coronado
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of San Diego
County of San Diego
Port of San Diego
San Diego County Regional Airport Authority

January 31, 2011

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services
San Diego Unified Port District

Signed certification statements for the participating San Diego Bay Copermittees are located in Appendix A of this report.

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Acknowledgements

The development and production of this Watershed Urban Runoff Management Program Document for the San Diego Bay Watershed Management Area (San Diego Bay WMA) are the result of the talents and experience of numerous individuals. Their contributions and insight made this document a collective success for the environment and for the watersheds. The primary authors of the text include:

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Annie Martin	*San Diego County Regional Airport Authority*

The San Diego Bay Copermittees also wish to recognize the public for their continued expressed concern for the protection and conservation of the San Diego Bay WMAs environmental resources.

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ACRONYMS AND ABBREVIATIONS

303(d)	Section of the Clean Water Act
BLTEA	Baseline Long-Term Effectiveness Assessment
BMP	Best Management Practices
BOD	Biologic Oxygen Demand
BWE	Baseline Watershed Evaluation
CALTRANS	California Transportation Department
CBI	Clean Beach Initiative
CBSM	Community Based Social Marketing
CCC	California Coastal Commission
CMC	Criterion Maximum Concentration
COD	Chemical Oxygen Demand
Copermittees	The 18 cities: San Diego County, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority
CRAM	California Rapid Assessment Method
CSDM	Coastal Storm Drain Monitoring
CWA	Clean Water Act
DDT	Dichlorodiphenyl trichloroethane
DPR	Department of Pesticide Regulation
DWM	Dry Weather Monitoring
EIS	Environmental Impact Assessment
EPA	Environmental Protection Agency
FOG	Fats, Oils, and Grease Program
FY	Fiscal Year
HHW	Household Hazardous Waste
HA	Hydrologic Area
HCH	Hexachlorocyclohexane
HOA	Homeowners Association
HPWQP	High Priority Water Quality Problem
HSA	Hydrologic Sub-Area
HU	Hydrologic Unit
IBI	Index of Biological Integrity
IC/ID	Illicit Connection / Illicit Discharge
ILACSD	I Love A Clean San Diego
IPM	Integrated Pest Management
JURMP	Jurisdictional Urban Runoff Management Program
LTEA	Long-Term Evaluation Assessment
MBAS	Methylene Blue Active Substances
MLS	Mass Loading Station
MS4	Municipal Separate Storm Sewer System
MSCP	Multiple Species Conservation Program
Municipal Permit or Permit	San Diego Regional Water Quality Control Board Order 2007-0001
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System

OAL	Office of Administrative Law
ORCA	Online Research Coastal Academy
ORWMP	Otay River Watershed Management Plan
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCW	Project Clean Water
PSA	Public Service Announcement
RGP	Regional General Permit
RFI	Request For Proposal
RHMP	Regional Harbor Monitoring Program
RURMP	Regional Urban Runoff Management Plan
RWQCB	Regional Water Quality Control Board
SAMP	Special Area Management Plan
San Diego Bay Copermittees	The County of San Diego, the Port of San Diego, and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego, and Airport Authority
SCCWRP	Southern California Coastal Water Research Project
SDA	Special Drainage Area
SDAPCD	San Diego Air Pollution Control District
SDB	San Diego Bay
SDCRAA	San Diego County Regional Airport Authority (Airport Authority)
SDRWQCB	San Diego Regional Water Quality Control Board
SIO	Scripps Institute of Oceanography
SIYB	Shelter Island Yacht Basin
SMC	Stormwater Monitoring Coalition
SSO	Site Specific Objective
SUSMP	Standard Urban Stormwater Management Plan
SWAMP	Surface Water Ambient Monitoring Program
SWELL	Stewardship Watershed Education for Lifelong Leadership
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWQMP	Stormwater Quality Master Plans
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
TWAS	Temporary Watershed Assessment Station
UCCE	University of California Cooperative Extension
URMP	Urban Runoff Management Program
WER	Water Effects Ratio
WLA	Waste Load Allocation
WMA	Watershed Management Area
WQO	Water Quality Objective
WURMP	Watershed Urban Runoff Management Program

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Executive Summary

Since January 2002, the County of San Diego, Port of San Diego, the San Diego County Regional Airport Authority (Airport Authority), and the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) have been active in developing and implementing watershed-based programs in the San Diego Bay Watershed Management Area (WMA). This Annual Report represents the San Diego Bay Copermittees' efforts during Fiscal Year (FY) 2009-10 to meet the requirements of Section E of the Municipal Storm Water Permit Order Number 2007-0001 (Municipal Permit or Permit) and develop and implement the San Diego Bay Watershed Urban Runoff Management Program (WURMP).

The San Diego Bay Copermittees continue to improve watershed efforts in the San Diego Bay WMA, using innovative methods and new tools as they become available. The overarching goal for the San Diego Bay WURMP is to cooperatively and through collaborative strategic planning decrease the potential sources and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) that have been identified as causing high priority water quality problems. Using the Watershed Strategy developed in the 2008 San Diego Bay WURMP document for guidance, each Copermittee individually selected activities that were feasible to institute in their jurisdiction, and were appropriate for its relative contribution to the watershed's high priority water quality problems.

During this reporting period, the San Diego Bay Copermittees continued improvements on the water quality assessment for the San Diego Bay WMA as the result of additional monitoring efforts. The FY 2009-10 WURMP program assessment involved: 1) the evaluation of individual activities, 2) a comprehensive assessment at the hydrologic area (HA) level, and 3) a comprehensive assessment at the watershed level. An integrated assessment of activity effectiveness within each HA was conducted to determine the collective impact of the activities on the targeted high priority pollutants and/or pollutant sources. This evaluation revealed where Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting identified pollutant sources in each HA.

The San Diego Bay Copermittees successfully completed the watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. The San Diego Bay Copermittees have worked to identify, implement, and assess watershed water quality, education, and public participation activities, as well as land use planning watershed-based mechanisms targeting high priority water quality problems and their sources. Assessment of individual activities indicated 13 of 17 water quality activities and nine of 13 educational activities met their assessment targets and were considered to be effective. The San Diego Bay Copermittees implemented seven trash and debris related water quality

activities focused on reducing the amount of trash entering the MS4. Five activities focused on implementing enhanced inspections to abate sources of high priority water quality problems associated with construction activities, large special events, or automotive facilities. In the effort to fill data gaps and improve the characterization of urban runoff and receiving water quality, the Copermittees implemented ten Monitoring/Source Identification activities. Data resulting from the monitoring activities will also enable the Copermittees to make more informed decisions on the best management practice (BMP) implementation that targets the high priority pollutants in the future. Copermittees implemented 13 education activities to supplement the educational activities occurring within the San Diego Bay WMA as part of the San Diego Bay Education Program which incorporates education activities implemented through existing Jurisdictional Urban Runoff Management Programs (JURMP), Regional Urban Runoff Management Programs (RURMP), or other Storm Water Programs. The Copermittees' assessments of the individual activities indicate nearly all the watershed activities were able to achieve the stated goals and were effective in obtaining outcome targets.

Pueblo Hydrologic Unit (908)

The Pueblo San Diego Hydrologic Unit (HU) is the smallest and most heavily urbanized of the three San Diego Bay HUs. Pueblo San Diego HU is comprised of the Point Loma (908.1), San Diego Mesa (908.2), and National City (908.3) HAs. Table ES-1 presents a comparison between baseline high priority water quality problems (HPWQPs) identified in the San Diego Bay WURMP Document for the Pueblo San Diego HU to the 2009-2010 monitoring results. HPWQPs were determined using data from only the San Diego County regional monitoring programs. Additional studies conducted by the San Diego Bay Copermittees were not used in the determination of priority constituents; however, results of these monitoring programs were used to either support or oppose baseline conditions as applicable. Data associated with monitoring efforts for Chollas Creek Diazinon and Dissolved Metals Total Maximum Daily Loads (TMDL) were also incorporated into the assessment of receiving water quality conditions.

During the 2009-2010 monitoring year, the HPWQPs in Pueblo San Diego HU were generally similar to previous years and correspond to the HPWQPs identified in the WURMP Document. There appear to be links between receiving water and urban runoff water quality results which may indicate a relationship between MS4 effluent and receiving water quality. However, it is unclear what effect MS4 effluent is having on receiving water quality compared to other sources, such as aerial deposition. Receiving water quality within Pueblo San Diego was primarily assessed in Chollas Creek (908.2 HA) which flows during storm events. Observed flow during ambient conditions within the creek is an indication of urban activities. The results of monitoring regarding pesticides remained similar to past reporting periods, with Diazinon and Malathion concentrations detected below the acute benchmarks, though synthetic pyrethroids have been identified as pollutants of concern.

Table ES-1. Comparison of Pueblo San Diego HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period			
		Wet Weather		Ambient Weather	
		RW	UR	RW	UR
908.1	Bacteria				Y
	Gross Pollutants				N
	Metals*		N		N
	Oil and Grease				N
	Pesticides				N
908.2	Bacteria	Y	N	Ym	Y
	Metals	Y		N	N
	Sediment	Y	N	N	N
	Trash				N
	Pesticides**	Y	Y	Y	Y
908.3	Bacteria		N		Y
	Sediment		Y		N
	Trash				N

Notes:

RW= Receiving Water; UR= Urban Runoff

Y = Monitoring results consistent with high priority rating; Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

Shading indicates no data from 2009-2010 reporting period

*Source of metals is likely due to anti-fouling boat hull paint located in San Diego Bay[13]

** Organophosphate pesticides detected infrequently

Copermittees were successful in implementing activities addressing the high priority water quality problems and reducing pollutant loads. In addition, the activities were also effective in targeting a variety of pollutant sources in this HU. Fourteen water quality activities in this HU resulted in source abatement or load reductions for bacteria, metals, sediment, and trash. In addition to education activities implemented through the JURMP and RURMP, Copermittees implemented eight educational activities as part of the WURMP to address the high priority pollutants. Ten additional monitoring studies were conducted in this HU during this reporting period that provided additional monitoring and source identification information.

The Copermittees, and other Named Dischargers, assessed the effectiveness of the BMP implementation plans for three adopted TMDLs: Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL (908.1 HA) and Chollas Creek Diazinon and Dissolved Metals TMDLs (908.2 HA). The SIYB Dissolved Copper TMDL Implementation and Monitoring Plan was in development during this reporting period. Named dischargers included the Port of San Diego, City of San Diego, marinas owners/operators, yacht clubs, and hull cleaners. During FY 2009-10, the named dischargers were involved in the development of the Implementation Plan, studies to identify non-copper alternative hull coatings, and monitoring activities to assess urban runoff water quality within the SIYB. Based on the monitoring results from the Chollas Creek Diazinon TMDL, the Chollas Creek Dischargers' efforts to address Diazinon through education and outreach programs are adequate for meeting the goals of the TMDL. During this reporting period, the Chollas Creek Dissolved Metals TMDL dischargers collaborated and completed the TMDL Implementation Plan. The Implementation Plan was submitted on October 21, 2009.

The named dischargers, including the US Navy and Caltrans, identified and reported on 47 water quality, education, and on-going agency-wide activities which were or will be implemented as part of their comprehensive Storm Water Programs to collectively help meet TMDL requirements.

Sweetwater Hydrologic Unit (909)

The Sweetwater HU is the largest of the three HUs within the San Diego Bay WMA. This HU is comprised of the Lower Sweetwater (909.1), Middle Sweetwater (909.2), and Upper Sweetwater (909.3) HAs. Table ES-2 presents a comparison between the baseline HPWQPs identified in the San Diego Bay WURMP Document for the Sweetwater HU to the 2009-2010 monitoring results.

Table ES-2. Comparison of Sweetwater HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period			
		Wet Weather		Ambient Weather	
		RW	UR	RW	UR
909.1	Bacteria	Ym	Y	Ym	Y
909.2	Pesticides*	Ym		N	N

Notes: RW= Receiving Water; UR= Urban Runoff

Y = Monitoring results consistent with high priority rating; Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

Shading indicates no data from the 2009-2010 reporting period

* Synthetic Pyrethroids (Bifenthrin)

There have not been any significant changes to the priority constituents of concern identified for the Sweetwater HU. Monitoring results are consistent with the priority ratings for bacteria in the Lower Sweetwater HA (909.1), but may not be supportive of the rating for pesticides in the Middle Sweetwater HA (909.2). Organophosphate pesticides including Chlorpyrifos, Malathion, and Diazinon have not been detected at the Sweetwater Mass Loading Station (MLS) since 2003.

Copermittees implemented five activities with the goal of reducing loads or abating sources of bacteria in this HU. These activities included the development of ordinances and policies, land acquisitions, and other source abatement measures that target pollutant sources and prevent pollutant generation and release. In addition to education activities implemented through the JURMP and RURMP, Copermittees implemented 11 educational activities in this HU as part of the WURMP to address the high priority pollutants. Educational efforts focused on a variety of audiences in FY 2009-10. Efforts included the collaborative I Love a Clean San Diego (ILACSD) school presentations focused on high school age children; outreach efforts such as booths and workshops addressing pet and livestock waste; and commercial businesses were addressed through questionnaires and educating restaurant owners and operators about the importance of proper grease waste management.

Otay Hydrologic Unit (910)

The Otay HU is comprised of the Coronado (910.1), Otay Valley (910.2), and Dulzura (910.3) HAs. The Otay HU continues to have a limited amount of data available from which to assess water quality. MLS monitoring data has not been collected in the Otay HU since 2001-2002 due to insufficient flow. However, improvements to monitoring efforts continue to occur.

Table ES-3 presents a comparison between the baseline HPWQPs identified in the San Diego Bay WURMP Document for the Otay HU to the 2009-2010 monitoring results. These results, which represent bacteria results for urban runoff during ambient weather, coincide with the baseline HPWQPs rating for bacteria in both Coronado (910.1) and Otay Valley (910.2) HAs. No wet weather results were collected during this reporting period.

Table ES-3. Comparison of Otay HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period			
		Wet Weather		Ambient Weather	
		RW	UR	RW	UR
910.1	Bacteria				Y
	Gross Pollutants				N
910.2	Bacteria			N	Y

Notes: RW= Receiving Water; UR= Urban Runoff

Y = Monitoring results consistent with high priority rating; Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

Shading indicates no data from the 2009-2010 reporting period

* Wet weather receiving water bacteria data was collected in 2009-2010; however, the data did not meet QA standards due to a holding time exceedance and is thus not included in the assessment.

Similar to efforts in the other San Diego Bay HUs, Copermittees have developed ordinances and policies, acquired land, and other source abatement measures that target pollutant sources and prevent pollutant generation and release. Copermittees identified and targeted a common source of bacteria by implementing the Pet Waste Bag Program in all of the San Diego Bay WMA HAs and implemented five water quality activities with the goal of reducing loads or abating sources of bacteria. All eight of the watershed education activities implemented in this HU effectively targeted bacteria and focused on a variety of audiences either through activities such as public service announcements (PSA) broadcasts or targeted outreach efforts addressing specific pollutant sources such as pet waste.

Watershed Assessment

The Copermittees WURMP program implementation efforts have contributed to water quality protection and improvement in the watershed, as evidenced by data collected during this reporting period which demonstrates positive changes in knowledge, behavior, pollutant load reductions and MS4 discharge quality. Activities such as public participation at cleanup events, the general public's use of household hazardous waste (HHW) collection facilities and pet waste

bags scaled multiple levels of assessment resulting in increases in awareness, behavior changes, and load reductions. An increase in knowledge and awareness were demonstrated through various education activities throughout the WMA to a variety of audiences (Level Two). Public participation in trash cleanups and collection events also indicate behavioral change (Level Three). Through inspection activities, Copermittees were able to demonstrate positive changes in behavior (Level Three) as well as abate specific pollutant sources (Level Four). The San Diego Bay Copermittees also achieved load reductions as well as source abatement (Level Four) through various programs that either targeted the pollutants of concern or the pollutant sources. Notably, 378.5 tons of trash and debris were collected throughout the WMA during cleanup events this reporting year. San Diego Bay Copermittees also actively supported legislation to reduce copper from automotive brake pads which is expected to result in long-term reductions from this particular source. In addition, land acquisition was identified as an effective mechanism to abate pollutant sources by averting development. Assessment of trash and debris related activities such as Pet Waste Bags, Enhanced Street Sweeping, and Cleanup Events resulted in a cross-programmatic watershed analysis of the effectiveness of these programs to address particular high priority pollutants originating from a variety of sources. Also of note, the long-term downward trend of Diazinon in stormwater is a positive indication that the concentration of this pesticide will continue to decrease (Level Five).

Utilizing the effectiveness assessment and monitoring data, Copermittees will continue to identify future collaborative watershed activities to address high priority water quality problems on a WMA and HA level. To this end, Copermittees will strive to gather additional water quality data suitable for assessments, as well as research the sources of pollutants of concern and their loading potential. Continuing to identify sources and their loading potential will enable the San Diego Bay Copermittees to modify WURMP program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

Section 1: Introduction

The NPDES Municipal Storm Water Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit," requires the Copermittees sharing the San Diego Bay Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). Since 2002, the San Diego Bay Watershed Copermittees have worked together to successfully implement the San Diego Bay WURMP, a collaborative effort to address high priority surface water quality issues throughout the San Diego Bay WMA. On March 24, 2008, the San Diego Bay Watershed Copermittees began implementation of the current San Diego Bay WURMP. The program includes identifying and addressing high priority water quality problems in the WMA, developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report highlights the efforts of the San Diego Bay Watershed Copermittees, referred to throughout this document as San Diego Bay Copermittees, during this reporting period from July 1, 2009, through June 30, 2010. This Annual Report is divided into five sections as presented below.

Section 2 This section provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3 This section describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period, collaborative land use planning, and additional education and public participation activities that took place. This section also summarizes the TMDL-related activities implemented by named dischargers of TMDLs within the San Diego Bay WMA. Detailed information on the results and status of each Named Dischargers' TMDL activities is located in Appendix E.

Section 4 This section discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among San Diego Bay Copermittees; 2) determine whether watershed activities are focused on appropriate water quality problems; 3) assess whether targeted outcomes are being achieved; and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale. This section includes an assessment of compliance with TMDLs in the San Diego Bay WMA and the effectiveness of activities implemented by the Named Dischargers.

Section 5 This section provides conclusions reached during FY 2009-10 as well as recommendations for future reporting periods.

In addition, this document functions as the primary reporting mechanism for all TMDL activities implemented for each approved TMDL in the San Diego Bay WMA. There are four approved TMDLs in the San Diego Bay WMA: Chollas Creek Diazinon TMDL, Chollas Creek Dissolved Metals TMDL, Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL, and the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL. A number of the San Diego Bay Copermittees are Named Dischargers in one or more of these TMDLs. The Named Dischargers of the Chollas Creek Dissolved Metals TMDL, which include Caltrans and the United States Navy, took a holistic approach to planning, implementation, and assessment of targeted watershed activities identified in the Implementation Plan. The Implementation Plan fully integrates with existing watershed, regional, and jurisdictional programs (as well as agency-wide programs for state and federal Dischargers) under existing National Pollutant Discharge Elimination System (NPDES) permit requirements. The integration of these activities provides a comprehensive evaluation of watershed-wide efforts to address a particular TMDL. As a result, this document provides a logical platform for annual reporting of efforts to address TMDLs within the San Diego Bay WMA.

1.1 WURMP Copermittee Collaboration

WURMP development and implementation is a collaborative effort by all of the following San Diego Bay Copermittees:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority (Airport Authority)

The Port of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among San Diego Bay Copermittees and liaison between Copermittees and Regional Water Quality Control Board (RWQCB) staff.

The San Diego Bay Copermittees met 12 times during this reporting period. Appendix B provides a summary of the dates and general topics of discussion. The majority of the meetings focused on the implementation of the San Diego Bay WURMP.

During this reporting period, the San Diego Bay Copermittees continued to collaborate extensively on the development of the Watershed Strategy that guides WURMP activity selection. An extensive explanation of the San Diego Bay Watershed Strategy (Watershed Strategy) was presented in the San Diego Bay WURMP document. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) defines the San Diego Bay WMA as being comprised of three watersheds, or hydrologic units (HUs). They are the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed. These HUs are further divided into hydrologic areas (HAs). The San Diego Bay Copermittees developed a database of baseline information consisting of land use, water quality monitoring data, and other information on potential pollutant sources, and identified the high priority water quality problems on a HA level.

Collaboration on the Watershed Strategy also enabled the San Diego Bay Copermittees to identify data gaps by reviewing existing monitoring and land use data. Such data provided the basis for developing additional water quality monitoring and source identification activities such as the coordinated dry weather monitoring program being implemented by the City of San Diego, the Port of San Diego, and the Airport Authority. Section 3 provides specific detail on each program that was initiated or completed during the FY 2009-10 reporting period.

1.2 TMDL Named Dischargers Collaboration

Chollas Creek Dissolved Metals and Diazinon TMDLs

This reporting year represents the second year the Chollas Creek Dissolved Metals TMDL is in effect. It was approved by the State Board Office of Administrative Law on October 22, 2008. During the reporting period, the permitted MS4 dischargers named in the TMDL collaborated on a multi-pollutant strategy for addressing the TMDL as well as the development of the required Implementation Plan. The Implementation Plan was submitted on October 21, 2009, to the Regional Water Quality Control Board. The named dischargers include five watershed Copermittees, Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, Port District, as well as the U.S. Navy and the California Department of Transportation (Caltrans). In addition to the collaborative Implementation Plan, each discharger developed their own list of activities they participated in or will participate in to address the TMDLs. Dischargers met 10 times during this reporting year: August 17, 2009, October 19, 2009, November 16, 2009, December 21, 2009, January 19, 2010, February 16, 2010, March 15, 2010, April 27, 2010, May 17, 2010, and June 21 2010. One stakeholder meeting was held on June 21, 2010. Further discussion on the efforts made by the dischargers during FY 2009-10 is provided in Sections 3.5.3 and 4.2.2.

Because the strategy for addressing this TMDL is multi-pollutant and watershed based, the reporting of activities under this TMDL incorporates those activities for the Chollas Creek

Diazinon TMDL as well. The named parties under the Diazinon TMDL include the same dischargers under the Chollas Creek Metals TMDL. Investigation Order R9-2004-0277 requires status reports of specific implementation elements. Further information on these specific elements is included in the Chollas Creek TMDL Compliance Monitoring Investigation Order R9-2004-0277 2009–2010 Water Quality Monitoring Report in Appendix C.

Shelter Island Yacht Basin Dissolved Copper TMDL

Named parties in the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL began the process of cooperatively developing a strategy for addressing the TMDL during this reporting period. The named parties include two watershed Copermittees, the Port District and the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners. The named parties collaborated during this reporting period to determine potential approaches for demonstrating compliance with loading reduction interim targets. The named parties met on 6 occasions during this reporting year: August 20, 2009, September 17, 2009, January 19, 2010, February 17, 2010, April 14, 2010, and June 16, 2010. One stakeholder meeting was held on October 20, 2009. Further discussion on the efforts made by the named parties is provided in Sections 3.5.3 and 4.2.2.

1.3 San Diego Bay Watershed Map Updates

There will be no San Diego Bay Watershed map updates included in the FY 2009-10 Annual Report.

Section 2: Water Quality and Pollutant Source Assessment

In accordance with Section J.3.b.2.c. of the Municipal Permit, this section provides an update of water quality throughout the San Diego Bay WMA with respect to high priority water quality problems (HPWQP) and pollutant sources. Water quality analyzed here is collected in accordance with the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Municipal Permit and is presented in the *2009-2010 San Diego County Municipal Copermittee Receiving Waters and Urban Runoff Monitoring Report* (Regional Monitoring Report). During 2009-2010, a new methodology was used for identifying priority constituents of concern presented in the Regional Monitoring Report and is described in the *Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas*, Final Draft-Version 1 (SDCRC, 2010). Where applicable, additional monitoring programs conducted by the San Diego Bay WMA Copermittees with respect to water quality and/or source identification studies are also incorporated into this analysis.

The San Diego Bay WMA consists of three major hydrologic units (HU) in the southern portion of San Diego County: Pueblo San Diego (908), Sweetwater (909), and Otay (910). Each HU varies in terms of size, population, and land use, and each has different water quality issues as a result. Each HU is therefore analyzed independently to provide a more accurate water quality assessment. Within each HU, high priority water quality problems and potential sources of pollutants are presented by hydrologic area (HA).

2.1 Water Quality Assessment

The San Diego Bay Copermittees identified HPWQPs in the San Diego Bay WURMP Document. In accordance with Municipal Permit requirements, monitoring data collected during each reporting period is compared to the established HPWQPs within the San Diego Bay WURMP Document for assessment purposes. A longer term assessment based on a larger five-year dataset is conducted as part of the Long-Term Evaluation Assessment (LTEA). The Baseline LTEA was created in 2005. LTEA ratings are anticipated to be revised based on data collected from 2005 – 2010 during 2011.

The San Diego Bay WURMP Document is structured to analyze receiving water and urban runoff quality to answer the five Core Management Questions presented in Section I.B of the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Municipal Permit:

1. *Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?*
2. *What is the extent and magnitude of the current or potential receiving water problems?*

3. *What is the relative urban runoff contribution to the receiving water problem(s)?*
4. *What are the sources of urban runoff that contribute to receiving water problem(s)?*
5. *Are conditions in receiving waters getting better or worse?*

Results of annual monitoring are analyzed to appropriately answer the questions. Answers to the Core Management Questions are presented within each HU's summary.

2.1.1 High Priority Water Quality Problems

The San Diego Bay WURMP Document presented a Baseline Watershed Evaluation (BWE) which utilized the Baseline LTEA water quality ratings, monitoring data, and source information to identify HPWQPs. Table 2-1 presents the HPWQPs by HA within the San Diego Bay WMA.

Table 2-1. San Diego Bay Baseline High Priority Water Quality Problems.

HA	Pollutant Categories						
	Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides	Sediment	Trash
Pueblo San Diego HU							
908.1	X	X	X	X	X		
908.2	X		X		X	X	X
908.3	X					X	X
Sweetwater HU							
909.1	X						
909.2					X		
909.3							
Otay HU							
910.1	X	X					
910.2	X						
910.3							

Annual water quality assessments are evaluated in light of established HPWQPs to track improvements associated with watershed activities or determine increasing trends of pollutants which require specific management actions. When the revised LTEA becomes available, the information will be analyzed in conjunction with updated 303(d) listings, monitoring data and source information to reassess the watershed's HPWQPs.

2.1.2 303(d) Listings

Water bodies in the San Diego Bay WMA and constituents that have been placed on the State Water Resources Control Board (SWRCB) 2006 Section 303(d) list are presented in Table 2-2.

The table includes the water bodies having an adopted Total Maximum Daily Load (TMDL) or for which a TMDL is in development.

Table 2-2. San Diego Bay WMA SWRCB 2006 Section 303(d) Listed Water Bodies and TMDL Status.

Water Body	HSA	Pollutant/Stressor	TMDL Status
Pueblo San Diego HU			
San Diego Bay Shoreline, near Sub-Base	908.10	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, Shelter Island Shoreline Park	908.10	Indicator bacteria	TMDL Adopted
San Diego bay Shoreline, at Harbor Island (West Basin)	908.10	Copper	Not developed
Shelter Island Yacht Basin	908.10	Copper	TMDL adopted
San Diego Bay Shoreline, G Street Pier	908.21	Indicator bacteria	In development
San Diego Bay Shoreline, near Switzer Creek	908.21	Chlordane, Lindane/ Hexachlorocyclohexane, and PAHs	In development
San Diego Bay Shoreline, vicinity of B Street and Broadway Piers	908.21	Indicator bacteria, benthic community effects, and sediment toxicity	In development
San Diego Bay Shoreline, Downtown Anchorage	908.21	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, at Harbor Island (East Basin)	908.21	Copper	Not developed
San Diego Bay Shoreline, at Marriott Marina	908.21	Copper	Not developed
San Diego Bay Shoreline, at America's Cup Harbor	908.21	Copper	Not developed
Chollas Creek	908.22	Diazinon, indicator bacteria, and dissolved copper, lead, and zinc	TMDLs adopted*
Chollas Creek	908.22	Indicator Bacteria	In development
San Diego Bay Shoreline, near Chollas Creek	908.22	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, 32nd Street Naval Station	908.22	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, between Sampson Street and 28th Street	908.22	Copper, mercury, PAHs, PCBs, and zinc	In development
San Diego Bay Shoreline, Near Coronado Bridge	908.22	Benthic community effects and sediment toxicity	Not developed
San Diego Bay Shoreline, Seventh Street Channel	908.31	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, north of 24th Street Marine Terminal	908.32	Benthic community effects and sediment toxicity	Not developed
Sweetwater HU			
San Diego Bay Shoreline, at Bayside Park (J Street)	909.11	Indicator bacteria	In development
San Diego Bay Shoreline, at Chula Vista Marina	909.12	Copper	Not developed
Sweetwater Reservoir	909.21	Dissolved oxygen	Not developed
Loveland Reservoir	909.31	Aluminum, manganese, and dissolved oxygen	Not developed
Otay HU			
Pacific Ocean Shoreline, Imperial Beach Pier	910.10	PCBs	Not developed
San Diego Bay	910.10	PCBs	Not developed
San Diego Bay Shoreline, at Coronado Cays	910.10	Copper	Not developed
San Diego Bay Shoreline, at Glorietta Bay	910.10	Copper	Not developed
Pogi Canyon Creek	910.20	DDT	Not developed
Otay Reservoir, Lower	910.31	Color, iron, manganese, nitrogen ammonia (total ammonia), and pH (high)	Not developed

HSA= Hydrologic Subarea

In November 2010, outside of the 2009-2010 reporting period, the Environmental Protection Agency (EPA) approved the State of California's 2010 Integrated Report, which includes an updated Clean Water Act Section 303(d) list of impaired waters. The updated 303(d) list will be considered in the upcoming regional LTEA and the 2010-2011 WURMP Annual Report.

2.1.3 2009-2010 Monitoring Activities

Table 2-3 provides a summary of monitoring activities conducted in the San Diego Bay WMA. As previously stated, most of the monitoring programs are conducted jointly by the San Diego County Copermittees in accordance with the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Municipal Permit. A comprehensive discussion of these monitoring programs within the San Diego Bay WMA is presented in Section 10 of the Regional Monitoring Report. Additional water quality monitoring and source identification studies which have been conducted by San Diego Bay WMA Copermittees are also presented in Table 2-3. Activity summary sheets describing additional monitoring programs noted in Table 2-3 can be found in Appendix D of this WURMP Annual Report.

Table 2-3. 2009-2010 Monitoring Activities.

#	Program	Constituents Measured	HA						
			Pueblo			Sweetwater		Otay	
			908.1	908.2	908.3	909.1	909.2	910.1	910.2
Receiving Water Quality Monitoring									
1	Mass Loading Stations (MLS) Ambient and Storm Monitoring	Chemistry, Toxicity, Bioassessment		X		X			
2	Temporary Watershed Assessment Stations (TWAS) Ambient and Storm Monitoring	Chemistry, Toxicity, Bioassessment					X		X
3	Post-Storm Event Synthetic Pyrethroid Monitoring	Grain size, Pesticides, Total Organic Carbon		X		X	X		X
4	Stormwater Monitoring Coalition (SMC) Regional Monitoring Participation	Chemistry, Toxicity, Bioassessment				X			
5	Chollas Creek TMDL Compliance Monitoring (SDB-019) †	Metals, Pesticides, Bacteria		X					
6	Chollas Creek TMDL Special Studies (Appendix C)†	Metals, Pesticides, Bacteria		X					
7	Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-066) †	Metals		X					
Urban Runoff Monitoring									
8	Jurisdictional Dry Weather Monitoring (DWM) and Trash Assessment*	Chemistry, Metals, Bacteria, Pesticides Trash	X	X	X	X	X	X	X
9	Municipal Separate Storm Sewer (MS4) Outfall Monitoring Program	Bacteria, Metals, Chemistry, and Pesticides	X	X	X	X	X		X
10	Coastal Storm Drain Monitoring (CSDM)	Bacteria	X	X		X		X	
11	Enhanced Dry Weather Monitoring Program (SDB-020)†	Chemistry, Metals, Bacteria, Pesticides Trash		X					
12	BMP Effectiveness Monitoring Program (SDB-023) †	Metals		X					
13	Shelter Island Yacht Basin Urban Runoff Monitoring Study (SDB-053) †	Metals	X						
14	B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-064) †	Metals, Pesticides	X	X					
15	Chollas and Paleta Creeks Characterization Study (SDB-065) †	Metals, Pesticides		X	X				
16	Regional Source Identification Program	Chemistry, Metals, Bacteria, Pesticides	Conducted in single family residential land use drainages within the San Luis Rey and Los Peñasquitos WMAs.						

*Jurisdictional DWM exceedance frequencies were analyzed by HU, not HA, for the purposes of this report.
†Additional studies conducted by the San Diego Bay Copermittees; data from these studies is not included in the Regional Monitoring Report methodology to determine priority constituents of concern.

2.1.4 Pueblo San Diego HU

The Pueblo San Diego HU is the smallest of the three San Diego Bay HUs, and is comprised of the Point Loma, San Diego Mesa, and National City HAs. Chollas Creek, Switzer Creek, Paleta Creek, and the San Diego Bay are the major waterbodies found within the Pueblo San Diego HU.

2.1.4.1 Pueblo San Diego HU HPWQPs

Table 2-4 presents a comparison between baseline HPWQPs identified in the San Diego Bay WURMP Document for the Pueblo San Diego HU to the 2009-2010 monitoring results. HPWQPs were established using data from only the San Diego County Regional Monitoring Programs. Additional studies conducted by the San Diego Bay Copermittees were not used in the determination of priority constituents; however, results of these monitoring programs may be used to either support or oppose baseline conditions as applicable. Monitoring results are separated by wet and ambient dry weather monitoring, as well as receiving water and urban runoff monitoring programs. The monitoring program from which the constituents of concern were determined is also indicated.

Table 2-4. Comparison of Pueblo San Diego HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period				Comments
		Wet Weather		Ambient Weather		
		RW	UR	RW	UR	
908.1	Bacteria				Y[8, 9]	
	Gross Pollutants				N[8, 9]	
	Metals		N[13]		N[8, 9]	Source of metals is likely due to anti-fouling boat hull paint located in San Diego Bay[13]
	Oil and Grease				N[8, 9]	
	Pesticides				N[8, 9]	
908.2	Bacteria	Y[1, 5, 6]	N[9]	Ym[1]	Y[8, 9]	
	Metals	Y[1, 5, 6]		N[1]	N[8, 9]	
	Sediment	Y[1]	N[9]	N[1]	N[8, 9]	
	Trash				N[8]	
	Pesticides	Y[3, 5, 6]	Y[14, 15]	Y[1,2]	Y[14, 15]	Organophosphate pesticides detected infrequently[5, 8, 9]
908.3	Bacteria		N[9]		Y[8, 9]	
	Sediment		Y[9]		N[8, 9]	
	Trash				N[8]	

Notes:

Superscript numbers correspond to monitoring activity number in Table 2-3.

RW= Receiving Water

UR= Urban Runoff

Y = Monitoring results consistent with high priority rating

Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

Shading indicates no data from 2009-2010 reporting period

The following constituents are not HPWQPs but were identified as potential constituents of concern based only on data from 2009-2010 monitoring programs: 908.2—high pH; 908.3—nutrients, pesticides, and metals. These constituents have been identified based on only one year of data and in some cases only one sample, so at this time it is premature to add them to the HPWQP list. Depending on results of future monitoring and the upcoming LTEA, these constituents may be added to the HPWQP list in the future.

2.1.4.2 Pueblo San Diego Core Management Questions

Table 2-5 summarizes receiving water quality and urban runoff quality data within the Pueblo San Diego HU during FY 2009-10. The table differentiates between data collected during wet and dry periods. Answers to the Core Management Questions are presented below.

Table 2-5. 2009-2010 Pueblo San Diego Monitoring Results.

Assessment	Program*	Priority Constituents of Concern†	Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	1, 3	Regional Monitoring Program: High: pH, *Enterococci*, Synthetic Pyrethroids Additional San Diego Bay Copermittee Monitoring: None	*C. dubia* reproduction, *S. capricornutum* growth	Yes
Ambient Urban Runoff	9, 14, 15	Regional Monitoring Program: High: Total Phosphorus, Total Nitrogen, *Enterococci* Medium: Fecal Coliform Additional San Diego Bay Copermittee Monitoring: Diss. Copper, Diss. Zinc, Synthetic Pyrethroids	NA NA	
Wet Weather Receiving Water	1, 4, 5, 6	Regional Monitoring Program: High: TSS, Turbidity, Diss. Copper, Fecal Coliform, Bifenthrin Medium: Diss. Lead, Diss. Zinc, Permethrin, MBAS, BOD, COD Additional San Diego Bay Copermittee Monitoring: Diss. Copper, Diss. Zinc, Synthetic Pyrethroids, Total Coliform, Fecal Coliform, and *Enterococci*	*H. Azteca* acute survival, *C. dubia* reproduction	
Wet Weather Urban Runoff	9, 13, 14, 15	Regional Monitoring Program: Medium: TSS Additional San Diego Bay Copermittee Monitoring: Diss. Copper, Diss. Zinc, Synthetic Pyrethroids	NA	

* Numbers correspond to monitoring activity number in Table 2-3

† Additional studies conducted by San Diego Bay Copermittees were not included to determine HPWQPs, however the constituents listed exceeded Water Quality Objectives.

NA = Not Assessed, Not Applicable, or Not Analyzed.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed through wet and ambient weather receiving water assessments at the Chollas Creek MLS and an upstream dry weather MLS site near 54th Street

(CC-NF@54). During wet weather, TSS, turbidity, dissolved copper, fecal coliform, and bifenthrin were identified as high priority constituents. Dissolved zinc, dissolved lead, permethrin, MBAS, BOD, and COD were identified as medium priority constituents. Nutrients and TDS were below benchmarks. During ambient conditions, chemistry constituents were primarily below ambient benchmarks with the exception of pH at the MLS (SD8(1)) during the first monitoring event. The MLS site (SD8(1)) was used as the ambient monitoring site during the first event, which occurred on January 6, 2010. This site is typically dry during non-storm events, and the site conditions (concrete channel) and ponded conditions may have influenced the pH results. This site was dry during the May 2010 ambient event, and monitoring was relocated upstream near 54th Street to coincide with bioassessment monitoring. All other chemical constituents were below the ambient benchmarks. For bacteria constituents, only *Enterococci* were identified as a high priority constituent at the upstream site CC-NF@54. There is no TDS benchmark for Chollas Creek; however, elevated TDS concentrations measured during ambient weather may have influenced the toxicity test organisms. These results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Bioassessment results from the CC-NF@54 site had an Index of Biotic Integrity (IBI) score of Very Poor. The observed to expected ratio (O/E) score also showed impaired conditions. The moderately rated physical habitat and high TDS are potential factors influencing depressed IBI scores. The bioassessment results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Toxicity was observed during ambient conditions to *C. dubia* reproduction and the freshwater algae *S. capricornutum* during the one monitoring event at CC@NF54 and the level of toxicity was slight. The CC-NF@54 site is influenced by groundwater baseflow and toxicity may be influenced by the high total dissolved solids (TDS) observed at the site. During wet weather (at the MLS), toxicity to *H. azteca* acute survival was identified as persistent. Toxicity to *H. azteca* acute survival at this site has been linked to detections of Synthetic Pyrethroids based on previously conducted toxicity identification evaluations (TIEs). Toxicity to *C. dubia* reproduction was also noted during the first storm event of the season, which occurred approximately 279 days after the last significant rainfall event.

Compliance monitoring conducted in accordance with the Chollas Creek Diazinon and Dissolved Metals TMDL (Order R9-2004-0277) occurred at two locations during three storm events within the Chollas Creek drainage area. Metals results, which are compared to the California Toxics Rule, indicated dissolved copper concentrations were greater than the chronic criteria (CCC) at site SD8(1), located in the north fork of Chollas Creek, and at site DPR2, located in the south fork of the creek, during all three monitoring events. Dissolved copper was also greater than the acute criteria (CMC) at both sites during the first two storm events. Dissolved lead was found to be above the CCC during the first and second storm events at both monitoring locations while dissolved zinc concentrations were greater than the CMC at site SD8(1) during the first two monitoring events. Diazinon and Malathion were detected during the monitoring season; however concentrations were generally low and below benchmarks. There

was one instance of reproductive toxicity to *C. dubia* observed at SD8(1) during the first storm event. No acute or chronic survival toxicity was observed at either site during all three monitoring events.

Four special studies were conducted by the dischargers named in the Chollas Creek Diazinon and Dissolved Metals TMDL with regards to receiving water quality within the Chollas Creek drainage area. Specific details regarding each special study can be found in Appendix C of this Annual Report. A general summary of the three special studies regarding receiving water quality are presented in Table 2-6. The fourth special study focuses on urban runoff water quality and will be discussed in Section 2.2 of this Annual Report.

Table 2-6. Chollas Creek TMDL Special Studies in Receiving Waters.

Special Study	Purpose	Summary of Results
Jurisdictional Boundary Monitoring in the Upper Watershed	Evaluate and compare water quality in the north fork and south fork of Chollas Creek in the upper and lower drainages of the watershed during two wet weather storm events.	▪ Diazinon and Chlorpyrifos were not detected above either acute or chronic waste load allocations ▪ Only one instance of toxicity occurred in regards to *C.dubia* reproduction ▪ Metals concentrations and exceedance ratios were higher in the north fork than in the south fork ▪ Dissolved copper had a higher detection rate and exceedance rate (compared to the acute and chronic WLAs) than lead and zinc. ▪ Dissolved lead was above the chronic WLA located in the upper watershed during the second storm event.
Synthetic Pyrethroid Assessment Monitoring	Assess Synthetic Pyrethroids in the north fork and south fork of Chollas Creek in the upper and lower drainages of the watershed during two wet weather storm events.	▪ Eight of 13 Synthetic Pyrethroids pesticides were detected in both the north and south forks of Chollas Creek. ▪ Bifenthrin concentrations were greater than the acute LC50 literature values at all sites. ▪ Toxicity to *Hyalella azteca* was commonly observed
Bacteria Monitoring	Assess bacteria in the north fork and south fork of Chollas Creek in the upper and lower drainages of the watershed.	▪ Fecal coliform exceeded the WLA at all sites.

Overall, the likelihood of conditions in receiving waters to be protective of beneficial uses may vary depending on wet or ambient conditions and the water body where monitoring was conducted. The results of receiving water quality monitoring indicate that Chollas Creek (908.22 HSA) may not be protective of beneficial uses during either ambient and wet weather conditions. Chollas Creek is currently listed in the Basin Plan for potential REC-1 and existing REC-2 beneficial uses as well as uses of water supportive of aquatic and terrestrial ecosystems. Indicator bacteria, including fecal coliform, have been measured above the Basin Plan benchmarks during both wet and ambient conditions indicating possible impairment of the

recreational uses in this HSA. The presence of Synthetic Pyrethroids detected in Chollas Creek storm water samples and sediments are suspected to be the primary cause of toxicity observed to freshwater invertebrates further indicating impairment of beneficial uses within the Chollas Creek.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed through analysis of regional monitoring data collected by the San Diego County Copermittees as well as compliance monitoring and special studies conducted by the dischargers named in the Chollas Creek Diazinon and Dissolved Metals TMDL. Data collected during the 2009–2010 Monitoring Season reflected generally understood patterns for the Chollas Creek Watershed (908.22 HSA). Dissolved copper, lead and zinc concentrations were generally greater in the north fork (SD8(1)) than in the south fork (DPR2), and were greatest during the first-flush storm event of the season. Dissolved lead concentrations were less than the acute WLA, but results above the chronic WLA were noted. Malathion and Diazinon were the only organophosphorus pesticides detected. Diazinon was below the acute and chronic WLA. Malathion was detected in both forks above the chronic benchmark during second storm event. PAHs and chlorinated pesticides were detected in similar concentrations in both forks of the creek. However, PCB congeners were only detected in the south fork (DPR2) during the February 6, 2010 monitoring event.

As mentioned above, the bioassessment score was Very Poor at site CC-NF@54 and results were similar to other sites in the San Diego Bay WMA. Similarly, O/E results suggested impaired conditions and were in general agreement with IBI score. The California Rapid Assessment Method (CRAM) score was in the moderate range.

During wet weather monitoring, there was only one instance of reproductive toxicity to *C. dubia* noted at site SD8(1). This was the first storm event following approximately 279 dry days without significant rainfall. Toxicity was observed to be a persistent wet weather concern for *H. azteca*. The sample results confirmed Synthetic Pyrethroids (bifenthrin and permethrin) were above the LC_{50} and confirm previous TIE results conducted at the SD8(1) location. During ambient weather, the monitoring site location was moved upstream in the north fork near 54th Street due to dry conditions at the downstream location, and toxicity to *S. capricornutum* growth and *C. dubia* reproduction was observed during one event. Chemistry results yielded elevated TDS concentrations.

Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through a comparison of MS4 Outfall Monitoring Program[1] results to receiving water monitoring program results presented in Table 2-5. It should also be noted that it is not known to what extent pollutants from sources outside of the Copermittee's ability to legally control (such as, direct aerial deposition into receiving waters and Phase II dischargers) are affecting receiving water quality. During wet weather, only two wet weather MS4 outfall samples were collected within the Pueblo San Diego HU. Both sites were not located within the drainage area of the Chollas Creek MLS; therefore, a direct relationship between urban runoff and receiving water quality cannot be made. Results show that only TSS was identified as a medium priority constituent. No high priority constituents were identified. During ambient weather, MS4 results show that *Enterococci* and total phosphorus were identified as high priority constituents in the Chollas HSA. Fecal coliform and total nitrogen were identified as medium priority constituents. Dissolved metals were below the benchmarks at all locations in the Pueblo San Diego HU during ambient conditions. The CSDM program undertaken by those Copermittees located within the Pueblo San Diego HU only observed exceedances of storm drain action levels for bacteria on two occasions during dry conditions. Paired receiving water samples did not indicate exceedances of bacteria. The results of these regional monitoring programs indicates that the contribution of the MS4 to receiving water problems is likely for some constituents within specific water bodies. During dry weather, bacteria found in urban runoff may be contributing to elevated concentrations of bacteria found in receiving waters. This question may be answered with a higher level of confidence with the five year assessment required by the MS4 Outfall Monitoring Workplan.

In addition to the regional MS4 monitoring programs undertaken by the San Diego County Copermittees, the dischargers named in the Chollas Creek Diazinon and Dissolved Metals TMDL participated a special study that targeted urban runoff quality. Eighteen MS4 outfalls were monitored during first-flush wet conditions to prioritize sources of metals and TSS throughout the Chollas Creek Watershed. Results were normalized by comparing dissolved copper, lead, and zinc concentrations at each site to the mean receiving water metals concentration at the two MLS locations in Chollas Creek (SD8(1) and DPR2). Six sites throughout the watershed exhibited dissolved copper concentrations greater than 1 standard deviation of the mean. Four sites recorded dissolved zinc concentrations greater than 1 standard deviation of the mean. Two sites in the south fork of Chollas Creek had dissolved lead greater than 3 standard deviations of the mean. These results indicate that concentrations of metals found within urban runoff may contribute to receiving water quality problems within the Chollas Creek HSA.

[1] The analytes sampled in the MS4 Outfall Monitoring Program may not correspond with the analytes sampled within the receiving water monitoring programs. Therefore, in some cases, a direct relationship between the results of both monitoring programs may not be applicable.

The City of San Diego also conducted various MS4 monitoring programs to assess the connection between urban runoff and receiving water quality. The Chollas and Paleta Creeks Characterization Study (Activity Summary Sheet SDB-63) and the B Street/Broadway Piers, Downtown Anchorage and Mouth of Switizer Creek Characterization Studies (Activity Summary Sheet SDB-064) analyzed MS4 concentrations of dissolved metals and pesticides during both wet and dry conditions. Both studies revealed that ambient weather MS4 urban runoff contained concentrations of dissolved zinc and copper above the California Toxics Rule Water Quality Objectives (WQO). Both dry and wet conditions demonstrated high concentrations of Synthetic Pyrethroids (sediment and water) throughout the Chollas and Paleta Creeks study areas as well as in the B Street study area. The high concentrations of dissolved copper, zinc, and Synthetic Pyrethroids can result in toxicity to aquatic life in the receiving waters and add to receiving water loads.

Lastly, the City of San Diego conducted MS4 monitoring during wet conditions to determine loads of copper which drain to the Shelter Island Yacht Basin (SIYB) located in north San Diego Bay (Activity Summary Sheet SDB-053). Results of monitoring during FY 2009-10 indicate that dissolved copper loading from the MS4 into the SIYB account for less than 1% of the total load. The predominate source of copper loading within the SIYB emanates from copper-based boat-hull paints.

Core Management Question #4 – What are the sources of urban runoff that contribute to receiving water problems(s)?

Core Management Question #4 may be answered through those monitoring programs which provide information in regards to sources of urban runoff including the Jurisdiction DWM program, the CSDM program, and trash assessments conducted within receiving waters. A more detailed discussion of urban runoff sources can be found in each Copermittee's Jurisdictional Urban Runoff Monitoring Program (JURMP) Annual Report and in the CSDM Program Annual Report, which is found in Appendix N of the Regional Monitoring Report. A separate discussion of source identification studies which took place within the San Diego Bay WMA will be presented in Section 2.2 of this Annual Report.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the Chollas Creek MLS. Increasing trends were observed for total coliform, TKN, turbidity, total copper, total zinc, and nitrate. Decreasing trends were observed for Malathion.

Compliance monitoring conducted by the dischargers named in the Chollas Creek Diazinon and Dissolved Metals TMDL indicate significantly increasing trends for total and dissolved copper and zinc in the north fork of Chollas Creek. Significantly increasing trends are apparent for total copper and zinc in the south fork of Chollas Creek as well. Diazinon and Malathion were

detected during FY 09-10, however concentrations were low. The USEPA ban on Diazinon is noted as the primary cause for the reduction in detections of Diazinon within the watershed. Synthetic pyrethroid pesticides appear to have increased since the ban on Diazinon took place.

The bioassessment ratings at the Chollas Creek MLS have been Very Poor in nearly all assessments conducted from 2002 to 2010 and there are no apparent trends in the benthic community.

Toxicity has frequently been observed in samples collected from the Chollas Creek MLS. Between 2001 and 2010, toxicity to *C. dubia* was observed in approximately 30% of samples since 2001–2002 and toxicity to *H. azteca* was observed in 54% of samples. During the 2009–2010 Monitoring Season, toxicity to *H. azteca* survival and *C. dubia* reproduction was also observed; however no trends in the data set were apparent.

2.1.5 Sweetwater HU

The Sweetwater HU (909.00) is the largest of the three HUs within the San Diego Bay WMA. This HU is comprised of the Lower Sweetwater, Middle Sweetwater, and Upper Sweetwater HAs. The Sweetwater River, Sweetwater Reservoir, Loveland Reservoir, and San Diego Bay are the major waterbodies found within Sweetwater HU.

2.1.5.1 Sweetwater HU HPWQPs

Table 2-7 presents a comparison between baseline HPWQPs identified in the San Diego Bay WURMP Document for the Sweetwater HU to the 2009-2010 monitoring results. Monitoring results are separated by wet and ambient weather monitoring, as well as receiving water and urban runoff monitoring programs. The monitoring program from which the constituents of concern were determined is also indicated.

Table 2-7. Comparison of Sweetwater HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period				Comments
		Wet Weather		Ambient Weather		
		RW	UR	RW	UR	
909.1	Bacteria	Ym[1]	Y[9]	Ym[1]	Y[9]	
909.2	Pesticides	Ym[3]		N[2]	N[9]	Synthetic Pyrethroids (Bifenthrin) [3]

Notes:
Superscript numbers correspond to monitoring activity number in Table 2-3.
RW= Receiving Water
UR= Urban Runoff
Y = Monitoring results consistent with high priority rating
Ym= Monitoring results indicate a medium priority rating
N= Monitoring results do not indicate a high priority
Shading indicates no data from the 2009-2010 reporting period

The following constituents are not HPWQPs but were identified as potential constituents of concern based only on data from 2009-2010 monitoring programs: 909.1—metals, nutrients, sediment, total dissolved solids (TDS), and chloride; 909.2—bacteria, TDS, and nutrients. These constituents have been identified based on only one year of data and in some cases only one sample, so at this time it is premature to add them to the HPWQP list. Depending on results of future monitoring and the upcoming LTEA, these constituents may be added to the HPWQP list in the future.

2.1.5.2 Sweetwater HU Core Management Questions

Table 2-8 summarizes receiving water and urban runoff quality data within the Sweetwater HU during FY 09-10. The table differentiates between data collected during wet and dry periods. Answers to the Core Management Questions are presented below.

Table 2-8. 2009-2010 Sweetwater Monitoring Results.

Assessment	Program*	Priority Constituents of Concern†	Persistent Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	1, 2, 3	Regional Monitoring Program: High: TDS, Chloride, *Enterococci*, Total Nitrogen (SMC Sites) Medium: Total Phosphorus, Diss. Phosphorus Additional San Diego Bay Copermittee Monitoring: None	*C. dubia* acute and chronic survival and reproduction, *S. capricornutum* growth	Yes
Ambient Urban Runoff	9	Regional Monitoring Program: High: Total Phosphorus, Total Nitrogen, TDS, *Enterococci* Medium: Fecal Coliform Additional San Diego Bay Copermittee Monitoring: None	NA	
Wet Weather Receiving Water	1, 2, 4	Regional Monitoring Program: Medium: TSS, Turbidity, Bifenthrin, TDS, Fecal Coliform Additional San Diego Bay Copermittee Monitoring: None	*C. dubia* reproduction, *S. capricornutum* growth	
Wet Weather Urban Runoff	9	Regional Monitoring Program: High: Fecal Coliform Additional San Diego Bay Copermittee Monitoring: None	NA	

* Numbers correspond to monitoring activity number in Table 2-3

† Additional studies conducted by San Diego Bay Copermittees were not included to determine HPWQPs, however the constituents listed support exceedances of WQO.

NA = Not assessed, Not Applicable, or Not Analyzed.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed through wet and ambient weather receiving water data. Results were evaluated at the MLS in the Lower Sweetwater HA (909.10) and the TWAS in the Middle Sweetwater HA (909.20). The MLS and TWAS are separated by the dam in the Lower Sweetwater Reservoir. During wet weather monitoring in the Lower Sweetwater HA (909.10), there were no high priority constituents identified. Medium priority constituents were identified for TSS, turbidity, bifenthrin, TDS, and fecal coliform. In the Middle Sweetwater HA (909.20), high priority constituents were identified only for fecal coliform. Medium priority constituents were identified for bifenthrin and TDS. During dry weather monitoring, TDS was identified as a high priority constituent and *enterococci* was identified as a medium priority constituent in both the Lower and Middle Sweetwater HAs. Dissolved and total phosphorus were also identified as medium priority constituents in the Lower Sweetwater HA (909.10). Ambient monitoring results at four SMC sites (all in the Lower Sweetwater HA (909.10) identified chloride and TDS above the benchmark. Total nitrogen was above the benchmarks at the three uppermost SMC sites while total phosphorus was above the benchmarks at the two upper SMC sites. These results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Stream bioassessment results indicate evidence of benthic community impairment in the Sweetwater HU, with Very Poor IBI ratings at all sites. O/E scores also showed impaired conditions. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat, and high TDS. The bioassessment results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Persistent toxicity was not observed for the Sweetwater HU during wet weather. Toxicity to the freshwater algae *S. capricornutum* was observed at both the MLS and TWAS sites during one event. Toxicity to *C. dubia* was also observed during one event at the MLS site. Both instances of toxicity occurred during the first storm event, which yielded less than a quarter inch of rain. Results were similar to the ambient monitoring event conducted in January and May and may be a function of the low gradient nature of this waterbody, the relatively low flow observed on the hydrograph, and the elevated TDS noted during the first wet weather monitoring event. Elevated TDS is a common issue throughout the San Diego Region and may contribute to observed toxicity. Several aquatic organisms (e.g., *C. dubia*) have low tolerance to elevated TDS and ion imbalance (Mount et al., 1997). Additionally, TIEs conducted previously at the MLS site for *S. capricornutum* suggested TDS as a likely contributor to the observed toxicity in 2006 (SDCRC, 2007). During ambient weather, toxicity to the freshwater algae *S. capricornutum* was identified as a persistent concern at both the MLS (Lower Sweetwater HA (909.10)) and TWAS (Middle Sweetwater HA (909.20)) sites. Toxicity to *C. dubia* was also observed to be a concern at all SMC sites and at the MLS site. At the SMC sites, toxicity was observed to the acute and chronic survival endpoints and the reproductive endpoint. The toxicity at the MLS was observed only to the reproductive endpoint and did not warrant conducting a TIE on the sample. These

results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed through spatial analysis of results and the frequency of the results above benchmarks. Receiving water spatial patterns in the Sweetwater HU varied by constituent. During wet weather, priority constituents that were common amongst both sites included TDS, bifenthrin, and fecal coliform. The only high priority constituent identified was fecal coliform in the Middle Sweetwater HA (909.20). Nutrients were below the benchmarks. During ambient conditions, *enterococci* was identified as a medium priority constituent in both the Lower and Middle Sweetwater HAs. Dissolved and total phosphorus were identified as medium priority constituents in the Lower Sweetwater HA (909.10). Total nitrogen was above the benchmarks at the three upper SMC sites while total phosphorus was above the benchmarks at two upper SMC sites (all in the Lower Sweetwater HA (909.10)). TDS was also identified as a high priority at all sites during ambient weather.

As mentioned above, bioassessment IBI scores were rated Very Poor at all monitoring stations in the HA. The consistent rating of Very Poor in the Lower Sweetwater HA and Middle Sweetwater HA suggests that the extent of the impairment on the benthic community is not isolated to one area.

During wet weather, toxicity was not identified as persistent and varied by site. Toxicity to the freshwater algae *S. capricornutum* was observed in both the Lower and Middle Sweetwater HAs. Toxicity to *C. dubia* was also observed in the Lower Sweetwater HA (909.10). During ambient weather, toxicity also varied by site. Toxicity was observed to *S. capricornutum* in both the Lower and Middle Sweetwater HAs. Toxicity to *C. dubia* was also observed at all sites in the Lower Sweetwater HA during ambient conditions.

Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through a comparison of the MS4 Outfall Monitoring Program results to receiving water monitoring program results presented in Table 2-8. It should also be noted that it is not known to what extent pollutants from sources outside of the Copermittee's ability to legally control (such as, direct aerial deposition into receiving waters and Phase II dischargers) are affecting receiving water quality. During wet weather monitoring, MS4 results show that fecal coliform was identified as a high priority constituent in the Lower Sweetwater HA, which corresponds with elevated concentrations of fecal coliform observed at the Sweetwater MLS. There were no wet weather urban runoff samples collected in the Middle Sweetwater HA or Upper Sweetwater HA. These results indicate that there is a possible relationship between MS4 urban runoff and receiving water quality during wet weather in the Lower Sweetwater HA.

During ambient weather monitoring, MS4 results indicate that total phosphorus, total nitrogen, TDS, and *enterococci* were identified as high priority constituents, whereas fecal coliform was identified as a medium priority constituent in the Lower Sweetwater HA. Elevated concentrations were also observed for total nitrogen, total phosphorus, and *enteroccoci* at the Sweetwater MLS. Total phosphorus and *enterococci* were detected above benchmarks in only one sample collected in the Middle Sweetwater HA. These results indicate that there is a possible relationship between urban runoff and receiving water quality in the Lower Sweetwater HU. This question may be answered with a higher level of confidence with the five year assessment required by the MS4 Outfall Monitoring Workplan.

Core Management Question #4 – What are the sources of urban runoff that contribute to receiving water problems(s)?

Core Management Question #4 may be answered through those monitoring programs which provide information in regards to sources of urban runoff including the Jurisdiction DWM program, the CSDM program, and trash assessments conducted within receiving waters. A more detailed discussion of urban runoff sources can be found in each Copermittee's JURMP Annual Report and in the CSDM Program Annual Report, which is found in Appendix N of the Regional Monitoring Report. A separate discussion of source identification studies which took place within the San Diego Bay WMA will be presented in Section 2.2 of this Annual Report.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring from 2001-2010 at the Sweetwater River MLS. Based on the trend analysis, total arsenic and dissolved phosphorus is increasing over time at this site, while total lead is decreasing over time.

There are no apparent trends in the benthic community. The MLS site has historically been rated Very Poor for the monitoring period since 2001. The results of the 2010 survey were also Very Poor at all locations.

Toxicity has been observed occasionally in samples collected from the Sweetwater River MLS. During the 2009-2010 Monitoring Season, toxicity to *S. capricornutum* and *C. dubia* was observed during ambient and wet weather at the MLS. Since 2001, toxicity to *C. dubia* reproduction has been identified in 38% of samples, and toxicity *S. capricornutum* growth has been observed in 43% of samples. No toxicity to *H. azteca* has been observed since 2001. No trends in the data set are apparent.

2.1.6 Otay HU

The Otay HU is comprised of the Coronado, Otay Valley, and Dulzura HAs. Upper and Lower Otay Reservoirs, Otay River, and San Diego Bay are the major waterbodies found within the Otay HU, whereas the principal aquifer in the watershed is the San Diego Formation.

2.1.6.1 Otay HU HPWQPs

Table 2-9 presents a comparison between baseline HPWQPs identified in the San Diego Bay WURMP Document for the Otay HU to the 2009-2010 monitoring results. Monitoring results are separated by wet and ambient weather monitoring, as well as receiving water and urban runoff monitoring programs. The monitoring program from which the constituents of concern were determined is also indicated.

Table 2-9. Comparison of Otay HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period				Comments
		Wet Weather		Ambient Weather		
		RW	UR	RW	UR	
910.1	Bacteria				Y[8, 9]	
	Gross Pollutants				N[8]	
910.2	Bacteria			N[2]	Y[8, 9]	Wet weather receiving water bacteria data was collected in 2009-2010; however, the data did not meet QA standards due to a holding time exceedance and is thus not included in the assessment. [2]

Notes:

Superscript numbers correspond to monitoring activity number in Table 2-3.

RW= Receiving Water

UR= Urban Runoff

Y = Monitoring results consistent with high priority rating

Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

Shading indicates no data from the 2009-2010 reporting period

The following constituents are not HPWQPs but were identified as potential constituents of concern based only on data from 2009-2010 monitoring programs: 910.2—TDS, chromium, nutrients, and pesticides; 910.3—nutrients. These constituents have been identified based on only one year of data and in some cases only one sample, so at this time it is premature to add them to the HPWQP list. Depending on results of future monitoring and the upcoming LTEA, these constituents may be added to the HPWQP list in the future.

2.1.6.2 Otay HU Core Management Questions

Table 2-10 summarizes receiving water and urban runoff quality data within the Otay HU during FY 09-10. The table differentiates between data collected during wet and dry periods. Answers to the Core Management Questions are presented below.

Table 2-10. 2009-2010 Otay Monitoring Results.

Assessment	Program*	Priority Constituents of Concern†	Persistent Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	1, 2, 3	Regional Monitoring Program: High: TDS, Total Phosphorus, Diss. Phosphorus, Bifenthrin Additional San Diego Bay Copermittee Monitoring: None	*S. capricornutum* growth	Yes
Ambient Urban Runoff	9	Regional Monitoring Program: High: *Enterococci*, Fecal Coliform Additional San Diego Bay Copermittee Monitoring: None	NA	
Wet Weather Receiving Water	1, 2, 4	Regional Monitoring Program: High: Bifenthrin, Medium: L-cyhalothrin, MBAS, TSS, Turbidity, Diss. Chromium, TDS, Fecal Coliform Additional San Diego Bay Copermittee Monitoring: None	*S. capricornutum* growth	
Wet Weather Urban Runoff	9	Regional Monitoring Program: None Additional San Diego Bay Copermittee Monitoring: None	NA	

* Numbers correspond to monitoring activity number in Table 2-3

† Additional studies conducted by San Diego Bay Copermittees were not included to determine HPWQPs, however the constituents listed support exceedances of WQO.

NA = Not assessed, Not Applicable, or Not Analyzed.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed through wet and ambient weather receiving water assessments at the TWAS monitoring site. During wet weather monitoring, bifenthrin was

identified as a high priority constituent. Medium priority constituents were identified as L-cyhalothrin, MBAS, TSS, turbidity, dissolved chromium, and TDS. During weather monitoring, high priority constituents were identified for TDS, total phosphorus, and dissolved phosphorus. These results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Bioassessment IBI scores were rated Very Poor. O/E scores also showed impaired conditions. Physical habitat scores were moderate, and combined with the high TDS, are potential factors influencing depressed biology scores. The bioassessment results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Reproductive toxicity to *C. dubia* was observed during both ambient weather monitoring events. Toxicity was also observed for the *C. dubia* acute and chronic survival endpoints during the first ambient event. The level of reproductive toxicity at the OR-TWAS-1 did not warrant conducting a TIE on the sample. Toxicity was not observed during wet weather. This suggests that conditions in receiving waters may not be protective of all assigned beneficial uses.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed through spatial analysis of results and the frequency of the results above benchmarks. There was only one monitoring site in the Otay HU, therefore a spatial analysis could not be completed. During wet weather, there was only one high priority constituent identified (bifenthrin). However, no toxicity was observed during either wet weather event.

The bioassessment score was rated Very Poor and is consistent with other results throughout the San Diego Bay WMA.

Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through a comparison of the MS4 Outfall Monitoring Program results to receiving water monitoring program results presented in Table 2-10. It should also be noted that it is not known to what extent pollutants from sources outside of the Copermittee's ability to legally control (such as, direct aerial deposition into receiving waters and Phase II dischargers) are affecting receiving water quality. There were no wet weather MS4 outfall samples collected in the Otay WMA. During dry weather, only one MS4 outfall was monitored. Fecal coliform and *enterococci* were identified as high priority MS4 outfall constituents within the Otay HU. There were no medium priority constituents identified. Due to the limited dataset, it is difficult to establish a relationship between urban runoff and receiving water quality conditions. This question may be answered with a higher level of confidence with the five year assessment required by the MS4 Outfall Monitoring Workplan.

Core Management Question #4 – What are the sources of urban runoff that contribute to receiving water problems(s)?

Core Management Question #4 may be answered through those monitoring programs which provide information in regards to sources of urban runoff including the Jurisdiction DWM program, the CSDM program, and trash assessments conducted within receiving waters. A more detailed discussion of urban runoff sources can be found in each Copermittee's JURMP Annual Report and in the CSDM Program Annual Report, which is found in Appendix N of the Regional Monitoring Report. A separate discussion of source identification studies which took place within the San Diego Bay WMA will be presented in Section 2.2 of this Annual Report.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Core Management Question 5 cannot be addressed for the Otay TWAS because only one year of data is available for this site.

2.2 Pollutant Source Identification

The San Diego Bay WURMP Document Section 3.3. discusses potential sources of the baseline HPQWPs that may impact water quality throughout the San Diego Bay WMA. Since the development of the WURMP document, the San Diego Bay Watershed Copermittees have conducted additional source identification programs to help refine that information. The findings of additional pollutant source identification studies conducted during the 2009-2010 reporting period are presented below. The San Diego Bay Copermittees will continue compiling information from monitoring and source identification studies in order to effectively select and implement source appropriate activities to reduce pollutant discharges.

2.2.1 Chollas Creek TMDL Special Studies - Activity Assessment Grab Samples for Metals

The dischargers named in the Diazinon and Dissolved Metals TMDL participated in this special study to prioritize source areas of dissolved copper, lead, zinc, as well as TSS concentrations within the Chollas Creek Watershed. First-flush samples were collected from 18 municipal MS4 outfalls located in targeted land use drainage basins. Source areas determined to be the "highest" priority emanated from commercial, transportation, and residential land uses. Specific sources within these areas include runoff from automotive facilities, buildings with metals roofs, and uncovered outdoor metal storage areas. It was determined that the transportation land use contributed dissolved copper, dissolved zinc, and TSS likely associated with brake pad dust and tires. The residential area contributed a very high TSS concentration; however, metals concentrations were relatively low. High TSS observed in the residential area is most likely due to sediment erosion from vegetated areas.

2.2.2 Chollas and Paleta Creeks Characterization Study (SDB-065) and B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-064)

The City of San Diego conducted these studies to characterize urban runoff discharges during wet and ambient conditions. A source identification component was integrated within each study. Both studies identified that activities originating in industrial areas are significant sources of copper and zinc. In addition, Synthetic Pyrethroids were found throughout each study area. The studies concluded that private and commercial application of synthetic pyrethroid pesticides were the primary sources for this class of pollutant.

2.2.3 Regional Source Identification Program

A Regional Source Identification Program was conducted in single family residential land use drainages within the jurisdictions of the City of Oceanside and the City of Del Mar. A detailed presentation of this study is presented in Section 12 of the Regional Monitoring Report. Results suggest that single family residential land uses are likely contributors of the following constituents during wet weather events:

- Sediment (TSS, turbidity)
- Metals (Dissolved Copper) – only in Del Mar
- Pyrethroid Pesticides (Bifenthrin, Cyfluthrin, L-Cyhalothrin, Permethrin)
- Bacteria (Fecal Coliforms)

The findings of this program can be used as a metric for understanding the potential extent and magnitude of these constituents within the San Diego Bay WMA. Single family residential land uses comprise approximately 29 percent of the Pueblo San Diego HA. Both the upper portions of the Sweetwater and Otay HUs contain primarily open space and undeveloped land uses. Twelve percent and 5 percent of land uses are comprised of single family residential uses within the Sweetwater and Otay HUs, respectively. Single family residential uses are more common within the lower portions of each HU. Within the Lower Sweetwater HA, 39 percent of land uses are comprised of single family residential uses. Fifteen percent exists within the lower Otay HAs. Constituent concentrations may vary depending on a variety of characteristics found within single family residential drainage areas. Factors which should be considered when applying the metric found in the regional source identification study include: age of neighborhood, size of properties, location of other land use types, etc.

Section 3: Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. Watershed Activity Implementation Summary Sheets for all watershed activities implemented during this reporting period, including activities implemented in compliance with a TMDL, are located in Appendix D of this Annual Report. The format of the activity summary template utilized by the San Diego Bay Copermittees is presented in the 2008 San Diego Bay WURMP document.

3.1 Watershed Water Quality Activities

The San Diego Bay Copermittees relied on the Watershed Strategy to guide the selection of watershed water quality activities. Each Copermittee has individually decided which activities are feasible to institute within its jurisdiction, and has selected watershed water quality activities for implementation that are appropriate for its relative contribution to the watershed's high priority water quality problems.

Table 3-1 presents the water quality activities implemented in FY 2009-10. The progress of each activity has been described in activity summary sheets, located in Appendix D. The Copermittees have identified what was accomplished during the reporting period for these activities and how the activity addresses high priority water quality problems in particular HAs. During this reporting period, the San Diego Bay Copermittees implemented seven trash and debris related water quality activities focused on reducing the amount of trash and debris entering the MS4. Five enhanced inspection activities were implemented to abate sources of high priority water quality problems associated with construction activities, large special events, or automotive facilities. Two targeted special studies were implemented during this reporting period. In addition, Copermittees implemented five other water quality activities to either abate sources or reduce loading of high priority pollutants. Five water quality activities and their associated assessment mechanisms were completed during this reporting period and will no longer be evaluated in future WURMP annual report assessments.

Copermittees named in the Chollas Creek Dissolved Metals TMDL implemented a number of watershed activities which specifically addressed the TMDL. Those watershed activities listed in the TMDL Implementation Plan are included in Table 3-1 and will be discussed further in their respective activity summary sheets. Results and updates on the water quality activities implemented by all named dischargers in the TMDL during this reporting period are located in Appendix E.

The Watershed Strategy indicates that where there are data gaps that must be filled before successful implementation of a load reduction activity can occur, monitoring and/or source identification activities are necessary. With this in mind, ten monitoring and source identification

activities were implemented during this reporting period. While the San Diego Bay Copermittees recognize that these types of activities are not considered for credit toward Permit compliance, the importance of the monitoring information to the overall success of the Watershed Strategy and the Copermittees' ability to address high priority water quality problems cannot be overlooked. Monitoring information will support future management decisions regarding the planning, implementation, and assessment of watershed activities.

The Copermittees have continued to collaborate on the reporting of four common jurisdictional water quality activities at a watershed level. These activities include: Pet Waste Bags, Storm Drain Litter Control Techniques, Enhanced Street Sweeping and Cleanup Events. This collaborative approach was utilized because these activities were identified as being beneficial in addressing high priority water quality problems and can be applied within different locations and at different scales of implementation as determined appropriate by each Copermittee. The benefit of this approach is that it allows an assessment of the activity at both the jurisdictional level as well as at a HA or watershed level.

Table 3-1. San Diego Bay WURMP Water Quality Activities in FY 2009-10.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																			
Trash and Debris Related Activities																			
Pet Waste Bag Collaborative Watershed Activities (SDB-001)	X	X		X			X	X	X	●				●					
Pet Waste Bag Dispenser Program in County Parks (SDB – 001a)				X	X	X			X	●				●					
Pet Waste Bag Dispenser Program Phase II (SDB-001b) (In Planning)		X								●				●					
Storm Drain Litter Control Techniques Collaborative Watershed Activity – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (SDB-002b)* (In Planning)		X	X	X														●	●
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)*	X	X	X	X			X						●					●	●
Median Sweeping Pilot Study (SDB-003a)*		X											●						
Sweeper Speed Efficiency Study (SDB-003b)* (In Planning)		X											●						
Collaborative Cleanup Events (SDB-004)*		X	X	X			X	X											●
Clean Community Program (SDB-005)			X							●		●							●
Chollas Creek Family Stream Team Initiative Partnership (SDB-051)*		X											●						●
Enhanced Inspection Activities																			
Additional Dry Season Construction Inspections (SDB-007)			X	X														●	●
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)*		X											●						
Enhanced Construction Oversight (SDB-009)		X																●	
Large Sp. Events (Education, Inspections, and Cleanup) (SDB-047)							X			●									
Outdoor Special Event Oversight (SDB-048)		X																	●
Targeted Special Studies																			
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)*		X								●			●						
Dalbergia "Green Mall" Infiltration Retrofit (SDB-013)* (In Planning)		X								●			●						

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Southcrest Park Green Lot Infiltration Project (SDB-014)* (In Planning)		X								●			●						
Memorial Park "Green Lot" Infiltration Retrofit Activity (SDB-015)* (In Planning)		X								●			●						
43rd and Logan Biofiltration Project (SDB-037)* (In Planning)		X								●			●						
Maple Canyon Water Quality Improvement (SDB-049)* (In Planning)		X								●								●	●
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)* (In Planning)		X											●						
Treatment Control BMP Pilot Projects (SDB-034)		X											●						
Beta Alley Green Street Filtration (SDB-058) (In Planning)		X								●		●	●		●		●	●	●
Other Water Quality Activities																			
Update Recycling and Solid Waste Ordinance (SDB-035)				X				X	X	●				●					●
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X	●	●	●	●	●	●	●	●	●	●
Stormwater Quality Master Plans for Special Drainage Fee Areas (SDB-056)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●
Commercial BMP Self Certification Pilot Program (SDB-059) (In Planning)		X								●			●	●			●	●	
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials (SDB-060)*	X	X	X	X	X	X	X	X	X				●						
Chula Vista Wildlife Reserve Restoration and Enhancement Project (SDB-061) (In Planning)										●								●	
Residential Rain Barrel Subsidies & Distributions (SDB-062) (In Planning)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																			
Chollas Creek Diazinon TMDL (SDB-018)	X	X															●		
Enhanced Dry Weather Monitoring Program (SDB-020)		X								●	●	●	●	●	●	●	●	●	●
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								●			●	●		●	●	●	●
La Mesa Additional Water Quality Monitoring Program (SDB-022)*		X								●	●	●	●	●	●	●	●	●	
BMP Effectiveness Monitoring Program (SDB-023)		X										●	●		●			●	

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X			●	●	●	●	●	●	●	●	●	
Shelter Island Yacht Basin Urban Runoff Monitoring Study (SDB-053)	X												●						
B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-063)	X											●				●			
Chollas and Paleta Creeks Characterization Study (SDB-064)*		X	X										●				●		
Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-065)*		X											●						

* Indicates the watershed activities also listed in the Chollas Creek Dissolved Metals TMDL Implementation Plan or added by reference within the tables in Appendix E.

3.2 Watershed Education Activities

The San Diego Bay Watershed Copermittees recognize the value of educational programs as an essential element towards ensuring future watershed protection efforts. The main focus of the San Diego Bay watershed education program is to make the public aware of the sources of water pollution in order to encourage positive behavioral change. Thirteen watershed education activities were implemented in the San Diego Bay WMA during this reporting period (Table 3-2). Activity summary sheets for these activities are located in Appendix D. In addition to these identified watershed educational activities, the Copermittees have continued to implement other educational and outreach activities that contribute to the increase in knowledge and behavior change among residents. This section of the report provides a watershed-wide tabulation of all education and public participation activities the Copermittees implemented during the reporting period, including jurisdictional activities that occurred in the watershed. This information will be utilized to obtain a comprehensive evaluation of education efforts occurring within the San Diego Bay WMA and aid in the development and/or modification of future watershed education activities.

Table 3-2. Implemented San Diego Bay WURMP Education Activities in FY 2009-10.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)*			X	X						●			●				●		
Storm Drain Stenciling (SDB-028)				X				X	X	●	●	●	●	●	●	●	●	●	●
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	●		●							●
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	●		●	●						●
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	●									
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	●									
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	●					●				
La Mesa Park Kiosk (SDB-042)*		X								●			●				●		
ILACSD High School Watershed Presentations (SDB-045)*		X	X	X				X		●	●	●	●	●	●	●	●	●	●
San Diego Bay Watershed Brochure (SDB-055)	X	X	X	X				X	X	●	●	●	●	●	●	●	●	●	●
Focused Outreach to Equestrian Community (SDB-066)				X	X	X		X	X	●				●				●	
Integenerational Games (SDB-067)*		X		X						●			●		●		●		●
Stream Team Stewards (SDB-068)*		X								●			●	●	●	●	●	●	●

* Indicates the watershed activities also listed in the Chollas Creek Dissolved Metals TMDL Implementation Plan or added by reference within the tables in Appendix E.

3.2.1 San Diego Bay Education Program

The San Diego Bay Education Program is outlined in the San Diego Bay WURMP document. The focus of the education program is to provide useful information to the public about the San Diego Bay WMA and the high priority water quality problems within the watershed. The San Diego Bay Copermittees have committed to implementing several short and long-term educational activities that address watershed concepts and watershed pollutants. These tasks also overlap several programs that are required for NPDES Permit compliance on jurisdictional, watershed, or regional levels.

In addition to the watershed education activities listed in Table 3-2, each jurisdiction also implemented targeted education programs within the San Diego Bay WMA that were part of other existing storm water or environmental programs. The education programs implemented by the San Diego Bay Copermittees are further summarized and described in the following sections of this report because they contribute to the overall increase in knowledge and behavior change within the WMA. Table 3-3 below provides a summary of all the education activities implemented during the reporting period broken down into the following subcategories: Watershed Public Presentation and Media, School Programs, Integrated Pest Management, Project Clean Water Website, and Partners in Clean Water. Appendix F provides a complete tabulation by jurisdiction of the watershed education and public participation activities that were implemented during the reporting period.

Table 3-3. Summary of Education Activities for FY 2009-10.

Tasks from the WURMP Education Action Plan	Target Audience	Program Elements	Number of Events	Jurisdictional, Watershed, or Regional Program	Participating Jurisdictions	Concepts/Constituents of Concern Addressed					
						Watershed concepts	General Surface Water concepts	Copper/Zinc	Pesticides	Bacteria	Sediment
Public Presentations and Media - Watershed Element	General Public, Residential, Commercial/ Industrial, Construction, Municipal	Festivals/Community Events	91	J, W, R	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, National City, Port of San Diego, San Diego, County of San Diego, Lemon Grove	x	x	x	x	x	x
		Presentations	216	J, W	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, National City, Port of San Diego, San Diego, County of San Diego	x	x	x	x	x	x
		Print Media	40	J, W	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, County of San Diego, City of San Diego	x	x	x	x	x	X
		Public Service Announcements	2	W, R	County of San Diego, Imperial Beach, City of San Diego	x	x				
		Municipal Staff Training	22	J, W	Airport, Chula Vista, Imperial Beach. La Mesa, National City	x	x	x	x	x	x

Table 3-3. Summary of Education Activities for FY 2009-10.

Tasks from the WURMP Education Action Plan	Target Audience	Program Elements	Number of Events	Jurisdictional, Watershed, or Regional Program	Participating Jurisdictions	Concepts/Constituents of Concern Addressed					
						Watershed concepts	General Surface Water concepts	Copper/Zinc	Pesticides	Bacteria	Sediment
		Workshops	4	J, W	La Mesa, Port of San Diego, County of San Diego	x	x	x	x	x	x
School Programs	K - 12 children	Field Trips	9	J, W	Airport Authority, Port of San Diego, County of San Diego	x	x		x	x	
		Project SWELL	*	W, R	Port of San Diego, Airport Authority, City of San Diego	x	x				
Integrated Pest Management	General Public, Residential, Commercial/ Industrial, Municipal	IPM Seminars/Events	2	J, W, R	Port of San Diego, County of San Diego, City of San Diego	x	x		x		
Project Clean Water Watershed Website	General Public	Website with information related to surface water quality issues, watersheds, and pollutants	N/A	W, R	All	x	x	x	x	x	x

Table 3-3. Summary of Education Activities for FY 2009-10.

Tasks from the WURMP Education Action Plan	Target Audience	Program Elements	Number of Events	Jurisdictional, Watershed, or Regional Program	Participating Jurisdictions	Concepts/Constituents of Concern Addressed					
						Watershed concepts	General Surface Water concepts	Copper/Zinc	Pesticides	Bacteria	Sediment
Partners in Clean Water	General Public	Cleanup Events	30	J, W	Chula Vista, Coronado, Imperial Beach, La Mesa, National City, Port of San Diego, San Diego, County of San Diego, Lemon Grove	x	x	x	x	x	x
		Citizen Monitoring/ Training	1	J, W	Port of San Diego	x	x	x	x	x	x
		Waste Collection Recycling Events	19	J, W, R	Airport Authority, Chula Vista, Imperial Beach, La Mesa, National City, Port of San Diego, County of San Diego	X	X	X	X	X	X
		Storm Water Stenciling Events	1	J, W	Airport Authority	X	X	X	X	X	X

* Project Swell is reported as the number of students reached and is discussed further in Section 3.2.1.2.

3.2.1.1 Watershed Public Presentations and Media

The Public Presentations and Media Watershed Elements of the San Diego Bay Education Program were designed to incorporate general watershed, receiving water, and storm water pollution prevention concepts and principles into existing and planned public presentation and media opportunities at the jurisdictional level. The San Diego Bay Copermittees used a variety of means to meet this objective and will continue to evaluate and improve their effectiveness. For purposes of this Annual Report, the Public Presentation and Media element of the Education Action Plan has been subcategorized under four sub-headings as shown in Table 3-3 and described below. Further detail on these activities by jurisdiction is provided in Appendix F.

Festivals/Community Events- These events are generally hosted by local community groups or jurisdictions and provide an opportunity to host a booth and to share educational materials. Community events, such as the San Diego County Fair, provide another venue for public outreach and education. The San Diego Bay Copermittees were involved in 91 different events this reporting period that reached an estimated 1,680,126 persons.

Presentations - This category includes presentations with visual aides given to community organizations or to school children, at their regular meeting or event. Staff from the jurisdictions in the San Diego Bay WMA made a number of presentations for groups throughout the watershed. During these presentations which addressed students at all levels from elementary school to adult education classes, staff emphasized watershed issues, recycling, and the general storm water pollutants of concern. Overall, the San Diego Bay Copermittees conducted 216 different presentations this reporting period which was estimated to reach approximately 39,702 persons.

An education activity (Activity Summary Sheet SDB-044) highlights the collaborative effort among the San Diego Bay Copermittees. Five of the Copermittees collaborated with I Love A Clean San Diego (ILACSD) to provide information on high priority water quality problems and general storm water issues through presentations to 495 students at six different high schools. In addition, the Stream Team Stewards (Activity Summary Sheet SDB-068) and Intergenerational Games (SDB-067) provided education to students and nearby residents on storm water pollution prevention. Their increased awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed

Print Media – Several of the San Diego Bay Copermittees have made efforts to attract media attention. The Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, and San Diego, as well as the Port of San Diego and the Airport Authority have been successful at gaining print media coverage for their watershed and storm water management efforts and the results of their programs. Articles in the EDCO Environmental Newsletter, Coronado Currents, South Bay Star News, La Mesa FOCUS, and the San Diego Union Tribune were printed during this reporting

period. In addition, Copermittees have presented watershed concepts through pamphlets, brochures, and displays or kiosks in public areas. Notably, the Think Blue program messages were advertised on transit shelters and billboards, and thought multiple media outlets in both English and Spanish. Additional information for these activities can be found in the activity summary sheets in Appendix D or in the tabulation of education activities by jurisdictions in Appendix F. The San Diego Bay Copermittees continue to explore opportunities at making coordinated efforts to garner print media coverage as an outreach and education mechanism. The San Diego Bay Copermittees distributed 40 different forms of watershed related print material during this reporting period.

Public Service Announcements (PSAs) – The Think Blue media campaign continues to be a mechanism for conducting watershed and storm water pollution prevention education and outreach throughout the San Diego Bay WMA and the entire region. This reporting period represents the ninth straight year that Think Blue has been in operation. Think Blue provides outreach to the general public through public service announcements in both English and Spanish. The City of San Diego produced and broadcasted the *Karma*, *Karma Second Chance*, and *Karma Tourist* PSAs (Activity Summary Sheet SDB-029) throughout the watershed during last reporting period and continued to broadcast the PSAs through this reporting year.

Watershed Education for Municipal Staff - The San Diego Bay Copermittees continue to provide storm water education to municipal staff, especially to those staff dealing directly with pollutants of concern in the watershed. Watershed training for municipal staff can be focused on more general concepts or on specific pollutants, depending on the audience. Incorporating watershed education into the required municipal staff training of the Jurisdictional Urban Runoff Management Plan (JURMP) helps the Copermittees address the high priority water quality problems in San Diego Bay. The San Diego Bay Copermittees conducted in 22 different Municipal Training Events during this reporting period. For more information on municipal staff training, please refer to each of the San Diego Bay Copermittee's individual JURMP.

Workshops – Several San Diego Bay Copermittees conducted educational workshops addressing storm water issues. These workshops targeted representative from businesses and the general public. Some of the topics included auto facility BMP implementation and water conservation. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues. One educational activity targeted the equestrian community and other owners of small animals and livestock in the unincorporated area, such as within the Sweetwater HU (Activity Summary Sheet SDB-066) and provided focused water quality outreach. The objective of the activity was to increase local watershed awareness, manure management, and composting. A presentation and outreach materials were provided that identified BMPs and resources available to equestrians. On July 28, 2010, 25 people participated in a workshop held in the Sweetwater HU. Key elements included how proper manure management relates to horse health, water quality, and maintenance of positive relationships with neighbors.

3.2.1.2 School Programs: San Diego Bay WMA

School children are a primary focus of the San Diego Bay Education Program. The San Diego Bay Copermittees continue to focus on efforts to effectively promote watershed awareness and to initiate positive behavioral changes in children. The San Diego Bay Watershed Education Program (presented in Table 3-3) shows the four main sub-categories used to describe the education and outreach efforts directed at school children during this reporting period.

Field Trips – The San Diego Bay Copermittees provided field trips to the Chula Vista Nature Center, Wildcoast Sea Turtle Education, the Maritime Museum, Ocean Discovery Institute, and others, as an effective hands-on means of increasing watershed and water quality awareness in their students. Attendance at these field trips was more than 15,000 students.

Project SWELL – Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, Airport Authority, other municipalities, and non-profit organizations to establish comprehensive water quality and pollution prevention curricula in City schools. Started in May 2003, Project SWELL seeks to educate local school children about our region's watersheds while also fostering a sense of stewardship in these future leaders that will provide long-term solutions to the region's water quality problems. Project SWELL is estimated to have reached more than 40,000 school children in the SDUSD during the reporting period.

3.2.1.3 Integrated Pest Management (IPM)

The San Diego Bay Copermittees believe that public education about IPM is an effective way to protect receiving waters from the impacts of Diazinon and other pesticides. IPM promotes the use of integrated, ecologically sound pest management programs. IPM seminars and special events are the two main methods used to increase knowledge on IPM. The San Diego Bay Copermittees participated in two IPM Seminars/Events during this reporting period.

3.2.1.4 Project Clean Water Watershed Website

As in previous years, the Project Clean Water (PCW) website (www.projectcleanwater.org) provided a venue for public education and outreach about the San Diego Bay WMA. In addition, the San Diego Bay Copermittees continue to link their individual jurisdictional websites to PCW. Each of these websites presents another mechanism for educating the public about watershed issues. These websites also function as public participation mechanisms. Please refer to the Public Participation section of this Annual Report (Section 3.3) for more information on this aspect of the PCW website for the San Diego Bay WMA.

3.2.1.5 Partners in Clean Water

The San Diego Bay Copermittees continue to nurture new and existing partnerships with individuals and groups within our communities that share our concern for the environment and our watershed. Table 3-3 shows the four main sub-categories as listed below to describe the

education and outreach efforts directed at these types of community partnerships during this reporting period.

Cleanup Events – In addition to the obvious public participation aspects of a cleanup event, these events provided an opportunity to conduct education and outreach about watershed issues and general storm water pollutants of concern. These events usually involve trash removal from inland and coastal areas.

All the San Diego Bay Copermittees collectively sponsored the Creek to Bay Cleanup for the sixth year in a row. San Diego Bay Copermittees worked together to help fund and staff cleanup sites within the San Diego Bay WMA. Several of the San Diego Bay Copermittees also participated in Coastal Cleanup Day, as well as a number of smaller, jurisdiction-specific cleanup events. The San Diego Bay Copermittees participated in 30 Clean-up Events during this reporting period. A summary of the number of persons reached is included in Table 3-5. Additional information on watershed cleanup events is provided in Activity Summary Sheet SDB-004 in Appendix D.

Citizen Monitoring/Training – Citizen Monitoring Training and Citizen Monitoring events provide an opportunity for community members to learn how water quality testing is performed, as well as make a connection to the water bodies in their neighborhoods. The Port of San Diego sponsored two programs with Citizen Monitoring components during this reporting period. The Chollas Creek Family Stream Team Initiative Partnership (SDB-051) and the Zoological Society of San Diego's Stream Team Stewards program (SDB-068) provided training to citizens within the Chollas Creek watershed (908.2 HA). Further details on these programs are provided in Appendices D-1 and E.

Storm Drain Stenciling Events – These events are an effective means for increasing watershed and water quality awareness in the community. The City of Chula Vista continued to participate in events during the reporting period through inlet labeling affixed with storm water related placards or stenciled graphics (SDB-028). The Chula Vista installed 150 thermoplastic storm drain markers permanently affixed to storm drain inlets with the prohibitive "No Dumping – Drains to Bay" message during the reporting year. Notably, nearly all storm drain structures in Chula Vista are identified with stenciling, plastic markers, or permanent concrete stamping. Storm drain stenciling was also done as part of the Stream Team Stewards watershed education activity (SDB-068) by students at 50 storm drain locations in and around the Chollas Creek watershed community (908.22 HSA).

Waste Collection/Recycling Events – These include special organized events where citizens can properly dispose of their HHW or E-Waste. This does not include regular collection at HHW facilities. The San Diego Bay Copermittees participated in 19 Waste Collection/Recycling Events during this reporting period with a summary of persons reached included in Table 3-5.

3.3 Public Participation Activities

Public participation during the development and implementation of the San Diego Bay WURMP has been, and continues to be, encouraged to ensure that stakeholder interests and creative solutions are considered. Broad participation is critical to further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process. Further, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own and that broad partnerships are essential to positively affect the water resources in the watershed. It is only through a collaborative approach that we will develop a better understanding of these issues and processes affecting water quality in our watersheds.

Effective public participation is driven by ensuring that the stakeholders are engaged at the appropriate level of decision-making. Public input into any decision-making process can be as simple as providing public notification that an initiative will occur, or a complex process that requires them to be intrinsically involved and responsible for the final decision-based outcome, or any level in between. The proper identification of the role of the public is crucial to ensuring the success of any initiative for which public input is sought. Table 3-4 provides a description of the possible levels of public participation, ranging from simple notifications to empowerment of full decision-making.

Table 3-4. Levels of Public Participation.

Public Participation Objectives				
INFORM	**CONSULT**	**INVOLVE**	**COLLABORATE**	**EMPOWER**
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.

An opportunity for assessing public participation is available through the identification of the appropriate level at which to involve stakeholders in decision-making. Prior to embarking on a public participation opportunity, San Diego Bay Copermittees established an objective defining the level at which the public is invited to be involved. The effectiveness of public participation in decisions affecting the San Diego Bay WMA were assessed by understanding the numbers of stakeholders reached through each decision-making opportunity (where applicable), and by providing summaries describing how stakeholders participated in each opportunity.

The following section summarizes the activities and efforts made by the San Diego Bay Copermittees to encourage public participation during this reporting period. A complete list of public participation activities conducted within the watershed is included in Appendix F. Please note that this section only discusses the activities that were identified in the Public Participation section of the WURMP and relate to the San Diego Bay WMA. The San Diego Bay Copermittees have also conducted a number of regional programs and events involving the public in general water quality issues. Many municipalities have worked with stakeholders on efforts such as grant applications and water quality data collection.

3.3.1 Storm Water Copermittee Collaboration and Community Workshops

Stakeholder participation is vital to the success of watershed activities. The San Diego Bay Copermittees provided several forums during the year that allowed various stakeholder groups to participate in WURMP activities. Community workshops and activities that enhanced collaboration among San Diego Bay Copermittees are discussed below.

San Diego Bay WURMP Meetings

San Diego Bay WURMP meetings were held regularly to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue to inform, consult, and involve Copermittees and other stakeholders on local watershed efforts. Appendix B presents a summary of the meetings held by the workgroup during the reporting period, including an outline of the principal agenda items.

Workshops and Conferences

San Diego Bay Copermittees conducted educational workshops addressing storm water issues to inform and involve the public. These workshops targeted representatives from businesses, the construction industry, and the general public. The topics ranged from simple BMP implementation to Stormwater Pollution Prevention Plan (SWPPP) preparation, and many were tailored to specific audiences. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues. The San Diego Bay Copermittees also targeted specific groups by setting up booths at various conferences and city festivals. Educational materials were distributed and personnel at the booths answered questions. The San Diego Bay Copermittees conducted or participated in four different watershed related workshops and conferences during this reporting period.

Presentations

The San Diego Bay Copermittees conducted a variety of informational presentations during the reporting period, targeting many different types of audiences including schools, community groups, and tour groups. These educational presentations provided educational media as well as a venue for questions about storm water issues to be discussed. Individuals who have a greater awareness and understanding of storm water issues will likely also be more active in taking measures to protect storm water quality and influencing others around them to do the same. The total number of persons attending presentations is estimated at 39,702.

Community Events

During this reporting period, the San Diego Bay Copermittees participated in 91 watershed related community special events. Collectively, the community events met all five public participation objectives presented in Table 3-4 and many of these events addressed regional water quality issues that spanned several watersheds. The San Diego Bay Copermittees feel such broad based activities play an important role in engaging the public on important water quality issues and that such public participation does positively impact water quality both in the San Diego region as a whole and in San Diego Bay.

Cleanup Events and Waste Collection

Cleanup events give the public a chance to actively participate in improving the water bodies in their neighborhoods. In addition to the obvious benefits to water quality, such events also give residents a tangible understanding of the link between their actions and receiving water impacts. Active, hands-on experience tends to foster a sense of ownership and deepen participants' sense of responsibility for their local water bodies. As a result, the cleanup events and waste collection events were effective in achieving all of the public participation objectives.

Though the San Diego Bay Copermittees have identified trash as a constituent of concern for the Pueblo HU, the Copermittees continued to implement a variety of activities to address this issue where applicable and, as a proactive measure, throughout the entire San Diego Bay WMA. Cleanup events are an effective means of not only involving the community in protecting water quality, but also specifically removing trash from water bodies in urban settings. During cleanup events, participants are provided with educational material regarding watershed concepts and have the opportunity to discuss storm water issues with city staff and knowledgeable volunteers. Additional information on watershed cleanup events is provided in Activity Summary Sheet SDB-004 in Appendix D.

Notably, the Chollas Creek Stream Team Initiative Partnership (SDB-0051) addressed illegal dumping and non-point source trash accumulation within Chollas Creek (908.2 HA) by organizing refuse collection events and community education and outreach efforts. The Initiative successfully implemented public participation elements to inform, involve and empower citizens to participate in proper refuse disposal in order to reduce illegal dumping and trash within the Chollas Creek community.

Free collection of household hazardous waste (HHW), electronic, and universal waste has occurred during FY 2009-10. Often residents illegally dump these materials due to a combination of economic pressures, inconvenience, and/or lack of knowledge regarding where to go to dispose of the items. Waste collection events provide an avenue for the public to properly dispose of used oil, appliances, and other items for which they might otherwise have had to pay fees or transport for long distances.

Table 3-5 below details the number of workshops, conferences, presentations, field trips, community events, cleanup events, waste collection events, print media, and municipal staff trainings that were held and the number of people reached through these events. Overall, 431 events reached more than 1.8 million people. Note that an exact numeric attendance was not possible for all events. For a more detailed description of the events that occurred in each one of these categories, refer to Appendix F.

Table 3-5. Summary of Activities.

Type of Activity	Number of Events	Number of People Reached*
Workshops/Conferences	4	67
Presentations	216	39,702
Field Trips	9	15,019
Community Events	91	1,685,576
Cleanup Events	30	10,106
Waste Collection Events	19	8,017
Print Media	40	128,082
Municipal Staff Training	22	719
TOTALS	**431**	**1,887,288**

* These totals do not include the numbers for some events for which attendance was not recorded.

3.3.2 Websites

The Project Clean Water (PCW) website successfully provides a means of public participation by informing and involving the public on San Diego Bay water quality issues. Each of the three HUs which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have pages devoted to them that are available for both the San Diego Bay Copermittees and public viewing. The San Diego Bay WURMP page includes downloadable WURMP and WURMP Annual Report documents, as well as land use and MS4 maps. The page specifically states that the San Diego Bay Copermittees are seeking public comment on the program and provides mail, email, and telephone contact information for the Lead Copermittee. The San Diego Bay WURMP had 977 hits in FY 2009-10

During the reporting period, 5,257 hits were recorded for the four main PCW web pages related to San Diego Bay WMA, which is comparable to the number of hits during the last reporting period. The Pueblo Watershed received 1,535 hits, Sweetwater Watershed received 1,896 hits, and the Otay Watershed link received 1,826 hits.

In addition to the PCW website, several other websites with San Diego Bay WMA content have been developed. The City of San Diego worked with San Diego State University and San Diego Coastkeeper continue to provide the San Diego Bay Watershed's Common Ground website (http://www.sdbay.sdsu.edu), which has interactive water quality maps, access to a variety of water quality data collected within the watershed, a watershed tour feature, and a variety of other watershed specific educational content. The Port of San Diego continues to display the Project ORCA (Online Research Coastal Academy) site, which provides interactive, San Diego Bay focused, environmental education targeted at children. The Copermittees' regional website (www.thinkblueregion.org) also serves as a web portal that provides storm water educational information and links to each member agency's website.

3.3.3 Direct Interaction

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' staff also interacts with the public on a daily basis. Municipal employees receive storm water training on an ongoing basis, as described in each JURMP. Staff with program implementation responsibilities receives the most intensive training, but other employees are educated about storm water issues as well. Municipal employees interact with the public in their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about storm water issues and regulations, as well as answer questions and provide guidance. This day-to-day personal interaction is an important component of the San Diego Bay Copermittees public participation activities.

3.4 Collaborative Land-Use Planning Efforts

In recent years water quality management efforts have become increasingly watershed-focused, and the San Diego Bay Copermittees are working to integrate watershed management concepts into programs that can be implemented across jurisdictional boundaries. In general, this effort includes participation in watershed management plans, utilizing regional guidance documents, and increasing public participation. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and a balance of land uses when planning future development. Several planning activities have been initiated.

During the reporting period, San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA continued to develop land-use plans intended to improve the water quality in San Diego Bay, including the following:

- Otay River Watershed Management Plan (ORWMP)
- Otay River Special Area Management Plan (SAMP)

Stakeholders in the areas in which these plans focus have attended regular meetings and providing valuable input on plan direction. By consulting and collaborating with various stakeholders, Copermittees' efforts have empowered the public to be more involved in addressing water quality issues.

Links to pages discussing the ORWMP and the Otay River SAMP are included on the Project Clean Water website. The sites include a variety of plan-related documents for public review and announcements of public meetings.

The ORWMP has been approved by the Port, the County of San Diego, Imperial Beach and the City of San Diego. The City of Chula Vista has yet to determine whether to approve the ORWMP. Therefore, there are no new action items to report for this reporting period. An interim Watershed Council will be established once the ORWMP has been approved.

In regards to the SAMP, meetings were held to gather project information for the Draft Regional General Permits these meetings included 1) An Interdepartmental meeting within the County of San Diego and 2) Working Group Meeting with our SAMP Partners and other interested stakeholders. The County (through their consultant team) has prepared the technical background information that is necessary to complete the 404(b)(1) process of the Clean Water Act. The draft Regional General Permits (RGPs) for the Otay River watershed and drafts of chapters 1, 2 and 3 of the SAMP document have been completed. In addition, URS Corporation prepared the Draft Baseline Conditions Report that will become part of the Environmental Impact Statement (EIS). The rest of the EIS will be underway shortly after the SAMP document is completed.

3.5 Updated Five-Year San Diego Bay WURMP Strategic Plan

3.5.1 New Activities

The San Diego Bay Copermittees added new watershed activities to the San Diego Bay WURMP Strategic Plan during FY 2009-10. Copermittees incorporated three new educational activities (Activity Summary Sheets SDB-066, SDB-067, and SDB-068). Two new trash and debris related activities (Activity Summary Sheets SDB-003a and SDB-003b), one new targeted special studies (Activity Summary Sheet SDB-058), four new water quality activities (Activity Summary Sheets SDB-059, SDB-060, SDB-061, and SDB-062) and three new monitoring activities (Activity Summary Sheets SDB-063, SDB-064, and SDB-065) were also included. The activity summary sheets for these activities are presented in Appendix D.

3.5.2 Updated 5-Year San Diego Bay WURMP Strategic Plan

The San Diego Bay WURMP's Strategic Plan is assessed on an annual basis and may be updated to reflect the current status of watershed activities and any modifications to previous versions of the Strategic Plan. During this reporting period, the San Diego Bay Copermittees have been committed to implementing the watershed water quality and education activities presented in Sections 3.1 through 3.4 of this Annual Report. The updated Implementation Plan Schedule of San Diego Bay WURMP is presented in Table 3-6 and is intended to supercede the previous version presented in the 2008 San Diego Bay WURMP document. In addition, the Copermittees are progressing towards making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding WURMP permit language.

3.5.3 Updates to TMDL Implementation Plan Activities

Currently, there are four adopted TMDLs in the San Diego Bay WMA (Table 2-2): the Chollas Creek Diazinon TMDL, the Chollas Creek Dissolved Metals TMDL, SIYB Dissolved Copper TMDL, and the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL. The named dischargers of the Chollas Creek Diazinon and

Dissolved Metals TMDLs have developed an Implementation Plan defining the approach to planning, implementing, and assessing the effectiveness of best management practices (BMPs) with the goals of attaining the wasteload allocations (WLAs) for dissolved metals and restoring the beneficial uses of the Chollas Creek Watershed. The named dischargers of the SIYB Dissolved Copper TMDL initiated the development of an Implementation Plan during this reporting period as well. Since the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL was approved by the Office of Administrative Law (OAL) on September 15, 2009, an update will be provided in the following reporting period. An assessment of the efforts to address TMDL compliance during this reporting period is presented in Section 4.2 of this Annual Report.

Chollas Creek Dissolved Metals TMDL Implementation Plan Activities

The seven named dischargers developed an Implementation Plan which presents the strategy, framework, and activities for the first five years under the TMDL using a multi-pollutant approach. The first five years, considered Phase I, involve the implementation a range of BMPs designed to address identified priority water quality problems from a range of community, structural, and watershed-level activities. Phase I also includes effectiveness assessments to measure the performance of specific BMPs to assess contributions to the long-term performance of the program, and to identify existing pollutant source or BMP design data gaps. The goal is to maximize the effectiveness of specific activities to guide the BMP priority rankings and implementation in subsequent phases with the ultimate goal of achieving TMDL compliance.

The Implementation Plan was submitted in October 2009, and the dischargers have begun implementing activities as part of their comprehensive Storm Water Programs that will help in meeting TMDL compliance for both the Metals TMDL and the Diazinon TMDL. Of special note, several dischargers worked diligently in support of Sustainable Conservation's efforts on the "Brake Pad Partnership" to pass SB 346. This bill addresses a significant source of dissolved copper in the watershed by requiring the reduction of copper in brake pads sold in California from up to 10% by weight to 0.5% by 2025.

The dischargers also have a number of activities planned over the next few years. Specific activities that the dischargers are implementing are included in tabular format in Appendix E. Forty-six activities, including water quality, education, and ongoing agency-wide activities, were in implementation in FY 2009-10. Many of these are planned to be implemented or continue into FY 2009-10, including two Municipal Code review and modification projects. Four collaborative special monitoring studies were implemented in FY 2009-10, one of them continues into FY 2010-11. Activities are further described in the tables included in Appendix E.

While activities implemented to address the Chollas Creek Diazinon TMDL are referenced in the discussion above, the dischargers that are responsible under the Diazinon TMDL must report on specific implementation elements. These updates are included in Appendix C, as part of the

annual response to monitoring report. However, specific activities referenced as part of the implementation elements discussion in Appendix C are also included in the Metals TMDL dischargers' tables in Appendix E, demonstrating the multi-pollutant approach to the Metals TMDL.

SIYB Dissolved Copper TMDL Implementation Plan Activities

The named parties, the Port of San Diego, the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners continued the development of the TMDL Implementation Plan and TMDL compliance monitoring plan during this reporting period. The Implementation Plan incorporates a collaborative approach among the named parties to planning, implementing, and assessing BMPs to achieve reductions in copper loading into SIYB. The Implementation Plan will utilize a solutions-oriented strategy of establishing BMPs that help realize the objective of reducing copper loading into the basin in order to preserve and restore the beneficial uses, while simultaneously achieving compliance with the SIYB interim and final dissolved copper loading thresholds. Loading reductions will be achieved through conversion of vessels to non-copper-based paints, reductions of inputs via hull cleaning, and control of upstream inputs. Therefore, the named parties identified BMPs and other activities that can be best implemented within their given facility/operations in order to collectively achieve compliance with TMDL loading targets for the entire basin.

During this reporting period, the named parties also began to develop vessel tracking standards, a vessel tracking database template and to collect vessel data on hull paints. Long-term tracking of vessel conversion is necessary to determine whether TMDL compliance has been attained. The draft monitoring plan and vessel tracking data base worksheet was presented to the SIYB TMDL named parties for review. The implementation and monitoring plans will be finalized in FY 2009-10.

Table 3-6. Updated Implementation Plan Schedule.

San Diego Bay Watershed	Hydrologic Area									Pollutants										FY 07-08	FY 08-09	FY 09-10	FY 10-11
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash				
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																							
Trash and Debris Related Activities																							
Pet Waste Bag Collaborative Watershed Activity (SDB-001)	X	X		X			X	X	X	●				●						I	I	I	I
Storm Drain Litter Control Techniques Collaborative Watershed Activity (SDB-002a)		X	X	X														●	●	I	Completed		
Storm Drain Litter Control Techniques Collaborative Watershed Activity – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (SDB-002b)		X	X	X														●	●	P	P	I	I
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)	X	X	X	X			X						●					●	●	I	I	I	I
Median Sweeping Pilot Study (SDB-003a)		X											●							-	P	I/Completed	
Sweeper Speed Efficiency Study (SDB-003b)		X											●							-	-	P	I
San Diego Bay Cleanup Events Collaborative Activity (SDB-004)		X	X	X			X	X											●	I	I	I	I
Clean Community Program (SDB-005)			X							●		●							●	I	I	I	I
Trash Containment Boom Cleaning Agreement with US Navy (SDB-006)		X	X							●									●	I	I/Completed		
Chollas Creek Family Stream Team Initiative Partnership (SDB-051)		X											●						●	P	I	I/Completed	
Enhanced Inspection Activities																							
Additional Dry Season Construction Inspections (SDB-007)			X	X														●	●	I	I	I	I
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)		X											●							P	I	I	Completed
Enhanced Construction Oversight (SDB-009)		X																●		I	I	I	I
Targeted Municipal Facility Inspections (SDB-036)		X								●			●	●						I	Discontinued		
Large Special Event Inspection and Clean-Up (SDB-047)							X			●										I	I	A	I
Outdoor Special Event Oversight (SDB-048)		X																	●	I	I	I	I
Targeted Special Studies																							
Chollas Creek Water Quality Protection & Habitat Enhancement Project (SDB-011)		X								●	●	●	●	●	●	●	●	●		I	Completed		
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)	X	X	X	X				X		●				●	●		●	●		P	I	I/A	Completed
Dalbergia "Green Mall" Infiltration Retrofit Project (SDB-013)		X								●			●							P	P	P	P
Southcrest Park "Green Lot" Infiltration Project (SDB-014)		X								●			●							P	P	P	P
Memorial Park "Green Lot" Infiltration Retrofit Activity (SDB-015)		X								●			●							P	P	P	I
43rd and Logan Biofiltration Project for Chollas Creek Watershed Protection (SDB-037)		X								●			●							P	P	P	I
Maple Canyon Water Quality Improvement (SDB-049)		X								●								●	●	P	P	P	P
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)		X											●							P	I	A	I/A
Treatment Control BMP Pilot Projects (SDB-034)		X											●							P	I	A	Completed
Beta Alley Green Street Filtration (SDB-058)		X								●		●	●		●		●	●	●	-	-	P	P
Other Water Quality Activities																							
Shelter Island Yacht Basin Dissolved Copper TMDL (SDB-016)	X												●							Activity Summary sheets will no longer be submitted for TMDL efforts will now be discussed in Sections 3 and 4.			
Chollas - Switzer - Paleta Creek Mouths TMDL (SDB-017)	X	X											●			●							
Chollas Creek Diazinon TMDL (SDB-018)	X	X															●						
Chollas Creek Dissolved Metals TMDL (SDB-019)		X											●										
Update Recycling and Solid Waste Planning Manual (SDB-035)				X				X	X	●				●					●	P	I	I	I
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●	I	I	I	I
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	I	I	I	I
Palm Avenue Stormwater Diverter (SDB-052)							X			●			●	●			●	●		P	I	No longer reporting on this activity	
Stormwater Quality Master Plans for Special Drainage Fee Areas (SDB-056)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●	P	P	I	I
Commercial BMP Self Certification Pilot Program (SDB-059)		X								●			●	●			●	●		-	-	P	I
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials (SDB-060)	X	X	X	X	X	X	X	X	X				●							-	P	P	P
Chula Vista Wildlife Reserve Restoration and Enhancement Project (SDB-061)				X				X		●							●	●		-	P	P	P
Residential Rain Barrel Subsidies & Distributions (SDB-062)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●	-	-	P	I

Table 3-6. Updated Implementation Plan Schedule.

San Diego Bay Watershed	Hydrologic Area									Pollutants										FY 07-08	FY 08-09	FY 09-10	FY 10-11
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash				
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																							
Enhanced Dry Weather Monitoring Program (SDB-020)		X								●	●	●	●	●	●	●	●	●	●	I	I	I	I
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								●			●	●		●	●	●	●	I	I	I	I
La Mesa Additional Water Quality Monitoring Program (SDB-022)		X								●	●	●	●	●	●	●	●	●		I	I	A	A
BMP Effectiveness Monitoring Program (SDB-023)		X										●	●		●			●		I	I	I	I
Dry Weather Aerial Deposition Study – Phase I (SDB-024a)		X											●					●		I	Completed		
Dry Weather Aerial Deposition Study – Phase II (SDB-024b)		X											●					●		P	I/Completed		
Dry Weather Aerial Deposition Study – Phase III (SDB-024c)		X											●					●		P	I/Completed		
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X			●	●	●	●	●	●	●	●	●		I	I	I	I
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (SDB-026)		X								●								●		I	Completed		
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (SDB-027)		X								●										I	I/Completed		
Shelter Island TMDL Urban Runoff Monitoring Study (SDB-053)	X												●							P	I	I	I
Switzer Creek Pesticide Source Monitoring Study (SDB-054)		X															●			P	I/Completed		
Water Quality Monitoring at Additional Mass Loading Stations (SDB-057)					X	X			X	●	●	●	●	●		●	●	●		P	I/Completed		
B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-063)		X											●				●			-	-	P/I	Completed
Chollas and Paleta Creeks Characterization Study (SDB-064)		X	X										●				●			-	-	P/I	Completed
Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-065)		X											●							-	-	P/I	I
Educational Activities																							
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)			X	X						●			●				●			I	I	A	A
Storm Drain Stenciling (SDB-028)				X				X	X	●	●	●	●	●	●	●	●	●	●	P	I/A	I/A	I/A
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	●		●							●	P/I	I	No longer reporting on this activity	
Outdoor Transit Shelters and Billboards Advertisements (SDB-030)	X	X	X	X				X	X	●									●	P/I	I/Completed		
Mobile Advertising (SDB-031)	X	X	X	X				X	X	●		●	●		●		●	●	●	P/I	I/A	Discontinued	
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	●		●	●						●	P	I	I	I
City of Coronado Fire Department Open House (SDB-033)							X			●	●	●	●	●	●	●	●	●	●	I	I	No longer reporting on this activity	
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	●										P	I	I	I
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	●										P	I	I	I/A
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	●					●					P	I	A	A
La Mesa Park Kiosk (SDB-042)		X								●			●				●			I	I	I	I
LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	P	I/Completed		
ILACSD Elementary School Watershed Presentations (SDB-044)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	P	I/Completed		
ILACSD High School Watershed Presentations (SDB-045)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	-	P	I	I/A
San Diego Bay Watershed Brochure (SDB-055)	X	X	X	X				X	X	●	●	●	●	●	●	●	●	●	●	-	P	P	I
Focused Outreach to Equestrian Community (SDB-066)				X	X	X		X	X	●				●				●		-	P	I	I
Integenerational Games (SDB-067)		X		X						●			●		●		●		●	I	I	I	I
Stream Team Stewards (SDB-068)		X								●	●	●	●	●	●	●	●	●	●	-	I	I/Completed	

P: Planning; I: Implementation; A: Assessment

Section 4: Effectiveness Assessment

An effectiveness assessment is an integral part of WURMP implementation because it helps determine whether receiving water quality improvements can be associated with WURMP activities. It also enhances program planning by providing feedback on activities and strategies, and by identifying program areas needing improvement. The following section presents the mechanisms used by the San Diego Bay Copermittees to assess the effectiveness of the WURMP as required by Section J.1.b. of the Municipal Permit and describes the results of this assessment.

4.1 Assessment of Overall WURMP Effectiveness

Effective implementation of the WURMP is dependent on the establishment of comprehensive and program-wide goals as well as objectives and tasks. Programmatic assessment provides a mechanism to verify the Copermittees have achieved compliance with the Permit and are continuing to work towards attaining the long-term goal of decreasing the sources and reducing the discharge of pollutants from the MS4. The following sections summarize WURMP activities and evaluate progress of the San Diego Bay WURMP toward meeting Target Outcome Levels One through Six.

4.1.1 Integrated WURMP Activities Assessment

In accordance with the San Diego Bay WURMP document, Copermittees selected activities and the associated effectiveness assessment mechanisms to implement in their individual jurisdictions while working within the collective goals of the WURMP. The activities and their assessments vary from one activity to another based on the identified targeted outcomes applicable to each activity, the pollutant(s), pollutant source addressed, and the HA in which it is located. The goals and objectives of the individual activities ensure individual accountability, provide direction, and allow for meaningful assessment. In this section, the San Diego Bay Copermittees assess whether they were able to maximize the effectiveness of these individual activities on a watershed level.

The Copermittees measured the effectiveness of the watershed activities as a whole by compiling the data and detailed information from each individual activity's assessment, or at a programmatic level to present a comprehensive assessment of activities. By thoroughly evaluating the activities, their relevance to each other and to the high priority water quality problems and their sources, the Copermittees were able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary. The Copermittees not only evaluated the effectiveness of each individual activity implemented during the reporting period, but also evaluated how the activities contributed to the success of the overall program effectiveness.

The process provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. By compiling this data in one place, the Copermittees have the opportunity to access multiple activities and their potential applicability for watershed-wide implementation. This resource can then be shared with other watersheds and jurisdictions to improve programming on a regional basis and further increase the list of BMPs. Sharing the evaluation methods will also help watershed workgroups and jurisdictions improve and enhance their programs. The collaborative and group assessment of the activities also encourages Targeted Special Studies and comprehensive thinking when planning future cooperative activities.

The San Diego Bay Copermittees have been successful in implementing the WURMP in compliance with the Municipal Permit. Specifically, the San Diego Bay Copermittees implemented watershed water quality and education activities that resulted in increased awareness and change in behavior, reduced discharge loads, abatement of potential sources, and other quantifiable benefits to receiving water quality during this reporting period. As discussed in Section 3.1 and 3.2, each Copermittee determined the appropriate assessment mechanisms for each of its implemented activities and determined if the effectiveness of the activities have been maximized when possible. Table 4-1 presents each individual watershed activity's effectiveness assessment mechanisms, if assessment for the activity was completed during the reporting period, and identifies if activities were effective in meeting the goals of the overall program. The Copermittees' assessments of the individual activities indicate nearly all of the water quality activities were able to achieve the stated goals and were effective in obtaining changes in awareness/behavior and/or load reduction/source abatement. Assessment data was provided for 27 activities, however, it should be noted that some activities are still in implementation phase and have not yet completed their overall assessment, while other activities are implemented and assessed each reporting year. Overall evaluation of Table 4-1 shows that the San Diego Bay Watershed Copermittees are able to effectively address high priority water quality problems through implementation of their water quality activities.

As noted above, there were watershed activities implemented that did not have all of the listed assessment mechanisms completed during this reporting period, and effectiveness has not yet been determined. Though considerable resources may be directed to these activities, effectiveness assessments are not yet available for a number of reasons, such as delays in planning/development of an activity or since the activity is still in progress. For example, the Rain Barrel Subsidies and Distribution activity (SDB-062) was in active planning phase and no assessment data was collected during this reporting period. In addition, assessment was not completed during this reporting period for activity categories in trash and debris as well as education (SDB-002b, SDB-029, and SDB-039) because the activities were either in planning/design stage or the assessment may be in progress. Please refer to the activity summary sheets in Appendix D for detailed analysis of progress to date for these activities.

Table 4-1. San Diego Bay WURMP Annual FY 2009-10 Watershed Water Quality Activity Assessment Table.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
Trash and Debris Related Activities					
SDB-001	Pet Waste Bag Programs	3 and 4	• Quantity of bags removed • New dispensers added	Yes	• ~ 346,934 pet waste bags • Seven new dispensers added in Chula Vista • County of San Diego estimated 11,214 lbs. removed in their jurisdiction • Airport Authority estimated 183.25 lbs. removed in their jurisdiction
SDB-003	Enhanced Street Sweeping	4	• Amount of debris collected above JURMP requirements • Curb miles covered above JURMP requirements	Yes	• 1,094 tons of additional material (and an additional 107 cy at the Airport) • An additional 22,963 curb miles (2,850 broom miles for the City of San Diego)
SDB--003a	Median Sweeping	4	• Amount of Debris Removed • Debris Sampling	Yes	• 16,580 lbs of debris over 12.8 miles • Average of 560 lbs of debris per mile swept • Debris sampling confirmed the presence of and removal of heavy metals, nutrients and hydrocarbons.
SDB-004	Cleanup Activities	3 and 4	• Amount of trash • Number of people participating	Yes	• ~ 378.5 tons of trash • 7,235 people
SDB-005	Clean Community Program	4	• Amount of trash collected • Number of participants • Number of cleanup visits • Number of outreach materials distributed	Yes	• Three large item collection events totaled 696 tons of bulky trash from 1, 579 vehicle loads. • Twice monthly cleanup of Paradise Creek • A total of 3,800 Storm Water Program 2010 calendars were distributed to school children, residences, industrial and commercial businesses, and municipal staff.
SDB-051	Family Stream Team Initiative	2,3, and 4	• Amount of trash and non-native vegetation collected • Number of participants involved • Number of flyers distributed	Yes	• ~115 tons trash and debris • ~12.6 tons vegetation removed • 95 refuse collection/survey participants • 534 Number of participants in trash Abatement and Creek Cleanup Activities and “Come Dump on Us” events • ~ 2,000 flyers distributed

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
Enhanced Inspection Activities					
SDB-007	Additional Dry Season Construction Inspections	3	• Increased inspection frequencies beyond Permit requirements	Yes	• Completed 9 inspections, which exceeds Permit requirements. • Helped contractors stay vigilant about implementing BMPs, especially near the end of the dry season.
SDB-008	San Diego Bay Watershed Targeted Facility Inspections - Automotive	3 and 4	Achieve greater BMP implementation rates from optimized inspection rates: • Inspections • Quantification • Tabulation • Reporting	Yes	• 276 total inspections • 274 sites needing corrective action • 4 sites immediately implemented corrective action with source abatement • 125 sites need follow-up to verify corrective actions/BMPs were implemented • 4 IC/IDs sites observed and eliminated
SDB-009	Enhanced Construction Oversight	3 and 4	• Track number of meetings attended • Number of site inspections conducted in excess of the minimum number required by the Municipal Permit • Number of sediment source control BMP issues identified during inspections • Estimate the annual sediment pollutant load abated	Yes	• Authority staff attended 179 meetings • Performed 111 more inspections than required by the permit • 10 inspections identified erosion & sediment source control BMP issues • The Authority was able to estimate annual sediment pollutant load reduction as approximately 57 tons .
SDB-047	Large Special Events Inspections and Clean up	1,2,3, and 4	• Amount of trash • Education efforts • Enforcement actions • Survey	Yes	• 1320 pounds of recyclables collected • 930 pounds of cardboard recycled • BMP information provided to street venders and follow up inspections verified BMP implementation. • 69% of individuals could correctly identify the difference between the storm drain and sanitary sewer

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-048	Outdoor Special Event Oversight	3 and 4	• Track the number of outdoor special events, • Track the number of pre-event meetings attended, • Track the number of pre- and post-event site inspections conducted • Track the number of trash source control BMP issues identified during the inspections • Estimate the annual trash pollutant load abated	Yes	• 1 outdoor special event, 0 pre event meetings were attended, 1 pre event inspection was conducted, 1 post event inspection was conducted, 0 trash source control BMP issues were identified. • Since no trash source control issues were identified, no estimate of pollutant load reduction or increase could be completed, although it would still be reasonable to assume that there was no increase in pollutant load of trash.
Other Water Quality Activities					
SDB-012	Municipal Rain Barrel Installation and Downspout Disconnect	4	• Monitoring	Yes	• Activity attenuated storm flows (515.4 cu ft of rainwater measured over two monitored storm events). • Resulted in a measurable pollutant load reduction.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-034	Treatment Control BMP Pilot Projects	2, 3 and 4	• Calculate the one-time pollutant load reductions created by the Treatment Control BMP Pilot Projects by comparing before and after heavy metal concentrations in roof runoff and runway runoff. • Estimate the cost-effectiveness of the pilot-scale treatment control BMPs.	No	Project 1 - Down Spout Filters – • Analytical results suggested that the filters did not remove heavy metals (Cu, Zn) as efficiently as expected. • The water quality benefits provided by both technologies appeared to be minimal. • In light of the results, the Authority determined that the filters were not an effective BMP, so no pollutant load reductions or cost-effectiveness calculations were made. • The study was discontinued in FY 2009-10. Project 2 - Runway pavement modification - • It was determined that porous concrete and synthetic turf is the focus of the pilot study. • The next steps in the pilot study are to conduct a geo technical investigation of the proposed project site, proceed with the design of the candidate BMPs, and to identify a funding source for implementation at the pilot scale. • The runway pavement pilot study remains in the FY 2010-11 budgets, but is currently on hold as an Airport Authority-wide cost control measure. • Because no implementation has begun on this project, no pollutant load reductions or cost-effectiveness calculations have been made. For this activity we are currently achieving a Level 2 Outcome.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-035	Update Recycling and Solid Waste Ordinance	3 and 4	• Number of projects and trash enclosures built that had to comply with these requirements • Estimated amount of bacteria load reduction	No	• 20 projects were reviewed that had to meet this ordinance requirement • Assessment will be conducted in Year 5 of the Permit Cycle
SDB-046	Land Acquisition San Diego Bay	1 and 4	• Number of acres acquired; • Load Reductions could be determined	Yes	• 1,095.49 acres of land acquired this FY.
SDB-056	Commercial BMP Self Certification	2 and 3	• Amount of source control BMP • Water quality monitoring data collected for the subject site.	No	• Water quality and source control BMP data obtained.
Watershed Education Activities					
SDB-010	Business Supplemental Watershed Questionnaire	2	• Compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach.	Yes	• 7% of respondents in 2009/2010 did not know where storm water runoff goes • 7% thought that the water was directed to a treatment facility. • 22% percent of all respondents in 2009/2010 could correctly identify that their site was located within the San Diego Bay Watershed.
SDB-028	Storm Drain Stenciling	2	• Number of pedestrians who pass these stencils • Number installed during reporting period	Yes	• 150 stencils installed • Over 500 installed since activity implementation in FY 2007-08 • Thousands of pedestrians pass these stencils on an annual basis
SDB-039	Provide Homeowner's Association Education About Pollution Prevention	2	• Number of homeowners and HOAs reached through education efforts	No	• Contributed an article to HOA magazine with the circulation of 20,000 • Educational flyer was distributed to 620 residents through HOA bill • Assessment will be conducted in Year 5 of the Permit Cycle

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-040	Storm Water Education Booth at Annual Pet Festival and Doggy Dash	3	• Surveyed pet owners who pick up after their pets	Yes	• 152 surveys completed • Found that over 90% of surveyed pet owners use BMPs for pet waste
SDB-041	Fats, Oils and Grease (FOG) Program	1	• Number of restaurants surveyed	Yes	• Working on the development of a FOG ordinance • 216 restaurant surveys completed
SDB-042	Park Kiosk	2	• Increased awareness of watershed problems and pollution prevention methods.	Yes	• Kiosk was maintained and kept with up to date information. • No other assessment data is available.
SDB-045	ILACSD High School Watershed Presentations	2 and 3	• Pre- and post-test • Teacher surveys	Yes	• 495 students completed pre- and post-tests • Post-test showed an increase in knowledge after the presentations
SDB-066	Focused Outreach to the Equestrian Community	1 and 2	• Number of Events • Number of Participants • Pre & Post Testing • Surveys	Yes	• 3 events the SD Bay (Sweetwater) WMA. • 85 people participated • Surveys showed positive correlation to increased knowledge and awareness.
SDB-067	Intergenerational Games	2	• Increased awareness of watershed problems and pollution prevention methods. • Number of watershed handouts and impressions made.	Yes	• Approximately 100 impressions made • Approximately 100 storm water handouts distributed.
SDB-068	Stream Team Stewards	2 and 3	• Pre- and post-test • Number of students/schools • Amount of trash collected • Amount of vegetation planted • Number storm drain stencils installed during reporting period	Yes	• Pre and post-tests indicated that the program was effective in increasing knowledge about water quality issues and actions the students could take • 578 students / 6 schools • 250 plants planted at two sites in Chollas Creek • 50 storm drain stenciled • ~75 lbs. trash collected

4.1.2 HA Assessment

The San Diego Bay Copermittees assessed how well the activities targeted the high priority water quality problems and their sources on a HA level. The Copermittees assessed activities occurring within each HA in order to determine the collective impact the activities have on the targeted high priority pollutants and/or pollutant sources. Table 4-2 presents the water quality activities occurring in each HA and the pollutants each activity addresses. This evaluation reveals whether the San Diego Bay Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting potential pollutant sources in each HA during this reporting period.

Evaluation at an HA level also provides an assessment of the effectiveness of the San Diego Bay Copermittees' collective efforts for a number of the activities that were implemented across several HAs. These activities presented universal solutions to address high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern, allowing for greater flexibility for each of the Copermittees to participate in coordinated watershed activities. The San Diego Bay Copermittees have implemented different approaches or activities which resulted in addressing the same pollutant of concern and/or pollutant sources in a HA. In particular, Copermittees addressed bacteria on a watershed scale by implementing activities targeting various pollutant sources in several HAs. Each of these activities collected similar data to show how these programs were effective at both the HA and WMA level. The Copermittees continued the implementation of Pet Waste Bags (SDB-001), Enhanced Street Sweeping (SDB-003), and Cleanups (SDB-004) during FY 2009-1009-10.

The combined effect results in a greater impact on the targeted high priority water quality problems and positively influences the effectiveness and efficiency of the San Diego Bay WURMP. Also, as required by the RWQCB 13267 Order Investigative Order Enforcement Letter for Trash, the San Diego Bay Copermittees are addressing trash through activities such as the Enhanced Street Sweeping (SDB-003), Cleanup Events (SDB-004), and Family Stream Team Initiative (SDB-051). These activities will contribute to efforts by cities along Chollas and Paleta Creeks to implement trash cleanup measures and programs to address trash and other pollutants that may be associated with trash within these creeks.

4.1.2.1 Pueblo San Diego HU (908)

The Pueblo San Diego Watershed is the smallest HU in San Diego County, encompassing approximately 60 square miles of predominantly urban landscape. The watershed drainage consists of a group of relatively small local creeks and pipe conveyances, many of which are concrete-lined and drain directly into San Diego Bay. The creeks in the watershed are highly impacted by urban runoff, with two TMDLs adopted (Dissolved Metals and Diazinon) for Chollas Creek in particular. A third TMDL, the SIYB Dissolved Copper TMDL, was also adopted within 908.1 HA.

4.1.2.1.1 Point Loma HA (908.1)

The Point Loma HS is heavily urbanized and is not characterized by any Hydrologic Subareas (HSAs). The high priority water quality problems in the Point Loma HA are bacteria, gross pollutants, metals, oil and grease, and pesticides. Activities were implemented that effectively targeted a variety of sources of many of the identified high priority pollutants. Potential pollutant sources in the Point Loma HA include those related to residential areas, streets and roadways, or commercial business, schools, and public facilities.

Copermittees implemented two water quality activities in the Point Loma HA during FY 2009-10 that effectively addressed high priority water quality problems. The Pet Waste Bag Collaborative Watershed Activity (SDB-001) targeted a specific source of bacteria within residential and park areas and is believed to be effective in abating this source. Enhanced Street Sweeping (SDB-003) in this HA was also implemented to address load reductions of gross pollutants, metals, and oil and grease into the MS4 from streets and roadways. A variety of other pollutants that are known to be associated with sediment, such as bacteria, may also be reduced. Load reductions have been assessed through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Copermittees implemented five monitoring and source identification studies in this HA to supplement MS4 and CSDM monitoring including the following; Coordinated Dry Weather Monitoring (SDB-021), SIYB Urban Runoff Monitoring Study (SDB-053), and the B Street/Broadway Piers Downtown Anchorage and Mouth of Switzer Creek Study (SDB-063) to evaluate receiving water quality and provide additional information on sources of high priority water quality problems.

4.1.2.1.2 San Diego Mesa HA (908.2):

The San Diego Mesa HA is a heavily urbanized watershed, and includes two Hydrologic Subareas: Lindbergh (908.21) and Chollas Creek HSA (908.22). The high priority water quality problems in the San Diego Mesa HA are bacteria, metals, sediment, trash, and pesticides. Prominent land uses which may contribute to high priority water quality problems in the HA include residential, streets and roadways, and commercial/industrial businesses. Other land uses in the HA include schools, parks, and public facilities. Copermittees have implemented a number of activities that effectively target sources of high priority water quality problems in the HA during this reporting year. Many of these activities have also been identified to be applicable in addressing the Chollas Creek Dissolved Metals and Diazinon TMDLs.

Copermittees implemented several load reduction and source abatement activities in this HA that effectively addressed the high priority pollutants. Pet Waste Bags (SDB-001), Cleanups (SDB-004), and Family Stream Team Initiative (SDB-051) are activities implemented during the reporting period that provided load reductions of bacteria and trash in the HA. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within areas such as residential areas and parks. Cleanup events and similar trash related activities aided in the removal of a quantifiable amount of trash from the watershed. Because the accumulation of

trash and debris may result in a number of negative impacts that contribute to increased pollution, such as elevated numbers of bacteria in the water, such impairments may be indirectly reduced through the cleanups, though this has not been quantified. Enhanced Inspection activities such as Targeted Automotive Inspections (SDB-008), Outdoor Special Event Oversight (SDB-048), and Enhanced Construction Oversight (SDB-009) have been identified as effective in reducing the sources of metals, trash, and sediment, respectively, in this HA. The activities identified specific sources of metals, trash, or sediment and ensured proper BMP implementation in order to effectively reduce loading of these pollutants into the MS4 (Level Four Outcome). Heightened awareness of proper BMP implementation increases the likelihood of BMP effectiveness, which in turn helps to abate the amount of pollutant loading to San Diego Bay.

As noted in Section 2.2, water quality data was collected primarily within the San Diego Mesa HA in the Chollas Creek HSA (908.22). Following management actions identified in the San Diego Bay WURMP Watershed Strategy, Copermittees planned and/or implemented eight urban monitoring and source identification studies in this HU in addition to the regional Receiving Waters and Urban Runoff Monitoring Program. These activities are necessary to fill data gaps, facilitate in the before implementation of load reduction activities and identify the appropriate focus of resources. Data resulting from this monitoring will enable the Copermittees to make more informed management decisions on implementing BMPs that target high priority pollutants.

In addition to the load reduction and source abatement activities implemented in this HA, the Copermittees also implemented education activities in this HA that were found to be effective in increasing awareness and knowledge. Stream Team Stewards provided watershed education to over 560 students at six schools. Students were involved in cleanups, storm drain stenciling, and tree planting. The ILACSD School Presentations (SDB-044) provided watershed focused pollution prevention information to six high schools in the San Diego Bay WMA during this reporting year, including one high school in this HA. Assessment of the activity indicated an average increase of 22% change in knowledge and attitude as a result of the presentations.

A number of activities have been identified by Copermittees to address the Chollas Creek Dissolved Metals and Diazinon TMDLs, as discussed in Section 3.5.3 and Section 4.2. In the 908.22 HSA, Named Dischargers implemented 47 activities, including water quality, education, and ongoing agency-wide activities in FY 2009-10 to address the identified high priority water quality problems. A comprehensive assessment of the activities identified in the TMDL Implementation Plan will be discussed in Section 4.2.1.

4.1.2.1.3 National City HA (908.3)

The National City HA is highly urbanized and consists of two HSAs: El Toyan (908.31) and Paradise (908.32). The high priority water quality problems in the HA are bacteria, sediment and trash. Activities were implemented that effectively targeted a variety of sources of bacteria, sediment and trash from prominent land uses such as residential, streets and roadways, open

space and parks, and commercial/industrial businesses. Copermittees implemented six effective water quality activities in the National City HA during FY 2009-10.

Copermittees implemented three load reduction/source abatement activities to address trash in this HA. Because trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water, it may be assumed that these activities also result in bacteria load reductions. The Copermittees also effectively addressed two different sources of sediment (construction and streets and roadways) during this reporting year. Copermittees participating in the Enhanced Street Sweeping Activity (SDB-003) increased the frequency of sweeping relative to JURMP requirements, effectively reducing the loading of sediment into the MS4. In addition, Additional Dry Season Construction Inspections (SDB-007) reduced sediment and trash runoff by promoting proper BMP implementation at construction sites during the dry season and helping construction sites prepare for the upcoming wet season. It was determined that most of these inspections helped contractors stay vigilant about implementing BMPs during the dry season and helpful toward the end of the dry season, when responsible parties are reminded of applicable wet season requirements.

4.1.2.2 Sweetwater HU (909)

Water quality assessment of the Sweetwater HU indicated there have not been any significant changes to the COCs identified for HU during this reporting year. Though monitoring results are consistent with the BLTEA priority ratings for bacteria in the Lower Sweetwater HA (909.1), the results are not supportive of the A rating for pesticides in the Middle Sweetwater HA (909.2). Copermittees implemented activities to address a variety of the high priority pollutant sources, as well as monitoring to help guide the selection and implementation of future watershed activities in this HU as part of the San Diego Bay WURMP.

4.1.2.2.1 Lower Sweetwater HA (909.1)

The Lower Sweetwater HA is the most urbanized area of the Sweetwater HU and land use consist primarily of residential, streets and roadways, open space, with the remaining area consisting of a mixture of commercial/industrial businesses, schools and undeveloped land use. The high priority water quality problem in the Lower Sweetwater HA is bacteria. Residential sources of bacteria include sanitary sewer overflows, septic system failures, landscape maintenance, various washing activities, trash, and pet waste. Copermittees implemented eleven effective water quality activities in the Lower Sweetwater HA during FY 2009-10. The Pet Waste Bag Activity (SDB-001) was effective in targeting and abating a source of bacteria within areas such as residential areas and parks. Copermitttees implemented Cleanup Events (SDB-004) to address trash from a number of areas in this HA. Trash and debris may result in a number of negative impacts that contribute to increased contamination, which may increase bacteria levels. Although monitoring to quantify the expected reductions has not been performed, it may be assumed that these activities also result in bacteria load reductions.

Copermittees effectively targeted a variety of audiences by implementing eleven watershed education activities in the Lower Sweetwater HA. The Storm Water Education Booth at the Pet Fest and Doggy Dash (SDB-040) activity provided education about proper pet waste disposal to pet owners. A part of the activity was to survey pet owners about pet waste disposal. The majority of surveyed festival attendees responded that they knew how to properly dispose of their pet's waste. To encourage BMP implementation, all respondents received a dog waste bag dispenser. The Focused Outreach to the Equestrian Community Activity (SDB-066) provided workshops on manure management and watershed protection. Pre- and post-test results from workshop attendees showed that there was an increase in knowledge after the workshop presentation.

4.1.2.2.2 Middle Sweetwater HA (909.2)

Unincorporated rural and suburban communities characterize the Middle Sweetwater HA. The Middle Sweetwater HA consists primarily of open space and undeveloped land, approximately 63% of the land use, while the rest of the HA is mostly residential use and commercial/industrial and streets/roadway land use. The high priority water quality problem in the Middle Sweetwater HA is pesticides. There were four water quality activities implemented in this HA during FY 09-10. The Land Acquisition Activity (SDB-046) precludes development from occurring and allows land to retain its natural perviousness. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed. The Storm Water Quality Master Plans for Special Drainage Fee Areas (SDB-056) activity aims to improve drainage structures and will recommend regional BMP structures or devices intended to improve watershed water quality.

4.1.2.2.3 Upper Sweetwater HA (909.3)

The Upper Sweetwater HA contains large undeveloped areas within the Cleveland National Forest and Cuyamaca Rancho State Park, the unincorporated communities of Pine Valley, Descanso, and Alpine, and the Viejas Indian Reservation. The Upper Sweetwater HA consists primarily of open space and undeveloped land, approximately 82% of the land use, while the rest of the HA is mostly residential use and agriculture. Although no pollutant category was classified as high priority in this HA, three water quality activities were implemented in this HA, which addressed a variety of pollutant categories. The Land Acquisition Activity (SDB-046), implemented in the Upper Sweetwater HA, directly addresses the prominent land use in this HA.

4.1.2.3 Otay HU (910)

The *Basin Plan* identifies the Otay HU as the second largest of the three HUs in the San Diego Bay WMA and is one of the least populated watersheds in the San Diego County. As stated in Section 2.5.3, elevated concentrations of indicator bacteria have been detected within MS4 during urban runoff monitoring from various locations in the Coronado HA and Otay Valley HA. This result supports the BLTEA high priority (A) rating for bacteria in the two HAs.

4.1.2.3.1 Coronado HA (910.1)

Land use in Coronado HA consists primarily of residential, streets and roadways, commercial/industrial, and parks. The high priority water quality problems in this HA are bacteria and gross pollutants. There were six water quality activities implemented this HA during the reporting period that addressed a variety of pollutant categories, including bacteria and gross pollutants. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas and parks. Cleanup events (SDB-004) occurred in this HA throughout the reporting period that removed trash and potentially reduced the amount of bacteria in waterways. The Large Special Event Activity (SDB-047) was effective in enhancing recycling efforts and verifying the implementation of BMPs by vendors through inspections, potentially leading to lower levels of bacteria and trash reaching the MS4.

4.1.2.3.2 Otay HA (910.2)

Land use in Otay HA consists primarily of open space and undeveloped land, or approximately 49% of the land use, while residential, streets and roadways and commercial uses. The high priority water quality problem this HA is bacteria. There were seven water quality activities implemented in the Otay HA during FY 2009-1009-10 which effectively addressed a variety of pollutants, including bacteria. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas, as well as open spaces. Cleanup events (SDB-004), such as the Home Front Cleanup and the Beautify Chula Vista Cleanup, occurred in this HA during this reporting period. The Updating the Recycling and Solid Waste Ordinance activity (SDB-035) targets residential and commercial pollutant sources. The ordinance requires that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas. As a result of this ordinance change, there were 20 projects under review during the reporting period that had to meet this requirement. In addition, the Median Sweeping Pilot Study (SDB-003a) was implemented in this HA to include non-traditionally swept thoroughfares, such as medians. Specifically, the pilot study tested an expansion of sweeping operations to include these areas that are adjacent to high traffic roadways and showed sweeping medians reduced debris, metals, nutrients, and hydrocarbons.

Nine education activities were implemented in this HA during this reporting year, which effectively targeted a variety of audiences. The ILACSD Watershed Presentations (SDB-045) activity provided focused watershed education to several high schools within the San Diego Bay Watershed, including two in the Otay HU. Assessment indicated an increase knowledge, with an average pre-test score of 44.2% correct and a post-test average score of 66.3%. The Focused Outreach to the Equestrian Community (SDB-066) activity is aimed at the equestrian community is focused on manure management, composting, and erosion control. Pre- and post-tests given at workshops resulted in an increase in knowledge and awareness, showing that workshop attendees were connecting their behaviors with water quality.

4.1.2.3.3 Dulzura HA (910.3)

The Dulzura HA consists primarily of open space and undeveloped land, or approximately 85% of the land use, while residential and commercial uses comprise nearly 15%. Although no pollutant category was classified as high priority in this HA, there were four water quality activities implemented during FY 2009-10 which effectively addressed potential sources within these land uses. The Land Acquisition Activity (SDB-046) precludes development from occurring and allows land to retain its natural perviousness. The Storm Water Quality Master Plans for Special Drainage Fee Areas (SDB-056) activity aims to improve drainage structures and will recommend regional BMP structures or devices intended to improve watershed water quality.

There were eight education activities in implementation or under development in this HA during this reporting year. The Public Service Announcements (SDB-029) activity continued as an effective means for educating the public about pollution prevention via the radio. The San Diego Bay Watershed Brochure (SDB-055), which was in development, will be a new educational tool to enhance the general public's understanding of watershed concepts and to educate them on BMPs related to the high priority water quality problems in the watershed.

Table 4-2. San Diego Bay Watershed Activities by HA in FY 2009-10.

HA	High Priority Water Quality Problem(s)	Watershed Strategy Management Action	Additional Monitoring/ Source ID Activities	Load Reduction/ Source Abatement Activities	Education Activities
908.1	Bacteria	Additional Monitoring	• Coordinated Dry Weather Monitoring	• Pet Waste Bags • City of San Diego Strategic Plan Implementation	• Public Service Announcements: Karma/Karma Second Chance • San Diego Bay Watershed Brochure
	Gross Pollutants		• Coordinated Dry Weather Monitoring • B Street/Broadway Piers, Downtown Anchorage, and Mouth of Switzer Creek Characterization Study	• City of San Diego Strategic Plan Implementation	• Public Service Announcements: Karma/Karma Second Chance • San Diego Bay Watershed Brochure
	Metals		• Coordinated Dry Weather Monitoring • SIYB Urban Runoff Monitoring	• Source of Copper Water Pollutants, SB 346: Motor Vehicle Brake Friction Materials • Enhanced Street Sweeping Collaborative Activity • City of San Diego Strategic Plan Implementation	• San Diego Bay Watershed Brochure
	Oil and Grease			• City of San Diego Strategic Plan Implementation	• San Diego Bay Watershed Brochure
	Pesticides		• Coordinated Dry Weather Monitoring • Chollas Creek Diazinon TMDL	• City of San Diego Strategic Plan Implementation	• San Diego Bay Watershed Brochure
908.2	Bacteria	Load Reduction	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Additional Water Quality Monitoring Program • Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study	• Pet Waste Bags • Pet Waste Bag Dispenser Program Phase II • Municipal Rain Barrel Installation and Downspout Disconnects • City of San Diego Strategic Plan Implementation • Storm Water Quality Master Plans for Special Drainage Fee Areas • Commercial BMP Self Certification Pilot Program	• Public Service Announcements: Karma/Karma Second Chance • Community Based Social Marketing Outreach Pilot Project – Chollas Creek Community • La Mesa Park Kiosk • ILACSD School Presentations • San Diego Bay Watershed Brochure • Intergenerational Games • Stream Team Stewards
	Metals		• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Additional Water Quality Monitoring Program • BMP Effectiveness Monitoring Program • Chollas and Paleta Creeks Characterization Study • Chollas Creek Copper, Lead, and Zinc Water-Effects Ratio Study	• Enhanced Street Sweeping • Chollas Creek Family Stream Team Initiative Partnership • Sweeper Speed Efficiency Study • San Diego Bay Watershed Targeted Facility Inspections – Automotive • Municipal Rain Barrel Installation and Downspout Disconnects • Chollas Creek Runoff Reduction and Groundwater Recharge Project • Treatment Control BMP Pilot Projects • Beta Alley Green Street Filtration • City of San Diego Strategic Plan Implementation • Storm Water Quality Master Plans for Special Drainage Fee Areas • Commercial BMP Self Certification Pilot Program • Source of Copper Water Pollutants, SB 346: Motor Vehicle Brake Friction Materials	• Community Based Social Marketing Outreach Pilot Project – Chollas Creek Community • La Mesa Park Kiosk • ILACSD School Presentations • San Diego Bay Watershed Brochure • Intergenerational Games • Stream Team Stewards
	Trash		• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring	• Enhanced Street Sweeping • Storm Drain Litter Control Techniques • Collaborative Cleanup Events • Trash Containment Boom with US Navy • Outdoor Special Event Oversight • City of San Diego Strategic Plan Implementation • Storm Water Quality Master Plans for Special Drainage Fee Areas	• Public Service Announcements: Karma/Karma Second Chance • Community Based Social Marketing Outreach Pilot Project – Chollas Creek Community • ILACSD School Presentations • San Diego Bay Watershed Brochure • Intergenerational Games • Stream Team Stewards

HA	High Priority Water Quality Problem(s)	Watershed Strategy Management Action	Additional Monitoring/ Source ID Activities	Load Reduction/ Source Abatement Activities	Education Activities
	Sediment	Source ID	• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Additional Water Quality Monitoring Program • BMP Effectiveness Monitoring Program	• Enhanced Street Sweeping • Enhanced Construction Oversight • City of San Diego Strategic Plan Implementation • Storm Water Quality Master Plans for Special Drainage Fee Areas • Commercial BMP Self Certification Pilot Program	• ILACSD School Presentations • San Diego Bay Watershed Brochure • Stream Team Stewards
	Pesticides		• Enhanced Dry Weather Monitoring • Coordinated Dry Weather Monitoring • La Mesa Additional Water Quality Monitoring Program • Switzer Creek Pesticide Source Monitoring Study • Chollas and Paleta Creeks Characterization Study	• City of San Diego Strategic Plan Implementation • Storm Water Quality Master Plans for Special Drainage Fee Areas • Commercial BMP Self Certification Pilot Program	• La Mesa Park Kiosk • ILACSD School Presentations • San Diego Bay Watershed Brochure • Intergenerational Games • Stream Team Stewards
908.3	Bacteria	Load Reduction		• Clean Community Program (Cleanup Events) • La Mesa Business Inspection Supplemental Watershed Questionnaire • City of San Diego Strategic Plan Implementation	• Public Service Announcements: Karma/ Karma Second Chance • ILACSD School Presentations • San Diego Bay Watershed Brochure
	Trash			• Storm Drain Litter Control Techniques – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project • Enhanced Street Sweeping • Cleanup Events • Clean Community Program (Cleanup Events) • Trash Containment Boom Cleaning Agreement with US Navy • Additional Dry Season Construction Inspections • City of San Diego Strategic Plan Implementation	• Public Service Announcements: Karma/ Karma Second Chance • ILACSD School Presentations • San Diego Bay Watershed Brochure • Clean Community Program (Calendar Distribution)
	Sediment	Source ID		• Storm Drain Litter Control Techniques – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project • Enhanced Street Sweeping • Additional Dry Season Construction Inspections • City of San Diego Strategic Plan Implementation	• ILACSD School Presentations • San Diego Bay Watershed Brochure
909.1	Bacteria	Load Reduction		• Pet Waste Bag • Pet Waste Bag Dispenser Program in County Parks • La Mesa Business Inspection Supplemental Watershed Questionnaire • Update Recycling and Solid Waste Ordinance • City of San Diego Strategic Plan Implementation • Land Acquisitions – SD Bay Watershed	• La Mesa Business Inspection Supplemental Watershed Questionnaire • Storm Drain Stenciling • Public Service Announcements: Karma/Karma Second Chance • Provide HOA Education About Pet Waste Disposal • Storm Water Education Booth at the Pet Fest and Dog Dash • FOG Program • ILACSD School Presentations • San Diego Bay Watershed Brochure • Focused Outreach to the Equestrian Community • Intergenerational Games

HA	High Priority Water Quality Problem(s)	Watershed Strategy Management Action	Additional Monitoring/ Source ID Activities	Load Reduction/ Source Abatement Activities	Education Activities
909.2	Pesticides	Additional Monitoring		• Land Acquisitions – SD Bay Watershed • Storm Water Quality Plans for Special Drainage Areas • Residential Rain Barrel Subsidies and Distributions	
910.1	Bacteria	Load Reduction		• Pet Waste Bags • Large Special Events (Education, Inspections, and Cleanup)	
	Gross Pollutants	Source ID			
910.2	Bacteria	Source ID		• Pet Waste Bags • Update Recycling and Solid Waste Ordinance • City of San Diego Strategic Plan Implementation • Storm Water Quality Master Plans for Special Drainage Fee Areas • Residential Rain Barrel Subsidies and Distributions	• Storm Drain Stenciling • Public Service Announcements: Karma/Karma Second Chance • Provide HOA Education About Pet Waste Disposal • Storm Water Education Booth at the Pet Fest and Dog Dash • FOG Program • ILACSD School Presentations • San Diego Bay Watershed Brochure • Focused Outreach to the Equestrian Community

4.1.3 Targeted Outcome Assessment

In the following sections, the San Diego Bay Copermittees will present an assessment of their ability to meet Permit requirements during this reporting period. A comprehensive evaluation of the San Diego Bay WURMP program enabled the Copermittees to determine if the targeted outcome levels were met.

4.1.3.1 Level One Outcome – Compliance with Activity-Based Permit Requirements

A Level One assessment addresses the fundamental requirements prescribed in the Permit, including programs and activities that are intended to benefit water quality. Table 4-3 lists how the San Diego Bay Copermittees have met Level One objectives and maintained compliance with the Permit requirements.

Table 4-3. Permit Component Compliance (Level One Outcome).

Targeted Outcome	Confirmation	Report Section/Appendix
Update any watershed maps.	Completed.	1.3
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	2.1-2.4
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	2.1-2.4
Identify and describe the Watershed Water Quality Activities implemented by Copermittees during the reporting period.	Completed.	3.1
Update list of potential Watershed Water Quality Activities.	Completed.	3.5.1
Identify and describe the Watershed Education Activities implemented by Copermittees during the reporting period.	Completed.	3.2
Update list of potential Watershed Education Activities.	Completed.	3.5.1
Describe the public participation mechanisms used during the reporting period.	Completed.	3.3
A description of Copermittee collaboration efforts including meeting as the San Diego Bay WMA WURMP Workgroup.	Completed.	1.2
Describe the efforts implemented to encourage collaborative, watershed-based, land use planning.	Completed.	3.4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date, incorporating the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Completed.	3.5.3 and 4.2 Appendix E

As shown in the Table 4-1, the San Diego Bay WURMP Copermittees were in compliance with all Level One WURMP related Municipal Permit requirements during FY 2009-10.

4.1.3.2 Level Two Outcome – Changes in Knowledge/Awareness and Level Three Outcome – Behavioral Change/BMP Implementation

The Permit states that Watershed Education Activities are in active implementation phase when "changes in attitudes, knowledge, awareness, or behavior can be reasonably established in target audiences." This definition corresponds with Level Two and Three Outcomes discussed in the 2008 San Diego Bay WURMP document. In order to assess education activities, the San

Diego Bay Copermittees have established and used several means, such as conducting surveys, for evaluating education program effectiveness. Data collected during this reporting year includes the amount of trash picked up at cleanup events, the number of participants, and pre- and post-tests and surveys. Through activities such as the CBSM Pilot Study in Chollas Creek (SDB-032), the ILACSD High School Presentations Activity (SDB-045), and the Stream Team Stewards (SDB-068), Copermittees effectively demonstrated a Level Two Outcome during this reporting period. An additional one-page supplement to the standard industrial and commercial inspection form (SDB-010) that has been used for the last three years in La Mesa also demonstrated a Level Two Outcome. The City of La Mesa intends to continue gathering information regarding the level of storm water awareness of business owners/operators in order to compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach. In addition, Copermittees provided storm water educational materials (i.e. brochures, fliers, and various giveaways) at many events such as the Pet Fest and Doggie Dash event in Chula Vista, the Coronado Fire Services Department Annual Open House, and various cleanups. Copermittees were also involved in supplemental educational activities that provided watershed information such as PSAs or posting ads on transit shelters and billboards.

In addition to the watershed education activities in Table 4-2, Copermittees collected assessment data for education activities implemented as part of other urban runoff management programs (Table 4-4) during this reporting period. The assessment information can be used by the San Diego Bay Copermittees to develop a comprehensive watershed-wide evaluation of education activities which can be used as a tool for planning future education activities and events that are able to reach Level Two and Three Outcomes. Overall, the collected data shows that education activities are positively impacting the public and leading to changes in knowledge about storm water. Notably, the San Diego Bay Copermittees showed significant success in promoting positive behavior change in school children through school programs and outreach.

Table 4-4. Assessment of the San Diego Bay Education Program FY 2009-10.

Program	Number of Events	Number of Participants	Events with Assessment Data	General Results of Assessment Data*
Presentations and Media	375	1,863,715	11	These programs were assessed via surveys and pre- and post-tests. Overall, results show positive behavior changes and an increase in knowledge. Refer to Appendix D for more information.
School Programs and Outreach	9	15,019	5	Pre- and post-tests indicated an increase in knowledge for all events. Refer to Appendix D for more information.
Partners in Clean Water	51	18,843	16	Amounts of waste collected – 882 tons of trash, recyclables, and construction debris; 117 tons of E-waste; 4 tons of U-waste
				Pre and post-tests show an increase in knowledge.
Integrated Pest Management	2	178	1	Survey results indicate that the seminar was useful and that protecting water quality is important
Project Clean Water Website	N/A	5,257 web hits for San Diego Bay	N/A	N/A

* For events where data was available

Several water quality activities also demonstrated a Level Three Outcome during this reporting period. Several San Diego Bay Copermittees have enhanced their inspection programs to address and abate specific watershed concerns, such as sediment, bacteria or metals. Through the Enhanced Inspection Activities, the San Diego Bay Copermittees were able to use the inspection data to ascertain if the activity was effective in ensuring the proper BMP implementation in their jurisdictions. Routine inspections of industrial, commercial, and construction sites by the Copermittees provide a tool for assessing behavioral changes and ensuring the proper implementation of appropriate BMPs by businesses and construction site managers. Positive changes in behavior and improved BMP implementation were noted from the following activities: Additional Dry Season Construction Inspections (SDB-007), Targeted Auto Facility Inspections (SDB-008), and Enhanced Construction Oversight (SDB-009). Additional information on these inspection activities is presented in Section 3.1 and Appendix D of this Annual Report.

Public participation in the trash and debris related activities such as the San Diego Bay WURMP sponsored Creek to Bay Cleanup event, indicate not only a change in awareness within the community of how to properly dispose of trash by the individuals involved but a change in

behavior that will continue into the future. Approximately 7,235 people participated in cleanups throughout the San Diego Bay WMA in FY 2009-10. Participation in collection events associated with the Clean Community Program (SDB-005) and the Family Stream Team Initiative (SDB-051) also provided evidence that there has been an increase in public awareness on proper disposal and options that may be available to properly dispose of trash. These efforts may assist in reducing the occurrence of illegal dumping in these areas. In addition, the number of people using publicly available HHW collection facilities located within the San Diego Bay WMA and the amount of waste collected at these facilities provides another tool to assess behavioral change and proper BMP implementation. The amount of HHW collected represents a quantity of potential storm water pollutants from residential areas that have been captured and removed from the waste stream. Data collected from San Diego Bay Copermittees shows that approximately 7,967 individuals made use of HHW collection facilities in the San Diego Bay WMA and disposed of approximately 361.4 tons of HHW during FY 2009-10[1].

The Pet Waste Bag activity was also successful at meeting a Level Three Outcome. The increased use of pet waste bags by pet owners is another example of positive behavioral change and the implementation of appropriate BMPs. The San Diego Bay Copermittees provided pet waste bags at various public locations, typically parks and public walkways. By providing pet waste bags, the San Diego Bay Copermittees have been able to increase public awareness of pet waste as a source of bacteria and increase the implementation and use of this BMP by the general public. A survey distributed at the Stormwater Education Booth at an Annual Pet Festival and Doggy Dash (SDB-040) revealed 92% of pet owners surveyed use bags to pick up after their pets. This indicates efforts to provide pet waste bags at public locations and to educate the public on the use of pet waste bags helps reduce pet waste from entering the MS4. An assessment in Chula Vista, as discussed in Activity Summary SDB-001, indicated that in parks where pet waste bags stations were used noted that less pet waste was left on the ground compared to those without stations. It was also noted that signage presented on the pet waste stations describing the environmental benefits of the activity and any laws pertaining to the pet waste encourages pet owners to pick up after their pet(s).

The equestrian community and other owners of small animals and livestock in the unincorporated area of the Sweetwater HU were also addressed during this reporting period (SDB-066). The County of San Diego implemented focused water quality outreach and education to provide information on BMPs that will improve horse health, protect properties from erosion, and prevent polluted runoff discharges. Survey results indicated a positive increase in knowledge and awareness about how equestrian activities can affect water quality and how more equestrians were able to identify positive behavioral changes, or Level Three Outcomes, following the workshops.

[1] HHW is collected as part of JURMP programs and not all Copermittees are able to currently estimate collection by WMA.

It should be noted that many of the activities focused on load reduction/source abatement also contribute to improvements in knowledge and positive behavior changes, though these improvements may not be directly measured. However, it is important to consider this when evaluating the overall effectiveness of the program. Outreach provided through display ads, signage, press releases, or email blasts for activities such as Enhanced Street Sweeping (SDB-003), present opportunities to further disseminate information on watershed water quality issues to the public even though no assessment was completed to measure the contribution of these particular outreach efforts.

The San Diego Bay Copermittees feel that they are making strides towards implementing education activities that result in Level Two and Level Three Outcomes. The San Diego Bay Copermittees will continue to evaluate their education programs in order to improve public knowledge and awareness.

4.1.3.3 Level Four Outcome – Load Reduction/Source Abatement

In order to determine whether an activity reached a Level Four Outcome, the San Diego Bay Copermittees collected information that measured load reductions resulting from changes in behavior or BMP implementation. The San Diego Bay Copermittees have implemented water quality activities that allow for a quantification of high priority pollutants that are intercepted or prevented from entering the MS4 or receiving water in order to provide a measure of load reduction. Overall, the San Diego Bay Copermittees accomplished the goals set forth in the majority of load reduction /source abatement activities.

The San Diego Bay Copermittees were involved in source abatement activities during this reporting period. The objective of the source abatement (source control and pollution prevention) activities was to reduce pollutant sources and prevent pollutant pathways to receiving waters. These measures can be more effective when targeting sources and activities with the greatest loading potential for the constituents of concern. Several of the Copermittees provided sponsorship to the Sustainable Conservation's Break Pad Partnership to address a major source of copper through a legislative process (SDB-060). The goal of Senate Bill 346: Motor Vehicle Brake Friction Materials is to reduce the amount of copper released into the environment from automotive brake pads. SB 346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. This effort is expected to result in long-term reductions of copper from automotive brake pads to the environment.

Land acquisition (SDB-046) is a pollution prevention activity that occurred within the San Diego Bay. This activity eliminates the possibility of future sources in need of abatement or future pollutant loads in need of reduction by averting development. Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed. The County of San Diego continues to acquire lands through its implementation of the Multiple Species Conservation Program (MSCP) in FY 2009-10 (SDB-046), acquiring 1,095.49 acres of property located in the Otay HU.

Data was collected to show reductions of high priority pollutant loads for Enhanced Street Sweeping, Storm Drain Litter Control Techniques, Trash Cleanup, Pet Waste Bag, and Inspection activities. The Enhanced Street Sweeping Activities significantly reduced the amount of high priority pollutants associated with roads and parking lots entering the storm water conveyance systems throughout the WMA. During this reporting period, the San Diego Bay Copermittees removed an additional 1,094 tons of material (and an additional 107 cy at the Airport) and covered and additional 22,963 curb miles (2,850 broom miles for the City of San Diego) by increasing the frequency of street sweeping beyond jurisdictional requirements (SDB-003). The goal of the Targeted Aggressive Street Sweeping Pilot Project (SDB-003) was to evaluate the effectiveness of new street sweeping equipment and different sweeping frequencies which may result in more efficient pollutant removal. A total of 74.5 tons of debris was removed by the different sweeper types during the two-year study in the San Diego Bay WMA, over a total of 2,850 miles swept. The activity resulted in a measurable pollutant load reduction during this reporting period, with an average of 58 lbs of debris removed per mile swept. The Median Street Sweeping Study (SDB-003a) was implemented during this reporting period to investigate whether sweeping medians improves the effectiveness of current street sweeping activities. The study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic roadways. Along the 12.8 miles along Palm and Coronado Avenues in the Otay HU of the San Diego Bay WMA, a total of 8.49 tons of debris was removed.

Individual or group-sponsored cleanup events represent another activity that significantly reduced pollutant loads within the WMA. Cleanup activities conducted throughout the San Diego Bay WMA during FY 2009-10 removed approximately 378.5 tons of trash and debris from the watershed's main tributaries, tidelands, and the San Diego Bay. Approximately 23 tons of trash was collected by 1,438 volunteers during the 2010 Creek to Bay Cleanup. This was the sixth year in a row in which the San Diego Bay Copermittees co-sponsored this cleanup event. In addition to resulting in a significant load reduction, these cleanup activities also provided an important outreach opportunity to citizens within the WMA. The San Diego Bay Copermittees will continue to conduct cleanup events in all jurisdictions.

In addition to cleanup events, Copermittees implemented activities to encourage the public with an opportunity to properly dispose of items that might otherwise have been illegally dumped. The Clean Community Program (SDB-005) effectively reduced trash and debris during three events in 908.3 HA in which 696 tons of bulky trash was collected. Through the Family Stream Team Initiative activity (SDB-051), approximately 115 tons of trash and debris was removed from Chollas Creek HSA during the eight refuse collection events during this reporting period.

As discussed in Section 4.3.1.2, several San Diego Bay Copermittees have enhanced their inspection programs to address and abate specific watershed concerns, such as sediment, bacteria or metals. For example, the Enhanced Construction Oversight Program (SDB-009) abates construction sites as a source of sediment in the watershed. The estimated annual sediment pollutant load reduction resulting from this activity was 57 tons. The abatement of

sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

Targeted special studies such as the Municipal Rain Barrel Installation and Downspout Disconnect study (SDB-012) provided the San Diego Bay Copermittees information to evaluate potential activities that are determined to be viable options to implement within their own jurisdictions. The Municipal Rain Barrel Installation and Downspout Disconnect targeted special study was implemented to determine whether rain barrel/rain-harvesting systems reduce stormwater runoff; thereby, reducing metals and bacteria loads, and if so, which system is most effective and efficient. Implementation of this activity addressed both high priority water quality problems by reducing runoff volume via capture, retention and infiltration. Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads (SDB-012).

These activities contribute to the overall success of the WURMP program and demonstrate the Copermittees are making progress towards achieving their program goals and objectives. Based on Level Four assessment discussed above, the San Diego Bay Copermittees believe that they are making great strides towards improving water quality due to the load reductions observed, sources abated, and the knowledge gained by each Copermittee simply by implementing these activities. Through this knowledge, activities can be improved, optimized, or replaced with more efficient ones, thus leading to the most effective program in protecting and improving water quality. The Copermittees expect that future agreement and collaboration on data standards and reporting will allow for trend analyses that further describe the effectiveness of the San Diego Bay WURMP.

4.1.3.4 Level Five Outcome – Changes in Urban Runoff and Discharge Quality

The results from the 2009-2010 *San Diego County Municipal Copermittees Urban Runoff Receiving Waters and Monitoring Report,* as discussed in Section 2, indicate that urban runoff water quality remained similar to conditions reported in the WURMP Document. Organophosphate pesticides (Diazinon, Chlorpyrifos, and Malathion) continue to be below their respective benchmarks. The continued downward trend of Diazinon concentrations in storm water is a positive indication that the San Diego Bay Copermittees' current education and outreach efforts to address Diazinon are adequate. The San Diego Bay Copermittees believe that overall, the concentration of Diazinon will continue to decrease. Even though Diazinon was banned from sales, it is possible that there are still unused products containing Diazinon being stored and used by residents and businesses. As residual Diazinon public supply and use is exhausted, it is possible to see transient, isolated incidents such as this. Diazinon will continue to be monitored and sampled to determine overall statistical trends.

4.1.3.5 Level Six Outcome – Changes in Receiving Water Quality

A Level Six assessment involves direct measurement of overall water quality in receiving water bodies and evaluates changes in water quality with respect to established regulatory

benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the San Diego Regional Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. Table 2-4 presents a comparison between baseline HPWQPs identified in the San Diego Bay WURMP Document for the Pueblo San Diego HU to the 2009-2010 monitoring results. Detailed monitoring results are presented in the Regional Urban Runoff Monitoring Report (Weston Solutions, 2011). Changes in receiving water quality are most effectively assessed using multiple years of data. The long-term analysis of available data will likely be provided through the next LTEA assessment.

4.2 Assessment of TMDL Implementation Plan Effectiveness

There are four TMDLs adopted by the RWQCB within the San Diego Bay WMA. These TMDLs include:

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL
- Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL

A brief summary of the current status and the assessment of the Implementation Plans for the Chollas Creek Diazinon and Dissolved Metals TMDLs and SIYB Dissolved Copper TDML are presented below. The RWQCB adopted the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL as a Basin Plan Amendment (BPA) on June 11, 2008. During this reporting period, the OAL approved the BPA on September 15, 2009 and the Environmental Protection Agency (EPA) approved the BPA on October 26, 2009.

4.2.1 Chollas Creek Diazinon and Dissolved Metals TMDLs

Status

The Implementation Plan for the Chollas Creek Diazinon TMDL was completed in September 2004 and is currently being implemented. The Copermittees within the Chollas Creek HSA (a sub-watershed of the Pueblo San Diego HU (908)) continue to monitor Diazinon discharges into the creek and implement an education and outreach program to raise awareness among key audiences regarding the harmful effects of pesticides on the environment. The Copermittees also continue to promote the use of Integrated Pest Management (IPM) practices to reduce pesticide loading into Chollas Creek.

The Chollas Creek Dissolved Metals TMDL took effect October 22, 2008 when it was approved as a Basin Plan Amendment by the Office of Administrative Law and subsequently approved by

the Environmental Protection Agency in December 2008. As described in Section 1.1, the seven named dischargers collaborated on a multi-pollutant strategy for addressing the TMDL as well as the development of the required BMP Implementation Plan. The Implementation Plan was submitted to the Regional Board on October 21, 2009. The dischargers are currently implementing Phase I of the strategy.

Assessment

To address Diazinon in FY 2009-10, the Copermittees continued to promote IPM through jurisdictional IPM seminars and events and through the San Diego regional IPM program. Refer to Section 3.2.1.3 and Table 3-3 of this Annual Report for more details. A few dischargers implemented additional activities targeting Diazinon through IPM materials, detailed in the tables in Appendix E. Specifically, dischargers implemented the following activities:

- IPM materials were distributed at five community events targeting specific audience groups.
- 2,848 students were educated through sponsorship by dischargers of San Diego County Office of Education's "Green Machine" traveling outreach van which visits elementary schools within the Chollas Creek watershed area. Education includes IPM practices
- The Copermittees continued to work with the University of California Cooperative Extension (UCCE) to disseminate information on IPM and water quality in both English and Spanish using PSAs, tips cards, and other outreach materials.

The Copermittees continue to conduct monitoring for the Chollas Creek Diazinon and Dissolved Metals TMDLs. Required compliance monitoring is detailed in Appendix C, the Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Order No. R9-2004-0277 2009-2010 Water Quality Monitoring Report. In summary, exceedances for metals were observed this year and data analysis on the long-term data set at SD8(1) indicates significantly increasing trends for total and dissolved copper and zinc. However, when compared to historical data (1994-2010), increasing trends are relatively shallow and have flattened over time. Exceedance ratios have steadily decreased at SD8(1) since 2007. Significant trends for total copper and total zinc were also observed at DPR2.

While Diazinon was detected during the 2009-2010 monitoring season, concentrations were generally low. Diazinon was below the chronic WLA at both sites. There are significant, observably decreasing trends for Diazinon in both the north fork and south fork of Chollas Creek since the ban by EPA in 2004. It is anticipated that as residual supplies of Diazinon become exhausted due to its unavailability, concentrations and frequency of detection should continue to decrease.

Only one instance of reproductive toxicity to *Ceriodaphnia dubia* was noted at SD8(1), during the first storm event on November 29, 2009. This event was the first storm following 279 days

without significant rainfall and the buildup during this long dry weather period may have contributed to the toxic effects observed.

Based on the monitoring results presented above, the San Diego Bay Copermittees' efforts to address Diazinon through education and outreach programs, in addition to the ban on Diazinon, are adequate for meeting the goals of the Diazinon TMDL. Education and outreach programs and events for area residents and businesses should continue in order to help further reduce pesticide usage within the Chollas Creek watershed and proactively address the observed shift in pesticide usage that has occurred in recent years toward synthetic pyrethroids.

The key objectives of the Dissolved Metals TMDL dischargers during FY 2009-10 included collaborating and establishing a consensus among stakeholders as well as beginning the implementation of specific pollution prevention activities. While these two objectives were accomplished in FY 2009-10, they are also long term objectives to which the dischargers will continuously strive.

The Implementation Plan was submitted to the Regional Board in October 2009 as described previously, and the dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in TMDL compliance. The Dischargers' approach in addressing the TMDL is an integrated, multi-pollutant based approach targeting metals, trash, bacteria, and pesticides as well as other pollutants. Forty-seven activities, including water quality, education, and ongoing agency-wide activities, were implemented in FY 2009-10.

Activity details including information on measurable targeted outcomes (Levels 1-6), assessment measures and assessment methods are presented in each discharger's BMP Implementation table located in Appendix E. However, this section includes a collective summary of some notable accomplishments. Discharger activity accomplishments for FY 2009-10 include:

- The removal of approximately 2,318 tons of trash, and 160 cubic yards of non-native vegetation from the watershed.
- Over 6,680 school children were educated on urban runoff and watershed issues during class presentations and field trips. Dischargers developed outreach booths at 22 local and regional events with a combined estimated 334,150 attendees. Public Service Announcements continued to air on television and radio regionally.
- Through over 272 targeted commercial, industrial, and municipal facility inspections and audits, 11 deficiencies were noted leading to 8 corrective actions. Corrective actions can include, but are not limited to, stopping/cleaning an active discharge, closing/covering open trash cans, and/or covering and maintain grease bins.
- Through an aggressive street sweeping pilot project, an average of over 58 lbs of debris was removed per mile swept for a total of 149,040 lbs of debris in the watershed over

the two year study period. Through the sweeping of freeways twice a month, an estimated 13.5 cubic yards of debris was collected from 40.8 miles.

- One Municipal Code modification was completed giving the City of La Mesa more stringent authority regulating within the Chollas Creek watershed. One other jurisdiction is planning a code modification to strengthen its sustainable building and green building practices and incorporate low impact development which ultimately will help improve the watershed.
- Four collaborative monitoring activities were conducted:1) Synthetic Pyrethroid Assessment Monitoring, 2) Bacteria Monitoring, 3) Assessment Grab Samples for Metals, and 4) Jurisdictional Boundary Monitoring in the Upper Watershed The jurisdictional boundary monitoring program continued on into FY2010-11 for a second year of data.
- Several of the dischargers provided sponsorship to the Sustainable Conservation's Break Pad Partnership to address a major source of copper through a legislative process. SB346 was passed and signed by the Governor in Fall 2010, and will reduce copper in brake pads to 0.5% by 2025.

The accomplishments listed above are not comprehensive. Details regarding all the activities that were implemented and/or are planned and made progress in FY 2009-10 are included in each discharger's activity table included in Appendix E. It is anticipated that over time with implementation of the Dischargers' Dissolved Metals TMDL Implementation Plan, improvements to water quality will be observed. The actions that the Dischargers' have planned are anticipated to reduce pollutant loading and address pollutant sources as well as education the public on water quality issues.

4.2.2 Shelter Island Yacht Basin Dissolved Copper TMDL

Status

The Port of San Diego and the City of San Diego are working with the RWQCB and other local stakeholders to develop a collaborative Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL Implementation Plan. The goal of the Implementation Plan will be to achieve a 76% reduction in dissolved copper discharges into the SIYB over the next 20 years. The named parties met on six occasions during this reporting year: August 20, 2009, September 17, 2009, January 19, 2010, February 17, 2010, April 14, 2010, and June 16, 2010.

During this reporting period, a conceptual monitoring plan for conducting compliance monitoring for the SIYB dissolved copper TMDL continued to be developed. The purpose of compliance monitoring within the SIYB is to determine if interim and final loading targets, including both numeric and narrative water quality objectives, are being achieved throughout the SIYB. Long-term tracking of vessel hull paint conversion and water quality is necessary to determine whether TMDL compliance has been attained. Compliance monitoring for the dissolved copper

TMDL will include tracking of vessel hull paint conversions to non-copper-based paint; annual water quality assessments of copper levels and toxicity; and monitoring of broader range of water-column, sediment, and biotic indicators on a 5-year basis through integration with the RHMP. The RHMP is further discussed in the Activity Summary Sheet SDB-025 in Appendix D. The primary means of determining compliance with interim loading reduction targets will be tracking the conversion of vessels from copper-based to non-copper paints on a basin-wide basis. The named parties began to develop vessel tracking standards, a vessel tracking database template and to collect vessel data on hull paints during this reporting period. The draft monitoring plan and vessel tracking data base worksheet was presented to the TMDL named parties for review during the aforementioned meetings. The draft Implementation and Monitoring plans are anticipated to be finalized in FY 2010-11.

Assessment

The Copermittees and other named dischargers have been in the process of developing the Implementation Plan during this reporting period. Therefore, an assessment of the Implementation Plan is not possible at this time. However, the Copermittees have been successful in proactively addressing the requirements of the TMDL in FY 2009-10. Accomplishments include:

- The Port of San Diego continued to participate in the EPA-funded "Safer Alternatives to Copper-Based Paints" project. The objectives of the project are to identify environmentally friendly test coatings that are: 1) effective in repelling or preventing fouling growth; 2) relatively easy to clean; and 3) cost effective to apply and maintain. The Port continued to implement the boat testing phase of the project during FY 2009-10. Ten of top performing alternative coatings from the panel testing phase were applied to recreational boats during the previous reporting period. Four boats were painted with test coatings in FY 2009-10. One boat was painted with another top performing test coating. Three boats served as duplicates for three of the top performing non-biocide test coatings. In all, there were 11 test coatings involved in the boat hull testing phase, though two coatings were removed from testing at the start of this reporting period due to coating condition issues. The educational and outreach efforts will provide valuable information and guidance to the boating industry on alternative non-copper based antifouling paints and maintenance strategies, resulting in a Level Three Outcome. The transition away from copper-based coatings would aid in the reduction of copper loading into the SIYB, thereby enabling the possibility of a Level Four Outcome by the end of this Permit cycle. The EPA-funded "Safer Alternatives to Copper-Based Paints" project will be finalized in FY 2010-11.

- The Port of San Diego and other parties named in the TMDL have continued to participate in the state-wide copper sub-workgroup, led by the Department of Pesticide Regulation (DPR), to increase overall understanding of copper impacts statewide. This workgroup met three times: July 9, 2009; April 8, 2010; and August 11, 2010.

- The Port of San Diego developed the framework for a long-term program to evaluate new and emerging hull coatings and technologies. The program will incorporate many of the testing methodologies and assessment protocols developed as part of the EPA Grant Project. The program will also develop mechanisms to continually seek new and emerging products, and develop partnerships with tenants in field testing efforts. As part of the on-going testing, Port staff contracted several of the paint manufacturers to see if any new products were available for testing. To date, approximately 22 new alternative coatings were assessed through panel testing in FY 2009-2010. The coatings tested include new products not previously available, as well as reformulations of several coatings from the EPA Grant Project which did not quite meet the panel testing standards. The field testing will be finalized in August 2010.
- During the previous reporting period, the Port collaborated with the SDSU College of Business' MBA Consulting Program to develop a database of interested parties of whom the Port can solicit solutions for innovative boat hull coatings. As a result of this effort, a Request for Information (RFI) solicitation was developed by the Port and distributed to interested parties in June 2009. The goal of the RFI was to identify innovative approaches to achieving a reduction in copper loading, either through the use of alternative coatings or in the form of concepts that prevent copper from impacting marine life in the area. Of the submittals received, three were determined to have significant potential to produce coatings that are novel in their approach to the problem and effective in preventing fouling of boat hulls. Funding was pending at the conclusion of this reporting period.
- The City of San Diego collected data from September 2009 through April 2010, including wet weather results, dry weather results, flow results, and loading estimates from the MS4 into SIYB (SDB-053). While no loading reduction is required under the TMDL for urban runoff, the City is taking a proactive position and verifying that the copper loading from its MS4 is within the load allocation WLA and WQOs.
- The RHMP conducted a focused special study during this reporting period which reviewed the existing literature and data to assess the spatial extent of copper contamination within the RHMP harbors, specifically focusing on the marina stratum. This comprehensive literature review included an assessment of sediment and surface water concentrations, copper loading, observed toxicity, and physical conditions within marinas that may affect copper bioavailability. Specifically, this task included a review of the primary peer-reviewed literature as well as key regional reports. Detailed information is provided in (SDB-025), located in Appendix D.

Section 5: Conclusions and Recommendations

5.1 Conclusions

The San Diego Bay Copermittees successfully completed all watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. Due to the success of the programs implemented during FY 2009-10, the San Diego Bay WURMP achieved the following objectives: 1) implementation of activities to specifically address the sources of water quality problems at a WMA and HA level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a WMA and HA level; 4) continued refinement of the watershed program; and 5) continue progress toward meeting WURMP goals and objectives. The comprehensive assessment of educational programs implemented through JURMP, RURMP, and WURMP demonstrates how the Copermittees have been successful in increasing public awareness and changing behaviors by implementing extensive pollution prevention efforts directed at potential sources of high priority pollutants. In FY 2009-10, the Copermittees supplemented the JURMP and RURMP educational programs by implementing 13 education activities targeting audiences identified in the Municipal Permit as most likely to have significant impact on the high priority water quality problems in the San Diego Bay.

Several of the watershed activities discussed in Table 4-2 improved knowledge or behaviors, reduced pollutant discharge loads, and abated potential pollutant sources. Assessment of individual activities indicated 13 of 17 water quality activities and nine of 13 educational activities met their assessment targets and were considered to be effective. As noted in Section 4, there were watershed activities that did not complete the assessment mechanisms during this reporting period. For a number of these activities, effectiveness assessment is scheduled to occur in the fifth year of the Permit. Evaluation of the water quality activities at an HA level also provided an assessment of the San Diego Bay Copermittees' collective efforts for several activities that were implemented across several HAs. These activities presented universal solutions to high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern.

The Copermittees identified jurisdictional water quality activities which were implemented across multiple HAs, such as Pet Waste Bags, Trash Cleanups, Enhanced Street Sweeping, and Enhanced Inspections. Copermittees also implemented different approaches or activities which focused on the same pollutant of concern and/or pollutant sources in a HA. The combined effect resulted in a greater impact on the targeted high priority water quality problems and positively influenced the effectiveness and efficiency of the WURMP program.

The named dischargers of the Chollas Creek Dissolved Metals and Diazinon TMDLs have taken a holistic approach to planning, implementation, and assessment of watershed activities. The

holistic approach takes into account watershed activities implemented by named dischargers under WURMP, JURMP, or other stormwater programs. The goal of integrating information from various programs is to compile data from all implemented activities in order to allow a comprehensive evaluation of watershed-wide efforts to address high priority water quality pollutants identified in the TMDL. The involvement of non-Copermittee agencies (i.e., Caltrans and the U.S. Navy) in the Chollas Creek TMDLs enables the incorporation of information on pollutant sources outside of the Copermittees' jurisdictions and the BMPs these agencies have implemented to address these sources. During this reporting period, all named dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in achieving TMDL compliance. The dischargers will share this information and will apply lessons learned in the region with the goal of improving water quality in the Chollas Creek Watershed.

During FY 2009-10, resources were allocated to the planning of seven Targeted Special Studies focused on high priority water quality problems and their sources within the Chollas Creek watershed (908.2). Future assessments of the Targeted Special Studies will provide information enabling Copermittees to determine the most efficient, feasible, and effective BMPs to implement within their individual jurisdictions. The San Diego Bay Copermittees believe monitoring activities provide important information which is essential to the overall success of the Watershed Strategy. Monitoring results may be used to support future management decisions regarding the planning, implementation, and assessment of watershed activities. During this reporting period, ten Monitoring and Source Identification activities were implemented. The San Diego Bay Copermittees attempted to further assess changes in receiving water quality during FY 2009-10, and more thorough assessments will be conducted as additional water quality and pollutant source assessment information becomes available. By acquiring a better understanding of the link between high priority pollutant sources and their impacts to water quality, Copermittees will be able to understand how the watershed activities affect urban runoff discharge and receiving water quality.

5.2 Program Improvements and Recommendations

The most important contribution that watershed programs can make is to protect and improve water quality in each WMA, including the San Diego Bay WMA. To do this, San Diego Bay Copermittees must first expand the understanding of the water quality issues in the WMA (i.e. the sources and magnitude of the issues), allowing for more informed decisions and actions. The comprehensive evaluation of existing activities, BMPs, and assessment strategies pertaining to watershed programming provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. This resource can then be shared with other watersheds, jurisdictions, and non-Copermittee agencies to improve programs on a regional basis and further increase the list of BMPs Copermittees may potentially implement.

The San Diego Bay Copermittees and other entities will continue to utilize information on watershed pollutants and sources when evaluating and determining which watershed activities to implement. The Watershed Strategy, a key component required for the San Diego Bay

WURMP Document, provides a consistent mechanism for prioritizing pollutants, identifying sources of pollution, maximizing available resources, and developing and implementing activities. The San Diego Bay Copermittees will continue to gather additional water quality data suitable for assessments at the watershed, sub-watershed, and HA levels, as well as research pollutant sources and their loading potential. Because there is a general lack of water quality data directly related to sources, the San Diego Bay Copermittees will continue to coordinate to improve data collection and monitoring. Efforts to further refine the characterization of source inventories and water quality, such as to the HA level, will provide more useful information to the San Diego Bay WURMP. This improved identification of sources and their loading potential will enable the Copermittees to enhance effectiveness assessments of watershed activities, which will enable Copermittees to modify program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

The next step in the evaluation process will be to look at the watershed activities and decide if they are optimized or whether the activities may be further developed to achieve even greater load reductions. The San Diego Bay Copermittees will continue to evaluate the standardization of incoming data available through the activity summary sheets and comprehensive assessments. The Copermittees could begin to compare activities to each other, deciding if certain activities are able to be combined to increase effectiveness and efficiency, and the activity's ability to address multiple pollutants. This information when combined with monitoring and source identification may promote the positioning of strategically placed watershed BMPs and comprehensive watershed activities. This process entails improving existing data and assessment strategies, which will lead to improved source identification and improvements in water quality. In addition, the Copermittees will continue to collaborate on efforts to integrate information on JURMP related activities information into the San Diego Bay WURMP Annual Report in order to develop a comprehensive evaluation of all activities implemented to address high priority water quality problems under the various urban runoff management programs in the WMA. By evaluating the activities relevance to each other and to the high priority water quality problems and their sources, the Copermittees will be able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary.

The Copermittees will also continue to contribute to efforts focused on making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the San Diego Regional Copermittees efforts to improve coordination on reporting and assessment functions. This will likely help increase the ability to report and assess programs and activities on a watershed level. The Copermittees will also continue participating with other San Diego Regional Copermittees in the process of working with the RWQCB regarding WURMP permit elements in the upcoming permit renewal. The RWQCB is scheduled to renew the San Diego NPDES Municipal Storm Water Permit in 2012. The permit renewal process will provide an opportunity to identify more effective and efficient approaches for protecting water quality from storm water impacts on local jurisdictional and/or watershed-level scales. This process will also present opportunities to reduce inefficiencies and

duplicative efforts so that resources can be redirected to activities that protect and improve water quality.

Section 6: References

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Appendix A

Signed Certification Statements

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paul Manasjan
Director
Environmental Affairs
San Diego County Regional Airport Authority

January 19, 2011

Subject: Chollas Creek TMDLs FY 2010 Annual Report as presented in the 2009-2010 San Diego Bay Watershed Urban Runoff Management Program Annual Report

STATEMENT OF CERTIFICATION

I certify under penalty of law that the California Department of Transportation's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BRUCE APRIL
Deputy District Director
Environmental Division
California Department of Transportation (Caltrans)

January 19, 2011
File # 0780-72-KY181

San Diego Bay Watershed Urban Runoff Management Program
Annual Report for Fiscal Year 2009-2010

Statement of Certification

"I certify under penalty of law that the City of Chula Vista participated in the development of the Fiscal Year 2009-2010 Watershed Urban Runoff Management Program Annual Report for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

MATT LITTLE
ASSISTANT DIRECTOR OF PUBLIC WORKS
CITY OF CHULA VISTA

H:\NPDES\Watershed\WURMP Certified Statement 2011.doc

THE CITY OF SAN DIEGO

RE: Statement of Certification
San Diego Bay Watershed Urban Runoff Management Program
Fiscal Year 2009-2010 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2009-2010 San Diego Bay Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Transportation & Storm Water Department
Storm Water Division

1/11/11
Date

DIVERSITY BRINGS US ALL TOGETHER

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 • Fax (858) 541-4350

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott Huth
Director
Department of Public Services
City of Coronado

County of San Diego
LAND USE AND ENVIRONMENT GROUP

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256 • Fax: (619) 531-5476
www. sdcounty.ca.gov/lueg

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program (WURMP) FY 2009-10 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to this FY 2009-10 San Diego Bay Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi
SARAH E. AGHASSI
Deputy Chief Administrative Officer

1/21/11
Date

The City of Imperial Beach

(619) 423-8311
(619) 429-4861 Fax

PUBLIC WORKS
825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

January 20, 2011

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

CITY OF
LA MESA
JEWEL of the HILLS

DAVID E. WITT, A.I.C.P.
CITY MANAGER

CERTIFICATION STATEMENT

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

1/19/11

David E. Witt
City Manager
City of La Mesa

Date

Telephone Number: (619) 667-1195

8130 ALLISON AVENUE • LA MESA, CA 91942 • TEL: 619.667.1195 FAX: 619.462.7528

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Graham Mitchell
City Manager
City of Lemon Grove

January 2011

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Maryam Babaki, City Engineer
Engineering Department
City of National City

1/19/2011

Subject: Chollas Creek TMDLs FY 2010 Annual Report as presented in the 2009-2010 San Diego Bay Watershed Urban Runoff Management Program Annual Report

STATEMENT OF CERTIFICATION

I certify under penalty of law that the U.S. Navy's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Brian S. Gordon
Water Program Manager
Naval Facilities Engineering Command, Southwest
U.S. Navy

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

DAVID MERK
Director
Environmental Services
San Diego Unified Port District

Appendix B

FY 2009-2010
San Diego Bay WURMP
Meeting Schedule

Table B-1. San Diego Bay FY 2009-2010 WURMP Meeting Summary.

MEETING DATES	GENERAL TOPICS
July 16, 2009	• ILACSD High School Watershed Presentation • Regional Updates • Watershed Activities Discussion
August 20, 2009	• Regional Updates • 2008-2009 San Diego Bay WURMP Annual Report
September 23, 2009	• Regional Updates • 2008-2009 San Diego Bay WURMP Annual Report
October 22, 2009	• Integrated URMP Reporting • Regional Items • ILACSD High School Education Draft Presentation Approval • 2008-2009 San Diego Bay WURMP Annual Report
November 19, 2009	• Integrated URMP Reporting • Regional Items • 2008-2009 San Diego Bay WURMP Annual Report
December 17, 2009	• Integrated URMP Reporting • Regional Items • 2008-2009 San Diego Bay WURMP Annual Report
January 14, 2010	• Regional Items • 2008-2009 San Diego Bay WURMP Annual Report • Future Activities
February 18, 2010	• Regional Monitoring Report Follow-Up Presentation • ILACSD Creek to Bay Cleanup Presentation and FY 10 High School Education Activity Update • Regional Items
March 24, 2010	• Regional Items • TMDL Updates • Watershed Strategy and Activities
April 15, 2010	• Regional Items • TMDL Updates • Potential new TMDL/Permit Requirements and 3rd party Data • San Diego Bay WURMP Review
May 20, 2010	• Regional Items • San Diego Bay WURMP Review • ILACSD Creek to Bay Cleanup Follow-Up
June 24, 2010	• Regional Items • San Diego Bay WURMP Review

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Appendix C

Chollas Creek
Total Maximum Daily Load Compliance Monitoring Investigation
Order R9-2009-0277

2009-2010
Water Quality Monitoring Report

Due to size limitations, Appendix C – *The Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Order R9-2009-0277: 2009-2010 Water Quality Monitoring Program* documents are not included in this electronic version. Please contact the City of San Diego or County of San Diego for copies of this appendix.

Appendix D

San Diego Bay
Watershed Activity Summary Sheets

PET WASTE BAG COLLABORATIVE WATERSHED ACTIVITY – (SDB-001)

ACTIVITY DESCRIPTION

The Pet Waste Bag Collaborative Watershed Activity addresses urban runoff from jurisdictional parks and recreational areas. It is believed that pet waste may be a potential source of high priority water quality problems such as bacteria. The use of pet waste bags helps to reduce pet waste from entering the storm water conveyance system, thereby addressing the high priority water quality problem, bacteria. Two important goals of this activity are to reduce the amount of pet waste found in parks and to provide an opportunity to educate the public on the need to cleanup after their pets. Providing pet waste bags to citizens may result in load reductions as the activity enables proper disposal of pet waste and associated pollutant categories such as bacteria.

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of pet waste bag dispensers added by a Copermittee as part of this activity or, 2) the number of pet waste bags removed and used, or 3) by estimating the bacteria loading based on the number of bags distributed. Implementation of educational elements of this activity may include new and/or improved signage in municipal parks describing the environmental benefits of using the pet waste bags.

During FY 2009-10 the City of Chula Vista conducted activities targeting pet waste including an evaluation of pet waste bag usage in city parks and trails and education directed towards local Home Owners Associations (Activity Summary Sheet SDB-039). Additional assessment was undertaken by the Airport Authority and the County of San Diego, by estimating the amount of pet waste removed from parks and public areas within their jurisdictions. Refer to the San Diego Bay WURMP Document's Pet Waste Bags summary sheets (1A through 1E) for additional information on the individual Copermittees' Pet Waste Bag activities.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. TMDLs are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Currently, Bacteria TMDL sites include Shelter Island and certain segments of Chollas Creek.

TIME SCHEDULE FOR IMPLEMENTATION

Table D-1 below lists the San Diego Bay Copermittees participating in the Pet Waste Bag Collaborative Watershed Activity during this reporting period and in which HA(s) the activity is being conducted.

Table D-1. San Diego Bay Copermittees Participation in Pet Waste Bag Watershed Activity.

Hydrologic Area									
Copermittee	**908.1**	**908.2**	**908.3**	**909.1**	**909.2**	**909.3**	**910.1**	**910.2**	**910.3**
Airport Authority		X							
City of Chula Vista				X				X	X
City of La Mesa		X		X					
City of Lemon Grove		X		X					
City of Imperial Beach							X	X	
City of Coronado							X		
County of San Diego				X	X	X		X	X
Port of San Diego	X	X	X	X			X		

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of Imperial Beach
- Port of San Diego
- City of La Mesa
- City of Lemon Grove
- City of Coronado
- Airport Authority
- County of San Diego
- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. This activity directly addresses and abates a source of bacteria in all HAs.

EFFECTIVENESS ASSESSMENT

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) identifying the number of bags removed and used from pet waste dispensers, 2) characterizing pet owners disposal of pet waste, and/or 3) estimating annual bacteria load reductions. For additional

effectiveness assessment information for the County of San Diego's Pet Waste Bag Program, please refer to Activity Summary Sheet SDB-001a in this Annual Report.

Additional Dispensers

The City of Chula Vista installed seven new pet waste bag dispensers within two additional parks during FY 2009-10. During FY 2009-10 the City of San Diego was in the planning phase of an activity to identify areas for pet waste bag dispenser installation (Activity Summary Sheet SDB-001b). This activity will be implemented during FY 2010-11.

Pet Waste Bags Dispensed

Table D-2 lists the total number of pet waste bags dispensed per Copermittee. The total number of pet waste bags dispensed during FY 2008-09 was approximately 368,234[1].

Table D-2. Number of Pet Waste Bags Dispensed.

Copermittees	Number of Pet Waste Bags Used
Port of San Diego	258,000
City of Imperial Beach	20,800
City of La Mesa	10,350
City of Lemon Grove	500
City of Chula Vista	9,000
City of Coronado	12,783
Airport Authority	733
County of San Diego	56,068

Proper disposal of pet waste helps to reduce bacteria from entering the storm water conveyance system. The use of pet waste bags by pet owners is another example of positive behavioral change. By providing pet waste bags and the appropriate educational signage describing the environmental benefits of the activity, the San Diego Bay Copermittees may be able to increase public awareness that removal of pet waste is a beneficial activity for water quality in which pet owners can be involved.

During this reporting period, the City of Chula Vista evaluated 48 municipal parks for the presence of pet waste bag stations. Thirteen parks were found to have pet waste stations. In parks where these stations were used, it was noted that there was less pet waste left on the ground compared to those without stations. Signage presented on the pet waste stations

[1] The manner in which pet waste bag data is recorded can vary from each of the jurisdictions, leaving room for variability in the data from year to year. Some jurisdictions report the number of pet waste bags that are purchased during the fiscal year, while others report the number of bags used during the fiscal year. This can cause data variation because some jurisdictions may be starting up new pet waste programs, causing an increase in the number of pet waste bags reported. Others may have well-established programs and just maintain their existing pet waste stations.

encourages pet owners to pick up after their pet(s) and indicates that it is the law according to Chula Vista Municipal Code. Utilizing relationships with citizen community groups, Chula Vista was able to install seven new pet waste stations in two additional parks during the FY 2009-10 reporting period.

Bacteria Load Reductions

The County of San Diego and the Airport Authority calculated the annual bacteria load reductions. Utilizing the assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve, the County estimated 51,680 pet waste bags were utilized from the seventeen bag dispensers in their jurisdictions in FY 09-20. The County estimated the amount of pet waste removed to be 11,214 lbs. Please refer to Activity Summary Sheet SDB-001a for further detail on the County of San Diego's pet waste bag activity efforts. The Airport Authority calculated bacteria load reductions using separate assumptions. A total of 733 pet waste bags were dispensed at the Airport's two pet relief areas. The use of pet west bags resulted in an estimated load reduction of 183.25 lbs. of pet waste and approximately 1.9×10^{12} fecal coliform bacteria.

PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS – (SDB-001A)

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 16 dispenser stations at 13 parks within the San Diego Bay Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain 16 dispenser stations at 13 parks within the San Diego Bay Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain 17 dispenser stations at 14 parks within the San Diego Bay Watershed. The parks and the number of dispensers include:

- Otay Lake Park (1 dispenser)
- Eucalyptus Park (1 dispenser)
- Goodland Acres Park (1 dispenser)
- Hilton Head, Cottonwood 3 (2 dispensers)
- Lamar Street Park (1 dispenser)
- Spring Valley Park (1 dispenser)
- Sweetwater Regional Park/Summit (2 dispensers)

- Sweetwater Lane Park[2] (1 dispenser)
- Hillsdale Park (1 dispenser)
- Lonnie Brewer Park (1 dispenser)
- Steele Canyon Park (1 dispenser)
- Cottonwood Park (1 dispenser)
- Woodhaven Park (2 dispensers)
- Nancy Jane Park (1 dispenser)

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria has been identified as a priority water quality problem in the San Diego Bay Watershed. Parks have been identified as potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

[2] In previous WURMP Annual Reports, the Sweetwater Lane Park location was accidentally omitted from San Diego Bay WURMP totals. Pet Waste bags have been dispensed at this location since FY 2007-08.

EFFECTIVENESS ASSESSMENT

Facility Name	# of Stations	# of Bags Used	Waste Removed Lbs.
Otay Lake Park	1	3,230	646
Eucalyptus Park	1	3,230	646
Goodland Acres	1	3,230	646
Hilton Head Park	2	7,120	1,424
Lamar Street Park	1	3,230	646
Spring Valley Park	1	3,230	646
Sweetwater Regional Park/Summit	2	6,460	1,292
Sweetwater Lane Park	1	3,230	646
Hillsdale Park	1	2,998	598
Lonnie Brewer Park	1	3,340	668
Steele Canyon Park	1	3,340	668
Cottonwood Park	1	3,340	668
Woodhaven Park	2	6,880	1,376
Nancy Jane Park	1	3,220	644
Total	**17**	**56,068**	**11,214**

During the FY 2009-10 reporting period the County maintained 17 stations among 14 County Parks within the San Diego Bay Watershed. These stations distributed approximately 56,068 bags, preventing an estimated 11,214 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

PET WASTE BAG DISPENSER PROGRAM PHASE II – (SDB-001B)

ACTIVITY IMPLEMENTATION

This activity will target areas frequented by pet owners such as apartment complexes, condominiums, mixed-use locations, and public right of way in the San Diego Bay Watershed Management Area (WMA). When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones.

This project was in its planning stage during FY 2009-10. Watershed maps were developed and utilized to assist in the selection of potential installation locations. Criteria used were:

a) Canine related activity, e.g. dogs being walked
b) Cleanliness (observed pet waste)
c) Presence of trash receptacles
d) Presence of pet waste bag dispensers
e) Areas draining to a water body impaired for bacteria, phosphorus or nitrogen
f) Potential for Partnership
g) Areas of Complaints/Chronic Pet Waste Observations

Three watershed management areas (WMAs) were selected for implementation in FY 2011: Mission Bay and La Jolla, San Diego Bay, and San Diego River.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2010. Program implementation is anticipated to occur in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
PET WASTE BAG DISPENSER PROGRAM Assess the Effectiveness of Pet Waste Bag Dispensers	
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	• Change (%) in load reduction pre and post implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results

The pilot project was not in active implementation during FY 2009-10. Program launch is anticipated to occur in FY 2010-11.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

STORM DRAIN LITTER CONTROL TECHNIQUES – (SDB-002)

ACTIVITY DESCRIPTION

One of the collaborative efforts the San Diego Bay Copermittees identified in the WURMP Program is the implementation of storm drain litter control techniques. These techniques may consist of storm drain inserts, filters, and other devices to capture or prevent trash and debris from entering the MS4 system. Installation of these devices within municipal areas such as parks or along streets is a relative affordable and effective means of preventing trash and debris from reaching receiving water bodies. In addition to preventing trash and debris from entering the MS4 and receiving water bodies, storm drain litter control techniques may indirectly control sediment, bacteria, and metals from reaching receiving water bodies. The expected benefit of these techniques is a level 4 outcome in exhibiting load reductions and source abatement. This activity allows easy measurement of pollutant load reductions, addresses high priority water quality problems, and results in improvements to the discharge water quality and BLTEA ratings.

The San Diego Bay Copermittees participated as part of this collaborative activity by either 1) quantifying the number of storm drain litter control devices added by a Copermittee as part of this activity or, 2) quantifying the amount of trash and debris removed from such devices. During this reporting period, the City of La Mesa installed two new storm drain litter control devices. In addition, the City of San Diego is in the planning stages of retrofitting two storm drain curb inlets along El Cajon Boulevard with drainage inserts (Activity Summary Sheet SDB-002a). Other San Diego Bay Copermittees who previously installed such devices continue to maintain and collect data on amount of trash and debris collected.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Jurisdiction	Permit Year 09-10	Permit Year 10-11
City of San Diego	Planning	Implementation
City of La Mesa	Implementation	Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City
- City of Coronado
- City of San Diego

- City of Imperial Beach
- County of San Diego
- City of La Mesa
- Port of San Diego
- City of Lemon Grove

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems and is consistent with the Watershed Strategy by focusing on sediment and trash load reduction. Litter control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous debris. The Watershed Strategy identifies sediment and trash as high priority water quality problems for the watershed HAs. Though sediment is identified as a high priority water quality problem in both 908.2 and 908.3 HAs, all HAs will benefit from this activity. While this activity may quantifiably demonstrate the reduction of sediment and trash loads, other priority pollutants known to be associated with sediment, such as bacteria and metals, may also be reduced. The Watershed Strategy acknowledges the identification of the source of sediment is needed in the majority of the San Diego Bay WMA. The Storm Drain Litter Control Technique Activity is an important method to reducing pollutant loading throughout the San Diego Bay WMA.

EFFECTIVENESS ASSESSMENT

<u>Number of storm drain litter control devices added in FY 2009-10</u>

The City of La Mesa installed 2 new Filterra Biofiltration Units within the City right-of-way designed to remove pollutants associated with urban runoff.

<u>Amount of trash and debris collected in FY 2009-10</u>

As a collaborative activity, the Copermittees report the amount of trash and debris removed or prevented from entering the MS4. Table D-3 identifies the Copermittees which collected data regarding the removal of trash and debris from storm drain litter control devices.

Table D-3. Amount of Trash and Debris Removed.

Copermittees	Trash and Debris Removed (lbs)
Port of San Diego	1,840
City of National City	58,754
City of Lemon Grove	3,360
City of Imperial Beach	4,115
City of La Mesa	4,200
City of Coronado	15,032
County of San Diego	419*

*County of San Diego reported trash and debris removed in cubic yards

Overall, the Copermittees collected 43.65 tons (and an additional 419 cy from the County of San Diego) of trash and debris. The trash, sediment, and associated pollutants removed represent a load reduction because the material would otherwise have entered the MS4 and transported downstream.

EL CAJON BOULEVARD STORM DRAIN INLET RETROFIT FOR CHOLLAS CREEK WATERSHED PROTECTION PROJECT – (SDB-002B)

ACTIVITY IMPLEMENTATION

The City of San Diego will retrofit two storm drain curb inlets on El Cajon Boulevard with drainage inserts. This site has been selected for its placement along a major arterial, proximity to the ongoing aggressive street sweeping program (Tier I Best Management Practice activity) along El Cajon Boulevard, and the adjacent commercial land uses.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that meet the performance standards and requirements of the RFP have been awarded. The curb inlets will be retrofitted with the selected drainage inserts in Fall/Winter 2010 and the first phase of monitoring will begin immediately after installation.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will contribute to improving water quality problems and is consistent with the Collective Watershed Strategy by focusing on bacteria and sediment load reduction. Litter

control techniques will capture trash, leaves, yard clippings, sediment, and other miscellaneous pollutants, which convey and provide nutrients to bacteria. The Collective Watershed Strategy identifies bacteria, sediment, and nutrients as priority water quality problems in the various hydrologic subareas of the San Diego Bay Watershed Management Area (WMA).

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
EL CAJON BOULEVARD STORM DRAIN FILTER INSERT PROJECT Assess Efficiency and Effectiveness of Storm Drain Filter Inserts in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved by retrofitting storm drains with filter inserts? • How efficient are filter inserts in reducing pollutant loads? • What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure filter inserts working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality (Outcome Level 5)

Objectives

The goal of the assessment is to determine the load reduction effectiveness and efficiency of storm drain filter inserts both by themselves and in combination with aggressive street sweeping.

Results and Analysis

This activity was in the planning phase and not in active implementation in FY 2009-10. Therefore, assessment is not feasible at this time. The City will conduct pre and post project monitoring to evaluate the effectives of the drainage insert selected in load reduction and effluent quality.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

ENHANCED STREET SWEEPING ACTIVITIES – (SDB-003)

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees have implemented street sweeping-focused activities to reduce the accumulation of metals, sediments, and trash. This watershed collaborative activity includes efforts undertaken by Copermittees to enhance their jurisdictional street sweeping programs. The San Diego Bay Copermittees participated as part of this collaborative activity by either 1) increasing the frequency of street sweeping in their jurisdictions above the minimum required jurisdictional frequencies, or 2) utilizing more effective street sweeping equipment. This activity summary includes the individual Copermittee efforts described in the WURMP Document activities 3A-3F.

Increased Frequency

According to the jurisdictional requirements presented in the Municipal Permit, municipal areas must prioritize and sweep streets and parking lots based upon the amount of trash and debris accumulated. All Copermittees participating in this watershed activity have prioritized areas and have undertaken additional sweeping that is more frequent than the Municipal Permit's jurisdictional requirements.

Targeted Aggressive Street Sweeping Project

During FY 2009-10, the City of San Diego (City) completed a 24-month street sweeping pilot study in the Chollas Creek area of the San Diego Bay Watershed Management Area (WMA). The pilot study is part of an ongoing effort to improve water quality and maintain City's compliance with multiple water quality regulations. The goal of the pilot study was to determine the optimal street sweeping frequencies and sweeper machinery that will help the City better comply with local, state and federal Clean Water regulations. Specifically, the study investigated the effectiveness of using vacuum-assisted street sweepers in place of conventional mechanical sweepers and increasing sweeping frequencies to reduce the accumulation of debris containing metals on City streets. The pilot study included the purchase of two types of vacuum-assisted sweepers; the training of sweeper operators; the assignment of sweepers to designated routes within the Chollas Creek area; and both dry-weather and wet-weather monitoring programs to assess the effectiveness of the pilot study.

In order to select the appropriate route, the City of San Diego used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target areas within the San Diego Bay WMA. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study, and meetings held with relevant City staff, the selected route (CC-1[3]) was in one of the highest priority sectors of the San Diego Bay WMA for potential metals loading.

[3] CC-1 consisted of a mix of residential and commercial land uses in the Greater North Park, Normal Heights, Kensington-Talmadge, and City Heights areas.

In anticipation of the start of pilot study, the City conducted the following community outreach and information dissemination efforts in FY 2009-10:

- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Newspaper display advertisements placed in community newspapers
- Door hangers distributed in Chollas Creek area
- Information shared with Council Offices
- Press event and release conducted by Mayor's Office
- E-mail blasts and calls made to inform stakeholders of project

The City installed "no parking" signs along the pilot study route in the Chollas Creek area (CC-1) from December 2007 through March 2008. In April 2008, the City began sweeping CC-1 at a twice a week frequency (two times per week on each side of the street) to determine the amount of debris containing metals that could be removed by increasing the frequency of the City's conventional street sweeping program. Implementation of the twice a week sweeping frequency took place for one calendar year, and concluded in April 2009. In March 2009, the City notified the public that it was reducing the sweeping frequency of CC-1 from twice a week to once a week (one time per week on each side of the street) for the remainder of FY 2008-09 to gather comparative data for the two frequencies. Public notification was provided via display ads, a press release and an email blast to community groups. The "no parking" signs were also changed to reflect the reduced frequency schedule. Implementation of the once a week sweeping frequency began in April 2009 and concluded in June 2010. The preliminary results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

This phase of the pilot study also included a comparative analysis of the performance of the City's conventional mechanical street sweepers and the newly acquired vacuum-assisted sweepers. Comparative debris data was collected for each machine type at both frequencies (twice/week and once/week) for CC-1. The results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

Based on the results presented in the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load reduction of metals (a high priority water quality problem in the San Diego Bay WMA), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2009-10.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303(d) lists of impaired water bodies as well as the Proposed 2010 California Integrated Report (Clean Water Act 303(d) List/305(b) Report) identified multiple locations throughout the San Diego Bay WMA with water quality impairments for sediment

toxicity, benthic community effects, bacteria indicators, and the metals copper, lead and zinc. Two total Maximum Daily Loads (TMDLS) have been established for metals in the San Diego Bay under the Shelter Island Yacht Basin Dissolved Copper TMDL and the Chollas Creek Dissolved Copper, Lead, and Zinc TMDL. In addition, the RWQCB is also developing additional TMDLs for sediment toxicity in Paleta, Switzer and Chollas Creek.

Street sweeping enhancement activities may have beneficial effects by reducing the loading of pollutants such as sediment, metals, and trash that are discharged to MS4s. A variety of other pollutants are known to be associated with sediment, such as bacteria, may also be reduced. The Enhanced Street Sweeping Program is applicable to these TMDLs to the extent it addresses the control of sources of copper and other metals, trash, sediment, and other pollutants that may be associated with sediments, such as oil and grease and organics, as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

The implementation schedule for the enhanced street sweeping water quality activity is presented from FY 2007-08 through FY 2009-10.

Jurisdiction	Permit Year 2007-08	Permit Year 2008-09	Permit Year 2009-10
Port of San Diego	Implementation	Implementation	Implementation
Airport Authority	Planning	Implementation	Implementation
City of Coronado	Planning	Implementation	Implementation
City of La Mesa	Implementation	Implementation	Implementation
City of San Diego	Planning/Implementation	Implementation	Planning/Implementation
City of Imperial Beach	-	Implementation	Implementation
City of National City	Implementation	Implementation	Implementation

Planning for the City of San Diego's Targeted Aggressive Street Sweeping project began in September 2006. Sweeping started in the spring of 2008 and continued through the summer of 2010. Debris testing and water quality monitoring was conducted throughout the project to assess effectiveness in removing metals from City of San Diego streets. The City of San Diego initiated two new water quality activities during FY 2009-10. Activity SDB-003a assessed the effectiveness of modifying the City's street sweeping program to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The activity was implemented during FY 2009-10. Results indicate that the non-traditionally swept thoroughfares contain buildup of high priority constituents including metals, hydrocarbons, and nutrients. Activity SDB-003b focuses on assessing the speed efficiency of mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. Planning for this activity began in FY 2009-10 and will be implemented in FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

Table D-4 below lists the San Diego Bay Copermittees participating in the street sweeping activity during this reporting period, the enhancement that was used, and the HA(s) where the activity occurred.

Table D-4. San Diego Bay Copermittee Participation in Street Sweeping during FY 2009-10.

Copermittee	Hydrologic Area									Enhancement Mechanism	
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Increased Sweeping Frequency	Higher Efficiency Equipment
City of National City			X	X						X	
City of Coronado							X			X	
City of Imperial Beach							X	X		X	
City of San Diego		X								X	X
City of La Mesa		X		X						X	
Port of San Diego	X	X	X	X				X		X	
Airport Authority		X								X	

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Street Sweeping Enhancement activity targets reduction of high priority water quality problems such as metals, sediments, and trash. Metals were identified as a high priority water quality problem for 908.1 HA and 908.2 HA. Sediment and trash were identified as high priority water quality problems in 908.2 and 908.3 HAs. Streets are identified as a major source category comprising approximately 20% of the acreage within each HA. Additionally, street sweeping may also address residential pollution that accumulates in gutters along residential thoroughfares. Residential acreage in these HAs also comprises a large percentage. By increasing sweeping frequencies, using more efficient equipment, or targeting non-traditionally swept areas, the Copermittees undertaking this activity improved their ability to reduce pollutant loading from major sources within the high priority hydrologic areas.

EFFECTIVENESS ASSESSMENT

Increased Frequency

The effectiveness of this activity has been assessed by evaluating the additional amount of materials that were removed from the watershed's streets and roadways. Load reductions comprise a level four assessment through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Table D-5 shows the increase in materials removed due to greater frequency of street sweeping by each participating Copermittee[4].

Table D-5. Estimation of Pollutant Load Reduction Due to Increased Frequency.

Jurisdiction	JURMP Baseline Material (lb)	Additional Materials Removed (lb)	JURMP Baseline Curb Miles	Additional Curb Miles 08/09
City of National City	390,000	1,560,000	2,923	11,932
City of Coronado	60,040	292,560	609	6,963
City of Imperial Beach	53,200	109,740	271	830
City of La Mesa	568,000	37,702	3,977	275
Airport Authority	12.3 cy	107 cy	192	1,728
Port of San Diego	13,410	40,590	408	1,235
City of San Diego		149,040		2,850*

* "Broom miles" and not "curb miles" were used to track the distance swept.

During this reporting period, the San Diego Bay Copermittees removed an additional 1,094 tons of material (and an additional 107 cy at the Airport) and covered and additional 22,963 curb miles (2,850 broom miles for the City of San Diego) within the San Diego Bay WMA through the increased frequency of street sweeping.

[4] Weight of baseline and additional material were estimated based on the overall amount of material removed during the year and the relative proportions of the overall sweeping attributable to JURMP baseline sweeping and to additional sweeping. For example, if 100,000 pounds were removed, 3,000 miles of JURMP baseline sweeping was done, and 2,000 miles of additional sweeping was done, the baseline material would be recorded as 60,000 pounds (60% of the overall amount) and the additional sweeping material would be recorded at 40,000 pounds (40% of the overall amount). The City of San Diego estimated the weight of baseline and additional material by using "broom miles". A "broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. The broom mileage does not translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Targeted Aggressive Street Sweeping Project

Watershed: San Diego Bay		
TARGETED AGGRESSIVE STREET SWEEPING PILOT STUDY **Assess Effectiveness and Efficiency of Street Sweeping in Reducing Metals Loading**		
Management Questions	• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?	
Targeted Measurable Outcomes	• Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement	
Assessment Methods	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)	
Data Recorded	Total lbs of debris removed by mechanical sweeper: Total lbs of debris removed by regenerative-air sweeper: Total lbs of debris removed by vacuum sweeper: **Total kg of debris removed:**	48,260 lbs 35,140 lbs 65,640 lbs **149,040 lbs**
	Total broom miles swept by mechanical sweeper:* Total broom miles swept by regenerative-air sweeper: Total broom miles swept by vacuum sweeper: **Total broom miles swept:**	1,395 mi 706 mi 749 mi **2,850 mi**
	Total lbs of debris removed by mechanical sweeper/mile swept: Total lbs of debris removed by regenerative-air sweeper/mile swept: Total lbs of debris removed by vacuum sweeper/mile swept: **Average lbs of debris removed /mile swept:**	35 lbs/mile 50 lbs/mile 88 lbs/mile **58 lbs/mile**
Recommended Data	• Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)	

*"Broom miles" and not "curb miles" were used to track the distance swept. "Broom mile" is defined as the length traveled by a sweeper when the sweeper's brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Objectives

The goal of the assessment was to investigate the effectiveness of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data was also evaluated for the purpose of establishing optimal sweeping frequencies.

Analysis and Results

The study included the purchase of two types of vacuum-assisted sweepers; the dedication and training of sweeper operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. A total of 149,040 lbs of debris was removed by all three sweeper types during the two-year study in the San Diego Bay WMA, over a total of 2,850 miles swept. This resulted in an average of 58 lbs of debris removed per mile swept.

Conclusions

The results of the study concluded that the vacuum-assisted sweepers are generally more effective at removing both debris and heavy metals from road surfaces, especially on flat routes. However, the vacuum sweepers performed equally as well as the City's conventional mechanical sweepers on hilly routes. Furthermore, it was determined that the vacuum sweepers are more effective at removing debris and metals with aggressive (i.e., twice per week) sweeping. Specifically, data collected during the pilot study indicated that the mechanical sweepers did not remove as much debris or metals when operated at an increased frequency. Finally, wet weather monitoring indicated that street sweeping is an effective BMP for improving water quality as the data showed direct improvements to runoff collected at inlets along swept roads versus those roads that were not swept. Based on an analysis that demonstrates that the activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2009-10.

MEDIAN SWEEPING PILOT STUDY – (SDB-003A)

ACTIVITY IMPLEMENTATION

During FY 2009-10, the City of San Diego (City) implemented a one-year pilot study to assess the effectiveness of modifying its street sweeping program to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study specifically focused on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with this proposed programmatic change to the City's street sweeping program.

The pilot study specifically looked at expanding current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change allowed calculation of potential pollutant removal efficiency afforded by sweeper access to what was found to be heavily polluted areas.

The overall pilot study was designed to answer the following management questions:

- What is the relative cost-efficiency of integrating additional median sweeping into the City street sweeping program?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does median sweeping provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study was used to determine whether sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring was conducted to allow for assessment. This activity took place in multiple watersheds, including Palm and Coronado Avenues in the San Diego Bay WMA.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Median Sweeping Pilot Study was piloted first to determine whether median sweeping improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2008-09 and continued into the first quarter of FY 2009-10. Implementation and assessment took place during FY 2009-10. This project is complete, and will no longer be included in future reporting updates.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address it. Median sweeping will target metals on City streets.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MEDIAN SWEEPING PILOT STUDY **Assess Effectiveness Sweeping Medians on Improving Street Sweeping Activities**		
Management Questions	• What is the relative cost-efficiency of integrating median sweeping into the City street sweeping program? • What level and type of debris can be removed by sweeping high volume median areas? • What level of metals removal benefit does median sweeping provide? • What type of sweeping equipment optimizes debris removal in or on high volume median areas?	
Targeted Measurable Outcomes	• Achieve load reduction for bacteria and sediment based on monitoring information	
Assessment Methods	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)	
Data Collected	• Total pounds of debris removed (Outcome Level 4)	• 16,980 lbs
	• Total broom miles swept (Outcome Level 4)	• 12.8 miles
	• Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)	• 560 lbs/mile swept[5]
	• COC concentrations in debris collected (Outcome Level 4)	• See report posted at http://www.sandiego.gov/thinkblue/special-projects/streetsweeping.shtml

[1]Data, except as noted, is from the single route mostly within the WMA.

[2] As calculated per combined route data for baseline sweeping.

Objectives

The goal of the assessment was to investigate whether sweeping medians improves the effectiveness of the City's current street sweeping activities.

Analysis and Results

A baseline sweep of the four pilot median areas, which included 12.8 miles along Palm and Coronado Avenues in the San Diego Bay WMA, resulted in the removal of 32,460 lbs of debris over a total of 58 miles with an average of 560 lbs of debris removed per mile swept. After the initial baseline sweep, each route was swept four more times over an approximate three month period (with roughly three weeks between sweeps). A total of 32,560 lbs of debris was removed over these three months. Along the 12.8 miles in the San Diego Bay WMA, a total of 16,980 lbs of debris was removed.

Conclusions

The study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic City roadways. The initial baseline median sweep collected 3-5 times more debris than the subsequent 3-week interval sweeps. This suggests that there is a significant buildup of debris adjacent to median areas. Furthermore, debris sampling confirmed the presence of heavy metals, nutrients and hydrocarbons in the debris collected. This leads the City to believe that median sweeping may provide a significant benefit for controlling the input of high priority water quality problems from impacting receiving waters. Based on an analysis that demonstrates that the activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2009-10.

SWEEPER SPEED EFFICIENCY STUDY – (SDB-003B)

ACTIVITY IMPLEMENTATION

During FY 2009-10, the City of San Diego (City) began planning a sweeper speed efficiency pilot study for implementation in FY 2010-11. The Sweeper Speed Efficiency Study will focus on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The City's typical street sweeper operational speed is between 6-12 miles per hour. Reduced street sweeper speed is defined as 3-6 miles per hour based on manufacture recommendations. During project planning, a commercial route along Imperial Avenue in the San Diego Bay WMA was selected for this study based on a number of criteria.

The goals of the Sweeper Speed Efficiency Study are to:

- assess the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed;
- assess the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed;
- assess the relative level of load reduction potential for street sweepers at various speeds; and
- determine the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Sweeper Speed Efficiency Study will be piloted first to determine whether reducing sweeper speeds improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning took place in FY 2009-10. Implementation and assessment will commence in FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address it. This pilot study specifically targets metals on City streets.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
SWEEPER SPEED EFFICIECY STUDY **Assess Effectiveness of Reduced Sweeper Speeds on Debris and Metals Removal**	
Management Questions	• What is the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed? • What is the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed? • What is the relative level of load reduction potential for street sweepers at various speeds? • What is the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed?
Targeted Measurable Outcomes	• Achieve load reduction for metals based on monitoring information
Assessment Methods	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives

The goal of the assessment will be to determine the optimal speed to operate City mechanical sweepers to maximize debris and metals removal.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time as project planning and coordination will continue into FY 2010-11. Implementation is anticipated to occur during the first half of FY 2009-10, with final assessment and conclusion being prepared in the latter half of FY 2010-11.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via debris monitoring efforts) at varying operational speeds. Conclusions will be made after assessment is complete in FY 2010-11.

SAN DIEGO BAY WATERSHED CLEANUP EVENTS – (SDB-004)

The San Diego Bay Copermittees participated in a number of cleanup events throughout the San Diego Bay WMA. The cleanup events physically removed large amounts trash, debris, and other associated pollutants from the watershed creeks, rivers, streams and shorelines. The events included jurisdictional events as well as watershed-wide efforts that were coordinated by non-profit organizations. The San Diego Bay Copermittees provided funding by sponsoring various cleanup events and/or participated by soliciting volunteers, working as site captains, and participating in the cleanup events themselves. These events actively promoted a sense of watershed stewardship to the general public and resulted in trash load reductions. Figure D-1 presents the locations of cleanup activities in the San Diego Bay WMA. Cooperative efforts enable the San Diego Bay Copermittees to assess the relative trash loads for each event within each HA and the San Diego Bay WMA and determine whether there is a long-term reduction.

The Copermittees, while reporting on multiple trash cleanup events that occurred within the watershed, understand that it will only receive credit for one cleanup activity during the fiscal year. Since the San Diego Bay Copermittees sponsor the Creek to Bay Cleanup, which focuses on trash throughout the watershed and along the coast, the Copermittees prefer credit for this cleanup. In addition, the Copermittees acknowledge that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the Copermittees may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash cleanup measures and programs to be implemented. The 2002 and 2006 CWA Section 303d lists of impaired water bodies as well as the Proposed 2010 California Integrated Report (Clean Water Act 303(d) List/305(b) Report) identified multiple locations throughout the San Diego Bay WMA with water quality impairments for bacteria, sediment toxicity, and benthic community effects. These impairments may be indirectly reduced through the cleanups. The RWQCB is currently developing or waiting for SWRCB approval of TMDLs to protect beneficial uses, including Indicator Bacteria, Project I—Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek), and the Paleta, Switzer and Chollas Creeks for sediment toxicity.

TIME SCHEDULE FOR IMPLEMENTATION

All San Diego Bay Copermittees have actively implemented cleanup events during this reporting period. They recognize the value in cleanup activities and plan to continue to implement this type of activity in all jurisdictions over the next four years.

Figure D-1. San Diego Bay WMA Cleanup Activity Sites.

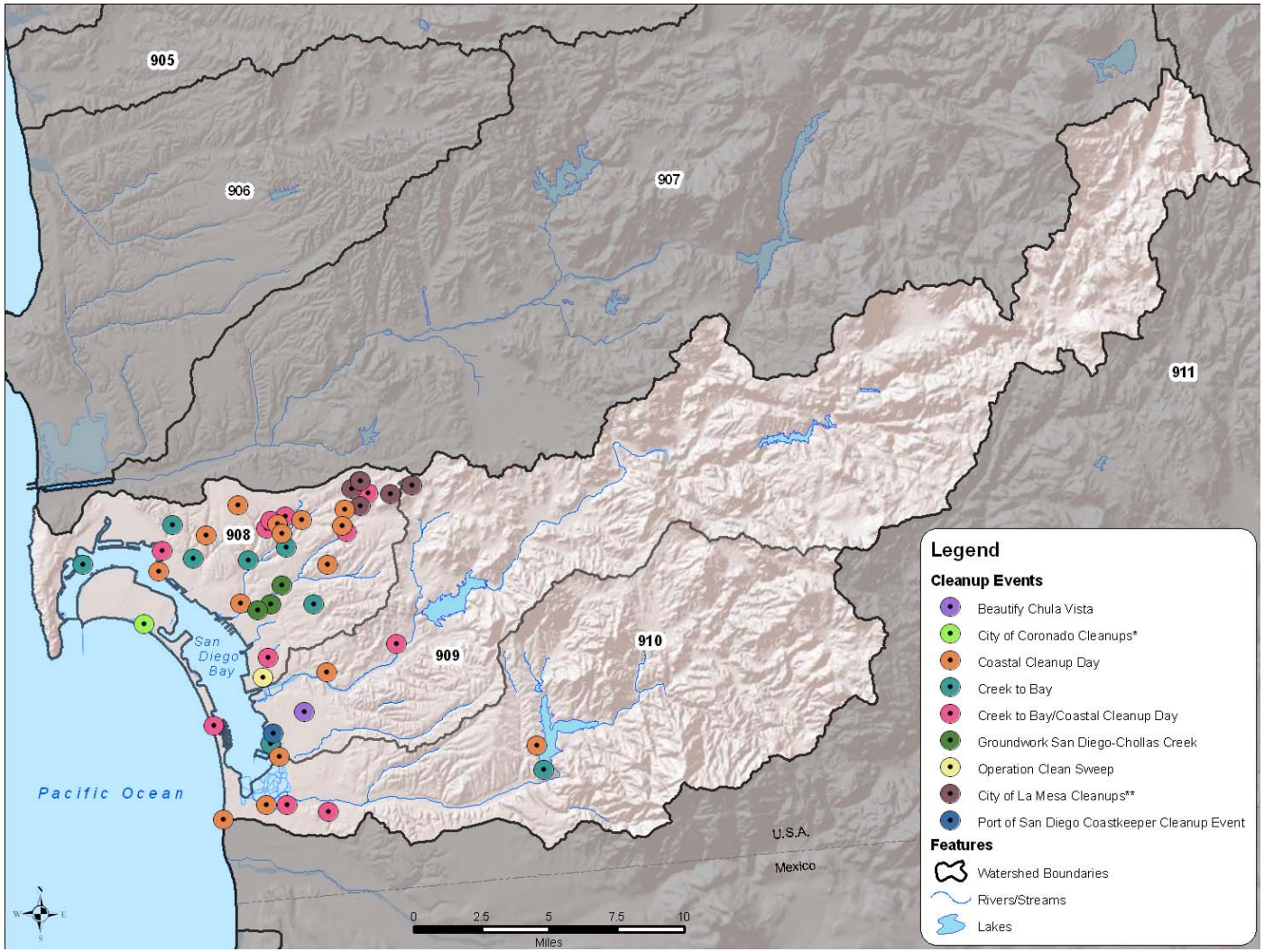

* City of Coronado cleanups included Coastal Cleanup Day, Creek to Bay, and San Diego Coastkeeper

**City of La Mesa cleanups include Park Appreciation Cleanup Day, Adopt a Park/Block Day, and partnership with Madeline Sophie Center

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of National City
- City of San Diego
- City of Imperial Beach
- City of Lemon Grove
- County of San Diego
- City of La Mesa
- City of Coronado
- Port of San Diego
- Airport Authority

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- San Diego Coastkeeper
- Groundworks San Diego—Chollas Creek

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash has been identified in the San Diego Bay WURMP document as a high priority water quality problem in 908.2 and 908.3 HAs. Trash is an important issue to address in all HAs. Cleanup events aid in the physical removal of a quantifiable amount of trash from the watershed. In addition, bacteria and metals are other high priority water quality problems that may be reduced indirectly as a result of the removal of trash. Trash often consisted of common litter items such as cigarette butts, plastic bags, food wrappers, containers of spent product such as fertilizer, and corroding or flaking items like metal appliances.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies trash as a high priority water quality problem. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions. Increased awareness and education of the public in all HAs is also an important component. Sponsorship of cleanup events resulted in load reduction of trash and debris directly and bacteria indirectly

EFFECTIVENESS ASSESSMENT

The cleanup events encouraged Copermittee, stakeholder, and citizen participation in implementing the Watershed Strategy. This often resulted in a level 3 outcome by causing a change in behavior, knowledge, attitude and awareness within the community of how to properly dispose of trash by the individuals involved. A level 4 outcome was also identified in all HAs due to the collection and removal of trash from the conveyance system. Relative pollutant load reductions within the watershed were assessed based on the weight of debris collected.

Table D-6 describes the cleanup event activities the San Diego Bay Copermittees actively implemented during this reporting period, the HA in which the cleanup event was located, the number of participants, and the amount (lb) of trash removed.

To assess the effectiveness of cleanup activities, the number of people participating as well as the total amount of trash collected has been calculated. The number of people participating in cleanups is utilized to convey a level three outcome to demonstrate changes in behavior in those involved in the cleanups in the San Diego Bay WMA. The amount of overall trash collected was utilized to estimate the load reductions of trash, a level four outcome level, occurring during FY 2009-10.

- Approximately 7,235 people participated in cleanups throughout the San Diego Bay WMA.
- The overall amount of trash collected throughout the San Diego Bay WMA during FY 2009-10 was approximately 378.5 tons.
- The Creek to Bay Cleanup, sponsored by the San Diego Bay Copermittees and coordinated by I Love A Clean San Diego on April 24, 2010, removed 23 tons of trash and involved 1,438 volunteers.

Table D-6. Cleanup Activities for FY 2009-10 within the San Diego Bay WMA.

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
The following jurisdictions served as site captains for the California Coastal Cleanup Day Event: City of Las Mesa, City of Lemon Grove, City of San Diego, Port of San Diego, City of National City, and City of Coronado. The Airport Authority financially supported the cleanup event as well.	908.2 908.3 909.1 910.1 910.2 910.3	9/19/2009	Coastal Cleanup Day: • 47th Street Canyon • Chollas Creek: o 33rd and National* o 54th Street o Oak Park o Radio Canyon • Chula Vista Wildlife Reserve* • Cooper Canyon • Coronado City Beach* • Eastern Otay Valley Regional Park • Embarcadero Dive Site • Florida Canyon • G Street Pier to Broadway Pier • IB Pier • Lemon Grove* • Manzanita Canyon • Montgomery High School Native Plant Garden • North Park • North Swan Canyon • Paradise Creek* • Silver Strand State Park • South Bay Wildlife Refuge • South Swan Canyon • Sweetwater Regional Park • Sweetwater River • University Channel* • Western Otay Valley Regional park • Zena Canyon	2,258	54,398
The San Diego Bay Copermittees sponsored the 2010 Creek to Bay Cleanup Event. The following jurisdictions also served as site captains for the event: City of Las Mesa, City of Lemon Grove, City of National City, City of San Diego, Port of San Diego, and City of Coronado.	908.1 908.2 908.3 909.1 910.1 910.2 910.3	4/24/2010	Creek to Bay: • 47th Street Canyon • Albatross Canyon • Cervantes Canyon • Chollas Creek, 47th Street • Cooper Canyon • Downtown San Diego • Embarcadero Dive Site • J Street Marina • Juniper Canyon • Lemon Grove • Lower Otay Lakes County Parks • Manzanita Canyon • Montgomery High School Native Plant Garden • Paradise Creek • San Diego High School • Shelter Island Watercraft Cleanup • Silver Strand State Beach • Southcrest Community Park • Sunshine Field Park • Sweetwater Regional Park • University Channel • Western Otay Valley Regional Park	1,438	46,287

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
City of La Mesa	908.2 909.1	10/24/09	Park Appreciation Cleanup Day	599	25,706
		Various	Adopt A Park and Adopt a Block		
		Various	Partnership with Madeline's Sophie Center		
City of Imperial Beach	910.2	5/1/2010	Home Front Cleanup*	822	351,200
City of Chula Vista	910.2	10/17/2009	Beautify Chula Vista	500	2,000
City of Coronado	910.1	3/27/2010	San Diego Coastkeeper Cleanup	209	595
Port of San Diego	909.1	8/29/2010	Operation Clean Sweep	800	24,000
		1/31/2010	Coastkeeper Cleanup	75	738
	908.2	Various	Groundworks San Diego—Chollas Creek Family Stream Team	534	252,040

* California Coastal Cleanup sites were captained by San Diego Bay Copermittees

**The Home Front Cleanup was an annual large waste drop off event at a single location.

CLEAN COMMUNITY PROGRAM – (SDB-005)

ACTIVITY SUMMARY

The City of National City (City) has implemented a program to encourage individuals to dispose of waste properly. This program included three disposal events for large items and green waste, one in November and two in June. These events provided individuals with an opportunity to properly dispose of items that might otherwise have been illegally dumped. The City alerted residents to these events beforehand via notices in their trash bills. The City has also hired a company to clean Paradise Creek twice per month. The cleaning mainly involves checking for the presence of trash and debris and removing trash that is noted. Additionally, third grade winners of the 2010 Storm Water Calendar artwork contest were selected and recognized by the National City Council, including the mayor, during a presentation on storm water awareness at a City Council meeting.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Disposal events will aid in the physical removal of a quantifiable amount of trash from the watershed; trash is a high priority water quality problem in HA 908.3. Results from previous dry weather monitoring programs in the City indicate that trash may also be a source of bacteria and gross pollutants such as ammonia, so removal of trash may also result in reduced levels of these pollutants.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EXPECTED BENEFITS

Disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also encourage a behavioral change for the community by potentially changing the manner in which trash is disposed of by the individuals involved.

EFFECTIVENESS MEASUREMENTS

In November 2009 and in June 2010, materials were collected on large item disposal days. The November event collected 303 tons of bulky item trash from 723 vehicles. The two June events collected a total of 393 tons of trash from 856 vehicles. The City has also contracted a company to clean out Paradise Creek bi-monthly, however, information on the quantities of the debris and trash removed is not available for FY 2009-10.

As mentioned previously, the third grade winners of the 2010 Storm Water Calendar artwork contest were recognized by the City Council. Approximately 3,800 calendars were distributed to school-aged children, residential households, inspected industrial and commercial businesses, and to municipal staff during FY 2009-10 reporting period.

ADDITIONAL DRY SEASON CONSTRUCTION INSPECTIONS – (SDB-007)

ACTIVITY SUMMARY

During FY 2009-10, the City of National City (City) conducted additional inspections of construction sites during the dry season to reduce the potential for the discharge of sediment. According to the jurisdictional requirements presented in the Municipal Permit, construction sites (any priority) should be inspected as needed during the dry season. Additional construction inspections were conducted to identify any areas where BMP implementation is not being maintained properly, particularly toward the end of the dry season when sites need to be preparing for the wet season. This program aims to decrease discharges of trash and sediment to the MS4.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of National City

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Increased construction inspection frequencies during the dry season are intended to reduce the discharge of trash and sediment, which have been listed as high priority water quality problems in HA 908.3. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these pollutants and abate pollutant sources.

EXPECTED BENEFITS

Increased construction inspection frequencies during the dry season will contribute to improvements in water quality by reducing the loads of pollutants such as sediment and trash entering the City's MS4 and downstream receiving waters. This effort will promote BMP implementation at construction sites during the dry season and will help prepare construction sites for the upcoming wet season.

EFFECTIVENESS MEASUREMENTS

The City completed 9 inspections at construction sites during the portions of the 2009 and 2010 dry seasons that fell within the FY 2009-10 reporting period: July 1, 2009 through September 30, 2009 and May 1, 2010 through June 30, 2010. Inspectors found most of these inspections helped contractors stay vigilant about implementing BMPs during the dry season and that they were especially helpful toward the end of the dry season, when the inspectors could also remind the responsible parties of applicable wet season requirements.

SAN DIEGO BAY WATERSHED MANAGEMENT AREA TARGETED INSPECTIONS – AUTOMOTIVE – (SDB-008)

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the Mission Bay, San Diego Bay and Tijuana River Watershed Management Areas (WMA). The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
2) Does type of business ownership change the required inspection frequencies?
3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

This activity included three rounds of inspections and spanned both FY 2009 and FY 2010. In FY 2008-09, this activity was developed and implemented Round 1 inspections to establish the baseline data for future inspections. All automotive facilities selected to be part of this activity were inspected. In FY 2009-10, Round 2 and Round 3 inspections were performed. Round 2 inspections occurred at approximately half of the sites selected for inspection. The sites inspected in Round 2 were selected via random number generation. These sites received two inspections in FY 2009-10 (Round 2 and Round 3). Round 3 inspections occurred at all automotive facilities selected to be part of this activity. These sites received one inspection in FY 2009-10 (Round 3 only). Inspections under this activity were not counted toward the Jurisdictional Urban Runoff Management Program (JURMP) inspection requirements unless inspected facilities were high threat to water quality sites that the Permit requires be inspected annually.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2008-09 and FY 2009-10. Assessment and final reporting for this activity was completed in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals as a high priority water quality problem in the San Diego Bay WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with metals.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
TARGETED FACILITY INSPECTIONS Assess Efficiency and Effectiveness of Facility Inspections		
Management Questions	• What is the optimal frequency of inspections for Automotive Repair Facilities? • Does type of business ownership change the required inspection frequencies? • Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?	
Targeted Measurable Outcomes	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from data)	
Data Recorded	**Automotive Inspections (Round 2)**	
	Number of full inspections	98
	Number of facilities recommended for follow-up (Outcome Level 1)	31
	Number of sites needing corrective action (Outcome Level 1)	98
	Number of sites implemented some corrective action during inspection (Outcome Level 3)	0
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	N/A
	Total IC/IDs observed (Outcome Level 1)	0
	Total IC/IDs eliminated during inspection (Outcome Level 1)	N/A
	Automotive Inspections (Round 3)	
	Number of full inspections	178
	Number of facilities recommended for follow-up (Outcome Level 1)	94
	Number of sites needing corrective action (Outcome Level 1)	176
	Number of sites implemented some corrective action during inspection (Outcome Level 3)	4
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	4
	Total IC/IDs observed (Outcome Level 1)	4
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	4

Objectives

The goal of this focused inspection activity on automotive facilities was to determine the most efficient frequency to ensure proper BMP implementation and reduce pollutant loads.

Results and Analysis

For all rounds of inspections, facility BMP implementation was evaluated for 27 different BMPs at each inspected facility. Inspected facilities were assigned a rating to reflect the level of BMP implementation at the site, and a separate rating to reflect the facility manager/responsible

party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility. Table D-7 presents a breakdown of the average knowledge and average BMP implementation scores for the inspected facilities during each period of implementation.

Table D-7. Breakdown of Average Knowledge and BMP Implementation Scores by Area (Automotive Inspections).

Average Knowledge Round 1	Average BMP Implementation Score Round 1	Average Knowledge Score Round 2	Average BMP Implementation Score Round 2	Average Knowledge Score Round 3	Average BMP Implementation Score Round 3
1.2	2.8	2.0	2.9	1.9	2.4

There was no significant change in BMP implementation rates observed with increased inspections when comparing the facilities that received one inspection to facilities receiving two inspections in one fiscal year, or three inspections from FY 2008-09 data. In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues would be resolved if the facilities had structural changes to cover the outdoor operations and activities. These changes would likely be economically infeasible for the businesses to implement.

Each inspected facility was evaluated for their potential to discharge specific pollutant types, such as sediment, metals, and trash. Results of the pollutant discharge potential assessment (PDPA) performed during each inspection were also compared; there were no significant differences in any PDPA constituents assessed during this watershed activity.

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

The increased inspection frequency did not yield improved compliance behavior or reduce the potential for discharge of pollutants at the inspected facilities. However, the inspection process is a viable mechanism for identifying non-compliance issues and potential discharge conditions at inspected facilities. Inspections have also proven to be an effective mechanism for identifying and prioritizing follow-up inspections, and contact necessary to further evaluate compliance and non-compliance issues at facilities. Inspections can be enhanced by having enforcement, with an option for an incentive, for achieving change in compliance behavior.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 274 sites. The increased inspections at the facilities increased knowledge and it was determined during a focus group study for automotive businesses that one of their sources of storm water knowledge came through inspections; thus, this activity raised awareness, Level Two. Additionally, the City noted 125 sites needed follow-

up to verify that corrective actions/BMPs were implemented. However, the City can verify that at four locations, corrective actions were immediately taken. This demonstrates both a Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcome was achieved as a direct result of this activity. Also, in this watershed, the City confirms four IC/IDs were observed and called into the City's hotline for response and follow-up for abatement.

ENHANCED CONSTRUCTION OVERSIGHT – (SDB-009)

ACTIVITY SUMMARY

The Airport Authority continues to oversee construction projects in a manner that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Construction Oversight Program is to abate the amount of sediment potentially released to the watershed from construction sites. The Airport Authority first began to implement this enhanced program in fiscal year 2004-2005. In addition to increasing construction site inspection frequencies, staff from the Airport Authority Environmental Affairs Department attend pre-construction meetings and regularly scheduled progress meetings more frequently than required by the Permit during both the wet and dry seasons. The regular meetings are used as an opportunity to focus the attention of project managers on BMPs directed at preventing the discharge of sediment to the storm drain system. During meetings and inspections, staff discuss the need for erosion & sediment controls such as soil stabilization and tracking controls throughout the life of the project. Heightened awareness of proper erosion & sediment control BMP implementation increases the likelihood of erosion & sediment control BMP effectiveness, which in turn helps to abate the amount of sediment loading to San Diego Bay. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of erosion & sediment control BMPs. By changing the way in which individuals implement BMPs, this program results in a level 3 outcome. The program also estimates the amount of sediment abated from impacting stormwater discharge quality, which is a level 4 outcome.

The Enhanced Construction Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates construction sites as a source of sediment in the watershed. Abatement of sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Construction Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of sediment as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Construction Oversight Program intends to abate sediment associated with construction sites and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies sediment as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS MEASUREMENTS

The Airport Authority tracks the number of construction project regular progress meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, and the number of sediment source control BMP issues identified during inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual sediment pollutant load abated by 1) estimating, based on review of the literature and/or other sources, sediment loads per construction site per day when erosion & sediment controls are not implemented, and 2) tracking the number of erosion & sediment control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

EFFECTIVENESS ASSESSMENT

There were sixteen construction projects underway at San Diego International Airport during FY 2009-10. Staff from the Authority Environmental Affairs Department attended 179 construction project meetings related to these 16 projects during FY 2009-10 and conducted a total of 185 inspections. Based on the requirements of the Municipal Permit, the Authority need have only

conducted 74 inspections, which means 111 more inspections were conducted than required by the Municipal Permit. Out of the 185 inspections conducted, issues or concerns related to erosion & sediment control were only identified 10 times. Given that issues/concerns regarding erosion & sediment control were only identified approximately 5% of the time, the Enhanced Construction Oversight Program appears to be effective at ensuring construction site erosion & sediment control BMPs are properly implemented over the life of the construction project.

To estimate the reduction in sediment load to the watershed resulting from implementation of the Enhanced Construction Oversight Program, the Authority used the method first outlined in the State Water Resources Control Board March 18, 2008 Draft NPDES Construction General Permit (Draft Permit) (http://www.swrcb.ca.gov/water_issues/programs/stormwater/historical.shtml#con).

Page 49 of the Draft Permit Fact Sheet and Draft Permit Attachment A presents a methodology using the Modified Universal Soil Loss Equation (MUSLE) to estimate soil loss from exposed soil that is being protected by BMPs. The Authority used this equation to compare the sediment load from a construction site without proper erosion and sediment control BMPs to the sediment load from a construction site with properly implemented BMPs. The difference between the two calculations is the estimated reduction in sediment load to the watershed. The MUSLE equation can be expressed as:

Erosion Estimate (sediment load) in tons/acre/year = R(K(LS(C(P

Where: R = rainfall intensity factor.

K = soil erodibility factor

LS = length-slope factor

C = cover factor (erosion controls)

P = management operations and support practices factor (sediment controls)

Attachment A of the Draft Permit notes that values of R have been calculated for any time period for more than 1000 locations in the Western U.S. and are available at HYPERLINK "http://ei.tamu.edu/" http://ei.tamu.edu/ . The Airport Authority used the one year period July 1, 2009 to June 30, 2010 to determine the R factor for the airport site (R = 21). Attachment A also notes that soils having a high silt content are especially susceptible to erosion and have high K values. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. K values for silty soils can exceed 0.45 and can be as large as 0.65. The Airport Authority assumed a K value equal to 0.45 for the airport site, so as not to over-estimate the amount of soil potentially being eroded, and in turn, so as not to over-estimate the sediment load reduction achieved by the Enhanced Construction Oversight Program. Attachment A to the Draft Permit discusses the effect of topography on erosion in terms of the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient

factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. Attachment A includes a table of LS factors. Given the relatively flat topography at the airport, the Airport Authority selected an LS value appropriate to such a shallow hillslope gradient (LS = 0.06).

The cover factor (C) and the management operations and support practices factor (P) can then be modified to calculate erosion estimates assuming 1) no erosion and sediment controls and 2) proper controls. The cover factor (C) and the management operations and support practices factor (P) are calculated as "1 - % effectiveness of control expressed in decimal form." If controls are not effective, then C and P equal 1. The Permit Fact Sheet notes that dischargers should use a C factor of 0.5 to simulate minimal erosion control BMPs on all exposed soil (for example, dust binder, temporary seeding, etc.). This would mean that the erosion control BMPs have an efficiency of 50% (C = 1 - 0.5 = 0.5). The Draft Permit notes that discharges should us a P factor of 0.2 to simulate an appropriately designed sediment basin. This means that the sediment control BMPs have an efficiency of 80% (P = 1 – 0.8 = 0.2). These C and P factors came from removal efficiency data from a Washington State Department of Transportation Document entitled "Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control" (http://www.wsdot.wa.gov/research/reports/fullreports/200.1.pdf)

Thus, the estimated sediment load (erosion estimate) that would have likely been generated from construction projects at the airport that had no erosion controls (that is, C = 1 – 0 =1) and no sediment controls (that is, P = 1 – 0 = 1) during FY 2009-10 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21(0.45(0.06(1(1

Erosion Estimate (sediment load) in tons/acre = 0.567

The Airport Authority estimates that the 16 construction projects underway at the airport during FY 2009-10 covered approximately 112 acres of surface area. As such, the amount of sediment that could have been released to the watershed by construction projects underway at the airport during FY 2009-10 equals:

Erosion Estimate (sediment load) = 0.567 tons/acre (112 acres = 63.504 tons

Similarly, the estimated sediment load (erosion estimate) that was likely generated from construction projects at the airport that did implement effective erosion controls (that is, C = 0.5) and sediment controls (that is, P = 0.2) during FY 2009-10 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 0.21(0.45(0.06(0.5(0.2

Erosion Estimate (sediment load) in tons/acre = 0.0567

As such, the amount of sediment that was likely released to the watershed by construction projects underway at the airport during FY 2009-10 despite the effective implementation of appropriate erosion and sediment control BMPs, equals:

Erosion Estimate (sediment load) = 0.0567 tons/acre (112 acres = 6.3504 tons

Therefore, the sediment load reduction resulting from the implementation of the Enhanced Construction Oversight Program equals the difference between the amount of sediment that would have been released from construction sites without BMPs and the amount of sediment that was likely released despite the implementation of adequate and effective BMPs. For the FY 2009-10 reporting period, the sediment load reduction would be equal to:

Sediment load reduction = 63.504 - 6.3504 tons = 57.1536 tons

In light of this significant reduction, the Authority believes that the Enhanced Construction Oversight Program is effective at ensuring proper BMP implementation at construction sites.

LA MESA BUSINESS INSPECTION SUPPLEMENTAL WATERSHED QUESTIONNAIRE – (SDB-010)

ACTIVITY SUMMARY

To gather more information regarding the level of storm water awareness of business owners/operators and to collect additional information regarding the condition of industrial and commercial sites, the City of La Mesa (City) completed an additional one-page supplement to the standard industrial and commercial inspection form. The first five questions on the form gathered information from business owners/operators regarding their knowledge of storm water, water quality issues, sources of pollutants, and whether or not they had previously received information regarding storm water. The inspector was prompted to make observations regarding the types of sprinkler heads on site, the percent of the pervious area that was landscaped, if there was any evidence of non-storm water discharges, and the business owner/operators attitude toward compliance with storm water regulations. The last question on the Supplemental Watershed Assessment Questionnaire and Inspection Form prompts the inspector to assign either significant or not significant to the overall source ranking for watershed pollutants of concern. This box was checked "Significant" when two or more of the watershed pollutants of concern were assigned a pollutant discharge potential (PDP) of three (3) or higher or one watershed pollutant of concern was assigned a PDP of a four (4) or higher. If the site did not meet the aforementioned criteria, the box was checked "Not Significant." The City intends to use the data to identify groups and/or areas in need of increased and more focused outreach and to identify potential pollutant sources.

TMDL APPLICABILITY

TMDLs for metals and diazinon have been adopted for the Chollas Creek sub-watershed. The data collected as part of this watershed activity enables the City to identify and address potential sources of watershed priority pollutants, including metals and pesticides.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to gain additional information about businesses' potential to contribute watershed pollutants of concern, including metals, pesticides, and bacteria.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is identifying potentially significant sources of these pollutants during its industrial and commercial storm water compliance inspection program. The City can use this information to target specific businesses and business types.

EXPECTED BENEFITS

The information gathered from the Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to collect additional information regarding the specific knowledge of business owners/operators and to identify sites that are potentially significant sources of watershed pollutants of concern. The City intends to use the collected data to develop more effective outreach measures and to identify potential sources of watershed pollutants of concern. Inspectors also give businesses corrective actions based on the findings; implementing corrective actions should result in a reduction of pollutants discharged to the storm drain system.

EFFECTIVENESS MEASUREMENTS

This was the third year that the supplemental watershed questionnaire was used during industrial and commercial inspections. The City plans to use this collected data to compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach. It is anticipated that comparison assessments of both level 2 (change in knowledge or awareness) and level 3 (change in behavior) outcomes will be possible as future data is collected. When presented with the question about where water goes once it leaves the site, 7 percent of respondents in FY 2009-10 did not know and 7 percent thought that the water was directed to a treatment facility before being discharged to a water body. Only 22 percent of all respondents in FY 2009-10 could correctly identify that their site was located within the San Diego Bay Watershed.

To conclude the survey, inspectors provided verbal explanations and education about storm water issues and BMPs to individuals that were unable to answer the survey questions correctly. The majority of facility personnel were receptive to storm water-related regulations.

MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECTS – (SDB-012)

ACTIVITY IMPLEMENTATION

During FY 2009-10, the City of San Diego (City) completed a municipal rain barrel installation and downspout disconnect project that reduced pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project consisted of installing rain barrel systems, including downspout disconnects and infiltration systems, within the San Diego Bay Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. The project included site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Diego Bay WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the San Diego Bay WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Southcrest Recreation Center was selected because it is located in one of the highest priority sectors of the San Diego Bay WMA for potential pollutant loading. The recreation center is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed five rain barrel systems at the recreation center. Two serially connected 75-gallon rain boxes were installed and connected to existing downspouts at two locations along the main entrance side of the building. Each pair of rain boxes utilizes an automated timer and pump to release captured runoff to adjacent landscaping. The installation included re-opening the existing roof drains (which had been roofed over) and securing the systems with protective caging (to discourage vandalism).

Two Rain Boxes with Caging

In addition, one 75-gallon rain box and concrete planter system was installed and connected to existing downspouts at three locations along the back side of the building. Each system utilizes an automated timer and pump to release captured water from the rain barrel to a concrete planter. Concrete planters were used for these locations due to the unavailability of nearby pervious surfaces. As with the installations along the main entrance side of the building, these systems included the re-opening of roof drains and installation of security cages.

Rain Box and Planter with Caging

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer was distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer were posted on the City's *Think Blue* website during the first quarter of FY 2009-10.

During FY 2009-10 City assessed the effectiveness of the rain barrel/rain harvesting systems at the Southcrest Recreation Center. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2007-08. Initially, the project was scheduled for completion by the fourth quarter of FY 2007-08. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2008-09. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring was performed from October 2009 to April 2010. Assessment and final reporting for this program concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity addressed both high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM **Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff**		
Management Questions	• What is the effectiveness of rain barrel/downspout disconnect systems in reducing pollutant loads and storm water runoff volume? • What are the potential pollutant load and volume reductions for the three system configurations tested? • Which system configuration is the most cost-effective?	
Targeted Measurable Outcome(s)	• Pollutant load reductions due to rain barrel/downspout disconnect installation • Runoff reduction due to rain barrel/downspout disconnect installation	
Cost Data	Cost of rain barrels and installation	$21,600
	Cost of operation and maintenance evaluation	$1,007
	Cost of effectiveness monitoring	$17,105
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/attenuated (Outcome Level 4) • Average concentrations of metals in rainwater or runoff (µg/L) (Outcome Level 4) • Pollutant load reductions for metals for each system configuration (grams) (Outcome Level 4)	

Objectives

The goal of the rain barrel and rain harvesting assessment was to determine whether rain barrel/rain-harvesting systems reduce stormwater runoff; thereby, reducing metals and bacteria loads, and if so, which system is most effective and efficient.

Results and Analysis

The pilot project was assessed in FY 2009-10 based on monitoring data from two storm events collected over one wet-weather season. The five systems at the Southcrest Recreation Center captured and attenuated 515.4 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from the roof and downspouts were 207 µg/L for copper, 14 µg/L for lead, and 802 µg/L for zinc. Over the two monitored storm events, the 150-gallon capacity gravity-flow system configuration at the Southcrest Recreation Center (SC-1)

resulted in load reduction of 0.182 grams of copper and 0.740 grams of zinc. During the same two storm events, another 150-gallon capacity gravity-flow system configuration at the Southcrest Recreation Center (SC-2) resulted in load reduction of 0.182 grams of copper and 0.740 grams of zinc. The gravity-flow and planter barrel system (SC-3) resulted in load reduction of 0.0003570 grams of copper and 0.061 grams of zinc. The gravity-flow and planter barrel system (SC-4) resulted in load reduction of 0.0003570 grams of copper and 0.061 grams of zinc. The gravity-flow and planter barrel system (SC-5) resulted in load reduction of 0.0003570 grams of copper and 0.061 grams of zinc.

The total cost of installation, operation, maintenance, and effectiveness assessment for the five systems at the Southcrest Recreation Center was approximately $39,712.

Assessment data at this site shows that the gravity-flow system configuration, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, is more effective and reducing pollutant loads and attenuating wet weather flows than other systems tested. Overall, the study found that gravity-flow systems can attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Furthermore, this configuration was the least expensive of the three tested, which makes it the most cost-efficient. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively.

Conclusions

Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Although less effective than gravity-flow systems at addressing pollutant loads, rain barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas. Based on an analysis that demonstrates that the activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2009-10.

DALBERGIA STREET GREEN MALL INFILTRATION PROJECT – (SDB-013)

ACTIVITY IMPLEMENTATION

The original concept for this project planned for the removal conventional asphalt paving along Dalbergia Street and Thor Street (industrial/commercial area) and replacement with pervious concrete paving. Bioretention planter boxes were planned to be installed as well.

In April 2009, contaminated soils were discovered in the planned infiltration areas. As such, a new location near Dalbergia Street and Vesta Street was chosen for the project. In June 2009, the second site also showed signs of contaminated soils in areas to be used for infiltration. A third site along Main Street and 30th Street was chosen. A new design consultant was hired in FY 2009-10 and they are working towards a bmp solution that will capture and treat the 85th percentile storm.

This project was one of two City of San Diego projects approved as a Proposition 50-granted funded project in May 2008 via the San Diego Integrated Regional Water Management Plan.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The design consultant started work in FY 2008-09 only to find contaminated soil in infiltration areas. A new consultant is in the process of determining how a green mall will fit in this area. Design will take place in FY 2010-11. Construction is anticipated to be complete in FY 2011-12. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
DALBERGIA STREET "GREEN MALL" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Malls in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the effectiveness and efficiency of the Dalbergia Street Green Mall Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009-10. Therefore, assessment is not possible at this time.

Conclusions

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

SOUTHCREST PARK GREEN LOT INFILTRATION PROJECT – (SDB-014)

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a below-grade storage and infiltration basin the grassy areas of Southcrest Park. Diversion structures will divert runoff from the existing storm drain system that runs through the parking area to the infiltration areas. The site design has incorporated various Low Impact Development (LID) approaches in an integrated manner. These approaches include replacing existing asphalt roads and parking lot with porous pavement as well as rain barrels and planters to collect roof drainage. This site was selected for its likely higher permeability soils and location next to the creek. Infiltration from the underground units will seep into the creek and will not impact down-gradient structures.

The project will be designed according to the integrated approach outlined in the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (November 2007) of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, help meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA). The City of San Diego has named this model approach for LID as "Green Lots" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Preliminary engineering was completed in October 2009. The project is currently in the 30% design phase. The planned implementation date is FY 2012-13. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
SOUTHCREST PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt, underground storm water storage vaults, and rain barrels? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the efficiency of the Southcrest Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009-10. Therefore, assessment is not feasible at this time. Project design will continue in FY 2010-11.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time. The planned implementation date is FY 2012-13. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

MEMORIAL PARK GREEN LOT INFILTRATION PROJECT – (SDB-015)

ACTIVITY IMPLEMENTATION

This activity will involve the installation of a large underground chamber to collect and then slowly infiltrate urban runoff into the underlying subsoils. This underground system will be located within Memorial Park, thereby transforming the recreational facility into a dual-use site for both urban runoff pollution reduction and recreation. The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA). The City has named this model approach for Low Impact Development (LID) as “Green Lots” and, if proven to be effective, anticipates eventually implementing similar Low Impact Development (LID) projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006 and was completed in September 2007. Design started in September 2007 and finished September 2009. The project advertised for construction bids and awarded the contract to the lowest responsible bidder in June 2010. Construction is anticipated to take place between July 2010 and November 2010. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
MEMORIAL PARK "GREEN LOT" INFILTRATION BMP RETROFIT Assess Efficiency and Effectiveness of Green Lots in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt and underground storm water storage vaults? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Data Recorded	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the efficiency of the Memorial Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009-10. Therefore, assessment is not feasible at this time. Project construction will take place in FY 2010-11.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

CHOLLAS CREEK DIAZINON TMDL – (SDB-018)

ACTIVITY IMPLEMENTATION

This report summarizes the monitoring activities conducted by the seven Chollas Creek Dischargers in compliance with the *Total Maximum Daily Loads* (TMDLs) *for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay* for Compliance Schedule Year 2 (2009–2010 Monitoring Season). In accordance with the TMDL, wet weather water quality monitoring at SD8(1) in the north fork of Chollas Creek and at DPR2 in the south fork of Chollas Creek was conducted for the following analytes:

- Total and dissolved metals (i.e., copper, lead, and zinc) and total hardness.
- Organophosphate pesticides (i.e., Diazinon).
- Toxicity to *Ceriodaphnia dubia.*
- Chlorinated pesticides (Chlordane).
- Polychlorinated biphenyls (PCBs).
- Polycyclic aromatic hydrocarbons (PAHs).

Results and Findings

Storm water monitoring samples were collected at two mass loading stations (MLS) (i.e., SD8(1) and DPR2) in the Chollas Creek Watershed. Monitoring was conducted during the first and second storm events after October 1, 2009, and the first event after February 1, 2010. During Compliance Schedule Year 2, wet weather monitoring was conducted November 28, 2009 through November 29, 2009; December 7, 2009; and February 6, 2010.

Dissolved copper concentrations at SD8(1) and DPR2 were greater than the acute waste load allocations (WLAs) for the first two storms after October 1, 2009. Dissolved copper concentrations were above the chronic WLA for all three monitored storm events. Dissolved lead was below the acute WLA for both SD8(1) and DPR2. However, dissolved lead was above the chronic WLA during the first and second storms monitored at both sites. Dissolved zinc was above the acute WLA at SD8(1) during the first two monitoring events. Dissolved zinc was below the chronic WLA during all events at DPR2 and during the February 6, 2010 storm at SD8(1).

Like the storm-specific data, the Mann-Kendall trend analyses indicate significantly increasing trends for total and dissolved copper and total and dissolved zinc in the north fork of Chollas Creek (SD8(1)). When compared to historical data (1994–2010), increasing trends are relatively shallow and have flattened over time. However, exceedance ratios have steadily decreased at SD8(1) since 2007. Significantly increasing trends were also noted for total copper and total zinc at DPR2.

While the organophosphate pesticides Diazinon and Malathion were detected during the 2009–2010 Monitoring Season, concentrations were generally low. Diazinon was below the chronic WLA during all events at both sites. Significantly decreasing trends were observed for Diazinon in both the north fork and south fork. For Diazinon, non-detect results are frequently noted. As the residual supply of Diazinon becomes exhausted due to the United States Environmental Protection Agency (USEPA) ban on Diazinon, concentrations and the frequency of detection in Chollas Creek should continue to decrease.

There was only one instance of reproductive toxicity to *C. dubia*, noted at SD8(1), during the first storm event on November 29, 2009. This was the first storm event following approximately 279 dry days without significant rainfall.

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Annual monitoring and reporting is required.

PARTICIPATING WATERSHED COPERMITTEES

- Chollas Creek Watershed Municipal Copermittees
- City of San Diego
- City of Lemon Grove
- City of La Mesa
- County of San Diego
- Port of San Diego

OTHER PARTICIPATING ENTITIES

- Caltrans
- US Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify diazinon as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement

activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Assessment of this TMDL is discussed in Section 4.2 of the San Diego Bay WURMP Annual Report.

ENHANCED DRY WEATHER MONITORING PROGRAM – (SDB-020)

ACTIVITY SUMMARY

The Airport Authority continues to conduct dry weather monitoring at a frequency that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Dry Weather Monitoring Program is to identify sources of stormwater pollution in the watershed. The Airport Authority first began to implement this enhanced program in fiscal year 2005-2006 by increasing the frequency of dry weather monitoring from the Permit requirement of once per dry weather season to at least three times during the dry weather season. The increased frequency increases the chances that illegal discharges and their sources might be identified, which in turn helps to reduce pollutant loading to the watershed and San Diego Bay. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

Information collected by the Enhanced Dry Weather Monitoring Program will also be used to characterize dry weather discharge water quality in general and to influence and assess ongoing watershed management and planning activities. The elimination of illegal discharges generally requires that dischargers gain some awareness of stormwater pollution prevention and understanding of proper BMP implementation. By changing the way in which dischargers implement BMPs, this program results in a level 3 outcome. The program may also be able to estimate the pollutant loads eliminated and thus no longer impacting stormwater discharge quality, which is a level 4 outcome.

The Enhanced Dry Weather Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it helps to identify and eliminate sources of illegal discharges in the watershed. Identification and elimination of illegal discharges within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Dry Weather Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, copper, and other pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation (FY 2007-08)
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Enhanced Dry Weather Monitoring Program will help to identify and eliminate sources of stormwater pollution in the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Dry Weather Monitoring Program intends to identify and eliminate sources of illegal discharges and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, pesticides, sediment, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of pollutant sources, including these high priority pollutants.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to track the number of dry weather monitoring events conducted in excess of the minimum number required by the Municipal Permit, and the number of illegal discharges identified. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the pollutant load abated using the known pollutant discharge concentrations and estimating the discharge duration. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

EFFECTIVENESS ASSESSMENT

During the 2010 dry weather monitoring season, the Authority conducted three monitoring events as part of the enhanced dry weather monitoring program. The dry weather monitoring was conducted two times more frequently than required by the Municipal Permit. Since no illegal discharges were identified during the 2010 dry season reporting period, there are no discharge durations to associate with pollutant discharge concentrations, and thus, no estimate

of a load reduction can be made. Conversely, since no illegal discharges were identified, it is assumed there was no increase in pollutant loading to the watershed and/or San Diego Bay.

COORDINATED DRY WEATHER MONITORING PROGRAMS – (SDB-021)

ACTIVITY SUMMARY

Each Copermittee is required to implement a Jurisdictional Dry Weather Monitoring (DWM) Program as part of the Illicit Discharge Detection and Elimination Component of the Municipal Storm Water Permit (Order No. 2007-0001). Each Copermittee has developed and implemented a DWM program as required by the Permit but due to logistical constraints, site monitoring and sample collection within each jurisdiction often are conducted independent of other jurisdictions. The San Diego Bay Copermittees recognize that coordinated DWM efforts could be more effective because illicit discharges may cross jurisdictional boundaries. Since 2004, San Diego Bay Copermittees have made efforts to coordinate their individual jurisdictional DWM sampling efforts for select locations and dates.

The Airport Authority, the City of San Diego, and the Port of San Diego continued to plan and coordinate dry weather sampling activities within 908.1 and 908.2 HAs during the 2010 dry weather monitoring season (May 1 to September 30). By simultaneously monitoring at the outfalls (Port jurisdiction) and at sites upstream (Airport Authority and City of San Diego jurisdictions), the Copermittees intend to detect potential illicit discharges, characterize pollutants within dry weather flows, and facilitate upstream source identification. Upon evaluation of the 2009 DWM coordinated data, the City of San Diego and the Port decided to change the location of one of their coordinated stormdrain systems. The new stormdrain system is portrayed in Figure D-2.

Coordinated monitoring among all three Copermittees occurred on 5/18/2010. The Airport Authority and the Port of San Diego continued coordinating dry weather monitoring efforts on 06/15/10 and 07/14/10 as well.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The coordination of DWM programs is considered a beneficial water quality activity in the San Diego Bay WMA because it will potentially identify sources of discharges and provides comprehensive detection, analysis, and investigation of pollutant discharges at a watershed level. Current jurisdictional DWM programs are effectively identifying and eliminating illicit discharges. When discharges cross jurisdictional boundaries, however, the follow-up investigation is passed from one jurisdiction to another, creating a potential lag time in the response. Coordinated efforts increase the efficiency and effectiveness of jurisdictional programs and allow analysis at a watershed level.

TMDL APPLICABILITY

This activity is not specifically targeted at a TMDL in the San Diego Bay. However, there is a current TMDL for dissolved copper within the Shelter Island Yacht Basin.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- Airport Authority
- City of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Nutrients
- Pesticides
- Metals
- Trash
- Bacteria

EFFECTIVENESS ASSESSMENT

Sampling was coordinated on 3 different dates, for 3 exclusive stromdrain systems during the 2010 DWM season. Each coordinated effort will be described below.

Stormdrain System 1

All three participating Copermittees coordinated DWM efforts on Stormdrain System 1. Figure D-2 portrays the coordinated monitoring effort along Stormdrain System 1. The City of San Diego's site (DW239) is a manhole located in the Midtown area of San Diego on California Street near the intersection with Laurel Street. The site is surrounded by industrial and transportation, including rail and highway, land uses. The City of San Diego collected a sample for field and laboratory analyses on 05/18/10.

Due to construction activities at the airport, the Airport Authority was unable to monitor the coordinated site which has been monitored in the past (CB01-1). An alternative site was chosen for monitoring by the Airport Authority, which exists within the same drainage area as the previous site. However, the connection to the coordinated stormdrain system is unknown. The alternative site is adjacent to the runway within the airport property. Although the Airport

Authority coordinated DWM monitoring with the Port of San Diego on all three occasions, they did not collect samples for laboratory analysis during the 2010 DWM season.

The Port of San Diego monitored an outfall downstream of the Airport Authority's and the City of San Diego sampling sites. The Port of San Diego's sampling site is located near the intersection of Harbor Drive and Laurel Street alongside the San Diego Bay (4. Laurel Street). Surrounding land uses include industrial, transportation, and recreational. The Port recorded tidal conditions at the sampling site on 5/18/10 and 6/15/10. A sample was collected for field screening on 7/14/10.

Figure D-2. Coordinated Dry Weather Monitoring Sites.

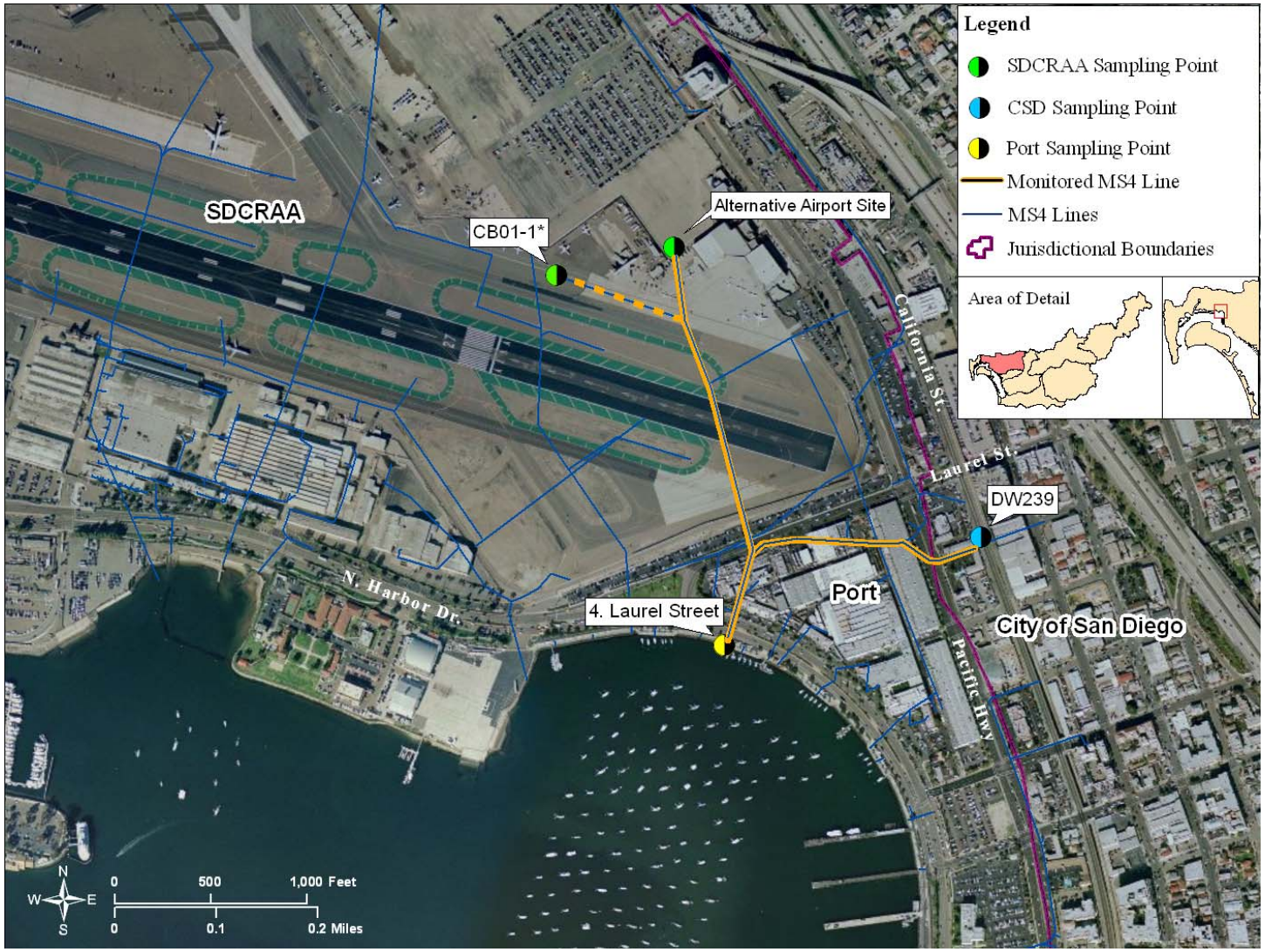

*CBO1-1 could not be monitored during the 2010 DWM season due to construction activity

There was no evidence of illegal discharges within the vicinity of the monitoring sites where samples were collected by the City of San Diego and the Port. Constituents with action level exceedances during the coordinated sampling are shown in Table D-8. Field screening results collected by the Port indicated high conductivity. The high conductivity may have been a result of residual tidal influence within the stormdrain system. The upcoming tide prevented analytical sampling.

Table D-8. Constituents with Action Level Exceedances During Coordinated Sampling.

Copermittees	Site ID	05/18/10	6/15/2010	7/14/2010
City of San Diego*	DW239	No DWM Action Level Exceedances	--	--
Airport Authority	CB01-1	NS	NS	NS
Port of San Diego	4. Laurel Street	NS	NS	Conductivity

NS – Site was not sampled due to dry or tidal conditions. The City of San Diego coordinated monitoring on 5/18/10 only

Stormdrain System 2

The City of San Diego and the Port monitored coordinated sites along Stormdrain System 2 within the vicinity of Downtown San Diego near PETCO Park and the Convention Center on 05/18/10. Figure D-3 portrays coordinated monitoring sites along Stormdrain System 2. The City of San Diego's site (DW812) is located at the intersection of 7th Street and Park Avenue. Surrounding land uses include industrial and transportation, including rail. The Port's site (E10-2.1) is an outfall located along a seawall at the Fifth Avenue Landing behind the Convention Center. Surrounding land uses include recreational and commercial uses.

Both the City of San Diego and the Port collected samples for field screening and laboratory analysis. The City of San Diego was unable to determine the source of the dry weather flow. Port staff noted irrigation as a source of dry weather runoff within the storm drain system. Constituents with action level exceedances during the coordinated sampling effort are shown in Table D-9.

Table D-9. Constituents with Action Level Exceedances During Coordinated Sampling.

Copermittees	Site ID	05/27/09
City of San Diego	DW812	Copper Zinc
Port of San Diego	CSD 213	Bacteria

Figure D-3. Coordinated Dry Weather Monitoring Sites.

Stormdrain System 3

The City of San Diego and the Port of San Diego monitored a third coordinated site on 05/18/2010. Figure D-4 portrays the coordinated DWM effort conducted along Stormdrain System 3. The coordinated sites are located within the Point Loma/Shelter Island Yacht Basin area of San Diego. The City of San Diego's monitoring site is located near the intersection of Rosecrans and Upshurs Streets (DW432). Surrounding land uses include commercial, transportation, and residential uses. The City of San Diego collected flowing water samples for field and laboratory analyses.

The Port of San Diego's sampling site drains into the Shelter Island Yacht Basin, at the foot of Talbot Street. The site receives drainage from residential and commercial land uses. The Port of San Diego collected flowing water samples for field and laboratory analyses. Visual observations did not indicate the source of the dry weather flow through the stormdrain system. Constituents with action level exceedances during the coordinated sampling effort are shown in Table D-10.

Table D-10. Constituents with Action Level Exceedances During the Coordinated Sampling.

Copermittees	Site ID	05/18/10
City of San Diego	DW432	Copper
Port of San Diego	CSD 145	Bacteria

Conclusions

Despite success in coordinating the monitoring efforts, results did not exhibit a discernable pattern between the upstream and downstream monitoring sites. Upstream, the City of San Diego identified exceedances of metals whereas the Port identified bacteria exceedances in downstream samples. The dry weather exceedances identified may be representative of surrounding activities, land uses, and/or stormdrain characteristics. The City of San Diego's sites were often adjacent to industrial, commercial, and transportation activities, which may be associated with higher concentrations of metals. The Port's sites were surrounded by recreational, residential, and commercial activities, which are commonly associated with dry weather bacteria exceedances.

The Airport Authority, the City of San Diego, and the Port of San Diego will assess and modify the monitoring site locations as needed to improve the coordinated dry weather monitoring program for the 2011 dry weather monitoring season. Coordinated follow-up investigations will also be considered for the 2011 dry weather monitoring season to increase the effectiveness of identifying potential sources of high priority pollutants.

Figure D-4. Coordinated Dry Weather Monitoring Sites.

LA MESA WATER QUALITY MONITORING PROGRAM – (SDB-022)

ACTIVITY SUMMARY

To more effectively characterize source of pollutants, the City of La Mesa (City) has conducted additional water quality monitoring within the San Diego Bay Watershed. In the reporting period, the two additional sites sampled in previous years were sampled for the City's dry weather monitoring. Samples taken from these sites during dry weather conditions are analyzed for watershed constituents of concern. The City has used this data to begin a commercial center source control self certification project, which is in conjunction with the Chollas Creek Dissolved Metals TMDL.

TMDL APPLICABILITY

Monitoring is conducted in support of California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). Wet weather monitoring data and dry weather sampling results support identifying exceedances in pollutant loading for dissolved copper, lead, zinc, and diazinon. Furthermore, data enables the City to identify potential sources and conduct targeted educational outreach.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4 : Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Monitoring program enables the City to collect data on the high priority pollutants in the watershed, particularly metals, sediment, bacteria, and pesticides. The City intends to use the collected data to identify pollutant sources and to target education and best management practice implementation efforts.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is monitoring for these constituents in order to identify sources of potential pollutants/exceedances. Once identified, the City can take the appropriate action. This monitoring activity supports the Watershed Strategy by identifying priority pollutant sources; the City can then use this information to target activities.

EXPECTED BENEFITS

The expected benefit is that pollutant sources will be identified through water quality monitoring. Once identified, the pollutant sources can be eliminated, resulting in a load reduction. Additionally, education outreach may also be implemented to target high threat communities.

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Monitoring is not considered a watershed water quality activity based on the Municipal Permit Order 2007-001 definition; however, the City has used this data to begin a water quality activity which involves commercial center source control self certifications.

BMP EFFECTIVENESS MONITORING PROGRAM – (SDB-023)

ACTIVITY SUMMARY

The Airport Authority continues to collect rain event runoff samples to monitor the performance of both structural and non-structural, discrete and combination BMPs. The long-range goal of the BMP Effectiveness Monitoring Program is to improve the water quality of stormwater runoff from the airport into San Diego Bay. The BMP Effectiveness Monitoring Program will assess whether the BMPs being implemented are able to reduce concentrations of, primarily, copper and zinc in stormwater runoff from the airport. Based on a power analysis of 10 years of existing airport runoff water quality data, a minimum number of samples required to allow an effectiveness comparison has been identified. The program allows 3 years to calibrate paired watershed sampling, followed by 3 years of sampling to make an initial assessment of BMP effectiveness. To confidently establish a downward trend, at trend analysis monitoring station has been established to allow for a minimum of 10 years sampling. The Airport Authority has sampled the stormwater runoff from 6 storm events per year since the 2006-2007 rainy season.

Information gained through the BMP Effectiveness Monitoring Program can aid ongoing watershed management and planning activities. The identification of effective BMPs will generally increase understanding of proper BMP selection. By changing discharger knowledge of BMPs, this program results in a level 2 outcome. The program may also be able to estimate the pollutant loads eliminated by effective BMPs, which is a level 4 outcome.

The BMP Effectiveness Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it assesses the effectiveness of BMPs at reducing concentrations of metals in stormwater runoff in the watershed. Establishing the effectiveness of BMPs in reducing pollutant concentrations in runoff contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The BMP Effectiveness Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of copper and other metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation (FY 2007-08)
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The BMP Effectiveness Monitoring Program intends to assess the effectiveness of BMPs at reducing concentrations of metals, primarily, in stormwater runoff thereby improve the quality of runoff discharging into the San Diego Bay. The Watershed Strategy identifies metals as high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of BMPs effective at reducing metal pollutant loads.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to assess the performance of both structural and non-structural, discrete and combination BMPs, by tracking number and types of discrete and combination BMPs will be evaluated, along with the pollutant concentrations in stormwater runoff. Overtime, these data will provide an assessment of the effectiveness of the BMPs. In addition, the Airport Authority intends to estimate the pollutant load reductions resulting from the use of these BMPs. By tracking the cost of BMP implementation, the Airport Authority may be able to determine the cost-effectiveness of the BMPs.

EFFECTIVENESS ASSESSMENT

The 2009-2010 rainy season was the fourth year of monitoring. The runoff from six storm events was sampled. The 2009-2010 rainy season was an additional fourth season that was added to the calibration period and completes the baseline data collection phase of this program. As such, the Authority will now begin to modify BMPs to begin monitoring effectiveness. While data on pollutant loads is also being collected currently, statistically valid estimates of total reductions will not be possible for several more years.

REGIONAL HARBOR MONITORING PROGRAM – (SDB-025)

ACTIVITY SUMMARY

In July 2003, the RWQCB, under §13225 of the California Water Code, requested the development of a coordinated and comprehensive harbor water quality monitoring program for harbors in the San Diego Region. San Diego Bay is one of the four harbors included in the Regional Harbor Monitoring Program (RHMP). The objectives of the RHMP are to:

1. Determine the contributions and spatial distributions of inputs of pollutants to harbors in the San Diego Region and how these inputs vary over time.
2. Determine whether the waters in harbors are safe for body contact activities.
3. Determine whether fish in harbors are safe to eat.
4. Determine whether the waters and sediments in the harbors sustain healthy biota.
5. Determine the long-term trends in water quality for each harbor.

The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay. The program includes monitoring for metals, bacteria, organic compounds, and toxicity and will improve assessments of the watershed priority pollutants and provide a program from which to assess overall water quality improvements. While this program does not specifically reduce loads of high priority pollutants, data collected will provide important information to the Copermittees on the ambient receiving water conditions.

The RHMP involves an ambient, or core, monitoring program to collect water and sediment samples in San Diego Bay and the other harbors to assess the overall condition of the harbors, with supplemental focused studies to answer specific questions. A key item in the program involves dividing the Bay into “stratified” regions to enhance data assessments and refine potential sources of pollutants. The delineation of the harbors allows for an assessment of pollutant sources and inputs based on activities within each stratum. Five strata were identified: marinas, industrial/port, freshwater influenced, shallow water, and deep water. All five strata are present in San Diego Bay. The RHMP core monitoring effort was coordinated with the Bight Regional Monitoring Program and was successfully completed in August 2008.

The RHMP Core Monitoring sampling effort was completed in August 2008. Water quality and sediment sampling and analysis completed at 60 monitoring locations throughout the San Diego Bay from five different strata: freshwater-influenced, marina, port, deep water, and shallow water. Analysis of a wide array of constituents, including bacteria, metals, PAHs, and pesticides was completed for each station. Preliminary core monitoring results and proposed focused studies were presented to RWQCB staff in May 2009 and the final report was available in FY 2009-10.

Focused studies will be used to further investigate and identify particular sources of pollutants and the impacts of pollutants on water quality and aquatic resources. The RHMP focused special studies will target copper in marinas over the next four years. The marina strata are often areas of impaired waters, such as the SIYB in San Diego Bay. The focused special studies will 1) assess the extent of copper contamination within marinas (2009), 2) identify causes of toxicity through toxicity identification evaluations (TIEs) in sediment and overlying water tests (2010), 3) conduct water effects ratio (WER) studies to determine the bioavailability and toxicity of copper and support the development of site-specific water quality objectives (SSOs) (2011), and 4) use laboratory and field studies to determine sediment copper flux (2012). The core monitoring program will reoccur in coordination with the 2013 Bight Regional Monitoring Program.

TMDL APPLICABILITY

The 2006 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 07-08: Implementation
- Permit Year 08-09: Implementation
- Permit Year 09-10: Implementation
- Permit Year 10-11: Implementation
- Permit Year 11-12: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- County of Orange
- City of Oceanside

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Copper
- Zinc

- Bacteria
- Pesticide
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The RHMP is considered a beneficial water quality activity in the San Diego Bay WMA because it will enable water quality improvements or degradations to be more readily identifiable. The monitoring will also provide trend information by repeating at a specified frequency to obtain statistical trend data for the indicators. Furthermore, the RHMP is designed to integrate with existing monitoring that is regularly conducted in the region, including storm water monitoring, other permit compliance monitoring, regional Bight monitoring, special focused studies and is designed to integrate with the State's Surface Water Ambient Monitoring Program (SWAMP).

EFFECTIVENESS ASSESSMENT

Results of the Core Monitoring Program

The overall RHMP 2008 results relative to program objectives are discussed below:

- Water and sediment quality throughout the harbor samples, including San Diego Bay, appears to be improving based on a weight-of-evidence approach.
- Within the four harbors, dissolved and total copper declined significantly from historical conditions. Other metals which had concentrations below the California Toxics Rule thresholds include dissolved and total nickel and dissolved and total zinc.
- Sediment chemistry quality did not significantly change from historical conditions.
- Low toxicity was found across all harbors and benthic community condition, as assessed by the BRI, also significantly improved.
- Lastly, indicator bacteria levels found in San Diego Bay were far below AB411 standards.

Results of the Focused Special Study

During this reporting period, a focused special study was conducted which reviewed the existing literature and data to assess the spatial extent of copper contamination within the RHMP harbors, specifically focusing on the marina stratum. This comprehensive literature review included an assessment of sediment and surface water concentrations, copper loading, observed toxicity, and physical conditions within marinas that may affect copper bioavailability. Specifically, this task included a review of the primary peer-reviewed literature as well as key regional reports. Results from this special study will be available in FY 2010-11.

STORM DRAIN STENCILING – (SDB-028)

ACTIVITY IMPLEMENTATION

As a part of its efforts to improve water quality and increase public awareness, the City has purchased thermoplastic storm drain stencils to be installed in high traffic pedestrian areas throughout the City. Stenciling addresses several pollutant categories including bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning/ Implementation
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Pending Funding Sources
- Permit Year 4: Pending Funding Sources
- Permit Year 5: Pending Funding Sources

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Various pollutant categories

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is a part of the collective Watershed Strategy in that it seeks to contribute to improvements in water quality by reducing the loads of bacteria, dissolved minerals, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash into the storm drain system.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity will be assessed through levels 2 and 3. During the reporting period, the City installed 150 thermoplastic storm drain stencils. These stencils adhere to the concrete curb/gutter by heat treatment and are more durable than paint stencils or plastic markers using adhesive. Since implementation of this activity, the City has installed more than

500 thermoplastic storm drain markers onto inlets in the City. These stencils are permanently affixed to storm drain inlets with the prohibitive "No Dumping – Drains to Bay" message in two languages. The stencils were installed on storm drains along major roads within southwest Chula Vista. Notably, nearly all storm drain structures in the City are identified with stenciling, plastic markers, or permanent concrete stamping. The City is currently tracking the locations of these stencils in a database and plans to produce a map of these locations. It is estimated that thousands of pedestrians pass these stencils on a yearly basis, which reminds them that their daily actions can impact water quality within the City. By installing these stencils along major streets in the City, the goal is to reduce the amount of pollutants that can potentially enter the storm drain system from pedestrians as well as showing citizens that they live near rivers and streams.

PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST – (SDB-029)

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2006-07 and FY 2007-08 and were broadcast on several TV and radio stations throughout the San Diego Bay Watershed Management Area (WMA) in FY 2008-09 and FY 2009-10. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

The City will continue to run the *Karma* public service announcements to educate the public; however, this activity will no longer be included in future reporting updates.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2006-07 and FY 2007-08 and were broadcast on several TV and radio stations throughout the San Diego Bay WMA in FY 2008-09 and FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City will continue to run the *Karma* public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program, therefore no assessment was conducted in FY 2009-10.

COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT STUDY IN CHOLLAS CREEK – (SDB- 032)

ACTIVITY IMPLEMENTATION

In FY 2008-09, the City of San Diego utilized professional research consultants to develop and implement an education and outreach strategy to address litter in the Chollas Creek Watershed using Community-Based Social Marketing (CBSM). This strategy will use observations, interventions, and assessment methods in an effort to identify barriers to public participation against littering, the steps needed to remove those barriers, and solutions which may include structural interventions and/or additional education and outreach strategies to residences and businesses.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

After initial planning in FY 2007-08, the city began implementation of the Chollas Creek CBSM pilot project in FY 2008-09 with an anticipated completion date in FY 2010-11. Activities in FY 2008-09 included selection of pilot and control areas of Chollas Creek and identification of trash and litter as a target behavior, development of an observational research protocol for assessing litter behavior and barriers, development of materials for data collection, developing and conducting a training session for Think Blue and ILACSD staff and volunteers, coordination and scheduling of observation sessions, as well as observational research protocol development, data collection, entry, and management. Additionally, recommendations for structural interventions and education and outreach strategies were presented to the city. Finally, initial clean up of the pilot and control areas occurred in FY 2008-09. Implementation of the structural and educational elements was delayed in FY 2009-10. The pilot study is being re-evaluated and if structural impediments can be overcome is anticipated that implementation of the structural and educational elements will begin in FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego (ILACSD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2). Implementation of this activity will address the high priority water quality problem by identifying the behaviors in the WMA contributing to trash loading (which acts a bacteria vector) and testing outreach strategies to determine their effectiveness in reducing loads before broad-scale implementation.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
COMMUNITY-BASED SOCIAL MARKETING PILOT STUDY IN CHOLLAS CREEK Assess Effectiveness of CBSM in Changing Awareness, Attitudes, and Behaviors	
Management Question	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution? • What changes in behaviors were observed after CBSM implementation?
Targeted Measurable Outcomes	• Reach goal number of people within the watershed, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Methods	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by pamphlet)
Recommended Data	• Number of educational materials distributed in business areas (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2) • Change in behaviors (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness of the Community-Based Social Marketing (CBSM) outreach in educating the public about the causes of trash and bacteria loading and changing their pollutant-loading behaviors.

Results and Analysis

Two study areas in Chollas Creek were selected by City of San Diego staff. The two areas were selected to serve as pilot and control areas, and were chosen such that they were similar along key dimensions such as land use, geography, and demographic composition. Area 1 boundaries are: 94 Freeway (N), Interstate 15 (E), L Street (S), and 30th Street (W). Area 2 boundaries are Hilltop Drive (N), I-805 (E), Mount Hope Cemetery (S), and Allen Park (W).

The observation sites were split between designated pilot and control areas. The purpose of the observational study was to identify the sources of litter, establish a baseline littering rate, identify the target population associated with litter, and identify avenues for outreach and education to reduce and prevent litter. Observations of litter and littering behavior took place during daylight hours between December 2nd and December 10th, 2008, and a total of nine sites and 714 individuals were observed.

A number of findings were discovered after analyzing the observational data. Among those that are most important, observations showed that people do litter, they do so frequently, and they do so intentionally. However, it was discovered that there also was a general lack of infrastructure for cigarette and waste disposal in both areas. Finally, it was determined that people who were part of a group littered slightly more often than those who were alone at the time of disposal and age was a significant demographic predictor of littering behavior, with younger individuals littering more than older individuals.

Long-Term Assessment and Conclusions

In FY 2008-09 the baseline observations; development of CBSM intervention; and community clean up portions of the project were completed. Due to structural and educational implementation delays, implementation of the CBSM intervention and follow-up observations are anticipated in FY 2010-11. Effectiveness will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

TREATMENT CONTROL BMP PILOT PROJECTS – (SDB-034)

ACTIVITY SUMMARY

The Airport Authority intends to implement treatment control BMPs on a pilot-scale to reduce zinc concentrations in the runoff from the roof of Terminal 1 East and to reduce copper and zinc concentrations in runoff from the runway. The goal of the Treatment Control BMP Pilot Projects is to reduce the heavy metal load that is being inadvertently released by galvanized roofing materials and by aircraft tire and brake wear. These heavy metals may be released to the stormwater conveyance system and then into San Diego Bay. The projects include installation of roof runoff downspout filters and modification to a portion of the pavement surfaces adjacent to the runway.

The program is an important water quality activity in the San Diego Bay Watershed because it will reduce or eliminate the amount of heavy metals being inadvertently released to the watershed. A reduction in the amount of heavy metals potentially entering the stormwater conveyance system contributes to improving the quality of the stormwater in the watershed and ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The TMDL being developed for bacteria is not address by this activity and a TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Treatment Control BMP Pilot Projects are applicable to the one particular TMDL, referred to as the Downtown Anchorage TMDL. The Treatment Control BMP Pilot Projects are applicable to this TMDL since they address the identification and control of sources of copper and other heavy metals as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: N/A (Capital projects in active implementation for the first year only)
- Permit Year 5: N/A (Capital projects in active implementation for the first year only)

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Treatment Control BMP Pilot Projects will aid in the physical removal of a quantifiable amount of heavy metals from the watershed.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The watershed strategy identifies heavy metals as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity contributes to improving water quality problems by focusing on the removal of heavy metals. This activity is consistent with the watershed strategy because it focuses principally on pollutant load reductions.

EXPECTED BENEFITS

The Treatment Control BMP Pilot Projects target pollutant removal from the roof of Terminal 1 East and from a portion of the runway at the airport. The pilot projects are intended to actively decrease the amount of heavy metals that might inadvertently enter the stormwater conveyance system. If the pilot projects prove effective, then Airport Authority's understanding of cost-effective treatment controls BMPs will generally be increased. By changing discharger knowledge of BMPs and thereby influencing the BMPs being selected for implementation, this program will result in both a level two and level three outcome. The program will also allow for a one-time calculation of the reduction in the amount of heavy metals impacting stormwater discharge quality, which is a level four outcome.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate the one-time pollutant load reductions resulting from the Treatment Control BMP Pilot Projects. The pollutant load reductions will be calculated by comparing before and after heavy metal concentrations in roof runoff and runway runoff. Based on the costs of implementation, the Airport Authority will be able to estimate the cost-effectiveness of the pilot-scale treatment control BMPs.

EFFECTIVENESS ASSESSMENT

<u>DOWN SPOUT FILTERS</u>

Begun in 2007, the Downspout Pilot Study was designed to test BMP products for treating storm water from the Terminal 1 rooftops prior to the runoff entering the storm drain system. The Authority began with an evaluation of the BMPs currently available that are designed to remove heavy metals from downspout drainage. The study looked at both the pollutant removal

efficiencies and the maintenance requirements and selected two technologies for installation and evaluation, namely, the Downspout Filter and the FloGard. These two filters were selected based on the small footprint required for installation and their costs.

The Downspout Filter, is manufactured by Bio Clean Environmental Services, Incorporated, and is designed for commercial and industrial buildings. The Downspout Filter includes a fabric filter designed to capture debris, sediments, hydrocarbons, and heavy metals. The other BMP selected for use was the FloGard manufactured by KriStar Enterprises, Incorporated. The device includes a fossil rock filter medium specialized to filter out heavy metals, particulates, debris, and petroleum hydrocarbons. A total of four installation locations were chosen at Terminal 1; two locations for each of the two selected BMPs.

The study Sampling and Analysis Plan (SAP), prescribed that a total of six storm events be sampled over two years, starting in fall 2008. Both first-flush and grab samples were collected from the influent and effluent locations of the BMPs. The first-flush sample quantifies the constituent concentrations of the initial runoff from the Terminal 1 roof and shows the BMP filter removal efficiency for the first flush. The grab sample was collected to quantify the constituent concentrations and BMP filter removal efficiency after the initial flush. The collected samples were then analyzed for both total and dissolved copper and zinc concentrations.

In addition to collecting water quality samples, the filter units were inspected on a monthly basis to document the condition of each BMP filter and the overall condition of the entire unit. The filter media for both filters appeared unchanged over the course of the first six months of monitoring, although the ease of maintenance was quite different between the two technologies, with the Downspout Filter being significantly harder to maintain. As such, total lifetime costs (operation and maintenance) for the Bio Clean filter could be several higher than the KriStar filter.

The analytical results for the samples collected suggested that the filters did not remove heavy metals as efficiently as expected. Stormwater samples collected during four storm events in FY 2008-09 showed results for both filters that had total copper and total zinc concentrations in the effluent that were higher than for the influent concentrations. Additionally, the heavy metals concentrations being reported were relatively higher than expected. Sampling conducted during FY 2009-10 had similar results, and the water quality benefits provided by both technologies appeared to be minimal. In light of these results, the Authority determined that these downspout filters were not an effective BMP for reducing heavy metal concentrations in roof runoff. As such, the downspout filter study was discontinued in FY 2009-10. No further testing is proposed, and no downspout filters will be installed.

RUNWAY PAVEMENT MODIFICATION

In FY 2008-09 the Airport Authority began a feasibility study to investigate BMP technologies to treat runway runoff, with the intent that the study would lead to a pilot program to manage and treat stormwater runoff that flows from the runway and discharges into the paved areas located

between the runway approaches/turn offs and the taxiways (referred to as the “ovals”).

The study began with a literature search to screen potential BMPs available to remove heavy metals from storm water runoff. Technologies reviewed included underground detention, sand filtration, porous pavement, biofiltration, synthetic turf, and a proprietary underground wetland treatment system. The technologies were evaluated based on their applicability considering constraints posed by both the airport operational and the natural environments. Site constraints included: 1) the space available to accommodate the BMPs; 2) height limits on any proposed BMPs; and 3) the amount of hydraulic head available.

The three candidate structural BMPs that were selected based on the initial phase of evaluation were porous pavement, synthetic turf in combination with sand filtration and a porous pavement bed, and a proprietary underground treatment system. A preliminary, feasibility level design was drawn up for each of the three selected BMPs. Using these preliminary designs, constructions costs were calculated, along with maintenance and operation costs, and monitoring costs.

In FY 2009-10 it was determined that the pilot project should proceed solely in Oval 8 because the capital and maintenance costs would be lower and there would be less need for fill material at that location. After further analysis to determine which of the three BMP candidates would best remove heavy metals (copper and zinc) to below USEPA benchmark levels, and have the longest operating life, it was determined that porous concrete and synthetic turf be the focus of the pilot study. The next steps in the pilot study are to conduct a geo technical investigation of the proposed project site, proceed with the design of the candidate BMPs, and to identify a funding source for implementation at the pilot scale. The Oval 8 pilot study remains in the FY 2010-11 budget, but is currently on hold as an Airport Authority-wide cost control measure that is subject to monthly review and evaluation.

UPDATE RECYCLING AND SOLID WASTE PLANNING MANUAL – (SDB-035)

ACTIVITY IMPLEMENTATION

In order to address contributions of pollutants, particularly bacteria, from trash and recycling areas from new multi-family residential and commercial land uses, the City of Chula Vista updated the design requirements in its Recycling and Solid Waste Planning Manual. The City requires that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas.

Over the previous reporting years, City Storm Water Management Section staff worked closely with the Environmental Services staff to update the manual in order to include this requirement for new development and redevelopment projects with trash enclosures. In September 2008, City Council approved the updated manual and it became a part of Chula Vista Municipal Code. The Environmental Services Department reviews all projects that are subject to these requirements and ensures that these structures are built.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash and recycling areas have the potential to contribute a number of pollutants to storm water runoff, namely bacteria, nutrients, and trash. By building trash enclosures to prevent the contact of storm water with trash, the City aims to reduce the amount of pollutants that could be washed into the storm drain system from trash areas during a rain event.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Updating the Recycling and Solid Waste Planning Manual in the City of Chula Vista aims to improve the quality of runoff that enters the storm drain system and eventually San Diego Bay. It intends to reduce high priority pollutants such as bacteria, trash, and nutrients from entering the storm drain system. Bacteria is a high priority pollutant throughout San Diego County and the San Diego Bay watershed. This effort seeks to reduce pollutant sources from trash areas as a source abatement measure.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity will be assessed through levels 3 and 4. BMP implementation and pollutant load reductions will be assessed by tracking the number of trash enclosures constructed with the new design criteria within the City. Also, estimations can be made about the amount of trash generated per person based on the number of dwellings within a project. The estimated amount of trash that could have possibly come in contact with storm water before the updates to the manual will be assessed as a load reduction.

During previous reporting years, there was a significant decrease in development projects coming to the City for review. However in this reporting year, there were 20 projects reviewed that met this criteria. These projects included both residential (multi-family homes) and commercial land uses. These projects will be tracked and the number of trash enclosures built will be assessed as a load reduction of bacteria to the storm drain system.

43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION – (SDB-037)

ACTIVITY IMPLEMENTATION

The 43rd Street and Logan Avenue Biofiltration Project will consist of two main low impact development (LID) features: linear filtration units along the curbside of 43rd Street and Logan Avenue and a triangular biofiltration basin on the undeveloped and vacant northwest corner lot at 43rd Street and Logan. Storm water runoff will be diverted from adjacent streets to the two LID features. The biofiltration basin will retain the water in an open vegetated basin for percolation through 18 inches of a loamy sand soil media for pollutant removal. The linear filtration units will retain the water in 14 inch layer of loose rock for percolation through 18 inches of sand and surface modified zeolite for pollutant removal.

This project is a roadway realignment project that the Right of Way Division of the Engineering and Capital Projects Department. Project design was complete in FY 2008-09. This Tier II project, according to the City of San Diego's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan), will be implemented to achieve a high level of effectiveness in reducing pollutant loads. This project will address metals and bacteria in line with the City of San Diego's Strategic Plan. The main goal of the project is to identify a BMP design that is compatible with the operational requirements of the public street right of way, and that achieves performance comparable to the BMPs identified in the Model SUSMP as having a high pollutant removal efficiency.

A grant deed is being processed under an agreement with the San Diego Community College District which transfers the lands but allows the biofiltration basin to remain under the City control as drainage infrastructure within an easement.

TMDL APPLICABILITY

- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project design was completed in FY 2009. The date for construction start is dependent on the schedule of the roadway realignment project, which is scheduled to begin in FY 2010-11. Water quality monitoring was conducted to assess pre-project pollutant loads. Post-construction monitoring is planned for the rainy season that follows project construction.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via biofiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
43RD AND LOGAN AVENUE BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION Assess Effectiveness and Efficiency of Filtration Planters and Biofiltration Basins	
Management Questions	• How much load reduction can be achieved using filtration planters and biofiltration basins? • How much reduction in runoff volume can be achieved using filtration planters and biofiltration basins? • How efficient are planters and basins in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure planters and basins working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Data Recorded	• Estimated construction cost (Outcome Level One) $600,000
Recommended Data	• Number of inspections (Outcome Level One) • Design, installation, and maintenance costs (Outcome Level One) • Operations and maintenance challenges (Outcome Level One) • Percent change in load reduction pre- and post-implementation (Outcome Level Four) • Percent change in discharge quality and runoff volume (Outcome Level Five)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of filtration planters and biofiltration basins in reducing bacteria and dissolved metals pollutant loading relative to other BMPs.

Results and Analysis

Project design is completed and construction is anticipated to start in FY 2010-11. Preconstruction monitoring has been conducted and post-construction monitoring is scheduled to occur. Analysis will be completed once the post-construction monitoring occurs.

Conclusions

No conclusions are available at this time. Project design is completed and construction is anticipated to start in FY 2010-11. Pollutant loading reduction and water quality monitoring results are anticipated to be available after two rainy seasons following completion of construction (est. late FY 2012-13). Monitoring data will be used to assess the effectiveness and efficiency of this project in reducing runoff volume and pollutant loading and improving discharge quality.

CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION – (SDB-038)

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring (runoff volume) will be conducted both at the pre and post irrigation modification stage. The rebate program is scheduled to be implemented in FY 2010-11.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, implementation and assessment completion anticipated in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2007-08 through FY 2012-13.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT STORM WATER POLLUTION PREVENTION – (SDB-039)

ACTIVITY IMPLEMENTATION

The City of Chula Vista plans to encourage homeowner's associations to provide pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the homeowner's association publications about the importance of cleaning up after pets and the potential for mismanaged pet waste to enter the storm drain system. The City will provide educational materials to residents via the homeowner's association.

During the planning phases of previous fiscal years, the City compiled contact information about the HOAs within the City as well as looked at potential methods for reaching HOAs in the City. This fiscal year, the City contributed a storm water article to the HOA magazines, 'My Hometown Otay Ranch' and 'My Hometown Eastlake,' which focused on general storm water pollution prevention, including proper pet waste pickup. In addition, the City designed an educational flyer in both English and Spanish and coordinated with a homeowner's association to distribute to the neighborhoods they manage within the City of Chula Vista via the HOA bill.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of bacteria from entering the storm drain system. Bacteria was been categorized as a high priority pollutant in the watershed. This activity is consistent with the collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity can be assessed through levels 2 and 3. During this fiscal year, the City contributed a pollution prevention article to a magazine that reached both the Eastlake and Otay Ranch areas in Chula Vista. The article focused on pollution prevention tips while enjoying the summertime and included information on proper pet waste disposal. This magazine reaches a large portion of the City, with a circulation of 20,000 households.

The City designed an educational English/Spanish flyer that was provided to a homeowner's association for inclusion in their monthly HOA bills. The flyer reviewed basic storm water concepts and how everyday residential activities have the ability to pollute nearby waterways. The homeowner's association was able to distribute 620 fliers to two neighborhoods in the Otay Ranch area and three neighborhoods in the Eastlake area. The City will continue to reach HOAs and explore other methods for providing them with storm water education.

STORM WATER EDUCATION BOOTH AT PET FESTIVAL AND DOGGIE DASH – (SDB-040)

ACTIVITY IMPLEMENTATION

The City of Chula Vista plans to educate its residents about proper pet waste disposal and its possible effects on water quality at its annual Pet Festival and Doggy Dash. This outdoor community event involves both pet owners and pets. The City plans to have an educational booth and provide educational materials related to the Chula Vista Clean Program for residents, in particular, those involving the cleanup of pet waste.

During the reporting year, the City Storm Water Management Section had a booth at the event on June 19, 2010. At the booth, City staff provided basic storm water education to residents and provided brochures about pollution prevention. A storm water awareness survey was also implemented to assess storm drain awareness and BMP implementation among residents. Pet owners who completed a survey received a pet waste bag holder.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning/ Implementation
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Implementation/ Assessment
- Permit Year 4: Implementation/ Assessment
- Permit Year 5: Implementation/ Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by eliminating sources of pollutants.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity will be assessed through level 2 - changes in knowledge, attitudes, and awareness. A survey was implemented at the Pet Festival with questions focused on behaviors related to storm water pollution prevention and BMP implementation. In order in increase participation, the City had a number of giveaways as an incentive for residents to complete a survey. The main giveaway was a pet waste bag dispenser that clips on to a dog's collar with a printed message reminding them to pick up after their pet. In order for the resident to receive a dispenser, s/he had to complete a survey. A total of 152 surveys were completed at the event. Table D-11 shows the general results of the survey.

Table D-11. Results of Pet Waste Survey.

Questions	Most Answered (% response)
1) What Zip code do you reside in?	Chula Vista Zip code (65%)
2) What type of residence do you live in?	Single family home (62%)
	Apartment/condo/town home (34%)
3) What kinds of pets do you have?	Dog and/or cat (95%)
4) Where do you dispose of your pet's waste?	Picked up with a bag, put into trash (92%)
	Into the toilet (6%)
5) Water that flows down the street into the gutter goes:	Directly to a nearby creek, then to the ocean (53%)
	Don't know (30%)
	To a treatment plant (17%)
6) What are some ways that you can prevent storm water pollution? (mark all that apply, so the response is more than 100%)	Pick up after my pet
	Pick up trash
	Recycle

The majority of survey respondents said that they use a plastic bag and trash to dispose of their pet's waste, showing that residents are implementing BMPs in regards to taking care of pet waste. In addition, they are even more encouraged to pick after their pets when they receive the pet waste bag dispenser. Although it is evident that residents know how to dispose of their pet's waste properly and that it is the right thing to do, they still need more education about basic storm drain concepts. The City will continue to participate in the Pet Fest and Doggy Dash by having a booth and reminding pet owners to pick up after their pets.

FATS, OILS, AND GREASE (FOG) PROGRAM – (SDB-041)

ACTIVITY IMPLEMENTATION

The City of Chula Vista developed a Fats, Oils, and Grease (FOG) program as a part of its Sewer System Management Plan (SSMP). The FOG program focuses on educating restaurant owners and operators about the importance of proper grease waste management. Increased education and awareness about proper grease waste disposal aims to reduce possible sanitary sewer overflows in the City. Restaurant owners and operators will receive educational materials about grease waste management.

The City currently implements a Sewer System Management Plan. Pursuant to the Statewide General Waste Discharge Requirements for Sewer Collection Agencies, in April 2009 the City developed a Sewer System Management Plan. The City is currently working on developing a Fats, Oils, and Grease (FOG) Monitoring Ordinance. As part of the FOG program, the City has conducted a survey in which questionnaires were sent out to all restaurants in the City. Information collected about their FOG practices, and methods of preventing oil and grease from entering sanitary sewer systems will be used to track BMPs, assess their efficiencies, and direct future inspections.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Assessment
- Permit Year 4: Assessment
- Permit Year 5: Assessment

Based on the Regional Board letter "Comments on the March 2008 Watershed Urban Runoff Management Plan (WURMP) and USEPA/ Regional Board April 2008 WURMP Assessments," the City will implement this activity once.

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective Watershed Strategy in that it aims to contribute to improvements in water quality by reducing the possible sanitary sewer overflows that result from mismanaged grease waste.

EFFECTIVENESS ASSESSMENT

The effectiveness of this activity will be addressed through levels 1, 2, 3, and 4. During the previous reporting year, levels 1 and 2 were assessed. As a part of the planning process, the City surveyed restaurants to find out what types of pre-treatment mechanisms they have in place. The City mailed out over 360 surveys to Chula Vista restaurants and received over 200 completed surveys. Of these restaurants, it was found that approximately 60% of them utilize grease pre-treatment devices, and 50% properly maintain and dispose of FOG. Based on these results, the City's FOG outreach and education program will first encourage restaurants to use pre-treatment devices, and then educate them regarding proper routine maintenance and FOG disposal procedures. In addition, the City is in the process of developing a FOG webpage that will include BMPs and other brochures for restaurants to print out. City staff are also in the process of developing a new FOG ordinance to be included in the City's Municipal Code. The number of restaurants that receive education will be tracked as well as the number of sanitary sewer overflows. The City believes that the low number of SSOs in previous years is attributable to the City's diligent preventative maintenance program for the wastewater collection system. Future efforts for the FOG program include education outreach campaigns that focus on the latest FOG pre-treatment devices, maintenance standards, and FOG disposal locations.

LA MESA PARK KIOSK – (SDB-042)

ACTIVITY DESCRIPTION

During FY 2009-10 the City of La Mesa (City) maintained the education outreach kiosk at one of the seven parks within the City in the San Diego Bay Watershed, Vista La Mesa Park. The City posted related watershed materials including the San Diego Bay Watershed Fact Sheet and the Chollas Creek Total Maximum Daily Load (TMDL) Fact Sheet, pollution prevention materials, and news and updates for watershed events such as the April 24, 2010 Creek to Bay Clean Up and the September 29, 2009 California Coastal Clean Up Day.

This kiosk was constructed during the FY 2007-08 reporting year with the help of the local Eagle Scouts. The watershed fact sheet provides information on the watershed, pollutants of concern, and tips to prevent storm water pollution. The TMDL fact sheet includes a map indicating which part of La Mesa is in the Chollas Creek sub-watershed, background about the Chollas Creek diazinon and metals TMDLs, and a list of best management practices that businesses can take that will help reduce the loads of pesticides and metals discharged.

TMDL APPLICABILITY

Education outreach is a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The kiosk includes a San Diego Bay Watershed Fact Sheet that lists diazinon and metals as pollutants of concern as well as tips to prevent storm water pollution. The City's Chollas Creek TMDL Fact Sheet is also displayed in the kiosk.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- Eagle Scouts

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The watershed fact sheet and TMDL fact sheet placed in the education outreach kiosk provide information on the watershed's pollutants of concern, including the 303(d) listed pollutants (metals, diazinon, and bacteria) and information about relevant TMDLs. Pollution prevention tips to address watershed priority pollutants are presented in the fact sheets.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The education outreach kiosk provides pollution prevention tips to address those watershed priority pollutants. The kiosk supports the Watershed Strategy by educating residents in the vicinity of the park on good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EXPECTED BENEFITS

The expected benefit is that park-goers and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the watershed and region. The kiosk provides educational outreach materials specific to the watershed to address pollution prevention measures.

ILACSD WATERSHED PRESENTATIONS – (SDB-045)

ACTIVITY IMPLEMENTATION

The San Diego Bay WURMP Workgroup recognizes the benefits of providing storm water and watershed education to elementary, middle, and high school children and how this type of watershed activity is an integral part of fostering positive behavioral change. Changing attitudes and behaviors in students can provide long-lasting impressions that follow a child into adulthood. The San Diego Bay Watershed Copermittees decided to continue this activity into the current reporting period due to the success of the I Love a Clean San Diego (ILACSD) Watershed Education Presentation Program in FY 2008-09. The ILACSD presentations for FY 2009-10 focused on high school students. The Cities of Chula Vista, Imperial Beach, La Mesa, the Port of San Diego, and the San Diego County Regional Airport Authority (Airport Authority) have collaborated on an education outreach effort to provide presentations to high school students that focus on watershed protection, pollution prevention, and BMP implementation. Assisted by ILACSD, the San Diego Bay Copermittees were able to reach 495 students in the San Diego Bay WMA during the presentations in the reporting year.

The overall goal of this activity was to educate students about the sources of pollution in their neighborhoods so that they will realize how their daily activities may impact their watershed. In turn, the hope is that the students will gain a sense of ownership for their watersheds and influence their families to implement BMPs and good house keeping practices. Pre- and post-test were administered to assess any changes in attitude, knowledge, and awareness of watersheds, storm water, and pollution prevention concepts. A 30-minute presentation was given to the students that reviewed storm water and watershed basics, sources of pollutants, how pollutants get into our waterways, pollution prevention, and recycling. Following the presentation was an interactive activity for the students to reinforce concepts learned during the presentation. Table D-12 lists the watershed education presentations given to high schools in the Cities of Imperial Beach, National City, La Mesa, and Chula Vista. In addition, a presentation was funded by the Airport Authority at High Tech High School

Table D-12. FY 2009-10 San Diego Bay Collaborative ILACSD Watershed Education Presentations.

Copermittee	HA	School	Number of Students
San Diego County Regional Airport Authority	Pueblo 908.2	High Tech High School	73
City of Chula Vista	Otay 910.2	Castle Park High School	80
	Sweetwater 909.1	Chula Vista High School	52
City of Imperial Beach Port of San Diego	Otay 910.1	Mar Vista High School	51
City of La Mesa	908.2	Helix High School	113
Port of San Diego	909.1	Sweetwater High School	126
TOTAL			495

In addition, the City of San Diego also hosted presentations with the help of ILACSD within the San Diego Bay WMA as a part of its jurisdictional education program during the reporting period. The City of La Mesa also hosted an additional presentation at La Mesa Middle School. Although these presentations occurred in the San Diego Bay WMA and covered watershed concepts, different pre- and post-test assessment tools were used. As a result the findings from these tests were not included in the activity effectiveness assessment for this watershed education activity. Table D-13 summarizes the additional presentations. It should be noted that with these additional presentations, the San Diego Bay Copermitees were able to provide education to more than 1,600 students during the reporting year.

Table D-13. Additional Presentations in the San Diego Bay Watershed.

Copermittee	HA	School Name	Number of Students
City of La Mesa	908.2	La Mesa Middle School	83
City of San Diego	Multiple HAs in the San Diego WMA	Crawford School of IDEA/MVAS/LAB	264
		Point Loma High School	409
		Montgomery Middle School	31
		Health Sciences High and Middle School	54
		High Tech High	15
		San Diego High School	92
		Lincoln High School	109
		Morse High School	17
		Crawford High School	37
TOTAL			1,111

TMDL APPLICABILITY

The 2006 CWA Section 303(d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for a number of high priority pollutants. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. Concepts in the presentations are applicable to the Chollas Creek Dissolved Metals TMDL and Chollas Creek Diazinon TMDL in the Pueblo Sand Diego HU (908.2 HA).

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation/ Assessment
- Permit Year 3: Implementation/ Assessment
- Permit Year 4: Implementation/ Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Chula Vista
- City of Imperial Beach
- City of La Mesa
- Port of San Diego
- San Diego County Regional Airport Authority

OTHER PARTICIPATING ENTITY

- I Love of Clean San Diego (ILACSD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash
- Pesticides
- Sediment
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Consistent with the Collective Watershed Strategy, this activity addresses several high priority water quality problems in the San Diego Bay WMA. This is a source control activity in which the overall goal is to prevent pollution from residential sources by providing education to students.

EFFECTIVENESS MEASUREMENTS

In order to assess effectiveness of this high school education activity and to assess a change in knowledge in the students, the same questions were asked in the pre- and post-test. The test consisted of 9 multiple-choice questions, and questions 10 and 11 were related to a scale that asked students the likelihood of a behavior. A example test is attached to this education activity summary sheet. The pre- and post-test cumulative results, as shown in Table D-14, were based on responses from 495 students. A summary of the results by question is shown in the Table D-14 below.

Assessment of the pre- and post-tests results indicate that there was an overall increase in knowledge among all the students. In reviewing Questions 1-9, there was an increase in the percent of students who answered the questions correctly in the post-test, showing that the presentation improved the students' knowledge of watershed concepts and pollution prevention. In Questions 10-11, there was an increase in the number of students more likely to participate in education and take action to improve water quality after the presentation.

The San Diego Bay Copermittees have determined that this activity is effective at increasing knowledge, attitudes, and awareness in high school students, and plan to implement this activity in upcoming years, as funding is available. Future efforts may include the continuation of focusing education on specific age groups or grade levels. Based on teacher feedback, the San Diego Bay Copermittees will also work to further improve the presentation, and tailor it to address the high priority pollutants of specific hydrologic areas.

Table D-14. ILACSD Watershed Presentations Pre- and Post-Test Cumulative Results.

Question	Pre-Test (% correct)		Post-Test (% correct)
1) What is a watershed?	25.3		60.0
2) Watershed boundaries are determined by:	41.4		66.1
3) What water body does your watershed drain into?	61.4		88.7
4) What happens to rain that falls on urban areas covered with concrete or asphalt?	54.5		71.1
5) Which of the following types of water is carried by the storm drain system?	24.0		48.7
6) Water that passes through the storm drain system is:	31.5		61.8
7) Grass clippings, leaves, and other yard waste that enters storm drains:	31.9		55.2
8) Which of the following actions can directly reduce storm water pollution?	69.5		79.4
9) Paper cups, cans, and plastic bottles that are thrown onto streets or into gutters:	58.6		66.1
Average % Correct	**44.2**		**66.3**
10) In the next 30 days, how likely is it that you will personally take action to prevent storm water pollution? (0 = Not At All –10 = Extremely Likely)	0	11.5	6.1
	1	7.3	2.2
	2	4.2	4.2
	3	6.7	5.9
	4	8.5	5.5
	5	19.4	6.8
	6	7.5	3.6
	7	11.3	1.1
	8	8.3	3.3
	9	4.2	9.3
	10	7.5	16.8
11) How likely is it that you will tell other members of your family about how to prevent storm water pollution? (0 = Not At All –10 = Extremely Likely)	0	12.5	7.7
	1	7.1	4.2
	2	5.5	4.0
	3	8.5	5.5
	4	7.7	5.7
	5	14.7	13.3
	6	6.1	7.3
	7	7.5	8.1
	8	10.9	11.5
	9	5.1	9.5
	10	10.3	20.0

LAND ACQUISITIONS SAN DIEGO BAY – (SDB-046)

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY2007-08 reporting period there was 0.84 acres of land acquired in the San Diego Bay WMA.

During the FY 2008-09 reporting period the MSCP acquired 385.38 acres of property located in the San Diego Bay WMA.

During the FY 2009-10 reporting period the MSCP acquired 1,095.49 acres of property located in the San Diego Bay WMA. The current acquisitions are shown in the table below.

Property	Acres	Date	Watershed ID	APN(S)
Federal Acquisition 2009	29.20	5/18/2009	910.32	585-091-06, 07
Otay Ranch Preserve	1066.29	12/11/2009	910.31 & .36	598-160-14-01, 598-170-17-02, 647-050-04, 647-060-04-02, 647-090-04-02, 647-110-01-01, 647-120-01-01
TOTAL	**1,095.49**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

LARGE SPECIAL EVENT INSPECTION AND CLEAN-UP – (SDB-047)

ACTIVITY IMPLEMENTATION

The City hosts the annual U.S Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food venders, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street venders for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the San Diego Bay. However, the 2006 CWA Section 303d list of impaired water bodies identifies multiple locations throughout San Diego Bay with water quality impairments for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation of the activity has begun under the previous storm water permit 2001-01 and since been reviewed and enhanced for the new R9-2007-0001 permit. The activity was in active implementation over the last three reporting years and has since become standard work procedure for managing storm water and recycling at special events. The City annually reviews effectiveness of the program after the U.S. Open Sandcastle competition and makes changes as necessary.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services
- Set Free Baptist Fellowship Group

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the San Diego Bay. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors and large crowds during special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of enhancing large special event clean up and inspections include compliance with permit requirements, changes in attitudes, knowledge, and awareness of mobile businesses and local community, and reductions in urban runoff and discharge quality by enhancing recycling and pollution prevention efforts and implementing storm water BMPs. Enhancing recycling efforts, increasing education on urban runoff, and verifying the implementation of BMPs through inspections may lead to lower levels of bacteria and trash reaching the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, Level 3, and Level 4 compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2009-10 Imperial Beach required the proper disposal of recycled waste and implementation of pollution prevention measures at all large special events. During the year the City held 32 large special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition, which during the weekend of July 17th-18th drew an estimated crowd of over 800,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event, which resulted in 1 Notice of Violation. The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event. The recycling efforts resulted in a total of 1320 pounds of mixed recyclables and 930 pounds of cardboard being recycled. The City also provided a storm water education both at the Sandcastle event where knowledge was assessed through a survey. The survey showed that 69% of the individuals surveyed correctly identified the difference between the sanitary sewer and storm drain system.

Sandcastle Event Waste Disposal Totals

	Mixed Recycling	Cardboard	Trash
2009	1320 lbs.	930 lbs.	8.11 tons
2008	1280 lbs.	960 lbs.	7.83 tons
2007	610 lbs.	990 lbs.	14.24 tons

OUTDOOR SPECIAL EVENT OVERSIGHT – (SDB-048)

ACTIVITY DESCRIPTION

The Airport Authority oversees the manner in which outdoor special events are set up, conducted, and cleaned. The goal of the Outdoor Special Event Oversight Program is to abate the amount of trash and debris potentially released to the watershed from these events. Staff from the Airport Authority Environmental Affairs Department attend pre-event meetings and/or conduct a pre-event site inspection to ensure that there are an adequate number of recycling containers and trash cans properly located at the venue. The site is also inspected immediately after the event is over to ensure that trash and debris have been properly disposed. The meetings and inspections are used as an opportunity to focus on stormwater pollution prevention in general and properly controlling sources of trash to the storm drain system.

In addition to establishing pre- and post-event inspection activities, the program also increases interaction with event planning and execution staff while on-site. Heightened awareness of proper trash management and source control BMP implementation increases the likelihood of trash control BMP effectiveness, which in turn helps to abate the amount of trash loading to the San Diego Bay watershed. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of trash control BMPs. By changing the way in which individuals implement BMPs, this program results in a level 3 outcome. The program may also estimate the amount of trash abated from impacting stormwater discharge quality, which would be a level 4 outcome.

The Outdoor Special Event Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates the trash potentially generated from these events from entering in the watershed. Abatement of trash within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Outdoor Special Events Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of trash as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Planning
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Outdoor Special Event Oversight Program intends to abate trash associated with special events and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies trash as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS MEASUREMENTS

The Airport Authority tracks the number of outdoor special events that occur, the number of pre-event meetings attended, the number of pre- and post-event site inspections conducted, and the number of trash source control BMP issues identified during the inspections. Over time, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual trash pollutant load abated by 1) estimating, based on review of the literature and/or other sources, trash loads per event when trash management controls are not implemented, and 2) tracking the number of trash control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

EFFECTIVENESS ASSESSMENT

During FY 2009-10 the Airport Authority conducted outdoor special event oversight for one event, the United Way Carnival. One pre-event inspection was conducted and 1 post event inspections was conducted. No issues related to improper trash source control BMP implementation were identified during the pre or post-event inspections. The Airport Authority has not yet drawn any conclusions on the effectiveness of this program since this was only the

second year of implementation of this program, only one special event occurred during the year, and the literature search estimating trash loads per outdoor special event are still being evaluated. An assessment of program effectiveness will be possible once more data has been compiled.

MAPLE STREET CANYON PROJECT – (SDB-049)

ACTIVITY IMPLEMENTATION

The Maple Street Canyon has a tributary watershed of approximately 90 acres. The watershed is generally located between Walnut Street to the north, Maple Street to the south, 6th Av to the east, and Curlew Street to the west. This project focuses on significantly reducing sediment migration due to highly erosive conditions through channel stabilization and upgrades to the existing basin outfall, and reducing pollutant loading from urban runoff through natural treatment systems, Low Impact Development (LID) Best Management Practices (BMPs), and gross solids removal in the mesas at three of the outfalls.

The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, pesticides and sediment. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA.) The City has named this model approach for LID as "Sustainable Canyons" and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2008 and concluded in March 2010. The City is currently deciding how much of the $5,000,000 concept plan will be designed. Design and award of contract are anticipated to occur from FY 2011-12 to FY 2013-14. Construction is anticipated to occur in FY 2014-15. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
MAPLE STREET CANYON PROJECT Assess Efficiency and Effectiveness of Storm Drain Filter Inserts in Reducing Pollutant Loads	
Management Questions	• How much load reduction can be achieved by retrofitting storm drains with filter inserts? • How efficient are filter inserts in reducing pollutant loads? • What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure filter inserts working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality (Outcome Level 5)

Objectives

The goal of the assessment is to determine the load reduction effectiveness and efficiency of integrated approach of LID.

Results and Analysis

This activity was in the planning phase and not in active implementation in FY 2009. Therefore, assessment is not feasible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

CHOLLAS CREEK RUNOFF REDUCTION AND GROUNDWATER RECHARGE PROJECT – (SDB-050)

ACTIVITY DESCRIPTION

This project is designed to reduce runoff from three existing County of San Diego facilities within the Pueblo San Diego Watershed (HA 908.2). Currently, these three facilities are highly impervious. The purpose of this activity is to retrofit existing impervious areas (parking lots) with porous pavements over stone reservoirs and to implement other LID practices to capture runoff from these areas as well as landscape elements such as rain gardens and bio-swales. A goal of this demonstration project is employ techniques to capture and infiltrate/evaporate rainfall. The objective of the activity is to prevent transportation of potentially polluted runoff (specifically with cooper, lead, and zinc) from leaving these facilities and entering the storm water system and particularly Chollas Creek.

REVISED ACTIVITY DESCRIPTION FY2008-09

Due to the State budget issues, the Prop 50 grant was not activated at the local level until September or October 2009. The delay has required us to alter our original grant proposal & schedule. The revisions will reduce the number of facilities retrofitted from three to two, the Southeast Family Resource Health Center on Market Street, and the Southeast Health Center at 52nd St/University Ave. Currently, the County is awaiting word from the State on the proposed revisions before commencing any work. If the change is approved we should being in January 2010.

ACTIVITY IMPLEMENTATION FY2008-09

Due to State Budget issues that resulted in the delay of approving and funding projects under the Proposition 50 grants, the County of San Diego had to reconsider its' grant application to reduce the number of retrofit projects from three to two and to revise the implementation schedule of the remaining projects. These revisions are highlighted in the discussions above and are reflected in the schedule below.

ACTIVITY IMPLEMENTATION FY 2009-10

Proposition 50 Funding was restored to this project in February 2010. During the final months of the Fiscal Year 70% and 100% design plans were approved by the County of San Diego for two properties remaining under the grant. These revisions are highlighted in the discussions above and are reflected in the schedule below.

TMDL APPLICABILITY

This project would be implemented in compliance with the Chollas Creek Metals TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Planning & Design: July 2008 – May 2009
- Environmental Review & Permitting: July 2008 – January 2009
- Construction: June 2009 – October 2009
- Monitoring: October 2009 – December 2010
- Demonstration Project: July 2008 – December 2010

REVISED TIME SCHEDULE FOR IMPLEMENTATION FY2009-10

- Planning & Design: November 2009 – June 2010 completed.

REVISED TIME SCHEDULE FOR IMPLEMENTATION FY2010-11

- Construction: September 2010 – November 2010
- Environmental Compliance/Mitigation: November 2010 – April 2011

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This Project is consistent with the collective watershed strategy because it addresses metals (copper, lead and zinc), which are considered as high priority water quality problem within the 908.2 Hydrologic Area.

EXPECTED BENEFITS

This project provides benefits to surface water quality and groundwater quantity by capturing, reusing and/or infiltrating rainfall that otherwise would be urban runoff that would transport potential pollutants specifically metals to sensitive receiving waters.

EFFECTIVENESS MEASUREMENTS

This project includes 14 months of monitoring of the water quality from the site. This monitoring will provide evidence of the overall amount of reduction of metals from entering the storm system.

CHOLLAS CREEK FAMILY STREAM TEAM INITIATIVE – (SDB-051)

ACTIVITY DESCRIPTION

The Chollas Creek Stream Team Initiative is a project led by Groundwork San Diego – Chollas Creek (GWSDCC) to address illegal dumping, non-point source trash accumulation, and invasive plant species within Chollas Creek (908.22 HSA). The Port of San Diego provided funding to GWSDCC to establish a four-pronged approach focused on trash and litter abatement activities and non-native plant removal. The four key components of the Initiative include refuse collection, habitat restoration, community education and outreach efforts, tracking, and activity assessment. The City of San Diego monitored the trash collection events to gain an improved understanding of the overall impact of this activity on reducing illegal dumping and trash within the Chollas Creek community. This multi-faceted activity began in FY 2008-09 and was completed in FY 2009-10.

Refuse Collection and Habitat Restoration

GWSDCC organized refuse collection events approximately twice a month at three alternating locations (Table D-15 and Figure D-5) to collect large, unwanted household items, vegetation, and other debris with the intent of preventing illegal dumping of these items into Chollas Creek and surrounding neighborhood. Refuse collection events occurring in FY 2009-10 occurred on the following dates and locations:

Table D-15. Refuse Collection Events in FY 2009-10.

Event Location	Event Date
Southcrest Community Park	7/11/2009, 2/06/2010, 4/24/2010
Jackie Robinson YMCA	8/15/2009, 3/26/2010
Southcrest Trails Park (formerly known as 38th & Alpha Park)	7/25/2009, 8/22/2009, 9/26/2009, 10/17/09

Approximately 115 tons of debris was collected during the eight refuse collection events during this reporting period.

As part of the restoration effort, GWSDCC collaborated with Urban Corp of San Diego in the removal of non-native plants from Chollas Creek, such as *Arundo donax* and Castor Bean. Efforts also focused on aiding residents to replace non-native plants with native, drought tolerant plants. There was no weight separation between trash and vegetation, though the vegetation was estimated to be approximately 10% of the total, or 12.6 tons.

Figure D-5. Refuse Collection Event Locations.

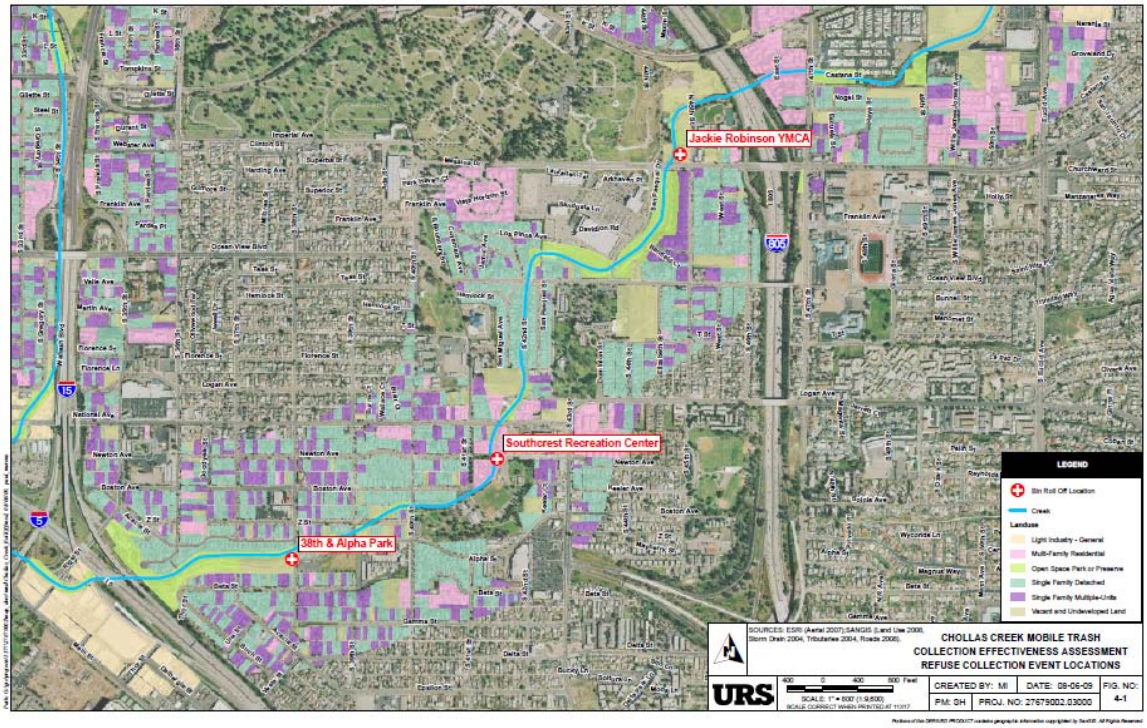

Community Education and Outreach

As part of the refuse collection efforts, the Family Stream Team Initiative developed the "Come Dump on Us" campaign. This campaign involved electronic and print messages (in both Spanish and English) reaching households in the Chollas Creek watershed, and volunteer cleanup and training events. Each refuse collection event was publicized prior to the occurrence date with publicity being limited to the surrounding community. During this reporting period, approximately 2000 bilingual flyers were delivered to residents' homes within a close radius of each event. An estimated 534 residents joined in the trash abatement and creek cleanup activities and the large trash pick up "Come Dump on Us" events.

Tracking and Assessment

The City of San Diego monitored the trash collection events, surveying participants to assess motivation in participation, relative need for the collection service, general understanding and attitude towards illegal dumping, and potential impediments towards future collection event participation. Surveys were administered in both English and Spanish to a total of 95 participants and results included: 1) most seemed to think events are needed annually or semi-annually; 2) participants state that they tend to take their alternative approach to this event would be dumping at the landfill; but 3) many reported that vehicle size, fees, and distance are all major impediments to dumping items at the landfill.

During each event, refuse has been characterized by type and relative volume. In addition, the trash collected was weighed and recorded at the landfill after each collection event. Of the approximately 115 tons of material collected, approximately 47% was house hold, 40% was construction, and 13% was green waste[1].

In conjunction with the data collected at the refuse collection events, the City attempted to assess the effectiveness of this type of activity at abating illegal dumping using visual trash assessment surveys of Chollas Creek. The visual trash surveys were intended to document any observed changes in the amount and type of items present in the adjacent creek area, particularly in areas where illegal dumping chronically occurs. However, the analysis was unable to show a correlation between the project and any changes in amount or types of items observed in the creek.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The grant was awarded in FY 2007-08 and will be complete in FY 2009-10. Refuse collection events began in April 2009 and were completed during this reporting period. Assessment of the refuse collection component, including the visual trash assessment surveys, was completed by the City of San Diego in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- Groundwork San Diego Chollas Creek
- Urban Corps of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

[1] Data from Chollas Creek Mobile Trash Collection Effectiveness Assessment Report, prepared by URS for City of San Diego

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies trash as a high priority water quality problem in 908.2 HA of the Pueblo San Diego HU and recommends implementing load reduction/source abatement activities to address this pollutant. This activity targeted illegal dumping and non-point source accumulation of trash.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay		
Family Stream Team Partnership: Refuse Collection Component Assess the Effectiveness of Sponsoring Local Organization's Refuse Collection Efforts as a Method for Abating Illegal Dumping		
Management Questions	• Does education on trash pollution result in behavioral changes or raise awareness? *Unable to be determined* • What is the total load reduction from refuse collection events? *115 tons* • Are special refuse collection events an efficient way of preventing illegal dumping? ($/person or $/ton collected) *Unable to be determined*	
Targeted Measurable Outcome(s)	• Reduction in trash observed within Chollas Creek during year long project *No reduction observed* • Load reduction (collected trash) due to refuse collection *115 tons*	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected, number of plants removed or planted) • Observation (e.g., change in amount and type of trash observed in Chollas Creek) • Interview/Survey (e.g., participant surveys)	
Data Collected	Refuse Collection/Survey Participants	95 participants
	Amount of trash and debris collected in FY 2009-10	~115 tons
	Amount of Non-Native Vegetation Removed	~12.6 tons
	Number of participants in trash Abatement and Creek Cleanup Activities and "Come Dump on Us" events	534
	Flyer distribution	~ 2,000 flyers

SHELTER ISLAND TMDL COPPER MONITORING – (SDB-053)

ACTIVITY IMPLEMENTATION

A total maximum daily load (TMDL) for dissolved copper was established for Shelter Island Yacht Basin (SIYB) and was added as an amendment to the San Diego Regional Water Quality Control Board (Regional Board) Water Quality Control Plan for the San Diego Basin (Basin Plan) on February 9, 2005. The City of San Diego (City) is named as a discharger under the TMDL and is responsible for the urban runoff contribution to SIYB from its MS4.

As stated in the TMDL, the marina, under the jurisdiction of the Port of San Diego, is the predominate source of copper loading to the SIYB, whereas the City discharges copper to a much lesser extent from its MS4. The TMDL provides a source analysis, which states that urban runoff from the MS4 accounts for 30 kg/yr of copper loading to SIYB. This contribution translates to only 1% of the total copper loading to SIYB and, therefore, is not listed for further reductions in the TMDL.

The TMDL does stipulate that the concentration of dissolved copper in the SIYB must meet the water quality criteria as set for the California Toxics Rule (CTR). The CTR states that for protection of marine and wildlife habitat, concentration of dissolved copper should not exceed 3.1 micrograms per liter (µg/L) for continuous or chronic exposure and should not exceed 4.8 µg/L for brief or acute exposure. The TMDL requires implementation of best management practices (BMPs) for the reduction of dissolved copper in the SIYB due to levels of dissolved copper that exceed the Basin Plan water quality objectives (WQOs). While no loading reduction is required under the TMDL for urban runoff, the City is taking a proactive position and verifying that the copper loading from its MS4 is within the load allocation WLA and WQOs.

This report summarizes the data collected from September 2009 through April 2010, including wet weather results, dry weather results, flow results, and loading estimates from the MS4 into SIYB. This report also summarizes data collected during the 2007–2008 and 2008–2009 monitoring seasons.

The main questions of this program were; what is the dissolved copper loading from wet weather and dry weather urban runoff, does it meet the TMDL WLA, and is there evidence of a trend in the historical dataset?

Results and Findings

The results and key findings of the 2009–2010 Monitoring Season are summarized as follows: Dissolved copper loading was below the TMDL estimates of 1% of the total load to the SIYB. The total annual dissolved copper load from the monitored outfall into SIYB was calculated to be 1.87 kg/yr in 2009–2010, which is less than the 30 kg/yr TMDL WLA. Combined with the 1.911 kg/yr annual load calculated in 2008–2009, the average annual dissolved copper load over the

two monitoring seasons was 1.89 kg/yr, also lower than the 30 kg/yr WLA for urban runoff in the TMDL.

From the three monitoring seasons for which there is data, it is possible to look at the historical trend of wet weather dissolved copper concentrations. During the 2007–2008 Monitoring Season, one composite sample was collected during a wet weather event. This sample represented an average concentration of dissolved copper during that storm event, and the concentration was 44.0 µg/L. During 2008–2009 Monitoring Season, the average wet weather concentration for dissolved copper was 36.2 µg/L, and during the 2009–2010 Monitoring Season the average concentration was 14.47 µg/L. Although this is a limited dataset, there does appear to be a downward trend in the average dissolved copper concentrations during wet weather.

TMDL APPLICABILITY

- Shelter Island Yacht Basin Dissolved Copper TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- Annual monitoring and reporting is required

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- Department of Pesticide Control
- Department of Toxic Substances
- Non-SYIB marinas
- Port Tenants Association
- Regional Board
- San Diego Bay boaters
- San Diego Coastkeepers
- San Diego Bay hull cleaners
- United States Navy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify copper as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this not an implementation or education activities. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

SAN DIEGO BAY WATERSHED BROCHURE – (SDB-055)

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay and La Jolla
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2008-09 and will continue through FY 2010-11. Implementation and distribution is expected to occur in late FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	**San Diego River**	**San Diego Bay**	**Mission Bay & La Jolla**	**San Dieguito River**	**Los Peñasquitos**
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants		Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2009-10 and will continue to create brochures for the remaining watersheds in FY 2010-11. Effectiveness

assessments are scheduled to begin in FY 2010-11. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS – (SDB-056)

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego Bay Watershed include:

- SDA 1 (Spring Valley)
- SDA 2 (Valle de Oro)
- SDA 3 (Sweetwater)
- SDA 4 (Jamul)
- SDA 5 (Bostonia)
- SDA 7 (Alpine)

ACTIVITY IMPLEMENTATION

<u>FY 2007-08 ACTIVITY IMPLEMENTATION</u>

Work began on drafting the SWQMPs for individual SDAs.

<u>FY 2008-09 ACTIVITY IMPLEMENTATION</u>

Work continues on the drafting of the SWQMPs for individual SDAs.

<u>FY 2009-10 ACTIVITY IMPLEMENTATION</u>

The SWQMPs for SDA 1, SDA 2, SDA 5, and SDA 7 are in draft form and undergoing review by County personnel. The SWQMPs for SDA 3 and SDA 4 are in the process of being drafted.

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2011-12. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2013.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

- To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

- To be determined

BETA GREEN ALLEY – (SDB-058)

ACTIVITY IMPLEMENTATION

This project targets an existing, unimproved alley and upgrades it with permeable pavement and catch basin inserts. The permeable pavement will infiltrate the runoff from the 85th percentile storm. Any runoff in excess of this size will be filtered through the permeable pavement and enter the storm drain system. Because this project is adjacent to Chollas Creek, the runoff that enters the storm drain is almost immediately deposited into the creek.

This project is currently awaiting transfer to Preliminary Engineering.

TMDL APPLICABILITY

- Chollas Creek TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was initiated in early FY 2008-09 and completed in June 2009. It is anticipated that this project will be transferred to Preliminary Engineering in August 2010 and then to Design in February 2011. Design is expected to continue through FY 2011-12.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Southeastern Economic Development Corporation- partially funding project as part of their effort to upgrade infrastructure in the southeastern San Diego community

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants
- Metals
- Oil/Grease
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria, gross pollutants, metals, oil/grease, pesticides, sediment, and trash as high priority water quality problems throughout the San Diego River WMA. Implementation of the permeable pavement will address gross pollutants, trash, sediment, and oil/grease. To a lesser extent, the permeable pavement also addresses metals, bacteria, and pesticides.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
Beta Green Alley **Assess the Efficiency and Effectiveness of Beta Alley Green Street Filtration**	
Management Questions	• What is the load reduction efficiency? • How effective is the permeable pavement at reducing loads of priority pollutants (metals and bacteria)?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Change in pollutant concentrations in runoff into storm drains or receiving water (Outcome Level 5) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) through reduction of runoff volume. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type.

Analysis and Results

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

COMMERCIAL BMP SELF CERTIFICATION PILOT PROGRAM – (SDB-059)

ACTIVITY DESCRIPTION

This program includes an assessment of urban runoff from a major, mixed use parking lot in La Mesa (super market with additional shops). The load contribution of the parking will also be examined. The project also includes an education and outreach component in order to open dialogue with property management. The shopping center management will provide source control BMP maintenance records for the City to assess. Recommendations will be made to property management, and self certifications will be required annually. Additional wet weather samples will be collected for assessment. The City may decide to continue the program for different commercial centers within the watershed.

TMDL APPLICABILITY

Outreach and pollutant reduction activities are a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The activity is designed to assess and reduce pollutant loading stemming from commercial parking lot locations.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: N/A
- Permit Year 2: N/A
- Permit Year 3: Planning
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The pollutants addressed are related to those which are found in large commercial parking lots. Dissolved metals is the primary target. Sediment, pesticides, nutrients, and bacteria are addressed as well.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The pilot program activity supports the Watershed Strategy by working with property managers in the watershed regarding good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EXPECTED BENEFITS

The expected benefit is that property managers will be educated on storm water pollution prevention, and their source control activities will be assessed. Their awareness of priority pollutants within the watershed will increase and allow them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Follow up water quality samples will be collected in order to begin to assess the program. Additionally, due to the variability of sampling; increase in frequency of source control activities onsite will constitute a portion of the effectiveness metric of the activity.

SOURCE CONTROL OF COPPER WATER POLLUTANTS, SENATE BILL 346: MOTOR VEHICLE BRAKE FRICTION MATERIALS – (SDB-060)

ACTIVITY IMPLEMENTATION

The City and other MS4 dischargers in the Chollas Creek Watershed are mandated by Total Maximum Daily Load (TMDL) Waste Load Allocations (WLAs) to reduce the amount of dissolved copper, lead, and zinc that are discharged to the creek. Previous City of San Diego (City) investigations determined that copper from automotive brake pads was a major contributor of dissolved copper to Chollas Creek and other waterbodies within City jurisdiction. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments, through California Stormwater Quality Association, to achieve true source control by reducing copper at its source. It was determined that the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads.

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. In addition, several of the San Diego Bay Copermittees provided letters of support for SB346 throughout the review and approval process. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

TMDL APPLICABILITY

- Chollas Creek Dissolved copper, Lead, and Zinc TMDL

TIME SCHEDULE FOR IMPLEMENTATION

SB346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. It is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021. This is a long-term action and other BMPs will need to be implemented to comply with the 80% reduction of by 2018.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- Port of San Diego

- City of La Mesa
- City of Lemon Grove
- Caltrans
- US Navy
- County of San Diego

OTHER PARTICIPATING ENTITIES

- CASQA - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Coalition for Practical Regulation - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Alameda County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.
- Contra Costa County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify metals as a high priority water quality problem throughout the Chollas Creek WMA, and recommend implementing source control activities to address it. This activity's objective is to reduce the amount of copper that reaches Chollas Creek to improve and restore water quality for our citizens.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials Removal of Copper in Automotive Brake Pads	
Targeted Measurable Outcome(s)	Evidence of reductions of copper starting in 2022.

Objectives

The goal of this legislation is to reduce the amount of copper released into the environment from automotive brake pads.

Analysis and Results/Conclusions

The authorization of this proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

CHULA VISTA WILDLIFE RESERVE RESTORATION AND ENHANCEMENT PROJECT – (SDB-061)

ACTIVITY SUMMARY

The Port of San Diego is partnering with the California Coastal Conservancy and the United States Fish and Wildlife Service (USFWS) to restore 280 acres of salt marsh habitat in South San Diego Bay. As part of the project, the Port of San Diego will address the 11 acres of restoration at the Chula Vista Wildlife Reserve, which is within the Port's jurisdiction. The District will restore salt marsh habitat at the Chula Vista Wildlife Reserve by lowering the elevations and transporting the material to Pond 11 in the South San Diego Bay National Wildlife Refuge. The restoration and enhancement effort will provide a significant water quality benefit for the San Diego Bay watershed and will restore natural filtering capabilities.

This project, which is located on the peninsula behind the South Bay Power Plant in Chula Vista, will use an EPA grant and District environmental funds to benefit habitat and water quality in San Diego Bay. It will remove an estimated twenty-five (25) tons of debris and four (4) acres of invasive plant species. In addition, approximately 67,500 cubic yards of tidal marsh material will be excavated to create tidal channels, which will increase water circulation and improve habitat quality for 30 acres of intertidal habitat. Native vegetation will be re-established by planting native plants. This will create new foraging habitat, expand spawning grounds and increase cover from predators. The marsh material excavated from the CVWR site will be used as fill material by the US Fish and Wildlife Service (USFWS) in the Pond 11 salt marsh restoration project, approximately 4,500 feet southwest of the CVWR project site. This will increase the opportunity to create intertidal habitat by assisting in creating approximately 40 acres of cordgrass habitat in Pond 11. Annual monitoring will be done for sediment, water quality, and vegetation growth and abundance. Recommendations based on the monitoring results will be developed which may facilitate future restoration projects to more effectively achieve restoration objectives.

TMDL APPLICABILITY

The 2008 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. Though this activity may be beneficial in addressing high water quality problems, it is not specifically planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 2009-10: Planning
- Permit Year 2011: Planning/Construction
- Permit Year 2011-12: Implementation

PARTICIPATING JURISDICTIONS

- Port of San Diego

OTHER PARTICIPATING ENTITIES

- California Coastal Conservancy
- United States Fish and Wildlife Service (USFWS)

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Otay HU. Implementation of this activity is considered a beneficial water quality activity in the San Diego Bay WMA and will address the high priority water quality problem in the receiving waters by enhancing wetland function.

EFFECTIVENESS ASSESSMENT MEASURES

The goal of the project is to enhance the wildlife habitat and improve wetland function within the Chula Vista Wildlife Reserve subarea. Annual monitoring from 2011 through 2016 will be done to measure the accumulation of sediment as well as water quality monitoring of turbidity, nitrogen, ammonia, phosphorous, and dissolved oxygen. Vegetation growth and abundance will be monitored from March 2010 to March 2016. The 2008 baywide bird, eelgrass, and fisheries studies for South Bay to the same study results from the 2012/2013 baywide surveys to determine species density and abundance changes between surveys.

This activity was in the planning phase and not in active implementation in FY 2009-10. Therefore, assessment is not feasible at this time.

RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION – (SDB-062)

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

<u>ACTIVITY IMPLEMENTATION FY 2009-10</u>

Activity during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY 2009-10. The events are scheduled to occur during FY 2010-11. Depending upon the success of the initial events, additional events will be considered for implementation during FY 2011-12 and FY 2012-13.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

B STREET/BROADWAY PIERS, DOWNTOWN ANCHORAGE AND MOUTH OF SWITZER CREEK CHARACTERIZATION STUDY – (SDB-063)

ACTIVITY IMPLEMENTATION

San Diego Bay marine sediment total maximum daily loads (TMDLs) are currently in development for the B Street/Broadway Piers, Downtown Anchorage, and mouth of Switzer Creek (B Street Study Area). Based on existing Bay Protection Toxic Cleanup Program data, these areas have been identified as being contaminated by anthropogenic chemicals and are listed on the Clean Water Act 40 CFR Section 303(d) list as being impaired for one or more of the following constituents or conditions: benthic community effects, sediment toxicity, indicator bacteria, chlordane, lindane, PCBs and polynuclear aromatic hydrocarbons (PAHs). Sediment assessment studies conducted between 2003 and 2005 by the Southern California Coastal Waters Research Project (SCCWRP) and the University of California, Davis, during TMDL Phases I and II, verified these impairments and identified the following potential sources: the municipal separate storm sewer systems (MS4s) (City and Caltrans), industrial facilities and construction sites (General Statewide Storm Water Permits), atmospheric deposition, sediment flux, sediment re-suspension, leaching from creosote pilings, ballast water, oil spills, and bilge water.

Chollas Creek is listed on the 2006 Clean Water Act 40 CFR Section 303(d) list for copper, lead, zinc, and indicator bacteria (Table 1-1). A TMDL to address the toxicity caused by metals to aquatic life was approved by the San Diego Regional Water Quality Control Board (SDRWQCB) in January 2009. Chollas Creek had been listed on previous 303(d) lists for Diazinon impairment to aquatic species. The Chollas Creek Diazinon TMDL was approved by the United States Environmental Protection Agency (US EPA) in 2003.

The City of San Diego (City) implemented the B Street/Broadway Piers, Downtown Anchorage, and mouth of Switzer Creek Study Monitoring Program during the fall and winter of 2009 - 2010 to further characterize the City's storm drain system discharges during both wet and dry weather. This monitoring program evaluated the potential sources of the pollutants-of-concern (POCs) throughout the MS4 system and collected data to calibrate and validate wet weather runoff modeling efforts for the San Diego Bay TMDLs.

The results from this study support the conclusions from previous regional studies that concentrations of copper, zinc and synthetic pyrethroid pesticides found in the MS4 storm drain system are elevated to levels that can potentially cause impairment to freshwater and marine systems, with the urchin being extremely sensitive to MS4 storm drain effluents and the amphipod, *Hyalella azteca* being moderately sensitive to B Street Study Area sediments.

Dry weather MS4 storm drain effluents contained concentrations of zinc and copper that exceeded the hardness-corrected CTR WQOs, while dry and wet weather concentrations of synthetic pyrethroid pesticides (sediment and water) were consistently present throughout the B Street study Area. These high concentrations of dissolved zinc, copper and synthetic pyrethroid

pesticides can result in toxicity to aquatic life in the receiving waters and add to receiving water loads in an already impaired San Diego Bay.

Activities originating in urban and industrial areas are the primary sources of copper and zinc. During dry weather and wet weather sampling, elevated concentrations were also found for strontium and barium in storm water and in sediments, however the concentrations of these elements match the naturally occurring levels found in soils in California and San Diego (U.C. 1996) and are not necessarily anthropogenic. Pyrethroid pesticide concentrations were ubiquitous throughout the drainage areas. The dominant pyrethroids were bifenthrin, cyfluthrin, cypermethrin, L-cyhalothrin and permethrin. Private and commercial application of synthetic pyrethroid pesticides are the primary sources for this class of pollutant into the B Street Study Area.

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Copper, Lead and Zinc TMDL
- Indicator Bacteria Project I- Twenty Beaches and Creeks (including Tecolote Creek)

TIME SCHEDULE FOR IMPLEMENTATION

Data was collected during the fall and winter of 2009 – 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Pesticides

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify metals and organics as a high priority water quality problem throughout the San Diego Bay WMA, and recommends implementing specific management and Best Management Practices (BMPs) strategies to reduce the identified sources.

EFFECTIVENESS ASSESSMENT

This study was designed to characterize pollutants causing water quality problems from the MS4 and identify sources of contamination. As such, the next steps provided for this study are focused on (1) confirming the roles that copper, zinc and synthetic pyrethroid pesticides are playing in the observed sediment and aqueous toxicity, (2) confirming sources of elevated COPCs and (3) providing possible management activities that the city can use to reduce inputs of toxic levels of pollutants into the MS4 drain system.

CHOLLAS AND PALETA CREEKS CHARACTERIZATION STUDY – (SDB-064)

ACTIVITY IMPLEMENTATION

San Diego Bay marine sediment total maximum daily loads (TMDLs) are currently in development for the Chollas Creek and Paleta Creek study Area. Based on existing Bay Protection Toxic Cleanup Program data, these areas have been identified as being contaminated by anthropogenic chemicals and are listed on the Clean Water Act 40 CFR Section 303(d) list as being impaired for one or more of the following constituents or conditions: benthic community effects, sediment toxicity, indicator bacteria, chlordane, lindane, PCBs and polynuclear aromatic hydrocarbons (PAHs). Sediment assessment studies conducted between 2003 and 2005 by the Southern California Coastal Waters Research Project (SCCWRP) and the University of California, Davis, during TMDL Phases I and II, verified these impairments and identified the following potential sources: the municipal separate storm sewer systems (MS4s) (City and Caltrans), industrial facilities and construction sites (General Statewide Storm water Permits), atmospheric deposition, sediment flux, sediment re-suspension, leaching from creosote pilings, ballast water, oil spills, and bilge water.

Chollas Creek is listed on the 2006 Clean Water Act 40 CFR Section 303(d) list for copper, lead, zinc, and indicator bacteria (Table 1-1). A TMDL to address the toxicity caused by metals to aquatic life was approved by the San Diego Regional Water Quality Control Board (SDRWQCB) in January 2009. Chollas Creek had been listed on previous 303(d) lists for Diazinon impairment to aquatic species. The Chollas Creek Diazinon TMDL was approved by the United States Environmental Protection Agency (US EPA) in 2003.

The City of San Diego (City) implemented the Chollas Creek and Paleta Creek Monitoring Program during the fall and winter of 2009 - 2010 to further characterize the City's storm drain system discharges during both wet and dry weather. This monitoring program evaluated the potential sources of the pollutants-of-concern (POCs) throughout the MS4 system and collected data to calibrate and validate preliminary wet weather runoff modeling efforts for the San Diego Bay TMDLs.

The results from this study support the conclusions from previous regional studies that concentrations of copper, zinc and synthetic pyrethroid pesticides found in the MS4 storm drain system are elevated to levels that can potentially cause impairment to freshwater and marine systems, with the urchin being extremely sensitive to MS4 storm drain effluents and the amphipod, *Hyalella azteca* being moderately sensitive to Chollas Creek and Paleta Creek Study Area sediments.

Dry weather MS4 storm drain effluents contained concentrations of zinc and copper that exceeded the hardness-corrected CTR WQOs, while dry and wet weather concentrations of synthetic pyrethroid pesticides (sediment and water) were consistently present throughout the Chollas Creek and Paleta Creek study Area. These high concentrations of dissolved zinc,

copper and synthetic pyrethroid pesticides can result in toxicity to aquatic life in the receiving waters and add to receiving water loads in an already impaired San Diego Bay.

Activities originating in industrial areas are the primary sources of these two metals, while arsenic was elevated in one residential area. Pyrethroid pesticide concentrations were ubiquitous throughout the drainage areas. The dominant pyrethroids were permethrin, esfenvalerate, bifenthrin and L-cyhalothrin. Bifenthrin and L-cyhalothrin were of greatest toxicological concern as they were elevated above the 96-hour LC_{50} values for *H.* azteca. Private and commercial application of synthetic pyrethroid pesticides are the primary sources for this class of pollutant into the Chollas Creek and Paleta Creek Study Area.

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Copper, Lead and Zinc TMDL
- Indicator Bacteria Project I- Twenty Beaches and Creeks (including Tecolote Creek)

TIME SCHEDULE FOR IMPLEMENTATION

Data was collected during the fall and winter of 2009 – 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Pesticides

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify metals and organics as a high priority water quality problem throughout the San Diego Bay WMA, and recommends implementing specific management and Best Management Practices (BMPs) strategies to reduce the identified sources.

EFFECTIVENESS ASSESSMENT

This study was designed to characterize pollutants causing water quality problems from the MS4 and identify sources of contamination. As such, the next steps provided for this study are focused on (1) confirming the roles that copper, zinc and synthetic pyrethroid pesticides are playing in the observed sediment and aqueous toxicity, (2) confirming sources of elevated COPCs and (3) providing possible management activities that the city can use to reduce inputs of toxic levels of pollutants into the MS4 drain system.

CHOLLAS CREEK COPPER, LEAD AND ZINC WATER-EFFECTS RATIO STUDY – (SDB-065)

ACTIVITY IMPLEMENTATION

This report presents the preliminary results of the *Chollas Creek Copper, Lead, and Zinc Water-Effect Ratio (WER) Study*. This study was conducted to develop site-specific water quality objectives (WQOs) for Chollas Creek in accordance with the California Toxics Rule (CTR) for dissolved metals. The CTR was used for the basis of the Chollas Creek Dissolved Copper, Lead, and Zinc Total Maximum Daily Load (TMDL), which incorporated a provision for developing site-specific objectives (SSOs).

Chollas Creek flows through the city of San Diego, California, and empties to the eastern shoreline of San Diego Bay. The Chollas Creek Watershed encompasses approximately 16,270 acres consisting predominately of urbanized land located within San Diego County. Residential, industrial, and commercial discharges to Chollas Creek are associated with portions of the cities of San Diego, Lemon Grove, and La Mesa located within the watershed. Because of low rainfall in the area, Chollas Creek is generally dry with intermittent inputs of urban runoff due to lawn watering and other residential and commercial activities during ambient weather conditions. During rainfall events in the Chollas Creek Watershed, Chollas Creek flows respond in a relatively short time frame (i.e., hours). Peak flows occur rapidly during a rainfall event and then decrease to little or no flow usually within two days.

The United States Environmental Protection Agency (USEPA) has established numeric targets for toxic pollutants, which developed applicable WQOs for dissolved metals (e.g., copper, lead, and zinc) through promulgation of the CTR. The CTR WQO equations are based on the inverse relationship between hardness and toxicity. The CTR lists a criteria maximum concentration (CMC) (i.e., acute criteria) and criteria continuous concentration (CCC) (i.e., chronic criteria) calculated using hardness concentrations from each sampling event to determine the WQOs for each dissolved metal (Regional Board, 2007). The WER is a variable of the CCC and CMC equations, which can be used to develop a SSO. Upon determination of a final WER, SSOs can then be calculated by substituting the final WER value into the CCC and CMC equations for the calculation of site-specific criteria.

Based on the preliminary results of the WER, the following conclusions can be made:

Dissolved Copper:

- Site SD8(1), north fork, dissolved copper WERs for 48-hour *C. dubia* toxicity experiments were 10.8, 22.1, and 37.4 for samples collected on January 18, 2010; February 27, 2010; and April 1, 2010; respectively.
- The geometric mean (range) of the three individual WERs for the north fork of Chollas Creek (i.e., SD8(1)) was 20.8 (10.8–37.4).

- Site DPR2 dissolved copper WERs for 48-hour *C. dubia* toxicity experiments were 27.0 and 45.0 for samples collected on February 27, 2010 and April 1, 2010, respectively.
- Because only two sampling events have been conducted for the south fork of Chollas Creek (i.e., DPR2) thus far, the minimum WER of 27 would be used as a conservative final WER.
- The geometric mean (range) of the five Chollas Creek Watershed dissolved copper WERs was 25.5 (10.8–45.0).

Dissolved Zinc:

- Site SD8(1) dissolved zinc WERs for 48-hour *C. dubia* toxicity experiments were 2.1, 0.6, and 2.7 for samples collected on January 18, 2010; February 27, 2010; and April 1, 2010; respectively.
- The geometric mean (range) of the three individual WERs for the north fork of Chollas Creek (i.e., SD8) was 1.7 (0.6–2.6).
- Site DPR2, south fork, dissolved zinc WERs for 48-hour *C. dubia* toxicity experiments were 1.5 and 3.3 for samples collected on February 27, 2010 and April 1, 2010, respectively.
- Because only two sampling events have been conducted for the south fork of Chollas Creek (DPR2) thus far, the minimum WER of 1.5 would be used as a conservative final WER.
- The geometric mean (range) of the five Chollas Creek Watershed dissolved zinc WERs was 1.44 (0.6–2.6).

Dissolved Lead:

- Based on recently available USEPA lead toxicity curves, a revised freshwater FAV for total lead at a hardness of 50 mg/L was calculated to be 95.96 µg/L. The total lead FAV was converted using the CF 0.892 to a new dissolved lead FAV of 85.61µg/L.
- A new freshwater criterion maximum concentration (CMC or Acute) for dissolved lead (µg/L) was developed, as follows:

$$e^{(1.442[ln(\text{hardness})]-1.884)}$$

where: e = constant

ln = natural log

- A new freshwater criterion continuous concentration (CCC or Chronic) for dissolved lead (µg/L) was developed, as follows:

$$e^{(1.442[ln(\text{hardness})]-3.421)}$$

where: e = constant

ln = natural log

- Since 1994, there have been 42 compliance monitoring events at SD8(1) on the north fork of Chollas Creek. Over that period, there have been zero acute exceedances and 19 chronic exceedances, based on current dissolved lead acute and chronic values, respectively. By comparing the new USEPA criteria data to the historical compliance monitoring data, recalculation of the dissolved lead acute and chronic values resulted in zero and three exceedances, respectively. The three dissolved chronic exceedances all occurred prior to November, 2001.
- Since 2004, there have been 19 compliance monitoring events at Site DPR2 on the south fork of Chollas Creek. Over that period, there have been zero acute exceedances and four chronic exceedances, based on current dissolved lead acute and chronic values, respectively. By comparing the new USEPA criteria data to the historical compliance monitoring data, recalculation of the dissolved lead acute and chronic values resulted in no exceedances of either standard.
- Based on the study data collected to date, the historical compliance results for Site SD8(1) in the north fork were re-evaluated to compare the number of exceedances from existing criteria and using the newly obtained criteria. Results show that exceedances were limited to six occurrences for dissolved zinc (acute and chronic) and three occurrences of dissolved lead (chronic only). There were no exceedances of copper for either the acute or chronic.

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Copper, Lead and Zinc TMDL
- Indicator Bacteria Project I- Twenty Beaches and Creeks (including Tecolote Creek)

TIME SCHEDULE FOR IMPLEMENTATION

A range-finder test (January 18, 2010) and two subsequent sampling events (February 27, 2010 and April 1, 2010) occurred in Spring 2010, and two sampling events are planned for Fall 2010, for a total of five flow events at each of the two sites evaluated.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals (Copper, Lead and Zinc)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego Bay WMA identify metals and organics as a high priority water quality problem throughout the San Diego Bay WMA, and recommends implementing specific management and Best Management Practices (BMPs) strategies to reduce the identified sources.

EFFECTIVENESS ASSESSMENT

The objective of this study was to establish WERs and SSOs for dissolved copper and zinc, separately, for Chollas Creek. The underlying goal was to determine how much dissolved copper and zinc can be present in Chollas Creek site water without lowering the intended level of protection for Chollas Creek beneficial uses.

FOCUSED OUTREACH TO THE EQUESTRIAN COMMUNITY – (SDB-066)

ACTIVITY DESCRIPTION

The County of San Diego conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups.

ACTIVITY IMPLEMENTATION FY 2009-10

Workshops

During FY 2009-10, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Workshops during FY 2009-10 were held in Bonita, Lakeside, Ramona, and Fallbrook. The table below identifies the primary watershed(s) addressed by each workshop.

Location	Presentation Date	No. of Attendees	Primary Watershed Addressed
Lakeside	11/7/09	23	San Diego River
Ramona	2/3/10	43	San Dieguito, San Diego River
Fallbrook	6/19/10	22	Santa Margarita, San Luis Rey
Bonita	6/28/10	25	Sweetwater
Total		**113**	

Funded by the County, the workshops were presented by staff from either the Solana Center or the MRCD. They included presentations and handouts identifying resources available to equestrians. Information presented included local watershed awareness, manure management, and composting. Key elements included how proper manure management relates to horse

health, water quality, and maintenance of positive relationships with neighbors. Question and answer sessions were conducted in all workshops.

The workshops in Lakeside and Fallbrook were held on Saturday mornings on private properties with horses and active compost piles at each location. Participants were encouraged to observe the compost piles and the BMPs in place to prevent contamination of runoff. The presentation at the Fallbrook workshop included poster boards of a Power Point presentation. The other two workshops (Ramona and Bonita) were held in classroom settings at community meeting rooms on weeknight evenings. Presentations were casual discussions that included BMPs to improve horse health, protecting properties from erosion, and preventing polluted runoff discharges. San Diego County watershed maps were displayed at all workshops, allowing attendees to locate their local watershed.

Assessment was conducted in the form of pre- and post-workshop surveys.

Community Events

County staff and/or contractors also provided targeted outreach to the equestrian community at four equestrian themed community events during FY 2009-10. At each of these events, the County staffed a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. Additional details on each community event are provided in the table below.

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
10/17/09 & 10/18/09	Vaquero Days Western Heritage Festival	Granville Martin Ranch/Museum	45	Sweetwater
5/16/2010	Creek Hollow Ranch Horse Dressage Event	Creek Hollow Ranch	10	San Dieguito
5/28&29/10	Valley Center Rodeo Days	Valley Center Community Center	35	San Luis Rey
6/19/2010	Sweetwater Farms Hunter/Jumper Horse Event	Sweetwater Farms	15	Sweetwater
TOTAL			105	

Development and Distribution of Educational Materials

During FY 2009-10, County staff created a coloring sheet and handout to direct interested equestrians to more detailed information regarding BMPs for manure management (see attached).

Surveys

In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted a firm with expertise in Community Based Social Marketing (CBSM) to conduct research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (see attached report).

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for beaches and creeks, and with other more localized TMDLs for constituents such as nutrients and sediment.

TIME SCHEDULE FOR IMPLEMENTATION

Additional workshops are planned for equestrians in the Santa Margarita and San Luis Rey Watersheds during FY 2010-11 and FY 2011-12. In addition, the County is pursuing a partnership with the San Diego County Equestrian Foundation (SDCEF) to disseminate information about manure management and other BMPs to the equestrian community. County staff will provide outreach at various SDCEF events during FY 2010-11. Over the long term, the County is interested in pursuing opportunities to facilitate peer mentoring programs that encourage equestrians to learn about proper BMPs such as manure management from one another. Development of such a program in the future is contingent upon identifying a reliable source of funding such as grants.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for an important source of the high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered.

Pre-workshop survey results were as follows:

- 15.2% of participants responded that they live in a watershed.
- 43.2% responded that stormwater is not treated.
- 10.8% felt that horse manure contributes from “some to a great deal” to water pollution.

When asked about what equestrians can do to prevent pollution caused by horse manure, 59.5% of respondents suggested ideas on the pre-workshop survey.

Post-workshop survey results were as follows:

- 90% of respondents indicated that they live in a watershed.
- 74.2% responded that stormwater is not treated.
- 22.8% felt that horse manure contributes from “some to a great deal” to water pollution.

Regarding what equestrians can do to prevent pollution caused by horse manure, 82.8% suggested ideas on the post survey.

These survey results indicate a positive increase in knowledge and awareness about how equestrian activities can affect water quality. Results also show that more equestrians were able to identify positive behavioral changes (Level 3 Outcomes) following the workshops.

INTERGENERATIONAL GAMES – (SDB-067)

ACTIVITY DESCRIPTION

The City of La Mesa is committed to education outreach at community events and local schools. Each year the City works with La Mesa Middle School to host Intergenerational Games. School children are paired up with adults and participate in a number of activities. During the event on October 9, 2009, the City's Storm Water Program staffed a booth at the event. The City contracted I Love a Clean San Diego to setup and demonstrate the "Operation Cleanup" game at the event and to distribute education outreach material. The City's San Diego Bay Watershed fact sheet was displayed at the event which was attended by approximately 100 students.

TMDL APPLICABILITY

Education outreach is a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The event includes a San Diego Bay Watershed Fact Sheet that lists diazinon and metals as pollutants of concern as well as tips to prevent storm water pollution. The City's Chollas Creek TMDL Fact Sheet is also displayed in the kiosk.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation

PARTICIPATING WATERSHED COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

- La Mesa Spring Valley School District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Children and seniors are educated regarding the pollution issues within the watershed; and are given tips as to how to reduce residential pollution. The watershed fact sheets and TMDL fact sheets distributed provide information on the watershed's pollutants of concern, including the 303(d) listed pollutants (metals, diazinon, and bacteria) and information about relevant TMDLs.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The education outreach provides pollution prevention information to address those watershed priority pollutants. The education event supports the Watershed Strategy by educating residents in the watershed on good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EXPECTED BENEFITS

The expected benefit is that students and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the watershed and region. The event provides educational outreach materials specific to the watershed to address pollution prevention measures.

STREAM TEAM STEWARDS OF CHOLLAS CREEK – (SDB-068)

ACTIVITY DESCRIPTION

Stream Team Stewards is a project led by the San Diego Zoo to educate elementary school children and community members on watershed concepts and restoration efforts within Chollas Creek (908.22 HSA). The Port of San Diego provided funding for this education program. The program for elementary school children consisted of a series of in-school and after school classroom sessions and field trips; cleanup, storm drain stenciling and restoration of one acre of the Chollas Creek stream corridor. This activity began in September of 2009 and was completed in March 2010.

Six schools were involved in the *Stream Team Stewards of Chollas Creek* program:

- Valencia Park Elementary
- Nye Elementary
- Carver Elementary
- Sherman Elementary
- Chollas-Mead Elementary
- Encanto Elementary

Students from each school had four components delivered to them throughout the program:

- An introduction of what a watershed is, along with Zoo animal ambassador visitors and a "*Dr. Eco"* show;
- A visit to their local watershed to learn more about the animals and plants that live there and to help restore the habitat;
- Discovery stations were brought to their school to teach the students how to become active stewards of their local watershed. The students were provided with examples of actions that they can do to help their watershed; and
- A trash clean-up session either at their school or at Silver Strands Beach.

The students were provided standards-based science and environmental education. The students and teachers were provided with three different field trips, which involved four to five distinct, standards-based rotations per trip.

The learning outcomes for the program were:

- Students will become aware of how human activities affect the health of a watershed.
- Students will understand how a watershed functions.

- Students will know that certain plants and animals live and interact within San Diego watersheds.
- Students will demonstrate their understanding of watersheds in their actions at home.

A community brochure was also given to every student on the first day of the program. The colorful brochure listed information about invasive and native plant species found in their neighborhoods. The students took the brochures home to share with their families and participated in a scavenger hunt in their neighborhood where they identified invasive species versus native species. Students were asked to return the brochure to their educator after a family member signed that they had completed the activity.

The program was extremely well-received. Reviews of the program were positive, as students and teachers alike commented they enjoyed the program and that their understanding of watershed concepts and pollutions issues increased as a result of the program.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Chollas Creek Dissolved Metals TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The grant was awarded in FY 2008-09 and was completed in FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- Port of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Zoo
- Groundwork San Diego Chollas Creek
- ECOLIFE Foundation
- Earth Discovery Institute

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies trash as a high priority water quality problem in 908.2 HA of the Pueblo San Diego HU and recommends implementing source abatement activities to address this pollutant. In addition, bacteria and metals are other high priority water quality problems that may be reduced indirectly as a result of the removal of trash.

EFFECTIVENESS ASSESSMENT

The program served a total of 578 students (K-5), teaching the students living in the Chollas Creek watershed (908.22 HSA) that their daily behaviors can affect water quality and aquatic plants and animals.

The results from the pre and post-tests indicated that the program was effective in increasing knowledge about water quality issues and actions the students could take. The greatest improvement was in the students' understanding of watersheds was in how they could help the watershed they live in and the actions they could take to protect this valuable resource. In addition, more than half of the students returned the community brochure, listing information about invasive and native plant species found in the local neighborhoods, showing the students completed the activity.

The program restored habitat at two sites: 1) 38th and Alpha and 2) EarthLab. The students learned how to identify plants and animals. Every student planted a native plant at the restoration site and helped create new habitat for native animals in San Diego. A total of 250 plants were planted at the restoration sites, which included 233 plants added by students and 17 plants by teachers and program leaders. Storm drain stenciling was done on September 26, 2009 at 50 storm drain locations in and around the Chollas Creek watershed community.

At the beach field visit, two schools picked up a total of approximately 15 pounds of trash. The trash that was removed included: glass and plastic bottles, aluminum cans and foil pieces, batteries, balloon pieces, nails, hangers, plastic bags, cigarette ends, candy wrappers, bottle caps, palate wood, plastic milk jugs, a diaper and a shoe. The other four schools picked up approximately 60 pounds of trash at their respective school sites. The trash consisted of plastic bags, candy wrappers, aluminum cans, plastic water and soda bottles, pens, pencils, napkin pieces, old homework and paper scraps, straw wrappers, and plastic server ware. All of these activities helped to reduce the amount of trash contaminating the Chollas Creek watershed and the San Diego Bay.

Appendix E

Chollas Creek
Dissolved Metals TMDL
Implementation Plans Updates

California Department of Transportation (Caltrans) Watershed Activities Reporting
Year 2, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Facilities Pollution Prevention Plan	Annual inspection of Caltrans maintenance stations for storm water compliance.	Implementation	Level 4	Are there deficiencies in our maintenance facilities where potential pollutants discharged may reach the creek?	Caltrans has one bridge paint maintenance station (Coronado) and another typical maintenance station (Chollas) in the watershed and the results of the inspection conducted showed no deficiencies.
Tier II Chollas Watershed sweeping	Sweeping effort in the watershed, especially in priority sectors before the start of the rainy season and before rain events. Efforts to be coordinated with our maintenance staff.	Implementation	Level 4 Level 5	How may miles are swept per year and how much material is swept?	Maintenance crews sweep the freeways twice a month. Number of miles swept in watershed (freeway in both directions) (FY 09-10) =approximately 40.8 miles Materials removed (FY 09-10)=approximately 13.5 cubic yards based on the district average materials in cubic yards swept per lane mile in San Diego County.
Tier II Homeless Encampment Removal	Eradicate illegal human encampment under bridges along the freeways within the Chollas watershed by paving under bridges and placing cobbles to reduce bacteria, metals and trash loading.	Implementation	Level 4	How many homeless encampments have been removed?	A project has been completed on I-5 at Pershing Drive. The project placed concreted rock slope protection under the bridge.
Tier II Collaborative Special Study (Jurisdictional Boundary Monitoring in the Upper Watershed)	Evaluate and compare water quality in the upper and lower watersheds in the north fork and south fork of Chollas Creek. During two of the three required storms per the Chollas TMDL, monitoring was conducted at the jurisdictional boundaries between the cities of San Diego, La Mesa, and Lemon Grove at sites LM-1 and LG-1. Flow-weighted composite samples that were analyzed for the following constituents: Total hardness, dissolved copper, dissolved lead, and dissolved zinc. Organophosphate pesticides (i.e., Diazinon and Chlorpyrifos). Organochlorine pesticides (i.e., Chlordane). Polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). Acute and chronic toxicity to *C. dubia*.	Planning	Level 1	What are the pollutant loads at the jurisdictional boundaries? How do the loads compare in the upper and lower watersheds in both forks?	▪ Diazinon and Chlorpyrifos were not detected above either the acute or chronic waste load allocations (WLAs) at LM-1 or LG-1 during any monitored storm event. ▪ Toxicity to *Ceriodaphnia dubia* was only tested at LM-1 and LG-1 during the February 2010 storm event. There were no instances of acute or chronic survival and reproductive toxicity to *C. dubia*. ▪ Metals concentrations and exceedance ratios at LM-1 were generally greater than in LG-1. ▪ Copper had a higher detection rate and exceedance rate (compared to the acute and chronic WLAs) than lead and zinc. ▪ Dissolved lead was below the acute WLA at all sites during all events. Dissolved lead was above the chronic WLA at LM-1 and LG-1 during the February 2010 storm event
Tier II Collaborative Special Study (Activity Assessment Grab Samples for Metals and sediment)	Activity assessment comprised of one grab samples per location, collected for source identification studies or for BMP assessments. Samples were collected from specific land use areas in each priority sector during one wet weather event. Samples were analyzed for total and dissolved metals, TSS, and hardness.	Planning	Level 1	What is a typical runoff concentration form a specific land use?	Monitoring activities conducted for this Study identified ten potential hot spots for dissolved copper, dissolved lead, dissolved zinc, and/or total suspended solids (TSS). The three hot spots with the highest relative priority were Site 19 (Commercial), Site 11 (Transportation), and Site 10 (Residential), as follows: ▪ Site 19 had the highest dissolved copper, lead and zinc concentrations and the fifth highest TSS concentration. ▪ Site 11 had the second highest dissolved copper and TSS concentrations, fourth highest dissolved lead concentration, and third highest dissolved zinc concentration. ▪ Site 10 had the highest TSS concentration of all sites, but was not identified as a hot spot for metals.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Collaborative Special Study (Bacteria Monitoring)	Samples were collected and analyzed for total coliform, fecal coliform, and *enterococci* during storm events at SD8(1) and DPR2 (three storms) and LM-1 and LG-1 (two storms). Samples were collected as grab samples during the peak flow of the storm event.	Planning	Level 1	What's the bacteria concentration at the jurisdictional boundaries and the two required monitoring stations?	Sample results were compared to the WLA criteria in the *Revised TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek),* which was adopted into the Basin Plan through Regional Board Resolution No. R9-2010-0001 ▪ All samples collected for Collaborative Special Study 4 exceeded the fecal coliform WLA. ▪ There are no discernable patterns for bacteria concentrations across the Chollas Creek Watershed. Total coliform, fecal coliform, and *enterococcus* concentrations varied from storm to storm and location to location. Fecal coliforms decreased with each successive storm event at SD8(1), however concentration increased with each successive storm event monitored at DPR2.
Ongoing Agency Wide Activities					
Tier I Brake Pad Partnership (BPP)	Caltrans funded work consisting of a watershed modeling effort conducted as part of a larger study examining the potential impact of copper from brake pad wear and debris released to the environment. The objective of the environmental transport and fate modeling is to predict how copper released from brake pads enters the bay and affects both the short-term and long-term concentrations of copper in the bay.	Implementation	Level 4	Are there new products that can replace the current products used for making brake pads?	Caltrans continues to fund the watershed modeling component of the BPP's technical studies and is working with the BPP to augment the modeling efforts of copper in highway environments. Results of the study will benefit in reducing copper concentration in the creek.
Tier I Don't Trash California	Using a comprehensive, multicultural approach, the *Don't Trash California* campaign targets primary offenders of highway littering, as well as the general public, to create a social mindset in California that this State does not tolerate polluting our freeways and highways. The campaign will implement proven strategies in the Chollas Creek Watershed, including billboard, bus advertising, partnerships and community outreach to raise the level of awareness of the effects of littering and encourage the public to avoid littering.	Implementation	Level2 Level 3	How much public education materials were distributed to sponsors in the watershed?	Caltrans provided the following collateral items to Groundwork San Diego for distribution at school education visits: 25 Activity Books In English 50 T Shirts 50 Ball Point Pens 25 Reusable Bags 20 Megaphones
Tier II Ornamental Roadside Vegetated Treatment Sites (ORVTS) Study	The Ornamental Roadside Vegetated Treatment Sites (ORVTS) Pilot Study is comprised of two types of study sites: the Expanded Roadside Vegetated Treatment Sites (ERVTS) and the Groundcover Roadside Vegetated Treatment Sites (GRVTS). The ERVTS sites were constructed to expand the treatment strips at existing site locations of the original Roadside Vegetated Treatment Sites (RVTS) Pilot Study with new groundcover. Existing RVTS data will be utilized as a baseline condition, providing supplemental data on alternate vegetation types.	Planning	Level 1 Level 4 Level 6	For the ERVTS, how effective is the groundcover vegetation species at providing treatment of highway runoff and how do they compare in treatment potential to existing grass and for vegetation within the Caltrans rights-of-way (ROW)?	Monitoring is ongoing. The report for the past monitoring season has not been finalized yet. Results will be reported as part of Caltrans Annual Report
Tier II Open/Gap Graded Asphalt Pavements Water Quality Project	The study of Porous Asphalt Concrete Overlays Project was initiated to better understand the potential water quality benefits of asphalt concrete porous pavement overlays (porous pavement). The objective of the multi-year Project is to evaluate the quality of stormwater runoff from porous pavements compared to conventional Dense Graded Hot Mix Asphalt (DG HMA). The Project includes sites at eleven locations located statewide. The porous overlays tested include Open Graded Friction Course (OGFC), Rubberized Hot Mix Asphalt Open Graded (RHMA-O), and Rubberized Hot Mix Asphalt Gap Graded (RHMA-G). Field monitoring has been performed since early in 2008 with three to 12 storm events successfully captured at each station, including flow-weighted composite samples, flow and precipitation.	Implementation	Level 1 Level 4 Level 6	Treatment effectiveness is based on assessing the following parameters. • Sediment (total suspended solids [TSS]) • Total phosphorus • Copper (total and dissolved) • Zinc (total and dissolved)	No conclusions are drawn at this time. Monitoring is ongoing. The report for the past monitoring season has not been finalized yet. Results will be reported as part of Caltrans Annual Report

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
New Activities					
Tier II Corrugated Metal Pipe Replacement	Replace or slip line corrugated metal pipes (CMPs) with other material such as concrete to reduce dissolved metals discharges to the creek.	Implementation	Level 4	How many feet of corrugated metal pipes have been retrofitted?	• Invert paved 3650 feet of failed CMP pipe and slip line 260 feet along I-805 near Adams Avenue (post mile 15.3) (Contract # 403904). • Replaced 100 feet of CMP along I-805 at University Avenue (Contract # 381504).
Tier II Structural BMPs Implementation for Major Construction Projects	Construct Bus Rapid Stations and High Occupancy Vehicle (HOV) lanes with structural BMPs in San Diego County from 0.4 mile north of Route 805/15 separation to 0.1 mile south of Route 15/8 Separation (contract 2T1300)	Planning	Level 1 Level 4 Level 6	How much of the existing and proposed pavement areas will be treated by the proposed structural BMPs?	• Project is in the planning stages and potential locations of structural BMPs are being evaluated at this time.
Tier II Structural BMPs Implementation for Major Construction Projects	Construct express and HOV lanes south in San Diego County in and near the City of Chula Vista, .32 Miles south of Palomar Street overcrossing to the Landis Street overcrossing. The project is proposing to incorporate 26 biofiltration swales within the Chollas watershed only (contract 081610).	Planning	Level 1 Level 4 Level 6	How much of the existing and proposed pavement areas will be treated by the proposed structural BMPs?	• Project is in the planning stages and will be constructed in multiple phases. Caltrans will report more details on each phase of construction in the upcoming reporting periods.
Tier II Structural BMPs Implementation for Major Construction Projects	Construct HOV/general purpose/auxiliary lanes in San Diego County from Route 94/5 Separation to 0.2 miles west of 47th Street overcrossing (contract 287100).	Planning	Level 1 Level 4 Level 6	How much of the existing and proposed pavement areas will be treated by the proposed structural BMPs?	• Project is in the planning stages and will be constructed in multiple phases. Caltrans will report more details on each phase of construction in the upcoming reporting periods.

City of San Diego Watershed Activities Reporting
Year 2, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Chollas Creek Watershed Storm Drain System Characterization Study	Source ID study for pollutants relating to the pending sediment toxicity and benthic community degradation TMDL at the mouth of Chollas Creek and adjacent areas. Study will assess existing upstream data and determine data gaps. Primary constituents of concern are Chlordane, PCBs, PAHs and pesticides. Monitoring to characterize the storm drain system during wet and dry weather. Wet weather will consist of pollutograph sampling with water column chemistry, sediment chemistry and grain size, and toxicity analyses for two storm events of 0.1 inch of rain. Dry weather will consist of water chemistry, sediment chemistry, and toxicity sample collection.	Planning	Level 1	The findings from this study will allow the City to characterize the pollutants causing sediment toxicity and benthic community degradation, and help identification sources of those pollutants.	Trend analyses indicate significantly increasing trends for total and dissolved copper and total and dissolved zinc in the north fork of Chollas Creek (SD8(1)). When compared to historical data (1994–2010), increasing trends are relatively shallow and have flattened over time. However, exceedance ratios have steadily decreased at SD8(1) since 2007. Significantly increasing trends were also noted for total copper and total zinc at DPR2. Significantly decreasing trends were observed for Diazinon in both the north fork and south fork
Tier I Identifying and Modifying Barriers to LID Techniques	This project involves a City-wide review of Municipal Code, development regulations, and design standards to determine barriers/conflicts to using LID and other BMP types within new development and redevelopment, where applicable.	Planning	Level 1	Report documenting the barriers to implementing LID and what benefits are associated with modifying these barriers.	The work plan was developed during the reporting period. The City-wide review will be conducted between July 2010 and June 2011. A second phase of the project will involve working with stakeholders (City Departments, Planning Groups, Developers, General Public, etc) to develop solutions to the identified barriers.
Tier I Brake Pad Partnership	The project involves providing support for bill SB346 which requires for brake pads to contain no more than 5% copper by weight by 2011.	Implementation	Level 4: Load Reduction	Sponsorship of Sustainable Conservation	The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.
Tier I Public Service Announcement	In past years, the objective of this campaign was to educate the public about the causes of bacteria and trash loading, and encourage positive behavioral change.	Complete	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	# residents reached through PSAs Results from public opinion/awareness surveys	While the City continues to air Public Service Announcements, it is no longer conducting assessment on the spots and will not be reporting on their effectiveness. This activity will continue but will no longer be reported. The City also worked with the San Diego Regional Stormwater Copermittees to run a pesticide PSA called "Ants in Your Pants."
Tier I CBSM Program for Chollas Creek – Trash	Community Based Social Marketing targeting Chollas Creek Watershed and activities/behaviors in residential and mixed residential and commercial areas that result in water quality issues due to trash. This project includes a trash clean up, a type structural trash intervention (e.g. new trash cans), and targeted education and outreach. The CBSM project is based on the methodology developed for Keep America Beautiful.	Implementation	Level 2: Change in awareness Level 3: Behavioral change in targeted areas Level 4: Load Reduction	Visual Trash Survey Telephone Behavior/Awareness Survey Load reduction - pounds of Trash Removed during clean up effort	In FY 2009 the baseline observations; development of CBSM intervention; and community clean up portions of the project were completed. In FY2010, the program continued to experience delays in procuring trash receptacles and determining maintenance responsibilities of receptacles. In FY 2011, it is anticipated that the program will be modified and work can begin again. Effectiveness will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the pilot will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Billboards/ Transit Shelters	This project evaluates whether public outreach can be linked to positive behavioral change. These advertisements were displayed in both English and Spanish on billboards and bus shelters, and target behaviors associated with bacteria and gross pollutants (trash) profiled as a vector.	Complete	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	% residents reached through signage Results from public opinion/awareness surveys (randomly selected cohort)	Based on results from the *2009 Storm Water Survey*, only 17% of residents polled recalled encountering Think Blue messages via billboards and mobile advertising. It was determined that transit shelters and billboard advertisements were not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues. The activity is being discontinued in FY 2010.
Tier I Mobile Advertising – Trash and Bacteria	This project evaluates whether public outreach can be linked to positive behavioral change. These advertisements were displayed in both English and Spanish on City-owned static billboard trucks.	Complete	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	% residents reached through signage Results from public opinion/awareness surveys (randomly selected cohort)	The advertisements were displayed throughout the San Diego Bay WMA in both English and Spanish in FY 2009. The estimated audience was 522,300 for Chollas Creek. In FY 2009, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, approximately 17% of residents became aware of the Think Blue message through billboards and mobile advertising. Based on results from the *2009 Storm Water Survey* it was determined that mobile advertising was not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. Additionally, the Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. The city has discontinued this activity.
Tier I Low Impact Development and the Planned BMPs at Southcrest and Memorial Park (to be issued project #)	This education and outreach program will include community meetings, poster presentations, handouts, education materials and giveaways promoting water quality, LID techniques, and descriptions of the planned CIP projects in the Chollas Creek Watershed, including Southcrest Park (City-14-1 and City-14-2), Memorial Park (City-15-1).	Planning	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	Results from public opinion/awareness surveys	Work has begun on the Memorial Park project. Public awareness of the project has been raised via community meetings and news stories and articles regarding the project. It is anticipated educational signage and community outreach will continue in FY 2011. Implementation of Southcrest Park project has been delayed.
Tier I Targeted Metals-Related Facilities – Auto Facility Inspections Pilot Study (City-8-1)	Project is an aggressive inspection program targeted at auto-related facilities for metals-related pollutants loading.	Implementation	Level 1: Completion of Inspections Level 3: Behavior Change Level 4: Source Abatement	# of facilities inspected # of sites with corrective actions # of IC/ID's observed	178 facilities inspected (Level 1) 4 sites implemented corrective actions during inspection (Level 3 and 4) 4 IC/ID's observed during inspections This activity will be completed in FY 2010.
Tier I Targeted Business Inspections Pilot Study (City-8-2)	Project is a targeted aggressive inspection program targeting various outdoor activities of businesses.	Cancelled			This activity is no longer planned for the Chollas Creek Watershed. Instead, the activity is moving forward in other watershed's within the City of San Diego's jurisdiction. The findings from the activity may be implemented in the Chollas Creek Watershed, and would be reported under the TMDL at that time.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Collaborative Special Study #1: Jurisdictional Boundary Monitoring in the Upper Watershed (to be issued project #)	Storm water monitoring was conducted during two storm events during the 2009-2010 wet weather monitoring period. Monitoring was conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples were e analyzed for organophosphate pesticides (Diazinon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc, and acute and chronic toxicity to *Ceriodaphnia dubia*. This study will continue into FY11.	Implementation	Level 1	Completed Study	This activity will continue into FY 11. Results found in FY10 include: ▪ Diazinon and Chlorpyrifos were not detected above either the acute or chronic waste load allocations (WLAs) at LM-1 or LG-1 during either monitored storm event. ▪ Toxicity to *Ceriodaphnia dubia* was only tested at LM-1 and LG-1 during the February 2010 storm event. There were no instances of acute or chronic survival and reproductive toxicity to *C. dubia*. ▪ Metals concentrations and exceedance ratios at LM-1 were generally greater than at LG-1. ▪ Copper had a higher detection rate and exceedance rate (compared to the acute and chronic WLAs) than lead and zinc. ▪ Dissolved lead was below the acute WLA at all sites during all events. Dissolved lead was above the chronic WLA at LM-1 and LG-1 during the February 2010 storm event.
Tier I Collaborative Special Study #2: Activity Assessment Grab Samples for Metals	Activity assessment grab samples were collected for source identification studies or for BMP assessments. Samples were collected from specific land use areas in each priority sector during one wet weather event. Specific locations were pre-determined prior to the storm monitoring season based on land use, activities, or BMPs and decided by the participating Dischargers. Samples were analyzed for total and dissolved metals, TSS, and hardness.	Complete	Level 1	Completed Study	Monitoring activities conducted for Collaborative Special Study 2 identified ten potential hot spots for dissolved copper, dissolved lead, dissolved zinc, and/or total suspended solids (TSS). The three hot spots with the highest relative priority were identified, as follows: ▪ Site 19 had the highest dissolved copper, lead and zinc concentrations and the fifth highest TSS concentration. ▪ Site 11 had the second highest dissolved copper and TSS concentrations, fourth highest dissolved lead concentration, and third highest dissolved zinc concentration. ▪ Site 10 had the highest TSS concentration of all sites, but was not identified as a hot spot for metals.
Tier I Collaborative Special Study #3: Synthetic Pyrethroid Assessment Monitoring	Additional samples were collected at SD8(1) and DPR2 (during three events) and LM-1 and LG-1 (during two events) and analyzed for synthetic pyrethroids, TSS, and toxicity to *Hyalella azteca*. The purpose of this study was to collect data that will be submitted to the Department of Pesticide Regulation (DPR) as part of their synthetic pyrethroid re-registration process. The goal of participation with DPR is to have synthetic pyrethroids banned or placed on restricted use.	Complete	Level 1	Completed Study	Completed in FY10. Results include: ▪ The data indicated that synthetic pyrethroid pesticides were used throughout the watershed. Eight of 13 synthetic pyrethroids were detected in both the north fork and south fork. ▪ All samples at all four monitored sites had Bifenthrin concentrations greater than the acute LC_{50} literature values. ▪ Toxicity to *Hyalella azteca* was commonly observed.
Tier I Collaborative Special Study #4: Bacteria Monitoring	Samples were collected and analyzed for total coliform, fecal coliform, and *enterococci* during storm events at SD8(1) and DPR2 (three storms) and LM-1 and LG-1 (two storms). Samples were collected as grab samples during the peak flow of the storm event.	Complete	Level 1	Completed Study	Sample results were compared to the WLA criteria in the *Revised TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek),* which was adopted into the Basin Plan through Regional Board Resolution No. R9-2010-0001. Results for Collaborative Special Study 4 were as follows: ▪ All samples collected for Collaborative Special Study 4 exceeded the fecal coliform WLA. ▪ There are no discernable patterns for bacteria concentrations across the Chollas Creek Watershed. Total coliform, fecal coliform, and *enterococcus* concentrations varied from storm to storm and location to location. Fecal coliforms decreased with each successive storm event at SD8(1), however concentration increased with each successive storm event monitored at DPR2.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Dry Weather Bacterial Source Identification Study In the Mouth of Chollas Creek (City-27-1)	Bacteria Source Study targeted storm drains and other potential sources of bacteria during three dry weather field surveys. Bacteria samples were be taken from investigation sites and fixed sites located on the three reaches of Chollas Creek. This will help identify the relative bacterial concentrations and flow influencing the Chollas Creek tidal prism (the point of compliance for the SHELL Beneficial Use) can be determined and the most likely sources of bacteria identified.	Complete	Level 1	Completed Study	This study was completed during the last year. Results and findings include: 1. During dry weather, there is no hydrologic connection between the mouth of Chollas Creek (the area influenced by tidal action) and the upstream drainage. Thus, bacteria found in the receiving waters of the creek mouth originate from sources that discharge directly to the mouth (i.e., storm drains). 2. 17 storm drains were identified that terminate in the creek mouth. Of these, evidence of flow was apparent in only four. 3. The highest bacterial concentrations were associated with the two storm drains near the National Avenue Bridge. 4. Two sources of flow that contributed to the high bacterial concentrations: a. Over-irrigation of landscaping at a strip mall b. A freshwater slough adjacent to a freeway off ramp that periodically discharges to a storm drain in the creek. 5. Scour ponds associated with the storm drains provide depressions within the streambed where high levels of indicator bacteria can be maintained. Tidal action carries bacteria from scour ponds to other areas within the tidal prism, serving as a point of inoculation for the mouth of Chollas Creek.
Tier I Tecolote Creek Bacteria Source Study, Phase I (City-5001)	Bacteria Source Study included dry and wet weather investigation of the bacteria loading potential of priority sources in the Tecolote Watershed. This project is directly related to the Chollas Creek Watershed that shares common priority sources for bacteria.	Complete	Level 1	Completed Study.	This study was completed in FY2008. Findings and results included that some sediments may act as a bacterial reservoir. This led to Phase II of the study.
Tier I Tecolote Creek Bacteria Source Study, Phase II (City-5002)	Bacteria Source Study included the collection of additional rainfall and bacterial concentration data and further bacterial source investigation. This project is directly related to the Chollas Creek Watershed because it shares common priority sources for bacteria. This work builds upon the bacteroides and source-related findings of the Phase I bacterial source ID study which was completed in August 2008 and complements results being collated under the 2009 San Diego River Phase I Microbial Source ID Study.	Complete	Level 1	Completed Study	**Results and Findings** ▪ An additional seven storm events need to be monitored in order to have a data set suitable for Section 303 (d) de-listing. ▪ Speciation of *enterococci* discharged during wet weather suggest that calculated bacterial loads in Tecolote Creek overestimate the potential threat to REC-1 and REC-2 beneficial uses because of the significant presence of fecal indicator bacteria from environmental sources such as soils and plants.
Tier I Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (City-26-1)	Project includes collecting and analyzing pollutograph samples from Chollas Creek Watershed and two other watersheds to determine a recommended approach to the BMP design storm to be used in TMDL implementation..	Complete	Level 1	Completed Study	The design storm study was completed in FY09. The sediment and bacteria relationship component of the study is on hold due to budget constraints.
Tier 1 TMDL Aerial Deposition Source Evaluation Monitoring Study, Phase III (City-24-1)	This Project evaluated potential sources of metals based on water quality data, previous aerial deposition data, inspection data (from FY07-08 targeted industrial inspections and other programs), and an area reconnaissance (to prioritize potential sources and identify sampling locations for first flush wet weather events). The study considered the impact of roofs and structural galvanizing. The study assessed runoff from up to 20 industrial/commercial sampling locations and up to six residential-only sampling locations for comparison to the	Complete	Level 1	Completed study.	**Results and Findings** ▪ Average annual aerial emissions of copper from four stationary facilities near the mouth of Chollas Creek are roughly five times higher than the average annual load discharged via storm water runoff. In contrast, lead and zinc emissions were only 1% and 24% of average annual discharge load. ▪ Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and resuspended dust) and localized parcel-based sources also play a role in metals deposition of

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
	industrial/commercial land use.				lead and zinc in the watershed. ▪ Samples collected from deteriorating metal rooftops were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Concentrations of copper and lead were relatively low from metal rooftop runoff, but increased in street level runoff suggesting aerial deposition or other parcel-based sources of copper and lead. ▪ Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area. ▪ Copper, lead, and zinc concentrations were higher in commercial and industrial land uses compared with residential land uses. ▪ Copper and zinc concentrations were significantly higher in Priority Sector 1 compared with other priority sectors. This supports the conclusion that emissions of copper and zinc from stationary facilities near the mouth of Chollas Creek likely contribute to aerial deposition and subsequent runoff of these metals. ▪ Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc.
Tier I Doggie Bag Dispenser Pilot Program	Evaluation of the most effective form(s) of pet waste stations, identification of optimum installation density and locations, potential pollutant load reductions that may be attributable to the pet waste station installations and development of appropriate effectiveness assessment measures.	Planning	Level 2: Public Awareness Level 3: Behavior Change	The assessment will focus on evaluating the installation of pet waste stations as a BMP in reducing pollutant loading in correlation with the number of bags employed. The project will include site evaluations and selections, Pre and post site observations.	This activity for this watershed will be implemented in FY11, however based on the outcome of this activity in other watersheds already completed in FY10 demonstrates there are positive, measurable pollutant load reductions due to the installation of pet waste bag dispensers.
Tier I Evapotranspiration Effects Study	This study evaluate to what level evapotranspiration provides a reduction in pollutant loads for street tress. This study may assess different vegetation types or different plant species.	Cancelled	Level 1: Completion of Study	Completed Study	This activity is no longer moving forward. However, the City may pursue researching this topic further in conjunction with one of its future structural BMP projects.
Tier II Roads, Commercial, Residential Chollas Creek Aggressive Street Sweeping (City-3-1)	Project included the purchase and deployment on designated routes in Sectors 1 and 2 of a regenerative air and vacuum street sweepers. These sweepers were anticipated to collect additional fines and gross solids compared to more widely used mechanical sweepers. Training of the operators for this new equipment has also been conducted. These two new aggressive sweepers were used on existing routes and compared to mechanical sweepers regarding their effectiveness to remove debris and the metals contained in the debris. The frequency of the sweeping was also assessed regarding increased pollutant removal as well as acceptance by the public.	Implementation	Level 4: Load Reduction	Load reduction from debris monitoring data including: - debris weight & volume - # broom miles - physical and analytical characteristics of debris -wet weather chemistry Management Questions: Are vacuum-assisted sweepers more effective in achieving pollutant load reductions than conventional mechanical sweepers? What is the optimal frequency for sweeping residential and commercial routes? Does aggressive street sweeping result in direct, measurable water quality improvements?	A total of 149,040 lbs of debris was removed by all three sweeper types during the two-year study, over a total of 2,850 miles swept. This resulted in an average of 58 lbs of debris removed per mile swept. The results of the study concluded that the vacuum-assisted sweepers are generally more effective at removing both debris and heavy metals from road surfaces, especially on flat routes like those found in Chollas Creek. However, the vacuum sweepers performed equally as well as the City's conventional mechanical sweepers on hilly routes. Furthermore, it was determined that the vacuum sweepers are more effective at removing debris and metals with aggressive (i.e., twice per week) sweeping. Specifically, data collected during the pilot study indicated that the mechanical sweepers did not remove as much debris or metals when operated at an increased frequency. Finally, wet weather monitoring indicated that street sweeping is an effective BMP for improving water quality as the data showed direct improvements to runoff collected at inlets along swept roads versus those roads that were not swept.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
				-Methods of measure will be tracked for each sweeper type. What is the most cost effective frequency that is publicly acceptable? - Methods of measure will be tracked at different sweeping frequencies for different sweepers.	
Tier I Median Sweeping Pilot Study	The purpose of this pilot study was to evaluate the feasibility, potential water quality benefits and cost-effectiveness of modifying the City's Street Sweeping Program to including sweeping street medians.	Implementation	Level 4: Load Reduction	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)	A baseline sweep of the four pilot median areas, which included Palm and Coronado Avenues in the San Diego Bay WMA, resulted in the removal of 32,460 lbs of debris over a total of 58 miles with an average of 560 lbs of debris removed per mile swept. After the initial baseline sweep, each route was swept four more times over an approximate three month period (with roughly three weeks between sweeps). A total of 32,560 lbs of debris was removed over this three month study period. Though the activity was not conducted in the Chollas Creek watershed, the study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic City roadways., including within this watershed The initial baseline median sweep collected 3-5 times more debris than the subsequent 3-week interval sweeps. This suggests that there is a significant buildup of debris adjacent to median areas. Furthermore, debris sampling confirmed the presence of heavy metals, nutrients and hydrocarbons in the debris collected. This leads the City to believe that median sweeping may provide a significant benefit for controlling the input of high priority water quality problems from impacting receiving waters.
Tier I Groundwork San Diego Chollas Creek Family Stream Team Partnership	The Port of San Diego awarded a grant to Ground work San Diego Chollas Creek for education, restoration, and refuse collection. The City of San Diego is collaborating on this activity by collecting data from the refuse collection events, surveys of the creek, and participant surveys.	Implementation	Level 3: Behavior Change Level 4: Load Reduction	Visual Trash Assessment of dump sites within Chollas Creek Participant Surveys Trash and debris characterization and quantification	This activity was completed in FY09 and FY10. See the Port of San Diego's table for more information regarding the project statistics. See Activity Summary Sheet SDB-051 in Appendix D for more detail.
Tier II Discharger Facilities Rain Barrels/ Downspout Disconnect Project (City-12-1)	Project reduced storm water flows by capturing runoff from roof structures and gutters at Southcrest Recreation Center. Project included two rain barrel systems and three combined rain barrel and bioretention planter systems.	Implementation	Level 2: Public Awareness Level 4: Load Reduction	Runoff volume captured Load reduction Maintenance Hours Implementation Cost	The study found that a gravity-flow system, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, can attenuate and infiltrate up to six times its capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively, and that all system configurations had measurable pollutant load reductions (however, certain systems were found to more effective than others). Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Furthermore, rain barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas.
Tier II Residential Outdoor Water Conservation Rebate Program	This activity involves launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until	Planning	Level 2: Public Awareness Level 4: Load Reduction	Water quantity monitoring will be conducted both at the pre and post irrigation modification stage. It is also anticipated the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to	This activity is scheduled to be implemented in FY11

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
	funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads.			better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.	
Tier II Eating and Drinking, Commercial, Roads Trash Segregation BMP Installation	This project is coordinated with the targeted aggressive street sweeping program. Inlet devices are installed to capture trash/debris prior to conveyance into local waterbodies. Due to long-term high maintenance issues, this BMP will first be piloted with aggressive street sweeping to assess the maintenance requirements compared to their trash removal effectiveness. The use of a multi-catchment /drainage area approach to trash removal (e.g., hydrodynamic separator at the MS4 outfall) may need to be used as part of a treatment train Tier III approach.	Planning	Level 4: Load Reduction	Load Reduction Maintenance Hours Implementation Cost	Vendors have been selected and the retrofits will be completed in FY11.
Tier II Auto, Commercial, Roads 43rd and Logan Street Upgrades and "Green Mall" Project	A combined green street and green mall project will be implemented to filtrate a design storm event. Project will include installing bioretention areas and LID filtration techniques and replacing impervious hardscapes with porous concrete sidewalks.	Planning	Level 4: Load Reduction	Load reduction Maintenance hours Implementation cost	The City of San Diego anticipates starting construction in FY 2011.
Tier II Parks, Pesticides, Roads Memorial Park Large "Green Lot" LID (City-15-1)	Project will divert flow from the parking area catch basin to a below grade storage and infiltration device installed within the grassy area of Memorial Park. Flows exceeding the storage and infiltration capacity will bypass the system through an overflow pipe at the downstream end of the infiltration area. Project will be designed to capture and infiltrate up to a five year storm.	Planning	Level 4: Load Reduction	Load reduction Maintenance hours Implementation cost	Design of the project is expected to be completed in FY 2010. Construction began in June 2010 and is expected to finish in November 2010.
Ongoing Agency Wide Activities					
Tier I Auto, Residential, Commercial, Eating and Drinking, Construction, Industrial Modification of City Fact Sheets (City-5004)	The City continues to update Storm water Fact Sheets, as needed. Current efforts focus on changes resulting from the 2007 NPDES permit. The development of the fact sheets has been completed. The program is now focusing on fact sheet distribution. The City is working with other regional Copermittees on these efforts (i.e. partnering with the City of Escondido on the Green Wrench Guide). Future efforts may include information about low impact development or modifications to City codes and/or design standards.	Implementation	Level 2: Change in awareness	Public familiarity with the Fact Sheets (phone survey, questionnaires, inspections, etc)	In FY 2010 the City continues to modify and augment Fact Sheets to inform the public of changes to the City's Storm Water Ordinance. The City expects the updated Fact Sheets to be completed and ready for distribution by Storm Water staff in FY 2011.
Tier I Industrial Enforcement Referrals	The City reports any "non-filers" under the General Industrial Permit to the Regional Board found during the annual industrial/commercial inspections program. In the future, the City may initiate dialogue (education and outreach) with the current Permitted industries about the types of water quality	Implementation	Level 1 Level 2: Industry Awareness	Number of "non-filers" reported	189* businesses in need of submitting NOI (application for industrial permit) 284* businesses in need of submitting NONA (application for exemption) *Citywide total. The City is currently revising the tracking of the data to report more focused data in the future.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
(City-5005)	data and possibly coordinating efforts on special studies.				
Tier I Discharger Facilities Outfall and Selected Canyon Condition Mapping and Assessment (City-5006)	The City is assessing canyons within its jurisdiction, specifically assessing erosion and deferred maintenance issues related to storm drain and MS4 outfalls which discharge to the canyons. This ongoing project will include a field reconnaissance and GIS mapping effort for the Chollas Creek and Los Peñasquitos watersheds.	Implementation	Level 1	Updated GIS maps with assessment of selected outfalls.	This project began in FY2010. Approximately 30% of the outfalls within canyons were assessed. By the end of the FY2011, this project will be 80% complete..
Tier I Discharger Facilities Updates to Storm Drain Infrastructure Mapping (City-5007)	The City is updating the existing storm drain infrastructure GIS layers. This ongoing project will include a desktop review of as-built storm drain drawings for CIP and private development projects. (Also see City-5009 and City-5010).	Complete	Level 1	Updated MS4 maps	This project was completed in FY10.
Tier I Discharger Facilities Master Drainage Mapping (City-5008)	The City is completing a master GIS layer of drainage areas and watershed for the storm drain and MS4 system within the City's jurisdiction. This ongoing project will include a desktop review of existing drainage maps/studies, field reconnaissance and modeling efforts (as needed), and GIS mapping.	Planning	Level 1	Updated MS4 maps with drainage areas	Planning efforts began in FY2010. A data needs list is being compiled for the creation of the drainage area layer. A budget request for FY12 has been submitted to continue efforts.
Tier I Discharger Facilities Corrugated Metal Pipe Assessment (City-5009)	The City is evaluating storm drain and MS4 infrastructure for corrugated metal pipe. The project's objective is to identify, assess, and prioritize systems which may be replaced with reinforced concrete pipe storm drain. (Also see City-5007 and City-5010).	Implementation	Level 1	Compiled list of existing corrugated metal pipe infrastructure and CIP prioritization	In FY10, the project was 50% complete. The project is anticipated to be 100% complete in FY11.
Tier I Discharger Facilities Priority Reinforced Concrete Pipe Assessment (City-5010)	The City is evaluating storm drain and MS4 infrastructure for degraded reinforced concrete pipe. The project's objective is to identify and assess existing infrastructure for deferred maintenance, and then to prioritize systems to be repaired and/or replaced. (Also see City-5007 and City-5009).	Planning	Level 1	Compiled list of high risk reinforced concrete pipe infrastructure and CIP prioritization	The risk analysis and workplan has been completed in FY10. Budget for field assessment has been requested for FY12.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Residential, Commercial, Boat Repair, Eating and Drinking, Landscaping Pesticides Booths at major events (City-5011)	During City sponsored events, educational materials are distributed to the public. The City has sponsored booths at the Del Mar Fair, December Nights, and San Diego Boat Show. The City has also sponsored a booth at the Adams Ave. Street Fair, and the Filipino-American Arts & Culture Festival events in the Chollas Creek Watershed.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	# of materials distributed at events located in Chollas Creek Results from public opinion/awareness surveys (as applicable)	The City participated in 20 events located within the Chollas Creek watershed, distributing more than 8,000 promotional items including brochures, hotline magnets, tip calendar, etc. The 2010 Think Blue Survey indicated that 18% of respondents received Think Blue information at a community event. Of the 20 events, the City distributed outreach materials targeting pesticide usage and integrated pest management practices at 5 events. The estimated combined audience at these events is 304,000 members of the public.
Tier I Construction Construction Site Inspections - Sediment/ Metals (City-5012)	Inspectors within the Field Engineering and Inspection Services Divisions inspect construction sites and issue correction notices and/or stop work orders for code violations. The Field Engineering Division has created and implemented a special correction notice that is issued for storm water violations in need of immediate solution.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through enforcement	Total Inspections	97,822 inspections Citywide 674 corrective action notices and NOV's issued Citywide for construction 9 stop work orders issued 81 enforcement actions taken by Storm Water Code Compliance Officers for construction sites
Tier I Discharger Facilities Municipal Facility Inspections (City-5013)	Municipal facilities are inspected for compliance with the requirements of the NPDES Permit. During these inspections, facilities are also inspected for activity specific BMPs and all designated pesticide, herbicide, and fertilizer BMPs required by the FY08 JURMP. Municipal Treatment Control BMPs are inspected for completeness, cleanliness, and other factors.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through enforcement	Total Inspections Timeliness of Inspections	804 sites inspected twice during the year 6 sites inspected once during the year Timeliness: 1 inspection should occur prior to and one during the rainy season
Tier I Industrial, Commercial Facilities Industrial/ Commercial Inspections Program (City-5014)	The City inspects prioritized industrial and commercial facilities per the Municipal Permit and, for facilities that do not comply with the City's Municipal Code, takes enforcement action.	Implementation	Level 1: Annual Compliance	Number of prioritized facilities inspected	6,926 inspections Citywide 73 Priority 1 Follow up Inspections
Tier II Roads Storm Drain Cleaning (City-5015)	Each year the City of San Diego cleans storm drain infrastructure including catch basins, inlets, cleanouts, and pipes. These efforts help reduce the trash and bacterial loading.	Implementation	Level 1: Annual cleaning Level 4: Load Reduction	Tons of debris removed	Approximately 29 tons was removed during storm drain system cleaning in the watershed[1]
Tier II Roads, Commercial. Residential Street Sweeping (City-5016)	Street sweeping is being implemented across the City of San Diego as well as in the Chollas Creek watershed.	Implementation	Level 4: Measurable Load Reduction	Load reduction determined using: Debris Weight	2,609 tons of debris collecting from sweeping in the watershed[1]

[1] Per the combined data from the Semi-Annual Chollas and Paleta Creeks Trash 13267 Reporting for March and September 2010.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Residential Clean Up Events (City-5017)	During City sponsored clean up events (resulting from specific calls for service and community cleanup efforts), volunteers and City workers remove trash and debris from the watershed. Also, during the year, the City removes trash and debris related to calls of service that are not handled through community cleanup events.	Implementation	Level 2: Public Awareness Level 3: Modification of Behavior Level 4: Runoff and Load Reductions	# participants Trash Load reduction	20,273 service calls in the watershed[1] 108 Community Cleanups through ESD and 2 Community Cleanups sponsored through non-profit organizations with 320 participants[1] 2,120 tons of trash collected through this effort[1]
Tier I Illicit Discharge Detection and Elimination (City-5018)	The City actively seeks and eliminates discharges to the storm water conveyance system. Code Compliance Officers respond to enforce the Storm Water Ordinance and cite/educate businesses and residents who reportedly violate the ordinance with illegal discharges.	Implementation	Level 1: Compliance Level 2: Public Awareness Level 3: Modification of Behavior	Number of calls reported and responded	Of 68 dry weather monitoring sites in the watershed, 39 sites were dry and 29 were flowing or ponded. Of the 29 wet sites, 15 exceeded for one or more analytes. Of those, only three had discrete sources. In one case, an illegal discharge originating from power washing was referred to the Code Compliance section. In another, monitoring indicated that the exceedance was due to an animal inhabiting the storm drain system. In the third case, decaying eucalyptus leaves were identified as the source. The remaining sites were either dry or below action levels on follow-up visits, or continued to exceed with no source identified.
Tier I SUSMP and Development Regulations (City-5019)	The City incorporates SUSMP requirements on applicable development and redevelopment projects City-wide. Depending on the type and size of the projects, SUSMP requirements could include site design, source controls, and treatment controls such as LID.	Implementation	Level 1: Compliance	Projects permitted subject to SUSMP	113 projects were determined to be Priority Development Projects
Tier I Household Hazardous Waste Collection Program (City-5020)	The City's Environmental Services Department runs this program which seeks to eliminate illegal discharges associated with the improper use and disposal of household hazardous materials. Methods include one-day collection events, a permanent collection facility, and education programs.	Implementation	Level 1: Compliance Level 2: Public Awareness Level 3: Modification of Behavior	Tons of household hazardous waste collected	464 tons of household hazardous waste was collected Citywide.
New Activities					
Tier II Beta Green Alley	This project will pave an alley that is currently unimproved and direct the runoff to areas of porous pavement. The pavement and base materials will filter the storm water runoff before directing it to the storm drain.	Planning	Level 4: Load Reduction	Load reduction Maintenance hours Implementation cost	In FY10, the concept design of the project was completed. Design is expected to begin in FY11.
Tier I Sweeper Speed Efficiency Study	Study will focus on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The City's typical street sweeper operational speed is between 6-12 miles per hour. Reduced street sweeper speed is defined as 3-6 miles per hour based on manufacture recommendations. During project planning, a commercial route along Imperial Avenue in the San Diego Bay WMA was selected for this study based on a number of criteria.	Implementation	Level 4: Load Reduction	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)	The goal of the assessment will be to determine the optimal speed to operate City mechanical sweepers to maximize debris and metals removal. An effectiveness assessment of this activity is not possible at this time as project planning and coordination will continue into FY 2011. Implementation is anticipated to occur during the first half of FY 2010, with final assessment and conclusion being prepared in the latter half of FY 2011.
Tier I ILACD School Presentations		Implementation	Level 2: Public Awareness	• Number of students educated • Number of schools visited	481 students at 5 schools in the watershed were provided the presentation on watershed issues and how they can help prevent storm water pollution

County of San Diego Watershed Activities Reporting
Year 2, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier II Porous Pavement Project at Central Regional Public Health Facility Parking Lot	Removal and replacement of 14,000 square feet of existing impervious pavement with porous pavement and a stone reservoir to capture runoff from the parking lot at the Central Regional Public Health Facility.	Planning	Level 4	Water quality monitoring	During FY09-10 Proposition 50 funding was restored. With the return of funding the Dept. of General Services was able to complete the 70% design stage of the project. It is projected that this improvement will be installed prior to the beginning of the rainy season to capture a full rain season of monitoring.
Tier II Capture and Infiltration Project at Comprehensive Health Care Center	Installation of concrete detention/infiltration vaults or equivalent units under two parking lots at the Comprehensive Health Care Center.	Planning	Level 4	Water quality monitoring	During FY09-10 Proposition 50 funding was restored. With the return of funding the Dept. of General Services was able to complete the 70% design stage of the project. It is projected that this improvement will be installed prior to the beginning of the rainy season to capture a full rain season of monitoring.
Tier II Bioswales/ Rain Gardens at Dodson House	Installation of three bioswales and two rain gardens at the Dodson House.	Project has been deleted	Level 4	Water quality monitoring	This project was originally included in the San Diego IRWMP program, but since the property is no longer maintained by the County, it has been removed from IRWMP as a project.
Ongoing Agency Wide Activities					
Tier 1 Commercial Business Inspection & Enforcement	The County of San Diego performs routine inspection and enforcement of commercial businesses as part of its JURMP. There is one commercial business, a cemetery, within the County's portion of the Chollas Creek Watershed. It is inspected approximately annually, with follow ups and enforcement performed as necessary.	Implementation	Level 1 Programmatic Outcomes Level 3 Behavioral Modification	Level 1 # Inspections, # Violations Observed Level 3 # Corrective Actions Implemented	# Inspections – 2 # Violations Observed – 4 # Corrective Actions Implemented – 1* (* remaining corrections occurred after the reporting period.)
Tier 1 Municipal Facility Inspection & Audits	The County of San Diego performs routine inspection and audits of municipal facilities as part of its JURMP. There are seven County-owned municipal facilities within the Chollas Creek Watershed. All facilities are inspected twice per year by the department responsible for facility operations. The Department of Public Works supplements routine inspections with periodic audits of facility operations.	Implementation	Level 1 Programmatic Outcomes Level 3 Behavioral Modification	Level 1: # Facilities Inspected, # Inspections, # Deficiencies Observed During Inspections, # Facilities Audited, # Audits, # Deficiencies Observed During Audits Level 3: # Corrective Actions Implemented Following Inspections, # Corrective Actions Implemented Following Audits	# Facilities Inspected – 7 # Inspections – 14 # Deficiencies Observed During Inspections – 1 # Corrective Actions Implemented Following Inspections – 1 # Facilities Audited – 1 # Audits – 1 # Deficiencies Observed During Audits – 0 # Corrective Actions Implemented Following Audits – 0
New Activities					
None.					

City of La Mesa Watershed Activities Reporting
Year 2, Phase I of Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Code Modification	Code update/regulations pertaining to Chollas Watershed. For example, new businesses along University Channel will be required to consider BMPs associated with the pollutants identified in the TMDL.	Implementation	Level 1: Completion of Code Modification	Code Adoption and Assessment Report.	The code update related to the Chollas Creek Watershed was completed in February 2010. The code update pertains to La Mesa Municipal Code Section 7.18.110.
Tier II Collaborative Special Study #1 Jurisdictional Boundary Monitoring in the Upper Watershed	Storm water monitoring was conducted during two storm events during the 2009-2010 wet weather monitoring period. Monitoring was conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples will be analyzed for organophosphate pesticides (Diazanon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc and acute and chronic toxicity to *Ceriodaphnia dubia*. In collaboration with City of San Diego, City of Lemon Grove, and Caltrans.	Implementation	Level 1: Completion of Study and Final Report	Completed study and final report prepared by the City of San Diego's Consultant.	Monitoring occurred during the 09/10 rainy season. Final report to be completed in FY 10/11. Monitoring at the jurisdictional boundary will continue in the 10/11 rainy season.
Tier I Residential Educational Kiosk Pilot Study	Educational material about the water quality problems in the Chollas Creek Watershed (Watershed Fact Sheet) will be posted in a specially designed kiosk at Vista La Mesa Park. La Mesa may implement additional educational kiosks at other locations in the future within the watershed.	Implementation	Level 2: Change in awareness	In 10//11 the City will obtain data from residents regarding change of watershed awareness from kiosk fact sheet displays.	Kiosk at Vista La Mesa Park has been constructed and is displaying watershed related information. The City of La Mesa has not begun collecting data regarding change is awareness from information displayed in kiosks. Planned for FY 10/11.
Tier II Residential Schools Education and Outreach Program	Education and outreach program at local schools within the Chollas Creek Watershed in partnership with the I Love A Clean San Diego. This program will be implemented at La Mesa Dale Elementary, La Mesa Middle School, and Mt. Helix High School.	Implementation	Level 2: Change in awareness Level 3: Modification of behavior through education and outreach	# of outreach events held (children educated) Survey Results	5 outreach presentations were conducted with 210 children educated. Overall weighted pre test score= 54% Overall weighted post test score = 75% 10/29/09 La Mesa Middle School (6th Grade): 1 presentation, 90 persons, Pre Test 63%, Post Test 81% 2/25/10 Helix High School (9th – 12th Grade): 4 presentations, 120 persons, Pre Test 48%: , Post Test 70%
Tier II Roads, Commercial Metals - BMP Self Certification Pilot Study	This pilot study includes an assessment of urban runoff form a major, mixed use parking lot in La Mesa (super market with additional shops). The load contribution of the parking will be also assessed. This project includes an education and outreach component to open dialogue with property management. The shopping center management will provide source control BMP maintenance records for the City to assess. Recommendations will be made to management, and self certifications will be required annually. Additional wet weather samples will be collected for assessment.	Implementation	Level 1: Completed study (understanding of metals sources) Level 2: Change in awareness Level 3: Modification of behavior through education and outreach	Completed study and final report.	In 09/10 wet weather analytical results were shared with property management and they were required to submit maintenance records. The City assessed maintenance records and made recommendations to management regarding the improvement of source control BMPs. In FY10-11 self certifications will begin, and they city will collect additional analytical samples from the property in the rainy season.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier III Roads, Residential, Industry, Commercial, Eating/Drinking Bacteria Treatment Insert Pilot Study	Selected catch basins in the Chollas Creek Watershed will be retrofitted with a treatment sponge insert. The number of these inserts (and bacteria sponges) is still to be determined.	Planning	Level 4: Load reduction	Load Reduction based on amount associated with bacteria sponges.	Planned for approximate implementation date of FY11/12.
Ongoing Agency Wide Activities					
Tier II Residential, Commercial Clean Up Events	Cleanup Events will be held twice a year at University Channel (Creek to Bay Clean Up and the California Coastal Day). Each event will include an education and outreach component.	Implementation	Level 2: Public Awareness Level 3: Modification of Behavior Level 4: Runoff and Load Reductions	# of participants Trash Load Reduction Educational Survey	Events held at University Channel: coord. (32.7551, -117.0412) 9/19/09 Costal Clean Up Day: 18 participants, 550 lbs removed, Tests not completed at this location. 4/24/10 Creek to Bay Cleanup: 16 participants, 360 lbs removed, Pre Test 75%, Post Test 100%
Tier I Auto, Roads, Industrial, Commercial, Eating/Drinking Enforcement: Targeted Facility Inspections	Annual business inspections will include a supplemental questionnaire specific to the Chollas Creek Watershed and targeting businesses along University Channel.	Implementation	Level 1: Completion of Inspections Level 2: Public Awareness	# of inspections within the Chollas Creek watershed which included the supplemental watershed questionnaire. # of businesses within the Chollas Creek watershed which implemented corrective actions based on the inspection.	23 Inspections completed within the Chollas Creek watershed which included the supplemental watershed questionnaire. 2 businesses within the Chollas Creek watershed took corrective actions based on the results of the inspections.
New Activities					
N/A					

City of Lemon Grove Watershed Activities Reporting
Year 2, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier II Collaborative Special Study #1: Jurisdictional Monitoring in the Upper Watershed	Storm water monitoring will be conducted during two storm events during the 2009-2010 wet weather monitoring period. Monitoring will be conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples will be analyzed for organophosphate pesticides (Diazinon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc, and acute and chronic toxicity to *Ceriodaphnia dubia*. Partnership with City of San Diego, Caltrans, and City of La Mesa	Planning	Level 1	Completed study and final report prepared by City of San Diego consultant.	Potential delayed participation by the City of Lemon Grove due to severe budget constraints. City is working to collaborate on a solution to maintain participation.
Tier I Legislative: Municipal Code and General Plan Amendments Sustainability Policy and Green Building Policy	To update the City's Municipal Code and General Plans to include green building concepts including LID and create a sustainability policy for overall City functions.	Planning and Implementation	Level 1	Amendment Adoption and Plan Development Approval Process	Development Code amendment adoption by Jan. 2010 Municipal Code amendment adoption by Mar. 2010 General Plan amendment adoption delayed due to quantity of work and necessity of performing work in house (budget constraints prevent the hiring of a consultant)
Ongoing Agency Wide Activities					
Tier I Discharger Facilities Municipal Facility Inspections	Municipal facilities are inspected for compliance with the requirements of the NPDES Permit. During these inspections, facilities are also inspected for activity specific BMPs and all designated pesticide, herbicide, and fertilizer BMPs required by the FY08 JURMP. Municipal Treatment Control BMPs are inspected for completeness, cleanliness, and other factors.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior	Total Inspections Timeliness of Inspections	53 Number of Inspections The City inspects all industrial facilities and all automotive and restaurant facilities within the City's boundaries. 1 inspection was conducted per facility and follow up inspections were performed as necessary
Tier II Residential, Commercial Clean up Events	Clean up events are held annual in the Chollas watershed or more frequently based on volunteer group availability. Each event will now include a brief post clean up survey.	Implementation	Level 2 and 4	# of participants Trash Load Reductions Survey data	Completed Creek to Bay in April 09 and Coastal Clean up Day in Sept. 09. Will participate in these two I Love a Clean San Diego events every year. Approximately 13lbs of trash and debris were collected by 4 volunteers for Creek to Bay. Approximately 600 lbs of trash and debris were collected by 20 volunteers for Coastal Clean up Day.
Tier I Residential City Newsletter	To provide Watershed specific information in the semi-annual City wide Newsletter. The Newsletter is distributed to all residents, business owners and business tenants in the City. The City will provide updates on current programs and TMDL efforts. Will contain a brief survey in future editions pertaining to Watershed knowledge.	Implementation	Level 1 and 2	Data collected from surveys	Newsletters are published biannually by the City and contain an environmental section.
Tier I Residential Water Quality Booth at City Events	To provide water quality and watershed information to the attending public. Obtain survey information pertaining to household BMPs.	Implementation	Level 1, 2, and 3	Data collected from surveys	During FY 08-09, the City had booths at the both the Fire Station open house and the Winter Bonfire. These two events ready approximately 800/900 people, residents and non-residents. The City has participated in one event so far during FY 09-10, the Fire Station Open House. The City will be participating in the Winter Bonfire in Dec. 09.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier I Municipal Xeroscaping Municipal Medians	Ongoing rehabilitation of municipal landscaping to include LID concepts, water conservation, and xeroscaping	Implementation	Level 1, 2 and 3 Potential Level 4 based on water saved	Amount of water saved Rehabilitation of all medians	This is an on-going project that was begun in FY 08-09. None of the new xeroscaped areas have been in ground long enough to assess water savings at this time.
New Activities					
Tier III Vector Control Grant Project	Vector Control Grant for minor stream restoration for 2 small drainage channels, both less than a mile in distance.	Application Planning Process	Potential Level 4 and 5, but no official monitoring will be performed	Decrease in vector control treatment frequency, visual improvement and flowing water	This project is currently in process with the County with potential implementation in 2012 if the projects are approved and grant funds remain available.

United States Navy Watershed Activities Reporting
Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Evaluation and Minimization Plan for Copper and Zinc in Storm Water	Prepare an evaluation and minimization plan to address sources of copper and zinc in storm water from the base.	Implementation (Contract awarded in Sept 2010)	Level 4 load reduction	Measure copper and zinc in industrial storm water discharges.	Results available after 2010/2009 wet season.
Tier I/II MS4 Storm Water Management Plan	The Navy will prepare a Storm Water Management Plan for Naval Base San Diego to comply with the Statewide General Permit for storm water. The Management Plan will describe BMPs, measurable goals, and timetables for implementation in the following six program areas: 1. Public Education and Outreach; 2. Public Participation/Involvement; 3. Illicit Discharge Detection and Elimination; 4. Construction Site Runoff Control; 5. Post-Construction Runoff Control; and 6. Pollution Prevention/Good Housekeeping.	Planning (Contract for updated MS4 plan awarded in Sept 2010)	Level 2 Change in awareness, Level 3 behavioral change, Level 4 load reduction	Track required inspections, audits, and maintenance activities and document in annual report. Track attendance at training and awareness events.	Navy is presently discussing the conditions for the updated Naval Base San Diego NPDES storm water permit with SDRWQCB. Status of permits should be available by December 20092010.
Ongoing Agency Wide Activities					
Tier II Creek Trash Removal Program	Program to remove accumulated trash and debris from mouth of Chollas Creek. Trash and debris is captured behind booms strung across the creek. Navy personnel utilize cranes and small boats to removal trash and debris which is transported to the local landfill for disposal. Hazardous substances removed from the creek are stored in a secured area and properly disposed of in accordance with Federal and state laws and regulations. Conducted in partnership with City of San Diego.	Implementation	Level 4: load reductions in Creek and San Diego Bay	Report weight (tons) of trash and debris removed from creek.	Total removed in 2009-2010 wet season is approximately 9 tons.
New Activities					
None					

Appendix E
United States Navy Watershed Activities Reporting
Year 2, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Port of San Diego Watershed Activities Reporting
Year 2, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Activities For Current Reporting Year					
Tier I Brake Pad Partnership	The project involves providing support for bill SB346 which requires for brake pads sold in California to contain no more than 0.5% copper by 2025. In addition, the bill will: 1) creates limits for other brake pad materials; 2) establishes a certification process by a third party testing agency and requires DTSC to charge a fee to cover the costs; 3) establishes civil penalties for violations; and 4) creates a Brake Friction Materials Water Pollution Fund.	Implementation	Level 4: Load Reduction	Support of Sustainable Conservation	Activity Results for FY 2009-2010: The Port supported Sustainable Conservation's Brake Pad Partnership technical efforts legislatively this reporting period by providing letters of support. The Port's support was critical in obtaining Senator Kristine Kehoe's sponsorship of Senate Bill 346. This draft bill was under committee review when it was placed on a two year legislative schedule, and was heard by the Assembly Committee on Environmental Safety and Toxic Materials in June 2010.
Tier I Public Seminars	Integrated Pest Management for Landscape Professionals: The regional seminar provided information to professionals on Integrated Pest Management, is a pest management method that combines biological, cultural, physical, and chemical tools to minimize health, environmental, and financial risks.	Implementation	Level 2: Change in awareness; Level 3: Modification of Behavior through education and outreach	Does the education activity result in behavioral change or raise awareness? Survey	Seminar held on 5/27/2010. 150 people were in attendance and 100% of the participants indicated that the seminar was useful and protecting water quality is important.
Tier I Green Machine IPM Education Program	The Port of San Diego sponsored the San Diego County Office of Education's "Green Machine" traveling outreach van to visit elementary schools within the Chollas Creek watershed area. This interactive agricultural program teaches students about soil, the water cycle, and integrated pest management (an environmentally friendly approach to pest control). The Green Machine curriculum is aligned with the California State Science Content Standards for grades K-4.	Implementation	Level 2: Change in awareness; Level 3: Modification of Behavior through education and outreach	Does the education activity result in behavioral change or raise awareness? Number of people reached; Formal pre- and post-tests are not applicable due to the young age of the children.	Activity Results for FY 2009-2010: • 2,848 children were reached during July 2009 through June 2010. Activity Update: This activity is on-going and assessment will be available in FY 2011.
Tier II Chollas Creek Family Stream Team Initiative (SBD-051)	The project is a four pronged strategy involving education, restoration, enforcement, and evaluation components. Financial support for this project is provided by the Port of San Diego's Environmental Fund. City of San Diego collaborated on this activity by monitoring the refuse collection events, surveying participants' motivation and participants' general understanding and attitude about illegal dumping to assist in efforts to eliminate trash and debris in the Chollas Creek watershed.	Implementing	Level 3 Behavioral Modification; Level 4 Load Reduction	Does education result in behavioral change or raise awareness? Does education result in lower trash pollution? What is the load reduction of trash/debris that is disposed through these efforts? Groundworks San Diego provided a final report on the findings to the Port of San Diego. The report includes information on: Community education and participation, collection events, enforcement, and tracking and assessment.	Activity Results for FY2008-2009 and FY2009-2010: • Held eight events • ~115 tons of trash and debris • ~12 tons of non-native vegetation (i.e., *Arundo donax*) was removed • ~2000 bilingual flyers distributed, also distributed illegal dumping magnets and refrigerator magnet boards. • Approximately 200 residents joined in trash abatement and clean up activities. • Approximately 600 residents participated in large trash "Come Dump On Us" events. • Over 200 Chollas Creek students received classroom instruction and participated in three field trips. • City of San Diego monitored events, characterized type and volume of trash collected, and surveyed participants. Refer to the City of San Diego's activities table for further details. Activity Update: This activity was completed during this reporting period. See Activity Summary Sheet SDB-051 in Appendix D for more detail.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Tier II Stream Team Stewards (SBD-068)	The education project for elementary school children consists of a series of in-school and after school classroom sessions and field trips; cleanup, storm drain stenciling and restoration of one acre of the Chollas Creek stream corridor. Financial support for this project is provided by the Port of San Diego's Environmental Fund.	Implementing	Level 3 Behavioral Modification; Level 4 Load Reduction	Does education result in behavioral change or raise awareness? Does education result in lower trash pollution? What is the load reduction of trash/debris that is disposed through these efforts? The San Diego Zoo has prepared a final report on the activity to date. The report includes: Number and/or amount of plants removed or planted; Amount and type of debris removed; Number of people reached	Activity Results for FY 2009-2010: • Schools that participated in the program: Carver Elementary, Chollas-Mead Elementary, Encanto Elementary, Nye Elementary, Valencia Park Elementary, and Sherman Elementary • Program served a total of 578 students (K-8) • Pre and post-tests indicated that the program was effective in increasing knowledge about water quality issues and actions they could take. • Restored habitat at two sites: 38th and Aplha and EarthLab. Learned to identify plants and animals and planted 250 plants. Trash removal day at either the school or at a local beach. Approximately 60 pounds of trash was collected. • Storm drain stenciling: 50 stormdrains were done on September 26, 2009. Activity Update: This activity was completed during this reporting period. See Activity Summary Sheet SDB-068 in Appendix D for more detail.
Tier II Chollas Creek Student Stream Restoration Team	The restoration project removed non-native plant species and plant native plant species, cleanup of trash and debris, and provide environmental education. Financial support for this project is provided by the Port of San Diego's Environmental Fund.	Implementing	Level 3 Behavioral Modification; Level 4 Load Reduction	Does education result in behavioral change or raise awareness? Does education result in lower trash pollution? What is the load reduction of trash/debris that is disposed through these efforts? The Urban Corp of San Diego County has prepared a final report on the on the activity to date. The report includes: Number and/or amount of plants removed or planted; Amount and type of debris removed; Number of people reached	Activity Results for FY 2009-2010: • Education: Reached approximately 200 students from Cesar Chavez and Emerson-Bandini Elementary Schools through in-class and field trip experiences at 38th and Alpha Street Park. Students also participated in creating a native species open space supporting wetland habitat. • Public Outreach: Tabling events, cleanup events (September 19 and October 24, 2009) and door to door residential outreach effort to surrounding neighborhoods and businesses. • Restoration: Removal of 166 cubic yards of non-native vegetation (i.e., *Arundo donax*). Planted 350 native plants. • Cleanups: Coordinated with Groundworks San Diego during the 2009 ILACSD Coastal Cleanup Day event at 33rd and National Ave. on October 24. Approximately 2.5 tons of trash and recyclables was also collected, filling one 40-yard roll off dumpster. 71 adults and 25 youth participated. Activity Update: This activity was completed during this reporting period.
Tier II Ocean Science Explorers Initiative	The Port of San Diego supported science education for low-income youth in City Heights, a neighborhood in the Chollas Creek watershed, through the SEA Series Initiative. The science education program includes professional development for teachers, hands-on activities, thematic curriculum, books and materials, and an environmental service project the students implement at the end of the program.	Implementing	Level 2 Increase in Awareness; Level 3 Behavioral Modification	Does the education activity result in behavioral change or raise awareness? Ocean Science Explorers has prepared a progress report on the activity to date. The progress report includes: # of students and teachers reached, # educational hours; Pre and post test assessments	Activity Results for FY 2009-2010: • Reached 2,200 low-income students and 69 teachers from schools within the City Heights area • 18,726 total educational hours through the initiative • Program provided to 3rd through 6th grade classes at five elementary schools and three middle schools. • Storm drain stenciling: 24 storm drains adjacent to the schools Activity Update: This activity is on-going and assessment will be completed in FY 2011.

Activity Name (Project #)	Project Description	Current Status *(Planning or Implementation)*	Outcome Levels(s)	Assessment Mechanisms	Activity Results and Updates
Ongoing Agency Wide Activities					
Tier I Port of San Diego Industrial Inspection Program	The Port of San Diego performs routine inspection and enforcement of industrial facilities as part of its JURMP. During the 2008-2009 reporting period, the Port conducted facility inspections to ensure the impacts of urban runoff from industrial and commercial facilities were reduced or eliminated. There is one industrial facility, NASSCO, within the Port's portion of the Chollas Creek Watershed. This facility is inspected approximately annually, with follow ups and enforcement performed as necessary.	Implementing - Ongoing	Level 1 Programmatic Outcomes; Level 3 Behavioral Modification through enforcement	Is the site continuing to be in compliance with the industrial requirements of the Port of San Diego's JURMP? # Inspections, # Violations Observed # Corrective Actions Implemented	The Port conducted one facility inspection of National Steel and Shipbuilding Company (NASSCO) on 11/10/2009. A written warning was issued to the facility for failure to keep the facility clean of leaking fluids from a vehicle and was cited for no having spill materials readily available. Follow-up inspection on 12/10/2009 determined the facility to be in compliance with JURMP requirements. The corrective action was addressed in a timely manner and no further enforcement actions were required.
Tier I NASSCO Environmental Practices	The NASSCO Shipyard, an industrial facility on Port of San Diego property, identifies and implements BMPs in order to maintain compliance with their NPDES industrial permit requiring zero discharge from the facility.	Implementing - Ongoing	Level 1 Programmatic Outcomes	Are the appropriate BMPs installed to ensure zero discharge of pollutants to the Chollas Creek? Is the facility collecting all of their water or discharges? NPDES Industrial Permit Report (Order NO. R9-2003-005) prepared by NASSCO	Results provided in NASSCO's NPDES Industrial Permit 2010 Annual Reports (Per Order NO. R9-2003-005)
Tier I Booths at major events	The Port annually sponsors booths at various events, such as the Del Mar Fair and San Diego Boat Show	Implementing - Ongoing	Level 2: Change in awareness; Level 3: Modification of Behavior through education and outreach	Are booths at major events an effective outreach tool? What level of awareness does the public have about water quality in Chollas Creek? # posted advertisements or pamphlets distributed Results from public opinion/awareness surveys (as applicable)	Sun Road Boat Show on 1/28/09 – 1/31/09. Estimated 30,000 in attendance over the timeframe of the event. No surveys distributed.

Appendix F

San Diego Bay Watershed Education and Public Participation Events

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
8/9/09	City of Chula Vista	Festivals/ Community Events	Lemon Festival	City storm water staff manned a booth and distributed information about pollution prevention and watershed protection	General Public	100s	Downtown Chula Vista	CLEAN Guide; brochures on Automobile maintenance, Pet waste, Gardening, Pool and water features, Home Improvement; pet waste bags; CLEAN giveaways	N
8/22/09	City of Chula Vista	Waste Collection/ Recycling Events	E-waste and U-waste Collection Event	Collection of electronic and universal waste	General Public	1,872	707 F Street	N/A	Y – 81,990 lbs of E-waste, 4,158 of U-waste
9/19/09	City of Chula Vista	Festivals/ Community Events	Children's Festival	City storm water staff manned a booth and distributed information about pollution prevention and watershed protection	Children	100s	New Hope Community Church	CLEAN Guide; brochures on Automobile maintenance, Pet waste, Gardening, Pool and water features, Home Improvement; pet waste bags; CLEAN giveaways	N
9/26/09	City of Chula Vista	Festivals/ Community Events	BonitaFest	City storm water staff manned a booth and distributed information about pollution prevention and watershed protection	General Public	100s	Bonita Shopping Center	CLEAN Guide; brochures on Automobile maintenance, Pet waste, Gardening, Pool and water features, Home Improvement; pet waste bags; CLEAN giveaways	N
10/3/09	City of Chula Vista	Festivals/ Community Events	Fire Station Open House	City storm water staff manned a booth and distributed information about pollution prevention and watershed protection	General Public	100	City of Chula Vista Fire Station #4	CLEAN Guide; brochures on Automobile maintenance, Pet waste, Gardening, Pool and water features, Home Improvement; pet waste bags; CLEAN giveaways	N
10/17/09	City of Chula Vista	Cleanup Events	Beautify Chula Vista	City storm water staff manned a booth and provided pollution prevention information, citizens cleaned trash from the neighborhood	General Public	500	Memorial Bowl – 373 Park Way	N/A	Y – 2,000 pounds of trash was picked up
10/1/09	City of Chula Vista	Municipal Staff Training	Storm Water Training for Firefighters	Topics included a general overview of storm water BMPs and watershed protection	Firefighters	85	Fire Stations	N/A	N
Oct and Nov 2009	City of Chula Vista	Municipal Staff Training	Storm Water Training for Public Works Staff	Topics included a general overview of BMPs and watershed protection	Public works staff	119	Public Works Center	N/A	N

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
11/21/09	City of Chula Vista	Waste Collection/ Recycling Event	E-waste and U-waste Collection Event	Electronic and universal waste collection	General Public	802	751 Otay Lakes Road	N/A	Y – 62,010 lbs of E-waste, 494 lbs of U-waste
2/12/10	City of Chula Vista	Municipal Staff Training	SUSMP Training for Engineers	Updates on the model SUSMP, pollutants of concern in the watershed, 303(d) list	Engineering	10	Public Services Building	N/A	N
2/20/10	City of Chula Vista	Waste Collection/ Recycling Event	E-waste and U-waste Collection Event	Electronic and universal waste collection event	General Public	1,680	707 F Street	N/A	Y – 89,385 lbs of E-Waste, 3,450 lbs of U-waste
4/17/10	City of Chula Vista	Festivals/ Community Events	Go Green and CLEAN Family Day	City storm water staff manned a booth and distributed information about pollution prevention and watershed protection, and displayed the EnviroScape	General Public	100s	Otay Ranch Town Center	CLEAN Guide; brochures on Automobile maintenance, Pet waste, Gardening, Pool and water features, Home Improvement; pet waste bags; CLEAN giveaways	N
4/24/10	City of Chula Vista	Festivals/ Community Events	Day of the Child	City storm water staff manned a booth and distributed information about pollution prevention and watershed protection	General Public	100s	Memorial Park	CLEAN Guide; brochures on Automobile maintenance, Pet waste, Gardening, Pool and water features, Home Improvement; pet waste bags; CLEAN giveaways	N
4/24/10	City of Chula Vista	Cleanup Events	Annual Creek to Bay Cleanup	Coordinated by ILACSD	General Public	440	Cleanup sites in Sweetwater Regional Park, J Street Marina, and Otay Valley Regional Park	N/A	Y – 2,100 lbs of trash and 390 lbs of recyclables from Chula Vista sites
5/1/10	City of Chula Vista	Print Media	CLEAN: Your Environmental Guide for Green Living	An all-inclusive environmental brochure, collaboration of the City of Chula Vista and the CLEAN stakeholders	General Public	1,000s	All City of Chula Vista events attended by the CLEAN group	N/A	N
6/19/10	City of Chula Vista	Festivals/ Community Events	Pet Fest and Doggy Dash	City storm water staff manned a booth and distributed information about pollution prevention and watershed protection	General Public	100s	Memorial Park	CLEAN Guide; brochures on Automobile maintenance, Pet waste, Gardening, Pool and water features, Home Improvement; pet waste bags; CLEAN giveaways	Y – 152 surveys collected, see SDB-012

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
6/26/10	City of Chula Vista	Festivals/ Community Events	Southbay Homeowners Resources Fair	City storm water staff manned a booth and distributed information about pollution prevention and watershed protection	General Public	50	Chula Vista City Hall Courtyard	CLEAN Guide; brochures on Automobile maintenance, Pet waste, Gardening, Pool and water features, Home Improvement; pet waste bags; CLEAN giveaways	N
6/1/10	City of Chula Vista	Print Media	Enviro-Friendly Tips for the Summer	Storm water pollution prevention article in My Eastlake/ My Otay Ranch magazine	General Public	Circulation 20,000	East Chula Vista	N/A	N
7/16/10	City of Chula Vista	Municipal Staff Training	SUSMP and LID Training	SUSMP and LID, pollutants of concern in the watershed	Planning and Engineering	18	Public Services Building	N/A	N
Year-Round	City of Chula Vista	Presentations and Field Trips	Chula Vista Nature Center	Watershed protection, recycling, pollution prevention	School Children	1000s	Chula Vista Nature Center	N/A	N
7/4/09	Coronado	Festivals/ Community Events	Fourth of July Jr. Yacht Club Sailing Programs Activities	Storm water BMP information	Boaters and Residential	150 Attendees	Coronado Yacht Club, City of Coronado, U.S. Coast Guard	Coronado Clean Coastlines promotional and clean boating material provided to attendees	Yes. 225lbs. of trash collected from boats docked at local yacht club and from 4th of July activities in that marina
9/1/09	Coronado	Print Media	Coronado Currents: The Official publication of the City of Coronado, Automated Trash Program begins The Fall, Vol. 23, p 2	Storm water information as it relates trash and debris	Residential	23,000 circulation	n/a	23,00 readers were educated about the importance of automating trash collection	N/A
9/19/09	City of Coronado, I Love A Clean San Diego, San Diego Coastkeeper and WildCoast	Clean Up Event	25th Annual California Coast Cleanup Day	Annual beach cleanup at City of Coronado Central Beach	General Public w/ an interest in beach water quality and associated environmental issues	175 volunteers at the Coronado City Beach	Coronado Central Beach	Coronado Clean Coastlines promotional material distributed: yoyo's, Frisbees, pens, pencils and cozies	Yes, 465 lbs. of trash, 184 lbs. of recyclables. Total: 649 lbs or 3.7 lbs/person
9/20/09	Coronado	Festivals/ Community Events	Coronado Art Walk 2009	The Unified Port District and the Coronado Historical Association sponsored this event. The City of Coronado and EDCO shared a booth.	General Public	6,000 attendees	Coronado Ferry Landing	Information and promotional items were distributed to approximately 600 of the 6,000 visitors to the booth shared by the City of Coronado & Edco	N/A

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
10/3/09	Coronado	Festivals/ Community Events	Coronado Fire Services Dept. Annual Open House	Storm water BMP information	Residential	4,000 attendees	City of Coronado, Dept. of Fire Services	Coronado Clean Coastlines promotional material provided to attendees	N/A
12/5/09	Coronado	Festivals/ Community Events	27th Annual Jimmy Reilly Memorial Longboard Surf Classic (for both adults & children)	Storm water BMP information	Residential	60 contestants 100 observers	City of Coronado	Staff assisted with registration & organizational activities. Handed out BMP brochure's	N/A
12/7/09	Coronado	Presentation School	Presentation to Coronado Elementary School, 4th Grade Class	Presented BMP information to 4th grade class	Students and teacher	36	Coronado elementary school	City Public Services Dept. staff presented information to class on Best Management Practices. Storm Water Pollution Prevention calendars were distributed to students.	N/A
1/1/10	Coronado	Print Media	*Coronado Currents:*	Storm water information as it relates trash and debris	Residential	23,000 circulation	City of Coronado	Article summarized: The City of Coronado partners with EDCO, the City's trash hauler, to provide blue recycling carts. Residents are encouraged to report recycling scavengers to the Coronado Police Dept. as it is against the law, and it takes a revenue source away from the City.	N/A
3/26/10	Coronado	Presentation School	Presentation to Coronado Middle School, 7th/8th Grade Combined Humanities Class	Presented BMP information to middle school class	Students and Teacher	35	Coronado Middle School	City Public Services Dept. staff presented information to class on Best Management Practices, as well as details about how long household items take to decompose in the ocean and bay. Storm Water Pollution Prevention calendars, and several Coronado Clean Coastlines promotional items including: Residential BMP brochures and stress balls were distributed to students.	N/A

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
3/27/10	San Diego Coastkeeper and City of Coronado	Clean Up Event	San Diego Coastkeeper and City of Coronado Beach Cleanup	Beach Cleanup at City of Coronado Central Beach	General Public w/ an interest in beach water quality and associated environmental issues	209 volunteers	City of Coronado	City staff provided canopies, trash cans & roll-on dumpsters. In addition, City staff provided Coronado Clean Coastlines promotional material: beach balls, Frisbees, pens, pencils and beverage cozies.	490 lbs. trash
4/17-18/10	City of Coronado	Festivals/ Community Events	Annual Flower Show	Storm water BMP information	Residential	4,000	Spreckels Park, Coronado	Coronado Clean Coastlines BMP specific brochures as well as Oil Recycling information .In addition, Integrated Pest Management Pest Tip Cards were distributed from a Department of Public Services booth.	N/A
4/18/10	City of Coronado	Festivals/ Community Events	Annual Car Show "Motorcars on Main Street"	Storm water BMP information	Residential	5,500	Spreckels Park, Coronado	Both with Coronado Clean Coastlines (CCC) brochures and auto-related promotional items such as oil funnels & shammies with CCC logo printed on them. EDCO distributed information on automated recycling program.	N/A
4/24/10	City of Coronado & I Love A Clean San Diego	Clean Up Event	8th Annual Creek to Bay Cleanup	Beach Cleanup at City of Coronado Central Beach & Silver Strand State Beach within City of Coronado	General Public w/ an interest in beach water quality and associated environmental issues	116 volunteers	Central Beach & Silver Strand State Beach	3 miles cleaned at Silver Strand State Beach	397 lbs. of Trash, total
5/28/10	City of Coronado	Print Media	Coronado's Central Beach named as one of the "Top 10 Best Beaches" by Dr. Stephen Leatherman a.k.a. "Dr. Beach"	Storm water's impact on California's oceans is seen as directly correlated to the beach's value as a tourist site.	General Public w/ an interest in beach water quality and associated environmental issues	74 mil. homes receive Travel Channel USA. This list was also mentioned on TravelChannel.com	City of Coronado	The Top 10 Beaches in the U.S. was reported by *Travel Channel USA, the Today Show, Yahoo Travel,* TravelChannel*.com* and *About.com: Southeast US Travel.*	N/A

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
12/1/09 6/1/10	Imperial Beach	Print Media	Semi-Annual City Newsletter	Multiple articles on storm water, street sweeping, recycling, and FOG	Citywide	27,000	City of Imperial Beach		N
9/1/09 12/1/09 3/1/10 6/1/10	Imperial Beach	Print Media	EDCO Quarterly Newsletter	Multiple articles on storm water, street sweeping, recycling, and special events	Citywide	27,000	City of Imperial Beach		N
Multiple	Imperial Beach	Print Media	Weekly City FYI	Forum to Council and City employees to educate and inform about current issues including storm water	City employees and Council	130	City of Imperial Beach		N
7/17/09-7/19/09	Imperial Beach	Festivals/ Community Events	U.S. Open Sandcastle Competition	Provided education materials for street venders and conducted commercial inspections during event. Hosted and storm water education booth.	General public and street vendors	300,000	Pier Plaza	Brochures and promotional items	Y- Surveys and street vendor inspection results (1 NOV)
8/1/09	Imperial Beach	Festivals/ Community Events	Auto Show	City booth for storm water, pollution prevention, and proper disposal of used oil.	General public	1,000	Seacoast Drive	Brochures and used oil containers	Y- Survey
8/21/09	Imperial Beach	Municipal Training	Emergency Response Training	Annual training of PW staff on emergency response including vactor truck use, spill response, municipal BMPs, and pollution prevention.	Public Works Employees	24	Public Works		N
9/4/09	Imperial Beach	Municipal Staff Training	Vault Dewatering	Supervisor training on SDGE vault dewatering	Public Works Supervisors	6	Public Works		N
9/19/09	Imperial Beach	Cleanup Events	Coastal Cleanup Day	Watershed awareness and public participation	Residents		Multiple locations		N
9/28/09	Imperial Beach	Municipal Staff Training	New Employee (Env Specialist)	Indoctrination for new employee on storm water program	Employee	1	Public Works		N
9/30/09	Imperial Beach	Municipal Staff Training	Annual Storm Water Training	Review storm water program, watershed programs, and BMPs	Public Works employees	22	Public Works		Y- Survey
10/20/09	Imperial Beach	Presentations	Presentation to Job Corps	Watersheds and construction BMPs	Students	30	Job Corps Center		N
10/20/09 10/21/09 10/22/09	Imperial Beach	Cleanup Events	Make a Difference Day (Job Corps)	Unimproved alley sweep for trash and debris. Bike path and South Seacoast trash collection.	Students	30	Citywide		Y- 6 tons of material collected
10/24/09	Imperial Beach	Waste Collection/ Recycling Events	E-waste Collection	Collection of e-waste and universal waste	Residents	150	City Hall Parking lot		N

Table F-1. Watershed Education and Public Participation Events

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11/2/09-11/4/09	Imperial Beach	Municipal Staff Training	CASQA Conference	3 day conference on everything storm water	City Employees	3	Mission Bay		N
11/23/09	Imperial Beach	Municipal Staff Training	New Employee (Bobbie Otero)	Indoctrination for new employee on storm water program	Employee	1	Public Works		N
2/10/10	Imperial Beach	Cleanup Events	Job Corps Bike Path Clean up (Braxton Ford)	Worked with Job Corps student to organize a community clean up event along bike path	Students	20	Bay Shore Bike Path		Y- 200 lbs of material
2/10/10 2/24/10 3/10/10	Imperial Beach	Presentations	High School Students	ILACSD HS presentations for SD Bay WURMP group	Students	140	Mar Vista HS		Y- Pre and Post tests
3/23/10	Imperial Beach	Municipal Staff Training	New Employee (Eric Bennet)	Indoctrination for new employee on storm water program	Employee	1	Public Works		N
4/1/10	Imperial Beach	Public Service Announcements	Mayor Proclamation "April is Environmental Awareness Month"	Mayor support of multiple education activities during the month of April.	Residents	27,000	City Hall		N
4/21/10	Imperial Beach	Presentations	Splash Lab at IB Sports Park	Storm water education at IB Sports Park after school program	Students	45	IB Sports Park		N
4/24/10	Imperial Beach	Cleanup Events	Creek to Bay Cleanup	Watershed awareness and public participation	Residents		Multiple locations		N
4/24/10	Imperial Beach	Festivals/ Community Events	Citywide Garage Sale	Reuse of items and public participation	Residents	96	Multiple locations		N
4/27/10 4/28/10	Imperial Beach	Presentations	Geo-cashing activity at IB Sports Park with CA State Parks	Environmental and watershed education using GPS receivers	Students	65	IB Sports Park		N
5/1/10	Imperial Beach	Cleanup Events	Home Front Cleanup	Annual Home Front Cleanup for residents to dispose of waste	Residents	822	Mar Vista HS		Y- 175.6 tons of trash, green waste, construction material, and recyclables
5/27/10	Imperial Beach	Presentations	IB Elementary	Watershed model to 3rd and 5th graders	Students	135	Imperial Beach Elementary		N
10/9/09	City of La Mesa	Festivals/Community Events	Intergenerational Games	Storm Water booth with interactive "Operation Cleanup" watershed pollution prevention game.	Students, Residents	100	La Mesa Middle School	40 recycling temporary tattoos, 30 storm water pencils, 5 San Diego Bay Fact Sheets, 5 Chollas TMDL Fact Sheets	N

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
4/18/10	City of La Mesa	Festivals/Community Events	Earth Fair	Booth Sponsorship through the Solana Center.	General Public	Unknown	Balboa Park	6 Preventing Urban Runoff Pollution pamphlets, 1 SD Bay Flyer, 14 Oil Recycling Magnets	N
5/28/10	City of La Mesa	Festivals/Community Events	Antique Fair	Booth providing storm water and recycling information to residents.	General Public	100	La Mesa Blvd.	100 Recycling Oil Rags, 100 Re-Useable Grocery Bags, 20 San Diego Bay Fact Sheets, 20 residential tri-folds, 2 Automotive recycling guides.	
10/29/09	City of La Mesa	Presentations	ILACSD Watershed Presentation	Watershed concepts presented to 6th Grade students.	6th Grade Students	90	La Mesa Middle School	N/A	Y – Pre/Post Tests Pre Test Score 63%, Post Test Score 81%
2/25/10	City of La Mesa	Presentations	ILACSD Watershed Presentations (4)	Watershed concepts presented to 9th – 12th Grade students.	9th – 12th Grade Students	120	Helix High School	N/A	Y – Pre/Post Tests Pre Test Score 48%, Post Test Score 70%
4/24/10	City of La Mesa	Cleanup Events	Creek To Bay Cleanup	Removed trash from University Channel	General Public	16	University Channel	N/A	Y – Pre/Post Tests Pre Test Score 77% Post Test Score 98%
9/19/09	City of La Mesa	Cleanup Events	Coastal Cleanup Day	Removed trash from University Channel	General Public	18	University Channel	N/A	Y – Pre/Post Tests Pre Test Score 74% Post Test Score 90%
10/24/09	City of La Mesa	Cleanup Events	Park Appreciation Day	A clean up event occurring in all City Parks.	Residents	134	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park, MacArthur Park	Pollution Prevention/Watershed Outreach Flyer and Message	N
FY 09/10	City of La Mesa	Cleanup Events	Adopt a Park/Adopt a Block	Individuals and businesses can volunteer to enroll clean up parks and neighborhoods throughout the watershed.	Residents, Businesses	25	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park, City Streets	N/A	N

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FY 09/10	City of La Mesa	Cleanup Events	Partnership with St. Madeline's Sophie Center	The City contracts with the Center to employ mentally disabled persons to aid in janitorial responsibilities at local parks. Teams of 3 persons and 1 coach are employed at a time, per site.	Employed Individuals	4 person work crew	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park, MacArthur Park	N/A	N
4/10/09, 4/17/09	City of La Mesa	Waste Collection/Recycling Events	Spring Cleanup Events	133,248 lbs of items, debris, and trash was collected.	Residents	746	EDCO Disposal Transfer Station Facility	Flyer regarding HHW Collection and Disposal	N
8 Events in FY 09/10	City of La Mesa	Waste Collection/Recycling Events	HHW Collection Events	64,695 lbs of HHW was collected.	Residents	450	EDCO Disposal Transfer Station Facility	Flyer regarding HHW Collection and Disposal	N
2/27/09, 6/12/10	City of La Mesa	Waste Collection/Recycling Events	Used Oil Disposal Events at Kragen Auto	48 individuals traded in used oil filters for new ones.	Residents	37	Kragen Auto Parts	A new oil filter for exchange	N
9/2009	City of La Mesa	Print Media	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	908	N/A	Articles including, "Doing Our Part to Save H20", "2nd Annual Environmental Awareness Festival", "Park Appreciation Day", "Avid the Clog by Eliminating FOG", "Wipes Clog Pipes", "Recycling's Here to Stay",	N
11/2009	City of La Mesa	Print Media	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	908	N/A	Articles including" Update: City of La Mesa FOG Program", "Park Appreciation Day 2009", "Environmental Awareness Festival Says Yes to Sustainability", "California Coastal Clean Up Day in La Mesa", "Stop the Spread of West Nile Virus" , "Save Money by Preventing Over Irrigation" "Do the Right Thing (HHW)", "Environmental Resources"	N

Table F-1. Watershed Education and Public Participation Events

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2/2010	City of La Mesa	Print Media	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	908	N/A	"St. Madeline Sophie Center Assists in our Parks", "Got Junk?", "La Mesa Oil Filter Exchange Event", "Cut out FOG!", "8th Annual Creek to Bay Cleanup April 24th", Good Housekeeping/Storm Drain Pollution?", "Test Your Environmental Knowledge!"	N
5/2010	City of La Mesa	Print Media	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	908	N/A	"Over Irrigation is Money Down the Drain", "Storm Water Pollution Prevention Requirements"	N
FY 09/10	City of La Mesa	Print Media	La Mesa Park Kiosk	The Kiosk is updated frequently with new community events regarding recycling and watershed pollution prevention.	Residents	N/A	Vista La Mesa Park	N/A	N
6/21/10	City of La Mesa	Workshops	Chollas Creek TMDL Stakeholder Meeting	Updates of TMDL compliance monitoring and activities presented at the meeting	Stakeholder Groups/Interested Public	20	6401 Skyline Dr. San Diego, CA	Information related to compliance monitoring and activities.	N
10/7/09	City of La Mesa	Municipal Training	City's Construction Storm Water Requirements	City's seasonal construction requirements for wet/dry weather.	Municipal Staff	9 Public Works/Engineering Employees	La Mesa City Hall	Construction Site list, power point presentation slides.	N
2/25/10	City of La Mesa	Municipal Training	FOG Seminar	General FOG info, grease traps, and interceptors.	Municipal Staff	3 Public Works/Engineering Employees	City of Carlsbad	Power point presentation slides for FOG seminar.	N
3/17/10	City of La Mesa	Municipal Training	Updated SUSMP Requirements	SUSMP and LID requirements, engineering submittals.	Municipal Staff	7 Public Works/ Engineering, 1 Building Division, 1 Community Development Employee	La Mesa City Hall	City SUSMP, power point presentation slides.	N

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3/23/10	City of La Mesa	Municipal Training	Environmental Enforcement Training	Interviewing skills, access, entry, warrants.	Municipal Staff	Storm Water Program Manager, and Engineering Technician	City of Carlsbad	Enforcement and program handbook.	N
3/31/10	City of La Mesa	Municipal Training	Industrial/ Commercial Inspection Training	Enforcement, implementation and data review of I/C Program.	Municipal Staff	1 Public Works/Engineering Employee	La Mesa City Hall	N/A	N
5/26/10	City of La Mesa	Municipal Training	Process Improvement Team Training – Storm Water Standards	Storm Water Standards.	Municipal Staff	7 Community Development, 1 Building Division, 2 Public Works/Engineering Employees	La Mesa City Hall	N/A	N
August 2009	City of National City	Municipal Staff Training	SUSMP compliance	Training on SUSMP compliance and process to verify proper BMP installation and on violations	Development Services staff	5	City Hall	None	N
July 2009	City of National City	Presentation	National City Council Meeting	Recognition of art contest winners for 2010 Storm Water Program Calendar	3rd grade art contest winners	30	City Hall	None	N/A
9/19/09	City of National City	Cleanup Events	Coastal Cleanup Day	Cleanup in coordination with California Coastal Commission	National City residents	210	Sweetwater River and Paradise Creek Education Park	None	Y – cleaned 3 miles and collected 2,340 pounds of trash and 720 pounds of recyclables
4/24/10	City of National City	Cleanup Events	Creek to Bay	Cleanup in coordination with I Love a Clean San Diego	National City residents	45	Paradise Creek Education Park	None	Y – cleaned over 0.5 mile and collected 200 pounds of trash and 310 pounds of recyclables
Nov 2009 June 2010	City of National City	Waste Collection/Recycli Events	Large item trash collection	Three free collection events for bulky trash	National City residents	1579 vehicles	EDCO Recovery and Transfer facility	None	Y – Three events collected over 696 tons of large item trash

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7/19/09	City of National City	Waste Collection/Recycling Events	Electronics waste event	Free e-waste event sponsored by Recycle San Diego	National City residents	Unknown	Kimball Senior Center	None	N
8/9/09	City of San Diego	Education/ Outreach	Fiesta Del Sol	JURMP	Underserved	60,000	Logan Heights	Think Blue Tips Brochure, 3Cs Card, Laminated Tip Card, Best Management Practice Giveaways	N
8/15/09	City of Chula Vista	Education/ Outreach	Cruise For The Cause	JURMP	General Public/Male Skewed	4,000	Chula Vista	Think Blue Tips Brochure, 3Cs Card, Laminated Tip Card, Best Management Practice Giveaways	N
8/18/09	City of San Diego	Education/ Outreach	Petco's Dog Days of Summer	JURMP	Pet Owners	40,000	Petco Park, San Diego	Think Blue Tips Brochure, 3Cs Card, Laminated Tip Card, Best Management Practice Giveaways	N
9/7/09	City of San Diego	Education/ Outreach	SOPHIE Radio College Campus Appearance	JURMP	College Students	1,500	City College	Think Blue Tips Brochure, 3Cs Card, Best Management Practice Giveaways	N
9/8/09	City of San Diego	Education/ Outreach	91X College Tour	JURMP	College Students	2,000	City College	Think Blue Tips Brochure, 3Cs Card, Best Management Practice Giveaways	N
9/19/09	City of San Diego	Clean-Up	Coastal Clean Up Day	WURMP	General Public	250	Coasts of San Diego	Think Blue Tips Brochure, Best Management Practice Giveaways	N
9/23-9/27/09	City of San Diego	Education/ Outreach	San Diego Film Festival	JURMP	General Public/ Business Owners	18,000	Gaslamp Quarter, San Diego	Think Blue Tips Brochure, Best Management Practice Giveaways	N
10/9/09	City of San Diego	Education/ Outreach	Living Green Event	JURMP	Hispanic/Underserved	300	Mexican Consulate, Little Italy	Think Blue Tips Brochure, Best Management Practice Giveaways	N
12/04/09	City of San Diego	Community Festival	December Nights	JURMP	General Public	325,000	Balboa Park	Think Blue Tips Brochure, Laminated Tip Card, Best Management Practice Giveways	N
12/12/09	City of San Diego	Education/Outreach	Gaslamp Pet Parade	JURMP	General Public	200	Gaslamp District	Think Blue Tips Brochure, Pet-themed Best Management Practice Giveaways	
12/30/09	City of San Diego	Parade	Holiday Bowl Big Balloon Parade	JURMP	General Public	75,000	Harbor Drive, San Diego	Think Blue Laminated Tip Cards, Best Management Practice Giveaways	N
12/30/09-1/03/10	City of San Diego	Education/ Outreach	San Diego Auto Show	JURMP	Auto Enthusiasts, Male Skewed	150,000	San Diego Convention Center	Think Blue Brochure, Auto Themed Best Management Practices Giveaways	N

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1/19/10	City of San Diego	Community Festival	San Diego Multicultural Festival	JURMP	General Public/ Underserved	20,000	MLK Promenade	Think Blue Tips Brochure, Best Management Practices Giveaways	N
2/27/10	City of San Diego	Community Festival	Heritage Day Festival and Parade	JURMP	Underserved	10,000	Market Creek Plaza	Think Blue Tips Brochure, Best Management Practices Giveaways	N
3/27/10	City of San Diego	Public Awareness/ Education	Cesar Chavez Day	JURMP	Underserved	5,000	Logan Ave	Think Blue Tips Brochure, Best Management Practices Giveaways	N
3/27/10	City of San Diego	Children's Science Fair	Science Festival	JURMP	School Aged Children	100,000	Balboa Park	Think Blue Tips Brochure, Kids Worksheets, Best Management Practices Giveaways	N
4/24/10	City of San Diego	Public Awareness/Clea n Up	Creek to Bay Clean Up	JURMP	Underserved	5,500	Chollas Creek	Think Blue Tips Brochure, Best Management Practices Giveaways	N
5/29/10	City of San Diego	Jazz Festival	Jazz Festival	JURMP	General Public, Female Skew	10,000	San Diego Gaslamp Quarter	Think Blue Tips Brochures, Best Management Practices Giveaways	N
Ongoing	City of San Diego	Education/Outre ach	CBSM Pilot Study in Chollas Creek	WURMP	General Public	488,158	San Diego Bay Watershed	CBSM Pilot Study to reduce trash in the San Diego Bay WMA	Y – In progress. Refer to CBSM Pilot Study in Chollas Creek Activity Sheet, SDB-032
7/1/09	County	Presentation	Interpretive Training		Park Rangers	2	Sweetwater Regional Park		
8/1/09	County	Watershed Activity	Sweetwater Campground - Red Hill		Adults & Children	11	Sweetwater Regional Park		
8/5/09	County	Mass Media	Radio Interview on Used Oil Recycling & Used Oil Filter Exchange		General Residents	10,000	Lincoln Financial Media Network Affiliates - Jefferson Pilot		
8/13/09	County	Watershed Activity	CA Conservation Corps, Project		Corps Members	10	Otay Lakes County Park		
8/22/09	County	Watershed Activity	Church Group Project		Adults & Children	60	Sweetwater Regional Park		
9/5/09	County	Community Event	South Bay Green Scene		General Residential & Gardeners	300	Southwestern College		
9/19/09	County	Clean Up	ILCSD Costal Clean Up Day		Students, Neighbors, Scouts	110	Otay Valley Regional Park		
9/19/09	County	Community Event	Spring Valley Fiesta		General Residents	1900	Spring Valley Library	IPM Tip Cards	
9/20/09	County	Display / Kiosk	Water Conservation		General Public	Park Users	Spring Valley Gym		

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9/20/09	County	Display / Kiosk	Water Conservation		General Public	100	South Locals		
9/20/09	County	Display / Kiosk	Water Conservation		General Public	Park Users	Spring Valley Park, Ildica Park, Lamar Park, Goodland Acres & Sweetwater Lane Sports Complex		
9/20/09	County	Display / Kiosk	Water Conservation		General Public	Park Users	Eucalyptus Park		
9/20/09	County	Display / Kiosk	Water Conservation		General Public	Park Users	Lincoln Acres		
9/26/09	County	Presentation	Bonita Fest		Adults & Children	48	Sweetwater Regional Park		
9/30/09	County	Bike Ride	Cycle Eastlake		Bike Ride	300	Otay Lakes County Park		
10/4/09	County	Community Event	Alpine Lions Club Health Fair (Sharps & HHW)		Lions Club Members	200	Alpine		
10/17/09	County	Community Event	Community Day at Point Loma Nazarene University		General Residential & Gardeners	100	Point Loma Nazarene University		
10/17/09	County	Community Event	Vaquero Days		General Public & Horse Owners	45	Granville Martin Tractor Museum		
11/7/09	County	Community / Collection Event	Tire Amnesty Day		Residents	75	Monte Vista HS		
11/14/09	County	Community Event	Water Smart Gardening Festival		General Residential & Gardeners	150	Cuyamaca College		
11/17/09	County	Presentation	Spring Valley Community Association		Spring Valley Residents	20	Spring Valley Library		
12/10/09	County	Watershed Activity	CA Conservation Corps, Project		Corps Members	12	Otay Lakes County Park		
12/21/09	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Alpine Village Apartments		
12/23/09	County	Display / Kiosk	Source Reduction		General Public	Park Users	Spring Valley Gym		
12/23/09	County	Display / Kiosk	Source Reduction		General Public	120	South Locals		
12/23/09	County	Display / Kiosk	Source Reduction		General Public	Park Users	Spring Valley Park, Ildica Park, Estrella Park, Eucalyptus Park, Lamar Park, Lincoln Acres, Sweetwater Lane Sports Complex		
12/23/09	County	Display / Kiosk	Source Reduction		General Public	Park Users	Eucalyptus Park		

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12/23/09	County	Display / Kiosk	SOURCE RECUCTION		General Public	Park Users	Lincoln Acres		
1/8/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Bonita Heights		
1/8/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Bonita Court		
1/8/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	The Mark at Bonita		
1/8/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Bonita Cedars		
1/13/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Bonita Court		
1/13/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Bonita Cedars		
1/13/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	The Mark at Bonita		
1/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Alpine Terrace		
1/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Alpine Country		
1/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Meadow Woods		
1/16/10	County	Presentation	Mutt Mitt Stations for Dog Sanitation		Park Visitors	4	Damon Lane		
1/29/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Alpine Village Apartments		
1/29/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Alpine Country		
1/29/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	2	Meadow Woods		
2/11/10	County	Presentation	Kiwanis Club		Adults	15	Sweetwater Regional Park		
2/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Spring Villa Apts		
2/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Sundance Senior Apts		
2/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Canyon Park		
2/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Hidden Meadows		
2/13/10	County	Bike Ride	Team in Training		Bike Ride	30	Otay Lakes County Park		
2/14/10	County	Hike	Take a Hike Event		Adults	35	Sweetwater Regional Park		
2/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Kenwood Gardens		

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2/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Casa Granada		
2/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Casa De Helix		
2/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Conrad Villas		
2/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Rancho Pointe		
2/20/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager & Residents	25	Alpine Village Apartments		
3/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Jamacha Glen		
3/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Calavo Woods		
3/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Woodbridge Mt. Helix		
3/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Lakeview Village		
3/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Sommerset Units of Rancho San Diego		
3/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Casa De Oro Gardens Senior Apts		
3/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Villas at Casa De Oro		
3/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager & Owner	2	Lanai Village		
3/6/10	County	Hike	Nature Hike		Adults & Children	8	Sweetwater Regional Park		
3/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Pepper Creek Apts		
3/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Countryside Village		
3/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Sunset Terrace		
3/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Greenfield Meadows		
3/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Shannon Woods		
3/12/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Royal Heights Apts		
3/13/10	County	Display / Kiosk	Vehicle Maintenance		General Public	Park Users	Spring Valley Gym		
3/13/10	County	Presentation	Vehicle Maintenance		Volunteers & Staff	6	South Locals		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
3/13/10	County	Display / Kiosk	Vehicle Maintenance		General Public	Park Users	Spring Valley Park, Ildica Park, Estrella Park, Eucalyptus Park, Lamar Park, Lincoln Acres, Sweetwater Lane Sports Complex		
3/13/10	County	Display / Kiosk	Vehicle Maintenance		General Public	Park Users	Eucalyptus Park		
3/13/10	County	Display / Kiosk	Vehicle Maintenance		General Public	Park Users	Lincoln Acres		
3/13/10	County	Presentation	Multi-Family Complex Recycling		Managers & Residents	15	Bonita Heights		
3/14/10	County	Hike	Nature Hike		Adults & Children	16	Sweetwater Regional Park		
3/19/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Highlands at Rancho San Diego		
3/19/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Rancho Hillside Apts		
3/19/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Terraza Hills		
3/19/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Creekside Meadows		
3/19/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	2	Alpine WOODS		
3/20/10	County	Presentation	Composting Workshop		General Residents, Composters, Gardeners	50	Water Conservation Garden		
3/27/10	County	Presentation	Composting Workshop		General Residents, Composters, Gardeners	21	Summers Past Farms		
4/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Alpine Village Apartments		
4/5/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Creekside Meadows		
4/10/10	County	Presentation	Mutt Mitt Stations for Dog Sanitation		Park Visitors	6	Damon Lane		
4/10/10	County	Presentation	How to Grow Healthy, Tasty Tomatoes!		General Residential & Gardeners	45	Sweetwater Woman's Club		
4/11/10	County	Clean Up	Proctor Valley Clean Up		Students, Neighbors, Scouts	150	Otay Valley Regional Park		
4/14/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	N/A	Robinwood Plaza		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
4/17/10	County	Hike	Red Hill Hike		Adults & Children	40	Sweetwater Regional Park		
4/18/10	County	Community Event	Earth Fair		General Residential & Gardeners	450	Balboa Park		
4/21/10	County	Community / Collection Event	IEA Earth Day Event (U-Waste & HHW)		County Employees	150	County Administration Center		
4/24/10	County	Clean Up	ILCSD Creek To Bay		Students, Neighbors, Scouts	115	Otay Valley Regional Park		
4/24/10	County	Clean Up	ILCSD Creek To Bay		Adults & Children	80	Sweetwater Regional Park		
4/24/10	County	Community Event	Spring Garden Festival		General Residential & Gardeners	350	Cuyamaca College		
4/24/10	County	Community / Collection Event	Tire Amnesty Day		Residents	150	Alpine Albertson's Parking Lot		
5/1/10	County	Community Event	SOHO Marston House Home & Garden Event		General Residential & Gardeners	150	Marston House		
5/2/10	County	Watershed Activity	Lutheran Church Comm. Service		Adults & Children	15	Sweetwater Regional Park		
5/8/10	County	Presentation	Starting to Grow Your Own Food? Learn How to Win the Battle Against Pests!		General Residential & Gardeners	28	Rancho San Diego Library		
5/8/10	County	Watershed Activity	Church Group Project		Adults & Children	244	Sweetwater Regional Park		
5/15/10	County	Presentation	Composting Workshop		General Residents, Composters, Gardeners	28	Water Conservation Garden		
5/20/10	County	Presentation	Multi-Family Complex Recycling		Residents	11	Casa De Oro Gardens Senior Apts		
5/22/10	County	Community Event	Pet Licensing Event		General Public	1000	Spring Valley Elementary		
5/22/10	County	Community Collection Event	Oil filter Exchanges		Residents / DIY	250	Kragen Stores (5)		
5/26/10	County	Presentation	Multi-Family Complex Recycling		Residents	25	Kenwood Gardens		
5/26/10	County	Presentation	Multi-Family Complex Recycling		Residents	25	Casa Granada		
5/26/10	County	Presentation	Multi-Family Complex Recycling		Residents	25	Vista Del Oro		
5/26/10	County	Presentation	Multi-Family Complex Recycling		Residents	25	Kenwood Villas		
6/10/10	County	Presentation	Multi-Family Complex Recycling		Residents	18	Hidden Meadows		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
6/11/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Peppertree Gardens		
6/14/10	County	Presentation	Multi-Family Complex Recycling		Residents	18	Shannon Woods		
6/15/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	4	Meadow Woods		
6/19/10	County	Clean Up	Scout Service Project		Cub Scouts & Parents	30	Otay Lakes County Park		
6/19/10	County	Community Event	Sweetwater Farms Hunter - Jumper Horse Event		Horse Owners	15	Sweetwater Farms		
6/21/10	County	Presentation	Multi-Family Complex Recycling		Residents	26	Hidden Meadows		
6/22/10	County	Presentation	Multi-Family Complex Recycling		Residents	52	Hidden Meadows		
6/22/10	County	Community Event	Farmer's Market		Residents, Composters, Gardeners	15	Alpine Farmer's Market		
6/23/10	County	Display / Kiosk	Equipment Maintenance		General Public	Park Users	Spring Valley Gym		
6/23/10	County	Presentation	Equipment Maintenance		Volunteers & Staff	6	South Locals		
6/23/10	County	Presentation	Multi-Family Complex Recycling		Residents	11	Royal Heights		
6/23/10	County	Display / Kiosk	Equipment Maintenance		General Public	Park Users	Spring Valley Park, Ildica Park, Estrella Park, Eucalyptus Park, Lamar Park, Lincoln Acres, Sweetwater Lane Sports Complex		
6/23/10	County	Display / Kiosk	Equipment Maintenance		General Public	Park Users	Eucalyptus Park		
6/23/10	County	Display / Kiosk	Equipment Maintenance		General Public	Park Users	Lincoln Acres		
6/25/10	County	Community Event	Movies in the Park		General Public	40	Sweetwater Park		
6/28/10	County	Presentation	Composting and Manure Management Workshop		General Public & Horse Owners	22	Bonita - Sunnyside Library		
6/29/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Lamar Gardens Townhouses		
6/29/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Kenora Terrace		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
6/30/10	County	Presentation	Multi-Family Complex Recycling		Complex Manager	1	Casa Diego		
6/30/10	County	Community Event	El Cajon Car Show		Residents / DIY	200	El Cajon		
6/30/10	County	Presentation	Recycling in SD County		Various Latino Organizations	27	El Gran Serape Restaurant		
1/2/10 - 1/3/10	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
10/16/2009 - 10/17/09	County	Community Event	Point Loma Flower Show		General Residential & Gardeners	100	Point Loma		
10/17&18/09	County	Community Event	Vaquero Days		Horse Owners	45	Granville Martin Ranch & Tractor Museum		
10/3/09 - 10/4/09	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
11/7/09 - 11/8/09	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
12/5/09 - 12/6/09	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
3/6/10 - 3/7/10	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
4/17/10 - 4/18/10	County	Community Event	Coronado Flower Show		General Residential & Gardeners	75	Spreckles Park		
4/3/10 - 4/4/10	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
5/1/10 - 5/2/10	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
5/7/10 - 5/8/10	County	Community Event	Mother's Day Garden Festival		General Residential & Gardeners	750	San Diego Zoo		
6/5/10 - 6/6/10	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
9/5/09- 9/6/09	County	Community Event	Balboa Park Botanic Garden		General Residential & Gardeners	150	Balboa Park		
8/31/09	County	Presentation	Watershed Education		Students - Biology	23	Otay Ranch HS		
8/31/09	County	Presentation	Watershed Education		Students - Biology	23	Otay Ranch HS		
8/31/09	County	Presentation	Watershed Education		Students - Biology	24	Otay Ranch HS		
8/31/09	County	Presentation	Watershed Education		Students - Biology	24	Otay Ranch HS		
8/31/09	County	Presentation	Watershed Education		Students - Biology	24	Otay Ranch HS		
8/31/09	County	Presentation	Watershed Education		Students - Biology	25	Otay Ranch HS		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
8/31/09	County	Presentation	Watershed Education		Students - Biology	25	Otay Ranch HS		
8/31/09	County	Presentation	Watershed Education		Students - Biology	25	Otay Ranch HS		
8/31/09	County	Presentation	Watershed Education		Students - Biology	25	Otay Ranch HS		
8/31/09	County	Presentation	Watershed Education		Students - Biology	25	Otay Ranch HS		
9/1/09	County	Presentation	Watershed Education		Students - Biology	25	Otay Ranch HS		
9/1/09	County	Presentation	Watershed Education		Students - Biology	25	Otay Ranch HS		
9/1/09	County	Presentation	Watershed Education		Students - Biology	49	Otay Ranch HS		
9/2/09	County	Presentation	Splash Lab		Students - Grade 4	119	McMillin Elementary		
9/2/09	County	Presentation	Watershed Education		Students - Biology	27	Otay Ranch HS		
9/2/09	County	Presentation	Watershed Education		Students - Biology	27	Otay Ranch HS		
9/2/09	County	Presentation	Watershed Education		Students - Biology	27	Otay Ranch HS		
9/14/09	County	Presentation	Watershed Education		Students - Health	34	Otay Ranch HS		
9/14/09	County	Presentation	Watershed Education		Students - Health	34	Otay Ranch HS		
9/14/09	County	Presentation	Watershed Education		Students - Health	34	Otay Ranch HS		
9/14/09	County	Presentation	Watershed Education		Students - Health	34	Otay Ranch HS		
9/14/09	County	Presentation	Watershed Education		Students - Health	52	Otay Ranch HS		
9/14/09	County	Presentation	Watershed Education		Students - Health	52	Otay Ranch HS		
9/21/09	County	Presentation	Watershed Education		Students - Earth Science	22	Otay Ranch HS		
9/21/09	County	Presentation	Watershed Education		Students - Earth Science	22	Otay Ranch HS		
9/21/09	County	Presentation	Watershed Education		Students - Earth Science	22	Otay Ranch HS		
9/21/09	County	Presentation	Watershed Education		Students - Earth Science	23	Otay Ranch HS		
9/21/09	County	Presentation	Watershed Education		Students - Earth Science	23	Otay Ranch HS		
9/21/09	County	Presentation	Watershed Education		Students - Earth Science	23	Otay Ranch HS		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
9/22/09	County	Presentation	Watershed Education		Students - Biology	25	Olympian HS		
9/22/09	County	Presentation	Watershed Education		Students - Biology	25	Olympian HS		
9/22/09	County	Presentation	Watershed Education		Students - Biology	26	Olympian HS		
9/22/09	County	Presentation	Watershed Education		Students - Biology	26	Olympian HS		
10/20/09	County	Presentation	Green Machine		Students - Grades K - 3	117	Heritage Elementary		
6/12/10	County	Hike	Hiking Adventure		Students	15	Otay Lakes County Park		
11/13/09	County	Community Event	Green Machine at World Wide Monitoring Day		Students - Grades 9 - 12	168	Chula Vista Nature Center		
11/13/09	County	Community Event	Splash Lab at World Wide Monitoring Day		Students - Grades 3 - 12	168	Chula Vista Nature Center		
12/14/09	County	Presentation	Splash Lab		Students - Grades 4 - 5	113	Jamul Primary School		
10/26/09	County	Presentation	Splash Lab		Students - Grade 6	95	Hillsdale Middle School		
11/4/09	County	Presentation	Green Machine		Students - Grade 4	104	Fuerte Elementary		
12/2/09	County	Presentation	Green Machine		Students - Grades K - 5	121	Crest Elementary		
12/16/09	County	Presentation	Green Machine		Students - Grades K - 5	86	Avocado Elementary		
3/23/10	County	Presentation	HHW & Recycling Information		Students - Grades K - 5	430	Jamacha Elementary		
5/26/10	County	Presentation	Splash Lab		Students - Grades 4 - 5	117	Bancroft Elementary		
7/11/09	County	Presentation	The Way Indians Camped		Adults & Children	11	Sweetwater Regional Park		
7/11/09	County	Watershed Activity	Eagle Scout Building Primitive Hut		Adults & Children	9	Sweetwater Regional Park		
7/23/09	County	Watershed Activity	Stein School		Children	5	Sweetwater Regional Park		
8/8/09	County	Watershed Activity	Eagle Scout Kiosk Building		Boy & Girl Scouts	16	Sweetwater Regional Park		
8/15/09	County	Watershed Activity	Eagle Scout Kiosk Building		Boy & Girl Scouts	16	Sweetwater Regional Park		
9/19/09	County	Watershed Activity	ILCSD Event		Adults & Children	13	Sweetwater Regional Park		
9/26/09	County	Watershed Activity	Eagle Scout Indian Hut Building		Adults & Children	21	Sweetwater Regional Park		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
10/8/09	County	Presentation	Watershed Education		Students - Biology	24	Monte Vista HS		
10/8/09	County	Presentation	Watershed Education		Students - Biology	24	Monte Vista HS		
10/10/09	County	Hike	Girl Scout Hike - Sweetwater, Red Hill		Boy & Girl Scouts	22	Sweetwater Regional Park		
10/11/09	County	Hike	Girl Scout Hike - Morrison Pond		Boy & Girl Scouts	25	Sweetwater Regional Park		
10/15/09	County	Presentation	Watershed Education		Students - Biology	28	Mt. Miguel HS		
10/15/09	County	Presentation	Watershed Education		Students - Biology	28	Mt. Miguel HS		
10/15/09	County	Presentation	Watershed Education		Students - Biology	29	Mt. Miguel HS		
10/15/09	County	Presentation	Watershed Education		Students - Biology	29	Mt. Miguel HS		
10/15/09	County	Presentation	Watershed Education		Students - Biology	29	Mt. Miguel HS		
10/15/09	County	Presentation	Watershed Education		Students - Biology	29	Mt. Miguel HS		
10/24/09	County	Hike	Boy Scout Guided Hike & Activity		Boy & Girl Scouts	13	Sweetwater Regional Park		
10/26/09	County	Presentation	Watershed Education		Students - Biology	25	Mt. Miguel HS		
10/26/09	County	Presentation	Watershed Education		Students - Biology	25	Mt. Miguel HS		
10/26/09	County	Presentation	Watershed Education		Students - Biology	26	Mt. Miguel HS		
10/26/09	County	Presentation	Watershed Education		Students - Biology	26	Mt. Miguel HS		
10/26/09	County	Presentation	Watershed Education		Students - Biology	26	Mt. Miguel HS		
11/7/09	County	Watershed Activity	Eagle Scout Trills & Trails Work		Boy & Girl Scouts	10	Sweetwater Regional Park		
11/14/09	County	Hike	GPS Field Trip - Sweetwater - Red Hill		Adults & Children	21	Sweetwater Regional Park		
12/1/09	County	Presentation	Watershed Education		Students - Biology	24	Mt. Miguel HS		
12/1/09	County	Presentation	Watershed Education		Students - Biology	25	Mt. Miguel HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	30	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	30	Valhalla HS		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	30	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	30	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	31	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	31	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	34	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	34	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	34	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	34	Valhalla HS		
12/11/09	County	Presentation	Watershed Education		Students - Integrated Science	35	Valhalla HS		
12/28/09	County	Watershed Activity	Eagle Scout Lodge Pole Fencing		Boy & Girl Scouts	15	Sweetwater Regional Park		
1/5/10	County	Presentation	Watershed Education		Students - Auto	26	Monte Vista HS		
1/5/10	County	Presentation	Watershed Education		Students - Auto	26	Monte Vista HS		
1/5/10	County	Presentation	Watershed Education		Students - Auto	26	Monte Vista HS		
1/5/10	County	Presentation	Watershed Education		Students - Auto	26	Monte Vista HS		
1/5/10	County	Presentation	Watershed Education		Students - Auto	25	Monte Vista HS		
1/5/10	County	Hike	Family Hike - Sweetwater - Red Hill		Adults & Children	4	Sweetwater Regional Park		
1/16/10	County	Presentation	Boy Scout Fencing Project		Boy & Girl Scouts	16	Sweetwater Regional Park		
1/17/10	County	Watershed Activity	Girl Scout Horse Stall Painting		Boy & Girl Scouts	2	Sweetwater Regional Park		
2/2/10	County	Presentation	Watershed Education		Students - Geography	23	Monte Vista HS		
2/2/10	County	Presentation	Watershed Education		Students - Geography	24	Monte Vista HS		
2/2/10	County	Presentation	Watershed Education		Students - Geography	24	Monte Vista HS		
2/2/10	County	Presentation	Watershed Education		Students - Geography	24	Monte Vista HS		
2/2/10	County	Presentation	Watershed Education		Students - Geography	25	Monte Vista HS		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
2/2/10	County	Presentation	Watershed Education		Students - Geography	25	Monte Vista HS		
2/2/10	County	Presentation	Watershed Education		Students - Geography	25	Monte Vista HS		
2/2/10	County	Presentation	Watershed Education		Students - Geography	25	Monte Vista HS		
2/18/10	County	Presentation	Watershed Education		Students - Oceanography	26	Monte Vista HS		
2/18/10	County	Presentation	Watershed Education		Students - Oceanography	26	Monte Vista HS		
2/18/10	County	Presentation	Watershed Education		Students - Waves Club	28	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	64	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	65	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	65	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	33	Valhalla HS		
3/18/10	County	Presentation	Watershed Education		Students - Biology	65	Valhalla HS		
3/28/10	County	Presentation	Boy Scouts Service Project		Adults & Children	3	Sweetwater Regional Park		
4/5/10	County	Presentation	Watershed Education		Students - Government	21	Monte Vista HS		

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
4/5/10	County	Presentation	Watershed Education		Students - Government	21	Monte Vista HS		
4/5/10	County	Presentation	Watershed Education		Students - Government	21	Monte Vista HS		
5/24/10	County	Presentation	Green Machine		Students - Grades K - 3	135	La Presa Elementary		
5/27/10	County	Presentation	Green Machine		Students - GRADE 3	110	Casa De Oro Elementary		
6/2/10	County	Presentation	Green Machine		Students - Grades 4 - 5	87	Rancho Elementary		
5/19/10	County	Presentation	Splash Lab		Students - Grades 4 - 5	118	Murdock Elementary		
5/27/10	Port of San Diego	Workshop	Integrated Pest Management for Landscape Professionals	IPM information to reduce pesticide use	Industrial and Commercial Owners and Operators	150	San Diego Sheraton Hotel & Marina	Various IPM materials	Y – 100% of participants indicated that the seminar was useful and protecting water quality is important.
9/19/09	Port of San Diego	Cleanup Event	Coastal Cleanup Day	Port-sponsored site at Chula Vista Wildlife Refuge	General Public	53	Chula Vista Wildlife Reserve	None	N
4/24/10	Port of San Diego	Cleanup Event	Creek to Bay Cleanup	Port-sponsored site at D Street Fill	General Public	55	D Street Fill	None	N
9/29/09	Port of San Diego	Cleanup Event	Operation Clean Sweep	Port sponsors this bay-wide effort, coordinated by the San Diego Port Tenants Association	General Public	800	Bay-wide	None	N
9/28/09	Port of San Diego	Workshop	Green Port Seminar: Waterwise Landscaping	Strategies for reducing irrigation and runoff	Port Staff	23	Port of San Diego Administration Building	Various landscaping materials	Y – 100% of the participants indicated that the seminar was useful and 86% said that they will change at least one behavior to reduce their environmental impact.
May 2010 – June 2010	Port of San Diego	Presentation	Water Conservation Training	The Port's water conservation strategy and tips for reducing water use and runoff	Port Staff	397	Port of San Diego Buildings	None	Y – 100% of the review questions asked at the end of the presentations were answered correctly by the audience.

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
9/17/09	Port of San Diego	Waste Collection/ Recycling Event	Electronic Waste Collections Event for Port Employees	Electronic waste education	Port Staff	26	Port of San Diego Administration Building	Non	N
July 2009 – June 2010	Port of San Diego	Presentation	Maritime Museum of San Diego Adult *Pilot* Boat Tours	Daily tours aboard the *Pilot* Boat for museum guests, which include environmental and watershed information	General Public	29,537	Maritime Museum of San Diego	Residential Stormwater brochures	N
7/9/09 7/10/09 7/11/09	Port of San Diego	Presentation	Port of San Diego Bay Tours	Bay tours for the general public, which include environmental and watershed information	General Public	1,495	Bay-wide	None	Y – 98% of the participants ranked the overall tour as valuable and informative.
July 2009 – June 2010	Port of San Diego	Festival	Port-funded outreach events conducted by Wildcoast	Port Environmental Fund-sponsored program involving booths at community events related to watershed issues	General Public	40,000	Watershed-wide	Various water quality information	N
July 2009 – March 2010	Port of San Diego	Citizen Monitoring/Training	Groundworks San Diego – Chollas Creek Family Stream Team	Port Environmental Fund-sponsored program involving water monitoring and cleanup events	General Public	1,000	Throughout Chollas Creek	Various water quality information	N
1/31/10	Port of San Diego	Cleanup Event	San Diego Coastkeeper Beach Cleanup	Port Environmental Fund-sponsored cleanup events throughout San Diego Bay	General Public	75	On San Diego Bay	Various water quality information	N
10/24/10	Port of San Diego	Cleanup Event	Urban Corps of San Diego Restoration Event	Port Environmental Fund-sponsored program involving creek restoration	General Public	96	On San Diego Bay	Various water quality information	N
September 2009 – May 2010	Port of San Diego	Field Trip	Ocean Discovery Institute – Ocean Science Explorers Initiative	Classroom presentations and field trips to local wetlands, information on watershed issues is included	School Children	2,895	Watershed-wide	Various water quality information	N
July 2009 – June 2010	Port of San Diego	Field Trip	Wildcoast – Sea Turtle Education Program	Field trips to learn about sea turtles and pollution prevention, information on watershed issues is included	School Children	876	Watershed-wide	Various environmental information	N
July 2009 – June 2010	Port of San Diego	Field Trip	The Green Machine – IPM Education Program	Field trips to learn about IPM and the water cycle, information on watershed issues is included	School Children	2,848	Chollas Creek Watershed-wide	Various environmental information	N

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
July 2009 – June 2010	Port of San Diego	Field Trip	Resource Conservation District – Watershed Education Program	Field trips to learn about the San Diego Bay watershed (using the Enviroscape model)	School Children	2,182	Watershed-wide	Various water quality information	Y – Knowledge was increased by 40% and measured through pre- and post-tests.
July 2009 – June 2010	Port of San Diego	Field Trip	Chula Vista Nature Center – Field Trips	Field trips to learn about the Sweetwater Marsh and watershed	School Children	2,296	Watershed-wide	Various water quality information	Y – Knowledge was increased by 11% and measured through pre- and post-tests.
July 2009 – June 2010	Port of San Diego	Field Trip	Ocean Discovery Institute – Wetland Avengers	Field trips to the Chula Vista Wildlife Refuge to learn about wetlands and pollution prevention, information on watershed issues is included	School Children	219	Within the Port's 5 member cities	Various water quality information	Y – Knowledge was increased by 12% and measured through pre- and post-tests.
July 2009 – June 2010	Port of San Diego	Field Trip	Maritime Museum of San Diego – Pilot Boat Program	Field trips to the Maritime Museum of San Diego to learn about San Diego Bay history and pollution prevention, information on watershed issues is included	School Children	1,168	Within the Port's 5 member cities	Various water quality information	Y – Knowledge was increase by 192% and measured through pre- and post-tests.
July 2009 – June 2010	Port of San Diego	Field Trip	Pro Peninsula – Sea Turtle Education Program	Classroom presentations and field trips to learn about sea turtles and pollution prevention, information on watershed issues is included	School Children	1,900	Within the Port's 5 member cities	Various water quality information	Y – Knowledge was increase by 25% and measured through pre- and post-tests.
July 2009 – June 2010	Port of San Diego	Presentation	High Tech High – Book Sponsorship	Exploration of environmental issues in San Diego Bay	School Children	68	High Tech High, San Diego	Various water quality information	N
July 2009 – March 2010	Port of San Diego	Field Trip	San Diego Zoological Society – Stream Team Stewards	Port Environmental Fund-sponsored program involving water monitoring and cleanup events	School Children	635	Watershed-wide	Various water quality information	N
FY09-10	SDCRAA	Print Media	Authority SWMP	On SDCRAA website	General public, Authority, and SDIA staff	unknown	San Diego International Airport		N
FY 09-10	SDCRAA	Storm Drain Stenciling	Storm Drain Stenciling	"No Dumping" warning signs on storm drain inlets throughout the airport	Authority, and SDIA staff	unknown	San Diego International Airport		N

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
FY09-10	SDCRAA	Municipal Staff Training	Annual Environmental Training	8 presentations given to reach all Authority staff for annual refresher training	Authority Staff	350	San Diego International Airport		N
FY09-10	SDCRAA	Presentations	Tenant Safety Committee Meetings	Environmental Affairs Department presented stormwater management program updates at monthly Tenant Safety Committee Meetings	Authority Staff	50	San Diego International Airport		N
FY09-10	SDCRAA	Presentations	Stormwater Presentation for LAMC	Environmental Affairs Department presented stormwater management program updates to airline station managers at monthly LAMC meetings	Airline Station Managers	50	San Diego International Airport		N
FY 09-10	SDCRAA	Field Trips	WIldCoast Wildlife Outreach Program	Continued collaboration with WiLDCOAST to support the "Wildlife Outreach Program" to encourage conservation of local wildlife and habitats	School Children	unknown	San Diego Bay Region		N
FY09-10	SDCRAA	Workshop	Elementary Institute of Science Water Issues Workshop	Authority staff met with EIS students and other community members to discuss water pollution and conservation issues	School children and general public	24	Elementary Institute of Science		N
7/20/09	SDCRAA	Municipal Staff Training	Stormwater training with Southwest Airlines	Due to need for revised washing operations Authority staff met Southwest Airlines staff to discuss new operations and stormwater concerns	Authority, and SDIA staff	5	San Diego International Airport		N
8/5/09	SDCRAA	Municipal Staff Training	Environmental Issues on the Airfield Tour	Airport Authority Interns were given a tour of the airfield and educated on stormwater issues	Authority Staff	15	San Diego International Airport		N
7/9/09	SDCRAA	Print Media	Tenant Advisory Email	Tenant Advisory Email for week long clean-up and e-waste event	Authority, and SDIA staff	350	San Diego International Airport		N
7/20/09	SDCRAA	Print Media	E-Newsletter	E-newsletter announcing the E-waste collection event	Authority, and SDIA staff	350	San Diego International Airport		N

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
8/5/09	SDCRAA	Presentation	StormCon Presentation	Authority staff gave presentation at stormwater conference about Authority stormwater audits and pilot projects	General public	unknown	Anaheim, Ca		N
8/6/09	SDCRAA	Waste Collection/Recycling Events	Two Day Electronic & Universal Waste Collection Event	Gathered electronic and universal waste from Authority and Airport employees for proper disposal and recycling	Authority, and SDIA staff	unknown	San Diego International Airport		N
8/14/10	SDCRAA	Print Media	Tenant Advisory Email	Tenant Advisory reminder on Smart Carte dispensers and proper cigarette disposal	Authority, and SDIA staff	350	San Diego International Airport		N
8/19/09	SDCRAA	Print Media	E-Newsletter	E-Newsletter promoting Coastal Clean Up Day event	Authority, and SDIA staff	350	San Diego International Airport		N
8/20-21/09	SDCRAA	Print Media	Intranet posting	Intranet posting for Coastal Clean Up Day	Authority, and SDIA staff	350	San Diego International Airport		N
8/28/09	SDCRAA	Print Media	Tenant Advisory email – "Good Bye for Now Least Terns, Hello Rainy Season"	Tenant Advisory reminder of the beginning of the wet season and stormwater BMPs	Authority, and SDIA staff	350	San Diego International Airport		N
9/9/09	SDCRAA	Waste Collection/Recycling Events	California Coastal Clean Up Day	The Airport Authority continued to support CoastKeeper's California Coastal Clean Up Day	General Public	unknown	NA		N
9/14/09	SDCRAA	Print Media	News Release	News Release "San Diego International Airport Teams up with Surfrider Foundation to fight Cigarette Litter"	General public, Authority, and SDIA staff	unknown	San Diego International Airport		N
9/15/09	SDCRAA	Festivals/Community Events	"Hold On To Your Butt Day"	Continued collaboration with Surfrider Foundation to support "Hold On To Your Butt" public education campaign about cigarette butts as a stormwater pollutant	General Public	92	San Diego International Airport	Pocket sized cigarette butt holders, bumper stickers, informational cards	N

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
9/19/09	SDCRAA	Print Media	WiLDCOAST sponsored art project	WiLDCOAST sponsored a conservation art project that was displayed at the "Youth Art Wall" in Terminal 2. Students from Boys and Girls Club of Imperial Beach created Scenes from the Otay River Valley using recycled materials.	General public, Authority, and SDIA staff	unknown	San Diego International Airport		N
11/14/09	SDCRAA	Presentation	Monthly Authority Wide Meeting	"Be the Solution to Stormwater Pollution" Calendars were presented and distributed at monthly Authority wide meeting	Authority Staff	unknown	San Diego International Airport	"Be the Solution to Stormwater Pollution" Calendars	Assessment for calendars is being conducted on a regional level
11/14/09	SDCRAA	Waste Collection/Recycling Events	Electronic & Universal Waste Collection Event	Gathered electronic and universal waste from Authority and Airport employees for proper disposal and recycling	Authority, and SDIA staff	25	San Diego International Airport	"Be the Solution to Stormwater Pollution" Calendars	Assessment for calendars is being conducted on a regional level
12/09 – 03/10	SDCRAA	Community Event	Electric Car Show	"Be the Solution to Stormwater Pollution" Calendars were distributed at Authority's Electric Car Show	General public, Authority, and SDIA staff	10	San Diego International Airport	"Be the Solution to Stormwater Pollution" Calendars	Assessment for calendars is being conducted on a regional level
12/4/09	SDCRAA	Waste Collection/Recycling Events	Electronic & Universal Waste Collection Event	Gathered electronic and universal waste from Authority and Airport employees for proper disposal and recycling	Authority, and SDIA staff	25	San Diego International Airport	"Be the Solution to Stormwater Pollution" Calendars	Assessment for calendars is being conducted on a regional level
1/29/10	SDCRAA	Waste Collection/Recycling Events	Creek to Bay Clean Up	The Airport Authority continued to support I Love A Clean San Diego's Annual Creek to Bay Clean Up	General Public	unknown	NA		N
4/14/10	SDCRAA	Community Event	Solid Waste Management Facility Grand Opening and Ribbon Cutting Ceremony	"Be the Solution to Stormwater Pollution" Calendars were distributed at Solid Waste Management Facility Grand Opening and Ribbon Cutting Ceremony	General public, Authority, and SDIA staff	50	San Diego International Airport	"Be the Solution to Stormwater Pollution" Calendars	Assessment for calendars is being conducted on a regional level

Table F-1. Watershed Education and Public Participation Events

Date	Jurisdiction	Event Type	Event Title	Comments	Audience	Estimated Audience #	Site Name/ Location	Materials Distributed	Assessment Conducted? (Y, N, N/A)
4/23/10	SDCRAA	Municipal Staff Training	Presentation on new General Construction Permit Requirements	Environmental Affairs Department staff provided training to Facilities Development Department staff on the new General Construction Permit requirements	Authority Staff	20	San Diego International Airport	Handout provided on material covered	N
9/09	City of Lemon Grove	Clean-up Event	Coastal Clean-up Day	Clean up event in local Chollas Creek tributaries	Residential	10 participants	Federal Blvd/San Miguel drainage facility	Provided all participants with HHW, recycling and stormwater brochures, along with a verbal presentation.	Y
10/09	City of Lemon Grove	Fire Department Sponsored Event	Fire Station Open House	Stormwater Information Booth	Residential	150	Fire Department	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including sponges, and bookmarks with the hotline and oil-recycling information. Also distributed were the IPM tip cards.	Y
12/09	City of Lemon Grove	City SponsoredCom munity Event	Winter Bonfire	Stormwater Information Booth	Residential and Business	800	Park on Main St.	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including sponges, bookmarks, and pens with the hotline and oil-recycling information.	N
4/10	City of Lemon Grove	Clean-up Event	I Love a Clean San Diego Creek to Bay Clean-up	Clean up event in local Chollas Creek tributaries	Residential	18 participants	Federal Blvd/ San Miguel drainage ditch	Provided all participants with HHW, recycling and stormwater brochures, along with a verbal presentation.	N
6/10	City of Lemon Grove	Regional Education Event	San Diego County Fair	Stormwater Information at Regional Booth	Residential and Business	4,500	Downtown streets	All City brochures pertaining to stormwater and pollution prevention. Household Hazardous Waste materials including free oil funnels with the hotline and oil-recycling information. Information on environmentally friendly gardening practices including tips on proper usage of fertilizers and pesticides.	Y

San Diego Bay Watershed Urban Runoff Management Program

Annual Report

PLEASE PROTECT OUR ENVIRONMENT
SAN DIEGO BAY WATERSHED

FISCAL YEAR

2011

Prepared and submitted by the
San Diego Bay Watershed Copermittees:

- Chula Vista
- Coronado
- Imperial Beach
- La Mesa
- Lemon Grove
- National City
- San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority

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SAN DIEGO BAY WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2011 ANNUAL REPORT

JANUARY 31, 2012

PREPARED AND SUBMITTED BY THE SAN DIEGO BAY WATERSHED COPERMITTEES

CITY OF CHULA VISTA
CITY OF CORONADO
CITY OF IMPERIAL BEACH
CITY OF LA MESA
CITY OF LEMON GROVE
CITY OF NATIONAL CITY
CITY OF SAN DIEGO
COUNTY OF SAN DIEGO
PORT OF SAN DIEGO
SAN DIEGO COUNTY REGIONAL AIRPORT AUTHORITY

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Executive Summary

Since January 2002, the County of San Diego, Port of San Diego, the San Diego County Regional Airport Authority (Airport Authority), and the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) have been active in developing and implementing watershed-based programs in the San Diego Bay Watershed Management Area (WMA). This Annual Report represents the San Diego Bay Copermittees' efforts during Fiscal Year 2010-2011 (FY 2011) to meet the requirements of Section E of the Municipal Storm Water Permit Order Number 2007-0001 (Municipal Permit or Permit) and develop and implement the San Diego Bay Watershed Urban Runoff Management Program (WURMP).

The San Diego Bay Copermittees continue to improve watershed efforts in the San Diego Bay WMA, using innovative methods and new tools as they become available. The overarching goal for the San Diego Bay WURMP is to cooperatively and through collaborative strategic planning decrease the potential sources and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) that have been identified as causing high priority water quality problems. Using the Watershed Strategy developed in the 2008 San Diego Bay WURMP document for guidance, each Copermittee individually selected activities that were feasible to institute in their jurisdiction, and were appropriate for its relative contribution to the watershed's high priority water quality problems.

During this reporting period, the San Diego Bay Copermittees continued implementation of watershed activities and assessments. The activities and assessments include: (1) a water quality assessment; (2) a pollutant source assessment; (3) planning and implementation of watershed activities; and (4) an assessment of the Copermittees activities in the WMA. An integrated assessment of activity effectiveness within each HA was conducted to determine the collective impact of the activities on the targeted high priority pollutants and/or pollutant sources.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees collected and reported JURMP and WURMP activities performed on a hydrologic area (HA) basis. This information is not comprehensive and for some data sets, estimates were used to generate quantities of activities (this process is explained in **Appendix D**). The Copermittees believe that this is an important step to integrate the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

A summary of the program accomplishments for FY 2011 is found below:

Water Quality and Pollutant Source Assessment

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the San Diego Bay WMA based on data collected and analyzed during the reporting period. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the San Diego County Municipal Copermittees Urban Runoff Monitoring Report (Annual Monitoring Report) for FY 2011 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. However, due to the rotational approach of monitoring conducted by the Regional Copermittees, receiving water mass loading stations within the southern portion of the

County (including San Diego Bay WMA) were not monitored during FY 2011. Chollas Creek is monitored on an annual basis regardless of the rotation schedule to meet the requirements of RWQCB Order No. R9-2004-0277, California Department of Transportation and San Diego Municipal Separate Storm Sewer System Copermittees Responsible for the Discharge of Diazinon into the Chollas Creek Watershed. There were not changes in FY 2011 to the previous year's high priority water quality problems (HPWQPs).

ES-1: San Diego Bay Baseline High Priority Water Quality Problems.

HA	Pollutant Categories						
	Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides	Sediment	Trash
Pueblo San Diego HU							
908.1	X	X	X	X	X		
908.2	X		X		X	X	X
908.3	X					X	X
Sweetwater HU							
909.1	X						
909.2					X		
909.3							
Otay HU							
910.1	X	X					
910.2	X						
910.3							

During this reporting period, the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the HPWQPs identified and each source category's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

Implementation of Watershed Activities

WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Collectively, the San Diego Bay WMA Copermittees implemented eight (8) watershed education activities, 29 watershed activities, and six (6) monitoring or source identification studies during the reporting period. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. Details of these activities are found in Section 3 and **Appendix E** of this Annual Report. Activities selected and conducted by the Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. In addition the San Diego Bay WMA Copermittees implemented activities associated with Total Maximum Daily Loads in certain HAs which are also detailed in Section 3 and **Appendix F**.

Effectiveness Assessment

The San Diego Bay WMA Copermittees continue to improve the program's effectiveness assessment by utilizing where appropriate the six-level assessment framework prepared by the Regional Copermittees in October 2003. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Activities such as public participation at cleanup events, the general public's use of household hazardous waste (HHW) collection facilities and pet waste bags scaled multiple levels of assessment resulting in increases in awareness, behavior changes, and load reductions. An increase in knowledge and awareness were demonstrated through various education activities throughout the WMA to a variety of audiences (Level 2). Public participation in trash cleanups and collection events also indicate behavioral change (Level 3). Through inspection activities, Copermittees were able to demonstrate positive changes in behavior (Level Three) as well as abate specific pollutant sources (Level Four). The San Diego Bay Copermittees also achieved load reductions as well as source abatement (Level Four) through various programs that either targeted the pollutants of concern or the pollutant sources. Notably, 120 tons of trash and debris were collected throughout the WMA during cleanup events this reporting year.

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1 Introduction

The NPDES Municipal Storm Water Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit," requires the Copermittees within the San Diego Bay Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). Since 2002, the San Diego Bay Watershed Copermittees have worked together to successfully implement the San Diego Bay WURMP, a collaborative effort to address high priority surface water quality issues throughout the San Diego Bay WMA. On March 24, 2008, the San Diego Bay Watershed Copermittees began implementation of the current San Diego Bay WURMP. The program includes identifying and addressing high priority water quality problems in the WMA, developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report reflects the efforts of the San Diego Bay Watershed Copermittees, referred to throughout this document as San Diego Bay Copermittees, during the reporting period from July 1, 2010, through June 30, 2011 (FY 2011). This Annual Report is divided into five sections as presented below.

Section 2 This section provides an update of water quality throughout the WMA, identifies high priority water quality problems (HPWQP) in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3 This section describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period, collaborative land use planning, and additional education and public participation activities that took place. As required, Copermittees implemented activities in the WMA as part of their WURMP and Jurisdictional Urban Runoff Management Program (JURMP). In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. This information is not comprehensive and for some data sets, estimates were used to generate quantities of activities. The Copermittees believe that this is an important first step toward integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis. This section also summarizes the TMDL-related activities implemented by named dischargers of TMDLs within the San Diego Bay WMA. Detailed information on the results and status of each Named Dischargers' TMDL activities is located in **Appendix F**.

Section 4 This section discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among San Diego Bay Copermittees; 2) determine whether watershed activities are focused on appropriate water quality problems; 3) assess whether targeted outcomes are being achieved; and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale. This section includes an assessment of compliance with TMDLs in the

San Diego Bay WMA and the effectiveness of activities implemented by the Named Dischargers.

Section 5 This section provides conclusions reached during FY 2011 as well as recommendations for future reporting periods.

In addition, this document functions as the primary reporting mechanism for all TMDL activities implemented for each approved TMDL in the San Diego Bay WMA. TMDL Implementation Plans often integrate existing watershed, regional, and jurisdictional programs (as well as agency-wide programs for state and federal Dischargers) under existing National Pollutant Discharge Elimination System (NPDES) permit requirements. The integration of these activities provides a comprehensive evaluation of watershed-wide efforts to address a particular TMDL. As a result, this Annual Report provides a logical platform for annual reporting of efforts to address TMDLs within the San Diego Bay WMA. There are five approved TMDLs in the San Diego Bay WMA:

- Investigation Order No. R9-2004-0277, California Department of Transportation and San Diego Municipal Separate Storm Sewer System Copermittees Responsible for the Discharge of Diazinon into the Chollas Creek Watershed (Chollas Creek Diazinon TMDL);
- Resolution No. R9-2007-0043, A Resolution Adopting An Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay (Chollas Creek Dissolved Metals TMDL);
- Resolution No. R9-2005-0019 A Resolution Adopting An Amendment to the Water Quality Control Plan for the San Diego Region to Incorporate a Total Maximum Daily Load for Dissolved Copper in Shelter Island Yacht Basin, San Diego Bay (Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL);
- Resolution No. R9-2008-0027, A Resolution to Adopt an Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay (Baby Beach and Shelter Island Shoreline Park Indicator Bacteria TMDL); and
- Resolution No. R9-2010-0001, A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek) (Revised TMDL for Indicator Bacteria, Project I).

1.1 WURMP Copermittee Collaboration

WURMP development and implementation is a collaborative effort by all of the following San Diego Bay Copermittees:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority (Airport Authority)

The Port of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among San Diego Bay Copermittees and liaison between Copermittees and Regional Water Quality Control Board (RWQCB) staff. The San Diego Bay Copermittees met 11 times during this reporting period – **Appendix B** provides a summary of the dates and general topics of discussion. The majority of the meetings focused on the implementation of the San Diego Bay WURMP.

During the reporting period, the San Diego Bay Copermittees continued to collaborate extensively on the development of the Watershed Strategy that guides WURMP activity selection. An extensive explanation of the San Diego Bay Watershed Strategy (Watershed Strategy) was presented in the 2008 San Diego Bay WURMP document. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) defines the San Diego Bay WMA as being comprised of three watersheds, or hydrologic units (HUs). They are the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed. These HUs are further divided into hydrologic areas (HAs). The San Diego Bay Copermittees developed a database of baseline information consisting of land use, water quality monitoring data, and other information on potential pollutant sources, and identified the high priority water quality problems on a HA level.

Collaboration on the Watershed Strategy also enabled the San Diego Bay Copermittees to identify data gaps by reviewing existing monitoring and land use data. Such data provided the basis for developing additional water quality monitoring and source identification activities such as the coordinated dry weather monitoring program being implemented by the City of San Diego, the Port of San Diego, and the Airport Authority. Section 3 provides specific detail on each program that was initiated or completed during the FY 2011 reporting period.

1.2 TMDL Named Dischargers Collaboration

Chollas Creek Dissolved Metals, Diazinon, and Indicator Bacteria TMDLs

This reporting year represents the third year the Chollas Creek Dissolved Metals TMDL is in effect. It was approved by the State Board Office of Administrative Law on October 22, 2008. During the reporting period, the permitted Municipal Separate Storm Sewer System (MS4) dischargers named in the TMDL collaborated on a multi-pollutant strategy for addressing the TMDL as well as the development of the required Implementation Plan.
The Implementation Plan was submitted on October 21, 2009, to the RWQCB. The named dischargers include five watershed Copermittees, Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, Port of San Diego, as well as the U.S. Navy and the California Department of Transportation (Caltrans). In addition to the collaborative Implementation Plan, each discharger developed their own list of activities they participated in or will participate in to address the TMDLs. Dischargers met 11 times during this reporting year:

- July 19, 2010
- August 16, 2010
- September 20, 2010
- October 18, 2010
- December 13, 2010
- January 18, 2010
- February 28, 2010
- March 21, 2011
- April 18, 2011
- May 16, 2011
- June 20, 2011

The February meeting marked the start of joint TMDL meetings for both the Metals TMDL dischargers and the Bacteria TMDL responsible parties. The Bacteria TMDL dischargers include the same five watershed Copermittees (Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, and Port of San Diego) and Caltrans. Further discussion on the efforts made by the dischargers during FY 2011 is provided in Sections 3.5.3 and 4.2.2.

Because the strategy for addressing this TMDL is multi-pollutant and watershed based, the reporting of activities under this TMDL incorporates those activities for the Chollas Creek Diazinon TMDL as well. The named parties under the Diazinon TMDL include the same dischargers under the Chollas Creek Metals TMDL. Investigation Order R9-2004-0277 requires status reports of specific implementation elements. Further information on these specific elements is included in the Chollas Creek TMDL Compliance Monitoring Investigation Order R9-2004-0277 2009–2010 Water Quality Monitoring Report in **Appendix C**.

Shelter Island Yacht Basin Dissolved Copper and Indicator Bacteria TMDLs

The City of San Diego and Port of San Diego are named dischargers in the TMDL for Shelter Island Shoreline Park. While there are no waste load reductions required for MS4s discharging into the receiving waters along the shoreline at Shelter Island Shoreline Park under both wet weather and dry weather conditions, the responsible municipalities continued to implement BMPs and collect monitoring data during the reporting period.

The named parties in the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL began the process of cooperatively developing a strategy for addressing the TMDL during this reporting period. The named parties include two watershed Copermittees, the Port of San Diego and the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners. On March 11, 2011, the RWQCB issued Investigative Order No. R9-2011-0036 which

directed the Port of San Diego to submit technical reports pertaining to the SIYB Dissolved Copper TMDL. The named parties met on eight occasions during this reporting year:

- July 28, 2010
- October 21, 2010
- November 10, 2010
- April 8, 2011
- April 21, 2011
- April 25, 2011
- May 5, 2011
- May 18, 2011

The final Implementation Plan and monitoring plan was presented to the TMDL named parties at these meetings. The Port of San Diego submitted the SIYB Dissolved Copper TMDL implementation plan and compliance monitoring plan on May 31, 2011 as required by Investigative Order R9-2011-0036 (**Appendix H** and **Appendix I**). Further discussion on the efforts made by the named parties is provided in Sections 3.5.3 and 4.2.2.

1.3 San Diego Bay Watershed Map Updates

No updates have been made to the previously submitted Watershed Map. A copy of the most recent Watershed Map can be found in the 2008 San Diego Bay WURMP document.

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2 Water Quality and Pollutant Source Assessment

In accordance with Section J.3.b.2.c. of the Municipal Permit, this section provides a summary assessment of water quality and pollutant sources in the San Diego Bay WMA. The water quality summary assessment is based on the *FY 2011 San Diego County Municipal Copermittee Receiving Waters and Urban Runoff Monitoring Report* (Regional Monitoring Report). Where applicable, additional monitoring programs conducted by the San Diego Bay WMA Copermittees with respect to water quality and/or source identification studies are also incorporated into this section.

A complete presentation of the regional monitoring efforts conducted during the reporting period is located in the Regional Monitoring Report (Weston, January 2012). The Regional Monitoring Report includes analysis and discussion of the Core Management Questions that are required by the Municipal Permit.

In 2008, the San Diego Bay Copermittees identified HPWQPs in the San Diego Bay WURMP. In accordance with Municipal Permit requirements, monitoring data collected during each reporting period is compared to the established HPWQPs within the 2008 San Diego Bay WURMP document for assessment purposes. The findings of these comparisons are noted in the following sub-sections.

2.1 High Priority Water Quality Problems

The San Diego Bay WURMP Copermittees developed and presented a Baseline Watershed Evaluation (BWE) which utilized the 2005 Baseline Long-Term Effectiveness Assessment (BLTEA) (MOE, Weston, LWA, August 2005) water quality ratings, monitoring data, and source information to identify HPWQPs. **Table 2-1** presents the HPWQPs by HA within the San Diego Bay WMA.

Table 2-1: San Diego Bay Baseline High Priority Water Quality Problems

HA	Pollutant Categories						
	Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides	Sediment	Trash
Pueblo San Diego HU							
908.1	X	X	X	X	X		
908.2	X		X		X	X	X
908.3	X					X	X
Sweetwater HU							
909.1	X						
909.2					X		
909.3							
Otay HU							
910.1	X	X					
910.2	X						
910.3							

Unless there are significant long-term trends or other overwhelming evidence indicating a need for change in HPWQPs, they remain the same throughout the permit cycle. During FY 2011 there was no significant data or information collected that warrants a change in HPWQPs in the WMA.

2.2 Water Quality Assessment

New data collected and analytical results summarized in this section and in the Regional Monitoring Report (Weston, January 2012) will be taken into consideration as watershed activities are developed, but do not affect the HPWQPs identified in the 2008 San Diego Bay WURMP.

The San Diego Bay WMA consists of three major hydrologic units (HU) in the southern portion of San Diego County: Pueblo San Diego (908), Sweetwater (909), and Otay (910). Each HU varies in terms of size, population, and land use, and each has different water quality issues as a result. Each HU is analyzed independently to provide a more accurate water quality assessment. The following information will be presented for each HU:

- Relative HU characteristics
- Monitoring activities conducted during FY 2011
- Water Quality Assessment

The 2010 SWRCB Section 303(d) list was adopted by the SWRCB on August 4, 2010, and was finalized by the United States Environmental Protection Agency (USEPA) on October 11, 2011. Waterbodies which appear on the 2010 303(d) list are presented within their respective HUs. Within each HU, HPWQPs and potential sources of pollutants are presented by HA. Most monitoring programs evaluated in the assessment are conducted jointly by the San Diego County Copermittees in accordance with the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Municipal Permit. **Figure 2-1** provides the monitoring locations for the San Diego Bay WMA. It is important to note, that due to the rotational approach of monitoring conducted by the Regional Copermittees, receiving water mass loading stations within the southern portion of the County (including the San Diego Bay WMA) were not monitored during FY 2011. However, Chollas Creek is monitored on an annual basis regardless of the rotation schedule to meet the requirements of RWQCB Order No. R9-2004-0277, California Department of Transportation and San Diego Municipal Separate Storm Sewer System Copermittees Responsible for the Discharge of Diazinon into the Chollas Creek Watershed. Additional water quality monitoring and source identification studies conducted by San Diego Bay WMA Copermittees are also presented in this section. Activity summary sheets describing additional monitoring programs noted in the HU discussions can be found in **Appendix E** of this WURMP Annual Report.

Figure 2-1: Location of MLS, TWAS, and HAs – San Diego Bay WMA

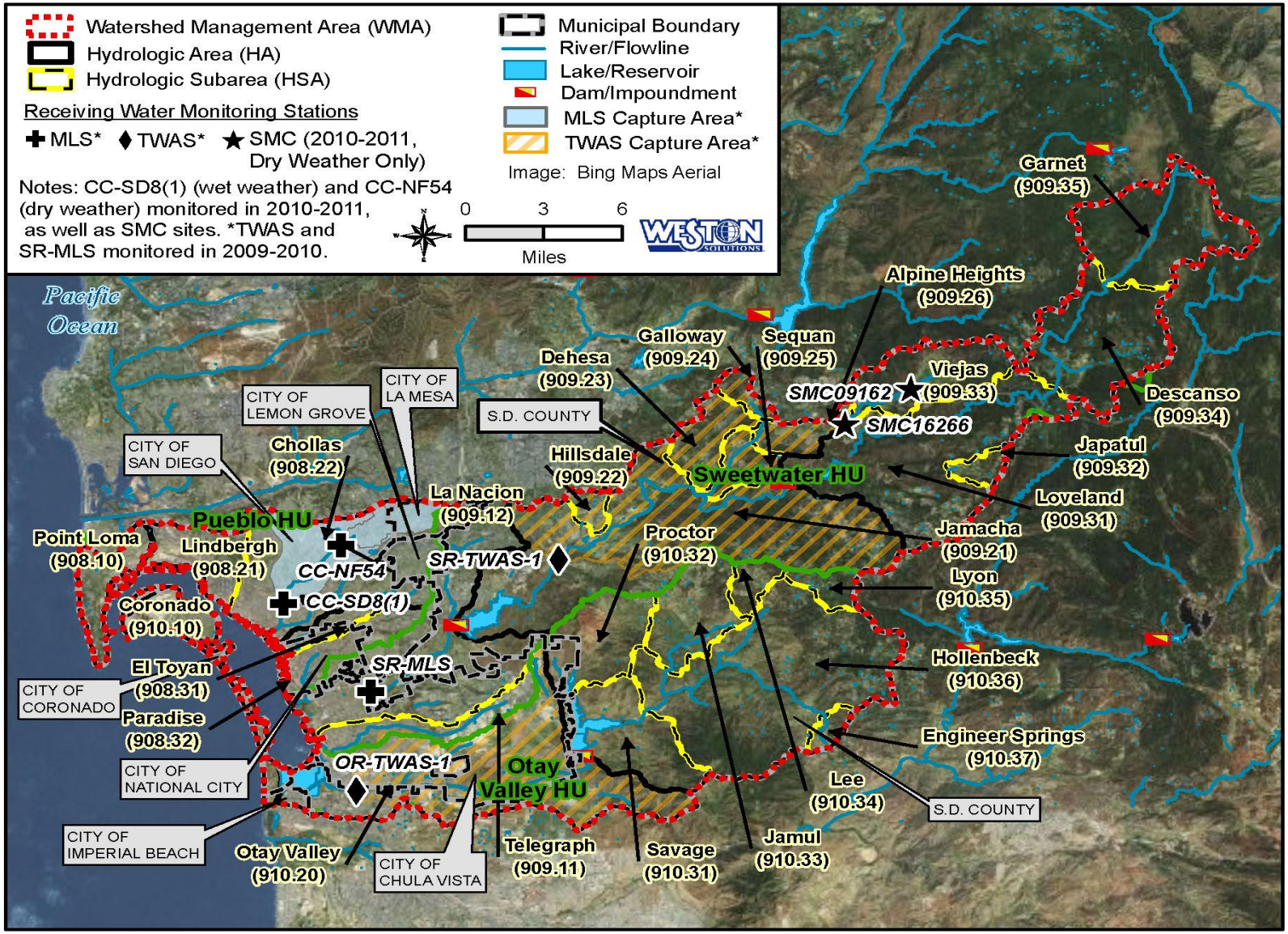

2.2.1 Pueblo Hydrologic Unit Assessment

This section provides an assessment of the water quality information for the Pueblo Hydrologic Unit and is presented by HA.

2.2.1.1 Pueblo Hydrologic Unit Characteristics

The Pueblo San Diego HU (908) is the smallest of the three San Diego Bay HUs, and is comprised of the Point Loma, San Diego Mesa, and National City HAs. Chollas Creek, Switzer Creek, Paleta Creek, and the San Diego Bay are the major waterbodies found within the Pueblo San Diego HU.

Table 2-2 presents the 2010 SWRCB Section 303(d) impaired waterbodies list for the Pueblo San Diego HU and their current TMDL status

Table 2-2: Pueblo HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
Pacific Ocean Shoreline, Bermuda Ave	908.10	Total coliform	Expected completion 2019
San Diego Bay Shoreline, Shelter Island Shoreline Park	908.10	Enterococcus, total coliform, fecal coliform	Approved 10/2009
San Diego Bay Shoreline, America's Cup Harbor	908.10	Copper	Expected completion 2019
San Diego Bay Shoreline, Harbor Island West Basin	908.10	Copper	Expected completion 2019
San Diego Bay Shoreline, near sub base	908.10	Sediment toxicity	Expected completion 2019
		Benthic effects and toxicity	Expected completion 2021
San Diego Bay, Shelter Island Yacht Basin	908.10	Dissolved copper	Approved 1/2003
San Diego Bay Shoreline, G Street Pier	908.21	Total coliform	Expected completion 2019
San Diego Bay Shoreline, Harbor Island East Basin	908.21	Copper	Expected completion 2019
San Diego Bay Shoreline, Switzer Creek	908.21	Chlordane and PAHs	Expected completion 2019
San Diego Bay Shoreline, B Street and Broadway Piers	908.21	Total coliform, benthic community effects, sediment toxicity	Expected completion 2019
San Diego Bay Shoreline, Downtown Anchorage	908.21	Benthic community effects and sediment toxicity	Expected completion 2019
San Diego Bay Shoreline, at Marriott Marina	908.21	Copper	Expected completion 2019
San Diego Bay Shoreline, Spanish Landing	908.21	Total coliform	Expected completion 2021
Chollas Creek	908.22	Copper, lead, zinc	Approved 12/2008
		Diazinon	Approved 11/2003
		Indicator bacteria	Approved 6/2011
		Phosphorus and nitrogen	Expected completion 2019
		Trash	Expected completion 2021
San Diego Bay Shoreline, near Chollas Creek	908.22	Benthic community effects and sediment toxicity	Expected completion 2010[1]
San Diego Bay Shoreline, 32nd Street Naval Station	908.22	Benthic community effects and sediment toxicity	Expected completion 2019

Table 2-2: Pueblo HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
San Diego Bay Shoreline, between Sampson Street and 28th Street	908.22	Mercury, PAHs, PCBs, and zinc	Expected completion 2013
		Copper	Expected completion 2015
San Diego Bay Shoreline, Near Coronado Bridge	908.22	Benthic community effects and sediment toxicity	Expected completion 2019
Switzer Creek	908.22	Copper, lead, zinc	Expected completion 2021
Paleta Creek	908.31	Copper and lead	Expected completion 2021
San Diego Bay Shoreline, Seventh Street Channel	908.31	Benthic community effects and sediment toxicity	Expected completion 2008[1]
San Diego Bay Shoreline, north of 24th Street Marine Terminal	908.32	Benthic community effects and sediment toxicity	Expected completion 2019
Paradise Creek	908.32	Selenium	Expected completion 2021

Source: SWRCB, 2010.
HSA - hydrologic subarea
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TMDL - total maximum daily load
[1]Due date published on 2010 303(d) list; TMDLs are in development.

2.2.1.2 Pueblo Hydrologic Unit Monitoring Activities

Table 2-3 provides a summary of monitoring activities conducted in the Pueblo HU during FY 2011. However, it is important to note that the monitoring was only conducted in 908.22 during FY 2011 and is therefore not representative of the entire HU. Additionally, the Chollas Creek MLS locations in 908.22 are different for wet and dry weather receiving water monitoring.

Table 2-3: FY 2011 Monitoring Activities in Pueblo HU

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**16**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	1-MLS
SMC Regional Monitoring	Water chemistry, toxicity, bacteria, rapid stream bioassessment	1-MLS
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	1-MLS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	1-MLS
Third-Party Data (Coastkeeper and Chollas TMDL)	General chemistry and bacteria	4-Coastkeeper 4-Chollas TMDL
Chollas Creek TMDL Compliance Monitoring (SDB-018)	Metals, pesticides, bacteria	2-MLS
Chollas Creek TMDL Special Studies (Appendix B)	Metals, pesticides, bacteria	4
Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-065)	Metals	0
Urban Runoff Monitoring		**325**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	103
Jurisdictional Dry Weather Monitoring - Trash	Trash	198
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	0
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	2

Table 2-3: FY 2011 Monitoring Activities in Pueblo HU

Program Data Set	Data Assessed	Number of Sites Assessed
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, pesticides, and bacteria	12
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	0
CSDM Program	Coastal outfall and receiving waters	9
Shelter Island Yacht Basin Urban Runoff Monitoring Study (SDB-053)	Metals	1

CSDM - Coastal Storm Drain Monitoring
MLS - mass loading station
MS4 - municipal separate storm sewer systems
SMC - Stormwater Monitoring Coalition
TOC - total organic carbon

2.2.1.3 Pueblo Hydrologic Unit Integrated Assessment

Tables 2-4 and **2-5** present integrated assessments of the ambient and wet weather conditions monitoring results for the areas tributary to each mass loading station. The comparison of receiving water and urban runoff results helps to understand the potential influence of urban runoff to water quality problems within receiving waters. Priority constituents which overlap between receiving waters and urban runoff are identified.

Table 2-4: FY 2011 Monitoring Activities in Pueblo HU (Chollas Creek)

CC-NF54 MLS Chollas Creek southwest of 54th St and Chollas Pkwy		
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *C. dubia* chronic (Med), *C. dubia* reproduction (Med), *S. capricornutum* acute (Med) • Biology – Very Poor IBI* • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen • TDS – Not applicable SMC Program • No samples collected upstream of CC-NF54 MLS Third-Party Data • No samples collected upstream of CC-NF54 MLS	No wet weather receiving water samples collected at this location in FY 2011[2]
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – *Enterococcus* • Nutrients – No data • TDS – No data	No wet weather receiving water samples collected at this location in FY 2011[2]
Trends		
Not Applicable at this time		

Note: Results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.
[2] The most recent data is presented in the LTEA (SDCRC 2011b)
*One sample used in analysis.

Med - medium-priority constituent
IBI - Index of Biotic Integrity
TDS - total dissolved solids
NPDES - National Pollutant Discharge Elimination System
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition

Table 2-5 FY 2011 Monitoring Activities in Pueblo HU (Chollas Creek 2)

CC-SD8(1) MLS Chollas Creek just east of I-15 and Steel St, and Chollas Pkwy N.		
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • Not Applicable Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Bacteria – *E. coli*, *Enterococcus*	NPDES Program • Chemistry – Dissolved Copper MBAS (Med), TSS (Med), Bifenthrin (Med), Permethrin (Med), Dissolved Lead (Med) • Toxicity – *H. azteca* acute • Biology – Very Poor IBI[3] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Not Applicable Synthetic Pyrethroids in Sediment* • No priority constituents identified Third Party (Chollas TMDL)[4] • Chemistry – Dissolved Copper, pH (Med), Malathion (Med)
Urban Runoff Monitoring	MS4 Program • Chemistry – TSS (Med) • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – No data • TDS – No data	MS4 Program* • Chemistry – TSS • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – No data
Trends[5]		
Increasing[6,7]	Total Coliform, Nitrite, Total Kjeldahl Nitrogen, Turbidity, Total Copper, Total Zinc	
Decreasing[6,8]	Nitrate, TDS, Total Arsenic, Malathion, *H. azteca* acute	

Note: Results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.

[2] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples.

[3] One bioassessment sample is collected each year during ambient conditions and is used for both the dry and wet assessment.

[4] Chollas TMDL includes one sample taken at CC-SD8(1) as well as two samples taken at LM-1 which is located upstream of CC-SD8(1).

[5] Trends based on wet weather historical data, including data from the FY 2011 monitoring year.

[6] Nitrite and nitrate concentrations have consistently been below the WQB for this site.

[7] Turbidity and *H. azteca* have consistently not met the WQB at this site.

[8] There have been no WQB exceedances for malathion since 2006.

*One sample used in analysis.

Med - medium-priority constituent	MLS - mass loading station
IBI - Index of Biotic Integrity	MS4 - municipal separate storm sewer system
TDS - total dissolved solids	TSS - total suspended solids
NPDES - National Pollutant Discharge Elimination System	MBAS - methylene blue active substances

The assessment of data collected in FY 2011 presented above supports the existing HPWQPs within the Pueblo HU. Other identified constituents may be further analyzed and addressed in future years.

2.2.2 SWEETWATER HYDROLOGIC UNIT ASSESSMENT

This section provides an assessment of the water quality information for the Sweetwater Hydrologic Unit and is presented by HA.

2.2.2.1 Sweetwater Hydrologic Unit Characteristics

The Sweetwater HU (909) is the largest of the three HUs within the San Diego Bay WMA. This HU is comprised of the Lower Sweetwater, Middle Sweetwater, and Upper Sweetwater HAs. The Sweetwater River, Sweetwater Reservoir, Loveland Reservoir, and San Diego Bay are the major waterbodies found within Sweetwater HU.

Table 2-6 presents the 2010 SWRCB Section 303(d) impaired waterbodies list for the Sweetwater HU and their current TMDL status.

Table 2-6: Sweetwater HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
San Diego Bay Shoreline, at Bayside Park (J Street)	909.11	Total coliform	Expected completion 2019
		Enterococcus	Expected completion 2021
Telegraph Canyon Creek	909.11	Selenium	Expected completion 2021
San Diego Bay Shoreline, Chula Vista Marina	909.12	Copper	Expected completion 2019
Lower Sweetwater River, below Sweetwater Reservoir	909.12	Enterococcus, fecal coliform, phosphorus, selenium, TDS, nitrogen, toxicity	Expected completion 2021
Sweetwater Reservoir	909.21	DO	Expected completion 2019
Loveland Reservoir	909.31	Aluminum, manganese, DO, pH	Expected completion 2019

Source: SWRCB, 2010.
TMDL - total maximum daily load.
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
HSA – hydrologic subarea
TDS – total dissolved solids
DO – dissolved oxygen

2.2.2.2 Sweetwater Hydrologic Unit Monitoring Activities

Table 2-7 provides a summary of monitoring activities conducted in the Sweetwater HU during FY 2011. As noted in Section 2.1, receiving water monitoring was not conducted at the Sweetwater MLS or TWAS locations during FY 2011 due to the rotational nature of the Regional Monitoring Program. For an analysis of the most recent data collected at the Sweetwater MLS and TWAS refer to the LTEA (SDCRC 2011b).

Table 2-7: FY 2011 Monitoring Activities in Sweetwater HU

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**16**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	2-SMC*
Rapid Stream Bioassessment and SMC Regional Monitoring Participation	Benthic macroinvertebrates, periphyton, and physical habitat	2-SMC
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	0
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	0
Third-Party Data (Coastkeeper)	General chemistry and bacteria	4-Coastkeeper
Ambient Bay and Lagoon Monitoring	Sediment chemistry, toxicity, and benthic habitat assessments, water chemistry and bacteria.	2-Water quality stations 6-Sediment stations
Urban Runoff Monitoring		**175**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	67
Jurisdictional Dry Weather Monitoring – Trash Assessment	Trash	75
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	5
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	2
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, pesticides, and bacteria	25
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
Regional Dry Weather Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	0
CSDM Program	Coastal outfall and receiving waters	1

SMC - Stormwater Monitoring Coalition
TOC - total organic carbon
MS4 - municipal separate storm sewer systems
CSDM - Coastal Storm Drain Monitoring
* The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over 5 years (http://socalsmc.org/ProjectThree.aspx).

2.2.2.3 Sweetwater Hydrologic Unit Integrated Assessments

Tables 2-8 and **2-9** present integrated assessments of the ambient and wet weather conditions monitoring results for the areas tributary to each mass loading station. The integrated assessments also identify which priority constituents overlap between receiving waters and urban runoff. The comparison of receiving water and urban runoff results helps to understand the potential influence of urban runoff to water quality problems within receiving waters. Priority constituents which overlap between receiving waters and urban runoff are identified.

Table 2-8: Sweetwater River MLS Drainage Area Assessment Findings

Sweetwater River MLS Sweetwater River at Plaza Bonita Rd and Sweetwater County Park		
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • No data[2] SMC Program • No samples collected upstream of SR-MLS Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Chemistry – DO • Bacteria – *Enterococcus*, *E. coli*	NPDES Program • No data collected in FY 2011[2] Synthetic Pyrethroids in Sediment • No data collected in FY 2011[2]
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen Dissolved Phosphorus (Med) • TDS – TDS	MS4 Program • No samples collected upstream of SR-MLS
Lagoon/ Estuary/ Bay Monitoring	ABLM FY 2011 (two stations) • 1 unimpacted (SR11-1) • 1 final station assessment not performed, salinity did not meet requirements of the SQO assessment tool (SR11-2)	Not Applicable
Trends[3]		
Increasing[4]	Total Arsenic, Dissolved Phosphorus	
Decreasing	Total Lead	
Source Identification		
Not Applicable		

Note: Results included in this table reflect data collected above the receiving water station and below the Sweetwater Reservoir.

Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.

[2] The most recent data for Sweetwater River-MLS is presented in the LTEA (SDCRC 2011b).

[3] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples.

[4] Trends are based on wet weather historical data. Due to rotational nature of the monitoring program, receiving water data for this station is not available for FY 2011.

[5] Dissolved phosphorous concentrations are consistently below the WQB at this site.

Med - medium-priority constituent	MLS - mass loading station
IBI - Index of Biotic Integrity	MS4 - municipal separate storm sewer system
TDS - total dissolved solids	SMC - Stormwater Monitoring Coalition
DO - dissolved oxygen	SQO - sediment quality objective
NPDES - National Pollutant Discharge Elimination System	ABLM - Ambient Bay and Lagoon Monitoring

Table 2-9 FY 2011 Sweetwater River TWAS-1 Drainage Area Assessment Findings

Sweetwater River TWAS-1 Sweetwater River at Campo Rd (CA-94), west of Steel Canyon County Park		
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • No data[2] SMC Program • No samples collected upstream of SR-TWAS-1 Third-Party Data – (Coastkeeper) [2] The following constituents did not meet Basin Plan benchmarks: • Chemistry – DO • Bacteria – *Enterococcus*	NPDES Program • No data collected in FY 2011[2] Synthetic Pyrethroids in Sediment • No data collected in FY 2011[2]
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – Total Nitrogen, Total Phosphorus, Dissolved Phosphorus • TDS – TDS	MS4 Program* • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – No priority constituents identified

Note: Results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.
[2] The most recent data for Sweetwater River-TWAS-1 is presented in the LTEA (SDCRC 2011b).
[3] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples.
* One sample used in analysis.

Med - medium-priority constituent	TWAS - temporary watershed assessment station
TDS - total dissolved solids	MS4 - municipal separate storm sewer system
NPDES - National Pollutant Discharge Elimination System	SMC - Stormwater Monitoring Coalition

Past monitoring data along with the Long Term Effectiveness Assessment (MOE, LWA, Weston, June 2011) support the existing HPWQPs within the Sweetwater HU. Other identified constituents may be further analyzed and addressed in future years.

2.2.3 OTAY HYDROLOGIC UNIT ASSESSMENT

The Otay HU (910) is comprised of the Coronado, Otay Valley, and Dulzura HAs. Upper and Lower Otay Reservoirs, Otay River, and San Diego Bay are the major waterbodies found within the Otay HU, whereas the principal aquifer in the watershed is the San Diego Formation.

Table 2-10 presents the 2010 SWRCB Section 303(d) impaired waterbodies list for the Otay HU and their current TMDL status.

Table 2-10: Otay HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
Pacific Ocean Shoreline, Silver Strand	910.10	Enterococcus	Expected completion 2019
Pacific Ocean Shoreline, Imperial Beach Pier	910.10	Total coliform, fecal coliform, PCBs	Expected completion 2019
Pacific Ocean Shoreline, Carnation Ave and Camp Surf Jetty	910.10	Total coliform	Expected completion 2019
San Diego Bay	910.10	PCBs	Expected completion 2019
San Diego Bay Shoreline, Tidelands Park	910.10	Total coliform	Expected completion 2019
		Enterococcus	Expected completion 2021
San Diego Bay Shoreline, at Coronado Cays	910.10	Copper	Expected completion 2019
San Diego Bay Shoreline, at Glorietta Bay	910.10	Copper	Expected completion 2019
Poggi Canyon Creek	910.20	Toxicity	Expected completion 2021
Lower Otay Reservoir	910.31	Ammonia, color, iron, manganese, pH (high)	Expected completion 2019
		Nitrogen	Expected completion 2021
Jamul Creek	910.33	Toxicity	Expected completion 2019
Source: SWRCB, 2010. HSA – hydrologic subarea		PCB - polychlorinated biphenyl TMDL - total maximum daily load.	

2.2.3.1 Otay Hydrologic Unit Monitoring Activities

Table 2-11 provides a summary of monitoring activities conducted in the Otay HU during FY 2011. As noted in Section 2.1, receiving water monitoring was not conducted at the Otay TWAS location during FY 2011 due to the rotational nature of the Regional Monitoring Program. For an analysis of the most recent data collected at the Otay TWAS refer to the LTEA (SDCRC 2011b).

Table 2-11: FY 2011 Monitoring Activities in Otay HU

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**2**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	0
SMC Regional Monitoring	Water chemistry, toxicity, bacteria, rapid stream bioassessment	0
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	0
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	0
Third-Party Data (Coastkeeper)	General chemistry and bacteria	2-Coastkeeper
Urban Runoff Monitoring		**138**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	49
Jurisdictional Dry Weather Monitoring – Trash Assessment	Trash	76
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	1
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	2
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, pesticides, and bacteria	9
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
Regional Dry Weather Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	0
CSDM Program	Coastal outfall and receiving waters	1

SMC - Stormwater Monitoring Coalition
TOC - total organic carbon
MS4 - municipal separate storm sewer systems
CSDM - Coastal Storm Drain Monitoring

2.2.3.2 Otay Hydrologic Unit Integrated Assessments

Table 2-12 presents an integrated assessment of the ambient and wet weather conditions monitoring results for the areas tributary to each mass loading station. The integrated assessments also identify which priority constituents overlap between receiving waters and urban runoff.

Table 2-12: FY 2011 Otay River TWAS-1 Drainage Area Assessment Findings

Otay River TWAS-1 Otay River at Beyer Blvd, less than one mile east of I-5		
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • No data[2] SMC Program • No samples collected upstream of OR-TWAS-1 Third-Party Data – (Coastkeeper) [2] The following constituents did not meet Basin Plan benchmarks: • Bacteria – *Enterococcus*, *E-coli*	NPDES Program • No data collected in FY 2011[2] Synthetic Pyrethroids in Sediment • No data collected in FY 2011[2]
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – No data • TDS – No data	MS4 Program • No samples collected upstream of OR-TWAS-1

Note: Results included in this table reflect data collected above the receiving water station and below Upper and Lower Otay Reservoirs.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.
[2] The most recent data for the Otay River TWAS is presented in the LTEA (SDCRC 2011b).
[3]. For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples.

Med - medium-priority constituent
TDS - total dissolved solids
NPDES - National Pollutant Discharge Elimination System
TWAS - temporary watershed assessment station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition

Past monitoring data along with the 2011 LTEA support the existing HPWQPs within the Otay HU. Other identified constituents may be further analyzed and addressed in future years.

2.2.4 San Diego Bay Special Studies and TMDLs

Copermittees conducted monitoring as part of special studies and/or TMDLs in the San Diego Bay WMA in order to address specific questions. The following sections provide information on monitoring conducted during the reporting period.

2.2.4.1 Chollas Creek Dissolved Metals and Diazinon TMDLs Monitoring

Compliance monitoring conducted in accordance with the Chollas Creek Diazinon and Dissolved Metals TMDL (Order R9-2004-0277) occurred at two locations during three storm events within the Chollas Creek drainage area. The metals data collected during the reporting period is similar to data reported in past reporting periods for the Chollas Creek Watershed. The following are findings from the FY 2011 monitoring effort:

- Exceedance ratios for dissolved copper, lead, and zinc were generally greater in the north fork (SD8(1)) than in the south fork (DPR2). Hardness values measured in the north fork were lower than the south fork. The differences between the north fork and south fork are related to the inverse relationship between the CTR values and hardness.
- Metals concentrations had higher rates of exceedance during the first-flush storm event of the season.
- Copper had a higher detection rate and exceedance rate than other metals.
- Lead concentrations were below the acute WLA. Unlike previous years, dissolved lead concentrations were also below the chronic WLAs for both sites.

Results

Dissolved copper concentrations at SD8(1) and DPR2 were above the acute and chronic waste load allocations (WLAs) during the first two storms after October 1, 2010. During the February storm, dissolved copper was above the acute and chronic WLA at SD8(1) and above the chronic WLA at DPR2. Dissolved lead was below the acute and chronic WLAs at both sites during all three storm events. Dissolved zinc at SD8(1) was above the acute and chronic WLAs during the first storm event only and was below the WLA at DPR2 during all three storm events. However, after applying newly developed site specific criteria developed through the City of San Diego's Chollas Creek Copper, Lead, and Zinc Water-Effect Ratio Study (Weston, 2011), dissolved copper, lead, and zinc were below the WLA.

Trends analysis indicated statistically significant increasing trends for total and dissolved copper and total and dissolved zinc in the north fork of Chollas Creek (SD8(1)). When compared to historical data (1994-2010), increasing trends are relatively shallow and have flattened over time. Increasing trends were also noted for total copper and dissolved copper and total zinc at DPR2. When compared to historical data (1994-2010), larger copper and zinc exceedance ratios during the 2007-2008 Monitoring Season created an increasing trend. Since 2009, copper and zinc results at DPR2 have been trending downward.

The organophosphate pesticides Diazinon and Malathion were detected in generally low concentrations during the FY 2011 Monitoring Season. Diazinon was below the acute and chronic WLAs during all events at both sites. Statistically significant decreasing trends were observed for Diazinon in both the north fork and south fork and non-detect results were frequently noted. As the residual supply of Diazinon becomes exhausted due to the USEPA ban on Diazinon, the frequency of detection in Chollas Creek should continue to decrease.

During Compliance Schedule Year 3 (FY 2011 Monitoring Season), no toxicity to *C. dubia* (acute or chronic survival, or reproduction) was observed at either site during the three monitored events. The results suggest that the copper and zinc results above the WLA did not impact the test organisms, thereby indicating protective conditions for these analytes.

2.2.4.2 Shelter Island Yacht Basin Dissolved Copper TMDL

The City of San Diego conducted MS4 monitoring during wet conditions to determine loads of copper which drain to the Shelter Island Yacht Basin (SIYB) located in north San Diego Bay (Activity Summary Sheet SDB-053). Findings from the monitoring efforts are as follows:

- The annual dissolved copper load from urban runoff into SIYB was below the TMDL estimates of 1% (30 kg/yr) of the total estimated load. The total annual dissolved copper load from the monitored and modeled outfalls into SIYB was calculated to be 7.23 kg/yr in FY 2011, which is less than the 30-kg/yr TMDL WLA. Combined with the 1.911-kg/yr annual load calculated in FY 2009 and the 1.87-kg/yr calculated in FY 2010, the average annual dissolved copper load over the three monitoring seasons was 3.67 kg/yr, also lower than the 30-kg/yr WLA for urban runoff in the TMDL.

- From the four monitoring seasons for which there are data, it is possible to look at the historical trend of wet weather dissolved copper concentrations. During the FY 2008 Monitoring Season, one composite sample was collected during a wet weather event. This sample represented an average concentration of dissolved copper during that storm event, and the concentration was 44.0 ug/L. During the FY 2009 Monitoring Season, the average wet weather concentration for dissolved copper was 27.12 ug/L, during the FY 2010 Monitoring Season the average concentration was 14.47 ug/L, and during the FY 2011 Monitoring Season the average concentration was 23.76 ug/L. These results reflect the variability in constituent concentrations during storm events observed throughout the region and there is no indication of a temporal trend in the average dissolved copper concentrations during wet weather from this limited dataset.

- There is dry weather dissolved copper concentration data for two monitoring seasons. During the FY 2010 Monitoring Season, the average dry weather concentration for dissolved copper was 6.41 ug/L. During the FY 2011 Monitoring Season, the average concentration was 4.11 ug/L. Additional data are needed to assess the presence of trends in dry weather dissolved copper concentrations.

2.3 Pollutant Source Assessment

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Diego Bay WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs and is presented by HA.

2.3.1 Pollutant Source Identification

The San Diego Bay WURMP Document Section 3.3. discusses potential sources of the baseline HPQWPs that may impact water quality throughout the San Diego Bay WMA. Since the development of the WURMP document, the San Diego Bay Watershed Copermittees have conducted additional source identification programs to help refine that information. The findings of additional pollutant source identification studies conducted during the FY 2011 reporting period are presented below. The San Diego Bay Copermittees will continue compiling information from monitoring and source identification studies in order to effectively select and implement source appropriate activities to reduce pollutant discharges.

City of San Diego Studies

Through four studies performed by the City of San Diego (*City of San Diego, 2010, Tecolote Creek Microbial Source Tracking Summary, Phases I, II, and III; City of San Diego, 2010,*

San Diego River Source Tracking Investigation – Phase I; and, City of San Diego, 2009, Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek by Weston Solutions Inc.; San Diego County Enterococcus Regrowth Study by Southern California Coastal Water Research Project (SCCWRP)), it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates regrowth in catch basins is a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[1], was found to provide both a bacteria transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishi et al., 2007; Yamahara et al., 2009).

Regional Source Identification Program

A Regional Source Identification Program was conducted in single family residential land use drainages within the jurisdictions of the City of Oceanside and the City of Del Mar. A detailed presentation of this study is presented in Section 12 of the Regional Monitoring Report. Results suggest that single family residential land uses are likely contributors of the following constituents during wet weather events:

- Sediment (TSS, turbidity)
- Metals (Dissolved Copper)
- Pyrethroid Pesticides (Bifenthrin, Cyfluthrin, L-Cyhalothrin, Permethrin)
- Bacteria (Fecal Coliforms)

The findings of this program can be used as a metric for understanding the potential extent and magnitude of these constituents within the San Diego Bay WMA. Residential land uses comprise 65,549 acres (23%) of the San Diego Bay WMA (SANDAG 2009 Land Use Data). Single family residential land uses comprise approximately 34% percent of the Pueblo HU, 12% of the Sweetwater HU, and 5% of the Otay HU (SANDAG 2009 Land Use Data). Both the upper portions of the Sweetwater and Otay HUs contain primarily open space and undeveloped land uses. Single family residential uses are more common within the lower portions of each HU. Constituent concentrations may vary depending on a variety of characteristics found within single family residential drainage areas. Factors which should be considered when applying the metric found in the regional source identification study include: age of neighborhood, size of properties, location of other land use types, etc.

2.3.2 Pollutant Source Assessment by Hydrologic Area

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Diego Bay WMA's HPWQPs. The pollutant source

[1] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by Hydrologic Area.

Table 2-13 summarizes the land use in each of the Hydrologic Areas. Runoff during wet weather mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to the pollutants found in dry weather urban runoff that are generally associated with identifiable dischargers such as residences, commercial facilities, etc. Urban runoff and illegal discharges to the MS4 associated with dry weather are usually the result of specific activities such as over irrigation, surface washing, spills, etc.

Tables 2-14 through **2-22** represent the inventoried sources that the Copermittees currently track. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants. The process used to develop the tables was taken directly from the 2005 BLTEA (Gross Pollutants) and 2011 LTEA (all other HPWQPs). The data used for the process includes the following:

1. Results in the FY 2011 Regional Annual Monitoring Report (Weston Solutions, 2012)

2. FY 2011 JURMP Annual Reports and current inventory information from all watershed Copermittees

3. Source Loading Potential (SLP) ratings from the 2005 BLTEA (Gross Pollutants) and 2011 LTEA (all other HPWQPs).

Table 2-13: Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)									Land Use Totals (acres)
	Pueblo			Sweetwater			Otay			
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	
Agricultural	-	14.8	-	68.6	584.7	2,163.2	-	429.8	759.2	**4,020.3**
Automotive and Transportation	36.4	1140.5	134.8	166.2	11.5	10.6	6.8	166.1	55.9	**1,728.8**
Beach, Bay and Lagoon	7.3	34.2	17.9	66.2	-	-	363.5	11.6	-	**500.7**
Commercial	240.1	1647.9	244.3	1,024.1	227.4	129.7	125.7	750.5	83.5	**4,473.2**
Health Services	16.4	131.6	27.7	62.4	11.4	10.1	16.4	71.5	-	**347.5**
Industrial	6	634.6	276.2	413.6	341.1	-	.1	1,778.6	56.9	**3,507**
Institutional	166.3	1,060.7	328.3	1,242.4	565.8	15.1	47.8	1,906.7	73.2	**5,406.3**
Junkyard, Dump, Landfill	-	14.3	-	-	77.3	-	-	785.3	-	**876.9**
Lake, Reservoir, Large Pond	3.4	14	-	54.6	946.7	427.9	8.3	-	1,040.5	**2,495.4**
Military	602.8	542.2	400.4	-	-	-	2,837.4	-	-	**4,382.8**
Mixed Use	-	4.6	1.7	.7	-	-	-	-	-	**7**
Mobile Home Park	-	121.2	4.6	228.5	139.5	99.8	2.1	383.2	-	**978.9**
Multi-Family Residential	84.8	1,644.2	305.9	1,033.2	277.9	117.1	121.3	765	14	**4,363.4**
Municipal	24.9	248.7	22.5	113.8	25.8	2.9	8.9	45.7	14.1	**507.3**
Open Space	207.2	1,534.7	207.3	4,842.3	14,233.6	19,533.2	77.6	9,903.3	37,127.3	**87,666.5**
Parks, Golf Courses, Cemeteries	122.3	1,038.2	138.9	1,101.6	923.6	1	367.1	655.3	12.9	**4,360.9**
Recreation	11.4	90	11.5	125.1	166	146.8	65.2	130.7	370.1	**1,116.8**
Residential	1	5.7	1.1	5.2	72	10.2	.6	45.9	27.2	**168.9**
Roads and Freeways	722.1	6,890	1,536	5,829.3	1,794.7	1,182.5	630.7	3,028	616.6	**22,229.9**
Single Family Residential	1,376	8,929.5	2,421	12,094.8	5,223.4	530.2	735.5	4,198.9	346.6	**35,855.9**
Spaced Rural Residential	-	14.9	7.9	453.3	10,202.2	7,361.4	-	26.6	7,094.3	**25,160.6**
Storage and Warehousing	-	75.4	113.8	99.3	31.5	-	.1	105.7	-	**425.8**
Utilities	50	168.5	16.9	431.9	121	6.5	14.8	338.9	32.1	**1,180.6**
Vacant and Undeveloped	709.3	618	156.2	1,092.2	17,510.8	30,997.8	111.8	4,043.3	15,532.7	**70,772.1**
TOTALS	**4,388**	**26,619**	**6,375**	**30,549**	**53,488**	**62,746**	**5,542**	**29,571**	**63,257**	**282,533.5**

Source: SANDAG 2009

Table 2-14: Pollutant Generating Sources – 908.1 Point Loma Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Agriculture	1	L	UL	UL	L	L	L	UK	L
Animal	12	N	L	UL	L	UK	L	UK	L
Automotive	36	L	L	L	UL	UL	UK	L	UL
Cemetery	0	N	N	UL	L	L	L	L	L
Contractor	139	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	171	N	L	L	UL	UK	UK	L	L
Equipment	12	L	L	L	UL	UL	UK	L	UL
Fueling	7	UK	L	L	UK	N	N	UK	N
General Industrial	11	L	L	L	UK	UK	UK	UK	UK
General Retail	16	UL	UL	UL	L	UL	UL	L	UL
Golf	1	N	N	UL	L	L	L	L	L
Health Services	1	N	L	UL	L	UK	L	UK	UL
Institutional	3	L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	19	L	UK	UK	UK	UK	UK	UK	UL
Metal	1	L	L	L	UK	UK	UK	UK	UL
Nursery	2	L	UL	UL	L	L	L	UK	L
Stone	4	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	89	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 15; Non-High: 0	L	L	L	L	UK	UK	UK	UL
Construction	High: 5; Medium: 2; Low: 3	UL	UL	UL	L	UL	UL	L	UL
Residential	1,462 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-15: Pollutant Generating Sources – 908.2 San Diego Mesa Hydrologic Area*

Inventory Sites/Facilities**	Quantities***	Pollutant Source Loading Potential****								
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria	Trash
Agriculture	7	L	UL	UL	L	L	L	UK	L	L
Animal	68	N	L	UL	L	UK	L	UK	L	L
Automotive	858	L	L	L	UL	UL	UK	L	UL	L
Contractor	628	UL	UL	UL	L	UL	UL	L	UL	L
Food Establishment	2,275	N	L	L	UL	UK	UK	L	L	L
Equipment	45	L	L	L	UL	UL	UK	L	UL	L
Fueling	63	UK	L	L	UK	N	N	UK	N	L
General Industrial	134	L	L	L	UK	UK	UK	UK	UK	L
General Retail	86	UL	UL	UL	L	UL	UL	L	UL	L
Golf	2	N	N	UL	L	L	L	L	L	L
Health Services	13	N	L	UL	L	UK	L	UK	UL	L
Institutional	51	L	UK	UK	UK	UK	UK	UK	UL	L
Manufacturing	96	L	UK	UK	UK	UK	UK	UK	UL	L
Metal	37	L	L	L	UK	UK	UK	UK	UL	L
Nursery	12	L	UL	UL	L	L	L	UK	L	L
Stone	35	L	UK	UK	UK	UK	UK	UK	UL	L
Storage & Warehousing	894	L	UK	UK	UK	UK	UK	UK	UL	L
Municipal	High: 248; Non-High: 41	L	L	L	L	UK	UK	UK	UL	L
Construction	High: 9; Medium: 12; Low: 8	UL	UL	UL	L	UL	UL	L	UL	L
Residential	10,716 acres	L	L	L	L	L	L	UK	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report.
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
*** The Quantities for this HA are based on 5 of the 6 Copermittees in the 908.2 HA
****Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-16: Pollutant Generating Sources – 908.3 National City Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***								
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens	Trash
Agriculture	1	L	UL	UL	L	L	L	UK	L	L
Animal	2	N	L	UL	L	UK	L	UK	L	L
Automotive	231	L	L	L	UL	UL	UK	L	UL	L
Contractor	125	UL	UL	UL	L	UL	UL	L	UL	L
Food Establishment	235	N	L	L	UL	UK	UK	L	L	L
Equipment	40	L	L	L	UL	UL	UK	L	UL	L
Fueling	15	UK	L	L	UK	N	N	UK	N	L
General Industrial	9	L	L	L	UK	UK	UK	UK	UK	L
General Retail	12	UL	UL	UL	L	UL	UL	L	UL	L
Golf	4	N	N	UL	L	L	L	L	L	L
Health Services	0	N	L	UL	L	UK	L	UK	UL	L
Manufacturing	5	L	UK	UK	UK	UK	UK	UK	UL	L
Metal	5	L	L	L	UK	UK	UK	UK	UL	L
Nursery	1	L	UL	UL	L	L	L	UK	L	L
Stone	11	L	UK	UK	UK	UK	UK	UK	UL	L
Storage & Warehousing	133	L	UK	UK	UK	UK	UK	UK	UL	L
Municipal	High: 23; Non-High: 11	L	L	L	L	UK	UK	UK	UL	L
Construction	High: 1; Medium: 8; Low: 32	UL	UL	UL	L	UL	UL	L	UL	L
Residential	2,741 acres	L	L	L	L	L	L	UK	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-17: Pollutant Generating Sources – 909.1 Lower Sweetwater Hydrologic Area*

Inventory Sites/Facilities**	Quantities***	Pollutant Source Loading Potential****							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	1	L	UL	UL	L	L	L	UK	L
Animal	8	N	L	UL	L	UK	L	UK	L
Automotive	327	L	L	L	UL	UL	UK	L	UL
Contractor	178	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	381	N	L	L	UL	UK	UK	L	L
Equipment	33	L	L	L	UL	UL	UK	L	UL
Fueling	54	UK	L	L	UK	N	N	UK	N
General Industrial	7	L	L	L	UK	UK	UK	UK	UK
General Retail	36	UL	UL	UL	L	UL	UL	L	UL
Golf	6	N	N	UL	L	L	L	L	L
Manufacturing	19	L	UK	UK	UK	UK	UK	UK	UL
Metal	3	L	L	L	UK	UK	UK	UK	UL
Nursery	8	L	UL	UL	L	L	L	UK	L
Stone	21	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	123	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 58; Non-High: 28	L	L	L	L	UK	UK	UK	UL
Construction	High: 3; Medium: 25; Low: 160	UL	UL	UL	L	UL	UL	L	UL
Residential	13,815 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
*** The Quantities for this HA are based on 6 of the 7 Copermittees in the 909.1 HA
****Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-18: Pollutant Generating Sources – 909.2 Middle Sweetwater Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	0	L	UL	UL	L	L	L	UK	L
Animal	7	N	L	UL	L	UK	L	UK	L
Automotive	24	L	L	L	UL	UL	UK	L	UL
Contractor	1	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	32	N	L	L	UL	UK	UK	L	L
Equipment	3	L	L	L	UL	UL	UK	L	UL
Fueling	8	UK	L	L	UK	N	N	UK	N
General Industrial	2	L	L	L	UK	UK	UK	UK	UK
General Retail	5	UL	UL	UL	L	UL	UL	L	UL
Golf	3	N	N	UL	L	L	L	L	L
Health Services	0	N	L	UL	L	UK	L	UK	UL
Institutional	0	L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	0	L	UK	UK	UK	UK	UK	UK	UL
Metal	2	L	L	L	UK	UK	UK	UK	UL
Nursery	9	L	UL	UL	L	L	L	UK	L
Stone	0	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	3	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 2; Non-High: 29	L	L	L	L	UK	UK	UK	UL
Construction	High: 4; Medium: 29; Low: 167	UL	UL	UL	L	UL	UL	L	UL
Residential	15,915 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-19: Pollutant Generating Sources – 909.3 Upper Sweetwater Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	3	N	L	UL	L	UK	L	UK	L
Automotive	0	L	L	L	UL	UL	UK	L	UL
Contractor	1	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	0	N	L	L	UL	UK	UK	L	L
Equipment	0	L	L	L	UL	UL	UK	L	UL
Fueling	0	UK	L	L	UK	N	N	UK	N
General Industrial	0	L	L	L	UK	UK	UK	UK	UK
General Retail	0	UL	UL	UL	L	UL	UL	L	UL
Golf	0	N	N	UL	L	L	L	L	L
Manufacturing	0	L	UK	UK	UK	UK	UK	UK	UL
Metal	0	L	L	L	UK	UK	UK	UK	UL
Nursery	0	L	UL	UL	L	L	L	UK	L
Stone	0	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	0	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 1; Non-High: 4	L	L	L	L	UK	UK	UK	UL
Construction	High: 0; Medium: 1; Low: 29	UL	UL	UL	L	UL	UL	L	UL
Residential	8,119 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (there are no HPWQP identified for this HA at this time). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-20: Pollutant Generating Sources – 910.1 Coronado Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	4	N	L	UL	L	UK	L	UK	L
Automotive	12	L	L	L	UL	UL	UK	L	UL
Contractor	3	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	118	N	L	L	UL	UK	UK	L	L
Equipment	0	L	L	L	UL	UL	UK	L	UL
Fueling	2	UK	L	L	UK	N	N	UK	N
General Industrial	0	L	L	L	UK	UK	UK	UK	UK
General Retail	65	UL	UL	UL	L	UL	UL	L	UL
Golf	0	N	N	UL	L	L	L	L	L
Manufacturing	0	L	UK	UK	UK	UK	UK	UK	UL
Metal	0	L	L	L	UK	UK	UK	UK	UL
Nursery	0	L	UL	UL	L	L	L	UK	L
Stone	0	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	1	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 8; Non-High: 19	L	L	L	L	UK	UK	UK	UL
Construction	High: 55; Medium: 0; Low: 239	UL	UL	UL	L	UL	UL	L	UL
Residential	860 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-21: Pollutant Generating Sources – 910.2 Otay Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	5	N	L	UL	L	UK	L	UK	L
Automotive	409	L	L	L	UL	UL	UK	L	UL
Contractor	145	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	374	N	L	L	UL	UK	UK	L	L
Equipment	17	L	L	L	UL	UL	UK	L	UL
Fueling	34	UK	L	L	UK	N	N	UK	N
General Industrial	94	L	L	L	UK	UK	UK	UK	UK
General Retail	163	UL	UL	UL	L	UL	UL	L	UL
Golf	3	N	N	UL	L	L	L	L	L
Manufacturing	78	L	UK	UK	UK	UK	UK	UK	UL
Metal	7	L	L	L	UK	UK	UK	UK	UL
Nursery	4	L	UL	UL	L	L	L	UK	L
Stone	26	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	189	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 43; Non-High: 13	L	L	L	L	UK	UK	UK	UL
Construction	High: 3; Medium: 25; Low: 58	UL	UL	UL	L	UL	UL	L	UL
Residential	5,036 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (greenhighlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-22: Pollutant Generating Sources – 910.3 Dulzura Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	4	N	L	UL	L	UK	L	UK	L
Automotive	1	L	L	L	UL	UL	UK	L	UL
Contractor	1	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	3	N	L	L	UL	UK	UK	L	L
Equipment	1	L	L	L	UL	UL	UK	L	UL
Fueling	1	UK	L	L	UK	N	N	UK	N
General Industrial	0	L	L	L	UK	UK	UK	UK	UK
General Retail	0	UL	UL	UL	L	UL	UL	L	UL
Golf	0	N	N	UL	L	L	L	L	L
Manufacturing	0	L	UK	UK	UK	UK	UK	UK	UL
Metal	0	L	L	L	UK	UK	UK	UK	UL
Nursery	1	L	UL	UL	L	L	L	UK	L
Stone	0	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	0	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 3; Non-High: 2	L	L	L	L	UK	UK	UK	UL
Construction	High: 0; Medium: 10; Low: 46	UL	UL	UL	L	UL	UL	L	UL
Residential	7,482 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (there are no HPWQP for this HA identified at this time). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix D** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

3 Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. Watershed Activity Implementation Summary Sheets for all watershed activities implemented during this reporting period, including activities implemented in compliance with a TMDL, are located in **Appendix E** of this Annual Report. The format of the activity summary template utilized by the San Diego Bay Copermittees is presented in the 2008 San Diego Bay WURMP document.

3.1 Watershed and JURMP Activities

The San Diego Bay WMA Copermittees implemented activities in the watershed as part of the WURMP and JURMP programs. In an effort to report on the Copermittees' jurisdictional activities performed in the WMA, data was collected for these activities on an HA basis. The data and information is not comprehensive and for some data sets, estimates were used to generate quantities for the activities – this is explained in **Appendix D** of the report.

Copermittees are responsible for implementing JURMP activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. Many of these activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

In addition to the JURMP activities, the San Diego Bay WURMP Copermittees are responsible for identifying and implementing watershed water quality and education activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 San Diego Bay WURMP document. The Copermittees believe it is an important step towards integrating jurisdictional and watershed activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The tables below represent the Copermittees' efforts towards reporting urban runoff management activities on a watershed basis, e.g., reporting of Copermittee activities regardless of jurisdiction-specific program labels. Reporting as many jurisdictional and watershed urban runoff management activities as feasible on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements.

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix E**) and are summarized in the Section 4 – Effectiveness Assessment.

Table 3-1: Watershed and JURMP Activities – 908.1 Point Loma Hydrologic Area

Activity			Results # of Inspections: (Inventory #)			High Priority Water Quality Problem(s)				
						Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides
Inspections	Municipal		High	Non-High				X	X	X
			15: (15)	0: (0)						
	Construction		High	Med	Low		X			
			30:(5)	11:(2)	16:(3)					
	Agriculture		0: (1)			X				X
	Animal		10: (12)			X				X
	Automotive		16: (36)				X	X	X	
	Boat Maintenance and Repair		4: (5)				X	X	X	
	Contractors		16: (139)				X			
	Food Establishment		69: (171)			X	X		X	
	Equipment		7: (12)				X	X	X	
	Fueling		4: (7)						X	
	General Industrial		0: (11)					X	X	
	Institutional		1: (3)					X		
	Manufacturing		2: (19)					X		
	Marina		16: (18)					X	X	
	Metal		0: (1)					X	X	
	Nursery		0: (2)			X		X		X
	Stone		2: (4)					X		
	Storage and Warehousing		6: (89)					X		
Street Sweeping (Tons Collected)			117			X				
Basins/Inlets/Ditches/MS4 (Tons Removed)			655.4			X				
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity				X				
SDB-021	Monitoring	Coordinated Dry Weather Monitoring Program								
SDB-025	Monitoring	Regional Harbor Monitoring Program				X	X	X	X	X
SDB-045	Education	ILACSD High School Watershed Presentations				X			X	X
SDB-053	Monitoring	Shelter Island 2010-2011 Compliance Monitoring						X		
SDB-060	Water Quality	Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials						X		

Table 3-2: Watershed and JURMP Activities – 908.2 San Diego Mesa Hydrologic Area[2]

Activity		Results # of Inspections: (Inventory #)[3]	High Priority Water Quality Problem(s)				
			Bacteria	Metals	Pesticides	Sediment	Trash
Inspections	Construction	High: 160: (9); Med: 80: (12); Low: 17: (8)				X	X
	Municipal	High: 314: (248); Non-High: 64: (41)		X	X	X	X
	Agriculture	2: (7)	X	X	X	X	X
	Animal	19: (68)	X		X		X
	Automotive	337: (858)		X			X
	Boat Maintenance and Repair	3: (3)		X			X
	Contractor	98: (628)				X	X
	Food Establishment	975: (2,275)	X				X
	Equipment	21: (45)		X			X
	Fueling	31: (63)					X
	General Industrial	70: (134)		X			X
	General Retail	19: (86)				X	X
	Golf	1: (2)	X		X	X	X
	Health Services	4: (13)				X	X
	Institutional	28: (51)		X			X
	Manufacturing	22: (96)		X		X	X
	Marina	7: (7)		X			X
	Metal	11: (37)		X			X
	Mining	0: (0)				X	X
	Nursery	5: (12)	X	X	X	X	X
	Stone	16: (35)		X		X	X
	Storage and Warehousing	147: (894)		X		X	X
Street Sweeping (Tons Collected)		1,188.9	X	X		X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		3,430.6	X	X		X	X
SDB-001	**Water Quality**	**Pet Waste Bag Collaborative Watershed Activity**	X				
SDB-001B	**Water Quality**	**Pet Waste Bag Dispenser Program Phase II**	X				
SDB-002B	**Water Quality**	**El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project**	X			X	X
SDB-003B	**Water Quality**	**Sweeper Speed Efficiency Study**	X	X		X	X
SDB-004	**Water Quality and Education**	**San Diego Bay Watershed Cleanup Events Collaborative Activity**	X				X

[2] Activities highlighted in bold occurred in Chollas Creek HSA 908.22
[3] The Results for this HA are based on 5 of the 6 Copermittees in the 908.2 HA

Activity			Results # of Inspections: (Inventory #)[3]	High Priority Water Quality Problem(s)				
				Bacteria	Metals	Pesticides	Sediment	Trash
SDB-009	Water Quality	Enhanced Construction Oversight					X	
SDB-010	**Water Quality**	**La Mesa Business Inspection Supplemental Watershed Questionnaire**			X	X		
SDB-014	**Water Quality**	**Southcrest Park Green Lot Infiltration Project**		X	X			
SDB-015	**Water Quality**	**Memorial Park Green Lot Infiltration Project**		X	X			
SDB-020	**Monitoring**	**Enhanced Dry Weather Monitoring Program**		X	X	X	X	X
SDB-021	**Monitoring**	**Coordinated Dry Weather Monitoring Program**		X	X	X		
SDB-022	Monitoring	La Mesa Additional Water Quality Monitoring Program				X	X	
SDB-025	Monitoring	Regional Harbor Monitoring Program		X	X	X	X	
SDB-032	**Education**	**Community-Based Social Marketing (CBSM) Pilot Study in Chollas Creek**		X	X			
SDB-037	**Water Quality**	**43rd and Logan Biofiltration Project for Chollas Creek Watershed Protection (Green Street)**		X	X			
SDB-042	**Education**	**La Mesa Park Kiosk**		X	X	X		X
SDB-045	**Education**	**I Love a Clean San Diego High School Watershed Presentations**		X	X	X	X	X
SDB-048	Water Quality	Outdoor Special Event Oversight						X
SDB-049	Water Quality	Maple Street Canyon Water Quality Improvement Project		X			X	X
SDB-050	**Water Quality**	**Chollas Creek Runoff Reduction and Groundwater Recharge Project**			X		X	
SDB-058	**Water Quality**	**Beta Green Alley**		X	X	X		X
SDB-059	**Water Quality**	**Commercial BMP Self Certification Pilot Program**		X	X		X	X
SDB-060	**Water Quality**	**Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials**			X			
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions		X	X	X	X	X
SDB-065	**Monitoring**	**Chollas Creek Copper, Lead, and Zinc Water-Effects Ratio Study**			X			
SDB-067	Education	Intergenerational Games		X				
SDB-070	**Water Quality**	**Multi-Family Residential Trash Area Pilot Program**		X				X
SDB-071	Water Quality	Targeted Catch Basin Cleaning Pilot Study		X	X		X	
SDB-072	Water Quality	Municipal Best Management Practices/Irrigation/Xeriscape				X	X	

Table 3-3: Watershed and JURMP Activities – 908.3 National City Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem(s)		
					Bacteria	Sediment	Trash
Inspections	Construction	High	Medium	Low		X	X
		17: (1)	90: (8)	14: (32)			
	Municipal	High		Non-High		X	X
		24: (23)		0: (11)			
	Agriculture	0: (1)			X	X	X
	Animal	2: (2)			X	X	X
	Automotive	90: (231)					X
	Boat Maintenance and Repair	2: (2)					X
	Contractor	29: (125)				X	X
	Food Establishment	80: (235)			X		X
	Equipment	11: (40)				X	X
	Fueling	7: (15)					X
	General Industrial	2: (9)					X
	Institutional	0: (1)					X
	Manufacturing	1: (5)				X	X
	Marina	0: (0)			X		X
	Metal	4: (5)					X
	Mining	0: (0)					X
	Nursery	1: (1)			X	X	X
	Stone	2: (11)					X
	Storage and Warehousing	18: (133)				X	X
Street Sweeping (Tons Collected)		662			X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		457.5			X	X	X
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity			X		
SDB-004	Water Quality and Education	San Diego Bay Watershed Cleanup Events Collaborative Activity			X		X
SDB-005	Water Quality	Clean Community Program			X		
SDB-007	Water Quality	Additional Dry Season Construction Inspections				X	X
SDB-060	Water Quality	Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials					

Table 3-4: Watershed and JURMP Activities – 909.1 Lower Sweetwater Hydrologic Area

Activity			Results # of Inspections: (Inventory #)[4]	High Priority Water Quality Problem(s)
				Bacteria
Inspections		Agriculture	0: (1)	X
		Animal	6: (8)	X
		Food Establishment	131: (381)	X
		Nursery	0: (8)	X
Street Sweeping (Tons Collected)			839.1	X
Basins/Inlets/Ditches/MS4 (Tons Removed)			469.6	X
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity		X
SDB-004	Water Quality and Education	San Diego Bay Watershed Cleanup Events Collaborative Activity		X
SDB-005	Water Quality	Clean Community Program		X
SDB-007	Water Quality	Additional Dry Season Construction Inspections		
SDB-025	Monitoring	Regional Harbor Monitoring Program		X
SDB-035	Water Quality	Update Recycling and Solid Waste Planning Manual		X
SDB-039	Education	Provide Homeowner's Association Education About Storm Water Pollution Prevention		X
SDB-040	Education	Storm Water Education Booth at Pet Festival and Doggy Dash		X
SDB-060	Water Quality	Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials		
SDB-066	Education	Focused Outreach to Equestrian Community		X
SDB-067-	Education	Intergenerational Games		X

[4] The results for this HA are based on 6 of the 7 Copermittees in the 909.1 HA

Table 3-5: Watershed and JURMP Activities – 909.2 Middle Sweetwater Hydrologic Area

Activity			Results # of Inspections: (Inventory #)		High Priority Water Quality Problem(s)
					Pesticides
Inspections	Municipal		High	Non-High	X
			2: (2)	22: (29)	
	Agriculture		0: (0)		X
	Golf		0: (3)		X
	Nursery		0: (9)		X
Street Sweeping (Tons Collected)			72.2		
Basins/Inlets/Ditches/MS4 (Tons Removed)			436.8		
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity			
SDB-001A	Water Quality	Pet Waste Bag Dispenser Program in County Parks			
SDB-004	Water Quality and Education	San Diego Bay Watershed Cleanup Events Collaborative Activity			
SDB-025	Monitoring	Regional Harbor Monitoring Program			
SDB-046	Water Quality	Land Acquisitions San Diego Bay Watershed			X
SDB-056	Water Quality	Stormwater Quality Master Plans for Special Drainage Fee Areas			X
SDB-060	Water Quality	Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials			
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions			X
SDB-066	Education	Focused Outreach to Equestrian Community			

Table 3-6: Watershed and JURMP Activities – 909.3 Upper Sweetwater Hydrologic Area

Activity			Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s) None Identified at this time
		Street Sweeping (Tons Collected)	84.7	N/A
		Basins/Inlets/Ditches/MS4 (Tons Removed)	512.5	N/A
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity		N/A
SDB-001A	Water Quality	Pet Waste Bag Dispenser Program in County Parks		N/A
SDB-056	Water Quality	Stormwater Quality Master Plans for Special Drainage Fee Areas		N/A
SDB-060	Water Quality	Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials		N/A
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions		N/A
SDB-066	Education	Focused Outreach to Equestrian Community		N/A

Table 3-7: Watershed and JURMP Activities – 910.1 Coronado Hydrologic Area

Activity			Results # of Inspections: (Inventory #)			High Priority Water Quality Problem(s)	
						Bacteria	Gross Pollutants
Inspections		Construction	High	Med	Low		X
			85: (55)	0: (0)	193: (239)		
		Agriculture	0: (0)			X	
		Animal	3: (4)			X	
		Automotive	10: (12)				X
		Equipment	0: (0)				X
		Food Establishment	94: (118)			X	X
		Nursery	0: (0)			X	
		Street Sweeping (Tons Collected)	240.6			X	
		Basins/Inlets/Ditches/MS4 (Tons Removed)	239.3			X	
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity				X	
SDB-004	Water Quality	San Diego Bay Watershed Cleanup Events Collaborative Activity				X	X
SDB-025	Monitoring	Regional Harbor Monitoring Program				X	X
SDB-045	Education	ILACSD High School Watershed Presentations				X	
SDB-047	Water Quality	Large Special Event Inspection and Clean-up				X	
SDB-060	Water Quality	Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials					

Table 3-8: Watershed and JURMP Activities – 910.2 Otay Hydrologic Area

Activity			Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s)
				Bacteria
Inspections		Agriculture	0: (1)	X
		Animal	3: (5)	X
		Food Establishment	173: (374)	X
		Street Sweeping (Tons Collected)	706.8	X
		Basins/Inlets/Ditches/MS4 (Tons Removed)	1,029.7	X
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity		X
SDB-001A	Water Quality	Pet Waste Bag Dispenser Program in County Parks		X
SDB-004	Water Quality	San Diego Bay Watershed Cleanup Events Collaborative Activity		X
SDB-025	Monitoring	Regional Harbor Monitoring Program		
SDB-035	Water Quality	Update Recycling and Solid Waste Planning Manual		X
SDB-039	Education	Provide Homeowner's Association Education About Storm Water Pollution Prevention		X
SDB-040	Education	Storm Water Education Booth at Pet Festival and Doggy Dash		X
SDB-045	Education	ILACSD High School Watershed Presentations		X
SDB-060	Water Quality	Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials		
SDB-061	Water Quality	Chula Vista Wildlife Reserve Restoration and Enhancement Project		X
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions		X
SDB-066	Education	Focused Outreach to Equestrian Community		X

Table 3-9: Watershed and JURMP Activities – 910.3 Dulzura Hydrologic Area

Activity			Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s)
				None Identified at this time
		Street Sweeping (Tons Collected)	135.5	N/A
		Basins/Inlets/Ditches/MS4 (Tons Removed)	514.2	N/A
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity		N/A
SDB-001A	Water Quality	Pet Waste Bag Dispenser Program in County Parks		N/A
SDB-004	Water Quality	San Diego Bay Watershed Cleanup Events Collaborative Activity		N/A
SDB-039	Education	Provide Homeowner's Association Education About Storm Water Pollution Prevention		N/A
SDB-040	Education	Storm Water Education Booth at Pet Festival and Doggy Dash		N/A
SDB-046	Water Quality	Land Acquisitions San Diego Bay Watershed		N/A
SDB-060	Water Quality	Source Control of Copper Water Pollutants, Senate Bill 346 Motor Vehicle Brake Friction Materials		N/A
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions		N/A
SDB-066	Education	Focused Outreach to Equestrian Community		N/A

3.2 San Diego Bay Education Program

The San Diego Bay Education Program is outlined in the San Diego Bay WURMP document. The focus of the education program is to provide useful information to the public about the San Diego Bay WMA and the high priority water quality problems within the watershed. The San Diego Bay Copermittees have committed to implementing several short and long-term educational activities that address watershed concepts and watershed pollutants. These tasks also overlap several programs that are required for NPDES Permit compliance on jurisdictional, watershed, or regional levels.

In addition to the watershed education activities included in Section 3.1, each jurisdiction also implemented targeted education programs within the San Diego Bay WMA that were part of other existing storm water or environmental programs. The education programs implemented by the San Diego Bay Copermittees are further summarized and described because they contribute to the overall increase in knowledge and behavior change within the WMA. **Table 3-10** below provides a summary of all the education activities implemented during the reporting period, and **Appendix G** provides a complete tabulation by jurisdiction of the watershed

Table 3-10: San Diego Bay Education Program Summary

Activity Type	General Description of Activity Type	Topics	Number*
Informational Kiosks	Watershed focused educational displays typically located at parks or municipal facilities	Stormwater BMPs, Water Conservation, Waste Storage, Handling, Disposal, Source Reduction Methods	36 displays
Municipal Staff Trainings	Watershed training provided to jurisdictional staff	General stormwater/watershed topics; BMP implementation; Park Maintenance; Inspection Procedures	Over 40 trainings held and ~560 municipal staff trained
Presentations	Presenting watershed information to an organization or group of people	Recycling Outreach; Watershed Education; TMDLs; Water Conservation	142 presentations reaching over an estimated 27,000 individuals
Print Media	The use of print media coverage for watershed education or information (i.e. newspaper articles; advertisement for events, etc.)	Watershed Pollution Prevention; BMP Implementation; Recycling Information; Community Event Information; Street Sweeping; Rainy Season BMP Information; Environmental Awareness;	19 Print Media methods utilized with the ability to reach over an estimated 140,000 individuals in the San Diego Bay WMA
School Programs (K-12 Children)	Any watershed education efforts focused on school children (i.e. Project SWELL[5], field trips, classroom presentations, etc.)	Watershed Education; Pollution Preventions; BMP Implementation;	Over 144 school program events reaching over 92,000 school-aged children

* These totals do not include the numbers for some events for which attendance was not recorded.

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[5] Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, Airport Authority, other municipalities, and non-profit organizations to establish comprehensive water quality and pollution prevention curricula in City schools. Started in May 2003, Project SWELL seeks to educate local school children about our region's watersheds while also fostering a sense of stewardship in these future leaders that will provide long-term solutions to the region's water quality problems.

3.3 San Diego Bay Public Participation Activities

The following section summarizes the activities and efforts made by the San Diego Bay Copermittees to encourage public participation during this reporting period. A complete list of public participation activities conducted within the watershed is included in **Appendix F**. Please note that this section only discusses the activities that were identified in the Public Participation section of the WURMP and relate to the San Diego Bay WMA. The San Diego Bay Copermittees have also conducted a number of regional programs and events involving the public in general water quality issues. Many municipalities have worked with stakeholders on efforts such as grant applications and water quality data collection.

3.3.1 Storm Water Copermittee Collaboration and Community Workshops

Stakeholder participation is vital to the success of watershed activities. The San Diego Bay Copermittees provided several forums during the year that allowed various stakeholder groups to participate in WURMP activities. Community workshops and activities that enhanced collaboration among San Diego Bay Copermittees are discussed below.

San Diego Bay WURMP Meetings

San Diego Bay WURMP Workgroup met eleven (11) times during the reporting period to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue to inform, consult, and involve Copermittees and other stakeholders on local watershed efforts. **Appendix B** presents a summary of the meetings held by the workgroup during the reporting period, including an outline of the principal agenda items.

Workshops and Conferences

San Diego Bay Copermittees conducted five (5) educational workshops addressing storm water issues to inform and involve the public during the reporting period. These workshops reached approximately 109 individuals and targeted representatives from businesses and the general public. The topics for the workshops included Total Maximum Daily Loads, monitoring, composting, BMP Implementation and Integrated Pest Management. During the workshops, those in attendance were given opportunities to ask questions about the topics and provided with educational materials.

Presentations

As noted in **Table 3-10** above, the San Diego Bay Copermittees conducted approximately 270[6] informational presentations during the reporting period, targeting many different types of audiences including schools, community groups, and tour groups. These educational presentations provided educational media as well as a venue for questions about storm water issues to be discussed. The total number of persons attending presentations is estimated at 34,758.

Community Events

During this reporting period, the San Diego Bay Copermittees participated in 63 watershed related community special events such as the Jazz Festival, Otay Valley Regional Park Day, and Day at the Docks. There were over approximately 1.4 million community event participants during FY 2011. Collectively, the community events met all five public

[6] This number includes both presentations and school children presentations from Table 3-10

participation objectives presented in the San Diego Bay WURMP: to inform, consult, involve, collaborate, and empower the public. Many of the community events in FY 2011 also addressed regional water quality issues that spanned several watersheds. The San Diego Bay Copermittees feel such broad based activities play an important role in engaging the public on important water quality issues and that such public participation does positively impact water quality both in the San Diego region as a whole and in San Diego Bay.

Cleanup Events and Waste Collection

Though the San Diego Bay Copermittees have identified trash as a constituent of concern for the Pueblo HU, the Copermittees continued to implement a variety of activities to address this issue where applicable and, as a proactive measure, throughout the entire San Diego Bay WMA. Cleanup events are an effective means of not only involving the community in protecting water quality, but also specifically removing trash from water bodies in urban settings. During cleanup events, participants are provided with educational material regarding watershed concepts and have the opportunity to discuss storm water issues with city staff and knowledgeable volunteers. There were 78 clean-up activities that occurred in the San Diego Bay WMA during the reporting period and an estimated 14,700 individuals assisted in the clean-up activities. The clean-up activities range from individuals collecting litter to organized larger scale clean-up events.

Free collection of household hazardous waste (HHW), electronic, and universal waste also occurred during FY 2011. Often residents illegally dump these materials due to a combination of economic pressures, inconvenience, and/or lack of knowledge regarding where to go to dispose of the items. There were eight (8) waste collection events held during FY 2011 in the San Diego Bay WMA which assisted in providing an avenue for the public to properly dispose of used oil, appliances, and other items for which they might otherwise have had to pay fees or transport for long distances.

3.3.2 Websites

During the reporting period, the Project Clean Water (PCW) website continued to successfully provide a means of public participation by informing and involving the public on San Diego Bay water quality issues. Each of the three HUs which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have pages devoted to them that are available for both the San Diego Bay Copermittees and public viewing. The San Diego Bay WURMP page includes downloadable WURMP and WURMP Annual Report documents, as well as land use and MS4 maps. The page specifically states that the San Diego Bay Copermittees are seeking public comment on the program and provides mail, email, and telephone contact information for the Lead Copermittee. The San Diego Bay WURMP had 624 hits, and the Pueblo, Sweetwater and Otay Watersheds received 992, 1,372, and 1,150 hits respectively during the reporting period.

In addition to the PCW website, the Port of San Diego continues to display the Project ORCA (Online Research Coastal Academy) site, which provides interactive, San Diego Bay focused, environmental education targeted at children. The Copermittees' regional website (www.thinkblueregion.org) also serves as a web portal that provides storm water educational information and links to each member agency's website.

3.3.3 Direct Interaction

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' staff continued to interact with the public on a daily basis during FY 2011.

Municipal employees receive storm water training on an ongoing basis, as described in each JURMP. Staff with program implementation responsibilities receives the most intensive training, but other employees are educated about storm water issues as well. Municipal employees interact with the public in their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about storm water issues and regulations, as well as answer questions and provide guidance. This day-to-day personal interaction is an important component of the San Diego Bay Copermittees public participation activities.

3.4 Collaborative Land-Use Planning Efforts

In recent years water quality management efforts have become increasingly watershed-focused, and the San Diego Bay Copermittees are working to integrate watershed management concepts into programs that can be implemented across jurisdictional boundaries. In general, this effort includes participation in watershed management plans, utilizing regional guidance documents, and increasing public participation. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and a balance of land uses when planning future development.

Several planning activities have been initiated including the Otay River Watershed Management Plan (ORWMP) and the Otay River Special Area Management Plan (SAMP). Links to pages discussing the ORWMP and the Otay River SAMP are included on the Project Clean Water website. The sites include a variety of plan-related documents for public review and announcements of public meetings.

The ORWMP has been approved by the Port, the County of San Diego, Imperial Beach and the City of San Diego. The City of Chula Vista has yet to determine whether to approve the ORWMP. Therefore, there are no new action items to report for this reporting period. An interim Watershed Council will be established once the ORWMP has been approved.

A draft SAMP was submitted to the ACOE in May of 2010 and currently still under review by that agency. Additional meetings to discuss progress on the draft document are scheduled for late 2011.

3.5 Updated Five-Year San Diego Bay WURMP Strategic Plan

The San Diego Bay WURMP's Strategic Plan is assessed on an annual basis and may be updated to reflect the current status of watershed activities and any modifications to previous versions of the Strategic Plan. The updated Implementation Plan Schedule of San Diego Bay WURMP is presented in **Table 3-12** and is intended to supercede the previous version presented in the 2008 San Diego Bay WURMP document. In addition, the Copermittees are progressing towards making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding WURMP permit language.

3.5.1 New Activities

The San Diego Bay Copermittees added new watershed activities to the San Diego Bay WURMP Strategic Plan during FY 2011 which include three (3) new water quality activities (SDB-070 Multi-Family Residential Trash Area Pilot Program; SDB-071 Targeted Catch Basin Cleaning Pilot Study; and SDB-072 Municipal Best Management

Practices/Irrigation/Xeriscape) and one (1) new education activity (SDB-073 Walk the Watershed Event Otay HU). The activity summary sheets for these activities are presented in **Appendix E**.

3.5.2 Updates to TMDL Implementation Plan Activities

As noted in the introduction, there are currently five adopted TMDLs in the San Diego Bay WMA: the Chollas Creek Diazinon TMDL, the Chollas Creek Dissolved Metals TMDL, SIYB Dissolved Copper TMDL, the Baby Beach and Shelter Island Shoreline Park Indicator Bacteria TMDL, and the Indicator Bacteria, Project I. The named dischargers of the Chollas Creek Diazinon and Dissolved Metals TMDLs have developed an Implementation Plan defining the approach to planning, implementing, and assessing the effectiveness of best management practices (BMPs) with the goals of attaining the waste load allocations (WLAs) for dissolved metals and restoring the beneficial uses of the Chollas Creek Watershed. The named dischargers of the SIYB Dissolved Copper TMDL continued to develop the Implementation Plan during this reporting period. The responsible parties for the Bacteria, Project I TMDL began the development of a Comprehensive Load Reduction Plan during the reporting period. An assessment of the efforts to address TMDL compliance during this reporting period is presented in Section 4.2 of this Annual Report.

Chollas Creek Dissolved Metals TMDL Implementation Plan Activities

The seven named dischargers developed an Implementation Plan which presents the strategy, framework, and activities for the first five years under the TMDL using a multi-pollutant approach. The dischargers have begun implementing activities as part of their comprehensive Storm Water Programs that will help in meeting TMDL compliance for both the Metals TMDL and the Diazinon TMDL. The dischargers also have a number of activities planned over the next few years. Specific activities that the dischargers are implementing are included in tabular format in **Appendix F**. Fifty-six activities, including 15 water quality, 9 education, 3 monitoring, and 29 ongoing agency-wide activities, were in implementation in FY 2011.

Of special note, several dischargers worked diligently in support of Sustainable Conservation's efforts on the "Brake Pad Partnership" to pass State Bill 346 (Kehoe) Hazardous materials motor vehicle brake friction materials. SB 346 (Kehoe) addresses a significant source of dissolved copper in the watershed by requiring the reduction of copper in brake pads sold in California from up to 10% by weight to 0.5% by 2025. The bill would also limit the use of other harmful water pollutants such as lead, mercury, zinc, cadmium, and asbestos in brake pads.

While activities implemented to address the Chollas Creek Diazinon TMDL are referenced in the discussion above, the dischargers that are responsible under the Diazinon TMDL must report on specific implementation elements. These updates are included in **Appendix C**, as part of the annual response to monitoring report. However, specific activities referenced as part of the implementation elements discussion in **Appendix C** are also included in the Metals TMDL dischargers' tables in **Appendix F**, demonstrating the multi-pollutant approach to the Metals TMDL.

SIYB Dissolved Copper TMDL Implementation Plan Activities

The named parties, the Port of San Diego, the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners continued the development of the TMDL Implementation Plan and TMDL compliance monitoring plan during this reporting period (**Appendix H** and **Appendix I**). The Implementation Plan incorporates a collaborative approach among the

named parties to planning, implementing, and assessing BMPs to achieve reductions in copper loading into SIYB. The Implementation Plan will utilize a solutions-oriented strategy of establishing BMPs that help realize the objective of reducing copper loading into the basin in order to preserve and restore the beneficial uses, while simultaneously achieving compliance with the SIYB interim and final dissolved copper loading thresholds. Loading reductions will be achieved through conversion of vessels to non-copper-based paints, reductions of inputs via hull cleaning, and control of upstream inputs. Therefore, the named parties identified BMPs and other activities that can be best implemented within their given facility/operations in order to collectively achieve compliance with TMDL loading targets for the entire basin.

On March 11, 2011, the RWQCB issued Investigative Order No. R9-2011-0036 which directed the Port to submit technical reports pertaining to the SIYB Dissolved Copper TMDL. The SIYB Dissolved Copper TMDL implementation plan and compliance monitoring plan were submitted as required by Investigative Order R9-2011-0036 to the RWQCB on May 31, 2011. The named parties worked to finalize vessel tracking standards, a vessel tracking database template and worked to collect vessel data on hull paints. The named parties met on eight occasions during this reporting year: July 28, 2010; October 21, 2010; November 10, 2010; April 8, 2011; April 21, 2011; April 25, 2011; May 5, 2011; and May 18, 2011. The final Implementation Plan and monitoring plan was presented to the TMDL named parties for review during the aforementioned meetings.

The monitoring plan includes a description of the annual monitoring that will be conducted each summer and the vessel tracking obligations that will be required. The monitoring plan is consistent with the Regional Board's acknowledgment that compliance (at least for the first phase) will be measured by vessel conversions. Information generated from both the water quality monitoring and the vessel conversion tracking will be turned in annually to the Regional Board as required. Development of the Implementation Plan and monitoring plan was completed during this reporting period. As a result, monitoring will be initiated during the next reporting period.

The City of San Diego has also been conducting urban runoff monitoring for SIYB to identify spatial or temporal patterns in dissolved copper loads. The waste load allocation (WLA) of dissolved copper from the City of San Diego's municipal separate storm sewer system (MS4) via urban runoff is approximately 1% of the total load (based on the model used to develop the TMDL). Because of this relatively small contribution, urban runoff from the City of San Diego MS4 has not been assigned a load reduction in the TMDL. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

Table 3-11: Updated Implementation Plan Schedule

San Diego Bay Watershed	Hydrologic Area									Pollutants														
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																								
Trash and Debris Related Activities																								
Pet Waste Bag Collaborative Watershed Activity (SDB-001)	X	X	X	X			X	X	X	●				●						I	I	I	I	I
Storm Drain Litter Control Techniques Collaborative Watershed Activity (SDB-002a)		X	X	X														●	●	I	Completed			
Storm Drain Litter Control Techniques Collaborative Watershed Activity – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (SDB-002b)		X	X	X														●	●	P	P	I	I	I/A
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)	X	X	X	X			X						●					●	●	I	I	I	No activity sheet-Now in Sections 3 & 4	
Median Sweeping Pilot Study (SDB-003a)		X											●							-	P	I/Completed		
Sweeper Speed Efficiency Study (SDB-003b)		X											●							-	-	P	I	
San Diego Bay Cleanup Events Collaborative Activity (SDB-004)		X	X	X			X	X											●	I	I	I	I	I
Clean Community Program (SDB-005)			X	X						●		●							●	I	I	I	I	I
Trash Containment Boom Cleaning Agreement with US Navy (SDB-006)		X	X							●									●	I	I/Completed			
Chollas Creek Family Stream Team Initiative Partnership (SDB-051)		X											●						●	P	I	I/Completed		
Multi-Family Residential Trash Area Pilot Program (SDB-070)		X																	●				P	I
Targeted Catch Basin Cleaning Pilot Study (SDB-071)		X								●		●	●					●	●				P	I
Enhanced Inspection Activities																								
Additional Dry Season Construction Inspections (SDB-007)			X	X														●	●	I	I	I	I	I
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)		X											●							P	I	I	Completed	
Enhanced Construction Oversight (SDB-009)		X																●		I	I	I	I	I
Targeted Municipal Facility Inspections (SDB-036)		X								●			●	●						I	Discontinued			
Large Special Event Inspection and Clean-Up (SDB-047)							X			●										I	I	A	I	I
Outdoor Special Event Oversight (SDB-048)		X																	●	I	I	I	I	I
Targeted Special Studies																								
Chollas Creek Water Quality Protection & Habitat Enhancement Project (SDB-011)		X								●	●	●	●	●	●	●	●	●		I	Completed			
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)	X	X	X	X				X		●				●	●		●	●		P	I	I/A	Completed	
Dalbergia "Green Mall" Infiltration Retrofit Project (SDB-013)		X								●			●							P	P	P	Cancelled	
Southcrest Park "Green Lot" Infiltration Project (SDB-014)		X								●			●							P	P	P	P	P
Memorial Park "Green Lot" Infiltration Retrofit Activity (SDB-015)		X								●			●							P	P	P	I	I
43rd and Logan Biofiltration Project for Chollas Creek Watershed Protection (SDB-037)		X								●			●							P	P	P	I	I
Maple Canyon Water Quality Improvement (SDB-049)		X								●								●	●	P	P	P	P	P

Table 3-11: Updated Implementation Plan Schedule

San Diego Bay Watershed	Hydrologic Area									Pollutants										FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash					
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)		X											●							P	I	A	I/A	I/A
Treatment Control BMP Pilot Projects (SDB-034)		X											●							P	I	A	Completed	
Beta Alley Green Street Filtration (SDB-058)		X								●		●	●		●		●	●	●	-	-	P	P	P
Other Water Quality Activities																								
Shelter Island Yacht Basin Dissolved Copper TMDL (SDB-016)	X												●							Activity Summary sheets will no longer be submitted for TMDL efforts will now be discussed in Sections 3 and 4.				
Chollas - Switzer - Paleta Creek Mouths TMDL (SDB-017)	X	X											●			●								
Chollas Creek Diazinon TMDL (SDB-018)	X	X															●							
Chollas Creek Dissolved Metals TMDL (SDB-019)		X											●											
Update Recycling and Solid Waste Planning Manual (SDB-035)				X				X	X	●				●					●	P	I	I	I	I
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●	I	I	I	I	I
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	I	I	I	I	I
Palm Avenue Stormwater Diverter (SDB-052)							X			●			●	●			●	●		P	I	No longer reporting on this activity		
Stormwater Quality Master Plans for Special Drainage Fee Areas (SDB-056)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●	P	P	I	I	I
Commercial BMP Self Certification Pilot Program (SDB-059)		X								●			●	●			●	●		-	-	P	I	I
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials (SDB-060)	X	X	X	X	X	X	X	X	X				●							-	P	P	P	P
SDBla Vista Wildlife Reserve Restoration and Enhancement Project (SDB-061)				X				X		●							●	●		-	P	P	P	P
Residential Rain Barrel Subsidies & Distributions (SDB-062)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●	-	-	P	I	I
Municipal Best Management Practices/Irrigation/Xeriscape (SDB-072)		X								●			●	●		●	●	●					I	I
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																								
Enhanced Dry Weather Monitoring Program (SDB-020)		X								●	●	●	●	●	●	●	●	●	●	I	I	I	I	I
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								●			●	●		●	●	●	●	I	I	I	I	I
La Mesa Additional Water Quality Monitoring Program (SDB-022)		X								●	●	●	●	●	●	●	●	●		I	I	A	A	A
BMP Effectiveness Monitoring Program (SDB-023)		X										●	●		●			●		I	I	I	I	I
Dry Weather Aerial Deposition Study – Phase I (SDB-024a)		X											●					●		I	Completed			
Dry Weather Aerial Deposition Study – Phase II (SDB-024b)		X											●					●		P	I/Completed			
Dry Weather Aerial Deposition Study – Phase III (SDB-024c)		X											●					●		P	I/Completed			
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X			●	●	●	●	●	●	●	●	●		I	I	I	I	I
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (SDB-026)		X								●								●		I	Completed			
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (SDB-027)		X								●										I	I/Completed			
Shelter Island TMDL Urban Runoff Monitoring Study (SDB-053)	X												●							P	I	I	I	I

Table 3-11: Updated Implementation Plan Schedule

San Diego Bay Watershed	Hydrologic Area									Pollutants										FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash					
Switzer Creek Pesticide Source Monitoring Study (SDB-054)		X															●			P	I/Completed			
Water Quality Monitoring at Additional Mass Loading Stations (SDB-057)					X	X			X	●	●	●	●	●		●	●	●		P	I/Completed			
B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-063)		X											●				●			-	-	P/I	Completed	
Chollas and Paleta Creeks Characterization Study (SDB-064)		X	X										●				●			-	-	P/I	Completed	
Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-065)		X											●							-	-	P/I	I	I
Educational Activities																								
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)			X	X						●			●				●			I	I	A	A	A
Storm Drain Stenciling (SDB-028)				X				X	X	●	●	●	●	●	●	●	●	●	●	P	I/A	I/A	Discontinued	
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	●		●							●	P/I	I	No longer reporting on this activity		
Outdoor Transit Shelters and Billboards Advertisements (SDB-030)	X	X	X	X				X	X	●									●	P/I	I/Completed			
Mobile Advertising (SDB-031)	X	X	X	X				X	X	●		●	●		●		●	●	●	P/I	I/A	Discontinued		
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	●		●	●						●	P	I	I	I	I
City of Coronado Fire Department Open House (SDB-033)							X			●	●	●	●	●	●	●	●	●	●	I	I	No longer reporting on this activity		
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	●										P	I	I	I	I
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	●										P	I	I	I/A	I/A
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	●					●					P	I	A	No longer reported	
La Mesa Park Kiosk (SDB-042)		X								●			●				●			I	I	I	I	I
LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	P	I/Completed			
ILACSD Elementary School Watershed Presentations (SDB-044)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	P	I/Completed			
ILACSD High School Watershed Presentations (SDB-045)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	-	P	I	I/A	I/A
San Diego Bay Watershed Brochure (SDB-055)	X	X	X	X				X	X	●	●	●	●	●	●	●	●	●	●	-	P	P	I	I
Focused Outreach to Equestrian Community (SDB-066)				X	X	X		X	X	●				●				●		-	P	I	I	I
Integenerational Games (SDB-067)		X		X						●			●		●		●		●	I	I	I	I	I
Stream Team Stewards (SDB-068)		X								●	●	●	●	●	●	●	●	●	●	-	I	I/Completed		
Walk the Watershed Event – Otay HU (SDB-073)								X		●		●	●		●		●	●	●	-	-	-	P	I

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4 Effectiveness Assessment

The following section presents the effectiveness assessment of the WURMP by the San Diego Bay Copermittees as required by Section J.1.b. of the Municipal Permit. An effectiveness assessment is an integral part of WURMP implementation that enhances program planning by: providing feedback on activities and strategies; and identifying program areas that may need improvement. The activity summary sheets presented in **Appendix E** include individual effectiveness assessment summaries for each water quality and education activity as required in the Permit, I.2.a.(1). This section evaluates progress of the San Diego Bay WURMP toward meeting Target Outcome Levels 1 through 6 and summarizes the effectiveness of WURMP Activities.

4.1 Assessment of Overall WURMP Effectiveness

Effective implementation of the WURMP is dependent on the establishment of comprehensive and program-wide goals as well as objectives and tasks. Programmatic assessment provides mechanisms to determine whether the Copermittees are compliant with the Permit and are continuing to progress towards the long-term goal of abating pollutant sources and reducing the discharge of pollutants from the MS4.

The San Diego Bay Copermittees have also included some data and information from jurisdictional program activities that address the HPWQPs in the watershed. It is important to note that the Copermittees are presenting this jurisdictional information to demonstrate the overall activities conducted in the watershed's hydrologic areas to address HPWQPs and provide a more holistic evaluation of the activities the Copermittees are implementing that address HPWQPs. The jurisdictional information presented here is not intended to be used for compliance with watershed activity requirements of the Municipal Permit. Reporting jurisdictional and watershed urban runoff management activities on a watershed basis will develop a nexus between Copermittee activities and potential pollutant sources and urban runoff water quality improvements.

Overall, the San Diego Bay Copermittees were effective in implementing the WURMP during FY 2011 and went above and beyond compliance with the watershed activity implementation component of the Permit. During the reporting period the San Diego Bay Copermittees implemented eight (8) watershed education activities, 29 watershed water quality activities, and six (6) monitoring or source identification studies.

Level 1 Effectiveness Assessment

A Level 1 assessment addresses the fundamental requirements prescribed in the Permit, including programs and activities that are intended to benefit water quality. **Table 4-1** lists how the San Diego Bay Copermittees have met Level 1 objectives and maintained compliance with the Permit requirements.

Table 4-1: Permit Component Compliance (Level 1 Outcome)

Targeted Outcome	Confirmation	Report Section/Appendix
Update any watershed maps.	No changes.	2008 WURMP
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	2
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	2.2
Identify and describe the Watershed Water Quality Activities implemented by Copermittees during the reporting period.	Completed.	3.1
Update list of potential Watershed Water Quality Activities.	Completed.	3.5
Identify and describe the Watershed Education Activities implemented by Copermittees during the reporting period.	Completed.	3.1, 3.2 and **Appendix G**
Update list of potential Watershed Education Activities.	Completed.	3.5
Describe the public participation mechanisms used during the reporting period.	Completed.	3.3 and **Appendix G**
A description of Copermittee collaboration efforts including meeting as the San Diego Bay WMA WURMP Workgroup.	Completed.	3.3.1
Describe the efforts implemented to encourage collaborative, watershed-based, land use planning.	Completed.	3.4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date, incorporating the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Completed.	3.5.3 and 4.2 and **Appendices C, E, F, H, and I**

As shown in Table 4-1, the San Diego Bay WURMP Copermittees were in compliance with all Level 1 WURMP related Municipal Permit requirements during FY 2011.

Level 2 Outcome – Changes in Knowledge and Awareness; Level 3 – Outcome – Changes in Behavior or BMP Implementation; Level 4 Outcome – Load Reduction/Source Abatement

The San Diego Bay Copermittees implemented many activities that resulted in Levels 2, 3, and 4 effectiveness assessments such as: the Watershed Copermittees collectively conducted over 500 education and public participation events/mechanisms reaching approximately 1.6 million individuals(Level 2); conducted enhanced inspections of facilities which demonstrated positive changes in behavior (Level 3); and conducted clean-up events

resulting in the removal of over 120 tons of debris from the WMA. Additionally, through the implementation of the San Diego Bay Copermittees' jurisdictional programs approximately 4,047 tons of debris from street sweeping activities and approximately 7,746 tons of debris from the cleaning of the MS4 was removed from the San Diego Bay WMA during FY 2011 resulting in load reductions for many of the HPWQPs (i.e. sediment, trash, gross pollutants, bacteria, metals, etc). Levels, 2, 3, and 4 are best discussed on the watershed activity level and are included in Section 4.2.1 below and the individual Activity Sheets included in **Appendix E**.

Level 5 Outcome – Changes in Urban Runoff and Discharge Quality

The results from the FY 2011 *San Diego County Municipal Copermittees Urban Runoff Receiving Waters and Monitoring Report,* as discussed in Section 2, indicate that urban runoff water quality remained similar to conditions reported in the 2008 WURMP Document. Organophosphate pesticides (Diazinon, Chlorpyrifos, and Malathion) levels continue to be below their respective benchmarks. The continued downward trend of Diazinon concentrations in storm water is a positive indication that the San Diego Bay Copermittees' current education and outreach efforts to address Diazinon are adequate. The San Diego Bay Copermittees believe that overall, the concentration of Diazinon will continue to decrease. Even though Diazinon was banned from sales, it is possible that there are still unused products containing Diazinon being stored and used by residents and businesses. As Diazinon public supply and use is exhausted, it is possible to see transient, isolated incidents from stored products being used. Diazinon will continue to be monitored and sampled to determine overall statistical trends.

Level 6 Outcome – Changes in Receiving Water Quality

A Level 6 assessment involves direct measurement of overall water quality in receiving water bodies and evaluates changes in water quality with respect to established regulatory benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the San Diego Regional Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. The San Diego Regional Copermittees conducted a Long-Term Effectiveness Assessment (LTEA) and submitted it to the Regional Board in June 2011. As part of the LTEA analysis there were some receiving water trends (based on available data) that were identified, where applicable and appropriate, for the San Diego Bay Watershed Management Area (**Table 4-2**). While there is no direct linkage to Copermittee watershed activities at this time, the trends are important to note and more detailed information can be found in Attachment A Section 9 of the LTEA (MOE, Weston, LWA June 2011).

Table 4-2: Constituent Trends as Identified in the 2005-2010 LTEA (June 2011)

Location	Increasing Trends by Priority Constituent	Decreasing Trends by Priority Constituent
CC-SD8(1) MLS Pueblo San Diego	• Total Coliforms • Nitrite • Total Kjeldahl Nitrogen • Turbidity • Total Copper • Total Zinc	• Hyalella Azteca acute survival • Malathion
Sweetwater River MLS	• Dissolved Phosphorous • Total Arsenic	• Total Lead
Sweetwater River TWAS-1	• No trends identified	• No trends identified
Otay Valley TWAS-1	• No trends identified	• No trends identified

4.2 Integrated WURMP Activities Assessment

In accordance with the 2008 San Diego Bay WURMP, Copermittees selected activities and associated effectiveness assessment mechanisms to implement in their individual jurisdictions while working within the collective goals of the WURMP. The activities and their assessments vary from one activity to another based on the identified targeted outcomes applicable to each activity, the pollutant(s), pollutant source(s) addressed, and the HA in which it is located. The goals and objectives of the individual activities ensure individual accountability, provide direction, and intended to provide meaningful assessment. In this section, the San Diego Bay Copermittees assess whether they were able to maximize the effectiveness of these individual activities on a watershed level.

Each activity summary sheet in **Appendix E** of this report identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measurable at levels 5 or 6. Levels 5 and 6 outcomes are typically measurable through cumulative assessments.

Tables 4-3 through **4-9** summarize the assessments of the water quality and education activities on a hydrologic area basis and provide a snapshot of the overall effectiveness of the watershed activities. This evaluation also reveals whether the San Diego Bay Copermittee efforts addressed the HPWQPs and whether the activities were or were not targeting potential pollutant sources in each HA during this reporting period. Evaluation at an HA level also provides an assessment of the effectiveness of the San Diego Bay Copermittees' collective efforts for activities that were implemented across several HAs. In some cases these activities provided solutions that address HPWQPs common to multiple HAs and potential sources of pollutants of concern.

In addition to the WURMP activities included in the tables, the San Diego Bay WURMP Copermittees are presenting the JURMP activities that are related to the HPWQPs in each hydrologic area. It is important to note that not all JURMP activities are included in this presentation. This year's annual reporting effort is intended to be an initial presentation of JURMP and WURMP activities that the Copermittees are implementing in the San Diego Bay WMA. These activities are presented in the tables below based on hydrologic area of implementation. The San Diego Bay Copermittees recognize that a holistic approach to watershed assessment allows for improvement in determining the sources of priority pollutants and how to address them through both watershed and jurisdictional activities. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

Some watershed activities implemented did not have all of the identified assessment mechanisms completed during this reporting period and effectiveness has not yet been determined. Though considerable resources may be directed to these activities, effectiveness assessments are not yet available for a number of reasons, such as delays in planning/development of an activity or the activity is still in progress. Please refer to the activity summary sheets in **Appendix D** for detailed analysis of progress to date for these activities.

Part of the basis of the assessment is to determine how effectively activities are addressing the HPWQPs in the watershed. For areas where no HPWQPs are currently identified, watershed activity development and implementation is not a high priority and resources are not focused in these areas. There are two HAs where there are no HPWQPs identified at this time and accordingly no assessment has been conducted. While there were activities conducted in these HAs as noted in Section 3, the Upper Sweetwater HA (909.3) and the Dulzura HA (910.3) are not included in the tables below.

4.2.1 Pueblo San Diego HU (908)

Effectiveness Assessment for the Pueblo San Diego HU is presented by HA in the sections below. Applicable TMDL effectiveness assessments are described in Section 4.2.

4.2.1.1 Point Loma HA (908.1)

The Point Loma HA is heavily urbanized and is not characterized by any Hydrologic Subareas (HSAs). The HPWQPs in the Point Loma HA are bacteria, gross pollutants, metals, oil and grease, and pesticides. Activities were implemented that effectively targeted a variety of sources of many of the identified high priority pollutants. Potential pollutant sources in the Point Loma HA include those related to residential areas, streets and roadways, or commercial business, schools, and public facilities. As noted in Section 3, Copermittees implemented five (5) distinct watershed water quality, monitoring, and education activities in the HA along with other educational and public participation activities, inspections, street sweeping, and MS4 cleaning. Reportable effectiveness measures have been identified for the eight (8) watershed activities, and the inspections, sweeping, and catch basin activities conducted at the jurisdictional level (**Table 4-3**).

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Table 4-3: Summary of Implemented Activities with Effectiveness Assessment for FY 2011 – 908.1 Point Loma Hydrologic Area (HPWQPs: Bacteria, Gross Pollutants, Metals, Oil and Grease, and Pesticides)

Activity:	Type:	Priority Problems Addressed:	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
Watershed				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria	Levels 3 and 4	• Approximately 723,868 pet waste bags dispensed • Four new dispensers added in the City of San Diego
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria	Levels 2, 3 and 4	Approximately 8,747 individual participated in clean-up activities and an estimated 120 tons of trash was collected.
SDB-045 ILACSD High School Watershed Presentations	Education	Bacteria, Pesticides, Oil and Grease	Level 2	Watershed education and pollution prevention information was provided to 500 high school aged children. Pre and post-tests assessment tools were utilized and indicated an increase in knowledge and awareness.
Presentations*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	142 presentations reaching over an estimated 27,000 individuals
Print Media*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	19 Print Media methods utilized with the ability to reach over an estimated 140,000 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	Over 144 school program events reaching over 92,000 school-aged children
Municipal Staff Training*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	Over 40 trainings held and ~560 municipal staff trained
Project Clean Water Website*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	4,138 hits on the website

Activity:	Type:	Priority Problems Addressed:	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
Jurisdictional (No WURMP credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, food establishments, and nurseries. Of the total 186 bacteria sources inventoried, 92% are food establishments. Approximately 40% of the food establishments were inspected, and overall 42% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Metals	Levels 1, 3 and 4	Sources categorized as likely to produce metals inventoried under the JURMP program during FY 2011 included agriculture, automotive, boat maintenance and repair, equipment, general industrial, institutional, manufacturing, marinas, metal, nursery, stone, and storage and warehousing. Of the total 201 metals sources inventoried, 44% are storage and warehousing facilities and 18% are automotive facilities. Approximately 7% of the storage and warehousing facilities were inspected and 44% of automotive facilities. Overall 27% of the likely metals sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Pesticides	Levels 1, 3 and 4	Sources categorized as likely to produce pesticides inventoried under the JURMP program during FY 2011 included agriculture, animal, and nursery facilities Of the total 15 pesticide sources inventoried, 80% are animal facilities. Approximately 83% of the animal facilities were inspected, and overall 67% of the likely pesticide sources inventoried were inspected.
JURMP Industrial/Commercial	Water Quality	Gross Pollutants	Levels 1, 3 and 4	Sources categorized as likely to produce gross pollutants inventoried under the JURMP program during FY 2011 included automotive, boat and maintenance repair, contractors, and food establishments. Of the total 351 gross pollutant sources inventoried 30% were inspected.
JURMP Industrial/Commercial Inspections and Construction Site and Municipal Facility Inspections	Water Quality	Oil and Grease	Levels 1, 3 and 4	Sources categorized as likely to produce oil and grease inventoried under the JURMP program during FY 2011 included agriculture, automotive, boat and maintenance repair, food establishments, equipment, fueling, general industrial, marina, manufacturing, metal, stone, and storage and warehousing. Of the total 374 oil and grease sources inventoried, 34% were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria, Metals, Gross Pollutants	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2011, 117 tons of material was removed from streets via street sweeping and 655.4 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.

4.2.1.2 San Diego Mesa HA (908.2)

The San Diego Mesa HA is a heavily urbanized watershed, and includes two Hydrologic Subareas: Lindbergh (908.21) and Chollas Creek HSA (908.22). The HPWQPs in the San Diego Mesa HA are bacteria, metals, sediment, trash, and pesticides. Prominent land uses which may contribute to high priority water quality problems in the HA include residential, streets and roadways, and commercial/industrial businesses. Transportation land use comprises approximately 28% of the total land use and residential land uses comprise approximately 41% of the total land use in the HA. As described in Section 3, Copermittees implemented 29 distinct watershed water quality, monitoring, and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning in this HA. Reportable effectiveness measures have been identified for the 12 watershed activities and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-4**). In addition, any assessment measures conducted as part of TMDLs are included in Section 4.2 below.

Table 4-4: Summary of Implemented Activities with Effectiveness Assessment for FY 2011 – 908.2 San Diego Mesa Hydrologic Area (HPWQPs: Bacteria, Metals, Sediment, Trash, and Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria	Levels 3 and 4	• Approximately 723,868 pet waste bags dispensed • Four new dispensers added in the City of San Diego • Airport Authority estimated 300 lbs. removed in their jurisdiction
SDB-003B Sweeper Speed Efficiency Study	Water Quality	Bacteria, Metals, Sediment, and Trash	Levels 1 and 4	Street sweeping along Imperial Avenue associated with this pilot study resulted in the additional removal of 8,560 lbs of debris above normal City street sweeping operations. Results from the study indicated that speed had little impact on the weight of debris collected in the field and the pollutant removal capability of the machines.
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria	Levels 2, 3 and 4	Approximately 8,747 individual participated in clean-up activities and an estimated 120 tons of trash was collected.
SDB-009 Enhanced Construction Oversight	Water Quality	Sediment	Levels 1, 3, and 4	Airport Authority staff attended 318 construction project meetings relating to 10 consturction projects and conducted a total of 151 construction inspections. (80 more than required by the Municipal Permit). Issues/concerns regarding erosion and sediment control were only identified 8.6% of the time. The Airport Authority was able to estimate a sediment pollutant load reduction as approximately 1,163.52 tons.
SDB-045 I Love a Clean San Diego High School Watershed Presentations	Education	Bacteria, Pesticides, Sediment, and Trash	Level 2	Watershed education and pollution prevention information was presented to 1,217 high school aged students in the HA. Results from the pre and post- tests showed an increase in knowledge after the presentations.
SDB-062 Residential Rain Barrel Subsidies & Distributions**	Water Quality and Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 3	185 residents participated in the rain barrels sales events and a total of 240 rain barrels were sold.
SDB-067 Intergenerational Games***	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	Approximately 110 students attended the event.
Presentations*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	142 presentations reaching over an estimated 27,000 individuals

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Print Media*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	19 Print Media methods utilized with the ability to reach over an estimated 140,000 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	Over 144 school program events reaching over 92,000 school-aged children
Municipal Staff Training*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	Over 40 trainings held and ~560 municipal staff trained
Project Clean Water Website*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	4,138 hits on the website
Jurisdictional (No WURMP Credit)[7]				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, restaurants, golf courses, and nurseries. Of the total 2,364 bacteria sources inventoried, 96% are food establishments. Approximately 43% of the restaurants were inspected, and overall 43% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Metals	Levels 1, 3 and 4	Sources categorized as likely to produce metals inventoried under the JURMP program during FY 2011 included agriculture, automotive, boat maintenance and repair, equipment, general industrial, institutional, manufacturing, marinas, metal, nursery, stone, and storage and warehousing. Of the total 2,179 metals sources inventoried, 41% are storage and warehousing facilities and 39% are automotive facilities. Approximately 16% of the storage and warehousing facilities were inspected and 39% of automotive facilities. Overall 31% of the likely metals sources inventoried were inspected.

[7] The jurisdictional effectiveness assessment information for this HA is based on 5 of the 6 Copermittees in the 908.2 HA

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
JURMP Industrial/Commercial Inspections	Water Quality	Pesticides	Levels 1, 3 and 4	Sources categorized as likely to produce pesticides inventoried under the JURMP program during FY 2011 included agriculture, animal, golf, and nursery facilities Of the total 89 pesticide sources inventoried, 76% are animal facilities. Approximately 28% of the animal facilities were inspected, and overall 30% of the likely pesticide sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, contractors, general retail, golf courses, health services, nurseries, construction sites, and municipal facilities. Of the total 1,773 sediment sources inventoried (excluding construction sites and municipal facilities), 50% are storage and warehousing facilities and 35% are contractors. Overall, 18% of the likely sediment sources that were not related to construction and municipal facilities were inspected. The primary focus of likely sources of sediment is construction sites. During this FY, there were approximately 38 active construction sites in the HA that were inspected a total of 248 times.
JURMP Industrial/Commercial Inspections and Construction Site and Municipal Facility Inspections	Water Quality	Trash	Levels 1, 3 and 4	All sources inventoried under the JURMP program during FY 2011 are likely to produce trash. Of the total 5,314 trash sources inventoried (excluding construction and municipal), 34% were inspected. There were also 38 active construction sites inspected a total of 248 times and 289 municipal sites inspected a total of 378 times.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria, Metals, Sediment, and Trash	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2011, 1,189 tons of material was removed from streets via street sweeping and 3,430.6 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
***** This activity was implemented in five HAs and cannot be divided by HAs at this time. Therefore the information and data presented represents five HAs but the activity impacted this HA.***
****** This activity was implemented in 908.2 and 909.1 and cannot be divided by HA at this time. Therefore the information and data presented represents two HAs but the activity impacted this HA.***

4.2.1.3 National City HA (908.3)

The National City HA is highly urbanized and residential land uses comprise 43% of the total land use. The HPWQPs in the HA are bacteria, sediment and trash. As described in Section 3, there were five (5) distinct watershed water quality and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for the nine (9) watershed activities, and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-5**).

Table 4-5: Summary of Implemented Activities with Effectiveness Assessment for FY 2011 – 908.3 National City Hydrologic Area (HPWQPs: Bacteria, Sediment, and Trash)

Activity	Type	Priority Problems Addressed	Level Outcome	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria, Trash, Sediment	Levels 3 and 4	• Approximately 723,868 pet waste bags dispensed • Four new dispensers added in the City of San Diego • City of National City estimated 1,040 lbs. removed in their jurisdiction
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria, Trash, Sediment	Levels 2, 3 and 4	Approximately 8,747 individual participated in clean-up activities and an estimated 120 tons of trash was collected.
SDB-005 Clean Community Program**	Water Quality	Bacteria, Trash, Sediment	Levels 2, 3, and 4	• 826 tons of large-item waste collected from 1,916 vehicle loads during three events. • Approximately 845 elementary students in 45 classrooms received the contest flyer and a lesson about the contest theme "By Keeping our Community Clean, We Can Keep the Ocean Clean."
SDB-007 Additional Dry Season Construction Inspections**	Water Quality	Bacteria, Trash, Sediment	Level 3	• Completed 6 inspections, which exceeds Permit requirements. • Helped contractors stay vigilant about implementing BMPs, especially near the end of the dry season.
Presentations*	Education	Bacteria, Trash, Sediment	Level 1 and 2	142 presentations reaching over an estimated 27,000 individuals
Print Media*	Education	Bacteria, Trash, Sediment	Level 1 and 2	19 Print Media methods utilized with the ability to reach over an estimated 140,000 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria, Trash, Sediment	Level 1 and 2	Over 144 school program events reaching over 92,000 school-aged children
Municipal Staff Training*	Education	Bacteria, Trash, Sediment	Level 1 and 2	Over 40 trainings held and ~560 municipal staff trained

Activity	Type	Priority Problems Addressed	Level Outcome	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Project Clean Water Website*	Education	Bacteria, Trash, Sediment	Level 1 and 2	4,138 hits on the website
Jurisdictional (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, food establishments, and nurseries. Of the total 239 bacteria sources inventoried, 98% are food establishments. Approximately 34% of the restaurants were inspected, and overall 35% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, contractors, nurseries, construction sites, and municipal facilities. Of the total 307 sediment sources inventoried (excluding construction sites and municipal facilities), 41% are contractors. Overall, 20% of the likely sediment sources that were not related to construction and municipal facilities were inspected. The primary focus of likely sources of sediment is construction sites. During this FY, there were approximately 41 active construction sites in the HA that were inspected a total of 121 times.
JURMP Industrial/ Commercial Inspections & Construction Site & Municipal Facility Inspections	Water Quality	Trash	Levels 1, 3 and 4	All sources inventoried under the JURMP program during FY 2011 are likely to produce trash. Of the total 816 trash sources inventoried (excluding construction and municipal), 31% were inspected. There were also 41 active construction sites inspected a total of 121 times and 34 municipal sites inspected a total of 24 times.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria, Sediment, and Trash	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2011, 662 tons of material was removed from streets via street sweeping and 457.5 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
***** This activity was implemented in 908.3 and 909.1 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents two HAs.***

4.2.2 Sweetwater HU (909)

Effectiveness Assessment for the Sweetwater HU is presented by HA in the sections below with the exception of the 909.3 HA. There are no HPWQPs identified in the 909.3 HA at this time and therefore no effectiveness assessment was conducted.

4.2.2.1 Lower Sweetwater HA (909.1)

The Lower Sweetwater HA is the most urbanized area of the Sweetwater HU and land use consist primarily of residential, streets and roadways, open space, with the remaining area consisting of a mixture of commercial/industrial businesses, schools and undeveloped land use. The HPWQP in the Lower Sweetwater HA is bacteria. Residential sources of bacteria include sanitary sewer overflows, septic system failures, landscape maintenance, various washing activities, trash, and pet waste. As described in Section 3, there were 11 distinct watershed water quality, monitoring, and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for the 11 watershed activities, and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-6**).

Table 4-6: Summary of Implemented Activities with Effectiveness Assessment for FY 2011 – 909.1 Lower Sweetwater Hydrologic Area (HPWQP: Bacteria)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria	Levels 3 and 4	• Approximately 723,868 pet waste bags dispensed • Six new dispensers added in Chula Vista • Four new dispensers added in the City of San Diego • County of San Diego estimated 11,214 lbs. removed in their jurisdiction • City of National City estimated 1,040 lbs. removed in their jurisdiction
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria	Levels 2, 3 and 4	Approximately 8,747 individual participated in clean-up activities and an estimated 120 tons of trash was collected.
SDB-039 Provide Homeowner's Association Education About Pollution Prevention**	Education	Bacteria	Level 2	Distributed 250 storm water pollution prevention fliers to HOAs in the City of Chula Vista
SDB-040 Storm Water Education Booth at Annual Pet Festival and Doggy Dash**	Education	Bacteria	Level 1 and 2	• 70 surveys completed • Found that over 89% of surveyed pet owners use BMPs for pet waste
SDB-066 Focused Outreach to Equestrian Community***	Education	Bacteria	Level 1 and 2	24 horse owners completed surveys
SDB-067 Intergenerational Games****	Education	Bacteria	Level 1 and 2	Approximately 110 students attended the event.

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Presentations*	Education	Bacteria	Level 1 and 2	142 presentations reaching over an estimated 27,000 individuals
Print Media*	Education	Bacteria	Level 1 and 2	19 Print Media methods utilized with the ability to reach over an estimated 140,000 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria	Level 1 and 2	Over 144 school program events reaching over 92,000 school-aged children
Municipal Staff Training*	Education	Bacteria	Level 1 and 2	Over 40 trainings held and ~560 municipal staff trained
Project Clean Water Website*	Education	Bacteria	Level 1 and 2	4,138 hits on the website
Jurisdictional (No WURMP Credit)[8]				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, food establishments, and nurseries. Of the total 398 bacteria sources inventoried, 34% were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2011, 839.1 tons of material was removed from streets via street sweeping and 469.6 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
****This activity was implemented in 909.1, 910.2, and 910.3 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents three HAs.***
*****This activity was implemented in 909.1 and 909.2 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents two HAs.***
****** This activity was implemented in 908.2 and 909.1 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents two HAs.***

[8] The jurisdictional effectiveness assessment for this HA is based on 6 of the 7 Copermittees in the 908.2 HA

4.2.2.2 Middle Sweetwater HA (909.2)

Unincorporated rural and suburban communities characterize the Middle Sweetwater HA. The Middle Sweetwater HA consists primarily of open space and undeveloped land, approximately 63% of the land use, while the rest of the HA is mostly residential use and commercial/industrial and streets/roadway land use. Pesticides have been identified as the HPWQP for this HA. As described in Section 3, there were nine (9) distinct watershed water quality and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for 10 watershed activities, and the inspection activities conducted at the jurisdictional level at this time (**Table 4-7**).

Table 4-7: Summary of Implemented Activities with Effectiveness Assessment for FY 2011 – 909.2 Middle Sweetwater Hydrologic Area (HPWQP: Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed				
SDB-001 Pet Waste Bag Programs*	Water Quality	Pesticides	Levels 3 and 4	• Approximately 723,868 pet waste bags dispensed • County of San Diego estimated 11,214 lbs. removed in their jurisdiction
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Pesticides	Levels 2, 3 and 4	Approximately 8,747 individual participated in clean-up activities and an estimated 120 tons of trash was collected.
SDB-046 Land Acquisitions San Diego Bay	Water Quality	Pesticides	Level 4	233.67 acres of land acquired during the reporting period
SDB-062 Residential Rain Barrel Subsidies & Distributions**	Water Quality and Education	Pesticides	Level 1 and 3	185 residents participated in the rain barrels sales events and a total of 240 rain barrels were sold.
SDB-066 Focused Outreach to Equestrian Community***	Education	Pesticides	Level 1 and 2	24 horse owners completed surveys
Presentations*	Education	Pesticides	Level 1 and 2	142 presentations reaching over an estimated 27,000 individuals
Print Media*	Education	Pesticides	Level 1 and 2	19 Print Media methods utilized with the ability to reach over an estimated 140,000 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Pesticides	Level 1 and 2	Over 144 school program events reaching over 92,000 school-aged children
Municipal Staff Training*	Education	Pesticides	Level 1 and 2	Over 40 trainings held and ~560 municipal staff trained

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Project Clean Water Website*	Education	Pesticides	Level 1 and 2	4,138 hits on the website
Jurisdictional (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Pesticides	Levels 1, 3 and 4	Sources categorized as likely to produce pesticides inventoried under the JURMP program during FY 2011 included agriculture, animal, golf, nursery facilities and municipal facilities Other than the municipal facilities there are no other pesticide sources inventoried in this HA. There were a total of 86 municipal facilities that received a total of 70 inspections.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
*** This activity was implemented in five HAs and the results cannot be divided by HAs at this time. Therefore the information and data presented represents five HAs but the activity impacted this HA.***
****This activity was implemented in 909.1 and 909.2 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents two HAs.***

4.2.3 Otay HU (910)

The *Basin Plan* identifies the Otay HU as the second largest of the three HUs in the San Diego Bay WMA and is one of the least populated watersheds in the San Diego County. The effectiveness assessment for the Otay HU is presented by HA in the sections below with the exception of the 910.3 HA. There are no HPWQPs identified for the 910.3 HA and therefore no effectiveness assessment was conducted.

4.2.3.1 Coronado HA (910.1)

Land use in the Coronado HA consists primarily of open space which is 81% of the total land use in the HA. Residential land uses make up approximately 13% and agricultural uses make up 4% of the total land use. Bacteria and Gross Pollutants have been identified as the HPWQP for the HA. As described in Section 3, there were six (6) distinct watershed water quality, monitoring, and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for nine (9) watershed activities, and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-8**).

Table 4-8: Summary of Implemented Activities with Effectiveness Assessment for FY 2011 – 910.1 Coronado Hydrologic Area (HPWQPs: Bacteria and Gross Pollutants)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria and Gross Pollutants	Levels 3 and 4	• Approximately 723,868 pet waste bags dispensed • Two new dispensers added in Coronado and Imperial Beach
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria and Gross Pollutants	Levels 2, 3 and 4	Approximately 8,747 individual participated in clean-up activities and an estimated 120 tons of trash was collected.
SDB-045 ILACSD High School Watershed Presentations	Education	Bacteria and Gross Pollutants	Level 2	Watershed education and pollution prevention information was provided to 92 high school aged children in the HA. Pre and post-tests assessment tools were utilized and indicated an increase in knowledge and awareness.
SDB-047 Large Special Event Inspection and Clean-up	Water Quality	Bacteria and Gross Pollutants	Levels 2, 3, and 4	The city of Imperial Beach held 12 large special events which included the U.S. Open Sandcastle Competition with over 800,000 visitors. 3 Notices of Violation (NOVs) were issued to vendors for improper BMP implementation.
Presentations*	Education	Bacteria and Gross Pollutants	Level 1 and 2	142 presentations reaching over an estimated 27,000 individuals
Print Media*	Education	Bacteria and Gross Pollutants	Level 1 and 2	19 Print Media methods utilized with the ability to reach over an estimated 140,000 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria and Gross Pollutants	Level 1 and 2	Over 144 school program events reaching over 92,000 school-aged children
Municipal Staff Training*	Education	Bacteria and Gross Pollutants	Level 1 and 2	Over 40 trainings held and ~560 municipal staff trained
Project Clean Water Website*	Education	Bacteria and Gross Pollutants	Level 1 and 2	4,138 hits on the website
Jurisdictional (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, food establishments, and nurseries. Of the total 137 bacteria sources inventoried, 80% are food establishments. Approximately 80% of the food establishments were inspected, and overall 78% of the likely bacteria sources inventoried were inspected.

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
JURMP Industrial/Commercial	Water Quality	Gross Pollutants	Levels 1, 3 and 4	Sources categorized as likely to produce gross pollutants inventoried under the JURMP program during FY 2011 included automotive, contractors, and food establishments. Of the total 133 gross pollutant sources inventoried 78% were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Gross Pollutants	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2011, 240.6 tons of material was removed from streets via street sweeping and 239.3 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.

4.2.3.2 Otay HA (910.2)

Land use in Otay HA consists primarily of open space, approximately 41% of the land use, while residential, streets and roadways and industrial and commercial uses are approximately 14% of the land use. Bacteria have been identified as a HPWQP for this HA. As described in Section 3, there were 12 distinct watershed water quality and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for 12 watershed activities, and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-9**).

Table 4-9: Summary of Implemented Activities with Effectiveness Assessment for FY 2011 – 910.2 Otay Hydrologic Area (HPWQPs: Bacteria)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria and Gross Pollutants	Levels 3 and 4	• Approximately 723,868 pet waste bags dispensed • Six new dispensers added in Chula Vista • Two new dispensers added in Imperial Beach • Four new dispensers added in the City of San Diego • County of San Diego estimated 11,214 lbs. removed in their jurisdiction
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria and Gross Pollutants	Levels 2, 3 and 4	Approximately 8,747 individual participated in clean-up activities and an estimated 120 tons of trash was collected.
SDB-039 Provide Homeowner's Association Education About Pollution Prevention**	Education	Bacteria	Level 2	Distributed 250 storm water pollution prevention fliers to HOAs in the City of Chula Vista
SDB-040 Storm Water Education Booth at Annual Pet Festival and Doggy Dash**	Education	Bacteria	Level 1 and 2	• 70 surveys completed • Found that over 89% of surveyed pet owners use BMPs for pet waste
SDB-045 ILACSD High School Watershed Presentations	Education	Bacteria	Level 2	Watershed education and pollution prevention information was provided to 110 high school aged children in the HA. Pre and post-tests assessment tools were utilized and indicated an increase in knowledge and awareness.
SDB-061 Chula Vista Wildlife Reserve Restoration and Enhancement Project	Water Quality	Bacteria	Levels 4	The following were implemented to ehance wetland function which utlimately benefits water quality by restoring natural filtering capabilities: • Excavation of the basins and transportation of sediments to Pond 11 was completed on February 17, 2011; • Transportation of an estimated 61,000 cubic yards of material to Pond 11 and the excavation of 65,495 cubic yards at the Chula Vista Wildlife Reserve (CVWR); • The endangered California least tern and Western snowy plover established 19 and 1 nests, respectively, at Pond 11 at the new nesting site.
SDB-062 Residential Rain Barrel Subsidies & Distributions***	Water Quality and Education	Pesticides	Level 1 and 3	185 residents participated in the rain barrels sales events and a total of 240 rain barrels were sold.

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Presentations*	Education	Bacteria and Gross Pollutants	Level 1 and 2	142 presentations reaching over an estimated 27,000 individuals
Print Media*	Education	Bacteria and Gross Pollutants	Level 1 and 2	19 Print Media methods utilized with the ability to reach over an estimated 140,000 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria and Gross Pollutants	Level 1 and 2	Over 144 school program events reaching over 92,000 school-aged children
Municipal Staff Training*	Education	Bacteria and Gross Pollutants	Level 1 and 2	Over 40 trainings held and ~560 municipal staff trained
Project Clean Water Website*	Education	Bacteria and Gross Pollutants	Level 1 and 2	4,138 hits on the website
Jurisdictional (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2011 included agriculture, animal facilities, food establishments. Of the total 380 bacteria sources inventoried, 46% are food establishments. Approximately 46% of the food establishments were inspected, and overall 78% of the likely bacteria sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2011, 706.8 tons of material was removed from streets via street sweeping and 1,029.7 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore, the data and information presented is for the WMA but the activity impacted this HA.
****This activity was implemented in 909.1, 910.2, and 910.3 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents three HAs.***
***** This activity was implemented in five HAs and the results cannot be divided by HAs at this time. Therefore the information and data presented represents five HAs but the activity impacted this HA.***

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5 Conclusions and Recommendations

5.1 Conclusions

The San Diego Bay Copermittees successfully completed all watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. Due to the success of the programs implemented during FY 2011, the San Diego Bay WURMP achieved the following objectives: 1) implementation of activities to specifically address the sources of water quality problems at a WMA and HA level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a WMA and HA level; 4) continued refinement of the watershed program; and 5) continue progress toward meeting WURMP goals and objectives.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis for this annual report. This information is not comprehensive and for some data sets, estimates were used to generate quantities of activities. The Copermittees believe that this is an important first step toward integrating the watershed and JURMP activities and the reporting of these activities to best assess and plan for future activities that address the identified HPWQPs on an HA basis.

In order to address HPWQPs and target audiences in the San Diego Bay WMA, the Copermittees implemented eight (8) watershed education activities, 29 watershed water quality activities, and six (6) monitoring or source identification studies with many of the activities providing effectiveness assessment information as described in Section 4. It is important to note that there were water quality activities that were implemented across HAs such as Pet Waste Bags, Trash Cleanups, Street Sweeping, and Inspections.

In addition, the San Diego Bay Watershed Copermittees were successful in collectively conducting a total of 4,092 construction inspections, 3,100 industrial and commercial facility inspections, and 644 municipal facility inspections in the San Diego Bay WMA during this reporting period. In addition there were approximately 7,746 tons of debris removed from MS4 facilities and an estimated 4,047 tons of debris removed through street sweeping activities conducted by the Copermittees in the San Diego Bay WMA.

The named dischargers of the Chollas Creek Dissolved Metals and Diazinon TMDLs have taken a holistic approach to planning, implementation, and assessment of watershed activities. The approach takes into account watershed activities implemented by named dischargers under WURMP, JURMP, or other stormwater programs. As with the WURMP assessment, the goal of integrating information from various programs is to compile data from all implemented activities in order to allow a comprehensive evaluation of watershed-wide efforts that address high priority water quality pollutants identified in the TMDL. The involvement of non-Copermittee agencies (i.e., Caltrans and the U.S. Navy) in the Chollas Creek TMDLs enables the incorporation of information on pollutant sources outside of the Copermittees' jurisdictions and the BMPs these agencies have implemented to address pollutant sources. During this reporting period, all named dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in achieving

TMDL compliance. The dischargers will share this information and will apply lessons learned in the region with the goal of improving water quality in the Chollas Creek Watershed.

5.2 Program Improvements and Recommendations

The San Diego Bay Copermittees will continue to utilize information on watershed pollutants and sources when evaluating and determining which watershed activities to implement. The Watershed Strategy, a key component required for the San Diego Bay WURMP Document, provides a consistent mechanism for prioritizing pollutants, identifying sources of pollution, maximizing available resources, and developing and implementing activities. The San Diego Bay Copermittees will continue to gather water quality data suitable for assessments at the watershed, sub-watershed, and HA levels, and research pollutant sources and their loading potentials. The San Diego Bay Copermittees will also leverage studies on these issues being completed in other San Diego region watersheds. Further refining the characterization of source inventories and water quality is expected to enable the Copermittees to modify program activities to specifically target the most important sources of HPWQPs.

The San Diego Bay Copermittees will continue to evaluate the standardization of incoming data available through the activity summary sheets and comprehensive assessments. By evaluating the activities' relevance to the high priority water quality problems and their sources, the Copermittees will be able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary.

The Copermittees will also continue to contribute to efforts focused on making a more efficient and effective watershed program through their involvement in the San Diego Regional Copermittees' efforts to improve coordination on reporting and assessment functions. This will likely help increase the ability to report and assess programs and activities on a watershed level. The Copermittees will also continue participating with other San Diego Regional Copermittees in the process of working with the RWQCB regarding WURMP permit elements in the upcoming permit renewal, scheduled to begin in 2012. This process is expected to present opportunities to reduce inefficiencies and reporting effort so that available resources can be more efficiently directed to activities that protect and improve water quality.

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Appendix A

FY 2011 San Diego Bay WURMP Annual Report

Certification Statements

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STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Paul Manasjan
Director, Environmental Affairs
San Diego County Regional Airport Authority

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AIRPORT

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STATEMENT OF CERTIFICATION

January 11, 2012

Subject: Chollas Creek TMDLs FY 2011 Annual Report as presented in the 2010-2011 San Diego Bay Watershed Urban Runoff Management Program Annual Report

I certify under penalty of law that the California Department of Transportation's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BRUCE APRIL
Deputy District Director
Environmental Division
California Department of Transportation (Caltrans)

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January 19, 2012
File # 0780-72-KY181

San Diego Bay Watershed Urban Runoff Management Program
Annual Report for Fiscal Year 2010-2011

Statement of Certification

"I certify under penalty of law that the City of Chula Vista participated in the development of the Fiscal Year 2010-2011 Watershed Urban Runoff Management Program Annual Report for the San Diego Bay Watershed. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

MATT LITTLE
ASSISTANT DIRECTOR OF PUBLIC WORKS
CITY OF CHULA VISTA

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THE CITY OF SAN DIEGO

January 18, 2012

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report
Statement of Certification

STATEMENT OF CERTIFICATION

Subject: Chollas Creek TMDLs FY 2011 Annual Report as presented in the 2010-2011 San Diego Bay Watershed Urban Runoff Management Program Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden 1/17/12

Kris McFadden
Deputy Director
Transportation & Storm Water Department
City of San Diego

THE CITY OF SAN DIEGO

January 18, 2012

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report
Statement of Certification

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden 1/17/12

Kris McFadden
Deputy Director
Transportation & Storm Water Department
City of San Diego

CITY OF CORONADO

101 "B" Avenue
CORONADO, CALIFORNIA 92118-1510

DEPARTMENT OF PUBLIC SERVICES
(619) 522-7380

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

LAUREN WASSERMAN
INTERIM DIERCTOR
DEPARTMENT OF PUBLIC SERVICES
CITY OF CORONADO

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County of San Diego

LAND USE AND ENVIRONMENT GROUP

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256 • Fax: (619) 531-5476
www. sdcounty.ca.gov/lueg

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program (WURMP) Fiscal Year 2010-11 Annual Report

I certify, under penalty of perjury of law, that the County of San Diego's contributions to this Fiscal Year 2010-11 San Diego Bay Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer

1/9/12
Date

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City of Imperial Beach, California
PUBLIC WORKS DEPARTMENT
825 Imperial Beach Blvd., Imperial Beach, CA 91932 Tel: (619) 423-8311 Fax: (619) 429-4861

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Director
Public Works
City of Imperial Beach

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CITY OF
LA MESA
JEWEL of the HILLS

PUBLIC WORKS DEPARTMENT

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

1/19/12

Gregory P. Humora
Director of Public Works/City Engineer
City of La Mesa

Date

LA MESA CENTENNIAL 1912 - 2012
8130 ALLISON AVENUE • LA MESA, CA 91942 • TEL: 619.667.1166 FAX: 619.667.1380

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CITY OF LEMON GROVE

"Best Climate On Earth"

Office of the City Manager

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report
Statement of Certification

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

GRAHAM MITCHELL
CITY MANAGER
CITY OF LEMON GROVE

3232 Main Street Lemon Grove California 91945-1705

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January 2012

STATEMENT OF CERTIFICATION
San Diego Bay Watershed Urban Runoff Management Program Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Stephen Manganiello, Acting City Engineer
Engineering Department
City of National City

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1/19/2011

Subject: Chollas Creek TMDLs FY 2011 Water Compliance Monitoring and Special Studies Final Reports, May 2011 as presented in the 2010-2011 San Diego Bay Watershed Urban Runoff Management Program Annual Report

STATEMENT OF CERTIFICATION

I certify under penalty of law that the U.S. Navy's contributions to the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Mark Edson
Naval Base San Diego
Installation Environmental Program Manager
Naval Facilities Engineering Command, Southwest
U.S. Navy

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Unified Port
of San Diego

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P.O. Box 120488, San Diego, CA 92112-0488
619.686.6200 www.portofsandiego.org

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2010-2011 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

RANDA CONIGLIO
EXECUTIVE VICE PRESIDENT
OPERATIONS
SAN DIEGO UNIFIED PORT DISTRICT

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Appendix B

FY 2011 San Diego Bay WURMP Workgroup Meetings

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San Diego Bay FY 2011 WURMP Meeting Summary

Meeting Date	General Meeting Topics
July 27, 2010	• Regional Updates • Watershed Activities Discussion • San Diego Bay WURMP Review
August 25, 2010	• Regional Updates • Watershed Activities Discussion • San Diego Bay WURMP Review
September 23, 2010	• Regional Updates • Discussion on IRWMP Tier I Projects in San Diego Bay WMA • 2009-2010 San Diego Bay WURMP Annual Report
October 27, 2010	• Regional Items • Future Annual Reporting – Cost Share Agreement for 2011-12 • 2009-2010 San Diego Bay WURMP Annual Report • Regional Monitoring Report – Presentation by Weston
November 18, 2010	• Regional Items • Regional Monitoring Report • 2009-2010 San Diego Bay WURMP Annual Report
December 16, 2010	• Regional Items • 2009-2010 San Diego Bay WURMP Annual Report
January 12, 2011	• Regional Items • 2009-2010 San Diego Bay WURMP Annual Report • SD Bay WURMP Annual Reporting Cost Share Agreement
February 24, 2011	• Regional Items • San Diego Bay WURMP Annual Reporting Cost Share Agreement
March 24, 2011	• Regional Items • San Diego Bay WURMP Annual Reporting Cost Share Agreement • ILACSD Presentation
April 28, 2011	• Regional Items • San Diego Bay WURMP Annual Reporting Cost Share Agreement
May 26, 2011	• Regional Items • San Diego Bay WURMP Annual Reporting Cost Share Agreement • ILACSD Creek to Bay Cleanup Follow-Up

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Appendix C

Chollas Creek TMDLs Monitoring Reports

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Chollas Creek Total Maximum Daily Load (TMDL) 2010 - 2011 Water Quality Compliance Monitoring

Prepared for:
San Diego Regional Water Quality Control Board

Final Report
May 20, 2011

City of San Diego

San Diego Unified Port District

City of La Mesa

United States Navy

City of Lemon Grove

County of San Diego

CalTrans

Chollas Creek Total Maximum Daily Load 2010–2011 Water Quality Compliance Monitoring

Final Report

Prepared for:

City of San Diego
City of La Mesa
City of Lemon Grove
County of San Diego
San Diego Unified Port District
United States Navy
CalTrans

Prepared by:

Weston Solutions, Inc.
2433 Impala Drive
Carlsbad, California 92010

May 20, 2011

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LIST OF ACRONYMS

BMP	best management practice
COC	chain of custody
CTR	California Toxics Rule
DWM	dry weather monitoring
ICID	illicit connection and illegal discharge
JURMP	Jurisdictional Urban Runoff Management Plan
MLS	mass loading station
NPDES	National Pollutant Discharge Elimination System
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
REC-1	contact water recreation beneficial use
REC-2	non-contact water recreation beneficial use
SOP	standard operating procedure
TIE	toxicity identification evaluation
TMDL	total maximum daily load
WARM	warm freshwater habitat beneficial use
WILD	wildlife habitat beneficial use
WLA	waste load allocation
WURMP	Watershed Urban Runoff Management Plan

EXECUTIVE SUMMARY

This report summarizes the monitoring activities conducted by the seven Chollas Creek Dischargers in compliance with the *Total Maximum Daily Loads* (TMDLs) *for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay* for Compliance Schedule Year 3 (2010–2011 Monitoring Season).

Monitoring Summary

In accordance with the TMDL (State Board Resolution No. 2008-0054 and Investigation Order No. R9-2004-0277), wet weather water quality monitoring samples were collected at the two mass loading stations (MLS) (i.e., SD8(1) and DPR2) in the Chollas Creek Watershed. SD8(1) is located on the north fork of Chollas Creek and DPR2 is located on the south fork of Chollas Creek. Compliance monitoring was conducted during the first and second storm events after October 1, 2010, and the first storm event after February 1, 2011 (October 6, 2010; October 19, 2010; and February 16, 2011, respectively). Samples were analyzed for the following:

- General chemistry analytes (applicable for the Biotic Ligand Model).
- Total and dissolved metals (i.e., copper, lead, and zinc) and total hardness.
- Organophosphate pesticides (i.e., Diazinon, Chlorpyrifos, and Malathion).
- Toxicity to *Ceriodaphnia dubia.*
- Chlorinated pesticides (Chlordane), Polychlorinated biphenyls (PCBs), and Polycyclic aromatic hydrocarbons (PAHs).

Results

Dissolved copper concentrations at SD8(1) and DPR2 were above the acute and chronic waste load allocations (WLAs) during the first two storms after October 1, 2010. During the February storm, dissolved copper was above the acute and chronic WLA at SD8(1) and above the chronic WLA at DPR2. Dissolved lead was below the acute and chronic WLAs at both sites. Dissolved zinc at SD8(1) was above the acute and chronic WLAs during the first storm event only and was below the WLA at DPR2 during all three storm events. However, after applying newly developed site specific criteria developed through the City of San Diego's Chollas Creek Water-Effects Ratio Study, dissolved copper, lead, and zinc were below the WLA,

Trends analysis indicated increasing trends for total and dissolved copper and total and dissolved zinc in the north fork of Chollas Creek (SD8(1)). When compared to historical data (1994-2010), increasing trends are relatively shallow and have flattened over time. Increasing trends were also noted for total copper and dissolved copper and total zinc at DPR2.

The organophosphate pesticides Diazinon and Malathion were detected in generally low concentrations during the 2010–2011 Monitoring Season. Diazinon was below the acute and chronic WLAs during all events at both sites. Decreasing trends were observed for Diazinon in both the north fork and south fork and non-detect results were frequently noted (49% and 72% of samples, respectively). As the residual supply of Diazinon becomes exhausted due to the United

States Environmental Protection Agency (USEPA) ban on Diazinon, the frequency of detection in Chollas Creek should continue to decrease.

During Compliance Schedule Year 3 (2010–2011 Monitoring Season), no toxicity to *C. dubia* (acute or chronic survival, or reproduction) was observed at either site during the three monitored events. The results suggest that the copper and zinc results above the WLA did not impact the test organisms, thereby indicating protective conditions for these analytes.

Recommendations

Based on the TMDL compliance monitoring results from the 2010–2011 Monitoring Season, the following program modifications are recommended:

- Continue monitoring to evaluate compliance with the Chollas Creek Diazinon and Dissolved Copper, Lead, and Zinc TMDLs and to assess long term trends in monitoring data.
- Future assessments of compliance with the TMDL WLAs should incorporate the newly developed site-specific criteria for SD8(1) and DPR2 for dissolved copper, dissolved lead, and dissolved zinc from the City of San Diego's Water-Effect Ratio study. These new criteria account for site-specific effects impacting the bioavailability and potential risks associated with dissolved copper, lead, and zinc detected in Chollas Creek.
- Future monitoring should continue to include the additional analytes necessary to evaluate metals toxicity using the biotic ligand model. This data will provide additional supporting information to assess compliance results when incorporating the new site-specific objectives.

Ongoing TMDL Implementation

The Chollas Creek TMDL Implementation Plan (Implementation Plan) (City of San Diego and Weston, 2009a) was specifically prepared in response to Resolution No. R9-2007-0043 in which the Regional Board incorporated the TMDL for dissolved copper, lead, and zinc into the Basin Plan. The Implementation Plan uses an iterative and adaptive management strategy for identifying, planning, implementing, and assessing best management practices (BMPs) for the Chollas Creek Watershed over the 20-year compliance schedule. The Implementation Plan was submitted to the Regional Board on October 21, 2009. The seven named TMDL Dischargers—which include the five Chollas Creek Watershed Municipal Copermittees, United States (US) Navy, and California Department of Transportation (Caltrans)—are using the Implementation Plan as a framework for ongoing compliance.

1.0 INTRODUCTION

This report summarizes the monitoring activities conducted by the seven Chollas Creek Dischargers in compliance with the *Total Maximum Daily Loads (TMDLs) for Dissolved Copper, Lead and Zinc in Chollas Creek, Tributary to San Diego Bay* (Chollas Creek Dissolved Metals TMDL) for Compliance Monitoring Schedule Year 3 (2010–2011 Monitoring Season). In accordance with the TMDL (State Board Resolution No. 2008-0054 and Investigation Order No. R9-2004-0277) wet weather water quality monitoring was conducted at the long term compliance stations (SD8(1) in the north fork of Chollas Creek and at DPR2 in the south fork of Chollas Creek) . Samples were collected and analyzed for the following:

- General chemistry analytes (applicable for the Biotic Ligand Model).
- Total and dissolved metals (i.e., copper, lead, and zinc) and total hardness.
- Organophosphate pesticides (i.e., Diazinon).
- Toxicity to *Ceriodaphnia dubia.*
- Chlorinated pesticides (Chlordane), Polychlorinated biphenyls (PCBs), and Polycyclic aromatic hydrocarbons (PAHs).

The Chollas Creek Watershed encompasses approximately 18,144 acres of predominately urbanized land located within San Diego County. The Chollas Creek Watershed is located southeast of downtown San Diego, in the San Diego Mesa Hydrologic Area, and within the larger Pueblo San Diego Hydrologic Unit. Though much of the creek has been channelized, there have been efforts to restore natural flow in the watershed. The creek is ephemeral in nature, flowing primarily during the wet season and typically only during storm events.

Chollas Creek consists of two main tributaries, the north fork and the south fork. The drainage area of the northern fork (i.e., 8,794 acres) of the watershed is larger than that of the southern fork (i.e., 7,575 acres). The headwaters of the north fork originate approximately 1.5 miles west of the jurisdictional boundary of the City of La Mesa. From this point, the north fork flows in a southwesterly direction for approximately 3 miles before it is joined by several smaller tributaries, which feed into the mainstem of the creek. The creek then flows in a southerly direction for approximately 1.5 miles before discharging into San Diego Bay. The south fork of Chollas Creek flows in a west–southwesterly direction from its headwaters in the City of Lemon Grove and is the product of two smaller creek branches. The north fork and south fork merge approximately 0.8 mile east of the creek's mouth, near the upper extent of the tidal influence from San Diego Bay. An aerial representation of the Chollas Creek Watershed is shown on Figure 1-1.

The Chollas Creek Watershed is highly urbanized. Land use in the Chollas Creek Watershed is predominantly residential (48%), roads (22%), and freeways and highways (5%), as shown on Figure 1-2. The remaining watershed land uses consist of commercial, industrial, and landfills (7%), open space / parks and recreation (7%), schools (3.5%), cemeteries (1.5%), and other miscellaneous land uses.

The seven Dischargers named in the 2007 Chollas Creek Dissolved Metals TMDL participating in compliance monitoring include California Department of Transportation (Caltrans), the United

States Navy (Navy), and five of the San Diego Region Municipal Stormwater Copermittees (Regional Board Order No. R9-2007-0001). As summarized in Table 1-1, the five Copermittees included as Dischargers and Copermittees are the City of La Mesa, City of Lemon Grove, City of San Diego, County of San Diego, and Unified Port District of San Diego. The jurisdictional boundaries of the seven Dischargers are shown on Figure 1-1. Approximately 3.5% of the Chollas Creek Watershed is under the jurisdiction of other agencies not named in the Chollas Creek Dissolved Metals TMDL.

Table 1-1. Dischargers Named in the Chollas Creek Dissolved Metals Total Maximum Daily Load

TMDL	San Diego Region Municipal Storm Water Copermittees	Dischargers
Chollas Creek Dissolved Metals TMDL	City of San Diego City of La Mesa City of Lemon Grove County of San Diego Unified Port District of San Diego	Caltrans City of San Diego City of La Mesa City of Lemon Grove County of San Diego Unified Port District of San Diego Navy

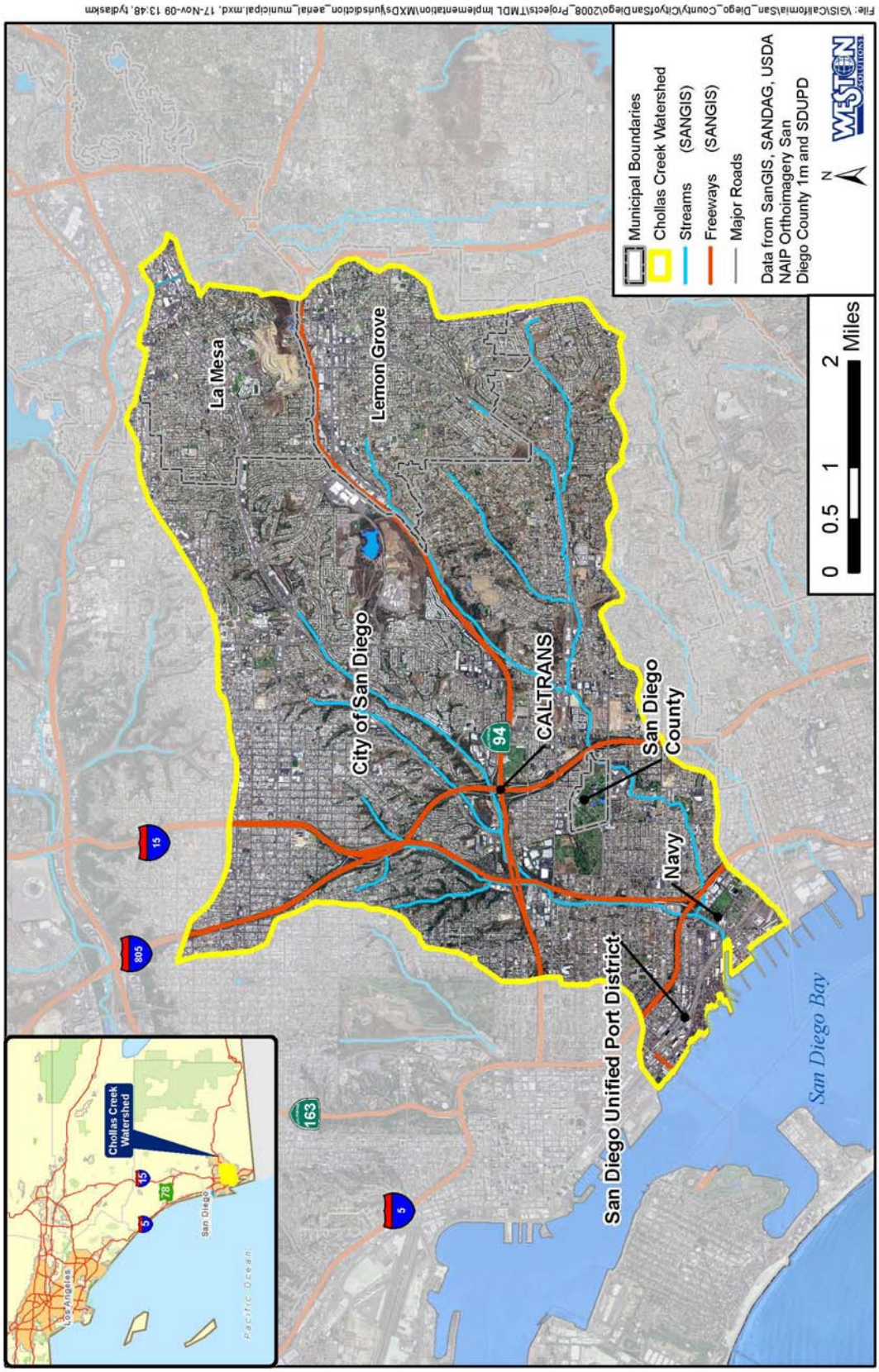

Figure 1-1. Aerial View of the Chollas Creek Watershed

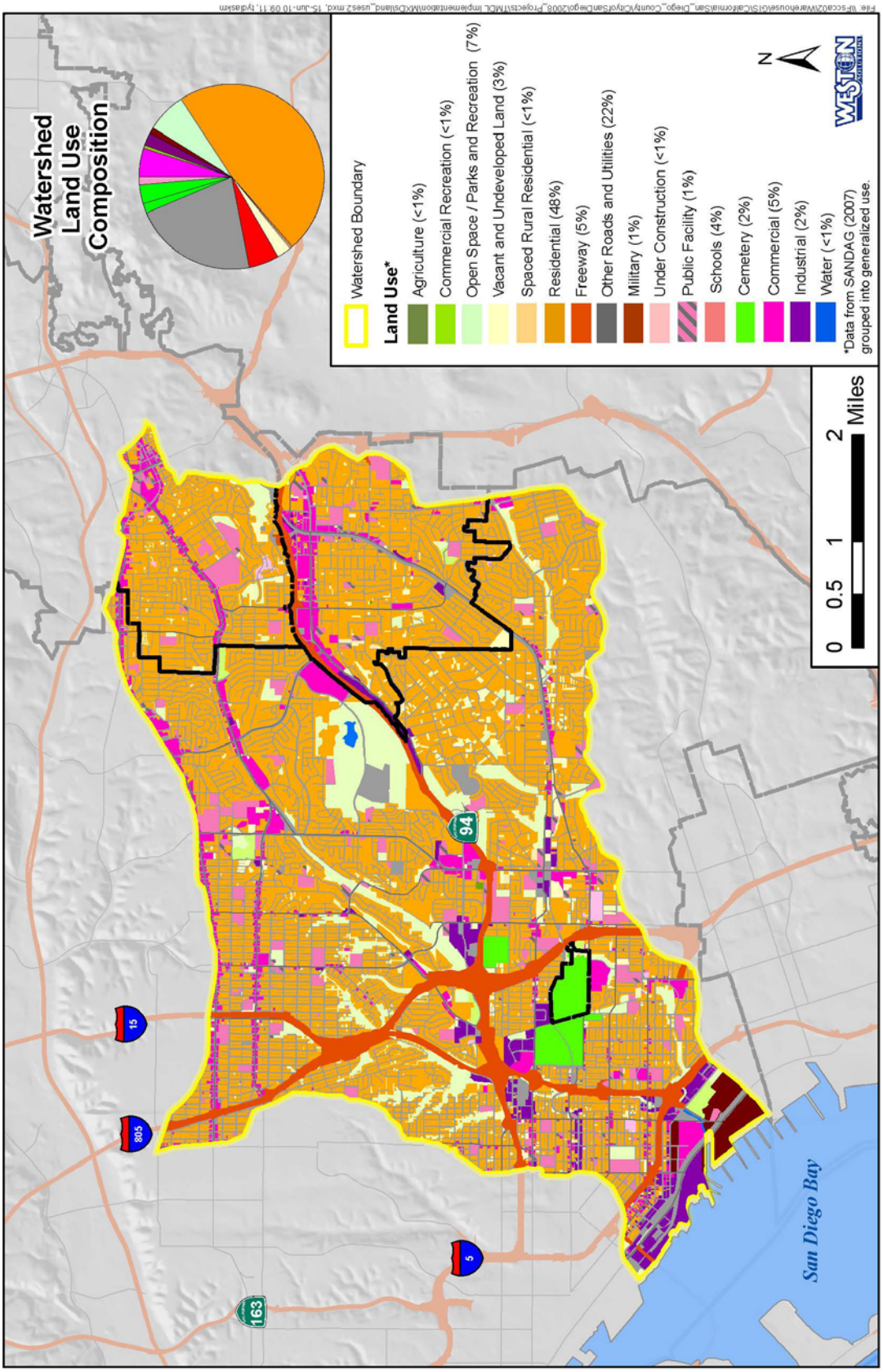

Figure 1-2. Land Uses within the Chollas Creek Watershed

1.1 State Water Resources Control Board Section 303(d) Listings and Total Maximum Daily Load Overview

The Water Quality Control Plan for the San Diego Region (Basin Plan) lists the inland surface water beneficial uses of Chollas Creek as non-contact water recreation (REC-2), warm freshwater habitat (WARM), and wildlife habitat (WILD). Chollas Creek also has the potential to support a contact water recreation (REC-1) beneficial use. The 2006 Clean Water Act (CWA) State Water Resources Control Board (State Board) Section (§)303(d) List identifies dissolved copper, dissolved lead, dissolved zinc, and indicator bacteria as pollutants that impair Chollas Creek. Diazinon appeared on the State Board §303(d) list in 1999 but was removed in 2006 after the *Chollas Creek TMDL for Diazinon* (Diazinon TMDL) was adopted. Table 1-2 summarizes the State Board §303(d) listings and beneficial uses for Chollas Creek above the tidal prism (corresponding to the two branches of the creek).

Table 1-2. Beneficial Uses and State Water Resources Control Board Section 303(d) Listings in the Chollas Creek Watershed

Beneficial Uses	Chollas Creek (3.5 miles)	Chollas Creek §303(d) Pollutants	San Diego Bay	San Diego Bay §303(d) Pollutants
REC-1	o	Dissolved copper(1) Dissolved lead(1) Dissolved zinc(1) Indicator bacteria Diazinon(2)	•	Sediment toxicity Benthic community effects
REC-2	•		•	
WARM	•		–	
WILD	•		•	
Rare, threatened, or endangered species	–		•	
Marine habitat	–		•	
Migration of aquatic organisms	–		•	
Preservation of biological habitats of special significance	–		•	
Estuarine habitat	–		•	
Shellfish harvesting	–		•	
Industrial service supply	–		•	
Commercial and sport fishing	–		•	
Navigation	–		•	

• Existing beneficial use o Potential beneficial use – Not applicable

1. These pollutants are on the 2006 State Board §303(d) list of Water Quality Limited Segments for the San Diego Bay.
2. Diazinon was added to the State Board §303(d) list in 1996. The Diazinon TMDL was developed in 2002 to address the contribution of this organophosphate pesticide to storm water toxicity (Regional Board, 2002a).

Federal law requires the San Diego Regional Water Quality Control Board (Regional Board) to develop TMDLs for waters on the State Board §303(d) list. The purpose of a TMDL is to attain applicable water quality objectives (WQOs) and to restore the beneficial uses of impaired waters. Diazinon was frequently detected above water quality benchmarks in most of San Diego County's watersheds, including Chollas Creek between 1994 and 2008. In 2002, the Regional Board adopted the Diazinon TMDL (Resolution No. R9-2002-0123). Diazinon was phased out of manufacturing and is no longer available for retail sale as of December 2004. Water quality results to date indicate that both the TMDL and ban have been effective. Diazinon concentrations have not been detected above the chronic waste load allocation (WLA) since November 30,

2007, and are infrequently detected at the method detection limit thereby indicating attainment of the TMDL.

Dissolved copper, lead, and zinc have been detected above California Toxics Rule (CTR) criteria (40 CFR 131.38 (c) (3)). In 2004, the Regional Board issued Order No. R9-2004-0277 to provide additional metals data for the Chollas Creek Watershed. The *TMDL for Dissolved Copper, Lead and Zinc in Chollas Creek, Tributary to San Diego Bay* (Chollas Creek Dissolved Metals TMDL) was adopted by the Regional Board in 2007 (Resolution No. R9-2007-0043) and was approved by the Office of Administrative Law on October 22, 2008. The Chollas Creek Dissolved Metals TMDL adopted the compliance monitoring requirements outlined in Order No. R9-2004-0277. The WLAs for dissolved copper, lead, and zinc are based on the conservative, default CTR water-effect ratio criteria of 1.0. The City of San Diego has completed a water-effects ratio study to determine site-specific objectives for Chollas Creek waters. Compliance monitoring data have been analyzed using the default water-effect ratio criteria per the TMDL. Supplemental analysis has also been presented using the site-specific criteria developed in the Water-Effects Ratio study. This report represents data and results for Compliance Schedule Year 3.

1.2 Dissolved Metals Total Maximum Daily Load Implementation Plan and Annual Report

The Chollas Creek Dissolved Metals TMDL Implementation Plan (Implementation Plan) (Weston, 2009a) was specifically prepared in response to Resolution No. R9-2007-0043 in which the Regional Board incorporated the TMDL for dissolved copper, lead, and zinc into the Basin Plan. The Implementation Plan represents the Discharger's strategy for conducting watershed activities within the Chollas Creek Watershed to meet TMDL WLAs. The Implementation Plan uses an iterative, adaptive management strategy for identifying, planning, implementing, and assessing best management practices (BMPs) over the 20-year compliance schedule. The Implementation Plan was submitted to the Regional Board on October 21, 2009. The annual reporting methodology used to develop this document was discussed in the Implementation Plan, and a draft outline of the report structure was submitted to the Regional Board on October 21, 2009. The Implementation Plan is available on the City of San Diego's Think Blue website at www.thinkbluesdregion.org.

1.3 Legal Authority

Five of the seven Dischargers are also San Diego Region Municipal Storm Water Copermittees. Order No. R9-2004-0277 (Item 2-a) requires reports of information on how Copermittees implemented their legal authority to remedy the condition of pollution. Copermittees accomplish this primarily through the current Dry Weather Monitoring (DWM) Program and facility inspections conducted under National Pollutant Discharge Elimination System (NPDES) Order No. R9-2007-0001 (Regional Board, 2007a). DWM is conducted throughout Chollas Creek to identify and eliminate illicit connections and illegal discharges (ICIDs). As part of the DWM Program, Diazinon and metals are monitored, and any illicit discharge of Diazinon or metals is eliminated by issuing violations and/or citations. Each Discharger in the Chollas Creek Watershed has ordinances in place to enforce the illegal and unauthorized discharge of waste into their storm drain systems. For more information on enforcement mechanisms, please refer to the Dischargers' individual Jurisdictional Urban Runoff Management Plans (JURMPs).

Caltrans is responsible for the California State Highway System, which possesses its own NPDES Permit (Order No. 99-06-DWQ) (State Board, 1999). The Navy is responsible for Naval Base San Diego and possesses its own industrial only NPDES Permit (Order No. R9-2002-0169) (Regional Board, 2002b).

2.0 PUBLIC EDUCATION AND OUTREACH PROGRAMS AND ANNUAL REPORTING

Order No. R9-2004-0277 requires reporting of information on the implementation and efficacy of a Diazinon Toxicity Control Plan and Diazinon Public Outreach/Education Program. Watershed activities that address pesticides under the Implementation Plan fulfilled the requirements of Order No. R9-2004-0277. The 2009 Implementation Plan collaboratively developed by the Dischargers represents an integrated adaptive management strategy for addressing priority water quality problems in the Chollas Creek Watershed (e.g., Diazinon). Progress reports for the watershed activities listed in the Implementation Plan are provided as appendices to the Discharger's annual storm water reports, including the San Diego Bay WURMP Annual Report and the Caltrans Stormwater Management Program Annual Report, as appropriate.

3.0 COMPLIANCE MONITORING

Order No. R9-2004-0277 requires water quality monitoring at mass loading stations (MLS) SD8(1) and DPR2. Compliance with the Chollas Creek Dissolved Metals TMDL and the Diazinon TMDL was determined by water quality monitoring at these two locations. Monitoring was conducted during the first and second storms after October 1st and during the first storm after February 1st of each year.

3.1 Monitoring Locations

The Chollas Creek Watershed is divided into two main drainage areas separated by the northern and southern forks of Chollas Creek. SD8(1) is the MLS located at the base of the north fork with a drainage area of approximately 8,794 acres. DPR2 is the MLS located at the base of the south fork of Chollas Creek with a drainage area of approximately 7,575 acres. The drainage areas captured from each site are presented in Table 3-1 and on Figure 3-1.

Table 3-1. Drainage Area Estimates

Portion of Chollas Creek	Monitoring Locations	Drainage Area (acres)	Percentage of Watershed
North fork	SD8(1)	8,794	48%
South fork	DPR2	7,575	42%

Compliance monitoring location SD8(1) was historically located at the end of Durant Street, east of 33rd Street, and approximately 750 ft south of Imperial Avenue. This location was selected as the MLS for the north fork because it represented the drainage area and was upstream of the tidal influence of San Diego Bay. During Compliance Schedule Year 1 (2008–2009 Monitoring Season), sensor readings at the historical SD8(1) location were impacted due to sediment accumulation where the sampler intake and pressure transducer were located in the channel bottom. During Compliance Schedule Year 2 (2009–2010 Monitoring Season), SD8(1) was relocated approximately 100 yards upstream of the original site, at the end of Steel Street (lat: 32.70553, long: -117.12121). Photos were taken at both the original and current SD8(1) monitoring location to document the differing channel conditions (Figure 3-2).

In Compliance Schedule Year 3 (2010–2011 Monitoring Season), sensor readings continued to be impacted by sediment and cobble accumulation, but during the months of October and November 2010 followed the patterns observed the previous year. The large storms in December 2010 resulted in greater sediment accumulation which buried the sensor (Figure 3-3). The City of San Diego acquired emergency permits to remove the majority of deposited sediment; however, the removal activities were limited to the area downstream of Durant Street. On January 24, 2011, the flow sensor was relocated approximately 17 inches up the trapezoidal channel wall to the base of the sediment, essentially replicating that of a natural channel installation (Figure 3-4).

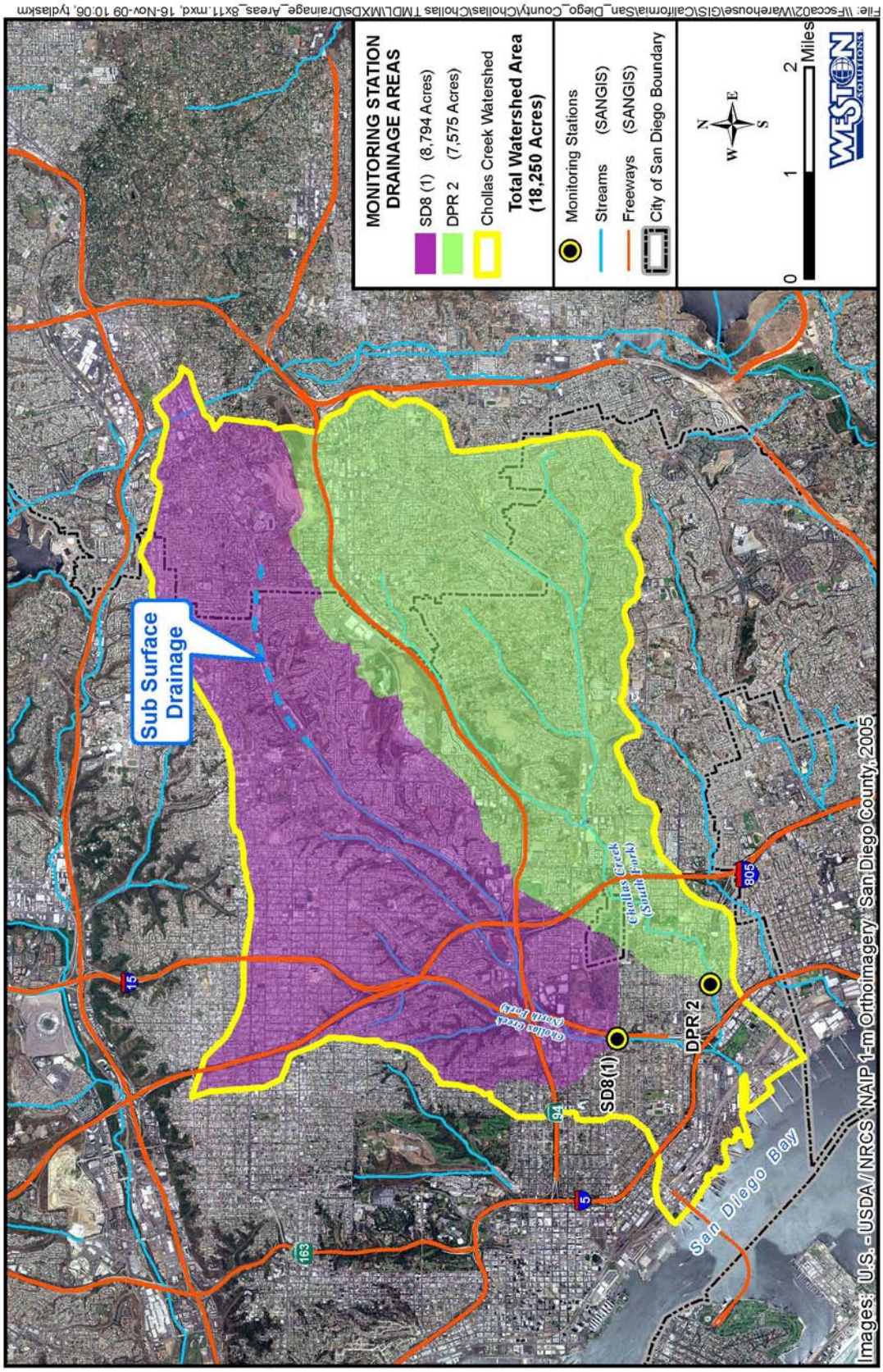

Figure 3-1. Chollas Creek Mass Loading Stations – SD8(1) and DPR2

Figure 3-2. View of Chollas Creek Showing the New SD8(1) Location in the Foreground, Historical SD8(1) Location in the Mid-Photo, and Accumulating Sediment and Cobbles in the Background – February 2010 (left) and May 2010 (right)

Figure 3-3. Sediment Accumulation at the New SD8(1) Location (left) and Channel Clearing Activities Downstream of New Site (right) – January 2011

Figure 3-4. Sensor Relocated 17 inches up the Channel Wall – January 24, 2011

3.2 Sampling and Analytical Methods

3.2.1 Sampling Methods and Storm Water Quality Monitoring

Storm water runoff was collected using flow-weighted composite techniques over the duration of each storm event. Sample collection was targeted for termination when the storm flow returned to within approximately 10% of the base flow condition, indicated by the end of the precipitation event and the cessation of storm water flow. However, the variable nature of storm water monitoring may have resulted in slight protocol deviations where noted.

Automated flow and sampling equipment were installed at each site to collect flow-weighted composite samples during storm events. American Sigma flowmeters with pressure transducers or bubblers were used to measure velocity and stage height. The flow sensors were installed on the bottom center of the channel.

Using the data collected by the flowmeters, sample intervals were set at flow pacings to collect approximately 40-60 L of water throughout the storm event depending on pacing and storm intensity and duration. The sample intake point was located adjacent to the flowmeter, on the bottom center of the channel. Water samples were pumped through a Teflon intake device and Teflon tubing. American Sigma automated samplers were used to collect 1-L sample grabs at a flow-dependent rate. The 1-L grab samples were composited into 20-L borosilicate glass sample bottles. Bottles were kept on ice during the storm event. Field crews maintained and replaced the sampling bottles as they filled to capacity. Multiple bottles were composited at Weston Solutions, Inc.'s (Weston's®) facility and subsampled for delivery to the laboratory for chemistry and bioassay toxicity analyses. Samples were submitted to Weck Laboratories for chemical analysis and to Weston's Toxicology Laboratory for bioassay toxicity analysis.

A field data log was completed at each site (Appendix B). The field data log includes empirical observations of the site and water quality characteristics. Observations included meteorological conditions at the time of sampling, odor, color, and other relevant observations as needed.

Flow-weighted composite samples were collected and analyzed for the constituents listed in Table 3-2, in accordance with Order No. R9-2004-0277. Bioassay water samples were collected for use in acute and chronic toxicity tests using *C. dubia* with dilution ranges from 100%, 50%, 25%, 12.5%, and 6.25%. Grab samples were collected for the field parameters, pH, temperature, and conductivity, which are not conducive to automated composite sampling. Grab samples were collected from the horizontal and vertical center of the channel, where possible during the peak of flow.

Table 3-2. Water Quality Analytical Parameters for Field Parameters and Analytes Required Under Order No. R9-2004-0277

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (e.g., chemical/temperature/light-protected)	Maximum Holding Time: Preparation/ Analysis
pH	NA	NA	Analyzed in field	NA	NA
Temperature	NA	NA	Analyzed in field	NA	NA
Conductivity	NA	NA	Analyzed in field	NA	NA
Chloride	USEPA 300	1 L	Plastic	Store cool at <4ºC	28 days
Sulfate	USEPA 300	1 L	Plastic	Store cool at <4ºC	28 days
Total Alkalinity	USEPA 310.2	500 ml	Plastic	Store cool at <4ºC	14 days
Total Organic Carbon	USEPA 415.1	250 ml	Amber glass	Store cool at <4ºC *; H3PO4	28 days
Dissolved Organic Carbon	USEPA 415.1	250 ml	Amber glass	Store cool at <4ºC *	24 hrs/28 days
Total Suspended Solids	SM 2540-D	1 L	Plastic	NA	7 days
Total hardness	SM 2340-B	100 mL	Plastic	HNO_3	Six months
Total/dissolved copper	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Total/dissolved lead	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Total/dissolved zinc	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Acute toxicity *C. dubia*	USEPA 821-R-02-012	10 L	10-L glass	Store cool at <6ºC	36 hours
Chronic toxicity *C. dubia*	USEPA 821-R-02-013	20 L	20-L glass	Store cool at <6ºC	36 hours
Organophosphorus pesticides (Diazinon)	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days
Chlorinated pesticides	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days
PAHs	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days
PCB congeners	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days

NA = not applicable
* Dissolved metals are filtered with a 0.45-µm filter.

3.2.2 Impact of Changing Chemistry Laboratory

In 2010, the laboratory which historically analyzed samples for the Chollas Creek Watershed, CRG Marine Laboratories, closed for business. Samples collected during the 2010-2011 Monitoring Season were submitted to Weck Laboratories for chemical analysis. Due to the change in laboratories, the method minimum reporting limits for PAHs, chlorinated pesticides, and PCB congeners were slightly higher than previous years. Also an abbreviated suite of 28 PCB congeners was analyzed for the first two storms monitored in October 2010 (the suite was based on the congener lists developed by the National Oceanic and Atmospheric Administration (NOAA) and the World Health Organization (WHO)). In February 2011, Weck Laboratories developed their analyte list to include the full list of 56 congeners. These procedural changes do not represent or mask a change in water quality.

3.2.3 Quality Assurance / Quality Control Procedures

Field measurements for pH, conductivity, and temperature were taken using an Oakton CON10 pH/temperature/conductivity meter according to the manufacturer specifications. Calibration of the instrument was conducted prior to each sampling event.

Quality assurance and quality control for sampling processes included proper collection of the samples to minimize the possibility of contamination. All samples were collected in certified clean, contaminant-free sample bottles. Field staff wore powder-free gloves during sample collection. Sampling personnel were trained according to the field sampling standard operating procedures (SOPs). Additionally, the field staff was made aware of the significance of the project's detection limits and the requirement to avoid contamination of samples at all times. The collection of sample duplicates and field blanks were conducted to assess variability and field bias, respectively.

3.2.4 Chain-of-Custody Procedures

Chain-of-custody (COC) procedures were used for all samples throughout the collection, transport, and analytical process. Samples were considered to be in custody if they were 1) in the custodian's possession or view, 2) retained in a secured place (i.e., under lock) with restricted access, or 3) placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal. The principal documents used to identify samples and to document possession were COC records, field logbooks, and field tracking forms.

The COC procedures were initiated during sample collection. A COC record was provided with each sample or group of samples. Each person with sample custody signed the form and ensured the samples were not left unattended unless properly secured. Documentation of sample handling and custody included the following:

- Sample identifier.
- Sample collection date and time.
- Any special notations on sample characteristics or analyses.
- Initials of the person collecting the sample.
- Date the sample was sent to the analytical laboratory.
- Shipping company and waybill information, if applicable.

Completed COC forms were placed in a plastic envelope and kept inside the container with the samples. Once delivered to the analytical laboratory, the COC form was signed by the samples recipient. The condition of the samples (i.e., confirming all samples were accounted for and properly labeled, the temperature of the samples, and the integrity of the sample jars) was noted and recorded by the recipient. COC records were included in the final reports prepared by the analytical laboratories and considered an integral part of the report.

3.2.5 Trend Assessment Methodology

Using the long-term datasets for SD8(1) and DPR2, a non-parametric trends analysis was conducted using the Mann-Kendall trend test to evaluate the presence or absence of significant trends using available monitoring data. This trend test was employed for analysis of environmental time series data. The test did not assume any single distribution for the data being tested, which was an advantage when analyzing environmental data. The test did not incorporate magnitude, but instead, calculated the number of positive and negative differences between samples. The number of positive and negative differences was summed to calculate the S-statistic, which was compared to a table value to determine significance. Sen's slope estimator (Sen, 1968) was used to estimate the magnitude of change over time when a significant trend was observed. Sen's slope estimator was a non-parametric method that was insensitive to outliers and was used to infer the magnitude of a trend in the data.

The two long-term datasets contain constituent measurements with levels below the detection limit of the analytical method (non-detect results). The Sen's slope estimator will exhibit noticeable bias if the number of non-detects exceed 15%. At non-detect levels of 15% or less, both the Mann-Kendall test results and the Sen's slope estimator were found to be reliable.

3.2.6 Water Quality Criteria

Sample results were compared to the water quality criteria shown in Table 3-3. Water chemistry results were compared to criteria from the references listed in the table to determine the magnitude of criteria exceedances from storm water runoff to Chollas Creek.

Table 3-3.Wet Weather Water Quality Criteria for Analyzed Constituents

Constituent List	Water Quality Criteria	Criteria Source
pH	6.5–9.0	Basin Plan (Regional Board, 1994)
Total/dissolved copper	(a)	Resolution No. R9-2007-0043
Total/dissolved lead	(a)	Resolution No. R9-2007-0043
Total/dissolved zinc	(a)	Resolution No. R9-2007-0043
Diazinon	72 ng/L (acute exposure); 45 ng/L (chronic exposure)	Resolution No. R9-2002-0123(b)
Chlorpyrifos	20 ng/L	CDFG (2000)
Malathion	430 ng/L (acute); 100 ng/L (chronic)	CDFG (2000)
Acute toxicity *C. dubia*	100 no-observed-effect concentration (NOEC) (%)	Regional Board Order No. R9-2007-0001
Chronic toxicity *C. dubia*	100 NOEC (%)	Regional Board Order No. R9-2007-0001

(a) The Chollas Creek Dissolved Metals TMDL WLAs are based on total hardness (as $CaCO_3$) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131.38 (c) (3)) (USEPA, 2000). Samples collected for the 2008–2009 Monitoring Season and monitoring seasons thereafter are compared to the acute and chronic condition, multiplied by 0.90 (i.e., the margin of safety).

(b) For the Diazinon TMDL (Resolution No. R9-2002-0123), the WLA is set at 72 ng/L for acute exposures and 45 ng/L for chronic exposures. The 45 ng/L chronic exposure is applied to samples collected using a flow-weighted composite method.

The Chollas Creek Dissolved Metals TMDL was adopted on October 22, 2008. The TMDL WLAs for dissolved copper, lead, and zinc were defined by both the acute and the chronic criteria, multiplied by a 10% margin of safety. The WLAs were applied as metals water quality benchmarks since inception of the TMDL.

4.0 MONITORING RESULTS

Monitoring results were assessed in relation to the Chollas Creek Dissolved Metals TMDL and Order No. R9-2004-0277. This assessment involved chemical, bacterial, and toxicological test results from three wet weather sampling events at SD8(1) and DPR2. Field logs are included electronically in Appendix A. Rainfall and flow data from the 2010–2011 Monitoring Season are provided in Appendix B. The laboratory chemistry and toxicity results are provided electronically in Appendix C.

4.1 2010–2011 Rainfall and Flow Data

The Chollas Creek Dissolved Metals TMDL and Order No. R9-2004-0277 require monitoring at SD8(1) and DPR2 for the first and second rainfall events of the storm season after October 1 and the first rainfall event after February 1. Estimation of a representative storm event in San Diego County was based on an evaluation of the long-term data records from the National Weather Service rain gauge located at Lindbergh Field. A typical storm event at Lindbergh Field ranges from 0.19–0.57 inches of rain and lasts six to 12 hours. Since the depth and duration of a typical storm event varies depending on the monitoring station's location within San Diego County, storm events that were preceded by at least 72 hours of dry weather and were forecasted to be greater than 0.10 inches were considered viable events for monitoring.

Three storm events (October 6, 2010; October 19, 2010; and February 16, 2011) were monitored over the course of the 2010–2011 Monitoring Season. Annual rainfall totals and event-specific rainfall for the 2010–2011 Monitoring Season at SD8(1) and DPR2 are shown in Table 4-1. The watershed received approximately 14.14 inches of rain based on the rain gauge at DPR2. Although rainfall data was collected at SD8(1) a comparison to rainfall at DPR2 and Lindbergh Field suggest that the rain gauge malfunctioned and that a portion of the total annual rainfall data for SD8(1) were not recorded.

The average daily rainfall for the Chollas Creek Watershed is shown on Figure 4-1. Monitored storm events are signified by raindrops on Figure 4-1. The total rainfall measured at San Diego's Lindbergh Field from October 1, 2010 to April 30, 2011, was 12.1 inches.

Table 4-1. Rainfall Totals for SD8(1) and DPR2 in the Chollas Creek Watershed

Storm Event Date	SD8(1) (inches)	DPR2 (inches)
10/06/2010	0.15 *	0.52
10/19/2010	0.31 *	1.01
02/16/2011	0.16 *	0.35
2010-2011 Monitoring Season Total Rainfall	**6.43 ***	**11.82**

* The SD8(1) rain gauge malfunctioned during the 2010-2011 Monitoring Season and portions of data are missing. Measured values are presented for comparison. DPR2 rainfall data was used for quality control assessment.

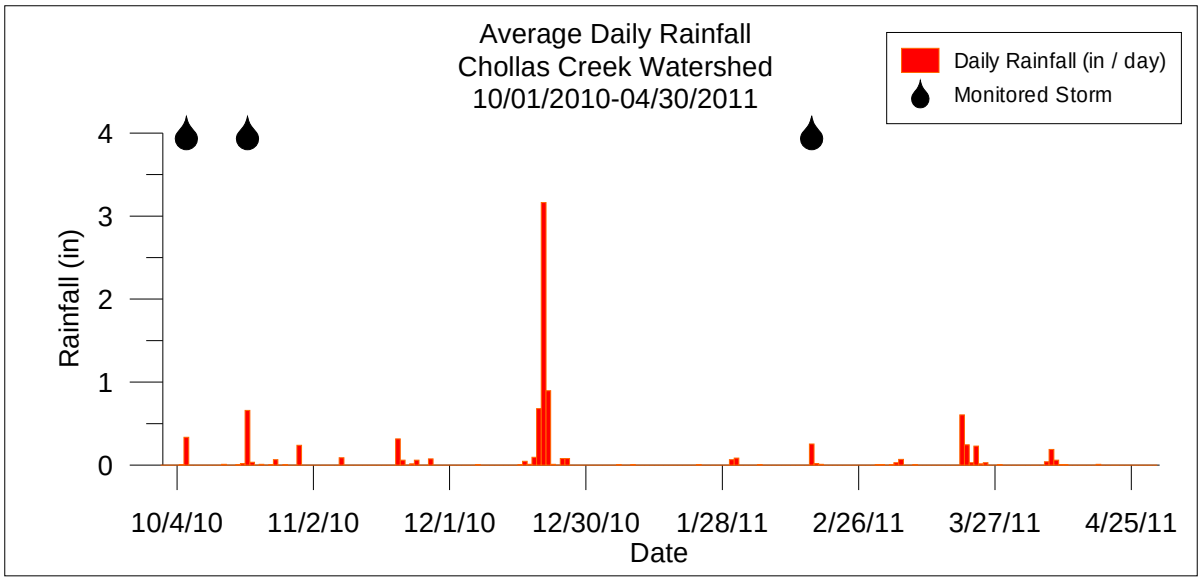

Figure 4-1. 2010–2011 Average Daily Rainfall Totals for the Chollas Creek Watershed

Hydrographs depicting flow rates, rainfall, and sample times for the three storm events monitored at SD8(1) and DPR2 during the 2010–2011 Monitoring Season are presented on Figure 4-2 and Figure 4-3, respectively. Annual hydrographs and season flow data for the sites are presented in Appendix B.

The flow sensors installed at SD8(1) and DPR2 at the beginning of the 2010–2011 Monitoring Season measured date, time, and level. The flow rates were calculated based on the channel dimensions and slope.

On Wednesday, October 6, 2010, a 0.25-inch to 0.75-inch storm system was forecast between 00:00 and 06:00.and consisted of sporadic showers which turned into a heavy downpour. A new rainfall record of 0.72 inches was established at Lindbergh Field. The Chollas Creek Watershed measured 0.51 inches of rainfall at DPR2. Rainfall was measured between 00:00 and 06:00, with two intense rainfall periods at approximately 02:45 and 05:45. Flow at SD8(1) was characterized by two distinct peaks, each peak associated with a major band of rainfall. DPR2 began flowing at approximately 03:00 on October 6, 2010. There was approximately 3.6 times more runoff from the north fork than the south fork (7.7 million ft^3 at SD8(1) versus 2.1 million ft^3 at DPR2).

Rain fell steadily during the afternoon and evening of Saturday, October 19, 2010. Intense rainfall was measured between 17:05 and 17:25 (0.16 inches). Runoff at SD8(1) was characterized by three distinct peaks in the hydrograph. A similar, compressed flow pattern was observed at DPR2. There were 24.0 million ft^3 of runoff from SD8(1) and 20.7 million ft^3 of runoff from DPR2.

The first storm after February 1, 2011 (as required by the TMDL, Order No. 2004-0277, and the NPDES Permits), occurred on Wednesday, February 16, 2011. At DPR2, 0.18 inches of rainfall was measured during the morning hours, and a second band of rainfall (0.17 inches) was measured in the early evening. The runoff volume measured at SD8(1) was 1.7 million ft^3 and 1.3 million ft^3 were measured at DPR2.

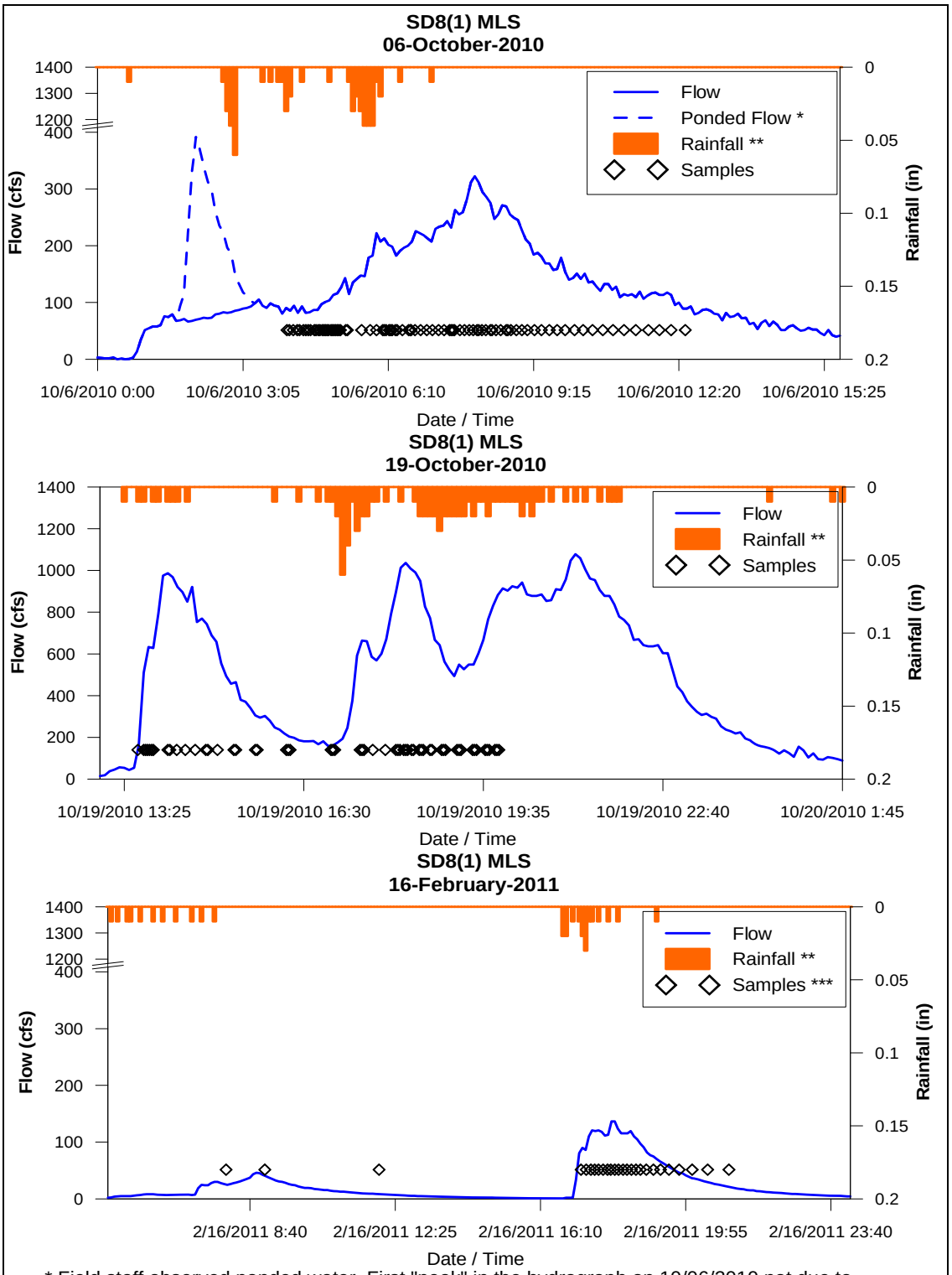

* Field staff observed ponded water. First "peak" in the hydrograph on 10/06/2010 not due to storm flows, but a rise in level due to ponding. Sampling began when flow began.
** Rainfall data from DPR2 rain gauge.
*** On 02/16/2011, the rainfall forecast and prediction was for ~1.0" storm between 00:00 and 06:00. Pacing was set for higher flow, but due to storm delay and path alteration delay, sampling activities were delayed ~6 hrs.

Figure 4-2. 2010–2011 Storm Hydrographs for SD8(1)

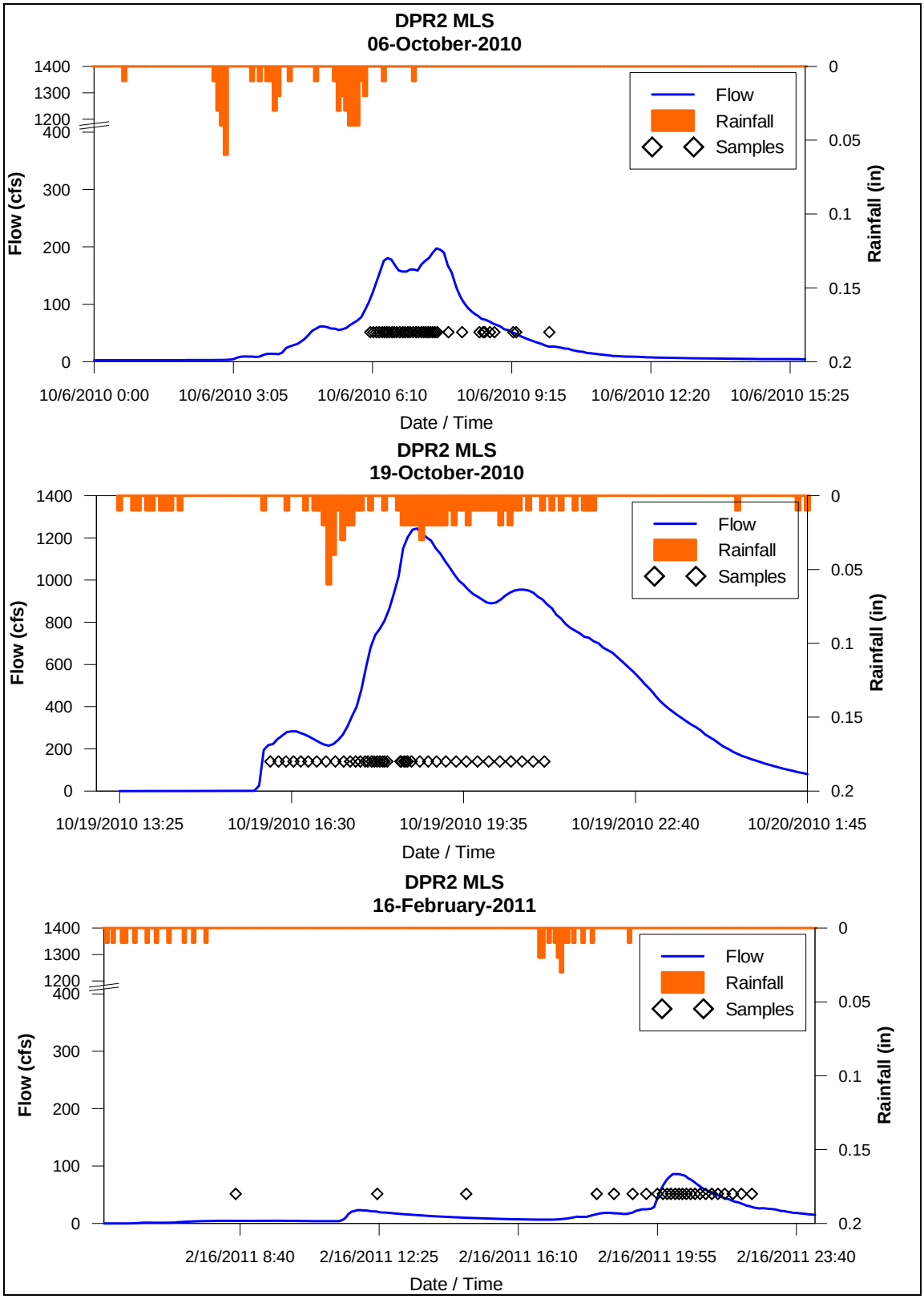

Figure 4-3. 2010–2011 Storm Hydrographs for DPR2

4.2 Compliance Monitoring Results

This section presents the water quality monitoring results for SD8(1) and DPR2 for the parameters outlined in the Chollas Creek Dissolved Metals TMDL. Samples were analyzed for conventional field parameters, general chemistry constituents, total and dissolved copper, lead, and zinc, total hardness, organophosphate pesticides (i.e., Diazinon), toxicity to *C. dubia*, chlorinated pesticides, PCBs, and PAHs. Wet weather chemistry results for SD8(1) and DPR2 are presented in Table 4-2. Results for toxicity to *C. dubia* are presented in Table 4-3. Results greater than the water quality benchmark were bolded and shaded.

Metals

For the purpose of assessing compliance with the Chollas Creek Dissolved Metals TMDL the dissolved metals are compared to the WLAs. Dissolved copper concentrations were above the acute WLAs for all three storm events monitored at SD8(1). Dissolved copper concentrations at DPR2 were above the acute WLAs during the first and second monitoring events and above the chronic WLA during the February monitoring event. Dissolved zinc was greater than the acute WLA at SD8(1) during the first-flush storm event and below the acute and chronic WLAs during the second and third monitoring events. Dissolved zinc was below the acute and chronic WLAs during all three monitoring events at DPR2. All results were below the acute and chronic WLAs for dissolved lead.

Organophosphate Pesticides

Of the organophosphate pesticides, only two analytes were detected at concentrations above the reporting limit (i.e., Diazinon and Malathion). Diazinon concentrations were below the acute and chronic WLAs during all storm events at both sites. Diazinon was not detected at either site on October 19, 2010. Malathion concentrations at both sites were slightly above the chronic water quality benchmark during the first-flush storm event. The Malathion result for SD8(1) was also slightly above the chronic benchmark on October 19, 2010. Toxicity to *C. dubia* was not observed in relation to any of the organophosphate pesticides detected during the 2010-2011 Monitoring Season.

Toxicity

No toxicity to *C. dubia* was observed during the three monitoring events to either the acute or chronic survival or reproductive endpoints.

Polynuclear Aromatic Hydrocarbons, Chlorinated Pesticides, and Polychlorinated Biphenyls

PAHs were detected at both SD8(1) and DPR2 in low concentrations. Total detectable PAH results at SD8(1) ranged from 640 ng/L to less than 100 ng/L (75% of results were below the reporting limit). At DPR2, total PAHs ranged from 821 ng/L to less than 100 ng/L (83% of results were below the reporting limit). Results were similar for both sites and consistent with PAH detections in storm water runoff from urbanized settings. PAH results were highest during the second storm event (October 19, 2010). PAHs were not detected in the north fork or south fork during the February storm event. Refer to Table 4-2 for individual PAH analyte concentrations.

The results for total chlorinated pesticides were generally below the reporting limit (98% of results). Trace levels of 4,4-DDT were detected at both SD8(1) and DPR2 in October 2010. The highest concentrations detected at SD8(1) and DPR2 were during the second storm event (6.4 ng/L and 5.5 ng/L, respectively).

PCB congeners were not detected during any of the three monitoring events at SD8(1) or DPR2.

Table 4-2. 2010–2011 Chollas Creek Wet Weather Compliance Monitoring Chemistry Results

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1) 10/6/2010	CC-SD8(1) 10/19/2010	CC-SD8(1) 2/16/2011	DPR2 10/6/2010	DPR2-DUP 10/6/2010	DPR2 10/19/2010	DPR2-DUP 10/19/2010	DPR2 2/16/2011	Field Blank 10/6/2010	Field Blank 10/19/2010	Field Blank 2/17/2011
Physical Chemistry														
Precipitation	inches			0.52+	1.01+	0.35+	0.52	0.52	1.01	1.01	0.35	-	-	-
pH	pH units	6.5-9.0	Basin Plan	7.19	7.33	7.74	6.9	-	7.01	-	7.46	-	-	-
Conductivity	µS/cm			199.5	129.7	239	393	-	189.5	-	561	-	-	-
Temperature	Celsius			17.7	18.8	16.5	18	-	19.1	-	15.6	-	-	-
General Chemistry														
Chloride	mg/L			39	21	32	310	57	44	45	140	0.15J	<0.5	0.14J
Dissolved Organic Carbon	mg/L			13	9.3	11	21	21	8.5	8.6	16	0.13J	0.16J	0.16J
Sulfate	mg/L			21	13	19	93	31	17	18	62	0.11J	<0.5	<0.5
Total Alkalinity	mg/L			33	27	42	46	36	29	63	79	<2	<2	1.5J
Total Hardness	mg $CaCO_3$/L			68	47	68	87	87	76	75	170	<0.66	<0.66	<0.66
Total Organic Carbon	mg/L			18	11	12	26	26	8.8	8.8	19	0.21J	0.12J	0.13J
Total Suspended Solids	mg/L			56	120	180	11	9	180	170	65	<1	<1	<1
Chlorinated Pesticides														
2,4'-DDD	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2,4'-DDE	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2,4'-DDT	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4,4'-DDD	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4,4'-DDE	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4,4'-DDT	ng/L			3.9J	6.4	<5	<5	<5	4.3J	5.5	<5	<5	<5	<5
Aldrin	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
BHC-alpha	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
BHC-beta	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
BHC-delta	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
BHC-gamma	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlordane-alpha	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlordane-gamma	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dieldrin	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Endosulfan Sulfate	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Endosulfan-I	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Endosulfan-II	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Endrin	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Endrin Aldehyde	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Heptachlor	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Heptachlor Epoxide	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methoxychlor	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Mirex	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Table 4-2. 2010–2011 Chollas Creek Wet Weather Compliance Monitoring Chemistry Results

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1)	CC-SD8(1)	CC-SD8(1)	DPR2	DPR2-DUP	DPR2	DPR2-DUP	DPR2	Field Blank	Field Blank	Field Blank
				10/6/2010	10/19/2010	2/16/2011	10/6/2010	10/6/2010	10/19/2010	10/19/2010	2/16/2011	10/6/2010	10/19/2010	2/17/2011
Toxaphene	ng/L			<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
trans-Nonachlor	ng/L			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Chlorinated Pesticides	ng/L			3.9	6.4	<500	<500	<500	4.3	5.5	<500	<500	<500	<500
Organophosphorus Pesticides														
Azinphos Methyl	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bolstar (Sulprofos)	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chlorpyrifos	ng/L	20/14	CA Dept. of Fish & Game, 2000 (Acute/Chronic)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Coumaphos	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Demeton-o	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Demeton-s	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Diazinon	ng/L	72/45	Chollas Creek TMDL for Diazinon (Acute/Chronic)	21	<10	6.6J	27	25	<10	<10	28	<10	<10	<10
Dichlorvos	ng/L			61 BS-L	<10	16	65 BS-L	64 BS-L	<10	<10	7.8J	<10	<10	<10
Dimethoate	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Disulfoton	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethoprop (Ethoprofos)	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethyl Parathion	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fenchlorphos (Ronnel)	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fensulfothion	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fenthion	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Malathion	ng/L	430/100	CA Dept. of Fish & Game, 1998 (Acute/Chronic)	**170**	**170**	47	**130**	**120**	<10	<10	78	<10	<10	<10
Merphos	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methyl Parathion	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Mevinphos (Phosdrin)	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naled	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Phorate	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tetrachlorvinphos (Stirofos)	ng/L			<10	<10	<10	8.6J	<10	<10	<10	<10	<10	<10	<10
Tokuthion	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Trichloronate	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aroclor PCBs														
Aroclor 1016	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Aroclor 1221	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Aroclor 1232	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100

Table 4-2. 2010–2011 Chollas Creek Wet Weather Compliance Monitoring Chemistry Results

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1)	CC-SD8(1)	CC-SD8(1)	DPR2	DPR2-DUP	DPR2	DPR2-DUP	DPR2	Field Blank	Field Blank	Field Blank
				10/6/2010	10/19/2010	2/16/2011	10/6/2010	10/6/2010	10/19/2010	10/19/2010	2/16/2011	10/6/2010	10/19/2010	2/17/2011
Aroclor 1242	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Aroclor 1248	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Aroclor 1254	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Aroclor 1260	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
PCB Congeners[1]														
PCB003	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB008	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB018	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB028	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB031	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB033	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB037	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB044	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB049	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB052	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB056	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB060	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB066	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB070	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB074	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB077	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB081	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB087	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB095	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB097	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB099	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB101	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB105	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB110	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB114	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB118	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB119	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB123	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB126	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB128	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB132	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB138	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Table 4-2. 2010–2011 Chollas Creek Wet Weather Compliance Monitoring Chemistry Results

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1)	CC-SD8(1)	CC-SD8(1)	DPR2	DPR2-DUP	DPR2	DPR2-DUP	DPR2	Field Blank	Field Blank	Field Blank
				10/6/2010	10/19/2010	2/16/2011	10/6/2010	10/6/2010	10/19/2010	10/19/2010	2/16/2011	10/6/2010	10/19/2010	2/17/2011
PCB141	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB149	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB151	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB153	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB156	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB157	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB158	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB167	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB168	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB169	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB170	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB174	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB177	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB180	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB183	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB187	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB189	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB194	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB195	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB200	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB201	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB203	ng/L			-	-	<10	-	-	-	-	<10	-	-	<10
PCB206	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCB209	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total PCB Congeners	ng/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Polynuclear Aromatic Hydrocarbons														
1-Methylnaphthalene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1-Methylphenanthrene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2,6-Dimethylnaphthalene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	ng/L			21J	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Acenaphthene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Acenaphthylene	ng/L			<100	25J	<100	<100	<100	<100	<100	<100	<100	<100	<100
Anthracene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Benz[a]anthracene	ng/L			33J	33J	<100	<100	<100	41J	29J	<100	<100	<100	<100
Benzo[a]pyrene	ng/L			<100	53J	<100	<100	<100	71J	54J	<100	<100	<100	<100
Benzo[b]fluoranthene	ng/L			20J	45J	<100	<100	<100	91J	55J	<100	<100	<100	<100
Benzo[e]pyrene	ng/L			<100	85J	<100	<100	<100	120	92J	<100	<100	<100	<100

Table 4-2. 2010–2011 Chollas Creek Wet Weather Compliance Monitoring Chemistry Results

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1)	CC-SD8(1)	CC-SD8(1)	DPR2	DPR2-DUP	DPR2	DPR2-DUP	DPR2	Field Blank	Field Blank	Field Blank
				10/6/2010	10/19/2010	2/16/2011	10/6/2010	10/6/2010	10/19/2010	10/19/2010	2/16/2011	10/6/2010	10/19/2010	2/17/2011
Benzo[g,h,i]perylene	ng/L			<100	<100	<100	<100	<100	85J	<100	<100	<100	<100	<100
Benzo[k]fluoranthene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Biphenyl	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	24J	<100
Chrysene	ng/L			40J	28J	<100	<100	<100	46J	<100	<100	<100	<100	<100
Dibenz[a,h]anthracene	ng/L			<100	62J	<100	<100	<100	<100	80J	<100	<100	<100	<100
Fluoranthene	ng/L			43J	130	<100	<100	<100	130	110	<100	<100	<100	<100
Fluorene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Indeno[1,2,3-c,d]pyrene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Naphthalene	ng/L			<100	39J	<100	<100	<100	35J	30J	<100	<100	24J	<100
Perylene	ng/L			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Phenanthrene	ng/L			<100	<100	<100	<100	<100	32J	<100	<100	<100	<100	<100
Pyrene	ng/L			72J	140	<100	<100	<100	170	140	<100	<100	<100	<100
Total Detectable PAHs	ng/L			229	640	<100	<100	<100	821	590	<100	<100	48	<100
Total Metals														
Calcium(Ca)-Total	mg/L			18	12	17	22	22	17	17	39	0.031J	0.07J	0.058J
Copper(Cu)-Total	µg/L			33	36	54	21	22	51	48	24	0.07J	0.15J	0.08J
Lead(Pb)-Total	µg/L			20	26	37	4.1	3.5	40	38	11	0.02J	<0.2	<0.2
Magnesium(Mg)-Total	mg/L			5.9	4.2	6.3	7.8	7.8	7.9	7.6	17	<0.1	<0.1	<0.1
Potassium(K)-Total	mg/L			5.3	4.3	4.3	8.4	8.4	6.3	6.1	5.2	<0.1	<0.1	<0.1
Sodium(Na)-Total	mg/L			25	15	22	35	35	26	25	90	0.26J	0.17J	0.18J
Zinc(Zn)-Total	µg/L			200	190	310	76	77	280	260	92	<5	<5	<5
Dissolved Metals														
Copper(Cu)-Dissolved	µg/L	(a)	40 CFR 131.38	**16**	**11**	**10**	**18**	**18**	**10**	**9.5**	**13**	0.15J	0.19J	0.11J
Lead(Pb)-Dissolved	µg/L	(a)	40 CFR 131.38	1.3	0.84	0.41	0.83	0.85	0.65	0.64	0.33	<0.2	0.035J	<0.2
Zinc(Zn)-Dissolved	µg/L	(a)	40 CFR 131.38	**77**	54	37	65	64	48	47	36	1.4J	1.7J	1.4J

BS-L-The recovery of this analyte in the BS/LCS was below the control limit. Sample result is suspect.

J-Analyte was detected at concentration below the reporting limit and above the method detection limit. Reported value is estimated.

< Results less than the reporting limit.

[†]It appears that the SD8(1) rain gauge malfunctioned during the 2010-2011 Monitoring Season and portions of data are missing. Measured values are presented for comparison. DPR2 rainfall data was used for quality control assessment.

- No data provided.

(a) WQO for dissolved metal fractions are based on Total Hardness (as CaCO3) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000).
Chollas Creek Dissolved Metals TMDL waste load allocations (90% of the CMC and CCC) were used as the WQO for storms after October 4, 2008.

[1] In February 2011, WECK Analytical Laboratories, Inc. expanded their list of PCB Congeners from 28 analytes to 56 analytes.

Bold only results exceed the water quality benchmark, the chronic water quality benchmark for pesticides, or the CCC water quality benchmark for metals.

Bold and shaded exceed the CMC and CCC water quality benchmarks for metals.

Table 4-3. 2010–2011 Chollas Creek Wet Weather Biological Toxicity Results for Ceriodaphnia dubia

Test	Reporting Value	Unit	SD8(1) 10/6/2010	SD8(1) 10/19/2010	SD8(1) 2/16/2011	DPR2[1] 10/6/2010	DPR2-DUP 10/6/2010	DPR2 10/19/2010	DPR2-DUP[1] 10/19/2010	DPR2[1] 2/16/2011	DPR2-DUP[1] 2/16/2011
96-hour acute toxicity (*C. dubia*)	Mean % survival for control	%	100	100	100	100	100	100	100	100	100
	% survival in 100% concentration	%	100	100	100	90	100	90	90	100	100
	LC_{50}	%	>100	>100	>100	>100	>100	>100	>100	>100	>100
	LOEC	%	>100	>100	>100	>100	>100	>100	>100	>100	>100
	Tu_a		0	0	0	0.59	0	0.59	0.59	0	0
	LT_{50}	Hours	>96	>96	>96	>96	>96	>96	>96	>96	>96
Toxicity Observed			No	No	No	No	No	No	No	No	No
7-day chronic toxicity (*C. dubia*)	Mean % survival for control	%	80	90	100	100	100	100	100	100	100
	% survival in 100% concentration	%	80	90	90	90	100	90	90	100	100
	LC_{50} (survival)	%	>100	>100	>100	>100	>100	>100	>100	>100	>100
	NOEC (survival)	%	100	100	100	100	100	100	100	100	100
	LOEC (survival)	%	>100	>100	>100	>100	>100	>100	>100	>100	>100
	Tu_a (survival)		1	1	1	1	1	1	1	1	1
	LT_{50}	Hours	>192	>168	>192	>168	>192	>168	>168	>144	>144
	NOEC (reproduction)	%	100	100	100	100	100	100	100	100	100
	LOEC (reporduction)	%	>100	>100	>100	>100	>100	>100	>100	>100	>100
	Tu_c (reproduction)	%	1	1	1	1	1	1	1	1	1
Toxicity Observed			No	No	No	No	No	No	No	No	No

[1] Percent mean standard deivation (MSDp) for reproduction is above protocol limit.

5.0 DATA ANALYSIS AND INTERPRETATION

Historical wet weather data have been collected at site SD8(1) since 1994 and at site DPR2 since 2004. The following sections provide analysis and interpretation of the compliance monitoring and additional analytical results from SD8(1) and DPR2 during the 2010–2011 Monitoring Season as compared to historical data.

2010–2011 Storm Event Analysis

The data for dissolved copper, lead, and zinc, Diazinon, and toxicity to *C. dubia* for sites SD8(1) and DPR2 are presented graphically by monitored storm event on Figure 5-1, Figure 5-2, and Figure 5-3. These figures present a comparison of which analytes were above the WLA and how the results compare for toxicity at each site.

Storm specific exceedance ratios for dissolved copper, lead, and zinc, along with a ratio representing the mean historical results for each analyte, were calculated for the acute and chronic condition as presented on Figure 5-4 and Figure 5-5, respectively.

Dissolved copper was above the acute and chronic WLAs at both SD8(1) and DPR2 during the first and second storm events monitored. During the February storm, dissolved copper was above the acute WLA at SD8(1) and above the chronic WLA at DPR2. Dissolved lead below the acute and chronic WLAs at both sites. Dissolved zinc was slightly above the acute WLA at SD8(1) during the first-flush storm event.

As indicated by Figure 5-4 and Figure 5-5, the WLA exceedance ratios for dissolved copper and dissolved zinc differed between the north fork and south fork of Chollas Creek. At SD8(1), copper concentrations were highest during the first-flush storm event (1.9 times the acute WLA) and lowest during the February storm (1.2 times the acute WLA). At DPR2, copper concentrations during the first-flush were 1.7 times the acute WLA. During the second storm, thirteen days later, the copper concentration dropped to 1.03 times the WLA. Chronic copper exceedance ratios were generally less than three. During the first-flush storm event, dissolved zinc was 1.01 times the acute WLA for site SD8(1) and equal to the chronic WLA for DPR2. Dissolved zinc concentrations were below the acute and chronic WLAs during the second and third monitored storm events. Dissolved lead concentrations were below the acute and chronic WLA for both sites.

The 2010–2011 compliance monitoring data reflected generally understood patterns for the Chollas Creek Watershed, including the following:

- Exceedance ratios for dissolved copper, lead, and zinc were generally greater in the north fork (SD8(1)) than in the south fork (DPR2). Hardness values measured in the north fork were lower than the south fork. The spatial differences between the north fork and south fork are related to the inverse relationship between the CTR values and hardness.
- Metals concentrations had higher rates of exceedance during the first-flush storm event of the season.
- Copper had a higher detection rate and exceedance rate than other metals.

- Lead concentrations were below the acute WLA. Unlike previous years, dissolved lead concentrations were also below the chronic WLAs for both sites.

During Compliance Schedule Year 3 (2010–2011 Monitoring Season), there was no acute survival, chronic survival, or reproductive toxicity observed at either site during the three monitored events.

The historical dissolved copper, lead, and zinc exceedance ratios are presented on Figure 5-6 through Figure 5-8. These figures compare the dissolved metals results normalized by the hardness values to the acute and chronic WLAs, and the five-unit moving average. It is evident that dissolved copper concentrations at SD8(1) spiked in November 2007 and both concentration and rate of exceedance have steadily decreased over time.

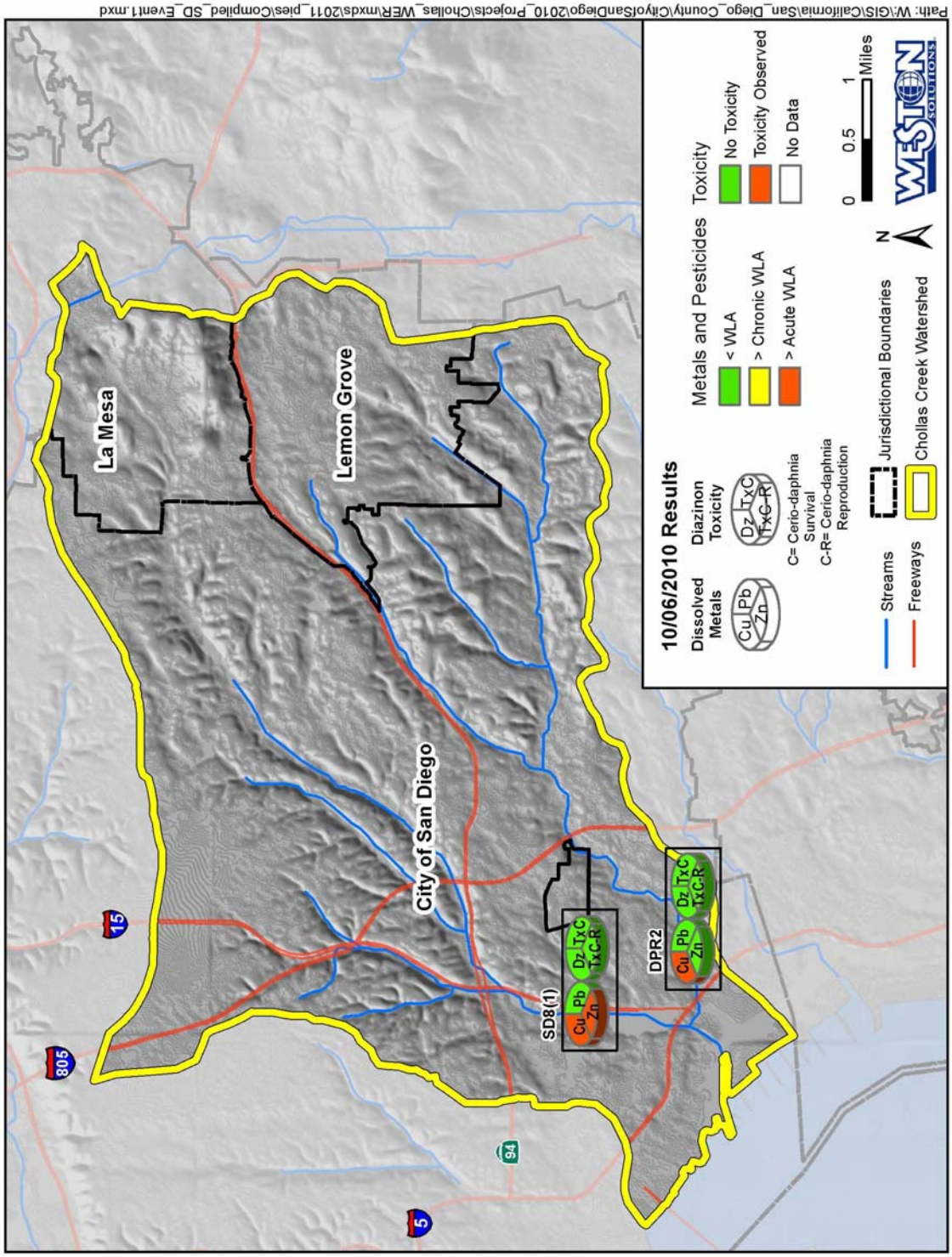

Figure 5-1. Metals, Pesticides, and Toxicity Results for SD8(1) and DPR2 for October 6, 2010

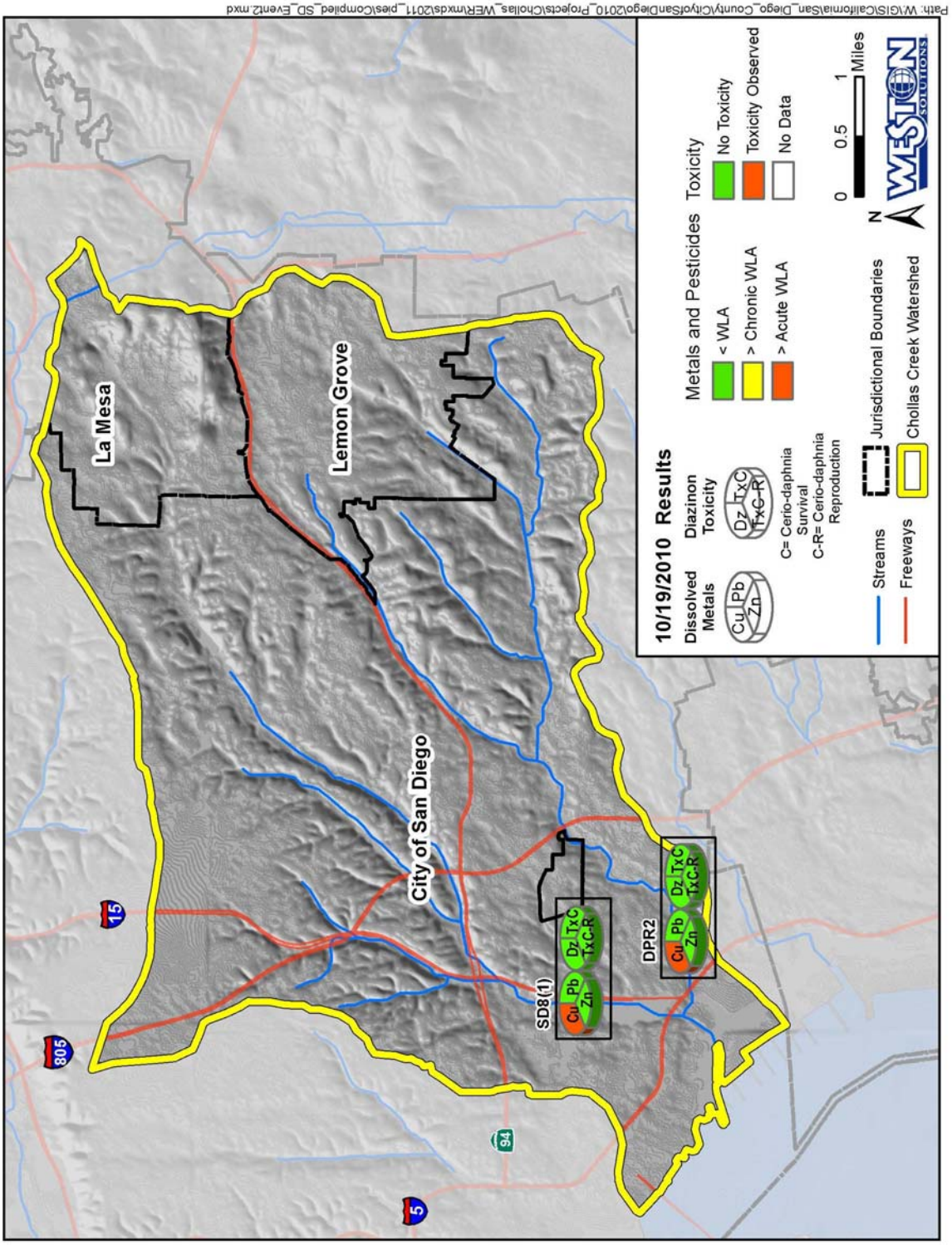

Figure 5-2. Metals, Pesticides, and Toxicity Results for SD8(1) and DPR2 for October 19, 2010

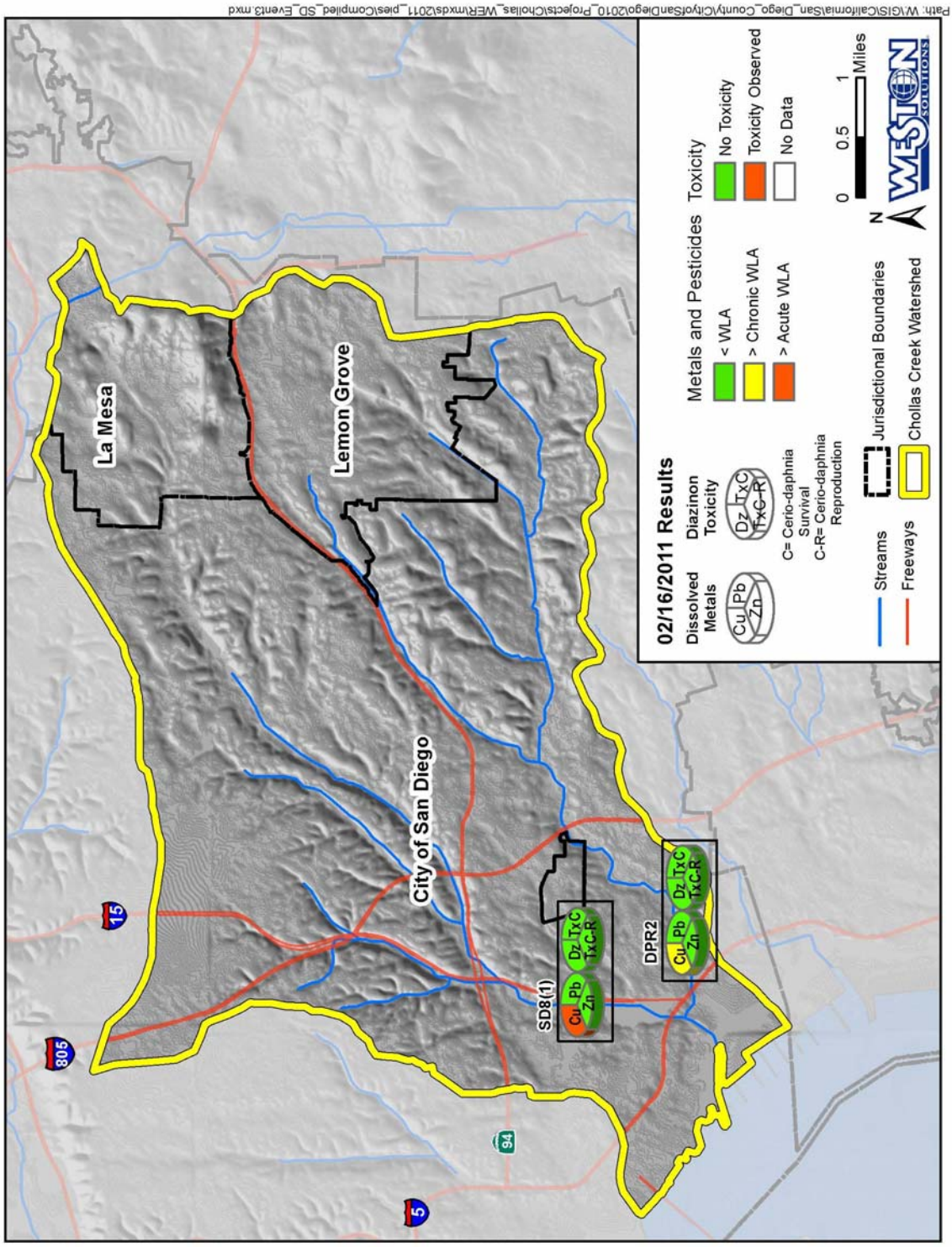

Figure 5-3. Metals, Pesticides, and Toxicity Results for SD8(1) and DPR2 for February 16, 2011

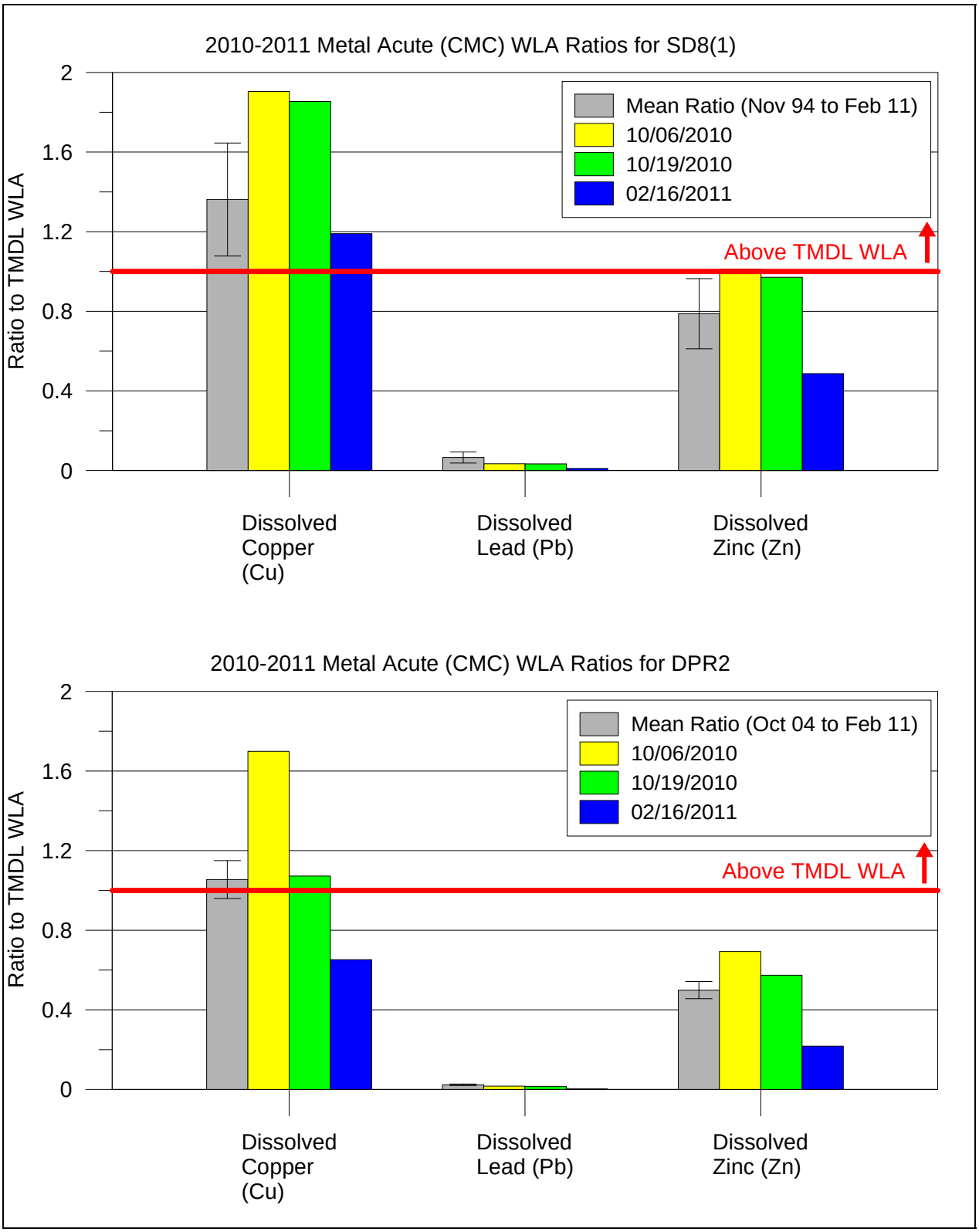

Figure 5-4. 2010–2011 Ratio Plots for Metals Concentrations Compared to the Acute Waste Load Allocation at SD8(1) and DPR2

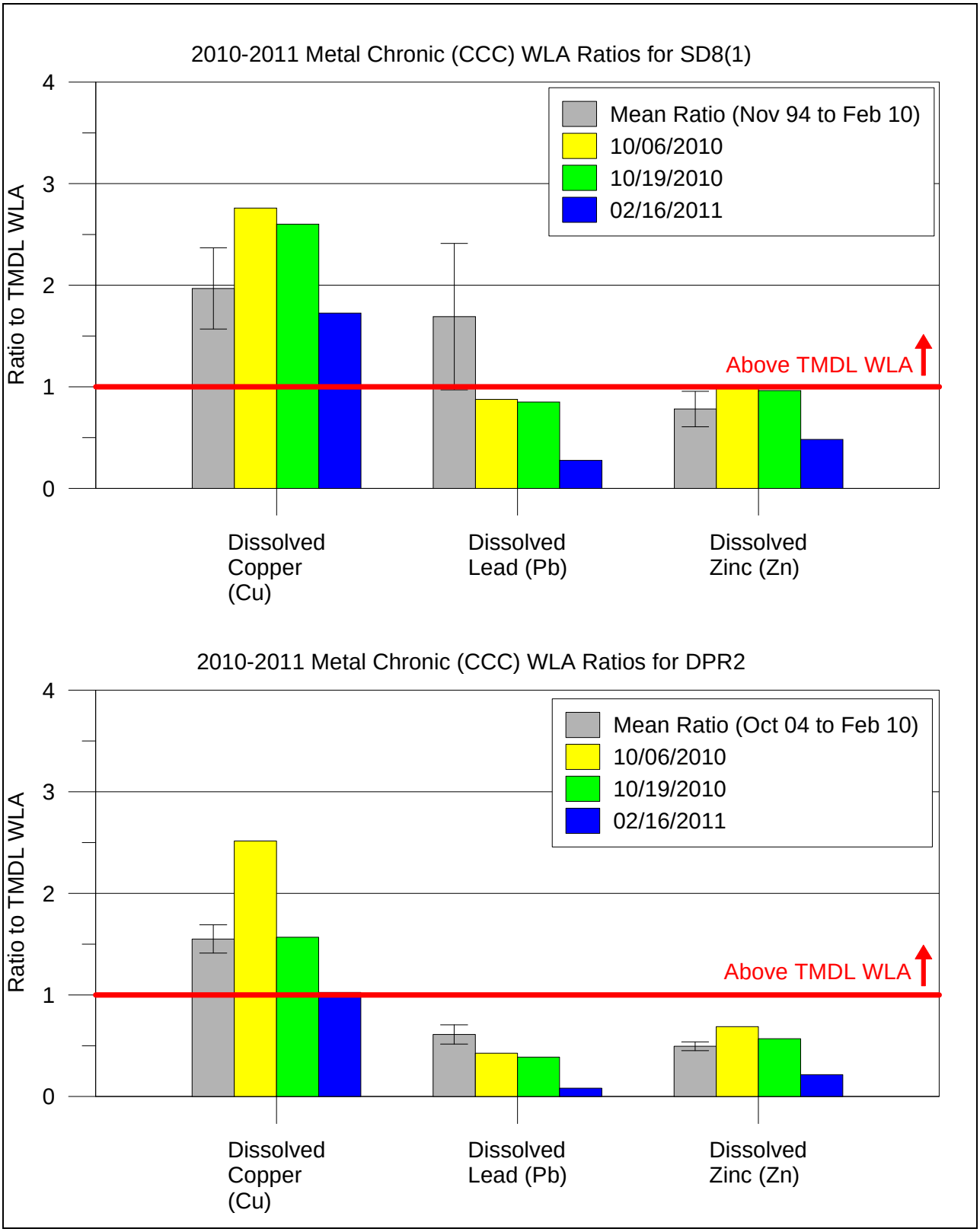

Figure 5-5. 2010–2011 Ratio Plots for Metals Concentrations Compared to the Chronic Waste Load Allocation at SD8(1) and DPR2

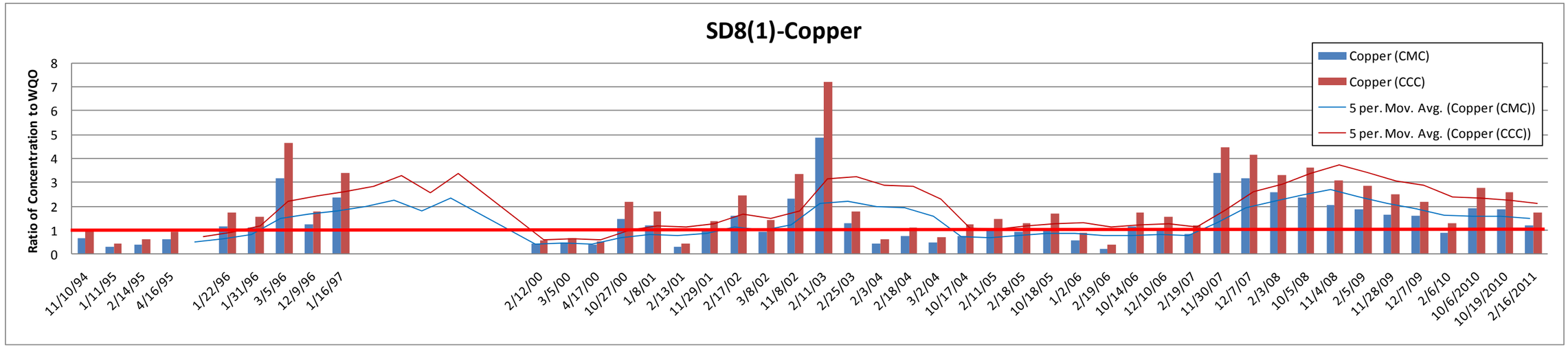

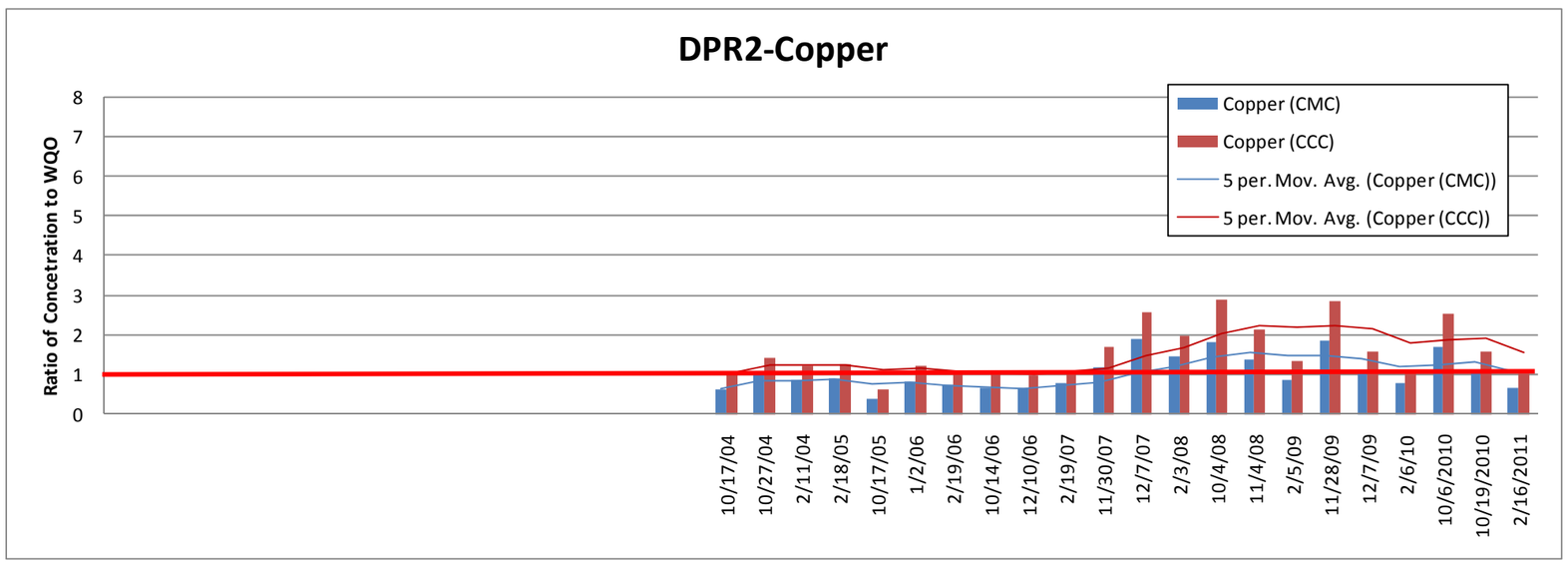

Figure 5-6. Historical Dissolved Copper Exceedance Ratios Showing the Five-Unit Moving Average

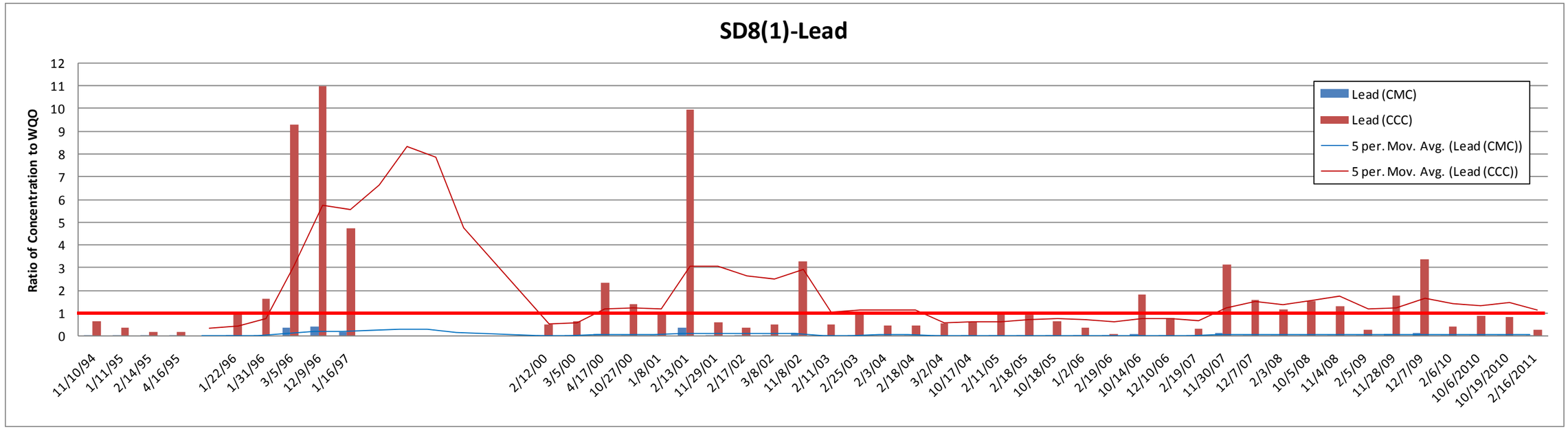

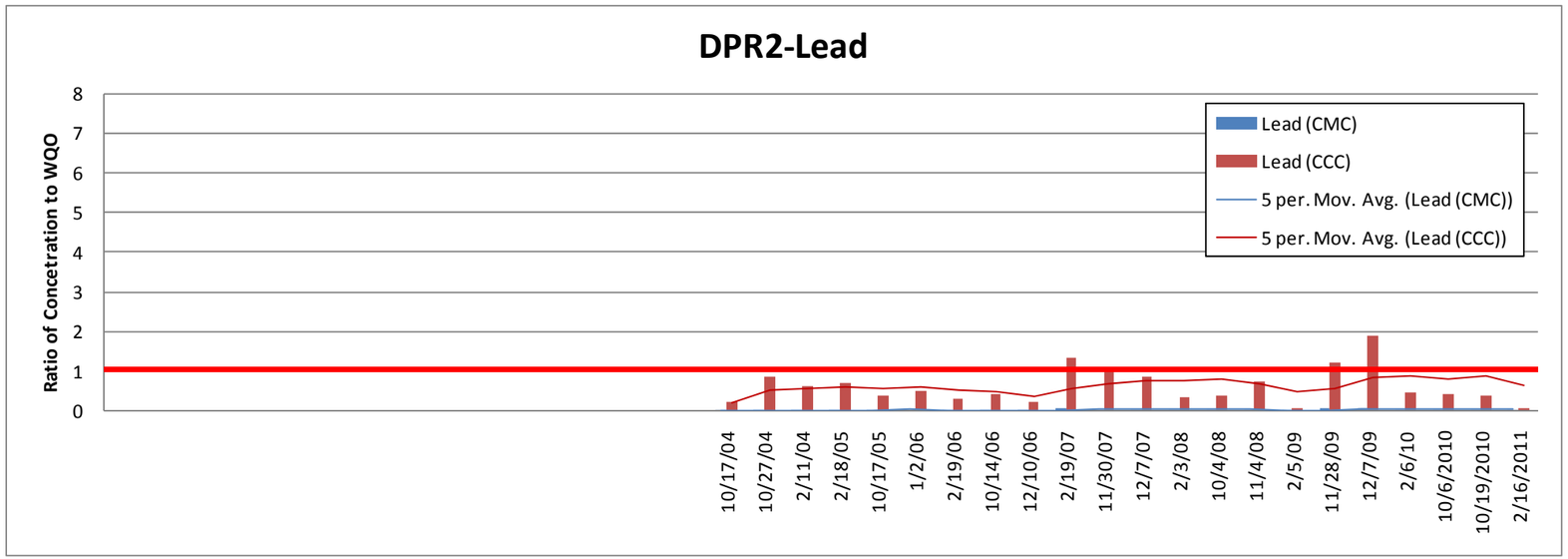

Figure 5-7. Historical Dissolved Lead Exceedance Ratios Showing the Five-Unit Moving Average

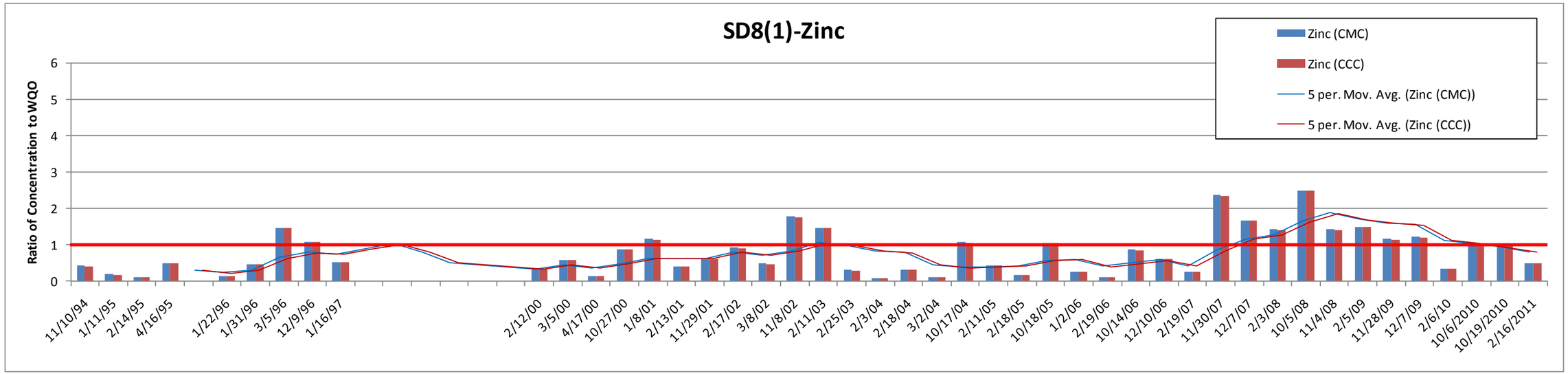

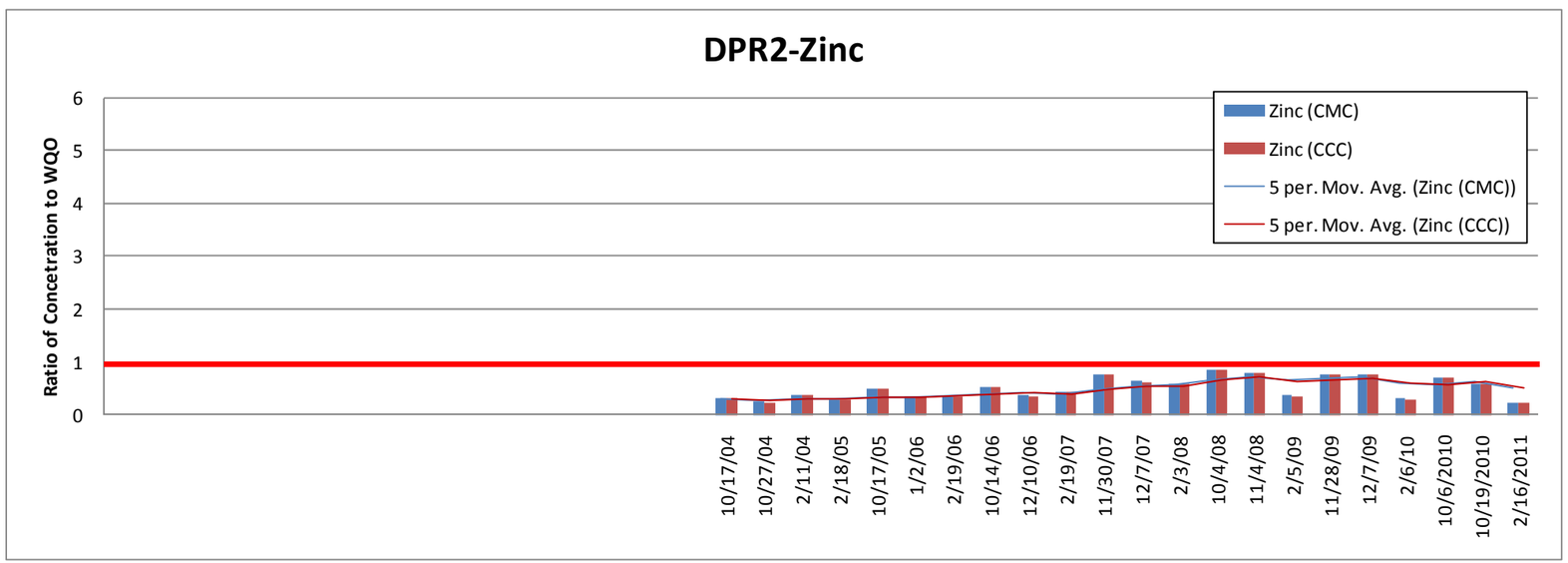

Figure 5-8. Historical Dissolved Zinc Exceedance Ratios Showing the Five-Unit Moving Average

Metals Trends

Mann-Kendall trend analysis was conducted using the entire record of data for SD8(1) and DPR2 separately. Similar to trend analyses for Compliance Schedule Years 1 and 2 (2008–2009 and 2009-2010 Monitoring Seasons), the trend analyses for the north fork (SD8(1)) indicated statistically significant increasing trends for total copper (p=0.002), dissolved copper (p=0.015), total zinc (p=0.001), and dissolved zinc (p=0.012). Increasing trends were also noted at DPR2 for total copper (p=0.019), dissolved copper (p=0.003), and total zinc (p=0.007). Trend plots for copper and zinc at SD8(1) and DPR2 are shown on Figure 5-9 and Figure 5-10, respectively. While there was a statistically significant increasing trend noted using the entire dataset, the ratio of WLA exceedances for dissolved copper and dissolved zinc have notably decreased since November 2007 (as previously noted on Figure 5-6 and Figure 5-8).

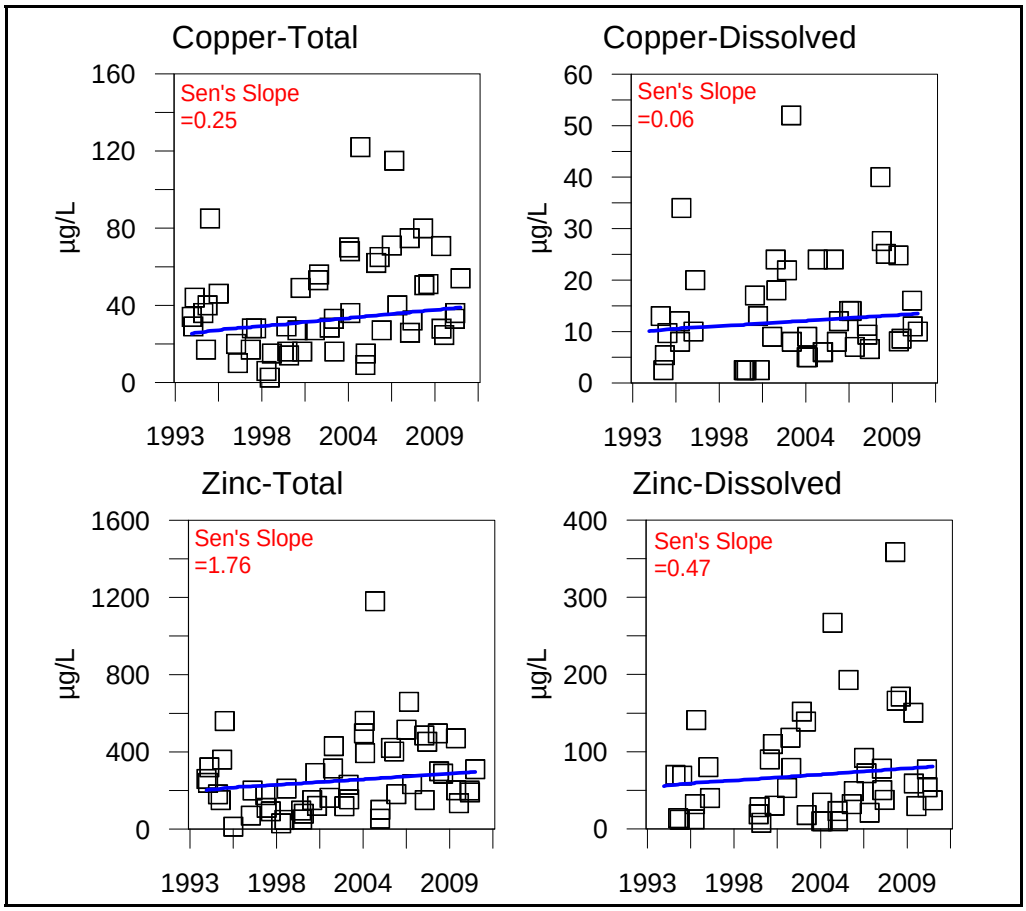

Figure 5-9. SD8(1) Trend Plots for Total and Dissolved Copper and Zinc

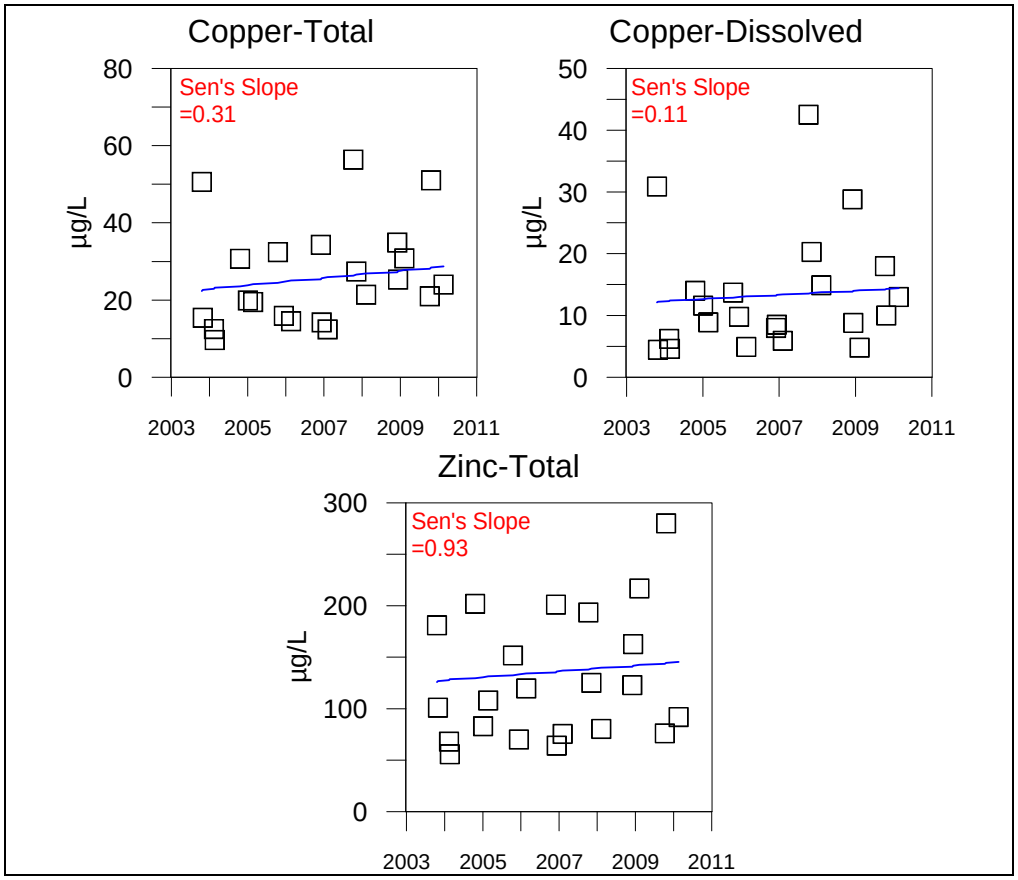

Figure 5-10. DPR2 Trend Plots for Total Copper and Zinc

The magnitudes of the trends for copper and zinc, as indicated by the Sen's slope value, were relatively shallow. By comparing the trends for Compliance Monitoring to monitoring conducted during Compliance Schedule Year 1 and 2, the data indicated that the long-term trend lines are generally flattening. The upward slope of the dissolved copper trend for SD8(1) decreased 0.01 µg/L per year from Compliance Schedule Year 2 (0.04 µg/L per year from Year 1) and total copper trends decreased 0.03 µg/L per year (0.05 µg/L per year from Year 1). The magnitude of the zinc trend was greater than for copper, but had also had a greater rate of decrease (0.78 µg/L per year and 0.21 µg/L per year for total and dissolved zinc, respectively, from Year 1). The historical frequency of metals exceedances by Compliance Monitoring is presented in Table 5-1.

Table 5-1. Metals Exceedances Compared to the Total Maximum Daily Load Waste Load Allocations for Three Monitored Storm Events by Compliance Schedule Year

Allowable % Exceedance of the TMDL WLAs	Compliance Schedule Year	Monitoring Season	Dissolved Copper Exceedances (% acute / % chronic)		Dissolved Lead Exceedances (% acute / % chronic)		Dissolved Zinc Exceedances (% acute / % chronic)	
			SD8(1)	DPR2	SD8(1)	DPR2	SD8(1)	DPR2
100%	Year 1	2008–2009	100 / 100	67 / 100	0 / 67	0 / 67	100 / 100	0 / 0
	Year 2	2009–2010	67 / 100	67 / 100	0 / 67	0 / 67	67 / 67	0 / 0
	Year 3	2010–2011	100 / 100	67 / 100	0 / 0	0 / 0	33 / 33	0 / 0
	Year 4	2011–2012	–	–	–	–	–	–
	Year 5	2012–2013	–	–	–	–	–	–
	Year 6	2013–2014	–	–	–	–	–	–
	Year 7	2014–2015	–	–	–	–	–	–
	Year 8	2015–2016	–	–	–	–	–	–
	Year 9	2016–2017	–	–	–	–	–	–
20%	Year 10	2017–2018	–	–	–	–	–	–
	Year 11	2018–2019	–	–	–	–	–	–
	Year 12	2019–2020	–	–	–	–	–	–
	Year 13	2020–2021	–	–	–	–	–	–
	Year 14	2021–2022	–	–	–	–	–	–
	Year 15	2022–2023	–	–	–	–	–	–
	Year 16	2023–2024	–	–	–	–	–	–
	Year 17	2024–2025	–	–	–	–	–	–
	Year 18	2025–2026	–	–	–	–	–	–
	Year 19	2026–2027	–	–	–	–	–	–
0%	Year 20	2027–2028	–	–	–	–	–	–

Diazinon and Toxicity Trends

The United States Environmental Protection Agency (USEPA) implemented a nationwide ban on the retail sale of pesticides containing Diazinon on January 1, 2005. Trend analysis indicated a statistically significant decreasing trend for SD8(1) ($p < 0.001$) and Diazinon at DPR2 ($p < 0.001$). The magnitude of this decreasing trend presented on Figure 5-11 could not be quantified for SD8(1) due to the number of non-detects in the historical dataset (50%>ND>15%). A Diazinon trend plot was not developed for DPR2 because 72% of the historical results were non-detects (ND>50%). The historical Diazinon concentrations and long-term decreasing trends for SD8(1) and DPR2 are shown on Figure 5-12 and Figure 5-13. As the residual supply of Diazinon becomes exhausted, Diazinon concentrations and the frequency of detection should continue to decrease. No significant trends for toxicity to *C. dubia* were observed for either site, but a review of historical data indicated that both SD8(1) and DPR2 had high rates of non-toxic results for *C. dubia*. This finding also justified the need for site specific objectives for dissolved copper, lead, and zinc in Chollas Creek as toxicity was not commonly observed since Diazinon was banned and no longer detected in storm water.

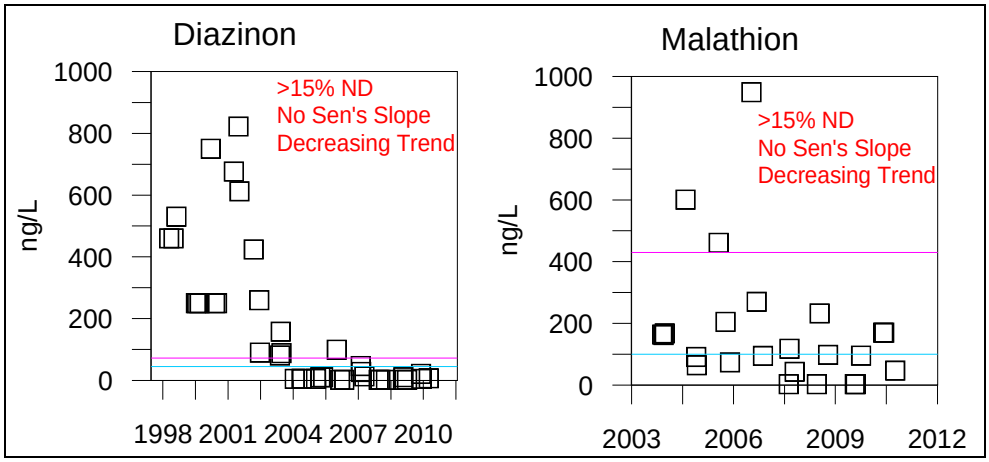

Figure 5-11. Trend Plots for SD8(1) – Diazinon (left) and Malathion (right)

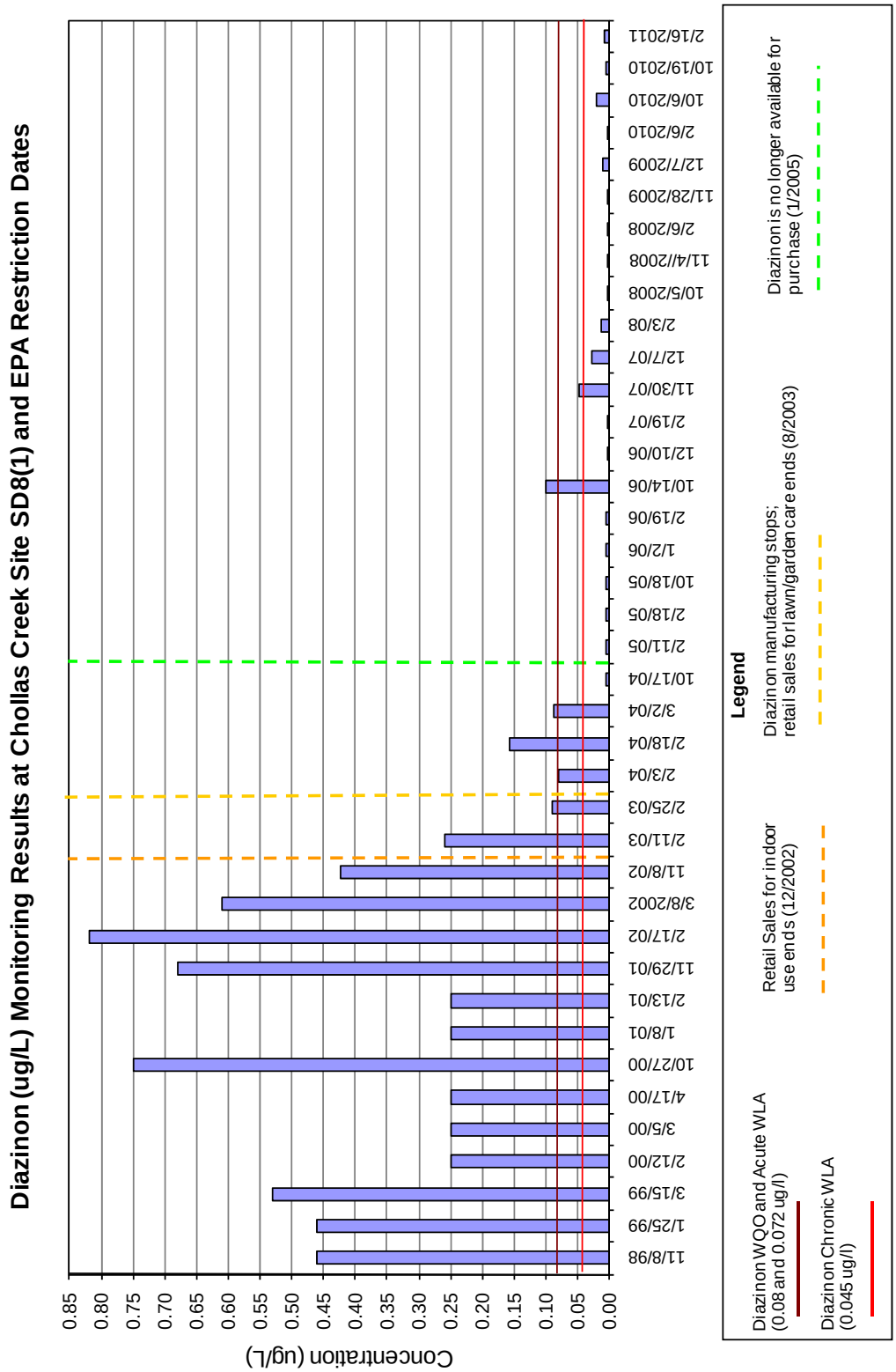

Figure 5-12. Historical Diazinon Concentrations at SD8(1) with Restriction Dates

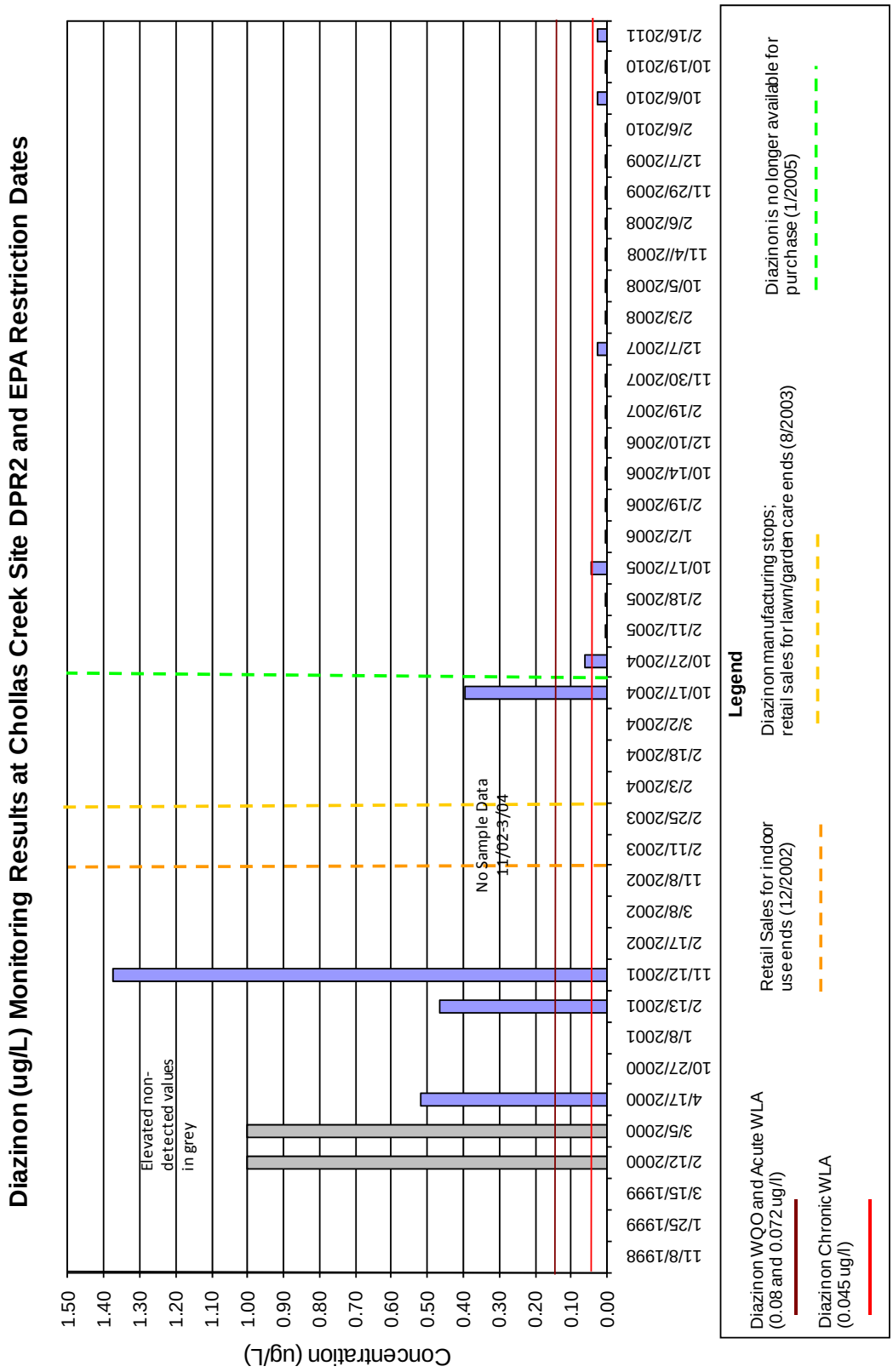

Figure 5-13. Historical Diazinon Concentrations at DPR2 with Restriction Dates

2010–2011 Benchmark Analysis

The Chollas Creek Dissolved Metals TMDL sets the numeric targets equal to the CTR criteria using a default water-effect ratio of 1.0, the most current, conservative benchmark for dissolved copper, lead, and zinc in freshwater. It is recognized by USEPA that national criteria for dissolved metals may be more or less protective than anticipated (40 CFR Part 131.38), depending on the site-specific characteristics including diversity of aquatic life and water quality measurements (i.e., hardness, pH, dissolved organic matter, total suspended particulates, and concentrations of contaminants of concern) (USEPA, 1994). As a consequence, USEPA has developed water-effect ratios as one of several procedures for deriving site specific objectives. The Regional Board specified in the TMDL that the development of a site specific objective using the Water-Effects Ratio procedure is an acceptable step in determining appropriate targets for dissolved copper, lead, and zinc in Chollas Creek.

The CTRs for dissolved copper, lead, and zinc are comprised of hardness-based equations that vary with sample hardness concentrations (Figure 5-14). The Chollas Creek Watershed is unique in that it has significantly lower hardness concentrations, and therefore lower dissolved metals criteria, than other watersheds in San Diego County. During the 2010-2011 Monitoring Season, the City of San Diego finalized a Water-Effects Ratio study for the Chollas Creek Watershed, thereby developing a site specific objective. The underlying goal of the study was to determine how much dissolved copper, lead, and zinc can be present in Chollas Creek site water without lowering the intended level of protection for Chollas Creek beneficial uses. In lieu of a water-effects ratio for dissolved lead, the study presented a comprehensive review and analysis of the effect the new lead criteria has on acute and chronic exceedances and/or protection over time. More information regarding the Water-Effects Ratio study is available in the City of San Diego's final report (Weston, 2011).

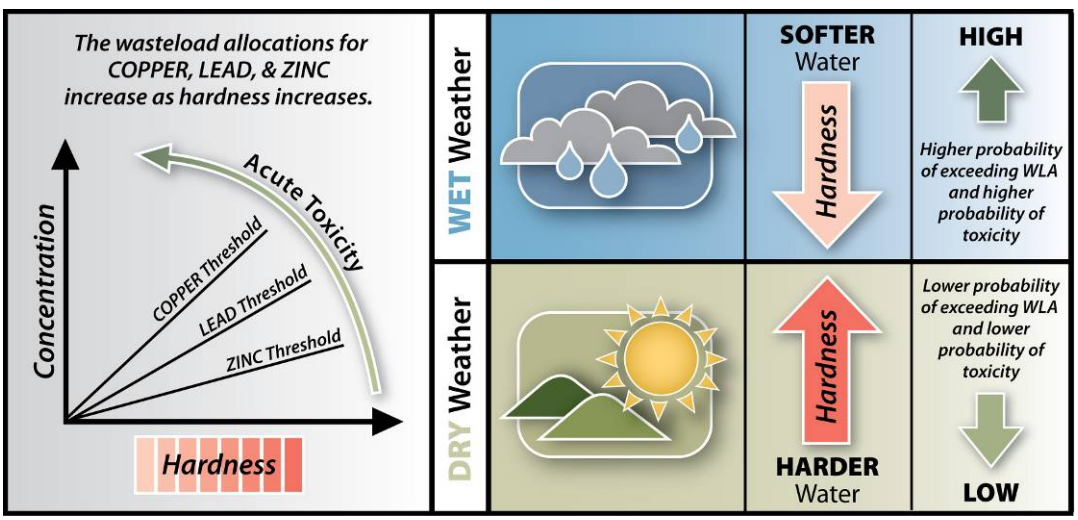

Figure 5-14. Impact of Hardness as a Dominant Variable in the California Toxics Rule Criteria

The water-effects ratios presented on Table 5-2 represent the conservative geometric mean of water-effects ratios for Chollas Creek. The water-effects ratios and new lead criteria were applied to monitoring data from Compliance Schedule Years 1 through 3 and used to calculate new exceedance ratios for the acute and chronic condition for the 2010-2011 Monitoring Season

(Figure 5-15). Results for dissolved copper, lead, and zinc are below both the new acute and chronic criteria for all three storms monitored during Compliance Schedule Year 3. As presented in Table 5-3, the site specific criteria indicate that dissolved metals concentrations at SD8(1) and DPR2 are protective of the beneficial uses. All dissolved copper and dissolved lead results were below the benchmarks at both SD8(1) and DPR2. Dissolved zinc concentrations were above the acute and chronic benchmarks at SD8(1) during Compliance Schedule Year 1. Chronic survival toxicity to *C. dubia* was observed at SD8(1) during the February 5, 2008 storm event, but acute and chronic survival toxicity to *C. dubia* was not observed at SD8(1) during any of the 2008-2009 storm events. As presented on the five year moving average graphic (Figure 5-3), dissolved zinc concentrations during this year were significantly higher than other years.

Table 5-2. Water-Effect Ratios for the Chollas Creek Watershed (Weston, 2011)

Dissolved Copper WER *(geomean)*	Dissolved Zinc WER *(geomean)*
4.64	1.40

Table 5-3. Metals Exceedances Compared to the Acute and Chronic Total Maximum Daily Load Waste Load Allocations and "New" Criteria for Three Monitored Storm Events Organized by Compliance Schedule Year

Compliance Schedule Year (Monitoring Season)	Type of Benchmark	Dissolved Copper (% acute / % chronic)		Dissolved Lead (% acute / % chronic)		Dissolved Zinc (% acute / % chronic)	
		SD8(1)	DPR2	SD8(1)	DPR2	SD8(1)	DPR2
Year 1 (2008-2009)	TMDL Compliance	100 / 100	67 / 100	0 / 67	0 / 67	100 / 100	0 / 0
	WER	0 / 0	0 / 0	-	-	100 / 100	0 / 0
	Lead Criteria	-	-	0 / 0	0 / 0	-	-
Year 2 (2009-2010)	TMDL Compliance	67 / 100	67 / 100	0 / 67	0 / 67	67 / 67	0 / 0
	WER - Geomean	0 / 0	0 / 0	-	-	0 / 0	0 / 0
	Lead Criteria	-	-	0 / 0	0 / 0	-	-
Year 3 (2010-2011)	TMDL Compliance	100 / 100	67 / 100	0 / 0	0 / 0	33 / 33	0 / 0
	WER - Geomean	0 / 0	0 / 0	-	-	0 / 0	0 / 0
	Lead Criteria	-	-	0 / 0	0 / 0	-	-

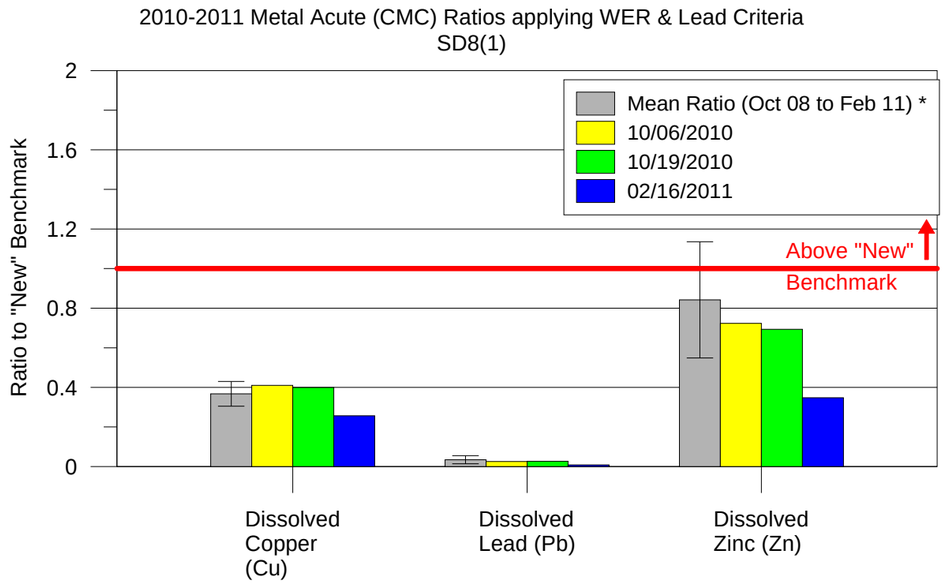

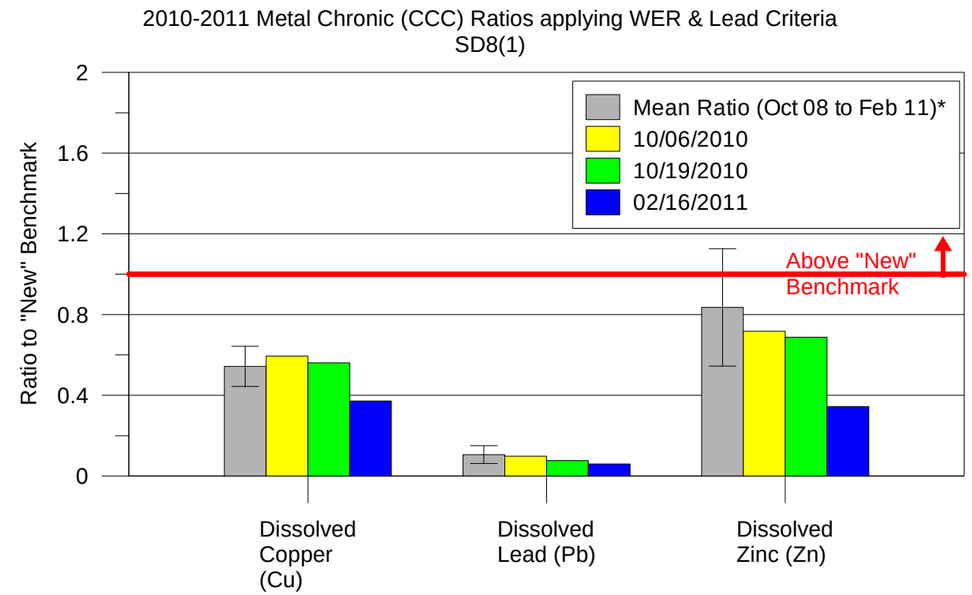

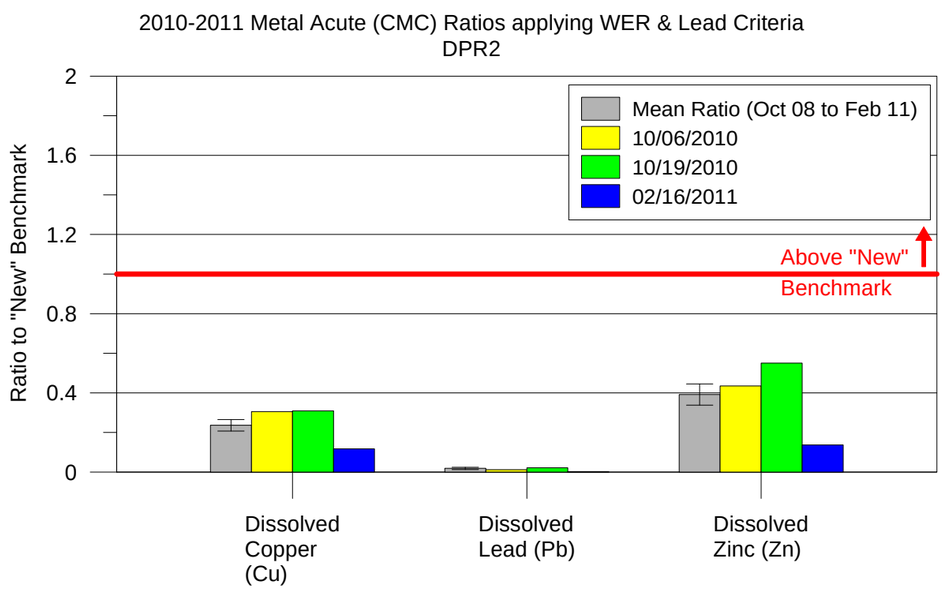

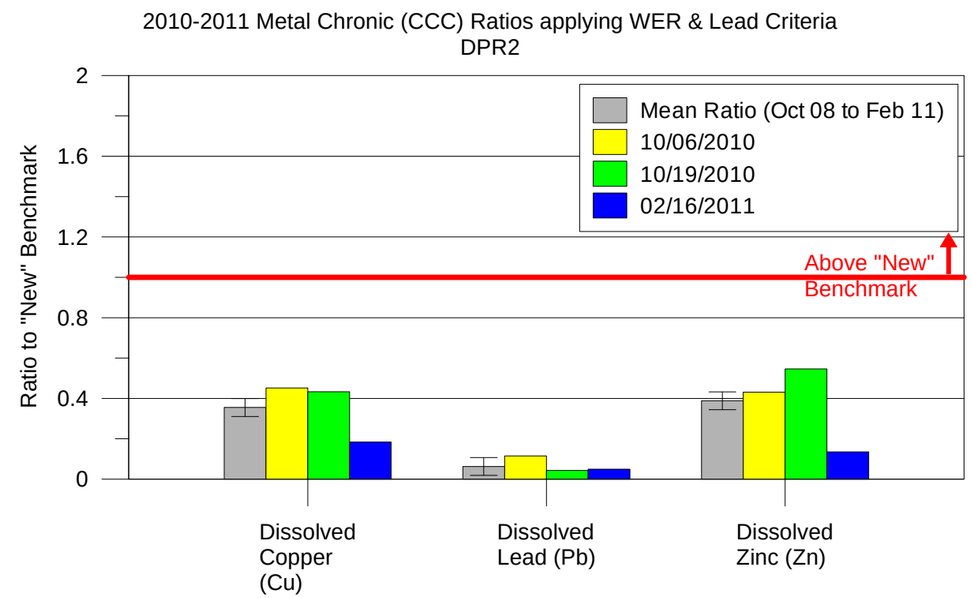

* Dissolved zinc concentrations at SD8(1) were above the "new" acute (CMC) benchmark during all three storms of the 2008-2009 Monitoring Season. Seven-day chronic toxicity to *C. dubia* was observed during the third storm.

* Dissolved zinc concentrations at SD8(1) were above the "new" chronic (CCC) benchmark during all three storms of the 2008-2009 Monitoring Season. Seven-day chronic toxicity to *C. dubia* was observed during the third storm.

Figure 5-15. 2010–2011 Ratio Plots for Metals Concentrations Compared to Potential "New" Acute and Chronic Benchmarks for SD8(1) and DPR2 Based on the Water Effects Ratio and New Lead Criteria

6.0 SUMMARY AND CONCLUSIONS

The Chollas Creek Dischargers conducted monitoring in accordance with the Chollas Creek Dissolved Metals TMDL (State Board Resolution No. 2008-0054 and Investigation Order No. R9-2004-0277). Compliance monitoring was conducted during the first and second storm events after October 1, 2010, and the first storm event after February 1, 2011 (October 6, 2010; October 19, 2010; and February 16, 2011, respectively). Samples were analyzed for the following:

- General chemistry analytes (applicable for the Biotic Ligand Model).
- Total and dissolved metals (i.e., copper, lead, and zinc) and total hardness.
- Organophosphate pesticides (i.e., Diazinon, Chlorpyrifos, and Malathion).
- Toxicity to *Ceriodaphnia dubia.*
- Chlorinated pesticides (Chlordane), Polychlorinated biphenyls (PCBs), and Polycyclic aromatic hydrocarbons (PAHs).

Compliance Monitoring

The data collected for Compliance Monitoring Year 3 (2010–2011 Monitoring Season) reflect generally understood patterns for the Chollas Creek Watershed, including the following:

- Dissolved copper concentrations at SD8(1) and DPR2 were above the acute and chronic waste load allocations (WLAs) during the first two storms after October 1, 2010. During the February storm, dissolved copper was above the acute and chronic WLA at SD8(1) and above the chronic WLA at DPR2. Dissolved lead was below the acute and chronic WLAs at both sites during all three storm events. Dissolved zinc at SD8(1) was above the acute and chronic WLAs during the first storm event only and was below the WLA at DPR2 during all three storm events. However, after applying newly developed site specific criteria developed through the City of San Diego's Chollas Creek Water-Effects Ratio Study, dissolved copper, lead, and zinc were below the WLA.

- Trends analysis indicated statistically significant increasing trends for total and dissolved copper and total and dissolved zinc in the north fork of Chollas Creek (SD8(1)). When compared to historical data (1994-2010), increasing trends are relatively shallow and have flattened over time. Increasing trends were also noted for total copper and dissolved copper and total zinc at DPR2. When compared to historical data (1994-2010), larger copper and zinc exceedance ratios during the 2007-2008 Monitoring Season created an increasing trend. Since 2009, copper and zinc results at DPR2 have been trending downward.

- The organophosphate pesticides Diazinon and Malathion were detected in generally low concentrations during the 2010–2011 Monitoring Season. Diazinon was below the acute and chronic WLAs during all events at both sites. Statistically significant decreasing trends were observed for Diazinon in both the north fork and south fork and non-detect results were frequently noted. As the residual supply of Diazinon becomes exhausted due

to the United States Environmental Protection Agency (USEPA) ban on Diazinon, the frequency of detection in Chollas Creek should continue to decrease.

- During Compliance Schedule Year 3 (2010–2011 Monitoring Season), no toxicity to *C. dubia* (acute or chronic survival, or reproduction) was observed at either site during the three monitored events. The results suggest that the copper and zinc results above the WLA did not impact the test organisms, thereby indicating protective conditions for these analytes.

Recommendations

Based on the TMDL compliance monitoring results from the 2010–2011 Monitoring Season, the following program modifications are recommended:

- Continue monitoring to evaluate compliance with the Chollas Creek Diazinon and Dissolved Copper, Lead, and Zinc TMDLs and to assess long term trends in monitoring data.
- Future assessments of compliance with the TMDL WLAs should incorporate the newly developed site-specific criteria for SD8(1) and DPR2 for dissolved copper, dissolved lead, and dissolved zinc from the City of San Diego's Water-Effect Ratio study. These new criteria account for site-specific effects impacting the bioavailability and potential risks associated with dissolved copper, lead, and zinc detected in Chollas Creek.
- Future monitoring should continue to include the additional analytes necessary to evaluate metals toxicity using the biotic ligand model. This data will provide additional supporting information to assess compliance results when incorporating the new site-specific objectives.

Ongoing TMDL Implementation

The Chollas Creek TMDL Implementation Plan (Implementation Plan) (City of San Diego and Weston, 2009a) was specifically prepared in response to Resolution No. R9-2007-0043 in which the Regional Board incorporated the TMDL for dissolved copper, lead, and zinc into the Basin Plan. The Implementation Plan uses an iterative and adaptive management strategy for identifying, planning, implementing, and assessing best management practices (BMPs) for the Chollas Creek Watershed over the 20-year compliance schedule. The Implementation Plan was submitted to the Regional Board on October 21, 2009. The seven named TMDL Dischargers—which include the five Chollas Creek Watershed Municipal Copermittees, United States (US) Navy, and California Department of Transportation (Caltrans)—will use the Implementation Plan as a framework for ongoing compliance.

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Chollas Creek Total Maximum Daily Load (TMDL) Special Studies 2010 - 2011 Water Quality Monitoring

Prepared for:
San Diego Regional Water Quality Control Board

Final Report
May 20, 2011

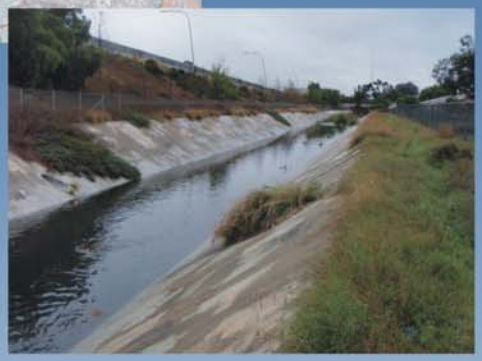

City of San Diego

City of La Mesa

City of Lemon Grove

CalTrans

Chollas Creek Total Maximum Daily Load (TMDL) Special Studies 2010–2011 Water Quality Monitoring

Final Report

Prepared for:
San Diego Regional Water Quality Control Board

Prepared by:

City of San Diego
City of La Mesa
City of Lemon Grove
County of San Diego
Unified Port District of San Diego
United States Navy, and
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May 20, 2011

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LIST OF ACRONYMS

BMP	best management practice
COC	chain of custody
CTR	California Toxics Rule
MLS	mass loading station
MS4	municipal separate storm sewer system
NPDES	National Pollutant Discharge Elimination System
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PWQP	priority water quality problem
SOP	standard operating procedure
TIE	toxicity identification evaluation
TMDL	total maximum daily load
TSS	total suspended solids
WLA	waste load allocation

EXECUTIVE SUMMARY

The Chollas Creek Dissolved Metals TMDL Dischargers collaboratively develop special studies to fill data gaps regarding priority water quality problems (PWQPs) and potential sources of PWQPs. These studies are beyond the compliance monitoring requirements of the *Total Maximum Daily Loads* (TMDLs) *for Dissolved Copper, Lead and Zinc in Chollas Creek, Tributary to San Diego Bay* (Chollas Creek Dissolved Metals TMDL), San Diego Regional Water Quality Control Board (Regional Board) Order No. R9-2004-0277, and the National Pollutant Discharge Elimination System (NPDES) permit. Collaborative special studies are designed to enhance existing compliance monitoring activities, and each study is designed as a stand-alone project. Participation in these studies is voluntary. This report summarizes the Jurisdictional Boundary Monitoring Special Study conducted during the 2010-2011 Monitoring Season. Monitoring was conducted in the upper watershed at the jurisdictional boundaries of the City of San Diego and La Mesa and the City of San Diego and Lemon Grove.

Special Study Summary

This special study was designed to allow the Dischargers to geospatially assess water quality. When compliance monitoring was implemented at the two mass loading stations (MLS), SD8(1) and DPR2, monitoring was also implemented in the upper watershed, at the jurisdictional boundaries between the Cities of San Diego, La Mesa, and Lemon Grove, at sites LM-1 and LG-1. Comparing results from LM-1 to results from SD8(1) would represent water quality for the 2010–2011 Monitoring Season along the north fork of Chollas Creek; and comparing results from LG-1 and DPR2 would represent the south fork. Monitoring at LM-1 and LG-1 was conducted during the first flush storm event (October 6, 2010) and the first storm event after February 1st (February 16, 2011). Samples were analyzed for the following analytes:

- General chemistry analytes (applicable for the Biotic Ligand Model).
- Total and dissolved metals (i.e., copper, lead, and zinc) and total hardness.
- Organophosphate pesticides (i.e., Diazinon, Chlorpyrifos, and Malathion).
- Toxicity to *Ceriodaphnia dubia.*
- Chlorinated pesticides (Chlordane), Polychlorinated biphenyls (PCBs), and Polycyclic aromatic hydrocarbons (PAHs).

Results

The monitoring results for the Jurisdictional Boundary Monitoring Special Study during Compliance Schedule Year 3 (2010-2011 Monitoring Season) were as follows:

- Diazinon was above the chronic waste load allocation (WLA) and Malathion was above the recommended benchmark for chronic conditions at LG-1 during the February 16, 2011 storm event.
- Toxicity to *C. dubia* reproduction was observed at LM-1 during the February 16, 2011 storm event. There were no instances of acute or chronic survival toxicity to *C. dubia* at LM-1 or LG-1 or reproductive toxicity at LG-1 during either monitored storm event.

- When applying the default California Toxics Rule water-effects ratio multiplier of 1.0, copper was below the WLA during the October 6, 2010 storm event at both LM-1 and LG-1. During the February 16, 2011 storm event, dissolved copper was above the acute and chronic WLA at LM-1 and above the chronic WLA at LG-1. Copper had a higher detection rate and frequency above WLAs (compared to the acute and chronic WLAs) than lead and zinc.
- Dissolved lead and dissolved zinc were below the acute and chronic WLAs at all sites during all events.
- When applying newly developed site-specific criteria developed through the City of San Diego's Chollas Creek Water-Effects Ratio Study, dissolved copper, lead, and zinc were below the WLA during both monitoring events,
- PAHs, Chlorinated Pesticides, and PCB congeners were mostly below detection limits with few detections above the reporting limits.

Results from the collaborative special study provided a valuable understanding of conditions across the Chollas Creek Watershed when evaluated collectively with results from the TMDL Compliance Monitoring. In summary, the data indicated the following:

- The 2005 ban on organophosphate pesticide Diazinon and Chlorpyrifos has proven successful with no results above the chronic WLA at either of the lower compliance sites SD8(1) and DPR2. However, Diazinon was above the chronic WLA and Malathion was above the recommended benchmark for chronic conditions observed at LG-1 during the February 16, 2011 storm event. No toxicity was observed to *C. dubia* at SD8(1) and DPR2.
- When applying the default CTR value of 1.0, copper had a higher detection rate and higher frequency of results above the WLA than lead and zinc. However, when applying recently developed site-specific objectives, copper results were below the acute and chronic benchmarks at all sites during all monitored events.
- The north fork of Chollas Creek (site SD8(1)) had zinc concentrations above the acute WLA during a first flush-storm event. Zinc was below the WLA in the south fork (site DPR2). When site specific objectives were applied, zinc was below the acute and chronic benchmarks at all sites during all monitored events during Compliance Year 3.
- Metals concentrations (dissolved copper, lead, and zinc) and the magnitude of results above WLAs in the north fork were generally greater than in the south fork. Hardness values measured in the north fork were lower than the south fork. The spatial differences between the north fork and south fork are related to the inverse relationship between the CTR values and hardness.

Recommendations

The following recommendations are provided for consideration:

- Future assessments of compliance with the TMDL WLAs should incorporate the newly developed site-specific criteria for dissolved copper, dissolved lead, and dissolved zinc from the City of San Diego's Water-Effect Ratio study. These new criteria account for site-specific effects impacting the bioavailability and potential risks associated with dissolved copper, lead, and zinc detected in Chollas Creek.

- Future monitoring should continue to include the additional analytes necessary to evaluate metals toxicity using the biotic ligand model. This data will provide additional supporting information to assess compliance results when incorporating the new site-specific objectives.

1.0 INTRODUCTION

The *Total Maximum Daily Load* (TMDL) *for Dissolved Copper, Lead and Zinc in Chollas Creek, Tributary to San Diego Bay* (Chollas Creek Dissolved Metals TMDL) was adopted by the San Diego Regional Water Quality Control Board (Regional Board) in 2007 (Resolution No. R9-2007-0043). The seven Dischargers named in the TMDL (Table 1-1) collaboratively developed the Chollas Creek Dissolved Metals TMDL Implementation Plan (Implementation Plan) (Weston, 2009) as a framework for identifying, planning, implementing, and assessing best management practices (BMPs) for the Chollas Creek Watershed over the 20-year compliance schedule. The TMDL was approved by the Office of Administrative Law on October 22, 2008, and the Implementation Plan was submitted to the Regional Board on October 21, 2009.

Table 1-1. Dischargers Named in the Chollas Creek Dissolved Metals Total Maximum Daily Load

Dischargers Named in the Chollas Creek Dissolved Metals TMDL	
California Department of Transportation (Caltrans) City of San Diego City of La Mesa City of Lemon Grove	County of San Diego Unified Port District of San Diego United States Navy

The Implementation Plan was based on an iterative, adaptive management strategy. Dischargers will use BMP effectiveness assessment results to develop the most efficient and effective strategies for meeting the metals waste load allocations (WLAs) and reducing other priority water quality problems in the Chollas Creek Watershed such as bacteria, pesticides (e.g., Diazinon) and trash. Consistent with this strategy, Dischargers proposed submitting two types of annual reports, as needed. This annual special study report was designed to present the methods, monitoring results, and analysis for collaborative, voluntary special studies conducted by the Dischargers during a given monitoring season. This report represents the effort implemented above and beyond the compliance monitoring requirements of the Chollas Creek Dissolved Metals TMDL, San Diego Regional Water Resources Control Board (Regional Board) Order No. R9-2004-0277, and the municipal National Pollutant Discharge Elimination System (NPDES) permit (R9-2007-0001). Those results were provided in the annual Compliance Monitoring Report, which has been submitted to the Regional Board as a separate report. This annual special study report presents the methods, monitoring results, and analysis for the Jurisdictional Boundary Monitoring Special Study in the upper Chollas Creek watershed.

1.1 Purpose of Collaborative Special Studies

During the development of the Implementation Plan, Dischargers collaboratively designed four special studies to fill data gaps regarding priority water quality problems (PWQPs) and potential sources of PWQPs for the Chollas Creek Watershed. Collaborative special studies are designed as stand-alone projects. Table 1-2 summarizes the purpose of the collaborative special study, participating Dischargers, and report section where study-specific methods, monitoring results, and analysis may be found.

Table 1-2. Purpose and Participants in the 2010–2011 Collaborative Special Studies

Special Study	Report Section	Purpose of the Special Study	Voluntary Participating Discharger
Jurisdictional Boundary Monitoring in the Upper Watershed	**2.0**	Evaluate and compare water quality in the north fork and south fork of Chollas Creek by collecting data for the upper drainages of the watershed which may be compared with compliance monitoring data collected in the lower drainages.	Caltrans City of San Diego City of La Mesa City of Lemon Grove

1.2 Chollas Creek Watershed and Monitoring Locations

The Chollas Creek Watershed is located southeast of downtown San Diego, in the San Diego Mesa Hydrologic Area, and within the larger Pueblo San Diego Hydrologic Unit. The Chollas Creek Watershed encompasses approximately 18,144 acres consisting predominately of urbanized land located within San Diego County. Chollas Creek consists of two main tributaries, the north fork and the south fork. The drainage area to the northern fork of the watershed (8,794 acres) is larger than that to the southern fork (7,575 acres). The north fork and south fork merge approximately 0.8 miles east of the creek's mouth, near the upper extent of the tidal influence from San Diego Bay.

The Chollas Creek Watershed has two compliance monitoring points at SD8(1) and DPR2, mass loading stations (MLS) located immediately upstream of the confluence of the north and south branches of Chollas Creek. Dischargers used the compliance monitoring requirements for these MLS as a baseline to explore PWQPs, priority sources, and regional effects in the 2010–2011 special studies.

When compliance monitoring activities were implemented at SD8(1) and DPR2, monitoring was also implemented in the upper watershed, at the jurisdictional boundaries between the Cities of San Diego, La Mesa, and Lemon Grove, at sites LM-1 and LG-1. This special study involved supplemental chemical and toxicological sample assessments at LM-1 and LG-1 to match compliance monitoring activities at the two MLS. A summary of all monitoring sites by special study are shown on Figure 1-1. Details regarding study areas and study purpose may be found in each special study section of this report.

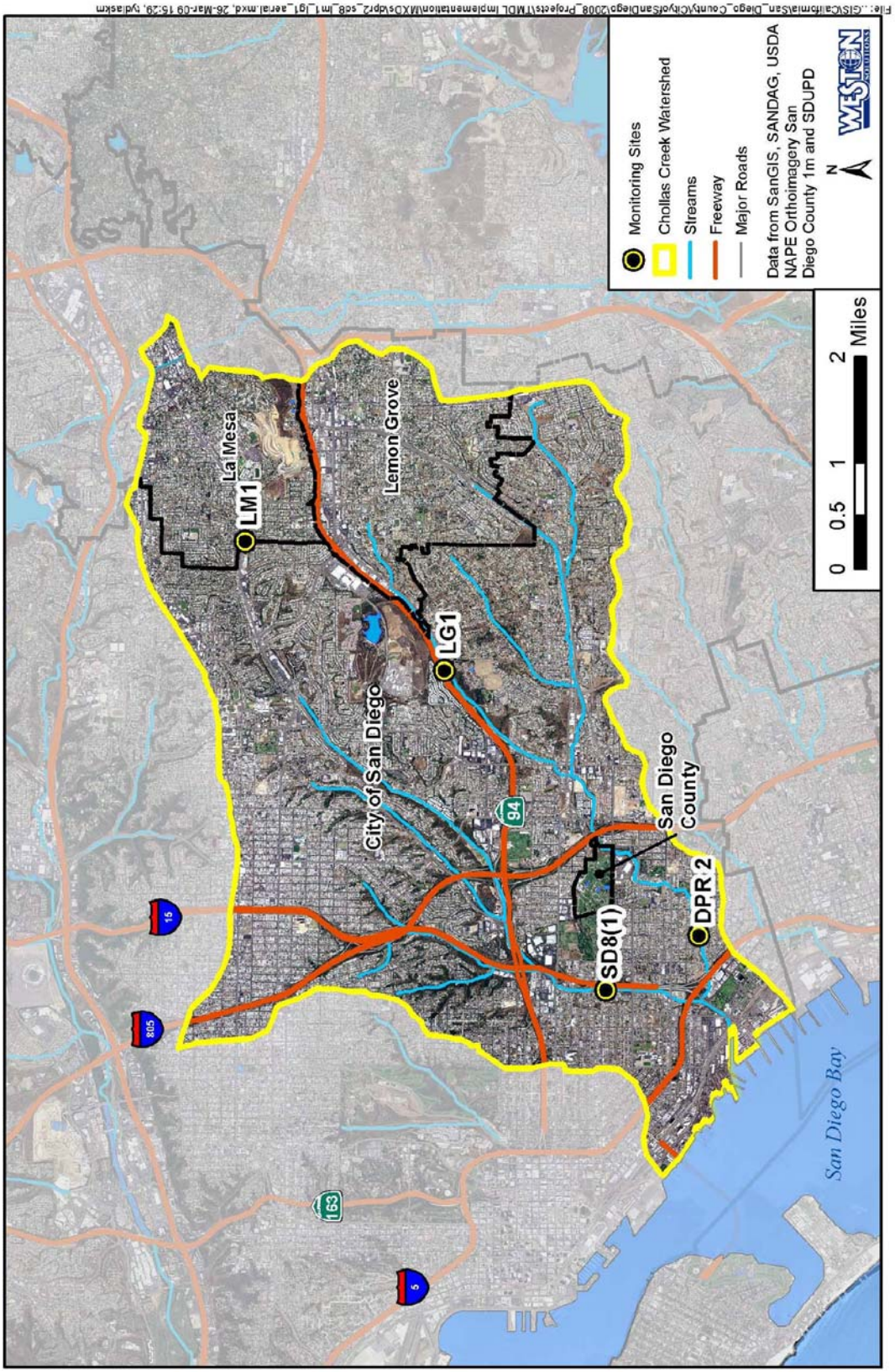

Figure 1-1. Monitoring Sites in the Chollas Creek Watershed

2.0 COLLABORATIVE SPECIAL STUDY – JURISDICTIONAL BOUNDARY MONITORING

2.1 Study Purpose and Design

The purpose of the Jurisdictional Boundary Monitoring Special Study 1 is to provide the Dischargers with a greater understanding of the distribution of PWQPs across the Chollas Creek Watershed. During the 2010–2011 Monitoring Season, compliance monitoring was conducted at SD8(1) and DPR2. During two of the three storms monitored for the compliance sites, monitoring was also conducted at the jurisdictional boundaries between the cities of San Diego and La Mesa, and Lemon Grove, respectively, at sites LM-1 and LG-1 (Figure 1-1). Discrete samples were collected in the field. Samples collected at SD8(1), DPR2, LM-1, and LG-1 were flow-weighted composite samples that were analyzed for the following constituents:

- General chemistry analytes (applicable for the Biotic Ligand Model).
- Total hardness, dissolved copper, dissolved lead, and dissolved zinc.
- Organophosphate pesticides (i.e., Diazinon and Chlorpyrifos).
- Chlorinated pesticides (i.e., Chlordane).
- Polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).
- Acute and chronic toxicity to *C. dubia*.

Comparing analytical results for samples collected in the northern and southern portions of the Chollas Creek Watershed would allow the Dischargers to geospatially assess upstream water quality, BMP effectiveness, and long-term impact of implemented watershed activities. Comparing results from LM-1 to results from SD8(1) would represent water quality along the north fork of Chollas Creek; and comparing results from LG-1 and DPR2 would represent the south fork. Cross sectional photos at each monitoring site along the north fork and south fork of Chollas Creek is shown on Figure 2-1.

NORTH FORK	SOUTH FORK
Downstream from Jurisdictional Boundary Site LM-1	**Downstream from Jurisdictional Boundary Site LG-1**
Downstream from Compliance Monitoring Site SD8(1)	**Upstream from Compliance Monitoring Site DPR2**

Figure 2-1. 2010–2011 Monitoring Sites along the North Fork and South Fork of Chollas Creek

2.2 Methods

2.2.1 Qualifying Storm Events

Storm events were considered viable for monitoring activities if they achieved greater than 0.10 inches of rainfall and were preceded by 72 hours or more of dry weather. The first storm after October 1 and the first storm after February 1 were selected as the two storm events evaluated for this special study. The two storms monitored for this special study occurred on Wednesday, October 6, 2010, and Wednesday, February 16, 2011.

Storm water runoff was collected at each site using flow-weighted composite techniques over the duration of each storm event. Sample collection was targeted for termination when the storm flow returned to within approximately 10% of the base flow condition, indicating the end of the precipitation event and the cessation of storm water flow. However, the variable nature of storm water monitoring may have resulted in slight protocol deviations where noted.

2.2.2 Field Monitoring and Quality Assurance / Quality Control

Monitoring equipment used at sites SD8(1), DPR2, LM-1, and LG-1 during storm event monitoring has been summarized in Table 2-1. All samples were collected in clean, contaminant-free sample bottles. Field staff wore powder-free gloves during sample collection. Sampling personnel were trained according to the field sampling standard operating procedures (SOPs). Additionally, the field personnel were made aware of the significance of the special study's detection limits and the requirement to avoid contamination of samples at all times. All samples were kept cold, on ice, until samples underwent analysis at the appropriate laboratory.

Table 2-1. Monitoring Equipment Used in the Field for Jurisdictional Boundary Monitoring Special Study

<table>
<tr><th>Site</th><th>Flow Monitoring Equipment</th><th>Field Parameter Equipment</th><th>Sampling Equipment</th></tr>
<tr><td>SD8(1)</td><td rowspan="4"><u>American Sigma flowmeter with pressure transducer.</u>

Flow velocity and stage height were measured using an automated flow sensor. Sensors were installed, on center, on the creek or channel bottom. Flow monitoring equipment was installed on site for the duration of the 2010–2011 Monitoring Season (October 1, 2010 through April 30, 2011).

Flow data was used to process grab samples from LM-1 and LG-1 as flow-weighted composites for laboratory analysis.</td><td rowspan="4"><u>Oakton CON10 meter.</u>
<u>Clean bucket.</u>

Field measurements for pH, conductivity, and temperature were made using an Oakton CON10 pH/temperature/ conductivity meter. While in the field, a grab sample was collected in a clean bucket and the meter used according to the manufacturer specifications.

The instrument was calibrated prior to each monitored storm event.</td><td rowspan="2"><u>Automated sampling equipment.</u>
Teflon intake device, peristaltic pump, and Teflon tubing connected to a 20-L borosilicate glass sample bottle. Equipment collected 1-L grab samples at the programmed, flow-dependent rate. Approximately 40 liters were collected throughout each storm event (in multiple bottles, as needed).</td></tr>
<tr><td>DPR2</td></tr>
<tr><td>LM-1</td><td rowspan="2"><u>Samples collected in laboratory-certified, contaminant-free sample bottles.</u>
Grab samples were collected every 10–20 minutes for the duration of monitoring. Samples were collected to represent the rise, peak, and fall of the hydrograph.</td></tr>
<tr><td>LG-1</td></tr>
</table>

A field data log was completed at each site for each monitored storm event. The field data log included empirical observations of the site and water quality characteristics. Observations included meteorological conditions at the time of sampling, odor, color, and other relevant observations as needed; and field parameters (i.e., pH, temperature, and conductivity). Field logs for sites LM-1 and LG-1 for the October 6, 2010; and February 16, 2011 storm events are provided in Appendix A.

2.2.3 Analytical Parameters

Flow-weighted composite samples from SD8(1), DPR2, LM-1, and LG-1 were analyzed for the constituents in accordance with Table 2-2.

Table 2-2. Water Quality Analytical Parameters for Jurisdictional Boundary Monitoring Special Study

Analytical Parameter	Analytical Method	Sample Volume	Container Type	Preservation (e.g., chemical/temperature/ light-protected)	Maximum Holding Time: Preparation/Analysis
pH	NA	NA	Analyzed in field	NA	NA
Temperature	NA	NA	Analyzed in field	NA	NA
Conductivity	NA	NA	Analyzed in field	NA	NA
Chloride	USEPA 300	1 L	Plastic	Store cool at <4ºC	28 days
Sulfate	USEPA 300	1 L	Plastic	Store cool at <4ºC	28 days
Total Alkalinity	USEPA 310.2	500 ml	Plastic	Store cool at <4ºC	14 days
Total Organic Carbon	USEPA 415.1	250 ml	Amber glass	Store cool at <4ºC *; H3PO4	28 days
Dissolved Organic Carbon	USEPA 415.1	250 ml	Amber glass	Store cool at <4ºC *	24 hrs/28 days
Total Suspended Solids	SM 2540-D	1 L	Plastic	NA	7 days
Total hardness	SM 2340-B	100 mL	Plastic	HNO_3	Six months
Total/dissolved copper	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Total/dissolved lead	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Total/dissolved zinc	USEPA 200.8	1 L	Plastic	Store cool at <4ºC *	Six months
Acute toxicity *C. dubia*	USEPA 821-R-02-012	10 L	10-L glass	Store cool at <6ºC	36 hours
Chronic toxicity *C. dubia*	USEPA 821-R-02-013	20 L	20-L glass	Store cool at <6ºC	36 hours
Organophosphorus pesticides (Diazinon)	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days
Chlorinated pesticides	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days
PAHs	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days
PCB congeners	USEPA 625	2 L	Amber glass	Store cool at <4ºC	Extraction – seven days; Analysis – 40 days

NA = not applicable
* Dissolved analyses are filtered with a 0.45-µm filter.

2.2.4 Impact of Changing Chemistry Laboratory

In 2010, the laboratory which historically analyzed samples for the Chollas Creek Watershed, CRG Marine Laboratories, closed for business. Samples collected during the 2010-2011 Monitoring Season were submitted to Weck Laboratories for chemical analysis. Due to the change in laboratories, the method minimum reporting limits for PAHs, chlorinated pesticides,

and PCB congeners were slightly higher than previous years. Also an abbreviated suite of 28 PCB congeners was analyzed for the first two storms monitored in October 2010 (the suite was based on the congener lists developed by the National Oceanic and Atmospheric Administration (NOAA) and the World Health Organization (WHO)). In February 2011, Weck Laboratories developed their analyte list to include the full list of 56 congeners. These procedural changes do not represent or mask a change in water quality.

2.2.5 Chain-of-Custody Procedures

Chain-of-custody (COC) procedures were used for all samples throughout the collection, transport, and analytical process. Samples were considered to be in custody if they were 1) in the custodian's possession or view, 2) retained in a secured place (i.e., under lock) with restricted access, or 3) placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal. The COC procedures were initiated during sample collection. A COC record was provided with the samples. Each person with custody of the samples signed the form and ensured the samples were not left unattended unless properly secured. COC records were included in the reports prepared by the analytical laboratories and were considered an integral part of the laboratory report.

2.3 Results

This subsection presents the water quality monitoring results for the Jurisdictional Boundary Monitoring Special Study.

2.3.1 2009–2010 Rainfall and Flow Data

Hydrographs depicting flow rates, rainfall, and sample times for the two storm events monitored at SD8(1), LM-1, DPR2, and LG-1 during the 2010–2011 Monitoring Season are presented on Figure 2-2 and Figure 2-3. The storm event flow volumes for each site are summarized in Table 2-3. The Chollas Creek Watershed is typically characterized by an earlier and larger flow response at the north fork compliance site (SD8(1)) compared to the south fork compliance site (DPR2). The flow data files for SD8(1), DPR2, LM-1, and LG-1 are provided in Appendix B.

Table 2-3. Rainfall and Flow Volumes for Monitored Storm Events

Storm Event	Data	North Fork		South Fork	
		SD8(1)	LM-1	DPR2	LG-1
10/06/2010	Precipitation (inches)	0.15 *	0.18	0.52	0.39
	Volume (ft^3)	6,843,542	80,650	2,146,685	281,610
02/16/2011	Precipitation (inches)	0.16 *	0.28	0.35	0.41
	Volume (ft^3)	0.28	402,230	1,342,582	660,540

* The SD8(1) rain gauge malfunctioned during the 2010-2011 Monitoring Season and portions of data are missing. Measured values are presented for comparison. DPR2 rainfall data was used for quality control assessment.

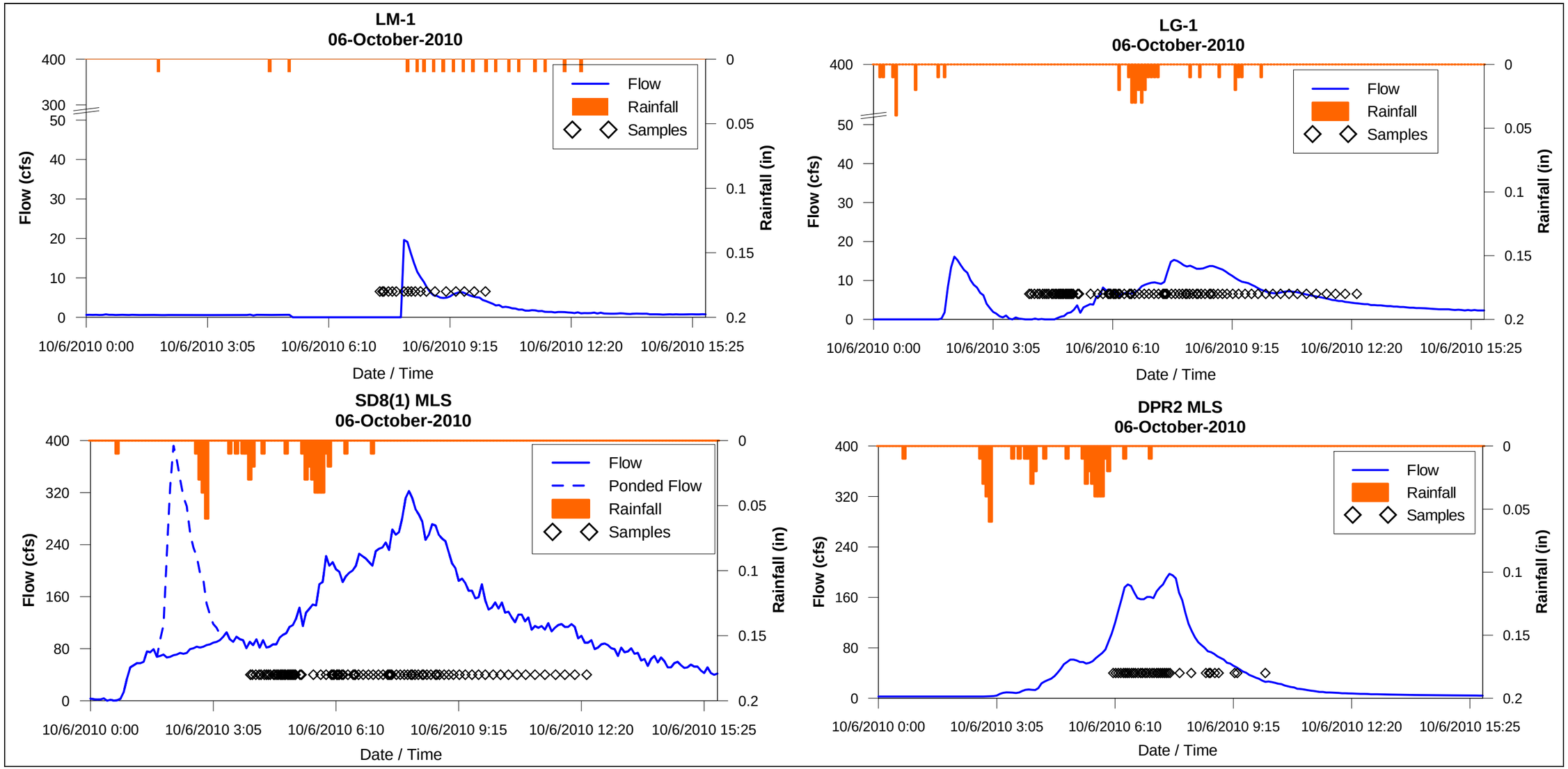

Figure 2-2. Storm Hydrographs for the First Monitored Storm Event on October 6, 2010

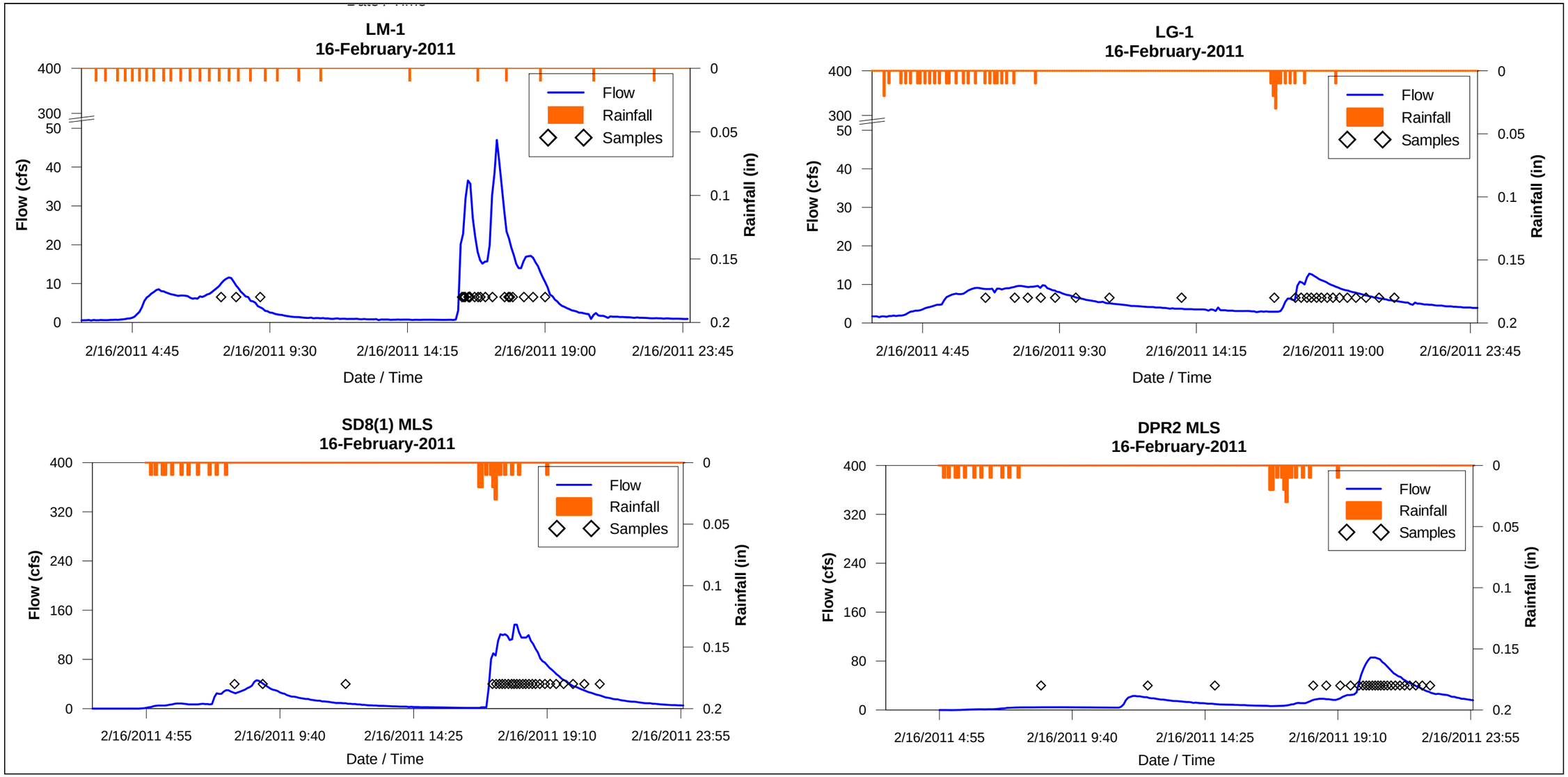

Figure 2-3. Storm Hydrographs for the Second Monitored Storm Event on February 16, 2011

2.3.2 Monitoring Results

The samples from LM-1 and LG-1 were analyzed for the suite of analytes required at SD8(1) and DPR2 in accordance with the NPDES permit, Order No. R9-2004-0277, and the WLAs of the Chollas Creek Dissolved Metals TMDL. The dissolved metals WLAs are equal to the hardness-based California Toxics Rule (CTR) equations, less the margin of safety incorporated into the TMDL.

Summary chemistry results for LM-1 and LG-1 are presented in Table 2-4. Results for toxicity to *C. dubia* are presented in Table 2-5. Results for SD8(1) and DPR2 were collected as part of compliance monitoring and are provided for comparison to LM-1 and LG-1 in Table 2-6 and Table 2-7. Results which were above the WLAs and/or water quality benchmarks were bolded and shaded. Tables of the monitoring results are provided in Appendix C. Discussion and analyses of these data are provided in Subsection 2.4.

Table 2-4. Wet Weather Water Quality Chemistry Results for LM-1 and LG-1 (Jurisdictional Boundary Monitoring Special Study)

Parameter	Units	Water Quality Benchmark	Benchmark Reference	LM-1	LM-1	LG-1	LG-1
				10/6/2010	2/16/2011	10/6/2010	2/16/2011
Physical Chemistry							
Precipitation	inches			0.18	0.28	0.39	0.41
pH	pH units	6.5-9.0	Basin Plan	7.87	**6.46**	7.64	**6.47**
Conductivity	µS/cm			169	436	404	560
Temperature	Celsius			17.03	16.3	17.45	15.5
General Chemistry							
Chloride	mg/L			140	29	310	110
Dissolved Organic Carbon	mg/L			14	11	21	16
Sulfate	mg/L			96	24	96	46
Total Alkalinity	mg/L			81	32	100	65
Total Hardness	mg $CaCO_3$/L			190	50	300	120
Total Organic Carbon	mg/L			18	12	27	18
Total Suspended Solids	mg/L	100	MSGP 2000	78	83	140	77
Chlorinated Pesticides							
2,4'-DDD	ng/L			<5	<5	<5	<5
2,4'-DDE	ng/L			<5	<5	<5	<5
2,4'-DDT	ng/L			<5	<5	<5	<5
4,4'-DDD	ng/L			<5	<5	<5	<5
4,4'-DDE	ng/L			<5	<5	<5	<5
4,4'-DDT	ng/L			5.6	<5	3.3J	<5
Aldrin	ng/L			<5	<5	<5	<5
BHC-alpha	ng/L			<5	<5	<5	<5
BHC-beta	ng/L			<5	<5	<5	<5
BHC-delta	ng/L			<5	<5	<5	<5
BHC-gamma	ng/L			<5	<5	<5	<5
Chlordane-alpha	ng/L			<5	<5	<5	<5
Chlordane-gamma	ng/L			<5	<5	<5	<5
Dieldrin	ng/L			<5	<5	<5	<5
Endosulfan Sulfate	ng/L			<5	<5	<5	<5
Endosulfan-I	ng/L			<5	<5	<5	<5
Endosulfan-II	ng/L			<5	<5	<5	<5
Endrin	ng/L			<5	<5	<5	<5
Endrin Aldehyde	ng/L			<5	<5	<5	<5
Heptachlor	ng/L			<5	<5	<5	<5
Heptachlor Epoxide	ng/L			<5	<5	<5	<5
Methoxychlor	ng/L			<5	<5	<5	<5
Mirex	ng/L			<5	<5	<5	<5
Toxaphene	ng/L			<500	<500	<500	<500

Table 2-4. Wet Weather Water Quality Chemistry Results for LM-1 and LG-1 (Jurisdictional Boundary Monitoring Special Study)

Parameter	Units	Water Quality Benchmark	Benchmark Reference	LM-1	LM-1	LG-1	LG-1
				10/6/2010	2/16/2011	10/6/2010	2/16/2011
trans-Nonachlor	ng/L			<5	<5	<5	<5
Total Chlorinated Pesticides	ng/L			5.6	<500	3.3	<500
Organophosphorus Pesticides							
Azinphos Methyl	ng/L			<10	<10	<10	<10
Bolstar (Sulprofos)	ng/L			<10	<10	<10	<10
Chlorpyrifos	ng/L	20/14	CA Dept. of Fish & Game, 2000 (Acute/Chronic)	<10	<10	<10	<10
Coumaphos	ng/L			<10	<10	<10	<10
Demeton-o	ng/L			<10	<10	<10	<10
Demeton-s	ng/L			<10	<10	<10	<10
Diazinon	ng/L	72/45	Chollas Creek TMDL for Diazinon (Acute/Chronic)	20	7.6J	11	**70**
Dichlorvos	ng/L			37 BS-L	6.4J	29 BS-L	8.5J
Dimethoate	ng/L			<10	<10	<10	<10
Disulfoton	ng/L			<10	<10	<10	<10
Ethoprop (Ethoprofos)	ng/L			<10	<10	<10	<10
Ethyl Parathion	ng/L			<10	<10	<10	<10
Fenchlorphos (Ronnel)	ng/L			<10	<10	<10	<10
Fensulfothion	ng/L			<10	<10	<10	<10
Fenthion	ng/L			<10	<10	<10	<10
Malathion	ng/L	430/100	CA Dept. of Fish & Game, 1998 (Acute/Chronic)	28	36	43	**250**
Merphos	ng/L			<10	<10	<10	<10
Methyl Parathion	ng/L			<10	<10	<10	<10
Mevinphos (Phosdrin)	ng/L			<10	<10	<10	<10
Naled	ng/L			<10	<10	<10	<10
Phorate	ng/L			<10	<10	<10	<10
Tetrachlorvinphos (Stirofos)	ng/L			<10	<10	<10	<10
Tokuthion	ng/L			<10	<10	<10	<10
Trichloronate	ng/L			<10	<10	<10	<10
Aroclor PCBs							
Aroclor 1016	ng/L			<100	<100	<100	<100
Aroclor 1221	ng/L			<100	<100	<100	<100
Aroclor 1232	ng/L			<100	<100	<100	<100
Aroclor 1242	ng/L			<100	<100	<100	<100
Aroclor 1248	ng/L			<100	<100	<100	<100
Aroclor 1254	ng/L			<100	<100	<100	<100

Table 2-4. Wet Weather Water Quality Chemistry Results for LM-1 and LG-1 (Jurisdictional Boundary Monitoring Special Study)

Parameter	Units	Water Quality Benchmark	Benchmark Reference	LM-1	LM-1	LG-1	LG-1
				10/6/2010	2/16/2011	10/6/2010	2/16/2011
Aroclor 1260	ng/L			<100	<100	<100	<100
PCB Congeners[(1)]							
PCB003	ng/L			-	<10	-	<10
PCB008	ng/L			<10	<10	<10	<10
PCB018	ng/L			<10	<10	<10	<10
PCB028	ng/L			<10	<10	<10	<10
PCB031	ng/L			-	<10	-	<10
PCB033	ng/L			-	<10	-	<10
PCB037	ng/L			-	<10	-	<10
PCB044	ng/L			<10	<10	<10	<10
PCB049	ng/L			-	<10	-	<10
PCB052	ng/L			<10	<10	<10	<10
PCB056	ng/L			-	<10	-	<10
PCB060	ng/L			-	<10	-	<10
PCB066	ng/L			<10	<10	<10	<10
PCB070	ng/L			-	<10	-	<10
PCB074	ng/L			-	<10	-	<10
PCB077	ng/L			<10	<10	<10	<10
PCB081	ng/L			<10	<10	<10	<10
PCB087	ng/L			-	<10	-	<10
PCB095	ng/L			-	<10	-	<10
PCB097	ng/L			-	<10	-	<10
PCB099	ng/L			-	<10	-	<10
PCB101	ng/L			<10	<10	<10	<10
PCB105	ng/L			<10	<10	<10	<10
PCB110	ng/L			<10	<10	<10	<10
PCB114	ng/L			<10	<10	<10	<10
PCB118	ng/L			<10	<10	<10	<10
PCB119	ng/L			-	<10	-	<10
PCB123	ng/L			<10	<10	<10	<10
PCB126	ng/L			<10	<10	<10	<10
PCB128	ng/L			<10	<10	<10	<10
PCB132	ng/L			-	<10	-	<10
PCB138	ng/L			<10	<10	<10	<10
PCB141	ng/L			-	<10	-	<10
PCB149	ng/L			-	<10	-	<10
PCB151	ng/L			-	<10	-	<10
PCB153	ng/L			<10	<10	<10	<10

Table 2-4. Wet Weather Water Quality Chemistry Results for LM-1 and LG-1 (Jurisdictional Boundary Monitoring Special Study)

Parameter	Units	Water Quality Benchmark	Benchmark Reference	LM-1	LM-1	LG-1	LG-1
				10/6/2010	2/16/2011	10/6/2010	2/16/2011
PCB156	ng/L			<10	<10	<10	<10
PCB157	ng/L			<10	<10	<10	<10
PCB158	ng/L			-	<10	-	<10
PCB167	ng/L			<10	<10	<10	<10
PCB168	ng/L			-	<10	-	<10
PCB169	ng/L			<10	<10	<10	<10
PCB170	ng/L			<10	<10	<10	<10
PCB174	ng/L			-	<10	-	<10
PCB177	ng/L			-	<10	-	<10
PCB180	ng/L			<10	<10	<10	<10
PCB183	ng/L			-	<10	-	<10
PCB187	ng/L			<10	<10	<10	<10
PCB189	ng/L			<10	<10	<10	<10
PCB194	ng/L			-	<10	-	<10
PCB195	ng/L			<10	<10	<10	<10
PCB200	ng/L			-	<10	-	<10
PCB201	ng/L			-	<10	-	<10
PCB203	ng/L			-	<10	-	<10
PCB206	ng/L			<10	<10	<10	<10
PCB209	ng/L			<10	<10	<10	<10
Total PCB Congeners	ng/L			<10	<10	<10	<10
Polynuclear Aromatic Hydrocarbons							
1-Methylnaphthalene	ng/L			<100	<100	<100	<100
1-Methylphenanthrene	ng/L			<100	<100	<100	<100
2,6-Dimethylnaphthalene	ng/L			<100	<100	<100	<100
2-Methylnaphthalene	ng/L			<100	<100	<100	<100
Acenaphthene	ng/L			260	<100	<100	<100
Acenaphthylene	ng/L			<100	<100	<100	<100
Anthracene	ng/L			<100	<100	<100	<100
Benz[a]anthracene	ng/L			<100	<100	<100	<100
Benzo[a]pyrene	ng/L			<100	<100	<100	<100
Benzo[b]fluoranthene	ng/L			140	<100	43J	<100
Benzo[e]pyrene	ng/L			90J	<100	45J	<100
Benzo[g,h,i]perylene	ng/L			160	<100	83J	<100
Benzo[k]fluoranthene	ng/L			<100	<100	<100	<100
Biphenyl	ng/L			<100	<100	<100	<100
Chrysene	ng/L			150	<100	63J	<100
Dibenz[a,h]anthracene	ng/L			<100	<100	<100	<100

Table 2-4. Wet Weather Water Quality Chemistry Results for LM-1 and LG-1 (Jurisdictional Boundary Monitoring Special Study)

Parameter	Units	Water Quality Benchmark	Benchmark Reference	LM-1	LM-1	LG-1	LG-1
				10/6/2010	2/16/2011	10/6/2010	2/16/2011
Fluoranthene	ng/L			<100	<100	96J	<100
Fluorene	ng/L			<100	<100	<100	<100
Indeno[1,2,3-c,d]pyrene	ng/L			50J	<100	<100	<100
Naphthalene	ng/L			<100	<100	<100	<100
Perylene	ng/L			<100	<100	<100	<100
Phenanthrene	ng/L			<100	<100	<100	<100
Pyrene	ng/L			240	<100	130	<100
Total Detectable PAHs	ng/L			1090	<100	460	<100
Total Metals							
Calcium(Ca)-Total	mg/L			36	11	63	26
Copper(Cu)-Total	µg/L			34	25	36	31
Lead(Pb)-Total	µg/L			12	13	25	14
Magnesium(Mg)-Total	mg/L			24	5.5	36	14
Potassium(K)-Total	mg/L			4.9	2.8	7.8	3.6
Sodium(Na)-Total	mg/L			110	24	170	71
Zinc(Zn)-Total	µg/L			210	150	230	160
Dissolved Metals							
Copper(Cu)-Dissolved	µg/L	(a)	40 CFR 131.38	13	**8.8**	10	**13**
Lead(Pb)-Dissolved	µg/L	(a)	40 CFR 131.38	0.41	0.45	0.84	0.73
Zinc(Zn)-Dissolved	µg/L	(a)	40 CFR 131.38	68	39	60	56

BS-L-The recovery of this analyte in the BS/LCS was below the control limit. Sample result is suspect.

J-Analyte was detected at concentration below the reporting limit and above the method detection limit. Reported values is estimated.

< Results less than the reporting limit.

- No data provided.

(a) WQO for dissolved metal fractions are based on Total Hardness (as CaCO3) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). Chollas Creek Dissolved Metals TMDL waste load allocations (90% of the CMC and CCC) were used as the WQO for storms after October 4, 2008.

[1] In February 2011, WECK Analytical Laboratories, Inc. expanded their list of PCB Congeners from 28 analytes to 56 analytes.

Bold only results exceed the water quality benchmark, the chronic water quality benchmark for pesticides, or the CCC water quality benchmark for metals.

Bold and shaded exceed the CMC and CCC water quality benchmarks for metals.

Table 2-5. Wet Weather Biological Toxicity Results for *Ceriodaphnia dubia* for LM-1 and LG-1 (Jurisdictional Boundary Monitoring Special Study)

Test	Reporting Value	Unit	LM-1 10/6/2010	LM-1 2/16/2011	LG-1 10/6/2010	LG-1 2/16/2011
96-hour acute toxicity (*C. dubia*)	Mean % survival for control	%	100	100	100	100
	% survival in 100% concentration	%	100	90	100	100
	LC_{50}	%	>100	>100	>100	>100
	LOEC	%	>100	>100	>100	>100
	Tu_a		0	0.59	0	0
	LT_{50}	Hours	>96	>96	>96	>96
Toxicity Observed			No	No	No	No
7-day chronic toxicity (*C. dubia*)	Mean % survival for control	%	90	100	100	100
	% survival in 100% concentration	%	100	90	100	100
	LC_{50} (survival)	%	>100	>100	>100	>100
	NOEC (survival)	%	100	100	100	100
	LOEC (survival)	%	>100	>100	>100	>100
	Tu_a (survival)		1	1	1	1
	LT_{50}	Hours	>168	>192	>168	>168
	NOEC (reproduction)	%	>100	**25**	>100	100
	LOEC (reporduction)	%	>100	50	>100	>100
	Tu_c (reproduction)	%	1	4	1	1
Toxicity Observed			No	**Yes**	No	No

Table 2-6. Wet Weather Chemistry Results for SD8(1) and DPR2

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1) 10/6/2010	CC-SD8(1) 2/16/2011	DPR2 10/6/2010	DPR2-DUP 10/6/2010	DPR2 2/16/2011	Field Blank 10/6/2010	Field Blank 2/17/2011
Physical Chemistry										
Precipitation	inches			0.52+	0.35+	0.52	0.52	0.35	-	-
pH	pH units	6.5-9.0	Basin Plan	7.19	7.74	6.9	-	7.46	-	-
Conductivity	µS/cm			199.5	239	393	-	561	-	-
Temperature	Celsius			17.7	16.5	18	-	15.6	-	-
General Chemistry										
Chloride	mg/L			39	32	310	57	140	0.15J	0.14J
Dissolved Organic Carbon	mg/L			13	11	21	21	16	0.13J	0.16J
Sulfate	mg/L			21	19	93	31	62	0.11J	<0.5
Total Alkalinity	mg/L			33	42	46	36	79	<2	1.5J
Total Hardness	mg $CaCO_3$/L			68	68	87	87	170	<0.66	<0.66
Total Organic Carbon	mg/L			18	12	26	26	19	0.21J	0.13J
Total Suspended Solids	mg/L			56	180	11	9	65	<1	<1
Chlorinated Pesticides										
2,4'-DDD	ng/L			<5	<5	<5	<5	<5	<5	<5
2,4'-DDE	ng/L			<5	<5	<5	<5	<5	<5	<5
2,4'-DDT	ng/L			<5	<5	<5	<5	<5	<5	<5
4,4'-DDD	ng/L			<5	<5	<5	<5	<5	<5	<5
4,4'-DDE	ng/L			<5	<5	<5	<5	<5	<5	<5
4,4'-DDT	ng/L			3.9J	<5	<5	<5	<5	<5	<5
Aldrin	ng/L			<5	<5	<5	<5	<5	<5	<5
BHC-alpha	ng/L			<5	<5	<5	<5	<5	<5	<5
BHC-beta	ng/L			<5	<5	<5	<5	<5	<5	<5
BHC-delta	ng/L			<5	<5	<5	<5	<5	<5	<5
BHC-gamma	ng/L			<5	<5	<5	<5	<5	<5	<5
Chlordane-alpha	ng/L			<5	<5	<5	<5	<5	<5	<5
Chlordane-gamma	ng/L			<5	<5	<5	<5	<5	<5	<5
Dieldrin	ng/L			<5	<5	<5	<5	<5	<5	<5
Endosulfan Sulfate	ng/L			<5	<5	<5	<5	<5	<5	<5
Endosulfan-I	ng/L			<5	<5	<5	<5	<5	<5	<5
Endosulfan-II	ng/L			<5	<5	<5	<5	<5	<5	<5
Endrin	ng/L			<5	<5	<5	<5	<5	<5	<5
Endrin Aldehyde	ng/L			<5	<5	<5	<5	<5	<5	<5
Heptachlor	ng/L			<5	<5	<5	<5	<5	<5	<5
Heptachlor Epoxide	ng/L			<5	<5	<5	<5	<5	<5	<5
Methoxychlor	ng/L			<5	<5	<5	<5	<5	<5	<5
Mirex	ng/L			<5	<5	<5	<5	<5	<5	<5

Table 2-6. Wet Weather Chemistry Results for SD8(1) and DPR2

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1) 10/6/2010	CC-SD8(1) 2/16/2011	DPR2 10/6/2010	DPR2-DUP 10/6/2010	DPR2 2/16/2011	Field Blank 10/6/2010	Field Blank 2/17/2011
Toxaphene	ng/L			<500	<500	<500	<500	<500	<500	<500
trans-Nonachlor	ng/L			<5	<5	<5	<5	<5	<5	<5
Total Chlorinated Pesticides	ng/L			3.9	<500	<500	<500	<500	<500	<500
Organophosphorus Pesticides										
Azinphos Methyl	ng/L			<10	<10	<10	<10	<10	<10	<10
Bolstar (Sulprofos)	ng/L			<10	<10	<10	<10	<10	<10	<10
Chlorpyrifos	ng/L	20/14	CA Dept. of Fish & Game, 2000 (Acute/Chronic)	<10	<10	<10	<10	<10	<10	<10
Coumaphos	ng/L			<10	<10	<10	<10	<10	<10	<10
Demeton-o	ng/L			<10	<10	<10	<10	<10	<10	<10
Demeton-s	ng/L			<10	<10	<10	<10	<10	<10	<10
Diazinon	ng/L	72/45	Chollas Creek TMDL for Diazinon (Acute/Chronic)	21	6.6J	27	25	28	<10	<10
Dichlorvos	ng/L			61 BS-L	16	65 BS-L	64 BS-L	7.8J	<10	<10
Dimethoate	ng/L			<10	<10	<10	<10	<10	<10	<10
Disulfoton	ng/L			<10	<10	<10	<10	<10	<10	<10
Ethoprop (Ethoprofos)	ng/L			<10	<10	<10	<10	<10	<10	<10
Ethyl Parathion	ng/L			<10	<10	<10	<10	<10	<10	<10
Fenchlorphos (Ronnel)	ng/L			<10	<10	<10	<10	<10	<10	<10
Fensulfothion	ng/L			<10	<10	<10	<10	<10	<10	<10
Fenthion	ng/L			<10	<10	<10	<10	<10	<10	<10
Malathion	ng/L	430/100	CA Dept. of Fish & Game, 1998 (Acute/Chronic)	**170**	47	**130**	**120**	78	<10	<10
Merphos	ng/L			<10	<10	<10	<10	<10	<10	<10
Methyl Parathion	ng/L			<10	<10	<10	<10	<10	<10	<10
Mevinphos (Phosdrin)	ng/L			<10	<10	<10	<10	<10	<10	<10
Naled	ng/L			<10	<10	<10	<10	<10	<10	<10
Phorate	ng/L			<10	<10	<10	<10	<10	<10	<10
Tetrachlorvinphos (Stirofos)	ng/L			<10	<10	8.6J	<10	<10	<10	<10
Tokuthion	ng/L			<10	<10	<10	<10	<10	<10	<10
Trichloronate	ng/L			<10	<10	<10	<10	<10	<10	<10
Aroclor PCBs										
Aroclor 1016	ng/L			<100	<100	<100	<100	<100	<100	<100
Aroclor 1221	ng/L			<100	<100	<100	<100	<100	<100	<100
Aroclor 1232	ng/L			<100	<100	<100	<100	<100	<100	<100
Aroclor 1242	ng/L			<100	<100	<100	<100	<100	<100	<100
Aroclor 1248	ng/L			<100	<100	<100	<100	<100	<100	<100

Table 2-6. Wet Weather Chemistry Results for SD8(1) and DPR2

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1)	CC-SD8(1)	DPR2	DPR2-DUP	DPR2	Field Blank	Field Blank
				10/6/2010	2/16/2011	10/6/2010	10/6/2010	2/16/2011	10/6/2010	2/17/2011
Aroclor 1254	ng/L			<100	<100	<100	<100	<100	<100	<100
Aroclor 1260	ng/L			<100	<100	<100	<100	<100	<100	<100
PCB Congeners[1]										
PCB003	ng/L			-	<10	-	-	<10	-	<10
PCB008	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB018	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB028	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB031	ng/L			-	<10	-	-	<10	-	<10
PCB033	ng/L			-	<10	-	-	<10	-	<10
PCB037	ng/L			-	<10	-	-	<10	-	<10
PCB044	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB049	ng/L			-	<10	-	-	<10	-	<10
PCB052	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB056	ng/L			-	<10	-	-	<10	-	<10
PCB060	ng/L			-	<10	-	-	<10	-	<10
PCB066	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB070	ng/L			-	<10	-	-	<10	-	<10
PCB074	ng/L			-	<10	-	-	<10	-	<10
PCB077	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB081	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB087	ng/L			-	<10	-	-	<10	-	<10
PCB095	ng/L			-	<10	-	-	<10	-	<10
PCB097	ng/L			-	<10	-	-	<10	-	<10
PCB099	ng/L			-	<10	-	-	<10	-	<10
PCB101	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB105	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB110	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB114	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB118	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB119	ng/L			-	<10	-	-	<10	-	<10
PCB123	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB126	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB128	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB132	ng/L			-	<10	-	-	<10	-	<10
PCB138	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB141	ng/L			-	<10	-	-	<10	-	<10
PCB149	ng/L			-	<10	-	-	<10	-	<10
PCB151	ng/L			-	<10	-	-	<10	-	<10

Table 2-6. Wet Weather Chemistry Results for SD8(1) and DPR2

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1)	CC-SD8(1)	DPR2	DPR2-DUP	DPR2	Field Blank	Field Blank
				10/6/2010	2/16/2011	10/6/2010	10/6/2010	2/16/2011	10/6/2010	2/17/2011
PCB153	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB156	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB157	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB158	ng/L			-	<10	-	-	<10	-	<10
PCB167	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB168	ng/L			-	<10	-	-	<10	-	<10
PCB169	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB170	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB174	ng/L			-	<10	-	-	<10	-	<10
PCB177	ng/L			-	<10	-	-	<10	-	<10
PCB180	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB183	ng/L			-	<10	-	-	<10	-	<10
PCB187	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB189	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB194	ng/L			-	<10	-	-	<10	-	<10
PCB195	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB200	ng/L			-	<10	-	-	<10	-	<10
PCB201	ng/L			-	<10	-	-	<10	-	<10
PCB203	ng/L			-	<10	-	-	<10	-	<10
PCB206	ng/L			<10	<10	<10	<10	<10	<10	<10
PCB209	ng/L			<10	<10	<10	<10	<10	<10	<10
Total PCB Congeners	ng/L			<10	<10	<10	<10	<10	<10	<10
Polynuclear Aromatic Hydrocarbons										
1-Methylnaphthalene	ng/L			<100	<100	<100	<100	<100	<100	<100
1-Methylphenanthrene	ng/L			<100	<100	<100	<100	<100	<100	<100
2,6-Dimethylnaphthalene	ng/L			<100	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	ng/L			21J	<100	<100	<100	<100	<100	<100
Acenaphthene	ng/L			<100	<100	<100	<100	<100	<100	<100
Acenaphthylene	ng/L			<100	<100	<100	<100	<100	<100	<100
Anthracene	ng/L			<100	<100	<100	<100	<100	<100	<100
Benz[a]anthracene	ng/L			33J	<100	<100	<100	<100	<100	<100
Benzo[a]pyrene	ng/L			<100	<100	<100	<100	<100	<100	<100
Benzo[b]fluoranthene	ng/L			20J	<100	<100	<100	<100	<100	<100
Benzo[e]pyrene	ng/L			<100	<100	<100	<100	<100	<100	<100
Benzo[g,h,i]perylene	ng/L			<100	<100	<100	<100	<100	<100	<100
Benzo[k]fluoranthene	ng/L			<100	<100	<100	<100	<100	<100	<100
Biphenyl	ng/L			<100	<100	<100	<100	<100	<100	<100
Chrysene	ng/L			40J	<100	<100	<100	<100	<100	<100

Table 2-6. Wet Weather Chemistry Results for SD8(1) and DPR2

Parameter	Units	Water Quality Benchmark	Benchmark Reference	CC-SD8(1) 10/6/2010	CC-SD8(1) 2/16/2011	DPR2 10/6/2010	DPR2-DUP 10/6/2010	DPR2 2/16/2011	Field Blank 10/6/2010	Field Blank 2/17/2011
Dibenz[a,h]anthracene	ng/L			<100	<100	<100	<100	<100	<100	<100
Fluoranthene	ng/L			43J	<100	<100	<100	<100	<100	<100
Fluorene	ng/L			<100	<100	<100	<100	<100	<100	<100
Indeno[1,2,3-c,d]pyrene	ng/L			<100	<100	<100	<100	<100	<100	<100
Naphthalene	ng/L			<100	<100	<100	<100	<100	<100	<100
Perylene	ng/L			<100	<100	<100	<100	<100	<100	<100
Phenanthrene	ng/L			<100	<100	<100	<100	<100	<100	<100
Pyrene	ng/L			72J	<100	<100	<100	<100	<100	<100
Total Detectable PAHs	ng/L			229	<100	<100	<100	<100	<100	<100
Total Metals										
Calcium(Ca)-Total	mg/L			18	17	22	22	39	0.031J	0.058J
Copper(Cu)-Total	µg/L			33	54	21	22	24	0.07J	0.08J
Lead(Pb)-Total	µg/L			20	37	4.1	3.5	11	0.02J	<0.2
Magnesium(Mg)-Total	mg/L			5.9	6.3	7.8	7.8	17	<0.1	<0.1
Potassium(K)-Total	mg/L			5.3	4.3	8.4	8.4	5.2	<0.1	<0.1
Sodium(Na)-Total	mg/L			25	22	35	35	90	0.26J	0.18J
Zinc(Zn)-Total	µg/L			200	310	76	77	92	<5	<5
Dissolved Metals										
Copper(Cu)-Dissolved	µg/L	(a)	40 CFR 131.38	**16**	**10**	**18**	**18**	**13**	0.15J	0.11J
Lead(Pb)-Dissolved	µg/L	(a)	40 CFR 131.38	1.3	0.41	0.83	0.85	0.33	<0.2	<0.2
Zinc(Zn)-Dissolved	µg/L	(a)	40 CFR 131.38	**77**	37	65	64	36	1.4J	1.4J

BS-L-The recovery of this analyte in the BS/LCS was below the control limit. Sample result is suspect.

J-Analyte was detected at concentration below the reporting limit and above the method detection limit. Reported value is estimated.

< Results less than the reporting limit.

[+]It appears that the SD8(1) rain gauge malfunctioned during the 2010-2011 Monitoring Season and portions of data are missing. Measured values are presented for comparison. DPR2 rainfall data was used for quality control assessment.

- No data provided.

(a) WQO for dissolved metal fractions are based on Total Hardness (as CaCO3) and are calculated as described by Title 40 of the Code of Federal Regulations (Part 131) (USEPA, 2000). Chollas Creek Dissolved Metals TMDL waste load allocations (90% of the CMC and CCC) were used as the WQO for storms after October 4, 2008.

[1] In February 2011, WECK Analytical Laboratories, Inc. expanded their list of PCB Congeners from 28 analytes to 56 analytes.

Bold only results exceed the water quality benchmark, the chronic water quality benchmark for pesticides, or the CCC water quality benchmark for metals.

Bold and shaded exceed the CMC and CCC water quality benchmarks for metals.

Table 2-7. Wet Weather Biological Toxicity Results for *Ceriodaphnia dubia* for SD8(1) and DPR2

Test	Reporting Value	Unit	SD8(1) 10/6/2010	SD8(1) 2/16/2011	DPR2[1] 10/6/2010	DPR2-DUP 10/6/2010	DPR2[1] 2/16/2011	DPR2-DUP[1] 2/16/2011
96-hour acute toxicity (*C. dubia*)	Mean % survival for control	%	100	100	100	100	100	100
	% survival in 100% concentration	%	100	100	90	100	100	100
	LC_{50}	%	>100	>100	>100	>100	>100	>100
	LOEC	%	>100	>100	>100	>100	>100	>100
	Tu_a		0	0	0.59	0	0	0
	LT_{50}	Hours	>96	>96	>96	>96	>96	>96
Toxicity Observed			No	No	No	No	No	No
7-day chronic toxicity (*C. dubia*)	Mean % survival for control	%	80	100	100	100	100	100
	% survival in 100% concentration	%	80	90	90	100	100	100
	LC_{50} (survival)	%	>100	>100	>100	>100	>100	>100
	NOEC (survival)	%	100	100	100	100	100	100
	LOEC (survival)	%	>100	>100	>100	>100	>100	>100
	Tu_a (survival)		1	1	1	1	1	1
	LT_{50}	Hours	>192	>192	>168	>192	>144	>144
	NOEC (reproduction)	%	100	100	100	100	100	100
	LOEC (reporduction)	%	>100	>100	>100	>100	>100	>100
	Tu_c (reproduction)	%	1	1	1	1	1	1
Toxicity Observed			No	No	No	No	No	No

[1] Percent mean standard deivation (MSDp) for reproduction is above protocol limit.

2.4 Data Analysis

This subsection describes the water quality monitoring data collected for the Jurisdictional Boundary Monitoring Special Study. Water quality in the north fork of Chollas Creek was evaluated by comparing results from LM-1 with results from compliance monitoring activities conducted at SD8(1). Similarly, water quality in the south fork of Chollas Creek was evaluated by comparing LG-1 with DPR2. The WLA comparisons observed at all four sites on October 6, 2010 and February 16, 2011 are graphically presented on Figure 2-4 and Figure 2-5.

Metals

The metals results for the 2010-2011 Monitoring Season reflect generally understood patterns for the Chollas Creek Watershed, including the following:

- Metals concentrations (dissolved copper, lead, and zinc) and the magnitude of results above WLAs were generally greater at the north fork compliance site (SD8(1)) than at the south fork compliance site (DPR2). Hardness values measured in the north fork were lower than the south fork. The spatial differences between the north fork and south fork are related to the inverse relationship between the CTR values and hardness.
- Copper had a higher detection rate and frequency above WLAs than other metals.
- Lead concentrations were below the acute (and chronic) water quality benchmark(s) at all four sites.

During the first flush storm event (October 6, 2010), dissolved copper concentrations at SD8(1) and DPR2 were above the acute and chronic WLAs and dissolved zinc at SD8(1) was slightly above the acute and chronic WLAs (i.e., WLA ratios approximately equal to 1.01). In contrast, metals concentrations at the jurisdictional boundaries were below the acute and chronic WLAs. Results are shown graphically on Figure 2-4. Dissolved lead was below the WLA at all four sites.

During the February 16, 2011 storm event, dissolved copper concentrations at LM-1 were above the acute and chronic WLAs. Concentrations and WLA ratios at SD8(1) and LM-1 were similar (i.e., approximately 10 µg/L and generally less than 2.0 times greater than the WLA). WLA ratios were slightly higher at LM-1, due to the low hardness result (50 mg $CaCO_3$/L). Dissolved copper concentrations were also above the chronic WLAs at both LG-1 and DPR2 (i.e., approximately 10 µg/L with WLA ratios of 1.38 at LG-1 and 1.02 at DPR2). Dissolved lead and dissolved zinc results were below the WLAs at all four sites during the February 16, 2011 storm event.

Organophosphate Pesticides

The organophosphate pesticides, Diazinon and Malathion were detected at all four locations during both monitored storm events. Diazinon concentrations at LG-1 were above the chronic WLA during the February 16, 2011 storm event. Malathion concentrations were above the water quality benchmark for chronic conditions at SD8(1) and DPR2 during the October 6, 2010 storm event and at LG-1 during the February 16, 2011 storm. Chlorpyrifos was not detected at any of the four sites during either monitored storm event. Although Malathion and Diazinon

concentrations were above the water quality benchmark and WLA at LG-1, survival and reproductive toxicity to *C. dubia* was not observed at LG-1 or at the compliance site DPR2. These results demonstrate the effectiveness of the 2005 ban on the retail sale of the organophosphate pesticides Diazinon and Chlorpyrifos.

Toxicity

There were no instances of acute or chronic survival and reproductive toxicity to *C. dubia* in the south fork (LG-1 and DPR2) or at SD8(1). Reproductive toxicity to *C. dubia* was observed at LM-1 during the February 16, 2011 storm event. As presented by the matching orange pies on Figure 2-5, this result may be associated with dissolved copper results above the acute and chronic WLAs for LM-1. However, when applying the newly developed site-specific objective for copper, the result would have been below the WLA for both acute and chronic effects. It is also possible that lower dissolved organic carbon and other water quality parameters (e.g., sulfate and chloride) may have influenced the bioavailability of copper during this event. Regardless, the results at the downstream compliance site (SD8(1)) where below the WLA and no toxicity was observed to *C. dubia).*

Polynuclear Aromatic Hydrocarbons, Chlorinated Pesticides, and Polychlorinated Biphenyls

PAHs were detected at all four sites, generally in low concentrations. Total PAH results for the October 6, 2010 storm event for LM-1 was 1,090 ng/L and 460 ng/L at LG-1. Results were below the detection limit of 100 ng/L at both sites during the February 16, storm event. Refer to Table 2-4 and Table 2-6 for individual analyte concentrations.

The total chlorinated pesticides results were generally below the method reporting limit, with low level detections of 4,4'-DDT during the October 6, 2010 storm event. Concentrations at LM-1 and LG-1 ranged from 3.3 ng/L to 5.6 ng/L and were similar to the detections at SD8(1). 4,4'-DDT was not detected at DPR2 during the two monitored storm events.

PCB congeners were not detected at any of the monitored sites during either monitoring event.

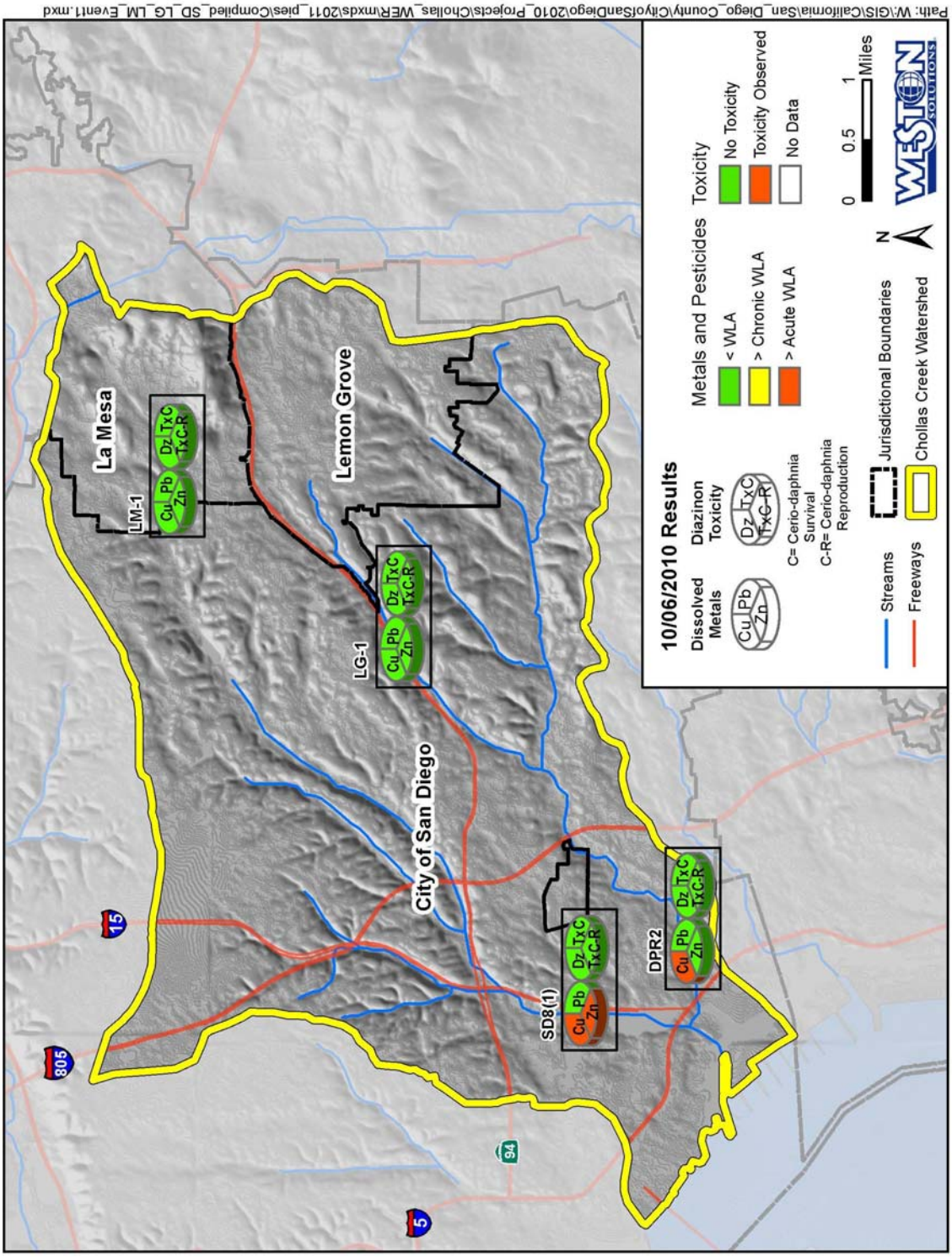

Figure 2-4. Metals, Pesticides and Toxicity Results for October 6, 2010

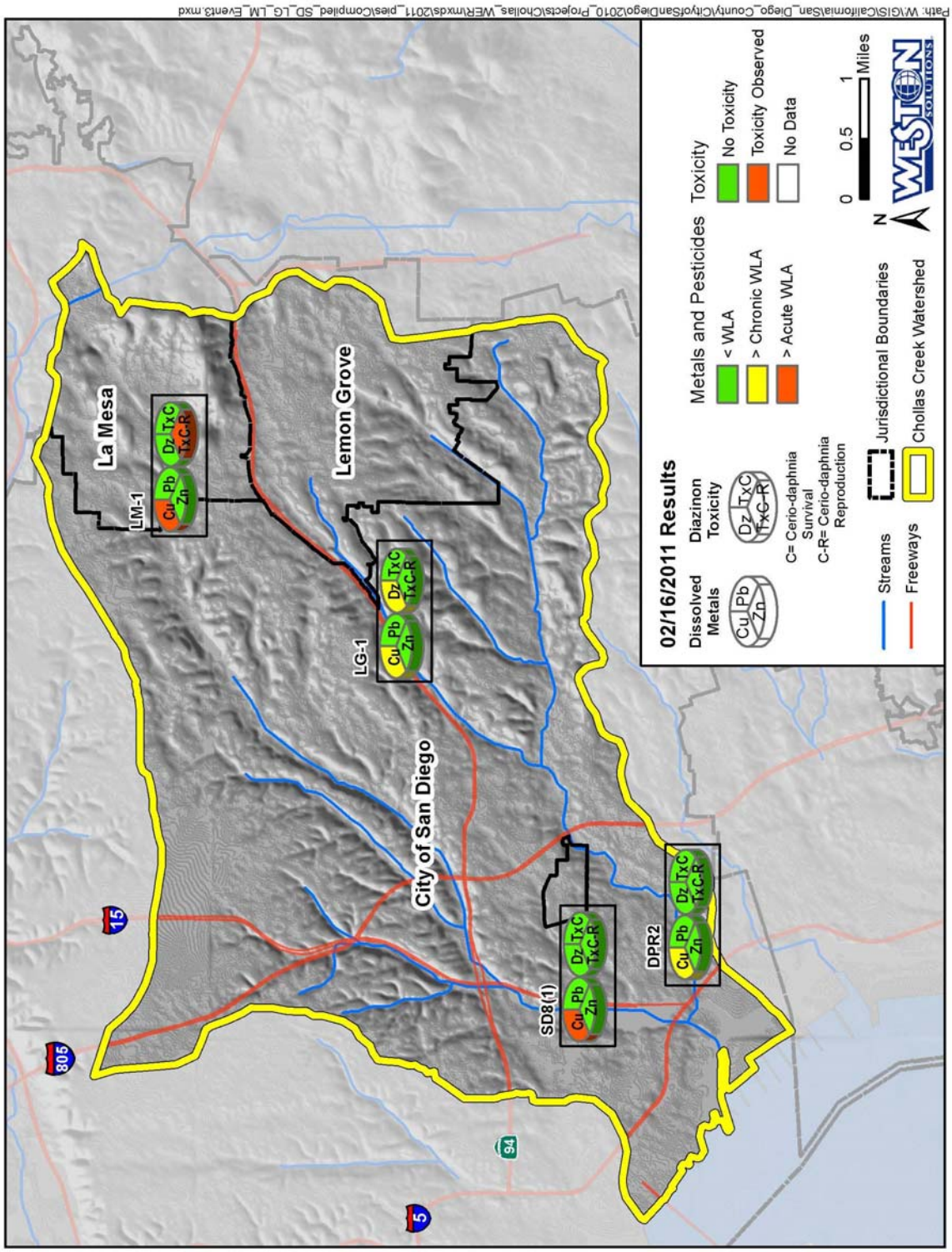

Figure 2-5. Metals, Pesticides and Toxicity Results for February 16, 2011

2010–2011 Benchmark Analysis

The Chollas Creek Dissolved Metals TMDL sets the numeric targets equal to the CTR criteria using a default water-effect ratio of 1.0, the most current, conservative benchmark for dissolved copper, lead, and zinc in freshwater. It is recognized by USEPA that national criteria for dissolved metals may be more or less protective than anticipated (40 CFR Part 131.38), depending on the site-specific characteristics including diversity of aquatic life and water quality measurements (i.e., hardness, pH, dissolved organic matter, total suspended particulates, and concentrations of contaminants of concern) (USEPA, 1994). As a consequence, USEPA has developed water-effect ratios as one of several procedures for deriving site specific objectives. The Regional Board specified in the TMDL that the development of a site specific objective using the Water-Effects Ratio procedure is an acceptable step in determining appropriate targets for dissolved copper, lead, and zinc in Chollas Creek.

The CTRs for dissolved copper, lead, and zinc are comprised of hardness-based equations that vary with sample hardness concentrations (Figure 2-6). The Chollas Creek Watershed is unique in that it has significantly lower hardness concentrations, and therefore lower dissolved metals criteria, than other watersheds in San Diego County. During the 2010-2011 Monitoring Season, the City of San Diego finalized a Water-Effects Ratio study for the Chollas Creek Watershed, thereby developing a site specific objective. The underlying goal of the study was to determine how much dissolved copper, lead, and zinc can be present in Chollas Creek site water without lowering the intended level of protection for Chollas Creek beneficial uses. In lieu of a water-effects ratio for dissolved lead, the study presented a comprehensive review and analysis of the effect the new lead criteria has on acute and chronic ratios and/or protection over time. More information regarding the Water-Effects Ratio study is available in the City of San Diego's final report (Weston, 2011).

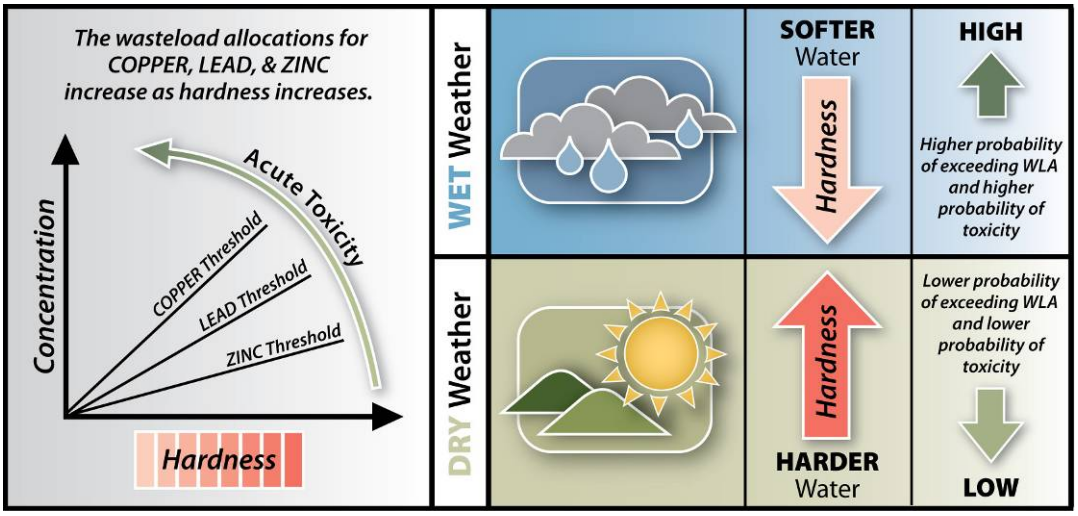

Figure 2-6. Impact of Hardness as a Dominant Variable in the California Toxics Rule Criteria

The water-effects ratios presented on Table 2-8 represent the conservative geometric mean of water-effects ratios for Chollas Creek. The water effects ratios and new lead criteria were applied to available monitoring data for LM-1 and LG-1 collected during Compliance Schedule Year 2 and 3 and were used to calculate new WLA ratios for the acute and chronic condition (Table 2-9). When the copper water effect ratio and new lead criteria are applied, the results for dissolved copper and dissolved lead fall below the acute and chronic benchmarks for LM-1 and LG-1. Dissolved zinc concentrations at LM-1 remained above the acute and chronic WLAs during the first flush storm of Compliance Schedule Year 1 (i.e., November 28, 2009 storm). The WLA ratios were low at approximately 1.15 times greater than the site-specific objective. Flow during this storm was limited and there was insufficient sample to conduct the upstream toxicity analyses. Therefore, no toxicity data for *C. dubia* was available for LM-1. The reduced frequency of metals above the site-specific WLA, in combination with non-persistent toxicity to *C. dubia*, suggests that dissolved metals concentrations in the Chollas Creek Watershed are protective of the beneficial uses.

Table 2-8. Water-Effect Ratios for the Chollas Creek Watershed (Weston, 2011)

Dissolved Copper WER *(geomean)*	Dissolved Zinc WER *(geomean)*
4.46	1.40

Table 2-9. Metals Results Compared to the Acute and Chronic Total Maximum Daily Load Waste Load Allocations and "New" Criteria for Two Monitored Storm Events Organized by Compliance Schedule Year

Compliance Schedule Year (Monitoring Season)	Type of Benchmark	Dissolved Copper (% acute / % chronic)				Dissolved Lead (% acute / % chronic)				Dissolved Zinc (% acute / % chronic)				Toxicity Observed to *C. Dubia*			
		North Fork		South Fork		North Fork		South Fork		North Fork		South Fork		North Fork		South Fork	
		LM-1	SD8(1)	LG-1	DPR2	LM-1	SD8(1)	LG-1	DPR2	LM-1	SD8(1)	LG-1	DPR2	LM-1	SD8(1)	LG-1	DPR2
Year 2 (2009-2010)	**TMDL Compliance**	**1 / 2**	**1 / 2**	**1 / 1**	**1 / 2**	**0 / 1**	**0 / 1**	**0 / 1**	**0 / 1**	**1 / 1**	**1 / 1**	**0 / 0**	**0 / 0**	No Data	7-day Reproductive (11/28/09)	No Data	None
	WER - Geomean	0 / 0	0 / 0	0 / 0	0 / 0	-	-	-	-	1 / 1	0 / 0	0 / 0	0 / 0				
	Lead Criteria	-	-	-	-	0 / 0	0 / 0	0 / 0	0 / 0	-	-	-	-				
Year 3 (2010-2011)	**TMDL Compliance**	**1 / 1**	**2 / 2**	**0 / 1**	**1 / 2**	**0 / 0**	**0 / 0**	**0 / 0**	**0 / 0**	**0 / 0**	**1 / 1**	**0 / 0**	**0 / 0**	7-day Reproductive (02/16/11)	None	None	None
	WER - Geomean	0 / 0	0 / 0	0 / 0	0 / 0	-	-	-	-	0 / 0	0 / 0	0 / 0	0 / 0				
	Lead Criteria	-	-	-	-	0 / 0	0 / 0	0 / 0	0 / 0	-	-	-	-				

3.0 SUMMARY AND CONCLUSIONS

This special study was designed to allow the Dischargers to geospatially assess water quality. When compliance monitoring was implemented at the two mass loading stations (MLS), SD8(1) and DPR2, monitoring was also implemented in the upper watershed, at the jurisdictional boundaries between the Cities of San Diego, La Mesa, and Lemon Grove, at sites LM-1 and LG-1. Comparing results from LM-1 to results from SD8(1) would represent water quality for the 2010–2011 Monitoring Season along the north fork of Chollas Creek; and comparing results from LG-1 and DPR2 would represent the south fork. Monitoring at LM-1 and LG-1 was conducted during the first flush storm event (October 6, 2010) and the first storm event after February 1st (February 16, 2011). Samples were analyzed for the following analytes:

- General chemistry analytes (applicable for the Biotic Ligand Model).
- Total and dissolved metals (i.e., copper, lead, and zinc) and total hardness.
- Organophosphate pesticides (i.e., Diazinon, Chlorpyrifos, and Malathion).
- Toxicity to *Ceriodaphnia dubia.*
- Chlorinated pesticides (Chlordane), Polychlorinated biphenyls (PCBs), and Polycyclic aromatic hydrocarbons (PAHs).

Results

The monitoring results for the Jurisdictional Boundary Monitoring Special Study during Compliance Schedule Year 3 (2010-2011 Monitoring Season) were as follows:

- Diazinon was above the chronic waste load allocation (WLA) and Malathion was above the recommended benchmark for chronic conditions at LG-1 during the February 16, 2011 storm event.
- Toxicity to *Ceriodaphnia dubia* reproduction was observed at LM-1 during the February 16, 2011 storm event. There were no instances of acute or chronic survival toxicity to *C. dubia* at LM-1 or LG-1 or reproductive toxicity at LG-1 during either monitored storm event.
- When applying the default California Toxics Rule water-effects ratio multiplier of 1.0, copper below the WLA during the October 6, 2010 storm event at both LM-1 and LG-1. During the February 16, 2011 storm event, dissolved copper was above the acute and chronic WLA at LM-1 and above the chronic WLA at LG-1. Copper had a higher detection rate and frequency above WLAs (compared to the acute and chronic waste load allocations (WLAs)) than lead and zinc.
- Dissolved lead and dissolved zinc were below the acute and chronic WLAs at all sites during all events.
- When applying newly developed site-specific criteria developed through the City of San Diego's Chollas Creek Water-Effects Ratio Study, dissolved copper, lead, and zinc were below the WLA during both monitoring events,
- PAHs, Chlorinated Pesticides, and PCB congeners were mostly below detection limits with few detections just above the reporting limits.

Results from the collaborative special study provided a valuable understanding of conditions across the Chollas Creek Watershed when evaluated collectively with results from the TMDL Compliance Monitoring. In summary, the data indicated the following:

- The 2005 ban on organophosphate pesticide Diazinon and Chlorpyrifos has proven successful with no results above the chronic WLA at either of the lower compliance sites SD8(1) and DPR2. However, Diazinon was above the chronic WLA and Malathion was above the recommended benchmark for chronic conditions observed at LG-1 during the February 16, 2011 storm event. No toxicity was observed to *C. dubia* at SD8(1) and DPR2.
- When applying the default CTR value of 1.0, copper had a higher detection rate and higher frequency of results above the WLA than lead and zinc. However, when applying recently developed site-specific objectives, copper was below the acute and chronic benchmarks at all sites during all monitored events.
- The north fork of Chollas Creek (site SD8(1)) had zinc concentrations above the acute WLA during a first flush-storm event. Zinc was below the WLA in the south fork (site DPR2). When site specific objectives were applied, zinc was below the acute and chronic benchmarks at all sites during all monitored events during Compliance Year 3.
- Metals concentrations (dissolved copper, lead, and zinc) and magnitude of results above WLAs in the north fork were generally greater than in the south fork.

Recommendations

The following recommendations are provided for consideration:

- Future assessments of compliance with the TMDL WLAs should incorporate the newly developed site-specific criteria for dissolved copper, dissolved lead, and dissolved zinc from the City of San Diego's Water-Effect Ratio study. These new criteria account for site-specific effects impacting the bioavailability and potential risks associated with dissolved copper, lead, and zinc detected in Chollas Creek.

- Future monitoring should continue to include the additional analytes necessary to evaluate metals toxicity using the biotic ligand model. This data will provide additional supporting information to assess compliance results when incorporating the new site-specific objectives.

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Appendix D

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The Copermittees' FY 2011 (July 1st, 2010 through June 30th, 2011) JURMP Annual Reports were used to determine quantities of inventories. The Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction
5) TCBMP

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1) Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2) Identified the Copermittees' total activity quantities for the following activities from the FY 2011 JURMP Annual Reports:
   a) Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
   b) Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3) Determined the amount of urban land use in each Copermittees' jurisdiction.
4) Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City.
5) Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation determining the Copermittee's contribution to the HA is as follows:

$$(Copermittee\ Activity\ Quantity) \times \left(\frac{Copermittee\ urban\ land\ use\ in\ HA}{Copermittee\ total\ urban\ land\ use}\right)$$

6) Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

JURMP Source and Activity Quantities Estimation Example

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1.
Jurisdiction A collected 800 tons of material from street sweeping in FY 2011.

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1.
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2011.

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1.
Jurisdiction C collected 250 tons of material from street sweeping in FY 2011.

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:

$$(800\ tons\ of\ material) \times \left(\frac{250\ urban\ land\ use\ acres\ in\ HA1}{1{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ A}\right) = \mathbf{200\ tons}$$

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:

$$(1{,}000\ tons\ of\ material) \times \left(\frac{1{,}250\ urban\ land\ use\ acres\ in\ HA1}{2{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ B}\right) = \mathbf{625\ tons}$$

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:

$$(250\ tons\ of\ material) \times \left(\frac{500\ urban\ land\ use\ acres\ in\ HA1}{500\ urban\ land\ use\ acres\ in\ Jurisdiction\ C}\right) = \mathbf{250\ tons}$$

The total amount of estimated street sweepings collected in HA1 is therefore:

$$200\ tons + 625\ tons + 250\ tons = \mathbf{1{,}075\ tons}$$

Appendix E

FY 2011 Watershed Activity Summary Sheets

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TITLE: PET WASTE BAG COLLABORATIVE WATERSHED ACTIVITY
ID #: SDB-001

ACTIVITY DESCRIPTION

The Pet Waste Bag Collaborative Watershed Activity addresses urban runoff from jurisdictional areas. It is believed that pet waste may be a potential source of high priority water quality problems such as bacteria. The use of pet waste bags helps to reduce pet waste from entering the storm water conveyance system, thereby addressing bacteria. Two important goals of this activity are to reduce the amount of pet waste found in jurisdictional areas such as parks and to provide an opportunity to educate the public on the need to cleanup after their pets. Providing pet waste bags to citizens may result in load reductions as the activity enables proper disposal of pet waste and associated pollutant categories such as bacteria.

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of pet waste bag dispensers added by a Copermittee or, 2) the number of pet waste bags removed and used, or 3) by estimating the bacteria loading based on the number of bags distributed. Implementation of educational elements of this activity may include new and/or improved signage in municipal parks describing the environmental benefits of using the pet waste bags.

During FY 2010-11 the City of San Diego conducted a study to assess the effectiveness of installing pet waste bag dispensers and related signage at Home Owner Associations (HOA) and Business Improvement Districts (Activity Summary Sheet SDB-001B). Likewise, the City of Chula Vista continued to educate HOAs (Activity Summary Sheet SDB-039) and residents (Activity Summary Sheet SDB-040) about proper pet waste disposal. Chula Vista also continued an evaluation of the use of pet waste dispensers in municipal parks. Additional assessment was undertaken by the County of San Diego, the City of National City, and the Airport Authority by estimating the amount of pet waste removed from areas within their jurisdictions.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL. The 2010 CWA Sections 305(b) and 303(d) Integrated Report of impaired water bodies identifies multiple locations within the San Diego Bay WMA for bacteria.

TIME SCHEDULE FOR IMPLEMENTATION

Table 1 below lists the San Diego Bay Copermittees participating in the Pet Waste Bag Collaborative Watershed Activity during this reporting period and in which HA(s) the activity is being conducted.

Table 1: San Diego Bay Copermittees Participation in Pet Waste Bag Watershed Activity[1]

Hydrologic Area									
Copermittee	**908.1**	**908.2**	**908.3**	**909.1**	**909.2**	**909.3**	**910.1**	**910.2**	**910.3**
Airport Authority		X							
City of Chula Vista				X				X	X
City of La Mesa		X		X					
City of Lemon Grove		X		X					
City of Imperial Beach							X	X	
City of Coronado							X		
City of National City			X	X					
County of San Diego				X	X	X		X	X
Port of San Diego	X	X	X	X			X		

PARTICIPATING COPERMITTEES

- SD County Regional Airport Authority
- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- SD Unified Port District
- City of San Diego
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies bacteria as a high priority water quality problem for all HAs. This activity directly addresses and abates a source of bacteria in all HAs.

EFFECTIVENESS MEASUREMENTS

Each Copermittee participating in this activity has chosen to calculate annual bacteria load reductions by using one or more of the following assessment mechanisms: 1) quantifying the number of additional pet waste bag dispenser installed during the reporting year, 2) identifying

[1] The manner in which pet waste bag data is recorded can vary from each of the jurisdictions, leaving room for variability in the data from year to year. Some jurisdictions report the number of pet waste bags that are purchased during the fiscal year, while others report the number of bags used during the fiscal year. This can cause data variation because some jurisdictions may be starting up new pet waste programs, causing an increase in the number of pet waste bags reported. Others may have well-established programs and just maintain their existing pet waste stations.

the number of bags removed and used from pet waste dispensers, and/or 3) estimating annual bacteria load reductions. For additional effectiveness assessment information for the City of San Diego and the County of San Diego's pet waste bag activities, please refer to Activity Summary Sheets SDB-001A and SDB-001B.

Additional Dispensers:

The City of Chula Vista installed six new pet waste bag dispensers, the City of Coronado and the City of Imperial Beach installed two additional pet waste dispensers each, and the City of San Diego installed four pet waste bag dispensers during FY 2011.

Pet Waste Bags Dispensed:

Table 2 lists the total number of pet waste bags dispensed per Copermittee. The total number of pet waste bags dispensed during FY 2010-11 was approximately 723,868.

Table 2: Number of Pet Waste Bags Dispensed

Copermittees	Number of Pet Waste Bags Used
Port of San Diego	468,000
City of Imperial Beach	83,600
City of La Mesa	10,800
City of Chula Vista	9,000
City of Coronado	90,000
Airport Authority	1,200
City of National City	5,200
County of San Diego	56,068

Proper disposal of pet waste helps to reduce bacteria from entering the storm water conveyance system. The use of pet waste bags by pet owners is another example of positive behavioral change. By providing pet waste bags and the appropriate educational signage describing the environmental benefits of the activity, the San Diego Bay Copermittees may be able to increase public awareness that removal of pet waste is a beneficial activity for water quality in which pet owners can be involved.

During this reporting period, the City of San Diego assessed the use of pet waste bag dispensers and related signage installed at two HOA and Business Improvement Districts. The study involved a pre-installation inspection of each study area in which the number of pet waste piles was recorded. Post-installation inspections were also conducted for comparative purposes. The results of the evaluation concluded that the installation of pet waste bag dispensers and related signage led to a reduction of pet waste piles. A thorough description of the activity is summarized in Activity Summary Sheet SDB-001B. Similarly, the City of Chula Vista evaluated the use of pet waste bag dispensers within municipal parks. It was determined that in the 14

parks which have pet waste bag dispensers and associated signage, there were less observations of pet waste piles left behind by dog owners. Newly constructed parks within Chula Vista are designed with special pet areas which contain pet waste bag dispensers.

Bacteria Load Reductions:

The County of San Diego, the City of National City, and the Airport Authority calculated annual bacteria load reductions. Utilizing the assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve, the County determined that the average weight of pet waste is approximately 0.2 lbs. Therefore, based on an estimated 56,068 pet waste bags used, the County estimated the amount of pet waste removed to be 11,214 lbs. Please refer to Activity Summary Sheet SDB-001A for further detail on the County of San Diego's pet waste bag activity efforts. Using the same method, the City of National City estimated the amount of pet waste removed was equal to 1,040 lbs from 5,200 bags dispensed. The Airport Authority calculated bacteria load reductions using slightly different assumptions where the average weight of pet waste is approximately 0.25 lbs and 1 gram of pet waste contains 23 million fecal coliform bacteria. A total of 1,200 pet waste bags were dispensed at the Airport's two pet relief areas. The use of pet west bags resulted in an estimated load reduction of 300 lbs of pet waste and approximately 3.12×10^{12} fecal coliform bacteria associated with the waste.

TITLE: PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS
ID #: SDB-001A

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 16 dispenser stations at 13 parks within the San Diego Bay Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain 16 dispenser stations at 13 parks within the San Diego Bay Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain 17 dispenser stations at 14 parks within the San Diego Bay Watershed.

FY10-11 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2010-11. During this reporting period the County of San Diego continued to maintain 17 dispenser stations at 14 parks within the San Diego Bay Watershed. The parks and the number of dispensers include:

Otay Lake Park (1 dispenser)
Eucalyptus Park (1 dispenser)
Goodland Acres Park (1 dispenser)
Hilton Head, Cottonwood 3 (2 dispensers)
Lamar Street Park (1 dispenser)
Spring Valley Park (1 dispenser)
Sweetwater Regional Park/Summit (2 dispensers)
Sweetwater Lane Park (1 dispenser)
Hillsdale Park (1 dispenser)
Lonnie Brewer Park (1 dispenser)
Steele Canyon Park (1 dispenser)
Cottonwood Park (1 dispenser)
Woodhaven Park (2 dispensers)
Nancy Jane Park (1 dispenser)

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for Beaches and Creeks and with other more localized TMDLs for constituents such as nutrients.

TIME SCHEDULE FOR IMPLEMENTATION

Maintenance of existing pet waste dispensers - Ongoing
Addition of new dispensers in County parks - Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria has been identified as a priority water quality problem in the San Diego Bay Watershed. Parks have been identified as potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Table 1: Facility Location and Stations

Facility Name	# of Stations	# of Bags Used	Waste Removed Lbs.
Otay Lake Park	1	3,230	646
Eucalyptus Park	1	3,230	646
Goodland Acres	1	3,230	646
Hilton Head Park	2	7,120	1,424
Lamar Street Park	1	3,230	646
Spring Valley Park	1	3,230	646
Sweetwater Regional Park/Summit	2	6,460	1,292
Sweetwater Lane Park	1	3,230	646
Hillsdale Park	1	2,998	598
Lonnie Brewer Park	1	3,340	668
Steele Canyon Park	1	3,340	668
Cottonwood Park	1	3,340	668
Woodhaven Park	2	6,880	1,376
Nancy Jane Park	1	3,220	644
Total	**17**	**56,068**	**11,214**

During the FY10-11 reporting period the County maintained 16 stations among 13 County Parks within the San Diego Bay Watershed. These stations distributed approximately 52,838, preventing an estimated 10,568 lbs. of pet waste from entering the watershed. Bacteria load

reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

1) Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
2) Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

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TITLE: **PET WASTE BAG DISPENSER PROGRAM PHASE II**
ID #: **SDB-001B**

ACTIVITY DESCRIPTION

The purpose of the activity is to assess the effectiveness of installing pet waste stations at Home Owners Associations and Business improvement Districts. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. The assessment focused on evaluating the installation of pet waste stations as a best management practice (BMP) in reducing pollutant loading in correlation with the number of bags deployed. The project includes site evaluations and selections, the installation of pet waste bag dispensers and all-in-one pet stations (dispenser and trash receptacle), pre- and post- site observations for the effectiveness assessments.

The sites were evaluated using a two-step process to screen and select potential project sites. An initial desktop site screening process was performed to identify candidate sites. Site visits were conducted at these locations to further assess the location and gather information used in the selection process.

Initial criteria used to identify the sites included: 1) areas of concentrated dog use adjacent to residential neighborhoods, 2) community and Storm Water Division staff input, 3) potential for partnerships to conduct ongoing operation and maintenance, and 4) positive community acceptance.

Geographical Information System maps depicting potential residential areas, trails, parks, schools, dog parks, and other points of interest, as well as water bodies that are 303(d) listed as impaired for bacterial indicators, nitrogen, and phosphorous, were used during the screening process to develop an initial list of potential project locations.

Based on the results of the initial screening and site assessment visits, the preliminary project locations for each watershed were further evaluated for: 1) dog-related activities within each area, 2) the availability of trash receptacles 3) the absence of pet waste receptacles, 4) the degree of pet waste observed, 5) the potential for vandalism, 6) the priority within the watershed, and 7) the potential for a site-specific contact group to be the point of contact at each site.

The two sites within the San Diego Bay WMA that were selected: DECA and 1 Mission Condos. During the initial assessments for site selection, a moderate degree (between 10 and 20 piles) of pet waste was observed at the DECA Condos; a high degree (more than 20 piles) of pet waste was observed at 1 Mission Condos.

One pet waste bag dispenser and one sign was installed at DECA and three pet waste bag dispensers and three signs, were installed at 1 Mission Condos.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2010. Installation of the pet waste bag dispensers and the effectiveness assessment concluded during FY 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City of San Diego Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What are the high pet waste use areas throughout the City where pet waste creates a pollution issue?
2) What is the most cost-effective pet waste station configuration?
3) What are the installation and operations and maintenance costs associated with pet waste stations?
4) What types of opportunities for partnerships exist for businesses, HOAs, and other community groups to sponsor pet waste stations operations and maintenance?

Targeted Measurable Outcome(s)

1) Reduction in pet waste from installation of pet waste stations.
2) Assessment of pollutant load reduction.
3) Decrease in pet waste through awareness from signage.

Assessment Method(s)

1) Monitor the pet waste reduction from pre-installation to post-installation.
2) Monitor overall pollutant load reduction from pet waste installations.
3) Monitor outcomes from sign only installation versus pet waste station installation.

Data Recorded
Weekly average of waste piles observed prior to installation (DECA Condos): 15.3
Weekly average of waste piles observed prior to installation (1 Mission Condos): 9.2

Weekly average of waste piles observed after installation (DECA Condos): 11.0
Weekly average of waste piles observed after installation (1 Mission Condos): 7.7

Weekly average number of bags dispensed (DECA Condos): 139.5
Weekly average number of bags dispensed (1 Mission Condos): 101.8

Average Weekly waste pile reduction (DECA Condos): 4.3
Average Weekly waste pile reduction (1 Mission Condos): 1.5

Percent waste reduction (DECA Condos): 28%
Percent waste reduction (1 Mission Condos): 16%

Ratio of bags dispensed to pet waste piles removed (DECA Condos): 32.2
Ratio of bags dispensed to pet waste piles removed (1 Mission Condos): 67.9

Expected Benefits
The City of San Diego Transportation & Storm Water Department, Storm Water Division (Storm Water Division) commissioned the Pet Waste Bag Dispenser Station Design and Implementation Project to assess the effectiveness of the installation of pet waste bag dispenser stations as a Best Management Practice (BMP) for reducing bacteria in the watersheds within its jurisdiction. The first phase of the Project emphasized installing pet waste bag dispensers in partnership with the Parks and Recreation Department in community parks and at open space trailheads. This second phase of the Project focused on the installation of pet waste stations in residential housing areas in partnership with Homeowners Associations (HOA), Business Improvement Districts (BIDs), and other community groups. The intent was to assess the potential for community partnerships to assist with ongoing maintenance and operation of the bag dispenser stations.

Analysis Results
Observations and pet waste pile counts were conducted for a total of twelve weeks. For six weeks prior to the installation of the pet waste bag dispensers, weekly observations and cleaning were conducted to assess the conditions at each site. An additional six weeks of observations were conducted after the installations. One of the locations was a site with signs only installed to assess the effectiveness of a sign only approach as an alternative. Prior to the installation of the pet waste bag dispensers a weekly average of 15.3 and 9.2 piles were observed at the DECA and 1 Mission Condos, respectively.

After the installation of the pet waste bag dispensers, a weekly average of 11.0 and 7.7 piles were observed at the DECA and 1 Mission Condos, respectively. The observations show an average weekly reduction of 4.3 and 1.5 piles at the DECA and 1 Mission Condos respectively.

The average weekly reduction was calculated by subtracting the pre-installation average count of observed waste and the post-installation average count of observed waste. This translates to 28% reduction at the DECA Condo and 16% reduction at 1 Mission Condos in the amount of pet waste piles observed.

Conclusions

A review of the collected data revealed the installation of the pet waste bag stations and the installation of signs contributed to the reduction of pet waste piles within the study area. The average number of bags dispensed weekly at the DECA and 1 Mission Condos corresponds to an estimated removal of 28.2 and 20.6 pounds of pet waste per week, respectively.

Overall, this activity demonstrated that there are positive, measureable pollutant load reductions due to the installation of pet waste bag dispensers and related signage.

TITLE: **EL CAJON BLVD. STORM DRAIN INLET RETROFIT FOR CHOLLAS CREEK WATERSHED PROTECTION PROJECT**
ID #: **SDB-002B**

ACTIVITY DESCRIPTION

Stormwater Drain Insert Pilot Study involves the installation of three curb inlet inserts in the San Diego Bay Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. Two inserts are installed directly in the existing curb inlets along El Cajon Blvd and one insert is installed at National Ave & 13th St. The three storm drain curb inlet inserts are retrofits within the existing storm drain system. The curb inlet inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as Trash Segregation Device Installation in the 2008 San Diego Bay WURMP. In June 2008, the sites along El Cajon Blvd were selected and the conceptual design was released for this project. An Additional Site at National Ave and 13th St was also used for this study and a drain insert was installed there as well.

Planning was initiated in FY2008 for this project which involves sites in several watersheds. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets have been retrofitted with the selected drainage inserts during the month of March in 2011 and the first phase of monitoring started during the month of September in 2011.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning concluded in 2010. The catch basin inlets have been retrofitted with the selected drainage inserts during the month of March in 2011 and the first phase of monitoring started during the month of September 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment
- Trash

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Oil & Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of the catch basin inserts?
2) How effective are these catch basin inserts at reducing priority pollutant loads?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the catch basin inserts are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

1) How much money spent on inspections and maintenance
2) Trash Capacity
3) Flooding Issues
4) Functionality during storm event
5) % Trash Bypass

Expected Benefits

Drain inserts are moderately effective at reducing discharge of trash to receiving waters when loadings are compatible with the maintenance frequency.
Excessive flow bypasses is the main cause of reduced performance.

Analysis Results

An effectiveness assessment of this activity is currently underway. The City will conduct project monitoring to evaluate the effectives of the drainage insert selected in load reduction and effluent quality.

Conclusions

Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

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TITLE: **SWEEPER SPEED EFFICIENCY STUDY**
ID #: **SDB-003B**

ACTIVITY DESCRIPTION

During FY 2011, the City of San Diego (City) implemented a sweeper speed efficiency pilot study. The Sweeper Speed Efficiency Study focused on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The City's typical street sweeper operational speed is between 6-12 miles per hour. Reduced street sweeper speed is defined as 3-6 miles per hour based on manufacture recommendations. During project planning, a commercial route along Imperial Avenue in the San Diego Bay WMA was selected for this study based on a number of criteria.

The goals of the Sweeper Speed Efficiency Study were to:
1) Assess the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed;

2) Assess the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed;

3) Assess the relative level of load reduction potential for street sweepers at various speeds; and

4) Determine the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conformed to this strategic approach by providing a phased approach. The Sweeper Speed Efficiency Study was piloted first to determine whether reducing sweeper speeds improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

TMDL APPLICABILITY

1) Chollas Creek Dissolved Metals TMDL
2) San Diego Region Beaches and Creeks Indicator Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning took place in FY 2010. Implementation and assessment was completed in FY 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- URS Corp.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo HU and recommends implementing load reduction/source abatement activities to address them. This pilot study specifically targets metals (and indirectly bacteria attached to debris and sediment) on City streets.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed?
2) What is the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed?
3) What is the relative level of load reduction potential for street sweepers at various speeds?
4) What is the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed?

Targeted Measurable Outcome(s)

1) Achieve load reduction for metals based on monitoring information

Assessment Method(s)

1) Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff)
2) Tabulation (e.g., amount of money to post additional signage and sweep medians)
3) Quantification (e.g., load estimate comparison pre and post-signage)

Recommended Data

1) Total pounds of debris removed (Outcome Level 4)
2) Total broom miles swept (Outcome Level 4)
3) Cost of sweeper repairs/maintenance (Outcome Level 1)
4) Total pounds of debris removed by land use (Outcome Level 4)
5) Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)
6) Post-sweeping COC concentrations in runoff (Outcome Level 4)

Expected Benefits

The goal of the assessment was to determine the optimal speed to operate City mechanical sweepers to maximize debris and metals removal. By reducing the operational speed of the City's street sweepers, it was anticipated that the sweepers would be able to remove more debris and metals, which may have resulted in increased load reductions for high priority water quality problems.

Analysis Results/Conclusions

Results from the Speed Efficiency study indicated that the operation of mechanical street sweepers at the two monitored operation speeds had little impact on the weight of debris collected in the field and the pollutant removal capability of the sweeping machines. The weight of material collected by the street sweepers was highly variable and did not correlate with operational speed. In addition, chemistry analysis of roadway debris samples collected prior to and after street sweeping activity revealed significant variability in both the pre-sweep and post-sweep sample results. This result is important in that the variability of the pollutant concentration at the scale of the roadway sample collection limited the ability to detect differences between the two operational speeds.

Street sweeping along Imperial Avenue associated with this pilot study resulted in the additional removal of 8,560 lbs of debris above normal City street sweeping operations. Therefore, this activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period and fulfills the requirement of a watershed water quality activity for credit in FY 2011.

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TITLE: SAN DIEGO BAY WATERSHED CLEANUP EVENTS COLLABORATIVE ACTIVITY
ID #: SDB-004

ACTIVITY DESCRIPTION

The San Diego Bay Copermittees participated in a number of cleanup events throughout the San Diego Bay WMA. The cleanup events physically removed large amounts trash, debris, and other associated pollutants from the watershed creeks, rivers, streams and shorelines. The events included jurisdictional events as well as watershed-wide efforts that were coordinated by non-profit organizations. The San Diego Bay Copermittees provided funding by sponsoring various cleanup events and/or participated by soliciting volunteers, working as site captains, and participating in the cleanup events themselves. These events actively promoted a sense of watershed stewardship to the general public and resulted in trash load reductions. Figure 1 presents the locations of cleanup activities in the San Diego Bay WMA. Cooperative efforts enable the San Diego Bay Copermittees to assess the relative trash loads for each event within each HA and the San Diego Bay WMA and determine whether there is a long-term reduction.

The Copermittees, while reporting on multiple trash cleanup events that occurred within the watershed, understand that it will only receive credit for one cleanup activity during the fiscal year. Since the San Diego Bay Copermittees sponsor the Creek to Bay Cleanup, which focuses on trash throughout the watershed and along the coast, the Copermittees prefer credit for this cleanup. In addition, the Copermittees acknowledge that trash cleanups provide more benefits than simply removal of trash; these are events that also involve education, outreach, and public participation. Therefore, the Copermittees may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

The RWQCB issued a 13267 order to the cities along Chollas and Paleta Creeks requiring trash cleanup measures and programs to be implemented. The 2010 California Integrated Report (Clean Water Act 303(d) List/305(b) Report) identified multiple locations throughout the San Diego Bay WMA with water quality impairments for bacteria, sediment toxicity, and benthic community effects. These impairments may be indirectly reduced through the cleanups. The SWRCB recently approved the Indicator Bacteria, Project I; Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek) TMDL and is currently developing a TMDL for Paleta, Switzer and Chollas Creeks for sediment toxicity.

TIME SCHEDULE FOR IMPLEMENTATION

All San Diego Bay Copermittees have actively implemented cleanup events during this reporting period. They recognize the value in cleanup activities and plan to continue to implement this type of activity in all jurisdictions in upcoming years.

LEAD WATERSHED COPERMITTEE

- SD Unified Port District

OTHER PARTICIPATING COPERMITTEES

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- SD Unified Port District
- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- 1) I Love a Clean San Diego
- 2) San Diego Coastkeeper
- 3) Port Tenants Association

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies trash as a high priority water quality problem. This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions. Increased awareness and education of the public in all HAs is also an important component. Sponsorship of cleanup events resulted in load reduction of trash and debris directly and bacteria indirectly

EFFECTIVENESS MEASUREMENTS

The cleanup events encouraged Copermittee, stakeholder, and citizen participation in implementing the Watershed Strategy. This often resulted in a level 3 outcome by causing a change in behavior, knowledge, attitude and awareness within the community of how to properly dispose of trash by the individuals involved. A level 4 outcome was also identified in all HAs due to the collection and removal of trash from the conveyance system. Relative pollutant load reductions within the watershed were assessed based on the weight of debris collected.

Table 1 describes the cleanup event activities the San Diego Bay Copermittees actively implemented during this reporting period, the HA in which the cleanup event was located, the number of participants, and the amount (lb) of trash removed.

To assess the effectiveness of cleanup activities, the number of people participating as well as the total amount of trash collected has been calculated. The number of people participating in

cleanups is utilized to convey a level three outcome to demonstrate changes in behavior in those involved in the cleanups in the San Diego Bay WMA. The amount of overall trash collected was utilized to estimate the load reductions of trash, a level four outcome level, occurring during FY 2010-11.

1) Approximately 7,000 people participated in cleanups throughout the San Diego Bay WMA.

2) The overall amount of trash collected throughout the San Diego Bay WMA during FY 2010-11 was approximately 82 tons.

3) The Creek to Bay Cleanup, sponsored by the San Diego Bay Copermittees and coordinated by I Love A Clean San Diego on April 30, 2011, removed approximately 38 tons of trash and involved 1,747 volunteers.

Table 1: Clean-up Activities for FY 2011 within the San Diego Bay WMA

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
The following jurisdictions served as site captains or financially contributed to the California Coastal Cleanup Day event: City of La Mesa, City of Lemon Grove, City of San Diego, Port of San Diego, City of National City, City of Coronado, the Airport Authority, and the County of San Diego.	908.2 909.1 910.1 910.2 910.3	9/25/2010	Coastal Cleanup Day: • 47th Street Canyon • Chollas Creek: ○ 54th Street ○ Oak Park • Bakersfield Ditch • Cooper Canyon • Coronado City Beach • D St Fill • Del Rey Canyon • Embarcadero Dive Site • Emory Cove • Florida Canyon • G Street Pier • Glorietta Bay • Imperial Beach YMCA Camp • J St Marina • Jackie Robinson YMCA • Logan Heights Street Sweep • Lower Otay Lakes • Mission Hills Canyon • Montgomery High School Native Plant Garden • Paradise Creek • Salt Creek • Silver Strand State Park • South Bay Wildlife Refuge • Southcrest Community Park • South Swan Canyon • Sweetwater Regional Park • Sweetwater River • University Channel • Western Otay Valley Regional Park • Zena Canyon	2,304	51,261
The San Diego Bay Watershed Copermittees financially sponsored the 2011 Creek to Bay Cleanup event. The following jurisdictions also served as site captains for the event: City of La Mesa, City of Lemon Grove, City of National City, City of San Diego, Port of San Diego, City of Coronado, and City of Imperial Beach.	908.2 908.3 909.1 910.1 910.2 910.3	4/30/2011	Creek to Bay: • 47th Street Canyon • Chollas Creek, 47th Street • Chollas Creek National Ave • Cooper Canyon • Coronado City Beach • Florida Canyon • Hollywood Canyon • Imperial Beach YMCA Camp • J Street Marina • Jackie Robinson YMCA • Lemon Grove • Manzanita Canyon • Maple Canyon • Mission Hills Canyon • MLK Memorial Park • Montgomery High School Native Plant Garden • North Park • Paradise Creek • Otay Lakes • Salt Creek • Southcrest Community Park • Swan Canyon • Sweetwater Regional Park • Sweetwater River • University Channel • Van Dyke Canyon • Zena Canyon	1,747	75,355

Copermittee	HA	Date	Name and Location	# of Participants	Trash (lbs)
City of La Mesa	908.2 909.1	10/23/2010	Park Appreciation Cleanup Day	145	16,155
		Various	Adopt A Park and Adopt a Block		
		Various	Partnership with Madeline's Sophie Center		
City of Imperial Beach	910.2	5/7/2011	Home Front Cleanup*	778	179
City of Chula Vista	910.2	10/16/2010	Beautify Chula Vista	600	2700
City of Coronado	910.1	11/3/2010	Beach Cleanup co-sponsored with Coronado Middle School and City of Coronado Recreation Department	576	1,309
		3/26/2011	San Diego Coastkeeper Cleanup		
Port of San Diego	908.2 909.1	8/28/2010	Operation Clean Sweep	852	17,000

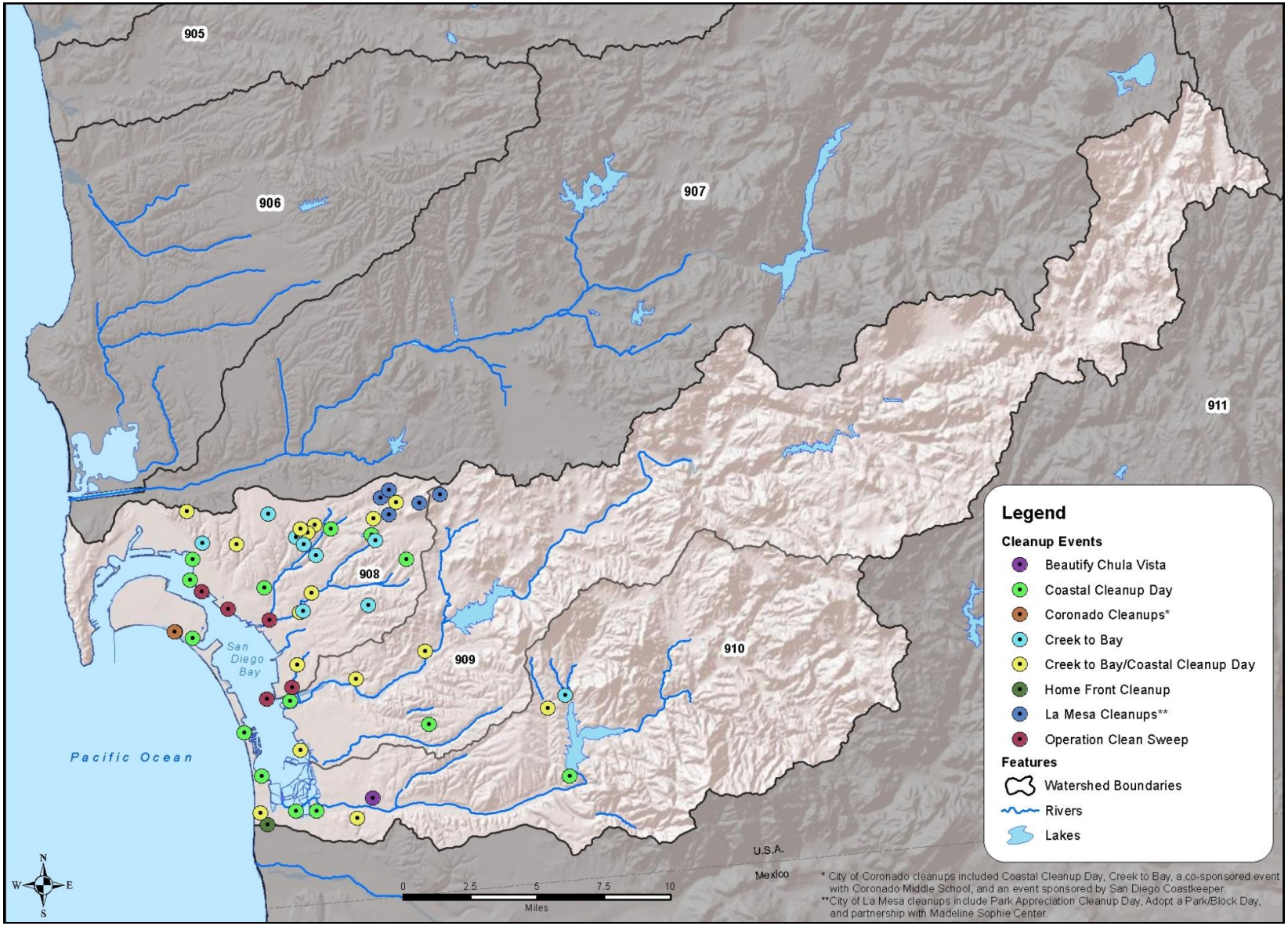

Figure 1: Clean-up Site Locations

TITLE: **CLEAN COMMUNITY PROGRAM**
ID #: **SDB-005**

ACTIVITY DESCRIPTION

The City of National City (City) has implemented a program to encourage individuals to dispose of waste properly. Cleanup and disposal events represent actions undertaken by citizens that actively reduce the amount of litter and trash that could be discharged to receiving water bodies. Such events also encourage a behavioral change for the community by potentially changing the manner in which trash was disposed of by individuals. This program included two disposal events for large items and green waste. These events provided individuals with an avenue for properly disposing of items that might otherwise have been illegally dumped. The City alerted residents to these events beforehand via notices in their trash bills.

The City has also hired a company to clean Paradise Creek twice per month. The cleaning mainly involves checking for the presence of trash and debris and removing trash that is noted.

Finally, the City continues to hold a Storm Water Program art contest for third grade school children in all the elementary schools in the City. The contest involved class presentations and preparing artwork in accordance with the theme "By Keeping our Community Clean, We Can Keep the Ocean Clean." The twelve winning drawings will be incorporated into the upcoming 2012 Storm Water Calendar along with watershed-themed messages about keeping the City and local water bodies clean. The City plans to distribute copies of the 2012 calendar during the FY 2012 reporting period.

TMDL APPLICABILITY

The City of National City was not tributary to an adopted TMDL during FY 2010-2011.

TIME SCHEDULE FOR IMPLEMENTATION

2011

LEAD WATERSHED COPERMITTEE

- City of National City

OTHER PARTICIPATING COPERMITTEES

- City of National City

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Watershed Strategy in that it focuses principally on pollutant load reductions, but increased awareness and education of the public in all HAs is also an

important component. Bacteria, which may also be addressed through this activity, are categorized as a high priority water quality for all HAs in the City of National City.

EFFECTIVENESS MEASUREMENTS

In November 2010 and in June 2011, 826 tons of large-item waste was collected from 1,916 vehicle loads during the three events.

For the city's calendar contest, teachers in all 43 third grade classrooms within the City introduced storm water concepts, using presentation materials from the school district representative, and distributed flyers that explained the contest guidelines. The flyer received by each student to take home also included storm water educational information. Approximately 845 elementary students in 45 classrooms received the contest flyer and a lesson about the contest theme "By Keeping our Community Clean, We Can Keep the Ocean Clean."

TITLE: ADDITIONAL DRY SEASON CONSTRUCTION INSPECTIONS
ID #: SDB-007

ACTIVITY DESCRIPTION

During FY 2010-2011, the City of National City (City) conducted additional inspections of construction sites during the dry season to reduce the potential for the discharge of sediment. According to the jurisdictional requirements presented in the Municipal Permit, construction sites (any priority) should be inspected as needed during the dry season. Additional construction inspections were conducted during the dry season to identify any areas where BMP implementation is not being maintained properly, particularly toward the end of the dry season when sites need to be preparing for the wet season. This program aims to decrease discharges of trash and sediment to the MS4. Increased construction inspection frequencies during the dry season will contribute to improvements in water quality by reducing the loads of pollutants such as sediment and trash entering the city's MS4 and downstream receiving waters. This effort will promote BMP implementation at construction sites during the dry season and will help prepare construction sites for the upcoming wet season.

TMDL APPLICABILITY

The City of National City was not tributary to an adopted TMDL during FY 2010-2011.

TIME SCHEDULE FOR IMPLEMENTATION

2011

LEAD WATERSHED COPERMITTEE

- City of National City

OTHER PARTICIPATING COPERMITTEES

- City of National City

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Increased construction inspection frequencies during the dry season are intended to reduce the discharge of trash and sediment, which have been listed as high priority water quality problems in 908.3 HA. This effort is consistent with the collective Watershed Strategy in that it seeks to reduce the loads of these pollutants and abate pollutant sources.

EFFECTIVENESS MEASUREMENTS

Excluding complaint investigations, the City completed 6 inspections at construction sites during the portions of the 2010 and 2011 dry seasons that fell within the FY 2011 reporting

period: July 1, 2010 through September 30, 2010 and May 1, 2011 through June 30, 2011. Inspectors found that these inspections helped contractors stay vigilant about implementing BMPs during the dry season and that they were especially helpful toward the end of the dry season, when the inspectors could also remind the responsible parties of applicable wet season requirements. BMP deficiencies noted during the dry season inspections enabled the City to require resolution before the wet season.

TITLE: ENHANCED CONSTRUCTION OVERSIGHT
ID #: SDB-009

ACTIVITY DESCRIPTION

The Airport Authority continues to oversee construction projects in a manner that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Construction Oversight Program is to abate the amount of sediment potentially released to the watershed from construction sites. The Airport Authority first began to implement this enhanced program in fiscal year 2004-2005. In addition to increasing construction site inspection frequencies, staff from the Airport Authority Environmental Affairs Department attend pre-construction meetings and regularly scheduled progress meetings more frequently than required by the Permit during both the wet and dry seasons. The regular meetings are used as an opportunity to focus the attention of project managers on BMPs directed at preventing the discharge of sediment to the storm drain system. During meetings and inspections, staff discuss the need for erosion & sediment controls such as soil stabilization and tracking controls throughout the life of the project. Heightened awareness of proper erosion & sediment control BMP implementation increases the likelihood of erosion & sediment control BMP effectiveness, which in turn helps to abate the amount of sediment loading to San Diego Bay. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of erosion & sediment control BMPs. By changing the way in which individuals implement BMPs, this program results in a level 3 outcome. The program also estimates the amount of sediment abated from impacting stormwater discharge quality, which is a level 4 outcome.

The Enhanced Construction Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates construction sites as a source of sediment in the watershed. Abatement of sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Construction Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of sediment as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

- Permit Year 1: Implementation
- Permit Year 2: Implementation
- Permit Year 3: Implementation
- Permit Year 4: Implementation
- Permit Year 5: Implementation

LEAD WATERSHED COPERMITTEE

- SD County Regional Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Construction Oversight Program intends to abate sediment associated with construction sites and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies sediment as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS MEASUREMENTS

The Airport Authority tracks the number of construction project regular progress meetings attended, the number of site inspections conducted in excess of the minimum number required by the Municipal Permit, and the number of sediment source control BMP issues identified during inspections. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual sediment pollutant load abated by 1) estimating, based on review of the literature and/or other sources, sediment loads per construction site per day when erosion & sediment controls are not implemented, and 2) tracking the number of erosion & sediment control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

EFFECTIVENESS ASSESSMENT

There were 10 construction projects underway at San Diego International Airport during FY10-11. Staff from the Authority Environmental Affairs Department attended 318 construction project meetings related to these 10 projects during FY10-11 and conducted a total of 151 inspections. Based on the requirements of the Municipal Permit, the Authority need have only conducted 71 inspections, which means 80 more inspections were conducted than required by the Municipal Permit. Out of the 151 inspections conducted, issues or concerns related to erosion & sediment control were only identified 13 times. Given that issues/concerns regarding erosion & sediment control were only identified approximately 8.6% of the time, the Enhanced

Construction Oversight Program appears to be effective at ensuring construction site erosion & sediment control BMPs are properly implemented over the life of the construction project.

To estimate the reduction in sediment load to the watershed resulting from implementation of the Enhanced Construction Oversight Program, the Authority used the method first outlined in the State Water Resources Control Board March 18, 2008 Draft NPDES Construction General Permit (Draft Permit); a methodology which has since been incorporated into the final adopted NPDES Construction General Permit (CGP) – (http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml) Appendix 1 of the CGP present a methodology using the Revised Universal Soil Loss Equation (RUSLE) to estimate soil loss from exposed soil at a construction site if there were no BMPs in place. The Authority used this equation to compare the sediment load from a construction site without proper erosion and sediment control BMPs to the sediment load from a construction site with properly implemented BMPs. The difference between the two calculations is the estimated reduction in sediment load to the watershed. The MUSLE equation can be expressed as:

Erosion Estimate (sediment load) in tons/acre/year = R*K*LS*C*P

Where: R = rainfall intensity factor.
K = soil erodibility factor
LS = length-slope factor
C = cover factor (erosion controls)
P = management operations and support practices factor (sediment controls)

Appendix 1 of the CGP requires that value of R be obtained from an EPA website (http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm). The Airport Authority used the one year period July 1, 2010 to June 30, 2011 to determine the R factor for the airport site (R = 20). Appendix 1 of the CGP features a link to a geographic information systems map of K values across California. The K value for the airport site is 0.32. Finally, Appendix 1 features a table of LS values based on angle and length of slope and the Authority has used this table to calculate an average LS value for the airport. Given the relatively flat topography at the airport, the Airport Authority determined an LS value of 1.0 to be appropriate.

The cover factor (C) and the management operations and support practices factor (P) can then be modified to calculate erosion estimates assuming 1) no erosion and sediment controls and 2) proper controls. The cover factor (C) and the management operations and support practices factor (P) are calculated as "1 - % effectiveness of control expressed in decimal form." As noted on page 28 of the CGP Fact Sheet, the C and P factors are given values of 1.0 to simulate bare ground conditions (that is, no BMPs). A Washington State Department of Transportation document entitled "Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control" (http://www.wsdot.wa.gov/research/reports/fullreports/200.1.pdf) notes that properly implemented erosion control BMPs generally have an effectiveness of 50% (so, C

= 1 - 0.5 = 0.5) and that a properly designed sediment basin as a means of sediment control generally have an effectiveness of 80% (P = 1 – 0.8 = 0.2).

Thus, the estimated sediment load (erosion estimate) that would have likely been generated from construction projects at the airport that had no erosion controls (that is, C = 1 – 0 =1) and no sediment controls (that is, P = 1 – 0 = 1) during FY10-11 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 20 * 0.32 * 1.0 * 1 *1

Erosion Estimate (sediment load) in tons/acre = 6.4

The Airport Authority estimates that the 10 construction projects underway at the airport during FY10-11 covered approximately 202 acres of surface area. As such, the amount of sediment that could have been released to the watershed by construction projects underway at the airport during FY10-11 equals:

Erosion Estimate (sediment load) = 6.4 tons/acre * 202 acres = 1292.8 tons

Similarly, the estimated sediment load (erosion estimate) that was likely generated from construction projects at the airport that did implement effective erosion controls (that is, C = 0.5) and sediment controls (that is, P = 0.2) during FY10-11 can be expressed as:

Erosion Estimate (sediment load) in tons/acre = 20 * 0.32 * 1.0 * 0.5 * 0.2

Erosion Estimate (sediment load) in tons/acre = 0.64

As such, the amount of sediment that was likely released to the watershed by construction projects underway at the airport during FY10-11 despite the effective implementation of appropriate erosion and sediment control BMPs, equals:

Erosion Estimate (sediment load) = 0.64 tons/acre * 202 acres = 129.28 tons

Therefore, the sediment load reduction resulting from the implementation of the Enhanced Construction Oversight Program equals the difference between the amount of sediment that would have been released from construction sites without BMPs and the amount of sediment that was likely released despite the implementation of adequate and effective BMPs. For the FY10-11 reporting period, the sediment load reduction would be equal to:

Sediment load reduction = 1292.8 – 129.28 tons = 1163.52 tons

In light of this significant reduction, the Authority believes that the Enhanced Construction Oversight Program is effective at ensuring proper BMP implementation at construction sites.

TITLE: LA MESA BUSINESS INSPECTION SUPPLIMENTAL WATERSHED QUESTIONARIE
ID #: SDB-010

ACTIVITY DESCRIPTION

To gather more information regarding the level of storm water awareness of business owners/operators and to collect additional information regarding the condition of industrial and commercial sites, the City of La Mesa (City) completed an additional one-page supplement to the standard industrial and commercial inspection form. The first five questions on the form gathered information from business owners/operators regarding their knowledge of storm water, water quality issues, sources of pollutants, and whether or not they had previously received information regarding storm water. The inspector was prompted to make observations regarding the types of sprinkler heads on site, the percent of the pervious area that was landscaped, if there was any evidence of non-storm water discharges, and the business owner/operators attitude toward compliance with storm water regulations. The last question on the Supplemental Watershed Assessment Questionnaire and Inspection Form prompts the inspector to assign either significant or not significant to the overall source ranking for watershed pollutants of concern. This box was checked 'Significant' when two or more of the watershed pollutants of concern were assigned a pollutant discharge potential (PDP) of three (3) or higher or one watershed pollutant of concern was assigned a PDP of a four (4) or higher. If the site did not meet the aforementioned criteria, the box was checked 'Not Significant.' The City intends to use the data to identify groups and/or areas in need of increased and more focused outreach and to identify potential pollutant sources.

The information gathered from the Supplemental Watershed Assessment Questionnaire and Inspection form allows the City to collect additional information regarding the specific knowledge of business owners/operators and to identify sites that are potentially significant sources of watershed pollutants of concern. The City intends to use the collected data to develop more effective outreach measures and to identify potential sources of watershed pollutants of concern. Inspectors also give businesses corrective actions based on the findings; implementing corrective actions should result in a reduction of pollutants discharged to the storm drain system.

TMDL APPLICABILITY

TMDLs for metals and diazinon have been adopted for the Chollas Creek subwatershed. The data collected as part of this watershed activity enables the City to identify areas of need related to education and awareness of storm water issues among businesses in the watershed.

TIME SCHEDULE FOR IMPLEMENTATION

Multi-Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

- City of La Mesa

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Pesticides

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is identifying potentially significant sources of these pollutants during its industrial and commercial storm water compliance inspection program. The City can use this information to target specific businesses and business types.

EFFECTIVENESS MEASUREMENTS

This was the fourth year that the supplemental watershed questionnaire was used during industrial and commercial inspections. The City plans to use this collected data to compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach. It is anticipated that comparison assessments of both level Two (change in knowledge or awareness) and level Three (change in behavior) outcomes will be possible as future data is collected.

To conclude the survey, inspectors provided verbal explanations and education about storm water issues and BMPs to individuals that were unable to answer the survey questions correctly. The majority of facility personnel were receptive to storm water-related regulations.

TITLE: **DALBERGIA STREET GREEN MALL INFILTRATION PROJECT**
ID #: **SDB-013**

ACTIVITY DESCRIPTION

The original concept for this project planned for the removal conventional asphalt paving along Dalbergia Street and Thor Street (industrial/commercial area) and replacement with pervious concrete paving. Bioretention planter boxes were planned to be installed as well.

In April 2009, contaminated soils were discovered in the planned infiltration areas. As such, a new location near Dalbergia Street and Vesta Street was chosen for the project. In June 2009, the second site also showed signs of contaminated soils in areas to be used for infiltration. A third site along Main Street and 30th Street was chosen. The third site was found to be too small to treat the required amount of water. This project has been cancelled.

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in September 2006. The design consultant started work in FY 2009 only to find contaminated soil in infiltration areas. This project is cancelled.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Pesticides
- Sediment

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TITLE: SOUTHCREST PARK GREEN LOT INFILTRATION PROJECT
ID #: SDB-014

ACTIVITY DESCRIPTION

This activity will involve the installation of a below-grade storage and infiltration basin the grassy areas of Southcrest Park. Diversion structures will divert runoff from the existing storm drain system that runs through the parking area to the infiltration areas. The site design has incorporated various Low Impact Development (LID) approaches in an integrated manner. These approaches include replacing existing asphalt roads and parking lot with porous. This site was selected for its likely higher permeability soils and location next to the creek. Infiltration from the underground units will seep into the creek and will not impact down-gradient structures.

The project will be designed according to the integrated approach outlined in the City of San Diego Strategic Plan for Watershed Activity Implementation (November 2007) of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, help meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA). The City of San Diego has named this model approach for LID as Green Lots and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Preliminary engineering was completed in October 2009. The project is currently in the 30% design phase. The planned implementation date is FY 2013. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

TMDL APPLICABILITY

Chollas Creek Dissolved Metals TMDL
San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Preliminary engineering was completed in October 2009. The planned implementation date is FY 2013. Water quality monitoring is anticipated to be conducted before and after construction.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt, underground storm water storage vaults, and rain barrels?
2) How much reduction in runoff volume can be achieved through LID retrofits?
3) How efficient are LID retrofits in reducing pollutant loads?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure LID retrofits working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction)
3) Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)

Data Recorded

N/A

Expected Benefits

The goal of the assessment is to determine the efficiency of the Southcrest Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Analysis Results

This activity was not in active implementation in FY 2011. Therefore, assessment is not feasible at this time. Project design will continue in FY 2012.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time. The planned implementation date is FY 2013. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

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TITLE: MEMORIAL PARK GREEN LOT INFILTRATION PROJECT
ID #: SDB-015

ACTIVITY DESCRIPTION

This activity involves the installation of a large underground chamber to collect and then slowly infiltrate urban runoff into the underlying subsoils. This underground system will be located within Memorial Park, thereby transforming the recreational facility into a dual use site for both urban runoff pollution reduction and recreation. The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, and pesticides TMDLs. The pollutant load reduction from this facility will, therefore, meet requirements under current and anticipated TMDLs in the receiving waters of Chollas Creek, which flows into the San Diego Bay. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA). The City has named this model approach for Low Impact Development (LID) as Green Lots and, if proven to be effective, anticipates eventually implementing similar Low Impact Development (LID) projects on a broader scale throughout the San Diego Bay WMA to comply with both Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

Chollas Creek Dissolved Metals TMDL
San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. Design was completed September 2009. Construction took place between July 2010 and Spring 2011. Water quality monitoring began in Winter 2011 once the project was operational.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to

address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) How much load reduction can be achieved by retrofitting parking lots and parks with LID features such as porous asphalt and underground storm water storage vaults?
2) How much reduction in runoff volume can be achieved through LID retrofits?
3) How efficient are LID retrofits in reducing pollutant loads?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure LID retrofits working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction)
3) Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)

Data Recorded

N/A

Expected Benefits

The goal of the assessment is to determine the efficiency of the Memorial Park Green Lot Infiltration Project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Analysis Results

Project completed construction in FY11. Water quality monitoring is in progress and is expected to be completed in FY12.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

TITLE: **ENHANCED DRY WEATHER MONITORING PROGRAM**
ID #: **SDB-020**

ACTIVITY DESCRIPTION

The Airport Authority continues to conduct dry weather monitoring at a frequency that exceeds the requirements of the Municipal Permit. The goal of the Enhanced Dry Weather Monitoring Program is to identify sources of stormwater pollution in the watershed. The Airport Authority first began to implement this enhanced program in FY 2005-06 by increasing the frequency of dry weather monitoring from the Permit requirement of once per dry weather season to at least three times during the dry weather season. The increased frequency increases the chances that illegal discharges and their sources might be identified, which in turn helps to reduce pollutant loading to the watershed and San Diego Bay. During meetings and inspections, staff will discuss the need for sediment controls such as soil stabilization and tracking controls throughout the life of the project.

Information collected by the Enhanced Dry Weather Monitoring Program will also be used to characterize dry weather discharge water quality in general and to influence and assess ongoing watershed management and planning activities. The elimination of illegal discharges generally requires that dischargers gain some awareness of stormwater pollution prevention and understanding of proper BMP implementation. By changing the way in which dischargers implement BMPs, this program results in a level Three Outcome. The program may also be able to estimate the pollutant loads eliminated and thus no longer impacting stormwater discharge quality, which is a level Four Outcome.

The Airport Authority intends to track the number of dry weather monitoring events conducted in excess of the minimum number required by the Municipal Permit, and the number of illegal discharges identified. Overtime, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the pollutant load abated using the known pollutant discharge concentrations and estimating the discharge duration. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

The Enhanced Dry Weather Monitoring Program is an important water quality activity in the San Diego Bay Watershed because it helps to identify and eliminate sources of illegal discharges in the watershed. Identification and elimination of illegal discharges within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the

RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Enhanced Dry Weather Monitoring Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of bacteria, copper, and other pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

LEAD WATERSHED COPERMITTEE

- SD County Regional Airport Authority

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Enhanced Dry Weather Monitoring Program intends to identify and eliminate sources of illegal discharges and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies bacteria, metals, pesticides, sediment, and trash as high priority water quality problems for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on identification of pollutant sources, including these high priority pollutants.

EFFECTIVENESS MEASUREMENTS

During the 2011 dry weather monitoring season, the Authority conducted three monitoring events as part of the enhanced dry weather monitoring program. The dry weather monitoring was conducted two times more frequently than required by the Municipal Permit. Since no illegal discharges were identified during the 2011 dry season reporting period, there are no discharge durations to associate with pollutant discharge concentrations, and thus, no estimate of a load reduction can be made. Conversely, since no illegal discharges were identified, it is assumed there was no increase in pollutant loading to the watershed and/or San Diego Bay.

TITLE: **COORDINATED DRY WEATHER MONITORING PROGRAM**
ID #: **SDB-021**

ACTIVITY DESCRIPTION

Each Copermittee is required to implement a Jurisdictional Dry Weather Monitoring (DWM) Program as part of the Illicit Discharge Detection and Elimination Component of the Municipal Storm Water Permit (Order No. 2007-0001). Each Copermittee has developed and implemented a DWM program as required by the Permit but due to logistical constraints, site monitoring and sample collection within each jurisdiction often are conducted independent of other jurisdictions. The San Diego Bay Copermittees recognize that coordinated DWM efforts could be more effective because illicit discharges may cross jurisdictional boundaries. Since 2004, San Diego Bay Copermittees have made efforts to coordinate their individual jurisdictional DWM sampling efforts for select locations and dates.

The Airport Authority, the City of San Diego, and the Port of San Diego continued to plan and coordinate dry weather sampling activities within 908.1 and 908.2 HAs during the 2011 dry weather monitoring season (May 1 to September 30). By simultaneously monitoring at the outfalls (Port jurisdiction) and at sites upstream (Airport Authority and City of San Diego jurisdictions), the Copermittees intend to detect potential illicit discharges, characterize pollutants within dry weather flows, and facilitate upstream source identification.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

Permit Year 07-08: Implementation
Permit Year 08-09: Implementation
Permit Year 09-10: Implementation
Permit Year 10-11: Implementation
Permit Year 11-12: Implementation

LEAD WATERSHED COPERMITTEE

- SD Unified Port District

OTHER PARTICIPATING COPERMITTEES

- SD County Regional Airport Authority
- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Gross Pollutants

- Metals
- Nutrients
- Pesticides

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The coordination of DWM programs is considered a beneficial water quality activity in the San Diego Bay WMA because it will potentially identify sources of discharges and provides comprehensive detection, analysis, and investigation of pollutant discharges at a watershed level. Current jurisdictional DWM programs are effectively identifying and eliminating illicit discharges. When discharges cross jurisdictional boundaries, however, the follow-up investigation is passed from one jurisdiction to another, creating a potential lag time in the response. Coordinated efforts increase the efficiency and effectiveness of jurisdictional programs and allow analysis at a watershed level.

EFFECTIVENESS MEASUREMENTS

Sampling was coordinated one time for three exclusive stormdrain systems during the 2011 DWM season. Coordinated monitoring among all three Copermittees occurred on 6/6/2011. Each coordinated effort is described below.

Stormdrain System 1

All three participating Copermittees coordinated DWM efforts on Stormdrain System 1 in Point Loma HA (908.1). Figure 1 portrays the coordinated monitoring effort along Stormdrain System 1. The City of San Diego's site (DW239) is a manhole located in the Midtown area of San Diego on California Street near the intersection with Laurel Street. The site is surrounded by industrial and transportation, including rail and highway, land uses. The City of San Diego collected a sample for field and laboratory analysis.

The Airport Authority monitored site CB01-1a, which is adjacent to the runway surrounded by airline transportation and industrial activities. The monitoring location was ponded on 6/6/2011. A sample was collected for field screening. Laboratory analysis was not conducted.

The Port of San Diego monitored an outfall downstream of the Airport Authority and the City of San Diego sampling sites. The Port of San Diego's sampling site is located near the intersection of Harbor Drive and Laurel Street alongside the San Diego Bay (4. Laurel Street). Surrounding land uses include industrial, transportation, and recreational. The Port recorded tidal conditions at the sampling site. A sample was not collected for field screening nor laboratory analysis due to tidal inundation.

There was no evidence of illegal discharges within the vicinity of the monitoring sites where samples were collected by the City of San Diego and the Airport Authority. A high rate of flowing water was observed at the site monitored by the City of San Diego; however, the source of the discharge was not located. Ponded conditions observed at the Airport site may have

been a result of light rain which fell on the morning of 6/6/2011. Constituents with action level exceedances during the coordinated sampling are shown in Table 1.

Table 1. Constituents with Action Level Exceedances During Coordinated Sampling.

Copermittees	Site ID	Constituents
City of San Diego*	DW239	No DWM Action Level Exceedances
Airport Authority	CB01-1a	No DWM Action Level Exceedances
Port of San Diego	4. Laurel Street	NS

NS – Site was not sampled due to dry or tidal conditions.

Figure 1. Stormdrain System 1 Coordinated Dry Weather Monitoring Sites.

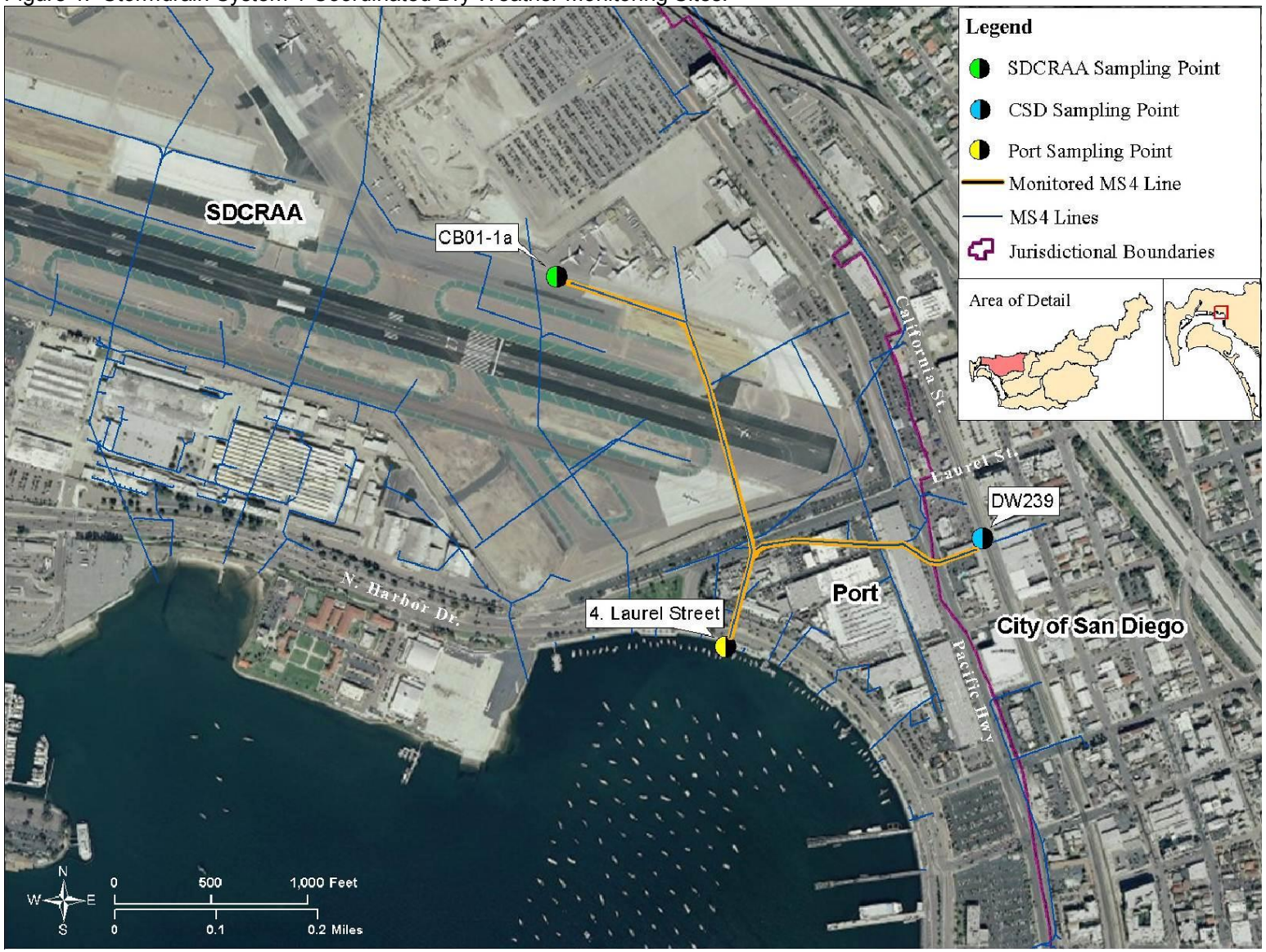

Stormdrain System 2

The City of San Diego and the Port monitored coordinated sites along Stormdrain System 2 within the vicinity of Downtown San Diego near PETCO Park and the Convention Center in San Diego Mesa HA (908.2). Figure 2 portrays coordinated monitoring sites along Stormdrain System 2. The City of San Diego's site (DW812) is located at the intersection of Tony Gwynn Drive and Park Avenue. Surrounding land uses include industrial and transportation, including rail transportation. The Port's site (E10-2.1) is an outfall located along a seawall at the Fifth Avenue Landing behind the Convention Center. Surrounding land uses include recreational and commercial uses.

Both the City of San Diego and the Port collected samples for field screening and laboratory analysis. The City of San Diego determined the source of the dry weather flow located at Site DW812 to be an open sewer diverter from PETCO Park. The open diverter resulted in a sewage discharge with probable exceedances of bacteria indicators. Further information regarding this incident can be found in the City of San Diego's 2010-2011 Annual JURMP Report.

Downstream, Port staff noted dry weather flows at the outfall. However, visual observations did not indicate odors or other signs of a sewage infiltration. Laboratory analysis was conducted for site E10-2.1 and the results did not demonstrate high levels of bacteria. Conductivity results were elevated suggesting a mixture of tidal and fresh water within the conveyance system. Constituents with action level exceedances during the coordinated sampling effort are shown in Table 2.

Table 2. Constituents with Action Level Exceedances During Coordinated Sampling.

Copermittees	Site ID	Constituents
City of San Diego	DW812	Bacteria
Port of San Diego	E10-2.1	Conductivity

Figure 2. Stormdrain System 2 Coordinated Dry Weather Monitoring Sites

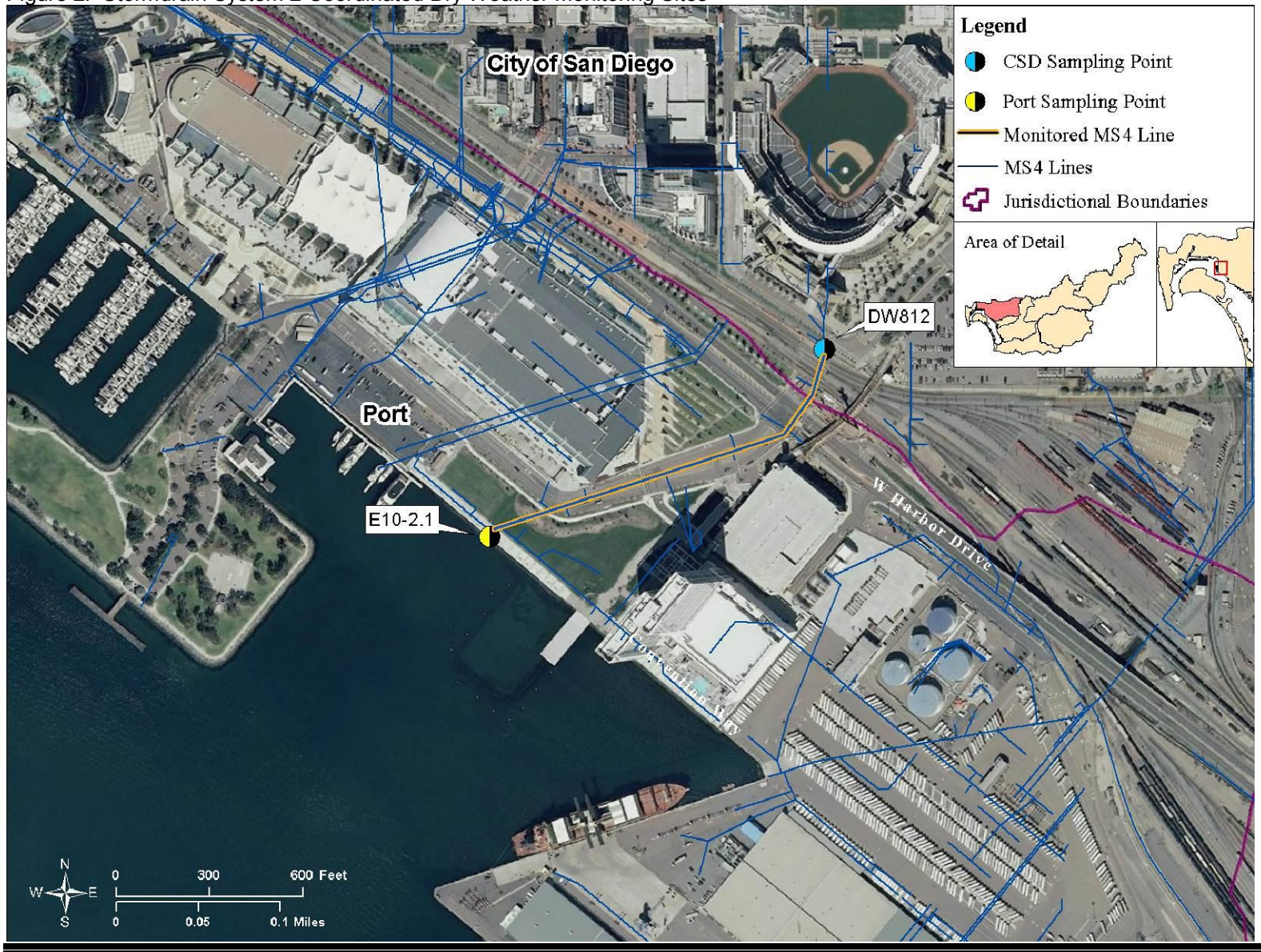

Stormdrain System 3

The City of San Diego and the Port of San Diego monitored a third coordinated site on 6/6/2011. Figure 3 portrays the coordinated DWM effort conducted along Stormdrain System 3 in Point Loma HA (908.1). The coordinated sites are located within the Point Loma/Shelter Island Yacht Basin area of San Diego. The City of San Diego's monitoring site is located near the intersection of Rosecrans and Upshurs Streets (DW432). Surrounding land uses include commercial, transportation, and residential uses. The City of San Diego collected flowing water samples for field and laboratory analysis.

The Port of San Diego's sampling site drains into the Shelter Island Yacht Basin, at the foot of Talbot Street. The site receives drainage from residential and commercial land uses. The Port of San Diego collected flowing water samples for field and laboratory analyses as well. Visual observations did not indicate the source of the dry weather flow through the stormdrain system. Bacteria indicator results for Enterococcus exceeded Dry Weather Monitoring action levels. Constituents with action level exceedances during the coordinated sampling effort are shown in Table 3.

Table 3. Constituents with Action Level Exceedances During the Coordinated Sampling.

Copermittees	Site ID	Constituents
City of San Diego	DW432	No DWM Action Level Exceedances
Port of San Diego	CSD 145	Bacteria

Figure 3. Stormdrain System 3 Coordinated Dry Weather Monitoring Sites

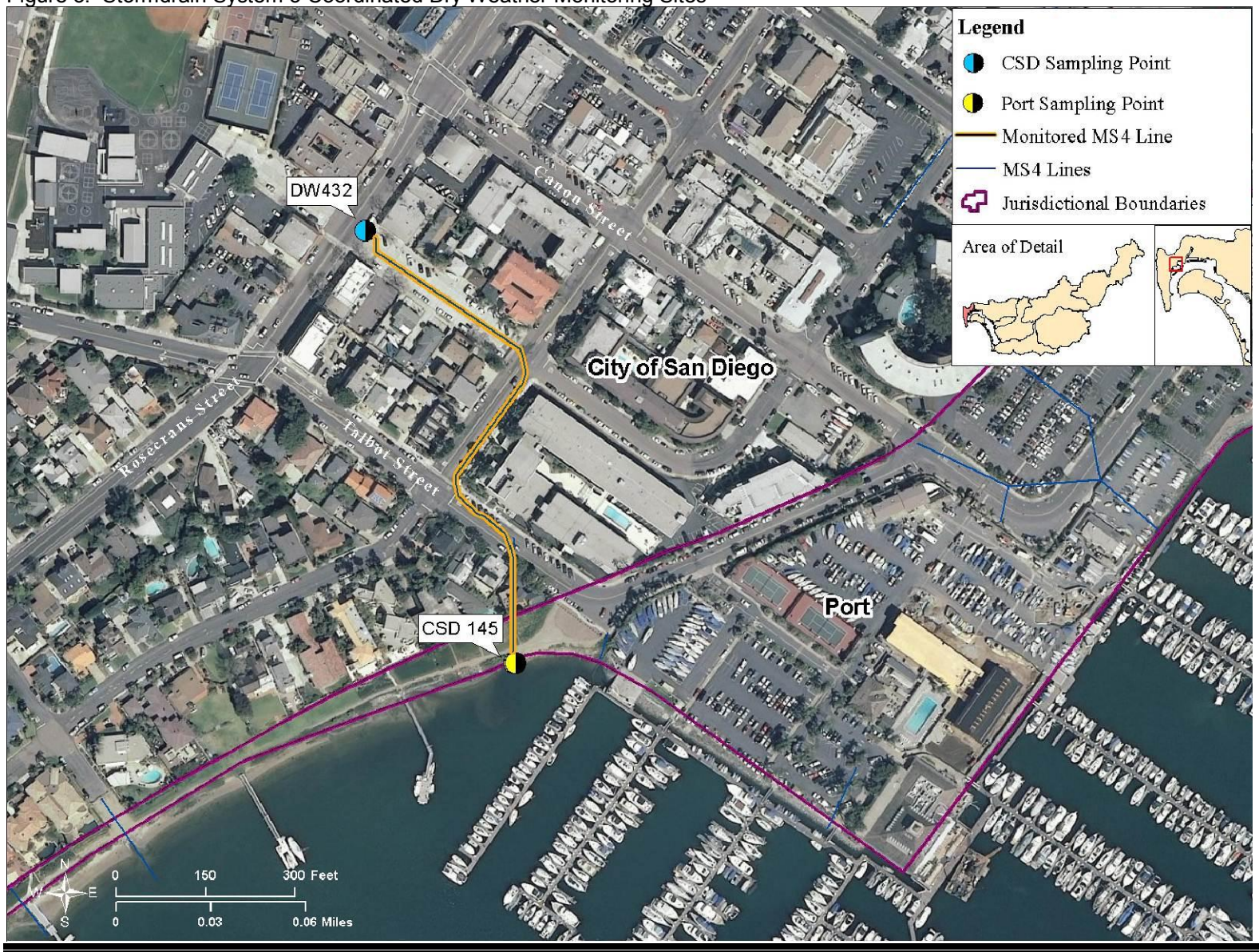

Conclusions

Despite success in coordinating the monitoring efforts, results did not exhibit a discernible pattern between the upstream and downstream monitoring sites. Along Stormdrain System 2, the City of San Diego identified sewage infiltration into the stormwater conveyance system. Downstream of this location, the Port's sampling results did not demonstrate elevated indicator bacteria results. The Port investigated the conveyance system upstream of the monitoring location to check for signs of sewage infiltration. The results of the investigation did not reveal indications that sewage had flowed through the system. These findings suggest that the conveyance system may not be connected as expected.

Along Stormdrain System 3, the Port's downstream monitoring results exhibited exceedances indicator bacteria concentrations for Enterococcus. The City of San Diego's monitoring results upstream of the outfall did not demonstrate constituent exceedances. Visual observations recorded at both locations revealed similar flow rates. After further review of the area between the two sampling locations, determination on the source was unable to be made as there were no other inputs to the conveyance system found.

The Airport Authority, the City of San Diego, and the Port of San Diego will assess and modify the monitoring site locations as needed to improve the coordinated dry weather monitoring program for the 2012 dry weather monitoring season. Coordinated follow-up investigations will also be considered for the 2012 dry weather monitoring season to increase the effectiveness of identifying potential sources of high priority pollutants.

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TITLE: LA MESA ADDITIONAL WATER QUALITY MONITORING PROGRAM
ID #: SDB-022

ACTIVITY DESCRIPTION

To more effectively characterize source of pollutants, the City of La Mesa (City) has conducted additional water quality monitoring within the San Diego Bay Watershed. In the reporting period, the two additional sites sampled in previous years were sampled for the City's dry weather monitoring. Samples taken from these sites during dry weather conditions are analyzed for watershed constituents of concern.

In FY 10-11 TSS Sampling at UNI-002 and UNI-003 were removed in order to increase bacteria sampling in San Diego River Watershed.

TMDL APPLICABILITY

Monitoring is conducted in support of California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). Dry weather sampling results support identifying exceedances in pollutant loading for dissolved copper, lead, zinc, and diazinon. Furthermore, data enables the City to identify potential sources and conduct targeted educational outreach.

TIME SCHEDULE FOR IMPLEMENTATION

Multi-Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

- City of La Mesa

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high water quality problems in the watershed. The City is monitoring for these constituents in order to identify sources of potential pollutants/exceedances. Once identified, the City can take the appropriate action. This monitoring activity supports the Watershed Strategy by identifying priority pollutant sources; the City can then use this information to target activities.

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Monitoring is not considered a watershed water quality activity based on the Municipal Permit Order R9-2007-001 definition; however, data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

TITLE: REGIONAL HARBOR MONITORING PROGRAM
ID #: SDB-025

ACTIVITY DESCRIPTION

In July 2003, the RWQCB, under 13225 of the California Water Code, requested the development of a coordinated and comprehensive harbor water quality monitoring program for harbors in the San Diego Region. San Diego Bay is one of the four harbors included in the Regional Harbor Monitoring Program (RHMP). The objectives of the RHMP are to:

1. Determine the contributions and spatial distributions of inputs of pollutants to harbors in the San Diego Region and how these inputs vary over time.
2. Determine whether the waters in harbors are safe for body contact activities.
3. Determine whether fish in harbors are safe to eat.
4. Determine whether the waters and sediments in the harbors sustain healthy biota.
5. Determine the long-term trends in water quality for each harbor.

The RHMP is an essential element in identifying trends and assessing ambient conditions in San Diego Bay. The program includes monitoring for metals, bacteria, organic compounds, and toxicity and will improve assessments of the watershed priority pollutants and provide a program from which to assess overall water quality improvements. While this program does not specifically reduce loads of high priority pollutants, data collected will provide important information to the Copermittees on the ambient receiving water conditions.

The RHMP involves an ambient, or core, monitoring program to collect water and sediment samples in San Diego Bay and the other harbors to assess the overall condition of the harbors, with supplemental focused studies to answer specific questions. A key item in the program involves dividing the Bay into 'stratified' regions to enhance data assessments and refine potential sources of pollutants. The delineation of the harbors allows for an assessment of pollutant sources and inputs based on activities within each stratum. Five strata were identified: marinas, industrial/port, freshwater influenced, shallow water, and deep water. All five strata are present in San Diego Bay. The RHMP core monitoring effort was coordinated with the Bight Regional Monitoring Program and was successfully completed in August 2008.

Focused studies will be used to further investigate and identify particular sources of pollutants and the impacts of pollutants on water quality and aquatic resources. The RHMP focused special studies will target copper in marinas over the next four years. The marina strata are often areas of impaired waters, such as the SIYB in San Diego Bay. The focused special studies will 1) assess the extent of copper contamination within marinas (2009), 2) identify causes of toxicity through toxicity identification evaluations (TIEs) in sediment and overlying water tests (2010), 3) conduct water effects ratio (WER) studies to determine the bioavailability and toxicity of copper and support the development of site-specific water quality objectives (SSOs) (2011), and 4) use laboratory and field studies to determine sediment copper flux (2012). The core

monitoring program will reoccur in coordination with the 2013 Bight Regional Monitoring Program.

TMDL APPLICABILITY

The 2010 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and metals.

TIME SCHEDULE FOR IMPLEMENTATION

Permit Year 07-08: Implementation
Permit Year 08-09: Implementation
Permit Year 09-10: Implementation
Permit Year 10-11: Implementation
Permit Year 11-12: Implementation

LEAD WATERSHED COPERMITTEE

- SD Unified Port District

OTHER PARTICIPATING COPERMITTEES

- City of Oceanside
- SD Unified Port District
- City of San Diego

OTHER PARTICIPATING ENTITIES

- County of Orange

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Oil & Grease
- Pesticides
- Sediment

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Conditions
- Nutrients
- Organics

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The RHMP is considered a beneficial water quality activity in the San Diego Bay WMA because it will enable water quality improvements or degradations to be more readily identifiable. The monitoring will also provide trend information by repeating at a specified frequency to obtain

statistical trend data for the indicators. Furthermore, the RHMP is designed to integrate with existing monitoring that is regularly conducted in the region, including storm water monitoring, other permit compliance monitoring, regional Bight monitoring, special focused studies and is designed to integrate with the State's Surface Water Ambient Monitoring Program (SWAMP).

EFFECTIVENESS MEASUREMENTS

Literature Review Special Study:

During 2009-2010, a focused special study was conducted which reviewed the existing literature and data to assess the spatial extent of copper contamination within the RHMP harbors, specifically focusing on the marina stratum. This comprehensive literature review included an assessment of sediment and surface water concentrations, copper loading, observed toxicity, and physical conditions within marinas that may affect copper bioavailability. Specifically, this task included a review of the primary peer-reviewed literature as well as key regional reports. The copper literature review was completed during this reporting period. The results of the literature review indicated that copper has the potential to result in adverse biological effects in RHMP harbors.

Toxicity Identification Evaluation (TIEs):

A second special study was conducted during this reporting period in which water and sediment Toxicity Identification Evaluation (TIEs) were performed. The TIEs were carried out to identify the causes of toxicity at RHMP 2008 stations that exhibited substantial chronic toxicity. At stations where sediment and/or surface water toxicity were found to occur within marinas, TIEs were used to experimentally examine the constituents likely to cause toxicity within RHMP marinas, including copper and other cationic materials. The results of this special study will be available during the following reporting period.

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TITLE: COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT STUDY IN CHOLLAS CREEK
ID #: SDB-032

ACTIVITY DESCRIPTION

In FY 2009, the City of San Diego utilized professional research consultants to develop and implement an education and outreach strategy to address litter in the Chollas Creek Watershed using Community-Based Social Marketing (CBSM). This strategy uses observations, interventions, and assessment methods in an effort to identify barriers to the public to reduce littering, the steps needed to remove those barriers, and solutions which may include structural interventions and/or additional education and outreach strategies to residences and businesses.

Activities in FY 2009 included selection of pilot and control areas of Chollas Creek and identification of trash and litter as a target behavior, development of an observational research protocol for assessing litter behavior and barriers, development of materials for data collection, developing and conducting a training session for Think Blue and ILACSD staff and volunteers, coordination and scheduling of observation sessions, as well as observational research protocol development, data collection, entry, and management. Additionally, recommendations for structural interventions and education and outreach strategies were presented to the city. Initial clean up of the pilot and control areas occurred in FY 2009. Implementation of the structural and educational elements was delayed in FY 2010 due to structural and budgetary impediments. The pilot study is being re-evaluated to determine how quickly the project can resume. No timetable has been established as of the FY11 reporting period. Updates will no longer be reported for this project until it resumes.

TMDL APPLICABILITY

Chollas Creek Dissolved Metals TMDL
San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

After initial planning in FY 2008, the city began implementation of the Chollas Creek CBSM pilot project in FY 2009, though it was placed on hold in FY 2010.

LEAD WATERSHED COPERMITTEE

- City of City of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria & Pathogens
- Heavy Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Pueblo Watershed (more specifically Hydrologic Area 908.2). Implementation of this activity will address the high priority water quality problem by identifying the behaviors in the WMA contributing to trash loading (which acts a bacteria vector) and testing outreach strategies to determine their effectiveness in reducing loads before broad-scale implementation.

EFFECTIVENESS MEASUREMENTS

Management Question

1) What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution?
2) What changes in behaviors were observed after CBSM implementation?

Targeted Measurable Outcomes

1) Reach goal number of people within the watershed, based on survey results
2) Increased level of knowledge/attitude based on post-activity surveys

Assessment Methods

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)
2) Quantification (e.g., number of residents reached by pamphlet)

Conclusions

In FY 2009 the baseline observations; development of CBSM intervention; and community clean up portions of the project were completed. Due to structural and educational implementation delays, implementation of the CBSM intervention and follow-up observations are on hold.

TITLE: **UPDATE RECYCLING AND SOLID WASTE PLANNING MANUAL**
ID #: **SDB-035**

ACTIVITY DESCRIPTION

In order to address contributions of pollutants, particularly bacteria, from trash and recycling areas from new multi-family residential and commercial land uses, the City of Chula Vista (City) updated the design requirements in its Recycling and Solid Waste Planning Manual. The City requires that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rainwater from entering the trash areas, as well as eliminate pollutant runoff from these areas.

Over previous reporting periods, the City's Storm Water Management Section staff worked closely with the Environmental Services staff to update the manual in order to include this requirement for new development and redevelopment projects with trash enclosures. In September 2008, City Council approved the updated manual and it became a part of Chula Vista Municipal Code. The Environmental Services Department reviews all projects that are subject to these requirements and ensures that these structures are built.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Permit Year 1: Planning
Permit Year 2: Implementation
Permit Year 3: Implementation
Permit Year 4: Implementation
Permit Year 5: Assessment

LEAD WATERSHED COPERMITTEE

- City of Chula Vista

OTHER PARTICIPATING COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Updating the Recycling and Solid Waste Planning Manual in the City of Chula Vista aims to improve the quality of runoff that enters the storm drain system and eventually San Diego Bay.

It intends to reduce high priority pollutants such as bacteria, trash, and nutrients from entering the storm drain system. Bacteria is a high priority pollutant throughout San Diego County and the San Diego Bay watershed. This effort seeks to reduce pollutant sources from trash areas as a source abatement measure.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through levels Three and Four. BMP implementation and pollutant load reductions will be assessed by tracking the number of trash enclosures constructed with the new design criteria within the City. Also, estimations can be made about the amount of trash generated per person based on the number of dwellings within a project. The estimated amount of trash that could have possibly come in contact with storm water before the updates to the manual will be assessed as a load reduction.

As in previous reporting years, there has been a significant decrease in development projects coming to the City for review. Since the ordinance was adopted in September 2008, it is estimated that around 50 projects have been reviewed that had to meet this requirement. These projects have mostly included commercial projects and a few multi-family residential projects. In the coming years, it is anticipated that development will pick up and there will be more projects that will be subject to these requirements.

TITLE: **43RD & LOGAN BIOFILTRATION PROJECT FOR CHOLLAS CREEK WATERSHED PROTECTION (GREEN STREET)**
ID #: **SDB-037**

ACTIVITY DESCRIPTION

The 43rd Street and Logan Avenue Biofiltration Project will consist of two main low impact development (LID) features: linear filtration units along the curbside of 43rd Street and Logan Avenue and a triangular biofiltration basin on the undeveloped and vacant northwest corner lot at 43rd Street and Logan Avenue. Storm water runoff will be diverted from adjacent streets to the two LID features. The biofiltration basin will retain the water in an open vegetated basin for percolation through 18 inches of a loamy sand soil media for pollutant removal. The linear filtration units will retain the water in 14 inch layer of loose rock for percolation through 18 inches of sand and surface modified zeolite for pollutant removal.

This project is part of a roadway realignment project that the Right of Way Division of the Engineering and Capital Projects Department is implementing. Project design was complete in FY 2009. This Tier II project, according to the City of San Diego Strategic Plan for Watershed Activity Implementation (Strategic Plan), will be implemented to achieve a high level of effectiveness in reducing pollutant loads. This project will address metals and bacteria in line with the City of San Diego Strategic Plan. The main goal of the project is to identify a BMP design that is compatible with the operational requirements of the public street right of way, and that achieves performance comparable to the BMPs identified in the Model SUSMP as having a high pollutant removal efficiency.

A grant deed is being processed under an agreement with the San Diego Community College District which transfers the lands but allows the biofiltration basin to remain under the City control as drainage infrastructure within an easement.

TMDL APPLICABILITY

Chollas Creek Dissolved Metals TMDL; San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project will be implemented in FY 2012. Assessment will be conducted in FY 2014.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via biofiltration.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) How much load reduction can be achieved using filtration planters and biofiltration basins?
2) How much reduction in runoff volume can be achieved using filtration planters and biofiltration basins?
3) How efficient are planters and basins in reducing pollutant loads?

Targeted Measurable Outcomes

1) Reduction in pollutant loads
2) Reduction in runoff volume
3) Improvements in discharge quality

Assessment Methods

1) Inspections (e.g., ensure planters and basins working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction)
3) Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)

Data Recorded

Estimated construction cost (Outcome Level One) $600,000

Recommended Data

1) Number of inspections (Outcome Level One)
2) Design, installation, and maintenance costs (Outcome Level One)
3) Operations and maintenance challenges (Outcome Level One)
4) Percent change in load reduction pre- and post-implementation (Outcome Level Four)
5) Percent change in discharge quality and runoff volume (Outcome Level Five)

Expected Benefits
The BMPs being tested could be used in a number of other locations throughout Chollas Creek, as well as other watersheds once it is determined that the BMP is practical and effective at removing pollutants typically found in street runoff.

Analysis Results
No results available at this time.

Conclusions
No conclusions available at this time.

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TITLE: CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION
ID #: SDB-038

ACTIVITY DESCRIPTION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the Strategic Plan for Watershed Activity Implementation (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program conducted by the Public Utilities Department involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. The rebate program was implemented in FY11.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the support of storm water and urban runoff pollution management efforts of the public.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, implementation and assessment completion anticipated in FY 2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

1) Chollas Creek Diazinon TMDL
2) Chollas Creek Dissolved Metals TMDL
3) San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Oil & Grease
- Pesticides
- Sediment
- Trash

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Organics

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City Strategic Plan and the Copermittees Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS MEASUREMENTS

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: **PROVIDE HOMEOWNER'S ASSOCIATION EDUCATION ABOUT STORM WATER POLLUTION PREVENTION**
ID #: **SDB-039**

ACTIVITY DESCRIPTION

The City of Chula Vista (City) plans to encourage homeowner associations (HOAs) to provide storm water pollution prevention education to residents in the neighborhoods they manage. Originally the main focus of the activity was to survey HOAs about pet waste signs and plastic bag dispensers within their community, as well as educate residents and home owners via the HOA about the importance of cleaning up after pets. The activity has evolved to become more encompassing, not only educating about pet waste disposal, but about other pollutant generating residential activities such as landscaping and home improvements.

During the planning phases of previous fiscal years, the City compiled contact information about the HOAs within the City as well as looked at potential methods for reaching HOAs in the City. This fiscal year, the City contacted several HOAs and provided storm water pollution prevention flyers in English and Spanish to the HOAs for distribution to the communities they manage. In addition, several HOAs and developers have contacted the City for additional educational materials to give to new residents. This information will be provided in next year's annual report.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

1) Permit Year 1: Planning
2) Permit Year 2: Implementation
3) Permit Year 3: Implementation
4) Permit Year 4: Implementation
5) Permit Year 5: Implementation/Assessment

LEAD WATERSHED COPERMITTEE

- City of Chula Vista

OTHER PARTICIPATING COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients
- Oil & Grease

- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity aims to reduce the amount of pollutants entering the storm drain system from residential areas. Since this activity is geared towards residential pollutant generating activities, it covers a variety of pollutant categories, including bacteria. This activity is consistent with the Collective Watershed Strategy because it will contribute to improvements in water quality and encourage stakeholder buy-in and participation.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity was assessed through levels 2 and 3. During this fiscal year, the City provided 250 storm water pollution prevention fliers to HOAs in the City. This flyer is written in both English and Spanish and reviews basic storm water concepts and ways that residents can prevent pollution during landscaping, vehicle repair, and home improvement projects. These flyers were distributed to the neighborhoods of Otay Ranch, San Miguel Ranch, Rolling Hills Ranch, and Sunbow via recreation centers and HOA board meetings. The City will continue to collaborate with HOAs in order to educate residents about pollution prevention.

TITLE: STORM WATER EDUCATION BOOTH AT PET FESTIVAL AND DOGGY DASH
ID #: SDB-040

ACTIVITY DESCRIPTION

The City of Chula Vista (City) plans to educate its residents about proper pet waste disposal and its possible effects on water quality at its annual Pet Festival and Doggy Dash. This outdoor community event involves the general public, especially pet owners and their pets. During the reporting year, the City's Storm Water Management Section had a booth for the third annual event on 06/18/11 in Memorial Park in Downtown Chula Vista. At the booth, City staff provided basic storm water education to residents and provided brochures about pollution prevention. A storm water awareness survey was also implemented to assess storm drain awareness and BMP implementation among attendees. Residents who completed a survey received a goodie bag with a pet waste bag holder and educational brochures.

TMDL APPLICABILITY

The City of Chula Vista does not discharge to water segments with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Permit Year 1: Planning/ Implementation
Permit Year 2: Implementation/ Assessment
Permit Year 3: Implementation/ Assessment
Permit Year 4: Implementation/ Assessment
Permit Year 5: Implementation/ Assessment

LEAD WATERSHED COPERMITTEE

- City of Chula Vista

OTHER PARTICIPATING COPERMITTEES

- City of Chula Vista

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the Collective Watershed Strategy in that it aims to contribute to improvements in water quality by eliminating sources of pollutants, particularly bacteria from pet waste.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be assessed through level 2 - changes in knowlegde, attitudes, and awareness. A survey was implemented at the Pet Festival with questions focused on behaviors related to storm water pollution prevention and BMP implementation. In

order in increase participation, the City had a number of giveaways as an incentive for residents to complete a survey. The main giveaway was a pet waste bag dispenser that clips on to a dog's collar with a printed message to remind residents pick up after their pet. In order for the resident to receive a dispenser, she/he had to complete a survey. A total of 70 surveys were completed at the event. The table shows the general results of the survey.

The majority of survey respondents said that they use a plastic bag and trash to dispose of their pet's waste, showing that residents are implementing pet waste BMPs.. In addition, they are even more encouraged to pick up after their pets when they receive the pet waste bag dispenser. Although it is evident that residents know how to dispose of their pet's waste properly and that it is the right thing to do, it is still important that they be encouraged to continue this behavior.

TITLE: **LA MESA PARK KIOSK**
ID #: **SDB-042**

ACTIVITY DESCRIPTION

During 2010-2011 the City of La Mesa (City) maintained the education outreach kiosk at one of the seven parks within the City in the San Diego Bay Watershed, Vista La Mesa Park. This kiosk was constructed in 2007, with the help of the local Eagle Scouts. The kiosk presents storm water pollution prevention education outreach materials, including the San Diego Bay Watershed Fact Sheet and the Chollas Creek TMDLs Fact Sheet, along with other storm water related materials. The watershed fact sheet provides information on the watershed, pollutants of concern, and tips to prevent storm water pollution. The TMDLs fact sheet includes a map indicating which part of La Mesa is in the Chollas Creek HSA, background about the Chollas Creek Dissolved Metals and Diazinon TMDLs, and a list of best management practices that businesses can take that will help reduce the loads of pesticides and metals discharged.

The expected benefit is that park-goers and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

Kiosk Re-stained in FY 2010-2011. Information updated quarterly.

TMDL APPLICABILITY

Education outreach is a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The kiosk includes a San Diego Bay Watershed Fact Sheet that lists diazinon and metals as pollutants of concern as well as tips to prevent storm water pollution. The City's Chollas Creek TMDLs Fact Sheet is also displayed in the kiosk.

TIME SCHEDULE FOR IMPLEMENTATION

Multi- Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

- City of La Mesa

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Pesticides

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The education outreach kiosk provides pollution prevention tips to address those watershed priority pollutants. The kiosk supports the Watershed Strategy by educating residents in the vicinity of the park on good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the watershed and region. The kiosk provides educational outreach materials specific to the watershed to address pollution prevention measures.

TITLE: **ILACSD HIGH SCHOOL WATERSHED PRESENTATIONS**
ID #: **SDB-045**

ACTIVITY DESCRIPTION

The San Diego Bay WURMP Workgroup recognizes the benefits of providing storm water and watershed education to elementary, middle, and high school children and how this type of watershed activity is an integral part of fostering positive behavioral change. Changing attitudes and behaviors in students can provide long-lasting impressions that follow a child into adulthood. The San Diego Bay Watershed Copermittees decided to continue this activity into the current reporting period due to the success of the I Love a Clean San Diego (ILACSD) Watershed Education Presentation Program in FYs 2009 and 2010. The ILACSD presentations for FY 2011 focused on high school students. The Cities of Chula Vista, Imperial Beach, La Mesa, the Port of San Diego, and the San Diego County Regional Airport Authority (Airport Authority) have collaborated on an education outreach effort to provide presentations to elementary and high school students that focus on watershed protection, pollution prevention, and BMP implementation. Assisted by ILACSD, the San Diego Bay Copermittees were able to reach 363 high school and 236 elementary students in the San Diego Bay WMA during the presentations for this watershed activity in the reporting year. The City of San Diego also hosted presentations with the help of ILACSD within the San Diego Bay WMA to approximately 1,320 high school students as a part of its jurisdictional education program during the reporting period.

The overall goal of this activity was to educate students about the sources of pollution in their neighborhoods so that they will realize how their daily activities may impact their watershed. In turn, the hope is that the students will gain a sense of ownership for their watersheds and influence their families to implement BMPs and good housekeeping practices. Pre- and post-test were administered to assess any changes in attitude, knowledge, and awareness of watersheds, storm water, and pollution prevention concepts. A 30-minute presentation was given to the students that reviewed storm water and watershed basics, sources of pollutants, how pollutants get into our waterways, pollution prevention, and recycling. Following the presentation was an interactive activity for the students to reinforce concepts learned during the presentation. Table 1 lists the watershed education presentations given to high schools in the Cities of Imperial Beach, National City, La Mesa, and Chula Vista. In addition, presentations were given at two elementary schools in La Mesa during this reporting period.

Table 1 FY 2010-11 San Diego Bay Collaborative ILACSD Watershed Education Presentations

Copermittee	HA	School	Number of Students
San Diego County Regional Airport Authority	Pueblo 908.2	Palomar High School	27
City of Chula Vista	Otay 910.2	Castle Park High School	110
City of Imperial Beach	Otay 910.1	Mar Vista High School	92
Port of San Diego	Pueblo 908.2	Helix High School	134
TOTAL			**363**
City of La Mesa	Pueblo 908.2	Dale Elementary School	70
		Rolando Elementary	166
TOTAL			**236**

In addition, the City of San Diego also hosted presentations with the help of ILACSD within the San Diego Bay WMA as a part of its jurisdictional education program during the reporting period. Although these presentations occurred in the San Diego Bay WMA and covered watershed concepts, different pre- and post-test assessment tools were used. As a result the findings from these tests were not included in the activity effectiveness assessment for this watershed education activity. Table 2 summarizes the additional presentations. It should be noted that with these additional presentations, the San Diego Bay Copermittees were able to provide watershed education to 1,683 high school and 236 elementary students during the reporting year.

Table 2: Additional High School Presentations in the San Diego Bay Watershed

Copermittee	HA	School Name	Number of Students
City of San Diego	908.1	Point Loma High School	440
		High Tech High	60
	908.2	Crawford School of IDEA/MVAS/LAB	295
		San Diego High School	465
		Lincoln High School	60
TOTAL			**1,320**

TMDL APPLICABILITY

The 2008 CWA Section 303(d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for a number of high priority pollutants. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect

beneficial uses in these impaired water body segments. Concepts in the presentations are applicable to the Chollas Creek Dissolved Metals TMDL and Chollas Creek Diazinon TMDL in the Pueblo Sand Diego HU (908.2 HA).

TIME SCHEDULE FOR IMPLEMENTATION

Permit Year 1: Planning
Permit Year 2: Implementation/ Assessment
Permit Year 3: Implementation/ Assessment
Permit Year 4: Implementation/ Assessment
Permit Year 5: Implementation/Assessment

LEAD WATERSHED COPERMITTEE

- SD Unified Port District

OTHER PARTICIPATING COPERMITTEES

- SD County Regional Airport Authority
- City of Chula Vista
- City of Imperial Beach
- City of La Mesa
- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Consistent with the Collective Watershed Strategy, this activity addresses several high priority water quality problems in the San Diego Bay WMA. This is a source control activity in which the overall goal is to prevent pollution from residential sources by providing education to students.

EFFECTIVENESS MEASUREMENTS

In order to assess effectiveness of this high school education activity and to assess a change in knowledge in the students, the same questions were asked in the pre- and post-test. The test consisted of 9 multiple-choice questions, and questions 10 and 11 were related to a scale that asked students the likelihood of a behavior. An example test is attached to this education activity summary sheet. The pre- and post-test cumulative results, as shown in Table 3, were

based on responses from 363 students. A summary of the results by question is shown in Table 3.

Table 3: ILACSD Watershed High School Presentations Pre- and Post-Test Cumulative Results

Question	Pre-Test (% correct)		Post-Test (% correct)
1) What is a watershed?	25.1		64.2
2) Watershed boundaries are determined by:	40.2		70.0
3) What water body does your watershed drain into?	54.3		88.2
4) What happens to rain that falls on urban areas covered with concrete or asphalt?	49.9		66.4
5) Which of the following types of water is carried by the storm drain system?	22.9		46.8
6) Water that passes through the storm drain system is:	33.1		57.9
7) Grass clippings, leaves, and other yard waste that enters storm drains:	28.1		58.1
8) Which of the following actions can directly reduce storm water pollution?	65.3		74.1
9) Paper cups, cans, and plastic bottles that are thrown onto streets or into gutters:	52.3		65.6
Average % Correct	**41.2**		**65.7**
10) In the next 30 days, how likely is it that you will personally take action to prevent storm water pollution? (0 = Not At All –10 = Extremely Likely)	0	13.8	8.8
	1	3.9	2.5
	2	7.7	4.7
	3	9.9	7.4
	4	6.9	5.0
	5	**17.1**	13.2
	6	8.3	7.7
	7	8.8	9.9
	8	5.2	14.3
	9	3.3	6.6
	10	8.8	**16.5**
	No Answer	6.3	3.3
11) How likely is it that you will tell other members of your family about how to prevent storm water pollution? (0 = Not At All –10 = Extremely Likely)	0	**14.6**	10.7
	1	6.3	4.1
	2	3.6	3.0
	3	8.0	6.1
	4	7.2	3.3
	5	11.8	11.6
	6	8.8	6.9
	7	10.5	12.4
	8	5.5	9.6
	9	7.2	10.2
	10	10.2	**18.7**
	No Answer	6.3	3.3

Assessment of the pre- and post-tests results indicate that there was an overall increase in knowledge among all the students. In reviewing Questions 1-9, there was an increase in the

percent of students who answered the questions correctly in the post-test, showing that the presentation improved the students"; knowledge of watershed concepts and pollution prevention. In Questions 10-11, there was an increase in the number of students more likely to participate in education and take action to improve water quality after the presentation. The pre- and post test results for the elementary schools in the City of La Mesa also indicated an increase in knowledge among those students, as indicated by the increase in correct answers in the pre- and post-tests from 57% to 73%, respectively.

The San Diego Bay Copermittees have determined that this activity is effective at increasing knowledge, attitudes, and awareness in high school students, and plan to implement this activity in upcoming years, as funding is available. Future efforts may include the continuation of focusing education on specific age groups or grade levels. Based on teacher feedback, the San Diego Bay Copermittees will also work to further improve the presentation, and tailor it to address the high priority pollutants of specific hydrologic areas.

ILACSD staff presenting the watershed model to elementary students in the City of La Mesa.

ILACSD staff during presentation to high school students

TITLE: **LAND ACQUISITIONS SAN DIEGO BAY WATERSHED (909.1, 909.2, 909.3, 910.2, 910.3)**
ID #: **SDB-046**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY2007-08 reporting period there was 0.84 acres of land acquired in the San Diego Bay WMA.

During the FY 2008-09 reporting period the MSCP acquired 385.38 acres of property located in the San Diego Bay WMA.

During the FY 2009-10 reporting period the MSCP acquired 1,095.49 acres of property located in the San Diego Bay WMA.

During the FY 2010-11 reporting period the County acquired 711.80 acres of property in the San Diego Bay WMA. The current acquisitions are shown in Table 1.

Table 1: FY2010-11 Land Acquisitions for San Diego Bay WMA

Property	Acres	Date	Watershed ID	APN(S)
Otay Ranch P.O.M.	488.13	Aug – Nov	910.31, 910.32	598-070-10, 598-070-08, 647-100-08, 647-100-10
Crest Acquisitions	233.67	July -June	909.23	399-030-18 – 21; 401-101-10 - 13
TOTAL	**711.80**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Oil & Grease
- Pesticides
- Sediment
- Trash

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Conditions
- Dissolved Minerals
- Nutrients
- Organics

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting

load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

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TITLE: **LARGE SPECIAL EVENT INSPECTION AND CLEAN-UP**
ID #: **SDB-047**

ACTIVITY DESCRIPTION

The City of Imperial Beach (City) hosts the annual U.S. Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food venders, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street venders for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the San Diego Bay WMA.

LEAD WATERSHED COPERMITTEE

- City of Imperial Beach

OTHER PARTICIPATING COPERMITTEES

- City of Imperial Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria & Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the San Diego Bay. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors during large special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level One, Level Two, Level Three, and Level Four compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2011, the City required the proper disposal of recycled waste at all special events and the implementation of storm water BMPs when appropriate. The City held 12 large special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition, which during the weekend of July 12th-13th drew an estimated crowd of over 800,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event to ensure the implementation of the BMPs. Most street venders were aware of the storm water requirements and were implementing proper storm water BMPs. Vendors not implementing proper BMPs were cited and provided further information to correct behavior. Over the weekend three Notices of Violations (NOVs) were issued.

The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event. The recycling efforts resulted in a large amount of mixed recyclables and cardboard being recycled.

As a result of the effectiveness assessment of this activity, the City recognizes a deficiency in education opportunities for the general public. Future efforts will continue implementing the existing large special event clean up and inspection activities while continuing to enhance the opportunities for education, especially for the general public. Program effectiveness for targeting water quality is expected to continually improve as special event applicants and vendors become familiar with city's storm water and recycling programs.

TITLE: **OUTDOOR SPECIAL EVENT OVERSIGHT**
ID #: **SDB-048**

ACTIVITY DESCRIPTION

The Airport Authority oversees the manner in which outdoor special events are set up, conducted, and cleaned. The goal of the Outdoor Special Event Oversight Program is to abate the amount of trash and debris potentially released to the watershed from these events. Staff from the Airport Authority Environmental Affairs Department attend pre-event meetings and/or conduct a pre-event site inspection to ensure that there are an adequate number of recycling containers and trash cans properly located at the venue. The site is also inspected immediately after the event is over to ensure that trash and debris have been properly disposed. The meetings and inspections are used as an opportunity to focus on stormwater pollution prevention in general and properly controlling sources of trash to the storm drain system. In addition to establishing pre- and post-event inspection activities, the program also increases interaction with event planning and execution staff while on-site. Heightened awareness of proper trash management and source control BMP implementation increases the likelihood of trash control BMP effectiveness, which in turn helps to abate the amount of trash loading to the San Diego Bay watershed. The program cultivates awareness of stormwater pollution prevention and responsibility for the health of local water bodies, which in turn leads to proper implementation of trash control BMPs. By changing the way in which individuals implement BMPs, this program results in a Level Three Outcome. The program may also estimate the amount of trash abated from impacting stormwater discharge quality, which would be a Level Four Outcome.

The Airport Authority tracks the number of outdoor special events that occur, the number of pre-event meetings attended, the number of pre- and post-event site inspections conducted, and the number of trash source control BMP issues identified during the inspections. Over time, these data will provide an assessment of program effectiveness. In addition, the Airport Authority intends to estimate the annual trash pollutant load abated by 1) estimating, based on review of the literature and/or other sources, trash loads per event when trash management controls are not implemented, and 2) tracking the number of trash control BMP implementation issues identified during inspections. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

The Outdoor Special Event Oversight Program is an important water quality activity in the San Diego Bay Watershed because it abates the trash potentially generated from these events from entering in the watershed. Abatement of trash within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects,

and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Outdoor Special Events Oversight Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of trash as one pollutant potentially impacting sediment toxicity and the degradation of benthic communities in San Diego Bay.

LEAD WATERSHED COPERMITTEE

- SD County Regional Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Outdoor Special Event Oversight Program intends to abate trash associated with special events and thereby improve the quality of urban runoff discharging into the San Diego Bay. The Watershed Strategy identifies trash as a high priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on source abatement.

EFFECTIVENESS MEASUREMENTS

During FY10-11 the Airport Authority conducted outdoor special event oversight for two events, the Employee Appreciation BBQ and the Rock and Roll Marathon. One pre-event inspection and 1 post event inspections was conducted for each event. No issues related to improper trash source control BMP implementation were identified during the pre or post-event inspections. The Airport Authority has not yet drawn any conclusions on the effectiveness of this program since this was only the third year of implementation of this program, only two special events occurred during the year, and the literature search estimating trash loads per outdoor special event are still being evaluated. An assessment of program effectiveness will be possible once more data has been compiled.

TITLE: MAPLE STREET CANYON WATER QUALITY IMPROVEMENT PROJECT
ID #: SDB-049

ACTIVITY DESCRIPTION

The Maple Street Canyon has a tributary watershed of approximately 90 acres. The watershed is generally located between Walnut Street to the north, Maple Street to the south, 6th Av to the east, and Curlew Street to the west. This project focuses on significantly reducing sediment migration due to highly erosive conditions through channel stabilization and upgrades to the existing basin outfall, and reducing pollutant loading from urban runoff through natural treatment systems, Low Impact Development (LID) Best Management Practices (BMPs), and gross solids removal in the mesas at three of the outfalls.

The project will be designed to address an integrated approach of meeting current and pending pollutant reduction goals for the dissolved metals, bacteria, pesticides and sediment. This project will also provide a direct and measurable load reduction to the San Diego Bay Watershed Management Area (WMA.) The City has named this model approach for LID as Sustainable Canyons and, if proven to be effective, anticipates eventually implementing similar LID projects on a broader scale throughout the San Diego to comply with both Municipal Permit and TMDL requirements.

Phase 1 of the project involves 15 storm drain extensions and LID on the mesas.

Project planning began in September 2008 and concluded in March 2010. The City decided to split this project into two phases: storm drain extensions and work in the canyon bottom. Phase 1 will begin in FY12 with preliminary engineering. Design will continue in FY13 and beyond. Construction is anticipated to occur in FY 2015. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Design will continue in FY13 and beyond. Construction is anticipated to occur in FY 2015. Water quality monitoring is anticipated to be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) How much load reduction can be achieved by retrofitting storm drains with filter inserts?
2) How efficient are filter inserts in reducing pollutant loads?
3) What is the effectiveness and efficiency of filter inserts in reducing pollutant loads in combination with aggressive street sweeping?

Targeted Measurable Outcome(s)

Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure filter inserts working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load reduction)
3) Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of pollutant load reduction from third-party data

Expected Benefits

The goal of the assessment is to determine the load reduction effectiveness and efficiency of integrated approach of LID.

Analysis Results

This activity was in the planning phase and not in active implementation in FY 2009. Therefore, assessment is not feasible at this time.

Conclusions

No conclusions regarding the efficiency of this activity at reducing pollutant loads can be made at this time.

TITLE: CHOLLAS CREEK RUNOFF REDUCTION AND GROUNDWATER RECHARGE PROJECT
ID #: SDB-050

ACTIVITY DESCRIPTION

This project is designed to reduce runoff from three existing County of San Diego facilities within the Pueblo San Diego Watershed (HA 908.2). Currently, these three facilities are highly impervious. The purpose of this activity is to retrofit existing impervious areas (parking lots) with porous pavements over stone reservoirs and to implement other LID practices to capture runoff from these areas as well as landscape elements such as rain gardens and bio-swales. A goal of this demonstration project is employ techniques to capture and infiltrate/evaporate rainfall. The objective of the activity is to prevent transportation of potentially polluted runoff (specifically with cooper, lead, and zinc) from leaving these facilities and entering the storm water system and particularly Chollas Creek.

REVISED ACTIVITY DESCRIPTION FY2008-09

Due to the State budget issues, the Prop 50 grant was not activated at the local level until Sept/Oct 2009. The delay has required us to alter our original grant proposal & schedule. The revisions will reduce the number of facilities retrofitted from three to two, the Southeast Family Resource Health Center on Market Street, and the Southeast Health Center at 52nd St/University Ave. Currently, the County is awaiting word from the State on the proposed revisions before commencing any work. If the change is approved we should being in January 2010.

ACTIVITY IMPLEMENTATION FY2008-09

Due to State Budget issues that resulted in the delay of approving and funding projects under the Proposition 50 grants, the County of San Diego had to reconsider its' grant application to reduce the number of retrofit projects from three to two and to revise the implementation schedule of the remaining projects. These revisions are highlighted in the discussions above and are reflected in the schedule below.

ACTIVITY IMPLEMENTATION FY2009-10

Proposition 50 Funding was restored to this project in February 2010. During the final months of the Fiscal Year 70% and 100% design plans were approved by the County of San Diego for two properties remaining under the grant. These revisions are highlighted in the discussions above and are reflected in the schedule below.

ACTIVITY IMPLEMENTATION FY2010-11

During FY10-11 two County Facilities including the Central Region Public Health Center and the Southeast Family Resource Center were retrofitted with stormwater BMPs. The Central Region Public Health Center including installation of 6,500 square feet of rubberized porous pavement. The project completed 5 water quality monitoring events. The improvements at the Southeast Family Resource Center included construction of four biofiltration devices to capture parking lot runoff and included 4 water quality monitoring events.

TMDL APPLICABILITY

This project would be implemented in compliance with the Chollas Creek Metals TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning & Design: July 2008 – May 2009
Environmental Review & Permitting: July 2008 – January 2009
Construction: June 2009 – October 2009
Monitoring: October 2009 – December 2010
Demonstration Project: July 2008 – December 2010

REVISED TIME SCHEDULE FOR IMPLEMENTATION FY 2009-10

Planning & Design: November 2009 – June 2010 completed.

REVISED TIME SCHEDULE FOR IMPLEMENTATION FY 2010-11

Construction: September 2010 – November 2010
Environmental Compliance/Mitigation: November 2010 – April 2011
Final Monitoring Report Fall 2011

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This Project is consistent with the collective watershed strategy because it addresses metals (copper, lead and zinc), which are considered as high priority water quality problem within the 908.2 HA.

EFFECTIVENESS MEASUREMENTS

This project includes 4 months of monitoring of the water quality from the sites. The final monitoring report will be available in FY11-12.

TITLE: SHELTER ISLAND 2010-2011 COMPLIANCE MONITORING
ID #: SDB-053

ACTIVITY DESCRIPTION

The Port of San Diego (Port), City of San Diego (City), Shelter Island Yacht Basin (SIYB) marinas/yacht clubs, hull cleaners, and boat owners were identified as named parties under the total maximum daily load (TMDL) for dissolved copper in SIYB. The SIYB TMDL was added as an amendment to the San Diego Regional Water Quality Control Board (Regional Board) Water Quality Control Plan for the San Diego Basin (Basin Plan) on February 9, 2005 (Regional Board, 2005). The Shelter Island Yacht Basin Dissolved Copper Total Maximum Daily Load requires that loading of dissolved copper be reduced by 76% by 2022.

According to the TMDL, the predominant source of copper loading to SIYB is copper-based hull paints applied to recreational vessels in SIYB. Copper may be released from the hull paints either through passive leaching or in-water hull cleaning. Other sources include urban runoff, aerial deposition, and sediment flux. The named parties have collaborated during this reporting period to determine potential approaches for demonstrating compliance with loading reduction targets identified in the TMDL.

On March 11, 2011, the RWQCB issued Investigative Order No. R9-2010-0136 which directed the Port to submit annual technical reports pertaining to the SIYB Dissolved Copper TMDL. During this reporting period, the Port worked with other named parties to finalize the SIYB Dissolved Copper TMDL implementation plan and compliance monitoring plan as required by Investigative Order R9-2011-0036. This Investigative Order clarified the annual TMDL reporting requirements and required the development of monitoring and implementation plans to guide activities over the course of the TMDL. The final implementation plan and monitoring plan was delivered to the Regional Board on May 31, 2011.

The City has also been conducting urban runoff monitoring for SIYB to identify spatial or temporal patterns in dissolved copper loads. The waste load allocation (WLA) of dissolved copper from the City municipal separate storm sewer system (MS4) via urban runoff is approximately 1% of the total load (based on the model used to develop the TMDL). Because of this relatively small contribution, urban runoff from the City MS4 has not been assigned a load reduction in the TMDL.

TMDL APPLICABILITY

The Shelter Island Yacht Basin Dissolved Copper Total Maximum Daily Load

TIME SCHEDULE FOR IMPLEMENTATION

Under Resolution R9-2005-0019, the SIYB dissolved copper TMDL identified a phased load reduction schedule that will achieve the final 76% reduction over 17 years. The TMDL was adopted in 2005 and sets compliance targets through 2022.

LEAD WATERSHED COPERMITTEE

- SD Unified Port District

OTHER PARTICIPATING COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- SIYB marina and yacht club owners/operators
- Persons owning boats moored in SIYB
- SIYB underwater hull cleaners
- San Diego Coastkeepers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego Bay WMA identify copper as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego Bay, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS MEASUREMENTS

Effectiveness is not being assessed as this not a watershed water quality or education activity.

During this reporting period, the named parties worked to finalize the SIYB Dissolved Copper TMDL implementation plan and compliance monitoring plan as required by Investigative Order R9-2011-0036. The Implementation Plan describes the adaptive process that the Port and other named parties will use to select and implement Best Management Practices (BMPs) over the course of the TMDL. It will be used to identify the activities that the Port and other named TMDL parties will undertake to reduce copper inputs.

The monitoring plan includes a description of the annual monitoring that will be conduct each summer and the vessel tracking obligations that will be required. The monitoring plan is consistent with the Regional Boards acknowledgment that compliance (at least for the first phase) will be measured by vessel conversions. Information generated from both the water quality monitoring and the vessel tracking will be turned in annually to the Regional Board as required. Development of the Implementation Plan and monitoring plan was completed during this reporting period. As a result. monitoring will be initiated during the next reporting period.

City of San Diego Urban Runoff Monitoring Study:
The City of San Diego has been conducting a study to fill pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

Expected Benefits
The implementation phase will involve the enactment of a phased program comprised of education, incentives, and policies that reduce copper loading. In recognition that the primary source of dissolved copper to the water column originates from copper-based antifouling paints, the main focus of implementation is to effect the conversion of hull paints from copper to non-copper and low-copper antifouling paint products to improve water quality as well as the restoration of marine and wildlife habitat beneficial uses within the basin.

Analysis Results
There are three City MS4 outfalls that drain into SIYB. Of these three outfalls, one pipe (Outfall 2) drains 90% of the drainage area, and the other two pipes drain the remaining 10%.

Wet weather flows were a larger contributor of dissolved copper loading to SIYB than dry weather flows.

There were no discernible spatial or temporal patterns in dry weather dissolved copper loads, indicating that the dry weather sources are likely sporadic.

The total dissolved copper annual load to SIYB from the MS4 in 2010-2011 was 7.23 kg/yr, which is well below the WLA of 30 kg/yr set in the TMDL for urban runoff.

Conclusions
The annual dissolved copper load from urban runoff into SIYB was below the TMDL estimates of 1% (30 kg/yr) of the total estimated load. The total annual dissolved copper load from the monitored and modeled outfalls into SIYB was calculated to be 7.23 kg/yr in 2010 to 2011, which is less than the 30-kg/yr TMDL WLA. Combined with the 1.911-kg/yr annual load calculated in 2008 to 2009 and the 1.87-kg/yr calculated in 2009 to 2010, the average annual dissolved copper load over the three monitoring seasons was 3.67 kg/yr, also lower than the 30-kg/yr WLA for urban runoff in the TMDL.

From the four monitoring seasons for which there are data, it is possible to look at the historical trend of wet weather dissolved copper concentrations. During the 2007 to 2008 Monitoring Season, one composite sample was collected during a wet weather event. This sample represented an average concentration of dissolved copper during that storm event, and the concentration was 44.0 ug/L. During the 2008 to 2009 Monitoring Season, the average wet weather concentration for dissolved copper was 27.12 ug/L, during the 2009 to 2010 Monitoring Season the average concentration was 14.47 ug/L, and during the 2010 to 2011 Monitoring Season the average concentration was 23.76 ug/L. These results reflect the

variability in constituent concentrations during storm events observed throughout the region and there is no indication of a temporal trend in the average dissolved copper concentrations during wet weather from this limited dataset.

There is dry weather dissolved copper concentration data for two monitoring seasons. During the 2009 to 2010 Monitoring Season, the average dry weather concentration for dissolved copper was 6.41 ug/L. During the 2010 to 2011 Monitoring Season, the average concentration was 4.11 ug/L. Additional data are needed to assess the presence of trends in dry weather dissolved copper concentrations.

TITLE: **SAN DIEGO BAY WATERSHED BROCHURE**
ID #: **SDB-055**

ACTIVITY DESCRIPTION

The City of San Diego (City) and Think Blue will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:
1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay
5) San Dieguito River
6) Los Penasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2012. Implementation and distribution is expected to occur in FY 2012.

LEAD WATERSHED COPERMITTEE

- City of City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions

- Dissolved Minerals
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) Do the watershed brochures increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?

2) Are the watershed brochures resulting in behavior change in the public by providing useful that reduce pollution from entering the storm drain system?

Targeted Measurable Outcome(s)

1) Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.

2) Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.

3) Increased intent to act to prevent storm water pollution after reading the watershed brochure.

Assessment Method(s)

1) Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Expected Benefits

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes

that will reduce bacteria and gross pollutants. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

Analysis Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2012. In FY 2011 it was determined that the watershed brochures for all six watersheds within the City of San Diego would need to be revised, including the already completed Tijuana and San Diego River watershed brochures. Watershed brochure revision will be completed in FY 2012. Effectiveness assessments are scheduled to begin in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

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TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: SDB-056

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego Bay Watershed include:

- SDA 1 (Spring Valley)
- SDA 2 (Valle de Oro)
- SDA 3 (Sweetwater)
- SDA 4 (Jamul)
- SDA 5 (Bostonia)
- SDA 7 (Alpine)

FY 2008 ACTIVITY IMPLEMENTATION

Work began on drafting the SWQMPs for individual SDAs.

FY 2009 ACTIVITY IMPLEMENTATION

Work continues on the drafting of the SWQMPs for individual SDAs.

FY 2010-11 ACTIVITY IMPLEMENTATION

Work continues on the drafting of the SWQMPs for individual SDAs.

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2011-12. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee.

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Pesticides

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

TBD

EFFECTIVENESS MEASUREMENTS

TBD

TITLE: **BETA STREET GREEN ALLEY**
ID #: **SDB-058**

ACTIVITY DESCRIPTION

This project targets an existing, unimproved alley and upgrades it with permeable pavement and catch basin inserts. The permeable pavement will infiltrate the runoff from the 85th percentile storm. Any runoff in excess of this size will be filtered through the permeable pavement and enter the storm drain system. Because this project is adjacent to Chollas Creek, the runoff that enters the storm drain is almost immediately deposited into the creek.

This project is currently working on 30% Design.

TMDL APPLICABILITY

Chollas Creek Dissolved Metals TMDL
San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was initiated in early FY 2009 and completed in June 2009. This project was transferred to Preliminary Engineering in August 2010 and then to Design in February 2011. Design is expected to continue through FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Pesticides
- Trash

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants
- Oil & Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego River WMA identify bacteria, gross pollutants, metals, oil/grease, pesticides, sediment, and trash as high priority water quality problems throughout the San Diego Bay WMA. Implementation of the permeable pavement will address gross

pollutants, trash, sediment, and oil/grease. To a lesser extent, the permeable pavement also addresses metals, bacteria, and pesticides.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency?

2) How effective is the permeable pavement at reducing loads of priority pollutants (metals and bacteria)?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)

2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)

3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)

4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)

5) Reporting (e.g., estimates of load reduction from 3rd party data)

Expected Benefits

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) through reduction of runoff volume. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type.

Analysis Results

This project is still in the design phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: COMMERCIAL BMP SELF CERTIFICATION PILOT PROGRAM
ID #: SDB-059

ACTIVITY DESCRIPTION

This program includes an assessment of urban runoff from a major, commercial parking lot in La Mesa (super market with additional shops). The load contribution of the parking lot will also be examined. The project also includes an education and outreach component in order to open dialogue with property management. The shopping center management will provide source control BMP maintenance records for the City to assess. Recommendations will be made to property management, and self certifications will be required annually. Additional wet weather samples will be collected for assessment. The City may decide to continue the program for different commercial centers within the watershed.

In FY 2010-2011 monitoring results obtained from target locations. Outreach to property managers stalled due to change in POA. Will continue in next fiscal year.

TMDL APPLICABILITY

Outreach and pollutant reduction activities are a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The activity is designed to assess and reduce pollutant loading stemming from commercial parking lot locations.

TIME SCHEDULE FOR IMPLEMENTATION

Multi-year- Ongoing.

LEAD WATERSHED COPERMITTEE

- City of La Mesa

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The pilot program activity supports the Watershed Strategy by working with property managers in the watershed regarding good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Follow up water quality samples will be collected in order to begin to assess the program. Additionally, due to the variability of sampling, increase in frequency of source control activities onsite will constitute a portion of the effectiveness metric of the activity.

TITLE: **SOURCE CONTROL OF COPPER WATER POLLUTANTS, SENATE BILL 346: MOTOR VEHICLE BRAKE FRICTION MATERIALS**
ID #: **SDB-060**

ACTIVITY DESCRIPTION

Previous City of San Diego (City) investigations determined that copper from automotive brake pads was a major contributor of dissolved copper, a high priority water quality pollutant, to San Diego waterways within City jurisdiction. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments, through California Stormwater Quality Association, to achieve true source control by reducing copper at its source. It was determined that the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads.

The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. On September 25, 2010, SB346 was passed by both houses, signed into legislation by the governor on and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50. Work has concluded on this legislation bill.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

SB346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. It is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

1. CASQA - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill.

2. Coalition for Practical Regulation - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill.

3. Alameda County - provided financial resources for experts to assist with the development of the bill, and provided lobbyist assistance to obtain political support for the passage of the bill.

4. Contra Costa County - provided financial resources for experts to assist with the development of the bill, and provided lobbyist assistance to obtain political support for the passage of the bill.

5. Many San Diego Regional Copermittees provided letters in support of the legislation.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City Strategic Plan for Watershed Activity Implementation for the San Diego Bay WMA identifies metals as a high priority water quality problem throughout the WMA, especially for the Chollas Creek watershed, and recommends implementing source control activities to address it. The objective of this activity is to reduce the amount of copper that reaches our storm drains and receiving waters to improve and restore water quality for our citizens.

EFFECTIVENESS MEASUREMENTS

Targeted Measurable Outcome(s)

Evidence of reductions of copper starting in 2022

Objectives

The goal of this legislation is to reduce the amount of copper released into the environment from automotive brake pads.

Analysis and Results/Conclusions

The authorization of this proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

TITLE: CHULA VISTA WILDLIFE RESERVE RESTORATION AND ENHANCEMENT PROJECT
ID #: SDB-061

ACTIVITY DESCRIPTION

The Port of San Diego partnered with the California Coastal Conservancy and the United States Fish and Wildlife Service (USFWS) to restore 280 acres of salt marsh habitat in South San Diego Bay. As part of the project, the Port of San Diego will address the 11 acres of restoration at the Chula Vista Wildlife Reserve, which is within the Port's jurisdiction. The Port of San Diego will restore salt marsh habitat at the Chula Vista Wildlife Reserve by lowering the elevations and transporting the material to Pond 11 in the South San Diego Bay National Wildlife Refuge. Both of these areas are in Otay HA (910.2). The restoration and enhancement effort will provide a significant water quality benefit for the San Diego Bay watershed and will restore natural filtering capabilities.

This project, which is located on the peninsula behind the South Bay Power Plant in Chula Vista, will use an EPA grant and Port of San Diego environmental funds to benefit habitat and water quality in San Diego Bay. It will remove an estimated twenty-five (25) tons of debris and four (4) acres of invasive plant species. In addition, approximately 67,500 cubic yards of tidal marsh material will be excavated to create tidal channels, which will increase water circulation and improve habitat quality for 30 acres of intertidal habitat. Native vegetation will be re-established by planting native plants. This will create new foraging habitat, expand spawning grounds and increase cover from predators. The marsh material excavated from the CVWR site will be used as fill material by the US Fish and Wildlife Service (USFWS) in the Pond 11 salt marsh restoration project, approximately 4,500 feet southwest of the CVWR project site. This will increase the opportunity to create intertidal habitat by assisting in creating approximately 40 acres of cordgrass habitat in Pond 11. Annual monitoring will be done for sediment, water quality, and vegetation growth and abundance. Recommendations based on the monitoring results will be developed which may facilitate future restoration projects to more effectively achieve restoration objectives.

TMDL APPLICABILITY

The 2008 CWA Section 303 (d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria. Though this activity may be beneficial in addressing high water quality problems, it is not specifically planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Permit Year 2009-10: Planning
Permit Year 2011: Planning/Construction
Permit Year 2011-12: Implementation

LEAD WATERSHED COPERMITTEE

- SD Unified Port District

OTHER PARTICIPATING ENTITIES

- California Coastal Conservancy
- United States Fish and Wildlife Service (USFWS)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego Bay WMA identifies bacteria as a high priority water quality problem in the Otay HU. Implementation of this activity is considered a beneficial water quality activity in the San Diego Bay WMA and will address the high priority water quality problem in the receiving waters by enhancing wetland function.

EFFECTIVENESS MEASUREMENTS

Annual monitoring from 2011 through 2016 will be done to measure the accumulation of sediment as well as water quality monitoring of turbidity, nitrogen, ammonia, phosphorous, and dissolved oxygen. Vegetation growth and abundance will be monitored from March 2010 to March 2016. The 2008 baywide bird, eelgrass, and fisheries studies for South Bay will be compared to the same study results from the 2012/2013 baywide surveys to determine species density and abundance changes between surveys.

The following activities occurred during FY 2010-2011:

- Excavation of the basins and transportation of sediments to Pond 11 was completed on February 17, 2011;
- Transportation of an estimated 61,000 cubic yards of material to Pond 11 and the excavation of 65,495 cubic yards at the Chula Vista Wildlife Reserve (CVWR);
- The endangered California least tern and Western snowy plover established 19 and 1 nests, respectively, at Pond 11 at the new nesting site.

No monitoring was done during this reporting period.

TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTIONS
ID #: SDB-062

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY09-10

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY10-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

On September 26, 2010, there was a buzz in Fallbrook as eager residents stood in line before the 9 a.m. start time for the distribution event at Fallbrook Village Square. By the 1 p.m. closing time, 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County (Table 1).

Table 1: Residents by Watershed

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	San Diego River	San Diego Bay	Tijuana	Unk
Total Residents	2	24	61	6	8	4	27	50	2	1

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY09-10. The events took place on August 28, 2011 (Cuyamaca College) and September 26, 2011 (Fallbrook Village). Additional events are being considered for implementation in FY 12-13.

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Pesticides
- Sediment
- Trash

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Conditions

- Dissolved Minerals
- Gross Pollutants
- Nutrients
- Oil & Grease
- Organics

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

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TITLE: CHOLLAS CREEK COPPER, LEAD AND ZINC WATER-EFFECTS RATIO STUDY
ID #: SDB-065

ACTIVITY DESCRIPTION

This report presents the preliminary results of the Chollas Creek Copper, Lead, and Zinc Water-Effect Ratio (WER) Study. This study was conducted to develop site-specific water quality objectives (WQOs) for Chollas Creek in accordance with the California Toxics Rule (CTR) for dissolved metals. The CTR was used for the basis of the Chollas Creek Dissolved Copper, Lead, and Zinc Total Maximum Daily Load (TMDL), which incorporated a provision for developing site-specific objectives (SSOs).

The United States Environmental Protection Agency (USEPA) has established numeric targets for toxic pollutants, which developed applicable WQOs for dissolved metals (e.g., copper, lead, and zinc) through promulgation of the CTR. The CTR WQO equations are based on the inverse relationship between hardness and toxicity. The CTR lists a criteria maximum concentration (CMC) (i.e., acute criteria) and criteria continuous concentration (CCC) (i.e., chronic criteria) calculated using hardness concentrations from each sampling event to determine the WQOs for each dissolved metal (Regional Board, 2007). The WER is a variable of the CCC and CMC equations, which can be used to develop a SSO. Upon determination of a final WER, SSOs can then be calculated by substituting the final WER value into the CCC and CMC equations for the calculation of site-specific criteria.

Monitoring in Chollas Creek was conducted during three individual storm events for the Chollas Creek WER Study from January 2010 through April 2010. The final report was submitted to the Regional Water Quality Control Board (RWQCB) for review and comment in June 2010. To date, the City has not received a response from the RWQCB.

TMDL APPLICABILITY

Chollas Creek Dissolved Copper, Lead and Zinc TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring was conducted during three individual storm events from January 2010 through April 2010. The final report was submitted in June 2010 to the RWQCB and no response has been received.

LEAD WATERSHED COPERMITTEE

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego Bay WMA identify metals and organics as a high priority water quality problem throughout the San Diego Bay WMA, and recommends implementing specific management and Best Management Practices (BMPs) strategies to reduce the identified sources.

EFFECTIVENESS MEASUREMENTS

The objective of this study was to establish WERs and SSOs for dissolved copper and zinc, separately, for Chollas Creek. The underlying goal was to determine how much dissolved copper and zinc can be present in Chollas Creek site water without lowering the intended level of protection for Chollas Creek beneficial uses.

Results are as follows:

1. The dissolved copper WER (i.e., the site-water median effective concentration (EC50) divided by the laboratory-water EC50) for Site SD8(1) for toxicity experiments conducted on samples from January 18, 2010, was 10.8 (141.5 micrograms per liter (µg/L) divided by 13.1 µg/L). The dissolved copper WER for toxicity experiments conducted on samples from February 27, 2010, was 22.1 (67.6 µg/L divided by 3.05 µg/L). The dissolved copper WER for toxicity experiments conducted on samples from April 1, 2010, was 37.4 (195 µg/L divided by 5.2 µg/L). The geometric mean (range) of the three individual WERs for the north fork of Chollas Creek (i.e., SD8(1)) was 20.8 (10.8±37.4), which would be the final WER based on the testing conducted to date.

The dissolved copper WER for Site DPR2 for toxicity experiments conducted on samples from February 27, 2010, was 27.0 (82.4 µg/L divided by 3.05 µg/L). The dissolved copper WER for toxicity experiments conducted on samples from April 1, 2010, was 45.0 (235 µg/L divided by 5.2 µg/L). Because only two sampling events have been conducted for the south fork of Chollas Creek (DPR2) thus far, the minimum WER of 27 would be used as a conservative final WER.

The geometric mean (range) of the five Chollas Creek Watershed dissolved copper WERs was 25.5 (10.8±45.0).

2. The Site SD8(1) dissolved zinc WER for toxicity experiments conducted on samples from January 18, 2010, was 2.1 (373.3 µg/L divided by 180 µg/L). The dissolved zinc WER for toxicity experiments conducted on samples from February 27, 2010, was 0.6 (99.9 µg/L divided by 178.9 µg/L). The dissolved zinc WER for toxicity experiments conducted on samples April 1, 2010, was 2.6 (395.6 µg/L divided by 153.7 µg/L). The geometric mean (range) of the three individual WERs for the north fork of Chollas Creek (i.e., SD8(1)) was 1.44 (0.6±2.6), which would be the final WER based on the testing conducted to date.

The Site DPR2 dissolved zinc WER for toxicity experiments conducted on samples from February 27, 2010, was 1.5 (262.7 µg/L divided by 178.9 µg/L). The dissolved zinc WER for toxicity experiments conducted on samples from April 1, 2010, was 3.3 (508.1 µg/L divided by 153.7 µg/L). Because only two sampling events have been conducted for the south fork of Chollas Creek (DPR2) thus far, the minimum WER of 1.5 would be used as a conservative final WER.

The geometric mean (range) of the five Chollas Creek Watershed dissolved zinc WERs was 1.71 (0.6±2.6).

3. During the development of the WER study workplan and based on results from the range-finder tests, it was evident that dissolved lead testing would not be relevant to the low concentrations detected in Chollas Creek. Lead is very insoluble in water and would require a lower site water and lab water pH to get lead into solution. However, lowering pH would potentially add confounding factors to the WER tests and would not be relevant to the study. This issue was raised to TAC members. Two of the TAC members had experienced this issue on a similar project and noted that the USEPA was currently developing a draft revised lead criteria for ambient waters (expected for release during Summer, 2010). Because the new criteria poses a potential moving target, review of the USEPA draft toxicity calculations was recommended to determine the relevance to the existing criteria. Based on these recommendations and in lieu of performing additional sample collection and testing for development of a Chollas Creek lead WER as previously proposed, a comparison of recalculated CMC and CCC values was conducted using USEPA's revised lead toxicity tables. The dissolved lead CMC and CCC values were recalculated, based on current CMC and CCC values for lead, and the previous ten years of dissolved lead concentrations collected for compliance monitoring. The effect the new criteria may have on acute and chronic exceedances and/or protection over time was evaluated.

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TITLE: FOCUSED OUTREACH TO EQUESTRIAN COMMUNITY
ID #: SDB-066

ACTIVITY DESCRIPTION

The County of San Diego conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups.

ACTIVITY IMPLEMENTATION

ACTIVITY IMPLEMENTATION FY09-10

Workshops

A total of 113 people attended four workshops during FY09-10. The County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Funded by the County, the workshops were presented by staff from either the Solana Center or the MRCD. They included presentations and handouts identifying resources available to equestrians. Information presented included local watershed awareness, manure management, and composting. Key elements included how proper manure management relates to horse health, water quality, and maintenance of positive relationships with neighbors. Question and answer sessions were conducted in all workshops.

The workshops in Lakeside and Fallbrook were held on Saturday mornings on private properties with horses and active compost piles at each location. Participants were encouraged to observe the compost piles and the BMPs in place to prevent contamination of runoff. The presentation at the Fallbrook workshop included poster boards of a Power Point presentation. The other two workshops (Ramona and Bonita) were held in classroom settings at community meeting rooms on weeknight evenings. Presentations were casual discussions that included BMPs to improve horse health, protecting properties from erosion, and preventing polluted runoff discharges. San Diego County watershed maps were displayed at all workshops, allowing attendees to locate their local watershed.

Assessment was conducted in the form of pre- and post-workshop surveys.

Community Events

A total of 105 people at 4 events approached the booths during FY09-10. County staff and/or contractors also provided targeted outreach to the equestrian community equestrian themed community events. At each of these events, the County staffed a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness.

Development and Distribution of Educational Materials

During FY09-10, County staff created a coloring sheet and handout to direct interested equestrians to more detailed information regarding BMPs for manure management.

Surveys

In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted a firm with expertise in Community Based Social Marketing (CBSM) to conduct research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development.

ACTIVITY IMPLEMENTATION FY10-11

Workshops

During FY10-11, the County of San Diego, again in coordination with the Solana Center for Solana Center and the MRCD, conducted similar workshops targeting equestrians. Workshops were held in Lakeside, Ramona*, Bonsall, and Rainbow. Table 1 below identifies the primary watershed(s) addressed by each workshop. Ramona event was rescheduled due to low attendance and the “;make-up”; workshop will be held on November 19, 2011.

Table 1: FY 2011 Workshop Location and Attendance

Location	Presentation Date	No. of Attendees	Primary Watersheds Addressed
Lakeside	6/25/11	24	San Diego River
Ramona	6/18/11	1	San Diego River, San Dieguito
Bonsall	6/25/11	22	Santa Margarita, San Luis Rey
Rainbow	6/18/11	14	Santa Margarita, San Luis Rey
Total		**69**	

Community Events

During FY10-11 County staff and/or contractors provided targeted outreach to the equestrian community at three equestrian themed community events. At these events, County staff made presentations or hosted a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. Additional details on each community event are provided in Table 2 below.

Table 2: FY 2011 Community Event Location and Attendance

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
8/2/2010	San Diego Equestrian Foundation	Hunter Equestrian Center	35	Carlsbad
10/10/2010	Horse Heritage Festival	Walnut Grove Park	75	Carlsbad
10/16/2011	Vaquero Days Western Heritage Festival	Granville Martin Ranch/Museum	150	Sweetwater
Total			**215**	

Surveys

Information was gathered via survey questionnaires and in person interviews during the Lakeside manure composting workshop. A total of 24 horse owners participated in the survey. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (see attached report - File 2).

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for Beaches and Creeks and with other more localized TMDLs for constituents such as nutrients and sediment.

TIME SCHEDULE FOR IMPLEMENTATION

Additional workshops are planned for equestrians in the Santa Margarita and San Luis Rey Watersheds during FY11-12. The County is interested in pursuing opportunities to facilitate peer mentoring programs that encourage equestrians to learn about proper B

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for an important source of the high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

Composting Workshop Lakeside

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered.

Pre-workshop survey results were as follows:

- 65% responded correctly that stormwater is not treated.
- A mean score of 3.59 responded that they believe horse manure contributes to pollution of local waterways. (Scale was 0 to 10)
- The mean score for how much manure they currently composted was 4.07 on a scale from 0 (none) to 10 (all).
- 38% responded that they currently pick up manure more often than once per week.
- 50% responded that they currently compost manure.

When asked about what equestrians can do to prevent pollution caused by horse manure, 59.5% of respondents suggested ideas on the pre-workshop survey.

Post-workshop survey results were as follows:

- 71% responded correctly that stormwater is not treated.
- A mean score of 4.41 responded that they believe horse manure contributes to pollution of local waterways. (Scale was 0 to 10)
- The amount of manure they plan to compost was a mean score of 7.36, indicating a statistically significant increase from the 4.07 mean score initially reported.

- 53% responded that they plan to remove manure from corrals and stalls every day in the future.
- 87% responded they plan to manage manure generated by composting in the future.

Based on the pre and post assessment at the Lakeside workshop, it appears that the workshop was successful at fostering positive attitudes and perceived control about composting. Future workshops might benefit from highlighting key issues such as the potential for manure to pollute waterways and the fact that stormwater is not treated.

Composting Workshop Rainbow

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, in the Rainbow manure management workshop pre- and post-workshop surveys were administered. Survey results indicate a positive change in awareness such as: knowing they live in a watershed, knowing water in the storm drain is not treated, and consideration of how horses and livestock manure can contribute to water pollution.

Results of the pre surveys administered by Mission RCD found the following results:

- 50% responded that they did not know they lived in a watershed
- 50% responded that water in the storm drain system is not treated
- 12.5% felt that livestock and horse manure did not contribute to water pollution
- 62.5% responded that they believe livestock and horses contribute “some” to water pollution
- 12.5% felt that livestock and horses contribute “a great deal” to water pollution

Post survey results found:

- 100% responded correctly that they now know they live in a watershed
- 100% responded that water in the storm drain system is not treated
- 0% responded that they believe livestock and horses contribute “;not at all”; to water pollution
- 37.5% responded that they believe livestock and horses contribute “some”; to water pollution
- 50% felt that livestock and horses contribute “a great deal” to water pollution

After the workshop all but one of the attendees responded positively that they plan to start composting at least some portion of the manure generated. While one person will continue to give away the manure, all others indicate they will begin composting some portion of the manure generated onsite, but may still continue to use other disposal methods, such as applying to their land or giving some of it away.

BMP Workshop San Luis Rey

The first Horse Property BMP Workshop was held in the San Luis Rey Watershed. A presentation and site tour were utilized for the event. Pre and post surveys were used to

evaluate change of awareness and knowledge. Surveys showed this to be a very well informed group, in that 100% of the attendees responded correctly that they live in a watershed. When surveyed on identification of BMPs the following results were found:

BMPs pre-survey results found:

- 37.5% believe horse manure contributes “;a great deal”; to water pollution.
- 70% responded correctly by identifying erosion control BMPs.
- 50% correctly identified drainage control BMPs.
- 70% correctly identified manure management BMPs.

Post survey results showed:

- 17% believe horse manure contributes “;a great deal”; to water pollution.
- 100% responded correctly by identifying erosion control BMPs.
- 92% could correctly identify drainage control BMPs
- 83% correctly identified manure management BMPs.

The overall impression of the BMP workshop was extremely positive. Attendees were excited and enthusiastic about the subject matter and appeared to be open to hearing about horse property BMPs. Many asked a lot of pointed questions, indicating they were trying to determine the best BMPs for their properties.

TITLE: **INTERGENERATIONAL GAMES**
ID #: **SDB-067**

ACTIVITY DESCRIPTION

The City of La Mesa is committed to education outreach at community events and local schools. Each year the City works with La Mesa Middle School to host the Intergenerational Games event. School children are paired up with adults and participate in a number of activities. During the event on October 14, 2010, I Love A Clean San Diego staffed a booth at the event, on behalf of the City's Storm Water Program. I Love a Clean San Diego setup and demonstrated the "Operation Cleanup" game at the event, and distributed education outreach material. The City's San Diego Bay Watershed fact sheet, and other storm water outreach and recycling materials was displayed at the event which was attended by approximately 110 students.

TMDL APPLICABILITY

Education outreach is a component of the California Regional Water Quality Control Board (RWQCB) Investigation Order No. R9-2004-0277 (Chollas Creek Dissolved Metals and Diazinon TMDLs). The event includes a San Diego Bay Watershed Fact Sheet that lists diazinon and metals as pollutants of concern as well as tips to prevent storm water pollution.

TIME SCHEDULE FOR IMPLEMENTATION

Multi-Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria & Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The education outreach provides pollution prevention information to address those watershed priority pollutants. The education event supports the Watershed Strategy by educating students and event participants on good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the watershed and region. The event provides educational outreach materials specific to the watershed to address pollution prevention measures.

Operation Cleanup
I LOVE A
CLEAN
SD
2011/10/13

TITLE: MULTI FAMILY RESIDENTIAL TRASH AREA PILOT PROGRAM
ID #: SDB-070

ACTIVITY DESCRIPTION

The City will perform a site-by-site assessment on multi-family residential trash areas throughout the watershed. This will allow the City to understand the baseline level of compliance. Following the assessment, enforcement will be conducted with follow up inspections to ensure locations are consistently up to code standard. Water quality sampling may be conducted for further assessment.

The City completed the initial assessment of approximately 70 Multi-Family Apartment locations within the watershed during the 10-11 program year.

TMDL APPLICABILITY

The activity will allow the City to understand baseline levels of compliance in multi-family residential locations, and reduce loads of bacteria through enforcement.

TIME SCHEDULE FOR IMPLEMENTATION

Multi-Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This type of activity promotes source control for a particular high priority water quality problem in the watershed.

EFFECTIVENESS MEASUREMENTS

The baseline compliance levels will allow for assessment based on locations that receive further code enforcement. Water quality sampling (wet/dry) will be examined in context of the program. Monitoring may be conducted downstream of particular multi-family locations as budget conditions will allow.

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TITLE: TARGETED CATCH BASIN CLEANING PILOT STUDY
ID #: SDB-071

ACTIVITY DESCRIPTION

The City of San Diego Storm Water Division began the planning of a catch basin cleaning pilot study in FY2011. The purpose of the project is to understand the potential water quality improvements and load reduction associated with catch basin cleaning by evaluating the quantity and quality of materials removed from the storm drains from four pilot areas. The areas were selected to be representative of different land uses within the City limits. Additionally two cleaning methods will be evaluated - manual and using vactor equipment. One of the pilot areas is within the San Diego Bay WMA in downtown San Diego.

Composite samples collected from the material removed from the targeted catch basins will be analyzed for metals, nutrients, organics, and bacteria.

TMDL APPLICABILITY

San Diego Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment is scheduled for FY2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Sediment

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego Bay WMA identify bacteria, sediment and metals as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address these constituents. This project will result in a quantifiable load reduction of sediment and will evaluate the amount of bacteria and metals reduced as part of catch basin cleaning.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) To what extent do changes in catch basin cleaning frequency affect the amount of pollutants collected?
2) What is the annual calculated load reduction based on pilot scale data collection with catch basin cleaning?
3) Which cleaning method, manual versus mechanical is the most cost effective method for removing sediment from catch basins?

Targeted Measurable Outcome(s)

1) Reduction in bacteria exported from the catch basin.
2) Reduction in sediment exported from the catch basin.
3) Reduction in nutrients associated with the catch basin.

Assessment Method(s)

1) Evaluate the volume of material currently removed from each catch basin.
2) Evaluate the correction in cleaning results with land use category, impervious area, watershed size, and surface water impairments.

Data Recorded

1) Volume Removed
2) Location
3) Sediment sample analysis

Assessment of effectiveness is anticipated to be completed in FY2012.

TITLE: **MUNICIPAL BEST MANAGEMENT PRACTICES / IRRIGATION / XERISCAPE**
ID #: **SDB-072**

ACTIVITY DESCRIPTION

The Airport Authority intends to coordinate with the San Diego Bay Copermittees and implement source control BMPs to address urban runoff from landscaped areas. The goal of the Irrigation/Xeriscape program is to reduce the amount nutrients, herbicides and pesticides, and sediment which could be released in the watershed from landscaped areas at the airport. The Airport Authority intends to implementation irrigation BMPs (e.g., drip-irrigation systems or automatic moisture/precipitation sensing controls) to reduce over-irrigation and the resultant nutrient, herbicide and pesticide, and sediment contaminated runoff from landscape areas. The Airport Authority also plans to use native plants and xeriscape to the extent possible with the goal of conserving water, reducing erosion and irrigation runoff pollutant loads. This water-wise landscaping technique will limit the need for fertilizers, herbicides, and pesticides, and thereby, reduce nutrient, herbicide, pesticide, and sediment pollutant loads associated with runoff from these landscaped surfaces.

The Irrigation/Xeriscape Program is an important water quality activity in the San Diego Bay Watershed because it can be used to estimate the amount of nutrients, herbicides, pesticides, and sediment being removed from the watershed. A reduction in the amount of fertilizers, herbicides, pesticides, and sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

The Airport Authority intends to calculate annual pollutant load reductions by 1) monitoring the amount of water, fertilizer, herbicide, and pesticide used for landscape maintenance, and 2) estimating, based on review of the literature and/or other sources, the sediment load per unit volume of irrigation water and landscape area for improperly irrigated landscape areas. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

TMDL APPLICABILITY

The 2002 and 2006 CWA Section 303d lists of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for bacteria and locations near the airport have been identified as having sediment toxicity, benthic community effects, and copper impairments. Total Maximum Daily Loads (TMDLS) are being developed by the RWQCB to protect beneficial uses in these impaired water body segments. The development of one particular TMDL is referred to as TMDLs for Indicator Bacteria Project II - San Diego Bay and Dana Point Harbor Shorelines. The development of the TMDL for sediment toxicity and benthic community effects is referred to as the Downtown Anchorage TMDL. A TMDL has not yet been initiated for copper along the Harbor Island segment of San Diego Bay. The Irrigation/Xeriscape Program is applicable to these TMDLs to the extent it addresses the identification and control of sources of nutrients, pesticides, and sediment as pollutants potentially impacting water quality, sediment toxicity, and the degradation of benthic communities in San Diego Bay.

TIME SCHEDULE FOR IMPLEMENTATION

Permit Year 1: Planning
Permit Year 2: Planning
Permit Year 3: Planning
Permit Year 4: Implementation
Permit Year 5: Implementation

LEAD WATERSHED COPERMITTEE

- SD County Regional Airport Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity contributes to improving water quality problems by focusing on nutrient, herbicide, pesticide, and sediment load reductions resulting from proper irrigation and the installation of xeriscape using native species that generally limit the need for fertilizers, herbicides, and pesticides. The Watershed Strategy identifies herbicides, pesticides, and sediments as high priority water quality problems and nutrients as a low priority water quality problem for the 908.2 HA portion of the San Diego Bay Watershed in which the airport lies. This activity is consistent with the Watershed Strategy because it focuses principally on pollutant load reductions, but also increases awareness and education of the Airport Authority staff regarding over-irrigation and over-application of fertilizers, herbicides, and pesticides as sources of stormwater pollution.

EFFECTIVENESS MEASUREMENTS

The Airport Authority intends to calculate annual pollutant load reductions by 1) monitoring the amount of water, fertilizer, herbicide, and pesticide used for landscape maintenance, and 2) estimating, based on review of the literature and/or other sources, the sediment load per unit volume of irrigation water and landscape area for improperly irrigated landscape areas. The Airport Authority will also be able to track the cost of implementing the program and thereby determine its cost-effectiveness.

During FY10-11the Airport Authority made a commitment to pursue LEED certification for ";Existing Buildings: Operations & Maintenance"; for the Facilities Management Department (FMD) Building, a 9,800 square foot single story facility located at SDIA. The building provides office space for the Airport Authority Facilities Management Department. The following results were reported in the Project Case Study prepared by Jacobs Consulting in FY10-11.

1. A drip irrigation system and a weather based irrigation controller were installed with the design intent to reduce the amount of water used for irrigation by 89%, compared to an irrigation system typical for the region.
2. Various climate tolerant plants were planted in beds that represent 5% of the total site area.
3. Porous asphalt was installed for 13% of the parking lot area, leading to a 16% reduction in stormwater run-off.

No load estimates have yet been calculated, since these 3 elements of the program were just installed this year. The Authority will continue to monitor these areas and collect data to evaluate the effectiveness of these measures.

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TITLE: **WALK THE WATERSHED – OTAY HU**
ID #: **SDB-073**

ACTIVITY DESCRIPTION

The San Diego Bay WURMP Workgroup recognizes the benefits of providing storm water and watershed education to children and how this type of watershed activity is an integral part of fostering positive behavioral change. Changing attitudes and behaviors in students can provide long-lasting impressions that follow a child into adulthood. In order to foster this positive behavioral change, the San Diego Bay Watershed Copermittees have decided to participate in the San Diego Coastkeeper's 4th annual Walk the Watershed event. The event will take place in the Otay Watershed at the Otay River Regional Park (OVRP) on March 31, 2012. The main objectives are to:

- Develop a sense of stewardship among residents, especially school children, for the local natural resources in the area;
- Create an understanding of how communities in urbanized neighborhoods impact local waterways, bays and ocean;
- Teach effective ways to reduce pollution through behavioral changes at home;
- Increase participation in watershed cleanups and environmental restoration.

The event will include a tour of the park with a number of educational stations, hands-on restoration and/or cleanup activities, and interactive lessons that focus on storm water. Concepts that will be covered in the stations include watershed basics, pollutant sources and transport, , recycling, and improving the health of the local watershed through pollution prevention and restoration. The topics of the tour will cover:

- Introduction to watershed concepts, as well as wetland and local canyon ecology;
- Identification of landmarks and residential areas in the local watershed to promote understanding of how local behavior affects the Otay River Valley and San Diego Bay;
- The difference between sewer and storm drain systems and the role of storm drains in watersheds;
- Identify potential sources of pollution from local residential areas and ideas to reduce them;
- Erosion and the role of non-designated trails and invasive plant species;
- Impacts of invasive plant species and beneficial roles of native plant species.

The overall goal of this activity is to educate students about the sources of pollution in their neighborhoods and to increase their understanding of how their daily activities may impact their watershed. In turn, the hope is that the students will gain a sense of ownership for their watersheds and influence their families to implement BMPs and good house keeping practices.

TMDL APPLICABILITY

The 2010 CWA Section 303(d) List of impaired water bodies identified multiple locations throughout San Diego Bay with water quality impairments for a number of high priority pollutants. There are currently no TMDLs developed in the Otay HU.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this event began in FY 2011. The watershed education activity will occur in FY 2012.

PARTICIPATING COPERMITTEES

- City of Chula Vista
- Port of San Diego
- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- WildCoast
- River Partners
- Allied Waste

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Pesticides
- Trash
- Oil and Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Consistent with the Collective Watershed Strategy, this activity addresses several high priority water quality problems in the San Diego Bay WMA. This is a source control activity in which the overall goal is to prevent pollution from residential sources by providing education to students.

EFFECTIVENESS MEASUREMENTS

Effectiveness of this watershed education activity will be measured through levels 2, 3, and 4. The number of participants will be identified and a survey will be distributed to participants at the Walk the Watershed event. Depending on the type of activities that will be implemented, the amount of trash collected and/or the amounts of invasive species removed will be weighed.

Appendix F

Chollas Creek TMDL Implementation Plans

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City of La Mesa Watershed Activities Reporting Year 3, Phase I of Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Activities For Current Reporting Year					
Tier I Code Modification	Code update/regulations pertaining to Chollas Watershed. For example, new businesses along University Channel will be required to consider BMPs associated with the pollutants identified in the TMDL.	Implementation	Level 1: Completion of Code Modification	Code Adoption and Assessment Report.	The code update related to the Chollas Creek Watershed was completed in February 2010. The code update pertains to La Mesa Municipal Code Section 7.18.110.
Tier II Collaborative Special Study #1 Jurisdictional Boundary Monitoring in the Upper Watershed	Storm water monitoring was be conducted during two storm events during the 2010-2011 wet weather monitoring period. Monitoring was conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples will be analyzed for organophosphate pesticides (Diazanon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc and acute and chronic toxicity to *Ceriodaphnia dubia*. In collaboration with City of San Diego, City of Lemon Grove, and Caltrans.	Implementation	Level 1: Completion of Study and Final Report	Completed study and final report prepared by the City of San Diego's Consultant.	Monitoring occurred during the 10/11 rainy season. Final report to be completed in FY 11/12. Monitoring at the jurisdictional boundary will continue in the 11/12 rainy season.
Tier I Residential Educational Kiosk Pilot Study	Educational material about the water quality problems in the Chollas Creek Watershed (Watershed Fact Sheet) will be posted in a specially designed kiosk at Vista La Mesa Park. La Mesa may implement additional educational kiosks at other locations in the future within the watershed.	Implementation	Level 2: Change in awareness	The City will conduct outreach within the watershed, and infers that increased exposure to materials in busy locations will lead to changes in awareness. No formal assessment of awareness will be conducted at this location=as it is not practicable.	Kiosk at Vista La Mesa Park has been constructed and is displaying watershed related information. The location is maintained and the information is updated quarterly.

City of La Mesa Watershed Activities Reporting Year 3, Phase I of Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier II Residential Schools Education and Outreach Program	Education and outreach program at local schools within the Chollas Creek Watershed in partnership with the I Love A Clean San Diego. This program will be implemented at La Mesa Dale Elementary School, Rolando Elementary School, La Mesa Middle School, and Mt. Helix High School.	Implementation	Level 2: Change in awareness Level 3: Modification of behavior through education and outreach	# of outreach events held (children educated) Survey Results	6 outreach presentations were conducted with 250 children educated. Overall weighted pre test score= 58% Overall weighted post test score = 73% 1/5/11 Rolando Elementary School (5th Grade): 1 presentations, 105 students, Pre Test 59%: , Post Test 78% 2/17/11 Rolando Elementary School (2nd Grade): 1 presentation, 75 students, Pre Test 59%, Post Test 78% 3/23/11 La Mesa Dale Elementary School (2nf Grade): 3 presentations, 70 students, Pre Test 57%: , Post Test 67%
Tier II Roads, Commercial Metals - BMP Self Certification Pilot Study	This pilot study includes an assessment of urban runoff form a major, mixed use parking lot in La Mesa (super market with additional shops). The load contribution of the parking will be also assessed. This project includes an education and outreach component to open dialogue with property management. The shopping center management will provide source control BMP maintenance records for the City to assess. Recommendations will be made to management, and self certifications will be required annually. Additional wet weather samples will be collected for assessment.	Implementation	Level 1: Completed study (understanding of metals sources) Level 2: Change in awareness Level 3: Modification of behavior through education and outreach	Completed study and final report.	The City collected wet weather grab samples in FY 10-11 from selected commercial centers within the City. The City will further refine and begin wider implementation of this activity at additional locations within the watershed in FY 11-12 as part of the City's strategy for the watershed's Comprehensive Load Reduction Plan.

City of La Mesa Watershed Activities Reporting Year 3, Phase I of Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier III Roads, Residential, Industry, Commercial, Eating/Drinking Bacteria Treatment Pilot Study	Selected locations in the Chollas Creek Watershed will be retrofitted with a filtration BMPs. The number and locations of these is still to be determined. The details will be specified in the Comprehensive Load Reduction Plan prepared for the watershed.	Planning	Level 4: Load reduction	Load Reduction based on amount associated with selected treatment BMPs.	The City installed (2) Filterra filtration BMPs at the intersection of Orien Dr. and Lowell St within the watershed in FY 09-10. Building on this, the City plans to assess the maintenance issues and effectiveness of these units in relation to further installations of BMPs in FY 11-12 and beyond, as will be explained in the Comprehensive Load Reduction plan prepared for the watershed.
Ongoing Agency Wide Activities					
Tier II Residential, Commercial Clean Up Events	Cleanup Events will be held twice a year at University Channel (Creek to Bay Clean Up and the California Coastal Day). Each event will include an education and outreach component.	Implementation	Level 2: Public Awareness Level 3: Modification of Behavior Level 4: Runoff and Load Reductions	# of participants Trash Load Reduction Education Pre/Post Test	Events held at University Channel: coord. (32.7551, -117.0412) 9/25/10 Costal Clean Up Day: 29 participants, 55 lbs trash, 20 lbs recycling removed Pre test 73% Post Test 92% 4/30/11 Creek to Bay Cleanup: 20 participants, 450 lbs trash 20 lbs recycling removed. Tests not completed.
Tier I Auto, Roads, Industrial, Commercial, Eating/Drinking Enforcement: Targeted Facility Inspections	Annual business inspections will include a supplemental questionnaire specific to the Chollas Creek Watershed and targeting businesses along University Channel.	Implementation	Level 1: Completion of Inspections Level 2: Public Awareness	# of inspections within the Chollas Creek watershed which included the supplemental watershed questionnaire. # of businesses within the Chollas Creek watershed which implemented corrective actions based on the inspection.	20 Inspections completed within the Chollas Creek watershed which included the supplemental watershed questionnaire. 2 businesses within the Chollas Creek watershed took corrective actions based on the results of the inspections.

City of La Mesa Watershed Activities Reporting Year 3, Phase I of Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
New Activities					
Multi Family Residential Trash Area Pilot Study	The City will perform an site-by-site assessment on multi-family residential trash areas throughout the watershed. This will allow the City to understand the baseline level of compliance. Following the assessment, enforcement will be conducted with follow up inspections to ensure locations are consistently up to code standard. Water quality sampling may be conducted for further assessment.	Implementation	Level 3: Modification of behavior	Completed study and final report.	The City completed the initial assessment of 136 Multi Family Apartment locations within the City.

City of Lemon Grove Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status (Planning or Implementation)**	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Activities For Current Reporting Year					
Tier II Collaborative Special Study #1: Jurisdictional Monitoring in the Upper Watershed	Storm water monitoring will be conducted during two storm events during the 2009-2010 wet weather monitoring period. Monitoring will be conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples will be analyzed for organophosphate pesticides (Diazinon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc, and acute and chronic toxicity to Ceriodaphnia dubia. Partnership with City of San Diego, Caltrans, and City of La Mesa	Implementation	Level 1	Completed study and final report prepared by City of San Diego consultant.	Potential delayed participation by the City of Lemon Grove due to severe budget constraints. City is working to collaborate on a solution to maintain participation.
Tier I Legislative: Municipal Code and General Plan Amendments Sustainability Policy and Green Building Policy	To update the City's Municipal Code and General Plans to include green building concepts including LID and create a sustainability policy for overall City functions.	Planning and Implementation	Level 1	Amendment Adoption and Plan Development Approval Process	Development Code amendment adopted in Jan. 2010 Municipal Code amendment adopted in Mar. 2010 General Plan amendment adoption delayed due to quantity of work and necessity of performing work in house (budget constraints prevent the hiring of a consultant)

City of Lemon Grove Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status (Planning or Implementation)**	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Ongoing Agency Wide Activities					
Tier I Discharger Facilities Municipal Facility Inspections	Municipal facilities are inspected for compliance with the requirements of the NPDES Permit. During these inspections, facilities are also inspected for activity specific BMPs and all designated pesticide, herbicide, and fertilizer BMPs required by the FY08 JURMP. Municipal Treatment Control BMPs are inspected for completeness, cleanliness, and other factors.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior	Total Inspections Timeliness of Inspections	53 Number of Inspections The City inspects all industrial facilities and all automotive and restaurant facilities within the City's boundaries. 1 inspection was conducted per facility and follow up inspections were performed as necessary
Tier II Residential, Commercial Clean up Events	Clean up events are held annual in the Chollas watershed or more frequently based on volunteer group availability. Each event will now include a brief post clean up survey.	Implementation	Level 2 and 4	# of participants Trash Load Reductions Survey data	Completed Creek to Bay in April 2011 and Coastal Clean up Day in Sept. 2010. Will participate in these two I Love a Clean San Diego events every year. Approximately 125bs of trash and debris were collected by 18 volunteers for Creek to Bay. Approximately 150 lbs of trash and debris were collected by 20 volunteers for Coastal Clean up Day.
Tier I Residential City Newsletter	To provide Watershed specific information in the semi-annual City wide Newsletter. The Newsletter is distributed to all residents, business owners and business tenants in the City. The City will provide updates on current programs and TMDL efforts. Will contain a brief survey in future editions pertaining to Watershed knowledge.	Implementation	Level 1 and 2	Data collected from surveys	Newsletters are published biannually by the City and contain an environmental section.
Tier I Residential Water Quality Booth at City Events	To provide water quality and watershed information to the attending public. Obtain survey information pertaining to household BMPs.	Implementation	Level 1, 2, and 3	Data collected from surveys	During FY 09-10, the City had booths at the both the Fire Station open house and the Winter Bonfire. These two events ready approximately 800/900 people, residents and non-residents. The City has participated in one event so far during FY 10-11, the Fire Station Open House.

City of Lemon Grove Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status (Planning or Implementation)**	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Municipal Xeroscaping Municipal Medians	Ongoing rehabilitation of municipal landscaping to include LID concepts, water conservation, and xeroscaping	Implementation	Level 1, 2 and 3 Potential Level 4 based on water saved	Amount of water saved Rehabilitation of all medians	This is an on-going project that was begun in FY 08-09. None of the new xeroscaped areas have been in ground long enough to assess water savings at this time.
New Activities					
Tier III Vector Control Grant Project	Vector Control Grant for minor stream restoration for 2 small drainage channels, both less than a mile in distance.	Project suspended due to evidence at the County that the properties did not b belong to the City	Potential Level 4 and 5, but no official monitoring will be performed	Decrease in vector control treatement frequency, visual improvement and flowing water	This project is currently in process with the County with potential implementation in 2012 if the projects are approved and grant funds remain available.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Activities For Current Reporting Year					
Tier I Chollas Creek Watershed Storm Drain System Characterization Study	Source ID study for pollutants relating to the pending sediment toxicity and benthic community degradation TMDL at the mouth of Chollas Creek and adjacent areas. Study will assess existing upstream data and determine data gaps. Primary constituents of concern are Chlordane, PCBs, PAHs and pesticides. Monitoring to characterize the storm drain system during wet and dry weather. Wet weather will consist of pollutograph sampling with water column chemistry, sediment chemistry and grain size, and toxicity analyses for two storm events of 0.1 inch of rain. Dry weather will consist of water chemistry, sediment chemistry, and toxicity sample collection.	Complete	Level 1	The findings from this study will allow the City to characterize the pollutants causing sediment toxicity and benthic community degradation, and help identification sources of those pollutants.	Trend analyses indicate significantly increasing trends for total and dissolved copper and total and dissolved zinc in the north fork of Chollas Creek (SD8(1)). When compared to historical data (1994–2010), increasing trends are relatively shallow and have flattened over time. However, exceedance ratios have steadily decreased at SD8(1) since 2007. Significantly increasing trends were also noted for total copper and total zinc at DPR2. Significantly decreasing trends were observed for Diazinon in both the north fork and south fork
Tier I Assessing Regulatory Barriers for Low Impact Development Implementation	This project involves a City-wide review of the Municipal Code, plans, manuals, policies, and design standards to determine barriers to implementing LID for new development and redevelopment, where applicable.	Planning	Level 1	Document the barriers to implementing LID	Barriers were identified. Any changes to modify the Municipal Code, plans, or manuals to advance implementing LID in the City will be considered during the Comprehensive Load Reduction Plans.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Brake Pad Partnership	The project involves providing support for bill SB346 which requires for brake pads to contain no more than 5% copper by weight by 2011.	Implementation	Level 4: Load Reduction	Sponsorship of Sustainable Conservation	The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.
Tier I Public Service Announcement	In past years, the objective of this campaign was to educate the public about the causes of bacteria and trash loading, and encourage positive behavioral change.	Complete	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	# residents reached through PSAs Results from public opinion/awareness surveys	While the City continues to air Public Service Announcements, it is no longer conducting assessment on the spots and will not be reporting on their effectiveness. This activity will continue but will no longer be reported. The City also worked with the San Diego Regional Stormwater Copermittees to run a pesticide PSA called "Ants in Your Pants."
Tier I CBSM Program for Chollas Creek – Trash	Community Based Social Marketing targeting Chollas Creek Watershed and activities/behaviors in residential and mixed residential and commercial areas that result in water quality issues due to trash. This project includes a trash clean up, a type structural trash intervention (e.g. new trash cans), and targeted education and outreach. The CBSM project is based on the methodology developed for Keep America Beautiful.	On-Hold	Level 2: Change in awareness Level 3: Behavioral change in targeted areas Level 4: Load Reduction	Visual Trash Survey Telephone Behavior/Awareness Survey Load reduction - pounds of Trash Removed during clean up effort	In FY 2009 the baseline observations; development of CBSM intervention; and community clean up portions of the project were completed. Implementation of the structural and educational elements was delayed in FY 2010 due to structural and budgetary impediments. The pilot study is being re-evaluated to determine how quickly the project can resume. No timetable has been established as of the FY11 reporting period.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Billboards/ Transit Shelters	This project evaluates whether public outreach can be linked to positive behavioral change. These advertisements were displayed in both English and Spanish on billboards and bus shelters, and target behaviors associated with bacteria and gross pollutants (trash) profiled as a vector.	Complete	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	% residents reached through signage Results from public opinion/awareness surveys (randomly selected cohort)	Based on results from the *2009 Storm Water Survey*, only 17% of residents polled recalled encountering Think Blue messages via billboards and mobile advertising. It was determined that transit shelters and billboard advertisements were not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues. The activity is being discontinued in FY 2010.
Tier I Mobile Advertising – Trash and Bacteria	This project evaluates whether public outreach can be linked to positive behavioral change. These advertisements were displayed in both English and Spanish on City-owned static billboard trucks.	Complete	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	% residents reached through signage Results from public opinion/awareness surveys (randomly selected cohort)	The advertisements were displayed throughout the San Diego Bay WMA in both English and Spanish in FY 2009. The estimated audience was 522,300 for Chollas Creek. In FY 2009, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, approximately 17% of residents became aware of the Think Blue message through billboards and mobile advertising. Based on results from the *2009 Storm Water Survey* it was determined that mobile advertising was not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. Additionally, the Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. The city has discontinued this activity.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Low Impact Development and the Planned BMPs at Southcrest and Memorial Park (to be issued project #)	This education and outreach program will include community meetings, poster presentations, handouts, education materials and give-aways promoting water quality, LID techniques, and descriptions of the planned CIP projects in the Chollas Creek Watershed, including Southcrest Park (City-14-1 and City-14-2), Memorial Park (City-15-1).	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	Results from public opinion/awareness surveys	Work was completed on the Memorial Park project in FY 11. Public awareness of the project was raised via community meetings, stakeholder meetings and news stories regarding the project. The project was well received in the community and the City continues to look for additional storm water BMP construction opportunities in this area. Implementation of Southcrest Park project is behind schedule and the project is currently in the design phase. Education and outreach programs will be implemented as the project gets closer to the construction phase.
Tier I Targeted Metals-Related Facilities – Auto Facility Inspections Pilot Study (City-8-1)	Project is an aggressive inspection program targeted at auto-related facilities for metals-related pollutants loading.	Complete	Level 1: Completion of Inspections Level 3: Behavior Change Level 4: Source Abatement	# of facilities inspected # of sites with corrective actions # of IC/ID's observed	178 facilities inspected (Level 1) 4 sites implemented corrective actions during inspection (Level 3 and 4) 4 IC/ID's observed during inspections This activity will be completed in FY 2010.
Tier I Targeted Business Inspections Pilot Study (City-8-2)	Project is a targeted aggressive inspection program targeting various outdoor activities of businesses.	Cancelled			This activity is no longer planned for the Chollas Creek Watershed. Instead, the activity is moving forward in other watershed's within the City of San Diego's jurisdiction. The findings from the activity may be implemented in the Chollas Creek Watershed, and would be reported under the TMDL at that time.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Collaborative Special Study #1: Jurisdictional Boundary Monitoring in the Upper Watershed (to be issued project #)	Storm water monitoring was conducted during two storm events during the 2010-2011 wet weather monitoring period. Monitoring was conducted simultaneously at the two compliance monitoring stations SD8(1) and DPR2. Flow weighted composite samples were e analyzed for organophosphate pesticides (Diazinon and Chlorpyrifos), organochlorine pesticides (Chlordane), PAHs, PCBs, total hardness, and dissolved copper, lead, and zinc, and acute and chronic toxicity to Ceriodaphnia dubia. This study will continue into FY12.	Implementation	Level 1	Completed Study	This activity will continue into FY 12. Results found in FY11 include: ▪ Diazinon was above the chronic waste load allocation (WLA) and Malathion was above the recommended benchmark for chronic conditions at LG-1 during the February 16, 2011 storm event. ▪ Toxicity to *Ceriodaphnia dubia* reproduction was observed at LM-1 during the February 16, 2011 storm event. There were no instances of acute or chronic survival toxicity to *C. dubia* at LM-1 or LG-1 or reproductive toxicity at LG-1 during either monitored storm event. ▪ When applying the default California Toxics Rule water-effects ratio multiplier of 1.0, copper below the WLA during the October 6, 2010 storm event at both LM-1 and LG-1. During the February 16, 2011 storm event, dissolved copper was above the acute and chronic WLA at LM-1 and above the chronic WLA at LG-1. Copper had a higher detection rate and frequency above WLAs (compared to the acute and chronic waste load allocations (WLAs)) than lead and zinc. ▪ Dissolved lead and dissolved zinc were below the acute and chronic WLAs at all sites during all events. ▪ When applying newly developed site-specific criteria developed through the City of San Diego's Chollas Creek Water-Effects Ratio Study, dissolved copper, lead, and zinc were below the WLA during both monitoring events, PAHs, Chlorinated Pesticides, and PCB congeners were mostly below detection limits with few detections just above the reporting limits.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Collaborative Special Study #2: Activity Assessment Grab Samples for Metals	Activity assessment grab samples were collected for source identification studies or for BMP assessments. Samples were collected from specific land use areas in each priority sector during one wet weather event. Specific locations were pre-determined prior to the storm monitoring season based on land use, activities, or BMPs and decided by the participating Dischargers. Samples were analyzed for total and dissolved metals, TSS, and hardness.	Complete	Level 1	Completed Study	Monitoring activities conducted for Collaborative Special Study 2 identified ten potential hot spots for dissolved copper, dissolved lead, dissolved zinc, and/or total suspended solids (TSS). The three hot spots with the highest relative priority were identified, as follows: ▪ Site 19 had the highest dissolved copper, lead and zinc concentrations and the fifth highest TSS concentration. ▪ Site 11 had the second highest dissolved copper and TSS concentrations, fourth highest dissolved lead concentration, and third highest dissolved zinc concentration. ▪ Site 10 had the highest TSS concentration of all sites, but was not identified as a hot spot for metals.
Tier I Collaborative Special Study #3: Synthetic Pyrethroid Assessment Monitoring	Additional samples were collected at SD8(1) and DPR2 (during three events) and LM-1 and LG-1 (during two events) and analyzed for synthetic pyrethroids, TSS, and toxicity to *Hyalella azteca*. The purpose of this study was to collect data that will be submitted to the Department of Pesticide Regulation (DPR) as part of their synthetic pyrethroid re-registration process. The goal of participation with DPR is to have synthetic pyrethroids banned or placed on restricted use.	Complete	Level 1	Completed Study	Completed in FY10. Results include: ▪ The data indicated that synthetic pyrethroid pesticides were used throughout the watershed. Eight of 13 synthetic pyrethroids were detected in both the north fork and south fork. ▪ All samples at all four monitored sites had Bifenthrin concentrations greater than the acute LC_{50} literature values. ▪ Toxicity to *Hyalella azteca* was commonly observed.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Collaborative Special Study #4: Bacteria Monitoring	Samples were collected and analyzed for total coliform, fecal coliform, and enterococci during storm events at SD8(1) and DPR2 (three storms) and LM-1 and LG-1 (two storms). Samples were collected as grab samples during the peak flow of the storm event.	Complete	Level 1	Completed Study	Sample results were compared to the WLA criteria in the *Revised TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, which was adopted into the Basin Plan through Regional Board Resolution No. R9-2010-0001. Results for Collaborative Special Study 4 were as follows: ▪ All samples collected for Collaborative Special Study 4 exceeded the fecal coliform WLA. ▪ There are no discernable patterns for bacteria concentrations across the Chollas Creek Watershed. Total coliform, fecal coliform, and enterococcus concentrations varied from storm to storm and location to location. Fecal coliforms decreased with each successive storm event at SD8(1), however concentration increased with each successive storm event monitored at DPR2.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Dry Weather Bacterial Source Identification Study In the Mouth of Chollas Creek (City-27-1)	Bacteria Source Study targeted storm drains and other potential sources of bacteria during three dry weather field surveys. Bacteria samples were be taken from investigation sites and fixed sites located on the three reaches of Chollas Creek. This will help identify the relative bacterial concentrations and flow influencing the Chollas Creek tidal prism (the point of compliance for the SHELL Beneficial Use) can be determined and the most likely sources of bacteria identified.	Complete	Level 1	Completed Study	This study was completed during the last year. Results and findings include: 1. During dry weather, there is no hydrologic connection between the mouth of Chollas Creek (the area influenced by tidal action) and the upstream drainage. Thus, bacteria found in the receiving waters of the creek mouth originate from sources that discharge directly to the mouth (i.e., storm drains). 2. 17 storm drains were identified that terminate in the creek mouth. Of these, evidence of flow was apparent in only four. 3. The highest bacterial concentrations were associated with the two storm drains near the National Avenue Bridge. 4. Two sources of flow that contributed to the high bacterial concentrations: a. Over-irrigation of landscaping at a strip mall b. A freshwater slough adjacent to a freeway off ramp that periodically discharges to a storm drain in the creek. 5. Scour ponds associated with the storm drains provide depressions within the streambed where high levels of indicator bacteria can be maintained. Tidal action carries bacteria from scour ponds to other areas within the tidal prism, serving as a point of inoculation for the mouth of Chollas Creek.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Tecolote Creek Bacteria Source Study, Phase I (City-5001)	Bacteria Source Study included dry and wet weather investigation of the bacteria loading potential of priority sources in the Tecolote Watershed. This project is directly related to the Chollas Creek Watershed that shares common priority sources for bacteria.	Complete	Level 1	Completed Study.	This study was completed in FY2008. Findings and results included that some sediments may act as a bacterial reservoir. This led to Phase II of the study.
Tier I Tecolote Creek Bacteria Source Study, Phase II (City-5002)	Bacteria Source Study included the collection of additional rainfall and bacterial concentration data and further bacterial source investigation. This project is directly related to the Chollas Creek Watershed because it shares common priority sources for bacteria. This work builds upon the bacteroides and source-related findings of the Phase I bacterial source ID study which was completed in August 2008 and complements results being collated under the 2009 San Diego River Phase I Microbial Source ID Study.	Complete	Level 1	Completed Study	**Results and Findings** ▪ An additional seven storm events need to be monitored in order to have a data set suitable for Section 303 (d) de-listing. ▪ Speciation of enterococci discharged during wet weather suggest that calculated bacterial loads in Tecolote Creek overestimate the potential threat to REC-1 and REC-2 beneficial uses because of the significant presence of fecal indicator bacteria from environmental sources such as soils and plants.
Tier I Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (City-26-1)	Project includes collecting and analyzing pollutograph samples from Chollas Creek Watershed and two other watersheds to determine a recommended approach to the BMP design storm to be used in TMDL implementation..	Complete	Level 1	Completed Study	The design storm study was completed in FY09. The sediment and bacteria relationship component of the study is on hold due to budget constraints.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status** ***(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier 1 TMDL Aerial Deposition Source Evaluation Monitoring Study, Phase III (City-24-1)	This Project evaluated potential sources of metals based on water quality data, previous aerial deposition data, inspection data (from FY07-08 targeted industrial inspections and other programs), and an area reconnaissance (to prioritize potential sources and identify sampling locations for first flush wet weather events). The study considered the impact of roofs and structural galvanizing. The study assessed runoff from up to 20 industrial/commercial sampling locations and up to six residential-only sampling locations for comparison to the industrial/commercial land use.	Complete	Level 1	Completed study.	**Results and Findings** ▪ Average annual aerial emissions of copper from four stationary facilities near the mouth of Chollas Creek are roughly five times higher than the average annual load discharged via storm water runoff. In contrast, lead and zinc emissions were only 1% and 24% of average annual discharge load. ▪ Aerial deposition of copper, lead, and zinc accounts for 100%, 29%, and 74%, respectively, of the average annual load discharged via storm water runoff. This suggests that mobile emissions sources (e.g., automobiles and resuspended dust) and localized parcel-based sources also play a role in metals deposition of lead and zinc in the watershed. ▪ Samples collected from deteriorating metal rooftops were found to be significantly higher in concentrations of total and dissolved zinc compared with the street level runoff concentrations. Concentrations of copper and lead were relatively low from metal rooftop runoff, but increased in street level runoff suggesting aerial deposition or other parcel-based sources of copper and lead. ▪ Total and dissolved copper concentrations were positively correlated (higher) with higher percent impervious surface area. ▪ Copper, lead, and zinc concentrations were higher in commercial and industrial land uses compared with residential land uses. ▪ Copper and zinc concentrations were significantly higher in Priority Sector 1 compared with other priority sectors. This supports the conclusion that emissions of copper and zinc from stationary facilities near the mouth of Chollas Creek likely contribute to aerial deposition and subsequent runoff of these metals. ▪ Industrial and commercial activities with uncovered outdoor metal storage and outdoor operations were positively correlated to high levels of copper, lead, and zinc.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Doggie Bag Dispenser Pilot Program	Evaluation of the most effective form(s) of pet waste stations, identification of optimum installation density and locations, potential pollutant load reductions that may be attributable to the pet waste station installations and development of appropriate effectiveness assessment measures.	Implementation	Level 2: Public Awareness Level 3: Behavior Change	The assessment focused on evaluating the installation of pet waste stations as a BMP in reducing pollutant loading in correlation with the number of bags employed. The project included site evaluations and selections, Pre and post site observations.	This project was completed in FY11. The average weekly reduction was calculated by subtracting the pre-installation average count of observed waste and the post-installation average count of observed waste. This translates to 28% reduction at the DECA Condo and 16% reduction at 1 Mission Condos in the amount of pet waste piles observed.
Tier I Evapotranspiration Effects Study	This study evaluate to what level evapotranspiration provides a reduction in pollutant loads for street tress. This study may assess different vegetation types or different plant species.	Cancelled	Level 1: Completion of Study	Completed Study	This activity is no longer moving forward. However, the City may pursue researching this topic further in conjunction with one of its future structural BMP projects.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier II Roads, Commercial, Residential Chollas Creek Aggressive Street Sweeping (City-3-1)	Project included the purchase and deployment on designated routes in Sectors 1 and 2 of a regenerative air and vacuum street sweepers. These sweepers were anticipated to collect additional fines and gross solids compared to more widely used mechanical sweepers. Training of the operators for this new equipment has also been conducted. These two new aggressive sweepers were used on existing routes and compared to mechanical sweepers regarding their effectiveness to remove debris and the metals contained in the debris. The frequency of the sweeping was also assessed regarding increased pollutant removal as well as acceptance by the public.	Implementation	Level 4: Load Reduction	Load reduction from debris monitoring data including: - debris weight & volume - # broom miles - physical and analytical characteristics of debris -wet weather chemistry Management Questions: Are vacuum-assisted sweepers more effective in achieving pollutant load reductions than conventional mechanical sweepers? What is the optimal frequency for sweeping residential and commercial routes? Does aggressive street sweeping result in direct, measurable water quality improvements? -Methods of measure will be tracked for each sweeper type. What is the most cost effective frequency that is publicly acceptable? - Methods of measure will be tracked at different sweeping frequencies for different sweepers.	A total of 149,040 lbs of debris was removed by all three sweeper types during the two-year study, over a total of 2,850 miles swept. This resulted in an average of 58 lbs of debris removed per mile swept. The results of the study concluded that the vacuum-assisted sweepers are generally more effective at removing both debris and heavy metals from road surfaces, especially on flat routes like those found in Chollas Creek. However, the vacuum sweepers performed equally as well as the City's conventional mechanical sweepers on hilly routes. Furthermore, it was determined that the vacuum sweepers are more effective at removing debris and metals with aggressive (i.e., twice per week) sweeping. Specifically, data collected during the pilot study indicated that the mechanical sweepers did not remove as much debris or metals when operated at an increased frequency. Finally, wet weather monitoring indicated that street sweeping is an effective BMP for improving water quality as the data showed direct improvements to runoff collected at inlets along swept roads versus those roads that were not swept.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Median Sweeping Pilot Study	The purpose of this pilot study was to evaluate the feasibility, potential water quality benefits and cost-effectiveness of modifying the City's Street Sweeping Program to including sweeping street medians.	Complete	Level 4: Load Reduction	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)	A baseline sweep of the four pilot median areas, which included Palm and Coronado Avenues in the San Diego Bay WMA, resulted in the removal of 32,460 lbs of debris over a total of 58 miles with an average of 560 lbs of debris removed per mile swept. After the initial baseline sweep, each route was swept four more times over an approximate three month period (with roughly three weeks between sweeps). A total of 32,560 lbs of debris was removed over this three month study period. Though the activity was not conducted in the Chollas Creek watershed, the study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic City roadways., including within this watershed The initial baseline median sweep collected 3-5 times more debris than the subsequent 3-week interval sweeps. This suggests that there is a significant buildup of debris adjacent to median areas. Furthermore, debris sampling confirmed the presence of heavy metals, nutrients and hydrocarbons in the debris collected. This leads the City to believe that median sweeping may provide a significant benefit for controlling the input of high priority water quality problems from impacting receiving waters.
Tier I Groundwork San Diego Chollas Creek Family Stream Team Partnership	The Port of San Diego awarded a grant to Ground work San Diego Chollas Creek for education, restoration, and refuse collection. The City of San Diego is collaborating on this activity by collecting data from the refuse collection events, surveys of the creek, and participant surveys.	Complete	Level 3: Behavior Change Level 4: Load Reduction	Visual Trash Assessment of dump sites within Chollas Creek Participant Surveys Trash and debris characterization and quantification	This activity was completed in FY09 and FY10. See the Port of San Diego's table for more information regarding the project statistics. See Activity Summary Sheet SDB-051 in the FY10 report for more information.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier II Discharger Facilities Rain Barrels/ Downspout Disconnect Project (City-12-1)	Project reduced storm water flows by capturing runoff from roof structures and gutters at Southcrest Recreation Center. Project included two rain barrel systems and three combined rain barrel and bioretention planter systems.	Complete	Level 2: Public Awareness Level 4: Load Reduction	Runoff volume captured Load reduction Maintenance Hours Implementation Cost	The study found that a gravity-flow system, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, can attenuate and infiltrate up to six times its capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively, and that all system configurations had measurable pollutant load reductions (however, certain systems were found to more effective than others). Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Furthermore, rain barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas.
Tier II Residential Outdoor Water Conservation Rebate Program	This activity involves launching a city wide rebate program through the Public Utilities Department to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads.	Planning	Level 2: Public Awareness Level 4: Load Reduction	Transportation and Storm Water Department initially planned to conduct water quantity monitoring both at the pre and post irrigation modification stage however due to a lack of appropriate participants re: residence proximity to storm drain inlets in order to conduct the assessment, the assessment was therefore cancelled.	The Public Utilities Department continues to offer this rebate program until grant funding is diminished.

City of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier II Eating and Drinking, Commercial, Roads Trash Segregation BMP Installation	This project is coordinated with the targeted aggressive street sweeping program. Inlet devices are installed to capture trash/debris prior to conveyance into local waterbodies. Due to long-term high maintenance issues, this BMP will first be piloted with aggressive street sweeping to assess the maintenance requirements compared to their trash removal effectiveness. The use of a multi-catchment /drainage area approach to trash removal (e.g., hydrodynamic separator at the MS4 outfall) may need to be used as part of a treatment train Tier III approach.	Implementation and Assessment	Level 4: Load Reduction	Load Reduction Maintenance Hours Implementation Cost	The catch basin inlets have been retrofitted with the selected drainage inserts in March 2011 and the first phase of monitoring began in September 2011
Tier II Auto, Commercial, Roads 43rd and Logan Street Upgrades and "Green Mall" Project	A combined green street and green mall project will be implemented to filtrate a design storm event. Project will include installing bioretention areas and LID filtration techniques and replacing impervious hardscapes with porous concrete sidewalks.	Construction	Level 4: Load Reduction	Load reduction Maintenance hours Implementation cost	The City of San Diego anticipates finishing construction in March 2012.
Tier II Parks, Pesticides, Roads Memorial Park Large "Green Lot" LID (City-15-1)	Project will divert flow from the parking area catch basin to a below grade storage and infiltration device installed within the grassy area of Memorial Park. Flows exceeding the storage and infiltration capacity will bypass the system through an overflow pipe at the downstream end of the infiltration area. Project will be designed to capture and infiltrate up to a five year storm.	Implementation and Assessment	Level 4: Load Reduction	Load reduction Maintenance hours Implementation cost	Construction took place between July 2010 and Spring 2011. Water quality monitoring began in Winter 2011 once the project was operational.

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Tier II Beta Green Alley	This project will pave an alley that is currently unimproved and direct the runoff to areas of porous pavement. The pavement and base materials will filter the storm water runoff before directing it to the storm drain.	Planning	Level 4: Load Reduction	Load reduction Maintenance hours Implementation cost	In FY10, the concept design of the project was completed. Designbegan in FY11 and will continue through FY12. It is anticipated that this project will be implemented in FY13
Tier I Sweeper Speed Efficiency Study	Study will focus on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The City's typical street sweeper operational speed is between 6-12 miles per hour. Reduced street sweeper speed is defined as 3-6 miles per hour based on manufacture recommendations. During project planning, a commercial route along Imperial Avenue in the San Diego Bay WMA was selected for this study based on a number of criteria.	Implementation	Level 4: Load Reduction	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)	Results indicated that the operation of mechanical street sweepers at the two monitored operation speeds had little impact on the weight of debris collected in the field and the pollutant removal capability of the sweeping machines. The weight of material collected by the street sweepers was highly variable and did not correlate with operational speed. In addition, chemistry analysis of roadway debris samples collected prior to and after street sweeping activity revealed significant variability in both the pre-sweep and post-sweep sample results. This result is important in that the variability of the pollutant concentration at the scale of the roadway sample collection limited the ability to detect differences between the two operational speeds. Street sweeping along Imperial Avenue associated with this pilot study resulted in the additional removal of 8,560 lbs of debris above normal City street sweeping operations. Therefore, this activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period and fulfills the requirement of a watershed water quality activity for credit in FY 2011.
Tier I ILACD School Presentations		Implementation	Level 2: Public Awareness	• Number of students educated • Number of schools visited	810 high school students at 5 schools in the Chollas Creek watershed were provided the presentation on watershed issues and how they can help prevent storm water pollution

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Ongoing Agency Wide Activities					
Tier I Auto, Residential, Commercial, Eating and Drinking, Construction, Industrial Modification of City Fact Sheets (City-5004)	The City continues to update Storm water Fact Sheets, as needed. Current efforts focus on changes resulting from the 2007 NPDES permit. The development of the fact sheets has been completed. The program is now focusing on fact sheet distribution. The City is working with other regional Copermittees on these efforts (i.e. partnering with the City of Escondido on the Green Wrench Guide). Future efforts may include information about low impact development or modifications to City codes and/or design standards.	Implementation	Level 2: Change in awareness	Public familiarity with the Fact Sheets (phone survey, questionnaires, inspections, etc)	In FY 2011 the City continues to modify and augment Fact Sheets to inform the public of changes to the City's Storm Water Ordinance. The updated Fact Sheets have been submitted to the Enforcement Section for review and upon approval will be distributed to the public. Anticipated completion date is scheduled for FY 2012.
Tier I Industrial Enforcement Referrals (City-5005)	The City reports any "non-filers" under the General Industrial Permit to the Regional Board found during the annual industrial/commercial inspections program. In the future, the City may initiate dialogue (education and outreach) with the current Permitted industries about the types of water quality data and possibly coordinating efforts on special studies.	Implementation	Level 1 Level 2: Industry Awareness	Number of "non-filers" reported	53 businesses within the Chollas Creek Watershed were found to be "nonfilers" under the General Industrial Permit
Tier I Discharger Facilities Outfall and Selected Canyon Condition Mapping and Assessment (City-5006)	The City is assessing canyons within its jurisdiction, specifically assessing erosion and deferred maintenance issues related to storm drain and MS4 outfalls which discharge to the canyons. This ongoing project will include a field reconnaissance and GIS mapping effort for the Chollas Creek and Los Peñasquitos watersheds.	Implementation	Level 1	Updated GIS maps with assessment of selected outfalls.	This project began in FY2010 and continued into FY2011. Approximately 60% of the outfalls within canyons have been assessed. Future progress will be dependent upon funding being made available for this watershed.

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Tier I Discharger Facilities Updates to Storm Drain Infrastructure Mapping (City-5007)	The City is updating the existing storm drain infrastructure GIS layers. This ongoing project will include a desktop review of as-built storm drain drawings for CIP and private development projects. (Also see City-5009 and City-5010).	Complete	Level 1	Updated MS4 maps	This project was completed in FY10.
Tier I Discharger Facilities Master Drainage Mapping (City-5008)	The City is completing a master GIS layer of drainage areas and watershed for the storm drain and MS4 system within the City's jurisdiction. This ongoing project will include a desktop review of existing drainage maps/studies, limited field reconnaissance and modeling efforts (as needed), and GIS mapping.	Planning	Level 1	Updated MS4 maps with drainage areas	Planning efforts began in FY2010. A data needs list is being compiled for the creation of the drainage area layer. A drainage map showing MS4 sub-basins (drainage areas affiliated with specific MS4 facilities) will be produced as part of the Watershed Asset Management Plan for Chollas in FY2012 and 2013.
Tier I Discharger Facilities Corrugated Metal Pipe Assessment (City-5009)	The City is evaluating storm drain and MS4 infrastructure for corrugated metal pipe. The project's objective is to identify, assess, and prioritize systems which may be replaced with reinforced concrete pipe storm drain. (Also see City-5007 and City-5010).	Implementation	Level 1	Compiled list of existing corrugated metal pipe infrastructure and CIP prioritization	In FY2011, this project was 90% complete. It is anticipated to be completed in FY2012.
Tier I Discharger Facilities Priority Reinforced Concrete Pipe Assessment (City-5010)	The City is evaluating storm drain and MS4 infrastructure for degraded reinforced concrete pipe. The project's objective is to identify and assess existing infrastructure for deferred maintenance, and then to prioritize systems to be repaired and/or replaced. (Also see City-5007 and City-5009).	Planning	Level 1	Compiled list of high risk reinforced concrete pipe infrastructure and CIP prioritization	The risk analysis and workplan has been completed in FY10. Budget for field assessment has been requested for FY12.

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Tier I Residential, Commercial, Boat Repair, Eating and Drinking, Landscaping Pesticides Booths at major events (City-5011)	During City sponsored events, educational materials are distributed to the public. The City has sponsored booths at the Del Mar Fair, December Nights, and San Diego Boat Show. The City has also sponsored a booth at the Adams Ave. Street Fair, and the Filipino-American Arts & Culture Festival events in the Chollas Creek Watershed.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through education and outreach	# of materials distributed at events located in Chollas Creek Results from public opinion/awareness surveys (as applicable)	The City participated in 16events located within the Chollas Creek watershed, distributing more than 6,500 promotional items including brochures, hotline magnets, tip calendar, etc. The 2011 Think Blue Survey indicated that 18% of respondents received Think Blue information at a community event. Of the 16 events, the City distributed outreach materials targeting pesticide usage and integrated pest management practices at 2 events. The estimated combined audience at these events is 196,000 members of the public.
Tier I Construction Construction Site Inspections - Sediment/ Metals (City-5012)	Inspectors within the Field Engineering and Inspection Services Divisions inspect construction sites and issue correction notices and/or stop work orders for code violations. The Field Engineering Division has created and implemented a special correction notice that is issued for storm water violations in need of immediate solution. Public Utilities Department inspect water and wastewater construction sites as well for storm water compliance.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through enforcement	Total Inspections	60,449 inspections Citywide 576 corrective action notices Citywide 19 Stop Work Notices issued Citywide for construction 21 enforcement actions taken by Storm Water Code Compliance Officers for construction sites
Tier I Discharger Facilities Municipal Facility Inspections (City-5013)	Municipal facilities are inspected for compliance with the requirements of the NPDES Permit. During these inspections, facilities are also inspected for activity specific BMPs and all designated pesticide, herbicide, and fertilizer BMPs required by the FY08 JURMP. Municipal Treatment Control BMPs are inspected for completeness, cleanliness, and other factors.	Implementation	Level 2: Change in awareness Level 3: Modification of Behavior through enforcement	Total Inspections Timeliness of Inspections	789 sites inspected twice during the year 782 sites inspected twice during the year Timeliness: 1 inspection should occur prior to and one during the rainy season

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Tier I Industrial, Commercial Facilities Industrial/ Commercial Inspections Program (City-5014)	The City inspects prioritized industrial and commercial facilities per the Municipal Permit and, for facilities that do not comply with the City's Municipal Code, takes enforcement action.	Implementation	Level 1: Annual Compliance	Number of prioritized facilities inspected	6,300 facilities inspected Citywide 455 follow up actions ranging from educational letters to notices of violation and citations 3,254 of those facilities inventoried are in the Chollas Creek Watershed
Tier II Roads Storm Drain Cleaning (City-5015)	Each year the City of San Diego cleans storm drain infrastructure including catch basins, inlets, cleanouts, and pipes. These efforts help reduce the trash and bacterial loading.	Implementation	Level 1: Annual cleaning Level 4: Load Reduction	Tons of debris removed	Approximately 17,560tons was removed during storm drain system cleaning in the watershed[1]
Tier II Roads, Commercial. Residential Street Sweeping (City-5016)	Street sweeping is being implemented across the City of San Diego as well as in the Chollas Creek watershed.	Implementation	Level 4: Measurable Load Reduction	Load reduction determined using: Debris Weight	2,763 tons of debris collecting from sweeping in the watershed[1]
Tier II Residential Clean Up Events (City-5017)	During City sponsored clean up events (resulting from specific calls for service and community cleanup efforts), volunteers and City workers remove trash and debris from the watershed. Also, during the year, the City removes trash and debris related to calls of service that are not handled through community cleanup events.	Implementation	Level 2: Public Awareness Level 3: Modification of Behavior Level 4: Runoff and Load Reductions	# calls or participants Trash Load reduction	19,611 service calls in the watershed[1] 49 Community Cleanups [1] Approximately 2,300 tons of trash collected through this effort[1]

[1] Per the combined data from the Semi-Annual Chollas and Paleta Creeks Trash 13267 Reporting for March and September 2011.

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Tier I Illicit Discharge Detection and Elimination (City-5018)	The City actively seeks and eliminates discharges to the storm water conveyance system. Code Compliance Officers respond to enforce the Storm Water Ordinance and cite/educate businesses and residents who reportedly violate the ordinance with illegal discharges. The Dry Weather Monitoring Program investigates exceedances found during routine monitoring that are potentially cause by illicit discharges or connections.	Implementation	Level 1: Compliance Level 2: Public Awareness Level 3: Modification of Behavior	Number of calls reported and responded (Code Enforcement) Number and status of sites monitored	Of 273 complaints called into the hotline within the Chollas watershed, compliance has been achieved at 254 sites due to enforcement actions. Several cases are in progress at the time of reporting, several were referred to other agencies, and seven calls were associated with the duplicate cases. Of 71 dry weather monitoring sites visited in the watershed, 35 sites were dry and 36 were flowing or ponded. 1 wet site was not monitored due to excessive vegetation at the outfall. Of the 36 wet sites, 19 exceeded for one or more analytes. 16 of these sites were found to be dry, clean, or otherwise had no sign of illegal discharge on the second visit. Only three sites had evidence of recent illegal discharge. In one case, an unidentified party dumped greasy wastewater into an inlet, This drain was cleaned by the Operations and Maintenance system and no further dumping has been observed. A second case involves a vehicle chronically leaking automotive fluids into the storm drain. This case was referred to and abated by the Code Enforcement section. The third exceedance source was caused by over-irrigation water from a shopping center.
Tier I SUSMP and Development Regulations (City-5019)	The City incorporates SUSMP requirements on applicable development and redevelopment projects City-wide. Depending on the type and size of the projects, SUSMP requirements could include site design, source controls, and treatment controls such as LID.	Implementation	Level 1: Compliance	Projects permitted subject to SUSMP	35 projects were determined to be Priority Development Projects Citywide
Tier I Household Hazardous Waste Collection Program (City-5020)	The City's Environmental Services Department runs this program which seeks to eliminate illegal discharges associated with the improper use and disposal of household hazardous materials. Methods include one-day collection events, a permanent collection facility, and education programs.	Implementation	Level 1: Compliance Level 2: Public Awareness Level 3: Modification of Behavior	Tons of household hazardous waste collected	494 tons of household hazardous waste was collected Citywide.

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Activities For Current Reporting Year					
Tier II Porous Pavement Project at Central Regional Public Health Facility Parking Lot	Removal and replacement of 14,000 square feet of existing impervious pavement with porous pavement and a stone reservoir to capture runoff from the parking lot at the Central Regional Public Health Facility.	Implementation	Level 4	Water quality monitoring	During FY10-11 this BMP was installed and monitored. Approximately 6,500 square feet of rubberized porous pavement was installed. Water Quality Monitoring was conducted during 5 rain events. A final report will be available after this reporting period.
Tier II Capture and Infiltration Project at Comprehensive Health Care Center	Installation of concrete detention/infiltration vaults or equivalent units under two parking lots at the Comprehensive Health Care Center.	Implementation	Level 4	Water quality monitoring	During FY10-11 this BMP was installed and monitored. Construction of 4 Biofiltration devices including three that collect parking lot runoff and one that collects roof runoff. Water Quality Monitoring was conducted during 4 rain events. A final report will be available after this reporting period.
Tier II Bioswales/ Rain Gardens at Dodson House	Installation of three bioswales and two rain gardens at the Dodson House.	Project has been deleted	Level 4	Water quality monitoring	This project was originally included in the San Diego IRWMP program, but since the property is no longer maintained by the County, it has been removed from IRWMP as a project.
Ongoing Agency Wide Activities					
Tier 1 Commercial Business Inspection & Enforcement	The County of San Diego performs routine inspection and enforcement of commercial businesses as part of its JURMP. There is one commercial business, a cemetery, within the County's portion of the Chollas Creek Watershed. It is inspected approximately annually, with follow ups and enforcement performed as necessary.	Implementation	Level 1 Programmatic Outcomes Level 3 Behavioral Modification	Level 1 # Inspections, # Violations Observed Level 3 # Corrective Actions Implemented	# Inspections – 2 # Violations Observed – 3 # Corrective Actions Implemented – 2* (* remaining corrections occurred after the reporting period.)

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Tier 1 Municipal Facility Inspection & Audits	The County of San Diego performs routine inspection and audits of municipal facilities as part of its JURMP. There are seven County-owned municipal facilities within the Chollas Creek Watershed. All facilities are inspected twice per year by the department responsible for facility operations. The Department of Public Works supplements routine inspections with periodic audits of facility operations.	Implementation	Level 1 Programmatic Outcomes Level 3 Behavioral Modification	Level 1: # Facilities Inspected, # Inspections, # Deficiencies Observed During Inspections, # Facilities Audited, # Audits, # Deficiencies Observed During Audits Level 3: # Corrective Actions Implemented Following Inspections, # Corrective Actions Implemented Following Audits	# Facilities Inspected – 7 # Inspections – 15 # Deficiencies Observed During Inspections – 4 # Corrective Actions Implemented Following Inspections – 4 # Facilities Audited – 6 # Audits – 6 # Deficiencies Observed During Audits – 2 # Corrective Actions Implemented Following Audits – 2

Port of San Diego Watershed Activities Reporting Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
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Activities For Current Reporting Year					
Tier I Brake Pad Partnership	The project involves providing support for bill SB346 which requires for brake pads sold in California to contain no more than 0.5% copper by 2025. In addition, the bill will: 1) creates limits for other brake pad materials; 2) establishes a certification process by a third party testing agency and requires DTSC to charge a fee to cover the costs; 3) establishes civil penalties for violations; and 4) creates a Brake Friction Materials Water Pollution Fund.	Implementation	Level 4: Load Reduction	Support of Sustainable Conservation	Activity Results for FY 2010-2011: The Port supported Sustainable Conservation's Brake Pad Partnership technical efforts legislatively this reporting period by providing letters of support. The Port's support was critical in obtaining Senator Kristine Kehoe's sponsorship of Senate Bill 346. This draft bill was signed by Governor Schwarzenager in September 2010.
Tier I Public Seminars	Integrated Pest Management for Landscape Professionals: The regional seminar provided information to professionals on Integrated Pest Management, is a pest management method that combines biological, cultural, physical, and chemical tools to minimize health, environmental, and financial risks.	Implementation	Level 2: Change in awareness; Level 3: Modification of Behavior through education and outreach	Does the education activity result in behavioral change or raise awareness? Survey	Seminar held on 5/19/2011. 75 people were in attendance and 100% of the participants indicated that the seminar was useful and protecting water quality is important.
Tier I Green Machine IPM Education Program	The Port of San Diego sponsored the San Diego County Office of Education's "Green Machine" traveling outreach van to visit elementary schools within the Chollas Creek watershed area. This interactive agricultural program teaches students about soil, the water cycle, and integrated pest management (an environmentally friendly approach to pest control). The Green Machine curriculum is aligned with the California State Science Content Standards for grades K-4.	Implementation	Level 2: Change in awareness; Level 3: Modification of Behavior through education and outreach	Does the education activity result in behavioral change or raise awareness? Number of people reached; Formal pre- and post-tests are not applicable due to the young age of the children.	Activity Results for FY 2010-2011: • 1,856 children were reached during July 2010 through June 2011.

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Tier II Ocean Science Explorers Initiative	The Port of San Diego supported science education for low-income youth in City Heights, a neighborhood in the Chollas Creek watershed, through the SEA Series Initiative. The science education program includes professional development for teachers, hands-on activities, thematic curriculum, books and materials, and an environmental service project the students implement at the end of the program.	Implementing	Level 2 Increase in Awareness; Level 3 Behavioral Modification	Does the education activity result in behavioral change or raise awareness? Ocean Science Explorers prepared a report on the activity. During this reporting period, The report includes: # of students and teachers reached.	Activity Results for FY 2010-2011: • Reached 1,145 low-income students and 29 teachers from schools within the City Heights area during this reporting period. Activity Update: This activity was completed in FY 2011.
Tier II Residential Schools Education and Outreach Program	Education and outreach program at local schools within the Chollas Creek Watershed in partnership with the I Love A Clean San Diego. The presentations were given at Mt. Helix High School in the City of La Mesa.	Implementation	Level 2: Change in awareness Level 3: Modification of behavior through education and outreach	# of outreach events held (children educated) Survey Results	Activity Results for FY 2010-2011: • 3 outreach presentations were conducted with 218 high school students educated (freshmen, sophomore, and seniors). • Results indicate See Activity Summary Sheet SDB-051 in Appendix E for more detail.
Tier II Operation Clean Sweep	Sponsorship of cleanup activities in Chollas Creek as part of a bay-wide event. Cleanup of debris in and around the creek bed. Collaborated with: San Diego Port Tenants Association, U.S. Navy and San Diego Gas & Electric	Implementing - Ongoing	Level 3 Behavioral Modification and 4 Load Reduction	The quantity and type of trash/debris collected.	Activity Results for FY 2010-2011: • Approximately 850 people participated • Areas cleaned: A8 Anchorage, Barrio Logan at Cesar Chavez Park, Chollas Creek, the Embarcadero Park, National City Marine Terminal and the Paradise Creek Marsh in National City. • Same sites as 2009 cleanup. • Trash collected overall: 8.5 tons (17,000 lbs) • Trash collected in Chollas Creek filled 1 ½ 40-cubic yard dumpsters • Most common trash collected in Chollas Creek: tires primarily but also pieces of sunken vessels and shopping carts

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Ongoing Agency Wide Activities					
Tier I Port of San Diego Industrial Inspection Program	The Port of San Diego performs routine inspection and enforcement of industrial facilities as part of its JURMP. During the 2008-2009 reporting period, the Port conducted facility inspections to ensure the impacts of urban runoff from industrial and commercial facilities were reduced or eliminated. There is one industrial facility, NASSCO, within the Port's portion of the Chollas Creek Watershed. This facility is inspected approximately annually, with follow ups and enforcement performed as necessary.	Implementing - Ongoing	Level 1 Programmatic Outcomes; Level 3 Behavioral Modification through enforcement	Is the site continuing to be in compliance with the industrial requirements of the Port of San Diego's JURMP? # Inspections, # Violations Observed # Corrective Actions Implemented	Activity Results for FY 2010-2011: • The Port conducted one facility inspection of National Steel and Shipbuilding Company (NASSCO) on 06/29/2011. • 100% of BMP compliance was achieved during this reporting period. • No follow-up was required sp no corrective action was necessary.
Tier I NASSCO Environmental Practices	The NASSCO Shipyard, an industrial facility on Port of San Diego property, identifies and implements BMPs in order to maintain compliance with their NPDES industrial permit requiring zero discharge from the facility.	Implementing - Ongoing	Level 1 Programmatic Outcomes	Are the appropriate BMPs installed to ensure zero discharge of pollutants to the Chollas Creek? Is the facility collecting all of their water or discharges? NPDES Industrial Permit Report (Order NO. R9-2003-005) prepared by NASSCO	Results provided in NASSCO's NPDES Industrial Permit 2010 Annual Reports (Per Order NO. R9-2003-005)
Tier I Booths at major events	The Port annually sponsors booths at various events, such as the Del Mar Fair and San Diego Boat Show	Implementing - Ongoing	Level 2: Change in awareness; Level 3: Modification of Behavior through education and outreach	Are booths at major events an effective outreach tool? What level of awareness does the public have about water quality in Chollas Creek? # posted advertisements or pamphlets distributed Results from public opinion/awareness surveys (as applicable)	Sun Road Boat Show on 1/27/10 – 1/30/11. Estimated 13,300 in attendance over the timeframe of the event. No surveys distributed. Earth Fair on April April 17, 2011. Estimated 60,000 in attendance over the timeframe of the event. No surveys distributed. Day at the Docks on April 17, 2011. Estimated 1,000 in attendance. No survey distributed,

California Department of Transportation (Caltrans) Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
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Activities For Current Reporting Year					
Tier I Facilities Pollution Prevention Plan	Annual inspection of Caltrans maintenance stations for storm water compliance.	Implementation	Level 4	Are there deficiencies in our maintenance facilities where potential pollutants discharged may reach the creek?	Caltrans has one bridge paint maintenance station (Coronado) and another typical maintenance station (Chollas) in the watershed and the results of the inspection conducted showed no deficiencies.
Tier II Chollas Watershed sweeping	Sweeping effort in the watershed, especially in priority sectors before the start of the rainy season and before rain events. Efforts to be coordinated with our maintenance staff.	Implementation	Level 4 Level 5	How many miles are swept per year and how much material is swept?	Maintenance crews sweep the freeways twice a month. Number of miles swept in watershed (freeway in both directions) (FY 10-11) =approximately 40.8 miles Materials removed (FY 10-11)=approximately 13.5 cubic yards based on the district average materials in cubic yards swept per lane mile in San Diego County.
Tier II Homeless Encampment Removal	Eradicate illegal human encampment under bridges along the freeways within the Chollas watershed by paving under bridges and placing cobbles to reduce bacteria, metals and trash loading.	Implementation	Level 4	How many homeless encampments have been removed?	Ongoing effort to remove homeless encampments.

California Department of Transportation (Caltrans) Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier II Collaborative Special Study (Jurisdictional Boundary Monitoring in the Upper Watershed)	Evaluate and compare water quality in the upper and lower watersheds in the north fork and south fork of Chollas Creek. During two of the three required storms per the Chollas TMDL, monitoring was conducted at the jurisdictional boundaries between the cities of San Diego, La Mesa, and Lemon Grove at sites LM-1 and LG-1. Flow-weighted composite samples that were analyzed for the following constituents: Total hardness, dissolved copper, dissolved lead, and dissolved zinc. Organophosphate pesticides (i.e., Diazinon and Chlorpyrifos). Organochlorine pesticides (i.e., Chlordane). Polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). Acute and chronic toxicity to *C. dubia*.	Planning	Level 1	What are the pollutant loads at the jurisdictional boundaries? How do the loads compare in the upper and lower watersheds in both forks?	▪ Diazinon and Chlorpyrifos were not detected above either the acute or chronic waste load allocations (WLAs) at LM-1 or LG-1 during any monitored storm event. ▪ Toxicity to *Ceriodaphnia dubia* was only tested at LM-1 and LG-1 during the February 2010 storm event. There were no instances of acute or chronic survival and reproductive toxicity to *C. dubia*. ▪ Metals concentrations and exceedance ratios at LM-1 were generally greater than in LG-1. ▪ Copper had a higher detection rate and exceedance rate (compared to the acute and chronic WLAs) than lead and zinc. ▪ Dissolved lead was below the acute WLA at all sites during all events. Dissolved lead was above the chronic WLA at LM-1 and LG-1 during the February 2010 storm event
Tier II Collaborative Special Study (Activity Assessment Grab Samples for Metals and sediment)	Activity assessment comprised of one grab samples per location, collected for source identification studies or for BMP assessments. Samples were collected from specific land use areas in each priority sector during one wet weather event. Samples were analyzed for total and dissolved metals, TSS, and hardness.	Planning	Level 1	What is a typical runoff concentration form a specific land use?	Monitoring activities conducted for this Study identified ten potential hot spots for dissolved copper, dissolved lead, dissolved zinc, and/or total suspended solids (TSS). The three hot spots with the highest relative priority were Site 19 (Commercial), Site 11 (Transportation), and Site 10 (Residential), as follows: ▪ Site 19 had the highest dissolved copper, lead and zinc concentrations and the fifth highest TSS concentration. ▪ Site 11 had the second highest dissolved copper and TSS concentrations, fourth highest dissolved lead concentration, and third highest dissolved zinc concentration. ▪ Site 10 had the highest TSS concentration of all sites, but was not identified as a hot spot for metals.

California Department of Transportation (Caltrans) Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier II Collaborative Special Study (Bacteria Monitoring)	Samples were collected and analyzed for total coliform, fecal coliform, and enterococci during storm events at SD8(1) and DPR2 (three storms) and LM-1 and LG-1 (two storms). Samples were collected as grab samples during the peak flow of the storm event.	Planning	Level 1	What's the bacteria concentration at the jurisdictional boundaries and the two required monitoring stations?	Sample results were compared to the WLA criteria in the *Revised TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek)*, which was adopted into the Basin Plan through Regional Board Resolution No. R9-2010-0001 ▪ All samples collected for Collaborative Special Study 4 exceeded the fecal coliform WLA. ▪ There are no discernable patterns for bacteria concentrations across the Chollas Creek Watershed. Total coliform, fecal coliform, and enterococcus concentrations varied from storm to storm and location to location. Fecal coliforms decreased with each successive storm event at SD8(1), however concentration increased with each successive storm event monitored at DPR2.
Ongoing Agency Wide Activities					
Tier I Brake Pad Partnership (BPP)	Caltrans funded work consisting of a watershed modeling effort conducted as part of a larger study examining the potential impact of copper from brake pad wear and debris released to the environment. The objective of the environmental transport and fate modeling is to predict how copper released from brake pads enters the bay and affects both the short-term and long-term concentrations of copper in the bay.	Implementation	Level 4	Are there new products that can replace the current products used for making brake pads?	Caltrans continues to fund the watershed modeling component of the BPP's technical studies and is working with the BPP to augment the modeling efforts of copper in highway environments. Results of the study will benefit in reducing copper concentration in the creek.

California Department of Transportation (Caltrans) Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier I Don't Trash California	Using a comprehensive, multicultural approach, the *Don't Trash California* campaign targets primary offenders of highway littering, as well as the general public, to create a social mindset in California that this State does not tolerate polluting our freeways and highways. The campaign will implement proven strategies in the Chollas Creek Watershed, including billboard, bus advertising, partnerships and community outreach to raise the level of awareness of the effects of littering and encourage the public to avoid littering.	Implementation	Level2 Level 3	How much public education materials were distributed to sponsors in the watershed?	Caltrans provided the following collateral items to Groundwork San Diego for distribution at school education visits: 25 Activity Books In English 50 T Shirts 50 Ball Point Pens 25 Reusable Bags 20 Megaphones
Tier II **Ornamental Roadside Vegetated Treatment Sites (ORVTS) Study**	The Ornamental Roadside Vegetated Treatment Sites (ORVTS) Pilot Study is comprised of two types of study sites: the Expanded Roadside Vegetated Treatment Sites (ERVTS) and the Groundcover Roadside Vegetated Treatment Sites (GRVTS). The ERVTS sites were constructed to expand the treatment strips at existing site locations of the original Roadside Vegetated Treatment Sites (RVTS) Pilot Study with new groundcover. Existing RVTS data will be utilized as a baseline condition, providing supplemental data on alternate vegetation types.	Planning	Level 1 Level 4 Level 6	For the ERVTS, how effective is the groundcover vegetation species at providing treatment of highway runoff and how do they compare in treatment potential to existing grass and forb vegetation within the Caltrans rights-of-way (ROW)?	Monitoring is ongoing. The report for the past monitoring season has not been finalized yet. Results will be reported as part of Caltrans Annual Report

California Department of Transportation (Caltrans) Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier II Open/Gap Graded Asphalt Pavements Water Quality Project	The study of Porous Asphalt Concrete Overlays Project was initiated to better understand the potential water quality benefits of asphalt concrete porous pavement overlays (porous pavement). The objective of the multi-year Project is to evaluate the quality of stormwater runoff from porous pavements compared to conventional Dense Graded Hot Mix Asphalt (DG HMA). The Project includes sites at eleven locations located statewide. The porous overlays tested include Open Graded Friction Course (OGFC), Rubberized Hot Mix Asphalt Open Graded (RHMA-O), and Rubberized Hot Mix Asphalt Gap Graded (RHMA-G). Field monitoring has been performed since early in 2008 with three to 12 storm events successfully captured at each station, including flow-weighted composite samples, flow and precipitation.	Implementation	Level 1 Level 4 Level 6	Treatment effectiveness is based on assessing the following parameters. • Sediment (total suspended solids [TSS]) • Total phosphorus • Copper (total and dissolved) • Zinc (total and dissolved)	No conclusions are drawn at this time. Monitoring is ongoing. The report for the past monitoring season has not been finalized yet. Results will be reported as part of Caltrans Annual Report
New Activities					
Tier II Structural BMPs Implementation for Major Construction Projects	Along I-15, Construct Bus Rapid Stations and High Occupancy Vehicle (HOV) lanes with structural BMPs in San Diego County from 0.4 mile north of Route 805/15 separation to 0.1 mile south of Route 15/8 Separation (contract 2T1300)	Planning	Level 1 Level 4 Level 6	How much of the existing and proposed pavement areas will be treated by the proposed structural BMPs?	• Project is in the planning stages and potential locations of structural BMPs are being evaluated at this time.
Tier II Structural BMPs Implementation for Major Construction Projects	Along I-805, Construct express and HOV lanes south in San Diego County in and near the City of Chula Vista, 0.32 Miles south of Palomar Street overcrossing to the Landis Street overcrossing. The project is proposing to incorporate biofiltration swales within the Chollas watershed (contract 081610).	Planning	Level 1 Level 4 Level 6	How much of the existing and proposed pavement areas will be treated by the proposed structural BMPs?	• Project is in the planning stages and will be constructed in multiple phases. One phase (2T1804) of the corridor project will go to construction in May of 2012. The project proposed 5 biofiltration swales and 1 biofiltration strip that will treat 5 acres of impervious surface.

California Department of Transportation (Caltrans) Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Tier II Structural BMPs Implementation for Major Construction Projects	Along SR-94, Construct HOV/general purpose/auxiliary lanes in San Diego County from Route 94/5 Separation to 0.2 miles west of 47th Street overcrossing (contract 287100).	Planning	Level 1 Level 4 Level 6	How much of the existing and proposed pavement areas will be treated by the proposed structural BMPs?	• Project is in the planning stages and will be constructed in multiple phases. Caltrans will report more details on each phase of construction in the upcoming reporting periods.
Tier II Structural BMPs Implementation for Major Construction Projects	Along SR-94, I-805, and I-15, Chollas Creek Watershed BMP Retrofit Project (contract 282400). The project is proposing to incorporate infiltration basins / trenches as well as biofiltration swales within the Chollas watershed to address the Metals TMDL to begin to move toward Waste Load Allocation.	Planning	Level 1 Level 4 Level 6	How much of the existing and proposed pavement areas will be treated by the proposed structural BMPs?	• Project is in the planning stages. So far the project is proposing 10 infiltration basins and 3 biofiltration swales.

United States Navy Year 3, Phase I of the Chollas Creek Dissolved Metals TMDL Implementation Plan					
Activity Name (Project #)	**Project Description**	**Current Status *(Planning or Implementation)***	**Outcome Levels(s)**	**Assessment Mechanisms**	**Activity Results and Updates**
Activities For Current Reporting Year					
Tier I/II MS4 Storm Water Management Plan	The Navy will prepare a Storm Water Management Plan for Naval Base San Diego to comply with the Statewide General Permit for storm water. The Management Plan will describe BMPs, measurable goals, and timetables for implementation in the following six program areas: 1. Public Education and Outreach; 2. Public Participation/Involvement; 3. Illicit Discharge Detection and Elimination; 4. Construction Site Runoff Control; 5. Post-Construction Runoff Control; and 6. Pollution Prevention/Good Housekeeping.	Planning (Still in negotiations with RWQCB on NPDES permits for NBSD)	Level 2 Change in awareness, Level 3 behavioral change, Level 4 load reduction	Track required inspections, audits, and maintenance activities and document in annual report. Track attendance at training and awareness events.	Navy is presently discussing the conditions for the updated Naval Base San Diego NPDES storm water permit with SDRWQCB. Permits should be available sometime in 2012.
Ongoing Agency Wide Activities					
Tier II Creek Trash Removal Program	Program to remove accumulated trash and debris from mouth of Chollas Creek. Trash and debris is captured behind booms strung across the creek. Navy personnel utilize cranes and small boats to removal trash and debris which is transported to the local landfill for disposal. Hazardous substances removed from the creek are stored in a secured area and properly disposed of in accordance with Federal and state laws and regulations. Conducted in partnership with City of San Diego.	Implementation	Level 4: load reductions in Creek and San Diego Bay	Report weight (tons) of trash and debris removed from creek.	Total removed in 2010-2011 wet season is approximately 10 tons.
New Activities					
Tier I Evaluation of Copper and Zinc sources in each outfall area	Use US EPA WINSLAMM model to assist in assessing Copper and Zinc sources across the base and optimize BMP selection and use.	Implementation	Level 4 load reduction	Four year project started in FY11and will involve mapping each outfall area and potential sources. Navy will calibrate and build a computer model of NBSD and use it to help select the best BMPs for each outfall.	Navy is currently collecting data for model calibration. After calibration, additional areas of the base will be mapped and assessed.

Appendix G

FY 2011 WURMP Education and Public Participation Activities Summary

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Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Estrella		
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Eucalyptus Park		
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Goodland Acres		
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Ildica Park		
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Lamar Park		
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Lincoln Acres		
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Spring Valley Gym		
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Spring Valley Park		
9/20/2010	County	Informational Kiosk	E	Signs of Degraded BMP's		General Public	Park Users	Sweetwater Lane Sports Complex		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Estrella		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Eucalyptus Park		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Goodland Acres		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Ildica Park		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Lamar Park		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Lincoln Acres		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Spring Valley Gym		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Spring Valley Park		
12/2/2010	County	Informational Kiosk	E	Water Conservation		General Public	Park Users	Sweetwater Lane Sports Complex		
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Estrella		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Eucalyptus Park		
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Goodland Acres		
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Ildica Park		
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Lamar Park		
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Lincoln Acres		
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Spring Valley Gym		
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Spring Valley Park		
3/21/2011	County	Informational Kiosk	E	Waste Storage, Handling, Disposal		General Public	Park Users	Sweetwater Lane Sports Complex		
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Estrella		
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Eucalyptus Park		
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Goodland Acres		
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Ildica Park		
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Lamar Park		
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Lincoln Acres		
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Spring Valley Gym		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Spring Valley Park		
6/30/2011	County	Informational Kiosk	E	Additional Source Reduction Methods		General Public	Park Users	Sweetwater Lane Sports Complex		
7/31/2010	City of Coronado	Municipal Staff Training	E	Spill Notification Procedures	Training on notification procedures for large spills. Allows staff to report spills to departmental staff, minimizing the chances of harming water quality	Municipal Staff	9	Department of Public Services	N/A	N/A
9/1/2010	City of Coronado	Municipal Staff Training	E	Pump Station Electrical Bypass	Training on proper set up of 25Kw Generator at 14th tee bathroom, to prevent sanitary sewer overflows from occurring	Municipal Staff	7	Department of Public Services	N/A	N/A
9/15/2010	City of Coronado	Municipal Staff Training	E	Certificate of Completion, Pearpoint CCTV	Skill training for new equipment to properly use the CCTV equipment to assess the state of the City's sewer and storm infrastructure.	Municipal Staff	6	Department of Public Services	N/A	N/A
9/15/2010	City of Coronado	Municipal Staff Training	E	SUSMP and General Construction Permit Overview	Overview of the updated SUSMP and general construction permit requirements.	Municipal Staff	10	Department of Public Services	N/A	N/A
9/17/2010	City of Coronado	Municipal Staff Training	E	Graffiti Truck BMP	BMPs training for removing graffiti from public right of way and to prevent illicit discharges into the MS4 system	Municipal Staff	8	Department of Public Services	N/A	N/A

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
9/21/2010	City of Coronado	Municipal Staff Training	E	Implementing BMPs: Park Maintenance	Parks Division training to protect storm water inlets during park maintenance activities.	Municipal Staff	13	Department of Public Services	N/A	N/A
9/30/2010	City of Coronado	Municipal Staff Training	E	Parker Station, High Tide, & Groundwater Diversion Procedures	Review of procedures for safe operations during diversion events. How to prevent flood conditions and move water through the storm water conveyance system.	Municipal Staff	3	Department of Public Services	N/A	N/A
10/5/2010	City of Coronado	Municipal Staff Training	E	Transferring data from Storm Water Computer to City Network Drive	Training on digital forms for diverter, pump stations, and cleaning areas.	Municipal Staff	6	Department of Public Services	N/A	N/A
10/5/2010	City of Coronado	Municipal Staff Training	E	Wet Weather Construction Inspections	Training on NPDES permit requirements as they relate to inspections of construction sites during the wet season.	Municipal Staff	6	Department of Public Services	N/A	N/A
10/6/2010	City of Coronado	Municipal Staff Training	E	Setting up Tiger Dam BMP/Flood Control	Training on set-up of BMP for locations prone to flooding during rain events.	Municipal Staff	5	Department of Public Services	N/A	N/A
10/7/2010	City of Coronado	Municipal Staff Training	E	Rain Event Possibilities	Discussion of set up and take down of flood control and BMPs during a rain event, and inlet cleaning procedures after a rain event occurs.	Municipal Staff	8	Department of Public Services	N/A	N/A

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
10/21/2010	City of Coronado	Municipal Staff Training	E	BMP Meeting	Discussion between parks and storm water divisions. Topics included providing location of storm water inlets around parks, researching alternative BMPs to implement during park maintenance, and how to minimize grass spray into the streets and gutters	Municipal Staff	6	Department of Public Services	N/A	N/A
12/1/2010	City of Coronado	Municipal Staff Training	E	Removing and inspecting storm water pump	Training on how to drain and inspect the check valve for a storm water pump.	Municipal Staff	9	Department of Public Services	N/A	N/A
12/2/2010	City of Coronado	Municipal Staff Training	E	Rain Event shift Reports	Training on how to properly fill out rain event forms.	Municipal Staff	12	Department of Public Services	N/A	N/A
1/6/2011	City of Coronado	Municipal Staff Training	E	Confined Space Entry	Training on confined space entry into a vault space.	Municipal Staff	6	Department of Public Services	N/A	N/A
1/11/2011	City of Coronado	Municipal Staff Training	E	Animal Pesticide	Training on proper application methods and amounts of pesticides/fertilizers to use to minimize leaching or runoff into the MS4.	Municipal Staff	5	Department of Public Services	N/A	N/A
1/18/2011	City of Coronado	Municipal Staff Training	E	DOT Hazmat Training	Training on how to properly track and ship hazardous materials.	Municipal Staff	2	Department of Public Services	N/A	N/A

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
3/18/2011	City of Coronado	Municipal Staff Training	E	Certified Compliance Inspector of Storm Water	Provides inspectors with necessary tools to evaluate construction sites, recommend appropriate BMPs and cite violators.	Municipal Staff	1	Department of Public Services	N/A	N/A
4/27/2011	City of Coronado	Municipal Staff Training	E	Revised SSO Form	Training on revised SSO reporting form.	Municipal Staff	7	Department of Public Services	N/A	N/A
5/23/2011	City of Coronado	Municipal Staff Training	E	Vactor Training	Training on how to properly operate the storm water department's vactor.	Municipal Staff	1	Department of Public Services	N/A	N/A
6/7/2011	City of Coronado	Municipal Staff Training	E	Flow Monitoring	Training on the modeling used by the City to approximate the rate of flow through the City's pumping equipment.	Municipal Staff	8	Department of Public Services	N/A	N/A
6/8/2011	City of Coronado	Municipal Staff Training	E	Qualified SWPPP Developer	Training to certify City Engineering staff as authorized to prepare and review SWPPPs	Municipal Staff	5	Department of Public Services	N/A	N/A
6/6/11-6/7/11	City of Coronado	Municipal Staff Training	E	Qualified SWPPP Practitioner	Training to certify City Engineering staff as authorized to prepare and review SWPPPs	Municipal Staff	5	Department of Public Services	N/A	N/A
9/13/10-9/16/10	City of Coronado	Municipal Staff Training	E	CAL EPA Basic Inspector Academy	Training provided on aspects of performing a government inspection.	Municipal Staff	5	Department of Public Services	N/A	N/A
11/3/2010	Imperial Beach	Municipal Staff Training	E	Annual Storm Water Training	Review storm water program, watershed programs, and BMPs	Public Works Employees	22	Public Works		Y - Survey

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
2/23/2011	Imperial Beach	Municipal Staff Training	E	Badger Training Course	Environmental compliance and pollution prevention course with focus on county inspections. Environmental Program Specialist completed the course.	Business Sector - Auto repair and autobody shop operators and employees.	1	Southwestern College	Items related to inspection and maintenance of bmps.	
4/6/2011	Imperial Beach	Municipal Staff Training	E	BMP Inspection and Maintenance of LID Workshop`	City of San Diego all day workshop on LID maintenance and inspection workshop	Employees - PW and Community Development	3	Balboa Park	Training material related to BMPs	N
5/12/2011	Imperial Beach	Municipal Staff Training	E	Fire Department Inspection and Training	Inspected fire station and conducted necessary storm water training	Employees - Fire Inspectors	2	Fire Station	N/A	N
5/24/2011	Imperial Beach	Municipal Staff Training	E	New Employee (GIS Administrator)	Indoctrination for new employee on storm water program	Employees - GIS Adminstrator	1	Public Works	N/A	N
9/13-16/10	Imperial Beach	Municipal Staff Training	E	EPA Code Enforcement Workshop	Detailed workshop on conducting proper environmental inspections.	Employees - Environmental Program Specialist	1	Carlsbad Faraday Center	Presentations and material relating to environmental inspection.	N
Multiple	Imperial Beach	Municipal Staff Training	E	QSP/QSD Certification GCP	QSP and QSD General Construction Permit training (JS Storm water, URS, and RBF)	Employees - Public Works environmental and inspection staff	3	Multiple Locations	Training material and information relating to QSP/QSD qualification.	N

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
FY10-11	SDCRAA	Municipal Staff Training	E	Annual Environmental Training	Environmental Affairs staff presentation on the Authority's Storm Water Program at the annual mandatory training: July 28, 2010 September 15, 2010 November 8, 2010	Authority Staff	260	San Diego International Airport		Yes – pre and post test
FY10-11	SDCRAA	Municipal Staff Training	E	Annual Environmental Training	Annual mandatory Storm Water Program training made available on-line.	Authority Staff	90	San Diego International Airport		Yes – pre and post test
7/22/2010	City of La Mesa	Municipal Training	E	EPA Training Course	Developing an Effective Municipal Storm Water Management Program for Construction sites	Municipal Staff	Engineering Tech.	La Mesa City Hall	Online Training Course related to construction storm water best management practices.	N
7/26/2010	City of La Mesa	Municipal Training	E	EPA Training Course	Finding and Fixing Illicit Discharges and Connections	Municipal Staff	Engineering Tech.	La Mesa City Hall	Online Training Course related to IC/ID detection.	N
9/29/2010	City of La Mesa	Municipal Training	E	City's Construction Storm Water Requirements	City's seasonal construction requirements for wet/dry weather.	Municipal Staff	8 Public Works/Engineering Employees, 2 Community Development Employees	La Mesa City Hall	Construction Site list, power point presentation slides.	N
8/31/2010	City of La Mesa	Municipal Training	E	Sewer Spill Overflow (SSO) Response and Reporting	Reviewed procedures for SSO Response	Municipal Staff	15 Public Works Employees	La Mesa Operations Facility	Procedure review by Wastewater Maintenance Supervisor	N
9/10/2010	City of La Mesa	Municipal Training	E	Fundamental Inspector Course	Inspection Protocols	Municipal Staff	Engineering Tech.	La Mesa City Hall	Online Training Course related to inspection protocols.	N

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
3/15/2011	City of La Mesa	Municipal Training	E	California Construction General Permit Training	Qualified SWPPP Developer (QSD) and Qualified SWPPP Practitioner (QSP) course	Municipal Staff	Strom Water Program Manager	City of San Diego Metro Waste Water	Review Construction General Permit Requirements for QSD/QDP exam.	N
3/15/2011	City of La Mesa	Municipal Training	E	Updated SUSMP and Hydromodificatio n Requirements	SUSMP and LID requirements, engineering submittals.	Municipal Staff	6 Public Works/ Engineering,, 1 Community Development Employee	La Mesa City Hall	City SUSMP, power point presentation slides.	N
7/27/2010	Imperial Beach	Municipal Training	E	Emergency Response Training	Annual training of PW staff on emergency response including vactor truck use, spill response, municipal BMPs, and pollution prevention.	Public Works Employees	24	Public Works	N/A	N
7/7/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Owner/Manager	Multi-Family Residential - Seniors	1	Helix Garden Court		
7/12/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door and Dropped off Supplies	Multi-Family Residential	17	Lanai Village	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
7/14/2010	County	Presentation	E	Recycling Outreach to Multi-Family	Door to Door Education	Multi-Family Residential	18	Jamacha Glen	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
7/16/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	22	Shadow Point		
7/17/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	40	Casa de Helix		
7/19/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	33	Shadow Point		
7/20/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	12	Casa Monterey		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
7/21/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	9	Lanai Village		
7/21/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	39	Shadow Point		
7/27/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	43	Casa Monterey		
7/28/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	80	Lakeview Village		
7/28/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	N/A	Shannon Arms		
7/29/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	21	Kenora Terrace		
7/29/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	44	Presioca Villa		
7/30/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	20	Shadow Point		
7/30/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	43	Woodbridge – Mt. Helix		
8/2/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	31	Kenora Terrace		
8/3/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	55	Lakeview Village		
8/4/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	41	Woodbridge – Mt. Helix		
8/9/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	21	Rancho Hillside		
8/11/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	12	Shannon Arms		
8/12/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	31	Canyon Park		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
8/12/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	39	Rancho Pointe		
8/13/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential - Seniors	27	Helix Vista Senior Apts		
8/13/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	5	Spring Valley Apts		
8/16/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	40	Bonita Heights		
8/16/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	26	Casa Monterey		
8/17/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	26	Casa Diego		
8/17/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	29	Casa Granada		
8/17/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	7	Rancho Pointe		
8/18/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential		Helix Square		
8/18/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	48	Rancho Hillside		
8/19/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	6	Lamar Gardens Townhouses		
8/20/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	34	Kenwood Gardens		
8/24/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	22	Bonita Cedars		
9/1/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	9	Villas at Casa De Oro		
9/2/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	5	Bonita Cedars		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
9/2/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential		Robinwood Plaza		
9/3/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	25	Villas at Casa De Oro		
9/8/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	22	Rancho Hillside		
9/8/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	48	Spring Villas Apts		
9/9/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Dropped off Supplies	Multi-Family Residential	N/A	Rancho Hillside	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
9/10/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	35	Rancho Hillside		
9/13/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	25	Calavo Woods		
9/13/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	33	Lamar Gardens Townhouses		
9/15/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	36	Spring Villas Apts		
9/16/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	34	Rancho Hillside		
9/20/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	15	Casa De Helix		
9/21/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	17	Casa Diego		
9/21/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	33	Woodbridge - Mt. Helix		
9/23/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	23	Bonita Bluffs		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
10/6/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	21	Rancho Hillside		
10/11/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	25	Bonita Bluffs		
10/14/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	93	Highlands at Rancho San Diego		
10/21/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	54	Conrad Villas		
10/21/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family - Senior	64	Peppertree Ranch		
10/21/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	58	Sommerset Units of Rancho San Diego		
10/23/2010	County	Presentation	E	Public Education Workshops		General Public	14	Water Conservation Garden		
10/25/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	45	Highlands at Rancho San Diego		
10/26/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	122	Highlands at Rancho San Diego		
11/2/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	59	Highlands at Rancho San Diego		
11/2/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	59	Highlands at Rancho San Diego		
11/15/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	32	Hidden Meadows		
11/15/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	32	Hidden Meadows		
11/15/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	10	Jamacha Glen		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
11/15/2010	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	10	Jamacha Glen		
5/9/2011	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	29	Highlands at Rancho San Diego		
5/10/2011	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	65	Conrad Villas		
5/16/2011	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	48	Highlands at Rancho San Diego		
5/31/2011	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	50	Hidden Meadows		
6/2/2011	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	94	Woodbridge - Mt. Helix		
6/8/2011	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	54	Spring Villa Apts		
6/21/2011	County	Presentation	E	Recycling Outreach to Multi-Family Residents	Door to Door Education	Multi-Family Residential	48	Lakeview Village		
1/20/2011	Port of San Diego	Presentation	E	Green Business Challenge: Kick-off Breakfast	Strategies for green business	Port Tenants	64	Sheraton San Diego Hotel and Marina	None	N
5/3/2011	Port of San Diego	Presentation	E	Green Business Challenge: Water Conservation	Tips for reducing water use and runoff	Port Tenants	16	Port of San Diego Administratio n Building	None	N
6/23/2011	Port of San Diego	Presentation	E	Green Business Challenge: Buy Green to Save Money	Tips for green purchasing	Port Tenants	19	Bay Club Hotel	Various workshop materials	N
5/31/11 – 6/1/11	Port of San Diego	Presentation	E	LEED 101	Green building strategies	Port Staff and Tenants	50	Port of San Diego Administratio n Building	Various workshop materials	Y – 100% of participants indicated that the seminar was useful.

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
July 2010 – June 2011	Port of San Diego	Presentation	E	Maritime Museum of San Diego Adult *Pilot* Boat Tours	Daily tours aboard the *Pilot* Boat for museum guests, which include environmental and watershed information	General Public	23,776	Maritime Museum of San Diego	Residential Stormwater brochures	N
10/2/2010	County	Presentation - Composting Workshop	P	Public Education Workshops		General Public	12	Crestridge Ecological Reserve		
2/5/2011	County	Presentation - Composting Workshop	P	Public Education Workshops		General Public	26	Water Conservation Garden		
5/21/2011	County	Presentation - Composting Workshop	P	Public Education Workshops		General Public	21	Water Conservation Garden		
7/2/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents	Dropped off Supplies	Multi-Family Residential	N/A	Casa Diego	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
7/14/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents	Dropped off Supplies	Multi-Family Residential	1	Shadow Point	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
7/20/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents	Dropped off Supplies	Multi-Family Residential	N/A	Bonita Cedars	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
7/20/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents	Dropped of Supplies	Multi-Family Residential	4	Presioca Villa	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
9/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents	Dropped off Supplies	Multi-Family Residential	N/A	Shannon Arms	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
9/8/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents	Dropped off Supplies	Multi-Family Residential	N/A	Lanai Village	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	
9/8/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents	Dropped off Supplies	Multi-Family Residential	N/A	Shannon Arms	Recycling Bins, Enclosure Signs, Dumpster Signs, Door Hangers	

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
11/12/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Rancho Hillside	Signs	
11/12/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Rancho Hillside	Signs	
11/17/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Rancho Hillside	Signs	
11/17/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Rancho Hillside	Signs	
12/1/2010	County	Presentation Preparation	E	Signs Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Bonita Heights	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Bonita Heights	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Calavo Woods	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Calavo Woods	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Canyon Park	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Canyon Park	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Conrad Villas	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Conrad Villas	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Hidden Meadows	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Hidden Meadows	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Jamacha Glen	Signs	

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Jamacha Glen	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Kenwood Gardens	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Kenwood Gardens	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Rancho Pointe	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Rancho Pointe	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Robinwood Plaza	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Robinwood Plaza	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Shannon Arms	Signs	
12/1/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Shannon Arms	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Bonita Bluffs	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Bonita Bluffs	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Casa Granada	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Casa Granada	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Casa Monterey	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Casa Monterey	Signs	

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Helix Square	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Helix Square	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Lamar Gardens Townhouses	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Lamar Gardens Townhouses	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Lanai Village	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Lanai Village	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Shadow Point	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Shadow Point	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Spring Villa Apts	Signs	
12/3/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Spring Villa Apts	Signs	
12/9/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Bonita Cedars	Signs	
12/9/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Highlands at Rancho San Diego	Signs	
12/9/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Kenora Terrace	Signs	
12/9/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Lakeview Village	Signs	
12/9/2010	County	Presentation Preparation	E	Recycling Outreach to Multi-Family Residents		Multi-Family Residential	N/A	Villas at Casa De Oro	Signs	

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
1/5/2011	City of La Mesa	Presentations	E	ILACSD Watershed Presentation	Watershed concepts presented to 5th Grade students.	5th Grade Students	105	Rolando Elementary	N/A	Y – Pre/Post Tests Pre Test Score 59%, Post Test Score 78%
6/22/2011	City of La Mesa	Presentations	E	Rotary Club Presentation	Presented La Mesa Storm Water Program to Rotary Club Members	La Mesa Rotary	50	Joan Kroc Center, San Diego CA	N/A	N
9/22/2010	Imperial Beach	Presentations	E	FY 2009-10 JURMP AR Public Hearing	JURMP components and program effectiveness	Residents	unknown	City Hall	N/A	N
12/15/2010	Imperial Beach	Presentations	E	City Council Presentation on TMDL Reference Condition Study	TMDLs, Watersheds, storm water program	Residents		City Hall		
12/16/2010	Imperial Beach	Presentations	E	Mayor proclamation (Day without a Bag)	Proclamation by the Mayor to support reusable bags	Residents		City Hall		
1/26/2011	Imperial Beach	Presentations	E	Mayor proclamation (April as Environmental awareness month)	Proclamation by mayor to support and recognize the environment	Residents		City Hall		
4/22/2011	Imperial Beach	Presentations	E	Mayor Proclamation "April is Environmental Awareness Month"	Mayor support of multiple education activities during the month of April.	Residents	27,000	City Hall	N/A	N
5/18/2011	Imperial Beach	Presentations	E	Update to City Council on Storm Water Program	Storm water permit, ROWD, TMDLs	Residents		City Hall	N/A	N

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
FY10-11	SDCRAA	Presentations	E	Presentations at Tenant Safety Committee Meetings	Environmental Affairs Department presented stormwater management program updates at monthly Tenant Safety Committee Meetings	Airport Tenants	320	San Diego International Airport		N
FY10-11	SDCRAA	Presentations	E	Presentations at LAMC Meetings	Environmental Affairs Department presented stormwater management program updates to airline station managers at monthly LAMC meetings	Airline Station Managers	320	San Diego International Airport		N
2/17/2011	City of La Mesa	Presentations	E	ILACSD Watershed Presentations (2)	Watershed concepts presented to 2nd Grade students.	2nd Grade Students	175	Rolando Elementary	N/A	Y – Pre/Post TestsPre Test Score 59%, Post Test Score 78%
3/23/2011	City of La Mesa	Presentations	E	ILACSD Watershed Presentations (3)	Watershed concepts presented to 2nd Grade students.	2nd Grade Students	70	La Mesa Dale	N/A	Y – Pre/Post Tests Pre Test Score 57%, Post Test Score 67%
September –December 2010	Chula Vista	Print Media	E	Your Guide to CLEAN	City staff designed a brochure to foster environmental awareness in citizens	General Public	51,000	Chula Vista	Guides to CLEAN distributed in trash bills	Y – 51,000 households
Jan-11	City of Coronado	Print Media	E	Coronado Currents Residential Mailer	An article regarding BMPs and how they can be used during the rainy season to prevent storm block drainages	Residential	30,000	Citywide	Residential mailer	N/A

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
5/26/2011	City of Coronado	Print Media	E	San Diego Union Tribune Article	An article discussing Coronado Beach as one of the cleanest in the county and state.	Residential/General Public	Unknown	Countywide	Published newspaper article distributed.	N/A
09/10/10	City of La Mesa	Print Media	E	Girl Scout Door Hanger Project	Girl Scouts (Age 6-8) storm water pollution prevention placed door hangers on approximately 300 residences.	Residents	300	Area surrounding Lemon Ave. School	Storm Water Pollution prevention Door Hangers	N
Sep-10	City of La Mesa	Print Media	E	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	960	N/A	Articles including, “Park Appreciation Day”, “3rd Annual Sustain La Mesa Festival”, “Intergenerational Games”, “8th Annual Creek To Bay Clean Up”.	N
Nov-10	City of La Mesa	Print Media	E	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	960	N/A	Articles including “La Mesa’s Watersheds In Focus”, “Volunteers Clear over 500 lbs of Trash from Local Waterways”, “Park Appreciation Day Held on October 23rd”.	N
Feb-11	City of La Mesa	Print Media	E	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	960	N/A	Articles including “9th Annual Creek To Bay Clean Up, April 30th 2011”, “Free HHW and electronic Waste Disposal March 19th”, “Are You a Young Person Concerned About the Environment?”, “ 2011 Spring Clean Up”,	N

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
May-11	City of La Mesa	Print Media	E	La Mesa Focus Newsletter	A municipal quarterly newsletter with several articles dedicated to community watershed pollution prevention.	Households	960	N/A	Articles including "Spring, Gardens, and Storm Water Pollution?", "Cut our FOG".	N
FY 10/11	City of La Mesa	Print Media	E	La Mesa Park Kiosk	The Kiosk is updated frequently with new community events regarding recycling and watershed pollution prevention.	Residents	N/A	Vista La Mesa Park	Not applicable	N
7/1/2010	Imperial Beach	Print Media	E	EDCO Quarterly Newsletter	Multiple articles on storm water, street sweeping, recycling, and special events	Residents and Commercial Businesses -EDCP trash customers	27,000	City of Imperial Beach		N
1/1/2011	Imperial Beach	Print Media	E	Spanish Calendars	Developed storm water Spanish calendars and distributed 2000 through Wildcaost as part of regional Education program	General Public - Spanish Speaking public	2,000	Multiple locations	Calendars distributed by Wildcoast	N
2/1/2011	Imperial Beach	Print Media	E	Street Banners	Installed new environmentally themed street banners on HW75, Palm Ave, and Seacoast	General Public		Citywide		
5/6/2011; 12/16/2010 ; 10/30/2010	Imperial Beach	Print Media	E	Weekly City FYI	Forum to Council and City employees to educate and inform about current issues including storm water and solid waste	City employees and Council	130	City of Imperial Beach	City of Imperial Beach	N

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
Multiple	Imperial Beach	Print Media	E	Construction brochure and education with new building permits.	Community Development Department disseminates BMP and storm water information with permits	Residents and Contractors - building permit applicants		City Hall	Brochures and guidance documents.	Inspections conducted for BMPs
FY10-11	SDCRAA	Print Media	E	Authority SWMP	On SDCRAA website	General public, Authority, and SDIA staff	unknown	San Diego International Airport		N
FY10-11	SDCRAA	Print Media	E	Recycling Guide on the Web	Airport Recycling Guide, Pollution Prevention information, and Energy Savings Checklist remain posted on the intranet and internet.	General public, Authority, and SDIA staff	unknown	San Diego International Airport		N
FY10-11	SDCRAA	Print Media	E	"Green Tips" on the Web	"Green Tip" ways to be more sustainable, and things SDIA is doing to be a more sustainable airport posted on the internet.	General public, Authority, and SDIA staff	unknown	San Diego International Airport		N
FY10-11	SDCRAA	Print Media	E	Recycling Guide Brochure	Recycling Guide provided in terminals and at various outreach events.	General public, Authority, and SDIA staff	unknown	San Diego International Airport	brochure	N
6/16/2011; 7/1/2010	Imperial Beach	Print Media	E	Semi-Annual City Newsletter and City News and Information	Multiple articles on storm water, street sweeping, recycling, and FOG	Residents	27,000	City of Imperial Beach		
4/6/2010	City of San Diego	School Children - Education/outreach	E	Spring Fest	JURMP	College Students	2,000	Pt. Loma Nazerene University	IPM Tip Cards, Brooms, Best Management Practices Giveaways	N

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
12/8/2010	City of San Diego	School Children - Education/outreach	E	Sewer Science at High Tech High	JURMP	School Aged Children	60	High Tech High, Liberty Station	Think Blue Tips Brochure, Drawstring Backpacks, Best Management Practice Giveaways	N
2/8/2011	City of San Diego	School Children - Education/outreach	E	SDSA High Tech Fair 2011	JURMP	School Aged Children	1,000	High Tech High, Liberty Station	Think Blue Tips Brochure, Drawstring Backpacks, Best Management Practice Giveaways	N
July 2010 – June 2011	Port of San Diego	School Children/Curriculum	E	Project SWELL	Watershed-based curriculum in San Diego City Schools	School Children	50,000	Watershed-wide	Various water quality information	N
Date UNK	City of Coronado	School Children/Presentation	E	Best Management Practices	Presentation to 7th grade class on BMPs.	Students	30	Coronado Middle School		N/A
8/5/2010	County	School Children/Presentation	E	R-1 Earth School Presentation		Students - Grade K-6	50	Camp Oliver		Yes Pre/Post Test
8/5/2010	County	School Children/Presentation	E	R-1 Earth School Presentation		Students - Grade K-6	50	Camp Oliver		Yes Pre/Post Test
8/6/2010	County	School Children/Presentation	E	Watershed Education	Geography	School Children	33	Olympian High		Yes Pre/Post Test
8/6/2010	County	School Children/Presentation	E	Watershed Education	Geography	School Children	35	Olympian High		Yes Pre/Post Test
8/6/2010	County	School Children/Presentation	E	Watershed Education	Geography	School Children	33	Olympian High		Yes Pre/Post Test
8/6/2010	County	School Children/Presentation	E	Watershed Education	Geography	School Children	35	Olympian High		Yes Pre/Post Test
8/6/2010	County	School Children/Presentation	E	Watershed Education	Geography	School Children	33	Olympian High		Yes Pre/Post Test
8/6/2010	County	School Children/Presentation	E	Watershed Education	Geography	School Children	34	Olympian High		Yes Pre/Post Test
8/9/2010	County	School Children/Presentation	E	Watershed Education		Health	32	Olympian High		Yes Pre/Post Test

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
8/9/2010	County	School Children/Presentation	E	Watershed Education		Health	32	Olympian High		Yes Pre/Post Test
8/9/2010	County	School Children/Presentation	E	Watershed Education		Health	32	Olympian High		Yes Pre/Post Test
8/9/2010	County	School Children/Presentation	E	Watershed Education		Health	33	Olympian High		Yes Pre/Post Test
8/16/2010	County	School Children/Presentation	E	Watershed Education		Earth Science	22	Otay Ranch High		Yes Pre/Post Test
8/16/2010	County	School Children/Presentation	E	Watershed Education		Earth Science	22	Otay Ranch High		Yes Pre/Post Test
8/16/2010	County	School Children/Presentation	E	Watershed Education		Earth Science	22	Otay Ranch High		Yes Pre/Post Test
8/16/2010	County	School Children/Presentation	E	Watershed Education		Earth Science	22	Otay Ranch High		Yes Pre/Post Test
8/16/2010	County	School Children/Presentation	E	Watershed Education		Earth Science	23	Otay Ranch High		Yes Pre/Post Test
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	32	Otay Ranch High		Yes Pre/Post Test
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	35	Otay Ranch High		Yes Pre/Post Test
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	35	Otay Ranch High		Yes Pre/Post Test
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	29	Otay Ranch High		Yes Pre/Post Test
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	30	Otay Ranch High		Yes Pre/Post Test
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	25	Otay Ranch High		Yes Pre/Post Test
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	28	Otay Ranch High		Yes Pre/Post Test

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	30	Otay Ranch High		Yes Pre/Post Test
8/27/2010	County	School Children/Presentation	E	Watershed Education		Health	31	Otay Ranch High		Yes Pre/Post Test
9/14/2010	County	School Children/Presentation	E	Green Machine		Students - Grade 2	92	Wolf Canyon Elementary		Yes Pre/Post Test
9/22/2010	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-5	124	Highlands School		Yes Pre/Post Test
9/28/2010	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-6	99	Rios Elementary		Yes Pre/Post Test
10/5/2010	County	School Children/Presentation	E	Girl Scout Troop: HHW, P2 & SW Information		Boy/Girl Scouts - Grade 4-5	10	Troop Meeting - La Mesa		
10/6/2010	County	School Children/Presentation	E	Watershed Education		Geography	20	Monte Vista High		Yes Pre/Post Test
10/7/2010	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-5	124	Murdock Elementary		Yes Pre/Post Test
10/11/2010	County	School Children/Presentation	E	Splash Lab		Students - Grade 4	83	Jamul Intermediate School		Yes Pre/Post Test
10/20/2010	County	School Children/Presentation	E	Watershed Education		Automotive	32	Monte Vista High		Yes Pre/Post Test
10/20/2010	County	School Children/Presentation	E	Watershed Education		Automotive	18	Monte Vista High		Yes Pre/Post Test
10/20/2010	County	School Children/Presentation	E	Watershed Education		Automotive	21	Monte Vista High		Yes Pre/Post Test
10/20/2010	County	School Children/Presentation	E	Watershed Education		Automotive	28	Monte Vista High		Yes Pre/Post Test
10/20/2010	County	School Children/Presentation	E	Watershed Education		Automotive	32	Monte Vista High		Yes Pre/Post Test

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
11/2/2010	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-5	108	Rancho San Diego Elementary School		Yes Pre/Post Test
11/2/2010	County	School Children/Presentation	E	Watershed Education		Earth Science	19	Valhalla High School		Yes Pre/Post Test
11/2/2010	County	School Children/Presentation	E	Watershed Education		Earth Science	22	Valhalla High School		Yes Pre/Post Test
11/3/2010	County	School Children/Presentation	E	Watershed Education		Biology	30	Mt. Miguel High		Yes Pre/Post Test
11/3/2010	County	School Children/Presentation	E	Watershed Education		Biology	24	Mt. Miguel High		Yes Pre/Post Test
11/3/2010	County	School Children/Presentation	E	Watershed Education		Biology	23	Mt. Miguel High		Yes Pre/Post Test
11/4/2010	County	School Children/Presentation	E	Watershed Education		Biology	29	Mt. Miguel High		Yes Pre/Post Test
11/12/2010	County	School Children/Presentation	E	Watershed Education		Biology	25	Otay Ranch High		Yes Pre/Post Test
11/12/2010	County	School Children/Presentation	E	Watershed Education		Biology	24	Otay Ranch High		Yes Pre/Post Test
11/12/2010	County	School Children/Presentation	E	Watershed Education		Biology	24	Otay Ranch High		Yes Pre/Post Test
11/12/2010	County	School Children/Presentation	E	Watershed Education		Biology	23	Otay Ranch High		Yes Pre/Post Test
11/12/2010	County	School Children/Presentation	E	Watershed Education		Biology	25	Otay Ranch High		Yes Pre/Post Test
11/12/2010	County	School Children/Presentation	E	Watershed Education		Biology	25	Otay Ranch High		Yes Pre/Post Test
11/12/2010	County	School Children/Presentation	E	Watershed Education		Biology	24	Otay Ranch High		Yes Pre/Post Test

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
11/12/2010	County	School Children/Presentation	E	Watershed Education		Biology	22	Otay Ranch High		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Gen Science	34	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Gen Science	38	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Gen Science	37	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science	37	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science	36	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science	36	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science	26	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science	36	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science	36	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science	30	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science/ ESL	33	Valhalla High School		Yes Pre/Post Test
11/30/2010	County	School Children/Presentation	E	Watershed Education		Integrated Science/ ESL	38	Valhalla High School		Yes Pre/Post Test
12/2/2010	County	School Children/Presentation	E	Watershed Education		Biology	26	Otay Ranch High		Yes Pre/Post Test
12/2/2010	County	School Children/Presentation	E	Watershed Education		Biology	25	Otay Ranch High		Yes Pre/Post Test

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
12/2/2010	County	School Children/Presentation	E	Watershed Education		Biology	27	Otay Ranch High		Yes Pre/Post Test
12/2/2010	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-5	87	Heritage Elementary		Yes Pre/Post Test
12/3/2010	County	School Children/Presentation	E	Watershed Education		Biology	26	Otay Ranch High		Yes Pre/Post Test
12/13/2010	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-5	136	Sweetwater Springs		Yes Pre/Post Test
1/14/2011	County	School Children/Presentation	E	Watershed Education		AVID	28	Olympian High		Yes Pre/Post Test
1/14/2011	County	School Children/Presentation	E	Watershed Education		AVID	32	Olympian High		Yes Pre/Post Test
1/14/2011	County	School Children/Presentation	E	Watershed Education		AVID	21	Olympian High		Yes Pre/Post Test
1/14/2011	County	School Children/Presentation	E	Watershed Education		AVID	17	Olympian High		Yes Pre/Post Test
1/25/2011	County	School Children/Presentation	E	Splash Lab		Students - Grade 5-6	93	Valley Vista Elementary		Yes Pre/Post Test
2/1/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 3-4	104	Liberty Elementary		Yes Pre/Post Test
2/6/2011	County	School Children/Presentation	E	Brownie Troop HHW, P2, & SW Information		Boy/Girl Scouts - Grade 1-2	10	Troop Meeting - Rancho San Diego		
2/8/2011	County	School Children/Presentation	E	Watershed Education		Geography	25	Monte Vista High		Yes Pre/Post Test
2/8/2011	County	School Children/Presentation	E	Watershed Education		Geography	26	Monte Vista High		Yes Pre/Post Test
2/9/2011	County	School Children/Presentation	E	Watershed Education		Life Science	20	Olympian High		Yes Pre/Post Test

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
2/10/2011	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-5	134	Jamacha Elementary		Yes Pre/Post Test
2/15/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 3-5	98	Rancho San Diego Elementary School		
3/4/2011	County	School Children/Presentation	E	R-1 Earth School Presentation		Students - Grade K-5	250	Avocado Elementary		Yes Pre/Post Test
3/4/2011	County	School Children/Presentation	E	R-1 Earth School Presentation		Students - Grade K-5	250	Avocado Elementary		Yes Pre/Post Test
3/8/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 1	102	Veterans Elementary		
3/9/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 1	121	McMillin Elementary		
3/10/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 1	74	Jamacha Elementary		
3/23/2011	County	School Children/Presentation	E	Green Machine		Students - Grade K-6	73	Trinity Christian School		
3/28/2011	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-7	90	Descanso Elementary		Yes Pre/Post Test
3/29/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 1	126	Wolf Canyon Elementary		
4/4/2011	County	School Children/Presentation	E	Watershed Education		Health	27	Otay Ranch High		Yes Pre/Post Test
4/4/2011	County	School Children/Presentation	E	Watershed Education		Health	34	Otay Ranch High		Yes Pre/Post Test
4/4/2011	County	School Children/Presentation	E	Watershed Education		Health	24	Otay Ranch High		Yes Pre/Post Test
4/4/2011	County	School Children/Presentation	E	Watershed Education		Health	27	Otay Ranch High		Yes Pre/Post Test

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
4/4/2011	County	School Children/Presentation	E	Watershed Education		Health	34	Otay Ranch High		Yes Pre/Post Test
4/4/2011	County	School Children/Presentation	E	Watershed Education		Health	36	Otay Ranch High		Yes Pre/Post Test
4/4/2011	County	School Children/Presentation	E	Watershed Education		Health	35	Otay Ranch High		Yes Pre/Post Test
4/4/2011	County	School Children/Presentation	E	R-1 Earth School Presentation		Students - Grade 3-5	300	Avondale Elementary		Yes Pre/Post Test
4/7/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 2-5	100	Santa Sofia Academy		
4/8/2011	County	School Children/Presentation	E	Watershed Education		Health	36	Otay Ranch High		Yes Pre/Post Test
4/8/2011	County	School Children/Presentation	E	Watershed Education		Health	26	Otay Ranch High		Yes Pre/Post Test
4/8/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 1-2	110	La Presa Elementary		
4/22/2011	County	School Children/Presentation	E	School Composting Education		Students at Risk	84	Teen Center		
4/27/2011	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-5	122	Sunnyside Elementary		Yes Pre/Post Test
4/28/2011	County	School Children/Presentation	E	R-1 Earth School Presentation		Students - Grade K-2	250	Avondale Elementary		Yes Pre/Post Test
5/18/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 2	125	Murdock Elementary		
5/19/2011	County	School Children/Presentation	E	Splash Lab		Students - Grade 4-5	139	Bancroft Elementary		Yes Pre/Post Test
5/27/2011	County	School Children/Presentation	E	Splash Lab		Students - Grade 3-4	66	La Presa Elementary		Yes Pre/Post Test
5/31/2011	County	School Children/Presentation	E	Watershed Education		Chemistry	22	Mt. Miguel High		Yes Pre/Post Test

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
5/31/2011	County	School Children/Presentation	E	Watershed Education		Chemistry	20	Mt. Miguel High		Yes Pre/Post Test
5/31/2011	County	School Children/Presentation	E	Watershed Education		Chemistry	20	Mt. Miguel High		Yes Pre/Post Test
5/31/2011	County	School Children/Presentation	E	Watershed Education		Chemistry	21	Mt. Miguel High		Yes Pre/Post Test
5/31/2011	County	School Children/Presentation	E	Watershed Education		Chemistry	21	Mt. Miguel High		Yes Pre/Post Test
6/1/2011	County	School Children/Presentation	E	Watershed Education		Science	21	Monte Vista High		Yes Pre/Post Test
6/1/2011	County	School Children/Presentation	E	Watershed Education		Science	20	Monte Vista High		Yes Pre/Post Test
6/1/2011	County	School Children/Presentation	E	Watershed Education		Science	22	Monte Vista High		Yes Pre/Post Test
6/3/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 1-2	119	Casa De Oro Elementary		Yes Pre/Post Test
6/8/2011	County	School Children/Presentation	E	Green Machine		Students - Grade 2	70	Avondale Elementary		Yes Pre/Post Test
6/8/2011	County	School Children/Presentation	E	Splash Lab		Students - Grade 4	81	Avondale Elementary		Yes Pre/Post Test
July 2010 – June 2011	Port of San Diego	School Children/Presentation	E	High Tech High – Book Sponsorship	Exploration of environmental issues in San Diego Bay	School Children	68	High Tech High, San Diego	Various water quality information	N
May-11	City of National City	School Children-Presentations	E	Storm Water Program Third Grade Art Contest	Class presentations were given as part of the contest. Art is to be used in a 2012 Storm Water Calendar.	National City third grade students	845	45 classrooms in 10 elementary schools in National City	Contest Flyers	N
1/27/2011	Imperial Beach	School Children-Presentations	E	Environmental education by ILACSD	ILACSD HS presentations for SD Bay WURMP group	High School Students	92	Mar Vista High School		Y- Pre test: 50%, Post-test: 53%

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
3/30/2011	Imperial Beach	School Children-Presentations	E	Watershed Presentation IB Elementary	Watershed model presentation	Students - 3rd grade class	48	IB Sports Park		
12/7/2010	Imperial Beach	Workshop	E	Beach Closure Workshop	Public workshop on beach closures in Imperial Beach. Presentation by Scripps SCCOOS, County DEH, Coastkeeper, IB Lifeguard and Environmental, and Q&A session.	General Public - the most affected by beach closures	60	City Hall	Information on Plum tracker, bacteria testing, available information, storm water, and public safety.	N
5/19/2011	Port of San Diego	Workshop	E	Integrated Pest Management for Landscape Professionals	IPM information to reduce pesticide use	Industrial and Commercial Owners and Operators	75	Chula Vista Nature Center	Various IPM materials	Y – 100% of participants indicated that the seminar was useful and that they can apply their new knowledge to their work.
8/9/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
8/9/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
9/2/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Del Parque		
9/2/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
9/2/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
9/2/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
9/2/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Steel Canyon		
9/2/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wind River Cottonwood I		
9/2/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
9/2/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		
10/6/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	2	Del Parque		
10/6/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
10/6/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Steel Canyon		
10/6/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wind River Cottonwood I		
10/6/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		
10/9/2010	County	Clean up/Pick Up	P	Sprinkler Adjustments		Park Visitor	0	Hilton Head		
10/9/2010	County	Clean up/Pick Up	P	Sprinkler Adjustments		Park Visitor	0	Hilton Head		
10/9/2010	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Damon Lane		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	2	Del Parque		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Steele Canyon		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Steele Canyon		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wind River Cottonwood I		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		
1/3/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		
2/7/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	2	Hillsdale		
3/4/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	3	Hillsdale		
3/12/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Damon Lane		
3/12/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Del Parque		
3/12/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
3/12/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Steel Canyon		
3/12/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wind River Cottonwood I		

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
3/12/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		
4/9/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Damon Lane		
4/9/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Del Parque		
4/9/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
4/9/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Steel Canyon		
4/9/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wind River Cottonwood I		
4/9/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		
5/23/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hillsdale		
5/28/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Del Parque		
5/28/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Hilton Head		
5/28/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Steel Canyon		
5/28/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wind River Cottonwood I		
5/28/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	1	Wood Haven Cottonwood II		
5/29/2011	County	Clean up/Pick Up	P	Litter Clean-Up		Park Visitor	2	Hilton Head		
4/30/2010	City of San Diego	Clean Up/Public Awareness	P	Creek to Bay Clean Up	JURMP	Underserved	5,000	Chollas Creek	Think Blue Tips Brochure, Best Management Practices Giveaways	N
4/9/2011	County	Clean up/Weed Removal Project	P	Chaparral Lands Conservancy		Volunteers	30	Otay River Valley Park		
9/20/2010	City of San Diego	Clean-Up	P	Coastal Clean Up Day	WURMP	General Public	250	Coasts of San Diego	Think Blue Tips Brochure, Best Management Practice Giveaways	N
10/16/2010	Chula Vista	Cleanup Event	P	Beautify Chula Vista	Volunteers pick up trash and remove graffiti	General Public	600	Memorial Park	N/A	Y – 2,700 lbs of trash
4/30/2011	Chula Vista	Cleanup Event	P	Creek to Bay Cleanup	Volunteers removed trash from inland and coastal waterways	General Public	5,350	Various location in Chula Vista	N/A	Y – 3,000 lbs of trash removed from Chula Vista sites

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
9/25/2010	City of Coronado	Cleanup Event	P	Coastal Cleanup Day	City of Coronado beach cleanup event	Residential/General Public	450	Center Beach, Silver Strand State Park Beach	N/A	Y- 700 lbs of trash removed from both beaches
11/3/2010	City of Coronado	Cleanup Event	P	Coronado Beach Cleanup	Beach cleanup event co-sponsored by Coronado Middle School and the City's Recreation Department	Students/ Municipal Staff	60	Coronado Center Beach	N/A	Y- 110 lbs of trash collected and removed from beach.
3/26/2011	City of Coronado	Cleanup Event	P	San Diego Coastkeeper Beach Cleanup	Sponsored by San Diego Coastkeeper in conjunction with City staff	Residential/General Public/Municipal Staff	150	Coronado Center Beach	N/A	Y- 490 lbs of trash and 105 lbs of recyclables collected
4/30/2011	City of Coronado	Cleanup Event	P	Creek to Bay Cleanup	Co-sponsored by the City of Coronado and I Love a Clean San Diego	Residential/General Public/Municipal Staff	80	Coronado Center Beach	N/A	Y- 120 lbs of trash and 58 lbs of recyclables collected
8/28/2010	Port of San Diego	Cleanup Event	P	Operation Clean Sweep	Port sponsors this bay-wide effort, coordinated by the San Diego Port Tenants Association	General Public	850	Bay-wide	None	N
9/25/2010	Port of San Diego	Cleanup Event	P	Coastal Cleanup Day	Port-sponsored site at	General Public	50	Chula Vista Wildlife Reserve	None	N
4/30/2011	Port of San Diego	Cleanup Event	P	Creek to Bay Cleanup	Port-sponsored site Paradise Creek	General Public	80	Paradise Creek	None	N
4/30/2011	City of La Mesa	Cleanup Events	P	Creek To Bay Cleanup	Removed trash from University Channel	General Public	20	University Channel	N/A	N
9/25/2010	City of La Mesa	Cleanup Events	P	Coastal Cleanup Day	Removed trash from University Channel	General Public	29	University Channel	N/A	N

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10/23/2010	City of La Mesa	Cleanup Events	P	Park Appreciation Day	A clean up event occurring in all City Parks within the watershed.	Residents	117	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park, MacArthur Park	Pollution Prevention/Watershed Outreach Flyer and Message	N
FY 10/11	City of La Mesa	Cleanup Events	P	Adopt a Park/Adopt a Block	Individuals and businesses can volunteer to enroll clean up parks and neighborhoods throughout the watershed.	Residents, Businesses	25	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park, City Streets	N/A	N
FY 10/11	City of La Mesa	Cleanup Events	P	Partnership with St. Madeline's Sophie Center	The City contracts with the Center to employ mentally disabled persons to aid in janitorial responsibilities at local parks. Teams of 3-5 persons and 1 coach are employed at a time, per site.	Employed Individuals	3-5 person work crew	Collier Park, Highwood Park, Rolando Park, Sunshine Park, Vista La Mesa Park, MacArthur Park	N/A	N
4/3/2011	City of National City and I Love A Clean San Diego	Cleanup Events	P	Creek to Bay Cleanup	Sweetwater River site was captained by the City's Storm Water Program representative. The event removed 1,915 pounds of trash and recyclables at two sites.	National City residents	110 volunteers	Paradise Creek Educational Park and Sweetwater River	None	N

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9/25/2010	City of National City and I Love A Clean San Diego/San Diego Coastkeeper	Cleanup Events	P	Coastal Cleanup Day	Sweetwater River site was captained by the City's Storm Water Program representative. The event removed 10,827 pounds of trash and recyclables at two sites.	National City residents	251 volunteers	Paradise Creek Educational Park and Sweetwater River	None	N
November 2010 – February 2011	I Love A Clean San Diego (within the City of National City)	Cleanup Events	P	Neighborhod Clean Watch: "Creek Day" Cleanups	Neighborhod Clean Watch was coordinated independently by ILACSD.	National City residents - volunteers	375	Paradise Creek Educational Park	Unknown	N
9/25/2010	Imperial Beach	Cleanup Events	P	Coastal Cleanup Day	Watershed awareness and public participation	General Public - volunteers	48	Multiple locations		Y – 56 lbs. of trash collected
1/8/2011	Imperial Beach	Cleanup Events	P	Fish and Wildlife volunteer cleanup bikeway	Cleanup event with FWS along SD Bay	General Public - volunteers	25	Bayside		
4/30/2011	Imperial Beach	Cleanup Events	P	Creek to Bay Cleanup	Watershed awareness and public participation	General Public - volunteers	Volunteers	Multiple locations	N/A	N
5/7/2011	Imperial Beach	Cleanup Events	P	Home Front Cleanup	Annual Home Front Cleanup for residents to dispose of waste	Residents	753	Mar Vista High School	N/A	Y- 178.7 tons of trash, green waste, constructio n material, and recyclables
9/25/2010	County	Clean-up/ Watershed Activity	P	ILCSD		Boy/Girl Scouts	40	OVRP		
9/25/2010	County	Clean-up/ Watershed Activity	P	California Coastal Commission Clean Up Day		General Public	500	Gray Whale Sponsor		
9/25/2010	County	Clean-up/ Watershed Activity	P	Coastal Clean Up - ILCSD		Youth & Adults	95	Morrison Pond		

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10/2/2010	County	Clean-up/ Watershed Activity	P	Tire Collection Event		General Public	58	Monte Vista HS		
4/30/2011	County	Clean-up/ Watershed Activity	P	ILCSD Creek To Bay Clean Up		Boy/Girl Scouts	35	OVRP		
4/30/2011	County	Clean-up/ Watershed Activity	P	Creek to Bay Clean Up - ILCSD		Youth & Adults	50	Western Gate Staging Area		
10/3/2010	City of Coronado	Community Event	P	Fire Services Open House		Residential/General Public/Municipal Staff	4,000	Coronado Fire Department	"Coronado Clean Coastlines" brochures distributed	No
4/17/2011	City of Coronado	Community Event	P	Motorcars on Mainstreet	"Coronado Clean Coastlines" booth set up	Residential/General Public/Municipal Staff	5,500	Orange Avenue, Coronado, CA	Brochures and promotional items distributed.	No
4/16/11-4/17/11	City of Coronado	Community Event	P	Coronado Flower Show	"Coronado Clean Coastlines" booth set up	Residential/General Public/Municipal Staff	4,000	Spreckels Park	Brochures and promotional items distributed.	No
6/11/2011	County	Community Event	P	California Historical Society – History of Sweetwater Park		Youth & Adults	100	Sweetwater Summit Campground		
7/16/2010	County	Community Event - Booth	P	Movies in the Park - Spring Valley		General Public	200	Spring Valley Community Park		
8/7/2010	County	Community Event - Booth	P	Oil Filter Exchange at 5 Kragen-O'Reilly locations		General Public – DIY Oil Changers	509	Spring Valley, Ramona, Lakeside & Fallbrook		
8/20/2010	County	Community Event - Booth	P	Rain Barrel Sales Event #1		General Public	69	Water Conservation Garden		
10/16/2010	County	Community Event - Booth	P	Vaquero Days		General Public / Horse Owners	150	Granville Martin Ranch & Tractor Museum		
10/16/2010	County	Community Event - Booth	P	Community Day @ Point Loma Nazarene University		General Public	100	Point Loma Nazarene University		
11/13/2010	County	Community Event - Booth	P	Water Smart Gardening Festival		General Public	150	Cuyamaca College		

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3/19/2011	County	Community Event - Booth	P	Oil Filter Exchange at 5 Kragen-O'Reilly locations		General Public – DIY Oil Changers	531	Spring Valley, Ramona, Lakeside & Fallbrook		
4/9/2011	County	Community Event - Booth	P	Spring Garden Festival		General Public	350	Cuyamaca College		
4/16/2011	County	Community Event - Booth	P	Point Loma Garden Club Plant Sale		General Public	75	Point Loma		
4/17/2011	County	Community Event - Booth	P	Earth Fair		General Public	450	Balboa Park		
4/30/2011	County	Community Event - Booth	P	Home and Garden Tour		General Public	200	Chula Vista		
5/11/2011	County	Community Event - Booth	P	Spring Festival		General Public	750	SD Zoo		
5/21/2011	County	Community Event - Booth	P	Spring Valley Community Health Fair		General Public	500	Spring Valley Park		
6/3/2011	County	Community Event - Booth	P	COSD Employee Health and Wellness Fair		General Public / County Employees	150	County Administratio n Center		
6/11/2011	County	Community Event - Booth	P	Movies in the Park – Sweetwater Summit Park		General Public	100	Sweetwater Summit Regional Park		
10/2-3/2010	County	Community Event - Booth	P	Balboa Park Botanic Garden		General Public	150	Balboa Park		
11/6-7/2010	County	Community Event - Booth	P	Balboa Park Botanic Garden		General Public	150	Balboa Park		
12/4-5/2010	County	Community Event - Booth	P	Balboa Park Botanic Garden		General Public	150	Balboa Park		
2/5-6/2011	County	Community Event - Booth	P	Balboa Park Botanic Garden		General Public	150	Balboa Park		
3/5-6/2011	County	Community Event - Booth	P	Balboa Park Botanic Garden		General Public	150	Balboa Park		
4/16-17/2011	County	Community Event - Booth	P	Coronado Flower Show		General Public	75	Spreckels Park		
4/2-3/2011	County	Community Event - Booth	P	Balboa Park Botanic Garden		General Public	150	Balboa Park		

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5/7-8/2011	County	Community Event - Booth	P	Balboa Park Botanic Garden		General Public	150	Balboa Park		
6/4-5/2011	County	Community Event - Booth	P	Balboa Park Botanic Garden		General Public	150	Balboa Park		
6/8/2011	County	Community Event – Booth	P	Apartment Expo	Inform Owner / Managers re: Recycling and County Assistance Program	Multi-Family Residential	700	SD Convention Center		
4/20/2011	County	Community Event - Booth / Collection	P	County / IEA Earth Day Event: U-Waste & HHW Info		County Employees	150	County Administratio n Center		
10/10/2010	County	Community Event - Eagle Scout Project	P	Built Wedding Trails		Youth & Adults	15	Sweetwater Summit Campground		
8/9/2010	City of Chula Vista	Community Event - Education/	P	Cruise For The Cause	JURMP	General Public/Male skewed	5,000	Chula Vista	Think Blue Tips Brochure, 3Cs Card, Funnels, Shammy Towels, Best Management Practice Giveaways	N
8/9/2009	City of San Diego	Community Event - Education/	P	Fiesta Del Sol	JURMP	Underserved	60,000	Logan Heights	Think Blue Tips Brochure, 3Cs Card, Laminated Tip Card, Best Management Practice Giveaways	N
9/8/2009	City of San Diego	Community Event - Education/	P	91X College Tour	JURMP	College Students	2,000	City College	Think Blue Tips Brochure, 3Cs Card, Best Management Practice Giveaways	N
12/30/09-1/03/10	City of San Diego	Community Event - Education/	P	San Diego Auto Show	JURMP	Auto Enthusiasts, Male Skewed	150,000	San Diego Convention Center	Think Blue Brochure, Auto Themed Best Management Practices Giveaways	N
9/29-10/3/10	City of San Diego	Community Event - Education/	P	San Diego Film Festival	JURMP	General Public/ Business Owners	4,000	Gaslamp Quarter, San Diego	Think Blue Tips Brochure, Best Management Practice Giveaways	N
9/7/10, 9/20/10	City of San Diego	Community Event - Education/	P	SOPHIE Radio College Campus Appearance	JURMP	College Students	1,500	City College	Think Blue Tips Brochure, 3Cs Card, Best Management Practice Giveaways	N

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Ongoing	City of San Diego	Community Event - Education/Outreach	P	CBSM Pilot Study in Chollas Creek	WURMP	General Public	488,158	San Diego Bay Watershed	CBSM Pilot Study to reduce trash in the San Diego Bay WMA	Y – In progress. Refer to CBSM Pilot Study in Chollas Creek Activity Sheet, SDB-032
12/13/2010	County	Community Event - Work Project / Spread Mulch	P			CCC	8	Otay Lakes County Park		
7/25/2010	County	Community Event -Picnic / Fundraiser	P	Friends of OVRP Picnic		Friends of the Park	75	Otay Lakes County Park		
8/8/2010	Chula Vista	Community Event/Festival	P	Lemon Festival	City storm water staff manned a booth and distributed information about pollution prevention	General Public	1000	Downtown Chula Vista (Third Avenue)	Storm water pollution prevention brochures about pet waste, gardening, auto repair, pool maintenance, and home improvement; CLEAN guides; IPM Cards; and giveaways	N
9/18/2010	Chula Vista	Community Event/Festival	P	Children's Festival	City storm water staff had a booth at the festival and provided pollution prevention training to citizens	School children	1000	New Hope Community Church	Storm water pollution prevention brochures about pet waste, gardening, auto repair, pool maintenance, and home improvement; CLEAN guides; IPM Cards; and giveaways	N
9/25/2010	Chula Vista	Community Event/Festival	P	BonitaFest	City storm water staff provided pollution prevention training to citizens	General Public	1000	Bonita Shopping Center	Storm water pollution prevention brochures about pet waste, gardening, auto repair, pool maintenance, and home improvement; CLEAN guides; IPM Cards; and giveaways	N

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12/16/2010	Chula Vista	Community Event/Festival	P	A Day Without a Plastic Bag	City staff distributed reusable grocery bags to shoppers to promote the reduction of plastic bag trash in the environment.	General Public	900	North Park Produce	Reusable grocery bags, Bring Your Own Bag givewaways	Y – 1,000 bags distributed
4/16/2011	Chula Vista	Community Event/Festival	P	Go Green and Clean Family Day	City staff manned a booth and provided brochures and other giveaways to promote pollution prevention.	General Public	1000	Otay Ranch Town Center	Storm water pollution prevention brochures about pet waste, gardening, auto repair, pool maintenance, and home improvement; CLEAN guides; IPM Cards; and giveaways	N
4/30/2011	Chula Vista	Community Event/Festival	P	Day of the Child	Storm water staff manned a booth and provided storm water pollution prevention brochures and environmental giveaways	School Children	1000	Memorial Park	Storm water pollution prevention brochures about pet waste, gardening, auto repair, pool maintenance, and home improvement; CLEAN guides; IPM Cards; and giveaways	N
5/8/2011	Chula Vista	Community Event/Festival	P	Cinco de Mayo	Storm water staff manned a booth and provided storm water pollution prevention brochures and environmental giveaways	General Public	1000	Downtown Chula Vista - Third Avenue	Storm water pollution prevention brochures about pet waste, gardening, auto repair, pool maintenance, and home improvement; CLEAN guides; IPM Cards; and giveaways	N
6/18/2011	Chula Vista	Community Event/Festival	P	Pet Fest and Doggy Dash	Storm water staff implemented a pet waste survey, provided pollution prevention education, and environmental giveaways to citizens	Pet Owners	300	Memorial Park	Storm water pollution prevention brochures about pet waste, gardening, auto repair, pool maintenance, and home improvement; CLEAN guides; IPM Cards; and giveaways	Y – 70 surveys completed, Activity SDB-040

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6/18/2011	Chula Vista	Community Event/Festival	P	Enviro-Fair	City staff manned the Think Blue Regional booth at the SD County Fair and provided education to attendees	General Public	Thousands	San Diego County Fair	Think Blue grocery bags, pollution prevention brochures	Y – regional survey conducted
7/24/2010	Imperial Beach	Community Event/Festival	P	Imperial Beach Classic Car Show	Staffed a booth at the car show with Chula Vista HHW	General Public	300	Pier Plaza	Staffed a booth at the car show with Chula Vista HHW	N
10/10/2010	Imperial Beach	Community Event/Festival	P	Fiesta Del Rio	City booth for storm water pollution prevention.	General public	3,000	Pier Plaza	Brochures, promotional items, and presentations.	Y - Survey
4/30/2011	Imperial Beach	Community Event/Festival	P	Citywide Garage Sale	Reuse of items and public participation	Residents - sellers	118	Multiple locations	N/A	N
8/6/10-8/9/10	Imperial Beach	Community Event/Festival	P	U.S. Open Sandcastle Competition	Provided education materials for street venders and conducted commercial inspections during event.	General public and street vendors	300,000	Pier Plaza	Brochures	Y- Street vendor inspection results (No Violations)
1/27/2011	Port of San Diego	Community Event/Festival	P	Sunroad Boat Show	Port environmental programs and copper pollution	General Public	13,300	Watershed-wide	Various water quality information	N
4/17/2011	Port of San Diego	Community Event/Festival	P	Earth Fair	Port environmental programs	General Public	60,000	Watershed-wide	Various water quality information	N
4/17/2011	Port of San Diego	Community Event/Festival	P	Day at the Docks	Port environmental programs and copper pollution	General Public	1,000	Watershed-wide	Various water quality information	N
6/4/2011	Chula Vista	Community Event/Field Trip	P	Otay Valley Regional Park Day	City staff provided storm water brochures and CLEAN guides to citizens who attended the event.	General Public	100s	Otay Valley Regional Park	Storm water pollution prevention brochures about pet waste, gardening, auto repair, pool maintenance, and home improvement; CLEAN guides; and IPM Cards	N

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5/29/2010	City of San Diego	Community Event/Jazz Festival	P	Jazz Festival	JURMP	General Public, Female Skew	10,000	San Diego Gaslamp Quarter	Think Blue Tips Brochures, Best Management Practices Giveaways	N
10/3/2010	County	Community Event-Eagle Scout Project	P	Built Wedding Trails		Youth & Adults	15	Sweetwater Summit Campground		
12/4/2010	City of San Diego	Community Festival	P	December Nights	JURMP	General Public	325,000	Balboa Park	Think Blue Tips Brochure, Laminated Tip Card, Best Management Practice Giveways	N
1/15/2011	City of San Diego	Community Festival	P	San Diego Multicultural Festival	JURMP	General Public/ Underserved	5,000	MLK Promenade	Think Blue Tips Brochure, Best Management Practices Giveaways	N
2/28/2011	City of San Diego	Community Festival	P	Heritage Day Festival and Parade	JURMP	Underserved	11,000	Market Creek Plaza	Think Blue Tips Brochure, Best Management Practices Giveaways	N
10/2/2010	County	Direct Interaction/Talk	P	Use of Dog Waste Bags		Park Visitor	2	Lonnie Brewer		
11/5/2010	County	Direct Interaction/Talk	P	Use of Dog Waste Bags		Park Visitor	2	Lonnie Brewer		
1/9/2011	County	Direct Interaction/Talk	P	Use of Dog Waste Bags		Park Visitor	1	Lonnie Brewer		
2/4/2011	County	Direct Interaction/Talk	P	Use of Dog Waste Bags		Park Visitor	2	Lonnie Brewer		
3/7/2011	County	Direct Interaction/Talk	P	Use of Dog Waste Bags		Park Visitor	1	Lonnie Brewer		
5/23/2011	County	Direct Interaction/Talk	P	Use of Dog Waste Bags		Park Visitor	2	Lonnie Brewer		
10/14/2010	City of La Mesa	Festivals/Community Events	P	Intergenerational Games	Storm Water booth with interactive "Operation Cleanup" watershed pollution prevention game.	Students, Residents	110	La Mesa Middle School	60 recycling temporary tattoos, 90 recycling pencils, 5 San Diego Bay Fact Sheets, 5 Over Irrigation Fact Sheets, 120 Sustain La Mesa Bookmarks, 50 Recycling Badges	N

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12/30/2010	City of San Diego	Parade	P	Holiday Bowl Big Balloon Parade	JURMP	General Public	75,000	Harbor Drive, San Diego	Think Blue Laminated Tip Cards, Best Management Practice Giveaways	N
3/28/2011	City of San Diego	School Children/ Children's Science Fair	P	Science Festival	JURMP	School Aged Children	20,000	Balboa Park	Think Blue Tips Brochure, Kids Worksheets, Best Management Practices Giveaways	N
Year-round	Chula Vista	School Program/Field Trip	P	Watershed, Recycling, Storm Drain Pollution Education	Organized School Group Visitors to the Chula Vista Nature Center	School Children	Thousands	Chula Vista Nature Center	N/A	N
July 2010 – June 2011	Port of San Diego	School Program/Field Trip	P	Resource Conservation District – Watershed Education Program	Field trips to learn about the San Diego Bay watershed (using the Enviroscape model)	School Children	1,003	Watershed-wide	Various water quality information	Y – Knowledge was increased by 38% and measured through pre- and post-tests.
July 2010 – June 2011	Port of San Diego	School Program/Field Trip	P	Chula Vista Nature Center – Field Trips	Field trips to learn about the Sweetwater Marsh and watershed	School Children	1,615	Watershed-wide	Various water quality information	Y – Knowledge was increased by 9% and measured through pre- and post-tests.
July 2010 – June 2011	Port of San Diego	School Program/Field Trip	P	Ocean Discovery Institute – Wetland Avengers	Field trips to the Chula Vista Wildlife Refuge to learn about wetlands and pollution prevention, information on watershed issues is included	School Children	128	Within the Port's 5 member cities	Various water quality information	Y – Knowledge was increased by 13% and measured through pre- and post-tests.

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July 2010 – June 2011	Port of San Diego	School Program/Field Trip	P	Maritime Museum of San Diego – Pilot Boat Program	Field trips to the Maritime Museum of San Diego to learn about San Diego Bay history and pollution prevention, information on watershed issues is included	School Children	937	Within the Port's 5 member cities	Various water quality information	Y – Knowledge was increased by 149% and measured through pre- and post-tests.
July 2010 – June 2011	Port of San Diego	School Program/Field Trip	P	Pro Peninsula – Sea Turtle Education Program	Classroom presentations and field trips to learn about sea turtles and pollution prevention, information on watershed issues is included	School Children	175	Within the Port's 5 member cities	Various water quality information	Y – Knowledge was increased by 35% and measured through pre- and post-tests.
July 2010 – June 2011	Port of San Diego	School Program/Field Trip	P	Chula Vista Nature Center – Coastal Education Program	Port Environmental Fund-sponsored program involving salt marsh and watershed education	School Children	540	Watershed-wide	Various water quality information	N
July 2010 – June 2011	Port of San Diego	School Program/Field Trip	P	Wildcoast – Sea Turtle Education Program	Field trips to learn about sea turtles and pollution prevention, information on watershed issues is included	School Children	1,812	Watershed-wide	Various environmental information	N
July 2010 – June 2011	Port of San Diego	School Program/Field Trip	P	The Green Machine – IPM Education Program	Field trips to learn about IPM and the water cycle, information on watershed issues is included	School Children	1,856	Chollas Creek Watershed-wide	Various environmental information	N

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FY10-11	SDCRAA	School Program/Field Trip	P	WIldCoast Wildlife Outreach Program	Continued collaboration with WiLDCOAST on the "Wildlife Outreach Program" to encourage conservation of local wildlife and habitats.	School children	unknown	San Diego Bay Region		N
11/6/2010	County	School Program/Hike	P	Outdoor Adventure Group		Students	30	Otay Lakes County Park		
5/28/11 and 6/10/11	Imperial Beach	Storm Drain Stenciling	P	Storm Drain Stenciling	Wildcoast storm drain stenciling in Imperial Beach	Residents	27,000	Citywide	N/A	N
FY10-11	SDCRAA	Storm Drain Stenciling	P	Storm Drain Stenciling	"No Dumping" warning signs on storm drain inlets throughout the airport	Authority, and SDIA staff	unknown	San Diego International Airport		N
11/13/2010	Chula Vista	Waste Collection/ Recycling Event	P	HHW Event	City staff collected HHW from Chula Vista residents	General Public	1,111 vehicles	Old Public Works Yard	N/A	Y – 97,236 lbs collected
9/9/2010	Port of San Diego	Waste Collection/ Recycling Event	P	Electronic Waste Collections Event for Port Employees	Electronic waste education	Port Staff	25	Port of San Diego Administratio n Building	None	N
11/13/10, 6/11/11, 6/18/11	City of National City and EDCO Collection Services	Waste Collection/ Recycling Events	P	Large item trash collection	Three free collection events for bulky trash, resulting in 826 tons properly disposed.	National City residents	1946 vehicles	EDCO Recovery and Transfer facility	None	N
11/20/10, 3/11/11, 6/25/11	I Love A Clean San Diego (within the City of National City)	Waste Collection/ Recycling Events	P	Neighborhod Clean Watch: Waste Collection Events	Neighborhod Clean Watch was coordinated independently by ILACSD. These events removed 99,315 pounds of debris.	National City residents	unknown	Kimball Elementary School and El Toyon Recreation Center and Granger Junior High School, National City	Unknown	N

Date	Jurisdiction	Event Type	Education(E) or Public Participation(P)	Event Title	Comments	Audience Type	Estimated Audience	Site Name/ Location	Materials Distributed	Assessment Conducted ? (y/n/n/a)
4/9/11, 4/10/11	National City Chamber of Commerce (within the City of National City)	Waste Collection/ Recycling Events	P	Electronic Waste Collection Event	National City Chamber of Commerce coordinated this event, which collected108,000 pounds of e-waste.	National City residents	unknown	Westfield Plaza Bonita, 3030 Plaza Bonita Road	None	N
4/9/11, 4/16/11	City of La Mesa	Waste Collection/Recycling Events	P	Spring Cleanup Events	700,000 lbs of items, debris, and trash was collected.	Residents	1044	EDCO Disposal Transfer Station Facility	Flyer regarding HHW Collection and Disposal	N
8 Events in FY 10/11	City of La Mesa	Waste Collection/Recycling Events	P	HHW Collection Events	49,939 lbs of HHW was collected	Residents	225	EDCO Disposal Transfer Station Facility	Flyer regarding HHW Collection and Disposal	N
FY 10/11	City of La Mesa	Waste Collection/Recycling Events	P	Used Oil Disposal Events at 10 collection centers and 4 tire recycling centers	Individuals traded in used oil filters for new ones.	Residents	--	14 locations	A new oil filter for exchange	N
6/23/2011	City of La Mesa	Workshops	P	Chollas Creek TMDL Stakeholder Meeting	Updates of TMDL compliance monitoring and activities presented at the meeting	Stakeholder Groups/Interested Public	20	Lemon Grove City Hall, Lemon Grove, CA	Information related to compliance monitoring and activities.	N
9/22/2010	County of San Diego, with the City of National City	Workshops	P	Negocio Verde Automotive Body and Repair Free Bilingual Compliance Workshop	Coordinated by the County of San Diego (may be redundant with their activities).	Auto body and auto repair businesses	30	National City	Unknown	N

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Appendix H

Shelter Island Yacht Basin (SIYB) TMDL Final Implementation Plan

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SHELTER ISLAND YACHT BASIN DISSOLVED COPPER TOTAL MAXIMUM DAILY LOAD IMPLEMENTATION PLAN

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May 2011

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ACRONYMS AND ABBREVIATIONS

Basin Plan	*Water Quality Control Plan for the San Diego Basin – Region 9*
BLM	Biotic Ligand Modeling
BMP	best management practice
City	City of San Diego
CTR	California Toxics Rule
CWA	Clean Water Act
DOC	dissolved organic carbon
EC_{50}	median effective concentration
Implementation Plan	SIYB Dissolved Copper TMDL Implementation Plan
Investigative Order	Investigative Order No. R9-2011-0036
LC_{50}	median lethal concentration
MAR	marine habitat
MS4	Municipal Separate Storm Sewer System
OAL	Office of Administrative Law
pH	hydrogen ion concentration
Port	San Diego Unified Port District
RHMP	Regional Harbor Monitoring Program
Regional Board	San Diego Regional Water Quality Control Board
SIYB	Shelter Island Yacht Basin
SSO	site specific objective
SUSMP	Standard Urban Stormwater Mitigation Plan
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
USEPA	U.S. Environmental Protection Agency
WER	Water Effects Ratio
WILD	wildlife habitat
WQO	water quality objectives

UNITS OF MEASURE

cm^2	square centimeter
kg/yr	kilogram per year
$\mu g/cm^2/day$	microgram per square centimeter per day
µg/L	microgram per liter
%	percent

1.0 INTRODUCTION

The Shelter Island Yacht Basin (SIYB) Dissolved Copper Total Maximum Daily Load (TMDL) Implementation Plan (Implementation Plan) describes the collective approach to achieving reductions in copper loading into SIYB in order to preserve and restore beneficial uses. The Implementation Plan takes a solutions-oriented approach of establishing and implementing Best Management Practices (BMPs) that directly and indirectly facilitate reductions in copper loading into the basin to meet the SIYB TMDL interim and final dissolved copper loading compliance thresholds. The Implementation Plan was prepared in response to Resolution No. R9-2005-0019 in which the San Diego Regional Water Quality Control Board (Regional Board) incorporated the dissolved copper TMDL into the *Water Quality Control Plan for the San Diego Basin – Region 9* (Basin Plan) (Regional Board, 2005). The Office of Administrative Law (OAL) reviewed and approved the dissolved copper TMDL on December 2, 2005.

This plan incorporates an adaptive management model of planning, implementation, and assessment. The first step in the planning phase is to develop a BMP implementation strategy by which the Named Parties (i.e., Dischargers) will work independently and collectively to reduce copper loading into SIYB. The implementation phase will involve the enactment of a phased program comprised of education, incentives, and policies that reduce copper loading. In recognition that the primary source of dissolved copper to the water column originates from copper-based antifouling paints, the main focus of implementation is to effect the conversion of hull paints from copper to non-copper and low-copper antifouling paint products to improve water quality. Therefore, assessment of compliance with the TMDL loading reductions will be determined through a basin-wide tracking program that quantifies the transition of vessels moored within SIYB from copper to non-copper and low-copper paints (less than 40% copper). Additionally, annual water quality monitoring will be used to track progress towards achieving long-term improvements in water quality. The results of tracking and monitoring assessments will be incorporated into technical reports that will be submitted annually to the Regional Board in compliance with the requirements of Investigative Order No. R9-2011-0036 (Investigative Order). A summary of the roles and responsibilities of the Named Parties in implementing the TMDL is provided in Appendix A.

1.1 TMDL Summary & Background

In 1996, SIYB was placed on the Clean Water Act (CWA) Section 303(d) list of impaired waters due to elevated levels of dissolved copper in the water column. The CWA requires that the Regional Board implement a TMDL for 303(d)-listed waters of SIYB since the existing water quality did not meet numeric water quality standards for dissolved copper or narrative water quality objectives (WQOs) for toxicity and pesticides. As a result, the Regional Board developed a TMDL for SIYB, with the purpose of achieving applicable WQOs as well as the restoration of marine habitat (MAR) and wildlife habitat (WILD) beneficial uses within the basin.

1.1.1 Source Analysis

The Regional Board's source analysis determined the total mass loading of dissolved copper to SIYB to be 2,163 kilograms per year (kg/yr). The TMDL stated that 98% of inputs are attributable to copper-based antifouling paints of recreational vessels (Regional Board, 2005). Copper is released from vessels to the water column through two sources: passive leaching and underwater hull cleaning. Passive leaching is the single largest source of dissolved copper to SIYB and was estimated to contribute a mass loading of 2,000 kg/yr of dissolved copper, which represents 93% of the total contribution (Table 1-1). The TMDL identified underwater hull cleaning as the second largest source of dissolved copper, resulting in the mass loading of 100 kg/yr, which represents 5% of the total contribution.

Table 1-1. Sources of Dissolved Copper to Shelter Island Yacht Basin

Source	Mass Load (kg/yr)	Contribution (% Dissolved Copper)
Passive Leaching	2,000	93
Hull Cleaning	100	5
Urban Runoff	30	1
Background	30	1
Direct Atmospheric Deposition	3	<1
Sediment	0	0
Total	**2,163**	**100**

Inputs of dissolved copper from upland sources appear to be much less pronounced according to the Regional Board's source analysis. Approximately 846 acres drain into SIYB, contributing 1% (30 kg/yr) of dissolved copper loading to SIYB via urban runoff, which consists of wet weather and dry weather flows (Regional Board, 2005). Other sources of dissolved copper to the SIYB include natural background sources in ambient seawater and aerial deposition. Water from San Diego Bay flushes SIYB and contributes to the loading of dissolved copper. Average copper concentrations in San Diego Bay were used to characterize background conditions and a box model was used to estimate loading. Background contributions of dissolved copper to SIYB are 1% (30 kg/yr). Direct atmospheric deposition contributes less than 1% (3 kg/yr) of dissolved copper loading to SIYB (Regional Board, 2005). This includes wet and dry deposition directly into SIYB. Indirect deposition is not included here, because it is a component of urban runoff.

1.1.2 Water Quality Objectives

The numeric WQOs in SIYB are equal to the California Toxics Rule (CTR) water quality values for dissolved copper within seawater (U.S. Environmental Protection Agency [USEPA], 2000). Continuous or chronic exposures may not exceed 3.1 micrograms per liter (µg/L) over a 4-day average, while acute exposures may not exceed 4.8 µg/L over a 1-hour average. In addition, numeric WQOs must not be exceeded more than once every three years. In addition to numeric WQOs, the Basin Plan establishes narrative WQOs for toxicity and pesticides (Regional Board, 1994):

> ***Toxicity Objective****: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Board.*
>
> ***Pesticide Objective****: No individual pesticide or combination of pesticides shall be present in the water column, sediments, or biota at concentration(s) that adversely affect beneficial uses. Pesticides shall not be present at levels which will bioaccumulate in aquatic organisms to levels which are harmful to human health, wildlife or aquatic organisms.*

The Regional Board indicated that if numeric WQOs are met for dissolved copper, then narrative WQOs will also be met. However, since numeric WQOs are not site specific, SIYB-specific assessments of toxicity and biota may provide a more direct indication of basin-wide attainment of beneficial uses and narrative WQOs than assessments of dissolved copper concentrations alone.

1.1.3 Loading Allocations

Dissolved copper loading allocations were established by the Regional Board to reduce inputs of dissolved copper into the water column to levels that will meet WQOs (i.e., 3.1 µg/L for dissolved copper). Allocations were based on the known sources of dissolved copper into the water column, as well as the environmental conditions of SIYB that affect the fate and transport of dissolved copper in the basin. A linkage analysis was performed by the Regional Board to determine the maximum amount of copper loading that SIYB can support and still meet the numeric target (i.e., loading capacity). Final loading allocations for known sources of copper to SIYB were based on the known sources of copper, the loading capacity of the basin, and a 10% margin of safety that accounted for the uncertainty of the analysis.

In order to meet the numeric targets for dissolved copper (Section 1.1.2), loading must be equal to or less than the TMDL loading allocation of 567 kg/yr, requiring a 76% reduction from current loading. Reductions were assigned to sources based on current loading (Table 1-2)). Loading from passive leaching must be reduced by 81% from current loading, resulting in an allocation of 375 kg/yr. This equates to a 75% reduction in the total loading of dissolved copper to SIYB. Loading from hull cleaning must be reduced by 27% from current loading, resulting in an allocation of 72 kg/yr. This equates to a 1% reduction in the total loading of dissolved copper to SIYB. The remaining sources of copper are relatively insignificant to the total loading and were not assigned reductions.

Table 1-2. Dissolved Copper Loading Allocations for Shelter Island Yacht Basin

Source	Current Load (kg/yr)	Allocation (kg/yr)	Percent Reduction from Current Loading (%)	Percent Reduction from Total Loading (%)
Passive Leaching	2,000	375	81	75
Hull Cleaning	100	72	27	1
Urban Runoff	30	30	0	0
Background	30	30	0	0
Direct Atmospheric Deposition	3	3	0	0
Sediment	0	0	0	0
Margin of Safety		57		
Total	**2,163**	**567**		**76**

1.1.4 Total Maximum Daily Load Compliance Schedule

Under Resolution R9-2005-0019, the SIYB dissolved copper TMDL identified a phased load reduction schedule that will achieve the final 76% reduction over 17 years (Regional Board, 2005). Based on the official TMDL approval date[1], this time period is set to end in 2022. No reductions in dissolved copper loading were required during the initial two-year orientation period (2005-2007). The subsequent 15-year period requires incremental load reductions, including a 10% reduction in dissolved copper loading within 7 years, a 40% reduction within 12 years, and a 76% reduction within 17 years (Table 1-3).

Table 1-3. Interim and Final Loading Targets for TMDL Attainment

Stage	Time Period	Percent Reduction from Current Estimated Loading	Reduction to be Attained by end of Year	Estimated Interim Target Loading (kg/yr of Dissolved Copper)
1	2005-2007	0%	N/A	N/A
2	2007-2012	10%	7	1,900
3	2012-2017	40%	12	1,300
4	2017-2022	76%	17	567

[1] For a TMDL to be incorporated into the Basin Plan, it must be approved by the Regional Board, State Water Resources Control Board (SWRCB), OAL, and USEPA Region 9. The official TMDL approval date is when the OAL approves the document.

1.2 Named Parties and Stakeholders

The Named Parties (i.e., Dischargers) under the SIYB TMDL responsible for copper load and wasteload reductions include:

- San Diego Unified Port District (Port)
- SIYB marina and yacht club owners/operators
- Persons owning boats moored in SIYB
- SIYB underwater hull cleaners
- (City) of San Diego

The Port, marina and yacht club owners/operators, boat owners, and hull cleaners are responsible for copper discharges from boat hulls, while the City is responsible for discharges to the basin via its Municipal Separate Storm Sewer Systems (MS4s).

The Named Parties began coordinating and preparing this Implementation Plan in June 2009. The Implementation Plan provides a roadmap for coordinating BMP implementation as well as loading reduction assessments and water quality monitoring (Section 4.2). The Named Parties are committed to open communication and an open public advisory process with a focus on stakeholder input.

Regional stakeholders included residents, non-government organizations, community groups, dischargers that were not named in the SIYB TMDL, and other interested members of the public. Stakeholder input was sought during stakeholder meetings and comment periods. Stakeholders invited to participate in the public advisory process included the following (listed alphabetically):

- Department of Pesticide Regulation
- Department of Toxic Substances Control
- Non-SIYB marinas
- Paint manufacturers
- Port Tenants Association
- Regional Board
- San Diego Bay boaters
- San Diego Bay boatyards
- San Diego Coastkeeper
- San Diego Bay hull cleaners
- Scripps Institute of Oceanography
- U.S. Navy

1.3 Plan Objective

The objective of the Implementation Plan is to achieve a reduction in copper loading into SIYB, resulting in a water-column concentration that is protective of MAR and WILD beneficial uses, as directed by the SIYB TMDL. Loading reductions will be achieved through conversion of vessels to non-copper and low-copper hull paints, reductions of inputs via hull cleaning, and

control of watershed inputs. Key measures to achieve compliance with TMDL interim and final loading objectives include:

- Implementing an adaptive approach to reducing copper loading into SIYB.
- Identifying antifouling hull coatings that substantially reduce or eliminate copper release into the water column.
- Establishing a basin-wide vessel hull paint conversion tracking program to assess loading reductions.
- Establishing a basin-wide water quality monitoring program to assess trends in dissolved copper concentrations and toxicity.
- Defining application procedures and certification standards for boatyards to properly apply non-copper antifouling coatings.
- Identifying in-water hull cleaning standards.
- Implementing boater education and outreach programs.
- Creating incentive programs for boaters and/or boatyards to apply and properly maintain non-copper hull paints.

1.4 Implementation Approach

The Implementation Plan takes a solutions-oriented strategy of establishing BMPs that directly and indirectly reduce copper loading into SIYB to comply with interim and final dissolved copper loading thresholds. This plan was designed to be consistent with the findings of the SIYB TMDL[2], and has integrated the loading allocations and assumptions of the TMDL into the implementation and assessment approaches. Additionally, this plan incorporates an adaptive management model of planning, implementation, and assessment (Figure 1-1).

[2] Special studies will be implemented to further refine and assess findings and assumptions of the TMDL.

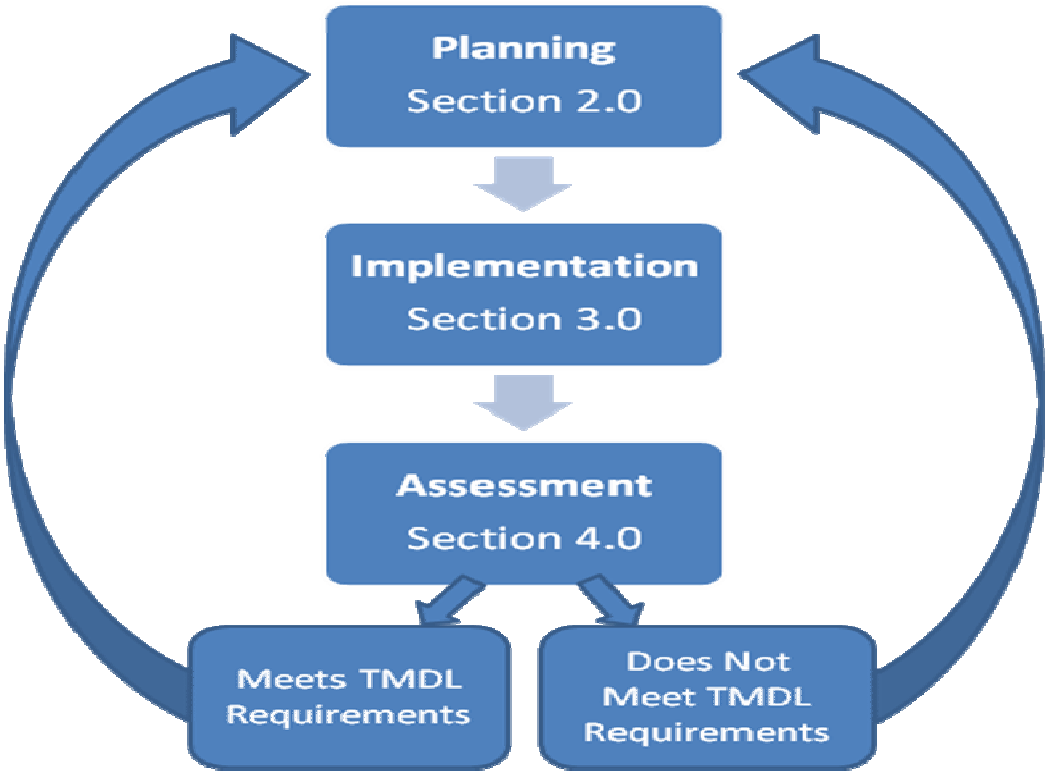

Figure 1-1. SIYB TMDL Implementation Plan Adaptive Management Approach

Planning includes the development of the Implementation Plan, which specifies the individual and coordinated efforts Named Parties will employ to reduce copper loading, track loading reductions, and monitor water quality improvements. Implementation consists of a flexible program that allows Named Parties to select BMPs that range from voluntary (e.g., education and incentives) to policy-driven measures (e.g., lease agreements, policies, and regulations). Assessment includes evaluations of compliance with the TMDL interim and final loading reduction targets through a basin-wide tracking program that quantifies the transition of vessels moored within SIYB from copper to non-copper and low-copper hull paints. Assessment also includes annual water quality monitoring and toxicity testing to track long-term trends in water quality and eventual attainment of final water quality numeric and narrative objectives.

2.0 PLANNING

This section describes the process the Named Parties used to develop the implementation strategy, inclusive of individual and coordinated efforts. The initial planning effort consisted of developing an approach to identify, prioritize, and plan the implementation of BMPs to meet dissolved copper loading reduction requirements of the SIYB TMDL. As such, it was determined that establishing a suite of individual and joint efforts would increase the likelihood that TMDL compliance will be achieved basin wide. As required in the Investigative Order, Named Parties are responsible for annually reporting the BMPs or other actions that have been implemented to reduce dissolved copper loads to the basin. Named Parties have the option of developing individual workplans that identify the BMPs they plan to implement to achieve loading reductions, including implementation schedules, assessment mechanisms, and effectiveness targets. During this phase, coordinated efforts were identified that include (1) a basin-wide vessel tracking program to quantify loading reductions based on conversions of vessels from copper to non-copper and low-copper paints and (2) a basin-wide water quality monitoring program that quantifies dissolved copper levels and toxicity. Both the vessel tracking and water quality monitoring program comply with the requirements of Investigative Order.

2.1 Cooperation among Named Parties

All of the Named Parties undertaking activities in SIYB have a responsibility to reduce pollutants that discharge or have the potential to discharge from their facility or actions. While each party named in the SIYB TMDL is responsible for ensuring their individual compliance under the TMDL, it is recognized that basin-wide compliance may be best achieved through cooperative efforts. Additionally, coordination of certain key elements may result in cost savings for all parties involved.

Showing basin-wide compliance for both interim and final TMDL loading reduction targets requires that Named Parties provide information on vessel hull conversions from copper-based to non-copper and low-copper hull paints (i.e., vessel tracking data). Named Parties have agreed on the tracking data to be collected, compiled, and submitted in order to meet TMDL reporting requirements as established in the Investigative Order. Similarly, water quality monitoring efforts will be conducted using a basin-wide approach that also complies with the Investigative Order requirements. The Named Parties will facilitate the collection of monitoring data within their leaseholds, when applicable.

2.2 Roles and Responsibilities of Each Named Party

The roles and responsibilities of Named Parties in implementing collective efforts are described in Table 2-1. The Port will serve as the technical lead of the Implementation Plan, inclusive of the tracking program, basin-wide water quality monitoring, and Port-led special studies. For these efforts, the Port will provide overall project management, coordination of technical studies, and submittal of annual monitoring and progress reports to the Regional Board as required by the Investigative Order. Named Parties who moor vessels or operate facilities for individual boat owners who moor vessels in SIYB will maintain records on the hull paints of all vessels within

their facility and the percent of time vessels are moored in their facilities (to the extent practicable) between January 1 to December 31 and will provide this information to the Port on an annual basis no later than January 15 for inclusion in the vessel tracking report to the Regional Board.

Table 2-1. Roles and Responsibilities for Collective Efforts by Named Party

Roles & Responsibilities	Port	Marinas & Yacht Clubs	Individual Boat Owners	Hull Cleaners	City
Tracking Program Development and Assessment	Lead	X	X		
Water Quality Monitoring	Lead	1			
MS4 Discharge Monitoring					Lead
Special Studies	Lead				X
Hull Cleaning BMPs & Certification Development	Lead	X		X	

1 Marina and yacht club owner/operators are to provide access to leaseholds, where applicable.

As required in the Investigative Order, Named Parties will be required to identify and describe the BMPs implemented to reduce dissolved copper discharges to SIYB (Table 2-2). For the purposes of the Implementation Plan, BMPs are defined as those actions or projects that indirectly or directly contribute to dissolved copper load reductions and/or water quality improvements. Named Parties will have the option of preparing individual workplans that describe, assess, and report on the BMPs, activities, and efforts they have selected or intend to use to comply with the staged load reduction targets. Named Parties will then annually report to the Port the BMPs and actions implemented to reduce dissolved copper loads to SIYB in compliance with Investigative Order reporting requirements.

Table 2-2. Roles and Responsibilities for Individual Efforts by Named Party

Roles & Responsibilities	Port	Marinas & Yacht Clubs	Individual Boat Owners	Hull Cleaners	City	Schedule
Identify BMPs	X	X	N/A	X	X	Begin Immediately
Develop Individual Workplans	X	X	N/A	X	X	Optional
Implement BMPs	X	X	N/A	X	X	Begin Immediately
Report on BMPs Implemented	X	X	N/A	X	X	Annually

2.2.1 Establishment of Individual Workplans

Each Named Party has the option of developing individual workplans. A workplan template is provided in Appendix B that details the BMPs to be implemented, the schedule for implementation, the desired outcome of BMPs, methods of assessing BMP effectiveness, and measures to be taken in the event that BMPs are not achieving desired outcomes. An "Implementation Tracking Matrix" developed by the San Diego Yacht Club is also provided in Appendix B.

The purpose of a workplan is to identify the BMPs to be implemented and to define the implementation schedule for each activity. The implementation of activities will be scheduled to achieve interim and final loading targets in compliance with the TMDL.

Workplans may include the following key components:

- BMP Description: The description will detail the objectives and scope of the BMP to be implemented.
- Implementation Schedule: The workplan has been divided into Stages 2-4 of the compliance schedule period (2007-2012, 2012-2017, and 2017-2022). Named Parties will schedule the implementation of BMPs to achieve the 10%, 40%, and 76% interim loading targets or water quality conditions that are protective of SIYB beneficial uses.
- BMP Purpose(s): Each BMP will have a specific purpose or will have at least one answerable, focused study question to frame its development, implementation, and assessment.
- Assessment Mechanism(s): Named Parties will define mechanisms to assess the effectiveness of BMPs (e.g., numbers of boaters contacted during education and outreach events).
- Targeted Outcome(s): The ultimate outcome is to achieve water quality conditions that are protective of beneficial uses in SIYB. BMPs will have defined goals and objectives towards achieving these outcomes (e.g., number of vessels to be converted to achieve dissolved copper loading reduction targets). These targets will become the basis for assessing the effectiveness of activities.

2.2.2 Establishment of Collective Tracking Efforts

Given the principal importance of anti-fouling paints to WQO exceedances, the main assessment of loading reductions will be tracking conversions of hull paints from copper to non-copper and low-copper paints for vessels moored within SIYB. The vessel tracking program will quantify both reductions in loading from passive leaching and hull cleaning. Named Parties will be responsible for instituting a tracking program to determine the number of vessels with copper, non-copper, and low-copper hull paints and the percentages of time that vessels are moored within SIYB. This will provide a direct, cost-effective measure of basin-wide annual loading, as well as loading reduction. Vessel tracking is described in greater detail in Section 4.2.1.

2.2.3 Establishment of Collective Monitoring Efforts

The Port will be responsible for the implementation of the water quality monitoring program, as well as the analysis and reporting of findings to assess basin-wide water quality conditions. The other Named Parties will facilitate the collection of monitoring data within their leasehold, when applicable. Water quality monitoring is described in greater detail in Section 4.2.2.

3.0 IMPLEMENTATION

This section defines how Named Parties can identify, select, and implement appropriate BMPs to meet SIYB TMDL interim and final loading reduction targets and/or water quality conditions that are protective of SIYB beneficial uses. Named Parties have the option of implementing BMPs, ranging from voluntary to more prescriptive measures, based on site-specific parameters and individual and collective effectiveness assessments. For the purposes of this Implementation Plan, BMPs are defined to be those actions or projects that directly or indirectly result in dissolved copper load reductions and/or water quality improvements.

3.1 Types of BMPs

Table 3-1 describes categories of BMPs that may be used by the Named Parties. This list in no way is intended to limit the BMPs that Named Parties may use to achieve TMDL goals. Named Parties may identify and implement other activities or BMPs if desired. Using the adaptive management approach developed in this Implementation Plan, it is anticipated that this list will be modified over the 17-year compliance schedule. A more detailed list of potential BMPs can be found in Appendix D of the Regional Harbor Monitoring Program (RHMP) Copper Literature Review and Biotic Ligand Model Analysis Report (WESTON, 2011a).

Table 3-1. Best Management Practices

Category	Description
Hull Paint Transition	Efforts that result in the transitioning of boats from copper to low-copper or non-copper paints and/or track hull paint transitions. This category will also include projects or activities designed to identify non-copper and low-copper hull paints available for making the transition. Activities could be individual or collective efforts. Examples of activities fitting into this category include, but are not limited to: • Developing schedules for boat transition and implementing boat transitions. • Developing data tracking mechanisms to track hull-paint transition. • Partnering with boatyards to track boat transition efforts • Implementing a "Green Boater" certification program with a criterion of using non-copper and low-copper antifouling paints.
Hull Cleaning	Measures taken to minimize copper inputs during in-water hull cleaning activities. In general, most activities in this category would be conducted by hull cleaners or individual boat owners. This category does not include education on hull cleaning, which would be best categorized under Education/Outreach. It may include implementation of a hull cleaner certification program to reduce loading from hull cleaning activities.
Structural and Mechanical BMP Implementation	Efforts to minimize inputs of pollutants through source/treatment controls for land-based and marine operations. Some examples include, but are not limited to: • Storm drain filters in parking lot storm drains. • Regularly sweeping parking lots. • Slip liners for boats. • Alternative small boat storage methods. Also included in this category would be facilities undergoing redevelopment that triggers Standard Urban Stormwater Mitigation Plan (SUSMP) compliance and the identification of the BMPs installed as part of the SUSMP process.
Grant Funding/ Incentives	Incentives include the projects or activities designed to encourage a voluntary transition by providing either monetary or preferential treatment options. These efforts could be undertaken by single or multiple entities. Examples include, but are not limited to: • Offering funding for boaters to switch to non-copper hull paint. • Preferred slip options or slip fee discounts for boaters using non-copper hull paints. • Grant submittals seeking hull paint transition funding may also be included here.
Education/ Outreach	Efforts to provide education to marinas, boatyards, boaters, staff, hull cleaners and the general public. Topics can include general information about water quality problems, the local copper hull paint issue, or other copper related topics around the state. Specific education elements could consist of workshops or events identifying what boaters can do to transition to available

Category	Description
	non-copper or low-copper hull paint alternatives, or specific practices/limitations occurring within a marina/yacht club. As with all education/outreach, it is important to have a metric to gauge the project's effectiveness, such as whether it improved the target audience's understanding or resulted in having boaters transition to non-copper and low-copper hull paints.
Alternative Hull Paint Studies	The Port and marina owners/operators may coordinate and oversee commercial and scientific special studies. Demonstration special studies by commercial entities may confirm and demonstrate the efficacy and longevity of available nontoxic and less toxic boat hull coating products. These studies would allow boat repair yards and underwater hull cleaners the opportunity to develop expertise and acquire special equipment needed for the application and maintenance of nontoxic and less toxic boat hull coatings.
Monitoring	Monitoring conducted for TMDL compliance and for the purposes of assessing BMPs, refining site conditions, or furthering the understanding of water-sediment-toxicity interactions. Monitoring efforts may be conducted by a single entity or by several entities. Examples include assessing contributions of hull cleaning efforts, evaluating conditions for site specific objectives, and identifying the contributions to or from sediments.
Reporting	Includes TMDL compliance reporting and reporting of any special studies or investigations relating to hull paint or copper water quality issues. Reports could be collective efforts or they could be individual reports. Results of tracking vessel transitions to non-copper and low-copper hull paints would also be identified in this category.
Lease Updates	Lease updates may include efforts to require boaters to provide information, structured slip fees based on the presence/absence of copper paints, or updates to lease language to reflect current policy or regulations. It could also include timelines or schedules for updating leases to include more stringent language relating to copper-based hull paints.
Policy/ Regulation	Limitations or restrictions on the inputs of copper to the water. Polices can be specific to sources and activities, or policies can be broad phase-out based options. Policies may include: • Limitations to hull cleaning. • Leasehold agreements. • Restrictions on the use of copper paints.

3.2 BMP Selection and Implementation

The types of BMPs applicable to each Named Party are presented in Table 3-2. The activities defined in Table 3-1 will aid Named Parties in BMP selection and development of individual workplans, if desired. BMP selection will consider desired outcomes of actions, mechanisms for assessing success, and modifications and alternative actions to be taken if success criteria are not achieved.

Table 3-2. Applicability of BMPs to Named Parties

Type of BMP	Port	Marinas & Yacht Clubs	Individual Boat Owners	Hull Cleaners	City of San Diego
Hull Paint Transition	X	X	X	X	
Hull Cleaning	X	X	X	X	
Structural & Mechanical BMP Implementation	X	X	X	X	X
Grant Funding / Incentives	X	X		X	X
Education & Outreach	X	X		X	X
Alternative Hull Paint Studies	X	X	X	X	X
Monitoring	X	X		X	X
Reporting	X	X		X	X
Lease Updates	X	X	X		
Policy / Regulation	X	X			X

Named Parties will have the option of selecting from BMPs that range from voluntary actions (e.g., education and outreach) to prescriptive actions (e.g., enactment of policies and regulations). It is anticipated that voluntary efforts will achieve the interim loading target of a 10% reduction by 2012. The individual and collective assessments implemented by the Named Parties will identify the most effective suite of activities needed to achieve loading allocations. If voluntary measures are not sufficient to meet loading reduction targets, Named Parties may progressively pilot and implement more stringent measures, such as lease updates and policies limiting use of copper-based antifouling paints, to achieve target loading allocations.

4.0 ASSESSMENT

Assessment includes individual efforts to determine BMP effectiveness and collective efforts to verify TMDL compliance with interim and final loading allocations. Collective assessments include vessel hull paint conversion tracking to quantify loading reductions and water quality monitoring to assess trends in water quality.

The assessment process follows the flow chart presented in Figure 4-1. Named Parties may use this process as a guide for developing activity-specific assessment programs for their individual workplans and collective tracking and monitoring studies.

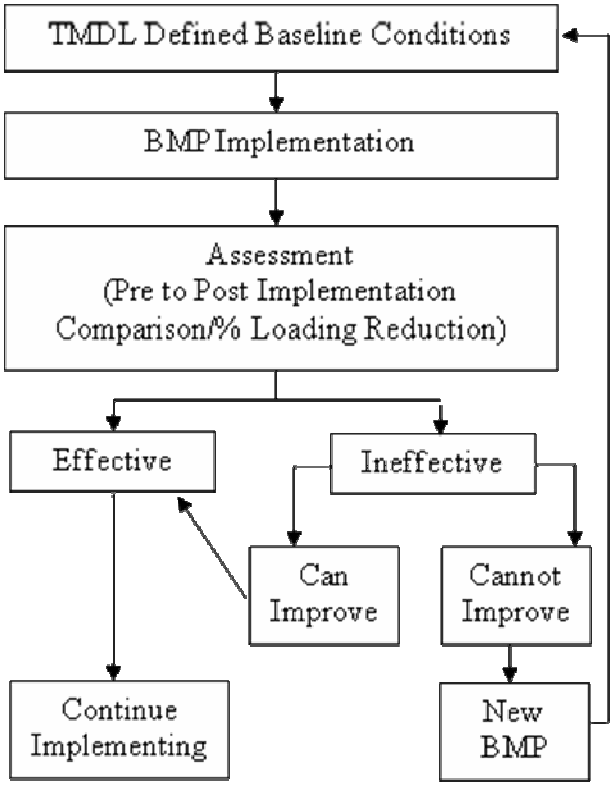

Figure 4-1. Effectiveness Assessment Process

Key elements of assessment include:

1) **Defining Baseline Conditions –** The SIYB TMDL defines the baseline dissolved copper loading to SIYB. Baseline dissolved copper water quality conditions were established using recent water quality monitoring studies performed in SIYB during the 2005-2008 RHMP surveys (WESTON, 2008 and 2010) and during 2006 and 2007 by Neira et al. (2009), as detailed in the SIYB TMDL Monitoring Plan.
2) **BMP Implementation** – Each Named Party will determine the implementation process for individual BMPs.

3) **Assessment** – Assessment may involve cooperative tracking, water quality monitoring, and/or other evaluations specific to the activity under assessment. Pre- and post-BMP implementation conditions will be compared to determine effectiveness.
    a. **Effective** – If the BMP achieves the desired targeted outcome(s), implementation may be continued and other Named Parties may choose to implement elsewhere, as appropriate.

    b. **Ineffective** – If the BMP as implemented cannot achieve the defined targeted outcome(s), the activity will be assessed for improvement opportunities. If the BMP can be modified to achieve the targeted outcome(s), the Named Party may choose to implement the practice with refinements (if necessary). If not, the Named Party may elect to discontinue the BMP and implement another.

4.1 Individual Assessment

Named Parties, including the Port, the City, SIYB marina and yacht club owners/operators, and SIYB underwater hull cleaners will document the actions implemented to reduce dissolved copper loads to SIYB and/or achieve WQOs and beneficial uses in accordance with the requirement of the Investigative Order.

To assess BMP effectiveness, Named Parties will have the option of using pre- and post-implementation assessments to determine the effectiveness of BMPs in achieving desired outcomes (e.g., increases in public awareness, development of non-copper and low-copper coatings, load reductions, and water quality improvements). Additionally, Named Parties will have the option of assessing individual reductions in loading due to conversion of vessels within their facilities to non-copper or low-copper paints or the enactment of BMPs that reduce inputs due to hull cleaning. Management questions and assessment mechanisms that can be used to quantify BMP effectiveness are presented in Appendix C.

4.2 Basin-Wide Assessments

Since TMDL compliance must be achieved basin-wide to ensure restoration and protection of beneficial uses, assessment of loading reductions must also be performed basin-wide. Assessment of TMDL compliance will be accomplished through basin-wide tracking of conversion of vessels from copper to non-copper and low-copper hull paints. Basin-wide water quality monitoring will track long-term trends in dissolved copper levels and toxicity. Summaries of basin-wide efforts are provided in the following sections. A more detailed discussion is presented in the SIYB TMDL Monitoring Plan.

4.2.1 Vessel Tracking

Tracking of vessel conversions from copper to non-copper and low-copper hull paints will be used to assess annual dissolved copper loading reductions. This will involve collection of vessel

conversion data from which annual dissolved copper loads and loading reductions will be calculated.

4.2.1.1 Data Collection

Named Parties operating facilities that aggregate vessels in SIYB (i.e., marina and yacht club owners and operators) will be responsible for collecting and submitting the following vessel tracking data to the Port on an annual basis (Table 4-1). These Named Parties will collect, maintain, and submit tracking information annually by January 15 to the Port in a standardized format for inclusion in annual monitoring and progress reports to the Regional Board.

Table 4-1. Required Vessel Tracking Data

Element	Vessel Tracking Data
1	Name of marina or yacht club
2	Date of report
3	Total number of slips or buoys in facility available to be occupied by vessels
4	Slip/mooring occupation data
4a	Percent of time unoccupied
4b	Percent of time occupied by vessel(s) with known copper hull paint
4c	Percent of time occupied by vessel(s) with documented low-copper hull paint
4d	Percent of time occupied by vessel(s) with documented non-copper hull paint
5	Vessel-specific information
5a	Document or registration numbers of vessels moored in slips/moorings
5b	Vessel type (sail, power, multi-hull, etc.)
5c	Vessel length
5d	Vessel beam width

As a data quality assurance/quality control and confirmation check, additional information on paint type and application will be required for vessels reported to have low-copper (less than 40% copper) or non-copper hull paints (Table 4-2).

Table 4-2. Required Low-Copper and Non-Copper Hull Paint Vessel Data

Element	Low-Copper and Non-Copper Vessel Hull Paint Confirmation Data
1	Vessel document or registration number
2	Hull paint name
3	Product number
4	Name of boatyard that applied paint
5	Painting date
6	Percent copper if low-copper hull paint is indicated

The Port will compile the vessel tracking data from SIYB marinas and yacht clubs to report on the percent of time that slips are unoccupied or are occupied by vessels with copper, low-copper, non-copper, or unknown hull paints as required by the Investigative Order (Table 4-3). This data will be used to calculate the annual dissolved copper load to SIYB from vessels, the number of vessels converted from copper to low-copper or non-copper hull paints, and the reduction in dissolved copper loading achieved annually.

Table 4-3. Investigative Order Required Vessel Tracking Data to be Reported Annually

Element	Vessel Tracking Data
1	Total number of slips or buoys in facility available to be occupied by vessels
2	Number of unoccupied slips or buoys and length of time unoccupied during each year
3	Number of vessels confirmed with copper-based hull paints and approximate length of time occupying a slip or buoy in facility each year
4	Number of vessels confirmed with alternative hull paints, by hull paint type, and approximate length of time occupying a slip or buoy in facility each year
5	Number of vessels with unconfirmed information about hull paints and approximate length of time occupying a slip or buoy in facility each year
6	Estimate of the dissolved copper load reduction achieved for the year (kg/yr and %)

4.2.1.2 Assessment of Annual Dissolved Copper Loading Reductions

Compliance with interim and final TMDL loading reduction goals will be assessed through basin-wide vessel tracking. Tracking of vessel conversions from copper-based to non-copper or low-copper (i.e., less than 40% copper) hull paints, as well as permanent slip and mooring conversions, will be used to calculate annual dissolved copper loading reductions. This assessment incorporates the following assumptions used by the Regional Board in determining loading allocations (Regional Board 2005, Appendix 2).

- All 2,363 SIYB slips or buoys were occupied by vessels (N_v).
- All 2,363 recreational vessels moored within SIYB have copper-based paints.
- Annual loading from passive leaching basin wide (L_p) equals 2000 kg/year.
- Annual loading from hull cleaning (L_h) equals100 kg/yr.
- Avg. annual loading (L_v) per vessel equals 0.9 kg/yr. Where $L_v = (L_p + L_h)/N_v$.

Based on the Regional Board assumptions in determining dissolved copper loading via passive leaching and hull cleaning combined, there will be an average loading reduction of 0.9 kg/yr for every vessel in SIYB that converts from copper to non-copper hull paints. The use of low-copper hull paints (i.e., hull coatings with less than 40% copper) also was recognized in the TMDL as a viable means of reducing copper loading to the basin. The loading reduction analysis assumes that each vessel transitioned to low-copper hull paints on average will reduce annual dissolved copper loading by 0.45 kg/yr. Thus, annual dissolved copper loading reductions will be based on the following assumptions (Table 4-4).

Table 4-4. Dissolved Copper Loading Calculation Assumptions

Dissolved Copper Loading Assumptions
1. All vessels moored in SIYB at the enactment of the TMDL had copper hull paints.
2. Average annual dissolved copper load from a vessel with copper paint equals 0.9 kg/yr.
3. Vessels with unknown hull paints will be assumed to have copper.
4. Annual dissolved copper load from a vessel with non-copper hull paint equals 0 kg/yr.
5. Low copper hull paints include paints with less than 40% copper.
6. Average annual dissolved copper load from a vessel with low-copper paint equals 0.45 kg/yr.

7. Annual loads will be normalized by the percent of time vessels are in SIYB.

The achievement of interim and final loading targets along with overall TMDL compliance will be dependent on reductions in the number of vessels with copper-based hull paints. In completing the source analysis, the Regional Board assumed that 100% of recreational boats in SIYB used copper-based paints (Regional Board, 2005); therefore, any reported reduction in the number of boats with copper-based paints would equate to a nearly directly proportional decline in copper loading into the water column. The following schedule provides an estimate of the number vessels to be converted from copper-based to non-copper-based paints in order to meet interim and final loading targets (Table 4-5).

Table 4-5. Vessel Hull Paint Conversion Schedule to Meet Loading Targets

Stage	Time Period	Percent Reduction from Current Estimated Loading	Reduction to be Attained by End of Year	Estimated Interim Target Loading (kg/yr)	Annual Loading Reduction Target (kg/yr)	Reduction in Vessels with Copper Paints to Achieve Loading Target[1]
1	2005-2007	0%	N/A	2,163	0	0
2	2007-2012	10%	7	1,900	263	292
3	2012-2017	40%	12	1,300	863	959
4	2017-2022	76%	17	567	1,596	1,773

[1] Vessel reductions based on average-sized 40-ft vessel converted to non-copper hull paints (i.e., 0.9 kg/yr/vessel) loading reduction, as assumed by SIYB TMDL Technical Report

4.2.2 Monitoring

The purpose for conducting water quality monitoring within SIYB is to document improvements in water quality conditions. Monitoring for this project will include annual water quality assessments of copper levels and toxicity; storm drain monitoring by the City; and monitoring of a broader range of water-column, sediment, and biotic indicators throughout San Diego Bay by the Port and City on a 5-year basis through integration with the RHMP. This information will be used to assess long-term trends in water quality in SIYB. A summary of monitoring programs is presented below.

4.2.2.1 Water Quality Monitoring

Water quality monitoring will be conducted throughout SIYB to assess basin-wide trends in dissolved copper concentrations and toxicity. The monitoring will be conducted using methods consistent with the prior Regional Board studies in SIYB used to establish baseline copper levels and loading reduction requirements of the TMDL (Appendix 6; Regional Board, 2005). In 2000, the Regional Board surveyed six stations within SIYB to determine the average basin-wide concentration (5.45 µg/L) and maximum concentration (8.0 µg/L). By multiplying the chronic WQO (3.1 µg/L) by the ratio of the average concentration to the maximum concentration, the target basin-wide dissolved copper concentration (2.11 µg/L) was established. To be consistent with studies conducted by the Regional Board, this monitoring program will use a similarly placed sampling grid consisting of six stations and one reference station in the main channel of

San Diego Bay adjacent to SIYB. These station locations meet the Investigative Order requirement of being spatially representative of dissolved copper concentrations in SIYB, as described in the Monitoring Plan.

Sampling will be conducted once per year during the summer (i.e., August), and will include analyses of water column chemistry and toxicity as described in detail in the Monitoring Plan. Annual monitoring during the summer will facilitate integration with RHMP, which includes sampling once every five years during summer to determine the general health of San Diego Bay, as well as other San Diego region embayments. Performing annual sampling at the same station locations each summer will allow for repeated measures and temporal trend analyses to determine changes in dissolved copper concentrations with time. Additionally, as BMPs are implemented (e.g., conversion of vessels with copper-based hull paints to non-copper-based hull paints), correlation analyses can be used to assess BMP effectiveness in reducing dissolved copper concentrations within the water column.

4.2.2.2 Storm Drain Sampling

The City, as a Named Party under the TMDL, is responsible for the urban runoff contribution to SIYB from the MS4. From 2008-2011, wet and dry weather monitoring of the three City MS4s was conducted by the City to empirically quantify dissolved copper loading from urban runoff to SIYB (WESTON, 2011b). Dissolved copper loads to SIYB were modeled using dissolved copper concentration and flow data. Results indicated that dissolved copper loading was well below the TMDL estimates of 1% of the total load to the SIYB. The total annual dissolved copper load from all three outfalls into SIYB was calculated to be 3.67 kg/yr, inclusive of wet and dry weather loads.

During subsequent years, the City will continue to implement dry and wet weather monitoring to evaluate if runoff inputs and loads are in compliance with the 30 kg/year load allocation, subject to the availability of funds.

4.2.2.3 Integration with Regional Harbor Monitoring Program

SIYB TMDL water quality monitoring will be integrated with the RHMP. This regional program is performed on a five-year cycle concurrently with Southern California Bight Regional Monitoring Studies. The RHMP assesses a much wider array of conditions, including water quality, sediment chemistry, sediment toxicity, and benthic infaunal analyses. By conducting the broader suite of analyses, the RHMP will be able to not only assess copper impacts, but also assess the accumulation of other potential contaminants that may be contributed by non-copper-paints. Furthermore, integration with the RHMP core monitoring will allow for assessments of MAR and WILD beneficial uses within SIYB. The RHMP core monitoring program will be conducted in 2013 and again in 2018.

4.3 Special Studies

During the course of the SIYB TMDL, special studies will be conducted to further the understanding of available non-copper and low-copper hull paints, BMP effectiveness, and the physical and chemical conditions within SIYB that affect copper impacts on MAR and WILD

beneficial uses. These studies will provide data needed to verify or refine assumptions, resolve uncertainties, and improve the scientific foundation of the TMDL. As a component of the RHMP, the Port and the City will conduct special studies that further investigate copper toxicity, bioavailability, and fate and transport in SIYB. The Port is also leading special studies to assess new and emerging non-copper boat hull paints (Appendix D).

5.0 Reporting

Reporting under the SIYB TMDL will include annual Monitoring and Progress Reports to be submitted to the Regional Board by the Port no later than March 31 of each year, beginning on March 31, 2012. Monitoring and Progress Reports will contain information on SIYB TMDL Implementation (i.e., BMP implementation, vessel conversion, and associated annual loading reduction), San Diego Bay-wide BMP implementation, and SIYB TMDL monitoring (i.e., water quality monitoring results, water quality trends, and as-needed conceptual model updates), as required by the Investigative Order. A more thorough description of the vessel tracking and water quality monitoring reporting elements are provided in the SIYB TMDL Monitoring Plan.

6.0 References

California Regional Water Quality Control Board, San Diego Region (Regional Board). 1994. Water Quality Control Plan for San Diego Basin – Region 9 (Basin Plan).

California Regional Water Quality Control Board, San Diego Region (Regional Board). 2005. Total Maximum Daily Load for Dissolved Copper in Shelter Island Yacht Basin, San Diego Bay. Resolution No. R9-2005-0019. Basin Plan Amendment and Technical Report.

U.S. Environmental Protection Agency (USEPA). 2000. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California. Federal Register. Vol. 65. No. 97. May 18, 2000. Rules and Regulations.

Weston Solutions, Inc. (WESTON). 2011a. Regional Harbor Monitoring Program Copper Literature Review & Biotic Ligand Model. Prepared for the Port of San Diego, City of San Diego, City of Oceanside, and County of Orange. May 2011.

Weston Solutions, Inc. (WESTON). 2011b. Shelter Island Copper TMDL Final Monitoring Report. Prepared for the City of San Diego. April 2011.

APPENDIX A

Summary of Roles and Responsibilities for Named Parties

Summary of Roles and Responsibilities for Named Parties

The Shelter Island Yacht Basin (SIYB) Dissolved Copper Total Maximum Daily Load (TMDL) was adopted by the San Diego Regional Water Quality Control Board (Regional Board) to identify and implement actions to reduce dissolved copper loads to SIYB to attain numeric (3.1 µg/L) and narrative water quality objectives (WQOs) (Regional Board, 2005). According to the TMDL, the primary source of dissolved copper to SIYB was determined to be antifouling hull paints of vessels, which contributed 98% (2,100 kg/yr) of the total annual load via passive leaching and in-water hull cleaning. The TMDL provided a compliance schedule for reducing annual loads to SIYB in four stages (Table A-1), and listed the Named Parties responsible for discharges, including:

- The Port of San Diego (Port);
- SIYB marina and yacht club owners/operators;
- Persons owning boats in SIYB; and
- SIYB underwater hull cleaners.

Additionally, the City of San Diego (City) was listed for discharges from municipal separate storm sewer systems (MS4s) to SIYB, totaling 1% (30 kg/yr) of the total annual load. All other loads were attributed to background inputs from San Diego Bay and atmospheric deposition.

Table A-1. Interim and Final Loading Targets for TMDL Attainment

Stage	Time Period	Percent Reduction from Current Estimated Loading	Reduction to be Attained by end of Year	Estimated Interim Target Loading (kg/yr of Dissolved Copper)
1	2005-2007	0%	N/A	N/A
2	2007-2012	10%	7	1,900
3	2012-2017	40%	12	1,300
4	2017-2022	76%	17	567

The Port, in coordination with the other Named Parties, developed the SIYB TMDL Implementation Plan to detail the adaptive management approach for reducing copper loading to the basin in order to obtain water quality conditions that are protective of the most sensitive SIYB beneficial uses – marine habitat (MAR) and wildlife habitat (WILD). According to the Implementation Plan, Named Parties will implement best management practices (BMPs) that both directly and indirectly reduce copper loads to SIYB in compliance with the TMDL interim and final loading reduction targets or until WQOs are obtained. Assessment of loading reductions will primarily be determined through tracking of vessel conversions from copper to non-copper and low-copper (less than 40% copper) hull paints. Water quality assessments will be accomplished through annual monitoring of dissolved copper concentrations and toxicity using a monitoring network of six stations that are representative of dissolved copper concentrations in SIYB waters and one reference station located in the main channel of San Diego Bay.

This appendix summarizes the roles and responsibilities of the Named Parties to implement their required efforts under the TMDL as detailed in the SIYB TMDL Implementation Plan. Potential BMPs and their applicability to the various Named Parties are presented in Tables A-2 and A-3, respectively.

Table A-2. Potential Best Management Practices

Category	Description
Hull Paint Transition	Efforts that result in the transitioning of boats from copper to low-copper or non-copper paints and/or track hull paint transitions. This category will also include projects or activities designed to identify non-copper and low-copper hull paints available for making the transition. Activities could be individual or collective efforts. Examples of activities fitting into this category include, but are not limited to: • Developing schedules for boat transition and implementing boat transitions. • Developing data tracking mechanisms to track hull-paint transition. • Partnering with boatyards to track boat transition efforts • Implementing a "Green Boater" certification program with a criterion of using non-copper and low-copper antifouling paints.
Hull Cleaning	Measures taken to minimize copper inputs during in-water hull cleaning activities. In general, most activities in this category would be conducted by hull cleaners or individual boat owners. This category does not include education on hull cleaning, which would be best categorized under Education/Outreach. It may include implementation of a hull cleaner certification program to reduce loading from hull cleaning activities.
Structural and Mechanical BMP Implementation	Efforts to minimize inputs of pollutants through source/treatment controls for land-based and marine operations. Some examples include, but are not limited to: • Storm drain filters in parking lot storm drains. • Regularly sweeping parking lots. • Slip liners for boats. • Alternative small boat storage methods. Also included in this category would be facilities undergoing redevelopment that triggers Standard Urban Stormwater Mitigation Plan (SUSMP) compliance and the identification of the BMPs installed as part of the SUSMP process.
Grant Funding/ Incentives	Incentives include the projects or activities designed to encourage a voluntary transition by providing either monetary or preferential treatment options. These efforts could be undertaken by single or multiple entities. Examples include, but are not limited to: • Offering funding for boaters to switch to non-copper hull paint. • Preferred slip options or slip fee discounts for boaters using non-copper hull paints. • Grant submittals seeking hull paint transition funding may also be included here.
Education/ Outreach	Efforts to provide education to marinas, boatyards, boaters, staff, hull cleaners and the general public. Topics can include general information about water

Category	Description
	quality problems, the local copper hull paint issue, or other copper related topics around the state. Specific education elements could consist of workshops or events identifying what boaters can do to transition to available non-copper or low-copper hull paint alternatives, or specific practices/limitations occurring within a marina/yacht club. As with all education/outreach, it is important to have a metric to gauge the project's effectiveness, such as whether it improved the target audience's understanding or resulted in having boaters transition to non-copper and low-copper hull paints.
Alternative Hull Paint Studies	The Port and marina owners/operators may coordinate and oversee commercial and scientific special studies. Demonstration special studies by commercial entities may confirm and demonstrate the efficacy and longevity of available nontoxic and less toxic boat hull coating products. These studies would allow boat repair yards and underwater hull cleaners the opportunity to develop expertise and acquire special equipment needed for the application and maintenance of nontoxic and less toxic boat hull coatings.
Monitoring	Monitoring conducted for TMDL compliance and for the purposes of assessing BMPs, refining site conditions, or furthering the understanding of water-sediment-toxicity interactions. Monitoring efforts may be conducted by a single entity or by several entities. Examples include assessing contributions of hull cleaning efforts, evaluating conditions for site specific objectives, and identifying the contributions to or from sediments.
Reporting	Includes TMDL compliance reporting and reporting of any special studies or investigations relating to hull paint or copper water quality issues. Reports could be collective efforts or they could be individual reports. Results of tracking vessel transitions to non-copper and low-copper hull paints would also be identified in this category.
Lease Updates	Lease updates may include efforts to require boaters to provide information, structured slip fees based on the presence/absence of copper paints, or updates to lease language to reflect current policy or regulations. It could also include timelines or schedules for updating leases to include more stringent language relating to copper-based hull paints.
Policy/ Regulation	Limitations or restrictions on the inputs of copper to the water. Polices can be specific to sources and activities, or policies can be broad phase-out based options. Policies may include: • Limitations to hull cleaning. • Leasehold agreements. • Restrictions on the use of copper paints.

Table A-3. Applicability of BMPs to Named Parties

Type of BMP	Port	Marinas & Yacht Clubs	Individual Boat Owners	Hull Cleaners	City
Hull Paint Transition	X	X	X	X	
Hull Cleaning	X	X	X	X	
Structural & Mechanical BMP Implementation	X	X	X	X	X
Grant Funding / Incentives	X	X		X	X
Education & Outreach	X	X		X	X
Alternative Hull Paint Studies	X	X	X	X	X
Monitoring	X	X		X	X
Reporting	X	X		X	X
Lease Updates	X	X	X		
Policy / Regulation	X	X			X

A-1 Port of San Diego

In accordance with Investigative Order No. R9-2011-0036 issued to the Port by the Regional Board on March 11, 2011, the Port has the primary monitoring and reporting responsibility for the TMDL. As such, the Port is responsible for the development and submission of the Implementation Plan, Monitoring Plan, and annual monitoring and progress reports to the Regional Board. To accomplish these obligations, the Port will require that SIYB Named Parties, including marina and yacht club owners/operators, underwater hull cleaners, and boat owners, report the BMPs implemented to reduce dissolved copper loading to SIYB. Additionally, the Port will require that marina and yacht club owners/operators submit annual vessel tracking data no later than January 15 to the Port for inclusion in annual monitoring and progress reports to be submitted to the Regional Board by March 31.

The Port has prepared, with input from the other Named Parties, and submitted to the Regional Board this final Implementation Plan and Monitoring Plan. The Monitoring Plan includes a Quality Assurance Project Plan (QAPP), Conceptual Model, spatially representative water quality monitoring network, and characterization of baseline conditions using existing data and information, as required by the Investigative Order.

Each year, the Port will submit annual monitoring and progress reports on the following information:

- ***SIYB TMDL Implementation:*** Evaluation, interpretation, and tabulation of vessel conversions and BMPs implemented by Named Parties in SIYB to reduce dissolved copper discharges from boat hulls to SIYB.
- ***San Diego Bay-wide BMP Implementation:*** Description of BMPs that the Port has implemented or will implement to reduce dissolved copper loading in areas of San Diego Bay other than SIYB.

- ***SIYB TMDL Monitoring:*** Evaluation, interpretation, and tabulation of water quality monitoring data to determine trends in dissolved copper concentrations in SIYB waters and assessment of new data and studies that may refine or update the Conceptual Model.

The Port is responsible for the implementation of BMPs, such as conversion of Port vessels moored within SIYB to non-copper and low-copper hull paints, to facilitate the reduction of copper loading to SIYB in compliance with interim and final loading reduction targets. It has taken on the lead role in implementing special studies that include identification and testing of alternative non-copper hull paints, assessments of copper bioavailability and site-specific conditions that affect copper toxicity, and testing of copper flux from sediments. Additionally, the Port has secured 319(h) grant funds and is implementing a grant program to remove copper hull paints from vessels moored in SIYB to facilitate conversion to non-copper, non-biocide hull paints. It is also leading bay-wide efforts to certify in-water hull cleaners and has developed policies to encourage transitions away from copper hull paints. Lastly, the Port is supporting the development of state legislation that will phase out the use of copper paints on most recreational vessels in California.

A-2 Marina and Yacht Club Owners/Operators

As described in the Implementation Plan, SIYB marina and yacht club owners/operators have three responsibilities.

1. Implement BMPs that directly or indirectly result in dissolved copper loading reductions to SIYB in compliance with TMDL loading reduction targets. BMP implementation is to be continued until final loading reduction targets are achieved and/or water quality conditions protective of MAR and WILD beneficial uses are realized. Marina and Yacht Clubs can use the BMPs identified in Tables A-2 and A-3 to assist in selecting BMPs to implement. They may also elect to choose an activity that is not included in the table, but is believed to result in copper reductions. The choice to implement any of the BMPs is individual and left to the respective marina or yacht club's discretion. Elements to consider in BMP selection include implementation costs, staffing costs, feasibility and other factors that may influence the selection process.
2. Report BMPs implemented from January 1 to December 31to the Port no later than January 15 annually.
3. Track vessel hull paint data for vessels moored within marina and yacht club facilities from January 1 to December 31, and report vessel tracking data to the Port no later than January 15 annually. Marina and yacht club owner/operators will be required to provide the information presented in Table A-4 for all slips/moorings in their facilities. As a data quality assurance/quality control and confirmation check, additional information on paint type and application will be required for vessels reported to have low-copper (less than 40% copper) or non-copper hull paints (Table A-5)..

Table A-4. Required Vessel Tracking Data

Element	Vessel Tracking Data
1	Name of marina or yacht club
2	Date of report
3	Total number of slips or buoys in facility available to be occupied by vessels
4	Slip/mooring occupation data
4a	Percent of time unoccupied
4b	Percent of time occupied by vessel(s) with known copper hull paint
4c	Percent of time occupied by vessel(s) with documented low-copper hull paint
4d	Percent of time occupied by vessel(s) with documented non-copper hull paint
5	Vessel-specific information
5a	Document or registration numbers of vessels moored in slips/moorings
5b	Vessel type (sail, power, multi-hull, etc.)
5c	Vessel length
5d	Vessel beam width

Table A-5. Required Low-Copper and Non-Copper Hull Paint Vessel Data

Element	Low-Copper and Non-Copper Vessel Hull Paint Confirmation Data
1	Vessel document or registration number
2	Hull paint name
3	Product number
4	Name of boatyard that applied paint
5	Painting date
6	Percent copper if low-copper hull paint is indicated

A-3 In-Water Hull Cleaners

SIYB hull cleaners have two responsibilities under the Implementation Plan:

1. Implement BMPs to reduce copper loading from in-water hull cleaning to SIYB in compliance with the TMDL interim and final loading reduction schedule or until water quality conditions are obtained that are protective of SIYB beneficial uses. The choice to implement any of the BMPs is individual and left to the respective hull cleaner's discretion.
2. Report BMPs implemented from January 1 to December 31 to the Port annually no later than January 15.

A-4 Boat Owners

Persons owning boats moored in SIYB have two responsibilities under the Implementation Plan.

1. Implement BMPs to reduce copper loading to SIYB in compliance with the TMDL interim and final loading reduction schedule or until water quality conditions are obtained

that are protective of SIYB beneficial uses. The choice to implement any of the BMPs is individual and left to the respective boater's discretion. BMPs may include conversion of vessels from copper to non-copper and low-copper hull paints, participation in special studies to test non-copper or low-copper hull paints, and hiring hull cleaners that clean hulls with the least abrasive method possible to control fouling, as described in Table A-2.

2. Report required vessel hull paint tracking information to marinas or yacht clubs where the boat owner's vessel is moored.

A-5 City of San Diego

The City has two responsibilities under the Implementation Plan.

1. Monitor MS4 discharges to SIYB to ensure annual loading does not exceed the urban runoff load allocation of 30 kg/yr.
2. Implement BMPs, as needed, to maintain copper loading levels from MS4s at less than 30 kg/yr.

As a Regional Harbor Monitoring Program stakeholder, the City is also partnering with the Port to implement special studies that include assessments of copper bioavailability and site-specific conditions that affect copper toxicity and testing of copper flux from sediments.

APPENDIX B

Individual Workplan Template

and

Implementation Tracking Matrix

Shelter Island Yacht Basin Total Maximum Daily Load Workplan Template– NAMED PARTY

BMP TYPE	DESCRIPTION	LOCATION	PURPOSE(S)	TARGETED OUTCOME(S)	ASSESSMENT MECHANISM	SCHEDULE	PARTNERING OPPORTUNITY
Defined Projects for Stage 2 (2007-2012)							
Planned Projects for Stage 3 (2012-2017)							
Planned Projects for Stage 4 (2017-2022)							
Cooperative Efforts							
Vessel Tracking Program	Track vessel conversion from copper to non-copper and low-copper hull paints to determine annual loading reductions	SIYB	Monitor implementation progress and assess progress towards interim and final loading targets	Interim and final loading reduction targets	Annual basin-wide vessel tracking assessments and loading reduction calculations	Annually beginning in 2011; reporting to Regional Board March 31 annually	All Named Parties
Water Quality Monitoring	Monitor water quality basin wide to assess long term trends in dissolved copper levels and attainment of WQOs	SIYB	Monitor implementation progress and assess progress towards attaining dissolved copper concentrations protective of SIYB beneficial uses	Water quality conditions protective of beneficial uses	Annual basin-wide chemistry and toxicity assessments	Annually beginning August 2011; reporting to Regional Board March 31 annually	All Names Parties

Implementation Tracking Matrix

Pollutant: Copper						**Implementation Tracking Matrix**	
SOURCE *What sources of this pollutant are under your jurisdiction?*	**STRATEGY** *What is being done, or will you do, to reduce and/or control pollution from this source?*	**HOW** *Specifically, how will this be done?*	**FISCAL ANALYSIS** *What is the expected resource need? Are there existing resources budgeted? If not, where will the resources come from?*	**MEASURE** *How will you quantitatively or qualitatively demonstrate successful implementation or completion of this strategy?*	**TIMELINE** *When do you expect it to be completed?*	**MILESTONE** *What intermediate goals do you expect to achieve, and by when, to know progress is being made?*	**STATUS** *Include summary and date.*
Diver BMPs							
Boatyard recommendations for antifouling							
Boat owner choices for diving companies							
Boat owner choices of boatyards							
Boat owner choices of marinas							
Boat owner choices of antifouling paint							

Developed by John Adriany – San Diego Yacht Club

APPENDIX C

Management Questions and Assessment Mechanisms

Management Questions and Assessment Mechanisms

C-1 Management Questions

Named Parties may choose to use management questions to ensure implemented best management practices (BMPs) and implementation activities are focused and assessable. Management questions are designed to evaluate BMP's effectiveness using the most simple and straightforward approaches possible to reduce the number of variables in the assessment process. Based on overall management or BMP goals, Named Parties may use or modify the below questions for BMP effectiveness assessments.

Possible Management Questions:

- Is the product/activity/BMP effective? *(Were the objectives, goals, and effectiveness outcomes achieved? If not, why not?)*
- Did the activity or BMP result in the transition of vessels from copper to non-copper or low-copper hull paints?
- Did the public outreach workshops attract the desired number of attendees?
- Did the public demonstrate a greater knowledge of copper issues and willingness to transition from copper to non-copper or low-copper hull paints?
- Are incentive programs effective in reducing abrasive hull cleaning techniques?
- Do voluntary measures result in the transition from copper to non-copper and low-copper hull paints? *(If not, are more prescriptive measures required?)*
- Does the BMP need to be modified to improve its effectiveness? *(How?)*

C-2 Assessment Mechanisms and Targeted Outcomes

Named Parties can use the following assessment mechanisms to relate the effectiveness of an implemented BMP to desired targeted outcomes, including interim and final total maximum daily load (TMDL) loading targets. The four levels of Targeted Outcomes defined in this Implementation Plan include: Project Completeness, a measureable Change in Awareness, a measureable Change in Behavior, and a measureable Loading Reduction.

FOUR LEVELS of TARGETED OUTCOMES
1. COMPLETENESS
2. CHANGE IN AWARENESS
3. CHANGE IN BEHAVIOR
4. LOADING REDUCTION

Completeness: The BMP was successfully implemented, monitored, assessed, and reported. This outcome is typically associated with the submission of a final report for a special study or data submission from an education/outreach activity.

Change in Awareness: Changes in public awareness due to public education/outreach efforts may, or may not, lead to an equivalent change in behavior or loading reduction. This outcome is typically associated with the number of visitors to an information booth, fliers distributed, or

similar numeric attendance records. At workshops, changes in public awareness may be quantified through pre- and post-survey questionnaires.

Change in Behavior: Changes in behavior may be observed in boat owners, product manufacturers, hull cleaners, and boatyards. This outcome may be quantified by selection of non-copper or low-copper hull paints by boat owners, implementation of less-abrasive hull-cleaning techniques by hull cleaners, and increased recommendation and application of non-copper and low-copper products by boatyards. Changes in behavior are typically the result of voluntary outreach/education programs.

Loading Reduction: Loading reductions are directly comparable to the loading targets defined in the Shelter Island Yacht Basin (SIYB) TMDL. The primary assessment of loading reduction used in this Implementation Plan is the number of vessels converted from copper to non-copper or low-copper hull paints. Additional loading reductions may include reductions of inputs via hull cleaning, control of upstream inputs, and alternative boat storage methods. The output may be compared to the baseline conditions defined in the TMDL and translated into a percent loading reduction.

When developing individual workplans, Named Parties may elect to define Targeted Goals. These goals define the anticipated loading reduction that will be achieved by each BMP. Comparing the targeted goals with the actual assessment results will allow for a simple evaluation of BMP effectiveness, as well as progress towards the TMDL targets on an individual and basin-wide level.

APPENDIX D

Potential Special Studies

Potential Special Studies

The purpose of special studies is to provide data needed to verify or refine assumptions, resolve uncertainties, and improve the scientific foundation of the Shelter Island Yacht Basin (SIYB) Total Maximum Daily Load (TMDL). During the course of the SIYB TMDL, special studies will be conducted to further the understanding of available non-copper and low-copper hull paints, determine and improve best management practice (BMP) effectiveness, and assess the physical and chemical conditions within SIYB that affect copper impacts on marine life habitat (MAR) and wildlife habitat (WILD) beneficial uses. Projects may include, but are not limited to:

- Biotic Ligand Modeling
- Toxicity Identification Evaluations (TIEs)
- Sediment Copper Flux Studies
- Water Effects Ratios Evaluations (WERs)
- Hull Cleaning BMP Development and Loading Evaluations
- Assessments of new and emerging non-copper and low-copper boat hull paints

Current, planned, and potential special studies are described below.

D-1 Biotic Ligand Modeling

The marine Biotic Ligand Model (BLM) is a promising framework for predicting metal speciation, complexation, and toxicity to aquatic organisms using site-specific water characteristics (i.e., pH, dissolved organic carbon [DOC], salinity and total metal concentration). Copper exists in multiple chemical forms depending on the physical conditions of the waters and sediments in which it occurs, including pH, alkalinity, and organic compounds. As a consequence, the bioavailability and toxicity of copper is dependent upon the form in which it occurs. The most bioavailable forms of copper include inorganic or ionic forms of dissolved copper, while bioavailability and toxicity decrease with higher alkalinity and organic carbon. The model takes into account water chemistry factors to determine the projected level of toxicity for a particular metal as measured by the metal's binding affinity to a biotic ligand (for example, the gills of an aquatic organism) (Niyogi and Wood, 2004). The copper BLM can be used to calculate median lethal concentration (LC_{50}) and median effective concentration (EC_{50}) values and predict whether copper concentrations are likely to be protective of marine biota based on physical water quality parameters.

D-2 Toxicity Identification Evaluations

Water and sediment TIEs will be performed to identify the causes of toxicity within SIYB and other areas of San Diego Bay found to be toxic during the RHMP 2008 study. While concentrations of dissolved copper may be elevated, it may not be the primary causative agent. At stations where sediment and/or surface water toxicity are found to occur, TIEs will be used to experimentally examine the constituents likely to cause toxic effects. Typically, TIEs consist of several tiers of testing. Tier I involves procedures designed to provide general information for

identifying the class of the toxic constituents within samples based on their chemical and/or physical characteristics (e.g., volatility, ionization state, degree of adsorption to particulates, polarity, oxidative state, pH sensitivity, and interaction with synergistic and antagonistic compounds). Classification characteristics are examined by comparing the results of toxicity tests conducted on unmanipulated samples to tests on samples that have been physically or chemically adjusted. Additional tiers of TIEs involve further manipulations and associated chemical analyses of samples to identify specific toxicants that are potential causative agents of toxicity.

A full suite of TIE treatments (including several tests targeted at copper and other metals) will be used to evaluate the potential causative agents of toxicity in surface water and sediment from SIYB in accordance with U.S. Environmental Protection Agency (USEPA) methods (USEPA, 1991; 2007). Depending on the results of the first tier of TIE tests, additional studies may be conducted to confirm the identity of the causative agent(s). Chemical analyses of water or sediment extracts will also be used to verify TIE test results, and confirm the causative agent(s) of toxicity, when appropriate.

D-3 Sediment Copper Flux Studies

Laboratory and field studies will be performed to assess the potential for copper-laden sediments to serve as a net source or sink for copper into and from the water column depending on the concentration of copper within the overlying water. Performing such a study may be crucial to understanding and predicting the effectiveness of converting vessel hull paints from copper-based to non-copper-based products as a means of reducing dissolved copper concentrations in the water column to levels below the numeric water quality objective (WQOs), 3.1 µg/L. Although sediments in SIYB appear to be serving as a sink for copper at current copper levels, it has yet to be tested if reductions in water column copper concentrations to levels approaching the chronic California Toxics Rule (CTR) threshold will shift sediments from a net sink to a source. This study will increase the understanding of the efforts required to meet TMDL WQOs.

D-4 Water Effects Ratios

As a follow-up to the BLM study, a WER study may be conducted to evaluate the relevance of numeric WQOs (i.e., CTR thresholds) to protection of SIYB MAR and WILD beneficial uses based on the physical properties. Because WQOs were developed based on laboratory studies of toxicity using filtered seawater, they often do not account for many of the physical constituents that may interfere with the toxicity of potential chemicals of concern, such as copper. Rivera-Duarte and others (2005) demonstrated that the bioavailability and toxicity of free copper ions within San Diego Bay was dependent upon the concentration of particulate and dissolved organic matter. Furthermore, Rosen and others (2005) measured dissolved and total copper concentrations, particulate and dissolved organic matter, and toxicity using both the mussel *Mytilus galloprovincialis* and the sea urchin *Strongylocentrotus purpuratus* at numerous stations within San Diego. Their estimates of copper WERs for the whole bay ranged from 1.54 to 1.67, which indicated that a WER study in SIYB may lead to the development of site specific objectives (SSOs) above the CTR threshold that would still be protective of MAR and WILD beneficial uses.

Dr. Bruland's independent review of the SIYB TMDL recommended conducting WERs to determine the actual level of loading reduction required to reduce the bioavailable forms of copper to levels that do not adversely affect biota (p. 131, Appendix 7; Regional Board, 2005). WERs will be performed using *M. galloprovincialis* and *S. purpuratus* in accordance with USEPA WER guidance (USEPA, 1994). Determination of the final WER will be dependent on the results of the most sensitive test, from which an SSO will be calculated.

D-5 Testing of New and Emerging Alternative Paints

Special studies are being conducted by the Port to identify and evaluate alternatives to copper-based paints, such as the USEPA funded "Safer Alternative to Copper Antifouling Paints" project. The purpose of the project is to develop a list of viable alternative antifouling coatings for boaters. The coatings on the list will be those which will substantially reduce or eliminate copper release into San Diego Bay. Coatings will be evaluated based on effectiveness to repel fouling organisms and easiness to clean. Additional ongoing testing of new and emerging non-copper and low-copper coatings will be necessary as coating suppliers are continuously developing new coatings and reformulating existing coatings.

D-6 Coating Application Standards

The Named Parties may elect to implement studies to define BMP application procedures and standards for approved hull coatings. In doing so, they will work with coating manufacturers to establish certification standards for coating application at boatyards.

D-7 Hull Cleaning Standards

The Named Parties may elect to implement studies to define hull cleaning standards and BMPs. In doing so, they will determine appropriate hull cleaning methods and establish a hull cleaner certification program.

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Appendix I

Shelter Island Yacht Basin (SIYB) TMDL Monitoring Plan

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Shelter Island Yacht Basin TMDL
Final Monitoring Plan

Prepared for:
California Regional Water Quality Control Board,
San Diego Region

Prepared by:
Weston Solutions, Inc.

In Coordination with:
Port of San Diego

May 2011

Shelter Island Yacht Basin TMDL
Final Monitoring Plan
including
QAPP & Conceptual Model

Prepared for:
California Regional Water Quality Control Board,
San Diego Region

In Coordination with:

Port of San Diego

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May 2011

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ACRONYMS AND ABBREVIATIONS

APHA	American Public Health Association
ASTM	American Society for Testing and Materials
Basin Plan	*Water Quality Control Plan for the San Diego Basin – Region 9*
BMPs	best management practices
COC	chain-of-custody
CTR	California Toxics Rule
Cu^{2+}	free copper
dGPS	differential global positioning system
DO	dissolved oxygen
DOC	dissolved organic carbon
ELAP	California Environmental Laboratory Accreditation Program
HDPE	high-density polyethylene
Implementation Plan	SIYB Dissolved Copper TMDL Implementation Plan
Investigative Order	Investigative Order No. R9-2011-0036
L_h	hull cleaning annual loading
L_p	passive leaching annual loading
LC_{50}	median lethal concentration
LOEC	lowest observed effect concentration
MAR	marine habitat
Monitoring Plan	SIYB Dissolved Copper TMDL Monitoring Plan
N_v	number of vessels
NOEC	no observed effect concentration
OAL	Office of Administrative Law
pH	hydrogen ion concentration
Port	Port of San Diego
QA	quality assurance
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
QC	quality control
RHMP	Regional Harbor Monitoring Program
Regional Board	San Diego Regional Water Quality Control Board
SIYB	Shelter Island Yacht Basin
SM	Standard Methods
SOPs	Standard Operating Procedures
SWAMP	Surface Water Ambient Monitoring Program
State Board	State Water Resources Control Board
TMDL	Total Maximum Daily Load
TOC	total organic carbon
TDS	total dissolved solids
USEPA	U.S. Environmental Protection Agency
WESTON	Weston Solutions, Inc.
WGS 84	World Geodetic System 1984
WILD	wildlife habitat
WQO	water quality objective

UNITS OF MEASURE

cm	centimeter
°C	degrees Celsius
ft	feet or foot
kg/yr	kilogram per year
µg/L	microgram per liter
µm	micrometer
m	meter
m^2	square meter
mm	millimeter
mg/L	milligram per liter
mL	milliliter
ppt	parts per thousand
psu	practical salinity unit
yr	year
%	percent

1.0 INTRODUCTION

The Shelter Island Yacht Basin (SIYB) Dissolved Copper Total Maximum Daily Load (TMDL) Monitoring Plan (Monitoring Plan) describes the approach to assessing loading reductions through tracking conversion of vessels from copper to non-copper hull paints for the purpose of determining compliance with TMDL criteria. The Monitoring Plan also details the annual water quality monitoring that will be performed to quantify long-term reductions in dissolved copper concentrations and toxicity. Results of the tracking program will be used to assess both interim and final compliance with the TMDL loading reduction requirements for dissolved copper into SIYB. Water quality monitoring will be used to assess annual improvements in dissolved copper concentrations and toxicity levels, while also determining progress towards final TMDL compliance numeric and narrative objectives. The Monitoring Plan was prepared in response to Resolution No. R9-2005-0019 in which the San Diego Regional Water Quality Control Board (Regional Board) incorporated the dissolved copper TMDL into the *Water Quality Control Plan for the San Diego Basin – Region 9* (Regional Board, 2005).

The Monitoring Plan meets the requirements of Investigative Order No. R9-2011-0036 (Investigative Order), which directs the Port of San Diego (Port) to develop and submit a Monitoring Plan to track the progress of implementing the TMDL. The Monitoring Plan includes a Quality Assurance Project Plan (QAPP) and Conceptual Model, which are provided as separate documents. The QAPP defines the project objectives and organization, functional activities, and quality assurance/quality control (QA/QC) protocols in compliance with Surface Water Ambient Monitoring Program (SWAMP) protocols. The Conceptual Model identifies the physical and chemical factors that control the fate and transport of copper in SIYB, and identifies the biological receptors that could be exposed to pollutants in the water and sediments. The Conceptual Model also identifies potential future studies that may be implemented to provide refinements to the model. In compliance with the Investigative Order, the Monitoring Plan includes a monitoring station network that is both consistent with prior Regional Board studies and is spatially representative of water quality conditions in SIYB. Lastly, the Monitoring Plan considers existing data on surface water dissolved copper concentrations to characterize baseline conditions.

1.1 Compliance Schedule

Under Resolution R9-2005-0019, the SIYB dissolved copper TMDL (hereafter referred to as SIYB TMDL) requires that loading of dissolved copper into the water column be reduced by 76% to 567 kilograms per year (kg/yr) over a 17-yr period (Regional Board, 2005). Based on the official TMDL approval date[1], this time period is set to end in 2022. No reductions in dissolved copper loading were required during the initial two-year orientation period (2005-2007). The subsequent 15-yr period requires incremental loading reductions. A 10% reduction in dissolved copper loading is required within seven years, a 40% reduction in loading is required within 12 years, and a 76% reduction within 17 years (Table 1-1).

[1] For a TMDL to be incorporated into the Basin Plan, it must be approved by the Regional Board, State Water Resources Control Board (State Board), Office of Administrative Law (OAL), and USEPA Region 9. The official TMDL approval date is when the OAL approves the document.

Table 1-1. Loading Targets for TMDL Attainment

Stage	Time Period	Percent Reduction from Current Estimated Loading	Reduction to be Attained by end of Year	Estimated Interim & Final Target Loading (kg/yr of Dissolved Copper)
1	2005-2007	0%	N/A	N/A
2	2007-2012	10%	7	1,900
3	2012-2017	40%	12	1,300
4	2017-2022	76%	17	567

1.2 TMDL Implementation Plan

The SIYB TMDL Implementation Plan (Implementation Plan) represents the Named Parties' implementation strategy for achieving a reduction in the loading of copper into the water column of SIYB, as directed by the SIYB TMDL and Investigative Order. The Implementation Plan describes the approach to achieving reductions in copper loading into SIYB in order to preserve and restore water quality and associated marine habitat (MAR) and wildlife habitat (WILD) beneficial uses. The Implementation Plan takes a solutions-oriented approach of establishing and implementing best management practices (BMPs) that directly and indirectly facilitate reductions in copper loading into the basin to meet the SIYB TMDL interim and final dissolved copper loading compliance thresholds. Key measures to monitor progress toward Implementation Plan objectives include:

- Establishing a tracking program for boats moored in SIYB to quantify loading reductions achieved through the conversion of vessels to non-copper and low-copper (i.e., less than 40% cuprous oxide) antifouling hull paints.
- Establishing a monitoring program to provide long-term trend analysis of water quality.

Because the primary source of dissolved copper to the water column is copper-based antifouling hull paints of recreational vessels (Section 1.3), interim and final targets for loading reductions will be assessed through the tracking of the conversion of vessel hull paints from copper-based to non-copper and low-copper (less than 40% cuprous oxide) products (Section 2.0). Annual water quality monitoring will be used to assess long-term improvements in dissolved copper concentrations and toxicity (Section 3.0).

1.3 Sources of Dissolved Copper

Based on the Regional Board's source analysis, the total mass load of dissolved copper to SIYB was determined to be 2,163 kg/yr, of which 98% of inputs were attributable to copper-based hull paints of recreational vessels (Regional Board, 2005). Copper is released from hull paints to the water column through two sources: passive leaching and underwater hull cleaning. Passive leaching is the single largest source of dissolved copper to SIYB resulting in the mass loading of 2,000 kg/yr and representing 93% of the total contribution (Table 1-2). Antifouling paints are an effective control for marine fouling; however, organisms still build up over time, requiring underwater hull cleaning by divers. Underwater hull cleaning is a routine maintenance in which the hull is cleaned in the water versus out of the water at a boatyard, resulting in the release of

dissolved copper into the water column. Underwater hull cleaning is the second largest source of dissolved copper, resulting in the mass loading of 100 kg/yr and representing 5% of the total contribution.

Table 1-2. Sources of Dissolved Copper to SIYB

Source	Mass Load (kg/yr)	Contribution (% Dissolved Copper)
Passive Leaching	2,000	93
Hull Cleaning	100	5
Urban Runoff	30	1
Background	30	1
Direct Atmospheric Deposition	3	<1
Sediment	0	0
Total	**2,163**	**100**

Inputs of dissolved copper from upland sources appear to be much less pronounced according to the Regional Board's source analysis. Urban runoff, consisting of wet and dry weather flows, was determined to contribute 1% (30 kg/yr) of dissolved copper loading to SIYB (Regional Board, 2005). Other sources of dissolved copper to the SIYB include background inputs from San Diego Bay, direct atmospheric deposition, and sediments. Water from the San Diego Bay flushes SIYB and contributes to the loading of dissolved copper. The copper concentration of ambient seawater within San Diego Bay was used to calculate the contribution of natural background sources (i.e., 1% or 30 kg/yr). Direct atmospheric deposition, including wet and dry deposition to SIYB, contributes less than 1% (3 kg/yr) of dissolved copper loading to SIYB. Indirect deposition is not included here, because it is a component of urban runoff. According to the TMDL source analysis, sediments were considered to be a net sink for copper in SIYB, and, therefore were considered to provide zero annual loading of dissolved copper to the basin.

1.4 Water Quality Objective Criteria

The numeric water quality objectives (WQOs) for dissolved copper in SIYB are equal to the California Toxics Rule (CTR) water quality values for dissolved copper within seawater (U.S. Environmental Protection Agency [USEPA], 2000). Continuous or chronic exposures may not exceed 3.1 µg/L over a 4-day average, while acute exposures should not exceed 4.8 µg/L over a 1-hour average. In addition, numeric water quality objectives must not be exceeded more than once every three years. Based on these numeric targets and existing monitoring data at the enactment of the TMDL, the final waste load allocation was determined to be 567 kg/yr. This includes a 10% margin of safety calculated to be 57 kg/yr. In addition to numeric WQOs, the Basin Plan establishes narrative WQOs for toxicity and pesticides (Regional Board, 1994):

Beneficial uses within SIYB threatened by elevated dissolved copper concentrations include MAR and WILD. The Regional Board indicated that if numeric WQOs are met for dissolved copper, then narrative water quality objectives will also be met. However, since numeric WQOs are not site specific, direct assessments of toxicity as well as SIYB biota will provide direct indications of basin-wide attainment of beneficial uses and narrative WQOs.

1.5 Monitoring Purpose

The Monitoring Plan includes annual tracking of vessel hull paint conversions to non-copper and low-copper paints and annual water quality assessments of copper levels and toxicity. Tracking of vessel conversions from copper to non-copper or low-copper hull paints will be used to assess compliance with interim and final TMDL loading-reduction targets on a basin-wide basis. Water quality monitoring will assess long-term improvements in water quality, as measured by surface-water dissolved copper concentrations and toxicity levels. Additionally, water quality monitoring will be used to determine final compliance with both numeric and narrative WQOs throughout the basin. By conducting both vessel tracking and water quality monitoring on an annual basis, the program will be able to evaluate the relationship between load reductions and water quality improvements. Additionally, this approach will provide the data needed to assess the overall TMDL implementation effectiveness and success in attaining both loading reductions and numeric WQOs that are protective of the basin's MAR and WILD beneficial uses.

2.0 TRACKING VESSEL CONVERSION

Based on the Regional Board's source analysis, the vast majority (i.e., 98%) of copper loading to SIYB was attributed to anti-fouling paints of vessels moored within the basin. Given the principal importance of anti-fouling paints to loading exceedances, annual dissolved copper loading reductions will be assessed through tracking of conversions of hull paints from copper to non-copper or low-copper products for vessels moored within SIYB.

2.1 Vessel Tracking

The primary assessment of loading reductions will be through tracking of conversions of hull paints from copper to non-copper or low-copper products for vessels moored in SIYB since transitions from copper paints result in simultaneous reductions in copper inputs from both passive leaching and hull cleaning. This approach will provide a direct, cost-effective measure of annual loading reductions. Named Parties operating facilities that aggregate vessels in SIYB (i.e., marina and yacht club owners and operators) will be responsible for collecting vessel tracking data between January 1 and December 31 annually. The marina and yacht club owners and operators will be responsible for submitting the following vessel tracking information to the Port on an annual basis no later than January 15 (Table 2-1).

Table 2-1. Required Vessel Tracking Data

Element	Vessel Tracking Data
1	Name of marina or yacht club
2	Date of report
3	Total number of slips or buoys in facility available to be occupied by vessels
4	Slip/mooring occupation data
4a	Percent of time unoccupied
4b	Percent of time occupied by vessel(s) with known copper hull paint
4c	Percent of time occupied by vessel(s) with documented low-copper hull paint
4d	Percent of time occupied by vessel(s) with documented non-copper hull paint
5	Vessel-specific information
5a	Document or registration numbers of vessels moored in slips/moorings
5b	Vessel type (sail, power, multi-hull, etc.)
5c	Vessel length
5d	Vessel beam width

As a data quality assurance/quality control and confirmation check, additional information on paint type and application will be required for vessels reported to have low-copper (less than 40% copper) or non-copper hull paints (Table 2-2).

Table 2-2. Required Low-Copper and Non-Copper Hull Paint Vessel Data

Element	Low-Copper and Non-Copper Vessel Hull Paint Confirmation Data
1	Vessel document or registration number
2	Hull paint name
3	Product number
4	Name of boatyard that applied paint
5	Painting date
6	Percent copper if low-copper hull paint is indicated

The Port will compile the vessel tracking data from SIYB marinas and yacht clubs to report on the percent of time that slips are unoccupied or are occupied by vessels with copper, low-copper, non-copper, or unknown hull paints as required by the Investigative Order (Table 2-3). This data will be used to calculate the annual dissolved copper load to SIYB from vessels, the number of vessels converted from copper to low-copper or non-copper hull paints, and the reduction in dissolved copper loading achieved annually, as described in Section 2.2.

Table 2-3. Investigative Order Required Vessel Tracking Data to be Reported Annually

Element	Vessel Tracking Data
1	Total number of slips or buoys in facility available to be occupied by vessels
2	Number of unoccupied slips or buoys and length of time unoccupied during each year
3	Number of vessels confirmed with copper-based hull paints and approximate length of time occupying a slip or buoy in facility each year
4	Number of vessels confirmed with alternative hull paints, by hull paint type, and approximate length of time occupying a slip or buoy in facility each year
5	Number of vessels with unconfirmed information about hull paints and approximate length of time occupying a slip or buoy in facility each year
6	Estimate of the dissolved copper load reduction achieved for the year (kg/yr and %)

2.1.1 Tracking Approach

Marina and yacht club owners and operators will be responsible for instituting tracking programs to record the number of slips and buoys in facilities, the number of vessels in their facilities with non-copper, copper, and low-copper hull paints, and the amount of time that vessels occupy slips and buoys. Operators and owners of vessels moored within SIYB will be required to report vessel registration information (e.g., documentation or registration number), dimensions (length and beam width), and paint type (if known) to marina and yacht club owners/operators. Marina and yacht club owners/operators will compile this information in a standardized format, inclusive of the total number of occupied and unoccupied slips and moorings within their facilities from January 1 to December 31. Marina and yacht club owners/operators then will provide annual reports to the Port no later than the January 15. Boatyards may also contribute information to the database, providing confirmation of the type of hull paint applied to vessels.

The tracking program takes a conservative approach to estimating loading reductions. If the hull paint name and type is unknown, the paint will be assumed to be copper-based. Named Parties will collect, maintain, and submit tracking information in a standardized format to the Port-maintained database for inclusion in annual tracking reports to the Regional Board. Annual reports will be used to determine basin-wide loading and annual loading reductions.

2.1.2 Tracking Database

A tracking database will be developed by the Port to document and track the number and paint types of all vessels moored within SIYB (if known and reported). The database will be capable of tracking pertinent boat information such as size (length and beam width), make/model, vessel document/registration number, power/sail, facility name & slip number, boatyard used for hull painting, and the type of paint last applied (product number), and approximate length of time occupying a slip or buoy in SIYB, among others. The vessel tracking database fields are provided in an MS Excel format as Appendix A.

It is the intention of the Named Parties to develop a web-based database. The database will be administered and maintained by the Port and will be designed for SIYB with the adaptability to move to a bay-wide tracking system over time. Boatyards, marinas, and yacht clubs will have the ability to access, input, and review data, both specific to their facilities and basin-wide. All users will have password protected rights to enter/edit data from their facility, and read-only rights for all basin-wide data.

2.2 Annual Dissolved Copper Load Analysis

Compliance with interim and final TMDL loading reduction goals will be assessed through basin-wide vessel tracking. Annual dissolved copper loading will be assessed through tracking the number of vessels with non-copper, copper, and low-copper hull paints, as well as the number of vacant slips in SIYB. This assessment will incorporate the following assumptions that were used by the Regional Board in determining loading allocations (Regional Board 2005, Appendix 2).

- All 2,363 SIYB slips or buoys were occupied by vessels (N_v).
- All 2,363 recreational vessels moored within SIYB have copper-based paints.
- Annual loading from passive leaching basin wide (L_p) equals 2000 kg/year.
- Annual loading from hull cleaning (L_h) equals100 kg/yr.
- Avg. annual loading (L_v) per vessel with copper hull paint equals 0.9 kg/yr. Where $L_v = (L_p + L_h)/N_v$.

Based on the Regional Board assumptions in determining dissolved copper loading via passive leaching and hull cleaning combined, there will be an average loading reduction of 0.9 kg/yr for every vessel in SIYB that converts from copper-based to non-copper-based paints. The use of low-copper hull paints (i.e., hull coatings with less than 40% copper) also was recognized in the TMDL as a viable means of reducing copper loading to the basin. This loading reduction analysis assumes that each vessel transitioned to low-copper hull paints on average will reduce annual dissolved copper loading by 0.45 kg/yr. Thus, calculations of annual dissolved copper loading will be based on the following assumptions (Table 2-4).

Table 2-4. Dissolved Copper Loading Calculation Assumptions

Dissolved Copper Loading Assumptions
1. All vessels moored in SIYB at the enactment of the TMDL had copper hull paints.
2. Average annual dissolved copper load from a vessel with copper paint equals 0.9 kg/yr.
3. Vessels with unknown hull paints will be assumed to have copper.
4. Annual dissolved copper load from a vessel with non-copper hull paint equals 0 kg/yr.
5. Low copper hull paints include paints with less than 40% copper.
6. Average annual dissolved copper load from a vessel with low-copper paint equals 0.45 kg/yr.
7. Annual loads will be normalized by the percent of time vessels are in SIYB.

The achievement of interim and final loading targets along with overall TMDL compliance will be dependent on reductions in the number of vessels with copper-based hull paints. In completing the source analysis, the Regional Board assumed that 100% of recreational boats in

SIYB used copper-based paints (Regional Board, 2005); therefore, any reported reduction in the number of boats with copper-based paints would equate to a nearly directly proportional decline in copper loading into the water column. The following schedule provides an estimate of the number vessels to be converted from copper-based to non-copper-based paints in order to meet interim and final loading targets (Table 2-5).

Table 2-5. Vessel Hull Paint Conversion Schedule to Meet Loading Targets

Stage	Time Period	Percent Reduction from Current Estimated Loading	Reduction to be Attained by End of Year	Estimated Interim Target Loading (kg/yr)	Annual Loading Reduction Target (kg/yr)	Reduction in Vessels with Copper Paints to Achieve Loading Target[1]
1	2005-2007	0%	N/A	2,163	0	0
2	2007-2012	10%	7	1,900	263	292
3	2012-2017	40%	12	1,300	863	959
4	2017-2022	76%	17	567	1,596	1,773

[1] Vessel reductions based on average-sized 40-ft vessel converted to non-copper hull paint (i.e., 0.9 kg/yr/vessel loading reduction), as assumed by SIYB TMDL Technical Report

3.0 WATER QUALITY MONITORING

Annual assessments of water quality will be performed to determine the average concentration of dissolved copper and toxicity levels in SIYB using a spatially-representative sampling design. Water quality monitoring will supplement tracking studies to assess long-term improvements in copper concentrations and toxicity levels, occurring as a consequence of loading reductions throughout the interim stages. Water quality monitoring will also be used to determine attainment of final WQOs.

3.1 Water Quality Sampling and Analyses

Water quality sampling will be conducted annually throughout SIYB to determine the average concentration of dissolved copper in the basin and assess water quality trends over time. The monitoring will be conducted using methods consistent with prior studies conducted by the Regional Board in SIYB, which were used to establish baseline copper levels and loading reduction requirements of the TMDL (Appendix 6; Regional Board, 2005). In 2000, the Regional Board surveyed six stations within SIYB to determine the average basin-wide concentration (5.45 µg/L) and maximum concentration (8.0 µg/L). By multiplying the chronic WQO (3.1 µg/L) by the ratio of the average concentration to the maximum concentration, the target basin-wide dissolved copper concentration (2.11 µg/L) was established. To be consistent with studies conducted by the Regional Board, this monitoring program will include annual sampling at six stations and one reference station in the main channel of San Diego Bay adjacent to SIYB. These station locations are similar to those sampled by the Regional Board and meet the Investigative Order requirement of being spatially representative of dissolved copper concentrations in SIYB, as described in Section 3.1.1.

3.1.1 SIYB Sample Locations

Based on an assessment of monitoring water quality data collected between 2005 and 2008 in SIYB from the RHMP Pilot Study (WESTON, 2008), RHMP 2008 (WESTON, 2010) and Neira et al., (2009) study, surface water dissolved copper concentrations ranged from 3.41-16.06 µg/L, with an average concentration of 9.09 ± 0.29 µg/L (mean ± standard error) (Figure 3-1). The original Regional Board monitoring network comprised of six stations within SIYB and one station in the main channel of San Diego is presented in Figure 3-2 and Table 3-1. Using the recent surface water dissolved copper monitoring data collected from six stations in the immediate vicinity of the sampling stations that comprise the monitoring network, dissolved copper concentrations ranged from 3.4-13.5 µg/L with an average concentration of 8.28 ± 1.36 µg/L. Based on a comparison of both the ranges and basin-wide average concentrations, the monitoring network is representative of dissolved copper water quality conditions in SIYB. Additionally, the recent monitoring data provide a reasonable assessment of baseline dissolved copper concentrations within SIYB.

Table 3-1. Sampling Station Coordinates

Station	Latitude	Longitude
SIYB-1	32.71821	-117.22601
SIYB-2	32.71412	-117.22921
SIYB-3	32.71550	-117.22989
SIYB-4	32.71683	-117.23203
SIYB-5	32.71217	-117.23297
SIYB-6	32.70858	-117.23514
SIYB-ref	32.70406	-117.23232

Figure 3-1. Dissolved Copper Levels in Shelter Island Yacht Basin Surface Waters

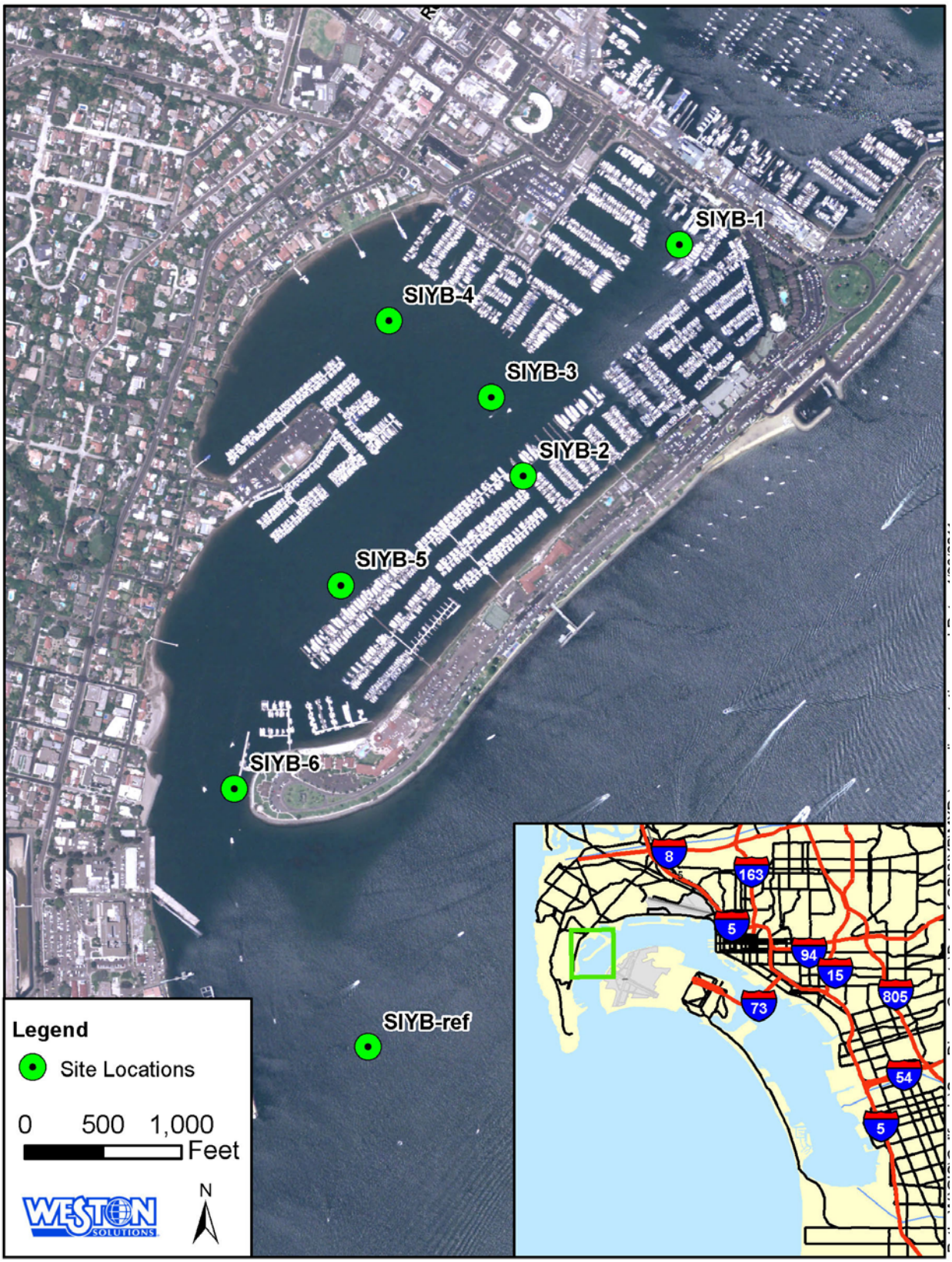

Figure 3-2. Shelter Island Yacht Basin Spatially-Representative Monitoring Network

3.1.2 Frequency of Sampling

Sampling will be conducted at the seven water quality stations at slack high tide once per year during the summer (i.e., August). By conducting sampling in the summer, dissolved copper concentrations are likely to be at the highest level in the water column due to higher release rates of copper from antifouling paints at higher sea surface temperatures and greater frequency of hull cleaning. As a consequence, this sampling design will provide the most conservative estimate for dissolved copper concentrations for SIYB. In addition, annual monitoring during the summer will facilitate integration with the Regional Harbor Monitoring Program (RHMP), which includes sampling of a broader range of chemical and biological parameters once every five years during the summer.

Performing annual sampling at the same station locations during the summer will allow for repeated measures and temporal trend analyses to determine changes in dissolved copper concentrations with time. Revisiting the same spatially-representative stations allows for basin-wide assessments of water quality, while limiting spatial variability and facilitating better detection of temporal trends. Additionally, correlation analyses can be used to assess relationships between estimated loading reductions from vessel conversions with surface water dissolved copper concentrations to track progress of the TMDL.

3.1.3 Sample Collection

Discrete water samples will be collected at each station using "clean hands" techniques with a Niskin bottle deployed from a sampling vessel. All stations will be located using differential global positioning system (dGPS). Samples will be collected within one meter of the surface. Upon collection, water samples will be transferred to labeled containers for analysis of total and dissolved copper, total and dissolved zinc, total organic carbon (TOC), dissolved organic carbon (DOC), and toxicity testing.

In situ measurements of free copper, salinity, and hydrogen ion concentration (pH) will be performed at all stations. Field measurements of pH and salinity will be made using a YSI meter according to manufacturer's specifications. An Orion copper-ion selective electrode (Cu-ISE) will be used to measure concentrations of free copper (Cu^{2+}) in surface water (i.e., within 1 m of the surface). The Cu-ISE measures pCu, where $pCu = \log_{10}(Cu^{2+})$, when calibrated with glycine and ethylenediamine copper buffers (Belli and Zirino, 1993; DeMarco et al., 1997). The precision of the Cu-ISE is $\pm$ 0.06 pCu units (Zirino et al., 1998), and the electrode is effective at total copper concentrations < 3 nM (Zirino et al., 2002). A description of the method used to measure Cu^{2+} is provided by Delgadillo-Hinojosa et al. (2008).

All water samples will be logged on a chain-of-custody (COC) form (Appendix B) and placed in a cooler on ice. Samples will be stored at 4°C in the dark until shipped or delivered to the appropriate laboratory for analysis. All water samples will be shipped within 24 hours of collection.

3.1.4 Equipment Decontamination and Cleaning

The Niskin bottle will be cleaned prior to sampling using clean soapy water and thoroughly rinsing with deionized water. Upon deployment, the Niskin bottle will receive a site water rinse prior to sample collection. After collection, water samples will be transferred from the Niskin bottle to laboratory-certified contaminant-free high-density polyethylene (HDPE) bottles.

3.1.5 Chemical Analysis

Water samples will be analyzed for total and dissolved copper, total and dissolved zinc, TOC, DOC, salinity, and pH (Table 3-2). The measurement of associated indicators can be entered into the Biotic Ligand Model to estimate the bioavailable fraction of dissolved copper present in SIYB and predict toxicity. Zinc is commonly used as an alternative biocide in antifouling paints and therefore total and dissolved zinc will be measured to ensure other water quality problems are not encountered during the conversion from copper-based to non-copper based paints. All analytical methods will follow USEPA or Standard Methods (SM; American Public Health Association [APHA], 1998). Recommended methods are presented in Table 3-2.

Table 3-2. Laboratory Analytical Methods and Detection Limits

Water Quality Measurement	Method	Method Detection Limit	Reporting Limit
Total Copper	USEPA 1640	0.01 µg/L	0.02 µg/L
Dissolved Copper	USEPA 1640	0.01 µg/L	0.02 µg/L
Total Zinc	USEPA 1640	0.005 µg/L	0.01 µg/L
Dissolved Zinc	USEPA 1640	0.005 µg/L	0.01 µg/L
Total Organic Carbon	USEPA 9060	0.1 mg/L	0.2 mg/L
Dissolved Organic Carbon	USEPA 9060	0.1 mg/L	0.2 mg/L
Free Copper	Orion Cu-ISE	<3 n/M	<3 n/M
Salinity	YSI Sonde	N/A	PSU
pH	YSI Sonde	N/A	0.2 pH unit

3.1.6 Toxicity Testing

Toxicity will be assessed at the six SIYB sampling stations and reference station. Toxicity testing for this project will consist of a 96-hr acute bioassay test using topsmelt (*Atherinops affinis*) to be consistent with the TMDL guidance (Regional Board, 2005). Additionally, a 48-hr chronic bioassay test using the mussel (*Mytilus galloprovincialis*) will also be conducted since previous studies have generally used the 48-hour mussel chronic test as the primary indicator of toxicity. Both tests will be used to assess the narrative toxicity objective described in the Implementation Plan since both species have ecological relevance to the marina environment and previously have been found to be sensitive to copper.

The 96-hour acute bioassay with topsmelt will be conducted in accordance with procedures described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (USEPA, 2002). Testing will be initiated within 36 hours of

sample collection. Topsmelt will be exposed for 96 hours to five sample concentrations (0.5 dilution series) and a control. Each concentration will be run with four replicates and ten topsmelt per replicate. Water quality will be conducted daily and include dissolved oxygen (DO), temperature, pH, and salinity. Test conditions are summarized in Table 3-3. After 96 hours, percent survival will be calculated. The test will be considered acceptable if 90% or greater survive in the controls. A 96-hour reference toxicity test using copper sulfate will be conducted concurrently with the project sample to evaluate the relative sensitivity of test organisms. At test termination, the median lethal concentration (LC_{50}) will be calculated and compared to historical laboratory reference toxicant test data for this species.

Table 3-3. Conditions for the 96-Hour Bioassay with *Atherinops affinis*

Test Conditions 96-Hour Acute Bioassay		
	Test Species	***Atherinops affinis***
	Test Procedures	EPA-821-R-02-012 (USEPA, 2002)
	Age/Size Class	7-15 days
	Test Type/Duration	Acute static-renewal /96-hours
	Sample Storage Conditions	4°C, dark, minimal head space
	Holding Time	36-hours
	Control Water Source	Scripps Pier seawater, 3 µm filtered, UV sterilized
Recommended Water Quality Parameters	Temperature	21 ± 1°C
	Salinity	10-30 ± 2 ppt
	Dissolved Oxygen	> 4.0 mg/L
	pH	Monitor for pH drift
	Photoperiod	16 hours light, 8 hours dark
	Test Chamber	500 mL
	Concentrations	5 and a control with a 0.5 dilution series (recommended)
	Replicates/Sample	4
	No. of Organisms/Replicate	10
	Exposure Volume	250 mL
	Aeration	None, unless DO falls below 4.0 mg/L
	Feeding	2 hours prior to renewal (recommended)
	Water Renewal	After 48 hours (minimum)

The 48-hour bivalve larvae test will be performed in accordance with procedures outlined in *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (USEPA, 1995) and ASTM E724-98 (ASTM, 2006). Testing will be initiated within 36 hours of sample collection. The test will be run for 48 hours, or up to 54 hours if necessary, to ensure development of the bivalve larvae to the D-hinge stage in the control. Bivalves will be exposed to five sample concentrations and a control. Each concentration will be run with four replicates and 150-300 larvae will be targeted for inoculation into each replicate. Water quality will include DO, temperature, pH, and salinity at test initiation and termination. Test conditions are summarized in Table 3-4. A 48-hour reference toxicity test using copper sulfate will be conducted concurrently with the project sample to evaluate the

relative sensitivity of test organisms. At the termination of the study, survival will be compared between the control and test concentrations to determine if significant mortality or reduction in normality exists.

Table 3-4. Conditions for the 48-Hour Bioassay with *Mytilus galloprovincialis*

Test Conditions 48-Hour Chronic Bioassay		
	Test Species	***Mytilus galloprovincialis***
	Test Procedures	EPA/600/R-95/136 (USEPA 1995), ASTM E724-98 (ASTM 2008b)
	Age/Size Class	<4 hour old embryos
	Test Type/Duration	Bivalve Larvae – Static / 48 hours
	Sample Storage Conditions	4°C, dark, minimal head space
	Holding Time	36 hours
	Control Water Source	Scripps Pier seawater, 0.2 µm filtered, UV sterilized
Recommended Water Quality Parameters	Temperature	15 ± 1°C
	Salinity	30 ± 2 ppt
	Dissolved Oxygen	> 4.0 mg/L
	pH	6-9; Monitor for pH drift
	Photoperiod	16 hours light, 8 hours dark
	Test Chamber	20-mL glass shell vials
	Concentrations	5 and a control
	Replicates/Sample	4
	No. of Organisms/Replicate	Recommended: 15–30/mL
	Exposure Volume	10 mL
	Feeding	None
	Water Renewal	None

3.1.7 Water Quality Analysis

Analysis of water quality data will include calculations of average dissolved copper concentrations to determine basin-wide compliance with the CTR dissolved copper chronic target (3.1 µg/L) or a potential site-specific objective. Since the same station locations will be revisited annually, repeated measures analysis will be used to statistically determine significant reductions in copper levels with time. The first monitoring season's data will be compared to the 2005-2008 dissolved copper surface concentration data reported in Section 3.1 to determine whether conditions have improved or degraded over the intervening period. Although this data will be informative for long-term trend analysis, it will not be used to assess compliance with interim loading reduction targets, since interim TMDL compliance will be directly assessed by loading reductions rather than water quality improvements.

Determinations of toxicity using the 96-hour topsmelt bioassay will be statistically assessed using ToxCalc to compare survival of topsmelt exposed to the multi-concentration dilution series

of SIYB seawater (i.e., treatments) to topsmelt exposed to filtered seawater (i.e., controls). Results will be used to determine No Observed Effect Concentration (NOEC), Lowest Observed Effect Concentration (LOEC), and LC_{50} values. If survival of the control does not differ significantly from that of the treatments, then conditions within SIYB will be considered to nontoxic, indicating that the narrative water quality target has been met.

Determinations of toxicity using the 48-hour bivalve bioassay will be statistically assessed using ToxCalc to compare survival and normality of bivalve larvae exposed to the multi-concentration dilution series of SIYB seawater (i.e., treatments) to bivalve larvae exposed to filtered seawater (i.e., controls). Results will be used to determine NOEC, LOEC, and LC_{50} (for survival) and EC_{50} (for normality) values. If survival and normality of the control do not differ significantly from that of the treatments, then conditions within SIYB will be considered to be nontoxic, indicating that the narrative water quality target has been met.

3.2 QA/QC Procedures

Sampling process QA/QC will include proper collection of the samples in order to minimize the possibility of contamination. All samples will be collected in laboratory-supplied, laboratory-certified, contaminant-free sample bottles. Field staff will wear powder-free nitrile gloves (or similar) at all times during sample collection. The sampling team will provide field sampling standard operating procedures (SOPs) and ensure all sampling personnel are trained accordingly. Additionally, the field staff will be made aware of the significance of the project's detection limits and the requirement to avoid contamination of samples at all times. Duplicate samples will also be analyzed to assess variability in sampling and to remain compliant with SWAMP protocols. Each batch of samples that is submitted to the laboratories for analyses will be accompanied by an equipment rinse blank, field blank, and a duplicate sample, as specified under SWAMP.

Samples will be analyzed by a laboratory certified by the California Environmental Laboratory Accreditation Program (ELAP) for the analyses of inorganics, toxic chemical elements, and organics in wastewater. The QA objectives for chemical analysis conducted by the participating analytical laboratories are detailed in their Laboratory QA Manual(s). The objectives for accuracy and precision involve all aspects of the testing process, including the following:

- Methods and SOPs;
- Calibration methods and frequency;
- Data analysis, validation, and reporting;
- Internal QC;
- Preventive maintenance; and
- Procedures to ensure data accuracy and completeness.

Results of all laboratory QC analyses will be reported with the final data. Any QC samples that fail to meet the specified QC criteria in the methodology or QAPP will be identified, and the corresponding data will be appropriately qualified in the final report.

All QA/QC records for the various testing programs will be kept on file for review by regulatory agency personnel.

3.3 Chain-of-Custody Procedures

Chain-of-custody procedures will be used for all samples throughout the collection, transport, and analytical process. Samples will be considered to be in custody if they are (1) in the custodian's possession or view, (2) retained in a secured place (under lock) with restricted access, or (3) placed in a container and secured with an official seal such that the sample could not be reached without breaking the seal. The principal documents used to identify samples and to document possession will be COC records, field logbooks, and field tracking forms.

Chain-of-custody procedures will be initiated during sample collection. A COC record will be provided with each sample or group of samples (Attachment 2). Each person who had custody of the samples will sign the form and ensure that the samples were not left unattended unless properly secured. Documentation of sample handling and custody will include the following:

- Sample identifier;
- Sample collection date and time;
- Any special notations on sample characteristics or analysis;
- Initials of the person collecting the sample;
- Date the sample was sent to the analytical laboratory; and
- Shipping company and waybill information.

Completed COC forms will be placed into a plastic envelope and kept inside the cooler containing the samples. Upon delivery to the analytical laboratory, the COC form will be signed by the person receiving the samples. Chain-of-custody records will be included in the final reports prepared by the analytical laboratories and will be considered an integral part of the report.

3.4 Health and Safety

Since sampling will be conducted from a boat, dangerous situations have the potential to arise. Field personnel need to be aware of safety hazards and take appropriate precautions. A health and safety tailgate meeting will be held prior to the occurrence of any on-site activity. During this meeting, site specific hazards will be discussed and addressed appropriately.

3.4.1 Use of Boats and Working over Water

Work will be conducted from a boat over and around SIYB; therefore, special considerations are required. All crafts will be operated according to the applicable navigational rules and regulations. The boat will be operated by a certified captain with U.S. Coast Guard small vessel training. Personnel working on the boat will be trained according to internal SOPs. The hazards associated with the operation and use of boats includes drowning, heat stress, and injuries from falling. An approved personal flotation device must be available for each person onboard. Wet conditions increase the chances of slipping; therefore, engineering controls such as guardrails will be used. Sampling will be conducted in the summer and therefore increase the risk of heat

stress. Plenty of water will be made available to field staff and wearing short pants is acceptable to reduce this risk. A Float Plan will be prepared for each trip and submitted to the Safety Officer or Project Manager. At a minimum, it will include destination, expected time of return, personnel on board, and description of vessel. The Float Plan will be used if the field crew does not return or notify the shore contact at a specified time and a rescue is needed. Weather forecast will be reviewed prior to field sampling. High winds may pose potential hazardous conditions within the harbor.

4.0 DATA REVIEW AND MANAGEMENT

4.1 Data Review

All data will be reviewed and verified by participating team laboratories to determine whether data quality objectives have been met, and that appropriate corrective actions have been taken, when necessary, as detailed in the QAPP.

4.2 Data Management

All laboratories will supply analytical results in both hard copy and electronic formats. Laboratories will have the responsibility of ensuring that both forms are accurate. After completion of the data review by participating team laboratories, hard copy results will be placed in the project file at WESTON and the results in electronic format will be imported into WESTON's database system. Additional details on data management are provided in the QAPP.

4.3 Quality Assurance/Quality Control

Analytical laboratories will provide a QA/QC narrative that describes the results of the standard QA/QC protocols that accompany analysis of field samples. All hard copies of results will be maintained in the project files. In addition, back-up copies of results generated by each laboratory will be maintained at their respective facilities. At a minimum, the laboratory reports will contain results of the laboratory analysis, QA/QC results, all protocols and any deviations from the project Monitoring Plan, and a case narrative of COC details.

5.0 REPORTING

Reporting under the SIYB TMDL will include annual Monitoring and Progress Reports to be submitted to the Regional Board by the Port no later than March 31 of each year, beginning on March 31, 2012. The purpose of the Monitoring Plan annual reporting is to document the methods and results of annual vessel tracking surveys and water quality monitoring. Reports will detail the number of vessels converted to non-copper or low-copper paints within SIYB to calculate loading reductions. Additionally, annual progress reports will describe water quality conditions, specifically focused on the concentrations of dissolved copper within the basin and observed toxicity levels.

At a minimum, the following information will be included in annual Monitoring and Progress Reports.

SIYB TMDL Implementation. An evaluation, interpretation and tabulation of data and information on SIYB Dissolved Copper TMDL activities undertaken by the Named Parties including:

1. *Vessel Conversions*. Assess vessel conversions from copper-based antifouling hull paint to non-copper and low-copper hull paints, including:
    a. Total number of slips or buoys in SIYB available to be occupied by vessels;
    b. Number of unoccupied slips or buoys and length of time unoccupied during each year;
    c. Number of vessels confirmed with copper-based hull paint and approximate length of time occupying a slip or buoy in SIYB during each year;
    d. Number of vessels confirmed with alternative hull paints, by alternative hull paint type, and approximate length of time occupying a slip or buoy in SIYB during each year;
    e. Number of vessels with unconfirmed information about hull paint and approximate length of time occupying a slip or buoy in SIYB during each year;
    f. An estimate of the dissolved copper load reduction achieved, in terms of kilograms and percent, for the year;
    g. Any other data or information relevant to annual tracking of vessels in SIYB occupying slips or buoys and conversions from copper-based hull paints to alternative (i.e., non-copper or low-copper) hull paints.
2. *SIYB BMP Implementation.* Describe BMPs or other actions that have been implemented by the Named Parties to reduce dissolved copper discharges from boat hulls into SIYB. BMPs and other actions implemented and required to be implemented by underwater hull cleaners must be described.

San Diego Bay-wide BMP Implementation. Describe BMPs or other actions that can be, will be, or have been implemented by the Port to reduce dissolved copper discharges from boat hulls into harbors or marinas, other than SIYB, within San Diego Bay.

SIYB TMDL Monitoring. An evaluation, interpretation, and tabulation of water quality sampling and analysis data, including:

1. *Sample Locations and Numbers*. The locations, type, and number of samples must be identified and shown on a site map.
2. *Sample Analyses*. The sample collection and laboratory analytical methods, QA/QC results, time and date of sample collection and other pertinent information must be described.
3. *Conceptual Model Update.* Refinements and updates to the Conceptual Model based on available data must be described. The description must include identification of monitoring data needed to verify or refine assumptions, resolve uncertainties, and improve the scientific foundation of the TMDL.
4. *Water Quality Trends.* Interpretations and conclusions, as to whether the "trajectory" of the measured water quality values points toward attainment of the dissolved copper water quality objectives, must be provided.

6.0 REFERENCES

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ATTACHMENT 1

Tracking Database Fields

Provided as an Excel File

SIYB TMDL Hull Tracking Agreement
Exhibit A

Guidance Document for Vessel Hull Tracking Transfer Data Template

Field Name	Date	Facility	Slip/Mooring Number	Percent of Time Occupied	Vessel Document or Registration #	Vessel Type	Vessel Length	Vessel Beam	Paint Type	Paint Name	Product Number	Boatyard	Painting Date	% Copper
Field Description	Provide date information is added to this template. If updating an existing entry, provide date information was updated.	Identify the facility where the vessel is moored - yacht club, marina, etc.	Identify specific slip or mooring where the vessel is docked/moored. Entry can include both letters and numbers.	Report the percent of time vessels are in slips or moored to buoys in SIYB	The CF # and/or Vessel Documentation # are used to identify a vessel with a state or federal registration-based identification that is transferrable if the boat is sold or relocated. **Entry is mandatory for this field (use either CF# or Vessel Documentation #)**	This field is necessary to identify whether vessel is a power, sailboat, multi-hull, or electric. Use valid code list provided below.	Report the **Registered Vessel Length** in feet. Identify length increments in decimals, **NOT** inches. For Example: Length of 10 1/2 feet would be 10.5, NOT 10ft 6in	Report beam width of the vessel in feet - the widest point on the vessel. Identify length increments in decimals, **NOT** inches. For Example: Length of 10 1/2 feet would be 10.5, NOT 10ft 6in	Identify whether the current hull paint is copper based or non-copper based. This is a mandatory entry field. **If information is not available identifying the coating as "Cu" "Zn", "NON", or "ORG", the default MUST be "UKN" until supporting information can be provided.**	Identify the product name of the hull paint used. This information will assist in determining paint composition. A list of the more commonly used paints is included below, but is not intended to be comprehensive.	List the product number of the current hull paint, if known. This field is a **required entry if being completed by applicator,** but voluntary if provided by boater or marina.	Identify the boatyard used for most current hull paint application. If form is being completed by applicator, enter your boatyard code below. If using a boatyard outside of San Diego Bay, enter "OTH".	Report date of most recent hull painting. If form is being completed by boatyard, report current painting date.	Report the percentage of copper in the paint
Required Field Type	Date Entry	Text - use only the BOLD codes listed below	Text	Numeric Entry (%), w/ decimal increments	Text	Text - use only the BOLD codes listed below	Numeric Entry (ft), w/ decimal increments	Numeric Entry (ft), w/ decimal increments	Text - use only the BOLD codes listed below	Text	Text	Text - use only the BOLD codes listed below	Date entry - use format identified below	Numeric Entry
Valid Field Code*	**MM/DD/YY**	**BCM** - Bay Club Marina **CN** - Crows Nest Marina **GC -** Gold Coast Anchorage **HMM** - Half Moon Marina **HPD -** Harbor Police Dock **LPYC -** La Playa Yacht Club **KK** - Kona Kai Marina **PSN -** Pearson's Fuel Dock **SIM** - Shelter Island Marina **SDYC -** San Diego Yacht Club **SGYC** - Silver Gate Yachy Club **SWYC-** Southwestern Yacht Club **TON -** Tonga Landing				**P -** Power **S -** Sailboat **E-** Electric **H -** Houseboat **M -** Multi-hull			**Cu -** single active = copper **LCu** -Low Copper (≤ 40%) **NON -** non-biocide **Zn** - single active = zinc **ORG** -single active = organic **COMBO** - multiple active **UKN -** Unknown	**Examples below:** Interlux Ultra (67) Monterey (58) Seaguard (49) ABC 3 (48) Hydrocoat (40) Cukote (46) Seacoat (45) Trilux33 (33) Micron66 (40) Micron Extra (39) Jotun ( ) Petit Vivid (17) Trilux/Biolux (17) Micron Optima (28 Trinidad ( ) Trinidad SR (70) Trinidad VOC (65) Interlux Super KL Ultrakote (76) Tropicoat (76) Proline 1088 (67) Calif Bottomkote Sharkskin (45) Procoat (45) Mission Bay Pacifica Econea E-Paint Cerakote Intersleek Ceram-kote Microphase VC127 SeaHawk AF33 Bluewater Imron Interlux Silicone Interlux K91 PolarCrest VC Performance Epoxy EP-21 Sunwave		**DR** - Driscolls **KC** - Knight & Carver **KK** - Koehler Kraft **MG** - Marine Group **NB** - Nielsen Beaumont **SI** - Shelter Island **OTH** - Other Boatyard	**MM/YYYY**	

* Valid field codes for each field having a predetermined set of allowable values are identified in **BOLD** print. Each valid code is followed by a definition of the value.

Facilities will be required to provide information for each of the slips and moorings in their facility.

Green: Required Field

Yellow: Required if claiming non-copper or low-copper paint

Gray: Optional

SIYB TMDL Hull Tracking Agreement
Exhibit B
Vessel Hull Tracking Data Transfer Template

Date	Facility	Slip/Mooring Number	Percent of Time Occupied	Vessel Document # or Registration #	Vessel Type	Vessel Length	Vessel Beam	Paint Type	Paint Name	Product Number	Boatyard	Painting Date	% Copper

ATTACHMENT 2

Chain-of-Custody Form

WESTON SOLUTIONS

☐ 2433 Impala Drive • Carlsbad, CA 92010 • (760) 795-6900, FAX 931-1580
☐ 1440 Broadway, Ste. 910 • Oakland, CA 94612 • (510) 808-0302, FAX 891-9710

CHAIN OF CUSTODY
1760

DATE_____ PAGE_____ OF_____

PROJECT NAME / SURVEY / PROJECT NUMBER
PROJECT MANAGER / CONTACT
COMPANY / CLIENT
ADDRESS
PHONE / FAX / EMAIL

SITE ID (Location)	SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE / VOLUME	TOTAL NUMBER OF CONTAINER	ANALYSIS/TEST REQUESTED								PRESERVED HOW	FOR WESTON USE ONLY: SAMPLE TEMP. (°C) UPON RECEIPT	FOR WESTON USE ONLY: WESTON LAB ID

Sample Matrix Codes: FW= fresh water GW=ground water SLT=salt water SW=storm water WW=waste water SED=sediment A=air BIO=biologic SS=soil T=tissue O=other (specify) _____

Container Code: G=glass P=plastic B=bags ☐ O=other _____

Shipped By: ☐ Courier ☐ UPS ☐ FedEx ☐ USPS ☐ Client drop off ☐ Other _____

Turnaround Time: ☐ 2-day ☐ 5-day ☐ 7-day ☐ 10-day ☐ 14-day ☐ Standard ☐ Other _____

Reporting Requirements: ☐ PDF ☐ EDD ☐ Hard Copy ☐ Email ☐ Other _____

SAMPLED BY: PRINT SIGNATURE

COMMENTS / SPECIAL INSTRUCTIONS

RELINQUISHED BY				RECEIVED BY			
Print Name	Signature	Firm	Date/Time	Print Name	Signature	Firm	Date/Time
1.							
2.							
3.							
4.							
5.							
6.							

WHITE – return to originator • YELLOW – lab • PINK – retained by originator

SAN DIEGO BAY WATERSHED
Urban Runoff Management Program

FISCAL YEAR 2012 ANNUAL REPORT

January 31, 2013

Prepared and Submitted by the San Diego Bay Watershed Copermittees

City of Chula Vista
City of Coronado
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of San Diego
County of San Diego
Port of San Diego
San Diego County Regional Airport Authority

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EXECUTIVE SUMMARY

Since January 2002, the County of San Diego, Port of San Diego, the San Diego County Regional Airport Authority (Airport Authority), and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) have been active in developing and implementing watershed-based programs in the San Diego Bay Watershed Management Area (WMA). This Annual Report represents the San Diego Bay Copermittees' efforts during Fiscal Year 2011-2012 (FY 2012) to meet the requirements of Section E of the Municipal Stormwater Permit Order Number R9-2007-0001 (Municipal Permit or Permit) and develop and implement the San Diego Bay Watershed Urban Runoff Management Program (WURMP).

The San Diego Bay Copermittees continue to improve watershed efforts in the San Diego Bay WMA, using innovative methods and new tools as they become available. The overarching goal for the San Diego Bay WURMP is to cooperatively and through collaborative strategic planning, decrease the impacts of potential sources and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) that have been identified as potentially causing high priority water quality problems. Using the Watershed Strategy developed in the 2008 San Diego Bay WURMP document for guidance, each Copermittee individually selected activities that were feasible to implement in their jurisdiction, and were appropriate for its relative contribution to the watershed's high priority water quality problems.

The San Diego Bay Watershed Management Area (WMA), as defined by the Municipal Permit, is unique in that there are three major watersheds that comprise the WMA: Pueblo San Diego (908 Hydrologic Unit (HU)), Sweetwater (909 HU), and Otay (910 HU). Each HU is comprised of Hydrologic Areas (HAs). The HUs vary greatly in size, land use, population, and have different water quality issues as a result. The San Diego Bay Copermittees have developed and implemented activities to address the variety of issues throughout the WMA.

During this reporting period, the San Diego Bay Copermittees continued implementation of watershed activities and assessments. The activities and assessments include: (1) a water quality assessment; (2) a pollutant source assessment; (3) planning and implementation of watershed activities; and (4) an assessment of the Copermittees activities in the WMA. An integrated assessment of activity effectiveness within each HA was conducted to determine the collective impact of the activities on the targeted high priority pollutants and/or pollutant sources.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees collected and reported JURMP and WURMP activities performed on a hydrologic area (HA) basis. It should be noted that while the information in this report does not account for all JURMP activities undertaken by each Copermittee, the San Diego Bay Copermittees are utilizing a more holistic approach to evaluate all efforts taken to improve stormwater quality through applicable stormwater programs within the WMA. In addition, estimates were used to generate quantifiable result for some of the reported JURMP activities (this process is explained in **Appendix B**). This is an important step to integrate the activities and reporting to best assess and plan for activities that address the identified high priority water quality problems (HPWQPs) on an HA basis.

A summary of the program accomplishments for FY 2012 is found below:

Water Quality and Pollutant Source Assessment

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the San Diego Bay WMA based on data collected and analyzed during the reporting period. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the San Diego County Municipal Copermittees Urban Runoff Monitoring Report (Annual Monitoring Report) for FY 2012 in compliance with the Municipal Permit. Assessment of the available water quality data from the Annual Monitoring Report indicated that there were no changes in FY 2012 to the previous year's HPWQPs.

ES-1: San Diego Bay Baseline High Priority Water Quality Problems

HA	Pollutant Categories						
	Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides	Sediment	Trash
Pueblo San Diego HU							
908.1	X	X	X	X	X		
908.2	X		X		X	X	X
908.3	X					X	X
Sweetwater HU							
909.1	X						
909.2					X		
909.3							
Otay HU							
910.1	X	X					
910.2	X						
910.3							

During this reporting period, the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the HPWQPs identified and each source category's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources' potential for generating bacteria as a pollutant.

Implementation of Watershed Activities

WURMP activities required by the Municipal Permit were conducted during the reporting period. Collectively, the San Diego Bay WMA Copermittees implemented eight (8) watershed education activities, 25 water quality activities, and three (3) monitoring or source identification studies during the reporting period. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. Table ES-2 provides a summary of the activities, and details of these activities are found in Section 3 and **Appendix C** of this Annual Report. Activities selected and conducted by the Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. In addition, the San Diego Bay WMA Copermittees implemented activities associated

with Total Maximum Daily Loads (TMDLs) in certain HAs which are also detailed in Sections 3, 4 and **Appendices D, F, G,** and **H**.

ES-2: San Diego Bay WMA Activities Implemented in FY 2012

Activity Implemented in FY 2012	HA Where Implementation Occurred									Pollutants Addressed by Activity									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil and Grease	Organics	Pesticides	Sediment	Trash
Watershed Water Quality Activities																			
SDB-001 Pet Waste Bag Collaborative Watershed Activity	X	X	X	X			X	X	X	●				●					
SDB-001A Pet Waste Bag Dispenser Program in County Parks		X		X	X	X		X	X	●				●					
SDB-002B El Cajon Blvd. Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project		X	X	X						●								●	●
SDB-004 San Diego Bay Clean-up Events Collaborative Activity		X	X	X			X	X		●									●
SDB-005 Clean Community Program			X	X						●		●							●
SDB-007 Additional Dry Season Construction Inspections			X	X														●	●
SDB-009 Enhanced Construction Inspections		X																●	
SDB-014 Southcrest Park Green Lot Infiltration Project		X								●			●						
SDB-015 Memorial Park Green Lot Infiltration Project		X								●			●						
SDB-035 Update Recycling and Solid Waste Planning Manual				X				X	X	●				●					●
SDB-037 43rd & Logan Biofiltration Project for Chollas Creek Watershed Protection (Green Street)		X								●			●						
SDB-046 Land Acquisitions San Diego Bay Watershed				X	X			X	X	●	●	●	●	●	●	●	●	●	●
SDB-047 Large Special Event Inspection and Clean-up							X	X		●									
SDB-048 Outdoor Special Event Oversight		X																	●
SDB-049 Maple Street Canyon Water Quality Improvement Project		X								●								●	●
SDB-050 Chollas Creek Runoff Reduction & Groundwater Recharge Project		X											●						

Activity Implemented in FY 2012	HA Where Implementation Occurred									Pollutants Addressed by Activity									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil and Grease	Organics	Pesticides	Sediment	Trash
SDB-052 Palm Avenue Storm Water Diverter							X			●			●	●			●	●	
SDB-056 Storm Water Quality Master Plans for Special Drainage Fee Areas		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●
SDB-058 Beta Street Green Ally		X								●		●	●		●		●	●	●
SDB-062 Residential Rain Barrel Subsidies & Distribution		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●
SDB-071 Targeted Catch Basin Cleaning Pilot Study		X								●		●	●					●	●
SDB-072 Municipal Best Management Practices/Irrigation/Xeriscape		X								●			●	●		●	●	●	
SDB-074 National City Multi-Family Residential Property Evaluation			X	X						●	●	●	●	●	●	●	●	●	●
SDB-076 Rainwater Harvesting Rebate Pilot Program	X	X	X	X				X		●		●	●	●	●	●	●	●	
SDB-077 Qualcomm Stadium Drop-off Community Clean-up & Recycling Event Sponsorship	X	X	X	X				X		●									●
Watershed Education Activities																			
SDB-039 Provide Homeowner's Association Education About Storm Water Pollution Prevention				X				X	X	●									
SDB-040 Storm Water Education Booth at Pet Festival and Doggy Dash				X				X	X	●									
SDB-041 Fats, Oils, and Grease (FOG) Program				X				X	X	●					●				
SDB-045 ILACSD School Watershed Presentations		X	X	X				X		●	●	●	●	●	●	●	●	●	●
SDB-055 San Diego Bay Watershed Brochure	X	X	X	X				X	X	●	●	●	●	●	●	●	●	●	●
SDB-066 Focused Outreach to Equestrian Community				X	X	X		X	X	●				●				●	
SDB-073 Walk the Watershed Otay HU								X		●		●	●		●		●	●	●
SDB-075 Juneteenth		X								●					●		●		●

Activity Implemented in FY 2012	HA Where Implementation Occurred									Pollutants Addressed by Activity									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil and Grease	Organics	Pesticides	Sediment	Trash
Watershed Monitoring Activities																			
SDB-020 Enhanced Dry Weather Monitoring Program		X								●	●	●	●	●	●	●	●	●	●
SDB-021 Coordinated Dry Weather Monitoring Program	X	X								●			●	●		●	●	●	●
SDB-025 Regional Harbor Monitoring Program	X	X	X	X			X			●	●	●	●	●	●	●	●	●	

Effectiveness Assessment

The San Diego Bay WMA Copermittees continue to improve the program's effectiveness assessment by utilizing where appropriate, the six-level assessment framework prepared by the Regional Copermittees in October 2003. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Activities such as public participation at cleanup events, the general public's use of household hazardous waste (HHW) collection facilities and pet waste bags covered multiple levels of assessment resulting in increases in awareness, behavior changes, and load reductions. An increase in knowledge and awareness were demonstrated through various education activities throughout the WMA to a variety of audiences (Level 2). Public participation in trash cleanups and collection events also indicate behavioral change (Level 3). Through inspection activities, Copermittees were able to demonstrate positive changes in behavior (Level 3) as well as abate specific pollutant sources (Level 4). The San Diego Bay Copermittees also achieved load reductions as well as source abatement (Level 4) through various programs that either targeted the pollutants of concern or the pollutant sources. Notably, 238 tons of trash and debris were collected from shorelines, streets, and waterways throughout the WMA during cleanup events this reporting year.

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1 INTRODUCTION

The NPDES Municipal Stormwater Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit," requires the Copermittees within the San Diego Bay Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). Since 2002, the San Diego Bay Watershed Copermittees have worked together to successfully implement the San Diego Bay WURMP, a collaborative effort to address high priority surface water quality issues throughout the San Diego Bay WMA. On March 24, 2008, the San Diego Bay Watershed Copermittees began implementation of the current San Diego Bay WURMP. The program includes identifying and addressing high priority water quality problems in the WMA, developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report reflects the efforts of the San Diego Bay Watershed Copermittees, referred to throughout this document as San Diego Bay Copermittees, during the reporting period from July 1, 2011, through June 30, 2012 (FY 2012). This Annual Report is divided into five sections as presented below.

Section 2 – Water Quality and Pollutant Source Assessment
This section provides an update of water quality throughout the WMA, identifies high priority water quality problems (HPWQP) in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3 – Implementation of Watershed Activities
This section describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period, collaborative land use planning, and additional education and public participation activities that took place. As required, Copermittees implemented activities in the WMA as part of their WURMP and Jurisdictional Urban Runoff Management Program (JURMP). In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees collected and reported on JURMP and WURMP activities performed on an HA basis. The information does not include all JURMP activities implemented by the Copermittees and for some data sets quantities were estimated (**Appendix B**). This is an important step toward integrating activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis. This section also summarizes the Total Maximum Daily Load (TMDL)-related activities implemented by named dischargers of TMDLs within the San Diego Bay WMA. Detailed information on the results and status of each Named Dischargers' TMDL activities is located in **Appendix D**.

Section 4 – Effectiveness Assessment
This section discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among San Diego Bay Copermittees; 2) determine whether watershed activities are focused on appropriate water quality problems; 3) assess whether targeted outcomes are being achieved; and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale. This section includes an assessment of compliance with TMDLs in the San Diego Bay WMA and the effectiveness of activities implemented by the Named Dischargers.

Section 5 – Conclusions and Recommendations
This section provides conclusions reached during FY 2012 as well as recommendations for future reporting periods.

Section 6 – References
This section provides information on the sources referenced in this annual report.

In addition, this document functions as the primary reporting mechanism for all TMDL activities implemented for each approved TMDL in the San Diego Bay WMA. TMDL Implementation Plans often integrate existing watershed, regional, and jurisdictional programs (as well as agency-wide programs for state and federal Dischargers) under existing National Pollutant Discharge Elimination System (NPDES) permit requirements. The integration of these activities provides a comprehensive evaluation of watershed-wide efforts to address a particular TMDL. As a result, this Annual Report provides a logical platform for annual reporting of efforts to address TMDLs within the San Diego Bay WMA. There are five approved TMDLs in the San Diego Bay WMA:

- Resolution No. R9-2002-01213 and associated Investigative Order No. R9-2004-0277 (for monitoring and reporting), California Department of Transportation and San Diego Municipal Separate Storm Sewer System Copermittees Responsible for the Discharge of Diazinon into the Chollas Creek Watershed (Chollas Creek Diazinon TMDL);
- Resolution No. R9-2007-0043, A Resolution Adopting An Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay (Chollas Creek Dissolved Metals TMDL);
- Resolution No. R9-2005-0019, A Resolution Adopting An Amendment to the Water Quality Control Plan for the San Diego Region to Incorporate a Total Maximum Daily Load for Dissolved Copper in Shelter Island Yacht Basin, San Diego Bay (Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL);
- Resolution No. R9-2008-0027, A Resolution to Adopt an Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Total Maximum Daily Loads for Indicator Bacteria, Baby Beach in Dana Point Harbor and Shelter Island Shoreline Park in San Diego Bay (Baby Beach and Shelter Island Shoreline Park Indicator Bacteria TMDL); and
- Resolution No. R9-2010-0001, A Resolution Amending the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Revised Total Maximum Daily Loads for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region (Including Tecolote Creek) (Revised TMDL for Indicator Bacteria, Project I).

1.1 WURMP COPERMITTEE COLLABORATION

WURMP development and implementation is a collaborative effort by all of the following San Diego Bay Copermittees:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach

- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- San Diego Unified Port District (Port of San Diego)
- San Diego County Regional Airport Authority (Airport Authority)

The Port of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among San Diego Bay Copermittees and liaison between Copermittees and Regional Water Quality Control Board (RWQCB) staff. The San Diego Bay Copermittees met 11 times during this reporting period – **Appendix E** provides a summary of the dates and general topics of discussion. The majority of the meetings focused on the implementation of the San Diego Bay WURMP.

During the reporting period, the San Diego Bay Copermittees continued to collaborate extensively on the development of the Watershed Strategy that guides WURMP activity selection. An extensive explanation of the San Diego Bay Watershed Strategy (Watershed Strategy) was presented in the 2008 San Diego Bay WURMP document. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) defines the San Diego Bay WMA as being comprised of three watersheds, or hydrologic units (HUs). They are the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed. These HUs are further divided into hydrologic areas (HAs). The San Diego Bay Copermittees developed a database of baseline information consisting of land use, water quality monitoring data, and other information on potential pollutant sources, and identified the high priority water quality problems on a HA level.

Collaboration on the Watershed Strategy also enabled the San Diego Bay Copermittees to identify data gaps by reviewing existing monitoring and land use data. Such data provided the basis for developing additional water quality monitoring and source identification activities such as the coordinated dry weather monitoring program being implemented by the City of San Diego, the Port of San Diego, and the Airport Authority. Section 3 provides specific detail on each program that was initiated or completed during the FY 2012 reporting period.

1.2 TMDL NAMED DISCHARGERS COLLABORATION

Chollas Creek Dissolved Metals, Diazinon, and Indicator Bacteria TMDLs

This reporting year represents the fourth year the Chollas Creek Dissolved Metals TMDL is in effect. It was approved by the State Board Office of Administrative Law on October 22, 2008. During the reporting period, the permitted Municipal Separate Storm Sewer System (MS4) dischargers named in the TMDL collaborated on a multi-pollutant strategy for addressing the TMDL.

The Implementation Plan was submitted on October 21, 2009, to the RWQCB. The named dischargers include five watershed Copermittees, Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, Port of San Diego, as well as the U.S. Navy and the California Department of Transportation (Caltrans). The named parties under the Diazinon TMDL include the same dischargers under the Chollas Creek Metals TMDL. In addition to the collaborative Implementation Plan, each discharger developed their own list of activities they participated in

or will participate in to address the TMDLs. Dischargers met 11 times during this reporting year:

- July 18, 2011
- September 19, 2011
- October 20, 2011
- November 14, 2011
- December 19, 2011
- January 23, 2012
- February 27, 2012
- March 26, 2012
- April 30, 2012
- May 2, 2012
- June 18, 2012

Additionally, the dischargers began attending joint TMDL meetings for both the Metals TMDL dischargers and the Bacteria TMDL responsible parties. The Bacteria TMDL dischargers include the same five watershed Copermittees (Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, and Port of San Diego) and Caltrans. The Bacteria TMDL responsible parties met weekly for development of the Comprehensive Load Reduction Plan (CLRP) during FY 2012. Further discussion on the efforts made by the dischargers during FY 2012 is provided in Sections 3.5.2 and 4.2.2.

Because the strategy for addressing the Bacteria TMDL is multi-pollutant and watershed based, the reporting of activities under this TMDL incorporates those activities for the Chollas Creek Diazinon and Dissolved Metals TMDLs as well. Investigative Order R9-2004-0277 requires status reports of specific implementation elements. Further information on these specific elements is included in the 2011–2012 Chollas Creek TMDL Compliance Monitoring Report in **Appendix F**.

Shelter Island Yacht Basin Dissolved Copper TMDL

The named parties in the SIYB Dissolved Copper TMDL include two watershed Copermittees (the Port of San Diego and the City of San Diego), the SIYB marinas and yacht clubs, and hull cleaners. On March 11, 2011, the RWQCB issued Investigative Order No. R9-2011-0036 which directed the Port of San Diego to submit technical reports pertaining to the SIYB Dissolved Copper TMDL. The named parties completed the development of a strategy for addressing the TMDL and submitted the annual report as required during this reporting period. The Port of San Diego and SIYB marinas and yacht clubs coordinated the collection of data summarizing the implementation of BMPs and other activities in the Basin for calendar year 2011. The annual report was submitted on March 31, 2012, as discussed in **Appendix G**.

The City of San Diego submitted the SIYB Dissolved Copper TMDL 2011-2012 Compliance Monitoring Report focusing on urban runoff discharges into SIYB on May 25, 2012 (**Appendix G**).

Further discussion on the efforts made by the named parties is provided in Sections 3.5.2 and 4.2.2.

1.3 SAN DIEGO BAY WATERSHED MAP UPDATES

No updates have been made to the previously submitted Watershed Map. A copy of the most recent Watershed Map can be found in the 2008 San Diego Bay WURMP document.

2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

In accordance with Section J.3.b.2.c. of the Municipal Permit, this section provides a summary assessment of water quality and pollutant sources in the San Diego Bay WMA. The water quality summary assessment is based on the *FY 2012 San Diego County Municipal Copermittee Receiving Waters and Urban Runoff Monitoring Report* [(Regional Monitoring Report), Weston, January 2013]. Where applicable, additional monitoring programs conducted by the San Diego Bay WMA Copermittees with respect to water quality and/or source identification studies are also incorporated into this section.

A complete presentation of the regional monitoring efforts conducted during the reporting period is located in the Regional Monitoring Report. The Regional Monitoring Report includes analysis and discussion of the Core Management Questions as required by the Municipal Permit.

In 2008, the San Diego Bay Copermittees identified HPWQPs in the San Diego Bay WURMP. In accordance with Municipal Permit requirements, monitoring data collected during each reporting period is compared to the established HPWQPs within the 2008 San Diego Bay WURMP document for assessment purposes. The findings of these comparisons are noted in the following sub-sections.

2.1 HIGH PRIORITY WATER QUALITY PROBLEMS

The San Diego Bay WURMP Copermittees developed and presented a Baseline Watershed Evaluation (BWE) which utilized the 2005 Baseline Long-Term Effectiveness Assessment (BLTEA) (MOE, Weston, LWA, August 2005) water quality ratings, monitoring data, and source information to identify HPWQPs. **Table 2-1** presents the HPWQPs by HA within the San Diego Bay WMA.

Table 2-1: San Diego Bay Baseline High Priority Water Quality Problems

HA	Pollutant Categories						
	Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides	Sediment	Trash
Pueblo San Diego HU							
908.1	X	X	X	X	X		
908.2	X		X		X	X	X
908.3	X					X	X
Sweetwater HU							
909.1	X						
909.2					X		
909.3							
Otay HU							
910.1	X	X					
910.2	X						
910.3							

Unless there are significant long-term trends or other overwhelming evidence indicating a need for change in HPWQPs, they remain the same throughout the permit cycle. It should be noted that while data for pesticides in 909.2 indicate that pesticides (specifically Diazinon) may no longer be a HPWQP, during FY 2012 there were no changes to the HPWQPs in the WMA. The San Diego Bay Copermittees will review data and information to reassess and determine priorities in the development of a Water Quality Improvement Plan under the new MS4 Permit once it is adopted. At that time, the Copermittees will identify any modifications in priorities within the HAs.

2.2 WATER QUALITY ASSESSMENT

The San Diego Bay WMA consists of three major hydrologic units (HU) in the southern portion of San Diego County: Pueblo San Diego (908), Sweetwater (909), and Otay (910). Each HU varies in terms of size, population, and land use, and each has different water quality issues as a result. Each HU is analyzed independently to provide a more accurate water quality assessment. The following information is presented below for each HU:

- Relative HU characteristics
- Monitoring activities conducted during FY 2012
- Water Quality Assessment

As stated earlier, new data collected and analytical results summarized in this section and in the Regional Monitoring Report (Weston, January 2013) will be taken into consideration as watershed activities are developed, but do not affect the HPWQPs identified in the 2008 San Diego Bay WURMP.

The 2010 SWRCB Section 303(d) list was adopted by the SWRCB on August 4, 2010, and was finalized by the United States Environmental Protection Agency (USEPA) on October 11, 2011. Waterbodies which appear on the 2010 303(d) list are presented within their respective HUs in the sections below. Within each HU, HPWQPs and potential sources of pollutants are presented by HA. Most monitoring programs evaluated in the assessment are conducted jointly by the San Diego County Copermittees in accordance with the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Municipal Permit (Regional Monitoring Program). **Figure 2-1** provides the monitoring locations for the San Diego Bay WMA. The Regional Monitoring Program has a rotational approach for conducting monitoring, and in FY 2012 the southern portion of the County, including the San Diego Bay WMA, was monitored during the 2011-2012 monitoring season (monitoring is conducted year round; wet weather monitoring was conducted from September 15, 2011 to April 30, 2012). Chollas Creek is monitored on an annual basis regardless of the rotation schedule to meet the requirements of the Chollas Creek Diazinon TMDL. Additional water quality monitoring and source identification studies conducted by San Diego Bay WMA Copermittees are also presented in this section. Activity summary sheets describing additional monitoring programs noted in the HU discussions can be found in **Appendix C** of this WURMP Annual Report.

Figure 2-1: Location of MLS, TWAS, and HAs – San Diego Bay WMA

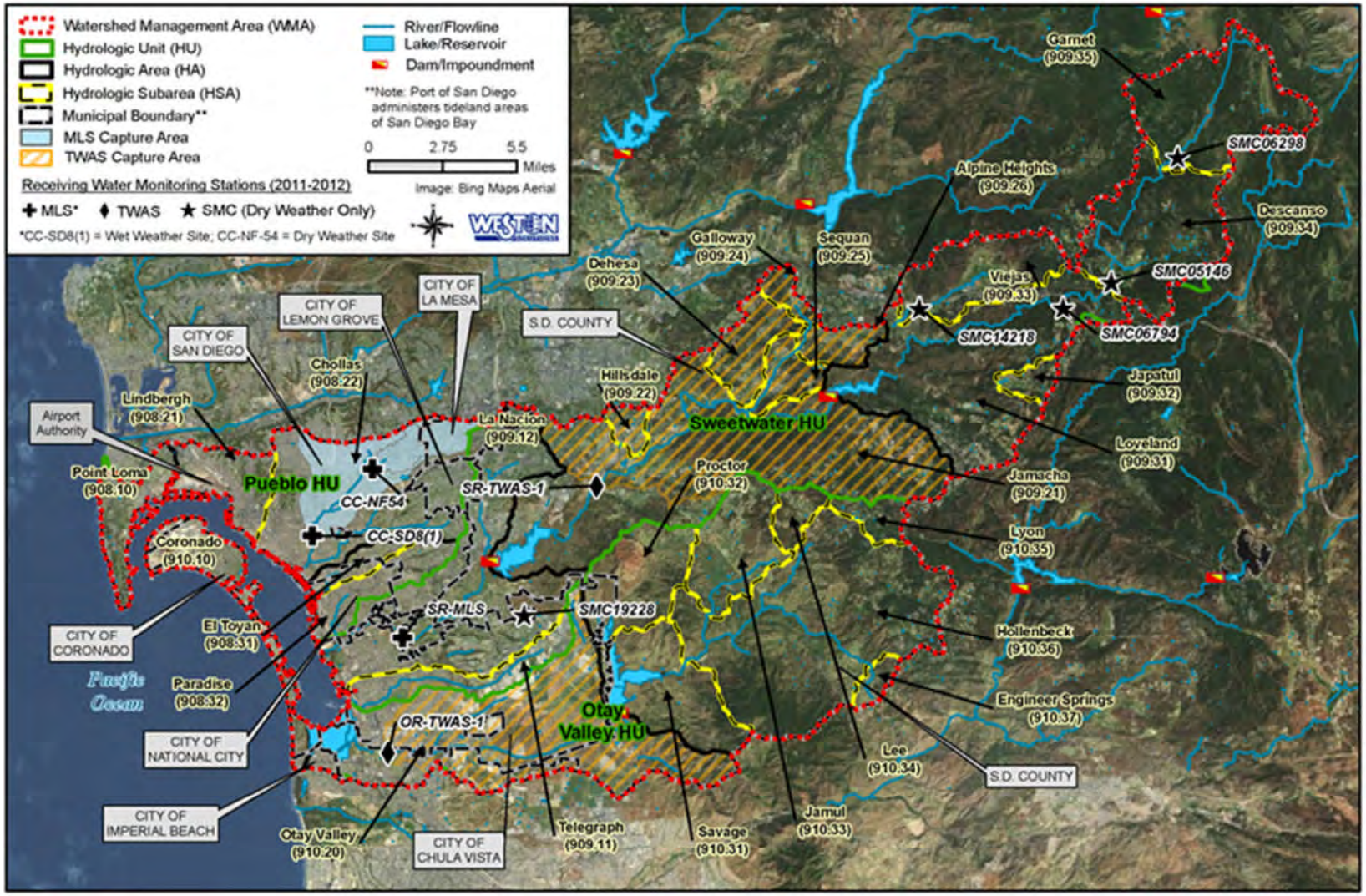

2.2.1 PUEBLO HYDROLOGIC UNIT ASSESSMENT

This section provides an assessment of the water quality information for the Pueblo Hydrologic Unit and is presented by HA.

2.2.1.1 Pueblo Hydrologic Unit Characteristics

The Pueblo San Diego HU (908) is the smallest of the three San Diego Bay HUs, and is comprised of the Point Loma (908.1), San Diego Mesa (908.2), and National City (908.3) HAs. Chollas Creek, Switzer Creek, Paleta Creek, and the San Diego Bay are the major waterbodies found within the Pueblo San Diego HU.

Table 2-2 presents the 2010 SWRCB Section 303(d) impaired waterbodies list for the Pueblo San Diego HU and their current TMDL status.

Table 2-2: Pueblo HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
Pacific Ocean Shoreline, Bermuda Ave	908.10	Total coliform	Expected completion 2019
San Diego Bay Shoreline, Shelter Island Shoreline Park	908.10	Enterococcus, total coliform, fecal coliform	Approved 2009
San Diego Bay Shoreline, America's Cup Harbor	908.10	Copper	Expected completion 2019
San Diego Bay Shoreline, Harbor Island West Basin	908.10	Copper	Expected completion 2019
San Diego Bay Shoreline, near sub base	908.10	Sediment toxicity	Expected completion 2019
		Benthic effects and toxicity	Not applicable*
San Diego Bay, Shelter Island Yacht Basin	908.10	Dissolved copper	Approved 2005
San Diego Bay Shoreline, G Street Pier	908.21	Total coliform	Expected completion 2019
San Diego Bay Shoreline, Harbor Island East Basin	908.21	Copper	Expected completion 2019
San Diego Bay Shoreline, Switzer Creek	908.21	Chlordane and PAHs	Expected completion 2019
San Diego Bay Shoreline, B Street and Broadway Piers	908.21	Total coliform, benthic community effects, sediment toxicity	Expected completion 2019
San Diego Bay Shoreline, Downtown Anchorage	908.21	Benthic community effects and sediment toxicity	Expected completion 2019
San Diego Bay Shoreline, at Marriott Marina	908.21	Copper	Expected completion 2019
San Diego Bay Shoreline, Spanish Landing	908.21	Total coliform	Expected completion 2021
Chollas Creek	908.22	Copper, lead, zinc	Approved 10/2008
		Diazinon	Approved 9/2003
		Indicator bacteria	Approved 4/2011
		Phosphorus and nitrogen	Expected completion 2019
		Trash	Expected completion 2021
San Diego Bay Shoreline, near Chollas Creek	908.22	Benthic community effects and sediment toxicity	Expected completion 2010[1]
San Diego Bay Shoreline, 32nd Street Naval Station	908.22	Benthic community effects and sediment toxicity	Expected completion 2019

Table 2-2: Pueblo HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
San Diego Bay Shoreline, between Sampson Street and 28th Street	908.22	Mercury, PAHs, PCBs, and zinc	Expected completion 2013
		Copper	Expected completion 2015
San Diego Bay Shoreline, Near Coronado Bridge	908.22	Benthic community effects and sediment toxicity	Expected completion 2019
Switzer Creek	908.22	Copper, lead, zinc	Expected completion 2021[1]
Paleta Creek	908.31	Copper and lead	Expected completion 2021[1]
San Diego Bay Shoreline, Seventh Street Channel	908.31	Benthic community effects and sediment toxicity	Expected completion 2008[1]
San Diego Bay Shoreline, north of 24th Street Marine Terminal	908.32	Benthic community effects and sediment toxicity	Expected completion 2019
Paradise Creek	908.32	Selenium	Expected completion 2021

Source: SWRCB, 2010.
HU – Hydrologic Unit
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TMDL - total maximum daily load
*The TMDL cannot be completed for benthic community effects alone. Source: SWRCB, 2010.
[1]Due date published on 2010 303(d) list; TMDLs are in development.

2.2.1.2 Pueblo Hydrologic Unit Monitoring Activities

Table 2-3 provides a summary of monitoring activities conducted in the Pueblo HU during FY 2012.

Table 2-3: FY 2012 Monitoring Activities in Pueblo HU

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**9**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	1-MLS
SMC Regional Monitoring	Water chemistry, toxicity, bacteria, rapid stream bioassessment	0
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	1-MLS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	1-MLS
Third-Party Data (Coastkeeper and Chollas TMDL)	General chemistry and bacteria	2 -Coastkeeper
Chollas Creek TMDL Compliance Monitoring (SDB-018)	Metals, pesticides, bacteria	2-MLS
Chollas Creek TMDL Special Studies (Appendix H)	Metals, pesticides, bacteria	4
Urban Runoff Monitoring		**328**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	116
Jurisdictional Dry Weather Monitoring - Trash	Trash	193
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	0
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	2
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, pesticides, and bacteria	7
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	0
CSDM Program	Coastal outfall and receiving waters	9
Shelter Island Yacht Basin Urban Runoff Monitoring Study (SDB-053)	Metals	1

CSDM - Coastal Storm Drain Monitoring
MLS - mass loading station
MS4 - municipal separate storm sewer systems
HU – Hydrologic Unit
SMC - Stormwater Monitoring Coalition
TOC - total organic carbon
TMDL – Total Maximum Daily Load

2.2.1.3 Pueblo Hydrologic Unit Integrated Assessment

Tables 2-4 and **2-5** present integrated assessments of the ambient and wet weather conditions monitoring results for the areas tributary to each mass loading station. The comparison of receiving water and urban runoff results helps to understand the potential influence of urban runoff to water quality problems within receiving waters. Priority constituents which overlap between receiving waters and urban runoff are identified. It is important to note that the MLS and TWAS data was collected within the Chollas Creek HSA (908.22), and is therefore not representative of the entire HU.

Table 2-4 FY 2012 Summary of Drainage Area Assessment Findings in Pueblo HU (Chollas Creek)

CC-SD8(1) MLS Chollas Creek just east of I-15 and Steel ST, and Chollas Pkwy N.		
System Assessed	**FY 2012 Dry Weather Priority Constituents[1]**	**FY 2012 Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	Not Applicable – no measurable flow for sample	NPDES Program • Chemistry – COD, TSS, Turbidity, Bifenthrin, Permethrin • BOD (Med), Dissolved Copper (Med) • Toxicity – *H. azteca* acute (Med) • Biology – Very Poor IBI[2] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Not Applicable Synthetic Pyrethroids in Sediment* • No priority constituents identified
Urban Runoff Monitoring	Not Applicable – no measurable flow for sample	MS4 Program • No samples collected upstream of CC-SD8(1) MLS

Trends[5]	
Increasing [3,4]	Fecal Coliform, Total Coliform, Nitrite as N, Total Kjeldahl Nitrogen, Turbidity, Total Copper, Total Zinc
Decreasing [4]	*H. azteca* acute toxicity

Note: All results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.

[2] One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.

[3] Nitrite as N concentrations have consistently been below the water quality benchmark (WQB) for this site.

[4] Fecal coliform, turbidity, and *H. azteca* have consistently not met the WQB at this site.

*One sample used in analysis.

BOD – biochemical demand
COD – chemical oxygen demand
Med - medium-priority constituent
TDS - total dissolved solids
NPDES - National Pollutant Discharge Elimination System
MLS - mass loading station
MS4 - municipal separate storm sewer system
TSS - total suspended solids
WQB – Water Quality Benchmark
IBI – Index of Biotic Integrity

Table 2-5: FY 2012 Summary of Drainage Area Assessment Findings in Pueblo HU (Chollas Creek)

CC-NF54 MLS Chollas Creek southwest of 54th St and Chollas Pkwy		
System Assessed	**FY 2012 Dry Weather Priority Constituents[1]**	**FY 2012 Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med) • Biology – Very Poor IBI* • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen (Med), Total Phosphorous (Med) • TDS – Not applicable due to no defined standard SMC Program • No samples collected upstream of CC-NF54 MLS Third-Party Data • No samples collected upstream of CC-NF54 MLS	Not Applicable – Due to no measurable dry weather flows at site CC-SD8 (1) this site was selected as a replacement site. Only dry weather monitoring was conducted.
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – *Enterococcus* • Nutrients – No data • TDS – No data	Not Applicable - – Due to no measurable dry weather flows at site CC-SD8 (1) this site was selected as a replacement site. Only dry weather monitoring was conducted.
Trends		
Not Applicable at this time		

Note: All results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.
[2] One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.

Med - medium-priority constituent
IBI - Index of Biotic Integrity
TDS - total dissolved solids
NPDES - National Pollutant Discharge Elimination System
LTEA – Long Term Effectiveness Assessment
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
WMA – Watershed Management Area
HU – Hydrologic Unit

The assessment of data collected in FY 2012 presented above supports the existing HPWQPs within the Pueblo HU. Other identified constituents may be further analyzed and addressed in future years.

2.2.1.4 TMDLs in Pueblo HU

Chollas Creek Dissolved Metals and Diazinon TMDLs Compliance Monitoring:
In accordance with the TMDL (State Board Resolution No. 2008-0054 and Investigation Order No. R9-2004-0277), wet weather water quality monitoring was conducted at the mass loading stations (MLSs) SD8(1) in the north fork of Chollas Creek and at DPR3 in the south fork of Chollas Creek during three wet weather events. Compliance with the TMDLs was determined by wet weather water quality monitoring at these two locations. Samples were analyzed for the

compliance constituents dissolved metals, toxicity, and Diazinon along with additional constituents selected by the Dischargers. Additional constituents include general chemistry, total metals, indicator bacteria, chlorinated pesticides, organophosphorus pesticides, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), chloride, and sulfate. The data collected for the 2011-2012 compliance monitoring season as presented in the *Final Chollas Creek Total Maximum Daily Load 2011-2012 Water Quality Compliance Monitoring Report* (Compliance Monitoring Report) **Appendix F** is summarized below.

- The dissolved copper, lead, and zinc analytical results were compared to the hardness-dependent California Toxics Rule (CTR) based numeric targets set forth in the Chollas Creek Dissolved Metals TMDL. Dissolved copper concentrations at DPR3 were above chronic Water Quality Objectives (WQOs) for the three monitored wet weather events and above acute criteria during Wet Weather Event 2. Results for dissolved lead and zinc were below acute and chronic WQOs. Dissolved copper concentrations at SD8(1) were above chronic WQOs for Wet Weather Event 1 and above acute and chronic WQOs for Wet Weather Event 2. Dissolved copper concentrations at SD8(1) were below acute and chronic WQOs during Wet Weather Event 3.
- For comparison purposes only, site specific objective (SSO) water effect ratios (WERs) for Chollas Creek were used to calculate separate metals criteria. The dissolved metals WQOs for both sites were higher than the WQOs developed using the default WER of 1. When compared to WQOs developed using site specific WERs, all dissolved copper concentrations were below acute and chronic WQOs.
- Diazinon was not detected in any of the samples collected from DPR3 and SD8(1) during the three monitored wet weather events.
- Malathion and methyl parathion were the only organophosphorus pesticides detected above the reporting limit (RL). Malathion concentrations during Wet Weather Event 3 at SD8(1) exceeded the CDFG acute criteria of 0.43 micrograms per liter (µg/L).
- Enterococcus, fecal coliform and total coliform counts from grab samples collected at DPR3 and SD8(1) were above indicator bacteria criteria.
- Low concentrations of PAHs were detected in the composite samples collected from both SD8(1) and DPR3. The majority of the results for all three wet weather monitored events were below RLs.
- PCB concentrations were not detected above the RL at both MLSs for all monitored wet weather events.
- Chlorinated pesticide concentrations were not detected with the exception of DDT(p,p') at SD8(1) for Wet Weather Event 1. The pesticide DDT was banned by the USEPA in 1972 due to adverse environmental and human health effects. DDT is known to be persistent in the environment and can take many years to break-down (USEPA, 2012a). Without a source identification study, potential sources could include legacy storage from a Chollas Creek watershed resident or sources outside the United States.
- No acute or chronic toxicity was observed in any of the DPR3 or SD8(1) wet weather water quality samples collected in the 2011-2012 wet weather season.

Based on the TMDL compliance monitoring results from the 2011–2012 monitoring season, the following program modifications are recommended in the Compliance Monitoring Report (**Appendix F**):

- Continue to evaluate compliance with the Diazinon and Dissolved Metals TMDLs and assess long term trends in monitoring data.
- Continue to incorporate an alternative assessment of compliance with the TMDL waste load allocations (WLAs) using the site specific objective (SSO) water-effect ratios (WERs) identified in the Chollas Creek Copper, Lead and Zinc Water Effect Ratio Study (Weston 2011).
- Use the data gathered as part of this monitoring program to enhance monitoring for the Bacteria TMDL.
- Include additional constituents as part of the compliance monitoring program as deemed appropriate by the Dischargers.

Dissolved copper trends throughout the compliance monitoring seasons have generally exceeded both acute and chronic WQOs using the default Water Effects Ratio (WER) of 1. However, based on Site Specific Objectives WERs dissolved copper concentrations did not exceed the acute and chronic dissolved copper WQOs. It should be noted that the WER, because it incorporates site-specific data, improves the Dissolved Metals TMDL by providing a more accurate calculation of the levels of dissolved metals that Chollas Creek is able to assimilate before beneficial uses would be impaired. The City of San Diego submitted the WER to the Regional Board in June 2011 and November 2011, but to date the WER has not been reviewed by the Regional Board. The Chollas Creek Dischargers plan to meet with the Regional Board to discuss the WER during the upcoming fiscal year, as they believe the WER is a valuable tool in calculating compliance. However, at this time, the Chollas Creek Dischargers are compliant with the Dissolved Metals TMDL's WLA requirements. These WLAs will also be met using the Site Specific Objectives as identified in the WER Study, which is pending Regional Board review and approval.

Shelter Island Yacht Basin Dissolved Copper TMDL:

The Port of San Diego and the City of San Diego conducted compliance water quality monitoring during this reporting period. The Port of San Diego conducted water quality sampling to determine dissolved copper concentrations within the basin, test for acute and chronic toxicity, and assess water quality trends over time within SIYB. Monitoring was completed at six stations within SIYB and one reference station in the main channel of San Diego Bay adjacent to SIYB. The SIYB Dissolved Copper Total Maximum Daily Load 2012 Monitoring and Progress Final Report (**Appendix G**) provides further detail on the compliance monitoring results. Key findings include:

- Dissolved copper concentrations at all stations exceeded the numeric water quality objective (WQO) of 3.1 µg/L; however, there was very little evidence of toxicity (i.e., only one station exhibited during the October 2011 survey showed evidence of chronic toxicity to mussel larvae);
- While not shown to be statistically significant, monitoring showed that there has been an approximately 15% reduction in the average dissolved copper concentration measured in 2011 surveys (7.01 µg/L) from the baseline average dissolved copper concentration (8.28 µg/L) as described in the SIYB TMDL Monitoring Plan.

The City of San Diego collected water quality and hydrologic data to verify that the copper loading from its MS4 is within the TMDL waste load allocation. The City's Final Shelter Island

Dissolved Copper Total Maximum Daily Load 2011-2012 Compliance Monitoring Report (SIYB Compliance Monitoring Report) (**Appendix G**) summarizes the water quality and hydrologic data collected from wet weather and dry weather monitoring during the 2011-2012 season (6/1/2011-5/3/2012) and presents data analysis methodologies and results. The report also summarizes comparisons between the result from the 2011-2012 season and results from the previous seasons. A brief summary of the City of San Diego's MS4 monitoring is presented below:

- The average dissolved copper event mean concentration (EMC) for wet weather for Outfall 2 is 17.08 micrograms per liter (µg/L), which is lower than those from the 2008-2009 season and 2010-2011 season, but slightly higher than that from the 2009-2010 season.
- The average dissolved copper EMC for dry weather for Outfall 2 is 3.64 µg/L, which is lower than those from the 2009-2010 season and 2010-2011 season. It appears there is a downward trend based on the data sets collected from the past three seasons
- The total annual dissolved copper load from the City's MS4 (consisting primarily of three outfalls) into the SIYB is 2.058 kilograms (kg), which is well below the WLA of 30 kg/yr as identified in the TMDL. This result is comparable to the reported results for the 2008-2009 season and 2009-2010 season; however, is much lower than the reported result for the 2010-2011 season.
- Of the total annual dissolved copper load from the MS4, wet weather runoff contributes approximately 89% while dry weather runoff contributes only 11%.
- Of the total annual dissolved copper load from the MS4, runoff from Outfall 2 contributes approximately 75%, Outfall 3 contributes approximately 20%, and Outfall 1 only contributes 5%.

2.2.2 SWEETWATER HYDROLOGIC UNIT ASSESSMENT

This section provides an assessment of the water quality information for the Sweetwater Hydrologic Unit and is presented by HA.

2.2.2.1 Sweetwater Hydrologic Unit Characteristics

The Sweetwater HU (909) is the largest of the three HUs within the San Diego Bay WMA. This HU is comprised of the Lower Sweetwater (909.1), Middle Sweetwater (909.2), and Upper Sweetwater (909.3) HAs. The Sweetwater River, Sweetwater Reservoir, Loveland Reservoir, and San Diego Bay are the major waterbodies found within Sweetwater HU.

Table 2-6 presents the 2010 SWRCB Section 303(d) impaired waterbodies list for the Sweetwater HU and their current TMDL status.

Table 2-6: Sweetwater HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
San Diego Bay Shoreline, at Bayside Park (J Street)	909.11	Total coliform	Expected completion 2019
		Enterococcus	Expected completion 2021
Telegraph Canyon Creek	909.11	Selenium	Expected completion 2021
San Diego Bay Shoreline, Chula Vista Marina	909.12	Copper	Expected completion 2019

Table 2-6: Sweetwater HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
Lower Sweetwater River, below Sweetwater Reservoir	909.12	Enterococcus, fecal coliform, phosphorus, selenium, TDS, nitrogen, toxicity	Expected completion 2021
Sweetwater Reservoir	909.21	DO	Expected completion 2019
Loveland Reservoir	909.31	Aluminum, manganese, DO, pH	Expected completion 2019

Source: SWRCB, 2010.
TMDL - total maximum daily load.
HU – Hydrologic Unit
HSA – hydrologic subarea
TDS – total dissolved solids
DO – dissolved oxygen

2.2.2.2 Sweetwater Hydrologic Unit Monitoring Activities

Table 2-7 provides a summary of monitoring activities conducted in the Sweetwater HU during FY 2012.

Table 2-7: FY 2012 Monitoring Activities in Sweetwater HU

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**14**
Ambient Monitoring	Water chemistry, toxicity, bacteria, rapid stream bioassessment, and trash	1-MLS, 1-TWAS
SMC Regional Monitoring Participation	Benthic macroinvertebrates, periphyton, and physical habitat	5-SMC*
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	1-MLS, 1-TWAS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	1-MLS, 1-TWAS
Third-Party Data (Coastkeeper)	General chemistry and bacteria	3-Coastkeeper
Urban Runoff Monitoring		**167**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	68
Jurisdictional Dry Weather Monitoring – Trash Assessment	Trash	76
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	5
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	2
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, pesticides, and bacteria	15
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
CSDM Program	Coastal outfall and receiving waters	1

SMC - Stormwater Monitoring Coalition
TOC - total organic carbon
MS4 - municipal separate storm sewer systems
MLS – Mass Loading Station
TWAS – Temporary Watershed Assessment Station
CSDM - Coastal Storm Drain Monitoring
* The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over 5 years (http://socalsmc.org/ProjectThree.aspx).

2.2.2.3 Sweetwater Hydrologic Unit Integrated Assessments

Tables 2-8 and **2-9** present integrated assessments of the ambient and wet weather conditions monitoring results for the areas tributary to each mass loading station. The integrated assessments also identify which priority constituents overlap between receiving waters and

urban runoff. The comparison of receiving water and urban runoff results helps to understand the potential influence of urban runoff to water quality problems within receiving waters. Priority constituents which overlap between receiving waters and urban runoff are identified.

Table 2-8: FY 2012 Summary of Drainage Area Assessment Findings in Sweetwater River MLS

Sweetwater River MLS Sweetwater River at Plaza Bonita Rd and Sweetwater County Park		
System Assessed	**FY 2012 Dry Weather Priority Constituents[1]**	**FY 2012 Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction, *S.* capricormutum growth • Biology – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Total Phosphorous, Dissolved Phosphorous (Med) • TDS - TDS SMC Program (one sample, SMC19228)* • Chemistry – Chloride • Toxicity – *C.dubia* acute survival, *C. dubia* chronic survival, *C. dubia* reproduction (Med) • Biology – Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorus • TDS – TDS Third-Party Data – (Coastkeeper)[3] The following constituents did not meet Basin Plan benchmarks: • Chemistry – Dissolved Oxygen • Bacteria – *Enterococcus*	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *S. capricornutum* growth *C. dubia* reproduction (Med) • Biology – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – TDS Synthetic Pyrethroids in Sediment* • No priority constituents identified
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen, Total Phosphorus • TDS – TDS	MS4 Program • No samples collected upstream of SR-MLS

Trends	
Increasing	-
Decreasing	Total Lead

Note: All results included in this table reflect data collected above the receiving water station and below the Sweetwater Reservoir.

Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.

[2] One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.

[3] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples. Constituent list for third-party data is provided in Appendix M of the FY 2012 Regional Annual Monitoring Report. Indicator bacteria analyzed include *E. coli*, *Enterococcus*, total coliform.

*One sample used in analysis

Med - medium-priority constituent
IBI - Index of Biotic Integrity
TDS - total dissolved solids
NPDES - National Pollutant Discharge Elimination System
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
DO - dissolved oxygen

Table 2-9 FY 2012 Summary of Drainage Area Assessment Findings in Sweetwater River TWAS-1

Sweetwater River TWAS-1 Sweetwater River at Campo Rd (CA-94), west of Steel Canyon County Park		
System Assessed	**FY 2012 Dry Weather Priority Constituents[1]**	**FY 2012 Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *S. capricornutum* growth • Biology – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Total Phosphorus • TDS – TDS SMC Program • No samples collected upstream of SR-TWAS-1 Third-Party Data – (Coastkeeper) • No priority constituents identified	NPDES Program • Chemistry – TSS (Med), Turbidity (Med) • Toxicity – No toxicity observed • Biology – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – TDS (Med) Synthetic Pyrethroids in Sediment* • No priority constituents identified
Urban Runoff Monitoring	MS4 Program • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform (Med), *Enterococcus* (Med) • Nutrients – Total Nitrogen, Dissolved Phosphorus*, Total Phosphorus (Med) • TDS – TDS	MS4 Program • No samples collected upstream of • SR-TWAS-1

Note: All results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.

[2] One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.

*One sample used in analysis.

Med - medium-priority constituent
TDS - total dissolved solids
NPDES - National Pollutant Discharge Elimination System
LTEA – Long Term Effectiveness Assessment
TWAS - temporary watershed assessment station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
IBI – Index of Biotic Integrity

Past monitoring data along with the Long-Term Effectiveness Assessment (MOE, LWA, Weston, June 2011) support the existing HPWQPs within the Sweetwater HU. Other identified constituents may be further analyzed and addressed in future years.

2.2.3 OTAY HYDROLOGIC UNIT ASSESSMENT

The Otay HU (910) is comprised of the Coronado (910.1), Otay Valley (910.2), and (910.3) Dulzura HAs. Upper and Lower Otay Reservoirs, Otay River, and San Diego Bay are the major waterbodies found within the Otay HU, whereas the principal aquifer in the watershed is the San Diego Formation.

Table 2-10 presents the 2010 SWRCB Section 303(d) impaired waterbodies list for the Otay HU and their current TMDL status.

Table 2-10: Otay HU 2010 303(d) Impaired Waterbodies List and TMDL Status

Water Body	HSA	Pollutant/Stressor	TMDL Status
Pacific Ocean Shoreline, Silver Strand	910.10	Enterococcus	Expected completion 2019
Pacific Ocean Shoreline, Imperial Beach Pier	910.10	Total coliform, fecal coliform, PCBs	Expected completion 2019
Pacific Ocean Shoreline, Carnation Ave and Camp Surf Jetty	910.10	Total coliform	Expected completion 2019
San Diego Bay	910.10	PCBs	Expected completion 2019
San Diego Bay Shoreline, Tidelands Park	910.10	Total coliform	Expected completion 2019
		Enterococcus	Expected completion 2021
San Diego Bay Shoreline, at Coronado Cays	910.10	Copper	Expected completion 2019
San Diego Bay Shoreline, at Glorietta Bay	910.10	Copper	Expected completion 2019
Poggi Canyon Creek	910.20	Toxicity	Expected completion 2021
Lower Otay Reservoir	910.31	Ammonia, color, iron, manganese, pH (high)	Expected completion 2019
		Nitrogen	Expected completion 2021
Jamul Creek	910.33	Toxicity	Expected completion 2019

Source: SWRCB, 2010.
HSA – hydrologic subarea
PCB - polychlorinated biphenyl
TMDL - total maximum daily load

2.2.3.1 Otay Hydrologic Unit Monitoring Activities

Table 2-11 provides a summary of monitoring activities conducted in the Otay HU during FY 2012.

Table 2-11: FY 2012 Monitoring Activities in Otay HU

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**5**
Ambient Monitoring	Water chemistry, toxicity, bacteria, trash	1-TWAS
SMC Regional Monitoring	Water chemistry, toxicity, bacteria, rapid stream bioassessment	0
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, trash	1-TWAS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	1-TWAS
Third-Party Data (Coastkeeper)	General chemistry and bacteria	2-Coastkeeper
Urban Runoff Monitoring		**137**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	47
Jurisdictional Dry Weather Monitoring – Trash Assessment	Trash	79
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	1
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	2
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, pesticides, and bacteria	7
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
CSDM Program	Coastal outfall and receiving waters	1

SMC - Stormwater Monitoring Coalition
TOC - total organic carbon
TWAS – Temporary Watershed Assessment Station
MS4 - municipal separate storm sewer systems
CSDM - Coastal Storm Drain Monitoring

2.2.3.2 Otay Hydrologic Unit Integrated Assessments

Table 2-12 presents an integrated assessment of the ambient and wet weather conditions monitoring results for the areas tributary to each mass loading station. The integrated assessments also identify which priority constituents overlap between receiving waters and urban runoff.

Table 2-12: FY 2012 Summary of Drainage Area Assessment Findings in Otay River TWAS-1

Otay River TWAS-1 Otay River at Beyer Blvd, less than one mile east of I-5		
System Assessed	**FY 2012 Dry Weather Priority Constituents[1]**	**FY 2012 Wet Weather Priority Constituents[1]**
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med) • Biology – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Dissolved Phosphorous, Total Phosphorous, Total Nitrogen (Med) • TDS – TDS SMC Program • No samples collected upstream of OR-TWAS-1 Third-Party Data – (Coastkeeper)[3] The following constituents did not meet Basin Plan benchmarks: • Bacteria – *Enterococcus*, *E-coli*	NPDES Program • Chemistry – MBAS (Med), Turbidity (Med), Malathion (Med), Bifenthrin (Med), Permethrin (Med) • Toxicity – *C dubia* acute survival (Med), *C. dubia* chronic survival (Med), *C. dubia* reproduction (Med), *H. azteca* acute (Med), *S. capricornutum* growth (Med) • Biology – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – TDS (Med) Synthetic Pyrethroids in Sediment* Bifenthrin
Urban Runoff Monitoring	MS4 Program • Chemistry – TSS* • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen* • TDS – No priority constituents identified	MS4 Program • Chemistry – No priority constituents identified • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – No priority constituents identified

Note: All results included in this table reflect data collected above the receiving water station and below Upper and Lower Otay Reservoirs.

Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity "no observed toxicity" was stated.

[2] One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.

[3] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples. Constituent list for third-party data is provided in Appendix M of the FY 2012 Regional Annual Monitoring Report. Indicator bacteria analyzed include *E. coli*, *Enterococcus*, total coliform.

*One sample used in analysis.

Med - medium-priority constituent
TDS - total dissolved solids
NPDES - National Pollutant Discharge Elimination System
TSS – Total Suspended Solids
TWAS - temporary watershed assessment station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
IBI – Index of Biotic Integrity

Monitoring data along with the 2011 LTEA support the existing HPWQPs within the Otay HU. Other identified constituents may be further analyzed and addressed in future years.

2.2.4 SAN DIEGO BAY SPECIAL STUDIES

Copermittees conducted monitoring as part of special studies in the San Diego Bay WMA in order to address specific questions. The following sections provide information on monitoring conducted during the reporting period.

Chollas Creek TMDL Special Study

As presented in the *Final Chollas Creek Total Maximum Daily Load 2011-2012 Special Studies Report* (Special Studies Report), (**Appendix H**), monitoring was conducted in the upper Chollas Creek Watershed during the 2011-2012 wet weather monitoring season. It should be noted that this study goes above and beyond the TMDL compliance monitoring required by the RWQCB. The monitoring was conducted at the jurisdictional boundary of the City of San Diego and City of La Mesa (LM-1) as well as the jurisdictional boundary of the City of San Diego and the City of Lemon Grove (LG-1). This study was performed as part of the Dissolved Metals and Diazinon TMDL Implementation Plan. The special study was collaboratively designed by the Dischargers involved to fill data gaps regarding priority water problems and potential pollutant sources in the Chollas Creek Watershed.

Samples were analyzed for general chemistry, bacteria, total and dissolved metals, chlorinated pesticides (chlordane) organophosphorus pesticides (Diazinon), polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and toxicity during two wet weather events. Analytical results were compared to applicable water quality criteria set forth in the approved TMDLs for the Chollas Creek Watershed and California Department of Fish and Game (CDFG) pesticide criteria.

The results from the Special Studies Report are presented below.

- Dissolved metal concentrations were compared to the acute and chronic water quality objectives (WQOs) set forth in the Chollas Creek Dissolved Metals TMDL. At LG-1 dissolved copper, lead, and zinc concentrations were below acute and chronic WQOs during both wet weather events. At LM-1 dissolved copper concentrations were above acute and chronic WQOs during both wet weather events. Dissolved lead and zinc concentrations at LM-1 were below acute and chronic WQOs.
- For comparison purposes only, site specific objective (SSO) water effect ratios (WERs) for Chollas Creek were used to calculate separate metals criteria. The dissolved metals WQOs for both sites were higher than the WQOs developed using the default WER of 1. When compared to WQOs developed using site specific WERs, all dissolved copper concentrations were below acute and chronic WQOs.
- Diazinon was not detected in samples collected from LG-1 and LM-1.
- Malathion was the only organophosphorus pesticide detected above the reporting limit (RL). During Wet Weather Event 2 Malathion concentrations at LM-1 exceeded the CDFG acute criteria.
- Chlorinated pesticides at LG-1 were not detected above the RL during both wet weather events. DDT(p,p') and alpha-chlordane were detected at LM-1 during Wet Weather Event 1 only at 7 ng/L and 5.6 ng/L, respectively.

- All bacteria grab samples collected exceeded Enterococcus, fecal coliform and total coliform WQOs.
- PAHs were measured below the RL for LG-1 and LM-1. The majority of the results were not detected.
- PCB concentrations at LG-1 and LM-1 for both monitored wet weather events were not measured above the RL.
- There was no acute or chronic toxicity observed in either of the two samples collected from the LG-1 site during the 2011-2012 wet weather monitoring season. There was also no toxicity in the LM-1 site collected during Wet Weather Event 1. However, toxicity was observed in both the acute and chronic test for the LM-1 site from Wet Weather Event 2. A toxicity identification evaluation (TIE) was not performed; therefore, the causative agent could not be identified.

Additionally, the Special Studies Report provided the following recommendations based on the monitoring conducted:

- Continue to monitor jurisdictional boundary sites based on the objectives outlined in the Implementation Plan.
- Continue to incorporate an alternative assessment of compliance with the TMDL waste load allocations (WLAs) using the site specific objective (SSO) water-effect ratio (WERs) for dissolved copper, lead, and zinc.
- Use the data gathered as part of this monitoring program to help implement compliance monitoring for the Bacteria TMDL.
- Include additional constituents as part of the compliance monitoring program as the Dischargers see fit.

2.2.4.1 Regional Harbor Monitoring

The Regional Harbor Monitoring Program (RHMP) conducted two focused special studies during this reporting period. The first involved performing a confirmatory sediment and water toxicity identification evaluations (TIEs) at locations within SIYB and Dana Point Harbor which exhibited substantial chronic toxicity during the RHMP 2008 core monitoring program. The TIEs were proposed to determine the contributions of the major constituent classes to toxicity. The second focused special study was a sediment copper flux study. This study was initiated in 2011-2012. The sediment copper flux study is in progress and the conclusions will be reported during the 2012-2013 reporting period. A description of each special study is presented below and on activity sheet SDB-025.

<u>Toxicity Identification Evaluation:</u>
During this reporting period, a special study was concluded to perform confirmatory sediment and water TIEs at locations which exhibited substantial chronic toxicity during the RHMP 2008 core monitoring program. The TIEs were proposed to determine the contributions of the major constituent classes to toxicity.

The special study began in the previous, 2010-2011 WURMP reporting period. Sediment and receiving water samples were collected from six stations representing marina, industrial, and deep water strata. These strata exhibited toxicity during the 2008 RHMP core monitoring program. Five stations were located in San Diego Bay and one station within Dana Point Harbor.

The findings of the study are currently being reviewed. The initial results include the following:

- TIEs could not be performed in any sample collected because the corresponding screening bioassays indicated that the toxicity measurements in the samples were below the threshold required to run the evaluation.
- In response to the toxicity findings, the objectives of the study were modified to assess the potential differences in chemical and physical conditions of receiving waters and sediment that could help to explain the decrease in toxic conditions from 2008 to 2011.
- Although there was a substantial decrease in toxicity, the concentrations of chemicals of concern in receiving waters and sediment were largely consistent between 2008 and 2011.
- Dissolved copper was the only chemical of concern in receiving waters to exceed regulatory thresholds. Within sediments, copper, arsenic, lead, mercury, zinc, PAHs and PCBs exceeded regulatory thresholds.

Sediment Copper Flux Study:
A sediment copper flux study was initiated in 2011-2012. Work is in progress and the conclusions will be reported during the 2012-2013 WURMP reporting period. This special study will involve laboratory and field studies to assess the potential for copper-laden sediments to serve as a net source or sink for copper into and from the water column depending on the concentration of the copper within the sediment, porewater, and overlying water. The results of this focused special study will be available during the next reporting period.

2.3 POLLUTANT SOURCE ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Diego Bay WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs and is presented by HA.

2.3.1 POLLUTANT SOURCE IDENTIFICATION

The San Diego Bay WURMP Document Section 3.3. discusses potential sources of the baseline HPWQPs that may impact water quality throughout the San Diego Bay WMA. Since the development of the WURMP document, the San Diego Bay Watershed Copermittees have conducted additional source identification programs to help refine that information. The San Diego Bay Watershed Copermittees participated in the Regional Source Identification Program noted below during the FY 2012 reporting period. The San Diego Bay Copermittees will continue compiling information from monitoring and source identification studies in order to effectively select and implement source appropriate activities to reduce pollutant discharges.

Regional Source Identification Program

The San Diego Municipal Copermittees developed a Bacteria Source Prioritization Process during the 2011-2012 Monitoring Season. The Copermittees held four workshops that focused on the completion of the following components:

- Develop a conceptual model for bacteria sources, fate, and transport
- Conduct a literature review and discussed methods and applications
- Develop a prioritization process and conducted test runs
- Review test results and made decisions on process and format

The Bacteria Source Prioritization Process document is present in the 2011-2012 Receiving Waters and Urban Runoff Monitoring Report's Appendix R. This report can be found at www.projectcleanwater.org.

2.3.2 POLLUTANT SOURCE ASSESSMENT BY HYDROLOGIC AREA

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Diego Bay WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by Hydrologic Area.

Table 2-13 summarizes the land use in each of the Hydrologic Areas. Runoff during wet weather mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to the pollutants found in dry weather urban runoff that are generally associated with identifiable dischargers such as residences, commercial facilities, etc. Urban runoff and illegal discharges to the MS4 associated with dry weather are usually the result of specific activities such as over-irrigation, surface washing, spills, etc.

Tables 2-14 through **2-22** represent the inventoried sources that the Copermittees currently track. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight). This HPWQP is then associated with the sources that are likely to generate those pollutants. The process used to develop the tables was taken directly from the 2005 BLTEA (Gross Pollutants) and 2011 LTEA (all other HPWQPs). The data used for the process includes the following:

1. Results in the FY 2012 Regional Annual Monitoring Report (Weston Solutions, 2013);
2. FY 2012 JURMP Annual Reports and current inventory information from all watershed Copermittees; and
3. Source Loading Potential (SLP) ratings from the 2005 BLTEA (Gross Pollutants) and 2011 LTEA (all other HPWQPs).

Table 2-13: Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)									Land Use Totals (acres)
	Pueblo			Sweetwater			Otay			
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	
Agricultural	-	14.8	-	68.6	584.7	2,163.2	-	429.8	759.2	**4,020.3**
Automotive and Transportation	36.4	1140.5	134.8	166.2	11.5	10.6	6.8	166.1	55.9	**1,728.8**
Beach, Bay and Lagoon	7.3	34.2	17.9	66.2	-	-	363.5	11.6	-	**500.7**
Commercial	240.1	1647.9	244.3	1,024.1	227.4	129.7	125.7	750.5	83.5	**4,473.2**
Health Services	16.4	131.6	27.7	62.4	11.4	10.1	16.4	71.5	-	**347.5**
Industrial	6	634.6	276.2	413.6	341.1	-	.1	1,778.6	56.9	**3,507**
Institutional	166.3	1,060.7	328.3	1,242.4	565.8	15.1	47.8	1,906.7	73.2	**5,406.3**
Junkyard, Dump, Landfill	-	14.3	-	-	77.3	-	-	785.3	-	**876.9**
Lake, Reservoir, Large Pond	3.4	14	-	54.6	946.7	427.9	8.3	-	1,040.5	**2,495.4**
Military	602.8	542.2	400.4	-	-	-	2,837.4	-	-	**4,382.8**
Mixed Use	-	4.6	1.7	.7	-	-	-	-	-	**7**
Mobile Home Park	-	121.2	4.6	228.5	139.5	99.8	2.1	383.2	-	**978.9**
Multi-Family Residential	84.8	1,644.2	305.9	1,033.2	277.9	117.1	121.3	765	14	**4,363.4**
Municipal	24.9	248.7	22.5	113.8	25.8	2.9	8.9	45.7	14.1	**507.3**
Open Space	207.2	1,534.7	207.3	4,842.3	14,233.6	19,533.2	77.6	9,903.3	37,127.3	**87,666.5**
Parks, Golf Courses, Cemeteries	122.3	1,038.2	138.9	1,101.6	923.6	1	367.1	655.3	12.9	**4,360.9**
Recreation	11.4	90	11.5	125.1	166	146.8	65.2	130.7	370.1	**1,116.8**
Residential	1	5.7	1.1	5.2	72	10.2	.6	45.9	27.2	**168.9**
Roads and Freeways	722.1	6,890	1,536	5,829.3	1,794.7	1,182.5	630.7	3,028	616.6	**22,229.9**
Single Family Residential	1,376	8,929.5	2,421	12,094.8	5,223.4	530.2	735.5	4,198.9	346.6	**35,855.9**
Spaced Rural Residential	-	14.9	7.9	453.3	10,202.2	7,361.4	-	26.6	7,094.3	**25,160.6**
Storage and Warehousing	-	75.4	113.8	99.3	31.5	-	.1	105.7	-	**425.8**
Utilities	50	168.5	16.9	431.9	121	6.5	14.8	338.9	32.1	**1,180.6**
Vacant and Undeveloped	709.3	618	156.2	1,092.2	17,510.8	30,997.8	111.8	4,043.3	15,532.7	**70,772.1**
TOTALS	**4,388**	**26,619**	**6,375**	**30,549**	**53,488**	**62,746**	**5,542**	**29,571**	**63,257**	**282,533.5**

Source: SANDAG 2009

Table 2-14: Pollutant Generating Sources – 908.1 Point Loma Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Agriculture	0	L	UL	UL	L	L	L	UK	L
Animal	13	N	L	UL	L	UK	L	UK	L
Automotive	61	L	L	L	UL	UL	UK	L	UL
Cemetery	0	N	N	UL	L	L	L	L	L
Contractor	97	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	174	N	L	L	UL	UK	UK	L	L
Equipment	20	L	L	L	UL	UL	UK	L	UL
Fueling	7	UK	L	L	UK	N	N	UK	N
General Industrial	18	L	L	L	UK	UK	UK	UK	UK
General Retail	38	UL	UL	UL	L	UL	UL	L	UL
Golf	1	N	N	UL	L	L	L	L	L
Health Services	1	N	L	UL	L	UK	L	UK	UL
Institutional	2	L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	4	L	UK	UK	UK	UK	UK	UK	UL
Metal	4	L	L	L	UK	UK	UK	UK	UL
Nursery	2	L	UL	UL	L	L	L	UK	L
Stone	1	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	61	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 15; Non-High: 0	L	L	L	L	UK	UK	UK	UL
Construction	High: 8; Medium: 5; Low: 207	UL	UL	UL	L	UL	UL	L	UL
Residential	1,462 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-15: Pollutant Generating Sources – 908.2 San Diego Mesa Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***								
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria	Trash
Agriculture	1			L	UL	UL	L	L	L	UK	L	L
Animal	82			N	L	UL	L	UK	L	UK	L	L
Automotive	876			L	L	L	UL	UL	UK	L	UL	L
Contractor	389			UL	UL	UL	L	UL	UL	L	UL	L
Food Establishment	2,316			N	L	L	UL	UK	UK	L	L	L
Equipment	91			L	L	L	UL	UL	UK	L	UL	L
General Industrial	95			L	L	L	UK	UK	UK	UK	UK	L
General Retail	260			UL	UL	UL	L	UL	UL	L	UL	L
Health Services	18			N	L	UL	L	UK	L	UK	UL	L
Institutional	68			L	UK	UK	UK	UK	UK	UK	UL	L
Manufacturing	57			L	UK	UK	UK	UK	UK	UK	UL	L
Metal	40			L	L	L	UK	UK	UK	UK	UL	L
Nursery	18			L	UL	UL	L	L	L	UK	L	L
Stone	9			L	UK	UK	UK	UK	UK	UK	UL	L
Storage & Warehousing	210			L	UK	UK	UK	UK	UK	UK	UL	L
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL	L
	259	39										
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL	L
	4	18	1,066									
Residential	10,716 acres			L	L	L	L	L	L	UK	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report.
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-16: Pollutant Generating Sources – 908.3 National City Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***								
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens	Trash
Agriculture	0	L	UL	UL	L	L	L	UK	L	L
Animal	3	N	L	UL	L	UK	L	UK	L	L
Automotive	234	L	L	L	UL	UL	UK	L	UL	L
Contractor	82	UL	UL	UL	L	UL	UL	L	UL	L
Food Establishment	233	N	L	L	UL	UK	UK	L	L	L
Equipment	45	L	L	L	UL	UL	UK	L	UL	L
General Industrial	36	L	L	L	UK	UK	UK	UK	UK	L
General Retail	30	UL	UL	UL	L	UL	UL	L	UL	L
Health Services	0	N	L	UL	L	UK	L	UK	UL	L
Manufacturing	10	L	UK	UK	UK	UK	UK	UK	UL	L
Metal	19	L	L	L	UK	UK	UK	UK	UL	L
Nursery	0	L	UL	UL	L	L	L	UK	L	L
Stone	17	L	UK	UK	UK	UK	UK	UK	UL	L
Storage & Warehousing	69	L	UK	UK	UK	UK	UK	UK	UL	L
Municipal	High: 23; Non-High: 10	L	L	L	L	UK	UK	UK	UL	L
Construction	High: 3; Medium: 11; Low: 230	UL	UL	UL	L	UL	UL	L	UL	L
Residential	2,741 acres	L	L	L	L	L	L	UK	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-17: Pollutant Generating Sources – 909.1 Lower Sweetwater Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential****							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	0	L	UL	UL	L	L	L	UK	L
Animal	28	N	L	UL	L	UK	L	UK	L
Automotive	452	L	L	L	UL	UL	UK	L	UL
Contractor	113	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	491	N	L	L	UL	UK	UK	L	L
Equipment	40	L	L	L	UL	UL	UK	L	UL
General Industrial	29	L	L	L	UK	UK	UK	UK	UK
General Retail	74	UL	UL	UL	L	UL	UL	L	UL
Manufacturing	3	L	UK	UK	UK	UK	UK	UK	UL
Metal	15	L	L	L	UK	UK	UK	UK	UL
Nursery	9	L	UL	UL	L	L	L	UK	L
Stone	12	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	46	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 69; Non-High: 27	L	L	L	L	UK	UK	UK	UL
Construction	High: 12; Medium: 26; Low: 264	UL	UL	UL	L	UL	UL	L	UL
Residential	13,815 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-18: Pollutant Generating Sources – 909.2 Middle Sweetwater Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Agriculture	0	L	UL	UL	L	L	L	UK	L
Animal	8	N	L	UL	L	UK	L	UK	L
Automotive	33	L	L	L	UL	UL	UK	L	UL
Contractor	1	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	76	N	L	L	UL	UK	UK	L	L
Equipment	1	L	L	L	UL	UL	UK	L	UL
General Industrial	0	L	L	L	UK	UK	UK	UK	UK
General Retail	5	UL	UL	UL	L	UL	UL	L	UL
Health Services	0	N	L	UL	L	UK	L	UK	UL
Institutional	0	L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	0	L	UK	UK	UK	UK	UK	UK	UL
Metal	0	L	L	L	UK	UK	UK	UK	UL
Nursery	6	L	UL	UL	L	L	L	UK	L
Stone	0	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	0	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 2; Non-High: 28	L	L	L	L	UK	UK	UK	UL
Construction	High: 23; Medium: 10; Low: 126	UL	UL	UL	L	UL	UL	L	UL
Residential	15,915 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-19: Pollutant Generating Sources – 909.3 Upper Sweetwater Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	6			N	L	UL	L	UK	L	UK	L
Automotive	0			L	L	L	UL	UL	UK	L	UL
Contractor	0			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	0			N	L	L	UL	UK	UK	L	L
Equipment	0			L	L	L	UL	UL	UK	L	UL
General Industrial	0			L	L	L	UK	UK	UK	UK	UK
General Retail	1			UL	UL	UL	L	UL	UL	L	UL
Manufacturing	0			L	UK	UK	UK	UK	UK	UK	UL
Metal	0			L	L	L	UK	UK	UK	UK	UL
Nursery	0			L	UL	UL	L	L	L	UK	L
Stone	0			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	0			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	1	3									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	0	4	46								
Residential	8,119 acres			L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (there are no HPWQP identified for this HA at this time). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses

***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-20: Pollutant Generating Sources – 910.1 Coronado Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	4			N	L	UL	L	UK	L	UK	L
Automotive	14			L	L	L	UL	UL	UK	L	UL
Contractor	0			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	118			N	L	L	UL	UK	UK	L	L
Equipment	1			L	L	L	UL	UL	UK	L	UL
General Industrial	0			L	L	L	UK	UK	UK	UK	UK
General Retail	47			UL	UL	UL	L	UL	UL	L	UL
Manufacturing	1			L	UK	UK	UK	UK	UK	UK	UL
Metal	0			L	L	L	UK	UK	UK	UK	UL
Nursery	0			L	UL	UL	L	L	L	UK	L
Stone	0			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	0			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	77	23									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	52	3	334								
Residential	860 acres			L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-21: Pollutant Generating Sources – 910.2 Otay Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	6	N	L	UL	L	UK	L	UK	L
Automotive	420	L	L	L	UL	UL	UK	L	UL
Contractor	71	UL	UL	UL	L	UL	UL	L	UL
Food Establishment	314	N	L	L	UL	UK	UK	L	L
Equipment	26	L	L	L	UL	UL	UK	L	UL
General Industrial	79	L	L	L	UK	UK	UK	UK	UK
General Retail	163	UL	UL	UL	L	UL	UL	L	UL
Manufacturing	15	L	UK	UK	UK	UK	UK	UK	UL
Metal	17	L	L	L	UK	UK	UK	UK	UL
Nursery	3	L	UL	UL	L	L	L	UK	L
Stone	5	L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	70	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 45; Non-High: 11	L	L	L	L	UK	UK	UK	UL
Construction	High: 14; Medium: 14; Low: 309	UL	UL	UL	L	UL	UL	L	UL
Residential	5,036 acres	L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (green highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 2-22: Pollutant Generating Sources – 910.3 Dulzura Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria/Pathogens
Animal	2			N	L	UL	L	UK	L	UK	L
Automotive	1			L	L	L	UL	UL	UK	L	UL
Contractor	0			UL	UL	UL	L	UL	UL	L	UL
Food Establishment	1			N	L	L	UL	UK	UK	L	L
Equipment	0			L	L	L	UL	UL	UK	L	UL
General Industrial	0			L	L	L	UK	UK	UK	UK	UK
General Retail	0			UL	UL	UL	L	UL	UL	L	UL
Manufacturing	0			L	UK	UK	UK	UK	UK	UK	UL
Metal	0			L	L	L	UK	UK	UK	UK	UL
Nursery	1			L	UL	UL	L	L	L	UK	L
Stone	0			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	0			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	3	2									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	8	2	17								
Residential	7,482 acres			L	L	L	L	L	L	UK	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (there are no HPWQP for this HA identified at this time). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development and Non-inventoried Businesses
***Pollutant Source Loading Potential taken from BLTEA 2005 and LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely

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3 IMPLEMENTATION OF WATERSHED ACTIVITIES

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. Watershed Activity Implementation Summary Sheets for all watershed activities implemented during this reporting period, including activities implemented in compliance with a TMDL, are located in **Appendix C** of this Annual Report. The format of the activity summary template utilized by the San Diego Bay Copermittees is presented in the 2008 San Diego Bay WURMP document.

3.1 WATERSHED AND JURMP ACTIVITIES

The San Diego Bay WMA Copermittees implemented activities in the watershed as part of the WURMP and JURMP programs during this reporting period. The San Diego Bay WURMP Copermittees are responsible for identifying and implementing watershed water quality and education activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed, or jurisdictional level. The activity selection process is described fully in the March 2008 San Diego Bay WURMP document. The Copermittees believe it is an important step towards integrating jurisdictional and watershed activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

Copermittees are also responsible for implementing JURMP activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. Many of these activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

In an effort to report on the Copermittees' jurisdictional activities performed in the WMA, data was collected for these activities on an HA basis. The data and information is not comprehensive and for some data sets, estimates were used to generate quantities for the activities – this is explained in **Appendix B** of the report.

The tables below represent the Copermittees' efforts towards reporting urban runoff management activities on a watershed basis, e.g., reporting of Copermittee activities regardless of jurisdiction-specific program labels. Reporting as many jurisdictional and watershed urban runoff management activities as feasible on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements.

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix C**) and are summarized in the Section 4 – Effectiveness Assessment.

Table 3-1: Watershed and JURMP Activities – 908.1 Point Loma Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem(s)				
					Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides
Inspections	Municipal	High		Non-High			X	X	X
		28: (15)		0: (0)					
	Construction	High	Med	Low		X			
		125:(8)	71:(5)	1,099: (207)					
	Agriculture	0: (0)			X				X
	Animal	6: (13)			X				X
	Automotive	28: (61)				X	X	X	
	Contractors	4: (97)				X			
	Food Establishment	71: (174)			X	X		X	
	Equipment	5: (20)				X	X	X	
	General Industrial	6: (18)					X	X	
	Institutional	2: (2)					X		
	Marina	18: (19)					X	X	
	Metal	1: (4)					X		
	Nursery	0: (2)			X		X		X
	Stone	0: (1)					X		
	Storage and Warehousing	2: (61)					X		
Street Sweeping (Tons Collected)		121.97			X				
Basins/Inlets/Ditches/MS4 (Tons Removed)		5.13			X				

Watershed Activities

Activity No.	Type	Activity Name	Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity	X				
SDB-076	Water Quality	Rainwater Harvesting Rebate Pilot Program	X				
SDB-077	Water Quality	Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship	X				
SDB-045	Education	ILACSD High School Watershed Presentations	X			X	X
SDB-055	Education	San Diego Bay Watershed Brochure	X	X	X	X	X
SDB-075	Education	Juneteenth	X			X	X
SDB-025	Monitoring	Regional Harbor Monitoring Program	X	X	X	X	X

Table 3-2: Watershed and JURMP Activities – 908.2 San Diego Mesa Hydrologic Area[1]

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem(s)				
					Bacteria	Metals	Pesticides	Sediment	Trash
Inspections	Construction	High	Med	Low				X	X
		554: (14)	495: (18)	5,756: (1,066)					
	Municipal	High	Non-High			X	X	X	X
		532: (259)	65: (39)						
	Agriculture	1: (1)			X	X	X	X	X
	Animal	28: (82)			X		X		X
	Automotive	463: (876)				X			X
	Contractor	89: (389)						X	X
	Food Establishment	883: (2,316)			X				X
	Equipment	51: (91)				X			X
	General Industrial	85: (95)				X			X
	General Retail	104: (260)						X	X
	Health Services	14: (18)						X	X
	Institutional	31: (68)				X			X
	Manufacturing	28: (57)				X		X	X
	Metal	17: (40)				X			X
	Nursery	7: (18)			X	X	X	X	X
	Stone	3: (9)				X		X	X
	Storage and Warehousing	71: (210)				X		X	X
Street Sweeping (Tons Collected)		1,148.94			X	X		X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		428.88			X	X		X	X

Watershed Activities

Activity No.	Type	Activity Name	Bacteria	Metals	Pesticides	Sediment	Trash
SDB-001	**Water Quality**	**Pet Waste Bag Collaborative Watershed Activity**	X				
SDB-002B	**Water Quality**	**El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project**	X			X	X
SDB-004	**Water Quality and Education**	**San Diego Bay Watershed Cleanup Events Collaborative Activity**	X				X
SDB-009	Water Quality	Enhanced Construction Oversight				X	

[1]Watershed activities highlighted in bold address the Chollas Creek Metals and Diazinon TMDLs in Chollas Creek HSA (908.22). All activities implemented by the Copermittees, U.S. Navy, and Caltrans during this period to address the Chollas Creek Metals and Diazinon TMDLs are provided in **Appendix D**.

Table 3-2 (cont.): Watershed and JURMP Activities – 908.2 San Diego Mesa Hydrologic Area[2]

Watershed Activities							
Activity No.	**Type**	**Activity Name**	**Bacteria**	**Metals**	**Pesticides**	**Sediment**	**Trash**
SDB-014	**Water Quality**	**Southcrest Park Green Lot Infiltration Project**	X	X			
SDB-015	**Water Quality**	**Memorial Park Green Lot Infiltration Project**	X	X			
SDB-037	**Water Quality**	**43rd and Logan Biofiltration Project for Chollas Creek Watershed Protection (Green Street)**	X	X			
SDB-048	Water Quality	Outdoor Special Event Oversight					X
SDB-049	Water Quality	Maple Street Canyon Water Quality Improvement Project	X			X	X
SDB-050	**Water Quality**	**Chollas Creek Runoff Reduction and Groundwater Recharge Project**		X		X	
SDB-058	**Water Quality**	**Beta Green Alley**	X	X	X		X
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions	X	X	X	X	X
SDB-071	Water Quality	Targeted Catch Basin Cleaning Pilot Study	X	X		X	X
SDB-072	Water Quality	Municipal Best Management Practices/Irrigation/Xeriscape			X	X	
SDB-076	**Water Quality**	**Rainwater Harvesting Rebate Pilot Program**	X				
SDB-077	**Water Quality**	**Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship**	X				X
SDB-045	**Education**	**I Love a Clean San Diego High School Watershed Presentations**	X	X	X	X	X
SDB-055	**Education**	**San Diego Bay Watershed Brochure**	X	X	X	X	X
SDB-075	**Education**	**Juneteenth**	X		X		X
SDB-020	**Monitoring**	**Enhanced Dry Weather Monitoring Program**	X	X	X	X	X
SDB-025	Monitoring	Regional Harbor Monitoring Program	X	X	X	X	

[2]Watershed activities highlighted in bold address the Chollas Creek Metals and Diazinon TMDLs in Chollas Creek HSA (908.22). All activities implemented by the Copermittees, U.S. Navy, and Caltrans during this period to address the Chollas Creek Metals and Diazinon TMDLs are provided in **Appendix D**.

Table 3-3: Watershed and JURMP Activities – 908.3 National City Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem(s)		
					Bacteria	Sediment	Trash
Inspections	Construction	High	Medium	Low		X	X
		56: (3)	132: (11)	833: (230)			
	Municipal	High		Non-High		X	X
		37: (23)		0: (10)			
	Agriculture	0: (0)			X	X	X
	Animal	1: (3)			X	X	X
	Automotive	83: (234)					X
	Contractor	15: (82)				X	X
	Food Establishment	139: (233)			X		X
	Equipment	25: (45)				X	X
	General Industrial	7: (36)					X
	Institutional	1: (2)					X
	Manufacturing	4: (10)				X	X
	Metal	1: (5)					X
	Nursery	0: (0)			X	X	X
	Stone	4: (7)					X
	Storage and Warehousing	17: (69)				X	X
Street Sweeping (Tons Collected)		796.23			X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		12.76			X	X	X

Watershed Activities

Activity No.	Type	Activity Name	Bacteria	Sediment	Trash
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity	X		
SDB-004	Water Quality and Education	San Diego Bay Watershed Cleanup Events Collaborative Activity	X		X
SDB-005	Water Quality	Clean Community Program	X		
SDB-007	Water Quality	Additional Dry Season Construction Inspections		X	X
SDB-074	Water Quality	National City Multi-Family Residential Property Evaluation	X	X	X
SDB-076	Water Quality	Rainwater Harvesting Rebate Pilot Program	X		
SDB-077	Water Quality	Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship	X		X
SDB-075	Education	Juneteenth	X		X

Table 3-4: Watershed and JURMP Activities – 909.1 Lower Sweetwater Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s)
			Bacteria
Inspections	Agriculture	0: (0)	X
	Animal	4: (28)	X
	Food Establishment	160: (491)	X
	Nursery	6: (9)	X
Street Sweeping (Tons Collected)		854.46	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		248.78	X

Watershed Activities

Activity No.	Type	Activity Name	Bacteria
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity	X
SDB-004	Water Quality and Education	San Diego Bay Watershed Cleanup Events Collaborative Activity	X
SDB-005	Water Quality	Clean Community Program	X
SDB-007	Water Quality	Additional Dry Season Construction Inspections	
SDB-035	Water Quality	Update Recycling and Solid Waste Planning Manual	X
SDB-046	Water Quality	Land Acquisitions San Diego Bay Watershed	X
SDB-074	Water Quality	National City Multi-Family Residential Property Evaluation	X
SDB-076	Water Quality	Rainwater Harvesting Rebate Pilot Program	X
SDB-077	Water Quality	Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship	X
SDB-039	Education	Provide Homeowner's Association Education About Stormwater Pollution Prevention	X
SDB-040	Education	Stormwater Education Booth at Pet Festival and Doggy Dash	X
SDB-041	Education	Fats, Oils, and Grease (FOG) Program	X
SDB-066	Education	Focused Outreach to Equestrian Community	X
SDB-075	Education	Juneteenth	X
SDB-025	Monitoring	Regional Harbor Monitoring Program	X

Table 3-5: Watershed and JURMP Activities – 909.2 Middle Sweetwater Hydrologic Area

Activity		Results # of Inspections: (Inventory #)		High Priority Water Quality Problem(s)
				Pesticides
Inspections	Municipal	High	Non-High	X
		2: (2)	28: (28)	
	Agriculture	0: (0)		X
	Animal	3: (8)		
	Nursery	1: (6)		X
Street Sweeping (Tons Collected)		309.73		
Basins/Inlets/Ditches/MS4 (Tons Removed)		275.08		

Watershed Activities

Activity No.	Type	Activity Name	Pesticides
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity	
SDB-001A	Water Quality	Pet Waste Bag Dispenser Program in County Parks	
SDB-004	Water Quality and Education	San Diego Bay Watershed Cleanup Events Collaborative Activity	
SDB-046	Water Quality	Land Acquisitions San Diego Bay Watershed	X
SDB-056	Water Quality	Stormwater Quality Master Plans for Special Drainage Fee Areas	X
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions	X
SDB-046	Water Quality	Land Acquisitions San Diego Bay Watershed	X
SDB-025	Monitoring	Regional Harbor Monitoring Program	X

Table 3-6: Watershed and JURMP Activities – 909.3 Upper Sweetwater Hydrologic Area

Activity	Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s)
		None Identified at this time
Street Sweeping (Tons Collected)	363.34	N/A
Basins/Inlets/Ditches/MS4 (Tons Removed)	322.69	N/A

Watershed Activities

Activity No.	Type	Activity Name	None Identified at this time
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity	N/A
SDB-001A	Water Quality	Pet Waste Bag Dispenser Program in County Parks	N/A
SDB-056	Water Quality	Stormwater Quality Master Plans for Special Drainage Fee Areas	N/A
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions	N/A
SDB-066	Education	Focused Outreach to Equestrian Community	N/A

Table 3-7: Watershed and JURMP Activities – 910.1 Coronado Hydrologic Area

Activity		Results # of Inspections: (Inventory #)			High Priority Water Quality Problem(s)	
					Bacteria	Gross Pollutants
Inspections	Construction	High	Med	Low		X
		112: (52)	167: (3)	302: (334)		
	Agriculture	0: (0)			X	
	Animal	3: (4)			X	
	Automotive	10: (12)				X
	Equipment	0: (0)				X
	Food Establishment	94: (118)			X	X
	Nursery	0: (0)			X	
Street Sweeping (Tons Collected)		179.69			X	
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,261.95			X	

Watershed Activities

Activity No.	Type	Activity Name	Bacteria	Gross Pollutants
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity	X	
SDB-004	Water Quality	San Diego Bay Watershed Cleanup Events Collaborative Activity	X	X
SDB-047	Water Quality	Large Special Event Inspection and Clean-up	X	
SDB- 052	Water Quality	Palm Avenue Stormwater Diverter	X	X
SDB-045	Education	ILACSD High School Watershed Presentations	X	
SDB-025	Monitoring	Regional Harbor Monitoring Program	X	X

Table 3-8: Watershed and JURMP Activities – 910.2 Otay Hydrologic Area

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s)
			Bacteria
Inspections	Agriculture	0: (0)	X
	Animal	2: (6)	X
	Food Establishment	146: (314)	X
Street Sweeping (Tons Collected)		649.87	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		159.43	X

Watershed Activities

Activity No.	Type	Activity Name	Bacteria
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity	X
SDB-001A	Water Quality	Pet Waste Bag Dispenser Program in County Parks	X
SDB-004	Water Quality	San Diego Bay Watershed Cleanup Events Collaborative Activity	X
SDB-035	Water Quality	Update Recycling and Solid Waste Planning Manual	X
SDB-046	Water Quality	Land Acquisitions in the San Diego Bay Watershed	X
SDB-076	Water Quality	Rainwater Harvesting Rebate Pilot Program	X
SDB-077	Water Quality	Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship	X
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions	X
SDB-073	Water Quality and Education	Walk the Watershed	X
SDB-039	Education	Provide Homeowner's Association Education About Stormwater Pollution Prevention	X
SDB-040	Education	Stormwater Education Booth at Pet Festival and Doggy Dash	X
SDB-041	Education	Fats, Oils, and Grease (FOG) Program	X
SDB-045	Education	ILACSD High School Watershed Presentations	X
SDB-066	Education	Focused Outreach to Equestrian Community	X
SDB-075	Education	Juneteenth	X
SDB-025	Monitoring	Regional Harbor Monitoring Program	

Table 3-9: Watershed and JURMP Activities – 910.3 Dulzura Hydrologic Area

Activity	Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s)
		None Identified at this time
Street Sweeping (Tons Collected)	399.41	N/A
Basins/Inlets/Ditches/MS4 (Tons Removed)	328.35	N/A

Watershed Activities			
Activity No.	**Type**	**Activity Name**	**None Identified at this time**
SDB-001	Water Quality	Pet Waste Bag Collaborative Watershed Activity	N/A
SDB-001A	Water Quality	Pet Waste Bag Dispenser Program in County Parks	N/A
SDB-004	Water Quality	San Diego Bay Watershed Cleanup Events Collaborative Activity	N/A
SDB-046	Water Quality	Land Acquisitions San Diego Bay Watershed	N/A
SDB-062	Water Quality and Education	Residential Rain Barrel Subsidies and Distributions	N/A
SDB-039	Education	Provide Homeowner's Association Education About Stormwater Pollution Prevention	N/A
SDB-040	Education	Stormwater Education Booth at Pet Festival and Doggy Dash	N/A
SDB-041	Education	Fats, Oils, and Grease (FOG) Program	N/A
SDB-066	Education	Focused Outreach to Equestrian Community	N/A

3.2 SAN DIEGO BAY EDUCATION PROGRAM

The San Diego Bay Education Program is outlined in the San Diego Bay WURMP document. The focus of the education program is to provide useful information to the public about the San Diego Bay WMA and the high priority water quality problems within the watershed. The San Diego Bay Copermittees have committed to implementing several short and long-term educational activities that address watershed concepts and watershed pollutants. These tasks also overlap several programs that are required for NPDES Permit compliance on jurisdictional, watershed, or regional levels.

In addition to the watershed education activities included in Section 3.1, each jurisdiction also implemented targeted education programs within the San Diego Bay WMA that were part of other existing stormwater or environmental programs. The education programs implemented by the San Diego Bay Copermittees are further summarized and described because they contribute to the overall increase in knowledge and behavior change within the WMA. **Table 3-10** below provides a summary of all the education activities implemented during the reporting period, and **Appendix I** provides a complete tabulation by jurisdiction of the watershed.

Table 3-10: San Diego Bay Education Program Summary

Activity Type	General Description of Activity Type	Topics Addressed	Number*
Informational Kiosks	Watershed focused educational displays typically located at parks or municipal facilities	Stormwater BMPs, Water Conservation, Waste Storage, Handling, Disposal, Source Reduction Methods	36 displays
Municipal Staff Trainings	Watershed training provided to jurisdictional staff	General stormwater/watershed topics; BMP implementation; Park Maintenance; Inspection Procedures	22 trainings held and 640 municipal staff trained
Presentations	Presenting watershed information to an organization or group of people	Recycling Outreach; Watershed Education; TMDLs; Water Conservation	13 presentations reaching over an estimated 697 individuals
Print Media	The use of print media coverage (also includes Public Service Announcements (PSAs) for watershed education or information (i.e. newspaper articles; advertisement for events, etc.)	Watershed Pollution Prevention; BMP Implementation; Recycling Information; Community Event Information; Street Sweeping; Rainy Season BMP Information; Environmental Awareness;	24 Print Media methods utilized with the ability to reach over an estimated 179,649 individuals in the San Diego Bay WMA
School Programs (K-12 Children)	Any watershed education efforts focused on school children (i.e. Project SWELL[3], field trips, classroom presentations, etc.)	Watershed Education; Pollution Preventions; BMP Implementation;	134 school program events reaching over 21,000 school-aged children

* These totals do not include the numbers for some events for which attendance was not recorded.

[3] Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, Airport Authority, other municipalities, and non-profit organizations to establish comprehensive water quality and pollution prevention curricula in City schools. Started in May 2003, Project SWELL seeks to educate local school children about our region's watersheds while also fostering a sense of stewardship in these future leaders that will provide long-term solutions to the region's water quality problems.

3.3 SAN DIEGO BAY PUBLIC PARTICIPATION ACTIVITIES

The following section summarizes the activities and efforts made by the San Diego Bay Copermittees to encourage public participation during this reporting period. A complete list of public participation activities conducted within the watershed is included in **Appendix I**. Please note that this section only discusses the activities that were identified in the Public Participation section of the WURMP and relate to the San Diego Bay WMA. The San Diego Bay Copermittees have also conducted a number of regional programs and events involving the public in general water quality issues. Many municipalities have worked with stakeholders on efforts such as grant applications and water quality data collection.

3.3.1 STORMWATER COPERMITTEE COLLABORATION AND COMMUNITY WORKSHOPS

Stakeholder participation is vital to the success of watershed activities. The San Diego Bay Copermittees provided several forums during the year that allowed various stakeholder groups to participate in WURMP activities. Community workshops and activities that enhanced collaboration among San Diego Bay Copermittees are discussed below.

San Diego Bay WURMP Meetings

San Diego Bay WURMP Workgroup met eleven (11) times during the reporting period to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue to inform, consult, and involve Copermittees on local watershed efforts. **Appendix E** presents a summary of the meetings held by the workgroup during the reporting period, including an outline of the principal agenda items.

Workshops and Conferences

San Diego Bay Copermittees conducted 21 educational workshops addressing stormwater issues to inform and involve the public during the reporting period. These workshops reached approximately 1,217 individuals and targeted representatives from businesses and the general public. The topics for the workshops included Total Maximum Daily Loads, composting, BMP Implementation, invasive species, IPM practices, and green businesses. During the workshops, those in attendance were given opportunities to ask questions about the topics and provided with educational materials.

Presentations

As noted in **Table 3-10** above, the San Diego Bay Copermittees conducted approximately 180 informational presentations[4] during the reporting period, targeting many different types of audiences including schools, community groups, and tour groups. These educational presentations provided educational media as well as a venue for questions about stormwater issues to be discussed. The total number of persons attending presentations is estimated at 11,625.

Community Events

During this reporting period, the San Diego Bay Copermittees participated in 63 watershed related community special events such as the Jazz Festival, Walk the Watershed, Otay Valley Regional Park Day, Juneteenth, and Day at the Docks. There were over approximately 3 million community event participants during FY 2012. Collectively, the community events assisted in addressing all five public participation objectives presented in the San Diego Bay WURMP: to inform, consult, involve, collaborate, and empower the public. Many of the community events

[4] This number includes both presentations and school children presentations from Table 3-10

in FY 2012 also addressed regional water quality issues that spanned several watersheds. The San Diego Bay Copermittees feel such broad based activities play an important role in engaging the public on important water quality issues and that such public participation does positively impact water quality both in the San Diego region as a whole and in San Diego Bay.

Cleanup Events and Waste Collection

The San Diego Bay Copermittees identified trash as a constituent of concern for the Pueblo HU and, as a proactive measure, implemented a variety of activities to address this issue throughout the entire San Diego Bay WMA. Cleanup events are an effective means of not only involving the community in protecting water quality, but also specifically removing trash from water bodies in urban settings. During cleanup events, participants are provided with educational material regarding watershed concepts and have the opportunity to discuss stormwater issues with city staff and knowledgeable volunteers. There were over 60 clean-up locations within the San Diego Bay WMA during the reporting period and an estimated 5,957 individuals assisted in the clean-up activities. The clean-up activities range from individuals collecting litter to organized larger scale clean-up events.

Free collection of household hazardous waste (HHW), electronic, and universal waste also occurred during FY 2012. Residents illegally dump these materials due to a combination of economic pressures, inconvenience, and/or lack of knowledge regarding where to go to dispose of the items. There were 12 waste collection events held during FY 2012 in the San Diego Bay WMA providing an avenue for the public to properly dispose of used oil, appliances, and other items for which they might otherwise have had to pay fees or transport for long distances.

3.3.2 WEBSITES

During the reporting period, the Project Clean Water (PCW) website continued to successfully provide a means of public participation by informing and involving the public on San Diego Bay water quality issues (www.projectcleanwater.org). Each of the three HUs which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have pages devoted to them that are available for both the San Diego Bay Copermittees and public viewing. The San Diego Bay WURMP page includes downloadable WURMP and WURMP Annual Report documents, as well as land use and MS4 maps. The page specifically states that the San Diego Bay Copermittees are seeking public comment on the program and provides mail, email, and telephone contact information for the Lead Copermittee. The PCW website received 35,229 visitors during the reporting period. The PCW website was updated and as a result visits to individual watershed pages can no longer be tracked.

In addition to the PCW website, the Port of San Diego continues to display the Project ORCA (Online Research Coastal Academy) site, which provides interactive, San Diego Bay focused, environmental education targeted at children (www.projectorca.org) . The Copermittees' regional website (www.thinkbluesdregion.org) also serves as a web portal that provides stormwater educational information and links to each member agency's website.

3.3.3 DIRECT INTERACTION

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' staff continued to interact with the public on a daily basis during FY 2012. Municipal employees receive stormwater training on an ongoing basis, as described in each Copermittee's JURMP. Staff with program implementation responsibilities receives the most intensive training, but other employees are educated about stormwater issues as well. Municipal employees interact with the public in their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections,

public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about stormwater issues and regulations, as well as answer questions and provide guidance. This day-to-day personal interaction is an important component of the San Diego Bay Copermittees public participation activities.

3.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

In recent years, water quality management efforts have become increasingly watershed-focused, and the San Diego Bay Copermittees are working to integrate watershed management concepts into programs that can be implemented across jurisdictional boundaries. In general, this effort includes participation in watershed management plans, utilizing regional guidance documents, and increasing public participation. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and a balance of land uses when planning future development.

Several planning activities have been initiated including the Otay River Watershed Management Plan (ORWMP) and the Otay River Special Area Management Plan (SAMP). Links to pages discussing the ORWMP and the Otay River Watershed SAMP are included on the Project Clean Water website. The sites include a variety of plan-related documents for public review and announcements of public meetings.

The ORWMP has been approved by the Port of San Diego, the County of San Diego, Imperial Beach and the City of San Diego. The City of Chula Vista has yet to determine whether to approve the ORWMP. Therefore, there are no new action items to report for this reporting period. An interim Watershed Council will be established once the ORWMP has been approved.

The County met with the Army Corps of Engineers (ACOE) regarding the draft Otay River Watershed SAMP in spring 2012. The draft SAMP that was submitted to the ACOE in 2010 is currently being revised and will be resubmitted to the ACOE in January 2013. The ACOE may complete the SAMP or may use the draft SAMP and its associated documents to support a regional section 404 permit for the Otay River Watershed. Additional information will be provided in the next WURMP Annual Report.

3.5 UPDATED FIVE-YEAR SAN DIEGO BAY WURMP STRATEGIC PLAN

The San Diego Bay WURMP's Strategic Plan is assessed on an annual basis and may be updated to reflect the current status of watershed activities and any modifications to previous versions of the Strategic Plan. The updated Implementation Plan Schedule of San Diego Bay WURMP is presented in **Table 3-11** and is intended to supersede the previous version presented in the 2008 San Diego Bay WURMP document. It is important to note, that the WURMP activity process and implementation is subject to change in the near future based on a new Municipal Permit. Tentative Order R9-2013-0001 National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges from the MS4s Draining the Watershed within the San Diego Region (Tentative Order) has been released by the RWQCB and may result in program changes and activity implementation changes in future fiscal years. The Copermittees are progressing towards making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding permit language.

3.5.1 NEW ACTIVITIES

The San Diego Bay Copermittees added new watershed activities to the San Diego Bay WURMP Strategic Plan during FY 2012 which included three (3) new water quality activities (SDB-074 National City Multi-Family Residential Property Evaluation; SDB-076 Rainwater Harvesting Rebate Pilot Program; SDB-077 Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship) and one (1) new education activity (SDB-075 Juneteenth). The activity summary sheets for these activities are presented in **Appendix C**.

3.5.2 UPDATES TO TMDL IMPLEMENTATION PLAN ACTIVITIES

As noted in the introduction, there are currently five adopted TMDLs in the San Diego Bay WMA: the Chollas Creek Diazinon TMDL, the Chollas Creek Dissolved Metals TMDL, SIYB Dissolved Copper TMDL, the Baby Beach and Shelter Island Shoreline Park Indicator Bacteria TMDL, and the Revised TMDL for Indicator Bacteria, Project I. This section will provide updates to the TMDL implementation plans. An assessment of the efforts to address TMDL compliance during this reporting period is presented in Section 4.2 of this Annual Report.

Chollas Creek Diazinon TMDL, Chollas Creek Dissolved Metals TMDL, and Revised TMDL for Indicator Bacteria, Project I Updates

The seven named dischargers developed an Implementation Plan which presents the strategy, framework, and activities for the first five years under the TMDL using a multi-pollutant approach. The dischargers have been implementing activities as part of their comprehensive Stormwater Programs that will help in meeting TMDL compliance for both the Metals TMDL and the Diazinon TMDL. The five Copermittees, Caltrans and Navy have implemented seventy-one activities (18 water quality, 7 education, 8 monitoring and thirty-eight ongoing agency-wide activities) in FY 2012. Further details on all of the activities the dischargers implemented to address the Chollas Creek Diazinon and Dissolved Metals TMDL are included in tabular format in **Appendix D**.

While activities implemented to address the Chollas Creek Diazinon TMDL are referenced in the discussion above, the dischargers that are responsible under the Diazinon TMDL must report on specific implementation elements. These updates are included in **Appendices F and H**, as part of the annual response to monitoring report. However, specific activities referenced as part of the implementation elements discussion in **Appendices F and H** are also included in the Metals TMDL dischargers' tables in **Appendix D.**

In FY 2012, the Responsible Parties for Chollas Creek segment of the Revised TMDL for Indicator Bacteria, Project 1 began the development of a comprehensive load reduction plan (CLRP). This integrated water quality plan addressing multiple pollutants supersedes the implementation plan previously submitted in 2009. The CLRP for Chollas Creek will be submitted in the next reporting period.

SIYB Dissolved Copper TMDL Implementation Plan Activities

The Port of San Diego, SIYB marinas and yacht clubs, and hull cleaners implemented activities as part of the TMDL Implementation Plan and initiated TMDL compliance monitoring during this reporting period. The implementation plan identified how loading reductions may be achieved, such as through conversion of vessels to non-copper-based hull paints, reductions of inputs via hull cleaning, and control of upstream inputs. Therefore, the named parties identified BMPs and other activities that can be best implemented within their given facility/operations in order to collectively achieve compliance with TMDL loading targets for the entire basin. The status of these efforts were provided in the annual report submitted as required by Investigative Order R9-2011-0036 to the RWQCB on March 31, 2012 and is included in **Appendix G**.

The City of San Diego also conducted urban runoff monitoring for SIYB to identify spatial or temporal patterns in dissolved copper loads. The waste load allocation (WLA) of dissolved copper from the City of San Diego's municipal separate storm sewer system (MS4) via urban runoff is approximately 1% of the total load (based on the model used to develop the TMDL). Because of this relatively small contribution, urban runoff from the City of San Diego MS4 has not been assigned a load reduction in the TMDL. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL Activities

The RWQCB adopted the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL as a Basin Plan Amendment (BPA) on June 11, 2008. The Port of San Diego and the City of San Diego are responsible for monitoring Shelter Island Shoreline Park for Indicator Bacteria (Total Coliform, Fecal Coliform, Enterococci).

During this reporting period, the Port of San Diego initiated an internal work plan to compile and summarize available bacteriological data collected from Shelter Island Shoreline Park, assess the data with respect to listing guidelines established by the State Water Resources Control Board (SWRCB), and identify data gaps. While no load reduction is required under the TMDL, this effort will help to verify that the existing waste load allocation has not been exceeded and identify additional actions that may need to be taken. SISP will remain on the 303(d) List until enough data are collected to support removal from the 303(d) List. Data will be provided to the State Water Resources Control Board during the next Public Solicitation of Water Quality Data and Information for the California Integrated Report of Surface Water Quality Assessment and List of Impaired Waters [Clean Water Act Sections 303(d) and 305(b)].

Table 3-11: Updated Implementation Plan Schedule

San Diego Bay Watershed	Hydrologic Area									Pollutants Addressed										FY 07-08	FY08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash						
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																									
Trash and Debris Related Activities																									
Pet Waste Bag Collaborative Watershed Activity (SDB-001)	X	X	X	X			X	X	X	●				●						I	I	I	I	I	I
Pet Waste Bag Dispenser Program in County Parks (SDB-001A)		X		X	X	X		X	X	●				●						I	I	I	I	I	I
Storm Drain Litter Control Techniques Collaborative Watershed Activity (SDB-002a)		X	X	X														●	●	I	Completed				
Storm Drain Litter Control Techniques Collaborative Watershed Activity – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (SDB-002b)		X	X	X														●	●	P	P	P	I	I/A	Completed
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)	X	X	X	X			X						●					●	●	I	I	I	No activity sheet-Now in Sections 3 & 4		
Median Sweeping Pilot Study (SDB-003a)		X											●							-	P	I/Completed			
Sweeper Speed Efficiency Study (SDB-003b)		X											●							-	-	P	I	Completed	
San Diego Bay Cleanup Events Collaborative Activity (SDB-004)		X	X	X			X	X											●	I	I	I	I	I	I
Clean Community Program (SDB-005)			X	X						●		●							●	I	I	I	I	I	I
Trash Containment Boom Cleaning Agreement with US Navy (SDB-006)		X	X							●									●	I	I/Completed				
Chollas Creek Family Stream Team Initiative Partnership (SDB-051)		X											●						●	P	I	I	I	Completed	
Multi-Family Residential Trash Area Pilot Program (SDB-070)		X																	●	-	-	-	P	I	I
Targeted Catch Basin Cleaning Pilot Study (SDB-071)		X								●		●	●					●	●	-	-	-	P	I/A	I/A
Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship (SDB-077)	X	X	X	X				X		●									●	-	-	-	-	P/I	I
Enhanced Inspection Activities																									
Additional Dry Season Construction Inspections (SDB-007)			X	X														●	●	I	I	I	I	I	I
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)		X											●							P	I	I	Completed		
Enhanced Construction Oversight (SDB-009)		X																●		I	I	I	I	I	I
Targeted Municipal Facility Inspections (SDB-036)		X								●			●	●						I	Discontinued				
Large Special Event Inspection and Clean-Up (SDB-047)										●										I	I	A	I	I	I
Outdoor Special Event Oversight (SDB-048)		X																	●	I	I	I	I	I	I
Rainwater Harvesting Rebate Pilot Program (SDB-076)	X	X	X	X				X		●		●	●	●	●	●	●	●		-	-	-	P	I/A	I/A
Targeted Special Studies																									
Chollas Creek Water Quality Protection & Habitat Enhancement Project (SDB-011)		X								●	●	●	●	●	●	●	●	●		I	Completed				
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)	X	X	X	X				X		●				●	●		●	●		P	I	I/A	Completed		

San Diego Bay Watershed	Hydrologic Area									Pollutants Addressed										FY 07-08	FY08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash						
Targeted Special Studies																									
Dalbergia "Green Mall" Infiltration Retrofit Project (SDB-013)		X								●			●							P	P	P	Cancelled		
Southcrest Park "Green Lot" Infiltration Project (SDB-014)		X								●			●							P	P	P	P	P	P
Memorial Park "Green Lot" Infiltration Retrofit Activity (SDB-015)		X								●			●							P	P	P	I	I/A	A
43rd and Logan Biofiltration Project for Chollas Creek Watershed Protection (SDB-037)		X								●			●							P	P	P	I	I	I
Maple Canyon Water Quality Improvement (SDB-049)		X								●								●	●	P	P	P	P	P	P
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)		X											●							P	I	A	I/A	I/A	A
Treatment Control BMP Pilot Projects (SDB-034)		X											●							P	I	A	Completed		
Beta Alley Green Street Filtration (SDB-058)		X								●		●	●		●		●	●	●	-	-	P	P	P	P
Other Water Quality Activities																									
Shelter Island Yacht Basin Dissolved Copper TMDL (SDB-016)	X												●							Activity Summary sheets will no longer be submitted for TMDL efforts - will now be discussed in Sections 3 and 4.					
Chollas - Switzer - Paleta Creek Mouths TMDL (SDB-017)	X	X											●			●									
Chollas Creek Diazinon TMDL (SDB-018)	X	X															●								
Chollas Creek Dissolved Metals TMDL (SDB-019)		X											●												
Update Recycling and Solid Waste Planning Manual (SDB-035)				X				X	X	●				●					●	P	I	I	I	I	I
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		●	●	●	●	●	●	●	●	●	●	I	I	I	I	No longer included in this report	
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	I	I	I	I	I	I
Palm Avenue Stormwater Diverter (SDB-052)							X			●			●	●			●	●		P	I	I	I	I	I
Stormwater Quality Master Plans for Special Drainage Fee Areas (SDB-056)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●	P	P	I	I	I	I
Commercial BMP Self Certification Pilot Program (SDB-059)		X								●			●	●			●	●		-	-	P	I	No longer included in this report	
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials (SDB-060)	X	X	X	X	X	X	X	X	X				●							-	P	P	P	No longer included in this report	
SDBay Vista Wildlife Reserve Restoration and Enhancement Project (SDB-061)				X				X		●							●	●		-	P	P	P	No longer included in this report	
Residential Rain Barrel Subsidies & Distributions (SDB-062)		X			X	X		X	X	●	●	●	●	●	●	●	●	●	●	-	-	P	I	I	I
Municipal Best Management Practices/Irrigation/Xeriscape (SDB-072)		X								●			●	●		●	●	●					I	I	I
National City Multi-Family Residential Property Evaluation (SDB-074)			X	X						●	●	●	●	●	●	●	●	●	●	-	-	-	-	P/I	I
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																									
Enhanced Dry Weather Monitoring Program (SDB-020)		X								●	●	●	●	●	●	●	●	●	●	I	I	I	I	I	I
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								●			●	●		●	●	●	●	I	I	I	I	I	I
La Mesa Additional Water Quality Monitoring Program (SDB-022)		X								●	●	●	●	●	●	●	●	●		I	I	A	A	No longer included in this report	
BMP Effectiveness Monitoring Program (SDB-023)		X										●	●		●			●		I	I	I	I	No longer included in this report	

San Diego Bay Watershed	Hydrologic Area									Pollutants Addressed										FY 07-08	FY08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash						
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																									
Dry Weather Aerial Deposition Study – Phase I (SDB-024a)		X											●					●		I	Completed				
Dry Weather Aerial Deposition Study – Phase II (SDB-024b)		X											●					●		P	I/Completed				
Dry Weather Aerial Deposition Study – Phase III (SDB-024c)		X											●					●		P	I/Completed				
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X			●	●	●	●	●	●	●	●	●		I	I	I	I	I	I/A
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (SDB-026)		X								●								●		I	Completed				
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (SDB-027)		X								●										I	I/Completed				
Shelter Island TMDL Urban Runoff Monitoring Study (SDB-053)	X												●							P	I/No longer included as an activity sheet - information can be found in Sections 2, 3, and 4				
Switzer Creek Pesticide Source Monitoring Study (SDB-054)		X															●			P	I/Completed				
Water Quality Monitoring at Additional Mass Loading Stations (SDB-057)					X	X			X	●	●	●	●	●		●	●	●		P	I/Completed				
B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-063)		X											●				●			-	-	P/I	Completed		
Chollas and Paleta Creeks Characterization Study (SDB-064)		X	X										●				●			-	-	P/I	Completed		
Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-065)		X											●							-	-	P/I	I	Completed	
Educational Activities																									
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)			X	X						●			●				●			I	I	A	A	Complete - no longer included in this report	
Storm Drain Stenciling (SDB-028)				X				X	X	●	●	●	●	●	●	●	●	●	●	P	I/A	I/A	Discontinued		
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	●		●							●	P/I	I	No longer reporting on this activity			
Outdoor Transit Shelters and Billboards Advertisements (SDB-030)	X	X	X	X				X	X	●									●	P/I	I/Completed				
Mobile Advertising (SDB-031)	X	X	X	X				X	X	●		●	●		●		●	●	●	P/I	I/A	Discontinued			
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	●		●	●						●	P	I	I	I	No longer reporting on this activity	
City of Coronado Fire Department Open House (SDB-033)							X			●	●	●	●	●	●	●	●	●	●	I	I	No longer reporting on this activity			
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	●										P	I	I	I	I	I
Stormwater Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	●										P	I	I	I/A	I/A	I/A
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	●					●					P	I	A	I	I	I
La Mesa Park Kiosk (SDB-042)		X								●			●				●			P	I	A	I	No longer included in this report	

San Diego Bay Watershed	Hydrologic Area									Pollutants Addressed										FY 07-08	FY08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash						
Educational Activities																									
LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043)				X	X	X			X	●	●	●	●	●	●	●	●	●	●	P	I/Completed				
ILACSD Elementary School Watershed Presentations (SDB-044)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	P	I/Completed				
ILACSD High School Watershed Presentations (SDB-045)		X	X	X				X		●	●	●	●	●	●	●	●	●	●	-	P	I	I/A	I/A	I/A
San Diego Bay Watershed Brochure (SDB-055)	X	X	X	X				X	X	●	●	●	●	●	●	●	●	●	●	-	P	P	P	P/I	I
Focused Outreach to Equestrian Community (SDB-066)				X	X	X		X	X	●				●				●		-	P	I	I	I	I
Intergenerational Games (SDB-067)		X		X						●			●		●		●		●	I	I	I	I	No longer included in this report	
Stream Team Stewards (SDB-068)		X								●	●	●	●	●	●	●	●	●	●	-	I	I/Completed			
Walk the Watershed Event – Otay HU (SDB-073)								X		●		●	●		●		●	●	●	-	-	-	P	I	Completed
Juneteenth (SDB-075)		X								●					●		●		●	-	-	-		P/I/A	I/A

P=Planning Phase; I=Implementation Phase; A=Assessment Phase

4 EFFECTIVENESS ASSESSMENT

The following section presents the effectiveness assessment of the WURMP by the San Diego Bay Copermittees as required by Section J.1.b. of the Municipal Permit. An effectiveness assessment is an integral part of WURMP implementation that enhances program planning by: providing feedback on activities and strategies; and identifying program areas that may need improvement. The activity summary sheets presented in **Appendix E** include individual effectiveness assessment summaries for each water quality and education activity as required in the Permit, I.2.a.(1). This section evaluates progress of the San Diego Bay WURMP toward meeting Target Outcome Levels 1 through 6 and summarizes the effectiveness of WURMP Activities.

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

Effective implementation of the WURMP is dependent on the establishment of comprehensive and program-wide goals as well as objectives and tasks. Programmatic assessment provides mechanisms to determine whether the Copermittees are compliant with the Permit and are continuing to progress towards the long-term goal of abating pollutant sources and reducing the discharge of pollutants from the MS4.

The San Diego Bay Copermittees have also included some data and information from jurisdictional program activities that address the HPWQPs in the watershed. The Copermittees are presenting this jurisdictional information to demonstrate the overall activities conducted in the watershed's hydrologic areas to address HPWQPs and provide a more holistic evaluation of the activities the Copermittees are implementing that address HPWQPs. The jurisdictional information presented here is not intended to be used for compliance with watershed activity requirements of the Municipal Permit. However, reporting jurisdictional and watershed urban runoff management activities on a watershed basis will develop a nexus between Copermittee activities and potential pollutant sources and urban runoff water quality improvements.

Overall, the San Diego Bay Copermittees were effective in implementing the WURMP during FY 2012 and went above and beyond compliance with the watershed activity implementation component of the Permit. During the reporting period the San Diego Bay Copermittees implemented eight (8) watershed education activities, 25 watershed water quality activities (in planning or implementation phases), and three (3) monitoring or source identification studies.

Level 1 Effectiveness Assessment

A Level 1 assessment addresses the fundamental requirements prescribed in the Permit, including programs and activities that are intended to benefit water quality. **Table 4-1** lists how the San Diego Bay Copermittees have met Level 1 objectives and maintained compliance with the Permit requirements.

Table 4-1: Permit Component Compliance (Level 1 Outcome)

Targeted Outcome	Confirmation	Report Section/Appendix
Update any watershed maps.	No changes	2008 WURMP
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed	2.2
Identify and describe the Watershed Water Quality Activities implemented by Copermittees during the reporting period.	Completed	3.1
Update list of potential Watershed Water Quality Activities.	Completed	3.5
Identify and describe the Watershed Education Activities implemented by Copermittees during the reporting period.	Completed	3.1, 3.2 and **Appendices C and I**
Update list of potential Watershed Education Activities.	Completed	3.5
Describe the public participation mechanisms used during the reporting period.	Completed	3.3 and **Appendix I**
A description of Copermittee collaboration efforts including meeting as the San Diego Bay WMA WURMP Workgroup.	Completed	3.3.1
Describe the efforts implemented to encourage collaborative, watershed-based, land use planning.	Completed	3.4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date, incorporating the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Completed	3.5.2 and 4.2 and **Appendices C, D, F, G, and H**

As shown in **Table 4-1**, the San Diego Bay WURMP Copermittees were in compliance with all Level 1 WURMP related Municipal Permit requirements during FY 2012.

Level 2 Outcome – Changes in Knowledge and Awareness; Level 3 – Outcome – Changes in Behavior or BMP Implementation; Level 4 Outcome – Load Reduction/Source Abatement

The San Diego Bay Copermittees implemented many activities that resulted in Levels 2, 3, and 4 effectiveness assessments such as: the Watershed Copermittees collectively conducted over 490 education and public participation events/mechanisms reaching over an estimated 3 million individuals (Level 2); conducted enhanced inspections of facilities which demonstrated positive changes in behavior (Level 3); and conducted clean-up events resulting in the removal of over 238 tons of debris from the WMA. Additionally, the San Diego Bay Copermittees' jurisdictional

programs resulted in the removal of approximately 4,799 tons of debris from street sweeping activities and approximately 3,042 tons of debris from MS4 cleaning during FY 2012. This resulted in load reductions for many of the HPWQPs (i.e. sediment, trash, gross pollutants, bacteria, metals, etc.). Levels, 2, 3, and 4 are best discussed on the watershed activity level and are included in Section 4.2.1 below and the individual Activity Sheets included in **Appendix C**.

Level 5 Outcome – Changes in Urban Runoff and Discharge Quality

The results from the FY 2012 *San Diego County Municipal Copermittees Urban Runoff Receiving Waters and Monitoring Report,* as discussed in Section 2, indicate that urban runoff water quality remained similar to conditions reported in the 2008 WURMP Document. Changes in urban runoff and discharge quality are difficult to determine on an annual basis due to the variability of water quality data. However, levels of organophosphorus pesticides (Diazinon, Chlorpyrifos, and Malathion) continue to be below their respective benchmarks. The continued downward trend of Diazinon concentrations in stormwater is a positive indication that the San Diego Bay Copermittees' current education and outreach efforts to address Diazinon are adequate. The San Diego Bay Copermittees believe that overall, the concentration of Diazinon will continue to decrease. Even though Diazinon was banned from sales, it is possible that there are still unused products containing Diazinon being stored and used by residents and businesses. As Diazinon public supply and use is exhausted, it is possible to see transient, isolated incidents from stored products being used. Diazinon and other pesticides will continue to be monitored and sampled to determine overall statistical trends.

Level 6 Outcome – Changes in Receiving Water Quality

A Level 6 assessment involves direct measurement of overall water quality in receiving water bodies and evaluates changes in water quality with respect to established regulatory benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the San Diego Regional Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. The San Diego Regional Copermittees conducted a Long-Term Effectiveness Assessment (LTEA) and submitted it to the Regional Board in June 2011. As part of the LTEA analysis there were some receiving water trends (based on available data) that were identified, where applicable and appropriate, for the San Diego Bay Watershed Management Area (**Table 4-2**). While there is no direct linkage to Copermittee watershed activities at this time, the trends are important to note and more detailed information can be found in Attachment A, Section 9 of the LTEA (MOE, Weston, LWA June 2011). Additionally, trends were identified in the FY 2012 Regional Monitoring Report (Weston, January 2013). The trends are based on all of the available data through the end of the 2011-2012 monitoring season and are summarized beside the LTEA trends in **Table 4-2**.

Table 4-2: Constituent Trends as Identified in the 2005-2010 LTEA (June 2011) and Regional Monitoring Report (January 2013)

Location	Increasing Trends by Priority Constituent		Decreasing Trends by Priority Constituent	
	LTEA	Regional Monitoring	LTEA	Regional Monitoring
CC-SD8(1) MLS Pueblo San Diego	• Total Coliforms • Nitrite • Total Kjeldahl Nitrogen • Turbidity • Total Copper • Total Zinc	• Fecal Coliform • Total Coliform • Nitrite as N • Total Kjedahl Nitrogen • Turbidity • Total Copper • Total Zinc	• Hyalella Azteca acute survival • Malathion	• Hyalella Azteca acute survival
Sweetwater River MLS	• Dissolved Phosphorous • Total Arsenic	• No trends identified	• Total Lead	• Total Lead
Sweetwater River TWAS-1	• No trends identified	• No trends identified	• No trends identified	• No trends identified
Otay Valley TWAS-1	• No trends identified	• No trends identified	• No trends identified	• No trends identified

4.2 INTEGRATED WURMP ACTIVITIES ASSESSMENT

In accordance with the 2008 San Diego Bay WURMP, Copermittees selected activities and associated effectiveness assessment mechanisms to implement in their individual jurisdictions while working within the collective goals of the WURMP. The activities and their assessments vary depending on the identified targeted outcomes applicable to each activity, the pollutant(s), pollutant source(s) addressed, and the HA in which it is located. The goals and objectives of the individual activities ensure individual accountability, provide direction, and intended to provide meaningful assessment. In this section, the San Diego Bay Copermittees assess whether they were able to maximize the effectiveness of these individual activities on a watershed level.

Each activity summary sheet in **Appendix C** of this report identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measurable at levels 5 or 6. Levels 5 and 6 outcomes are typically measurable through cumulative assessments.

Tables 4-3 through **4-9** summarize the assessments of the water quality and education activities on a hydrologic area basis and provide a snapshot of the overall effectiveness of the watershed activities. This evaluation also reveals whether the San Diego Bay Copermittee efforts addressed the HPWQPs and whether the activities targeted potential pollutant sources in each HA during this reporting period. Evaluation at an HA level also allows an assessment of the effectiveness of the San Diego Bay Copermittees' collective efforts for activities that were implemented across several HAs. In some cases these activities provided solutions that address HPWQPs common to multiple HAs and potential sources of pollutants of concern.

In addition to the WURMP activities included in the tables, the San Diego Bay WURMP Copermittees are presenting the JURMP activities that are related to the HPWQPs in each hydrologic area. It is important to note that not all JURMP activities are included in this presentation. These activities are presented in the tables below based on hydrologic area of implementation. The San Diego Bay Copermittees recognize that a holistic approach to watershed assessment allows for improvement in determining the sources of priority pollutants and how to address them through both watershed and jurisdictional activities. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

Some watershed activities implemented did not have all of the identified assessment mechanisms completed during this reporting period and effectiveness has not yet been determined. Though considerable resources may be directed to these activities, effectiveness assessments are not yet available for a number of reasons, such as delays in planning/development of an activity or the activity is still in progress. Furthermore, some activities do not lend well to assessment through surveys, including public booths at events. Please refer to the activity summary sheets in **Appendix C** for detailed analysis of progress to date for these activities.

Part of the basis of the assessment is to determine how effectively activities are addressing the HPWQPs in the watershed. For areas where no HPWQPs are currently identified, watershed activity development and implementation is not a high priority and resources may not be focused in these areas. There are two HAs (the Upper Sweetwater HA (909.3) and the Dulzura HA (910.3)) where there are no HPWQPs identified at this time and accordingly no assessment has been conducted. While there were activities conducted in these HAs as noted in Section 3, assessments of the two HAs are not included in the tables below.

4.2.1 PUEBLO SAN DIEGO HU (908)

Effectiveness Assessment for the Pueblo San Diego HU is presented by HA in the sections below. Applicable TMDL effectiveness assessments are described in Section 4.3.

4.2.1.1 Point Loma HA (908.1)

The Point Loma HA is heavily urbanized and is not characterized by any Hydrologic Subareas (HSAs). The HPWQPs in the Point Loma HA are bacteria, gross pollutants, metals, oil and grease, and pesticides. Activities were implemented that effectively targeted a variety of sources of many of the identified high priority pollutants. Potential pollutant sources in the Point Loma HA include those related to residential areas, streets and roadways, or commercial business, schools, and public facilities. As noted in Section 3, Copermittees implemented seven (7) distinct watershed water quality, monitoring, and education activities in the HA along with other educational and public participation activities, inspections, street sweeping, and MS4 cleaning. Reportable effectiveness measures have been identified for the four (4) watershed activities, and jurisdictional inspections, sweeping, and catch basin activities (**Table 4-3**).

In addition, there are two adopted TMDLs within the Point Loma HA. These TMDLs include:

- SIYB Dissolved Copper TMDL
- Baby Beach and Shelter Island Shoreline Park Indicator Bacteria TMDL

A brief summary of the current status and the assessment of the Implementation Plans for these TMDLs are included in Section 4.3.

Table 4-3: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.1 Point Loma Hydrologic Area (HPWQPs: Bacteria, Gross Pollutants, Metals, Oil and Grease, and Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed Activities				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria	Levels 3 and 4	Approximately 730,068 pet waste bags dispensed
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria	Levels 2, 3 and 4	Approximately 5,957 individual participated in clean-up activities and an estimated 238 tons of trash was collected.
SDB-076 Rainwater Harvesting Rebate Pilot Program**	Water Quality and Education	Bacteria, Trash, Pesticides, Gross Pollutants, and Sediment	Level 1 and 3	15 participants were rebated for a total of 58 rain barrels. Participants were provided a rebate of 0.50 cents per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed.
SDB-077 Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship**	Water Quality	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 3 and 4	Collected a total of 112,000 lbs. of metals, appliances, junk furniture, and mattresses. Disposed of 68,000 lbs. and recycled 44,000 lbs.
Presentations*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	13 presentations reaching over an estimated 697 individuals in the San Diego Bay WMA
Print Media*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	24 Print Media methods utilized with the ability to reach over an estimated 179,649 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	134 school program events reaching over 21,000 school-aged children
Municipal Staff Training*	Education	Bacteria, Gross Pollutants, Metals, Oil and Grease, Pesticides	Level 1 and 2	22 trainings held and 640 municipal staff trained

Table 4-3: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.1 Point Loma Hydrologic Area (HPWQPs: Bacteria, Gross Pollutants, Metals, Oil and Grease, and Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Jurisdictional Activities (No WURMP credit)				
JURMP Industrial/ Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included animal facilities, food establishments, and nurseries. Of the total 189 bacteria sources inventoried, 92% are food establishments. Approximately 41% of the food establishments were inspected, and overall 41% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/ Commercial Inspections	Water Quality	Metals	Levels 1, 3 and 4	Sources categorized as likely to produce metals inventoried under the JURMP program during FY 2012 included automotive, equipment, general industrial, institutional, marinas, metal, nursery, stone, and storage and warehousing. Of the total 188 metals sources inventoried, 32% are storage and warehousing facilities and 32% are automotive facilities. Approximately 3% of the storage and warehousing facilities were inspected and 46% of automotive facilities. Overall 33% of the likely metals sources inventoried were inspected.
JURMP Industrial/ Commercial Inspections	Water Quality	Pesticides	Levels 1, 3 and 4	Sources categorized as likely to produce pesticides inventoried under the JURMP program during FY 2012 included animal and nursery facilities Of the total 15 pesticide sources inventoried, 87% are animal facilities. Approximately 46% of the animal facilities were inspected, and overall 40% of the likely pesticide sources inventoried were inspected.
JURMP Industrial/ Commercial	Water Quality	Gross Pollutants	Levels 1, 3 and 4	Sources categorized as likely to produce gross pollutants inventoried under the JURMP program during FY 2012 included automotive, contractors, and food establishments. Of the total 332 gross pollutant sources inventoried 31% were inspected.
JURMP Industrial/ Commercial Inspections & Construction Site & Municipal Facility Inspections	Water Quality	Oil and Grease	Levels 1, 3 and 4	Sources categorized as likely to produce oil and grease inventoried under the JURMP program during FY 2012 included automotive, food establishments, equipment, general industrial, marina, metal, stone, and storage and warehousing. Of the total 374 oil and grease sources inventoried, 49% were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria, Metals, Gross Pollutants	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2012, 118.75 tons of material was removed from streets via street sweeping and 4.99 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
****This activity was implemented throughout the City of San Diego's jurisdiction. Therefore, the data and information presented is for the City of San Diego, but the activity impacted this HA.***

4.2.1.2 San Diego Mesa HA (908.2)

The San Diego Mesa HA is a heavily urbanized watershed, and includes two Hydrologic Subareas: Lindbergh (908.21) and Chollas Creek HSA (908.22). The HPWQPs in the San Diego Mesa HA are bacteria, metals, sediment, trash, and pesticides. Prominent land uses which may contribute to high priority water quality problems in the HA include residential, streets and roadways, and commercial/industrial businesses. Transportation land use comprises approximately 28% of the total land use and residential land uses comprise approximately 41% of the total land use in the HA. As described in Section 3, Copermittees implemented 21 distinct watershed water quality, monitoring, and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning in this HA. Reportable effectiveness measures have been identified for the six (6) watershed activities and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-4**). In addition, there are three adopted TMDLS within the Chollas Creek HSA (908.22):

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- Revised TMDL for Indicator Bacteria, Project I

A brief summary of the current status and the assessment of the Implementation Plans for the three TMDLs are presented in Section 4.3.

Table 4-4: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.2 San Diego Mesa Hydrologic Area (HPWQPs: Bacteria, Metals, Sediment, Trash, and Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed Activities				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria	Levels 3 and 4	• Approximately 730,068 pet waste bags dispensed • Airport Authority estimated 250 lbs. removed in their jurisdiction
SDB-002b El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project	Water Quality	Bacteria, Oil and Grease, Trash, and Sediment	Level 1 and 4	Drain inserts are moderately effective at reducing discharge of trash to receiving waters when loadings are compatible with the maintenance frequency. Excessive flow bypasses is the main cause of reduced performance. Results showed that these BMPs lack the capacity needed to quantify the level of maintenance desired by City's O&M Department. Due to large drainage areas, typical of street drainage, the pilot showed maintenance required in excess of 4 times per year.
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria	Levels 2, 3 and 4	Approximately 5,957 individual participated in clean-up activities and an estimated 238 tons of trash was collected.
SDB-009 Enhanced Construction Oversight	Water Quality	Sediment	Levels 1, 3, and 4	Airport Authority staff attended 360 construction project meetings relating to 15 construction projects and conducted a total of 267 construction inspections. (154 more than required by the Municipal Permit). Issues/concerns regarding erosion and sediment control were only identified 9.4% of the time. The Airport Authority was able to estimate a sediment pollutant load reduction as approximately 354.2 tons.
SDB-045 I Love a Clean San Diego School Watershed Presentations	Education	Bacteria, Pesticides, Sediment, and Trash	Level 2	Watershed education and pollution prevention information was presented to 111 school aged students in the HA. Results from the pre and post- tests showed an increase in knowledge after the presentations.
SDB-062 Residential Rain Barrel Subsidies & Distributions**	Water Quality and Education	Bacteria, Metals, Sediment, Trash, and Pesticides	Level 1 and 3	The County surveyed 50 customers who purchased rain barrels in 2010 for customer satisfaction and to check to be sure the rain barrels had been installed and maintained.

Table 4-4: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.2 San Diego Mesa Hydrologic Area (HPWQPs: Bacteria, Metals, Sediment, Trash, and Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
SDB-071 Targeted Catch Basin Cleaning Pilot	Water Quality	Bacteria, Trash, Metals, Nutrients, Trash and Sediment	Level 1 and 4	The costs and benefits associated with methods, schedules, or targeted locations in relation to sediment and pollutant removal would be better quantified with ongoing monitoring. Other data collection for specific analyses will require a targeted monitoring program. Data Recorded: 1. Volume Removed • Nitrogen - 100g • Phosphorus - 44g • Copper - 6.25g • Lead - 2.42g • Zinc - 20.47g 2. Location • Downtown 3. Sediment Sample Analysis: • Sediment – 70% • Trash – 20% • Organics – 10% of material removed
SDB-075 Juneteenth	Water Quality and Education	Bacteria, Oil & Grease, Pesticides, and Trash	Level 1 and 3	• Number of Surveys administered in FY 2012 (Outcome Level 1): 102 • Percentage of individuals surveyed that knew stormwater is not treated (Outcome Level 2): 45% • Percentage of individuals surveyed who feel that litter contributes to pollution at least a moderate amount (Outcome Level 2): 92% • Percentage of individuals surveyed who reported that they feel a very strong or strong obligation to not litter (Outcome Level 2): 81% • Percentage of individuals surveyed who reported that they pick up litter they see in their community and throw it in the trash at least sometimes (Outcome Level 3): 87%
SDB-076 Rainwater Harvesting Rebate Pilot Program**	Water Quality and Education	Bacteria, Metals, Sediment, Trash, and Pesticides	Level 1 and 3	15 participants were rebated for a total of 58 rain barrels. Participants were provided a rebate of 0.50 cents per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed.

Table 4-4: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.2 San Diego Mesa Hydrologic Area (HPWQPs: Bacteria, Metals, Sediment, Trash, and Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
SDB-077 Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship**	Water Quality	Bacteria, Metals, Trash	Level 3 and 4	Collected a total of 112,000 lbs. of metals, appliances, junk furniture, and mattresses. Disposed of 68,000 lbs. and recycled 44,000 lbs.
Presentations*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	13 presentations reaching over an estimated 697 individuals in the San Diego Bay WMA
Print Media*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	24 Print Media methods utilized with the ability to reach over an estimated 179,649 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	134 school program events reaching over 21,000 school-aged children
Municipal Staff Training*	Education	Bacteria, Metals, Pesticides, Sediment and Trash	Level 1 and 2	22 trainings held and 640 municipal staff trained
Jurisdictional Activities (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, restaurants, and nurseries. Of the total 2,417 bacteria sources inventoried, 96% are food establishments. Approximately 38% of the restaurants were inspected, and overall 38% of the likely bacteria sources inventoried were inspected.

Table 4-4: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.2 San Diego Mesa Hydrologic Area (HPWQPs: Bacteria, Metals, Sediment, Trash, and Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
JURMP Industrial/Commercial Inspections	Water Quality	Metals	Levels 1, 3 and 4	Sources categorized as likely to produce metals inventoried under the JURMP program during FY 2012 included agriculture, automotive, equipment, general industrial, institutional, manufacturing, metal, nursery, stone, and storage and warehousing. Of the total 1,465 metals sources inventoried, 60% automotive facilities and 14% are storage and warehousing facilities. Approximately 34% of the storage and warehousing facilities were inspected and 53% of automotive facilities. Overall 52% of the likely metals sources inventoried were inspected.
JURMP Industrial/Commercial Inspections	Water Quality	Pesticides	Levels 1, 3 and 4	Sources categorized as likely to produce pesticides inventoried under the JURMP program during FY 2012 included agriculture, animal, and nursery facilities Of the total 101 pesticide sources inventoried, 81% are animal facilities. Approximately 34% of the animal facilities were inspected, and overall 36% of the likely pesticide sources inventoried were inspected.
JURMP Industrial/Commercial and Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, contractors, general retail, health services, nurseries, construction sites, and municipal facilities. Of the total 768 sediment sources inventoried (excluding construction sites and municipal facilities), 32% of the likely sediment sources that were not related to construction and municipal facilities were inspected. There were also 298 municipal sites inspected a total of 597 times. The primary focus of likely sources of sediment is construction sites. During this FY, there were approximately 1,098 active construction sites in the HA that were inspected a total of 6,805 times.
JURMP Industrial/Commercial Inspections and Construction Site and Municipal Facility Inspections	Water Quality	Trash	Levels 1, 3 and 4	All sources inventoried under the JURMP program during FY 2012 are likely to produce trash. Of the total 5,314 trash sources inventoried (excluding construction and municipal), 34% were inspected. There were also 1,098 active construction sites inspected a total of 6,805 times and 298 municipal sites inspected a total of 597 times.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria, Metals, Sediment, and Trash	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2012, 1,135.1 tons of material was removed from streets via street sweeping and 428.3 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
****This activity was implemented throughout the County of San Diego's jurisdiction but may have impacted this HA.***

4.2.1.4 National City HA (908.3)

The National City HA is highly urbanized and residential land uses comprise 43% of the total land use. The HPWQPs in the HA are bacteria, sediment and trash. As described in Section 3, there were eight (8) distinct watershed water quality and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for the six (6) watershed activities, and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-5**).

Table 4-5: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.3 National City Hydrologic Area (HPWQPs: Bacteria, Sediment, and Trash)

Activity	Type	Priority Problems Addressed	Level Outcome	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed Activities				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria, Trash, Sediment	Levels 3 and 4	• Approximately 730,068 pet waste bags dispensed • City of National City estimated 2,400 lbs. removed in their jurisdiction
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria, Trash, Sediment	Levels 2, 3 and 4	Approximately 5,957 individual participated in clean-up activities and an estimated 238 tons of trash was collected.
SDB-005 Clean Community Program**	Water Quality	Bacteria, Trash, Sediment	Levels 2, 3, and 4	• In November 2011 and June 2012, a total of 623 tons of large-item waste was collected from 1,756 vehicle loads during the three events. • Approximately 871 elementary students received the contest flyer and a lesson about the contest theme "By Keeping our Community Clean, We Can Keep the Ocean Clean."
SDB-007 Additional Dry Season Construction Inspections**	Water Quality	Bacteria, Trash, Sediment	Level 3	• Completed 6 inspections, which exceeds Permit requirements. • Helped contractors stay vigilant about implementing BMPs, especially near the end of the dry season. BMP deficiencies noted during the dry season inspections enabled the City to require resolution before the wet season.
SDB-074 National City Multi-Family Residential Property Evaluation	Water Quality	Bacteria, Sediment, Trash	Level 3	Upon completion of the initial assessment, brief follow-up visits were conducted at six properties where higher priority BMP deficiencies were observed and were able to be discussed with the responsible party of the property. During follow-up visits, it was found that about half of the the properties had corrected or taken steps to correct the higher priority BMP deficiencies observed during the first site visit (e.g., erosion, discharges to the MS4, oil stains, etc.)
SDB-076 Rainwater Harvesting Rebate Pilot Program**	Water Quality and Education	Bacteria, Sediment, Trash	Level 1 and 3	15 participants were rebated for a total of 58 rain barrels. Participants were provided a rebate of 0.50 cents per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed.

Table 4-5: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.3 National City Hydrologic Area (HPWQPs: Bacteria, Sediment, and Trash)

Activity	Type	Priority Problems Addressed	Level Outcome	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
SDB-077 Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship***	Water Quality	Bacteria, Trash	Level 3 and 4	Collected a total of 112,000 lbs. of metals, appliances, junk furniture, and mattresses. Disposed of 68,000 lbs. and recycled 44,000 lbs.
Presentations*	Education	Bacteria, Trash, Sediment	Level 1 and 2	13 presentations reaching over an estimated 697 individuals in the San Diego Bay WMA
Print Media*	Education	Bacteria, Trash, Sediment	Level 1 and 2	24 Print Media methods utilized with the ability to reach over an estimated 179,649 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria, Trash, Sediment	Level 1 and 2	134 school program events reaching over 21,000 school-aged children
Municipal Staff Training*	Education	Bacteria, Trash, Sediment	Level 1 and 2	22 trainings held and 640 municipal staff trained
Jurisdictional Activities (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, food establishments, and nurseries. Of the total 236 bacteria sources inventoried, 99% are food establishments. Approximately 60% of the restaurants were inspected, and overall 59% of the likely bacteria sources inventoried were inspected.
JURMP Industrial/Commercial & Construction Site Inspections	Water Quality	Sediments	Levels 1, 3 and 4	Sources categorized as likely to produce sediment inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, contractors, nurseries, construction sites, and municipal facilities. Of the total 85 sediment sources inventoried (excluding construction sites and municipal facilities), 97% are contractors. Overall, 19% of the likely sediment sources that were not related to construction and municipal facilities were inspected. The primary focus of likely sources of sediment is construction sites. During this FY, there were approximately 244 active construction sites in the HA that were inspected a total of 1,021 times. There were also 33 municipal sites inspected a total of 37 times
JURMP Industrial/ Commercial Inspections & Construction Site & Municipal Facility Inspections	Water Quality	Trash	Levels 1, 3 and 4	All sources inventoried under the JURMP program during FY 2012 are likely to produce trash. Of the total726 trash sources inventoried (excluding construction and municipal), 41% were inspected. There were also 244 active construction sites inspected a total of 1,021 times and 33 municipal sites inspected a total of 37 times.

Table 4-5: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 908.3 National City Hydrologic Area (HPWQPs: Bacteria, Sediment, and Trash)

Activity	Type	Priority Problems Addressed	Level Outcome	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria, Sediment, and Trash	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2012, 792.9 tons of material was removed from streets via street sweeping and 12.7 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
*** This activity was implemented in 908.3 and 909.1 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents two HAs.***
****This activity was implemented throughout the City of San Diego's jurisdiction. Therefore, the data and information presented is for the City of San Diego, but the activity impacted this HA.***

4.2.2 SWEETWATER HU (909)

Effectiveness Assessment for the Sweetwater HU is presented by HA in the sections below with the exception of the 909.3 HA. There are no HPWQPs identified in the 909.3 HA at this time and therefore no effectiveness assessment was conducted.

4.2.2.1 Lower Sweetwater HA (909.1)

The Lower Sweetwater HA is the most urbanized area of the Sweetwater HU and land use consist primarily of residential, streets and roadways, open space, with the remaining area consisting of a mixture of commercial/industrial businesses, schools and undeveloped land use. The HPWQP in the Lower Sweetwater HA is bacteria. Residential sources of bacteria include sanitary sewer overflows, septic system failures, landscape maintenance, various washing activities, trash, and pet waste. As described in Section 3, there were 15 distinct watershed water quality, monitoring, and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for the nine (9) watershed activities, and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-6**).

Table 4-6: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 909.1 Lower Sweetwater Hydrologic Area (HPWQP: Bacteria)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed Activities				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria	Levels 3 and 4	• Approximately 730,068 pet waste bags dispensed • Three new dispensers added in Chula Vista • County of San Diego estimated 11,214 lbs. removed in their jurisdiction • City of National City estimated 2,400 lbs. removed in their jurisdiction
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria	Levels 2, 3 and 4	Approximately 5,957 individual participated in clean-up activities and an estimated 238 tons of trash was collected.
SDB-039 Provide Homeowner's Association Education About Pollution Prevention**	Education	Bacteria	Level 2	Distributed 250 stormwater pollution prevention fliers to HOAs in the City of Chula Vista
SDB-040 Stormwater Education Booth at Annual Pet Festival and Doggy Dash**	Education	Bacteria	Level 1 and 2	• 115 surveys completed • Found that over 85% of surveyed pet owners use BMPs for pet waste
SDB-046 Land Acquisitions San Diego Bay	Water Quality	Bacteria	Level 4	3.39 acres of land acquired during the reporting period
SDB-062 Residential Rain Barrel Subsidies & Distributions***	Water Quality and Education	Bacteria	Level 1 and 3	The County surveyed 50 customers who purchased rain barrels in 2010 for customer satisfaction and to check to be sure the rain barrels had been installed and maintained.
SDB-066 Focused Outreach to Equestrian Community****	Education	Bacteria	Level 1 and 2	45 horse owners completed surveys – Surveys showed among horse owners there was some evidence that the workshop sparked behavioral intentions to remove manure from corrals and stalls more frequently and to manage manure by composting.
SDB-074 National City Multi-Family Residential Property Evaluation	Water Quality	Bacteria	Level 3	Upon completion of the initial assessment, brief follow-up visits were conducted at six properties where higher priority BMP deficiencies were observed and were able to be discussed with the responsible party of the property. During follow-up visits, it was found that about half of the the properties had corrected or taken steps to correct the higher priority BMP deficiencies observed during the first site visit (e.g., erosion, discharges to the MS4, oil stains, etc.)
SDB-076 Rainwater Harvesting Rebate Pilot Program**	Water Quality and Education	Bacteria	Level 1 and 3	15 participants were rebated for a total of 58 rain barrels. Participants were provided a rebate of 0.50 cents per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed.

Table 4-6: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 909.1 Lower Sweetwater Hydrologic Area (HPWQP: Bacteria)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
SDB-077 Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship****	Water Quality	Bacteria	Level 3 and 4	Collected a total of 112,000 lbs. of metals, appliances, junk furniture, and mattresses. Disposed of 68,000 lbs. and recycled 44,000 lbs.
Presentations*	Education	Bacteria	Level 1 and 2	13 presentations reaching over an estimated 697 individuals in the San Diego Bay WMA
Print Media*	Education	Bacteria	Level 1 and 2	24 Print Media methods utilized with the ability to reach over an estimated 179,649 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria	Level 1 and 2	134 school program events reaching over 21,000 school-aged children
Municipal Staff Training*	Education	Bacteria	Level 1 and 2	22 trainings held and 640 municipal staff trained
Jurisdictional Activities (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, food establishments, and nurseries. Of the total 528 bacteria sources inventoried, 32% were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2012, 855.2 tons of material was removed from streets via street sweeping and 249.1 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
****This activity was implemented in 909.1, 910.2, and 910.3 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents three HAs.***
***** This activity was implemented throughout the County of San Diego's jurisdiction but may have impacted this HA.***
*****This activity was implemented in 909.1 and 909.2 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents two HAs.***

4.2.2.2 Middle Sweetwater HA (909.2)

Unincorporated rural and suburban communities characterize the Middle Sweetwater HA. The Middle Sweetwater HA consists primarily of open space and undeveloped land, approximately 63% of the land use, while the rest of the HA is mostly residential use and commercial/industrial and streets/roadway land use. Pesticides have been identified as the HPWQP for this HA. As described in Section 3, there were eight (8) distinct watershed water quality and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for five (5) watershed activities, and the inspection activities conducted at the jurisdictional level at this time (**Table 4-7**).

Table 4-7: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 909.2 Middle Sweetwater Hydrologic Area (HPWQP: Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed Activities				
SDB-001 Pet Waste Bag Programs*	Water Quality	Pesticides	Levels 3 and 4	• Approximately 730,068 pet waste bags dispensed • County of San Diego estimated 11,214 lbs. removed in their jurisdiction
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Pesticides	Levels 2, 3 and 4	Approximately 5,957 individual participated in clean-up activities and an estimated 238 tons of trash was collected.
SDB-046 Land Acquisitions San Diego Bay	Water Quality	Pesticides	Level 4	254.66 acres of land acquired during the reporting period
SDB-062 Residential Rain Barrel Subsidies & Distributions**	Water Quality and Education	Pesticides	Level 1 and 3	50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained.
SDB-066 Focused Outreach to Equestrian Community***	Education	Pesticides	Level 1 and 2	45 horse owners completed surveys – Surveys showed among horse owners there was some evidence that the workshop sparked behavioral intentions to remove manure from corrals and stalls more frequently and to manage manure by composting.
Presentations*	Education	Pesticides	Level 1 and 2	13 presentations reaching over an estimated 697 individuals in the San Diego Bay WMA
Print Media*	Education	Pesticides	Level 1 and 2	24 Print Media methods utilized with the ability to reach over an estimated 179,649 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Pesticides	Level 1 and 2	134 school program events reaching over 21,000 school-aged children
Municipal Staff Training*	Education	Pesticides	Level 1 and 2	22 trainings held and 640 municipal staff trained

Table 4-7: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 909.2 Middle Sweetwater Hydrologic Area (HPWQP: Pesticides)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Jurisdictional Activities (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Pesticides	Levels 1, 3 and 4	Sources categorized as likely to produce pesticides inventoried under the JURMP program during FY 2012 included agriculture, animal, nursery facilities and municipal facilities. 29% of the facilities likely to produce pesticides inventoried were inspected (not including municipal facilities). Additionally, there were a total of 30 municipal facilities that received a total of 30 inspections.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.
*** This activity was implemented throughout the County of San Diego's jurisdiction but may have impacted this HA.***
*****This activity was implemented in 909.1 and 909.2 and cannot be divided by the individual HA at this time. Therefore the information and data presented represents two HAs.***

4.2.3 OTAY HU (910)

The *Basin Plan* identifies the Otay HU as the second largest of the three HUs in the San Diego Bay WMA and is one of the least populated watersheds in the San Diego County. The effectiveness assessment for the Otay HU is presented by HA in the sections below with the exception of the 910.3 HA. There are no HPWQPs identified for the 910.3 HA and therefore no effectiveness assessment was conducted.

4.2.3.1 Coronado HA (910.1)

Land use in the Coronado HA consists primarily of open space which is 81% of the total land use in the HA. Residential land uses make up approximately 13% and agricultural uses make up 4% of the total land use. Bacteria and Gross Pollutants have been identified as the HPWQP for the HA. As described in Section 3, there were six (6) distinct watershed water quality, monitoring, and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for three (3) watershed activities, and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-8**).

Table 4-8: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 910.1 Coronado Hydrologic Area (HPWQPs: Bacteria and Gross Pollutants)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed Activities				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria and Gross Pollutants	Levels 3 and 4	• Approximately 730,068 pet waste bags dispensed
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria and Gross Pollutants	Levels 2, 3 and 4	Approximately 5,957 individual participated in clean-up activities and an estimated 238 tons of trash was collected.
SDB-047 Large Special Event Inspection and Clean-up	Water Quality	Bacteria and Gross Pollutants	Levels 2, 3, and 4	The City of Imperial Beach held 17 large special events which included the U.S. Open Sandcastle Competition with over 400,000 visitors. In preparation for the U.S. Open Sandcastle event the City provided additional stormwater BMP information to all street vendors before the event and then followed up with stormwater inspections during the event to ensure the implementation of the BMPs. Most street venders were aware of the stormwater requirements and were implementing proper stormwater BMPs. Vendors not implementing proper BMPs were warned or cited and provided further information to correct behavior. No Notices of Violations (NOVs) were issued during the Sandcastle event or other special event.
Presentations*	Education	Bacteria and Gross Pollutants	Level 1 and 2	13 presentations reaching over an estimated 697 individuals in the San Diego Bay WMA
Print Media*	Education	Bacteria and Gross Pollutants	Level 1 and 2	24 Print Media methods utilized with the ability to reach over an estimated 179,649 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria and Gross Pollutants	Level 1 and 2	134 school program events reaching over 21,000 school-aged children
Municipal Staff Training*	Education	Bacteria and Gross Pollutants	Level 1 and 2	22 trainings held and 640 municipal staff trained
Jurisdictional Activities (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, food establishments, and nurseries. Of the total 244 bacteria sources inventoried, 48% are food establishments. Approximately 80% of the food establishments were inspected, and overall 40% of the likely bacteria sources inventoried were inspected.

Table 4-8: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 910.1 Coronado Hydrologic Area (HPWQPs: Bacteria and Gross Pollutants)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
JURMP Industrial/Commercial	Water Quality	Gross Pollutants	Levels 1, 3 and 4	Sources categorized as likely to produce gross pollutants inventoried under the JURMP program during FY 2012 included automotive, contractors, and food establishments. Of the total 130 gross pollutant sources inventoried 80% were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Gross Pollutants	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2012, 173.5 tons of material was removed from streets via street sweeping and 1,217.4 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore the information and data presented is for the WMA but the activity impacted this HA.

4.2.3.2 Otay HA (910.2)

Land use in Otay HA consists primarily of open space, approximately 41% of the land use, while residential, streets and roadways and industrial and commercial uses are approximately 14% of the land use. Bacteria have been identified as a HPWQP for this HA. As described in Section 3, there were 15 distinct watershed water quality and education activities along with other education and public participation activities, inspections, street sweeping and MS4 cleaning conducted in the HA. Reportable effectiveness measures have been identified for seven (7) watershed activities, and the inspections, sweeping and catch basin activities conducted at the jurisdictional level at this time (**Table 4-9**).

Table 4-9: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 910.2 Otay Hydrologic Area (HPWQPs: Bacteria)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
Watershed Activities				
SDB-001 Pet Waste Bag Programs*	Water Quality	Bacteria	Levels 3 and 4	• Approximately 730,068 pet waste bags dispensed • Three new dispensers added in Chula Vista • County of San Diego estimated 11,214 lbs. removed in their jurisdiction
SDB-004 Collaborative Clean-Up Activities*	Water Quality	Bacteria	Levels 2, 3 and 4	Approximately 5,957 individual participated in clean-up activities and an estimated 238 tons of trash was collected.
SDB-039 Provide Homeowner's Association Education About Pollution Prevention**	Education	Bacteria	Level 2	Distributed 250 stormwater pollution prevention fliers to HOAs in the City of Chula Vista
SDB-040 Stormwater Education Booth at Annual Pet Festival and Doggy Dash**	Education	Bacteria	Level 1 and 2	• 115 surveys completed • Found that over 85% of surveyed pet owners use BMPs for pet waste
SDB-045 ILACSD School Watershed Presentations	Education	Bacteria	Level 2	Watershed education and pollution prevention information was provided to 298 school aged children in the HA. Pre and post-tests assessment tools were utilized and indicated an increase in knowledge and awareness.
SDB-062 Residential Rain Barrel Subsidies & Distributions***	Water Quality and Education	Bacteria	Level 1 and 3	50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained.
SDB-073 Walk the Watershed	Water Quality and Education	Bacteria	Levels 2 and 3	• Over 200 students participated • 125 event exit surveys were collected – 100% correctly identified what a watershed is, what urban runoff is, and at least one preventative measure they can take to prevent stormwater pollution • 1,000 pounds of invasive iceplant was removed from a 40 square foot area adjacent to the Otay River
SDB-076 Rainwater Harvesting Rebate Pilot Program****	Water Quality and Education	Bacteria	Level 1 and 3	15 participants were rebated for a total of 58 rain barrels. Participants were provided a rebate of 0.50 cents per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed.

Table 4-9: Summary of Implemented Activities with Effectiveness Assessment for FY 2012 – 910.2 Otay Hydrologic Area (HPWQPs: Bacteria)

Activity	Type	Priority Problems Addressed	Level Outcomes	Pollutant Load Reduction, Source Abatement or Other Benefit Derived
SDB-077 Qualcomm Stadium Drop-off Community Clean-up and Recycling Event Sponsorship*****	Water Quality	Bacteria	Level 3 and 4	Collected a total of 112,000 lbs. of metals, appliances, junk furniture, and mattresses. Disposed of 68,000 lbs. and recycled 44,000 lbs.
Presentations*	Education	Bacteria	Level 1 and 2	13 presentations reaching over an estimated 697 individuals in the San Diego Bay WMA
Print Media*	Education	Bacteria	Level 1 and 2	24 Print Media methods utilized with the ability to reach over an estimated 179,649 individuals in the San Diego Bay WMA
School Programs and Outreach*	Education	Bacteria	Level 1 and 2	134 school program events reaching over 21,000 school-aged children
Municipal Staff Training*	Education	Bacteria	Level 1 and 2	22 trainings held and 640 municipal staff trained
Jurisdictional Activities (No WURMP Credit)				
JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Sources categorized as likely to produce bacteria inventoried under the JURMP program during FY 2012 included agriculture, animal facilities, and food establishments. Of the total 320 bacteria sources inventoried, 98% are food establishments. Approximately 47% of the food establishments were inspected, and overall 46% of the likely bacteria sources inventoried were inspected.
JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	Street sweeping and MS4 cleaning are other BMPs implemented under the JURMP that may address bacteria, metal, sediment, and trash sources. During FY 2012, 651.2 tons of material was removed from streets via street sweeping and 203.4 tons of material was removed from the MS4 via cleaning activities, addressing catch basins, pipes, brow ditches, and open channels.

This activity was implemented on a watershed basis and cannot be divided by HA at this time. Therefore, the data and information presented is for the WMA but the activity impacted this HA.
****This activity was implemented in 909.1, 910.2, and 910.3 and cannot be divided by the individual HA at this time.***
***** This activity was implemented throughout the County of San Diego's jurisdiction but may have impacted this HA.***
******This activity was implemented in five HAs and the results cannot be divided by HAs at this time. Therefore the information and data presented represents five HAs but the activity impacted this HA.***
*******This activity was implemented throughout the City of San Diego's jurisdiction. Therefore, the data and information presented is for the City of San Diego, but the activity impacted this HA.***

4.3 TMDL ASSESSMENTS

This section will assess the effectiveness of BMP Implementation Plans as a whole for TMDLs within the San Diego WMA.

4.3.1 CHOLLAS CREEK DIAZINON AND DISSOLVED METALS TMDLS

Status

The Implementation Plan for the Chollas Creek Diazinon TMDL was completed in September 2004 and is currently being implemented. The Copermittees within the Chollas Creek HSA (a sub-watershed of the Pueblo San Diego HU (908)) continue to monitor Diazinon discharges into the creek and implement an education and outreach program to raise awareness among key audiences regarding the harmful effects of pesticides on the environment. The Copermittees also continue to promote the use of Integrated Pest Management (IPM) practices to reduce pesticide loading into Chollas Creek.

The Chollas Creek Dissolved Metals TMDL took effect October 22, 2008 when it was approved as a Basin Plan Amendment by the Office of Administrative Law and subsequently approved by the Environmental Protection Agency in December 2008. The seven named dischargers collaborated on a multi-pollutant strategy for addressing the TMDL and the developed the required BMP Implementation Plan that was submitted to the Regional Board on October 21, 2009. While implementing Phase I of the strategy, the dischargers have also been developing the CLRP, as discussed in section 4.3.4. The CLRP will supersede the current implementation plan for the Chollas Creek Metals TMDL once approved by the RWQCB.

Assessment

To address Diazinon in FY 2012, the Copermittees continued to promote IPM through jurisdictional IPM seminars and events and through the San Diego Regional IPM Program. Refer to Section 3.2.1.3 and **Table 3-3** of this Annual Report for more details. A few dischargers implemented additional activities targeting Diazinon through IPM materials, detailed in the tables in (**Appendix D**). Specifically, dischargers implemented the following activities:

- IPM materials were distributed at five community events targeting specific audience groups.
- 2,162 students were educated through sponsorship by dischargers of San Diego County Office of Education's "Green Machine" traveling outreach van which visits elementary schools within the Chollas Creek watershed area. Education includes IPM practices.
- 132 individuals attended an IPM for Landscape Professionals Seminar and received information on IPM methods that combine biological, cultural, physical, and chemical tools to minimize health, environmental and financial risks.

As discussed in Section 2.2.1.4, the Copermittees continue to conduct monitoring for the Chollas Creek Diazinon and Dissolved Metals TMDLs. Required compliance monitoring along with trends is detailed in **Appendix F**, the Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Order No. R9-2004-0277 2009-2010 Water Quality Monitoring Report. In summary:

- Diazinon concentrations at SD8(1) and DPR3 have shown statistically significant decreasing trends,

- Dissolved copper trends throughout the compliance monitoring seasons have generally exceeded both acute and chronic WQOs using the default Water Effects Ratio (WER) of 1. However, based on Site Specific Objectives WERs dissolved copper concentrations did not exceed the acute and chronic dissolved copper WQOs.
- Dissolved lead concentrations have been consistently below the acute WQO and about level with the chronic WQO.
- Dissolved zinc concentrations at DPR3 have been below the acute and chronic WQOs throughout the compliance monitoring period. However, dissolved zinc concentrations at SD8(1) have fluctuated above and below the acute and chronic WQOs, but concentrations from the 2010-2011 monitoring season to the present are lower than acute and chronic WQOs.
- Toxicity was not observed at DPR3 during any season of this monitoring effort. In the sample collected from SD8(1), there was an adverse effect observed in *C. dubia* reproduction in February and November of 2009

Based on the monitoring results presented above, the San Diego Bay Copermittees' efforts to address Diazinon through education and outreach programs, in addition to the ban on Diazinon, are adequate for meeting the goals of the Diazinon TMDL. Education and outreach programs and events for area residents and businesses should continue in order to help further reduce pesticide usage within the Chollas Creek watershed and proactively address the observed shift in pesticide usage that has occurred in recent years toward synthetic pyrethroids.

As discussed in Section 2.2.1.4, the City of San Diego submitted the WER to the Regional Board for review and approval. If approved, the WER would improve the accuracy of the Dissolved Metals TMDL by including water hardness in the calculation of the levels of dissolved metals that Chollas Creek is able to assimilate before beneficial uses would be impaired. To date, the WER has not been reviewed by the Regional Board.

The Dischargers' approach in addressing the Dissolved Metals TMDL is an integrated, multi-pollutant based approach targeting metals, trash, bacteria, and pesticides as well as other pollutants. Seventy-one activities, including water quality, education, and ongoing agency-wide activities, were implemented in FY 2012.

Activity details including information on measurable targeted outcomes (Levels 1-6), assessment measures and assessment methods are presented in each discharger's BMP Implementation table located in **Appendix F**. However, this section includes a collective summary of some notable accomplishments. Examples of Discharger activity accomplishments for FY 2012 include:

- The removal of over 48,000 pounds of trash from the watershed.
- Over 150,000 individuals were educated on urban runoff, pollution prevention, and watershed issues through Public Service Announcements, presentations, workshops and seminars.
- 80 Multi-Family Residential Trash Areas were assessed as part of a Multi-Family Residential Trash Area Pilot Study

The accomplishments listed above are not comprehensive. Details regarding all the activities that were implemented and/or are planned and made progress in FY 2012 are included in each

discharger's activity table included in **Appendix D**. It is anticipated that over time with implementation of the Dischargers' Dissolved Metals TMDL Implementation Plan, improvements to water quality will be observed. The actions that the Dischargers' have planned are anticipated to reduce pollutant loading and address pollutant sources as well as education the public on water quality issues.

4.3.2 SIYB DISSOLVED COPPER TMDL

Status

The Port of San Diego, City of San Diego, SIYB marinas/yacht clubs, hull cleaners, and boat owners were identified as named parties under the TMDL for dissolved copper in SIYB. The SIYB Dissolved Copper TMDL was added as an amendment to the Regional Board Water Quality Control Plan for the San Diego Basin (Basin Plan) on February 9, 2005. The SYIB Dissolved Copper TMDL requires that loading of dissolved copper be reduced by 76% by 2022.

According to the TMDL, the predominant source of copper loading to SIYB is copper-based hull paints applied to recreational vessels in SIYB. Copper may be released from the hull paints either through passive leaching or in-water hull cleaning. Other sources include urban runoff, aerial deposition, and sediment flux.

On March 11, 2011, the RWQCB issued Investigative Order No. R9-2011-0136 which stated that TMDL implementation progress is to be determined through tracking data on the number of boat hulls converted from copper-based antifouling paints to alternative hull paints to assess required dissolved copper loading reductions and monitoring dissolved copper concentrations and toxicity in the water column to determine when water quality objectives are attained and beneficial uses restored.

During this reporting period, efforts focused on implementing strategies to address the TMDL and compiling information on these efforts in the annual report submitted on March 31, 2012, which is included in **Appendix G**. As discussed in Section 2.2.1.4, the Port of San Diego conducted water quality sampling to determine dissolved copper concentrations in the basin, test for acute and chronic toxicity, and assess water quality trends over time, while the City of San Diego conducted urban runoff monitoring for SIYB to identify spatial or temporal patterns in dissolved copper loads.

Assessment

BMPs implemented by the responsible parties to reduce dissolved copper loading and improve water quality included:

- Formulation of policies, regulations, and incentives to reduce copper loading, such as the San Diego Bay-wide hull cleaning permit and marina/yacht club alternative hull paint wait list priority and financial incentives.
- Sponsorship and implementation of alternative hull paint studies.
- Hull paint transitions to non-copper and low-copper products.
- Extensive education and outreach, such as hosting educational booths, developing brochures and educational materials, and presenting at conferences and workshops.
- Leading and participating in multi-agency activities, such as the state-wide copper subworkgroup and the Regional Harbor Monitoring Program.

The SIYB Dissolved Copper TMDL incorporated interim and final loading targets for TMDL attainment. The first interim loading target is a 10% reduction in dissolved copper by December 2012. Compliance with the interim target will be assessed in the next reporting period and submitted by the Port of San Diego in the Shelter Island Yacht Basin Dissolved Copper Total Maximum Daily Load 2012 Monitoring and Progress Final Report. An update will also be provided in the next WURMP annual report.

Although the dissolved copper load from the City's MS4 into the SIYB is well below the WLA as identified in the TMDL and further reductions from the MS4 are not required by the TMDL, the City is continuing to monitor and verify that the copper loading from its MS4 remains within the TMDL WLA. Additionally, potential options to further control or reduce the existing dissolved copper load from the City's MS4 into the SIYB that the City may consider include:

- Source control measures targeting reduction copper load from aerial deposition
- Implement targeted aggressive street sweeping activities within the Shelter Island drainage area
- Outreach and education programs to educate residents and business owners about the dissolved copper TMDLs as well as general stormwater pollution prevention information.

4.3.3 BABY BEACH AND SHELTER ISLAND SHORELINE PARK INDICATOR BACTERIA TMDL

Status

The Regional Board adopted the Baby Beach and Shelter Island Shoreline Park Indicator Bacteria TMDL as a Basin Plan Amendment on June 11, 2008. The Port of San Diego and the City of San Diego are responsible for monitoring Shelter Island Shoreline Park for Indicator Bacteria (Total Coliform, Fecal Coliform, Enterococci).

As discussed in Section 3.5.2, the Port of San Diego initiated an internal work plan to compile and summarize available bacteriological data collected from Shelter Island Shoreline Park, assess the data with respect to listing guidelines established by the State Water Resources Control Board (SWRCB), and identify data gaps. This effort will help to verify that the existing waste load allocation has not been exceeded and identify additional actions that may need to be taken. An update will be provided in the next reporting period.

Assessment

An assessment of this TMDL is not currently available.

4.3.4 REVISED TMDL FOR INDICATOR BACTERIA, PROJECT I

Status

In FY 2012, the Copermittees and Caltrans developed a CLRP for the Chollas Creek HSA. The CLRP represents an integrated water quality plan combining multiple permit-based and voluntary strategies and BMPs into a comprehensive approach for achieving compliance with the Indicator Bacteria, Project 1 TMDL which was approved by the San Diego Regional Water Quality Control Board and took effect April 4, 2011. This CLRP will supersede the Implementation Plan previously submitted for the Chollas Creek Metals and Diazinon TMDL. The Copermittees will use the CLRP to guide watershed implementation programs, evaluate their effectiveness, and make adjustments over a twenty-year implementation period (through 2031).

The CLRP is a compliance plan with suites of potential nonstructural and structural BMPs that may be implemented. These BMPs were developed and selected based on their applicability to the specific pollutants, impairments and conditions addressed; and the specific land use conditions and availability of land in the watersheds. By incorporating a comprehensive approach to all of the pollutants, impairments and concerns, the CLRP is intended to improve the efficiency and effectiveness of BMP planning, and as a result, to reduce the overall cost of implementation and compliance monitoring.

Assessment

Assessment of the Comprehensive Load Reduction Plan is an iterative process and will involve tracking the individual activities periodically to be able to make recommendations on how to optimize the efficiency of the Copermittees stormwater programs to meet water quality goals and regulations. As the CLRP was submitted in October 2012, there are no results available at this time.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The San Diego Bay Copermittees successfully completed all watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. Due to the success of the programs implemented during FY 2012, the San Diego Bay WURMP achieved the following objectives: 1) implementation of activities to specifically address the sources of water quality problems at a WMA and HA level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a WMA and HA level; 4) continued refinement of the watershed program; and 5) continued progress toward meeting WURMP goals and objectives (San Diego Bay WURMP, 2008).

As required, Copermittees implemented activities in the WMA as part of their JURMP and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees continued to collect and report on JURMP and WURMP activities performed on an HA basis for this annual report. It should be noted that while the information in this report does not account for all JURMP activities undertaken by each Copermittee, the San Diego Bay Copermittees are utilizing a more holistic approach to evaluate all efforts taken to improve stormwater quality through applicable stormwater programs within the WMA. In addition, estimates were used to generate quantifiable result for some of the reported JURMP activities (this process is explained in **Appendix B**). Combined activity reporting is an important step to integrate the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

In order to address HPWQPs and target audiences in the San Diego Bay WMA, the Copermittees implemented eight (8) watershed education activities, 25 water quality activities, and three (3) monitoring or source identification studies with many of the activities providing effectiveness assessment information as described in Section 4. It is important to note that there were water quality activities that were implemented in multiple HAs such as Pet Waste Bags, Trash Cleanups, Street Sweeping, Rain Barrel Rebates, and Inspections.

In addition, the San Diego Bay Watershed Copermittees were successful in collectively conducting a total of 14,731 construction inspections, 3,607 industrial and commercial facility inspections, and 930 municipal facility inspections in the San Diego Bay WMA during this reporting period. In addition there were approximately 3,042 tons of debris removed from MS4 facilities and an estimated 4,799 tons of debris removed through street sweeping activities conducted by the Copermittees in the San Diego Bay WMA.

The named dischargers of the TMDLs in San Diego Bay WMA have taken a holistic approach to planning, implementation, and assessment of watershed activities. The approach takes into account watershed activities implemented by named dischargers under WURMP, JURMP, or other stormwater water quality programs. As with the WURMP assessment, the goal of integrating information from various programs is to compile data from all implemented activities in order to allow a comprehensive evaluation of watershed-wide efforts that address high priority water quality pollutants identified in the TMDLs. The involvement of non-Copermittee agencies (i.e., Caltrans and the U.S. Navy) in the Chollas Creek TMDLs enables the incorporation of information on pollutant sources outside of the Copermittees' jurisdictions and the BMPs these agencies have implemented to address pollutant sources. During this reporting period, Copermittees named in one or more of the TMDLs in the San Diego Bay WMA have

implemented activities as part of their comprehensive Stormwater Programs that will help in achieving TMDL compliance. The dischargers will share this information and will apply lessons learned in the region with the goal of improving water quality in the Chollas Creek Watershed and throughout the San Diego Bay WMA.

5.2 PROGRAM IMPROVEMENTS AND RECOMMENDATIONS

The San Diego Bay Copermittees will continue to utilize information on watershed pollutants and sources when evaluating and determining which watershed activities to implement. The Watershed Strategy, a key component required for the San Diego Bay WURMP Document, provides a consistent mechanism for prioritizing pollutants, identifying sources of pollution, maximizing available resources, and developing and implementing activities. The San Diego Bay Copermittees will continue to gather water quality data suitable for assessments at the watershed, sub-watershed, and HA levels, and research pollutant sources and their loading potentials. The San Diego Bay Copermittees will also leverage studies on these issues being completed in other San Diego region watersheds. Further refining the characterization of source inventories and water quality is expected to enable the Copermittees to modify program activities to specifically target the most important sources of HPWQPs.

The San Diego Bay Copermittees will continue to evaluate the standardization of incoming data available through the activity summary sheets and comprehensive assessments. By evaluating the activities' relevance to the high priority water quality problems and their sources, the Copermittees will be able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary.

It is also recommended that the San Diego Bay Watershed Copermittees evaluate the WURMP program and implementation components in regards to the upcoming Tentative Order and its impact on watershed and jurisdictional programs. The adoption of the Tentative Order may lead to program changes and activity implementation changes in future fiscal years. The Copermittees will continue to contribute to efforts focused on making a more efficient and effective watershed program through their involvement in the San Diego Regional Copermittees' efforts to improve coordination on reporting and assessment functions and in working with RWQCB staff.

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SAN DIEGO BAY WATERSHED MANAGEMENT AREA

Land Use Map

Legend

- Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

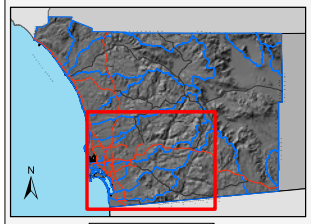

DPLU GIS

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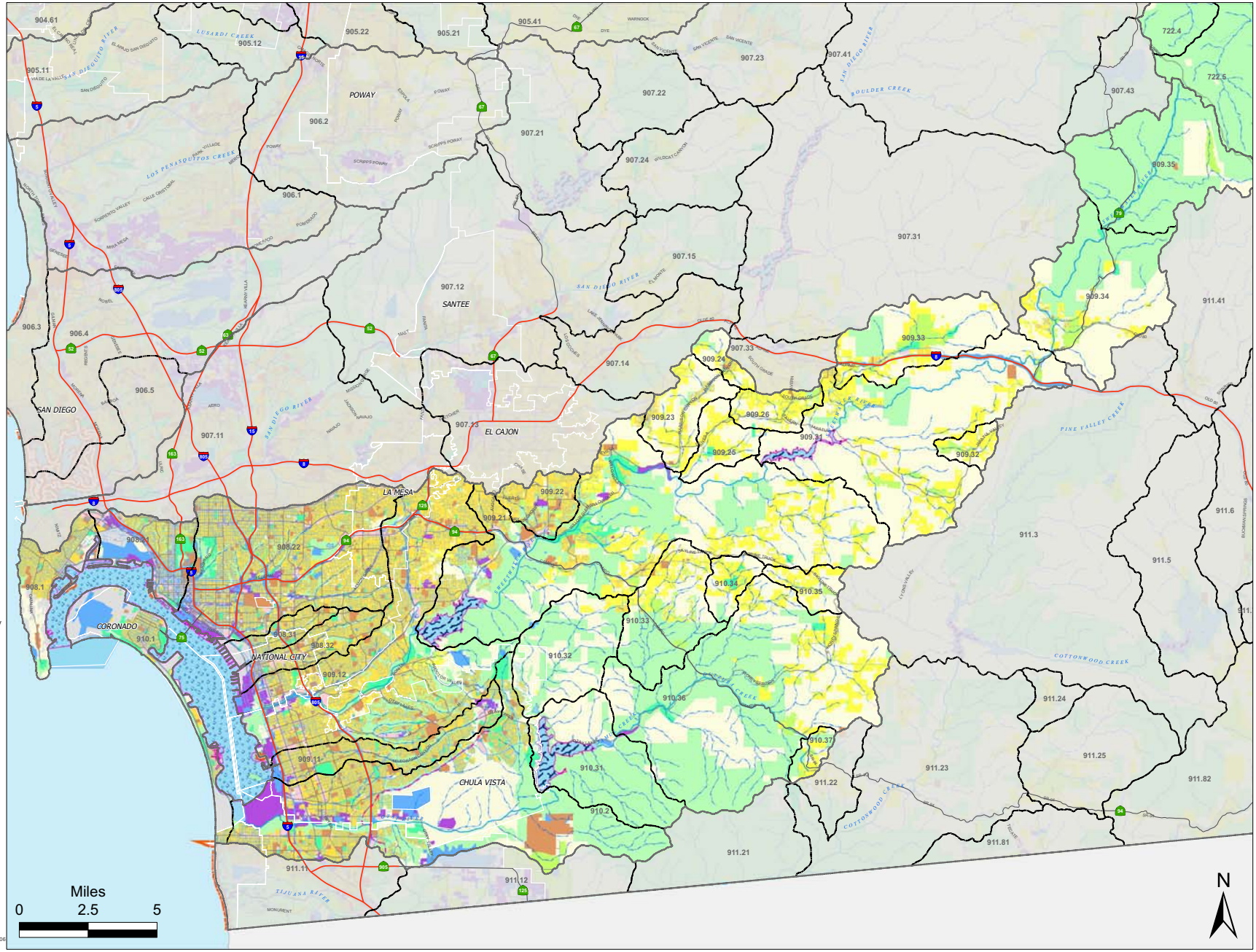

SAN DIEGO RIVER WATERSHED URBAN RUNOFF MANAGEMENT PLAN

San Diego River Watershed
San Diego County, California

Prepared For:

City of El Cajon, Lead Copermittee
City of La Mesa
City of San Diego
City of Santee
County of San Diego

Prepared By:

TRC
San Diego, California

March 2008

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EXECUTIVE SUMMARY

In accordance with the requirements of the 2007 Municipal Permit, this Watershed Urban Runoff Management Plan (WURMP) follows the collective Watershed Strategy developed at the regional level by the jurisdictions (San Diego Region Copermittees) subject to the Municipal Permit. This Watershed Strategy provides a process for identifying priority pollutants and priority sources in the watershed and for developing a watershed-specific plan of activities in order to mitigate the impacts associated with municipal discharges. The WURMP also describes how the effectiveness of these activities and the overall watershed program will be evaluated in the San Diego River watershed management area (WMA) so that the program can continue to improve.

PROGRAM FRAMEWORK

The five jurisdictions in the San Diego River WMA working collaboratively at the watershed level to develop this WURMP are the County of San Diego and the cities of El Cajon, La Mesa, San Diego and Santee. The City of El Cajon serves as the lead Copermittee.

The water quality standards applicable to water bodies within the San Diego River WMA consist of the designated beneficial uses, water quality objectives (WQOs) and the Anti-Degradation Policy as described in the Basin Plan (SDRWQCB, 1994). WQOs establish the numeric or narrative water quality goals that are expected to support the beneficial uses. If these standards are not appropriate for a particular location, the Copermittees would need to work with the San Diego Regional Water Quality Control Board (SDRWQCB) to evaluate potential modification of the standard.

Copermittee municipal separate storm sewer systems (MS4s) are regulated as a point source of pollutants under National Pollutant Discharge Elimination System (NPDES) regulations and, as such, Copermittees are required to reduce the discharge of pollutants in urban runoff to the maximum extent practicable (MEP). MEP is not defined by statute and its regulatory definition is complicated, but MEP is generally defined as an iterative process involving the selection of best management practices, assessment of effectiveness and program modification based on results to meet water quality standards.

If this process is not effective in a timely manner, the alternate route for the SDRWQCB to achieve the applicable water quality standards is to include the water body on the 303(d) list and create a total maximum daily load (TMDL). The TMDL process relies on the allocation of pollutant loads and corresponding load reductions to all watershed sources (point and non-point) of discharges. This difference can result in new and expensive requirements being imposed on the Copermittees, in part because it eliminates some of the flexibility intentionally provided to the Copermittees in the MEP standard. Because of this potential, it is important for the Copermittees to monitor closely the existing and future 303(d) listings of impairments to ensure their accuracy and appropriateness and to actively participate in the TMDL development process.

The Municipal Permit focuses on land use, particularly the urbanization of natural landscapes, as a contributing factor to watershed hydromodification and water quality impairments. In particular, the permit focuses on land use-related imperviousness as

a cause of changes to the natural hydrologic regime and land use-related human activities as a source of pollutants. Because of the Municipal Permit's focus on land use, the San Diego River Copermittees have incorporated land use-related factors into several aspects of the watershed program described in this WURMP. However, while land use authority generally resides with the San Diego River Copermittees, a significant percentage of land is under the jurisdiction of the federal government or sovereign Indian tribes and, thus, the San Diego River Copermittees are limited in their ability to influence water quality-related decisions on these lands.

WATERSHED DESCRIPTION

The San Diego River WMA consists of Hydrologic Unit 907.00 in the Basin Plan, which is divided into four Hydrologic Areas (HAs): Lower San Diego (907.10), San Vicente (907.20), El Capitan (907.30), and Boulder Creek (907.40). The main surface water draining the WMA is the San Diego River, which discharges into the Pacific Ocean between Mission Beach and Ocean Beach. The other principal surface water bodies of the WMA are Forester Creek, Boulder Creek, Santee Lakes, and five reservoirs: El Capitan, San Vicente, Lake Jennings, Lake Cuyamaca, and Lake Murray. Principal groundwater aquifers in the WMA include the Santee/El Monte Basin and the Mission Valley Basin.

The hydrology of the WMA is heavily managed for human benefit, including flood control, impoundment of imported raw drinking water, and withdrawals of natural water sources for human use. This management is not coordinated from a watershed context, but nevertheless helps to establish the baseline receiving water conditions into which the San Diego River Copermittees discharge urban runoff. Because of this, it may be appropriate in some cases for the San Diego River Copermittees to work with other stakeholders in the WMA to also address baseline receiving water conditions in order to achieve receiving water quality standards, rather than exclusively focus on the water quality of Copermittee discharges.

The Copermittees currently conduct, and will continue to conduct over the next five year permit cycle, a number of monitoring programs designed to assess the conditions of receiving waters or the quality of urban runoff through Copermittee MS4s in the San Diego River WMA. These programs include mass loading station monitoring, temporary watershed assessment station (TWAS) monitoring, bioassessment monitoring, coastal storm drain monitoring, pyrethroids monitoring, Bight 2008, dry weather monitoring, MS4 outfall monitoring, and source identification monitoring. Ultimately, these monitoring programs provide the primary basis for selecting Copermittee activities and for subsequently evaluating the effectiveness of those activities. Initial efforts in this regard were detailed in the Baseline Long Term Effectiveness Assessment report issued in 2005 and include prioritization ratings of receiving water conditions broken down by HA and the Threat To Water Quality (TTWQ) ratings of certain source categories (Weston et al., 2005).

COLLECTIVE WATERSHED STRATEGY

The Copermittees have developed a collective Watershed Strategy to guide the selection, implementation and assessment of Watershed Activities in a consistent manner across the watersheds and in compliance with Municipal Permit requirements (Copermittees, 2008). The goal of the Watershed Strategy is to facilitate the selection

and implementation of Watershed Activities that appropriately address each watershed Copermittees' contribution to the high priority water quality problems in their WMAs. Consistent with other Municipal Permit programs implemented by the Copermittees at the jurisdictional and regional levels, the Watershed Strategy uses the following three step, iterative process to continually improve performance in conformance with the MEP standard and ultimately achieve the desired water quality goals: 1) Planning, 2) Implementation, and 3) Assessment.

PLANNING – WATER QUALITY AND SOURCE ASSESSMENT

The first step in the collective Watershed Strategy process, i.e. planning, takes the form of a Baseline Watershed Assessment (BWE) to evaluate water quality and identify potential sources of problems. Using the available water quality data, the available information regarding land use-related sources, and the process developed from the collective Watershed Strategy, the following watershed priority pollutants are recommended for pollutant loading reductions through Copermittee Watershed Activities during this permit cycle:

- Bacteria Indicators
- Phosphorus
- Total Dissolved Solids (TDS)
- Low Dissolved Oxygen
- Turbidity

These results appear to be validated by a comparison to the discharge quality problems identified in the dry weather monitoring program and to a source water protection evaluation of multiple watersheds by the City of San Diego Water Department.

Based on a comparison of this data evaluation to the Copermittees' previous long-term effectiveness assessment (LTEA) results, the following conclusions can be made regarding the adequacy of monitoring data in the WMA to support future LTEA ratings at the individual hydrologic area (HA) level in the watershed:

- The available monitoring data appears adequate to support the use of the LTEA rating system at the HA level in the lower watershed (HA 907.10);
- Given the effects of the dams in cutting off surface flow and differences in land use between the upper and lower watersheds, the extrapolation of data from HA 907.10 into the upper watershed is not appropriate for the San Diego River WMA;
- The currently available data in the upper watershed appears adequate to support limited use of the current LTEA pollutant ratings in HAs 907.20 and 907.30 until more data is collected;
- The currently available data in HA 907.40 (one sample in 2004) is not adequate to support an individual LTEA rating;
- The future extrapolation of dry weather monitoring data from HA 907.30 into HA 907.40 to support the LTEA ratings appears reasonable as an interim measure as long as at least some corroborating data is collected in HA 907.40; and
- Additional data collection in the upper watershed is needed both to improve future LTEA ratings and to support watershed-based decision making using the collective Watershed Strategy.

Specific recommendations for adjustments to the Copermittees monitoring programs in order to improve future LTEA ratings and current watershed decision making include:

- Due to the presence of the dams, two of the three temporary watershed assessment stations (TWAS) locations proposed for the San Diego River WMA should be located in the upper watershed, one assessing HA 907.20 and one assessing HAs 907.30 and 907.40.
- Locating an urban runoff bioassessment station with a TWAS location in the upper watershed should be considered, perhaps on an alternating basis between the two upper watershed TWAS locations.
- If practical, the new regional monitoring programs should include representative locations in the upper watershed among their targeted locations.
- If feasible, at least one dry weather monitoring station should be located in HA 907.40, perhaps on an alternating basis with an existing location in another HA.
- Monitoring of receiving waters throughout the WMA should be conducted using a consistent set of analyses for watershed priority pollutants, including total phosphorus, TDS and total organic carbon (TOC).

Based on a review of land use statistics, the BWE also identified the following prevalent land uses suspected of contributing priority pollutant discharges to Copermittee MS4s and, therefore, targeted for San Diego River Copermittee activities:

Hydrologic Area (HA)	Targeted Land Uses
907.10 Lower San Diego	Residential, Park/Municipal, Commercial, Industrial
907.20 San Vicente	Park/Municipal, Residential
907.30 El Capitan	Park/Municipal, Residential
907.40 Boulder Creek	Park/Municipal, Residential

The San Diego River Copermittees then used the TTWQ ratings established in the Baseline Long Term Effectiveness Assessment (BLTEA) report to identify and rank specific categories of potential sources within these land use types. This resulted in a prioritized list of sources targeted for Watershed Activities (Likely TTWQ) and targeted for further study (Unknown TTWQ).

IMPLEMENTATION – FIVE YEAR STRATEGIC PLAN

The second step in the collective Watershed Strategy process consists of selecting and implementing Watershed Water Quality and Education Activities. In order to facilitate the coordinated selection of appropriate activities across the watershed, the Strategic Goals listed in the table below were established to translate the identified watershed problems into more specific narrative objectives, which generally will be implemented using the schedule in the table below. The specific Water Quality and Education Activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, in some cases, individual jurisdictions may find it more appropriate to perform different activities that still support one of the Watershed Strategic Goals. For example, the

timing of funding sources, differences between HAs or differences in organizational structure may cause an individual jurisdiction to select different activities that year.

Goal	Strategic Goal	Activity Implementation Schedule by Fiscal Year					
		Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013
1	Dry Weather Flow Reduction	P/I	P/I/A	P/I/A	P/I/A	I[1]/A	A
2	Muncipal/Park Source Reduction	P/I	I	A		P[1]	I[1]
3	Commercial/Industrial Source Reduction	P	P	I	A		
4	Residential Source Reduction			P	I	A	A
5	Bacteria Source Reduction	P/I	P/I/A	P/I/A	P/I/A	P/I/A	P/I/A

Notes: I = Implementation; P = Planning; A = Assessment
[1] Activities supporting this Strategic Goal may be eliminated and shifted toward other Strategic Goals if judged appropriate.

Because this strategy is being developed in the first year of the new Municipal Permit, use of this strategy to guide selection of activities will not begin until fiscal year 2009 and San Diego River Copermittees will not have the benefit from a full year of planning until implementing activities scheduled for the 2010 fiscal year.

In compliance with Municipal Permit requirements for public participation through engagement with stakeholder organizations, the San Diego River Copermittees have initiated an ongoing dialogue with the San Diego River Foundation, the San Diego River Conservancy and several local water districts to identify potential areas of collaboration. The results of this and other potential dialogues will be discussed in annual WURMP reports.

In order to encourage collaborative, watershed-based land use planning, the San Diego River Copermittees will have at least one watershed meeting per year dedicated to discussing and addressing land use planning issues. It is anticipated that this discussion will enable San Diego River Copermittees to establish some consistency in how they integrate watershed principles into their plans and to evaluate the potential need for watershed-specific land use requirements. The results of this meeting, including any follow up activities, will be reported in the WURMP annual reports.

EFFECTIVENESS ASSESSMENT AND PROGRAM MODFICIATION

In the third step of implementing the collective Watershed Strategy, the Copermittees will conduct effectiveness assessments of each watershed Water Quality Activity implemented, each Watershed Education Activity implemented, and implementation of the WURMP as a whole in terms of outcome levels 1 through 6. The San Diego River Copermittees will incorporate an effectiveness assessment of TMDL related activities conducted at the watershed level. The conclusions from these effectiveness assessments will be used in the planning phase of the next three year cycle for that same or related Strategic Goal or the overall program and, as appropriate, will be incorporated into the jurisdictional and regional programs. It is anticipated that, with each iteration of this cycle, the Copermittees will become increasingly proficient at identifying and reducing sources of priority pollutant loadings.

The San Diego River Watershed Copermittees will meet on a regular basis, at least quarterly, to review the status and progress of cooperation within the watershed in order to ensure compliance with watershed requirements in the Municipal Permit. Each year, the Copermittees will incorporate into their Annual WURMP Report revised summaries of the Watershed Activities proposed for baseline planning, implementation or effectiveness assessment in the following fiscal year as well as any other adjustments to the overall program.

CITY OF EL CAJON

CITY MANAGER

March 24, 2008

San Diego River WURMP

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Kathi Henry — 3.14.08

Signature — Date

Kathi Henry, City Manager — (619) 441-1780

Printed Name, Title — Phone Number

200 E. MAIN STREET • EL CAJON, CA 92020-3996

Printed on recycled paper.

THE CITY OF SAN DIEGO

RE: San Diego River Watershed Urban Runoff Management Program Statement of Certification

I certify under penalty of law that the City of San Diego participated in the development of the San Diego River Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew Kleis
Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
City of San Diego

3/14/08
Date

Storm Water Pollution Prevention Program
1970 B Street, MS 27A • San Diego, CA 92102
Hotline (619) 235-1000 Fax (619) 525-8641

CITY OF
LA MESA
JEWEL of the HILLS

OFFICE OF THE CITY MANAGER

March 24, 2008

San Diego River WURMP

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sandra L. Kerl — 3/17/08

Signature — Date

Sandra L. Kerl, City Manager — 619-667-1102

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8130 ALLISON AVENUE • LA MESA, CA 91941 • TEL: 619.667.1105 FAX: 619.462.7528

STATEMENT OF CERTIFICATION
San Diego River Watershed Urban Runoff Management Program

I certify under penalty of law that the County of San Diego participated in the development of the San Diego River Watershed Urban Runoff Management Program and all attachments. County staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

3-21-08
Date

March 17, 2008

San Diego River WURMP

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ENGINEERING DIVISION

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"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Steven Cresswell — 3/17/08

Signature — Date

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Steven Cresswell, P.E., City Engineer — Phone Number

1.0 INTRODUCTION

1.1 PROGRAM FRAMEWORK

1.1.1 Requirement for Watershed Program

In January 2007, the San Diego Regional Water Quality Control Board (SDRWQCB) issued the most recent National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit for San Diego Copermittees (Order No. R9-2007-0001, NPDES No. CAS 0108758), hereafter referred to as the "Municipal Permit" (SDRWQCB, 2007a). The following government bodies are regulated jointly under the Municipal Permit and jointly referred to as the Copermittees: County of San Diego, all the incorporated cities within the County of San Diego, the San Diego Unified Port District and the San Diego County Regional Airport Authority. Along with various jurisdictionally or regionally based requirements, the Municipal Permit requires the Copermittees located within the San Diego River Watershed Management Area (WMA) to collaborate in the development of a revised watershed-based approach to addressing the water quality impacts of urban runoff discharged by the Copermittees' municipal separate storm sewer systems (MS4s; Figure 1).

In accordance with Municipal Permit requirements, the Copermittees developed a collective Watershed Strategy in 2007 to guide the work of Copermittees in each watershed during development of the Watershed Urban Runoff Management Plan (WURMP). Its intent is to provide a reasonable level of consistency between watersheds in the methods used to identify watershed priorities. This WURMP uses the collective Watershed Strategy to evaluate priority pollutants and priority sources in the WMA and to develop a watershed specific plan of activities in order to mitigate the impacts associated with Copermittee discharges. The WURMP also describes how the effectiveness of these activities and the overall watershed program will be evaluated in the San Diego River WMA.

1.1.2 Watershed Copermittees

A total of six jurisdictions are situated within the San Diego River WMA: the County of San Diego and the incorporated cities of El Cajon, La Mesa, Santee, San Diego and Poway (Figure 2). The current Municipal Permit does not list the City of Poway as a required participant for developing the WURMP for the San Diego River WMA, even though it did so under the previous permit (Order No. 2001-01). This purposeful exclusion was based on the understanding that the portion of Poway within the WMA will not generate urban runoff. This portion of Poway consists of approximately 120 acres, all of which is protected habitat, designated as open space, and cannot be developed (SDRWQCB, 2006). The five jurisdictions required to participate in preparation of this WURMP will be collectively referred to as the San Diego River Copermittees in this WURMP.

The Municipal Permit requires the San Diego River Copermittees to designate a watershed lead or accept the default lead Copermittee listed in the permit, which is the City of El Cajon for the San Diego River WMA (SDRWQCB, 2007a). In fulfillment of these accepted responsibilities, the City of El Cajon has worked with the other San Diego River Copermittees and led the development of this WURMP for the San Diego River WMA.

1.1.3 Beneficial Uses and Water Quality Standards

The surface and ground waters of the San Diego River WMA provide many beneficial uses to both the human inhabitants and the natural environment. For regulatory purposes, these beneficial uses are officially defined and designated to water bodies under the federal Clean Water Act (CWA) and the state Porter-Cologne Act through the Water Quality Control Plan for the San Diego Basin (Basin Plan) issued by the SDRWQCB (SDRWQCB, 1994). The significance of these designated beneficial uses is that they form the foundation for defining acceptable levels of water quality for receiving waters in the San Diego River WMA. Water quality objectives (WQOs), also referred to as water quality criteria under federal law, are established for specific pollutants or stressors in the Basin Plan and are intended to preserve and support the designated beneficial uses, typically the most sensitive beneficial use for that pollutant or stressor. Collectively, the designated beneficial uses, the WQOs and the Anti-Degradation Policy in the Basin Plan are referred to as the water quality standards applicable to waters in the San Diego River WMA.

For a variety of reasons, including funding issues in the SDRWQCB triennial review process for amending the Basin Plan, the current water quality standards may not be appropriate for all locations in the WMA. To the extent that there is a discrepancy between designated and actual beneficial uses or that applicable WQOs are inappropriate for the beneficial use in a water body segment, the Copermittees must either accept the current designation and WQOs, or work with the SDRWQCB to evaluate possible modification of the applicable standards. If the applicable standards are found by the SDRWQCB to be not appropriate to the water body, an appropriate regulatory response may be to correct the standards through mechanisms such as use attainability analysis (UAA), a site-specific objective, antidegradation finding or other modification of the water quality standard, which may address the impairment in a water body and eliminate the need for additional mitigation measures by Copermittees (California State Water Resources Control Board [CSWRCB], 2005).

One impetus for the Copermittees to look closely at this issue may be the potentially significant expense to meet the standards and the potential benefit of using the public resources elsewhere. However, standards may not be changed as a convenient means of "restoring" water bodies. To the contrary, federal and state laws contain numerous detailed requirements that, in many cases, would prevent modification of the standards, especially if it would result in less stringent controls. Modification of standards may be appropriate, however, to make uses more specific, to manage conflicting uses, to address site-specific conditions, or to otherwise address an inappropriate standard (CSWRCB, 2005).

The use of the term "beneficial use" within this document will hereafter refer to the official designated uses described in the Basin Plan unless specifically stated otherwise (Tables 1 and 2).

1.1.4 Regulation of Copermittees As a Point Source of Pollutants

A primary mechanism for enforcing water quality standards in California has been through the implementation of state waste discharge requirements (WDRs) and/or federal NPDES permits. Under the NPDES program, discharges of urban runoff from Copermittee MS4s are considered regulated discharges of pollutants from a point source and, as such, Copermittees are required to reduce the discharge of pollutants in urban

runoff to the maximum extent practicable (MEP). MEP is not defined in the CWA statute, but the United States Environmental Protection Agency (EPA) provided guidance on MEP and best management practice (BMP) implementation in the 1999 federal rule for Phase II implementation of MS4 NPDES permit requirements (Federal Register, 1999), including the following excerpts:

> "EPA interprets this standard to apply to all MS4s, including both existing regulated (large and medium) MS4s, as well as the small MS4s regulated under today's rule."
>
> "EPA has intentionally not provided a precise definition of MEP to allow maximum flexibility in MS4 permitting. MS4s need the flexibility to optimize reductions in storm water pollutants on a location-by-location basis. EPA envisions that this evaluative process will consider such factors as conditions of receiving waters, specific local concerns, and other aspects included in a comprehensive watershed plan. Other factors may include MS4 size, climate, implementation schedules, current ability to finance the program, beneficial uses of receiving water, hydrology, geology, and capacity to perform operation and maintenance."
>
> "EPA envisions application of the MEP standard as an iterative process. MEP should continually adapt to current conditions and BMP effectiveness and should strive to attain water quality standards. Successive iterations of the mix of BMPs and measurable goals will be driven by the objective of assuring maintenance of water quality standards."

The Municipal Permit also provides a detailed discussion and definition of MEP describing it as a process where:

> ". . . municipalities propose their definition of MEP by way of their urban runoff management programs. Their total collective and individual activities conducted pursuant to the urban runoff management programs becomes their proposal for MEP as it applies both to their overall effort, as well as to specific activities . . ."

In this discussion and definition of MEP, the Municipal Permit includes an extended quotation from a February 11, 1993 guidance memo from the SWRCB addressing the achievement of the MEP standard, including the following excerpt:

> "To achieve the MEP standard, municipalities must employ whatever Best Management Practices (BMPs) are technically feasible (i.e. are likely to be effective) and are not cost prohibitive. The major emphasis is on technical feasibility. Reducing pollutants to the MEP means choosing effective BMPs, and rejecting applicable BMPs only where other effective BMPs will serve the same purpose, or the BMPs would not be technically feasible, or the cost would be prohibitive. In selecting BMPs to achieve the MEP standard, the following factors may be useful to consider:
>
> A. Effectiveness: Will the BMPs address a pollutant (or pollutant source) of concern?
> B. Regulatory Compliance: Is the BMP in compliance with storm water regulations as well as other environmental regulations?
> C. Public Acceptance: Does the BMP have public support?

D. Cost: Will the cost of implementing the BMP have a reasonable relationship to the pollution control benefits to be achieved?
E. Technical Feasibility: Is the BMP technically feasible considering soils, geography, water resources, etc.?

Because of the complex relationships between the many natural and human processes involved, the still preliminary nature of Copermittee understanding of BMP cost effectiveness, and the purposeful flexibility in the MEP standard, the Copermittees currently do not have a clear understanding of the most appropriate initiatives and response measures needed to positively affect water quality at the watershed level. Nevertheless, the Municipal Permit requires the Copermittees to implement activities at the watershed level to benefit water quality. Based on this discrepancy between knowledge and the need to act, implementation of this watershed management program will be inherently experimental. Some activities may fail to produce the measurable water quality benefits desired by both the SDRWQCB and the Copermittees. This failure is not an indication of permit non-compliance, but rather is an expected and necessary part of the iterative process required under the MEP.

The San Diego River Copermittees regard the watershed program described in this WURMP as their opportunity to test various BMPs and combinations of BMPs in terms of the factors to be considered during BMP selection as described by the EPA, CSWRCB and Municipal Permit. Through these watershed-level evaluations, the San Diego River Copermittees anticipate being able to draw better conclusions regarding new BMPs to introduce, existing BMPs to improve and existing BMPs to eliminate from their jurisdictional and regional programs in order to effectively address the WMA priority pollutants and achieve water quality standards. Over time, the San Diego River Copermittees anticipate that they will become increasingly successful at improving water quality throughout the WMA by following the watershed management program outlined in this WURMP in compliance with the Municipal Permit. In conjunction with the jurisdictional and regional programs, the San Diego River Copermittees believe the watershed program described in this WURMP satisfies the MEP standard as an outcome-oriented process.

1.1.5 Regulation of Copermittees Based on TMDLs

In addition to these NPDES permit requirements, the Copermittees are subject to additional requirements through a separate, but related, CWA process to develop Total Maximum Daily Loads (TMDLs). The NPDES program and the TMDL process are related in that the objective of both is to achieve water quality standards for receiving waters, but differ in how those results are obtained. The NPDES program relies on technology-based effluent limits for industrial point sources and compliance with the MEP standard for MS4 operators (point sources) in order to meet water quality standards. The TMDL process relies on the allocation of pollutant loads and corresponding load reductions to all watershed sources (point and non-point) based on the modeled attributes of the receiving waters. This difference can result in new and expensive requirements being imposed on the Copermittees, in part because it eliminates some of the flexibility intentionally provided to the Copermittees in the MEP standard. Currently, the only TMDL approved by the SDRWQCB and applicable to the San Diego River WMA is the December 2007 TMDL for Indicator Bacteria Project I – Beaches and Creeks in the San Diego Region (Bacterial TMDL).

The TMDL process begins through the identification of receiving water impairments. Every two years, Section 303(d) of the CWA requires states to identify waters that do not meet, or are not expected to meet by the next listing cycle, applicable WQOs through existing WDRs and NPDES permits. The method used in California to develop the section 303(d) list in compliance with federal requirements is established in the Water Quality Policy for Developing California's Clean Water Act Section 303(d) List issued in September 2004 and otherwise known as the Listing Policy (CSWRCB, 2004). The most recent 303(d) list developed by the SDRWQCB and approved by the CSWRCB and EPA is the 2006 list. The 2008 303(d) list is currently under development by the SDRWQCB.

After a water body has been placed on the 303(d) list of impaired waters, states are required to develop a TMDL to address each pollutant or stressor causing the impairment in accordance with an EPA approved schedule. A TMDL defines how much of a pollutant a water body can assimilate or tolerate and still meet water quality standards. Each TMDL must account for all sources of the pollutant. Federal regulations require that the TMDL, at a minimum, account for contributions from point sources (permitted discharges such as the Copermittees' MS4s) and contributions from nonpoint sources, including natural background. In addition to accounting for past and current activities, TMDLs may consider projected growth that could increase pollutant levels in the future. After identifying all relevant sources, TMDLs allocate allowable pollutant loads for each source or group of sources, and identify management measures that, when implemented, will assure that water quality standards are attained. To satisfy state law, TMDLs and their associated implementation plans are adopted into the Basin Plan through the Basin Planning process (CSWRCB, 2007).

Once the TMDL is established in the Basin Plan, a primary enforcement mechanism for implementation of the TMDL loading allocations to point sources is through the various NPDES permits in the watershed, including the Municipal Permit. The EPA has established regulations (40 CFR 122) requiring that NPDES permits for all point sources be revised to be consistent with any approved TMDL (CSWRCB, 2007). Consistent with this requirement, the provisions of the Municipal Permit require the Copermittees, as a point source, to comply with existing TMDL waste load allocations and to annually assess the effectiveness of their compliance with TMDL requirements (SDRWQCB, 2007a). Under federal law, implementation of nonpoint source pollution control measures, however, are generally limited to education and outreach as provided by CWA Section 319 (CSWRCB, 2007).

1.1.6 TMDL Costs

Compliance with TMDLs can be expensive. The SDRWQCB has published the following estimated costs associated with the draft TMDL for Indicator Bacteria, Project I – Beaches and Creeks in the San Diego Region (draft bacteria TMDL). This TMDL estimates the costs for only one pollutant, bacteria, in the beaches and creeks of the San Diego region (SDRWQCB, 2007b):

> ". . . the cost estimates for non-structural BMPs ranged from $0 to $211,000. The cost estimates for treating 10 percent of the watershed with structural BMPs ranged from $50,000 to $973 million, depending on BMP selection, with yearly maintenance costs estimated from $10,000 to $68 million. Implementation of these TMDLs will also entail water quality monitoring which has associated costs."

The San Diego River Copermittees have not attempted an independent evaluation to verify whether the assumptions underlying these potential implementation costs are reasonable, but as with any cost estimate there is margin for error. For example, it is not clear whether treating 10% of the watershed with structural BMPs will be sufficient to meet water quality standards. The cost estimate assumes that land use modifications, i.e. protection of open space within new development, adjustments to development design and rezoning from current allowed uses to protected uses, will represent a cost savings to municipalities and developers rather than an increased cost. Also, the cost estimates "do not take into account retrofit of existing structures or the potential purchase of land needed for the BMP" (SDRWQCB, 2007b). In other words, the potential implementation cost could be higher than the SDRWQCB estimate if the number of structural BMPs requiring installation is higher than anticipated by the SDRWQCB, if land use modifications represent a cost increase rather than a costs savings, or if land must be purchased.

Because of the potential for significant new and expensive requirements to be developed through this TMDL process and then implemented through the Copermittees' NPDES permit, it is important for the Copermittees to monitor closely the existing and future listings of impairments to ensure their accuracy and appropriateness and to actively participate in the TMDL development process. In some cases, this process may be most appropriately monitored by Copermittees at the watershed level, in part because this is where understanding of the water quality and relevant natural watershed processes is greatest and also because, the bacteria TMDL being an example, pollutant load allocations and reduction requirements may be assigned to Copermittees collectively on a watershed basis, not by individual jurisdictions. It may also be appropriate for the Copermittees to focus their watershed activities on TMDL related issues.

1.1.7 Land Use-Related Municipal Permit Requirements

The Municipal Permit focuses on land use, particularly the urbanization of natural landscapes, as a significant contributing factor to watershed hydromodification and water quality impairments. In particular, the permit focuses on:

- land use-related imperviousness as a cause of changes to the natural hydrologic regime, and
- land use-related human activities as a source of pollutants.

The Municipal Permit cites studies showing that urbanization of as little as 10% of a watershed can result in dramatically lower water quality and that MS4s serve as one of the pathways by which these land use-related changes to the upland environment impact receiving waters. To address these impacts, the Municipal Permit requires the Copermittees to implement a number of land use-based requirements in their jurisdictional programs, including developing a Hydromodification Plan (HMP[1]),

[1] The Hydromodification Plan is intended to limit increases in runoff discharge rates and durations in order to minimize erosion of channel beds and banks, sediment pollutant generation or other impacts to beneficial uses and stream habitat due to increased erosive force. Under the Municipal Permit, the Copermittees are required to develop this plan and then implement it within 180 days after approval of the plan by the SDRWQCB. When completed, the requirements of the Hydromodification Plan will be a subset of requirements included in the SUSMP.

incorporating low impact development (LID[2]) BMPs and other requirements into the Standard Urban Stormwater Mitigation Plans (SUSMPs[3]) for priority new development projects, and instituting various requirements to control pollutants from existing development based on different kinds of land use and associated site activities. The Municipal Permit also requires this WURMP to address watershed priority pollutants in terms of land use and specific sources associated with those land uses (SDRWQCB, 2007a). Because of these requirements, the San Diego River Copermittees have incorporated land use-related factors into several aspects of the watershed program described in this WURMP.

1.2 WATERSHED DESCRIPTION AND MAP

1.2.1 Basin Plan Description of the Watershed

The San Diego River WMA consists of Hydrologic Unit 907.00 in the Basin Plan (Figure 2; SDRWQCB, 2007a). It is the second largest watershed lying entirely within San Diego County with a total land area of approximately 277,543 acres or 440 square miles. The Basin Plan divides the WMA into four Hydrologic Areas (HAs): Lower San Diego (907.10), San Vicente (907.20), El Capitan (907.30), and Boulder Creek (907.40). Each HA is also subdivided into Hydrologic Subareas and beneficial uses may be designated at any of these levels (Hydrologic Unit, Area or Subarea) in the Basin Plan (SDRWQCB, 1994).

The main surface water draining the WMA is the San Diego River, which discharges into the Pacific Ocean between Mission Beach and Ocean Beach. The other principal surface water bodies of the WMA are Forester Creek, Boulder Creek, Santee Lakes, and five reservoirs: El Capitan, San Vicente, Lake Jennings, Lake Cuyamaca, and Lake Murray. San Vicente, Lake Jennings, and Lake Murray store mainly Colorado River water, whereas, El Capitan mainly stores local runoff and some Colorado River water. Cuyamaca Reservoir stores only local runoff. Much of the impounded water is used to provide potable water to major population centers, including a portion of the San Diego metropolitan area and the communities of El Cajon, Santee, Lakeside, Alpine and Julian. The beneficial uses of the WMA's major surface waters are presented in Table 1 (SDRWQCB, 1994).

Principal groundwater aquifers in the WMA include the Santee/El Monte Basin and the Mission Valley Basin (Figure 3). The northernmost portions of the San Diego Formation also extend below a small portion of the San Diego River WMA (San Diego County Water Authority [SDCWA], 1997). The beneficial uses of groundwater within the WMA are presented in Table 2 (SDRWQCB, 1994).

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[2] Low Impact Development generally describes a variety of design and construction techniques that collectively reduce the impacts of pollutants from new development on downstream water bodies. The Municipal Permit particularly emphasizes the implementation of BMPs that minimize directly connected impervious areas and promote infiltration. LID BMPs are a subset of requirements included in the SUSMP.

[3] Standard Urban Stormwater Mitigation Plans describe a set of requirements that development projects identified as "Priority Development Projects" under the Municipal Permit must satisfy. These requirements were developed by the Copermittees under detailed guidance from the Municipal Permit and are intended to reduce discharges of pollutants, prevent violations of water quality standards, and manage runoff discharge rates and durations for water quality benefit.

1.2.2 Relevance of Watershed Hydrology to Copermittee Discharges

The hydrology of the San Diego River WMA has been modified by human activities over time, particularly within the last 100 years. Although the WMA is now highly managed to support human needs, this management is not necessarily well coordinated within a watershed context. There is no single agency with responsible authority for most or all of the surface water flows within the WMA. Flood control is the responsibility of each individual municipality within its jurisdiction. The volumes of water transfers into, within and from the WMA are managed by individual water rights holders, including several major water districts such as the Helix Water District, Padre Dam Municipal Water District (Padre Dam) and City of San Diego Water Department. Decisions regarding the timing and volume of water movement in the WMA have frequently not considered the resulting water quality impacts. Nevertheless, the combination of these and other human activities contribute to the baseline receiving water quality conditions into which the San Diego River Copermittees discharge urban runoff. Because of this, it may be appropriate in some cases for the San Diego River Copermittees to work with other stakeholders in the WMA to also address baseline receiving water conditions in order to achieve receiving water quality standards, rather than exclusively focus on the water quality of Copermittee discharges.

1.2.3 Changes to Surface Water Hydrology

In addition to the effects of urbanization, some of the changes to the natural river hydrology have been the activities of the various water agencies in the WMA, including the construction of five dams to store both watershed runoff and imported water as a source of potable water for residents inside and outside the WMA. In particular, the two dams creating the El Capitan and San Vicente Reservoirs cause "an almost complete hydraulic disconnect between the upper and lower watersheds with essentially no exchange of water from the upper watershed to the lower," where the upper watershed consists of HA 907.20, HA 907.30 and HA 907.40 and the lower watershed consists of HA 907.10 (Pasek, 2007). These dams are reported to have only released water twice in the last 50 years due to large storms and, given both the precious nature of the water as a resource and the increasing sophistication of the City of San Diego Water Department's management of water levels in the reservoirs, future releases appear unlikely. The result is that the San Diego River immediately below these two dams is generally dry year round (Smith, 2007).

Another water agency activity with an impact on surface flows in the river is the ongoing discharge associated with the Padre Dam's publicly owned treatment work (POTW) at Santee Lakes. Based on available United States Geological Survey (USGS) stream gauging data showing flow in the San Diego River near Mast Boulevard every day since the 1970s, the Padre Dam discharge appears to be helping, along with other sources of flow, to maintain a generally continuous flow from Santee into Mission Trails Regional Park, Mission Gorge and then Mission Valley (USGS, 2007).

1.2.4 Changes to Ground Water Hydrology

Groundwater is relevant to surface water hydrology in that the subsurface, if soil conditions and groundwater levels allow, can accept infiltration of water to reduce or eliminate surface flows and that groundwater, if shallow enough, can serve as a source of surface flow. Similar to surface waters, groundwater resources are also actively managed

in the WMA for human benefit. Groundwater provides a source of water supply to four local water districts, the City of San Diego and many residents relying on private wells. The availability of groundwater is particularly important in the upper watershed where most residents cannot access water imported from the Metropolitan Water District and the use of private wells for domestic water supply is more common.

In its 1997 Groundwater Resource Development Report, the SDCWA identifies the following projects by member agencies in the San Diego River WMA (SDCWA, 1997). Existing projects as of 1997 included:

- 1,000 acre feet per year (AFY) of potable water production (1997 production rate) from the El Monte basin by Lakeside Water District, which withdraws and treats groundwater to remove iron and manganese.
- 350 AFY (1997 production rate) of groundwater extraction by Riverview Water District from the El Monte basin.
- 250 AFY (1997 production rate) of potable groundwater production by Helix Water District within the El Monte basin.
- Zero AFY (1997 production rate): The City of San Diego maintains wells for emergency use, but as of 1997 conveyance system repairs were required to activate the wells.

Feasibility study completed but project on hold as of 1997:

- The 8,500 AFY seasonal reclaimed water recharge and recovery project investigated by Padre Dam and Helix Water District in the Santee/El Monte basin.

Projects under study as of 1997 included:

- Lakeside Water District is evaluating the potential for expanding its El Monte basin groundwater withdrawal and treatment facilities from 1000 AFY to 1,200 AFY in 1997, and then possibly to 2,400 AFY thereafter.
- Riverview Water District is considering increasing its groundwater production from 350 AFY to 1,000 AFY in the El Monte basin.

Projects conceptually being considered but not actively investigated as of 1997 included:

- Padre Dam's potential implementation of a brackish groundwater demineralization program in the Santee basin to produce approximately 3,600 AFY of potable supply.
- A potential (identified by SDCWA staff) for a 1,600 AFY groundwater demineralization project in Mission Valley.
- Development of the remaining production and storage potential of the San Diego Formation outside the Sweetwater Authority and Tiajuana River Valley.

1.2.5 Land Use and Land Use Authority Within the Watershed

Land use within the WMA is primarily undeveloped (46.8%), parks and recreation (21.3%), and residential (17.9%). Other uses are comprised of Municipal/Government (4.5%), agriculture (1.9%), commercial (2.7%), industrial (1.5%) and surface water bodies (1.6%), as illustrated in Figure 4. Approximately half of the WMA is privately-owned land. The remaining portions are mostly under federal or American Indian jurisdiction with a smaller percentage of land being state or locally owned (SanGIS, 2007).

The San Diego River WMA is the most populated watershed in the county containing over 506,000 people. Most of this population is located in the lower watershed. However, some of the fastest growing, i.e. urbanizing, areas of the WMA, such as Alpine and Julian, are located within the unincorporated areas of San Diego County in the upper watershed (SanGIS, 2007).

Land use authority within the WMA generally resides with the San Diego River Copermittees. The incorporated areas of the WMA are located entirely within the 907.10 Hydrologic Area and include the cities of El Cajon, La Mesa, Poway, San Diego, and Santee. Most of the unincorporated lands are located within the upper watershed (Hydrologic Areas 907.20, 907.30 and 907.40), with some additional unincorporated areas located within the lower watershed (Hydrologic Area 907.10). While the County of San Diego generally would have land use authority in unincorporated areas, a significant percentage of this unincorporated area is under the jurisdiction of the federal government or sovereign Indian tribes and, thus, effectively outside the jurisdictional land use authority of the County. Therefore, the ability of the San Diego River Copermittees to influence water quality-related decisions on these federal or Indian lands is limited.

1.2.6 Copermittee Monitoring and Assessment Programs

1.2.6.1 Purpose of Monitoring Programs

The Copermittees conduct a variety of monitoring programs to assess receiving water quality and urban runoff and will be incorporating several new monitoring programs in compliance with the Municipal Permit. The collective purpose of these various programs is to:

1. Assess compliance with the Municipal Permit;
2. Measure and improve the effectiveness of the Copermittees' urban runoff management programs;
3. Assess the chemical, physical, and biological impacts to receiving waters resulting from urban runoff discharges;
4. Characterize urban runoff discharges;
5. Identify sources of specific pollutants;
6. Prioritize drainage and sub-drainage areas that need management action;
7. Detect and eliminate illicit discharges and illicit connections to the MS4; and
8. Assess the overall health of receiving waters.

The Municipal Permit also requires that these monitoring programs be designed to answer the following core management questions:

- Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
- What is the extent and magnitude of the current or potential receiving water problems?
- What is the relative urban runoff contribution to the receiving water problem(s)?
- What are the sources of urban runoff that contribute to receiving water problem(s)?
- Are conditions in receiving waters getting better or worse?

1.2.6.2 Receiving Water Monitoring

The current and planned receiving water monitoring programs to be implemented by Copermittees include:

Mass Loading Station (MLS) Monitoring – Flow weighted composite samples of surface water are collected at predetermined locations for the purpose of estimating pollutant loads in receiving waters at individual points in time, such as during a storm event, and for the purpose of identifying trends over time (SDRWQCB, 2007a). Over the past five years, one MLS station in Mission Valley has been sampled during three storm events each year in the San Diego River WMA (Weston Solutions, 2008). Under the current Municipal Permit, this station will be sampled for only three out of five years, but three additional temporary watershed assessment stations (TWAS) will be placed in different parts of the WMA and sampled in conjunction with the main MLS station.

Bioassessment Monitoring – This monitoring uses several measures of a stream's benthic macro invertebrate (BMI) community and the stream's physical/habitat characteristics to assess the stream's overall biological and physical integrity. The BMI community is used because it is sensitive, in varying degrees, to temperature, dissolved oxygen, sedimentation, scouring, nutrient enrichment and chemical and organic pollution. These biological and physical assessment measures integrate the effects of water quality over time and provide valuable insight into the stream's ability to serve as habitat, i.e. fulfill the habitat related beneficial uses of the stream. However, by itself, bioassessment typically can not identify specific causes for poor conditions unless they are the result of direct physical alterations to the stream at the monitoring station. Bioassessment is frequently conducted in conjunction with other monitoring that may provide additional indications of potential causes for poor conditions. Even so, positive identification of causality is difficult and rare. Two urban bioassessment stations have been monitored in the San Diego River WMA twice a year since 2002 and one reference station has been monitored consistently since 2005 (Weston Solutions, 2008). Under the current Municipal Permit, bioassessment monitoring will be conducted during fiscal years 2010 and 2012, but in compensation for this reduced schedule another station will be added to the program (SDRWQCB, 2007a).

Ambient Bay and Lagoon Monitoring (ABLM) – ABLM monitoring has not been done in the San Diego River WMA since there are no bays or lagoons located within the San Diego River WMA.

Coastal Storm Drain Monitoring – Copermittees are required to implement a new monitoring program to assess the impacts from MS4s discharging directly to coastal waters (e.g. Pacific Ocean), as opposed to MS4 discharges into an inland creek that will eventually flow into a coastal water. Copermittees generally will be required to sample

both the discharge and the coastal water body on a monthly basis unless certain conditions are met indicating the discharge is not likely to be contributing to a water quality problem. This monitoring will begin during the 2008 fiscal year (SDRWQCB, 2007a).

Pyrethroids Monitoring – Copermittees are required to implement a new monitoring program to assess the presence of pyrethroids in receiving waters. Pyrethroids are commonly used in insecticides and insect repellants. This monitoring will begin during the 2008 fiscal year (SDRWQCB, 2007a).

Bight 2008 – The Copermittees have the ability to substitute participation in a large study of water quality across the Southern California Bight as a replacement for most of its regular receiving water quality monitoring for one year. This study is intended to integrate data from the various monitoring efforts throughout the Southern California region to provide a detailed assessment of each watershed's condition in a consistent and comparable manner. This study is conducted by the Southern California Coastal Water Research Project (SCCWRP) and will be conducted during the 2009 fiscal year (SDRWQCB, 2007a).

1.2.6.3 Urban Runoff Monitoring

The following current and planned monitoring programs are intended to assess the water quality of urban runoff and discharges from the Copermittees' MS4:

Dry Weather Monitoring – This existing monitoring program is intended to detect and eliminate illicit connections and illegal discharges to MS4s through routine field screening and sampling of dry weather flows within the MS4. If field measurements or analytical results exceed an established action level, then follow up investigations are performed in an attempt to identify the source of the discharge causing the exceedance (Weston Solutions, 2008).

MS4 Outfall Monitoring – Copermittees are required to implement a new monitoring program to characterize pollutant discharges from MS4 outfalls during wet and dry weather. Samples are required to be analyzed for pollutants causing or contributing to violations of water quality standards within the watershed. This monitoring will begin during the 2008 fiscal year (SDRWQCB, 2007a).

Source Identification Monitoring – Copermittees are required to implement a new monitoring program to identify sources of discharges of pollutants causing the priority water quality problems within each watershed. This monitoring will begin during the 2009 fiscal year (SDRWQCB, 2007a).

1.2.6.4 Long Term Effectiveness Assessment

In August 2005, the Copermittees submitted a Baseline Long Term Effectiveness Assessment (BLTEA) report that evaluated overall effectiveness of Copermittee activities with respect to water quality (Weston et al., 2005). This effectiveness assessment consisted of an integrated assessment of water quality, source information, loading reductions from BMPs and program costs in accordance with the process described in the 2003 report "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs" (Copermittees, 2003).

For the purposes of this WURMP, some of the most relevant products of the BLTEA include the prioritization ratings of receiving water conditions broken down by HA within each watershed and the Threat To Water Quality (TTWQ) ratings of certain source categories. The BLTEA evaluated the available water quality data to identify which categories of pollutants (e.g. bacteria, nutrients, etc.) should be the prioritized focus of Copermittee activities in a consistent manner across the watersheds. Each pollutant category was assigned an A, B, C or D rating in each HA with an A rating representing the highest priority for Copermittee activities (Weston et al., 2005). Because of the limited nature of water quality data available at the time, these long term effectiveness assessment (LTEA) ratings were updated again in the subsequent annual monitoring report (Weston Solutions, 2007). However, these water quality prioritization ratings will not be updated again until the next long term effectiveness assessment, which is conducted on a five year basis consistent with the Municipal Permit.

The BLTEA then used these water quality ratings and the results of a source loading potential evaluation to develop TTWQ ratings. The TTWQ is a rating of a particular source's threat to water quality in the watershed for a specific pollutant type. These ratings are watershed specific and this WURMP only considered the ratings specific to the San Diego River WMA when developing this plan (Weston et al., 2005).

2.0 COLLECTIVE WATERSHED STRATEGY METHODOLOGY

2.1 COLLECTIVE WATERSHED STRATEGY

The Copermittees have developed a collective Watershed Strategy to guide the selection, implementation and assessment of Watershed Activities in a consistent manner across the watersheds and in compliance with Municipal Permit requirements (Copermittees, 2008). The goal of the Watershed Strategy is to facilitate the selection and implementation of Watershed Activities that appropriately address each watershed Copermittees' contribution to the high priority water quality problems in their WMAs. However, the Watershed Strategy is not intended to select specific activities, to dictate the timing of activities, or to dictate the manner in which the activities will be implemented, all of which is most appropriately established within each WMA. The specific activities to be conducted will be decided by the Copermittees in the WMA. The timelines for implementation, sequencing of activities and other methods of prioritization will take into account the ongoing effectiveness evaluations as well as individual Copermittee budgets, resources and other relevant factors that would weigh on their decisions.

Consistent with other Municipal Permit required programs implemented by the Copermittees at the jurisdictional and regional levels, the Watershed Strategy utilizes the following three step, iterative process to continually improve performance and ultimately achieve the desired water quality goals: 1) Planning, 2) Implementation, and 3) Assessment.

2.2 IMPLEMENTATION IN SAN DIEGO RIVER WATERSHED

2.2.1 Activity Planning – Baseline Watershed Evaluation

The first step in the Watershed Strategy is to conduct a Baseline Watershed Evaluation (BWE) of the WMA, looking at both water quality data and potential source information. The BWE uses information at the HA level from the BLTEA (Weston et al., 2005), the most recent annual regional monitoring report and other existing water quality and source information to distinguish between HAs for which sufficient data is available to develop appropriate watershed activities and HAs lacking sufficient data. In the HAs where data gaps are identified, the BWE provides a methodical approach to define the actions needed to fill the data gaps within that HA based upon the priority of the pollutant of concern and the known amount of data that exists. As the final step in this planning process, the Copermittees use the HA Action Matrix in the collective Watershed Strategy to identify the type of actions (activity implementation, additional studies or no action) to be implemented for priority pollutants in each HA. This BWE process enables the Copermittees to focus their efforts on priority pollutants and priority sources in the watershed in order to make the best use of scarce resources.

2.2.1.1 Receiving Water Monitoring Data

In performing this BWE, the San Diego River Copermittees focused on receiving water monitoring data available from the following sources:

Receiving Water Monitoring Data Reviewed

Source	Location	Timeframe
Copermittee Mass Loading Station	Mission Valley (HA 907.10)	2002-2007
Copermittee Bioassessment Stations	Mission Valley and Mission Trails (HA 907.10) and Boulder Creek (HA 907.40)	2002-2007
City of La Mesa Special Sampling	Alvarado Channel at La Mesa jurisdictional boundary (HA 907.10)	2007
SWRCB Surface Water Ambient Monitoring Program (SWAMP)	San Diego River at I5, Forester Creek and Los Coches Creek (HA 907.10) and Boulder Creek (HA 907.40)	2004
Padre Dam	Six locations in San Diego River and Forester Creek within the Santee vicinity (HA 907.10)	2005-2006
City of San Diego Water Department	Murray (HA 907.10), San Vicente (HA 907.20) and El Capitan (HA 907.30) Reservoirs	2005-2006

A complete summary of the monitoring results from these sources is provided in the annual Regional Monitoring Report and is not repeated in this document (Weston Solutions, 2008). Dry weather monitoring data was not reviewed for the purpose of identifying high priority receiving water pollutants or stressors, but is compared to the results of the receiving water data evaluation in order to provide qualitative validation that the Copermittee MS4s may contribute to pollutant loadings in the watershed. This comparison is described in Section 3.3.2.

2.2.1.2 Adequacy of Monitoring Data

In accordance with the collective Watershed Strategy, the distribution of currently available data was reviewed by HA to assess whether there are adequate data to support the development of individual LTEA's water quality ratings at the HA level and to assess data gaps. This was necessary because of several limitations in the LTEA process, primarily due to the limited monitoring data available at the time. For example, the LTEA process frequently extrapolated data from one HA up the watershed into the next HA.

The available receiving water data appears adequate to support some limited or general conclusions regarding which pollutants appear to be the highest priorities for the WMA. However, several caveats should be noted. As indicated in the table of receiving water data in Section 2.2.1.1, most of the receiving water data is located in HA 907.10. Only one receiving water sample has been collected in the Boulder Creek HA (907.40). Similarly, there is only one receiving water monitoring station in each of the two major reservoirs in HA 907.20 and HA 907.30. Although both stations are monitored frequently, their location in the middle of the reservoirs may provide more indications about the quality of raw drinking water imported to the reservoirs than about the quality of WMA surface water flows also feeding the reservoirs.

The number of sample locations per HA in the dry weather monitoring program is also heavily weighted toward HA 907.10, but does include a combined total of six monitoring locations in HAs 907.20 and 907.30. Currently, there are no dry weather monitoring locations in HA 907.40.

Based on this review, the following conclusions can be made regarding adequacy of the

currently available data to support future LTEA ratings at the individual HA level in the WMA:

- The available monitoring data appears adequate to support the use of the LTEA rating system at the HA level in the lower watershed (HA 907.10);
- Given the effects of the dams in cutting off surface flow and differences in land use between the upper and lower watersheds, the extrapolation of data from HA 907.10 into the upper watershed is not appropriate for the San Diego River WMA;
- The currently available data in the upper watershed is not adequate to fully support the LTEA's water quality ratings at the HA level, although the upper watershed is also less urbanized and, consequently, not as large a focus for the WURMP as the lower watershed.

2.2.2 Source Evaluation

The next step in the Watershed Strategy is to evaluate the HAs with regard to the quantity, location and potential threat of sources discharging the pollutant in question to determine if the sources have been adequately identified and characterized to support management decisions. For this purpose, the San Diego River Copermittees first relied on the availability of monitoring data in an HA to assess whether the current quantity of sources in an HA were sufficient to impact water quality within the HA. If there was not sufficient monitoring data to characterize the water quality of an HA, then the San Diego River Copermittees also concluded that the available source data was inadequate to characterize the potential threat from sources even if land use was known. If there was sufficient data to assess water quality, then the San Diego River Copermittees generally concluded that the BLTEA threat to water quality (TTWQ) ratings in combination with known land use statistics provided sufficient information to support the selection of initial Watershed Activities. The exception to this is when the monitoring data indicated a water quality problem was located in the reservoirs. The reservoirs generally contain both imported raw drinking water and local runoff. Since the reservoir water quality is likely to be affected by both sources, additional information and potential evaluation appears warranted in order to better inform decisions regarding the need for Watershed Activities.

2.2.3 Activity Selection and Implementation

The final step in the Watershed Strategy defined process is to appropriately select and implement activities for each HA based upon the types of actions identified through the BWE. In order to translate the results of the BWE into specific Watershed Activities, the San Diego River Copermittees in the San Diego River WMA established a set of Strategic Goals to facilitate activity selection in accordance with Municipal Permit requirements. The Strategic Goals are intended to translate the results of the BWE into narrative objectives that the proposed Watershed Activities intend to achieve. As long as the proposed activity serves at least one of the Strategic Goals in accordance with this process, the selected activity will satisfy the Municipal Permit requirement that Watershed Activities address high priority pollutants and high priority sources in the WMA.

It is anticipated that the San Diego River Copermittees generally will agree to implement a coordinated set of Watershed Water Quality and Education Activities designed to address a limited subset of the Strategic Goals in each year. To the extent the activities are coordinated, the San Diego River Copermittees will stagger this implementation on a collectively agreed schedule so that each Strategic Goal is addressed at least once during

the five year permit period. This coordinated staggering will also fulfill the permit requirement for two water quality and two education activities to be in implementation phase each year. By focusing their yearly efforts in this way, the San Diego River Copermittees believe it is more likely that they will be able to make measurable improvements to water quality and, thus, be better able to demonstrate the effectiveness of the activities selected and BMPs used.

However, issues such as the timing and amount of funding, differences in priorities between HAs, or other needs may cause an individual jurisdiction to select different activities from the other jurisdictions or even deviate from the overall schedule of Strategic Goals. If the San Diego River Copermittees do deviate from this collective schedule, the selected activities should still support at least one of the watershed's Strategic Goals in order to comply with the Municipal Permit requirement that activities address the priority pollutants and sources in the WMA.

Identified Watershed Activities typically generally will be implemented in a three year process that allows the San Diego River Copermittees adequate time to plan and evaluate the activities appropriately. The first year will typically involve the selection and planning of the specific activities as well as the collection of baseline data as necessary for evaluating effectiveness. The second year will be the implementation phase in compliance with Municipal Permit requirements and will include ongoing data collection as needed. The third year will be the evaluation phase, including the collection of post-implementation data necessary for effectiveness evaluations.

For consistency, the Watershed Strategy identifies implementation of activities using the same definitions that are contained in the Municipal Permit. A Watershed Water Quality Activity is in active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's high priority water quality problems, i.e. the watershed priority pollutants identified in Section 3.0. Furthermore, Watershed Water Quality Activities that are capital improvement projects are in active implementation for the first year of implementation only and Copermittees would not receive credit during subsequent years of implementation. A Watershed Education Activity is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can reasonably be established in a target audience (SDRWQCB, 2007a).

2.2.4 Assessing Effectiveness

Consistent with the Municipal Permit, the San Diego River Copermittees will conduct effectiveness assessments for activities and the overall watershed program by using the measurable targeted outcomes, assessment measures, or assessment methods that have been established for each activity as part of the planning and implementation phases. As described further in Section 5.0, the San Diego River Copermittees will assess the effectiveness of Watershed Water Quality and Education Activities implemented as well as implementation of the WURMP as a whole.

In accordance with the effectiveness assessment framework previously developed by the Copermittees, the San Diego River Copermittees will use outcome levels 1 through 6 when assessing individual activities and the WURMP program as a whole (Copermittees, 2003). The strategy also encourages San Diego River Copermittees to consider whether the

individual activities will meet any of the following criteria when assessing their effectiveness:

1. Fill data gaps
2. Demonstrate load reductions and/or source abatement
3. Improve LTEA ratings
4. Address high priority water quality problems
5. Contribute to improvements in water quality
6. Encourage stakeholder buy-in and participation in implementing the Watershed Strategy

The conclusions drawn from this effectiveness assessment will be used in the planning phase of the next three year cycle for that same or related Strategic Goal and may be incorporated into the jurisdictional and regional programs. As appropriate, the San Diego River Copermittees may use the results of this effectiveness evaluation to modify, add, or eliminate Strategic Goals. It is anticipated that, with each iteration of this cycle, the San Diego River Copermittees will become increasingly proficient at identifying and reducing sources of priority pollutant loadings.

3.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

3.1 WATER QUALITY ASSESSMENT APPROACH

For the San Diego River WMA, the San Diego River Copermittees conducted this BWE in accordance with the collective Watershed Strategy. The available receiving water monitoring data, including bioassessment data, was reviewed by individual HA to identify where concentrations of specific pollutants in receiving waters exceeded Basin Plan WQOs and the frequency with which these exceedances occurred (Weston Solutions, 2008). The receiving water data was then compared to the 2006 303(d) list of impaired water bodies in the San Diego River WMA.

Based on this review of information regarding the condition of receiving waters in the San Diego River WMA, the San Diego River Copermittees developed a prioritized list of receiving water quality problems to be addressed by Watershed Activities. To validate this list as a basis for addressing San Diego River Copermittee discharges, it was compared to Copermittee dry weather monitoring data, the LTEA rankings, and a separate evaluation of multiple watersheds by the City of San Diego Water Department (Weston et al., 2005; Weston Solutions, 2007; City of San Diego, 2004).

In order to prioritize potential sources of priority pollutants as targets of Copermittee activities, land use within each HA was screened to identify the dominant land use categories based on acreage. The LTEA TTWQ rankings were then used to identify specific sources within the dominant land uses that could be targeted by Copermittee activities.

The San Diego River Copermittees will annually review the available receiving water data. Data from new monitoring programs, including the TWAS sampling, outfall monitoring program and source identification program, will be incorporated into future annual reviews as the data becomes available. As appropriate based on the available data, the list of high priority pollutants and sources in the San Diego River WMA will be updated.

3.2 RECEIVING WATERS CONDITION

3.2.1 Receiving Water Analytical Data

The details regarding available receiving water analytical data results in the San Diego River WMA are described in the Regional Monitoring Report and only summarized here (Weston Solutions, 2008). Turbidity and fecal coliform were identified as high frequency of occurrence constituents followed by total dissolved solids (TDS) as a medium frequency constituent. Total coliform and enterococcus were identified as low frequency of occurrence constituents. A review of the scatterplots and trends shows statistically significant increasing trends for turbidity and total suspended solids (TSS), although TSS was still below WQOs.

Measured storm event loads were compared to modeled loading values derived from the National Stormwater Quality Database in the Regional Monitoring Report. Measured loads for TDS and bacterial indicators were greater than the model predicted for a majority of the storm events sampled. Most of the other constituents measured were within the expected range or lower than predicted by the model. In particular, metals consistently showed lower than expected loads for the storm events sampled.

The Regional Monitoring Report also reviewed receiving water data from various third parties, i.e. non-Copermittees. Third party data provided by Padre Dam showed low dissolved oxygen concentrations exceeded the Basin Plan WQO 43% of the time while pH exceeded the WQO in 3% of samples. Third party data results from the SWAMP sampling in May 2004 found turbidity, sulfate, and manganese above WQOs. Results from the analyses of pesticides, herbicides, polyaromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) were generally below their respective WQOs with only a few detections of herbicides and one pesticide compound (Weston Solutions, 2008).

For the purposes of this BWE, the San Diego River Copermittees compared this receiving water monitoring data to the Basin Plan WQOs whenever applicable WQOs were available. The attached Table 3 identifies the pollutants or stressors and the locations where WQOs were exceeded more than 15% of the time, and then lists them based on the number of data sets that had this frequency of exceedances. The San Diego River Copermittees assume that the more locations where a pollutant or stressor exceeds the Basin Plan WQOs in receiving waters, the more likely that pollutant or stressor is to be a high priority for San Diego River Copermittee activities throughout the WMA.

3.2.2 Receiving Water Bioassessment Evaluation

The details of the Copermittees' bioassessment of the San Diego River WMA are described in the Regional Monitoring Report and only summarized here (Weston Solutions, 2008). The San Diego River WMA was sampled at three monitoring sites, including two urban sites and one reference site. The urban sites were in Mission Trails Regional Park and near Morena Boulevard in Mission Valley (HA 907.10), located above and below the MLS station, respectively. Both of the urban sites had an Index of Biotic Integrity (IBI) rating of Very Poor, and the reference site on Boulder Creek (HA 907.40) had an IBI rating of Fair.

Additional bioassessments were conducted at three different projects. Padre Dam sampled two sites in the San Diego River in Santee (at Carlton Hills Blvd. and at Old Mission Dam) as part of an NPDES permit requirement. The City of Santee sampled two sites in Forester Creek in support of a restoration project (City of Santee, unpublished data), and the County of San Diego sampled an unnamed tributary to Las Coches Creek/San Diego River as part of a BMP effectiveness study in Woodside Basin in Lakeside. Weston Solutions, Inc. collected and processed the data from these projects.

The Padre Dam monitoring sites typically had lower IBI scores than the nearest County bioassessment site in Mission Trails Park, which was further downstream. The mean IBI scores were 3.7 and 5.6 at Carlton Hills Blvd. and Old Mission Dam, respectively. The mean IBI score in Mission Trails Park was 10.0. This may indicate some water quality recovery from the urban effects of El Cajon, Santee, and Lakeside, as IBI scores increased with distance from these cities. IBI scores in Forester Creek and Las Coches Creek were consistently higher than the Padre Dam monitoring sites, with mean values ranging from 10.0 to 16.5. These two tributaries enter the San Diego River near the Padre Dam sites. Although the macro invertebrate communities in these tributaries were classified as impaired, they also indicate that the tributaries probably had slightly better water quality than the receiving waters of the San Diego River (Weston Solutions, 2008).

Specific causes for the IBI rating of Very Poor at the urban bioassessment sites have not been identified. For the purposes of the current BWE, the San Diego River Copermittees

assume that the results of this bioassessment support the selection of high priority pollutants and stressors currently identified through review of the available analytical monitoring data.

3.2.3 303d Listed Water Segments

For the purposes of this BWE, the San Diego River Copermittees also reviewed the 2006 303(d) listings within the WMA to identify priority pollutants or stressors in the WMA. The attached Table 4 lists the 303(d) listed pollutants or stressors based on the number of times it was listed within the WMA. The table also identifies the basis for the listing as described in the available 303(d) fact sheets and then provides comparable recent monitoring data. Based on this comparison, some of the listings appear to be potential candidates for delisting and, therefore, are discounted relative to the other listings when considering which pollutants and stressors to prioritize. In addition, the listings associated with reservoirs that represent mostly imported water are also discounted relative to the other listings when considering which pollutants and stressors to prioritize in the WMA.

3.3 WATER QUALITY PROBLEMS

The San Diego River Copermittees processed the available receiving water data through the Watershed Strategy's Action Matrix to identify the highest priority water quality problems for further action. For each category of pollutants identified in the LTEA rating system, the San Diego River Copermittees prepared a Hydrologic Area Water Quality Problem Analysis Table documenting the recommended actions in accordance with the Watershed Strategy (Appendix A; Copermittees, 2008). A summary of the recommended actions for each pollutant category is provided in Table 5. The specific pollutant or stressors in each category that drove the action recommendation is included in parenthesis in the column heading.

3.3.1 High Priority Water Quality Problems

Based on this evaluation, the following watershed priority pollutants or stressors are recommended for pollutant loading reductions or other action through Copermittee watershed activities during this permit cycle:

- Bacteria Indicators
- Phosphorus
- TDS
- Low Dissolved Oxygen (HA 907.10)
- Turbidity (HA 907.10)

Based on this evaluation, the following two pollutants or stressors are recommended for additional monitoring to assess their significance in the WMA:

- Low Dissolved Oxygen (HA 907.20 and HA 907.30)
- Turbidity (HA 907.40)

Since these two constituents overlap with those recommended for watershed activities in other HAs, the Copermittees believe the most cost-effective way to conduct this additional monitoring is by integrating it into the implementation of the watershed activities.

Other pollutants or stressors were identified in this evaluation as exceeding Copermittee

benchmarks or WQOs, including pH, sulfate, chloride, color and manganese. However, they were eliminated from further consideration in order to allow the San Diego River Copermittees to focus their efforts on those pollutants where they believe their activities will have the greatest impact on watershed water quality. The following assumptions are provided as justifications for this lower status.

- Several of the pollutants eliminated from further consideration were primarily identified as problems in the reservoirs, not other receiving waters. It is not clear how much the identified exceedances are related to the quality of surface runoff entering the reservoirs versus the quality of the raw drinking water imported and stored in the reservoirs.

- Recent monitoring data does not appear to support some of the 303(d) listings, but rather appears to indicate some may be candidates for delisting.

- By reducing phosphorus (and other nutrient) concentrations in the WMA, it is assumed that, to some degree, the San Diego River Copermittees will also be reducing overall color problems and preventing high pH conditions from developing to the extent the high pH is caused by eutrophication and photosynthesis.

- By addressing the WMA sources of low dissolved oxygen conditions, including nutrients, sediment and organic matter, it is assumed that, to some degree, the San Diego River Copermittees will also be reducing concentrations of manganese, sulfates and chloride, reducing overall color problems, and preventing high pH conditions from developing to the extent the high pH is caused by eutrophication and photosynthesis.

- By addressing TDS concentrations in the WMA, it is assumed that, to some degree, the San Diego River Copermittees will also be addressing concentrations of manganese, sulfates and chloride as well as addressing overall color problems.

- By addressing turbidity in the WMA, it is assumed that, to some degree, the San Diego River Copermittees will also be addressing concentrations of manganese, sulfates and chloride as well as addressing overall color problems.

3.3.2 Comparison with Dry Weather Monitoring Results

The purpose of the Dry Weather Monitoring program is to identify and stop illicit discharges, not to estimate Copermittee loadings and relative contributions to receiving water exceedances of WQOs. Copermittee benchmarks used to evaluate the discharges are not necessarily the same as WQOs, and an exceedance of a benchmark does not necessarily indicate that a receiving water exceedance has or will occur. Some of the measurements collected are qualitative in nature and should not be used to quantify pollutant discharges. In addition, the data generated from this program is not sufficient to accurately distinguish the relative weight of potential sources across major land use categories such as residential, commercial/industrial, municipal, etc. since many of the monitoring locations include multiple land use categories within its drainage area. Finally, the dry weather data may not be representative of actual discharges due to the ponding of water within the MS4 or because sample locations may be upstream of MS4 BMPs that would treat it.

With these caveats in mind, the San Diego River Copermittees used the results of the dry

weather monitoring program as a qualitative indicator of potential issues in downstream receiving waters. A summary of the dry weather monitoring results is provided in the annual Regional Monitoring Report, as well as individual Copermittee dry weather monitoring reports, and is not repeated in this WURMP (Weston Solutions, 2008). Table 6 summarizes by constituent and HA the dry weather monitoring results reported by the Regional Monitoring Program.

For the purposes of the watershed analysis conducted in this WURMP, the San Diego River Copermittees also calculated the percentages of samples that exceeded the Copermittee benchmarks and included the percentages in Table 6. Using a 15% rate of exceedances relative to Copermittee benchmarks to screen constituents, the dry weather monitoring indicates the following constituents are present in MS4s in at least one HA: indicator bacteria, turbidity, TSS, TDS, low dissolved oxygen, manganese, sulfate, chlorpyrifos, and methylene blue activated substances (MBAS). This list appears to generally overlap with and validate the watershed priority pollutants selected through the receiving water data evaluations. The only exception to this is in HA 907.40, where there is no dry weather data currently collected.

3.3.3 Comparison with LTEA Results

Because of the differences in how the data evaluations were conducted, the results of the collective Watershed Strategy evaluation process in this WURMP were compared to the ratings developed through the LTEA process. Overall, the results of this evaluation support the HA level ratings developed through the LTEA process, but yield different outcomes for two constituents, low dissolved oxygen and phosphorus, in HAs 907.30 and 907.40. In the case of total phosphorus, this difference is based on the standard or benchmark used to evaluate the data, which is the Basin Plan WQO of 0.1 milligrams per liter (mg/l) for total phosphorus in this evaluation versus the EPA multi sector general permit benchmark of 2.0 mg/l for total phosphorus in the LTEA ratings. For low dissolved oxygen, the difference appears to be based on the use of different thresholds to assess when the number of WQO exceedances is significant, which is 15% in the current evaluation versus 50% in the LTEA process.

Another potentially significant difference is that the LTEA process prioritizes a pollutant or stressor for Copermittee action based on 303(d) listings even if current monitoring data would not otherwise support prioritizing this constituent. The evaluation process used in this WURMP does not accept the 303(d) listing in this way, but rather compares the original monitoring data causing placement on the 303(d) list with more recent monitoring data to assess the relevance of the 303(d) listing. As a result, this process discounts those 303(d) listings that do not appear to be supported by recent monitoring results.

3.3.4 Comparison with Reservoir Source Water Protection Evaluation

As an additional supporting note, the results of this evaluation are generally consistent with the results of a separate evaluation by the City of San Diego Water Department across multiple watersheds, including parts of the San Diego River WMA, to assess the impact of storm runoff on reservoir water quality. The evaluation was used by the City to support the development of its Source Water Protection Guidelines (City of San Diego, 2004). While the primary purpose of the guidelines is to maintain water quality conditions that limit the costs of water treatment and support the water supply operations of the department, this purpose is generally consistent with the purpose of complying with water quality standards. The City's

evaluation identified the following constituents as the highest priority for protection of the City's reservoir source waters: nutrients (nitrogen and phosphorus) and related algae, taste and odor compounds; total organic carbon (TOC) associated with algae produced from excess nutrients and/or from decomposing vegetative material in storm water runoff; and TDS (City of San Diego, 2004).

3.4 LIKELY POLLUTANT SOURCES

In accordance with the Collective Watershed Strategy, the San Diego River Copermittees used the relative prevalence of certain land use categories within each HA (based on acreage) and the TTWQ ranking of suspect sources in the BLTEA to evaluate whether the sources of watershed priority pollutants are adequately characterized and to prioritize sources for selection of watershed activities (Figure 5; Weston et al., 2005).

Based on the availability of HA-specific land use statistics and adequate BLTEA TTWQ rankings of sources that can be linked to land use, the San Diego River Copermittees believe the sources of watershed priority pollutants are adequately characterized for the purpose of selecting initial Watershed Activities. The only exception to this is in HA 907.40. Since there is insufficient monitoring data to validate that the Copermittee MS4 is a contributing source of priority pollutants in this mostly undeveloped HA, the San Diego River Copermittees concluded that the potential pollutant sources are not adequately characterized for this HA. As the recommended changes to the Copermittees' monitoring programs are implemented, it is expected that this issue will be resolved over the next few years.

3.4.1 Identification of Targeted Land Uses

Based on the available land use statistics available through SanGIS, a list of land uses in each HA was developed with acreage information (SanGIS, 2007). Each SanGIS-defined land use was then categorized by general land use type approximately corresponding to categories in the Municipal Permit, such as commercial, industrial, municipal, etc. These land use categories were then sorted by prevalence within each HA based on total acreage by category (Tables 7 through 10). In these tables sorting the land uses, the San Diego River Copermittees distinguished between Park and Recreational uses and other Municipal uses in order to assess their relative importance within each HA. However, the San Diego River Copermittees merged the two categories into a combined Park/Municipal category throughout the rest of this WURMP since many of the park and recreational facilities in the WMA are actually managed by government and since this combination corresponds more closely to the Municipal category used in the BLTEA TTWQ rankings of potential sources.

Based on this review of land use statistics, the most prevalent land uses suspected of contributing priority pollutant discharges to Copermittee MS4s and, therefore, targeted for Copermittee activities are:

Hydrologic Area (HA)	Targeted Land Uses
907.10 Lower San Diego	Residential, Park/Municipal, Commercial, Industrial
907.20 San Vicente	Park/Municipal, Residential
907.30 El Capitan	Park/Municipal, Residential
907.40 Boulder Creek	Park/Municipal, Residential

3.4.2 Targeted Sources within Identified Land Uses

In the second part of this source evaluation, the San Diego River Copermittees listed sources that were ranked by the BLTEA TTWQ process as likely sources of watershed priority pollutants, and then sorted the list based on the number of priority pollutant categories for which each source was identified as a likely source (Table 11). For sources with the same number of likely rankings by pollutant category, secondary sorts were done based on the number of times a source was ranked unknown and then the total number of such sources in the WMA. These rankings will be used to guide the selection and targeting of specific Watershed Activities to address the targeted land uses in each HA.

As the likely sources are addressed, the San Diego River Copermittees may also choose to address some of the sources ranked with an unknown TTWQ. For the purpose of prioritizing which unknown ranked sources to address first, a similar sorting of sources was performed based on the number of times it was ranked as unknown, the total number of such sources in the WMA and finally the number of times it was ranked as a likely source (Table 12).

4.0 FIVE YEAR STRATEGIC PLAN

4.1 PROPOSED WATERSHED WATER QUALITY ACTIVITIES

4.1.1 Strategic Goals Guide Activity Selection

As described in Section 2.0, the San Diego River Copermittees will use a series of Strategic Goals as the narrative objectives that the proposed Watershed Activities intend to achieve during the five year permit period. The Strategic Goals will reflect the results of the BWE conducted using the Watershed Strategy, including any modifications made in annual reports. Based on the current BWE, the following Strategic Goals have been selected by the San Diego River Copermittees:

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water. This goal will be implemented in conjunction with and targeting the same land uses as Strategic Goals 2, 3 and 4.

- **Strategic Goal 2 - Source Reduction at Park/Municipal Land Uses**: By reducing the mass of watershed priority pollutants discharged to Copermittee storm drain systems and receiving waters from park and municipal land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 3 - Source Reduction at Commercial and Industrial Land Uses**: By reducing the mass of watershed priority pollutants discharged to Copermittee storm drain systems and receiving waters from commercial and industrial land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 4 - Source Reduction at Residential Land Uses**: By reducing the mass of watershed priority pollutants discharged to Copermittee storm drain systems and receiving waters from residential land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 5 – Bacteria Source Reduction**: By reducing the mass of bacteria discharged to Copermittee storm drain systems and receiving waters, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of bacteria to receiving waters. The specific land uses and sources targeted by this Strategic Goal will be selected based on the available data from ongoing monitoring programs and the results of implementing previous Strategic Goals. This goal will also support Copermittee implementation of the recent Bacteria TMDL.

4.1.2 Strategic Goal Implementation Schedule

The table below outlines the planned timeframe for implementing activities associated with each Strategic Goal. The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, in some cases, individual jurisdictions may find it more appropriate to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between HAs and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

Because this strategy is being developed in the first year of the new Municipal Permit, use of this strategy to guide selection of activities will not begin until fiscal year 2009 and San Diego River Copermittees will not have the benefit from a full year of planning until implementing activities scheduled for the 2010 fiscal year. Initially, the Strategic Goals and supporting activities will address multiple pollutants while focusing on specific types of land uses (e.g. Goals 2 through 4), but as Copermittee understanding of sources improves over time it is possible that the strategic goals may become more specific, perhaps centered around specific pollutants or groups of pollutants at various land use types (e.g. Goal 5) or perhaps by targeting more specific sources within a land use.

Goal	Strategic Goal	Activity Implementation Schedule by Fiscal Year					
		Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013
1	Dry Weather Flow Reduction	P/I	P/I/A	P/I/A	P/I/A	I[1]/A	A
2	Muncipal/Park Source Reduction	P/I	I	A		P[1]	I[1]
3	Commercial/Industrial Source Reduction	P	P	I	A		
4	Residential Source Reduction			P	I	A	A
5	Bacteria Source Reduction	P/I	P/I/A	P/I/A	P/I/A	P/I/A	P/I/A

Notes: I = Implementation; P = Planning; A = Assessment
[1] Activities supporting this Strategic Goal may be eliminated and shifted toward other Strategic Goals if judged appropriate.

4.1.3 Selection of Watershed Water Quality Activities

Each year, the San Diego River Copermittees will incorporate into their Annual WURMP Report revised summaries of the Watershed Water Quality Activities proposed for planning, implementation or effectiveness assessment in the following fiscal year. The Water Quality Activities will be presented in conjunction with the Watershed Education Activities in a single summary of both types of Watershed Activities for each implementation year. The activities will be selected based on the identified high priority water quality problems and best professional judgment. At this time, it is unclear which activities will be most appropriately

selected, but the San Diego River Copermittees may consider some of the following types of activities:

- Incentives or requirements for reductions in runoff volume.
- Work cooperatively with stakeholders to reduce pollutant loadings from a targeted source.
- Test the use of specific BMPs to address watershed priority pollutants.
- Targeted inspections and enforcement above baseline jurisdictional requirements.
- Development of new ordinances or permit requirements to address watershed priority pollutants.

Summaries of the Watershed Water Quality Activities proposed for fiscal year 2009 and fiscal year 2010 are included in Appendix B. This summary provides a general description of the proposed activities, including the Copermittee departments involved, other organizations that may participate, and the scope of work to be implemented. The summary also justifies the activity selection relative to the Strategic Goal(s) it supports and defines how the effectiveness of the activities will be measured and evaluated. Whenever feasible, data from existing jurisdictional, watershed or regional monitoring programs will be used to evaluate effectiveness. If necessary, additional special studies will be proposed to measure water quality in relationship to the proposed activities.

4.2 PROPOSED WATERSHED EDUCATION ACTIVITIES

Each year, the San Diego River Copermittees will incorporate into their Annual WURMP Report a summary of the Watershed Education Activities for baseline planning, implementation or effectiveness assessment in the following fiscal year. The activities will be selected based on the available information and best professional judgment. Generally, Education Activities will be selected that support or complement the Water Quality Activities selected. At this time, it is unclear which Education Activities will be most appropriately selected, but the San Diego River Copermittees may consider some of the following types of activities:

- Education campaigns to discourage certain activities such as over-irrigation or car washing runoff.
- Campaigns to educate target audiences regarding the introduction of new requirements or new BMPs.
- Campaigns to encourage the use of specific BMPs by target audiences.

Summaries of the Watershed Education Activities proposed for fiscal year 2009 and fiscal year 2010 are included in Appendix B. This summary provides a general description of the proposed activities, including the Copermittee departments involved, other organizations that may participate, and the scope of work to be implemented. The summary also justifies the activity selection relative to the Strategic Goal(s) it supports and defines how the effectiveness of the activities will be measured and evaluated. Whenever feasible, data from existing jurisdictional, watershed or regional programs will be used to evaluate effectiveness. If necessary, additional special studies will be proposed to measure changes in attitudes or behavior relative to the proposed activities.

4.3 PROPOSED PUBLIC PARTICIPATION ACTIVITIES

In cooperation with the San Diego River Park Foundation, the City of El Cajon, as lead Copermittee for the WMA, has initiated a San Diego River Watershed Stakeholder Working Group. Senior managers and leadership of select organizations with management authority over the WMA have been invited to a series of meetings to discuss potential collaboration. To date, the attending organizations include the San Diego River Conservancy and several water districts such as the Helix Water District, Padre Dam and City of San Diego Water Department. A current focus of the working group is to explore the potential for conducting joint project(s) that could be wholly or partially funded under the Integrated Regional Water Management Program. However, the working group is also discussing each organization's broader interests in the WMA and what other strategic basis for collaboration may be appropriate. It is unclear at this time what the end result of this discussion process will be. The San Diego River Copermittees will continue to approach significant stakeholders as appropriate throughout the current permit cycle in an attempt to encourage participation from other organizations within the WMA.

In addition, the San Diego River Copermittees anticipate that they will have more focused bilateral discussions with individual stakeholder organizations that may or may not overlap with the Stakeholder Working Group. These inter-organizational discussions will generally be held at the staff level within each organization and may not involve senior management to the same degree. The intent of these discussions will be to focus on more specific or targeted areas of joint interest. For example, individual Copermittees and water districts may work together within their jurisdictions to jointly monitor over-irrigation issues and promote the use of weather based irrigation controllers.

4.4 PROPOSED LAND-USE PLANNING ACTIVITIES

Land use planning is a jurisdictional activity and land use planning efforts will generally be reported as part of the Jurisdictional Urban Runoff Management Program (JURMP) reporting. However, highlights will be provided in the WURMP annual report as deemed appropriate. These planning efforts will incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the General and Community Plans for each jurisdiction as appropriate. These plans will be updated as necessary to address special concerns identified for the San Diego River WMA.

In order to encourage collaborative, watershed-based land use planning, the San Diego River Copermittees will have at least one watershed meeting per year dedicated to discussing and addressing land use planning issues. It is anticipated that this discussion will enable San Diego River Copermittees to establish some consistency in how they integrate watershed principles into their plans and to evaluate the potential need for watershed specific land use requirements. The results of this meeting, including any follow up meetings, will be reported in the WURMP annual reports.

5.0 PROGRAM EFFECTIVENESS ASSESSMENT

The San Diego River Copermittees believe that the proposed watershed program represents an excellent opportunity for jurisdictions to pool and jointly test their existing knowledge and assumptions regarding the effectiveness of individual BMPs as well as the collective effectiveness of groups of BMPs prior to instituting mandatory requirements or extensive use throughout the WMA. Therefore, it anticipated that not all activities will achieve measurable pollutant loading reductions, either because the targeted source was not as significant a source of pollutants as originally assumed or because the selected activity was ineffective. However, even this information will allow the San Diego River Copermittees to improve the overall effectiveness of their jurisdictional, watershed and regional programs by allowing them to stop performing ineffective activities and to choose alternative activities with a greater potential for success. Over time, this iterative process is anticipated to yield significant pollutant loading reductions and improved water quality.

5.1 WATERSHED ACTIVITY ASSESSMENT

The effectiveness of each Copermittee activity will be measured and evaluated in terms of the intended outcomes established during the planning phase for that year's activities, which in turn are based on the Strategic Goal the activity is intended to serve. In general, the San Diego River Copermittees will consider the following types of anticipated outcomes and effectiveness metrics.

Effectiveness Assessment Metrics

Outcome Level	Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1 Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2 Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/exposure.	Pre and post implementation surveys of targeted audience attitudes.
3 Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/measured or inferred from observed or documented conditions.
4 Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5 Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6 Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

San Diego River Copermittees will consider using monitoring data from selected facilities or neighborhoods of the targeted land uses in order to evaluate the combined effectiveness of each year's activities. These facilities will generally be monitored for dry and wet weather discharges the years before, of and after the activity implementation. Down gradient storm drain outfalls and receiving water may also be sampled. The results of this flow monitoring and sample collection may be extrapolated, if appropriate, to estimate the pollutant loading from similar land uses in the WMA as well as draw conclusions regarding the likely affects on storm drain discharge water quality and receiving water quality from the activities conducted. The locations of these representative facilities will not be shared with targeted audiences when doing so may introduce bias into the results or otherwise undermine the ability of that facility to be representative of similar land uses throughout the WMA relative to Copermittee activity implementation.

In general, monitoring data from existing programs and other kinds of readily available quantitative statistics (such as land use, census data, etc.) will be used to evaluate effectiveness. As necessary to obtain a reasonable understanding of effectiveness, the San Diego River Copermittees may supplement this readily available data with either special studies or qualitative evaluations. These special studies may take the form of targeted

monitoring data collection, attitude surveys or inspections. These special studies may be conducted before activity implementation to establish baseline conditions, during implementation to measure interim progress and/or after implementation to measure changes in conditions. The decision to collect additional data will be based on whether or not the data already available will provide the information necessary to draw conclusions regarding activity effectiveness or will assist in identifying or quantifying loadings from specific sources associated with the targeted land use. In some cases, certain activities may include a more detailed assessment of efficiency or cost-effectiveness.

Validated data that identifies and quantifies the specific sources of pollutants from each targeted land use will be critical for identifying future activities that are most likely to achieve measurable results. Collection of this data as an integral part of activity implementation is an important mechanism for testing and validating the assumptions that the San Diego River Copermittees necessarily use to guide their selection of target sources and activities. Over time, the San Diego River Copermittees anticipate that the selection of target sources and individual activities will be increasingly data driven instead of assumption driven, just as the selection of Strategic Goals in the WMA is being driven by the increasing amount of receiving water data available.

5.2 OVERALL WURMP ASSESSMENT

The effectiveness of the WURMP as a whole will be evaluated in terms of the cumulative results of effectiveness evaluations performed in accordance with Section 5.1. These cumulative results may be used to estimate trends over time and the relative progress towards achieving the Strategic Goals of the WMA, if appropriate. Because the data collection supporting activity implementation will be designed to support extrapolation of the data to similar sources throughout the WMA whenever feasible and to support effectiveness evaluations in terms of outcome levels 1 through 6, it is anticipated that the San Diego River Copermittees will be able to evaluate the cumulative results of the program in terms of outcome levels 1 through 6 as required in the Municipal Permit (Copermittees, 2003).

The San Diego River Copermittees will annually review the latest available water quality data and other information to assess whether the current Strategic Goals should be modified. Strategic Goals may be modified, replaced or eliminated due to the Goal having been adequately achieved and/or because other watershed priorities take precedence. For example, the available jurisdictional, watershed and regional monitoring results and trends will be used each year to reassess the watershed level priority pollutants and land uses to be targeted for watershed activities. A change in priority pollutants or targeted land uses would justify changes to the existing Strategic Goals. As the Strategic Goals are modified, corresponding changes will be made to the future selection and implementation of watershed activities.

The San Diego River Copermittees believe this assessment methodology will satisfy the requirements of the Municipal Permit, including supporting the effectiveness assessment objectives established in Section I.3.a.(6) of the Municipal Permit. The table below identifies how the watershed effectiveness assessment methodology, in conjunction with jurisdictional and regional effectiveness assessments, will help the San Diego River Copermittees satisfy these permit-required objectives.

Compliance with Permit Required Effectiveness Assessment Objectives

Municipal Permit Objective	Watershed Effectiveness Assessment Compliance
Assessment of watershed health and identification of water quality issues and concerns.	Primarily met through existing jurisdictional and regional monitoring programs. Watershed assessments will test the assumptions regarding sources of water quality issues and perhaps identify additional issues.
Evaluation of the degree to which existing source management priorities are properly targeted to, and effective in addressing, water quality issues and concerns.	The Watershed Strategic Goals are selected based on priority water quality issues. Activities are selected based on how well they serve the Strategic Goals. The proposed effectiveness assessments will test Copermittee assumptions regarding sources of water quality issues and will be used to guide subsequent activity selection.
Evaluation of the need to address additional pollutant sources not already included in Copermittee programs.	Primarily met through existing jurisdictional and regional monitoring programs. Watershed assessments will test Copermittee assumptions regarding sources of water quality issues and perhaps identify additional sources.
Assessment of progress in implementing Copermittee programs and activities.	The WURMP has identified measurable criteria for judging Copermittee implementation of the program and activities that are consistent with permit requirements.
Assessment of the effectiveness of Copermittee activities in addressing priority constituents and sources.	The Watershed Strategic Goals are selected based on priority water quality issues. Activities are selected based on how well they serve the Strategic Goals. The proposed effectiveness assessments will test Copermittee assumptions regarding sources of water quality issues and will be used to guide subsequent activity selection.
Assessment of changes in discharge and receiving water quality.	By targeting specific land uses each year and measuring changes at representative facilities, the Copermittees will be able to validate assumptions regarding activity impacts on discharge and receiving water quality.
Assessment of the relationship of program implementation to changes in pollutant loading, discharge quality, and receiving water quality.	By targeting specific land uses each year and measuring changes at representative facilities, the Copermittees will be able to validate assumptions regarding specific sources, loadings and water quality relative to specific activities.
Identification of changes necessary to improve Copermittee programs, activities, and effectiveness assessment methods and strategies.	By targeting specific land uses each year and measuring changes at representative facilities, the Copermittees will be able to validate assumptions and, where appropriate, make changes to Copermittee programs.

5.3 TMDL BMP IMPLEMENTATION PLAN ASSESSMENT

The SDRWQCB recently approved the Bacteria TMDL in December 2007. By establishing Strategic Goal 5 to address bacteria specifically, this WURMP is acknowledging that implementation of the Bacteria TMDL will be a priority for the San Diego River WMA. However, at this time, the Copermittees are still assessing how best to implement the TMDL. That decision will depend on the San Diego River Copermittees' judgment regarding the most cost effective way to address the TMDL across its programs at the jurisdictional, watershed and regional levels. To the extent that the Bacteria TMDL is addressed at the watershed level, the effectiveness of Copermittee efforts to address bacteria loadings within the watershed will be evaluated through the same process described in previous sections and will be reported in the Annual WURMP Report.

6.0 PROGRAM REVIEW AND MODIFICATION

The San Diego River Copermittees will meet on a regular basis, at least quarterly, to review the status and progress of cooperation within the WMA. These meetings will be designed to ensure adequate collaboration between the various jurisdictions and departments as needed to implement this WURMP. The San Diego River Copermittees will review the progress of the watershed program and coordinate their activity planning, implementation and effectiveness evaluations. The San Diego River Copermittees will also cooperate in the preparation of WURMP annual reports.

The San Diego River Copermittees will review the overall watershed program annually and make modifications as necessary to improve the overall effectiveness of Copermittee activities. Future reviews will generally follow the same process used in this WURMP, but will primarily be concerned with consistency between the data collected that year and the data used to support the assumptions and conclusions described in this WURMP. If the data collected and evaluated each year continues to support the current conclusions regarding the priority pollutants and targeted land uses in the WMA, then the Strategic Goals for the WMA will not be modified. Conversely, if the data calls into question the assumptions and conclusions supporting the current Strategic Goals, appropriate modifications will be made as necessary so that the Strategic Goals continue to address the top watershed level priorities. Any changes to the Strategic Goals will also result in changes to the selection and implementation of the activities supporting those Strategic Goals. Changes to the WURMP will be described in the WURMP Annual Reports.

7.0 REFERENCES

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8.0 ACRONYMS AND DEFINITIONS

The page in the WURMP where the acronym or term is first defined is provided in parentheses.

303(d) – Section of the Clean Water Act requiring states to prepare a list of impaired water bodies (page 5)
ABLM – ambient bay and lagoon monitoring (page 11)
AFY – acre feet per year (page 9)
Bacteria TMDL – Total Maximum Daily Load for Indicator Bacteria Project I – Beaches and Creeks in the San Diego Region (page 4)
Basin Plan – Water Quality Control Plan for the San Diego Basin (page 2)
BLTEA – Baseline Long Term Effectiveness Assessment (page 12)
BMI – benthic macro invertebrate (page 11)
BMP – best management practice (page 3)
BWE – baseline watershed evaluation (page 14)
Copermittees - jurisdictions regulated by the Municipal Permit, which are the County of San Diego, the incorporated cities within the County of San Diego, the San Diego Unified Port District and the San Diego County Regional Airport Authority (page 1)
CSWRCB – California State Water Resources Control Board (page 2)
CWA – Clean Water Act (page 2)
Draft Bacteria TMDL – draft TMDL for Indicator Bacteria, Project I – Beaches and Creeks in the San Diego Region (page 5)
EPA – United State Environmental Protection Agency (page 3)
HA – Hydrologic Area as defined in the Basin Plan (page 7)
HA 907.10 – Lower San Diego Hydrologic Area 907.10 in the Basin Plan (page 7)
HA 907.20 – San Vicente Hydrologic Area 907.20 in the Basin Plan (page 7)
HA 907.30 – El Capitan Hydrologic Area 907.30 in the Basin Plan (page 7)
HA 907.40 – Boulder Creek Hydrologic Area 907.40 in the Basin Plan (page 7)
HMP – Hydromodification Plan (page 6)
IBI – Index of Biotic Integrity (page 20)
JURMP – Jurisdictional Urban Runoff Management Program (page 29)
LID – low impact development (page 7)
LTEA – long term effectiveness assessment (page 13)
MBAS - methylene blue activated substances (page 23)
MEP – maximum extent practicable (page 3)
MLS – mass loading station (page 11)
MS4 – municipal separate storm sewer system (page 1)
Municipal Permit – Municipal Storm Water Permit for San Diego Copermittees (Order No. R9-2007-0001) (page 1)
NPDES – National Pollutant Discharge Elimination System (page 1)
Padre Dam – Padre Dam Municipal Water District (page 8)
PAH - polyaromatic hydrocarbons (page 20)
PCB - polychlorinated biphenyl (page 20)
POTW – publicly owned treatment works (page 8)
SCCWRP – Southern California Coastal Water Research Project (page 12)
SDCWA – San Diego County Water Authority (page 7)
SDRWQCB – San Diego Regional Water Quality Control Board (page 1)
Strategic Goals – Copermittee defined goals translating the results of the BWE into narrative objectives that proposed Watershed Activities are intended to achieve (page 16)
SUSMP – Standard Urban Stormwater Mitigation Plans (page 7)

TDS – total dissolved solids (page 19)
TMDL – total maximum daily load (page 4)
TOC – total organic carbon (page 24)
TSS – total suspended solids (page 19)
TTWQ – threat to water quality (page 13)
TWAS – temporary watershed assessment station (page 11)
UAA – Use Attainability Analysis (page 2)
USGS – United States Geological Survey (page 8)
WDR – waste discharge requirements (page 2)
WMA – Watershed Management Area (page 1)
WQO – water quality objective (page 2)
WURMP – Watershed Urban Runoff Management Plan (page 1)

SAN DIEGO RIVER WATERSHED MANAGEMENT AREA

Municipal Separate Storm Sewer System Map (MS4)

FIGURE 1

Legend

- Watershed Sub-Basins
- (MS4) Point Features
- (MS4) Linear Features
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:

MS4: Various jurisdictions (2007);
MS4 data were provided by individual Copermittees to the County of San Diego. Jurisdictional MS4 layers are in various stages of completion and have been simplified into a simple point and line symbology for the purposes of this map. Some of the MS4 layers shown are still in draft form. Gaps in the MS4 data are most likely a reflection of missing data rather than a true inventory of drainage structures in the watershed. This map is not intended for any use other than to respond to Permit section E.2.b., which requires development of a map of the WMA including MS4 features.

**303(d) Waters / Watersheds: (SWRCB), (2006)
Disclaimer:
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

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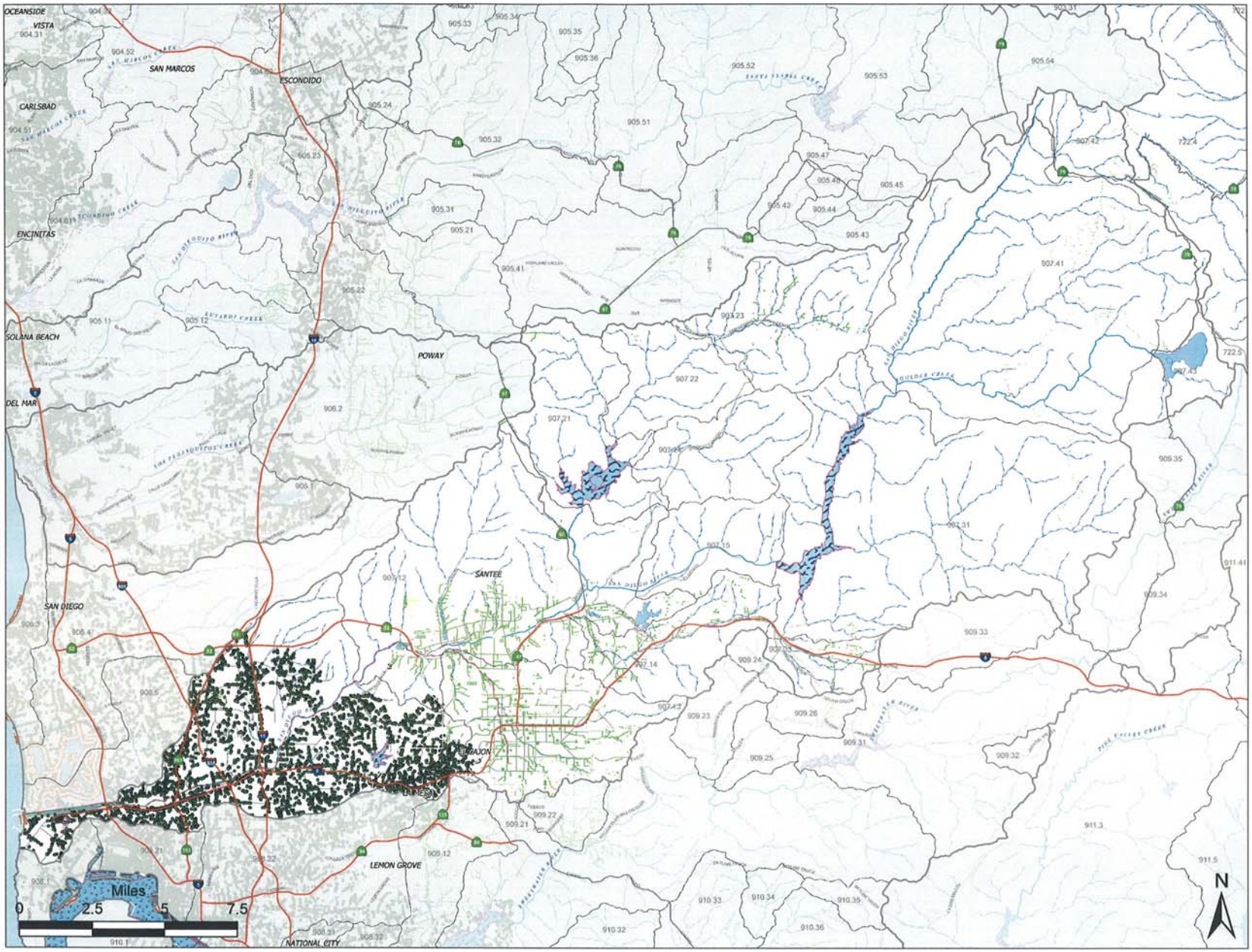

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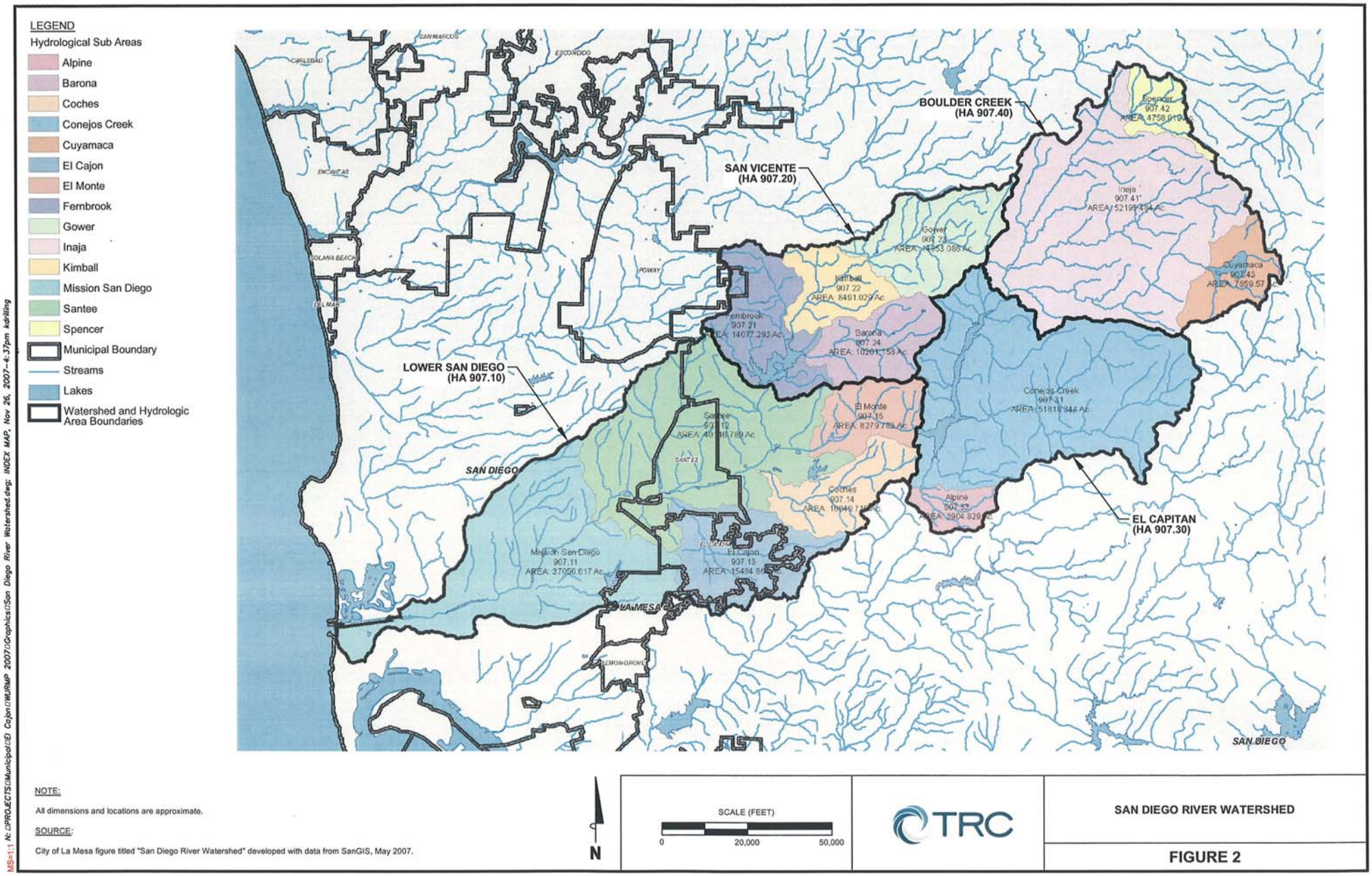
LEGEND
Hydrological Sub Areas
Alpine
Barona
Coches
Conejos Creek
Cuyamaca
El Cajon
El Monte
Fernbrook
Gower
Inaja
Kimball
Mission San Diego
Santee
Spencer
Municipal Boundary
Streams
Lakes
Watershed and Hydrologic Area Boundaries
BOULDER CREEK (HA 907.40)
SAN VICENTE (HA 907.20)
LOWER SAN DIEGO (HA 907.10)
EL CAPITAN (HA 907.30)
SAN MARCOS
ESCONDIDO
CARLSBAD
ENCINITAS
SOLANA BEACH
DEL MAR
POWAY
SANTEE
EL CAJON
LA MESA
LEMON GROVE
SAN DIEGO
Spencer 907.42
Inaja 907.41
Gower 907.23
Kimball 907.22
Fernbrook 907.21
Barona 907.24
Cuyamaca 907.43
Conejos Creek 907.31
El Monte 907.15
Santee 907.12
Coches 907.14
Alpine 907.32
Mission San Diego 907.11
El Cajon 907.13
NOTE:
All dimensions and locations are approximate.
SOURCE:
City of La Mesa figure titled "San Diego River Watershed" developed with data from SanGIS, May 2007.
N
SCALE (FEET)
0
20,000
50,000
TRC
SAN DIEGO RIVER WATERSHED
FIGURE 2
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6278

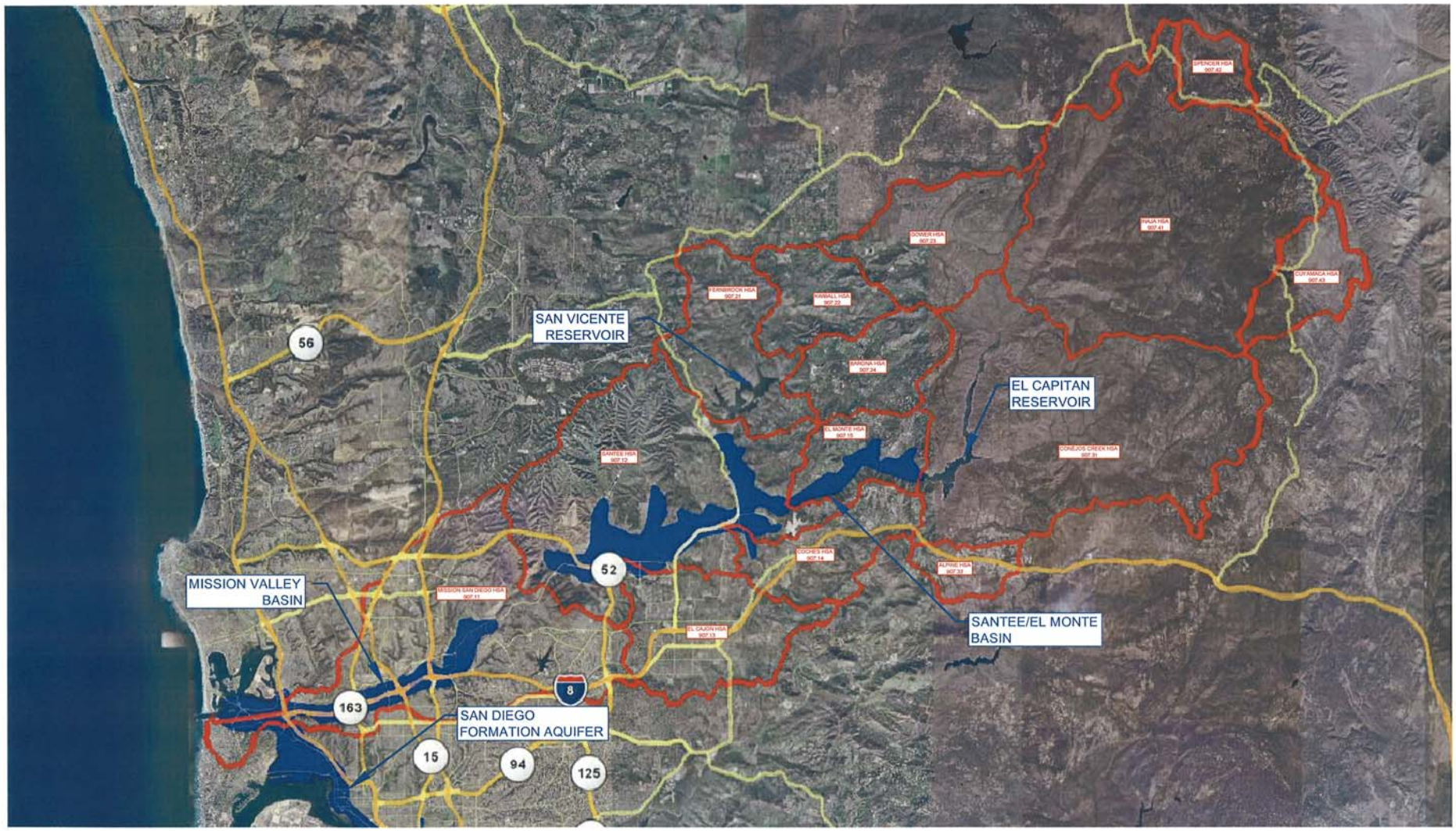

NOTE:

All dimensions and locations are approximate.

SOURCE:

Image from Google Earth Pro. Alluvial basin data file from Bulletin 118, California Department of Water Resources, Version 3.0 dated October 2003. Hydrologic basin data file from SANDAG, dated 1999.

N

SCALE (MILES)

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TRC

GROUNDWATER BASINS IN SAN DIEGO RIVER WATERSHED

FIGURE 3

MS=1:1 N:\PROJECTS\Municipal\El Cajon\IWURMP 2007\Graphics\San Diego Watershed basins.dwg; INDEX MAP, Nov 26, 2007-10:44am kdrilling

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SAN DIEGO RIVER WATERSHED MANAGEMENT AREA

Land Use Map

FIGURE 4

Legend

- Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)

Disclaimer
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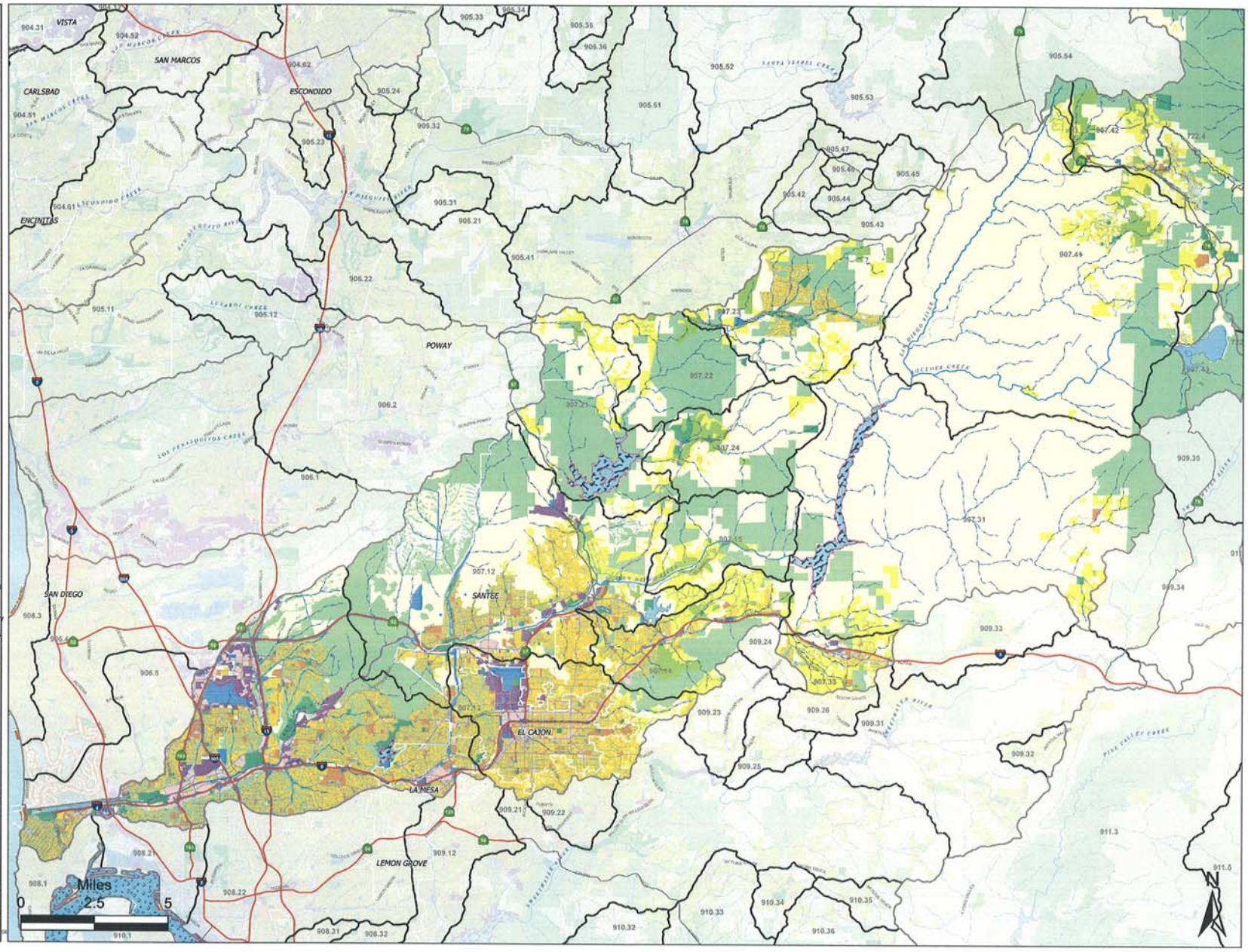

SAN DIEGO RIVER WATERSHED MANAGEMENT AREA

Pollutant Source Map
FIGURE 5

Legend

- Watershed Sub-Basins

Potential Pollutant Sources

Baseline Long-Term Effectiveness Assessment (2005)

- Airfield
- AirplaneRepair
- Animal Facilities
- AutoPaint
- AutoRepair
- BoatRepair
- Cemetary
- Food
- Fuel
- GolfCourses
- LandApplication
- Landfill
- MaintenanceYard
- Marina
- Nursery
- POTW
- Paintball
- SolidWasteTransfer
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego / Ogden Engineering)
**303(d) Waters / Watersheds: (SWRCB), (2006)
Disclaimer:
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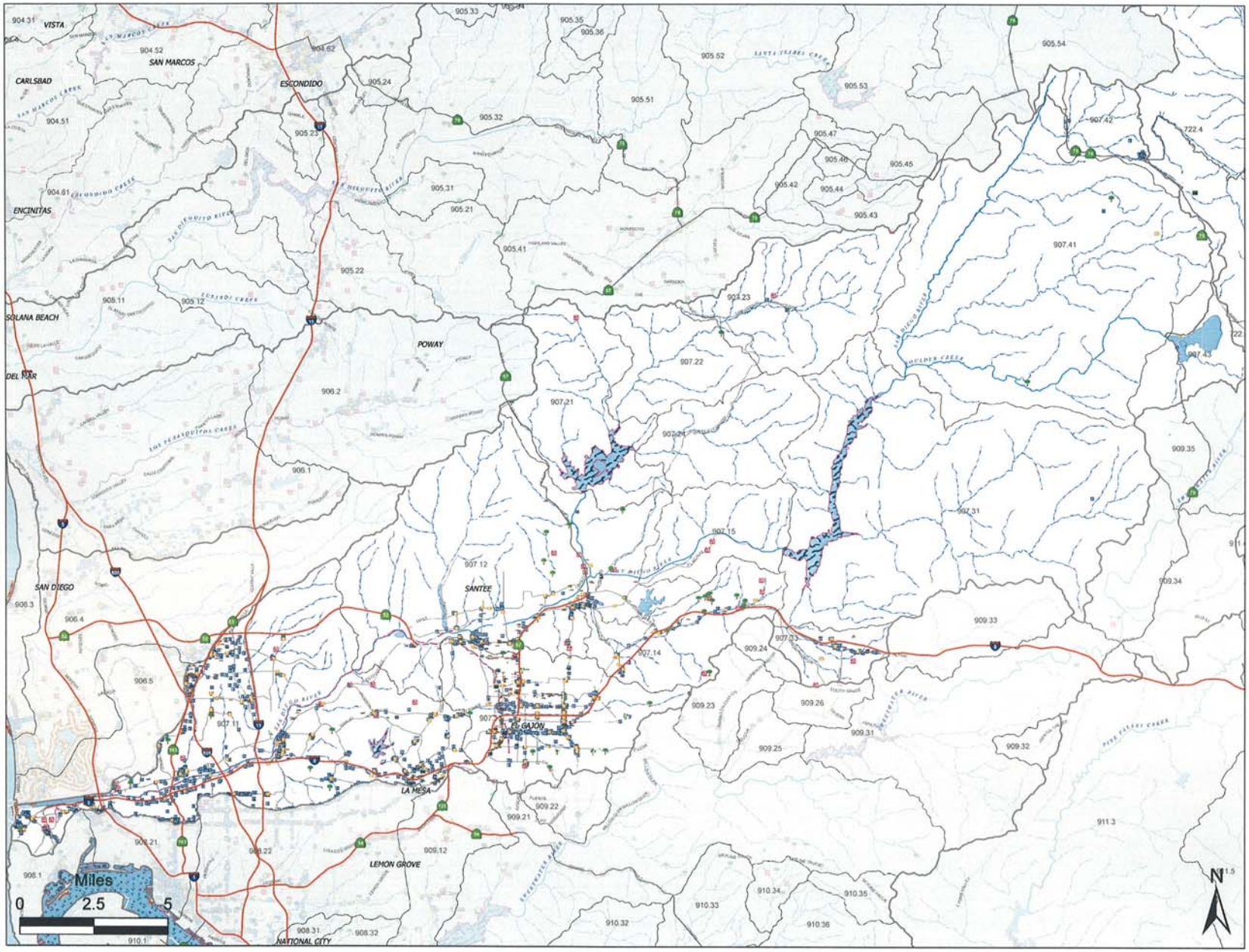

TABLE 1
Condensed List: Designated Beneficial Uses of Surface Waters

SURFACE WATER	Hydrologic Basin Number	BENEFICIAL USE																				
		MUN	AGR	IND	NAV	PROC	GWR	POW	REC 1	REC 2	BIOL	WARM	COLD	WILD	RARE	SPWN	COMM	EST	MAR	AQUA	MIGR	SHELL
Pacific Ocean				E	E				E	E	E			E	E	E	E		E	E	E	E
Mouth of San Diego River	907.11			E					E	E				E	E	E	E	E	E		E	E
Famosa Slough and Channel	907.11			E					E	E				E	E	E	E	E	E		E	E
San Diego River	907.11	--	E	E					E	E	1	E		E	2							
Lake Murray	907.11	E		E				E	3	E		E	E	E								
San Diego River	907.12	P		E					E	E		E		E	4							
Sycamore and Spring Canyons	907.12	--	E	E					E	E		E		E	E							
Little Sycamore and Oak Canyons	907.12	--	E	E					E	E		E		E								
Lake Jennings	907.12	E		E					E	E		E	E	E								
Forester Creek	907.12 and 907.13	P		E					E	E		E		E								
Los Coches Creek	907.14	P		E					E	E	5	E		E								
San Diego River	907.15	P		E					E	E		E		E	E							
San Vicente Reservoir	907.21	E	E	E		E			3	E		E	E	E								
Aqueduct Arm Creek	907.21	E	E	E		E	P		E	E		E		E								
Foster Creek	907.21	E	E	E		E			E	E		E		E								
San Vicente Creek	907.21, 907.22 and 907.23	E	E	E		E			E	E		E		E								
Padre Barona Creek	907.24	E	E	E		E			E	E		E		E								
San Diego River	907.31	E	E	E		E			E	E		E	E	E		6						
El Capitan Reservoir	907.31	E	E	E		E			3	E		E	E	E	E							
San Diego River	907.41	E	E	E		E			E	E		E	E	E		7						
Cuyamaca Reservoir	907.43	E	E	E		E			3	E		E	E	E	E							

NOTES

-- = Excepted from Municipal and Domestic Use designation

E = Existing Use

P= Potential Use

1 = Biological Habitat of Special Significance designated as Existing Beneifical Use for San Diego River in HSA 907.11, except not in an unnamed tributary, Alvarado Canyon, Murphy Canyon and Murray Canyon.

2 = Rare designated as Existing Beneficial Use for San Diego River in HSA 907.11, except not in Alvarado Canyon, Shepherd Canyon and Murray Canyon.

TABLE 1
Condensed List: Designated Beneficial Uses of Surface Waters

NOTES CONTINUED

3 = Fishing from shore or boat permitted, but other water contact recreational uses prohibited.
4 = Rare designated as Existing Beneficial Use for San Diego River in HSA 907.12, except not in Quail Canyon and Wildcat Canyon.
5 = Biological Habitat of Special Significance designated as Existing Beneficial Use for Rios Canyon in HSA 907.14.
6 = Spawning designated as Existing Beneificial Use only for Conejos Creek.
7 = Spawning designated as Existing Beneficial Use only for Cedar Creek and Dehr Creek.

MUN = Municipal and Domestic Supply
AGR = Agricultural Supply
IND = Industrial Service Supply (processes not depend primarily on water quality)
PROC = Industrial Process Supply (processes depend primarily on water quality)
NAV = Navigation
GWR = Groundwater Recharge
POW = Hydropower Generation
REC 1 = Contact Water Recreation
REC 2 = Non-Contact Recreation
BIOL = Preservation of Biological Habitats of Special Significance
WARM = Warm Freshwater Habitat

COLD = Cold Freshwater Habitat
WILD = Wildlife Habitat
RARE = Rare, Threatened or Endangered Species
SPWN = Spawning, Reproduction and/or Early Development
COMM = Commercial and Sport Fishing
EST = Estuarine Habitat
MAR = Marine Habitat
AQUA = Aquaculture
MIGR = Migration of Aquatic Organisms
SHELL = Shellfish Harvesting

Sources: Basin Plan Tables 2-2 Beneficial Use of Inland Surface Waters, 2-3 Beneficial Uses of Coastal Waters, and 2-4 Beneficial Uses of Reservoirs and Lakes; some surface waters have been combined when no differences in designated uses were present.

TABLE 2
Designated Beneficial Uses of Ground Waters

GROUNDWATER	Hydrologic Basin Number	BENEFICIAL USE					
		MUN	AGR	IND	PROC	FRSH	GWR
Mission San Diego HSA (west of I-5)*	907.11	--	--	--	--		
Mission San Diego HSA (east of I-5)	907.11	P	E	E	E		
Santee HSA	907.12	E	E	E	E		
El Cajon HSA	907.13	E	E	P	P		
Coches HSA	907.14	E	E	E	P		
El Monte HSA	907.15	E	E	E	P		
San Vicente HA	907.20	E	E				
El Capitan HA	907.30	E	E				
Boulder Creek HA	907.40	E	E				

NOTES
HSA = Hydrologic Subarea
HA = Hydrologic Area
* = The beneficial uses of this HSA do not apply westerly of the easterly boundary of the right-of-way of Interstate 5 and this area is excepted from the sources of drinking water policy.
-- = Beneficial Uses do not apply in this area
E = Existing Use
P= Potential Use

MUN = Municipal Supply
AGR = Agricultural Supply
IND = Industrial Service Supply (processes not depend primarily on water quality)
PROC = Industrial Process Supply (processes depend primarily on water quality)
FRSH = Freshwater Replenishment
GWR = Groundwater Recharge

Source: Basin Plan Table 2-5. Beneficial Uses of Ground Waters

TABLE 3
Summary of Receiving Water Exceedances By Constituent

Pollutant/ Stressor	Data Source	Location	HSA	Basin Plan WQO	Number of Exceedances	Total Number of Samples	Percentage of Samples Exceeding WQO	Sampling Timeframe
Enterococci	Copermittees	Mass Loading Station	907.11	151 MPN/100 ml (infrequently used area)	14	15	93%	2001-2006
Fecal Coliform	Copermittees	Mass Loading Station	907.11	400 MPN/100 ml	13	15	87%	2001-2006
Enterococci	City of La Mesa	Alvarado - In Channel	907.11	151 MPN/100 ml (infrequently used area)	2	2	100%	2007
Fecal Coliform	City of La Mesa	Alvarado - In Channel	907.11	400 MPN/100 ml	1	2	50%	2007
Fecal Coliform	Padre Dam	Mast Bridge	907.12	400 MPN/100 ml	6	24	25%	2005-2006
Fecal Coliform	Padre Dam	Forester Creek	907.12	400 MPN/100 ml	18	24	75%	2005-2006
E.coli	Padre Dam	Forester Creek	907.12	576 MPN/100 ml (infrequently used area)	10	24	42%	2005-2006
Dissolved Oxygen	City of San Diego Water Dept.	Murray Reservoir	907.11	6.0 mg/l	70*	96	73%	2005-2006
Dissolved Oxygen	CSWRCB SWAMP	San Diego River I5	907.11	5.0 mg/l	1	1	100%	2004
Dissolved Oxygen	Padre Dam	San Diego River (5 locations)	907.12	5.0 mg/l	54	120	45%	2005-2006
Dissolved Oxygen	Padre Dam	San Diego River (5 locations)	907.12	annual mean 7 mg/l no more than 10% of time	2	2	100%	2005-2006
Dissolved Oxygen	City of San Diego Water Dept.	San Vicente Reservoir	907.21	6.0 mg/l	75*	92	82%	2005-2006
Dissolved Oxygen	City of San Diego Water Dept.	El Capitan Reservoir	907.31	6.0 mg/l	82*	96	85%	2005-2006

TABLE 3
Summary of Receiving Water Exceedances By Constituent

Pollutant/ Stressor	Data Source	Location	HSA	Basin Plan WQO	Number of Exceedances	Total Number of Samples	Percentage of Samples Exceeding WQO	Sampling Timeframe
Total Phosphorus	Copermittees	Mass Loading Station	907.11	0.1 mg/l (flowing water)	15	15	100%	2001-2006
Total Phosphorus	City of La Mesa	Alvarado - In Channel	907.11	0.1 mg/l (flowing water)	2	2	100%	2007
Total Phosphorus	Padre Dam	Forester Creek	907.12	0.1 mg/l (flowing water)	12	24	50%	2005-2006
Total Phosphorus	Padre Dam	San Diego River (5 locations)	907.12	0.1 mg/l (flowing water)	111	120	93%	2005-2006
Phosphorus	City of San Diego Water Dept.	San Vicente Reservoir	907.21	0.025 mg/l (standing water)	6	37	16%	2005-2006
Phosphorus	City of San Diego Water Dept.	El Capitan Reservoir	907.31	0.025 mg/l (standing water)	6	35	17%	2005-2006
TDS	Padre Dam	Forester Creek	907.12	1,000 mg/l	21	23	91%	2005-2006
TDS	Padre Dam	San Diego River (5 locations)	907.12	1,000 mg/l	75	120	63%	2005-2006
TDS	City of San Diego Water Dept.	San Vicente Reservoir	907.21	300 mg/l	25	25	100%	2005-2006
TDS	City of San Diego Water Dept.	El Capitan Reservoir	907.31	300 mg/l	17	23	74%	2005-2006
Turbidity	Copermittees	Mass Loading Station	907.11	20 NTU	10	15	67%	2001-2006
Turbidity	City of La Mesa	Alvarado - In Channel	907.11	20 NTU	1	2	50%	2007
Turbidity	Padre Dam	Forester Creek	907.12	20 NTU	5	24	21%	2005-2006
Turbidity	CSWRCB SWAMP	Boulder Creek	907.41	20 NTU	1	1	100%	2004
pH	City of San Diego Water Dept.	Murray Reservoir	907.11	6.5 to 8.5	39*	93	42%	2005-2006

TABLE 3
Summary of Receiving Water Exceedances By Constituent

Pollutant/ Stressor	Data Source	Location	HSA	Basin Plan WQO	Number of Exceedances	Total Number of Samples	Percentage of Samples Exceeding WQO	Sampling Timeframe
pH	City of San Diego Water Dept.	San Vicente Reservoir	907.21	6.5 to 8.5	36*	92	39%	2005-2006
pH	City of San Diego Water Dept.	El Capitan Reservoir	907.31	6.5 to 8.5	31*	97	32%	2005-2006
Sulfate	CSWRCB SWAMP	San Diego River I5	907.11	250 mg/l	1	1	100%	2004
Sulfate	City of San Diego Water Dept.	San Vicente Reservoir	907.21	65 mg/l	24	24	100%	2005-2006
Sulfate	City of San Diego Water Dept.	El Capitan Reservoir	907.31	65 mg/l	5	23	22%	2005-2006
Chloride	City of San Diego Water Dept.	Murray Reservoir	907.11	50 mg/l	8	8	100%	2005-2006
Chloride	City of San Diego Water Dept.	San Vicente Reservoir	907.21	50 mg/l	24	24	100%	2005-2006
Chloride	City of San Diego Water Dept.	El Capitan Reservoir	907.31	50 mg/l	6	23	26%	2005-2006
Color	City of San Diego Water Dept.	El Capitan Reservoir	907.31	20 color units	4	23	17%	2005-2006
Manganese	CSWRCB SWAMP	San Diego River I5	907.11	0.05 mg/l	1	1	100%	2004

Notes:
HSA = Hydrologic Subarea in the Basin Plan
WQO = Water Quality Objective
CSWRCB SWAMP = California State Water Resources Control Board Surface Water Ambient Monitoring Program
MPN/ml = most probable number of colonies per number of milliliters
mg/l = milligrams per liter
NTU = nephelometric turbidity units
* measurements taken at multiple depths throughout the water column in reservoir; exceedance noted if measurements at any depth failed WQO

TABLE 4
303(d) Listings By Pollutant or Stressor

Pollutant/ Stressor	Water Body Name	Hydrologic Sub Area (HSA)	Year Listed	Basin Plan WQO Used	Data Source	Basis for Listing	Comparable current results
pH	Murray Reservoir+	907.11 Mission San Diego	2006	6.5 to 8.5	San Diego Water Dept. 1996-2000	14 of 78 samples exceed WQO.	39 of 93 samples exceed WQO at shallow depth in 2005-06
pH	Forester Creek	907.12 Santee	2002	6.5 to 8.5	City of El Cajon 1994-2001	28 of 34 samples exceed WQO.	1 of 24 Padre Dam samples exceed WQO in 2005-06
pH	San Vicente Reservoir+	907.21 Fernbrook	2006	6.5 to 8.5	San Diego Water Dept. 1996-2000	28 of 60 samples exceed WQO.	36 of 92 samples exceed WQO at shallow depth in 2005-06
pH	El Capitan Lake+	907.31 Conejos Creek	2006	6.5 to 8.5	San Diego Water Dept. 1996-2000	10 of 57 samples exceed WQO.	31 of 97 samples exceed WQO at shallow depth in 2005-06
Fecal Coliform	Lower San Diego River	907.11 Mission San Diego	2002	400 MPN/ml	Padre Dam 1998-2000	11 of 18 samples exceed WQO.	15 of 120 samples exceed WQO in 2005-06 at 5 locations
Fecal Coliform	Forester Creek	907.12 Santee	2002	400 MPN/ml	Padre Dam 1997-2000	14 of 38 samples exceed WQO.	18 of 24 samples exceed WQO in 2005-06
Indicator Bacteria	Pacific Ocean Shoreline	907.11 Mission San Diego	1998	230 MPN/ml Fecal Coliform	--	--	--
Low Dissolved Oxygen	Lower San Diego River	907.11 Mission San Diego	2002	6.0 mg/l minimum	Padre Dam 1997-2000	76 of 84 samples below WQO minimum.	71 of 120 samples below WQO minimum in 2005-06 at 5 locations
Low Dissolved Oxygen	Forester Creek	907.12 Santee	2006	6.0 mg/l minimum	City of El Cajon 1997-2000	Mistaken listing - Fact Sheet recommends Do Not List	2 of 24 Padre Dam samples below WQO minimum in 2005-06
Eutrophic	Famosa Slough and Channel	907.11 Mission San Diego	1998	--	--	--	--
Phosphorus	Lower San Diego River	907.11 Mission San Diego	2002	0.1 mg/l	Padre Dam 1997-2000	87 of 112 samples exceed WQO.	111 of 120 samples exceed WQO in 2005-06 at 5 locations
Phosphorus	Forester Creek	907.12 Santee	2006	0.1 mg/l	City of El Cajon 1997-2000	3 of 10 monthly averages exceed WQO	12 of 24 samples exceed WQO in 2005-06
Eutrophic	Famosa Slough and Channel	907.11 Mission San Diego	1998	--	--	--	--

TABLE 4
303(d) Listings By Pollutant or Stressor

Pollutant/ Stressor	Water Body Name	Hydrologic Sub Area (HSA)	Year Listed	Basin Plan WQO Used	Data Source	Basis for Listing	Comparable current results
Total Dissolved Solids	Lower San Diego River	907.11 Mission San Diego	2002	1500 mg/l	Padre Dam 1997-2000	67 of 153 samples exceed WQO.	30 of 120 samples exceed WQO in 2005-06 at 5 locations
Total Dissolved Solids	Forester Creek	907.12 Santee	2002	1500 mg/l	Padre Dam 1997-2000	52 of 59 samples exceed WQO.	21 of 23 samples exceed WQO in 2005-06
Color	San Vicente Reservoir+	907.21 Fernbrook	2006	15 color units	San Diego Water Dept. 1996-2000	701 of 1,841 samples exceed WQO.	3 of 24 samples exceed WQO in 2005-06
Color	El Capitan Lake+	907.31 Conejos Creek	2006	15 color units	San Diego Water Dept. 1996-2000	1,376 of 1,726 samples exceed WQO.	13 of 23 samples exceed WQO in 2005-06
Manganese	San Vicente Reservoir+	907.21 Fernbrook	2006	0.05 mg/l; not exceed more than 10% of time	San Diego Water Dept. 1996-2000	7 of 55 samples exceed WQO and in 3 of 5 years exceedances were more than 10% of time.	2 of 23 samples exceed WQO in 2005-06
Manganese	El Capitan Lake+	907.31 Conejos Creek	2006	0.05 mg/l; not exceed more than 10% of time	San Diego Water Dept. 1996-2000	13 of 64 samples exceed WQO and in 4 of 5 years exceedances were more than 10% of time.	2 of 24 samples exceed WQO in 2005-06
Sulfates	San Vicente Reservoir+	907.21 Fernbrook	2006	65 mg/l	San Diego Water Dept. 1996-2000	57 of 60 samples exceed WQO and in 5 of 5 years exceedances were more than 10% of time.	24 of 24 samples exceed WQO in 2005-06
Chloride	San Vicente Reservoir+	907.21 Fernbrook	2006	50 mg/l	San Diego Water Dept. 1996-2000	56 of 60 samples exceed WQO.	24 of 24 samples exceed WQO in 2005-06

Notes:

* 303d listings that are potential candidates for delisting; also highlighted in yellow.

+ San Vicente, Lake Jennings, and Lake Murray store mainly Colorado River water. El Capitan mainly stores local runoff and some Colorado River water. Cuyamaca Reservoir stores only local runoff.

shallow depth = pH exceedances were generally from surface to approximately 2 to 8 meters in depth.

Unless otherwise stated, the source of data for Comparable Current Results is the same source used for earlier 303d listing.

Eutrophic conditions at one location shown twice in this table because eutrophic conditions frequently 1) are caused by excess nutrients (first listing with phosphorus) and 2) result in low dissolved oxygen (second listing).

TABLE 5
Results of Hydrologic Area Water Quality Problem Analysis

Hydrologic Area	Bacteria	Nutrients (Phosphorus)	Metals	Gross Pollutants (pH)	Gross Pollutants (Dissolved Oxygen)	Sediments (Turbidity)	Dissolved Minerals (TDS)
907.10	Activity - High	Activity - High	No activity - Low	No activity - Low	Activity - High	Activity - High	Activity - High
907.20	No activity - Low	Activity - High	No activity - Low	No activity - Low	Studies - High	No activity - Low	Activity - High
907.30	Activity - High	Activity - High	No activity - Low	No activity - Low	Studies - High	No activity - Low	Activity - High
907.40	Monitor -High	Monitor - Medium	Monitor - Low	Monitor - Low	Monitor - Low	Monitor - Medium	Monitor - Low
Constituent Notes:	dry and wet weather problem				Low DO generally not observed in runoff but develops in receiving waters	wet weather problem	dry weather and early season storm problem

General Notes:
High priority in Hydrologic Area
Medium priority in Hydrologic Area
TDS = total dissolved solids

TABLE 6
Dry Weather Exceedances 2006-2007

Number of Samples for Dry Weather LTEA Analysis

	Heavy Metals				Dissolved Minerals				O&G	Sediments		Pesticides		Nutrients					Gross Pollutants					Bacteria			
HA	**Cadmium**	**Copper**	**Lead**	**Zinc**	**Selenium**	**Manganese**	**Total Dissolved Solids**	**Sulfate**	**Oil and Grease**	**Turbidity**	**Total Suspended Solids**	**Chlorpyrifos**	**Diazinon**	**Phosphate**	**Orthophosphate (PO4-P)**	**total phosphorus**	**nitrogen**	**Nitrate**	**Ammonia**	**Conductivity**	**MBAS**	**pH**	**Dissolved Oxygen**	**Enterococcus**	**Fecal Coliform**	**Total Coliform**	**ecoli**
907.1	146	146	146	146	3	3	144	3	147	395	3	139	139	196	191	144	144	396	386	411	146	414	147	147	291	147	144
907.2	4	4	4	4					4	9		4	4	2	6			8	8	9	4	9		4	8	8	
907.3	11	11	11	11					11	12		8	8	4	10			14	14	14	11	14		11	20	20	
907.4					1	1		1		1	1											1	1				

Total Number of Dry Weather Exceedances for LTEA calculations

	Heavy Metals				Dissolved Minerals				O&G	Sediments		Pesticides		Nutrients					Gross Pollutants					Bacteria			
HA	**Cadmium**	**Copper**	**Lead**	**Zinc**	**Selenium**	**Manganese**	**Total Dissolved Solids**	**Sulfate**	**Oil and Grease**	**Turbidity**	**Total Suspended Solids**	**Chlorpyrifos**	**Diazinon**	**Phosphate**	**Orthophosphate (PO4-P)**	**total phosphorus**	**nitrogen**	**Nitrate**	**Ammonia**	**Conductivity**	**MBAS**	**pH**	**Dissolved Oxygen**	**Enterococcus**	**Fecal Coliform**	**Total Coliform**	**ecoli-NA no WQO or Action Level**
907.1	2	6	2	3	0	1	99	1	7	61	0	8	11	3	8	0	0	23	16	2	22	7	58	27	51	45	
907.2	0	0	0	0					0	0		0	0	0	0			1	0	0	0	0		0	0	1	
907.3	0	0	0	0					0	2		2	1	0	0			2	0	0	0	0		1	4	6	
907.4					0	0		0		1	1											0	0				

Percent of Dry Weather Exceedances for LTEA calculations

	Heavy Metals				Dissolved Minerals				O&G	Sediments		Pesticides		Nutrients					Gross Pollutants					Bacteria			
HA	**Cadmium**	**Copper**	**Lead**	**Zinc**	**Selenium**	**Manganese**	**Total Dissolved Solids**	**Sulfate**	**Oil and Grease**	**Turbidity**	**Total Suspended Solids**	**Chlorpyrifos**	**Diazinon**	**Phosphate**	**Orthophosphate (PO4-P)**	**total phosphorus**	**nitrogen**	**Nitrate**	**Ammonia**	**Conductivity**	**MBAS**	**pH**	**Dissolved Oxygen**	**Enterococcus**	**Fecal Coliform**	**Total Coliform**	**ecoli-NA no WQO or Action Level**
907.1	1.4%	4.1%	1.4%	2.1%	0.0%	33.3%	68.8%	33.3%	4.8%	15.4%	0.0%	5.8%	7.9%	1.5%	4.2%	0.0%	0.0%	5.8%	4.1%	0.5%	15.1%	1.7%	39.5%	18.4%	17.5%	30.6%	
907.2	0.0%	0.0%	0.0%	0.0%					0.0%	0.0%		0.0%	0.0%	0.0%	0.0%			12.5%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	12.5%	
907.3	0.0%	0.0%	0.0%	0.0%					0.0%	16.7%		25.0%	12.5%	0.0%	0.0%			14.3%	0.0%	0.0%	0.0%	0.0%		9.1%	20.0%	30.0%	
907.4					0.0%	0.0%		0.0%		100.0%	100.0%											0.0%	0.0%				

Notes:
HA = Hydrologic Area
Results are highlighted in yellow if the frequency of exceedances in an HA is 15% or more for a pollutant or stressor.

TABLE 7
Land Use in Hydrologic Area 907.10

SanGIS Identified Land Use	Acres	Percent	WURMP Land Use Category	Category Acres	Category Percent
Single Family Residential	21123.93	19.0%	Residential	33329.84	30.0%
Spaced Rural Residential	6445.31	5.8%			
Multi-Family Residential	4224.16	3.8%			
Mobile Home Parks	1284.05	1.2%			
Other Group Quarters Facilities	142.91	0.1%			
Residential Recreation	86.66	0.1%			
Dormitories	22.84	0.0%			
Open Space Parks & Preserves	26298.27	23.7%	Park/Recreational	27786.52	25.0%
Parks - Active	830.76	0.7%			
Landscape Open Space	359.66	0.3%			
Other Recreation	263.96	0.2%			
Beach - Active	33.87	0.0%			
Undeveloped Land	20198.01	18.2%	Undeveloped	20198.01	18.2%
Road Right Of Ways	9045.82	8.1%	Municipal	10895.61	9.8%
Elementary Schools	747.23	0.7%			
High School	484.94	0.4%			
Junior High Schools And Middle Schools	277.88	0.2%			
Gov't Office/Civic Center	163.26	0.1%			
Other Public Services	89.39	0.1%			
Fire/Police Station	57.26	0.1%			
Jails/Prisons	18.01	0.0%			
Libraries	11.81	0.0%			
Golf Courses	926.44	0.8%	Commercial		
Arterial Commercial	655.09	0.6%			
Office - Low Rise	653.96	0.6%			
Communications And Utilities	610.96	0.5%			
Neighborhood Shopping Centers	520.12	0.5%			
Community Shopping Centers	478.39	0.4%			
Religious Facility	390.92	0.4%			
Regional Shopping Centers	273.93	0.2%			
Other Retail Trade And Strip Commercial	246.26	0.2%			
Hotel/Motel (Lo-Rise)	199.99	0.2%			
Warehousing & Public Storage	192.91	0.2%			
Sdsu Smsu Or Ucsd	187.10	0.2%			
Stadiums/Arenas	185.35	0.2%			
Automobile Dealership	181.37	0.2%			
Hospitals - General	174.57	0.2%			
Other Health Care	131.56	0.1%			
Other Universities And Colleges	105.22	0.1%			
Railroad Right Of Ways	97.11	0.1%			
Junior College	73.54	0.1%			
Parking Lots -Surface	71.66	0.1%			
Other Transportation	66.31	0.1%			
Office - High Rise	55.07	0.0%			
Other School	49.51	0.0%			
School District Office	45.45	0.0%			
Wholesale Trade	45.26	0.0%			
Racetracks	42.45	0.0%			
Unknown Transportation	39.46	0.0%			

TABLE 7
Land Use in Hydrologic Area 907.10

SanGIS Identified Land Use	Acres	Percent	WURMP Land Use Category	Category Acres	Category Percent
Rail Station/Transit Center	32.72	0.0%	Commercial cont'd	6876.54	6.2%
Ucsd, Va Hospital, Balboa Hospital	29.48	0.0%			
Post Offices	20.89	0.0%			
Hotel/Motel (High-Rise)	18.78	0.0%			
Convention Center	16.30	0.0%			
Golf Course Clubhouses	13.62	0.0%			
Parking Lots -Structure	12.91	0.0%			
Cemetery	12.50	0.0%			
Missions	9.14	0.0%			
Park And Ride Lots	3.75	0.0%			
Monastery	3.11	0.0%			
Specialty Commercial	2.24	0.0%			
Resort	1.15	0.0%			
Industrial Parks	1497.71	1.3%	Industrial	3985.90	3.6%
General Aviation Airport	822.25	0.7%			
Extractive Industry	789.48	0.7%			
Light Industry-General	628.03	0.6%			
Junkyard/Dump/Landfill	201.94	0.2%			
Heavy Industry	46.48	0.0%			
Freeways	3238.70	2.9%	CalTrans	3238.70	2.9%
Military Training	1766.19	1.6%	Government	1964.98	1.8%
Military Use	105.83	0.1%			
Weapons Facilities	92.97	0.1%			
Field Crops	992.82	0.9%	Agricultural	1891.57	1.7%
Orchards And Vineyards	599.47	0.5%			
Intensive Agriculture	299.28	0.3%			
Lakes, Reservoirs, Large Ponds	718.87	0.6%	Other	978.29	0.9%
Bays, Lagoons	258.59	0.2%			
Ocean	0.83	0.0%			
Residential Under Construction	18.90	0.0%	Construction	36.79	0.0%
Commercial Under Construction	16.42	0.0%			
Road Under Construction	1.48	0.0%			
Grand Totals	**111182.76**	**100%**		**111182.76**	**100%**

TABLE 8
Land Use in Hydrologic Area 907.20

SanGIS Identified Land Use	Acres	Percent	WURMP Land Use Category	Category Acres	Category Percent
Undeveloped Land	20621.85	43.3%	Undeveloped	20621.85	43.3%
Open Space Parks & Preserves	16018.29	33.6%	Park/Recreational	16281.32	34.2%
Other Recreation	236.93	0.5%			
Parks - Active	21.01	0.0%			
Landscape Open Space	5.09	0.0%			
Spaced Rural Residential	4993.43	10.5%	Residential	6717.11	14.1%
Single Family Residential	1664.77	3.5%			
Multi-Family Residential	44.71	0.1%			
Residential Recreation	7.68	0.0%			
Mobile Home Parks	6.52	0.0%			
Field Crops	1167.63	2.5%	Agricultural	1699.08	3.6%
Intensive Agriculture	364.87	0.8%			
Orchards And Vineyards	166.58	0.3%			
Road Right Of Ways	611.57	1.3%	Municipal	638.72	1.3%
Elementary Schools	22.44	0.0%			
Other Public Services	2.51	0.0%			
Fire/Police Station	2.20	0.0%			
Golf Courses	394.48	0.8%	Commercial	578.54	1.2%
Communications And Utilities	63.00	0.1%			
Resort	57.71	0.1%			
Casino	50.04	0.1%			
Religious Facility	4.81	0.0%			
Other Retail Trade And Strip Commercial	3.92	0.0%			
Golf Course Clubhouses	3.05	0.0%			
Arterial Commercial	1.53	0.0%			
Junkyard/Dump/Landfill	11.12	0.0%	Industrial	23.30	0.0%
Airstrips	9.62	0.0%			
Light Industry-General	1.79	0.0%			
Extractive Industry	0.77	0.0%			
Lakes, Reservoirs, Large Ponds	1062.07	2.2%	Other	1062.07	2.2%
Grand Totals	**47621.99**	**100%**		**47621.99**	**100%**

TABLE 9
Land Use in Hydrologic Area 907.30

SanGIS Identified Land Use	Acres	Percent	WURMP Land Use Category	Category Acres	Category Percent
Undeveloped Land	43304.51	77.7%	Undeveloped	43304.51	77.7%
Open Space Parks & Preserves	5168.14	9.3%	Park/Recreational	5225.85	9.4%
Other Recreation	41.72	0.1%			
Landscape Open Space	16.00	0.0%			
Spaced Rural Residential	4365.08	7.8%	Residential	4845.44	8.7%
Single Family Residential	289.36	0.5%			
Multi-Family Residential	90.35	0.2%			
Other Group Quarters Facilities	65.56	0.1%			
Mobile Home Parks	27.68	0.0%			
Residential Recreation	7.41	0.0%			
Road Right Of Ways	321.22	0.6%	Municipal	365.10	0.7%
Junior High Schools And Middle Schools	21.17	0.0%			
Elementary Schools	13.38	0.0%			
Other Public Services	8.59	0.0%			
Libraries	0.55	0.0%			
Fire/Police Station	0.20	0.0%			
Freeways	219.67	0.4%	CalTrans	219.67	0.4%
Arterial Commercial	17.64	0.0%	Commercial	94.99	0.2%
Other Retail Trade And Strip Commercial	13.27	0.0%			
Community Shopping Centers	12.16	0.0%			
Communications And Utilities	11.23	0.0%			
Religious Facility	9.04	0.0%			
Office - Low Rise	8.39	0.0%			
Cemetery	8.16	0.0%			
School District Office	4.03	0.0%			
Hotel/Motel (Lo-Rise)	3.69	0.0%			
Other Transportation	2.60	0.0%			
Warehousing & Public Storage	2.13	0.0%			
Other School	1.81	0.0%			
Post Offices	0.83	0.0%			
Field Crops	56.20	0.1%	Agricultural	97.81	0.2%
Intensive Agriculture	41.61	0.1%			
Extractive Industry	29.19	0.1%	Industrial	32.10	0.1%
Light Industry-General	2.91	0.0%			
Residential Under Construction	3.22	0.0%	Construction	3.22	0.0%
Lakes, Reservoirs, Large Ponds	1534.11	2.8%	Other	1534.11	2.8%
Grand Totals	**55722.80**	**100%**		**55722.80**	**100%**

TABLE 10
Land Use in Hydrologic Area 907.40

SanGIS Identified Land Use	Acres	Percent	WURMP Land Use Category	Category Acres	Category Percent
Undeveloped Land	45700.68	72.5%	Undeveloped	45700.68	72.5%
Open Space Parks & Preserves	9370.79	14.9%	Park/Recreational	9700.71	15.4%
Other Recreation	326.38	0.5%			
Parks - Active	3.45	0.0%			
Landscape Open Space	0.09	0.0%			
Spaced Rural Residential	4404.50	7.0%	Residential	4656.13	7.4%
Single Family Residential	140.67	0.2%			
Other Group Quarters Facilities	110.48	0.2%			
Multi-Family Residential	0.47	0.0%			
Field Crops	1141.47	1.8%	Agricultural	1647.51	2.6%
Orchards And Vineyards	506.04	0.8%			
Road Right Of Ways	458.83	0.7%	Municipal	464.22	0.7%
Fire/Police Station	4.84	0.0%			
Other Public Services	0.33	0.0%			
Gov't Office/Civic Center	0.22	0.0%			
Other Retail Trade And Strip Commercial	27.41	0.0%	Commercial	66.71	0.1%
Hotel/Motel (Lo-Rise)	15.20	0.0%			
Communications And Utilities	14.73	0.0%			
Religious Facility	3.05	0.0%			
Cemetery	3.02	0.0%			
School District Office	2.90	0.0%			
Arterial Commercial	0.40	0.0%			
Extractive Industry	13.81	0.0%	Industrial	30.86	0.0%
Light Industry-General	9.72	0.0%			
Airstrips	7.33	0.0%			
Lakes, Reservoirs, Large Ponds	745.33	1.2%	Other	745.33	1.2%
Grand Totals	**63012.15**	**100%**		**63012.15**	**100%**

TABLE 11
Likely Threat to Water Quality (TTWQ) Sources

Source ID	Source	WURMP Source Category	Bacteria	Nutrients	Gross Pollutants (Dissolved Oxygen)	Sediment (Dissolved Oxygen)	Dissolved Minerals (TDS)	Organic Matter	TTWQ Likely Score*	TTWQ Unknown Score*	Number of Sources
21	Roads/Parking	Park/Municipal	L	L	L	L	NE	NE	4	0	--
14	Landscaping	Commercial	L	L	L	L	NE	NE	4	0	11
18	Home Auto Activities	Residential	L	L	UK	L	NE	NE	3	1	--
17	Animal Facilities	Commercial	L	L	UK	L	NE	NE	3	1	60
13	Gardens/Nurseries	Commercial	L	L	UK	L	NE	NE	3	1	45
30	Recycling, Junkyards, Scrap Metal	Industrial	UK	UK	L	L	NE	NE	2	2	5
10	Eating/Drinking Establishments	Commercial	L	UK	L	UL	NE	NE	2	1	1908
12	General Contractors	Commercial	UL	UL	L	L	NE	NE	2	0	--
20	Construction Sites	Construction	UL	UL	L	L	NE	NE	2	0	1410
7	Auto Parking/Storage Lots	Commercial	UK	UK	UK	L	NE	NE	1	3	--
25	Park & Recreational Facilities	Park/Municipal	UK	L	UK	UK	NE	NE	1	3	--
34	Sewage Sludge Disposal Sites	Industrial	L	UK	UK	UK	NE	NE	1	3	--
33	POTWs	Industrial	L	UK	UK	UK	NE	NE	1	3	4
24	Corporate Yards	Industrial	UL	UK	UK	L	NE	NE	1	2	5
22	Flood Control Devices	Park/Municipal	UK	N	N	L	NE	NE	1	1	--
23	MS4s	Park/Municipal	UK	N	N	L	NE	NE	1	1	--
1	Auto Repair/Fueling/Cleaning	Commercial	UL	UK	L	UL	NE	NE	1	1	452
4	Equipment Repair/Fueling/Cleaning	Commercial	UL	UK	L	UL	NE	NE	1	1	48
6	Mobile Auto Washing	Commercial	UL	UL	UL	L	NE	NE	1	0	--
5	Auto/Other Vehicle Body Repair/Paint	Commercial	UL	UL	L	UL	NE	NE	1	0	61

Notes:
L = Likely
UK = Unknown
UL = Unlikely
N = Not a significant source
NE = Not Evaluated in BLTEA

* Threat To Water Quality (TTWQ) Scores are based on the number of pollutant categories for which it is listed as a likely or unknown source.
TDS = total dissolved solids
POTW = publicly owned treatment works
MS4s = municipal separate storm sewer systems

TABLE 12
Unknown Threat to Water Quality (TTWQ) Sources

Source ID	Source Type	WURMP Source Category	Bacteria	Nutrients	Gross Pollutants (Dissolved Oxygen)	Sediment (Dissolved Oxygen)	Dissolved Minerals (TDS)	Organic Matter	TTWQ Unknown Score*	Number of Sources	TTWQ Likely Score*
19	Development Subject to SUSMP	Construction	UK	UK	UK	UK	NE	NE	4	79	0
32	Motor Freight	Industrial	UK	UK	UK	UK	NE	NE	4	37	0
29	Municipal Landfills	Industrial	UK	UK	UK	UK	NE	NE	4	1	0
7	Auto Parking/Storage Lots	Commercial	UK	UK	UK	L	NE	NE	3	--	1
25	Park & Recreational Facilities	Municipal	UK	L	UK	UK	NE	NE	3	--	1
34	Sewage Sludge Disposal Sites	Industrial	L	UK	UK	UK	NE	NE	3	--	1
27	Fabricated Metal	Industrial	UL	UK	UK	UK	NE	NE	3	64	0
26	Chemical and Allied Products	Industrial	UL	UK	UK	UK	NE	NE	3	12	0
28	Primary Metal	Industrial	UL	UK	UK	UK	NE	NE	3	8	0
33	POTWs	Industrial	L	UK	UK	UK	NE	NE	3	4	1
16	Marinas	Commercial	UK	UK	UK	N	NE	NE	3	2	0
31	Airfields	Industrial	N	UK	UK	UK	NE	NE	3	2	0
8	Retail/Wholesale Fueling	Commercial	N	N	UK	UK	NE	NE	2	160	0
15	Pool/Fountain Cleaning	Commercial	N	UK	UK	N	NE	NE	2	46	0
9	Pest Control Services	Commercial	UK	N	UK	N	NE	NE	2	38	0
2	Airplane Repair/Fueling/Cleaning	Commercial	UL	UK	UK	UL	NE	NE	2	18	0
30	Auto Wholesale	Industrial	UK	UK	L	L	NE	NE	2	5	2
24	Corporate Yards	Municipal	UL	UK	UK	L	NE	NE	2	5	1
18	Home Auto Activities	Residential	L	L	UK	L	NE	NE	1	--	3
22	Flood Control Devices	Municipal	UK	N	N	L	NE	NE	1	--	1
23	MS4s	Municipal	UK	N	N	L	NE	NE	1	--	1
10	Eating/Drinking Establishments	Commercial	L	UK	L	UL	NE	NE	1	1908	2
1	Auto Repair/Fueling/Cleaning	Commercial	UL	UK	L	UL	NE	NE	1	452	1
17	Animal Facilities	Commercial	L	L	UK	L	NE	NE	1	60	3
11	Mobile Carpet/Furniture Cleaning	Commercial	UL	UK	N	UL	NE	NE	1	59	0

TABLE 12
Unknown Threat to Water Quality (TTWQ) Sources

Source ID	Source Type	WURMP Source Category	Bacteria	Nutrients	Gross Pollutants (Dissolved Oxygen)	Sediment (Dissolved Oxygen)	Dissolved Minerals (TDS)	Organic Matter	TTWQ Unknown Score*	Number of Sources	TTWQ Likely Score*
4	Equip Repair/Fueling/Cleaning	Commercial	UL	UK	L	UL	NE	NE	1	48	1
13	Gardens/Nurseries	Commercial	L	L	UK	L	NE	NE	1	45	3
3	Boat Repair/Fueling/Cleaning	Commercial	UL	UL	UK	UL	NE	NE	1	6	0

Notes:
L = Likely
UK = Unknown
UL = Unlikely
N = Not a significant source
NE = Not Evaluated in BLTEA

* Threat To Water Quality (TTWQ) Scores are based on the number of pollutant categories for which it is listed as a likely or unknown source.
TDS = total dissolved solids
POTW = publicly owned treatment works
MS4s = municipal separate storm sewer systems

APPENDIX A

COLLECTIVE WATERSHED STRATEGY AND HYDROLOGIC AREA WATER QUALITY PROBLEM ANALYSIS TABLES

Hydrologic Area Water Quality Problem Analysis

Water Quality Target: Bacteria (Total and Fecal Coliform, Enterococcus, E Coli)

San Diego River Watershed (Hydrologic Unit)							
Hydrologic Area (HA)	BLTEA Rating	2005/06 Rating	Jurisdictions in HA	Sufficient Monitoring Data?	Sources Sufficiently Characterized?	Most Prevalent Land Uses (Percent)	Action (based on matrix)
907.10 Lower San Diego	A	A	Cities of San Diego, Santee, La Mesa, and El Cajon; County of San Diego	Yes	Yes	Residential, Park/Municipal, Commercial/ Industrial	1. Select appropriate Watershed Activities.
907.20 San Vicente HA	A	C	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	7. Watershed Activities not needed for this pollutant in this HA.
907.30 El Capitan HA	A	B	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	1. Select appropriate Watershed Activities.
907.40 Boulder Creek HA	B	B	County of San Diego	No (no monitoring data in this HA)	No (no monitoring data in this HA)	Undeveloped, Park/Municipal, Residential	6. Monitoring to confirm rating and source identification studies.

Notes: Exceedance rating primarily based on Fecal Coliform. MLS data indicate enterococci may be a concern.
Padre Dam data indicates *E. Coli* may be a concern.

Hydrologic Area Water Quality Problem Analysis

Water Quality Target: Nutrients (Nitrogen and Phosphorus)

San Diego River Watershed (Hydrologic Unit)							
Hydrologic Area	BLTEA Rating	2005/06 LTEA Rating	Jurisdictions in HA	Sufficient Monitoring Data?	Sources Sufficiently Characterized?	Most Prevalent Land Uses (Percent)	Action (based on matrix)
907.10 Lower San Diego	A	A	Cities of San Diego, Santee, La Mesa, and El Cajon; County of San Diego	Yes	Yes	Residential, Park/Municipal, Commercial/ Industrial	1. Select appropriate Watershed Activities.
907.20 San Vicente HA	C	D	County of San Diego	Yes - LTEA rating should be adjusted to A or B	Yes	Undeveloped, Park/Municipal, Residential	1. Select appropriate Watershed Activities.
907.30 El Capitan HA	D	D	County of San Diego	Yes - LTEA rating should be adjusted to A or B	Yes	Undeveloped, Park/Municipal, Residential	1. Select appropriate Watershed Activities.
907.40 Boulder Creek HA	C	D	County of San Diego	No (only one data point - SWAMP)	No (only one data point - SWAMP)	Undeveloped, Park/Municipal, Residential	9. Monitoring to confirm rating.

Notes: Phosphorus data from City of San Diego Water Department in 907.21 and 907.31 indicate need to raise LTEA rating.
907.40 SWAMP Phosphorus data exceeds WQO of 0.1 mg/L in stream/flowing water

Hydrologic Area Water Quality Problem Analysis

Water Quality Target: Metals

San Diego River Watershed (Hydrologic Unit)							
Hydrologic Area	BLTEA Rating	2005/06 Rating	Jurisdictions in HA	Sufficient Monitoring Data?	Sources Sufficiently Characterized?	Most Prevalent Land Uses (Percent)	Action (based on matrix)
907.10 Lower San Diego	B	D	Cities of San Diego, Santee, La Mesa, and El Cajon; County of San Diego	Yes	Yes	Residential, Park/Municipal, Commercial/ Industrial	7. Focus efforts on other HAs.
907.20 San Vicente HA	C	D	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	7. Focus efforts on other HAs.
907.30 El Capitan HA	C	D	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	7. Focus efforts on other HAs.
907.40 Boulder Creek HA	C	D	County of San Diego	No (only one data point - SWAMP)	No (only one data point - SWAMP)	Undeveloped, Park/Municipal, Residential	9. Monitoring to confirm rating.

Hydrologic Area Water Quality Problem Analysis

Water Quality Target: Gross Pollutants (pH, trash, BOD, COD, and MBAS)

San Diego River Watershed (Hydrologic Unit)							
Hydrologic Area	BLTEA Rating	2005/06 Rating	Jurisdictions in HA	Sufficient Monitoring Data?	Sources Sufficiently Characterized?	Most Prevalent Land Uses (Percent)	Action (based on matrix)
907.10 Lower San Diego	A	A	Cities of San Diego, Santee, La Mesa, and El Cajon; County of San Diego	No	No	Residential, Park/Municipal, Commercial/ Industrial	4. Priority Rating should be lowered.
907.20 San Vicente HA	B	D	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	7. Focus efforts on other HAs.
907.30 El Capitan HA	B	D	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	7. Focus efforts on other HAs.
907.40 Boulder Creek HA	B	D	County of San Diego	No (only one data point - SWAMP)	No (only one data point - SWAMP)	Undeveloped, Park/Municipal, Residential	9. Monitoring to confirm rating.

Notes:

pH is 303d listed, but recent data may not support the listing except in City of El Cajon channels (Forester Creek 907.13) and City of SD Water Dept reservoirs (Lake Murray - 907.11; San Vicente 907.21; and El Capitan 907.31)

Trash monitoring will be done per Municipal Permit requirements and rating will be reevaluated in future.

Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) do not appear to be a significant problem based on limited MLS data, but additional data collection upstream is planned.

Methylene Blue Activated Substances (MBAS) do not appear to be a significant problem based on MLS and dry weather data.

Hydrologic Area Water Quality Problem Analysis

Water Quality Target: Gross Pollutants (DO)

San Diego River Watershed (Hydrologic Unit)							
Hydrologic Area	BLTEA Rating	2005/06 Rating	Jurisdictions in HA	Sufficient Monitoring Data?	Sources Sufficiently Characterized?	Most Prevalent Land Uses (Percent)	Action (based on matrix)
907.10 Lower San Diego	A	A	Cities of San Diego, Santee, La Mesa, and El Cajon; County of San Diego	Yes	Yes	Residential, Park/Municipal, Commercial/ Industrial	1. Select appropriate Watershed Activities.
907.20 San Vicente HA	B	D	County of San Diego	Yes - LTEA rating should be A or B	No	Undeveloped, Park/Municipal, Residential	2. Source Identification and characterization studies should be conducted.
907.30 El Capitan HA	B	D	County of San Diego	Yes - LTEA rating should be A or B	No	Undeveloped, Park/Municipal, Residential	2. Source Identification and characterization studies should be conducted.
907.40 Boulder Creek HA	B	D	County of San Diego	No (only one data point - SWAMP)	No (only one data point - SWAMP)	Undeveloped, Park/Municipal, Residential	9. Monitoring to confirm rating.

Notes: Dissolved oxygen 303d listing for Forester Creek appears to be erroneous. Padre Dam data indicates need to address. City of San Diego Water Department data indicates this stressor is a problem in reservoirs.

Hydrologic Area Water Quality Problem Analysis

Water Quality Target: Sediments (TSS, Turbidity)

San Diego River Watershed (Hydrologic Unit)							
Hydrologic Area	BLTEA Rating	2005/06 Rating	Jurisdictions in HA	Sufficient Monitoring Data?	Sources Sufficiently Characterized?	Most Prevalent Land Uses (Percent)	Action (based on matrix)
907.10 Lower San Diego	A	B	Cities of San Diego, Santee, La Mesa, and El Cajon; County of San Diego	Yes	Yes	Residential, Park/Municipal, Commercial/ Industrial	1. Select appropriate Watershed Activities.
907.20 San Vicente HA	B	C	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	7. Focus efforts on other HAs.
907.30 El Capitan HA	B	C	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	7. Focus efforts on other HAs.
907.40 Boulder Creek HA	B	A	County of San Diego	No (only one data point - SWAMP)	No (only one data point - SWAMP)	Undeveloped, Park/Municipal, Residential	6. Monitoring to confirm rating and source identification studies.

Notes:

Turbidity appears to be a potentially significant wet weather problem, but not dry weather.

TSS does not appear to be a significant problem based on limited MLS and Swamp data (Boulder Creek [907.40] appears to have exceedance but below RL), but may contribute to turbidity problems. Additional data collection upstream of MLS is planned.

303d listing for "color" at San Vicente Reservoir (907.21) and El Capitan Lake (907.31)

907.40 had exceedance for turbidity in the only sample collected - SWAMP May 2004

Hydrologic Area Water Quality Problem Analysis

Water Quality Target: Dissolved Minerals (TDS, Manganese, Sulfate)

San Diego River Watershed (Hydrologic Unit)							
Hydrologic Area	BLTEA Rating	2005/06 Rating	Jurisdictions in HA	Sufficient Monitoring Data?	Sources Sufficiently Characterized?	Most Prevalent Land Uses (Percent)	Action (based on matrix)
907.10 Lower San Diego	A	A	Cities of San Diego, Santee, La Mesa, and El Cajon; County of San Diego	Yes	Yes	Residential, Park/Municipal, Commercial/ Industrial	1. Select appropriate Watershed Activities.
907.20 San Vicente HA	B	B	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	1. Select appropriate Watershed Activities.
907.30 El Capitan HA	B	B	County of San Diego	Yes	Yes	Undeveloped, Park/Municipal, Residential	1. Select appropriate Watershed Activities.
907.40 Boulder Creek HA	B	C	County of San Diego	No (only one data point - SWAMP)	No (only one data point - SWAMP)	Undeveloped, Park/Municipal, Residential	9. Monitoring to confirm rating.

Notes:

TDS is the dominant COC and appears to be primarily a dry weather issue, although it also appears to be an occasional problem in early season rain events (some correlation with Bacteria problems).

Manganese and sulfate not analyzed in MLS and dry weather. SWAMP data indicate lower river (907.11) had exceedance for both manganese and sulfate. 303d listed for San Vicente Reservoir (907.21) and El Capitan Lake (907.31); data collected by City of SD Water 1996 to 2000.

APPENDIX B

WATERSHED ACTIVITY SUMMARIES

2008 WATERSHED ACTVITY ATTACHMENTS

- Proposed Watershed Implementation Activities: Fiscal Years 2008 and 2009
- Anticipated Activity Matrix
- Activity Descriptions
- Proposed Watershed Implementation Activities: Fiscal Years 2010

A. ACTIVITY DESCRIPTION

A.1 INITIAL DESCRIPTION FOR PLANNING PURPOSES

Since the current Municipal Permit takes effect in the middle of fiscal year 2008 and proposed activities will only be in effect for part of the fiscal year, the San Diego River Copermittees will implement activities supporting the same Strategic Goals in both fiscal year 2008 and fiscal year 2009. In each fiscal year, at least two Watershed Water Quality Activities will be implemented at the jurisdictional level, potentially including:

Water Quality:

- Installation of weather-based controllers at municipal parks and facilities with landscaping. Facility selection will be prioritized based on irrigation area/water consumption and proximity to receiving waters.
- Pet Waste Bags will be made available at municipal parks and facilities open to the public. Facility selection will be prioritized based on proximity to receiving waters and anticipated used by pets.
- Institute campaign to reduce overall fertilizer use at municipal facilities and parks.
- Incorporate the need to identify potential erosion issues into existing facility inspection and maintenance checklists. Ensure follow up corrective measures are implemented through normal maintenance processes.
- Reduce the pollutants generated from public activities requiring special use permits. Develop requirements for special event/private use of parks, including reducing water use, animal waste pickup, trash pick up and food management – incorporate rules into special event permitting and fees; incorporate rules into public education campaign.
- Increase street sweeping in certain areas beyond jurisdictional requirements.
- Install storm drain inserts, hydrodynamic separators or other structural BMPs in targeted areas.
- Implement trash removal activities at selected locations.

In each fiscal year, at least two Watershed Education Activities will be implemented at the jurisdictional level, potentially including:

Education:

- Educate Parks & Recreation or Public Works staff regarding irrigation system repairs, reducing over-irrigation, reducing other excess water use, reduction of litter, food waste management, landscaping waste management, and landscape issues such as minimization of fertilizer applications. Develop self-inspection checklists for park and recreation staff to use during site visits. Targeted inspections and follow-up training to ensure adequate comprehension and implementation. Create incentive program for reporting issues and making suggested improvements.
- Educate public attending parks regarding littering and food waste management.
- Educate public at time of special use permit issue regarding trash, pet waste management, water use, and food management.

A.2 PLANNING AND BASELINE ACTIVITIES (FISCAL YEAR 2008)

Since this is the first year of implementation under the new watershed program, the timeframe for planning implementation of these activities is somewhat compressed. This issue of timing, and more particularly the issue of municipal budgets being established far in advance, will likely affect the results. For example, the cataloguing of municipal facility characteristics may be conducted

concurrently with actual implementation of the selected activities, which means that selection in fiscal year 2008 of the municipal facilities to represent conditions at similar facilities will be based on the existing, incomplete knowledge of municipal staff rather than a comprehensive data set. To the extent possible, data from the representative municipal facilities will be collected through existing programs such as the dry weather monitoring program.

Each Copermittee will work with the relevant municipal departments, primarily the Parks & Recreation, Facility Maintenance and Public Works Departments, to develop specific plans for implementing the selected activities across a number of municipal facilities and for tracking implementation. The pre-implementation surveys of the attitudes and behavior of public and municipal staff may be performed in fiscal year 2008 if time and resources permit. Otherwise, these activities will be performed early in fiscal year 2009.

A.3 IMPLEMENTATION ACTIVITIES (FISCAL YEARS 2008 and 2009)

In the transition to the new WURMP activity development process, the Copermittees will continue to implement the watershed activities from the previous year as described in the attached table. Activity sheets for continuing activities were submitted in the San Diego River WURMP 2006-2007 Annual Report and are not repeated here. Activity sheets are provided for new activities.

For fiscal year 2009, the San Diego River Copermittees are in the process of developing a final list of watershed activities based on the process developed in the current WURMP. A preliminary list is provided in Section A.1

B. TMDL APPLICABILITY

At this time, there are no adopted TMDLs currently in effect within the San Diego River WMA. Necessary changes to meet future TMDL specific requirements will be incorporated at that time.

C. TIME SCHEDULE FOR IMPLEMENTATION

Since this is the first year of implementation under the new watershed program, initial planning and baseline activities will be conducted in fiscal years 2008 and 2009. Implementation of the proposed activities will also be conducted in both fiscal years. Follow up activities to support effectiveness evaluations, if any, will be conducted in fiscal year 2010-2011 as necessary.

D. PARTICIPATING WATERSHED COPERMITTEES

At this time, all five San Diego River Copermittees are intending to participate in this process.

E. OTHER PARTICIPATING ENTITIES

At this time, it is not clear what other entities, if any, will participate.

F. HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED

As described further in Section 7.0, the proposed activities may address the following watershed priority pollutants or stressors:

- Bacteria Indicators
- Phosphorus
- TDS
- Low Dissolved Oxygen
- Turbidity

G. CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

As detailed in the WURMP, the proposed activities are consistent with the collective Watershed Strategy developed by the copermittees to the extent that they support at least one of the Watershed's Strategic Goals established in the WURMP. Generally, the San Diego River Copermittees will attempt to coordinate their activities to address the same subset of strategic goals in a given fiscal year in order to conserve resources and improve the likelihood of success. However, in some cases, individual jurisdictions may find it more appropriate to perform different activities that still support one of the Watershed Strategic Goals.

G.1 DESCRIPTION OF TARGETED STRATEGIC GOALS

The Strategic Goals established by the WURMP serve as the narrative objectives that the proposed watershed activities intend to achieve. Consistent with the watershed strategy developed in the WURMP, the Copermittees will implement activities in each fiscal year that support the following Strategic Goals:

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water.

- **Strategic Goal 2 - Source Reduction at Park/Municipal Land Uses**: By reducing the mass of priority pollutants discharged to Copermittee storm drain systems and receiving waters from park and municipal land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 5 – Bacteria Source Reduction**: By reducing the mass of bacteria discharged to Copermittee storm drain systems and receiving waters, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of bacteria to receiving waters. The specific land uses and sources targeted by this Strategic Goal will be selected based on the available data from ongoing monitoring programs and the results of implementing previous Strategic Goals. This goal will also support Copermittee implementation of the recent Bacteria TMDL.

G.2 POTENTIAL TARGET SOURCES

Selected activities generally will target the following land use categories:

- Park/Municipal

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for load reduction watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 11 in the WURMP may be used.

- Roads/Parking
- Park & Recreational Facilities
- Flood Control Devices/MS4s

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for source characterization watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 12 in the WURMP may be used.

- Park & Recreational Facilities
- Corporate Yards
- Flood Control Devices/MS4s

G.3 WATERSHED PRIORITY POLLUTANTS AT TARGET SOURCES

Assuming that selected activities will address some mixture of the top three target sources for load reduction, the following combination of watershed priority pollutants/stressors and target sources will generally be the focal point of watershed activities:

- Bacteria from applicable facilities, including: human litter; food and waste management; soil management/erosion control; animal/pet waste; and bathroom facilities (fixed or portable).
- Nutrients from general landscaping sources at applicable facilities as well as from specific operations: fertilizer storage and distribution; fertilizer application at recreational facilities; decorative roadside landscapes; and soil and mulch management/erosion control.
- Total Dissolved Solids from excessive potable water use.
- Low Dissolved Oxygen from sources of nutrients, sediment and organic matter (see above). Additional sources may include the intentional application to soil of organic compounds or the decomposition of vegetative litter.
- Turbidity from sources of sediment, organic matter and nutrients (see above). Additional sources may result from general housekeeping and human litter.

H. EXPECTED BENEFITS

As described further in Section 7.0, the expected benefits of the proposed activities include reduction of pollutant mass discharged at the target sources and reduction of dry weather flows that serve as a potential transport mechanism for discharged pollutants.

I. EFFECTIVENESS MEASUREMENTS

When evaluating the effectiveness of the proposed watershed activities, the Copermittees will consider the following anticipated outcomes and effectiveness metrics.

Outcome Level	Anticipated Outcome of Activity	Effectiveness Metrics
1 Permit Compliance	Compliance with Permit requirement to implement a Watershed Water Quality Activity (Section E.2.f.)	Number of applicable watershed activities implemented per jurisdiction.
2 Changes in Attitudes	Increased awareness among the public and municipal staff regarding sources of pollutants and the need to reduce pollutant discharges/exposures.	Pre- and post-training surveys of municipal staff attitudes. Pre and post implementation surveys of public attitudes at time attending parks.
3 Behavioral Change	Reduction in public behaviors that generate pollutants. Changes in municipal staff behavior, including increased use of inspection checklists, increased reporting of issues or improvement suggestions, reduction in landscape waste exposure to runoff.	Pre- and post-training observations of municipal staff behavior. Pre and post implementation observation of public behavior, e.g. trash surveys. Behavior may be directly observed or inferred from observed or documented conditions.
4 Load Reductions	Reduced volume of dry weather runoff. Reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data. If necessary, supplement with a special study.
5 Discharge Quality	Reduced volume of dry weather discharges. Reduced concentration of priority pollutants in dry and wet weather discharges.	Use permit required outfall and dry weather monitoring data. If necessary, supplement with a special study.
6 Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use available receiving water monitoring data. If necessary, supplement with a special study.

In general, currently available monitoring data and other kinds of readily available quantitative statistics will be used to evaluate effectiveness. As necessary to obtain a reasonable understanding of effectiveness, the Copermittees may supplement this readily-available quantitative data with either special studies or qualitative evaluations. The special studies may take the form of targeted monitoring data collection, attitude surveys or inspections. These special studies may be conducted before activity implementation to establish baseline conditions, during implementation to measure interim progress and/or after implementation to measure changes in conditions. For the currently proposed watershed activities, the following special studies are being considered:

- The Copermittees may catalogue the characteristics of parks and municipal facilities within the watershed that are known or assumed to be relevant to this evaluation. For example, the Copermittees may catalogue what types of specific sources are potentially present.

- Pre- and post-implementation surveys may be conducted to measure the attitudes of the public visiting the parks or municipal facilities.

- Pre- and post-implementation observations of facilities for evidence of changes in public behavior may be conducted.

- Pre-, during and post-training surveys may be conducted of municipal staff to assess changes in awareness and attitudes toward specific watershed issues and to help identify follow up issues and opportunities.

- Pre- and post-training observations of municipal staff behavior through self reporting and/or targeted inspections for evidence of changes in behavior may be conducted.

- Representative municipal parks and facilities may be monitored for dry and wet weather discharges the years before (if possible), during and after the activity implementation.

Anticipated Watershed Activities Matrix for 2007-08 Activities

	ACTIVITY NAME	Collective Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	POLLUTANTS TO BE ADDRESSED: High Priority						POLLUTANTS TO BE ADDRESSED: COC					COMPONENTS IN PROGRESS IN FISCAL YEAR 2007-08							Activity Status for Fiscal Year 2007-08*	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	pH	Turbidity	Diazinon	Eutrophication	Benthic Community Degradation	Copper	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
Special Studies / Source ID / Pollution Reduction	**Activities to Address High Priority TTWQ Sources:**																							
	Porous Pavement and Model Municipal Operations Center Demonstration Project - Phase II (County of San Diego)		X		X		X		X		X				X	X	X						O	Attached: SDR-2008-1
	ALPHA Project for the Homeless Cleanup (City of San Diego)		X		X				X										X			X	O	2006-07 Annual Report Appendix A-2
	CBI Grant SDR Ocean Beach WQ Improvement Project, Phase II (City of San Diego)		X		X											X	X	X	X				O	2006-07 Annual Report Appendix A-3
	San Diego Riverbed Homeless Encampment Removal Project (City of Santee)		X		X				X								X					X	O	2006-07 Annual Report Appendix A-4
	Prevention of the Release of Pet Fecal Matter in Public Parks (City of El Cajon, La Mesa, Santee, and County of San Diego)	X			X	X		X											X	X	X	X	O	Attached: SDR-2008-2
	Increase in Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas (City of Santee)		X		X												X			X		X	O	2006-07 Annual Report Appendix A-6
	Forrester Creek Homeless Encampment Removal Project (City of El Cajon)		X		X															X		X	O	2006-07 Annual Report Appendix A-7
	Coastal Cleanup Day - Lake Murray & Alvarado Channel (City of La Mesa)		X		X			X	X							X					X	X	O	2006-07 Annual Report Appendix A-8
	San Diego River Park Foundation Cleanup Event Sponsorship (City of San Diego)		X		X				X							X					X	X	O	2006-07 Annual Report Appendix A-9
	Wet Weather Monitoring (La Mesa)		X		X	X	X	X	X	X	X	X			X	X	X			X			O	2006-07 Annual Report Appendix A-10
	Additional Dry Weather Monitoring (City of La Mesa)		X		X	X	X	X	X	X	X	X			X	X	X			X			N	2006-07 Annual Report Appendix A-11
	Park Appreciation Days (City of La Mesa)		X		X	X		X	X		X					X					X	X	O	2006-07 Annual Report Appendix A-12
	Canine Corners Harry Griffith Park (La Mesa)		X		X	X		X														X	O	2006-07 Annual Report Appendix A-13
	Adopt a Park/Adopt A Block (La Mesa)		X		X	X		X			X					X						X	O	2006-07 Annual Report Appendix A-14
	I Love a Clean San Diego Creek to Bay Cleanup Event Sponsorship (County of San Diego, City of La Mesa, City of San Diego)	X			X			X													X	X	O	2006-07 Annual Report Appendix A-15
	Trash Removal Activities in Santee (City of Santee)		X		X			X													X	X	O	2006-07 Annual Report Appendix A-16
	Fecal Coliform Source Investigations at Forester Creek (City of El Cajon and City of Santee)	X			X															X		X	O	2006-07 Annual Report Appendix A-17
	San Diego River Watershed Targeted Restaurant Inspection (City of San Diego)		X		X													X		X	X	X	O	2006-07 Annual Report Appendix A-18
	Activities to Address Watershed High Priority Pollutants:																							
	Maintenance/Inspection of Forrester Creek Trash Barrier (City of El Cajon)		X		X				X									X	X				O	2006-07 Annual Report Appendix A-19
	Forrester Creek Improvements (City of Santee)		X		X	X		X	X		X			X		X	X	X	X		X		O	2006-07 Annual Report Appendix A-21
	Woodside Avenue Detention Basin (County of San Diego)		X		X	X	X	X		X	X	X	X	X	X		X	X	X	X		X	O	Attached: SDR-2008-3
	San Diego River Flinn Springs Porous Pavement (County of San Diego)		X		X	X	X		X		X				X	X							O	Attached: SDR-2008-4
	Woodglen Vista Creek Improvement Project (City of Santee)		X		X	X		X	X										X				O	2006-07 Annual Report Appendix A-24
	Multiple Species Conservation Program (MSCP) South County Subarea (County of San Diego)		X			X										X					X		O	2006-07 Annual Report Appendix A-25
	San Diego River Indicator Bacteria Study (County of San Diego)		X		X												X			X			O	Attached: SDR-2008-5
	IRWMP Grant Preparation		X		X				X		X			X	X	X							O	2006-07 Annual Report Appendix A-28
	Stormwater Quality Master Plans for Special Drainage Fee Areas (County of San Diego)		X		X	X	X	X	X	X	X	X	X	X	X	X							N	Attached: SDR-2008-6
	Land Acquisitions MSCP (County of San Diego)		X		X											X							N	Attached: SDR-2008-7
	Lakeside Ballfield Park		X		X	X	X	X	X	X	X	X	X	X	X	X							N	Attached: SDR-2008-8
	Coastal Cleanup Day Sponsorship (City of San Diego)		X		X				X												X	X	N	Attached: SDR-2008-9
	Municipal Rain Barrel Installation (City of San Diego)		X		X		X		X			X							X			X	N	Attached: SDR-2008-10
	Animal Related Facilities Inspection (City of San Diego)		X		X		X											X		X	X	X	N	Attached: SDR-2008-11
Land Use Activities	Impervious Cover Coefficients (San Diego County)		X																				O	Attached: SDR-2008-12
	Low Impact Design (LID) Handbook (County of San Diego)		X		X	X	X					X			X	X			X		X	X	O	2006-07 Annual Report Appendix A-33

Anticipated Watershed Activities Matrix for 2007-08 Activities

	ACTIVITY NAME	Collective Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	POLLUTANTS TO BE ADDRESSED											COMPONENTS IN PROGRESS IN FISCAL YEAR 2007-08							Activity Status for Fiscal Year 2007-08*	Activity Description Location**
					High Priority						COC													
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	pH	Turbidity	Diazinon	Eutrophication	Benthic Community Degradation	Copper	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
Education Activities	San Diego River Watershed Boundary Signs (City of San Diego, County of San Diego)		X													X					X		O	2006-07 Annual Report Appendix A-34
	San Diego River Watershed Erosion and Sedimentation Poster (City of San Diego)		X		X						X							X		X	X	X	O	2006-07 Annual Report Appendix A-35
	San Diego River Restaurant BMP Booklet (City of San Diego)		X		X				X												X		O	2006-07 Annual Report Appendix A-36
	Outreach on Pet Waste Management (City of Santee)		X		X			X					X	X							X		O	2006-07 Annual Report Appendix A-37
	Integrated Pest Management PRISM Grant			X								X									X		O	2006-07 Annual Report Appendix A-38
	San Diego River Watershed Pesticide and Herbicide Guide Brochure (City of San Diego)		X									X									X		O	2006-07 Annual Report Appendix A-39
	School Outreach (all)	X		X																	X		O	2006-07 Annual Report Appendix A-40
	Partners for Clean Water and Community Events (all)	X		X																	X		O	2006-07 Annual Report Appendix A-41
	Public Presentations, Outreach and Media	X		X																	X		O	2006-07 Annual Report Appendix A-42
	Oktoberfest (City of La Mesa)		X		X	X	X	X		X	X	X	X	X	X	X				X	X		O	2006-07 Annual Report Appendix A-45
	Intergenerational Games La Mesa Middle School (City of La Mesa)		X		X	X	X	X		X	X	X	X	X	X	X				X	X		O	2006-07 Annual Report Appendix A-46
	LID Watershed Planning Education (County of San Diego)															X							N	Attached: SDR-2008-13
	Karma/Karma Second Chance Public Service Announcements (City of San Diego)		X		X				X												X		N	Attached: SDR-2008-14
	Billboards/Transit Shelters (City of San Diego)		X		X																X		N	Attached: SDR-2008-15
	Mobile Advertising (City of San Diego)		X		X				X			X			X						X		N	Attached: SDR-2008-16
	San Diego River Park Foundation Sponsorship (City of San Diego)		X		X		X		X			X									X	X	N	Attached: SDR-2008-17
Public Participation	San Diego River Coalition Meetings (all)	X			X	X	X	X		X	X	X	X	X	X	X					X		O	2006-07 Annual Report Appendix A-47
	Project Clean Water - San Diego River Watershed Website (all)	X			X	X	X	X		X	X	X	X	X	X	X					X		O	2006-07 Annual Report Appendix A-48
Administrative Activities																								

* N = New; O = Ongoing; C = Completed

TITLE: **Porous Pavement and Model Municipal Operations Center Demonstration Project**
ID NUMBER: **SDR-2008-1**

ACTIVITY DESCRIPTION

The Porous Pavement and Model Municipal Operations Center Demonstration Project is a phased project with Phase I completed during FY 2005-06 and Phase II scheduled for completion in October 2007.

Phase I
Phase I involved implementation of the Porous Pavement and Model Municipal Operations Center Demonstration Project. Along with matching funds, grant money was used to install approximately 63,000 square feet of three different porous pavement product types and a centralized underground water quality treatment control system at the County Operations Center (COC) in Kearny Mesa. The grant also funded monitoring to evaluate the performance of these state-of-the-art best management practices (BMPs) and extensive outreach and training efforts. One of the project's main goals was to demonstrate to municipal managers and the construction industry the benefits and feasibility of installing porous paving and enhanced treatment facilities at municipal parking lots and maintenance yards. The project was also intended to educate municipal employees and contractors (especially architects and engineers) about the installation of porous paving and the use of structural BMPs at municipal facilities.

Phase II
On September 6, 2006, the SWRCB awarded the County of San Diego an additional $1.5 million in Proposition 40 funding for a project demonstrating the benefits and feasibility of installing porous pavement and enhanced structural treatment controls at the COC. Phase II consists of upgrades to the Phase I project described above. Among the porous pavement mixes and configurations to be reviewed are: 1) asphalt with either polymer or fiber reinforcement, 2) an area with a deep reservoir to contain runoff from adjacent building roof tops as well as parking lot and sidewalk drainage, and 3) a test area with stabilization re-enforcement beneath the pavement.

In addition, the proposal recommends an enhanced treatment control system to filter a greater volume of runoff from the COC and to facilitate evaluation of alternative media for removal of different stormwater pollutants. While the current, primary treatment unit captures sediment, trash, debris, and undissolvable oil and grease from the COC's 35 acres, the upgraded media filtration units will target more difficult pollutants, such as dissolved hydrocarbons, heavy metals (copper, zinc, cadmium, chromium), organics, and phosphorous. The existing stormwater media filtration treatment capability will increase from one unit treating 1.25 cfs to four units treating 6.4 cfs. This will facilitate the evaluation of filtration media in removing different pollutants of concern. The project also proposes to enhance the design and performance of the existing monitoring systems for porous pavement and the media filtration systems. Consistent with the requirements of the SWRCB, this proposal will continue existing BMP assessment and monitoring for the duration of the new grant term.

The Phase II program addresses several questions:

- How do normalized stormwater discharges from each pavement type (porous asphalt, porous concrete and pavers) compare to normalized runoff from the reference area for individual storm events as well as the entire storm season?
- How does stormwater discharge water quality for each pavement type, measured in terms of flow-rated event mean concentrations, compare to runoff quality from the reference area?
- How do infiltration basins associated with each of the porous surface treatments impact stormwater discharge hydrographs?
- How do normalized pollutant loading rates associated with each porous surface treatment compare to those of the adjacent impervious reference area?
- At what rates do water levels in the infiltration basins of each treatment type change during and between storm events?

Phase II will consist of:

- Installing approximately 54,000 square feet of additional porous asphalt and concrete
- Expanding the existing centralized stormwater media filtration treatment capability
- Facilitating the evaluation of different filtration media as they relate to water quality improvement
- Existing monitoring systems for porous pavement and the media filtration systems will have enhanced design and performance.

The County has enlisted Coastkeeper to assist in providing additional outreach regarding the benefits and results of this project.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Completion of Phase II is scheduled for October 2007.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Coastkeeper (SAG member and outreach consultant)
- San Diego River Coalition (SAG member)
- Building Industry Association of San Diego (SAG member)
- Industrial Environmental Association (SAG member)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria Indicators
- Phosphorous
- Turbidity

OTHER CONSTITUENTS ADDRESSED

- Trash and debris
- Undissolvable oil and grease
- Dissolved hydrocarbons
- Heavy metals (copper, zinc, cadmium, chromium)
- Organic

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria indicators, phosphorous and turbidity have been identified as priority water quality problems in the San Diego River Watershed. This activity demonstrates reduced pollutant loads and source abatement which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity directly addresses high priority water quality issues by reducing the amount of pollutants leaving the COC and reducing the pollutants' potential for entering receiving waters. The porous pavement project reduces runoff and, consequently, the discharge of pollutants to receiving waters. It also reduces erosion and the down cutting of streams. The promotion of porous paving to reduce imperviousness, and the installation of treatment trains to remove pollutants from runoff that does occur, will protect water quality and enhance the ecological processes and environmental resources of the watershed.

Anticipated outcomes of the Phase II project are:

- Demonstrate how local government can improve water quality by making changes in existing facilities and improving the design and construction of future facilities;
- Assess porous pavement products that will guide future installation of such paving at County facilities;
- Assess the effectiveness of two types of treatment control devices to guide future use of control devices at County facilities;
- Establish the COC as a regional demonstration site for implementation of water quality BMPs;
- Educate County Project Managers, as well as contract architects and engineers, about porous pavement and Treatment Control BMPs;
- Increase knowledge about porous pavement and Treatment Control BMPs among all municipal officials in San Diego County;
- Encourage all municipalities to install porous pavement; and
- Establish long-term relationships with watershed groups throughout San Diego County.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming completion of all project elements (Level 1 Outcome). Monitoring will conducted to assess the pollutant and runoff reductions resulting from both the porous pavement and the media filtration systems (Level 4 Outcome).

TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID NUMBER: **SDR-2008-2**

ACTIVITY DESCRIPTION

The County of San Diego maintains an inventory of pet waste bag dispensers in its parks. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. In the San Diego River Watershed, there are currently 25 dispensers located in 11 County parks:

- Cactus Park (1 dispenser)
- Dos Picos Park (5 dispensers)
- El Monte Park (3 dispensers)
- Flinn Springs Park (2 dispensers)
- Heritage Park (1 dispenser)
- Lake Jennings Park (4 dispensers)
- Lindo Lake Park (4 dispensers)
- Louis A. Stelzer Park (1 dispenser)
- Oakoasis Park (1 dispenser)
- Rios Canyon Sports Park (1 dispenser)
- William Heise (6 dispensers)

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste bag dispensers – Ongoing
- Addition of new dispensers in County parks – To be determined

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and dissolved oxygen have been identified as priority water quality problems in the San Diego River Watershed. Parks have been identified as potential sources of these pollutants. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1 Outcome). Bacteria load reductions (Level 4 Outcome) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: **Woodside Avenue Detention Basin**
ID NUMBER: **SDR-2008-3**

ACTIVITY DESCRIPTION

The County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and to construct a best management practice (BMP) to treat urban runoff from the Winter Gardens sub-watershed before discharging into Los Coches Creek and the San Diego River in the unincorporated community of Lakeside. The constructed BMP and concrete removal BMP are designed to act as a demonstration for the effectiveness of similar BMPs at removing pollutants from water systems. A water quality monitoring component was also initiated to provide hard evidence of the pollutant removal capabilities of the BMP.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Although the grant has been completed (close out in May 2007), the County will continue to take samples at the site to gauge its effectiveness at removing pollutants.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- State Water Resources Control Board
- Regional Water Quality Control Board (San Diego)
- San Diego River Park Foundation
- Lakeside's River Park Conservancy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacterial Indicators

OTHER CONSTITUENTS ADDRESSED

- BOD
- COD
- MBAS
- Chlorpyrifos
- Diazinon
- Copper

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity targets high priority water quality problems within the watershed by treating urban runoff before it discharges into Los Coches Creek. As such, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This project is designed to address non-point source (NPS) pollution from the community. In addition, it is designed to enhance and restore beneficial uses within the San Diego River Watershed. The San Diego River is listed on the Clean Water Act (CWA) Section 303(d) list for high bacterial indicators, phosphorous, low dissolved oxygen, and total dissolved solids. These pollutants are characteristic of urban runoff from residential areas. In addition to the water quality benefits expected, this project provides improved landscaping for the community and flooding relief for Woodside Avenue.

EFFECTIVENESS MEASUREMENTS

The County will continue to take samples at the site to gauge its effectiveness at removing pollutants (Level 4 Outcome).

TITLE: **Flinn Springs County Park Porous Paving Project**
ID NUMBER: **SDR-2008-4**

ACTIVITY DESCRIPTION

Given the success of the porous paving demonstration project funded by Proposition 13 at the County Operations Center, the County Department of Parks and Recreation (DPR) proposes to build upon lessons learned and implement the preferred technology at its facility parking lots, beginning with Flinn Springs County Park. Runoff from the parking lots at Flinn Springs Park discharges into the adjacent Los Coches Creek in the San Diego River Watershed. DPR's ultimate goal is to utilize porous paving where appropriate in the 80 facilities it manages.

Porous paving allows infiltration of dissolved nutrients, such as phosphorous, bacterial contaminants from human and /or other animal waste, and oil and grease through the porous surface down in to the crushed rock bed below. This 12"-18" depth bed allows percolation into the soil substrate breaking down the pollutants before recharging the groundwater table below. Surface runoff carrying pollutants into adjacent streams is eliminated or greatly reduced with the use of porous paving technologies. Installation of porous pavement will increase infiltration and reduce excess runoff associated with surface parking lots.

Monitoring will continue for six major storm events following construction completion. Monitoring results will be used to determine the effectiveness of the porous paving in comparison to standard impervious paving in reducing pollutant runoff into Los Coches Creek

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Construction is scheduled for completion in January 2008. Stormwater monitoring will begin immediately after construction completion and will continue through the rainy season with data to be compiled in August 2008.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This project will demonstrate the effectiveness of porous paving in reducing surface runoff and associated pollutants flowing into Los Coches Creek and will serve as a prototype for future installations at County parks.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by confirming completion of all project elements (Level 1 Outcome). Post-project monitoring will also be conducted to determine the reduction in pollutant loading resulting from the porous paving in comparison to standard impervious paving (Level 4 Outcome).

TITLE: **San Diego River Indicator Bacteria Study**
ID NUMBER: **SDR-2008-5**

ACTIVITY DESCRIPTION

The purpose of this activity is to compare the frequency of water quality threshold exceedances for indicator bacteria during wet weather to the frequencies during summer (Apr. 1 – Oct. 31) and winter dry weather (Nov. 1 – Mar. 31) in the San Diego River Watershed. Water quality thresholds for enterococci, fecal coliform and total coliform are based on the State of California's public health standards for marine bathing beaches. The water quality threshold for E. coli is based on the San Diego Water Quality Plan objective for freshwater. Wet weather sampling is conducted during and/or up to three days following rain while dry weather sampling is carried out three or more days following rainfall.

TMDL APPLICABILITY

The results of this study will be used to aid in the implementation of the bacteria Total Maximum Daily Loads in the San Diego River Watershed.

TIME SCHEDULE FOR IMPLEMENTATION

- Data collection for this project will be completed in August 2007.
- Data will be summarized, analyzed, and interpreted in FY 2007-08.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Indicator Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Since this activity addresses a priority water quality problem, Indicator Bacteria, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

The results of this study will be used to aid in the implementation of the bacteria Total Maximum Daily Loads in the San Diego River Watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming the completion of all project elements (Level 1 Outcome).

TITLE: **Stormwater Quality Master Plans for Special Drainage Fee Areas**
ID: **SDR-2008-6**

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego River Watershed include:

- SDA 5 (Bostonia)
- SDA 6 (Lakeside)
- SDA 7 (Alpine)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur anytime before FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined

TITLE: **LAND ACQUISITIONS**
ID NUMBER: **SDR-2008-7**

ACTIVITY TYPE

Watershed Water Quality Activity

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups

- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **Lakeside Baseball Park**
ID NUMBER: **SDR-2008-8**

ACTIVITY DESCRIPTION

This project consists of replacing a former wastewater treatment plant that was demolished approximately four years ago with new baseball fields, a tot-lot, a restroom/concession building, a maintenance building, and minimal landscape with detention basins on a ten-acre parcel. Detention basins will be designed to capture all onsite water, filtering it before seeping back into the ground and eventually into the San Diego River. No water runoff is designed to flow directly into the adjacent San Diego River.

This project is located east of Riverford Road and south of Mast Boulevard and is located adjacent to wetland and upland habitat. The San Diego River flows through a five-acre parcel that was purchased as part of this project. This land is designated as preserve land.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The project is estimated to be completed during FY 08-09.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Conservancy guidelines were used for developing the multi-use trail adjacent to the San Diego River.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with the collective watershed strategy because it addresses pollutant load reductions, source abatement, and may have other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EXPECTED BENEFITS

The expected benefits include controlled and reduced run-off of silt, sediment, and other high priority water quality problems (bacteria indicators, nutrients, etc.), as well as water conservation.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming completion of all project elements (Level 1 Outcome) and be confirming reduced or no runoff water from the site (Level 4 Outcome). Water will drain into the detention basins for filtering before seeping into the ground.

TITLE: **San Diego Coastkeeper Trash Cleanup Sponsorship**
ID NUMBER: **SDR-2008-9**

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Diego River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love A Clean San Diego
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River WMA identifies bacteria as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Coastal Cleanup Day is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Diego River WMA through cleanup events, bacteria loading is reduced.

[1] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Municipal Rain Barrel Installation and Downspout Disconnects**
ID NUMBER: **SDR-2008-10**

ACTIVITY DESCRIPTION

This activity will involve the installation of rain barrels and/or the disconnection of downspouts to direct runoff from municipal facility roofs into pervious areas (such as landscaping) for infiltration. Rain barrels, downspout disconnects, and rainwater harvesting/reuse systems help to capture, store, and divert urban runoff to reduce the volume thereof, thus contributing to reduced flooding, erosion, and the contamination of surface water with sediment, fertilizer, metals, and pesticides. In addition, this activity has the added benefit of water conservation; runoff collected and diverted to landscaping would help reduce the amount of potable water needed for irrigation. Roof runoff solutions can be used both in large-scale landscapes, such as municipal buildings, community centers, schools, and commercial sites, as well as in small residential landscapes.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007 and is anticipated to continue until the end of calendar year 2007. Procurement of rain barrels and other items and installation are anticipated to occur from November 2007 through February 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Dissolved Oxygen
- Dissolved Minerals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River WMA identifies bacteria, nutrients, dissolved oxygen, and dissolved minerals as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address these high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing runoff volume via capture, retention, and eventual infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of rain barrels, downspout disconnects, and rainwater harvesting/reuse systems to reduce urban runoff volume and pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of rain barrels and downspout disconnects as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	• Reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	• Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data:	• Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

TITLE: **Targeted Animal-Related Facility Inspections**
ID NUMBER: **SDR-2008-11**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target animal-related facilities within the San Diego River WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at animal-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Diego River WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River WMA identifies bacteria and nutrients as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and nutrients.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at animal-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Impervious Cover Coefficients**
ID NUMBER: **SDR-2008-12**

ACTIVITY DESCRIPTION

Relatively recent literature maintains that specific ratios of impervious surface cover, commonly referred to as impervious surface coefficients, exist for various types of land use categories. However, coefficients specific to San Diego County have not been developed. In an effort to derive coefficients for a specific land use category in the unincorporated areas of the County of San Diego, this research project examines a segment of the San Diego River Watershed using geographical information systems (GIS) and remote sensing (RS) technologies.

As reported previously in the Common Activities section of the Copermittees' Unified Annual Report, a County GIS team produced a research project entitled "Upper San Diego River Improvement Plan (USDRIP) Impervious Surface Mapping Remote Sensing Research 2002-2003", which provided a starting point for estimating the average proportion of hardscape in the San Diego River Watershed. However, the study was only conducted for single-family residential land use categories located within a small segment of the San Diego River Watershed. Staff determined that for those coefficients to be representative of entire watersheds, the study area needed to be expanded to include sample areas within the incorporated cities and the rural unincorporated County. County staff began to investigate the expansion of these data sets and their appropriate use in a conceptual white paper that was drafted in September 2003. The white paper identified the need to expand the GIS project with the goal of developing results that can be applied regionally. The costs for completion of the mapping model and the development of area-specific impervious surface coefficients for one watershed (in this case the San Diego River Watershed) were estimated at approximately $40,000.

The County's initial study provided the following three important discoveries as a starting point:

1. The impervious surface cover for single-family residential land use in the USDRIP area is approximately 30%.
2. There is a definite relationship between parcel size and impervious cover.
3. The ESRI (Redlands, Ca.) Feature Analyst GIS tool works reasonably well for detecting impervious surface features, although the modeling methods and data inputs chosen in this study have limitations when quantifying the impervious surface coverage of the single-family residential land use category.

During FY 2005-2006, the County partnered with the U.S. Federal Emergency Management Agency (FEMA) to begin the contracting purchase of digital satellite imagery to move this project forward. However, due to litigation involving the vendor of the imagery, both the purchase and the project were put on hold until alternative sources of the imagery data could be made available. An alternative source of imagery and an alternative methodology became available during FY 2006-2007, enabling the project to proceed. An initial assessment of imperviousness was conducted, and a draft report was completed by June 30, 2007. Additional work, including recalibration of the model, will take place during FY 2007-2008.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Completion of this activity is anticipated during FY 2008-09.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- FEMA

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Previously, coefficients for the San Diego Region were not developed for various types of land use categories. This activity, and subsequent mapping activities, potentially addresses a number of high priority water quality problems and a likely source of the problems; therefore, the activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Mapping impervious surface coverage can help land use professionals better assess the quality of the entire watershed, as well as provide assistance in guiding growth patterns to minimize impacts on stream water quality. Ultimately, an estimated impervious surface percentage for the watershed will be calculated. A report will also be drafted describing in greater detail the processes employed, the results achieved, and the analysis conducted. Corresponding maps depicting the model output and impervious surface fraction for the watershed will be included.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming completion of the study (Level 1 Outcome).

TITLE: **LID and Watershed Planning Education for Community Planning and Sponsor Groups**
ID NUMBER: **SDR-2008-13**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the San Diego River Watershed include:

- Cuyamaca
- Descanso
- Lakeside
- Ramona
- Alpine
- Julian
- Valle de Oro
- Palomar Mountain

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcome). The County will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2 Outcome).

TITLE: **Public Service Announcements: *Karma* and *Karma Second Chance***
ID NUMBER: **SDR-2008-14**

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division has retained a contract with a film production company to produce two Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled, *Karma* and *Karma Second Chance*, and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. These PSAs were developed in FY 2007 and FY 2008 and will be broadcast on several television and radio stations throughout the San Diego River WMA in FY 2008. The PSAs will be broadcast in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with a film production company to complete production in FY 2008, then will work with various broadcast media outlets to distribute and air the PSAs in FY 2008 and FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radio Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River WMA identifies bacteria as a high priority water quality problem in the WMA. The *Karma* and *Karma Second Chance* PSAs will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

The PSAs address bacteria directly by focusing on pet waste, food waste and organic matter, and indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that *pathogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

[1] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured on a variety of levels, to include the number of households (television) or listeners (radio) reached by the program will be tabulated. Second, awareness, attitude data will be collected via surveys. Thirdly, once the PSA have aired, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

Management Questions:	• What changes in awareness/attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of listeners (radio) or homes (television) reached (Outcome Level 1) • Change in knowledge or awareness (Outcome Level 2)

TITLE: **Outdoor Billboards and Transit Shelters**
ID NUMBER: **SDR-2008-15**

ACTIVITY DESCRIPTION

The City's Storm Water Division has retained a contract with an outdoor advertising company to advertise "Think Blue" messages on billboards and bus shelters located in the San Diego River WMA. The City intends to create advertisements that target behaviors associated with bacteria and gross pollutants (trash) profiled as a vector. The goal of the billboards is to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the San Diego River WMA in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Print Services department in the design of the advertisements and will work with the company to have the advertisements created and placed on billboards and transit areas throughout the San Diego River WMA.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria and Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria and gross pollutants as high priority water quality problems in the San Diego WMA and recommends implementing load reduction/source abatement activities to address it. The billboard advertisements will result in increased knowledge and awareness directly, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

The advertisements will address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash, bacteria loading is reduced.

[1] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured via a Citywide telephone surveys and focus groups comprised of residents in the San Diego River WMA to determine awareness, knowledge retention and behavior change.

Management Questions:	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

TITLE: **Mobile Advertising**
ID NUMBER: **SDR-2008-16**

ACTIVITY DESCRIPTION

The City's Storm Water Division has retained a mobile advertising company to advertise *Think Blue* messages on its static billboard trucks in the San Diego River WMA. The City intends to create advertisements that target behaviors associated with bacteria and/or sediment. The goal of the billboards is to educate the public about causes of these kinds of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the San Diego River WMA in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Printing Services Division in the design of the advertisements and will have them created and placed on static billboard trucks. The trucks will drive pre-determined routes in the San Diego River WMA in an effort to reach targeted, high priority areas within the WMA to increase awareness and promote behavior change.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River WMA identifies bacteria as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing the static billboard trucks will result in increased knowledge and awareness directly and will promote behavior change.

EXPECTED BENEFITS

The billboard advertisements will address bacteria to increase knowledge awareness and promote behavior change.

EFFECTIVENESS MEASUREMENTS

Advertisement effectiveness will be measured via Citywide telephone surveys and focus groups comprised of residents in the San Diego River WMA.

Management Questions:	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

TITLE: **San Diego River Park Foundation Partnership**
ID NUMBER: **SDR-2008-17**

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division will partner with the San Diego River Park Foundation in an effort to help the organization raise awareness of the pollution, bacteria, and sediment issues surrounding the San Diego River. The City will provide funding for a number of San Diego River Park Foundation initiatives, including the annual River Days event designed to promote awareness of the pollution issues surrounding the San Diego River through 36 different watershed education and service projects. Additionally, funding will support the Foundation's Clean and Green Team, a volunteer program designed to remove trash and plant native plants within the San Diego River WMA. Funding will also be used to support public cleanups and other educational endeavors.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with San Diego River Park Foundation to provide funding for various projects throughout FY 2008 and beyond. Cleanups will be scheduled as appropriate. Clean and Green Team efforts take place throughout the year, and River Days is scheduled to occur in May of each year.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria as a high priority water quality problem in the San Diego River WMA. Providing funding to the San Diego River Park Foundation will increase awareness of the bacteria and pollution issues surrounding the San Diego River, and the various cleanup initiatives will assist in reducing pollution throughout the San Diego River WMA.

EXPECTED BENEFITS

Partnership with the San Diego River Foundation will provide funding to address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by

[1] http://www.epa.gov/owow/oceans/debris/

pathogens that have adverse effects on humans. By reducing the amount of trash, bacteria loads are reduced. In addition, funding of the outreach and education efforts of the Foundation will help increase awareness pollution issues regarding the San Diego River and foster appropriate behavior change.

EFFECTIVENESS MEASUREMENTS

Effectiveness will be measured via Citywide telephone surveys and focus groups comprised of residents in the San Diego River WMA to determine awareness and knowledge retention of water quality issues within the San Diego River WMA, as well as changes in behavior. Additionally, water quality monitoring will be conducted throughout the San Diego River WMA to determine improvements to the overall water quality of the WMA.

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

A. ACTIVITY DESCRIPTION

A.1 INITIAL DESCRIPTION FOR PLANNING PURPOSES

For fiscal year 2010, the following Watershed Water Quality Activities are currently being considered for implementation. Final selection of the proposed activities will be made in fiscal year 2009 based on the results of initial planning and baseline activities and in accordance with the selection process described in the WURMP and in Section G below.

Water Quality:

- Provide subsidies/rebates to promote the installation of weather-based controllers at commercial and industrial facilities with irrigation systems. To the extent practical, facility selection will be prioritized based on irrigation area/water runoff volumes and proximity to receiving waters.
- Target inspections based on property management company and cooperatively develop more specific BMPs to be implemented.
- Perform inspections beyond jurisdictional compliance requirements targeting specific types of commercial and industrial facilities judged to be higher potential risks for discharging priority pollutants. The increased level of inspection will reduce loadings by ensuring higher levels of compliance with source control BMPs. The inspections will also serve as education opportunities, an opportunity to identify potential sources at these facilities not sufficiently addressed by current BMPs and an opportunity to request advice from knowledgeable facility personnel regarding other ways to reduce pollutant discharges. If appropriate, the current schedule of recommended BMPs will be updated.
- Experiment with the implementation of new LID design or structural BMPs at new commercial or industrial developments of target sources and compare with more typical SUSMP-compliant developments to identify appropriate future requirements. If successful in establishing new standards for controlling pollutant discharges, the cumulative impact of lower loadings from future development is anticipated to be significant.

For fiscal year 2010, the following Watershed Education Activities are currently being considered for implementation. Final selection of the proposed activities will be made in fiscal year 2009 based on the results of initial planning and baseline activities and in accordance with the selection process described in the WURMP and in Section G below.

Education:

- Work with appropriate local associations to educate landscape maintenance contractors and property management companies regarding irrigation system repairs, reducing over irrigation, reducing other excess water use, waste management, landscaping waste management, and landscape issues such as minimization of fertilizer applications. Develop self inspection checklists for contractors and property managers to use during their work.
- Educate facilities targeted for additional inspections regarding BMPs during compliance inspections. This will also serve as an opportunity to identify potential sources at these facilities not sufficiently addressed by current BMPs and to request advice from knowledgeable facility personnel regarding other ways to reduce pollutant discharges.
- Develop and implement industry training seminars targeting specific industry groups and activities.

A.2 PLANNING AND BASELINE ACTIVITIES (FISCAL YEAR 2009)

The following planning activities are currently being considered for fiscal year 2009 in order to facilitate implementation of Watershed Water Quality and Education Activities in 2010:

- The Copermittees will work with the water districts to identify the largest (by volume) commercial or industrial water users within the watershed and then work with other readily available data sources to develop methods for prioritizing users most likely to generate large volumes of runoff as targets for weather-based controller rebates. The Copermittees will also develop methods for estimating pollutant loading reductions from the estimated or measured reduction in runoff volumes.
- Baseline surveys of attitudes and behavior will be conducted for initial target audiences, including golf course managers, animal/pet facility managers, nursery/garden center managers and property managers. Surveys of additional potential target audiences may be conducted as needed in order to develop a final list of sources targeted for watershed water quality and education activities.
- Dry and wet weather baseline monitoring data will be collected from a MS4 servicing at least two representative commercial/industrial areas that include targeted, high priority sources for activity implementation. The volume of flow will be measured or estimated and samples will be collected and analyzed for the watershed priority pollutants. Additional monitoring may be conducted at the downgradient storm drain outfall and receiving water or at potential target sources located upgradient. The results of this flow monitoring and sample collection will be used to guide the selection of target sources and may be extrapolated to estimate the baseline pollutant loading from similar commercial and industrial areas and facilities in the watershed, if appropriate.

A.3 IMPLEMENTATION ACTIVITIES (FISCAL YEAR 2010)

To be determined based on results of Planning and Baseline Activities.

B. TMDL APPLICABILITY

At this time, there are no adopted TMDLs currently in effect within the San Diego River WMA. Necessary changes to meet future TMDL specific requirements will be incorporated at that time.

C. TIME SCHEDULE FOR IMPLEMENTATION

Initial planning and baseline activities will be conducted in fiscal year 2009. Implementation of the proposed activities will be conducted in fiscal year 2010. Follow up activities to support effectiveness evaluations, if any, will be conducted in fiscal year 2010-2011 as necessary.

D. PARTICIPATING WATERSHED COPERMITTEES

At this time, all five San Diego River Copermittees are intending to participate in this process, but individual watershed activities have not yet been selected.

E. OTHER PARTICIPATING ENTITIES

At this time, it is not clear what other entities, if any, will participate.

F. HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED

As described further in Section 7.0, the proposed activities may address the following watershed priority pollutants or stressors:

- Bacteria Indicators
- Phosphorus
- TDS
- Low Dissolved Oxygen
- Turbidity

G. CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

As detailed in the WURMP, the proposed activities are consistent with the collective Watershed Strategy developed by the copermittees to the extent that they support at least one of the Watershed's Strategic Goals established in the WURMP. Generally, the San Diego River Copermittees will attempt to coordinate their activities to address the same subset of strategic goals in a given fiscal year in order to conserve resources and improve the likelihood of success. However, in some cases, individual jurisdictions may find it more appropriate to perform different activities that still support one of the Watershed Strategic Goals.

G.1 DESCRIPTION OF TARGETED STRATEGIC GOALS

The Strategic Goals established by the WURMP serve as the narrative objectives that the proposed watershed activities intend to achieve. Consistent with the watershed strategy developed in the WURMP, the Copermittees will implement activities in fiscal year 2010 that support the following Strategic Goals:

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water.

- **Strategic Goal 3 - Source Reduction at Commercial/Industrial Land Uses**: By reducing the mass of priority pollutants discharged to Copermittee storm drain systems and receiving waters from commercial and industrial land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

G.2 POTENTIAL TARGET SOURCES

Selected activities generally will target the following land use categories:

- Commercial
- Industrial

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for load reduction watershed activities within these land use categories. Not all

may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 11 in the WURMP may be used.

- Landscaping
- Animal Facilities
- Gardens/Nurseries

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for source characterization watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 12 in the WURMP may be used.

- Motor freight
- Municipal landfills
- Auto parking/Storage lots

G.3 WATERSHED PRIORITY POLLUTANTS AT TARGET SOURCES

Assuming that selected activities will address some mixture of the top three target sources for load reduction, the following combination of watershed priority pollutants/stressors and target sources will generally be the focal point of watershed activities:

- Bacteria from applicable facilities (general landscaping and waste management) as well as from facility specific types of sources: animal/pet food and waste management, soil management/erosion control, and portable bathroom facilities (if present).
- Nutrients from general landscaping at applicable facilities as well as from specific commercial operations: fertilizer storage at retailers, fertilizer storage and application at nurseries/commercial gardens and golf courses; soil and mulch management/erosion control at nurseries/commercial gardens, golf courses and animal facilities; animal waste management at animal facilities; portable bathroom facilities (if present), and vegetative litter.
- Total Dissolved Solids from excessive potable water use.
- Low Dissolved Oxygen from sources of nutrients, sediment and organic matter (see above). Additional sources may include the intentional application to soil of organic compounds or the decomposition of vegetative litter.
- Turbidity from sources of sediment, organic matter and nutrients (see above). Additional sources may result from general housekeeping and human litter.

H. EXPECTED BENEFITS

As described further in Section 7.0, the expected benefits of the proposed activities include reduction of pollutant mass discharged at the target sources and reduction of dry weather flows that serve as a potential transport mechanism for discharged pollutants.

I. EFFECTIVENESS MEASUREMENTS

When evaluating the effectiveness of the proposed watershed activities, the Copermittees will consider the following anticipated outcomes and effectiveness metrics.

Outcome Level	Anticipated Outcome of Activity	Effectiveness Metrics
1 Permit Compliance	Compliance with Permit requirement to implement a Watershed Water Quality Activity (Section E.2.f.)	Number of applicable watershed activities implemented per jurisdiction.
2 Changes in Attitudes	Increased awareness among the targeted commercial/industrial personnel regarding sources of pollutants and the need to reduce pollutant discharges/exposures.	Pre and post training surveys of target audience attitudes.
3 Behavioral Change	Reduction in targeted behaviors at commercial/industrial facilities that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post training observations of facility staff behavior. Behavior may be directly observed or inferred from observed or documented conditions.
4 Load Reductions	Reduced volume of dry weather runoff. Reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data. If necessary, supplement with a special study.
5 Discharge Quality	Reduced volume of dry weather discharges. Reduced concentration of priority pollutants in dry and wet weather discharges.	Use permit required outfall and dry weather monitoring data. If necessary, supplement with a special study.
6 Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use available receiving water monitoring data. If necessary, supplement with a special study.

In general, currently available monitoring data and other kinds of readily available quantitative statistics will be used to evaluate effectiveness. As necessary to obtain a reasonable understanding of effectiveness, the Copermittees may supplement this readily available quantitative data with either special studies or qualitative evaluations. The special studies may take the form of targeted monitoring data collection, attitude surveys or inspections. These special studies may be conducted before activity implementation to establish baseline conditions, during implementation to measure interim progress and/or after implementation to measure changes in conditions. A list of anticipated special studies for these watershed activities will be developed during the planning activities in 2009.

SAN DIEGO RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

San Diego River Watershed
San Diego County, California

Prepared For:

City of El Cajon, Lead Copermittee
City of La Mesa
City of San Diego
City of Santee
County of San Diego

Prepared By:

TRC
San Diego, California

January 2009

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EXECUTIVE SUMMARY

In accordance with the requirements of the 2007 Municipal Permit, this Watershed Urban Runoff Management Program (WURMP) Annual Report describes the activities performed by the San Diego River Watershed Copermittees in fiscal year 2007-08. The most significant collaborative activity during this time period was the comprehensive review and revision of the WURMP itself, which was completed in March 2008.

This Annual Report also reviews the available water quality and pollutant source information to assess whether any changes should be made to the WURMP. The amount of water quality data was limited for this fiscal year due to the alternating schedule of receiving water monitoring in the regional monitoring program. Based on a review of the available data from the dry weather monitoring and coastal storm drain monitoring programs, no changes were made to the list of high priority pollutants for the watershed. In addition, the San Diego River Watershed Copermittees believe the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP, remain valid priorities for the watershed.

Based on the limited monitoring conducted in fiscal year 2007-08 and the short time since the revision of the WURMP in March 2008, the San Diego River Copermittees are not making significant revisions to the current 5-year strategic plan in the WURMP. The San Diego River Watershed Copermittees do anticipate that changes may be necessary depending on the outcome of the ongoing CRWQCB-Copermittee dialogue prompted by the results of the CRWQCB/EPA audit of the Carlsbad and San Diego Bay Watersheds in 2008.

The San Diego River Watershed Copermittees are in the process of transitioning to new types of more collaborative activities for future years as described in the WURMP and this Annual Report. This transition is not reflected in the watershed activities being reported for fiscal year 2007-08 because these activities were selected prior to the WURMP revisions being completed (Appendix A). The San Diego River Copermittees will use the Strategic Goals described in the WURMP to guide selection of future activities, but will not have the benefit from a full year of planning under the new system until implementing activities scheduled for the 2009-10 fiscal year (Appendices B and C).

For fiscal year 2007-08, watershed activities were selected for implementation well in advance of the WURMP revisions and can not be reasonably evaluated in terms of the WURMP's Strategic Goals. However, similar to previous years, the San Diego River Watershed Copermittees have evaluated the 2007-08 watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document. The effectiveness assessment continued to find evidence of effectiveness in levels 1 through 4, but faced similar difficulties as in the past when trying to assess effectiveness in levels 5 and 6.

Based on these results, the San Diego River Copermittees will continue to transition into watershed activities that are consistent with the revised WURMP. The Copermittees believe the adjustments being made in response to the revised WURMP

will improve watershed water quality. The two primary recommendations for fiscal year 2008-09 are:

- Conduct a Source Identification Study to Guide Future Activity Selection.
- Use the WURMP Strategic Goals to facilitate coordinated and collaborative activities across jurisdictional boundaries.

CITY OF EL CAJON

CITY MANAGER

March 24, 2009

San Diego River WURMP

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

RT

Kathi Henry — 1.26.09

Signature — Date

Kathi Henry, City Manager — (619) 441-1780

Printed Name, Title — Phone Number

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Printed on recycled paper.

STATEMENT OF CERTIFICATION

San Diego River Watershed Urban Runoff Management Plan (WURMP) FY 2007-2008 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2007-2008 San Diego River Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-21-09
Date

THE CITY OF SAN DIEGO

January 26, 2009

RE: Statement of Certification
San Diego River Watershed Urban Runoff Management Program
Fiscal Year 2008 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2008 San Diego River Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

1/27/09
Date

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350

CITY OF
LA MESA
JEWEL of the HILLS

SANDRA L. KERL
CITY MANAGER

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sandra L. Kerl — 1/14/08

Signature — Date

Sandra L. Kerl, City Manager — 619-667-1105
City of La Mesa

8130 ALLISON AVENUE • LA MESA, CA 91941 • TEL: 619.667.1105 FAX: 619.462.7528

January 19, 2009

San Diego River WURMP Annual Report Fiscal Year 2007-2008

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

James B O'Grady 1.22.09

Signature Date

James O'Grady,
Interim Director of Development Services/Deputy City Manager

1.0 INTRODUCTION

The National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit for San Diego Copermittees (Order No. R9-2007-0001, NPDES No. CAS 0108758, hereafter referred to as "Municipal Permit") requires that the Copermittees within the San Diego River Watershed collaborate in the development of a watershed-based program that addresses surface water quality and storm water pollution prevention (California Regional Water Quality Control Board [CRWQCB], 2007). In accordance with these requirements, the San Diego River Watershed Copermittees developed and submitted a revised Watershed Urban Runoff Management Plan (WURMP) in March 2008 (City of El Cajon et al., 2008). This report provides an annual reporting of Copermittee progress in implementing the revised WURMP and meeting other Municipal Permit watershed-level requirements for fiscal year 2007-08.

1.1 COPERMITTEE COLLABORATION

The administration of the San Diego River Watershed Activities is handled both jurisdictionally and collaboratively. The jurisdictions act collaboratively to review and understand the water quality monitoring data and define the water quality issues and priority water quality pollutants. The Copermittees use this information to develop and implement jurisdictional short- and long-term activities that address the priority pollutants and sources. The Copermittees also work together as much as possible to more effectively use limited resources and achieve greater results by coordinating their activities across jurisdictional boundaries when reasonably possible. The Copermittees have developed close working relationships on watershed issues that have a direct impact across jurisdictional boundaries. For example, staff in Santee and El Cajon have worked extensively on the migration of trash in the San Diego River from El Cajon to Santee and the identification and removal of bacterial sources in Forester Creek.

Between July 2007 and June 2008, the San Diego River Watershed Copermittees formally met seven times to develop and implement the San Diego River WURMP in accordance with the Municipal Permit. During the reporting period, all Copermittees took an active role in the development and implementation of the WURMP. In addition, the workgroup used email and phone calls to facilitate collaboration on the development of watershed activities and the Annual Report. The following table presents a summary of the meetings held by the San Diego River WURMP workgroup during the reporting period, including an outline of the principal agenda items.

Summary of Watershed Workgroup Meetings

Meeting Date	Topics Covered
07/26/07	WURMP Update and Annual Report Discussion Third Party Monitoring Data to include in Draft Permit Update Review GIS Maps, monitoring data and ideas for watershed activities San Diego River Park Foundation Workplan discussion San Diego River Day Lagoons Monitoring Order – Famosa Slough

Meeting Date	Topics Covered
08/16/07	LID training prior to meeting Review Status of Activity Summaries for Previous Year Analyze Pollutant Source Data using Watershed Maps Review TWAS locations Review Activities Planned for this Fiscal Year Discuss Potential Use of UCSD Resources to Assist Copermittees
09/27/07	MOU Pertaining to Watershed Group WURMP schedule and content Summary of Watershed Collaboration Meeting Review Analysis of Monitoring Data Discuss Bacteria Conceptual Model and Activities
11/1/07	MOU Pertaining to Watershed Group Discuss Letter from CRWQCB regarding WURMP Annual Report 2005-06 Discussion of Activity Strategies Discussion of Proposed Watershed Implementation BMPs WURMP Draft Review Timeline
11/14/07	Discussion of Workplan for Next Year's Watershed Activities Cost Share Agreement Discussion of WURMP document Annual WURMP Report
3/6/08	Discussion of Updated WURMP Document Discussion of Bacteria TMDL – How to Prepare
5/8/08	Discussion with Weston regarding Improvements to Regional Monitoring Report (Dave Renfrew) Workplan (Scope of Work) for San Diego River Watershed Develop schedule for meetings in 2008

The San Diego River Watershed Copermittees will continue to meet on a regular basis to plan and facilitate implementation of the San Diego River WURMP.

1.2 WATERSHED MAP UPDATES

As requested by the CRWQCB, the watershed map for the San Diego River watershed has been increased in size and scale to be more legible. Additional maps and data describing the watershed are included in the Weston monitoring report (Weston, 2009).

2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section is intended to provide an updated assessment and analysis of the watershed's water quality and pollutant sources. Due to changes in the regional monitoring program in compliance with the revised Municipal Permit, regional receiving water monitoring was not performed in the southern watersheds, including the San Diego River Watershed, during the 2007-08 fiscal year. However, Copermittee dry weather monitoring and some local or third party monitoring were conducted. A summary and analysis of the monitoring conducted during fiscal year 2007-08 is documented in Section 9 of the *San Diego County Copermittees 2007-2008 Urban Runoff Monitoring Report*, January 2009, prepared by Weston Solutions (Weston, 2009).

Assessments in the Weston Monitoring Report were conducted using data from multiple monitoring programs and the results were applied to the relevant core management questions described in Section I.B of the Receiving Waters and Urban Runoff Monitoring Program using a weight-of-evidence approach. The results of this assessment are summarized in the table below.

Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
San Diego River WMA	Receiving Water Monitoring Program	Ambient Receiving Water Assessment	▪ Constituents of concern[1]: – High frequency of occurrence (TDS and enterococci). – Low frequency of occurrence (dissolved oxygen, total coliform, and fecal coliform).	1, 2
		Wet Weather Receiving Water Assessment	▪ Constituents of concern[1]: – High frequency of occurrence (turbidity and fecal coliform) – Low frequency of occurrence (enterococci, TDS, and total coliform) ▪ No persistent toxicity was observed.	
		Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed.	
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (CSDM and DWM)	▪ Constituents of concern[1]: – Low frequency of occurrence (total coliform and fecal coliform)	3, 4
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ No data analyzed from this program to date.	
	WMA Assessment	Receiving Water Trend Assessment	▪ Significant increasing trends were observed for turbidity and TSS. ▪ Significant decreasing trends were observed for nitrate, dissolved copper, and dissolved arsenic.	5
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, fecal coliform, and enterococci are consistent with the 2001–2006 BLTEA ratings.	

[1] Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in Appendix B of the Weston Monitoring Report (Weston 2009).

2.1 WATER QUALITY ASSESSMENT

The Water Quality Assessment provided in the Weston monitoring report and summarized in the table above is consistent with the previous year's assessments reported in the Weston Monitoring Report for fiscal year 2006-07 as well as the baseline watershed evaluation (BWE) presented in the March 2008 WURMP. Based on a review of the current Weston monitoring report and available monitoring data from dry weather monitoring, jurisdictional wet weather monitoring and third party monitoring data, the San Diego River Watershed Copermittees concluded that the high priority pollutants for the watershed remain the same ones identified in the WURMP:

- Bacteria Indicators
- Phosphorus
- Total Dissolved Solids (TDS)
- Low Dissolved Oxygen (DO)
- Turbidity

In addition, bioassessment data continue to show benthic alterations as a concern in this watershed, but these impacts may be due to physical impacts, not chemical impacts. Note that a biological assessment performed after completion of the Forester Creek Improvement project, indicates that the area downstream of the project was "unimpaired," very rare for an urban waterbody (Weston; July 2008). It is anticipated that this and other restoration projects (such as the Woodglen Vista Creek project) will assist in improving the condition of the biological community within the San Diego River.

Weston's recommendations for this watershed are to continue monitoring at the MLS to determine long-term trends, to continue monitoring for toxic and benthic impacts, and to identify upstream sources of COCs. The addition of TWAS locations within the Lower San Diego HA during the 2009–2010 Monitoring Season will provide information regarding conditions in other areas of the WMA. Furthermore, conducting ambient weather monitoring at the MLS and future TWAS locations will provide temporal information regarding the conditions in the receiving water.

2.2 POLLUTANT SOURCE ASSESSMENT

The Weston monitoring report evaluates pollutant sources in terms of the core management questions 3 and 4. The observed results in the dry weather monitoring and coastal storm drain monitoring programs as reported in the Weston Monitoring Report are generally consistent with previous year's data and appear to indicate that the conclusions in the Baseline Long Term Effectiveness Assessment (BLTEA) and the March 2008 WURMP regarding pollutant sources remain valid (Weston Solutions et al., 2005; City of El Cajon et al., 2008). More specifically, the San Diego River Watershed Copermittees believe the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP, remain valid priorities for the watershed.

The Weston Monitoring Report recommends continued development and implementation of the MS4 Outfall Monitoring and Source Identification Monitoring program to provide additional information regarding urban runoff during wet weather conditions. The San Diego River Watershed Copermittees concur with this recommendation.

3.0 IMPLEMENTATION OF WATER QUALITY ACTIVITIES

This section summarizes the activities identified in the WURMP and implemented by the San Diego River Watershed Copermittees during the 2007-08 reporting period. Although not a qualifying watershed activity under the permit, the most significant activity during fiscal year 2007-08 was the comprehensive review and revision of the WURMP itself (City of El Cajon et al., 2008b). The San Diego River Watershed Copermittees used the collective Watershed Strategy developed at the regional level to evaluate conditions in the watershed and the priorities for the San Diego River Watershed Copermittees. This evaluation culminated in a five-year strategic plan to guide the selection of watershed activities during the current permit cycle.

Since this comprehensive reevaluation of the watershed program spanned almost the entire fiscal year and watershed activites are planned and budgeted well in advance, the watershed activities conducted during fiscal year 2007-08 are generally consistent with the activity selection process under the previous permit, not the current WURMP. The San Diego River Watershed Copermittees are in the process of transitioning to new types of more collaborative activities as described in the WURMP and Section 3.5 below, but this transition is not reflected in the watershed activities being reported in this section for 2007-08 because of this timing issue.

3.1 WATERSHED WATER QUALITY ACTIVITIES

The San Diego River Watershed Copermittees implemented numerous water quality activities focused on the San Diego River Watershed priority pollutants of concern during fiscal year 2007-08. These activities are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern. Some of the highlighted activities include:

- River Restoration projects, including land acquisitions,
- Trash removal and river cleanup events,
- Structural BMP projects,
- Removal of homeless encampments and cleanups, and
- Setting-up additional "doggie bag" dispensers.

3.2 WATERSHED EDUCATION ACTIVITIES

The San Diego River Watershed Copermittees continue to value education activities as a means of reducing pollutants at the source. The watershed education activities conducted in fiscal year 2007-08 are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern.

3.3 PUBLIC PARTICIPATION ACTIVITIES

The San Diego River Watershed Copermittees continue to rely on the Project Clean Water website as a tool to facilitate outreach to the public. In addition, a number of the activities, both education and water quality, are specifically designed to foster public participation. For

example, the cleanup events sponsored by the jurisdictions are typically conducted by or augmented by volunteers and are often associated with appreciation events for specific parks or the river itself. This direct public participation is intended to foster a sense of community awareness and responsibility for our waterways. A number of jurisdictions make a point of addressing the volunteers to educate them about watersheds in order to strengthen the link between upland human activities and water quality.

3.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

This section describes collaborative land use planning efforts within the San Diego River Watershed during fiscal year 2007-08. The San Diego River Watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Education:
The San Diego River Watershed Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant re-development. In addition to the education and training that is provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego's development of a LID and Watershed Planning Education Activity. This activity is intended to educate local planning and sponsor groups on LID and watershed planning principles, practices, and requirements. The recommendations of local planning and sponsor groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. This education activity is intended to aid these advisory bodies in making informed recommendations on aspects of development projects that could affect watershed water quality. During the FY 07/08 reporting period, County of San Diego staff began conducting presentations to planning and sponsor groups with the first presentation made to the Hidden Meadows Community Sponsor group in the Carlsbad Watershed on June 26, 2008. Within the San Diego River Watershed 9 additional educational presentations are targeted for 7 Community Planning Groups, 1 Community Sponsor group and 1 local community group in the North Mountain Planning Area during FY 08/09.

Cross-Jurisdictional Communication:
The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the San Diego River Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides

neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the San Diego River Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

In order to encourage collaborative, watershed-based land use planning, the San Diego River Copermittees will have at least one watershed meeting per year that will be dedicated to discussing and addressing land use planning issues. For fiscal year 2007-08, this collaboration primarily addressed the incorporation of LID into land use and development, and particularly the LID manual produced by the County. The County presented the manual and LID concepts to planners from other San Diego River Copermittees prior to the regular WURMP group meeting in August 2007 (Cities of El Cajon, Santee and San Diego) and at jurisdictional offices in November 2007 (La Mesa). Planners from San Diego River Copermittees also attended other cross-jurisdictional LID training events in February 2008. It is anticipated that these ongoing discussions will enable San Diego River Copermittees to establish some consistency in how they integrate watershed principles into their plans and to evaluate the potential need for watershed specific land use requirements. The results of future meetings, including any follow up meetings, will be reported in the WURMP annual reports.

3.5 UPDATED 5-YEAR STRATEGIC PLAN

The comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are described in the WURMP and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement.

3.5.1 New Watershed Activities

The table below outlines the planned timeframe for implementing activities associated with each Strategic Goal, which are based on the priority pollutants and targeted sources identified in the WURMP. The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

Goal	Strategic Goal	Implementation Schedule by Fiscal Year				
		Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013
1	Dry Weather Flow Reduction	P/I/A	P/I/A	P/I/A	I[1]/A	A
2	Muncipal/Park Source Reduction	I	A		P[1]	I[1]
3	Commercial/Industrial Source Reduction	P	I	A		
4	Residential Source Reduction		P	I	A	A
5	Bacteria Source Reduction	P/I/A	P/I/A	P/I/A	P/I/A	P/I/A

Notes: I = Implementation; P = Planning; A = Assessment
[1] Activities supporting this Strategic Goal may be eliminated and shifted toward other Strategic Goals if judged appropriate.

Because this strategy was developed in the first year of the new Municipal Permit, use of this strategy to guide selection of activities will not begin until fiscal year 2008-09. Thus, the San Diego River Copermittees will not have the benefit from a full year of planning until implementing activities scheduled for the 2009-10 fiscal year. Initially, the Strategic Goals and supporting activities will address multiple pollutants while focusing on specific types of land uses (e.g. Goals 2 through 4). As Copermittee understanding of sources increases over time, it is possible that the strategic goals may become more specific. For example, goals may be focused on specific pollutants or groups of pollutants at various land use types (e.g. Strategic Goal 5), or by targeting more specific sources within a land use.

More detailed descriptions of how the San Diego River Copermittees will implement these Strategic Goals in the form of Watershed Water Quality and Education Activities are provided in Appendices B and C. These plans will be updated at least annually to reflect our changing understanding of water quality in the watershed or lessons learned from other sources, including previous implementation activities.

3.5.2 Updated 5-Year Strategic Plan

Based on the limited monitoring conducted in fiscal year 2007-08 and the short time since the revision of the WURMP in March 2008, the San Diego River Copermittees are not making significant revisions to the current 5-year strategic plan. However, in April 2008, the CRWQCB and the EPA's consultant, PG Environmental, conducted an audit of the WURMP programs in the Carlsbad and San Diego Bay Watersheds that will likely require some changes. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. It also

recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language where necessary so that Copermittees may better meet the program's goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The San Diego River Copermittees are committed to continue their involvement in this process during the 2008/2009 reporting period. It is anticipated that some changes to the Five-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the Copermittees and the RWQCB.

4.0 EFFECTIVENESS ASSESSMENT

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

One of the most important components of a successful program is the development and implementation of a comprehensive program evaluation. In order to facilitate this assessment of WURMP effectiveness, the March 2008 WURMP has translated the results of the Copermittees water quality and pollutant source assessments into more specific Strategic Goals that will facilitate the selection of collaborative and measurable activities. Since the selection of Strategic Goals was based on a comprehensive assessment of water quality and potential pollutant sources in the watershed, measurable progress toward achieving these Strategic Goals is considered to be measurable progress toward the larger goal of positively affecting water quality. The specific activities selected by the San Diego River Copermittees will be developed, implemented and measured for effectiveness against these Strategic Goals.

For fiscal year 2007-08, activities were selected for implementation well in advance of the WURMP revisions and can not be reasonably evaluated in terms of the Strategic Goals. However, even with the use of the Strategic Goals, the San Diego River Watershed Copermittees intend to continue evaluating watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document, which can still be used for the fiscal year 2007-08 activities. The six levels are as follows:

Level 1:	Compliance with activity-based permit requirements
Level 2:	Changes in knowledge / awareness
Level 3:	Behavioral change / BMP implementation
Level 4:	Load reductions
Level 5:	Changes in discharge quality
Level 6:	Changes in receiving water quality

Documentation of Levels 1-3 is fairly straightforward, whereas documentation of Levels 4-6 requires the development and implementation of scientific studies designed specifically to document and track water quality trends in discharges and in the receiving water. Moreover, the detection of changes in discharge quality and, in particular, changes in receiving water quality requires the collection of data over several years to detect and verify changes in water quality. Although the Copermittees have very few data sets that span several years, we are working to collect this information and improve the process. In addition, due to the enormous number of factors affecting water quality in both storm drain discharges and in receiving waters, it is difficult to isolate the effects of a storm water program's efforts. Conclusions from existing data will be conducted when possible, but long-term, consistent improvements in water quality throughout the San Diego River Watershed cannot yet be determined.

Levels 1, 2, and 3 assess implementation of BMPs with prevention of pollution entering the storm drain system as the primary objective. Assessment Levels 4, 5, and 6 focus on reducing pollutants loads and assessing water quality improvement. The two groups of Assessment Levels have two different objectives, although they are connected by water quality. A connection between the two assessment groups is not possible when pollutant load information has been obtained at only a few mass loading stations, generally found in the

lower watershed, near the discharge point to the ocean. Even if jurisdictions take the Effectiveness Assessment through to Level 4 by estimating pollutants prevented from entering the receiving water, there still is no path for connecting this information to water quality in any meaningful way. These and other obstacles to assessing effectiveness will be tasked to the Effectiveness Assessment Workgroup as well as the Watershed Copermittees, who will work together to identify solutions to these obstacles.

4.1.1 Level 1 Effectiveness: Compliance with Activity-Based Permit Requirements

The San Diego River Watershed Copermittees have fulfilled several of the requirements of the Municipal Storm Water Permit. The table below outlines Level 1 Compliance with the Municipal Permit by relating San Diego River Watershed Copermittee activities to one of the four objectives and the requirements specified in the Municipal Permit.

Level 1 targeted outcomes

Permit Requirements (E.2)	Activities	Status
(a) Lead Watershed Permittee Identification	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) An accurate map of the watershed	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) Annual assessment of receiving water quality	• Weston 2007-2008 Urban Runoff Monitoring Report	Complete for 2007-2008
(d) Mechanism to facilitate collaborative "watershed based" land use planning	• County General Plan Update	Ongoing
	• City of San Diego General Plan Update	Completed (proceeding with GP elements)
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2007-2008
	• San Diego River WURMP Workgroup	Complete for 2007-2008
	• MOU; CEQA; Public Hearings; MSCP – descriptions included in the Common Activities	Complete for 2007-2008
	• Impervious Cover Coefficients Study	Complete for 2007-2008
(e) Develop and implement collective watershed strategy	• San Diego River Watershed Urban Runoff Management Plan • Weston 2007-2008 Urban Runoff Monitoring Report	Complete for 2007-2008
(f) Identify and implement Watershed Activities	• See Section 3	Complete for 2007-2008
(g) Copermittee collaboration	• See Sections 1 and 3	Complete for 2007-2008
(h) Mechanism for public participation	• Copermittee and Stakeholder Collaboration /Public Participation (meetings, e-mail and web)	Ongoing
	• Direct Interaction	Ongoing

Permit Requirements (E.2)	Activities	Status
	• Project Clean Water	Ongoing (website is updated as new information warrants)
	• San Diego River Coalition Meetings	Complete for 2007-2008
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2007-2008 - Implementation ongoing
(i) Annual WURMP review	• WURMP Annual Report	Complete for 2007-2008

4.1.2 Level 2 Effectiveness: Changes in Knowledge and Awareness

The following programs implemented by the San Diego River Watershed Copermittees may have contributed to an increase in knowledge and/or awareness of program participants.

- Project Clean Water
- Transit Shelter and Billboard Advertisements
- Think Blue Public Servic e Announcements
- Public Outreach & Media
- School Outreach: Water Quality and Watersheds
- Partners in Clean Water and Community Events

Many of the programs listed above address multiple program strategies (i.e., development of a monitoring program coupled with an educational outreach campaign). As such, these programs provided education on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed. However, the San Diego River Copermittees increasingly want to focus their attention on activities that result in load reductions. This may result in fewer activities targeting this level of effectiveness, depending on the methods used to achieve the load reduction, e.g. structural BMPs typically have no impact at this level.

4.1.3 Level 3 Effectiveness: Behavioral Change and BMP Implementation

It is likely that changes in behavior occurred through implementation of the programs or activities listed in Section 3 that involved stakeholder participation in activities and decision-making processes, as well as the implementation of BMPs to reduce the impacts of urban runoff. These programs also provided information on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed:

- Transit Shelter and Billboard Advertisements
- Think Blue Public Servic e Announcements
- San Diego River Watershed Restaurant Inspection Flyer Distribution
- Park Appreciation Days
- Intergenerational Games
- Outreach on Pet Waste Management
- Our Water, Our Responsibility Pamphet Distribution

Although no formal quantification was made during this fiscal year, it can be assumed that the Copermittees efforts changed behavior and, thus, had a positive effect on water quality.

4.1.4 Level 4 Effectiveness: Load Reductions

The implementation of BMPs is ultimately aimed at preventing pollutants from entering the storm drain system, which equates to load reduction. Targeting specific pollutants by implementing BMPs to address pollutant sources is an integral component of measuring Level 4 outcomes. Furthermore, quantifying the volume of pollutants that were prevented from entering the storm drain system or receiving water bodies can provide beneficial data that can be used to address broader water quality issues.

Some activities are more conducive to estimating load reductions than others. For example, street sweeping and storm drain cleaning are easily quantified in terms of loads reduced since material is physically removed from conveyances. However, Copermittees generally do not track most jurisdictional activities on a watershed basis. One of the opportunities for improvement identified in the Copermittees' BLTEA is to reconsider the way certain types of program data are tracked. This may involve becoming more geospatial in the way data is collected and presented. Some activities are extremely difficult to analyze in terms of load reductions. For example, the effect that education has on reducing pollutant loads would likely be based on conjecture and gross estimation.

Some of the FY2007-08 activities with quantifiable load reductions include the following:

- Approximately 100,776 dog waste bags were used, and it is estimated that this equates to the reduction of 20,155 pounds of dog waste collected at County of San Diego park facilities in the San Diego River Watershed.
- Approximately 4,200 dog waste bags were used, and it is estimated that this equates to the reduction of 840 pounds of dog waste collected at City of Santee park facilities in the San Diego River Watershed.
- Approximately 3,640 pounds of trash and debris were removed from 30 locations in the San Diego River Watershed on 12 dates during the Alpha Project Cleanup.
- Approximately 5 tons of trash and debris on Park Appreciation Day in La Mesa. Additional waste and debris was removed in La Mesa on Coastal Cleanup Day and by efforts throughout the year in the Adopt a Park program and by Canine Corners volunteers at Harry Griffen Park.
- An estimated 47.6 tons of trash were removed from various parks and Forester Creek during cleanup events in the City of Santee.
- An estimated 187 cubic yards of trash, debris and sediment removed from the trash barrier at Forrester Creek in the City of El Cajon.

4.1.5 Level 5 and 6 Effectiveness: Changes in Discharge Quality and Receiving Water Quality

Level 5 outcomes represent changes in the quality of discharges from Copermittee-owned storm drain systems into receiving waters. They differ from Level 4 outcomes in that they represent changes in the cumulative loadings from multiple sources rather than individual

sites or facilities. No measurements of changes to discharge quality were taken during FY2007-08.

Level 6 outcomes describe changes to receiving water quality that result from urban runoff management programs. It can be difficult to distinguish between the beneficial effect of urban runoff management activities and changes in water quality that are due to natural variability or other factors outside the scope of the WURMP. Nonetheless, collection of water quality data is critical to determining the effectiveness of management programs over time. Copermittees throughout the region are working together to collect water quality data and to measure improvement or degradation at the watershed scale. The BLTEA provided the first long-term assessment of changes to receiving water quality. It also incorporated pollutant-loading potentials for significant sources within the region and established threat-to-water quality (TTWQ) ratings for priority pollutants and sources within each hydrologic sub-watershed identified within the Basin Plan.

Quantifying water quality change requires an analysis of COCs in sampled runoff as well as an evaluation of existing information: 303(d) listings, beneficial uses, existing projects and studies, etc. In many cases, sufficient data may not be available from urban runoff monitoring programs to determine whether a water quality problem results in water body impairment. More difficult still is isolating the effect that urban runoff management activities have on observed changes. Stormwater data can vary significantly from storm to storm and it usually takes several years of data to determine whether improvements or degradation are occurring. All of these factors complicate annual water quality assessments. Water quality change is generally assessed on a long-term basis by evaluating trends; more water quality information pertaining to trend analysis is presented in the Weston Monitoring Report.

As a whole, the Copermittees are working to expand the focus of their assessments on demonstrating the watershed-level benefits of program implementation, and will continue to do so under order R9-2007-0001. However, annual watershed assessments do not attempt to address the relationship of WURMP implementation to changes in water quality; this analysis will be confined to the Long-term Effectiveness Assessment process. The Copermittees feel that their efforts demonstrated by Level 1, 2, 3, 4, 5 and 6 data likely had positive effects on water quality and help establish the effectiveness of their San Diego River watershed program. The process also allowed them to thoroughly evaluate the WURMP and make improvements, modifications, and changes to the program as needed.

4.2 ASSESSMENT OF TMDL BMP IMPLEMENTATION PLAN EFFECTIVENESS

At this time, there are no adopted TMDLs currently in effect within the San Diego River WMA. The Bacteria TMDL has been adopted by the CRWQCB, but has not yet been approved by the State Water Resources Control Board. Necessary changes to meet future TMDL specific requirements will be incorporated at that time. Current activities are being planned and implemented with the Bacteria TMDL requirements in mind.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

This Annual Report describes the efforts of the County of San Diego and the cities of El Cajon, La Mesa, San Diego, and Santee in improving the water quality within the watershed for the benefit of residents and wildlife alike.

Between July 2007 and June 2008, the San Diego River Watershed Copermittees conducted a comprehensive review and revision of the WURMP using the Collective Watershed Strategy developed at the regional level and in compliance with the reissued Municipal Permit. The revised WURMP continued and extended Copermittee efforts to more efficiently use limited resources by focusing resources on efforts that maximized water quality benefits. In particular, the San Diego River Watershed Copermittees developed a set of Strategic Goals for the watershed that will guide activity selection, implementation and evaluation during this permit cycle and will facilitate cross-jurisdictional cooperation. It is clear that continued integration between regional, watershed and jurisdictional programs are key to the development of quality programs that are cost-effective and responsive to the needs of the residents within the watershed.

In addition to WURMP program development, the San Diego River Watershed Copermittees continued to implement a number of Water Quality and Education activities designed to improve water quality and program effectiveness. As described in Section 3.5 of this Annual Report, the WURMP Workgroup is working diligently and across jurisdictional boundaries to develop and implement watershed activities that address the specific water quality problems of the San Diego River watershed. As the new WURMP process is implemented and refined, the planned collaborative efforts will help to raise the effectiveness of the Copermittee programs. The Copermittees will continue to refine and improve the San Diego River WURMP each year.

The San Diego River Watershed Copermittees will also cooperate with the other watersheds in the region to develop a coordinated dialogue with the CRWQCB in response to the CRWQCB's September 23, 2008 letter. As this dialogue continues and develops, the San Diego River Watershed Copermittees will make adjustments to the San Diego River WURMP as appropriate.

5.2 RECOMMENDATIONS

Based on these conclusions, the Copermittees present the following recommendations.

Conduct a Source Identification Study to Guide Future Activity Selection. The most important contribution the watershed programs can make towards protecting Beneficial Uses and improving water quality in the San Diego River Watershed (or any watershed) is to increase understanding of the water quality issues in the watershed (i.e., the sources and magnitude of the issues). This will enable the Copermittees, other entities, and interested members of the public (their watershed partners) to make more informed decisions and take effective action to reduce pollutant loads. This is particularly true for bacteria, which has complicated fate, transport and regrowth mechanisms that are not well understood. The Copermittees

are planning to conduct a Source Identification Study in fiscal year 2008-09 as described further in Appendix B. The Copermittees believe this study will improve their ability to select and implement watershed activities that will result in measurable load reductions.

Use the WURMP Strategic Goals to facilitate coordinated and collaborative activities across jurisdictional boundaries. The San Diego River Watershed Copermittees have committed to making the effort to coordinate their activities as much as reasonably possible. The Strategic Goals provide a common focal point and direction for the activity development process. Because it is a group process designed to coordinate our efforts, the development of activities, even with the Strategic Goals as guides, is a slower process than one in which each jurisdiction simply selects individual watershed activities. However, based on our experience so far in fiscal year 2008-09, the San Diego River Watershed Copermittees believe it will yield better results. Developing common inspection checklists for parks and a common purpose for the inspections that allows for some comparability of results across jurisdictions has been a difficult but valuable exercise.

6.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region (CRWQCB). 2007, Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District and the San Diego County Regional Airport Authority

City of El Cajon, City of La Mesa, City of Santee, City of San Diego and County of San Diego (City of El Cajon et al.), 2008, San Diego River Watershed Urban Runoff Management Plan, March 2008.

Weston Solutions, Larry Walker Associates and Mikhail Ogawa Engineering (Weston et al.), 2005, Baseline Long-Term Effectiveness Assessment, San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program, August 2005.

Weston Solutions, 2009, San Diego County Municipal Copermittees 2007-2008 Urban Runoff Monitoring Report, Prepared for County of San Diego, January 2009.

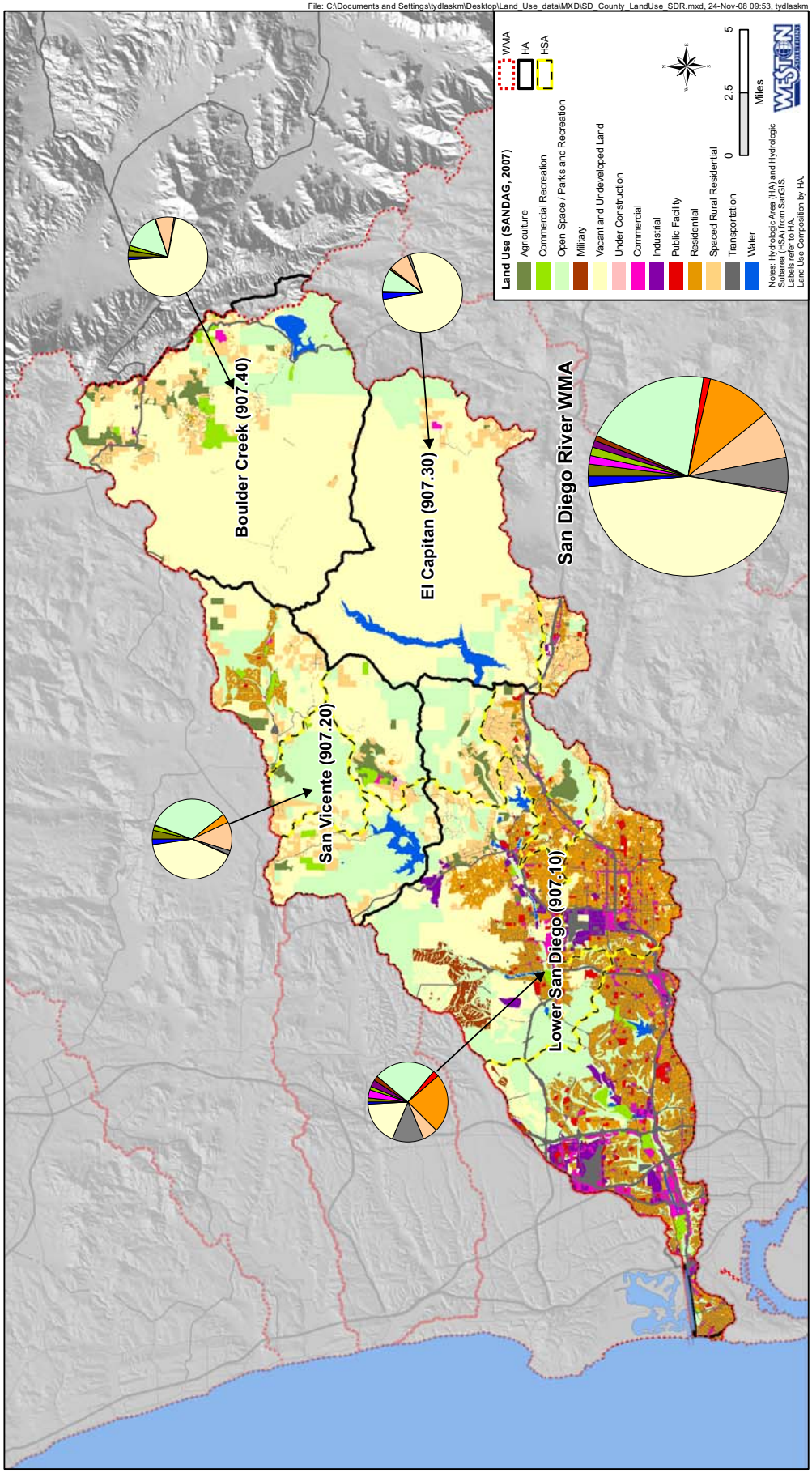
File: C:\Documents and Settings\tydlaskm\Desktop\Land_Use_data\MXD\SD_County_LandUse_SDR.mxd, 24-Nov-08 09:53, tydlaskm
Boulder Creek (907.40)
El Capitan (907.30)
San Diego River WMA
San Vicente (907.20)
Lower San Diego (907.10)
Land Use (SANDAG, 2007)
Agriculture
Commercial Recreation
Open Space / Parks and Recreation
Military
Vacant and Undeveloped Land
Under Construction
Commercial
Industrial
Public Facility
Residential
Spaced Rural Residential
Transportation
Water
WMA
HA
HSA
0
2.5
5
Miles
Notes: Hydrologic Area (HA) and Hydrologic Subarea (HSA) from SanGIS.
Labels refer to HA.
Land Use Composition by HA.
WESTON

APPENDIX A

PROGRAM ACTIVITY SUMMARY DESCRIPTIONS FOR FISCAL YEAR 2007-08

Watershed Activities Matrix for 2007-08 Activities

	ACTIVITY NAME	Collective Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2007-08							2007-08*	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction	Activity Status for Fiscal Year 08*	
Special Studies / Source ID / Pollution Reduction	**Activities to Address High Priority TTWQ Sources:**																		
	Additional Dry Weather Monitoring (City of La Mesa)		X		X	X	X	X	X	X	X	X			X			N	Appendix A-1
	Adopt a Park/Adopt A Block (La Mesa)		X		X	X		X		X	X						X	O	Appendix A-2
	ALPHA Project for the Homeless Cleanup (City of San Diego)		X		X				X					X			X	O	Appendix A-3
	Bacteria Source Investigation Tracking Study (City of San Diego)		X		X	X	X	X		X	X							N	Appendix A-4
	Canine Corners Harry Griffith Park (La Mesa)		X		X	X		X									X	O	Appendix A-5
	CBI Grant SDR Ocean Beach WQ Improvement Project, Phase II (City of San Diego)		X		X						X	X	X	X				O	Appendix A-6
	Coastal Cleanup Day - Lake Murray & Alvarado Channel (City of La Mesa)		X		X			X	X		X					X	X	O	Appendix A-7
	Forrester Creek Homeless Encampment Removal Project (City of El Cajon)		X		X										X		X	O	Appendix A-8
	I Love a Clean San Diego Creek to Bay Cleanup Event Sponsorship (County of San Diego, City of La Mesa, City of San Diego)	X			X			X								X	X	O	Appendix A-9
	Increase in Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas (City of Santee)		X		X							X			X		X	O	Appendix A-10
	Park Appreciation Days (City of La Mesa)		X		X	X		X	X	X	X					X	X	O	Appendix A-11
	Porous Pavement and Model Municipal Operations Center Demonstration Project - Phase II (County of San Diego)		X		X		X		X	X	X	X						O	Appendix A-12
	Prevention of the Release of Pet Fecal Matter in Public Parks (City of El Cajon, La Mesa, Santee, and County of San Diego)	X			X	X		X						X	X	X	X	O	Appendix A-13
	San Diego River Park Foundation Cleanup Event Sponsorship (City of San Diego)		X		X				X		X					X	X	O	Appendix A-14
	San Diego River Watershed Targeted Inspection (City of San Diego)		X		X		X						X		X	X	X	O	Appendix A-15
	San Diego Riverbed Homeless Encampment Removal Project (City of Santee)		X		X				X			X					X	O	Appendix A-16
	Trash Removal Activities in Santee (City of Santee)		X		X			X								X	X	O	Appendix A-17
	Wet Weather Monitoring (La Mesa and Santee)		X		X	X	X	X	X	X	X	X			X			O	Appendix A-18
	Activities to Address Watershed High Priority Pollutants:																		
	Cabrillo Heights Park Rain Garden Infiltration Project - LID pilot (City of San Diego)		X		X	X	X				X							N	Appendix A-19
	Coastal Cleanup Day Sponsorship (City of San Diego)		X		X				X							X	X	N	Appendix A-20
	Forrester Creek Improvements (City of Santee)		X		X	X		X	X	X	X	X	X	X		X		O	Appendix A-21
	Lakeside Ballfield Park (County of San Diego)		X		X	X	X	X	X	X	X							N	Appendix A-22
	Land Acquisitions MSCP (County of San Diego)		X		X						X							N	Appendix A-23
	Maintenance/Inspection of Forrester Creek Trash Barrier (City of El Cajon)		X		X				X				X	X				O	Appendix A-24
	Municipal Rain Barrel Installation (City of San Diego)		X		X		X		X					X			X	N	Appendix A-25
	Park Ridge Blvd Bacteria Treatment Project (City of San Diego)		X		X				X		X							N	Appendix A-26
	San Diego River Flinn Springs Porous Pavement (County of San Diego)		X		X	X	X		X	X	X							O	Appendix A-27
	San Diego River Indicator Bacteria Study (County of San Diego)		X		X							X			X			O	Appendix A-28
	SDPD Western Division Green Lot Infiltration Project (City of San Diego)		X		X		X				X							N	Appendix A-29
	Sweeping Route Posting and Enforcement (City of San Diego)		X		X	X	X	X	X	X	X							N	Appendix A-30
	Woodglen Vista Creek Improvement Project (City of Santee)		X		X	X		X	X					X				O	Appendix A-31
	Woodside Avenue Detention Basin (County of San Diego)		X		X	X	X	X		X		X	X	X	X		X	O	Appendix A-32
	Strategic Plan Implementation (City of San Diego)		X		X	X	X	X		X	X							O	Appendix A-48

Watershed Activities Matrix for 2007-08 Activities

	ACTIVITY NAME	Collective Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2007-08							2007-08 Activity Status for Fiscal Year 08*	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
Land Use Activities	Impervious Cover Coefficients (San Diego County)		X															O	Appendix A-33
Education Activities	Billboards/Transit Shelters (City of San Diego)		X		X											X		N	Appendix A-34
	Intergenerational Games La Mesa Middle School (City of La Mesa)		X		X	X	X	X		X	X				X	X		O	Appendix A-35
	Karma/Karma Second Chance Public Service Announcements (City of San Diego)		X		X				X							X		N	Appendix A-36
	LID Watershed Planning Education (County of San Diego)										X							N	Appendix A-37
	Mobile Advertising (City of San Diego)		X		X				X							X		N	Appendix A-38
	Oktoberfest (City of La Mesa)		X		X	X	X	X		X	X				X	X		O	Appendix A-39
	Our Water Our Responsibility Pamphlet Distribution (City of San Diego)		X		X											X		N	Appendix A-40
	Outreach on Pet Waste Management (City of Santee)		X		X			X								X		O	Appendix A-41
	Public Presentations, Outreach and Media (Santee)		X	X	X	X	X	X	X	X						X		O	Appendix A-42
	San Diego River Restaurant BMP Booklet (City of San Diego)		X		X				X							X		O	Appendix A-43
	San Diego River Watershed Erosion and Sedimentation Poster (City of San Diego)		X		X					X			X		X	X	X	O	Appendix A-44
Public Participation	San Diego River Coalition Meetings (all)	X			X	X	X	X		X	X					X		O	Appendix A-45
	Project Clean Water - San Diego River Watershed Website (all)	X			X	X	X	X		X	X					X		O	Appendix A-46
	Public Participation (Santee)		X		X	X		X	X		X					X		N	Appendix A-47
Administrative Activities																			

* N = New; O = Ongoing; C = Completed

ID NUMBER: **SDR-A1**

TITLE: Additional Dry Weather Monitoring

PROJECT SUMMARY

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies and identifying pollutant sources. Consequently, the City conducted additional non-storm water quality monitoring within the San Diego River Watershed. The purpose of the study was to evaluate the water quality of the discharged flow. Two sampling locations were identified within the Alvarado Drainage Basin. All water samples taken during this study in July 2008 were evaluated for the same suite of constituents measured in the City's annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303 (d) listings, and watershed constituent of concern listings as reported in the WURMP. This included measuring flow, temperature, pH, conductivity, turbidity, nitrate, ammonia, orthophosphate, dissolved oxygen, and MBAS in the field and total hardness, dissolved metals, chlorpyrifos, diazinon, surfactants, oil and grease, TDS, TSS, total coliform, fecal coliform, and enteroccus bacteria in the laboratory. Results have been received and are being analyzed.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

This activity is above and beyond the Dry Weather Field Screening and Analytical Monitoring Program. Analyzing samples of non-storm water discharge from two locations within the San Diego River Watershed provides insight into water quality leaving the City of La Mesa. It also enables the City to conduct potential follow-up investigation of potential pollutant sources. Monitoring is intended as a long-term activity; however, sampling locations may vary each year.

ACTIVITIES CONDUCTED DURING 2007-2008

The following activities were conducted during 2007-2008:

- Identified two discharge locations to monitor within watershed.
- Conducted sampling in July 2008 inclusive of field monitoring and laboratory analysis.
- Prepare letter report analyzing data.

ID NUMBER: **SDR-A2**

TITLE: Adopt A Park/Adopt A Block

PROJECT SUMMARY

The City of La Mesa has encouraged the public in participating in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers as part of the Adopt-a-Park and Adopt-a-Block Program. Volunteers are encouraged to routinely pick trash from various parks within the watershed or along their block. There are seven parks that are assigned to volunteers within the San Diego River Watershed that are maintained by the volunteer groups. Although specific amount of debris collected is not recorded, the groups effort is considered a load reduction from debris entering the storm drain system and receiving water body. Volunteers logged 2,794 service hours of time under these programs during this reporting period.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- DO (high priority)
- Turbidity

HOW THIS ACTIVITY RELATES TO THE WATERSHED

There are seven parks and numerous residential areas located within the San Diego River Watershed. Volunteers assigned to parks or within residential areas, routinely collect trash and debris within the watershed. These efforts result in a reduction in debris entering the storm water conveyance system and receiving water. Removal of debris constitutes a reduction in pollutants that are sources of bacteria, TDS and may reduce turbidity or low oxygen concentration in receiving waters due to eutrophication. This activity is considered by the City as a long-term activity.

ACTIVITIES CONDUCTED DURING 2006-2007

The following activities were conducted during this reporting period 2007-2008:

- Group organized to collect trash and debris from parks and neighborhood blocks, routinely
- Trash and debris removed from parks and street blocks and disposed of appropriately.

TITLE: **Alpha Project for the Homeless, Inc. Cleanup Sponsorship**
ID NUMBER: **SDR-A3**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups and potentially homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2008.

Alpha Project conducted a cleanup at 30 locations in the San Diego River Watershed Management Area (WMA) on 12 different dates in FY 2008. Approximately 136 workers participated to remove approximately 3.64 tons of trash and debris in FY 2008.

Based on this information, the effectiveness assessment section, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity.

In the Regional Board Comment letter[1], Regional Board staff indicated that the City would need to provide locations selected, amount of trash collected at those locations and that the Copermittees would receive credit only for the first trash cleanup event in the fiscal year. Locations and trash information are provided in the Activity Implementation subsection of this summary sheet. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will not continue the Alpha Project trash cleanup sponsorship in FY 2009. The reporting of this activity will cease with this annual report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Cleanups by Alpha Project result in load reduction of trash and debris directly and of bacteria indirectly though trash and debris as a source though trash and debris as a source.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
ALPHA PROJECT FOR THE HOMELESS, INC. CLEANUP Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound	
Targeted Measurable Outcome(s)	Achieve load reduction of bacteria (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
	Pounds of trash removed (Outcome Level 4)	3,640 lbs
	Number of participants (Outcome Level 1)	136
	Amount of money spent on cleanups (Outcome Level 1)	$1,856.40
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.51/lb

Objectives

The goal of the activity assessment is to determine the efficiency of load reduction associated with sponsoring trash cleanups.

Analysis and Results

Alpha Project conducted a cleanup at thirty locations in the San Diego River WMA on twelve different dates, with an estimated 136 workers. Approximately 3,640 pounds of trash and debris were removed, and at $0.51 per pound the total cost of cleanups in the WMA was $1,856.

Conclusions

The City will not continue the Alpha Project in FY 2009. The reporting of this activity will cease with this annual report. The project's efficiency has been determined by comparing the load reduction to the amount of money spent on the cleanup events as shown above.

TITLE: **Bacteria Source Investigation Tracking Study**
ID NUMBER: **SDR-A4**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a San Diego River Bacterial Source Tracking Study (Study). The Study is a Tier II activity under the City of San Diego 5-Year Strategic Plan. As a Tier II study, the project aims to identify sources of specific bacterial pollutants in San Diego River. This project also qualifies as a watershed activity under the National Pollutant Discharge Elimination System (NPDES) permit.

A Monitoring Plan for Phase I of the San Diego River Bacterial Source Tracking Investigation will be developed. Phase I aims to identify bacterial sources in San Diego River.

The following objectives have been identified for Phase I of this study:

1. Verify priority sectors identified in the Watershed Priority Plan by characterizing bacterial loadings in the San Diego River Watershed Management Area (WMA) by targeting primary sources of high bacterial loading, including eating and drinking establishments, residential areas, commercial landscaping, animal-related facilities, golf courses, roads, areas of potential bacterial re-growth (ponds) and sources of human contamination.

2. Determine the presence/absence of human contamination within the WMA and pinpoint any sources of human contamination for abatement.

3. Determine the relative contribution of bacterial re-growth to bacterial loading in the River during wet and dry weather.

4. Determine the relative loading between sub-watersheds during wet weather, including the contribution of bacterial loads from adjacent jurisdictions.

5. Provide recommendations for the reduction of bacterial loading based on the information gathered from source assessments and loading estimates.

The objectives listed above will be met through conducting dry and wet weather monitoring surveys that incorporate bacterial load estimates and Quantitative Polymerase Chain Reaction (Q-PCR) analysis from sources likely to contribute to bacterial loading throughout the San Diego River WMA.

Through an assessment of bacterial loading, Q-PCR analysis, general water quality assessment and visual observations, the proposed monitoring plan will further quantify loads from likely sources of bacteria impacting San Diego River. The results of the investigation will provide the City with a clear understanding of the key bacterial sources within the WMA as well as the loads associated with dry and wet weather flows. This Study will assess whether human contamination is contributing to bacterial loading.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

A Monitoring Plan for Phase I of the San Diego River Bacterial Source Tracking Investigation will be completed in FY 2009. Monitoring will occur in FY 2009 and reporting will be completed in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego River, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this not an implementation or education activities. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

ID NUMBER: **SDR-A5**

TITLE: Canine Corners Harry Griffen Park

PROJECT SUMMARY

The City of La Mesa has encouraged the public in participating in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers known as the Canine Corners in cleaning up pet waste at Harry Griffen Park. This park is located within the San Diego River Watershed. Although specific amount of pet waste is not recorded, the group's effort is considered a load reduction for pet waste and a potential reduction in bacteria entering into the storm drain conveyance system.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Dissolved Oxygen (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

Harry Griffen Park is located within the San Diego River Watershed. A volunteer group known as the Canine Corners, collect pet waste routinely from the park and dispose of it appropriately. These efforts result in a reduction of pet waste entering the storm water conveyance system and receiving water. Pet waste is considered a source that contributes to elevated levels of bacteria, reduction in dissolved oxygen and increased total dissolved solids. This is considered by the City as a long-term activity.

ACTIVITIES CONDUCTED DURING 2007-2008

The following activities were conducted during this reporting period 2007-2008:

- Group organized to routinely remove pet waste.
- Pet waste removed from park and disposed of appropriately.

TITLE: **CBI Grant SDR Ocean Beach WQ Improvement Project, Phase II**
ID NUMBER: **SDR-A6**

ACTIVITY IMPLEMENTATION

The San Diego-Ocean Beach Water Quality Improvement Project, Phase I included an initial focus on the San Diego River Watershed Management Area (WMA) and assumed that local sources (bird and dog feces) were not the primary cause of bacterial contamination at Dog Beach. The Phase I study sought to identify any potential infrastructure (either sanitary sewer or storm drain systems), urban runoff, and anthroprogenic patterns that may be the primary causes of observed water quality degradation. Based on limited historical upstream monitoring results of bacterial contamination within the San Diego River WMA, the study design assumed the river may be transporting bacterial load downstream and causing beach closures at Dog Beach and Ocean Beach.

The scope for Phase II was developed from several key recommendations presented in the Phase I report in order to achieve the overall project goal to reduce beach postings and closures. In May 2004, the City of San Diego (City) initiated Phase II of this project. The Phase II study included the following components:

- Task 1 - Design, obtain environmental clearance permits for, and construct infrastructure improvements in Ocean Beach – San Diego River vicinity
- Task 2 - Conduct water quality monitoring to verify improvements to achieve beach posting reduction
- Task 3 - Develop a Kelp and Dog Waste Management Plan

The Phase II San Diego River – Ocean Beach Water Quality Improvement Project Report was submitted to the State Regional Water Quality Board on January 1st, 2008. Comments were received and integrated. The revised report was finalized on February 27, 2008. The recommendations were made and activities have occurred:

- *Phase II Design recommendations.* The design to modify the existing storm drain system and the outfall flap valves was performed. The design was initially divided into three components.
    - *Check valve replacement.* Both existing check valves were removed and replaced with counter balanced flap gates. This counter balancing was needed to assure that the storm drain had a bubble tight seal throughout the dry season. Coupled with this replacement was a new maintenance program which provided maintenance of the new flap gates each spring after the rainy season to clean the flap gates seats and remove any debris which may have been deposited in the seats during the rainy season. A sensor was also put on the flap gate to show when it was seated or not seated.
    - *Low Flow Diversion Improvements.* Physical improvements were required to the 60-inch Outfall 13 Diversion System. The flow volume

and control elevation were changed and a number of catch basins that were originally connected to Outfall 13 were reconnected to Outfall 14. Without these improvements, the tidal intrusion overloaded the low flow diversion system and the diversion valves were shut, which caused tidal mixing with contaminated low flows of urban runoff and bacteria. The 48-inch Outfall 14 Diversion System also had physical improvements.

  - *Storm Drain Lining and Replacement.* Approximately 500 feet of pipe joints required sealing to make the joints watertight to prevent leakage. In addition, 4,000 feet of new piping was needed due to the increased head causes by more efficient flap gates.

- *Construction.* Construction occurred between FY 2005 and FY 2008.
- *Water quality monitoring.* The SAP was first approved in October 2004, with significant addendums in April 2006 and April 2007. During FY 2008, monitoring occurred at four locations on Dog Beach. Bacterial levels were assessed from Outfalls 13 and 14 discharges. Other various monitoring tasks occurred. After completion of the infrastructure improvements in September 2007, the monitoring program continued sampling at the diversion boxes and the outfalls, but discontinued sampling along the upstream river transect in favor of sampling at four beach locations across Dog Beach.
  - A total of 48 samples were collected at SDR-1 (San Diego River – Upstream at Sunset Cliffs Bridge) prior to the completion of construction related activities. Prior to construction completion, 29% of the samples would have exceeded AB411 standards.
  - A total of 48 samples were collected at SDR-2 (San Diego River – Upstream at Sunset Cliffs Bridge) prior to the completion of construction related activities. Prior to construction completion, 13% of the samples would have exceeded AB411 standards.
  - A total of 48 samples were collected at SDR-3 (San Diego River – Upstream at Sunset Cliffs Bridge) prior to the completion of construction related activities. Prior to construction completion, 13% of the samples would have exceeded AB411 standards.
  - A total of 48 samples were collected at SDR-4 (San Diego River – Upstream at Sunset Cliffs Bridge) prior to the completion of construction related activities. Prior to construction completion, 13% of the samples would have exceeded AB411 standards.
  - A total of 48 samples were collected at SDR-2 (San Diego River – Upstream at Sunset Cliffs Bridge) prior to the completion of construction related activities. Prior to construction completion, 19% of the samples would have exceeded AB411 standards.
  - A total of 35 samples were collected of the influent to Diversion Box 13. Of these, 25 samples were collected prior to the completion of construction related activities on April 16, 2006, and 10 samples were collected after the completion of construction related activities. Prior to construction completion, 88% of the samples would have exceeded AB411 standards. After construction, all (100%) of the samples would have exceeded AB411 standards.

- A total of 35 samples were collected of the influent to Diversion Box 14. Of these, 25 samples were collected prior to the completion of construction related activities on April 16, 2006, and 10 samples were collected after the completion of construction related activities. Prior to construction completion, 92% of the samples would have exceeded AB411 standards. After construction, all (90%) of the samples would have exceeded AB411 standards.
- A total of 112 samples were collected at the discharge point of Outfalls 13 and 14. Of these, 95 samples were collected prior to the completion of the flap gate replacement in December 2006 and 17 samples were collected after the completion. Prior to construction completion, 75% of the samples would have exceeded AB411 standards. After construction, only 35% of the samples would have exceeded AB411 standards.
- A total of 30 samples were collected at Station DB1 at Dog Beach. Of these, 13 samples were collected prior to the completion of the flap gate replacement in December 2006 and 17 samples were collected after the completion. Prior to construction completion, 15% of the samples would have exceeded AB411 standards. After construction, only 6% of the samples would have exceeded AB411 standards.
- A total of 30 samples were collected at Station DB1 at Dog Beach. Of these, 13 samples were collected prior to the completion of the flap gate replacement in December 2006 and 17 samples were collected after the completion. Prior to construction completion, 31% of the samples would have exceeded AB411 standards. After construction, only 24% of the samples would have exceeded AB411 standards.
- A total of 30 samples were collected at Station DB7 at Dog Beach. Of these, 13 samples were collected prior to the completion of the flap gate replacement in December 2006 and 17 samples were collected after the completion. Prior to construction completion, 39% of the samples would have exceeded AB411 standards. After construction, 41% of the samples would have exceeded AB411 standards.
- A total of 29 samples were collected at Station DB8 at Dog Beach. Of these, 31 samples were collected prior to the completion of the flap gate replacement in December 2006 and 16 samples were collected after the completion. Prior to construction completion, 6% of the samples would have exceeded AB411 standards. After construction, only 6% of the samples would have exceeded AB411 standards.

- *Kelp and Dog Waste Management Plan*. This Plan provides Best Management Practices (BMPs) to implement at Dog Beach to minimize the negative impact decaying kelp and dog waste can have on water quality.

Conclusions were made regarding Tasks 1 through 3. Task 1 was completed with the successful design, permitting and construction. Task 2 was completed with the extensive pre- and post- water quality monitoring conducted throughout this study area. Implementation of this project was found to be effective in reducing AB411 exceedances at Dog Beach. However, continued bacterial loading from the primary sources identified

in these studies need to be addressed throughout the management plan provided with this report. Task 3 was completed with the development and implementation of the Kelp and Dog Waste Management Plan.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Tasks planned for FY 2009 include:

- Implementation of the Kelp and Dog Waste Management Plan is ongoing.
- Continued monitoring under the AB411 program will assess the long term effectiveness of the BMPs in reducing beach closures.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it.

By continuing to implement the Kelp and Dog Waste Management Plan and to continue to monitor the BMP effectiveness, bacteria loading can be reduced and assessed. This study indicated that kelp was a media for bacterial regrowth.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
CBI GRANT SDR OCEAN BEACH WQ IMPROVEMENT PROJECT, PHASE II **Assess the Efficiency and Effectiveness of Storm Drain Modifications**	
Management Questions	• According to water quality monitoring conducted in Task 2 of the project, was there an improvement in water quality post-construction?
Targeted Measurable Outcome(s)	• Receiving water quality improvement
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)

	• Reporting (e.g., estimates of load reduction from 3rd party data)					
Data Recorded	**Station**	**Total # Samples**	**# Pre-Construction Samples**	**% Exceeding AB411**	**# Post-Construction Samples**	**% Exceeding AB411**
	SDR-1	48	48	29%	.	.
	SDR-2	48	48	13%	.	.
	SDR-3	48	48	13%	.	.
	SDR-4	48	48	13%	.	.
	SDR-2	48	48	19%	.	.
	Div. Box 13	35	25	88%	10	100%
	Div. Box 14	35	25	92%	10	90%
	Outfalls 13-14	112	95	75%	17	35%
	DB1	30	13	15%	17	6%
	DB1	30	13	31%	17	24%
	DB7	30	13	39%	17	41%
	DB8	29	31	6%	16	6%

Objectives

The goal of this assessment is to determine the effectiveness of the storm drain modifications to improve water quality in the San Diego River WMA, Ocean Beach and Dog Beach areas.

Analysis and Results

All three tasks associated with the project were completed in the FY08. For Task 1, infrastructure improvements in the Ocean Beach vicinity were designed, permitted and constructed. For Task 2, water quality monitoring was conducted to verify that the construction had improved water quality. Implementation of this project was found to be effective in reducing AB411 exceedances at Dog Beach, amounting to a load reduction. For Task 3 the *Kelp and Dog Waste Management Plan* was developed and implemented.

Conclusions

Implementation of the *Kelp and Dog Waste Management Plan* is ongoing in FY09. The long term effectiveness of the BMPs in reducing beach closures will be assessed via continued monitoring under the AB411 program.

ID NUMBER: **SDR-A7**

TITLE: Coastal Cleanup Day Alvarado Channel

ACTIVITY SUMMARY

The City of La Mesa supported and participated in the California Coastal Cleanup Day conducted on September 15, 2007 in coordination with I Love a Clean San Diego and San Diego Coastkeeper. A poster specifying date and time for the clean up was placed on the City's bulletin board. California Coastal Cleanup Day is one of the most successful large-scale cleanup projects in the Country. This event enlists thousands of volunteers throughout the state to clean up over 700 polluted coastal and inner-coastal areas. Volunteers met a designated site in Alvarado Channel to collect debris during this reporting period.

PARTICIPATING JURISDICTIONS

- City of La Mesa
- Volunteers from other jurisdictions

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- Dissolved Oxygen (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The California Coastal Cleanup Day at Alvarado Channel is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. Over 200 pounds of trash and debris were collected by 65 volunteers during this event. A San Diego River Watershed fact sheet was also provided to volunteers at the Alvarado Channel site and the City's Environmental Specialist discussed watershed concepts and concerns prior to commencement of the cleanup. This activity is conducted on an annual basis and considered as a long-term activity to reduce trash and debris in receiving water bodies.

TASKS IMPLEMENTED DURING 2007-2008

The following tasks were implemented as part of the Coastal Cleanup Day at Alvarado Channel during 2007-2008:

- Advertising and placing posters for the event on the bulletin board.
- Sponsored the event with $1,000
- Encouraged the public and City employees to participate in the event.
- Participated in the event collecting trash and debris in Alvarado Channel; an estimated 200 pounds of trash was collected.
- Provided watershed specific fact sheets and educated volunteers on watershed concepts and concerns at Alvarado Channel site.

TITLE: **Forrester Creek Homeless Encampment Removal Project**
ID NUMBER: **SDR-A8**

ACTIVITY SUMMARY
The City's Public Works Department and the El Cajon Police Department conducted sixteen (16) homeless encampment sweeps during the reporting period along Forrester Creek within City jurisdiction to remove trash and encampment items.

PARTICIPATING JURISDICTION

- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Bacteria (high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED
The sweeps were conducted during the 2007-08 reporting period and targeted homeless camps along Forrester Creek and tributaries. During the sweeps the Police encountered transients and their camps and took appropriate law enforcement action; Public Works maintenance crews then removed the trash and encampment items used for the illegal lodging. The encampment removal contributed to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution.

TASKS IMPLEMENTED DURING FY 2007-2008
The following tasks were conducted as part of the Encampment Removal activities during fiscal year 2007- 2008:

- Removal of trash and debris = 125 Cubic Yards (Cumulative)

ID NUMBER: **SDR-A9**

TITLE: Creek to Bay Cleanup

ACTIVITY SUMMARY

The City of La Mesa supported and participated in the Creek to Bay Cleanup conducted on April 26, 2008 in coordination with I Love a Clean San Diego. A poster specifying date and time for the clean up was placed on the City's bulletin board. Volunteers from the City, including the mayor of La Mesa, met along Alvarado Channel in La Mesa from 9am to 12pm to collect trash and debris along the channel.

PARTICIPATING JURISDICTIONS

- City of La Mesa
- Volunteers from other jurisdictions

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- DO (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The Creek to Bay Cleanup is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. A total of 135 pounds of trash and debris were collected during this event. A San Diego River Watershed fact sheet was provided to volunteers at the cleanup. This activity is considered a long-term activity to reduce pollutants from entering receiving water bodies.

TASKS IMPLEMENTED DURING 2007-2008

The following tasks were implemented as part of the Creek to Bay Cleanup during 2007-2008:

- Advertised and placed posters for the event on the bulletin board.
- Sponsored event for $1,000.
- Encouraged the public and City employees to participate in the event, which included 15 participants.
- Provided watershed specific fact sheets to volunteers.
- Participated in the event collecting trash and debris along Alvarado Channel. An estimated 135 pounds were collected.

TITLE: **I Love a Clean San Diego Trash Cleanup Sponsorship**
ID NUMBER: **SDR-A9**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The City of San Diego sponsored the Mission Valley Preserve in the San Diego River Watershed Management Area (WMA) on April 26, 2008. At the Mission Valley Preserve, 2,000 pounds of trash and debris was removed and 100 pounds of trash and debris was recycled from 2 miles by approximately 81 volunteers.

Based on the information above, the effectiveness assessment section, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity.

In the Regional Board Comment letter[1], Regional Board staff indicated for other WURMPs that the City is involved in (e.g., Mission Bay and La Jolla's) that the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

Diego River Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- Other Copermittees that participate in the San Diego River WURMP workgroup

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
	Pounds of trash removed (Outcome Level 4)	2,000 lbs
	Pounds of trash recycled (Outcome Level 4)	100 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	2,100 lbs
	Number of participants (Outcome Level 1)	81
	Total money spent on cleanups for all six watersheds (Outcome Level 1)	$5,000
	Estimated amount of money spent on cleanups for San Diego River watershed (Outcome Level 1)	$833.33*
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.40/lb

* Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the load reduction effectiveness and efficiency of the sponsored cleanup.

Analysis and Results

On April 26, 2008, 81participants removed approximately 2,000 pounds of trash and debris and recycled approximately 100 pounds of trash and debris from numerous sites in the San Diego River WMA. The average estimated sponsorship cost of $833.33 per watershed, calculated by dividing the total cost of cleanups ($5,000) by six watersheds. Thus, there was a 2,100 pound load reduction associated with sponsorship per yearly event, with an efficiency of $0.40 per pound collected. The efficiency was calculated by dividing the estimated sponsorship cost for the San Diego River watershed by the pounds of trash removed.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2009. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

ID NUMBER: **SDR-A10**

TITLE: **Increase Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas**

ACTIVITY SUMMARY

The San Diego Municipal Storm Water Permit (Orders No. 2001-01 and 2007-0001) required copermittees to conduct annual dry weather monitoring. In an effect to better track and eradicate bacteria as well as other pollutants of concern, the City of Santee conducts two rounds of dry weather monitoring each year.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

Fecal coliforms are designated as a 303 (d) impairment in the San Diego River. The City of Santee is required to conduct dry weather monitoring of bacterial indicators once a year under its municipal permit. Bacterial indicators monitored included total coliforms, fecal coliforms and enterococci. Additional monitoring will be conducted on behalf of the City of Santee to facilitate the detection of illegal connections and discharges of fecal matter to the MS4.

TASKS IMPLEMENTED DURING FY 2006-2007

Two rounds of dry weather monitoring for bacterial indicators (only one is required under the municipal permit).

ID NUMBER: **SDR-A11**

TITLE: Park Appreciation Day

PROJECT SUMMARY

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies. Consequently, the City has organized a Park Appreciation Day for volunteers to remove trash and debris from local parks. Park Appreciation Day takes place once a year and is independent of the Adopt-A-Park Program. This event typically takes place in the fall, but due to the fires that were in the region during that time, Park Appreciation Day was held in the spring on March 29, 2008. The event was held at seven parks located within the San Diego River Watershed in La Mesa. The amount of debris removed during Park Appreciation Day was not directly recorded in 2007-2008, but from observations at the event it is believed the amount is about the same as that removed in 2006-2007, when five tons of trash and debris were removed.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- DO (high priority)
- Turbidity/TSS
- Trash (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

There are seven parks in the City of La Mesa that fall within the San Diego River Watershed. Organization of the Park Appreciation Day enabled residents to participate in cleaning up the environment with in the San Diego River Watershed. Site Captains at each park were given education outreach material to distribute and information on watershed concepts and pollutants of concern within the watershed. Trash and debris as well as green waste was collected and disposed of appropriately. This event is considered a long-term annual activity.

ACTIVITIES CONDUCTED DURING 2007-2008

The following activities were conducted during this reporting period 2007-2008:

- Presented watershed concepts by site captains.
- Cleaned seven parks within the San Diego River Watershed.
- Collected approximately 5 tons of trash and debris.

TITLE: **Porous Pavement and Model Municipal Operations Center Demonstration Project**
ID NUMBER: **SD-A12**

ACTIVITY IMPLEMENTATION

The County of San Diego Department of General Services (DGS) received Proposition 13 Non-Point Source grant funds to demonstrate the use of porous pavements as a demonstration project for municipal facilities to follow. The Porous Pavement and Model Municipal Operations Center Demonstration Project, located at the County Operations Center (COC) at 5555 Overland Avenue within the City of San Diego, is a phased project, with Phase I completed during FY 2005-06 (see previous WURMP Annual Reports for details). On September 6, 2006, the State Water Resources Control Board (SWRCB) awarded the County of San Diego an additional $1.5 million in Proposition 40 funding to facilitate Phase II, which aims to demonstrate the benefits and feasibility of installing porous pavement and enhanced structural treatment controls at the COC. Phase II, was completed during the FY 2007-08 reporting period. This activity report focuses on Phase II implementation and associated monitoring activities that were accomplished this fiscal year.

The purpose and intended outcomes for Phase II included:

- Demonstrating how local governments can improve water quality by making changes in existing facilities and improving the design and construction of future facilities;
- Assessing porous pavement products that will guide future installation of such paving at County facilities;
- Assessing the effectiveness of two types of treatment control devices to guide future use of control devices at County facilities;
- Establishing the COC as a regional demonstration site for implementation of water quality BMPs;
- Educating County Project Managers, as well as contract architects and engineers, about porous pavement and Treatment Control BMPs;
- Increasing general knowledge about porous pavement and Treatment Control BMPs among all municipal officials in San Diego County;
- Encouraging all municipalities to install porous pavement; and
- Establishing long-term relationships with watershed groups throughout San Diego County.

Phase II consisted of upgrades to the Phase I portion of the project, including additional porous pavements and upgrades to the treatment train. The upgrades to the parking lot included 54,000 square feet of additional porous asphalt and concrete test plots, the addition of geogrid stabilization under half of each new porous asphalt test plot, and the diversion and capture of 26,000 square feet of roof runoff to porous test beds.

The porous pavement mixes and configurations reviewed included: 1) asphalt with either a polymer or fiber reinforcement, 2) an area with a deep reservoir to contain runoff from adjacent building roof tops as well as parking lot and sidewalk drainage, and 3) a test area with

stabilization re-enforcement beneath the pavement. Porous asphalt design mixes included PG7610, AR1600 and Caltrans Standard Open Grade Mix. Also, during Phase II an additional geogrid stabilization fabric was placed under half of the newly installed area to determine what benefit could be derived from the added material.

The media filtration system was also enhanced by expanding the existing stormwater (media filtration) treatment capability by three additional media filtration units, evaluating different filtration media as they relate to water quality improvement and monitoring to evaluate the current and expanded BMP effectiveness.

In addition, upgrades to the existing treatment train included an enhanced treatment control system to filter a greater volume of runoff from the COC and to facilitate evaluation of alternative media for removal of different stormwater pollutants. While the primary treatment unit captured sediment, trash, debris, and undissolvable oil and grease from the COC's 35 acres, the upgraded media filtration unit is intended to target more difficult pollutants, such as dissolved hydrocarbons, heavy metals (copper, zinc, cadmium, chromium), organics, and phosphorous. The existing stormwater media filtration treatment capability was intended to be increased from one unit treating 1.25 cfs to four units treating 6.4 cfs to facilitate the evaluation of filtration media in removing different pollutants of concern. The project also proposes to enhance the design and performance of the existing monitoring systems for porous pavement and the media filtration systems, the results of which should be reported during the next fiscal year's reporting cycle.

The County continued to contract Coastkeeper during this time to assist in providing additional outreach regarding the benefits and results of this project. Outreach efforts included presentations outlining the construction process through cost of materials, as well as guided tours and demonstrations of the porous materials.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Completion of Phase II during FY 2007-08
- Consistent with the requirements of the SWRCB, this proposal will continue existing BMP assessment and monitoring for the duration of the grant term.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Coastkeeper (SAG member and outreach consultant)
- San Diego River Coalition (SAG member)

- Building Industry Association of San Diego (SAG member)
- Industrial Environmental Association (SAG member)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria Indicators
- Phosphorous
- Turbidity

OTHER CONSTITUENTS ADDRESSED

- Trash and debris
- Undissolvable oil and grease
- Dissolved hydrocarbons
- Heavy metals (copper, zinc, cadmium, chromium)
- Organic
- Nitrogen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria indicators, phosphorous and turbidity have been identified as priority water quality problems in the San Diego River Watershed. This activity demonstrates reduced pollutant loads and source abatement which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

As indicated in the March 2008 WURMP document, activity effectiveness is to be measured by confirming completion of all project elements (Level 1 Outcome). All project elements were successfully implemented as documented above.

The training and outreach component is assumed to have resulted in increased knowledge and awareness about this project (Level 2 Outcome).

Monitoring has been conducted and is ongoing to assess the pollutant and runoff reductions resulting from both the porous pavement and the media filtration systems. Results from Phase I showed a significant reduction in associated pollutants from runoff diverted through the media filtration system (treatment train), the assumption can be made that added porous materials, increased diverted roof runoff through the porous materials and treatment train and the enhanced filtration system will continue and likely improve water runoff quality during future storm events. The same assumption can be made for Phase II. Ongoing monitoring will be useful for reporting estimated pollutant load reductions in future annual reports (Level 4 Outcome).

With respect to material types, all three types of porous asphalt were determined to have worked well to eliminate runoff and mitigate associated pollutants. The AR1600 was determined to be a "softer" material and more prone to manipulation with the use of heavy duty vehicles. Also, the

field observations for the geogrid stabilization fabric deemed no difference in function or quality through the end of 2008.

TITLE: **Pet Waste Dispenser Program in Parks**
ID NUMBER: **SDR-A13**

ACTIVITY IMPLEMENTATION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County maintains 26 dispenser stations at a total of 11 parks within the San Diego River Watershed, including one new dispenser installed during the FY 07/08 reporting period. Dispenser locations include:

- Flinn Springs Park (1 new dispenser, 3 total dispensers)
- Cactus Park (1 total dispenser)
- Dos Picos Park (4 total ispensers)
- El Monte Park (2 total dispensers)
- Heritage Park (1 total dispenser)
- Lank Jennings Park (3 total dispensers)
- Lindo Lake Park (3 total dispensers)
- Louis A. Stelzer Park (1 total dispenser)
- Oakoasis Park (1 total dispenser)
- Rios Canyon Sports Park (1 total dispenser)
- William Heise Park (6 total dispensers)

City of Santee

The City of Santee maintained "Doggie Bag" dispensers at all public parks and along Cuyamaca Street, which is a popular dog walking location. During this fiscal year, three additional pet waste bag dispensing stands were installed along Forester Creek between Prospect Avenue and Mission Gorge Road.

City of La Mesa

The City of La Mesa maintains pet waste bag dispensers throughout all City parks. Half the parks in the City are in the San Diego River Watershed. Approximately 9,000 bags were used, an increase from the estimated 6,750 used during 2006-07, and 4 new dispensing stations were added during this reporting period. The City encourages residents to cleanup after their pets. This constitutes a load reduction in pet waste and bacteria from entering the storm water conveyance system.

City of El Cajon

"Doggie Bag" dispensers were set up at Wells Park – Dog Park to provide pet owners with bags with which they can collect their pet's fecal matter for proper disposal (i.e., in a trash bin). During the 2007-2008 reporting period the City conducted provision and maintenance of doggie bag dispensers at the Dog Park.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Santee

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as priority water quality problems in the San Diego Watershed. Parks, and pet waste in particular, are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	FY 07-08		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Cactus Park	1	4,199	840
Dos Picos Park	4	12,597	2,519
El Monte Park	2	8,398	1,680
Flinn Springs Park	3	12,597	2,519
Heritage Park	1	4,199	840
Lake Jennings Park	3	12,597	2,519
Lindo Lake Park	3	12,597	2,519
Louis A. Stelzer Park	1	8,398	1,680
Oakoasis Park	1	4,199	840

Rios Canyon Sports Park	1	4,199	840
William Heise Park	6	16,796	3,359
Total	**26**	**100,776**	**20,155**

Cumulatively, the County maintains 26 stations among 11 County Parks within the San Diego River Watershed. These stations distributed approximately 100,776 bags during the FY 07/08 reporting period, preventing an estimated 20,155 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

During FY 2004-05, approximately 125 bags per month were reported to have been used in the City of Santee. During FY 2005-06, approximately 2,000 bags per month were reported to have been used. During FY 2006-07, approximately 24,000 bags per month were reported to have been used. During FY 2007-08, approximately 4,200 bags per month were reported to have been used, which corresponds to approximately 840 pounds of dog waste based on previous studies. While this is a drop from the previous year, it still represents a continuing upward trend over previous years which may indicate that the 2006-07 numbers were anomalously high. Assuming the bags are being used for their intended purpose, this represents a significant shift in behavior by Santee citizens in addition to a measurable pollutant load reduction.

Using a similar calculation, the number of bags dispensed in the City of La Mesa would indicate approximately 1,800 pounds of dog waste were removed.

The City of El Cajon estimated that City Parks Crews removed approximately 41,600 lbs of pet waste from pet waste dispensers.

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: **San Diego River Park Foundation Partnership**
ID NUMBER: **SDR-A14**

ACTIVITY DESCRIPTION

The City of San Diego (City) will partner with the San Diego River Park Foundation (SDRPF) in an effort to help raise awareness of the pollution, bacteria, and sediment issues affecting the San Diego River. The City will provide funding for a number of SDRPF initiatives, including the annual River Days event designed to promote awareness of the pollution issues surrounding the San Diego River through 36 different watershed education and service projects. Additionally, funding will support the SDRPF's Clean and Green Team, a volunteer program designed to remove trash and plant native plants within the San Diego River Watershed Management Area (WMA). Funding will also be used to support public cleanups and other educational endeavors.

FY 2008 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for the Clean and Green Team. Funding went to:

- support annual river clean-ups and other activities;
- the purchase of supplies;
- trash removal and disposal;
- volunteer support; and
- direct staff support of program.

Four major quarterly events and eight minor events occurred. The two events sponsored by the City included the Mission Valley Preserve cleanup on June 14, 2008 and the Mission Valley Cleanup on June 8, 2008. 24,000 pounds of trash was removed and 2000 plus hours of volunteer service occurred.

According to Regional Board staff comments[1], the City will need to provide more information about the activities that will take place and how they will protect and enhance water quality. The funding of the SDRPF's Clean and Green Sponsorship was explained in detail in this section.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2009 and beyond. Cleanups will be scheduled as appropriate. Clean and Green Team efforts take place throughout the year, and River Days is scheduled to occur in May of each year.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- San Diego River Park Foundation
- REI
- Union Bank of California

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria as a high priority water quality problem in the San Diego River WMA. Providing funding to SDRPF will increase awareness of the bacteria and pollution issues surrounding the San Diego River, and the various cleanup initiatives will assist in reducing pollution throughout the San Diego River WMA.

Partnership with SDRPF will provide funding to address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[2] states that debris may be contaminated by pathogens that have adverse effects on humans. By decreasing the amount of trash, bacteria loads are reduced. Funding SDRPF's public education and outreach programs will help increase awareness of the pollution issues affecting the San Diego River and foster appropriate behavior change

EFFECTIVENESS MEASUREMENTS

Watershed: San Diego River		
SDRPF CLEANUP SPONSORSHIPS Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Was the program in compliance? (Outcome Level 1)	Yes
	Pounds of trash removed (Outcome Level 4)	24,000 lbs
	Number of volunteer hours (Outcome Level 1)	>2,000 hours
	Amount of money spent on cleanups (Outcome Level 1)	$5,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	<$0.01/lb
Recommended Data	• Number of participants (Outcome Level 1)	

Objectives

The goal of this assessment is to determine the load reduction effectiveness and efficiency of the sponsored cleanup.

[2] http://www.epa.gov/owow/oceans/debris/

Analysis and Results

FY08 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for annual river clean-ups and other activities, the purchase of supplies, trash removal and disposal, volunteer support, and direct staff support of program. Four major quarterly events and eight minor events occurred. The two events sponsored by the City included the Mission Valley Preserve cleanup on June 14, 2008 and the Mission Valley Cleanup on June 8, 2008. Over the course of these events, 24,000 pounds of trash were removed and over 2,000 hours of volunteer service occurred. This yields an efficiency of less than $0.01 per pound of load reduction.

Conclusions

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2009 and beyond. Cleanups will be scheduled as appropriate. Clean and Green Team efforts take place throughout the year, and River Days is scheduled for May of each year. Implementation and assessment of load reduction and efficiency of these cleanups will occur again in FY 2009. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time. Effectiveness of public outreach and educational will be measured via citywide surveys comprised of residents in the San Diego River WMA to determine awareness and knowledge retention of water quality issues, as well as changes in behavior. Additionally, water quality monitoring will be conducted throughout the San Diego River WMA to determine whether improvements have occurred.

TITLE: **San Diego River Targeted Inspections**
ID NUMBER: **SDR-A15**

ACTIVITY IMPLEMENTATION

The City of San Diego is developing a focused inspection program to target facilities that are potential sources of high priority pollutants. In the San Diego River Watershed Management Area (WMA), the City is focusing on landscaping and animal-related facilities. The long-term goals of the program are:

- Determine the most efficient frequency of inspections to ensure proper Best Management Practice (BMP) implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The City delineated a specific area within the San Diego River WMA to conduct the targeted inspections based on factors such as facility clustering and proximity to other watershed activities being conducted. The overall approach of the site selection process focused first on the specific business categories within the prioritized sectors in each WMA. If multiple category types were targeted for inspection in a particular WMA, a fairly equal distribution of sites from each category was selected for inspection where possible. In addition, knowledge gained by the City from past inspections was used to consider the likelihood of certain business types and areas of the City to be more problematic than others regarding constituents of concern in each WMA

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected community, only one inspection was conducted at each facility. The inspections that were conducted provide baseline data for comparison to future years' watershed-focused inspection programs. Information gathered during the FY 2008 watershed-focused inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years.

Fifty-two full inspection equivalents occurred across the San Diego River watershed at restaurants and landscaping-related facilities. Full inspection equivalents are equal to the number of full inspections plus one half the number of "other site visits" (site visits that did not result in a full inspection), excluding other site visits where the facility has moved and is gone and a replacement business was found. This metric allows for a more equal comparison of inspection effort among WMAs. There were 25 total inspections conducted for animal-related facilities with one follow up inspection and 16 “other site visits”; 5 total inspections at landscaping-related facilities with one follow up inspection and 15 “other site visits”; 1 inspection at a metal industry with no follow up and no “other site visits”; and 5 total inspections conducted for restaurant facilities with no follow-ups and no “other site visits.”

This activity is in active implementation, and source abatement information is included in the effectiveness assessment section of this activity summary sheet. The City requests credit for one of the two required watershed water quality activities for this reporting year with this activity.

The City acknowledges Regional Board staff’s comment that recorded data and assessment is needed regarding the inspections and that the inspections must be above and beyond JURMP requirements. Inspections under this activity occurred to facilities that were not inspected under the JURMP program. Recorded data and assessment is included in this report.

Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become “business and usual.” However, the City is implementing this non-capital activity over multiple years in order to optimize the program prior to incorporating the results and recommendations into the JURMP. Specific changes to the JURMP are not yet planned as the study is ongoing at this time. Incorporating this activity into the JURMP at this time would be premature in putting valuable resources toward wide-scale implementation before the program is optimized. With optimization, the City anticipates gaining the strongest improvement to storm water discharge quality that is achievable at this point in time. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as “business as usual.”

It should be noted that all of the inspections (landscaping-related and restaurant facilities) are being reported on one activity summary sheet for FY 2008 due to the structuring of this year’s program. The inspections were previously detailed as separate activities in the 2008 San Diego River WURMP. For consistency, the activity numbers are included in the heading of this summary sheet. The City is not expecting to receive two watershed water activity credits (one for each type of facility) for this program year; the City is requesting credit for one of the two required activities in this program year. However, the program may be restructured in the future and depending on the scale of implementation, the City may request credit for different facilities in the future.

Additionally, Regional Board staff commented that animal-related facility inspections will not be given credit in FY08 since they were completed in FY06/07. This statement is not accurate, as restaurant inspections, not animal facility inspections were implemented in FY06/07. Additionally, the Municipal Permit does not preclude credit over multiple years for non-capital projects. Section E.2.f.(4) states that "capital projects are in active implementation for the first year of implementation only." There is no reference to non-capital projects.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The City selected and hired a consultant who implemented the watershed-focused project from the end of March through June 2008. The City will continue to evaluate ways to optimize the inspection of various facilities in the future. The City is currently developing its 2009 program and anticipates continuing piloting the targeted inspections through FY2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The San Diego River inspections target the following high priority water quality problems:

FACILITY TYPE	HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED	
	Bacteria	Nutrients
Restaurants	X	
Landscaping-related		X

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Restaurant Facility Inspections**		
Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?	
Targeted Measurable Outcome(s)	• Load reduction/Source Abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)	
	Number of animal facility full inspections, spot and scheduled (Outcome Level 1)	25
	Number of animal follow-up inspections (Outcome Level 1)	1
	Number of landscaping facility full inspections, spot and scheduled (Outcome Level 1)	5
	Number of landscaping follow-up inspections (Outcome Level 1)	1
	Number of industrial facility full inspections, spot and scheduled (Outcome Level 1)	1
	Number of industrial follow-up inspections (Outcome Level 1)	0
	Number of restaurant facility full inspections, spot and scheduled (Outcome Level 1)	5
	Number of restaurant follow-up inspections (Outcome Level 1)	0
	Number of Sites Needing Corrective Action (Outcome Level 1)	35
	Number of Sites that Implemented Some Corrective Action During Inspection (Outcome Level 3)	1
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level 4)	1
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	0
	Total IC/IDs Receiving Notice of Violation, and therefore abatement (Outcome Level 4)	0
	Total number of full equivalent inspections, spot and scheduled (Outcome Level 1)	52

Watershed: San Diego River	
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Restaurant Facility Inspections**	
Recommended Data	• Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 3) • Pollutant Discharge Potential Assessment (Outcome Level 4) • Amount of money spent on inspections

Objectives

Goals of this activity assessment include determination of the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections, to ensure proper BMP implementation and reduce pollutant loading.

Analysis and Results

A breakdown of the number of sites needing corrective action and number of sites that implemented at least some corrective action during the inspection were included in the Watershed-Focused Storm Water Compliance Inspection Program Report[1] and is included in Table 1. The table also includes the number of Illegal Connections/Illicit Discharges (IC/ID) observed during inspections, and the total number of IC/IDs abated during inspections. One of the 35 sites implemented corrective action during the inspection, resulting in source abatement at this facility.

Table 1
Corrective Actions Implemented at Time of Inspection

Area	Number of Sites Needing Corrective Action	Number of Sites That Implemented Some Corrective Action During Inspection	Total IC/IDs Observed	Total IC/IDs Eliminated During Inspection
SDR	35	1	0	N/A

Although a load reduction was not calculated for each location, abatement of potential sources (Outcome Level 4) may be assumed with corrective actions being implemented due to the inspections. Future years' analysis will include a detailed pollutant discharge potential assessment to better show this source abatement. Inspected facilities were assigned a rating to reflect the level of BMP implementation noted at the site, and a separate rating to reflect the facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the

[1] D-MAX Engineering, *Watershed-Focused Storm Water Compliance Inspection Program* (September 2008).

site and the number of recommended corrective actions given to each facility. Table 2 presents a breakdown of the average knowledge and average BMP implementation scores for inspected facilities in each WMA. In the San Diego River_WMA, the Average BMP Implementation Score and the Average Knowledge score increased. While some conclusions can be drawn based on the results of the FY 2007 and FY 2008 inspection programs, the number of inspections completed, the individual sites visited, and the business types targeted in each WMA were not the same in FY 2008 as in FY 2007. Because of these differences, drawing definitive conclusions is difficult. The City is modifying its strategy for future years, and the use of the new inspection form should provide the ability to derive more solid conclusions in future years to help optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

Table 2
Breakdown of Average Knowledge and BMP Implementation Scores by Area

Area	Average Knowledge Score FY 2007	Average BMP Implementation Score FY 2007	Average Knowledge Score FY 2008	Average BMP Implementation Score FY 2008
SDR	2.0	2.4	2.5	3.7

Conclusions
Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected community, only one inspection was conducted at each facility. More inspection data is anticipated in the FY 2009 to build on what was gathered in FY2008. Further analysis of inspection efficiency, BMP implementation and education and their source abatement effectiveness is required before conclusions can be made and will include the cost of inspections, BMP implementations, education data, and enforcement follow-ups.

ID NUMBER: **SDR-A16**

TITLE: **San Diego Riverbed Homeless Encampment Removal Project**

ACTIVITY SUMMARY

On behalf of the City of Santee, the San Diego County Sheriff conducts sweeps during the reporting period along the San Diego River within City jurisdiction to remove trash and encampment items.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The sweeps target homeless camps along the San Diego River. During the sweeps the Sheriff encounters transients and their camps and takes appropriate law enforcement action to remove trash and encampment items used for the illegal lodging. The raids contribute to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution.

TASKS IMPLEMENTED DURING FY 2007-2008

The following tasks were conducted as part of the Riverbed Project during Fiscal Year 2007:

- Trash removal
- Bacteria source reduction

ID NUMBER: **SDR-A17**

TITLE: **TRASH REMOVAL ACTIVITIES IN SANTEE**

ACTIVITY SUMMARY
The City hosted or facilitated six clean-up events within the City during FY 07-08. A total of over 47 tons of trash and debris were collected. A summary of these events is presented below:

Date	Volume of Trash Removed	Description
12/29/07	1.35 tons	San Diego River Park Foundation event in Mast Park, primary goal was to aid in the removal of invasive species (Tamarisk). Some trash removal was done as well.
03/01/08	3 tons	Material removed in preparation for the Santreefest event at Cajon Park School. Outreach material was provided during the Santreefest event.
04/15/08	6 tons	Church group conducting trash removal event in Mast Park.
0/26/08	2 tons	Clean up and application of mulch at West Hills Park by Rotary Group.
04/27/08	35 tons	Pathways Community Church hosted a clean up event in conjunction with the City at Forester Creek. A total of 300 volunteers removed trash from a concrete portion of Forester Creek, and conducted maintenance of properties adjacent to Forester Creek. Outreach materials were provided.
05/10/08	0.25 tons of trash and 10 shopping carts.	San Diego River Park Foundation event attended by 50 people. City provided dumpsters and outreach materials. Outreach materials provided for another River Days event at Mission Trails during 5/11/08.

PARTICIPATING JURISDICTION
- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED
- Trash

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED
This activity restores trash within the watershed. It also enabled residents to participate enhancing the watershed environment by removing trash. Trash and debris was collected and disposed of appropriately. Reduction of the pollutant load can be assessed based on the weight of material collected. In addition, neighborhood enhancement activities can instill a sense of pride in the appearance of the neighborhood, providing a disincentive to allow trash to accumulate again. Removal of invasive species can benefit the rivurine environment.

TASKS IMPLEMENTED DURING FY 2007-2008
The following tasks were conducted as part of these public participation and education activities during Fiscal Year 2005:

- Six trash removal events were conducted within the watershed, three adjacent to the San Diego River or Forester Creek.
- Removal of over 47 tons of trash.

- Removal of an invasive species of tree in Mast Park.
- Enhancement of the neighborhood adjacent to Forester Creek.
- Public participation and education.

ID NUMBER: **SDR-A18**

TITLE: Wet Weather Monitoring

PROJECT SUMMARY

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies and identifying pollutant sources. During the 2006-2007 fiscal year, the City developed a wet weather water quality monitoring program within the San Diego River Watershed. The purpose of this study is to evaluate the water quality of the discharged flow in the Watershed. The City continued this program during the 2007-2008 fiscal year. Sampling was conducted during the 07-08 reporting period at the same two discharge locations sampled during the 06-07 reporting period. One site is located at the jurisdictional boundary, and one site is located farther upstream in the watershed. Water samples taken in November 2007 were evaluated for constituents associated with receiving water body 303(d) listings and watershed constituent of concern listings in the WURMP. This included measuring temperature, pH, conductivity, turbidity, and dissolved oxygen in the field and total hardness, dissolved copper, chlorpyrifos, diazinon, malathion, total nitrogen, total phosphorus, TDS, TSS, total coliform, fecal coliform, and *Enterococcus* bacteria in the lab. An additional sample was taken in December 2007 at the jurisdictional boundary location only. The data from these samples is currently being analyzed.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

This activity is above and beyond the Municipal Permit sampling and monitoring requirements. Analyzing samples from wet weather discharges from locations within the San Diego River Watershed provides insight into water quality leaving the City of La Mesa. It also enables the City to conduct potential follow-up investigation of possible pollutant sources.

As a result of the sampling conducted during the 2006-2007 fiscal year, the City performed additional storm water inspections in a light industrial area upstream of one of the sampling locations to further investigate BMP implementation and characterize pollutant sources in the area. A supplemental questionnaire was also completed during all of the City's industrial/commercial inspections in the San Diego River Watershed to identify potential pollutant sources and gauge the level of stormwater knowledge within the watershed.

Data from 2007-2008 is currently being analyzed and will be compared with the monitoring data from 2006-2007. This program is intended as a long-term activity.

ACTIVITIES CONDUCTED DURING 2007-2008

The following activities were conducted during this reporting period 2007-2008:

- Conducted sampling in November and December 2007 which included field monitoring and laboratory analysis.
- Prepared draft letter report summarizing previous year's data.
- Conducted additional inspections upstream of one of the monitoring locations as a result of the monitoring conducted during the previous fiscal year.
- Completed a supplemental questionnaire during all industrial/commercial inspections within the watershed.

ID NUMBER: **SDR-A18**

TITLE: **Monitoring for Priority Pollutants in the San Diego River Watershed**

ACTIVITY SUMMARY

The City of Santee has conducted an additional study each year since 2002 to assess constituents of concern at five locations within the watershed. These locations include Forester Creek as it enters the City of Santee and prior to its confluence with the San Diego River (two locations); the San Diego River as it enters the City of Santee; Sycamore Creek as it discharges into the San Diego River; and the San Diego River just as it leaves the City of Santee (three locations). These locations are typically sampled twice during the dry season, at the beginning and towards the end of the season. This investigation was reviewed during Fiscal Year 2007 and revised to incorporate the constituents listed on the 303(d) list for the Forester Creek and San Diego River.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria
- Total Dissolved Solids
- Dissolved Oxygen
- Phosphorous

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The dry weather monitoring program focuses on potential pollutants within the MS4. Monitoring receiving waters within the City helps to evaluate water quality within City limits. The data can be incorporated with data collected within other jurisdictions to develop a profile of water quality within the watershed. This helps to identify areas where loadings of priority pollutants may be increasing and to assist in developing watershed activities in appropriate locations that may result in water quality improvements.

TASKS IMPLEMENTED DURING FY 2007-2008

Review and update program to incorporate priority pollutants. Collect two rounds of data.

TITLE: **Cabrillo Heights Park Rain Garden Infiltration Project**
ID NUMBER: **SDR-A19**

ACTIVITY IMPLEMENTATION

This activity involves the implementation of a large scale low impact development (LID) project in the San Diego River Watershed Management Area (WMA) to reduce runoff volume. The large scale LID site selection focused on city owned parks and parcels that would be suitable for infiltrating off site flow. Site visits were performed to evaluate the field conditions at approximately ten sites in FY 2007 through FY 2008. Cabrillo Heights Park was eventually selected as the site of choice for the Rain Garden Infiltration Project.

The concept for this park includes the installation of rain gardens at a couple of sites within the park. The rain gardens, or bioretention basins, will be used to trap particulate pollution, encourage evapotraspiration, and reduce the amount of trash, oils and grease that make its way to the storm drain system. Flows are mainly filtered through the rain garden, collected, and returned to the storm drain system. A portion of the stormwater will remain within the planted bed and be used by plants for evapotranspiration and growth.

The first site, located on the western edge of the park, will be used to treat storm flows from the western parking lot on Kearny Villa Road. All parking lot flows will enter into the storm distribution piping through a couple of storm water catch basins located in the parking lot. These catch basins shall include grating to prevent large solids from entering into the piping, and inserts to prevent trash and other debris from entering the rain garden. PVC storm drain piping will convey the parking lot flows to the rain garden located at the southern end of the parking lot.

The second site is located on the eastern portion of the park and will treat flows from Angier Elementary School and a sporting event parking lot on the east side of the park. All flows from these two locations are directed to two existing separate catch basins; one dedicated for school flows, and one for parking lot flows. Distribution piping will capture flow from these two locations and convey it to the rain garden.

Project conceptual design occurred in FY 2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project will be transferred to Engineering and Capital Projects in September 2008 for purposes of managing the project through final design, construction and project closeout. Project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

Project conceptual design occurred in FY08. The project will be transferred to Engineering and Capital Projects in September 2008 for purposes of managing the project through final design, construction and project closeout. Project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Dissolved Minerals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria, nutrients, and dissolved minerals as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
CABRILLO HEIGHTS PARK RAIN GARDEN INFILTRATION PROJECT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Rain Garden Infiltration**	
Management Questions	• What is the load reduction efficiency due to infiltration? • How effective is the infiltration at reducing loads of priority pollutants? • Does the implementation of the infiltration result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the infiltration is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives
The goal of the analysis is to determine the load reduction efficiency of LID Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations.

Analysis and Results
Site visits were performed to evaluate the field conditions at approximately ten sites in FY 2007 through FY08, and Cabrillo Heights Park was eventually selected as the site of choice for the Rain Garden Infiltration Project.

Conclusions
Anticipated future monitoring will be conducted to assess pollutant removal efficiencies.

TITLE: **Coastal Cleanup Day Sponsorship**
ID NUMBER: **SDR-A20**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 15, 2007. The City of San Diego (City) sponsored the Mission Valley Preserve site in the San Diego River Watershed Management Area (WMA). Four thousand pounds of trash and debris were removed by 37 volunteers. Volunteers were asked to track the debris collected by implementing data cards provided by the Ocean Conservancy.

According to Regional Board staff comments[1], the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

Based on the information above, the effectiveness assessment below, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Diego River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- SDCK
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
	Pounds of trash removed (Outcome Level 4)	4,000 lbs
	Number of participants (Outcome Level 1)	37
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$6,000
	Amount of money spent on cleanups for the San Diego River watershed (Outcome Level 1)	$1,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.25/lb

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

The Coastal Cleanup Day took place on September 15, 2007, and was sponsored by both the City of San Diego and the San Diego Coastkeepers (SDCK). Using data cards provided by Ocean Conservancy, 37 participants removed 4,000 pounds of debris, resulting in a 4,000 pound load reduction. A total of $6,000 was estimated for the

sponsorship cost for all six watersheds. For the cost estimates, it was assumed that each site sponsored at the "Garibaldi Sponsor" level, or $1,000. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the sponsorship cost for the San Diego River WMA by the pounds of trash removed, was $0.25 per pound.

Conclusions

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2009. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

ID NUMBER: **SDR-A21**

TITLE: **FORESTER CREEK IMPROVEMENT PROJECT**

ACTIVITY SUMMARY

During the reporting period, the City of Santee completed the Forester Creek Improvement Project. The improvements incorporate the widening of the Forester Creek channel and to restore ecosystem function to the last viable stretch of Forester Creek before it enters the San Diego River. In its previous condition the creek in Santee has a channel width of 75 to 100 feet and can carry only a 10-year flow between its banks. The newly widened channel is designed to achieve 100-year flood capacity and will have a top width varying from 181 feet to 358 feet. Exotic plant species will be removed from the project area. Approximately 17 acres of native riparian vegetation will be created through a planting and plant establishment program.

The upstream reach of Forester Creek in El Cajon is concrete-lined, and high velocity flows cause severe downstream erosion beyond the Prospect Avenue Bridge (within the project area). To address this problem, an energy dissipation/debris collection facility approximately 200 feet long will be installed at the upstream end of the project, just north of the Prospect Avenue Bridge.

This feature will prevent watershed erosion and sedimentation of surface waters in a natural and sustainable way, through the reduction of flow velocities at the upstream end. Additionally, this feature will effectively capture trash and debris prior to discharge into the revegetated channel. Forester Creek accumulates trash as it flows through urbanized areas of El Cajon. This can have a negative impact on water quality and the aesthetic enjoyment of the creek. Therefore this material needs to be removed as it enters the project area to allow the objectives of this project to be fully realized.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria
- Total Dissolved Solids
- Low Dissolved Oxygen

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

This activity restores habitat within the watershed; provides additional bicycle trails in the San Diego River Park system; naturalizes and expands floodplain areas; removes invasive plant species and encourages the growth of appropriate riparian vegetation; it reduces/removes non-point source loads of pollutants; and provides interpretative information regarding the value of the river through the various monitoring programs being implemented before, during and after the project. In summary it improves the water quality of the last viable stretch of Forester Creek before it discharges into the San Diego River. Initial post-construction data has shown significant improvement in fecal coliform counts and bioassessment data.

TASKS IMPLEMENTED DURING FY 2007-2008

The following tasks were conducted as part of the Forester Creek Improvement Project during Fiscal Year 2007:

- Maintenance of BMPs to protect water quality.
- Diversion of creek around construction area.

- Continuation of creek re-contouring.
- Water quality monitoring during and after construction activities.
- Planting of native vegetation.

TITLE: **Lakeside Baseball Park**
ID NUMBER: **SDR-A22**

ACTIVITY IMPLEMENTATION

This project consists of replacing a former wastewater treatment plant that was demolished approximately four years ago with new baseball fields, a tot-lot, a restroom/concession building, a maintenance building, and minimal landscape with detention basins on a ten-acre parcel. Detention basins will be designed to capture all onsite water, filtering it before seeping back into the ground and eventually into the San Diego River. No water runoff is designed to flow directly into the adjacent San Diego River.

This project is located east of Riverford Road and south of Mast Boulevard and is located adjacent to wetland and upland habitat. The San Diego River flows through a five-acre parcel that was purchased as part of this project. This land is designated as preserve land.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Estimated to be complete during FY 2008-2009, construction of this project has progressed according to schedule and will be complete by December 31, 2008 with potential final punch list items and/or change order items complete in early January 2009. The public grand opening is scheduled for January 24, 2009.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Conservancy guidelines were used for developing the multi-use trail adjacent to the San Diego River.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with the collective watershed strategy because it addresses pollutant load reductions, source abatement, and may have other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming completion of all project elements (Level 1 Outcome) and be confirming reduced or no runoff water from the site (Level 4 Outcome). There is no post-construction water quality monitoring planned for this site at this time.

TITLE: **LAND ACQUISITIONS**
ID NUMBER: **SDR-A23**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural ability to infiltrate stormwater/runoff.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

During the FY2007-08 reporting period there were 197.07 acres of land acquired in the San Diego River Watershed.

Property Purchased in FY 07-08	Acres	Transaction	Watershed	Watershed ID	Date Closed	APN(s)
Eagle Peak	180.00	County purchased conservation easement; owned, mgd by SD River Park Foundation	SD River	907.41	1/29/2008	290-090-25,27,28
Heise additions	15.12	Acquired in fee to add to William Heise Co Park	SD River	907.41	3/21/2008	292-140-02,04,05
Total	**195.12**					

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

ID NUMBER: SDR-A24

TITLE: Forester Creek Debris Barrier

ACTIVITY SUMMARY

The City of El Cajon Public Works Department (City) installed a debris barrier in 2005. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed in an area adjacent to the City's Public Works Maintenance Yard best suited for prompt cleanup following significant storm events and before it can reach the San Diego River.

PARTICIPATING JURISDICTIONS/ORGANIZATIONS

- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Sediment

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The removal of trash and debris in the San Diego River is important in order to improve water quality in the river. Trash and debris enters the storm water system, Forester Creek and eventually the San Diego River and the Pacific Ocean, posing a threat to wildlife and human health. The debris barrier controls and contains trash and other debris reducing pollutants from ultimately discharging into the San Diego River. This activity is an ongoing long-term activity and trash and debris will continue to be collected and monitored.

TASKS IMPLEMENTED DURING FY 2007-2008

Collection and removal of a total of 186.5 cubic yards of trash and debris was conducted as part of maintenance activities by the City of El Cajon. The collection of trash and debris was as follows:

- Assorted Trash/Debris = 34.5 Cubic Yards
- Organic Materials = 39 Cubic Yards
- Sediment = 113 Cubic Yards

TITLE: **San Diego River Watershed Municipal Rain Barrel Installation and Downspout Disconnect Project**

ID NUMBER: **SDR-A25**

ACTIVITY IMPLEMENTATION

The City of San Diego is undertaking a rain barrel and rain harvesting study and implementation program to reduce pollutant loading at municipal facilities. The rain barrel/rain harvesting study will consist of implementing rain barrel systems, including downspout disconnects and infiltration systems, within the San Diego River Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels, downspout disconnects and rainwater harvesting/reuse systems help to capture, store and divert storm water to reduce the volume of rainwater runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, and pesticides in rainfall runoff. Rain barrels and underground storage systems (cisterns) collect storm water runoff from buildings and residential rooftops and store until discharged. The barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff waters away from existing structures and utilities. Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The study will investigate the effectiveness of rain barrels/rain harvesting systems in reducing loading and will assist the City in attaining its water quality goals. The Study includes site evaluations and selections, the purchase of rain barrel/rain harvesting systems and infiltration systems, rain barrel installation, and effectiveness evaluations.

The City is using the prioritization process that is outlined in the *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Diego River WMA and other watersheds for this study. Based on this prioritization plan, the selected site for rain barrel implementation will be in the highest priority sectors of the San Diego River WMA for potential for pollutant loading.

The primary goal of this project is to reduce runoff volumes and pollutant loading from storm water urban runoff. The first phase of this project will focus on implementing rain barrel/rain harvesting systems at selected municipal facilities as part of a pilot program. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during the pilot program will be applied to implementation in residential areas.

Based on these findings, the City may modify its rain barrel/rain harvesting program to increase effectiveness and/or seek City Council approval for additional funding to implement additional rain barrel/rain harvesting systems.

A one page information sheet regarding the rain barrels was developed in the summer of 2007 for the City . Project planning, including site selection, began in July 2007. The Mission Trails Regional Park Visitor Center was chosen as a site. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes, and rain chains began in the second quarter of 2008. No installation occurred in FY 2008.

According to Regional Board comments[1], the City must provide data on the locations selected, number of barrels installed, and the volume of rain water collected. The location is discussed in this section. The number of rain barrels has yet to be decided, but will be discussed in future reporting. As the rain barrels are not yet installed, the volume of water captured is not known and will also be discussed in future reporting.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and is anticipated to continue until the end of calendar year 2008. Initially the project was anticipated to be completed in Spring 2008. Planning, site selection, and procurement of the rain barrels took longer than expected. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Procurement of rain barrels and other items and installation started in the second quarter of 2008. Subcontractors will be procured in late 2008. The specifications and installation guidelines will be developed by the end of 2008. A site pre-bid meeting will be held by the end of 2008. Parts and equipment will be installed at the site in March and April 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identifies bacteria as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. Implementation of this activity will addresses the high priority water quality problem by reducing runoff volume via capture, retention, and infiltration.

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[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM **Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff**		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Estimated cost of site preparation, installation and start-up for all sites (Outcome Level 1)	$3,506
	Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1)	$13,086
	Estimated cost of effectiveness monitoring for all sites (Outcome Level 1)	$21,526
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results

Procurement of rain barrels and other items and installation started in the second quarter of 2008, and installation has yet to begin. Estimated costs for rain barrel preparation; installation and start-up in San Diego River WMA total $3,506. Estimated costs for operation and maintenance evaluation total $13,086 or an average of $1,869 per site for each of the seven sites. Estimated costs for effectiveness monitoring total $21,526, or an average of $3,075 per site for each of the seven sites.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the rain barrel system. Conclusions will be made after the assessment is complete.

TITLE: **Park Ridge Boulevard Bacteria Treatment Project**
ID NUMBER: **SDR-A26**

ACTIVITY IMPLEMENTATION

At the southern terminus of Park Ridge Boulevard, a new catchbasin, storm drain, trash segregation unit, and AbTech (Bacterial Treatment System) unit will be constructed. A new catchbasin will be placed along the western right-of-way south of the intersection with Murray Park Drive. The catchbasin will be sized for the full design flow reaching that location.

Flows up to an 85th percentile storm event will exit the catchbasin and flow through a trash segregation unit, followed in series by an AbTech (Bacterial Treatment System) unit. Flows in excess of an 85th percentile storm will exit the catchbasin via an overflow pipe and bypass the treatment system.

A common manhole will receive flows from both the treatment system and the overflow pipe. From that manhole, a new storm drain will convey flows to the outlet location for the existing storm drain system within the eastern Park Ridge Boulevard right-of-way. A new headwall sized to accommodate both outlets will be required at this location.

Project conceptual design occurred in FY 2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project will be transferred to Engineering and Capital Projects in September 2008 for purposes of managing the project through final design, construction, and project closeout. Project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of

this activity will reduce bacterial pollutant loads in the watershed by installing a new catchbasin which diverts runoff to a trash segregation unit / AbTech (Bacterial Treatment System) unit.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
PARK RIDGE BOULEVARD BACTERIA TREATMENT PROJECT **Assess the Efficiency and Effectiveness of the Design and Construction of the Enhancement and Bacteria Treatment Project**	
Management Questions:	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants? •
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads •
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data:	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria load with the installation of catch basins, storm drains, and trash segregation units on Park Ridge Boulevard.

Analysis and Results

The project is still in the planning phase; therefore effectiveness analysis has not been completed at this time. Assessment will be completed after project completion.

Conclusions

Conclusions will be made after the project is complete and effectiveness is determined.

TITLE: **Flinn Springs County Park Porous Paving Project**
ID NUMBER: **SDR-A27**

ACTIVITY IMPLEMENTATION

Building upon the success of the porous paving demonstration project at the County Operations Center in Kearny Mesa, the County Department of Parks and Recreation (DPR) began implementing this technology at its facility parking lots. The first park chosen for implementation was Flinn Springs County Park, located in the community of Lakeside. Prior to the porous pavement installation, Flinn Springs contained more than 60,000 square feet of impervious pavement draining into Los Coches Creek, a tributary to the San Diego River. Approximately 41,000 square feet of traditional impervious pavement was replaced with 27,878 square feet of porous asphalt and 13,100 square feet of porous concrete. A 37,026 square foot traditional impervious asphalt lot was left in place as the reference site, for comparison purposes. Other infrastructure included an interceptor trash drain, associated piping, wet wells and a sampling box were installed to collect runoff from the reference site.

The project area was intended to be monitored throughout the entire wet season. However, due to construction delays, monitoring was performed during the second half of the wet season, from January through April 2008. The purpose of the monitoring was to quantify the effectiveness of the porous materials in reducing runoff and constituents of concern directly into Los Coches Creek. Monitoring sites were located at positions where the equipment was able to measure all potential discharges from both the porous pavement and impervious reference sites. The quantity and quality of stormwater runoff from the reference area was then measured against the porous pavement sites.

Because of the success of this study, at the conclusion of this project the runoff from the reference area was directed into the porous asphalt infiltration basin. Tests conducted indicate that it is unlikely that discharges would occur from the porous lot, except during the most extreme rainfall events.

Funding for this project was obtained through a Proposition 40 grant, which was awarded by the State Water Resources Control Board and matched with funding from the County of San Diego General Fund. With the matched County funds of $399,500, the total project budget was $1,198,000, all of which was expended as per the line item budget in the grant agreement. DPR's ultimate goal is to utilize porous paving where appropriate in the eighty facilities it manages.

Actual costs were higher than estimated, primarily due to increased contingency and labor costs. To remain within budget, some portions of the project that were not essential were removed from the construction contract (e.g.: a concrete block trash bin enclosure). Actual costs of materials, including demolition costs and installation of the subbase totaled $13.30 per square foot for porous asphalt and $13.82 for porous concrete.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Construction was completed January 18, 2008. Stormwater monitoring began immediately after construction completion and continued through the rainy season, with data compiled in August 2008.

The following activities were completed as outlined in the table of items for review:

Date	Activity
02/2007-05/2007	Design plans and specifications for reconstructed parking lot with porous pavement technology
10/2007-12/2007	Remove existing asphalt pavement and install porous pavement with monitoring system, including reference site
09/2007	Economic evaluation
01/2008-04/2008	Site monitoring and assessment

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Conservancy guidelines were used for developing the multi-use trail adjacent to the San Diego River.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with the collective watershed strategy because it addressed pollutant load reductions, source abatement, and may have other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EFFECTIVENESS MEASUREMENTS

Each of the two porous pavement types effectively eliminated all runoff and associated contaminant from directly entering Los Coches Creek. Both the porous concrete and porous asphalt rapidly infiltrated all stormwater, demonstrating the capacity to provide additional infiltration capacity for runoff from other adjacent impervious areas. Infiltration allowed by the porous pavement prevented nearly 64,000 cubic feet of water (the result of 9.81 inches of rain

during the time period measured) from directly entering Los Coches Creek, and ultimately discharging into the San Diego River during the FY 2007 / 2008 storm season. Furthermore, based upon an annual average rainfall of 14.1 inches, the final parking lot configuration is expected to eliminate an average of nearly 150,000 cubic feet of direct stormwater discharges into Los Coches Creek.

The majority of the lessons learned were related to engineering, construction, and construction oversight. With respect to engineering of the porous pavement, coordination and oversight would have been improved if the engineer had had a local office and could have provided continuous oversight of the grading, installation of basins and piping, installation of the stone reservoir, and installation of the pavements. It was apparent from the process that currently contractors lack understanding of the critical nature of constructing the monitoring elements exactly to specifications, and that until contractors are more familiar with installing porous materials, contingency components should be included in all contracts. Because of this an experienced full time engineer / project manager should be on site at all times to ensure proper and timely installation of these BMP's.

Some of the high costs of porous paving can be attributed to the lack of experience contractors currently have with installing porous materials. As knowledge of working with these materials increases, the labor and associated contingency costs should come down. Also, costs can be mitigated in areas with good infiltration, like those that exist at Flinn Springs Park. Porous paving areas may be able to handle four to six times the amount of runoff from adjacent impervious areas, depending upon infiltration rates and capacity of the stone reservoirs.

TITLE: **San Diego River Indicator Bacteria Study**
ID NUMBER: **SDR-A28**

ACTIVITY IMPLEMENTATION

The purpose of this water quality monitoring activity was to compare the frequency of water quality threshold exceedances for indicator bacteria during wet weather to the frequencies during summer (Apr. 1 – Oct. 31) and winter dry weather (Nov. 1 – Mar. 31) in the San Diego River Watershed. Water quality thresholds for enterococci, fecal coliform and total coliform are based on the State of California's public health standards for marine bathing beaches. The water quality threshold for E. coli is based on the San Diego Water Quality Plan objective for freshwater. Wet weather sampling was conducted during and/or up to three days following rain, while dry weather sampling was carried out three or more days following rainfall.

Water quality monitoring for this study was completed from August 21, 2006 to August 13, 2007. Data analysis is ongoing.

TMDL APPLICABILITY

The results of this study will be used to aid in the implementation of the bacteria Total Maximum Daily Loads in the San Diego River Watershed.

TIME SCHEDULE FOR IMPLEMENTATION

- Data collection for this project was completed by August 2007.
- Data analysis will be completed by January 2009.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Indicator Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Since this activity addresses a priority water quality problem, Indicator Bacteria, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming the completion of all project elements (Level 1 Outcome).

TITLE: **SDPD Western Division Green Lot Infiltration Project**
ID NUMBER: **SDR-A29**

ACTIVITY IMPLEMENTATION

This activity involves the implementation of an infiltration project (SDPD Western Division Green Lot) in the San Diego River Watershed Management Area (WMA) to reduce runoff volume. Several of the SDPD Western Division parking lots will be reconstructed in order to remove existing asphalt concrete paving and replaced with pervious concrete pavement. Existing curb and gutters will be protected in place where possible, and existing lines and finished grades will be maintained, as will existing parking striping to the extent that it complies with current code. The new pavement section will include the pervious concrete paving, a gravel base, an amended soil layer, and a gravel subdrain system. The subdrain system is necessary due to low permeability soils found at the site. The subdrain system will tie in to the existing storm drain system within the site at several locations.

Project conceptual design occurred in FY 2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project will be transferred to Engineering and Capital Projects in September 2008 for purposes of managing the project through final design, construction, and project closeout. Project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Dissolved Minerals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria, nutrients, and dissolved minerals as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
SDPD WESTERN DIVISION "GREEN LOT" INFILTRATION RETROFIT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs**	
Management Questions	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants (metals and bacteria)? •
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads •
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of LID BMP retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type. High priority pollutants targeted include bacteria, nutrients and dissolved minerals.

Analysis and Results

The concept design for this project began in the FY 2008, and baseline monitoring was completed. This design, which is in progress, will take into account the replacement of the existing parking lot. Once design and construction is complete, additional assessment will be completed to determine the effectiveness of this activity.

Conclusions

Anticipated future monitoring will be conducted to assess pollutant removal efficiencies.

TITLE: **Sweeping Route Posting and Enforcement Project**
ID NUMBER: **SDR-A30**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing an activity to determine the water quality benefits associated with posting previously non-posted routes for street sweeping. The City would post specific routes with no parking signage to allow for street sweeping to occur along the gutters of streets where currently vehicles are allowed to park on days that street sweeping occurs. The vehicles block the street sweepers' access to the gutters along these non-posted routes. This activity will be used to determine whether posting routes improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring will occur to allow for assessment. This activity will occur in three watersheds. One control site will be chosen in one watershed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Street Sweeping Route Posting and Enforcement Project will be piloted first to determine whether posting the routes improves the effectiveness of street sweeping activities before broad scale implementation.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning is anticipated to be developed in FY 2009 and into FY 2010. Implementation is anticipated to occur in FY 2010 and FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Dissolved minerals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria, nutrients, and dissolved minerals as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them.

Implementation of this activity will address the high priority water quality problems by targeting increased sweeping and removal of sediment and trash from the City streets.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
SWEEPING ROUTE POSTING AND ENFORCEMENT PROJECT **Assess the Effectiveness of Posting Routes on Improving Street Sweeping Activities**	
Management Questions	• Is posting previously un-posted sweeping routes effective in removing bacteria and sediment contaminants? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives
The goal of the assessment is to investigate whether posting previously non-posted routes for street sweeping improves the effectiveness of street sweeping activities.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in FY 2009 and into FY 2010. Implementation is anticipated to occur in FY 2010 and FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via water quality and/or debris monitoring efforts) to the cost of project

installation, operation and maintenance. Conclusions will be made after the assessment is complete.

ID NUMBER: **SDR-A31**

TITLE: **WOODGLEN VISTA CREEK IMPROVEMENT PROJECT**

ACTIVITY SUMMARY

There was revegetation, removal of invasive species and widening of the Woodglen Vista Creek channel. This work was conducted as part of the Town Center Community Park project and should result in the enhancement of the creek as a recreational resource. Other benefits will include the reduction of water flow velocity, reducing the potential for pollutants to be transported downstream to the San Diego River, and enhance the groundwater recharge capability of the creek.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria
- Total Dissolved Solids
- Low Dissolved Oxygen

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

This activity restores habitat within the watershed; naturalizes and expands floodplain areas; removes invasive plant species and encourages the growth of appropriate riparian vegetation; it reduces/removes non-point source loads of pollutants. In summary it improves the water quality of the Woodglen Vista Creek before it discharges into the San Diego River.

TASKS IMPLEMENTED DURING FY 2007-2008

The following tasks were conducted as part of the Woodglen Vista Creek Improvement Project during Fiscal Year 2007:

- Maintenance of BMPs to protect water quality.
- Revegetation of creek using native species and maintenance of revegetation.

TITLE: **Woodside Avenue Detention Basin**
ID NUMBER: **SDR-A32**

ACTIVITY IMPLEMENTATION

In 2003, the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and construction of an extended detention basin to treat urban runoff and low storm flows from a 1.4 square mile area within Hydrologic Area (HA) 907.12 before discharging into Los Coches Creek and the San Diego River. The site is located in the unincorporated community of Lakeside on a vacant property adjacent to Woodside Avenue near Winter Gardens as shown in the attached figure. The constructed basin and concrete removal were designed to act as a demonstration for the effectiveness of similar BMPs at removing pollutants. A water quality monitoring component was also initiated to provide hard evidence of the BMP's pollutant removal capabilities. Although the grant was completed in May 2007, the County continues to monitor the site to gauge its effectiveness at removing pollutants.

During FY 2007-2008, the County performed routine maintenance of the basin, including removal of trash and debris and vegetation control. Influent and effluent flow measurements and water quality samples were also taken on the following four dates:

- August 29, 2007
- February 22, 2008
- March 13, 2008
- May 5, 2008

Monitoring results for FY 2007-08 are included as an attachment to this activity sheet.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Grant activities were completed in May 2007
- Basin maintenance, including trash removal and vegetation control, is ongoing.
- Monitoring of flow and water quality will continue in accordance with the guidelines outlined in the Long-Term Monitoring Plan (Weston 2007).

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- State Water Resources Control Board
- Regional Water Quality Control Board (San Diego)
- San Diego River Park Foundation
- Lakeside's River Park Conservancy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacterial Indicators

OTHER CONSTITUENTS ADDRESSED

- BOD
- COD
- MBAS
- Chlorpyrifos
- Diazinon
- Copper

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity targets high priority water quality problems within the watershed by treating urban runoff before it discharges into Los Coches Creek. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

An initial effectiveness assessment of this project was conducted in 2006. The results are summarized below and are presented in detail in: *Woodside Avenue Extended Detention Basin Effectiveness Assessment Monitoring Final Report,* March, 2007, prepared by Weston Solutions. As described above, additional monitoring is ongoing.

There were six storm events successfully monitored during the initial assessment. Storms were monitored on February 19, 2006, February 28, 2006, March 21, 2006, March 29, 2006, April 4, 2006, and October 14, 2006. During each of the storm sampling events the flow overtopped the spillway. Therefore, the calculation of load and removal efficiency for storm events is focused to the initial portion of the storm. Sampling and measurement of effluent concentrations were obtained up to the point that the spillway was overtopped. Therefore, event mean concentrations were obtained and removal efficiency based on event mean concentration determined to the point of overtopping of the spillway. Based on these measurements the load reduction efficiency of the EDB for the initial flows of the storm event was a median reduction of 94% for all pollutants measured. The primary mechanism for this reduction was infiltration based on the measured reduced effluent flows compared to the influent flows. The mean concentration of the event was utilized to assess reduction of constituents during storm flows. Wilcoxon Signed Rank results indicate that during storm flows the EDB is effective at removing total metals, total hardness as

$CaCO_3$, and total suspended solids. A statistical increase was observed for nitrate. All other pollutants measured showed no statistical difference between the influent sources and low flow effluent orifice using event mean concentration.

There were five dry weather events that were successfully sampled during this assessment. Dry weather events were monitored on June 5, 2006, September 12, 2006, September 14, 2006, October 31, 2006, and November 1, 2006. Flows captured from all dry weather events remained within the EDB. Thus, it was possible to accurately estimate flows and calculate load reduction. A mean load reduction of 90.9% for all constituents monitored was observed within the EDB. The main mechanism of the large load reduction is evaporation, infiltration and transpiration based on the measured reduced effluent flows compared to the influent flows. The measured mean flow reduction was 90.4%.

Bioassessment was conducted both prior to construction of the EDB on June 23, 2005, and again after full vegetative establishment within the EDB on November 2, 2006. Bioassessment conducted after completion of the EDB and full vegetative establishment indicated significantly improved water quality at the effluent sampling site in comparison to the influent sampling site, thereby suggesting that the EDB is improving water quality of dry weather flows.

A vegetation survey was conducted after completion and full vegetative establishment within the EDB to assess the success of the re-vegetation effort. This survey was conducted on November 2, 2006. The results of the survey indicated that desired native species planted at the time of the EDB construction were dominant within the EDB. Year round dry weather flow allowed for the recruitment of desired native emergent species of plants within the low flow plot channel including cattails and bull rush. These continuous nuisance flows also has allowed for the recruitment of non-native exotic invasive species. There were two non-native exotic invasive species of special concern noted within the EDB, Giant Reed, and Mexican Fan Palm. The prolific nature of these plants posses a detrimental threat to the EDB. Arundo establishes dense thickets that choke out and exclude colonization of native plants. During periods of high flow (storm events) aquatic plants such as cattail and bull rush are flexible and shallow rooted. Thus, during high flow they matt down, or are ripped out entirely. Stout Arundo with its rhizomes that penetrate up to ten feet into the soil produces a damning effect. As such they can clog water flow, creating upstream flooding issues. The Mexican Fan Palm can also choke waterways, creating upstream flooding. Overall the revegetation effort was a success, however periodic maintenance of the EDB is needed to remove and control the proliferation of invasive species.

TITLE: **Impervious Cover Coefficients**
ID NUMBER: **SDR-A33**

ACTIVITY IMPLEMENTATION

Building on the efforts of a 2002 pilot study that investigated residential impervious surface fractions in the Upper San Diego River Improvement Area, the County of San Diego developed impervious surface coefficients to estimate the amount of hardscape associated with the general land use categories found in the County of San Diego (County of San Diego DPLU, 2002). The coefficients developed are based on both modeling and *in situ* efforts in the San Diego River Watershed. The attached paper provides a detailed description of methodology and study results.

In summary, the San Diego River Watershed is 277,540 acres. Of that, 49,457 acres are under an impervious land cover, resulting in an impervious surface fraction of 17.82%. The downstream portions of the watershed have the majority of the impervious surfaces. The upper basin has many continuously pervious areas with some sub-basins almost completely pervious (see map in attached).

The impervious surface coefficients developed will facilitate the calculation of impervious surface fractions in other watersheds in the County. Because the coefficients were derived from a study area that incorporates a representative sample of land use categories, the coefficients are appropriate for application in other watersheds. There is high confidence in the coefficients because they were developed by applying well-tested feature extraction modeling techniques to high resolution multi-spectral satellite imagery.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Completion of this activity occurred during FYs 2005-08.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- FEMA

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Previously, coefficients for the San Diego Region were not developed for various types of land use categories. This activity, and subsequent mapping activities, potentially addresses a number of high priority water quality problems and a likely source of the problems; therefore, the activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

The Impervious Surface Coefficient study was completed in November of 2008 (Level 1 Outcome).

TITLE: **Transit Shelter and Billboard Advertisements**
ID NUMBER: **SDR-A34**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has retained a contract with an outdoor advertising company advertise *Think Blue* messages on billboards and bus shelters located in the San Diego River Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria profiled as a vector. The goal of the billboards is to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008, and were displayed throughout the San Diego River WMA in both English and Spanish.

Transit shelter Think Blue advertisements were located at one location in FY 2008:

- Ruffin Rd. W/O Clairemont Mesa Blvd. N/S

Billboards were advertised at six locations in FY2008:

- Navajo Rd. W/O Lake Murray Blvd. S/S
- Fairmount Ave. N/O University Ave. E/S
- Mission Gorge Rd. N/O Zion Ave. E/S
- Sunset Cliffs and Niagara S/F
- Mission Gorge Rd. N/O Old Cliffs Rd. W/S
- Camino Del Rio St. W/O Moore St. S/S

The audience number varied by location.

According to Regional Board staff comments[1], the City will need to answer effectiveness measurement questions and provide locations of the billboards and transit centers in the annual report. The locations are provided in the Activity Implementation section. Effectiveness measurement is discussed in the Effectiveness Assessment section.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The City plans to continue to implement transit shelter and billboard advertisements in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS **Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness**		
Management Questions	• What changes in awareness /attitude regarding bacteria and sediment was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of public reached by ads)	
Data Recorded	Number of billboard advertisements impressions in the San Diego River WMA (Outcome Level 1)	131,040 DEC*
	Number of transit shelter advertisements impressions in the San Diego River WMA (Outcome Level 1)	16,230 DEC*
	Number of public participants reached by billboard advertisements in all watersheds (Outcome Level 1)	7%
	Change in knowledge or attitude (Outcome Level 2)	45% increase
	Change in pollutant-related behavior (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 454,440 for transit shelter ads and 3,669,120 for billboards.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives
The goal of this assessment is to determine the effectiveness of the billboards to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008, and were to be displayed throughout the San Diego River WMA in both English and Spanish.

Analysis and Results
Transit shelter Think Blue advertisements were located at one location in FY 2008: Ruffin Rd. W/O, Clairemont Mesa Blvd. N/S. Billboards were advertised at six locations in FY2008: Navajo Rd. W/O, Lake Murray Blvd. S/S; Fairmount Ave. N/O, University Ave. E/S; Mission Gorge Rd. N/O, Zion Ave. E/S; Sunset Cliffs and Niagara S/F; Mission Gorge Rd. N/O, Old Cliffs Rd. W/S; and Camino Del Rio St. W/O, Moore St. S/S. The number of public reached varied by location. Over the four-week viewing period, there were 454,440 impressions for transit shelter advertisements and 3,669,120 impressions for billboards.

In FY 2008, out of 800 total residents from all watersheds who participated in a random digit-dial *Think Blue* survey, 7% became aware of the *Think Blue* message by seeing the billboards. According to the survey, groups most likely to have seen the billboard were: residents under 50 years of age, (38%) compared to seniors (24%); Latino women (49%) compared to white men (31%) and white women (32%); and Latino renters (50%) compared to white homeowners (29%).

Conclusions
Implementation of the advertisements will continue in the FY 2009. Effectiveness is measured via telephone surveys and focus groups comprised of residents in the San Diego River WMA to determine awareness, knowledge retention and behavior change.

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the survey, 45% reported exposure in 2008. The survey results correlate well to the daily effective calculation (DEC), estimated to be 131,040 impressions per day for transit shelter advertisements and 16,230 billboard impressions in San Diego River WMA.

The 2008 results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are engaging in negative storm water practices. The large number of transit shelter advertisement impressions made in FY 2008 also supports the assertion that the transit shelter advertisement program is effective, due to increasing public exposure to bacteria and sediment pollutant issues. Surveys will be continued in future fiscal years, and longer-term assessment should provide more complete results on which to base the conclusion of increased awareness.

ID NUMBER: **SDR-A35**

TITLE: Intergenerational Games

PROJECT SUMMARY

The City of La Mesa is committed to education outreach at community events and local schools. Each year the City works with La Mesa Middle School to host Intergenerational Games. School children are paired up with adults and participate in a number of activities. During the event on October 12, 2007, the City's Storm Water Program staff requested a booth at the event. The City contracted I Love a Clean San Diego to setup and demonstrate the Enviroscape Watershed Model at the event and to distribute education outreach material. The City's San Diego River Watershed fact sheet was displayed at the event.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The City hosted a storm water booth that included demonstrations of the Enviroscape Watershed Model by I Love A Clean San Diego and provided storm water pollution prevention material. The San Diego River Watershed fact sheet was displayed at the booth.

ACTIVITIES CONDUCTED DURING 2006-2007

The following activities were conducted during this reporting period 2007-2008:

- Contracted I Love A Clean San Diego to demonstrate Enviroscape Watershed Model.
- Setup and staff booth.
- Distributed 19 Integrated Pest Management Cards

TITLE: **Public Service Announcement: Karma, Karma Second Chance, Karma Tourist**
ID NUMBER: **SDR-A36**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego River Watershed Management Area (WMA) from February 2008 to April 2008. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

According to Regional Board staff comments, the City will need to answer effectiveness measurement questions in the annual report. Effectiveness measurement questions can be found in the Effectiveness Assessment section of this activity summary sheet.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego River WMA from February 2008 to April 2008. The City will work with various broadcast media outlets to distribute and air the PSAs in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in both increased knowledge and

awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST **Assess the Efficiency and Effectiveness of Public Service Announcements**		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in San Diego River WMA (Outcome Level 1)	2,747,706
	Number of impressions made to the public through radio announcements in San Diego River WMA (Outcome Level 1)	881,014
	Change in knowledge or attitude from survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes*

*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The PSAs were developed in the FY 2007-2008, and broadcast on several TV and radio stations throughout the San Diego River WMA from February 2008 to April 2008. The PSAs were broadcast in both English and Spanish.

Out of 800 total residents from all WMAs who participated in a random digit-dial *Think Blue* survey, 52% of residents became aware of the *Think Blue* message by seeing the television ads, and 13% of residents heard the radio announcements in FY 2008. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. To estimate the number of impressions in the San Diego River WMA, the total number of estimated City-wide impressions, (15,680,381 for television and 5,027,700 for radio ads) was multiplied by the proportion of residents living in the San Diego River WMA (18%) of the City's total population. According to the random survey, groups most

likely to have seen the television ad were: residents who knew that storm water was untreated (25%); people without college degrees (25%); and residents of the San Diego Bay (26%) and San Diego River (25%) WMAs. Groups most likely to have heard the radio ad were: residents who are white (9%); residents in the 35-49 age group (9%); and people between the ages of 18 and 35 (9%).

Conclusions

The City will work with various broadcast media outlets to continue distribution of the PSAs in FY 2008-2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the San Diego River WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, the *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

It is worth noting that the City's PSAs continue to reach new individuals in the San Diego River WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE: LID and Watershed Planning Education for Community Planning and Sponsor Groups
ID NUMBER: SDR-A37

ACTIVITY IMPLEMENTATION

The LID and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on Low Impact Development (LID) and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved within the unincorporated County, this education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID handbook, including the Management Strategies, the Appendices and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

This education program was successfully developed during the spring of FY2007-2008, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2007-08, none were conducted in the San Diego River Watershed.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Local planning and sponsor groups to be trained within the San Diego River Watershed during the FY 2008-2009 timeframe include:

- Valle de Oro (9/16/08)
- Descanso (9/18/08)
- Cuyamaca (12/9/08)
- Lakeside (TBD)
- Ramona (TBD)
- Alpine (TBD)
- Julian (TBD)
- Crest-Dehesa (TBD)

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity focuses on impacts to the watershed as a result of new and re-development. Specifically, impacts from increased impervious cover and any types of pollutants associated with runoff (both urban runoff and stormwater runoff) as it traverses a variety of types of land uses.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed during the presentation (Level 1 Outcome). Since no presentations to groups in the San Diego River Watershed were conducted during FY 2007-08, there are no Level 1 outcomes to assess. The County is targeting presentations to 8 community planning and sponsor groups during FY 2008-09.

As described above pre- and post-presentation survey evaluation forms are administered before and after each presentation. The pre- and post- survey form consists of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area (CPA). The survey results are calculated to obtain a mean average (in percentage) of the overall results of the survey. The pre- and post- survey results are then compared, with the anticipated result being a higher percentage obtained on the post-survey to show an increase in knowledge of watershed planning and LID principles (Level 2 Outcome). Since no presentations to groups in the San Diego River Watershed were conducted during FY 2007-08, there are no Level 2 outcomes to assess.

TITLE: **Mobile Advertising**
ID NUMBER: **SDR-A38**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has retained a contract with a mobile advertising firm to advertise *Think Blue* messages on its static billboard trucks in the San Diego River Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria. The goal of mobile advertising is to educate the public about causes of these kinds of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed in both English and Spanish. The estimated audience was 969,100 impressions per 4 week period. The following image shows the San Diego River route that was driven using a Banner Billboard Truck.

According to Regional Board staff comments[1], the City will need to answer effectiveness measurement questions and provide routes in the annual report. The routes are provided above. Effectiveness will be measured via surveys comprised of residents in the San Diego River WMA in FY 2009. Efficiency will be determined by analyzing advertisement costs.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Print Services department in the design of the advertisements and have the advertisements created and placed on the company's static

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

billboard trucks. The Mobile truck will drive pre-determined routes in the San Diego River WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change. The City plans to continue to implement mobile advertising in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy identify bacteria as a high priority water quality problem in the San Diego River WMA, and recommend implementing load reduction/source abatement activities to address it. Utilizing the mobile billboard truck will result in increased knowledge and awareness regarding bacteria and sediment and will promote behavior change.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
MOBILE ADVERTISING **Assess the Efficiency and Effectiveness of Advertisement on Static Billboard Trucks**		
Management Questions	• What changes in awareness /attitude regarding bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)	
Data Recorded	Number of impressions in the San Diego River WMA (Outcome Level 1)	48,455 DEC*
	Change in knowledge or attitude based on survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior based on survey results (Outcome Level 3)	Decrease**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age

18 per car). The estimated audience in the FY 2008 was 969,100 impressions per 4 week period for San Diego River.
**There was a 5% decrease in the percentage of residents hosing down their driveways, but the few other decreases in pollutant-related behavior were percents too small to fall within the acceptable range for statistical outcomes, a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity.

Objectives
The goal of this assessment is to determine the effectiveness of mobile advertising to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

Analysis and Results
The mobile advertisements were developed in FY 2008 and displayed throughout the San Diego River WMA in both English and Spanish. The initial estimated audience was 969,100 total impressions per 4-week period. Out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, approximately 33% of residents became aware of the *Think Blue* message via mobile advertising in FY 2008.

Conclusions
The City plans to continue to implement mobile advertisements in FY 2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the San Diego River WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure to mobile advertising in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

Furthermore, the increase in impressions made in FY 2008 also indicates that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

ID NUMBER: **SDR-A39**

TITLE: Oktoberfest

PROJECT SUMMARY

The City of La Mesa is committed to education outreach at community events. Each year the City hosts an Oktoberfest Event. During the event on October 5-7, 2007 the City's Storm Water Program staff requested an area at the City's booth to distribute education outreach material. The San Diego River Watershed fact sheet was displayed at the booth. Integrated Pest Management cards were available for visitors of the booth to take.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The City hosted a storm water booth that included a storm water education outreach section. The San Diego River Watershed fact sheet was displayed at the booth. Integrated Pest Management cards were available for visitors of the booth to take.

ACTIVITIES CONDUCTED DURING 2007-2008

The following activities were conducted during this reporting period 2007-2008:

- Setup and staff booth.
- Distributed 100 Integrated Pest Management cards

TITLE: **Our Water, Our Responsibility Pamphlet Distribution**
ID NUMBER: **SDR-A40**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced pamphlet to be made available at all San Diego City Lakes as an insert inside a map of the area. The pamphlet includes information about the fact that the City owns and operates nine reservoirs and explains what the public can do in order to protect the drinking water supply and natural habitat. Additionally, the pamphlet explains that the habitat surrounding three of the nine reservoirs is protected by the Multiple Species Conservation Program (MSCP) and that by protecting land around the reservoirs, the community's water supply is kept safe and an important refuge for wildlife is provided. Approximately 2,444 pamphlets were distributed at El Capitan Reservoir, Lake Murray, San Vicente Reservoir, and the Sutherland Reservoir in the San Diego River Watershed Management Area (WMA).

The Regional Board provided comments[1] on the March 2008 Watershed Urban Runoff Management Programs (WURMPs) based on an audit conducted by PG Engineering. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit…pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet SDR-A48 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMPs because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these pamphlets have been distributed over a number of years and the City plan to continue their distribution

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- City staff will continue to the pamphlets in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 2,444 pamphlets in FY 2008. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the pamphlet to permit applications, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

ID NUMBER: **SDR-A41**

TITLE: **Outreach to Residents Regarding Pet Waste Management**

ACTIVITY SUMMARY

Concentrations of fecal bacteria were reported at certain sampling locations during dry weather monitoring in Santee. Based on the observations made during dry weather monitoring, it has been recommended that educational outreach be made to residents in specific areas of the City of Santee where fecal bacteria and/or animal waste has been observed. The objective of this outreach would be to educate residents on the importance of properly disposing of pet fecal waste to prevent it from eventually entering the storm drain system. By reducing the amount of pet fecal matter in the storm drain system, this educational effort would eventually assist in the reduction of fecal coliforms in the San Diego River.

Outreach to specific areas in Santee was conducted during fiscal year 2005-06. However additional follow up has been made to reinforce this message.

PARTICIPATING JURISDICTION

- City of Santee
- County of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

Fecal coliforms are designated as a 303 (d) impairment in the San Diego River. Potential sources of this pollutant include illicit sewer connections, sewage overflows, and animal waste. A major source of animal waste in residential areas will be pet fecal matter which has not been properly disposed of. Residents may consider that this fecal matter is “natural” and “bio-degradable,” that it is not likely to negatively impact the environment. Therefore they will not necessarily make the effort to clean up after their pet, even though they may be more careful about removing other kinds of litter.

If the public is educated about the potential linkage between the discharge of pet fecal matter and surface water quality, then they may have a greater inclination to clean up after their pets, therefore reducing the load on the watershed.

TASKS IMPLEMENTED DURING FY 2007-2008

Information relating to pet waste management was mailed to residents located in an area identified to have elevated levels of bacteria (total coliform, fecal coliform, and *Enterococci*) during dry weather monitoring. In addition, an article on pet waste management was presented in the Fall 2007 issue of the Santee review which is mailed to all residences and businesses in Santee.

The City of Santee partnered with the County of San Diego’s Department of Animal Services to provide information on pet waste management which would be mailed in an envelope along with a dog license. Approximately 300 copies of the outreach were provided to Animal Control officers for use at the licensing clinic in Santee and to be carried in Animal Control vehicles that work in Santee.

In addition, the City contacted the County Watershed Protection Unit and arranged to conduct County-developed pet waste surveys. Thirty-five surveys were conducted, each in exchange for a pet waste dispenser. The completed forms were forwarded to the County Watershed Protection

Unit for analysis in conjunction with other surveys that may be collected in the Region. The surveys were used as an opportunity to discuss stormwater issues with the respondents and the City representative was able to answer questions.
To facilitate appropriate pet waste management, three additional pet waste bag dispensing stands have been installed. These stands are located along Forester Creek between Prospect Avenue and Mission Gorge Road.

ID NUMBER: **SDR-A42**

TITLE: **PUBLIC OUTREACH AND MEDIA**

ACTIVITY SUMMARY

During the reporting period, the City of Santee distributed articles specific to storm water in the quarterly newsletter entitled "Santee Review'. The newsletter reaches potentially 21,500 residential, commercial, and industrial addresses. The newsletter is intended to educate residents and visitors about watershed issues and to solicit their cooperation and participation.

PARTICIPATING JURISDICTIONS

- City of Santee
- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria
- Total Dissolved Solids
- Low Dissolved Oxygen

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

In order to change knowledge and awareness and effect behavioral changes, it is necessary to conduct education to the general public. Public presentations/outreach and the media are an effective method in distributing our watershed message and informing others on how they can make a difference in our water quality and environment.

TASKS IMPLEMENTED DURING FY 2007-2008

Santee: The following articles were published as part of the Public Outreach Program during Fiscal Year 2007-2008: The articles included:

- "Don't Let Pests Bug You!", which highlighted the impact of pesticide use on the storm drain system as well as safer alternatives to pesticides. This article was based on the IPM cards that have been distributed by the Copermittees over recent years.
- "Care for Your Pets and the Environment Too!" informed residents of the impact pet waste inflicts on the local storm drain system as well as proper waste disposal techniques.
- "Notice: Stormwater Management Plan Public Input Open House" informed residents of a City Hall meeting for community input on storm water quality.
- "Stormwater Website Provides Resources" provided a link to the BMP portal on the Project Clean Water website, which provides BMPs for residents, mobile businesses and industrial and commercial facilities and a brief summary of the website contents.

El Cajon: The City of El Cajon printed 38,000 copies of two semiannual newsletters containing 5 articles relevant to the watershed and reaching potentially 190,000 different readers. The articles were distributed and entitled as follows:

- Residential Repair, Restoration & Remodeling (Fall 2007),
- Pet Pollution Can Be a Serious Problem? (Fall 2007), What is Storm Water Runoff? (Spring 2008),
- Residntial Solutions to Storm Water Pollution (Spring 2008), and
- Auto Care, Pet Waste, Parking Lot & Trash Storage Areas (Spring 2008).

The City of El Cajon also partnered with Waste Management to send 18,000 separate mailed brochures, titled “Water Pollution Prevention”, to all customers in El Cajon in January 2008.

TITLE: **San Diego River Watershed Restaurant Best Management Practices Booklet**
ID NUMBER: **SDR-A43**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the San Diego River Watershed during inspections. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer; however, after further evaluation, City staff determined that a booklet to supplement existing fact sheets passed out during inspections would be more effective in educating food and drinking establishment owners and workers about storm water issues and BMPs. After review, the booklet could be kept by owners/managers for reference, and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs.

Storm Water Division staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2008 to City-permitted facilities. The City distributed 537 booklets in the San Diego River Watershed Management Area (WMA),.

This activity was not included in the 2008 San Diego River WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, these posters have been distributed over a number of years, and the City plans to continue distribution of them.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2009 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

For FY 2008, the City distributed 537 booklets as referenced above in the Activity Implementation section. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **San Diego River Watershed Erosion and Sediment Control Poster**
ID NUMBER: **SDR-A44**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control poster to be handed out to development applicants receiving a grading or public improvement permit from the City. The poster is large and durable enough to be posted outdoors or indoors to serve as a steady reminder to construction managers and workers of storm water issues and Best Management Practices (BMPs). Photos on the poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated with Development Services Department staff to distribute the poster in FY 2008 to development applicants receiving a grading or public improvement permit from the City. Based on the number of permits granted, the total number of posters distributed in the San Diego River Watershed was 54.

This activity was not included in the 2008 San Diego River Watershed Urban Runoff Management Program (WURMP) because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, these posters have been distributed over a number of years, and the City plans to continue distribution of them.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the poster to permit applicants in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment/siltation/turbidity/total suspended solids
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria, nutrients, and total dissolved solids as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

For FY 2008, the City distributed 95 posters as referenced above in the Activity Implementation section. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the poster to permit applications, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **PROJECT CLEAN WATER - SAN DIEGO RIVER WATERSHED WEBSITE**
ID NUMBER: **SDR-A46**

ACTIVITY DESCRIPTION

The Project Clean Water website (**http://www.projectcleanwater.org/html/ws_map.html**) provides a venue for public participation and involvement in local watershed activities. The Watershed Map page is the starting point of the watershed website. Visitors wishing to learn more about a particular watershed can simply "click" on a desired watershed in the Watershed Map. Once selected, the visitor is linked to the watershed's summary page and provided with additional link options. The visitor can view multiple informational pages on the San Diego River Watershed which include:

- San Diego River Watershed Summary Page (main page)
- San Diego River Watershed Plan Page
- San Diego River Watershed Project Page
- San Diego River Watershed Activities Page

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

This is an ongoing activity.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of La Mesa
- City of El Cajon
- City of Santee
- City of San Diego

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This method of public participation is consistent with the collective watershed strategy in that it encourages any member of the public to take an interest in their watershed and to participate in Copermittee activities. .

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is not being measured directly, but can be inferred from tracking the number of "hits" the web pages received on an annual basis.

- Watershed Copermittees continued to post the WURMP and annual reports on the Project Clean Water website.
- There were 3,901 hits on the San Diego River Watershed webpage.
- There were 889 hits on the San Diego River WURMP webpage.

ID NUMBER: **SDR-A47**

TITLE: **DEVELOPMENT OF ADDITIONAL PUBLIC PARTICIPATION PROGRAMS**

ACTIVITY SUMMARY

During the reporting period, the City of Santee expanded the opportunities for public participation in our stormwater program by developing a storm drain stenciling program and by promoting the Roadside Pride program. The storm drain stenciling program has multiple benefits including:

- Providing stencils on storm drains reminds people in the vicinity that the drain provides a direct connection to the river and that their activities can have a direct impact on the health of the river. This reminder may result in the modification of their behavior to prevent the discharge of pollutants into the storm drain.

- This program provides groups within the community an opportunity to participate in an activity that is related to an issue that they are interested in. This activity may also provide them with the necessary experience to achieve a goal related within the organization (such as fulfilling a community service requisite).

- The activity may provide education for people who volunteer to help with the activity who may have limited knowledge of stormwater issues. This knowledge may result in changes to their behavior.

The Roadside Pride Program provides Santee-based community groups with an opportunity to earn a small amount of money in exchange for removing litter from roadsides within the community. This on-going program will be promoted alongside other public participation opportunities.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria
- Total Dissolved Solids
- Low Dissolved Oxygen

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

TASKS IMPLEMENTED DURING FY 2007-2008

The following tasks were conducted as part of the development of the Public Participation Program during Fiscal Year 2007-2008:

- Development of procedures and waiver forms to be used in these types of these projects.
- Promotion of these public participation opportunities (such as in an article in the Santee Review).
- Implementation of a stenciling project by a scout group within Santee. This included the presentation of information on stormwater at a scout meeting. Development of strategy for stenciling project; identification of stenciling locations; provision of safety equipment and stenciling equipment to implement program.

TITLE: **City of San Diego Strategic Plan for Watershed Implementation**
ID NUMBER: **SDR-A48**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Tecolote Watershed "Green Street" Infiltration Retrofit	Green Street	Water Quality	Structural	Bacteria, Metals & Sediment

Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash
Maple Canyon Water Quality Improvement Project	Sustainable Canyons	Water Quality	Structural	Metals, TSS, Bacteria, Pesticides & Trash
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals
Tijuana River Solid Waste Removal and Transfer Facility	Trash/Debris Separation	Water Quality	Structural	Trash, bacteria
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment
Residential Landscaping Retrofit Pilot Project	Residential Landscaping Retrofit	Water Quality	Non-structural	Targeted Multiple Pollutants
Smart Irrigation and Controller Incentive/Giveaway Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Targeted Multiple Pollutants
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A
Pet Waste Dispenser Program	Doggie Bag Dispenser	Water Quality	Non-structural	Bacteria
Posted Street Sweeping Routes	Street Sweeping	Water Quality	Non-structural	Metals, Trash & TSS
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants
Residential Rain Barrel, Downspout Disconnect, and	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants

Xeriscaping Incentive Program (2)				
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Commercial Pest Control Art Turf or Product Sub	Product Sub	Water Quality	Non-Structural	Pesticides
Residential Pesticide Management Art Turf or Prod Sub	Product Sub	Water Quality	Non-Structural	Pesticides
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants

Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Home Auto Activities (Metals) Code Mod and Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease
Alley Cleanup and Sweeping Pilot Project	Street Sweeping	Water Quality	Non-structural	Bacteria, Trash & Metals

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

APPENDIX B

SUMMARY OF PLANNED PROGRAM IMPLEMENTATION FOR FISCAL YEAR 2008-09

A. ACTIVITY DESCRIPTION

A.1 INITIAL PLANNING

The types of activities that are most likely to be effective at the watershed level require advanced planning and coordination among the San Diego River Copermittees. However, the new watershed activity development process described in the WURMP was still being developed in FY 2007-2008 and there was not sufficient time for advanced planning of implementation activities for FY 2008-2009. Nevertheless, the San Diego River Copermittees are attempting to coordinate their implementation of watershed activities towards achieving the Strategic Goals of the WURMP.

A.2 BASELINE ACTIVITIES

Since this is the first year of implementation under the new watershed program, the timeframe for implementation of baseline activities is compressed. This issue of timing, and more particularly the issue of municipal budgets being established far in advance, will likely affect the results. Most planning and baseline activities this year have been conducted at the same time as or immediately before implementation.

A.3 IMPLEMENTATION ACTIVITIES

For fiscal year 2008-09, the San Diego River Copermittees are implementing several coordinated activities that serve the purposes of the Strategic Goals in the WURMP. These combinations of activities are intended to not only satisfy the Municipal Permit criteria, but also to test out integrated and coordinated sets of activities so that the Copermittees can continue to adjust their programs in a process of continuous improvement.

- Source Identification Study: This is a critical activity that supports Copermittee decision-making regarding load reduction activity selection and implementation. The Copermittees, in particular the City of San Diego, are collectively spending over $200,000 to identify sources of pollutants, specifically bacteria, in the lower San Diego River watershed. The City of San Diego has modeled this study after its Tecolote Creek Microbial Source Tracking Study with a similar design and intent, but will also include watershed-specific priority pollutants. The study will assess more than 15 San Diego River sites during two dry weather monitoring events. Specific likely sources, including industrial, residential, commercial and transport areas will also be investigated during dry weather. During wet weather, eight river monitoring locations will be investigated with the collection of pollutograph samples. In addition, wet weather loads from specific likely sources will be investigated. During both dry and wet weather assessments, the presence of fecal indicator bacterial, as well as human-specific indicators, will be assessed together with TDS, phosphorus and DO. In total, over 160 bacterial samples will be collected for analysis of fecal indicator bacteria. Approximately 50 samples will be analyzed for human-specific indicators. Up to 90 samples will also be analyzed for dissolved oxygen, total dissolved solids, total suspended solids, total phosphorus and orthophosphate throughout the San Diego River Watershed. Sampling will occur during FY 2008-2009 and reporting of results to Copermittees is currently scheduled to be completed in October 2009.

- Park Inspection and Source Reduction Program: These are load reduction activities for the watershed and will satisfy the Municipal Permit criteria for water quality activities. The inspection program is designed to yield information regarding potential sources of dry weather runoff from municipal parks and potential sources of pollutant loads, which Copermittees can use to adjust their park

management programs. Potential management responses may be administrative such as changing the frequency of irrigation setting adjustments or trash removal; physical such as replacing irrigation equipment with more efficient types; or involve some form of runoff treatment. Administrative changes will generally be the easiest and quickest management changes to implement. Changes that require capital commitments will take longer to implement and will reflect each jurisdiction's budget constraints and priorities.

- Public and Parks Staff Education Program: These will satisfy the Municipal Permit criteria for watershed education activities. Based on the results of the inspection and chosen load reduction activities, the San Diego River Watershed Copermittees will engage in education activities that complement and support the load reduction activities selected. The primary target audiences are anticipated to be the public visitors to the parks and the municipal parks staff.

More specific descriptions of potential activities include:

Water Quality

- Installation of weather-based controllers at municipal parks and facilities with landscaping. Facility selection will be prioritized based on irrigation area/water consumption and proximity to receiving waters.
- Pet Waste Bags will be made available at municipal parks and facilities open to the public. Facility selection will be prioritized based on proximity to receiving waters and anticipated use by pets owners.
- Institute campaign to reduce overall fertilizer use at municipal facilities and parks.
- Incorporate the need to identify potential erosion issues into existing facility inspection and maintenance checklists. Ensure follow up corrective measures are implemented through normal maintenance processes.
- Reduce the pollutants generated from public activities requiring special use permits. Develop requirements for special event/private use of parks, including reducing water use, animal waste pickup, trash pick up and food management – incorporate rules into special event permitting and fees; incorporate rules into public education campaign.
- Increase street sweeping in certain areas beyond jurisdictional requirements.
- Install storm drain inserts, hydrodynamic separators or other structural BMPs in targeted areas.
- Implement trash removal activities at selected locations.

Education

- Educate Parks & Recreation or Public Works staff regarding irrigation system repairs, reducing over-irrigation, reducing other excess water use, reduction of litter, food waste management, landscaping waste management, and landscape issues such as minimization of fertilizer applications. Develop self-inspection checklists for park and recreation staff to use during site visits. Targeted inspections and follow-up training to ensure adequate comprehension and implementation. Create incentive program for reporting issues and making suggested improvements.
- Educate public attending parks regarding littering and food waste management.
- Educate public at time of special use permit issue regarding trash, pet waste management, water use, and food management.

B. TMDL APPLICABILITY

At this time, there are no adopted TMDLs currently in effect within the San Diego River WMA. The Bacteria TMDL has been adopted by the RWQCB, but has not yet been approved at the state level. Necessary changes to meet future TMDL-specific requirements will be incorporated at that time. Current activities are being planned and implemented with the Bacteria TMDL requirements in mind.

C. TIME SCHEDULE FOR IMPLEMENTATION

Since this is the first year of implementation under the new watershed program, initial planning, baseline activities and implementation activities will be conducted in fiscal year 2008-09. Follow up activities to support effectiveness evaluations, if any, will be conducted in fiscal year 2009-10 as necessary.

D. PARTICIPATING WATERSHED COPERMITTEES

At this time, all five San Diego River Copermittees are intending to participate in this process.

E. OTHER PARTICIPATING ENTITIES

At this time, it is not clear what other entities, if any, will participate.

F. HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED

As described further in Section 7.0 of the WURMP, the proposed activities may address the following watershed priority pollutants or stressors:

- Bacteria Indicators
- Phosphorus
- TDS
- Low Dissolved Oxygen
- Turbidity

G. CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

As detailed in the WURMP, the proposed activities are consistent with the collective Watershed Strategy developed by the copermittees to the extent that they support at least one of the Watershed's Strategic Goals established in the WURMP. Generally, the San Diego River Copermittees will attempt to coordinate their activities to address the same subset of strategic goals in a given fiscal year in order to conserve resources and improve the likelihood of success. However, in some cases, individual jurisdictions may find it more appropriate to perform different activities that still support one of the Watershed Strategic Goals.

G.1 DESCRIPTION OF TARGETED STRATEGIC GOALS

The following Strategic Goals were established in the WURMP and are the targeted outcomes for activity implementation in fiscal year 2008-09.

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water.

- **Strategic Goal 2 - Source Reduction at Park/Municipal Land Uses**: By reducing the mass of priority pollutants discharged to Copermittee storm drain systems and receiving waters from park and municipal land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 5 – Bacteria Source Reduction**: By reducing the mass of bacteria discharged to Copermittee storm drain systems and receiving waters, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of bacteria to receiving waters. The specific land uses and sources targeted by this Strategic Goal will be selected based on the available data from ongoing monitoring programs and the results of implementing previous Strategic Goals. This goal will also support Copermittee implementation of the recent Bacteria TMDL.

G.2 POTENTIAL TARGET SOURCES

Selected activities generally will target the following land use categories:

- Park/Municipal

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for load reduction watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 11 in the WURMP may be used.

- Roads/Parking
- Park & Recreational Facilities
- Flood Control Devices/MS4s

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for source characterization watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 12 in the WURMP may be used.

- Park & Recreational Facilities
- Corporate Yards
- Flood Control Devices/MS4s

G.3 WATERSHED PRIORITY POLLUTANTS AT TARGET SOURCES

Assuming that selected activities will address some mixture of the top three target sources for load reduction, the following combination of watershed priority pollutants/stressors and target sources will generally be the focal point of watershed activities:

- Bacteria from applicable facilities, including: human litter; food and waste management; soil management/erosion control; animal/pet waste; and bathroom facilities (fixed or portable).
- Nutrients from general landscaping sources at applicable facilities as well as from specific operations: fertilizer storage and distribution; fertilizer application at recreational facilities; decorative roadside landscapes; and soil and mulch management/erosion control.
- Total Dissolved Solids from excessive potable water use.
- Low Dissolved Oxygen from sources of nutrients, sediment and organic matter (see above). Additional sources may include the intentional application to soil of organic compounds or the decomposition of vegetative litter.
- Turbidity from sources of sediment, organic matter and nutrients (see above). Additional sources may result from general housekeeping and human litter.

H. EXPECTED BENEFITS

As described further in Section 7.0 of the WURMP, the expected benefits of the proposed activities include reduction of pollutant mass discharged at the target sources and reduction of dry weather flows that serve as a potential transport mechanism for discharged pollutants.

I. EFFECTIVENESS MEASUREMENTS

The effectiveness of Copermittee activities will be measured and evaluated in terms of the intended outcomes established during the planning phase for that year's activities, which in turn are based on the Strategic Goal the activity is intended to serve. A more complete discussion of Copermittee effectiveness assessment methods and constraints is provided in Section V of the WURMP Annual Report. In general, the San Diego River Copermittees will consider the following types of anticipated outcomes and effectiveness metrics as time and financial constraints permit.

Outcome Level	Anticipated Outcome of Activity	Effectiveness Metrics
1 Permit Compliance	Compliance with Permit requirement to implement a Watershed Water Quality Activity (Section E.2.f.)	Number of applicable watershed activities implemented per jurisdiction.
2 Changes in Attitudes	Increased awareness among the public and municipal staff regarding sources of pollutants and the need to reduce pollutant discharges/exposures.	Pre- and post-training surveys of municipal staff attitudes. Pre and post implementation surveys of public attitudes at time attending parks.
3 Behavioral Change	Reduction in public behaviors that generate pollutants. Changes in municipal staff behavior, including increased use of inspection checklists, increased reporting of issues or improvement suggestions, reduction in landscape waste exposure to runoff.	Pre- and post-training observations of municipal staff behavior. Pre and post implementation observation of public behavior, e.g. trash surveys. Behavior may be directly observed or inferred from observed or documented conditions.
4 Load Reductions	Reduced volume of dry weather runoff. Reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit-required source identification monitoring data. If necessary, supplement with a special study.
5 Discharge Quality	Reduced volume of dry weather discharges. Reduced concentration of priority pollutants in dry and wet weather discharges.	Use permit-required outfall and dry weather monitoring data. If necessary, supplement with a special study.
6 Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use available receiving water monitoring data. If necessary, supplement with a special study.

In general, currently available monitoring data and other kinds of readily available quantitative statistics will be used to evaluate effectiveness. The Copermittees may supplement this readily-available quantitative data with either special studies or qualitative evaluations as necessary to obtain a reasonable understanding of activity effectiveness. The special studies may take the form of targeted monitoring data collection, attitude surveys or inspections. These special studies may be conducted before activity implementation to establish baseline conditions, during implementation to measure interim progress and/or after implementation to measure changes in conditions. For the currently-proposed watershed activities, the following special studies are being considered:

- The Copermittees may catalogue the characteristics of parks and municipal facilities within the watershed that are known or assumed to be relevant to this evaluation. For example, the Copermittees may catalogue what types of specific sources are potentially present.

- Pre- and post-implementation surveys may be conducted to measure the attitudes of the public visiting the parks or municipal facilities.

- Pre- and post-implementation observations of facilities for evidence of changes in public behavior may be conducted.

- Pre-, during and post-training surveys may be conducted of municipal staff to assess changes in awareness and attitudes toward specific watershed issues and to help identify follow up issues and opportunities.

- Pre- and post-training observations of municipal staff behavior through self reporting and/or targeted inspections for evidence of changes in behavior may be conducted.

APPENDIX C

SUMMARY OF PLANNED PROGRAM IMPLEMENTATION FOR FISCAL YEAR 2009-10

A. ACTIVITY DESCRIPTION

A.1 INITIAL DESCRIPTION FOR PLANNING PURPOSES

For FY2009-2010, the following Watershed Water Quality Activities are currently being considered for implementation. Final selection of the proposed activities will be made in FY 2008-2009 based on the results of initial planning and baseline activities and in accordance with the selection process described in the WURMP and in Section G below.

Water Quality:

- Promote the installation of weather-based controllers at commercial and industrial facilities with irrigation systems, which may include providing or facilitating subsidies/rebates or other means to increase their use. To the extent practicable, facility selection will be prioritized based on irrigation area/water runoff volumes and proximity to receiving waters.
- Target inspections based on property management company responsibility and cooperatively develop more specific BMPs to be implemented, and/or educate personnel associated with property management companies to ensure that BMPs are more effectively implemented.
- Perform inspections beyond jurisdictional compliance requirements targeting specific types of commercial and industrial facilities judged to be higher potential risks for discharging priority pollutants. The increased level of inspection will reduce loadings by ensuring higher levels of compliance with source control BMPs. The inspections will also serve as education opportunities, an opportunity to identify potential sources at these facilities not sufficiently addressed by current BMPs and an opportunity to request advice from knowledgeable facility personnel regarding other ways to reduce pollutant discharges. If appropriate, the current schedule of recommended BMPs will be updated in collaboration with the Region-wide Industrial and Commercial Facilities workgroup.
- Experiment with the implementation of new LID design or structural BMPs at new commercial or industrial developments of target sources and compare with more typical SUSMP-compliant developments to identify appropriate future requirements. If successful in establishing new standards for controlling pollutant discharges, the cumulative impact of lower loadings from future development is anticipated to be significant.

For fiscal year 2010, the following Watershed Education Activities are currently being considered for implementation. Final selection of the proposed activities will be made in fiscal year 2009 based on the results of initial planning and baseline activities and in accordance with the selection process described in the WURMP and in Section G below.

Education:

- Work with appropriate local associations to educate landscape maintenance contractors and property management companies regarding irrigation system repairs, reducing over-irrigation, reducing other excess water use, waste management, landscaping waste management, and landscape issues such as minimization of fertilizer applications. Develop self-inspection checklists for contractors and property managers to use during their work.
- Educate facilities targeted for additional inspections regarding BMPs during compliance inspections. This will also serve as an opportunity to identify potential sources at these facilities not sufficiently addressed by current BMPs and to request advice from knowledgeable facility personnel regarding other ways to reduce pollutant discharges.
- Develop and implement industry training seminars targeting specific industry groups and activities.

A.2 PLANNING AND BASELINE ACTIVITIES

The most significant activity during fiscal year 2008-09 that will serve as baseline data for activities in subsequent fiscal years is the source identification study currently being conducted in a coordinated manner by all five jurisdictions in the watershed.

- Source Identification Study: This is a critical activity that supports Copermittee decision-making regarding load reduction activity selection and implementation. The Copermittees, in particular the City of San Diego, are collectively spending over $200,000 to identify sources of pollutants, specifically bacteria, in the lower San Diego River watershed. The City of San Diego has modeled this study after its Tecolote Creek Microbial Source Tracking Study with a similar design and intent, but will also include watershed-specific priority pollutants. The study will assess more than 15 San Diego River sites during two dry weather monitoring events. Specific likely sources, including industrial, residential, commercial and transport areas will also be investigated during dry weather. During wet weather, eight river monitoring locations will be investigated with the collection of pollutograph samples. In addition, wet weather loads from specific likely sources will be investigated. During both dry and wet weather assessments, the presence of fecal indicator bacterial, as well as human-specific indicators, will be assessed together with TDS, phosphorus and DO. In total, over 160 bacterial samples will be collected for analysis of fecal indicator bacteria. Approximately 50 samples will be analyzed for human-specific indicators. Up to 90 samples will also be analyzed for dissolved oxygen, total dissolved solids, total suspended solids, total phosphorus and orthophosphate throughout the San Diego River Watershed. Sampling will occur in fiscal year 2008-09 and reporting of results to Copermittees is currently scheduled to be completed in October 2009.

The following planning activities are currently being explored during fiscal year 2008-09 in order to facilitate implementation of Watershed Water Quality and Education Activities in 2009-10:

- The Copermittees may work with the water districts to identify the largest (by volume) commercial or industrial water users within the watershed and then work with other readily available data sources to develop methods for prioritizing users most likely to generate large volumes of runoff as targets for weather-based controller rebates/installation. The Copermittees will also develop methods for estimating pollutant loading reductions from the estimated or measured reduction in runoff volumes.
- Baseline surveys of attitudes and behavior may be conducted for initial target audiences, including golf course managers, animal/pet facility managers, nursery/garden center managers and property managers. Surveys of additional potential target audiences may be conducted as needed in order to develop a final list of sources targeted for watershed water quality and education activities.

A.3 IMPLEMENTATION ACTIVITIES

To be determined based on results of Planning and Baseline Activities.

B. TMDL APPLICABILITY

At this time, there are no adopted TMDLs currently in effect within the San Diego River WMA. The Bacteria TMDL has been adopted by the RWQCB, but has not yet been approved at the state level. Necessary changes to meet future TMDL specific requirements will be incorporated at that time. Current activities are being planned and will be implemented with the Bacteria TMDL requirements in mind.

C. TIME SCHEDULE FOR IMPLEMENTATION

Initial planning and baseline activities will be conducted in FY 2008-2009. Implementation of the proposed activities will be conducted in FY 2009-2010. Follow up activities to support effectiveness evaluations, if any, will be conducted in FY2010-2011 as necessary.

D. PARTICIPATING WATERSHED COPERMITTEES

At this time, all five San Diego River Copermittees are intending to participate in this process, but individual watershed activities have not yet been selected.

E. OTHER PARTICIPATING ENTITIES

At this time, it is not clear what other entities, if any, will participate. This work may result in some collaboration or information-sharing with the Regional Industrial and Commercial Sources workgroup.

F. HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED

As described further in Section 7.0 of the WURMP, the proposed activities may address the following watershed priority pollutants or stressors:

- Bacteria Indicators
- Phosphorus
- TDS
- Low Dissolved Oxygen
- Turbidity

G. CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

As detailed in the WURMP, the proposed activities are consistent with the collective Watershed Strategy developed by the copermittees to the extent that they support at least one of the Watershed's Strategic Goals established in the WURMP. Generally, the San Diego River Copermittees will attempt to coordinate their activities to address the same subset of strategic goals in a given fiscal year in order to conserve resources and improve the likelihood of success. However, in some cases, individual jurisdictions may find it more appropriate to perform different activities that still support one of the Watershed Strategic Goals.

G.1 DESCRIPTION OF TARGETED STRATEGIC GOALS

The following Strategic Goals were established in the WURMP and are the targeted outcomes for activity implementation in FY 2009-2010.

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters

both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water.

- **Strategic Goal 3 - Source Reduction at Commercial/Industrial Land Uses**: By reducing the mass of priority pollutants discharged to Copermittee storm drain systems and receiving waters from commercial and industrial land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 5 – Bacteria Source Reduction**: By reducing the mass of bacteria discharged to Copermittee storm drain systems and receiving waters, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of bacteria to receiving waters. The specific land uses and sources targeted by this Strategic Goal will be selected based on the available data from ongoing monitoring programs and the results of implementing previous Strategic Goals. This goal will also support Copermittee implementation of the recently approved Bacteria TMDL.

G.2 POTENTIAL TARGET SOURCES

Selected activities generally will target the following land use categories:

- Commercial
- Industrial

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for load reduction watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 11 in the WURMP may be used.

- Landscaping
- Animal Facilities
- Gardens/Nurseries

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for source characterization watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 12 in the WURMP may be used.

- Motor freight
- Municipal landfills
- Auto parking/Storage lots

G.3 WATERSHED PRIORITY POLLUTANTS AT TARGET SOURCES

Assuming that selected activities will address some mixture of the top three target sources for load reduction, the following combination of watershed priority pollutants/stressors and target sources will generally be the focal point of watershed activities:

- Bacteria from applicable facilities (general landscaping and waste management) as well as from facility-specific types of sources: animal/pet food and waste management, soil management/erosion control, and portable bathroom facilities (if present).
- Nutrients from general landscaping at applicable facilities as well as from specific commercial operations: fertilizer storage at retailers, fertilizer storage and application at nurseries/commercial gardens and golf courses; soil and mulch management/erosion control at nurseries/commercial gardens, golf courses and animal facilities; animal waste management at animal facilities; portable bathroom facilities (if present), and vegetative litter.
- Total Dissolved Solids from excessive potable water use.
- Low Dissolved Oxygen from sources of nutrients, sediment and organic matter (see above). Additional sources may include the intentional application to soil of organic compounds or the decomposition of vegetative litter.
- Turbidity from sources of sediment, organic matter and nutrients (see above). Additional sources may result from general housekeeping and human litter.

H. EXPECTED BENEFITS

As described further in Section 7.0 of the WURMP, the expected benefits of the proposed activities include reduction of pollutant mass discharged at the target sources and reduction of dry weather flows that serve as a potential transport mechanism for discharged pollutants.

I. EFFECTIVENESS MEASUREMENTS

When evaluating the effectiveness of the proposed watershed activities, the Copermittees will consider the following anticipated outcomes and effectiveness metrics.

Outcome Level	Anticipated Outcome of Activity	Effectiveness Metrics
1 Permit Compliance	Compliance with Permit requirement to implement a Watershed Water Quality Activity (Section E.2.f.)	Number of applicable watershed activities implemented per jurisdiction.
2 Changes in Attitudes	Increased awareness among the targeted commercial/industrial personnel regarding sources of pollutants and the need to reduce pollutant discharges/exposures.	Pre- and post-training surveys of target audience attitudes.
3 Behavioral Change	Reduction in targeted behaviors at commercial/industrial facilities that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre- and post-training observations of facility staff behavior. Behavior may be directly observed or inferred from observed or documented conditions.
4 Load Reductions	Reduced volume of dry weather runoff. Reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit-required source identification monitoring data. If necessary, supplement with a special study.
5 Discharge Quality	Reduced volume of dry weather discharges. Reduced concentration of priority pollutants in dry and wet weather discharges.	Use permit-required outfall and dry weather monitoring data. If necessary, supplement with a special study.

6 Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use available receiving water monitoring data. If necessary, supplement with a special study.

In general, currently available monitoring data and other kinds of readily available quantitative statistics will be used to evaluate effectiveness. The Copermittees may supplement this readily available quantitative data with either special studies or qualitative evaluations as necessary to obtain a reasonable understanding of activity effectiveness. The special studies may take the form of targeted monitoring data collection, attitude surveys or inspections. These special studies may be conducted before activity implementation to establish baseline conditions, during implementation to measure interim progress and/or after implementation to measure changes in conditions. A list of anticipated special studies for these watershed activities will be developed during the planning activities during FY2008-2009.

SAN DIEGO RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

San Diego River Watershed
San Diego County, California

Prepared By:

City of El Cajon, Lead Copermittee
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County of San Diego

With Consultant Support From:

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San Diego, California

January 2010

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EXECUTIVE SUMMARY

In accordance with the requirements of the 2007 Municipal Permit, this Watershed Urban Runoff Management Program (WURMP) Annual Report describes the activities performed by the San Diego River Watershed Copermittees in fiscal year (FY) 2008-09. The most significant collaborative activity during this time period was the San Diego River Watershed Source Identification Study. Led by the City of San Diego, all of the San Diego River Water Copermittees participated in this study, collectively spending over $200,000 to identify watershed-specific sources of bacteria and other high priority pollutants. The results of this study are being used to guide the selection, planning and implementation of watershed activities by the San Diego River Watershed Copermittees. In addition, the Copermittees' combined efforts have resulted in the following measurable load reductions for the San Diego River Watershed:

- Prevention of over 77,000 pounds of pet waste from entering the watershed.
- Removal of over 66,000 pounds of trash/debris and over 660 cubic yards of sediment, trash/debris and organic materials from the watershed.

These and other watershed activities that contribute to improved water quality for the watershed are described in more detail in this Annual Report.

This Annual Report also reviews the available water quality and pollutant source information to assess whether any changes should be made to the WURMP. Based on a review of the available data from the ambient, wet and dry weather monitoring, Bight '08 monitoring, the new outfall monitoring and coastal storm drain monitoring programs in addition to third party data, the San Diego River Watershed Copermittees concluded that the high priority pollutants for the watershed remain the same ones identified in the WURMP. Nitrogen exceedances were more apparent this year and will continue to be monitored. The San Diego River Watershed Copermittees also reviewed the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP, and believe they remain valid priorities for the watershed as indicated by the Source Identification Study.

Based on the results of the Source Identification Study, the San Diego River Copermittees are not making significant revisions to the Strategic Goals established in the WURMP's current 5-year strategic plan, but will change the timing of when the Strategic Goals will be addressed. The San Diego River Watershed Copermittees have determined that one year's worth of activities is insufficient to address adequately the commercial/industrial sources identified by the study. The Copermittees will address commercial/industrial sources of high priority pollutants during the next two fiscal years, instead of the previously planned one year, before targeting residential sources.

The San Diego River Watershed Copermittees are still in the process of transitioning to new types of more collaborative program planning, implementation (as appropriate) and assessment efforts for future years as described in the WURMP and this Annual Report. Many of the watershed activities being reported for FY 2008-09 were selected prior to the WURMP revisions being completed and are more jurisdictionally independent (Appendix A). The San Diego River Copermittees

anticipate that the continued use of the WURMP Strategic Goals to guide selection of watershed activities will result in increasingly coordinated (as appropriate) and effective activities. Planned efforts to coordinate activities over the next two fiscal years are described in Appendix B.

Similar to previous years, the San Diego River Watershed Copermittees have evaluated the 2008-09 watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document. The effectiveness assessment continued to find evidence of effectiveness in levels 1 through 4, but faced similar difficulties as in the past when trying to assess effectiveness in levels 5 and 6.

Based on these results, the San Diego River Copermittees will continue to transition into watershed activities that are consistent with the revised WURMP. The Copermittees believe the adjustments being made in response to the revised WURMP will improve watershed water quality. The two primary recommendations for FY 2009-10 are:

- Continue using the WURMP Strategic Goals to facilitate coordinated and collaborative program planning, implementation (as appropriate) and assessment efforts; and
- Use the results of the Source Identification Study to guide future watershed activity selection, planning and implementation.

CITY OF EL CAJON

CITY MANAGER

January 31, 2010

San Diego River WURMP
2008-2009 WURMP Annual Report

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Kathi Henry 1.19.2010

Signature Date

Kathi Henry, City Manager (619) 441-1780

Printed Name, Title Phone Number

200 E. MAIN STREET • EL CAJON, CA 92020-3996 • TEL: (619) 441-1716 • FAX: (619) 441-1770

Printed on recycled paper.

THE CITY OF SAN DIEGO

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Diego River Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Diego River Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden 1/22/10

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 • Fax (858) 541-4350

January 20, 2010

San Diego River WURMP

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature

1/25/10
Date

(619) 258-4100 x168
Phone Number

Pedro Orso-Delgado
Deputy City Manager/Director of Development Services

CITY OF
LA MESA
JEWEL of the HILLS

DAVID E. WITT, A.I.C.P.
CITY MANAGER

CERTIFICATION STATEMENT

San Diego River WURMP Annual Report

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

David E. Witt 1/20/10

David E. Witt
City Manager

Date

Telephone Number: (619) 667-1195

8130 ALLISON AVENUE • LA MESA, CA 91942 • TEL: 619.667.1195 FAX: 619.462.7528

County of San Diego

LAND USE AND ENVIRONMENT GROUP

CHANDRA L. WALLAR
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256
Fax: (619) 531-5476

STATEMENT OF CERTIFICATION

San Diego River Watershed Urban Runoff Management Plan (WURMP) FY 2008-09 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2008-2009 San Diego River Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-27-10
Date

1.0 INTRODUCTION

The National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit for San Diego Copermittees (Order No. R9-2007-0001, NPDES No. CAS 0108758, hereafter referred to as "Municipal Permit") requires that the Copermittees within the San Diego River Watershed collaborate in the development of a watershed-based program that addresses surface water quality and storm water pollution prevention (California Regional Water Quality Control Board [CRWQCB], 2007). In accordance with these requirements, the San Diego River Watershed Copermittees developed and submitted a revised Watershed Urban Runoff Management Plan (WURMP) in March 2008 (City of El Cajon et al., 2008). This report provides an annual reporting of Copermittee progress in implementing the revised WURMP and meeting other Municipal Permit watershed-level requirements for FY 2008-09.

1.1 COPERMITTEE COLLABORATION

The administration of the San Diego River Watershed Activities is handled both jurisdictionally and collaboratively. The jurisdictions act collaboratively to review and understand the water quality monitoring data and define the water quality issues and priority water quality pollutants. The Copermittees use this information to develop and implement jurisdictional short- and long-term activities that address the priority pollutants and sources. The Copermittees also work together as much as possible to more effectively use limited resources and achieve greater results by coordinating their activities across jurisdictional boundaries when reasonably possible. The Copermittees have developed close working relationships on watershed issues that have a direct impact across jurisdictional boundaries. For example, staff in Santee and El Cajon have worked extensively on the migration of trash in the San Diego River from El Cajon to Santee and the identification and removal of bacteria sources in Forester Creek.

Between July 2008 and June 2009, the San Diego River Watershed Copermittees formally met nine times to develop and implement the San Diego River WURMP in accordance with the Municipal Permit. During the reporting period, all Copermittees took an active role in the implementation of the WURMP and watershed activities. In addition, the workgroup used email and phone calls to facilitate collaboration on the development of watershed activities and the Annual Report. The following table presents a summary of the meetings held by the San Diego River WURMP workgroup during the reporting period, including an outline of the principle agenda items.

Summary of Watershed Workgroup Meetings

Meeting Date	Topics Covered
07/24/08	Watershed Implementation Activities for this fiscal year Cost Sharing Agreement
09/25/08	Watershed Implementation Activities – Water Conservation and Municipal Facilities Annual Report – Previous Year Activities Regional Board Comment Letter Cost Sharing Agreement

Meeting Date	Topics Covered
11/17/08	Watershed Activities – Rationale/Objectives and Data Collection Forms 2009-10 Watershed Activity planning Triennial Review of Basin Plan - comments Discussion of Integrated Approach to Watershed Annual Report – discuss deadlines and responsibilities
1/22/09	Review Annual Report Weston/City of San Diego presentation on watershed approach and Source ID Study Workplan and Budget for 2009/10 fiscal year Watershed Activity Implementation – discuss issues
2/12/09	Distribute Annual Report Update on Watershed Approach and Source ID Study 2009-10 Watershed Activity planning Workplan and Budget for 2009/10 fiscal year
3/26/09	Source ID Study cooperation Cost Share Agreement for next year 2009-10 Watershed Activity planning San Diego River Watershed Forum
4/23/09	Selection of final TWAS locations Cost Share Agreement for next year Source ID Study cooperation
5/28/09	Quality of Life Initiative Cost Share Agreement for next year 2009-10 Watershed Activity planning TWAS locations Source ID Study update
6/25/09	Cost Share Agreement for next year Source ID Study Update 2009-10 Watershed Activity planning Bacteria TMDL Phase I update Community Based Social Marketing Selection of MS4 Outfall Locations for targeted wet weather monitoring

The San Diego River Watershed Copermittees will continue to meet on a regular basis to plan and facilitate implementation of the San Diego River WURMP.

2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section is intended to provide an updated assessment and analysis of the watershed's water quality and pollutant sources. A comprehensive summary and analysis of the monitoring conducted during FY 2008-09 is documented in Section 9 of the *San Diego County Copermittees 2008-2009 Urban Runoff Monitoring Report*, January 2010, prepared by Weston Solutions (Weston, 2010).

Assessments in the Weston Monitoring Report were conducted using data from multiple monitoring programs and the results were applied to the relevant core management questions described in Section I.B of the Receiving Waters and Urban Runoff Monitoring Program using a weight-of-evidence approach. The results of this assessment are summarized in the table below.

Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
San Diego River WMA	Receiving Water Monitoring Program	Ambient Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS, chloride, total phosphorus, and enterococci). - Medium frequency of occurrence (total nitrogen) - Low frequency of occurrence (dissolved oxygen and selenium). ▪ Total nitrogen was the only constituent with a magnitude of exceedance greater than five times its benchmark.	1, 2
		Wet Weather Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (turbidity and fecal coliform) - Low frequency of occurrence (enterococci, TDS, and total coliform) ▪ No persistent toxicity was observed. ▪ Fecal coliform was the only constituent with a magnitude of exceedance greater than five times its benchmark ▪ No pyrethroids were detected in post storm sediment samples.	
		Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed.	
		Bight 08	▪ Bacteria and TSS were low and below benchmarks in ambient water samples collected in the estuary. • Sediment results identified two sites as likely unimpacted, two sites as possibly impacted, and one site as likely impacted based on SQO Guidelines. • A toxicity identification evaluation was conducted for the one site identified as likely impacted and indicated naturally occurring ammonia was the causative agent of toxicity and not toxic chemicals. The overall result of the likely impacted site was changed to likely unimpacted based on the SQO Guidance.	

Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
		Third Party Data	▪ Dry weather findings indicated TDS and enterococci concentrations were above the WQO at most receiving water sites. Indicators of recent human fecal pollution were not found during dry weather. ▪ Land use investigations during dry and wet weather indicated low density residential drainage areas contributed higher loads of bacteria. ▪ Catchbasins were determined to be a significant reservoir for bacteria.	
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of concern[1]: 1. Jurisdictional: Low frequency of occurrence (total coliform and enterococci) 2. MS4: - High frequency of occurrence (TDS, chloride, sulfate, total nitrogen, enterococci) - Medium frequency of occurrence (total phosphorus) - Low frequency of occurrence (fecal coliform, manganese)	3, 4
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions. ▪ Third party data indicated specific land uses contribute higher bacteria loads (residential and transportation) and that catchbasins provide a reservoir for bacteria.	
	WMA Assessment	Receiving Water Trend Assessment	▪ No significant increasing trends were observed. ▪ Significant decreasing trends were observed for nitrate and dissolved copper.	5
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, chloride, total phosphorus, fecal coliform, and enterococci are consistent with the 2001–2006 BLTEA ratings as it relates to Lower San Diego HA. ▪ WMA high frequency of occurrence rating for turbidity is consistent with the 2001-2006 BLTEA rating for the Boulder Creek HA.	

[1] Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in Appendix B.

2.1 WATER QUALITY ASSESSMENT

The Water Quality Assessment provided in the Weston monitoring report and summarized in the table above is generally consistent with the previous year's assessments reported in the Weston Monitoring Report for FY 2007-08 as well as the baseline watershed evaluation (BWE) presented in the March 2008 WURMP. Based on a review of the current Weston monitoring report and available monitoring data from dry weather monitoring, jurisdictional wet weather monitoring and third party monitoring

data, the San Diego River Watershed Copermittees concluded that the high priority pollutants for the watershed remain the same ones identified in the WURMP:

- Bacteria Indicators
- Nutrients: Phosphorus
- Total Dissolved Solids (TDS), including chloride
- Low Dissolved Oxygen (DO)
- Turbidity

In addition, monitoring data showed that nitrogen is more apparent as a potential high priority pollutant, and bioassessment data continue to show benthic alterations as a concern in this watershed. However, these benthic alterations may be due to physical impacts, not chemical impacts. Note that a biological assessment performed after completion of the Forester Creek Improvement project, indicates that the area downstream of the project was "unimpaired," very rare for an urban waterbody (Weston, 2008). It is anticipated that this and other restoration projects (such as the Woodglen Vista Creek project) will assist in improving the condition of the biological community within the San Diego River. To allow for analysis of monitoring data over time, the Copermittees will consider modifying the list of high priority pollutants during the Long Term Effectiveness Assessment (LTEA) process.

Weston's recommendations for this watershed are to continue monitoring at the mass loading station (MLS) to determine long-term trends, to continue monitoring for toxic and benthic impacts, and to identify upstream sources of constituents of concern (COCs). The addition of temporary watershed assessment station (TWAS) locations within the Lower San Diego HA during the 2009–2010 Monitoring Season will provide information regarding conditions in other areas of the watershed management area (WMA). Furthermore, conducting ambient weather monitoring at the MLS and future TWAS locations will provide information regarding the conditions in the receiving water during dry weather. The San Diego River Watershed Copermittees concur with these recommendations.

2.2 POLLUTANT SOURCE ASSESSMENT

The Weston monitoring report evaluates pollutant sources in terms of the core management questions 3 and 4. The observed results in the dry weather monitoring and coastal storm drain monitoring programs as reported in the Weston Monitoring Report are generally consistent with previous year's data and appear to indicate that the conclusions in the Baseline Long Term Effectiveness Assessment (BLTEA) and the March 2008 WURMP regarding pollutant sources remain valid (Weston Solutions et al., 2005; City of El Cajon et al., 2008). More specifically, the San Diego River Watershed Copermittees believe the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP, remain valid priorities for the watershed.

Based on ambient and wet weather conditions, the Weston Monitoring Report recommends continued efforts to address upstream sources as a high priority. Future MS4 Outfall Monitoring and Source Identification Monitoring will augment the data collected during the 2008–09 Monitoring Season and the San Diego River watershed-

specific Source Identification Study. The San Diego River Watershed Copermittees concur with this recommendation.

3.0 IMPLEMENTATION OF WATER QUALITY ACTIVITIES

This section summarizes the activities implemented by the San Diego River Watershed Copermittees during the 2008-09 reporting period. The March 2008 comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are based on the priority pollutants and targeted sources identified in the WURMP, and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement.

The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

The table below outlines the timeframe for implementing activities originally associated with each Strategic Goal as described in the WURMP:

		Implementation Schedule by Fiscal Year				
Goal	**Strategic Goal**	**Fiscal Year 2009**	**Fiscal Year 2010**	**Fiscal Year 2011**	**Fiscal Year 2012**	**Fiscal Year 2013**
1	Dry Weather Flow Reduction	P/I/A	P/I/A	P/I/A	I[1]/A	A
2	Muncipal/Park Source Reduction	I	A		P[1]	I[1]
3	Commercial/Industrial Source Reduction	P	I	A		
4	Residential Source Reduction		P	I	A	A
5	Bacteria Source Reduction	P/I/A	P/I/A	P/I/A	P/I/A	P/I/A

Notes: I = Implementation; P = Planning; A = Assessment
[1] Activities supporting this Strategic Goal may be eliminated and shifted toward other Strategic Goals if judged appropriate.

Because this strategy was developed in the first year of the new Municipal Permit, use of this strategy to guide selection of activities did not begin until FY 2008-09. Thus, the San Diego River Copermittees will not have the benefit from a full year of planning until implementing activities scheduled for the 2009-10 fiscal year. Initially, the Strategic Goals and supporting activities will address multiple pollutants while focusing on specific types of land uses (e.g. Goals 2 through 4). As Copermittee understanding of sources increases over time, it is possible that the strategic goals may become more specific. For example,

goals may be focused on specific pollutants or groups of pollutants at various land use types (e.g. Strategic Goal 5), or by targeting more specific sources within a land use.

3.1 WATERSHED WATER QUALITY ACTIVITIES

The San Diego River Watershed Copermittees implemented numerous water quality activities focused on the San Diego River Watershed priority pollutants of concern during FY 2008-09. These activities are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern. Some of the highlighted activities include:

- River Restoration projects, including land acquisitions,
- Trash removal and river cleanup events,
- Structural BMP projects,
- Removal of homeless encampments and cleanups, and
- Setting-up additional "doggie bag" dispensers.

In addition, the San Diego River Watershed Copermittees began to coordinate some of their activities around the Strategic Goals established in the WURMP. Consistent with the timeline established in the WURMP, these activities focused on municipal facilities and particularly on sources of bacteria. One of the primary facility types focused on by the Copermittees was parks. San Diego River Copermittees conducted inspections of representative City parks using forms specifically developed for this activity and then used the results of these inspections to train and guide Park and Recreation Department staff on how to improve future operation and maintenance of the parks.

Although not technically a watershed activity as defined by the permit, the San Diego River Watershed Copermittees spent considerable time and money implementing a collaborative Source Identification Study throughout the watershed. Led by the City of San Diego, this effort included water quality sampling in all five jurisdictions and focused on sources of priority pollutants specific to this watershed, especially bacteria. The study results are summarized in Appendix A-4. The study identified over-irrigation, waste management at dumpsters, debris in catch basins and outdoor grease management as particular sources of concern in the watershed, especially at commercial/industrial land uses. For residential land use, waste and landscape management, especially over-irrigation, appear to be significant sources of pollutants, either directly or as a transport mechanism. These results will be used to plan and implement future watershed activities that will result in greater load reductions.

3.2 WATERSHED EDUCATION ACTIVITIES

The San Diego River Watershed Copermittees continue to value education activities as a means of reducing pollutants at the source. The watershed education activities conducted in FY 2008-09 are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern.

3.3 PUBLIC PARTICIPATION ACTIVITIES

The San Diego River Watershed Copermittees continue to rely on the Project Clean Water website as a tool to facilitate outreach to the public. In addition, a number of the activities,

both education and water quality, are specifically designed to foster public participation. For example, the cleanup events sponsored by the jurisdictions are typically conducted by or augmented by volunteers and are often associated with appreciation events for specific parks or the river itself. This direct public participation is intended to foster a sense of community awareness and responsibility for our waterways. A number of jurisdictions make a point of addressing the volunteers to educate them about watersheds in order to strengthen the link between upland human activities and downstream water quality.

3.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

This section describes collaborative land use planning efforts within the San Diego River Watershed during FY 2008-09. The San Diego River Watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. Jurisdictional Urban Runoff Management Program (JURMP) annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Education:
The San Diego River Watershed Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant re-development. In addition to the education and training that is provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego's development of a LID and Watershed Planning Education Activity. This activity is intended to educate local planning and sponsor groups on LID and watershed planning principles, practices, and requirements. The recommendations of local planning and sponsor groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. This education activity is intended to aid these advisory bodies in making informed recommendations on aspects of development projects that could affect watershed water quality. During the FY 2008-09 reporting period, County of San Diego staff gave the presentation to 9 planning and sponsor groups, including 7 Community Planning Groups, 1 Community Sponsor group and 1 local community group in the North Mountain Planning Area.

Cross-Jurisdictional Communication:
The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the San Diego River Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the San

Diego River Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

In order to encourage collaborative, watershed-based land use planning, the San Diego River Copermittees will have at least one watershed meeting per year that will be dedicated to discussing and addressing land use planning issues. For FY 2008-09, this collaboration primarily consisted of sharing land use planning activities between Copermittees and discussions regarding how the San Diego Association of Governments (SANDAG) Quality of Life Initiative can be incorporated into the watershed. It is anticipated that these ongoing discussions will enable San Diego River Copermittees to establish some consistency in how they integrate watershed principles into their plans and to evaluate the potential need for watershed specific land use requirements. The results of future meetings, including any follow up meetings, will be reported in the WURMP annual reports.

3.5 UPDATED 5-YEAR STRATEGIC PLAN

The comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are described in the WURMP and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement. Updates to the 5-year strategic plan in the San Diego River Watershed will take the form of changes to the Strategic Goals and associated activities.

3.5.1 New Watershed Activities

New watershed activities are selected and implemented in a manner intended to meet the objectives established in the relevant Strategic Goals for that year, which are based on the priority pollutants and targeted sources identified in the WURMP. The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

More detailed descriptions of how the San Diego River Copermittees will implement these Strategic Goals in the form of Watershed Water Quality and Education Activities are provided in Appendix B. These plans will be updated at least annually to reflect our changing understanding of water quality in the watershed or lessons learned from other sources, including previous implementation activities.

3.5.2 Updated 5-Year Strategic Plan

The results of the recently completed Source Identification Study are generally consistent with the evaluations conducted during preparation of the WURMP in March 2008. This study strongly supports the Strategic Goals previously selected for this watershed and helps

to provide more specific sources of pollutants that can be prioritized for watershed activities. Based on the results of this study, the San Diego River Copermittees are not making significant revisions to the current Strategic Goals established in the WURMP, except that the timeframes for implementation of activities related to Strategic Goal 3 has been extended an additional year so that the Copermittees can fully incorporate the results of the study into their activities.

This change is also consistent with our collective experience implementing collaborative activities in previous years. The Copermittees have generally found that coordinated activities tend to take longer to plan, implement and evaluate, because they tend to either require extensive planning/communication or be done in a more iterative or experimental fashion. Copermittees will often implement variations on the same activity and report back results. Based on these results, Copermittees often see more benefit from implementing new and improved versions of these activities rather than moving on to new categories of activities as originally planned in the WURMP. The revised implementation schedule for the Strategic Goals is provided below and indicates that we will focus on commercial/industrial sources of pollutant loads for two fiscal years instead of the previously planned one year.

Goal	Strategic Goal	Implementation Schedule by Fiscal Year				
		Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013
1	Dry Weather Flow Reduction	P/I/A	P/I/A	P/I/A	I[1]/A	A
2	Muncipal/Park Source Reduction	I	A		P[1]	I[1]
3	Commercial/Industrial Source Reduction	P	I	I	A	
4	Residential Source Reduction		P	P	I	A
5	Bacteria Source Reduction	P/I/A	P/I/A	P/I/A	P/I/A	P/I/A

Notes: I = Implementation; P = Planning; A = Assessment
[1] Activities supporting this Strategic Goal may be eliminated and shifted toward other Strategic Goals if judged appropriate.

4.0 EFFECTIVENESS ASSESSMENT

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

One of the most important components of a successful program is the development and implementation of a comprehensive program evaluation. In order to facilitate this assessment of WURMP effectiveness, the March 2008 WURMP has translated the results of the Copermittees water quality and pollutant source assessments into more specific Strategic Goals that will facilitate the selection of collaborative and measurable activities. Since the selection of Strategic Goals was based on a comprehensive assessment of water quality and potential pollutant sources in the watershed, measurable progress toward achieving these Strategic Goals is considered to be measurable progress toward the larger goal of positively affecting water quality. The specific activities selected by the San Diego River Copermittees will be developed, implemented and measured for effectiveness against these Strategic Goals.

For FY 2008-09, activities were selected for implementation well in advance of the WURMP revisions and can not be reasonably evaluated in terms of the Strategic Goals. However, even with the use of the Strategic Goals, the San Diego River Watershed Copermittees intend to continue evaluating watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document, which can still be used for the FY 2008-09 activities. The six levels are as follows:

Level 1: Compliance with activity-based permit requirements
Level 2: Changes in knowledge / awareness
Level 3: Behavioral change / BMP implementation
Level 4: Load reductions
Level 5: Changes in discharge quality
Level 6: Changes in receiving water quality

Documentation of Levels 1-3 is fairly straightforward, whereas documentation of Levels 4-6 requires the development and implementation of scientific studies designed specifically to document and track water quality trends in discharges and in the receiving water. Moreover, the detection of changes in discharge quality and, in particular, changes in receiving water quality requires the collection of data over several years to detect and verify changes in water quality. Although the Copermittees have very few data sets that span several years, we are working to collect this information and improve the process. In addition, due to the enormous number of factors affecting water quality in both storm drain discharges and in receiving waters, it is difficult to isolate the effects of a storm water program's efforts. Conclusions from existing data will be conducted when possible, but long-term, consistent improvements in water quality throughout the San Diego River Watershed cannot yet be determined.

Levels 1, 2, and 3 assess implementation of BMPs with prevention of pollution entering the storm drain system as the primary objective. Assessment Levels 4, 5, and 6 focus on reducing pollutants loads and assessing water quality improvement. The two groups of Assessment Levels have two different objectives, although they are connected by water quality. A connection between the two assessment groups is not possible when pollutant load information has been obtained at only a few mass loading stations, generally found in the

lower watershed, near the discharge point to the ocean. Even if jurisdictions take the Effectiveness Assessment through to Level 4 by estimating pollutants prevented from entering the receiving water, it is still difficult to connect this information to downstream receiving water quality for a number of reasons including the alternative sources of both flow (for example, groundwater) and pollutants (for example, aerial deposition) as well as the overlapping influences of multiple Copermittee activities at the jurisdictional, watershed and regional levels. These and other obstacles to assessing effectiveness will be tasked to the Effectiveness Assessment Workgroup as well as the Watershed Copermittees, who will work together to identify solutions to these obstacles.

4.1.1 Level 1 Effectiveness: Compliance with Activity-Based Permit Requirements

The San Diego River Watershed Copermittees have fulfilled several of the requirements of the Municipal Storm Water Permit. The table below outlines Level 1 Compliance with the Municipal Permit by relating San Diego River Watershed Copermittee activities to one of the four objectives and the requirements specified in the Municipal Permit.

Level 1 targeted outcomes

Permit Requirements (E.2)	Activities	Status
(a) Lead Watershed Permittee Identification	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) An accurate map of the watershed	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) Annual assessment of receiving water quality	• Weston 2008-2009 Urban Runoff Monitoring Report	Complete for 2008-2009
(d) Mechanism to facilitate collaborative "watershed based" land use planning	• County General Plan Update	Ongoing
	• City of San Diego General Plan Update	Completed (proceeding with GP elements)
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2008-2009
	• San Diego River WURMP Workgroup	Complete for 2008-2009
	• MOU; CEQA; Public Hearings; MSCP – descriptions included in the Common Activities	Complete for 2008-2009
	• Impervious Cover Coefficients Study	Complete for 2008-2009
(e) Develop and implement collective watershed strategy	• San Diego River Watershed Urban Runoff Management Plan • Weston 2008-2009 Urban Runoff Monitoring Report	Complete for 2008-2009
(f) Identify and implement Watershed Activities	• See Section 3	Complete for 2008-2009
(g) Copermittee collaboration	• See Sections 1 and 3	Complete for 2008-2009

Permit Requirements (E.2)	Activities	Status
(h) Mechanism for public participation	• Copermittee and Stakeholder Collaboration /Public Participation (meetings, e-mail and web)	Ongoing
	• Direct Interaction	Ongoing
	• Project Clean Water	Ongoing (website is updated as new information warrants)
	• San Diego River Coalition Meetings	Complete for 2008-2009
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2008-2009 - Implementation ongoing
(i) Annual WURMP review	• WURMP Annual Report	Complete for 2008-2009

4.1.2 Level 2 Effectiveness: Changes in Knowledge and Awareness

The following programs implemented by the San Diego River Watershed Copermittees may have contributed to an increase in knowledge and/or awareness of program participants.

- Project Clean Water
- LID Training
- Think Blue Public Service Announcements
- Public Outreach & Media
- Pet Waste Outreach
- New Advertising Materials: booklets, posters and brochures
- Partners in Clean Water and Community Events as well as Cleanup Events

Many of the programs listed above address multiple program strategies (i.e., development of a monitoring program coupled with an educational outreach campaign). As such, these programs provided education on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed. However, the San Diego River Copermittees increasingly want to focus their attention on activities that result in load reductions. This may result in fewer activities targeting this level of effectiveness, depending on the methods used to achieve the load reduction, e.g. structural BMPs typically have no impact at this level.

4.1.3 Level 3 Effectiveness: Behavioral Change and BMP Implementation

It is likely that changes in behavior occurred through implementation of the programs or activities listed in Section 3 that involve stakeholder participation in activities and decision-making processes, as well as the implementation of BMPs to reduce the impacts of urban runoff. These programs also provided information on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed:

- Targeted Inspections
- Cleanup Events
- Think Blue Public Service Announcements
- Park Appreciation Days

- Intergenerational Games
- Outreach on Pet Waste Management

Although no formal quantification was made during this fiscal year, it can be assumed that the Copermittees efforts changed behavior and, thus, had a positive effect on water quality.

4.1.4 Level 4 Effectiveness: Load Reductions

The implementation of BMPs is ultimately aimed at preventing pollutants from entering the storm drain system, which equates to load reduction. Targeting specific pollutants by implementing BMPs to address pollutant sources is an integral component of measuring Level 4 outcomes. Furthermore, quantifying the volume of pollutants that were prevented from entering the storm drain system or receiving water bodies can provide beneficial data that can be used to address broader water quality issues.

Some activities are more conducive to estimating load reductions than others. For example, street sweeping and storm drain cleaning are easily quantified in terms of loads reduced since material is physically removed from conveyances. However, Copermittees generally do not track most jurisdictional activities on a watershed basis. One of the opportunities for improvement identified in the Copermittees' BLTEA is to reconsider the way certain types of program data are tracked. This may involve becoming more geospatial in the way data is collected and presented. Some activities are extremely difficult to analyze in terms of load reductions. For example, the effect that education has on reducing pollutant loads would likely be based on conjecture and gross estimation.

Some of the FY2008-09 activities with quantifiable load reductions include the following:

- Approximately 83,980 dog waste bags were used, and it is estimated that this equates to the reduction of 21,835 pounds of dog waste collected at County of San Diego park facilities in the San Diego River Watershed.
- Approximately 50,400 dog waste bags were used, and it is estimated that this equates to the reduction of 13,104 pounds of dog waste collected at City of Santee park facilities in the San Diego River Watershed.
- Approximately 9,000 dog waste bags were used, and it is estimated that this equates to the reduction of 2,340 pounds of dog waste collected at City of La Mesa park facilities in the San Diego River Watershed.
- Approximately 18,000 pounds of trash and debris were removed from parks and creeks during various cleanup events in the City of La Mesa.
- Approximately 33,710 pounds of trash and debris were removed in the City of San Diego during various cleanup events, primarily in Mission Valley.
- An estimated 7.2 tons of trash and debris were removed from various parks and Forester Creek during 9 cleanup events and clean out of the Forester Creek trash barrier in the City of Santee.
- An estimated 659 cubic yards of trash, debris and sediment removed from the trash barrier at Forester Creek in the City of El Cajon.

4.1.5 Level 5 and 6 Effectiveness: Changes in Discharge Quality and Receiving Water

Quality

Level 5 outcomes represent changes in the quality of discharges from Copermittee-owned storm drain systems into receiving waters. They differ from Level 4 outcomes in that they represent changes in the cumulative loadings from multiple sources rather than individual sites or facilities. No measurements of changes to discharge quality were taken during FY2008-09.

Level 6 outcomes describe changes to receiving water quality that result from urban runoff management programs. It can be difficult to distinguish between the beneficial effect of urban runoff management activities and changes in water quality that are due to natural variability or other factors outside the scope of the WURMP. Nonetheless, collection of water quality data is critical to determining the effectiveness of management programs over time. Copermittees throughout the region are working together to collect water quality data and to measure improvement or degradation at the watershed scale. The BLTEA provided the first long-term assessment of changes to receiving water quality. It also incorporated pollutant-loading potentials for significant sources within the region and established threat-to-water quality (TTWQ) ratings for priority pollutants and sources within each hydrologic sub-watershed identified within the Basin Plan.

Quantifying water quality change requires an analysis of COCs in sampled runoff as well as an evaluation of existing information: 303(d) listings, beneficial uses, existing projects and studies, etc. In many cases, sufficient data may not be available from urban runoff monitoring programs to determine whether a water quality problem results in water body impairment. More difficult still is isolating the effect that urban runoff management activities have on observed changes. Stormwater data can vary significantly from storm to storm and it usually takes several years of data to determine whether improvements or degradation are occurring. All of these factors complicate annual water quality assessments. Water quality change is generally assessed on a long-term basis by evaluating trends; more water quality information pertaining to trend analysis is presented in the Weston Monitoring Report.

As a whole, the Copermittees are working to expand the focus of their assessments on demonstrating the watershed-level benefits of program implementation, and will continue to do so under order R9-2007-0001. However, annual watershed assessments do not attempt to address the relationship of WURMP implementation to changes in water quality; this analysis will be confined to the Long-term Effectiveness Assessment process. The Copermittees feel that their efforts demonstrated by Level 1, 2, 3, 4, 5 and 6 data likely had positive effects on water quality and help establish the effectiveness of their San Diego River watershed program. The process also allowed them to thoroughly evaluate the WURMP and make improvements, modifications, and changes to the program as needed.

4.2 ASSESSMENT OF TMDL BMP IMPLEMENTATION PLAN EFFECTIVENESS

At this time, there are no adopted TMDLs currently in effect within the San Diego River WMA. The previously adopted Bacteria TMDL was returned to the CRWQCB by the State Water Resources Control Board for further consideration. The Bacteria TMDL has been revised by the CRWQCB, and is anticipated to be adopted by the CRWQCB in 2010. After CRWQCB adoption, the Bacteria TMDL will need to be approved by the State Water

Resources Control Board and Office of Administrative Law. Necessary changes to meet future TMDL specific requirements will be incorporated at that time. Current activities are being planned and implemented with the Bacteria TMDL requirements in mind.

5.0 PLANNED WATERSHED IMPLEMENTATION ACTIVITIES

5.1 INITIAL ACTIVITY SELECTION

5.1.1 Applicable Strategic Goals

The following Strategic Goals were established in the WURMP and are the targeted outcomes for activity implementation in FY 2009-10 and FY 2010-11.

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water.

- **Strategic Goal 3 - Source Reduction at Commercial/Industrial Land Uses**: By reducing the mass of priority pollutants discharged to Copermittee storm drain systems and receiving waters from commercial and industrial land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 5 – Bacteria Source Reduction**: By reducing the mass of bacteria discharged to Copermittee storm drain systems and receiving waters, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of bacteria to receiving waters. The specific land uses and sources targeted by this Strategic Goal will be selected based on the available data from ongoing monitoring programs and the results of implementing previous Strategic Goals. This goal will also support Copermittee implementation of the Bacteria TMDL when finalized.

5.1.2 Potential Target Sources

Selected activities for FY2009-10 and 2010-11 generally will target the following land use categories:

- Commercial
- Industrial

Based on the Source Identification Study, the following types of sources represent the top potential targets for exposure reduction and, therefore, load reduction in the commercial/industrial land use category.

- Over-irrigation
- Waste Management/Dumpsters
- Catch Basin Debris
- Outdoor Grease Storage

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for load reduction watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 11 in the WURMP may be used.

- Landscaping
- Animal Facilities
- Gardens/Nurseries

4.1.5 Watershed Priority Pollutants at Target Sources

The following combination of watershed priority pollutants/stressors and target sources will generally be the focal point of collaborative watershed activities generated through the WURMP process:

- Bacteria from applicable facilities as well as from facility-specific types of sources: waste management/dumpsters, grease management, catch basin cleanout, animal/pet food and waste management, soil management/erosion control, and portable bathroom facilities (if present).
- Nutrients from general landscaping at applicable facilities as well as from specific commercial operations: fertilizer storage at retailers, fertilizer storage and application at nurseries/commercial gardens and golf courses; soil and mulch management/erosion control at nurseries/commercial gardens, golf courses and animal facilities; animal waste management at animal facilities; portable bathroom facilities (if present), and vegetative litter.
- Total Dissolved Solids from excessive potable water use.
- Low Dissolved Oxygen from sources of nutrients, sediment and organic matter (see above). Additional sources may include the intentional application to soil of organic compounds or the decomposition of vegetative litter.
- Turbidity from sources of sediment, organic matter and nutrients (see above). Additional sources may result from general housekeeping and human litter.

Bacteria is intended to be the primary pollutant addressed by the current watershed activities, but the other priority pollutants will be addressed as appropriate if they are encountered during implementation of the activities.

5.2 INITIAL ACTIVITY DESCRIPTIONS FOR PLANNING PURPOSES

As part of its planning process, the San Diego River Watershed Copermittees consider a number of watershed activities and have several in various stages of planning and implementation. The following Watershed Water Quality Activities are currently being considered for implementation during FY 2009-10 and FYI 2010-11, or are in the process of development and implementation. Final selection of the proposed activities will be made in FY 2009-2010 based on the results of initial planning and baseline activities, and in accordance with the selection process described in Section 4.1.

Water Quality:

- Perform inspections beyond jurisdictional compliance requirements. These inspections may target facilities based on individual history of compliance,

geography or facility type. These inspections may also explore the potential for increased frequency of inspection with a smaller scope of inspection to facilitate reduced levels of exposure and, therefore, reduced pollutant loading.

- Promote the installation of weather-based controllers at commercial and industrial facilities with irrigation systems, which may include providing or facilitating subsidies/rebates or other means to increase their use. To the extent practicable, facility selection will be prioritized based on irrigation area/water runoff volumes and proximity to receiving waters.
- Promote the installation of drip irrigation for landscaping instead of spray irrigation, which is more prone to leaks.

For FY 2009-10 and FY 2010-11, the following Watershed Education Activities are currently being considered for implementation. Final selection of the proposed activities will be made in each fiscal year based on the results of initial planning and baseline activities and in accordance with the selection process described previous in Section 4.1.

Education:

- Develop pet waste training presentation and materials to educate the public on the importance of cleaning up after their pets. Work with local retail and commercial pet facilities to educate the public.
- Educate facilities targeted for additional inspections regarding BMPs during compliance inspections. This will also serve as an opportunity to identify potential sources at these facilities not sufficiently addressed by current BMPs and to request advice from knowledgeable facility personnel regarding other ways to reduce pollutant discharges.
- Develop and implement industry training seminars targeting specific industry groups and activities.

5.3 PLANNING AND BASELINE ACTIVITIES

The most significant activity during FY 2008-09 that will serve as baseline data for activities in subsequent fiscal years is the source identification study currently being conducted in a coordinated manner by all five jurisdictions in the watershed.

- Source Identification Study: This is a critical activity that supports Copermittee decision-making regarding load reduction activity selection and implementation. The Copermittees, in particular the City of San Diego, are collectively spending over $200,000 to identify sources of pollutants, specifically bacteria, in the lower San Diego River watershed. The City of San Diego has modeled this study after its Tecolote Creek Microbial Source Tracking Study with a similar design and intent, but will also include watershed-specific priority pollutants. The study assessed more than 15 San Diego River sites during two dry weather monitoring events. Specific likely sources, including industrial, residential, commercial and transport areas were investigated during dry weather. During wet weather, river monitoring locations were investigated with the collection of pollutograph samples. In addition, wet weather loads from specific likely sources were investigated. During both dry and wet weather assessments, the presence of fecal indicator bacterial, as well as human-specific indicators, were assessed together with TDS, phosphorus and DO.

The following planning activities are currently being explored during FY 2009-10 in order to facilitate implementation of Watershed Water Quality and Education Activities in 2010-11:

- The Copermittees regard the implementation activities being conducted during FY2009-10 as experiments that can be used to develop additional variations on these activities in FY 2010-11, targeting the same sources but experimenting with new techniques, to reduce pollutant exposure and loading in the watershed.
- The Copermittees will review the results of previous commercial/industrial inspections to identify appropriate inspection targets on both a jurisdictional and watershed basis. may work with the water districts to identify the largest (by volume) commercial or industrial water users within the watershed and then work with other readily available data sources to develop methods for prioritizing users most likely to generate large volumes of runoff as targets for weather-based controller rebates/installation. The Copermittees will also develop methods for estimating pollutant loading reductions from the estimated or measured reduction in runoff volumes.
- Baseline surveys of attitudes and behavior may be conducted for initial target audiences, such as golf course managers, animal/pet facility managers, nursery/garden center managers and property managers. Surveys of additional potential target audiences may be conducted as needed in order to develop a final list of sources targeted for watershed water quality and education activities.

5.4 IMPLEMENTATION ACTIVITIES

For FY 2009-10, the Copermittees will be focusing their watershed activities on improving the results of commercial/industrial inspections by experimenting with various methods of adjusting their inspection programs above and beyond jurisdictional requirements in the permit. These will include geographic based inspections by the City of San Diego and targeted inspections based on history of compliance by the City of Santee. Other inspection programs are being developed based on facility type. These inspections will also experiment with reduced scope of inspection by focusing on readily visible outdoor sources. All the inspection programs will be targeting high priority pollutants and high priority sources as identified in the Source Identification Study.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The San Diego River Watershed Copermittees implemented a number of Water Quality and Education activities designed to improve water quality in FY 09. As described in Section 3 of this Annual Report, the WURMP Workgroup is working diligently and across jurisdictional boundaries to develop and implement watershed activities that address the specific water quality problems of the San Diego River watershed. In addition, the Copermittees are working to improve the Program's iterative planning, implementation and assessment processes. As the new WURMP process is implemented and refined, the planned collaborative efforts will help to raise the effectiveness of the Copermittee programs. The Copermittees will continue to refine and improve the San Diego River WURMP each year.

In addition, although not technically a watershed activity as defined by the permit, the San Diego River Watershed Copermittees spent considerable time and money implementing a collaborative Source Identification Study throughout the watershed. Led by the City of San Diego, this successful effort included water quality sampling in all five jurisdictions and focused on sources of priority pollutants specific to this watershed, especially bacteria. The results of this study will serve as the foundation for the selection, planning and implementation of watershed activities throughout the rest of this permit cycle, and has already impacted the activity development for the 2009-2010 fiscal year.

6.2 RECOMMENDATIONS

Based on these conclusions, the Copermittees present the following recommendations.

Continue using the WURMP Strategic Goals to facilitate coordinated and collaborative planning, implementation (as appropriate) and assessment efforts across jurisdictional boundaries. The San Diego River Watershed Copermittees have committed to making the effort to coordinate their activities as much as reasonably possible. The Strategic Goals provide a common focal point and direction for the activity development process. Because it is a group process designed to coordinate our efforts, the development of activities, even with the Strategic Goals as guides, is a slower process than one in which each jurisdiction simply selects individual watershed activities. However, based on our experience so far, the San Diego River Watershed Copermittees believe it will yield better results.

Use the results of the Source Identification Study to Guide Future Activity Selection and Implementation. The most important contribution the watershed programs can make towards protecting Beneficial Uses and improving water quality in the San Diego River Watershed (or any watershed) is to increase understanding of the water quality issues in the watershed (i.e., the sources and magnitude of the issues). This will enable the Copermittees, other entities, and interested members of the public (their watershed partners) to make more informed decisions and take effective action to reduce pollutant loads. This is particularly true for bacteria, which has complicated fate, transport and regrowth mechanisms that are not well understood.

The Copermittees are planning to use the results of the Source Identification Study in FY 2009-10 as described further in Appendix B to address specific commercial sources

of pollutants identified as highest priority, including dumpsters/waste management, catch basin maintenance and outdoor grease storage areas. In addition, this study was the basis for the Copermittees' decision to change the implementation schedule of the Watershed Strategic Goals so that commercial/industrial sources will be addressed over a two year timeframe instead of just one. The Copermittees believe this study will improve their ability to select and implement watershed activities that will result in measurable load reductions.

7.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region (CRWQCB). 2007, Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District and the San Diego County Regional Airport Authority

City of El Cajon, City of La Mesa, City of Santee, City of San Diego and County of San Diego (City of El Cajon et al.), 2008, San Diego River Watershed Urban Runoff Management Plan, March 2008.

Weston Solutions, Larry Walker Associates and Mikhail Ogawa Engineering (Weston et al.), 2005, Baseline Long-Term Effectiveness Assessment, San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program, August 2005.

Weston Solutions, 2008, Stream Bioassessment for the Forester Creek Enhancement Project, June 2008 Survey, Prepared for Nordbery Biological Consultants, July 2008.

Weston Solutions, 2009, San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report, Prepared for County of San Diego, January 2010.

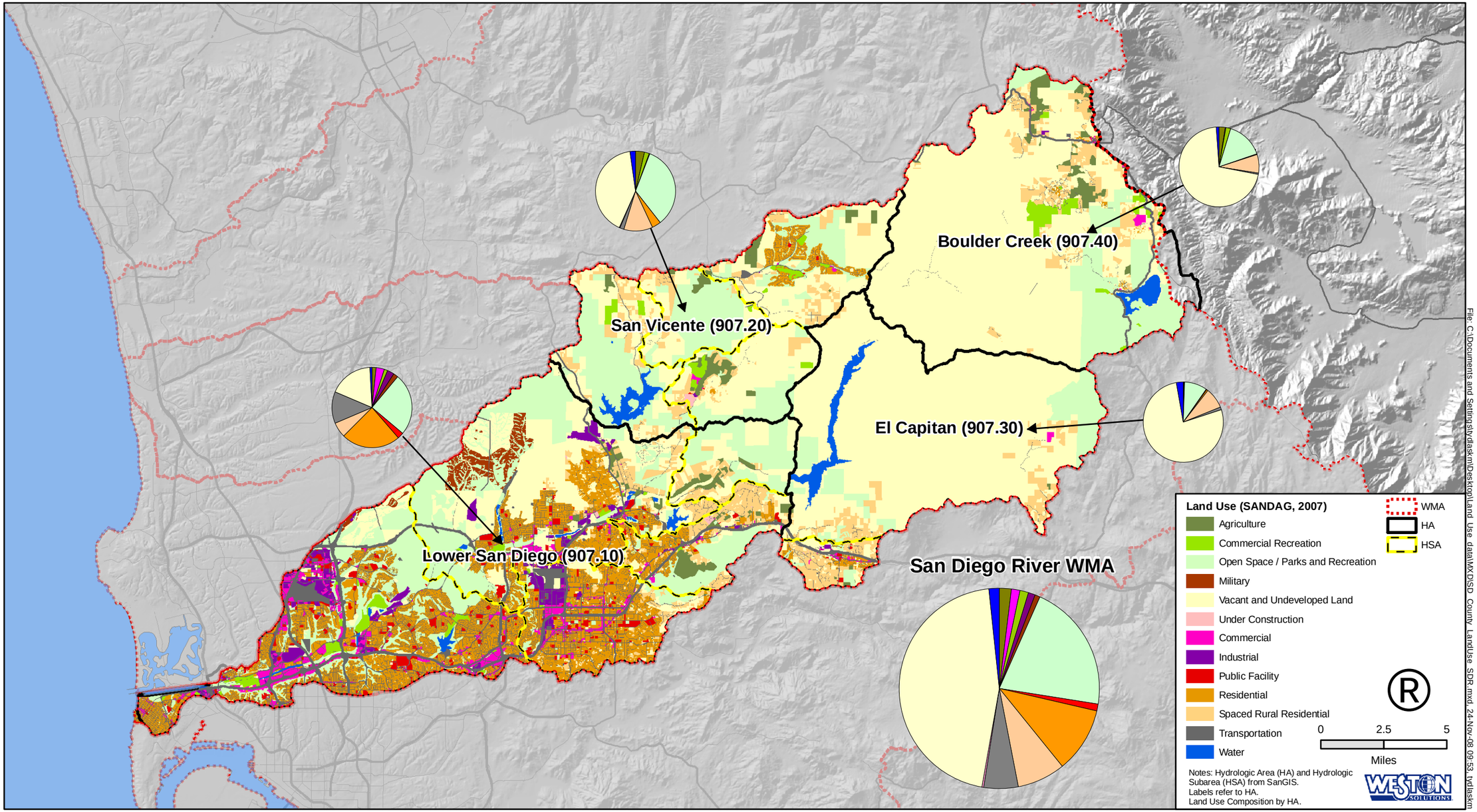
Boulder Creek (907.40)
San Vicente (907.20)
El Capitan (907.30)
Lower San Diego (907.10)
San Diego River WMA
Land Use (SANDAG, 2007)
Agriculture
Commercial Recreation
Open Space / Parks and Recreation
Military
Vacant and Undeveloped Land
Under Construction
Commercial
Industrial
Public Facility
Residential
Spaced Rural Residential
Transportation
Water
WMA
HA
HSA
0
2.5
5
Miles
Notes: Hydrologic Area (HA) and Hydrologic Subarea (HSA) from SanGIS.
Labels refer to HA.
Land Use Composition by HA.
WESTON SOLUTIONS
File: C:\Documents and Settings\tvdlaskm\Desktop\Land Use data\MXD\SD County LandUse SDR.mxd, 24-Nov-08 09:53, tvdlaskm

APPENDIX A

PROGRAM ACTIVITY SUMMARY DESCRIPTIONS FOR FISCAL YEAR 2008-09

Watershed Activities Matrix for 2008-09 Activities

	ACTIVITY NAME	Collaborative Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2008-09							Activity Status for Fiscal Year 2008-09*	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
Special Studies / Source ID / Pollution Reduction	**Activities to Address High Priority TTWQ Sources:**																		
	Additional Dry Weather Monitoring (City of La Mesa)		X		X	X	X	X	X	X	X	X			X			O	Appendix A-1
	Adopt a Park/Adopt A Block (City of La Mesa)		X		X	X		X		X	X			X		X	X	O	Appendix A-2
	Bacteria Source Investigation Tracking Study (Cities of San Diego, El Cajon, Santee and La Mesa, County of San Diego)	X			X	X	X	X		X	X	X	X		X			N	Appendix A-4
	Canine Corners Harry Griffith Park (City of La Mesa)		X		X	X		X						X		X	X	O	Appendix A-5
	Coastal Cleanup Day Sponsorship - University Channel & Alvarado Channel (City of La Mesa)		X		X			X	X		X			X		X	X	O	Appendix A-7
	Forrester Creek Homeless Encampment Removal Project (City of El Cajon)		X		X				X					X	X		X	O	Appendix A-8
	I Love a Clean San Diego Creek to Bay Cleanup Event Sponsorship (County of San Diego, City of La Mesa, City of San Diego)	X			X			X	X		X			X		X	X	O	Appendix A-9A and A-9B
	Increase in Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas (City of Santee)		X		X							X			X			O	Appendix A-10
	Park Appreciation Days (City of La Mesa)		X		X	X		X	X	X	X			X		X	X	O	Appendix A-11
	Prevention of the Release of Pet Fecal Matter in Public Parks (Cities of El Cajon, La Mesa, Santee, and County of San Diego)	X			X			X						X		X	X	O	Appendix A-13
	San Diego River Park Foundation Cleanup Event Sponsorship (City of San Diego)		X		X				X		X			X		X	X	O	Appendix A-14
	San Diego River Watershed Targeted Inspection (City of San Diego)		X		X	X	X		X	X			X		X	X	X	O	Appendix A-15
	San Diego Riverbed Homeless Encampment Removal Project (City of Santee)		X		X				X				X				X	O	Appendix A-16
	Trash Removal Activities in Santee (City of Santee)		X		X				X					X		X	X	O	Appendix A-17
	Wet Weather Monitoring (City of La Mesa)		X		X	X	X	X	X	X	X	X			X			O	Appendix A-18
	Municipal Park Runoff Minimization (City of San Diego)		X		X						X							N	Appendix A-50
	Qualcomm Stadium Trash BMP Installation (City of San Diego)		X		X			X	X	X	X							N	Appendix A-52
	Robb Field Stormwater Reuse (City of San Diego)		X		X						X							N	Appendix A-53
	Stormwater Quality Master Plans for Special Drainage Fee Areas (County of San Diego)		X		X	X	X	X	X	X	X							N	Appendix A-55
	Invasive Species Removal (County of San Diego)		X		X	X	X	X	X	X	X							N	Appendix A-57
	Additional Wet and Dry Weather Monitoring (County of San Diego)		X		X	X	X	X	X	X	X	X			X			N	Appendix A-59
	Municipal Park Inspections (Cities of El Cajon, La Mesa, Santee, San Diego and County of San Diego)	X			X	X	X	X	X	X	X	X	X		X		X	N	Appendix A-60
	Irrigation Runoff Reduction (City of Santee)		X		X	X	X		X	X	X							N	Appendix A-62
	Activities to Address Watershed High Priority Pollutants:																		
	Cabrillo Heights Park Rain Garden Infiltration Project - LID pilot (City of San Diego)		X		X						X							N	Appendix A-19
	Coastal Cleanup Day Sponsorship (City of San Diego)		X		X				X					X		X	X	O	Appendix A-20
	Lakeside Ballfield Park (County of San Diego)		X		X	X	X	X	X	X	X							C	Appendix A-22
	Land Acquisitions MSCP (County of San Diego)		X		X	X	X	X	X	X	X			X			X	O	Appendix A-23
	Maintenance/Inspections of Forrester Creek Trash Barriers (Cities of El Cajon and Santee)		X		X				X				X	X			X	O	Appendix A-24A and A-24B
	Municipal Rain Barrel Installation (City of San Diego)		X		X									X			X	N	Appendix A-25
	Park Ridge Blvd Bacteria Treatment Project (City of San Diego)		X		X						X							N	Appendix A-26
	San Diego River Flinn Springs Porous Pavement (County of San Diego)		X		X	X	X		X	X	X							O	Appendix A-27
	San Diego River Indicator Bacteria Study (County of San Diego)		X		X							X			X			O	Appendix A-28
	SDPD Western Division Green Lot Infiltration Project (City of San Diego)		X		X		X				X							C	Appendix A-29
	Sweeping Route Posting and Enforcement (City of San Diego)		X		X	X	X	X	X	X	X							N	Appendix A-30
	Woodside Avenue Detention Basin (County of San Diego)		X			X	X			X		X	X	X			X	O	Appendix A-32
	Strategic Plan Implementation (City of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-48
	Additional Receiving Water Monitoring (City of Santee)		X		X	X	X	X		X	X	X						O	Appendix A-49

Watershed Activities Matrix for 2008-09 Activities

	ACTIVITY NAME	Collaborative Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2008-09							Activity Status for Fiscal Year 2008-09*	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
	Famosa Slough Monitoring (City of San Diego)		X				X	X		X	X	X			X			C	Appendix A-51
	San Diego River Park Foundation Cleanup Event (County of San Diego)		X		X	X	X	X	X	X	X							N	Appendix A-58
	Municipal Use of Organic Fertilizers (City of Santee)		X				X				X			X				N	Appendix A-61
Land Use Activities																			
Education Activities	Billboards/Transit Shelters (City of San Diego)		X		X											X		C	Appendix A-34
	Intergenerational Games La Mesa Middle School (City of La Mesa)		X		X	X	X	X		X	X				X	X		O	Appendix A-35
	Karma/Karma Second Chance Public Service Announcements (City of San Diego)		X		X				X							X		O	Appendix A-36
	LID Watershed Planning Education (County of San Diego)		X		X	X	X	X	X	X	X					X		N	Appendix A-37
	Mobile Advertising (City of San Diego)		X		X				X							X		C	Appendix A-38
	Oktoberfest (City of La Mesa)		X		X	X	X	X		X	X				X	X		O	Appendix A-39
	Outreach on Pet Waste Management (City of Santee)		X		X											X		O	Appendix A-41
	Public Presentations, Outreach and Media (City of Santee)		X		X	X	X	X	X	X						X		O	Appendix A-42
	San Diego River Restaurant BMP Booklet (City of San Diego)		X		X				X							X		O	Appendix A-43
	San Diego River Watershed Erosion and Sedimentation Poster (City of San Diego)		X		X					X						X		O	Appendix A-44
	San Diego River Watershed Brochure (City of San Diego)		X		X	X	X	X	X	X	X							N	Appendix A-54
	Pet Waste Outreach (County of San Diego, Cities of San Diego, El Cajon, Santee and La Mesa)	X			X					X	X							N	Appendix A-56
Public Participation	San Diego River Coalition Meetings (all)	X			X	X	X	X		X	X					X		O	Appendix A-45
	Project Clean Water - San Diego River Watershed Website (all)	X			X	X	X	X		X	X					X		O	Appendix A-46
	Public Participation (City of Santee)		X		X	X		X	X		X					X		O	Appendix A-47
Administrative Activities																			

* N = New; O = Ongoing; C = Completed or Cancelled

FY 2008–2009 Water Quality Activity

TITLE: Additional Dry Weather Monitoring

PROJECT SUMMARY

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies and identifying pollutant sources. Consequently, the City conducted additional non-storm water quality monitoring within the San Diego River Watershed. The purpose of the study was to evaluate the water quality of the discharged flow. Two sampling locations were identified within the Alvarado Drainage Basin. All water samples during this study were taken in June 2009 and were evaluated for the same suite of constituents measured in the City's annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303 (d) listings constituents, and watershed constituent of concerns as reported in the WURMP. This included measuring flow, temperature, pH, conductivity, turbidity, nitrate, ammonia, orthophosphate, dissolved oxygen, and MBAS in the field and total hardness, dissolved metals, chlorpyrifos, diazinon, surfactants, oil and grease, TDS, TSS, total coliform, fecal coliform, and enterococcus bacteria in the laboratory. Results have been received and are being analyzed.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

This activity is above and beyond the Dry Weather Field Screening and Analytical Monitoring Program. Analyzing samples of non-storm water discharge from two locations within the San Diego River Watershed provides insight into water quality leaving the City of La Mesa. It also enables the City to conduct potential follow-up investigation of potential pollutant sources. Monitoring is intended as a long-term activity; however, sampling locations may vary each year. This activity is consistent with WURMP Strategic Goals 2 through 5

ACTIVITIES CONDUCTED DURING 2008-2009

The following activities were conducted during 2008-2009:

- Identified two discharge locations to monitor within watershed.
- Conducted sampling in June 2009 inclusive of field monitoring and laboratory analysis.
- Prepare letter report analyzing data.

FY 2008–2009 Water Quality Activity

TITLE: Adopt A Park/Adopt A Block

PROJECT SUMMARY

The City of La Mesa has encouraged the public to participate in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers as part of the Adopt-a-Park and Adopt-a-Block Program. Volunteers are encouraged to routinely pick trash from various parks within the watershed or along their block. There are seven parks within the San Diego River Watershed that are maintained by the volunteer groups. Although specific amount of debris collected is not recorded, the groups' efforts are considered a load reduction from debris entering the storm drain system and receiving water body. Volunteers logged approximately 2,000 service hours of time under these programs during this reporting period.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- DO (high priority)
- Turbidity

HOW THIS ACTIVITY RELATES TO THE WATERSHED

There are seven parks and numerous residential areas located within the San Diego River Watershed. Volunteers assigned to parks or within residential areas, routinely collect trash and debris within the watershed. These efforts result in a reduction of debris entering the storm water conveyance system and receiving water. Removal of debris constitutes a reduction in pollutants that are sources of bacteria, TDS and may reduce turbidity or low oxygen concentration in receiving waters due to eutrophication. This activity is considered by the City as a long-term watershed activity.

ACTIVITIES CONDUCTED DURING 2008-2009

The following activities were conducted during this reporting period 2008-2009:

- Group organized to collect trash and debris from parks and neighborhood blocks, routinely
- Trash and debris removed from parks and street blocks, and disposed of appropriately.

TITLE: **Bacteria Source Investigation Tracking Study Phase I 2009**
ID NUMBER: **SDR-A4**

ACTIVITY IMPLEMENTATION

Phase I San Diego River Bacterial Source Identification Study was conducted throughout the San Diego River Watershed Management Area (WMA) to investigate bacterial loads in the SDR and to assess specific priority activity contributions. The objective of the study was to understand the implications of future total maximum daily loads (TMDLs) for fecal coliforms, total dissolved solids (TDS), phosphorus, and dissolved oxygen (DO). The monitoring results provide the basis to assess the land uses and related activities which contribute bacteria to the San Diego River WMA.

Results and Findings

- **Exceedances -** TDS and enterococci concentrations were above the Water Quality Objectives (WQOs) during dry weather for the majority of samples indicating their significance as contaminants of concern.
- **River Loads –**Analyte loads in the San Diego River were determined to be driven more by flow than by analyte concentration. During periods of low flow, loads were significantly lower. Further evaluation is needed to determine if over-irrigation practices are a significant contributor to San Diego River flows.
- **Human fecal presence -** No recent human fecal contamination was detected in the San Diego River WMA during dry weather surveys.
- **Land use contributions -** During dry and wet weather, low density residential housing contributed the highest bacterial concentrations and loads, respectively. During dry weather, commercial activities contributed the highest concentrations of bacteria. These activities included dumpster leaks and wash-down discharges.
- **Impact of MS4 -** The MS4 was determined to be a significant reservoir for bacteria. Concentrations of enterococci were significantly higher in catchbasins than in runoff leading to those catchbasins during both dry and wet weather. The degree of build-up within a catchbasin was found to be a good indicator of the likely presence of high concentrations of bacteria, especially in commercial catchbasins.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

A Monitoring Plan for Phase I of the San Diego River Bacterial Source Tracking Investigation was completed in FY 2009. Monitoring occurred in FY 2009 and reporting will be completed in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of El Cajon
- City of Santee
- City of La Mesa

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego River, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this study is neither an implementation nor education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

FY 2008–2009 Water Quality Activity

TITLE: Canine Corners Harry Griffen Park

PROJECT SUMMARY

The City of La Mesa has encouraged the public to participate in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers known as the Canine Corners to clean up pet waste at Harry Griffen Park. This park is located within the San Diego River Watershed. Although the specific amount of pet waste is not recorded, the group's effort is considered a load reduction for pet waste and a potential reduction in bacteria entering into the storm drain conveyance system.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Dissolved Oxygen (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

Harry Griffen Park is located within the San Diego River Watershed. A volunteer group known as the Canine Corners, collect pet waste routinely from the park and dispose of it appropriately. These efforts result in a reduction of pet waste entering the storm water conveyance system and receiving water. Pet waste is considered a source that contributes to elevated levels of bacteria, reduction in dissolved oxygen and increased total dissolved solids. This is considered by the City as a long-term activity.

ACTIVITIES CONDUCTED DURING 2008-2009

The following activities were conducted during this reporting period 2008-2009:

- Group organized to routinely remove pet waste.
- Pet waste removed from park and disposed of appropriately.

FY 2008–2009 Water Quality Activity

TITLE: Coastal Cleanup Day Alvarado Channel

ACTIVITY SUMMARY

The City of La Mesa supported and participated in the California Coastal Cleanup Day conducted on September 20, 2008 in coordination with I Love a Clean San Diego and San Diego Coastkeeper. A poster specifying date and time for the clean up was placed on the City's bulletin board. California Coastal Cleanup Day is one of the most successful large-scale cleanup projects in the Country. This event enlists thousands of volunteers throughout the state to clean up over 700 polluted coastal and inner-coastal areas. Volunteers met at a designated site in Alvarado Channel to collect debris during this reporting period.

PARTICIPATING JURISDICTIONS

- City of La Mesa
- Volunteers from other jurisdictions

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- Dissolved Oxygen (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The California Coastal Cleanup Day at Alvarado Channel is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. Over 370 pounds of trash and debris were collected by 46 volunteers during this event. A San Diego River Watershed fact sheet was also provided to volunteers at the Alvarado Channel site and the City's Storm Water Program Manager discussed watershed concepts and concerns prior to commencement of the cleanup. This activity is conducted on an annual basis and considered as a long-term activity to reduce trash and debris in receiving water bodies.

TASKS IMPLEMENTED DURING 2008-2009

The following tasks were implemented as part of the Coastal Cleanup Day at Alvarado Channel during 2008-2009:

- Advertising and placing posters for the event on the bulletin board, and in other City Facilities.
- Sponsored the event with $1,000
- Encouraged the public and City employees to participate in the event.
- Participated in the event collecting trash and debris in Alvarado Channel; an estimated 370 pounds of trash was collected.
- Provided watershed specific fact sheets and educated volunteers on watershed concepts and concerns at Alvarado Channel site.

TITLE: Forrester Creek Homeless Encampment Removal Project

ACTIVITY SUMMARY

The City's Public Works Department and the El Cajon Police Department coordinated efforts and conducted five (5) homeless encampment sweeps along Forrester Creek within the City's jurisdiction. After the removal of illegal encampments, trash and debris was collected and removed from Forrester Creek.

PARTICIPATING JURISDICTION

- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Bacteria (high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The sweeps were conducted during the 2008-09 reporting period and targeted homeless camps along Forrester Creek and tributaries. During the sweeps, the Police encountered transients and their camps and took appropriate law enforcement action; Public Works maintenance crews then removed the trash and encampment items used for the illegal lodging. The encampment removal contributed to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2008-2009

The following tasks were conducted as part of the Encampment Removal activities during fiscal year 2008- 2009:

- Removal of trash and debris = 3.75 Cubic Yards (Cumulative)

FY 2008–2009 Water Quality Activity

TITLE: Creek to Bay Cleanup

ACTIVITY SUMMARY

The City of La Mesa supported and participated in the Creek to Bay Cleanup conducted on April 18, 2009 in coordination with I Love a Clean San Diego. A poster specifying date and time for the clean up was placed on the City's bulletin board. 44 Volunteers from the City, met along Alvarado Channel in La Mesa from 9am to 12pm to collect trash and debris along the channel.

PARTICIPATING JURISDICTIONS

- City of La Mesa
- Volunteers from other jurisdictions

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- DO (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The Creek to Bay Cleanup is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. A total of 296 pounds of trash and debris were collected during this event. A San Diego River Watershed fact sheet was provided to volunteers at the cleanup. This activity is considered a long-term activity to reduce pollutants from entering receiving water bodies.

TASKS IMPLEMENTED DURING 2008-2009

The following tasks were implemented as part of the Creek to Bay Cleanup during 2008-2009:

- Advertised and placed posters for the event on the bulletin board.
- Sponsored event for $1,000.
- Encouraged the public and City employees to participate in the event, which included 44 participants.
- Provided watershed specific fact sheets to volunteers.
- Participated in the event collecting trash and debris along Alvarado Channel. An estimated 296 pounds were collected.

TITLE: **I Love a Clean San Diego Trash Cleanup Sponsorship**
ID NUMBER: **SDR-A9B**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The City of San Diego sponsored the Mission Valley Preserve Cleanup in the San Diego River Watershed Management Area (WMA) on April 25, 2009. At the Mission Valley Preserve, 4,900 pounds of trash and debris was removed from 2 miles by 90 volunteers.

Based on the information above, the effectiveness assessment section, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills credit as a watershed water quality activity for FY 2009.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Diego River Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- Other Copermittees that participate in the San Diego River WURMP workgroup

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/lb collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	4,900 lbs
	Pounds of trash recycled (Outcome Level 4)	4,900 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	4,900 lbs
	Number of participants (Outcome Level 1)	90
	Total money spent on cleanups for each watershed (Outcome Level 1)	$5,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$1.02/lb

Objectives

The goal of this assessment is to determine the load reduction effectiveness and efficiency of the sponsored cleanup.

Analysis and Results

On April 25, 2009, 90 participants removed 4,900 pounds of trash and debris and were also recycled from the San Diego River WMA. The event's efficiency, calculated by dividing the sponsorship cost for the San Diego River WMA by the pounds of trash removed, was $1.02 per pound.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

TITLE: Increased Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas

ACTIVITY SUMMARY

The San Diego Municipal Storm Water Permit (Orders No. 2001-01 and 2007-0001) requires Copermittees to conduct annual dry weather monitoring. In an effort to better track and eradicate bacteria as well as other pollutants of concern, the City of Santee conducts an additional round (total of two rounds) of dry weather monitoring each year.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

Fecal coliforms are designated as a 303 (d) impairment in the San Diego River. The City of Santee is required to conduct dry weather monitoring of bacterial indicators once a year under its municipal permit. Bacterial indicators monitored included total coliforms, fecal coliforms and enterococci. Additional monitoring will be conducted on behalf of the City of Santee to facilitate the detection of illegal connections and discharges of fecal matter to the MS4. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2008-2009

Two rounds of dry weather monitoring for bacterial indicators (only one is required under the municipal permit).

FY 2008–2009 Water Quality Activity

TITLE: Park Appreciation Day

PROJECT SUMMARY

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies. Consequently, the City has organized a Park Appreciation Day for volunteers to remove trash and debris from local parks. Park Appreciation Day takes place once a year and is independent of the Adopt-A-Park Program. This event typically took place on 10/24/2008. The event was held at seven parks located within the San Diego River Watershed in La Mesa. The amount of debris removed during Park Appreciation Day was 8.8 tons.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- DO (high priority)
- Turbidity/TSS
- Trash (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

There are seven parks in the City of La Mesa that fall within the San Diego River Watershed. Organization of the Park Appreciation Day enabled residents to participate in cleaning up the environment with in the San Diego River Watershed. Trash and debris as well as green waste was collected and disposed of appropriately. This event is considered a long-term annual activity.

ACTIVITIES CONDUCTED DURING 2008-2009

The following activities were conducted during this reporting period 2008-2009:

- Cleaned seven parks within the San Diego River Watershed.
- Collected approximately 8.8 tons of trash and debris.
- Watershed related information was conveyed by group leaders to all participants.

FY 2008–2009 Water Quality Activity

TITLE: Pet Waste Bacterial Load Reduction/Doggie Bag Dispenser Program

ACTIVITY SUMMARY

The installation of "Doggie Bag" dispensers provides pet owners with bags to collect their pet's fecal matter for proper disposal (i.e., in a trash bin). This reduces the accumulation of pet fecal matter in public places, which otherwise would eventually be washed into storm drain facilities and into the watershed. An additional benefit is public health, as it prevents other park users (such as children) coming into contact with the excrement.

This activity is also associated with public awareness and outreach. By placing the dispensers and accompanying signage, including municipal code sections, the public becomes aware that not picking up after their pets is a violation of the municipal code and negatively impacts the environment.

PARTICIPATING JURISDICTIONS

- County of San Diego
- City of Santee
- City of La Mesa
- City of El Cajon

WATERSHED PRIORITY WATER QUALITY PROBLEMS ADDRESSED

- Bacteria (high priority)
- Dissolved Oxygen (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The Pet Waste Bacterial Load Reduction Program is considered an important activity in the watershed because it will reduce bacteria and oxygen demand loads into the storm drain system. This is a long-term activity; however, it will be assessed and adjusted on an annual basis through the annual reporting process. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will thereby result in the reduction of a source of pollutants, most notably bacteria and nutrients, which could be released into the watershed.

TASKS IMPLEMENTED DURING FY 2008-09

The following tasks were implemented during FY 2008-09 as part of the Pet Waste Bacterial Load Reduction Program in the San Diego River Watershed:

County of San Diego

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks). During the FY 2008-09 reporting period, the County added two new dispensers and continued to maintain 28 dispenser stations at a total of 11 parks within the San Diego River Watershed. Dispenser locations include:

- Cactus Park (2 new dispenser, 3 total dispensers)
- Flinn Springs Park (3 dispensers)

- Dos Picos Park (4 dispensers)
- El Monte Park (2 dispensers)
- Heritage Park (1 dispenser)
- Lank Jennings Park (3 dispensers)
- Lindo Lake Park (3 dispensers)
- Louis A. Stelzer Park (1 dispenser)
- Oakoasis Park (1 total dispenser)
- Rios Canyon Sports Park (1 dispenser)
- William Heise Park (6 dispensers)

Facility Name	FY 08-09		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Cactus Park	3	9,690	2,519
Dos Picos Park	4	9,690	2,519
El Monte Park	2	6,460	1,680
Flinn Springs Park	3	9,690	2,519
Heritage Park	1	3,230	840
Lake Jennings Park	3	9,690	2,519
Lindo Lake Park	3	9,690	2,519
Louis A. Stelzer Park	1	6,460	1,680
Oakoasis Park	1	3,230	840
Rios Canyon Sports Park	1	3,230	840
William Heise Park	6	12,920	3,359
Total	**28**	**83,980**	**21,834**

These stations distributed approximately 83,980 bags, preventing an estimated 21,834 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

City of Santee

The City of Santee maintained "Doggie Bag" dispensers at all public parks, along Forester Creek and along Cuyamaca Street, a popular dog walking location. The City encourages residents to cleanup after their pets. Approximately 50,400 bags were used during this reporting period. Using the results of the San Elijo study, this is estimated to represent approximately 13,104 pounds of pet waste eliminated from the watershed, which constitutes a load reduction in both pet waste and bacteria from entering the storm water conveyance system.

City of La Mesa

The City of La Mesa maintains pet waste bag dispensers throughout all City parks with half the parks in the City located in the San Diego River Watershed. The City encourages residents to cleanup after their pets. Approximately 9,000 bags were used during this reporting period. Using the results of the San Elijo study, this is estimated to represent approximately 2,340 pounds of pet waste eliminated from the watershed, which constitutes a load reduction in both pet waste and bacteria from entering the storm water conveyance system.

City of El Cajon

"Doggie Bag" dispensers were set up at Wells Park – Dog Park to provide pet owners with bags with which they can collect their pet's fecal matter for proper disposal (i.e., in a trash bin). During the 2008-2009 reporting period, the City conducted provision and maintenance of doggie bag dispensers at the Dog Park. It is estimated that City Parks crews removed approximately 40,000 pounds of pet waste from pet waste dispensers.

TASKS PLANNED FOR IMPLEMENTATION DURING FY 2009-10

Copermittees involved will continue to maintain "Doggie Bag" dispensers and to monitor the usage of bags. In addition, jurisdictions will increase the number of dispenser locations as appropriate. For example, the County has established a jurisdictional goal for this five-year permit cycle to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

TITLE: **San Diego River Park Foundation Partnership**
ID NUMBER: **SDR-A14**

ACTIVITY DESCRIPTION

The City of San Diego (City) will partner with the San Diego River Park Foundation (SDRPF) in an effort to help raise awareness of the pollution, bacteria, and sediment issues affecting the San Diego River. The City will provide funding for a number of SDRPF initiatives, including the annual River Days event designed to promote awareness of the pollution issues surrounding the San Diego River. Additionally, funding will support the SDRPF's Clean and Green Team, a volunteer program designed to remove trash and plant native plants within the San Diego River Watershed Management Area (WMA). Funding will also be used to support public cleanups and other educational endeavors.

FY 2009 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for the Clean and Green Team. Funding went to:

- support annual river clean-ups and other activities;
- the purchase of supplies;
- trash removal and disposal;
- volunteer support; and
- direct staff support of program.

The City sponsored five cleanup events. Two events sponsored by the City included the River Garden cleanup on May 16, 2009 and the Mission Valley Preserve South cleanup on June 13, 2009. A total of 24,950 pounds of trash was removed and 1,388 hours of volunteer service occurred through the five cleanup events.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2010 and beyond. Cleanups will be scheduled as appropriate. Trash Cleanup Events efforts take place throughout the year, and River Days is scheduled to occur in May of each year.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation
- REI
- Union Bank of California

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. The Collective Watershed Strategy identifies bacteria as a high priority water quality problem in the San Diego River WMA. Providing funding to SDRPF will increase awareness of the bacteria and pollution issues surrounding the San Diego River, and the various cleanup initiatives will assist in reducing pollution throughout the San Diego River WMA.

Partnership with SDRPF will provide funding to address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By decreasing the amount of trash, bacteria loads are reduced. Funding SDRPF's public education and outreach programs will help increase awareness of the pollution issues affecting the San Diego River and foster appropriate behavior change.

EFFECTIVENESS MEASUREMENTS

Watershed: San Diego River		
SDRPF CLEANUP SPONSORSHIPS Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	24,950 lbs
	Number of volunteer hours (Outcome Level 1)	1,388 hours
	Total amount of money spent on five cleanups (Outcome Level 1)	$15,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.60/lb
Recommended Data	• Number of participants (Outcome Level 1)	

Objectives

The goal of this assessment is to determine the load reduction effectiveness and efficiency of the sponsored cleanup.

Analysis and Results

FY2009 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for annual river clean-ups and other activities, the purchase of supplies, trash removal and disposal, volunteer support, and direct staff support of program. The City sponsored five events. Two events sponsored by the City included the River Garden cleanup on May 16, 2009 and the Mission Valley Preserve South cleanup on June 13, 2009. Over the course of the five events, 24,950 pounds of trash were removed and 1,388 hours of volunteer service occurred. The efficiency of the five cleanup events was $0.60 per pound of load reduction,

[1] http://www.epa.gov/owow/oceans/debris/

calculated by dividing the total sponsorship cost for the five events by the pounds of trash removed.

Conclusions

This activity fulfills a watershed water quality activity for FY2009 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction during this reporting period.

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2010 and beyond. Cleanups will be scheduled as appropriate. Clean and Green Team efforts take place throughout the year, and River Days is scheduled for May of each year. Implementation and assessment of load reduction and efficiency of these cleanups will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time. Effectiveness of public outreach and educational will be measured via citywide surveys comprised of residents in the San Diego River WMA to determine awareness and knowledge retention of water quality issues, as well as changes in behavior. Additionally, water quality monitoring will be conducted throughout the San Diego River WMA to determine whether improvements have occurred.

TITLE: **San Diego River Geographically Based Business Property and Facility Inspections**
ID NUMBER: **SDR-A15**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What activities and locations at businesses should be targeted during the inspection?
2) Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?
3) Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?

The focus of the activity was to evaluate/inspect properties as a whole as well as individual business regardless of whether they were included in the City's commercial/industrial inventory. Property and business evaluations were not as in-depth as regular commercial inspections, but rather were observation oriented to quickly assess the outdoor activities and impacts of the properties and businesses.

The major findings included problems in trash enclosures, with irrigated landscaped areas, and outdoor good-housekeeping practices. The findings for the FY 2009 activity implementation do not completely answer the management questions; however, by the end of the program, it is anticipated that these questions will be answered.

In FY 2009 88 full inspections (including supplemental business evaluations), 111 business evaluations only, and 47 property evaluations were conducted in the two geographic areas selected in the San Diego River WMA.

Facilities

The following is a summary of the evaluations performed across the participating watersheds:

Number of Evaluated Properties = 190 as follows:

- 48 Shopping Centers
- 63 Office Parks
- 39 Industrial Parks
- 39 Individual Businesses

Number of Businesses Evaluated = 825 including, but not limited to:

- Medical Offices
- Manufacturing
- General Retail
- Automotive
- Contractors
- Bookstores
- Equipment Repair
- Warehouses
- Food Service Establishments
- Hair and Nail Salons
- Janitorial
- Massage Therapists
- Dry Cleaners
- Home Improvement Centers
- Landscaping
- Lodging
- General Offices
- Pest Control
- Printing
- Storage

Public Outreach

The City developed an inspection letter that was distributed to property owners and businesses informing them of the inspection program. In addition, the City advertised its intent to implement this inspection program in various public outreach media forums.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City conducted its inspection program during FY 2009 and will perform a second round of inspections in FY 2010 to obtain more data to compile and assess. The results of the data analysis will be used to answer the management questions posed by this activity.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Phosphorus
- Total dissolved solids (TDS)
- Turbidity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing

discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Findings

The following represents the primary findings of the activity. Other activity findings are less substantiated and are therefore not presented as a part of this activity. Further studies may be appropriate to develop supported results.

Property Evaluations: Landscaping / Irrigation

- 85% of landscaped areas are watered with spray/rotor delivery irrigation systems
- 94% of landscaped areas show some evidence of over-watering / over-spraying runoff
- Industrial and Office Parks tend to have more evidence of over watering than shopping centers or individual businesses
- Evidence of over watering runoff was rarely observed in areas with no irrigation system or with low flow irrigation

Property Evaluations: Trash/Dumpster Areas

- Shopping centers were most likely property type to have bird guano/feces present
- Shopping centers were somewhat, but not dramatically, more likely to have dirty trash areas
- Cleanliness of the trash area shows the strongest relationship with presence of feces

Property Evaluations: Roof Drains and Parking Areas

- 21% of roof drains discharge to pervious areas
- Almost all parking lots are impervious and directly connected to MS4
- Of the approximately 320 acres of parking lot area inspected:
    - 0% (0 ac.) had porous pavement
    - 1.4% (4.5 ac.) had gravel/dirt
    - 4.9% (15.8 ac.) discharged to pervious areas

Property Evaluations: Outdoor Trash Receptacles

- 25% of outdoor trash receptacles had no cover

All Business Evaluations: Activities and BMP Implementation

- Powerwashing activities – 12% do not implement any BMPs
- Vehicle washing – 43% fully implement BMPs, 34% do not implement BMPs or it is unknown whether BMPs were implemented
- Hosing outdoor areas – 56% do not implement any BMPs
- Loading/unloading areas – 93% uncovered and 25% not protected from run-on

Automotive Business Evaluations: Activities and BMP Implementation

- 10% of Automotive Repair Facilities have outdoor repair activities
    - 50% do not implement coverage BMPs

- 25% are not protected from run-on
- 62% partially implemented good-housekeeping BMPs

- 20% of Automotive Repair Facilities have outdoor automotive fluid storage
  - 15% do not implement coverage BMPs
  - 20% do not have any secondary containment

Table 1–Effectiveness Assessment for Activity

Watershed: San Diego River		
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Facility Inspections**		
Management Questions	• What activities and locations at businesses should be targeted during the inspection? • Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)? • Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the San Diego River Watershed	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	**Property Evaluations**	
	Number of property evaluations (Outcome Level 1)	47
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	62%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	79%
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Full Inspections Plus Supplemental Business Evaluation Sheet	
	Number of full inspections plus business evaluations (Outcome Level 1)	88
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	17
	Number of sites needing corrective action (Outcome Level 1)	88
	Number of Sites That Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	5
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	5
	Total IC/IDs Observed (Outcome Level 1)	3
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	3
	Business Evaluations Only	
	Number of facility evaluations (Outcome Level 1)	111
	Number of sites needing corrective action (Outcome Level 1)	12
	Number of Sites That Implemented Some Corrective Action During	2

	Inspection (BMPs implemented) (Outcome Level 3)	
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	2
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Assumed Eliminated (Outcome Level 4)	1
Recommended Data	• Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of educational information items passed out (Outcome Level 3) • Potential Pollutant Discharge Assessment (Outcome Level 4)	

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 100 sites. Additionally, the City noted 17 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at seven locations, corrective actions were immediately taken. This demonstrates both a Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcome was achieved as a direct result of this activity. Also, in this watershed, the City confirms that four IC/IDs were observed and called into the City's hotline for response and follow-up for abatement.

The City plans to implement the program in FY 2010 to more obtain more data necessary to answer the management questions associated with the program activity.

TITLE: San Diego Riverbed Homeless Encampment Removal Project

ACTIVITY SUMMARY

On behalf of the City of Santee, the San Diego County Sheriff conducts sweeps during the reporting period along the San Diego River within City jurisdiction to remove trash and encampment items. This year the San Diego County Sheriff enlisted the use of a training helicopter to air-lift trash and other debris from the south side of the river near Mast Park, which is not accessible by conventional road vehicles.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The sweeps target homeless camps along the San Diego River. During the sweeps, the Sheriff encounters transients and their camps and takes appropriate law enforcement action to remove trash and encampment items used for the illegal lodging. This activity contributes to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2008-2009

The following tasks were conducted as part of the Riverbed Project during Fiscal Year 2008:

- Trash removal
- Bacteria source reduction

TITLE: TRASH REMOVAL ACTIVITIES IN SANTEE

ACTIVITY SUMMARY

The City hosted or facilitated six clean-up events within the City during FY 07-08. A total of over 5.7 tons of trash and debris were collected. A summary of these events is presented below:

Date	Amount of Trash Removed	Description
07/12/08	800 pounds	Thirty-three volunteers participated in this event organized by the San Diego River Park Foundation with support from Santee.
09/20/08	3,500	Collaboration with the San Diego River Park Foundation for California Clean Up Day. Watershed activity. Conducted pre and post activity surveys to assess participant's understanding of watershed and stormwater issues.
10/11/08	1,200 pounds	Forty-four volunteers participated in this event organized by the San Diego River Park Foundation with support from Santee.
12/6/08	1.5 tons	Collaboration with the San Diego River Park Foundation. Response to issues with trash barrier at upstream location. 28 volunteers removed trash washed down during Thanksgiving storms before it was washed downstream.
3/14/09	600 pounds	500 volunteers participated in this environmental education and volunteer opportunity. Some volunteers removed trash, others removed invasive species and planted trees.
4/25/09	50 pounds	Twenty volunteers removed trash in landscaping surrounding new gazebo. Re-mulching of areas of bare soil.
4/26/09	1,200 pounds	Forty volunteers and 4 City staff participated in a clean up of Forester Creek conducted in collaboration with the San Diego River Park Foundation.
5/2/09	500 pounds	Pathways Church clean up of Forester Creek. Fifteen volunteers and 3 City staff participated.
5/9/09	500 pounds	One hundred volunteers associated with the San Diego River Park Foundation participated in a trash pick up and removal of invasive species as part of the River Days celebration.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria (indirectly through trash)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

This activity removes trash within the watershed and thereby reduces the potential breeding of bacteria within the watershed, which is consistent with the WURMP Strategic Goal 5 for Bacteria Source Reduction. It also enabled residents to participate in enhancing the watershed environment by removing trash. Trash and debris was collected and disposed of appropriately. Reduction of the pollutant load can be assessed based on the weight of material collected. In addition, neighborhood enhancement activities can instill a sense of pride in the appearance of the neighborhood, providing a disincentive to allow trash to accumulate again. Removal of invasive species can benefit the riparian environment.

TASKS IMPLEMENTED DURING FY 2008-2009

The following tasks were conducted as part of these public participation and education activities during Fiscal Year 2008:

- Nine trash removal events were conducted within the watershed, eight adjacent to the San Diego River or Forester Creek.
- Removal of over 5.7 tons of trash.
- Removal of invasive species in Mast Park.
- Public participation and education.

FY 2008–2009 Water Quality Activity

TITLE: Wet Weather Monitoring

PROJECT SUMMARY

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies and identifying pollutant sources. The City developed a wet weather water quality monitoring program within the San Diego River Watershed during the 2006-2007 fiscal year and has continued this program each year since then. The purpose of this study is to evaluate the water quality of the discharged flow in the Watershed. Sampling was conducted during the 08-09 reporting period at the same two discharge locations sampled during the previous reporting periods. One site is located at the jurisdictional boundary, and one site is located farther upstream in the watershed. Water samples taken in November 2008 and February 2009 were collected at the Jurisdictional Boundary location and evaluated for constituents associated with receiving water body 303(d) listings and watershed constituent of concern listings in the WURMP. This included measuring temperature, pH, conductivity, turbidity, and dissolved oxygen in the field and total hardness, total phosphorus, TDS, TSS, total coliform, fecal coliform, and *Enterococcus* bacteria in the lab.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

This activity is above and beyond the Municipal Permit sampling and monitoring requirements. Analyzing samples from wet weather discharges from locations within the San Diego River Watershed provides insight into water quality leaving the City of La Mesa. It also enables the City to conduct potential follow-up investigation of possible pollutant sources.

A supplemental questionnaire was also completed during all of the City's industrial/commercial inspections in the San Diego River Watershed to identify potential pollutant sources and gauge the level of stormwater knowledge within the watershed.

Data from 2008-2009 is currently being analyzed and will be compared with the monitoring data from 2006-2007, and 2007-2008. This program is intended as a long-term activity.

ACTIVITIES CONDUCTED DURING 2008-2009

The following activities were conducted during this reporting period 2008-2009:

- Conducted sampling in November 2008 and February 2009 which included field monitoring and laboratory analysis.
- Prepared draft letter report summarizing previous year's data.
- Completed a supplemental questionnaire during all industrial/commercial inspections within the watershed.

TITLE: **Cabrillo Heights Park Rain Garden Infiltration Project**
ID NUMBER: **SDR-A19**

ACTIVITY IMPLEMENTATION

This activity involves the implementation of a large scale low impact development (LID) project in the San Diego River Watershed Management Area (WMA) to reduce runoff volume. The large scale LID site selection focused on city owned parks and parcels that would be suitable for infiltrating off site flow. Site visits were performed to evaluate the field conditions at approximately ten sites in FY 2007 through FY 2008. Cabrillo Heights Park was eventually selected as the site of choice for the Rain Garden Infiltration Project.

The concept for this park includes the installation of rain gardens at two sites within the park. The rain gardens, or bioretention basins, will be used to trap particulate pollution, encourage evapotraspiration, and reduce the amount of trash, oils and grease that make its way to the storm drain system. Flows are mainly filtered through the rain garden, collected, and returned to the storm drain system. A portion of the stormwater will remain within the planted bed and be used by plants for evapotranspiration and growth.

The first site, located on the western edge of the park, will be used to treat storm flows from the western parking lot on Kearny Villa Road. All parking lot flows will enter into the storm distribution piping through a couple of storm water catch basins located in the parking lot. These catch basins shall include grating to prevent large solids from entering into the piping, and inserts to prevent trash and other debris from entering the rain garden. PVC storm drain piping will convey the parking lot flows to the rain garden located at the southern end of the parking lot.

The second site is located on the eastern portion of the park and will treat flows from Angier Elementary School and a sporting event parking lot on the east side of the park. All flows from these two locations are directed to two existing separate catch basins; one dedicated for school flows, and one for parking lot flows. Distribution piping will capture flow from these two locations and convey it to the rain garden.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Project design is anticipated to begin in November 2009 and continue through FY 2011. Construction is anticipated to begin in FY 2012. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
CABRILLO HEIGHTS PARK RAIN GARDEN INFILTRATION PROJECT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Rain Garden Infiltration**	
Management Questions	• What is the load reduction efficiency due to infiltration? • How effective is the infiltration at reducing loads of priority pollutants? • Does the implementation of the infiltration result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the infiltration is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the analysis is to determine the load reduction efficiency of LID Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations.

Analysis and Results

Site visits were performed to evaluate the field conditions at approximately ten sites in FY 2007 through FY 2008, and Cabrillo Heights Park was eventually selected as the site of choice for the Rain Garden Infiltration Project.

Conclusions

Anticipated future monitoring will be conducted to assess pollutant removal efficiencies.

TITLE: **Coastal Cleanup Day Sponsorship**
ID NUMBER: **SDR-A20**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 20, 2008. The City of San Diego (City) sponsored the Mission Valley Preserve site in the San Diego River Watershed Management Area (WMA). A total of 3,860 pounds of trash and debris were removed by 50 volunteers. Volunteers were asked to track the debris collected by implementing data cards provided by the Ocean Conservancy.

This activity fulfills a watershed water quality activity for FY 2009 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Diego River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
SDCK COASTAL CLEANUP DAY SPONSORSHIP **Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways**		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
	Pounds of trash removed (Outcome Level 4)	3,860 lbs.
	Number of participants (Outcome Level 1)	50
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$12,000
	Amount of money spent on cleanups for the San Diego River watershed (Outcome Level 1)	$2,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.52/lb.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

Fifty participants removed approximately 3,860 pounds of trash and debris. Debris removal (i.e., load reduction) was tracked using data cards provided by the Ocean Conservancy. The total estimated sponsorship cost for all six watersheds was $12,000. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the sponsorship cost for the San Diego River WMA by the pounds of trash removed, was $0.52 per pound.

Conclusions

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

TITLE: **Lakeside Baseball Park**
ID NUMBER: **SDR-A22**

ACTIVITY DESCRIPTION

This project consists of replacing a former wastewater treatment plant that was demolished approximately four years ago with new baseball fields, a tot-lot, a restroom/concession building, a maintenance building, and minimal landscape with detention basins on a ten-acre parcel. Detention basins will be designed to capture all onsite water, filtering it before seeping back into the ground and eventually into the San Diego River. No water runoff is designed to flow directly into the adjacent San Diego River.

This project is located east of Riverford Road and south of Mast Boulevard and is located adjacent to wetland and upland habitat. The San Diego River flows through a five-acre parcel that was purchased as part of this project. This land is designated as preserve land.

Estimated to be complete during FY 2008-2009, construction of this project has progressed according to schedule and was completed in early January 2009. The public grand opening occurred as scheduled, January 24, 2009.

ACTIVITY IMPLEMENTATION

- Construction was completed in January 2009.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Construction for this activity was completed during FY 2008-09.
- A stormwater manual for the facility is currently in progress (completion date TBD)
- No further activity is planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Conservancy guidelines were used for developing the multi-use trail adjacent to the San Diego River.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with the collective watershed strategy because it addresses pollutant load reductions, source abatement, and may have other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming completion of all project elements (Level 1 Outcome) and by confirming reduced or no runoff water from the site (Level 4 Outcome). There is no post-construction water quality monitoring planned for this site at this time.

TITLE: **LAND ACQUISITIONS**
ID NUMBER: **SDR-A23**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural ability to infiltrate stormwater/runoff.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period there were 197.07 acres of land acquired in the San Diego River Watershed.

During the FY2008-09 reporting period there were 557.50 acres of land acquired in the San Diego River Watershed. The current acquisitions are shown in the table below.

Property	Acres	Date	Watershed ID	APN(s)
Armstrong-Sycamore Canyon	20.47	12/10/2008	907.12	325-060-02, -03
State of California	32.00	11/7/2008	907.13	508-080-08
State of California	505.03	1/1/2008	907.22	328-010-03,-04; 328-020-08, -10
TOTAL	**557.50**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy and the Strategic Goals of the WURMP in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: Forester Creek Debris Barrier

ACTIVITY SUMMARY

The City of El Cajon Public Works Department (City) installed a debris barrier. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed in an area adjacent to the City's Public Works Maintenance Yard best suited for prompt cleanup following significant storm events and before it can reach the San Diego River.

PARTICIPATING JURISDICTIONS/ORGANIZATIONS

- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Sediment
- Bacteria (indirect through trash and sediment; high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The removal of trash and debris in the San Diego River is important in order to improve water quality in the river. Trash and debris enters the storm water system, Forester Creek and eventually the San Diego River and the Pacific Ocean, posing a threat to wildlife and human health. The debris barrier controls and contains trash and other debris reducing pollutants from ultimately discharging into the San Diego River. This activity is an ongoing long-term activity and trash and debris will continue to be collected and monitored. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2008-2009

Collection and removal of a total of 659 cubic yards of trash and debris was conducted as part of maintenance activities by the City of El Cajon. The collection of trash and debris was as follows:

- Assorted Trash/Debris = 27 Cubic Yards
- Organic Materials = 28.5 Cubic Yards
- Sediment = 603.5 Cubic Yards

TITLE: Forester Creek Debris Barrier

ACTIVITY SUMMARY

The City of Santee installed a debris barrier in as part of the Forester Creek Improvement Project. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed adjacent to the Prospect Avenue Bridge where the creek transitions from concrete-lined to unlined.

PARTICIPATING JURISDICTIONS/ORGANIZATIONS

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Sediment
- Bacteria (indirectly through trash and sediment; high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The removal of trash and debris in the San Diego River is important in order to improve water quality in the river and also indirectly for reducing bacteria loads. Trash and debris enters the storm water system, Forester Creek and eventually the San Diego River and the Pacific Ocean, posing a threat to wildlife and human health. The debris barrier controls and contains trash and other debris reducing pollutants from ultimately discharging into the San Diego River. This activity is an ongoing long-term activity and trash and debris will continue to be collected and monitored. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2008-2009

Trash and debris were removed as needed from the barrier. In addition, approximately 1.5 tons of trash was removed using a volunteer event after the first major storm of the 08-09 rainy season. The City recognized that the trash needed to be promptly removed prior to the next forecast storm, so it contacted this volunteer organization to provide the additional manpower to accomplish this task in a timely manner. The City provided staff, equipment and the trash disposal service, in addition to coordinating the event.

TITLE: **San Diego River Watershed Municipal Rain Barrel Installation and Downspout Disconnect Project**
ID NUMBER: **SDR-A25**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the San Diego River Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities.

Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Diego River WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the San Diego River WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Mission Trails Regional Park Visitor Center was selected because it is located in one of the highest priority sectors of the San Diego River WMA for potential pollutant loading. The visitor center is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed two rain barrel systems at the visitor center. One 54-gallon rain barrel was installed below grade adjacent to the main entrance to the back patio. The rain barrel was placed directly underneath an existing roof drain. This system uses an automated timer and pump to release captured runoff to adjacent landscaping. A rain chain connecting the roof drain to the rain barrel was also installed to direct runoff from the roof to the rain barrel below. A second 54-gallon rain barrel was also installed below grade along the back patio area. This system also uses an automated timer and pump but does not include the use of a rain chain.

Below grade rain barrel with rain chain

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer will be distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer will be posted on the City's *Think Blue* website during the first quarter of FY 2010.

This phase of the pilot project focuses on implementing and assessing the effectiveness of rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the pilot project will be applied to implementation in residential areas.

Based on these findings, the City may modify its municipal rain barrel installation and downspout disconnect project to increase effectiveness and/or seek City Council approval for additional funding to implement future phases (i.e., incentives) and additional rain barrel/downspout disconnect systems.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth

quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring will be performed from October 2009 to April 2010. Assessment and final reporting for this program will conclude by June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identifies bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problem by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM **Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff**		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of site preparation, installation and start-up for all sites	TBD
	Cost of operation and maintenance evaluation for all sites	TBD
	Cost of effectiveness monitoring for all sites	TBD

Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results

The pilot project was not in active implementation during FY 2009. Further analysis will take place after wet-weather monitoring data is collected, which is scheduled for completion by April 2010.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the rain barrel system. Conclusions will be made after the effectiveness assessment is completed in June 2010. Any recommendations resulting from this pilot project will be reported in the FY 2010 WURMP Annual Report.

TITLE: **Park Ridge Boulevard Bacteria Treatment Project**
ID NUMBER: **SDR-A26**

ACTIVITY IMPLEMENTATION

The City of San Diego will construct a new catchbasin, storm drain, trash segregation unit, and AbTech (Bacterial Treatment System) unit at the southern terminus of Park Ridge Boulevard. A new catchbasin will be placed along the western right-of-way south of the intersection with Murray Park Drive. The catchbasin will be sized for the full design flow reaching that location.

Flows up to an 85th percentile storm event will exit the catchbasin and flow through a trash segregation unit, followed in series by an AbTech (Bacterial Treatment System) unit. Flows in excess of an 85th percentile storm will exit the catchbasin via an overflow pipe and bypass the treatment system.

A manhole will receive flows from both the treatment system and the overflow pipe. From that manhole, a new storm drain will convey flows to the outlet location for the existing storm drain system within the eastern Park Ridge Boulevard right-of-way. A new headwall sized to accommodate both outlets will be required at this location.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction, and project closeout. Project design is anticipated to begin in FY 2010 and continue through FY 2011. Construction is anticipated to begin and completed in FY 2012. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA, and recommend

implementing load reduction/source abatement activities to address it. Implementation of this activity will reduce bacterial pollutant loads in the watershed by installing a new catchbasin which diverts runoff to a trash segregation unit / AbTech (Bacterial Treatment System) unit.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
PARK RIDGE BOULEVARD BACTERIA TREATMENT PROJECT **Assess the Efficiency and Effectiveness of the Design and Construction of the Enhancement and Bacteria Treatment Project**	
Management Questions:	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data:	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria load with the installation of catch basins, storm drains, and trash segregation units on Park Ridge Boulevard.

Analysis and Results

The project is still in the planning phase; therefore effectiveness analysis has not been completed at this time. Assessment will be completed after project completion.

Conclusions

Conclusions will be made after the project is complete and effectiveness is determined.

TITLE: **FLINN SPRINGS COUNTY PARK POROUS PAVING PROJECT**
ID NUMBER: **SDR-A27**

ACTIVY DESCRIPTION

Building upon the success of the porous paving demonstration project at the County Operations Center in Kearny Mesa, the County Department of Parks and Recreation (DPR) began implementing this technology at its facility parking lots. The first park chosen for implementation was Flinn Springs County Park, located in the community of Lakeside. Prior to the porous pavement installation, Flinn Springs contained more than 60,000 square feet of impervious pavement draining into Los Coches Creek, a tributary to the San Diego River. Approximately 41,000 square feet of traditional impervious pavement was replaced with 27,878 square feet of porous asphalt and 13,100 square feet of porous concrete. A 37,026 square foot traditional impervious asphalt lot was left in place as the reference site, for comparison purposes. Other infrastructure included an interceptor trash drain, associated piping, wet wells and a sampling box were installed to collect runoff from the reference site.

The project area was intended to be monitored throughout the entire wet season. However, due to construction delays, monitoring was performed during the second half of the wet season, from January through April 2008. The purpose of the monitoring was to quantify the effectiveness of the porous materials in reducing runoff and constituents of concern directly into Los Coches Creek. Monitoring sites were located at positions where the equipment was able to measure all potential discharges from both the porous pavement and impervious reference sites. The quantity and quality of stormwater runoff from the reference area was then measured against the porous pavement sites.

Because of the success of this study, at the conclusion of this project the runoff from the reference area was directed into the porous asphalt infiltration basin. Tests conducted indicate that it is unlikely that discharges would occur from the porous lot, except during the most extreme rainfall events.

Funding for this project was obtained through a Proposition 40 grant, which was awarded by the State Water Resources Control Board and matched with funding from the County of San Diego General Fund. With the matched County funds of $399,500, the total project budget was $1,198,000, all of which was expended as per the line item budget in the grant agreement. DPR's ultimate goal is to utilize porous paving where appropriate in the eighty facilities it manages.

Actual costs were higher than estimated, primarily due to increased contingency and labor costs. To remain within budget, some portions of the project that were not essential were removed from the construction contract (e.g.: a concrete block trash bin enclosure). Actual costs of materials, including demolition costs and installation of the subbase totaled $13.30 per square foot for porous asphalt and $13.82 for porous concrete.

ACTIVITY IMPLEMENTATION FY 07-08

- Demolition of existing asphalt parking lot and installation of porous pavement system.

- Site monitoring and assessment

ACTIVITY IMPLEMENTATION FY 08-09

- Final report on the project generated in September 2008.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was completed in September 2008. No further action is anticipated.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Conservancy guidelines were used for developing the multi-use trail adjacent to the San Diego River.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with the collective watershed strategy because it addressed pollutant load reductions, source abatement, and may have other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EFFECTIVENESS MEASUREMENTS

Each of the two porous pavement types effectively eliminated all runoff and associated contaminant from directly entering Los Coches Creek. Both the porous concrete and porous asphalt rapidly infiltrated all stormwater, demonstrating the capacity to provide additional infiltration capacity for runoff from other adjacent impervious areas. Infiltration allowed by the porous pavement prevented nearly 64,000 cubic feet of water (the result of 9.81 inches of rain during the time period measured) from directly entering Los Coches Creek, and ultimately discharging into the San Diego River during the FY 2007 / 2008 storm season. Furthermore, based upon an annual average rainfall of 14.1 inches, the final parking lot configuration is expected to eliminate an average of nearly 150,000 cubic feet of direct stormwater discharges into Los Coches Creek.

The majority of the lessons learned were related to engineering, construction, and construction oversight. With respect to engineering of the porous pavement, coordination and oversight would have been improved if the engineer had had a local office and could have provided continuous oversight of the grading, installation of basins and piping, installation of the stone reservoir, and installation of the pavements. It was apparent from the process that currently contractors lack understanding of the critical nature of constructing the monitoring elements exactly to specifications, and that until contractors are more familiar with installing porous materials, contingency components should be included in all contracts. Because of this an experienced full time engineer / project manager should be on site at all times to ensure proper and timely installation of these BMP's.

Some of the high costs of porous paving can be attributed to the lack of experience contractors currently have with installing porous materials. As knowledge of working with these materials increases, the labor and associated contingency costs should come down. Also, costs can be mitigated in areas with good infiltration, like those that exist at Flinn Springs Park. Porous paving areas may be able to handle four to six times the amount of runoff from adjacent impervious areas, depending upon infiltration rates and capacity of the stone reservoirs.

TITLE: **San Diego River Indicator Bacteria Study**
ID NUMBER: **SDR-A28**

ACTIVITY DESCRIPTION

The purpose of the San Diego River Indicator Bacteria Study was to evaluate the Fecal Indicator Bacteria (FIB) counts and compare the frequency of water quality threshold exceedances for FIB during wet weather to dry weather at two sampling locations in the San Diego River watershed: Riverford Road (TG 1231, H4) and Denny Way (TG 1251, F2). The results of the study will be used to determine baseline levels of FIB at the two locations and further used to aid in implementing a future bacteria TMDL in the watershed.

Water quality monitoring for dry weather was conducted beginning in August 2006 through August 2007, while wet weather monitoring was conducted from November 2006 through February 2007. Data analysis was ongoing through the study, which concluded in January 2009. Wet weather sampling was conducted during and/or up to three days following a rain event, while dry weather sampling was conducted three or more days following rainfall.

According to the Section 303(d) listing policy, a waterbody can be de-listed for FIB if, after a minimum of 26 samples are collected, the number of FIB exceedances equals 5 or fewer for 31-36 samples taken, and 7 or fewer exeedances for 43-48 samples taken. Because of the number of exceedances realized during the study, the results from both dry weather and wet weather monitoring do not support de-listing for FIB. (See attached study in Appendix C of WURMP Annual Report for all results and maps)

ACTIVITY IMPLEMENTATION FY 2008-09

- Data analysis was completed January 2009.

TMDL APPLICABILITY

The results of this study will be used to aid in the implementation of the future bacteria TMDL in the San Diego River Watershed.

TIME SCHEDULE FOR IMPLEMENTATION

There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Indicator Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Since this activity addresses a priority water quality problem, Indicator Bacteria, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was measured by confirming the completion of all project elements (Level 1 Outcome). All project elements have been completed.

TITLE: **SDPD Western Division Green Lot Infiltration Project**
ID NUMBER: **SDR-A29**

ACTIVITY IMPLEMENTATION

This activity involves the implementation of an infiltration project (SDPD Western Division Green Lot) in the San Diego River Watershed Management Area (WMA) to reduce runoff volume. Several of the SDPD Western Division parking lots will be reconstructed in order to replace the existing asphalt concrete paving with pervious concrete pavement. Existing curb and gutters will be protected in place where possible, and existing lines and finished grades will be maintained, as will existing parking striping to the extent that it complies with current code. The new pavement section will include the pervious concrete paving, a gravel base, an amended soil layer, and a gravel subdrain system. The subdrain system is necessary due to low permeability soils found at the site. The subdrain system will tie in to the existing storm drain system within the site at several locations.

In April 2009, contaminated soils were found on the site where pervious concrete was to infiltrate runoff into the groundwater. As a result of this finding, SDPD Western Division Green Lot was cancelled.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

As mentioned above, this activity has been cancelled.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria, as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
SDPD WESTERN DIVISION "GREEN LOT" INFILTRATION RETROFIT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs**	
Management Questions	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants (metals and bacteria)?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type. High priority pollutants targeted include bacteria.

Analysis and Results

The concept design for this project began in FY 2008 and baseline monitoring was completed. Because this project has been cancelled, no additional analyses or results will be pursued.

Conclusions

Contaminated soils were found on the site where pervious concrete was to infiltrate runoff into the groundwater in April 2009. As a result of this finding, the SDPD Western Division Green Lot Infiltration Project has been cancelled.

TITLE: **Route Posting and Median Sweeping Pilot Study**[1]
ID NUMBER: **SDR-A30**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a pilot study to assess the effectiveness of two potential modifications to its street sweeping program: 1) posting limited-hour "no parking" signs along non-posted routes to allow street sweeping near curb areas; and 2) modifying or increasing street sweeping routes to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study will specifically focus on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with these proposed programmatic changes to the City's street sweeping program.

The first program element of this pilot study would require the installation of limited-hour "no parking" sign along existing street sweeping routes that are traditionally "free swept", or swept closer to the centerline of the street due to the presence of curb-park vehicles. Implementation of this programmatic change would allow an effectiveness evaluation of the current "free sweep" practice and calculation of potential increases in pollutant removal efficiency afforded by sweeper access to the curb and gutter. The second program element would expand current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change would allow calculation of potential pollutant removal efficiency afforded by sweeper access to what is believed to be heavily polluted areas.

The overall pilot study will aim to answer the following management questions:

- What is the relative cost-efficiency of integrating additional route posting and median sweeping into the City street sweeping program?
- What level of general debris removal benefit does the posting of street sweeping routes provide?
- What level of metals removal benefit does the posting of street sweeping routes provide?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does the posting of street sweeping routes provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study will be used to determine whether posting routes and sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or

[1] In the FY08 WURMP Annual Report, this activity was known as Sweeping Route Posting and Enforcement Program. A more accurate title was chosen for this activity during project planning that took place in FY09.

debris volume monitoring will occur to allow for assessment. This activity will occur in multiple watersheds. One control site will be chosen in one watershed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Route Posting and Median Sweeping Pilot Study will be piloted first to determine whether route posting and median sweeping improves the effectiveness of street sweeping activities before broad scale implementation.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2009 and will continue through FY 2010. Implementation is anticipated to occur in FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by targeting increased sweeping and removal of sediment and trash from City streets.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
ROUTE POSTING AND MEDIAN SWEEPING PILOT STUDY **Assess the Effectiveness of Posting Routes and Sweeping Medians on Improving Street Sweeping Activities**	
Management Questions	• What is the relative cost-efficiency of integrating additional route posting and median sweeping into the City street sweeping program? • What level of general debris removal benefit does the posting of street sweeping routes provide? • What level of metals removal benefit does the posting of street sweeping routes provide? • What level and type of debris can be removed by sweeping high volume median areas? • What level of metals removal benefit does the posting of street sweeping routes provide? • What type of sweeping equipment optimizes debris removal in or on high volume median areas?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives
The goal of the assessment is to investigate whether posting previously non-posted routes and sweeping medians improves the effectiveness of street sweeping activities.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time as project planning and coordination will continue through FY 2010. Implementation is anticipated to occur in FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via water quality and/or debris monitoring efforts) to the cost of project installation, operation and maintenance. Conclusions will be made after the assessment is complete.

TITLE: **Woodside Avenue Detention Basin**
ID NUMBER: **SDR-A32**

ACTIVITY DESCRIPTION

In 2003, the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and construction of an extended detention basin to treat urban runoff and low storm flows from a 1.4 square mile area within Hydrologic Area (HA) 907.12 before discharging into Los Coches Creek and the San Diego River. The site is located in the unincorporated community of Lakeside on a vacant property adjacent to Woodside Avenue near Winter Gardens as shown in the attached figure. The constructed basin and concrete removal were designed to act as a demonstration for the effectiveness of similar BMPs at removing pollutants. A water quality monitoring component was also initiated to provide hard evidence of the BMP's pollutant removal capabilities.

Although the grant was completed in May 2007, the County continues to monitor the site to gauge its effectiveness at removing pollutants.

ACTIVITY IMPLEMENTATION FY 2007-08

During FY 2007-08, the County performed routine maintenance of the basin, including removal of trash and debris and vegetation control. Influent and effluent flow measurements and water quality samples were also taken on the following four dates:

- August 29, 2007
- February 22, 2008
- March 13, 2008
- May 5, 2008

ACTIVITY IMPLEMENTATION FY 2008-09

During FY 2008-09, the County performed routine maintenance of the basin, including removal of trash and debris and vegetation control. Influent and effluent flow measurements and water quality samples were taken on the following dates:

Sample dates, dry weather events:

- September 25, 2008
- November 13, 2008
- March 3, 2009
- June 4, 2009

Sample dates, wet weather events:

- December 25, 2008
- February 9, 2009

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Basin maintenance, including trash removal and vegetation control, is ongoing.
- Monitoring of flow and water quality will continue in accordance with the guidelines outlined in the Long-Term Monitoring Plan (Weston 2007).

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- State Water Resources Control Board
- Regional Water Quality Control Board (San Diego)
- San Diego River Park Foundation
- Lakeside's River Park Conservancy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Phosphorus
- TDS
- pH

OTHER CONSTITUENTS ADDRESSED

- Metals
- TSS
- Total and Dissolved Organic Carbon
- Nitrate
- Ammonia

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity targets high priority water quality problems within the watershed by treating urban runoff before it discharges into Los Coches Creek. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

An initial effectiveness assessment of this project was conducted in 2006. The results were presented in detail in: *Woodside Avenue Extended Detention Basin Effectiveness Assessment Monitoring Final Report,* March, 2007, prepared by Weston Solutions. As previously described, additional monitoring is ongoing.

Although some constituent concentrations at the outlet of the Extended Detention Basin (EDB) were higher than at the inlet, such as total copper during both dry and wet weather monitoring events, zinc during dry weather events and dissolved lead during wet weather events, overall load reductions were realized for the majority of the constituents measured during FY 2008-09, especially during dry weather conditions..

Annual water quality sampling results for FY 2008-09, including load reduction estimates, are attached.

TITLE: **Transit Shelter and Billboard Advertisements**
ID NUMBER: **SDR-A34**

ACTIVITY IMPLEMENTATION

In FY 2008, the City of San Diego (city) retained a contract with an outdoor advertising company to advertise *Think Blue* messages on billboards and bus shelters located in the San Diego River Watershed Management Area (WMA). The City created advertisements in English and Spanish that target behaviors associated with bacteria profiled as a vector. The goal of the billboards was to educate the public about causes of pollution and to encourage positive behavioral change. These advertisements were developed and implemented in FY 2008 throughout the San Diego River WMA. In FY 2009, it was determined that transit shelters and billboard advertisements were not effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. The City will continue to monitor outdoor advertising opportunities in the future and may reconsider the use of this activity in the San Diego River WMA.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City no longer plans to use billboards and transit shelters as part of its watershed program.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City no longer plans to use billboards and transit shelters as part of its watershed program: therefore, no assessment was conducted in FY 2009.

FY 2008–2009 Education Activity

TITLE: Intergenerational Games

PROJECT SUMMARY

The City of La Mesa is committed to education outreach at community events and local schools. Each year the City works with La Mesa Middle School to host Intergenerational Games. School children are paired up with adults and participate in a number of activities. During the event on October 10, 2008, the City's Storm Water Program staffed a booth at the event. The City contracted I Love a Clean San Diego to setup and demonstrate the Enviroscape Watershed Model at the event and to distribute education outreach material. The City's San Diego River Watershed fact sheet was displayed at the event.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The City hosted a storm water booth that included demonstrations of the Enviroscape Watershed Model by I Love A Clean San Diego and provided storm water pollution prevention material. The San Diego River Watershed fact sheet was displayed at the booth.

ACTIVITIES CONDUCTED DURING 2008-2009

The following activities were conducted during this reporting period 2008-2009:

- Contracted I Love A Clean San Diego to demonstrate Enviroscape Watershed Model.
- Setup and staff booth.
- Distributed 25 recycling flyers, 45 storm water pencils, 50 storm water key chains.

TITLE: **Public Service Announcement: Karma Series**
ID NUMBER: **SDR-A36**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance,* and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego River Watershed Management Area (WMA) during FY 2009 from August 2008 to April 2009. The City will work with various broadcast media outlets to distribute and air the PSAs during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem in the San Diego River WMA. The *Karma, Karma Second Chance,* and *Karma Tourist* PSAs will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST **Assess the Efficiency and Effectiveness of Public Service Announcements**		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in San Diego River WMA (Outcome Level 1)	2,010,760
	Number of impressions made to the public through radio announcements in San Diego River WMA (Outcome Level 1)	2,760,568
	Change in knowledge or attitude from survey results (Outcome Level 2)	44%
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes**

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The City conducted an effectiveness assessment of *Think Blue* PSAs and storm water messages via field experiment in which 309 individuals were shown eight different *Think Blue* PSAs (including the *Karma, Karma Second Chance* PSAs). Participants were then asked questions to determine storm water knowledge, awareness and possible changes to future behavior as a result of the PSA. The results of the field experiment demonstrate the messages in the PSAs are effective in increasing public knowledge that storm water is not treated. 25% of participants were more likely to answer that storm water is not treated than those who had answered the question prior to watching the PSA. Additionally, awareness that storm water pollution is an important issue in San Diego also increased after watching the PSA. Lastly, the *Karma Second Chance* PSA scored

the highest of the PSAs in motivating participants to take specific actions to prevent storm water pollution.

The City also obtained assessment information from its annual random-digit dial 2009 *San Diego Storm Water Survey* of 800 total residents from all WMAs. 55% of residents said they saw a *Think Blue* PSA last year (up from 52%) on television while 8% of residents heard the radio announcements in FY 2009. 51% said they prefer to get information about storm water via television. This year's survey also noted that while 44% of residents know that storm water was not treated, significant increases in awareness were detected among women (particularly over the age of 50), residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the city as a whole. To estimate the number of impressions in the San Diego River WMA, the total number of estimated city-wide impressions, (11,170,888 for television and 15,336,488 for radio ads) was multiplied by the proportion of residents living in the San Diego River WMA (18%) of the city's total population.

Conclusions

Based on assessment from both the survey and the field experiment as well as feedback from the public, *Think Blue* PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the City will continue to monitor public perception and feedback to determine if this is actually occurring. The City will continue to work with appropriate broadcast media outlets to air *Think Blue* television and radio PSAs in FY 2010.

Additionally, the City continued to measure public awareness of the *Think Blue* program via surveys comprised of a random digit dial sample of the residents living in the San Diego River WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, while the *2009 San Diego Storm Water Survey* indicated that 39% had heard the phrase "Think Blue" during FY 2009, awareness that storm water is not treated increased. These results, coupled with a continued decrease in the percentage of residents hosing down their driveways, and in residents using pesticide or weed killers, demonstrate that the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the San Diego River WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE: **LID and Watershed Planning Education for Community Planning and Sponsor Groups**
ID NUMBER: **SDR-A37**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID Handbook, including Management Strategies, the Appendices, and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

Local planning and sponsor groups within the San Diego River Watershed include:

- Alpine
- Cuyamaca
- Descanso
- Julian
- Lakeside
- Crest-Dehesa
- Ramona
- Valle de Oro

ACTIVITY IMPLEMENTATION FY 07-08

This education program was successfully developed during the spring of FY 2007-2008, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2007-08, none were conducted in the San Diego River Watershed.

ACTIVITY IMPLEMENTATION FY 08-09

As documented in the table below, presentations were delivered to eight planning and sponsor groups in the San Diego River Watershed, which included 131 attendees. A total of 77 pre- and post- surveys were completed by seven of the eight groups.

Community Group	Presentation Date	No. of Attendees	Surveys Completed
Valle de Oro (VDO)	9/16/08	19	0
Descanso	9/18/08	10	10
Cuyamaca	12/9/08	7	5
Julian	1/12/09	10	9
Alpine	1/22/09	27	15
Ramona	1/26/09	19	11
Lakeside	3/18/09	17	13
Crest-Dehesa	5/11/09	22	14
Total		**131**	**77**

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was completed during FY 2008-09. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy and the Strategic Goals established in the WURMP.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcomes). Furthermore, attendees were asked to complete pre- and post- survey forms, which consisted of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area. Survey

results were calculated to measures changes in attendee knowledge regarding watershed planning and LID principles (Level 2 Outcome).

The table below summarizes results from the seven surveys administered to groups in the San Diego River Watershed. Improvements on the post- survey ranged from a 2.7% increase to a 22.9% increase. This represents a demonstrable increase in knowledge among the target audience.

Community Group	Total Attendees	# of Surveys Taken	Pre-survey (% correct)	Post- survey (% correct)	% increase
Valle de Oro	19	0	N/A	N/A	*No survey*
Descanso	10	10	82.0%	88.0%	6%
Cuyamaca	7	5	76.0%	88.0%	12%
Julian	10	9	71.1%	84.4%	13.3%
Alpine	27	15	65.3%	68.0%	2.7%
Ramona	19	11	67.3%	89.1%	21.8%
Lakeside	17	13	60.0%	75.4%	15.4%
Crest-Dehesa	22	14	61.4%	84.3%	22.9%

Questions posed on the surveys to the participants included:

1. Do watershed and community planning areas share the same boundaries?

a) Yes
b) No
c) Sometimes

2. Increased urbanization (increased development)

a) Has no impact on water quality.
b) Has only a small impact on water quality, and the stormwater (storm drain) system helps to keep the water clean.
c) Increases evapotranspiration & infiltration directly proportional to the amount of development that is built.
d) Affects ground water and stormwater quality by increasing runoff and decreasing infiltration.

3. What are the County requirements with regard to LID for incoming projects?

a) Ensure all project use exactly the same Low Impact Development techniques for site design.
b) Require LID techniques for all priority development projects, and encourage LID techniques for all other projects.
c) There are no County requirements for LID, its all voluntary.
d) None of the above.

4. Priority Development Projects include projects that are:

a) Less than 5000 square feet in size and have no impact on environmentally sensitive areas

b) Are defined as new or redevelopment projects that require a Stormwater Management Plan (SWMP)

c) Small lot splits and do not require a SWMP to be completed.

d) Fast-tracked at the County.

5. Low Impact Development (LID) is

a) Developing fewer homes on larger lots.

b) A method of developing that serves to mimic the natural hydrology of a site.

c) Keeping all water away from storm drains and channeling it to the nearest creek.

d) An identical set of BMPs that are used in exactly the same manner each time to address stormwater runoff.

6. Where does stormwater or urban runoff from your CPA go? (Open answer)

TITLE: **Mobile Advertising (Discontinued)**
ID NUMBER: **SDR-A38**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a mobile advertising firm, AdTruks, to advertise Think Blue messages on static billboard trucks in the San Diego River Watershed Management Area (WMA) in FY09. The City created advertisements that targeted behaviors associated with bacteria and trash. The goal of mobile advertising was to educate the public about the impacts litter and pollution have on local waterways and beaches and to encourage positive behavioral change.

Based on results from the 2009 Storm Water Survey in which 17% of participants stated they received Think Blue messages via mobile advertising, it was determined that the program was not as effective in generating sufficient knowledge and awareness of the program or storm water issues. Additionally, the Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. Therefore, the city did not conduct mobile advertising in the San Diego River WMA in FY09, and has discontinued this activity.

FY 2008–2009 Education Activity

TITLE: Oktoberfest

PROJECT SUMMARY

The City of La Mesa is committed to education outreach at community events. Each year the City hosts an Oktoberfest Event. During the event on October 3-5, 2008 the City's Storm Water Program staff ensured fact sheets were distributed to all Oktoberfest vendors regarding storm water pollution prevention.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The City took steps to ensure that vendors were knowledgeable regarding pollution prevention during the event, which is located within the San Diego River Watershed.

ACTIVITIES CONDUCTED DURING 2008-2009

The following activities were conducted during this reporting period 2008-2009:

- Distributed ~330 Vendor Fact Sheets

TITLE: Outreach to Residents Regarding Pet Waste Management

ACTIVITY SUMMARY

Concentrations of fecal bacteria have been reported at certain sampling locations during dry weather monitoring in Santee. Based on the observations made during dry weather monitoring, it has been recommended that educational outreach be made to residents in specific areas of the City of Santee where fecal bacteria and/or animal waste has been observed. The objective of this outreach would be to educate residents on the importance of properly disposing of pet fecal waste to prevent it from eventually entering the storm drain system. By reducing the amount of pet fecal matter in the storm drain system, this educational effort would eventually assist in the reduction of fecal coliforms in the San Diego River.

Outreach to specific areas in Santee has been conducted during previous fiscal years. However, additional follow up has been made to reinforce this message.

PARTICIPATING JURISDICTION

- City of Santee
- County of San Diego

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

Fecal coliforms are designated as a 303 (d) impairment in the San Diego River. Potential sources of this pollutant include illicit sewer connections, sewage overflows, and animal waste. A major source of animal waste in residential areas will be pet fecal matter which has not been properly disposed of. Residents may consider that this fecal matter is “natural” and “bio-degradable,” or that it is not likely to negatively impact the environment. Therefore they will not necessarily make the effort to clean up after their pet, even though they may be more careful about removing other kinds of litter.

If the public is educated about the potential linkage between the discharge of pet fecal matter and surface water quality, then they may have a greater inclination to clean up after their pets, thereby reducing the load on the watershed. This activity is consistent with the WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2008-2009

The City of Santee partnered with the County of San Diego’s Department of Animal Services to provide information on pet waste management which would be mailed in an envelope along with a dog license. Approximately 69 copies of the outreach were provided to Animal Control officers for use at the licensing clinic in Santee and to be carried in Animal Control vehicles that work in Santee.

In addition, the City contacted the County Watershed Protection Unit and arranged to conduct County-developed pet waste surveys. Twenty-seven surveys were conducted, each in exchange for a pet waste dispenser. The completed forms were forwarded to the County Watershed Protection Unit for analysis in conjunction with other surveys that may be collected in the Region. The surveys were used as an opportunity to discuss stormwater issues with the respondents and the City representative was able to answer questions.

TITLE: PUBLIC OUTREACH AND MEDIA

ACTIVITY SUMMARY

During the reporting period, the City of Santee distributed articles specific to storm water in the periodic newsletter entitled "Santee Review'. The newsletter reaches potentially 21,500 residential, commercial, and industrial addresses. The newsletter is intended to educate residents and visitors about watershed issues and to solicit their cooperation and participation.

PARTICIPATING JURISDICTIONS

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria
- Total Dissolved Solids
- Low Dissolved Oxygen

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

In order to change knowledge and awareness and effect behavioral changes, it is necessary to educate the general public. Public presentations/outreach and the media are an effective method in distributing our watershed message and informing others on how they can make a difference in our water quality and environment.

TASKS IMPLEMENTED DURING FY 2007-2008

The following articles were published as part of the Public Outreach Program during Fiscal Year 2008-2009: The articles included:

- "New Approach to Flood Control is Good for Wildlife and Water Quality" described the benefits of the recently-completed Forester Creek restoration.
- "Conserve Water and Protect Our River" was an article on water conservation and how it can improve water quality. Readers were provided with a link to the water conservation page on the Padre Dam Municipal Water District website.
- "Volunteers Assist with Creek Clean-Up" described the clean up event conducted by the San Diego River Park Foundation in Forester Creek after the initial storms of the 08-09 rainy season. The article provided some information on the San Diego River Park Foundation and a link to its website.
- A postcard was developed to raise awareness amongst residents about the connection between the storm drain and the river and the need to properly dispose of waste. The postcard also provides information on the free services provided by the City for the disposal household hazardous waste and large household items. This postcard was sent to approximately 1,400 residences.

TITLE: **San Diego River Watershed Restaurant Best Management Practices Booklet**
ID NUMBER: **SDR-A43**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the San Diego River Watershed during inspections. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer; however, after further evaluation, City staff determined that a booklet to supplement existing fact sheets passed out during inspections would be more effective in educating food and drinking establishment owners and workers about storm water issues and BMPs. After review, the booklet could be kept by owners/managers for reference, and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs.

Storm Water Division staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2009 to City-permitted facilities. The City distributed 662 booklets in the San Diego River Watershed Management Area (WMA),

This activity was not included in the 2009 San Diego River WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, these posters have been distributed over a number of years, and the City plans to continue distribution of them.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2010 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

In FY 2009, the City distributed 662 booklets as referenced above in the Activity Implementation section. Due to the nature of this activity, although feedback on the booklets is generally positive, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **San Diego River Watershed Erosion and Sediment Control Clean Construction Poster and Brochure Distribution**
ID NUMBER: **SDR-A44**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper Best Management Practices (BMPs). The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and BMPs for construction. Photos on the brochure and poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally to distribute the poster in FY 2009 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of brochures and posters distributed in the San Diego River Watershed was 133. The number of posters distributed by Storm Water inspectors was 16 (11 in English and 5 in Spanish).

This activity was not included in the 2008 San Diego River Watershed Urban Runoff Management Program (WURMP) because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years and the City plans to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the brochures and posters in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem throughout the San Diego River WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with sediment and bacteria.

EFFECTIVENESS ASSESSMENT

In FY 2009, the City distributed 133 clean construction posters and brochures as referenced above in the Activity Implementation section. Due to the nature of this activity, effectiveness assessment beyond Level 1 is not being conducted for this activity. The City may continue to report on the distribution of the brochures and posters, but is not currently requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **PROJECT CLEAN WATER - SAN DIEGO RIVER WATERSHED WEBSITE**
ID NUMBER: **SDR-A46**

ACTIVITY DESCRIPTION

The Project Clean Water website (**http://www.projectcleanwater.org/html/ws_map.html**) provides a venue for public participation and involvement in local watershed activities. The Watershed Map page is the starting point of the watershed website. Visitors wishing to learn more about a particular watershed can simply "click" on a desired watershed in the Watershed Map. Once selected, the visitor is linked to the watershed's summary page and provided with additional link options. The visitor can view multiple informational pages on the San Diego River Watershed which include:

- San Diego River Watershed Summary Page (main page)
- San Diego River Watershed Plan Page
- San Diego River Watershed Project Page
- San Diego River Watershed Activities Page

During the FY 2008-09 reporting period, revisions were made to update the content and documents available via the site, including adding reports, repairing broken links, and updating 303(d) listings.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

This is an ongoing activity.

PARTICIPATING WATERSHED COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This method of public participation is consistent with the collective watershed strategy in that it encourages any member of the public to take an interest in their watershed and to participate in Copermittee activities.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is not being measured directly, but can be inferred from tracking the number of "hits" the web pages received on an annual basis.

- Watershed Copermittees continued to post the WURMP and annual reports on the Project Clean Water website.
- There were 4,093 hits on the San Diego River Watershed webpage.
- There were 786 hits on the San Diego River WURMP webpage.

TITLE: DEVELOPMENT OF ADDITIONAL PUBLIC PARTICIPATION PROGRAMS

ACTIVITY SUMMARY

During the reporting period, the City of Santee has continued to promote the opportunities for public participation in our stormwater program through the storm drain stenciling program and the Roadside Pride program. The storm drain stenciling program has multiple benefits including:

- Providing stencils on storm drains reminds people in the vicinity that the drain provides a direct connection to the river and that their activities can have a direct impact on the health of the river. This reminder may result in the modification of their behavior to prevent the discharge of pollutants into the storm drain.

- This program provides groups within the community an opportunity to participate in an activity that is related to an issue that they are interested in. This activity may also provide them with the necessary experience to achieve a goal related within the organization (such as fulfilling a community service requisite).

- The activity may provide education for people who volunteer to help with the activity who may have limited knowledge of stormwater issues. This knowledge may result in changes to their behavior.

The Roadside Pride Program provides Santee-based community groups with an opportunity to earn a small amount of money in exchange for removing litter from roadsides within the community. This on-going program will be promoted alongside other public participation opportunities.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria
- Total Dissolved Solids
- Low Dissolved Oxygen

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

TASKS IMPLEMENTED DURING FY 2008-2009

The following tasks were conducted as part of the development of the Public Participation Program during Fiscal Year 2008-2009:

- Promotion of these public participation opportunities (such as in an article in the Santee Review on the San Diego River Foundation).
- Implementation of a stenciling project by a scout group within Santee. Fifty-two storm drain inlets were identified for stenciling. The City provided health and safety guidance and equipment to the group. The City also assisted in obtaining stenciling equipment. This included the preparation of educational information by the scout group in collaboration with the City. Distribution of 900 flyers in the areas where drains were stenciled.

TITLE: **City of San Diego Strategic Plan for Watershed Implementation**
ID NUMBER: **SDR-A48**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table 1 – Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Irrigation Hardware Giveaway and Cash for Plants Program	Smart Irrigation Control Incentive	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning. Implementation and assessment is anticipated to be

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
	Program				completed in FY2013. WMA: TBD.
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash	Pre-planning
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals	Sponsorship of the Brake Pad Partnership is in progress.
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment	Cancelled
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
	Filtration				
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Educatio n	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Educatio n	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Educatio n	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-	Low-Flow Storm Drain	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Pollutant Treatment System (1)	Inlet Multi-Pollutant Train				
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management

decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report, including all of the Strategic Goals established in the WURMP.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: Receiving Water Monitoring for Priority Pollutants in the San Diego River Watershed

ACTIVITY SUMMARY

The City of Santee has conducted an additional study each year since 2002 to assess constituents of concern at five receiving water locations within the watershed. These locations include Forester Creek as it enters the City of Santee and prior to its confluence with the San Diego River (two locations); the San Diego River as it enters the City of Santee; Sycamore Creek as it discharges into the San Diego River; and the San Diego River just as it leaves the City of Santee (three locations). These locations are typically sampled twice during the dry season, at the beginning and towards the end of the dry season. This investigation was reviewed during Fiscal Year 2007 and revised to incorporate the constituents listed on the 303(d) list for the Forester Creek and San Diego River.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria
- Total Dissolved Solids
- Dissolved Oxygen
- Phosphorous

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The dry weather monitoring program focuses on potential pollutants within the MS4. Monitoring receiving waters within the City helps to evaluate water quality within City limits. The data can be incorporated with data collected within other jurisdictions to develop a profile of water quality within the watershed. This helps to identify areas where loadings of priority pollutants may be increasing and to assist in developing watershed activities in appropriate locations that may result in water quality improvements. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2008-2009

Collected two rounds of data. Reviewed the data to date to assess any trends in water quality. The resulting memorandum is attached to the City of Santee's JURMP Annual Report.

TITLE: **Municipal Park Irrigation Runoff Minimization, Artificial Turf, and Storm Water Harvesting Study**

ID NUMBER: **SDR-A50**

ACTIVITY IMPLEMENTATION

This activity is to evaluate the implementation of urban runoff reduction measures at municipal parks within the San Diego River Watershed Management Area (WMA), including an assessment of reusing storm water and installing artificial turf at municipal parks to achieve multiple water use and quality benefits. As part of a joint, collaborative watershed effort initiated by the San Diego River Watershed Workgroup, the City of San Diego plans to design and implement a preliminary feasibility study focusing on identifying procedures and providing recommendations on how water is used, and evaluating what options are available to balance water demand and storm water management at municipal parks. In addition, this project included assessing a potential resource management strategy of using storm water reuse, and artificial turf in municipal parks to meet multiple public use, water reduction and water quality improvement benefits.

In short, the goal of this activity was to assess potential implementation strategies to optimize water efficiency and reduce urban runoff at municipal parks in the San Diego River WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and Assessment is anticipated to begin in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goals 1, 2 and 5 for Dry Weather Flow Reduction, Municipal Source Reduction and Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problem, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problem by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
Assess the Efficiency and Effectiveness of Municipal Park Irrigation Runoff Minimization, Artificial Turf, and Storm Water Harvesting Study	
Management Questions	A) Municipal Parks - San Diego River WMA 1) What are the physical characteristics of municipal parks which contribute to over-irrigation and urban runoff? 2) What patterns or applications of water that may impact water quality can be identified at municipal parks? 3) What are the procedures and maintenance practices which contribute to over-irrigation and urban runoff at municipal parks? B) Storm Water Harvesting 1) What are the major barriers (logistical, regulatory, public perception or other) to storm water reuse as a water resource at municipal parks? 2) Is rainwater harvesting for irrigation use at municipal parks an efficient method in reducing irrigation runoff? C) Artificial Turf 1) Is artificial turf at municipal parks an efficient and functional method in reducing irrigation runoff volume? • How much urban runoff is reduced from areas containing artificial turf versus grassy areas? • What are the operational and maintenance needs and issues associated with artificial turf? • What is the cost efficiency of artificial turf in reducing irrigation runoff volume?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., track number of BMPs, Count number of corrections made while inspector was onsite) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)

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Data Recorded	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of altering maintenance practices and procedures, and other factors leading to potential procedural and structural Best Management Practices (BMPs) that may be employed to eliminate significant sources of urban runoff and to reduce urban runoff and improve water quality.

Analysis and Results
This project was in the planning phase during FY 2009.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring and/or observation efforts) to the cost of changing park maintenance practices and procedures and equipment. Conclusions will be made after the assessment is complete.

TITLE: **Famosa Slough Monitoring**
ID NUMBER: **SDR-A51**

ACTIVITY IMPLEMENTATION

Water quality monitoring was conducted in Famosa Slough (Slough) to comply with San Diego Regional Water Quality Control Board (Regional Board) Investigation Order R9-2006-0076 (Order) dated July 19, 2006. The Slough was one of the seven lagoons identified in the Order. The Slough was identified as impacted by eutrophication. A number of key contaminants including assessment of general water quality, nutrients concentrations, and sediments were monitored during both dry weather and wet weather.

Key issues posed in the Order.

- Contaminant concentrations were recorded at the base of the watershed during wet weather and dry weather. During wet weather, concentrations of contaminants of concern were below Water Quality Control Plan, (Basin Plan) for the San Diego Region Basin Plan, Multi-Sector General Permit, and Environmental Protection Agency (EPA) water quality objectives (WQOs) for all parameters, with the exception of one total suspended solid (TSS) sample, which was above the Multi-Sector General Permit WQO of 100 mg/L. During the four dry weather monitoring events, contaminant concentrations at the mass emission site (MES) were relatively high. However, flow volumes were very low and therefore the impact of the storm drain on the Slough was minimal.

- Rainfall was monitored continuously throughout a 12-month period from October 2007 through October 2008. A total rainfall of 7.02 inches was recorded during this period.

- Mass loads and total annual flows were calculated based on pollutant concentration and loads from the MES. The average storm event loads into the Slough from the MES and average dry weather loads were calculated. The highest contributed load was found to be TSS which averaged approximately 400 pounds during a storm event and approximately 18,000 pounds annually from dry weather. Nutrient loads were considerably lower and were not indicative of a significant eutrophication issue in the Slough.

- The contaminant concentrations were assessed for the Slough Segment Site and the Ocean Inlet Site. This analysis showed that there was no difference between the two sites, with the exception of chlorophyll-a, which was higher in the Slough during the Fall 2008 index period. In assessing all other constituents of concern, the dry weather flow from the San Diego River does not appear to impact the Slough.

- Contaminant concentrations within the main body of the Slough were measured during four index period sampling events which occurred during Winter, Spring,

Summer, and Fall 2008. Nutrient concentrations did not exceed WQOs during any of the index period sampling events within the Slough.

- DO was recorded within the Slough during each index period and continuously at the Slough Segment Site and the Ocean Inlet Site. The Basin Plan WQO for DO states that DO shall be above 5 mg/L (Regional Board, 1994). DO concentrations were above the Basin Plan WQO throughout the Slough during daylight hours. DO dropped below Basin Plan levels during the night. DO was never below Basin Plan WQOs for prolonged periods of time.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Data was collected from sampling events that occurred at the main storm drain, the mouth of the Slough, at a midpoint of the Slough, and at 15 transect sites throughout the main body of the Slough and adjacent channel from October 2007 through October 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved oxygen
- Phosphorous
- Turbidity

Other constituents of concern

- TSS
- Nitrogen
- Ammonia
- CBOD

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify dissolved oxygen and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego River, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce pollutant loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this not an implementation or education activities. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: **Qualcomm Stadium Trash Segregation Best Management Practice (BMP) Installation**
ID NUMBER: **SDR-A52**

ACTIVITY IMPLEMENTATION

This project will involve the installation of catch basin inserts at two catch basins at Qualcomm Stadium. The catch basin inserts would be installed directly in the existing curb inlets. The Qualcomm Stadium site location will include the implementation of storm drain catch basin inserts as retrofits within the existing storm drain system.

The City of San Diego (City) will study the effectiveness (in terms of load reduction) and the efficiency (in terms of load reduction divided by cost) of such devices in improving discharge and water quality impaired by bacteria, both in absolute terms and relative to other potential activities.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and concept design occurred in FY 2009. This project is part of the Catch Basin Inserts Pilot Program. It is anticipated to solicit bids from different vendors by December 2010 and installation is anticipated to occur in FY 2011. Water quality monitoring will be conducted before and after installation to assess the effectiveness in bacteria and trash loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants
- Turbidity
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA and recommend implementing load reduction/source abatement activities to address them.

Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
QUALCOMM STADIUM TRASH SEGREGATION BMP INSTALLATION **Assess the Efficiency and Effectiveness of Catch Basin Inserts**	
Management Questions	• What is the load reduction efficiency of the catch basin inserts? • How effective are these catch basin inserts at reducing loads of priority pollutants? • Does the implementation of catch basin inserts result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the catch basin inserts are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Change (%) in bacteria load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the catch basin inserts in two curb inlets in Qualcomm Stadium to remove trash and debris and improve water quality.

Analysis and Results

Once the installation and monitoring are completed, additional assessment will be completed to determine the effectiveness of this activity.

Conclusions

Anticipated future monitoring will be conducted to assess pollutant removal deficiencies.

TITLE: **Robb Field Water Treatment and Reuse Project**
ID NUMBER: **SDR-A53**

ACTIVITY IMPLEMENTATION

This project will construct a storm runoff collection and treatment facility at the northwest corner of Robb Field, a Park & Recreation Facility. Once treated, the stormwater will be stored and used to irrigate the adjacent 14 acre grass athletic field The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Stormwater Reuse" and, if proven to be effective, anticipates eventually implementing similar LID projects.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in June 2009. The work performed in FY 2009 included the conceptual design and the City facility stakeholder, Park and Recreation Department (PRD). Once PRD formally approves the project for land use, the design consultant will start work in FY 2010. Construction is anticipated to occur February through September 2013. Water quality monitoring is anticipated be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. The Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identifies bacteria as high priority water quality problems in the watershed and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address this high priority water quality problem by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
ROBB FIELD STORM WATER REUSE Assess Efficiency and Effectiveness of Storm Water Reuse in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the effectiveness and efficiency of the reuse project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not possible at this time. Project design will continue in FY 2010.

Conclusions

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: **San Diego River Watershed Brochure**
ID NUMBER: **SDR-A54**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2010. Implementation and distribution is expected to occur in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern

Tijuana River	San Diego River	San Diego Bay	Mission Bay	San Dieguito River	Los Penasquitos
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants	Gross Pollutants	Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction. This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City plans to continue to implement the brochure program in FY 2010. Effectiveness assessments will be conducted after the watershed brochures are implemented in FY 2010. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: **Stormwater Quality Master Plans for Special Drainage Fee Areas**
ID NUMBER: **SDR-A55**

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego River Watershed include:

• SDA 5 (Bostonia)
• SDA 6 (Lakeside)
• SDA 7 (Alpine)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur anytime before FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

• County of San Diego

OTHER PARTICIPATING ENTITIES

• None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined

TITLE: **Pet Waste Management Outreach**
ID NUMBER: **SDR-A56**

ACTIVITY DESCRIPTION

This activity targets potential, new, and existing pet owners and seeks to educate them on the importance of cleaning up after their pets, as well as tying a water quality and watershed protection message into the outreach activity. A presentation will be developed that will include a pre- and post-presentation survey asking participants about their pet waste management practices. Between the pre- and post- surveys, participants will review a series of slides that define a watershed, a general description of the MS4 system, the link between bacteria and water quality, and the importance of cleaning up after their pets. The presentation will also include tips for managing pet waste properly and encouraging participants to clean up after their pets each and every time.

Each jurisdiction will select at least two local pet-related businesses, selecting from pet day-care facilities, pet food retail stores, adoption centers, and/or veterinary clinics to present the materials.

FY 2008-09 ACTIVITY IMPLEMENTATION

Planning for this activity began during FY 2008-09.

TMDL APPLICABILITY

Bacteria is listed on the 2008 303(d) list in the San Diego River Watershed. As such, this activity has potential to support future TMDL implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Completing the presentation materials and survey, identifying the businesses to target and executing the outreach activity will occur during FY 2009-10.

- Complete presentation materials – 2009
- Identify businesses to target – 2009
- Deliver presentations – 2010

PARTICIPATING WATERSHED COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as priority water quality problems in the San Diego River Watershed. Pet waste in particular is a potential source of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Ten pet waste management presentations are targeted for FY 2009-10 (Level 1 Outcome). It is anticipated that an increased score in the post-presentation survey will show an increase in knowledge and awareness (Level 2 Outcome), and hopefully a change in future behavior (Level 3 Outcome).

Using Community Based Social Marketing tools on the survey, Copermittees may be able to calculate a potential load reduction, as well. One such tool is to ask participants to commit to changing their behavior (e.g.: "I promise to clean up after my pet and dispose of pet waste properly every time") on the survey form. A load reduction may be calculated by estimating the number of participants who make the commitment multiplied by the number of pets they have or are planning to adopt (Level 4 Outcome).

TITLE: **San Diego River Invasive Species Removal**
ID NUMBER: **SDR-A57**

ACTIVITY DESCRIPTION

The County of San Diego Department of Public Works is working in coordination with the San Diego River Conservancy to remove Arundo donax and other non-native species along the San Diego River. The removal is occurring on a 1.78 acre County-owned parcel located in the City of Santee (APN 383-060-25-00). Arundo and non-native palms were removed during October 2009 by the California Conservation Corp. Cut vegetation was chipped and taken to the landfill and stumps were treated with herbicide to prevent regrowth.

This site will be planted with native riparian vegetation during the fall of 2010. Maintenance and monitoring of the newly planted vegetation will be performed by the County until success criteria is met, which is estimated to be within 3 to 5 years of planting. No water quality monitoring related to this specific project has been planned.

ACTIVITY IMPLEMENTATION

- Planning and coordination for the activity began March 1, 2009.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Invasive species removal – October 2009.
- Plant site with native riparian vegetation – Fall 2010.
- Monitoring and maintenance of site vegetation – 3-5 years after planting, until successful growth occurs.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Conservancy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

EXPECTED BENEFITS

This Invasive Species Removal project will not only enhance water quality and aid in flood control measures, but will help the County realize 1.56 acres of wetland credits to be used as mitigation for RPG 53 projects (related to invasive species removal in river bank areas).

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Removal of invasive species benefits water quality by restoring the river's natural condition and native vegetation. Native vegetation provides greater filteration and treatment of pollutants. As such, this water quality activity is consistent with the collective watershed strategy, which seeks to abate pollutants in the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1). Re-planted areas will be monitored and maintained to ensure the invasive species do not re-grow and native riparian vegetation is successful.

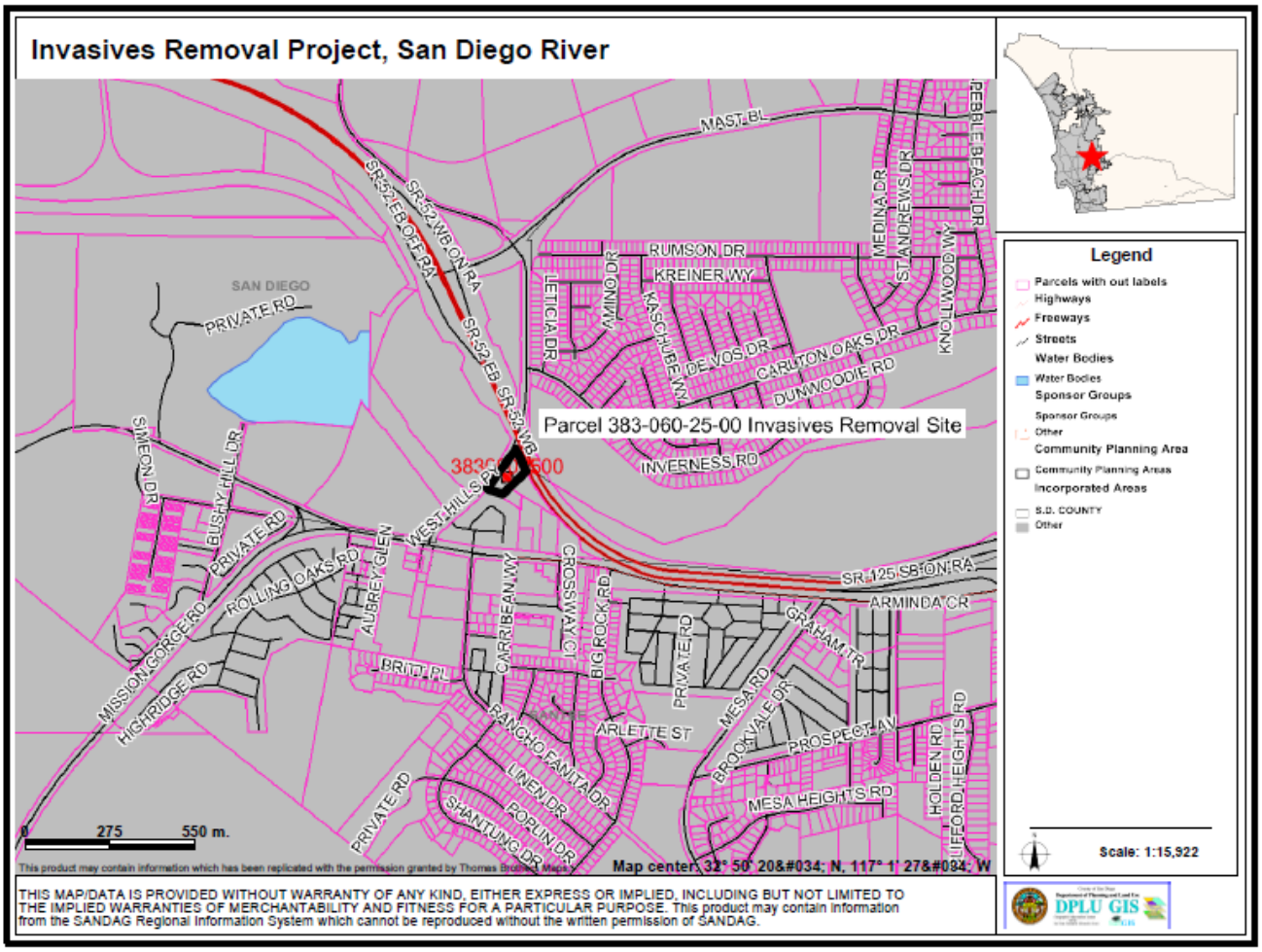

TITLE: **San Diego River Volunteer Clean Up Event**
ID NUMBER: **SDR-A58**

ACTIVITY DESCRIPTION

The County of San Diego will partner with the San Diego River Park Foundation (SDRPF) to sponsor a cleanup of a 79-acre parcel located within the San Diego River corridor on the County-owned Edgemoor property in the City of Santee. (See map)

SDRPF will be responsible for organizing and performing the cleanup using approximately 100 volunteers to remove garbage, debris, and abandoned encampments on the property. Staging for the clean up activity will occur from the parking area at Cottonwood Avenue and Chubb Lane.

ACTIVITY IMPLEMENTATION FY 2008-09

- None

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Initiate planning and coordination – December 2009
- Conduct cleanup – February 20, 2010.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Clean up activities are consistent with the collective watershed strategy because they are an effective means of addressing pollutants in the watershed as well as raising public awareness of the importance of pollution prevention. This activity will constitute a load reduction within the watershed, as well as other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EXPECTED BENEFITS

Previous clean up efforts have yielded thousands of pounds of garbage and debris removed, realizing significant load reductions for this portion of the watershed.

EFFECTIVENESS MEASUREMENTS

Effectiveness will be measured by tabulating the amount of garbage, debris, and abandoned encampments removed.

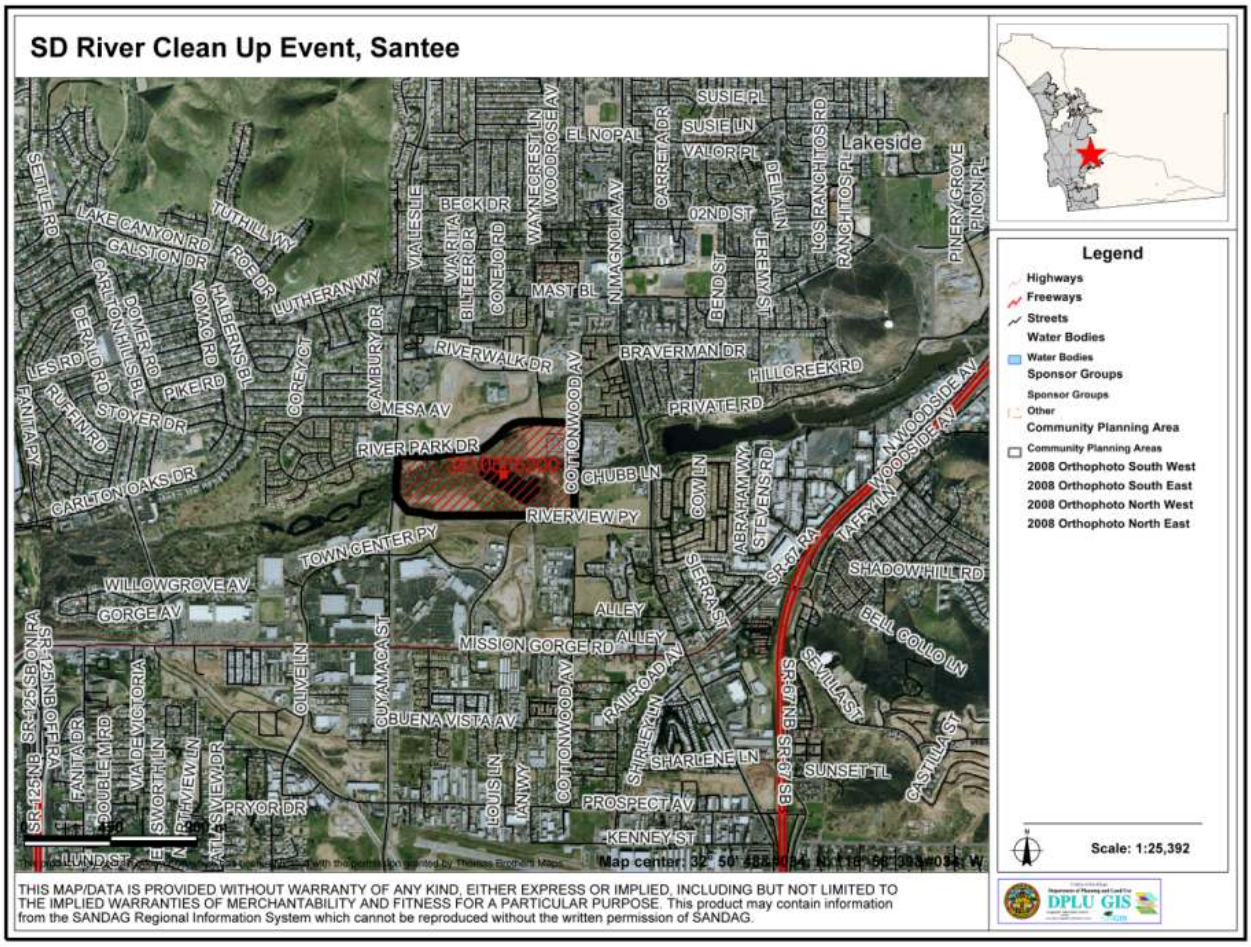

TITLE: **WATER QUALITY MONITORING IN THE SAN DIEGO RIVER**
ID NUMBER: **SDR-A59**

ACTIVITY DESCRIPTION

The County of San Diego will perform water quality monitoring in the San Diego River Watershed during two wet weather events and one dry weather event at three monitoring stations. The purpose of this monitoring is to collect additional data regarding concentrations and loading of bacteria in the unincorporated portion of the watershed.

The two wet weather events will consist of collecting six pollutograph samples and the dry weather event will consist of a 24-hour composite sample for those analytes conducive to composite techniques. Grab samples will be collected for all microbiology samples using PCR trained, clean hands techniques. Bacteria analysis will be conducted for total coliform, fecal coliform, enterococcus and the presence/absence of human fecal contamination (Bacteroides fragilis).

Sample site locations include:

SDR08	Los Coches Creek @ I-8 Business Route
SDR10	San Diego River @ Riverford Road
SDR28	San Diego River @ Ashwood Street

ACTIVITY IMPLEMENTATION

- During FY 2008-09, monitoring was conducted during one wet and one dry weather event at three monitoring stations. Water quality data are presented in tabular format in the attached report.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Monitor one additional wet weather event – FY 2009-10
- Complete data analysis and final report – FY 2009-10

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria has been identified as a high priority water quality problem in the San Diego River Watershed. Since this activity is focused on identifying and abating sources of bacteria, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by ensuring completion of all water quality monitoring for this project (Level 1).

TITLE: **Municipal Park Inspections**
ID NUMBER: **SDR-A60**

ACTIVITY DESCRIPTION

This project consisted of inspections of municipal park facilities by stormwater program staff using inspection checklists developed specifically for parks, and then addressing identified issues. The San Diego River Copermittees modeled the checklists after other successful forms, including forms used in previous Source Identification Studies. With the guidance of the forms, inspectors visited a number of parks within the watershed to assess the potential for pollutant exposures and for dry weather runoff, particularly from irrigation systems. Based on these inspections, Stormwater Department staff worked to develop stronger relationships and better communication with Parks and Recreation Department staff. The purpose of this activity was not only to address the specific incidents and issues identified at the parks visited, but to foster dialogue with Parks and Recreation Department staff on how to reduce dry weather runoff and pollutant exposures at parks.

ACTIVITY IMPLEMENTATION FY2008-09

City of La Mesa

Three parks (Jackson, La Mesita and Northmont) were selected for inspection based on their potential for over-irrigation and pollutant exposures as well as for their representativeness of other City parks. Inspections were performed using the watershed forms developed specifically for this activity. A baseline inspection was performed during the day to collect information regarding the parks and identify potential pollutant sources. A second inspection was conducted during the night at times when the last cycle of irrigation for the park was scheduled. The last irrigation cycle of the night was selected in order to maximize the probability of observing runoff under the assumption that this would be the time of maximum saturation of the soil from previous irrigation cycles. Only one incidence of water runoff reaching a storm drain was observed, which was due to a broken irrigation line. A sample of the runoff was collected just prior to the runoff entering the storm drain and analyzed for indicator bacteria. Concentrations were below Copermittee Dry Weather Action Levels indicating that the water had not come into contact with a significant source of bacteria in the park. This was consistent with the visual observations of this and all the parks, which is they are generally well maintained with minimal pollutant exposures. Based on the results of the inspections, a training program was developed and given to the Parks and Recreation field personnel to share the results and explore ways to reduce pollutant exposures and over-irrigation further. Some of the conclusions of this discussion were that plant selection and park design were key to minimizing dry weather discharges and preventing plant debris from entering the storm drains, and that future changes to park should include a shift from spray to drip irrigation or no irrigation wherever feasible.

City of Santee

Two City parks, West Hills Park and Woodglen Vista Park, were inspected five times each based on their potential for over-irrigation and pollutant exposures, including a review of down

gradient dry weather monitoring results. Inspections were performed using the watershed forms developed specifically for this activity. A baseline inspection was performed to collect information regarding the parks and identify potential pollutant sources. Subsequent inspections were performed to identify incidents of pollutant exposure or evidence of dry weather runoff. The primary issue identified was over-irrigation, but some evidence of potential pollutant exposure was also observed, e.g. dumpster lid left open. The inspections indicated that over-irrigation and erosion can be a recurring issue even at parks where Park Department personnel are regularly adjusting and maintaining irrigation systems.

Follow up training and communication was provided to Parks and Recreation Department staff to encourage the staff to address not only these incidents, but to manage potential over-irrigation and pollutant exposure issues on an ongoing basis. Pre- and post- training surveys were conducted and indicated that the training did improve staff understanding of what a watershed is and how their actions impact the watershed. Training was also provided to City contractors that work at City parks to ensure awareness of City BMP requirements at the field staff level. A training session was conducted at the Public Works Operations Facility for representatives of the two contract companies (Benchmark and Steven Smith Landscaping) with ongoing, long-term city contracts in addition to the City staff member who manages the contracts. Each company was then required to train their staff and provide written documentation that this training was completed. A third contractor did not participate since its contract with the City is expiring.

City of El Cajon

Two City parks were inspected using the watershed forms developed specifically for this activity. The parks were selected based on their potential for over-irrigation and pollutant exposures as well as for their representativeness of other City parks. A baseline inspection was performed to collect information regarding the parks and identify potential pollutant sources. Subsequent inspections were performed to identify incidents of pollutant exposure or evidence of dry weather runoff. Follow up communication was provided to Parks and Recreation Department staff to encourage the staff to address not only these incidents, but to manage potential over-irrigation and pollutant exposure issues on an ongoing basis.

County of San Diego

The two parks selected for this inspection activity were Louis Steltzer Park and El Monte Park, both located within the Lakeside Community Planning Area. Parks were selected based upon several factors including location, consistency with other types of parks chosen in the watershed, and potential for over-irrigation and pollutant load exposures. Baseline information was collected using the forms created for this activity and one follow-up inspection was conducted at each facility. Potential sources for pollution and runoff found were dumpsters, picnic areas (potential food contamination) and irrigation devices, both mechanical and hand watering. Both parks passed their baseline and follow-up inspections very well. Minor corrections were made at each facility, including a change in the timing of sprinkler heads at El Monte Park, and providing additional education materials at Louis Steltzer Park.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is completed for four jurisdictions, but is being implemented in fiscal year 2009-10 by the City of San Diego.

PARTICIPATING WATERSHED COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

No outside entities participated in this activity, but the Stormwater Departments for each Copermittee worked closely with their respective Parks and Recreation Departments when implementing this activity.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Nutrients
- Bacteria (indirectly through trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with the collective watershed strategy because it addresses several Strategic Goals established by the WURMP, including Goal 1 for Dry Weather Flow Reduction, Goal 2 for Municipal/Park Source Reduction and Goal 5 for Bacteria Source Reduction. The activity addresses pollutant load reductions, source abatement, and pollutant transport mechanisms, and may have other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was measured by confirming completion of all project elements (Level 1 Outcome), by measuring changes in knowledge and attitude (Level 2 Outcome) using surveys and by confirming reduced or no runoff water from the site (Level 4 Outcome) during follow up inspections. The City of La Mesa did incorporate sampling of observed irrigation runoff into its inspection program, but no other water quality monitoring was planned for this activity.

TITLE: Use of Organic Fertilizers at Parks

ACTIVITY SUMMARY

The City of Santee experimented with the use of alternative fertilizers with the intention of applying better fertilizers at City Parks. Organic fertilizers are reported to be more beneficial to water quality than traditional fertilizers since the nutrients (e.g. nitrogen and phosphorus compounds) leach more slowly. By releasing from the delivery compound more slowly, the nutrients provide a more long-term benefit to the soil (reducing the need for additional applications) and reducing the amount of nutrients discharging into the watershed over time. In addition, the organic matrix in which the nutrients are contained are reported to help improve soil quality and water retention.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Nutrients - Phosphorus

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The activity is consistent with the collective watershed strategy because it addresses Strategic Goal 2 for Municipal/Park Source Reduction of high priority pollutants. Nutrients, i.e. phosphorus, is a high priority pollutant for the San Diego River Watershed and this activity addresses pollutant load reductions, source abatement, and pollutant transport mechanisms, and may have other quantifiable benefits to discharge or receiving water quality.

TASKS IMPLEMENTED DURING FY 2008-2009

The City contacted California Organic Fertilizers who provided a sample of organic fertilizer. This fertilizer was applied at a small grass area at the Public Works Operations Center. The fertilizer was comprised of large blue pellets, which were highly visible. In addition, dogs visiting the facility were observed to ingest the pellets. It was concluded that the product in its current large pellet form would be unsuitable for public parks and similar spaces, as it would be unsightly, generate too many public questions and complaints, and would be most likely eaten by animals before the nutritional benefit was realized. It is understood by the City that the product was developed for agricultural use, where a noticeable pellet size could be useful to prevent over-application. The vendor was advised of these concerns and invited to contact the City if these concerns were resolved.

TITLE: Irrigation Runoff Reduction

ACTIVITY SUMMARY

The City of Santee is conducting a pilot project experimenting with the removal of existing median vegetation with high water needs and the planting of drought tolerant vegetation instead. This pilot study will be conducted on four median strips in Mission Gorge Road within the City. The City will also be conducting a study to assess the cost and cost-effectiveness of extending this approach throughout City maintained landscape maintenance districts. The City has hired a consultant to advise it on the technical issue of which plants to use, and another consultant to assist with evaluating the economics of the project. The goals of the project are both to eliminate the overuse of water and to reduce runoff.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- TDS
- Bacteria (Indirect – Elimination of Transport Mechanism)
- Nutrients – Phosphorus (Indirect – Elimination of Transport Mechanism)
- Gross Pollutants (Indirect – Elimination of Transport Mechanism)
- Turbidity (Indirect – Elimination of Transport Mechanism)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The activity is consistent with the collective watershed strategy because it addresses Strategic Goals 1 and 2 for Dry Weather Flow Reduction and Municipal/Park Source Reduction of high priority pollutants. Since overirrigation runoff is a primary mechanism for dry weather flows and dry weather flows serve as a transport mechanism for many watershed priority pollutants, this project will help to reduce both flow and pollutant loading in the watershed.

TASKS IMPLEMENTED DURING FY 2008-2009

The City began planning this activity in FY 2008-2009 and is implementing the activity in FY 2009-2010. Contracts have been issued and the project is ongoing.

APPENDIX B

ACTIVITY A-28 SUPPORTING DOCUMENTATION: COUNTY OF SAN DIEGO INDICATOR BACTERIA STUDY

San Diego River
Indicator Bacteria Study

The purpose of this study was to evaluate the Fecal Bacterial Indicator (FIB) counts at two sampling locations in the San Diego River watershed. The counts obtained from dry and wet weather grab samples were compared to AB411 Single Sample Standards and the Basin Plan water quality objectives for contact recreation (REC-1). The results will be used to determine baseline levels of FIB at Riverford Road in the San Diego River Watershed. A secondary purpose of the study was to compare WQO exceedance levels between the multi-tube fermentation (MTF) analysis method and the IDEXX brand Colilert and Enterolert methods.

Methods

Beginning in August, 2006 the County of San Diego conducted water quality sampling at two sites in the San Diego River watershed (Table 3; Figures 1 and 2). The sites included the main stem of lower San Diego River (SDR10) draining 42,460 acres of various land uses (Figure 2) and a storm drain channel (SDR35) draining 643 acres of a mostly residential land use area.. The storm drain channel at Denny Way (SDR35) discharges into Forrester Creek 0.8 miles downstream.

Table 3. Sampling locations

Site ID	Location	Thomas Bros.	Latitude	Longitude
SDR10	San Diego River @ Riverford Road	1231, H4	32.85653	-116.94730
SDR35	Storm Drain Channel @ Denny Way (drains into Forrester Creek)	1251, F2	32.82058	-116.96480

Dry weather samples were taken weekly on days when no rainfall greater than 0.10 inches occurred in the past 72 hours. The sampling was conducted from August 2006 through August 2007. Best effort was made to collect all dry weather samples before 11:00 A.M. on the same day each week at each of the two sampling locations.

Wet weather sampling criteria included three or more days of antecedent dry period and predicted minimum rainfall estimates of 0.20 in. The samples were collected during three storms that occurred in November 2006 and early and late February 2007. Samples were taken once on the day of each storm and once during each of two consecutive days.

Bacteria samples were collected as composite grab samples, with equivalent volumes taken from three different points across the stream (at approximately 10%, 50%, and 90% distance across). The samples were taken from the flowing portion of the stream at a depth sufficient to exclude the surface layer without introducing bottom sediment. The samples were collected in sterile 100 mL high-density polyethylene (HDPE) bottles. A separate sterile "fill" bottle was used at each site to collect equal proportions (i.e., 1/3 full) of water into each sample container. The "fill" bottle was triple rinsed with stream water before each collection and protective gloves were worn. Once collected, the samples were immediately placed on ice and transported to the analytical laboratory within six (6) hours of collection time.

On each sampling occasion in-situ measurements of temperature (°C), dissolved oxygen (DO) (mg/L), pH, turbidity, conductivity (µS/cm), and salinity were taken using a hand held probe (Horiba U-10) at 10%, 50%, and 90% distance across the stream and the mean reading was recorded for each parameter. In addition, physical and biological characteristics of the site and general climatic conditions were recorded (using data sheets and photos). Instantaneous stream discharge was estimated as a product of the channel cross-sectional area and the flow velocity. The channel cross sectional area was estimated from the

width of the stream and depth measurements. Flow velocity was measured using a Global Water model FP101 or FP201 flow meter. The velocity, width, and depth were measured at three different points across the stream (approximately 10%, 50%, and 90% distance across). Flow from each transect subsection was computed and summed for a total flow for the transect (Rantz et al., 1982).

The samples were analyzed for FIB using methods outlined in Table 4.

Table 4: Bacterial indicator species and analysis performed.

Indicator Species	Analysis Method
Total Coliform	Multi-tube fermentation (SM 9221B) and Colilert 18H Q2000
Fecal Coliform	Multi-tube fermentation (SM 9221B) and Extrapolation from Colilert 18H Q2000 (EC *1.2)
Enterococcus	Multi-tube fermentation (SM 9221B) and Enterolert
E. Coli	Colilert 18H Q2000 and Extrapolation from Fecal Coliform SM 9221B (FC/1.2)

Analysis of Data

Prior to analysis all data were log-transformed. For the purpose of visualization, the single sample measurements and 30-day geometric means were then plotted against sample collection dates for each bacterial indicator species at each sampling location. The dates of rainfall and corresponding single-sample and 30-day geometric mean water quality objectives were also included in the plots.

Total Coliform, Fecal Coliform, *Enterococcus* and *E. coli* bacterial counts were compared between the multi-tube fermentation (MTF) and the IDEXX results (either direct results or extrapolations) as outlined in Table 4. The comparisons were made with respect to the number of samples exceeding the single-sample and the 30-day geomean water quality objectives using the 2-tailed Pearson's chi-square (χ^2) test of independence ($\alpha = 0.05$)(SPSS). The test assesses whether paired observations on two variables, here bacterial counts estimated through the MTF and IDEXX methods or extrapolations, were independent; i.e. whether the bacterial counts differed in how often they exceeded the single sample WQOs (for wet weather samples) or the 30-day geomean WQOs (for dry weather samples). If they differed significantly, the χ^2 value was large and the p value was smaller than 0.05.

Further Pearson's chi-square (χ^2) tests of independence ($\alpha = 0.05$)(SPSS) were conducted to compare bacterial counts between the wet and dry weather conditions. Single Sample Standard exceedances were used for the wet and 30-day Geomean Standard exceedances were employed for the dry weather samples.

Figure 1: Sampling locations and landuse.

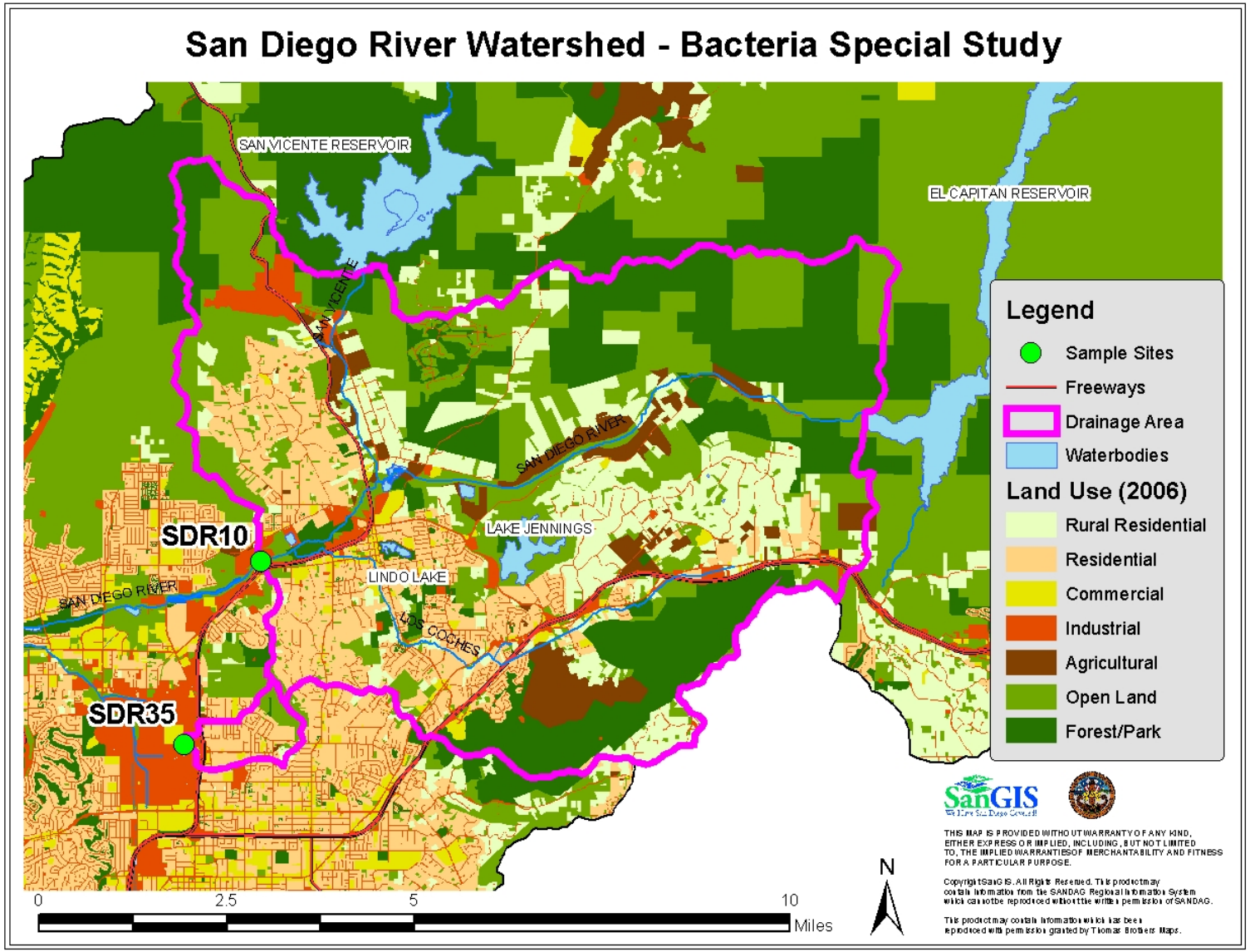

Figure 2: Jurisdiction around the drainage area.

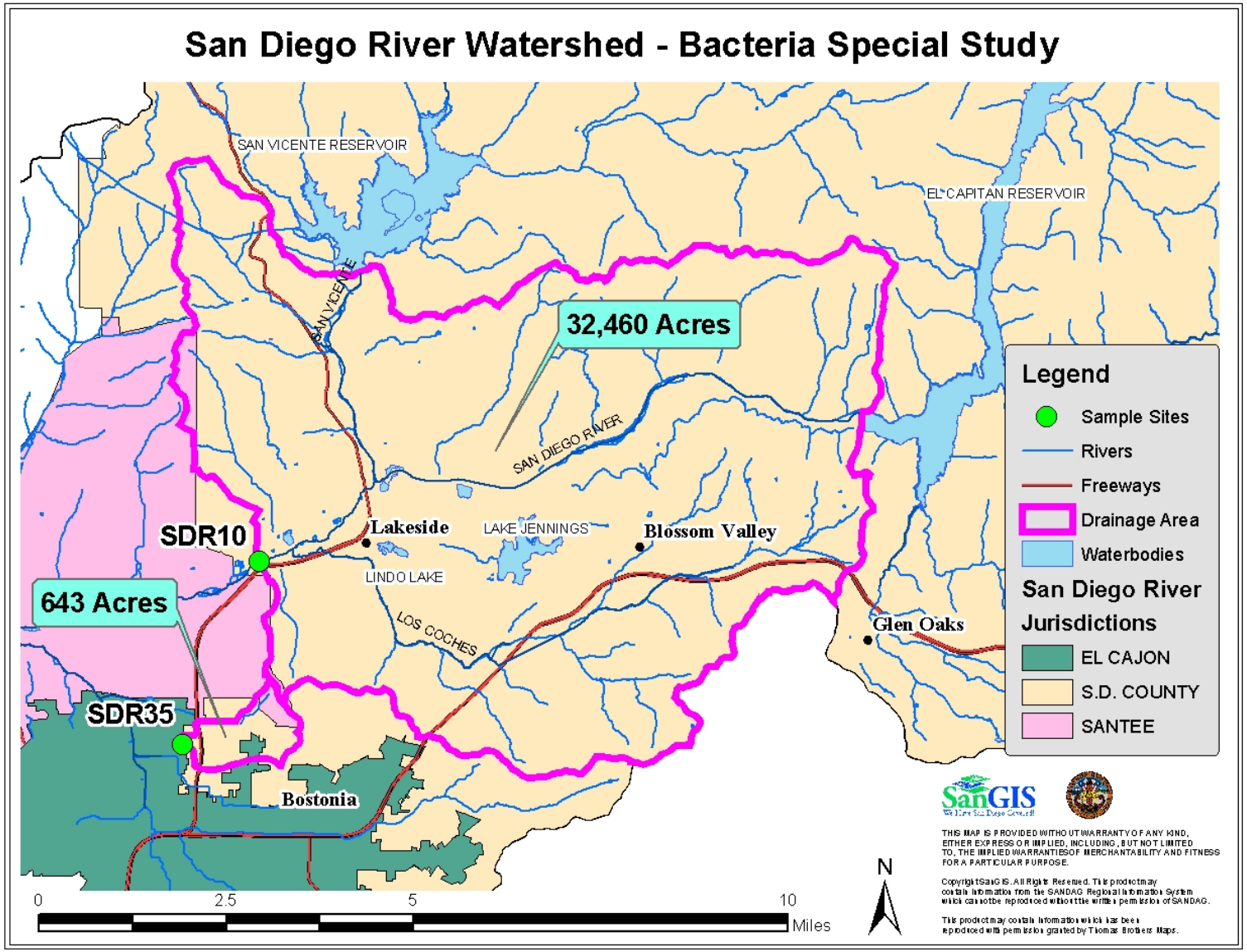

Results

Rain Events and Flow

During the sampling period (from August 2006 through August 2007), 43 samples were collected from the San Diego River at Riverford Road (SDR10) and 53 from the Storm Drain Channel at Denny Way (SDR35). Nine samples at SDR10 and 10 at SDR35 were collected during and/or directly following rain events and are indicated with thickened black horizontal bars along the X-axis in Figures 6-9). As illustrated in Figure 3, several rain events took place in the sampling area; all occurring from late November 2006 through late April 2007. Wet weather data for the present study were collected during the late November 2006 and January and February 2007. The USGS hydrographs showing San Diego River discharge as measured the Mast Rd. station* near Santee Dr. during these three wet weather collection periods are presented in Figure 4. The San Diego river discharge at the Mast Rd. USGS station over the entire sampling period is presented in Figure 5. From Figure 3, it may be concluded that the November rain event represented the first storm of the season.

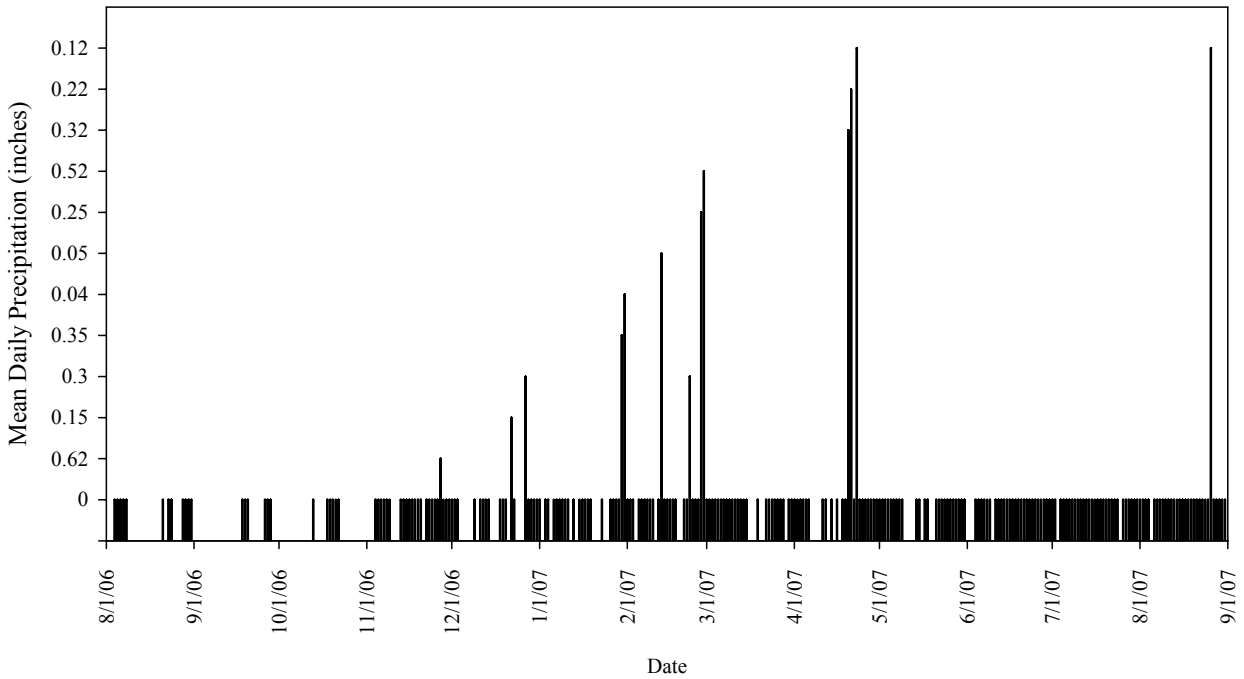

Figure 3: Mean daily precipitation as measured at the Santee station from August 2006 through August 2007. The data for this graph were obtained from the National Weather Services webpage (http://www.wrh.noaa.gov/).

* The USGS station 11022480 located at Lat 32°50'25", long 117°01'30" near the right bank, at Mast Road Bridge, 0.7 mi upstream from Old Mission Damsite, 2.8 mi west of Santee, and 14.2 mi downstream from El Capitan Lake.

A.

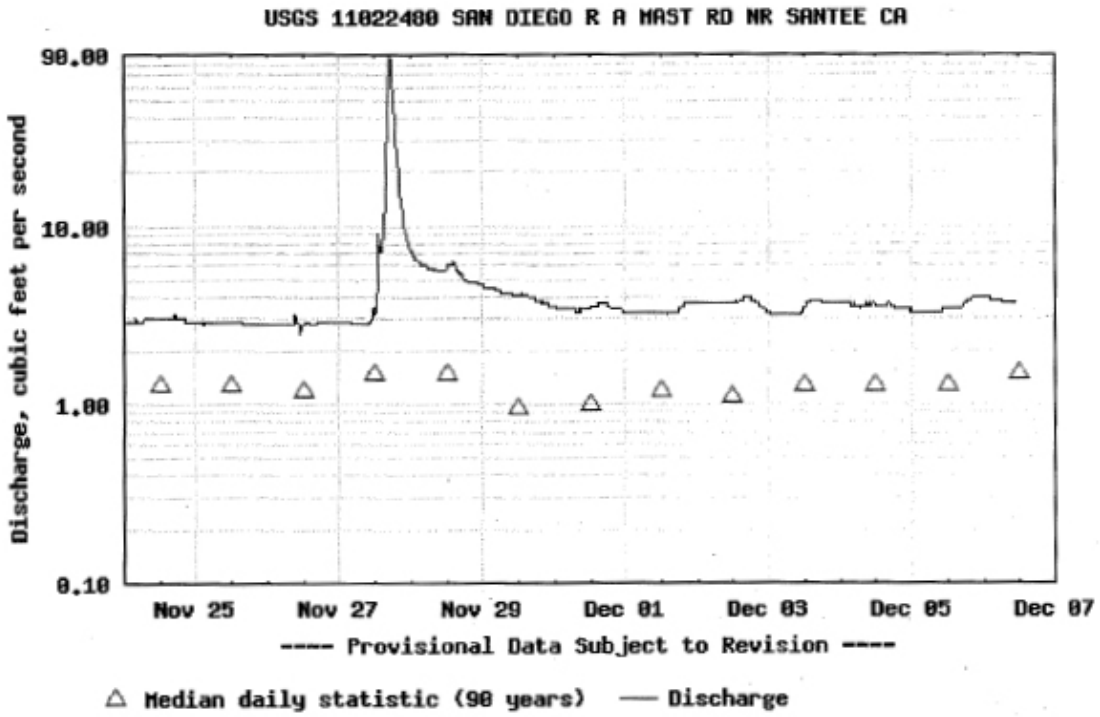
USGS 11022480 SAN DIEGO R A MAST RD NR SANTEE CA
90.00
10.00
1.00
0.10
Discharge, cubic feet per second
Nov 25
Nov 27
Nov 29
Dec 01
Dec 03
Dec 05
Dec 07
---- Provisional Data Subject to Revision ----
Median daily statistic (90 years)
Discharge

B.

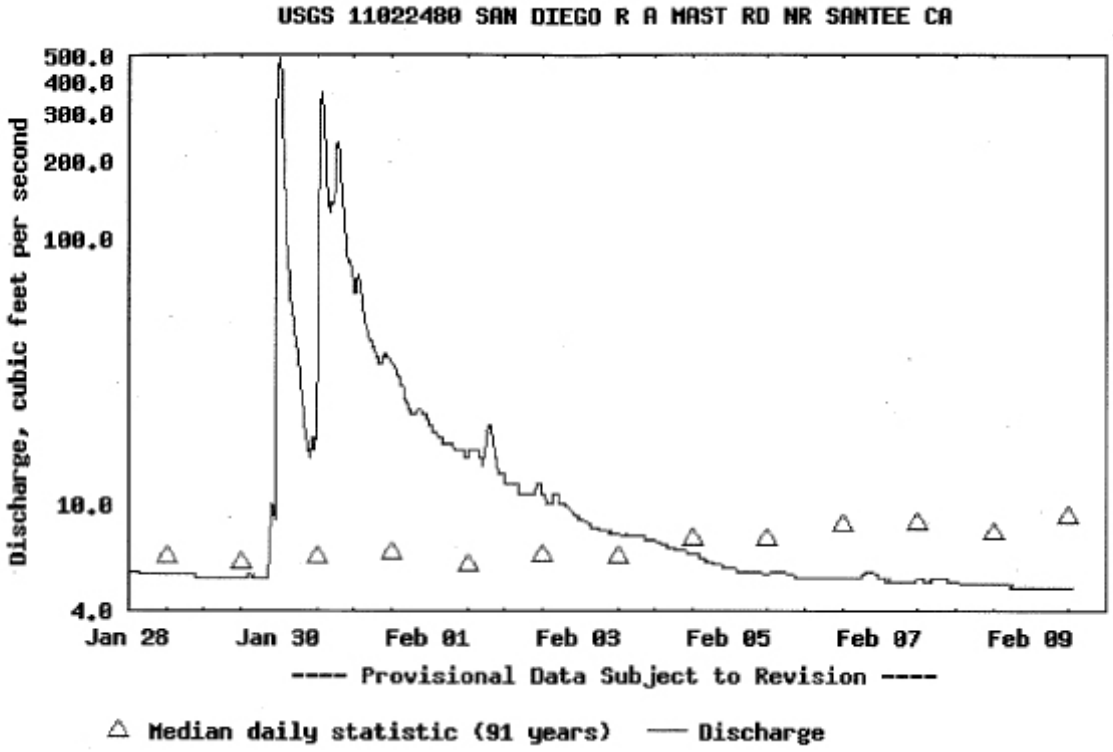
USGS 11022480 SAN DIEGO R A MAST RD NR SANTEE CA
500.0
400.0
300.0
200.0
100.0
10.0
4.0
Discharge, cubic feet per second
Jan 28
Jan 30
Feb 01
Feb 03
Feb 05
Feb 07
Feb 09
---- Provisional Data Subject to Revision ----
Median daily statistic (91 years)
Discharge

C.

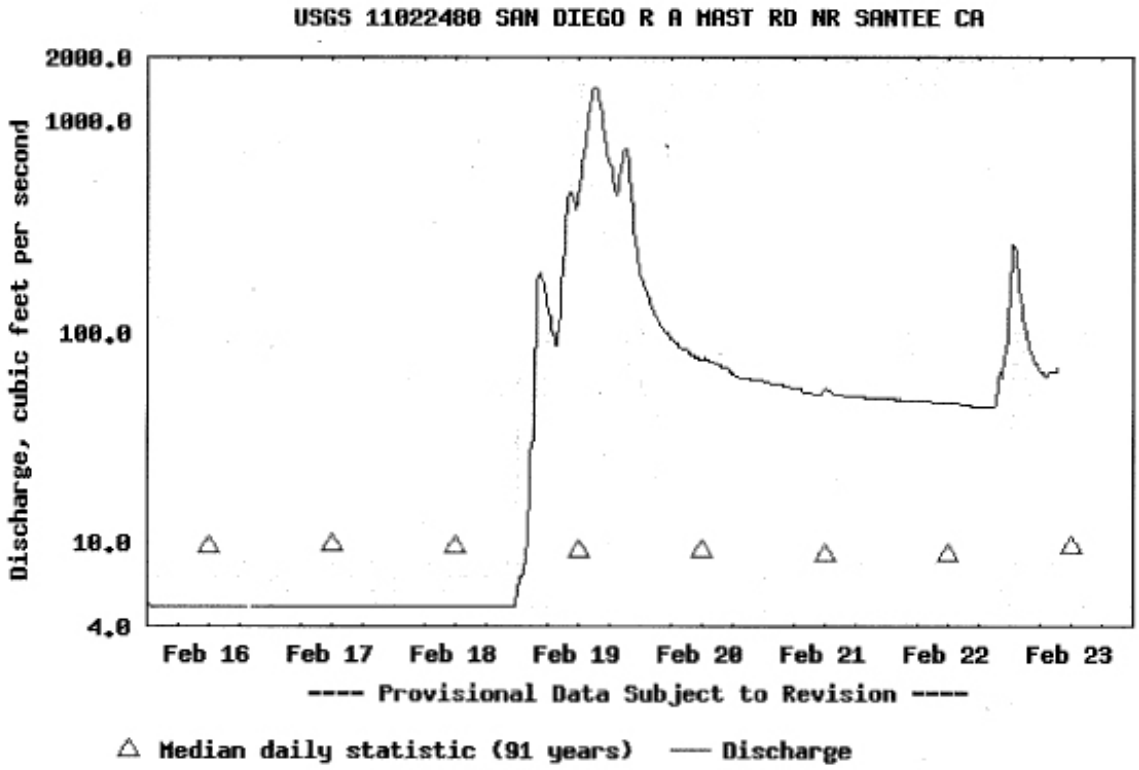

Figure 4: USGS hydrographs showing San Diego River discharge as measured the Mast Rd. station* Near Santee Dr. for the November 2006 (A), January 2007 (B) and February 2007 (C) rain events.

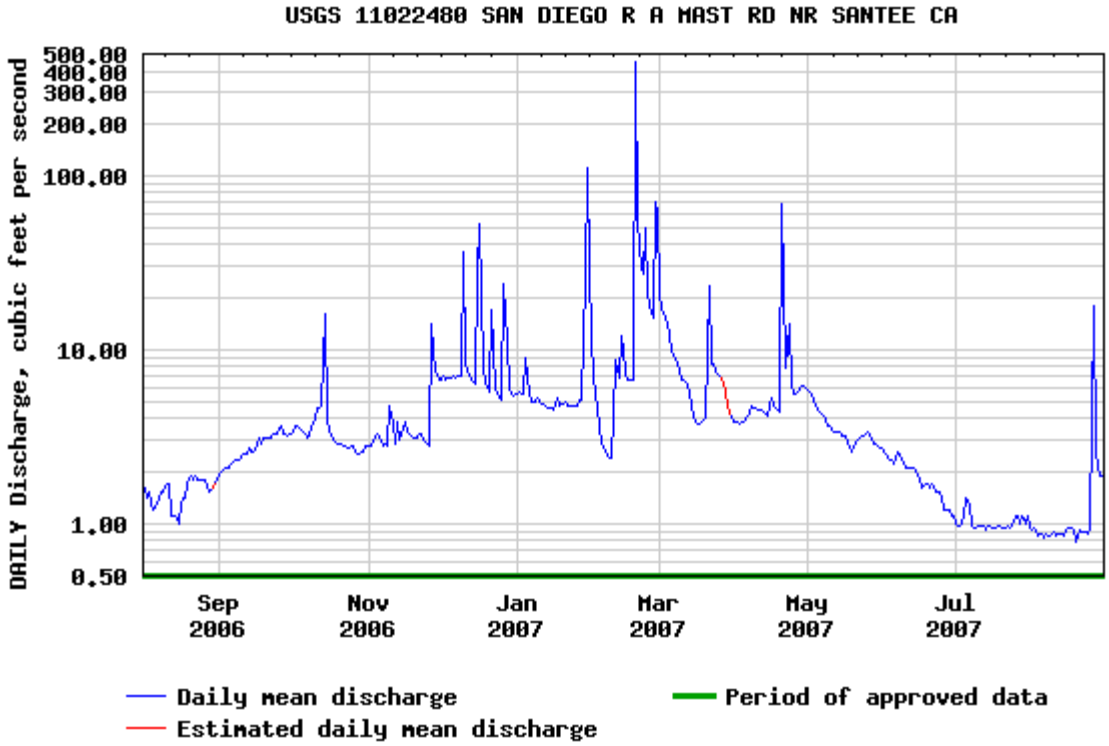

Figure 5: A hydrograph showing San Diego River discharge as measured the Mast Rd. station* Near Santee Dr. for the period of August 2006 through August 2007.

Bacterial Analysis

All bacterial counts and their 30-day averages are presented in Table 9 with the WQO exceedances indicated in bald print and wet-weather sampling events shown in underline/italics. The rain events are also indicated as thick black horizontal bars along the X-axis in Figures 8-9. The relative frequencies of wet and dry weather WQO exceedances are shown in Tables 5 through 8. Tables 5 and 6 contain the results of the χ^2 analysis comparing the percentages of samples exceeding the dry and wet weather WQO objectives as determined using different laboratory analytical methods for each FIB type within each of the two sampling locations. Tables 7 and 8 summarize the χ^2 analysis results where the frequencies of WQOs exceedances were compared between the dry and wet weather conditions.

Comparison of Testing Methods

The results of the comparison between the methods using the χ^2 test of independence ($\alpha = 0.05$) are presented in Table 5 for SDR10 and Table 6 for SDR35. From Figures 6-9 and Tables 5 and 6 it is evident that, regardless of the sampling location, the results of MTF analysis of Total Coliform indicator bacteria show counts that produce significantly less 30-day geomean exceedances than those obtained with the IDEXX method (Colilert 18H Q2000). For the dry weather samples collected from the San Diego River (at SDR10), only 24% exceeded the 30-day geomean standard when counts were estimated using the MTF method but 94% of samples exceeded the standard when the Colilert 18H Q2000 method was employed (Table 5). A substantial but smaller difference in the percentage of exceedances detected by the two methods was observed in the dry weather samples collected from the storm drain channel (SDR 35) with 84% of exceedances detected with the MTF technique and 100% with Colilert 18H Q2000 (Table 6). For the wet weather single

sample standard exceedances in total coliform bacterial counts, the difference between the two methods was not statistically significant.

For the remaining bacterial indicator species, no significant differences in percentages of samples exceeding the 30-day geomean and the single sample standards were found between the analysis methods at either of the locations (Tables 5 and 6).

For the purpose of further analysis, only those total coliform bacteria WQO exceedances that were detected with the MTF method will be employed.

Dry and Wet Weather WQO Exceedances

Generally, the percentage exceedances of dry weather WQOs occurred more frequently at the storm drain channel at Denny Way (SDR35) than in the main stem of the San Diego River (SDR10) (Tables 5 and 6). During wet weather, this difference was not apparent.

At the lower San Diego River site (SDR10), all FIB species exceeded their corresponding WQOs more frequently during wet than during dry weather (Table 7). The same was not generally true for the storm drain channel (SDR35) where the percent of wet weather samples exceeding the AB411 single sample standard WQOs ranged from 70 to 100 and the percentage of dry weather samples exceeding the 30-day geomean WQOs had a range of 65 to 95 (Table 8).

Conclusions

According to the Section 303d listing policy (California Water Boards, 2004), a waterbody can be de-listed for FIB if the number of FIB exceedances is less or equal to 5 for sample size of 31-36 and less or equal to 7 for samples size of 43-48. Furthermore, at least 26 samples need to be collected to employ this rule. The dry weather data presented in Tables 5 through 9 do not at this time support de-listing for the lower San Diego River (as measured at SDR10) and the data from the nine 9 wet weather samples collected from the river also do not support delisting.

In the lower San Diego River (SDR10), higher percentages of samples exceeded their corresponding WQOs during wet weather while the storm drain channel (SDR35) tended to produce a high percentage of FIB WQO exccedances regardless of the weather.

With respect to the analytical methods employed to estimate total coliform bacteria counts, the IDEXX method has proved to bias the results toward a significantly greater percentage of 30-day geomean and single sample standard exceedances than would be determined using the MTF method. For fecal coliform, *Enterococcus* and *E. coli*, the two methods did not produce significantly different results in this study.

References

California Water Boards. 2004. Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List. Adopted September, 2004. http://www.swrcb.ca.gov/tmdl/docs/ffed_303d_listingpolicy093004.pdf

Rantz, S. E., et al. 1982. Measurement and Computation of Streamflow, Vols. 1 and 2. U.S. Geological Survey Water-Supply Paper 2175.

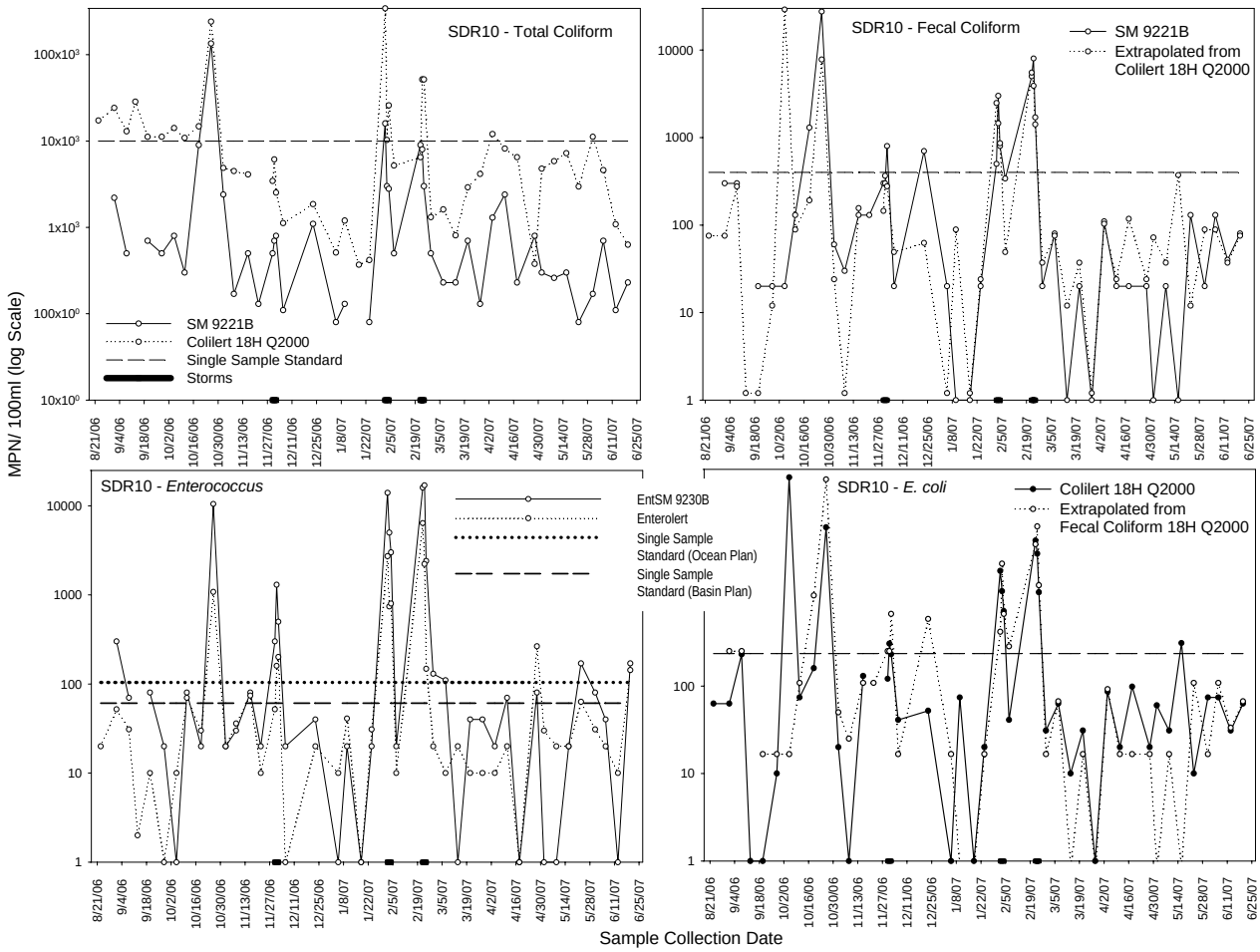

Figure 6. Bacterial counts over time as estimated using the Multitube Fermentation and Idexx methods for Total Coliform (SM 9221B and Colilert 18H Q2000), Fecal Coliform (SM 9221B and by extrapolation from Colilert 18H Q2000), *Enterococcus* (SM 9221B and Enterolert) and *E. coli* (Colilert 18H Q2000 only). Samples were collected from the San Diego River at Riverford Road (SDR 10).

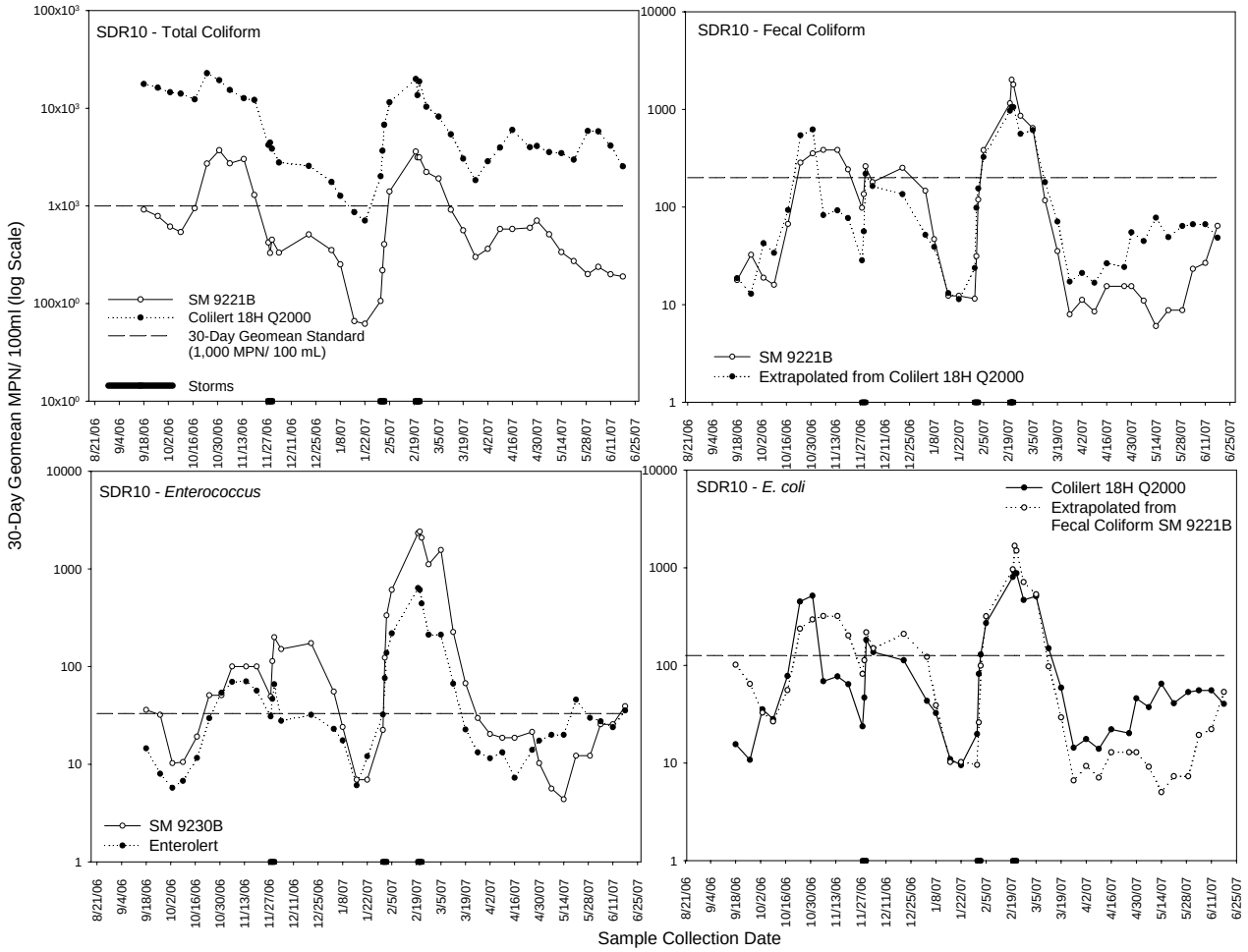

Figure 7. Thirty-day geometric means of the bacterial counts plotted against sampling dates. Bacterial counts were estimated using the Multitube Fermentation and Idexx methods for Total Coliform (SM 9221B and Colilert 18H Q2000), Fecal Coliform (SM 9221B and by extrapolation from Colilert 18H Q2000), *Enterococcus* (SM 9221B and Enterolert) and *E. coli* (Colilert 18H Q2000 only). Samples collected from the San Diego River at Riverford Road (SDR 10).

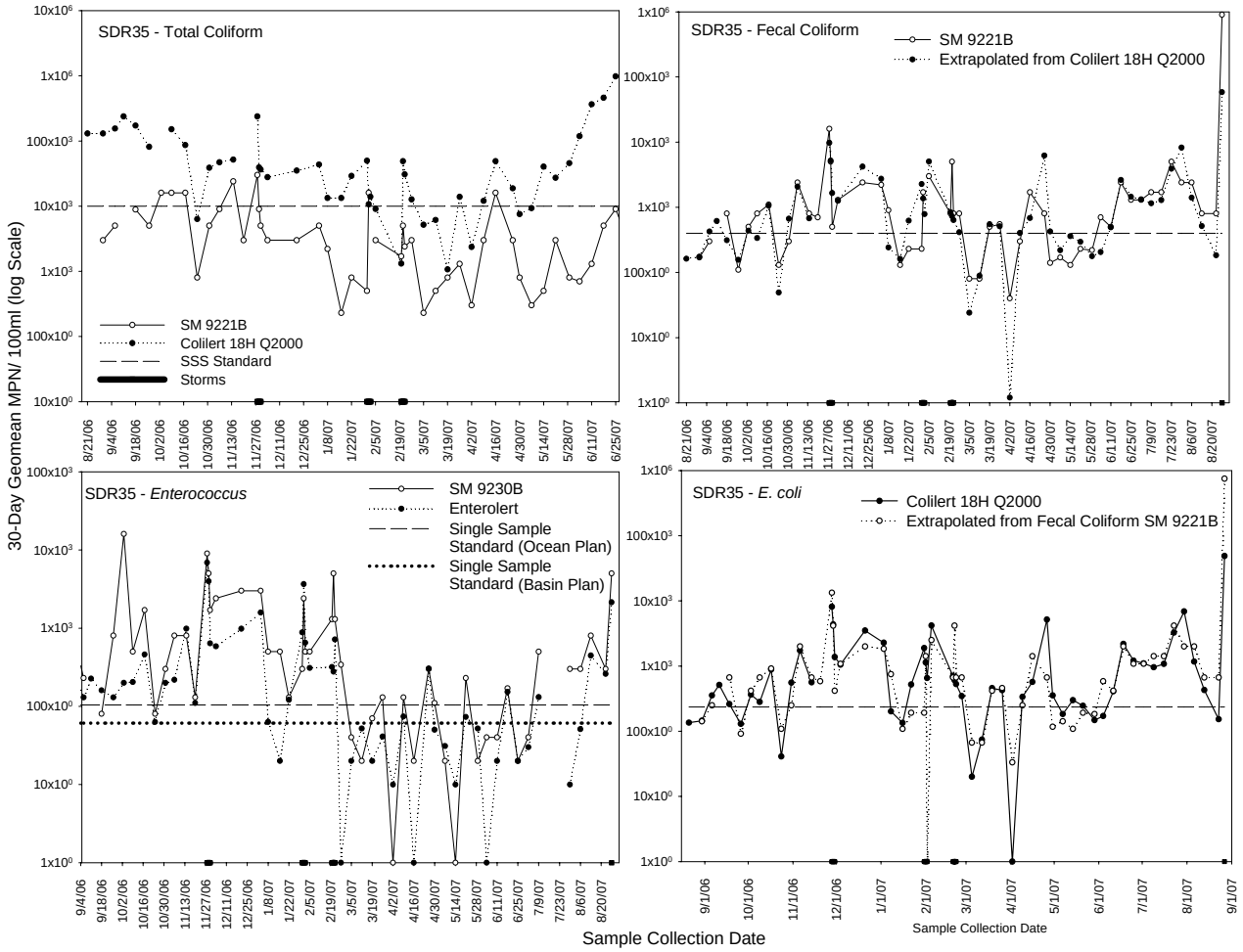

Figure 8. Bacterial counts over time as estimated using the Multitube Fermentation and Idexx methods for Total Coliform (SM 9221B and Colilert 18H Q2000), Fecal Coliform (SM 9221B and by extrapolation from Colilert 18H Q2000), Enterococcus (SM 9221B and Enterolert) and E. coli (Colilert 18H Q2000 only). Samples were collected from the Storm Drain Channel at Denny Way (SDR 35).

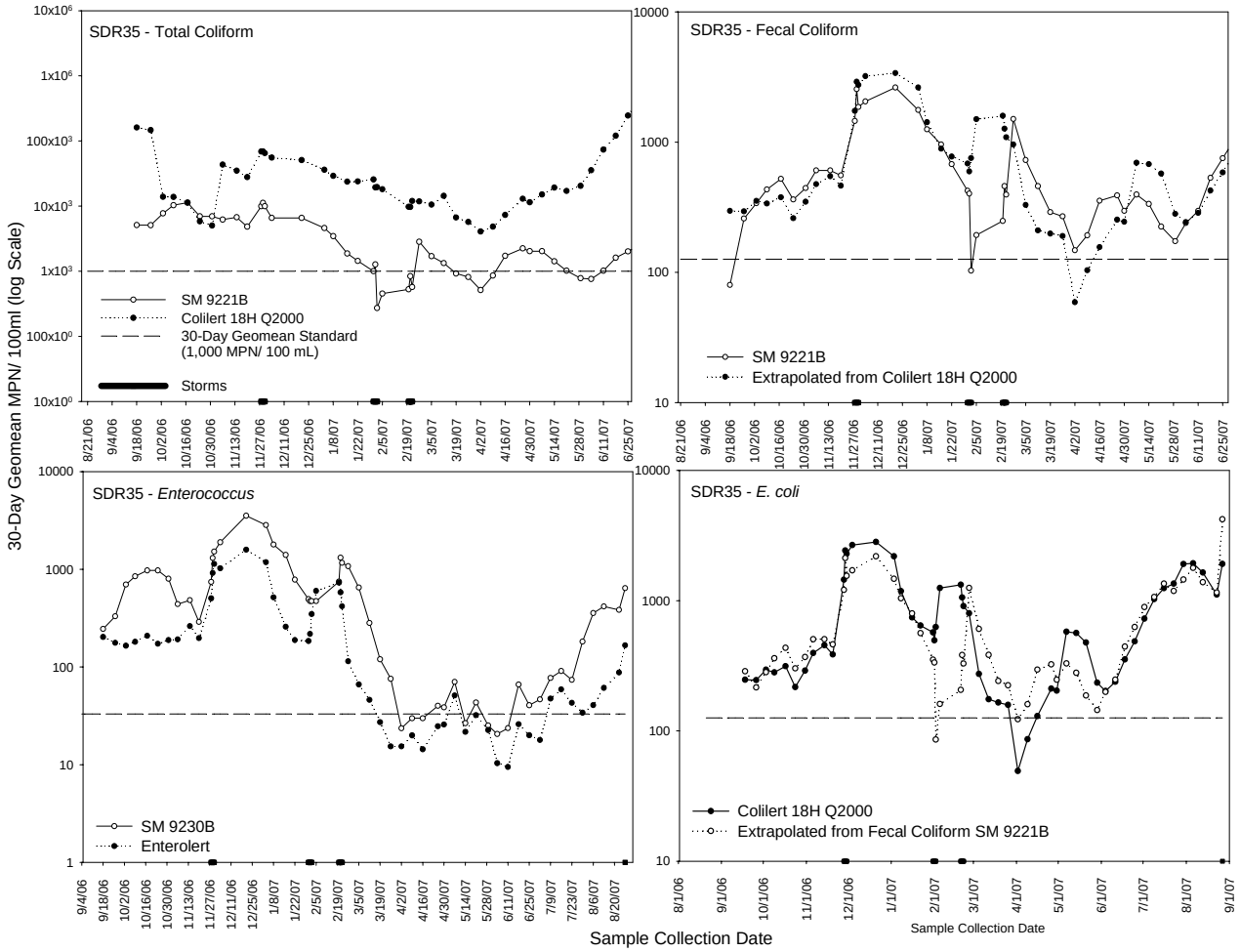

Figure 9. Thrity-day geometric means of the bacterial counts over time as estimated using the Multitube Fermentation and Idexx methods for Total Coliform (SM 9221B and Colilert 18H Q2000), Fecal Coliform (SM 9221B and by extrapolation from Colilert 18H Q2000), Enterococcus (SM 9221B and Enterolert) and E. coli (Colilert 18H Q2000 only). Samples were collected from the Storm Drain Channel at Denny Way (SDR 35).

Table 5. Results of a χ^2 analysis of the 30-day Geomean Standard exceedances (for dry weather samples) and Single Sample Standard exceedances (for wet weather samples) between different analytical methods. Samples collected at San Diego River at Riverford Rd. (SDR10). The values of *p* are 2-tailed.

Fecal Indicator Species	Analysis Method	N	Dry Weather Samples Exceeding 30-day Geomean Standards		χ^2	*p*	N	Wet Weather Samples Exceeding the SSS		Chi-Square	*P*
			No	%				No	%		
Total Coliform	MTF (SM 9221B)	34	8	**24**	**34.97**	**<0.001**	9	6	67	0.277	1.000
	Colilert 18H Q2000		32	**94**				7	78		
Fecal Coliform	MTF (SM 9221B)		9	27	1.44	0.369		7	78	0.277	1.000
	Extrapolated from *E. coli* (Colilert)		5	15				6	67		
Enterococcus	MTF (SM 9221B)		15	44	1.581	0.314		9	100	1.059	1.000
	Enterolert		10	29				8	89		
E. coli	Extrapolated from Fecal Coliform (MTF)		10	29	0.706	0.576		7	78	2.250	0.471
	Colilert 18H Q2000		7	21				9	100		

Table 6. Results of a χ^2 analysis of the 30-day Geomean Standard exceedances (for dry weather samples) and Single Sample Standard exceedances (for wet weather samples) between different analytical methods. Samples collected at the Storm Drain Channel at Denny Way (SDR 35). The values of *p* are 2-tailed.

Fecal Indicator Species	Analysis Method	N	No. Samples Exceeding 30-day Geomean Standards		χ^2	*p*	N	Samples Exceeding the SSS		Chi-Square	*P*
			No	%				No	%		
Total Coliform	MTF (SM 9221B)	43	36	**84**	**7.620**	**0.012**	10	7	70	3.529	0.211
	Colilert 18H Q2000		43	**100**				10	100		
Fecal Coliform	MTF (SM 9221B)		38	88	0.000	1.000		8	80	2.222	0.474
	Extrapolated from *E. coli* (Colilert)		38	88				10	100		
Enterococcus	MTF (SM 9221B)		36	84	3.909	0.082		10	100		
	Enterolert		28	65				10	100		
E. coli	Extrapolated from Fecal Coliform (MTF)		42	98	0.345	1.000		10	100	2.222	0.474
	Colilert 18H Q2000		41	95				8	80		

Table 7. Results of a χ^2 comparison of dry to wet weather exceedance frequencies for samples collected from the lower San Diego River at Riverford Rd. (SDR10). Single Sample Standard exceedances were used for the wet and 30-day Geomean Standard exceedances were employed for the dry weather samples. The values of *p* are 2-tailed.

Fecal Indicator Species	Weather	N	MTF (SM 9221B) or extrapoloation*		χ^2	*p*	N	IDEXX		Chi-Square	*P*
			No	%				No	%		
Total Coliform	Dry	43	8	**24**	**6.031**	**0.040**					
	Wet	9	6	**67**							
****Fecal Coliform**	Dry	43	9	**27**	**8.018**	**0.008**	43	5	**15**	**10.092**	**0.004**
	Wet	9	7	**78**			9	6	**67**		
Enterococcus	Dry	43	15	**44**	**9.011**	**0.002**	43	10	**29**	**10.344**	**0.002**
	Wet	9	9	**100**			9	8	**89**		
****E. coli****	Dry	43	10	**29**	**6.964**	**0.018**	43	7	**21**	**19.208**	**<0.001**
	Wet	9	7	**78**			9	9	**100**		

*****For E. coli, MTF values were calculated from the Fecal Coliform MTF results by dividing the Fecal Coliform MTF counts by a factor of 1.2. ******For fecal coliform, IDEXX values were extrapolated from E. coli by multiplying the Colilert 18H Q2000 results by a factor of 1.2

Table 8. Results of a χ^2 comparison of dry to wet weather exceedance frequencies for samples collected from the Storm Drain Channel at Denny Way (SDR 35). Single Sample Standard exceedances were used for the wet and 30-day Geomean Standard exceedances were employed for the dry weather samples. The values of *p* are 2-tailed.

Fecal Indicator Species	Weather	N	MTF (SM 9221B) or extrapoloation*		χ^2	*p*	N	IDEXX or extrapolation**		Chi-Square	*P*
			No	%				No	%		
Total Coliform	Dry	43	36	84	0.998	0.376					
	Wet	10	7	70							
****Fecal Coliform**	Dry	43	38	88	0.496	0.604	43	38	88	1.284	0.570
	Wet	10	8	80			10	10	100		
Enterococcus	Dry	43	36	84	1.876	0.323	43	28	**65**	**4.865**	**0.046**
	Wet	10	10	100			10	10	**100**		
****E. coli***	Dry	43	42	98	0.237	1.000	43	41	95	2.739	0.157
	Wet	10	10	100			10	8	80		

*****For *E. coli*, MTF values were calculated from the Fecal Coliform MTF results by dividing the Fecal Coliform MTF counts by a factor of 1.2.
******For fecal coliform, IDEXX values were extrapolated from E. coli by multiplying the Colilert 18H Q2000 results by a factor of 1.2

Table 9. Results of bacterial indicator analysis. Single sample results and 30-day averages are listed separately. Samples collected during and directly following rain events are indicated in underline/ italics. Counts exceeding water quality standards are presented in bold print.

Sample Site	Sample Date	Single Sample Results						30-Day Averages					
		E. coli	*Enterococcus*		Fecal Coli-form	Total Coliform		*E. coli*	*Enterococcus*		Fecal Coli-form	Total Coliform	
		MPNLert 180	Enterolert	SM 9230B	SM 9221B	MPNLert1 80	SM 9221B	MPNLert 180	Enterolert	SM 9230B	SM 9221B	MPNLert1 80	SM 9221B
San Diego River @ Riverford Road	8/21/06	63	20			**17,330**							
	8/30/06	63	52	**300**	300	**24,190**	**2,200**						
	9/6/06	230	31	70	300	**12,960**	500						
	9/11/06	ND	2			**28,600**							
	9/18/06	ND	10	80	20	**11,200**	700	119	23	**150**	**207**	**18,856**	**1,133**
	9/26/06	10	ND	20	20	**11,200**	500	101	24	**118**	160	**17,630**	975
	10/3/06	**24,190**	10	ND	20	**14,130**	800	**8,143**	13	**57**	90	**15,618**	625
	10/9/06	74	70	80	130	**10,900**	300	**8,091**	23	**60**	48	**15,206**	575
	10/17/06	160	30	20	**1,300**	**14,800**	**9,000**	**6,109**	30	**50**	**298**	**12,446**	**2,260**
	10/24/06	**6,490**	**1,080**	**10,500**	**27,500**	**242,000**	**135,000**	**6,185**	**298**	**2,655**	**5,794**	**58,606**	**29,120**
	10/31/06	20	20	20	60	4,884	2,400	**6,187**	**242**	**2,655**	**5,802**	**57,343**	**29,500**
	11/6/06	ND	36	30	30	4,495	170	**1,686**	**247**	**2,130**	**5,804**	**55,416**	**29,374**
	11/14/06	130	74	80	130	4,106	500	**1,700**	**248**	**2,130**	**5,804**	**54,057**	**29,414**
	11/20/06		10	20	130		130	**2,213**	**244**	**2,130**	**5,570**	**63,871**	**27,640**
	11/28/06	*121*	*52*	***300***	*300*	*3,448*	*500*	*90*	***38***	***90***	*130*	***4,233***	*740*
	11/29/06	***305***	***160***	***1,300***	*300*	*6,131*	*700*	***185***	***66***	***346***	*178*	***4,545***	*400*
	11/30/06	*231*	***201***	***500***	***800***	***2,530***	*800*	***197***	***99***	***440***	***332***	***4,054***	*526*
	12/4/06	41	ND	20	20	1,119	110	**175**	**106**	**428**	**310**	**3,307**	448
	12/21/06	52	20	40	**700**	1,860	**1,100**	**150**	**108**	**432**	**424**	**3,018**	642
	1/3/07	ND	10	ND	20	512	80	**157**	**98**	**465**	**368**	**2,430**	558
	1/8/07	74	41	20	ND	1,198	130	100	**68**	**145**	**385**	**1,444**	444
	1/16/07	ND	ND	ND	ND	369	ND	56	24	27	**247**	**1,012**	355
	1/22/07	20	31	20	20	419	80	49	26	27	**247**	872	348
	1/31/07	***2,063***	***2,723***	***14,000***	***500***	***344,800***	***16,000***	***719***	***701***	***4,680***	***180***	***69,460***	***4,073***

Sample Site	Sample Date	Single Sample Results						30-Day Averages					
		E. coli	*Enterococcus*		Fecal Coli-form	Total Coliform		*E. coli*	*Enterococcus*		Fecal Coli-form	Total Coliform	
		MPNLert 180	Enterolert	SM 9230B	SM 9221B	MPNLert1 80	SM 9221B	MPNLert 180	Enterolert	SM 9230B	SM 9221B	MPNLert1 80	SM 9221B
	2/1/07	***1,211***	***740***	***5,000***	***3,000***	***10,290***	***3,000***	***842***	***884***	***4,760***	***1,173***	***71,415***	***4,803***
	2/2/07	***717***	***801***	***3,000***	***800***	***25,900***	***2,800***	***1,003***	***1,074***	***5,505***	***1,080***	***76,356***	***5,470***
	2/5/07	41	10	20	340	5,200	500	**810**	**861**	**4,408**	**932**	**77,322**	**4,476**
	2/20/07	***4,600***	***6,400***	***16,000***	***5,000***	***6,488***	***9,000***	***1,726***	***2,135***	***7,604***	***1,928***	***78,536***	***6,260***
	2/21/07	***3,255***	***2,224***	***17,000***	***8,000***	***51,720***	***8,000***	***1,965***	***2,035***	***8,204***	***3,428***	***19,920***	***4,660***
	2/22/07	***1,178***	***148***	***2,400***	***1,700***	***51,720***	***3,000***	***1,958***	***1,917***	***7,684***	***3,168***	***28,206***	***4,660***
	2/26/07	31	20	**130**	20	1,313	500	**1,821**	**1,760**	**7,110**	**3,012**	**23,288**	**4,200**
	3/5/07	63	10	**110**	80	1,616	230	**1,825**	**1,760**	**7,128**	**2,960**	**22,571**	**4,146**
	3/12/07	10	20	ND	ND	809	230	**907**	**484**	**4,910**	**2,450**	**21,436**	**2,392**
	3/19/07	31	10	40	20	2,909	700	**263**	**42**	**670**	**455**	**11,673**	932
	3/26/07	ND	10	40	ND	4,160	130	34	14	**80**	40	**2,161**	358
	4/2/07	86	10	20	110	**12,033**	1,300	48	12	**53**	70	**4,305**	518
	4/9/07	20	20	70	20	8,169	2,400	37	14	**43**	50	**5,616**	952
	4/16/07	98	ND	ND	20	6,490	230	59	13	**43**	43	**6,752**	952
	4/26/07	20	**265**	80	20	379	800	56	**76**	**53**	43	**6,246**	972
	4/30/07	60	30	ND	ND	4,790	300	57	**81**	**57**	43	**6,372**	**1,006**
	5/7/07	31	20	ND	20	5,860	260	46	**84**	**75**	20	**5,138**	798
	5/14/07	**310**	20	20	ND	7,230	300	104	**84**	**50**	20	**4,950**	378
	5/21/07	10	63	**170**	130	2,980	80	86	**80**	**90**	57	**4,248**	348
	5/29/07	74	31	80	20	**11,199**	170	97	**33**	**90**	57	**6,412**	222
	6/4/07	74	20	40	130	4,611	700	100	31	**78**	75	**6,376**	302
	6/11/07	31	10	ND	40	1,086	110	100	29	**78**	80	**5,421**	272
	6/19/07	63	**143**	**170**	80	630	230	50	**53**	**115**	80	**4,101**	258
Storm Drain Channel @ Denny Way	8/21/06	135	**259**			**130,000**							
	8/30/06	145	**278**	**800**	170	**130,000**	3,000						
	9/6/06	**354**	**130**	**230**	300	**155,300**	5,000						
	9/11/06	**512**	**226**			**238,000**							
	9/18/06	**260**	**160**	80	**800**	**172,000**	8,880	**281**	**211**	**370**	**423**	**165,060**	**5,627**

Sample Site	Sample Date	Single Sample Results						30-Day Averages					
		E. coli	*Enterococcus*		Fecal Coli-form	Total Coliform		*E. coli*	*Enterococcus*		Fecal Coli-form	Total Coliform	
		MPNLert 180	Enterolert	SM 9230B	SM 9221B	MPNLert1 80	SM 9221B	MPNLert 180	Enterolert	SM 9230B	SM 9221B	MPNLert1 80	SM 9221B
	9/26/06	130	130	800	110	81,300	5,000	280	185	478	345	155,320	5,470
	10/3/06	364	200	16,000	500	ND	16,000	324	169	4,278	428	161,650	8,720
	10/9/06	281	204	500	800	151,500	16,000	309	184	4,345	553	160,700	11,470
	10/17/06	882	459	1,700	1,100	86,500	16,000	383	231	3,816	662	122,825	12,376
	10/24/06	41	63	80	130	6,330	800	340	211	3,816	528	81,408	10,760
	10/31/06	556	199	300	300	38,730	5,000	425	225	3,716	566	70,765	10,760
	11/6/06	1,730	218	800	2,400	47,200	9,000	698	229	676	946	66,052	9,360
	11/14/06	563	985	800	800	51,700	24,000	754	385	736	946	46,092	10,960
	11/20/06		110	130	700		3,000	723	315	422	866	35,990	8,360
	11/28/06	*8,130*	*6,867*	*9,000*	*16,000*	*238,200*	*30,000*	*2,745*	*1,676*	*2,206*	*4,040*	*93,958*	*14,200*
	11/29/06	*4,352*	*3,968*	*5,000*	*5,000*	*39,300*	*9,000*	*3,694*	*2,430*	*3,146*	*4,980*	*94,100*	*15,000*
	11/30/06	*1,376*	*638*	*1,700*	*500*	*36,540*	*5,000*	*3,605*	*2,514*	*3,326*	*4,600*	*91,435*	*14,200*
	12/4/06	1,050	585	2,400	1,300	27,800	3,000	3,727	2,434	3,646	4,700	85,460	10,000
	12/21/06	3,500	983	3,000	2,400	35,000	3,000	3,682	2,608	4,220	5,040	75,368	10,000
	1/3/07	2,280	1,580	3,000	2,200	43,500	5,000	2,512	1,551	3,020	2,280	36,428	5,000
	1/8/07	201	63	500	900	13,340	2,200	1,681	770	2,120	1,460	31,236	3,640
	1/16/07	134	20	500	130	13,340	230	1,433	646	1,880	1,386	26,596	2,686
	1/22/07	520	121	130	230	29,000	800	1,327	553	1,426	1,172	26,836	2,246
	1/31/07	*1,890*	*880*	*300*	*230*	*49,600*	*500*	*1,005*	*533*	*886*	*738*	*29,756*	*1,746*
	2/1/07	*1,137*	*3,654*	*2,400*	*1,700*	*10,710*	*16,000*	*776*	*948*	*766*	*638*	*23,198*	*3,946*
	2/2/07	*654*	*650*	*500*	*ND*	*13,900*	*ND*	*867*	*1,065*	*766*	*573*	*23,310*	*4,383*
	2/5/07	4,190	309	500	3,000	9,070	3,000	1,678	1,123	766	1,290	22,456	5,075
	2/20/07	*697*	*318*	*1,300*	*800*	*1,313*	*1,700*	*1,714*	*1,162*	*1,000*	*1,433*	*16,919*	*5,300*
	2/21/07	*609*	*278*	*5,000*	*5,000*	*48,840*	*5,000*	*1,457*	*1,042*	*1,940*	*2,625*	*16,767*	*6,425*
	2/22/07	*530*	*717*	*1,300*	*800*	*30,700*	*2,400*	*1,336*	*454*	*1,720*	*2,400*	*20,765*	*3,025*
	2/26/07	345	ND	340	800	12,660	3,000	1,274	406	1,688	2,080	20,517	3,020
	3/5/07	20	20	40	80	5,172	230	440	333	1,596	1,496	19,737	2,466
	3/12/07	74	52	20	80	6,131	500	316	267	1,340	1,352	20,701	2,226

Sample Site	Sample Date	Single Sample Results						30-Day Averages					
		E. coli	*Enterococcus*		Fecal Coli-form	Total Coliform		*E. coli*	*Enterococcus*		Fecal Coli-form	Total Coliform	
		MPNLert 180	Enterolert	SM 9230B	SM 9221B	MPNLert1 80	SM 9221B	MPNLert 180	Enterolert	SM 9230B	SM 9221B	MPNLert1 80	SM 9221B
	3/19/07	**457**	20	70	**500**	1,067	800	**285**	**202**	**354**	**452**	**11,146**	**1,386**
	3/26/07	**426**	41	**130**	**550**	**13,896**	**1,300**	**264**	**33**	**120**	**402**	**7,785**	**1,166**
	4/2/07	ND	ND	ND	40	2,360	300	**244**	**33**	**65**	**250**	**5,725**	626
	4/9/07	**336**	74	**130**	300	**12,033**	**3,000**	**323**	**47**	**88**	**294**	**7,097**	**1,180**
	4/16/07	**570**	10	20	**1,700**	**48,800**	**16,000**	**447**	**36**	**88**	**618**	**15,631**	**4,280**
	4/26/07	**5,172**	**303**	**300**	**800**	**18,720**	**3,000**	**1,626**	**107**	**145**	**678**	**19,162**	**4,720**
	4/30/07	**354**	50	**110**	140	7,555	800	**1,608**	**109**	**140**	**596**	**17,894**	**4,620**
	5/7/07	183	31	20	170	9,320	300	**1,323**	**94**	**116**	**622**	**19,286**	**4,620**
	5/14/07	**300**	ND	ND	130	**40,400**	500	**1,316**	**99**	**113**	**588**	**24,959**	**4,120**
	5/21/07	**246**	73	**230**	230	**27,230**	3,000	**1,251**	**114**	**165**	**294**	**20,645**	**1,520**
	5/29/07	148	52	20	220	**45,700**	800	**246**	**52**	**95**	178	**26,041**	**1,080**
	6/4/07	171	ND	40	**700**	**118,700**	700	**210**	**52**	**78**	**290**	**48,270**	**1,060**
	6/11/07	**410**	20	40	**500**	**365,400**	**1,300**	**255**	**48**	**83**	**356**	**119,486**	**1,260**
	6/18/07	**2,187**	**153**	**170**	**2,400**	**461,100**	**5,000**	**632**	**75**	**100**	**810**	**203,626**	**2,160**
	6/25/07	**1,210**	20	20	**1,300**	**980,800**	**9,000**	**825**	**61**	**58**	**1,024**	**394,340**	**3,360**
	7/2/07	**1,100**	30	40	**1,300**	**1,299,650**	**3,000**	**1,016**	**56**	**62**	**1,240**	**645,130**	**3,800**
	7/9/07	**960**	**131**	**500**	**1,700**	**435,200**	**5,000**	**1,173**	**71**	**154**	**1,440**	**708,430**	**4,660**
	7/16/07	**1,076**			**1,700**	**27,500**	**2,800**	**1,307**	**84**	**183**	**1,680**	**640,850**	**4,960**
	7/23/07	**3,255**			**5,000**	**261,300**	**16,000**	**1,520**	**60**	**187**	**2,200**	**600,890**	**7,160**
	7/30/07	**6,867**	10	**300**	**2,400**	**165,800**	5,000	**2,652**	**57**	**280**	**2,420**	**437,890**	**6,360**
	8/6/07	**1,169**	51	**300**	**2,400**	**129,965**	**24,000**	**2,665**	**64**	**367**	**2,640**	**203,953**	**10,560**
	8/13/07	**428**	**446**	**800**	**800**	**129,965**	**16,000**	**2,559**	**169**	**467**	**2,460**	**142,906**	**12,760**

Table 10. Field measurement results.

ample Collection Date	Season	Weather	Wet Weather Day	Discharge (ft3/s)		pH		Conductivity		Turbidity (NTU)		DO (mg/L)		Temperature (oC)		Salinity	
				SDR10	SDR35	SDR10	SDR35	SDR10	SDR35	SDR10	SDR35	SDR10	SDR35	SDR10	SDR35	SDR10	SD
2/28/06	Winter	Wet	1	48.50	30.68	7.50	7.44	0.66	0.08	235	70	7.50	9.15	14.7	15.4	0.02	0.
3/1/06	Winter	Wet	2	5.50	0.39	7.51	7.71	0.57	1.94	216	9	6.49	7.49	14.8	15.4	0.02	0.
3/2/06	Winter	Wet	3	2.34	0.92	7.41	7.83	0.65	2.34	71	3	4.08	6.70	14.8	15.2	0.02	0.
3/3/06	Winter	Wet	4	1.48	0.86	7.36	7.77	0.94	2.27	41	5	2.46	5.40	13.8	11.5	0.04	0.
8/21/06	Summer	dry		2.20	0.33	7.80	7.88	2.37	2.44	9	1	3.82	7.05	24.4	23.1	0.11	0.
8/30/06	Summer	dry		4.53	0.49	7.56	8.04	2.14	2.26	81	33	3.92	9.89	24.3	24.7	0.09	0.
9/6/06	Summer	dry		3.63	0.21	7.44	7.98	2.08	2.16	9	21	3.14	5.62	23.4	26.7	0.10	0.
9/11/06	Summer	dry		0.95	0.29	7.60	8.12	2.05	2.19	20	10	4.09	11.14	22.3	23.5	0.09	0.
9/18/06	Summer	dry		2.20	0.19	7.47	7.92	2.02	2.26	33	141	5.93	8.04	20.6	18.8	0.09	0.
9/26/06	Summer	dry		3.33	0.19	7.61	8.07	2.00	24.10	8	12	7.27	8.56	20.7	20.4	0.09	0.
10/2/06	Summer	dry		8.23	0.77	7.57	7.93	1.92	2.11	9	13	5.02	8.44	20.9	20.5	0.09	0.
10/3/06	Summer	dry		4.90	0.07	7.54	7.84	2.03	2.05	15	18	7.26	11.96	20.9	22.1	0.09	0.
10/9/06	Summer	dry		5.60	0.74	7.66	8.00	2.01	2.33	17	65			19.6	19.4	0.09	0.
10/17/06	Summer	dry		3.90	0.36	7.45	7.77	1.95	2.23	12	31	4.57	8.41	18.7	18.5	0.09	0.
10/24/06	Summer	dry		3.10	0.43	7.67	7.58	1.94	1.95	12	97	6.67	8.14	18.6	18.2	0.09	0.
10/31/06	Summer	dry		0.50	0.37	7.64	8.27	1.94	2.30	12	8	4.68	13.40	17.3	17.3	0.09	0.
11/6/06	Winter	dry		0.24	2.55	7.73	8.04	1.91	2.41	60	309	6.25	10.02	17.7	16.3	0.09	0.
11/14/06	Winter	dry		0.22	0.31	7.47	8.15	2.00	2.31	20	10	5.82	11.82	16.3	15.3	0.09	0.
11/20/06	Winter	dry		0.02	0.35	7.65	8.15	2.04	2.08	24	26	7.19	14.97	14.5	15.2	0.09	0.
11/28/06	Winter	wet	1	0.48	0.37	7.56	7.84	1.86	2.26	26	86	5.26	6.18	15.2	14.7	0.08	0.
11/29/06	Winter	wet	2	2.90	0.39	7.47	8.00	1.87	2.35	45	125	4.25	8.13	15.1	12	0.08	0.
11/30/06	Winter	wet	3	1.38	0.45	7.53	7.87	1.85	2.47	35	24	4.46	9.24	14	9.4	0.08	0.
12/4/06	Winter	dry		0.03	0.32	7.74	7.95	1.84	2.31	14	326	6.10	8.98	10.8	9.7	0.08	0.
12/21/06	Winter	dry		0.33	1.40	7.74	8.00	1.86	2.36	12	129	9.44	9.53	10.5	9.7	0.08	0.
1/3/07	Winter	dry		0.16	0.32	7.72	7.98	1.86	2.18	18	125	6.42	9.09	10	9.8	0.08	0.
1/8/07	Winter	dry		0.21	0.39	7.60	8.10	1.91	2.18	41	92	6.39	11.27	9.9	10.4	0.08	0.
1/16/07	Winter	dry		0.23	0.37	7.67	8.07	2.01	2.30	8	48	7.76	13.57	7.4	5.8	0.09	0.
1/22/07	Winter	dry		0.29	0.41	7.67	8.10	2.04	2.30	25	172	9.20	14.07	8.4	8.6	0.09	0.
1/31/07	Winter	wet	1	4.21	0.59	7.56	7.93	1.36	1.94	71	12	5.42	9.97	11.8	13.4	0.06	0.
2/1/07	Winter	wet	2	1.33	0.38	7.56	7.99	1.30	2.30	47	45	4.16	10.12	11.9	13.5	0.05	0.
2/2/07	Winter	wet	3	1.08	0.31	7.54	7.97	1.42	2.18	27	12	3.63	8.61	11.3	9.9	0.06	0.

ample Collection Date	Season	Weather	Wet Weather Day	Discharge (ft3/s)		pH		Conductivity		Turbidity (NTU)		DO (mg/L)		Temperature (oC)		Salinity	
				SDR10	SDR35	SDR10	SDR35	SDR10	SDR35	SDR10	SDR35	SDR10	SDR35	SDR10	SDR35	SDR10	SD
2/5/07	Winter	dry		0.66	0.38	7.59	8.09	1.63	2.31	31	41	3.87	14.18	12	13.4	0.07	0.
2/20/07	Winter	wet	1	33.13	0.85	7.73	8.02	0.52	1.89	577	17	6.88	9.96	13	18	0.02	0.
2/21/07	Winter	wet	2	4.39	0.28	7.86	8.08	0.65	2.17	331	10	4.68	10.36	13.2	17.7	0.02	0.
2/22/07	Winter	wet	3	2.42	0.20	7.40	7.97	0.77	2.28	166	6	3.86	12.07	13.9	15.9	0.03	0.
2/26/07	Winter	dry		2.06	0.16	7.50	8.05	1.29	2.30	35	3	3.10	14.46	13.3	15.5	0.05	0.
3/5/07	Winter	dry		2.16	0.28	7.63	8.18	1.13	2.33	83	5	5.84	18.14	13.4	16	0.05	0.
3/12/07	Winter	dry		1.15	0.39	7.76	8.09	1.57	2.19	16	10	10.26	13.08	16	15.5	0.07	0.
3/19/07	Winter	dry		0.73	0.40	7.64	8.19	1.88	2.28	14	2	5.55	17.72	17.9	18	0.08	0.
3/26/07	Winter	dry		0.71		7.77		2.08		10		5.23		17.7		0.09	
4/2/07	Summer	dry		0.47	0.49	7.72	8.15	2.12	2.17	8	3	6.18	16.17	17.5	18.3	0.10	0.
4/9/07	Summer	dry		1.29	0.46	7.65	7.88	2.27	2.27	10	1	4.02	9.52	17.6	17	0.10	0.
4/16/07	Summer	dry		0.48	0.36	7.69	8.14	2.30	2.22	9	2	4.69	13.41	17	16.4	0.11	0.
4/26/07	Summer	dry		1.40	0.25	7.64	8.21	1.66	2.27	12	2	9.34	17.18	19.5	21.5	0.07	0.
4/30/07	Summer	dry		0.66	0.43	7.68	8.07	1.90	2.31	7	2	4.82	13.59	20.7	21	0.09	0.
5/7/07	Summer	dry		0.62	0.52	7.61	8.12	2.05	2.26	4	4	4.26	15.45	21.3	19.3	0.09	0.
5/14/07	Summer	dry		0.23	0.34	7.89	8.32	2.20	2.24	7	3	5.28	17.15	22	23.6	0.10	0.
5/21/07	Summer	dry		0.19	0.22	7.73	8.38	2.24	2.09	5	2	3.92	8.07	20.7	19.1	0.10	0.
5/29/07	Summer	dry		0.12	0.17	7.90	8.51	2.26	2.24	4	9	5.99	19.99	22.5	25.9	0.10	0.
6/4/07	Summer	dry		0.14	0.20	8.03	8.42	2.30	2.17	1	5	7.25	19.87	23.6	26.4	0.11	0.
6/11/07	Summer	dry		0.09	0.46	7.89	8.19	2.26	2.20	1	2	5.77	15.03	21.7	23.3	0.10	0.
6/18/07	Summer	dry		0.04	0.41	7.68	7.92	2.33	2.30	1	3	4.67	10.85	22.2	22	0.11	0.
6/25/07	Summer	dry		0.00	0.24		8.04		2.26		9		11.30		23.2		0.
7/2/07	Summer	dry		0.00	0.26	8.09	8.01	2.30	2.24	2	4	18.40	10.59	25.7	25	0.11	0.
7/9/07	Summer	dry		0.00	0.31	7.70	7.92	2.46	2.23	22	6	9.50	9.30	24.7	24	0.12	0.
7/16/07	Summer	dry		0.00	0.34	7.51	7.87	2.57	2.25	25	13	11.35	11.28	25.2	24.4	0.12	0.
7/23/07	Summer	dry			0.25		7.94		2.24		8		10.52		25.2		0.
7/30/07	Summer	dry			0.30		7.95		1.72		5		10.71		24.6		0.
8/6/07	Summer	dry			0.22		7.84		2.26		9		10.05		25.4		0.
8/23/07	Summer	dry			0.27		7.94		2.36		5		9.05		24		0.
8/27/07	Summer	wet	1	0.00	0.26	7.37	7.73	2.77	2.22	25	6	0.27	7.43	22.8	26	0.13	0.

APPENDIX C

ACTIVITY A-32 SUPPORTING DOCUMENTATION: COUNTY OF SAN DIEGO WOODSIDE AVENUE EXTENDED DETENTION BASIN ANNUAL WATER QUALITY SAMPLING RESULTS FY 2008/2009

County of San Diego
Woodside Avenue Extended Detention Basin
Annual Water Quality Sampling Results FY 2008/2009

August 2009

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APPENDIX A – LABORATORY ANALYTICAL REPORTS
APPENDIX B – FIELD DATA SHEETS

1 INTRODUCTION

On July 15, 2004 the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and to construct a Best Management Practice (BMP) water quality detention basin (Woodside EDB) to treat urban runoff from the Winter Gardens sub-watershed. This runoff discharges directly into the San Diego River. This report presents the annual water quality sampling results for Woodside EDB in order to assess its effectiveness in pollutant removal and load reduction.

During FY 2008-2009, water quality and flow at the inlet and the outlet of Woodside EDB were monitored over four dry weather and two wet weather sampling events. Dry weather monitoring was conducted quarterly following an antecedent dry period of at least 72 hours or after the EDB has returned to its base flow conditions. Wet weather monitoring was conducted during and/or directly following storm events of at least 0.10 inches of rainfall.

2 DESCRIPTION OF SAMPLING PROCEDURES

2.1 Flow Measurement

Instantaneous flows were measured at the influent and effluent via fixed staff gauges at each of the two sampling locations. Readings were recorded and compared to the "Head versus Flow Table" in the Woodside Avenue Extended Detention Basin, Long-Term Monitoring Program (LTMP) document. The results of the instantaneous flow measurements are summarized in Table 1 below. On some sampling occasions, there was and accumulation of sediment in the outlet and/or inlet channels that prevented accurate estimation of flow based on the staff gauges. In those instances, flow was estimated using a hand-held flow velocity meter and measuring the water depth and channel width directly.

Table 1. Instantaneous Flow Measurements

Date	Inlet Head Height (ft. in.)	Inlet Flow (cfs)	Outlet Head Height (ft. in.)	Outlet (cfs)
9/25/2008	0'9.0"	0.230*	0'3.5"	0.095
11/13/2008	0'8.0"	5.90465	0'4.5"	0.153614
12/15/2008	0'9.0"	7.26292	0'5.0"	0.18634
2/9/2009	1'2.0"	15.89219	3'7.0"	12.27003
3/3/2009	No flow**	0.0936	0'4.0"	0.0936***
6/4/2009	0'7.0"	4.674334	0'4.0"	0.120888

* Gauge height was affected by silt build-up in the inlet; hand-held flow meter and channel depth and width measurements were employed to estimate flow

**Water flowed in a newly-formed channel (bypassing the gauge); flow estimated using hand-held flow meter and channel depth and width measurements.

***Outflow was split between two outlets. Hand-held flow meter was used to estimate flow.

2.2 Water Quality Sampling

During FY 2008/2009, four dry weather events (September 25, 2008; November 13, 2008; March 3, 2009; June 4, 2009) and two wet weather events (December 15, 2008 and February 9, 2009) were sampled. One set of water quality grab samples were collected at both the influent and effluent sampling points during each sampling event. Grab samples were collected in pre-cleaned laboratory-supplied sampling bottles. Samples were labeled, placed in a cooler on ice and transported under proper chain-of-custody documentation to an analytical laboratory for analysis. The samples were analyzed for the constituents listed in Table 2. During the sampling of the inlet and outlet, field measurements were also collected for pH, conductivity, temperature, dissolved oxygen, and turbidity. The field measurements are described on Table 3. Field data sheets were also completed for each site during each sampling event and are included in Appendix A.

Table 2: Analytical Laboratory Water Quality Constituents

Analytical Parameter	Analytical Method (1)	Sample Volume (1)	Containers #, size, type (1)	Preservation (chemical, temperature, light protected) (1)	Maximum Holding Time: Preparation/ analysis (1)
TSS	SM 2540-D	1L	Plastic	Store Cool at <4ºC	7 Days
TDS	SM 2540-C	1L	Plastic	Store Cool at <4ºC	7 Days
Total Hardness	SM 2340-B	100 ml	Plastic	HNO_3	6 Months
Total Organic Carbon	EPA 415.1	250 ml	Glass	H_2SO_4	28 Days
Dissolved Organic Carbon	EPA 415.1	250 ml	Glass	H_2SO_4	28 Days
Nitrate – N	SM 4500-NO_3	100 ml	Plastic or Glass	Store Cool at <4ºC	48 Hours
Ammonia – N	SM 4500-NH_3	250 ml	Plastic or Glass	Acidify to <2 with H_2S0_4	28 Days
Total Phosphorus	SM 4500-P C	250 ml	HDPE Plastic	Store Cool at <4ºC	28 Days
Total & Dissolved Copper	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Total & Dissolved Lead	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months
Total & Dissolved Zinc	EPA 200.8	1L	Plastic	Store Cool at <4ºC	6 Months

3 Subject to change.

Table 3: Field Measured Analytical Constituents

Analytical Parameter	Analytical Method	Sample Volume	Containers #, size, type	Preservation (chemical, temperature, light protected)	Maximum Holding Time: Preparation/ analysis
pH	Horiba multimeter	N/A	Analyzed in Field	N/A	immediate
Temperature	Horiba multimeter	N/A	Analyzed in Field	N/A	immediate
Conductivity	Horiba multimeter	N/A	Analyzed in Field	N/A	immediate
Dissolved Oxygen	Horiba multimeter	N/A	Analyzed in Field	N/A	immediate
Turbidity	Horiba multimeter	N/A	Analyzed in Field	N/A	immediate

3 RESULTS

The results of the 2008-2009 monitoring study are summarized in Table 4. The Truesdail Laboratory analytical reports are included in Appendix B. Table 5 shows the inlet/ outlet percent differences in constituent concentrations and field-measured parameters including pH, temperature, conductivity, dissolved oxygen and turbidity. Percent differences between the inlet and outlet constituent loadings are presented in Table 6.

Table 4: Analytical and Field Results

Constituent (units)	Dry Weather								Wet Weather			
	Sep. 25, 2008		Nov. 13, 2008		Mar. 3, 2009		Jun. 4, 2009		Dec. 15, 2008		Feb. 9, 2009	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Discharge (cfs)	0.230	0.095	0.040	0.154	0.308	0.094	4.674	0.121	7.263	0.186	15.892	12.270
pH	7.53	7.25	7.95	7.89	8.6	7.85	7.45	7.77	7.17	7.87	7.49	7.67
Conductivity (mS/cm)	2.02	2.18	2.04	2.03	1.91	2.12	2.15	2.25	0.097	2.08	0.46	0.164
Turbidity (NTU)	9	9	1	2	21	24	1	61	228	10	162	234
Dissolved Oxygen (mg/L)	2.84	7.13	6.34	7.43	18.8	4.77	4.3	7.84	8.575	6.89	8.24	7.8
Temperature (°C)	20.1	20.1	14.4	12	21.4	15.8	20.7	18.2	12.7	10.5	12.7	11.3
Total Dissolved Solids (mg/L)	1280	1330	1400	1400	1100	1220	1370	1520	1290	61.5	310	118
Total Suspended Solids (mg/L)	5.8	8.6	ND	4.3	21	33.2	2.2	35.4	10.2	120	30.8	38.4
Hardness (mg/L)	1040	580	560	720	600	700	660	700	620	48	160	50
Total Organic Carbon (mg/L)	4.68	4.3	4.5	5.81	5.71	4.5	3.33	3.49	10.9	12.4	9.62	4.6
Dissolved Organic Carbon (mg/L)	3.7	4.33	4.19	5.45	5.17	4.52	3.46	3.59	7.22	12.07	8.62	3.95
Nitrate as N (mg/L)	8.64	6.17	12.6	8.97	10.6	8.85	11.8	9.25	10.3	0.67	1.83	0.52
Ammonia (mg/L)	0.04	0.03	0.04	0.05	0.05	0.05	0.05	0.05	0.08	0.59	0.18	0.1
Total Phosphorus (mg/L)	0.03	0.03	0.18	0.14	0.25	0.92	0.29	0.24	0.17	0.56	0.67	0.84
Dissolved Copper (µg/L)	ND	ND	1.59	3.66	ND	ND	0.62	1.29	4.18	10.5	ND	ND
Total Copper (µg/L)	ND	1.97	14.9	4.34	2.09	ND	5.07	7.62	46.2	60.4	0.3	8.01
Dissolved Lead (µg/L)	ND	ND	0.12	0.22	0.02	ND	ND	ND	0.34	0.9	0.01	0.07
Total Lead (µg/L)	0.07	ND	0.83	0.78	1.47	0.66	0.25	1.78	2.24	12.6	0.1	0.1
Dissolved Zinc (µg/L)	13	10.9	6.55	9.64	ND	ND	1.52	1.05	13.3	40.6	0.88	1.44
Total Zinc (µg/L)	26.8	20.8	29.7	20.8	0.21	18.2	16.2	28.5	31.6	123	1.99	3.69

ND – not detected

Table 5: Percent differences between Woodside EDB inlet and outlet field sampling results (discharge, pH, conductivity, turbidity and temperature) and constituent concentrations.

Constituent (units)	Dry Weather				Wet Weather		Overall (Mean) % Difference		
	9/25/08	11/13/08	3/3/09	6/4/09	12/15/08	2/9/09	Dry	Wet	Both
Discharge (cfs)	-59%	-97%	-69%	-97%	-97%	-23%	-81%	-60%	-10%
pH	-4%	-1%	-9%	4%	10%	2%	-2%	6%	1%
Conductivity (mS/cm)	8%	0%	11%	5%	2044%	-64%	6%	990%	334%
Turbidity (NTU)	0%	100%	14%	6000%	-96%	44%	1529%	-26%	1011%
Dissolved Oxygen (mg/L)	151%	17%	-75%	82%	-20%	-5%	44%	-12%	25%
Temperature (°C)	0%	-17%	-26%	-12%	-17%	-11%	-14%	-14%	-14%
Total Dissolved Solids (mg/L)	4%	0%	11%	11%	-95%	-62%	6%	-79%	-22%
Total Suspended Solids (mg/L)	48%	3863%	58%	1509%	1076%	25%	1370%	551%	1097%
Hardness (mg/L)	-44%	29%	17%	6%	-92%	-69%	2%	-81%	-26%
Total Organic Carbon (mg/L)	-8%	29%	-21%	5%	14%	-52%	1%	-19%	-6%
Dissolved Organic Carbon (mg/L)	17%	30%	-13%	4%	67%	-54%	10%	6%	9%
Nitrate as N (mg/L)	-29%	-29%	-17%	-22%	-93%	-72%	-24%	-83%	-43%
Ammonia (mg/L)	-25%	25%	0%	0%	638%	-44%	0%	297%	99%
Total Phosphorus (mg/L)	0%	-22%	268%	-17%	229%	25%	57%	127%	81%
Dissolved Copper (µg/L)	0%	130%	0%	108%	151%	0%	60%	76%	65%
Total Copper (µg/L)	2931%	-71%	-97%	50%	31%	2570%	703%	1300%	902%
Dissolved Lead (µg/L)	0%	83%	-55%	0%	165%	600%	7%	382%	132%
Total Lead (µg/L)	-87%	-6%	-55%	612%	463%	0%	116%	231%	154%
Dissolved Zinc (µg/L)	-16%	47%	0%	-31%	205%	64%	0%	134%	45%
Total Zinc (µg/L)	-22%	-30%	8567%	76%	289%	85%	2148%	187%	1494%

Table 6: Percent differences between Woodside EDB influent and effluent constituent loadings.

Constituent (units)	Dry Weather				Wet Weather		Overall (Mean) % Difference		
	9/25/08	11/13/08	3/3/09	6/4/09	12/15/08	2/9/09	Dry	Wet	Both
Total Dissolved Solids (kg/day)	-57%	-97%	-66%	-97%	-100%	-71%	-79%	-85%	-81%
Total Suspended Solids (kg/day)	-39%	3%	-52%	-58%	-70%	-4%	-36%	-37%	-37%
Hardness (kg/day)	-77%	-97%	-64%	-97%	-100%	-76%	-84%	-88%	-85%
Total Organic Carbon (kg/day)	-62%	-97%	-76%	-97%	-97%	-63%	-83%	-80%	-82%
Dissolved Organic Carbon (kg/day)	-52%	-97%	-73%	-97%	-96%	-65%	-80%	-80%	-80%
Nitrate as N (kg/day)	-71%	-98%	-75%	-98%	-100%	-78%	-85%	-89%	-87%
Ammonia (kg/day)	-69%	-97%	-69%	-97%	-81%	-57%	-83%	-69%	-78%
Total Phosphorus (kg/day)	-59%	-98%	12%	-98%	-92%	-3%	-61%	-47%	-56%
Dissolved Copper (g/day)	-59%	-94%	-69%	-95%	-94%	-23%	-79%	-58%	-72%
Total Copper (g/day)	1152%	-99%	-99%	-96%	-97%	1961%	214%	932%	454%
Dissolved Lead (g/day)	-59%	-95%	-86%	-97%	-93%	440%	-84%	174%	2%
Total Lead (g/day)	-95%	-98%	-86%	-82%	-86%	-23%	-90%	-54%	-78%
Dissolved Zinc (g/day)	-65%	-96%	-69%	-98%	-92%	26%	-82%	-33%	-66%
Total Zinc (g/day)	-68%	-98%	2545%	-95%	-90%	43%	571%	-23%	373%

For field-measured parameters (Table 5; Figure 1), a 6% increase in pH was observed between the influent and effluent ends of the Woodside EDB during wet weather; no such increase was detected during dry weather. Also during wet weather, there was a 9-fold increase in conductivity at the EDB outlet. Turbidity was higher at the outlet than at the inlet during dry but not during wet weather. Dissolved oxygen concentration was also higher at the outlet during dry weather for three out of the four sampling occasions.

With respect to percent differences in constituent concentrations between the EDB influent and effluent ends (Table 5; Figure 1) during wet weather, hardness decreased at the outlet by 81%, total organic carbon concentration dropped 19% and nitrate-N concentration decreased by 83%. During dry weather, there was a 43% reduction in nitrate-N, 26% reduction in hardness, 22% reduction in TDS and 6% reduction in total organic carbon. Concentrations of the remaining constituents measured showed no change or an increase at the outlet. Significant increases in concentration at the outlet during dry weather were noted for TSS (over 13-fold increase), total metals (including a 21-fold increase in total zinc and a 7-fold increase in total copper), dissolved copper (60% increase), total phosphorus (57% increase) and total organic carbon (10% increase). During wet weather, the increases at the outlet were observed for TSS (5-fold increase), ammonia (3-fold increase), and all total and dissolved metals (including a 13-fold increase in total copper and almost a 4-fold increase in dissolved lead).

When constituent loadings were considered (Table 6; Figure 2) during wet weather, significant decreases were observed in nitrate-N (-89%), hardness (-88%), ammonia (-69%), total phosphorus (-47%), TDS (-85%), total and dissolved organic carbon (-80%), TSS (-37%), dissolved copper and zinc (-58% and -33% respectively), and total lead and zinc (-54% and -23% respectively). A similar pattern was noted during dry weather with significant decreases observed for nitrate-N (-85%), hardness (-84%), ammonia (-83%), total phosphorus (-61%), TDS (-79%), total and dissolved organic carbon (-83% and -80% respectively), TSS (-36%), dissolved copper, lead and zinc (-79%, -84% and -82% respectively), and total lead (-90%). Significant increases in dry weather loadings at the outlet were observed only for total copper (214%) and total zinc (571%). During wet weather, the mean loading of total copper was over 9-fold higher at the outlet and the mean loading of dissolved lead was 174% higher.

4 CONCLUSIONS

Generally, the results indicate that, with the exception of nitrate, TDS, hardness, and TOC, constituent concentrations at the outlet of the EDB were often much higher than at the inlet. There were, however, overall load reductions for the majority of constituents measured – especially during dry weather conditions. This was most likely due to the EDB acting to absorb the runoff containing the pollutants before it was able to reach the outlet. The exceptions included total copper and zinc during dry weather and total copper and dissolved lead during wet weather. The loadings of those constituents were higher at the outlet than at the inlet of Woodside EDB.

In terms of constituent concentrations alone, it may be concluded that the EDB functioned well in reducing nitrate-N concentrations especially in the wet weather flows. During wet weather, it was also effective in reducing TDS, hardness, turbidity and dissolved organic

carbon. The concentrations of total and dissolved metals, on the other hand, were not reduced and were often higher at the outlet of the EDB. Also, during dry weather, the turbidity and TSS concentrations at the outlet were many orders of magnitude higher than at the inlet. This may have been due to the aerial deposition of metals and dust near the outlet as it is located adjacent to a major road with significant traffic. This however remains to be a question to be addressed in possible future investigations.

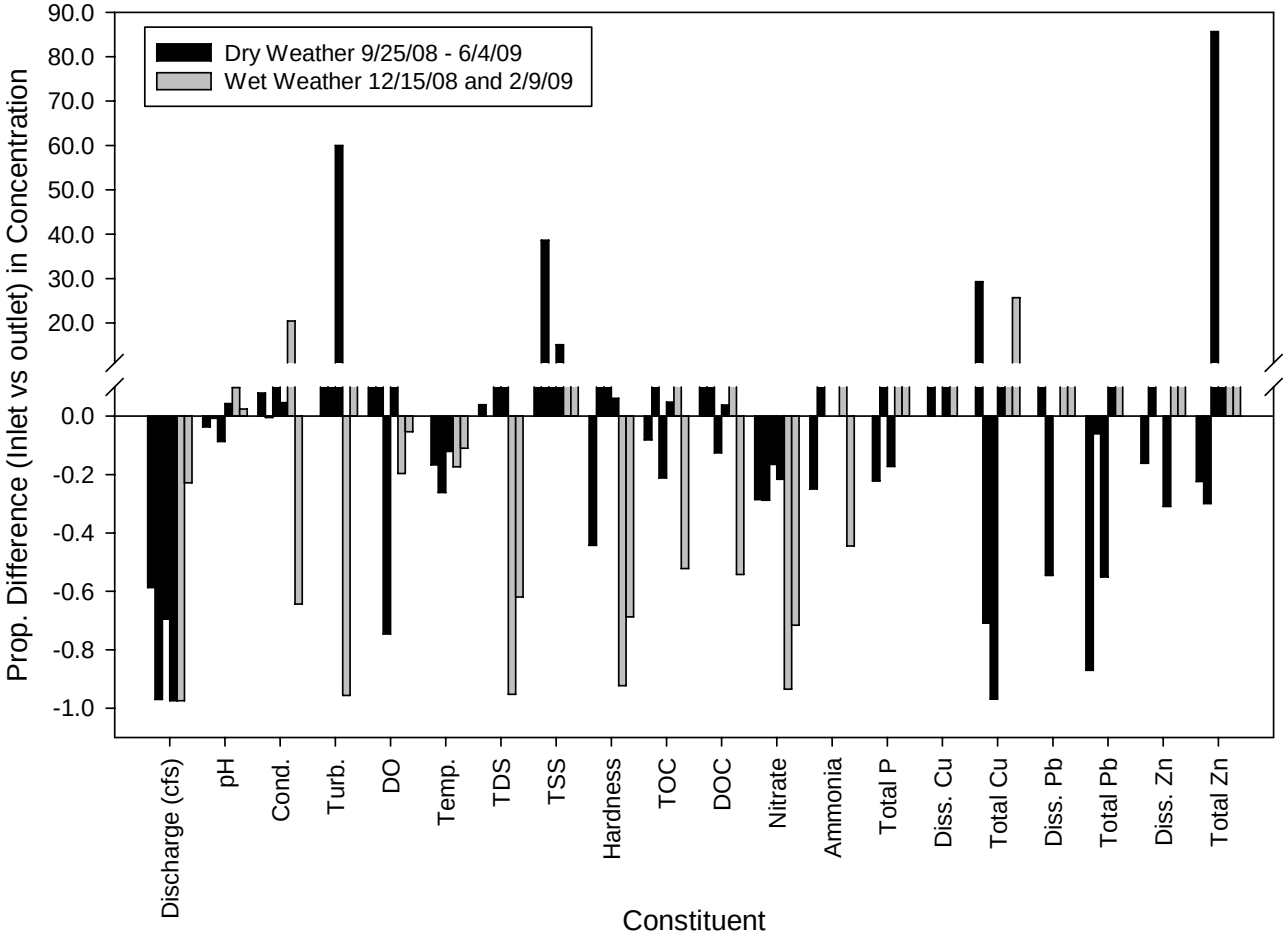

Figure 1: Percent differences between Woodside EDB inlet and outlet field sampling results (discharge, pH, conductivity, turbidity and temperature) and constituent concentrations.

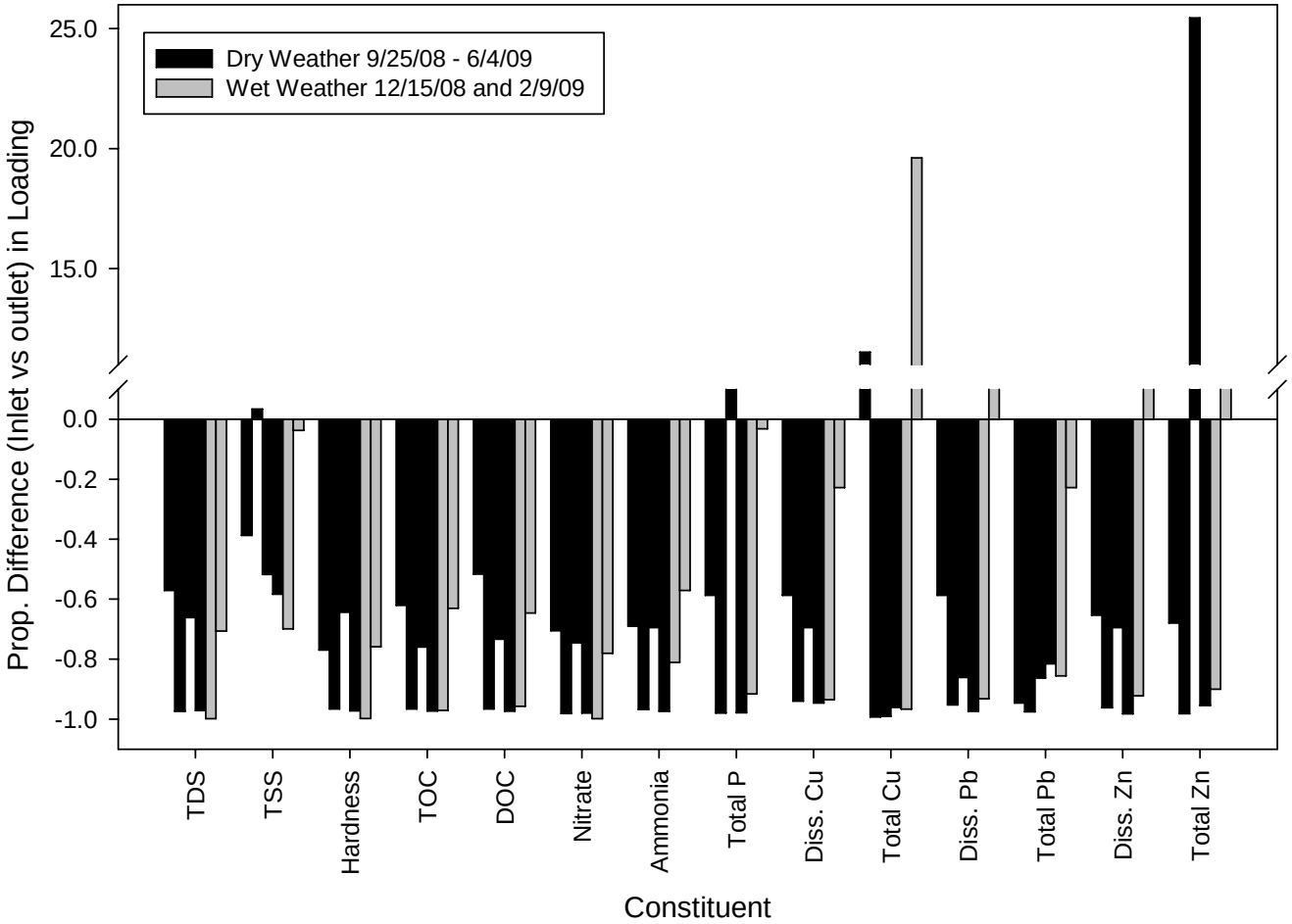

Figure 2: Percent differences between Woodside EDB influent and effluent constituent loadings.

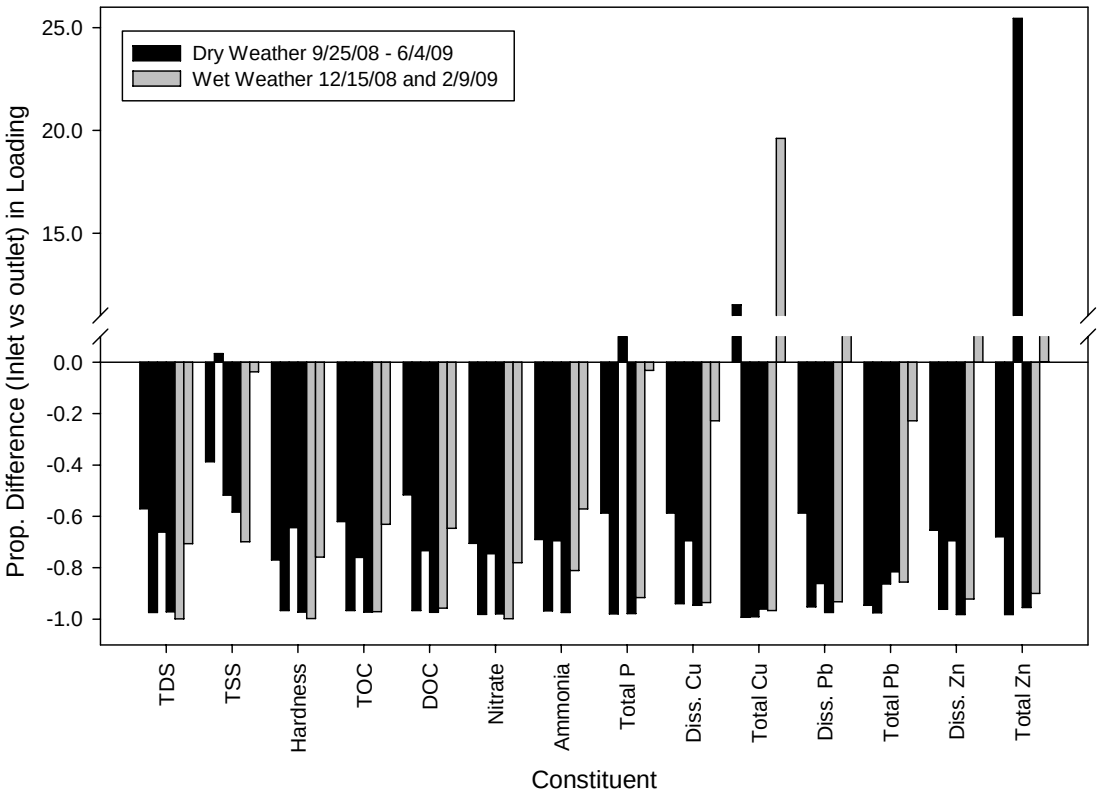
Dry Weather 9/25/08 - 6/4/09
Wet Weather 12/15/08 and 2/9/09
Prop. Difference (Inlet vs outlet) in Loading
25.0
20.0
15.0
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
TDS
TSS
Hardness
TOC
DOC
Nitrate
Ammonia
Total P
Diss. Cu
Total Cu
Diss. Pb
Total Pb
Diss. Zn
Total Zn
Constituent

SAN DIEGO RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

San Diego River Watershed
San Diego County, California

Prepared By:

City of El Cajon, Lead Copermittee
City of La Mesa
City of San Diego
City of Santee
County of San Diego

With Consultant Support From:

TRC
San Diego, California

January 2011

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D Activity A-59 Supporting Documentation: County of San Diego, Additional Water Quality Monitoring and Sampling Results FY 2009-10

EXECUTIVE SUMMARY

In accordance with the requirements of the 2007 Municipal Permit, this Watershed Urban Runoff Management Program (WURMP) Annual Report describes the activities performed by the San Diego River Watershed Copermittees in fiscal year (FY) 2009-10. A significant collaborative activity during this time period was the reporting of results from the San Diego River Watershed Source Identification Study. Led by the City of San Diego, all of the San Diego River Water Copermittees participated in this study during FY 2008-09, collectively spending over $200,000 to identify watershed-specific sources of bacteria and other high priority pollutants. Evaluation of the results of this study were completed in the FY 2009-10 and are being used to guide the selection, planning and implementation of watershed activities by the San Diego River Watershed Copermittees. In addition, the Copermittees' combined efforts have resulted in the following measurable load reductions for the San Diego River Watershed:

- Prevention of over 73,000 pounds of pet waste from entering the watershed.
- Removal of over 173,000 pounds of trash/debris and over 283 cubic yards of sediment, trash/debris and organic materials from the watershed.

These and other watershed activities that contribute to improved water quality for the watershed are described in more detail in this Annual Report.

This Annual Report also reviews the available water quality and pollutant source information to assess whether any changes should be made to the WURMP. Based on a review of the available data from the ambient, wet and dry weather monitoring, Bight '08 monitoring, the outfall monitoring and coastal storm drain monitoring programs in addition to third party data, the San Diego River Watershed Copermittees concluded that the high priority pollutants for the watershed remain the same ones identified in the WURMP. The San Diego River Watershed Copermittees also reviewed the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP, and believe they remain valid priorities for the watershed as indicated by the Source Identification Study.

Based on the results of the Source Identification Study, the San Diego River Copermittees are not making significant revisions to the Strategic Goals established in the WURMP's current 5-year strategic plan, but as previously reported will change the timing of when the Strategic Goals will be addressed. The San Diego River Watershed Copermittees determined that one year's worth of activities is insufficient to address adequately the commercial/industrial sources identified by the study and recommended in last year's annual report that the Copermittees address commercial/industrial sources of high priority pollutants over two fiscal

years, instead of the previously planned one year, before targeting residential sources.

The San Diego River Copermittees anticipate that the continued use of the WURMP Strategic Goals to guide selection of watershed activities will result in increasingly coordinated (as appropriate) and more effective activities. San Diego River Copermittees plan to increase efforts to coordinate activities over the next fiscal year, particularly in anticipation of the likely final approval of the Bacteria TMDL in 2011.

Similar to previous years, the San Diego River Watershed Copermittees have evaluated the 2009-10 watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document. The effectiveness assessment continued to find evidence of effectiveness in levels 1 through 4, but faced similar difficulties as in the past when trying to assess effectiveness in levels 5 and 6.

Based on these results, the San Diego River Copermittees will continue to develop watershed activities that are consistent with the revised WURMP. The Copermittees believe the adjustments being made in response to the revised WURMP will improve watershed water quality. The two primary recommendations for FY 2010-11 are:

- Continue using the WURMP Strategic Goals to facilitate coordinated and collaborative program planning, implementation (as appropriate) and assessment efforts; and
- Use the results of the Source Identification Study to guide future watershed activity selection, planning and implementation.

CITY OF EL CAJON

CITY MANAGER

January 31, 2011

San Diego River WURMP
2009-2010 WURMP Annual Report

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Kathi Henry — 1.24.11 — RT

Signature — Date

Kathi Henry, City Manager — (619) 441-1780

Printed Name, Title — Phone Number

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LA MESA
JEWEL of the HILLS

DAVID E. WITT, A.I.C.P.
CITY MANAGER

CERTIFICATION STATEMENT

San Diego River Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego River Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

1/19/11

David E. Witt
City Manager
City of La Mesa

Date

Telephone Number: (619) 667-1195

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January 30, 2011

RE: STATEMENT OF CERTIFICATION
FY 2010 Watershed Urban Runoff Management Program Annual Report for the San Diego River Watershed Management Area

I certify under penalty of law that the FY 2010 Watershed Urban Runoff Management Program Annual Report for the San Diego River Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Transportation & Storm Water Department
City of San Diego

County of San Diego
LAND USE AND ENVIRONMENT GROUP

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STATEMENT OF CERTIFICATION

San Diego River Watershed Urban Runoff Management Program (WURMP) FY 2009-10 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to this FY 2009-10 San Diego River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer

1/21/11
Date

MAYOR
Randy Voepel

CITY COUNCIL
Jack E. Dale
Rob McNelis
John W. Minto
John Ryan

CITY MANAGER
Keith Till

January, 2011

San Diego River WURMP

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature

1/27/11
Date

(619) 258-4100 x168
Phone Number

Pedro Orso-Delgado
Deputy City Manager/Director of Development Services

1.0 INTRODUCTION

The National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit for San Diego Copermittees (Order No. R9-2007-0001, NPDES No. CAS 0108758, hereafter referred to as "Municipal Permit") requires that the Copermittees within the San Diego River Watershed collaborate in the development of a watershed-based program that addresses surface water quality and storm water pollution prevention (California Regional Water Quality Control Board [CRWQCB], 2007). In accordance with these requirements, the San Diego River Watershed Copermittees developed and submitted a revised Watershed Urban Runoff Management Plan (WURMP) in March 2008 (City of El Cajon et al., 2008). This report provides an annual reporting of Copermittee progress in implementing the revised WURMP and meeting other Municipal Permit watershed-level requirements for fiscal year (FY) 2009-10.

1.1 COPERMITTEE COLLABORATION

The administration of the San Diego River Watershed Activities is handled both jurisdictionally and collaboratively. The jurisdictions act collaboratively to review and understand the water quality monitoring data and define the water quality issues and priority water quality pollutants. The Copermittees use this information to develop and implement jurisdictional short- and long-term activities that address the priority pollutants and sources. The Copermittees also work together as much as possible to more effectively use limited resources and achieve greater results by coordinating their activities across jurisdictional boundaries when reasonably possible. The Copermittees have developed close working relationships on watershed issues that have a direct impact across jurisdictional boundaries. For example staff in Santee and El Cajon have worked extensively on the migration of trash in the San Diego River from El Cajon to Santee and the identification and removal of bacteria sources in Forester Creek.

Between July 2009 and June 2010, the San Diego River Watershed Copermittees formally met eleven times to develop and implement the San Diego River WURMP in accordance with the Municipal Permit. During the reporting period, all Copermittees took an active role in the implementation of the WURMP and watershed activities. In addition, the workgroup used email and phone calls to facilitate collaboration on the development of watershed activities and the Annual Report. The following table presents a summary of the meetings held by the San Diego River WURMP workgroup during the reporting period, including an outline of the principle agenda items.

Summary of Watershed Workgroup Meetings

Meeting Date/Location	Topics Covered
07/23/09 – Mission Trails Regional Park Center	Presentation by Matt Rahn, SDSU, regarding potential cooperation with San Diego River monitoring stations Presentation by City of San Diego and Weston on Rain Barrels as LID BMP Watershed Implementation Activities for this fiscal year Cost Sharing Agreement Quality of Life Initiative - SANDAG
08/24/09 – County of San Diego	Watershed Implementation Activities Annual Report – Previous Year Activities Pet Waste Presentation – County of San Diego Permit Language Changes proposed by CRWQCB Cost Sharing Agreement
9/24/09 – City of Santee	Watershed Activity Planning WURMP Annual Report Permit Language Changes proposed by CRWQCB 303d List Comments Status of City of San Diego Source ID Study Report
10/14/09 – City of San Diego	Watershed Activity Planning WURMP Annual Report Permit Language Changes proposed by CRWQCB Status of Cost Share Agreement
11/16/09 – City of Santee	Cost Sharing Agreement Regional Watershed Activities Database Watershed Activity Planning
12/10/09 – City of San Diego	Watershed Activity Planning WURMP Annual Report
1/14/10 – County of San Diego	WURMP Annual Report
3/11/10 – City of Santee	Cost Sharing Agreement Watershed Activity Planning Review 2012 303d Listings
4/8/10 – City of Santee	Bacteria TMDL Cost Share Agreement for next year 303d Listing Watershed Activity Planning Coordinate Participation in RiverFest Event
5/13/10 – City of Santee	Coordinate Participation in RiverFest Event Bacteria TMDL Cost Share Agreement for next year 303d Listing Sycamore Canyon Landfill Project 2010-11 Watershed Activity planning
6/10/10 – County of San Diego	Bacteria TMDL Cost Share Agreement for next year 303d Listing Watershed Activity Planning San Diego RiverFest follow up

The San Diego River Watershed Copermittees will continue to meet on a regular basis to plan and facilitate implementation of the San Diego River WURMP.

2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section is intended to provide an updated assessment and analysis of the watershed's water quality and pollutant sources. A comprehensive summary and analysis of the monitoring conducted during FY 2009-10 is documented in Section 9 of the *San Diego County Copermittees 2009-2010 Urban Runoff Monitoring Report*, January 2011, prepared by Weston Solutions (Weston, 2011) and selected portions of the document are repeated in Section 2.1 below. The San Diego River Copermittees reviewed the results of the monitoring program and then reviewed its previous water quality and pollutant source assessments for the watershed. Updates to these assessments based on the new information available are provided in Sections 2.2 and 2.3 below.

2.1 SUMMARY OF REGIONAL MONITORING RESULTS

2.1.1 Conclusions of Monitoring Program

The core monitoring questions were addressed through receiving water and urban runoff monitoring within the watershed in accordance with Permit requirements. Results were assessed during both wet weather and dry weather conditions. Conclusions based on the results of monitoring in the watershed are as follows:

Chemistry – No persistent toxic chemicals were identified during dry weather conditions. During wet weather conditions, turbidity, total suspended solids (TSS), bifenthrin, and permethrin were identified as wet weather persistent constituents at the temporary watershed assessment station (TWAS) locations. No persistent wet weather constituents were identified at the mass loading station (MLS). A significant decreasing trend was noted for dissolved copper at the MLS, whereas a significant increasing trend was noted for dissolved organic carbon. Both trend results are beneficial in reducing the bioavailability of metals toxicity to aquatic organisms.

Bacteria – Fecal coliform was identified as a high priority constituent during wet weather at all receiving water locations. During ambient conditions, only enterococci were identified as a medium priority constituent and only at SDR-TWAS-2 (Santee) and SDR-TWAS-3 (Lakeside) locations, both of which are situated in the Santee Hydrologic Sub Area (HSA) – 907.12. These results were also confirmed by third-party monitoring data collected in the Santee HSA, which identified enterococci as a medium priority concern overall, with Forrester Creek having slightly more frequent exceedances for fecal coliform and enterococci. A slight, but statistically significant increasing trend was noted for enterococci at the MLS.

Toxicity – Toxicity was not observed to be a watershed-wide issue during either wet or dry weather monitoring. An exception was the persistent toxicity identified at SDR-TWAS-3 during ambient weather.

Biology – Bioassessment Index of Biotic Integrity (IBI) scores were Very Poor at all monitoring stations. Similarly, observed to expected (O/E) results suggested impaired conditions and were in agreement with IBI scores. California Rapid Assessment Method (CRAM) scores were mostly in the moderate range, with only two sites having high (good) scores (SDR-TWAS-2 and SMC32718 [El Monte HSA-907.15]). These results suggest that the physical habitat is generally good at these locations and other factors may be influencing the poor biological scores. During one post-restoration bioassessment survey in Forester Creek (2008), an unimpaired condition was reported (Fair IBI Rating). Therefore, it is likely that the lower ratings reported here are not consistent throughout the watershed.

Total Dissolved Solids (TDS) – Elevated TDS results were recorded at nearly all monitoring stations during ambient conditions.

Nutrients – Total and dissolved phosphorus were identified as high priority constituents during ambient conditions at the MLS (Mission Valley), SDR-TWAS-1 (East Mission Valley) and SDR-TWAS-2 sites, and as a medium priority at the SDR-TWAS-3 site. Total nitrogen was identified as a high priority constituent at SDR-TWAS-2. Third-party monitoring data also identified total phosphorus and total nitrogen as high priority constituents in the Santee HSA (907.12) and El Cajon HSA (907.13). Although wet weather discharges provide elevated loads of nutrients, most concentrations are below the wet weather benchmarks. Nitrate in groundwater seepage has been documented as a known source in this watershed. Based on academic literature, nutrients are known to contribute to eutrophic conditions in low flowing waters, but the monitoring data for this watershed indicates depressed oxygen results only at the Carlton Hills Bridge monitoring location (Third-Party Data) and at SMC32718 (El Monte HSA (907.15)). A significant decreasing trend was noted for total phosphorus at the MLS.

In the table below, watershed monitoring results were compared to the 2006 303(d) listings in the watershed to provide an assessment of current conditions.

San Diego River Watershed Management Area (WMA) Assessment Conclusions in Relation to 2006 Section 303(d) Listings

Waterbody Name	HSA	HSA No.	303(d) Listed Pollutant/Stressor	Comments
Famosa Slough and Channel	Mission San Diego	907.11	Eutrophic	Waterbody is downstream of MLS. City of San Diego Study demonstrated that poor circulation in slough is resulting in a sediment sink for nutrients. Watershed loads were low in comparison to other similar slough studies.
Pacific Ocean Shoreline	Mission San Diego	907.11	Indicator bacteria	None
Lower San Diego River	Mission San Diego	907.11 907.12	Fecal coliforms, low dissolved oxygen (DO), phosphorus, and TDS	Annual monitoring results are consistent with listings. Elevated TDS primarily observed in base flow conditions. Fecal coliform is watershed-wide issue. Low DO may be a function of low gradients and ponded flows.
Forester Creek	Santee	907.13	Fecal coliforms, pH (concrete lined channel), TDS, and phosphorus	Third-party monitoring data confirm all listings with the exception of pH. All pH results were within Basin Plan range. Annual dry weather monitoring results are consistent with listings. Elevated TDS observed in baseflow conditions. Fecal coliform is a watershed-wide issue. Additionally, the hydrology of the river has been considerably altered and several ponded areas occur throughout the watershed and may reduce the flow through specific watershed areas, and contribute to low DO conditions.
El Capitan Lake	El Cajon	907.31	Color, manganese, and pH	Samples not assessed in this HSA. Reservoirs addressed by Metropolitan Water District of Southern California (MWD).
Murray Reservoir	Mission San Diego	907.11	pH	pH issues in reservoir addressed by MWD or San Diego County Water Authority (SDCWA).
San Vicente Reservoir	Fernbrook	907.21	Chloride, color, manganese, pH, and sulfates	Samples not assessed in this HSA. Reservoirs addressed by MWD or SDCWA.

Listing Source: State Water Resources Control Board (SWRCB), 2006.
1. The 2010 Section 303(d) List was made available after the development of this report and will be updated in future reports.

2.1.2 Core Management Question Results

As required by the Permit, the five Core Management Questions are addressed. Responses are based on monitoring of the receiving waters at the MLS, TWAS, and as part of the Stormwater Monitoring Coalition (SMC) monitoring. Where applicable, monitoring results are evaluated using a weight of evidence approach that includes the triad assessment of chemistry, biology, and toxicity.

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**

Core Management Question 1 was addressed through wet and dry weather receiving water assessments. Results with concentrations above their respective benchmark were evaluated. Wet weather priority constituents were identified for turbidity, TSS, bifenthrin, and permethrin at the TWAS locations. Fecal coliform was identified as a high priority constituent during wet weather at all receiving water locations. Although, no persistent toxic chemicals were identified during dry weather conditions, enterococci were identified as a medium priority constituent and only at SDR-TWAS-2 and SDR-TWAS-3 locations in the Santee HSA (907.12). TDS results were above the benchmark at nearly all monitoring stations during ambient conditions. For nutrients, total and dissolved phosphorus were identified as high priority constituents throughout the lower San Diego Hydrologic Area (HA) with the exception of the SDC-TWAS-3 site (Santee HSA (907.12)) being identified as medium priority. Total nitrogen was identified as a high priority constituent at SDR-TWAS-2. Although wet weather discharges provide elevated loads of nutrients, most concentrations were below the wet weather benchmarks. However, depressed oxygen results were noted only at the Carlton Hills Bridge monitoring location (Third-Party Data) and at one SMC site in the El Monte HSA (907.15).

Bioassessment IBI scores were rated Very Poor at all monitoring stations. Similarly, O/E results suggested impaired conditions and were in agreement with IBI scores. CRAM scores were mostly in the moderate range, with only two sites having high (good) CRAM scores (SDR-TWAS-2 and SMC32718). The monitoring locations did not include the Forester Creek monitoring location that was reported to be “unimpaired” during 2008, therefore there may be locations within the watershed where biological conditions may be better than those reported. The bioassessment results from this monitoring suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Toxicity was not observed to be a watershed-wide issue during either wet or dry weather monitoring. However, toxicity was identified at SDR-TWAS-3 in the Santee HSA (907.12) during ambient weather.

2. **What is the extent and magnitude of the current or potential receiving water problems?**

Core Management Question 2 was addressed through spatial analysis of results and the frequency of the results above benchmarks. Results were most similar for TDS and bacteria. Fecal coliform was identified as a high priority constituent during wet weather at all receiving water locations. During ambient conditions, only enterococci were identified as a medium priority constituent and only at the two upper sites in the Santee HSA (907.12). These results were also confirmed by third-party monitoring data collected in the Santee HSA (907.12), which identified enterococci as a medium priority concern overall, with Forrester Creek having slightly more frequent results above benchmarks for fecal coliform and enterococci. TDS, total phosphorus, and dissolved phosphorus were identified as high priority dry weather constituent benchmarks at nearly all monitoring stations with the exception of the SDC-TWAS-3 site (Upper Santee HSA (907.12)) being identified as medium priority for phosphorus constituents. Total nitrogen was identified as a high priority constituent at SDR-TWAS-2 in the lower Santee HSA (907.12). Third-party monitoring data also identified total phosphorus and total nitrogen as high priority constituents in the Santee HSA (907.12) and El Cajon HSA (907.13).

As mentioned above, bioassessment IBI scores were rated Very Poor at all monitoring stations included in this study. Toxicity was not observed to be a watershed-wide issue during either wet or dry weather monitoring. However, toxicity was identified at SDR-TWAS-3 in the upper Santee HSA (907.12) during ambient weather. The magnitude of toxicity was low and did not warrant conducting a toxicity identification evaluation.

3. **What is the relative urban runoff contribution to the receiving water problem(s)?**

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. During wet weather, results showed that only fecal coliform was identified as a high priority constituent. No medium priority constituents were identified. During dry weather, MS4 results showed that total nitrogen, total phosphorus, TDS, and enterococci were identified as high priority constituents in all drainage areas. Fecal coliform was identified as a medium priority constituent at the SDR-TWAS-2, SDR-TWAS-1, and MLS drainage area and nitrate as a medium priority constituent at SDR-TWAS-2 and SDR-TWAS-1. It remains unclear the extent to which MS4 outfalls may contribute to receiving water problems. This question may be answered with a higher level of confidence with the five-year assessment required by the MS4 Outfall Monitoring Workplan.

4. **What are the sources of urban runoff that contribute to receiving water problem(s)?**

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional Dry Weather Monitoring (DWM) Program, the Coastal Storm Drain Monitoring (CSDM) Program, and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources can be found in each Copermittee's Jurisdictional Urban Runoff Monitoring Program Annual Report and in the CSDM Program Annual Report. A wet weather source identification study of single family residences was conducted outside of the San Diego River WMA by the Copermittees during the 2009–2010 Monitoring Season. Results from this study suggest that fecal coliforms, TSS, turbidity, synthetic pyrethroids, dissolved metals, and Malathion may locally occur in concentrations above wet weather benchmarks. The SMC suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in the regional monitoring report are for comparison purposes only and for further assessment with toxicity results.

5. **Are conditions in receiving waters getting better or worse?**

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the San Diego River MLS. Based on the trend analysis, significant increasing trends were observed for enterococci and dissolved organic carbon. Significant decreasing trends were observed for total phosphorus and dissolved copper.

With the exception of monitoring after the Forester Creek Improvement Project, the bioassessment ratings in the Lower San Diego HA have been Poor to Very Poor in all reported assessments conducted from 2001 to 2010, and there are no apparent trends in the benthic community.

Toxicity has rarely been observed in samples collected from the San Diego River MLS. Between 2001 and 2008, toxicity was observed once, and all during separate storm events, to *H. azteca* (October 2006), *C. dubia* (October 2005), and *S. capricornutum* (February 2002 and November 2009). As such, no trends in the data set are apparent.

2.1.3 Monitoring Program Recommendations

The recommended actions from the triad monitoring results as listed in Section II, A. 4 (Table 3 of the Permit) are provided for both dry and wet weather.

The recommendations based on dry weather monitoring were similar for the SDR-MLS, SDR-TWAS-1, and SDR-TWAS-2 and include the following:

- No action necessary to address toxic chemicals.
- Address potential role of urban runoff in causing physical habitat disturbance.

The recommendations based on dry weather monitoring for SDR-TWAS-3 was as follows:

- Permit recommended action would normally be to conduct toxicity identification evaluation (TIE) to identify contaminants of concern, based on TIE metric. However, a TIE was not conducted due to only slight toxicity being observed. At least 50% inhibition is needed to determine statistical significance between control and test sample during TIE test treatments.
- Address upstream sources as a high priority.
- Address potential role of urban runoff causing physical habitat disturbance.

The recommendations based on wet weather monitoring include the following:

- No action necessary to address toxic chemicals (at the MLS only).
- Address potential role of urban runoff in causing physical habitat disturbance (at the MLS only).
- Address upstream sources of turbidity and befenthrin as a high priority at all TWAS and additionally TSS and permethrin at SDR-TWAS-2.

2.2 WATER QUALITY ASSESSMENT BY WATERSHED COPERMITTEES

The Water Quality Assessment provided in the Weston monitoring report and repeated in section 2.1 above is generally consistent with the previous year's assessments reported in the Weston Monitoring Report for FY 2008-09 as well as the baseline watershed evaluation (BWE) presented in the March 2008 WURMP. The most significant new data is from the TWAS locations in receiving waters.

The monitoring data showed that nitrogen, total suspended solids, biological oxygen demand, methylene blue active substances (MBAS) and certain pesticides are more apparent at certain monitoring locations and may need to be reconsidered as potential watershed high priority pollutants. In addition, bioassessment data continue to show benthic alterations as a concern in this watershed. However, these benthic alterations may be due to physical impacts, not chemical impacts. Note that a biological assessment performed after completion of the Forester Creek Improvement project indicates the area downstream of the project was "unimpaired" (Fair IBI rating), very rare for an urban waterbody (Weston, 2008). It is anticipated that this and other restoration projects will assist in improving the condition of the biological community within the San Diego River.

Based on a review of the current Weston monitoring report and available monitoring data from dry weather monitoring, jurisdictional wet weather monitoring and third party monitoring data, the San Diego River Watershed Copermittees concluded that the high priority pollutants for the watershed should remain the same ones identified in the WURMP until the recent monitoring data can be considered as part of the Long Term Effectiveness Assessment (LTEA) process in FY 2010-11. This will allow

the Copermittees to analyze the data over time and to have a consistent regional approach for addressing the pollutants identified by recent monitoring.

For the current year, the high priority pollutants for the watershed will continue to be:

- Bacteria Indicators
- Nutrients: Phosphorus
- Total Dissolved Solids (TDS), including chloride
- Low Dissolved Oxygen (DO)
- Turbidity

2.3 POLLUTANT SOURCE ASSESSMENT BY WATERSHED COPERMITTEES

The Weston monitoring report evaluates pollutant sources in terms of the core management questions 3 and 4. The observed results in the dry weather monitoring and coastal storm drain monitoring programs as reported in the Weston Monitoring Report are generally consistent with previous year's data and appear to indicate that the conclusions in the Baseline Long Term Effectiveness Assessment (BLTEA) and the March 2008 WURMP regarding pollutant sources remain valid (Weston Solutions et al., 2005; City of El Cajon et al., 2008). More specifically, the San Diego River Watershed Copermittees believe the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP and updated in previous WURMP Annual Reports, remain valid priorities for the watershed.

3.0 IMPLEMENTATION OF WATER QUALITY ACTIVITIES

This section summarizes the activities implemented by the San Diego River Watershed Copermittees during the 2009-10 reporting period. The March 2008 comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are based on the priority pollutants and targeted sources identified in the WURMP, and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement.

The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

The schedule for implementing activities was modified in last year's Annual Report based on the results of activities performed to that time and the recently completed Source Identification Study conducted in the watershed. Specifically, the timeframes for implementation of activities related to Strategic Goal 3 were extended an additional year so that the Copermittees could incorporate the results of the study into their activities. The table below outlines the revised timeframe for implementing activities associated with each Strategic Goal as described in the WURMP:

Goal	Strategic Goal	Implementation Schedule by Fiscal Year				
		Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013
1	Dry Weather Flow Reduction	P/I/A	P/I/A	P/I/A	I[1]/A	A
2	Muncipal/Park Source Reduction	I	A		P[1]	I[1]
3	Commercial/Industrial Source Reduction	P	I	I	A	
4	Residential Source Reduction		P	P	I	A
5	Bacteria Source Reduction	P/I/A	P/I/A	P/I/A	P/I/A	P/I/A

Notes: I = Implementation; P = Planning; A = Assessment
[1] Activities supporting this Strategic Goal may be eliminated and shifted toward other Strategic Goals if judged appropriate.

Initially, the Strategic Goals and supporting activities will address multiple pollutants while focusing on specific types of land uses (e.g. Goals 2 through 4). As Copermittee understanding of sources increases over time, it is possible that the strategic goals may become more specific. For example, goals may be focused on specific pollutants or groups of pollutants at various land use types (e.g. Strategic Goal 5), or by targeting more specific sources within a land use.

3.1 WATERSHED WATER QUALITY ACTIVITIES

The San Diego River Watershed Copermittees implemented numerous water quality activities focused on the San Diego River Watershed priority pollutants of concern during FY 2009-10. These activities are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern. Some of the highlighted activities include:

- River Restoration projects, including land acquisitions,
- Trash removal and river cleanup events,
- Structural best management practice (BMP) projects,
- Removal of homeless encampments and cleanups, and
- Setting-up additional "doggie bag" dispensers.

In addition, the San Diego River Watershed Copermittees began to coordinate some of their activities around the Strategic Goals established in the WURMP. Consistent with the timeline established in the WURMP, these activities focused on commercial/industrial facilities and particularly on sources of bacteria. Several San Diego River Copermittees conducted enhanced or additional inspections of commercial/industrial facilities using forms specifically developed for this activity, or developed a BMP self-certification pilot project.

Although not technically a watershed activity as defined by the permit, the San Diego River Watershed Copermittees spent considerable time and money implementing a collaborative Source Identification Study throughout the watershed in fiscal year 2008-09 with reporting and evaluation extending into fiscal year 2009-10. Led by the City of San Diego, this effort included water quality sampling in multiple jurisdictions and focused on sources of priority pollutants specific to this watershed, especially bacteria. The study results are summarized in Appendix A-4. The study identified over-irrigation, waste management at dumpsters, debris in catch basins and outdoor grease management as particular sources of concern in the watershed, especially at commercial/industrial land uses. For residential land use, waste and landscape management, especially over-irrigation, appear to be significant sources of pollutants, either directly or as a transport mechanism. These results will be used to plan and implement future watershed activities.

3.2 WATERSHED EDUCATION ACTIVITIES

The San Diego River Watershed Copermittees continue to value education activities as a means of reducing pollutants at the source. The watershed education activities conducted in FY 2009-10 are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern. The San Diego River Copermittees worked collaboratively to develop and implement an education program focused on pet waste. This activity included development of a pet waste presentation as well as pre- and post presentation surveys to measure improvements in public understanding. In addition, the County of San Diego developed a new education program consisting of a focused outreach to the equestrian community.

3.3 PUBLIC PARTICIPATION ACTIVITIES

The San Diego River Watershed Copermittees continue to rely on the Project Clean Water website as a tool to facilitate outreach to the public. In addition, a number of the activities, both education and water quality, are specifically designed to foster public participation. For example, the cleanup events sponsored by the jurisdictions are typically conducted by or augmented by volunteers and are often associated with appreciation events for specific parks or the river itself. This direct public participation is intended to foster a sense of community awareness and responsibility for our waterways. A number of jurisdictions make a point of addressing the volunteers to educate them about watersheds in order to strengthen the link between upland human activities and downstream water quality.

3.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

This section describes collaborative land use planning efforts within the San Diego River Watershed during FY 2009-10. The San Diego River Watershed Copermittees have identified enhanced cross-jurisdictional communication as a key element in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. Jurisdictional Urban Runoff Management Program (JURMP) annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Cross-Jurisdictional Communication:
The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the San Diego River Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the

California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the San Diego River Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

In order to encourage collaborative, watershed-based land use planning, the San Diego River Copermittees will have at least one watershed meeting per year that will be dedicated to discussing and addressing land use planning issues. For FY 2009-10, this collaboration primarily consisted of sharing land use planning activities between Copermittees and discussions regarding how the San Diego Association of Governments (SANDAG) Quality of Life Initiative can be incorporated into the watershed. It is anticipated that these ongoing discussions will enable San Diego River Copermittees to establish some consistency in how they integrate watershed principles into their plans and to evaluate the potential need for watershed specific land use requirements. The results of future meetings, including any follow up meetings, will be reported in the WURMP annual reports.

3.5 UPDATED 5-YEAR STRATEGIC PLAN

The comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are described in the WURMP and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement. Updates to the 5-year strategic plan in the San Diego River Watershed will take the form of changes to the Strategic Goals and associated activities.

3.5.1 New Watershed Activities

New watershed activities are selected and implemented in a manner intended to meet the objectives established in the relevant Strategic Goals for that year, which are based on the priority pollutants and targeted sources identified in the WURMP. The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to

perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

3.5.2 Updated 5-Year Strategic Plan

The results of the recently completed Source Identification Study are generally consistent with the evaluations conducted during preparation of the WURMP in March 2008. This study strongly supports the Strategic Goals previously selected for this watershed and helps to provide more specific sources of pollutants that can be prioritized for watershed activities. Based on the results of this study, the San Diego River Copermittees are not making significant revisions to the current Strategic Goals established in the WURMP. As already described, the timeframes for implementation of activities related to Strategic Goal 3 has been extended an additional year so that the Copermittees can incorporate the results of the study into their activities.

This change is also consistent with our collective experience implementing collaborative activities in previous years. The Copermittees have generally found that coordinated activities tend to take longer to plan, implement and evaluate, because they tend to either require extensive planning/communication or be done in a more iterative or experimental fashion. Copermittees will often implement variations on the same activity and report back results. Based on these results, Copermittees often see more benefit from implementing new and improved versions of these activities rather than moving on to new categories of activities as originally planned in the WURMP. The San Diego River Copermittees will continue to focus on commercial/industrial sources of pollutant loads for another fiscal year instead of moving immediately onto residential sources of pollutants.

4.0 EFFECTIVENESS ASSESSMENT

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

One of the most important components of a successful program is the development and implementation of a comprehensive program evaluation. In order to facilitate this assessment of WURMP effectiveness, the March 2008 WURMP has translated the results of the Copermittees water quality and pollutant source assessments into more specific Strategic Goals that will facilitate the selection of collaborative and measurable activities. Since the selection of Strategic Goals was based on a comprehensive assessment of water quality and potential pollutant sources in the watershed, measurable progress toward achieving these Strategic Goals is considered to be measurable progress toward the larger goal of positively affecting water quality. The specific activities selected by the San Diego River Copermittees will be developed, implemented and measured for effectiveness against these Strategic Goals.

Even with the use of the Strategic Goals, the San Diego River Watershed Copermittees intend to continue evaluating watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document. The six levels are as follows:

Level 1:	Compliance with activity-based permit requirements
Level 2:	Changes in knowledge / awareness
Level 3:	Behavioral change / BMP implementation
Level 4:	Load reductions
Level 5:	Changes in discharge quality
Level 6:	Changes in receiving water quality

Documentation of Levels 1-3 is fairly straightforward, whereas documentation of Levels 4-6 requires the development and implementation of scientific studies designed specifically to document and track water quality trends in discharges and in the receiving water. Moreover, the detection of changes in discharge quality and, in particular, changes in receiving water quality requires the collection of data over several years to detect and verify changes in water quality. Although the Copermittees have very few data sets that span several years, we are working to collect this information and improve the process. In addition, due to the enormous number of factors affecting water quality in both storm drain discharges and in receiving waters, it is difficult to isolate the effects of a storm water program's efforts. Conclusions from existing data will be conducted when possible, but long-term, consistent improvements in water quality throughout the San Diego River Watershed cannot yet be determined.

Levels 1, 2, and 3 assess implementation of BMPs with prevention of pollution entering the storm drain system as the primary objective. Assessment Levels 4, 5, and 6 focus on reducing pollutants loads and assessing water quality improvement. The two

groups of Assessment Levels have two different objectives, although they are connected by water quality. A connection between the two assessment groups is not possible when pollutant load information has been obtained at only a few mass loading stations, generally found in the lower watershed, near the discharge point to the ocean. Even if jurisdictions take the Effectiveness Assessment through to Level 4 by estimating pollutants prevented from entering the receiving water, it is still difficult to connect this information to downstream receiving water quality for a number of reasons including the alternative sources of both flow (for example, groundwater) and pollutants (for example, aerial deposition) as well as the overlapping influences of multiple Copermittee activities at the jurisdictional, watershed and regional levels. These and other obstacles to assessing effectiveness will be tasked to the Effectiveness Assessment Workgroup as well as the Watershed Copermittees, who will work together to identify solutions to these obstacles.

4.1.1 Level 1 Effectiveness: Compliance with Activity-Based Permit Requirements

The San Diego River Watershed Copermittees have fulfilled several of the requirements of the Municipal Storm Water Permit. The table below outlines Level 1 Compliance with the Municipal Permit by relating San Diego River Watershed Copermittee activities to one of the four objectives and the requirements specified in the Municipal Permit.

Level 1 targeted outcomes

Permit Requirements (E.2)	Activities	Status
(a) Lead Watershed Permittee Identification	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) An accurate map of the watershed	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) Annual assessment of receiving water quality	• Weston 2009-2010 Urban Runoff Monitoring Report	Complete for 2009-2010
(d) Mechanism to facilitate collaborative "watershed based" land use planning	• County General Plan Update	Ongoing
	• City of San Diego General Plan Update	Completed (proceeding with GP elements)
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2009-2010
	• San Diego River WURMP Workgroup	Complete for 2009-2010
	• MOU; CEQA; Public Hearings; MSCP – descriptions included in the Common Activities	Complete for 2009-2010
(e) Develop and implement collective watershed strategy	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2009-2010

Permit Requirements (E.2)	Activities	Status
	• Weston 2009-2010 Urban Runoff Monitoring Report	
(f) Identify and implement Watershed Activities	• See Section 3	Complete for 2009-2010
(g) Copermittee collaboration	• See Sections 1 and 3	Complete for 2009-2010
(h) Mechanism for public participation	• Copermittee and Stakeholder Collaboration /Public Participation (meetings, e-mail and web)	Ongoing
	• Direct Interaction	Ongoing
	• Project Clean Water	Ongoing (website is updated as new information warrants)
	• San Diego River Coalition Meetings	Complete for 2009-2010
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2009-2010 - Implementation ongoing
(i) Annual WURMP review	• WURMP Annual Report	Complete for 2009-2010

4.1.2 Level 2 Effectiveness: Changes in Knowledge and Awareness

The following programs implemented by the San Diego River Watershed Copermittees may have contributed to an increase in knowledge and/or awareness of program participants.

- Project Clean Water
- Think Blue Public Service Announcements
- Public Outreach & Media
- Pet Waste Outreach
- New Advertising Materials: booklets, posters and brochures
- Partners in Clean Water and Community Events as well as Cleanup Events
- Outreach to the Equestrian Community

Many of the programs listed above address multiple program strategies (i.e., development of a monitoring program coupled with an educational outreach campaign). As such, these programs provided education on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed. However, the San Diego River Copermittees increasingly want to focus their attention on activities that result in load reductions. This may result in fewer activities targeting this level of effectiveness, depending on the methods used to achieve the load reduction, e.g. structural BMPs typically have no impact at this level.

4.1.3 Level 3 Effectiveness: Behavioral Change and BMP Implementation

It is likely that changes in behavior occurred through implementation of the programs or activities listed in Section 3 that involve stakeholder participation in activities and decision-making processes, as well as the implementation of BMPs to reduce the impacts of urban runoff. These programs also provided information on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed:

- Targeted Inspections
- Cleanup Events
- Think Blue Public Service Announcements
- Park Appreciation Days
- Intergenerational Games
- Outreach on Pet Waste Management
- Outreach to the Equestrian Community

Although no formal quantification was made during this fiscal year, it can be assumed that the Copermittees efforts changed behavior and, thus, had a positive effect on water quality.

4.1.4 Level 4 Effectiveness: Load Reductions

The implementation of BMPs is ultimately aimed at preventing pollutants from entering the storm drain system, which equates to load reduction. Targeting specific pollutants by implementing BMPs to address pollutant sources is an integral component of measuring Level 4 outcomes. Furthermore, quantifying the volume of pollutants that were prevented from entering the storm drain system or receiving water bodies can provide beneficial data that can be used to address broader water quality issues.

Some activities are more conducive to estimating load reductions than others. For example, street sweeping and storm drain cleaning are easily quantified in terms of loads reduced since material is physically removed from conveyances. However, Copermittees generally do not track most jurisdictional activities on a watershed basis. One of the opportunities for improvement identified in the Copermittees' BLTEA is to reconsider the way certain types of program data are tracked. This may involve becoming more geospatial in the way data is collected and presented. Some activities are extremely difficult to analyze in terms of load reductions. For example, the effect that education has on reducing pollutant loads would likely be based on conjecture and gross estimation.

Some of the FY 2009-10 activities with quantifiable load reductions include the following:

- Approximately 83,980 dog waste bags were used, and it is estimated that this equates to the reduction of 21,834 pounds of dog waste collected at County of San Diego park facilities in the San Diego River Watershed.
- Approximately 240,000 dog waste bags were used, and it is estimated that this equates to the reduction of 48,000 pounds of dog waste collected at City of Santee park facilities in the San Diego River Watershed.
- Approximately 12,150 dog waste bags were used, and it is estimated that this equates to the reduction of 3,250 pounds of dog waste collected at City of La Mesa park facilities in the San Diego River Watershed.
- Approximately 40,000 pounds of dog waste were collected at City of El Cajon parks.
- Approximately 40,000 pounds of trash and debris were removed from parks and creeks during various cleanup events in the City of La Mesa.
- Approximately 106,455 pounds of trash and debris were removed in the City of San Diego during various cleanup events, primarily in Mission Valley.
- An estimated 26,840 pounds of trash and debris were removed from various parks and Forester Creek during cleanup events and clean out of the Forester Creek trash barrier in the City of Santee.
- An estimated 283 cubic yards of trash, debris and sediment removed from the trash barrier at Forester Creek in the City of El Cajon.

4.1.5 Level 5 and 6 Effectiveness: Changes in Discharge Quality and Receiving Water Quality

Level 5 outcomes represent changes in the quality of discharges from Copermittee-owned storm drain systems into receiving waters. They differ from Level 4 outcomes in that they represent changes in the cumulative loadings from multiple sources rather than individual sites or facilities. No measurements of changes to discharge quality were taken during FY 2009-10. However, some dry weather monitoring stations in the City of Santee have been eliminated due to several years of no exceedances or no dry weather flows, which suggest some measure of effectiveness within these drainage areas.

Level 6 outcomes describe changes to receiving water quality that result from urban runoff management programs. It can be difficult to distinguish between the beneficial effect of urban runoff management activities and changes in water quality that are due to natural variability or other factors outside the scope of the WURMP. Nonetheless, collection of water quality data is critical to determining the effectiveness of management programs over time. Copermittees throughout the region are working together to collect water quality data and to measure improvement or degradation at the watershed scale. The BLTEA provided the first long-term assessment of changes to receiving water quality. It also incorporated pollutant-loading potentials for significant

sources within the region and established threat-to-water quality (TTWQ) ratings for priority pollutants and sources within each hydrologic sub-watershed identified within the Basin Plan.

Quantifying water quality change requires an analysis of constituents of concern (COCs) in sampled runoff as well as an evaluation of existing information: 303(d) listings, beneficial uses, existing projects and studies, etc. In many cases, sufficient data may not be available from urban runoff monitoring programs to determine whether a water quality problem results in water body impairment. More difficult still is isolating the effect that urban runoff management activities have on observed changes. Stormwater data can vary significantly from storm to storm and it usually takes several years of data to determine whether improvements or degradation are occurring. All of these factors complicate annual water quality assessments. Water quality change is generally assessed on a long-term basis by evaluating trends; more water quality information pertaining to trend analysis is presented in the Weston Monitoring Report.

As a whole, the Copermittees are working to expand the focus of their assessments on demonstrating the watershed-level benefits of program implementation, and will continue to do so under order R9-2007-0001. Indeed, trends in monitoring data from Forester Creek and the San Diego River appear to show positive results from the Forester Creek restoration and other up-gradient BMP implementation. However, annual watershed assessments do not attempt to address the relationship of WURMP implementation to changes in water quality; this analysis will be confined to the Long-Term Effectiveness Assessment process. The Copermittees feel that their efforts demonstrated by Level 1, 2, 3, 4, 5 and 6 data likely had positive effects on water quality and help establish the effectiveness of their San Diego River watershed program. The process also allowed them to thoroughly evaluate the WURMP and make improvements, modifications, and changes to the program as needed.

4.2 ASSESSMENT OF TMDL BMP IMPLEMENTATION PLAN EFFECTIVENESS

At this time, there are no adopted TMDLs currently in effect within the San Diego River WMA. The previously adopted Bacteria TMDL was returned to the CRWQCB by the State Water Resources Control Board for further consideration. The Bacteria TMDL has been revised by the CRWQCB, and is anticipated to go into effect in 2011 after final approval by the Office of Administrative Law. Necessary changes to meet future TMDL specific requirements will be incorporated at that time. Bacteria TMDL requirements are considered when current activities are being planned and implemented.

5.0 PLANNED WATERSHED IMPLEMENTATION ACTIVITIES

5.1 INITIAL ACTIVITY SELECTION

5.1.1 Applicable Strategic Goals

The following Strategic Goals were established in the WURMP and are the targeted outcomes for activity implementation in FY 2010-11.

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water.

- **Strategic Goal 3 - Source Reduction at Commercial/Industrial Land Uses**: By reducing the mass of priority pollutants discharged to Copermittee storm drain systems and receiving waters from commercial and industrial land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 5 – Bacteria Source Reduction**: By reducing the mass of bacteria discharged to Copermittee storm drain systems and receiving waters, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of bacteria to receiving waters. The specific land uses and sources targeted by this Strategic Goal will be selected based on the available data from ongoing monitoring programs and the results of implementing previous Strategic Goals. This goal will also support Copermittee implementation of the Bacteria TMDL when finalized.

5.1.2 Potential Target Sources

Selected activities for FY 2009-10 and 2010-11 generally will target the following land use categories:

- Commercial
- Industrial

Based on the Source Identification Study, the following types of sources represent the top potential targets for exposure reduction and, therefore, load reduction in the commercial/industrial land use category.

- Over-irrigation

- Waste Management/Dumpsters
- Catch Basin Debris
- Outdoor Grease Storage

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for load reduction watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 11 in the WURMP may be used.

- Landscaping
- Animal Facilities
- Gardens/Nurseries

5.1.3 Watershed Priority Pollutants at Target Sources

The following combination of watershed priority pollutants/stressors and target sources will generally be the focal point of collaborative watershed activities generated through the WURMP process:

- Bacteria from applicable facilities as well as from facility-specific types of sources: waste management/dumpsters, grease management, catch basin cleanout, animal/pet food and waste management, soil management/erosion control, and portable bathroom facilities (if present).
- Nutrients from general landscaping at applicable facilities as well as from specific commercial operations: fertilizer storage at retailers, fertilizer storage and application at nurseries/commercial gardens and golf courses; soil and mulch management/erosion control at nurseries/commercial gardens, golf courses and animal facilities; animal waste management at animal facilities; portable bathroom facilities (if present), and vegetative litter.
- Total Dissolved Solids from excessive potable water use.
- Low Dissolved Oxygen from sources of nutrients, sediment and organic matter (see above). Additional sources may include the intentional application to soil of organic compounds or the decomposition of vegetative litter.
- Turbidity from sources of sediment, organic matter and nutrients (see above). Additional sources may result from general housekeeping and human litter.

Bacteria is intended to be the primary pollutant addressed by the current watershed activities, but the other priority pollutants will be addressed as appropriate if they are encountered during implementation of the activities.

5.2 INITIAL ACTIVITY DESCRIPTIONS FOR PLANNING PURPOSES

As part of its planning process, the San Diego River Watershed Copermittees consider a number of watershed activities and have several in various stages of

planning and implementation. The following Watershed Water Quality Activities are currently being considered for implementation during FY 2010-11, or are in the process of development and implementation. Final selection of the proposed activities will be made based on the results of initial planning and baseline activities, and in accordance with the selection process described in Section 4.1.

Water Quality:

- Perform inspections beyond jurisdictional compliance requirements. These inspections may target facilities based on individual history of compliance, geography or facility type. These inspections may also explore the potential for increased frequency of inspection with a smaller scope of inspection to facilitate reduced levels of exposure and, therefore, reduced pollutant loading.
- Promote the installation of weather-based controllers at commercial and industrial facilities with irrigation systems, which may include providing or facilitating subsidies/rebates or other means to increase their use. To the extent practicable, facility selection will be prioritized based on irrigation area/water runoff volumes and proximity to receiving waters.
- Promote the installation of drip irrigation for landscaping instead of spray irrigation, which is more prone to leaks.
- Develop other mechanisms for reducing over-irrigation.

For FY 2010-11, the following Watershed Education Activities are currently being considered for implementation. Final selection of the proposed activities will be made in each fiscal year based on the results of initial planning and baseline activities and in accordance with the selection process described previous in Section 4.1.

Education:

- Develop pet waste training presentation and materials to educate the public on the importance of cleaning up after their pets. Work with local retail and commercial pet facilities to educate the public.
- Educate facilities targeted for additional inspections regarding BMPs during compliance inspections. This will also serve as an opportunity to identify potential sources at these facilities not sufficiently addressed by current BMPs and to request advice from knowledgeable facility personnel regarding other ways to reduce pollutant discharges.
- Develop and implement industry training seminars targeting specific industry groups and activities.

5.3 PLANNING AND BASELINE ACTIVITIES

The most significant activity conducted during FY 2008-09 and finalized during FY 2009-10 that will serve as baseline data for activities in subsequent fiscal years is

the source identification study conducted in a coordinated manner by all five jurisdictions in the watershed.

- Source Identification Study: This is a critical activity that supports Copermittee decision-making regarding load reduction activity selection and implementation. The Copermittees, in particular the City of San Diego, are collectively spending over $200,000 to identify sources of pollutants, specifically bacteria, in the lower San Diego River watershed. The City of San Diego has modeled this study after its Tecolote Creek Microbial Source Tracking Study with a similar design and intent, but will also include watershed-specific priority pollutants. The study assessed more than 15 San Diego River sites during two dry weather monitoring events. Specific likely sources, including industrial, residential, commercial and transport areas were investigated during dry weather. During wet weather, river monitoring locations were investigated with the collection of pollutograph samples. In addition, wet weather loads from specific likely sources were investigated. During both dry and wet weather assessments, the presence of fecal indicator bacterial, as well as human-specific indicators, were assessed together with TDS, phosphorus and DO.

The following planning activities are currently being explored during FY 2009-10 in order to facilitate implementation of Watershed Water Quality and Education Activities in 2010-11:

- The Copermittees regard the implementation activities conducted during FY 2009-10 as experiments that can be used to develop additional variations on these activities in FY 2010-11, targeting the same sources but experimenting with new techniques, to reduce pollutant exposure and loading in the watershed.
- The Copermittees will review the results of previous commercial/industrial inspections to identify appropriate inspection targets on both a jurisdictional and watershed basis. The Copermittees may work with the water districts to identify the largest (by volume) commercial or industrial water users within the watershed and then work with other readily available data sources to develop methods for prioritizing users most likely to generate large volumes of runoff as targets for weather-based controller rebates/installation. The Copermittees will also develop methods for estimating pollutant loading reductions from the estimated or measured reduction in runoff volumes.
- Baseline surveys of attitudes and behavior may be conducted for initial target audiences, such as golf course managers, animal/pet facility managers, nursery/garden center managers and property managers. Surveys of additional potential target audiences may be conducted as needed in order to develop a final list of sources targeted for watershed water quality and education activities.

5.4 IMPLEMENTATION ACTIVITIES

For FY 2010-11, the Copermittees will be focusing their watershed activities on improving the results of commercial/industrial inspections by experimenting with various methods of adjusting inspection programs above and beyond jurisdictional requirements in the permit. These will include geographic based inspections by the City of San Diego and targeted inspections based on history of compliance by the City of Santee. Other inspection programs are being developed based on facility type. These inspections will also experiment with reduced scope of inspection by focusing on readily visible outdoor sources. All the inspection programs will be targeting high priority pollutants and high priority sources as identified in the Source Identification Study.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The San Diego River Watershed Copermittees implemented a number of Water Quality and Education activities designed to improve water quality in FY 2009-10. As described in Section 3 of this Annual Report, the WURMP Workgroup is working diligently and across jurisdictional boundaries to develop and implement watershed activities that address the specific water quality problems of the San Diego River watershed. In addition, the Copermittees are working to improve the Program's iterative planning, implementation and assessment processes. As the new WURMP process is implemented and refined, the planned collaborative efforts will help to raise the effectiveness of the Copermittee programs. The Copermittees will continue to refine and improve the San Diego River WURMP each year. In one example, the Copermittees agreed last year to extend for another year its focus on industrial/commercial land uses with its watershed activities.

In addition, although not technically a watershed activity as defined by the permit, the San Diego River Watershed Copermittees spent considerable time and money in FY 2008-09 implementing a collaborative Source Identification Study throughout the watershed, and in FY 2009-10 assessing the results. Led by the City of San Diego, this successful effort included water quality sampling in multiple jurisdictions and focused on sources of priority pollutants specific to this watershed, especially bacteria. The results of this study will serve as the foundation for the selection, planning and implementation of watershed activities throughout the rest of this permit cycle, and has already impacted the activity development for FY 2009-10.

6.2 RECOMMENDATIONS

Based on these conclusions, the Copermittees present the following recommendations.

Continue using the WURMP Strategic Goals to facilitate coordinated and collaborative planning, implementation (as appropriate) and assessment efforts across jurisdictional boundaries. The San Diego River Watershed Copermittees have committed to making the effort to coordinate their activities as much as reasonably possible. The Strategic Goals provide a common focal point and direction for the activity development process. Because it is a group process designed to coordinate our efforts, the development of activities, even with the Strategic Goals as guides, is a slower process than one in which each jurisdiction simply selects individual watershed activities. However, based on our experience so far, the San Diego River Watershed Copermittees believe it will yield better results.

Use the results of the Source Identification Study to Guide Future Activity Selection and Implementation. The most important contribution the watershed programs can make towards protecting Beneficial Uses and improving water quality in the San Diego River Watershed (or any watershed) is to increase understanding of the water quality issues in the watershed (i.e., the sources and magnitude of the issues). This will enable the Copermittees, other entities, and interested members of the public (their watershed partners) to make more informed decisions and take effective action to reduce pollutant loads. This is particularly true for bacteria, which has complicated fate, transport and re-growth mechanisms that are not well understood.

The Copermittees are planning to use the results of the Source Identification Study in FY 2010-11 to address specific commercial sources of pollutants identified as highest priority, including dumpsters/waste management, catch basin maintenance and outdoor grease storage areas. In addition, this study was the basis for the Copermittees' decision to change the implementation schedule of the Watershed Strategic Goals so that commercial/industrial sources will be addressed over a two year timeframe instead of just one. The Copermittees believe this study will improve their ability to select and implement watershed activities that will result in measurable load reductions.

7.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region (CRWQCB). 2007, Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District and the San Diego County Regional Airport Authority

City of El Cajon, City of La Mesa, City of Santee, City of San Diego and County of San Diego (City of El Cajon et al.), 2008, San Diego River Watershed Urban Runoff Management Plan, March 2008.

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Weston Solutions, 2011, San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Report, Prepared for County of San Diego, January 2011.

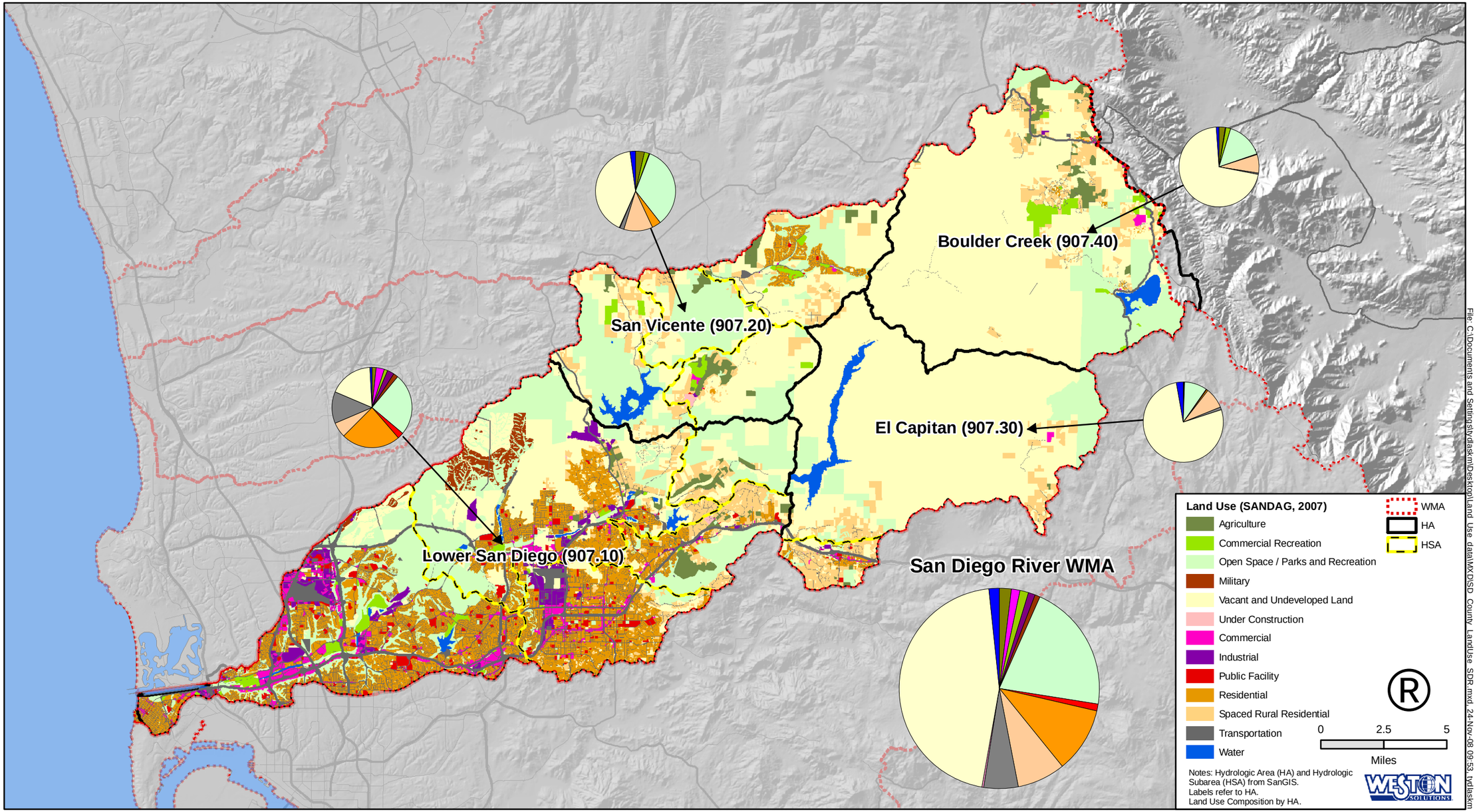
Boulder Creek (907.40)
San Vicente (907.20)
El Capitan (907.30)
Lower San Diego (907.10)
San Diego River WMA
Land Use (SANDAG, 2007)
Agriculture
Commercial Recreation
Open Space / Parks and Recreation
Military
Vacant and Undeveloped Land
Under Construction
Commercial
Industrial
Public Facility
Residential
Spaced Rural Residential
Transportation
Water
WMA
HA
HSA
0
2.5
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Miles
Notes: Hydrologic Area (HA) and Hydrologic Subarea (HSA) from SanGIS.
Labels refer to HA.
Land Use Composition by HA.
WESTON SOLUTIONS
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APPENDIX A

PROGRAM ACTIVITY SUMMARY DESCRIPTIONS FOR FISCAL YEAR 2009-10

Watershed Activities Matrix for 2009-10 Activities

	ACTIVITY NAME	Collaborative Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2009-10							2009-10* Activity Status for Fiscal Year	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
Special Studies / Source ID / Pollution Reduction	**Activities to Address High Priority TTWQ Sources:**																		
	Additional Dry Weather Monitoring (City of La Mesa)		X		X	X	X	X	X	X	X	X			X			O	Appendix A-1
	Adopt a Park/Adopt A Block (City of La Mesa)		X		X	X		X		X	X			X		X	X	O	Appendix A-2
	Bacteria Source Investigation Tracking Study (City of San Diego)		X		X							X	X		X			O	Appendix A-4
	Canine Corners Harry Griffith Park (City of La Mesa)		X		X	X		X						X		X	X	O	Appendix A-5
	Coastal Cleanup Day Sponsorship - University Channel & Alvarado Channel (City of La Mesa)		X		X			X	X		X			X		X	X	O	Appendix A-7
	Forrester Creek Homeless Encampment Removal Project (City of El Cajon)		X		X				X					X	X		X	O	Appendix A-8
	I Love a Clean San Diego Creek to Bay Cleanup Event Sponsorship (County of San Diego, City of La Mesa, City of San Diego)	X			X			X	X		X			X		X	X	O	Appendix A-9A and A-9B
	Increase in Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas (City of Santee)		X		X							X			X			O	Appendix A-10
	Park Appreciation Days (City of La Mesa)		X		X	X		X	X	X	X			X		X	X	O	Appendix A-11
	Prevention of the Release of Pet Fecal Matter in Public Parks (Cities of El Cajon, La Mesa, Santee, and County of San Diego)	X			X			X						X		X	X	O	Appendix A-13
	San Diego River Park Foundation Cleanup Event Sponsorship (City of San Diego)		X		X				X		X			X		X	X	O	Appendix A-14
	San Diego River Watershed Targeted Inspection (City of San Diego)		X		X	X	X		X	X			X		X	X	X	O	Appendix A-15
	San Diego Riverbed Homeless Encampment Removal Project (City of Santee)		X		X				X				X				X	O	Appendix A-16
	Trash Removal Activities in Santee (City of Santee)		X		X				X					X		X	X	O	Appendix A-17
	Municipal Park Runoff Minimization (City of San Diego)		X		X						X							O	Appendix A-50
	Qualcomm Stadium Trash BMP Installation (City of San Diego)		X		X			X	X	X	X							O	Appendix A-52
	Robb Field Stormwater Reuse (City of San Diego)		X		X						X							O	Appendix A-53
	Stormwater Quality Master Plans for Special Drainage Fee Areas (County of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-55
	Invasive Species Removal (County of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-57
	Additional Wet and Dry Weather Monitoring (County of San Diego)		X		X	X	X	X	X	X	X	X			X			O	Appendix A-59
	Municipal Park Inspections (Cities of El Cajon, La Mesa, Santee and County of San Diego)	X			X	X	X	X	X	X		X	X		X		X	O	Appendix A-60
	Irrigation Runoff Reduction (City of Santee)		X		X	X	X		X	X	X							O	Appendix A-62
	Commercial BMP Self Certification Pilot Project (City of La Mesa)		X		X	X	X	X	X	X	X				X	X	X	N	Appendix A-63
	Think Blue Trash Abatement Partnership (City of San Diego)		X		X						X							N	Appendix A-68
	Pet Waste Bag Dispenser (City of San Diego)		X		X						X							N	Appendix A-69
	Activities to Address Watershed High Priority Pollutants:																		
	Cabrillo Heights Park Rain Garden Infiltration Project - LID pilot (City of San Diego)		X		X						X							O	Appendix A-19
	Coastal Cleanup Day Sponsorship (City of San Diego)		X		X				X					X		X	X	O	Appendix A-20
	Land Acquisitions MSCP (County of San Diego)		X		X	X	X	X	X	X	X			X			X	O	Appendix A-23
	Maintenance/Inspections of Forrester Creek Trash Barriers (Cities of El Cajon and Santee)		X		X				X				X	X			X	O	Appendix A-24A and A-24B
	Municipal Rain Barrel Installation (City of San Diego)		X		X									X			X	O	Appendix A-25
	Park Ridge Blvd Bacteria Treatment Project (City of San Diego)		X		X						X							O	Appendix A-26
	Median Sweeping Pilot Study (City of San Diego)		X		X	X	X	X	X	X	X	X	X	X			X	C	Appendix A-30
	Woodside Avenue Detention Basin (County of San Diego)		X			X	X			X		X	X	X			X	O	Appendix A-32
	Strategic Plan Implementation (City of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-48
	Additional Receiving Water Monitoring (City of Santee)		X		X	X	X	X		X	X	X						O	Appendix A-49
	San Diego River Park Foundation Cleanup Event (County of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-58
	Allied Gardens Green Lot (City of San Diego)		X		X	X	X	X		X	X							N	Appendix A-65

Watershed Activities Matrix for 2009-10 Activities

	ACTIVITY NAME	Collaborative Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2009-10							2009-10* Activity Status for Fiscal Year	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
	Complex Street Green Mall (City of San Diego)		X		X	X	X	X		X	X							N	Appendix A-66
	Famosa Slough Erosion Sediment Control (City of San Diego)		X							X	X							N	Appendix A-67
	Residential Rain Barrell Subsidies and Distribution (County of San Diego)		X		X	X	X	X	X	X	X					X		N	Appendix A-71
	Addition of Infiltration Strips to Concrete Channels (City of Santee)	X	X	X	X	X	X	X	X	X	X							F	Appendix A-72
Land Use Activities																			
Education Activities	Focused Outreach to Equestrian Community (County of San Diego)		X		X		X		X		X					X		N	Appendix A-70
	Karma/Karma Second Chance Public Service Announcements (City of San Diego)		X		X				X							X		O	Appendix A-36
	Kids Care Fest (City of La Mesa)		X		X	X	X	X		X	X					X		O	Appendix A-64
	Oktoberfest (City of La Mesa)		X		X	X	X	X		X	X					X		O	Appendix A-39
	Public Presentations, Outreach and Media (City of Santee)		X		X	X	X	X	X	X						X		O	Appendix A-42
	San Diego River Restaurant BMP Booklet (City of San Diego)		X		X				X							X		O	Appendix A-43
	San Diego River Watershed Erosion and Sedimentation Poster (City of San Diego)		X		X					X						X		O	Appendix A-44
	San Diego River Watershed Brochure (City of San Diego)		X		X	X	X	X	X	X	X					X		O	Appendix A-54
	Pet Waste Outreach (County of San Diego, Cities of San Diego, El Cajon, Santee and La	X			X					X	X					X		N	Appendix A-56
Public Participation	San Diego River Coalition Meetings (all)	X			X	X	X	X		X	X					X		O	Appendix A-45
	Project Clean Water - San Diego River Watershed Website (all)	X			X	X	X	X		X	X					X		O	Appendix A-46
	Public Participation (City of Santee)		X		X	X		X	X		X					X		O	Appendix A-47
Administrative Activities																			

* N = New; O = Ongoing; C = Completed or Cancelled; F = Future

FY 2009–2010 Water Quality Activity

TITLE: Additional Dry Weather Monitoring

PROJECT SUMMARY

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies and identifying pollutant sources. Consequently, the City conducted additional non-storm water quality monitoring within the San Diego River Watershed. The purpose of the study was to evaluate the water quality of the discharged flow. Two sampling locations were identified within the Alvarado Drainage Basin. All water samples during this study were taken in June 2010 and were evaluated for the same suite of constituents measured in the City's annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303 (d) listings constituents, and watershed constituent of concerns as reported in the WURMP. This included measuring flow, temperature, pH, conductivity, turbidity, nitrate, ammonia, orthophosphate, dissolved oxygen, and MBAS in the field and total hardness, dissolved metals, chlorpyrifos, diazinon, surfactants, oil and grease, TDS, TSS, total coliform, fecal coliform, and enterococcus bacteria in the laboratory. Results have been received and are being analyzed.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

This activity is above and beyond the Dry Weather Field Screening and Analytical Monitoring Program. Analyzing samples of non-storm water discharge from two locations within the San Diego River Watershed provides insight into water quality leaving the City of La Mesa. It also enables the City to conduct potential follow-up investigation of potential pollutant sources. Monitoring is intended as a long-term activity; however, sampling locations may vary each year. This activity is consistent with WURMP Strategic Goals 2 through 5.

ACTIVITIES CONDUCTED DURING 2009-2010

The following activities were conducted during 2008-2009:

- Identified two discharge locations to monitor within watershed.
- Conducted sampling in June 2009 inclusive of field monitoring and laboratory analysis.
- Prepare letter report analyzing data.

FY 2009–2010 Water Quality Activity

TITLE: Adopt A Park/Adopt A Block

PROJECT SUMMARY

The City of La Mesa has encouraged the public to participate in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers as part of the Adopt-a-Park and Adopt-a-Block Program. Volunteers are encouraged to routinely pick trash from various parks within the watershed or along their block. There are seven parks within the San Diego River Watershed that are maintained by the volunteer groups. Although specific amount of debris collected is not recorded, the groups' efforts are considered a load reduction from debris entering the storm drain system and receiving water body. Volunteers logged over 2,000 service hours of time under these programs during this reporting period.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- DO (high priority)
- Turbidity

HOW THIS ACTIVITY RELATES TO THE WATERSHED

There are seven parks and numerous residential areas located within the San Diego River Watershed. Volunteers assigned to parks or within residential areas, routinely collect trash and debris within the watershed. These efforts result in a reduction of debris entering the storm water conveyance system and receiving water. Removal of debris constitutes a reduction in pollutants that are sources of bacteria, TDS and may reduce turbidity or low oxygen concentration in receiving waters due to eutrophication. This activity is considered by the City as a long-term watershed activity.

ACTIVITIES CONDUCTED DURING 2009-2010

The following activities were conducted during this reporting period 2009-2010:

- Group organized to collect trash and debris from parks and neighborhood blocks, routinely
- Trash and debris removed from parks and street blocks, and disposed of appropriately.

TITLE: **Source Tracking Investigation Phase II 2010**
ID NUMBER: **SDR-A4**

ACTIVITY IMPLEMENTATION

Phase II San Diego River Source Tracking Investigation was conducted within the City of San Diego's jurisdiction in the San Diego River Watershed Management Area (WMA). The purpose of this investigation was to monitor for fecal bacteria, total dissolved solids (TDS), Total Phosphorus, Nitrogen compounds, total suspended solids, total and dissolved metals, and pesticides. Samples were collected during two storm events. Cleaning of 13 catch basins was performed during dry weather and samples were collected during the cleaning efforts. The objective of the study was to understand the implications of future total maximum daily loads (TMDLs) for fecal bacteria including *Bacteroids*, total dissolved solids (TDS), phosphorus, and dissolved oxygen (DO). The monitoring results provide the basis to assess the land uses and related activities which contribute bacteria to the San Diego River WMA.

Results and Findings

Wet weather monitoring:

- The lowest bacteria loads were found at Site 6 at the jurisdictional boundary with La Mesa. However, during the second wet weather sampling event, the majority of samples collected from this jurisdictional boundary were positive for human-specific *Bacteroides* (an indicator for recent human fecal contamination), suggesting the presence of human fecal matter in the wet weather flows from upstream of the City. Further investigation upstream of this sampling location should be undertaken to investigate and confirm the source of this contamination, which may include homeless populations living within the river floodway, groundwater / septic systems, sanitary sewer systems, and/or illegal dumping.
- Site 9 (at the jurisdictional boundary with the City of Santee) had the highest loads of dissolved orthophosphate, total Kjeldahl nitrogen (TKN), and total nitrogen.
- Site 2 (at the base of the watershed) had the highest loads of nitrite, total phosphorus, total orthophosphate and total dissolved solids (TDS) compared with other subdrainages, or sectors.

Dry weather monitoring:

- Standard mechanical catchbasin cleaning, as conducted by the City on an annual basis, appears to effectively reduce pesticide concentrations in dry weather flows.
- Standard catchbasin cleaning, which involves the removal of large solids only, was not found to be effective in the reduction of bacterial concentrations.
- Intensive cleaning, using vacuum and steam cleaning was conducted at three catchbasin locations. One of the three locations was shown to have

a decrease in enterococci concentrations. The other two sites did not have high enough bacteria concentrations to evaluate any significant decreases in indicator bacteria concetrations.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

A Monitoring Plan for Phase II of the San Diego River Source Tracking Investigation was completed in FY 2010. Monitoring occurred in FY 2010 and reporting will be completed in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego River, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness is not being assessed as this study is neither an implementation nor education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

FY 2009–2010 Water Quality Activity

TITLE: Canine Corners Harry Griffen Park

PROJECT SUMMARY

The City of La Mesa has encouraged the public to participate in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers known as the Canine Corners to clean up pet waste at Harry Griffen Park. This park is located within the San Diego River Watershed. Although the specific amount of pet waste is not recorded, the group's effort is considered a load reduction for pet waste and a potential reduction in bacteria entering into the storm drain conveyance system.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Dissolved Oxygen (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

Harry Griffen Park is located within the San Diego River Watershed. A volunteer group known as the Canine Corners, collect pet waste routinely from the park and dispose of it appropriately. These efforts result in a reduction of pet waste entering the storm water conveyance system and receiving water. Pet waste is considered a source that contributes to elevated levels of bacteria, reduction in dissolved oxygen and increased total dissolved solids. This is considered by the City as a long-term activity.

ACTIVITIES CONDUCTED DURING 2009-2010

The following activities were conducted during this reporting period 2009-2010:

- Group organized to routinely remove pet waste.
- Pet waste removed from park and disposed of appropriately.

FY 2009–2010 Water Quality Activity

TITLE: Coastal Cleanup Day Alvarado Channel

ACTIVITY SUMMARY

The City of La Mesa supported and participated in the California Coastal Cleanup Day conducted on September 19, 2009 in coordination with I Love a Clean San Diego and San Diego Coastkeeper. A poster specifying date and time for the clean up was placed on the City's bulletin board. California Coastal Cleanup Day is one of the most successful large-scale cleanup projects in the Country. This event enlists thousands of volunteers throughout the state to clean up over 700 polluted coastal and inner-coastal areas. Volunteers met at a designated site in Alvarado Channel to collect debris during this reporting period.

PARTICIPATING JURISDICTIONS

- City of La Mesa
- Volunteers from other jurisdictions

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- Dissolved Oxygen (high priority)
- Gross Pollutants/Trash

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The California Coastal Cleanup Day at Alvarado Channel is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. 20 pounds of trash and debris were collected by 9 volunteers during this event. Although the weight was low, hundreds of small items like cigarette butts were collected. A San Diego River Watershed fact sheet was also provided to volunteers at the Alvarado Channel site and the City's Storm Water Program Manager discussed watershed concepts and concerns prior to commencement of the cleanup. This activity is conducted on an annual basis and considered as a long-term activity to reduce trash and debris in receiving water bodies.

TASKS IMPLEMENTED DURING 2009-2010

The following tasks were implemented as part of the Coastal Cleanup Day at Alvarado Channel during 2009-2010:

- Advertising and placing posters for the event on the bulletin board, and in other City Facilities.
- Sponsored the event with $1,000
- Encouraged the public to participate in the event.

- Participated in the event collecting trash and debris in Alvarado Channel; an estimated 20 pounds of trash was collected.
- Provided watershed specific fact sheets and educated volunteers on watershed concepts and concerns at Alvarado Channel site.

FY 2009–2010 Water Quality Activity

TITLE:Forrester Creek Homeless Encampment Removal Project

ACTIVITY SUMMARY

The City's Public Works Department and the El Cajon Police Department coordinated efforts and conducted nine (9) homeless encampment sweeps along Forrester Creek within the City's jurisdiction. After the removal of illegal encampments, trash and debris was collected and removed from Forrester Creek.

PARTICIPATING JURISDICTION

- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Bacteria (high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The sweeps were conducted during the 2009-10 reporting period and targeted homeless camps along Forrester Creek and tributaries. During most of the sweeps, the Police encountered transients and their camps and took appropriate law enforcement action; Public Works maintenance crews then removed the trash and encampment items used for the illegal lodging. The encampment removal contributed to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2009-2010

The following tasks were conducted as part of the Encampment Removal activities during fiscal year 2009- 2010:

- Removal of trash and debris = 24 Cubic Yards (Cumulative)

FY 2009–2010 Water Quality Activity

TITLE: Creek to Bay Cleanup

ACTIVITY SUMMARY

The City of La Mesa supported and participated in the Creek to Bay Cleanup conducted on April 24, 2010 in coordination with I Love a Clean San Diego. A poster specifying date and time for the clean up was placed on the City's bulletin board. 23 Volunteers from the City met along Alvarado Channel in La Mesa from 9am to 12pm to collect trash and debris along the channel.

PARTICIPATING JURISDICTIONS

- City of La Mesa
- Volunteers from other jurisdictions

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- DO (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The Creek to Bay Cleanup is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. A total of 475 pounds of trash and debris were collected during this event. A San Diego River Watershed fact sheet was provided to volunteers at the cleanup. This activity is considered a long-term activity to reduce pollutants from entering receiving water bodies.

TASKS IMPLEMENTED DURING 2009-2010

The following tasks were implemented as part of the Creek to Bay Cleanup during 2009-2010:

- Advertised and placed posters for the event on the bulletin board.
- Sponsored event for $1,000.
- Encouraged the public and City employees to participate in the event, which included 23 participants.
- Provided watershed specific fact sheets to volunteers.
- Participated in the event collecting trash and debris along Alvarado Channel. An estimated 475 pounds were collected.

TITLE: **I Love a Clean San Diego Trash Cleanup Sponsorship**
ID #: **SDR-A9B**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 24, 2010. The City of San Diego (City) sponsored the Mission Valley Preserve site in the San Diego River Watershed Management Area (WMA). Approximately 202 volunteers removed 8,400 lbs of trash and over a half-mile area.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2010 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Diego River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the San Diego River WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	8,400 lbs
	Pounds of trash recycled (Outcome Level 4)	0 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	8,400 lbs
	Number of participants (Outcome Level 1)	202
	Amount of money spent on cleanups for all watersheds (Outcome Level 1)	$30,000
	Estimated Amount of money spent on cleanups for the San Diego River watershed management area (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	$0.60/lb

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On April 24, 2010, 202 participants removed approximately 8,400 pounds of trash and debris from numerous sites in the San Diego River WMA. The average estimated sponsorship cost was $5,000 per watershed ($30,000/6 watersheds). Thus, there was a 8,400 pound load reduction associated with sponsorship per yearly event, and an efficiency of $0.60 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Diego River WMA by the total pounds of trash removed and recycled.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2010.

FY 2009–2010 Water Quality Activity

TITLE: Increased Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas

ACTIVITY SUMMARY

The San Diego Municipal Storm Water Permit (Orders No. 2001-01 and 2007-0001) requires Copermittees to conduct annual dry weather monitoring. In an effort to better track and eradicate bacteria as well as other pollutants of concern, the City of Santee conducts an additional round (total of two rounds) of dry weather monitoring each year.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

Fecal coliforms are designated as a 303 (d) impairment in the San Diego River. The City of Santee is required to conduct dry weather monitoring of bacterial indicators once a year under its municipal permit. Bacterial indicators monitored included total coliforms, fecal coliforms and enterococci. Additional monitoring will be conducted on behalf of the City of Santee to facilitate the detection of illegal connections and discharges of fecal matter to the MS4. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2009-2010

Two rounds of dry weather monitoring for bacterial indicators (only one is required under the municipal permit).

FY 2009–2010 Water Quality Activity

TITLE: Park Appreciation Day

PROJECT SUMMARY

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies. Consequently, the City has organized a Park Appreciation Day for volunteers to remove trash and debris from local parks. Park Appreciation Day takes place once a year and is independent of the Adopt-A-Park Program. This event took place on October 24, 2009. The event was held at seven parks located within the San Diego River Watershed in La Mesa. The amount of debris removed during Park Appreciation Day was 12.9 tons.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- DO (high priority)
- Turbidity/TSS
- Trash (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

There are seven parks in the City of La Mesa that fall within the San Diego River Watershed. Organization of the Park Appreciation Day enabled residents to participate in cleaning up the environment with in the San Diego River Watershed. Trash and debris as well as green waste was collected and disposed of appropriately. This event is considered a long-term annual activity.

ACTIVITIES CONDUCTED DURING 2009-2010

The following activities were conducted during this reporting period 2009-2010:

- Cleaned seven parks within the San Diego River Watershed.
- Collected approximately 12.9 tons of trash and debris.
- Watershed related information was conveyed by group leaders to all participants.

FY 2009–2010 Water Quality Activity
TITLE: Pet Waste Bacterial Load Reduction/Doggie Bag Dispenser Program

ACTIVITY SUMMARY

The installation of "Doggie Bag" dispensers provides pet owners with bags to collect their pet's fecal matter for proper disposal (i.e., in a trash bin). This reduces the accumulation of pet fecal matter in public places, which otherwise would eventually be washed into storm drain facilities and into the watershed. An additional benefit is public health, as it prevents other park users (such as children) coming into contact with the excrement.

This activity is also associated with public awareness and outreach. By placing the dispensers and accompanying signage, including municipal code sections, the public becomes aware that not picking up after their pets is a violation of the municipal code and negatively impacts the environment.

PARTICIPATING JURISDICTIONS

- County of San Diego
- City of Santee
- City of La Mesa
- City of El Cajon

WATERSHED PRIORITY WATER QUALITY PROBLEMS ADDRESSED

- Bacteria (high priority)
- Dissolved Oxygen (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The Pet Waste Bacterial Load Reduction Program is considered an important activity in the watershed because it will reduce bacteria and oxygen demand loads into the storm drain system. This is a long-term activity; however, it will be assessed and adjusted on an annual basis through the annual reporting process. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will thereby result in the reduction of a source of pollutants, most notably bacteria and nutrients, which could be released into the watershed. This activity is also consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2008-09

The following tasks were implemented during FY 2008-09 as part of the Pet Waste Bacterial Load Reduction Program in the San Diego River Watershed:

County of San Diego

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks). During the FY 2008-09 reporting period, the County added two new dispensers

and continued to maintain 28 dispenser stations at a total of 11 parks within the San Diego River Watershed. Dispenser locations include:

• Cactus Park (2 new dispenser, 3 total dispensers)
• Flinn Springs Park (3 dispensers)
• Dos Picos Park (4 dispensers)
• El Monte Park (2 dispensers)
• Heritage Park (1 dispenser)
• Lank Jennings Park (3 dispensers)
• Lindo Lake Park (3 dispensers)
• Louis A. Stelzer Park (1 dispenser)
• Oakoasis Park (1 total dispenser)
• Rios Canyon Sports Park (1 dispenser)
• William Heise Park (6 dispensers)

These stations distributed approximately 83,980 bags, preventing an estimated 21,834 pounds of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

• Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
• Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TASKS IMPLEMENTED DURING FY 2009-10
The following tasks were implemented during FY 2009-10 as part of the Pet Waste Bacterial Load Reduction Program in the San Diego River Watershed:

County of San Diego
The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks). During the FY 2009-10 reporting period, the County continued to maintain 28 dispenser stations at a total of 11 parks within the San Diego River Watershed. Dispenser locations include:

Facility Name	FY 2009-10		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Cactus Park	3	9,690	1,938
Dos Picos Park	4	9,690	1,938
El Monte Park	2	6,460	1,292
Flinn Springs Park	3	9,690	1,938
Heritage Park	1	3,230	646
Lake Jennings Park	3	9,690	1,938
Lindo Lake Park	3	9,690	1,938
Louis A. Stelzer Park	1	6,460	1,292
Oakoasis Park	1	3,230	646
Rios Canyon Sports Park	1	3,230	646
William Heise Park	6	12,920	2,584
Total	**28**	**83,980**	**16,796**

These stations distributed approximately 83,980 bags, preventing an estimated 16,796 pounds of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

• Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
• Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

City of Santee
The City of Santee maintained "Doggie Bag" dispensers at all public parks, along Forester Creek and along Cuyamaca Street, a popular dog walking location. Additional Doggie Bag dispensers were installed at Mast Park (4 dispensers), Big Rock Park (1 dispenser), West Hills Park (1 dispenser), Woodglen Vista Park (2 dispensers) and Magnolia Avenue at Princess Joann (1 dispenser). The City encourages residents to cleanup after their pets. Approximately 240,000 bags were used during this reporting period. Using the results of the San Elijo study, this is estimated to represent approximately 48,000 pounds of pet waste eliminated from the watershed, which

constitutes a load reduction in both pet waste and bacteria from entering the storm water conveyance system.

City of La Mesa
The City of La Mesa maintains pet waste bag dispensers throughout all City parks with half the parks in the City located in the San Diego River Watershed. The City encourages residents to clean up after their pets. Approximately 12,150 bags were used during this reporting period. Using the results of the San Elijo study, this is estimated to represent approximately 3,250 pounds of pet waste eliminated from the watershed, which constitutes a load reduction in both pet waste and bacteria from entering the storm water conveyance system.

City of El Cajon
“Doggie Bag” dispensers were set up at Wells Park – Dog Park to provide pet owners with bags with which they can collect their pet’s fecal matter for proper disposal (i.e., in a trash bin). During the 2009-2010 reporting period, the City conducted provision and maintenance of doggie bag dispensers at the Dog Park. It is estimated that City Parks crews removed over 40,000 pounds of pet waste from pet waste dispensers.

TASKS PLANNED FOR IMPLEMENTATION DURING FY 2010-11
Copermittees involved will continue to maintain “Doggie Bag” dispensers and to monitor the usage of bags. In addition, jurisdictions will increase the number of dispenser locations as appropriate. For example, the County has established a jurisdictional goal for this five-year permit cycle to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

EFFECTIVENESS ASSESSMENT
Effectiveness assessments for each jurisdiction’s pet waste bacterial load reduction activities are discussed in the implementation section above.

FY 2009–2010 Water Quality Activity

TITLE: **San Diego River Park Foundation Cleanup Event Sponsorship**
ID NUMBER: **SDR-A14**

ACTIVITY DESCRIPTION

The City of San Diego (City) will partner with the San Diego River Park Foundation (SDRPF) in an effort to help raise awareness of the pollution, bacteria, and sediment issues affecting the San Diego River. The City will provide funding for a number of SDRPF initiatives, including the annual River Days event designed to promote awareness of the pollution issues surrounding the San Diego River. Additionally, funding will support the SDRPF's Clean and Green Team, a volunteer program designed to remove trash and plant native plants within the San Diego River Watershed Management Area (WMA). Funding will also be used to support public cleanups and other educational endeavors.

FY 2010 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for the Clean and Green Team. Funding went to:

- removal and hauling of debris;
- purchase of tools and supplies;
- printed materials for volunteers; and
- staff time at the events.

The City sponsored twenty-eight cleanup events. A total of 93,775 pounds of trash was removed and 6,087 hours of volunteer service occurred through the twenty-eight cleanup events.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2011 and beyond. Cleanups will be scheduled as appropriate. Trash Cleanup Events efforts take place throughout the year, and River Days is scheduled to occur in May of each year.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation
- REI
- Union Bank of California

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria as a high priority water quality problem in the San Diego River WMA. Providing funding to SDRPF will increase awareness of the bacteria and pollution issues surrounding the San Diego River, and the various cleanup initiatives will assist in reducing pollution throughout the San Diego River WMA.

Partnership with SDRPF will provide funding to address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By decreasing the amount of trash, bacteria loads are reduced. Funding SDRPF's public education and outreach programs will help increase awareness of the pollution issues affecting the San Diego River and foster appropriate behavior change.

EFFECTIVENESS MEASUREMENTS

Watershed: San Diego River		
SDRPF CLEANUP SPONSORSHIPS Assess the Efficiency and Effectiveness of Sponsoring Local Organization's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	93,775 lbs
	Number of volunteer hours (Outcome Level 1)	6,087 hours
	Total amount of money spent on twenty-eight cleanups (Outcome Level 1)	$33,000
	Activity Efficiency (Total Cost/Total Pounds of Trash and Debris Removed and Recycled)	$0.35/lbs
Recommended Data	• Number of participants (Outcome Level 1)	

[1] http://www.epa.gov/owow/oceans/debris/

Objectives
The goal of this assessment is to determine the load reduction effectiveness and efficiency of the sponsored cleanup.

Analysis and Results
FY 2010 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for annual river clean-ups and other activities, the purchase of supplies, trash removal and disposal, volunteer support, and direct staff support of program. The City sponsored twenty-eight events. Over the course of the twenty-eight events, 93,775 pounds of trash were removed and 6,087 hours of volunteer service occurred. The efficiency of the twenty-eight cleanup events was $0.0.35 per pound, calculated by dividing the total sponsorship cost by the total pounds of trash and debris removed and recycled during all twenty-eight events.

Conclusions
This activity fulfills a watershed water quality activity for FY 2010 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction during this reporting period.

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2011 and beyond. Cleanups will be scheduled as appropriate. Clean and Green Team efforts take place throughout the year, and River Days is scheduled for May of each year. Implementation and assessment of load reduction and efficiency of these cleanups will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time. Effectiveness of public outreach and educational will be measured via citywide surveys comprised of residents in the San Diego River WMA to determine awareness and knowledge retention of water quality issues, as well as changes in behavior. Additionally, water quality monitoring will be conducted throughout the San Diego River WMA to determine whether improvements have occurred.

FY 2009–2010 Water Quality Activity

TITLE: **San Diego River Geographically Based Business Property and Facility Inspections**
ID NUMBER: **SDR-A15**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What activities and locations at businesses should be targeted during the inspection based on severity of observed/report issues?
2) Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?
3) Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?

The City delineated a specific area within the San Diego River WMA. Inspections were conducted within this geographic area, both inspecting properties as a whole, and evaluating and inspecting individual businesses regardless of whether they were included in the City's commercial/industrial inventory. A mixture of individual businesses and multi-suite complexes, such as industrial parks and shopping centers, were located in this selected geographic area. Two types of data collection were performed at the overall property level: geographic property evaluations and property inspections. Two types of additional data collection at the individual business level on these properties were also conducted: pre-contact and post-contact inspections. Details of these evaluations and inspections are included below:

- Property level data collection:
    - Geographic property evaluations, referred to as "geographic evaluations" for short, recorded detailed information about landscaping, trash/disposal areas, and storm drains within a given property. The purpose of the property evaluations was to characterize the area and collect data additional data beyond the scope of a typical inspection to be used for assessment purposes. For example, a typical inspection answers the question of whether trash areas at a site are clean enough to meet the City's BMP requirements. During property evaluations, more detailed information was recorded: the number of trash areas at a property and the type(s) and quantities of trash observed in them (outside the dumpsters) were recorded.

    - Property inspections were performed at shopping centers and industrial parks. Property inspections gathered information about shared areas

such as landscaping, trash/dumpster areas, parking lots, outdoor material storage, and high threat to water quality activities. Typically, these areas are the responsibility of the property owner or property management company. These inspections were based solely on information gathered through observations and focused mainly on compliance evaluation.

- Individual business level data collection:
  - Pre-contact business inspections were performed based on the inspectors' observations only and before speaking with facility representatives. These inspections were performed at all types of businesses on the City's industrial and commercial inventory. Pre-contact business inspections were not conducted at facilities for which site access required contact with site personnel or for facilities that appeared likely not to be inventoried.

  - Post-contact business compliance inspections were conducted at businesses that inspectors determined were or would likely need to be included on the City's industrial and commercial inventory based on pre-contact inspection results and were completed after the pre-contact inspections. The post-contact business inspection involved the same steps as a standard industrial and commercial inspection under the City's JURMP industrial and commercial inspection program. A post-inspection was only conducted if a pre-contact inspection was completed. Educational material was distributed, as applicable, during post-contact inspections.

In FY 2010, 18 geographic evaluations, 15 property inspections, 100 pre-contact business inspections and 88 post-contact industrial/commercial inspections, were conducted in the area selected in the San Diego River WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2009 and FY2010. Assessment and reporting on this activity were completed in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Phosphorus

- Total dissolved solids (TDS)
- Turbidity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Facility Inspections**		
Management Questions	• What activities and locations at businesses should be targeted during the inspection based on severity of observed/reported issues? • Can the City increase its commercial/industrial program efficiency by using a tiered inspection process (variable inspection forms & procedures) based on site specific characteristics of the businesses? • Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the San Diego River Watershed	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	**Geographic Evaluations**	
	Number of geographic evaluations (Outcome Level 1)	18
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	97%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	74%
	Percent of storm drains with observed trash, debris, and/or sediment (Outcome Level 1)	95%
	Property Inspections	
	Number of property inspections (Outcome Level 1)	15
	Percent of facilities recommended for follow-up inspection (Outcome Level 1)	40%
	Percent of sites needing corrective action (Outcome Level 1)	100%
	Percent of sites identified of sources of bacteria (Outcome Level 1)	33%
	Percent of sites identified of sources of nutrients (Outcome Level 1)	13%
	Total IC/IDs Observed (Outcome Level 1)	3
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	3
	Pre-Contact Business Inspections	

	Number of full inspections (Outcome Level 1)	100
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	40
	Number of sites needing corrective action (Outcome Level 1)	98
	Number of sites identified of sources of bacteria (Outcome Level 1)	31
	Number of sites identified of sources of nutrients (Outcome Level 1)	6
	Total IC/IDs Observed (Outcome Level 1)	14
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	14
Data Recorded (continued)	**Post-Contact Business Inspections**	
	Number of full inspections (Outcome Level 1)	88
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	37
	Number of sites needing corrective action (Outcome Level 1)	88
	Number of sites identified of sources of bacteria (Outcome Level 1)	28
	Number of sites identified of sources of nutrients (Outcome Level 1)	2
	Number of Sites that Implemented Some Corrective Action During Inspection (i.e. BMPs implemented) (Outcome Level 3)	10
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level 4)	10
	Total IC/IDs Observed (Outcome Level 1)	3
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	3

Objectives

The goal of this assessment is to determine if evaluating facilities based on observation only is an effective and efficient method for identifying and eliminating storm water pollution sources generated on industrial/commercial sites. Furthermore, this program aimed to identify potential sources of constituents of concern in the San Diego River watershed by assessing industrial and commercial areas, businesses, and activities in the selected geographic areas.

Analysis and Results

A total of 97% of properties evaluated during geographic evaluations were observed to have some evidence of over-irrigation. Additionally, 95% of storm drains were observed to have some level of accumulated trash, litter, and/or sediment. Lastly, 74% of trash areas were observed to have accumulated trash, debris, and/or sediment.

All of the properties that received property inspections had at least one corrective action. Most were relatively minor corrections, but 40% of the properties that received property inspections had corrective actions requiring further follow-up. A total of three IC/IDs were observed during property inspections. Based on the inspections performed and the recorded time for each inspection, it appears that a property inspection is an effective and efficient method for identifying major outdoor activities and storage that contribute to storm water pollutant runoff. Overall property inspections do not provide much ability to assess BMPs for activities outside accessible common areas, but at shopping centers and industrial parks, it is very rare for activities with potential to influence storm water quality to occur outside areas that can be accessed without first contacting a business representative. Occasionally, it was difficult for the inspectors to clearly delineate a property. Different parcels located close to one another can appear to be part of the same property complex, but may actually have different parcel owners.

As previously mentioned, business inspections were conducted in two parts, the pre-contact inspection and the post-contact inspection. Pre-contact inspections are faster and were effective at identifying outdoor BMP implementation deficiencies at properties, such as shopping centers and industrial parks with accessible areas. Pre-contact inspections were not as effective at identifying BMP deficiencies at sites that are more difficult to access or where potentially pollutant-generating activities are conducted in areas closed off to the general public, such as auto repair shops. It should be noted that during pre-contact inspections BMP implementation problems could be identified, but it was often not possible to identify the responsible party without talking to personnel at the site. The number of pre-contact inspections is greater than the number of post-contact inspections because in several instances the pre-contact inspection was performed, but after talking with facility personnel during the post-contact inspection the inspector determined that the facility was not conducting activities for which inclusion on the industrial/commercial inventory was required. The percentage of sites that required corrective actions increased slightly between the pre- and post-contact inspections, 98% and 100% respectively. Pre-contact inspections yielded 14 IC/IDs since the responsible party could not be identified; however, during the post-contact inspections, the number of IC/IDs decreased because the responsible parties were narrowed down to three.

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

Based on the gathered information, pre-contact inspections of an overall complex assessment with shared areas is an efficient and effective in identifying BMP implementation deficiencies in outdoor areas for shopping centers and industrial parks, but less so for individual businesses that are more difficult to access or areas closed to the public, such as contractor storage yards or automotive repair shops.

Based upon the two year inspections results, the primary areas and activities that should be focused on during inspections are: 1) Over-Irrigation; 2) Trash Areas; and 3) Storm Drains. In addition, there were no other businesses warranted to be on the industrial/commercial inventory.

As a result of this activity during the post-contact business inspections, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 88 sites. Additionally, the City noted 37 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify at ten locations, corrective actions were immediately taken. This demonstrates both Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcomes were achieved as a direct result of this activity. Also, in this watershed, the City confirms three IC/IDs were observed and called into the City's hotline for response and follow-up for abatement.

The City plans to implement a modified version of the property inspections in the San Diego River WMA in FY 2011.

FY 2009–2010 Water Quality Activity

TITLE: San Diego Riverbed Homeless Encampment Removal Project

ACTIVITY SUMMARY

On behalf of the City of Santee, the San Diego County Sheriff conducts sweeps during the reporting period along the San Diego River within City jurisdiction to remove trash and encampment items.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The sweeps target homeless camps along the San Diego River. During the sweeps, the Sheriff encounters transients and their camps and takes appropriate law enforcement action to remove trash and encampment items used for the illegal lodging. This activity contributes to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2009-2010

The following tasks were conducted as part of the Riverbed Project during Fiscal Year 2009-2010:

- Trash removal
- Bacteria source reduction

FY 2009–2010 Water Quality Activity

TITLE: TRASH REMOVAL ACTIVITIES IN SANTEE

ACTIVITY SUMMARY

The City of Santee hosted or facilitated six clean-up events within the City during FY 2009-10. A total of over 24,840 pounds of trash and debris were collected. A summary of these events is presented below:

Date	Amount of Trash Removed (lbs)	Description
09/12/09	3,500	56 volunteers participated in an event organized with the San Diego River Park Foundation at Mast Park.
09/19/09	3,000	California Clean Up Day event attended by 124 volunteers.
09/26/09	3,500	144 volunteers participated in an event organized with the San Diego River Park Foundation at Mast Park.
12/12/09	2,000	18 volunteers participated in an event organized with the San Diego River Park Foundation at Forester Creek.
01/29/10	100	Two volunteers associated with the San Diego River Park Foundation conducted a clean-up at Mast Park West (location of future trailhead, west of Carlton Hills Boulevard).
02/05/10	300	Four volunteers associated with the San Diego River Park Foundation conducted a clean-up at the river at Big Rock Road.
02/20/10	7,700	Event organized by the County of San Diego Department of Watershed Protection and attended by City Staff. Trash was removed from property along the river owned by the County. City Department of Public Works assisted in the removal of larger items retrieved during the event.
03/10/10	540	Seven volunteers associated with San Diego River Park Foundation removed material from along Forester Creek.
4/24/10	1,600	Creek to Bay Clean-Up organized by City consultant D-Max Engineering with assistance from the San Diego River Park Foundation and City staff. Approximately 93 people participated in the removal of trash along Forester Creek.
04/30/10	2,500	Thirty-six volunteers associated with the San Diego River Park Foundation removed debris from the river at Big Rock Road.
05/01/10	100	Santreefest event where the San Diego River Park Foundation organized volunteers to remove trash from the river near Cuyamaca Street.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria (indirectly through trash)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

This activity removes trash within the watershed and thereby reduces the potential breeding of bacteria within the watershed, which is consistent with the WURMP Strategic Goal 5 for Bacteria Source Reduction. It also enabled residents to participate in enhancing the watershed environment by removing trash. Trash and debris was collected and disposed of appropriately. Reduction of the pollutant load can be assessed based on the weight of material collected. In addition, neighborhood enhancement activities can instill a sense of pride in the appearance of the neighborhood, providing a disincentive to allow trash to accumulate again. Removal of invasive species can benefit the riparian environment.

TASKS IMPLEMENTED DURING FY 2009-2010

The following tasks were conducted as part of these public participation and education activities during Fiscal Year 2009-2010:

- Eleven trash removal events were conducted adjacent to the San Diego River or Forester Creek.
- Removal of over 24,840 pounds of trash.
- Public participation and education.

FY 2009–2010 Water Quality Activity

TITLE: **Cabrillo Heights Park Rain Garden Infiltration Project**
ID NUMBER: **SDR-A19**

ACTIVITY IMPLEMENTATION

This activity involves the implementation of a large scale low impact development (LID) project in the San Diego River Watershed Management Area (WMA) to reduce runoff volume. The large scale LID site selection focused on city owned parks and parcels that would be suitable for infiltrating off site flow. Site visits were performed to evaluate the field conditions at approximately ten sites in FY 2007 through FY 2008. Cabrillo Heights Park was eventually selected as the site of choice for the Rain Garden Infiltration Project.

The concept for this park includes the installation of rain gardens at two sites within the park. The rain gardens, or bioretention basins, will be used to trap particulate pollution, encourage evapotraspiration, and reduce the amount of trash, oils and grease that make its way to the storm drain system. Flows are mainly filtered through the rain garden, collected, and returned to the storm drain system. A portion of the storm water will remain within the planted bed and be used by plants for evapotranspiration and growth.

The first site, located on the western edge of the park, will be used to treat storm flows from the western parking lot on Kearny Villa Road. All parking lot flows will enter into the storm distribution piping through a couple of storm water catch basins located in the parking lot. These catch basins shall include grating to prevent large solids from entering into the piping, and inserts to prevent trash and other debris from entering the rain garden. PVC storm drain piping will convey the parking lot flows to the rain garden located at the southern end of the parking lot.

The second site is located on the eastern portion of the park and will treat flows from Angier Elementary School and a sporting event parking lot on the east side of the park. All flows from these two locations are directed to two existing separate catch basins; one dedicated for school flows, and one for parking lot flows. Distribution piping will capture flow from these two locations and convey it to the rain garden.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The

project is currently in the process of hiring a design consultant. Project design is anticipated to begin in November 2010 and continue into FY 2012. Construction is anticipated to begin in FY 2012. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
CABRILLO HEIGHTS PARK RAIN GARDEN INFILTRATION PROJECT **Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Rain Garden Infiltration**	
Management Questions	• What is the load reduction efficiency due to infiltration? • How effective is the infiltration at reducing loads of priority pollutants? • Does the implementation of the infiltration result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the infiltration is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the analysis is to determine the load reduction efficiency of LID Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations.

Analysis and Results

Site visits were performed to evaluate the field conditions at approximately ten sites in FY 2007 through FY 2008, and Cabrillo Heights Park was eventually selected as the site of choice for the Rain Garden Infiltration Project.

Conclusions

Anticipated future monitoring will be conducted to assess pollutant removal efficiencies.

FY 2009–2010 Water Quality Activity

TITLE: **Coastal Cleanup Day Sponsorship**
ID NUMBER: **SDR-A20**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 19, 2009. The City of San Diego (City) sponsored the Mission Valley Preserve site in the San Diego River Watershed Management Area (WMA). Approximately 70 volunteers removed 4,280 pounds of trash and debris over a one-mile area. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

Based on the information above, the effectiveness assessment below, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills credit as a watershed water quality activity for FY 2010.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Diego River WMA are included in the list for cleanups, and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the San Diego River WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDKC's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	4,280 lbs
	Pounds of trash recycled (Outcome Level 4)	0 lbs
	Total pounds of trash removed (Outcome Level 4)	4,280 lbs
	Number of participants (Outcome Level 1)	70
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$30,000
	Estimated Amount of money spent on cleanups for the San Diego River watershed management area (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	$1.17/lbs

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

The event's debris removal was tracked using data cards provided by the Ocean Conservancy; 70 participants removed 4,280 pounds of trash and debris. The average estimated sponsorship cost was $5,000 per watershed ($30,000/6 watersheds); thus,

there was a 4,280 pound load reduction and an efficiency of $1.17 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Diego River WMA by the total pounds of trash removed and recycled. It is anticipated that the sponsorship fee at that level would remain the same for subsequent years.

Conclusions

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2010.

TITLE: **LAND ACQUISITIONS**
ID NUMBER: **SDR-A23**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural ability to infiltrate stormwater/runoff.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY2009-10 reporting period there were no land acquisitions in the San Diego River Watershed. It is expected that acquisitions will continue if land becomes available within the watershed.

During the FY2008-09 reporting period there were 557.50 acres of land acquired in the San Diego River Watershed. The current acquisitions are shown in the table below.

Property	Acres	Date	Watershed ID	APN(s)
Armstrong-Sycamore Canyon	20.47	12/10/2008	907.12	325-060-02, -03
State of California	32.00	11/7/2008	907.13	508-080-08
State of California	505.03	1/1/2008	907.22	328-010-03,-04; 328-020-08, -10
TOTAL	**557.50**			

During the FY 2007-08 reporting period there were 197.07 acres of land acquired in the San Diego River Watershed.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy and the Strategic Goals of the WURMP in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

FY 2009–2010 Water Quality Activity

TITLE: Forester Creek Debris Barrier

ACTIVITY SUMMARY

The City of El Cajon Public Works Department (City) installed a debris barrier. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed in an area adjacent to the City's Public Works Maintenance Yard best suited for prompt cleanup following significant storm events and before it can reach the San Diego River.

PARTICIPATING JURISDICTIONS/ORGANIZATIONS

- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Sediment
- Bacteria (indirect through trash and sediment; high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The removal of trash and debris in the San Diego River is important in order to improve water quality in the river. Trash and debris enters the storm water system, Forester Creek and eventually the San Diego River and the Pacific Ocean, posing a threat to wildlife and human health. The debris barrier controls and contains trash and other debris reducing pollutants from ultimately discharging into the San Diego River. This activity is an ongoing long-term activity and trash and debris will continue to be collected and monitored. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2009-2010

Collection and removal of a total of 282.5 cubic yards of trash and debris was conducted as part of maintenance activities by the City of El Cajon. The collection of trash and debris was as follows:

- Assorted Trash/Debris = 13.5 Cubic Yards
- Organic Materials = 81 Cubic Yards
- Sediment = 188 Cubic Yards

FY 2009–2010 Water Quality Activity

TITLE: Forester Creek Debris Barrier

ACTIVITY SUMMARY

The City of Santee installed a debris barrier in as part of the Forester Creek Improvement Project. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed adjacent to the Prospect Avenue Bridge where the creek transitions from concrete-lined to unlined.

PARTICIPATING JURISDICTIONS/ORGANIZATIONS

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Sediment
- Bacteria (indirectly through trash and sediment; high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The removal of trash and debris in the San Diego River is important in order to improve water quality in the river and also indirectly for reducing bacteria loads. Trash and debris enters the storm water system, Forester Creek and eventually the San Diego River and the Pacific Ocean, posing a threat to wildlife and human health. The debris barrier controls and contains trash and other debris reducing pollutants from ultimately discharging into the San Diego River. This activity is an ongoing long-term activity and trash and debris will continue to be collected and monitored. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2009-2010

Trash and debris were removed as needed from the barrier. In addition, approximately **2,000 lbs was removed** using a volunteer event after the first major storm of the 09-10 rainy season. The City recognized that the trash needed to be promptly removed prior to the next forecast storm, so it contacted this volunteer organization to provide the additional manpower to accomplish this task in a timely manner. The City provided staff, equipment and the trash disposal service, in addition to coordinating the event.

FY 2009–2010 Water Quality Activity

TITLE: **San Diego River Watershed Municipal Rain Barrel Installation and Downspout Disconnect Project**
ID NUMBER: **SDR-A25**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) completed a municipal rain barrel installation and downspout disconnect project that reduced pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project consisted of installing rain barrel systems, including downspout disconnects and infiltration systems, within the San Diego River Management Area (WMA) to reduce pollutant loading from urban runoff during storm events.

The project included site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Diego River WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the San Diego River WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Mission Trails Regional Park Visitor Center was selected because it is located in one of the highest priority sectors of the San Diego River WMA for potential pollutant loading. The visitor center is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed two rain barrel systems at the visitor center. One 54-gallon rain barrel was installed below grade adjacent to the main entrance to the back patio. The rain barrel was placed directly underneath an existing roof drain. This system uses an automated timer and pump to release captured runoff to adjacent landscaping. A rain chain connecting the roof drain to the rain barrel was also installed to direct runoff from the roof to the rain barrel below. A second 54-gallon rain barrel was also installed below grade along the back patio area. This system also uses an automated timer and pump but does not include the use of a rain chain.

Below grade rain barrel with rain chain

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer was distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer were posted on the City's *Think Blue* website during the first quarter of FY 2010.

During FY 2010 the City assessed the effectiveness of the rain barrel/rain harvesting systems the Mission Trails Regional Park Visitor Center. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete and will no longer be included in future reporting updates.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring was performed from October 2009 to April 2010. Assessment and final reporting for this program concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identifies bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity addressed the high priority water quality problem by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM **Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff**		
Management Questions	• What is the effectiveness of rain barrel/downspout disconnect systems in reducing pollutant loads and storm water runoff volume? • What are the potential pollutant load and volume reductions for the three system configurations tested? • Which system configuration is the most cost-efficient?	
Targeted Measurable Outcome(s)	• Pollutant load reductions due to rain barrel/downspout disconnect installation • Runoff reduction due to rain barrel/downspout disconnect installation	
Cost Data	Cost of site preparation, installation and start-up	$3,880
	Cost of operation and maintenance evaluation	$258
	Cost of effectiveness monitoring	$3,421
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/attenuated (Outcome Level 4) • Average concentrations of metals in rainwater or runoff (µg/L) (Outcome Level 4) • Pollutant load reductions for metals for each system configuration (grams) (Outcome Level 4)	

Objectives
The goal of the rain barrel and rain harvesting assessment was to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results
The pilot project was assessed in FY 2010 based on monitoring data from two storm events collected over one wet-weather season. The one system at the Mission Trails Regional Park Nature and Visitor Center captured and attenuated 14.4 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff were 51 µg/L for copper, 6 µg/L for lead, and 136 µg/L for zinc. Over the two monitored storm events, the 54-gallon capacity automated system configuration at the Mission Trails Visitor Center resulted in load reduction of 4 grams of copper and 0.1 grams of zinc.

The total cost of installation, operation, maintenance, and effectiveness assessment for the one system at Mission Trails Regional Park Nature and Visitor Center was approximately $7,559.

Assessment data at this site shows that the gravity-flow system configuration, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, is more effective and reducing pollutant loads and attenuating wet weather flows than other systems tested. Overall, the study found that gravity-flow systems can attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Furthermore, this configuration was the least expensive of the three tested, which makes it the most cost-efficient. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively.

Conclusions
Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Although less effective than gravity-flow systems at addressing pollutant loads, rain barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas. Based on an analysis that demonstrates that the activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

FY 2009–2010 Water Quality Activity

TITLE: **Park Ridge Boulevard Bacteria Treatment Project**
ID NUMBER: **SDR-A26**

ACTIVITY IMPLEMENTATION

The City of San Diego will construct a new catch basin, storm drain, trash segregation unit, and bacterial treatment system at the southern terminus of Park Ridge Boulevard. A new catch basin will be placed along the western right-of-way south of the intersection with Murray Park Drive. The catch basin will be sized for the full design flow reaching that location.

Flows up to an 85th percentile storm event will exit the catch basin and flow through a trash segregation unit, followed in series by the bacterial treatment system. Flows in excess of an 85th percentile storm will exit the catch basin via an overflow pipe and bypass the treatment system.

A manhole will receive flows from both the treatment system and the overflow pipe. From that manhole, a new storm drain will convey flows to the outlet location for the existing storm drain system within the eastern Park Ridge Boulevard right-of-way. A new headwall sized to accommodate both outlets will be required at this location.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design began February 2010 and is anticipated to continue through FY 2011. Construction is expected to be completed in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will reduce bacterial pollutant loads in the watershed by installing a new catch basin which diverts runoff to a trash segregation unit / AbTech (Bacterial Treatment System) unit.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
PARK RIDGE BOULEVARD BACTERIA TREATMENT PROJECT Assess the Efficiency and Effectiveness of the Design and Construction of the Enhancement and Bacteria Treatment Project	
Management Questions:	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data:	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria load with the installation of catch basins, storm drains, and trash segregation units on Park Ridge Boulevard.

Analysis and Results

The project is still in the planning phase; therefore effectiveness analysis has not been completed at this time. Assessment will be completed after project completion.

Conclusions

Conclusions will be made after the project is complete and effectiveness is determined.

FY 2009–2010 Water Quality Activity

TITLE: **Median Sweeping Pilot Study**[1]
ID NUMBER: **SDR-A30**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) implemented a one-year pilot study to assess the effectiveness of modifying its street sweeping program to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study specifically focused on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with this proposed programmatic change to the City's street sweeping program.

The pilot study specifically looked at expanding current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change allowed calculation of potential pollutant removal efficiency afforded by sweeper access to what was found to be heavily polluted areas.

The overall pilot study was designed to answer the following management questions:

- What is the relative cost-efficiency of integrating additional median sweeping into the City street sweeping program?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does median sweeping provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study was used to determine whether sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring was conducted to allow for assessment. This activity took place in multiple watersheds, including Friars Road in the San Diego River WMA.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Median Sweeping Pilot Study was piloted first to determine whether median sweeping improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

[1] In the FY09 WURMP Annual Report, this activity was known as Route Posting and Median Sweeping Pilot Study. A more accurate title was chosen for this activity during project planning and implementation that took place in FY 2010.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2009 and continued into the first quarter of FY 2010. Implementation and assessment took place during FY 2010. This project is complete, and will no longer be included in future reporting updates.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity addressed this high priority water quality problem by targeting increased sweeping and removal of sediment and trash, which contain bacteria, from City streets.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
MEDIAN SWEEPING PILOT STUDY **Assess the Effectiveness of Sweeping Medians on Improving Street Sweeping Activities**	
Management Questions	• What is the relative cost-efficiency of integrating median sweeping into the City street sweeping program? • What level and type of debris can be removed by sweeping high volume median areas? • What level of metals removal benefit does median sweeping provide? • What type of sweeping equipment optimizes debris removal in or on high volume median areas?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information

Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives

The goal of the assessment was to investigate whether sweeping medians improves the effectiveness of the City's current street sweeping activities.

Analysis and Results

A baseline sweep of the four pilot median areas, which included Friars Road in the San Diego River WMA, resulted in the removal of 32,460 lbs of debris over a total of 58 miles with an average of 560 lbs of debris removed per mile swept. After the initial baseline sweep, each route was swept four more times over an approximate three month period (with roughly three weeks between sweeps). A total of 32,560 lbs of debris was removed over this three month study period.

Conclusions

The study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic City roadways. The initial baseline median sweep collected 3-5 times more debris than the subsequent 3-week interval sweeps. This suggests that there is a significant buildup of debris adjacent to median areas. Furthermore, debris sampling confirmed the presence of heavy metals, nutrients and hydrocarbons in the debris collected. This leads the City to believe that median sweeping may provide a significant benefit for controlling the input of high priority water quality problems from impacting receiving waters. Based on an analysis that demonstrates that the activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

FY 2009–2010 Water Quality Activity

TITLE: Woodside Avenue Detention Basin
ID NUMBER: SDR-A32

ACTIVITY DESCRIPTION

In 2003, the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and construction of an extended detention basin (EDB) to treat urban runoff and low storm flows from a 1.4 square mile area within Hydrologic Area (HA) 907.12 before discharging into Los Coches Creek and the San Diego River. The site is located in the unincorporated community of Lakeside on a vacant property adjacent to Woodside Avenue near Winter Gardens as shown in the attached figure. The constructed basin and concrete removal were designed to act as a demonstration for the effectiveness of similar BMPs at removing pollutants. A water quality monitoring component was also initiated to provide hard evidence of the BMP's pollutant removal capabilities. Although the grant was completed in May 2007, the County continues to monitor the site to gauge its effectiveness at removing pollutants.

ACTIVITY IMPLEMENTATION FY 2007-08

During FY 2007-08, the County performed routine maintenance of the basin, including removal of trash and debris and vegetation control. Influent and effluent flow measurements and water quality samples were also taken on the following four dates:

- August 29, 2007
- February 22, 2008
- March 13, 2008
- May 5, 2008

ACTIVITY IMPLEMENTATION FY 2008-09

During FY 2008-09, the County performed routine maintenance of the basin, including removal of trash and debris and vegetation control. Influent and effluent flow measurements and water quality samples were taken on the following dates:

<u>Sample dates, dry weather events:</u>

- September 25, 2008
- November 13, 2008
- March 3, 2009
- June 4, 2009

<u>Sample dates, wet weather events:</u>

- December 25, 2008
- February 9, 2009

ACTIVITY IMPLEMENTATION FY 2009-10

During FY 2009-2010, water quality and flow at the inlet and the outlet of the Woodside EDB were monitored over three dry weather and four wet weather sampling events. Influent and effluent flow measurements and water quality samples were taken on the following dates:

Sample dates, dry weather events:

- August 19, 2009
- March 3, 2010
- June 29, 2010

Sample dates, wet weather events:

- January 19, 2010
- April 12, 2010
- April 21, 2010

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

• Basin maintenance, including trash removal and vegetation control, is ongoing.

• Monitoring of flow and water quality will continue in accordance with the guidelines outlined in the Long-Term Monitoring Plan (Weston 2007).

PARTICIPATING WATERSHED COPERMITTEES

• County of San Diego

OTHER PARTICIPATING ENTITIES

• State Water Resources Control Board
• Regional Water Quality Control Board (San Diego)
• San Diego River Park Foundation
• Lakeside's River Park Conservancy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

• Phosphorus
• TDS
• pH

OTHER CONSTITUENTS ADDRESSED

• Metals

- TSS
- Total and Dissolved Organic Carbon
- Nitrate
- Ammonia

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity targets high priority water quality problems within the watershed by treating urban runoff before it discharges into Los Coches Creek. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

An initial effectiveness assessment of this project was conducted in 2006. The results were presented in detail in: Woodside Avenue Extended Detention Basin Effectiveness Assessment Monitoring Final Report, March, 2007, prepared by Weston Solutions. As previously described, additional monitoring is ongoing.

Constituent concentrations at the outlet of the EDB were often higher than at the inlet. There were, however, overall load reductions for the majority of constituents measured during dry weather conditions (wet weather discharge rates were not measured; therefore, wet weather loadings could not be calculated for FY 2009/2010). This was most likely due to the EDB acting to absorb the runoff containing the pollutants before it was able to reach the outlet. The exceptions included total copper and zinc. The mean loadings of those constituents were higher at the outlet than at the inlet of the Woodside EDB due to the much elevated total zinc and copper loadings at the outlet observed on one of the three sampling dates (on March 3, 2010).

In terms of constituent concentrations alone, it may be concluded that the EDB functioned well in reducing nitrate-N concentrations in non-storm flows and dissolved zinc concentrations during wet weather. The concentrations of other constituents measured, however, were not consistently reduced and were often higher at the outlet of the EDB. These often higher constituent concentrations at the outlet and the much higher total copper and zinc loadings at the outlet on one sampling occasion may have been due to the deposition of metals and dust near the outlet as it is located adjacent to a high-traffic road.

Annual water quality sampling results for FY 2009-10, including load reduction estimates, are attached.

FY 2009–2010 Education Activity

TITLE: **Public Service Announcement: Karma Series**
ID NUMBER: **SDR-A36**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego River Watershed Management Area (WMA) in FY 2009 and FY 2010. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

The City will continue to run the *Karma* public service announcements; however, this activity will no longer be included in future reporting updates.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Diego River WMA in FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City will continue to run the *Karma* public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program, therefore no assessment was conducted in FY 2010.

FY 2009–2010 Education Activity

TITLE: Oktoberfest

PROJECT SUMMARY

The City of La Mesa is committed to education outreach at community events. Each year the City hosts an Oktoberfest Event. During the event on October 2-4, 2009 the City's Storm Water Program staff ensured fact sheets were distributed to all Oktoberfest vendors regarding storm water pollution prevention.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The City took steps to ensure that vendors were knowledgeable regarding pollution prevention during the event, which is located within the San Diego River Watershed.

ACTIVITIES CONDUCTED DURING 2009-2010

The following activities were conducted during this reporting period 2009-2010:

- Distributed ~75 Vendor Fact Sheets

FY 2009–2010 Education Activity

TITLE: PUBLIC OUTREACH AND MEDIA

ACTIVITY SUMMARY

During the reporting period, the City of Santee distributed articles specific to storm water in the periodic newsletter entitled "Santee Review'. The newsletter reaches potentially 21,500 residential, commercial, and industrial addresses. The newsletter is intended to educate residents and visitors about watershed issues and to solicit their cooperation and participation.

PARTICIPATING JURISDICTIONS

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria
- Total Dissolved Solids
- Low Dissolved Oxygen

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

In order to change knowledge and awareness and effect behavioral changes, it is necessary to educate the general public. Public presentations/outreach and the media are an effective method in distributing our watershed message and informing others on how they can make a difference in our water quality and environment.

TASKS IMPLEMENTED DURING FY 2009-2010

The following articles were published as part of the Public Outreach Program during Fiscal Year 2009-2010: The articles included:

- "Volunteers Assist with Creek Clean Up" describes how volunteers from the San Diego River Park Foundation worked with City crews to remove trash washed down to Forester Creek. It provided contact information for the River Park Foundation.

- "Debris Recycled into Construction Material" described how sediment washed into Forester Creek from the upstream lined channel was removed and used in the Town Center Community Park project.

- "Kids, Water and Bugs" described outreach to children at a City of Santee camp. There a simplified model of the storm drain system and river were used to demonstrate how pollution discharged onto our streets affects the San Diego River. Afterwards the children had an opportunity to examine some of the benthic macroinvertebrates that live in Forester Creek. This event was conducted in collaboration with the San Diego River Park Foundation.

A postcard was previously developed to raise awareness amongst residents about the connection between the storm drain and the river and the need to properly dispose of

waste. The postcard also provides information on the free services provided by the City for the disposal household hazardous waste and large household items. This postcard was sent to approximately 81 residences.

TITLE: **San Diego River Watershed Restaurant Best Management Practices Booklet**
ID NUMBER: **SDR-A43**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the San Diego River Watershed during inspections. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer; however, after further evaluation, City staff determined that a booklet to supplement existing fact sheets passed out during inspections would be more effective in educating food and drinking establishment owners and workers about storm water issues and BMPs. After review, the booklet could be kept by owners/managers for reference, and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs.

Storm Water Division staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2010 to City-permitted facilities. The City distributed 679 booklets in the San Diego River Watershed Management Area (WMA).

This activity was not included in the 2010 San Diego River WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, these posters have been distributed over a number of years, and the City plans to continue distribution of them. The booklets will continue to be distributed in the future; however, the City will not be reporting on this activity.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2011 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

In FY 2010, the City distributed 679 booklets as referenced above in the Activity Implementation section. Due to the nature of this activity, although feedback on the booklets is generally positive, effectiveness assessment is not being conducted for this activity. After FY2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: San Diego River Watershed Erosion and Sediment Control Poster
ID NUMBER: SDR-A44

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper BMPs. The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and Best Management Practices (BMPs) for construction. Photos on the brochure and poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally to distribute the poster in FY 2010 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of brochures and posters distributed in the San Diego River Watershed Management Area was 104. The number of posters distributed by Storm Water inspectors was 10 (9 in English and 1 in Spanish).

At the current time, this activity does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years with positive feedback from users, so the City plans to continue their distribution. The City will discontinue reporting on this activity after FY 2010.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the poster, but will no longer report on the distribution

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment/siltation/turbidity/total suspended solids
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria, nutrients, and total dissolved solids as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with sediment and bacteria.

EFFECTIVENESS ASSESSMENT

In FY 2010, the City distributed 104 posters as referenced above in the Activity Implementation section. After FY 2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

FY 2009–2010 Outreach Activity

TITLE: PROJECT CLEAN WATER - SAN DIEGO RIVER WATERSHED WEBSITE
ID NUMBER:SDR-A46

ACTIVITY DESCRIPTION

The Project Clean Water website (**http://www.projectcleanwater.org/html/ws_map.html**) provides a venue for public participation and involvement in local watershed activities. The Watershed Map page is the starting point of the watershed website. Visitors wishing to learn more about a particular watershed can simply "click" on a desired watershed in the Watershed Map. Once selected, the visitor is linked to the watershed's summary page and provided with additional link options. The visitor can view multiple informational pages on the San Diego River Watershed which include:

- San Diego River Watershed Summary Page (main page)
- San Diego River Watershed Plan Page
- San Diego River Watershed Project Page
- San Diego River Watershed Activities Page

During the FY 2009-10 reporting period, revisions were made to update the content and documents available via the site, including adding reports, repairing broken links, and updating 303(d) listings.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

This is an ongoing activity.

PARTICIPATING WATERSHED COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This method of public participation is consistent with the collective watershed strategy in that it encourages any member of the public to take an interest in their watershed and to participate in Copermittee activities.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is not being measured directly, but can be inferred from tracking the number of “hits” the web pages received on an annual basis (Level 1 Outcome).

- Watershed Copermittees continued to post the WURMP and annual reports on the Project Clean Water website.
- There were 3,978 hits on the San Diego River Watershed webpage.
- There were 924 hits on the San Diego River WURMP webpage.

TITLE: DEVELOPMENT OF ADDITIONAL PUBLIC PARTICIPATION PROGRAMS

ACTIVITY SUMMARY

During the reporting period, the City of Santee has continued to promote the opportunities for public participation in our stormwater program through the storm drain stenciling program and the Roadside Pride program. The storm drain stenciling program has multiple benefits including:

- Providing stencils on storm drains reminds people in the vicinity that the drain provides a direct connection to the river and that their activities can have a direct impact on the health of the river. This reminder may result in the modification of their behavior to prevent the discharge of pollutants into the storm drain.

- This program provides groups within the community an opportunity to participate in an activity that is related to an issue that they are interested in. This activity may also provide them with the necessary experience to achieve a goal related within the organization (such as fulfilling a community service requisite).

- The activity may provide education for people who volunteer to help with the activity who may have limited knowledge of stormwater issues. This knowledge may result in changes to their behavior.

The Roadside Pride Program provides Santee-based community groups with an opportunity to earn a small amount of money in exchange for removing litter from roadsides within the community. This on-going program will be promoted alongside other public participation opportunities.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash
- Bacteria
- Total Dissolved Solids
- Low Dissolved Oxygen

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

This method of public participation is consistent with the collective watershed strategy in that it encourages any member of the public to take an interest in their watershed and to participate in Copermittee activities.

TASKS IMPLEMENTED DURING FY 2009-2010

During 2009-2010, the City continued to offer and raise awareness about these programs.

TITLE: **City of San Diego Strategic Plan for Watershed Implementation**
ID NUMBER: **SDR-A48**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring

(runoff volume) will be conducted both at the pre and post irrigation modification stage. The rebate program is scheduled to be implemented in FY11.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table 1 – Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning. Implementation and assessment is anticipated to be completed in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the

information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

FY 2009–2010 Water Quality Activity

TITLE: Receiving Water Monitoring for Priority Pollutants in the San Diego River Watershed

ACTIVITY SUMMARY

The City of Santee has conducted an additional study each year since 2002 to assess constituents of concern at five receiving water locations within the watershed. These locations include Forester Creek as it enters the City of Santee and prior to its confluence with the San Diego River (two locations); the San Diego River as it enters the City of Santee; Sycamore Creek as it discharges into the San Diego River; and the San Diego River just as it leaves the City of Santee (three locations). These locations are typically sampled twice during the dry season, at the beginning and towards the end of the dry season. This investigation was reviewed during Fiscal Year 2007 and revised to incorporate the constituents listed on the 303(d) list for the Forester Creek and San Diego River.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria
- Total Dissolved Solids
- Dissolved Oxygen
- Phosphorous

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The dry weather monitoring program focuses on potential pollutants within the MS4. Monitoring receiving waters within the City helps to evaluate water quality within City limits. The data can be incorporated with data collected within other jurisdictions to develop a profile of water quality within the watershed. This helps to identify areas where loadings of priority pollutants may be increasing and to assist in developing watershed activities in appropriate locations that may result in water quality improvements. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2009-2010

Developed a QAPP for the additional monitoring program and conducted two additional rounds of monitoring.

TITLE: **Municipal Park Irrigation Runoff Minimization**
ID NUMBER: **SDR-A50**

ACTIVITY IMPLEMENTATION

This activity consisted of municipal park facility inspections to assess the potential urban runoff and pollutant reduction measures at selected municipal parks within the San Diego River Watershed Management Area (WMA). The City of San Diego participated in this activity, which is part of a collaborative watershed effort initiated by the San Diego River Watershed Workgroup. This activity also fostered dialogue with the Parks and Recreation Department staff on how to reduce dry weather runoff and pollutant exposures at parks.

The parks selected for this inspection activity were in collaboration with the Park & Recreation Department and the Storm Water Department. The four parks selected for this inspection activity were Ocean Beach Athletic Area Robb Field, Robb Field Recreation Center, and Robb Field Skate Park; Dusty Rhodes Park; Serra Mesa Community Park and Recreation Center; and Tierrasanta Community Park and Recreation Center. Two parks are located in the coastal area and two parks are located in the inland area.

The project implemented an inspection checklist, developed specifically for parks, as utilized by the other San Diego River Copermittees. The parks were inspected twice. A baseline inspection was performed during the day to collect information regarding the parks, identify potential evidence of runoff, and identify potential pollutant sources. The second inspection was conducted during irrigation system operations, generally conducted overnight, to identify pollutant exposure or evidence of dry weather runoff. A summary of the findings is presented in the Effectiveness Assessment section below.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This activity was completed by the City of San Diego during FY 2009-2010. This activity was previously completed by other jurisdictions in FY 2008-09. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of El Cajon
- City of La Mesa
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problem, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River		
Assess the Efficiency and Effectiveness of Municipal Park Irrigation Runoff Minimization		
Management Questions	Municipal Parks - San Diego River WMA 1) What are the physical characteristics of municipal parks which contribute to over-irrigation and urban runoff? 2) What patterns or applications of water that may impact water quality can be identified at municipal parks? 3) What are the procedures and maintenance practices which contribute to over-irrigation and urban runoff at municipal parks?	
Targeted Measurable Outcome(s)	• Reduction in pollutant load • Receiving water quality improvement	
Assessment Method(s)	• Inspections • Quantification • Monitoring (e.g., average over-irrigation flows) • Reporting (e.g. identify pollution sources)	
Data Recorded	Number of inspections (Outcome Level 1)	8
	Number of distributed education materials (Outcome Level 1)	25

Objectives

The goal of this inspection assessment was to determine the potential for pollutant discharges and dry weather runoff at municipal parks, particularly from irrigation systems.

Analysis and Results

Potential sources for pollution and runoff found were picnic areas, dumpsters, off-site water entering the municipal parks, and automobile maintenance in the parking lot by the public.

Based upon the inspection during the irrigation cycle operation at the four municipal parks, most irrigation water is delivered to vegetated areas as intended and relatively minor levels of irrigation water runoff reached the storm drains. There were three types of potential sources of runoff: sprinkler overspray onto

impervious surfaces; irrigation system operation leading to flow onto impervious surfaces; and off-site irrigation entering the municipal park boundary. Irrigation runoff can also be attributed to the topographical characteristics of the park.

Conclusions

Based on the results, the parks were generally well maintained. The observed irrigation runoff is considered to be relatively minimal. The Park and Recreation Department utilizes a Best Management Practices Manual and storm water issues are generally well considered. For the minor issues that were identified, follow-up communication was provided to Parks and Recreation Department to encourage the staff to address not only these incidents, but to manage potential over-irrigation and pollutant exposure issues on an ongoing basis. This activity fostered communication between Storm Water Department and Park and Recreation Department on how to reduce dry weather runoff and pollutant exposures at parks. Educational materials were distributed to the Park & Recreation staff. This activity also raised storm water awareness and increased knowledge to the Park and Recreation Department. The reporting of this activity will end with this annual report.

TITLE: **Qualcomm Stadium Trash Segregation Best Management Practice (BMP) Installation**
ID NUMBER: **SDR-A52**

ACTIVITY IMPLEMENTATION

This project will involve the installation of catch basin inserts at two catch basins at Qualcomm Stadium. The catch basin inserts would be installed directly in the existing curb inlets. The Qualcomm Stadium site location will include the implementation of storm drain catch basin inserts as retrofits within the existing storm drain system.

The City of San Diego (City) will study the effectiveness (in terms of load reduction) and the efficiency (in terms of load reduction divided by cost) of such devices in improving discharge and water quality.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets will be retrofitted with the selected drainage inserts within the next month or so and the first phase of monitoring will begin immediately after installation.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
QUALCOMM STADIUM TRASH SEGREGATION BMP INSTALLATION **Assess the Efficiency and Effectiveness of Catch Basin Inserts**	
Management Questions	• What is the load reduction efficiency of the catch basin inserts? • How effective are these catch basin inserts at reducing loads of priority pollutants? • Does the implementation of catch basin inserts result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the catch basin inserts are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Change (%) in bacteria load reduction pre and post-implementation (Outcome Level 4) • Amount of money spent on inspections and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the catch basin inserts in two curb inlets in Qualcomm Stadium to remove trash and debris and improve water quality.

Analysis and Results

Once the installation and monitoring are completed, additional assessment will be completed to determine the effectiveness of this activity. The City will be conducted pre and post project monitoring to evaluate the effectives of the drainage insert selected in load reduction and effluent quality.

Conclusions

Anticipated future monitoring will be conducted to assess pollutant removal efficiency.

FY 2009–2010 Water Quality Activity

TITLE: **Robb Field Water Treatment and Reuse Project**
ID NUMBER: **SDR-A53**

ACTIVITY IMPLEMENTATION

This project will construct a storm runoff collection and treatment facility at the northwest corner of Robb Field, a Park & Recreation Facility. Once treated, the storm water will be stored and used to irrigate the adjacent 14 acre grass athletic field. The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Storm Water Reuse" and, if proven to be effective, anticipates eventually implementing similar LID projects.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in June 2009. The work performed in FY 2009 included the conceptual design and the City facility stakeholder, Park and Recreation Department (PRD). The City of San Diego is currently assessing our options for implementing this project. Water quality monitoring is anticipated be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the San Diego River Watershed and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
ROBB FIELD STORM WATER REUSE Assess Efficiency and Effectiveness of Storm Water Reuse in Reducing Pollutant Loading and Runoff Volume	
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?
Targeted Measurable Outcomes	• Reduction in pollutant loads • Reduction in runoff volume • Improvements in discharge quality
Assessment Methods	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Design, installation, and maintenance costs (Outcome Level 1) • Operations and maintenance challenges (Outcome Level 1) • Percent change in load reduction pre- and post-implementation (Outcome Level 4) • Percent change in discharge quality and runoff volume (Outcome Level 5)

Objectives

The goal of the assessment is to determine the effectiveness and efficiency of the reuse project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

Results and Analysis

This activity was not in active implementation in FY 2009. Therefore, assessment is not possible at this time.

Conclusions

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

FY 2009–2010 Education Activity

TITLE: **San Diego River Watershed Brochure**
ID NUMBER: **SDR-A54**

ACTIVITY IMPLEMENTATION

In FY 2010, the City of San Diego (City) and *Think Blue* implemented a new brochure program in two (2) of the watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. The brochures will also be used to promote watershed stewardship by making citizens aware of specific pollutants within each watershed, and ways individual action can be used to protect each water body. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to improve the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate about best management practices (BMPs), and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs had watershed specific brochures created:

- Tijuana River
- San Diego River

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and continued through FY 2010. Implementation and initial distribution occurred in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Oxygen

- Bacteria
- Phosphorous
- Turbidity
- Total Dissolved Solids

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

Effectiveness Assessment will take place in FY2011. The goal of assessment will be to determine the effectiveness of the watershed brochure in increasing knowledge and awareness, and whether the brochure will encourage positive behavioral changes that will reduce bacteria and gross pollutants in the watershed. The City is planning a feedback assessment activity which will include gathering feedback from target audiences via a feedback card. The card will be available at the Think Blue booth during various community events that take place in or near the watershed. Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. Within 3 months, those that provided contact information will be contacted and asked a series of follow-up questions to determine if the brochure has a lasting impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City plans to continue to implement the brochure program in FY 2010. Effectiveness assessments will be conducted after the watershed brochures are implemented in FY 2010. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

FY 2009–2010 Water Quality Activity

TITLE: Stormwater Quality Master Plans for Special Drainage Fee Areas

ID NUMBER: SDR-A55

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Diego River Watershed include:

- SDA 5 (Bostonia)
- SDA 6 (Lakeside)
- SDA 7 (Alpine)

FY 2009-10 ACTIVITY IMPLEMENTATION

The SWQMPs for SDA 5, SDA 6, and SDA 7 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2011-12. Construction of BMPs is contingent upon approval of SDA fee increases

by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2013.

PARTICIPATING WATERSHED COPERMITTEES

• County of San Diego

OTHER PARTICIPATING ENTITIES

• None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined.

FY 2009–2010 Education Activity

TITLE: **Pet Waste Management Outreach**
ID NUMBER: **SDR-A56**

ACTIVITY DESCRIPTION

This activity targets potential, new, and existing pet owners and seeks to educate them on the importance of cleaning up after their pets, as well as tying a water quality and watershed protection message into the outreach activity. A presentation was developed that included a pre- and post-presentation survey asking participants about their pet waste management practices. Between the pre- and post- surveys, participants will review a series of slides that define a watershed, a general description of the MS4 system, the link between bacteria and water quality, and the importance of cleaning up after their pets. The presentation will also include tips for managing pet waste properly and encouraging participants to clean up after their pets each and every time.

Each jurisdiction will select at least two local pet-related businesses, selecting from pet day-care facilities, pet food retail stores, adoption centers, and/or veterinary clinics to present the materials.

FY 2009-10 ACTIVITY IMPLEMENTATION

During FY 2009-10 the pet waste survey and training were finalized and used at a number of events.

San Diego RiverFest – All Jurisdictions Participated
The San Diego River Watershed Copermittees participated in the first Annual San Diego RiverFest. The San Diego River Park Foundation held the Annual RiverFest event at the Qualcomm practice field. The event drew a large number of participants; it was initially estimated at approximately 5,000. Copermittees had an outreach booth at the event with educational materials targeting existing pet owners. The materials consisted of a presentation that included pre- and post-presentation surveys asking participants about their pet waste management practices. Between the pre- and post-surveys, participants reviewed a series of slides that defined a watershed, a general description of the storm drain system, the link between bacteria and water quality, and the importance of cleaning up after their pets. The presentation also included tips for properly manage pet waste and encourage participants to clean up after their pets each and every time.

The booth had representation from every Copermitte in the San Diego River Watershed. Every participant that reviewed the presentation and took both surveys received a bag that included a pet waste bag dispenser. Every person that stopped by the booth received informational materials about water quality and watersheds.

City of El Cajon

The City of El Cajon held an educational booth at the City's Dog Park. The Dog Park has a good influx of dog owners that attend the park throughout the day and provides a good opportunity for outreach. The booth offered educational materials to everyone who stopped by the booth, and giveaways only to pet owners that took the surveys and reviewed the presentation. A multitude of pet owners approached the booth and received informational materials but only a fraction participated in the presentation and surveys. A total of fourteen pet owners took the pre and post presentation surveys.

City of La Mesa

The City of La Mesa targeted to educate potential, new, and existing pet owners with presentations about pet waste management practices. The presentations were conducted at the San Diego River Park Days event on May 16, 2010; and at the Creek to Bay Clean Up event on April 24, 2010.

In addition, this activity seeks to educate them on the importance of cleaning up after pets, as well as tying a water quality and watershed protection message into the outreach activity. Between the pre- and post- surveys, participants reviewed a series of slides that define a watershed, a general description of the MS4 system, the link between bacteria and water quality, and the importance of cleaning up after their pets.

The San Diego River Park Days event was a collaboration between the Cities of San Diego, La Mesa, El Cajon, Santee, and the County of San Diego.

City of Santee

The City of Santee contacted Petco, a pet store in Santee that does training sessions for new owners. City staff arranged with the manager at Petco to present the pet waste information at new owner training. Dates when this was done are presented below:

April 29th, 2010 – City staff attended scheduled training, however no pet owners were present to receive the training.
May 27th, 2010 – Two pet owners attended and received training on pet waste management from City staff.

Petco has a fair once a year in the Spring where different organizations have booths. A larger number of individuals attend this event and would provide a more cost effective way to reach out to more residents in Santee. The City will explore using this event as a venue to conduct outreach. Based on a review of the City's business inventory there are no doggie daycare facilities. However the City will continue to find ways to reach out to residents through pet stores and animal hospitals within the City, as well as through community events.

City of San Diego

On Sunday May 23rd, Think Blue staff set up a booth at the OB Dog Wash in Ocean Beach to educate dog owners about proper disposal of pet waste. Patrons were asked to take a short pre-test to determine their knowledge of the proper disposal of pet waste

and the impact bacteria from pet waste can have on local waterways. Patrons were then encouraged to review a brief flip book presentation entitled, “The Scoop On Dog Poop” which provided educational information about bacteria in found in pet waste, its potential impact on watersheds and methods of proper pet waste disposal. After reviewing the material, patrons were given a post test to determine if their knowledge of pet waste had increased. In exchange for their time patrons were given an pet theme related incentive item (e.g. collapsible dog bowl) for participating. Think Blue staff collected 19 surveys.

On June 5th, Think Blue staff set up a booth at the San Diego Chapter of the Bassett Hound Rescue Annual Picnic held at the Allied Gardens Community Park. Patrons were asked to take a short pre-test to determine their knowledge of the proper disposal of pet waste and the impact bacteria from pet waste can have on local waterways. Patrons were then encouraged to review a brief flip book presentation entitled, “The Scoop On Dog Poop” which provided educational information about bacteria in found in pet waste, its potential impact on watersheds and methods of proper pet waste disposal. After reviewing the material, patrons were given a post test to determine if their knowledge of pet waste had increased. In exchange for their time patrons were given an pet theme related incentive item (e.g. collapsible dog bowl) for participating. Think Blue staff collected 23 surveys.

County of San Diego

On September 26, 2010, the Lakeside Fire Department held its annual Open House, and invited various participants including the County’s Storm Water Protection Program to set up a booth to share materials. The Cities of Santee and El Cajon also participated in this event. The pet waste presentation and pre- and post- surveys were provided at the County’s booth. A total of 39 total surveys were handed out to participants, and 31 pre- and post- surveys were completed. Eight surveys were discarded, as the participants did not complete the presentation or post- survey.

The county is planning at least one additional activity during FY10-11 to complete its goal of achieving two presentations made.

TMDL APPLICABILITY

Bacteria is listed on the 2008 303(d) list in the San Diego River Watershed. As such, this activity has potential to support future TMDL implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Completing the presentation materials and survey, identifying the businesses to target and executing the outreach activity occurred during FY 2009-10.

- Completed presentation materials – 2009

- Identified businesses to target – 2009
- Commence delivering presentations – 2010
- Plan to complete presentations during FY10-11

PARTICIPATING WATERSHED COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as priority water quality problems in the San Diego River Watershed. Pet waste in particular is a potential source of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Ten pet waste management presentations were targeted for FY 2009-10 (Level 1 Outcome). The increased scores in the post-presentation survey show an increase in knowledge and awareness (Level 2 Outcome), and hopefully a change in future behavior (Level 3 Outcome).

City of El Cajon

The results of the survey showed an increased level of knowledge between the pre and post presentation surveys. The averaged percentage of correct answers for the pre presentation survey was 76% compared to 83% for the post presentation surveys. There was a 7% average increase in the number of correct answers (Level 2 Outcome). The increase in the number of correct answers to the survey demonstrated that the information in the presentation help to show pet owners the importance of picking up after their pets and presumably a change in behavior (Level 3 Outcome).

City of La Mesa

At the Creek to Bay Clean up event in April, 12 persons were given the presentation with a pre-test survey correct percentage of 75%, and a post survey correct percentage of 83% (Level 2 Outcome).

County of San Diego

Results are calculated by comparing total correct answers from the pre- and post-surveys, and determining the average percentage difference between the two. A positive percentage shows an increase in knowledge between the pre- and post-survey. Of the 31 surveys completed at this event, the overall result was a 28 % increase in knowledge between the pre- and post- surveys, Pre- survey correct answers totaled 101 and post-survey correct answers totaled 140. Out of 31 surveys, 11 participants were able to correctly identify the watershed they live within, and 23 participants signed the “Personal Pledge” to pick up after their pets regularly. Therefore it can be concluded that for two-thirds of the surveys collected, we were able to reach Levels one, two and three outcomes.

FY 2009–2010 Water Quality Activity

TITLE: **San Diego River Invasive Species Removal**
ID NUMBER: **SDR-A57**

ACTIVITY DESCRIPTION

The County of San Diego Department of Public Works has been working in coordination with the San Diego River Conservancy to remove Arundo donax and other non-native species along the San Diego River. The removal is occurring on a 1.78 acre County-owned parcel located in the City of Santee (APN 383-060-25-00). Arundo and non-native palms were removed during October 2009 by the California Conservation Corps. Cut vegetation was chipped and taken to the landfill and stumps were treated with herbicide to prevent regrowth.

This site will be planted with native riparian vegetation to match surrounding habitat, including southern willow scrub/cottonwood willow riparian vegetation at some point in the future, but currently is pending discussions with the local resource agencies as to when that will begin. Maintenance and monitoring of the newly planted vegetation will be performed by the County until success criteria is met, which is estimated to be within 3 to 5 years of planting. No water quality monitoring related to this specific project has been planned.

ACTIVITY IMPLEMENTATION

- Planning and coordination for the activity began March 1, 2009.
- The invasive removal program was begun in October 2009.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Follow-up herbicide treatment is scheduled for November 2010.
- The non-natives will be cut and removed from the site after the material dies off in early 2011.
- Herbicide treatment will be conducted if necessary in May and September of 2011, to retreat any additional regrowth. Monitoring and maintenance of site vegetation – 3-5 years after planting, until successful growth occurs.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego River Conservancy

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

EXPECTED BENEFITS

This Invasive Species Removal project will not only enhance water quality and aid in flood control measures, but will help the County realize 1.56 acres of wetland credits to be used as mitigation for RPG 53 projects (related to invasive species removal in river bank areas).

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Removal of invasive species benefits water quality by restoring the river's natural condition and native vegetation. Native vegetation provides greater filteration and treatment of pollutants. As such, this water quality activity is consistent with the collective watershed strategy, which seeks to abate pollutants in the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1). Re-planted areas will be monitored and maintained to ensure the invasive species do not re-grow and native riparian vegetation is successful.

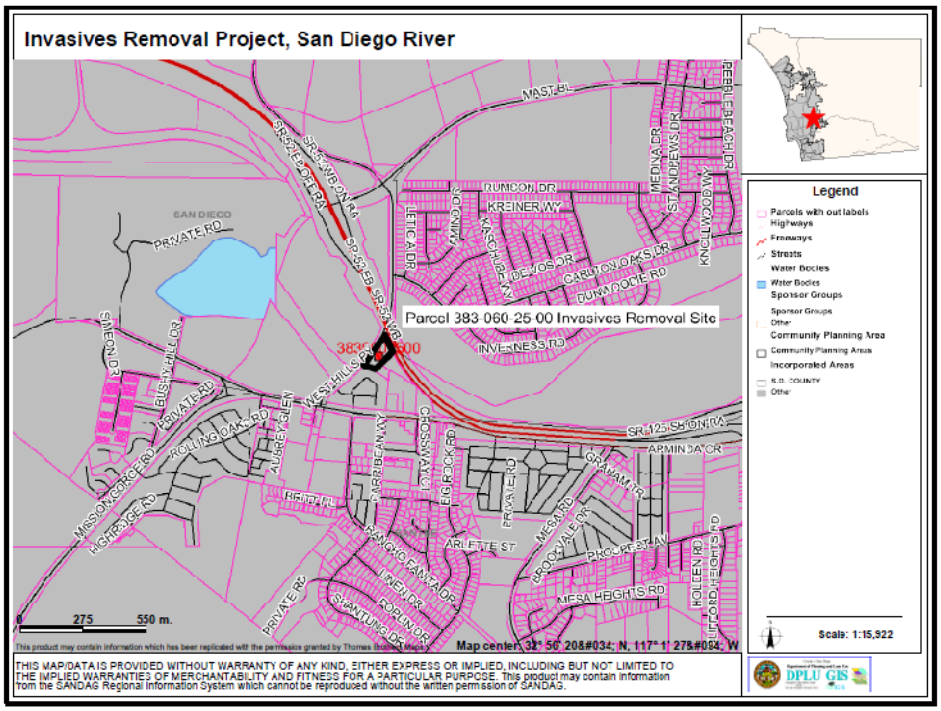

FY 2009–2010 Water Quality Activity

TITLE: San Diego River Park Foundation County Sponsored Clean Up Event in Santee

ID NUMBER: SDR-A58

ACTIVITY DESCRIPTION

San Diego River Park Foundation with the sponsorship of the County of San Diego organized and performed a volunteer clean-up effort with approximately 100 volunteers to remove garbage, debris and abandoned encampments as part of a community cleanup on the County-owned property within the San Diego River Corridor. SDRPF staff and volunteers identified a site on COSD property within the city of Santee along the San Diego River that would benefit from a trash and debris removal event.

The 79 acre parcel of property located within the San Diego River corridor on County-owned Edgemoor property in the City of Santee (APN 381-050-62-00). Staging occurred at the parking area at Cottonwood Avenue and Chubb Lane (see photo). Volunteers of the San Diego River Park Foundation identified trash and debris equating to 5000 lbs. and over 100 bags of trash on site.

For the County's sponsorship, the San Diego River Park Foundation provided:

- Event logistics and necessary supplies including tools, safety equipment and trash bags.
- Water and food for volunteers.
- Facilitation of dumpster delivery and placement/removal, including hazardous / alternative waste disposal.
- Use of SDRPF vehicle.

A City of Santee representative also attended this event.

FY 2009-10 ACTIVITY IMPLEMENTATION

Event Date and Time: February 20, 2010 9am-Noon

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

No further activity is planned during this fiscal year.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Santee

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria indicators and trash have been identified as priority water quality problems in the San Diego River Watershed. This activity demonstrates a reduced pollutant load of trash and associated bacteria, which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is to be measured by assessing the amount of trash and debris removed from the site (Level 4 Outcome). An estimated 5,000 lbs of trash and debris, apparently from illegal dumping, were removed from the site, including 8 tires, 2 car batteries, one T.V. and construction debris identified at the site.

FY 2009–2010 Water Quality Activity

TITLE: WATER QUALITY MONITORING IN THE UNINCORPORATED AREAS OF THE SAN DIEGO RIVER

ID NUMBER: SDR-A59

ACTIVITY DESCRIPTION

The County of San Diego performed water quality monitoring in the San Diego River Watershed during two wet weather events and one dry weather event at three monitoring stations. The monitoring was conducted from February 2009 through December 2009. The purpose of this monitoring was to collect additional data regarding concentrations and loading of bacteria in the unincorporated portion of the watershed. A secondary goal was to provide data to the San Diego River Watershed Workgroup during a similar effort being conducted within the watershed coordinated by the City of San Diego. The monitoring included flow rate and constituent loading and flux measurements during the wet weather and one dry weather runoff events.

Wet weather monitoring was conducted over two storm events at three sampling locations. A total of six grab samples were collected at each site per storm over a pollutograph and tested for chemical constituents. Grab samples were also collected for microbiological analysis. During storms, bacterial samples were collected over a pollutograph. Estimates of continuous flow at each site were made using Sigma 950 Flowmeter with a pressure/level transducer. Data from the USGS gauging station at Los Coches Road (COSDSDR08) was used to validate the flow measurements collected. Grab samples were collected for all microbiology samples using PCR trained, clean hands techniques. Bacteria analysis was conducted for total coliform, fecal coliform, enterococcus and the presence/absence of human fecal contamination (Bacteroides fragilis).

<u>Sample site locations include:</u>

- SDR07 San Diego River @ Upper Forester Creek Tributary
- SDR08 Los Coches Creek @ I-8 Business Route
- SDR10 San Diego River @ Riverford Road

A fourth site (SDR28) was considered but was not monitored as it had no flow during the study's time period.

ACTIVITY IMPLEMENTATION

• During FY 2008-09, monitoring was conducted during one wet and one dry weather event at three monitoring stations. Water quality data are presented in tabular format in the attached report.

• During FY 2009-10, monitoring was conducted during one wet weather event at three monitoring stations. Data analysis was completed in December 2010.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

• Monitored one additional wet weather event – FY 2009-10
• Completed data analysis and final report – FY 2009-10

PARTICIPATING WATERSHED COPERMITTEES

• County of San Diego

OTHER PARTICIPATING ENTITIES

• None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

• Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a high priority water quality problem in the San Diego River Watershed. Since this activity is focused on identifying and abating sources of bacteria, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by ensuring completion of all water quality monitoring for this project (Level 1). The final study was published December 2010. The study provided needed baseline water quality data for the portions of the lower San Diego River watershed located within the County of San Diego jurisdiction. Three sampling locations were monitored, each exhibiting unique drainage area characteristics:

- COSDSDR10 was generally ponded with a wide a flood plain and relatively low flow velocities, even during storm events.
- COSDSRD08 had a narrow channel with steep sides that was influenced by continuous dry weather flows and relatively high flow velocities during storm events.
- COSDSDR07 had flow only during storm events; its channel was narrow and composed of very coarse sand.

With respect to water quality monitoring, the results of the present study can be summarized as follows:

- Total nitrogen and total phosphorus concentrations generally exceeded Basin Plan water quality objectives (WQOs) of 1 mg/L and 0.1 mg/L respectively at all sampling locations in storm water flows. During non storm conditions, total nitrogen WQO was exceeded at both locations sampled and total phosphorus WQO was exceeded at one of the two.

- Total phosphorus and TSS concentrations increased with increased flows from storm water runoff at all locations monitored. The tendency of phosphorus to bind to sediment particles may explain these correlated increases in the concentrations of TSS and total phosphorus.
- The 24-hour dry weather loads were very similar at both sampling locations (COSDSDR08 and COSDSDR10) for all chemical and microbiological constituents monitored.
- Wet weather loads were orders of magnitude higher at COSDSDR10 than at COSDSDR08 during the February storm for all chemical constituents except TSS; bacterial loads were also higher at COSDSDR10.
- During the December storm, organic nitrogen, TKN, total nitrogen, total phosphorus and E. coli loads were higher at CPSDSDR08. Notably, TSS loads were three times higher at CPSDSDR08 during December storm while they were only slightly higher at that location during the much less intense February storm. As phosphorus, organic nitrogen, and bacteria may be bound to sediment, this would likely provide some rationale for this difference.
- Total nitrogen and total phosphorus flux (in kg/acre) increased with rainfall amount and intensity.
- Non storm dissolved oxygen concentrations met Basin Plan WQOs at COSDSDR08 and COSDSDR10.
- TDS concentrations exceeded the 1000 mg/L Basin Plan WQO during non-storm conditions at both locations monitored; during storms, TDS concentrations decreased and increased upon return to baseflow as supported by continuous conductivity results.
- Bacteria concentrations generally exceeded WQOs but Bacteroides testing results were not indicative of recent human fecal sources.
- Although bacterial loads were higher during wet weather than in non-storm flows, bacteria flux (loads per acre) values during storms and non-storm conditions did not differ significantly among the monitored drainage areas.

TITLE: **Municipal Park Inspections**
ID NUMBER: **SDR-A60**

ACTIVITY DESCRIPTION

This project consisted of inspections of municipal park facilities by stormwater program staff using inspection checklists developed specifically for parks, and then addressing identified issues. The San Diego River Copermittees modeled the checklists after other successful forms, including forms used in previous Source Identification Studies. With the guidance of the forms, inspectors visited a number of parks within the watershed to assess the potential for pollutant exposures and for dry weather runoff, particularly from irrigation systems. Based on these inspections, Stormwater Department staff worked to develop stronger relationships and better communication with Parks and Recreation Department staff. The purpose of this activity was not only to address the specific incidents and issues identified at the parks visited, but to foster dialogue with Parks and Recreation Department staff on how to reduce dry weather runoff and pollutant exposures at parks.

ACTIVITY IMPLEMENTATION FY 2009-10

City of La Mesa

In FY 2009-2010, annual municipal facility inspections were conducted with all three parks which were included in the fiscal year 2008-2009 activity. The results of the 2009-2010 inspections yielded positive results based on the previous year's work. The only park which had corrective actions was Northmont Park, which has some dirt and debris within a storm drain inlet which needed cleaning. Jackson and La Mesita Park did not have any corrective actions.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was completed for four jurisdictions in fiscal year 2008-09, but is being reported again to show follow up inspection results for the City of La Mesa for fiscal year 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

No outside entities participated in this activity, but the Stormwater Departments for each Copermittee worked closely with their respective Parks and Recreation Departments when implementing this activity.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Nutrients
- Bacteria (indirectly through trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with the collective watershed strategy because it addresses several Strategic Goals established by the WURMP, including Goal 1 for Dry Weather Flow Reduction, Goal 2 for Municipal/Park Source Reduction and Goal 5 for Bacteria Source Reduction. The activity addresses pollutant load reductions, source abatement, and pollutant transport mechanisms, and may have other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was measured by confirming completion of all project elements (Level 1 Outcome), by measuring changes in knowledge and attitude (Level 2 Outcome) using surveys and by confirming reduced or no runoff water from the site (Level 4 Outcome) during follow up inspections. The City of La Mesa did incorporate sampling of observed irrigation runoff into its inspection program, but no other water quality monitoring was planned for this activity.

FY 2009–2010 Water Quality Activity

TITLE: Irrigation Runoff Reduction

ACTIVITY SUMMARY

The City of Santee is conducting a pilot project experimenting with the removal of existing median vegetation with high water needs and the planting of drought tolerant vegetation instead. This pilot study will be conducted on four median strips in Mission Gorge Road within the City. The City will also be conducting a study to assess the cost and cost-effectiveness of extending this approach throughout City maintained landscape maintenance districts. The City has hired a consultant to advise it on the technical issue of which plants to use, and another consultant to assist with evaluating the economics of the project. The goals of the project are both to eliminate the overuse of water and to reduce runoff.

PARTICIPATING JURISDICTION

- City of Santee

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- TDS
- Bacteria (Indirect – Elimination of Transport Mechanism)
- Nutrients – Phosphorus (Indirect – Elimination of Transport Mechanism)
- Gross Pollutants (Indirect – Elimination of Transport Mechanism)
- Turbidity (Indirect – Elimination of Transport Mechanism)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The activity is consistent with the collective watershed strategy because it addresses Strategic Goals 1 and 2 for Dry Weather Flow Reduction and Municipal/Park Source Reduction of high priority pollutants. Since overirrigation runoff is a primary mechanism for dry weather flows and dry weather flows serve as a transport mechanism for many watershed priority pollutants, this project will help to reduce both flow and pollutant loading in the watershed.

TASKS IMPLEMENTED DURING FY 2010-2011

The City has commenced project design and anticipates implementation to start during FY 2010-2011.

FY 2009–2010 Water Quality Activity

TITLE: Commercial BMP Self Certification Pilot Project

PROJECT SUMMARY

This program includes an assessment of urban runoff from a major, mixed use parking lot in La Mesa (super market with additional shops). The load contribution of the parking will also be examined. The project also includes an education and outreach component in order to open dialogue with property management. The shopping center management will provide source control BMP maintenance records for the City to assess. Recommendations will be made to property management, and self certifications will be required annually. Additional wet weather samples will be collected for assessment. The City may decide to continue the program for different commercial centers within the watershed.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The pilot program activity supports the Watershed Strategy by working with property managers in the watershed regarding good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system.

ACTIVITIES CONDUCTED DURING 2009-2010

The following activities were conducted during this reporting period 2009-2010:

- Planning and design of the activity.
- Selection of the location (5620-5628 Lake Murray Blvd)

ACTIVITIES PLANNED FOR 2010-2011

The following activities will be conducted during the following reporting period

- Wet weather sampling
- Contact property management
- Obtain and assess source control BMP records from property management

FY 2009–2010 Education Activity

TITLE: Kids Care Fest

PROJECT SUMMARY

The City of La Mesa is committed to education outreach at community events. Each year the City in conjunction with Grossmont Healthcare District hosts Kids Care Fest. During the event on September 26, 2009 the City's Storm Water Program had a booth staffed by environmental educators from I Love a Clean San Diego. Approximately 500 people visited the booth during the festival, and received San Diego River Watershed flyers designed to convey information regarding preventing pollution in the watershed. The event is located at Briercrest Park, 9001 Wakarusa St. in La Mesa, CA.

PARTICIPATING JURISDCTIONS

- City of La Mesa

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Bacteria (high priority)
- TDS (high priority)
- Turbidity/TSS
- Diazinon
- Metals
- Total Phosphorous, Dissolved Oxygen, and pH (high priority)

HOW THIS ACTIVITY RELATES TO THE WATERSHED

The City took ensured that visitors to the booth were provided with San Diego River watershed pollution prevention information.

ACTIVITIES CONDUCTED DURING 2009-2010

The following activities were conducted during this reporting period 2009-2010:

- Booth was visited by approximately 500 people.
- Enviroscape Watershed model and handouts were presented to visitors.

FY 2009–2010 Water Quality Activity

TITLE: Allied Gardens Green Lot
ID #: SDR- A65

ACTIVITY IMPLEMENTATION

This project will replace a portion of the conventional asphalt in the parking lot of the Allied Garden Recreation Center with porous pavement to allow for the filtration of urban runoff. The runoff from the asphalt around the recreation center and tennis courts will drain to porous pavement. Underdrains beneath the porous pavement will convey the runoff to the existing catch basins.

TMDL APPLICABILITY

Future TMDL's: fecal coliform, low dissolved oxygen, phosphorous, total dissolved solids

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. It is anticipated that this project will be transferred to the Engineering & Capital Projects Department for design and construction in September 2010. Construction is anticipated to finish in FY 2015. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Oxygen
- Bacteria
- Phosphorous
- Turbidity
- Total Dissolved Solids

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify dissolved oxygen, bacteria, phosphorous, turbidity, and total dissolved solids as high priority water quality problems throughout the San Diego River WMA, and recommend implementing filtration activities to address it.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
ALLIED GARDENS GREEN LOT **Assess the Efficiency and Effectiveness of Allied Gardens Green Lot**	
Management Questions	• What is the load reduction efficiency of retrofits? • How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Change in pollutant concentrations in runoff into storm drains or receiving water (Outcome Level 5) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives

The goal of the project is to reduce runoff volume through filtration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type.

Analysis and Results

The concept design for this project was completed in FY 2010. Currently, load estimates are being calculated and will be included in the project report. Once design and construction are complete, additional assessment will be completed to determine the effectiveness of this activity.

Conclusions

As mentioned above, the assessment will be completed after project construction and conclusions will be made at that time.

FY 2009–2010 Water Quality Activity

TITLE: Complex Street Green Mall
ID #: SDR- A66

ACTIVITY IMPLEMENTATION

This project will upgrade the existing sidewalk areas with curb cut-outs and vegetated bioretention cells which are designed to capture urban runoff from the tributary asphalt surfaces and provide a load reduction by filtering flows. Runoff absorbed into the amended soils will undergo evapotranspiration through native vegetation.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in late FY 2011. Construction is anticipated in FY 2015.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved oxygen
- Bacteria
- Phosphorous
- Turbidity
- Total dissolved solids

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify dissolved oxygen, bacteria, phosphorous, turbidity, and total dissolved solids as high priority water quality problems throughout the San Diego River WMA, and recommend implementing filtration and infiltration activities to address it.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
COMPLEX STREET GREEN MALL **Assess the Efficiency and Effectiveness of Complex Street Green Mall Filtration**	
Management Questions	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives
The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of vegetative planters.

Analysis and Results
This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions
Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

FY 2009–2010 Water Quality Activity

TITLE: Famosa Slough Erosion Sediment Control BMP
ID #: SDR- A67

ACTIVITY IMPLEMENTATION

Famosa Slough is a 37 acre wetland immediately upstream of the San Diego River. It is fed by rainwater from the surrounding urban drainage areas and is flushed with salt water from the main San Diego River channel.

This project takes place in two locations in the slough. At one location, curb and gutter as well a new storm drain pipe and an energy dissipater will be added. The second location will include everything at the first location plus an infiltration channel.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The concept plan for the project was completed in June 2010. The project is anticipated to be transferred to the Engineering & Capital Projects Department for design and construction in late FY 2011. Construction is anticipated in FY 2015.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify fecal coliform, low dissolved oxygen, phosphorous, and total dissolved solids as high priority water quality problems throughout the San Diego River WMA.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
FAMOSA SLOUGH EROSION SEDIMENT CONTROL BMP **Assess the Efficiency and Effectiveness of Famosa Slough Erosion & Sediment Control**	
Management Questions	• What is the load reduction efficiency of retrofits? • How effective are retrofits at reducing loads of priority pollutants (sediment)?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Change in pollutant concentrations in runoff into storm drains or receiving water (Outcome Level 5) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

Objectives
The goal of this assessment is to determine the project's effectiveness and efficiency for reducing sediment load.

Analysis and Results
This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions
Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

FY 2009–2010 Water Quality Activity

Title: Think Blue Trash Abatement Partnership
ID #: SDR – A68

ACTIVITY IMPLEMENTATION

Think Blue sponsored the purchase of 100 new trash bins for Qualcomm Stadium. The new trash bins are 3-cubic yard metal bins with lids. The new trash bins are distributed throughout the 150 acre parking lot at Qualcomm Stadium. These trash bins replaced the stadiums old lidless trash bins. The trash cans are designed to provide stadium attendees with additional infrastructure with which to properly dispose of trash that is generated. Additionally, the increased size of the bins allows for additional trash to be collected while the lids prevent trash, and the resulting bacteria, from blowing into the San Diego River.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Trash bins were purchased and implemented at the beginning for FY 2010. No additional bins will be implemented in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the San Diego River WMA, and recommend Best Management Practices (BMPs) to reduce bacteria.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this program is to provide more opportunities for the stadium patrons to properly dispose of trash while at Qualcomm Stadium. No assessment will be conducted on this program.

Analysis and Results

A total of 100 bins were purchased and distributed throughout the Qualcomm Stadium parking lot.

Conclusions

The City implemented this program to help reduce trash flowing from the stadium parking lot into the San Diego River. The City is not intending to use this activity as part of its watershed program, therefore no assessment was conducted in FY 2010 or in future years.

FY 2009–2010 Water Quality Activity

TITLE: **Pet Waste Bag Dispenser Program**
ID NUMBER: **SDR-A69**

ACTIVITY IMPLEMENTATION

This activity will target areas frequented by pet owners such as apartment complexes, condominiums, mixed-use locations, and public right of way in the San Diego River Watershed Management Area (WMA). When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones.

This project was in its planning stage during FY 2010. Watershed maps were developed and utilized to assist in the selection of potential installation locations. Criteria used were:

a) Canine related activity, e.g. dogs being walked
b) Cleanliness (observed pet waste)
c) Presence of trash receptacles
d) Presence of pet waste bag dispensers
e) Areas draining to a water body impaired for bacteria, phosphorus or nitrogen
f) Potential for Partnership
g) Areas of Complaints/Chronic Pet Waste Observations

Three watershed management areas (WMAs) were selected for implementation in FY 2011: Mission Bay and La Jolla, San Diego Bay, and San Diego River.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2010. Program implementation is anticipated to occur in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego River	
PET WASTE BAG DISPENSER PROGRAM **Assess the Effectiveness of Pet Waste Bag Dispensers**	
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	• Change (%) in load reduction pre and post implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results

The pilot project was not in active implementation during FY 2010. Program launch is anticipated to occur in FY 2011.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

FY 2009–2010 Education Activity

TITLE: Focused Outreach to the Equestrian Community

ACTIVITY DESCRIPTION

The County of San Diego conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups.

ACTIVITY IMPLEMENTATION FY09-10

Workshops

During FY09-10, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Workshops during FY09-10 were held in Bonita, Lakeside, Ramona, and Fallbrook. The table below identifies the primary watershed(s) addressed by each workshop.

Location	Presentation Date	No. of Attendees	Primary Watershed Addressed
Lakeside	11/7/09	23	San Diego River
Ramona	2/3/10	43	San Dieguito, San Diego River
Fallbrook	6/19/10	22	Santa Margarita, San Luis Rey
Bonita	6/28/10	25	Sweetwater
Total		**113**	

Funded by the County, the workshops were presented by staff from either the Solana Center or the MRCD. They included presentations and handouts identifying resources available to equestrians. Information presented included local watershed awareness, manure management, and composting. Key elements included how proper manure

management relates to horse health, water quality, and maintenance of positive relationships with neighbors. Question and answer sessions were conducted in all workshops.

The workshops in Lakeside and Fallbrook were held on Saturday mornings on private properties with horses and active compost piles at each location. Participants were encouraged to observe the compost piles and the BMPs in place to prevent contamination of runoff. The presentation at the Fallbrook workshop included poster boards of a Power Point presentation. The other two workshops (Ramona and Bonita) were held in classroom settings at community meeting rooms on weeknight evenings. Presentations were casual discussions that included BMPs to improve horse health, protecting properties from erosion, and preventing polluted runoff discharges. San Diego County watershed maps were displayed at all workshops, allowing attendees to locate their local watershed.

Assessment was conducted in the form of pre- and post-workshop surveys.

Community Events

County staff and/or contractors also provided targeted outreach to the equestrian community at four equestrian themed community events during FY09-10. At each of these events, the County staffed a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. Additional details on each community event are provided in the table below.

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
10/17/09 & 10/18/09	Vaquero Days Western Heritage Festival	Granville Martin Ranch/Museum	45	Sweetwater
5/16/2010	Creek Hollow Ranch Horse Dressage Event	Creek Hollow Ranch	10	San Dieguito
5/28&29/10	Valley Center Rodeo Days	Valley Center Community Center	35	San Luis Rey
6/19/2010	Sweetwater Farms Hunter/Jumper Horse Event	Sweetwater Farms	15	Sweetwater
Total			**105**	

Development and Distribution of Educational Materials

During FY09-10, County staff created a coloring sheet and handout to direct interested equestrians to more detailed information regarding BMPs for manure management (see attached).

Surveys

In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted a firm with expertise in Community Based Social Marketing (CBSM) to conduct research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (see attached report).

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for beaches and creeks, and with other more localized TMDLs for constituents such as nutrients and sediment.

TIME SCHEDULE FOR IMPLEMENTATION

Additional workshops are planned for equestrians in the Santa Margarita and San Luis Rey Watersheds during FY10-11 and FY11-12. In addition, the County is pursuing a partnership with the San Diego County Equestrian Foundation (SDCEF) to disseminate information about manure management and other BMPs to the equestrian community. County staff will provide outreach at various SDCEF events during FY10-11. Over the long term, the County is interested in pursuing opportunities to facilitate peer mentoring programs that encourage equestrians to learn about proper BMPs such as manure management from one another. Development of such a program in the future is contingent upon identifying a reliable source of funding such as grants.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered.

Pre-workshop survey results were as follows:

- 15.2% of participants responded that they live in a watershed.
- 43.2% responded that stormwater is not treated.
- 10.8% felt that horse manure contributes from “some to a great deal” to water pollution.

When asked about what equestrians can do to prevent pollution caused by horse manure, 59.5% of respondents suggested ideas on the pre-workshop survey.

Post-workshop survey results were as follows:

- 90% of respondents indicated that they live in a watershed.
- 74.2% responded that stormwater is not treated.
- 22.8% felt that horse manure contributes from “some to a great deal” to water pollution.

Regarding what equestrians can do to prevent pollution caused by horse manure, 82.8% suggested ideas on the post survey.

These survey results indicate a positive increase in knowledge and awareness about how equestrian activities can affect water quality. Results also show that more equestrians were able to identify positive behavioral changes (Level 3 Outcomes) following the workshops.

FY 2009–2010 Water Quality Activity

TITLE: **Residential Rain Barrel Subsidies & Distribution**
ID NUMBER: **SDR-A71**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY09-10

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition,

the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY09-10. The events are scheduled to occur during FY10-11. Depending upon the success of the initial events, additional events will be considered for implementation during FY11-12 and FY12-13.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

Water Quality Activity

TITLE: Addition of Infiltration Strips to Concrete Channels

ACTIVITY SUMMARY

The City of Santee has received preliminary approval for funding of a pilot project through the San Diego Region Integrated Regional Water Management Plan (IRWMP). The project has been designed specifically to address water quality issues relating to concrete channel-lined drainage. The City has been successful in restoring portions of unlined channels such as Forester Creek and Woodglen Vista Creek. However, it is not possible to implement restoration in concrete channels where there is existing development, for example in the upper portion of the Woodglen Vista Creek, which is surrounded by residences.

The City is proposing to conduct a pilot project to explore how infiltration can be introduced at the base of concrete channels to facilitate infiltration of dry weather (and to some extent wet weather) flows. This would mimic the pre-development hydrology of the drainage channel and help recharge groundwater.

Infiltration of runoff will divert pollutants from being discharged to the San Diego River. Some designs may allow the recruitment of plants in the infiltration areas which will help remove pollutants such as nutrients from the run-off. The objective of the project is to achieve some of the benefits of restoration without compromising flood control capacity and function.

This project complements other projects the City is undertaking to survey the condition of corrugated metal pipe (CMP) portion of the storm drain system and to prioritize CMP replacement.

PARTICIPATING JURISDICTIONS

- City of Santee

With input from City of El Cajon, City of San Diego, City of La Mesa, and County of San Diego. It can also be considered a regional collaborative effort due to its integration into the IRWMP process for San Diego County.

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- TDS (Indirect – Elimination of Transport Mechanism)
- Bacteria (Indirect – Elimination of Transport Mechanism)
- Nutrients – Phosphorus (Indirect – Elimination of Transport Mechanism)
- Gross Pollutants (Indirect – Elimination of Transport Mechanism)
- Turbidity (Indirect – Elimination of Transport Mechanism)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The activity is consistent with the collective watershed strategy because it addresses Strategic Goals 1 and 2 for Dry Weather Flow Reduction and Municipal/Park Source Reduction of high priority pollutants. This project will become a standing item during

WURMP meetings to allow other jurisdictions to comment on the pilot project design. Input from other jurisdictions is needed so that the findings, if the project is successful, it can be used to design similar facilities in their jurisdictions.

Infiltration of runoff, if implemented throughout the watershed will potentially help achieve TMDL compliance.

TASKS TO BE IMPLEMENTED DURING FY 2010-2011

The City will begin planning and seeking funding for this activity during FY 2010-2011. The project will be implemented when funding becomes available.

APPENDIX B

ACTIVITY A-9 SUPPORTING DOCUMENTATION: I LOVE A CLEAN SAN DIEGO – CREEK TO BAY CLEANUP EVENT

25th Annual California Coastal Cleanup Day
FINAL REPORT—San Diego County

Event Overview

The 25th Annual California Coastal Cleanup Day was held on Saturday September 19th, 2009 from 9am to 12noon in San Diego County. This year's event celebrated the 25th anniversary of California Coastal Cleanup Day, and the 24th anniversary of the International Coastal Cleanup. I Love A Clean San Diego (ILACSD) and San Diego Coastkeeper (SDCK) coordinated the effort once again in San Diego County. As in past years, ILACSD coordinated all inland cleanup sites while SDCK coordinated all coastal sites. This was the sixth consecutive year that San Diego Coastkeeper was involved as co-coordinator of the event and the twenty-third year that ILACSD has been involved.

California Coastal Cleanup Day is part of International Coastal Cleanup (ICC), a global volunteer initiative organized by the Ocean Conservancy. Each year, the majority of U.S. states, and over fifty countries worldwide participate in the largest international volunteer event in support of the marine environment. ICC is unique in that all volunteers are asked to track the debris they collect by completing data cards provided by The Ocean Conservancy. These cards track the type and amount of trash and recyclables collected at each site, as well as identify certain items of local concern, including cigarette butts, fishing line, and food wrappers. These data cards are entered into a comprehensive online database managed by the Ocean Conservancy and are used to determine sources of marine debris and pollution trends, making volunteers an important part of a global marine pollution study.

This year Coastal Cleanup Day broke volunteer records once again, making this year a continuation in the tradition of increased volunteer support locally year after year. In San Diego County, 10,283 volunteers participated in Coastal Cleanup Day at 80 sites countywide. Six of these cleanup sites were hosted by Proyecto Fronterizo across the border at beaches in Tijuana. Of all cleanup sites, 38 were coastal and 42 were inland, further demonstrating the shift to inland sites as many local beaches have less of a problem with litter. These volunteers removed an impressive 174,491 pounds or 87 tons of trash, recyclables, and green waste from cleanup sites, showing an increase in the amount of trash collected when compared to 2007 and 2008 debris totals.

Community Participation

Volunteers

San Diego County volunteering reached a milestone this year, with over 10,000 individuals giving their time to Coastal Cleanup Day. This was more than a 25% increase from 2008, when there was a similar jump in numbers from the previous year. Many volunteers came with their family or were part of community service groups, including company teams, scout troops, and school groups. Coordinators hope to encourage youth participation each year to create

environmental stewards at a young age. To reward and engage these youth volunteers, scout troops can earn commemorative event patches for their service, and volunteers in grades K – 6 can enter a coloring contest for a prize and recognition on the website. This year's Coloring Contest theme asked students to create their own CCD mascot to act as a cleanup champion for clean communities, and winners from each grade were rewarded with an art kit.

In order to accommodate the increasing numbers of volunteers, 4 more sites were added and each site captain was given more supplies. This year's 80 sites reached over 150 miles of shoreline, spanning across the majority of the coastline from Oceanside to Rosarito, Baja California, and inland sites as far north as Fallbrook and as far east as El Cajon. In total, 10,283 participants removed 124,236 pounds of trash and 50,255 pounds of recycling for a total of 174,491 pounds or 87 tons of debris. San Diego County had some of the highest accomplishments of coordinating groups in the state of California, where over 78,000 volunteers removed over 1.2 million pounds of debris. San Diego ranked third after Los Angeles and Orange counties in terms of volunteer totals in California. San Diego ranked 2nd only to Los Angeles County for the most debris collected.

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Each coordinating organization enlisted the help of many student volunteers to help with this event. These volunteers were called on to help prepare each site's supplies, distribute materials to site captains, and to manage registration and food at the media site on the day of the event. Some volunteers also helped tabulate data cards after the event. In total, 187 volunteer hours were spent on such activities.

Over 7,500 volunteers registered prior to the cleanup on the San Diego Coastal Cleanup Day website, www.cleanupday.org. This website is regularly maintained by the event coordinators with updated information about site locations, special instructions, scout patches and coloring contests, and press releases/photos/news. Tracking online registration is an important part of distributing volunteer groups to sites with fewer volunteers, as coordinators are able to set a reasonable cap on registration for some of the more popular sites. While it is recognized that a number of registrants will not actually attend, a similar number will attend without registering. Urging volunteers to register is an important part of managing such a large simultaneous event, and accessing that information through the website helps to prepare site captains for the expected number of attendees. Red text is used in the weeks leading up to the event to further encourage participation at sites in need of volunteers. Coordinators recommend adding differentiation for full sites as well so they stand out against sites that are open. There are opportunities to better match the actual capacity of certain sites with the cap set on registration at the website and the quantity of supplies provided. Coordinators hope to further streamline this process next year.

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Site Captains

ILACSD and SDCK are greatly appreciative that many site captains were experienced returning veterans for their site. However, it is inevitable that some captains cannot continue the level of commitment necessary to make the event a success, and some sites required recruiting new eager site captains. Site captains are often associated with a community group or local government agency, or an organization dedicated to supporting the environment. Since many captains work with co-captains, there were well over 100 site captains and co-captains for 80 sites at Coastal Cleanup Day 2009.

Site captains are strongly encouraged to attend one of two training meetings one month before the event to distribute their cleanup supplies and for updates on any news or changes. As an incentive to attend, captains are treated to dinner and entertainment (in the form of a brief educational PowerPoint presentation on marine debris and the history of Coastal Cleanup Day). The meetings were held from 6:00-7:30 pm on Tuesday August 11th at the Oceanside Library Civic Center Community Room and on Monday August 17th at the Naval Training Center Command Center in Point Loma. Statewide coordinators from the Coastal Commission were able to attend and introduce themselves at both meetings; Shannon Waters attended the North County meeting and Eben Schwartz attended the Point Loma meeting. Both meetings had impressive attendance, although due to conflicts some site captains were required to pick up their supplies from the ILACSD or SDCK offices and receive a brief tutorial.

Site captains are responsible for reporting their total volunteer count and trash weight, along with any hazardous waste for pick up, to the coordinators by 12:30 pm on the day of the cleanup. While some follow up calls were necessary, over 85% of totals were recorded before the distribution of the final press release. There are always captains who fail to complete data cards, or do not tally their sites data cards on the site captain summary card, leading to some extra follow up by coordinators after the event.

Marketing & Media

Coordinators decided to hire a professional marketing, advertising and public relations agency, Oster & Associates to help with media buys, press releases and overall event branding this year. Focus was placed on the 25th anniversary component, as well as the bi-national aspect of San Diego's Coastal Cleanup Day to garner more media attention. Coordinators created and disseminated two pre-event press releases, one media advisory, and one post-event release. Outreach was also done by printing 1,000 posters and 5,000 flyers recognizing event sponsors and directing potential volunteers to the local CCD website, www.cleanupday.org. The posters were once again printed with both English and Spanish text on one poster, and the two different versions of the flyers were available, one in English and one in Spanish. These documents were also sent out electronically to all site captains to further disseminate to all email contacts.

Belmont Park in Mission Beach was chosen as the location for this year's media site. This site was chosen for a variety of reasons, including its central location, local landmark status, substantial parking in multiple lots, ability for volunteers to spread out in a large cleanup area, and a new partnership with Belmont Park through Wavehouse and the San Diego Coaster Company. In order to manage the expected 500 + volunteer turnout, ILACSD coordinated a variety of service projects at this site including storm drain stenciling and stenciling beach rules on the boardwalk and seawall.

ILACSD & SDCK updated the "how you heard about the event" field in the online registration form to reflect current media partners as well as other outreach means including schools, sponsors, word of mouth, internet, etc. This field was made mandatory as part of the registration process. A complete breakdown of how registered volunteers heard about the event is shown in the table below. The

feedback shows that online and social marketing and media is an excellent method of reaching a wide audience. Coordinators anticipate a heavier emphasis in online marketing next year, as well as targeting media that will more effectively reach members of the Hispanic community, which makes up 30% of the population of San Diego County.

SOURCE	NUMBER	% of TOTAL
SDCK Website	337	20.46%
Friend	196	11.90%
School	169	10.26%
ILACSD Website	142	8.62%
Internet	99	6.01%
10 News	96	5.83%
Local Newspaper	82	4.98%
Flyer	40	2.43%
Sponsor	34	2.06%
Work	29	1.76%
Radio Latina	25	1.52%
Poster	20	1.21%
Star 94.1	19	1.15%
Previous Participation	19	1.15%
Contigo Univision	10	0.61%
Facebook	10	0.61%
Other	320	19.43%
TOTAL	**1647**	**100.00%**

With the help of Oster & Associates, coordinators were able to get proposals from a variety of television and radio stations in order to find the best partnership at a competitive price. Coordinators received proposals from the following stations: Star 94.1, KPRI 102.1, Sophie 103.7, 10News, Fox5, Azteca America, Univision TV, Radio Latina 104.5 and La Nueva 106.5.

Television

Coordinators worked with media partners ABC 10News and Univision TV to conduct cross-platform outreach in both the English and Spanish language. This marked the 4th year that ABC 10News has acted as the English language television partner providing hundreds of spots as well as web presence and an emcee for the media site. The station produced pre-event public service announcements of the following lengths: :04 seconds, :05 seconds, :10 seconds, :15 seconds, and :30 seconds. Tracking was provided showing the air date, length, and timeslot for each airing. ABC 10News also produced a post-event PSA in lengths of :04 seconds, :15 seconds, and :30 seconds. Online hits were also tracked, with a .03% click and read rate from their web banners. Out of over 3 million impressions, 891 impressions were clicked and read. While ABC 10News did air an impressive number of spots, their new shift away from community news and toward "hard news" has encouraged coordinators to reach out to other stations for the 2010 event.

This year coordinators chose to reach out to other Spanish language television stations as media partners, since previous years Spanish language media outreach was fairly unsuccessful with the current measuring system. Univision TV Channel 17 was chosen as the Spanish language television partner due to the popularity of their nationally syndicated "novellas" as well as their local morning and evening news programs. Univision offered a Coastal Cleanup Day representative the opportunities to be interviewed for their morning show, *Despierta San Diego*, of which ILACSD staff member Gilberto Alfaro attended. Univision aired a total of 62 spots while their sister station Telemundo also aired 60 spots.

Radio

Again, coordinators received proposals from a variety of stations in order to truly select the best partnership to promote the event. Past CCD media sponsors KPRI 102.1FM and Sophie 103.7FM submitted proposals, as did Star 94.1FM, a station that has never promoted Coastal Cleanup Day. While their advertising rates were a bit more expensive, their audience was larger than any other station and the opportunity to advertise during the hugely popular Jeff & Jer Morning Show encouraged coordinators to choose Star 94.1FM. However, the morning show which had been on air for over 20 years was cut right before the advertising campaign began, marking a very sudden and potentially negative change in programming. Star 94.1FM aired 54 spots, 14 of which were 30 seconds and 40 of

which were 15 seconds in length. They also provided an appearance by popular morning and afternoon show personality, Delana at the media site, which added to the event. Clear Channel, the owner of this station also put together a 30 minute pre-recorded interview featuring SDCK & ILACSD Executive Directors Bruce Reznik and Pauline Martinson, which aired across all of their stations in San Diego multiple times. Radio Latina aired a total of 51 spots varying in length from 10 seconds, 30 seconds, and 60 seconds. Radio Latina also adopted two sites, one in Tijuana and one in Imperial Beach, encouraging listeners to attend one of these two sites depending on which side of the border they live on. Their two morning show personalities, Jesse and Nelly, attended one of the two sites, and used live call-ins during the event to compete for who could get the most volunteers at their respective site. As a result, both sites boomed with volunteers as well as fun festivities during and after the cleanup.

Print

Several local papers and magazines covered Coastal Cleanup Day in San Diego County, both before the event and after its completion. These include *The Union Tribune (5X), The Carlsbad Sun, The Peninsula Beacon, Beach and Bay Press (2X), Carmel Valley Leader (3X), Coronado Eagle and Journal (4X), Del Mar Times (5X), East County Magazine, Eagle and Times (3X), El Mexicano (2X), La Jolla Light, Lavender Lens, La Jolla Village News, North County Times (3X), Pacific San Diego Magazine, Rancho Santa Fe Record (3X), Rancho Santa Fe Review (2X), Presidio Sentinel (2X), San Diego News Network, Del Mar Village Voice, Fallbrook Bonsall Village News*, and *Mission Times Courier (2X)*.

Online

Most online marketing directed potential participants to visit the www.cleanupday.org website for more information and to register for a site near them. ILACSD and SDCK highlighted Coastal Cleanup Day as a major volunteer opportunity on both of their websites and through regular email alerts. The www.cleanupday.org website also allows for an email blast to be sent to all previously registered participants, and coordinators sent this reminder when online registration opened on August 1st. As mentioned, ABC10News, Univision, and Star 94.1 posted information and links on their websites. A link was made available on the Belmont Park Roller Coaster Website advertising that viewers could get a free ride on the rollercoaster just for volunteering, and led participants to the registration website. Many site captains' organizations internally advertised the event through email blasts or by posting a link on their website. An email was also sent to San Diego Unified School District Teachers advertising the event, and save the date flyers were distributed to Girl Scout Troop leaders at a meeting early in the summer. Finally, a Facebook event page was created for the San Diego County Cleanup where Facebook members could find more information, RSVP, post photos, ask questions, or make comments about the event.

New in 2009

Online Post-Event Survey

A few changes were introduced at this year's Coastal Cleanup Day Conference with the California Coastal Commission. Surveys were introduced in 2008 in a select few counties that could coordinate it last minute, including San Diego. ILACSD and SDCK chose a few sites to test the surveys based off of the experience level of the site captains. This year, the CCC encouraged all county coordinators to use surveys, and San Diego planned to implement them countywide. However, the CCC was delayed in sending out the surveys, so they were not included in each site captain box. ILACSD and SDCK did not receive surveys until the week leading up to the event, leaving little time to distribute and explain to

captains with such short notice. To remedy this, ILACSD printed surveys to distribute to attendees at the media site, and planned to send out surveys digitally to volunteers in the post-event thank you email. This additionally saves on paper and resources for a more sustainable event.

Online Data Collection System

The Ocean Conservancy presented a new online data collection system at this year's conference. Rather than sending in each data card and summary card as in years past, coordinators will log into an online database to report data from each summary card. The Ocean Conservancy created the initial county profile with a list of cleanup sites that coordinators can log into and edit each year. Summary cards are entered online, giving coordinators immediate access to data and trends calculated countywide.

Crystal Geyser Water Partnership

A partnership with Crystal Geyser was established in 2008 to provide water donations for many counties at a statewide level. The Coastal Commission made an error with order deadlines, and water deliveries could not be secured in time for the first site captain meeting in North County. ILACSD worked with the local Crystal Geyser contact, Bob Flavin, as well as the statewide contact, Jackie Suzuki, to work out a solution. Water coupons were mailed for distribution to all of the North County site captains that attended the first site captain meeting in Oceanside. Recommended stores for redemption included Stater Brothers, Vons, Albertsons, and Wal-Mart. Coordinators did not receive any complaints regarding the coupons from site captains. The CRV added cost may be an issue pending further review.

Site Captain Appreciation Event

Additions were made at a local level to the San Diego County event. Coordinators secured Belmont Park and the San Diego Coaster Company as sponsors of this year's event, who provided each volunteer with a roller coaster ride pass. This sponsorship also provided the venue, food, and service staff for the first ever Site Captain Appreciation Night. Wavehouse, a part of Belmont Park in Mission Beach, hosted the event. Site captains were encouraged to return their supplies while also enjoying food provided by Wavehouse, beer provided by CCD sponsor Alaskan Brewery, and other refreshments from Wavehouse. Photos submitted for the photo contest were shown on a slideshow during the event, and winners were announced for categories that included Volunteers in Action, Group Photo, Kids, and the best Before and After shot. The photo contest was another new addition, and was a successful way to encou captains to submit photos to coordinators. ILACSD and SDCK facilitated conversation amongst site captains through an ice breaker bingo game, and did a short presentation of site captain stand out awards. Awards included best rookie captain, most trash removed, most trash removed per volunteer, and best all around captain, each for coastal and inland sites. A "Golden Grabber" award was presented to Jane Donely for her 20th Anniversary as a site captain with Coastal Cleanup Day.

This event was not only a fun and relaxing way to get to know site captains better, but also proved to be a great way to get supplies back in a timely fashion. Some site captains who were not able to stay for the event still came simply to drop off their supplies, as the "after-hours" timing seems to work better for many people's schedules. This event, held four days after Coastal Cleanup Day provided site captains the opportunity to share their site results and experiences. Spreadsheets with totals from all sites were printed out and placed at each table to help facilitate conversation. Site leaders were also able to bring their children to the event, as the venue had games for both kids and adults to engage in.

Sempra Volunteer Service Projects

The Sempra Energy Foundation partnered with ILACSD for the second year to organize five Coastal Cleanup Day sites chosen for Sempra employees. To keep an expected 200 volunteers occupied and engaged at each site, ILACSD coordinated service projects to compliment the debris removal at one cleanup site in each of the five zones. Sempra asked for sites near their main offices and recommended targeted communities to hit, including National City and Carlsbad. Sempra volunteers could choose from the cleanup option or the side projects at each of their cleanup sites. Below is a list of the service projects coordinated for Sempra volunteers in San Diego County:

Zone 1: North County Coastal
Carlsbad State Beach campgrounds: Campground renovations and amphitheater mural

Zone 2: North County Inland
Dixon Lake: Kayak cleanup, trail maintenance, and bridge installation

Zone 3: Central San Diego
Belmont Park Media Site: Storm Drain Stenciling and stenciling beach rules on the seawall

Zone 4: East County
El Cajon Rose House: Landscaping and facelift for foster care center

Zone 5: South Bay
Paradise Creek Educational Park: Upland creekbed restoration, native planting

When coordinating service projects, a few characteristics were used to qualify sites. Veteran captains that have a history of efficiency were selected because of their ability to handle the added responsibility successfully. Sites also needed to have enough trash and need for additional work, and enough space for the added large group of volunteers. Projects were selected that were varied from the rest, to occupy an assortment of age ranges and physical abilities to satisfy Sempra's diverse volunteer base. The Paradise Creek site was promoted as the family friendly site, and the Dixon Lake was marketed towards sturdier volunteers ready to work hard.

Team Sempra hand selected leaders from their employee base to ensure that volunteers were qualified as a point of contact for the project. Last year, they asked for employee volunteers and had some problems with scheduling and training before the event. By selecting candidates that they felt would be up to the challenge, each team leaders was very helpful and easy to work with. Site visits were scheduled in the weeks leading up to the event. These meetings were very beneficial and crucial to the event's success. Each site captain got to meet the Sempra team leader and discuss supplies, logistics, and give the Sempra employee a specific idea of the layout and plan for the event.

To coordinate supplies, each site captain utilized their knowledge and expertise at each of their sites to establish a supply list of needs for their projects. ILACSD approved the budget and allowed captains to purchase supplies. Receipts were required from each captain for reimbursements. Team Sempra provided pizza from Oggi's for all volunteers at each of the five sites. Some site captains arranged for extra snacks or drinks to compliment the lunch. In addition to pizza arrangements, ILACSD coordinated with Sempra to reserve parking spots for Sempra executives that were assigned to each site.

One Sempra volunteer advised that coordinators provide masks for any project that used paint. This should be taken into consideration for next year's event. All other feedback provided by Sempra volunteers and event coordinators was extremely positive. ILACSD plans to meet with Sempra to discuss an overview of the event, including pros and cons before beginning to plan for the 2010 event.

For more information regarding Coastal Cleanup Day, please contact either of the co-coordinators:

San Diego Coastkeeper:

Alicia Glassco
Alicia@sdcoastkeeper.org
619-758-7743 ext 125

I Love A Clean San Diego:

Morgan Justice-Black
mjusticeblack@cleansd.org
619-291-0103 ext. 3003

Natalie Roberts
nroberts@cleansd.org
619-291-0103 ext. 3014

Sempra Coastal Cleanup Day 2009

Carlsbad State Beach campgrounds

Rose House, El Cajon

Belmont Park, Mission Beach

Paradise Creek, National City

25th Annual Coastal Cleanup Day Site Totals

NORTH COASTAL	Miles Cleaned	Number of Volunteers	Pounds Trash	Pounds Recycling	Total Weight
Beacon's Beach, Encinitas	6	150	165	5	170
Buccaneer Beach, Oceanside	1	154	473	54	527
Carlsbad State Beach (Campgrounds)	1	123	112.5	56.5	169
Fletcher Cove, Solana Beach	1	186	100	64	164
Frazee Beach, Carlsbad	3	172	171	55	226
Oceanside City Beach	2	410	880	0	880
Powerhouse Park, Del Mar	3	155	281	41	322
San Elijo State Beach (Campgrounds)	1	154	67	53	120
San Elijo Lagoon (Trailhead at Rios)	2	94	137	52	189
Seaside Beach, Cardiff	1.5	115	85	15	100
South Carlsbad State Beach (Ponto Beach)	2	289	330	10	340
Swami's Beach, Encinitas	2	182	171	71.5	242.5
Tamarack State Beach & Aqua Hediona Lagoon, Carlsbad	4	108	184	58	242
Torrey Pines and Penasquitos Lagoon	1	148	100	27	127
NORTH INLAND	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Buena Creek, Vista	1	118	1153	220	1373
Buena Vista Creek (3 sites)	1	183	2500	0	2500
Carmel Mountain Preserve	6	85	3,200	75	3,275
De Luz, Daily Rd and Santa Margarita Truck Trail	12	32	34,680	3,320	38,000
Dixon Lake, Escondido	2	327	280	426	706
Fallbrook	15	100	4140	31460	35600
Lake Hodges	3	80	462	75	537
San Elijo Lagoon, Cardiff-by-the-Sea	2	137	400	0	400
CENTRAL SAN DIEGO	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Belmont Park MEDIA SITE	3	759	1,361	62.5	1,423
Bonita Cove, Mission Bay (Kayak Cleanup)	5	16	30	1	31
Chollas Creek, 33rd and National	3	40	5280	10	5290
Chollas Creek, 54th Street	1	25	1,060	30	1,090
Chollas Lake Park, Oak Park	1	59	128	5	133
Chollas Radio Canyon	1	80	200	50	250
Cooper Canyon	1	29	2500	40	2540
Embarcadero Docks (Underwater Cleanup)	1	141	512	59	571
Florida Canyon	2	86	854	91	945
G Street Pier to Broadway Pier	2	45	200	30	230

25th Annual Coastal Cleanup Day Site Totals

CENTRAL SAN DIEGO (cont.)	Miles Cleaned	# Vols	Pounds Trash	Pounds Recycling	Total Weight
Guymon Arms Open Space	1	30	600	50	650
La Jolla Shores	3	278	215	20	235
Lakehurst Canyon	1	43	1400	20	1420
Manzanita Canyon	1	32	0	0	0
Mission Bay - Santa Clara Point	2.5	110	105	25	130
Normal Heights Canyon	0.5	27	346	370	716
North Park (29th and University)	2	26	3280	0	3280
North Swan Canyon	0.5	114	8980	6820	15800
Ocean Beach, Dog Beach	3	207	211	16	227
Ocean Beach Pier	2	351	243	34.5	277.5
Pacific Beach Drive	0.5	92	99	26	125
Rose Creek	3	94	1460	100	1,560
San Diego River, Mission Valley Preserve	1	70	4280	0	4280
Shawn Canyon	0.25	23	1700	110	1810
Sorrento Creek	3	45	465	91	556
South Swan Canyon, City Heights	0.75	16	1,470	20	1,490
Stevenson Canyon	1	11	0	2880	2,880
Tourmaline Beach	1	213	56	1	57
Zena Canyon	2	15	4660	60	4720
47th Street Canyon, City Heights	1.5	35	3,620	6	3,626
EAST COUNTY	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Alvarado Channel, La Mesa	0.25	10	17.5	3	20.5
El Cajon	3	93	161	101	262
Lake Murray	8	253	229	100	329
Lemon Grove	1.5	24	620	250	870
Rancho Mission Canyon	0.1	10	340	100	440
Santee San Diego River	2	164	3000	250	3250
University Channel, La Mesa	0.4	15	539	10	549
SOUTH BAY	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Borderfield State Park	1	82	668	0	668
Chula Vista Wildlife Reserve off of the Power Plant	1	92	2138	0	2138
Coronado City Beach	2	175	465	184	649
Eastern Otay Valley Regional Park	2.5	112	3000	300	3300
Imperial Beach Pier	3	475	485	0	485
Las Playas, Tijuana	6	1350	8016	0	8016

25th Annual Coastal Cleanup Day Site Totals

SOUTH BAY (cont.)	Miles Cleaned	# Vols	Pounds Trash	Pounds Recycling	Total Weight
Montgomery High School Natives Plant Garden	0.5	8	20	5	25
Paradise Creek Education Park	1	120	100	700	800
Silver Strand State Beach, Coronado	3	205	340	100	440
South Bay Wildlife Refuge	1	15	60	66	126
Sweetwater Regional Park, Western Staging Area	3.7	104	2020	420	2440
Sweetwater River	2	90	2240	20	2,260
Tijuana River Valley	1	92	3680	400	4080
Tijuana Slough , North Beach	1	100	386	55	441
Western Otay Valley Regional Park	1.5	80	326	25	351
TOTALS:	**168.5**	**10,283**	**124,236**	**50,255**	**174,491**

25th Annual Coastal Cleanup Day Site Captains

NORTH COASTAL	Site Captain	Site Captain Affiliation
Beacon's Beach, Encinitas	Bob & Jan Rogers & Family	Heaviland Enterprise, Inc
Buccaneer Beach, Oceanside	Carla Miller	Harrah's Rincon Casino
Carlsbad State Beach (Camp)	Laura Ohman	California State Parks
Fletcher Cove, Solana Beach	Craig Miller	City of Solana Beach
Frazee Beach, Carlsbad	Bill Dodson	Individual
Oceanside City Beach	Cynthia Mallet	City of Oceanside Clean Water Program
Powerhouse Park, Del Mar	Ed Yuskiewicz/ Andrea Eaton	Keep Del Mar Clean/ Women's Environmental Council
San Elijo State Beach (Campgrounds)	Rebecca Bergren, Megan Malaska	SeaLife Aquarium, LegoLand
San Elijo Lagoon (Trailhead, Rios)	Danny King	City of Solana Beach
Seaside Beach, Cardiff	Lisa Hellstrom	Junior Girl Scouts Troop 1259
South Carlsbad State Beach (Ponto Beach)	Dave Boerlin	Kids Korps, Cub Scout Pack 740
Swami's Beach, Encinitas	Carlie Peck/ Kristy Rygiel	Solana Center for Environmental Innovation/City of Encinitas
Tamarack State Beach & Aqua Hediona Lagoon, Carlsbad	Sheree Hildebrandt	City of Carlsbad Environmental Program
Torrey Pines and Penasquitos Lagoon	Alyson Wright	REI
NORTH INLAND	**Site Captain**	**Site Captain Affiliation**
Buena Creek, Vista	Ligeia Heagy	City of Vista, Engineering Dept.
Buena Vista Creek (3 sites)	Cynthia Mallett	City of Oceanside Clean Water
Carmel Mountain Preserve	Sr. Ranger Gina Washington	City of San Diego, Open Space Div.
De Luz, Daily Rd & Santa Margarita Truck Trail	Ali Nusbaum	De Luz Cleanup Committee
Dixon Lake, Escondido	Kathy Winn, Heather Thomas	City of Escondido Recycling Prog.
Fallbrook	Judy Mitchell	Keep Fallbrook Clean & Green
Lake Hodges	County co-coordinators	I Love A Clean SD/SD Coastkeeper
San Elijo Lagoon, Cardiff	Geoffrey Smith	San Elijo Lagoon Conservancy
CENTRAL SAN DIEGO	**Site Captain**	**Site Captain Affiliation**
Belmont Park MEDIA SITE	County Co-coordinators	I Love A Clean SD/SD Coastkeeper
Bonita Cove, Mission Bay (Kayak)	Dave Teafatiller	HikeBikeKayak
Chollas Creek, 33rd and National	Eric Bowlby, Javier Hernandez	San Diego Canyonlands
Chollas Creek, 54th Street	Bill Babcock	Friends of Chollas Creek
Chollas Lake Park, Oak Park	Brigitte Taylor, Sirena Ung	Girls Alliance

25th Annual Coastal Cleanup Day Site Captains

CENTRAL SAN DIEGO (cont.)	Site Captain	Site Captain Affiliation
Chollas Radio Canyon	Liz Faddis	Groundwork SD, Chollas Creek
Cooper Canyon	Laurie Carlock, Jody Carey	Individuals
Embarcadero Docks (Underwater Cleanup)	Cheryl Barnes	San Diego Oceans Foundation
Florida Canyon	Shawn Veen	Florida Canyon
G Street Pier to Broadway Pier	LT Sonja Hedrick	US Coast Guard, Sector San Diego
Guymon Arms Open Space	Ranger Jason Allen	City of San Diego Parks & Rec
La Jolla Shores	Alicia Bravo	Kashi
Lakehurst Canyon	David Prakken, Hal Bosworth	Individuals
Manzanita Canyon	Linda Pennington, Tom Lashbrook	Project CLEAN
Mission Bay - Santa Clara Point	Maruta Gardener	Mission Beach Women's Club
Normal Heights Canyon	Kevin Johnston	Friends of Normal Heights Canyon
North Park (29th and University)	Omar Passons	North Park Community Assn
North Swan Canyon	Valentina Hernandez, Andrea Zinko	North Swan Canyon Neighborhood Association
Ocean Beach, Dog Beach	Jane Donley, Mindy Pellissier	Friends of Dog Beach
Ocean Beach Pier	Sarah Adams, Bill Hickman	Surfrider Foundation, SD Chapter
Pacific Beach Drive	Larissa Johnson/ Eliza Rooks	SD Tufts Alliance/Kiehl's
Rose Creek	Karin Zirk, & Evette Callahan	Friends of Rose Creek
San Diego River, Mission Valley Preserve	Shannon Quigley	San Diego River Park Foundation
Shawn Canyon	Linda Thompson, Carleen Blandin	San Diego Canyonlands
Sorrento Creek	Olen Yoder/Vickie Garner	Friends of Sorrento Creek/Genzyme
South Swan Canyon, City Heights	Brian Moehl, Steve Kaiser	San Diego Canyonlands
Stevenson Canyon	Masada Disenhouse, Dennis Sabella	Individuals
Tourmaline Beach	Mary & Amber Sanborn	Sierra Club
Zena Canyon	Debbie Blake, Audrey Ledesma	Individuals
47th Street Canyon, City Heights	John Hanley	Individual
EAST COUNTY	**Site Captain**	**Site Captain Affiliation**
Alvarado Channel, La Mesa	Joe Kuhn	City of La Mesa
El Cajon	Aaron Unseth, Marilyn Heatherington	First Lutheran Church
Lake Murray	Barbara Cleves	Friends of Lake Murray
Lemon Grove	Cora Long	City of Lemon Grove
Rancho Mission Canyon	Fred Kramer	Friends of Rancho Mission Canyon

25th Annual Coastal Cleanup Day Site Captains

EAST COUNTY (cont.)	Site Captain	Site Captain Affiliation
Santee San Diego River	Richard Dhu	San Diego River Park Foundation
University Channel, La Mesa	Scott Munzenmaier	City of La Mesa
SOUTH BAY	**Site Captain**	**Site Captain Affiliation**
Borderfield State Park	Danielle Litke	TJ River National Estuarine Research Reserve
Chula Vista Wildlife Reserve (Power Plant)	Phil Gibbons	Unified Port of San Diego
Coronado City Beach	Cecilia Lyon	City of Coronado
East Otay Valley Regional Park	Rangers Bill Lipowcan & Robert Major	County of San Diego, Parks & Recreation Dept.
Imperial Beach Pier	Shanti Santulli	US Army Corps of Engineers
Las Playas, Tijuana	Margarita Diaz	Proyecto Fronterizo de Educacion Ambiental
Montgomery High Natives Plant Garden	Theresa Acerro	Montgomery High School
Paradise Creek Education Park	Ted Godshalk	Paradise Creek Education Park
Silver Strand State Beach, Coronado	Barbara Denny	Coronado City Council
South Bay Wildlife Refuge	Debbie Good	California State Parks
Sweetwater Regional Park, W. Staging Area	Jeff Westra	SD County Dept of Parks & Rec
Sweetwater River	Shauna McKellar	DMAX Engineering
Tijuana River Valley	Jay Novak	Tijuana River Concerned Citizens
Tijuana Slough , North Beach	Ann Marie Tipton	TJ River National Estuarine Research Reserve
West Otay Valley Regional Park	Katie Westfall, John Barone	WiLDCOAST

Photos by Matthew Meier

2009 San Diego County Media Site

ILACSD and SDCK pose with event sponsors and Proclaimations from local government.

Coastal and Inland CCD coordinators

SDCK and ILACSD accept Proclamation from County Board Supervisor Greg Cox.

Volunteers check in at registration and get their cleanup supplies.

Belmont Park, Mission Beach

Volunteers contributed to an international study on marine debris through data cards tallying each item they found at CCD.

CCD brings volunteers of all ages together to make a difference.

Additional projects were completed by volunteers to keep the beach safe and clean.

Photos from Coastal Sites

Volunteers celebrated after cleaning near the Chula Vista Wildlife Reserve

ABOVE: Santa Clara Point site captain Maruta Gardener (Mission Bay Women's Club) assists USD students with their trash. RIGHT: A happy family cleaning the Mission Beach boardwalk.

Site captains from Kashi (a CCD sponsor) raffled off prizes to relaxing volunteers after the La Jolla Shores cleanup.

BELOW (L , Center, & R): Volunteers assist the San Diego Oceans Foundation with multiple underwater cleanups on land and in the water of San Diego Bay.

California Coastal Cleanup Day
San Diego County Sponsors 2009

Presented by:

San Diego County Supervisors
Greg Cox & Pam Slater-Price

Think Blue-City of San Diego
Storm Water Department

With additional support from:

Major in-kind donors:

Media Sponsors:

Statewide Sponsors:

Thank you for helping make San Diego's beaches, bays and inland waterways clean, safe and healthy

Most common items found: Cigarette butts, bottle caps, food wrappers

El Cajon

Beacon's Beach, Encinitas

25% more volunteers in 2009 than 2008, and a 8% increase in debris removed

10,283 Volunteers

174,491 pounds of debris removed

80 coastal and inland cleanup sites

169 miles covered

Buena Creek, Vista

Sweetwater River, National City

Before ...

Coastal Cleanup Day 2009

... After

42 Inland Sites and 38 Coastal Sites

3,137 inland volunteers removed 154,403 lbs. of debris
= 50 lbs per volunteer

7,146 coastal volunteers removed 20,058 lbs. of debris
= 2.8 lbs per volunteer

Most unusual items found: ATM machine, fake nose, comb with hairpiece, fencing sword

APPENDIX C

ACTIVITY A-32 SUPPORTING DOCUMENTATION: WOODSIDE AVENUE EXTENDED DETENTION BASIN ANNUAL WATER QUALITY SAMPLING RESULTS FY 2009-10

County of San Diego
Woodside Avenue Extended Detention Basin
Annual Water Quality Sampling Results FY 2009/2010

December 2010

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APPENDIX A – LABORATORY ANALYTICAL REPORTS
APPENDIX B – FIELD DATA SHEETS

1 INTRODUCTION

On July 15, 2004 the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and to construct a Best Management Practice (BMP) water quality detention basin (Woodside EDB) to treat urban runoff from the Winter Gardens sub-watershed. This runoff discharges directly into the San Diego River. This report presents the annual water quality sampling results for Woodside EDB in order to assess its effectiveness in pollutant removal and load reduction.

During FY 2009-2010, water quality and flow at the inlet and the outlet of Woodside EDB were monitored over three dry weather and three wet weather sampling events. Dry weather monitoring was conducted in August 2009, March 2010, and June 2010; dry weather conditions were defined as following an antecedent dry period of at least 72 hours or after the EDB has returned to its base flow conditions. Wet weather monitoring was conducted during and/or directly following storm events of at least 0.10 inches of rainfall.

2 DESCRIPTION OF SAMPLING PROCEDURES

2.1 Flow Measurement

Instantaneous flows were measured at the influent and effluent during non storm flow conditions only; no flow measurements were made during storms due to safety concerns. Flow rates were estimated by multiplying flow velocity readings from a hand-held mechanical current meter by direct water depth and channel width measurements. Staff gauges were not used to estimate flow because accumulated sediment in the outlet and inlet channels prevented accurate estimation. The results are summarized in Table 1 below.

Table 1. Instantaneous Flow Measurements

Date	Inlet Flow (cfs)	Outlet (cfs)
8/19/2009	0.126	0.030
3/3/2010	0.317	0.234
6/29/2010	0.189	0.034

2.2 Water Quality Sampling

During FY 2009/2010, three dry weather events (in August 19, 2009, March 3, 2010, and June 29, 2010) and three wet weather events (January 19, 2010, April 12, 2010 and April 21, 2010) were sampled. One set of water quality grab samples were collected at both the influent and effluent sampling points during each sampling event. Grab samples were collected in pre-cleaned laboratory-supplied sampling bottles. Samples were labeled, placed in a cooler on ice and transported under proper chain-of-custody documentation to an analytical laboratory for analysis. The samples were analyzed for the constituents listed in Table 2. During the sampling of the inlet and outlet, field measurements were also collected for pH, conductivity, temperature, dissolved oxygen, and turbidity. The field measurements are described on Table 3. Field data sheets were also completed for each site during each sampling event and are included in Appendix A.

Table 2: Water Quality Constituents Measured and the Corresponding Analytical Methods, Reporting Limits (RL) and Method Detection Limits (MDL).

Measured Parameter	*Method*	*RL*	*MDL*
Flow	Flow Probe FP101	0.01 cfs	
pH	In-situ, Horiba U-10		
Temperature	In-situ, Horiba U-10		
Conductivity	In-situ, Horiba U-10		
Dissolved Oxygen	In-situ, Horiba U-10	1 mg/L	
Turbidity	In-situ, Horiba U-10		
Ammonia as N	SM4500 NH3 B,C,D	0.05 mg/L	0.02 mg/L
Copper, Dissolved and Total	EPA 200.7, EPA 200.8	10 µg/L	2 µg/L
Dissolved Organic Carbon	SM 5310 B	1 mg/L	1 mg/L
Hardness	EPA 200.7, SM 2340 C	10 mg/L	10 mg/L
Lead, Dissolved and Total	EPA 200.8	5 µg/L	1 µg/L
Nitrate as N	SM 4500 NO3 E	0.009 mg/L	0.01 mg/L
Phosphate, Total as P	SM 4500-P B,E	0.05 mg/L	0.02 mg/L
Total Dissolved Solids	SM 2540 C	20 mg/L	1 mg/L
Total Organic Carbon	SM 5310 B	1 mg/L	0.4 mg/L
Total Suspended Solids	SM 2540 D	2.5 mg/L	0.307 mg/L
Zinc, Dissolved and Total	EPA 200.8	20 µg/L	3 µg/L

3 RESULTS

The results of the 2009-2010 monitoring study are summarized in Table 3. The Laboratory analytical reports are included in Appendix B. Table 4 shows the inlet/ outlet percent differences in constituent concentrations and field-measured parameters including pH, temperature, conductivity, dissolved oxygen and turbidity. Percent differences between the inlet and outlet constituent loadings are presented in Table 5. The percent differences were calculated for dry weather results only as discharge rates were not measured for wet weather flows during fiscal year 2009/2010.

For field-measured parameters (Table 4), a 4% average decrease in pH was observed between the influent and effluent ends of the Woodside EDB during dry weather; no difference was detected during wet weather. Also during wet weather, there was a mean 31% increase in conductivity at the EDB outlet. Turbidity was also higher at the outlet than at the inlet and dissolved oxygen concentration was lower at the outlet.

With respect to percent differences in constituent concentrations between the EDB influent and effluent (Table 4) during dry weather, only nitrate and TDS showed lower concentrations at the outlet than at the inlet; mean concentrations of all remaining constituents were higher at the outlet of the EDB. During wet weather, decreased TSS, TOC, DOC and metal concentrations were observed at the outlet while TDS, hardness, and nutrient concentrations were higher at the outlet than at the inlet.

When constituent loadings were considered (Table 5) for dry weather flows only, all but three constituents showed mean load reductions between inlet and outlet of the EDB. The three constituents that had the higher mean loads at the outlet included total phosphorus, total copper, and total zinc. The loadings of total copper and total zinc were orders of magnitude higher at the outlet on March 3, 2010 but they were lower at the outlet on the remaining two sampling occasions. Total phosphorus loading was higher at the outlet on two of the three sampling locations. Ammonia loading was higher at the outlet on one of the three dry weather sampling dates.

Table 3: Analytical and Field Results

Constituent (units)	Dry Weather						Wet Weather					
	Aug. 19, 2009		March 3, 2010		June 29, 2010		Jan. 18, 2010		April 12, 2010		April 21, 2010	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Discharge (cfs)	0.13	0.03	0.32	0.23	0.19	0.03	NM	NM	NM	NM	NM	NM
pH	7.65	7.87	8.04	7.52	8.04	7.48	7.5	7.33	7.51	7.79	7.39	7.23
Conductivity (mS/cm)	2.14	2.24	2.36	2.4	2.26	2.37	0.527	1.91	0.634	0.223	0.689	0.516
Turbidity (NTU)	3	10	4	2	1	2	355	48	130	293	64	82
Dissolved Oxygen (mg/L)	5.26	7.36	13.52	7.78	9.54	5.91	9.32	4.02	9.01	8.4	8.21	5.63
Temperature (°C)	21.7	19.7	18	15.6	20.4	18.4	13.6	10.6	16.8	15.3	16.27	14.05
Total Dissolved Solids (mg/L)	1390	1410	1570	1480	1430	1390	156	1160	NM	NM	352	271
Total Suspended Solids (mg/L)	6.1	7.7	ND	ND	2.1	4	235	23	NM	NM	26	33
Hardness (mg/L)	650	640	737	826	665	712	108	604	203	66	194	132
Total Organic Carbon (mg/L)	3.85	4.38	6.3	7.7	2.8	3.5	14.9	13.6	12	11	13	15
Dissolved Organic Carbon (mg/L)	4.72	5.2	6.6	7.6	2.6	3.4	11.2	12.9	12	7.9	15	16
Nitrate as N (mg/L)	10.8	8.64	10.8	6.35	14.2	8.12	1.35	5.16	NM	NM	2.1	1.07
Ammonia (mg/L)	0.04	0.04	0.16	ND	ND	0.12	0.28	0.67	0.18	0.34	0.15	0.14
Total Phosphorus (mg/L)	0.02	0.27	0.14	0.21	0.13	0.16	0.18	0.16	0.45	0.45	0.36	0.45
Dissolved Copper (µg/L)	1.5	2.1	ND	ND	ND	ND	ND	ND	NM	NM	ND	ND
Total Copper (µg/L)	1.5	2.1	ND	14	ND	ND	34	ND	15	16	13	10
Dissolved Lead (µg/L)	0.33	0.33	ND	ND	ND	ND	ND	ND	NM	NM	ND	ND
Total Lead (µg/L)	0.329	0.327	ND	ND	ND	ND	15	ND	7	10	ND	ND
Dissolved Zinc (µg/L)	15.8	21.1	ND	ND	ND	ND	26	ND	NM	NM	26	ND
Total Zinc (µg/L)	15.8	21.1	ND	40	ND	ND	232	29	55	68	76	59

ND – not detected
NM – not measured

Table 4: Percent Differences between Woodside EDB Inlet and Outlet Field Sampling Results (Discharge, pH, Conductivity, Turbidity and Temperature) and Constituent Concentrations.

Constituent (units)	Dry Weather			Wet Weather			Overall (Mean) % Difference		
	8/19/09	3/3/10	6/29/10	1/19/10	4/12/10	4/21/10	Dry	Wet	Both
Discharge (cfs)	-76%	-26%	-82%	NM	NM	NM	-61%	NM	-61%
pH	3%	-6%	-7%	-2%	4%	-2%	-4%	0%	-2%
Conductivity (mS/cm)	5%	2%	5%	262%	-65%	-25%	4%	57%	31%
Turbidity (NTU)	233%	-50%	100%	-86%	125%	28%	94%	22%	58%
Dissolved Oxygen (mg/L)	40%	-42%	-38%	-57%	-7%	-31%	-14%	-32%	-23%
Temperature (°C)	-9%	-13%	-10%	-22%	-9%	-14%	-11%	-15%	-13%
Total Dissolved Solids (mg/L)	1%	-6%	-3%	644%	NM	-23%	-2%	310%	123%
Total Suspended Solids (mg/L)	26%	0%	90%	-90%	NM	27%	39%	-32%	11%
Hardness (mg/L)	-2%	12%	7%	459%	-67%	-32%	6%	120%	63%
Total Organic Carbon (mg/L)	14%	22%	25%	-9%	-8%	15%	20%	-1%	10%
Dissolved Organic Carbon (mg/L	10%	15%	31%	15%	-34%	7%	19%	-4%	7%
Nitrate as N (mg/L)	-20%	-41%	-43%	282%	NM	-49%	-35%	117%	26%
Ammonia (mg/L)	0%	-94%	1100%	139%	89%	-7%	335%	74%	205%
Total Phosphorus (mg/L)	1250%	50%	23%	-11%	0%	25%	441%	5%	223%
Dissolved Copper (µg/L)	40%	0%	0%	0%	NM	0%	13%	0%	8%
Total Copper (µg/L)	40%	2700%	0%	-100%	7%	-23%	913%	-39%	437%
Dissolved Lead (µg/L)	0%	0%	0%	0%	NM	0%	0%	0%	0%
Total Lead (µg/L)	-1%	0%	0%	-100%	43%	0%	0%	-19%	-10%
Dissolved Zinc (µg/L)	34%	0%	0%	-99%	NM	-99%	11%	-99%	-33%
Total Zinc (µg/L)	34%	26567%	0%	-88%	24%	-22%	8867%	-29%	4419%

Table 5: Percent Differences between Woodside EDB Influent and Effluent Constituent Loadings. Load Differences Were Calculated For Dry Weather Results Only As Wet Weather Discharge Rates Were Not Measured During 2009/2010 FY.

Constituent (units)	8/19/09	3/3/10	6/29/10	Mean
Total Dissolved Solids (kg/day)	-76%	-30%	-82%	-63%
Total Suspended Solids (kg/day)	-70%	-26%	-65%	-54%
Hardness (kg/day)	-77%	-17%	-81%	-58%
Total Organic Carbon (kg/day)	-73%	-10%	-77%	-53%
Dissolved Organic Carbon (kg/da	-74%	-15%	-76%	-55%
Nitrate as N (kg/day)	-81%	-57%	-90%	-76%
Ammonia (kg/day)	-76%	-95%	118%	-18%
Total Phosphorus (kg/day)	218%	11%	-78%	50%
Dissolved Copper (g/day)	-67%	-26%	-82%	-58%
Total Copper (g/day)	-67%	1968%	-82%	606%
Dissolved Lead (g/day)	-76%	-26%	-82%	-61%
Total Lead (g/day)	-77%	-26%	-82%	-62%
Dissolved Zinc (g/day)	-69%	-26%	-82%	-59%
Total Zinc (g/day)	-69%	19597%	-82%	6482%

4 CONCLUSIONS

Generally, the results indicate that, constituent concentrations at the outlet of the EDB were often much higher than at the inlet. There were, however, overall load reductions for the majority of constituents measured during dry weather conditions (wet weather discharge rates were not measured therefore wet weather loadings could not be calculated for FY 2009/2010). This was most likely due to the EDB acting to absorb the runoff containing the pollutants before it was able to reach the outlet. The exceptions included total copper and zinc. The mean loadings of those constituents were higher at the outlet than at the inlet of Woodside EDB due to the much elevated total zinc and copper loadings at the outlet observed on one of the three sampling dates (on Marcy 3, 2010).

In terms of constituent concentrations alone, it may be concluded that the EDB functioned well in reducing nitrate-N concentrations in non storm flows and dissolved zinc concentrations during wet weather. The concentrations of other constituents measured, however, were not consistently reduced and were often higher at the outlet of the EDB. These often higher constituent concentrations at the outlet and the very much higher total copper and zinc loadings at the outlet on one sampling occasion may have been due to the deposition of metals and dust near the outlet as it is located adjacent to a high-traffic road.

KZ -7/20/09

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REPORT

Client: **County of San Diego**
5201 Ruffin Road
San Diego, CA 92123

Attention: Kenneth Liddell
Project Name: Woodside Ave.
P.O. Number:
Project Number:

Printed 6/23/09

Samples Received on 6/4/09 4:00:00 PM

Field ID		Lab ID	Collected	Matrix
2984	WOD2	983670-001	06/04/2009 10:15	Water
2985	WOD1	983670-002	06/04/2009 11:15	Water

Anions By I.C. - EPA 300.0 Batch 06AN09E 6/5/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result
983670-001 Nitrate as Nitrogen	mg/L	06/05/2009	5	0.035	1.00	9.25
983670-002 Nitrate as Nitrogen	mg/L	06/05/2009	5	0.035	1.00	11.8

Method Blank

Parameter	Unit	DF	Result
Nitrate as Nitrogen	mg/L	1	ND

Duplicate — Reference Sample = 2984 — Lab ID = 983670-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrate as Nitrogen	mg/L	5	9.36	9.25	1.18	0 - 15

Lab Control Sample — Spike Added = 4.00 mg/L

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	1	3.98	4.00	99.5	90 - 110

Matrix Spike — Spike Added = 20.0 mg/L — Reference Sample = 2984 — Lab ID = 983670-001

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	5	30.4	29.2	106	85 - 115

Matrix Spike Duplicate — Spike Added = 20.0 mg/L — Reference Sample = 2984 — Lab ID = 983670-001

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	5	30.2	29.2	105	85 - 115

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Client: County of San Diego

Project Name: Woodside Ave.
Project Number:

Printed 6/22/09

Metals by ICP/MS, Total

Batch 061609A 6/16/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
983670-001 Zinc	ug/L	06/16/2009	1	0.115	5.00	28.5	
Copper	ug/L	06/16/2009	1	0.13	1.00	7.62	
Lead	ug/L	06/16/2009	1	0.0182	1.00	1.78	
983670-002 Zinc	ug/L	06/16/2009	1	0.115	5.00	16.2	
Copper	ug/L	06/16/2009	1	0.13	1.00	5.07	
Lead	ug/L	06/16/2009	1	0.0182	1.00	0.249	J

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Client: County of San Diego Project Name: Woodside Ave.

Project Number: Printed 6/22/09

Metals by ICP/MS, Dissolved

Batch 061609A 6/16/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
983670-001 Zinc	ug/L	06/16/2009	1	0.115	5.00	1.05	J
Copper	ug/L	06/16/2009	1	0.13	1.00	1.29	
Lead	ug/L	06/16/2009	1	0.0182	1.00	0.0182	<
983670-002 Zinc	ug/L	06/16/2009	1	0.115	5.00	1.52	J
Copper	ug/L	06/16/2009	1	0.13	1.00	0.615	J
Lead	ug/L	06/16/2009	1	0.0182	1.00	0.0182	<

Method Blank

Parameter	Unit	DF	Result
Zinc	ug/L	1	ND
Copper	ug/L	1	ND
Lead	ug/L	1	ND

Lab Control Sample Spike Added = 50.0 ug/L

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1	48.3	50.0	96.6	90 - 110
Copper	ug/L	1	48.8	50.0	97.6	90 - 110
Lead	ug/L	1	50.2	50.0	100	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Client: County of San Diego Project Name: Woodside Ave.

Project Number: Printed 6/22/09

Hardness (SM 2340C)

Batch 06HARD09B 6/9/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result
983670-001 Hardness as CaCO3	mg/L	06/09/2009	5	1.24	10.0	700.
983670-002 Hardness as CaCO3	mg/L	06/09/2009	5	1.24	10.0	660.

Method Blank

Parameter	Unit	DF	Result
Hardness as CaCO3	mg/L	1	ND

Duplicate — Reference Sample = 2984 — Lab ID = 983670-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Hardness as CaCO3	mg/L	5	710.	700.	1.42	0 - 20

Lab Control Sample — Spike Added = 80.0 mg/L

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Hardness as CaCO3	mg/L	1	80.0	80.0	100.	90 - 110

Lab Control Sample Duplicate — Spike Added = 80.0 mg/L

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Hardness as CaCO3	mg/L	1	82.0	80.0	102	90 - 110

Total Dissolved Solids (TDS) SM 2540C

Batch 06TDS09D 6/8/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result
983670-001 Total Dissolved Solids	mg/L	06/08/2009	20	1.40	50.0	1520
983670-002 Total Dissolved Solids	mg/L	06/08/2009	20	1.40	50.0	1370

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	10	ND

Lab Control Sample — Spike Added = 500 mg/L

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	10	501.	500.	100	90 - 110

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Client: County of San Diego

Project Name: Woodside Ave.
Project Number:

Printed 6/22/09

Total Suspended Solids (TSS) SM 2540D

Batch 06TSS09D 6/10/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
983670-001 Total Suspended Solids	mg/L	06/10/2009	1	0.307	2.50	35.4	
983670-002 Total Suspended Solids	mg/L	06/10/2009	1	0.307	2.50	2.20	J

Method Blank

Parameter	Unit	DF	Result
Total Suspended Solids	mg/L	1	ND

Lab Control Sample — Spike Added = 100 mg/L

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Suspended Solids	mg/L	10	96.0	100.	96.0	90 - 110

Lab Control Sample Duplicate — Spike Added = 100 mg/L

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Suspended Solids	mg/L	10	98.0	100.	98.0	90 - 110

Total Organic Carbon (T/DOC) SM 5310B

Batch 06TOC09D 6/18/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result
983670-001 Total Organic Carbon	mg/L	06/18/2009	1	0.048	0.30	3.49
Dissolved Organic Carbon	mg/L	06/18/2009	1	0.048	0.30	3.59
983670-002 Total Organic Carbon	mg/L	06/18/2009	1	0.048	0.30	3.33
Dissolved Organic Carbon	mg/L	06/18/2009	1	0.048	0.30	3.46

Method Blank

Parameter	Unit	DF	Result
Total Organic Carbon	mg/L	1	ND
Dissolved Organic Carb	mg/L	1	ND

Duplicate — Reference Sample = 2985 — Lab ID = 983670-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Dissolved Organic Carb	mg/L	1	3.45	3.46	0.289	0 - 20

Lab Control Sample — Spike Added = 20.0 mg/L

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1	18.3	20.0	91.5	90 - 110

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Client: County of San Diego

Project Name: Woodside Ave.
Project Number:

Printed 6/22/09

Total Phosphate, SM 4500-PB,E

Batch 06TP09C 6/8/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result
983670-001 Phosphate, Total As P	mg/L	06/08/2009	2	0.02	0.04	0.239
983670-002 Phosphate, Total As P	mg/L	06/08/2009	5	0.05	0.10	0.292

Ammonia Nitrogen by SM4500-NH3C

Batch 06NH3-E09B 6/9/09

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
983670-001 Ammonia as N	mg/L	06/09/2009	1	0.009	0.05	0.047	J
983670-002 Ammonia as N	mg/L	06/09/2009	1	0.009	0.05	0.048	J

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Jeff Lee
Assistant Project Manager

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EnviroMatrix Analytical, Inc.

29 January 2010

COSD - DPW - Water Shed Protection Program
Attn: Kenneth Liddell
5201 Ruffin Road, Suite P
San Diego, California 92123

EMA Log #: 1001486

Project Name: Woodside Avenue

Enclosed are the results of analyses for samples received by the laboratory on 01/19/10 14:12. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

ent Name: COSD - DPW - Water Shed Protection Program
roject Name: Woodside Avenue

EMA Log #: 1001486

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Event ID	Laboratory ID	Matrix	Date Sampled	Date Received
WOD1/3226	3226	1001486-01	Stormwater	01/19/10 12:40	01/19/10 14:12
WOD2/3227	3227	1001486-02	Stormwater	01/19/10 13:10	01/19/10 14:12

Th esults in this report apply to the samples analyzed in accordance with the chain of c document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program **EMA Log #: 1001486**
roject Name: Woodside Avenue

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD1/3226 (1001486-01) Stormwater	**Sampled: 01/19/10 12:40**		**Received: 01/19/10 14:12**						
Sample Evenet ID: 3226									
Copper	**0.034**	0.010	mg/l	1	0012118	01/20/10	01/22/10	EPA 200.8	
Lead	**0.015**	0.005	"	"	"	"	"	"	
Zinc	**0.232**	0.020	"	"	"	"	"	"	
WOD2/3227 (1001486-02) Stormwater	**Sampled: 01/19/10 13:10**		**Received: 01/19/10 14:12**						
Sample Evenet ID: 3227									
Copper	ND	0.010	mg/l	1	0012118	01/20/10	01/22/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.029**	0.020	"	"	"	"	"	"	

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'ent Name: COSD - DPW - Water Shed Protection Program **EMA Log #: 1001486**
. ıoject Name: Woodside Avenue

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD1/3226 (1001486-01) Stormwater	**Sampled: 01/19/10 12:40**		**Received: 01/19/10 14:12**						
Sample Evenet ID: 3226									
Copper	ND	0.010	mg/l	1	0012524	01/25/10	01/25/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.026**	0.020	"	"	"	"	"	"	
WOD2/3227 (1001486-02) Stormwater	**Sampled: 01/19/10 13:10**		**Received: 01/19/10 14:12**						
Sample Evenet ID: 3227									
Copper	ND	0.010	mg/l	1	0012524	01/25/10	01/25/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

Th esults in this report apply to the samples analyzed in accordance with the chain of c document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
r roject Name: Woodside Avenue

EMA Log #: 1001486

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD1/3226 (1001486-01) Stormwater Sampled: 01/19/10 12:40 Received: 01/19/10 14:12									
Sample Evenet ID: 3226									
Ammonia as N	**0.28**	0.10	mg/l	1	0012828	01/28/10	01/28/10	SM4500 NH3 B,C	
Dissolved Organic Carbon	**11.2**	1.00	"	"	0012728	01/28/10	01/28/10	SM5310 B	
Hardness (Total)	**108**	100	mg CaCO3/L	10	0012534	01/25/10	01/27/10	EPA 200.7	
Nitrate as N	**1.35**	0.50	mg/l	"	0012601	01/26/10	01/26/10	SM4500 NO3 E	W-02
Phosphorus, Total	**0.18**	0.05	"	1	0012733	01/27/10	01/27/10	SM4500 P B, E	
Total Dissolved Solids	**156**	20.0	"	"	0012518	01/26/10	01/26/10	SM2540 C	
Total Suspended Solids	**235**	20.0	"	"	0012620	01/26/10	01/27/10	SM2540 D	
Total Organic Carbon	**14.9**	1.00	"	"	0012044	01/22/10	01/22/10	SM5310B	
WOD2/3227 (1001486-02) Stormwater Sampled: 01/19/10 13:10 Received: 01/19/10 14:12									
Sample Evenet ID: 3227									
Ammonia as N	**0.67**	0.10	mg/l	1	0012828	01/28/10	01/28/10	SM4500 NH3 B,C	
Dissolved Organic Carbon	**12.9**	1.00	"	"	0012728	01/28/10	01/28/10	SM5310 B	
Hardness (Total)	**604**	100	mg CaCO3/L	10	0012534	01/25/10	01/27/10	EPA 200.7	
Nitrate as N	**5.16**	0.50	mg/l	"	0012601	01/26/10	01/26/10	SM4500 NO3 E	W-02
phorus, Total	**0.16**	0.05	"	1	0012733	01/27/10	01/27/10	SM4500 P B, E	
Total Dissolved Solids	**1160**	20.0	"	"	0012518	01/26/10	01/26/10	SM2540 C	
Total Suspended Solids	**23.0**	20.0	"	"	0012620	01/26/10	01/27/10	SM2540 D	
Total Organic Carbon	**13.6**	1.00	"	"	0012044	01/22/10	01/22/10	SM5310B	

T' sults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
r-roject Name: Woodside Avenue

EMA Log #: 1001486

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0012118										
Blank (0012118-BLK1)				Prepared: 01/20/10	Analyzed: 01/22/10					
Copper	ND	0.010	mg/l							
Zinc	ND	0.020	"							
Lead	ND	0.005	"							
LCS (0012118-BS1)				Prepared: 01/20/10	Analyzed: 01/22/10					
Zinc	0.100	0.020	mg/l	0.100		100	85-115			
Copper	0.099	0.010	"	0.100		99	85-115			
Lead	0.103	0.005	"	0.100		103	85-115			
LCS Dup (0012118-BSD1)				Prepared: 01/20/10	Analyzed: 01/22/10					
Lead	0.103	0.005	mg/l	0.100		103	85-115	0.3	20	
Zinc	0.101	0.020	"	0.100		101	85-115	0.7	20	
Copper	0.100	0.010	"	0.100		100	85-115	1	20	
Duplicate (0012118-DUP1)		**Source: 1001259-02**		Prepared: 01/20/10	Analyzed: 01/22/10					
er	0.011	0.010	mg/l		0.008			22	20	QR-02
Lead	0.002	0.005	"		0.002			12	20	
Zinc	0.065	0.020	"		0.056			15	20	
Matrix Spike (0012118-MS1)		**Source: 1001259-02**		Prepared: 01/20/10	Analyzed: 01/22/10					
Copper	0.107	0.010	mg/l	0.100	0.008	99	70-130			
Zinc	0.193	0.020	"	0.100	0.056	137	70-130			QM-06
Lead	0.114	0.005	"	0.100	0.002	112	70-130			
Matrix Spike Dup (0012118-MSD1)		**Source: 1001259-02**		Prepared: 01/20/10	Analyzed: 01/22/10					
Copper	0.111	0.010	mg/l	0.100	0.008	103	70-130	4	20	
Lead	0.110	0.005	"	0.100	0.002	108	70-130	4	20	
Zinc	0.236	0.020	"	0.100	0.056	181	70-130	20	20	QM-06

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ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside Avenue

EMA Log #: 1001486

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0012524										
Blank (0012524-BLK1)				Prepared & Analyzed: 01/25/10						
Lead	ND	0.005	mg/l							
Zinc	ND	0.020	"							
Copper	ND	0.010	"							
LCS (0012524-BS1)				Prepared & Analyzed: 01/25/10						
Lead	0.093	0.005	mg/l	0.100		93	75-125			
Copper	0.096	0.010	"	0.100		96	85-115			
Zinc	0.096	0.020	"	0.100		96	85-115			
LCS Dup (0012524-BSD1)				Prepared & Analyzed: 01/25/10						
Lead	0.093	0.005	mg/l	0.100		93	75-125	0.2	20	
Copper	0.095	0.010	"	0.100		95	85-115	0.9	20	
Zinc	0.096	0.020	"	0.100		96	85-115	0.6	20	
Duplicate (0012524-DUP1)		**Source: 1001486-02**		Prepared & Analyzed: 01/25/10						
	0.016	0.020	mg/l		0.016			2	20	
Copper	0.005	0.010	"		0.005			0.2	20	
Lead	ND	0.005	"		ND				20	
Matrix Spike (0012524-MS1)		**Source: 1001486-02**		Prepared & Analyzed: 01/25/10						
Copper	0.088	0.010	mg/l	0.100	0.005	83	70-130			
Lead	0.087	0.005	"	0.100	ND	87	75-125			
Zinc	0.109	0.020	"	0.100	0.016	93	70-130			
Matrix Spike Dup (0012524-MSD1)		**Source: 1001486-02**		Prepared & Analyzed: 01/25/10						
Copper	0.090	0.010	mg/l	0.100	0.005	85	70-130	3	20	
Zinc	0.111	0.020	"	0.100	0.016	95	70-130	2	20	
Lead	0.084	0.005	"	0.100	ND	84	75-125	4	20	

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ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside Avenue

EMA Log #: 1001486

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0012044										
Blank (0012044-BLK1)				Prepared & Analyzed: 01/22/10						
Total Organic Carbon	ND	1.00	mg/l							
LCS (0012044-BS1)				Prepared & Analyzed: 01/22/10						
Total Organic Carbon	24.6	1.00	mg/l	25.0		98	80-120			
LCS Dup (0012044-BSD1)				Prepared & Analyzed: 01/22/10						
Total Organic Carbon	23.8	1.00	mg/l	25.0		95	80-120	3	20	
Duplicate (0012044-DUP1)		**Source: 1001453-01**		Prepared & Analyzed: 01/22/10						
Total Organic Carbon	5.36	1.00	mg/l		5.30			1	20	
Matrix Spike (0012044-MS1)		**Source: 1001471-03**		Prepared & Analyzed: 01/22/10						
Total Organic Carbon	26.8	2.00	mg/l	25.0	2.35	98	80-120			
Matrix Spike Dup (0012044-MSD1)		**Source: 1001471-03**		Prepared & Analyzed: 01/22/10						
Total Organic Carbon	26.1	2.00	mg/l	25.0	2.35	95	80-120	3	20	
Batch 0012518										
Blank (0012518-BLK1)				Prepared: 01/25/10 Analyzed: 01/26/10						
Total Dissolved Solids	ND	20.0	mg/l							
Duplicate (0012518-DUP1)		**Source: 1001499-01**		Prepared: 01/25/10 Analyzed: 01/26/10						
Total Dissolved Solids	124	20.0	mg/l		134			8	20	
Reference (0012518-SRM1)				Prepared: 01/25/10 Analyzed: 01/26/10						
Total Dissolved Solids	230	20.0	mg/l	204		113	6.76-113.2			

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ent Name: COSD - DPW - Water Shed Protection Program
r roject Name: Woodside Avenue

EMA Log #: 1001486

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0012534										
Blank (0012534-BLK1)				Prepared: 01/25/10	Analyzed: 01/27/10					
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (0012534-DUP1)		**Source: 1001444-01**		Prepared: 01/25/10	Analyzed: 01/27/10					
Hardness (Total)	292	10	mg CaCO3/L		299			2	20	
Batch 0012601										
Blank (0012601-BLK1)				Prepared & Analyzed: 01/26/10						
Nitrate as N	ND	0.05	mg/l							
LCS (0012601-BS1)				Prepared & Analyzed: 01/26/10						
Nitrate as N	0.49	0.05	mg/l	0.500		98	80-120			
LCS Dup (0012601-BSD1)				Prepared & Analyzed: 01/26/10						
Nitrate as N	0.47	0.05	mg/l	0.500		94	80-120	4	20	
licate (0012601-DUP1)		**Source: 1001426-05**		Prepared & Analyzed: 01/26/10						
ate as N	ND	0.05	mg/l		ND				20	
Matrix Spike (0012601-MS1)		**Source: 1001426-05**		Prepared & Analyzed: 01/26/10						
Nitrate as N	0.43	0.05	mg/l	0.500	ND	85	80-120			
Matrix Spike Dup (0012601-MSD1)		**Source: 1001426-05**		Prepared & Analyzed: 01/26/10						
Nitrate as N	0.46	0.05	mg/l	0.500	ND	92	80-120	7	20	
Reference (0012601-SRM1)				Prepared & Analyzed: 01/26/10						
Nitrate as N	0.46	0.05	mg/l	0.442		104	0.05-108.3			

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ent Name: COSD - DPW - Water Shed Protection Program
roject Name: Woodside Avenue

EMA Log #: 1001486

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0012620										
Blank (0012620-BLK1)				Prepared: 01/26/10	Analyzed: 01/27/10					
Total Suspended Solids	ND	20.0	mg/l							
Duplicate (0012620-DUP1)		**Source: 1001476-02**		Prepared: 01/26/10	Analyzed: 01/27/10					
Total Suspended Solids	ND	20.0	mg/l		ND				20	
Reference (0012620-SRM1)				Prepared: 01/26/10	Analyzed: 01/27/10					
Total Suspended Solids	68.0	20.0	mg/l	76.2		89	0.18-111.0			
Batch 0012728										
Blank (0012728-BLK1)				Prepared & Analyzed: 01/28/10						
Dissolved Organic Carbon	ND	1.00	mg/l							
LCS (0012728-BS1)				Prepared & Analyzed: 01/28/10						
Dissolved Organic Carbon	22.8	1.00	mg/l	25.0		91	80-120			
` Dup (0012728-BSD1)				Prepared & Analyzed: 01/28/10						
. olved Organic Carbon	22.4	1.00	mg/l	25.0		89	80-120	2	20	
Duplicate (0012728-DUP1)		**Source: 1001486-01**		Prepared & Analyzed: 01/28/10						
Dissolved Organic Carbon	11.4	1.00	mg/l		11.2			2	20	
Matrix Spike (0012728-MS1)		**Source: 1001486-01**		Prepared & Analyzed: 01/28/10						
Dissolved Organic Carbon	34.0	2.00	mg/l	25.0	11.2	91	80-120			
Matrix Spike Dup (0012728-MSD1)		**Source: 1001486-01**		Prepared & Analyzed: 01/28/10						
Dissolved Organic Carbon	34.6	2.00	mg/l	25.0	11.2	93	80-120	2	20	

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ent Name: COSD - DPW - Water Shed Protection Program
r roject Name: Woodside Avenue

EMA Log #: 1001486

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0012733										
Blank (0012733-BLK1)				Prepared & Analyzed: 01/27/10						
Phosphorus, Total	ND	0.05	mg/l							
LCS (0012733-BS1)				Prepared & Analyzed: 01/27/10						
Phosphorus, Total	0.58	0.05	mg/l	0.500		116	80-120			
LCS Dup (0012733-BSD1)				Prepared & Analyzed: 01/27/10						
Phosphorus, Total	0.56	0.05	mg/l	0.500		112	80-120	3	20	
Duplicate (0012733-DUP1)		**Source: 1001425-01**		Prepared & Analyzed: 01/27/10						
Phosphorus, Total	0.57	0.05	mg/l		0.50			13	20	
Matrix Spike (0012733-MS1)		**Source: 1001425-01**		Prepared & Analyzed: 01/27/10						
Phosphorus, Total	0.98	0.05	mg/l	0.500	0.50	96	80-120			
Matrix Spike Dup (0012733-MSD1)		**Source: 1001425-01**		Prepared & Analyzed: 01/27/10						
Phosphorus, Total	1.03	0.05	mg/l	0.500	0.50	107	80-120	6	20	
Batch 0012828										
Blank (0012828-BLK1)				Prepared & Analyzed: 01/28/10						
Ammonia as N	ND	0.10	mg/l							
LCS (0012828-BS1)				Prepared & Analyzed: 01/28/10						
Ammonia as N	0.77	0.10	mg/l	0.820		94	80-120			
LCS Dup (0012828-BSD1)				Prepared & Analyzed: 01/28/10						
Ammonia as N	0.73	0.10	mg/l	0.820		89	80-120	6	20	

T' esults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside Avenue

EMA Log #: 1001486

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0012828										
Duplicate (0012828-DUP1)		**Source: 1001486-01**		Prepared & Analyzed: 01/28/10						
Ammonia as N	0.32	0.10	mg/l		0.28			13	20	
Matrix Spike (0012828-MS1)		**Source: 1001486-01**		Prepared & Analyzed: 01/28/10						
Ammonia as N	1.06	0.10	mg/l	0.820	0.28	94	80-120			
Matrix Spike Dup (0012828-MSD1)		**Source: 1001486-01**		Prepared & Analyzed: 01/28/10						
Ammonia as N	1.09	0.10	mg/l	0.820	0.28	99	80-120	3	20	

T' sults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

Notes and Definitions

W-02	The sample for nitrate analysis was preserved with H2SO4 after the nitrite portion of the analysis was completed to extend the holding time for the sample. Nitrate results are corrected for the nitrite contribution per the method.
QR-02	The RPD result exceeded the QC limits due to non-homogeneity of sample.
QM-06	Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

T' ·sults in this report apply to the samples analyzed in accordance with the chain of
(y document. This analytical report must be reproduced in its entirety.

16 March 2010

COSD - DPW - Water Shed Protection Program
Attn: Kenneth Liddell
5201 Ruffin Road, Suite P
San Diego, California 92123

EMA Log #: 10C0116

Project Name: Woodside

Enclosed are the results of analyses for samples received by the laboratory on 03/03/10 12:50. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

ient Name: COSD - DPW - Water Shed Protection Program
roject Name: Woodside

EMA Log #: 10C0116

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Event ID	Laboratory ID	Matrix	Date Sampled	Date Received
WOD 2	3292	10C0116-01	Water	03/03/10 10:20	03/03/10 12:50
WOD 1	3293	10C0116-02	Water	03/03/10 11:00	03/03/10 12:50

NOTE: The TOC and DOC analyses were performed by a sub-contract laboratory, results to follow in a separate report.

Th sults in this report apply to the samples analyzed in accordance with the chain of c document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
r roject Name: Woodside

EMA Log #: 10C0116

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD 2 (10C0116-01) Water Sampled: 03/03/10 10:20 Received: 03/03/10 12:50									
Sample Evenet ID: 3292									
Copper	**0.014**	0.010	mg/l	1	0031003	03/09/10	03/10/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.040**	0.020	"	"	"	"	"	"	
WOD 1 (10C0116-02) Water Sampled: 03/03/10 11:00 Received: 03/03/10 12:50									
Sample Evenet ID: 3293									
Copper	ND	0.010	mg/l	1	0031003	03/09/10	03/10/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

Th ·sults in this report apply to the samples analyzed in accordance with the chain of c. · document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10C0116

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD 2 (10C0116-01) Water Sampled: 03/03/10 10:20 Received: 03/03/10 12:50									
Sample Evenet ID: 3292									
Copper	ND	0.010	mg/l	1	0031513	03/15/10	03/15/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
WOD 1 (10C0116-02) Water Sampled: 03/03/10 11:00 Received: 03/03/10 12:50									
Sample Evenet ID: 3293									
Copper	ND	0.010	mg/l	1	0031513	03/15/10	03/15/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

Th- -esults in this report apply to the samples analyzed in accordance with the chain of c · document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10C0116

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD 2 (10C0116-01) Water Sampled: 03/03/10 10:20 Received: 03/03/10 12:50									
Sample Evenet ID: 3292									
Ammonia as N	ND	0.10	mg/l	1	0031101	03/11/10	03/11/10	SM4500 NH3 B,C	
Hardness (Total)	**826**	100	mg CaCO3/L	10	0031004	03/09/10	03/11/10	EPA 200.7	
Nitrate as N	**6.35**	1.25	mg/l	25	0030405	03/04/10	03/04/10	SM4500 NO3 E	
Phosphorus, Total	**0.21**	0.05	"	1	0030943	03/10/10	03/10/10	SM4500 P B, E	
Total Dissolved Solids	**1480**	20.0	"	"	0030944	03/09/10	03/10/10	SM2540 C	
Total Suspended Solids	ND	20.0	"	"	0030945	03/09/10	03/10/10	SM2540 D	
WOD 1 (10C0116-02) Water Sampled: 03/03/10 11:00 Received: 03/03/10 12:50									
Sample Evenet ID: 3293									
Ammonia as N	**0.16**	0.10	mg/l	1	0031101	03/11/10	03/11/10	SM4500 NH3 B,C	
Hardness (Total)	**737**	100	mg CaCO3/L	10	0031004	03/09/10	03/11/10	EPA 200.7	
Nitrate as N	**10.8**	1.25	mg/l	25	0030405	03/04/10	03/04/10	SM4500 NO3 E	
Phosphorus, Total	**0.14**	0.05	"	1	0030943	03/10/10	03/10/10	SM4500 P B, E	
Total Dissolved Solids	**1570**	20.0	"	"	0030944	03/09/10	03/10/10	SM2540 C	
Total Suspended Solids	ND	20.0	"	"	0030945	03/09/10	03/10/10	SM2540 D	

Th· ·sults in this report apply to the samples analyzed in accordance with the chain of c · document. This analytical report must be reproduced in its entirety.

'ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10C0116

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0031003										
Blank (0031003-BLK1)				Prepared: 03/09/10	Analyzed: 03/10/10					
Copper	ND	0.010	mg/l							
Zinc	ND	0.020	"							
Lead	ND	0.005	"							
LCS (0031003-BS1)				Prepared: 03/09/10	Analyzed: 03/10/10					
Zinc	0.102	0.020	mg/l	0.100		102	85-115			
Lead	0.095	0.005	"	0.100		95	85-115			
Copper	0.099	0.010	"	0.100		99	85-115			
LCS Dup (0031003-BSD1)				Prepared: 03/09/10	Analyzed: 03/10/10					
Lead	0.099	0.005	mg/l	0.100		99	85-115	3	20	
Copper	0.100	0.010	"	0.100		100	85-115	1	20	
Zinc	0.104	0.020	"	0.100		104	85-115	2	20	
Duplicate (0031003-DUP1)		**Source: 10C0119-37**		Prepared: 03/09/10	Analyzed: 03/10/10					
er	0.010	0.100	mg/l		0.012			18	20	
Lead	0.003	0.050	"		0.002			61	20	QR-04
Zinc	0.071	0.200	"		0.055			26	20	QR-04
Matrix Spike (0031003-MS1)		**Source: 10C0119-37**		Prepared: 03/09/10	Analyzed: 03/10/10					
Zinc	1.03	0.200	mg/l	1.00	0.055	98	70-130			
Lead	0.916	0.050	"	1.00	0.002	91	70-130			
Copper	0.930	0.100	"	1.00	0.012	92	70-130			
Matrix Spike (0031003-MS2)		**Source: 10C0119-15**		Prepared: 03/09/10	Analyzed: 03/10/10					
Zinc	1.03	0.200	mg/l	1.00	0.075	95	70-130			
Lead	0.902	0.050	"	1.00	0.004	90	70-130			
Copper	0.960	0.100	"	1.00	0.098	86	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of c document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
r roject Name: Woodside

EMA Log #: 10C0116

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0031003										
Matrix Spike Dup (0031003-MSD1)		**Source: 10C0119-37**		Prepared: 03/09/10	Analyzed: 03/10/10					
Lead	0.938	0.050	mg/l	1.00	0.002	94	70-130	2	20	
Copper	0.965	0.100	"	1.00	0.012	95	70-130	4	20	
Zinc	1.03	0.200	"	1.00	0.055	97	70-130	0.4	20	

Th esults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10C0116

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0031513										
Blank (0031513-BLK1)				Prepared & Analyzed: 03/15/10						
Copper	ND	0.010	mg/l							
Zinc	ND	0.020	"							
Lead	ND	0.005	"							
LCS (0031513-BS1)				Prepared & Analyzed: 03/15/10						
Copper	0.048	0.010	mg/l	0.0500		95	85-115			
Zinc	0.048	0.020	"	0.0500		96	85-115			
Lead	0.050	0.005	"	0.0500		101	75-125			
LCS Dup (0031513-BSD1)				Prepared & Analyzed: 03/15/10						
Copper	0.046	0.010	mg/l	0.0500		93	85-115	3	20	
Zinc	0.047	0.020	"	0.0500		94	85-115	3	20	
Lead	0.052	0.005	"	0.0500		105	75-125	4	20	
Duplicate (0031513-DUP1)		**Source: 10C0309-01**		Prepared & Analyzed: 03/15/10						
	ND	0.005	mg/l		ND				20	
Zinc	0.015	0.020	"		0.014			9	20	
Copper	ND	0.010	"		ND				20	
Matrix Spike (0031513-MS1)		**Source: 10C0309-01**		Prepared & Analyzed: 03/15/10						
Lead	0.051	0.005	mg/l	0.0500	ND	101	75-125			
Copper	0.044	0.010	"	0.0500	ND	88	70-130			
Zinc	0.060	0.020	"	0.0500	0.014	93	70-130			
Matrix Spike Dup (0031513-MSD1)		**Source: 10C0309-01**		Prepared & Analyzed: 03/15/10						
Copper	0.043	0.010	mg/l	0.0500	ND	86	70-130	2	20	
Zinc	0.060	0.020	"	0.0500	0.014	94	70-130	0.3	20	
Lead	0.054	0.005	"	0.0500	ND	108	75-125	6	20	

Th sults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10C0116

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0030405										
Blank (0030405-BLK1)				Prepared & Analyzed: 03/04/10						
Nitrate as N	ND	0.05	mg/l							
LCS (0030405-BS1)				Prepared & Analyzed: 03/04/10						
Nitrate as N	0.50	0.05	mg/l	0.500		100	80-120			
LCS Dup (0030405-BSD1)				Prepared & Analyzed: 03/04/10						
Nitrate as N	0.47	0.05	mg/l	0.500		95	80-120	6	20	
Duplicate (0030405-DUP1)		**Source: 10C0092-06**		Prepared & Analyzed: 03/04/10						
Nitrate as N	ND	0.05	mg/l		ND				20	
Matrix Spike (0030405-MS1)		**Source: 10C0092-06**		Prepared & Analyzed: 03/04/10						
Nitrate as N	0.49	0.05	mg/l	0.500	ND	99	80-120			
Matrix Spike Dup (0030405-MSD1)		**Source: 10C0092-06**		Prepared & Analyzed: 03/04/10						
Nitrate as N	0.53	0.05	mg/l	0.500	ND	107	80-120	8	20	
Reference (0030405-SRM1)				Prepared & Analyzed: 03/04/10						
Nitrate as N	0.38	0.05	mg/l	0.375		103	89.6-108			
Batch 0030943										
Blank (0030943-BLK1)				Prepared & Analyzed: 03/09/10						
Phosphorus, Total	ND	0.05	mg/l							
LCS (0030943-BS1)				Prepared & Analyzed: 03/09/10						
Phosphorus, Total	0.58	0.05	mg/l	0.500		116	80-120			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
r roject Name: Woodside

EMA Log #: 10C0116

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0030943										
LCS Dup (0030943-BSD1)				Prepared & Analyzed: 03/09/10						
Phosphorus, Total	0.57	0.05	mg/l	0.500		114	80-120	2	20	
Duplicate (0030943-DUP1)		**Source: 10B0693-03**		Prepared & Analyzed: 03/09/10						
Phosphorus, Total	0.76	0.25	mg/l		0.72			4	20	
Matrix Spike (0030943-MS1)		**Source: 10B0693-03**		Prepared & Analyzed: 03/09/10						
Phosphorus, Total	3.08	0.25	mg/l	2.50	0.72	94	80-120			
Matrix Spike Dup (0030943-MSD1)		**Source: 10B0693-03**		Prepared & Analyzed: 03/09/10						
Phosphorus, Total	3.22	0.25	mg/l	2.50	0.72	100	80-120	4	20	
Batch 0030944										
Blank (0030944-BLK1)				Prepared: 03/09/10 Analyzed: 03/10/10						
Total Dissolved Solids	ND	20.0	mg/l							
licate (0030944-DUP1)		**Source: 10C0177-01**		Prepared: 03/09/10 Analyzed: 03/10/10						
.l Dissolved Solids	1200	20.0	mg/l		1200			0.8	20	
Reference (0030944-SRM1)				Prepared: 03/09/10 Analyzed: 03/10/10						
Total Dissolved Solids	356	20.0	mg/l	333		107	8.89-111.1			
Batch 0030945										
Blank (0030945-BLK1)				Prepared: 03/09/10 Analyzed: 03/10/10						
Total Suspended Solids	ND	20.0	mg/l							

T' esults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10C0116

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0030945										
Duplicate (0030945-DUP1)		**Source: 10C0084-01**		Prepared: 03/09/10		Analyzed: 03/10/10				
Total Suspended Solids	228	20.0	mg/l		220			4	20	
Reference (0030945-SRM1)				Prepared: 03/09/10		Analyzed: 03/10/10				
Total Suspended Solids	94.0	20.0	mg/l	93.3		101	88-103.97			
Batch 0031004										
Blank (0031004-BLK1)				Prepared: 03/09/10		Analyzed: 03/11/10				
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (0031004-DUP1)		**Source: 10C0175-01**		Prepared: 03/09/10		Analyzed: 03/11/10				
Hardness (Total)	279	10	mg CaCO3/L		242			14	20	
Batch 0031101										
Blank (0031101-BLK1)				Prepared & Analyzed: 03/11/10						
Ammonia as N	ND	0.10	mg/l							
LCS (0031101-BS1)				Prepared & Analyzed: 03/11/10						
Ammonia as N	0.72	0.10	mg/l	0.820		88	80-120			
LCS Dup (0031101-BSD1)				Prepared & Analyzed: 03/11/10						
Ammonia as N	0.87	0.10	mg/l	0.820		106	80-120	19	20	
Duplicate (0031101-DUP1)		**Source: 10C0116-01**		Prepared & Analyzed: 03/11/10						
Ammonia as N	0.08	0.10	mg/l		ND				20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ɜnt Name: COSD - DPW - Water Shed Protection Program
ɪ ɪoject Name: Woodside

EMA Log #: 10C0116

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0031101										
Matrix Spike (0031101-MS1)		**Source: 10C0116-01**		Prepared & Analyzed: 03/11/10						
Ammonia as N	0.77	0.10	mg/l	0.820	ND	93	80-120			
Matrix Spike Dup (0031101-MSD1)		**Source: 10C0116-01**		Prepared & Analyzed: 03/11/10						
Ammonia as N	0.82	0.10	mg/l	0.820	ND	100	80-120	6	20	

Tl ·esults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

Notes and Definitions

QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

27 April 2010

COSD - DPW - Water Shed Protection Program
Attn: Kenneth Liddell
5201 Ruffin Road, Suite P
San Diego, California 92123

EMA Log #: 10D0298

Project Name: Woodside

Enclosed are the results of analyses for samples received by the laboratory on 04/12/10 12:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

:nt Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0298

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Event ID	Laboratory ID	Matrix	Date Sampled	Date Received
WOD 2	3336	10D0298-01	Stormwater	04/12/10 09:50	04/12/10 12:00
WOD 1	3337	10D0298-02	Stormwater	04/12/10 10:20	04/12/10 12:00

NOTE: The TOC and DOC analyses were performed by a sub-contract laboratory, results to follow in a separate report. Also, since no unpreserved containers were receieved at the laboratory the dissolved metals, TSS,and TDS, and nitrate analyses were not able to be performed. As a result the analysis request was cancelled.

T ults in this report apply to the samples analyzed in accordance with the chain of c document. This analytical report must be reproduced in its entirety.

:nt Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0298

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD 2 (10D0298-01) Stormwater	**Sampled: 04/12/10 09:50**		**Received: 04/12/10 12:00**						
Sample Evenet ID: 3336									
Copper	**0.016**	0.010	mg/l	1	0041607	04/20/10	04/22/10	EPA 200.8	
Lead	**0.010**	0.005	"	"	"	"	"	"	
Zinc	**0.068**	0.020	"	"	"	"	"	"	
WOD 1 (10D0298-02) Stormwater	**Sampled: 04/12/10 10:20**		**Received: 04/12/10 12:00**						
Sample Evenet ID: 3337									
Copper	**0.015**	0.010	mg/l	1	0041607	04/20/10	04/22/10	EPA 200.8	
Lead	**0.007**	0.005	"	"	"	"	"	"	
Zinc	**0.055**	0.020	"	"	"	"	"	"	

Tl· ·ults in this report apply to the samples analyzed in accordance with the chain of c· · document. This analytical report must be reproduced in its entirety.

:nt Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0298

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD 2 (10D0298-01) Stormwater	**Sampled: 04/12/10 09:50**		**Received: 04/12/10 12:00**						
Sample Evenet ID: 3336									
Ammonia as N	**0.34**	0.10	mg/l	1	0041504	04/15/10	04/15/10	SM4500 NH3 B,C	
Hardness (Total)	**66**	10	mg CaCO3/L	"	0041414	04/13/10	04/14/10	EPA 200.7	
Phosphorus, Total	**0.45**	0.05	mg/l	"	0041421	04/14/10	04/14/10	SM4500 P B, E	
WOD 1 (10D0298-02) Stormwater	**Sampled: 04/12/10 10:20**		**Received: 04/12/10 12:00**						
Sample Evenet ID: 3337									
Ammonia as N	**0.18**	0.10	mg/l	1	0041504	04/15/10	04/15/10	SM4500 NH3 B,C	
Hardness (Total)	**203**	10	mg CaCO3/L	"	0041414	04/13/10	04/14/10	EPA 200.7	
Phosphorus, Total	**0.45**	0.05	mg/l	"	0041421	04/14/10	04/14/10	SM4500 P B, E	

Tl sults in this report apply to the samples analyzed in accordance with the chain of c ; document. This analytical report must be reproduced in its entirety.

:nt Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0298

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0041607										
Blank (0041607-BLK1)				Prepared: 04/20/10		Analyzed: 04/21/10				
Lead	ND	0.005	mg/l							
Copper	ND	0.010	"							
Zinc	ND	0.020	"							QB-01
LCS (0041607-BS1)				Prepared: 04/20/10		Analyzed: 04/21/10				
Lead	0.099	0.005	mg/l	0.100		99	85-115			
Zinc	0.101	0.020	"	0.100		101	85-115			
Copper	0.098	0.010	"	0.100		98	85-115			
LCS Dup (0041607-BSD1)				Prepared: 04/20/10		Analyzed: 04/21/10				
Lead	0.092	0.005	mg/l	0.100		92	85-115	7	20	
Zinc	0.091	0.020	"	0.100		91	85-115	11	20	
Copper	0.088	0.010	"	0.100		88	85-115	11	20	
Duplicate (0041607-DUP1)		**Source: 10D0298-01**		Prepared: 04/20/10		Analyzed: 04/21/10				
	0.009	0.005	mg/l		0.010			9	20	
Copper	0.017	0.010	"		0.016			6	20	
Zinc	0.070	0.020	"		0.068			4	20	
Matrix Spike (0041607-MS1)		**Source: 10D0298-01**		Prepared: 04/20/10		Analyzed: 04/21/10				
Zinc	0.150	0.020	mg/l	0.100	0.068	83	70-130			
Lead	0.098	0.005	"	0.100	0.010	88	70-130			
Copper	0.103	0.010	"	0.100	0.016	87	70-130			
Matrix Spike (0041607-MS2)		**Source: 10D0298-02**		Prepared: 04/20/10		Analyzed: 04/21/10				
Copper	0.106	0.010	mg/l	0.100	0.015	90	70-130			
Zinc	0.139	0.020	"	0.100	0.055	84	70-130			
Lead	0.101	0.005	"	0.100	0.007	94	70-130			

T[illegible]ults in this report apply to the samples analyzed in accordance with the chain of c[illegible] document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0298

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0041607										
Matrix Spike Dup (0041607-MSD1)		**Source: 10D0298-01**		Prepared: 04/20/10	Analyzed: 04/21/10					
Lead	0.099	0.005	mg/l	0.100	0.010	90	70-130	1	20	
Zinc	0.151	0.020	"	0.100	0.068	83	70-130	0.4	20	
Copper	0.102	0.010	"	0.100	0.016	86	70-130	0.9	20	

T' sults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

:nt Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0298

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0041414										
Blank (0041414-BLK1)				Prepared: 04/13/10	Analyzed: 04/14/10					
Hardness (Total)	ND	10	mg CaCO3/L							
Duplicate (0041414-DUP1)		**Source: 10D0206-01RE1**		Prepared: 04/13/10	Analyzed: 04/14/10					
Hardness (Total)	218	10	mg CaCO3/L		206			6	20	
Batch 0041421										
Blank (0041421-BLK1)				Prepared & Analyzed: 04/14/10						
Phosphorus, Total	ND	0.05	mg/l							
LCS (0041421-BS1)				Prepared & Analyzed: 04/14/10						
Phosphorus, Total	0.54	0.05	mg/l	0.500		107	80-120			
LCS Dup (0041421-BSD1)				Prepared & Analyzed: 04/14/10						
Phosphorus, Total	0.50	0.05	mg/l	0.500		100	80-120	6	20	
'icate (0041421-DUP1)		**Source: 10C0527-05**		Prepared & Analyzed: 04/14/10						
,phorus, Total	0.88	0.05	mg/l		0.93			6	20	
Matrix Spike (0041421-MS1)		**Source: 10D0213-01**		Prepared & Analyzed: 04/14/10						
Phosphorus, Total	0.51	0.05	mg/l	0.500	0.09	85	80-120			
Matrix Spike Dup (0041421-MSD1)		**Source: 10D0213-01**		Prepared & Analyzed: 04/14/10						
Phosphorus, Total	0.51	0.05	mg/l	0.500	0.09	85	80-120	0.6	20	
Batch 0041504										
Blank (0041504-BLK1)				Prepared & Analyzed: 04/15/10						
Ammonia as N	ND	0.10	mg/l							

Tl sults in this report apply to the samples analyzed in accordance with the chain of c y document. This analytical report must be reproduced in its entirety.

:nt Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0298

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0041504										
LCS (0041504-BS1)				Prepared & Analyzed: 04/15/10						
Ammonia as N	0.75	0.10	mg/l	0.820		92	80-120			
LCS Dup (0041504-BSD1)				Prepared & Analyzed: 04/15/10						
Ammonia as N	0.70	0.10	mg/l	0.820		86	80-120	7	20	
Duplicate (0041504-DUP1)		**Source: 10D0298-01**		Prepared & Analyzed: 04/15/10						
Ammonia as N	0.40	0.10	mg/l		0.34			17	20	
Matrix Spike (0041504-MS1)		**Source: 10D0298-01**		Prepared & Analyzed: 04/15/10						
Ammonia as N	1.07	0.10	mg/l	0.820	0.34	90	80-120			
Matrix Spike Dup (0041504-MSD1)		**Source: 10D0298-01**		Prepared & Analyzed: 04/15/10						
Ammonia as N	1.05	0.10	mg/l	0.820	0.34	87	80-120	2	20	

T' sults in this report apply to the samples analyzed in accordance with the chain of c. y document. This analytical report must be reproduced in its entirety.

Notes and Definitions

QB-01	The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

T' sults in this report apply to the samples analyzed in accordance with the chain of c. y document. This analytical report must be reproduced in its entirety.

04 May 2010

COSD - DPW - Water Shed Protection Program
Attn: Kenneth Liddell
5201 Ruffin Road, Suite P
San Diego, California 92123

EMA Log #: 10D0566

Project Name: Woodside

Enclosed are the results of analyses for samples received by the laboratory on 04/21/10 12:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0566

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Event ID	Laboratory ID	Matrix	Date Sampled	Date Received
WOD2	3364	10D0566-01	Stormwater	04/21/10 09:10	04/21/10 12:00
WOD1	3365	10D0566-02	Stormwater	04/21/10 09:40	04/21/10 12:00

NOTE: The TOC/DOC analyses were performed by a sub-contract laboratory, results to follow in a separate report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

'nt Name: COSD - DPW - Water Shed Protection Program
,ect Name: Woodside

EMA Log #: 10D0566

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD2 (10D0566-01) Stormwater Sampled: 04/21/10 09:10 Received: 04/21/10 12:00									
Sample Evenet ID: 3364									
Copper	**0.010**	0.010	mg/l	1	0042625	04/26/10	04/27/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.059**	0.020	"	"	"	"	"	"	
WOD1 (10D0566-02) Stormwater Sampled: 04/21/10 09:40 Received: 04/21/10 12:00									
Sample Evenet ID: 3365									
Copper	**0.013**	0.010	mg/l	1	0042625	04/26/10	04/27/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.076**	0.020	"	"	"	"	"	"	

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' ' ent Name: COSD - DPW - Water Shed Protection Program	**EMA Log #: 10D0566**
,ect Name: Woodside	

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD2 (10D0566-01) Stormwater Sampled: 04/21/10 09:10 Received: 04/21/10 12:00									
Sample Evenet ID: 3364									
Copper	ND	0.010	mg/l	1	0042128	04/21/10	04/21/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	04/22/10	"	
WOD1 (10D0566-02) Stormwater Sampled: 04/21/10 09:40 Received: 04/21/10 12:00									
Sample Evenet ID: 3365									
Copper	ND	0.010	mg/l	1	0042128	04/21/10	04/21/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	**0.026**	0.020	"	"	"	"	04/23/10	"	

The results in this report apply to the samples analyzed in accordance with the chain of cu document. This analytical report must be reproduced in its entirety.

ent Name: COSD - DPW - Water Shed Protection Program
ject Name: Woodside

EMA Log #: 10D0566

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD2 (10D0566-01) Stormwater Sampled: 04/21/10 09:10 Received: 04/21/10 12:00									
Sample Evenet ID: 3364									
Ammonia as N	**0.14**	0.10	mg/l	1	0042601	04/26/10	04/26/10	SM4500 NH3 B,C	
Hardness (Total)	**132**	10	mg CaCO3/L	"	0042733	04/27/10	05/04/10	EPA 200.7	
Nitrate as N	**1.07**	0.25	mg/l	5	0042621	04/26/10	04/26/10	SM4500 NO3 E	W-02
Phosphorus, Total	**0.45**	0.05	"	1	0042125	04/21/10	04/21/10	SM4500 P B, E	
Total Dissolved Solids	**271**	20.0	"	"	0042616	04/26/10	04/27/10	SM2540 C	
Total Suspended Solids	**33.0**	1.0	"	"	0042617	"	04/27/10	SM2540 D	
WOD1 (10D0566-02) Stormwater Sampled: 04/21/10 09:40 Received: 04/21/10 12:00									
Sample Evenet ID: 3365									
Ammonia as N	**0.15**	0.10	mg/l	1	0042601	04/26/10	04/26/10	SM4500 NH3 B,C	
Hardness (Total)	**194**	10	mg CaCO3/L	"	0042733	04/27/10	05/04/10	EPA 200.7	
Nitrate as N	**2.10**	0.25	mg/l	5	0042621	04/26/10	04/26/10	SM4500 NO3 E	W-02
Phosphorus, Total	**0.36**	0.05	"	1	0042125	04/21/10	04/21/10	SM4500 P B, E	
Total Dissolved Solids	**352**	20.0	"	"	0042616	04/26/10	04/27/10	SM2540 C	
Total Suspended Solids	**26.0**	1.0	"	"	0042617	"	04/27/10	SM2540 D	

The results in this report apply to the samples analyzed in accordance with the chain of cu document. This analytical report must be reproduced in its entirety.

Client Name: COSD - DPW - Water Shed Protection Program
Project Name: Woodside

EMA Log #: 10D0566

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0042625										
Blank (0042625-BLK1)				Prepared: 04/26/10	Analyzed: 04/27/10					
Lead	ND	0.005	mg/l							
Zinc	ND	0.020	"							
Copper	ND	0.010	"							
LCS (0042625-BS1)				Prepared: 04/26/10	Analyzed: 04/27/10					
Zinc	0.099	0.020	mg/l	0.100		99	85-115			
Copper	0.096	0.010	"	0.100		96	85-115			
Lead	0.102	0.005	"	0.100		102	85-115			
LCS Dup (0042625-BSD1)				Prepared: 04/26/10	Analyzed: 04/27/10					
Lead	0.095	0.005	mg/l	0.100		95	85-115	7	20	
Copper	0.091	0.010	"	0.100		91	85-115	6	20	
Zinc	0.094	0.020	"	0.100		94	85-115	6	20	
Duplicate (0042625-DUP1)		**Source: 10D0667-01**		Prepared: 04/26/10	Analyzed: 04/27/10					
Copper	0.286	0.050	mg/l		0.268			6	20	
Lead	0.022	0.025	"		0.020			11	20	
Zinc	0.110	0.100	"		0.101			9	20	
Matrix Spike (0042625-MS1)		**Source: 10D0667-01**		Prepared: 04/26/10	Analyzed: 04/27/10					
Lead	0.122	0.025	mg/l	0.100	0.020	102	70-130			
Zinc	0.202	0.100	"	0.100	0.101	101	70-130			
Copper	0.347	0.050	"	0.100	0.268	79	70-130			
Matrix Spike (0042625-MS2)		**Source: 10D0667-02**		Prepared: 04/26/10	Analyzed: 04/27/10					
Copper	0.231	0.050	mg/l	0.100	0.164	66	70-130			QM-06
Lead	0.098	0.025	"	0.100	0.016	82	70-130			
Zinc	0.168	0.100	"	0.100	0.098	71	70-130			

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Client Name: COSD - DPW - Water Shed Protection Program	**EMA Log #: 10D0566**
Project Name: Woodside	

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0042625										
Matrix Spike Dup (0042625-MSD1)		**Source: 10D0667-01**		Prepared: 04/26/10	Analyzed: 04/27/10					
Zinc	0.188	0.100	mg/l	0.100	0.101	87	70-130	7	20	
Lead	0.107	0.025	"	0.100	0.020	87	70-130	13	20	
Copper	0.328	0.050	"	0.100	0.268	60	70-130	6	20	QM-06

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

·nt Name: COSD - DPW - Water Shed Protection Program	**EMA Log #: 10D0566**
,ect Name: Woodside	

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0042128										
Blank (0042128-BLK1)				Prepared & Analyzed: 04/21/10						
Lead	ND	0.005	mg/l							
Copper	ND	0.010	"							
Zinc	ND	0.020	"							
LCS (0042128-BS1)				Prepared & Analyzed: 04/21/10						
Lead	0.049	0.005	mg/l	0.0500		98	75-125			
Zinc	0.054	0.020	"	0.0500		108	85-115			
Copper	0.053	0.010	"	0.0500		106	85-115			
Duplicate (0042128-DUP1)		**Source: 10D0395-01**		Prepared & Analyzed: 04/21/10						
Zinc	ND	0.020	mg/l		ND				20	
Copper	ND	0.010	"		ND				20	
Lead	ND	0.005	"		ND				20	
Matrix Spike (0042128-MS1)		**Source: 10D0395-01**		Prepared & Analyzed: 04/21/10						
l	0.052	0.005	mg/l	0.0500	ND	105	75-125			
Z	0.064	0.020	"	0.0500	ND	127	70-130			
Copper	0.054	0.010	"	0.0500	ND	108	70-130			
Matrix Spike Dup (0042128-MSD1)		**Source: 10D0395-01**		Prepared & Analyzed: 04/21/10						
Lead	0.054	0.005	mg/l	0.0500	ND	107	75-125	2	20	
Zinc	0.063	0.020	"	0.0500	ND	127	70-130	0.6	20	
Copper	0.054	0.010	"	0.0500	ND	108	70-130	0.2	20	

The results in this report apply to the samples analyzed in accordance with the chain of cu document. This analytical report must be reproduced in its entirety.

·ent Name: COSD - DPW - Water Shed Protection Program	**EMA Log #: 10D0566**
,ect Name: Woodside	

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0042125										
Blank (0042125-BLK1)				Prepared & Analyzed: 04/21/10						
Phosphorus, Total	ND	0.05	mg/l							
LCS (0042125-BS1)				Prepared & Analyzed: 04/21/10						
Phosphorus, Total	0.53	0.05	mg/l	0.500		106	80-120			
LCS Dup (0042125-BSD1)				Prepared & Analyzed: 04/21/10						
Phosphorus, Total	0.51	0.05	mg/l	0.500		102	80-120	4	20	
Duplicate (0042125-DUP1)		**Source: 10D0540-01**		Prepared & Analyzed: 04/21/10						
Phosphorus, Total	0.26	0.05	mg/l		0.27			4	20	
Matrix Spike (0042125-MS1)		**Source: 10D0540-01**		Prepared & Analyzed: 04/21/10						
Phosphorus, Total	0.73	0.05	mg/l	0.500	0.27	92	80-120			
Matrix Spike Dup (0042125-MSD1)		**Source: 10D0540-01**		Prepared & Analyzed: 04/21/10						
Phosphorus, Total	0.74	0.05	mg/l	0.500	0.27	93	80-120	1	20	
ı h 0042601										
Blank (0042601-BLK1)				Prepared & Analyzed: 04/26/10						
Ammonia as N	ND	0.10	mg/l							
LCS (0042601-BS1)				Prepared & Analyzed: 04/26/10						
Ammonia as N	0.73	0.10	mg/l	0.820		89	80-120			
LCS Dup (0042601-BSD1)				Prepared & Analyzed: 04/26/10						
Ammonia as N	0.69	0.10	mg/l	0.820		84	80-120	6	20	

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·ent Name: COSD - DPW - Water Shed Protection Program	**EMA Log #: 10D0566**
,ect Name: Woodside	

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0042601										
Duplicate (0042601-DUP1)		**Source: 10D0566-01**		Prepared & Analyzed: 04/26/10						
Ammonia as N	0.14	0.10	mg/l		0.14			2	20	
Matrix Spike (0042601-MS1)		**Source: 10D0566-01**		Prepared & Analyzed: 04/26/10						
Ammonia as N	0.89	0.10	mg/l	0.820	0.14	91	80-120			
Matrix Spike Dup (0042601-MSD1)		**Source: 10D0566-01**		Prepared & Analyzed: 04/26/10						
Ammonia as N	0.82	0.10	mg/l	0.820	0.14	82	80-120	8	20	
Batch 0042616										
Blank (0042616-BLK1)				Prepared: 04/26/10 Analyzed: 04/27/10						
Total Dissolved Solids	ND	20.0	mg/l							
Duplicate (0042616-DUP1)		**Source: 10D0503-01**		Prepared: 04/26/10 Analyzed: 04/27/10						
Total Dissolved Solids	520	20.0	mg/l		536			3	20	
R··ference (0042616-SRM1)				Prepared: 04/26/10 Analyzed: 04/27/10						
·Dissolved Solids	304	20.0	mg/l	283		107	6.93-113.0			
Batch 0042617										
Blank (0042617-BLK1)				Prepared: 04/26/10 Analyzed: 04/27/10						
Total Suspended Solids	ND	1.0	mg/l							
Duplicate (0042617-DUP1)		**Source: 10D0538-03**		Prepared: 04/26/10 Analyzed: 04/27/10						
Total Suspended Solids	152	1.0	mg/l		148			3	20	

The results in this report apply to the samples analyzed in accordance with the chain of cu document. This analytical report must be reproduced in its entirety.

...ent Name: COSD - DPW - Water Shed Protection Program	**EMA Log #: 10D0566**
...ject Name: Woodside	

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0042617										
Reference (0042617-SRM1)				Prepared: 04/26/10 Analyzed: 04/27/10						
Total Suspended Solids	38.0	20.0	mg/l	40.7		93	2.55-106.1			
Batch 0042621										
Blank (0042621-BLK1)				Prepared & Analyzed: 04/26/10						
Nitrate as N	ND	0.05	mg/l							
LCS (0042621-BS1)				Prepared & Analyzed: 04/26/10						
Nitrate as N	0.50	0.05	mg/l	0.500		100	80-120			
LCS Dup (0042621-BSD1)				Prepared & Analyzed: 04/26/10						
Nitrate as N	0.51	0.05	mg/l	0.500		102	80-120	2	20	
Duplicate (0042621-DUP1)		**Source: 10D0626-01**		Prepared & Analyzed: 04/26/10						
Nitrate as N	3.20	0.50	mg/l		2.99			7	20	
Matrix Spike (0042621-MS1)		**Source: 10D0626-01**		Prepared & Analyzed: 04/26/10						
Nitrate as N	13.4	1.25	mg/l	12.5	2.99	83	80-120			
Matrix Spike Dup (0042621-MSD1)		**Source: 10D0626-01**		Prepared & Analyzed: 04/26/10						
Nitrate as N	13.6	1.25	mg/l	12.5	2.99	85	80-120	2	20	
Reference (0042621-SRM1)				Prepared & Analyzed: 04/26/10						
Nitrate as N	0.37	0.05	mg/l	0.375		99	89.6-108			
Batch 0042733										
Blank (0042733-BLK1)				Prepared: 04/27/10 Analyzed: 05/04/10						
Hardness (Total)	ND	10	mg CaCO3/L							

The results in this report apply to the samples analyzed in accordance with the chain of cu... document. This analytical report must be reproduced in its entirety.

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0042733										
Duplicate (0042733-DUP1)		**Source: 10D0540-03**		Prepared: 04/27/10	Analyzed: 05/04/10					
Hardness (Total)	810	100	mg CaCO3/L		733			10	20	

The results in this report apply to the samples analyzed in accordance with the chain of cu document. This analytical report must be reproduced in its entirety.

Notes and Definitions

W-02	The sample for nitrate analysis was preserved with H2SO4 after the nitrite portion of the analysis was completed to extend the holding time for the sample. Nitrate results are corrected for the nitrite contribution per the method.
QM-06	Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of cu document. This analytical report must be reproduced in its entirety.

28 July 2010

COSD - DPW - Water Shed Protection Program
Attn: Kenneth Liddell
5201 Ruffin Road, Suite P
San Diego, California 92123

EMA Log #: 10F0819

Project Name: Woodside

Enclosed are the results of analyses for samples received by the laboratory on 06/29/10 11:36. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

'ient Name: COSD - DPW - Water Shed Protection Program
roject Name: Woodside

EMA Log #: 10F0819

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Event ID	Laboratory ID	Matrix	Date Sampled	Date Received
WOD2	3522	10F0819-01	Stormwater	06/29/10 09:40	06/29/10 11:36
WOD1	3523	10F0819-02	Stormwater	06/29/10 10:10	06/29/10 11:36

NOTE: The TOC/DOC analyses were performed by a sub-contract laboratory, results to follow in a separate report.

*Th- results in this report apply to the samples analyzed in accordance with the chain of
ly document. This analytical report must be reproduced in its entirety.*

'ient Name: COSD - DPW - Water Shed Protection Program
. roject Name: Woodside

EMA Log #: 10F0819

Total Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD2 (10F0819-01) Stormwater Sampled: 06/29/10 09:40 Received: 06/29/10 11:36									
Sample Evenet ID: 3522									
Copper	ND	0.010	mg/l	1	0070744	07/07/10	07/10/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	07/08/10	"	
WOD1 (10F0819-02) Stormwater Sampled: 06/29/10 10:10 Received: 06/29/10 11:36									
Sample Evenet ID: 3523									
Copper	ND	0.010	mg/l	1	0070744	07/07/10	07/10/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	07/08/10	"	

T' ·esults in this report apply to the samples analyzed in accordance with the chain of ly document. This analytical report must be reproduced in its entirety.

'ient Name: COSD - DPW - Water Shed Protection Program
. roject Name: Woodside

EMA Log #: 10F0819

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD2 (10F0819-01) Stormwater Sampled: 06/29/10 09:40 Received: 06/29/10 11:36									
Sample Evenet ID: 3522									
Copper	ND	0.010	mg/l	1	0063031	06/30/10	06/30/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	
WOD1 (10F0819-02) Stormwater Sampled: 06/29/10 10:10 Received: 06/29/10 11:36									
Sample Evenet ID: 3523									
Copper	ND	0.010	mg/l	1	0063031	06/30/10	06/30/10	EPA 200.8	
Lead	ND	0.005	"	"	"	"	"	"	
Zinc	ND	0.020	"	"	"	"	"	"	

T' esults in this report apply to the samples analyzed in accordance with the chain of ly document. This analytical report must be reproduced in its entirety.

lient Name: COSD - DPW - Water Shed Protection Program
roject Name: Woodside

EMA Log #: 10F0819

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WOD2 (10F0819-01) Stormwater Sampled: 06/29/10 09:40 Received: 06/29/10 11:36									
Sample Evenet ID: 3522									
Ammonia as N	**0.12**	0.10	mg/l	1	0071428	07/15/10	07/15/10	SM4500 NH3 B,C	
Hardness (Total)	**712**	100	mg CaCO3/L	10	0071505	07/14/10	07/27/10	EPA 200.7	
Nitrate as N	**8.12**	1.25	mg/l	25	0062901	06/29/10	06/29/10	SM4500 NO3 E	
Phosphorus, Total	**0.16**	0.05	"	1	0063030	06/30/10	06/30/10	SM4500 P B, E	
Total Dissolved Solids	**1390**	20.0	"	"	0070501	07/05/10	07/06/10	SM2540 C	
Total Suspended Solids	**4.0**	1.0	"	"	0070506	07/03/10	07/05/10	SM2540 D	
WOD1 (10F0819-02) Stormwater Sampled: 06/29/10 10:10 Received: 06/29/10 11:36									
Sample Evenet ID: 3523									
Ammonia as N	ND	0.10	mg/l	1	0071428	07/15/10	07/15/10	SM4500 NH3 B,C	
Hardness (Total)	**665**	100	mg CaCO3/L	10	0071505	07/14/10	07/27/10	EPA 200.7	
Nitrate as N	**14.2**	2.50	mg/l	50	0062901	06/29/10	06/29/10	SM4500 NO3 E	
Phosphorus, Total	**0.13**	0.05	"	1	0063030	06/30/10	06/30/10	SM4500 P B, E	
Total Dissolved Solids	**1430**	20.0	"	"	0070501	07/05/10	07/06/10	SM2540 C	
Total Suspended Solids	**2.1**	1.0	"	"	0070506	07/03/10	07/05/10	SM2540 D	

esults in this report apply to the samples analyzed in accordance with the chain of dy document. This analytical report must be reproduced in its entirety.

'ient Name: COSD - DPW - Water Shed Protection Program **EMA Log #: 10F0819**
. roject Name: Woodside

Total Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0070744										
Blank (0070744-BLK1)				Prepared: 07/07/10		Analyzed: 07/10/10				
Copper	ND	0.010	mg/l							
Lead	ND	0.005	"							
Zinc	ND	0.020	"							
LCS (0070744-BS1)				Prepared: 07/07/10		Analyzed: 07/08/10				
Zinc	0.044	0.020	mg/l	0.0500		87	85-115			
Copper	0.046	0.010	"	0.0500		92	85-115			
Lead	0.047	0.005	"	0.0500		94	85-115			
LCS Dup (0070744-BSD1)				Prepared: 07/07/10		Analyzed: 07/10/10				
Lead	0.047	0.005	mg/l	0.0500		94	85-115	0.3	20	
Zinc	0.043	0.020	"	0.0500		87	85-115	0.8	20	
Copper	0.045	0.010	"	0.0500		90	85-115	1	20	
Duplicate (0070744-DUP1)		**Source: 10G0112-01**		Prepared: 07/07/10		Analyzed: 07/10/10				
per	ND	0.010	mg/l		0.0009				20	
Lead	0.0002	0.005	"		0.0006			115	20	QR-04
Zinc	0.0004	0.020	"		0.049			197	20	QR-02
Matrix Spike (0070744-MS1)		**Source: 10G0112-01**		Prepared: 07/07/10		Analyzed: 07/10/10				
Copper	0.045	0.010	mg/l	0.0500	0.0009	88	70-130			
Lead	0.050	0.005	"	0.0500	0.0006	98	70-130			
Zinc	0.044	0.020	"	0.0500	0.049	NR	70-130			QM-06
Matrix Spike Dup (0070744-MSD1)		**Source: 10G0112-01**		Prepared: 07/07/10		Analyzed: 07/08/10				
Zinc	0.044	0.020	mg/l	0.0500	0.049	NR	70-130	0.07	20	QM-06
Copper	0.045	0.010	"	0.0500	0.0009	89	70-130	0.2	20	
Lead	0.047	0.005	"	0.0500	0.0006	92	70-130	6	20	

T' esults in this report apply to the samples analyzed in accordance with the chain of ly document. This analytical report must be reproduced in its entirety.

'ient Name: COSD - DPW - Water Shed Protection Program
. roject Name: Woodside

EMA Log #: 10F0819

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0063031										
Blank (0063031-BLK1)				Prepared & Analyzed: 06/30/10						
Lead	ND	0.005	mg/l							
Copper	ND	0.010	"							
Zinc	ND	0.020	"							
LCS (0063031-BS1)				Prepared & Analyzed: 06/30/10						
Zinc	0.049	0.020	mg/l	0.0500		98	85-115			
Lead	0.051	0.005	"	0.0500		101	75-125			
Copper	0.052	0.010	"	0.0500		104	85-115			
LCS Dup (0063031-BSD1)				Prepared & Analyzed: 06/30/10						
Zinc	0.048	0.020	mg/l	0.0500		97	85-115	1	20	
Lead	0.051	0.005	"	0.0500		101	75-125	0.06	20	
Copper	0.051	0.010	"	0.0500		103	85-115	0.8	20	
Duplicate (0063031-DUP1)		**Source: 10F0666-01**		Prepared & Analyzed: 06/30/10						
per	ND	0.010	mg/l		ND				20	
Lead	ND	0.005	"		ND				20	
Zinc	ND	0.020	"		ND				20	
Matrix Spike (0063031-MS1)		**Source: 10F0666-01**		Prepared & Analyzed: 06/30/10						
Zinc	0.042	0.020	mg/l	0.0500	ND	84	70-130			
Copper	0.045	0.010	"	0.0500	ND	91	70-130			
Lead	0.052	0.005	"	0.0500	ND	103	75-125			
Matrix Spike Dup (0063031-MSD1)		**Source: 10F0666-01**		Prepared & Analyzed: 06/30/10						
Lead	0.053	0.005	mg/l	0.0500	ND	105	75-125	2	20	
Copper	0.046	0.010	"	0.0500	ND	91	70-130	0.2	20	
Zinc	0.041	0.020	"	0.0500	ND	83	70-130	0.9	20	

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'lient Name: COSD - DPW - Water Shed Protection Program
'roject Name: Woodside

EMA Log #: 10F0819

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0062901										
Blank (0062901-BLK1)				Prepared & Analyzed: 06/29/10						
Nitrate as N	ND	0.05	mg/l							
LCS (0062901-BS1)				Prepared & Analyzed: 06/29/10						
Nitrate as N	0.50	0.05	mg/l	0.500		99	80-120			
LCS Dup (0062901-BSD1)				Prepared & Analyzed: 06/29/10						
Nitrate as N	0.48	0.05	mg/l	0.500		96	80-120	3	20	
Duplicate (0062901-DUP1)		**Source: 10F0766-02**		Prepared & Analyzed: 06/29/10						
Nitrate as N	ND	0.05	mg/l		ND				20	
Matrix Spike (0062901-MS1)		**Source: 10F0766-02**		Prepared & Analyzed: 06/29/10						
Nitrate as N	0.57	0.05	mg/l	0.500	ND	114	80-120			
Matrix Spike Dup (0062901-MSD1)		**Source: 10F0766-02**		Prepared & Analyzed: 06/29/10						
Nitrate as N	0.52	0.05	mg/l	0.500	ND	104	80-120	8	20	
.ference (0062901-SRM1)				Prepared & Analyzed: 06/29/10						
Nitrate as N	0.46	0.05	mg/l	0.442		105	0.05-108.3			
Batch 0063030										
Blank (0063030-BLK1)				Prepared & Analyzed: 06/30/10						
Phosphorus, Total	ND	0.05	mg/l							
LCS (0063030-BS1)				Prepared & Analyzed: 06/30/10						
Phosphorus, Total	0.52	0.05	mg/l	0.500		104	80-120			

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'lient Name: COSD - DPW - Water Shed Protection Program **EMA Log #: 10F0819**
. roject Name: Woodside

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0063030										
LCS Dup (0063030-BSD1)				Prepared & Analyzed: 06/30/10						
Phosphorus, Total	0.51	0.05	mg/l	0.500		102	80-120	2	20	
Duplicate (0063030-DUP1)		**Source: 10F0691-01**		Prepared & Analyzed: 06/30/10						
Phosphorus, Total	0.17	0.05	mg/l		0.17			0.6	20	
Matrix Spike (0063030-MS1)		**Source: 10F0691-01**		Prepared & Analyzed: 06/30/10						
Phosphorus, Total	0.61	0.05	mg/l	0.500	0.17	88	80-120			
Matrix Spike Dup (0063030-MSD1)		**Source: 10F0691-01**		Prepared & Analyzed: 06/30/10						
Phosphorus, Total	0.62	0.05	mg/l	0.500	0.17	90	80-120	2	20	
Batch 0070501										
Blank (0070501-BLK1)				Prepared: 07/05/10 Analyzed: 07/06/10						
Total Dissolved Solids	ND	20.0	mg/l							
- olicate (0070501-DUP1)		**Source: 10F0819-01**		Prepared: 07/05/10 Analyzed: 07/06/10						
.l Dissolved Solids	1390	20.0	mg/l		1390			0	20	
Reference (0070501-SRM1)				Prepared: 07/05/10 Analyzed: 07/06/10						
Total Dissolved Solids	242	20.0	mg/l	269		90	87-113			
Batch 0070506										
Blank (0070506-BLK1)				Prepared: 07/03/10 Analyzed: 07/05/10						
Total Suspended Solids	ND	1.0	mg/l							

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Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0070506										
Duplicate (0070506-DUP1)		**Source: 10F0848-01**		Prepared: 07/03/10	Analyzed: 07/05/10					
Total Suspended Solids	ND	1.0	mg/l		ND				20	
Reference (0070506-SRM1)				Prepared: 07/03/10	Analyzed: 07/05/10					
Total Suspended Solids	48.0	20.0	mg/l	49.9		96	84.8-105			
Batch 0071428										
Blank (0071428-BLK1)				Prepared & Analyzed: 07/14/10						
Ammonia as N	ND	0.10	mg/l							
LCS (0071428-BS1)				Prepared & Analyzed: 07/14/10						
Ammonia as N	0.96	0.10	mg/l	0.820		118	80-120			
LCS Dup (0071428-BSD1)				Prepared & Analyzed: 07/14/10						
Ammonia as N	0.90	0.10	mg/l	0.820		109	80-120	7	20	
- 'plicate (0071428-DUP1)		**Source: 10F0549-01**		Prepared & Analyzed: 07/14/10						
.monia as N	116	10.0	mg/l		133			13	20	
Matrix Spike (0071428-MS1)		**Source: 10F0549-01**		Prepared & Analyzed: 07/14/10						
Ammonia as N	190	25.0	mg/l	205	133	28	80-120			QM-05
Matrix Spike Dup (0071428-MSD1)		**Source: 10F0549-01**		Prepared & Analyzed: 07/14/10						
Ammonia as N	218	25.0	mg/l	205	133	42	80-120	14	20	QM-05
Batch 0071505										
Blank (0071505-BLK1)				Prepared: 07/14/10	Analyzed: 07/26/10					
Hardness (Total)	ND	10	mg CaCO3/L							

T' 'esults in this report apply to the samples analyzed in accordance with the chain of ly document. This analytical report must be reproduced in its entirety.

Client Name: COSD - DPW - Water Shed Protection Program **EMA Log #: 10F0819**
Project Name: Woodside

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0071505										
Duplicate (0071505-DUP1)		**Source: 10G0265-01**		Prepared: 07/14/10	Analyzed: 07/26/10					
Hardness (Total)	1500	100	mg CaCO3/L		1340			11	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Notes and Definitions

QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
QR-02	The RPD result exceeded the QC limits due to non-homogeneity of sample.
QM-06	Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

*T' - results in this report apply to the samples analyzed in accordance with the chain of
dy document. This analytical report must be reproduced in its entirety.*

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

MK2 – 7/14/09

GENERAL SITE DESCRIPTION

Site ID	WOD2	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	2984	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Effuent Channel					**Watershed**		**Hydrologic Unit**	907
Date	06/04/09	**Time**	1015	**Latitude**	32.85540 ° N			**Hydrologic Area**	907.10
Field Staff	KL			**Longitude**	-116.93504 ° W			**Hydrologic Subarea** (Optional)	907.12

QC Sample ☑ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☑ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☑ Partly Cloudy ☐ Overcast ☐ Fog

Last Rain ☑ >72 hours ☐ < 72 Hours ☐ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☑ None ☐ <0.1" ☐ >0.1"

OBSERVATIONS N/A

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☑ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☐ Clear	☑ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☑ Concrete	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☑ Normal	☐ Excessive		☐ Other
Biology	☐ None	☑ Insects	☑ Algae ☐ Snails	☐ Fish	☐ Insect/Algae	☐ Insect/Snail ☐ Other

FLOW MEASUREMENT N/A

Leaf Float Distance_____ft Time_____sec

1 From Table in LTMP

Gauge Height (ft, in)	0' 4"		
Corresponding Flow[1]	0.52'/sec	w: 0.5'	Dep: 0.15'

Photo Taken? ☑ Yes ☒ No MK2 6/4/09

FIELD MEASUREMENT N/A

Horiba Meter: ☐ In Stream ☑ In Bucket **Analytical Lab Sample Collected?** ☑ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.77			DO (mg/L)	7.84		
Cond (mS/cm)	2.25			Temp (°C)	18.2		
Turb (NTU)	61			Salinity (%)	8.1		

COMMENTS: Watercress + a few weeds growing out of accumulated sediment near flowing water

Completed by KL

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

KZ - 7/14/09

GENERAL SITE DESCRIPTION

Site ID	WOD1	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	2985	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Influent Channel					**Watershed**		**Hydrologic Unit**	907
Date	06/04/09	**Time**	1115	**Latitude**	32.85386 ° N			**Hydrologic Area**	907.10
Field Staff	KL			**Longitude**	-116.93441 ° W			**Hydrologic Subarea** (Optional)	907.12

QC Sample ☑ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☑ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☑ Partly Cloudy ☐ Overcast ☐ Fog

Last Rain ☑ >72 hours ☐ < 72 Hours ☐ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☑ None ☐ <0.1" ☐ >0.1"

OBSERVATIONS N/A

Odor	☑ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☑ None	☐ Yellow	☐ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☑ Clear	☐ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☑ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☑ Concrete	☐ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☑ Excessive		☐ Other Birds
Biology	☐ None	☑ Insects	☐ Algae ☐ Snails	☑ Fish	☐ Insect/Algae ☐ Insect/Snail	☑ Other Frogs

FLOW MEASUREMENT N/A

Leaf Float Distance 0.1 ft Time 1 sec

1 From Table in LTMP

Gauge Height (ft, in)	0'7"		
Corresponding Flow[1]	Depth=0.5'	Width=0.7'	

Photo Taken? ☑ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☑ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☑ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.45			DO (mg/L)	4.30		
Cond (mS/cm)	2.15			Temp (°C)	20.7		
Turb (NTU)	1			Salinity (%)	0.1		

COMMENTS: Channel choked with watercress, cattails, castor bean and other vegetation

Completed by KL

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

K2 - 8/25/09

GENERAL SITE DESCRIPTION

Site ID	WOD2	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	3092	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Effuent Channel					**Watershed**	**Hydrologic Unit**	907	
Date	08/19/09	**Time**	10:20	**Latitude**	32.85540 ° N		**Hydrologic Area**	907.10	
Field Staff	SD			**Longitude**	-116.93504 ° W		**Hydrologic Subarea** (Optional)	907.12	

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Last Rain ☒ >72 hours ☐ < 72 Hours ☐ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☒ None ☐ <0.1" ☐ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☒ Clear	☐ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails	☒ Fish	☐ Insect/Algae ☐ Insect/Snail ☐ Other

FLOW MEASUREMENT N/A

Leaf Float Distance 3.3 ft Time 10 sec

0.9 wide, 0.1 depth.

1 From Table in LTMP

Gauge Height (ft, in)	0', 2.75"		
Corresponding Flow[1]			

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☐ In Stream ☒ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.87			DO (mg/L)	7.36		
Cond (mS/cm)	2.24			Temp (°C)	19.7		
Turb (NTU)	10			Salinity (%)	0.10		

COMMENTS:

Completed by S.D.

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

K2 - 8/25/09

GENERAL SITE DESCRIPTION

Site ID	WOD1	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	~~280~~ 3093 (SD)	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Influent Channel					**Watershed**		**Hydrologic Unit**	907
Date	08/19/09	**Time**	10:40	**Latitude**	32.85386 ° N			**Hydrologic Area**	907.10
Field Staff	SD			**Longitude**	-116.93441 ° W			**Hydrologic Subarea** (Optional)	907.12

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☒ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog

Last Rain ☒ >72 hours ☐ < 72 Hours ☐ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☒ None ☐ <0.1" ☐ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☒ Clear	☐ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae ☐ Snails	☒ Fish	☐ Insect/Algae ☐ Insect/Snail	☒ Other Crayfish

FLOW MEASUREMENT N/A

Leaf Float Distance 0.35 ft Time 10 sec

1.2" wide, 0.3" depth

1 From Table in LTMP

Gauge Height (ft, in)			
Corresponding Flow[1]			

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.65			DO (mg/L)	5.26		
Cond (mS/cm)	2.14			Temp (°C)	21.7		
Turb (NTU)	3			Salinity (%)	0.10		

COMMENTS: Channel is overgrown and the water is focused into a 1.2" creek.

Completed by S.D.

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

X1 - 1/21/10

GENERAL SITE DESCRIPTION

Site ID	WOD1	Site Type	MLS	Event Type	WaterChem	Event ID	3226	Sample Type	Grab
Location	Woodside Avenue EDB @ Influent Channel					Watershed		Hydrologic Unit	907
Date	1/19/10	Time	12:40	Latitude	32.85386 ° N			Hydrologic Area	907.10
Field Staff	SD			Longitude	-116.93441 ° W			Hydrologic Subarea (Optional)	907.12

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Last Rain ☐ >72 hours ☒ < 72 Hours ☐ Light Rain/Mist ☒ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☐ None ☐ <0.1" ☒ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☒ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☐ Clear	☐ Slightly Cloudy	☒ Opaque			☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects	☐ Algae	☐ Snails	☐ Fish	☐ Insect/Algae ☐ Insect/Snail ☐ Other

FLOW MEASUREMENT N/A

Leaf Float Distance_____ft Time_____sec

1 From Table in LTMP

Gauge Height (ft, in)	1' 11"		
Corresponding Flow[1]	38.64203		

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.50	7.50	7.44	DO (mg/L)	9.32	9.29	9.47
Cond (mS/cm)	0.527	0.454	0.395	Temp (°C)	13.6	13.5	13.5
Turb (NTU)	355	318	311	Salinity (%)	0.02	0.01	0.01

COMMENTS: Rain started apx. one hour prior to arrival at site. Water was rising during the sampling event. Flowmeter = Vel. = 1.57 ft/sec, wide = 12.0 feet, deep = 1.8 feet.

Completed by S.D.

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

AK2 - 1/21/10

GENERAL SITE DESCRIPTION

Site ID	WOD2	Site Type	MLS	Event Type	WaterChem	Event ID	3227	Sample Type	Grab
Location	Woodside Avenue EDB @ Effuent Channel					Watershed		Hydrologic Unit	907
Date	1/19/10	Time	13:10	Latitude	32.85540 ° N			Hydrologic Area	907.10
Field Staff	SD			Longitude	-116.93504 ° W			Hydrologic Subarea (Optional)	907.12

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Last Rain ☐ >72 hours ☒ < 72 Hours ☐ Light Rain/Mist ☒ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☐ None ☐ <0.1" ☒ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☒ Yellow	☐ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☐ Clear	☒ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☒ None	☐ Insects ☐ Algae	☐ Snails	☐ Fish	☐ Insect/Algae	☐ Insect/Snail ☐ Other

FLOW MEASUREMENT N/A

Leaf Float Distance_____ft Time_____sec

1 From Table in LTMP

Gauge Height (ft, in)	~~0'~~ 0' 4"		
Corresponding Flow[1]	0.12089		

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.33			DO (mg/L)	4.02		
Cond (mS/cm)	1.91			Temp (°C)	10.6		
Turb (NTU)	48			Salinity (%)	0.08		

COMMENTS: Second pipes' gate valve was open ∴ gauge height is probably inaccurate, Vel. = 0.49'/sec wide = 2.5', Depth = 0.25' = flowmeter

Completed by S.D.

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

K2 - 3/5/10

GENERAL SITE DESCRIPTION

Site ID	WOD2	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	3292	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Effuent Channel					**Watershed**	**Hydrologic Unit**	907	
Date	03/03/10	**Time**	10:20	**Latitude**	32.85540 ° N		**Hydrologic Area**	907.10	
Field Staff	SD			**Longitude**	-116.93504 ° W		**Hydrologic Subarea** (Optional)	907.12	

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Last Rain ☒ >72 hours ☐ < 72 Hours ☐ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☒ None ☐ <0.1" ☐ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☒ Clear	☐ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails	☐ Fish	☐ Insect/Algae ☐ Insect/Snail ☒ Other Birds

FLOW MEASUREMENT N/A

Leaf Float Distance_____ft Time_____sec

1 From Table in LTMP

Gauge Height (ft, in)	0', 3"		
Corresponding Flow[1]			

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.52	7.48	7.69	DO (mg/L)	7.78	7.21	11.77
Cond (mS/cm)	2.40	2.36	2.25	Temp (°C)	15.6	15.5	18.0
Turb (NTU)	2	3	2	Salinity (%)	0.11	0.11	0.10

COMMENTS: The Vegitation in the basin was been trimmed and thined out. Bypass Valve is open which alters the gauge height measurement.
Vel = 0.36 ft/sec, L = 2.6', D = 0.25' ∴ Flow = 0.234 ft³/sec.

Completed by S.D.

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

AK 2-3/5/10

GENERAL SITE DESCRIPTION

Site ID	WOD1	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	3293	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Influent Channel					**Watershed**	**Hydrologic Unit**	907	
Date	03/03/10	**Time**	11:00	**Latitude**	32.85386 ° N		**Hydrologic Area**	907.10	
Field Staff	SD			**Longitude**	-116.93441 ° W		**Hydrologic Subarea** (Optional)	907.12	

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☒ Partly Cloudy ☐ Overcast ☐ Fog

Last Rain ☒ >72 hours ☐ < 72 Hours ☐ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☒ None ☐ <0.1" ☐ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☒ Clear	☐ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae ☐ Snails	☐ Fish	☐ Insect/Algae	☐ Insect/Snail ☒ Other Birds

FLOW MEASUREMENT N/A

Leaf Float Distance_____ft Time_____sec

1 From Table in LTMP

Gauge Height (ft, in)	N/A		
Corresponding Flow[1]			

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	8.04	8.04	8.05	DO (mg/L)	13.52	13.65	13.57
Cond (mS/cm)	2.36	2.40	2.30	Temp (°C)	18.0	18.0	17.9
Turb (NTU)	4	3	4	Salinity (%)	0.11	0.11	0.11

COMMENTS: No Vegitation clearing was done on this end of the basin.
d = 0.48 cfs L = 2.2" D = 0.3" Flow = 0.3168 ft³/sec
Gauge is not in the water, sediment is up against the gauge stick up to the 10" Mark.

Completed by S.R

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

K1 - 4/16/10

GENERAL SITE DESCRIPTION

Site ID	WOD2	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	3336	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Effuent Channel					**Watershed**	**Hydrologic Unit**	907	
Date	04/12/10	**Time**	9:50	**Latitude**	32.85540 ° N		**Hydrologic Area**	907.10	
Field Staff	SD			**Longitude**	-116.93504 ° W		**Hydrologic Subarea** (Optional)	907.12	

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Last Rain ☐ >72 hours ☒ < 72 Hours ☒ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☐ None ☐ <0.1" ☒ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☒ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☐ Clear	☐ Slightly Cloudy	☒ Opaque			☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae ☐ Snails	☐ Fish	☐ Insect/Algae ☐ Insect/Snail	☒ Other Birds

FLOW MEASUREMENT N/A

Leaf Float Distance _____ ft Time _____ sec

1 From Table in LTMP

Gauge Height (ft, in)	3' 2"		
Corresponding Flow[1]	95.476		

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☐ In Stream ☒ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.79	7.51		DO (mg/L)	8.40	8.38	
Cond (mS/cm)	0.223	0.211		Temp (°C)	15.3	15.2	
Turb (NTU)	293	280		Salinity (%)	0.00	0.00	

COMMENTS: Last rain shower was 1-2 hours ago.

Completed by S.D.

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

NK2 - 4/16/10

GENERAL SITE DESCRIPTION

Site ID	WOD1	Site Type	MLS	Event Type	WaterChem	Event ID	3337	Sample Type	Grab
Location	Woodside Avenue EDB @ Influent Channel					Watershed		Hydrologic Unit	907
Date	04/12/10	Time	10:20	Latitude	32.85386 ° N			Hydrologic Area	907.10
Field Staff	SD			Longitude	-116.93441 ° W			Hydrologic Subarea (Optional)	907.12

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Last Rain ☐ >72 hours ☒ < 72 Hours ☒ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☐ None ☐ <0.1" ☒ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☒ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☐ Clear	☐ Slightly Cloudy	☒ Opaque			☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☐ Algae ☐ Snails	☐ Fish	☐ Insect/Algae	☐ Insect/Snail ☒ Other Birds & Ducks

FLOW MEASUREMENT N/A

Leaf Float Distance _____ ft Time _____ sec

[1] From Table in LTMP

Gauge Height (ft, in)	N/A		
Corresponding Flow[1]	9.72		

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.51	7.58	7.73	DO (mg/L)	9.01	9.06	9.00
Cond (mS/cm)	0.634	0.672	0.540	Temp (°C)	16.8	16.7	16.4
Turb (NTU)	130	148	136	Salinity (%)	0.02	0.02	0.02

COMMENTS: Last rain shower was 1-2 hours ago.
Flow measurement V = 1.44 ft/sec, W = 7.5, d = 0.9
Gauge staff is partially buried in sediments.

Completed by S.D.

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

KZ – 4/26/10

GENERAL SITE DESCRIPTION

Site ID	WOD2	Site Type	MLS	Event Type	WaterChem	Event ID	3364	Sample Type	Grab
Location	Woodside Avenue EDB @ Effuent Channel					Watershed	Hydrologic Unit	907	
Date	04/21/10	Time	9:10	Latitude	32.85540 ° N		Hydrologic Area	907.10	
Field Staff	SD			Longitude	-116.93504 ° W		Hydrologic Subarea (Optional)	907.12	

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Last Rain ☐ >72 hours ☐ < 72 Hours ☒ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☐ None ☐ <0.1" ☒ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☒ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☐ Clear	☐ Slightly Cloudy	☒ Opaque			☐ Other
Floatables	☐ None	☐ Trash	☒ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails	☐ Fish	☐ Insect/Algae ☐ Insect/Snail ☒ Other Birds

FLOW MEASUREMENT N/A

Leaf Float Distance _____ ft Time _____ sec

1 From Table in LTMP

Gauge Height (ft, in)	1', 2"		Flow meter
Corresponding Flow[1]	1.379 ← is wrong.		6.38 ft³/sec

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☒ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st Bucket	2nd Avg.*	3rd channel	Parameter	1st Bucket	2nd Avg.*	3rd channel
pH (Unit)	7.27	7.23	7.19	DO (mg/L)	5.88	5.63	5.37
Cond (mS/cm)	0.524	0.516	0.508	Temp (°C)	14.1	14.05	14.0
Turb (NTU)	85	82	78	Salinity (%)	0.02	0.02	0.02

COMMENTS: The by pass valve is open so Gauge flow may not be correct. Flow meter was done in the channel, V = 1.45 ft/sec, W = 5.5 ft, D = 0.8 feet flow = 6.38 ft³/sec

Completed by SD

*calc. by KZ, 4/26/10

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

NZ - 4/26/10

GENERAL SITE DESCRIPTION

Site ID	WOD1	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	3365	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Influent Channel					**Watershed**	**Hydrologic Unit**	907	
Date	04/21/10	**Time**	9:40	**Latitude**	32.85386 ° N		**Hydrologic Area**	907.10	
Field Staff	SD			**Longitude**	-116.93441 ° W		**Hydrologic Subarea** (Optional)	907.12	

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Last Rain ☐ >72 hours ☐ < 72 Hours ☒ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☐ None ☐ <0.1" ☒ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☐ None	☐ Yellow	☒ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☐ Clear	☐ Slightly Cloudy	☒ Opaque			☐ Other
Floatables	☒ None	☐ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☒ Sediment/Gravel	☐ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☒ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☐ Snails	☐ Fish	☐ Insect/Algae ☐ Insect/Snail ☒ Other Frogs, Ducks

FLOW MEASUREMENT N/A

1 From Table in LTMP

Leaf Float Distance _____ ft Time _____ sec

Gauge Height (ft, in)	N/A		Flowmeter
Corresponding Flow[1]	N/A		1.029 ft³/sec

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Avg.*	Parameter	1st	2nd	3rd	Avg.*
pH (Unit)	7.31	7.36	7.35	7.39	DO (mg/L)	8.12	8.11	8.40	8.21
Cond (mS/cm)	0.664	0.689	0.713	0.689	Temp (°C)	16.3	16.3	16.2	16.27
Turb (NTU)	64	65	53	61	Salinity (%)	0.02	0.02	0.03	0.02

COMMENTS: Gauge staff is covered in mud. Flow meter values: V = 0.30 ft/sec, D = 0.70 ft, w = 4.9 ft, Flow = 1.029 ft³/sec

Completed by SD

*calc. by: NZ, 4/26/10

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

NK2 - 7/1/10

GENERAL SITE DESCRIPTION

Site ID	WOD2	**Site Type**	MLS	**Event Type**	WaterChem	**Event ID**	3522	**Sample Type**	Grab
Location	Woodside Avenue EDB @ Effuent Channel					**Watershed**	**Hydrologic Unit**	907	
Date	06/29/10	**Time**	9:40	**Latitude**	32.85540 ° N		**Hydrologic Area**	907.10	
Field Staff	SD			**Longitude**	-116.93504 ° W		**Hydrologic Subarea** (Optional)	907.12	

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Last Rain ☒ >72 hours ☐ < 72 Hours ☐ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☒ None ☐ <0.1" ☐ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☒ Clear	☐ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☒ Other Algae, Duckweed
Substrate	☐ Concrete	☐ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☒ Limited	☐ Normal	☐ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☒ Snails	☐ Fish	☐ Insect/Algae ☐ Insect/Snail ☐ Other

FLOW MEASUREMENT N/A

Leaf Float Distance _____ ft Time _____ sec

[1] From Table in LTMP

Gauge Height (ft, in)	0', 2.5"		
Corresponding Flow[1]			

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	7.48			DO (mg/L)	5.91		
Cond (mS/cm)	2.37			Temp (°C)	18.4		
Turb (NTU)	2			Salinity (%)	0.11		

COMMENTS: Flowmeter = 0.98 ft/sec = Vel., width = 0.35 ft., depth = 0.10 ft.
By-pass Valve is open so gauge height will not be reliable.

Completed by S.D.

COUNTY OF SAN DIEGO
WATERSHED PROTECTION PROGRAM

DEPARTMENT OF PUBLIC WORKS
9325 HAZARD WAY, SAN DIEGO, CA 92123

Water Quality Field Datasheet - Woodside Avenue LTMP

K2 - 7/1/10

GENERAL SITE DESCRIPTION

Site ID	WOD1	Site Type	MLS	Event Type	WaterChem	Event ID	3523	Sample Type	Grab
Location	Woodside Avenue EDB @ Influent Channel					Watershed	Hydrologic Unit	907	
Date	06/29/10	Time	10:10	Latitude	32.85386 ° N		Hydrologic Area	907.10	
Field Staff	SD			Longitude	-116.93441 ° W		Hydrologic Subarea (Optional)	907.12	

QC Sample ☒ None ☐ Orig-Dup ☐ QC-Dup ☐ Orig-Blank ☐ QC-Blank ☐ Field Standard

Land Use (Primary) (Check one only) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open

Land Use (Secondary) (Optional, >10%) ☐ Residential ☐ Rural Resid. ☐ Comm. ☐ Indust. ☐ Agr. ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Curb/Gutter

WATER FLOW

☒ Flowing ☐ Ponded ☐ Dry

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☒ Overcast ☐ Fog

Last Rain ☒ >72 hours ☐ < 72 Hours ☐ Light Rain/Mist ☐ Moderate Rain/Showers ☐ Heavy Rain/Steady

Rainfall ☒ None ☐ <0.1" ☐ >0.1"

OBSERVATIONS N/A

Odor	☒ None	☐ Musty	☐ Rotten Eggs	☐ Chemical	☐ Sewage	☐ Other
Color	☒ None	☐ Yellow	☐ Brown (Silty)	☐ White (Milky)	☐ Gray	☐ Other
Clarity	☒ Clear	☐ Slightly Cloudy	☐ Opaque			☐ Other
Floatables	☐ None	☒ Trash	☐ Bubbles/Foam	☐ Sheen	☐ Fecal Matter	☐ Other
Substrate	☐ Concrete	☒ Sediment/Gravel	☒ Fine Particulates	☐ Stains	☐ Oily Deposits	☐ Other
Vegetation	☐ None	☐ Limited	☐ Normal	☒ Excessive		☐ Other
Biology	☐ None	☒ Insects	☒ Algae	☒ Snails	☐ Fish	☐ Insect/Algae ☐ Insect/Snail ☒ Other Rats

FLOW MEASUREMENT N/A

Leaf Float Distance _____ ft Time _____ sec

1 From Table in LTMP

Gauge Height (ft, in)	N/A see note		
Corresponding Flow[1]			

Photo Taken? ☒ Yes ☐ No

FIELD MEASUREMENT N/A

Horiba Meter: ☒ In Stream ☐ In Bucket **Analytical Lab Sample Collected?** ☒ Yes ☐ No

Parameter	1st	2nd	3rd	Parameter	1st	2nd	3rd
pH (Unit)	8.04	8.06		DO (mg/L)	9.54	9.06	
Cond (mS/cm)	2.26	2.37		Temp (°C)	20.4	20.4	
Turb (NTU)	1	1		Salinity (%)	0.10	0.11	

COMMENTS: Flowmeter = 0.35 ft/sec. vel, width = 1.8 ft, depth = 0.3 ft.
Gauge Staff is not in contact with the water, No measurement could be made.

Completed by S.D.

APPENDIX D

ACTIVITY A-59 SUPPORTING DOCUMENTATION: COUNTY OF SAN DIEGO, ADDITIONAL WATER QUALITY MONITORING AND SAMPLING RESULTS FY 2009-10

WATER QUALITY MONITORING IN THE UNICORPORATED AREAS OF THE SAN DIEGO RIVER WATERSHED

Monitoring Report

Prepared for:

County of San Diego
Department of Public Works
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Prepared by:

Weston Solutions, Inc.
2433 Impala Drive
Carlsbad, California 92010

December, 2010

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LIST OF ACRONYMS

Acronym	Definition
cfs	cubic feet per second
DO	dissolved oxygen
FIB	fecal indicator bacteria
MLS	mass loading station
MPN	most probable number
MS4	municipal separate storm sewer system
Q-PCR	quantitative polymerase chain reaction
SDR	San Diego River
TDS	total dissolved solids
TP	total phosphorus
TSS	total suspended solids
WESTON®	Weston Solutions, Inc.
WQO	water quality objective

EXECUTIVE SUMMARY

This report presents results of water quality and water quantity monitoring in the lower San Diego River watershed within the County of San Diego jurisdiction. The monitoring, conducted from February 2009 through December 2009, included flow rate and constituent loading and flux measurements during two wet weather runoff events and one dry weather runoff event. A secondary goal was to provide data to the San Diego River Watershed Workgroup during a similar effort being conducted within the watershed coordinated by the City of San Diego. Samples were collected and analyzed for priority watershed constituents including the following:

- Nutrients (nitrogen and phosphorus).
- Bacteria.
- Human-specific *Bacteroides.*
- Total suspended solids (TSS).
- Turbidity.
- Total dissolved solids (TDS).

Dry weather flows were observed at Los Coches Creek at I8 (COSDSDR08) and SDR at Riverford Rd. (COSDSDR10). However, measurable flow at Forester Creek at Greenfield Drive (COSDSDR07) was present only during one of the two storm events monitored. The three sampling locations included in the study exhibited unique characteristics: COSDSDR10 was generally ponded with a wide a flood plain and relatively low flow velocities, COSDSRD08 had a narrow channel with steep sides that was influenced by continuous dry weather flows and relatively high flow velocities during storm events, and COSDSDR07 had channel that was narrow and composed of very coarse sand with flow observed only during storms.

With respect to water quality monitoring, the results of the present study can be summarized as follows:

- Total nitrogen and total phosphorus concentrations generally exceeded Basin Plan water quality objectives (WQOs) of 1 mg/L and 0.1 mg/L respectively at all sampling locations in storm water flows. During non storm conditions, total nitrogen WQO was exceeded at both locations sampled and total phosphorus WQO was exceeded at one of the two.
- Total phosphorus and TSS concentrations increased with increased flows from storm water runoff at all locations monitored. The tendency of phosphorus to bind to sediment particles may explain these correlated increases in the concentrations of TSS and total phosphorus.
- The 24-hour dry weather loads were very similar at both sampling locations (COSDSDR08 and COSDSDR10) for all chemical and microbiological constituents monitored.
- Wet weather loads were orders of magnitude higher at COSDSDR10 than at COSDSDR08 during the February storm for all chemical constituents except TSS; bacterial loads were also higher at COSDSDR10.
- During the December storm, organic nitrogen, TKN, total nitrogen, total phosphorus and *E. coli* loads were higher at CPSDSDR08. Notably, TSS loads were three times higher at CPSDSDR08 during December storm while they were only slightly higher at that location during the much less intense February storm. As phosphorus, organic nitrogen,

and bacteria may be bound to sediment, this would likely provide some rationale for this difference.

- Total nitrogen and total phosphorus flux (in kg/acre) increased with rainfall amount and intensity.
- Non storm dissolved oxygen concentrations met Basin Plan WQOs at COSDSDR08 and COSDSDR10.
- TDS concentrations exceeded the 1000 mg/L Basin Plan WQO during non-storm conditions at both locations monitored; during storms, TDS concentrations decreased and increased upon return to baseflow as supported by continuous conductivity results.
- Bacteria concentrations generally exceeded WQOs but *Bacteroides* testing results were not indicative of recent human fecal sources.
- Although bacterial loads were higher during wet weather than in non-storm flows, bacteria flux (loads per acre) values during storms and non-storm conditions did not differ significantly among the monitored drainage areas.

1.0 INTRODUCTION

1.1 Program Overview

This report presents the results of water quality and quantity monitoring at three tributary locations in the lower San Diego River Watershed within the County of San Diego's jurisdiction. The purpose of the study was to characterize drainage areas flow rates and compare constituent concentrations and loads between sites. Monitoring was conducted from February 2009 through December 2009 by Weston Solutions, Inc. (WESTON®) under contract by the County of San Diego. Monitoring was conducted during two wet weather runoff events and one non-storm event. Samples were collected and analyzed for priority watershed constituents including the following:

- Nutrients (nitrogen and phosphorus).
- Bacteria.
- Human-specific *Bacteroides.*
- Total suspended solids (TSS).
- Turbidity.
- Total dissolved solids (TDS).

1.2 Study Objectives

The study objective was to capture two wet weather runoff events and one dry weather runoff event for the purpose of comparing flows and constituent loading and flux within the County of San Diego's jurisdiction. A secondary goal was to provide data to the San Diego River Watershed Workgroup during a similar effort being conducted within the watershed coordinated by the City of San Diego. Additional study participants included City of El Cajon, City of Santee, and City of La Mesa. The constituents, land use types, and pollutant sources selected for investigation in this study reflect the priorities of the Watershed Group, as described in the Watershed Urban Runoff Management Plan (TRC, 2007).

1.3 San Diego River Watershed

The San Diego River Watershed Management Area (WMA) (Hydrologic Unit (HU) 907.00), encompassing 277,543 acres, is the second largest WMA in San Diego County and consists of four hydrologic areas (HAs):

- Lower San Diego.
- San Vicente.
- El Capitan.
- Boulder Creek.

These HAs are further divided into 15 hydrologic subareas (HSAs). The HAs, HSAs, and named tributaries are shown on Figure 1-1. For this monitoring effort, sampling locations were limited to the County of San Diego's jurisdiction below San Vicente Reservoir and El Capitan Lake dams. The studied drainage areas included El Monte (907.15), Coches (907.14), El Cajon (907.13), and Santee (907.12) HSAs (Figure 1-2).

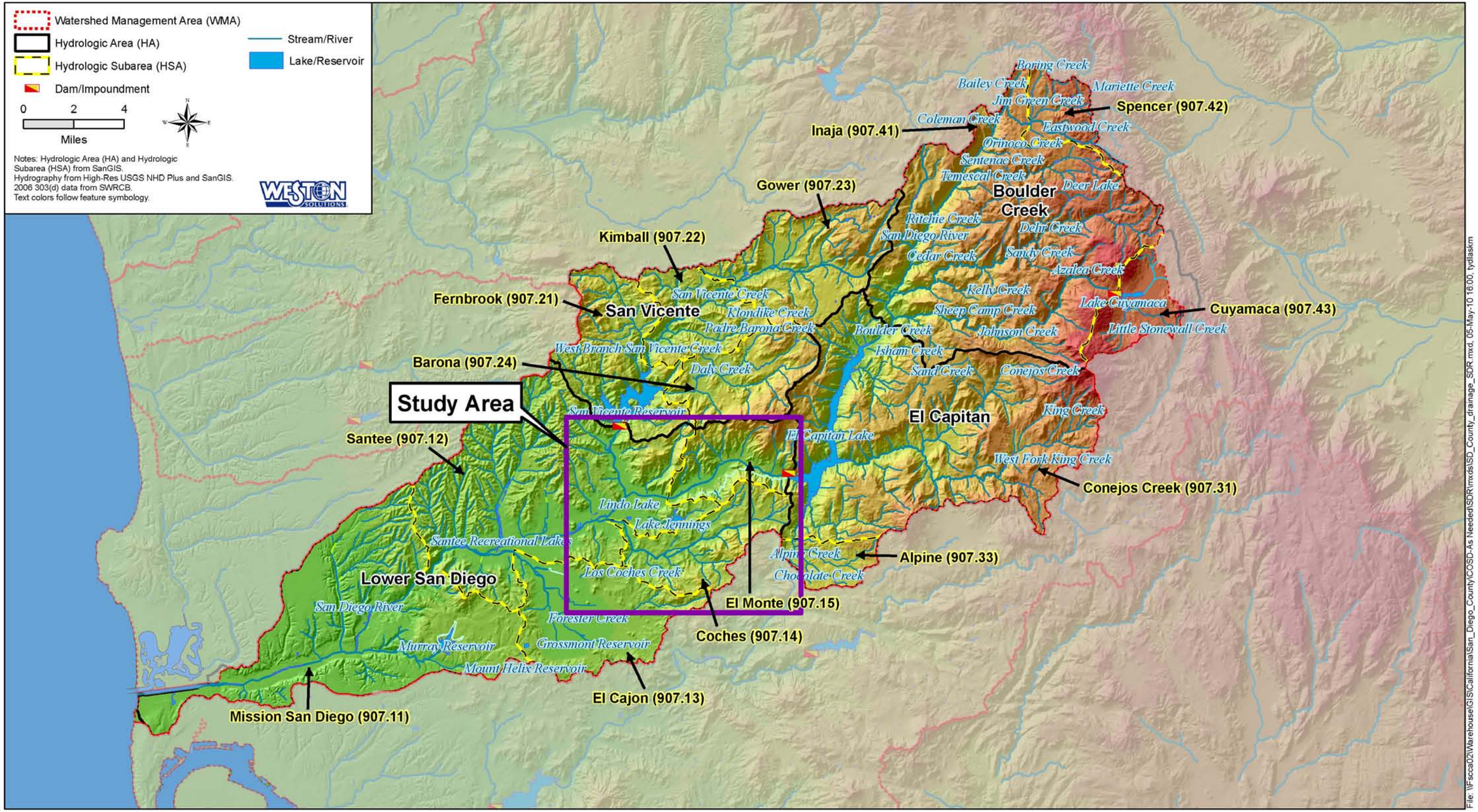

Figure 1-1. San Diego River Hydrologic Areas and Tributaries

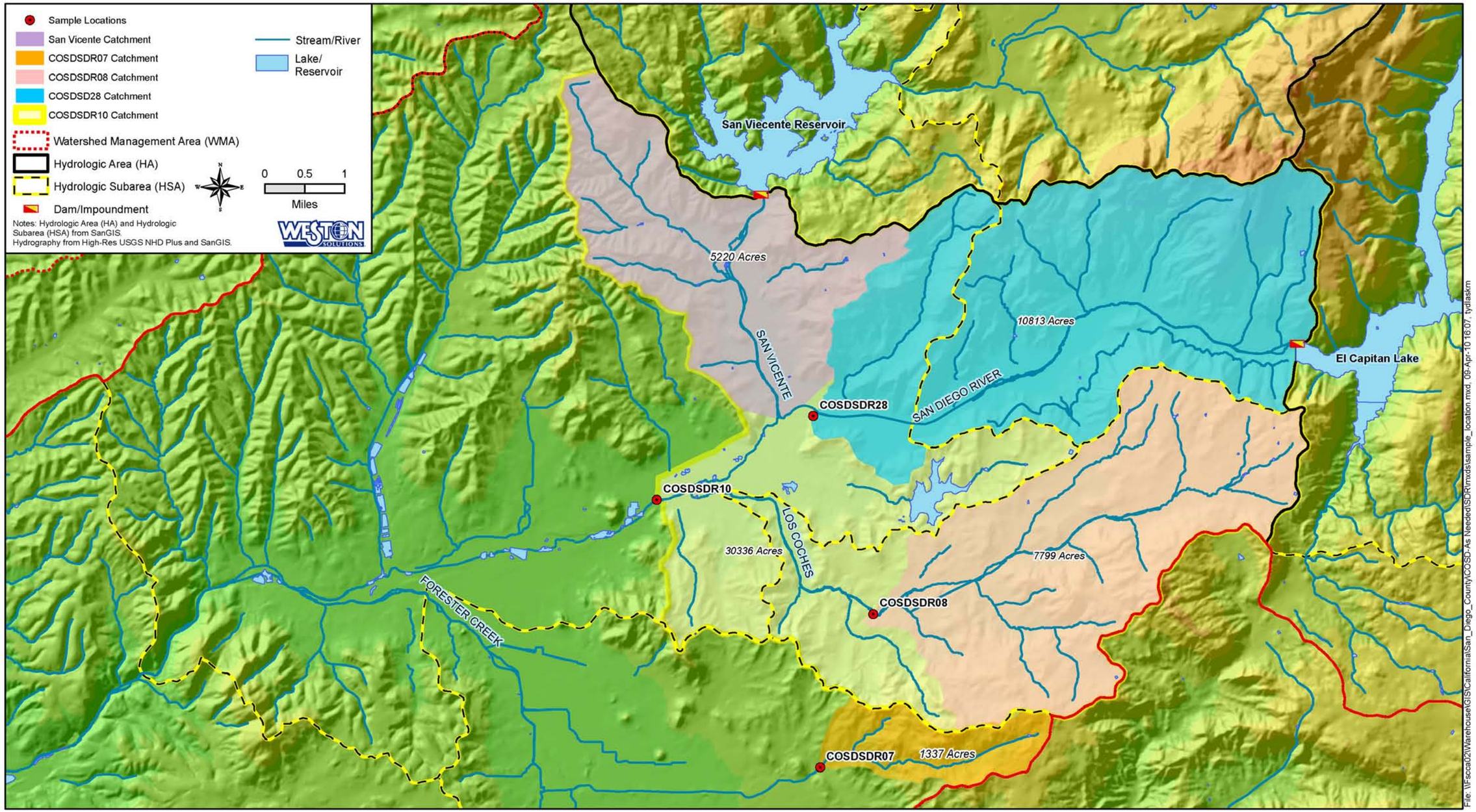

Figure 1-2. Sample Locations and Representative Drainage Area Monitored

1.3.1 Land Use

Land use classifications within the San Diego River WMA are shown on Figure 1-3 (United States (US) land use classification data distributed by SANDAG, 2007). In general, the watershed becomes more urbanized from east to west with most land being vacant and undeveloped (45%). Other major land uses include open space / parks and recreation (21%), residential and spaced rural residential (18%, combined), and transportation (6%). Agriculture, commercial, industrial, military, public facility, and water land use classifications each make up less than 2% of the acreage.

Figure 1-3 also presents land use composition of individual HAs. The Lower San Diego HA is comprised primarily of residential / spaced rural residential (30%) and open space / parks and recreation (25%) land uses with vacant and undeveloped land accounting for 18% of the area. The San Vicente HA is primarily vacant and undeveloped (41%) with 34% of the area occupied by open space and parks and recreation and 15% classified in the residential / spaced rural residential land use category. The El Capitan HA is also primarily vacant and undeveloped (77%); open space / parks and recreation and residential / spaced rural residential each account for only 9% of the land use. Vacant and undeveloped land accounts for 71% of the Boulder Creek HA; other significant uses include open space / parks and recreation (15%) and residential / spaced rural residential (8%).

The drainage areas studied (Figure 1-4) included primarily vacant and undeveloped land and open space/ parks and recreation but also a large proportion of residential and spaced rural residential land uses. Directly upstream of the study area, two drinking water reservoirs are located: El Capitan Lake and San Vincente Reservoir. These impoundments, maintained by the Water Department of the City of San Diego, rarely release water downstream. There were also some localized industrial and commercial land uses near the site on Riverford Road (COSDSDR10).

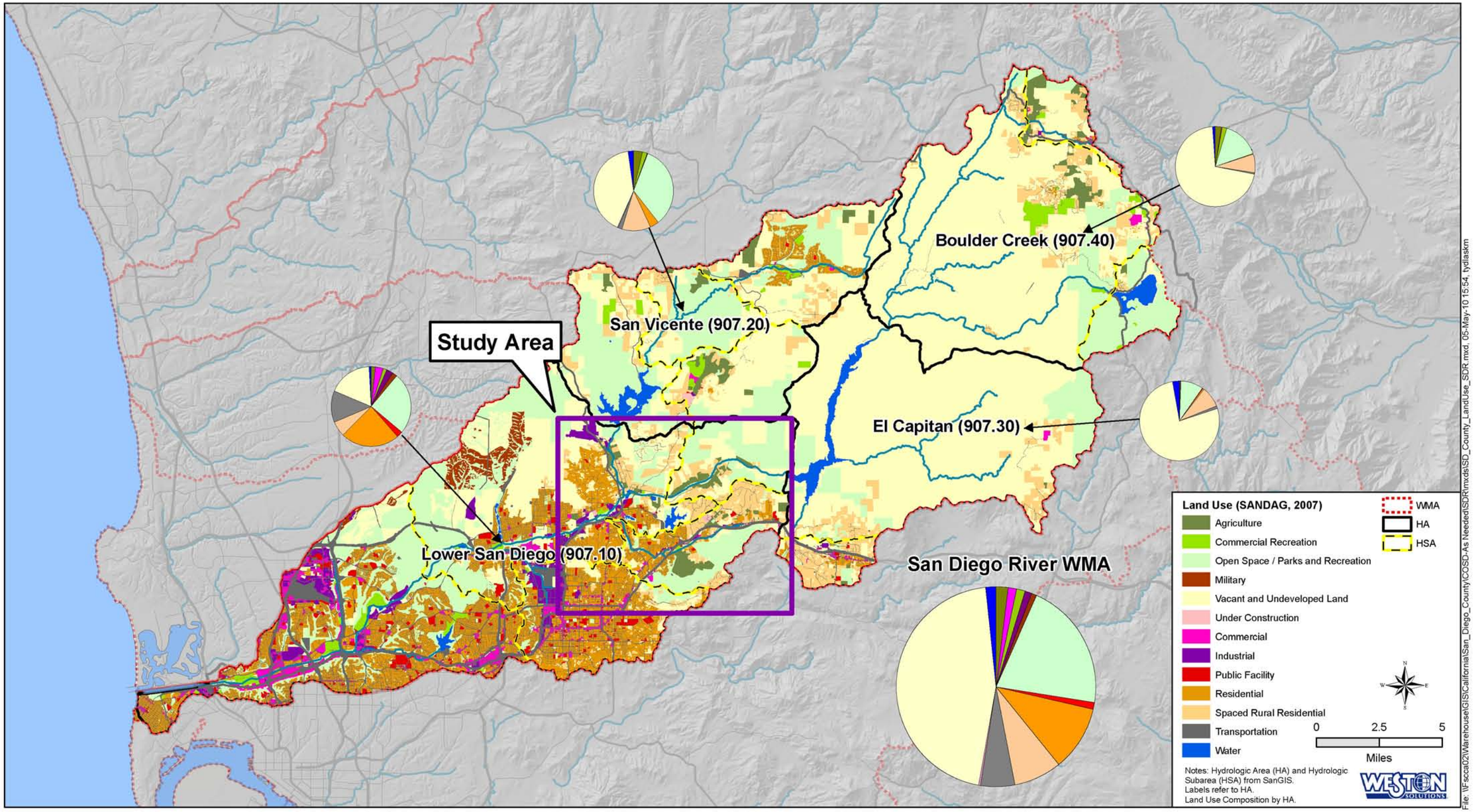

Figure 1-3. San Diego River Watershed Land Use

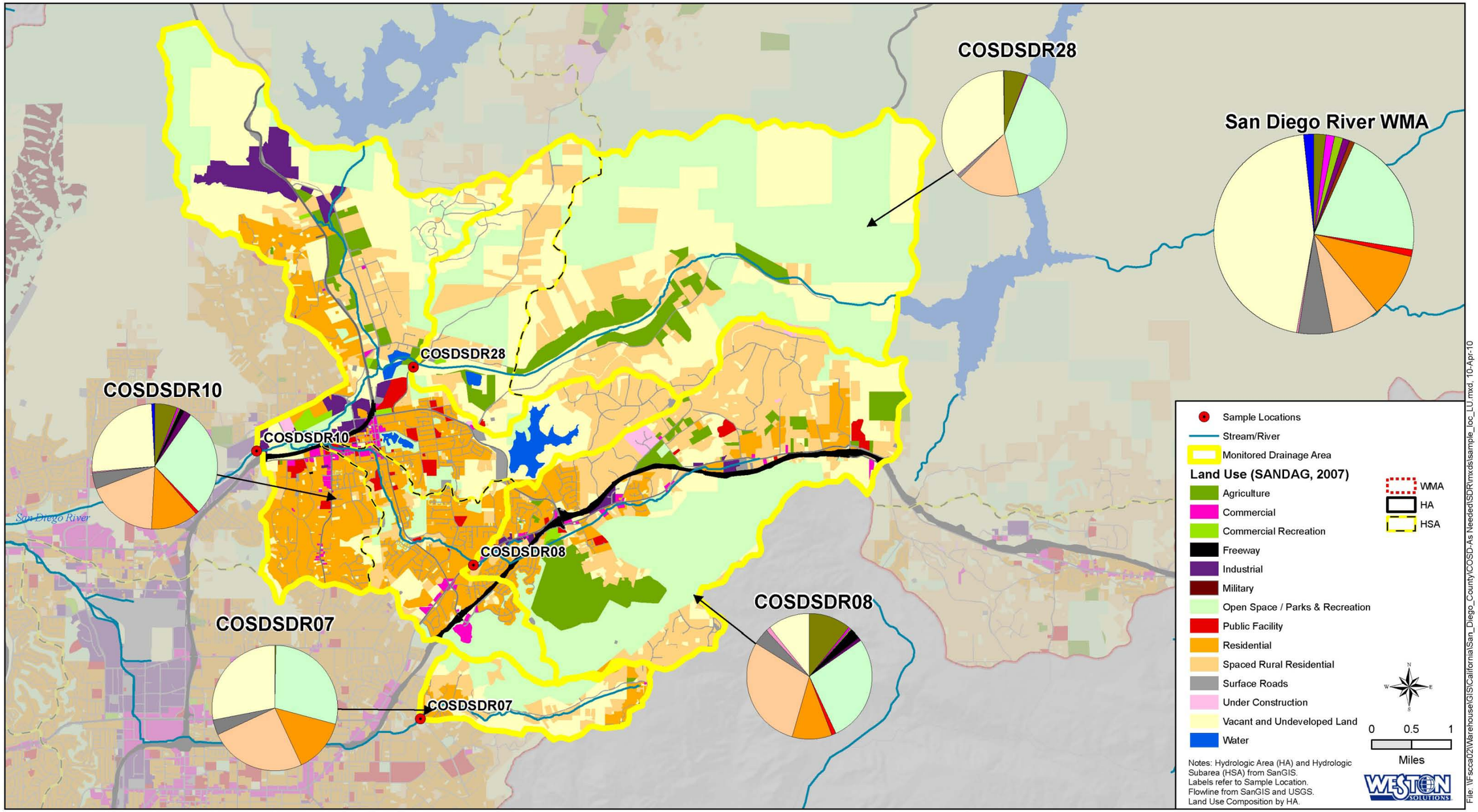

Figure 1-4. Monitored Drainage Area Land Use

1.3.2 Population and Jurisdiction

The population in the watershed is estimated at 525,000 persons or 1,190 persons per square mile (US census data distributed by SANDAG, 2000). The major population center is in the lower San Diego HA; which is reflected by the greater proportion of the urban land uses in the lower watershed. The area's population is projected to increase by 12%, reaching approximately 590,000 people by 2020 (SANDAG, 2005).

The San Diego River WMA contains the second largest percentage (75%) of unincorporated land in San Diego County. The remaining areas of the watershed include the Cities of El Cajon, La Mesa, Poway, San Diego, and Santee.

1.3.3 Beneficial Uses

The San Diego River WMA provides many beneficial uses with its reservoirs, lakes, rivers, and creeks. A listing of the beneficial uses from the Water Quality Control Plan for the San Diego Basin 9 (Basin Plan) is presented in Table 1-1. Notable waterbodies in the watershed include the San Diego River, Boulder Creek, El Capitan Reservoir, San Vicente Reservoir, Lake Jennings, Lake Cuyamaca, and Lake Murray. Principal aquifers include the Santee/El Monte Basin and the Mission Valley Basin. In addition to water resources, the watershed contains many parks and open space areas including Famosa Slough, a 37-acre wetland near the mouth of the River and the Mission Trails Regional Park which provides nearly 5,800 acres of natural habitat and recreation areas. Beneficial uses influenced by runoff from the monitored drainage areas are limited to areas below the reservoirs.

Table 1-1. San Diego River Watershed Management Area Beneficial Uses

Beneficial Uses	Inland Surface Waters	Coastal Waters (excluding Pacific Ocean)	Pacific Ocean	Reservoirs and Lakes	Ground-water
Municipal and domestic supply	●			●	●
Agricultural supply	●			●	●
Industrial service supply	●		●	●	●
Industrial process supply	●			●	●
Groundwater recharge					
Freshwater replenishment					
Hydropower generation				●	
Navigation			●		
Contact water recreation	●	●	●	●[1]	
Non-contact water recreation (REC-2)	●	●	●	●	
Commercial and sport fishing		●	●		
Warm freshwater habitat (WARM)	●			●	
Cold freshwater habitat (COLD)	●			●	
Estuarine habitat		●	●		
Wildlife habitat	●	●		●	
Biological habitats of special significance	●		●		
Rare, threatened, or endangered species	●	●	●	●	
Marine habitat		●	●		
Migration of aquatic organisms		●	●		
Aquaculture			●		
Shellfish harvesting		●	●		
Spawning, reproduction, and/or early development	●	●	●		

● = Existing
[1] Shore and boat fishing only; other REC-1 uses prohibited (exception is Lake Jennings).
Note: Beneficial uses vary by HU basin number. Please refer to the Basin Plan for individual HUs.
Source: Basin Plan September 8, 1994 (tables 2-2, 2-3, 2-4, and 2-5), amendments adopted through February 8, 2006.

1.4 San Diego River Total Maximum Daily Load Status

1.4.1 Regulatory Water Quality Issues

Impacts to the watershed include surface water quality degradation, habitat degradation and loss, invasive species, eutrophication, and flooding (San Diego County, 2009). Section §303(d) of the Clean Water Act (CWA) requires that each state identify waterbodies within its boundaries that do not meet water quality standards (i.e., beneficial uses, water quality objectives (WQOs), and an anti-degradation policy). The CWA also requires each state to establish a priority ranking for these impaired waters known as the CWA §303(d) List of Water Quality Limited Segments and to establish Total Maximum Daily Loads (TMDLs) for the identified waterbodies. The 2008 California §303(d) List of Water Quality Limited Segments was partially approved by the USEPA on November 18, 2010. Waterbodies in the San Diego River WMA that have been placed on the 2008 State Board §303(d) list are presented in Table 1-2. Constituents that have been placed on the 2008 State Board §303(d) list for waterbodies throughout the watershed include indicator bacteria, TDS, phosphorus, total nitrogen, eutrophication, pH, low DO, color, chloride, manganese, selenium, toxicity, and sulfates. Factors that may be impairing water quality in the watershed include urban runoff, agricultural runoff, mining operations, sewage

spills, sand mining, and natural sources (San Diego County, 2009). Forester Creek, in upper San Diego River, is listed for fecal coliform, pH, phosphorus, TDS, and selenium. Alvorado Creek and Los Coches Creek are listed for Selenium.

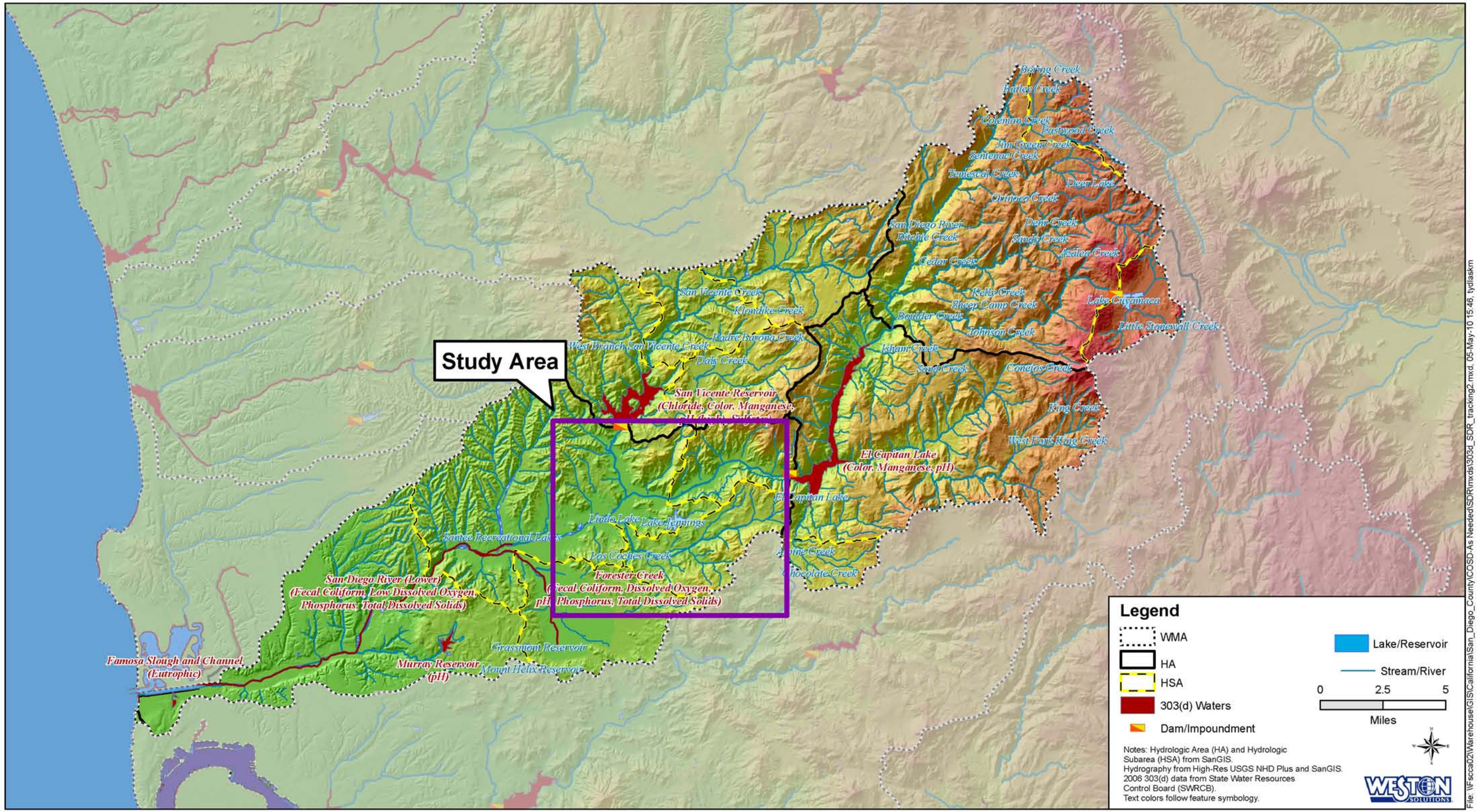

Figure 1-5. San Diego River Watershed Management Area 2006 State Water Resources Control Board Section 303(d) Listed Waterbodies

Table 1-2. San Diego River Watershed Management Area Waterbodies on the 2008 State Water Resources Control Board Section 303(d) List

Waterbody Name	HSA	HSA No.	Pollutant/Stressor
Famosa Slough and Channel	Mission San Diego	907.11	Eutrophic
Pacific Ocean Shoreline, at the San Diego River outlet, at Dog Beach	Mission San Diego	907.11	Total Coliform
Mission Bay Shoreline at Quivira Basin		907.52	Copper
Lower San Diego River	Mission San Diego	907.11	Enterococcus, Fecal Coliform, Low DO, Nitrogen, Phosphorus, TDS, Toxicity
Forester Creek	Santee	907.12	Fecal Coliform, Phosphorus, Selenium, TDS, pH
Alvorado Creek	Mission San Diego	907.11	Selenium
Los Coches Creek		907.14	Selenium
El Capitan Lake	El Cajon	907.31	Color, Manganese, Phosphorus, Total Nitrogen as N, pH
Murray Reservoir	Mission San Diego	907.11	Nitrogen, pH
San Vicente Reservoir	Fernbrook	907.21	Chloride, Color, Sulfates, Total Nitrogen as N, pH (high)

Source: State Board, 2006

1.4.2 Bacteria Project I Total Maximum Daily Load and Bacteria Source Discussion

1.4.2.1 Bacteria Project I Total Maximum Daily Load

The State Water Quality Control Board (SWQCB) adopted on December14, 2010 the Basin Plan amendment, to incorporate indicator bacteria TMDLs developed in the *Project I – Twenty Beaches and Creeks in the San Diego Region (including Tecolote Creek)* (Resolution R9-2010-0001, February 10, 2010). Project I was initiated in 2003 and several iterations of TMDL adoption and revision occurred. The TMDL was originally adopted in 2007, but was later revised. The Bacteria I TMDL Project is still pending review by USEPA. The most recent TMDL involved calculating TMDLs for numerous surface waters throughout San Diego County and includes the San Diego River. The County of San Diego is named as the responsible party in the TMDL for multiple waterbodies, including the San Diego River. The numeric targets listed in the Basin Plan Amendment are presented in Table 1-3 for wet weather and Table 1-4 for dry weather.

Table 1-3. Bacteria Project I Total Maximum Daily Load – Wet Weather Numeric Targets

Indicator Bacteria	Numeric Target (MPN/100 mL)	Allowable Exceedance Frequency[a]
Fecal coliforms	400[b]	22%
Total \coliforms	10,000[c]	22%
Enterococci	104[d] / 61[e]	22%

[a]Percent of wet days (i.e., rainfall events of 0.2 inch or greater and the following 72 hours) allowed to exceed the wet weather numeric targets. Exceedance frequency based on reference system in the Los Angeles Region.
[b]Fecal coliform single sample maximum WQO for REC-1 use in creeks and at beaches.
[c]Total coliform single sample maximum WQO for REC-1 use at beaches and the point in creeks that discharges to beaches.
[d]Enterococcus single sample maximum WQO for REC-1 use in creeks established and designated as "moderately or lightly used" in the Basin Plan and at beaches downstream of those creeks, as well as all other beaches.
[e]Enterococcus single sample maximum WQO for REC-1 use in creeks not established and designated as "moderately or lightly used" in the Basin Plan and at beaches downstream of those creeks ("designated beach" frequency of use; applicable to San Juan Creek and downstream beach, Aliso Creek and downstream beach, Tecolote Creek, Forrester Creek, San Diego River and downstream beach, and Chollas Creek).

Table 1-4. Bacteria Project I Total Maximum Daily Load – Dry Weather Numeric Targets

Indicator Bacteria	Numeric Target (MPN/100 mL)	Allowable Exceedance Frequency[a]
Fecal coliforms	200[b]	0%
Total coliforms	1,000[c]	0%
Enterococci	35[d] / 33[e]	0%

[a]Percent of dry days (i.e., days with less than 0.2 inch of rainfall observed on each of the previous three days) allowed to exceed the dry weather numeric targets.
[b]Fecal coliform 30-day geometric mean WQO for REC-1 use in creeks and at beaches.
[c]Total coliform 30-day geometric mean WQO for REC-1 at beaches and the point in creeks that discharges to beaches.
[d]Enterococcus 30-day geometric mean WQO for REC-1 at beaches.
[e]Enterococcus 30-day geometric mean WQO for REC-1 use in impaired creeks and beaches downstream of those creeks (applicable to San Juan Creek and downstream beach, Aliso Creek and downstream beach, Tecolote Creek, Forrester Creek, San Diego River and downstream beach, and Chollas Creek).

2.0 STUDY DESIGN

Two wet weather and one non-storm (dry weather) events were monitored in 2009 at three sites within the County of San Diego's jurisdiction (Figure 1-2).

2.1 Study Duration

The study was conducted from January 2009 through December 2009.

2.2 Sampling Locations

Three sampling locations were chosen: One site (COSDSDR10) was located on the mainstem of the San Diego River at Riverford Road. The second site (COSDSDR08) was upstream in the Los Coches tributary and was co-located with a USGS gauging station. The third site (COSDSDR07) was in the upper Forester Creek tributary. A map of the locations is presented in Figure 1-2 and site photos are shown in Figure 2-1 through Figure 2-4. A fourth site (COSDSDR28) was considered but was not monitored as it had no flow during the study's time period.

Table 2-1. Dry Weather River Sampling Locations within San Diego River Watershed

Site ID	Latitude	Longitude	Location
COSDSDR10	32.85653°	-116.94730°	SDR at Riverford Road.
COSDSDR08[1]	32.83599°	-116.90040°	Los Coches Creek at Interstate 8 Business Route.
COSDSDR28[2]	32.87198	-116.91361	SDR at Ashwood Street
COSDSDR07[3]	32.80801°	-116.91159°	Forester Creek at Greenfield Drive.

[1] Site collocated with USGS gauging station.
[2] Only visited during first wet weather event. This site was consistently dry during both wet weather and dry weather. The site was moved to capture additional flow areas.
[3] Visited during the first dry weather and second wet weather events. This site was a replacement for COSDSDR28.

Figure 2-1. Dry Weather Flow at COSDSDR08 (Los Coches)

Figure 2-2. Dry Weather Flow at COSDSDR10 (Riverford)

Figure 2-3. Dry Conditions during Dry Weather at COSDSDR07 (Forester Creek)

Figure 2-4. Dry Conditions during Wet Weather at COSDSDR28 (Ashwood)

2.3 Sampling Sites

A summary of sites and types of sampling is presented in Table 2-2. Field data sheets are provided in Appendix B.

Table 2-2. Summary of All Wet Weather and Dry Weather Sample Sites

Survey and Date	Duration	Sites Monitored	Type of Sampling
Wet Weather			
Wet Weather Sampling 1 **February 5–7, 2009**	72 hours	COSDSDR10 COSDSDR08	▪ Pollutograph samples for general chemistry, nutrients, indicator bacteria, and *Bacteroides* (general and human). ▪ Visual observations. ▪ Datalogger for continuous field measurements including temperature, pH, conductivity, dissolved oxygen, and turbidity. ▪ Continuous flow monitoring.
Wet Weather Sampling 2 **December 7, 2009**	Six hours	COSDSDR10 COSDSDR08 COSDSDR07	▪ Pollutograph samples for general chemistry, nutrients, indicator bacteria, and *Bacteroides* (general and human). ▪ Visual observations. ▪ Datalogger for continuous field measurements including temperature, pH, conductivity, dissolved oxygen, and turbidity. ▪ Continuous flow monitoring.
Dry Weather			
Dry Weather Sampling Survey **April 21–22, 2009**	24 hours	COSDSDR10 COSDSDR08 (COSDSDR07 – dry / not monitored)	▪ Pollutograph samples for indicator bacteria and *Bacteroides* (general and human). ▪ Composite samples for general chemistry and nutrients. ▪ Visual observations. ▪ Datalogger for continuous field measurements including temperature, pH, conductivity, dissolved oxygen, and turbidity. ▪ Continuous flow monitoring.

2.3.1 Water Quality Sampling

Dry weather monitoring was conducted during April 21–22, 2009. There was an antecedent dry period of four days prior to the monitoring event. Only two of the three sampling locations were monitored (Table 2-2); Forester Creek (COSDSDR07) was not sampled as it was dry. WESTON collected and analyzed one 24-hour time-weighted composite sample from each location. Sample pacing was set to collect one 250-mL sample per 20-minute period for a total of 18 L using a Sigma 900 SD sampler with Teflon tubing and a 10-L glass composite bottle. The samples were analyzed for chemical constituents presented in Table 2-5.

Wet weather monitoring was conducted over two storm events at three sampling locations as outlined in Table 2-2. A total of six grab samples were collected at each site per storm over a pollutograph and tested for chemical constituents listed in Table 2-5.

Grab samples were also collected for microbiological analysis. During dry weather, one grab sample was taken every six hours for a total of five at each site. During storms, bacterial samples were collected over a pollutograph. Bacteria samples require clean handling techniques for PCR analysis (WESTON *Bacteroides*/PCR Field Sampling SOP–FLD031.01). Only PCR-trained personnel conducted the sampling. The bacterial samples were analyzed individually. Field measurements were also taken at each location at 15-minute intervals using YSI 6920 v2 data sondes.

Quality assurance samples included one duplicate and one field blank per event. Additional quality controls included calibration of all monitoring equipment per manufacturers' specifications prior to the monitoring event and the use of proper chain-of-custody procedures. Samples were collected in laboratory provided sample bottles with the appropriate preservative for each analysis. All samples were immediately placed on ice and transferred to the laboratory within the methods' specified holding times.

2.3.2 Flow Measurements

Estimates of continuous flow at each site were made using Sigma 950 Flowmeter with a pressure/level transducer. A water level (stream stage) sensor was secured to the bottom of the channel at each sampling location. Stream stage measurements at each site were downloaded following each sampling event and verified to ensure accuracy. They were then converted to discharge rates with head/flow equations developed from stream survey and stream rating data. All water level and flow data were entered into the data management system, copied, and archived. Data from the USGS gauging station at Los Coches Road (COSDSDR08) was used to validate the flow measurements collected.

2.3.2.1 Stream Surveys

Channel Cross Section. To produce rating curves for flow estimation, surveys of channel cross-sections were conducted at each monitoring site. The surveys involved placing endpoints at the highest points of each channel at each bank. A tape was then stretched between the endpoints such that the zero end of the tape was attached to the endpoint on the left bank of the channel (looking downstream). Channel depth was measured by holding a stadia rod vertical and level from the channel bottom to the stretched tape. The channel depth measurements were recorded incrementally at equal horizontal distances across the channel for a minimum of 20 measurements.

Channel Slope. Channel longitudinal slope surveys, required for rating curve development, were conducted using a DeWalt™ Model DW092 transit level. A minimum of three elevations at increasing horizontal distances from the transit level were recorded in the channel bed at each sampling site. A minimum of five elevations were measured at sites with irregularly sloped or curved channel surfaces. The average channel slope was calculated from the survey data.

Stream Rating. To measure instantaneous flow during base flow conditions, a Marsh-McBirney Model 2000 Portable Flowmeter connected via a cable to an electromagnetic open-channel velocity sensor was used. The velocity sensor was attached to a stainless-steel, top-setting wading rod. To construct a transect, measuring tape was extended across the stream perpendicular to flow, and secured on both banks approximately 1 ft above water surface. The distance on the tape directly above waterline (where water meets the bank) was recorded as the initial point. The first three measurements were made at the first point with adequate depth and measurable velocity. They included water depth, velocity, and distance from the bank (i.e., the initial point). Subsequent depth, velocity, and distance measurements were made incrementally across the entire width of the channel; a minimum of 20 points are measured per site. Water depth was determined from calibrations on the wading rod in tenths of feet. Velocity measurements (in feet per second) were made at each point along the transect by positioning the velocity sensor perpendicular to flow at 60% of water depth (from the surface).
The field measurements were then entered into a computer spreadsheet that calculates the stream's cross-sectional profile (from depth and distance-from-bank measurements). Total flow rate across the channel (in cubic feet per second) was then determined by integrating the velocity measurements over the cross-sectional surface area of the stream channel.

2.3.2.2 Rating Curve Development

The channel survey data were used to produce a rating curve for each sampling site. A rating curve or table is a relationship between stage (water level) and flow at a cross section of a river or stream and reflects the particular geometry of the given cross section.

Rating curves were modeled using site-specific survey information with the Manning's Equation as defined by USGS (Rantz, 1982). Using the direct measures of stream discharge collected during base flow conditions, indirect stream discharge measurements were calculated for wet weather flows using the Equation. Manning's Equation is an empirical formula for open channel flow or for flow driven by gravity, as follows:

$$Q = VA = \left(\frac{1.49}{n}\right) AR^{\frac{2}{3}} \sqrt{S}$$

where

Q = Flow
n = Manning Roughness coefficient
A= Cross-sectional area
R = Hydraulic radius
S = Hydraulic slope

The hydraulic radius is derived as follows:

$$R = A/P$$

where

A = Cross-sectional area of flow (ft^2)
P = Wetted perimeter (ft)

The Manning's Equation was developed for conditions of uniform flow in which the water surface profile and energy gradient are parallel to the streambed and the area, hydraulic radius and depth remain constant throughout the reach.

2.3.3 Field Measurements

YSI 6920 Multiparameter Water Quality Sondes were used to monitor temperature, turbidity, specific conductivity, pH, and DO (Table 2-3). The Sondes were calibrated prior to sampling events. Monthly maintenance was performed on the Sondes, including battery replacement and verification of proper operation per manufacturer specifications. Table 2-3 details parameters measured.

Table 2-3. General Water Characterization Analyte List and Corresponding Method, Detection Limit, and Reporting Limit

Analyte	Method	Range of Detection	Accuracy	Units
Field Measurements				
Temperature	Data sonde	-5 to 50	+/- 0.15	°C
Conductivity	Data sonde	0 to 100	+/- 0.001	mS
Turbidity	Data sonde	0 to 1,000	+/- 0.1	NTU
pH	Data sonde	0 to 14	+/- 0.2	pH unit
Dissolved oxygen (DO)	Data sonde	0 to 50	+/- 0.1	mg/L

NTU = nephelometric turbidity unit.

2.3.4 Microbiological Analyses

2.3.4.1 Sample Analysis Summary

Two types of bacterial analyses were completed during the surveys: the enumeration of fecal indicator bacteria (FIB) (i.e., total coliforms, fecal coliforms, enterococci, and *E. coli*), and quantitative polymerase chain reaction (Q-PCR) analysis for *Bacteroides*. Traditional bacterial samples were collected to determine the spatial and temporal distribution of FIB. The Q-PCR technique was used to amplify the DNA of *Bacteroides*. Two separate analyses were performed: one to determine the presence of general *Bacteroides* (associated with feces from warm-blooded animals) and one to test for human-specific *Bacteroides* (associated with only human feces).

Table 2-4 details the microbiology analytical methods performed including detection limits, and units of measurement.

Table 2-4. Microbiology Analyses including Method, Detection Limits, and Units

Analyte	Method	Minimum Detection Limit	Reporting Limit	Units
Microbiology Laboratory Measurements				
Total coliforms	SM 9221 B	20	20–16,000,000	MPN/100 mL
Fecal coliforms	SM 9221E	20	20–16,000,000	MPN/100 mL
E. coli	SM 9223	20	20–16,000,000	MPN/100 mL
Enterococci	SM 9230B	10	10–2,419,570	MPN/100 mL
Bacteroides fragilis	Q-PCR (Dick and Fields, 2004)	Presence/absence		

MPN = most probable number.

2.3.4.2 Sample Handling and Processing

Fecal Indicator Bacteria

Field technicians wearing clean, disposable gloves collected 100-mL grab samples in sterile, plastic containers containing sodium thiosulfate as a preservative. At locations where sampling by hand was not feasible, an extension grab pole was used. Prior to each sample, the pole was decontaminated with ethanol and wiped down with Kimwipes®. The bottle was submerged with its open-end down below the water surface and then turned up and allowed to fill. The bottle was then closed and placed in a plastic bag, sealed, labeled, and placed on ice. Each sample was labeled and identified with the project title, appropriate identification number, and the date and time of sample collection. The samples and corresponding chain-of-custody forms were delivered to WESTON's Microbiology Laboratory where analysis was initiated within the maximum holding time of six hours.

Total coliform and fecal coliform concentrations were determined using Multiple Tube Fermentation Direct Method, whereas enterococcus concentrations were measured using IDEXX Enterolert™ technique. The IDEXX Enterolert™ uses a chromogenic substrate test to determine enterococci concentrationa, whereas the multiple tube fermentation technique employs a series of dilutions to estimate the number of bacteria in a sample. Results of each type of analysis are given as the most probable number (MPN) of organisms present. This number, based on the 19th Edition Standard Methods' probability formulas (Eaton et al., 1995), is an estimate of the mean bacterial density per 100 mL of liquid.

Sample Collection

Q-PCR analysis was employed to test for presence or absence of *Bacteroides*. Samples were collected with the following "clean hands" aseptic technique: First, the exterior of the Ziploc® bag containing the Q-PCR bottle was labeled with sample identification, sample location, sample date, sample time, and name of collector using black, waterproof ink. The sampler's hands were sprayed with ethanol and dried. The first pair of gloves was put on and sprayed with *DNA AWAY*™, a DNA destabilizing reagent, and wiped dry with Kimwipes®. The second pair of gloves was then worn over the first pair, sprayed with *DNA AWAY*™, and wiped dry with Kimwipes®. Decontaminated Ziploc® bags were used to store the 250-mL irradiated nuclease-free plastic containers before and after sampling. All sample containers were double bagged. Prior to opening the outer Ziploc® bag, a Kimwipe® was sprayed with *DNA AWAY*™, and the

seal of the bag was wiped and allowed to dry. The inner Ziploc® bag was then opened, and the bottle was removed. The sample container was opened, and the cap was held face down to prevent aerial contamination. The sampling container was inverted, allowed to fill, and then capped and held in one hand. Excessive water was removed from the outside of the sample container using Kimwipes® and transferred to the other hand. The outside glove of the hand that held the bottle during sampling was removed. The sample bottle was sprayed with *DNA AWAY™*, wiped dry with Kimwipes®, and placed in the inner Ziploc® bag. The hand that placed the bottle into the inner Ziploc® bag sealed the inner bag. The outer Ziploc® bag was then sealed with both hands, and gloves were removed.

These steps were performed for each sample collected, and new gloves were used for each sample. During sampling, if gloved hands touched anything other than the sampling bottle or Ziploc® bag, the gloves were discarded, and the procedure was repeated. The sealed Ziploc® bags containing the Q-PCR samples were placed in a cooler with blue-ice and were transported to WESTON's Molecular Laboratory in Carlsbad, California within the 24-hour holding time.

One sterile field blank sample was prepared by each sampling technician during each sampling survey to ensure sterile techniques. The same sampling techniques were used as described above. For the blank, nuclease-free water was substituted for creek water. If the field blank was contaminated, all results for that Q-PCR set were considered invalid, and were not reported. No field blanks were contaminated at any time throughout this study.

Laboratory Analysis

Upon arrival at WESTON's Molecular Laboratory, water samples for Q-PCR analysis were stored at 4ºC until being filtered within 24 hours of sampling. When performing the three-phase Q-PCR procedure, care was taken to avoid any contamination. All surfaces and instruments were first sterilized using ethanol and were then wiped again with *DNA AWAY™*. Kimwipes® were used to dry the surfaces and equipment during the sterilization process. Samples collected for Q-PCR analysis were processed according to WESTON's standard operating procedures for *Bacteroides* following the methods described in *The Rapid Estimation of Fecal Bacteroidetes by the Use of a Quantitative PCR Assay for 16s rRNA Genes* (Dick and Field, 2004).

2.3.5 Chemistry Analysis

2.3.5.1 Sample Handling and Processing

Field scientists wearing clean, disposable gloves collected water samples in sterile, plastic or glass containers. During storm events, samples were collected as pollutograph samples (discreet grab samples taken over the course of the storm hydrograph). The dry weather event samples were collected as 24-hour composites. Chemistry water samples for analysis were collected from the horizontal and vertical center of the channel if possible. Conventional analytes were collected from beneath the water surface to a depth of 0.1 m. The sampling device was decontaminated before being moved to sample at a different station.

2.3.5.2 Sample Analysis Summary

Table 2-5 outlines the analytical methods and the corresponding method detection limits, and reporting limits used in this study.

Table 2-5. Chemistry Analyte List and Corresponding Methods, Detection Limits, and Reporting Limits

Analyte	Method	Minimum Detection Limit	Reporting Limit	Units
Chemistry Laboratory Measurements				
Total phosphorus as P	SM 4500 P E	0.016	0.05	mg/L
Total dissolved phosphorus	SM 4500 P E	0.016	0.05	mg/L
Dissolved orthophosphate as P[1]	USEPA 300.0	0.0075	0.01	mg/L
Nitrate as N	USEPA 300.0	0.01	0.05	mg/L
Nitrite as N	USEPA 300.0	0.01	0.05	mg/L
Total kjeldahl nitrogen (TKN)	SM 4500 N Org B	0.455	0.50	mg/L
Ammonia as N	SM 4500-NH3 F	0.03	0.03	mg/L
Total nitrogen (sum of nitrate, nitrite, and TKN)	Calculation	0.455	0.50	mg/L
TDS	SM 2450 C	0.1	5	mg/L
TSS	SM 2540 D	0.5	5	mg/L
Turbidity	USEPA 180.1	1	2	NTU

1. Dissolved orthophosphate was analyzed in place of dissolved phosphorus during wet weather event 1.

2.3.6 Water Quality Criteria

Where appropriate, water quality results were compared to the corresponding water quality objectives (WQOs) as defined in the Basin Plan. Table 2-6 lists the WQOs for indicator bacteria and other water quality parameters monitored during this project.

Table 2-6. List of Analytes and Water Quality Objectives

Analyte	Objective	Source
Temperature	–	–
Conductivity	–	–
Turbidity	<20 NTU	Basin Plan (RWQCB, 1994)
pH	6.5–8.5 pH units	Basin Plan (RWQCB, 1994)
DO	>6.0 mg/L	Basin Plan (RWQCB, 1994)
TSS	<100 mg/L	Multi-Sector General Permit (USEPA, 2000)
TDS	<1,000 mg/L	Basin Plan (RWQCB, 1994)
Orthophosphate (P)	–	–
Total Phosphorus	0.1 mg/L	Basin Plan (RWQCB, 1994)
Ammonia as N	-	-
Nitrate as N	10 mg/L	Basin Plan (RWQCB, 1994)
Nitrite as N	1 mg/L	Basin Plan (RWQCB, 1994)
Total Kjeldahl Nitrogen	-	-
Organic Nitrogen	-	-
Total Nitrogen	1 mg/L	Basin Plan (RWQCB, 1994)
Fecal coliform	<400 MPN/100 mL	Basin Plan REC-1
Enterococci	<151 MPN/100 mL	Basin Plan (RWQCB, 1994) Res No. R9-2007-0044 (RWQCB, 2007)
Bacteroides	–	–

– = A WQO has not been developed.

3.0 RESULTS

This section presents the results of the monitoring program undertaken in SDR. The results are presented in the following subsections:

- Subsection 3.1 Dry Weather Sampling
- Subsection 3.2 Wet Weather Sampling

Supporting data pertaining to the results sections (field data sheets and quality control (QC) documentation) are presented in the appendices.

3.1 Dry Weather Sampling – April 21, 2009

One 24-hour dry weather event was monitored on April 21–22, 2009 at two sampling locations: Los Coches Creek at I8 Business Route (COSDRSDR08) and San Diego River at Riverford Road (COSDSDR10). Forester Creek at Greenfield Drive (COSDSDR07) was not sampled as it was dry. Monitoring was conducted to determine the following:

- Chemical constituent concentrations, daily loads and flux
- The presence or absence of human fecal contamination
- In situ field measurements of pH, DO, specific conductance, temperature and turbidity

3.1.1 Dry Weather Chemical Constituent Concentrations

The composite sample concentrations are presented and compared to relevant benchmarks in Table 3-1. Nutrient concentrations are compared between sites in Figure 3-1. Turbidity, TSS and TDS results are compared in Figure 3-2.

Nutrient concentrations were generally higher at COSDSDR10 than COSDSDR08. Total phosphorus concentration at COSDSDR10 was above the WQO of 0.1 mg/L. Total Nitrogen concentrations exceeded the 1 mg/L WQO at both sampling locations. At both locations, TSS concentrations and turbidity were below their respective benchmarks; TDS concentrations exceeded the 1,000 mg/L WQO at both sites.

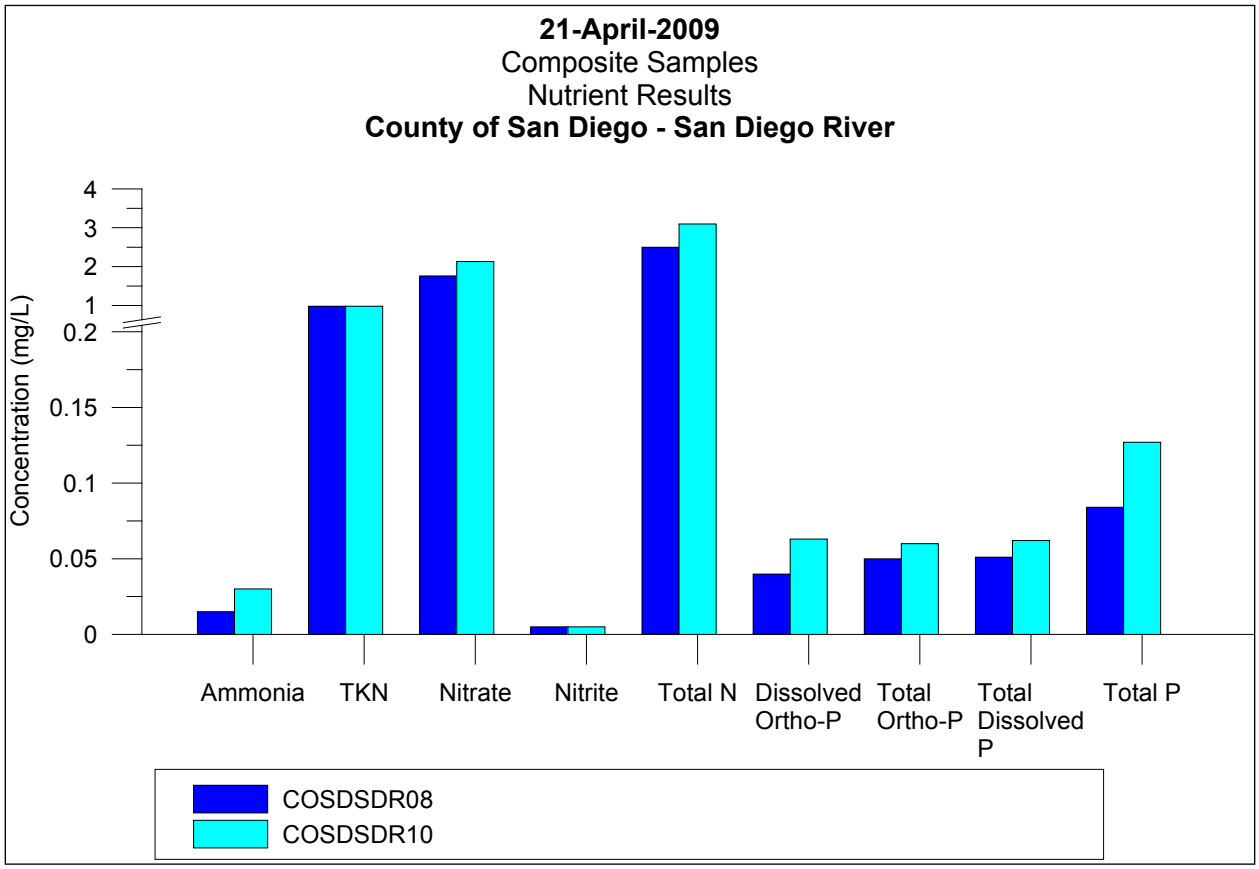

Figure 3-1. Dry Weather Nutrient Concentrations

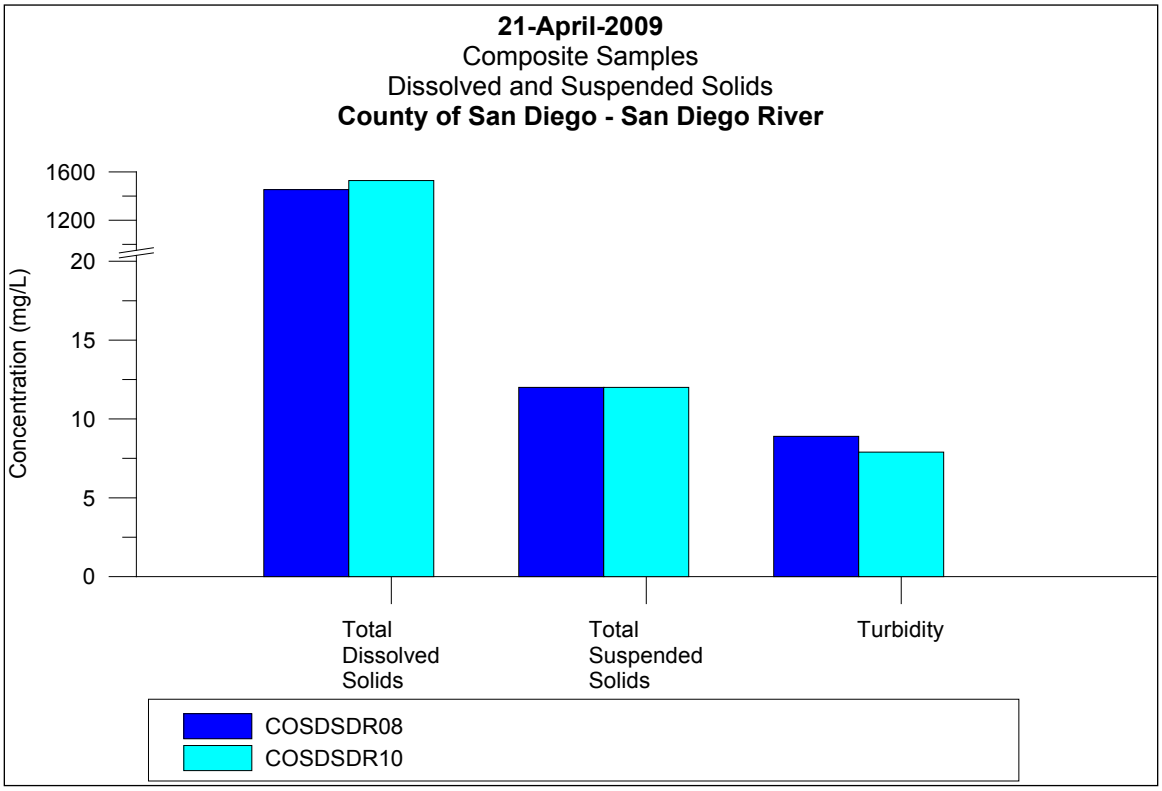

Figure 3-2. Dry Weather Dissolved and Suspended Solids Concentrations

Table 3-1. Chemical Constituent Concentrations for the Dry Weather Monitoring Event – April 21–22, 2009

Analyte	MDL	RL	Units	Water Quality Benchmark	Source	COSDSDR08 24-Hour Composite 4/21-22/2009	COSDSDR10 24-Hour Composite 4/21-22/2009
Ammonia as N	0.03	0.03	mg/L	(a)	2. U.S. EPA Water Quality Criteria (Freshwater CCC)	<0.03	0.03J
Nitrate as N	0.01	0.05	mg/L	10	1. Basin Plan	1.76	2.13
Nitrite as N	0.01	0.05	mg/L	1	1. Basin Plan	<0.01	<0.01
Total Kjeldahl Nitrogen	0.46	0.50	mg/L			0.98	0.98
Organic Nitrogen (Calculation)			mg/L			0.98	0.95
Total Nitrogen (Calculation)			mg/L	1 (b)	1. Basin Plan (narrative objective)	**2.5**	**3.1**
Total Phosphorus	0.016	0.05	mg/L	0.1	1. Basin Plan (narrative objective)	0.084	**0.127**
Total Dissolved Phosphorus	0.016	0.05	mg/L			0.051	0.062
Total Orthophosphate as P	0.01	0.01	mg/L			0.05H	0.06H
Dissolved Orthophosphate as P	0.0075	0.01	mg/L			0.040	0.063
Total Dissolved Solids	0.1	5	mg/L	1000 (a)	1. Basin Plan	**1,454**	**1,528**
Total Suspended Solids	0.5	5	mg/L	58	3. NSQD	12	12
Turbidity	1	2	NTU	20	1. Basin Plan	8.9	7.9

Shaded text – exceeds water quality benchmark.
< values are less than the mdl.
H-Sample received and/or analyzed past the recommended holding time.
J -Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
(a) Water Quality Benchmark for total dissolved solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).
(b) From Basin Plan (1994): "Threshold values have not been set for nitrogen compounds; however natural ration of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 shall be used." Given WQO for total P = 0.1, WQO for total N = 1.

Sources
1. San Diego Regional Water Quality Control Plan for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007)
2. U.S. EPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.
3. Research Progress Report, findings from the National Stormwater Quality Database, January, 2004.

Table 3-2. Dry Weather Bacteria and Polymerase Chain Reaction Results for the Dry Weather Monitoring Event – April 21–22, 2009

Analyte	Units	Water Quality Benchmarks	Source	COSDSDR08					COSDSDR10					
				SDR08-2 4/21/2009 13:55	SDR08-3 4/21/2009 20:00	SDR08-4 4/22/2009 02:00	SDR08-5 4/22/2009 08:20	SDR08-6 4/22/2009 13:45	SDR10-2 4/21/2009 13:30	SDR10-3 4/21/2009 21:00	SDR10-4 4/22/2009 02:20	SDR10-5 4/22/2009 07:30	SDR10-6 4/22/2009 13:00	SDR10-6Dup 4/22/2009 13:05
Bacteriological														
Total Coliform	MPN/100mL			2,300	5,000	500	7,000	5,000	500	839E	1,700	11,000	5,000	8,000
Fecal Coliform	MPN/100mL	400 (REC-1)	1. Basin Plan	**1,300**	40	20	<20	220	170	**700**	300	340	40	<20
E. coli	MPN/100mL	576	1. Basin Plan	**906**	<10	<10	10	256	10	556	336	350	10	<10
Enterococci	MPN/100mL	151	1. Basin Plan	**1,700**	80	**230**	80	**1,300**	**1,300**	**500**	**800**	**1,300**	130	**230**
General Bacteroides	+ or -			+	+	+	N/A	+	+	+	+	N/A	+	+
Human Bacteroides	+ or -			-	-	-	N/A	-	-	-	-	N/A	-	-

Sources
1. San Diego Regional Water Quality Control Plan for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007)

3.1.2 Dry Weather Microbiology Results

The bacterial counts in grab samples (collected at approximately six-hour intervals) are presented and compared to relevant benchmarks in Table 3-2 In addition to FIB (i.e., total coliforms, fecal coliforms, enterococci, and *E. coli*), samples were also collected and analyzed for *Bacteroides.*

At Los Coches Creek (COSDSDR08), the first sample collected (at 13:55), had the highest concentrations of fecal coliforms, enterococci, and *E. coli* for the sampling event (Figure 3-3); each of these parameters also exceeded their respective WQOs. Two other samples collected during the sampling event exceeded enterococci WQO and there were no other exceedances. Toward the end of the event, fecal coliform and *E. coli* concentrations were very similar, indicating a recent fecal source. *Bacteroides* were detected, but they were not human-specific suggesting that the FIB were attributable to contamination by warm-blooded animals living near the river rather than human contamination.

At San Diego River at Riverford Rd. (COSDSDR10), total coliform concentrations increased throughout the event. Fecal coliform and *E. coli* concentrations showed an initial increase, remained relatively stable in the next three samples, and declined in the last sample. Fecal coliform exceeded the 400 MPN/ 100 ml WQO in only one of the five samples. Enterococcus concentrations exceeded the 151 MPN/100 ml WQO in all but one sample. General *Bacteroides* were detected in the first three samples collected at COSDSDR10, but no human-specific *Bacteroides* were found.

Date and Time	General Bacteroides	Human Bacteroides
4/21/09 13:55	+	-
4/21/09 20:00	+	-
4/22/09 2:00	+	-
4/22/09 8:20	NA	NA
4/22/09 13:45	+	-

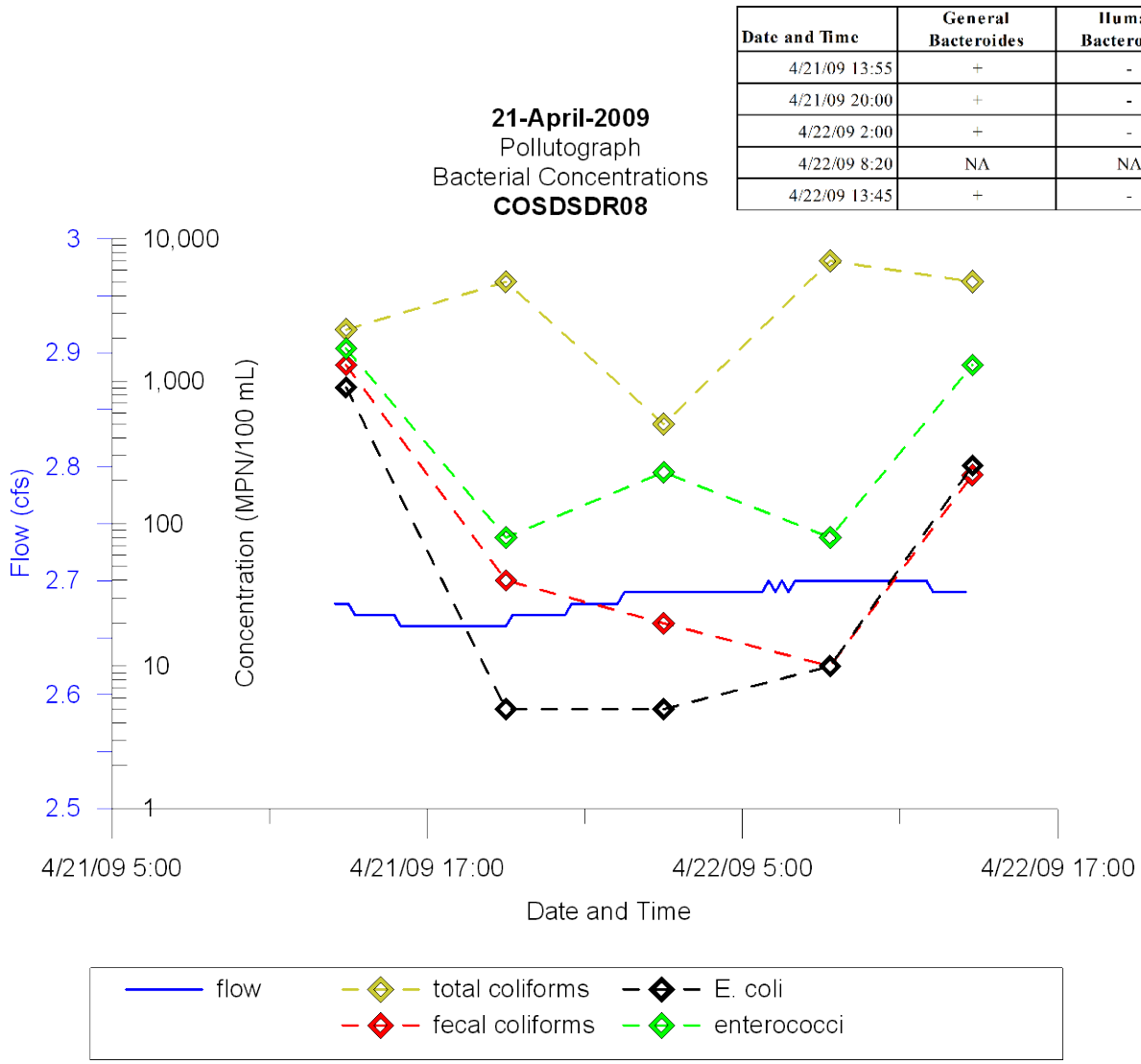

Date and Time	General Bacteroides	Human Bacteroides
4/21/09 13:30	+	-
4/21/09 21:00	+	-
4/22/09 2:20	+	-
4/22/09 7:30	NA	NA
4/22/09 13:00	-	-

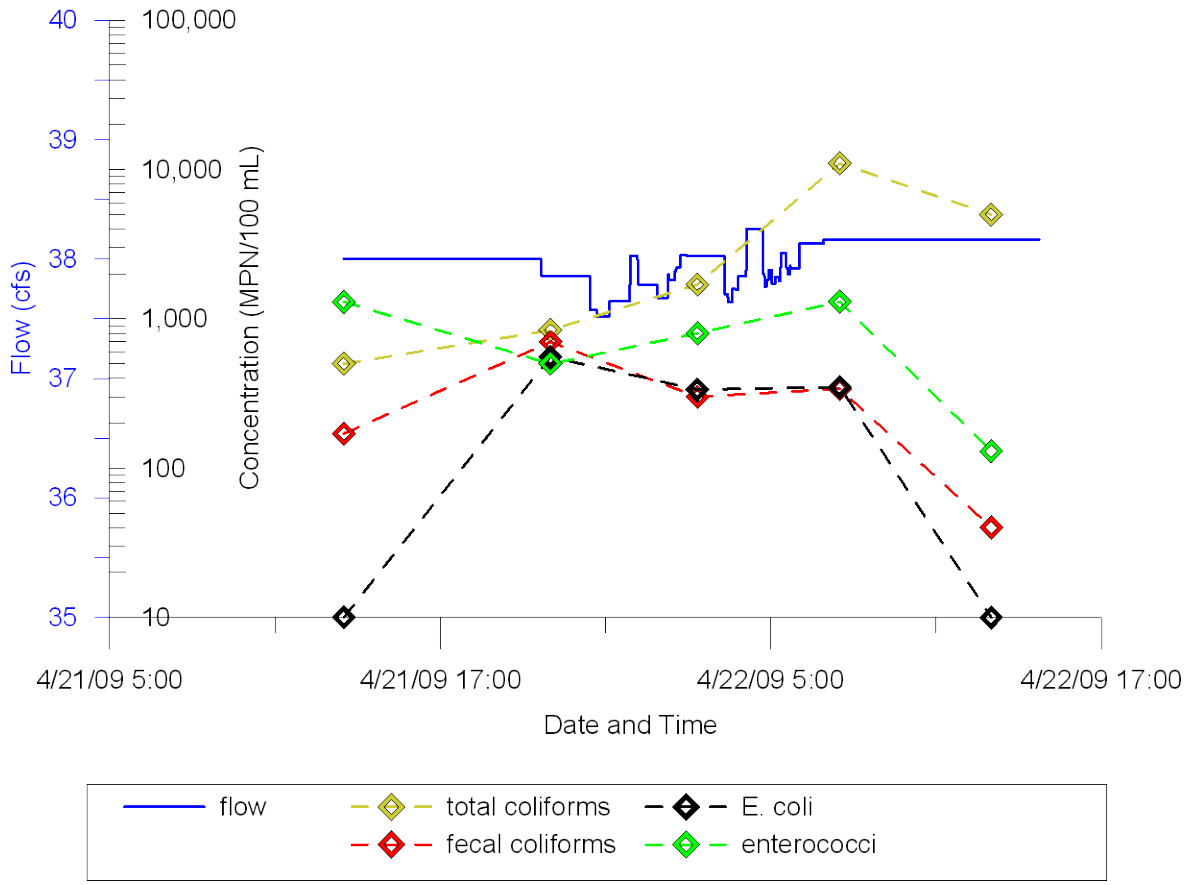

Figure 3-3. Dry Weather Bacteria Pollutographs for COSDSDR08

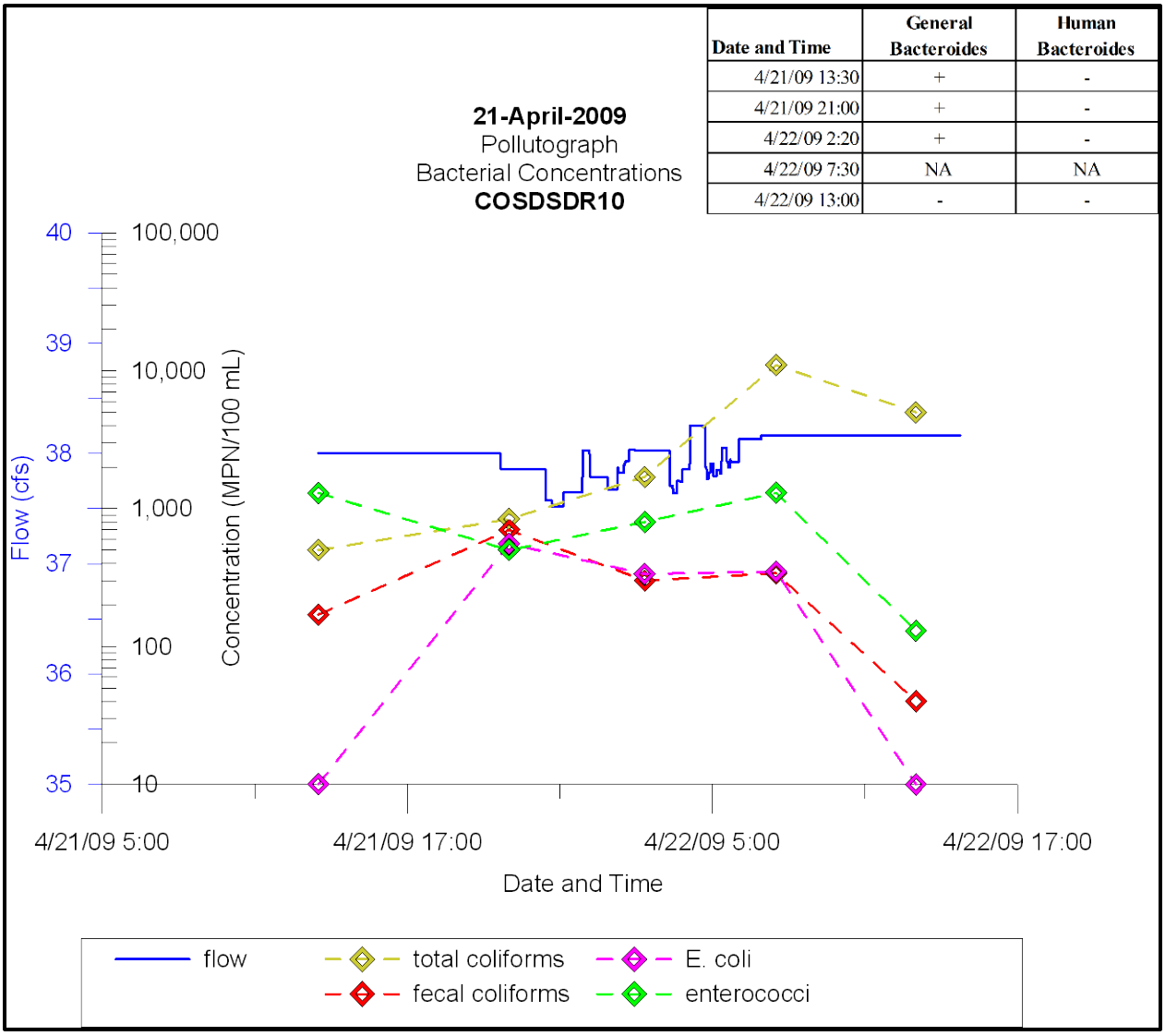

Date and Time	General Bacteroides	Human Bacteroides
4/21/09 13:30	+	-
4/21/09 21:00	+	-
4/22/09 2:20	+	-
4/22/09 7:30	NA	NA
4/22/09 13:00	-	-

Figure 3-4. Dry Weather Bacteria Pollutographs for COSDSDR10

3.1.3 Dry Weather Estimated Daily Loads

Daily loads were estimated for the one dry weather monitoring event for each drainage area studied and are presented in Table 3-3 (chemical constituents) and Table 3-4 (FIB). The loads are representative only of the monitored 24-hour period. Extrapolating beyond the event to calculate dry weather annual loads is not recommended because of the unknown variability in flow conditions throughout the year.

Table 3-3. Estimated Daily Chemical Constituent Loads for the Dry Weather Monitoring Event.

Analyte	COSDSDR08 Daily Load (04/21-22/09) Kg/Day	COSDSDR10 Daily Load (04/21-22/09) Kg/Day
Ammonia as N	0.10	0.17
Nitrate as N	11.55	11.76
Nitrite as N	0.03	0.03
Total Kjeldahl Nitrogen	6.43	5.41
Organic Nitrogen	6.43	5.24
Total Nitrogen	16.41	17.11
Total Phosphorus	0.55	0.70
Total Dissolved Phosphorus	0.33	0.34
Total Orthophosphate as P	0.33	0.33
Dissolved Orthophosphate as P	0.26	0.35
Total Dissolved Solids	9,543	8,433
Total Suspended Solids	78.76	66.23

Table 3-4. Estimated Daily Bacteria Loads for the Dry Weather Monitoring Event.

Analyte	COSDSDR08 Daily Load (04/21-22/09) MPN/day	COSDSDR10 Daily Load (04/21-22/09) MPN/day
Total Coliform	2.6E+11	2.2E+11
Fecal Coliform	1.4E+10	1.9E+10
E. coli	1.0E+10	1.6E+10
Enterococci	3.1E+10	4.6E+10

3.1.4 Field Measurement Results

The field measurement results for the 24-hour non-storm monitoring event are shown on Figure 3-5 through Figure 3-6. Field parameter results for temperature, pH, conductivity, and DO fell within acceptable ranges for dry weather, based on the Basin Plan objectives. There were few differences between the two sites, with the exception of turbidity; turbidity at COSDSDR08 exceeded the Basin Plan objective of 20 NTU and was markedly higher than that at COSDSDR10 which, on the average, was below the Basin Plan objective. The water at COSDSDR10 was opaque and brown in appearance, whereas the water at COSDSDR08 was colorless and clearer.

Dissolved oxygen (DO) is a constituent on the State Board §303(d) list for the lower part of SDR. The Basin Plan objective for DO is 6 mg/L. Dissolved oxygen concentrations that persist below this value for extended periods of time could be detrimental to aquatic life. Neither of the sites had DO concentrations lower than 6 mg/L over the 24-hour period monitored.

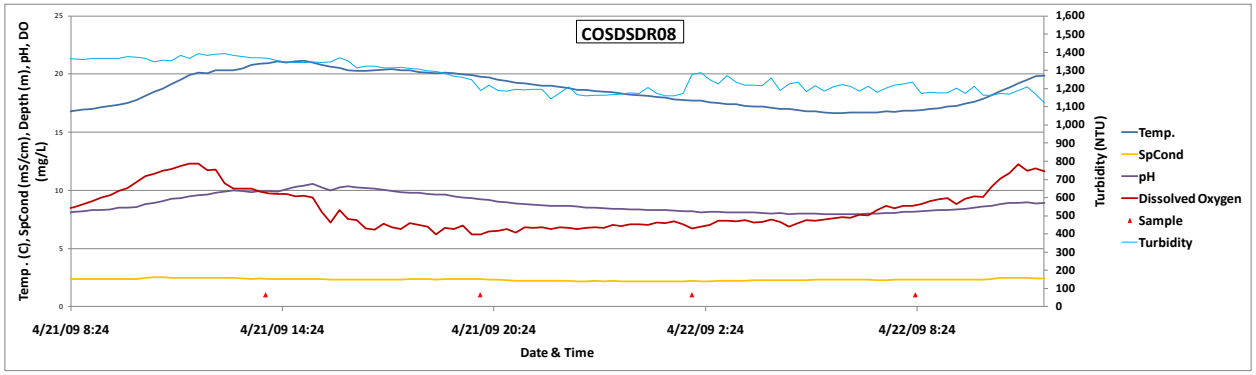

Figure 3-5. Field Measurements at COSDSDR08 during Dry Weather Sampling Event.

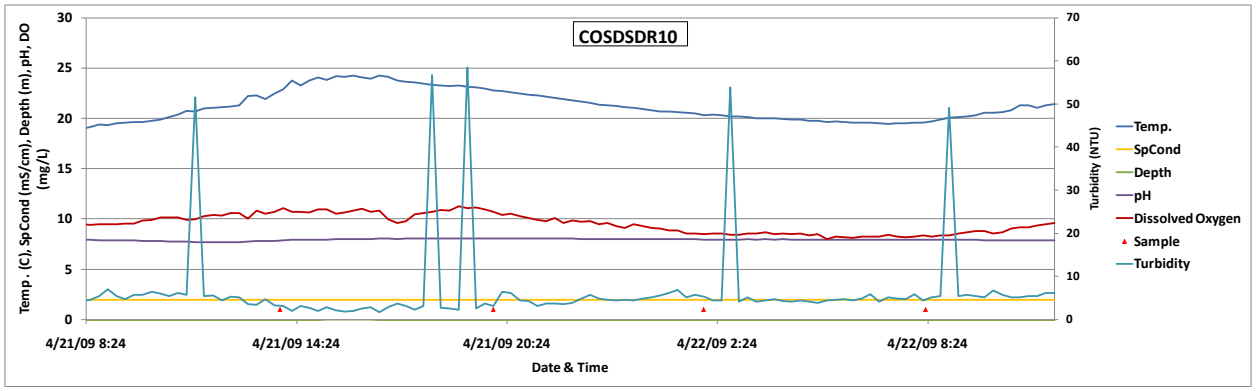

Figure 3-6. Field Measurements at COSDSDR10 during Dry Weather Sampling Event.

Table 3-5. Mean Field Measurement Results for the 24-Hour Dry Weather Sampling Event

Analyte	COSDSDR08 (04/21/09 08:00–04/22/09 12:00)	COSDSDR10 (04/21/09 08:00–04/22/09 12:00)
Temperature (˚C)	18.61	21.23
Conductivity (mS/cm)	2.32	1.97
Turbidity (NTU)	1,259	6.69
pH (pH units)	8.85	7.94
DO (mg/L)	8.40	9.54

3.2 Wet Weather Sampling

Two wet weather surveys were conducted on February 6 and December 7, 2009. Three sampling locations were monitored: Los Coches Creek at I8 Business Route (COSDRSDR08), San Diego River at Riverford Road (COSDSDR10), and Forester Creek at Greenfield Drive (COSDSDR07) to determine:

- Chemical constituent concentrations, estimated instantaneous loads, and flux
- The presence or absence of human fecal contamination.
- In-situ measurements of pH, DO, specific conductance, temperature and turbidity

3.2.1 Wet Weather Event 1 – February 6, 2009

3.2.1.1 Event Summary

The first wet weather survey was conducted at two locations only: Los Coches Creek at I8 Business Route (COSDRSDR08) and San Diego River at Riverford Road (COSDSDR10). Monitoring took place from February 5, 2009 through February 7, 2009 during which time intermittent rainfall resulted in a total precipitation of 0.93 inches (Table 3-6). Rain began at 16:00 on February 5, 2009 and lasted until approximately 21:00 with a total 0.16 inch accumulated; the resulting flow was insufficient for the purpose of monitoring. On February 6, 2009, 0.28 inches of rain fell from 03:00 intermittently throughout the day. On February 7, 2009, 0.49 inches of rain fell from 00:30 to 04:30.

Table 3-6. Summary of Rainfall Statistics for February 6, 2009 Wet Weather Event

Event Date	Event Type	Rainfall Total (inch)[1]	Rainfall Duration (hh:mm)[1]	Antecedent Dry Days[2]
February 5, 2009 12AM to February 7, 2009 12PM	Wet	0.93	36:30	35

[1] Rainfall totals and duration from the Weather Underground Santee rain gauges.
[2] Antecedent dry days based on Weather Underground Santee rain gauges.

An additional 0.63 inches of rain fell in the area after the monitoring ended and, although more than 12 hours passed between the end of the monitoring event and the start of the additional rainfall, the creeks' water levels did not yet return to base flows. For the purpose of data presentation and analysis, the pollutographs for COSDSDR08 (Figure 3-7 and Figure 3-8) represent just the monitored storm event while the pollutographs for COSDSDR10 show the

flow during the monitored storm event and, for the time period after monitoring ended, actual flows, and the modeled flows if no additional rainfall occurred. The storm event mean concentrations (EMCs) (Table 3-7, Table 3-8, Figure 3-7, and Figure 3-8) and loads (Table 3-9) are based on the monitored and modeled storm flows. The actual storm flow volumes are presented (Table 3-10) to provide a comparison regarding the entire size of the event.

3.2.1.2 Wet Weather Event 1 Chemical Constituent Concentrations

Wet weather samples were collected as discrete grabs over the course of the sampling event. Sample results are shown in Table 3-7 and Figure 3-7.

Table 3-7. Wet Weather Monitoring Event 1 Chemical Constituent, Bacteria, and Polymerase Chain Reaction Results – February 5–7, 2009

Analyte	MDL	RL	Units	Water Quality Benchmarks	Source	COSDSDR08						COSDSDR10						
						SDR08-1	SDR08-2	SDR08-3	SDR08-4	SDR08-5	SDR08-7	SDR10-1	SDR10-2	SDR10-3	SDR10-4	SDR10-5	SDR10-6	SDR10-7
						2/5/2009	2/5/2009	2/6/2009	2/7/2009	2/7/2009	2/7/2009	2/5/2009	2/5/2009	2/6/2009	2/7/2009	2/7/2009	2/7/2009	2/7/2009
						19:45	20:16	16:20	4:00	5:30	10:50	21:00	21:30	16:10	5:30	7:40	9:50	12:05
Physical Chemistry																		
pH	N/A	N/A	pH Units	6.5-9.0	1. Basin Plan	6.79	6.74	7.35	6.95	7.31	7.11	7.96	7.95	7.8	7.61	7.56	7.52	7.51
Conductivity	N/A	N/A	ms/cm			1.189	1.178	0.796	1.727	0.347	0.532	2.084	2.084	2.097	1.92	1.7	1.275	1.007
Temperature	N/A	N/A	Celsius			16.21	16.05	15.41	14.89	12.32	11.89	12.71	12.7	12.92	13.46	13.36	13.08	12.9
General Chemistry																		
Ammonia as N	0.03	0.03	mg/L	(a)	2. U.S. EPA Water Quality Criteria (Freshwater CMC)	0.03J	0.11	0.12	0.34	0.33	0.53	0.04	0.03J	0.03J	0.03J	0.04	0.07	0.91
Nitrate as N	0.01	0.05	mg/L	10	1. Basin Plan	3.01	3.48	3.21	1.24	1.6	2.18	<0.01	<0.01	0.07	0.37	0.59	0.99	0.93
Nitrite as N	0.01	0.05	mg/L	1	1. Basin Plan	0.03J	0.03J	0.1	0.08	0.08	0.09	0.01J	0.01J	<0.01	<0.01	<0.01	0.08	0.08
Total Kjeldahl Nitrogen	0.46	0.50	mg/L			1.1	1.3	0.91	1.1	1.1	2.4	0.56	0.7	0.77	0.7	0.84	1.4	1.3
Organic Nitrogen (calculation)			mg/L			1.07	1.19	0.79	0.76	0.77	1.87	0.52	0.67	0.74	0.67	0.8	1.33	0.39
Total Nitrogen (calculation)			mg/L	1 (c)	1. Basin Plan	**4.14**	**4.81**	**4.22**	**2.42**	**2.78**	**4.67**	0.575	0.715	0.845	**1.075**	**1.435**	**2.47**	**2.31**
Total Phosphorus	0.016	0.50	mg/L	0.1	1. Basin Plan	0.092J	**0.157J**	**0.37J**	**1.073**	**1.762**	**0.766**	0.055J	0.062J	**0.195J**	**0.254J**	**0.205J**	**0.347J**	**0.343J**
Total Dissolved Phosphorus	0.016	0.50	mg/L			<0.016	<0.016	0.142J	0.837	0.264J	0.214J	<0.016	<0.016	**0.47J-DNQ**	**0.386J-DNQ**	0.097J	0.109J	0.136J
Total Dissolved Solids	0.1	5	mg/L	1000 (b)	1. Basin Plan	**1622**	**1632**	596	404	332	462.5	**1366**	**4198**	**1442**	**1208**	**1110**	562	482
Total Suspended Solids	0.5	5	mg/L	100	3. MSGP 2008	6.5	32	65	**1066**	**1226**	**345**	9.8	9.3	11.5	25	29.7	55.5	72
Turbidity	1	2	NTU	20	1. Basin Plan	3.1	6.8	**55.7**	**214.5**	**495**	**327.5**	6.2	6.2	9	**24.7**	**29.2**	**60.4**	**81**
Bacteriological																		
Total Coliform			MPN/100ml			1,100	13,000	170,000	130,000	130,000	70,000	130	300	50,000	70,000	80,000	22,000	110,000
Fecal Coliform			MPN/100ml	400 (REC-1)	1. Basin Plan	230	**1,700**	**8,000**	**13,000**	**30,000**	**22,000**	80	130	**700**	**8,000**	**8,000**	**13,000**	**8,000**
E. coli			MPN/100ml	576	1. Basin Plan	384EC	**3255EC**	**13135EC**	**15001EC**	**12,740**	**23822EC**	109EC	84	**644**	**1,850**	**5,794**	**9,036**	**7,027**
Enterococci			MPN/100ml	151	1. Basin Plan	**2,200**	**5,000**	**30,000**	**50,000**	**160,000**	**50,000**	40	40	**2,200**	**14,000**	**30,000**	**90,000**	**160,000**
General Bacteroides	N/A	N/A	+ or -			+	+	+	+	-	+	+	+	+	+	+	+	+
Human Bacteroides	N/A	N/A	+ or -			-	-	-	-	-	-	-	-	-	-	-	-	-

Shaded text-exceeds water quality benchmark.
Red shaded text-indicates analytical QC issue to be resolved (disagreement between total and dissolved phosphorus), dissolved phosphorus should not be used (Do not Quantify)
< values are less than the mdl.
EC-E. coli results are greater than fecal coliform. Although E. coli is a subgroup of fecal coliforms, some values may be higher due to differences in methodology and statistical range.
J -Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N/A=Not Applicaple.
(a) Water Quality Benchmark is based on CMC (salmonids absent) using pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.
(b) Water Quality Benchmark for total dissolved solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).
(c) From Basin Plan (1994): "Threshold values have not been set for nitrogen compounds; however natural ration of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld.
If data are lacking, a ratio of N:P = 10:1 shall be used." Given WQO for total P = 0.1, WQO for total N = 1.
No rinse blanks were indicated in the EDDs.

Sources

1. San Diego Regional Water Quality Control Plan for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007)
2. U.S. EPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.
3. Multisector General Permit for Industrial Activities, Section2

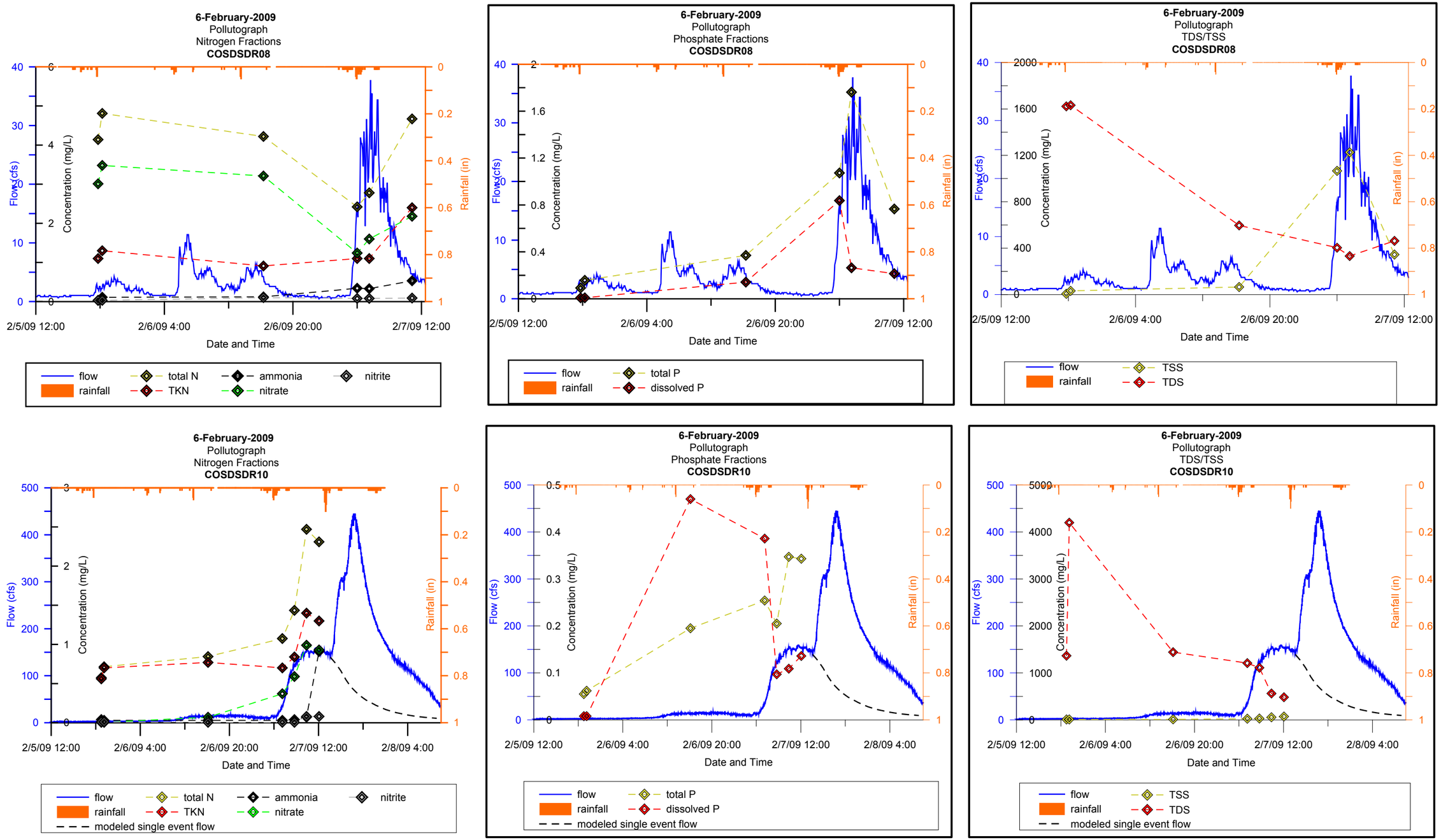

Figure 3-7. Chemical Constituent Pollutographs for Wet Weather Event 1 – February 5–7, 2009

3.2.1.3 Wet Weather Event 1 Microbiology Results

Bacterial concentrations and *Bacteroides* testing results for the first monitored storm event are depicted on Figure 3-8. A total of six samples were analyzed. At both locations, the concentrations of all four groups of FIB increased steadily with the hydrograph rise. While all but one sample were positive for general *Bacteroides*, none were positive for human-specific *Bacteroides* (Figure 3-8, inset top right of each graph). These results indicate that there was no recent human fecal contamination in the river during the monitored storm event.

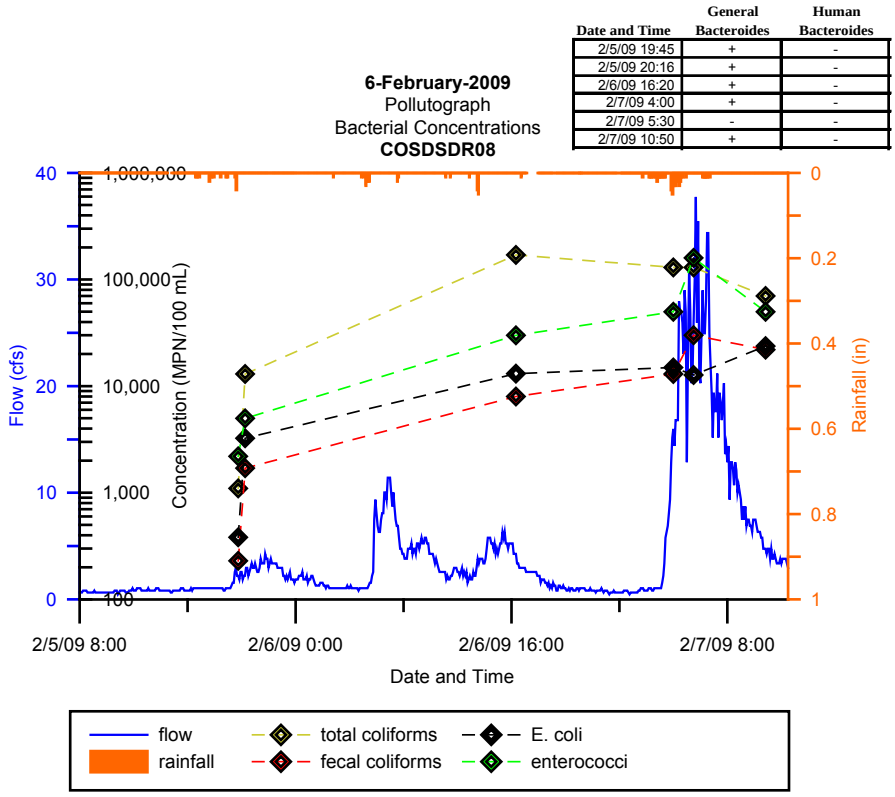

Date and Time	General Bacteroides	Human Bacteroides
2/5/09 19:45	+	-
2/5/09 20:16	+	-
2/6/09 16:20	+	-
2/7/09 4:00	+	-
2/7/09 5:30	-	-
2/7/09 10:50	+	-

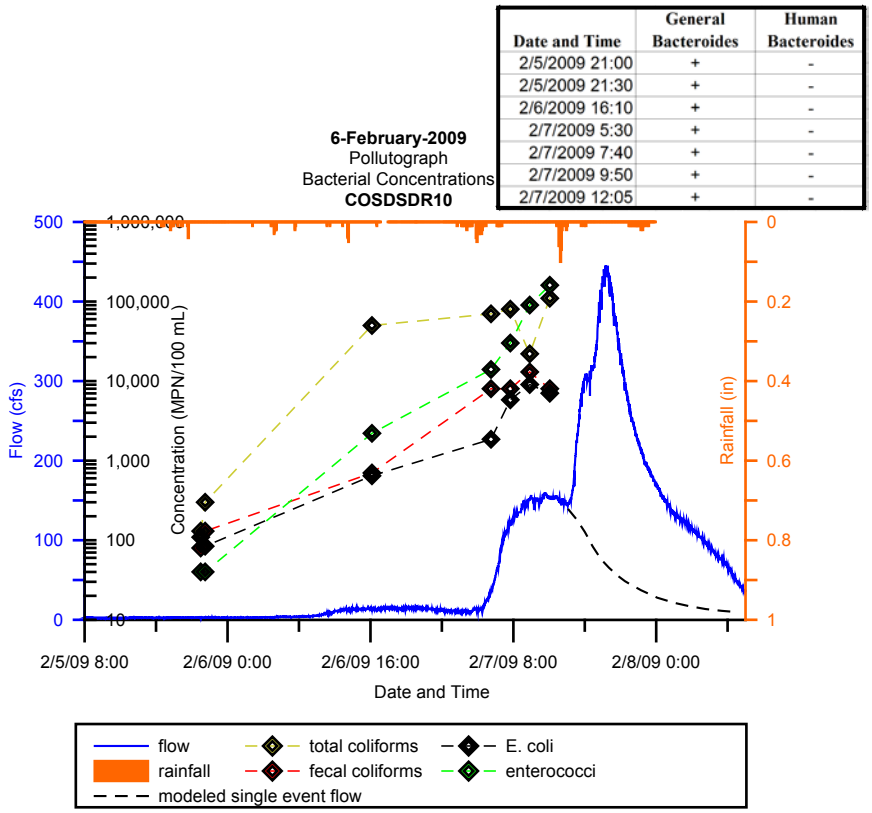

Date and Time	General Bacteroides	Human Bacteroides
2/5/2009 21:00	+	-
2/5/2009 21:30	+	-
2/6/2009 16:10	+	-
2/7/2009 5:30	+	-
2/7/2009 7:40	+	-
2/7/2009 9:50	+	-
2/7/2009 12:05	+	-

Figure 3-8. Bacteria Pollutographs for Wet Weather Event 1 – February 5–7,

3.2.1.4 Wet Weather Event 1 Event Mean Concentrations and Estimated Storm Loads

An event mean concentration (EMC) of a given constituent is defined for a storm event as follows:

EMC = ————

Where:
EMC – Event Mean Concentration
V*i* = discharge volume corresponding to sample i
C*i* – constituent concentration in sample i
i = sample number
n = total number of samples collected

Constituent loads (M) are calculated using the following equation:

M =

The EMCs and loads (in kilograms) were calculated for storm event 1 and are presented in Table 3-8 and Table 3-9.

Table 3-8. Event Mean Concentrations for Wet Weather Event 1

Parameter	Units	COSDSDR08 EMC (2/5–7/2009)	COSDSDR10 EMC (2/5–7/2009)
Ammonia-N	mg/L	0.24	0.53
Nitrate-N	mg/L	2.33	0.74
Nitrite-N	mg/L	0.07	0.05
Organic nitrogen	mg/L	0.64	0.80
Total dissolved phosphorus as P	mg/L	0.26	0.16
TDS	mg/L	809	875
TKN	mg/L	1.18	1.13
Total nitrogen	mg/L	3.58	1.92
Total phosphorus	mg/L	0.95	0.29
TSS	mg/L	661.16	53.17
Total coliforms	MPN/100 mL	92,500	84,700
Fecal coliforms	MPN/100 mL	15,400	7,590
E. coli	MPN/100 mL	10,200	5,880
Enterococci	MPN/100 mL	74,400	104,000

Table 3-9. Total Storm Loads (in kilograms) for Wet Weather Event 1

Parameter	Units	COSDSDR08 (2/5–7/2009)	COSDSDR10 (2/5–7/2009)
Ammonia-N	kg/storm	5.25	135.30
Nitrate-N	kg/storm	51	190
Nitrite-N	kg/storm	1.42	13.95
Organic nitrogen	kg/storm	13.96	205.03
Total dissolved phosphorus as P	kg/storm	5.59	42.16
TDS	kg/storm	17,564	225,107
TKN	kg/storm	25.70	290.53
Total nitrogen	kg/storm	77.79	494.00
Total phosphorus as P	kg/storm	20.58	75.13
TSS	kg/storm	14,361.09	13,684.93
Total coliforms	MPN/storm	2.01E+13	2.18E+14
Fecal coliforms	MPN/storm	3.34E+12	1.95E+13
E. coli	MPN/storm	2.22E+12	1.51E+13
Enterococci	MPN/storm	1.62E+13	2.67E+14

The discharge volumes monitored corresponding to each grab sample and the storm event volumes from each site are presented in Table 3-10.

Table 3-10. Summary of Volumes Sampled During Wet Weather Event 1

Sample ID	Date and Time	Vol/Sample (cf)
COSDSDR08-1	02/05/2009 19:45	18,600
COSDSDR08-2	02/05/2009 20:16	238,649
COSDSDR08-3	02/06/2009 16:20	73,658
COSDSDR08-4	02/07/2009 04:00	123,880
COSDSDR08-5	02/07/2009 05:30	289,237
COSDSDR08-6	02/07/2009 10:50	23,046
Total Volume Sampled (02/05/2009–02/07/2009)		767,070

Sample ID	Date and Time	Vol/Sample (cf)
COSDSDR10-1	02/05/2009 21:00	5,155
COSDSDR10-2	02/05/2009 21:30	399,231
COSDSDR10-3	02/06/2009 16:10	667,853
COSDSDR10-4	02/07/2009 05:30	644,111
COSDSDR10-5	02/07/2009 07:40	1,435,616
COSDSDR10-6	02/07/2009 10:30	874,006
COSDSDR10-7	02/07/2009 12:05	5,063,712
Total Volume Sampled (02/05/2009–02/07/2009)		9,089,684

3.2.1.5 Field Measurement Results for Wet Weather Event 1

Field measurements of temperature, specific conductance (conductivity), turbidity, pH and dissolved oxygen (DO) collected continuously in situ during wet weather event 1 are shown in Figure 3-9 and Figure 3-10.

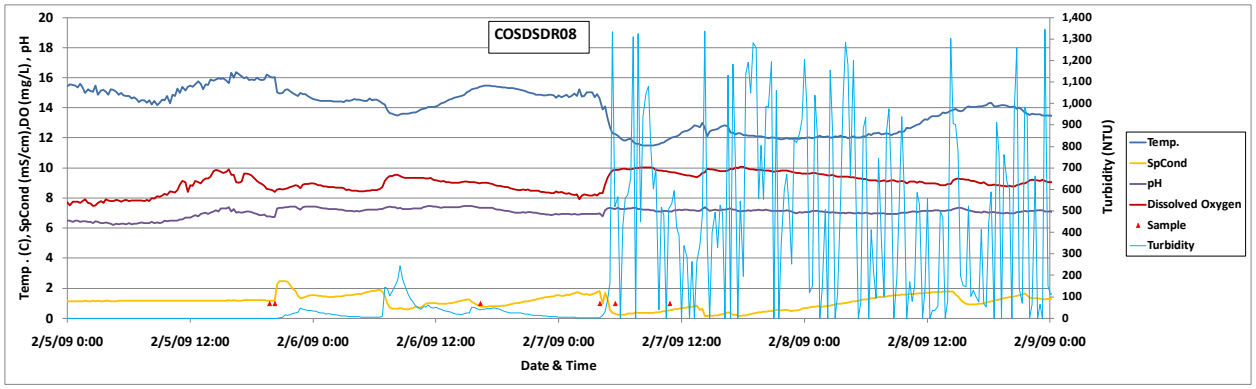

Figure 3-9. Field Measurements of Temperature, Conductivity, Turbidity, pH and DO at COSDSDR08 during Wet Weather Sampling Event 1 – February 5–9, 2009

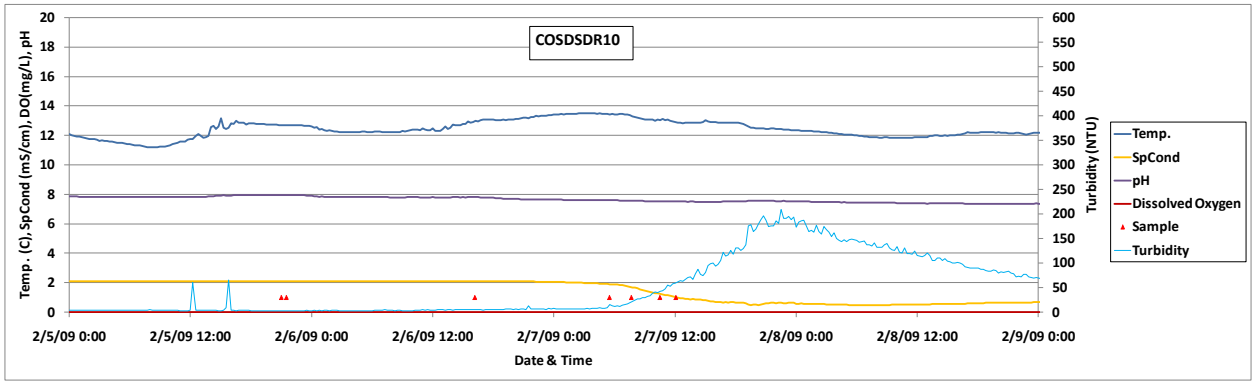

Figure 3-10. Field Measurements of Temperature, Conductivity, Turbidity, pH and DO at COSDSDR10 during Wet Weather Sampling Event 1 – February 5–9, 2009

Table 3-11. Average Temperature, Conductivity, Turbidity, pH and DO for Wet Weather Sampling Event 1 – February 5–9, 2009

Analyte	COSDSDR08 (02/05/09 00:00–02/09/09 00:00)	COSDSDR10 (02/05/09 00:00–02/09/09 00:00)
Temperature (˚C)	13.9	12.44
Conductivity (mS/cm)	1.10	1.49
Turbidity (NTU)	237	50.90
pH (pH units)	7.06	7.65
DO (mg/L)	9.01	0.0[1]

[1]optical DO sensor failure.

3.2.2 Wet Weather Event 2 – December 7, 2009

The second wet weather event was monitored on December 7, 2009. As shown in table 3-12, rainfall began around 06:00 and continued until 22:00 with a total precipitation of 2.22 inches. Monitoring was conducted at three locations: Los Coches Creek at I8 Business Route (COSDRSDR08), San Diego River at Riverford Road (COSDSDR10), and Forester Creek at Greenfield Drive (COSDSDR07).

Table 3-12. Summary of Rainfall Statistics for December 7, 2009 Wet Weather Event

Event Date	Event Type	Rainfall Total (inches)[1]	Rainfall Duration (hh:mm)[1]	Antecedent Dry Days[2]
December 7, 2009	Wet	2.22	16:00	8

[1] Rainfall totals and duration from the Weather Underground Santee rain gauges.
[2] Antecedent dry days based on Weather Underground Santee rain gauges.

3.2.2.1 Wet Weather Event 2 Chemical Constituent Concentrations

Wet weather samples were collected as discrete grabs over the course of the sampling event. The results are summarized in Table 3-13 and presented graphically in Figure 3-12.

Table 3-13. Wet Weather Monitoring Event 2 Chemical Constituent, Bacteria, and Polymerase Chain Reaction Results – December 7, 2009

Analyte	MDL	RL	Units	Water Quality Benchmarks	Source	COSD-SDR07						COSD-SDR08									COSD-SDR10									
						SDR07-1	SDR07-2	SDR07-3	SDR07-4	SDR07-5	SDR07-6	SDR08-1	SDR08-2	SDR08-3	SDR08-4	SDR08-5	SDR08-6	SDR08-7	SDR08-8	SDR08-FB	SDR10-1	SDR10-2	SDR10-2-2	SDR10-3	SDR10-4	SDR10-5	SDR10-6	SDR10-7	SDR10-8	SDR10-FB
						12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009	12/7/2009
						9:30	11:00	12:45	14:00	16:00	17:30	7:35	9:00	10:30	13:30	15:00	16:45	18:15	19:45	11:00	12:00	12:30	12:30	13:00	13:30	15:00	16:30	18:30	20:45	12:30
Physical Chemistry																														
pH			pH Units	6.5-9.0	1. Basin Plan	7.81	7.79	7.65	7.75	7.87	7.76	NS	NS	NS	NS	NS	NS	NS	NS	N/A	7.36	7.36	7.36	7.41	7.47	7.52	7.55	7.71	7.7	N/A
Conductivity			ms/cm			0.526	4.466	0.102	0.216	0.186	0.156	NS	NS	NS	NS	NS	NS	NS	NS	N/A	1.405	1.463	1.463	1.401	1.347	0.943	0.612	0.297	0.329	N/A
Temperature			Celsius			17.6	17.24	12.61	12.58	12.75	12.87	NS	NS	NS	NS	NS	NS	NS	NS	N/A	11.79	11.76	11.76	11.85	11.98	12.33	12.71	12.92	12.83	N/A
General Chemistry																														
Ammonia as N	0.03	0.03	mg/L	(a)	2. U.S. EPA Water Quality Criteria (Freshwater CMC)	0.53	0.47	0.43	0.7	0.66	0.55	0.38	0.29**	NS	0.39	NS	0.38	0.37	0.36	0.03J	0.37	0.25**	0.22**	NS	NS	0.2**	0.27**	0.26**	0.42	0.03J
Nitrate as N	0.01	0.05	mg/L	10	1. Basin Plan	1.7	1.36	1.19	1.99	1.81	1.43H	1.36	0.91	NS	1.36	NS	1.36	1.97H	3.08H	<0.01	0.42	0.43	0.43	NS	NS	0.75	0.96	1.21	1.56	<0.01
Nitrite as N	0.01	0.05	mg/L	1	1. Basin Plan	0.07	0.07	0.07	0.12	0.11	0.16	0.06	0.06	NS	0.07	NS	0.06	0.08	0.08	<0.01	0.14	0.13	0.13	NS	NS	0.08	0.07	0.07	0.07	<0.01
Total Kjeldahl Nitrogen	0.456	1	mg/L			8.46	5.48	6.56	12.48	4.52	18.32	3.22**	3.02**	NS	4.02**	NS	3.86**	18.4	7.78	0.456J	1.42**	1.33**	1.768**	NS	NS	1.692**	1.506**	1.598**	2.52**	0.494J
Organic Nitrogen (Calculation)			mg/L			7.93	5.01	6.13	11.78	3.86	17.77	2.84	2.73	NS	3.63	NS	3.48	18.03	7.42	0.426	1.05	1.08	1.548	NS	NS	1.492	1.236	1.338	2.1	0.464
Total Nitrogen (Calculation)			mg/L	1 (c)	1. Basin Plan	**10.23**	**6.91**	**7.82**	**14.59**	**6.44**	**19.91**	**4.64**	**3.99**	NS	**5.45**	NS	**5.28**	**20.45**	**10.94**	0.456J	**1.98**	**1.89**	**2.328**	NS	NS	**2.522**	**2.536**	**2.878**	**4.15**	0.494J
Total Phosphorus	0.016	0.05	mg/L	0.1	1. Basin Plan	**2.792**	**1.449**	**2.016**	**4.336**	**3.191**	**7.016**	**0.38**	**0.718**	NS	**1.031**	NS	**1.346**	**5.013**	**4.28**	<0.016	**0.26**	**0.326**	**0.364**	NS	NS	**0.178**	**0.205**	**0.653**	**0.987**	<0.016
Dissolved Orthophosphate as P	0.0075	0.01	mg/L			0.4706	0.4478	0.3884	0.6293	0.6386	0.5854	0.1841	0.2475	NS	0.3402	NS	0.3927	0.593	0.491	<0.0075	0.1901	0.2323	0.2122	NS	NS	0.1696	0.2277	0.3779	0.434	<0.0075
Total Dissolved Solids	0.1	5	mg/L	1000 (b)	1. Basin Plan	177.4	150	30	310	220	500	728	124	NS	60	NS	68	140	**1053.3**	<0.1	830	852	888	NS	NS	566	352	218	238	10*
Total Suspended Solids	0.5	5	mg/L	100	3. MSGP 2008	**1380**	**1106.7**	**1493.3**	**3560**	**2600**	**7720**	**234**	**419**	NS	**1196.7**	NS	**1553.3**	**4950**	**3950**	<0.5	9	79.5	**176.7**	NS	NS	59	**112.7**	**344.3**	**497.5**	<0.5
Turbidity	1	2	NTU	20	1. Basin Plan	**623**	**460**	**699**	**1110**	**930**	**3660**	**75**	**178**	NS	**397**	NS	**678**	**2430**	**1770**	<1	9.5	16.1	**32.7**	NS	NS	**49.5**	**105**	**315**	**495**	<1
Bacteriological																														
Total Coliforms			MPN/100 mL			1,600,000	900000H	500,000	500,000	1,600,000	500,000	300,000	140,000	300,000	900,000	22,000	500,000	1,600,000	300,000	NS	NS	50,000	130,000	170,000	140,000	500,000	900,000	300,000	500,000	<20
Fecal Coliforms			MPN/100 mL	400 (REC-1)	1. Basin Plan	**500,000**	**14,000H**	**80,000**	**130,000**	NR	**170,000**	**50,000**	**17,000**	**17,000**	**130,000**	**13,000**	**110,000**	**500,000**	**170,000**	NS	NS	**5,000**	**2,200**	**5,000**	**13,000**	**300,000**	**13,000**	**17,000**	**80000D**	<20
E.coli			MPN/100 mL	576	1. Basin Plan	**7,678**	**2,755H**	**4,884**	**57,943**	**54,750**	**129,965**	**26,125**	**38,732EC**	**16,162**	**23,822**	**43,517EC**	**86,644**	**120,333**	**54,750**	NS	NS	**1,223**	**1,725**	**2,187**	**2,909**	**9,335**	**10,168**	**36,540EC**	**41,058**	<10
Enterococci			MPN/100 mL	151	1. Basin Plan	**90,000**	**50,000H**	**50,000**	**35,000**	**>=160,000**	**>=160,000**	**28,000**	**160,000**	**90,000**	**>=160,000**	**160,000**	**>=160,000**	**>=160,000**	**90,000**	NS	NS	**3,000**	**2,800**	**11,000**	**13,000**	**90,000**	**50,000**	**160,000**	**160,000**	<20
General Bacteroides	N/A	N/A	+ or -			-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	N.S.	-	-	-	-	-	-	-
Human Bacteroides	N/A	N/A	+ or -			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N.S.	-	-	-	-	-	-	-

Shaded text – exceeds water quality benchmark.
< values are less than the mdl.
EC-E. coli results are greater than fecal coliform. Although E. coli is a subgroup of fecal coliforms, some values may be higher due to differences in methodology and statistical range.
D- Lab duplicate failed due to suspected technician error.
H-Sample received and/or analyzed past the recommended holding time.
J -Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N/A=Not Applicaple.
NR=Not Reported.
NS=Not Sampled.
* field blank had detectable result, however, value was less than 10 times the sample result.
**potential positive bias from sampling, field blank detection was within 10 times the reported value.
(a) Water Quality Benchmark is based on CMC (salmonids absent) using pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.
(b) Water Quality Benchmark for total dissolved solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).
(c) From Basin Plan (1994): "Threshold values have not been set for nitrogen compounds; however natural ration of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld.
If data are lacking, a ratio of N:P = 10:1 shall be used." Given WQO for total P = 0.1, WQO for total N = 1.

Sources
1. San Diego Regional Water Quality Control Plan for the San Diego Region (Basin Plan), 1994 (with amendments efective prior to April 25, 2007).
2. U.S. EPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.
3. Multisector General Permit for Industrial Activities, Section 2.

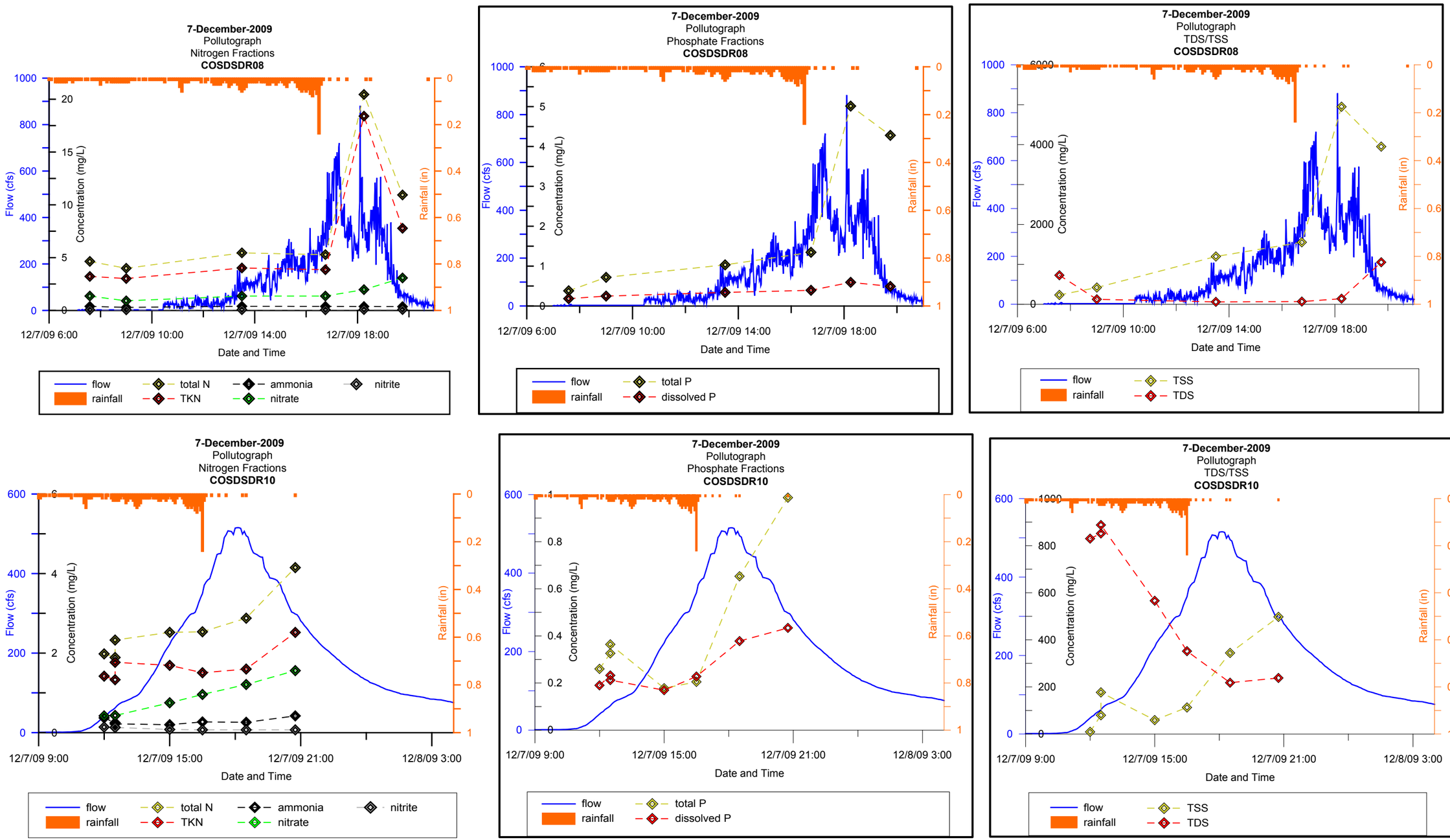

Figure 3-11. Chemical Constituent Pollutographs for Wet Weather Event 2 at COSDSDR08 and COSDSDR10

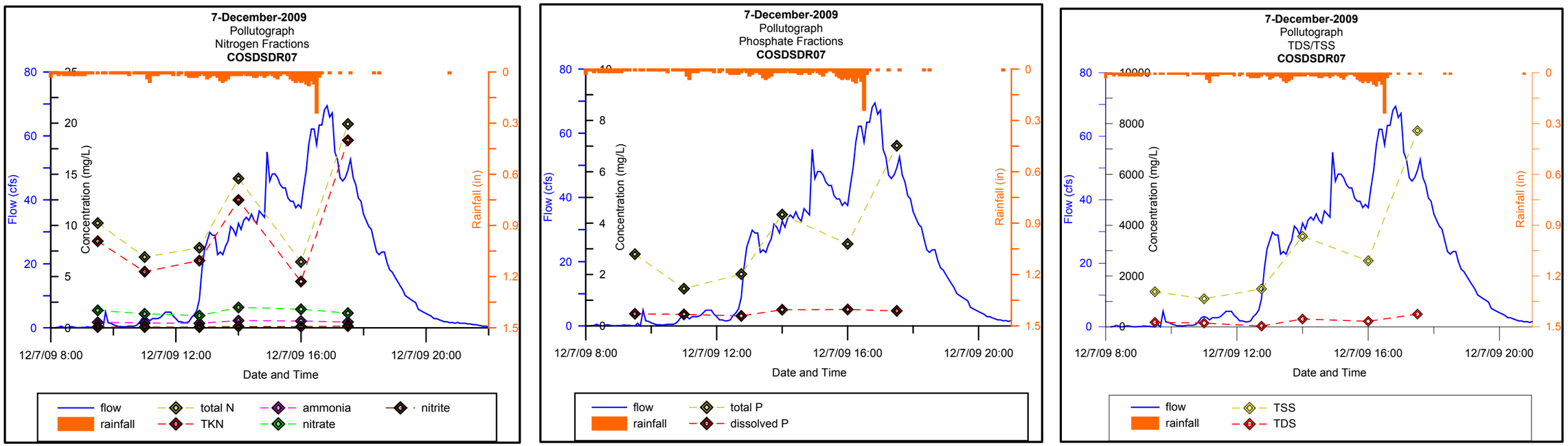

Figure 3-12. Chemical Constituent Pollutographs for Wet Weather Event 2 at COSDSDR07.

3.2.2.2 Wet Weather Event 2 Microbiology Results

Bacterial concentrations for the second monitored storm event are listed in Table 3-13 and presented graphically in Figure 3-13 through Figure 3-15. In all samples collected, concentrations of fecal coliforms, enterococci, and *E. coli* exceeded their respective water quality benchmarks. All samples analyzed were negative for both general and human-specific *Bacteroides* (Figure 3-13, inset top right) indicating that there was no recent human fecal contamination in the river during the monitored storm event at any of the three sites.

Date and Time	General Bacteroides	Human Bacteroides
12/7/2009 9:30	-	-
12/7/2009 11:00	-	-
12/7/2009 12:45	-	-
12/7/2009 14:00	-	-
12/7/2009 16:00	-	-
12/7/2009 17:30	-	-

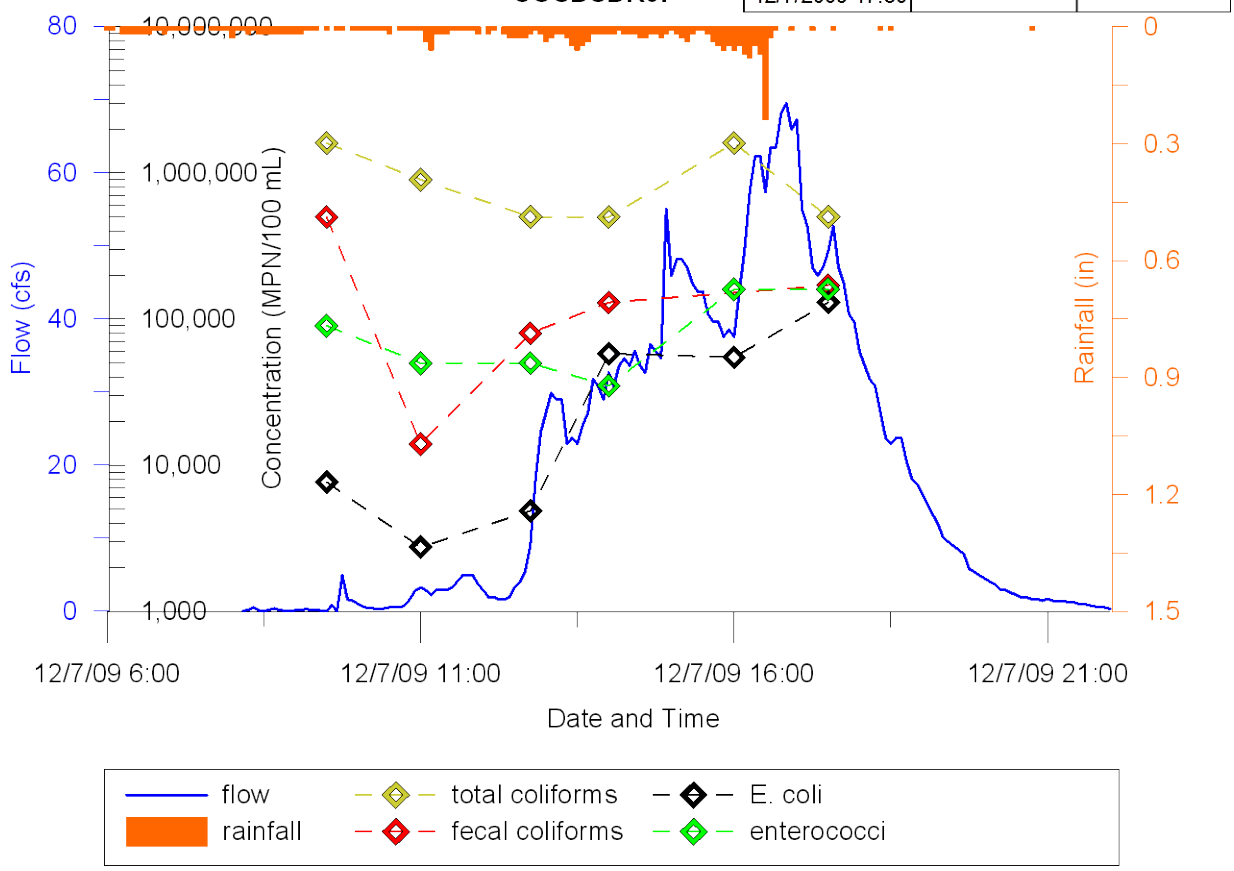

Figure 3-13. Wet Weather Bacteria Pollutograph for COSDSDR07 during December 7, 2009 Storm Event

Date and Time	General Bacteroides	Human Bacteroides
12/7/2009 7:35	+	-
12/7/2009 9:00	+	-
12/7/2009 10:30	-	-
12/7/2009 13:30	-	-
12/7/2009 15:00	-	-
12/7/2009 16:45	-	-
12/7/2009 18:15	-	-
12/7/2009 19:45	-	-

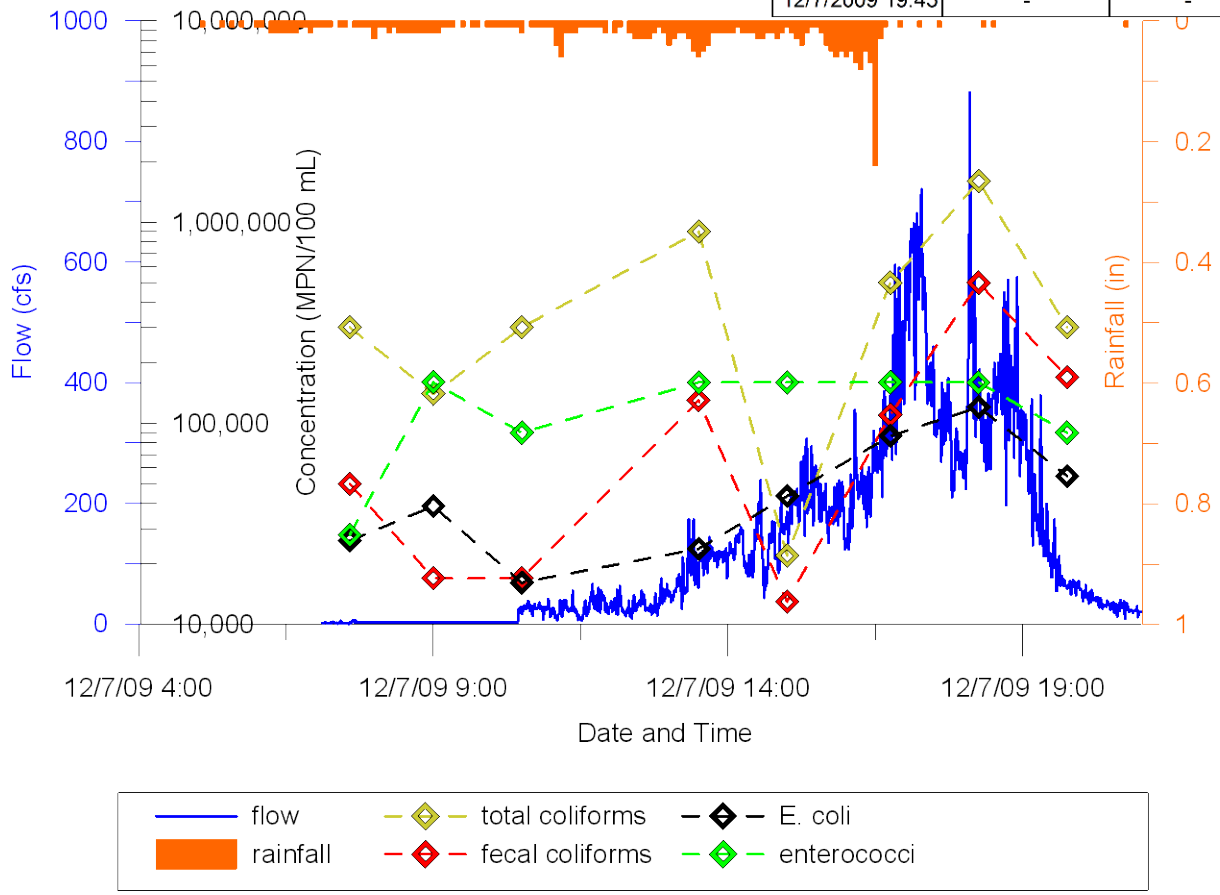

Figure 3-14. Wet Weather Bacteria Pollutograph for COSDSDR08 during December 7, 2009 Storm Event

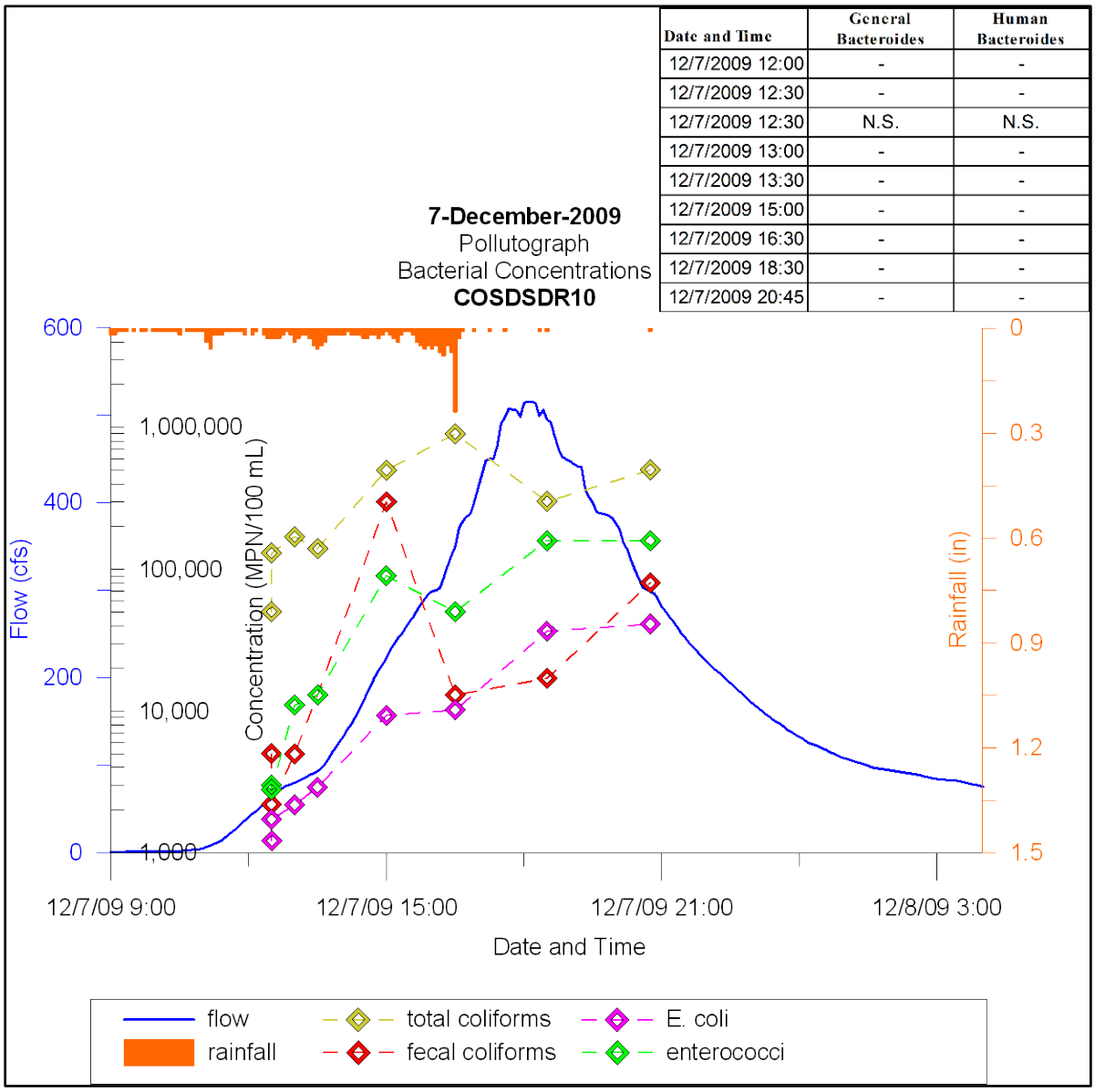

Date and Time	General Bacteroides	Human Bacteroides
12/7/2009 12:00	-	-
12/7/2009 12:30	-	-
12/7/2009 12:30	N.S.	N.S.
12/7/2009 13:00	-	-
12/7/2009 13:30	-	-
12/7/2009 15:00	-	-
12/7/2009 16:30	-	-
12/7/2009 18:30	-	-
12/7/2009 20:45	-	-

N.S. – Not Sampled

Figure 3-15. Wet Weather Bacteria Pollutograph for COSDSDR10 during December 7, 2009 Storm Event

3.2.3 Wet Weather Estimated Instantaneous Loads

The EMCs and loads (in kilograms) were calculated for storm event 2 and are presented in Table 3-14 and Table 3-15. Table 3-16 shows grab sample collection times and discharge volumes (in cubic feet) corresponding to the samples taken at the three locations.

Table 3-14. Event Mean Concentrations for Wet Weather Event 2

Parameter	Units	COSD-SDR07 EMC (12/7/09)	COSD-SDR08 EMC (12/7/09)	COSD-SDR10 EMC (12/7/09)
Ammonia-N	mg/L	0.61	0.37	0.31
Nitrate-N	mg/L	1.70	1.50	1.14
Nitrite-N	mg/L	0.12	0.07	0.08
Organic nitrogen	mg/L	9.48	6.86	1.55
Dissolved orthophosphate as P	mg/L	0.59	0.41	0.32
TDS	mg/L	278.42	105.56	355.65
TKN	mg/L	10.10	7.24	1.86
Total nitrogen	mg/L	11.91	8.80	3.07
Total phosphorus	mg/L	4.13	2.09	0.57
TSS	mg/L	3,758	2,175	280
Total coliforms	MPN/100 mL	880,000	853,000	508,000
Fecal coliforms	MPN/100 mL	88,800	200,000	66,600
E. coli	MPN/100 mL	63,200	69,800	25,200
Enterococci	MPN/100 mL	105,000	158,000	111,000

Table 3-15. Total Storm Loads for Wet Weather Event 2

Parameter	Units	COSD-SDR07 (12/7/09)	COSD-SDR08 (12/7/09)	COSD-SDR10 (12/7/09)
Ammonia-N	kg/storm	16.25	67.34	120.35
Nitrate-N	kg/storm	44.84	269.83	444.40
Nitrite-N	kg/storm	3.09	12.26	30.09
Organic nitrogen	kg/storm	250.79	1233.42	606.33
Dissolved orthophosphate as P	kg/storm	15.52	74.19	125.90
TDS	kg/storm	7,363	18,977	139,076
TKN	kg/storm	267.04	1,300.76	726.68
Total nitrogen	kg/storm	314.97	1,582.86	1,201.16
Total phosphorus	kg/storm	109.23	375.34	221.71
TSS	kg/storm	99,376	391,025	109,324
Total coliforms	MPN/storm	2.33E+14	1.58E+15	1.98E+15
Fecal coliforms	MPN/storm	2.35E+13	3.69E+14	2.61E+14
E. coli	MPN/storm	1.67E+13	1.53E+14	9.85E+13
Enterococci	MPN/storm	2.76E+13	3.90E+14	4.32E+14

Table 3-16. Summary of Sample Volumes for Wet Weather Event 2

Station	Date and Time	Vol/Sample (cf)
COSD-SDR07-1	12/07/2009 09:30	6,523
COSD-SDR07-2	12/07/2009 11:00	21,695
COSD-SDR07-3	12/07/2009 12:45	121,027
COSD-SDR07-4	12/07/2009 14:00	285,104
COSD-SDR07-5	12/07/2009 16:00	307,815
COSD-SDR07-6	12/07/2009 17:30	191,761
Total Volume Sampled		933,925

Station	Date and Time	Vol/Sample (cf)
COSD-SDR08-1	12/07/2009 07:35	13,948
COSD-SDR08-2	12/07/2009 09:00	426,613
COSD-SDR08-4	12/07/2009 13:30	2,080,481
COSD-SDR08-6	12/07/2009 16:45	2,263,804
COSD-SDR08-7	12/07/2009 18:15	1,443,949
COSD-SDR08-8	12/07/2009 19:45	119,820
Total Volume Sampled		6,348,615

Station	Date and Time	Vol/Sample (cf)
COSD-SDR10-1	12/07/2009 12:00	177,895
COSD-SDR10-2	12/07/2009 12:30	1,134,167
COSD-SDR10-5	12/07/2009 15:00	1,539,878
COSD-SDR10-6	12/07/2009 16:30	3,345,328
COSD-SDR10-7	12/07/2009 18:30	3,173,436
COSD-SDR10-8	12/07/2009 20:45	4,439,141
Total Volume Sampled		13,809,845

3.2.3.1 Field Measurement Results for Wet Weather Event 2

Field measurements of temperature, specific conductance (conductivity), turbidity, pH and dissolved oxygen (DO) collected continuously in situ during wet weather event 2 are shown in Figure 3-16 and Figure 3-17. No data were recorded at COSDSDR08 due to a data sonde failure.

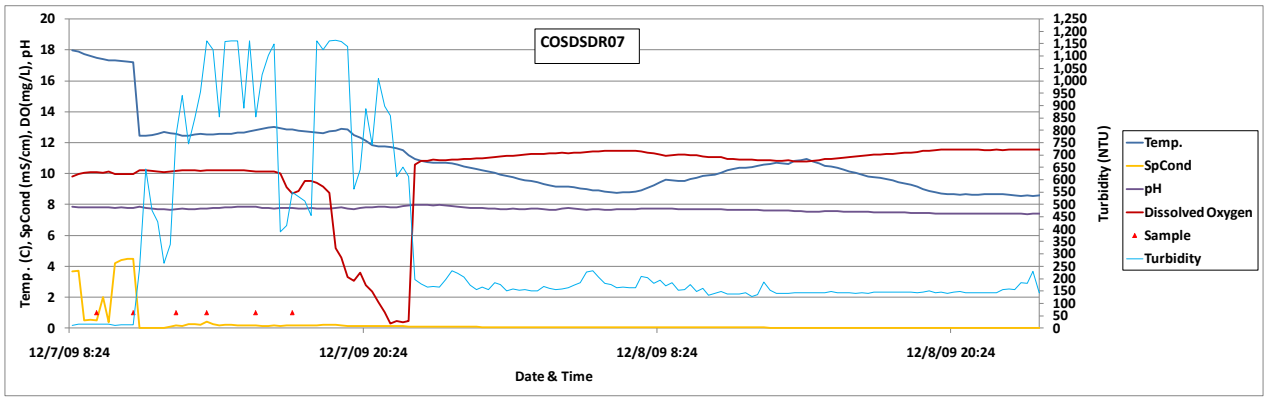

Figure 3-16. Field Measurements of Temperature, Conductivity, Turbidity, pH and DO at COSDSDR07 during Wet Weather Sampling Event 2 – December 7–9, 2009

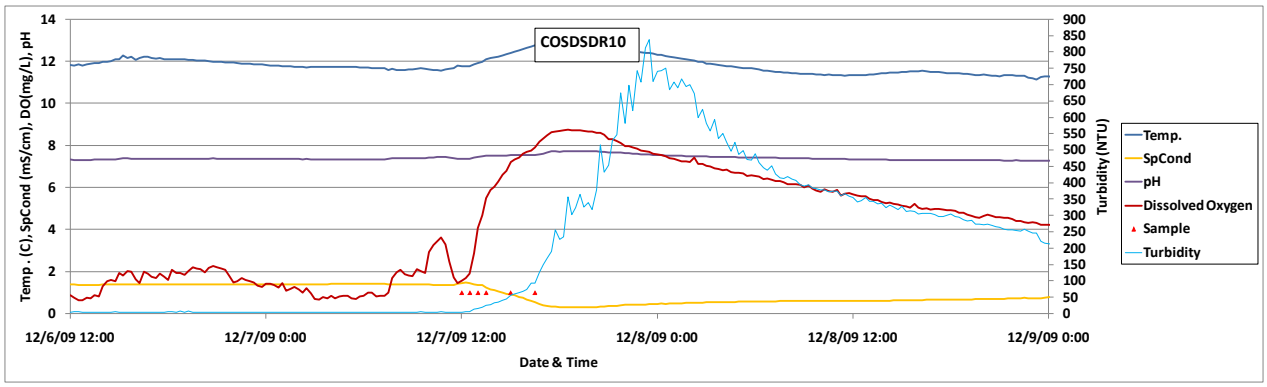

Figure 3-17. Field Measurements of Temperature, Conductivity, Turbidity, pH and DO at COSDSDR10 during Wet Weather Sampling Event 2 – December 6–9, 2009

Table 3-17. Average Temperature, Conductivity, Turbidity, pH and DO for Wet Weather Sampling Event 2 – December 7, 2009

Analyte	COSDSDR07 (12/07/2009–12/09/2009)	COSDSDR08 (12/06/2009–12/09/2009)	COSDSDR10 (12/06/2009–12/09/2009)
Temperature (˚C)	10.61	Sonde failure No data	11.77
Conductivity (mS/cm)	0.21		0.95
Turbidity (NTU)	307.21		199.85
pH (pH units)	7.61		7.39
DO (mg/L)	10.37		4.02

4.0 FLUX COMPARISONS

Nutrient and bacteria loads per acre (flux) were calculated for each sampling location and event. The results are presented in Figure 4-1 through Figure 4-3. Total nitrogen and total phosphorus flux values are compared among sites and events in Figure 4-4. Bacteria flux results are presented graphically in Figure 4-5.

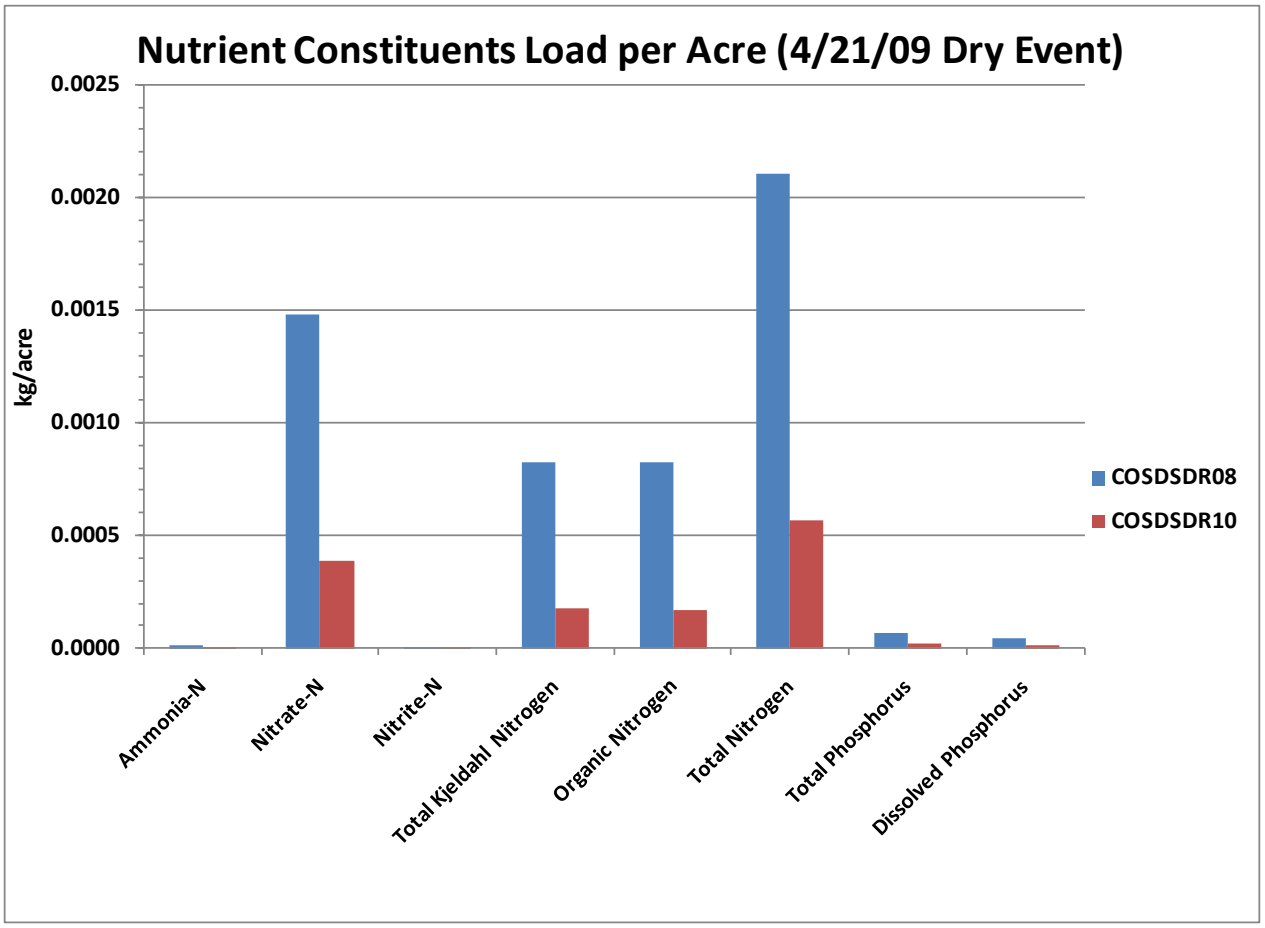

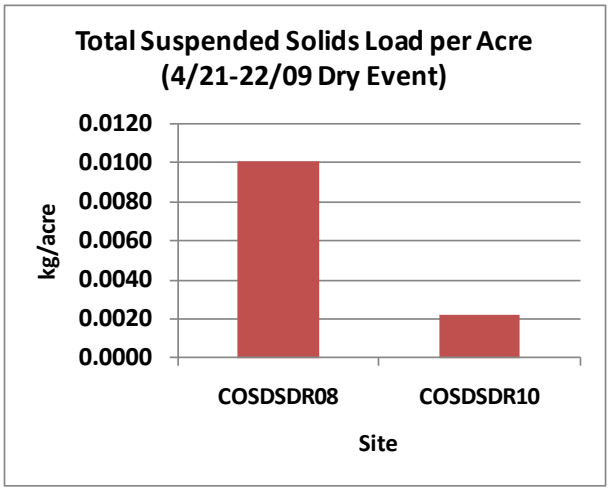

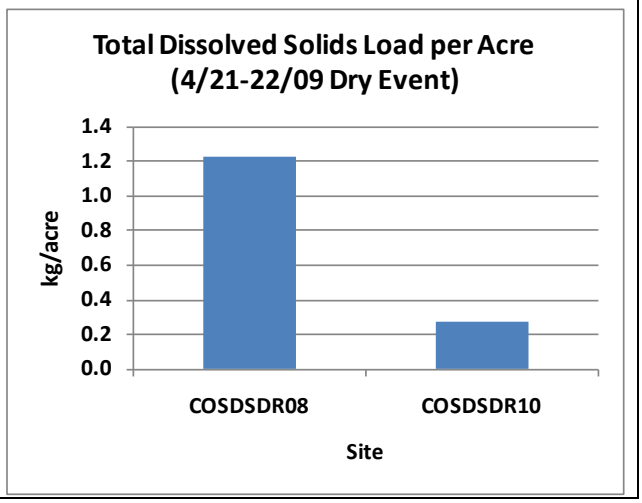

Figure 4-1. Flux for Chemical Constituents during the Dry Weather Event

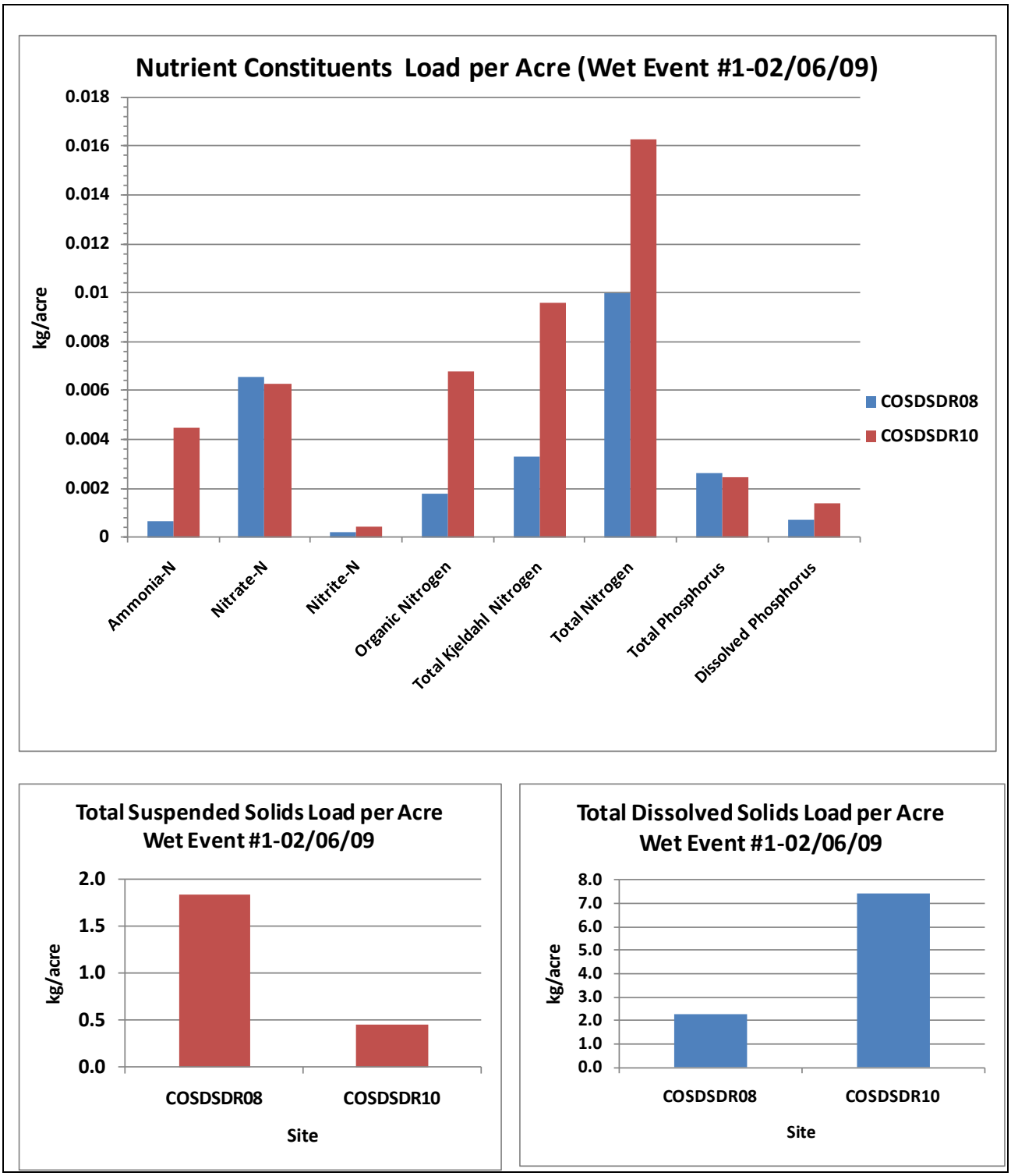

Figure 4-2. Flux for Chemical Constituents during Wet Weather Event 1

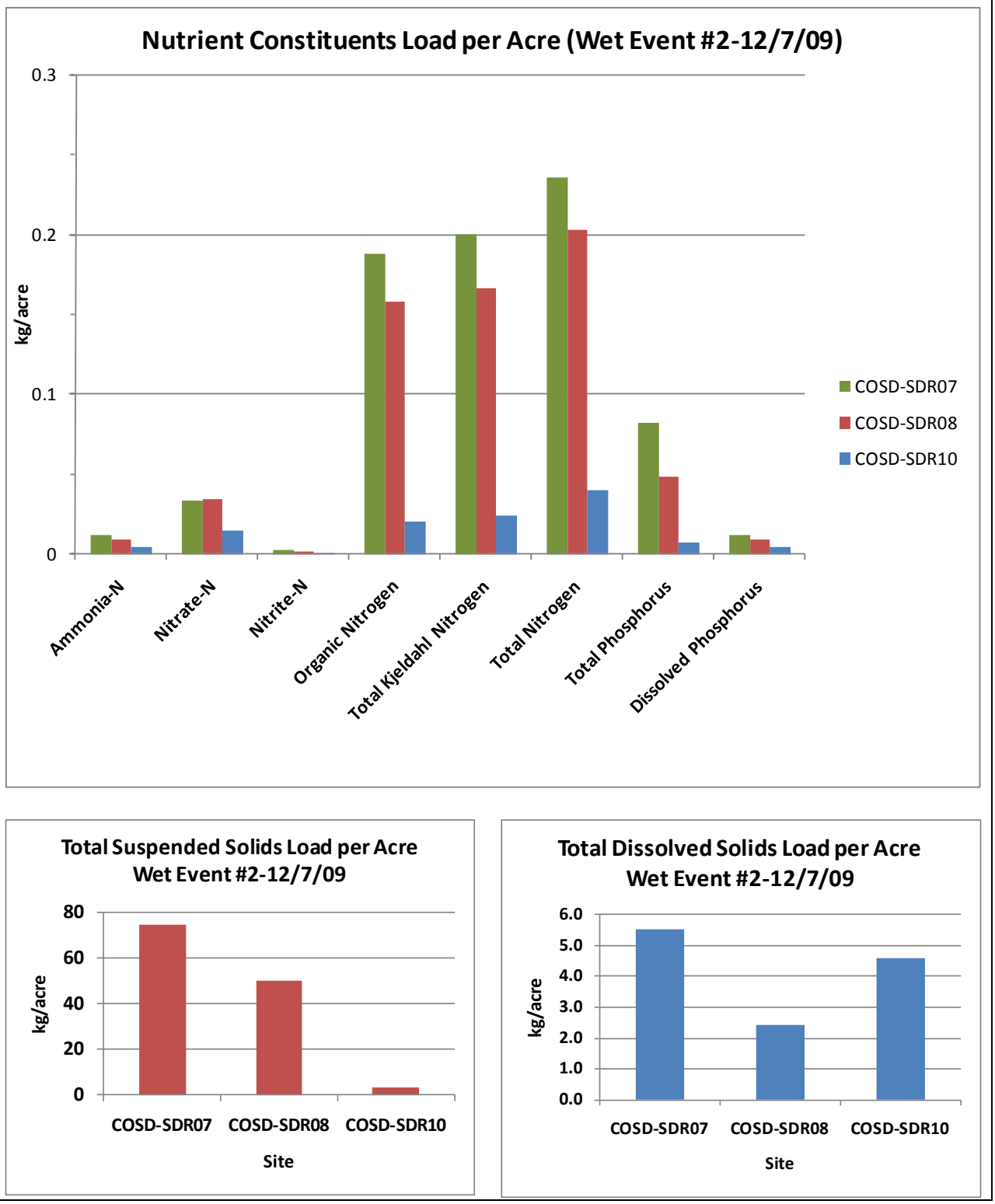

Figure 4-3. Flux for Chemical Constituents during Wet Weather Event 2

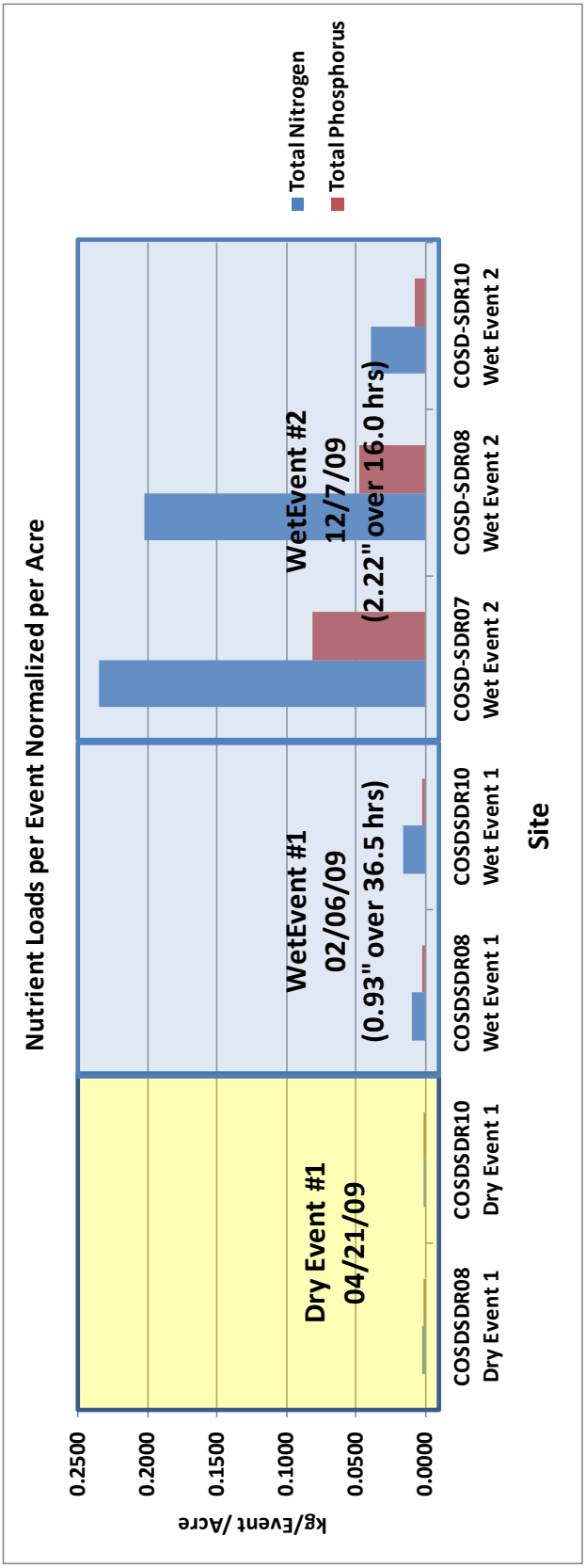

Figure 4-4. Flux by Site and Event for Total Nitrogen and Total Phosphorus

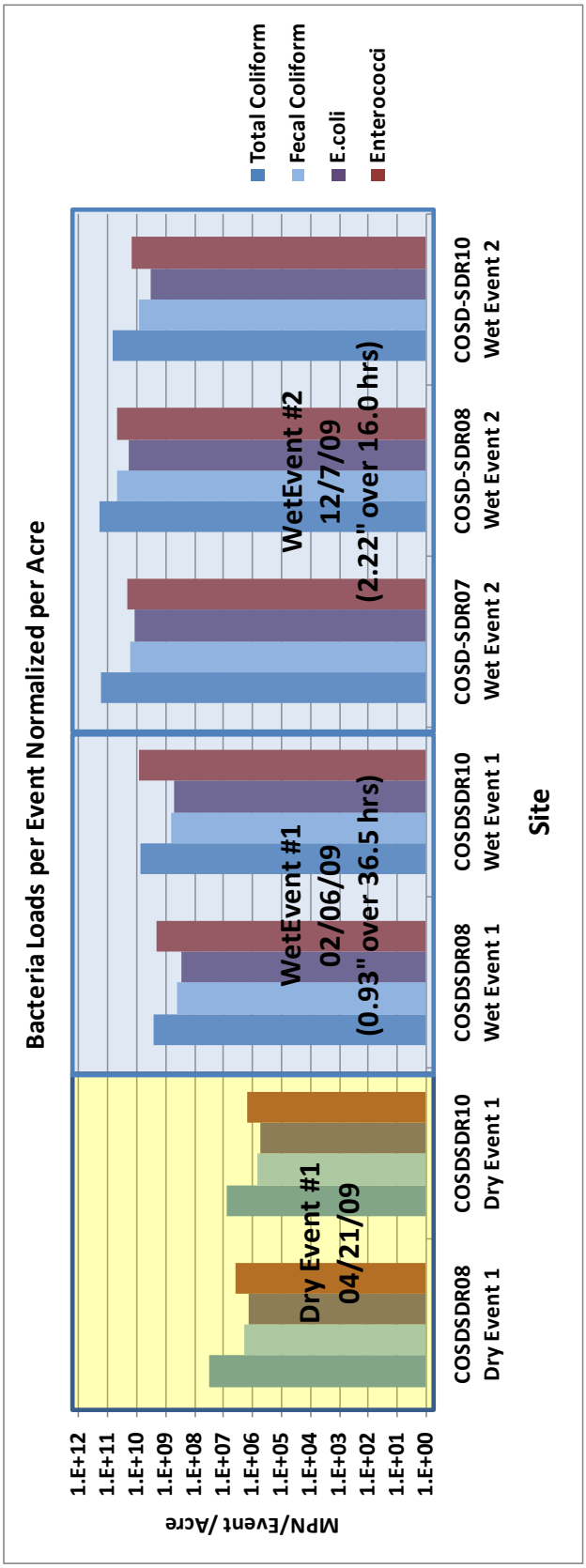

Figure 4-5. Flux for Bacteria Constituents

5.0 CONCLUSIONS

The current study provided needed baseline water quality data for the portions of the lower San Diego River watershed located within the County of San Diego jurisdiction. Three sampling locations were monitored, each exhibiting unique drainage area characteristics:

- COSDSDR10 was generally ponded with a wide a flood plain and relatively low flow velocities, even during storm events.
- COSDSRD08 had a narrow channel with steep sides that was influenced by continuous dry weather flows and relatively high flow velocities during storm events.
- COSDSDR07 had flow only during storm events; its channel was narrow and composed of very coarse sand.

Study results can be summarized as follows:

- Forester Creek at Greenfield Drive (COSDSDR07) exhibited a higher sediment load than the two other locations monitored as it was likely influenced by the erosive sediments within the channel (Figure 2-3).
- Total nitrogen and total phosphorus concentrations generally exceeded Basin Plan water quality objectives (WQOs) of 1 mg/L and 0.1 mg/L respectively at all sampling locations in storm water flows. During non storm conditions, total nitrogen WQO was exceeded at both locations sampled and total phosphorus WQO was exceeded at one of the two.
- Total phosphorus and TSS concentrations increased with increased flows from storm water runoff at all locations monitored. The tendency of phosphorus to bind to sediment particles may explain these correlated increases in the concentrations of TSS and total phosphorus.
- The 24-hour dry weather loads were very similar at both sampling locations (COSDSDR08 and COSDSDR10) for all chemical and microbiological constituents monitored.
- Wet weather loads were orders of magnitude higher at COSDSDR10 than at COSDSDR08 during the February storm for all chemical constituents except TSS; bacterial loads were also higher at COSDSDR10. During the December storm, organic nitrogen, TKN, total nitrogen, total phosphorus and *E. coli* loads were higher at CPSDSDR08. Notably, TSS loads were three times higher at CPSDSDR08 for the December storm while they were only slightly higher at that location during the much less intense February storm. As phosphorus, organic nitrogen, and bacteria may be bound to sediment, this would likely provide some rationale for this difference.
- Total nitrogen and total phosphorus flux[i] increased with rainfall amount and intensity.
- Non storm dissolved oxygen concentrations did not indicate low dissolved oxygen at either COSDSDR08 or COSDSDR10.
- TDS concentrations exceeded the 1000 mg/L Basin Plan WQO during non-storm conditions at both locations monitored; during storms, TDS concentrations decreased and increased upon return to baseflow as supported by continuous conductivity results.
- Bacteria concentrations generally exceeded WQOs but *Bacteroides* testing results were not indicative of recent human fecal sources.

- Although bacterial loads were higher during wet weather than in non-storm flows, bacteria flux (loads per acre) values during storms and non-storm conditions did not differ significantly among the monitored drainage areas.

6.0 REFERENCES

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[i] Flux was calculated in kilograms per acre per storm for wet weather events and in kilograms per acre per 24-hr period for the non-storm flow event. Therefore, flux is not reported per unit time as the lengths of the two storms varied (length of the first storm was approximately 50 hr while it was only about 10 hr for the second and the corresponding flows were monitored for different time periods depending on sampling location) and were not equal to the length of the dry weather event.

SAN DIEGO RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

San Diego River Watershed
San Diego County, California

Prepared By:

City of El Cajon, Lead Copermittee
City of La Mesa
City of San Diego
City of Santee
County of San Diego

With Consultant Support From:

TRC
San Diego, California

January 2012

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EXECUTIVE SUMMARY

In accordance with the requirements of the 2007 Municipal Permit, this Watershed Urban Runoff Management Program (WURMP) Annual Report describes the activities performed by the San Diego River Watershed Copermittees in fiscal year (FY) 2010-11. The San Diego River Watershed Source Identification Study was completed in the previous FY, but continues to guide the selection, planning and implementation of watershed activities by the San Diego River Water Copermittees. The Copermittees' combined efforts have resulted in the following measurable load reductions for the San Diego River Watershed:

- Prevention of over 119,000 pounds of pet waste from entering the watershed.
- Removal of over 194,000 pounds and 1,100 cubic yards of trash/debris from the watershed.

These and other watershed activities that contribute to improved water quality for the watershed are described in more detail in this Annual Report.

This Annual Report also reviews the available water quality and pollutant source information to assess whether any changes should be made to the WURMP. Based on a review of the available data from the ambient, wet and dry weather monitoring, Bight '08 monitoring, the outfall monitoring and coastal storm drain monitoring programs in addition to third party data, the San Diego River Watershed Copermittees concluded that the high priority pollutants for the watershed remain the same ones identified in the WURMP. The San Diego River Watershed Copermittees also reviewed the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP, and believe they remain valid priorities for the watershed as indicated by the Source Identification Study.

Based on the results of the Source Identification Study, the San Diego River Copermittees are not making significant revisions to the Strategic Goals established in the WURMP's current 5-year strategic plan. The San Diego River Copermittees anticipate that the continued use of the WURMP Strategic Goals to guide selection of watershed activities will result in increasingly coordinated (as appropriate) and more effective activities. San Diego River Copermittees plan to increase efforts to coordinate activities over the next fiscal year, particularly as they work to implement the Bacteria total maximum daily load (TMDL).

Similar to previous years, the San Diego River Watershed Copermittees have evaluated the 2010-11 watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document. The effectiveness assessment continued to find evidence of

effectiveness in levels 1 through 4, but faced similar difficulties as in the past when trying to assess effectiveness in levels 5 and 6.

Based on these results, the San Diego River Copermittees will continue to develop watershed activities that are consistent with the revised WURMP. The Copermittees believe the adjustments being made in response to the revised WURMP will improve watershed water quality. For example, activities have become more focused on sources of bacteria, such as trash enclosures, that were identified as significant in the watershed's recent Source Identification Study. The primary focus of watershed activities in the next year will be targeted to support Copermittee compliance with the Bacteria TMDL. In addition, the regional Copermittees are moving towards an adaptive management process in the watersheds as articulated in the Report of Waste Discharge (ROWD) and are looking to integrate the various regulatory programs, e.g. municipal permit and TMDLs, into a single program for efficiency.

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CITY MANAGER

January 31, 2012

San Diego River WURMP
2010-2011 WURMP Annual Report

CERTIFICATION

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Rob Turner 1/17/12

Signature Date

Rob Turner, City Manager (Acting) (619) 441-1780

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STATEMENT OF CERTIFICATION

San Diego River Watershed Urban Runoff Management Program (WURMP) FY 2009-10 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to this FY 2009-10 San Diego River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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SARAH E. AGHASSI
Deputy Chief Administrative Officer

1/21/11
Date

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Deputy Director
Transportation & Storm Water Department
City of San Diego

1/13/12
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Signature | Date 1/19/12

Gregory P. Humora, Director of Public Works/City Engineer | 619.667.1146
Printed Name, Title | Phone Number

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January 2012

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2010-2011 WURMP Annual Report

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Pedro Orso Delgado 1/24/2012

Signature Date

Pedro Orso Delgado, Deputy City Manager 619 250-4100 (x167)

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1.0 INTRODUCTION

The National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit for San Diego Copermittees (Order No. R9-2007-0001, NPDES No. CAS 0108758, hereafter referred to as "Municipal Permit") requires that the Copermittees within the San Diego River Watershed collaborate in the development of a watershed-based program that addresses surface water quality and storm water pollution prevention (California Regional Water Quality Control Board [CRWQCB], 2007). In accordance with these requirements, the San Diego River Watershed Copermittees developed and submitted a revised Watershed Urban Runoff Management Plan (WURMP) in March 2008 (City of El Cajon et al., 2008). This report provides an annual reporting of Copermittee progress in implementing the revised WURMP and meeting other Municipal Permit watershed-level requirements for fiscal year (FY) 2010-11.

1.1 COPERMITTEE COLLABORATION

The administration of the San Diego River Watershed Activities is handled both jurisdictionally and collaboratively. The jurisdictions act collaboratively to review and understand the water quality monitoring data and define the water quality issues and priority water quality pollutants. The Copermittees use this information to develop and implement jurisdictional short- and long-term activities that address the priority pollutants and sources. The Copermittees also work together as much as possible to more effectively use limited resources and achieve greater results by coordinating their activities across jurisdictional boundaries when reasonably possible. The Copermittees have developed close working relationships on watershed issues that have a direct impact across jurisdictional boundaries. For example, staff in Santee and El Cajon has worked extensively on the migration of trash in the San Diego River from El Cajon to Santee and the identification and removal of bacteria sources in Forester Creek.

Between July 2010 and June 2011, the San Diego River Watershed Copermittees formally met eleven times to develop and implement the San Diego River WURMP in accordance with the Municipal Permit. During the reporting period, all Copermittees took an active role in the implementation of the WURMP and watershed activities. In addition, the workgroup used email and phone calls to facilitate collaboration on the development of watershed activities and the Annual Report. The following table presents a summary of the meetings held by the San Diego River WURMP workgroup during the reporting period, including an outline of the principle agenda items.

Summary of Watershed Workgroup Meetings

Meeting Date/Location	Topics Covered
07/8/10 – City of Santee	Bacteria TMDL 303d Listings IRWM Project Submittal Quality of Life Cost Sharing Agreement Watershed Implementation Activities
08/12/10 – City of Santee	Watershed Implementation Activities IRWM Project Submittal Quality of Life Bacteria TMDL Cost Sharing Agreement
9/9/10 – City of Santee	Watershed Activity Planning WURMP Annual Report Bacteria TMDL
10/22/10 – City of San Diego	Reservoir System – City of San Diego Water Dept. San Diego River Monitoring Results – Weston Bacteria TMDL Quality of Life WURMP Annual Report Status of Cost Share Agreement
11/16/09 – City of Santee	Cost Sharing Agreement Regional Watershed Activities Database Watershed Activity Planning
12/9/10 – County of San Diego	Watershed Activity Planning WURMP Annual Report Bacteria TMDL
1/13/11 – City of Santee	WURMP Annual Report Bacteria TMDL
2/10/11 – City of Santee	Cost Sharing Agreement WURMP Leads Meeting Update Watershed Activity Planning – Industrial Commercial BMPs and Activities Bacteria TMDL
3/17/11 – City of San Diego	Bacteria TMDL Regional Monitoring Program - ROWD San Diego River Watershed Forum Watershed Activity Planning – Outreach Opportunities Coordinate Participation in RiverFest Event
5/5/11 – County of San Diego	Regional Monitoring Program – TWAS locations Coordinate Participation in RiverFest Event Bacteria TMDL Cost Share Agreement for next year
6/9/11 – City of Santee	Bacteria TMDL Cost Share Agreement for next year Watershed Activity Planning

The San Diego River Watershed Copermittees will continue to meet on a regular basis to plan and facilitate implementation of the San Diego River WURMP.

2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section is intended to provide an updated assessment and analysis of the watershed's water quality and pollutant sources. A comprehensive summary and analysis of the monitoring conducted during FY 2010-11 is documented in Section 9 of the *San Diego County Copermittees 2010-2011 Urban Runoff Monitoring Report*, January 2012, prepared by Weston Solutions (Weston, 2012) and selected portions of the document are repeated in Section 2.1 below. The San Diego River Copermittees reviewed the results of the monitoring program and then reviewed its previous water quality and pollutant source assessments for the watershed. Updates to these assessments based on the new information available are provided in Sections 2.2 and 2.3 below.

2.1 SUMMARY OF REGIONAL MONITORING RESULTS

2.1.1 Conclusions of Monitoring Program

The most recent information answering core monitoring questions 1 and 2 is presented in the Long Term Effectiveness Assessment Water Quality Report (SDCRC, 2011b). Responses to core monitoring questions 3, 4, and 5 are the focus of the Regional Monitoring Program's annual report for the San Diego River watershed management area (WMA) due to the rotational nature of the program. Conclusions based on the results of annual monitoring in the watershed to date are as follows:

> **3. What is the relative urban runoff contribution to the receiving water problem(s)?**

Core management question 3 is partially answered through the municipal separate storm sewer system (MS4) Outfall Monitoring Program. During ambient conditions, urban runoff high-priority constituents for the drainage areas above the mass loading station (MLS) and three temporary watershed assessment station (TWAS) locations include bacteria, nutrients, and total dissolved solids (TDS). These results are consistent with the ambient MS4 outfall high priorities identified in the Long-Term Effectiveness Assessment (LTEA) (SDCRC, 2011b).

As mentioned above, this question is partially answered because NPDES-required receiving water monitoring was not conducted during the 2010-2011 Monitoring Season. In comparing the high-priority constituents identified from the ambient MS4 outfall data with the receiving water results presented in the LTEA, common high-priority constituents include total phosphorus at all sites. The LTEA also considered SMC and third party data in identifying constituent priorities in receiving waters. When these data are considered, common high-priority constituents in both MS4 outfalls and receiving waters under ambient conditions, include bacteria

(*Enterococcus*), nutrients (total nitrogen and total phosphorus), and TDS for all the drainage areas monitored.

The results of the wet weather MS4 outfall monitoring indicate fecal coliform is a high-priority constituent in urban runoff in drainage areas above the MLS and TWAS stations. In comparing these results with the LTEA, fecal coliform is a common high-priority constituent in both receiving water during storm flows and MS4 outfalls.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core management question 4 is partially answered through planned analysis of land use and MS4 outfall monitoring results. This analysis is planned upon completion of the 5 year MS4 outfall random monitoring program. The results of the regional source characterization monitoring focusing on residential land uses are summarized in Section 12 of the Regional Monitoring Report. The Jurisdictional dry weather monitoring (DWM) Program, the coastal storm drain monitoring (CSDM) Program, and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources is provided in each Copermittee's Jurisdictional Urban Runoff Monitoring Program Annual Report.

5. Are conditions in receiving waters getting better or worse?

Core management question 5 is addressed using the trend results evaluated during the 2009-2010 Annual Monitoring Report (SDCRC, 2011a). Trends are conducted on historical data collected at the MLS during wet weather events. Trend results do not typically change from year to year, and therefore can be tracked on a less frequent basis in receiving waters. As of 2010, total phosphorus and dissolved copper were significantly decreasing and *Enterococcus* and dissolved organic carbon (DOC) were significantly increasing. *Enterococcus* and DOC do not have water quality benchmarks, and the decreasing constituents total phosphorus and dissolved copper concentrations have been below their respective water quality benchmarks historically.

2.1.2 Monitoring Program Recommendations

The recommendations for this watershed are to continue with the requirements and timeframe as defined in the current Permit and update the monitoring program per the recommendations in the Report of Waste Discharge for the next Permit term.

Specific recommendations for the San Diego River WMA based on the triad assessments listed in the Permit are not developed for this report because receiving water data were not collected due to the rotational cycle of the Permit-required monitoring.

2.2 WATER QUALITY ASSESSMENT BY WATERSHED COPERMITTEES

The Water Quality Assessment provided in the Weston monitoring report and repeated in section 2.1 above is generally consistent with the previous year's assessments reported in the Weston Monitoring Report for FY 2009-10 as well as the baseline watershed evaluation (BWE) presented in the March 2008 WURMP. Based on a review of the current Weston monitoring report and available monitoring data from dry weather monitoring, jurisdictional wet weather monitoring and third party monitoring data, the San Diego River Watershed Copermittees concluded that the high priority pollutants for the watershed should remain the same ones identified in the WURMP until the recent monitoring data can be considered as part of the LTEA process in FY 2010-11. This will allow the Copermittees to analyze the data over time and to have a consistent regional approach for addressing the pollutants identified by recent monitoring.

For the current year, the high priority pollutants for the watershed will continue to be:

- Bacteria Indicators
- Nutrients: Phosphorus
- TDS, including chloride
- Low Dissolved Oxygen (DO)
- Turbidity

2.3 POLLUTANT SOURCE ASSESSMENT BY WATERSHED COPERMITTEES

The Weston monitoring report evaluates pollutant sources in terms of the core management questions 3 and 4. The observed results in the dry weather monitoring and coastal storm drain monitoring programs as reported in the Weston Monitoring Report are generally consistent with previous year's data and appear to indicate that the conclusions in the Baseline Long Term Effectiveness Assessment (BLTEA) and the March 2008 WURMP regarding pollutant sources remain valid (Weston Solutions et al., 2005; City of El Cajon et al., 2008). More specifically, the San Diego River Watershed Copermittees believe the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP and updated in previous WURMP Annual Reports, remain valid priorities for the watershed. In particular, the San Diego River Watershed Copermittees will continue to prioritize their management attention and resources on addressing indicator bacteria through the Total Maximum Daily Load (TMDL) process.

In addition, through four studies performed by the City of San Diego (*City of San Diego, 2010, Tecolote Creek Microbial Source Tracking Summary, Phases I, II, and III; City of San Diego, 2010, San Diego River Source Tracking Investigation – Phase I; and, City of San Diego, 2009, Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek by Weston Solutions Inc.; San Diego County*

Enterococcus Regrowth Study by Southern California Coastal Water Research Project (SCCWRP)), it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[1], was found to provide both a bacteria transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishi et al., 2007; Yamahara et al., 2009).

[1] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

3.0 IMPLEMENTATION OF WATER QUALITY ACTIVITIES

This section summarizes the activities implemented by the San Diego River Watershed Copermittees during the 2010-11 reporting period. The March 2008 comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are based on the priority pollutants and targeted sources identified in the WURMP, and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement.

The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

The schedule for implementing activities was modified in last year's Annual Report based on the results of activities performed to that time and the recently completed Source Identification Study conducted in the watershed. Specifically, the timeframes for implementation of activities related to Strategic Goal 3 were extended an additional year so that the Copermittees could incorporate the results of the study into their activities. The table below outlines the revised timeframe for implementing activities associated with each Strategic Goal as described in the WURMP:

Goal	Strategic Goal	Implementation Schedule by Fiscal Year				
		Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013
1	Dry Weather Flow Reduction	P/I/A	P/I/A	P/I/A	I[1]/A	A
2	Municipal/Park Source Reduction	I	A		P[1]	I[1]
3	Commercial/Industrial Source Reduction	P	I	I	A	
4	Residential Source Reduction		P	P	I	A
5	Bacteria Source Reduction	P/I/A	P/I/A	P/I/A	P/I/A	P/I/A

Notes: I = Implementation; P = Planning; A = Assessment
[1] Activities supporting this Strategic Goal may be eliminated and shifted toward other Strategic Goals if judged appropriate.

Initially, the Strategic Goals and supporting activities were designed to address multiple pollutants while focusing on specific types of land uses (e.g. Goals 2 through 4). As Copermittee understanding of sources increases over time, it is possible that the strategic goals may become more specific. For example, goals may be focused on specific pollutants or groups of pollutants at various land use types (e.g. Strategic Goal 5), or by targeting more specific sources within a land use. It is anticipated that the TMDL compliance process will be the primary mechanism used to address Strategic Goal 5, Bacteria Source Reduction.

3.1 WATERSHED WATER QUALITY ACTIVITIES

The San Diego River Watershed Copermittees implemented numerous water quality activities focused on the San Diego River Watershed priority pollutants of concern during FY 2010-11. These activities are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern. Some of the highlighted activities include:

- River Restoration projects, including land acquisitions,
- Trash removal and river cleanup events,
- Structural best management practice (BMP) projects,
- Removal of homeless encampments and cleanups, and
- Setting-up additional "doggie bag" dispensers.

Although not technically a watershed activity as defined by the permit, the San Diego River Watershed Copermittees spent considerable time and money implementing a collaborative Source Identification Study throughout the watershed in fiscal year 2008-09 with reporting and evaluation extending into fiscal year 2009-10. Led by the City of San Diego, this effort included water quality sampling in multiple jurisdictions and focused on sources of priority pollutants specific to this watershed, especially bacteria. The study results are summarized in Appendix A-4. The study identified over-irrigation, waste management at dumpsters, debris in catch basins and outdoor grease management as particular sources of concern in the watershed, especially at commercial/industrial land uses. For residential land use, waste and landscape management, especially over-irrigation, appear to be significant sources of pollutants, either directly or as a transport mechanism. These results were then used to plan and implement subsequent watershed activities. For example, the City of Santee has implemented a new watershed activity to inspect dumpsters at industrial facilities and is planning a future activity to inspect dumpsters at multi-family residential facilities. Other jurisdictions, including the Cities of La Mesa and San Diego, have also adjusted their programs as well in response to this Study.

3.2 WATERSHED EDUCATION ACTIVITIES

The San Diego River Watershed Copermittees continue to value education activities as a means of reducing pollutants at the source. The watershed education activities conducted in FY 2010-11 are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern. The San Diego River Copermittees worked collaboratively to develop and implement an education program focused on pet waste. This activity included development of a pet waste presentation as well as pre- and post presentation surveys to measure improvements in public understanding.

3.3 PUBLIC PARTICIPATION ACTIVITIES

The San Diego River Watershed Copermittees continue to rely on the Project Clean Water website as a tool to facilitate outreach to the public. In addition, a number of the activities, both education and water quality, are specifically designed to foster public participation. For example, the cleanup events sponsored by the jurisdictions are typically conducted by or augmented by volunteers and are often associated with appreciation events for specific parks or the river itself. This direct public participation is intended to foster a sense of community awareness and responsibility for our waterways. A number of jurisdictions make a point of addressing the volunteers to educate them about watersheds in order to strengthen the link between upland human activities and downstream water quality.

In addition, the San Diego River Watershed Copermittees have been actively participating in the San Diego River Watershed Regional Monitoring Workgroup. This workgroup is led by the CRWQCB and its consultant as a voluntary effort by stakeholders in the watershed to coordinate monitoring efforts in order to generate a better, more integrated understanding of water quality conditions. Participating stakeholders consist of all the major organizations collecting water quality data, including various local and even federal government agencies, private non-profit organizations conducting monitoring, Copermittees and the CRWQCB itself. Coordination efforts are focusing around improving the ability to answer four key management questions with more specific sub-questions intended to drive changes to participants' monitoring programs:

- Is our water safe to drink?
- Is it safe to swim in our waters?
- Is it safe to eat fish and shellfish from our waters?
- Are our aquatic ecosystems healthy?

3.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

This section describes collaborative land use planning efforts within the San Diego River Watershed during FY 2010-11. The San Diego River Watershed Copermittees have identified enhanced cross-jurisdictional communication as a key element in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. Jurisdictional Urban Runoff Management Program (JURMP) annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Cross-Jurisdictional Communication:

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the San Diego River Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the San Diego River Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to ‘catch’ potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

In order to encourage collaborative, watershed-based land use planning, the San Diego River Copermittees will have at least one watershed meeting per year that will include discussion addressing land use planning issues. For FY 2010-11, this collaboration primarily consisted of sharing land use planning activities between Copermittees and discussions regarding how the San Diego Association of Governments (SANDAG) Quality of Life funding strategy can be incorporated into the watershed planning efforts. During this past fiscal year, the Water Quality Working Group (WQWG) developed a regional Needs Assessment and Cost Estimate to help regional stakeholders better understand the needs and associated costs of achieving water quality in the San Diego region. Future work products include project notebooks, refining ROM cost estimates and developing long range watershed-based plans.

It is anticipated that these ongoing discussions will enable San Diego River Copermittees to establish some consistency in how they integrate watershed principles into their plans and to evaluate the potential need for watershed specific land use requirements. Regional stakeholders, such as the building and agricultural industries, and copermittees are encouraged to attend WQWG meetings to discuss funding options and long range planning objectives. The funding strategy currently has a vision through 2016. The results of future meetings, including any follow up meetings, will be reported in the WURMP annual reports.

3.5 UPDATED 5-YEAR STRATEGIC PLAN

The comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are described in the WURMP and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement. Updates to the 5-year strategic plan in the San Diego River Watershed will take the form of changes to the Strategic Goals and associated activities.

3.5.1 New Watershed Activities

New watershed activities are selected and implemented in a manner intended to meet the objectives established in the relevant Strategic Goals for that year, which are based on the priority pollutants and targeted sources identified in the WURMP. The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

3.5.2 Updated 5-Year Strategic Plan

The 5-Year Strategic Plan was updated in last year's Annual Report based on the results of the previously completed Source Identification Study in the watershed. No additional changes are anticipated since the results of the study were generally consistent with the evaluations conducted during preparation of the WURMP in March 2008. The study strongly supported the Strategic Goals previously selected for this watershed and helped to provide more specific sources of pollutants that can be prioritized for watershed activities. Based on the results of the study, the San Diego River Copermittees did not make significant revisions to the Strategic Goals established in the WURMP, but did extend by one year the timeframe for

implementation of activities related to Strategic Goal 3 so that the Copermittees could incorporate the results of the study into their activities.

4.0 EFFECTIVENESS ASSESSMENT

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

One of the most important components of a successful program is the development and implementation of a comprehensive program evaluation. In order to facilitate this assessment of WURMP effectiveness, the March 2008 WURMP translated the results of the Copermittees water quality and pollutant source assessments into more specific Strategic Goals that will facilitate the selection of collaborative and measurable activities. Since the selection of Strategic Goals was based on a comprehensive assessment of water quality and potential pollutant sources in the watershed, measurable progress toward achieving these Strategic Goals is considered to be measurable progress toward the larger goal of positively affecting water quality. The specific activities selected by the San Diego River Copermittees will be developed, implemented and measured for effectiveness against these Strategic Goals.

Even with the use of the Strategic Goals, the San Diego River Watershed Copermittees intend to continue evaluating watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document. The six levels are as follows:

Level 1:	Compliance with activity-based permit requirements
Level 2:	Changes in knowledge / awareness
Level 3:	Behavioral change / BMP implementation
Level 4:	Load reductions
Level 5:	Changes in discharge quality
Level 6:	Changes in receiving water quality

Documentation of Levels 1-3 is fairly straightforward, whereas documentation of Levels 4-6 requires the development and implementation of scientific studies designed specifically to document and track water quality trends in discharges and in the receiving water. Moreover, the detection of changes in discharge quality and, in particular, changes in receiving water quality requires the collection of data over several years to detect and verify changes in water quality. Although the Copermittees have very few data sets that span several years, we are working to collect this information and improve the process. In addition, due to the enormous number of factors affecting water quality in both storm drain discharges and in receiving waters, it is difficult to isolate the effects of a storm water program's efforts. Conclusions from existing data will be conducted when possible, but long-term, consistent improvements in water quality throughout the San Diego River Watershed cannot yet be determined.

Levels 1, 2, and 3 assess implementation of BMPs with prevention of pollution entering the storm drain system as the primary objective. Assessment Levels 4, 5, and 6 focus on reducing pollutants loads and assessing water quality improvement. The two

groups of Assessment Levels have two different objectives, although they are connected by water quality. A connection between the two assessment groups is not possible when pollutant load information has been obtained at only a few mass loading stations, generally found in the lower watershed, near the discharge point to the ocean. Even if jurisdictions take the Effectiveness Assessment through to Level 4 by estimating pollutants prevented from entering the receiving water, it is still difficult to connect this information to downstream receiving water quality for a number of reasons including the alternative sources of both flow (for example, groundwater) and pollutants (for example, aerial deposition) as well as the overlapping influences of multiple Copermittee activities at the jurisdictional, watershed and regional levels. These and other obstacles to assessing effectiveness will be tasked to the Effectiveness Assessment Workgroup as well as the Watershed Copermittees, who will work together to identify solutions to these obstacles.

4.1.1 Level 1 Effectiveness: Compliance with Activity-Based Permit Requirements

The San Diego River Watershed Copermittees have fulfilled several of the requirements of the Municipal Storm Water Permit. The table below outlines Level 1 Compliance with the Municipal Permit by relating San Diego River Watershed Copermittee activities to one of the four objectives and the requirements specified in the Municipal Permit.

Level 1 targeted outcomes

Permit Requirements (E.2)	Activities	Status
(a) Lead Watershed Permittee Identification	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) An accurate map of the watershed	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) Annual assessment of receiving water quality	• Weston 2010-2011 Urban Runoff Monitoring Report	Complete for 2010-2011
(d) Mechanism to facilitate collaborative "watershed based" land use planning	• County General Plan Update	Completed August 2011
	• City of San Diego General Plan Update	Completed (proceeding with GP elements)
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2010-2011
	• San Diego River WURMP Workgroup	Complete for 2010-2011
	• MOU; CEQA; Public Hearings; MSCP – descriptions included in the Common Activities	Complete for 2010-2011
(e) Develop and implement collective watershed strategy	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2010-2011

Permit Requirements (E.2)	Activities	Status
	• Weston 2010-2011 Urban Runoff Monitoring Report	
(f) Identify and implement Watershed Activities	• See Section 3	Complete for 2010-2011
(g) Copermittee collaboration	• See Sections 1 and 3	Complete for 2010-2011
(h) Mechanism for public participation	• Copermittee and Stakeholder Collaboration /Public Participation (meetings, e-mail and web)	Ongoing
	• Direct Interaction	Ongoing
	• Project Clean Water	Ongoing (website is updated as new information warrants)
	• San Diego River Coalition Meetings	Complete for 2010-2011
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2010-2011 - Implementation ongoing
(i) Annual WURMP review	• WURMP Annual Report	Complete for 2010-2011

4.1.2 Level 2 Effectiveness: Changes in Knowledge and Awareness

The following programs implemented by the San Diego River Watershed Copermittees are designed to contribute to an increase in knowledge and/or awareness of program participants.

- Project Clean Water
- Think Blue Public Service Announcements
- Public Outreach & Media
- Pet Waste Outreach
- New Advertising Materials: booklets, posters and brochures
- Partners in Clean Water and Community Events as well as Cleanup Events
- Outreach to the Equestrian Community

Many of the programs listed above address multiple program strategies (i.e., development of a monitoring program coupled with an educational outreach campaign). As such, these programs provided education on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed. However, the San Diego River Copermittees increasingly want to focus their attention on activities that result in tangible load reductions. This may result in fewer activities targeting this level of effectiveness, although a component of the Load Reduction Plan for the Bacteria TMDL will include education BMPs.

4.1.3 Level 3 Effectiveness: Behavioral Change and BMP Implementation

It is likely that changes in behavior occurred through implementation of the programs or activities listed in Section 3 that involve stakeholder participation in activities and decision-making processes, as well as the implementation of BMPs to reduce the impacts of urban runoff. These programs also provided information on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed:

- Targeted Inspections
- Cleanup Events
- Think Blue Public Service Announcements
- Park Appreciation Days
- Intergenerational Games
- Outreach on Pet Waste Management
- Outreach to the Equestrian Community

Although no formal quantification was made during this fiscal year, based on survey results and assessments in prior years, these types of activities lead to changed behavior and, thus, have a positive effect on water quality.

4.1.4 Level 4 Effectiveness: Load Reductions

The implementation of BMPs is ultimately aimed at preventing pollutants from entering the storm drain system, which equates to load reduction. Targeting specific pollutants by implementing BMPs to address pollutant sources is an integral component of measuring Level 4 outcomes. Furthermore, quantifying the volume of pollutants that were prevented from entering the storm drain system or receiving water bodies can provide beneficial data that can be used to address broader water quality issues.

Some activities are more conducive to estimating load reductions than others. For example, street sweeping and storm drain cleaning are easily quantified in terms of loads reduced since material is physically removed from conveyances. However, Copermittees generally do not track most jurisdictional activities on a watershed basis. One of the opportunities for improvement identified in the Copermittees' BLTEA is to reconsider the way certain types of program data are tracked. This may involve becoming more geospatial in the way data is collected and presented. Some activities have been difficult to analyze in terms of load reductions, for example, the effect that education has on reducing pollutant loads. The Copermittees believe the bacteria TMDL comprehensive load reduction plan (CLRP) currently under development will provide a framework for better assessing load reductions from Copermittee activities.

Some of the FY 2010-11 activities with quantifiable load reductions include the following:

- Approximately 83,980 dog waste bags were used, and it is estimated that this equates to the reduction of 21,834 pounds of dog waste collected at County of San Diego park facilities in the San Diego River Watershed.
- Approximately 36,000 dog waste bags were used, and it is estimated that this equates to the reduction of 93,600 pounds of dog waste collected at City of Santee park facilities in the San Diego River Watershed.
- Approximately 14,460 dog waste bags were used, and it is estimated that this equates to the reduction of 3,876 pounds of dog waste collected at City of La Mesa park facilities in the San Diego River Watershed.
- Approximately 40 cubic yards of debris were removed as part of the Homeless encampment removal process.
- Approximately 24,879 pounds of trash, debris and green waste were removed from parks and creeks during various cleanup events in the City of La Mesa.
- Approximately 146,110 pounds of trash and debris were removed in the City of San Diego during various cleanup events, primarily in Mission Valley.
- An estimated 23,100 pounds of trash and debris were removed from various parks and Forester Creek during cleanup events and clean out of the Forester Creek trash barrier in the City of Santee.
- An estimated 1,106 cubic yards of trash, debris and sediment removed from the trash barrier at Forester Creek in the City of El Cajon.

4.1.5 Level 5 and 6 Effectiveness: Changes in Discharge Quality and Receiving Water Quality

Level 5 outcomes represent changes in the quality of discharges from Copermittee-owned storm drain systems into receiving waters. They differ from Level 4 outcomes in that they represent changes in the cumulative loadings from multiple sources rather than individual sites or facilities. No measurements of changes to discharge quality were taken during FY 2010-11. However, due to several years of no exceedances or no dry weather flows, some dry weather monitoring stations in the City of Santee have been eliminated, which suggest some measure of effectiveness within these drainage areas.

Level 6 outcomes describe changes to receiving water quality that result from urban runoff management programs. It can be difficult to distinguish between the beneficial effect of urban runoff management activities and changes in water quality that are due to natural variability or other factors outside the scope of the WURMP. Nonetheless, collection of water quality data is critical to determining the effectiveness of management programs over time. Copermittees throughout the region are working together to collect water quality data and to measure improvement or degradation at the watershed scale. The BLTEA provided the first long-term assessment of changes

to receiving water quality. It also incorporated pollutant-loading potentials for significant sources within the region and established threat-to-water quality (TTWQ) ratings for priority pollutants and sources within each hydrologic sub-watershed identified within the Basin Plan.

Quantifying water quality change requires an analysis of constituents of concern (COCs) in sampled runoff as well as an evaluation of existing information: 303(d) listings, beneficial uses, existing projects and studies, etc. In many cases, sufficient data may not be available from urban runoff monitoring programs to determine whether a water quality problem results in water body impairment. More difficult still is isolating the effect that urban runoff management activities have on observed changes. Stormwater data can vary significantly from storm to storm and it usually takes several years of data to determine whether improvements or degradation are occurring. All of these factors complicate annual water quality assessments. Water quality change is generally assessed on a long-term basis by evaluating trends; more water quality information pertaining to trend analysis is presented in the Weston Monitoring Report.

As a whole, the Copermittees have worked to expand the focus of their assessments on demonstrating the watershed-level benefits of program implementation, and will continue to do so under order R9-2007-0001. Trends in monitoring data from Forester Creek and the San Diego River appear to show positive results from the Forester Creek restoration and other up-gradient BMP implementation. For example, post-restoration data for Forester Creek has shown a 69% decrease in fecal coliform across the restored portion of the creek. In addition, bioassessment in the restored area has been rated above the impairment threshold. However, annual watershed assessments do not attempt to address the relationship of WURMP implementation to changes in water quality; this analysis will be confined to the Long-Term Effectiveness Assessment process. The available evidence supports that the Copermittees' efforts as demonstrated by Level 1, 2, 3, 4, 5 and 6 data had positive effects on water quality and established the effectiveness of their San Diego River watershed program. The process also allowed them to thoroughly evaluate the WURMP and make improvements, modifications, and changes to the program as needed.

4.2 ASSESSMENT OF TMDL BMP IMPLEMENTATION PLAN EFFECTIVENESS

The San Diego River Copermittees are in the process of developing a Load Reduction Plan in compliance with the recently adopted Bacteria TMDL, which applies to portions of the San Diego River and Forester Creek. Bacteria TMDL requirements already are being considered when current activities are planned and implemented. Additional program changes will be considered after development of the Load Reduction Plan has been completed.

5.0 PLANNED WATERSHED IMPLEMENTATION ACTIVITIES

5.1 INITIAL ACTIVITY SELECTION

5.1.1 Applicable Strategic Goals

The following Strategic Goals were established in the WURMP and are the targeted outcomes for activity implementation in FY 2011-12.

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water.

- **Strategic Goal 4 - Source Reduction at Residential Land Uses**: By reducing the mass of priority pollutants discharged to Copermittee storm drain systems and receiving waters from residential land uses, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 5 – Bacteria Source Reduction**: By reducing the mass of bacteria discharged to Copermittee storm drain systems and receiving waters, the San Diego River Copermittees expect to reduce both dry and wet weather loadings of bacteria to receiving waters. The specific land uses and sources targeted by this Strategic Goal will be selected based on the available data from ongoing monitoring programs and the results of implementing previous Strategic Goals. This goal will also support Copermittee implementation of the Bacteria TMDL CLRP.

5.1.2 Potential Target Sources

Selected activities for FY 2011-12 generally will target the following land use categories:

- Single Family Residential
- Multi-Family Residential

Based on the Source Identification Study, the following types of sources represent the top potential targets for exposure reduction and, therefore, load reduction in the residential land use category.

- Over-irrigation

- Waste Management/Dumpsters
- Catch Basin Debris

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for load reduction watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 11 in the WURMP may be used.

- Waste Disposal
- Home and Garden Care Activities
- Home Automobile Associated Activities

5.1.3 Watershed Priority Pollutants at Target Sources

The following combination of watershed priority pollutants/stressors and target sources will generally be the focal point of collaborative watershed activities generated through the WURMP process:

- Bacteria from applicable facilities as well as from facility-specific types of sources: waste management/dumpsters, grease management, catch basin cleanout, animal/pet food and waste management, soil management/erosion control, and portable bathroom facilities (if present).
- Nutrients from general landscaping.
- Total Dissolved Solids from excessive potable water use.
- Low Dissolved Oxygen from sources of nutrients, sediment and organic matter (see above). Additional sources may include the intentional application to soil of organic compounds or the decomposition of vegetative litter.
- Turbidity from sources of sediment, organic matter and nutrients (see above). Additional sources may result from general housekeeping and human litter.

Bacteria is intended to be the primary pollutant addressed by the current watershed activities, but the other priority pollutants will be addressed as appropriate if they are encountered during implementation of the activities.

5.2 INITIAL ACTIVITY DESCRIPTIONS FOR PLANNING PURPOSES

As part of its planning process, the San Diego River Watershed Copermittees consider a number of watershed activities and have several in various stages of planning and implementation. The following Watershed Water Quality Activities are currently being considered for implementation during FY 2011-12, or are in the process of development and implementation. Final selection of the proposed activities will be made based on the results of initial planning and baseline activities, and in accordance with the selection process described in Section 4.1.

Water Quality:

- Perform inspections beyond jurisdictional compliance requirements. These inspections may target facilities based on individual history of compliance, geography or facility type. These inspections may also explore the potential for increased frequency of inspection with a smaller scope of inspection to facilitate reduced levels of exposure and, therefore, reduced pollutant loading.
- Promote the installation of weather-based controllers at residences with irrigation systems, which may include providing or facilitating subsidies/rebates or other means to increase their use. To the extent practicable, facility selection will be prioritized based on irrigation area/water runoff volumes and proximity to receiving waters.
- Promote the installation of drip irrigation for landscaping instead of spray irrigation, which is more prone to leaks.
- Develop other mechanisms for reducing over-irrigation.

For FY 2011-12, the following Watershed Education Activities are currently being considered for implementation. Final selection of the proposed activities will be made in each fiscal year based on the results of initial planning and baseline activities and in accordance with the selection process described previous in Section 4.1.

Education:

- Outreach to Property Managers and Property Owners of multi-family residential facilities regarding waste disposal, landscaping management and over-irrigation.
- Develop and implement other residential education and outreach activities.

5.3 PLANNING AND BASELINE ACTIVITIES

The most significant planning activity conducted during FY 2010-11 has been to incorporate the results of the Source Identification Study (finalized in previous fiscal year) into watershed activities.

- Source Identification Study: This is a critical activity that supports Copermittee decision-making regarding load reduction activity selection and implementation. The Copermittees, in particular the City of San Diego, collectively spent over $200,000 to identify sources of pollutants, specifically bacteria, in the lower San Diego River watershed. The City of San Diego modeled this study after its Tecolote Creek Microbial Source Tracking Study with a similar design and intent, but also included watershed-specific priority pollutants. The study assessed more than 15 San Diego River sites during two dry weather monitoring events. Specific likely sources, including industrial, residential, commercial and transport areas were investigated during dry weather. During wet weather, river monitoring locations were

investigated with the collection of pollutograph samples. In addition, wet weather loads from specific likely sources were investigated. During both dry and wet weather assessments, the presence of fecal indicator bacterial, as well as human-specific indicators, were assessed together with TDS, phosphorus and DO. The study identified irrigation runoff, dumpsters/waste management areas, and catch basins as primary sources of bacteria.

The following planning activities were explored during FY 2010-11 in order to facilitate implementation of Watershed Water Quality and Education Activities in 2011-12:

- The implementation activities conducted during FY 2010-11 were reviewed to develop additional variations on these activities in FY 2011-12, targeting the same sources but experimenting with new techniques, to reduce pollutant exposure and loading in the watershed.
- The Copermittees will review the results of previous residential inspections to identify appropriate inspection targets. The Copermittees may work with the water districts to identify the largest (by volume) residential water users within the watershed and then work with other readily available data sources to develop methods for prioritizing users most likely to generate large volumes of runoff as targets for weather-based controller rebates/installation.

5.4 IMPLEMENTATION ACTIVITIES

For FY 2011-12, the Copermittees will be focusing their watershed activities on improving the results of residential inspections by adjusting inspection programs above and beyond jurisdictional requirements in the permit. These will include property-based inspections by the City of San Diego and targeted inspections by the City of Santee. All the inspection programs will be targeting high priority pollutants and high priority sources as identified in the Source Identification Study, e.g. trash dumpsters.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The San Diego River Watershed Copermittees implemented a number of Water Quality and Education activities designed to improve water quality in FY 2010-11. As described in Section 3 of this Annual Report, the WURMP Workgroup is working diligently and across jurisdictional boundaries to develop and implement watershed activities that address the specific water quality problems of the San Diego River watershed, for example indicator bacteria. In addition, the Copermittees are working to improve the Program's iterative planning, implementation and assessment processes. The planned collaborative efforts to jointly develop and implement the CLRP, for example, will help to raise the effectiveness of the Copermittee programs. The Copermittees will continue to refine and improve the San Diego River WURMP each year. In one example, the Copermittees previously agreed to extend for another year through FY 2010-11 its focus on industrial/commercial land uses with its watershed activities.

In addition, although not technically a watershed activity as defined by the permit, the San Diego River Watershed Copermittees spent considerable time and money in FY 2008-09 implementing a collaborative Source Identification Study throughout the watershed, and in FY 2009-10 assessing the results. Led by the City of San Diego, this successful effort included water quality sampling in multiple jurisdictions and focused on sources of priority pollutants specific to this watershed, especially bacteria. The results of this study serve as the foundation for the selection, planning and implementation of watershed activities throughout the rest of this permit cycle, and has guided the activity development for FY 2010-11 and FY 2011-12.

6.2 RECOMMENDATIONS

Based on these conclusions, the Copermittees present the following recommendations.

Continue using the WURMP Strategic Goals to facilitate coordinated and collaborative planning, implementation (as appropriate) and assessment efforts across jurisdictional boundaries. The San Diego River Watershed Copermittees have committed to continuing to coordinate their activities as much as reasonably possible. The Strategic Goals provide a common focal point and direction for the activity development process. Based on our experience so far, the San Diego River Watershed Copermittees believe coordinating activity development will yield better results. This is especially important now that the Bacteria TMDL is in effect.

Use the results of the Source Identification Study to Guide Future Activity Selection and Implementation. The most important contribution the watershed

programs can make towards protecting Beneficial Uses and improving water quality in the San Diego River Watershed (or any watershed) is to increase understanding of the water quality issues in the watershed (i.e., the sources and magnitude of the issues). This will enable the Copermittees, other entities, and interested members of the public (their watershed partners) to make more informed decisions and take effective action to reduce pollutant loads. This is particularly true for bacteria, which has complicated fate, transport and re-growth mechanisms that are not well understood.

The Copermittees are planning to use the results of the Source Identification Study in FY 2011-12 to address specific residential sources of pollutants identified as highest priority, including dumpsters/waste management, catch basin maintenance and over-irrigation. The Copermittees believe this study will improve their ability to select and implement watershed activities that will result in measurable load reductions.

Modify activities as needed to support implementation of the CLRP for bacteria. The main focus of Copermittees activities in the watershed for the next few years will be focused on achieving load reductions in order to achieve compliance with the Bacteria TMDL. Although the Copermittees have selected and designed their watershed activities with the Bacteria TMDL in mind already, watershed activities will need to be adjusted as the CLRP is developed and then implemented.

7.0 REFERENCES

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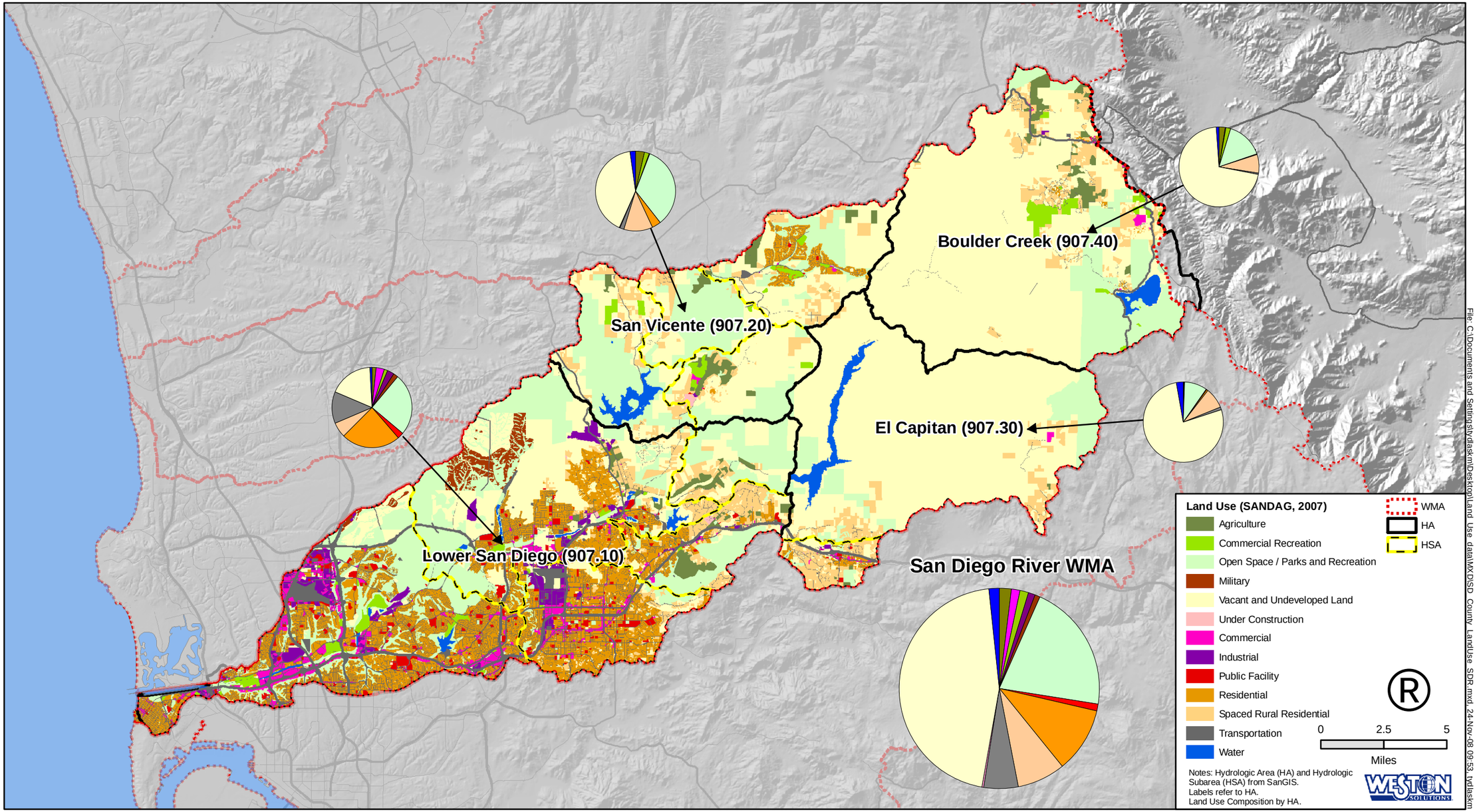

Figure 1: Land Use Map

APPENDIX A

PROGRAM ACTIVITY SUMMARY DESCRIPTIONS FOR FISCAL YEAR 2010-11

Watershed Activities Matrix for 2010-11 Activities

	ACTIVITY NAME	Collaborative Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2010-11							Activity Status for Fiscal Year 2010-11*	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
Special Studies / Source ID / Pollution Reduction	**Activities to Address High Priority TTWQ Sources:**																		
	Additional Dry Weather Monitoring (City of La Mesa)		X		X	X	X	X	X	X	X	X			X			O	Appendix A-1
	Adopt a Park/Adopt A Block (City of La Mesa)		X		X	X		X		X	X			X		X	X	O	Appendix A-2
	Bacteria Source Investigation Tracking Study (City of San Diego)		X		X										X			O	Appendix A-4
	Canine Corners Harry Griffith Park (City of La Mesa)		X		X	X		X						X		X	X	O	Appendix A-5
	Coastal Cleanup Day Sponsorship - University Channel & Alvarado Channel (City of La Mesa)		X		X			X	X		X			X		X	X	O	Appendix A-7
	Forrester Creek Homeless Encampment Removal Project (City of El Cajon)		X		X				X					X	X		X	O	Appendix A-8
	I Love a Clean San Diego Creek to Bay Cleanup Event Sponsorship (City of La Mesa, City of San Diego and County of San Diego)	X			X			X	X		X			X		X	X	O	Appendix A-9A, A-9B, and A-9C
	Increase in Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas (City of Santee)		X		X							X			X			O	Appendix A-10
	Park Appreciation Days (City of La Mesa)		X		X	X		X	X	X	X			X		X	X	O	Appendix A-11
	Prevention of the Release of Pet Fecal Matter in Public Parks (County of San Diego and City of Santee)		X		X			X						X		X	X	O	Appendix A-13A and A-13B
	San Diego River Park Foundation Cleanup Event Sponsorship (City of San Diego)		X		X				X		X			X		X	X	O	Appendix A-14
	San Diego River Watershed Property Based Inspections (City of San Diego)		X		X				X	X	X		X			X		O	Appendix A-15
	San Diego Riverbed Homeless Encampment Removal Project (City of Santee)		X		X				X				X				X	O	Appendix A-16
	Trash Removal Activities in Santee (City of Santee)		X		X				X					X		X	X	O	Appendix A-17
	Qualcomm Stadium Trash BMP Installation (City of San Diego)		X		X			X	X	X	X							O	Appendix A-52
	Robb Field Stormwater Reuse (City of San Diego)		X		X						X							O	Appendix A-53
	Stormwater Quality Master Plans for Special Drainage Fee Areas (County of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-55
	Commercial BMP Self Certification Pilot Project (City of La Mesa)		X		X	X	X	X	X	X	X				X	X	X	O	Appendix A-63
	Pet Waste Bag Dispenser (City of San Diego)		X		X						X							O	Appendix A-69
	Industrial Facility Trash Enclosure Assessment (City of Santee)		X		X				X		X		X	X		X		N	Appendix A-73
	Multi-Family Residential Trash Enclosure Assessment (City of Santee)		X		X				X		X							N	Appendix A-74
	Joint Investigation and Enforcement Activities at Carlton Hills Golf Course (Cities of Santee and San Diego)	X			X		X				X		X		X	X		N	Appendix A-75
	Multi-Family Residential Trash Area Pilot Program (City of La Mesa)		X		X				X		X		X			X		N	Appendix A-76
	Qualcomm Stadium Drop Off Community Cleanup and Recycling Event Sponsorship (City of San Diego)		X						X		X					X	X	N	Appendix A-77
	Rainwater Harvesting Rebate Pilot Program (City of San Diego)		X		X	X	X	X	X	X	X							N	Appendix A-78
	Activities to Address Watershed High Priority Pollutants:																		
	Cabrillo Heights Park Rain Garden Infiltration Project - LID pilot (City of San Diego)		X		X						X							O	Appendix A-19
	Coastal Cleanup Day Sponsorship (City of San Diego)		X		X				X					X		X	X	O	Appendix A-20
	Land Acquisitions MSCP (County of San Diego)		X		X	X	X	X	X	X	X			X			X	O	Appendix A-23
	Maintenance/Inspections of Forrester Creek Trash Barriers (Cities of El Cajon and Santee)		X		X				X				X	X			X	O	Appendix A-24A and A-24B
	Park Ridge Blvd Bacteria Treatment Project (City of San Diego)		X		X						X							O	Appendix A-26
	Woodside Avenue Detention Basin (County of San Diego)		X			X	X			X		X	X	X			X	O	Appendix A-32
	Strategic Plan Implementation (City of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-48
	Additional Receiving Water Monitoring (City of Santee)		X		X	X	X	X		X	X	X						O	Appendix A-49
	San Diego River Park Foundation Cleanup Event (County of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-58
	Allied Gardens Green Lot (City of San Diego)		X		X	X	X	X		X	X							O	Appendix A-65

Watershed Activities Matrix for 2010-11 Activities

	ACTIVITY NAME	Collaborative Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2010-11							Activity Status for Fiscal Year 2010-11*	Activity Description Location**
					Bacteria	TDS	Total Phosphorous	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
	Complex Street Green Mall (City of San Diego)		X		X	X	X	X		X	X							O	Appendix A-66
	Famosa Slough Erosion Sediment Control (City of San Diego)		X							X	X							O	Appendix A-67
	Residential Rain Barrell Subsidies and Distribution (County of San Diego)		X		X	X	X	X	X	X	X					X		O	Appendix A-71
	Addition of Infiltration Strips to Concrete Channels (City of Santee)	X	X	X	X	X	X	X	X	X	X							F	Appendix A-72
Land Use Activities																			
Education Activities	Focused Outreach to Equestrian Community (County of San Diego)		X		X		X		X		X					X		O	Appendix A-70
	Kids Care Fest (City of La Mesa)		X		X	X	X	X		X	X					X		O	Appendix A-64
	Oktoberfest (City of La Mesa)		X		X	X	X	X		X	X					X		O	Appendix A-39
	Outreach to Residents Regarding Pet Waste Management (City of Santee)		X		X											X		O	Appendix A-41
	Public Presentations, Outreach and Media (City of Santee)		X		X	X	X	X	X	X						X		O	Appendix A-42
	San Diego River Watershed Brochure (City of San Diego)		X		X	X	X	X	X	X	X					X		O	Appendix A-54
	Pet Waste Outreach (County of San Diego, Cities of San Diego, El Cajon, Santee and La	X			X					X	X					X		O	Appendix A-56
	La Mesa Harry Griffen Park Kiosk (City of La Mesa)		X		X						X					X		N	Appendix A-79
Public Participation	San Diego River Coalition Meetings (all)	X			X	X	X	X		X	X					X		O	Appendix A-45
	Project Clean Water - San Diego River Watershed Website (all)	X			X	X	X	X		X	X					X		O	Appendix A-46
	Public Participation (City of Santee)		X		X	X		X	X		X					X		O	Appendix A-47
Administrative Activities																			

* N = New; O = Ongoing; C = Completed or Cancelled; F = Future

TITLE: ADDITIONAL DRY WEATHER MONITORING
ID #: SDR-A1

ACTIVITY DESCRIPTION

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies and identifying pollutant sources. Consequently, the City conducted additional non-storm water quality monitoring within the San Diego River Watershed. The purpose of the study was to evaluate the water quality of the discharged flow. Two sampling locations were identified within the Alvarado Drainage Basin. All water samples during this study were taken for the 2011 reporting year and were evaluated for the same suite of constituents measured in the city's annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303 (d) listings constituents, and watershed constituent of concerns as reported in the WURMP. Additional locations were also monitored for Total Coliform, Fecal Coliform, and Enterococcus.

This included measuring flow, temperature, pH, conductivity, turbidity, nitrate, ammonia, orthophosphate, dissolved oxygen, and MBAS in the field and total hardness, dissolved metals, chlorpyrifos, diazinon, surfactants, oil and grease, TDS, TSS, total coliform, fecal coliform, and enterococcus bacteria in the laboratory. Results have been received and are being analyzed.

TMDL APPLICABILITY

Dry weather sampling results support identifying exceedances in pollutant loading for constituents included in the forthcoming comprehensive load reduction plans prepared for the regional Bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Total Phosphorus, Dissolved Oxygen, and pH

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is above and beyond the Dry Weather Field Screening and Analytical Monitoring Program. Analyzing samples of non-storm water discharge from two locations within the San Diego River Watershed provides insight into water quality leaving The City of La Mesa. It also enables the City to conduct potential follow-up investigation of potential pollutant sources. Monitoring is intended as a long-term activity; however, sampling locations may vary each year. This activity is consistent with WURMP Strategic Goals 2 through 5.

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

TITLE: ADOPT A PARK/ADOPT A BLOCK
ID #: SDR-A2

ACTIVITY DESCRIPTION

The City of La Mesa has encouraged the public to participate in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers as part of the Adopt-a-Park and Adopt-a-Block Program. Volunteers are encouraged to routinely pick trash from various parks within the watershed or along their block. There are seven parks within the San Diego River Watershed that are maintained by the volunteer groups. Although specific amount of debris collected is not recorded, the groups efforts are considered a load reduction from debris entering the storm drain system and receiving water body. Volunteers logged approximately 2,000 service hours of time under these programs during this reporting period.

TMDL APPLICABILITY

Outreach and pollutant reduction will be a portion of the San Diego River Comprehensive Load Reduction Plans, which will be developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- DO
- Turbidity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

There are seven parks and numerous residential areas located within the San Diego River Watershed. Volunteers assigned to parks or within residential areas routinely collect trash and debris within the watershed. These efforts result in a reduction of debris entering the storm water conveyance system and receiving water. Removal of debris constitutes a reduction in pollutants that are sources of bacteria, TDS, and may reduce turbidity or low oxygen concentration in receiving waters due to eutrophication. This activity is considered by the City as a long term watershed activity.

EFFECTIVENESS MEASUREMENTS

Presence of the program activity on each given year . More detailed metrics such as amount of trash collected is not included.

TITLE: SOURCE TRACKING INVESTIGATION PHASE II 2010
ID #: SDR-A4

ACTIVITY DESCRIPTION

Phase II San Diego River Source Tracking Investigation was conducted within the City of San Diego's jurisdiction in the San Diego River Watershed Management Area (WMA). The purpose of this investigation was to monitor for fecal bacteria, total dissolved solids (TDS), Total Phosphorus, Nitrogen compounds, total suspended solids, total and dissolved metals, and pesticides. Samples were collected during two storm events. Cleaning of 13 catch basins was performed during dry weather and samples were collected during the cleaning efforts. The objective of the study was to understand the implications of future total maximum daily loads (TMDLs) for fecal bacteria including Bacteroids, total dissolved solids (TDS), phosphorus, and dissolved oxygen (DO). The monitoring results provide the basis to assess the land uses and related activities which contribute bacteria to the San Diego River WMA.

Results and Findings
Wet weather monitoring:

1) The lowest bacteria loads were found at Site 6 at the jurisdictional boundary with La Mesa. However, during the second wet weather sampling event, the majority of samples collected from this jurisdictional boundary were positive for human-specific Bacteroides (an indicator for recent human fecal contamination), suggesting the presence of human fecal matter in the wet weather flows from upstream of the City. Further investigation upstream of this sampling location should be undertaken to investigate and confirm the source of this contamination, which may include homeless populations living within the river floodway, groundwater / septic systems, sanitary sewer systems, and/or illegal dumping.
2) Site 9 (at the jurisdictional boundary with the City of Santee) had the highest loads of dissolved orthophosphate, total Kjeldahl nitrogen (TKN), and total nitrogen.
3) Site 2 (at the base of the watershed) had the highest loads of nitrite, total phosphorus, total orthophosphate and total dissolved solids (TDS) compared with other subdrainages, or sectors.

Dry weather monitoring:

1) Standard mechanical catchbasin cleaning, as conducted by the City on an annual basis, appears to effectively reduce pesticide concentrations in dry weather flows.
2) Standard catchbasin cleaning, which involves the removal of large solids only, was not found to be effective in the reduction of bacterial concentrations.
3) Intensive cleaning, using vacuum and steam cleaning was conducted at three catchbasin locations. One of the three locations was shown to have a decrease in enterococci concentrations. The other two sites did not have high enough bacteria concentrations to evaluate any significant decreases in indicator bacteria concentrations.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

A Monitoring Plan for Phase II of the San Diego River Source Tracking Investigation was completed in FY 2010. Monitoring occurred in 2010 and reporting was to be completed in 2011, however, due to budgetary constraints the report has yet to be written.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the San Diego River, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS MEASUREMENTS

Effectiveness is not being assessed as this study is neither an implementation nor education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

TITLE: CANINE CORNERS HARRY GRIFFEN PARK
ID #: SDR-A5

ACTIVITY DESCRIPTION

The City of La Mesa has encouraged the public to participate in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers known as the Canine Corners to clean up pet waste at Harry Griffen Park. This park is located within the San Diego River Watershed. Although the specific amount of pet waste is not recorded, the group's effort is considered a load reduction for pet waste and a potential reduction in bacteria entering into the storm drain conveyance system.

TMDL APPLICABILITY

Outreach and pollutant reduction will be a portion of the San Diego River Comprehensive Load Reduction Plans which will be developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Harry Griffen Park is located within the San Diego River Watershed. A volunteer group known as the Canine Corners, collect pet waste from the park and dispose of it appropriately. These efforts result in a reduction of pet waste entering the storm water conveyance system and receiving water. Pet waste is considered a source that contributes to elevated levels of bacteria, reduction in dissolved oxygen and increased total dissolved solids. This is considered by the City as long term activity.

EFFECTIVENESS MEASUREMENTS

The presence of the program in an active state is the effectiveness measurement. More detailed information related to the amount of material collected is not recorded.

TITLE:	**COASTAL CLEAN UP DAY ALVARADO CHANNEL**
ID #:	**SDR-A7**

ACTIVITY DESCRIPTION

The City of La Mesa supported and participated in the California Coastal Cleanup Day conducted on September 25, 2010 in coordination with I Love a Clean San Diego. A poster specifying date and time for the clean up was placed on the City's bulletin board. California Coastal Cleanup Day is one of the most successful large-scale cleanup projects in the Country. This event enlists thousands of volunteers throughout the state to clean up over 700 polluted coastal and inner-coastal areas. Volunteers met at a designated site in Alvarado Channel to collect debris during this reporting period.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria (high priority)
- Dissolved Oxygen (high priority)
- Gross Pollutants/Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The California Coastal Cleanup Day at Alvarado Channel is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. 250 pounds of trash and debris were collected by 32 volunteers during this event. A San Diego River Watershed fact sheet was also provided to volunteers at the Alvarado Channel site and the City's Storm Water Program Manager discussed watershed concepts and concerns prior to commencement of the cleanup. This activity is conducted on an annual basis and considered as a long-term activity to reduce trash and debris in receiving water bodies.

EFFECTIVENESS MEASUREMENTS

Number of participants and collective amount of trash/recycling collected.

TITLE: FORESTER CREEK HOMELESS ENCAMPMENT REMOVAL PROJECT
ID #: SDR-A8

ACTIVITY SUMMARY

The City's Public Works Department and the El Cajon Police Department coordinated efforts and conducted nine (9) homeless encampment sweeps along Forrester Creek within the City's jurisdiction. After the removal of illegal encampments, trash and debris was collected and removed from Forrester Creek.

PARTICIPATING JURISDICTION

- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Bacteria (high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The sweeps were conducted during the 2010-11 reporting period and targeted homeless camps along Forrester Creek and tributaries. During most of the sweeps, the Police encountered transients and their camps and took appropriate law enforcement action; Public Works maintenance crews then removed the trash and encampment items used for the illegal lodging. The encampment removal contributed to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 2010-11

The following tasks were conducted as part of the Encampment Removal activities during fiscal year 2010-11:

- Removal of trash and debris = 24 Cubic Yards (Cumulative)

TITLE: CREEK TO BAY CLEANUP
ID #: SDR-A9A

ACTIVITY DESCRIPTION

The City of La Mesa supported and participated in the Creek to Bay Cleanup conducted on April 30, 2011 in coordination with I Love a Clean San Diego. A poster specifying date and time for the clean up was placed on the city's bulletin board. 35 Volunteers from the City, met along Alvarado Channel in La Mesa from 9am to 12pm to collect trash and debris along the channel.

The following tasks were implemented as part of the Creek to Bay Cleanup during 2010-2011:
1) Advertised and placed posters for the event on the bulletin board.
2) Sponsored event for $1,000.
3) Encouraged the public to participate in the event, which included 35 participants.
4) Provided watershed specific fact sheets to volunteers.
5) 350 lbs of trash, and 17 lbs of recyclable material were removed from the channel.

TMDL APPLICABILITY

Outreach and pollutant reduction will be a portion of the San Diego River Comprehensive Load Reduction Plans which will be developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Creek to Bay Cleanup is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. A total of 475 pounds of trash and debris were collected during this event. A San Diego River Watershed fact sheet was provided to volunteers at the cleanup. This activity is considered a long-term activity to reduce pollutants from entering receiving water bodies.

EFFECTIVENESS MEASUREMENTS

Number of participants and collective amount of trash/recycling collected.

TITLE: I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP
ID #: SDR-A9B

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 30, 2011. The City of San Diego (City) sponsored the San Diego River, Mission Valley Preserve site in the San Diego River Watershed Management Area (WMA). Approximately 80 volunteers removed 4,220 pounds of trash and debris over a two mile area.

TMDL APPLICABILITY

Indicator Bacteria: Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Diego River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s)

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

1) Pounds of trash removed (Outcome Level 4): 4,220 lbs
2) Total pounds of trash removed (Outcome Level 4): 4,220 lbs
3) Number of participants (Outcome Level 1): 80
4) Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
5) Estimated amount of money spent on cleanups for the San Diego River watershed (Outcome Level 1): $5,000
6) Efficiency (Total Cost/Total Pounds Removed): $1.18/lb

EXPECTED BENEFITS

Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS

At the event, 80 participants removed 4,220 pounds of trash and debris. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 4,220 pound load reduction and an efficiency of $1.18 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Diego River WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This trash cleanup activity fulfills a watershed water quality activity for FY2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 4,220 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE: **COUNTY SPONSORED CLEAN UP EVENT, FACILITATED BY ILACSD**
ID #: **SDR-A9C**

ACTIVITY DESCRIPTION

The County of San Diego is one of several sponsors of the annual Creek to Bay clean-up event, facilitated by I Love A Clean San Diego. The April 30, 2011 event marked the 9th year ILACSD managed the county-wide clean up. This year, ILACSD organized 5,350 volunteers that spanned across 75 coastal and inland cleanup sites throughout San Diego County, removing more than 80 tons of trash and debris. While volunteers removed the typical trash items such as cigarette butts and plastic bags, a few unusual items were reported removed as well including tires, a bathroom sink, AstroTurf and an Easy Bake oven. In addition to removing trash and these other items, volunteers had the opportunity to take ownership of their neighborhoods by restoring and enhancing beaches, open spaces and parks. Restoration and enhancing activities include mural painting, storm drain stenciling, graffiti removal, native planting, brush maintenance, tree planting, weeding and general park maintenance activities. The event also empowers local residents to take an active role in preserving their environment year-round.

Specific to the San Diego River Watershed, following are the clean-up sites and statics for trash and recycling removal:

SDR Watershed Site Location	Miles Covered	Volunteers	Trash Removed (lbs)	Recycling Removed (lbs)	Total
Ocean Beach Pier - Veteran's Plaza	1	81	137	0	**137**
Ocean Beach Pier - Veteran's Plaza	2	48	64	12	**76**
Serra Mesa – Ruffin Canyon	1	43	2,940	0	**2,940**
San Diego River – MVP	1	80	4,220	0	**4,220**
La Mesa – Alvarado Channel	.25	35	320	19	**339**
Lakeside – Los Coches Creek	1	14	210	52	**262**
Lakeside – Cactus County Park	1.25	30	3,000	0	**3,000**
El Cajon – E. Park Ave and Roanoke	3	36	197	30	**227**
Santee – Forester Creek	1	73	325	43	**368**
Total:	**12.25**	**462**	**11,766**	**194**	**11,960**

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

The one-day event took place April 30, 2011

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of San Diego
- City of Santee
- City of El Cajon
- La Mesa

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria indicators and trash have been identified as priority water quality problems in the San Diego River Watershed. This activity demonstrates a reduced pollutant load of trash and associated bacteria, which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the amount of trash, debris and recycling removed from the watershed at various locations (Level 4 Outcome). A total of 11,960 lbs of trash, debris and recycling were removed from 10 locations (11,766 lbs of trash and 194 lbs of recycling materials).

TITLE: INCREASE IN DRY WEATHER MONITORING FOR BACTERIAL INDICATORS IN SUSPECTED PROBLEM AREAS
ID #: SDR A-10

ACTIVITY DESCRIPTION

The San Diego Municipal Storm Water Permit (Orders No. 2001-01 and 2007-0001) requires Copermittees to conduct annual dry weather monitoring. In an effort to better track and eradicate bacteria as well as other pollutants of concern, the City of Santee conducts an additional round (total of two rounds) of dry weather monitoring each year. Dry weather monitoring is conducted during the early part of the dry season (May) and at the end of the dry season (September).

TMDL APPLICABILITY

This activity will provide additional data on where bacterial indicators are observed in the MS4 which will facilitate the identification of sources and locations of sources of bacterial indicators within the City.

TIME SCHEDULE FOR IMPLEMENTATION

2011

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Fecal coliforms are designated as a 303 (d) impairment in the San Diego River. The City of Santee is required to conduct dry weather monitoring of bacterial indicators once a year under its municipal permit. Bacterial indicators monitored included total coliforms, fecal coliforms and enterococci. Additional monitoring will be conducted on behalf of the City of Santee to facilitate the detection of illegal connections and discharges of fecal matter to the MS4. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed up to level 5 (changes in discharge quality) as the activity incorporates the direct measurement of discharge quality over multiple events to assess trends. Monitoring has been conducted since the 1996 and conducted twice a year (with the exception of 2002) since 1997. Overall exceedence rates for bacterial indicators have generally decreased over recent years, compared to the earlier years of the program. No exceedences were reported during May 2011, despite new dry weather monitoring locations being used during 2010 in an effort to find new sources of pollutants within the storm drain system.

TITLE: PARK APPRECIATION DAY
ID #: SDR-A11

ACTIVITY DESCRIPTION

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies. Consequently, the City has organized a Park Appreciation Day for volunteers to remove trash and debris from local parks. Park Appreciation Day takes place once a year and is independent of the Adopt-A-Park Program. A watershed message is read to volunteers at each site location.

TMDL APPLICABILITY

Outreach and pollutant reduction will be a portion of the San Diego River Comprehensive Load Reduction Plans which will be developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- DO
- Turbidity/TSS
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

There are seven parks in the City of La Mesa that fall within the San Diego River Watershed. Organization of the Park Appreciation Day enabled residents to participate in cleaning up the environment within the San Diego River Watershed. Trash and debris as well as green waste was collected and disposed of appropriately. This event is considered a long-term activity.

EFFECTIVENESS MEASUREMENTS

Levels of trash and green waste collected, as well as the number of attendees hearing the watershed message, which is explained at each site.

TITLE: PREVENTION OF THE RELEASE OF PET FECAL MATTER IN PUBLIC PLACES
ID #: SDR A-13A

ACTIVITY DESCRIPTION

The installation of Doggie Bag dispensers provides pet owners with bags to collect their pets fecal matter for proper disposal (i.e., in a trash bin). This reduces the accumulation of pet fecal matter in public places, which otherwise would eventually be washed into storm drain facilities and into the watershed. An additional benefit is public health, as it prevents other park users (such as children) coming into contact with the excrement. This activity is also associated with public awareness and outreach. By placing the dispensers and accompanying signage, including municipal code sections, the public becomes aware that not picking up after their pets is a violation of the municipal code and negatively impacts the environment. During FY 2011, City parks personnel continued to maintain pet waste bag dispensers throughout six City parks, and at other popular dogwalking locations. Additional pet waste dispensers have been installed at Woodglen Vista Park (2), Mast Park (2), Town Center Community Park (3) and West Hills Park (1). A total of 360,000 pet waste bags were used during FY 2011. The City of Santee maintained Doggie Bag dispensers at all public parks, along Forester Creek and along Cuyamaca Street, a popular dog walking location. The City encourages residents to cleanup after their pets, and the notices on the dispensers serve as a reminder to owners to clean up after their pet. Using the results of the San Elijo study, this is estimated to represent approximately 93,600 pounds of pet waste eliminated from the watershed, which constitutes a load reduction in both pet waste and bacteria from entering the storm water conveyance system.

TMDL APPLICABILITY

This activity removes a source of bacteria which may be discharged into the MS4. This is the type of activity that may be incorporated into a load reduction plan for the Bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

No final year

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for bacteria source reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured at level 3 (behavioral change/BMP implementation) and level 4 (load reduction) by assessing the number of bags used (assuming all bags are used for removing pet waste and that if bags were not provided, then the waste would be left on the ground). Effectiveness can be measured at level 5 (changes in discharge quality) through the

dry weather monitoring program, as this program is designed to assess sources of pollution in the storm drain system, although any change may be inferred, not directly measured. Data collected before and after doggie bag dispensers have been deployed can be used to assess if sources of bacterial indicators have been reduced or eliminated.

TITLE:	**PET WASTE BACTERIAL LOAD REDUCTION / DOGGIE BAG DISPENSER PROGRAM**
ID #:	**SDR-A13B**

ACTIVITY DESCRIPTION

The installation of Doggie Bag dispensers provides pet owners with bags to collect their pet fecal matter for proper disposal (i.e., in a trash bin). This reduces the accumulation of pet fecal matter in public places, which otherwise would eventually be washed into storm drain facilities and into the watershed. An additional benefit is public health, as it prevents other park users (such as children) coming into contact with the excrement. This activity is also associated with public awareness and outreach. By placing the dispensers and accompanying signage, including municipal code sections, the public becomes aware that not picking up after their pets is a violation of the municipal code and negatively impacts the environment.

The Pet Waste Bacterial Load Reduction Program is considered an important activity in the watershed because it will reduce bacteria and oxygen demand loads into the storm drain system. This is a long-term activity; however, it will be assessed and adjusted on an annual basis through the annual reporting process. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will thereby result in the reduction of a source of pollutants, most notably bacteria and nutrients, which could be released into the watershed. This activity is also consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria indicators have been identified as a priority water quality problem in the San Diego River Watershed. This activity demonstrates a reduced pollutant load of bacteria, which benefits the receiving water quality. Since this activity addresses a priority water quality problem it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

These stations distributed approximately 83,980 bags, preventing an estimated 16,796 pounds of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs

Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: SAN DIEGO RIVER PARK FOUNDATION PARTNERSHIP
ID #: SDR-A14

ACTIVITY DESCRIPTION

The City of San Diego (City) will partner with the San Diego River Park Foundation (SDRPF) in an effort to help raise awareness of the pollution, bacteria, and sediment issues affecting the San Diego River. The City will provide funding for a number of SDRPF initiatives, including the annual River Days event designed to promote awareness of the pollution issues surrounding the San Diego River. Additionally, funding will support the SDRPF's Clean and Green Team, a volunteer program designed to remove trash and plant native plants within the San Diego River Watershed Management Area (WMA). Funding will also be used to support public cleanups and other educational endeavors.

FY 2011 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for the Clean and Green Team. Funding went to:
1) Removal and hauling of debris;
2) Purchase of tools and supplies;
3) Printed materials for volunteers;
4) Staff time at the events.

The City sponsored fifteen cleanup events. A total of 58,600 pounds of trash was removed and 3,897 hours of volunteer service occurred through the fifteen cleanup events.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2012 and beyond. Cleanups will be scheduled as appropriate. Trash Cleanup Events efforts take place throughout the year, and River Days is scheduled to occur in May of each year

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation; REI; Union Bank; Home Depot; New Belgium Brewery; John Smith Earthworks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria as a high priority water quality problem in the San Diego River WMA. Providing funding to SDRPF will increase awareness of the bacteria and pollution issues surrounding the San Diego River, and the various cleanup initiatives will assist in reducing pollution throughout the San Diego River WMA.

Partnership with SDRPF will provide funding to address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website states that debris may be contaminated by pathogens that have adverse effects on humans. By decreasing the amount of trash, bacteria loads are reduced. Funding SDRPF's public education and outreach programs will help increase awareness of the pollution issues affecting the San Diego River and foster appropriate behavior change.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of trash cleanup? ($/person or $/ton collected)

Targeted Measurable Outcome(s)

1) Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

1) Pounds of trash removed (Outcome Level 4): 58,600 lbs
2) Number of volunteer hours (Outcome Level 1): 3,897 hours
3) Total amount of money spent on twenty-eight cleanups (Outcome Level 1): $33,000
4) Activity Efficiency (Total Cost/Total Pounds of Trash and Debris Removed and Recycled): $0.56/lbs

EXPECTED BENEFITS

The goal of the assessment is to determine the load reduction effectiveness and efficiency of the sponsored cleanups. Partnership with SDRPF will provide funding to address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website states debris may be contaminated by pathogens that have adverse effects on humans. By decreasing the amount of trash, bacteria loads are reduced. Funding SDRPF's public education and outreach programs will help increase awareness of the pollution issues affecting the San Diego River and foster appropriate behavior change.

ANALYSIS RESULTS

FY 2011 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for annual river clean-ups and other activities, the purchase of supplies, trash removal and disposal, volunteer support, and direct staff support of program. The City sponsored twenty-eight events. Over the course of the fifteen events, 58,600 pounds of trash were removed and 3,897 hours of volunteer service occurred. The efficiency of the fifteen cleanup events was $0.56 per pound, calculated by dividing the total sponsorship cost by the total pounds of trash and debris removed and recycled during all twenty-eight events.

CONCLUSIONS

This activity fulfills a watershed water quality activity for FY 2011 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction during this reporting period. The City will coordinate with SDRPF to provide funding for various projects throughout FY 2012 and beyond. Cleanups will be scheduled as appropriate. Clean and Green Team efforts take place throughout the year, and River Days is scheduled for May of each year. Implementation and assessment of load reduction and efficiency of these cleanups will occur again in FY 2012. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups

that are sponsored each year over time. Effectiveness of public outreach and educational will be measured via citywide surveys comprised of residents in the San Diego River WMA to determine awareness and knowledge retention of water quality issues, as well as changes in behavior. Additionally, water quality monitoring will be conducted throughout the San Diego River WMA to determine whether improvements have occurred.

TITLE: SAN DIEGO RIVER PROPERTY-BASED INSPECTIONS
ID #: SDR-A15

ACTIVITY DESCRIPTION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, San Diego River and Tijuana River watershed management areas (WMAs). The City of San Diego (City) performed an inspection program activity specifically focused on properties with multi-businesses. The activity involved inspecting properties and the businesses located on the properties, regardless whether they are part of the City's commercial and industrial inventory. Traditionally, the City performs individual business inspections in the City's commercial and industrial inventory.

The City developed and implemented a focused inspection activity designed to evaluate the effectiveness of performing multi-business property-based inspections and answer the following management questions related to the commercial and industrial inspections program:

1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

The areas selected for inspection were shopping centers, industrial parks, and office parks within five watershed management areas.

The inspections occurred over two phases. Property inspections and business investigations were conducted during both phases. During the first phase, inspectors performed a full inspection of each property. Properties were inspected for BMP compliance, general site observations, pollutant discharge potential, and illicit connections/illegal discharges (IC/IDs) similar to an individual business inspection. Site observations and BMP deficiencies were noted on the inspection form. When an issue was noted during the property inspection and could be associated to a particular business, the inspector initiated an investigation of the business, or businesses. These individual business inspections were limited to investigating the significant deficiencies observed. If an issue could not be associated to one or more businesses on the property, the issue was considered to be the responsibility of the property owner or management company, and no business inspections were performed.

The property inspection reports were sent to the property management company, or to the property owner on file. Where applicable, business inspections reports were sent to corporate offices. If a business was not part of a corporation, the report was sent directly to the business at its physical location, or mailing address.

In phase two of the activity, selected properties from phase one that were determined to be high priority follow-ups were inspected. Each property was inspected using the same procedures utilized in the initial inspections. As part of phase two, business investigations were also performed to those businesses likely responsible for potential storm water issue(s) in the area.

During both phases, if violations were identified, they were recorded for appropriate follow-up. Follow-up inspections occurred based on the severity of the identified violations. If discharges were identified, they were immediately reported to the City's Storm Water hotline number. Lastly, education material was distributed, as applicable, during phase one and two of the inspection activity.

TMDL APPLICABILITY
Indicator Bacteria - Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION
Implementation and assessment took place during FY2011. This project is complete, and will no longer be included in future reporting updates.

LEAD WATERSHED COPERMITTEE
- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES
- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
The Collective Watershed Strategy for the San Diego River WMA identifies bacteria as high priority water quality problem in the San Diego River WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of the property inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria.

EFFECTIVENESS MEASUREMENTS
Management Questions
1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

Targeted Measurable Outcome(s)
1) Identification of sources of constituents of concern in the San Diego River Watershed

Assessment Method(s)
1) Inspections
2) Quantification
3) Monitoring
4) Tabulation
5) Reporting

Data Recorded
Phase One Property Inspections
Number of property inspections = 130
Number of properties recommended for follow-up inspection= 35
Total IC/IDs Observed = 3
Total IC/IDs Eliminated During Inspection = 0

Phase One Business Investigations
Number of business investigations = 91

Number of sites recommended for follow-up inspection = 72
Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 2
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = 2
Total IC/IDs Observed = 7
Total IC/IDs Eliminated During Inspection = 0

Phase Two Property Inspections
Number of property inspections = 27
Number of properties recommended for follow-up inspection = 22
Total IC/IDs Observed = 0
Total IC/IDs Eliminated During Inspection = N/A

Phase Two Business Investigations
Number of business investigations = 49
Number of sites recommended for follow-up inspection = 49
Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 0
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = N/A
Total IC/IDs Observed = 0
Total IC/IDs Eliminated During Inspection = N/A

Overall
Number of Sites That Implemented Some Corrective Action Between the Two Phases (Outcome Level 3) = 8
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4) = 8

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness of property-based inspections as a method to conduct inspections, which includes identifying and eliminating potential sources of storm water pollution.

ANALYSIS RESULTS

During phase one, 31 properties received property inspections. A total of 32% of these properties needed follow-up to verify that corrective actions/BMPs were implemented. From the phase one property inspections, thirty-six businesses were investigated. For phase two, eight properties from phase one received a follow-up property inspection. Four of the eight properties were recommended for follow-up to verify that corrective actions/BMPs were implemented. From the eight property inspections, there were ten business investigations in phase two. Overall between the two phases of inspections, there were four sites that implemented some corrective action. Lastly, the number of IC/IDs decreased from four to zero between the two phases of the eight property inspections.

Property inspections are an efficient and effective method to assess shared areas and evaluate visible, outdoor areas for BMP implementation at shopping centers, industrial parks, and office parks. Overall, there was a reduction of IC/IDs and improvement in BMP implementation at the properties inspected between the two phases of inspection. There are some BMPs normally

addressed during business inspections that did not apply to property inspections, as they required input from a business representative, or are requirements specific to business operations, such as employee training. In addition, follow-up inspection priorities improved between the inspection phases. Lastly, common areas that have the highest threat to water quality, such as trash, landscaping, and storm drain areas, can be effectively evaluated during a property inspection.

CONCLUSIONS

Overall, property-based commercial and industrial inspections provide efficiency in both cost and coverage, with the ability to inspect a large area with multiple businesses in a short amount of time. Also common areas of high pollutant generating activities are addressed during these inspections, including IC/IDs, trash areas, landscaping and storm drain issues. Only three IC/IDs were observed during the first property inspections phase, and called into the City's hotline for response and follow-up for abatement. No IC/ID was found during the second property inspections phase in the San Diego River WMA. In addition, seven sites implemented some corrective action between the two phases of inspections. Although a load reduction was not calculated, abatement of potential sources may be assumed with corrective actions being implemented; therefore, demonstrating both Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcomes being achieved as a result of conducting the property inspection activity. This activity fulfills the requirement of one of the two required watershed water quality activities.

TITLE: SAN DIEGO RIVER HOMELESS ENCAMPMENT REMOVAL PROJECT
ID #: SDR A-16

ACTIVITY DESCRIPTION

On behalf of the City of Santee, the San Diego County Sheriff conducts sweeps during the reporting period along the San Diego River within City jurisdiction to remove trash and encampment items. These activities are incorporated into the Sheriff's usual duties within Santee. Local knowledge, including data collected by the San Diego River Park Foundation Riverblitz, and referrals from the public are used to identify where encampments are occurring. Particular effort is invested prior to public participation events (such as trash clean-up events) to ensure that volunteers focus efforts where they can be most beneficial and participants have a safe and pleasant experience.

TMDL APPLICABILITY

Waste from homeless activity in the San Diego River and its tributaries contributes to pollutant loadings in the receiving water. Pollutants may include bacterial indicators and trash.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- The San Diego River Park Foundation volunteers provide data on the location of homeless encampments.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Gross Pollutants
- Metals
- Nutrients
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The sweeps target homeless camps along the San Diego River. During the sweeps, the Sheriff encounters transients and their camps and takes appropriate law enforcement action to remove trash and encampment items used for the illegal lodging. This activity contributes to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness assessment can be indirectly assessed up to level 6. Changes in receiving water quality (level 6) could also be observed through monitoring programs, however the causes of what will likely be small changes in receiving water could be numerous and it would not be possible to differentiate the proportional impact of each. Tracking the numbers of homeless encampment within the activity area over time (such as through the results of the San Diego

River Park Foundation Riverblitz surveys) can be used to assess level 3 (behavioral change); level 4 load reductions can be measured through the volume of material removed (not currently tracked by the City of Santee).

TITLE: TRASH REMOVAL ACTIVITIES IN SANTEE
ID #: SDR A-17

ACTIVITY DESCRIPTION

The City hosted or facilitated nine clean-up events within the City during FY 2011. A total of over 23,100 pounds of trash and debris were collected. Six of these were in or adjacent to the San Diego River or Forester Creek. All the events were held within the watershed and should reduce the loading of trash and debris in the river. The City of Santee partners with local volunteer groups such as the San Diego River Park Foundation; Rotarian groups; and churches to host public participation events. City staff help identify where these events are needed, assist with logistical planning; promotion of the event through the City website; and provides waste disposal facilities. If needed, City staff will contact the Sheriff to ensure that any homeless camps in the event area are vacated. During April 2011, a City staff member captained a Creek to Bay Clean-up in Forester Creek to ensure that a site in Santee was included in this regionwide event. Forester Creek was to be subject to another clean-up earlier in the month, but rain resulted in this event being cancelled, making participation in the Creek to Bay Clean-up critical. The staff member helped promote the event, coordinated the provision of support staff and equipment to conduct the event; attended the training provided by event organizers, I Love a Clean San Diego (ILACSD); and provided the data collected during the event to ILACSD.

TMDL APPLICABILITY

Trash can provided a potential breeding location of bacteria within the watershed. Removal of trash may result in a reduction of bacterial indicators.

TIME SCHEDULE FOR IMPLEMENTATION

No end date for implementation.

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation, Rotarian groups and churches.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity removes trash within the watershed and thereby reduces the potential breeding of bacteria within the watershed, which is consistent with the WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured up to level 4 (pollutant load reduction) by assessing the volume (or weight) of the material removed. Over 23,100 pounds of trash was removed during FY 2011.

TITLE: CABRILLO HEIGHTS PARK RAIN GARDEN INFILTRATION PROJECT
ID #: SDR-A19

ACTIVITY DESCRIPTION

This activity involves the implementation of a large scale low impact development (LID) project in the San Diego River Watershed Management Area (WMA) to reduce runoff volume. The large scale LID site selection focused on city owned parks and parcels that would be suitable for infiltrating off site flow. Site visits were performed to evaluate the field conditions at approximately ten sites in FY 2007 through FY 2008. Cabrillo Heights Park was eventually selected as the site of choice for the Rain Garden Infiltration Project.

The concept for this park includes the installation of rain gardens at two sites within the park. The rain gardens, or bioretention basins, will be used to trap particulate pollution, encourage evapotraspiration, and reduce the amount of trash, oils and grease that make its way to the storm drain system. Flows are mainly filtered through the rain garden, collected, and returned to the storm drain system. A portion of the storm water will remain within the planted bed and be used by plants for evapotranspiration and growth.

The first site, located on the western edge of the park, will be used to treat storm flows from the western parking lot on Kearny Villa Road. All parking lot flows will enter into the storm distribution piping through a couple of storm water catch basins located in the parking lot. These catch basins shall include grating to prevent large solids from entering into the piping, and inserts to prevent trash and other debris from entering the rain garden. PVC storm drain piping will convey the parking lot flows to the rain garden located at the southern end of the parking lot.

The second site is located on the eastern portion of the park and will treat flows from Angier Elementary School and a sporting event parking lot on the east side of the park. All flows from these two locations are directed to two existing separate catch basins; one dedicated for school flows, and one for parking lot flows. Distribution piping will capture flow from these two locations and convey it to the rain garden. Time Schedule for Implementation The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The project is currently working on 100% design. Project design is anticipated to continue into FY 2012. Construction is anticipated to begin in FY 2012. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The project is currently working on 100% design. Project design is anticipated to continue into FY 2012. Construction is anticipated to begin in FY 2012. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency due to infiltration?
2) How effective is the infiltration at reducing loads of priority pollutants?
3) Does the implementation of the infiltration result in a detectible receiving water quality improvement?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the infiltration is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of the analysis is to determine the load reduction efficiency of LID Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: COASTAL CLEANUP DAY SPONSORSHIP
ID #: SDR-A20

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 25, 2010. The City of San Diego (City) sponsored the San Diego River, Mission Valley Preserve site in the San Diego River Watershed Management Area (WMA). Approximately 86 volunteers removed 1,520 pounds of trash and debris and recycled 10 pounds of trash and debris.

TMDL APPLICABILITY

Indicator Bacteria Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK and ILACSD staff to ensure that sites within the San Diego River WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego San Diego Coastkeeper Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s)

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

1) Pounds of trash removed (Outcome Level 4): 1,520 lbs
2) Pounds of trash recycled (Outcome Level 4): 10 lbs
3) Total pounds of trash removed and recycled (Outcome Level 4): 1,530 lbs
4) Number of participants (Outcome Level 1): 86
5) Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
6) Estimated amount of money spent on cleanups for the San Diego River watershed (Outcome Level 1): $5,000
7) Efficiency (Total Cost/Total Pounds Removed): $3.27/lb

EXPECTED BENEFITS

Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS

At the event, 86 participants removed 1,520 pounds of trash and debris and recycled 10 pounds of trash and debris, which was tracked using data cards provided by the Ocean Conservancy. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 1,530 pound load reduction and an efficiency of $3.27 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Diego River WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This trash cleanup activity fulfills a watershed water quality activity for FY2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 1,530 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE: **LAND ACQUISITIONS**
ID #: **SDR-A23**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural ability to infiltrate stormwater/runoff. The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY2010-11 reporting period there were 261.10 acres of land acquired in the San Diego River Watershed. The current acquisitions are shown in the table below.

Property	Acres	Date	Watershed ID	APNs
Sycamore Canyon, South	160	FY10-11	907.12	325-060-03, 04, 05, 06, 07, 10, 11, 12, 17-24
Fernbrook	29.47	FY10-11	907.21, 907.24	329-171-04
El Monte Flume Trail	18.78	November 17, 2010	907.15	390-061-06, 393-022-10
El Monte Hanson	52.85	August 26, 2010	907.12	Portions of each 392-150-10, and -15
Total	**261.10**			

During the FY2009-10 reporting period there were no land acquisitions in the San Diego River Watershed.

During the FY2008-09 reporting period there were 557.50 acres of land acquired in the San Diego River Watershed.

During the FY 2007-08 reporting period there were 197.07 acres of land acquired in the San Diego River Watershed.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients
- Oil & Grease
- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy and the Strategic Goals of the WURMP in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: FORESTER CREEK DEBRIS BARRIER
ID #: SDR-A24A

ACTIVITY SUMMARY

The City of El Cajon Public Works Department (City) installed a debris barrier. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed in an area adjacent to the City's Public Works Maintenance Yard best suited for prompt cleanup following significant storm events and before it can reach the San Diego River.

PARTICIPATING JURISDICTIONS/ORGANIZATIONS

- City of El Cajon

WATERSHED PRIORITY POLLUTANTS ADDRESSED

- Trash (high priority)
- Sediment
- Bacteria (indirect through trash and sediment; high priority)

HOW THIS ACTIVITY RELATES TO THE SAN DIEGO RIVER WATERSHED

The removal of trash and debris in the San Diego River is important in order to improve water quality in the river. Trash and debris enters the storm water system, Forester Creek and eventually the San Diego River and the Pacific Ocean, posing a threat to wildlife and human health. The debris barrier controls and contains trash and other debris reducing pollutants from ultimately discharging into the San Diego River. This activity is an ongoing long-term activity and trash and debris will continue to be collected and monitored. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TASKS IMPLEMENTED DURING FY 20010-2011

Collection and removal of a total of 1,106.5 cubic yards of trash and debris was conducted as part of maintenance activities by the City of El Cajon. The collection of trash and debris was as follows:

- Assorted Trash/Debris = 47.5 Cubic Yards
- Organic Materials = 41 Cubic Yards
- Sediment = 1,018 Cubic Yards

TITLE: MAINTENANCE/INSPECTIONS OF FORESTER CREEK TRASH BARRIER
ID #: SDR 24B

ACTIVITY DESCRIPTION

The City of Santee installed a debris barrier as part of the Forester Creek Improvement Project. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed adjacent to the Prospect Avenue Bridge where the creek transitions from concrete-lined to unlined. The barrier needs to be routinely maintained to remove the collected debris. The debris barrier was installed during 2008. The activity comprises routine maintenance of the barrier, such as before the rainy season and between rain events.

TMDL APPLICABILITY

Trash can provide a breeding ground for bacteria, therefore its removal reduces potential bacteria loadings within the watershed.

TIME SCHEDULE FOR IMPLEMENTATION

Ongoing

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed up to level 4 (load reduction), however data specific to removal of trash from the barrier (versus the creek and storm drain maintenance as a whole) is not collected.

TITLE: PARK RIDGE BOULEVARD BACTERIA TREATMENT PROJECT
ID #: SDR-A26

ACTIVITY DESCRIPTION

The City of San Diego proposed construction of a new catch basin, storm drain, trash segregation unit, and bacterial treatment system at the southern terminus of Park Ridge Boulevard. Upon futher review of monitoring data conducted by another municipality, it was determined that the bacterial treatment system would be ineffective and this was removed from the project.

A new catch basin was proposed along the western right-of-way south of the intersection with Murray Park Drive. The catch basin will be sized for the full design flow reaching that location. Flows up to an 85th percentile storm event will exit the catch basin and flow through a trash segregation unit, followed in series by the bacterial treatment system. Flows in excess of an 85th percentile storm will exit the catch basin via an overflow pipe and bypass the treatment system.

A manhole will receive flows from both the treatment system and the overflow pipe. From that manhole, a new storm drain will convey flows to the outlet location for the existing storm drain system within the eastern Park Ridge Boulevard right-of-way. A new headwall sized to accommodate both outlets will be required at this location.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design began February 2010 and is anticipated to continue through FY 2012. Construction is expected to be completed in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will

reduce bacterial pollutant loads in the watershed by installing a new catch basin which diverts runoff to a trash segregation unit.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the bacteria load reduction efficiency?
2) How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria load with the installation of catch basins, storm drains, and trash segregation units on Park Ridge Boulevard.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: WOODSIDE AVENUE DETENTION BASIN
ID #: SDR-A32

ACTIVITY DESCRIPTION

In 2003, the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and construction of an extended detention basin (EDB) to treat urban runoff and low storm flows from a 1.4 square mile area within Hydrologic Area (HA) 907.12 before discharging into Los Coches Creek and the San Diego River. The site is located in the unincorporated community of Lakeside on a vacant property adjacent to Woodside Avenue near Winter Gardens as shown in the attached figure. The constructed basin and concrete removal were designed to act as a demonstration for the effectiveness of similar BMPs at removing pollutants. A water quality monitoring component was also initiated to provide hard evidence of the BMP's pollutant removal capabilities. Although the grant was completed in May 2007, the County continues to monitor the site to gauge its effectiveness at removing pollutants.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation of Detention Basin Complete in 2007
- Water Quality monitoring ongoing, annually

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Conditions
- Dissolved Minerals
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity targets high priority water quality problems within the watershed by treating urban runoff before it discharges into Los Coches Creek. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

An initial effectiveness assessment of this project was conducted in 2006. The results were presented in detail in: Woodside Avenue Extended Detention Basin Effectiveness Assessment Monitoring Final Report, March, 2007, prepared by Weston Solutions. As previously described, additional monitoring is ongoing.

Activity Assessment FY 2010-11

Generally, the results indicate that, constituent concentrations at the outlet of the EDB were often higher than at the inlet. There were, however, overall load reductions for the majority of

constituents measured during both dry and wet weather (for wet weather, only the March 2011 storm event data were included in the calculations). The load reductions were most likely due to the EDB allowing settling or absorption of pollutants before reaching the outlet.

For dry weather, the exceptions (mean loads higher at the outlet than at the inlet of the EDB) included total lead, dissolved zinc and TSS; for wet weather TOC, DOC and nitrate as N had loads that were higher at the outlet. The increased mean dry weather loads of zinc, lead and TSS were due to measurements taken during just one of the three dry weather events (the January 20, 2011 event) during which instantaneous loadings of most constituents were higher at the outlet than at the inlet. This was due to a higher instantaneous flow rate measured at the outlet during that event. In terms of constituent concentrations alone, it may be concluded that the EDB functioned well in reducing nitrate-N, ammonia and total copper concentrations in non storm flows and TDS, TSS, ammonia, total phosphate as P, and metals concentrations during wet weather. The concentrations of other constituents measured, however, were not consistently reduced and were often higher at the outlet of the EDB. The often higher concentrations of metals at the outlet during dry weather conditions may have been due to the deposition of metals and dust near the outlet as it is located adjacent to a high-traffic road.

TITLE: OKTOBERFEST
ID #: SDR-A39

ACTIVITY DESCRIPTION

The City of La Mesa is committed to education outreach at community events. Each year the City hosts an Oktoberfest Event. During the event on October 1-3, 2010 the city's Storm Water Program staff ensured fact sheets were distributed to all Oktoberfest vendors regarding storm water pollution prevention.

TMDL APPLICABILITY

Outreach and pollutant reduction will be a portion of the San Diego River Comprehensive Load Reduction Plans which will be developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- La Mesa Merchants Association

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Turbidity/TSS
- Diazanon
- Metals
- Total Phosphorus, Dissolved Oxygen, and pH

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City took steps to ensure that vendors were knowledgeable regarding pollution prevention during the event, which is located within the San Diego River Watershed.

EFFECTIVENESS MEASUREMENTS

The City currently tracks if the vendor fact sheets were distributed to vendors.

TITLE: OUTREACH TO RESIDENTS REGARDING PET WASTE MANAGEMENT
ID #: SDR-A41

ACTIVITY DESCRIPTION

Concentrations of fecal bacteria have been reported at certain sampling locations during dry weather monitoring in Santee. Based on the observations made during dry weather monitoring, it has been recommended that educational outreach be made to residents in specific areas of the City of Santee where fecal bacteria and/or animal waste has been observed. The objective of this outreach is to educate residents on the importance of properly disposing of pet fecal waste to prevent it from eventually entering the storm drain system. By reducing the amount of pet fecal matter in the storm drain system, this educational effort would eventually assist in the reduction of fecal coliforms in the San Diego River. The City has developed information on pet waste management for residents and participated in the development of a presentation on the subject by the WURMP group. During this fiscal year outreach has focused on the findings of dry weather monitoring and complaints. Typically the outreach is provided to addresses surrounding an area where an issue has been observed. Also, information has been provided to residents who wish to conduct outreach within their communities.

TMDL APPLICABILITY

This activity focuses on the elimination of a source of bacterial indicators.

TIME SCHEDULE FOR IMPLEMENTATION

This is an ongoing activity.

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with strategic goal 5, bacteria source reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed at level 2 (changes in knowledge/awareness), or possibly at level 4 (load reductions). A survey is conducted every year at a Santee community event. The data from this could be assessed to determine if there have been any changes in knowledge/awareness, although knowledge would be influenced by number of factors and could not be linked to a single educational campaign. Load reductions can be inferred by the elimination of exceedences of bacterial indicators in areas where outreach activities have been focused.

TITLE: PUBLIC PRESENTATIONS, OUTREACH AND MEDIA
ID #: SDR-A42

ACTIVITY DESCRIPTION

During the reporting period, the City of Santee distributed articles specific to storm water in the periodic newsletter entitled 'Santee Review'. The newsletter reaches potentially 21,500 residential, commercial, and industrial addresses. The newsletter is intended to educate residents and visitors about watershed issues and to solicit their cooperation and participation. Articles are included in issues of the Santee Review. The Santee Review has transitioned online, using the City Website, Facebook and Twitter accounts. Online articles have also been posted on stormwater infrastructure maintenance. Future articles will be posted on the City website, Facebook page and Twitter feeds.

TMDL APPLICABILITY

Education is a tool that can be used to foster behavioral change. Education focuses on watershed priority pollutants, which are constituents on the 303(d) list or for which a TMDL has already been developed.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation events with the City of Santee are promoted on the City of Santee's website.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Nutrients
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 4, source reduction at residential land uses, as education typically focuses on residential activities.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured at level 2 (changes in knowledge/awareness). A survey is conducted at an annual Santee community event and the results can be used to assess overall knowledge in the community. However changes are likely to occur due to multiple factors and cannot be directly attributed to one educational campaign.

TITLE: PROJECT CLEAN WATER - SAN DIEGO RIVER WATERSHED WEBSITE
ID #: SDR-A46

ACTIVITY DESCRIPTION

The Project Clean Water website (http://www.projectcleanwater.org/html/ws_map.html) provides a venue for public participation and involvement in local watershed activities. The Watershed Map page is the starting point of the watershed website. Visitors wishing to learn more about a particular watershed can simply 'click' on a desired watershed in the Watershed Map. Once selected, the visitor is linked to the watershed's summary page and provided with additional link options. The visitor can view multiple informational pages on the San Diego River Watershed which include:

1) San Diego River Watershed Summary Page (main page)
2) San Diego River Watershed Plan Page
3) San Diego River Watershed Project Page
4) San Diego River Watershed Activities Page

During the FY 2008-09 reporting period, revisions were made to update the content and documents available via the site, including adding reports, repairing broken links, and updating 303(d) listings.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This method of public participation is consistent with the collective watershed strategy in that it encourages any member of the public to take an interest in their watershed and to participate in Copermittee activities.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is not being measured directly, but can be inferred from tracking the number of 'hits' the web pages received on an annual basis.

1) Watershed Copermittees continued to post the WURMP and annual reports on the Project Clean Water website.

2) There were 4,093 hits on the San Diego River Watershed webpage.
3) There were 786 hits on the San Diego River WURMP webpage.

TITLE: DEVELOPMENT OF ADDITIONAL PUBLIC PARTICIPATION PROGRAMS
ID #: SDR-A47

ACTIVITY DESCRIPTION

During the reporting period, the City of Santee has continued to promote the opportunities for public participation in its stormwater program through the storm drain stenciling program and the Roadside Pride program. The storm drain stenciling program has multiple benefits including: 1) Providing stencils on storm drains reminds people in the vicinity that the drain provides a direct connection to the river and that their activities can have a direct impact on the health of the river. This reminder may result in the modification of their behavior to prevent the discharge of pollutants into the storm drain. 2) This program provides groups within the community an opportunity to participate in an activity that is related to an issue that they are interested in. This activity may also provide them with the necessary experience to achieve a goal related within the organization (such as fulfilling a community service requisite). 3) The activity may provide education for people who volunteer to help with the activity who may have limited knowledge of stormwater issues. This knowledge may result in changes to their behavior. The Roadside Pride Program provides Santee-based community groups with an opportunity to earn a small amount of money in exchange for removing litter from roadsides within the community. This on-going program will be promoted alongside other public participation opportunities.

TMDL APPLICABILITY

Storm drain stenciling may not be directly addressing a specific pollutant source, but it does serve as a reminder of the public of their connection to the river and the need to prevent the discharge of pollutants.

TIME SCHEDULE FOR IMPLEMENTATION

This is an ongoing activity.

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with strategic goal 2, source reduction at park/municipal land uses, as it helps deter illegal discharges into the storm drain from road and pavements.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed at level 2 (changes in knowledge/awareness) through a residential survey conducted each year at a community event. However changes in knowledge cannot be attributed solely to the stenciling of storm drain inlets and citizen knowledge will be influenced by a number of factors.

TITLE: CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION
ID #: SDR-A48

ACTIVITY DESCRIPTION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program conducted by the Public Utilities Department involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. The rebate program was implemented in FY11.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the support of storm water and urban runoff pollution management efforts of the public. Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City

updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS MEASUREMENTS

Assessment of the Strategic Plan is a long-term effort and will involve tracking the city's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: ADDITIONAL RECEIVING WATER MONITORING
ID #: SDR A-49

ACTIVITY DESCRIPTION

The City of Santee has conducted an additional study each year since 2002 to assess constituents of concern at five receiving water locations within the watershed. These locations include Forester Creek as it enters the City of Santee and prior to its confluence with the San Diego River (two locations); the San Diego River as it enters the City of Santee; Sycamore Creek as it discharges into the San Diego River; and the San Diego River just as it leaves the City of Santee (three locations). These locations are typically sampled twice during the dry season, at the beginning and towards the end of the dry season. This investigation was reviewed during Fiscal Year 2007 and revised to incorporate the constituents listed on the 303(d) list for the Forester Creek and San Diego River. During 2010, a Quality Assurance Project Plan (QAPP) was developed for this activity and all subsequent monitoring activities have been compliant with the QAPP. The City of Santee contracts with a consultant to conduct the monitoring.

TMDL APPLICABILITY

Ambient monitoring is conducted for constituent included on the 303(d) for the San Diego River downstream of the City of Santee. This data can be used to assess if exceedences for these constituents are occurring in the City of Santee and to assess trends in water quality. Ambient monitoring can indicate on which segment where exceedences are occurring, helping to direct initial TMDL planning efforts.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Fecal coliforms are designated as a 303(d) impairment in the San Diego River. This activity is consistent with WURMP Strategic Goal 5 for bacteria source reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed up to level 5 (changes in receiving water quality) as the activity incorporates the direct measurement of receiving water quality over multiple events to assess trends. Fecal coliform levels in recent years are lower than the levels recorded in the earlier years of the program. Data for 2010 indicates that during both rounds of monitoring fecal coliform counts decreased from where Forester Creek enters the City to its confluence at the San Diego River. The area where this improvement occurs includes the 1.2-mile restored portion of the Creek.

TITLE: QUALCOMM STADIUM TRASH SEGREGATION BEST MANAGEMENT PRACTICE (BMP) INSTALLATION
ID #: SDR-A52

ACTIVITY DESCRIPTION

Stormwater Drain Insert Pilot Study involves the installation of one area inlet insert in the San Diego River Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The insert is installed directly in the existing area within Qualcomm Parking Lot. This site includes the installation of one storm drain area inlet inserts as a retrofit within the existing storm drain system. The inlet insert will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as Trash Segregation Device Installation in the 2008 San Diego River WURMP. In January 2011, the Qualcomm site was selected and the conceptual design was released for this project.

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets have been retrofitted with the selected drainage inserts during the month of March in 2011 and the first phase of monitoring started during the month of September in 2011.

TMDL APPLICABILITY

San Diego and Creeks Bacterial TMDL Region Beaches

TIME SCHEDULE FOR IMPLEMENTATION

Planning was initiated in 2008. The catch basin inlets have been retrofitted during March 2011 and first phase of monitoring started in September 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load reduction/source

abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of the catch basin insert?
2) How effective are these catch basin inserts at reducing priority pollutant loads?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the catch basin inserts are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

1) How much money spent on inspections and maintenance
2) Trash Capacity
3) Flooding Issues
4) Functionality during storm event
5) % Trash Bypass

EXPECTED BENEFITS

Drain inserts are moderately effective at reducing discharge of trash to receiving waters when loadings are compatible with the maintenance frequency. Excessive flow bypasses is the main cause of reduced performance.

ANALYSIS RESULTS

An effectiveness assessment of this activity is currently underway. The City will conduct project monitoring to evaluate the effectives of the drainage insert selected in load reduction and effluent quality.

CONCLUSIONS

Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: ROBB FIELD WATER TREATMENT AND REUSE PROJECT
ID #: SDR-A53

ACTIVITY DESCRIPTION

This project will construct a storm runoff collection and treatment facility at the northwest corner of Robb Field, a Park & Recreation Facility. Once treated, the storm water will be stored and used to irrigate the adjacent 14 acre grass athletic field The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Storm water Reuse" and, if proven to be effective, anticipates eventually implementing similar LID projects. This project has not moved forward since last fiscal year.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in June 2009. The work performed in 2009 included the conceptual design and the City facility stakeholder, Park and Recreation Department (PRD). The City of San Diego is currently assessing our options for implementing this project.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters?
2) How much reduction in runoff volume can be achieved through LID retrofits?
3) How efficient are LID retrofits in reducing pollutant loads?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure LID retrofits working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction)

3) Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of the assessment is to determine the effectiveness and efficiency of the reuse project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: SAN DIEGO RIVER WATERSHED BROCHURE
ID #: SDR-A54

ACTIVITY DESCRIPTION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay
5) San Dieguito River
6) Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2012. Implementation and distribution is expected to occur in early FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?
2) Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

Targeted Measurable Outcome(s)

1) Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.
2) Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.
3) Increased intent to act to prevent storm water pollution after reading the watershed brochure.

Assessment Method(s)

1) Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

ANALYSIS RESULTS

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

CONCLUSIONS

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2012. In FY 2011 it was determined that the watershed brochures for all 6 watersheds within the City of San Diego would need to be revised, including the already completed Tijuana and San Diego River watershed brochures. Watershed brochure revision will be completed in FY2012. Effectiveness assessments are scheduled to begin in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE:	**STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS**
ID #:	**SDR-A55**

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs. Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors. SWQMPs with the potential to propose BMPs in the San Diego River Watershed include:

1) SDA 5 (Bostonia)
2) SDA 6 (Lakeside)
3) SDA 7 (Alpine)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2012-13. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in FY 2013-14.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EFFECTIVENESS MEASUREMENTS

To be determined

TITLE: **PET WASTE MANAGEMENT OUTREACH**
ID #: **SDR-A56**

ACTIVITY DESCRIPTION

This activity targets potential, new, and existing pet owners and seeks to educate them on the importance of cleaning up after their pets, as well as tying a water quality and watershed protection message into the outreach activity. A presentation was developed that includes a pre- and post-presentation survey asking participants about their pet waste management practices. Between the pre- and post- surveys, participants review a series of slides that define a watershed, a general description of the MS4 system, the link between bacteria and water quality, and the importance of cleaning up after their pets. The presentation includes tips for managing pet waste properly and encouraging participants to clean up after their pets each and every time. Each jurisdiction selected local pet-related businesses, selecting from pet day-care facilities, pet food retail stores, adoption centers, and/or veterinary clinics to present the materials.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

- Presentation materials & businesses to target completed in 2009
- Commence delivering presentations FY09-10
- Completed presentations during FY10-11

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as priority water quality problem in the San Diego River Watershed. Pet waste in particular is a potential source of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Ten pet waste management presentations were targeted for FY09-10 (Level 1 Outcome). Of the ten planned, all ten outreach events were ultimately completed within FY10-11 with all copermittees in the watershed participating. It is anticipated that an increased score in the post-

presentation survey will show an increase in knowledge and awareness (Level 2 Outcome), and hopefully a change in future behavior (Level 3 Outcome).

Using Community Based Social Marketing tools on the survey, Copermittees may be able to calculate a potential load reduction, as well. One such tool is to ask participants to commit to changing their behavior (e.g.: "I promise to clean up after my pet and dispose of pet waste properly every time") on the survey form. A load reduction may be calculated by estimating the number of participants who make the commitment multiplied by the number of pets they have or are planning to adopt (Level 4 Outcome).

FY 2009-10 ACTIVITY IMPLEMENTATION

During FY09-10 the pet waste survey and training were finalized and used at a number of events.

San Diego RiverFest 2010 – All copermittees in the watershed participated

The San Diego River Watershed Copermittees participated in the first Annual San Diego RiverFest. The San Diego River Park Foundation held the Annual RiverFest event at the Qualcomm practice field. The event drew a large number of participants; it was initially estimated at approximately 5,000. Copermittees had an outreach booth at the event with educational materials targeting existing pet owners. The materials consisted of a presentation that included pre- and post-presentation surveys asking participants about their pet waste management practices. Between the pre- and post- surveys, participants reviewed a series of slides that defined a watershed, a general description of the storm drain system, the link between bacteria and water quality, and the importance of cleaning up after their pets. The presentation also included tips for properly manage pet waste and encourage participants to clean up after their pets each and every time.

The booth had representation from every Copermittee in the San Diego River Watershed. Every participant that reviewed the presentation and took both surveys received a bag that included a pet waste bag dispenser. Every person that stopped by the booth received informational materials about water quality and watersheds.

City of El Cajon

The City of El Cajon held an educational booth at the City's Dog Park. The Dog Park has a good influx of dog owners that attend the park throughout the day and provides a good opportunity for outreach. The booth offered educational materials to everyone who stopped by the booth, and giveaways only to pet owners that took the surveys and reviewed the presentation. Many pet owners approached the booth and received informational materials but only a fraction participated in the presentation and surveys. A total of fourteen pet owners took the pre and post presentation surveys.

City of La Mesa

The City of La Mesa targeted to educate potential, new, and existing pet owners with presentations about pet waste management practices. The presentations were conducted at the San Diego River Park Days event on May 16, 2010; and at the Creek to Bay Clean Up event on April 24, 2010.

In addition, this activity seeks to educate them on the importance of cleaning up after pets, as well as tying a water quality and watershed protection message into the outreach activity. Between the pre- and post- surveys, participants reviewed a series of slides that define a

watershed, a general description of the MS4 system, the link between bacteria and water quality, and the importance of cleaning up after their pets.

City of Santee
The City of Santee contacted Petco, a pet store in Santee that does training sessions for new owners. City staff arranged with the manager at Petco to present the pet waste information at new owner training. Dates when this was done are presented below:

April 29th, 2010 – City staff attended scheduled training, however no pet owners were present to receive the training.

May 27th, 2010 – Two pet owners attended and received training on pet waste management from City staff. Petco has a fair once a year in the Spring where different organizations have booths. Based on a review of the City's business inventory there are no doggie daycare facilities. However the City will continue to find ways to reach out to residents through pet stores and animal hospitals within the City, as well as through community events such as pet licensing clinics.

City of San Diego
On Sunday, May 23rd, Think Blue staff set up a booth at the OB Dog Wash in Ocean Beach to educate dog owners about proper disposal of pet waste. Patrons were asked to take a short pre-test to determine their knowledge of the proper disposal of pet waste and the impact bacteria from pet waste can have on local waterways. Patrons were then encouraged to review a brief flip book presentation entitled, "The Scoop On Dog Poop" which provided educational information about bacteria in found in pet waste, its potential impact on watersheds and methods of proper pet waste disposal. After reviewing the material, patrons were given a post test to determine if their knowledge of pet waste had increased. In exchange for their time patrons were given an pet theme related incentive item (e.g. collapsible dog bowl) for participating. Think Blue staff collected 19 surveys.

On June 5th, Think Blue staff set up a booth at the San Diego Chapter of the Bassett Hound Rescue Annual Picnic held at the Allied Gardens Community Park. Patrons were asked to take a short pre-test to determine their knowledge of the proper disposal of pet waste and the impact bacteria from pet waste can have on local waterways. Patrons were then encouraged to review a brief flip book presentation entitled, "The Scoop On Dog Poop" which provided educational information about bacteria in found in pet waste, its potential impact on watersheds and methods of proper pet waste disposal. After reviewing the material, patrons were given a post test to determine if their knowledge of pet waste had increased. In exchange for their time patrons were given a pet theme related incentive item (e.g. collapsible dog bowl) for participating. Think Blue staff collected 23 surveys.

FY 2010-11 ACTIVITY IMPLEMENTATION
During FY2010-11 the outreach events were finalized and the goal of ten total presentations was met.

Results from the Lakeside Open House event (County, City of El Cajon, City of Santee)
Results are calculated by comparing total correct answers from the pre- and post-presentation surveys, and determining the average percentage difference between the two. A positive percentage shows an increase in knowledge. Of the 31 surveys completed at this event, the overall result was a 28 % increase in knowledge between the pre- and post- surveys. Pre-survey correct answers totaled 101 and post-survey correct answers totaled 140. Out of 31

surveys, 11 participants were able to correctly identify the watershed they live within, and 23 participants signed the Personal Pledge to pick up after their pets regularly. Therefore, it can be concluded that for two-thirds of the surveys collected, we were able to reach Levels 1, 2 and 3 outcomes.

Lakeside Health and Wellness Fair (County of San Diego)

Results are calculated by comparing total correct answers from the pre- and post-presentation surveys, and determining the average percentage difference between the two. A positive percentage shows an increase in knowledge. Of the 9 surveys completed at this event, the overall result was a 22 % increase in knowledge between the pre- and post- surveys. Pre-survey correct answers totaled 31and post-survey correct answers totaled 41. Out of 9 surveys, 4 participants were able to correctly identify the watershed they live within, and all 9 participants signed the Personal Pledge to pick up after their pets regularly. Therefore, it can be concluded that for all of the surveys collected, we were able to reach Levels 1, 2 and 3 outcomes.

TITLE: SAN DIEGO RIVER VOLUNTEER CLEAN UP EVENT
ID #: SDR-A58

ACTIVITY DESCRIPTION

San Diego River Park Foundation (SDRPF) staff and volunteers identified a site on County property within the City of Santee along the San Diego River that would benefit from a trash and debris removal event. With the sponsorship from the County of San Diego (County), the SDRPF organized and performed a volunteer clean-up effort, using 37 volunteers spending 111 volunteer hours, to remove garbage, debris and abandoned encampments as part of a community clean-up effort on County-owned property within the San Diego river corridor. The property is a 67 acre County-owned parcel located within the San Diego River corridor, APN 381-050-73-00. Staging occurred at the parking area at Cottonwood Avenue and Chubb Lane (see photo). Volunteers identified and removed trash and debris equating to over 2,700 lbs. For the County's sponsorship, the SDRPF provided:

- Event logistics and necessary supplies including tools, safety equipment and trash bags.
- Water and food for volunteers.
- Facilitation of dumpster delivery and placement/removal, including alternative waste disposal.
- Hazardous/alternative waste disposal for tires, car batteries and e-waste.
- Use of SDRPF vehicle.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- One day event held May 28, 2011, from 9AM to 12PM

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation
- City of Santee

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria indicators and trash have been identified as priority water quality problems in the San Diego River Watershed. This activity demonstrates a reduced pollutant load of trash and associated bacteria, which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the amount of trash and debris removed from the site (Level 4 Outcome). 2,745 lbs of trash (compared to 7,700 lbs. in 2010) and debris were removed. Items removed included 1 tire (last year, 17 were removed from this site), 1 dumpsite of burned household items that consisted of 8 bags of trash, 1 quart of oil, 20 lbs of E-waste, a

living room set, a porcelain toilet and 15 lbs of recycling were removed and properly disposed of.

TITLE: COMMERCIAL BMP SELF CERTIFICATION PILOT PROGRAM
ID #: SDR-A63

ACTIVITY DESCRIPTION

This program includes an assessment of urban runoff from a major, commercial parking lot in La Mesa (super market with additional shops). The load contribution of the parking lot will also be examined. The project also includes an education and outreach component in order to open dialogue with property management. The shopping center management will provide source control BMP maintenance records for the City to assess. Recommendations will be made to property management, and self certifications will be required annually. Additional wet weather samples will be collected for assessment. The City may decide to continue the program for different commercial centers within the watershed.

In FY 2010-2011 monitoring results obtained from target locations. Will continue in next fiscal year.

TMDL APPLICABILITY

Outreach and pollutant reduction activities will be a component of the Comprehensive Load Reduction Plans developed for the Bacteria TMDL. The activity is designed to assess and reduce pollutant loading stemming from commercial parking lot locations.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The pilot program activity supports the Watershed Strategy by working with property managers in the watershed regarding good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Follow up water quality samples will be collected in order to begin to assess the program. Additionally, due to the variability of sampling, increase in frequency of source control activities onsite will constitute a portion of the effectiveness metric of the activity.

TITLE: KIDS CARE FEST
ID #: SDR-A64

ACTIVITY DESCRIPTION

The City of La Mesa is committed to education outreach at community events. Each year the City in conjunction with Grossmont Healthcare District hosts Kids Care Fest. During the event on September 25, 2010 the city's Storm Water Program had a booth staffed by environmental educators from I Love a Clean San Diego. Approximately 500 people visited the booth during the festival, and received San Diego River Watershed flyers designed to convey information regarding preventing pollution in the watershed. The "Operation Cleanup" watershed model was also demonstrated to visitors. The event is located at Briercrest Park, 9001 Wakarusa St. in La Mesa, CA.

TMDL APPLICABILITY

Outreach and pollutant reduction will be a portion of the San Diego River Comprehensive Load Reduction Plans which will be developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Briercrest Park is located within the San Diego River Watershed. Education and outreach within the watershed allows residents to understand how their actions make a difference in downstream water quality.

EFFECTIVENESS MEASUREMENTS

Number of people visiting storm water booth (500).

TITLE: ALLIED GARDENS GREEN LOT
ID #: SDR-A65

ACTIVITY DESCRIPTION

This project will replace a portion of the conventional asphalt in the parking lot of the Allied Garden Recreation Center with porous pavement to allow for the filtration of urban runoff. The runoff from the asphalt around the recreation center and tennis courts will drain to porous pavement. Underdrains beneath the porous pavement will convey the runoff to the existing catch basins.

TMDL APPLICABILITY

Future TMDLs: fecal coliform, low dissolved oxygen, phosphorous, total dissolved solids

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010 and was transferred to the Engineering & Capital Projects Department for design and construction in September 2010. Construction is anticipated to finish in FY 2015. Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify dissolved oxygen, bacteria, phosphorous, turbidity, and total dissolved solids as high priority water quality problems throughout the San Diego River WMA, and recommend implementing filtration activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of retrofits?
2) How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the retrofit is working as designed)

2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of the project is to reduce runoff volume through filtration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: COMPLEX STREET GREEN MALL
ID #: SDR-A66

ACTIVITY DESCRIPTION

This project will upgrade the existing sidewalk areas with curb cut-outs and vegetated bioretention cells which are designed to capture urban runoff from the tributary asphalt surfaces and provide a load reduction by filtering flows. Runoff absorbed into the amended soils will undergo evapotranspiration through native vegetation.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. This project is currently on hold pending funding availability. At this time, it is unknown when the project will resume.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify dissolved oxygen, bacteria, phosphorous, turbidity, and total dissolved solids as high priority water quality problems throughout the San Diego River WMA, and recommend implementing filtration and infiltration activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the bacteria load reduction efficiency?
2) How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the treatment is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)

3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of vegetative planters.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: FAMOSA SLOUGH EROSION SEDIMENT CONTROL BMP
ID #: SDR-A67

ACTIVITY DESCRIPTION

Famosa Slough is a 37 acre wetland immediately upstream of the San Diego River. It is fed by rainwater from the surrounding urban drainage areas and is flushed with salt water from the main San Diego River channel.

This project takes place in two locations in the slough. At one location, curb and gutter as well a new storm drain pipe and an energy dissipater will be added. The second location will include everything at the first location plus an infiltration channel.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

The concept plan for the project was completed in June 2010. The project is anticipated to be transferred to the Engineering & Capital Projects Department for design and construction in late FY 2011. Construction is anticipated in FY 2015.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify fecal coliform, low dissolved oxygen, phosphorous, and total dissolved solids as high priority water quality problems throughout the San Diego River WMA.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of retrofits?
2) How effective are retrofits at reducing loads of priority pollutants (sediment)?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the retrofit is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)

4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing sediment load.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

TITLE: PET WASTE BAG DISPENSER PROGRAM PHASE II
ID #: SDR-A69

ACTIVITY DESCRIPTION

The purpose of the activity is to assess the effectiveness of installing pet waste stations at Home Owners Associations and Business improvement Districts. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. The assessment focused on evaluating the installation of pet waste stations as a best management practice (BMP) in reducing pollutant loading in correlation with the number of bags deployed. The project includes site evaluations and selections, the installation of pet waste bag dispensers and all-in-one pet stations (dispenser and trash receptacle), pre- and post- site observations for the effectiveness assessments.

The sites were evaluated using a two-step process to screen and select potential project sites. An initial desktop site screening process was performed to identify candidate sites. Site visits were conducted at these locations to further assess the location and gather information used in the selection process.

Initial criteria used to identify the sites included: 1) areas of concentrated dog use adjacent to residential neighborhoods, 2) community and Storm Water Division staff input, 3) potential for partnerships to conduct ongoing operation and maintenance, and 4) positive community acceptance.

Geographical Information System maps depicting potential residential areas, trails, parks, schools, dog parks, and other points of interest, as well as water bodies that are 303(d) listed as impaired for bacterial indicators, nitrogen, and phosphorous, were used during the screening process to develop an initial list of potential project locations.

Based on the results of the initial screening and site assessment visits, the preliminary project locations for each watershed were further evaluated for: 1) dog-related activities within each area, 2) the availability of trash receptacles 3) the absence of pet waste receptacles, 4) the degree of pet waste observed, 5) the potential for vandalism, 6) the priority within the watershed, and 7) the potential for a site-specific contact group to be the point of contact at each site.

Two sites within the San Diego River WMA were selected: the Montanosa Condos, Westview Condos and Robb Field Bike Path. During the initial assessments for site selection, a moderate degree (between 10 and 20 piles) of pet waste was observed at the Montanosa Condos; a low degree (fewer than 10 piles) of pet waste was observed at the Howard Lane Neighborhood Park; a high degree (more than 20 piles) of pet waste was observed at the Robb Field Bike Path.

Two All-in-One Pet Stations (bag dispenser, trash receptacle and sign), were installed at the condos. Robb Field Bike Path was selected as a sign only installation, three signs were installed, each sign was mounted on existing infrastructure along the path.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2010. Installation of the pet waste bag dispensers and the effectiveness assessment concluded during FY 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What are the high pet waste use areas throughout the City where pet waste creates a pollution issue?
2) What is the most cost-effective pet waste station configuration?
3) What are the installation and operations and maintenance costs associated with pet waste stations?
4) What types of opportunities for partnerships exist for businesses, HOAs, and other community groups to sponsor pet waste stations operations and maintenance?

Targeted Measurable Outcome(s)

1) Reduction in pet waste from installation of pet waste stations.
2) Assessment of pollutant load reduction.
3) Decrease in pet waste through awareness from signage.

Assessment Method(s)

1) Monitor the pet waste reduction from pre-installation to post-installation.
2) Monitor overall pollutant load reduction from pet waste installations.
3) Monitor outcomes from sign only installation versus pet waste station installation

Data Recorded

1) Weekly average of waste piles observed prior to installation (Montanosa Condos): 8.7
2) Weekly average of waste piles observed prior to installation (Westview Condos): 4.5
3) Weekly average of waste piles observed prior to installation (Robb Field Bike Path): 20.5
4) Weekly average of waste piles observed after installation (Montanosa Condos): 7.0
5) Weekly average of waste piles observed after installation (Westview Condos): 5.2
6) Weekly average of waste piles observed after installation (Robb Field Bike Path): 11.8
7) Weekly average number of bags dispensed (Montanosa Condos): 53.0
8) Weekly average number of bags dispensed (Westview Condos): 49.5
9) Weekly average number of bags dispensed (Robb Field Bike Path): Sign Only Site
10) Average Weekly waste pile reduction (Montanosa Condos): 1.7
11) Average Weekly waste pile reduction (Westview Condos): -0.7

12) Average Weekly waste pile reduction (Robb Field Bike Path): 8.7
13) Percent waste reduction (Montanosa Condos): 19%
14) Percent waste reduction (Westview Condos): 0
15) Percent waste reduction (Robb Field Bike Path): 42%
16) Ratio of bags dispensed to pet waste piles removed (Montanosa Condos): 31.8
17) Ratio of bags dispensed to pet waste piles removed (Westview Condos): N/A
18) Ratio of bags dispensed to pet waste piles removed (Robb Field Bike Path): N/A

EXPECTED BENEFITS

The City of San Diego Transportation & Storm Water Department, Storm Water Division (Storm Water Division) commissioned the Pet Waste Bag Dispenser Station Design and Implementation Project to assess the effectiveness of the installation of pet waste bag dispenser stations as a Best Management Practice (BMP) for reducing bacteria in the watersheds within the City of San Diego's jurisdiction. The first phase of the Project emphasized installing pet waste bag dispensers in partnership with the Parks and Recreation Department in community parks and at open space trailheads. This second phase of the Project focused on the installation of pet waste stations in residential housing areas in partnership with Homeowners Associations (HOA), Business Improvement Districts (BIDs), and other community groups. The intent was to assess the potential for community partnerships to assist with ongoing maintenance and operation of the bag dispenser stations.

ANALYSIS RESULTS

Observations and pet waste pile counts were conducted for a total of twelve weeks. For six weeks prior to the installation of the pet waste bag dispensers, weekly observations and cleaning were conducted to assess the conditions at each site. An additional six weeks of observations were conducted after the installations. One of the locations was a site with signs only installed to assess the effectiveness of a sign only approach as an alternative. Prior to the installation of the pet waste bag dispensers a weekly average of 8.7 piles and 4.5 piles were observed at the Montanosa and Westview Condos respectively and Robb Field Bike Path (sign only) 20.5 piles.

After the installation of the pet waste bag dispensers, a weekly average of 7.0 piles and 5.2 piles were observed at the Montanosa and Westview Condos, respectively and Robb Field Bike Path (sign only) 11.8 piles. The observations show an average weekly reduction of 1.7 piles at the Montanosa Condos. The Westview Condos had an increase, although minor in the amount of waste observed, to -0.7 piles. However, almost 50 bags per week were dispensed at this site on average.

The average weekly reduction was calculated by subtracting the pre-installation average count of observed waste and the post-installation average count of observed waste. This translates to 19.5% reduction at the Montanosa Condo and 42.4% reduction at the Robb Field Bike Path (sign only) in the amount of pet waste piles observed.

CONCLUSIONS

A review of the collected data revealed the installation of the pet waste bag stations and the installation of signs contributed to the reduction of pet waste piles within the study area. The average number of bags dispensed weekly at the Montanosa and Westview Condos corresponds to an estimated removal of 10.7 pounds and 10.0 pounds of pet waste per week, respectively. At the signs only site Robb Field Bike Path reflected a weekly reduction of 8.7 piles.

Overall, this activity demonstrated that there are positive, measureable pollutant load reductions due to the installation of pet waste bag dispensers and related signage.

TITLE: FOCUSED OUTREACH TO THE EQUESTRIAN COMMUNITY
ID #: SDR-A70

ACTIVITY DESCRIPTION

The County of San Diego conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups.

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for beaches and creeks, and with other more localized TMDLs for constituents such as nutrients and sediment.

TIME SCHEDULE FOR IMPLEMENTATION

ACTIVITY IMPLEMENTATION FY09-10

Workshops

During FY09-10, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Workshops during FY09-10 were held in Bonita, Lakeside, Ramona, and Fallbrook. The table below identifies the primary watershed(s) addressed by each workshop.

Location	Presentation Date	No. of Attendees	Primary Watershed Addressed
Lakeside	11/7/09	23	San Diego River
Ramona	2/3/10	43	San Dieguito, San Diego River
Fallbrook	6/19/10	22	Santa Margarita, San Luis Rey
Bonita	6/28/10	25	Sweetwater
Total		**113**	

Funded by the County, the workshops were presented by staff from either the Solana Center or the MRCD. They included presentations and handouts identifying resources available to equestrians. Information presented included local watershed awareness, manure management, and composting. Key elements included how proper manure management relates to horse health, water quality, and maintenance of positive relationships with neighbors. Question and answer sessions were conducted in all workshops.

The workshops in Lakeside and Fallbrook were held on Saturday mornings on private properties with horses and active compost piles at each location. Participants were encouraged to observe the compost piles and the BMPs in place to prevent contamination of runoff. The presentation at the Fallbrook workshop included poster boards of a Power Point presentation. The other two workshops (Ramona and Bonita) were held in classroom settings at community meeting rooms on weeknight evenings. Presentations were casual discussions that included BMPs to improve horse health, protecting properties from erosion, and preventing polluted runoff discharges. San Diego County watershed maps were displayed at all workshops, allowing attendees to locate their local watershed. Assessment was conducted in the form of pre- and post-workshop surveys.

Community Events

County staff and/or contractors also provided targeted outreach to the equestrian community at four equestrian themed community events during FY09-10. At each of these events, the County staffed a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. Additional details on each community event are provided in the table below.

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
10/17/09 & 10/18/09	Vaquero Days Western Heritage Festival	Granville Martin Ranch/Museum	45	Sweetwater
5/16/2010	Creek Hollow Ranch Horse Dressage Event	Creek Hollow Ranch	10	San Dieguito
5/28&29/10	Valley Center Rodeo Days	Valley Center Community Center	35	San Luis Rey
6/19/2010	Sweetwater Farms Hunter/Jumper Horse Event	Sweetwater Farms	15	Sweetwater

Development and Distribution of Educational Materials

During FY09-10, County staff created a coloring sheet and handout to direct interested equestrians to more detailed information regarding BMPs for manure management (see attached).

Surveys

In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted a firm with expertise in Community Based Social Marketing (CBSM) to conduct research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results

of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (see attached report).

ACTIVITY IMPLEMENTATION FY10-11

Workshop Activities

During FY 2010-11, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Workshops during FY10-11 were held in Lakeside, Ramona*, Bonsall, and Rainbow. The table below identifies the primary watershed(s) addressed by each workshop. The Ramona event was rescheduled due to low attendance and the "make-up" workshop will be held on November 19, 2011.

Location	Presentation Date	No. of Attendees	Primary Watershed Addressed
Lakeside	6/25/11	24	San Diego River
Ramona	6/18/11	1	San Diego River, San Dieguito
Bonsall	6/25/11	22	Santa Margarita, San Luis Rey
Rainbow	6/18/11	14	Santa Margarita, San Luis Rey
Total		**69**	

Funded by the County, the workshops were presented by staff from either the Solana Center or the MRCD. They included presentations, demonstration BMPs, presentations, and handouts identifying resources available to equestrians. Information presented included local watershed awareness, manure management, and composting. Key elements included how proper manure management relates to horse health, water quality, and maintenance of positive relationships with neighbors. Question and answer sessions were conducted in all workshops. Assessment was conducted in the form of pre- and post-workshop surveys.

Community Events

County staff and/or contractors also provided targeted outreach to the equestrian community at three equestrian themed community events during FY10-11. At these events, the County staff gave a presentation or hosted a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. Additional details on each community event are provided in the table below.

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
8/2/2010	San Diego Equestrian Foundation	Hunter Equestrian Center	35	Carlsbad
10/10/2010	Horse Heritage Festival	Walnut Grove Park	75	Carlsbad
10/16/2011	Vaquero Days Western Heritage Festival	Granville Martin Ranch/Museum	150	Sweetwater

Surveys
In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted a firm with expertise in Community Based Social Marketing (CBSM) to conduct research to:

1) Identify barriers to proper manure management,
2) Develop strategies to remove barriers, and
3) Conduct pilot studies to gauge the effectiveness of compost workshops.

Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Information was gathered via survey questionnaires and in person interviews during the Lakeside manure composting workshop. A total of 24 horse owners participated in the survey. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (see attached report).

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

Composting Workshop Lakeside: To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered. Pre-workshop survey results were as follows:

- 65% responded correctly that stormwater is not treated.
- 38% responded that they currently pick up manure more often than once per week.
- 50% responded that they currently compost manure.
- On a scale from 0 (none) to 10 (all) participants responded with a mean score of 3.59 that they believe horse manure contributes to pollution of local waterways.
- On a scale from 0 (none) to 10 (all) participants responded with a mean score of 4.07 for the amount of manure equestrians currently composted.

When asked about what equestrians can do to prevent pollution caused by horse manure, 59.5% of respondents suggested ideas on the pre-workshop survey. Post-workshop survey results were as follows:

- 71% responded correctly that stormwater is not treated.
- 53% responded that they plan to remove manure from corrals and stalls every day in the future.
- 87% responded they plan to manage manure generated by composting in the future.
- On a scale from 0 (none) to 10 (all) participants responded with a mean score of 4.41 responded that they believe horse manure contributes to pollution of local waterways.
- On a scale from 0 (none) to 10 (all) participants responded with a mean score of 7.36 for the amount of manure equestrians plan to compost, indicating a statistically significant increase from the 4.07 mean score initially reported.

Based on the pre- and post-assessment at the Lakeside workshop, it appears that the workshop was successful at fostering positive attitudes and perceived control about composting. Future workshops might benefit from highlighting key issues such as the potential for manure to pollute waterways and the fact that stormwater is not treated.

TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION
ID #: SDR-A71

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoffreduction through public outreach before and during rain barrel distribution events. Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

1) Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
2) Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
3) Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
4) Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County's staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate. Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY09-10

Activity during FY 09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY10-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

On September 26, 2010, Fallbrook residents stood in line before the 9 a.m. start time for the distribution event at Fallbrook Village Square. By the 1 p.m. closing time, 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County.

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	**San Diego River**	San Diego Bay	Tijuana	Unk
Total Residents	2	24	61	6	8	4	**27**	50	2	1

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY09-10. The events took place on August 28, 2011 (Cuyamaca College) and September 26, 2011 (Fallbrook Village). Additional events are being considered for implementation in FY 12-13.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

TITLE: ADDITION OF INFILTRATION STRIPS TO CONCRETE CHANNELS
ID #: SDR-A72

ACTIVITY DESCRIPTION

The City of Santee has received preliminary approval for funding of a pilot project through the San Diego Region Integrated Regional Water Management Plan (IRWMP). The project has been designed specifically to address water quality issues relating to concrete channel-lined drainage. The City has been successful in restoring portions of unlined channels such as Forester Creek and Woodglen Vista Creek. However, it is not possible to implement restoration in concrete channels where there is existing development, for example in the upper portion of the Woodglen Vista Creek, which is surrounded by residences. The City is proposing to conduct a pilot project to explore how infiltration can be introduced at the base of concrete channels to facilitate infiltration of dry weather (and to some extent wet weather) flows. This would mimic the pre-development hydrology of the drainage channel and help recharge groundwater. Infiltration of runoff will divert pollutants from being discharged to the San Diego River. Some designs may allow the recruitment of plants in the infiltration areas which will help remove pollutants such as nutrients from the run-off. The objective of the project is to achieve some of the benefits of restoration without compromising flood control capacity and function. This project complements other projects the City is undertaking to survey the condition of corrugated metal pipe (CMP) portion of the storm drain system and to prioritize CMP replacement. The activity will be implemented when funds are available (projected to be during calendar year 2012).

TMDL APPLICABILITY

This activity focuses on the elimination of dry weather flows which may contribute to bacteria loading, and is therefore applicable to the bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity currently is scheduled for implementation in 2012.

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- Input will be solicited from the Cities of El Cajon, La Mesa and San Diego as well as the County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 1 Dry Weather Flow Reduction.

EFFECTIVENESS MEASUREMENTS

This activity can be assessed up to level 5 (changes in discharge quality). Theoretically it will lead to changes in receiving water quality, but it is unlikely that these changes would be measurable.

TITLE: INDUSTRIAL FACILITY TRASH ENCLOSURE ASSESSMENT
ID #: SDR A-73

ACTIVITY DESCRIPTION

During a previous watershed source identification study, trash enclosures were identified as a source of bacterial indicators. As industrial facilities were identified for WURMP focus during FY 2011 and as most facilities will use an outside trash dumpster, a watershed activity was developed to assess trash enclosure management and where necessary foster improvements. The activity focused on the Wheatlands industrial area in the eastern area of Santee, adjacent to the San Diego River. The regional standards for trash dumpster management were referenced in conducting these assessments: dumpster should be intact; lids down; and the area around the dumpster should be free of debris. Dumpsters should not be allowed to overfill. The activity was implemented using a combination of education, inspection and enforcement. The activity comprised of the following: 1. Development of educational information on trash enclosure management specifically for businesses. This was mailed to every address in the area where the activity was to be conducted. 2. An initial survey was conducted where the conditions of the dumpsters were observed and noted. Where appropriate, the inspector spoke to a business representative to remind them of the trash enclosure management requirements. 3. Follow up surveys were conducted to assess if improvements had been made at the locations where deficiencies were noted. If necessary, the inspector spoke to a relevant business representative to facilitate improvements in trash enclosure management. 4. Locations where trash enclosure management still needed improvement were identified and property managers contacted to advise them of the trash management enclosure requirements and the findings of the activity.

TMDL APPLICABILITY

This activity focuses on a source of bacterial indicators and is therefore applicable to the Bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- 2011

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 3 Source Reduction at Commercial & Industrial Uses, and WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

This activity can be assessed at level 3, behavioral change/BMP implementation, by examining changes in compliance rate during the implementation of the activity.

TITLE: MULTI-FAMILY RESIDENTIAL TRASH ENCLOSURE ASSESSMENT
ID #: SDR A-74

ACTIVITY DESCRIPTION

Trash enclosures have been identified as a source of bacterial indicators during a previous source identification investigation in the San Diego River watershed. During FY 2011 an activity was conducted which focused on trash enclosure management in an industrial area in Santee. A similar activity is being developed for FY 2012 for multifamily residences that use trash dumpster enclosures. The activity will identify multi-family residential locations in Santee, particularly those located in areas where data is available showing that bacterial exceedences have occurred, and those that are in close proximity to the San Diego River and its tributaries. The activity will combine education, inspection, and enforcement as necessary. Educational information will be provided to property managers advising them how trash dumpster enclosures should be managed. This information will be based on regional standards which require that the dumpster(s) be intact; lids closed; and the area surrounding the dumpsters free of trash and debris. Dumpsters should be emptied at a frequency that will prevent them from becoming overfull. Education will be followed by inspection to assess the level of compliance at the facilities. Where appropriate, the property manager will be informed of any deficiencies. Follow-up inspections will be conducted periodically to assess if compliance has been improved. The property manager will be re-contacted as necessary and enforcement procedures will be followed if needed.

TMDL APPLICABILITY

This activity focuses on eliminating a source of bacterial indicators and is therefore applicable to the bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity currently is scheduled to be implemented in 2012.

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is consistent with WURMP Strategic Goal 4 Source Reduction at Residential Land Uses and Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed at level 3 (behavioral change/BMP implementation), as a baseline can be developed for initial inspections, and compared with results for follow-up surveys.

TITLE: JOINT INVESTIGATION AND ENFORCEMENT ACTIVITIES AT CARLTON OAKS GOLF COURSE
ID #: SDR-A75

ACTIVITY DESCRIPTION

The Cities of San Diego and Santee have collaborated in addressing water quality issues at Carlton Oaks Golf Course (Golf Course), located on the San Diego River at the boundary between the two Cities. The majority of the facility is located within the 100-year floodway, and Sycamore Creek transects the golf course. Carlton Oaks' mailing address is in Santee, however the facility is located partially on land owned by the City of San Diego and leased to the Golf Course, and within the City of San Diego.

The Golf Course has been identified as a potential source of nutrients and concerns have been raised regarding BMP implementation, for example in relation to pesticide application. The Golf Course has been subject to business inspections by the City of Santee; however, a number of issues, some relating to activities that may have occurred prior to City incorporation (such as the installation of restrooms on the golf course) needed resolution.

The City of San Diego and City of Santee conducted a joint comprehensive facility inspection. Based on the findings of the inspection an inspection notice was prepared. The real estate department of the City of San Diego also sent a notice reminding the Golf Course operators of their obligations to prepare a stormwater pollution prevention plan (SWPPP) and to comply with stormwater requirements.

A subsequent joint inspection was conducted of the perimeter of the golf course to investigate whether the Golf Course operators were pumping accumulated rainwater from the Golf Course into the San Diego River and whether BMPs were being used. On this occasion there was no active pumping of rainwater, although pipes possibly used for this purpose were observed. The Golf Course operators have been notified of the need to obtain a NPDES permit prior to any future pumping of rainwater from the Golf Course to the San Diego River.

The City of Santee has jointly investigated the disposal measures used at one of the restrooms on the golf course with Padre Dam Municipal Water District. Based on these investigations it is concluded that this restroom does discharge to sanitary sewer. A second restroom (Second Restroom), whose disposal method has yet to be determined, has been closed on order of the City of Santee. Investigations continue with this Second Restroom, which will not be re-opened until it has been demonstrated that the restroom has an appropriate disposal method and that its location will not compromise water quality in Sycamore Creek or the San Diego River.

The City of Santee has also collaborated with the County of San Diego Department of Planning and Land Use to investigate:

- Whether or not two vertical structures in the ground at the Golf Course were wells (inquiries were also made with the County Department of Environmental Health, responsible for monitoring well permitting). No permit information was available on wells located on the relevant portion of the golf course. Based on the observations by the County Inspector, it was concluded that the structures were not wells.
- Whether the Second Restroom is connected to a septic tank. The observations made during this site visit were inconclusive and the Golf Course operators have been directed to uncover the septic tank.

The investigations at the Golf Course are ongoing and will be reported on in future reports.

TMDL APPLICABILITY
San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION
This activity is ongoing.

LEAD WATERSHED COPERMITTEE
- City of Santee

OTHER PARTICIPATING COPERMITTEES
- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES
- Padre Dam Municipal Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
This activity is consistent with Strategic Goal 3, source reduction at commercial and industrial land uses; and Strategic Goal 5, bacteria source reduction.

EFFECTIVENESS MEASUREMENTS
Effectiveness can be assessed at level 3, behavioral change during future business inspections.

EXPECTED BENEFITS
The Golf Course is located in the 100-year floodway and its activities are likely to result in a greater impact on water quality in the San Diego River and Sycamore Creek, than facilities located further away. It is anticipated that improvements in compliance at the Golf Course will result in pollutant load reduction, and possibly improvements in monitoring data for this portion of the San Diego River.

TITLE: MULTI FAMILY RESIDENTIAL TRASH AREA PILOT PROGRAM
ID #: SDR-A76

ACTIVITY DESCRIPTION

The City performed a site-by-site assessment on multi-family residential trash areas in the watershed. This will allow the City to understand the baseline level of compliance. Following the assessment, enforcement will be conducted with follow up inspections to ensure locations are consistently up to code standard. Water quality sampling may be conducted for further assessment.

TMDL APPLICABILITY

The activity will allow the City to understand baseline levels of compliance in multi-family residential locations, and reduce loads of bacteria through enforcement.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This type of activity promotes source control for a particular high priority water quality problem in the watershed.

EFFECTIVENESS MEASUREMENTS

The baseline compliance levels will allow for assessment based on locations that receive further code enforcement. Water quality sampling (wet/dry) will be examined in context of the program. Monitoring may be conducted downstream of particular multi-family locations as budget conditions will allow.

TITLE: QUALCOMM STADIUM DROP OFF COMMUNITY CLEANUP AND RECYCLING EVENT SPONSORSHIP
ID #: SDR-A77

ACTIVITY DESCRIPTION

The City of San Diego Environmental Services Department (ESD) conducted two drop off clean up events (March and June). The events were open to all City residents and targeted items like appliances, metals, junk furniture, mattresses and tires. The Qualcomm Stadium parking lot was the site for the drop off and ESD staff conducted both events.

The events were advertised through an E-mail blast containing a flier outlining the event to all Council Representatives, who then forwarded to constituents. Also utilized were Radio ads and City TV commercial. Fliers were printed and mailed by request to citizen. All City departments were notified via e-mail.

A total of 81,760 pounds were collected of which 37,560 pounds were recycled. Some of the items collected were, refrigerators, microwaves, stoves, window air conditioners, clothes washers and dryers, dishwashers and tires.

These events were in the planning stages for approximately 2-3 months each. Scheduling and coordinating available dates at Qualcomm stadium, writing traffic control patterns if needed, reserving equipment for use and scheduling drivers, creating a site map of the staging area and traffic flow pattern for ease of use.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

These events took place in March and June.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of these Cleanup events will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the sponsored cleanup? ($/lb collected)

Targeted Measureable Outcome(s)

1) Load Reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Quantification (e.g., pounds of trash collected)

Data Recorded

1) Pounds of trash removed (Outcome Level 4): 44,200lbs
2) Pounds of trash recycled (Outcome Level 4): 37,560lbs
3) Total pounds of trash removed and recycled (Outcome Level 4): 81,760 lbs
4) Total money spent on two cleanups (Outcome Level 1): $4,000
5) Efficiency (Total Cost/Total Pounds Removed and Recycled): $0.04/lb

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness and efficiency of free drop off clean up and recycling events. In sponsoring these clean up events, the City is providing a convenient drop off location for the free drop off/disposal of furniture, appliances and tires. These community cleanup events are also intended to deter residents from illegally dumping unwanted items in street and alley rights-of-way, canyons, creeks and riverbeds as well as other locations throughout the City. They also replace a house by house "bulky item" pick up.

ANALYSIS RESULTS

ESD staff collected a total of 81,760 lbs of metals, appliances, junk furniture and mattresses. Disposed 44,200 lbs and recycled 37,560 lbs. A total of 114 tires were collected in the March event (tire drop off in the June event was not an option). The sponsorship from the City of San Diego Transportation and Storm Water Department, Storm Water Division per event was $2,000 for a total of $4,000. The efficiency therefore was $0.04/lb, calculated by dividing the sponsorship cost for two events by the total pounds of trash removed and recycled.

CONCLUSIONS

This activity fulfills a watershed water quality activity for FY2011 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 81,760 pounds during the reporting period.

TITLE: Rainwater Harvesting Rebate Pilot Program
ID #: SDR-A78

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). During this reporting period staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program will be open to the residents of the City of San Diego on a first come first serve basis and will provide a rebate of .50c per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department will administer the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in the last quarter of FY 11 with a tentative implementation start date in FY12.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- City of San Diego Public Utilities Department

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identifies several water quality problems throughout the watershed. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

Data to be recorded

1) Most common water catchment device installed
2) Average size of water catchment device installed

EXPECTED BENEFITS

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

The project is currently being planned so there are no conclusions to report.

TITLE: LA MESA HARRY GRIFFEN PARK KIOSK
ID #: SDR-A79

ACTIVITY DESCRIPTION

During 2010-2011 the City of La Mesa (City) constructed an education outreach kiosk at the largest park within the City in the San Diego River Watershed, Harry Griffen Park. This kiosk was constructed with the help of the local Eagle Scouts. The kiosk presents storm water pollution prevention education outreach materials, including the San Diego River Watershed Fact Sheet along with other storm water related materials. The watershed fact sheet provides information on the watershed, pollutants of concern, and tips to prevent storm water pollution.

The expected benefit is that park-goers and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

Information updated quarterly.

TMDL APPLICABILITY

Education outreach will be a component of the Comprehensive Load Reduction Plan which is being developed for the regional bacteria TMDL. The kiosk includes a San Diego River Watershed Fact Sheet that outlines the pollutants of concern for the watershed, as well as BMPs which should be utilized to limit pollutants from reaching the storm drain system.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Total Phosphorus

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The education outreach kiosk provides pollution prevention tips to address those watershed priority pollutants. The kiosk supports the Watershed Strategy by educating residents in the vicinity of the park on good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the

watershed and region. The kiosk provides educational outreach materials specific to the watershed to address pollution prevention measures.

APPENDIX B

ACTIVITY A-32 SUPPORTING DOCUMENTATION: WOODSIDE AVENUE EXTENDED DETENTION BASIN ANNUAL WATER QUALITY SAMPLING RESULTS FY 2010-11

County of San Diego
Woodside Avenue Extended Detention Basin
Annual Water Quality Sampling Results FY 2010/2011

December 2011

INTRODUCTION

On July 15, 2004 the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and to construct a Best Management Practice (BMP) water quality detention basin (Woodside EDB) to treat urban runoff from the Winter Gardens sub-watershed. This runoff discharges directly into the San Diego River. This report presents the annual water quality sampling results for Woodside EDB in order to assess its effectiveness in pollutant removal and load reduction.

During FY 2010-2011, water quality and flow at the inlet and outlet of Woodside EDB were monitored over three dry weather and two wet weather sampling events. Dry weather was defined as following an antecedent dry period of at least 72 hours or after the EDB has returned to its base flow conditions; wet weather monitoring was conducted during and/or directly following storm events of at least 0.10 inches of rainfall.

DESCRIPTION OF SAMPLING PROCEDURES

Measurement of Flow

Instantaneous flows were estimated for influent and effluent by multiplying flow velocity readings from a hand-held mechanical current meter by direct water depth and channel width measurements. Staff gauges were not used to estimate flow because accumulated sediment in the outlet and inlet channels prevented accurate estimation. The results are summarized in Table 1 below.

Table 1. Instantaneous Flow Measurements

Date	Inlet Flow (cfs)	Outlet (cfs)
3/7/2011	1.561	1.502
4/8/2011	0.221	0.780
9/29/2010	0.047	0.016
1/20/2011	0.163	0.230
5/26/2011	0.158	0.083

Water Quality Sampling

During FY 2010/2011, three dry weather events (on September 29, 2010; January 20, 2011; and May 25, 2011) and two wet weather events were sampled (on March 7 and April 8 of 2011). One set of water quality grab samples were taken at both the influent and effluent during each sampling event. The samples were collected in pre-cleaned laboratory-supplied sampling bottles. Samples were labeled, placed in a cooler on ice and transported under proper chain-of-custody documentation to an analytical laboratory for analysis. The samples were analyzed for the constituents listed in Table 2. During the sampling of the inlet and outlet, field

measurements were also collected for pH, conductivity, temperature, dissolved oxygen, and turbidity. The field measurements are described in Table 3.

Table 2: Water Quality Constituents Measured and the Corresponding Analytical Methods, Reporting Limits (RL) and Method Detection Limits (MDL)

Measured Parameter	Method	RL	MDL
Flow	Flow Probe FP101	0.01 cfs	0.01 cfs
pH	In-situ, Horiba U-10	0.01 units	0.01 units
Temperature	In-situ, Horiba U-10	0.1 °C	0.1 °C
Conductivity	In-situ, Horiba U-10	1 mS/cm	1 mS/cm
Dissolved Oxygen	In-situ, Horiba U-10	1 mg/L	0.01 mg/L
Turbidity	In-situ, Horiba U-10	1 NTU	1 NTU
Ammonia as N	SM4500 NH3 B,C,D	0.05 mg/L	0.02 mg/L
Copper, Dissolved and Total	EPA 200.7, EPA 200.8	10 µg/L	2 µg/L
Dissolved Organic Carbon (DOC)	SM 5310 B	1 mg/L	1 mg/L
Hardness	EPA 200.7, SM 2340 C	10 mg/L	10 mg/L
Lead, Dissolved and Total	EPA 200.8	5 µg/L	1 µg/L
Nitrate as N	SM 4500 NO3 E	0.009 mg/L	0.01 mg/L
Phosphate, Total as P	SM 4500-P B,E	0.05 mg/L	0.02 mg/L
Total Dissolved Solids (TDS)	SM 2540 C	20 mg/L	1 mg/L
Total Organic Carbon (TOC)	SM 5310 B	1 mg/L	0.4 mg/L
Total Suspended Solids (TSS)	SM 2540 D	2.5 mg/L	0.307 mg/L
Zinc, Dissolved and Total	EPA 200.8	20 µg/L	3 µg/L

RESULTS

Data collected during FY 2010-2011 are summarized in Table 3. Table 4 shows the inlet / outlet percent differences in constituent concentrations and field-measured parameters including pH, temperature, conductivity, dissolved oxygen and turbidity. Percent differences between the inlet and outlet constituent loadings are presented in Table 5. Negative % differences indicate reductions (lower values at the outlet as compared to the inlet); positive % differences show increases (higher concentrations or loadings at the outlet than at the inlet)

For field-measured parameters (Table 4), a 24% average decrease in flow was observed between the influent and effluent ends of the Woodside EDB during dry weather; the instantaneous flow at the outlet was slightly lower than at the inlet during the March 2011 storm event; it was two and a half times higher at the outlet during the April 2011 storm event. Since the April 2011 storm measurements were taken directly following the storm event, this much higher flow measurement may been due to a temporarily increased flow from the detention basin toward the end of the storm as water accumulated in the basin and was discharging at a temporarily higher rate from the outlet at the time of the measurement. . Therefore, the April 2011 storm event discharge rate at the outlet was not considered representative of the entire storm event and was not used to calculate loads (Table 5).

Generally, dissolved oxygen, temperature and pH were lower at the outlet than the inlet of the EDB while turbidity and conductivity were higher but this depended on the sampling event considered (Table 4). For instance, turbidity during the March 2011 storm event was 83% lower at the outlet than at the inlet but, for the April 2011 storm, turbidity was 127% higher at the outlet. During dry weather, a reduction in turbidity was observed for one of the three sampling events while, for the remaining two, turbidity was higher at the outlet than the inlet.

With respect to the mean percent differences in constituent concentrations between the EDB influent and effluent (Table 4) during dry weather, only nitrate as N, ammonia, total phosphate as P and total copper showed lower concentrations at the outlet than at the inlet; mean concentrations of all remaining constituents were higher at the outlet of the EDB. However, individual results varied depending on the dry weather event monitored. During wet weather, decreased total suspended solids, total and dissolved organic carbon, ammonia, total phosphate as P, and total and dissolved metal concentrations were observed at the outlet while TDS, hardness, and nitrate as N concentrations were higher at the outlet than at the inlet.

When constituent loadings were considered (Table 5), all but three constituents showed mean load reductions between inlet and outlet of the EDB during dry weather. The three constituents that had the higher mean dry weather loads at the outlet included total suspended solids, total lead, and dissolved zinc. During wet weather, load reductions were observed for all metals, total phosphate as P, ammonia and TSS when measured for the March 2011 event. Loads were not calculated for the April 2011 event due to the un-representative instantaneous discharge rate measured at the outlet of the EDB.

Table 3: Analytical and Field Results

Constituent (units)	Wet Weather				Dry Weather					
	Mar 7, 2011		Apr 8, 2011		Sep 29, 2010		Jan 20, 2011		May 26, 2011	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Discharge (cfs)	1.56	1.50	0.22	0.78	0.05	0.02	0.16	0.23	0.16	0.08
pH	7.65	7.87	8.04	7.52	8.04	7.48	7.5	7.33	7.51	7.79
Conductivity (mS/cm)	7.65	7.47	7.94	7.90	7.64	7.50	8.31	7.97	8.43	7.94
Turbidity (NTU)	0.49	0.84	1.76	1.76	2.12	2.16	2.37	2.21	2.29	2.33
Dissolved Oxygen (mg/L)	129	22	22	50	4	5	6	4	2	7
Temperature (°C)	8.73	5.43	8.89	7.13	5.61	7.63	18.35	5.08	14.21	6.42
Total Dissolved Solids (mg/L)	16.2	14.9	19.9	15.2	21.2	21.5	14.5	12.4	24.2	16.6
Total Suspended Solids (mg/L)	282	518	1120	1200	1390	1340	1610	1660	1430	1460
Hardness (mg/L)	67.3	11.8	20.8	21.6	10.7	7.1	17.6	5.6	2.2	12.2
Total Organic Carbon (mg/L)	136	265	507	560	635	641	748	781	728	702
Dissolved Organic Carbon (mg/L)	13	14	21	15	3	4.2	4.2	4.1	6.2	6.9
Nitrate as N (mg/L)	12	13	20	15	2.8	3.6	3.8	4	5.9	6.4
Ammonia (mg/L)	1.44	3.13	7.38	8.2	11.5	8.08	12.4	11.5	13.3	10.7
Total Phosphorus (mg/L)	0.34	0.18	0.41	0.36	0.03	0.02	ND	ND	0.21	0.17
Dissolved Copper (µg/L)	0.26	0.18	0.25	0.23	0.19	0.18	0.12	0.08	0.05	0.06
Total Copper (µg/L)	7	5	6	4	ND	1	2	1	2	2
Dissolved Lead (µg/L)	16	8	9	6	2	1	4	3	4	4
Total Lead (µg/L)	ND	ND	1	1	ND	ND	ND	ND	ND	ND
Dissolved Zinc (µg/L)	5	2	2	2	1	1	2	3	0.5	1
Total Zinc (µg/L)	30	20	20	12	4	9	5	7	6	8

ND – not detected
NM – not measured

Table 4: Percent Differences between Woodside EDB Inlet and Outlet Field Sampling Results (Discharge, pH, Conductivity, Turbidity and Temperature) and Constituent Concentrations.

Constituent	Wet Weather		Dry Weather			Mean % Difference		
	03/07/11	04/08/11	09/29/10	01/20/11	05/26/11	Wet	Dry	Overall
Flow	-4%	254%	-67%	41%	-47%	125%	-24%	35%
pH	-2%	-1%	-2%	-4%	-6%	-1%	-4%	-3%
Conductivity	72%	0%	2%	-7%	2%	36%	-1%	14%
Turbidity	-83%	127%	25%	-33%	250%	22%	81%	57%
Dissolved Oxygen	-38%	-20%	36%	-72%	-55%	-29%	-30%	-30%
Temperature	-8%	-24%	1%	-14%	-31%	-16%	-15%	-15%
Total Dissolved Solids	84%	7%	-4%	3%	2%	45%	1%	18%
Total Suspended Solids	-82%	4%	-34%	-68%	455%	-39%	118%	55%
Hardness	95%	10%	1%	4%	-4%	53%	1%	21%
Total Organic Carbon	8%	-29%	40%	-2%	11%	-10%	16%	6%
Dissolved Organic Carbon	8%	-25%	29%	5%	8%	-8%	14%	5%
Nitrate as N	117%	11%	-30%	-7%	-20%	64%	-19%	14%
Ammonia as N	-47%	-12%	-33%	0%	-19%	-30%	-17%	-22%
Phosphate, Total as P	-31%	-8%	-5%	-33%	20%	-19%	-6%	-11%
Copper, Diss	-29%	-33%	100%	-50%	0%	-31%	17%	-2%
Copper, Total	-50%	-33%	-50%	-25%	0%	-42%	-25%	-32%
Lead, Diss	0%	0%	0%	0%	0%	0%	0%	0%
Lead, Total	-60%	0%	0%	50%	100%	-30%	50%	18%
Zinc, Diss	-33%	-40%	125%	40%	33%	-37%	66%	25%
Zinc, Total	-41%	-27%	56%	10%	50%	-34%	39%	10%

Table 5: Percent Differences between Woodside EDB Influent and Effluent Constituent Loadings.

Constituent	Wet Weather	Dry Weather			Mean % Difference	
	03/07/11	09/29/10	01/20/11	05/26/11	Dry	Overall
Total Dissolved Solids	77%	-68%	46%	-46%	-23%	2%
Total Suspended Solids	-83%	-78%	-55%	193%	20%	-6%
Hardness	87%	-66%	47%	-49%	-23%	5%
Total Organic Carbon	4%	-53%	38%	-41%	-19%	-13%
Dissolved Organic Carbon	4%	-57%	49%	-43%	-17%	-12%
Nitrate as N	109%	-77%	31%	-58%	-34%	1%
Ammonia as N	-49%	-78%	41%	-57%	-31%	-36%
Phosphate, Total as P	-33%	-68%	-6%	-37%	-37%	-36%
Copper, Diss	-31%	-33%	-29%	-47%	-37%	-35%
Copper, Total	-52%	-83%	6%	-47%	-42%	-44%
Lead, Diss	-4%	-67%	41%	-47%	-24%	-19%
Lead, Total	-62%	-67%	112%	6%	17%	-3%
Zinc, Diss	-36%	-25%	98%	-30%	14%	2%
Zinc, Total	-44%	-48%	55%	-21%	-4%	-14%

CONCLUSIONS

Generally, the results indicate that, constituent concentrations at the outlet of the EDB were often higher than at the inlet. There were, however, overall load reductions for the majority of constituents measured during both dry and wet weather (for wet weather, only the March 2011 storm event data were included in the calculations). The load reductions were most likely due to the EDB allowing settling or absorption of pollutants before reaching the outlet.

For dry weather, the exceptions (mean loads higher at the outlet than at the inlet of the EDB) included total lead, dissolved zinc and TSS; for wet weather TOC, DOC and nitrate as N had loads that were higher at the outlet. The increased mean dry weather loads of zinc, lead and TSS were due to measurements taken during just one of the three dry weather events (the January 20, 2011 event) during which instantaneous loadings of most constituents were higher at the outlet than at the inlet. This was due to a higher instantaneous flow rate measured at the outlet during that event.

In terms of constituent concentrations alone, it may be concluded that the EDB functioned well in reducing nitrate-N, ammonia and total copper concentrations in non storm flows and TDS, TSS, ammonia, total phosphate as P, and metals concentrations during wet weather. The concentrations of other constituents measured, however, were not consistently reduced and were often higher at the outlet of the EDB. The often higher concentrations of metals at the outlet during dry weather conditions may have been due to the deposition of metals and dust near the outlet as it is located adjacent to a high-traffic road.

SAN DIEGO RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

San Diego River Watershed
San Diego County, California

Prepared By:

City of El Cajon, Lead Copermittee
City of La Mesa
City of San Diego
City of Santee
County of San Diego

With Consultant Support From:

TRC
San Diego, California

January 2013

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Land Use Map

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EXECUTIVE SUMMARY

In accordance with the requirements of the 2007 Municipal Permit, this Watershed Urban Runoff Management Program (WURMP) Annual Report describes the activities performed by the San Diego River Watershed Copermittees in fiscal year (FY) 2011-12. The most significant activity this year was the development of the Comprehensive Load Reduction Plan (CLRP) for the watershed in accordance with the Bacteria Total Maximum Daily Load (TMDL).

The San Diego River Watershed Source Identification Study has been used for the past two years to guide the selection, planning and implementation of watershed activities by the San Diego River Water Copermittees. The Copermittees' combined efforts have resulted in the following measurable load reductions for the San Diego River Watershed:

- Prevention of over 81,000 pounds of pet waste from entering the watershed.
- Removal of over 116,000 pounds (415 cubic yards) of trash/debris from the watershed.

These and other watershed activities that contribute to improved water quality for the watershed are described in more detail in this Annual Report.

This Annual Report also reviews the available water quality and pollutant source information to assess whether any changes should be made to the WURMP. In particular, the San Diego River Watershed Copermittees relied upon the analysis of available data by the Regional Monitoring Report and the CLRP for the San Diego River watershed. Based on this review of the available data and analysis, the San Diego River Watershed Copermittees concluded that the high priority pollutants for the watershed remain the same ones identified in the WURMP and 2011 Long Term Effectiveness Assessment (LTEA). The San Diego River Watershed Copermittees also concluded that significant revisions to the Strategic Goals established in the WURMP's current 5-year strategic plan are not needed for FY 2012-13, which is the last year of the 5-year period.

Similar to previous years, the San Diego River Watershed Copermittees have evaluated the FY 2011-12 watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document. The effectiveness assessment continued to find evidence of effectiveness in levels 1 through 4, but faced similar difficulties as in the past when trying to assess effectiveness in levels 5 and 6.

Based on these results, the San Diego River Watershed Copermittees will continue to develop watershed activities that are consistent with the WURMP for FY 2012-13. The primary focus of watershed activities in the next year will be

targeted to support San Diego River Watershed Copermittee compliance with the Bacteria TMDL. In addition, the regional Copermittees are moving towards an adaptive management process in the watersheds as articulated in the Report of Waste Discharge (ROWD) and are looking to integrate the various regulatory programs, e.g. municipal permit and TMDLs, into a single program for efficiency.

CITY OF SANTEE

MAYOR
Randy Voepel

CITY COUNCIL
Jack E. Dale
Rob McNelis
John W. Minto
John Ryan

CITY MANAGER
Keith Till

January 2013

San Diego River WURMP
2011-2012 WURMP Annual Report

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature _____ Date 1/22/13

Pedro Orso Delgado, Deputy City Manager 619 250-4100 (x167)

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Printed on recycled paper

THE CITY OF SAN DIEGO

January 25, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Diego River Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Diego River Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden

Kris McFadden
Deputy Director
Transportation & Storm Water Department
City of San Diego

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CITY OF
LA MESA
JEWEL of the HILLS

PUBLIC WORKS DEPARTMENT

January 2013

San Diego River WURMP
2011-2012 WURMP Annual Report

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature _____ Date 1/22/13

Gregory P. Humora, Director of Public Works/City Engineer — 619.667.1146
Printed Name, Title — Phone Number

8130 ALLISON AVENUE • LA MESA, CA 91942 • TEL: 619.667.1166 FAX: 619.667.1380

January 31, 2013

San Diego River WURMP
2011-2012 WURMP Annual Report

CERTIFICATION

"I Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature | 1/23/13 Date

Douglas Williford, City Manager | (619) 441-1780
Printed Name, Title | Phone Number

County of San Diego

LAND USE AND ENVIRONMENT GROUP

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January 18, 2013

SAN DIEGO RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM (WURMP) FY 2011-12 ANNUAL REPORT STATEMENT OF CERTIFICATION

I certify, under penalty of perjury of law, that the County of San Diego's contributions to this FY 2011-12 San Diego River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer
Land Use and Environment Group
County of San Diego

Date 1/18/13

1.0 INTRODUCTION

The National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit for San Diego Copermittees (Order No. R9-2007-0001, NPDES No. CAS 0108758, hereafter referred to as "Municipal Permit") requires that the Copermittees within the San Diego River Watershed collaborate in the development of a watershed-based program that addresses surface water quality and storm water pollution prevention (California Regional Water Quality Control Board [CRWQCB], 2007). In accordance with these requirements, the San Diego River Watershed Copermittees developed and submitted a revised Watershed Urban Runoff Management Plan (WURMP) in March 2008 (City of El Cajon et al., 2008). This report provides an annual reporting of San Diego River Watershed Copermittees' progress in implementing the revised WURMP and meeting other Municipal Permit watershed-level requirements for fiscal year (FY) 2011-12.

1.1 COPERMITTEE COLLABORATION

The administration of the San Diego River Watershed Activities is handled both jurisdictionally and collaboratively. The jurisdictions act collaboratively to review and understand the water quality monitoring data and define the water quality issues and priority water quality pollutants. The San Diego River Watershed Copermittees use this information to develop and implement jurisdictional short- and long-term activities that address the priority pollutants and sources. The San Diego River Watershed Copermittees also work together as much as possible when joint efforts allow Copermittees to more effectively use limited resources and achieve greater results. The San Diego River Watershed Copermittees have developed close working relationships on watershed issues that have a direct impact across jurisdictional boundaries. For example, staff in Santee and El Cajon has worked extensively on the migration of trash in the San Diego River from El Cajon to Santee and the identification and removal of bacteria sources in Forester Creek.

Between July 2011 and June 2012, the San Diego River Watershed Copermittees formally met thirteen times to develop and implement the San Diego River WURMP in accordance with the Municipal Permit. During the reporting period, all San Diego River Watershed Copermittees took an active role in the implementation of the WURMP and watershed activities. In addition, the workgroup used email and phone calls to facilitate collaboration on the development of watershed activities and the Annual Report. The following table presents a summary of the meetings held by the San Diego River WURMP workgroup during the reporting period, including an outline of the principle agenda items.

Summary of Watershed Workgroup Meetings

Meeting Date/Location	Topics Covered
07/14/11 – City of San Diego	Bacteria TMDL - CLRP Potential Collaboration with Stakeholders WURMP Leads Workgroup Update Cost Sharing Agreement Watershed Implementation Activities
08/10/11 – City of San Diego	Watershed Implementation Activities WURMP Leads Workgroup Update Bacteria TMDL - CLRP Cost Sharing Agreement
9/8/11 – City of Santee	Watershed Activities Database WURMP Annual Report Bacteria TMDL - CLRP
10/13/11 – City of Santee	San Diego River Monitoring Results – Weston Bacteria TMDL- CLRP Watershed Activities for Residential Bacteria WURMP Annual Report Status of Cost Share Agreement
11/3/11 – City of Santee	WURMP Annual Report Bacteria TMDL- CLRP
12/1/11 – City of San Diego	WURMP Annual Report WURMP Leads Workgroup Update Bacteria TMDL - CLRP
1/18/12 – City of Santee	WURMP Annual Report Bacteria TMDL- CLRP
2/16/12 – City of Santee	San Diego River Monitoring– Weston Water Quality Data Sharing with Stakeholders Bacteria TMDL- CLRP
3/01/12 – City of San Diego	Bacteria TMDL- CLRP Regional Program Planning Cost Sharing Agreement Coordinate Participation in Santree Fest Event
4/5/12 – City of Santee	Regional Program Planning Bacteria TMDL - CLRP Cost Share Agreement for next year
4/26/12 – County of San Diego	Bacteria TMDL - CLRP
5/3/12 – City of San Diego	Bacteria TMDL - CLRP San Diego River Days 2012 Municipal Permit Reissuance
6/12/12 – County of San Diego	Bacteria TMDL - CLRP

The San Diego River Watershed Copermittees will continue to meet on a regular basis to plan and facilitate implementation of the San Diego River WURMP.

2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section is intended to provide an updated assessment and analysis of the watershed's water quality and pollutant sources. A comprehensive summary and analysis of the monitoring conducted during FY 2011-12 is documented in Section 9 of the *San Diego County Copermittees 2011-2012 Urban Runoff Monitoring Report*, January 2013, prepared by Weston Solutions (Weston, 2013) and selected portions of the document are repeated in Section 2.1 below. The San Diego River Watershed Copermittees reviewed the results of the monitoring program and then reviewed the results of the recently completed Long Term Effectiveness Assessment Water Quality Report (LTEA; SDCRC, 2011). Updates to these assessments based on the new information available are provided in Sections 2.2 and 2.3 below.

2.1 SUMMARY OF REGIONAL MONITORING RESULTS

The 2011-2012 Receiving Waters and Urban Runoff Monitoring Report provides a description of the monitoring results of the past year and some long-term trends. Based on these results, the report's recommendations for the San Diego River watershed are as follows:

Continue with the requirements and timeframe as defined in the current Permit, including monitoring at the MLS at a frequency that will allow the determination of long-term trends with a high level of confidence.

MS4 Outfall Monitoring should be continued in accordance with the approved Workplan (SDCRC, 2008c) to complete the 5-year program (1 year remains).

The following recommended actions from the triad monitoring results as listed in Section II, A. 4 (Table 3 of the Permit) were provided for both dry and wet weather.

The recommendations based on dry weather monitoring were the same for SDR-MLS, SDR-TWAS-1, and SDR-TWAS-2 and include the following:

- No action necessary to address toxic chemicals.
- Address potential role of urban runoff in causing physical habitat disturbance.

The recommendations based on dry weather monitoring for SDR-TWAS-3 include the following:

- Conduct TIE to identify contaminants of concern, based on TIE metric. The Copermittees budgeted for three TIEs during the 2011-2012 Monitoring Season. Based on prioritization and similar results at this station during wet weather, a TIE was conducted at SDR-TWAS-3 during wet weather. The results of the TIE indicated high TDS and hardness as the likely cause of observed toxicity. Results compared to similar hardness controls did not

suggest toxicity was due to a toxic constituent, but rather due to an artifact of comparison to a dissimilar control. These results were similar to results at stations SR-TWAS-1 and MB-TWAS-2 and suggest that alternate test control techniques should be considered when evaluating toxicity at stations with high TDS. Please see Appendix I for specific information in the TIE Report.

- Address upstream sources.
- Address potential role of urban runoff in causing habitat disturbance.

The recommendations based on wet weather monitoring were the same for SDR-MLS and SDR-TWAS-1 and include the following:

- No action necessary to address toxic chemicals.
- Address potential role of urban runoff in causing physical habitat disturbance.

The recommendations based on wet weather monitoring at SDR-TWAS-2 include the following:

- Address upstream sources.

The recommendations based on wet weather monitoring for SDR-TWAS-3 include the following:

- Conduct TIE to identify contaminants of concern, based on TIE metric. A TIE was conducted at SDR-TWAS-3 during wet weather. The results of the TIE indicated high TDS and hardness as the likely cause of observed toxicity. Results compared to similar hardness controls did not suggest toxicity was due to a toxic constituent, but rather due to an artifact of comparison to a dissimilar control. These results were similar to results at stations SR-TWAS-1 and MB-TWAS-2 and suggest that alternate test control techniques should be considered when evaluating toxicity at stations with high TDS. Please see Appendix I for specific information in the TIE Report.
- Address upstream sources.
- Address potential role of urban runoff causing physical habitat disturbance.

2.2 WATER QUALITY ASSESSMENT BY WATERSHED COPERMITTEES

The San Diego River Watershed Copermittees have reviewed the current monitoring data and long-term trends reported in the 2011-2012 Receiving Waters and Urban Runoff Monitoring Report and substantively repeated the report's recommendations in Section 2.1 above. The San Diego River Watershed Copermittees have also reviewed the 2011 revised LTEA results. Based on these reviews, the San Diego River Watershed Copermittees continue to believe that bacteria indicators remain the highest priority pollutant in the watershed. Other pollutants of concern and impairments are also being addressed through planned implementation of the Comprehensive Load Reduction Plan (CLRP). However, for the limited purpose of

activity selection in the next fiscal year under this WURMP, which is set to expire with the anticipated reissuance of the municipal permit, bacteria indicators should remain the primary pollutant of concern for the San Diego River Watershed Copermittees.

2.3 POLLUTANT SOURCE ASSESSMENT BY WATERSHED COPERMITTEES

The results of the Weston monitoring report are generally consistent with the results of the recently completed LTEA and CLRP (SDCRC, 2011; City of El Cajon et al, 2012). For future activity planning, the processes described in the LTEA and CLRP and the ongoing results of the monitoring program will be used by the San Diego River Watershed Copermittees to identify pollutant sources to be addressed by program activities. The results so far appear to indicate that the pollutant sources previously identified in the WURMP for this watershed will remain valid for FY 2012-13. More specifically, the San Diego River Watershed Copermittees believe the targeted land uses and the relative rankings of potential source categories within these land use types, as reported in the WURMP and updated in previous WURMP Annual Reports, remain valid concerns for the watershed. In particular, the San Diego River Watershed Copermittees will continue to focus their management attention and resources on addressing indicator bacteria through the Total Maximum Daily Load (TMDL) process and implementation of the CLRP.

In addition, through four studies performed by the City of San Diego (*City of San Diego, 2010, Tecolote Creek Microbial Source Tracking Summary, Phases I, II, and III; City of San Diego, 2010, San Diego River Source Tracking Investigation – Phase I; and, City of San Diego, 2009, Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek by Weston Solutions Inc.; San Diego County Enterococcus Regrowth Study by Southern California Coastal Water Research Project (SCCWRP))*, it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[1], was found to provide both a bacteria transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishi et al., 2007; Yamahara et al., 2009).

[1] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

3.0 IMPLEMENTATION OF WATER QUALITY ACTIVITIES

This section summarizes the activities implemented by the San Diego River Watershed Copermittees during the FY 2011-12 reporting period. The March 2008 comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are based on the priority pollutants and targeted sources identified in the WURMP, and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement.

The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

As indicated in the table below, the schedule for implementing activities is set to end with the FY 2012-2013 in conjunction with the change to a new Municipal Permit, which is anticipated to be reissued in the near future, and implementation of the recently completed CLRP. A new schedule for activities will be developed as appropriate based on the final requirements of the new Municipal Permit when reissued and consistent with planned implementation of the CLRP.

		Implementation Schedule by Fiscal Year				
Goal	**Strategic Goal**	**Fiscal Year 2009**	**Fiscal Year 2010**	**Fiscal Year 2011**	**Fiscal Year 2012**	**Fiscal Year 2013**
1	Dry Weather Flow Reduction	P/I/A	P/I/A	P/I/A	I[1]/A	A
2	Municipal/Park Source Reduction	I	A		P[1]	I[1]
3	Commercial/Industrial Source Reduction	P	I	I	A	
4	Residential Source Reduction		P	P	I	A
5	Bacteria Source Reduction	P/I/A	P/I/A	P/I/A	P/I/A	P/I/A

Notes: I = Implementation; P = Planning; A = Assessment
[1] Activities supporting this Strategic Goal may be eliminated and shifted toward other Strategic Goals if judged appropriate.

3.1 WATERSHED WATER QUALITY ACTIVITIES

The San Diego River Watershed Copermittees implemented numerous water quality activities focused on the San Diego River Watershed priority pollutants of concern during FY 2011-12. These activities are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern. Some of the highlighted activities include:

- River Restoration projects, including land acquisitions;
- Trash removal and river cleanup events;
- Trash and waste removal from homeless encampment removals;
- Rebates for homeowners to harvest rainwater;
- Structural best management practice (BMP) projects; and
- Setting-up additional "doggie bag" dispensers.

3.2 WATERSHED EDUCATION ACTIVITIES

The San Diego River Watershed Copermittees continue to value education activities as a means of reducing pollutants at the source. The watershed education activities conducted in FY 2011-12 are summarized in the Watershed Activities Matrix and activity summary sheets included in Appendix A, which contain descriptions of each activity's impact on the watershed and the pollutants of concern. The San Diego River Watershed Copermittees worked collaboratively to develop and implement education programs, including outreach to new public venues such as at the Santree Fest. The education covered a number of topics directly related to high priority sources, including pet waste, rain barrels, pesticide use, etc. These activities included pre- and post-presentation surveys to measure improvements in public understanding.

3.3 PUBLIC PARTICIPATION ACTIVITIES

The San Diego River Watershed Copermittees continue to rely on the Project Clean Water website as a tool to facilitate outreach to the public. In addition, a number of the activities, both education and water quality, are specifically designed to foster public participation. For example, the cleanup events sponsored by the jurisdictions are typically conducted by or augmented by volunteers and are often associated with appreciation events for specific parks or the river itself. This direct public participation is intended to foster a sense of community awareness and responsibility for our waterways. A number of jurisdictions make a point of addressing the volunteers to educate them about watersheds in order to strengthen the link between upland human activities and downstream water quality.

In addition, the San Diego River Watershed Copermittees have been actively participating in the San Diego River Watershed Regional Monitoring Workgroup. This

workgroup is led by the CRWQCB and its consultant as a voluntary effort by stakeholders in the watershed to coordinate monitoring efforts in order to generate a better, more integrated understanding of water quality conditions. Participating stakeholders consist of all the major organizations collecting water quality data, including various local and even federal government agencies, private non-profit organizations conducting monitoring, San Diego River Watershed Copermittees and the CRWQCB itself. Coordination efforts are focusing around the development of a score card for the watershed to answer key management questions with more specific sub-questions intended to drive changes to participants' monitoring programs.

3.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

This section describes collaborative land use planning efforts within the San Diego River Watershed during FY 2011-12. The San Diego River Watershed Copermittees have identified enhanced cross-jurisdictional communication as a key element in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. Jurisdictional Urban Runoff Management Program (JURMP) annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Cross-Jurisdictional Communication:

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the San Diego River Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the San Diego River Watershed Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the San Diego River Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, San Diego River Watershed Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the San Diego River Watershed Copermittees are able to better address watershed needs as a whole.

In order to encourage collaborative, watershed-based land use planning, the San Diego River Watershed Copermittees will have at least one watershed meeting per year that will include discussion addressing land use planning issues. For FY 2011-12, this collaboration primarily consisted of sharing land use planning activities between San Diego River Watershed Copermittees and discussions regarding how the San Diego Association of Governments (SANDAG) Quality of Life funding strategy can be incorporated into the watershed planning efforts. During this past fiscal year, the Water Quality Working Group (WQWG) developed a regional Needs Assessment and Cost Estimate to help regional stakeholders better understand the needs and associated costs of achieving water quality in the San Diego region. Future work products include project notebooks, refining ROM cost estimates and developing long range watershed-based plans.

It is anticipated that these ongoing discussions will enable San Diego River Watershed Copermittees to establish some consistency in how they integrate watershed principles into their plans and to evaluate the potential need for watershed specific land use requirements. Regional stakeholders, such as the building and agricultural industries, and San Diego River Watershed Copermittees are encouraged to attend WQWG meetings to discuss funding options and long range planning objectives. The funding strategy currently has a vision through 2016. The results of future meetings, including any follow up meetings, will be reported in future reports.

3.5 UPDATED 5-YEAR STRATEGIC PLAN

The 2008 comprehensive review and revision of the WURMP resulted in the San Diego River Watershed Copermittees developing a set of Strategic Goals for the watershed based on the regionally developed Collective Watershed Strategy (City of El Cajon et al., 2008). These Strategic Goals are described in the WURMP and are being used as narrative objectives to facilitate activity selection, implementation and effectiveness measurement. Annual updates to the 5-year strategic plan in the San Diego River Watershed will take the form of changes to the Strategic Goals and associated activities.

3.5.1 New Watershed Activities

New watershed activities for this year included invasive species removal, Santreefest education and outreach, CLRP development and land use based water quality monitoring (Appendix A). New watershed activities are selected and implemented in a manner intended to meet the objectives established in the relevant Strategic Goals for that year, which are based on the priority pollutants and targeted sources identified in the WURMP. The specific activities selected for implementation in a given year will, to the extent reasonable, support the identified Strategic Goals both individually and collectively. However, individual jurisdictions may find it more appropriate in some cases to perform different activities that still support one of the Watershed Strategic Goals. For example, the timing of funding sources, differences

between drainage areas and differences in organizational structure may cause an individual jurisdiction to select different activities that year.

3.5.2 Updated 5-Year Strategic Plan

The 5-Year Strategic Plan was not revised due to the impending changes in Copermittee programs driven by the new Municipal Permit to be reissued shortly and the implementation of the CLRP for the watershed. Strategic planning for future activities was conducted through the CLRP development and Municipal Permit reissuance process.

4.0 EFFECTIVENESS ASSESSMENT

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

One of the most important components of a successful program is the development and implementation of a comprehensive program evaluation. In order to facilitate this assessment of WURMP effectiveness, the March 2008 WURMP translated the results of the San Diego River Watershed Copermittees water quality and pollutant source assessments into more specific Strategic Goals that will facilitate the selection of collaborative and measurable activities. Since the selection of Strategic Goals was based on a comprehensive assessment of water quality and potential pollutant sources in the watershed, measurable progress toward achieving these Strategic Goals is considered to be measurable progress toward the larger goal of positively affecting water quality. The specific activities selected by the San Diego River Watershed Copermittees will be developed, implemented and measured for effectiveness against these Strategic Goals.

Even with the use of the Strategic Goals, the San Diego River Watershed Copermittees intend to continue evaluating watershed activities using the six hierarchical levels of targeted outcomes described in the Framework for Effectiveness Assessment Document. The six levels are as follows:

Level 1:	Compliance with activity-based permit requirements
Level 2:	Changes in knowledge / awareness
Level 3:	Behavioral change / BMP implementation
Level 4:	Load reductions
Level 5:	Changes in discharge quality
Level 6:	Changes in receiving water quality

Documentation of Levels 1-3 is fairly straightforward, whereas documentation of Levels 4-6 requires the development and implementation of scientific studies designed specifically to document and track water quality trends in discharges and in the receiving water. Moreover, the detection of changes in discharge quality and, in particular, changes in receiving water quality requires the collection of data over several years to detect and verify changes in water quality. Although the San Diego River Watershed Copermittees have very few data sets that span several years, we are working to collect this information and improve the process. In addition, due to the enormous number of factors affecting water quality in both storm drain discharges and in receiving waters, it is difficult to isolate the effects of a storm water program's efforts. Conclusions from existing data will be conducted when possible, but long-term, consistent improvements in water quality throughout the San Diego River Watershed cannot yet be determined.

Levels 1, 2, and 3 assess implementation of best management practices (BMPs) with prevention of pollution entering the storm drain system as the primary objective.

Assessment Levels 4, 5, and 6 focus on reducing pollutants loads and assessing water quality improvement. The two groups of Assessment Levels have two different objectives, although they are connected by water quality. A connection between the two assessment groups is not possible when pollutant load information has been obtained at only a few mass loading stations, generally found in the lower watershed, near the discharge point to the ocean. Even if jurisdictions take the Effectiveness Assessment through to Level 4 by estimating pollutants prevented from entering the receiving water, it is still difficult to connect this information to downstream receiving water quality for a number of reasons including the alternative sources of both flow (for example, groundwater) and pollutants (for example, aerial deposition) as well as the overlapping influences of multiple Copermittee activities at the jurisdictional, watershed and regional levels. These and other obstacles to assessing effectiveness will be tasked to the Effectiveness Assessment Workgroup as well as the San Diego River Watershed Copermittees, who will work together to identify solutions to these obstacles.

4.1.1 Level 1 Effectiveness: Compliance with Activity-Based Permit Requirements

The San Diego River Watershed Copermittees have fulfilled several of the requirements of the Municipal Storm Water Permit. The table below outlines Level 1 Compliance with the Municipal Permit by relating San Diego River Watershed Copermittee activities to one of the four objectives and the requirements specified in the Municipal Permit.

Level 1 targeted outcomes

Permit Requirements (E.2)	Activities	Status
(a) Lead Watershed Permittee Identification	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) An accurate map of the watershed	• San Diego River Watershed Urban Runoff Management Plan	Completed
(b) Annual assessment of receiving water quality	• Weston 2010-2011 Urban Runoff Monitoring Report	Complete for 2011-2012
(d) Mechanism to facilitate collaborative "watershed based" land use planning	• County General Plan Update	Completed August 2011
	• City of San Diego General Plan (GP) Update	Completed (proceeding with GP elements)
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2011-2012
	• San Diego River WURMP Workgroup	Complete for 2011-2012
	• MOU; CEQA; Public Hearings; Multiple Species Conservation Plan (MSCP) – descriptions included in the Common Activities	Complete for 2011-2012

Permit Requirements (E.2)	Activities	Status
(e) Develop and implement collective watershed strategy	• San Diego River Watershed Urban Runoff Management Plan • Weston 2011-2012 Urban Runoff Monitoring Report	Complete for 2011-2012
(f) Identify and implement Watershed Activities	• See Section 3	Complete for 2011-2012
(g) Copermittee collaboration	• See Sections 1 and 3	Complete for 2011-2012
(h) Mechanism for public participation	• Copermittee and Stakeholder Collaboration /Public Participation (meetings, e-mail and web)	Ongoing
	• Direct Interaction	Ongoing
	• Project Clean Water	Ongoing (website is updated as new information warrants)
	• San Diego River Coalition Meetings	Complete for 2011-2012
	• San Diego River Watershed Urban Runoff Management Plan	Complete for 2011-2012 - Implementation ongoing
(i) Annual WURMP review	• WURMP Annual Report	Complete for 2011-2012

4.1.2 Level 2 Effectiveness: Changes in Knowledge and Awareness

The following programs implemented by the San Diego River Watershed Copermittees are designed to contribute to an increase in knowledge and/or awareness of program participants.

- Project Clean Water
- Think Blue Public Service Announcements
- Public Outreach & Media
- Pet Waste Outreach
- New Advertising Materials: booklets, posters and brochures
- Partners in Clean Water and Community Events as well as Cleanup Events
- Outreach to the Equestrian Community

Many of the programs listed above address multiple program strategies (i.e., development of a monitoring program coupled with an educational outreach campaign). As such, these programs provided education on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed. However, the San Diego River Watershed Copermittees increasingly want to focus their attention on activities that result in tangible load reductions. This may result in fewer activities targeting this level of effectiveness, although a component of the Load Reduction Plan for the Bacteria TMDL will include education BMPs.

4.1.3 Level 3 Effectiveness: Behavioral Change and BMP Implementation

It is likely that changes in behavior occurred through implementation of the programs or activities listed in Section 3 that involve stakeholder participation in activities and decision-making processes, as well as the implementation of BMPs to reduce the impacts of urban runoff. These programs also provided information on general watershed concepts, as well as information on specific priority pollutants within the San Diego River Watershed:

- Targeted Inspections
- Cleanup Events
- Think Blue Public Service Announcements
- Park Appreciation Days
- Intergenerational Games
- Outreach on Pet Waste Management
- Outreach to the Equestrian Community

Although no formal quantification was made during this fiscal year, based on survey results and assessments in prior years, these types of activities lead to changed behavior and, thus, have a positive effect on water quality.

4.1.4 Level 4 Effectiveness: Load Reductions

The implementation of BMPs is ultimately aimed at preventing pollutants from entering the storm drain system, which equates to load reduction. Targeting specific pollutants by implementing BMPs to address pollutant sources is an integral component of measuring Level 4 outcomes. Furthermore, quantifying the volume of pollutants that were prevented from entering the storm drain system or receiving water bodies can provide beneficial data that can be used to address broader water quality issues.

Some activities are more conducive to estimating load reductions than others. For example, street sweeping and storm drain cleaning are easily quantified in terms of loads reduced since material is physically removed from conveyances. However, Copermittees generally do not track most jurisdictional activities on a watershed basis. One of the opportunities for improvement identified in the Copermittees' Baseline Long Term Effectiveness Assessment (BLTEA) is to reconsider the way certain types of program data are tracked (Weston Solutions et al., 2005). This may involve becoming more geospatial in the way data is collected and presented. Some activities have been difficult to analyze in terms of load reductions, for example, the effect that education has on reducing pollutant loads. The San Diego River Watershed Copermittees believe the recently developed bacteria TMDL CLRP will provide a framework for better assessing load reductions from San Diego River Watershed Copermittee activities.

Some of the FY 2011-12 activities with quantifiable load reductions include the following:

- An estimated 16,796 pounds of dog waste was collected at County of San Diego park facilities in the San Diego River Watershed.
- An estimated 50,000 pounds of dog waste was collected at City of Santee park facilities in the San Diego River Watershed.
- An estimated 15,000 pounds of dog waste was collected at City of El Cajon park facilities in the San Diego River Watershed.
- Approximately 528 pounds of trash, debris and green waste were removed from parks and creeks during various cleanup events in the City of La Mesa.
- Approximately 31,338 pounds of trash and debris were removed in the City of San Diego during various cleanup events, primarily in Mission Valley.
- Approximately 2,080 pounds of trash, debris and green waste were removed from parks and creeks during various cleanup events in the County of San Diego.
- Approximately 182.5 pounds of trash, debris and recyclables were removed from a park during a cleanup event in the City of El Cajon.
- An estimated 41 tons of trash and debris were removed from various parks and Forester Creek during cleanup events and clean out of the Forester Creek trash barrier in the City of Santee.
- An estimated 415 cubic yards of trash, debris and sediment removed from the trash barrier at Forester Creek in the City of El Cajon.

4.1.5 Level 5 and 6 Effectiveness: Changes in Discharge Quality and Receiving Water Quality

Level 5 outcomes represent changes in the quality of discharges from Copermittee-owned storm drain systems into receiving waters. They differ from Level 4 outcomes in that they represent changes in the cumulative loadings from multiple sources rather than individual sites or facilities. No measurements of changes to discharge quality were taken during FY 2011-12. However, due to several years of no exceedances or no dry weather flows, some dry weather monitoring stations in the City of Santee have been eliminated, which suggest some measure of effectiveness within these drainage areas.

Level 6 outcomes describe changes to receiving water quality that result from urban runoff management programs. It can be difficult to distinguish between the beneficial effect of urban runoff management activities and changes in water quality that are due to natural variability or other factors outside the scope of the WURMP. Nonetheless, collection of water quality data is critical to determining the effectiveness of management programs over time. Copermittees throughout the region are working together to collect water quality data and to measure improvement or degradation at the watershed scale. The BLTEA provided the first long-term assessment of changes to receiving water quality. It also incorporated pollutant-loading potentials for significant

sources within the region and established threat-to-water quality (TTWQ) ratings for priority pollutants and sources within each hydrologic sub-watershed identified within the Basin Plan.

Quantifying water quality change requires an analysis of constituents of concern (COCs) in sampled runoff as well as an evaluation of existing information: 303(d) listings, beneficial uses, existing projects and studies, etc. In many cases, sufficient data may not be available from urban runoff monitoring programs to determine whether a water quality problem results in water body impairment. More difficult still is isolating the effect that urban runoff management activities have on observed changes. Stormwater data can vary significantly from storm to storm and it usually takes several years of data to determine whether improvements or degradation are occurring. All of these factors complicate annual water quality assessments. Water quality change is generally assessed on a long-term basis by evaluating trends; more water quality information pertaining to trend analysis is presented in the Weston Monitoring Report.

As a whole, the Copermittees have worked to expand the focus of their assessments on demonstrating the watershed-level benefits of program implementation, and will continue to do so under order R9-2007-0001. Trends in monitoring data from Forester Creek and the San Diego River appear to show positive results from the Forester Creek restoration and other up-gradient BMP implementation. For example, post-restoration data for Forester Creek has shown a 69% decrease in fecal coliform across the restored portion of the creek. In addition, bioassessment in the restored area has been rated above the impairment threshold. However, annual watershed assessments do not attempt to address the relationship of WURMP implementation to changes in water quality; this analysis will be confined to the Long-Term Effectiveness Assessment process. The available evidence supports that the San Diego River Watershed Copermittees' efforts as demonstrated by Level 1, 2, 3, 4, 5 and 6 data had positive effects on water quality and established the effectiveness of their San Diego River watershed program. The process also allowed them to thoroughly evaluate the WURMP and make improvements, modifications, and changes to the program as needed.

4.2 ASSESSMENT OF TMDL BMP IMPLEMENTATION PLAN EFFECTIVENESS

The San Diego River Watershed Copermittees recently finished developing a CLRP in compliance with the adopted Bacteria TMDL, which applies to portions of the San Diego River and Forester Creek. Bacteria TMDL requirements are already being considered when current activities are planned and implemented. Additional program changes will be considered through the process of implementing the CLRP.

5.0 PLANNED WATERSHED IMPLEMENTATION ACTIVITIES

5.1 INITIAL ACTIVITY SELECTION

5.1.1 Applicable Strategic Goals

The following Strategic Goals were established in the WURMP and are the targeted outcomes for activity implementation in FY 2012-13.

- **Strategic Goal 1 - Dry Weather Flow Reduction**: By reducing dry weather flows, the San Diego River Watershed Copermittees expect to reduce dry weather loadings of priority pollutants to receiving waters both by reducing the mass of pollutants discharged from the original water source and by reducing the ability of the water to act as a transport mechanism for other pollutant sources encountered on the water's path to the storm drain system and ultimate receiving water.

- **Strategic Goal 4 - Source Reduction at Residential Land Uses**: By reducing the mass of priority pollutants discharged to San Diego River Watershed Copermittee storm drain systems and receiving waters from residential land uses, the San Diego River Watershed Copermittees expect to reduce both dry and wet weather loadings of priority pollutants to receiving waters.

- **Strategic Goal 5 – Bacteria Source Reduction**: By reducing the mass of bacteria discharged to San Diego River Watershed Copermittee storm drain systems and receiving waters, the San Diego River Watershed Copermittees expect to reduce both dry and wet weather loadings of bacteria to receiving waters. The specific land uses and sources targeted by this Strategic Goal will be selected based on the available data from ongoing monitoring programs and the results of implementing previous Strategic Goals. This goal will also support San Diego River Watershed Copermittee implementation of the Bacteria TMDL CLRP.

5.1.2 Potential Target Sources

Selected activities for FY 2012-13 generally will target the following land use categories:

- Single Family Residential
- Multi-Family Residential

Based on the Source Identification Study, the following types of sources represent the top potential targets for exposure reduction and, therefore, load reduction in the residential land use category.

- Irrigation Runoff
- Waste Management/Dumpsters
- Catch Basin Debris

Based on the BLTEA TTWQ rankings, the following types of sources represent the top three potential targets for load reduction watershed activities within these land use categories. Not all may be addressed in a given year. If needed or appropriate, additional or substitute source types from Table 11 in the WURMP may be used.

- Waste Disposal
- Home and Garden Care Activities
- Home Automobile Associated Activities

5.1.3 Watershed Priority Pollutants at Target Sources

The following combination of watershed priority pollutants/stressors and pollutant generating activities will generally be the focal point of collaborative watershed activities generated through the WURMP process:

- Bacteria from applicable facilities as well as from facility-specific types of sources: waste management/dumpsters, grease management, catch basin cleanout, animal/pet food and waste management, soil management/erosion control, and portable bathroom facilities (if present).
- Nutrients from general landscaping.
- Total Dissolved Solids from excessive potable water use.
- Low Dissolved Oxygen from sources of nutrients, sediment and organic matter (see above). Additional sources may include the intentional application to soil of organic compounds or the decomposition of vegetative litter.
- Turbidity from sources of sediment, organic matter and nutrients (see above). Additional sources may result from general housekeeping and human litter.

Bacteria is intended to be the primary pollutant addressed by the current watershed activities, but the other priority pollutants will be addressed as appropriate if they are encountered during implementation of the activities.

5.2 INITIAL ACTIVITY DESCRIPTIONS FOR PLANNING PURPOSES

As part of its planning process, the San Diego River Watershed Copermittees consider a number of watershed activities and have several in various stages of planning and implementation. The following Watershed Water Quality Activities are currently being considered for implementation during FY 2012-13, or are in the process of development and implementation. Final selection of the proposed

activities will be made based on the results of initial planning and baseline activities, and in accordance with the selection process described in Section 4.1.

Water Quality:

- Perform inspections beyond jurisdictional compliance requirements. These inspections may target facilities based on individual history of compliance, geography or facility type. These inspections may also explore the potential for increased frequency of inspection with a smaller scope of inspection to facilitate reduced levels of exposure and, therefore, reduced pollutant loading.
- Promote the installation of weather-based controllers at residences with irrigation systems, which may include providing or facilitating subsidies/rebates or other means to increase their use. To the extent practicable, facility selection will be prioritized based on irrigation area/water runoff volumes and proximity to receiving waters.
- Promote the installation of drip irrigation for landscaping instead of spray irrigation, which is more prone to leaks.
- Develop other mechanisms for reducing over-irrigation.

For FY 2012-13, the following Watershed Education Activities are currently being considered for implementation. Final selection of the proposed activities will be made in each fiscal year based on the results of initial planning and baseline activities and in accordance with the selection process described previously in Section 4.1.

Education:

- Outreach to Property Managers and Property Owners of multi-family residential facilities regarding waste disposal, landscaping management and over-irrigation.
- Develop and implement other residential education and outreach activities.

5.3 PLANNING AND BASELINE ACTIVITIES

The San Diego River Watershed Copermittees collaborated in FY 2011-12 on the development of the CLRP in accordance with Bacteria TMDL requirements. The CLRP is intended to be the primary planning tool guiding San Diego River Watershed Copermittee activity selection for the next fiscal year and beyond. To identify a program of activities that will be capable of achieving TMDL-required bacteria load reductions during wet weather, the CLRP used a computer model to simulate hydrologic and pollutant loadings and then to evaluate various BMP implementation scenarios. The results of this computer modeling identified types of non-structural and structural BMPs as well as potential locations for these BMPs. The San Diego River Watershed Copermittees will use these results to guide decisions about watershed activities going forward, including potential adjustments to ongoing watershed activities. It is

anticipated that FY 2012-13 will be the last year that the Strategic Goals from the WURMP will be used.

5.4 IMPLEMENTATION ACTIVITIES

For FY 2012-13, the San Diego River Watershed Copermittees will be focusing their watershed activities on improving the results of residential inspections by adjusting inspection programs above and beyond jurisdictional requirements in the permit. These will include property-based inspections by the City of San Diego and targeted inspections by the City of Santee. All the inspection programs will be targeting high priority pollutants and high priority sources as identified in the Source Identification Study, e.g. trash dumpsters.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The San Diego River Watershed Copermittees implemented a number of Water Quality and Education activities designed to improve water quality in FY 2011-12. As described in Section 3 of this Annual Report, the WURMP Workgroup is working diligently and across jurisdictional boundaries to develop and implement watershed activities that address the specific water quality problems of the San Diego River watershed, for example indicator bacteria. In addition, the San Diego River Watershed Copermittees are working to improve the Program's iterative planning, implementation and assessment processes. The planned collaborative efforts to jointly develop and implement the CLRP, for example, will help to raise the effectiveness of the Copermittee programs.

The impending reissuance of the Municipal Permit in FY 2012-13 and the planned implementation of the CLRP to satisfy Bacteria TMDL requirements will require the San Diego River Watershed Copermittees to change its process for developing watershed based activities for future years.

6.2 RECOMMENDATIONS

Based on these conclusions, the San Diego River Watershed Copermittees present the following recommendations.

Continue to implement watershed activities already planned for FY 2012-13 using the WURMP Strategic Goals, but modify activities as needed to support implementation of the CLRP. The main focus of San Diego River Watershed Copermittees activities in the watershed for the next few years will be focused on achieving load reductions in order to achieve compliance with the Bacteria TMDL. Although the San Diego River Watershed Copermittees have selected and designed their watershed activities with the Bacteria TMDL in mind already, watershed activities will need to be adjusted as the CLRP is implemented.

Modify activities as needed to support Copermittee's shift to an integrated approach to compliance with TMDLs and the revised Municipal Permit, which is anticipated to be reissued shortly. Regionally, the Copermittees are moving towards an adaptive management process in the watersheds as articulated in the Report of Waste Discharge (ROWD) and are looking to integrate the various regulatory programs, e.g. Municipal Permit and TMDLs, into a single program for efficiency. The reissued Municipal Permit appears likely to require the development of a Water Quality Improvement Plan for the watershed, which will replace the current WURMP and integrate the CLRP.

7.0 REFERENCES

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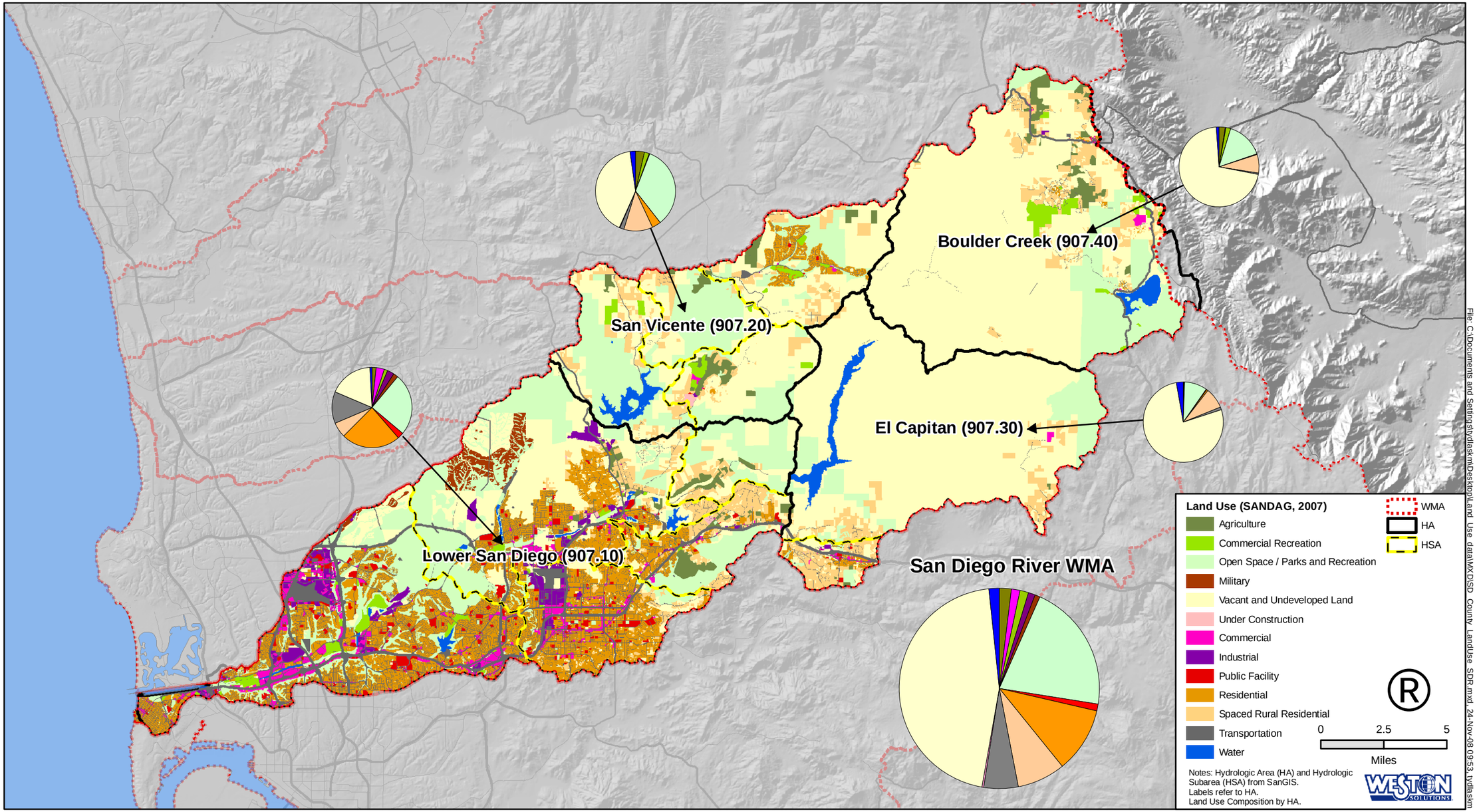

Figure 1: Land Use Map

APPENDIX A

PROGRAM ACTIVITY SUMMARY DESCRIPTIONS FOR FISCAL YEAR 2011-12

Watershed Activities Matrix for 2011-12 Activities

	ACTIVITY NAME	Collaborative Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2011-12							Activity Status for Fiscal Year 2011-12*	Activity Description Location**
					Bacteria	TDS	Nutrients	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
Special Studies / Source ID / Pollution Reduction	**Activities to Address High Priority TTWQ Sources:**																		
	Additional Dry Weather Monitoring (City of La Mesa)		X		X	X	X	X	X	X	X	X			X			O	Appendix A-1
	Adopt a Park/Adopt A Block (City of La Mesa)		X		X	X		X		X	X			X		X	X	O	Appendix A-2
	Canine Corners Harry Griffith Park (City of La Mesa)		X		X	X		X						X		X	X	O	Appendix A-5
	Coastal Cleanup Day Sponsorship - University Channel & Alvarado Channel (City of La Mesa)		X		X			X	X		X			X		X	X	O	Appendix A-7
	I Love a Clean San Diego Creek to Bay Cleanup Event Sponsorship (Cities of La Mesa, San Diego, and El Cajon and County of San Diego)	X			X			X	X		X			X		X	X	O	Appendix A-9A, A-9B, and A-9C
	Increase in Dry Weather Monitoring for Bacterial Indicators in Suspected Problem Areas (City of Santee)		X		X							X			X			O	Appendix A-10
	Park Appreciation Days (City of La Mesa)		X		X	X		X	X	X	X			X		X	X	O	Appendix A-11
	Prevention of the Release of Pet Fecal Matter in Public Parks (County of San Diego and Cities of Santee and El Cajon)	X			X			X						X		X	X	O	Appendix A-13A, A-13B and A-13C
	San Diego River Park Foundation Cleanup Event Sponsorship (City of San Diego)		X		X				X		X			X		X	X	O	Appendix A-14
	San Diego Riverbed Homeless Encampment Removal Project (City of Santee)		X		X				X				X				X	O	Appendix A-16
	Trash Removal Activities in Santee (City of Santee)		X		X				X					X		X	X	O	Appendix A-17
	Stormwater Drain Insert Pilot Study (City of San Diego)		X		X			X	X	X	X							O	Appendix A-52
	Robb Field Stormwater Reuse (City of San Diego)		X		X						X							O	Appendix A-53
	Stormwater Quality Master Plans for Special Drainage Fee Areas (County of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-55
	Commercial BMP Self Certification Pilot Project (City of La Mesa)		X		X	X	X	X	X	X	X				X	X	X	O	Appendix A-63
	Multi-Family Residential Trash Enclosure Assessment (City of Santee)		X		X				X		X							O	Appendix A-74
	Multi-Family Residential Trash Area Pilot Program (City of La Mesa)		X		X				X		X		X			X		O	Appendix A-76
	Qualcomm Stadium Drop Off Community Cleanup and Recycling Event Sponsorship (City of San Diego)		X						X		X					X	X	O	Appendix A-77
	Rainwater Harvesting Rebate Pilot Program (City of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-78
	Activities to Address Watershed High Priority Pollutants:																		
	Cabrillo Heights Park Rain Garden Infiltration Project - LID pilot (City of San Diego)		X		X						X							O	Appendix A-19
	Coastal Cleanup Day Sponsorship (City of San Diego)		X		X				X					X		X	X	O	Appendix A-20
	Land Acquisitions MSCP (County of San Diego)		X		X	X	X	X	X	X	X			X			X	O	Appendix A-23
	Maintenance/Inspections of Forrester Creek Trash Barriers (Cities of El Cajon and Santee)		X		X				X				X	X			X	O	Appendix A-24A and A-24B
	Park Ridge Blvd Bacteria Treatment Project (City of San Diego)		X		X						X							O	Appendix A-26
	Woodside Avenue Detention Basin (County of San Diego)		X			X	X			X		X	X	X			X	O	Appendix A-32
	Strategic Plan Implementation (City of San Diego) - NO LONGER REPORTING		X		X	X	X	X	X	X								O	Appendix A-48
	Additional Receiving Water Monitoring (City of Santee)		X		X	X	X	X		X	X	X						O	Appendix A-49
	San Diego River Park Foundation Cleanup Event (County of San Diego)		X		X	X	X	X	X	X	X							O	Appendix A-58
	Allied Gardens Green Lot (City of San Diego)		X		X	X	X	X		X	X							O	Appendix A-65
	Complex Street Green Mall (City of San Diego)		X		X	X	X	X		X	X							O	Appendix A-66
	Famosa Slough Erosion Sediment Control (City of San Diego)		X							X	X							O	Appendix A-67
	Residential Rain Barrell Subsidies and Distribution (County of San Diego)		X		X	X	X	X	X	X	X					X		O	Appendix A-71
	Addition of Infiltration Strips to Concrete Channels (City of Santee)		X		X	X	X	X	X	X	X							F	Appendix A-72
	Invasive Species Removal (City of Santee)		X				X	X		X				X			X	N	Appendix A-80

Watershed Activities Matrix for 2011-12 Activities

	ACTIVITY NAME	Collaborative Watershed Activity	Individual Watershed Activity	Regional Watershed Activity	HIGH PRIORITY POLLUTANTS TO BE ADDRESSED						COMPONENTS IN PROGRESS IN FISCAL YEAR 2011-12							Activity Status for Fiscal Year 2011-12*	Activity Description Location**
					Bacteria	TDS	Nutrients	DO	Gross Pollutants	Turbidity	Planning / Development	Monitoring	Inspections	BMP Implementation	Source Identification	Outreach	Pollutant / Load Reduction		
	Comprehensive Load Reduction Plan (Cities of El Cajon, Santee, La Mesa, San Diego and County of San Diego)	X			X	X	X	X	X	X	X							N	Appendix A-82
	Land Use Based Water Quality Monitoring (County of San Diego)		X		X		X				X	X						N	Appendix A-83
Land Use Activities																			
Education Activities	Focused Outreach to Equestrian Community (County of San Diego)		X		X		X		X		X					X		O	Appendix A-70
	Kids Care Fest (City of La Mesa)		X		X	X	X	X		X	X					X		O	Appendix A-64
	Oktoberfest (City of La Mesa)		X		X	X	X	X		X	X					X		O	Appendix A-39
	Outreach to Residents Regarding Pet Waste Management (City of Santee)		X		X											X		O	Appendix A-41
	Public Presentations, Outreach and Media (City of Santee)		X		X	X	X	X	X	X						X		O	Appendix A-42
	San Diego River Watershed Brochure (City of San Diego)		X		X	X	X	X	X	X	X					X		O	Appendix A-54
	La Mesa Harry Griffen Park Kiosk (City of La Mesa)		X		X						X					X		O	Appendix A-79
	Community Event; Santreefest (City of Santee and County of San Diego)	X			X	X	X	X	X	X						X		N	Appendix A-81
Public Participation	San Diego River Coalition Meetings (all)	X			X	X	X	X		X	X					X		O	Appendix A-45
	Project Clean Water - San Diego River Watershed Website (all)	X			X	X	X	X		X	X					X		O	Appendix A-46
	Public Participation (City of Santee)		X		X	X		X	X		X					X		O	Appendix A-47
Administrative Activities																			

* N = New; O = Ongoing; C = Completed or Cancelled; F = Future

TITLE: **ADDITIONAL DRY WEATHER MONITORING**
ID #: **SDR-A1**

ACTIVITY DESCRIPTION

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies and identifying pollutant sources. Consequently, the City conducted additional non-storm water quality monitoring within the San Diego River Watershed. The purpose of the study was to evaluate the water quality of the discharged flow. Two sampling locations were identified within the Alvarado Drainage Basin. All water samples during this study were taken for the 2012 reporting year and were evaluated for the same suite of constituents measured in the city's annual Dry Weather Field Screening and Analytical Monitoring Program, receiving water body 303 (d) listings constituents, and watershed constituent of concerns as reported in the WURMP. Additional locations were also monitored for Total Coliform, Fecal Coliform, and Enterococcus.

This included measuring flow, temperature, pH, conductivity, turbidity, nitrate, ammonia, orthophosphate, dissolved oxygen, and MBAS in the field and total hardness, dissolved metals, chlorpyrifos, diazinon, surfactants, oil and grease, TDS, TSS, total coliform, fecal coliform, and enterococcus bacteria in the laboratory. Results have been received and are being analyzed.

TMDL APPLICABILITY

Dry weather sampling results support identifying exceedances in pollutant loading for constituents included in the forthcoming comprehensive load reduction plans prepared for the regional Bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Total Phosphorus, Dissolved Oxygen, and pH

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is above and beyond the Dry Weather Field Screening and Analytical Monitoring Program. Analyzing samples of non-storm water discharge from two locations within the San Diego River Watershed provides insight into water quality leaving The City of La Mesa. It also enables the City to conduct potential follow-up investigation of potential pollutant sources. Monitoring is intended as a long-term activity; however, sampling locations may vary each year. This activity is consistent with WURMP Strategic Goals 2 through 5.

EFFECTIVENESS MEASUREMENTS

Monitoring data collected over time in conjunction with identifying and eliminating sources of pollutants will help assess the effectiveness of the program to improve water quality/pollutant load reduction within the City. Data will provide the City with pertinent information that may lead to implementation of various best management practices that may be assessed.

TITLE: **ADOPT A PARK/ADOPT A BLOCK**
ID #: **SDR-A2**

ACTIVITY DESCRIPTION

The City of La Mesa has encouraged the public to participate in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers as part of the Adopt-a-Park and Adopt-a-Block Program. Volunteers are encouraged to routinely pick trash from various parks within the watershed or along their block. There are seven parks within the San Diego River Watershed that are maintained by the volunteer groups. Although specific amount of debris collected is not recorded, the groups efforts are considered a load reduction from debris entering the storm drain system and receiving water body. Volunteers logged approximately 2,000 service hours of time under these programs during this reporting period.

TMDL APPLICABILITY

Outreach and pollutant reduction is a portion of the San Diego River Comprehensive Load Reduction Plans which was developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- DO
- Turbidity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

There are seven parks and numerous residential areas located within the San Diego River Watershed. Volunteers assigned to parks or within residential areas routinely collect trash and debris within the watershed. These efforts result in a reduction of debris entering the storm water conveyance system and receiving water. Removal of debris constitutes a reduction in pollutants that are sources of bacteria, TDS, and may reduce turbidity or low oxygen concentration in receiving waters due to eutrophication. This activity is considered by the City as a long term watershed activity.

EFFECTIVENESS MEASUREMENTS

Presence of the program activity on each given year . More detailed metrics such as amount of trash collected is not included.

TITLE:	**CANINE CORNERS HARRY GRIFFEN PARK**
ID #:	**SDR-A5**

ACTIVITY DESCRIPTION

The City of La Mesa has encouraged the public to participate in activities that help reduce pollutant load. Consequently, the City encourages a group of volunteers known as the Canine Corners to clean up pet waste at Harry Griffen Park. This park is located within the San Diego River Watershed. Although the specific amount of pet waste is not recorded, the group's effort is considered a load reduction for pet waste and a potential reduction in bacteria entering into the storm drain conveyance system.

TMDL APPLICABILITY

Outreach and pollutant reduction is a portion of the San Diego River Comprehensive Load Reduction Plans which was developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Harry Griffen Park is located within the San Diego River Watershed. A volunteer group known as the Canine Corners, collect pet waste from the park and dispose of it appropriately. These efforts result in a reduction of pet waste entering the storm water conveyance system and receiving water. Pet waste is considered a source that contributes to elevated levels of bacteria, reduction in dissolved oxygen and increased total dissolved solids. This is considered by the City as long term activity.

EFFECTIVENESS MEASUREMENTS

The presence of the program in an active state is the effectiveness measurement. More detailed information related to the amount of material collected is not recorded.

TITLE: **COASTAL CLEAN UP DAY ALVARADO CHANNEL**
ID #: **SDR-A7**

ACTIVITY DESCRIPTION

The City of La Mesa supported and participated in the California Coastal Cleanup Day conducted on September 17, 2011 in coordination with I Love a Clean San Diego. A poster specifying date and time for the clean up was placed on the City's bulletin board. California Coastal Cleanup Day is one of the most successful large-scale cleanup projects in the Country. This event enlists thousands of volunteers throughout the state to clean up over 700 polluted coastal and inner-coastal areas. Volunteers met at a designated site in Alvarado Channel to collect debris during this reporting period.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria (high priority)
- Dissolved Oxygen (high priority)
- Gross Pollutants/Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The California Coastal Cleanup Day at Alvarado Channel is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such as elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. 401 pounds of trash and debris were collected by 16 volunteers during this event. A San Diego River Watershed fact sheet was also provided to volunteers at the Alvarado Channel site and the City's Storm Water Program Manager discussed watershed concepts and concerns prior to commencement of the cleanup. This activity is conducted on an annual basis and considered as a long-term activity to reduce trash and debris in receiving water bodies.

EFFECTIVENESS MEASUREMENTS

Number of participants and collective amount of trash/recycling collected.

TITLE: **CREEK TO BAY CLEANUP**
ID #: **SDR-A9A**

ACTIVITY DESCRIPTION

The City of La Mesa supported and participated in the Creek to Bay Cleanup conducted on April 28, 2012 in coordination with I Love a Clean San Diego. A poster specifying date and time for the clean up was placed on the city's bulletin board. 19 Volunteers from the City, met along Alvarado Channel in La Mesa from 9am to 12pm to collect trash and debris along the channel.

The following tasks were implemented as part of the Creek to Bay Cleanup during 2010-2011:
1) Advertised and placed posters for the event on the bulletin board.
2) Sponsored event for $1,000.
3) Encouraged the public to participate in the event, which included 19 participants.
4) Provided watershed specific fact sheets to volunteers.
5) 125 lbs of trash, and 2 lbs of recyclable material were removed from the channel.

TMDL APPLICABILITY

Outreach and pollutant reduction is a portion of the San Diego River Comprehensive Load Reduction Plans which was developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Creek to Bay Cleanup is considered an important activity in the San Diego River Watershed because removal of trash and debris ultimately improves water quality within the watershed. Trash and debris may result in a number of negative impacts that contribute to increased contamination such elevated numbers of bacteria in the water and depletion of dissolved oxygen during the decay/breakdown of organic material. The cleanup is an effective means of addressing priority pollutants in the watershed such as bacteria and dissolved oxygen. It is conducted on an annual basis and encourages the public to be active and aware of the importance of pollution prevention. This activity also constitutes a load reduction in pollutants within the watershed. A total of 127 pounds of trash and debris were collected during this event. A San Diego River Watershed fact sheet was provided to volunteers at the cleanup. This activity is considered a long-term activity to reduce pollutants from entering receiving water bodies.

EFFECTIVENESS MEASUREMENTS

Number of participants and collective amount of trash/recycling collected.

TITLE: **I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP**
ID #: **SDR-A9B**

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

ACTIVITY IMPLEMENTATION DESCRIPTION

The ILACSD Creek to Bay Cleanup occurred on April 28, 2012. The City of San Diego (City) sponsored the Fashion Valley San Diego River Cleanup site in the San Diego River Watershed Management Area (WMA). Approximately 390 volunteers removed 3,540 pounds of trash and debris and recycled 118 pounds of trash and debris over a two mile area.

TMDL APPLICABILITY

Indicator Bacteria – Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Diego River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

Phase	Year*
Planning	
Implementation	2012
Assessment	2012

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

LEAD WATERSHED CO-PERMITTEE

- City of San Diego

OTHER PARTICIPATING CO-PERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- Volunteers from the general public

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

LOCATION DESCRIPTION
Fashion Valley San Diego River Cleanup site

HYDROLOGIC AREA

Effectiveness Measurements		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the trash cleanup? ($/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	3,540 lbs
	Pounds of trash recycled (Outcome Level 4)	118 lbs
	Total pounds of trash removed (Outcome Level 4)	3,658 lbs
	Number of participants (Outcome Level 1)	390
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$15,000
	Estimated amount of money spent on cleanups for the San Diego River watershed (Outcome Level 1)	$2,500
	Efficiency (Total Cost/Total Pounds Removed)	$0.68/lb

EXPECTED BENEFITS
Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS
At the event, 390 participants removed 3,540 pounds of trash and debris and recycled 118 pounds of trash and debris. The average estimated sponsorship cost was $2,500 per watershed; thus, there was a 3,658 pound load reduction and an efficiency of $0.68 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Diego River WMA by the total pounds of trash removed and recycled.

CONCLUSIONS
This trash cleanup activity fulfills a watershed water quality activity for FY2012 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 3,658 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

RECOMMENDATIONS

PROJECT TYPE(S)

- Pollution Prevention
- Source Control
- Education

POLLUTANT SOURCE TYPE(S)

- Ind/Comm Facilities
- Residential

POLLUTANT SOURCE ACTIVITIES

- Illegal Dumping
- Trash and Litter Control

TARGET POLLUTANT TYPE(S)

- Bacteria/Pathogens
- Trash

TITLE: **COUNTY SPONSORED CLEAN UP EVENT, FACILITATE BY ILACSD**
ID #: **SDR-A9C**

ACTIVITY DESCRIPTION

The County of San Diego is one of several sponsors of the annual Creek to Bay clean-up event, facilitated by I Love A Clean San Diego. The April 28, 2012 event marked the 10th year ILACSD managed the county-wide clean up. The 2012 event was the most successful to date, with 6,020 volunteers spanning out across 88 different coastal and inland cleanup sites, removing 78 tons of litter and invasive plants, and painting storm drains, murals, picnic tables, and park benches. The event also empowers local residents to take an active role in preserving their environment year-round.

While volunteers removed the typical trash items such as cigarette butts and plastic bags, a few unusual items were reported removed as well including tires, a bathroom sink, AstroTurf and an Easy Bake oven. In addition to removing trash and these other items, volunteers had the opportunity to take ownership of their neighborhoods by restoring and enhancing beaches, open spaces and parks. Restoration and enhancing activities include mural painting, storm drain stenciling, graffiti removal, native planting, brush maintenance, tree planting, weeding and general park maintenance activities. Specific to the County of San Diego's jurisdiction in the San Diego River Watershed, following are the clean-up sites and statics for trash and recycling removal:

SDR Watershed Site Location	Miles Covered	Volunteers	Trash Removed (lbs)	Recycling Removed (lbs)	Total
Lakeside – Los Coches Creek	1	21	63	7	**70**
Mission Trails Regional Park	3	62	2000	10	**2010**
Total:	**4**	**83**	**2,063**	**17**	**2,080**

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

The one-day event took place April 28, 2012

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of San Diego
- City of Santee
- City of El Cajon
- La Mesa

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria indicators and trash have been identified as priority water quality problems in the San Diego River Watershed. This activity demonstrates a reduced pollutant load of trash and associated bacteria, which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the amount of trash, debris and recycling removed from the watershed at various locations (Level 4 Outcome). A total of 2,080 lbs of trash, debris and recycling were removed from 2 locations (2,063 lbs of trash and 17 lbs of recycling materials).

TITLE: El CAJON ILACSD CREEK TO BAY CLEANUP EVENT SPONSORSHIP
ID #: SDR A-9D

ACTIVITY DESCRIPTION

The City of El Cajon supports and sponsors the Creek to Bay Clean event organized by the I Love a Clean San Diego organization. The event has had a steady increase in the number of participants over the years. A group of 55 volunteers met at East Park and Roanoke within the City of El Cajon to conduct a neighborhood clean-up. The group of volunteers removed trash, debris and recyclables for a distance of one mile.

At a watershed level, there were a total of 1,058 participants that covered at total of 20.3 miles removing approximately 10,274 lbs of trash and 462 lbs of recyclables within the San Diego River Watershed.

TMDL APPLICABILITY

This activity supports the implementation of the Bacteria TMDL for Beaches and Creeks.

TIME SCHEDULE FOR IMPLEMENTATION

This event took place April 28, 2012 and is a yearly event

LEAD WATERSHED COPERMITTEE

- City of El Cajon

OTHER PARTICIPATING COPERMITTEES

- County of San Diego
- City of San Diego
- City of La Mesa

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash/Debris

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The removal of trash and debris in the San Diego River is important in order to improve water quality in the river. Trash and debris enters the storm water system, Forester Creek and eventually the San Diego River and the Pacific Ocean, posing a threat to wildlife and human health. The volunteers of this clean up event collected trash and debris therefore reducing pollutants from discharging into the San Diego River and ultimate the Pacific Ocean.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is measured by assessing the amount of trash, debris and recycling removed from the watershed at various locations (Level 4 Outcome). A total of 182.5 lbs of trash, debris and recycling were removed from one location within the City of El Cajon (171.5 lbs of trash and 11 lbs of recycling materials).

TITLE: INCREASE IN DRY WEATHER MONITORING FOR BACTERIAL INDICATORS IN SUSPECTED PROBLEM AREAS
ID #: SDR A-10

ACTIVITY DESCRIPTION

The San Diego Municipal Storm Water Permit (Orders No. 2001-01 and 2007-0001) requires Copermittees to conduct annual dry weather monitoring. In an effort to better track and eradicate bacteria as well as other pollutants of concern, the City of Santee conducted an additional round (total of two rounds) of dry weather monitoring during 2011. Dry weather monitoring was conducted during the early part of the dry season (May) and at the end of the dry season (September).

TMDL APPLICABILITY

This activity will provide additional data on where bacterial indicators are observed in the MS4 which will facilitate the identification of sources and locations of sources of bacterial indicators within the City.

TIME SCHEDULE FOR IMPLEMENTATION

2011

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Fecal coliforms are designated as a 303 (d) impairment in the San Diego River. The City of Santee is required to conduct dry weather monitoring of bacterial indicators once a year under its municipal permit. Bacterial indicators monitored included total coliforms, fecal coliforms and enterococci. Additional monitoring will be conducted on behalf of the City of Santee to facilitate the detection of illegal connections and discharges of fecal matter to the MS4. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed up to level 5 (changes in discharge quality) as the activity incorporates the direct measurement of discharge quality over multiple events to assess trends. Monitoring has been conducted since the 1996 and conducted twice a year (with the exception of 2002) since 1997. Overall exceedence rates for bacterial indicators have generally decreased over recent years, compared to the earlier years of the program.

TITLE: **PARK APPRECIATION DAY**
ID #: **SDR-A11**

ACTIVITY DESCRIPTION

The City of La Mesa (City) has been focused on eliminating pollutants from entering our receiving water bodies. Consequently, the City has organized a Park Appreciation Day for volunteers to remove trash and debris from local parks. Park Appreciation Day takes place once a year and is independent of the Adopt-A-Park Program. A watershed message is read to volunteers at each site location.

TMDL APPLICABILITY

Outreach and pollutant reduction is a portion of the San Diego River Comprehensive Load Reduction Plans which was developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- DO
- Turbidity/TSS
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

There are seven parks in the City of La Mesa that fall within the San Diego River Watershed. Organization of the Park Appreciation Day enabled residents to participate in cleaning up the environment within the San Diego River Watershed. Trash and debris as well as green waste was collected and disposed of appropriately. This event is considered a long-term activity.

EFFECTIVENESS MEASUREMENTS

Levels of trash and green waste collected, as well as the number of attendees hearing the watershed message which is explained at each site.

TITLE: PREVENTION OF THE RELEASE OF PET FECAL MATTER IN PUBLIC PLACES
ID #: SDR A-13A

ACTIVITY DESCRIPTION

The installation of Doggie Bag dispensers provides pet owners with bags to collect their pets fecal matter for proper disposal (i.e., in a trash bin). This reduces the accumulation of pet fecal matter in public places, which otherwise would eventually be washed into storm drain facilities and into the watershed. An additional benefit is public health, as it prevents other park users (such as children) coming into contact with the excrement. This activity is also associated with public awareness and outreach. By placing the dispensers and accompanying signage, including municipal code sections, the public becomes aware that not picking up after their pets is a violation of the municipal code and negatively impacts the environment. During FY 2012, City parks personnel continued to maintain pet waste bag dispensers throughout six City parks, and at other popular dogwalking locations. Additional pet waste dispensers have been installed at the Mission Creek Landscape Maintenance District and on Magnolia Avenue. The City of Santee maintained Doggie Bag dispensers at all public parks, along Forester Creek and along Cuyamaca Street, a popular dog walking location. The City encourages residents to cleanup after their pets, and the notices on the dispensers serve as a reminder to owners to clean up after their pet. Using the results of the San Elijo study, this is estimated to represent approximately 50,000 pounds of pet waste eliminated from the watershed, which constitutes a load reduction in both pet waste and bacteria from entering the storm water conveyance system.

TMDL APPLICABILITY

This activity removes a source of bacteria which may be discharged into the MS4. This is the type of activity that may be incorporated into a load reduction plan for the Bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- No final year

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 5 for bacteria source reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured at level 3 (behavioral change/BMP implementation) and level 4 (load reduction) by assessing the number of bags used (assuming all bags are used for removing pet waste and that if bags were not provided, then the waste would be left on the ground). Effectiveness can be measured at level 5 (changes in discharge quality) through the dry weather monitoring program, as this program is designed to assess sources of pollution in the storm drain system, although any change may be inferred, not directly measured. Data collected before and after doggie bag dispensers have been deployed can be used to assess if sources of bacterial indicators have been reduced or eliminated.

TITLE:	**PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS**
ID #:	**SDR-A13B**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean-up after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 26 stations at 11 County parks in the San Diego River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

Two additional stations were added in the FY 2008-09. During this reporting period, the County of San Diego continued to maintain 28 dispenser stations at a total of 11 parks within the San Diego River Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in the FY 2009-10. During this reporting period, the County of San Diego continued to maintain 28 dispenser stations at a total of 11 parks within the San Diego River Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

No additional stations were added in the FY 2010-11. During this reporting period, the County of San Diego continued to maintain 28 dispenser stations at a total of 11 parks within the San Diego River Watershed.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

LEAD WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Diego River Watershed. Parks and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Table 1

Facility Name	FY 11-12		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Cactus Park	3	9,690	1,938
Dos Picos	4	9,690	1,938
El Monte	2	6,460	1,292
Flinn Springs Park	3	9,690	1,938
Heritage Park	1	3,230	646
Lake Jennings Park	3	9,690	1,938
Lindo Lake Park	3	9,690	1,938
Louis A. Stelzer Park	1	6,460	1,292
Oak Oasis Park	1	3,230	646
Rios Canyon Sports Park	1	3,230	646
William Heise Park	6	12,920	2,584
Total	**28**	**83,980**	**16,796**

No additional stations were added in the FY 2010-11. During this reporting period, the County of San Diego continued to maintain 28 dispenser stations at a total of 11 parks within the San Diego River Watershed. These stations distributed approximately 83,980 bags during the FY 2011-12 reporting period, preventing an estimated 16,796 pounds of pet waste from entering the watershed.

Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 pounds.
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE:	**Pet Waste Bacterial Load Reduction/Doggie Bag Dispenser Program**
ID #:	**SDR-A13C**

ACTIVITY DESCRIPTION

Doggie-Pots are installed throughout Wells Dog Park and Hillside Park. The Doggie-Pots are refuse containers for dog feces that have self-shutting lids to keep out rain and irrigation water. The Doggie-Pots also have plastic bag dispensers. The installation of Doggie-Pots with bag dispensers provides pet owners with bags to collect their pet's fecal matter for proper disposal. This reduces the accumulation of pet fecal matter in public places, which otherwise would eventually be washed into storm drain facilities and into the receiving waters within the watershed. An additional benefit is public health, as it prevents other park users (such as children) from coming into contact with the excrement.

This activity is also associated with public awareness and outreach. By placing the dispensers and accompanying signage, including municipal code sections, the public becomes aware that not picking up after their pets is a violation of the municipal code and negatively impacts the environment.

TMDL APPLICABILITY

This activity supports the implementation of the Bacteria TMDL for Beaches and Creeks.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED CO-PERMITTEE

- City of El Cajon

OTHER PARTICIPATING CO-PERMITTEES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Pet Waste Bacterial Load Reduction Program is considered an important activity in the watershed because it will reduce bacteria and oxygen demand loads in the storm drain system. This is a long-term activity; however, it will be assessed and adjusted on an annual basis through the annual reporting process. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will thereby result in the reduction of a source of pollutants, most notably bacteria and nutrients, which could be released into the watershed.

EFFECTIVENESS MEASUREMENTS

Doggie-Pots with bag dispensers set up at Wells Park – Dog Park provide pet owners with bags with which they can collect their pet's fecal matter for proper disposal. During the 2011-2012 reporting period, the City assessed the effectiveness of this activity by

measuring the amount of pet waste collected from the Dog Park at Wells Park. It is estimated that City Park crews removed over 15,000 pounds of pet waste.

TITLE:	SAN DIEGO RIVER PARK FOUNDATION CLEANUP EVENT SPONSORSHIP
ID #:	SDR- A14

ACTIVITY IMPLEMETATION DESCRIPTION

The City of San Diego (City) will partner with the San Diego River Park Foundation (SDRPF) in an effort to help raise awareness of the pollution, bacteria, and sediment issues affecting the San Diego River. The City will provide funding for a number of SDRPF initiatives, including the annual River Days event designed to promote awareness of the pollution issues surrounding the San Diego River. Additionally, funding will support the SDRPF's Clean and Green Team, a volunteer program designed to remove trash and plant native plants within the San Diego River Watershed Management Area (WMA). Funding will also be used to support public cleanups and other educational endeavors.

FY 2012 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for the Clean and Green Team. Funding went to:

- removal and hauling of debris;
- purchase of tools and supplies;
- printed materials for volunteers;
- staff time at the events.

The City sponsored five cleanup events. A total of 23,850 pounds of trash was removed and 1,728 hours of volunteer service occurred through the five cleanup events.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2013 and beyond. Cleanups will be scheduled as appropriate. Trash Cleanup Events efforts take place throughout the year, and River Days is scheduled to occur in May of each year.

Phase	Year*
Planning	2012
Implementation	2012
Assessment	2012

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation
- REI
- Union Bank
- Home Depot
- New Belgium Brewery

- John Smith Earthworks

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria as a high priority water quality problem in the San Diego River WMA. Providing funding to SDRPF will increase awareness of the bacteria and pollution issues surrounding the San Diego River, and the various cleanup initiatives will assist in reducing pollution throughout the San Diego River WMA.

Partnership with SDRPF will provide funding to address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By decreasing the amount of trash, bacteria loads are reduced. Funding SDRPF's public education and outreach programs will help increase awareness of the pollution issues affecting the San Diego River and foster appropriate behavior change.

LOCATION DESCRIPTION

These clean-up events occurred along and in the San Diego River within the City of San Diego portion of the San Diego River WMA.

HYDROLOGIC SUB-AREA

- 907.10

Effectiveness Measurements		
MANAGEMENT QUESTIONS	What is the load reduction associated with sponsorship? What is the efficiency of trash cleanup? ($/person or $/ton collected)	
TARGETED MEASURABLE OUTCOME(S)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
ASSESSMENT METHOD(S)	Tabulation (e.g., number of participants) Quantification (e.g., pounds of trash collected)	
DATA RECORDED	Pounds of trash removed (Outcome Level 4)	23,850 lbs
	Number of volunteer hours (Outcome Level 1)	1,728 hours
	Total amount of money spent on five cleanups (Outcome Level 1)	$10,000
	Activity Efficiency (Total Cost/Total Pounds of Trash and Debris Removed and Recycled)	$0.4193/lbs

EXPECTED BENEFITS

The goal of the assessment is to determine the load reduction effectiveness and efficiency of the sponsored cleanups.

Partnership with SDRPF will provide funding to address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website states debris may be contaminated by pathogens that have adverse effects on humans. By decreasing the amount of trash, bacteria loads are reduced. Funding SDRPF's public education and outreach programs will help increase awareness of the pollution issues affecting the San Diego River and foster appropriate behavior change.

ANALYSIS RESULTS

FY 2012 activities included funding of the SDRPF's Clean and Green Sponsorship. One year of support was provided for annual river clean-ups and other activities, the purchase of supplies, trash removal and disposal, volunteer support, and direct staff support of program. The City sponsored five events. Over the course of the five events, 23,850 pounds of trash were removed and 1,728 hours of volunteer service occurred. The efficiency of the five cleanup events was $0.4193 per pound, calculated by dividing the total sponsorship cost by the total pounds of trash and debris removed and recycled during all twenty-eight events.

CONCLUSIONS

This activity fulfills a watershed water quality activity for FY 2012 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction during this reporting period.

The City will coordinate with SDRPF to provide funding for various projects throughout FY 2013 and beyond. Cleanups will be scheduled as appropriate. Clean and Green Team efforts take place throughout the year, and River Days is scheduled for May of each year. Implementation and assessment of load reduction and efficiency of these cleanups will occur again in FY 2013. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time. Effectiveness of public outreach and educational will be measured via citywide surveys comprised of residents in the San Diego River WMA to determine awareness and knowledge retention of water quality issues, as well as changes in behavior. Additionally, water quality monitoring will be conducted throughout the San Diego River WMA to determine whether improvements have occurred.

RECOMMENDATIONS

PROJECT TYPE(S)

POLLUTANT SOURCE TYPE(S)

POLLUTAN SOURCE ACTIVITIES

TARGET POLLUTANT TYPE(S)

- Trash

TITLE:	**SAN DIEGO RIVER HOMELESS ENCAMPMENT REMOVAL PROJECT**
ID #:	**SDR-A16**

ACTIVITY DESCRIPTION

On behalf of the City of Santee, the San Diego County Sheriff conducted sweeps during the reporting period along the San Diego River within the City's jurisdiction to remove trash and encampment items. These activities are incorporated into the Sheriff's usual duties within Santee. Local knowledge, including data collected by the San Diego River Park Foundation Riverblitz, and referrals from the public are used to identify where encampments are occurring. Particular effort is invested prior to public participation events (such as trash clean-up events) to ensure that volunteers focus efforts where they can be most beneficial and participants have a safe and pleasant experience.

TMDL APPLICABILITY

Waste from homeless activity in the San Diego River and its tributaries contribute to pollutant loadings in the receiving water. Pollutants may include bacterial indicators and trash.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- The San Diego River Park Foundaiton volunteers provide data on the location of homeless encampments.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Nutrients
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The sweeps target homeless camps along the San Diego River. During the sweeps, the Sheriff encounters transients and their camps and takes appropriate law enforcement action to remove trash and encampment items used for the illegal lodging. This activity contributes to the betterment of the San Diego River Watershed by removing trash and sources of bacteria pollution. This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness assessment can be indirectly assessed up to level 6. Change in receiving water quality (level 6) could also be observed through monitoring programs, however the causes of what will likely be small changes in receiving water could be numerous and it would not be possible to differentiate the proportional impact of each. Tracking the numbers of homeless

encampment within the activity area over time (such as through the results of the San Diego River Park Foundation Riverblitz surveys) can be used to assess level 3 (behavioral change); level 4 load reductions can be measured through the volume of material removed (not currently tracked by the City of Santee).

TITLE: **TRASH REMOVAL ACTIVITIES IN SANTEE**
ID #: **SDR-A17**

ACTIVITY DESCRIPTION

The City hosted or facilitated nineteen clean-up events within the City during FY2012. A total of over 41 tons of trash and debris were collected. Seventeen of these were conducted in or around the San Diego River, Forester Creek or Woodglen Vista Creek. All the events were held within the watershed and should reduce the loading of trash and debris in the river. The City of Santee partners with local volunteer groups such as the San Diego River Park Foundation; Rotarian groups; and churches to host public participation events. City staff help identify where these events are needed, assist with logistical planning; promotion of the event through the City website and provide waste disposal facilities. If needed, City staff will contact the Sheriff to ensure that any homeless camps in the event area are vacated.

TMDL APPLICABILITY

Trash can provide a potential breeding location of bacteria within the watershed. Removal of trash may result in a reduction of bacterial indicators.

TIME SCHEDULE FOR IMPLEMENTATION

- No end date for implementation

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation, Rotarian groups and churches

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity removes trash within the watershed and thereby reduces the potential breeding of bacteria within the watershed, which is consistent with the WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured up to level 4 (pollutant load reduction) by assessing the volume (or weight) of the material removed. Over 41 tons of trash was removed during FY 2012.

TITLE: **CABRILLO HEIGHTS PARK RAIN GARDEN INFILTRATION PROJECT**
ID #: **SDR- A19**

ACTIVITY IMPLEMENTATION DESCRIPTION

This activity involves the implementation of a large scale low impact development (LID) project in the San Diego River Watershed Management Area (WMA) to reduce runoff volume. The large scale LID site selection focused on city owned parks and parcels that would be suitable for infiltrating off site flow. Site visits were performed to evaluate the field conditions at approximately ten sites in FY 2007 through FY 2008. Cabrillo Heights Park was eventually selected as the site of choice for the Rain Garden Infiltration Project.

The concept for this park includes the installation of rain gardens at two sites within the park. The rain gardens, or bioretention basins, will be used to trap particulate pollution, encourage evapotraspiration, and reduce the amount of trash, oils and grease that make its way to the storm drain system. Flows are mainly filtered through the rain garden, collected, and returned to the storm drain system. A portion of the storm water will remain within the planted bed and be used by plants for evapotranspiration and growth.

The first site, located on the western edge of the park, will be used to treat storm flows from the western parking lot on Kearny Villa Road. All parking lot flows will enter into the storm distribution piping through a couple of storm water catch basins located in the parking lot. These catch basins shall include grating to prevent large solids from entering into the piping, and inserts to prevent trash and other debris from entering the rain garden. PVC storm drain piping will convey the parking lot flows to the rain garden located at the southern end of the parking lot.

The second site is located on the eastern portion of the park and will treat flows from Angier Elementary School and a sporting event parking lot on the east side of the park. All flows from these two locations are directed to two existing separate catch basins; one dedicated for school flows, and one for parking lot flows. Distribution piping will capture flow from these two locations and convey it to the rain garden.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The project is currently working on 100% design. Project design is anticipated to continue into FY 2013. Construction is anticipated to begin in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

Phase	Year*
Planning	2013
Implementation	2013
Assessment	2014

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

CONSISTANCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

LOCATION DESCRIPTION

- Cabrillo Heights Park

HYDROLOGIC AREA

- 907.11

EFFECTIVENESS MEASUREMENTS		
MANAGEMENT QUESTIONS	• What is the load reduction efficiency due to infiltration? • How effective is the infiltration at reducing loads of priority pollutants? • Does the implementation of the infiltration result in a detectible receiving water quality improvement?	
TARGETED MEASURABLE OUTCOME(S)	Reduction in priority pollutant loads	
ASSEMENT METHOD(S)	• Inspections (e.g., ensure the infiltration is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)	
DATA RECORDED	None	

EXPECTED BENEFITS

The goal of the analysis is to determine the load reduction efficiency of LID Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations.

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ANALYSIS RESULTS
This activity was not in active implementation in FY 2012. Therefore, assessment is not possible at this time.

CONCLUSIONS
No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

RECOMMENDATIONS

PROJECT TYPE(S)
Low Impact Development- Other pollution prevention bmp

POLLUTANT SOURCE TYPE(S)

POLLUTANT SOURCE ACTIVITIES

TARGET POLLUTANT TYPE(S)
- Bacteria

TITLE: **COASTAL CLEANUP DAY SPONSORSHIP**
ID #: **SDR - A20**

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

ACTIVITY IMPLEMENTATION DESCRIPTION

Coastal Cleanup Day occurred on September 17, 2011. The City of San Diego (City) sponsored the San Diego River, Mission Valley Preserve site in the San Diego River Watershed Management Area (WMA). Approximately 130 volunteers removed 3,680 pounds of trash and debris and recycled 150 pounds of trash and debris.

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK and ILACSD staff to ensure that sites within the San Diego River WMA are included in the list of cleanups.

Phase	Year*
Planning	
Implementation	2012
Assessment	2012

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

TMDL APPLICABILITY

Indicator Bacteria – Beaches and Creeks SD Region

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- San Diego Coastkeeper
- Volunteers from the general public None

CONSISTANCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water

quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

LOCATION DESCRIPTION
San Diego River, Mission Valley Preserve

HYDROLOGIC AREA
- 907.1

EFFECTIVENESS MEASUREMENTS		
MANAGEMENT QUESTIONS	• What is the load reduction associated with sponsorship? • What is the efficiency of the trash cleanup? ($/pound collected)	
TARGETED MEASURABLE OUTCOME(S)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
ASSESSMENT METHOD(S)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
DATA RECORDED	Pounds of trash removed (Outcome Level 4)	3,680 lbs
	Pounds of trash recycled (Outcome Level 4)	150 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	3,830 lbs
	Number of participants (Outcome Level 1)	130
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$15,000
	Estimated amount of money spent on cleanups for the San Diego River watershed (Outcome Level 1)	$2,500
	Efficiency (Total Cost/Total Pounds Removed)	$0.65/lb

EXPECTED BENEFITS
Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS
At the event, 130 participants removed 3,680 pounds of trash and debris and recycled 150 pounds of trash and debris, which was tracked using data cards provided by the Ocean Conservancy. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 3,830 pound load reduction and an efficiency of $0.65 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Diego River WMA by the total pounds of trash removed and recycled.

CONCLUSIONS
This trash cleanup activity fulfills a watershed water quality activity for FY2012 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 3,830 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

RECOMMENDATIONS

PROJECT TYPE(S)

- Pollution Prevention
- Source Control
- Education

POLLUTANT SOURCE TYPE(S)

- Ind/Comm Facilities
- Residential

POLLUTANT SOURCE ACTIVITIES

- Illegal Dumping
- Trash and Litter Control

TARGET POLLUTANT TYPE(S)

- Bacteria/Pathogens
- Trash

TITLE: **LAND ACQUISITIONS MSCP**
ID #: **SDR-A23**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION:

During FY 2011-12 reporting period there were 61.43 acres of land acquired in the San Diego River Watershed.

Table 1: FY 2011-12 Land Acquisitions for San Diego Watershed

Property	Acres	Date	Watershed ID	APN(S)
County Acquisition – Sycamore Canyon (Hagey)	32.72	11/2/11	907.12	3240402600 3240403100 3240403200
PM20857	28.71	1/28/11	907.21	3270114100 3270114300 3270114300 3270114400 3270114400 3270114500 3270114500
TOTAL	**61.43**			

During the FY 2007-08 reporting period there were 197.07 acres of land acquired in the San Diego River Watershed.

During the FY 2008-09 reporting period there were 557.50 acres of land acquired in the San Diego River Watershed.

During the FY 2009-10 reporting period there were no land acquisitions in the San Diego River Watershed.

During the FY2010-11 reporting period there were 261.10 acres of land acquired in the San Diego River Watershed.

TMDL APPLICABILITY
While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION
The County of San Diego acquires land on an ongoing basis from willing sellers.

LEAD WATERSHED COPERMITTEE
- County of San Diego

OTHER PARTICIPATING ENTITIES
- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria/Pathogens
- Gross Pollutants
- Nutrients
- Oil & Grease
- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS
Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: MAINTENANCE AND INSPECTION OF FORESTER CREEK TRASH BARRIER
ID #: SDR A-24A

ACTIVITY DESCRIPTION

The City of El Cajon Public Works Department (City) installed a debris barrier. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed in an area adjacent to the City's Public Works Maintenance Yard best suited for prompt cleanup following significant storm events and before it can reach the San Diego River.

TMDL APPLICABILITY

This activity is consistent with WURMP Strategic Goal 5 for Bacteria Source Reduction.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- City of El Cajon

OTHER PARTICIPATING COPERMITTEES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The removal of trash and debris in the San Diego River is important in order to improve water quality in the river. Trash and debris enters the storm water system, Forester Creek and eventually the San Diego River and the Pacific Ocean, posing a threat to wildlife and human health. The debris barrier controls and contains trash and other debris reducing pollutants from ultimately discharging into the San Diego River. This activity is an ongoing long-term activity and trash and debris will continue to be collected and monitored.

EFFECTIVENESS MEASUREMENTS

Collection and removal of a total of 415 cubic yards of trash and debris was conducted as part of maintenance activities by the City of El Cajon. The collection of trash and debris was as follows:

- Assorted Trash/Debris = 220 Cubic Yards
- Organic Materials = 35 Cubic Yards
- Sediment = 160 Cubic Yards

TITLE:	**MAINTENACE/INSPECTIONS OF FORESTER CREEK TRASH BARRIER**
ID #:	**SDR-A24B**

ACTIVITY DESCRIPTION

The City of Santee installed a debris barrier as part of the Forester Creek Improvement Project. The debris barrier was custom manufactured for Forester Creek and placed to intercept plastic bottles, Styrofoam cups, paper, shopping carts, and other debris. The barrier was strategically placed adjacent to the Prospect Avenue Bridge where the creek transitions from concrete-lined to unlined. The barrier needs to be routinely maintained to remove the collected debris. The debris barrier was installed during 2008. The activity comprises routine maintenance of the barrier, such as before the rainy season and between rain events.

TMDL APPLICABILITY

Trash can provide a potential breeding location of bacteria, therefore its removal reduces potential bacteria loadings within the watershed.

TIME SCHEDULE FOR IMPLEMENTATION

- No end date for implementation

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity removes trash within the watershed and thereby reduces the potential breeding of bacteria within the watershed, which is consistent with the WURMP Strategic Goal 5 for Bacteria Source Reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured up to level 4 (pollutant load reduction), however data specific to removal of trash from the barrier (versus the creek and storm drain maintenance as a whole) is not collected.

TITLE:	**PARK RIDGE BOULEVARD BACTERIA TREATMENT PROJECT**
ID #:	**SDR A-26**

ACTIVITY IMPLEMENATATION DESCRIPTION

The City of San Diego proposed construction of a new catch basin, storm drain, trash segregation unit, and bacterial treatment system at the southern terminus of Park Ridge Boulevard. Upon futher review of monitoring data conducted by another municipality, it was determined that the bacterial treatment system would be ineffective and this was removed from the project.

A new catch basin was proposed along the western right-of-way south of the intersection with Murray Park Drive. The catch basin will be sized for the full design flow reaching that location. Flows up to an 85th percentile storm event will exit the catch basin and flow through a trash segregation unit, followed in series by the bacterial treatment system. Flows in excess of an 85th percentile storm will exit the catch basin via an overflow pipe and bypass the treatment system.

A manhole will receive flows from both the treatment system and the overflow pipe. From that manhole, a new storm drain will convey flows to the outlet location for the existing storm drain system within the eastern Park Ridge Boulevard right-of-way. A new headwall sized to accommodate both outlets will be required at this location.

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design began February 2010 and is anticipated to continue through FY 2013. Construction is expected to be completed in FY 2013. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

Phase	Year*
Planning	2013
Implementation	2013
Assessment	2014

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

CONSISTANCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will reduce bacterial pollutant loads in the watershed by installing a new catch basin which diverts runoff to a trash segregation unit.

LOCATION DESCRIPTION

South terminus of Park Ridge Blvd

HYDROLOGIC AREA

- 907.11

EFFECTIVENESS MEASUREMENTS		
Management Questions	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?	
Targeted Measureable Outcome(s)	Reduction in priority pollutant loads	
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)	
Data Recorded		

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing bacteria load with the installation of catch basins, storm drains, and trash segregation units on Park Ridge Boulevard.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2012. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

RECOMMENDATIONS

PROJECT TYPE(S)
Low Impact Development- Other pollution prevention bmp

POLLUTANT SOURCE TYPE(S)

POLLUTANT SOURCE ACTIVITIES

TARGET POLLUTANT TYPE(S)
- Bacteria

TITLE: **WOODSIDE AVENUE DETENTION BASIN**
ID #: **SDR-A32**

ACTIVITY DESCRIPTION

In 2003, the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and construction of an extended detention basin (EDB) to treat urban runoff and low storm flows from a 1.4 square mile area within Hydrologic Area (HA) 907.12 before discharging into Los Coches Creek and the San Diego River. The site is located in the unincorporated community of Lakeside on a vacant property adjacent to Woodside Avenue near Winter Gardens as shown in the attached figure. The constructed basin and concrete removal were designed to act as a demonstration for the effectiveness of similar BMPs at removing pollutants. A water quality monitoring component was also initiated to provide hard evidence of the BMP's pollutant removal capabilities. Although the grant was completed in May 2007, the County continues to monitor the site to gauge its effectiveness at removing pollutants.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Implementation of Detention Basin Complete in 2007
- Water Quality monitoring ongoing, annually

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Conditions
- Dissolved Minerals
- Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity targets high priority water quality problems within the watershed by treating urban runoff before it discharges into Los Coches Creek. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

An initial effectiveness assessment of this project was conducted in 2006. The results were presented in detail in: Woodside Avenue Extended Detention Basin Effectiveness Assessment Monitoring Final Report, March, 2007, prepared by Weston Solutions. As previously described, additional monitoring is ongoing.

Activity Assessment FY 2011-12

Overall load reductions for the majority of constituents measured during both dry and wet weather (for wet weather, only the December 2011 storm event data were included in the calculations). Results indicate that, constituent concentrations at the outlet of the EDB were often higher than at the inlet.

In terms of constituent concentrations alone, it may be concluded that the EDB functioned well in reducing nitrate-N, ammonia and total copper concentrations in non storm flows and turbidity, and zinc concentrations during wet weather.

The concentrations of other constituents measured, however, were not consistently reduced and were often higher at the outlet of the EDB. One reason for the higher concentrations may be that only one of the flows entering the BMP was monitored. As shown in the EDB Design, there are actually two influent conveyances discharging into the EDB: one is a concrete channel (parallel to Woodside Avenue) entering the BMP from its South-East corner, the other is a storm drain pipe entering the BMP near its South-West corner. To date, only the concrete channel influent conveyance located on the South-East corner has been monitored. It was assumed that there were no discharges entering the BMP from the storm drain pipe, but not certain. During future monitoring events, this storm drain pipe will be checked for flow, and analytical samples and measurements will be collected when flow is present.

TITLE: **OKTOBERFEST**
ID #: **SDR-A39**

ACTIVITY DESCRIPTION

The City of La Mesa is committed to education outreach at community events. Each year the City hosts an Oktoberfest Event. During the event on October 5-7, 2011 the city's Storm Water Program staff ensured fact sheets were distributed to all Oktoberfest vendors regarding storm water pollution prevention.

TMDL APPLICABILITY

Outreach and pollutant reduction is a portion of the San Diego River Comprehensive Load Reduction Plans which was developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

- La Mesa Merchants Association

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Turbidity/TSS
- Diazanon
- Metals
- Total Phosphorus, Dissolved Oxygen, and pH

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City took steps to ensure that vendors were knowledgeable regarding pollution prevention during the event, which is located within the San Diego River Watershed.

EFFECTIVENESS MEASUREMENTS

The City currently tracks if the vendor fact sheets were distributed to vendors.

TITLE:	**OUTREACH TO RESIDENTS REGARDING PET WASTE MANAGEMENT**
ID #:	**SDR-A41**

ACTIVITY DESCRIPTION

Concentrations of fecal bacteria have been reported at certain sampling locations during dry weather monitoring in Santee. Based on the observations made during dry weather monitoring, it has been recommended that educational outreach be made to residents in specific areas of the City of Santee where fecal bacteria and/or animal waste has been observed. The objective of this outreach is to educate residents on the importance of properly disposing of pet fecal waste to prevent it from eventually entering the storm drain system. By reducing the amount of pet fecal matter in the storm drain system, this educational effort would eventually assist in the reduction of fecal coliforms in the San Diego River. The City has developed information on pet waste management for residents and participated in the development of a presentation on the subject by the WURMP group. During this fiscal year outreach has focused on the findings of dry weather monitoring and complaints. Typically the outreach is provided to addresses surrounding an area where an issue has been observed.

This year the City partnered with representatives from the County of San Diego (Animal Control and Department of Watershed Protection) to provide outreach at a pet licensing event at Woodglen Vista Park in Santee. Exceedences of fecal indicator bacteria have been observed periodically during dry weather monitoring activities and this provided an opportunity to directly educate nearby dog-owning residents.

Surveys were completed by attendees in exchange for a doggie bag dispenser and copermittee representatives provided feedback on the answers encouraging dog owners to pick up after their pets. Inserts on pet waste management were provided to animal control to place in each license envelope.

TMDL APPLICABILITY

This activity focuses on the elimination of a source of bacterial indicators.

TIME SCHEDULE FOR IMPLEMENTATION

This is an ongoing activity.

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- County of San Diego (Animal Control and Department of Watershed Protection)

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The activity is consistent with strategic goal 5, bacteria source reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed at level 2 (changes in knowledge/awareness), or possibly at level 4 (load reductions). A survey is conducted every year at a Santee community event. The data from this could be assessed to determine if there have been any changes in knowledge/awareness, although knowledge would be influenced by number of factors and could not be linked to a single educational campaign. Load reductions can be inferred by the elimination of exceedences of bacterial indicators in areas where outreach activities have been focused.

TITLE:	**PUBLIC PRESENTATIONS, OUTREACH AND MEDIA**
ID #:	**SDR-A42**

ACTIVITY DESCRIPTION

During the reporting period, the City of Santee distributed articles specific to storm water using the City Website, Facebook and Twitter accounts. Online articles have also been posted on proper trash management; an explanation of the connection of residences to the river through the storm drain system and BMPs that residents can use; maintenance of Forester Creek to remove trash; proper pesticide and fertilizer use; household hazardous waste management and access to City-provided disposal services; proper yard waste management and using composting to dispose of organic waste.

TMDL APPLICABILITY

Education is a tool that can be used to foster behavioral change. Education focuses on watershed priority pollutants, which are constituents on the 303(d) list or for which a TMDL has already been developed.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- San Diego River Park Foundation events with the City of Santee are promoted on the City of Santee's website.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Nutrients
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 4, source reduction at residential land uses, as education typically focuses on residential activities.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured at level 2 (changes in knowledge/awareness). A survey is conducted at an annual Santee community event and the results can be used to assess overall knowledge in the community. However changes are likely to occur due to multiple factors and cannot be directly attributed to one educational campaign.

TITLE: **PROJECT CLEAN WATER - SAN DIEGO RIVER WATERSHED WEBSITE**
ID #: **SDR-A46**

ACTIVITY DESCRIPTION

The Project Clean Water website (http://www.projectcleanwater.org/html/ws_map.html) provides a venue for public participation and involvement in local watershed activities. The Watershed Map page is the starting point of the watershed website. Visitors wishing to learn more about a particular watershed can simply 'click' on a desired watershed in the Watershed Map. Once selected, the visitor is linked to the watershed's summary page and provided with additional link options. The visitor can view multiple informational pages on the San Diego River Watershed which include:

1) San Diego River Watershed Summary Page (main page)
2) San Diego River Watershed Plan Page
3) San Diego River Watershed Project Page
4) San Diego River Watershed Activities Page

During the FY 2011-12 reporting period, changes made to update the content of the site include adding reports and data as necessary.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This method of public participation is consistent with the collective watershed strategy in that it encourages any member of the public to take an interest in their watershed and to participate in Copermittee activities.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness is not being measured directly, but can be inferred from tracking the number of 'hits' the web pages received on an annual basis. Watershed Copermittees continued

to post the WURMP and annual reports on the Project Clean Water website. The new PCW website format does not support counts by the individual watershed pages, thus, the home page web traffic counts are being reported:

- There were 35,299 hits on the PCW Webpage
- Average of 97 hits per day

TITLE:	**DEVELOPMENT OF ADDITIONAL PUBLIC PARTICIPATION PROGRAMS**
ID #:	**SDR-A47**

ACTIVITY DESCRIPTION

During the reporting period, the City of Santee has continued to promote the opportunities for public participation in its stormwater program through the storm drain stenciling program and the Roadside Pride program. The storm drain stenciling program has multiple benefits including: 1) Providing stencils on storm drains reminds people in the vicinity that the drain provides a direct connection to the river and that their activities can have a direct impact on the health of the river. This reminder may result in the modification of their behavior to prevent the discharge of pollutants into the storm drain. 2) This program provides groups within the community an opportunity to participate in an activity that is related to an issue that they are interested in. This activity may also provide them with the necessary experience to achieve a goal related within the organization (such as fulfilling a community service requisite). 3) The activity may provide education for people who volunteer to help with the activity who may have limited knowledge of stormwater issues. This knowledge may result in changes to their behavior. The Roadside Pride Program provides Santee-based community groups with an opportunity to earn a small amount of money in exchange for removing litter from roadsides within the community. This on-going program will be promoted alongside other public participation opportunities.

TMDL APPLICABILITY

Storm drain stenciling may not be directly addressing a specific pollutant source, but it does serve as a reminder of the public of their connection to the river and the need to prevent the discharge of pollutants.

TIME SCHEDULE FOR IMPLEMENTATION

This is an ongoing activity.

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with strategic goal 2, source reduction at park/municipal land uses, as it helps deter illegal discharges into the storm drain from road and pavements.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed at level 2 (changes in knowledge/awareness) through a residential survey conducted each year at a community event. However changes in knowledge

cannot be attributed solely to the stenciling of storm drain inlets and citizen knowledge will be influenced by a number of factors.

TITLE: **ADDITIONAL RECEIVING WATER MONITORING**
ID #: **SDR-A49**

ACTIVITY DESCRIPTION

The City of Santee has conducted an additional study each year since 2002 to assess constituents of concern at five receiving water locations within the watershed. These locations include Forester Creek as it enters the City of Santee and prior to its confluence with the San Diego River (two locations); the San Diego River as it enters the City of Santee; Sycamore Creek as its discharges into the San Diego River; and the San Diego River just as it leaves the City of Santee (three locations). These locations are typically sampled twice during the dry season, at the beginning and towards the end of the dry season. This investigation was reviewed during Fiscal Year 2007 and revised to incorporate the constitutents listed on the 303(d) list fo rhte Forester Creek and San Diego River. During 2010, a Quality Assurance Project Plan (QAPP) was developed for this activity and all subsequent monitoring activities have been compliant with the QAPP. The City of Santee contracts with a consultant to conduct the monitoring.

TMDL APPLICABILITY

Ambient monitoring is conducted for constituents included on the 303(d) for the San Diego River downstream of the City of Santee. This data can be used to assess if exceedances for these constituents are occurring in the City of Santee and to assess trends in water quality. Ambient monitoring can indicate on which segment exceedances are occurring, helping to direct initial TMDL planning efforts.

TIME SCHEDULE FOR IMPLEMENTATION

- Ongoing

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Fecal coliforms are designated as a 303(d) impairment in the San Diego River. This activity is consistent with WURMP Strategic Goal 5 for bacteria source reduction.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be measured up to level 5 (changes in receving water qality) as the activity incorporates the direct measurement of receiving water quality over multiiple events to assess incorporates the direct measurement of receiving water quality over multiple events to assess trends. Fecal coliform levels in recent years are lower than the levels recorded in the earlier years of the program. Generally the water quality objectives are met for the consituents of concern, although exceedences for TDS and sulfate were observed during late Summer 2012.

TITLE: **STORMWATER DRAIN INSERT PILOT STUDY**
ID #: **SDR A-52**

ACTIVITY IMPLEMENTATION DESCRIPTION

Stormwater Drain Insert Pilot Study involves the installation of one area inlet insert in the San Diego River Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The insert was installed directly in the existing area within Qualcomm's Parking Lot. This site includes the installation of one storm drain area inlet inserts as a retrofit within the existing storm drain system. The inlet insert will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as "Trash Segregation Device Installation" in the 2008 San Diego River WURMP. In January 2011, the Qualcomm site was selected and the conceptual design was released for this project.

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets have been retrofitted with the selected drainage inserts during the month of March in 2011 and the first phase of monitoring started during the month of September in 2011.

Phase	Year*
Planning	10
Implementation	11
Assessment	12

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

TMDL APPLICABILITY

San Diego and Creeks Bacterial TMDL Region Beaches

LEAD WATERSHED COPERMITTEE

- San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

CONSISTANCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

LOCATION DESCRIPTION
Qualcomm Stadium Parking Lot

HYDROLOGIC AREA
- 907.11

EFFECTIVENESS MEASUREMENTS		
MANAGEMENT QUESTIONS	• What is the load reduction efficiency of the catch basin insert? How effective are these catch basin inserts at reducing priority pollutant loads?	
TARGETED MEASURABLE OUTCOME(S)	Reduction in priority pollutant loads	
ASSESSMENT METHODS(S)	Inspections (e.g., ensure the catch basin inserts are working as designed) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) Tabulation (e.g., amount of money spent on implementation and maintenance) Reporting (e.g., estimates of load reduction from 3rd party data)	
DATA RECORDED		
	How much money spent on inspections and maintenance	NA
	Trash Capacity	100 lbs
	Flooding Issues	No
	Functionality during storm event	Significant Flow Bypass, Re-suspension of material from filter into basin.
	% Trash Bypass	Unknown

EXPECTED BENEFITS
Drain inserts are moderately effective at reducing discharge of trash to receiving waters when loadings are compatible with the maintenance frequency.
Excessive flow bypasses is the main cause of reduced performance.

ANALYSIS RESULTS
Results showed that these BMP's lack the capacity needed to quantify the level of maintenance desired by city O&M. Due to large drainage areas, typical of street drainage, the pilot showed maintenance required in excess of 4 times per year.

CONCLUSIONS
Effectiveness and efficiency, determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts are deemed insufficient to meet city goals.

RECOMMENDATIONS
Research BMP's with greater trash retention capacity to ensure less maintenance intervals.

Project Type(s)

- Monitoring

Pollutant Source Type(s)

- Municipal Facilities

Pollutant Source Activities

- Auto Parking and Use

Target Pollutant Type(s)

- Bacteria
- Oil & Grease
- Sediment
- Trash

TITLE:	**ROBB FIELD WATER TREATMENT AND REUSE PROJECT**
ID #:	**SDR A-53**

ACTIVITY IMPLEMENTATION DESCRIPTION

This project will construct a storm runoff collection and treatment facility at the northwest corner of Robb Field, a Park & Recreation Facility. Once treated, the storm water will be stored and used to irrigate the adjacent 14 acre grass athletic field The City has named this model approach for Low Impact Development (LID) in commercial and industrial areas as "Storm water Reuse" and, if proven to be effective, anticipates eventually implementing similar LID projects. This project has not moved forward since last fiscal year.

TMDL Applicability

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in June 2009. The work performed in FY 2009 included the conceptual design and the City facility stakeholder, Park and Recreation Department (PRD). The City of San Diego is currently assessing our options for implementing this project.

Phase	Year*
Planning	
Implementation	
Assessment	

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

CONSISTANCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identifies metals and bacteria as high priority water quality problems in the Pueblo Watershed (more specifically Hydrologic Area 908.2) and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration.

LOCATION DESCRIPTION

Robb Field

HYDROLOGIC AREA

- 908.2

EFFECTIVENESS MEASUREMENTS		
Management Questions	• How much load reduction can be achieved by retrofitting commercial and industrial streets with LID features such as porous asphalt and infiltration planters? • How much reduction in runoff volume can be achieved through LID retrofits? • How efficient are LID retrofits in reducing pollutant loads?	
Targeted Measurable Outcome(s)	Reduction in priority pollutant loads	
Assessment Method(s)	• Inspections (e.g., ensure LID retrofits working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated pollutant load and runoff volume reduction) • Monitoring (e.g., collect data on pollutant concentrations and flows to estimate pollutant load and runoff volume reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of pollutant load and runoff volume reduction from third-party data)	
Data Recorded		

EXPECTED BENEFITS

The goal of the assessment is to determine the effectiveness and efficiency of the reuse project in reducing runoff volume and reducing pollutant loads. This information will be used to help estimate the pollutant load reduction efficiency of future similar projects.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2012. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

RECOMMENDATIONS

PROJECT TYPE(S)

Low Impact Development- Other pollution prevention bmp

POLLUTANT SOURCE TYPE(S)

POLLUTANT SOURCE ACTIVITIES

TARGET POLLUTANT TYPE(S)

- Bacteria

TITLE: **SAN DIEGO RIVER WATERSHED BROCHURE**
ID #: **SDR A-54**

ACTIVITY IMPLEMENTATION DESCRIPTION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and continued through FY 2012. Implementation and distribution occured in FY 2012 and will continue through FY 2015. Assessment is proposed in FY 2015.

Phase	Year*
Planning	2012
Implementation	2012
Assessment	2015

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

LOCATION DESCRIPTION

San Diego River Watershed Management Area.

HYDROLOGIC AREA

The brochures will be distributed throughout the San Diego River Watershed Management Area.

EFFECTIVENESS MEASUREMENTS		
Management Questions	Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA? Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?	
Targeted Measurable Outcome(s)	Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure. Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure. Increased intent to act to prevent storm water pollution after reading the watershed brochure.	
Assessment Method(s)	Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.	
Data Recorded	N/A	

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

ANALYSIS RESULTS

An effectiveness assessment of this activity is not possible at this time because the watershed brochures have not been distributed to enough residents within the Watershed Management Area. Data will be collected throughout FY 2012 - FY 2015.

CONCLUSIONS

Watershed brochure revisions to all six brochures were completed in late FY2012. Effectiveness assessments are scheduled to begin in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

RECOMMENDATIONS

PROJECT TYPE(S)

- Pollution Prevention – Irrigation Runoff Reduction & Other Pollution Prevention BMP
- Education – Community Events

POLLUTANT SOURCE TYPE(S)

- Industrial/Commercial Facilities
- Municipal Facilities
- Residential

POLLUTANT SOURCE ACTIVITIES

TARGET POLLUTANT TYPE(S)

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Metals
- Nutrients
- Organics
- Oil & Grease
- Pesticides
- Sediments
- Trash

TITLE:	**STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS**
ID #:	**SDR-A55**

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs. Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors. SWQMPs with the potential to propose BMPs in the San Diego River Watershed include:

1) SDA 5 (Bostonia)
2) SDA 6 (Lakeside)
3) SDA 7 (Alpine)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2012-13. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in FY 2013-14.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EFFECTIVENESS MEASUREMENTS

To be determined

TITLE: **COMMERCIAL BMP SELF CERTIFICATION PILOT PROGRAM**
ID #: **SDR-A63**

ACTIVITY DESCRIPTION

This program includes an assessment of urban runoff from a major, commercial parking lot in La Mesa (super market with additional shops). The load contribution of the parking lot will also be examined. The project also includes an education and outreach component in order to open dialogue with property management. The shopping center management will provide source control BMP maintenance records for the City to assess. Recommendations will be made to property management, and self certifications will be required annually. Additional wet weather samples will be collected for assessment. The City may decide to continue the program for different commercial centers within the watershed.

In FY 2011-2012 porject was on hold. Will continue in next fiscal year.

TMDL APPLICABILITY

Outreach and pollutant reduction activities will be a component of the Comprehensive Load Reduction Plans developed for the Bacteria TMDL. The activity is designed to assess and reduce pollutant loading stemming from commercial parking lot locations.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The pilot program activity supports the Watershed Strategy by working with property managers in the watershed regarding good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Follow up water quality samples will be collected in order to begin to assess the program. Additionally, due to the variability of sampling, increase in frequency of source control activities onsite will constitute a portion of the effectiveness metric of the activity.

TITLE: **KIDS CARE FEST**
ID #: **SDR-A64**

ACTIVITY DESCRIPTION

The City of La Mesa is committed to education outreach at community events. Each year the City in conjunction with Grossmont Healthcare District hosts Kids Care Fest. During the event on September 24, 2011 the city's Storm Water Program had a booth staffed by environmental educators from I Love a Clean San Diego. Approximately 600 people visited the booth during the festival, and received San Diego River Watershed flyers designed to convey information regarding preventing pollution in the watershed. The "Operation Cleanup" watershed model was also demonstrated to visitors. The event is located at Briercrest Park, 9001 Wakarusa St. in La Mesa, CA.

TMDL APPLICABILITY

Outreach and pollutant reduction is a portion of the San Diego River Comprehensive Load Reduction Plans which was developed in the 2011-2012 Fiscal Year.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year, Ongoing

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Dissolved Oxygen

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Briercrest Park is located within the San Diego River Watershed. Education and outreach within the watershed allows residents to understand how their actions make a difference in downstream water quality.

EFFECTIVENESS MEASUREMENTS

Number of people visiting storm water booth. (600)

TITLE: **ALLIED GARDENS GREEN LOT**
ID #: **SDR A-65**

ACTIVITY IMPLEMENTATION DESCRIPTION

This project will replace a portion of the conventional asphalt in the parking lot of the Allied Garden Recreation Center with porous pavement to allow for the filtration of urban runoff. The runoff from the asphalt around the recreation center and tennis courts will drain to porous pavement. Underdrains beneath the porous pavement will convey the runoff to the existing catch basins.

TMDL APPLICABILITY

Future TMDL's: fecal coliform, low dissolved oxygen, phosphorous, total dissolved solids

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010 and was transferred to the Engineering & Capital Projects Department for design and construction in September 2010. The project is in 100% design. Construction is anticipated to finish in FY 2014. Water quality monitoring will be conducted after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

Phase	Year*
Planning	2013
Implementation	2014
Assessment	2015

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify dissolved oxygen, bacteria, phosphorous, turbidity, and total dissolved solids as high priority water quality problems throughout the San Diego River WMA, and recommend implementing filtration activities to address it.

LOCATION DESCRIPTION

Allied Gardens Community Center

HYDROLOGIC AREA

- 907.11

EFFECTIVENESS MEASUREMENTS		
Management Questions	• What is the load reduction efficiency of retrofits? • How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?	
Targeted Measurable Outcome(s)	Reduction in priority pollutant loads	
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)	
Data Recorded		

EXPECTED BENEFITS

The goal of the project is to reduce runoff volume through filtration. The goal of this analysis is to determine the load reduction efficiency of Low Impact Development (LID) Best Management Practice (BMP) retrofits. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type.

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ANALYSIS RESULTS

This activity was not in active implementation in FY 2012. Therefore, assessment is not possible at this time.

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CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

RECOMMENDATIONS

PROJECT TYPE(S)

Low Impact Development- Other pollution prevention bmp

POLLUTANT SOURCE TYPE(S)

POLLUTANT SOURCE ACTIVITIES

TARGET POLLUTANT TYPE(S)

- Dissolved Oxygen
- Bacteria

- Phosphorous
- Turbidity
- Total Dissolved Solids

TITLE: **COMPLEX STREET GREEN MALL**
ID #: **SDR A-66**

ACTIVITY IMPLEMENTATION DESCRIPTION

This project will upgrade the existing sidewalk areas with curb cut-outs and vegetated bioretention cells which are designed to capture urban runoff from the tributary asphalt surfaces and provide a load reduction by filtering flows. Runoff absorbed into the amended soils will undergo evapotranspiration through native vegetation.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. This project is currently on hold pending funding availability. At this time, it is unknown when the project will resume.

Phase	Year*
Planning	
Implementation	
Assessment	

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify dissolved oxygen, bacteria, phosphorous, turbidity, and total dissolved solids as high priority water quality problems throughout the San Diego River WMA, and recommend implementing filtration and infiltration activities to address it.

LOCATION DESCRIPTION

Complex St just north of Clairemont Mesa Blvd.

HYDROLOGIC AREA

- 907.11

EFFECTIVENESS MEASUREMENTS	
Management Questions	• What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?
Targeted	Reduction in priority pollutant loads

Measurable OUTCOME(S)		
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)	
Data Recorded		

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of vegetative planters.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2012. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

RECOMMENDATIONS

PROJECT TYPE(S)

Low Impact Development- Other pollution prevention bmp

POLLUTANT SOURCE TYPE(S)

POLLUTANT SOURCE ACTIVITIES

TARGET POLLUTANT TYPE(S)

- Dissolved Oxygen
- Bacteria
- Phosphorous
- Turbidity
- Total Dissolved Solids

TITLE:	**FAMOSA SLOUGH EROSION SEDIMENT CONTROL BMP**
ID #:	**SDR A-67**

ACTIVITY IMPLEMENTATION DESCRIPTION

Famosa Slough is a 37 acre wetland immediately upstream of the San Diego River. It is fed by rainwater from the surrounding urban drainage areas and is flushed with salt water from the main San Diego River channel.

This project takes place in two locations in the slough. At one location, curb and gutter as well a new storm drain pipe and an energy dissipater will be added. The second location will include everything at the first location plus an infiltration channel

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. This project is currently on hold pending funding availability. Preliminary engineering is expected to begin in FY2013. At this time, construction is anticipated in FY2016.

Phase	Year*
Planning	2013
Implementation	2016
Assessment	2017

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The concept plan for the project was completed in June 2010. The project is anticipated to be transferred to the Engineering & Capital Projects Department for design and construction in late FY 2011. Construction is anticipated in FY 2015.

LOCATION DESCRIPTION

Famosa Slough at alley between Mentone St and Montalvo St.

HYDROLOGIC AREA

- 907-11

EFFECTIVENESS MEASUREMENTS	
Management Questions	• What is the load reduction efficiency of retrofits? • How effective are retrofits at reducing loads of priority pollutants

	(sediment)?
Targeted Measurable Outcome(s)	Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Data Recorded	

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing sediment load.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2012. Therefore, assessment is not possible at this time.

CONCLUSIONS

No conclusions regarding the effectiveness and efficiency of this activity in reducing pollutant loads and runoff volume can be made at this time.

RECOMMENDATIONS

PROJECT TYPE(S)

Low Impact Development- Other pollution prevention bmp

POLLUTANT SOURCE TYPE(S)

POLLUTANT SOURCE ACTIVITIES

TARGET POLLUTANT TYPE(S)

- Sediment

TITLE: **FOCUSED OUTREACH TO THE EQUESTRIAN COMMUNITY**
ID #: **SDR-A70**

ACTIVITY DESCRIPTION

The County of San Diego conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups.

ACTIVITY IMPLEMENTATION FY11-12

Workshops

During FY11-12, the County of San Diego, again in coordination with the Solana Center for Solana Center and the MRCD, conducted similar workshops targeting equestrians. Workshops were held in Ramona, Spring Valley, Fallbrook and Bonsall. Table 1 includes a summary for the four workshops. One additional workshop was canceled in FY11-12 due to low pre-registration.

Table 1 FY2011-12 Workshop Location and Attendance

Location	Presentation Date	No. of Attendees	Primary Watersheds Addressed
Ramona	11/19/11	24	San Diego River, San Dieguito
Spring Valley	1/14/12	24	Sweetwater
Fallbrook	5/26/12	64	Santa Margarita, San Luis Rey
Bonsall	6/2/12	15	Santa Margarita, San Luis Rey
Total		**127**	

Community Events

During FY11-12 County staff and/or contractors provided targeted outreach to the equestrian community at the Ramona Rodeo. At the event, County staff and contractors hosted a booth, answered questions from attendees, and disseminated information on manure management, composting, general recycling, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. A total of 200 horse owners were reached through these three community events. Attendance and interest in the booth varied significantly on each day of the rodeo.

Table 2 FY2011-12 Community Event Location and Attendance

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
5/18/2012	Ramona Rodeo	Ramona Rodeo Grounds	25	San Dieguito, San Diego River
5/19/2012	Ramona Rodeo	Ramona Rodeo Grounds	25	San Dieguito, San Diego River
5/20/2012	Ramona Rodeo	Ramona Rodeo Grounds	150	San Dieguito, San Diego River
Total			**200**	

Surveys

Information was gathered via survey questionnaires and in person interviews during the Ramona and Spring Valley manure composting workshops. A total of 45 horse owners participated in the survey, however only 36 matched sets could be identified for the pre and post tests. The results of these interviews were summarized in a final report titled San Diego County Manure Management Workshop Survey Results FY12. This report is included as an attachment in the County of San Diego 2011-12 JURMP Annual Report.

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for Beaches and Creeks and with other more localized TMDLs for constituents such as nutrients and sediment.

TIME SCHEDULE FOR IMPLEMENTATION

Additional workshops are planned for equestrians in the Santa Margarita and San Luis Rey Watersheds during FY12-13. The County is interested in pursuing opportunities to facilitate peer mentoring programs that encourage equestrians to learn about proper BMPs such as manure management from one another. In FY12-13, County staff will meet with partners and discuss future program development. Development of such a program in the future is contingent upon identifying a reliable source of funding, such as grants.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for an important source of the high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

Composting Workshop (Ramona and Spring Valley Results combined)

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered.

Pre-workshop survey results were as follows:

- 56% responded correctly that stormwater is not treated.
- A mean score of 5.5 responded that they believe horse manure contributes to pollution of local waterways. (Scale was 0 to 10)
- The mean score for how much manure they currently composted was 2.75 on a scale from 0 (none) to 10 (all).
- 89% responded that they currently pick up manure more often than once per week.
- 16% responded that they currently compost manure.

When asked about what equestrians can do to prevent pollution caused by horse manure, few respondents suggested ideas on the pre-workshop survey.
Post-workshop survey results were as follows:

- 91% responded correctly that stormwater is not treated.
- Participants perceived composting manure to be much less difficult following the workshop compared to the pre-test.
- 95% responded that they plan to remove manure from corrals and stalls every day in the future.
- 90% responded they plan to manage manure generated by composting in the future.

Based on the pre and post assessment at the Lakeside and Ramona workshops, it appears that the workshop was successful at fostering positive attitudes and perceived control about composting. Future workshops might benefit from highlighting key issues such as the potential for manure to pollute waterways and the fact that stormwater is not treated.

Composting Workshop Rainbow

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, in the Rainbow manure management workshop pre- and post-workshop surveys were administered. Survey results indicate a positive change in awareness such as: knowing they live in a watershed, knowing water in the storm drain is not treated, and consideration of how horses and livestock manure can contribute to water pollution.

Results of the pre surveys administered by Mission RCD found the following results:

- 58% responded that they did not know they lived in a watershed
- 80% responded that water in the storm drain system is not treated
- 46% responded that they believe livestock and horses contribute “some” to water pollution

Post survey results found:

- 98% responded correctly that they now know they live in a watershed
- 98% responded that water in the storm drain system is not treated
- 85% responded that they believe livestock and horses contribute “some” to water pollution

After the workshop it appeared that attendees responded positively that they plan to start composting at least some portion of the manure generated. It appeared that after the presentation attendees had learned that horses and large animals can impact water quality.

BMP Workshop – San Luis Rey

The second Horse Property BMP Workshop was held in the San Luis Rey Watershed. A presentation and site tour were utilized for the event. Pre and post surveys were used to evaluate change of awareness and knowledge.

When surveyed on identification of BMPs the following results were found:
BMPs pre-survey results found:

- 64% responded correctly that they live in a watershed.
- 91% believe horse manure contributes “some” to water pollution.
- 45% responded correctly by identifying erosion control BMPs.
- 36% correctly identified drainage control BMPs.
- 67% correctly identified manure management BMPs.

Post survey results showed:

- 100% knew they live in a watershed.
- 91% believe horse manure contributes “some” to “a great deal” to water pollution.
- 82% responded correctly by identifying erosion control BMPs.
- 91% could correctly identify drainage control BMPs
- 82% correctly identified manure management BMPs.

The overall impression of the BMP workshop was extremely positive. Attendees were excited and enthusiastic about the subject matter and appeared to be open to hearing about horse property BMPs. Many asked a lot of pointed questions, indicating they were trying to determine the best BMPs for their properties. Over half of the attendees at this workshop had also attended the Manure Composting Workshop in Rainbow the week before.

TITLE:	**RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION**
ID #:	**SDR-A71**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY09-10

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY10-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

On September 26, 2010, Fallbrook residents stood in line before the 9 a.m. start time for the distribution event at Fallbrook Village Square. By the 1 p.m. closing time, 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County.

Table 1 Residents by Watershed

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	San Diego River	San Diego Bay	Tijuana	Unk
Total Residents	2	24	61	6	8	4	27	50	2	1

ACTIVITY IMPLEMENTATION FY11-12

During FY11-12, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Survey results will be summarized in FY12-13. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY09-10. The events took place on August 28, 2010* (Cuyamaca College) and September 26, 2010[1] (Fallbrook Village). Additional events are being considered for implementation in FY 12-13.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

[1] Rain Barrel sales dates are corrected for 2010. No County rain barrel sale was conducted in 2011.

TITLE: **ADDITION OF INFILTRATION STRIPS TO CONCRETE CHANNELS**
ID #: **SDR-A72**

ACTIVITY DESCRIPTION

The City of Santee has received preliminary approval for funding of a pilot project through the San Diego Region Integrated Regional Water Management Plan (IRWMP). The project has been designed specifically to address water quality issues relating to concrete channel-lined drainage. The City has been successful in restoring portions of unlined channels such as Forester Creek and Woodglen Vista Creek. However, it is not possible to implement restoration in concrete channels where there is existing development, for example in the upper portion of the Woodglen Vista Creek, which is surrounded by residences. The City is proposing to conduct a pilot project to explore how infiltration can be introduced at the base of concrete channels to facilitate infiltration of dry weather (and to some extent wet weather) flows. This would mimic the pre-development hydrology of the drainage channel and help recharge groundwater. Infiltration of runoff will divert pollutants from being discharged to the San Diego River. Some designs may allow the recruitment of plants in the infiltration areas which will help remove pollutants such as nutrients from the run-off. The objective of the project is to achieve some of the benefits of restoration without compromising flood control capacity and function. This project complements other projects the City is undertaking to survey the condition of corrugated metal pipe (CMP) portion of the storm drain system and to prioritize CMP replacement. The activity will be implemented when funds are available (projected to be during calendar year 2013).

TMDL APPLICABILITY

This activity focuses on the elimination of dry weather flows which may contribute to bacteria loading, and is therefore applicable to the bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity currently is scheduled for implementation when grant funds become available (2013-14).

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- Input will be solicited from the Cities of El Cajon, La Mesa and San Diego as well as the County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Dissolved Minerals
- Gross Pollutants
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goal 1 Dry Weather Flow Reduction.

EFFECTIVENESS MEASUREMENTS

This activity can be assessed up to level 5 (changes in discharge quality). Theoretically it will lead to changes in receiving water quality, but it is unlikely that these changes would be measurable.

TITLE:	**MULTI-FAMILY RESIDENTIAL TRASH ENCLOSURE ASSESSMENT**
ID #:	**SDR A-74**

ACTIVITY DESCRIPTION

Trash enclosures have been identified as a source of bacterial indicators during a previous source identification investigation in the San Diego River watershed. During FY 2011 an activity was conducted which focused on trash enclosure management in an industrial area in Santee. A similar activity was being developed for FY 2012 for multi-family residences that use trash dumpster enclosures. The activity identified multi-family residential locations in Santee which use trash dumpsters (versus individual bins for each residence), particularly those located in areas where data is available showing that bacterial exceedences have occurred, and those that are in close proximity to the San Diego River and its tributaries. The activity will combine education, inspection, and enforcement as necessary. Educational information will be provided to property managers advising them how trash dumpster enclosures should be managed. This information will be based on regional standards which require that the dumpster(s) be intact; lids closed; and the area surrounding the dumpsters free of trash and debris. Dumpsters should be emptied at a frequency that will prevent them from becoming overfull. Education will be followed by inspection to assess the level of compliance at the facilities. Where appropriate, the property manager will be informed of any deficiencies. Follow-up inspections will be conducted periodically to assess if compliance has been improved. The property manager will be re-contacted as necessary and enforcement procedures will be followed if needed.

TMDL APPLICABILITY

This activity focuses on eliminating a source of bacterial indicators and is therefore applicable to the bacteria TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity currently was implemented in 2012.

LEAD WATERSHED COPERMITTEE

- City of Santee

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This is consistent with WURMP Strategic Goal 4 Source Reduction at Residential Land Uses and Strategic Goal 5 for Bacteria Source Reduction. This data can also be used in possible future watershed documents (such as a Water Quality Improvement Plan) to prioritize areas for inspection.

EFFECTIVENESS MEASUREMENTS

Effectiveness can be assessed at level 3 (behavioral change/BMP implementation), as a baseline can be developed for initial inspections, and compared with results for follow-up surveys.

TITLE:	**MULTI FAMILY RESIDENTIAL TRASH AREA PILOT PROGRAM**
ID #:	**SDR-A76**

ACTIVITY DESCRIPTION

The City performed a site-by-site assessment on multi-family residential trash areas throughout the watershed. This will allow the City to understand the baseline level of compliance. Following the assessment, enforcement will be conducted with follow up inspections to ensure locations are consistently up to code standard. Water quality sampling may be conducted for further assessment.

TMDL APPLICABILITY

The activity will allow the City to understand baseline levels of compliance in multi-family residential locations, and reduce loads of bacteria through enforcement.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This type of activity promotes source control for a particular high priority water quality problem in the watershed.

EFFECTIVENESS MEASUREMENTS

The baseline compliance levels will allow for assessment based on locations that receive further code enforcement. Water quality sampling (wet/dry) will be examined in context of the program. Monitoring may be conducted downstream of particular multi-family locations as budget conditions will allow.

TITLE:	**QUALCOMM STADIUM DROP OFF COMMUNITY CLEANUP AND RECYCLING EVENT SPONSORSHIP**
ID #:	**SDR A-77**

ACTIVITY IMPLEMENTATION DESCRIPTION

The City of San Diego Environmental Services Department (ESD) conducted a drop off clean up event in March. The event was open to all City residents and targeted items like appliances, metals, junk furniture, mattresses and tires. The Qualcomm Stadium parking lot was the site for the drop off and ESD staff conducted both events. This event was selected based upon citizen requests, pledges of community involvement and previous citizen participation levels.

A total of 112,000 pounds were collected of which 44,000 pounds were recycled. Some of the items collected were, refrigerators, microwaves, stoves, window air conditioners, clothes washers and dryers, dishwashers and tires.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This event took place in March and was in the planning stages for approximately 2-3 months. Scheduling and coordinating available dates at Qualcomm stadium, writing traffic control patterns if needed, reserving equipment for use and scheduling drivers, creating a site map of the staging area and traffic flow pattern for ease of use.

PHASE	YEAR*
Planning	2012
Implementation	2012
Assessment	2012

*FY for which phase is/was occurring – if multi-year, enter the final year of the phase

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River WMA identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of these Cleanup events will result in load reduction of trash and debris directly and of bacteria indirectly.

LOCATION DESCRIPTION

This event was open to all City of San Diego residents. The location for the drop off was a designated location in the parking lot of the Qualcomm Stadium.

HYDROLOGIC AREA

- 907.10
- 907.20
- 907.30
- 907.40

EFFECTIVENESS MEASUREMENTS		
Management Questions	What is the load reduction associated with sponsorship? What is the efficiency of the sponsored cleanup? ($/lb collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	68,000 lbs
	Pounds of trash recycled (Outcome Level 4)	44,000 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	112,000 lbs
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$2,200
	Total money spent on the cleanup for the San Diego River watershed (Outcome Level 1)	$367
	Efficiency (Total Cost/Total Pounds Removed and Recycled)	$0.03/lb

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness and efficiency of free drop off clean up and recycling events. In sponsoring these clean up events, the City is providing a convenient drop off location for the free drop off/disposal of furniture, appliances and tires. These community cleanup events are also intended to deter residents from illegally dumping unwanted items in street and alley rights-of-way, canyons, creeks and riverbeds as well as other locations throughout the City. They also replace a house by house “bulky item” pick up.

ANALYSIS RESULTS

ESD staff collected a total of 112,000 lbs of metals, appliances, junk furniture and mattresses. Disposed 68,000 lbs and recycled 44,000 lbs. The sponsorship from the City of San Diego Transportation and Storm Water Department, Storm Water Division for this event was $2,200. The efficiency was calculated by dividing the sponsorship cost for the San Diego River WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This activity fulfills a watershed water quality activity for FY2012 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 112,000 pounds during the reporting period.

RECOMMENDATIONS

PROJECT TYPE(S)

- Pollution Prevention
- Source Control

POLLUTANT SOURCE TYPE(S)

- Ind/Comm Facilities
- Residential

POLLUTANT SOURCE ACTIVITIES

- Illegal Dumping
- Trash and Litter Control

TARGET POLLUTANT TYPE(S)

- Bacteria/Pathogens
- Trash

TITLE: Rainwater Harvesting Rebate Pilot Program
ID #: SDR – A78

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division in FY11 collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). Staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program was implemented in FY12 and was open to the residents of the City of San Diego on a first come first serve basis and provided a rebate of .50c per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department administered the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program. In the San Diego River Watershed there were 20 participants rebating a total of 76 rain barrels.

In addition to Rain Barrels Rebate Program an Outdoor Water Conservation Rebate Program was also offered to the residents of the City of San Diego. The Outdoor Water Conservation Rebate Program involved a rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in FY 11, implementation occurred in FY12.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- City of San Diego Public Utilities Department

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Diego River Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

Data recorded

1) Total amount of Rain Barrels rebated 196 rain barrels
2) Average size of Rain Barrels installed 60 gallons
3) Total Rain Barrel gallons rebated 17,400 gallons
4) Number of Outdoor Water Conservation items rebated

   297 rebates

   Smart Controllers -106

   Micro Irrigation - 93

   Turf Conversion - 98

EXPECTED BENEFITS

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Reduction in runoff can be achieved with the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants.

TITLE: **LA MESA HARRY GRIFFEN PARK KIOSK**
ID #: **SDR-A79**

ACTIVITY DESCRIPTION

During 2010-2011 the City of La Mesa (City) constructed an education outreach kiosk at the largest park within the City in the San Diego River Watershed, Harry Griffen Park. This kiosk was constructed with the help of the local Eagle Scouts. The kiosk presents storm water pollution prevention education outreach materials, including the San Diego River Watershed Fact Sheet along with other storm water related materials. The watershed fact sheet provides information on the watershed, pollutants of concern, and tips to prevent storm water pollution.

The expected benefit is that park-goers and nearby residents will be educated on storm water pollution prevention. Their awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed.

Information updated quarterly.

TMDL APPLICABILITY

Education outreach will be a component of the Comprehensive Load Reduction Plan which is being developed for the regional bacteria TMDL. The kiosk includes a San Diego River Watershed Fact Sheet that outlines the pollutants of concern for the watershed, as well as BMPs which should be utilized to limit pollutants from reaching the storm drain system.

TIME SCHEDULE FOR IMPLEMENTATION

Multi Year

LEAD WATERSHED COPERMITTEE

- City of La Mesa

OTHER PARTICIPATING COPERMITTEES

OTHER PARTICIPATING ENTITIES

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- TDS
- Total Phosphorus

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Watershed Strategy identifies high priority water quality problems in the watershed. The education outreach kiosk provides pollution prevention tips to address those watershed priority pollutants. The kiosk supports the Watershed Strategy by educating residents in the vicinity of the park on good housekeeping measures and best management practices that prevent priority pollutants from being discharged into the storm drain system within the watershed.

EFFECTIVENESS MEASUREMENTS

Education outreach is an integral part of the storm water program. One of the primary means to improving water quality is for the public to become aware of water quality problems within the

watershed and region. The kiosk provides educational outreach materials specific to the watershed to address pollution prevention measures.

TITLE: **San Diego River Invasive Species Removal**
ID #: **SDR A-80**

ACTIVITY DESCRIPTION

The City of Santee is working in coordination with the San Diego River Conservancy, the County of San Diego Vector Control Program and the Urban Corps of San Diego to remove invasive species including water primrose from the San Diego River at Mast Park in Santee. Invasive Mexican Fan Palms were treated with herbicide and removed after they died. The removed vegetation was disposed offsite at a properly licensed waste disposal facility. The project was conducted during the summer of 2011 and is ongoing.

A plan has been developed to prevent the regrowth of water primrose in this part of the San Diego River. It is anticipated that the removal of the water primrose will result in improved dissolved oxygen concentrations in the San Diego River at Mast Park. No water quality monitoring related to this specific project has been planned, however the San Diego River Park Foundation monitors this location monthly.

ACTIVITY IMPLEMENTATION

- Summer 2011

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Commence invasive removal summer 2011
- Project is ongoing as of Fall 2012

PARTICIPATING WATERSHED COPERMITTEES

- City of Santee

OTHER PARTICIPATING ENTITIES

- San Diego River Conservancy
- San Diego River Park Foundation
- County of San Diego Vector Control Program
- Urban Corps of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

EXPECTED BENEFITS

This Invasive Species Removal project will not only enhance water quality and aid in flood control measures.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Removal of invasive species benefits water quality by restoring the river's natural condition and native vegetation. Native vegetation provides greater filtration and treatment of pollutants. As such, this water quality activity is consistent with the collective watershed strategy, which seeks to abate pollutants in the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by ensuring completion of all project elements. The river will continue to be monitored to ensure the invasive species do not re-grow and native riparian vegetation is successful.

TITLE:	**COMMUNITY OUTREACH EVENT; SANTREE FEST**
ID NUMBER:	**SDR-A81**

ACTIVITY DESCRIPTION

The Santree Fest, held at the Town Center Community Park in Santee, March 17, 2012, promotes landscape improvements to the local park and provides a venue for a variety of agencies and non-profit organizations to promote messages related to outdoor activities, the environment, fire protection and pollution prevention.

The San Diego River WURMP group was represented by the City of Santee Stormwater Department, the County of San Diego Watershed Protection Program, and City of San Diego Stormwater Department (thorough provision of promotional items), to discuss issues related to stormwater management and bacteria in the watershed. Pet-waste dispensers/bags, reusable Chico bags, as well as materials on composting, landscaping practices, Integrated Pest Management (IPM) and instructions on how to create your own rain barrel were distributed to participants. The importance of managing pet-waste and proper landscaping was discussed with attendees, including several girl scout troups in attendance. The San Diego River watershed map was also presented to help attendees understand the geography and hydrology of the watershed.

FY 2011-12 ACTIVITY IMPLEMENTATION

The one-day event was held March 17, 2012, from 9:00 AM- 12:00 PM

TMDL APPLICABILITY

Information presented at this event supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

The one-day event was held March 17, 2012, from 9:00 AM- 12:00 PM

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego
- City of Santee
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as priority water quality problems in the San Diego River Watershed. Pet waste in particular is a potential source of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Approximately 250 people were in attendance at the Santree Fest, and of the items provided by the Cities and the County to give away, about 100 of each were provided to the participants.

TITLE: COMPREHENSIVE LOAD REDUCTION PLANS
ID #: SDR-A82

ACTIVITY DESCRIPTION

During FY 2011-12, in compliance with the Bacteria Total Maximum Daily Load (TMDL) for Beaches and Creeks, the San Diego River Copermittees began developing a Comprehensive Load Reduction Plan (CLRP) for the San Diego River Watershed. The CLRP outlines a proposed program of activities that will be capable of achieving TMDL-specified bacteria load reductions. To qualify for an extended 20-year wet weather compliance timeline, the Responsible Parties opted to develop a plan that addresses multiple constituents (specifically, nitrogen and phosphorous).

In order to identify a program of activities that will be capable of achieving TMDL-required bacteria load reductions during wet weather, the Copermittees used a robust, public-domain computer model with the ability to simulate hydrologic and pollutant loadings and to evaluate various best management practice (BMP) implementation scenarios. The water quality model was used to estimate the target bacteria load reductions for various BMP implementation scenarios that are predicted to achieve compliance with the TMDL's allowable exceedance frequency-based Waste Load Allocations.

TMDL APPLICABILITY

Indicator Bacteria TMDL - Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

CLRP development was initiated during FY 2011-12 and continued throughout the reporting period. The process will continue during the FY 2012-13 period, culminating in the submission of the CLRP to the RWQCB in October 2012.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

- City of El Cajon
- City of La Mesa
- City of San Diego
- City of Santee

OTHER PARTICIPATING ENTITIES

- Caltrans

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients
- Dissolved Oxygen
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with WURMP Strategic Goals 1 through 5.

EFFECTIVENESS MEASUREMENTS

The San Diego River Watershed Copermittees collaborated to participate in an ongoing, collaborative planning process for CLRP development. The Activity was effective as the CLRP was completed and submitted to the RWQCB by the October 2012 deadline.

TITLE: **LAND USE BASED WATER QUALITY MONITORING**
ID #: **SDR-A83**

ACTIVITY DESCRIPTION

The County of San Diego will collect bacteria and general water chemistry data to characterize water quality in catchments consisting primarily of agricultural and rural residential land uses. Water quality sampling will take place at sites located in rural areas of the San Luis Rey and San Diego River Watersheds. Data gathered can be used to inform future watershed modeling efforts or to predict the potential pollutant load associated with activities or characteristics common to these land use categories. These data will be added to the existing body of land use-based water quality data collected by the San Diego County Copermittees.

TIME SCHEDULE FOR IMPLEMENTATION

During the FY 2009-10 reporting year, monitoring took place at three sites throughout San Diego County (Table 1). The Couser Canyon site was monitored during two wet weather events and one dry period; Valley Center and Blossom Valley sites were monitored during two wet weather events. For additional information, refer to Attachment D of this Annual Report.

Table 1. FY 2009-10 Monitoring Activities

Location	Watershed	Primary Land Use	Sampling Type
Couser Canyon	San Luis Rey	Agricultural (Grove/Orchard)	Wet (two events), Dry (one event)
Valley Center	San Luis Rey	Rural Residential, Agricultural (Grove/Orchard)	Wet (two events)
Blossom Valley	San Diego River	Rural Residential	Wet (two events)

FY 2010-11 ACTIVITY IMPLEMENTATION
During FY 2010-11, the County of San Diego completed analysis of the data collected during FY 20009-10. For additional information, refer to Attachment D of this Annual Report.

FY 2011-12 ACTIVITY IMPLEMENTATION
During the FY 2011-12 reporting year, additional monitoring took place at two sites (Table 2). Couser Canyon and Blossom Valley were monitored during three wet weather events. For additional information, refer to Attachment E of this Annual Report.

Table 2. FY 2011-12 Monitoring Activities

Location	Watershed	Primary Land Use	Sampling Type
Couser Canyon	San Luis Rey	Agricultural (Grove/Orchard)	Wet (three events),
Blossom Valley	San Diego River	Rural Residential	Wet (three events)

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Analysis of the FY 2011-12 will be completed in FY 2012-13 and included in future WURMP Annual Reports.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the San Diego River WMA. This monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

During the FY 2011-12 reporting period, the County of San Diego conducted sampling at one location (Level 1 Outcome). For additional information, refer to Attachment E of this Annual Report.

APPENDIX B

ACTIVITY A-23 SUPPORTING DOCUMENTATION: COUNTY OF SAN DIEGO LAND USE WATER QUALITY SAMPLING FINAL MONITORING REPORT

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this study was to collect analytical data at mass loading stations (MLSs) draining primarily agricultural and/or rural residential lands during storms and non-storm conditions. Three sampling locations, two in the lower San Luis Rey (SLR) Watershed (Couser Canyon and Valley Center) and one in the San Diego River Watershed (Blossom Valley) were monitored over two storm events for nutrients, conventional constituents, fecal indicator bacteria (FIB), metals, and herbicides. *In situ* field measurements of temperature, specific conductance, dissolved oxygen (DO), pH, and turbidity were also taken at each location during each storm. In addition, at Couser Canyon, a composite post-storm sediment sample was collected to test for synthetic pyrethroid insecticides. The Couser Canyon location was also monitored over a non-storm flow event for all water quality constituents listed above.

2.0 METHODS AND MATERIALS

Stream flow gauging and water quality sampling were conducted at the three monitoring locations. One sediment quality sample was collected at the Couser Canyon monitoring location after the February 6-8 storm event. Detailed descriptions of sampling locations, stream flow gauging methods, storm selection criteria, methods utilized in sample collection, and quality assurance/quality control procedures are provided in the Quality Assurance Project Plan (QAPP) (Appendix A).

2.1 MONITORING LOCATIONS

Sampling locations were selected to characterize runoff from agricultural and spaced rural residential land uses during wet weather and non-storm flow (dry weather) conditions. Table 2-1 provides site names and GPS coordinates. A map of the monitoring locations and the associated drainage areas is provided in Figure 2-1. Pie diagrams showing landuse compositions of the drainage areas associated with the monitoring locations are presented in Figure 2-2.

Table 2-1: Approximate Locations of Monitoring Sites

Site	Watershed	Latitude[(a)]	Longitude[(a)]
Blossom Valley	San Diego River	32.86608	-116.83415
Couser Canyon	San Luis Rey	33.33176	-117.12483
Valley Center	San Luis Rey	33.25589	-117.06857

(a) GPS positions are based on the NAD 83 Datum.

Figure 2-1: Monitoring Locations within Watersheds and Land Use Designations

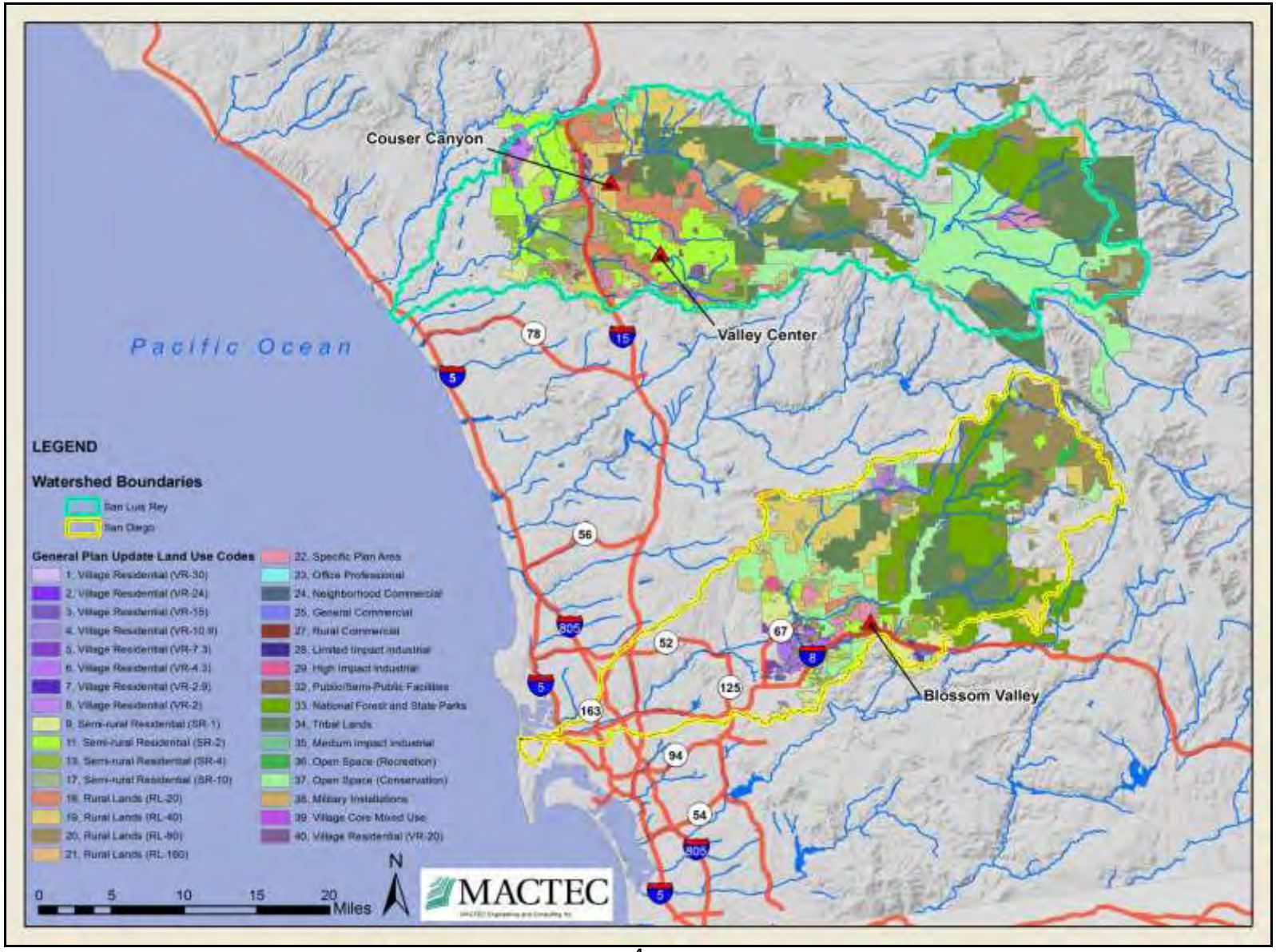
Couser Canyon
Valley Center
Blossom Valley
Pacific Ocean
LEGEND
Watershed Boundaries
San Luis Rey
San Diego
General Plan Update Land Use Codes
1. Village Residential (VR-30)
2. Village Residential (VR-24)
3. Village Residential (VR-15)
4. Village Residential (VR-10.9)
5. Village Residential (VR-7.3)
6. Village Residential (VR-4.3)
7. Village Residential (VR-2.9)
8. Village Residential (VR-2)
9. Semi-rural Residential (SR-1)
11. Semi-rural Residential (SR-2)
13. Semi-rural Residential (SR-4)
17. Semi-rural Residential (SR-10)
18. Rural Lands (RL-20)
19. Rural Lands (RL-40)
20. Rural Lands (RL-80)
21. Rural Lands (RL-160)
22. Specific Plan Area
23. Office Professional
24. Neighborhood Commercial
25. General Commercial
27. Rural Commercial
28. Limited Impact Industrial
29. High Impact Industrial
32. Public/Semi-Public Facilities
33. National Forest and State Parks
34. Tribal Lands
35. Medium Impact Industrial
36. Open Space (Recreation)
37. Open Space (Conservation)
38. Military Installations
39. Village Core Mixed Use
40. Village Residential (VR-20)
0 5 10 15 20 Miles
N
MACTEC
78
15
5
56
805
52
67
8
125
163
94
54

Figure 2-2: Comparison of Drainage Area Landuse Compositions among the Three Monitoring Locations

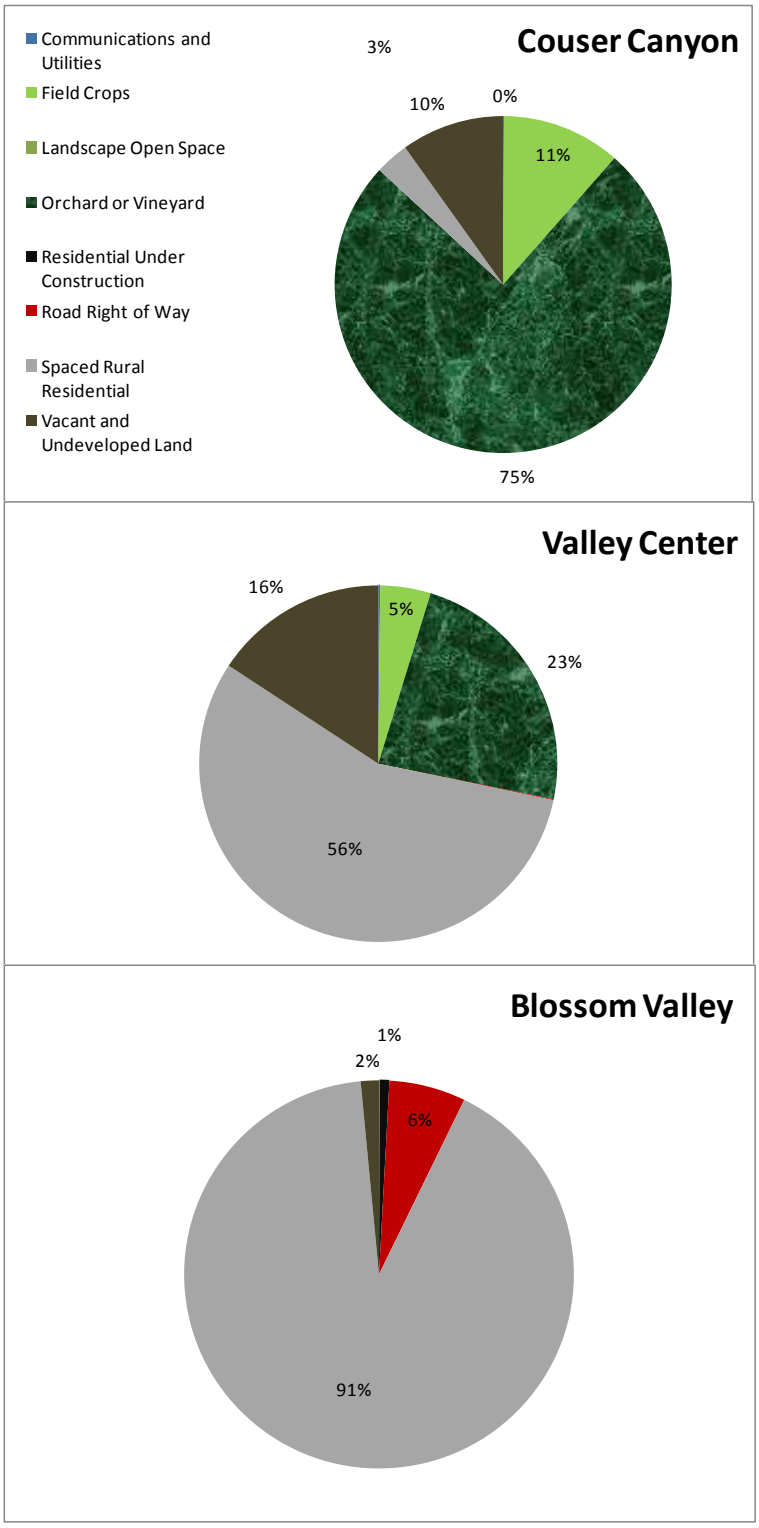

2.1.1 Couser Canyon and Valley Center Sites

The Couser Canyon and Valley Center monitoring sites are located within the San Luis Rey River Watershed (Fig. 2.1). The Couser Canyon site, draining approximately 1,155 acres, was established at the north-western edge of the Monserate sub-basin on Couser Canyon Road, approximately 1.1 miles south of Highway 76. The drainage area associated with the site is dominated by agriculture including orchard and vineyards (75%) and field crops (11%) with the remaining 13% being composed of vacant and undeveloped land (10%) and spaced rural residential land use areas (3%) (Figs. 2-2 and 2-4). The water quality monitoring equipment for Couser Canyon was installed on County property near the upstream end of two 18-inch corrugated steel pipes that run below Couser Canyon Road (Figure 2-3). Midway through the monitoring period one of the two pipes was bent over and closed off from the majority of flow as a result of high flows that flooded the area.

Figure 2-3: Couser Canyon Monitoring Location Photo

Figure 2-4: Couser Canyon Monitoring Location Drainage Area Landuse Composition

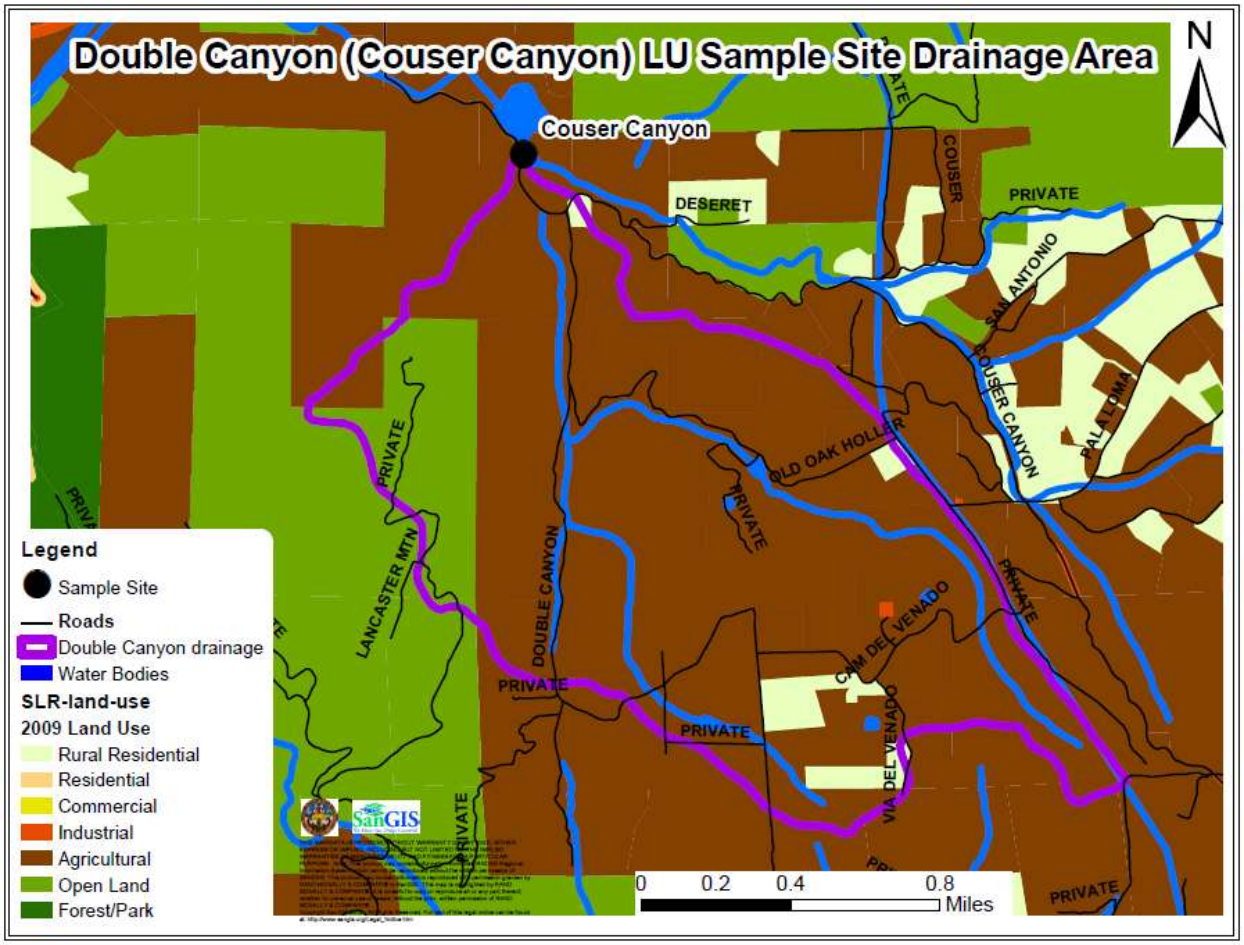

The Valley Center site, with a drainage area of 423 acres, was established in the eastern portion of the Lower San Luis Rey sub-basin at the intersection of Old Castle Road and Lilac Road. The drainage area associated with the site consists mainly of spaced rural residential (56%) and agricultural (27%) land uses; undeveloped or vacant lands occupy 16% of the area (Figs. 2-2 and 2-6). The water quality monitoring equipment for the Valley Center site was installed on County property in the single 48-inch corrugated metal pipe that extends under Old Castle Road just west of the intersection with Lilac Road (Figure 2-5).

Figure 2-5: Valley Center Monitoring Location

Figure 2-6: Valley Center Monitoring Location Drainage Area Landuse Composition

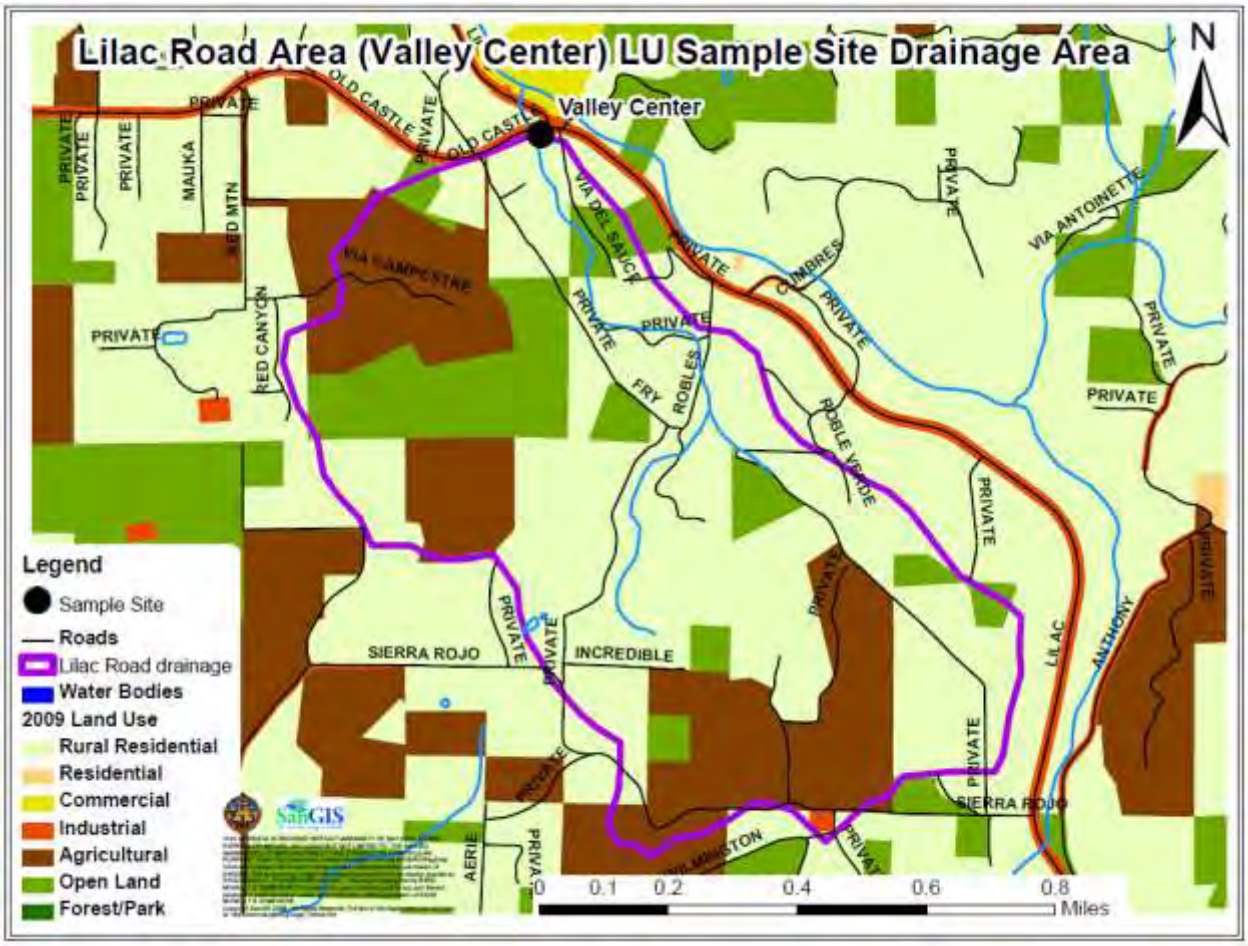

2.1.2 Blossom Valley Site

The Blossom Valley monitoring site, draining approximately 185 acres, was established located within the San Diego River Watershed on Hawley Road, approximately 0.65 miles north of Old Highway 60. The site, , was set near the eastern edge of the Lower San Diego sub-basin targeting runoff from spaced rural residential land use (91%) (Figs 2-2 and 2-8) . The water quality monitoring equipment for the site was installed on County property in the single 36-inch concrete pipe that runs below Hawley Road (Figure 2-5).

Figure 2-7: Blossom Valley Monitoring Location

Figure 2-8: Valley Center Monitoring Location Drainage Area Landuse Composition

2.2 ANALYTICAL METHODS

Specific analytical parameters were selected for each site based on land uses within the associated drainage areas and the specific 303(d) listings of the receiving waters. Tables 2-2, 2-3, and 2-4 show the analytes by site and include methods, maximum holding times, and reporting limit requirements. At all locations, *in-situ* water quality field measurements were collected for parameters listed in Table 2-5.

Water and sediment samples were analyzed by CRG Marine Laboratories, Inc. (CRG), for both wet weather sampling events. EnviroMatrix Analytical, Inc. (EMA) performed the dry weather sample analysis.

Table 2-2: Analytical Requirements for Couser Canyon MLS Water Samples

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Microbiology	Coliform, Fecal	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100mL
	Coliform, Total	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100mL
	Enterococcus	Enterolert	6 hours at ≤ 6°C	10 MPN/100mL
Nutrients and Conventionals	Ammonia-Nitrogen	SM 4500-NH_3 F/ SM 4500 NH_3 B,C	28 days	0.03 mg/L
	Nitrate-Nitrogen	EPA 300.0/ SM 4500 NO_3 E	48 hours	0.20 mg/L
	Nitrite-Nitrogen	EPA 300.0/ SM 4500 NO_2 B	48 hours	0.05 mg/L
	Ortho-Phosphate Phosphorus	EPA 300.0/ SM 4500-P E[c]	48 hours	0.01 mg/L

Table 2-2: Analytical Requirements for Couser Canyon MLS Water Samples (continued)

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Nutrients and Conventionals	Chloride	EPA 300.0/ SM 4500 Cl C	28 days	0.20 mg/L
	Fluoride	EPA 300.0/ SM 4500 F C	28 days	0.20 mg/L
	Sulfate	EPA 300.0/ SM 4500 SO_4 E	28 days	0.05 mg/L
	Total Kjeldahl Nitrogen	SM 4500-N Org B/ SM 4500 N C	28 days	0.50 mg/L
	Total Phosphorus	SM 4500-P E/ SM 4500 P B, E	28 days	0.05 mg/L
	Total Suspended Solids	SM 2540-D	7 days	5.0 mg/L
	Total Dissolved Solids (TDS)	SM 2540-C	7 days	5.0 mg/L
	Alkalinity, Bicarbonate	SM 2320-B	14 days	5.0 mg/L
	Alkalinity, Carbonate	SM 2320-B	14 days	5.0 mg/L
	Alkalinity, Hydroxide	SM 2320-B	14 days	5.0 mg/L
	Hardness, Total	SM 2340-C/ EPA 200.7	6 months	5.0 mg $CaCO_3$/L

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Metals	Iron, Total	EPA 200.8(m)	6 months	20.0 ug/L
	Manganese, Total	EPA 200.8(m)	6 months	1.0 ug/L
	Boron, Total	EPA 200.8(m)/ EPA 200.7	6 months	5.0 ug/L
	Magnesium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	0.1 mg/L
	Potassium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	10.0 mg/L
	Sodium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	10.0 mg/L
	Calcium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	0.1 mg/L
Herbicides	Terbuthylazine	EPA 625(m)	7 days	0.01 ug/L
	Secbumeton	EPA 625(m)	7 days	0.01 ug/L
	Simazine	EPA 625(m)	7 days	0.01 ug/L
	Oxadiazon	EPA 625(m)	7 days	0.05 ug/L
	Atrazine	EPA 625(m)	7 days	0.01 ug/L

(a) Filtering for dissolved constituents was conducted by the laboratory as soon as possible.

(b) If a second method number is listed, it is the method used by EnviroMatrix Analytical, Inc., for the dry weather sampling event.

(c) The County requested the analytical method for Orthophosphate-Phosphorus be changed from EPA 300.0 to SM 4500-P E.

Table 2-3: Analytical Requirements for Blossom Valley and Valley Center MLS Water Samples

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit

Microbiology	Coliform, Fecal	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100 mL
	Coliform, Total	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100 mL
	Enterococcus	Enterolert	6 hours at ≤ 6°C	10 MPN/100 mL
Nutrients and Conventionals	Ammonia-Nitrogen	SM 4500-NH_3 F	28 days	0.03 mg/L
	Nitrate-Nitrogen	EPA 300.0	48 hours	0.20 mg/L
	Nitrite-Nitrogen	EPA 300.0	48 hours	0.05 mg/L
	Ortho-Phosphate Phosphorus	SM 4500-P E	48 hours	0.01 mg/L
	Hardness, Total	SM 2340-C	6 months	5.0 mg $CaCO_3$/L
	Total Kjeldahl Nitrogen	SM 4500-N Org B	28 days	0.50 mg/L
	Total Phosphorus	SM 4500-P E	28 days	0.05 mg/L
	Total Suspended Solids	SM 2540-D	7 days	5.0 mg/L
	Total Dissolved Solids (TDS)	SM 2540-C	7 days	5.0 mg/L
Metals	Antimony, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Arsenic, Dissolved	EPA 200.8(m)	6 months	1.0 ug/L
	Cadmium, Dissolved	EPA 200.8(m)	6 months	1.0 ug/L
	Chromium, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L

	Copper, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Lead, Dissolved	EPA 200.8(m)	6 months	2.0 ug/L
	Lead, Total	EPA 200.8(m)	6 months	2.0 ug/L
	Nickel, Dissolved	EPA 200.8(m)	6 months	2.0 ug/L
	Selenium, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Selenium, Total	EPA 200.8(m)	6 months	5.0 ug/L
	Zinc, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
Organophosphorus Pesticides	Chlorpyrifos	EPA 625(m)	7 days	0.02 ug/L
	Diazinon	EPA 625(m)	7 days	0.04 ug/L
	Malathion	EPA 625(m)	7 days	0.06 ug/L

(a) Filtering for dissolved constituents was conducted by the laboratory as soon as possible.

(b) Acid preservation will be conducted by the laboratory as soon as possible.

Table 2-4: Analytical Requirements for Couser Canyon MLS Sediment Samples

Constituent Category	Analytical Parameter	Analytical Method	Maximum Holding Time	Reporting Limit
Pyrethroid Pesticides	Allethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Bifenthrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g

Constituent Category	Analytical Parameter	Analytical Method	Maximum Holding Time	Reporting Limit
	Cyfluthrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Cypermethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Danitol	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Deltamethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	lambda-Cyhalothrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Permethrin	EPA 8270 NCI GC/MS	40 days	25.0 ng/g
	Prallethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Piperonyl butoxide (PBO)	EPA 8270C(m)	40 days	20.0 ng/g

Table 2-5: *In-Situ* Field Measurements at All Locations

Analyte	Range
Conductivity	0 – 9.99 S/cm
Dissolved Oxygen (DO)	0 – 19.99 mg/L or 0 – 199% saturated air
pH	0 – 14

Temperature	0 °C – 55 °C
Turbidity	0 – 800 NTU

2.3 WATER QUALITY OBJECTIVES

Certain water bodies (Table 2-6) associated with this monitoring program are listed as impaired on the Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List). The Lower and Upper SLR River is listed for total nitrogen. The Lower SLR River is also listed for chloride, phosphorus, and total dissolved solids (TDS). The Lower SLR River and the Pacific Ocean shoreline at the SLR River mouth are listed for bacteria. The Lower San Diego River is listed for bacteria, phosphorus, total nitrogen, TDS, and low DO. In addition, a Total Maximum Daily Load (TMDL) for indicator bacteria was adopted by the California State Water Resources Control Board on December 14, 2010 that includes San Luis Rey River and the San Diego River watersheds. In this report, applicable Water Quality Objectives (WQOs), if available, were utilized for comparison purposes only and are outlined in Table 2-7. Sediment quality objectives applicable to this project are not available in current literature. The State Water Resources Control Board (SWRCB) intends to develop sediment quality objectives for enclosed bays and estuaries, but anticipates that the process will require approximately four years to complete (SWRCB, 2009).

Table 2-6: Clean Water Act Section 303(d) Listings Related to the Study Sites

Impaired Water Bodies	CWA Section 303(d) 2008 Listings								
	Nutrients			Dissolved Minerals		Low Dissolved Oxygen	FIB		
	Total N	Phosphorus	Eutrophic	Chloride	TDS		Enterococcus	Fecal Coliform	Total Coliform
San Luis Rey River (Lower)	X	X		X	X		X	X	
San Luis Rey River (Upper)	X								

Pacific Ocean Shoreline at SLR River mouth							X		X
San Diego River (Lower)	X	X			X	X	X	X	

FIB = Fecal Indicator Bacteria

N = Nitrogen

Table 2-7: Available Water Quality Objectives

Analyte	Units	Water Quality Objective	Source
Microbiology			
Coliform, Fecal	colonies/100mL	400	Basin Plan
Coliform, Total	colonies/100mL	10,000[a]	Basin Plan
Enterococcus	colonies/100mL	104[b]	Basin Plan
Nutrients and Conventionals			
Ammonia-Nitrogen	mg/L	< 0.025	Basin Plan
Nitrate-Nitrogen	mg/L	10[c]	Basin Plan
Nitrite-Nitrogen	mg/L	1[c]	Basin Plan
Total Nitrogen	mg/L	1[d]	Basin Plan
Chloride	mg/L	250[e]	Basin Plan
		50[f]	
Fluoride	mg/L	1.0	Basin Plan
Total Phosphorus	mg/L	0.1[g]	Basin Plan
Dissolved Oxygen	mg/L	> 5.0 mg/l	Basin Plan
Total Dissolved Solids	mg/L	500[e]	Basin Plan
		300[f]	

Table 2-7: Available Water Quality Objectives (continued)

Metals			
Arsenic, Dissolved	µg/L	340[h, i]	California Toxics Rule
		150[i, j]	
Boron, Total	mg/L	0.75[e]	Basin Plan
		1.0[f]	
Cadmium, Dissolved	µg/L	4.3[h, k]	California Toxics Rule
		2.2[j, k]	
Chromium, Dissolved	µg/L	550[h, k]	California Toxics Rule
		180[j, k]	
Copper, Dissolved	µg/L	13[h, k]	California Toxics Rule
		9.0[j, k]	
Iron, Total	mg/L	0.3	Basin Plan
Lead, Dissolved	µg/L	65[h, k]	California Toxics Rule
		2.5[j, k]	
Lead, Total	µg/L	82[h, k]	California Toxics Rule
		3.2[j, k]	
Manganese, Total	mg/L	0.05	Basin Plan
Nickel, Dissolved	µg/L	470[h, k]	California Toxics Rule
		52[j, k]	
Selenium, Dissolved	µg/L	Acute N/A	USEPA Recommended Water Quality Criteria
		4.6[j]	
Selenium, Total	µg/L	Acute N/A	USEPA Recommended Water Quality Criteria
		5.0[j]	
Sodium, Dissolved	%	60[l]	Basin Plan

Zinc, Dissolved	µg/L	120[h, k] 120[j, k]	California Toxics Rule
Organics			
Diazinon	µg/L	Acute: 0.08 Chronic: 0.05	SDRWQCB Resolution No. R9-2002-0123
Simazine	ng/L	4000 ng/L	Basin Plan
Atrazine	mg/L	0.001	Basin Plan

N/A = Water quality objective is not available at this time.

(a) WQO for bays and estuaries.

(b) Although criteria are for saltwater, these criteria are commonly used in San Diego Co-Permitee projects.

(c) Although criteria are for drinking water standards, these criteria are commonly used in San Diego Co-Permitee projects.

(d) From Basin Plan (1994): "Threshold values have not been set for nitrogen compounds; however natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 shall be used." Given WQO for total P = 0.1, WQO for total N = 1.

(e) WQO specified for Inland Surface Waters in the San Luis Rey Hydrologic Unit and Sweetwater Hydrologic Unit.

(f) WQO specified for Inland Surface Waters in the San Diego Hydrologic Unit.

(g) Not to be exceeded more than 10% of the time

(h) Criteria Maximum Concentration (CMC).

(i) Criteria are expressed as a function of the water effect ratio.

(j) Criteria Continuous Concentration (CCC).

(k) Criteria are expressed as a function of total hardness (mg/L as $CaCO_3$). Values assume a hardness of 100 mg/L.

(l) The WQO for sodium is expressed as percent sodium.

2.4 WET WEATHER SAMPLING

Wet weather sampling was conducted during two storm events at each of the three monitoring locations. A viable storm event was one that produced a minimum of 0.25 inches of rainfall and was within ± 50 percent of the average storm volume for the region. Storm qualification was determined by the mobilization criteria established in the QAPP (Appendix A). Rain gauges were installed at each sampling location to measure precipitation during monitored storm events.

Wet weather sampling included single *in-situ* field measurements as listed in Table 2-5, and collection of flow-weighted composite samples for chemical constituent analysis and grab samples for FIB analysis. Chemistry and microbiology analyses were performed according to Table 2-2 for the Couser Canyon site and Table 2-3 for the Blossom Valley and Valley Center sites. The flow-weighted composite sample aliquots were collected throughout the storm events until rain stopped and flow rates returned to baseflow. A single grab sample was collected for each storm event at each sampling location to test for FIB. Field duplicate grab samples were taken once per storm event and one field blank grab sample was analyzed for the program.

One post-storm sediment sample was collected at Couser Canyon after the first monitored wet weather event (February 6-8). The sample was taken as a composite along a cross-section of the creek. To collect the sample, a pre-cleaned stainless steel spoon was used to scoop the top two inches of sediment at locations approximately 25 percent, 50 percent, and 75 percent of the total distance across the channel. The sample was collected approximately five feet upstream of the water sample collection point and was analyzed according to Table 2-4.

2.5 DRY WEATHER SAMPLING

One non-storm flow sampling event was monitored at Couser Canyon only. The Valley Center and Blossom Valley sites were dry. The sampling at Couser Canyon included collection of single *in-situ* field measurements as listed in Table 2-5, and collection of a flow-weighted composite sample for chemical constituent analysis and a grab sample for FIB analysis. Chemistry and microbiology analyses were performed according to Table 2-2. The flow-weighted composite sample aliquots were collected every 30 minutes for a 24–hour period. A field duplicate grab sample was also collected and analyzed for FIB.

2.6 STREAM GAUGING

Stream flow gauging was conducted, based on site characteristics, using either standard USGS wading stream flow gauging protocol (Rantz, 1982), or installed area-velocity bubbler (AVB) probes. The resulting data were used to develop stage-discharge relationships that were incorporated into the flow monitoring equipment used during wet weather sampling events.

2.6.1 Couser Canyon

The Couser Canyon monitoring location consisted of a small natural channel leading to two 18-inch misshapen corrugated metal pipes. Stream gauging at this site was conducted using the 0.6 depth USGS protocol (Rantz, 1982). Multiple gauging events occurred at this site; however, development of a reliable discharge rating curve was not possible because of the transitional nature of the sandy bottom of the channel. Although depths in the gauging area did not vary much throughout the season, current velocities did, resulting in highly variable discharge rates. When these rates were compared with the associated stage heights from the installed bubbler, the data did not allow for rating curve establishment. As a result, sample pacings at this site were determined based on site conditions prior to each monitored event. Field data sheets from the gauging events are included in Appendix C.

2.6.2 Valley Center

The Valley Center monitoring location consisted of a 48-inch corrugated metal pipe. This site was selected late in the season, which did not allow for early season discharge measurements. Gauging data were collected using a HACH flow meter and AVB probe. This was advantageous over traditional stream gauging (the 0.6 depth USGS protocol) because, based on field observations, stage heights at the Valley Center site did not vary much over the monitoring season. The selected approach allowed for discharge data collection during higher stage heights associated with rain events.

2.6.3 Blossom Valley

The Blossom Valley monitoring location consisted of a 36-inch concrete pipe that contained flowing water only during storms. This did not allow for traditional stream gauging using the 0.6 depth USGS protocol (Rantz, 1982) and therefore, gauging data at this site were collected using a HACH flow meter and AVB probe during monitored events only.

3.0 RESULTS

Due to varying local hydrology, wet weather sampling occurred on different days at different sites. As mentioned in Section 2.5, dry weather sampling was conducted only at Couser Canyon as the other two sites were dry. The pertinent field data sheets are included in Appendix C. Table 3-1 lists the locations sampled, events monitored, and sample dates.

Table 3-1: Sampling Event Summary

Monitoring Location	First Wet Weather Event	Second Wet Weather Event	Dry Weather Event
Couser Canyon	2/6 – 2/8/2010	2/20/2010	6/2 - 6/3/2010
Valley Center	2/20/2010	3/6 – 3/7/2010	Not Sampled[(a)]
Blossom Valley	2/21-22/2010	3/7/2010	Not Sampled[(a)]

(a) Blossom Valley and Valley Center were not sampled during the dry weather sampling event as there was no flow at the sites.

3.1 WET WEATHER MONITORING

Monthly and annual rainfall data for the 2009-2010 wet weather season (October through May) (Table 3-2) were obtained from the National Weather Service (NWS) Fallbrook station, located near the Couser Canyon and Valley Center monitoring sites, and Alpine station, located near the Blossom Valley monitoring site. Isopluvial maps from the San Diego County Hydrology Manual indicate that the mean annual rainfall for both areas ranges from approximately 15 to 18 inches (Chang, 2009). Based on this data, the total rainfall for the area was within the average range.

Table 3-2: Regional Monthly Rainfall Summaries, 2009-2010 Storm Water Season

Month	Total Rainfall (inches)	
	Fallbrook (near Couser Canyon and Valley Center)	Alpine (near Blossom Valley)
October 2009	0.05	0.08
November 2009	0.42	0.85

Month	Total Rainfall (inches)	
	Fallbrook (near Couser Canyon and Valley Center)	**Alpine** (near Blossom Valley)
December 2009	3.43	3.85
January 2010	5.84	4.70
February 2010	4.12	3.36
March 2010	0.61	0.86
April 2010	1.99	2.76
May 2010	0.00	0.05
Season Total (October 2009 - May 2010)	16.46	16.51

Note: Data is from the National Oceanic and Atmospheric Administration website (http://www.wrh.noaa.gov/sgx/obs/rtp/rtpmap.php?wfo=sgx)

3.1.1 Couser Canyon

Two wet weather events were monitored at Couser Canyon with one post-storm sediment grab sample collected after the first storm.

3.1.1.1 February 6-8 Wet Weather Event

Rainfall began at 4:21 pm on February 5, 2010 and ended at 6:43 am on February 7 totaling 1.13 inches in precipitation. Flow began to increase in response to rainfall at approximately 10:00 pm on February 5 and the first composite sample aliquot was collected at 3:32 am on February 6. The last sample aliquot was taken at 7:21 am on February 8 as the flow rate returned to baseline. There were occasional drops in flow due to debris either slowing flow or clogging the pipes immediately downstream of the sample area. The debris clogs were cleared by field crews and flows returned to typical levels. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent

capture for this event. The total discharge for the event was 880,719 cubic feet. The event hydrograph is provided in Figure 3-1.

Figure 3-1: Couser Canyon Hydrograph – February 6-8 Wet Weather Event

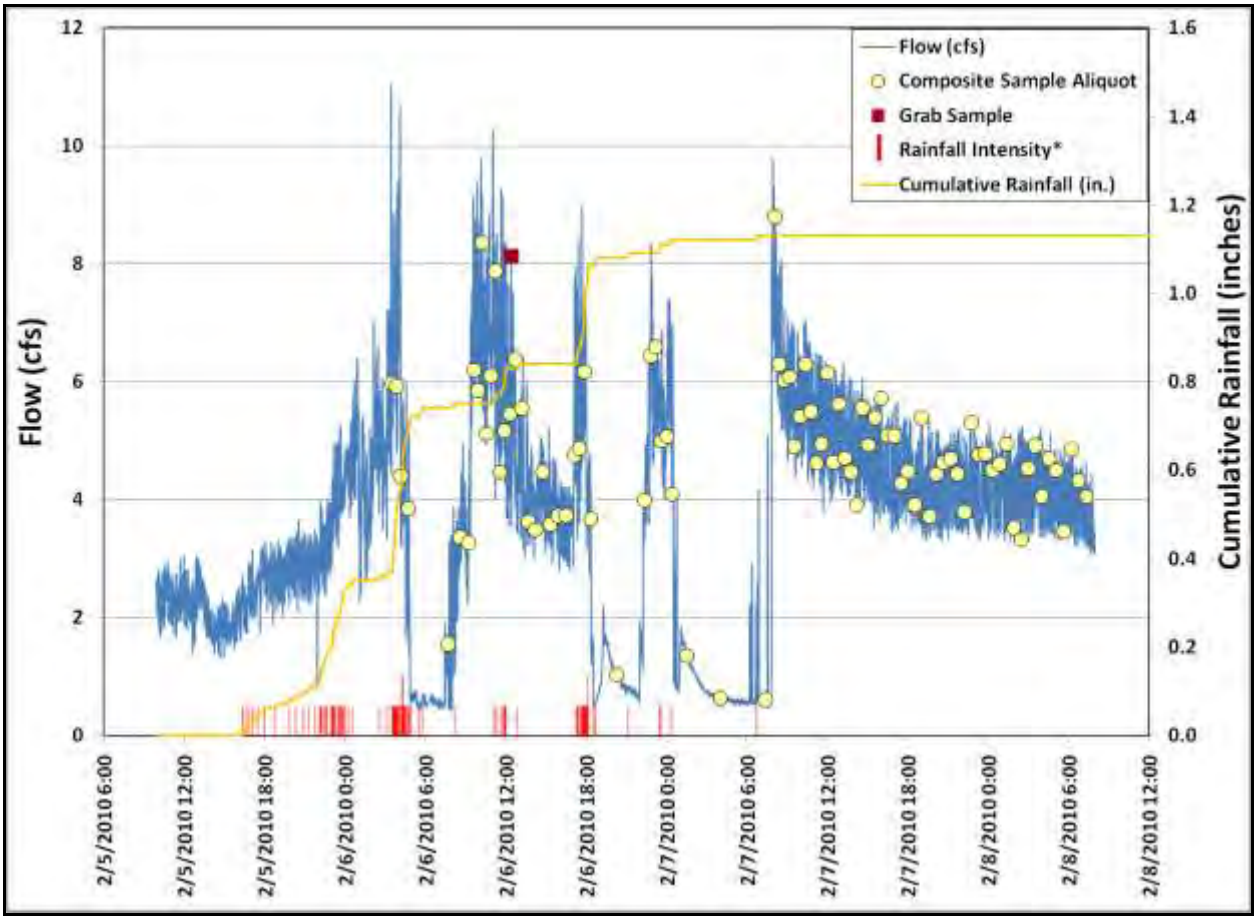

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.1.2 February 20 Wet Weather Event

Rainfall began at 10:26 pm on February 19, 2010 and ended at 9:11 am on February 20 producing 0.44 inches in precipitation. Flow began to increase in response to rainfall at approximately 2:30 am on February 20 and the first sample aliquot was collected at 6:33 am. The last aliquot was taken at 4:26 pm

on February 20 as flow returned to baseline shortly after. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event was 592,604 cubic feet. The event hydrograph is provided in Figure 3-2.

Figure 3-2: Couser Canyon Hydrograph – February 20 Wet Weather Event

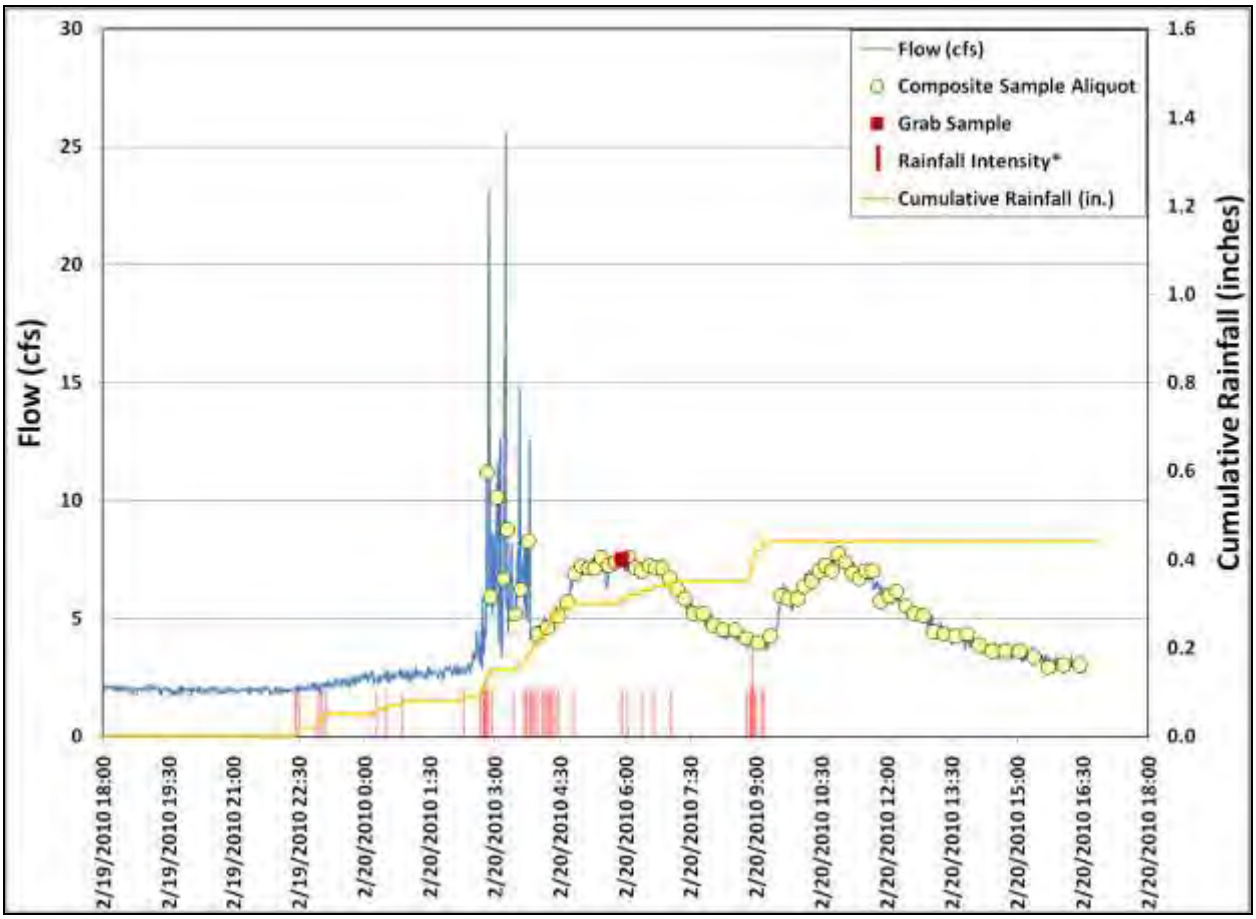

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.1.3 Water Quality and Sediment Testing Results

Water quality analytical laboratory testing results are presented in Table 3-3; Table 3-4 shows the *in-situ* field measurement results. The post-storm sediment sample results are presented in Table 3-5.

None of the 13 synthetic pyrethroids considered were detected in the sediment sample. Simazine was the only herbicide detected in the water samples. The simazine-positive sample was collected during the February 20 Wet Weather Event and the simazine concentration in the sample exceeded the 4,000 ng/L WQO.

Of the remaining water quality constituents, the following nine exceeded their respective WQOs (Table 2-6) during both storms:

- Fecal Coli*f*orm
- Total Coliform
- *Enterococcus*
- Ammonia as Nitrogen
- Total Nitrogen (total N concentrations for storm events one and two equaled 29 mg/L and 27 mg/L, respectively, greatly exceeding the 1.0 mg/L WQO)
- Total Phosphorus
- Total Dissolved Solids
- Total Iron
- Total Manganese

Table 3-6 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-3: Analytical Results for Wet Weather Events at Couser Canyon

Constituent Category	Analyte	Analytical Method	Units	Feb. 6-8 Event	Feb. 20 Event
Microbiology	*Enterococcus*	Enterolert	MPN/100mL	309	2,359
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	800	1,700
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	17,000	50,000
Nutrients and Conventionals	Ammonia as Nitrogen	SM 4500-NH_3 F	mg/L	0.05	0.03J
	Nitrate as Nitrogen	EPA 300.0	mg/L	27.70	24.42
	Nitrite as Nitrogen	EPA 300.0	mg/L	0.03J	0.05
	Total Nitrogen	by Calculation	mg/L	29.02	27.41
	Orthophosphate as Phosphorus	SM 4500-P E	mg/L	0.15	0.11
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	1.29Q9	2.94Q9
	Total Phosphorus	SM 4500-P E	mg/L	0.36	0.36
	Chloride	EPA 300.0	mg/L	183.47	196.15
	Fluoride	EPA 300.0	mg/L	0.32	0.36
	Sulfate	EPA 300.0	mg/L	390.6	401.1
	Total Suspended Solids	SM 2540 D	mg/L	244	261
	Total Dissolved Solids	SM 2540 C	mg/L	1132	1218
	Alkalinity, Bicarbonate	SM 2320 B	mg/L	131.0	137.0
	Alkalinity, Carbonate	SM 2320 B	mg/L	< 1.0	< 1.0
	Alkalinity, Hydroxide	SM 2320 B	mg/L	< 1.0	< 1.0
	Total Hardness as CaCO3	SM 2340 B	mg/L	534.4	609.1
Metals	Boron (B), Total	EPA 200.8m	µg/L	227.3	180.5
	Calcium (Ca), Dissolved	EPA 200.8m	mg/L	88.26	100.40
	Iron (Fe), Total	EPA 200.8m	µg/L	2562	2283
	Magnesium (Mg), Dissolved	EPA 200.8m	mg/L	76.25	87.04

	Manganese (Mn), Total	EPA 200.8m	µg/L	235.9	239.9
	Potassium (K), Dissolved	EPA 200.8m	mg/L	< 5.0	< 5.0
	Sodium (Na), Dissolved	EPA 200.8m	mg/L	189.8	214.8
Herbicides	Atrazine	EPA 625m	ng/L	< 5.0	19.00
	Oxadiazon	EPA 625m	ng/L	< 18.97	< 18.97
	Secbumeton	EPA 625m	ng/L	< 5.0	< 5.0
	Simazine	EPA 625m	ng/L	806.4	4820.9
	Terbuthylazine	EPA 625m	ng/L	< 5.0	< 5.0

Notes when Basin Plan water quality criteria were exceeded.

Notes when California Toxics Rule Criterion Continuous Concentration (CCC) water quality criteria were exceeded.

J qualifier notes when the analyte was detected above the MDL but below the RL. Therefore, the result is considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-4: *In-Situ* Field Measurements for Wet Weather Events at Couser Canyon

Parameter	Units	Feb. 6-8 Event	Feb. 20 Event
Conductivity	uS/cm	1,840	1,780
Dissolved Oxygen	mg/L	9.06	8.59
pH	pH Units	7.67	7.51
Temperature	°C	15.3	13.3
Turbidity	NTU	417	70

Table 3-5: Sediment Analytical Results for February 6-8 Wet Weather Event at Couser Canyon

Constituent Category	Analyte	Analytical Method	Units	Feb. 6-8 Event
Synthetic Pyrethroids	Allethrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Bifenthrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Cyfluthrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Cypermethrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Danitol	EPA 8270CmNCI	ng/dry g	< 0.5
	Deltamethrin	EPA 8270CmNCI	ng/dry g	< 0.5Q9[(a)]
	Esfenvalerate	EPA 8270CmNCI	ng/dry g	< 0.5
	Fenvalerate	EPA 8270CmNCI	ng/dry g	< 0.5
	Fluvalinate	EPA 8270CmNCI	ng/dry g	< 0.5
	L-Cyhalothrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Permethrin	EPA 8270CmNCI	ng/dry g	< 5.0Q9[(a)]
	Piperonyl Butoxide (PBO)	EPA 8270Cm	ng/dry g	< 5.0Q9[(a)]
	Prallethrin	EPA 8270CmNCI	ng/dry g	< 0.5

(a) Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Table 3-6: Mass Loading and Flux Values for the Wet Weather Events at Couser Canyon

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Feb. 20	Units	Feb. 6-8	Feb. 20
Micro -biology	Enterococcus	MPN/ storm event	77,062,081,096	395,856,160,110	MPN/ storm event/ acre	66,720,417	342,732,606
	Fecal Coliform		199,513,478,566	285,271,501,563		172,738,942	246,988,313
	Total Coliform		4,239,661,419,520	8,390,338,281,273		3,670,702,528	7,264,362,148
Nutrients and Conventionals	Ammonia as N	kg/ storm event	1.25	0.50	kg/ storm event/ acre	0.00	0.00
	Nitrate as N		690.82	409.78		0.60	0.35
	Nitrite as N		0.75	0.84		0.00	0.00
	Total N		723.74	459.96		0.63	0.40
	Orthophosphate as P		3.74	1.85		0.00	0.00
	TKN		32.17	49.34		0.03	0.04
	Total P		8.98	6.04		0.01	0.01
	Chloride		4575.59	3291.53		3.96	2.85
	Fluoride		7.98	6.04		0.01	0.01
	Sulfate		9741.25	6730.73		8.43	5.83
	TSS		6085.16	4379.76		5.27	3.79
	TDS		28231.16	20438.86		24.44	17.70
	Alkalinity, Bicarbonate		3267.03	2298.95		2.83	1.99
	Alkalinity, Carbonate		12.47	8.39		0.01	0.01

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Feb. 20	Units	Feb. 6-8	Feb. 20
	Alkalinity, Hydroxide		12.47	8.39		0.01	0.01
	Total Hardness as CaCO3		13327.50	10221.11		11.54	8.85
Metals	Boron (B), Total	g/ storm event	5668.68	3028.91	g/ storm event/ acre	4.91	2.62
	Calcium (Ca), Dissolved		2201132.45	1684779.93		1905.74	1458.68
	Iron (Fe), Total		63894.19	38310.28		55.32	33.17
	Magnesium (Mg), Dissolved		1901612.84	1460590.09		1646.42	1264.58
	Manganese (Mn), Total		5883.15	4025.68		5.09	3.49
	Potassium (K), Dissolved		62347.96	41951.69		53.98	36.32
	Sodium (Na), Dissolved		4733457.28	3604489.33		4098.23	3120.77
Herbicides	Atrazine	mg/ storm event	62.35	318.83	mg/ storm event/ acre	0.05	0.28
	Oxadiazon		236.55	159.16		0.20	0.14
	Secbumeton		62.35	41.95		0.05	0.04
	Simazine		20110.96	80897.96		17.41	70.04
	Terbuthylazine		62.35	41.95		0.05	0.04

3.1.2 Valley Center

Two wet weather events were monitored at Valley Center.

3.1.2.1 February 20 Wet Weather Event

Rainfall began at 8:37 pm on February 19, 2010 and ended at 6:43 am on February 20 producing 0.32 inches in precipitation. Flow began to increase in response to rainfall at approximately 2:30 am on February 20 and the first sample aliquot was collected at 3:14 am. Flow returned to baseline levels and monitoring ended at 3:38 pm on February 20. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event was 24,031 cubic feet. The resulting hydrograph is presented in Figure 3-3.

Figure 3-3: Valley Center Hydrograph – February 20 Wet Weather Event

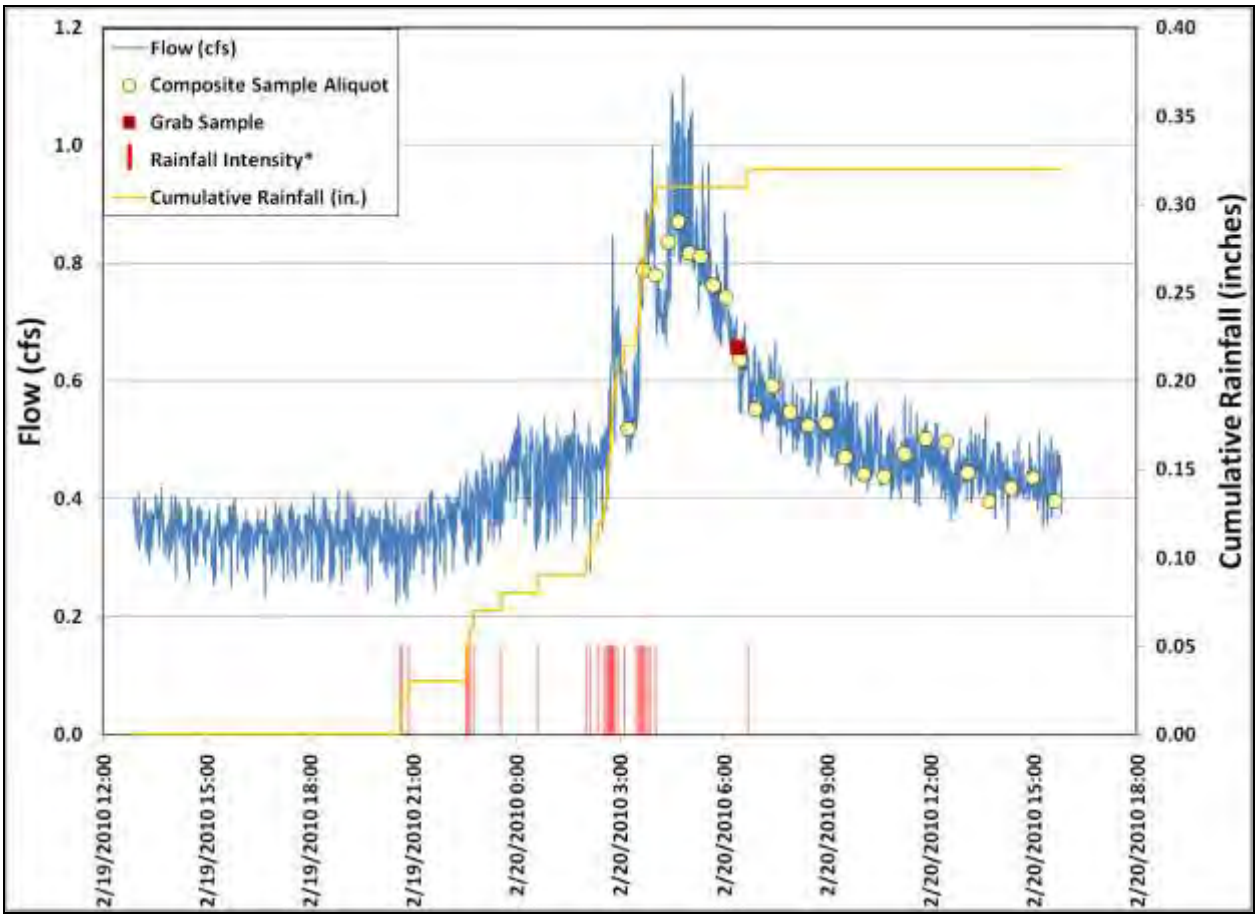

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.2 March 6-7 Wet Weather Event

Rainfall began at 4:16 pm on March 6, 2010 and ended at 9:37 am on March 7 resulting in a total precipitation of 0.14 inches, much less than the forecasted amount. Flow began to increase in response to rainfall at approximately 6:30 pm on March 6 and sampling begun at 8:05 pm. The majority of sampling took place during flows that were only slightly above base flow conditions. Sampling continued for approximately 20 hours. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event equaled 31,189 cubic feet. The resulting hydrograph is presented in Figure 3-4.

Figure 3-4: Valley Center Hydrograph – March 6-7 Wet Weather Event

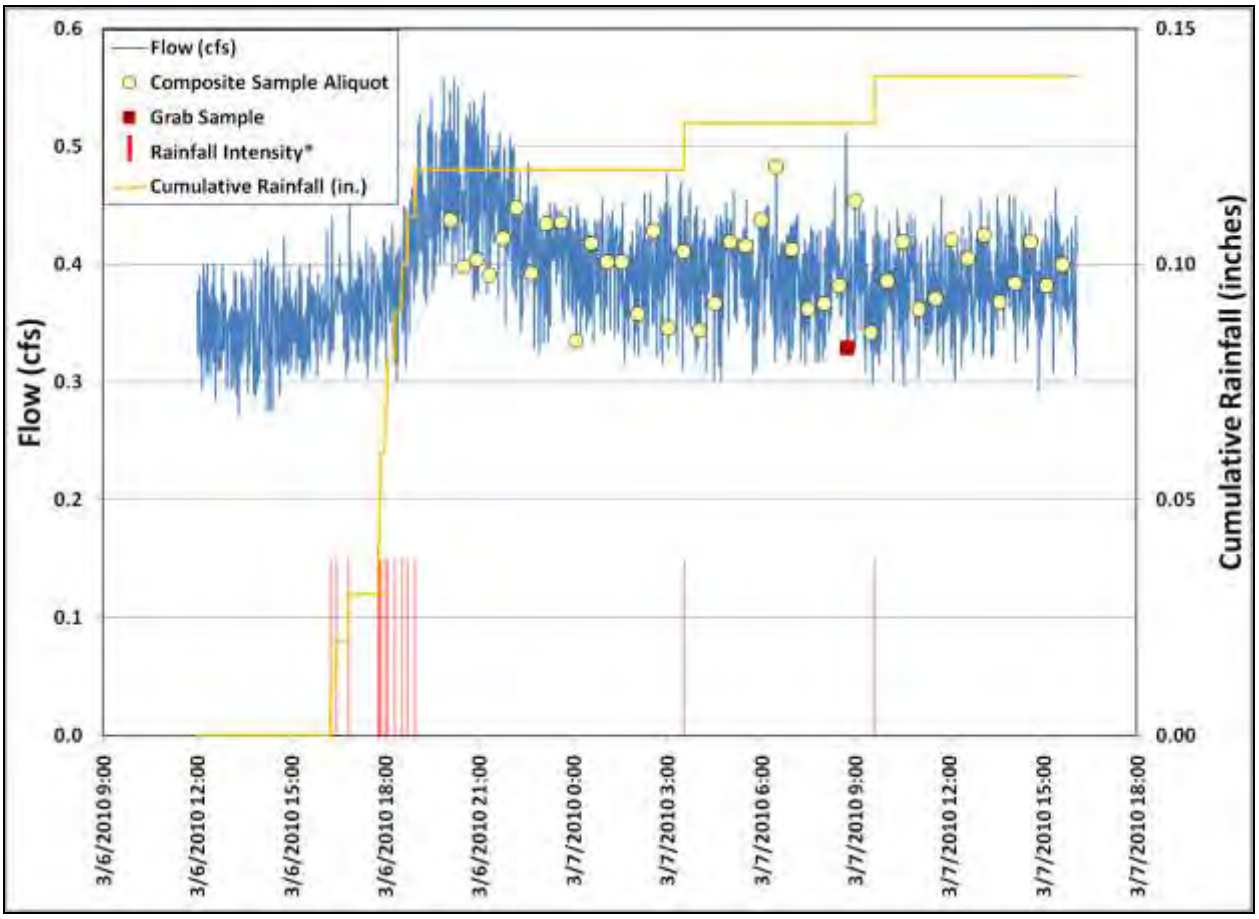

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.2.3 Water Quality Testing Results

Water quality analytical laboratory testing results are presented in Table 3-7; Table 3-8 shows the *in-situ* field measurement results. The following constituents exceeded WQOs for both wet weather events as outlined in Table 2-6:

- *Enterococcus*
- Total Nitrogen
- Total Dissolved Solids

Table 3-9 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-7: Analytical Results for Wet Weather Events at Valley Center

Constituent Category	Analyte	Analytical Method	Units	Feb. 20 Event	March 6-7 Event
Microbiology	Enterococcus	Enterolert	MPN/100mL	355	31
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	230	40
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	3,000	140
Nutrients and Conventionals	Ammonia as Nitrogen	SM 4500-NH_3 F	mg/L	< 0.03	< 0.03
	Nitrate as N	EPA 300.0	mg/L	3.14	3.82
	Nitrite as N	EPA 300.0	mg/L	0.04J	0.03J
	Total Nitrogen	by calculation	mg/L	4.97	4.55
	Orthophosphate as P	SM 4500-P E	mg/L	0.10	0.02
	Total Hardness as CaCO3	SM 2340 B	mg/L	552.5	445.6
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	1.79Q9	0.698J
	Total Phosphorus-Low Range	SM 4500-P E	mg/L	0.048J	0.027J
	Total Suspended Solids	SM 2540 D	mg/L	12	3J
	Total Dissolved Solids	SM 2540 C	mg/L	1272	1368B
Metals	Antimony (Sb), Dissolved	EPA 200.8m	µg/L	0.1J	0.70
	Arsenic (As), Dissolved	EPA 200.8m	µg/L	0.2J	0.4J
	Cadmium (Cd), Dissolved	EPA 200.8m	µg/L	< 0.2	< 0.2
	Chromium (Cr), Dissolved	EPA 200.8m	µg/L	0.2J	0.3J
	Copper (Cu), Dissolved	EPA 200.8m	µg/L	1.90	1.20
	Lead (Pb), Dissolved	EPA 200.8m	µg/L	< 0.05	< 0.05
	Lead (Pb), Total	EPA 200.8m	µg/L	0.27	< 0.05
	Nickel (Ni), Dissolved	EPA 200.8m	µg/L	1.30	1.00
	Selenium (Se), Dissolved	EPA 200.8m	µg/L	0.4J	0.3J
	Selenium (Se), Total	EPA 200.8m	µg/L	0.70	< 0.2

	Zinc (Zn), Dissolved	EPA 200.8m	µg/L	7.80	0.90
Organophosphorus Pesticides	Chlorpyrifos	EPA 625m	ng/L	< 1.0	< 1.0
	Diazinon	EPA 625m	ng/L	< 2.0	< 2.0
	Malathion	EPA 625m	ng/L	< 3.0	< 3.0

Notes when Basin Plan water quality criteria were exceeded.

The result for the dissolved fraction is greater than the total fraction for particular constituent. This is typically caused by the analytical variation for each result and indicates that the target parameter is primarily in the dissolved phase.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-8: *In-Situ* Field Measurements for Wet Weather Events at Valley Center

Parameter	Units	Feb. 20 Event	March 6-7 Event
Conductivity	uS/cm	1,890	2,150
Dissolved Oxygen	mg/L	9.94	6.89
pH	pH Units	7.62	7.39
Temperature	°C	12.7	11.1
Turbidity	NTU	19	0

Table 3-9: Mass Loading and Flux Values for the Wet Weather Events at Valley Center

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 20	Mar. 6-7	Units	Feb. 20	Mar. 6-7
Micro -biology	Enterococcus	MPN/ storm event	2,415,711,599	273,783,980	MPN/ storm event/ acre	5,710,902	647,243
	Fecal Coliform		1,565,108,923	353,269,651		3,700,021	835,153
	Total Coliform		20,414,464,219	1,236,443,780		48,261,145	2,923,035
Nutrients and Conventionals	Ammonia as N	kg/ storm event	0.01	0.01	kg/ storm event/ acre	0.0000	0.0000
	Nitrate as N		2.14	3.37		0.0051	0.0080
	Nitrite as N		0.03	0.03		0.0001	0.0001
	Total N		3.38	4.02		0.0080	0.0095
	Orthophosphate as P		0.07	0.02		0.0002	0.0000
	Total Hardness as CaCO3		375.97	393.54		0.8888	0.9304
	TKN		1.22	0.62		0.0029	0.0015
	Total P		0.03	0.02		0.0001	0.0001
	TSS		8.17	2.65		0.0193	0.0063

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 20	Mar. 6-7	Units	Feb. 20	Mar. 6-7
	TDS		865.57	1208.18		2.0463	2.8562
Metals	Antimony (Sb), Dissolved	g/ storm event	0.07	0.62	g/ storm event/ acre	0.0002	0.0015
	Arsenic (As), Dissolved		0.14	0.35		0.0003	0.0008
	Cadmium (Cd), Dissolved		0.07	0.09		0.0002	0.0002
	Chromium (Cr), Dissolved		0.14	0.26		0.0003	0.0006
	Copper (Cu), Dissolved		1.29	1.06		0.0031	0.0025
	Lead (Pb), Dissolved		0.02	0.02		0.0000	0.0001
	Lead (Pb), Total		0.18	0.02		0.0004	0.0001
	Nickel (Ni), Dissolved		0.88	0.88		0.0021	0.0021
	Selenium (Se), Dissolved		0.27	0.26		0.0006	0.0006
	Selenium (Se), Total		0.48	0.09		0.0011	0.0002
	Zinc (Zn), Dissolved		5.31	0.79		0.0125	0.0019
Organo-phosphate Pesticides	Chlorpyrifos	mg/ storm event	0.34	0.44		0.0008	0.0010
	Diazinon		0.68	0.88		0.0016	0.0021
	Malathion		1.02	1.32		0.0024	0.0031

3.1.3 Blossom Valley

The Blossom Valley site was dry early in the wet season and flow appeared only after the majority of rainfall had occurred in the area.

3.1.3.1 February 21-22 Wet Weather Event

Although monitoring equipment for this event was set up on February 20, 2010 (some rainfall occurred on February 20 through early February 21), flow in the creek appeared congruent with the rain event that began at 9:45 pm on February 21 and ended at 9:34 am on February 22; the rain event produced 0.38 inches of precipitation. As flow in the creek began at 10:11 pm on February 21, the first sample aliquot was collected shortly after, at 11:00 pm; the flow ended at 8:43 am on February 22 with the last sample aliquot taken at 7:42 am. All required grab samples and composite sample volumes were successfully collected, resulting in 100-percent capture. The total discharge for the event equaled 4,622 cubic feet. The associated hydrograph is presented in Figure 3-5.

Figure 3-5: Blossom Valley Hydrograph – February 21-22 Wet Weather Event

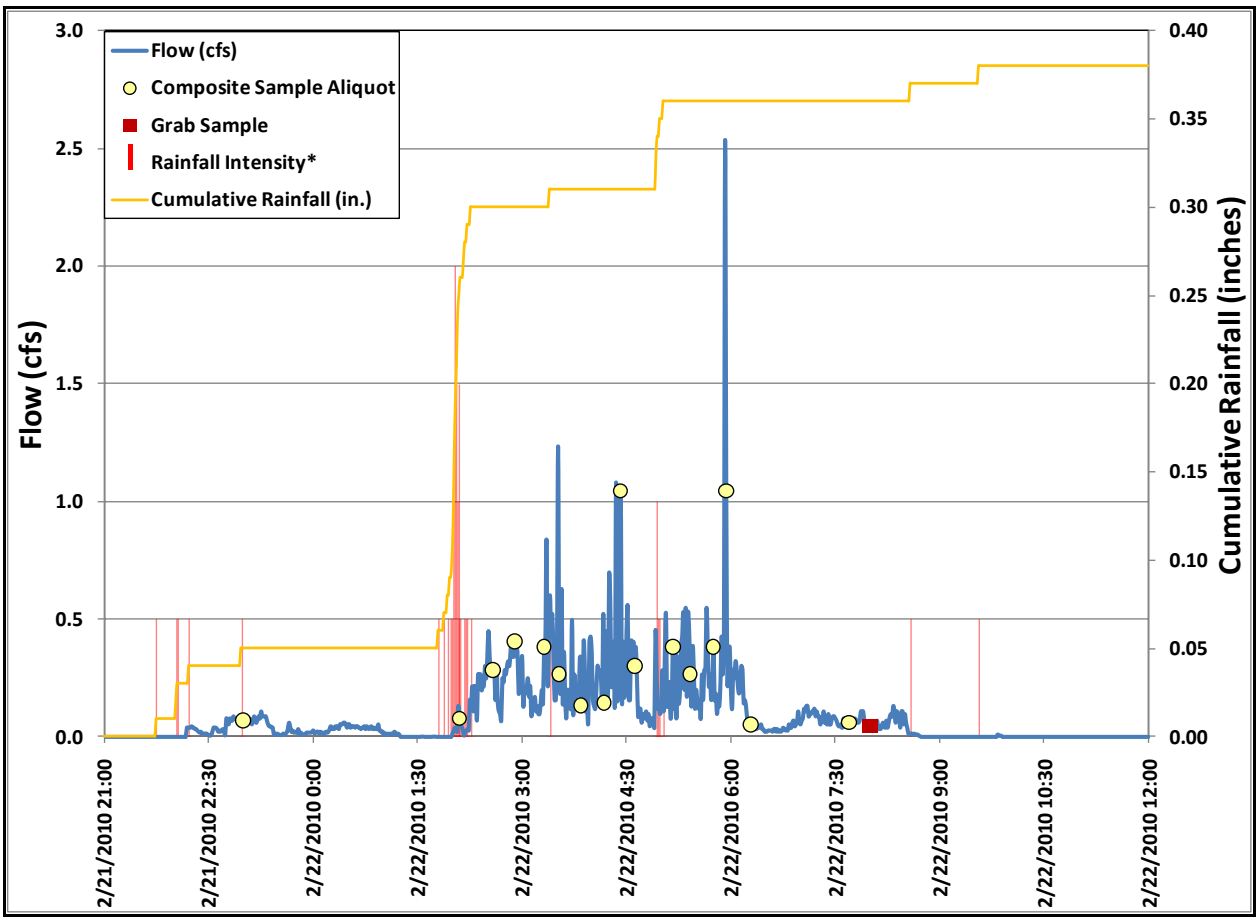

*Rainfall Intensity is not to scale but is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.2 March 7 Wet Weather Event

Rainfall began at 5:24 pm on March 6, 2010 and ended at 5:39 pm on March 7, totaling 0.69 inches in precipitation. Flow began at 9:39 am on March 7 and sampling began at 9:54 am. Sampling ended at 6:12 pm on March 7 and water flow in the creek stopped shortly thereafter (at 6:46 pm on March 7). The required grab and composite samples were successfully collected during this time period. There were some missed sample aliquots due to intake clogging. The intake was subsequently cleared by field crews and sampling resumed normally. Despite the missed samples, the composite sample is considered representative of the monitored event with 88.5 percent capture. The total discharge for the event was 7,648 cubic feet. The corresponding hydrograph is presented in Figure 3-6.

Figure 3-6: Blossom Valley Hydrograph – March 7 Wet Weather Event

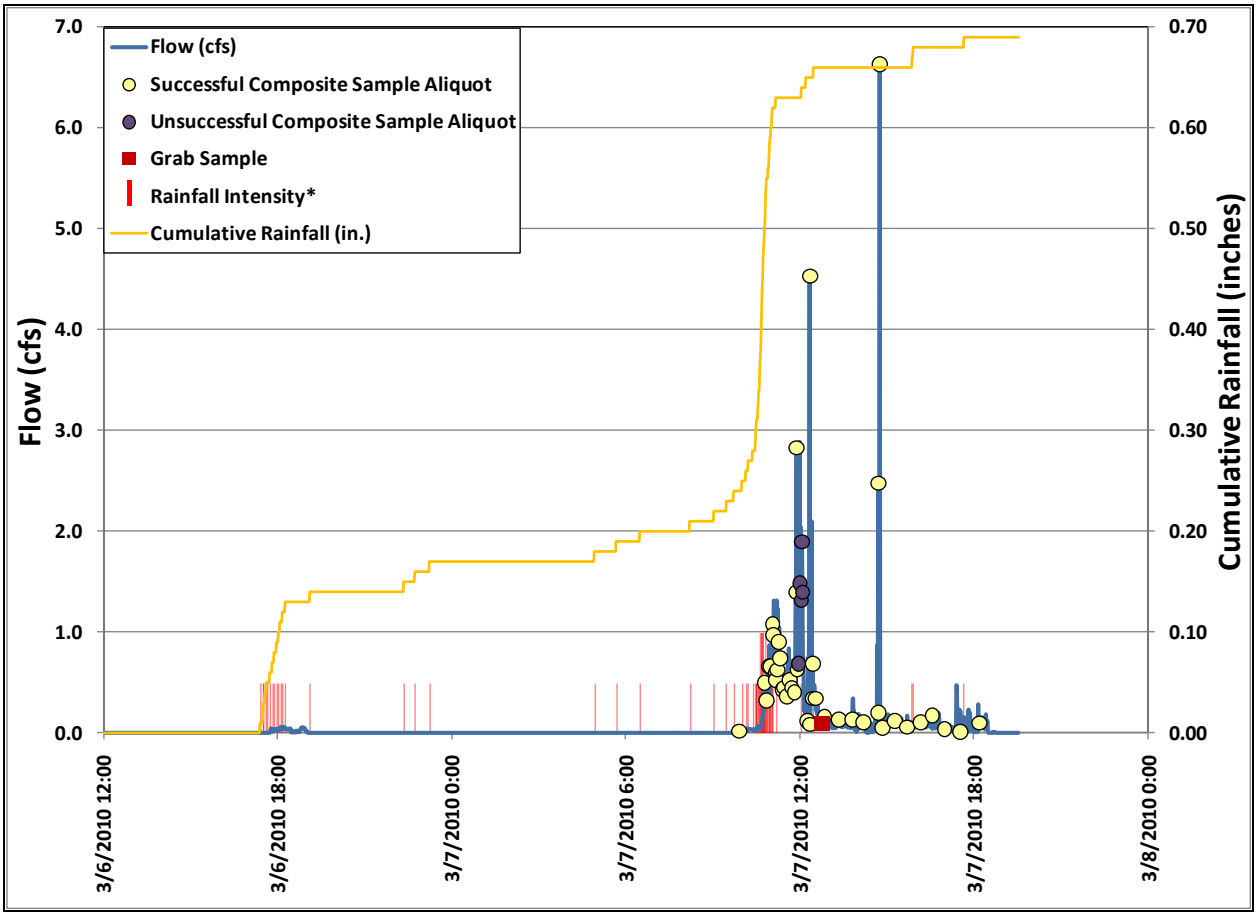

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.3 Water Quality Testing Results

Analytical laboratory testing results are presented in Table 3-8; Table 3-9 shows the *in-situ* field measurement results. For both wet weather events, the following constituents exceeded WQOs, as outlined in Table 2-6:

- Fecal Coliform
- Total Coliform
- *Enterococcus*
- Ammonia as Nitrogen
- Total Nitrogen
- Total Phosphorus
- Total Lead

Table 3-12 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-10: Analytical Results for Wet Weather Events at Blossom Valley

Constituent Category	Analyte	Analytical Method	Units	Feb. 21-22 Event	March 7 Event
Microbiology	*Enterococcus*	Enterolert	MPN/100mL	14,136	9,208
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	8,000	5,000
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	13,000	13,000
Nutrients and Conventionals	Ammonia as N	SM 4500-NH_3 F	mg/L	0.14B	0.08
	Nitrate as N	EPA 300.0	mg/L	1.23	1.72
	Nitrite as N	EPA 300.0	mg/L	0.04J	0.02J
	Total Nitrogen	Calculation	mg/L	4.31	3.92
	Orthophosphate as P	SM 4500-P E	mg/L	0.09	0.15
	Total Hardness as CaCO3	SM 2340 B	mg/L	76.5	88.6
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	3.04	2.18
	Total Phosphorus	SM 4500-P E	mg/L	1.92	1.16
	Total Suspended Solids	SM 2540 D	mg/L	3217	1404
	Total Dissolved Solids	SM 2540 C	mg/L	275	278B
Metals	Antimony (Sb), Dissolved	EPA 200.8m	µg/L	0.3J	0.90
	Arsenic (As), Dissolved	EPA 200.8m	µg/L	< 0.2	0.50
	Cadmium (Cd), Dissolved	EPA 200.8m	µg/L	< 0.2	< 0.2
	Chromium (Cr), Dissolved	EPA 200.8m	µg/L	0.60	0.3J
	Copper (Cu), Dissolved	EPA 200.8m	µg/L	5.10	3.00
	Lead (Pb), Dissolved	EPA 200.8m	µg/L	0.28	< 0.05
	Lead (Pb), Total	EPA 200.8m	µg/L	25.74	15.73
	Nickel (Ni), Dissolved	EPA 200.8m	µg/L	0.90	0.50
	Selenium (Se), Dissolved	EPA 200.8m	µg/L	0.50	0.2J
	Selenium (Se), Total	EPA 200.8m	µg/L	< 0.2	< 0.2

	Zinc (Zn), Dissolved	EPA 200.8m	µg/L	8.40	0.50
Organo-phosphorus Pesticides	Chlorpyrifos	EPA 625m	ng/L	< 1.0	< 1.0
	Diazinon	EPA 625m	ng/L	< 2.0	< 2.0
	Malathion	EPA 625m	ng/L	< 3.0	< 3.0

Notes when Basin Plan water quality criteria were exceeded.

Notes when California Toxics Rule Criterion Continuous Concentration (CCC) water quality criteria were exceeded.

The result for the dissolved fraction is greater than the total fraction for particular constituent. This is typically caused by the analytical variability for each result and indicates that the target parameter is primarily in the dissolved phase.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-11: *In-Situ* Field Measurements for Wet Weather Events at Blossom Valley

Parameter	Units	Feb. 21-22 Event	March 7 Event
Conductivity	uS/cm	534	940
Dissolved Oxygen	mg/L	7.91	7.75
pH	pH Units	7.25	7.55
Temperature	°C	11.6	11.3
Turbidity	NTU	> 800	381-430[(a)]

(a) Turbidity values varied within the noted range.

Table 3-12: Mass Loading and Flux Values for the Wet Weather Events at Blossom Valley.

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Mar. 6-7	Units	Feb. 20	Mar. 6-7
Micro -biology	Enterococcus	MPN/ storm event	18,501,262,530	19,941,511,717	MPN/ storm event/ acre	100,006,824	107,791,955
	Coliform, Fecal/MTF 20		10,470,437,199	10,828,362,140		56,596,958	58,531,687
	Coliform, Total/MTF 20		17,014,460,448	28,153,741,564		91,970,056	152,182,387
Nutrients and Conventionals	Ammonia as N	kg/ storm event	0.02	0.02	kg/ storm event/ acre	0.0001	0.0001
	Nitrate as N		0.16	0.37		0.0009	0.0020
	Nitrite as N		0.01	0.00		0.0000	0.0000
	Total N		0.56	0.85		0.0030	0.0046
	Orthophosphate as P		0.01	0.03		0.0001	0.0002
	Total Hardness as CaCO3		10.01	19.19		0.0541	0.1037
	TKN		0.40	0.47		0.0022	0.0026
	Total P		0.25	0.25		0.0014	0.0014

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Mar. 6-7	Units	Feb. 20	Mar. 6-7
	TSS		421.04	304.06		2.2759	1.6436
	TDS		35.99	60.21		0.1946	0.3254
Metals	Antimony (Sb), Dissolved	g/ storm event	0.04	0.19	g/ storm event/ acre	0.0002	0.0011
	Arsenic (As), Dissolved		0.01	0.11		0.0001	0.0006
	Cadmium (Cd), Dissolved		0.01	0.02		0.0001	0.0001
	Chromium (Cr), Dissolved		0.08	0.06		0.0004	0.0004
	Copper (Cu), Dissolved		0.67	0.65		0.0036	0.0035
	Lead (Pb), Dissolved		0.04	0.01		0.0002	0.0000
	Lead (Pb), Total		3.37	3.41		0.0182	0.0184
	Nickel (Ni), Dissolved		0.12	0.11		0.0006	0.0006
	Selenium (Se), Dissolved		0.07	0.04		0.0004	0.0002
	Selenium (Se), Total		0.01	0.02		0.0001	0.0001
	Zinc (Zn), Dissolved		1.10	0.11		0.0059	0.0006
Organo-phosphate Pesticides	Chlorpyrifos	mg/ storm event	0.07	0.11		0.0004	0.0006
	Diazinon		0.13	0.22		0.0007	0.0012
	Malathion		0.20	0.32		0.0011	0.0018

3.2 DRY WEATHER MONITORING

Dry weather monitoring was conducted from June 2 through June 3, 2010 at the Couser Canyon location only as both Valley Center and Blossom Valley sampling sites were dry. A time-weighted composite sample was collected and analyzed for chemical constituents, *in-situ* field measurements were taken,

and a grab sample was collected for FIB analysis once during the event. The total discharge for the event was 245,390 cubic feet. A hydrograph of the event is provided in Figure 3-7.

Figure 3-7: Couser Canyon Hydrograph – Dry Weather Event

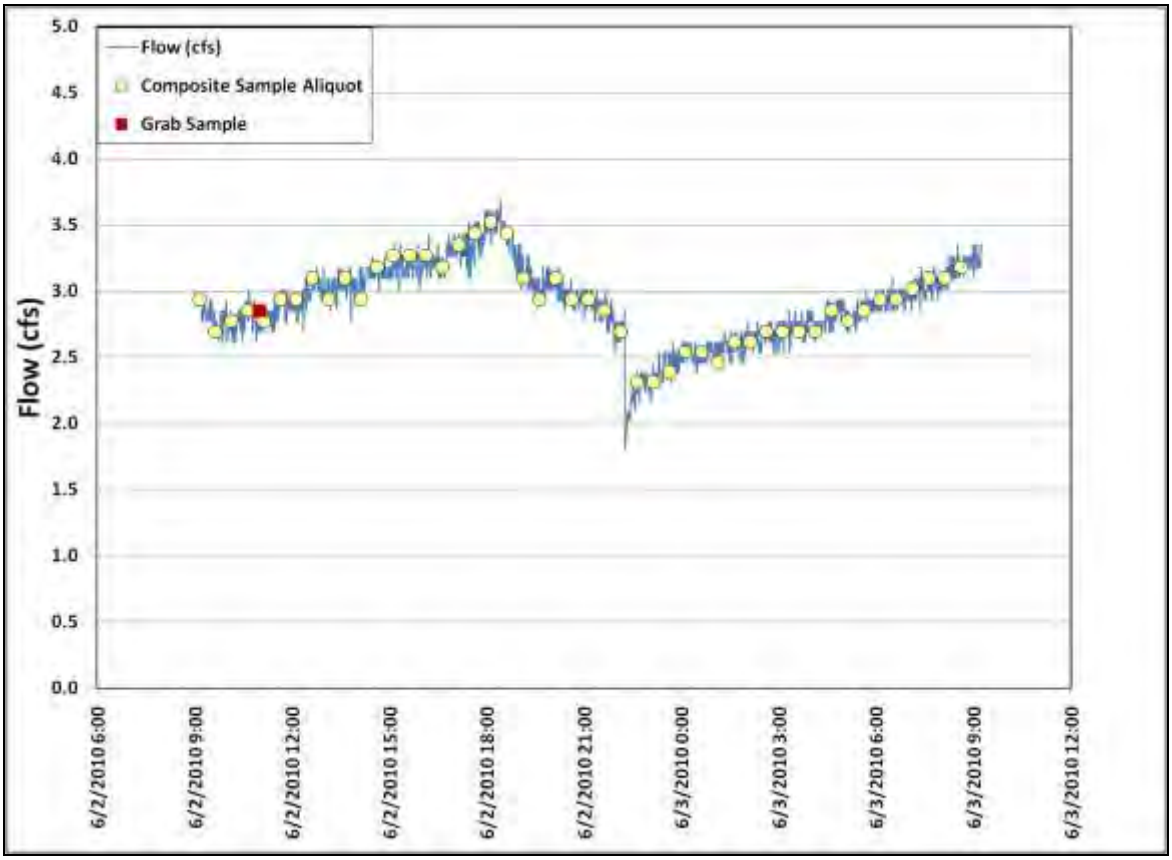

3.2.1 Water Quality Testing Results

Water quality analytical laboratory testing results are presented in Table 3-10; Table 3-11 shows the *in-situ* field measurement results. The following constituents exceeded WQOs for both wet weather events as outlined in Table 2-6:

- Total Nitrogen
- Total Phosphorus
- Ammonia as Nitrogen

- *Enterococcus*
- Total Dissolved Solids

Simazine was the only herbicide detected in the composite water sample.

Table 3-12 shows the mass loading (calculated for the entire non-storm event) and flux (loading per drainage area in acres) of each constituent.

Table 3-10: Analytical Results for the Dry Weather Event at Couser Canyon

Constituent Category	Constituent	Method	Units	Dry Weather Event
Microbiology	*Enterococcus*	Enterolert	MPN/100 ml	426
	Coliforms, Fecal	SM 9221 B, E	MPN/100 ml	230
	Coliforms, Total	SM 9221 B, E	MPN/100 ml	2800
Nutrients and Conventionals	Ammonia as N	SM 4500 NH_3 B,C	mg/l	0.14 QM-05
	Nitrate as N	SM 4500 NO_3 E	mg/l	24.9J
	Nitrite as N	SM 4500 NO_2 B	mg/l	0.3J
	Total Nitrogen	by calculation	mg/L	25.35
	Orthophosphate as P	SM 4500 P E	mg/l	0.22
	Total Kjeldahl Nitrogen	SM 4500 N C	mg/l	< 0.3
	Phosphorus, Total	SM 4500 P B, E	mg/l	0.26
	Chloride	SM 4500 Cl C	mg/l	214
	Fluoride	SM 4500 F C	mg/l	0.229
	Sulfate as SO4	SM 4500 SO_4 E	mg/l	441
	Total Suspended Solids	SM 2540 D	mg/l	6J
	Total Dissolved Solids	SM 2540 C	mg/l	1,210
	Alkalinity, Bicarbonate	SM 2320B	mg CaCO3/L	152
	Alkalinity, Carbonate	SM 2320B	mg CaCO3/L	< 5
	Alkalinity, Hydroxide	SM 2320B	mg CaCO3/L	< 5
	Hardness ,Total	EPA 200.7	mg CaCO3/L	582
Metals	Boron, Total	EPA 200.7	mg/l	< 0.25 QM-06
	Calcium, Dissolved	EPA 200.7	mg/l	112 QM-4X
	Iron, Total	EPA 200.8	mg/l	0.084 QR-02, QM-06
	Magnesium, Dissolved	EPA 200.7	mg/l	73.7 QM-4X

	Manganese, Total	EPA 200.8	mg/l	0.044 QM-4X
	Potassium, Dissolved	EPA 200.7	mg/l	< 10 QM-4X
	Sodium, Dissolved	EPA 200.7	mg/l	185 QM-4X
Herbicides	Atrazine	EPA 625(m)	ng/L	< 5.05
	Oxadiazon	EPA 625 (M)	ng/L	< 5.05
	Secbumeton	EPA 625(m)	ng/L	< 5.05
	Simazine	EPA 625(m)	ng/L	50.5
	Terbuthylazine	EPA 625(m)	ng/L	< 19.2

Notes when Basin Plan water quality criteria were exceeded.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

QR-02 qualifier indicates that the RPD for the associated laboratory sample duplicate pair exceeded the DQO of ± 30% due to sample non-homogeneity. The results were accepted by the laboratory because the corresponding LCS/LCSD percent recoveries and RPD values fell within DQOs. Note: This qualifier is associated with laboratory duplicate data during laboratory QA/QC procedures and was added to this primary data table.

QM-4X qualifier indicates that the spike recovery was outside of the QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

QM-05 qualifier indicates that the spike recovery was outside acceptance limits (low in this case) for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control (retrieving reliable results) and the data is acceptable. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

QM-06 qualifier indicates that due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

Values with a "<" symbol were not detected at or above the MDL and are therefore noted as less than the MDL. Some detection limits were increased from those stated in the QAPP due to dilutions required by the laboratory.

Table 3-11: *In-Situ* Field Measurements for the Dry Weather Event at Couser Canyon

Parameter	Units	Dry Weather Event
Conductivity	uS/cm	0.202

Dissolved Oxygen	mg/L	9.52
pH	pH Units	7.82
Temperature	°C	17.8
Turbidity	NTU	73

Table 3-12: Mass Loading and Flux Values for the Dry Weather Event at Couser Canyon

Constituent Category	Analyte	Mass Loading		Flux	
		Units	Value	Units	Value
Micro -biology	Enterococcus	MPN/ 24h event	29,601,338,405	MPN/ storm event/ acre	25,628,864
	Fecal Coliform		15,981,943,271		13,837,180
	Total Coliform		194,562,787,641		168,452,630
Nutrients and Conventionals	Ammonia as N	kg/ 24h event	0.97	kg/ storm event/ acre	0.001
	Nitrate as N		173.02		0.150
	Nitrite as N		2.08		0.002
	Total N		176.15		0.153
	Orthophosphate as P		1.53		0.001
	TKN		10.42		0.009
	Total P		1.81		0.002
	Chloride		1487.02		1.287
	Fluoride		1.59		0.001
	Sulfate		3064.36		2.653

Constituent Category	Analyte	Mass Loading		Flux	
		Units	Value	Units	Value
	TSS		41.69		0.036
	TDS		8407.89		7.280
	Alkalinity, Bicarbonate		1056.20		0.914
	Alkalinity, Carbonate		17.37		0.015
	Alkalinity, Hydroxide		17.37		0.015
	Total Hardness as CaCO3		4044.13		3.501
Metals	Boron (B), Total	g/ 24h event	868.58	g/ storm event/ acre	0.75
	Calcium (Ca), Dissolved		778251.15		673.81
	Iron (Fe), Total		583.69		0.51
	Magnesium (Mg), Dissolved		512117.05		443.39
	Manganese (Mn), Total		305.74		0.26
	Potassium (K), Dissolved		34743.35		30.08
	Sodium (Na), Dissolved		1285504.13		1112.99
Herbicides	Atrazine	mg/ 24h event	17.55	mg/ storm event/ acre	0.015
	Oxadiazon		17.55		0.015
	Secbumeton		17.55		0.015
	Simazine		350.91		0.304
	Terbuthylazine		66.71		0.058

4.0 SUMMARY OF KEY FINDINGS

Of the three locations monitored, Couser Canyon dominated by agricultural land uses while spaced rural residential is the dominant landuse at Blossoom Valley (Fig. 2-2). The Valley Center site is influenced by both landuse types, At Couser Canyon, the great majority of drainage area (75%) is occupied by orchards and vineyards. Twenty three percent of Valley Center drainage area is occupied by orchards.

For the 2009-2010 monitoring season, precipitation totals for the study areas were within the average range for San Diego County. Based on site visits during the project period, it was observed that Couser Canyon is a perennial stream, Blossom Valley is an ephemeral stream, and Valley Center appears to be an intermittent stream. The monitored events met the criteria defined in the QAPP and the composite samples collected were representative of site conditions during each event.

It must be noted that the findings of this study are preliminary as results are based on only six wet weather samples collected at three locations over three storm events, one post-storm sediment sample collected at one location, and one dry weather sample also collected at only one location. Due to the fact that dry weather samples and the sediment samples were collected at only one of the three locations, Couser Canyon, comparisons among locations of sediment and dry weather loads and concentrations for different constituents analyzed could not be made. Also, some of the constituents monitored at Couser Canyon, including boron, calcium, iron, magnesium, manganese, potassium and sodium, were not included in the analysis for the other two locations while samples collected at Blossom Valley and Valley Center were tested for a suite of metals including antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium and zinc; these metals were not included in the Couser Canyon analysis. For this reason, wet weather results comparisons for these constituents between Couser Canyon and the remaining two sites were not possible.

With this in mind, a summary of key findings for each sampling location as characterized by its land use composition is provided below.

4.1 AGRICULTURAL LAND USE – COUSER CANYON

At the predominantly agricultural Couser Canyon site, all wet weather samples exceeded WQO for all FIB species considered (*Enterococcu*s, fecal coliform, and total coliform) while the dry weather sample exceeded WQO only for *Enterococcus*. As expected, bacteria loads and flux were higher during the storm events than for the non-storm flows (data available for Couser Canyon only) and, with the exception of *Enterococcus*, Couser Canyon had the highest bacteria loads (flux) of the three locations sampled.

Samples from Couser Canyon exceeded WQOs during all monitored events for TDS and nutrients including total nitrogen, ammonia as nitrogen, and total phosphorus. The total nitrogen and total phosphorus loads were two to five times higher during storm events than during non-storm conditions; the total suspended solids loads were 105 to 146 times higher, and the total dissolved solids loads were two to three times higher. Also, when compared to the other two locations, Couser Canyon had the highest wet weather total nitrogen, total phosphorus, TSS, and TDS loads whether considered for the entire drainage area or on the per-acre basis (as flux).

All metal and mineral samples collected at Couser Canyon during dry weather met the associated WQOs while, during storms, iron and total manganese exceeded WQOs. With the exception of sodium and potassium, mass loadings of all metals and minerals analyzed were higher during storms than during non-storm conditions. Correspondingly, TDS loads were also higher in the wet weather samples while TDS concentrations were about the same during both wet and dry weather and, as mentioned above, they exceeded the Basin Plan WQO.

Of the five herbicides analyzed one, Simazine, was detected in all samples, and exceeded the WQO during the February 20 storm event. The mass loading of Simazine was 230 times higher in the sample collected during the February 20 storm event than in that taken during non-storm conditions. It was 57 times higher in the February 6-8 storm event sample. Loads of the remaining four herbicides were not compared as their concentrations were below the method detection limits.

A post-storm sediment sample from the February 6-8 storm event at Couser Canyon was tested for thirteen synthetic pyrethroids. None were detected.

4.2 RURAL RESIDENTIAL LAND USE – BLOSSOM VALLEY

At the predominantly rural residential Blossom Valley location, all wet weather samples exceeded WQO for all FIB species. *Enterococcus* flux was highest at the Blossom Valley site when compared among sites within the same storms.

Samples from Blossom Valley exceeded WQOs during all monitored events for nutrients including total nitrogen, ammonia as nitrogen, and total phosphorus. Also, of the three locations sampled, Blossom Valley had the highest TSS concentrations of 3,217 mg/L and 1,404 mg/L.

All Blossom Valley samples met the associated WQOs for antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium and zinc with the exception of lead whose concentrations exceeded the CTR WQO during both storm events. Lead had a total loading of approximately 3.4 grams at Blossom Valley over each of the monitored storm events.

4.3 RURAL RESIDENTIAL AND AGRICULTURAL LAND USES – VALLEY CENTER

At Valley Center, only *Enterococcus* counts exceeded the 104 MPN/100ml WQO and only during one of the storms monitored (the February 20 storm event). On per acre basis, Valley Center had the lowest wet weather bacteria loads (flux) of the three locations sampled. While samples collected at the site exceeded the WQO for TDS and total nitrogen, ammonia as nitrogen was not detected in the samples and total phosphorus was detected below the reporting limit. Valley Center also had the lowest TSS concentrations of 3 mg/L and 12 mg/L.

All samples from Valley Center met the associated WQOs for antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium, and zinc and no organophosphate pesticides were detected during the monitored events.

5.0 REFERENCES

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APPENDIX A
DATA QUALITY REPORT

Generally, project data met the data quality objectives (DQOs) for precision, accuracy, representativeness and completeness as outlined in the QAPP (Appendix B) (Table A-1) and the equipment blanking results showed zero contamination (Table A-2). Details regarding the DQO assessment are discussed below.

Table A-1: Project Analytical DQO Achievement Summary

DQO Measurement	Number of Values Out of DQO Acceptance Range	Total Number of DQO Measurements	Achievement Percent
Precision	2[(a)]	160	99%
Accuracy	23	485	95%
Representativeness	0[(b)]	7	100%
Completeness	NA	NA	100%

(a) Three RPD values were greater than 30 percent; however, the results for all three were less than 10 times the MDL, resulting in a Q3 qualifier noting that the RPD values are considered not to be accurate and, therefore, not applicable to the quality of the data.

(b) Composite samples collected during this monitoring program met the acceptance criteria based on rainfall and number of aliquots as outlined in Section 4.3 below.

NA = Not applicable to this DQO measurement as completeness is measured as a percentage of actual measurements out of the number of planned measurements. There is not a range by which a single measurement collection is considered accepted. This DQO measurement does not have a specified acceptance range by which a single measurement is considered collected.

Table A-2: Project Equipment DQO Achievement Summary

DQO Measurement	Number of Values Out of Range	Total Number Values	Achievement Percent
Equipment Blanking Results[(a)]	0	493	100%

(a) Equipment Blanks included Teflon tubing, silicon tubing, and 19-L sample containers.

A.1 PRECISION

The precision objectives outlined in the QAPP apply to field and laboratory duplicate and split samples. Precision measures how well repeated measurements agree and is expressed as the RPD.

For this project, precision was measured by assessing field duplicate samples collected for bacteria, laboratory duplicates, blank spike duplicates, and matrix spike duplicates. All but two duplicate pairs met the DQO of RPD < ± 30%. The two pairs included laboratory duplicates and matrix spike duplicates for total iron from the dry weather event. For the laboratory duplicate pair, the DQO exceedance was attributed to sample non-homogeneity by the analytical laboratory; for the matrix spike duplicate pair, the exceedance was attributed to the QC sample matrix non-homogeneity by the analytical laboratory. The results were accepted by the laboratory because the corresponding LCS/LCSD percent recoveries and RPD values fell within DQOs. In Table 3-10, the total iron results have been flagged to reflect this finding.

Three other RPD values fell outside the DQOs but the exceedances were not considered valid because primary sample and/or duplicate sample concentrations were lower than 10 times the corresponding MDLs per laboratory data qualifier Q3. The three RPD exceedances included the dissolved selenium result from February 21-22 Wet Weather Event at Blossom Valley, and dissolved selenium and nitrite concentrations form March 6-7 Wet Weather Event at Valley Center. For the Valley Center results, selenium and nitrate concentrations were also J-flagged meaning that the analytes were detected above MDLs, but below RLs.

In conclusion, 99% of the results met the project DQOs for precision as summarized in Table A-1.

A.2 ACCURACY

Accuracy is the degree of agreement between an observed value and a "true" value or an accepted reference (e.g., standard); accuracy is evaluated by analyzing samples of known concentration (Laboratory Control Samples) or by adding a known concentration of analyte of interest to field-collected samples (Matrix Spike Samples). Accuracy may further be assessed with field and laboratory blank samples. Accuracy of laboratory control samples and matrix spike samples is expressed as percent recovery. The percent recovery DQO for all chemical constituents analyzed in this project was set at ±20 percent and the overall accuracy quality objective achievement for this project was 95 percent as summarized in Table A-1.

All laboratory blank results were non-detect. One field blank was collected and analyzed for FIB analyses and all results were non-detect. Equipment blanks were conducted once per batch for Teflon tubing, silicone tubing, and 19-L sample containers. Overall 100 percent of equipment blanks met the DQOs, all equipment blank results were non-detects. In one batch of Teflon tubing there was a detection of zinc just above the RL. The laboratory was requested to re-run the analyses and zinc was not detected at or above the MDL in the primary or laboratory duplicate sample.

All spiked samples, with the exception of fourteen specific results, met the DQOs for recovery within a range of 80 to 120 percent. A description of the fourteen results that were outside of the ±20 percent recovery range is provided below:

- Four matrix spikes and four matrix duplicates of calcium, magnesium, potassium, and sodium samples associated with the dry weather event at Couser Canyon had low recoveries. These eight results were qualified due to analyte concentrations at four times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits. The primary results associated with these QA/QC issues were noted with a QM-4X qualifier in the primary data table.
- One matrix spike and one matrix duplicate of ammonia samples associated with the dry weather event at Couser Canyon had low recoveries. The spike recoveries were outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control by retrieving reliable results and the data are acceptable. The primary result associated with these QA/QC issues was noted with a QM-05 qualifier in the primary data table.
- Two matrix spikes and two matrix spike duplicates of total boron and total iron samples associated with the dry weather event at Couser Canyon had recoveries outside of the acceptance limits due to noted non-homogeneity of the QC sample matrix. The MS/MSD did not provide reliable results for accuracy and precision and the sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values. The primary results associated with these QA/QC issues were noted with a QM-06 qualifier in the primary data table.
- Low blank spike and/or blank spike recoveries occurred on three occasions with water analyses and three occasions with sediment analyses. For the water analyses, these three occasions all occurred with TKN analysis on two batches. One batch had low recovery of both the blank spike and the blank spike duplicate samples and was associated with the first wet weather event at Couser Canyon. The second batch had low recovery of the blank spike sample and was associated with the second wet weather event at Couser Canyon and the first wet weather event at Valley Center. For the sediment analyses, the three occasions occurred with Permethrin, Piperonyl Butoxide, and Deltamethrin, all associated with one analytical batch. This batch had low recovery of the blank spike samples for Permethrin and Piperonyl Butoxide and low recovery of the blank spike duplicate sample for Deltamethrin. This batch was associated with the sediment sample collected during the first wet weather event at Couser Canyon. The results associated with these batches are qualified in the analytical results tables (Tables 2-5, 2-7, and 2-8) with a Q9 qualifier. This qualifier notes that the recovery of the blank spike and/or blank spike duplicate compound was below the DQO of 80 percent for water samples, and 49 to 65 percent for the designated sediment samples, and, therefore, the results for these compounds may be biased low. It should be noted that the recoveries for the three occasions

for water analyses ranged from 72 to 78 percent, and from 48 to 62 percent for the three sediment analysis occasions, all of which are just outside of the DQOs. Although the data are qualified, the effects of these low recoveries are minimal on the true quality and accuracy of the data.

4.3 REPRESENTATIVENESS

Representativeness describes the degree to which the results of analyses represent the samples collected, and the degree to which the samples in turn represent the environment from which they were taken. Representativeness of the sample locations and storm events was addressed by collecting flow-weighted composite samples. Although there is no prescribed DQO for representativeness, general industry standards for percent capture DQOs vary based on rainfall amounts as summarized in Table A-3 (Caltrans, 2003).

Table A-3: Monitoring Event Representativeness Requirements

Total Event Precipitation (in.)	Minimum Acceptable Number of Aliquots	Percent Capture Requirement
0 - 0.25	6	85
0.25 - 0.5	8	80
0.5 - 1.0	10	80
> 1.0	12	75

For this project, representativeness was measured by assessing percent capture during all sampling events at all sites. Composite samples collected throughout this monitoring program met the representativeness requirements outlined in Table A-3 in order to be considered acceptable samples. The overall representativeness quality objective achievement for this project was 100 percent and is summarized in Table A-1.

A.4 COMPLETENESS

Completeness is the percentage of actual measurements that are judged to be valid, over the planned overall measurements. An invalid measurement is one that does not meet the sampling method requirements and the data quality objectives. Data loss may also occur due to adverse weather conditions, safety concerns, and equipment problems. For the present project, the DQO for completeness was set at 90 percent.

For this project, all planned samples were collected and all planned analyses were performed. The overall completeness quality objective achievement for this project was 100 percent and is summarized in Table A-1.

APPENDIX B
QUALITY ASSURANCE PROJECT PLAN (QAPP) FOR LAND USE WATER QUALITY SAMPLING IN THE SAN LUIS REY AND SAN DIEGO WATERSHEDS

APPENDIX C

TASK ORDER STOP-WORK NOTIFICATION

(Available on request)

APPENDIX D

FIELD DATA SHEETS

(Available on request)

APPENDIX E

LABORATORY ANALYTICAL RESULTS

(Available on request)

APPENDIX C

ACTIVITY A-32 SUPPORTING DOCUMENTATION: WOODSIDE AVENUE EXTENDED DETENTION BASIN ANNUAL WATER QUALITY SAMPLING RESULTS FY 2010-11

County of San Diego
Woodside Avenue Extended Detention Basin
Annual Water Quality Sampling Results FY 2011/2012

December 2012

INTRODUCTION

On July 15, 2004 the County of San Diego received Proposition 13 funding from the State Water Resources Control Board (SWRCB) to perform conveyance restoration and to construct a Best Management Practice (BMP) water quality detention basin (Woodside EDB) to treat urban runoff from the Winter Gardens sub-watershed. This runoff discharges directly into the San Diego River. In accordance with the long term effectiveness monitoring recommendations outlined in the *County of San Diego Woodside Avenue Extended Detention Basin Grant Agreement No. 04-067-559-0 (2007),* this report presents the annual water quality sampling results for Woodside EDB in order to assess its effectiveness in pollutant removal and load reduction

During FY 2011-2012, water quality and flow at the inlet and outlet of Woodside EDB were monitored over three dry weather and two wet weather sampling events. Dry weather was defined as following an antecedent dry period of at least 72 hours or after the EDB has returned to its base flow conditions; wet weather monitoring was conducted during and/or directly following storm events of at least 0.10 inches of rainfall.

DESCRIPTION OF SAMPLING PROCEDURES

Measurement of Flow

Instantaneous flows were estimated for influent and effluent by multiplying flow velocity readings from a hand-held mechanical current meter by direct water depth and channel width measurements. No flow measurement was made at the outlet on April 11, 2012 due to safety concerns. Staff gauges were not used to estimate flow because accumulated sediment in the outlet and inlet channels prevented accurate estimation. The results are summarized in Table 1 below.

Table 1. Instantaneous Flow Measurements

Date	Inlet Flow (cfs)	Outlet (cfs)
9/14/11	0.12	0.02
12/12/11	2.74	1.20
1/17/12	0.19	0.03
4/11/12	0.36	NM*
6/19/12	0.13	0.06

*Flow was not measured due to safety concerns

Water Quality Sampling

During FY 2011/2012, three dry weather events (on September 14, 2011; January 17, 2012; and June 19, 2012) and two wet weather events were sampled (on December 12, 2011 and April 11,

2012). One set of water quality grab samples were taken at both the influent and effluent during each sampling event. The samples were collected in pre-cleaned laboratory-supplied sampling bottles. Samples were labeled, placed in a cooler on ice and transported under proper chain-of-custody documentation to an analytical laboratory for analysis. The samples were analyzed for the constituents listed in Table 2. During the sampling of the inlet and outlet, field measurements were also collected for pH, conductivity, temperature, dissolved oxygen, and turbidity. The field measurements are described in Table 3.

Table 2: Water Quality Constituents Measured and the Corresponding Analytical Methods, Reporting Limits (RL) and Method Detection Limits (MDL).

Measured Parameter	Method	RL	MDL
Flow	Flow Probe FP101	0.01 cfs	0.01 cfs
pH	In-situ, Horiba U-10	0.01 units	0.01 units
Temperature	In-situ, Horiba U-10	0.1 °C	0.1 °C
Conductivity	In-situ, Horiba U-10	1 mS/cm	1 mS/cm
Dissolved Oxygen	In-situ, Horiba U-10	1 mg/L	0.01 mg/L
Turbidity	In-situ, Horiba U-10	1 NTU	1 NTU
Ammonia as N	SM4500 NH3 B,C,D	0.02 mg/L	0.1 mg/L
Copper, Dissolved and Total	EPA 200.8	10 µg/L	1 µg/L
Dissolved Organic Carbon (DOC)	SM 5310 B	0.3 mg/L	0.02 mg/L
Hardness	EPA 200.7	10 mg/L	10 mg/L
Lead, Dissolved and Total	EPA 200.8	5 µg/L	1 µg/L
Nitrate as N	SM 4500 NO3 E	0.05 mg/L	0.009 mg/L
Phosphate, Total as P	SM 4500-P B,E	0.05 mg/L	0.02 mg/L
Total Dissolved Solids (TDS)	SM 2540 C	20 mg/L	1 mg/L
Total Organic Carbon (TOC)	SM 5310 B	0.3 mg/L	0.02 mg/L
Total Suspended Solids (TSS)	SM 2540 D	20 mg/L	1 mg/L
Zinc, Dissolved and Total	EPA 200.8	20 µg/L	0.3 µg/L

RESULTS

Data collected during FY 2011-2012 are summarized in Table 3. Table 4 shows the inlet/ outlet percent differences in constituent concentrations and field-measured parameters including pH, temperature, conductivity, dissolved oxygen and turbidity. Percent differences between the outlet and inlet constituent loadings are presented in Table 5. Negative % differences indicate reductions (lower values at the outlet as compared to the inlet); positive % differences show increases (higher concentrations or loadings at the outlet than at the inlet)

For field-measured parameters (Table 4), an 11% average decrease in flow was observed between the inlet and outlet locations of the Woodside EDB during dry weather; the instantaneous flow at the outlet was about 1.5 times lower than at the inlet during the December 2011 storm event; since flow was not measured at the outlet, the percent difference could not be calculated for the April 2012 storm event.

Generally, temperature, pH and turbidity were lower at the outlet than the inlet of the EDB (Table 4). Marked reductions in turbidity were observed during wet weather; now effect or, in one instance, some increase was evident during dry weather. Results for dissolved oxygen and specific conductivity varied depending on the sampling event.

With respect to the mean percent differences in constituent concentrations between the EDB influent and effluent (Table 4) during dry weather, only dissolved organic carbon, ammonia, dissolved copper and total zinc showed lower concentrations at the outlet than at the inlet; mean concentrations of all remaining constituents did not change or were higher at the outlet of the EDB. However, individual results varied depending on the dry weather event monitored. During wet weather, decreases were observed for total and dissolved zinc; the remaining metals showed no change. Differences in hardness, nitrate as N, and TSS concentrations varied depending on the storm. Wet weather TDS, TOC, DOC, ammonia, and total phosphorus concentrations were higher at the outlet.

When constituent loadings were considered (Table 5), all constituents showed mean instantaneous load reductions between inlet and outlet of the EDB during dry weather. During wet weather, load reductions were observed for all metals, total phosphate as P, DOC, TOC and TSS when measured for the December 2011 event. Instantaneous loads were not available for the April 2012 event as flow was not measure at the outlet.

Table 3: Analytical and Field Results

Constituent (units)	Wet Weather				Dry Weather					
	Dec 12, 2011		Apr 11, 2012		Sep 14, 2011		Jan 17, 2012		Jun 19, 2012	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Discharge (cfs)	2.74	1.20	0.36	NM	0.12	0.02	0.19	0.03	0.13	0.06
pH	7.57	7.66	7.82	7.53	7.86	7.91	8.27	7.74	7.91	7.4
Conductivity (mS/cm)	0.245	0.88	0.791	0.26	2.01	2.12	2.07	2.11	1.79	1.99
Turbidity (NTU)	107	79	143	65	0	2	1	1	2	2
Dissolved Oxygen (mg/L)	NM	NM	7.95	6.75	6.42	7.53	12.43	7.62	NM	NM
Temperature (°C)	8.73	5.43	8.89	7.13	5.61	7.63	18.35	5.08	14.21	6.42
Total Dissolved Solids (mg/L)	205	603	168	490	1350	1400	1310	1350	1160	1220
Total Suspended Solids (mg/L)	52.4	34.4	24.2	55.5	2.6	3.3	4.2	2.6	2.1	3.4
Hardness (mg/L)	78	241	252	71	652	675	673	715	612	563
Total Organic Carbon (mg/L)	24	40	17	19	4.1	4.2	3.5	5.2	NM	NM
Dissolved Organic Carbon (mg/L)	25	40	16	17	4	4.2	3.4	5	NM	NM
Nitrate as N (mg/L)	1.15	5.95	3.7	1.31	12.9	10.4	3.7	4.15	7.46	7.88
Ammonia (mg/L)	0.25	0.98	0.2	0.26	0.11	0.1	0.18	0.16	<0.02	<0.02
Total Phosphorus (mg/L)	0.38	0.55	0.42	0.44	0.1	0.06	0.05	0.06	0.07	0.27
Dissolved Copper (µg/L)	0.013	0.013	0.008	0.01	0.002	0.001	0.002	0.002	0.002	0.002
Total Copper (µg/L)	0.021	0.019	0.013	0.014	0.052	0.009	0.002	0.003	0.002	0.003
Dissolved Lead (µg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Lead (µg/L)	0.005	0.004	0.007	0.002	0.003	0.001	0.0007	0.0008	0.002	0.001
Dissolved Zinc (µg/L)	0.063	0.037	0.019	0.021	0.007	0.006	0.006	0.008	0.003	0.004
Total Zinc (µg/L)	0.13	0.064	0.053	0.043	0.274	0.049	0.012	0.015	0.026	0.02

NM – not measured

Table 4: Percent Differences between Woodside EDB Outlet and Inlet Field Sampling Results (Discharge, pH, Conductivity, Turbidity and Temperature) and Constituent Concentrations. Negative Percentages Indicate Decreased Values at the Outlet; Positive Percentages Indicate Increased Values at the Outlet.

Constituent (units)	Percent Difference between Outlet and Inlet Measurements/ Concentrations					Mean Percent Difference	
	Wet Weather		Dry Weather				
	12/12/11	4/11/12	9/14/11	1/17/12	6/19/12	Wet Weather	Dry Weather
Discharge (cfs)	-154%	NA*	-10%	-16%	-7%	86%	-11%
pH	9%	-29%	5%	-53%	-51%	-10%	-33%
Conductivity (mS/cm)	64%	-53%	11%	4%	20%	5%	12%
Turbidity (NTU)	-2800%	-7800%	200%	0%	0%	-5300%	67%
Dissolved Oxygen (mg/L)	0%	-120%	111%	-481%	0%	-60%	-123%
Temperature (°C)	-210%	-230%	-250%	-170%	-550%	-220%	-323%
Total Dissolved Solids (mg/L)	39800%	32200%	5000%	4000%	6000%	36000%	5000%
Total Suspended Solids (mg/L)	-1800%	3130%	70%	-160%	130%	665%	13%
Hardness (mg/L)	16300%	-18100%	2300%	4200%	-4900%	-900%	533%
Total Organic Carbon (mg/L)	1600%	200%	10%	170%	0%	900%	60%
Dissolved Organic Carbon (mg/L)	1500%	100%	20%	160%	0%	800%	60%
Nitrate as N (mg/L)	480%	-239%	-250%	45%	42%	121%	-54%
Ammonia (mg/L)	73%	6%	-1%	-2%	0%	40%	-1%
Total Phosphorus (mg/L)	17%	2%	-4%	1%	20%	10%	6%
Dissolved Copper (µg/L)	0%	0%	0%	0%	0%	0%	0%
Total Copper (µg/L)	0%	0%	-4%	0%	0%	0%	-1%
Dissolved Lead (µg/L)	0%	0%	0%	0%	0%	0%	0%
Total Lead (µg/L)	0%	-1%	0%	0%	0%	0%	0%
Dissolved Zinc (µg/L)	-3%	0%	0%	0%	0%	-1%	0%
Total Zinc (µg/L)	-7%	-1%	-23%	0%	-1%	-4%	-8%

* Because flow was not measured at the outlet on 4/11/2012, the percent difference between outlet and inlet flow measurements could not be calculated.

Table 5: Percent Differences between Woodside EDB Effluent and Influent Constituent Loadings. Negative Percentages Indicate Decreased Loadings at the Outlet; Positive Percentages Indicate Increased Loadings at the Outlet.

Constituent (units)	Percent Difference between Outlet and Inlet Constituent Loadings					Mean Percent Difference	
	Wet Weather		Dry Weather				
	12/12/11	4/11/12*	9/14/11	1/17/12	6/19/12	Wet Weather	Dry Weather
Total Dissolved Solids (mg/L)	456127%	NA	-375508%	-603983%	-233557%	2658449%	-404349%
Total Suspended Solids (mg/L)	-290263%	NA	-694%	-2077%	-234%	127533%	-1002%
Hardness (mg/L)	212852%	NA	-181412%	-308541%	-136011%	343513%	-208655%
Total Organic Carbon (mg/L)	-50562%	NA	-1143%	-1484%	0%	63658%	-876%
Dissolved Organic Carbon (mg/L)	-58333%	NA	-1110%	-1446%	0%	50012%	-852%
Nitrate as N (mg/L)	11283%	NA	-3733%	-1678%	-1497%	10496%	-2303%
Ammonia (mg/L)	1388%	NA	-31%	-85%	-2%	1927%	-39%
Total Phosphorus (mg/L)	-1084%	NA	-30%	-22%	17%	1504%	-12%
Dissolved Copper (µg/L)	-57%	NA	-1%	-1%	0%	19%	-1%
Total Copper (µg/L)	-99%	NA	-17%	-1%	0%	16%	-6%
Dissolved Lead (µg/L)	-2%	NA	0%	0%	0%	1%	0%
Total Lead (µg/L)	-25%	NA	-1%	0%	-1%	-6%	-1%
Dissolved Zinc (µg/L)	-364%	NA	-2%	-3%	0%	-84%	-2%
Total Zinc (µg/L)	-793%	NA	-88%	-5%	-6%	-202%	-33%

*Because flow was not measured at the outlet on 4/11/2012, the percent difference between outlet and inlet constituent loadings could not be calculated.

CONCLUSIONS

Overall load reductions for the majority of constituents measured during both dry and wet weather (for wet weather, only the December 2011 storm event data were included in the calculations). The load reductions were most likely due to the EDB allowing settling or absorption of pollutants before reaching the outlet. However, the results indicate that, constituent concentrations at the outlet of the EDB were often higher than at the inlet.

In terms of constituent concentrations alone, it may be concluded that the EDB functioned well in reducing nitrate-N, ammonia and total copper concentrations in non storm flows and turbidity and zinc concentrations during wet weather. The concentrations of other constituents measured, however, were not consistently reduced and were often higher at the outlet of the EDB. One reason for the higher concentrations may be that, potentially, not all flows entering the BMP were accounted for in the monitoring. According to the EDB Design, there are actually two influent conveyances discharging into the EDB: one is a concrete channel (parallel to Woodside Ave.) entering the BMP from its South-East corner, the other is a storm drain pipe entering the BMP near its South-West corner. For the purpose of the present study, only the concrete channel influent conveyance was monitored. Although, based on past experience, an assumption was made that there is usually no discharge entering the BMP from the storm drain pipe, this was not confirmed on monitoring days. In future monitoring, this potential discharge site will be accounted for by checking for flow and collecting analytical samples and measurements when flow is present.

REFERENCE

County of San Diego Woodside Avenue Extended Detention Basin Grant Agreement No. 04-067-559-0. 2007. Prepared for the County of San Diego by Weston Solutions Inc.

APPENDIX D

ACTIVITY A-83 SUPPORTING DOCUMENTATION: COUNTY OF SAN DIEGO LAND USE WATER QUALITY SAMPLING, FINAL MONITORING REPORT, JANUARY 2011

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this study was to collect analytical data at mass loading stations (MLSs) draining primarily agricultural and/or rural residential lands during storms and non-storm conditions. Three sampling locations, two in the lower San Luis Rey (SLR) Watershed (Couser Canyon and Valley Center) and one in the San Diego River Watershed (Blossom Valley) were monitored over two storm events for nutrients, conventional constituents, fecal indicator bacteria (FIB), metals, and herbicides. *In situ* field measurements of temperature, specific conductance, dissolved oxygen (DO), pH, and turbidity were also taken at each location during each storm. In addition, at Couser Canyon, a composite post-storm sediment sample was collected to test for synthetic pyrethroid insecticides. The Couser Canyon location was also monitored over a non-storm flow event for all water quality constituents listed above.

2.0 METHODS AND MATERIALS

Stream flow gauging and water quality sampling were conducted at the three monitoring locations. One sediment quality sample was collected at the Couser Canyon monitoring location after the February 6-8 storm event. Detailed descriptions of sampling locations, stream flow gauging methods, storm selection criteria, methods utilized in sample collection, and quality assurance/quality control procedures are provided in the Quality Assurance Project Plan (QAPP) (Appendix A).

2.1 MONITORING LOCATIONS

Sampling locations were selected to characterize runoff from agricultural and spaced rural residential land uses during wet weather and non-storm flow (dry weather) conditions. Table 2-1 provides site names and GPS coordinates. A map of the monitoring locations and the associated drainage areas is provided in Figure 2-1. Pie diagrams showing landuse compositions of the drainage areas associated with the monitoring locations are presented in Figure 2-2.

Table 2-1: Approximate Locations of Monitoring Sites

Site	Watershed	Latitude[(a)]	Longitude[(a)]
Blossom Valley	San Diego River	32.86608	-116.83415
Couser Canyon	San Luis Rey	33.33176	-117.12483
Valley Center	San Luis Rey	33.25589	-117.06857

(a) GPS positions are based on the NAD 83 Datum.

Figure 2-1: Monitoring Locations within Watersheds and Land Use Designations

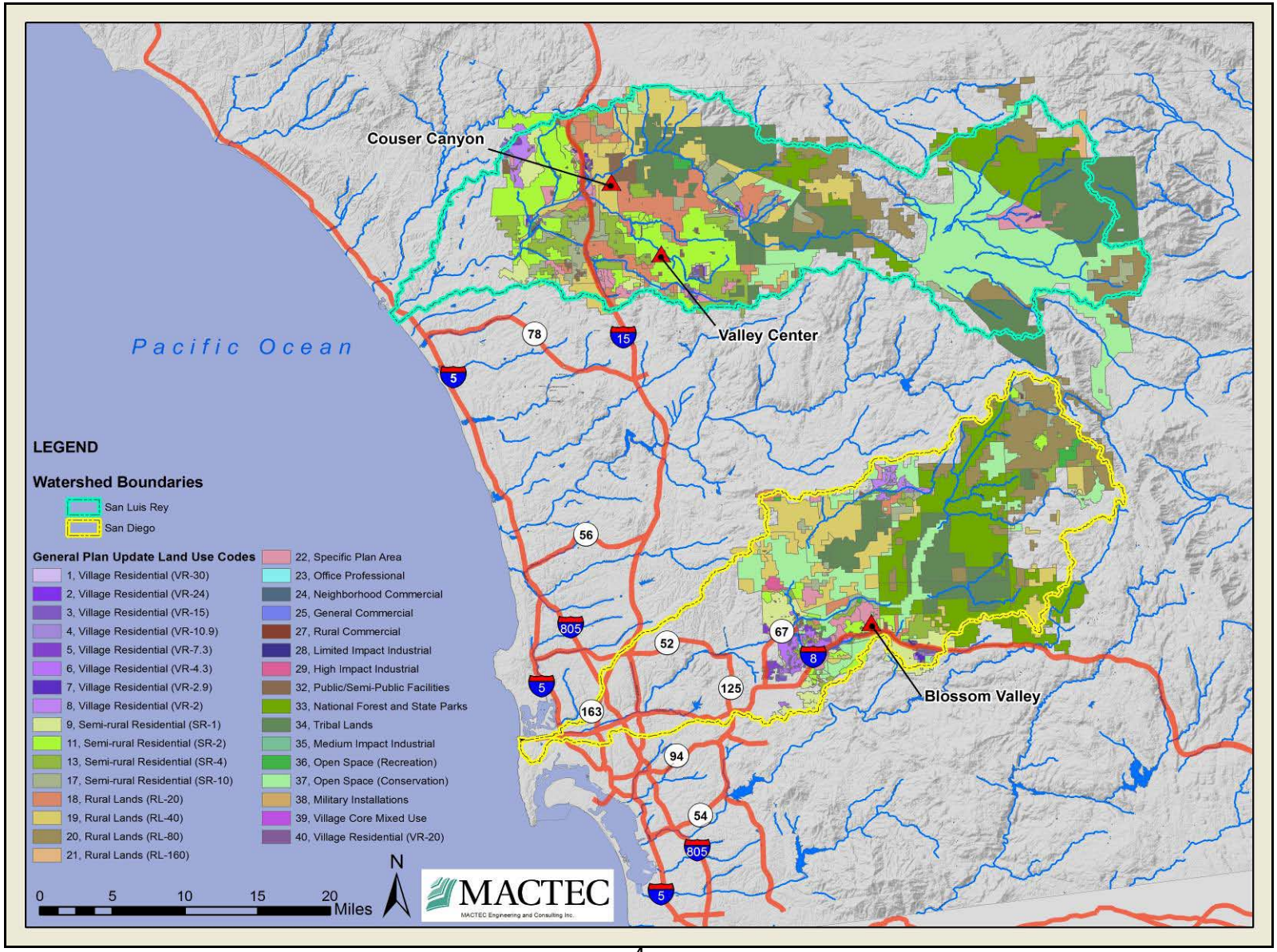
Couser Canyon
Valley Center
Blossom Valley
Pacific Ocean
78
15
5
56
805
52
67
8
125
163
94
54
LEGEND
Watershed Boundaries
San Luis Rey
San Diego
General Plan Update Land Use Codes
1, Village Residential (VR-30)
2, Village Residential (VR-24)
3, Village Residential (VR-15)
4, Village Residential (VR-10.9)
5, Village Residential (VR-7.3)
6, Village Residential (VR-4.3)
7, Village Residential (VR-2.9)
8, Village Residential (VR-2)
9, Semi-rural Residential (SR-1)
11, Semi-rural Residential (SR-2)
13, Semi-rural Residential (SR-4)
17, Semi-rural Residential (SR-10)
18, Rural Lands (RL-20)
19, Rural Lands (RL-40)
20, Rural Lands (RL-80)
21, Rural Lands (RL-160)
22, Specific Plan Area
23, Office Professional
24, Neighborhood Commercial
25, General Commercial
27, Rural Commercial
28, Limited Impact Industrial
29, High Impact Industrial
32, Public/Semi-Public Facilities
33, National Forest and State Parks
34, Tribal Lands
35, Medium Impact Industrial
36, Open Space (Recreation)
37, Open Space (Conservation)
38, Military Installations
39, Village Core Mixed Use
40, Village Residential (VR-20)
0 5 10 15 20 Miles
N
MACTEC
MACTEC Engineering and Consulting Inc.

Figure 2-2: Comparison of Drainage Area Landuse Compositions among the Three Monitoring Locations

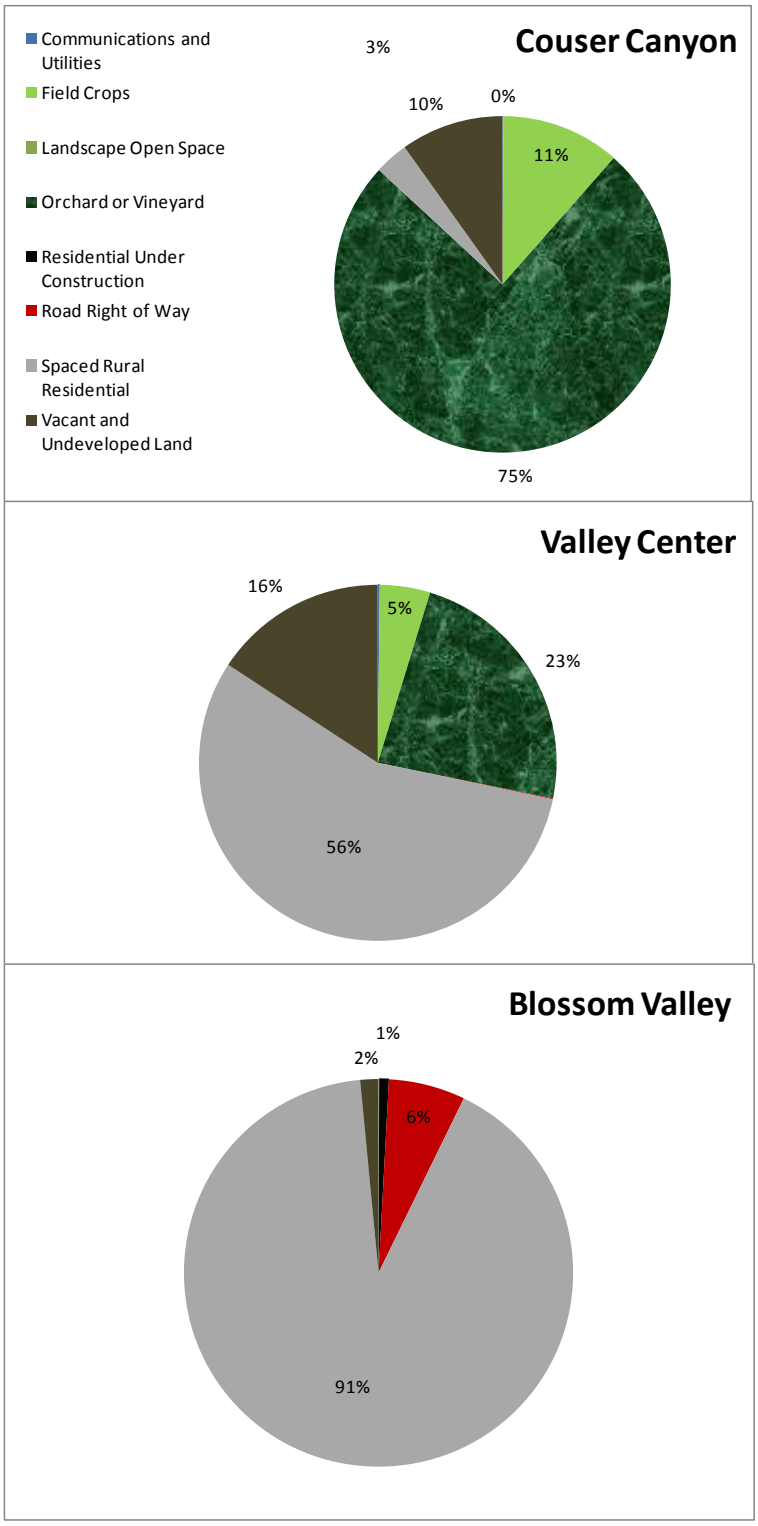

2.1.1 Couser Canyon and Valley Center Sites

The Couser Canyon and Valley Center monitoring sites are located within the San Luis Rey River Watershed (Fig. 2.1). The Couser Canyon site, draining approximately 1,155 acres, was established at the north-western edge of the Monserate sub-basin on Couser Canyon Road, approximately 1.1 miles south of Highway 76. The drainage area associated with the site is dominated by agriculture including orchard and vineyards (75%) and field crops (11%) with the remaining 13% being composed of vacant and undeveloped land (10%) and spaced rural residential land use areas (3%) (Figs. 2-2 and 2-4). The water quality monitoring equipment for Couser Canyon was installed on County property near the upstream end of two 18-inch corrugated steel pipes that run below Couser Canyon Road (Figure 2-3). Midway through the monitoring period one of the two pipes was bent over and closed off from the majority of flow as a result of high flows that flooded the area.

Figure 2-3: Couser Canyon Monitoring Location Photo

Figure 2-4: Couser Canyon Monitoring Location Drainage Area Landuse Composition

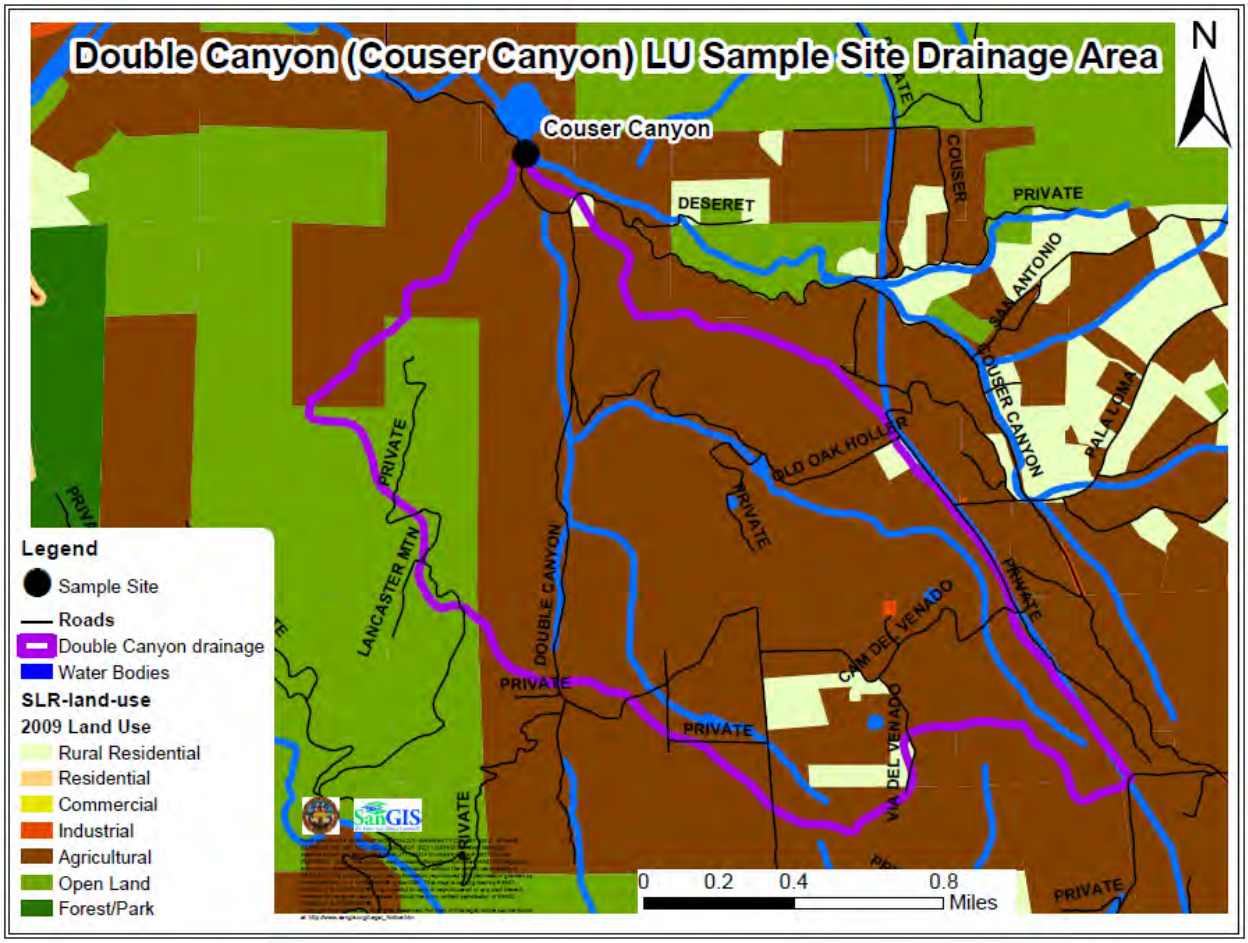

The Valley Center site, with a drainage area of 423 acres, was established in the eastern portion of the Lower San Luis Rey sub-basin at the intersection of Old Castle Road and Lilac Road. The drainage area associated with the site consists mainly of spaced rural residential (56%) and agricultural (27%) land uses; undeveloped or vacant lands occupy 16% of the area (Figs. 2-2 and 2-6). The water quality monitoring equipment for the Valley Center site was installed on County property in the single 48-inch corrugated metal pipe that extends under Old Castle Road just west of the intersection with Lilac Road (Figure 2-5).

Figure 2-5: Valley Center Monitoring Location

Figure 2-6: Valley Center Monitoring Location Drainage Area Landuse Composition

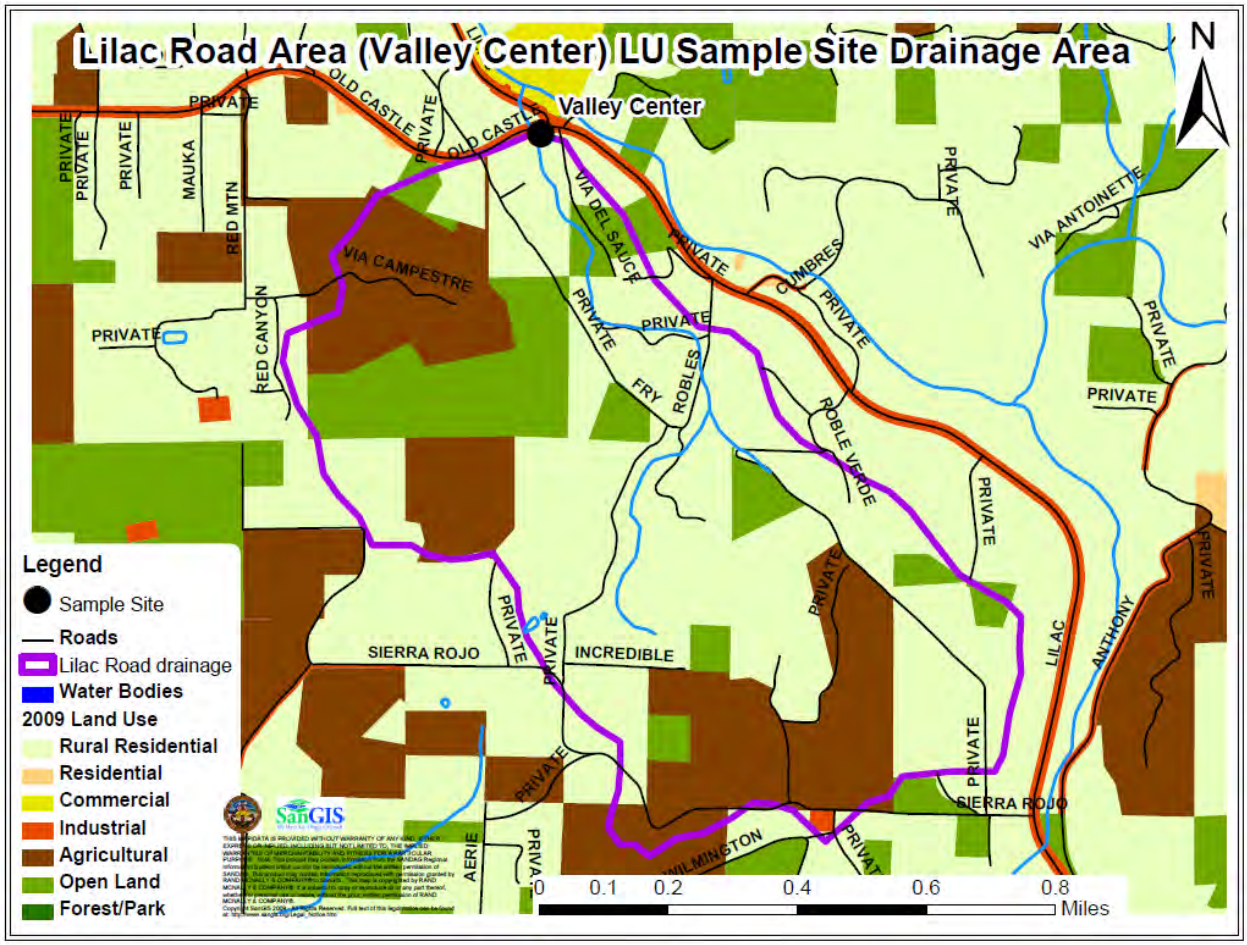

2.1.2 Blossom Valley Site

The Blossom Valley monitoring site, draining approximately 185 acres, was established located within the San Diego River Watershed on Hawley Road, approximately 0.65 miles north of Old Highway 80. The site, was set near the eastern edge of the Lower San Diego sub-basin targeting runoff from spaced rural residential land use (91%) (Figs 2-2 and 2-8). The water quality monitoring equipment for the site was installed on County property in the single 36-inch concrete pipe that runs below Hawley Road (Figure 2-5).

Figure 2-7: Blossom Valley Monitoring Location

Figure 2-8: Valley Center Monitoring Location Drainage Area Landuse Composition

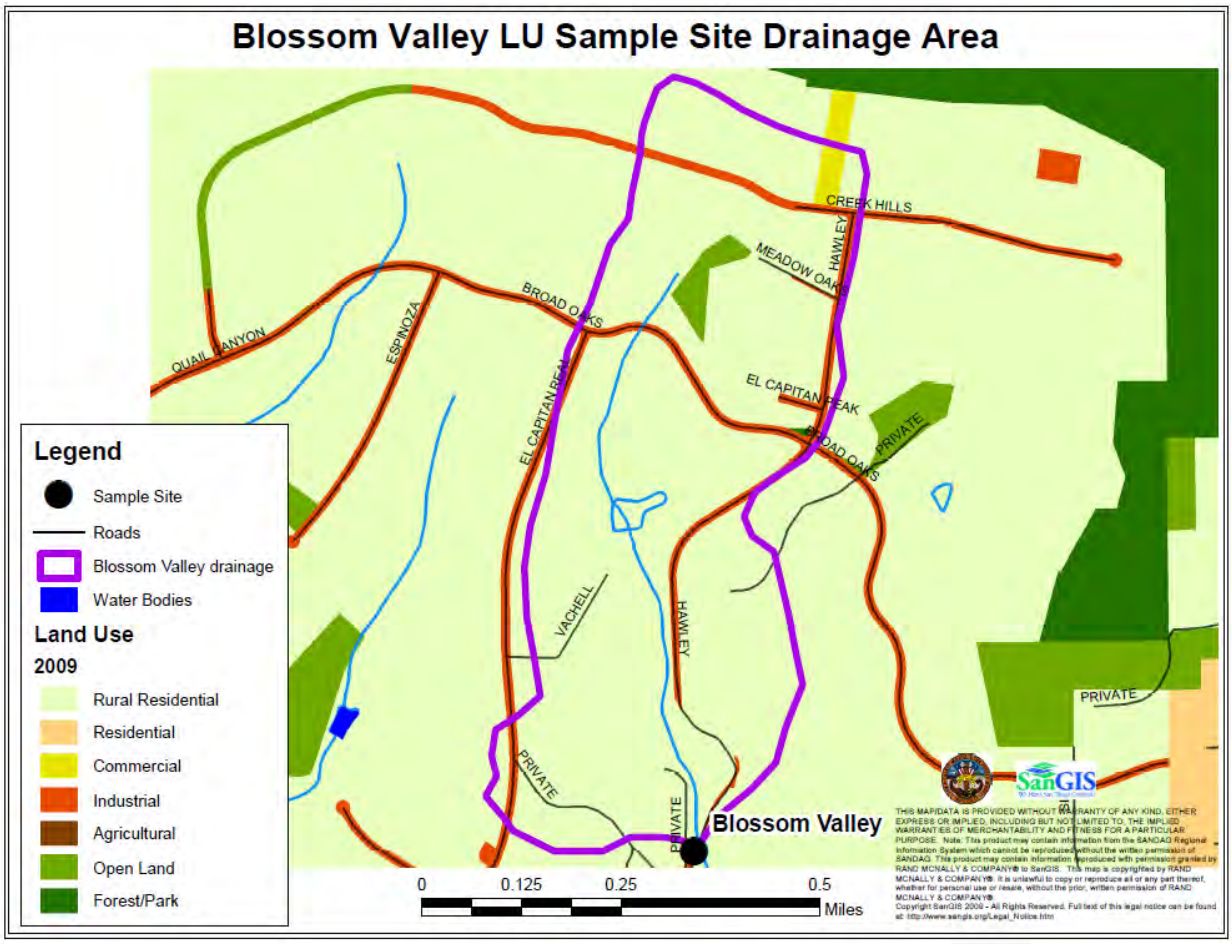

2.2 ANALYTICAL METHODS

Specific analytical parameters were selected for each site based on land uses within the associated drainage areas and the specific 303(d) listings of the receiving waters. Tables 2-2, 2-3, and 2-4 show the analytes by site and include methods, maximum holding times, and reporting limit requirements. At all locations, *in-situ* water quality field measurements were collected for parameters listed in Table 2-5.

Water and sediment samples were analyzed by CRG Marine Laboratories, Inc. (CRG), for both wet weather sampling events. EnviroMatrix Analytical, Inc. (EMA) performed the dry weather sample analysis.

Table 2-2: Analytical Requirements for Couser Canyon MLS Water Samples

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Microbiology	Coliform, Fecal	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100mL
	Coliform, Total	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100mL
	Enterococcus	Enterolert	6 hours at ≤ 6°C	10 MPN/100mL
Nutrients and Conventionals	Ammonia-Nitrogen	SM 4500-NH_3 F/ SM 4500 NH_3 B,C	28 days	0.03 mg/L
	Nitrate-Nitrogen	EPA 300.0/ SM 4500 NO_3 E	48 hours	0.20 mg/L
	Nitrite-Nitrogen	EPA 300.0/ SM 4500 NO_2 B	48 hours	0.05 mg/L
	Ortho-Phosphate Phosphorus	EPA 300.0/ SM 4500-P E[c]	48 hours	0.01 mg/L

Table 2-2: Analytical Requirements for Couser Canyon MLS Water Samples (continued)

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Nutrients and Conventionals	Chloride	EPA 300.0/ SM 4500 Cl C	28 days	0.20 mg/L
	Fluoride	EPA 300.0/ SM 4500 F C	28 days	0.20 mg/L
	Sulfate	EPA 300.0/ SM 4500 SO_4 E	28 days	0.05 mg/L
	Total Kjeldahl Nitrogen	SM 4500-N Org B/ SM 4500 N C	28 days	0.50 mg/L
	Total Phosphorus	SM 4500-P E/ SM 4500 P B, E	28 days	0.05 mg/L
	Total Suspended Solids	SM 2540-D	7 days	5.0 mg/L
	Total Dissolved Solids (TDS)	SM 2540-C	7 days	5.0 mg/L
	Alkalinity, Bicarbonate	SM 2320-B	14 days	5.0 mg/L
	Alkalinity, Carbonate	SM 2320-B	14 days	5.0 mg/L
	Alkalinity, Hydroxide	SM 2320-B	14 days	5.0 mg/L
	Hardness, Total	SM 2340-C/ EPA 200.7	6 months	5.0 mg $CaCO_3$/L

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Metals	Iron, Total	EPA 200.8(m)	6 months	20.0 ug/L
	Manganese, Total	EPA 200.8(m)	6 months	1.0 ug/L
	Boron, Total	EPA 200.8(m)/ EPA 200.7	6 months	5.0 ug/L
	Magnesium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	0.1 mg/L
	Potassium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	10.0 mg/L
	Sodium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	10.0 mg/L
	Calcium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	0.1 mg/L
Herbicides	Terbuthylazine	EPA 625(m)	7 days	0.01 ug/L
	Secbumeton	EPA 625(m)	7 days	0.01 ug/L
	Simazine	EPA 625(m)	7 days	0.01 ug/L
	Oxadiazon	EPA 625(m)	7 days	0.05 ug/L
	Atrazine	EPA 625(m)	7 days	0.01 ug/L

(a) Filtering for dissolved constituents was conducted by the laboratory as soon as possible.

(b) If a second method number is listed, it is the method used by EnviroMatrix Analytical, Inc., for the dry weather sampling event.

(c) The County requested the analytical method for Orthophosphate-Phosphorus be changed from EPA 300.0 to SM 4500-P E.

Table 2-3: Analytical Requirements for Blossom Valley and Valley Center MLS Water Samples

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit

Microbiology	Coliform, Fecal	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100 mL
	Coliform, Total	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100 mL
	Enterococcus	Enterolert	6 hours at ≤ 6°C	10 MPN/100 mL
Nutrients and Conventionals	Ammonia-Nitrogen	SM 4500-NH_3 F	28 days	0.03 mg/L
	Nitrate-Nitrogen	EPA 300.0	48 hours	0.20 mg/L
	Nitrite-Nitrogen	EPA 300.0	48 hours	0.05 mg/L
	Ortho-Phosphate Phosphorus	SM 4500-P E	48 hours	0.01 mg/L
	Hardness, Total	SM 2340-C	6 months	5.0 mg $CaCO_3$/L
	Total Kjeldahl Nitrogen	SM 4500-N Org B	28 days	0.50 mg/L
	Total Phosphorus	SM 4500-P E	28 days	0.05 mg/L
	Total Suspended Solids	SM 2540-D	7 days	5.0 mg/L
	Total Dissolved Solids (TDS)	SM 2540-C	7 days	5.0 mg/L
Metals	Antimony, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Arsenic, Dissolved	EPA 200.8(m)	6 months	1.0 ug/L
	Cadmium, Dissolved	EPA 200.8(m)	6 months	1.0 ug/L
	Chromium, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L

	Copper, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Lead, Dissolved	EPA 200.8(m)	6 months	2.0 ug/L
	Lead, Total	EPA 200.8(m)	6 months	2.0 ug/L
	Nickel, Dissolved	EPA 200.8(m)	6 months	2.0 ug/L
	Selenium, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Selenium, Total	EPA 200.8(m)	6 months	5.0 ug/L
	Zinc, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
Organophosphorus Pesticides	Chlorpyrifos	EPA 625(m)	7 days	0.02 ug/L
	Diazinon	EPA 625(m)	7 days	0.04 ug/L
	Malathion	EPA 625(m)	7 days	0.06 ug/L

(a) Filtering for dissolved constituents was conducted by the laboratory as soon as possible.

(b) Acid preservation will be conducted by the laboratory as soon as possible.

Table 2-4: Analytical Requirements for Couser Canyon MLS Sediment Samples

Constituent Category	Analytical Parameter	Analytical Method	Maximum Holding Time	Reporting Limit
Pyrethroid Pesticides	Allethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Bifenthrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g

Constituent Category	Analytical Parameter	Analytical Method	Maximum Holding Time	Reporting Limit
	Cyfluthrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Cypermethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Danitol	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Deltamethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	lambda-Cyhalothrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Permethrin	EPA 8270 NCI GC/MS	40 days	25.0 ng/g
	Prallethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Piperonyl butoxide (PBO)	EPA 8270C(m)	40 days	20.0 ng/g

Table 2-5: *In-Situ* Field Measurements at All Locations

Analyte	Range
Conductivity	0 – 9.99 S/cm
Dissolved Oxygen (DO)	0 – 19.99 mg/L or 0 – 199% saturated air
pH	0 – 14

Temperature	0 °C – 55 °C
Turbidity	0 – 800 NTU

2.3 WATER QUALITY OBJECTIVES

Certain water bodies (Table 2-6) associated with this monitoring program are listed as impaired on the Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List). The Lower and Upper SLR River is listed for total nitrogen. The Lower SLR River is also listed for chloride, phosphorus, and total dissolved solids (TDS). The Lower SLR River and the Pacific Ocean shoreline at the SLR River mouth are listed for bacteria. The Lower San Diego River is listed for bacteria, phosphorus, total nitrogen, TDS, and low DO. In addition, a Total Maximum Daily Load (TMDL) for indicator bacteria was adopted by the California State Water Resources Control Board on December 14, 2010 that includes San Luis Rey River and the San Diego River watersheds. In this report, applicable Water Quality Objectives (WQOs), if available, were utilized for comparison purposes only and are outlined in Table 2-7. Sediment quality objectives applicable to this project are not available in current literature. The State Water Resources Control Board (SWRCB) intends to develop sediment quality objectives for enclosed bays and estuaries, but anticipates that the process will require approximately four years to complete (SWRCB, 2009).

Table 2-6: Clean Water Act Section 303(d) Listings Related to the Study Sites

Impaired Water Bodies	CWA Section 303(d) 2008 Listings								
	Nutrients			Dissolved Minerals		Low Dissolved Oxygen	FIB		
	Total N	Phosphorus	Eutrophic	Chloride	TDS		Enterococcus	Fecal Coliform	Total Coliform
San Luis Rey River (Lower)	X	X		X	X		X	X	
San Luis Rey River (Upper)	X								

Pacific Ocean Shoreline at SLR River mouth							X		X
San Diego River (Lower)	X	X			X	X	X	X	

FIB = Fecal Indicator Bacteria

N = Nitrogen

Table 2-7: Available Water Quality Objectives

Analyte	Units	Water Quality Objective	Source
Microbiology			
Coliform, Fecal	colonies/100mL	400	Basin Plan
Coliform, Total	colonies/100mL	10,000[a]	Basin Plan
Enterococcus	colonies/100mL	104[b]	Basin Plan
Nutrients and Conventionals			
Ammonia-Nitrogen	mg/L	< 0.025	Basin Plan
Nitrate-Nitrogen	mg/L	10[c]	Basin Plan
Nitrite-Nitrogen	mg/L	1[c]	Basin Plan
Total Nitrogen	mg/L	1[d]	Basin Plan
Chloride	mg/L	250[e]	Basin Plan
		50[f]	
Fluoride	mg/L	1.0	Basin Plan
Total Phosphorus	mg/L	0.1[g]	Basin Plan
Dissolved Oxygen	mg/L	> 5.0 mg/l	Basin Plan
Total Dissolved Solids	mg/L	500[e]	Basin Plan
		300[f]	

Table 2-7: Available Water Quality Objectives (continued)

Metals			
Arsenic, Dissolved	µg/L	340[h, i]	California Toxics Rule
		150[i, j]	
Boron, Total	mg/L	0.75[e]	Basin Plan
		1.0[f]	
Cadmium, Dissolved	µg/L	4.3[h, k]	California Toxics Rule
		2.2[j, k]	
Chromium, Dissolved	µg/L	550[h, k]	California Toxics Rule
		180[j, k]	
Copper, Dissolved	µg/L	13[h, k]	California Toxics Rule
		9.0[j, k]	
Iron, Total	mg/L	0.3	Basin Plan
Lead, Dissolved	µg/L	65[h, k]	California Toxics Rule
		2.5[j, k]	
Lead, Total	µg/L	82[h, k]	California Toxics Rule
		3.2[j, k]	
Manganese, Total	mg/L	0.05	Basin Plan
Nickel, Dissolved	µg/L	470[h, k]	California Toxics Rule
		52[j, k]	
Selenium, Dissolved	µg/L	Acute N/A	USEPA Recommended Water Quality Criteria
		4.6[j]	
Selenium, Total	µg/L	Acute N/A	USEPA Recommended Water Quality Criteria
		5.0[j]	
Sodium, Dissolved	%	60[l]	Basin Plan

Zinc, Dissolved	µg/L	120[h, k] 120[j, k]	California Toxics Rule
Organics			
Diazinon	µg/L	Acute: 0.08 Chronic: 0.05	SDRWQCB Resolution No. R9-2002-0123
Simazine	ng/L	4000 ng/L	Basin Plan
Atrazine	mg/L	0.001	Basin Plan

N/A = Water quality objective is not available at this time.

(a) WQO for bays and estuaries.

(b) Although criteria are for saltwater, these criteria are commonly used in San Diego Co-Permitee projects.

(c) Although criteria are for drinking water standards, these criteria are commonly used in San Diego Co-Permitee projects.

(d) From Basin Plan (1994): "Threshold values have not been set for nitrogen compounds; however natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 shall be used." Given WQO for total P = 0.1, WQO for total N = 1.

(e) WQO specified for Inland Surface Waters in the San Luis Rey Hydrologic Unit and Sweetwater Hydrologic Unit.

(f) WQO specified for Inland Surface Waters in the San Diego Hydrologic Unit.

(g) Not to be exceeded more than 10% of the time

(h) Criteria Maximum Concentration (CMC).

(i) Criteria are expressed as a function of the water effect ratio.

(j) Criteria Continuous Concentration (CCC).

(k) Criteria are expressed as a function of total hardness (mg/L as $CaCO_3$). Values assume a hardness of 100 mg/L.

(l) The WQO for sodium is expressed as percent sodium.

2.4 WET WEATHER SAMPLING

Wet weather sampling was conducted during two storm events at each of the three monitoring locations. A viable storm event was one that produced a minimum of 0.25 inches of rainfall and was within ± 50 percent of the average storm volume for the region. Storm qualification was determined by the mobilization criteria established in the QAPP (Appendix A). Rain gauges were installed at each sampling location to measure precipitation during monitored storm events.

Wet weather sampling included single *in-situ* field measurements as listed in Table 2-5, and collection of flow-weighted composite samples for chemical constituent analysis and grab samples for FIB analysis. Chemistry and microbiology analyses were performed according to Table 2-2 for the Couser Canyon site and Table 2-3 for the Blossom Valley and Valley Center sites. The flow-weighted composite sample aliquots were collected throughout the storm events until rain stopped and flow rates returned to baseflow. A single grab sample was collected for each storm event at each sampling location to test for FIB. Field duplicate grab samples were taken once per storm event and one field blank grab sample was analyzed for the program.

One post-storm sediment sample was collected at Couser Canyon after the first monitored wet weather event (February 6-8). The sample was taken as a composite along a cross-section of the creek. To collect the sample, a pre-cleaned stainless steel spoon was used to scoop the top two inches of sediment at locations approximately 25 percent, 50 percent, and 75 percent of the total distance across the channel. The sample was collected approximately five feet upstream of the water sample collection point and was analyzed according to Table 2-4.

2.5 DRY WEATHER SAMPLING

One non-storm flow sampling event was monitored at Couser Canyon only. The Valley Center and Blossom Valley sites were dry. The sampling at Couser Canyon included collection of single *in-situ* field measurements as listed in Table 2-5, and collection of a flow-weighted composite sample for chemical constituent analysis and a grab sample for FIB analysis. Chemistry and microbiology analyses were performed according to Table 2-2. The flow-weighted composite sample aliquots were collected every 30 minutes for a 24–hour period. A field duplicate grab sample was also collected and analyzed for FIB.

2.6 STREAM GAUGING

Stream flow gauging was conducted, based on site characteristics, using either standard USGS wading stream flow gauging protocol (Rantz, 1982), or installed area-velocity bubbler (AVB) probes. The resulting data were used to develop stage-discharge relationships that were incorporated into the flow monitoring equipment used during wet weather sampling events.

2.6.1 Couser Canyon

The Couser Canyon monitoring location consisted of a small natural channel leading to two 18-inch misshapen corrugated metal pipes. Stream gauging at this site was conducted using the 0.6 depth USGS protocol (Rantz, 1982). Multiple gauging events occurred at this site; however, development of a reliable discharge rating curve was not possible because of the transitional nature of the sandy bottom of the channel. Although depths in the gauging area did not vary much throughout the season, current velocities did, resulting in highly variable discharge rates. When these rates were compared with the associated stage heights from the installed bubbler, the data did not allow for rating curve establishment. As a result, sample pacings at this site were determined based on site conditions prior to each monitored event. Field data sheets from the gauging events are included in Appendix C.

2.6.2 Valley Center

The Valley Center monitoring location consisted of a 48-inch corrugated metal pipe. This site was selected late in the season, which did not allow for early season discharge measurements. Gauging data were collected using a HACH flow meter and AVB probe. This was advantageous over traditional stream gauging (the 0.6 depth USGS protocol) because, based on field observations, stage heights at the Valley Center site did not vary much over the monitoring season. The selected approach allowed for discharge data collection during higher stage heights associated with rain events.

2.6.3 Blossom Valley

The Blossom Valley monitoring location consisted of a 36-inch concrete pipe that contained flowing water only during storms. This did not allow for traditional stream gauging using the 0.6 depth USGS protocol (Rantz, 1982) and therefore, gauging data at this site were collected using a HACH flow meter and AVB probe during monitored events only.

3.0 RESULTS

Due to varying local hydrology, wet weather sampling occurred on different days at different sites. As mentioned in Section 2.5, dry weather sampling was conducted only at Couser Canyon as the other two sites were dry. The pertinent field data sheets are included in Appendix C. Table 3-1 lists the locations sampled, events monitored, and sample dates.

Table 3-1: Sampling Event Summary

Monitoring Location	First Wet Weather Event	Second Wet Weather Event	Dry Weather Event
Couser Canyon	2/6 – 2/8/2010	2/20/2010	6/2 - 6/3/2010
Valley Center	2/20/2010	3/6 – 3/7/2010	Not Sampled[(a)]
Blossom Valley	2/21-22/2010	3/7/2010	Not Sampled[(a)]

(a) Blossom Valley and Valley Center were not sampled during the dry weather sampling event as there was no flow at the sites.

3.1 WET WEATHER MONITORING

Monthly and annual rainfall data for the 2009-2010 wet weather season (October through May) (Table 3-2) were obtained from the National Weather Service (NWS) Fallbrook station, located near the Couser Canyon and Valley Center monitoring sites, and Alpine station, located near the Blossom Valley monitoring site. Isopluvial maps from the San Diego County Hydrology Manual indicate that the mean annual rainfall for both areas ranges from approximately 15 to 18 inches (Chang, 2009). Based on this data, the total rainfall for the area was within the average range.

Table 3-2: Regional Monthly Rainfall Summaries, 2009-2010 Storm Water Season

Month	Total Rainfall (inches)	
	Fallbrook (near Couser Canyon and Valley Center)	Alpine (near Blossom Valley)
October 2009	0.05	0.08
November 2009	0.42	0.85

Month	Total Rainfall (inches)	
	Fallbrook (near Couser Canyon and Valley Center)	**Alpine** (near Blossom Valley)
December 2009	3.43	3.85
January 2010	5.84	4.70
February 2010	4.12	3.36
March 2010	0.61	0.86
April 2010	1.99	2.76
May 2010	0.00	0.05
Season Total (October 2009 - May 2010)	16.46	16.51

Note: Data is from the National Oceanic and Atmospheric Administration website (http://www.wrh.noaa.gov/sgx/obs/rtp/rtpmap.php?wfo=sgx)

3.1.1 Couser Canyon

Two wet weather events were monitored at Couser Canyon with one post-storm sediment grab sample collected after the first storm.

3.1.1.1 February 6-8 Wet Weather Event

Rainfall began at 4:21 pm on February 5, 2010 and ended at 6:43 am on February 7 totaling 1.13 inches in precipitation. Flow began to increase in response to rainfall at approximately 10:00 pm on February 5 and the first composite sample aliquot was collected at 3:32 am on February 6. The last sample aliquot was taken at 7:21 am on February 8 as the flow rate returned to baseline. There were occasional drops in flow due to debris either slowing flow or clogging the pipes immediately downstream of the sample area. The debris clogs were cleared by field crews and flows returned to typical levels. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent

capture for this event. The total discharge for the event was 880,719 cubic feet. The event hydrograph is provided in Figure 3-1.

Figure 3-1: Couser Canyon Hydrograph – February 6-8 Wet Weather Event

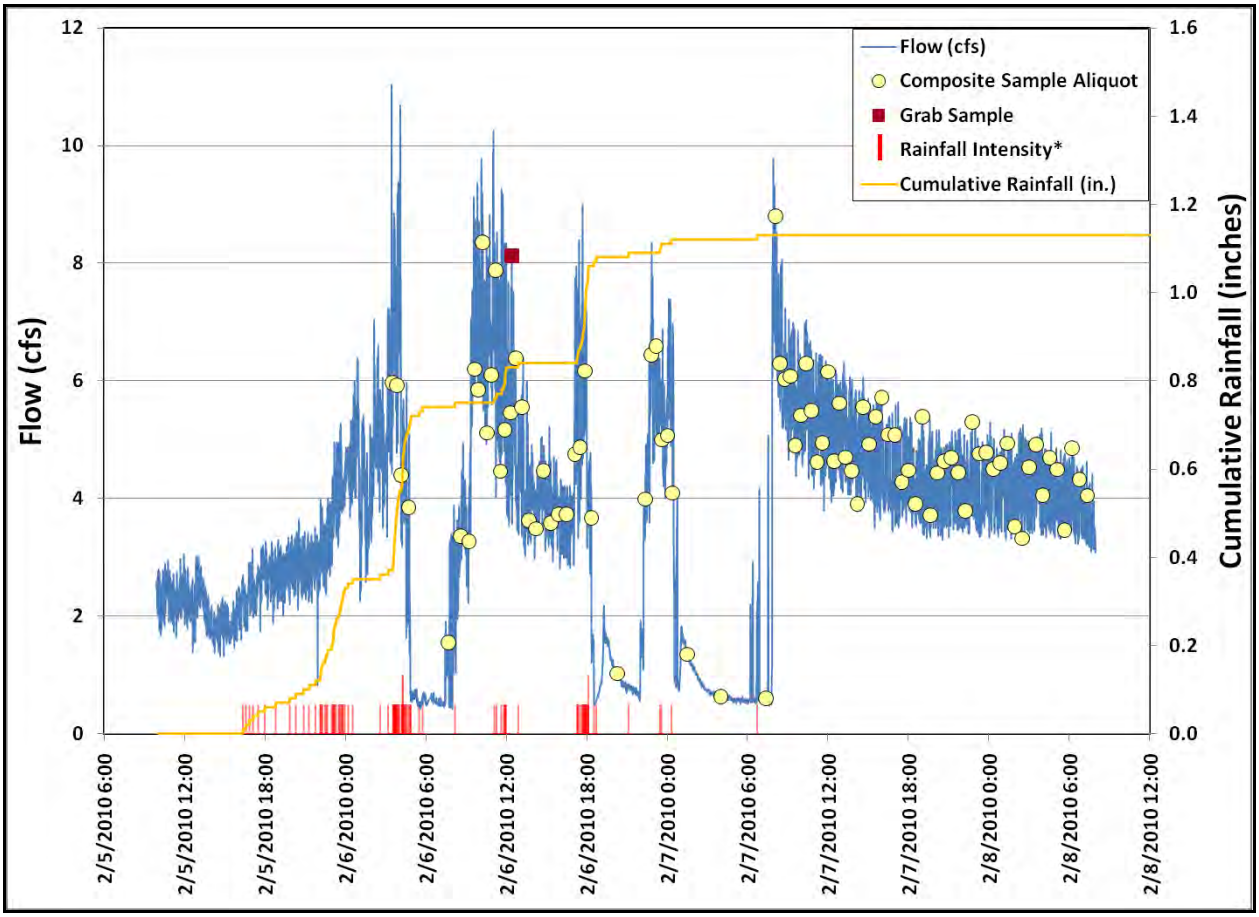

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.1.2 February 20 Wet Weather Event

Rainfall began at 10:26 pm on February 19, 2010 and ended at 9:11 am on February 20 producing 0.44 inches in precipitation. Flow began to increase in response to rainfall at approximately 2:30 am on February 20 and the first sample aliquot was collected at 6:33 am. The last aliquot was taken at 4:26 pm

on February 20 as flow returned to baseline shortly after. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event was 592,604 cubic feet. The event hydrograph is provided in Figure 3-2.

Figure 3-2: Couser Canyon Hydrograph – February 20 Wet Weather Event

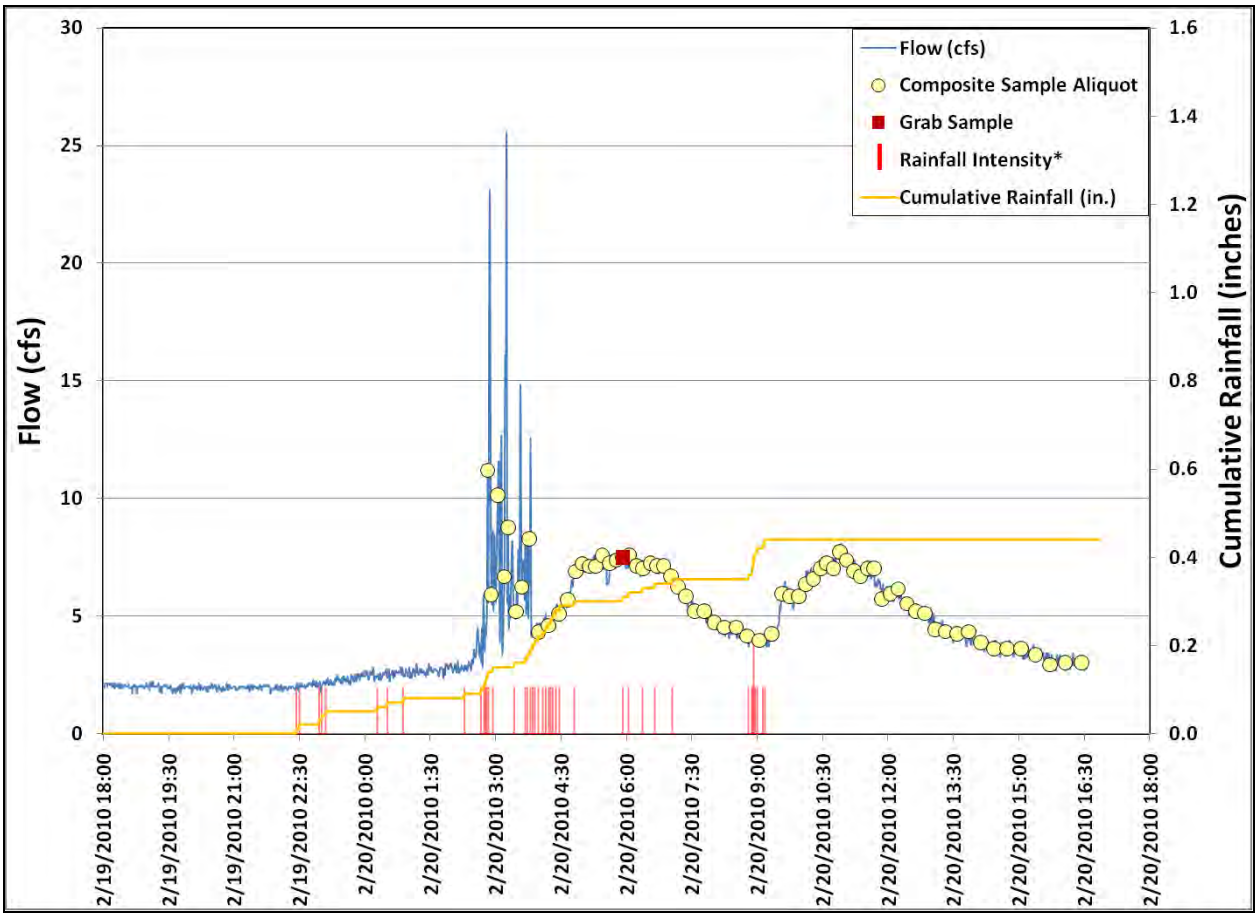

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.1.3 Water Quality and Sediment Testing Results

Water quality analytical laboratory testing results are presented in Table 3-3; Table 3-4 shows the *in-situ* field measurement results. The post-storm sediment sample results are presented in Table 3-5.

None of the 13 synthetic pyrethroids considered were detected in the sediment sample. Simazine was the only herbicide detected in the water samples. The simazine-positive sample was collected during the February 20 Wet Weather Event and the simazine concentration in the sample exceeded the 4,000 ng/L WQO.

Of the remaining water quality constituents, the following nine exceeded their respective WQOs (Table 2-7) during both storms:

- Fecal Coli*f*orm
- Total Coliform
- *Enterococcus*
- Ammonia as Nitrogen
- Total Nitrogen (total N concentrations for storm events one and two equaled 29 mg/L and 27 mg/L, respectively, greatly exceeding the 1.0 mg/L WQO)
- Total Phosphorus
- Total Dissolved Solids
- Total Iron
- Total Manganese

Table 3-6 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-3: Analytical Results for Wet Weather Events at Couser Canyon

Constituent Category	Analyte	Analytical Method	Units	Feb. 6-8 Event	Feb. 20 Event
Microbiology	*Enterococcus*	Enterolert	MPN/100mL	309	2,359
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	800	1,700
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	17,000	50,000
Nutrients and Conventionals	Ammonia as Nitrogen	SM 4500-NH_3 F	mg/L	0.05	0.03J
	Nitrate as Nitrogen	EPA 300.0	mg/L	27.70	24.42
	Nitrite as Nitrogen	EPA 300.0	mg/L	0.03J	0.05
	Total Nitrogen	by Calculation	mg/L	29.02	27.41
	Orthophosphate as Phosphorus	SM 4500-P E	mg/L	0.15	0.11
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	1.29Q9	2.94Q9
	Total Phosphorus	SM 4500-P E	mg/L	0.36	0.36
	Chloride	EPA 300.0	mg/L	183.47	196.15
	Fluoride	EPA 300.0	mg/L	0.32	0.36
	Sulfate	EPA 300.0	mg/L	390.6	401.1
	Total Suspended Solids	SM 2540 D	mg/L	244	261
	Total Dissolved Solids	SM 2540 C	mg/L	1132	1218
	Alkalinity, Bicarbonate	SM 2320 B	mg/L	131.0	137.0
	Alkalinity, Carbonate	SM 2320 B	mg/L	< 1.0	< 1.0
	Alkalinity, Hydroxide	SM 2320 B	mg/L	< 1.0	< 1.0
	Total Hardness as CaCO3	SM 2340 B	mg/L	534.4	609.1
Metals	Boron (B), Total	EPA 200.8m	µg/L	227.3	180.5
	Calcium (Ca), Dissolved	EPA 200.8m	mg/L	88.26	100.40
	Iron (Fe), Total	EPA 200.8m	µg/L	2562	2283
	Magnesium (Mg), Dissolved	EPA 200.8m	mg/L	76.25	87.04

	Manganese (Mn), Total	EPA 200.8m	µg/L	235.9	239.9
	Potassium (K), Dissolved	EPA 200.8m	mg/L	< 5.0	< 5.0
	Sodium (Na), Dissolved	EPA 200.8m	mg/L	189.8	214.8
Herbicides	Atrazine	EPA 625m	ng/L	< 5.0	19.00
	Oxadiazon	EPA 625m	ng/L	< 18.97	< 18.97
	Secbumeton	EPA 625m	ng/L	< 5.0	< 5.0
	Simazine	EPA 625m	ng/L	806.4	4820.9
	Terbuthylazine	EPA 625m	ng/L	< 5.0	< 5.0

Notes when Basin Plan water quality criteria were exceeded.

Notes when California Toxics Rule Criterion Continuous Concentration (CCC) water quality criteria were exceeded.

J qualifier notes when the analyte was detected above the MDL but below the RL. Therefore, the result is considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-4: *In-Situ* Field Measurements for Wet Weather Events at Couser Canyon

Parameter	Units	Feb. 6-8 Event	Feb. 20 Event
Conductivity	uS/cm	1,840	1,780
Dissolved Oxygen	mg/L	9.06	8.59
pH	pH Units	7.67	7.51
Temperature	°C	15.3	13.3
Turbidity	NTU	417	70

Table 3-5: Sediment Analytical Results for February 6-8 Wet Weather Event at Couser Canyon

Constituent Category	Analyte	Analytical Method	Units	Feb. 6-8 Event
Synthetic Pyrethroids	Allethrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Bifenthrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Cyfluthrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Cypermethrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Danitol	EPA 8270CmNCI	ng/dry g	< 0.5
	Deltamethrin	EPA 8270CmNCI	ng/dry g	< 0.5Q9[(a)]
	Esfenvalerate	EPA 8270CmNCI	ng/dry g	< 0.5
	Fenvalerate	EPA 8270CmNCI	ng/dry g	< 0.5
	Fluvalinate	EPA 8270CmNCI	ng/dry g	< 0.5
	L-Cyhalothrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Permethrin	EPA 8270CmNCI	ng/dry g	< 5.0Q9[(a)]
	Piperonyl Butoxide (PBO)	EPA 8270Cm	ng/dry g	< 5.0Q9[(a)]
	Prallethrin	EPA 8270CmNCI	ng/dry g	< 0.5

(a) Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Table 3-6: Mass Loading and Flux Values for the Wet Weather Events at Couser Canyon

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Feb. 20	Units	Feb. 6-8	Feb. 20
Micro -biology	Enterococcus	MPN/ storm event	77,062,081,096	395,856,160,110	MPN/ storm event/ acre	66,720,417	342,732,606
	Fecal Coliform		199,513,478,566	285,271,501,563		172,738,942	246,988,313
	Total Coliform		4,239,661,419,520	8,390,338,281,273		3,670,702,528	7,264,362,148
Nutrients and Conventionals	Ammonia as N	kg/ storm event	1.25	0.50	kg/ storm event/ acre	0.00	0.00
	Nitrate as N		690.82	409.78		0.60	0.35
	Nitrite as N		0.75	0.84		0.00	0.00
	Total N		723.74	459.96		0.63	0.40
	Orthophosphate as P		3.74	1.85		0.00	0.00
	TKN		32.17	49.34		0.03	0.04
	Total P		8.98	6.04		0.01	0.01

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Feb. 20	Units	Feb. 6-8	Feb. 20
	Chloride		4575.59	3291.53		3.96	2.85
	Fluoride		7.98	6.04		0.01	0.01
	Sulfate		9741.25	6730.73		8.43	5.83
	TSS		6085.16	4379.76		5.27	3.79
	TDS		28231.16	20438.86		24.44	17.70
	Alkalinity, Bicarbonate		3267.03	2298.95		2.83	1.99
	Alkalinity, Carbonate		12.47	8.39		0.01	0.01
	Alkalinity, Hydroxide		12.47	8.39		0.01	0.01
	Total Hardness as CaCO3		13327.50	10221.11		11.54	8.85
Metals	Boron (B), Total	g/ storm event	5668.68	3028.91	g/ storm event/ acre	4.91	2.62
	Calcium (Ca), Dissolved		2201132.45	1684779.93		1905.74	1458.68
	Iron (Fe), Total		63894.19	38310.28		55.32	33.17
	Magnesium (Mg), Dissolved		1901612.84	1460590.09		1646.42	1264.58

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Feb. 20	Units	Feb. 6-8	Feb. 20
	Manganese (Mn), Total		5883.15	4025.68		5.09	3.49
	Potassium (K), Dissolved		62347.96	41951.69		53.98	36.32
	Sodium (Na), Dissolved		4733457.28	3604489.33		4098.23	3120.77
Herbicides	Atrazine	mg/ storm event	62.35	318.83	mg/ storm event/ acre	0.05	0.28
	Oxadiazon		236.55	159.16		0.20	0.14
	Secbumeton		62.35	41.95		0.05	0.04
	Simazine		20110.96	80897.96		17.41	70.04
	Terbuthylazine		62.35	41.95		0.05	0.04

3.1.2 Valley Center

Two wet weather events were monitored at Valley Center.

3.1.2.1 February 20 Wet Weather Event

Rainfall began at 8:37 pm on February 19, 2010 and ended at 6:43 am on February 20 producing 0.32 inches in precipitation. Flow began to increase in response to rainfall at approximately 2:30 am on February 20 and the first sample aliquot was collected at 3:14 am. Flow returned to baseline levels and monitoring ended at 3:38 pm on February 20. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event was 24,031 cubic feet. The resulting hydrograph is presented in Figure 3-3.

Figure 3-3: Valley Center Hydrograph – February 20 Wet Weather Event

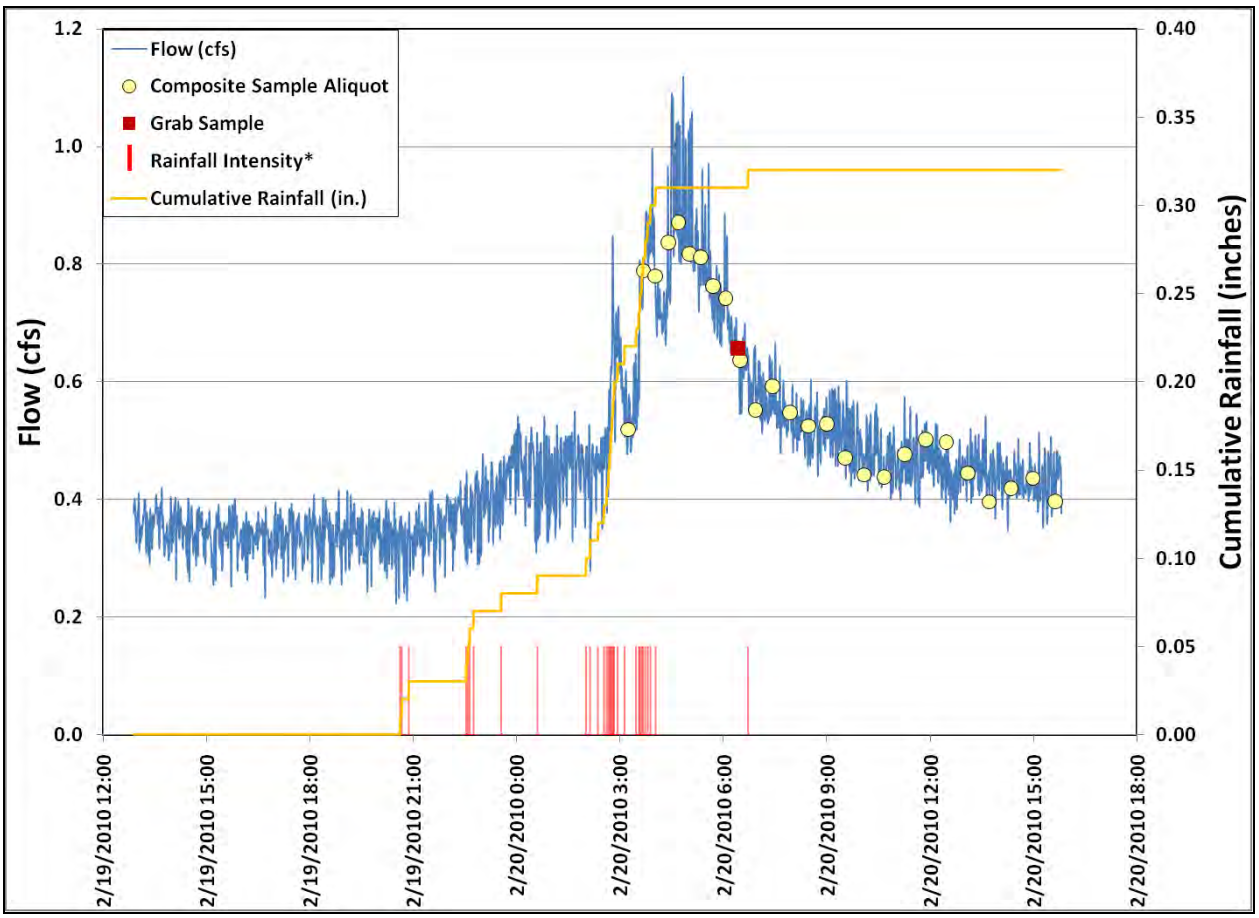

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.2 March 6-7 Wet Weather Event

Rainfall began at 4:16 pm on March 6, 2010 and ended at 9:37 am on March 7 resulting in a total precipitation of 0.14 inches, much less than the forecasted amount. Flow began to increase in response to rainfall at approximately 6:30 pm on March 6 and sampling begun at 8:05 pm. The majority of sampling took place during flows that were only slightly above base flow conditions. Sampling continued for approximately 20 hours. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event equaled 31,189 cubic feet. The resulting hydrograph is presented in Figure 3-4.

Figure 3-4: Valley Center Hydrograph – March 6-7 Wet Weather Event

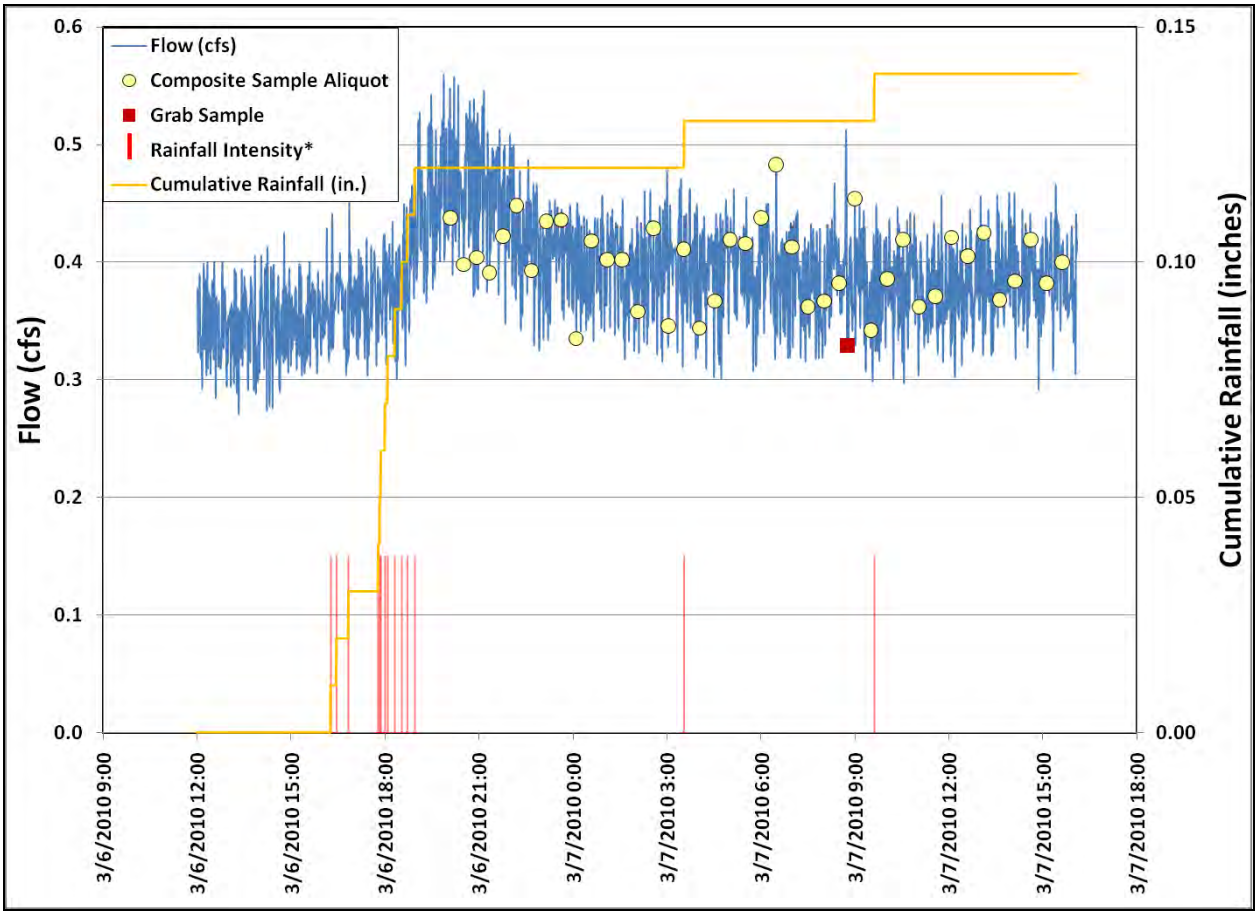

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.2.3 Water Quality Testing Results

Water quality analytical laboratory testing results are presented in Table 3-7; Table 3-8 shows the *in-situ* field measurement results. The following constituents exceeded WQOs for both wet weather events as outlined in Table 2-7:

- *Enterococcus*
- Total Nitrogen
- Total Dissolved Solids

Table 3-9 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-7: Analytical Results for Wet Weather Events at Valley Center

Constituent Category	Analyte	Analytical Method	Units	Feb. 20 Event	March 6-7 Event
Microbiology	Enterococcus	Enterolert	MPN/100mL	355	31
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	230	40
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	3,000	140
Nutrients and Conventionals	Ammonia as Nitrogen	SM 4500-NH_3 F	mg/L	< 0.03	< 0.03
	Nitrate as N	EPA 300.0	mg/L	3.14	3.82
	Nitrite as N	EPA 300.0	mg/L	0.04J	0.03J
	Total Nitrogen	by calculation	mg/L	4.97	4.55
	Orthophosphate as P	SM 4500-P E	mg/L	0.10	0.02
	Total Hardness as CaCO3	SM 2340 B	mg/L	552.5	445.6
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	1.79Q9	0.698J
	Total Phosphorus-Low Range	SM 4500-P E	mg/L	0.048J	0.027J
	Total Suspended Solids	SM 2540 D	mg/L	12	3J
	Total Dissolved Solids	SM 2540 C	mg/L	1272	1368B
Metals	Antimony (Sb), Dissolved	EPA 200.8m	µg/L	0.1J	0.70

Constituent Category	Analyte	Analytical Method	Units	Feb. 20 Event	March 6-7 Event
	Arsenic (As), Dissolved	EPA 200.8m	µg/L	0.2J	0.4J
	Cadmium (Cd), Dissolved	EPA 200.8m	µg/L	< 0.2	< 0.2
	Chromium (Cr), Dissolved	EPA 200.8m	µg/L	0.2J	0.3J
	Copper (Cu), Dissolved	EPA 200.8m	µg/L	1.90	1.20
	Lead (Pb), Dissolved	EPA 200.8m	µg/L	< 0.05	< 0.05
	Lead (Pb), Total	EPA 200.8m	µg/L	0.27	< 0.05
	Nickel (Ni), Dissolved	EPA 200.8m	µg/L	1.30	1.00
	Selenium (Se), Dissolved	EPA 200.8m	µg/L	0.4J	0.3J
	Selenium (Se), Total	EPA 200.8m	µg/L	0.70	< 0.2
	Zinc (Zn), Dissolved	EPA 200.8m	µg/L	7.80	0.90
Organophosphorus Pesticides	Chlorpyrifos	EPA 625m	ng/L	< 1.0	< 1.0
	Diazinon	EPA 625m	ng/L	< 2.0	< 2.0
	Malathion	EPA 625m	ng/L	< 3.0	< 3.0

Notes when Basin Plan water quality criteria were exceeded.

The result for the dissolved fraction is greater than the total fraction for particular constituent. This is typically caused by the analytical variation for each result and indicates that the target parameter is primarily in the dissolved phase.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-8: *In-Situ* Field Measurements for Wet Weather Events at Valley Center

Parameter	Units	Feb. 20 Event	March 6-7 Event
Conductivity	uS/cm	1,890	2,150
Dissolved Oxygen	mg/L	9.94	6.89
pH	pH Units	7.62	7.39
Temperature	°C	12.7	11.1
Turbidity	NTU	19	0

Table 3-9: Mass Loading and Flux Values for the Wet Weather Events at Valley Center

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 20	Mar. 6-7	Units	Feb. 20	Mar. 6-7
Micro -biology	Enterococcus	MPN/ storm event	2,415,711,599	273,783,980	MPN/ storm event/ acre	5,710,902	647,243
	Fecal Coliform		1,565,108,923	353,269,651		3,700,021	835,153
	Total Coliform		20,414,464,219	1,236,443,780		48,261,145	2,923,035
Nutrients and Conventionals	Ammonia as N	kg/ storm event	0.01	0.01	kg/ storm event/ acre	0.0000	0.0000
	Nitrate as N		2.14	3.37		0.0051	0.0080
	Nitrite as N		0.03	0.03		0.0001	0.0001
	Total N		3.38	4.02		0.0080	0.0095
	Orthophosphate as P		0.07	0.02		0.0002	0.0000
	Total Hardness as CaCO3		375.97	393.54		0.8888	0.9304
	TKN		1.22	0.62		0.0029	0.0015
	Total P		0.03	0.02		0.0001	0.0001
	TSS		8.17	2.65		0.0193	0.0063

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 20	Mar. 6-7	Units	Feb. 20	Mar. 6-7
	TDS		865.57	1208.18		2.0463	2.8562
Metals	Antimony (Sb), Dissolved	g/ storm event	0.07	0.62	g/ storm event/ acre	0.0002	0.0015
	Arsenic (As), Dissolved		0.14	0.35		0.0003	0.0008
	Cadmium (Cd), Dissolved		0.07	0.09		0.0002	0.0002
	Chromium (Cr), Dissolved		0.14	0.26		0.0003	0.0006
	Copper (Cu), Dissolved		1.29	1.06		0.0031	0.0025
	Lead (Pb), Dissolved		0.02	0.02		0.0000	0.0001
	Lead (Pb), Total		0.18	0.02		0.0004	0.0001
	Nickel (Ni), Dissolved		0.88	0.88		0.0021	0.0021
	Selenium (Se), Dissolved		0.27	0.26		0.0006	0.0006
	Selenium (Se), Total		0.48	0.09		0.0011	0.0002
	Zinc (Zn), Dissolved		5.31	0.79		0.0125	0.0019
Organo-phosphate Pesticides	Chlorpyrifos	mg/ storm event	0.34	0.44		0.0008	0.0010
	Diazinon		0.68	0.88		0.0016	0.0021
	Malathion		1.02	1.32		0.0024	0.0031

3.1.3 Blossom Valley

The Blossom Valley site was dry early in the wet season and flow appeared only after the majority of rainfall had occurred in the area.

3.1.3.1 February 21-22 Wet Weather Event

Although monitoring equipment for this event was set up on February 20, 2010 (some rainfall occurred on February 20 through early February 21), flow in the creek appeared congruent with the rain event that began at 9:45 pm on February 21 and ended at 9:34 am on February 22; the rain event produced 0.38 inches of precipitation. As flow in the creek began at 10:11 pm on February 21, the first sample aliquot was collected shortly after, at 11:00 pm; the flow ended at 8:43 am on February 22 with the last sample aliquot taken at 7:42 am. All required grab samples and composite sample volumes were successfully collected, resulting in 100-percent capture. The total discharge for the event equaled 4,622 cubic feet. The associated hydrograph is presented in Figure 3-5.

Figure 3-5: Blossom Valley Hydrograph – February 21-22 Wet Weather Event

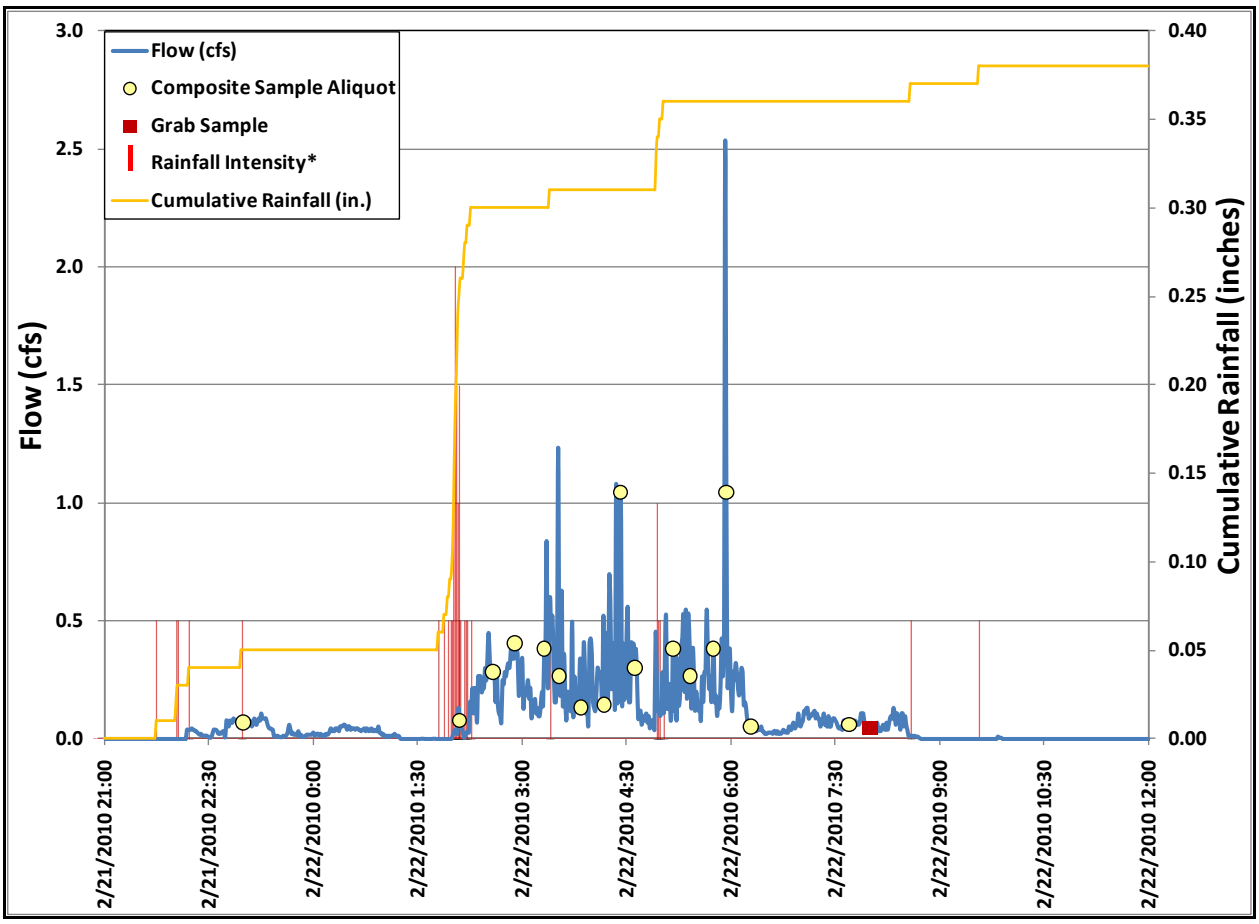

*Rainfall Intensity is not to scale but is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.2 March 7 Wet Weather Event

Rainfall began at 5:24 pm on March 6, 2010 and ended at 5:39 pm on March 7, totaling 0.69 inches in precipitation. Flow began at 9:39 am on March 7 and sampling began at 9:54 am. Sampling ended at 6:12 pm on March 7 and water flow in the creek stopped shortly thereafter (at 6:46 pm on March 7). The required grab and composite samples were successfully collected during this time period. There were some missed sample aliquots due to intake clogging. The intake was subsequently cleared by field crews and sampling resumed normally. Despite the missed samples, the composite sample is considered representative of the monitored event with 88.5 percent capture. The total discharge for the event was 7,648 cubic feet. The corresponding hydrograph is presented in Figure 3-6.

Figure 3-6: Blossom Valley Hydrograph – March 7 Wet Weather Event

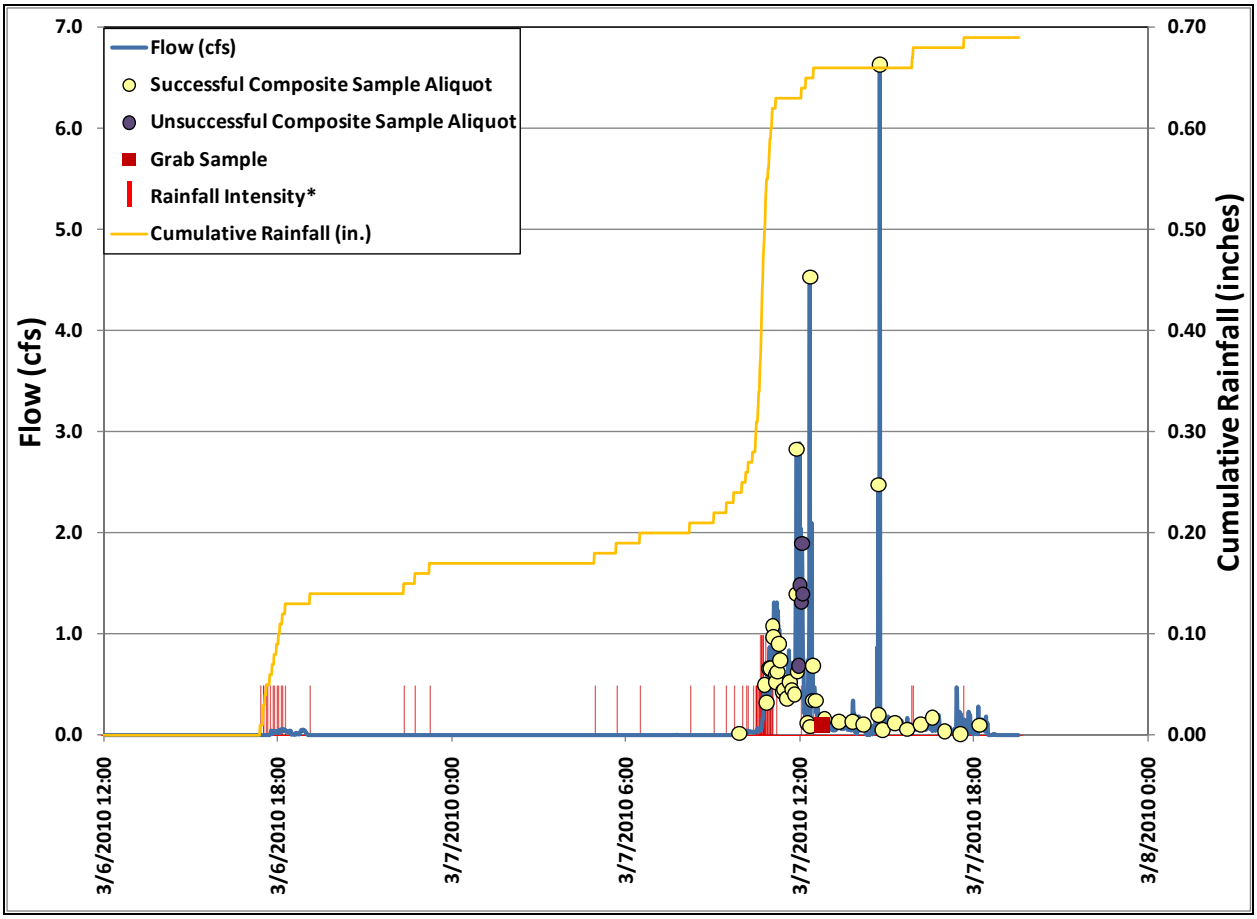

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.3 Water Quality Testing Results

Analytical laboratory testing results are presented in Table 3-8; Table 3-9 shows the *in-situ* field measurement results. For both wet weather events, the following constituents exceeded WQOs, as outlined in Table 2-7:

- Fecal Coliform
- Total Coliform
- *Enterococcus*
- Ammonia as Nitrogen
- Total Nitrogen
- Total Phosphorus
- Total Lead

Table 3-12 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-10: Analytical Results for Wet Weather Events at Blossom Valley

Constituent Category	Analyte	Analytical Method	Units	Feb. 21-22 Event	March 7 Event
Microbiology	*Enterococcus*	Enterolert	MPN/100mL	14,136	9,208
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	8,000	5,000
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	13,000	13,000
Nutrients and Conventionals	Ammonia as N	SM 4500-NH_3 F	mg/L	0.14B	0.08
	Nitrate as N	EPA 300.0	mg/L	1.23	1.72
	Nitrite as N	EPA 300.0	mg/L	0.04J	0.02J
	Total Nitrogen	Calculation	mg/L	4.31	3.92
	Orthophosphate as P	SM 4500-P E	mg/L	0.09	0.15
	Total Hardness as CaCO3	SM 2340 B	mg/L	76.5	88.6
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	3.04	2.18
	Total Phosphorus	SM 4500-P E	mg/L	1.92	1.16
	Total Suspended Solids	SM 2540 D	mg/L	3217	1404
	Total Dissolved Solids	SM 2540 C	mg/L	275	278B
Metals	Antimony (Sb), Dissolved	EPA 200.8m	µg/L	0.3J	0.90
	Arsenic (As), Dissolved	EPA 200.8m	µg/L	< 0.2	0.50
	Cadmium (Cd), Dissolved	EPA 200.8m	µg/L	< 0.2	< 0.2
	Chromium (Cr), Dissolved	EPA 200.8m	µg/L	0.60	0.3J
	Copper (Cu), Dissolved	EPA 200.8m	µg/L	5.10	3.00
	Lead (Pb), Dissolved	EPA 200.8m	µg/L	0.28	< 0.05
	Lead (Pb), Total	EPA 200.8m	µg/L	25.74	15.73
	Nickel (Ni), Dissolved	EPA 200.8m	µg/L	0.90	0.50
	Selenium (Se), Dissolved	EPA 200.8m	µg/L	0.50	0.2J
	Selenium (Se), Total	EPA 200.8m	µg/L	< 0.2	< 0.2

	Zinc (Zn), Dissolved	EPA 200.8m	µg/L	8.40	0.50
Organo-phosphorus Pesticides	Chlorpyrifos	EPA 625m	ng/L	< 1.0	< 1.0
	Diazinon	EPA 625m	ng/L	< 2.0	< 2.0
	Malathion	EPA 625m	ng/L	< 3.0	< 3.0

Notes when Basin Plan water quality criteria were exceeded.

Notes when California Toxics Rule Criterion Continuous Concentration (CCC) water quality criteria were exceeded.

The result for the dissolved fraction is greater than the total fraction for particular constituent. This is typically caused by the analytical variability for each result and indicates that the target parameter is primarily in the dissolved phase.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-11: *In-Situ* Field Measurements for Wet Weather Events at Blossom Valley

Parameter	Units	Feb. 21-22 Event	March 7 Event
Conductivity	uS/cm	534	940
Dissolved Oxygen	mg/L	7.91	7.75
pH	pH Units	7.25	7.55
Temperature	°C	11.6	11.3
Turbidity	NTU	> 800	381-430[(a)]

(a) Turbidity values varied within the noted range.

Table 3-12: Mass Loading and Flux Values for the Wet Weather Events at Blossom Valley.

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Mar. 6-7	Units	Feb. 20	Mar. 6-7
Micro -biology	Enterococcus	MPN/ storm event	18,501,262,530	19,941,511,717	MPN/ storm event/ acre	100,006,824	107,791,955
	Coliform, Fecal/MTF 20		10,470,437,199	10,828,362,140		56,596,958	58,531,687
	Coliform, Total/MTF 20		17,014,460,448	28,153,741,564		91,970,056	152,182,387
Nutrients and Conventionals	Ammonia as N	kg/ storm event	0.02	0.02	kg/ storm event/ acre	0.0001	0.0001
	Nitrate as N		0.16	0.37		0.0009	0.0020
	Nitrite as N		0.01	0.00		0.0000	0.0000
	Total N		0.56	0.85		0.0030	0.0046
	Orthophosphate as P		0.01	0.03		0.0001	0.0002
	Total Hardness as CaCO3		10.01	19.19		0.0541	0.1037
	TKN		0.40	0.47		0.0022	0.0026
	Total P		0.25	0.25		0.0014	0.0014

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Mar. 6-7	Units	Feb. 20	Mar. 6-7
	TSS		421.04	304.06		2.2759	1.6436
	TDS		35.99	60.21		0.1946	0.3254
Metals	Antimony (Sb), Dissolved	g/ storm event	0.04	0.19	g/ storm event/ acre	0.0002	0.0011
	Arsenic (As), Dissolved		0.01	0.11		0.0001	0.0006
	Cadmium (Cd), Dissolved		0.01	0.02		0.0001	0.0001
	Chromium (Cr), Dissolved		0.08	0.06		0.0004	0.0004
	Copper (Cu), Dissolved		0.67	0.65		0.0036	0.0035
	Lead (Pb), Dissolved		0.04	0.01		0.0002	0.0000
	Lead (Pb), Total		3.37	3.41		0.0182	0.0184
	Nickel (Ni), Dissolved		0.12	0.11		0.0006	0.0006
	Selenium (Se), Dissolved		0.07	0.04		0.0004	0.0002
	Selenium (Se), Total		0.01	0.02		0.0001	0.0001
	Zinc (Zn), Dissolved		1.10	0.11		0.0059	0.0006
Organo-phosphate Pesticides	Chlorpyrifos	mg/ storm event	0.07	0.11		0.0004	0.0006
	Diazinon		0.13	0.22		0.0007	0.0012
	Malathion		0.20	0.32		0.0011	0.0018

3.2 DRY WEATHER MONITORING

Dry weather monitoring was conducted from June 2 through June 3, 2010 at the Couser Canyon location only as both Valley Center and Blossom Valley sampling sites were dry. A time-weighted composite sample was collected and analyzed for chemical constituents, *in-situ* field measurements were taken,

and a grab sample was collected for FIB analysis once during the event. The total discharge for the event was 245,390 cubic feet. A hydrograph of the event is provided in Figure 3-7.

Figure 3-7: Couser Canyon Hydrograph – Dry Weather Event

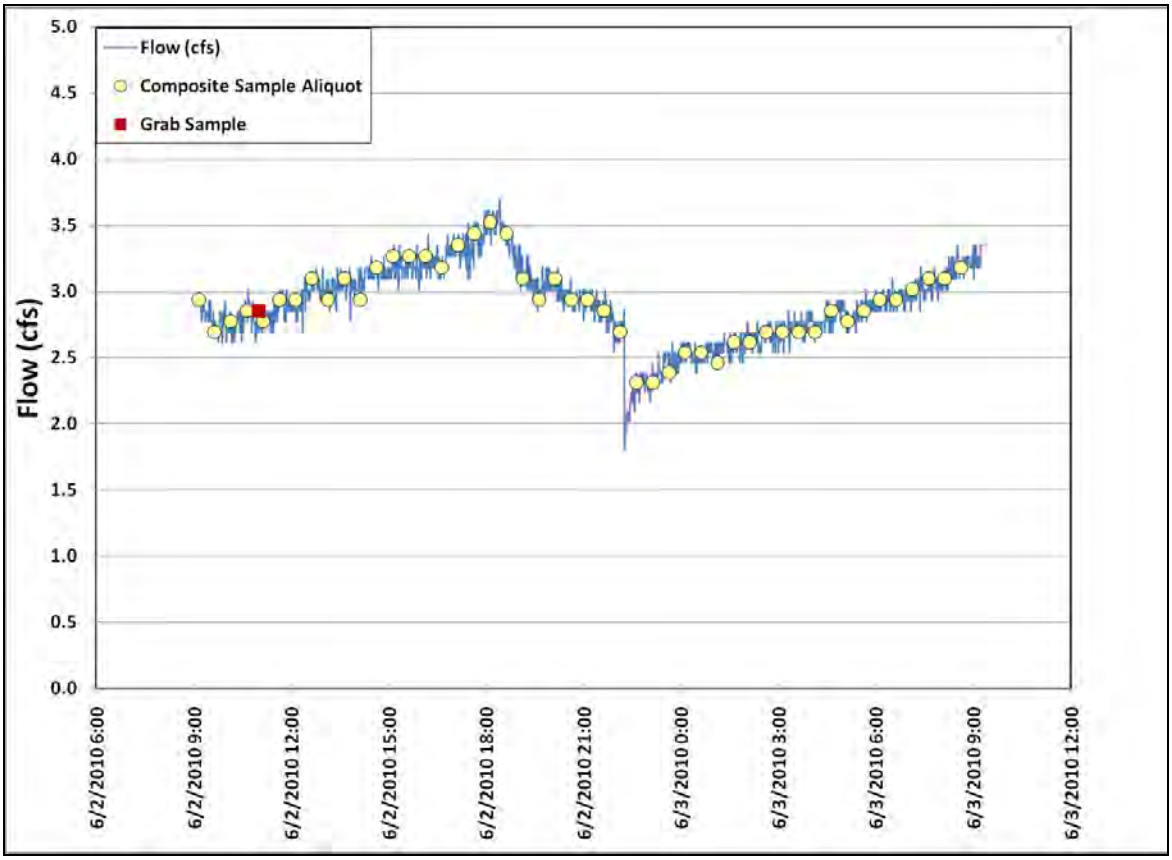

3.2.1 Water Quality Testing Results

Water quality analytical laboratory testing results are presented in Table 3-10; Table 3-11 shows the *in-situ* field measurement results. The following constituents exceeded WQOs (Table 2.7)for the single dry weather event as outlined in Table 3-10:

- Total Nitrogen
- Total Phosphorus
- Ammonia as Nitrogen

- *Enterococcus*
- Total Dissolved Solids

Simazine was the only herbicide detected in the composite water sample.

Table 3-12 shows the mass loading (calculated for the entire non-storm event) and flux (loading per drainage area in acres) of each constituent.

Table 3-10: Analytical Results for the Dry Weather Event at Couser Canyon

Constituent Category	Constituent	Method	Units	Dry Weather Event
Microbiology	*Enterococcus*	Enterolert	MPN/100 ml	426
	Coliforms, Fecal	SM 9221 B, E	MPN/100 ml	230
	Coliforms, Total	SM 9221 B, E	MPN/100 ml	2800
Nutrients and Conventionals	Ammonia as N	SM 4500 NH_3 B,C	mg/l	0.14 QM-05
	Nitrate as N	SM 4500 NO_3 E	mg/l	24.9J
	Nitrite as N	SM 4500 NO_2 B	mg/l	0.3J
	Total Nitrogen	by calculation	mg/L	25.35
	Orthophosphate as P	SM 4500 P E	mg/l	0.22
	Total Kjeldahl Nitrogen	SM 4500 N C	mg/l	< 0.3
	Phosphorus, Total	SM 4500 P B, E	mg/l	0.26
	Chloride	SM 4500 Cl C	mg/l	214
	Fluoride	SM 4500 F C	mg/l	0.229
	Sulfate as SO4	SM 4500 SO_4 E	mg/l	441
	Total Suspended Solids	SM 2540 D	mg/l	6J
	Total Dissolved Solids	SM 2540 C	mg/l	1,210
	Alkalinity, Bicarbonate	SM 2320B	mg CaCO3/L	152
	Alkalinity, Carbonate	SM 2320B	mg CaCO3/L	< 5
	Alkalinity, Hydroxide	SM 2320B	mg CaCO3/L	< 5
	Hardness ,Total	EPA 200.7	mg CaCO3/L	582
Metals	Boron, Total	EPA 200.7	mg/l	< 0.25 QM-06
	Calcium, Dissolved	EPA 200.7	mg/l	112 QM-4X
	Iron, Total	EPA 200.8	mg/l	0.084 QR-02, QM-06
	Magnesium, Dissolved	EPA 200.7	mg/l	73.7 QM-4X

	Manganese, Total	EPA 200.8	mg/l	0.044 QM-4X
	Potassium, Dissolved	EPA 200.7	mg/l	< 10 QM-4X
	Sodium, Dissolved	EPA 200.7	mg/l	185 QM-4X
Herbicides	Atrazine	EPA 625(m)	ng/L	< 5.05
	Oxadiazon	EPA 625 (M)	ng/L	< 5.05
	Secbumeton	EPA 625(m)	ng/L	< 5.05
	Simazine	EPA 625(m)	ng/L	50.5
	Terbuthylazine	EPA 625(m)	ng/L	< 19.2

Notes when Basin Plan water quality criteria were exceeded.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

QR-02 qualifier indicates that the RPD for the associated laboratory sample duplicate pair exceeded the DQO of ± 30% due to sample non-homogeneity. The results were accepted by the laboratory because the corresponding LCS/LCSD percent recoveries and RPD values fell within DQOs. Note: This qualifier is associated with laboratory duplicate data during laboratory QA/QC procedures and was added to this primary data table.

QM-4X qualifier indicates that the spike recovery was outside of the QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

QM-05 qualifier indicates that the spike recovery was outside acceptance limits (low in this case) for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control (retrieving reliable results) and the data is acceptable. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

QM-06 qualifier indicates that due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

Values with a "<" symbol were not detected at or above the MDL and are therefore noted as less than the MDL. Some detection limits were increased from those stated in the QAPP due to dilutions required by the laboratory.

Table 3-11: *In-Situ* Field Measurements for the Dry Weather Event at Couser Canyon

Parameter	Units	Dry Weather Event
Conductivity	uS/cm	0.202

Dissolved Oxygen	mg/L	9.52
pH	pH Units	7.82
Temperature	°C	17.8
Turbidity	NTU	73

Table 3-12: Mass Loading and Flux Values for the Dry Weather Event at Couser Canyon

Constituent Category	Analyte	Mass Loading		Flux	
		Units	Value	Units	Value
Micro -biology	Enterococcus	MPN/ 24h event	29,601,338,405	MPN/ storm event/ acre	25,628,864
	Fecal Coliform		15,981,943,271		13,837,180
	Total Coliform		194,562,787,641		168,452,630
Nutrients and Conventionals	Ammonia as N	kg/ 24h event	0.97	kg/ storm event/ acre	0.001
	Nitrate as N		173.02		0.150
	Nitrite as N		2.08		0.002
	Total N		176.15		0.153
	Orthophosphate as P		1.53		0.001
	TKN		10.42		0.009
	Total P		1.81		0.002
	Chloride		1487.02		1.287
	Fluoride		1.59		0.001
	Sulfate		3064.36		2.653

Constituent Category	Analyte	Mass Loading		Flux	
		Units	Value	Units	Value
	TSS		41.69		0.036
	TDS		8407.89		7.280
	Alkalinity, Bicarbonate		1056.20		0.914
	Alkalinity, Carbonate		17.37		0.015
	Alkalinity, Hydroxide		17.37		0.015
	Total Hardness as CaCO3		4044.13		3.501
Metals	Boron (B), Total	g/ 24h event	868.58	g/ storm event/ acre	0.75
	Calcium (Ca), Dissolved		778251.15		673.81
	Iron (Fe), Total		583.69		0.51
	Magnesium (Mg), Dissolved		512117.05		443.39
	Manganese (Mn), Total		305.74		0.26
	Potassium (K), Dissolved		34743.35		30.08
	Sodium (Na), Dissolved		1285504.13		1112.99
Herbicides	Atrazine	mg/ 24h event	17.55	mg/ storm event/ acre	0.015
	Oxadiazon		17.55		0.015
	Secbumeton		17.55		0.015
	Simazine		350.91		0.304
	Terbuthylazine		66.71		0.058

4.0 SUMMARY OF KEY FINDINGS

Of the three locations monitored, Couser Canyon dominated by agricultural land uses while spaced rural residential is the dominant landuse at Blossoom Valley (Fig. 2-2). The Valley Center site is influenced by both landuse types, At Couser Canyon, the great majority of drainage area (75%) is occupied by orchards and vineyards. Twenty three percent of Valley Center drainage area is occupied by orchards.

For the 2009-2010 monitoring season, precipitation totals for the study areas were within the average range for San Diego County. Based on site visits during the project period, it was observed that Couser Canyon is a perennial stream, Blossom Valley is an ephemeral stream, and Valley Center appears to be an intermittent stream. The monitored events met the criteria defined in the QAPP and the composite samples collected were representative of site conditions during each event.

It must be noted that the findings of this study are preliminary as results are based on only six wet weather samples collected at three locations over three storm events, one post-storm sediment sample collected at one location, and one dry weather sample also collected at only one location. Due to the fact that dry weather samples and the sediment samples were collected at only one of the three locations, Couser Canyon, comparisons among locations of sediment and dry weather loads and concentrations for different constituents analyzed could not be made. Also, some of the constituents monitored at Couser Canyon, including boron, calcium, iron, magnesium, manganese, potassium and sodium, were not included in the analysis for the other two locations while samples collected at Blossom Valley and Valley Center were tested for a suite of metals including antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium and zinc; these metals were not included in the Couser Canyon analysis. For this reason, wet weather results comparisons for these constituents between Couser Canyon and the remaining two sites were not possible.

With this in mind, a summary of key findings for each sampling location as characterized by its land use composition is provided below.

4.1 AGRICULTURAL LAND USE – COUSER CANYON

At the predominantly agricultural Couser Canyon site, all wet weather samples exceeded WQO for all FIB species considered (*Enterococcus*, fecal coliform, and total coliform) while the dry weather sample exceeded WQO only for *Enterococcus*. As expected, bacteria loads and flux were higher during the storm events than for the non-storm flows (data available for Couser Canyon only) and, with the exception of *Enterococcus*, Couser Canyon had the highest bacteria loads (flux) of the three locations sampled.

Samples from Couser Canyon exceeded WQOs during all monitored events for TDS and nutrients including total nitrogen, ammonia as nitrogen, and total phosphorus. The total nitrogen and total phosphorus loads were two to five times higher during storm events than during non-storm conditions; the total suspended solids loads were 105 to 146 times higher, and the total dissolved solids loads were two to three times higher. Also, when compared to the other two locations, Couser Canyon had the highest wet weather total nitrogen, total phosphorus, TSS, and TDS loads whether considered for the entire drainage area or on the per-acre basis (as flux).

All metal and mineral samples collected at Couser Canyon during dry weather met the associated WQOs while, during storms, iron and total manganese exceeded WQOs. With the exception of sodium and potassium, mass loadings of all metals and minerals analyzed were higher during storms than during non-storm conditions. Correspondingly, TDS loads were also higher in the wet weather samples while TDS concentrations were about the same during both wet and dry weather and, as mentioned above, they exceeded the Basin Plan WQO.

Of the five herbicides analyzed one, Simazine, was detected in all samples, and exceeded the WQO during the February 20 storm event. The mass loading of Simazine was 230 times higher in the sample collected during the February 20 storm event than in that taken during non-storm conditions. It was 57 times higher in the February 6-8 storm event sample. Loads of the remaining four herbicides were not compared as their concentrations were below the method detection limits.

A post-storm sediment sample from the February 6-8 storm event at Couser Canyon was tested for thirteen synthetic pyrethroids. None were detected.

4.2 RURAL RESIDENTIAL LAND USE – BLOSSOM VALLEY

At the predominantly rural residential Blossom Valley location, all wet weather samples exceeded WQO for all FIB species. *Enterococcus* flux was highest at the Blossom Valley site when compared among sites within the same storms.

Samples from Blossom Valley exceeded WQOs during all monitored events for nutrients including total nitrogen, ammonia as nitrogen, and total phosphorus. Also, of the three locations sampled, Blossom Valley had the highest TSS concentrations of 3,217 mg/L and 1,404 mg/L.

All Blossom Valley samples met the associated WQOs for antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium and zinc with the exception of lead whose concentrations exceeded the CTR WQO during both storm events. Lead had a total loading of approximately 3.4 grams at Blossom Valley over each of the monitored storm events.

4.3 RURAL RESIDENTIAL AND AGRICULTURAL LAND USES – VALLEY CENTER

At Valley Center, only *Enterococcus* counts exceeded the 104 MPN/100ml WQO and only during one of the storms monitored (the February 20 storm event). On per acre basis, Valley Center had the lowest wet weather bacteria loads (flux) of the three locations sampled. While samples collected at the site exceeded the WQO for TDS and total nitrogen, ammonia as nitrogen was not detected in the samples and total phosphorus was detected below the reporting limit. Valley Center also had the lowest TSS concentrations of 3 mg/L and 12 mg/L.

All samples from Valley Center met the associated WQOs for antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium, and zinc and no organophosphate pesticides were detected during the monitored events.

5.0 REFERENCES

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APPENDIX A
DATA QUALITY REPORT

Generally, project data met the data quality objectives (DQOs) for precision, accuracy, representativeness and completeness as outlined in the QAPP (Appendix B) (Table A-1) and the equipment blanking results showed zero contamination (Table A-2). Details regarding the DQO assessment are discussed below.

Table A-1: Project Analytical DQO Achievement Summary

DQO Measurement	Number of Values Out of DQO Acceptance Range	Total Number of DQO Measurements	Achievement Percent
Precision	2[(a)]	160	99%
Accuracy	23	485	95%
Representativeness	0[(b)]	7	100%
Completeness	NA	NA	100%

(a) Three RPD values were greater than 30 percent; however, the results for all three were less than 10 times the MDL, resulting in a Q3 qualifier noting that the RPD values are considered not to be accurate and, therefore, not applicable to the quality of the data.

(b) Composite samples collected during this monitoring program met the acceptance criteria based on rainfall and number of aliquots as outlined in Section 4.3 below.

NA = Not applicable to this DQO measurement as completeness is measured as a percentage of actual measurements out of the number of planned measurements. There is not a range by which a single measurement collection is considered accepted. This DQO measurement does not have a specified acceptance range by which a single measurement is considered collected.

Table A-2: Project Equipment DQO Achievement Summary

DQO Measurement	Number of Values Out of Range	Total Number Values	Achievement Percent
Equipment Blanking Results[(a)]	0	493	100%

(a) Equipment Blanks included Teflon tubing, silicon tubing, and 19-L sample containers.

A.1 PRECISION

The precision objectives outlined in the QAPP apply to field and laboratory duplicate and split samples. Precision measures how well repeated measurements agree and is expressed as the RPD.

For this project, precision was measured by assessing field duplicate samples collected for bacteria, laboratory duplicates, blank spike duplicates, and matrix spike duplicates. All but two duplicate pairs met the DQO of RPD < ± 30%. The two pairs included laboratory duplicates and matrix spike duplicates for total iron from the dry weather event. For the laboratory duplicate pair, the DQO exceedance was attributed to sample non-homogeneity by the analytical laboratory; for the matrix spike duplicate pair, the exceedance was attributed to the QC sample matrix non-homogeneity by the analytical laboratory. The results were accepted by the laboratory because the corresponding LCS/LCSD percent recoveries and RPD values fell within DQOs. In Table 3-10, the total iron results have been flagged to reflect this finding.

Three other RPD values fell outside the DQOs but the exceedances were not considered valid because primary sample and/or duplicate sample concentrations were lower than 10 times the corresponding MDLs per laboratory data qualifier Q3. The three RPD exceedances included the dissolved selenium result from February 21-22 Wet Weather Event at Blossom Valley, and dissolved selenium and nitrite concentrations form March 6-7 Wet Weather Event at Valley Center. For the Valley Center results, selenium and nitrate concentrations were also J-flagged meaning that the analytes were detected above MDLs, but below RLs.

In conclusion, 99% of the results met the project DQOs for precision as summarized in Table A-1.

A.2 ACCURACY

Accuracy is the degree of agreement between an observed value and a "true" value or an accepted reference (e.g., standard); accuracy is evaluated by analyzing samples of known concentration (Laboratory Control Samples) or by adding a known concentration of analyte of interest to field-collected samples (Matrix Spike Samples). Accuracy may further be assessed with field and laboratory blank samples. Accuracy of laboratory control samples and matrix spike samples is expressed as percent recovery. The percent recovery DQO for all chemical constituents analyzed in this project was set at ±20 percent and the overall accuracy quality objective achievement for this project was 95 percent as summarized in Table A-1.

All laboratory blank results were non-detect. One field blank was collected and analyzed for FIB analyses and all results were non-detect. Equipment blanks were conducted once per batch for Teflon tubing, silicone tubing, and 19-L sample containers. Overall 100 percent of equipment blanks met the DQOs, all equipment blank results were non-detects. In one batch of Teflon tubing there was a detection of zinc just above the RL. The laboratory was requested to re-run the analyses and zinc was not detected at or above the MDL in the primary or laboratory duplicate sample.

All spiked samples, with the exception of fourteen specific results, met the DQOs for recovery within a range of 80 to 120 percent. A description of the fourteen results that were outside of the ±20 percent recovery range is provided below:

- Four matrix spikes and four matrix duplicates of calcium, magnesium, potassium, and sodium samples associated with the dry weather event at Couser Canyon had low recoveries. These eight results were qualified due to analyte concentrations at four times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits. The primary results associated with these QA/QC issues were noted with a QM-4X qualifier in the primary data table.
- One matrix spike and one matrix duplicate of ammonia samples associated with the dry weather event at Couser Canyon had low recoveries. The spike recoveries were outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control by retrieving reliable results and the data are acceptable. The primary result associated with these QA/QC issues was noted with a QM-05 qualifier in the primary data table.
- Two matrix spikes and two matrix spike duplicates of total boron and total iron samples associated with the dry weather event at Couser Canyon had recoveries outside of the acceptance limits due to noted non-homogeneity of the QC sample matrix. The MS/MSD did not provide reliable results for accuracy and precision and the sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values. The primary results associated with these QA/QC issues were noted with a QM-06 qualifier in the primary data table.
- Low blank spike and/or blank spike recoveries occurred on three occasions with water analyses and three occasions with sediment analyses. For the water analyses, these three occasions all occurred with TKN analysis on two batches. One batch had low recovery of both the blank spike and the blank spike duplicate samples and was associated with the first wet weather event at Couser Canyon. The second batch had low recovery of the blank spike sample and was associated with the second wet weather event at Couser Canyon and the first wet weather event at Valley Center. For the sediment analyses, the three occasions occurred with Permethrin, Piperonyl Butoxide, and Deltamethrin, all associated with one analytical batch. This batch had low recovery of the blank spike samples for Permethrin and Piperonyl Butoxide and low recovery of the blank spike duplicate sample for Deltamethrin. This batch was associated with the sediment sample collected during the first wet weather event at Couser Canyon. The results associated with these batches are qualified in the analytical results tables (Tables 2-5, 2-7, and 2-8) with a Q9 qualifier. This qualifier notes that the recovery of the blank spike and/or blank spike duplicate compound was below the DQO of 80 percent for water samples, and 49 to 65 percent for the designated sediment samples, and, therefore, the results for these compounds may be biased low. It should be noted that the recoveries for the three occasions

for water analyses ranged from 72 to 78 percent, and from 48 to 62 percent for the three sediment analysis occasions, all of which are just outside of the DQOs. Although the data are qualified, the effects of these low recoveries are minimal on the true quality and accuracy of the data.

4.3 REPRESENTATIVENESS

Representativeness describes the degree to which the results of analyses represent the samples collected, and the degree to which the samples in turn represent the environment from which they were taken. Representativeness of the sample locations and storm events was addressed by collecting flow-weighted composite samples. Although there is no prescribed DQO for representativeness, general industry standards for percent capture DQOs vary based on rainfall amounts as summarized in Table A-3 (Caltrans, 2003).

Table A-3: Monitoring Event Representativeness Requirements

Total Event Precipitation (in.)	Minimum Acceptable Number of Aliquots	Percent Capture Requirement
0 - 0.25	6	85
0.25 - 0.5	8	80
0.5 - 1.0	10	80
> 1.0	12	75

For this project, representativeness was measured by assessing percent capture during all sampling events at all sites. Composite samples collected throughout this monitoring program met the representativeness requirements outlined in Table A-3 in order to be considered acceptable samples. The overall representativeness quality objective achievement for this project was 100 percent and is summarized in Table A-1.

A.4 COMPLETENESS

Completeness is the percentage of actual measurements that are judged to be valid, over the planned overall measurements. An invalid measurement is one that does not meet the sampling method requirements and the data quality objectives. Data loss may also occur due to adverse weather conditions, safety concerns, and equipment problems. For the present project, the DQO for completeness was set at 90 percent.

For this project, all planned samples were collected and all planned analyses were performed. The overall completeness quality objective achievement for this project was 100 percent and is summarized in Table A-1.

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN (QAPP) FOR LAND USE WATER QUALITY SAMPLING IN THE SAN LUIS REY AND SAN DIEGO WATERSHEDS

(Available on request)

APPENDIX C

TASK ORDER STOP-WORK NOTIFICATION

(Available on request)

APPENDIX D

FIELD DATA SHEETS

(Available on request)

APPENDIX E

LABORATORY ANALYTICAL RESULTS

(Available on request)

APPENDIX E

ACTIVITY A-83 SUPPORTING DOCUMENTATION: SAN DIEGO RIVER AND SAN LUIS REY WATERSHEDS LAND USE MONITORING REPORT 2011-12

San Diego River and San Luis Rey Watersheds
Land Use Monitoring Report 2011-12

County of San Diego

November 2012

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List of Abbreviations

County	County of San Diego
Cfs	cubic feet per second
EnviroMatrix	EnviroMatrix Analytical, Inc.
FC	Flow Composite
HD	Hydrograph Discrete
MLS	Mass Loading Stations
PSD	Post Storm Discrete
SWAMP	Surface Water Ambient Monitoring Program

Section 1
Introduction

1.1 Purpose and Scope

The purpose of this study was to provide water quality, flow, and visual observation data of the receiving waters at predetermined mass loading stations (MLS) over three wet weather events. The data may be used to assist in watershed modeling and/or to characterize the storm water quality that may be associated with the agricultural and rural residential land uses.

1.1.1 Sampling Stations

Table 1-1 lists the two sites and their respective GPS coordinates. Pie diagrams showing land use compositions of the drainage areas associated with the monitoring locations are presented in Figure 1-1.

Table 1-1. Approximate GPS Locations of Watershed Monitoring Sites

Site	Watershed	Datum NAD 83 GPS Coordinates
Blossom Valley – 10125 Hawley Road	San Diego River	N 32° 51' 57.34" W 116°50' 2.16"
Double Canyon Creek at Couser Canyon Road	San Luis Rey	N 33° 19' 54.34" W 117°7' 29.39"

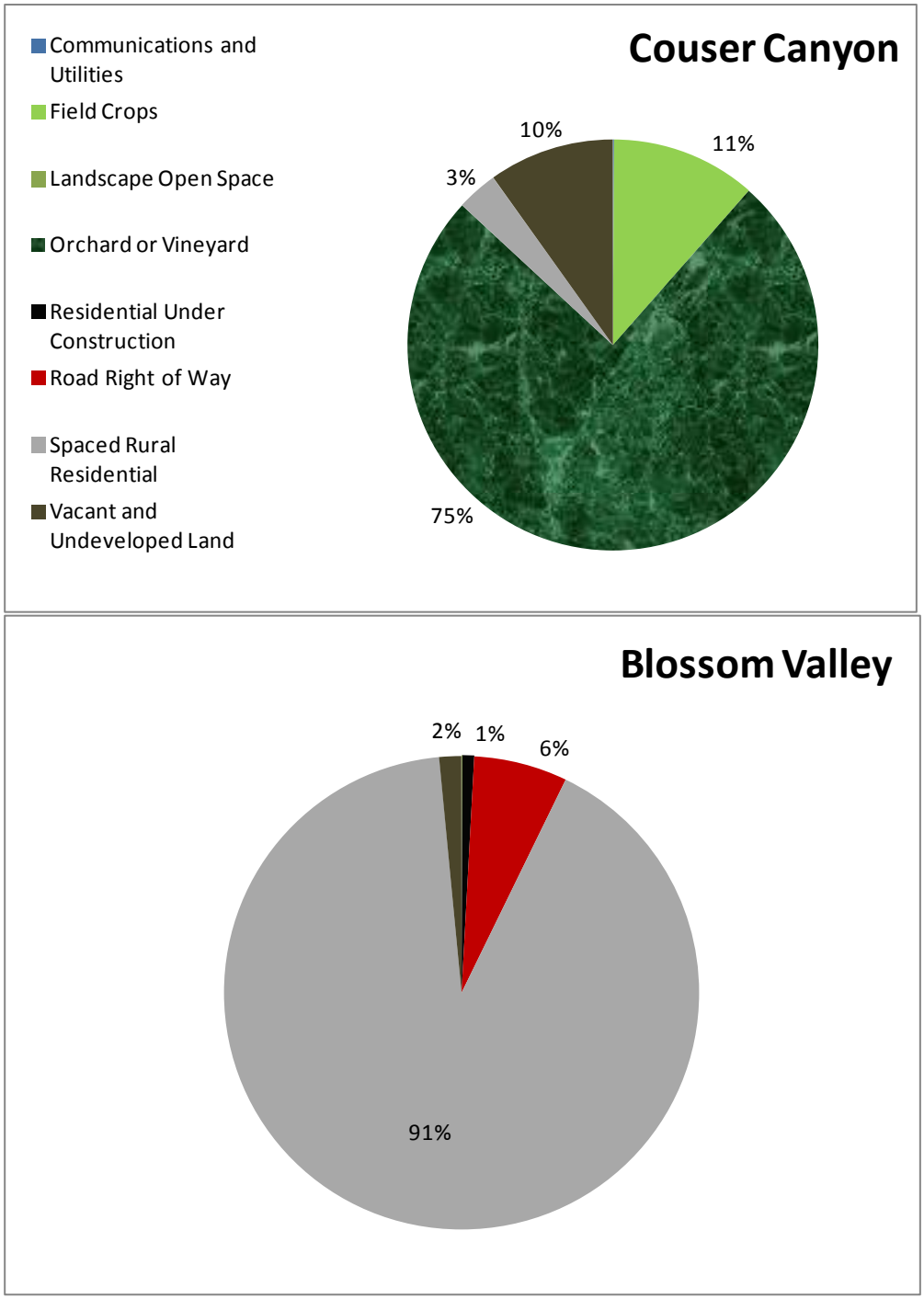

Figure 1-1. Drainage Area Land Use Compositions of the Two Monitoring Locations

1.1.1.1 Couser Canyon

The Couser Canyon monitoring site is located within the San Luis Rey River (SLR) Watershed and drains approximately 1,155 acres. It was established at the north-western edge of the Monserate sub-basin on Couser Canyon Road, approximately 1.1 miles south of Highway 76. The drainage area associated with the site is dominated by agriculture including orchards and vineyards (75%) and field crops (11%) with the remaining 13% being composed of vacant and undeveloped land (10%) and spaced rural residential land use areas (3%) (Figures 1-1 and 1-2).

The water quality monitoring equipment for the site was installed on County property near the downstream end of two 24-inch concrete pipes that run below Couser Canyon Road. The two culverts are of relatively new construction and have replaced the two 18-inch corrugated steel culverts present during previous studies. A data logging pressure transducer was installed within the southern concrete culvert where flow exits on the right. The device provided continuous water level measurements in the pipe, stream flow data and peak flow information. A sampling strainer was installed at a location just adjacent to the data logging equipment, but not so close as to interfere with the flow monitoring efforts.

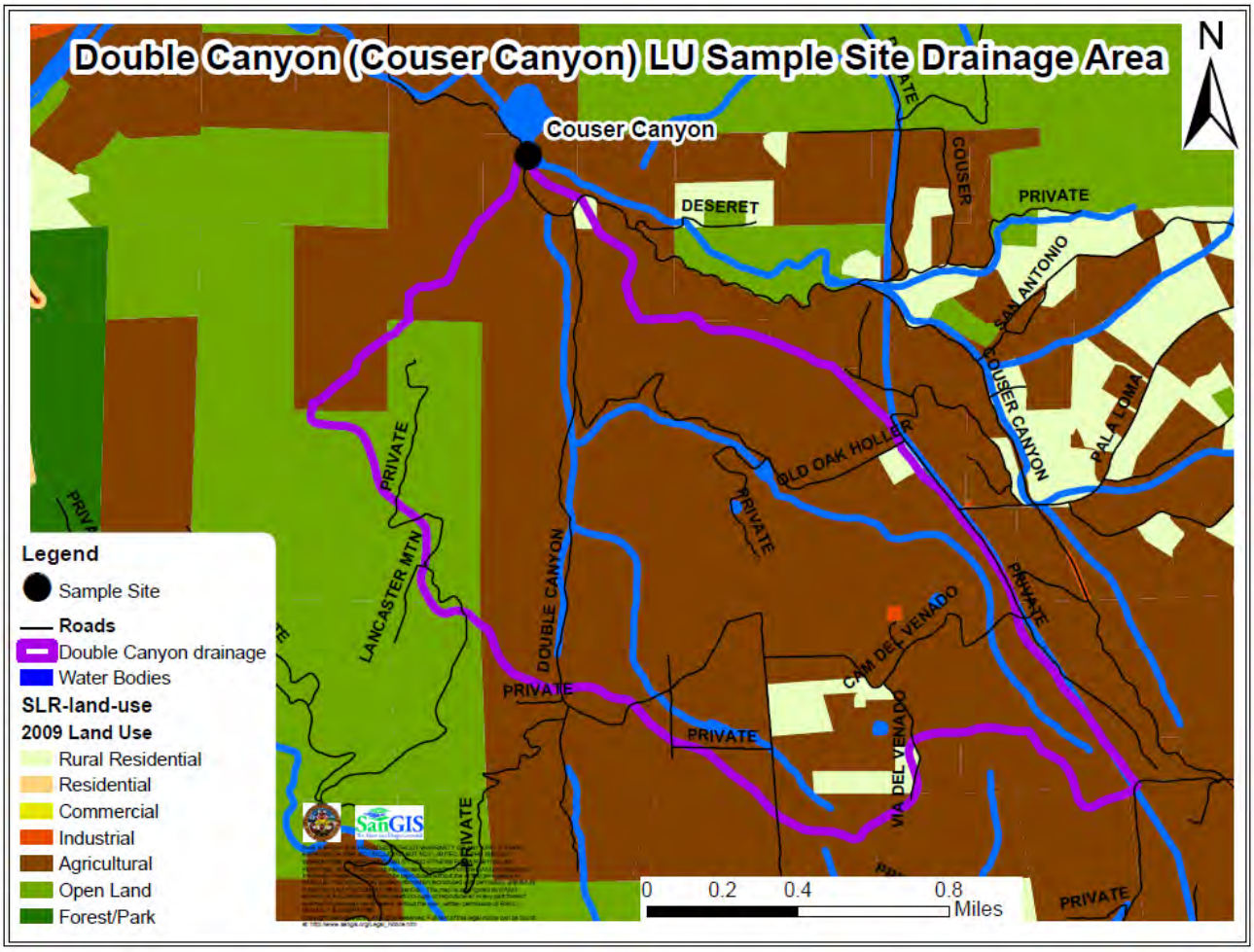

Figure 1-2. Drainage Area and Land Use Composition at Couser Canyon.

1.1.1.2 Blossom Valley

The Blossom Valley monitoring site, draining approximately 185 acres, is located within the San Diego River (SDR) Watershed on Hawley Road, approximately 0.65 miles north of Old Highway 60. The site, set near the eastern edge of the Lower San Diego sub-basin, targets runoff from spaced rural residential land use (91%) (Figs 1-1 and 1-3).

The water quality monitoring equipment for the site was installed on County property adjacent to the energy dissipation structure and a single 36-inch concrete pipe outlet that runs below Hawley Road. A data logging pressure transducer was installed within the 36-inch concrete pipe to continuously measure water level, and stream flow. A sampling strainer was installed at a location just adjacent to the data logging equipment, but not so close as to interfere with the flow monitoring efforts.

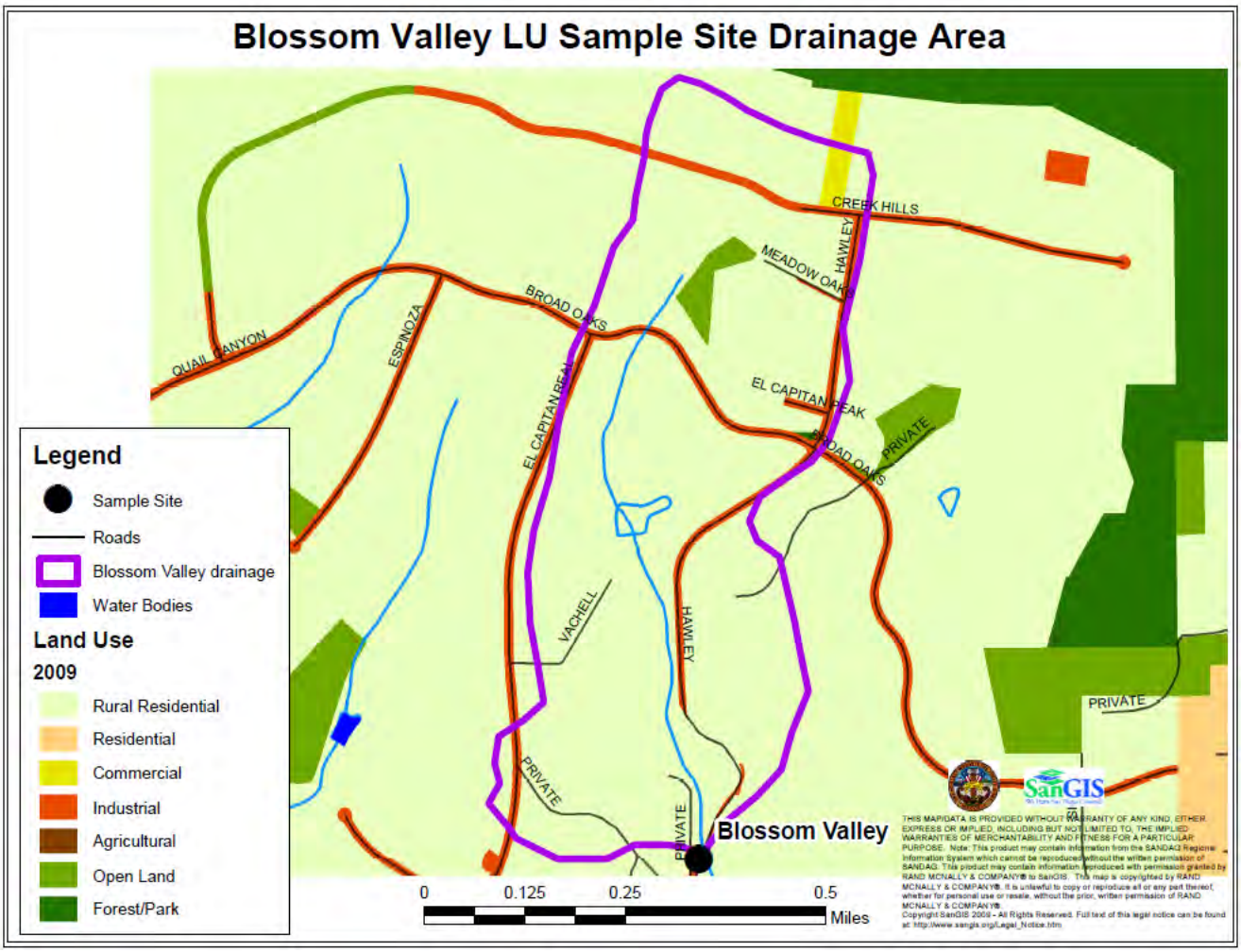

Figure 1-3. Drainage Area and Land Use Composition at Blossom Valley.

1.1.2 Monitoring Methods

Three storm events were monitored at both locations beginning in November 2011 and ending in January 2012. The equipment installation and storm event monitoring dates are shown in Table 1.2,

Table 1-2. Installation Schedule and Sampling Event Record

Activity	2010 Sampling Event Record
Site Assessment	10/07/2011 – 10/13/2011
Blossom Valley Site Installation	10/25/2011 - 11/03/2011
Couser Canyon Site Installation	10/27/2011 - 11/03/2011
First Storm Event Monitoring	11/12/2011 – 11/15/2011
Second Storm Event Monitoring	12/11/2011 – 12/13/2011
Third Storm Event Monitoring	1/21/2012 – 1/24/2012

Monitoring was conducted for the duration of each storm and the additional 72 hr following the end of the storm. Rain gauges (Hatch750) were installed at each sampling site to monitor precipitation.

1.1.2.1 Weather Tracking and Baseline Flow Measurements

In order to improve the probability of a successful storm capture, a qualifying event was defined as having quantitative precipitation forecast of at least 0.25 inches over a 24-hour period. Sampling did not occur if baseline flow remained steady.

Baseline flow was observed at the Couser Canyon site only. This was taken into account for setting the flow-weighted sample pacing and when estimating the total stormwater discharge volume.

1.1.2.2 Water Quality Sample Collection and Analysis

Two types of samples were taken at each location during each storm event: flow-weighted composite samples collected throughout each storm and grab samples collected once during the storm and 24, 48 and 78 hours following the end of each storm event. Per the Bacteria Total Maximum Daily Load (Attachment A, Page 52, footnote 77), "The end of a storm event is when there is no more precipitation."

The flow weighted composite samples were collected using ISCO 6712 automatic sampler with a single bottle in which a series of aliquots of equal volume taken at equal increments of flow were combined to reflect average pollutant concentrations of the stormwater discharge. The flow volume was measured using HACH 750 flow rate sensor installed in the round culvert pipe. The samples were analyzed for fecal indicator bacteria (FIB) including total coliform, fecal coliform, *Enterococcus and E. coli* and for chemical constituents as shown in Table 1-3. The grab samples were analyzed only for FIB (Table 1-3).

Table 1-3. Constituents, Analytical Methods, Sample Volumes, Preservatives, Maximum Holding Times and Laboratory Reporting Limits Employed in the Analysis of Flow Weighted Composite Samples

Constituent	Analytical Method	Sample Volume (mL)	Preservative	Maximum Holding Time	Laboratory Reporting Limit (units)
Coliform, Fecal	SM 9221	100	Na2S2O3	6 hours at 4°C	2 to 1,600,000 (MPN/100mL)
Coliform, Total	SM 9221 SM 9223	100	Na2S2O3	6 hours at 4°C	2 to 1,600,000 (MPN/100mL)
Enterococcus	ASTM D6503	100	Na2S2O3	6 hours at 4°C	1 to 2,419,600 (MPN/100mL)
E. coli	SM 9223 (Colilert)	100	Na2S2O3	6 hours at 4°C	1 to 2,419,600 (MPN/100mL)
Chloride	SM4500 NH_3 B & C	250	None	25 days	0.20 (mg/L)
Sulfate	SM4500 SO_4 E	250	None	28 days	0.50 (mg/L)
Hardness, Total	EPA 200.7	250	None	6 months	5.0 (mg CaCO3/mL)
Alkalinity, Bicarbonate	SM 2320B	250	None	14 days	5 (mg/L)
Alkalinity, Carbonate	SM 2320B	250	None	14 days	5 (mg/L)
Alkalinity, Hydroxide	SM 2320B	250	None	14 days	5 (mg/L)
Antimony, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)

Antimony, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Arsenic, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Arsenic, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Boron, Total	EPA 200.7	250	Acidify to pH<2 with HNO3	6 months	50 (µg/L)
Boron, Dissolved	DO NOT PERFORM ANALYSIS				
Cadmium, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Cadmium, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Chromium, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Chromium, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Copper, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Copper, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Lead, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Lead, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Nickel, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Nickel, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Iron, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	20.0 (µg/L)
Iron, Dissolved	DO NOT PERFORM ANALYSIS				
Manganese, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Manganese, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Selenium, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Selenium, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Zinc, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Zinc, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)

Total Dissolved Solids	SM 2540 C	1000	None	7 days	5.0 (mg/L)
Total Suspended Solids	SM 2540-D	1000	None	7 days	5 (mg/L)
Ammonia as N	SM4500 NH_3 B & C	1000	None	7 days	0.02 (mg/L)
Nitrate as N	SM4500 NO_3 E	1000	None	7 days	0.05 (mg/L)
Nitrite as N	SM4500 NO_2 B	1000	None	7 days	0.05 (mg/L)
Total Kjeldahl Nitrogen as N	SM4500 N & E	1000	None	7 days	0.5 (mg/L)
Orthophosphate as P	SM4500 P & E	1000	None	7 days	0.05 (mg/L)
Total Phosphate as P	SM4500 P, B & E	1000	None	7 days	0.05 (mg/L)
Terbuthylazine	EPA 625(m)	1000	Refrigerate	7 days	0.01 (µg/L)
Secbumeton	EPA 625(m)	1000	Refrigerate	7 days	0.01 (µg/L)
Simazine	EPA 625(m)	1000	Refrigerate	7 days	0.01 (µg/L)
Atrazine	EPA 625(m)	1000	Refrigerate	7 days	0.01 (µg/L)

Table 1-4. Constituents, Analytical Methods, Sample Volumes, Preservatives, Maximum Holding Times and Laboratory Reporting Limits Employed in the Analysis of the Grab Samples

Analytical Parameter	Analytical Method	Sample Volume (mL)	Preservative	Maximum Holding Time	Laboratory Reporting Limit (units)[3]
Coliform, Fecal	SM 9221	100	Na2S2O3	6 hours at 4°C	2 to 1,600,000 (MPN/100mL)
Coliform, Total	SM 9221 SM 9223	100	Na2S2O3	6 hours at 4°C	2 to 1,600,000 (MPN/100mL)
Enterococcus	ASTM D6503	100	Na2S2O3	6 hours at 4°C	1 to 2,419,600 (MPN/100mL)
E. coli	SM 9223 (Colilert)	100	Na2S2O3	6 hours at 4°C	1 to 2,419,600 (MPN/100mL)

1.1.2.3 In-Situ Physical Parameter Measurements

In addition to grab samples and flow-weighted composite samples, physical parameters including dissolved oxygen, water temperature, specific conductance, pH and turbidity were measured at the centroid and sides of the stream using a Horiba U-10 multi-parameter water quality meter. When flow was too low, stormwater was gathered within a clean bucket for the measurements. Table 1-5 lists the *in-situ* parameters together with the corresponding measurement methods, units and ranges.

Table 1-5. *In-Situ* Measurement Types Collected at Both Locations During Each Monitoring Event.

Parameter	Principle	Units	Range	Accuracy
Temperature	Thermistor	Degrees Celsius (°C)	0 – 50 oC	+/- 0.1 °C
Dissolved Oxygen	Membrane/ galvanic cell	mg/L	0 – 19.9	+/- 0.1 mg/L
pH	Glass Electrode	s.u.	0 – 14.0	+/-0.1 s.u.
Conductivity	Alternating four-electrode	uS/cm	0 - 100	+/-1 uS/cm
Turbidity	Scattering/ transmitting light	NTUs	0 - 999	+/-1 NTU

1.1.2.4 Calculations of Flow

A detailed description of calculations performed to determine sample pacing and aliquot volumes is provided in the Monitoring Plan (Appendix B). At Couser Canyon, the creek flows through a set of twin culverts as illustrated in Figure 2-10 but sampling and flow measurements were conducted in only one of the two concrete pipes. For the purpose of flow calculations, it was assumed that equal valumes flow through both culverts.

Section 2
Results

2.1 Couser Canyon

2.1.1 – Flow and *In-Situ* Measurement Results

2.1.1.1 First Storm Event – November 12, 2011

Field crew arrived on site November 11, 2011 (Friday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations. The mean base flow was 0.578 cubic feet per second (cfs).

According to the on-site rain gauge, measurable precipitation (0.01 inches) began at 4:17 a.m. on November 12, 2011 (Saturday) and ended at 5:52 p.m. the same day (9.5 hours) for a total of 0.77 inches. The storm event was not uniform as it arrived in two main fronts. The first front lasted about 2 hours Saturday morning and deposited nearly 0.27 inches of rain. For the next 6 hours, no measurable precipitation was recorded. The second front arrived at 1:21 p.m. and deposited the remaining 0.54 inches over the course of 4 hours. While the rain intensity varied throughout the day, the flow rate was steady throughout the storm as shown on the hydrograph (Figures 2-1 and 2-2). Precipitation wise, the peak of the storm event occurred around 2:20 p.m. Flow wise, the peak occurred at 5:45 p.m. A picture of the flow through the outfall is provided in Figure 2-6. Only one of the twin culverts is shown in the photo.

The storm grab sample (at 4:50 p.m.), subsequent post-storm grab samples, and the composite sample were collected successfully, resulting in 100-percent capture for this event.

The total discharge for the event was 44,937 cubic feet assuming (1) mean dry weather flow of 0.578 cfs; and (2) equal flow volumes through both pipes.

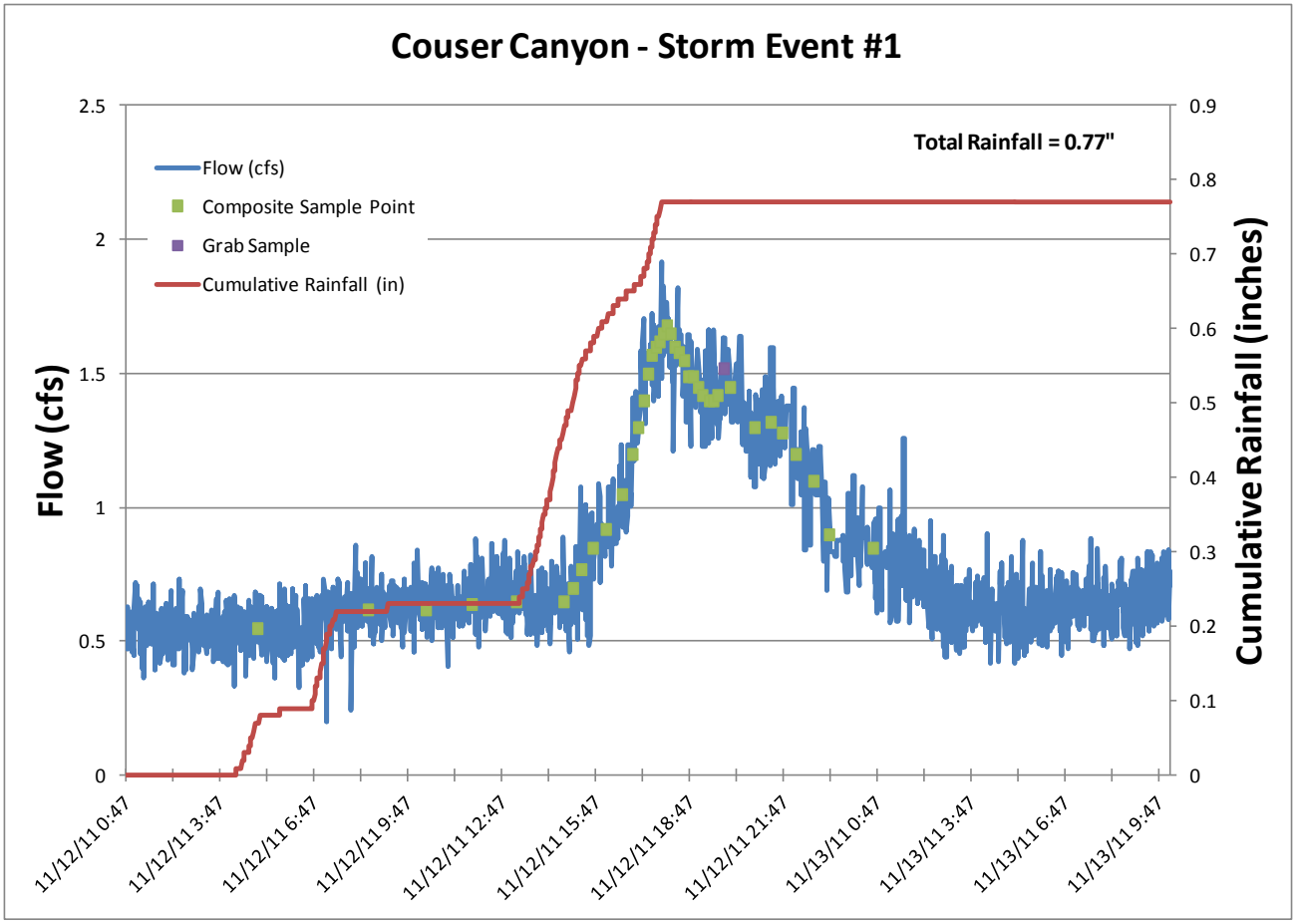

Figure 2-1. Couser Canyon Hydrograph – November 12, 2011 Strom Event

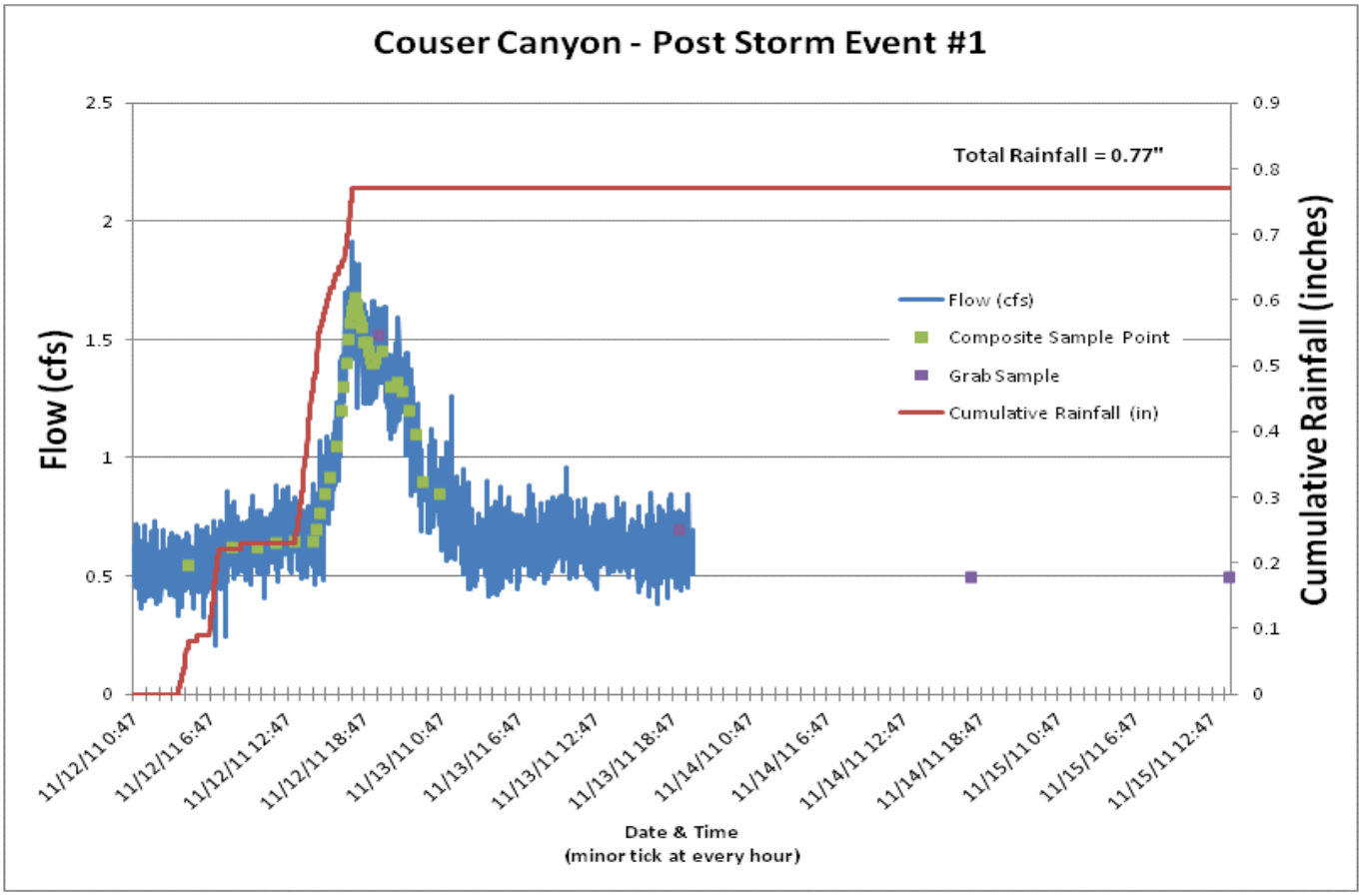

Figure 2-2. Couser Canyon – November 12, 2011 Storm Event and Post-Storm Sampling. Flow monitoring was discontinued following the end of the storm event. No precipitation occurred after 11/13/2011 and, based on visual observations, baseflow remained the same throughout the 72-hour post-storm sampling period.

The results of the in-situ measurements taken during the storm event and every 24 hours for 72 hours thereafter are presented in Table 2-1 and illustrated in Figures 2-3 through 2-5. Water temperature, pH, specific conductance and dissolved oxygen concentrations remained fairly constant throughout this time period while turbidity increased from about 10 NTU to nearly 300 NTU during the storm event and returned to its original level 24, 48 and 72 hours following the end of the storm.

Table 2-1. Results of the *In-Situ* Field Measurements for First Storm Event at Couser Canyon

	Analytical Constituent	Units	Range	11/12/2012						11/13 2011		11/14 2011	11/15 2011
				08:25	09:15	10:05	13:10	17:53	19:50	00:36	19:15	18:00	14:00
Storm Event #1	Water Temperature	°C	0 - 50	13.9	13.8	14.1	13.9	16.2	14	12.9	15.4	16.2	17.2
	pH	s.u.	0 – 14	7.81	7.82	7.85	8.42	8.66	8.36	8.54	8.64	8.59	8.69
	Dissolved Oxygen	mg/L	0 – 19.9	14.26	14.51	13.21	12.57	11.63	12.71	11.92	11.71	11.27	11.1
	Specific Conductivity	uS/cm	0 – 10,000	1800	1800	1800	1890	1660	1750	1870	1880	1630	1890
	Turbidity	NTU	0 - 999	54	79	53	47	11	294	22	14	19	11

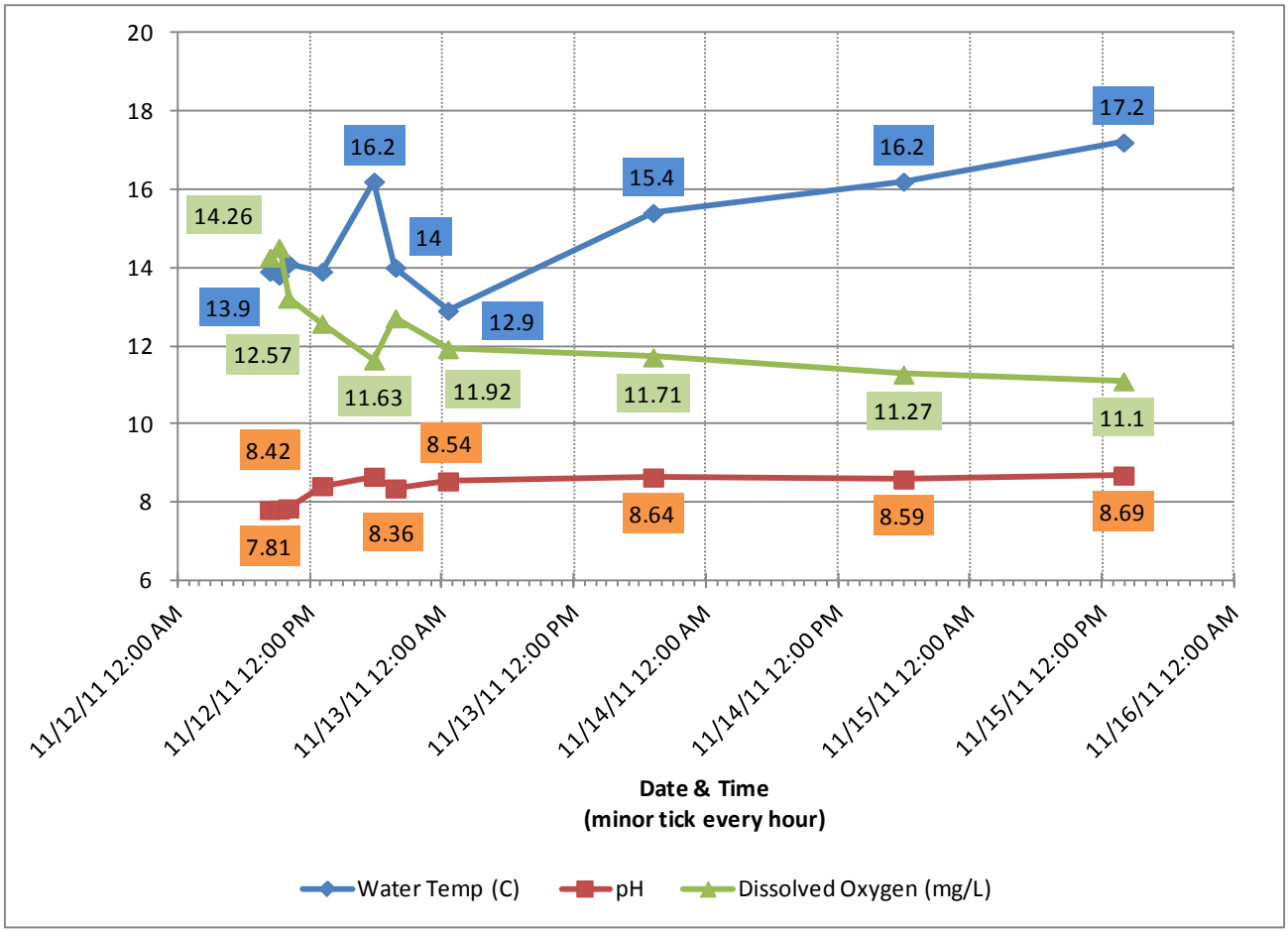

Figure 2-3. Water Temperature, pH and Dissolved Oxygen Concentrations – Couser Canyon, November 12-16, 2011.

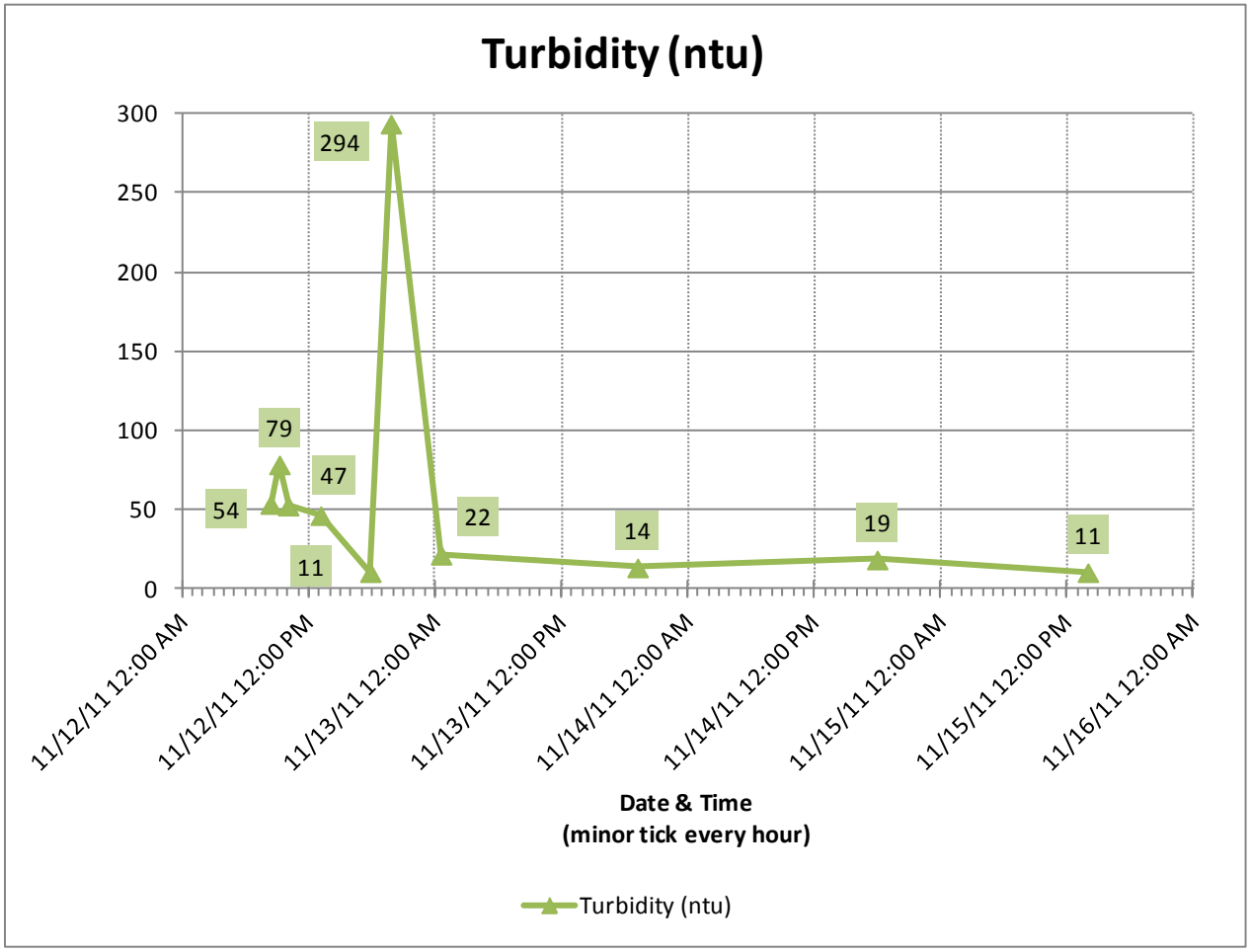

Figure 2-4. Turbidity– Couser Canyon, November 12-16, 2011.

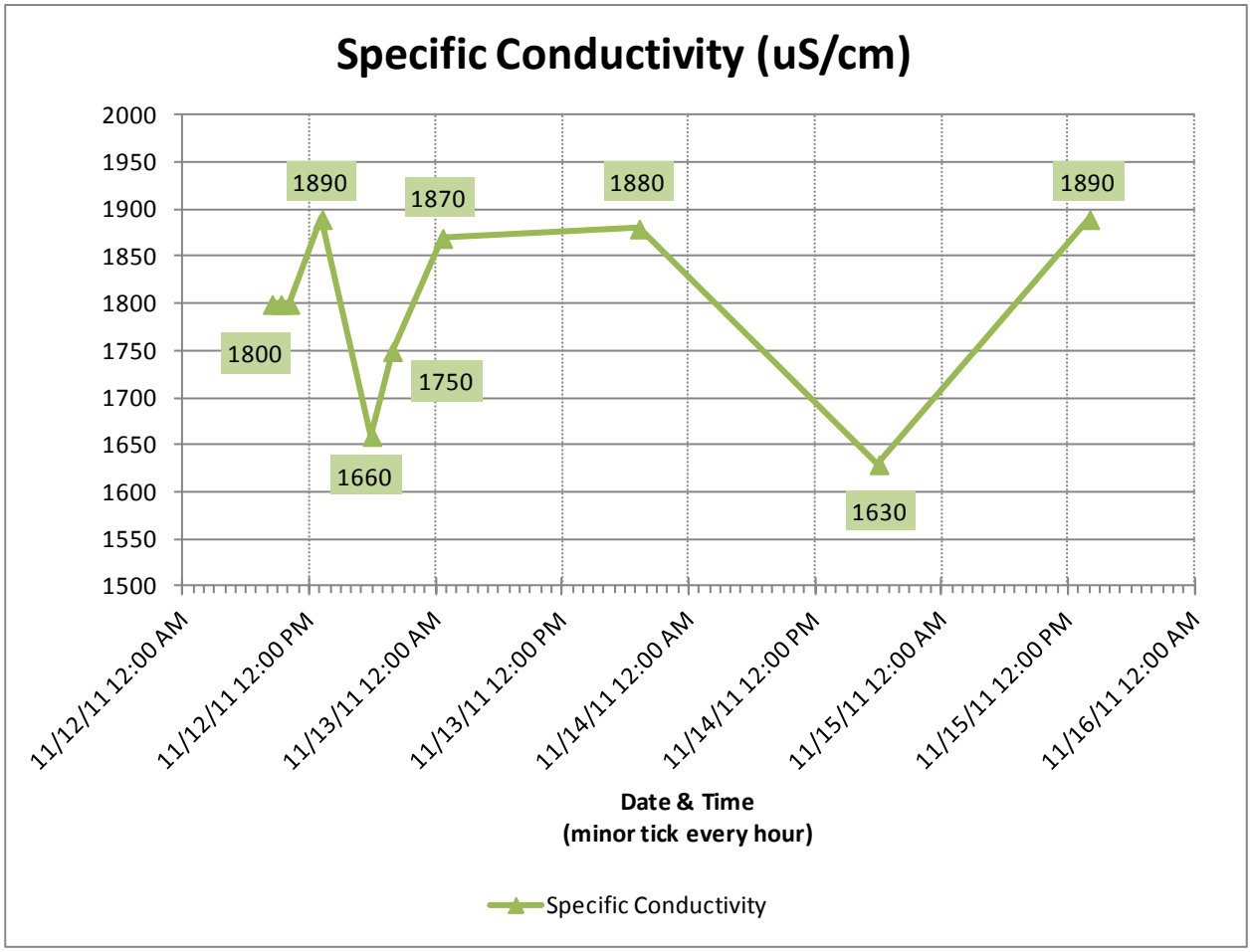

Figure 2-5. Specific Conductivity – Couser Canyon, November 12-16, 2011.

Figure 2-6. Stormwater Flow from One of the Twin Culverts at Couser Canyon on November 12, 2011 at 7:05pm.

2.1.1.2 Second Storm Event – December 12, 2011

Field crew arrived onsite December 11, 2011 (Sunday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations. The mean base flow was 0.323 cfs.

According to the onsite rain gauge, measurable precipitation (0.01 inches) began at 9:18 a.m. on December 12, 2011 (Monday) and ended at 3:18 p.m. the same day for a total of 0.84 inches. The storm event was fairly uniform with the rain intensity peaking between 1 and 2 p.m. During this time, 0.25 inches of rain fell over 20 minutes. The flow rate was steady throughout the storm as shown in the hydrograph (Figure 2-7). Post storm, the flow remained at baseflow as additional grab samples were collected (Figure 2-8). A picture of the flow through the outfall is provided in Figure 2-12. Both culverts are shown in the photo.

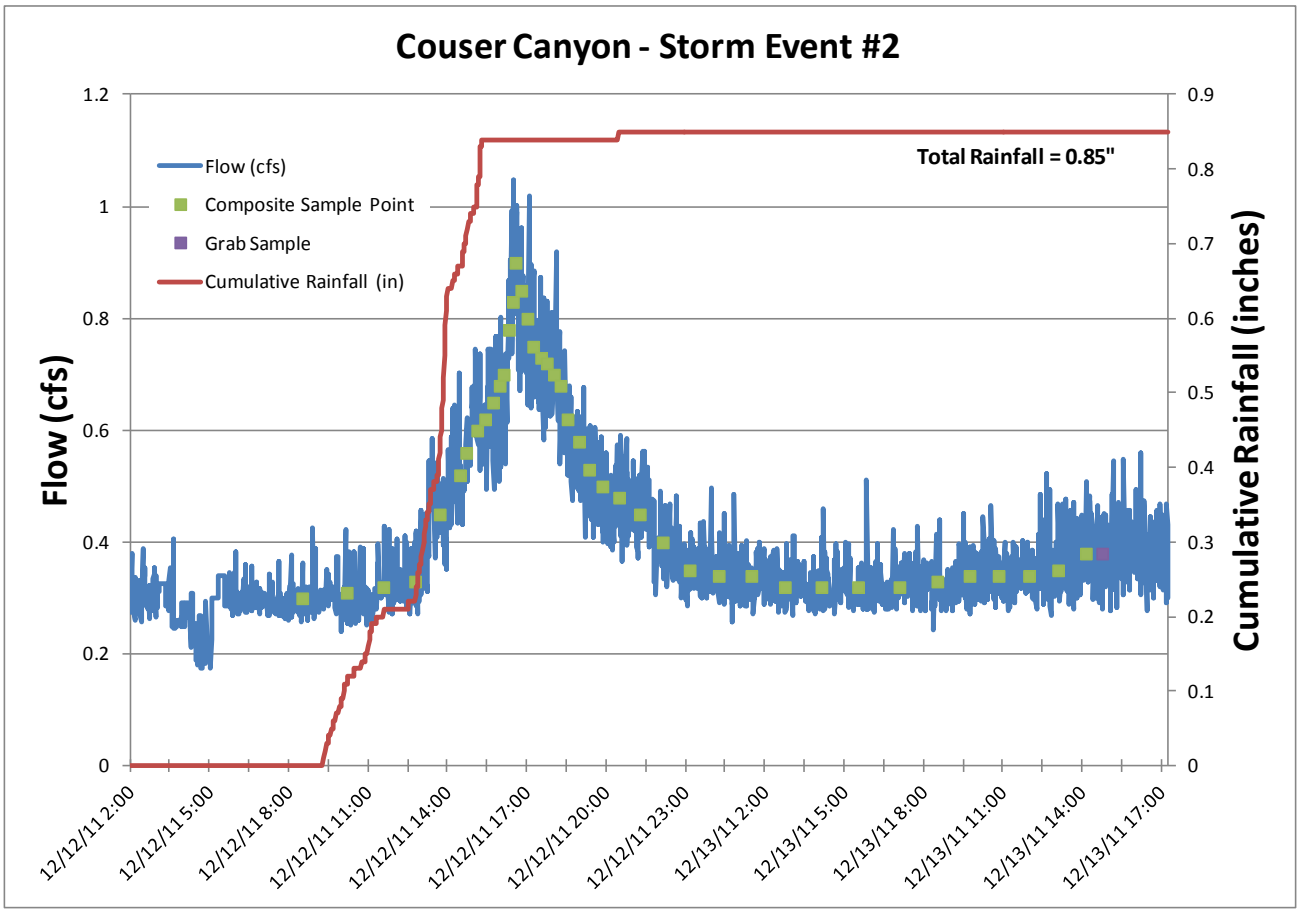

Figure 2-7. Couser Canyon Hydrograph – December 12, 2011 Storm Event.

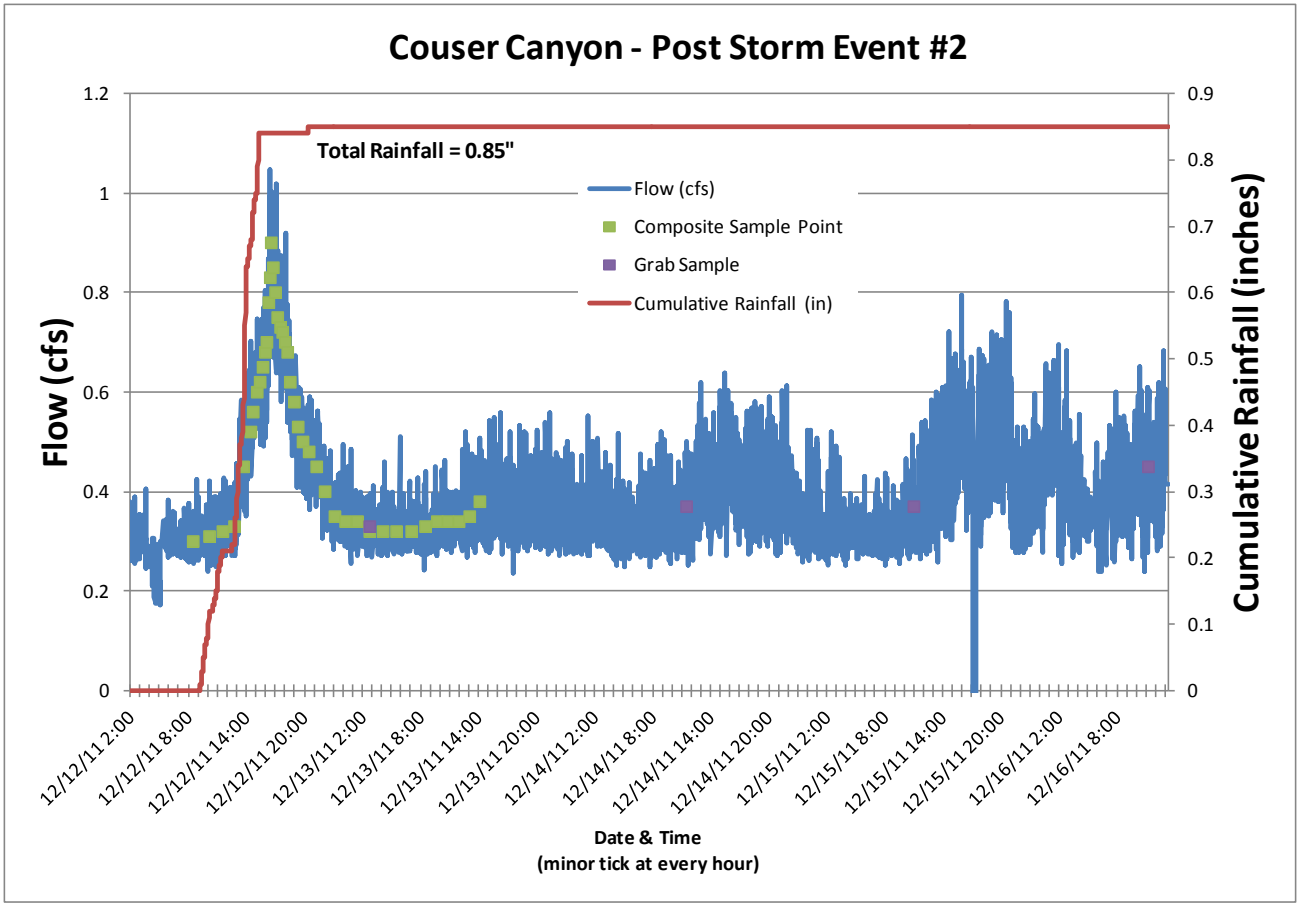

Figure 2-8. Couser Canyon – December 12, 2011 Storm Event and Post-Storm Sampling.

Precipitation wise, the peak of the storm event occurred around 1:55 p.m. Flow wise, the peak of the storm event occurred at 5:25 p.m. The composite sample was collected successfully resulting in 100-percent capture for this event (Figure 2-8). Due to a miscalculation, the storm grab sample (December 13, 2011 at 2:45 a.m.) was collected after precipitation ended and flow returned to base level but it was still collected within the first 24 hours of the storm (Figure 2-7); the three post storm grab samples were collected successfully at approximate 24-hour intervals following the end for the storm (Figure 2-8).

The total discharge for the event was 16,264 cubic feet assuming (1) mean dry weather flow of 0.323 cfs; and (2) equal flow volumes through both pipes.

The results of the in-situ measurements taken during the storm event and every 24 hours for 3 days thereafter are provided in Table 2-2 and illustrated in Figures 2-9 through 2-11. Water temperature, pH, specific conductance, turbidity and dissolved oxygen remained fairly constant throughout the storm.

Table 2-2. Results of the *In-Situ* Field Measurements for Second Storm Event at Couser Canyon

	Analytical Constituent	Units	Range	12/11 2012	12/13/2012					12/14 2012	12/15 2012	12/16 2012
				13:01	13:40	14:10	14:40	10:40	12:26	11:30	11:00	11:15
Storm Event #2	Water Temperature	°C	0 - 50	13.38	10.99	11	11.04	12.34	13.04	12.99	11.71	12.64
	pH	s.u.	0 – 14	8.2	8.42	8.1	8.06	8.27	8.32	8.39	8.46	8.45
	Dissolved Oxygen	mg/L	0 – 19.9	11.19	11.08	11.15	10.87	10.89	11.02	11.47	12.76	11.28
	Specific Conductivity	uS/cm	0 – 10,000	1550	1440	1540	1520	1530	1500	1430	1330	1520
	Turbidity	NTU	0 - 999	14.8	40.6	39.8	44.1	25.9	26.7	21.6	19.1	20.3

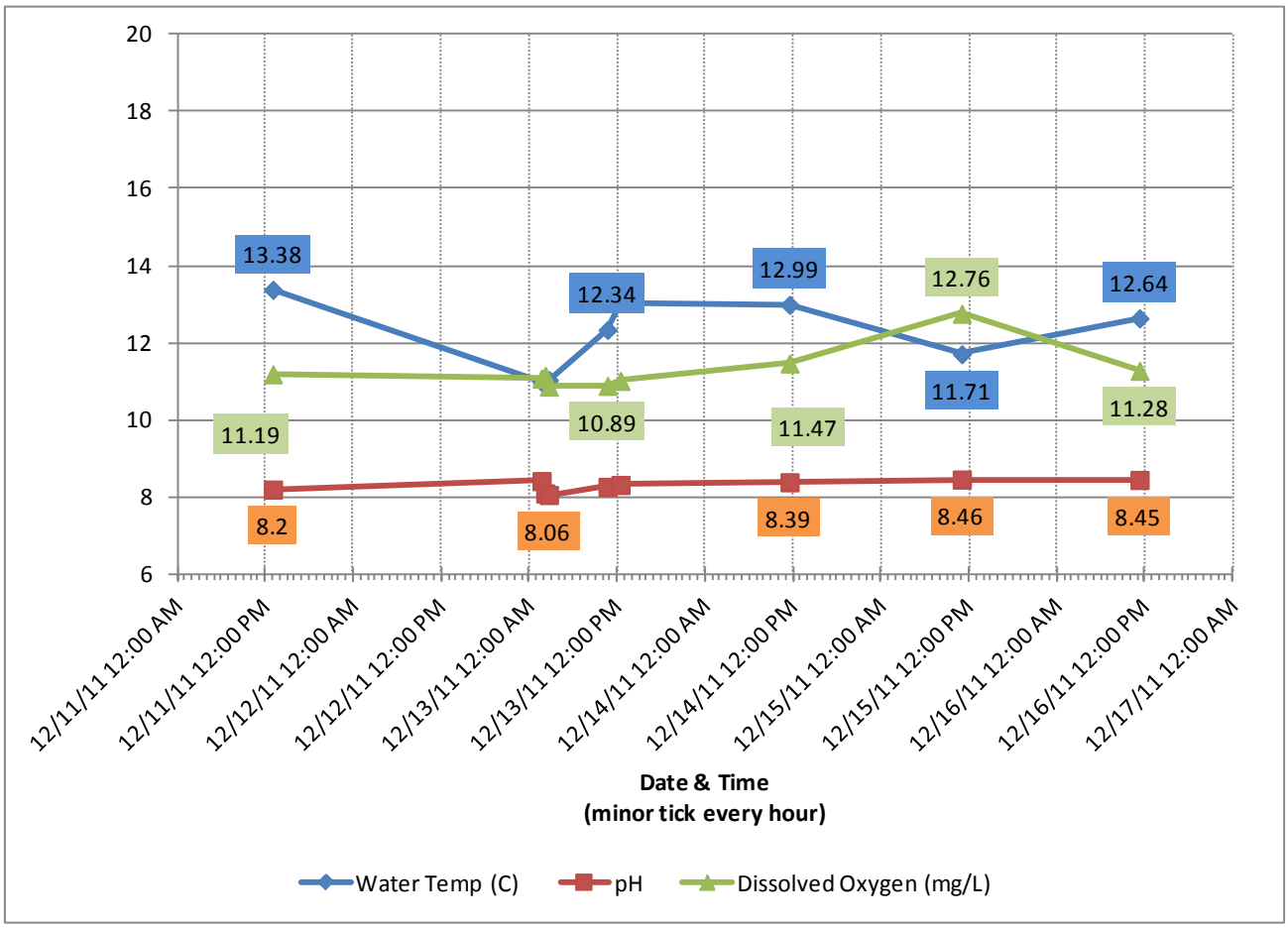

Figure 2-9. Water Temperature, pH and Dissolved Oxygen Concentrations – Couser Canyon, December 11-17, 2011.

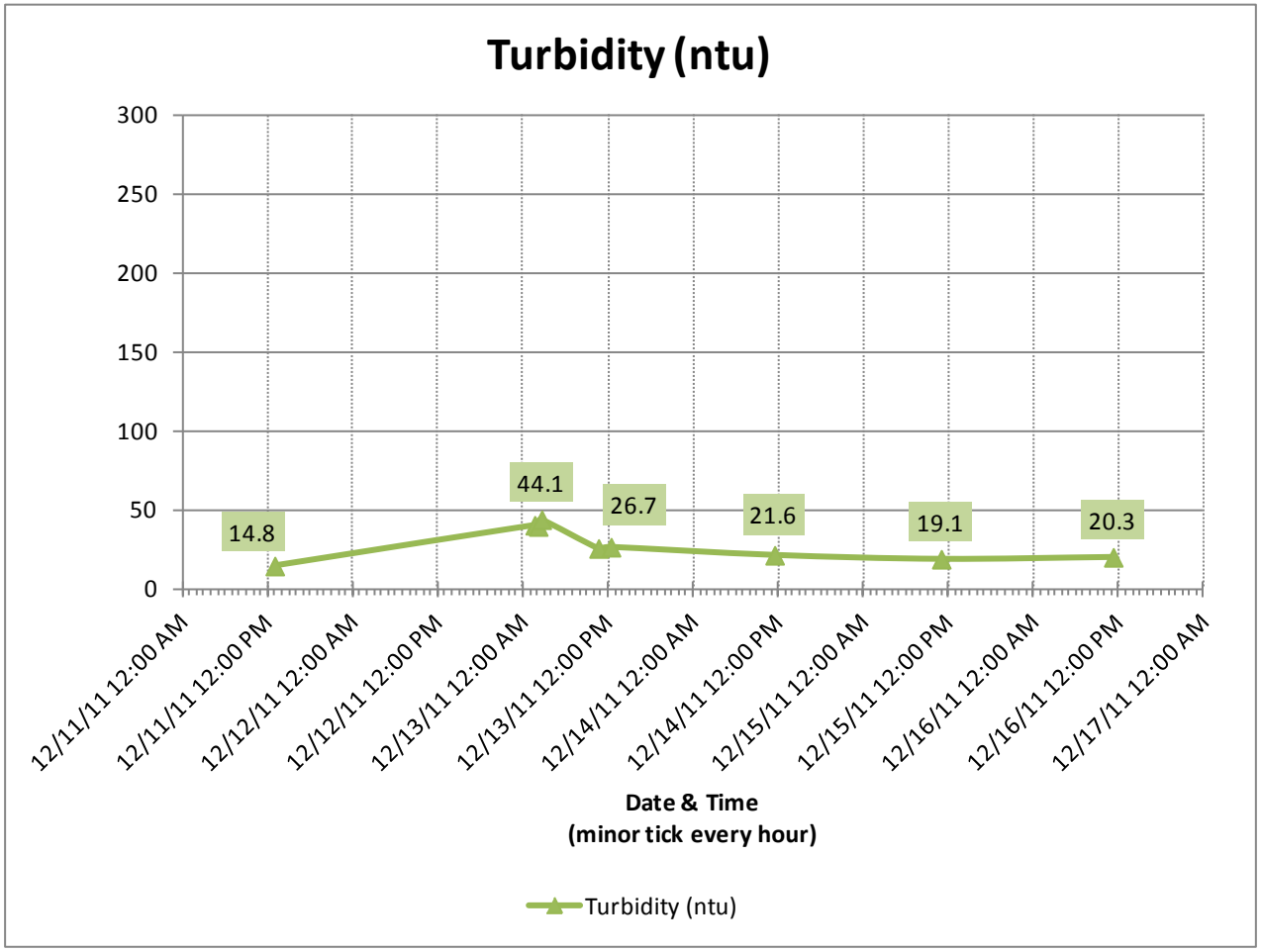

Figure 2-10. Turbidity – Couser Canyon, December 11-17, 2011.

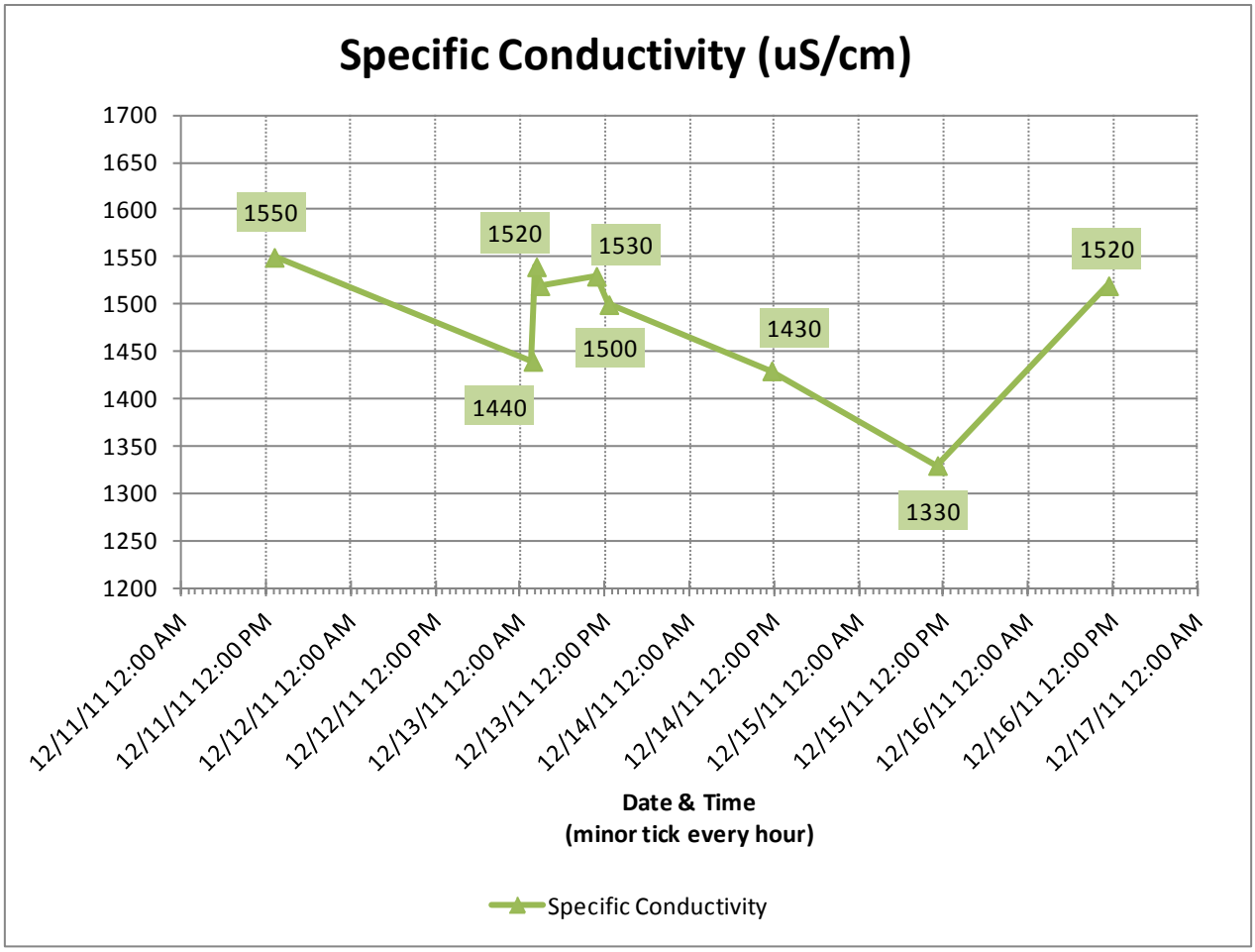

Figure 2-11. Specific Conductivity – Couser Canyon, December 11-17, 2011.

Figure 2-12. Stormwater Flow through both Culverts on December 13, 2011 at 10:14 a.m.

2.1.1.3 Third Storm Event – January 21, 2012

Field crew arrived onsite January 20, 2012 (Friday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations. The mean base flow was 0.790 cfs. A photo of the flow through both culverts is provided in Figure 2-18.

According to the onsite rain gauge, measurable precipitation (0.01 inches) began at 7:59 a.m. January 21, 2012 (Saturday) and ended at 12:36 p.m. the same day for a total of 0.37 inches. The storm event was fairly uniform with no localized intensity peaks (Figures 2-13). After a dry and sunny period on Sunday, a steady and drizzly rain event returned all day Monday with quick intensity moments that observed 0.1 inches over the course of a 10-minute period. The post stormwater sample grabs were taken during this second rain event that totaled 0.56 inches of precipitation. A hydrograph of this second "post-storm" event is provided in Figure 2-14 showing the timing of the "post-storm" grab sample collection. According to the hydrograph, the 24 hour post-storm grab sample was not affected by the second event but the subsequent 48 and 72 hour samples were.

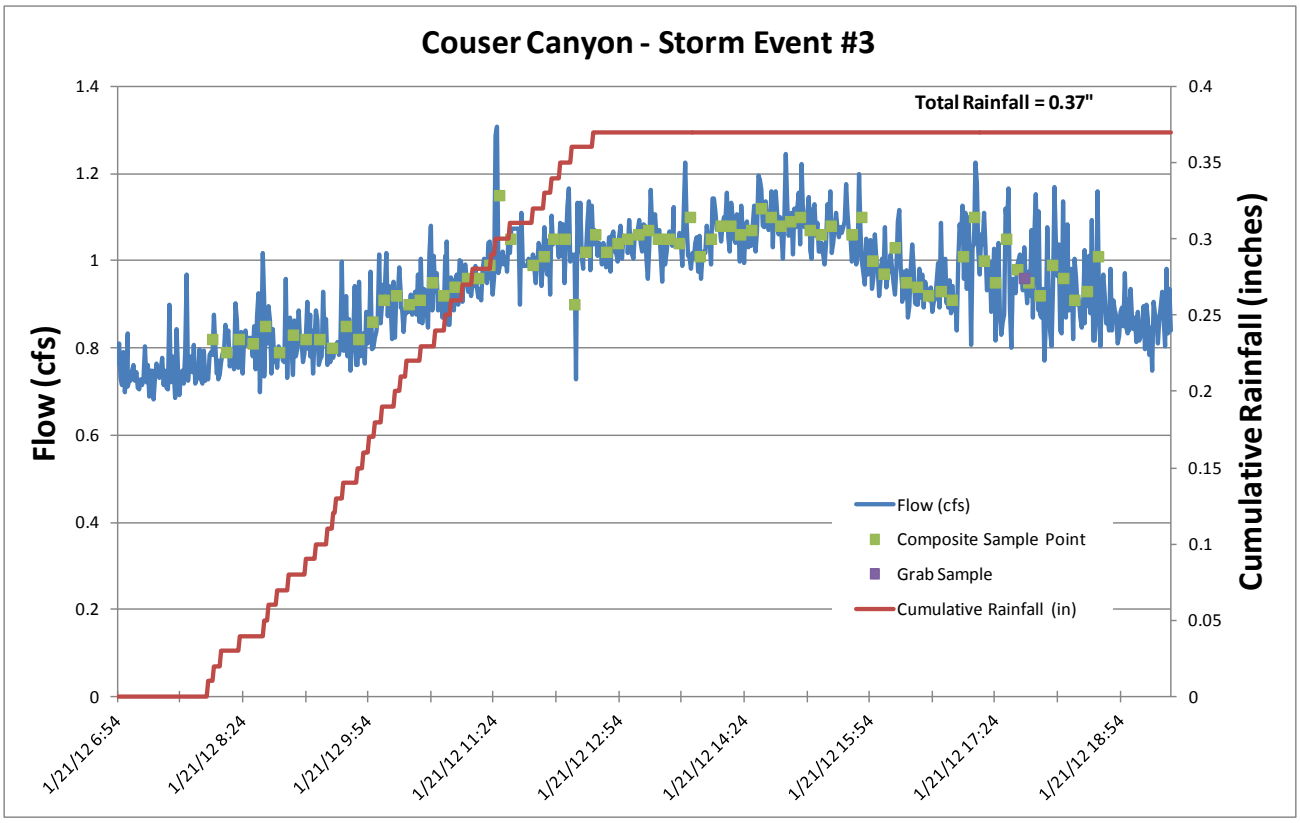

Figure 2-13. Couser Canyon Hydrograph – January 21, 2012 Storm Event

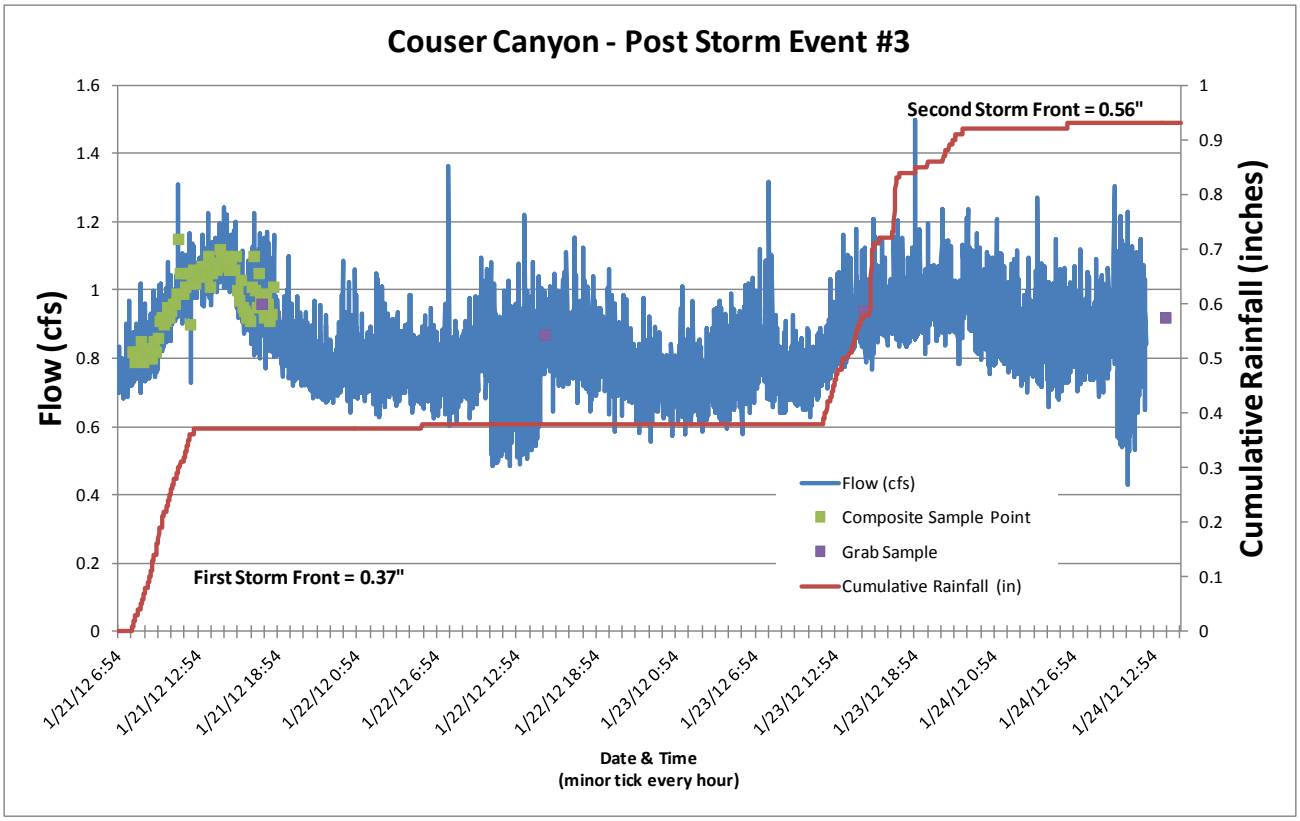

Figure 2-14. Couser Canyon – January 21, 2012 Storm Event and Post-Storm Sampling.

Precipitation wise, the peak of the storm occurred around 9:29 a.m.; flow wise, it occurred at 3:45 p.m. The flow throughout the storm event was steady (Figure 2-11). The storm grab sample (at 3:25 p.m.), subsequent post storm grab samples and the composite sample were collected successfully, resulting in 100-percent capture for this event.

The total discharge for the event was 14,047 cubic feet assuming (1) mean dry weather flow of 0.790 cfs; and (2) equal flow volumes through both pipes.

The results of the in-situ measurements taken during the storm event and every 24 hours for 3 days thereafter (24 hours after and twice during the second storm event) are given in Table 2-3 and illustrated in Figures 2-15 through 2-17. Water temperature, pH, and dissolved oxygen remained fairly constant throughout the storm but a 3-fold increase in turbidity and a 20-fold drop in specific conductance occurred during the initial storm event. This drop in conductance may have been due to an equipment malfunction. A duplicate measurement was not conducted to confirm the reading.

Table 2-3. Results of the *In-Situ* Field Measurements for Third Storm Event at Couser Canyon

	Analytical Constituent	Units	Range	12/13/2012						12/22 2012	12/23 2012	12/24 2012
				06:45	15:25	15:55	16:30	16:50	18:54	12:15	12:07	12:25
Storm Event #3	Water Temperature	°C	0 - 50	11.9	13.75	13.65	13.34	13.29	12.53	13.32	12.15	13.96
	pH	s.u.	0 – 14	8.22	8.01	7.49	7.72	7.33	8.1	7.6	8.08	8.07
	Dissolved Oxygen	mg/L	0 – 19.9	9.27	8.77	9.47	10.07	10.46	10.7	8.68	8.84	8.41
	Specific Conductivity	uS/cm	0 – 10,000	1640	1570	1590	1590	77	1600	1630	1620	1650
	Turbidity	NTU	0 - 999	16.15	136	118	96.4	76	45.6	32	37.6	29.5

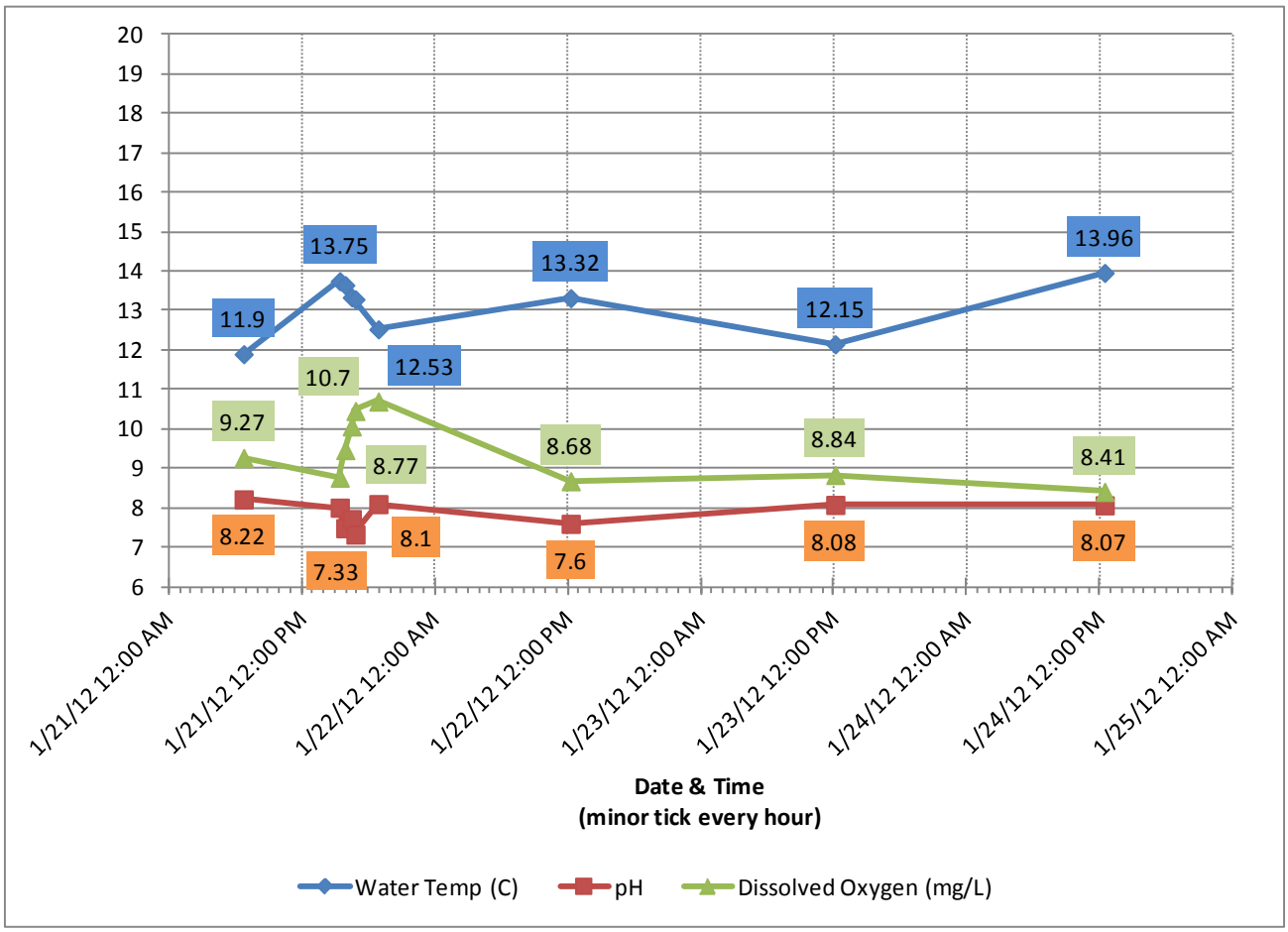

Figure 2-15. Water Temperature, pH and Dissolved Oxygen Concentrations – Couser Canyon, January 21-25, 2012.

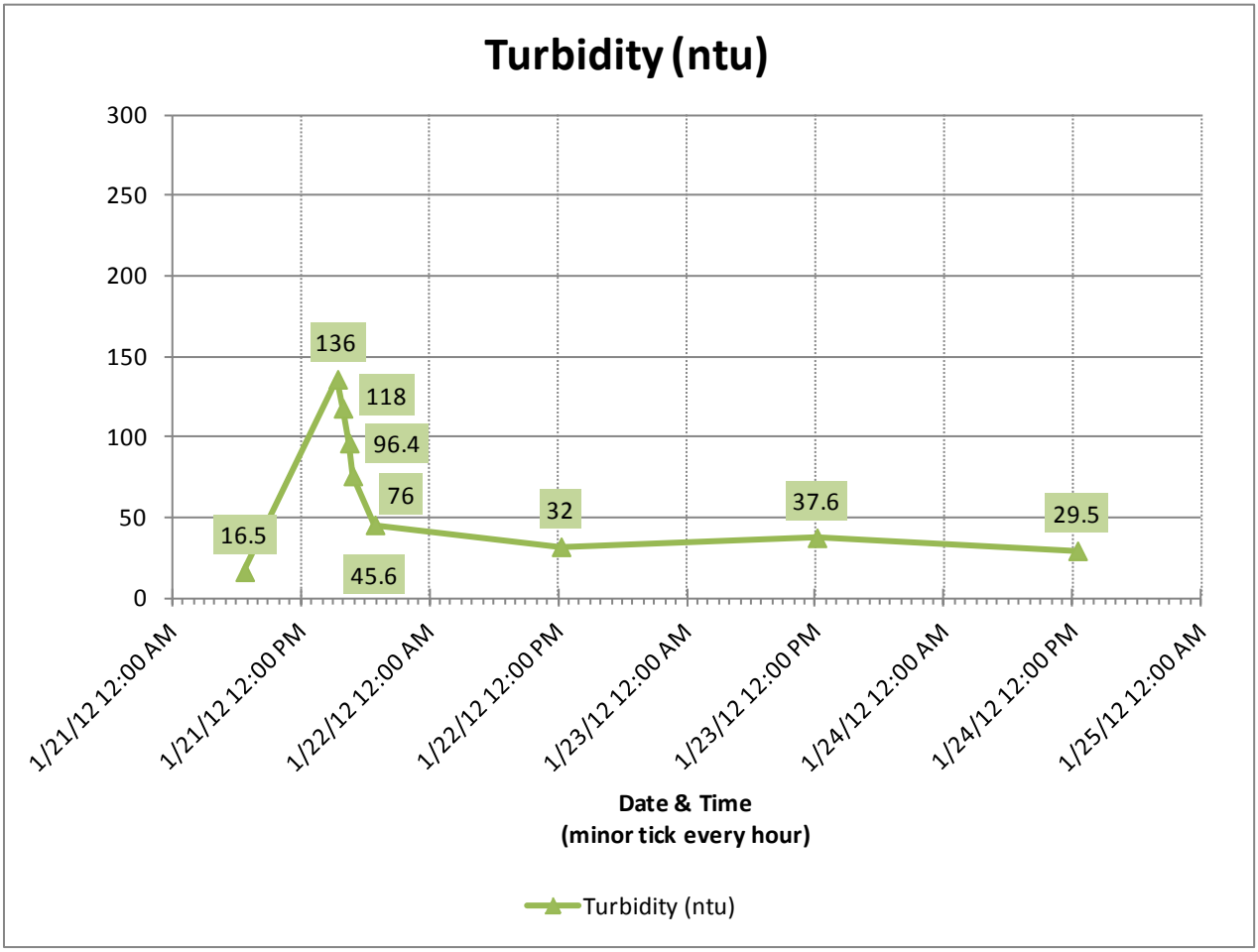

Figure 2-16: Turbidity– Couser Canyon, January 21-25, 2012.

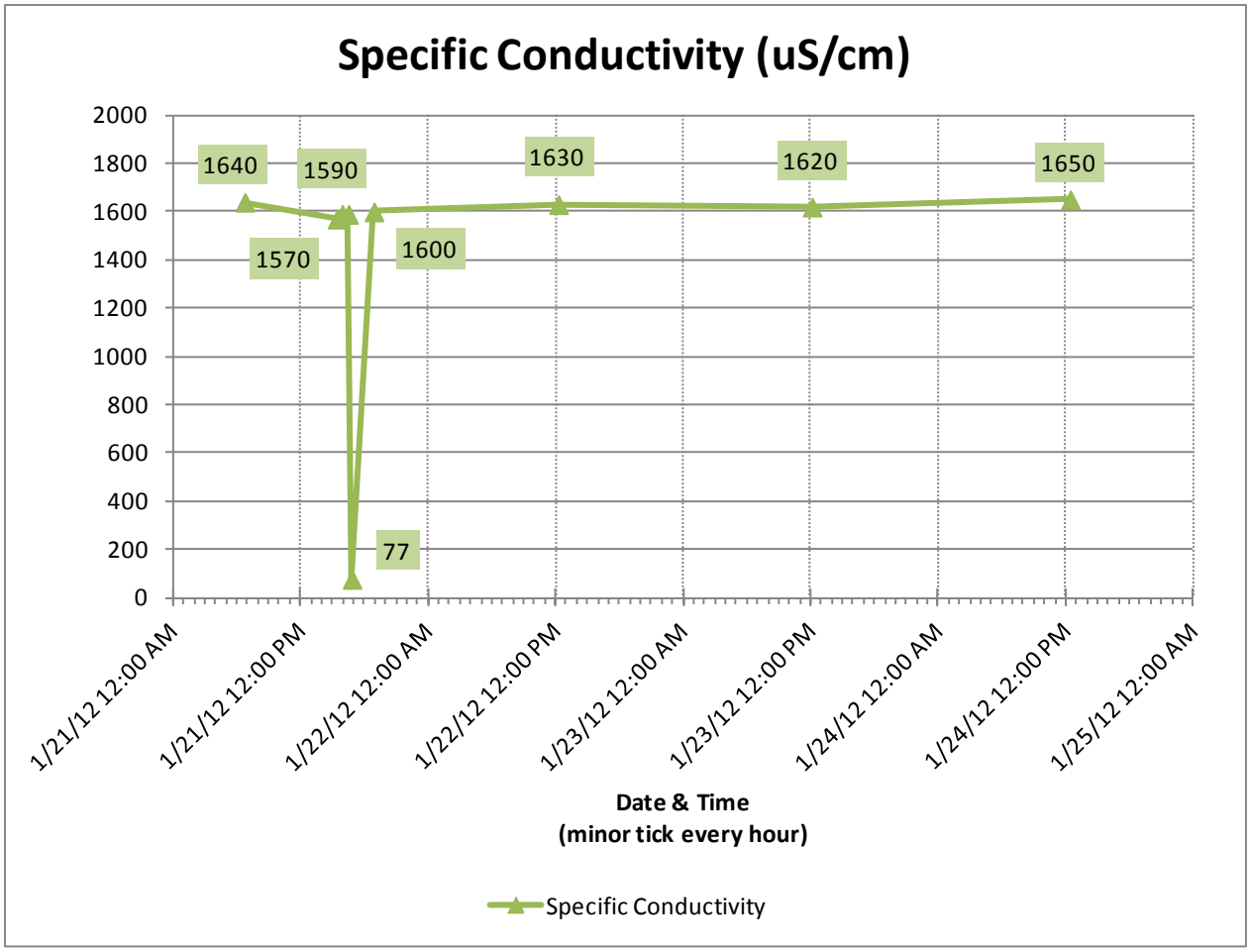

Figure 2-17. Specific Conductivity – Couser Canyon, January 21-25, 2012.

Figure 2-18. Stormwater Flow through both Culverts on January 21, 2011 at 3:11 p.m.

2.1.2 Couser Canyon – Flow Weighted Composite and Grab Sample Analysis Results.

The results of chemical constituent analysis for the flow-weighted composite samples collected at Couser Canyon over the three storm events are summarized in table 2-4. Table 2-5 shows the results of the composite sample microbiology analysis; the grab sample fecal indicator bacteria concentrations together with the corresponding sample times are presented in Table 2-6.

Table 2-4. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Couser Canyon over the Three Storm Events.

Analytical Constituent	Units	Reporting Limit	Method Detection Limit	Storm Event #1 11/13/2011 00:36	DQI	Storm Event #2 12/13/2011 14:15	DQI	Storm Event #3 01/21/12 18:38	DQI
Alkalinity, Bicarbonate	mg CaCO3/L	5	5	130		102		124	
Alkalinity, Carbonate	mg CaCO3/L	5	5	ND	U	ND	U	ND	U
Alkalinity, Hydroxide	mg CaCO3/L	5	5	ND	U	ND	U	ND	U
Boron, Total	mg/L	0.005	0.003	0.21		0.20		0.19	
Chloride	mg/L	0.20	0.05	180		140		180	
Sulfate	mg/L	0.50	10.0/5.0	335		255		264	
Hardness, Total	mg CaCO3/L	5.0	100	510		483		514	
Antimony, Dissolved	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Antimony, Total	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Arsenic, Dissolved	mg/L	0.001	0.0001	0.0004	J	0.0006	J	0.0003	J
Arsenic, Total	mg/L	0.001	0.0001	0.0007	J	0.001		0.001	
Cadmium, Dissolved	mg/L	0.001	0.0002	ND	U	ND	U	ND	U

Table 2-4. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Couser Canyon over the Three Storm Events.

Analytical Constituent	Units	Reporting Limit	Method Detection Limit	Storm Event #1 11/13/2011 00:36	DQI	Storm Event #2 12/13/2011 14:15	DQI	Storm Event #3 01/21/12 18:38	DQI
Cadmium, Total	mg/L	0.001	0.0002	0.0004	J	0.0004	J	0.007	
Chromium, Dissolved	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Chromium, Total	mg/L	0.005	0.0005	0.004	J	0.003	J	0.003	J
Copper, Dissolved	mg/L	0.005	0.0005	0.002	J	0.002	J	0.002	J
Copper, Total	mg/L	0.005	0.0005	0.012		0.007		0.008	
Lead, Dissolved	mg/L	0.002	0.0005	ND	U	ND	U	ND	U
Lead, Total	mg/L	0.002	0.0005	0.005		ND	U	0.002	
Nickel, Dissolved	mg/L	0.002	0.0002	0.0007	J	0.0006	J	0.0008	J
Nickel, Total	mg/L	0.002	0.0002	0.003		0.002		0.003	
Iron, Total	mg/L	0.020	0.035	6.61		4.78		4.32	
Manganese, Dissolved	mg/L	0.001	0.0001	0.003		0.002		0.003	
Manganese, Total	mg/L	0.001	0.0001	0.283		0.184		0.163	
Selenium, Dissolved	mg/L	0.002	0.0006	ND	U	ND	U	ND	U
Selenium, Total	mg/L	0.002	0.0006	0.0007	J	0.0008	J	0.0006	J

Table 2-4. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Couser Canyon over the Three Storm Events.

Analytical Constituent	Units	Reporting Limit	Method Detection Limit	Storm Event #1 11/13/2011 00:36	DQI	Storm Event #2 12/13/2011 14:15	DQI	Storm Event #3 01/21/12 18:38	DQI
Zinc, Dissolved	mg/L	0.005	0.0008	0.012		0.008	J	0.008	
Zinc, Total	mg/L	0.005	0.0008	0.193		0.035		0.034	
Total Dissolved Solids	mg/L	5.0	1.0	1130		835		1060	
Total Suspended Solids	mg/L	5	1.0	277		247		124	
Ammonia as N	mg/L	0.02	0.02	0.22		ND		0.07	J
Nitrate as N	mg/L	0.05	0.22/0.04	19.5		28.0		14.9	J
Nitrite as N	mg/L	0.05	0.007	0.03	J	0.03	J	0.02	
Total Kjeldahl Nitrogen as N	mg/L	0.5	0.3	0.4	J	1.0		0.3	J
Orthophosphate as P	mg/L	0.05	0.007	0.22		0.13		0.14	
Total Phosphorus as P	mg/L	0.05	0.02	0.37		0.25		0.26	
Terbuthylazine	µg/L	0.01	0.01	ND	U	ND	U	ND	U
Secbumeton	µg/L	0.01	0.01	ND	U	3.27		ND	U
Simazine	µg/L	0.01	0.01	0.46		ND	U	2.9	
Atrazine	µg/L	0.01	0.01	ND	U	0.05		ND	U

Table 2-5. Microbiology Analysis Results for the Flow-Weighted Composite Samples Collected at Couser Canyon over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Storm Event #1	Storm Event #2	Storm Event #3
Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	17,000	1,300	300
Coliform, Total	MPN/100 mL	2 to 1,600,000	2	30,000	14,000	11,000
Enterococcus	MPN/100 mL	1 to 2,419,600	1	4,611	1,095	708
E. coli	MPN/100 mL	1 to 2,419,600	1	6,127	1,250	548

Table 2-6. Microbiology Analysis Results for the Grab Samples Collected at Couser Canyon Over the Three Storm Events

	Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Date of Sample	Time of Sample	Concentration Detected
Storm Event #1	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	11/12/2011	19:50	3,000
					11/13/2011	19:15	500
					11/14/2011	18:00	220
					11/15/2011	14:00	170
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	11/12/2011	19:50	240,000
					11/13/2011	19:15	5,000
					11/14/2011	18:00	3,000
					11/15/2011	14:00	3,500
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	11/12/2011	19:50	4,284
					11/13/2011	19:15	269
					11/14/2011	18:00	411
					11/15/2011	14:00	133
	E. coli	MPN/100 mL	1 to 2,419,600	1	11/12/2011	19:50	7,491
					11/13/2011	19:15	201
					11/14/2011	18:00	238
					11/15/2011	14:00	167

Table 2-6. Microbiology Analysis Results for the Grab Samples Collected at Couser Canyon Over the Three Storm Events

	Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Date of Sample	Time of Sample	Concentration Detected
Storm Event #2	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	12/13/2011	02:45	130
					12/14/2011	11:30	80
					12/15/2011	11:00	500
					12/16/2011	11:15	140
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	12/13/2011	02:45	1,100
					12/14/2011	11:30	2,200
					12/15/2011	11:00	13,000
					12/16/2011	11:15	800
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	12/13/2011	02:45	517
					12/14/2011	11:30	387
					12/15/2011	11:00	488
					12/16/2011	11:15	150
	E. coli	MPN/100 mL	1 to 2,419,600	1	12/13/2011	02:45	387
					12/14/2011	11:30	201
					12/15/2011	11:00	435
					12/16/2011	11:15	153
Storm Event #3	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	1/21/2012	17:45	800
					1/22/2012	15:05	900
					1/23/2012	15:05	800
					1/24/2012	13:50	110
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	1/21/2012	17:45	30,000
					1/22/2012	15:05	7,504
					1/23/2012	15:05	3,000
					1/24/2012	13:50	1,300
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	1/21/2012	18:00	689
					1/22/2012	15:05	317
					1/23/2012	15:00	350
					1/24/2012	14:10	387
	E. coli	MPN/100 mL	1 to 2,419,600	1	1/21/2012	18:25	579
					1/22/2012	15:30	461
					1/23/2012	15:05	365
					1/24/2012	14:15	192

2.2 Blossom Valley

2.2.1 – Flow and *In-Situ* Measurement Results

2.2.1.1 First Storm Event – November 12, 2011

Field crew arrived on site November 11, 2011 (Friday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations.

According to the onsite rain gauge, measurable precipitation (0.01 inches) began at 6:49 a.m. November 12, 2011 (Saturday) and ended at 6:55 p.m. the same day for a total of 1.37 inches.

The first storm event was not uniform as it arrived in two main fronts (Figure 2-19). The first front, beginning at 8:26 a.m., lasted an hour and deposited near 0.24 inches of rain. For the next 6 hours, no measurable precipitation was recorded. The second front arrived at 1:21 p.m. and deposited the remaining 1.13 inches over the course of 5 hours. A photo of the flow through the culvert is provided in Figure 2-23.

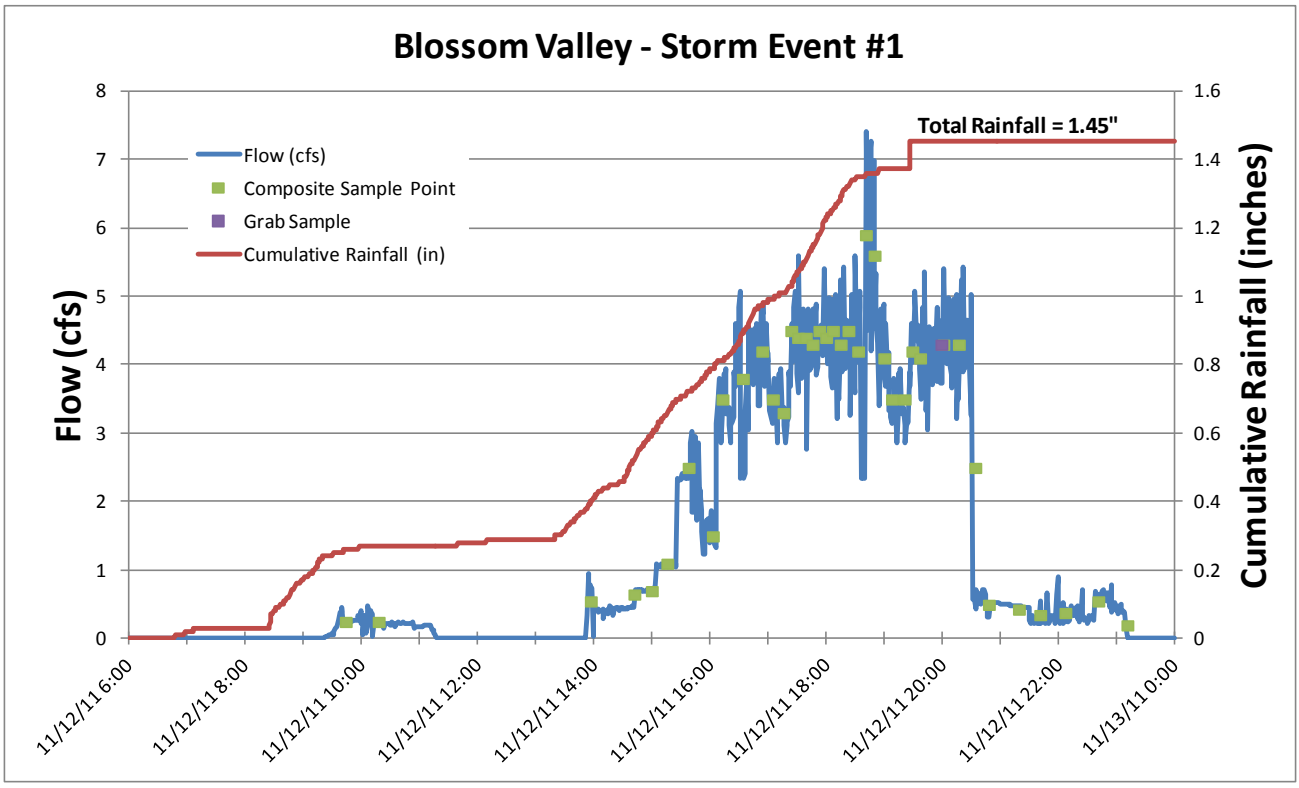

Figure 2-19. Blossom Valley Hydrograph – November 12, 2011.

Precipitation wise, the peak of the storm event occurred around 5:58 p.m. Flow wise, the peak of the storm event occurred at 7:45 p.m.

The storm grab sample (at 6:15 p.m.) and the composite sample were collected during this time period, resulting in 100-percent capture for this event. No post-storm grab samples were collected as detectable flow ceased just before midnight on 11/12/2011.

The results of in-situ measurements are presented Table 2-7 and illustrated in Figures 2-20 through 2-22. Water temperature, pH, and dissolved oxygen remained fairly constant throughout the duration of the storm event. During the second front of the storm, specific conductivity equaled less than half the initial value and turbidity increased to over 1000 NTU. The high turbidity, however, may have been due to the water pooling flow ceasing toward the end of the storm.

Table 2-7. Results of the *In-Situ* Field Measurements for First Storm Event at Blossom Valley

Analytical Constituent		Units	Range	11/12/2011		
				09:20	10:00	18:15
Storm Event #1	Water Temperature	°C	0 - 50	11.9	12.5	12.3
	pH	s.u.	0 – 14	7.65	7.85	8.14
	Dissolved Oxygen	mg/L	0 – 19.9	12.22	14.11	13.06
	Specific Conductivity	uS/cm	0 – 10,000	454	508	213
	Turbidity	NTU	0 - 999	521	427	> 999

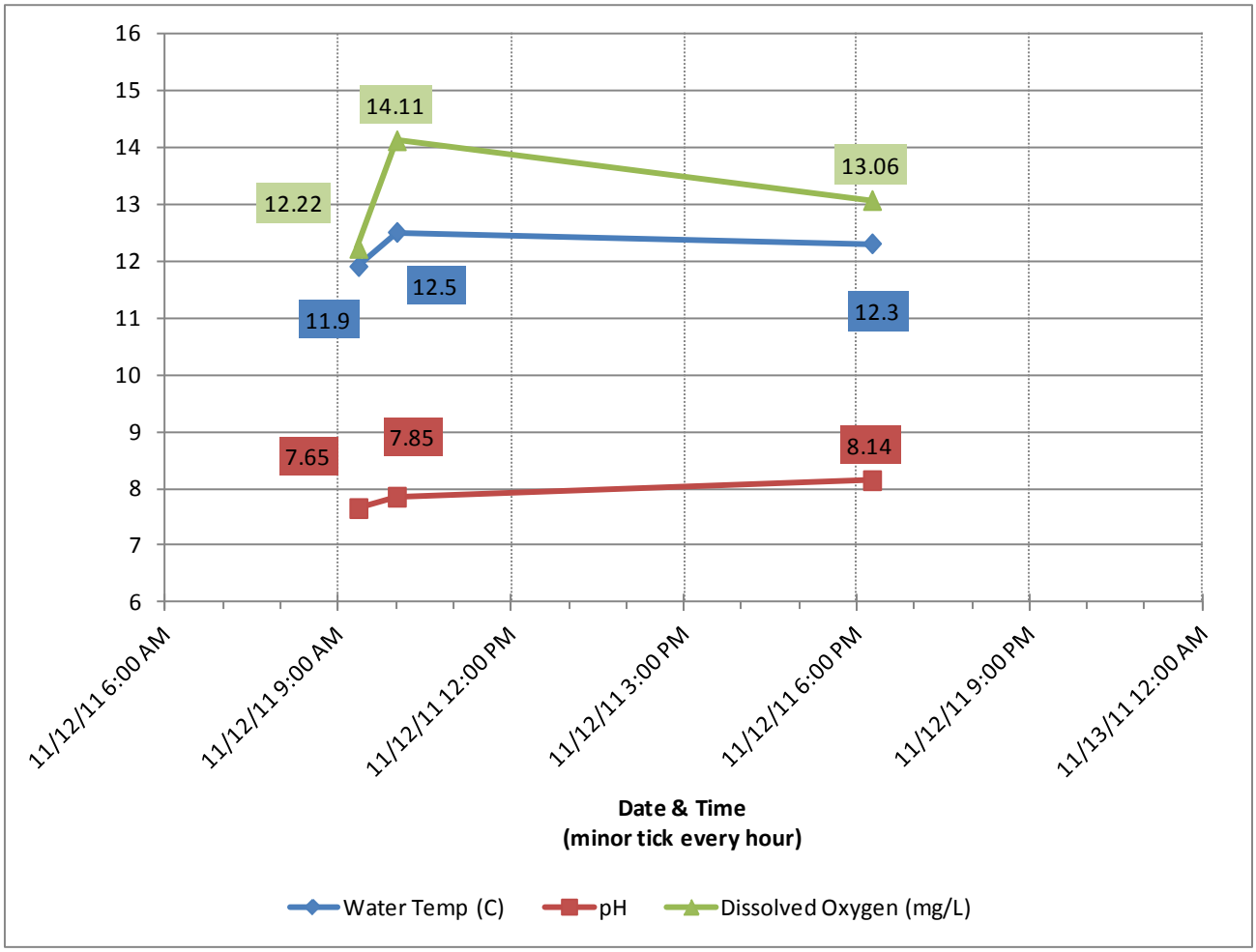

Figure 2-20. Water Temperature, pH and Dissolved Oxygen Concentrations – Blossom Valley, November 12, 2011.

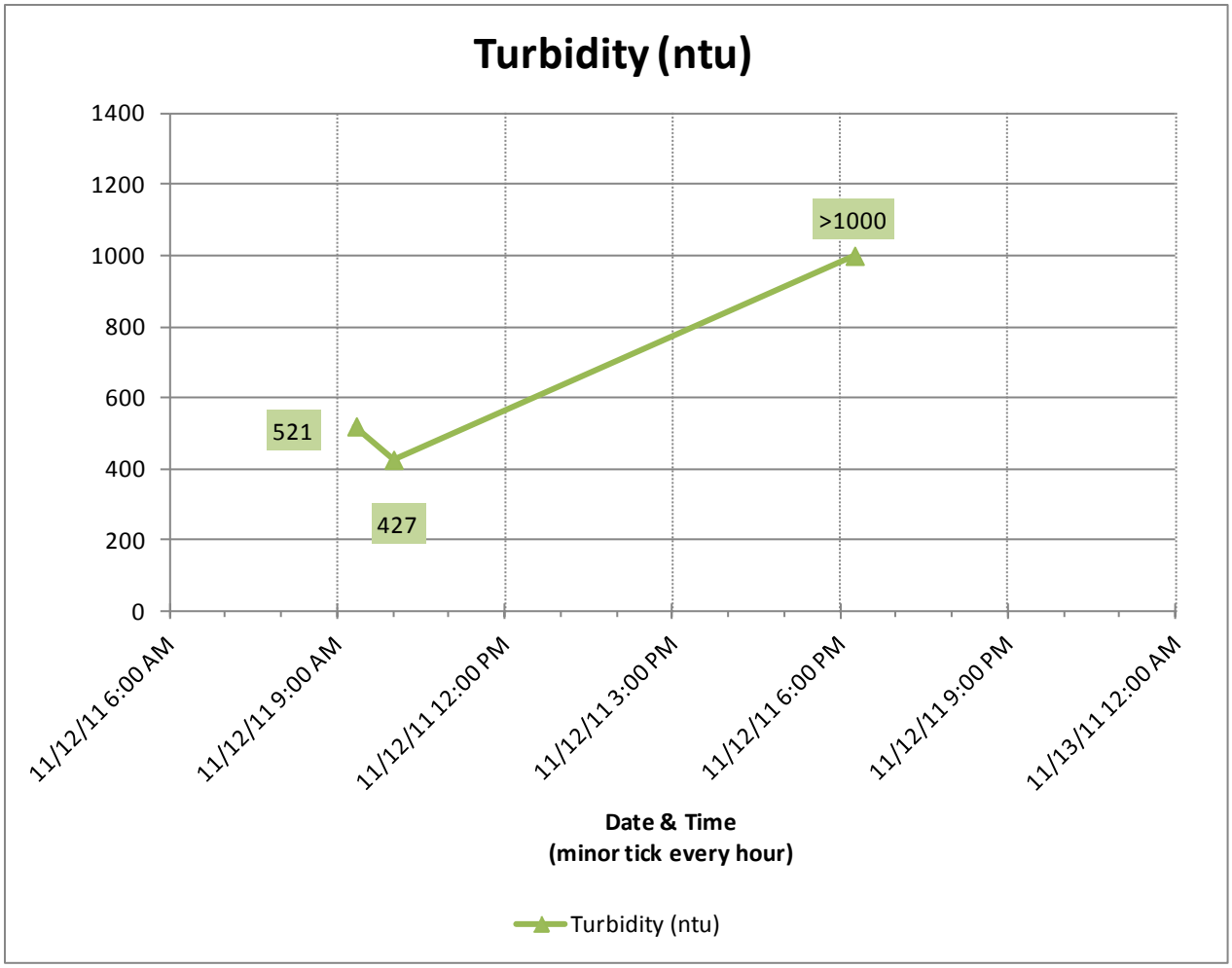

Figure 2-21. Turbidity– Blossom Valley, November 12, 2011.

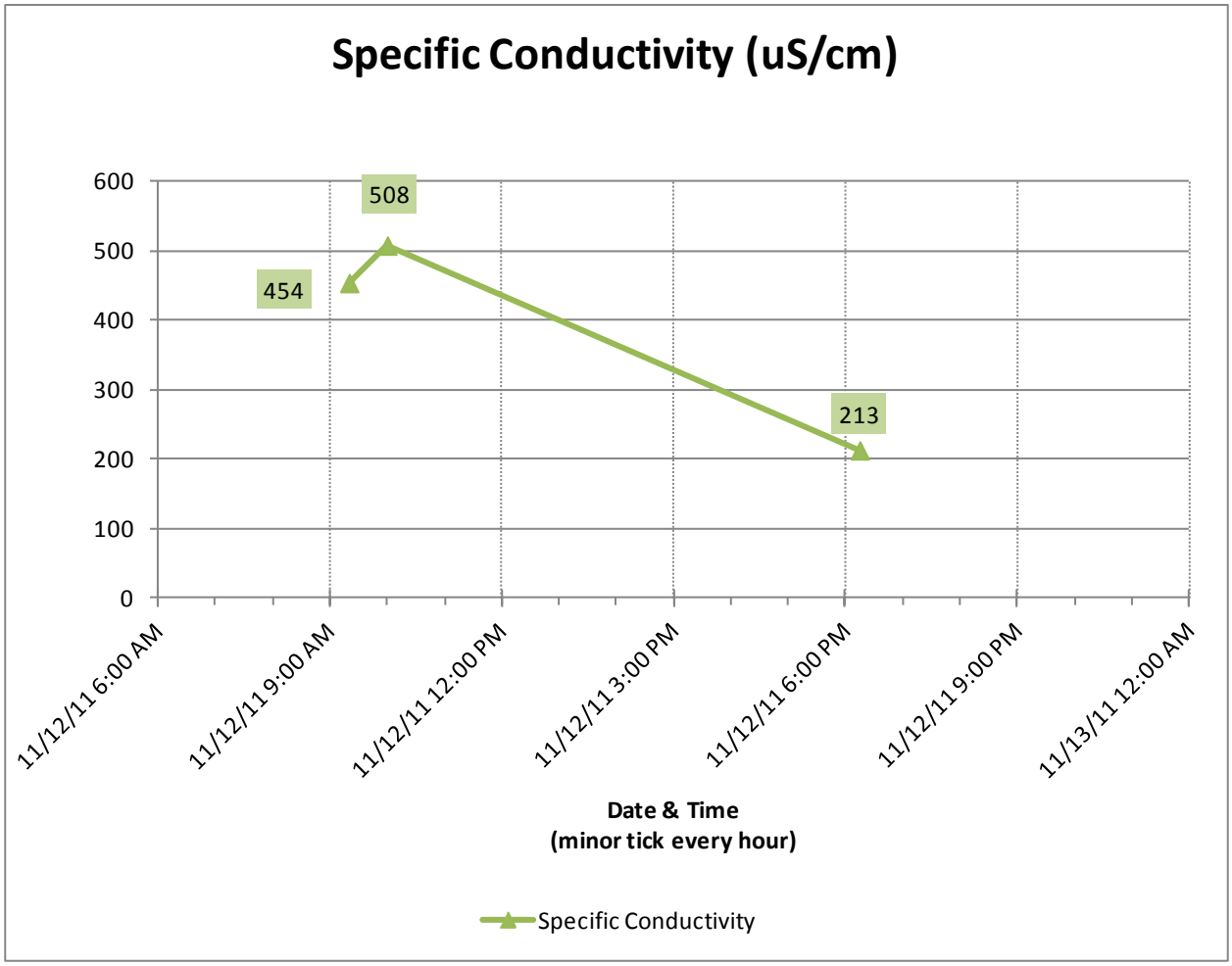

Figure 2-22. Specific Conductivity – Blossom Valley, November 12, 2011.

Figure 2-23. Stormwater Outfall from Culvert Outlet – November 12, 2011 at 7:05 p.m.

2.2.1.2 Second Storm Event – December 12, 2011

Field crew arrived onsite December 11, 2011 (Sunday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations.

According to the onsite rain gauge, measurable precipitation (0.01 inches) began at 8:17 a.m. December 12, 2011 (Monday) and ended at 5:38 p.m. the same day for a total of 0.68 inches. The storm event was fairly uniform with the rain intensity peaking between 11:30 a.m. and 12:30 p.m. During this time, 0.1 inches of rain fell over 10 minutes. An additional 0.04 inches of drizzle continued through December 13, 2011 (Tuesday). The flow rate throughout the storm was steady (Figure 2-24).

A photo of the flow through the culvert is provided in Figure 2-28.

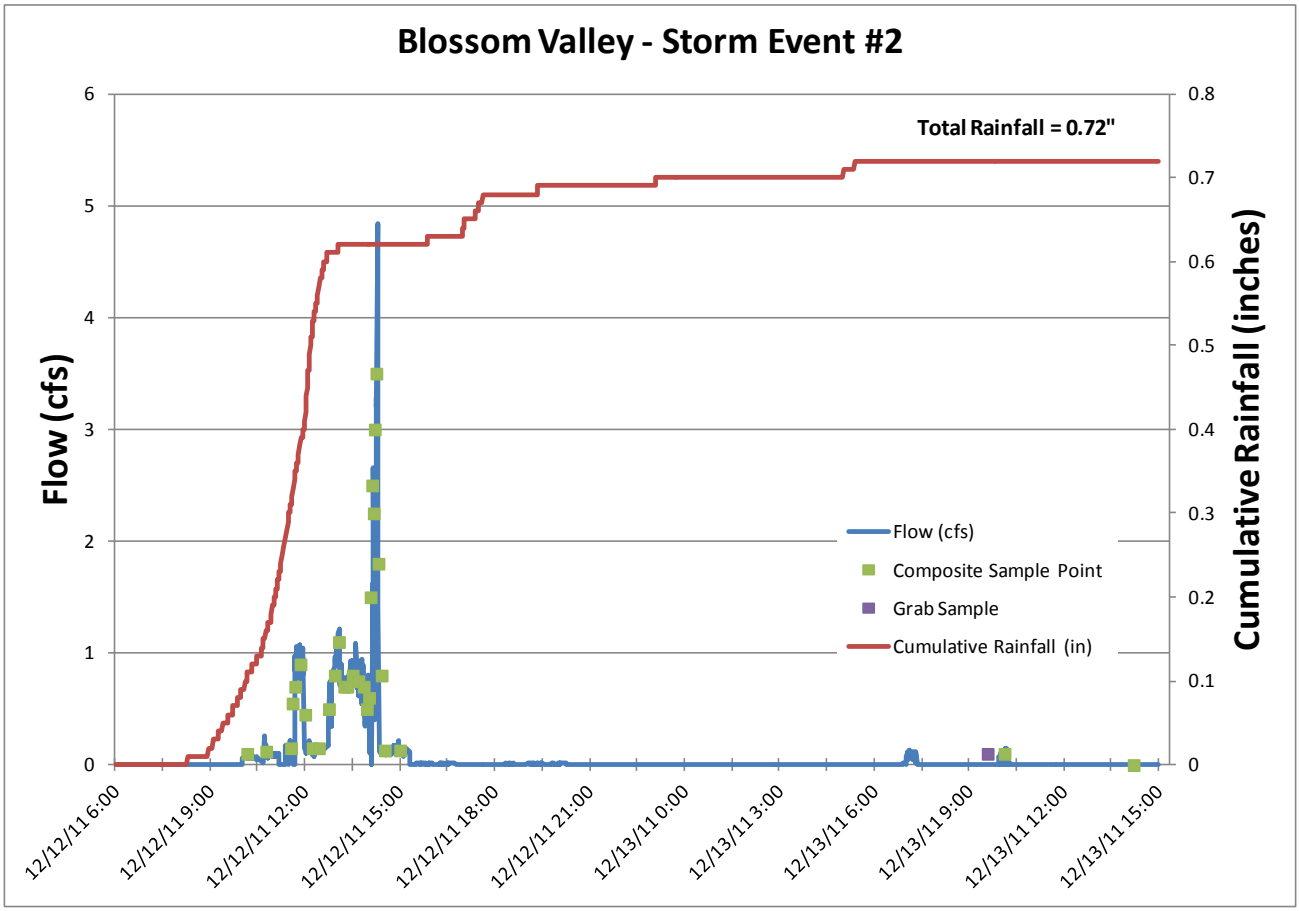

Figure 2-24. Blossom Valley Hydrograph – November 12, 2011.

Precipitation wise, the peak of the storm event occurred around 12:03 p.m. Flow wise, the peak of the storm event occurred at 1:25 p.m.

The composite was collected during this time period resulting in 100-percent capture for the event. The first grab sample (collected on December 13, 2011 at 10:05 a.m.) was taken after the storm event has ended and flow returned to very low level (before it ceased completely in mid afternoon on 12/12/2011). This sample, however, was still collected within the first 24 hours of the storm. Due to no flow, no additional grab samples were taken.

The results of in-situ measurements are presented in Table 2-8 and illustrated in Figures 2-23 through 2-25. Dissolved oxygen concentration and pH remained fairly constant throughout the storm while a marked decrease in water temperature was observed shortly after rainfall begun. During the same time there was also a sharp increase in turbidity and specific conductivity followed by a decrease in specific conductivity.

Table 2-8. Results of the *In-Situ* Field Measurements for Second Storm Event at Blossom Valley

Analytical Constituent		Units	Range	12/12 2011	12/13/2011							
				08:45	03:00	03:40	04:15	10:05	12:01	12:22	13:02	13:35
Storm Event #2	Water Temperature	°C	0 - 50	11.5	11.3	9.8	11.4	10.4	11.1	11.3	11.9	12.2
	pH	s.u.	0 – 14	8.41	8.34	8.09	8.14	8.05	8.15	8.09	8.11	8.11
	Dissolved Oxygen	mg/L	0 – 19.9	10.66	9.75	9.81	10.34	9.49	10.64	10.82	10.55	11.62
	Specific Conductivity	uS/cm	0 – 10,000	232	550	991	120	552	541	561	422	418
	Turbidity	NTU	0 - 999	31	126	728	324	142	170	156	1222	89

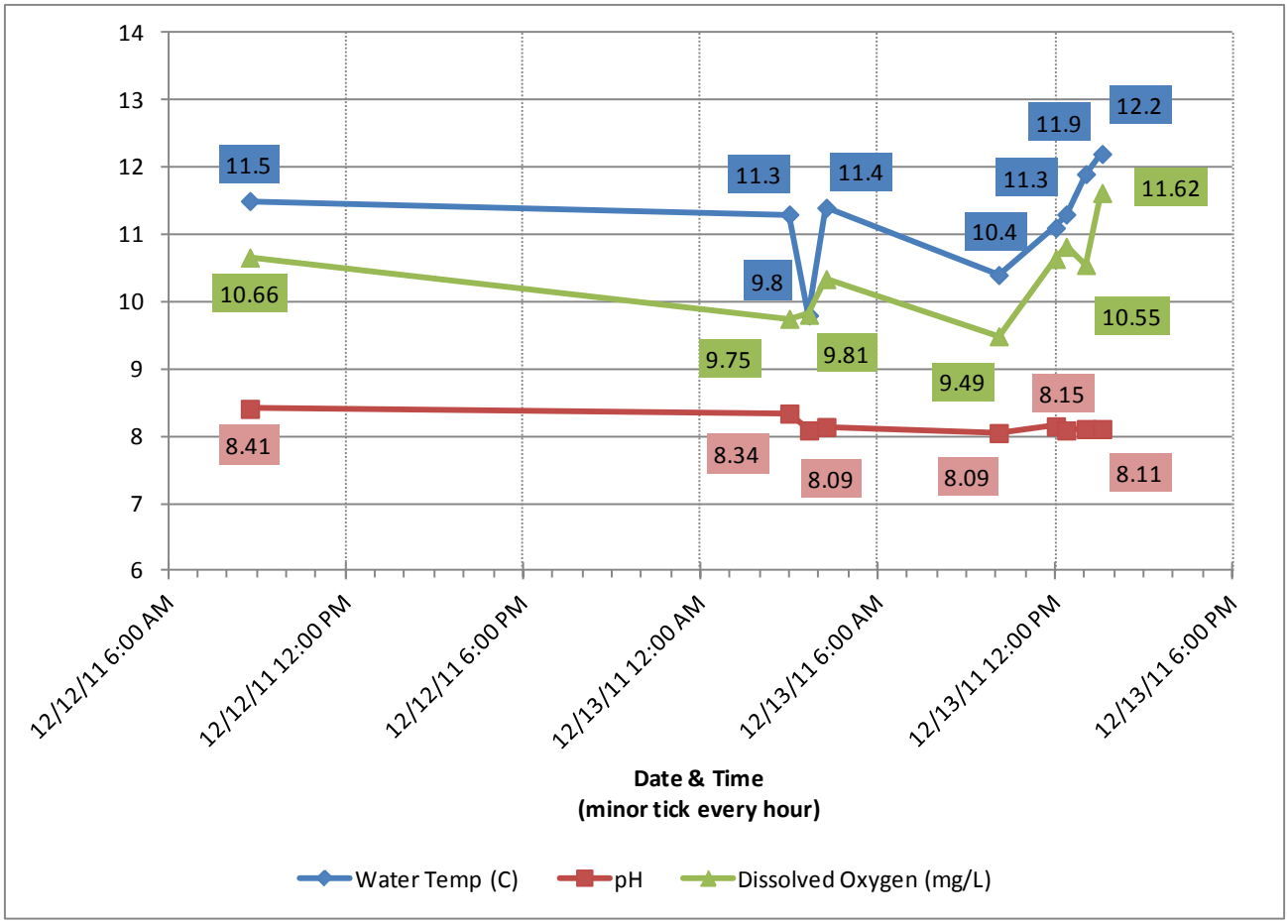

Figure 2-25. Water Temperature, pH and Dissolved Oxygen Concentrations – Blossom Valley, November 12-13, 2011.

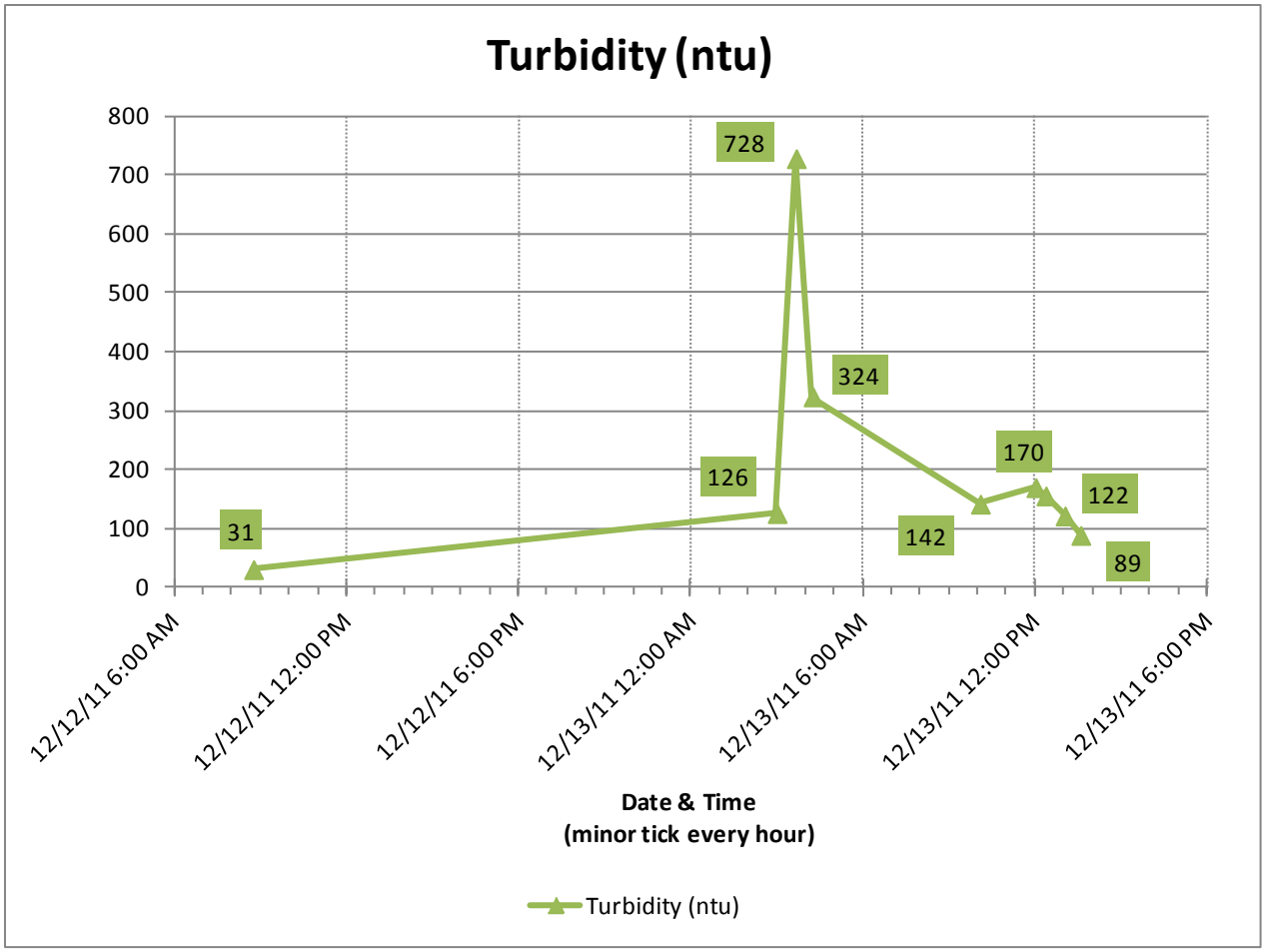

Figure 2-26. Turbidity – Blossom Valley, November 12-13, 2011.

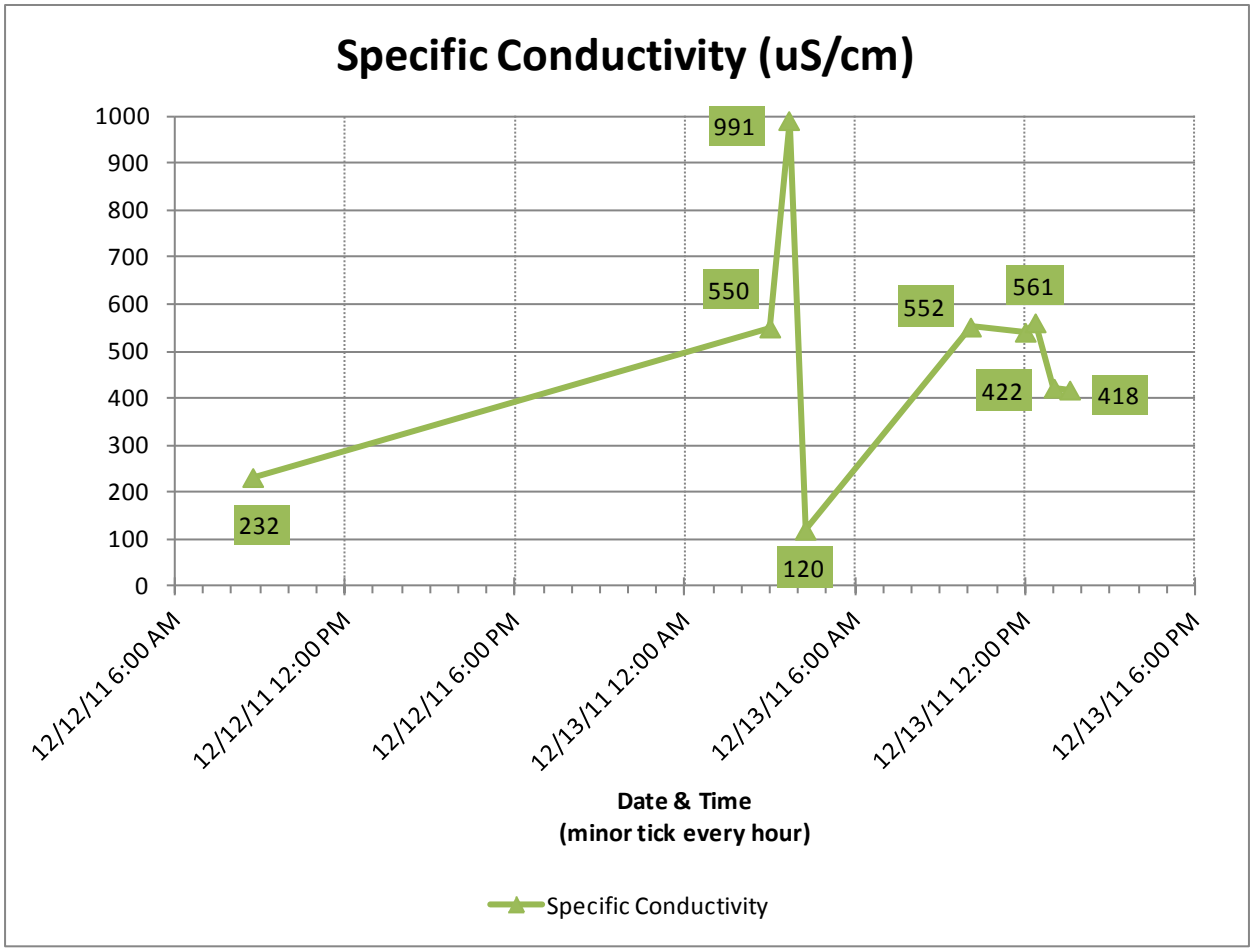

Figure 2-27. Specific Conductivity – Blossom Valley, November 12-13, 2011.

Figure 2-28. Stormwater Outfall from Culvert Inlet – December 12, 2011 at 10:14 a.m.

2.2.1.3 Third Storm Event – January 21, 2012

Field crew arrived onsite January 20, 2012 (Friday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations. The crew discovered that the previous weather event had displaced the flow meter from the interior pipe clamp. Plastic ties were put into place to prevent this from reoccurring (Figure 2-34).

According to the on-site rain gauge, measurable precipitation (0.01 inches) began at 6:40 a.m. January 21, 2012 (Saturday) and ended at 1:11 p.m. the same day for a total of 0.43 inches. The third storm event was fairly uniform with no localized intensity peaks. The flow rate was steady throughout the storm (Figure 2-29) (the sudden drop in flow from noon to about 1 pm as illustrated in the hydrograph, was due to equipment error as flow was too high to measure). Precipitation wise, the peak of the storm event occurred around 9:19 a.m. Flow wise, the peak of the storm event occurred at 3:45 p.m. The composite sample and the storm grab sample were collected successfully (resulting in 100-percent capture for this event).

After a dry and sunny period on Sunday, steady and drizzly rain, totaling 0.34 inches in precipitation, returned all day Monday with quick moments of intensity (Figure 2-30). The collection of the 24-hour "post-storm" grab sample was affected by the second event. No 48 and 72 hour post-storm grab samples were collected as the flow ceased.

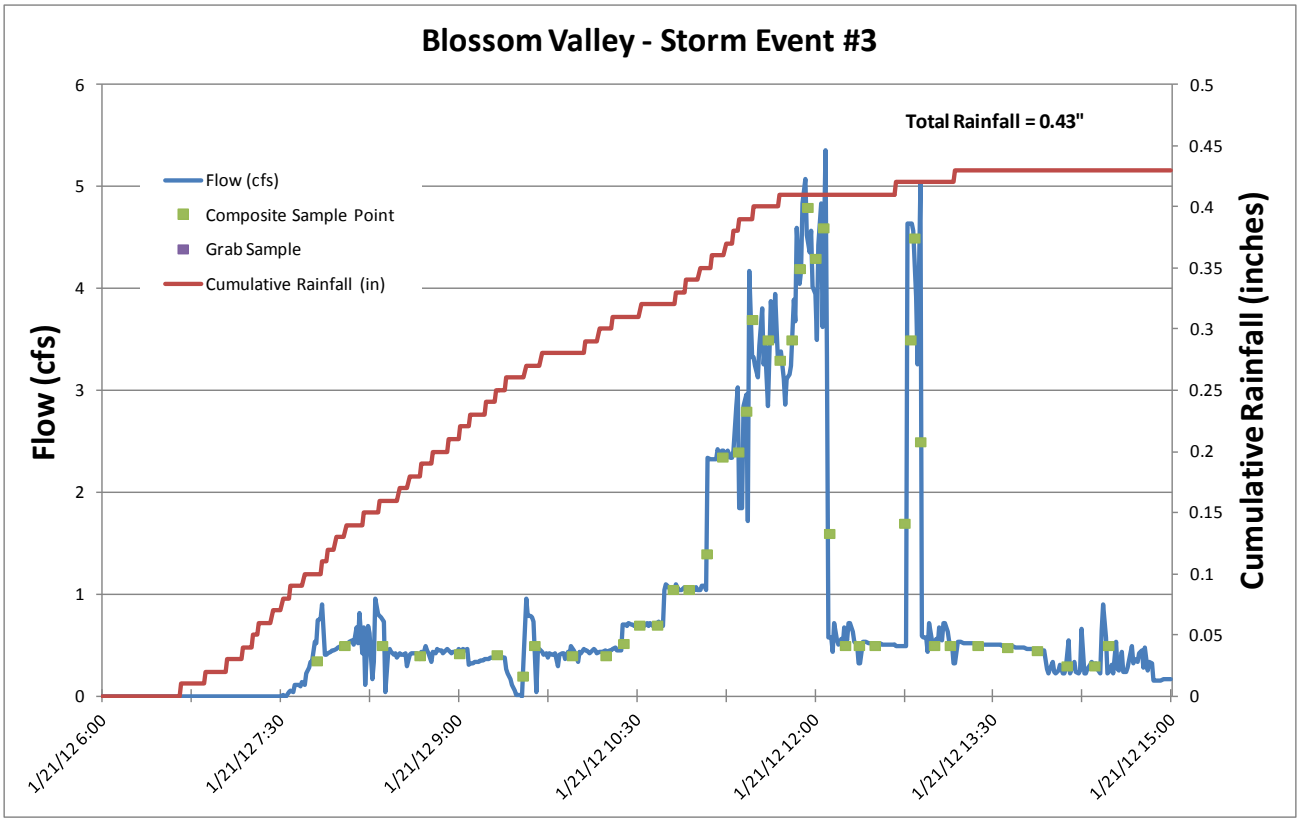

Figure 2-29. Blossom Valley Hydrograph – November 12, 2011. The sudden drop in the flow illustrated in the graph was due to equipment error as flow was too high to measure.

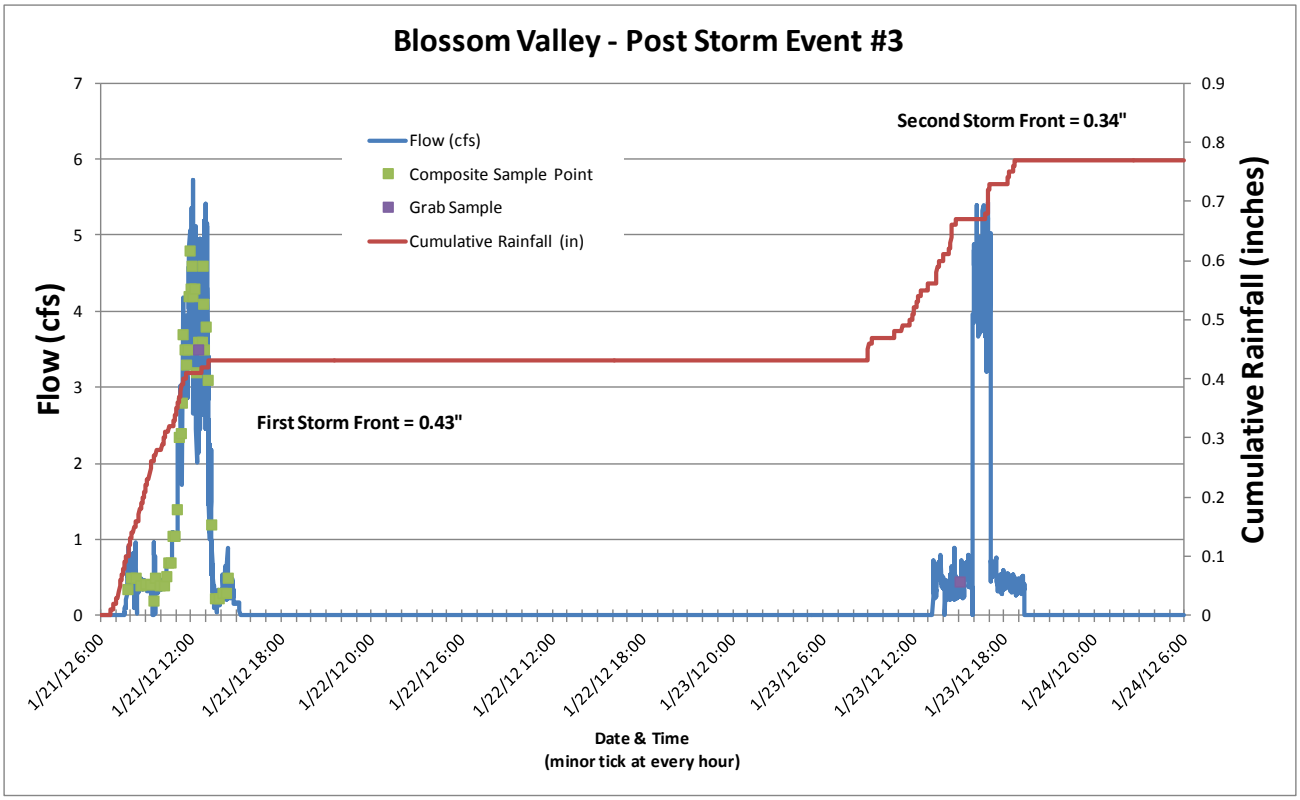

Figure 2-30. Blossom Valley – January 21, 2012 Storm Event and Post Storm Sampling.

The results of in-situ measurements are presented in Table 2-9 and illustrated in Figures 2-21 through 2-33. Dissolved oxygen concentration and pH remained fairly constant throughout the storm while a marked increase in water temperature was observed toward the end of the initial storm event. Turbidity and specific conductivity also increased during peak flow of the event.

Table 2-9. Results of the *In-Situ* Field Measurements for Third Storm Event at Blossom Valley

Analytical Constituent		Units	Range	1/21/2012							1/23/2012
				07:05	08:15	12:30	13:00	13:30	14:00	14:28	13:08
Storm Event #3	Water Temperature	°C	0 - 50	6.9	7.3	7.8	8.2	12.7	12.6	12.7	10.1
	pH	s.u.	0 – 14	7.89	7.93	8.09	8.14	7.95	7.91	7.97	7.46
	Dissolved Oxygen	mg/L	0 – 19.9	10.04	10.32	10.21	10.42	11.08	10.92	11.15	11.21
	Specific Conductivity	uS/cm	0 – 10,000	210	232	446	49*4	378	421	385	421
	Turbidity	NTU	0 - 999	38	44	178	92	88	62	65.4	49

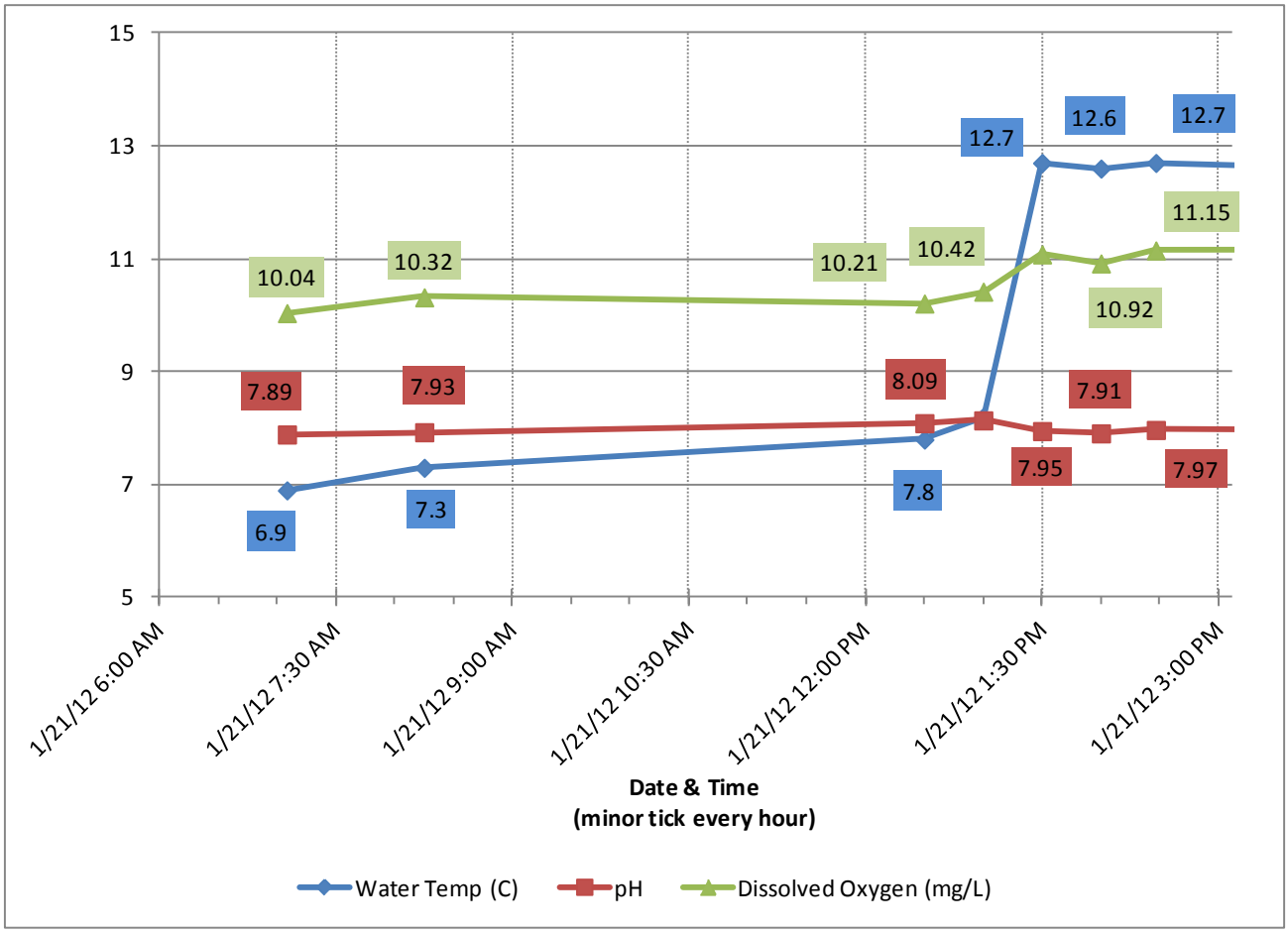

Figure 2-31. Water Temperature, pH and Dissolved Oxygen Concentrations - Blossom Valley, January 21-23, 2012.

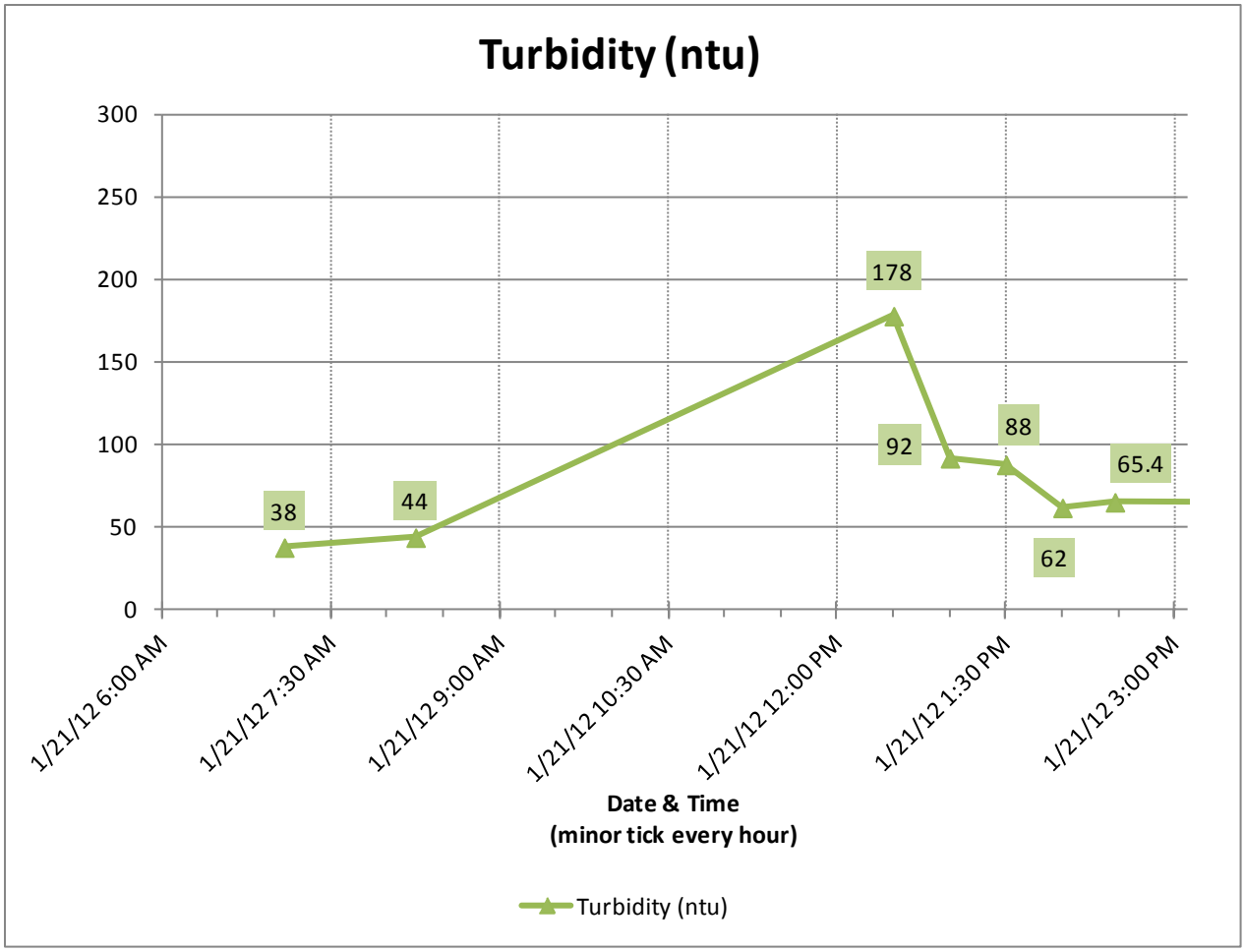

Figure 2-32. Turbidity –Blossom Valley, January 21-23, 2012.

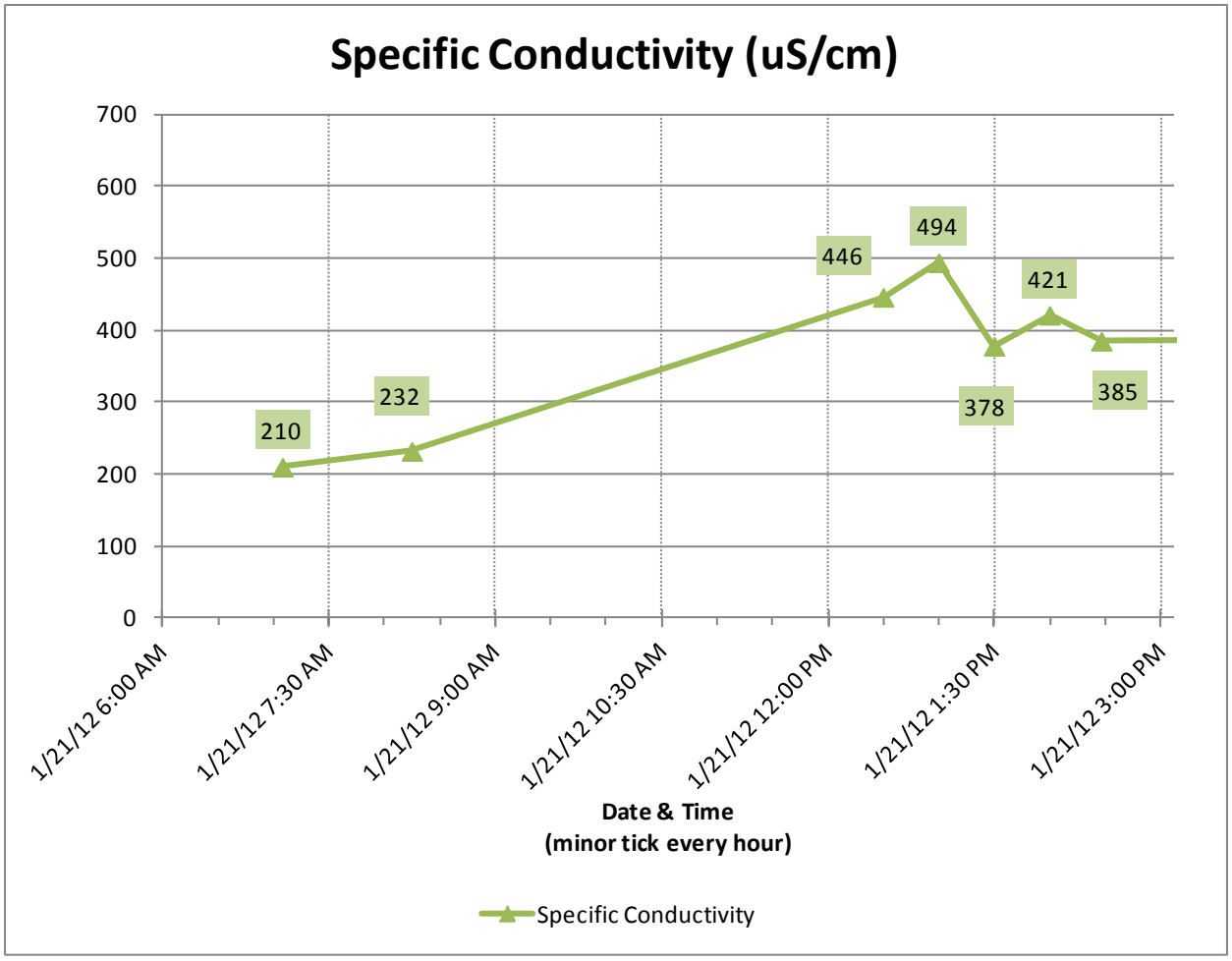

Figure 2-33. Specific Conductivity – Blossom Valley, January 21-23, 2012.

Figure 2-34. Flow Meter – January 20, 2011 at 2:56 p.m.

2.2.2 Blossom Valley – Flow Weighted Composite and Grab Sample Analysis Results.

The results of chemical constituent analysis for the flow-weighted composite samples collected at Blossom Valley over the three storm events are summarized in table 2-10. Table 2-11 shows the results of the composite sample microbiology analysis; the grab sample fecal indicator bacteria concentrations together with the corresponding sample times are presented in Table 2-12.

Table 2-10. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Blossom Valley over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	EnviroMatrix Method Detection Limit	Storm Event #1 11/12/2011 20:00	DQI	Storm Event #2 12/13/2011 14:13	DQI	Storm Event #3 01/21/12 14:28	DQI
Alkalinity, Bicarbonate	mg CaCO3/L	5	5	58		103		48	
Alkalinity, Carbonate	mg CaCO3/L	5	5	ND	U	ND	U	ND	U
Alkalinity, Hydroxide	mg CaCO3/L	5	5	ND	U	ND	U	ND	U
Boron, Total	mg/L	0.005	0.003	0.080		0.100		0.07	
Chloride	mg/L	0.20	0.05	100		110		50.0	
Sulfate	mg/L	0.50	10.0/5.0	38.5		92.2		18.5	
Hardness, Total	mg CaCO3/L	5.0	100	208		239		133	
Antimony, Dissolved	mg/L	0.005	0.0005	ND		0.0005	J	ND	U
Antimony, Total	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Arsenic, Dissolved	mg/L	0.001	0.0001	0.0006	J	0.0007	J	0.0004	J
Arsenic, Total	mg/L	0.001	0.0001	0.001		0.002		0.001	
Cadmium, Dissolved	mg/L	0.001	0.0002	ND	U	ND	U	ND	U

Table 2-10. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Blossom Valley over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	EnviroMatrix Method Detection Limit	Storm Event #1 11/12/2011 20:00	DQI	Storm Event #2 12/13/2011 14:13	DQI	Storm Event #3 01/21/12 14:28	DQI
Cadmium, Total	mg/L	0.001	0.0002	0.0004	J	0.0002	J	0.005	
Chromium, Dissolved	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Chromium, Total	mg/L	0.005	0.0005	0.010		0.007		0.008	
Copper, Dissolved	mg/L	0.005	0.0005	0.004	J	0.006		0.004	J
Copper, Total	mg/L	0.005	0.0005	0.023		0.040		0.018	
Lead, Dissolved	mg/L	0.002	0.0005	ND	U	ND	U	ND	U
Lead, Total	mg/L	0.002	0.0005	0.006		0.002		0.006	
Nickel, Dissolved	mg/L	0.002	0.0002	0.0009	J	0.001	J	0.0009	J
Nickel, Total	mg/L	0.002	0.0002	0.006		0.005		0.008	
Iron, Total	mg/L	0.020	0.035	18.0		9.28		9.62	
Manganese, Dissolved	mg/L	0.001	0.0001	0.004		0.005		0.006	
Manganese, Total	mg/L	0.001	0.0001	0.292		0.158		0.211	
Selenium, Dissolved	mg/L	0.002	0.0006	ND	U	ND	U	ND	U
Selenium, Total	mg/L	0.002	0.0006	ND	U	ND	U	ND	U

Table 2-10. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Blossom Valley over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	EnviroMatrix Method Detection Limit	Storm Event #1 11/12/2011 20:00	DQI	Storm Event #2 12/13/2011 14:13	DQI	Storm Event #3 01/21/12 14:28	DQI
Zinc, Dissolved	mg/L	0.005	0.0008	0.011		0.009		0.010	
Zinc, Total	mg/L	0.005	0.0008	0.190		0.045		0.057	
Total Dissolved Solids	mg/L	5.0	1.0	339		468		219	
Total Suspended Solids	mg/L	5	1.0	360		204		270	
Ammonia as N	mg/L	0.02	0.02	0.08	J	ND		0.20	
Nitrate as N	mg/L	0.05	0.22/0.04	1.16		4.11		1.17	
Nitrite as N	mg/L	0.05	0.007	0.06		0.05		0.08	
Total Kjeldahl Nitrogen as N	mg/L	0.5	0.3	2.2		1.1		1.9	
Orthophosphate as P	mg/L	0.05	0.007	0.18		0.13		0.25	
Total Phosphorus as P	mg/L	0.05	0.02	0.56		0.26		0.46	
Terbuthylazine	µg/L	0.01	0.01	ND	U	ND	U	ND	U
Secbumeton	µg/L	0.01	0.01	0.01		ND	U	ND	U
Simazine	µg/L	0.01	0.01	ND	U	ND	U	ND	U
Atrazine	µg/L	0.01	0.01	ND	U	ND	U	ND	U

Table 2-11. Microbiology Analysis Results for the Flow-Weighted Composite Samples Collected at Blossom Valley over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Storm Event #1	Storm Event #2	Storm Event #3
Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	8,000	8,000	35,000
Coliform, Total	MPN/100 mL	2 to 1,600,000	2	30,000	17,000	240,000
Enterococcus	MPN/100 mL	1 to 2,419,600	1	7,757	3,076	2,613
E. coli	MPN/100 mL	1 to 2,419,600	1	3,255	1,935	11,370

Table 2-12. Microbiology Analysis Results for the Grab Samples Collected at Blossom Valley over the Three Storm Events.

	Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Date of Sample	Time of Sample	Concentration Detected
Storm Event #1	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	11/12/2011	20:00	8,000
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	11/12/2011	20:00	30,000
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	11/12/2011	20:00	7,757
	E. coli	MPN/100 mL	1 to 2,419,600	1	11/12/2011	20:00	3,255
Storm Event #2	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	12/13/2011	10:05	17,000
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	12/13/2011	10:05	170,000
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	12/13/2011	10:05	10,394
	E. coli	MPN/100 mL	1 to 2,419,600	1	12/13/2011	10:05	5,172
Storm Event #3	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	1/21/2012	16:35	22,000
					1/23/2012	15:05	230
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	1/21/2012	16:35	220,000
					1/23/2012	15:05	5,000
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	1/21/2012	16:45	3,592
					1/23/2012	15:00	959
	E. coli	MPN/100 mL	1 to 2,419,600	1	1/21/2012	17:00	19,349
					1/23/2012	15:05	756

Appendix A

Additional Photographs from Sampling Events 2011-12

Included as a CD Reference

(Available upon request from County of San Diego)

Appendix B

Monitoring Plan and QAPP for Watershed-Wide Monitoring in 2011-12

(Available upon request from County of San Diego)

Appendix C

Laboratory Analytical Results for Watershed-Wide Monitoring in 2011-12

Excel Data Table as SWAMP format included CD Reference

Chain of Custody Forms included per Laboratory Certificate

(Available upon request from County of San Diego)

Appendix D

Flow and Precipitation Data for Watershed-Wide Monitoring in 2011-12

Excel Data Export from HACH and ISCO Equipment

(Available upon request from County of San Diego)

Appendix E

Field Observation for Watershed-Wide Monitoring in 2011-12

Physical In-Situ Measurements

(Available upon request from County of San Diego)

San Dieguito

Watershed Urban Runoff Management Program

March 2008

San Dieguito River Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Del Mar participated in the development of the San Dieguito River Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Karen P. Brust

KAREN P. BRUST
City Manager
City of Del Mar

3/18/08
Date

San Dieguito Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Escondido participated in the development of the Carlsbad Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Mary Ann Mann
Utilities Manager
City of Escondido

March 20, 2008

STATEMENT OF CERTIFICATION
San Dieguito River Watershed Urban Runoff Management Program

I certify under penalty of law that the County of San Diego participated in the development of the San Dieguito River Watershed Urban Runoff Management Program and all attachments. County staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

3-21-08
Date

San Dieguito River Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Poway participated in the development of the San Dieguito River Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kevin Haupt
Director of Public Works
City of Poway

March 14, 2008

Robert J. Manis
Director of Development Services
City of Poway

March 14, 2008

THE CITY OF SAN DIEGO

RE: San Dieguito River Watershed Urban Runoff Management Program Statement of Certification

I certify under penalty of law that the City of San Diego participated in the development of the San Dieguito River Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew Kleis

Andrew Kleis
Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
City of San Diego

3/18/08
Date

DIVERSITY BRINGS US ALL TOGETHER

Storm Water Pollution Prevention Division
1970 B Street, MS 27A • San Diego, CA 92102
Hotline (619) 235-1000 Fax (619) 525-8641

CITY OF SOLANA BEACH
635 SOUTH HIGHWAY 101 • SOLANA BEACH, CALIFORNIA 92075-2215 • (858) 720-2400
www.ci.solana-beach.ca.us FAX (858) 792-6513 / (858) 755-1782

San Dieguito River Watershed Urban Runoff Management Program
Statement of Certification

I certify under penalty of law that the City of Solana Beach participated in the development of the San Dieguito River Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Dan Goldberg, P.E.
Interim Director of Engineering/Public Works
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EXECUTIVE SUMMARY

The San Dieguito River is one of the eight major stream systems in San Diego County that drains to the Pacific Ocean. In recent years, there has been a growing concern that the San Dieguito River and Lagoon are being impacted by pollution associated with urban and stormwater runoff. Controlling pollution in runoff is critical to preserving aquatic resources and the economic viability of the San Diego region. The San Dieguito River Watershed Urban Runoff Management Program is intended to be one of many efforts to protect and improve water quality, thereby protecting the natural resources within the watershed and ensure sustainability for future generations. The San Dieguito River and its watershed have benefited greatly due to the efforts of the San Dieguito River Park Joint Powers Authority (JPA). The San Dieguito River Park JPA was formed as a separate agency on June 12, 1989, by the Cities of Del Mar, Escondido, Poway, San Diego and Solana Beach and County of San Diego –all local agencies which have jurisdiction within the San Dieguito River watershed. The San Dieguito River Park JPA is empowered to acquire, plan, design, improve, operate and maintain the San Dieguito River Park. It is envisioned that the Park will someday extend from the ocean at Del Mar to Volcan Mountain, just north of Julian.

The goal of the San Dieguito River Watershed Urban Runoff Management Program (WURMP) is to positively impact the water quality of the receiving waters in the San Dieguito Watershed Management Area while balancing economic, social, and environmental constraints. The San Dieguito Watershed Urban Runoff Management Plan has been prepared by the City of Escondido, as lead agency, in collaboration with the Cities of Del Mar, Poway, San Diego, Solana Beach, and the County of San Diego – all local agencies which have jurisdiction within the San Dieguito Watershed Management Area. The Plan meets the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit for San Diego Copermittees (Order No. R9-2007-0001, NPDES No. CAS0108758). The Municipal Stormwater Permit requires the development and implementation of Watershed Urban Runoff Management Programs for each of nine watershed areas within San Diego County, including the San Dieguito River Watershed Management Area. This document represents the plan the jurisdictions have prepared to implement said Program.

The San Dieguito WURMP is the continuation of a long-term effort to protect and enhance the water quality of the river, tributaries, and lagoon, at the watershed level. It is the goal of all participating jurisdictions to work cooperatively with other agencies, non-governmental organizations, and private citizens at the watershed level in order to positively affect the water resources of the region and achieve compliance with the Municipal Permit. It should be noted that this plan has been written with the public in mind as a means to engage San Diego area residents in watershed issues and to facilitate public understanding of challenges related to the protection of our precious water resources.

The San Dieguito WURMP identifies and prioritizes water quality problems within the watershed that can be potentially attributed to discharges from the municipal storm drain systems and may be addressed through a cross-jurisdictional approach. Additionally, activities to abate sources of pollution and restore and protect beneficial uses are also identified. During this initial year, the evaluation of watershed conditions and the potential sources of the pollutants were based upon a limited data set. As more data become available, it is important that the Program be evaluated and allowed to evolve. Participating agencies consider this point in time to be the continuation of a long-term process – reducing the pollutant loads that are contributing to the water quality problems identified in the Watershed Management Area. Consistent with the Municipal Permit, Program amendments or revisions will be submitted to the California Regional

Water Quality Control Board – San Diego Region for review as part of the annual reporting process.

The Copermittees developed a collective watershed management strategy that is found in Chapter 2. The watershed strategy focuses the program efforts on the water quality problems and potential sources that are unique to the San Dieguito Management Area sub-watersheds. Data analyzed to date suggests that bacteria are a high priority water quality problem throughout the Watershed Management Area. Nutrients have been identified to be a high priority water quality problem in one of the hydrologic areas – the San Pasqual Valley sub-watershed. Additionally, total dissolved solids and gross pollutants have been identified as pollutants of concern within sub-watersheds. Lastly, other issues that have the potential to negatively affect water supply have also been noted. The water quality assessment is discussed in detail in Chapter 3.

To address issues of concern, this Plan identifies a series of watershed water quality and education activities in Chapter 4, in addition to other ongoing and planned activities identified for Land Use Planning and Public Participation. Having used the collective watershed strategy as the basis for developing the activities, the Copermittees have focused the activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the San Dieguito Watershed Management Area.

The Cities of San Diego, Del Mar, Escondido, Poway, Solana Beach and the County of San Diego share the implementation responsibilities for the Program. Due to the commitments of these agencies, this watershed program is expected to extend beyond the Municipal Permit expiration date of January 24, 2012. Using the watershed approach, the Cities of San Diego, Del Mar, Escondido, Poway, Solana Beach and the County of San Diego aim to protect and enhance aquatic resources in a cost effective, environmentally sensitive, and collaborative manner.

1. INTRODUCTION

Urban and stormwater runoff discharged into streams, bays, and oceans from municipal storm drain systems has been identified under local, regional, and national research programs as one of the principal causes of water quality problems in most urbanized regions. Runoff reaching our waterways has the potential to contain a host of pollutants like trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, and metals. These pollutants can adversely affect receiving and coastal waters, associated biota, and public health.

The San Dieguito River Watershed Management Area (WMA) is within the boundaries of the Cities of San Diego, Del Mar, Escondido, Poway, Solana Beach and the County of San Diego. These local jurisdictions are committed to finding creative and effective ways to improve the water quality of the receiving waters of the San Dieguito River WMA, such as the San Dieguito Lagoon and Pacific Ocean, while also complying with the National Pollutant Discharge Elimination System Municipal Stormwater Permit (Order No. 2007-0001), hereafter referred to as the Municipal Permit.

While the Cities of Del Mar, Escondido, Poway, San Diego, Solana Beach and the County of San Diego ("San Dieguito River WMA Copermittees") are implementing broad water pollution prevention programs within their respective jurisdictions, the San Dieguito River Watershed Urban Runoff Management Program focuses specifically on water quality related issues within the San Dieguito River WMA that can be potentially attributed (wholly or partially) to discharges from the municipal separate storm sewer system (MS4) and may be addressed through a cross-jurisdictional approach.

The primary goal of this inter-jurisdictional effort is to positively affect the water resources of the San Dieguito River WMA while balancing economic, social and environmental constraints.

Why a Watershed?

A watershed is defined as a contiguous area of land that drains to a particular location, usually a water body such as a creek, lake, lagoon, or ocean (See Figure 1-1). Watersheds come in all shapes and sizes and cross jurisdictional, state and national boundaries. The delineation of a watershed, or drainage area, depends on the scale of reference and small watersheds are combined together to become larger watersheds. Watershed boundaries follow the major ridgelines around river channels and meet where the water flows out of the watershed, usually the mouth of a stream or river.

In San Diego County, all waterways west of the Peninsular Range ultimately reach to the Pacific coast. While watersheds can be large or small, we all live in a watershed as every stream, tributary, or river has an associated watershed.

Because the water moves downstream in a watershed, any activity that affects the water quality, quantity, or rate of movement at one location can affect the watershed and receiving waters at downstream locations. Before reaching a stream, surface runoff accumulates from the highest points in a watershed and flows downhill across lawns, rooftops, parking lots, and roads, picking up many pollutants along the way that have the potential to reach our rivers and beaches. For this reason, everyone living or working within a watershed needs to contribute to ensure the health of the watershed.

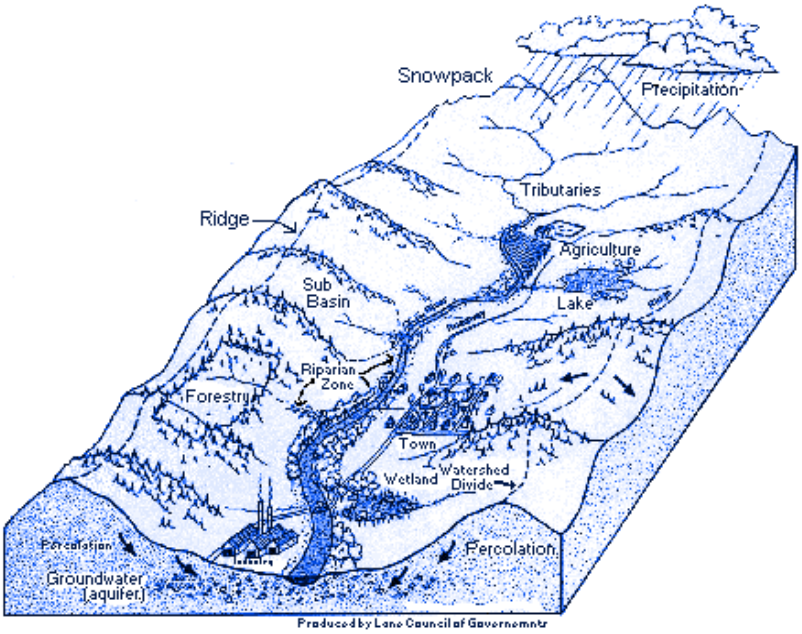

Figure 1-1 Typical watershed. ***Source: U.S. EPA, Office of Wetlands, Oceans & Watersheds***

Most environmental management activities have traditionally been based on the jurisdictional limits of participating institutions including cities, counties, and states. While this may be effective in some instances, it is also important to implement and coordinate activities on a sub-watershed scale. Sub-watersheds often share common water quality problems and sources based on land use and other factors which may provide more effective activity implementation, investigations, or analysis.

San Diego Watersheds

San Diego County encompasses an area of over 4,000 square miles in the southwest corner of California. The northwest to southeast trending Peninsular Range divide two hydrologic regions in the San Diego region. The San Diego Hydrologic Region drains in a westerly direction toward the Pacific Ocean and the Colorado Hydrologic Region drains in an easterly direction toward the Colorado River.

There are a total of 11 major watersheds or *hydrologic units* in the San Diego Hydrologic Region encompassing a land area of nearly 3,000 square miles (See Figure 1-2). Eight major stream systems originate on the western slope of the Peninsular Range and discharge into the Pacific Ocean. From north to south they are San Juan Creek, Santa Margarita, San Luis Rey, San Dieguito, San Diego, Sweetwater, Otay, and Tijuana Rivers. In addition, there are three hydrologic units whose headwaters are located between the Peninsular Range and the Pacific Ocean. These include the Carlsbad, Los Peñasquitos, and Pueblo San Diego units[1].

[1] Project Clean Water, 2002.

Figure 1-2 San Diego Hydrologic Units.

In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards ("Regional Boards") have primary responsibility for the protection of water quality. This requires preventing and reducing water pollution in our rivers, streams, lakes, beaches, bays, and groundwater. Within this regulatory context, the San Diego Regional Board determines the appropriate scale to define watersheds in the region. For regulatory purposes, the Regional Board has divided the San Diego region into 11 Watershed Management Areas as illustrated in Figure 1-3.

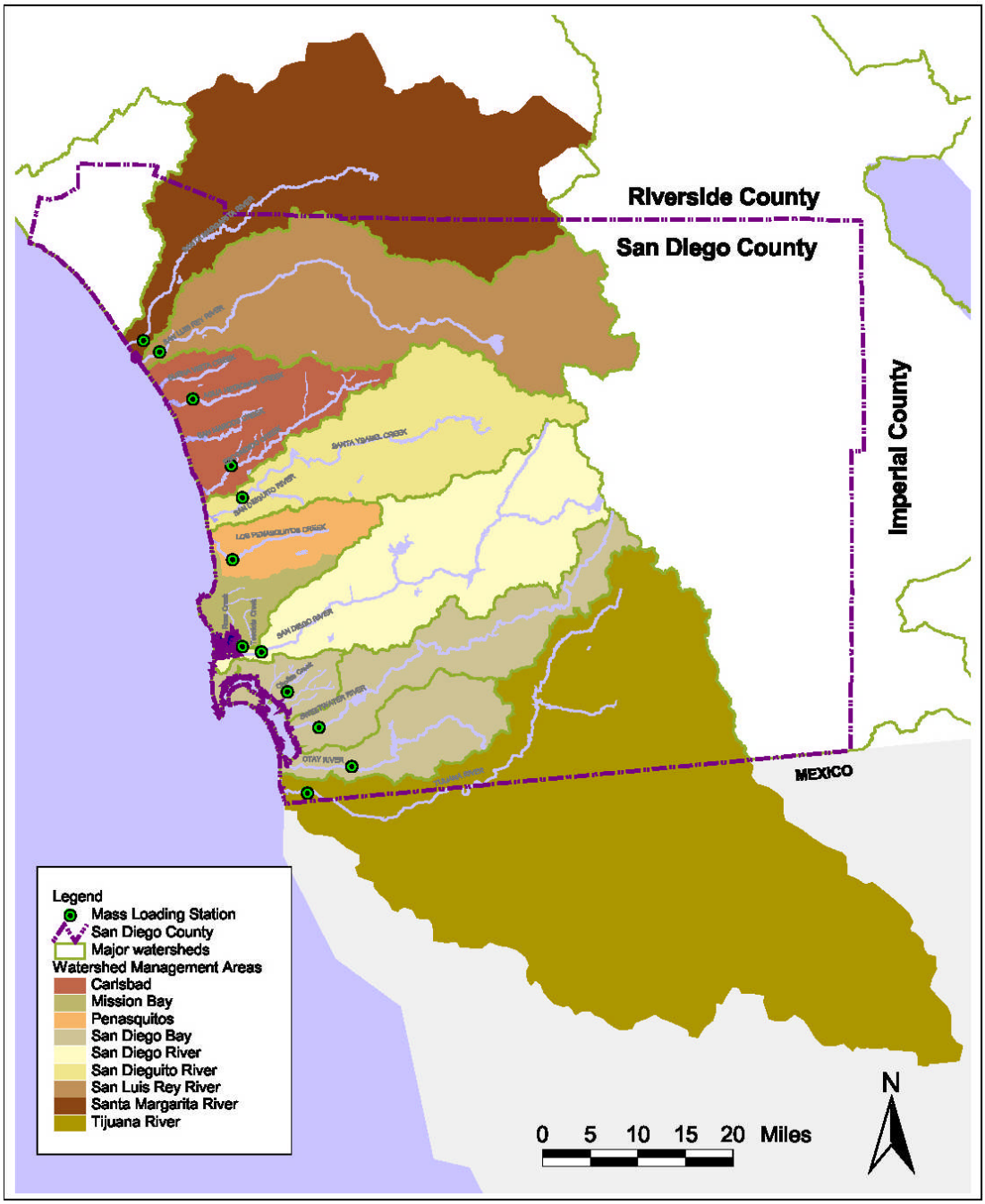

Figure 1-3 San Diego Watershed Management Areas

Background

Pollutant loads associated with urban and stormwater runoff is one of the leading causes of water quality impairment in the San Diego region and nationwide. Pollutants carried in urban and stormwater runoff, indiscriminate of dry or wet weather conditions, routinely find their way to our creeks, lagoons, bays, and ocean via the municipal storm drain systems. Unlike many other

regions in the country, storm drain systems in San Diego are separate from sanitary sewer systems (Figure 1-4). The San Dieguito River Watershed storm drain system, like the drainage system throughout San Diego County conveys urban runoff and rainwater from our streets, rooftops, driveways, parking lots, and other impervious areas, directly to the river and Pacific Ocean without receiving any form of treatment.

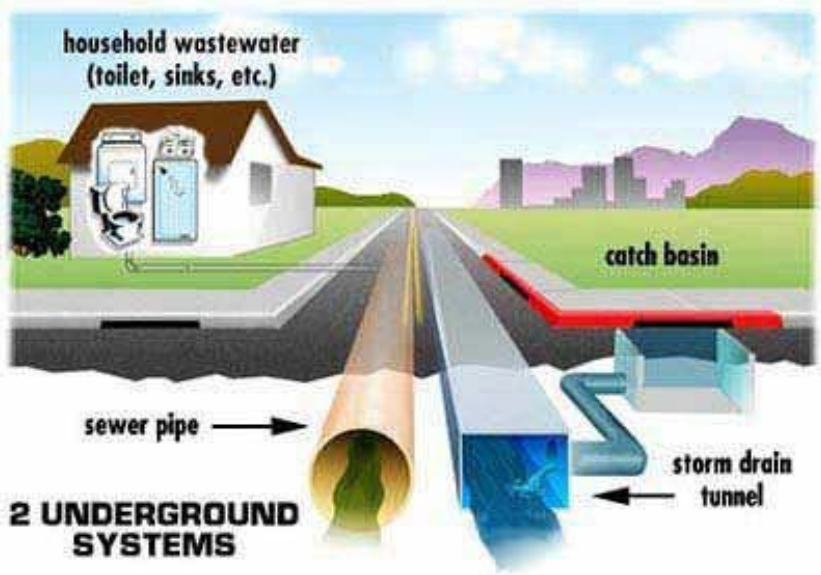

Figure 1-4. San Diego Sanitary Sewer and Storm Drain Systems.

Urban and stormwater runoff potentially contain a host of pollutants like trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals. These contaminants can adversely affect receiving and coastal waters, associated wildlife, and public health. Water pollution associated with runoff is not only a problem during rainy seasons, but also year-round due to many types of water use activities that discharge runoff into the storm drain system.

1.1. Program Framework

Municipal Stormwater Permit

The principal law governing pollution of the nation's surface waters is the Federal Water Pollution Control Act, more commonly known as the Clean Water Act. The Clean Water Act set the goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The federal Clean Water Act was amended in 1987 to address urban and stormwater runoff. One requirement of the amendment was that many municipalities throughout the United States were obligated for the first time to obtain National Pollutant Discharge Elimination System (NPDES) permits for discharges from their stormwater conveyance system. The National Pollutant Discharge Elimination System (NPDES) is a federal program established under the Clean Water Act to regulate discharges from any point source. A point source, as defined under the Clean Water Act is any "discernible, confined and discrete conveyance from which pollutants are or may be discharged." Discharge of urban and stormwater runoff conveyed in the storm drain system is considered a point source. Section 402(p) of the Clean Water Act prohibits municipal stormwater discharges without an NPDES permit. Discharge from any point source, except in compliance with an NPDES permit, is considered unlawful.

Residents, businesses and other uses within local jurisdictions contribute to discharges of pollution in stormwater and urban runoff from their property into *receiving waters* of the San Diego region via municipal storm drain systems. These municipal stormwater discharges are regulated under countywide requirements contained in Regional Board Order No. 2007-0001. This Order serves as the NPDES Municipal Stormwater Permit (Municipal Permit) for the

County of San Diego, the San Diego Unified Port District, the San Diego Regional Airport Authority and the 18 incorporated cities of San Diego County, referred to collectively as the *Copermittees*.

The Municipal Permit is granted and administered by the State Water Resources Control Board through the San Diego Regional Water Quality Control Board ("Regional Board"). The State Water Resources Control Board (SWRCB) and its nine Regional Boards have primary responsibility in California for the protection of water quality. This responsibility translates into preventing and reducing water pollution in our rivers, streams, lakes, beaches, and bays.

Municipal Permits seek to ensure that the *beneficial uses* of receiving waters are protected. Beneficial uses are defined as the uses of water necessary for the survival or well being of people, plants, and wildlife. Beneficial uses include surfing at a local beach, fishing in a creek or stream, or just taking a pleasurable walk along a scenic waterfront. Municipal stormwater NPDES permits contain requirements to achieve numeric and narrative *water quality objectives* that are established to protect beneficial uses. Water quality objectives are defined as pollutant concentrations, levels, or narrative statements, representing a quality of water that supports the most sensitive beneficial uses that have been designated for a water body.

Each Copermittee is required to implement the requirements of the Municipal Permit across two broad levels of responsibility: (1) their jurisdiction and (2) their watershed(s). The Municipal Permit reflects these two broad levels of responsibility, in that it requires implementation of comprehensive urban runoff management programs, memorialized though Urban Runoff Management Plans, at both jurisdictional and watershed levels.

All San Dieguito River WMA Copermittees are implementing their Jurisdictional Urban Runoff Management Plans. In general, these plans outline broad implementation actions that each of these agencies will undertake in order to protect and improve the water quality of the Pacific Ocean, as well as rivers, creeks and bays in the region while achieving compliance with the Municipal Permit.

Watershed Urban Runoff Management Programs

The Municipal Permit requires the development and implementation of Watershed Urban Runoff Management Programs (WURMPs) for each of nine watershed management areas within San Diego County.

The City of Escondido is the lead Copermittee for the San Dieguito River Watershed Urban Runoff Management Program. As such, Escondido is responsible for developing the San Dieguito River Urban Runoff Management Program, producing associated documents, and coordinating overall implementation of the program. All San Dieguito River Watershed Copermittees are required to collaborate with one another within the watershed to develop and implement a program that "…reduces the discharge of pollutants from the MS4 to the MEP, and prevent urban runoff discharges from the MS4 from causing or contributing to a violation of water quality standards." (Permit Section E.2).

The San Dieguito River Watershed Urban Runoff Management Program will be submitted to the Regional Board no later than March 24, 2008. Additionally, annual program reports will also be submitted to the Regional Board. Annual reports will include the following:

1. A comprehensive description of all activities conducted by the watershed Copermittees;
2. Updates to any watershed maps;
3. Updates to assessments and analyses of the WMA's current and past applicable water

quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period;

4. Identification of the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed;
5. Updates to list of potential Watershed Water Quality Activities;
6. Identification and description of the Watershed Water Quality Activities implemented by each Copermittee during the reporting period;
7. Updates to list of potential Watershed Education Activities;
8. Identification and description of the Watershed Education Activities implemented by each Copermittee during the reporting period;
9. Description of the public participation mechanisms used during the reporting period and the parties that were involved;
10. A description of Copermittee collaboration efforts including meeting as the Los Peñasquitos WMA WURMP Workgroup;
11. Description of the efforts implemented to encourage collaborative, watershed-based, land-use planning;
12. When applicable, description of all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. The description shall include:
    a. Any additional source identification information;
    b. The number, type, location, and other relevant information about BMP implementation, including any expanded or better tailored BMPs necessary to meet the WLAs;
    c. Updates in the BMP implementation prioritization and schedule;
    d. An assessment of the effectiveness of the BMP Implementation Plan, and;
    e. A discussion of the progress to date in meeting the TMDL Numeric Targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.
13. Assessment of the effectiveness of the WURMP.

The first annual report will be submitted to the Regional Board by January 31, 2009. Subsequent annual reports are due every January 31st during the life of the current Municipal Permit.

Water Quality Control Plan for the San Diego Basin

The Water Quality Control Plan for the San Diego Region (more commonly referred to as the Basin Plan) was adopted by the Regional Board in 1994. This document serves to guide and coordinate the management of water quality within the region. According to the Basin Plan, "the most basic goal of the Regional Board is to preserve and enhance the quality of water resources in the San Diego Region for the benefit of present and future generations[2]." Specifically, the Basin Plan: (1) designates beneficial uses for inland surface waters, coastal waters, reservoirs and lakes, and ground water; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses; (3) describes implementation programs to protect the beneficial uses of all waters in the Region; and, (4) describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan. The Basin Plan incorporates by reference all applicable State and Regional Board plans and policies.

[2] San Diego Regional Water Quality Control Board (SDRWQCB), 1994.

Beneficial uses applicable to the waters of the state of California include contact water recreation (such as swimming and surfing), provision of habitat for freshwater, marine and wildlife species, and water supply.

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) and the Federal Clean Water Act both mandate periodic review of water quality control plans. Section 303 (c)(1) of the Federal Clean Water Act requires, "… the water pollution control agency of such State shall from time to time (but at least once each three year period...) hold public hearings for the purpose of reviewing applicable water quality standards[3] and, as appropriate, modifying and adopting standards." Because the review mandated by the Clean Water Act takes place every three years, it is termed a "Triennial Review".

Clean Water Act Section 303(d) Listed Water Bodies

Section 303(d) of the federal Clean Water Act requires States to periodically identify all surface waters in the state that do not meet *water quality objectives* as described in the Basin Plan. In California, the State Water Resources Control Board works with its Regional Boards to compile a draft list that is submitted to the U.S. Environmental Protection Agency for their review and approval. The list must include a description of the pollutants causing the violation of water quality objectives and a priority ranking of the water quality limited segments for the purpose of development of action plans aimed to improve their water quality. These action plans are referred to as *Total Maximum Daily Loads* (TMDLs).

The most recent 303(d) list for the San Dieguito River Watershed is shown in Table 1-1 below.

Table1-1. 2006 303(d) listings for San Dieguito River Watershed

Water Body Name	Hydrologic Sub Area (HSA)	HSA	Pollutant/Stressor
Pacific Ocean Shoreline	Rancho Santa Fe	905.11	Bacterial Indicators
Green Valley Creek	Del Dios	905.21	Sulfates, Chloride, Manganese, PCP
Lake Hodges	Del Dios	905.21	Color, Nitrogen, Phosphorus, Turbidity, Manganese, pH
Kit Carson Creek	Del Dios	905.21	TDS, PCP
Felicita Creek	Felicita	905.23	TDS, Aluminum
Cloverdale Creek	Highland	905.32	Phosphorus, TDS
Sutherland Reservoir	Sutherland	905.53	Color, Manganese, pH

Program Responsibilities

As described above, the San Dieguito River Watershed falls within the boundaries of the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach as well as within unincorporated areas under the jurisdiction of the County of San Diego. While the City of Escondido is identified as the WURMP lead Copermittee, all of the Copermittees have participated in the development of this WURMP and are responsible for its continued assessment and implementation.

[3] *Water Quality Standards* refer to both numeric and narrative water quality objectives and beneficial uses.

The following section identifies which specific departments and/or divisions within each of the participating jurisdictions are responsible for stormwater management activities as well as their primary functions and goals.

CITY OF DEL MAR

Del Mar is continuing to implement the environmentally friendly policies and guidelines of its City Council and citizens'. The City developed and is implementing its Jurisdictional Urban Runoff Management Program in order to affect a change in water quality within the City's stormwater conveyance system. However, the Program's primary goal is to protect its most visible and valuable natural resources – our lagoons, and the Pacific Ocean – from the degradation caused by pollution in urban runoff.

The Clean Water Manager, within the Planning and Community Services Department, has primary responsibility for development and implementing the Program's many elements, and ensuring city-wide compliance with the Municipal Permit. To accomplish this, the Clean Water Manager works with staff from the various City Departments; representatives from community and environmental groups; and staff from other jurisdictions in San Diego County to ensure that the requiremnts of the Municipal Permit are met through proper education/training, water quality monitoring and assessment, auditing, facility inspections, planning and reporting, and enforcement activities. All of the City's departments are working closely to implement the Urban Runoff Program as effectively and efficiently as possible.

CITY OF ESCONDIDO

Historically, the City of Escondido has been proactive in developing and implementing programs to improve water quality, particularly as it relates to urban runoff. Operated by the Public Works Department, these programs include street-sweeping, sewer line maintenance and overflow response, litter and debris abatement, storm drain stenciling, Escondido Creek baseline monitoring, dry weather monitoring, illegal dumping response, household hazardous waste, and Citywide cleanup events. Therefore, the City's stormwater program was developed to not only respond to the requirements of Municipal Permit, but also to incorporate and augment existing water quality improvement programs. Consistent with the City's past and present environmental objectives, the goal of the City's stormwater program is to improve water quality at the local and regional levels, as well as to comply with the mandates of the Permit. To achieve these goals, the City's stormwater program specifies measures to reduce the discharge of pollutants during the three major phases of urban development: planning, construction, and existing development stages. Based on the mandates of the Permit, the development of these measures has involved expanding the stormwater program to include other City departments and divisions, such as the Attorney's Office, Planning Department, Fire Department, Code Enforcement Division, etc. In addition, to manage the broad scope of the City's stormwater program, the coordination of its major components is assigned to the Public Works/Utilities Administration Division.

CITY OF POWAY

The City of Poway has a Stormwater Pollution Prevention Program in place to ensure compliance with the Municipal Stormwater Permit. The Program goals are to comply with Federal, State, and regional regulatory requirements. The City's Stormwater Program must ensure all public and private facilities, and existing and new development implement the City's Jurisdictional Urban Runoff Management Plan. The City of Poway Stormwater Program receives policy direction from the City Council. The administration of the Stormwater Pollution

Prevention Program is shared by the Department of Public Works and the Department of Development Services.

The Department of Public Works is responsible for ongoing, enhanced maintenance of the City's storm drain system, illicit discharge detection and elimination, dry weather monitoring, and municipal and residential permit compliance. The Department of Development Services administers a vigorous Industrial and Commercial Inspection program to ensure the facilities and developers that operate in the City of Poway demonstrate compliance with the City's JURMP and the Municipal Stormwater Permit. The Department of Development Services Code Compliance Division investigates illegal discharges and illicit connections, maintains a database of compliance history for each facility, and enforces the Permit requirements. Both the Department of Public Works and the Department of Development Services create and conduct stormwater pollution prevention education and outreach to the City's residents, municipal staff, businesses, and developers.

CITY OF SAN DIEGO

The City of San Diego Stormwater Pollution Prevention Division, housed within the General Services Department, is the lead office in the City's efforts to reduce pollutants in urban runoff and stormwater. Additionally, the Stormwater Pollution Prevention Division is responsible for achieving compliance with the Municipal Permit.

The Division is focused on protecting and improving the water quality of rivers, bays and the ocean for the citizens of San Diego and future generations by targeting pollutant sources for abatement and eliminating and reducing pollutants in urban runoff and stormwater in an efficient, effective and cost-effective manner.

The City's belief that public education is key to cleaner ocean waters leads to the development of the "Think Blue" educational campaign. "Think Blue" (www.thinkbluesd.org) seeks to educate residents, business, and industry about the causes of stormwater pollution and the pollution prevention behaviors everyone can adopt to protect the region's water resources for now and for future generations of San Diegans.

The Stormwater Pollution Prevention Division is responsible for the front-line development and implementation of the City's watershed urban runoff management programs. The Division also leads a citywide effort to retool and reconfigure existing policies, procedures and development regulations to incorporate pro-active stormwater pollution prevention strategies.

CITY OF SOLANA BEACH

The City of Solana Beach has integrated the Stormwater Program components into its various daily activities and shares the tasks among departments. The City's Stormwater Team consists of staff from Code Enforcement, Engineering and Public Works. The City is actively seeking to develop program activities that will improve the quality of water in the region and is working with other Copermittees to establish the nexus between program actions and their impact on water quality.

COUNTY OF SAN DIEGO

The County of San Diego's Watershed Protection Program is designed to improve water quality through education, inspection, response and water monitoring. The objectives of the Watershed Protection Program are to provide guidance to the public on water quality issues and to act as a coordinating entity towards a cohesive regional stormwater program.

Several departments within the County's Land Use and Environment Group (LUEG) implement the Stormwater Management Program. The County believes that the individual departments within the County each have a core competency, and a Program Manager is designated in County Departments to ensure program implementation.

1.2. Watershed Description & Map

General Description

The San Dieguito River WMA is the fourth largest hydrologic unit in the San Diego region with a land area of approximately 434 square miles. Important hydrologic resources in the WMA include water storage reservoirs, a large groundwater aquifer, extensive riparian habitat and coastal wetlands. As illustrated in Figure 2-1, the WMA includes portions of the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, and unincorporated areas under the jurisdiction of San Diego County. The majority of the land area of the WMA (79.8 percent) is within the unincorporated jurisdiction. (See additional maps of the WMA in Appendix B)

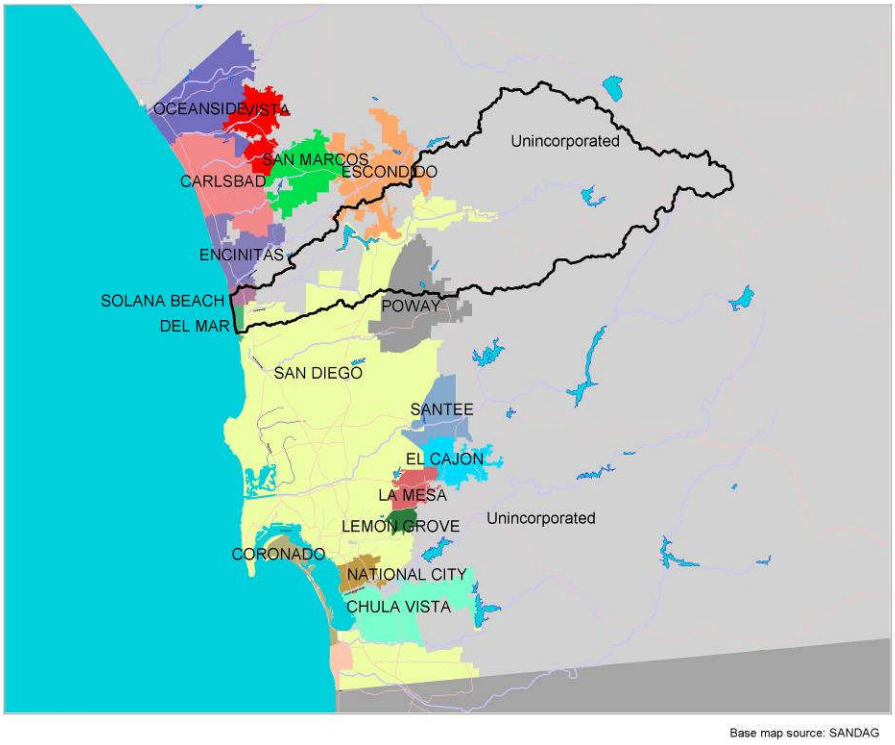

Figure 1-5. San Dieguito River Watershed: Jurisdictional Boundaries.

The WMA extends through a diverse array of habitats from its eastern headwaters in the Volcan Mountains to the main outlet at the San Dieguito Lagoon and the Pacific Ocean. There are several important natural areas within the WMA that sustain a number of threatened and endangered species. Among these areas are the 55-mile long, 80,000 acre San Dieguito River Park; the 150 acre San Dieguito Lagoon; and five water storage reservoirs including Lake Hodges, Lake Sutherland, and Lake Poway. Approximately 86 percent of the San Dieguito River WMA lies behind dams[4]. Special-status species identified in the WMA include San Diego horned lizard, orange-throated whiptail, common loon, brown pelican, white-faced ibis, osprey, north harrier, sharp-shinned hawk, Western snowy plover, long-billed curlew, California gull, elegant tern, California least tern, black skimmer, tricolor blackbird, Belding's Savannah sparrow, and California gnatcatcher.

As shown in Figure 1.6, the San Dieguito River WMA is divided into five hydrologic areas: Solana Beach (905.1), Hodges (905.2), San Pasqual (905.3), Santa Maria Valley (905.4) and Santa Ysabel Hydrologic Areas (905.5). The San Dieguito River drainage receives water from several low mountain areas east of Del Mar, including Santa Ysabel, Ramona, and San Pasqual.

[4] Coastal Conservancy, 2001.

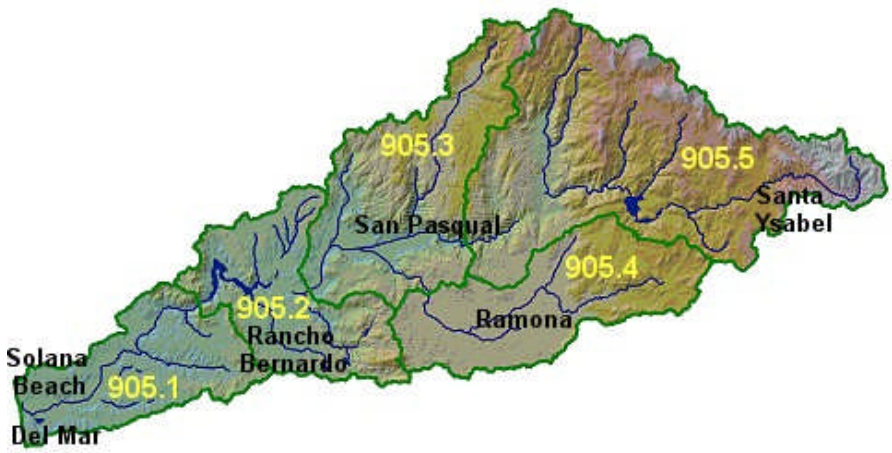

Figure 1-6. San Dieguito River Watershed: Hydrologic Areas

Land Use

Each of the WMAs in the San Diego region is unique in size, terrain, and development pattern. Generally, as the amount of impervious pavement, rooftops, and other impervious surfaces increases in a watershed, the velocity and volume of surface water as well as pollutant loads are also increased. There is a strong correlation between the amount of imperviousness in a watershed and the health of its receiving water bodies.

Impervious surfaces collect and accumulate pollutants deposited from the atmosphere, leaked from vehicles or derived from other sources. During storms, accumulated substances are quickly washed off and rapidly delivered to aquatic systems. Even during extended periods of dry weather, pollutants carried in water flows associated with landscape irrigation, car washing, hosing off sidewalks and driveways, and industrial discharges reach surface waters.

Research has shown that impervious surfaces, a consequence of development, have a direct impact upon stream water quality. A watershed with impervious surface coefficient less than 10 percent is considered as protected area, 10 percent to 25 percent is considered as affected, and higher than 25 percent is considered as degraded[5]. The categories indicate a qualitative degree of stream deterioration due to urbanization, which is measured by the imperviousness coverage.

The San Dieguito River WMA covers over 221,302 acres, with approximately 129,645 acres of vacant land and open space.[6] The lower portion of the San Dieguito River WMA is generally typical of urbanized coastal areas in Southern California. Principal land uses within the WMA (based on year 2006 data) are illustrated in Figure 1-7 and a more detailed accounting is presented in Table 1-5.

[5] Schueler, 1994.
[6] Data sources: SANDAG 2006.

Figure 1-7. San Dieguito River Watershed – 2006 Land Uses.

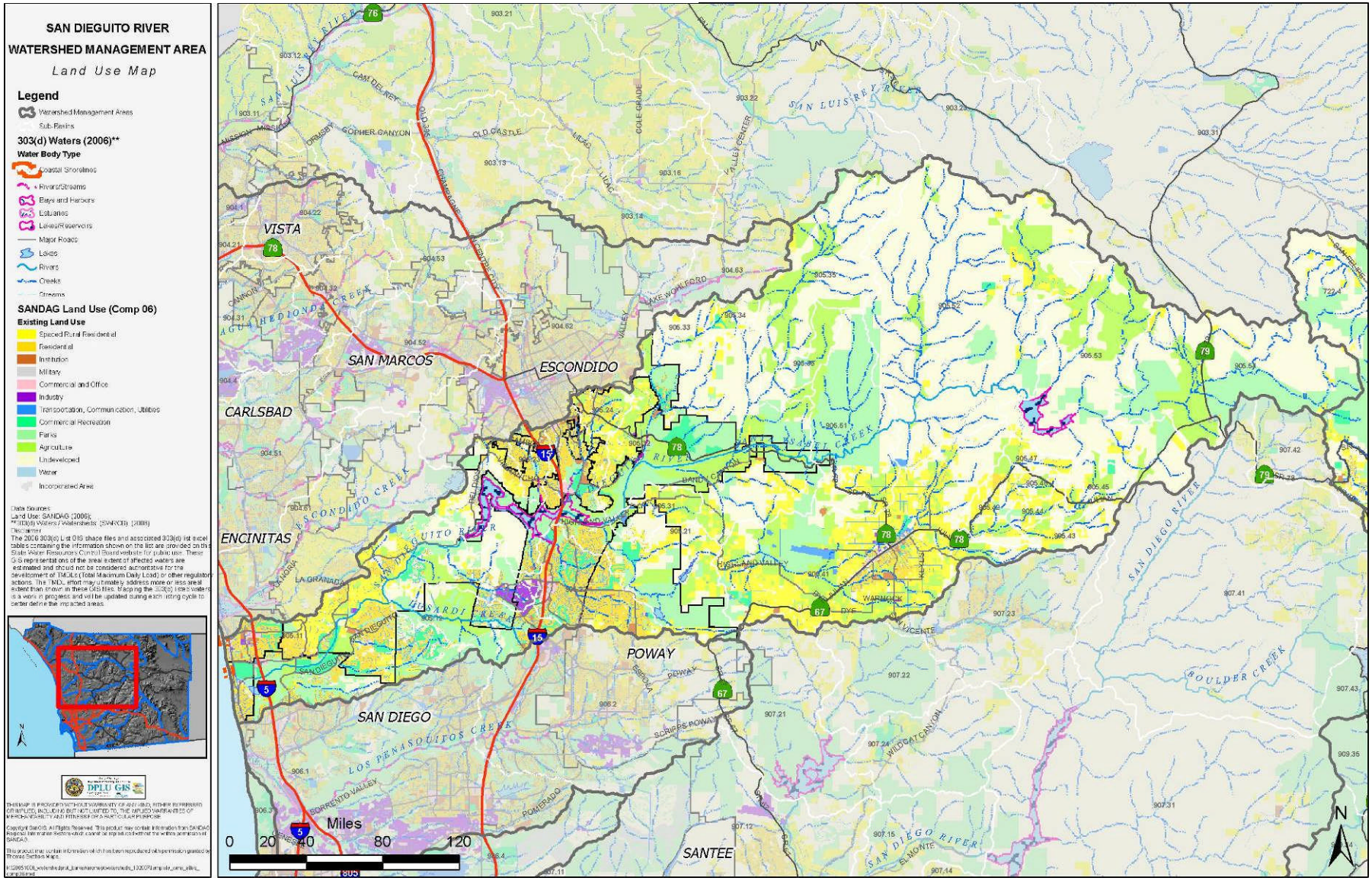

Table 1-5. San Dieguito River WMA Land Use.

LAND USE DESCRIPTION	ACRES	ACREAGE As Percentage of WMA
Agriculture	33,714	15.23%
Airports	258.6	0.12%
Commercial	554.6	0.25%
Golf	2643.6	1.19%
Industrial	729.1	0.33%
Junkyard/Dumps/Landfills	85.5	0.04%
Landscape Open Space	489.0	0.22%
Municipal	43.3	0.02%
Office	580.3	0.26%
Open Space	37,493.7	16.94%
Parking Lots	8.7	0.0%
Parks	355.1	0.16%
Racetracks	209.4	0.09%
Rail Transit	57.9	0.03%
Recreation	579.1	0.26%
Miscellaneous Residential	1,626.8	0.74%
Roads Under Construction	6,494.5	2.93%
Schools	512.1	0.23%
Single Family Residential	13,001.3	5.87%
Spaced Rural Residential	26,962.7	12.18%
Tourist Attraction	638.6	0.29%
Undeveloped	92,151.9	41.64%
Utilities	332.3	0.15%
Water	1763.5	0.80%
TOTALS	**221,302**	**100%**

Source: SANDAG 2006
Note: Percentages may not add to 100 due to rounding

Generally, runoff from open space areas and undeveloped land contributes lower contaminant loads into watersheds while residential, commercial, industrial, and transportation land uses have higher contaminant loads. Contaminants associated with residential, commercial, industrial, and transportation land uses include oil and grease, bacteria, pesticides, metals, suspended solids, and surfactants, while open space and construction activities tend to contribute to sedimentation. Agricultural land uses tend to contribute nutrients and pesticides to watershed loads. Soil types and susceptibility to erosion also influences water quality and streambed conditions.

Watershed Drainage Characteristics

The San Dieguito River Watershed extends from the Pacific Ocean eastward and includes several low mountain areas including Santa Ysabel, Ramona, and San Pasqual. The San Dieguito River and its tributaries function as the main drainage channel for the WMA. Rainfall in the WMA ranges from 10.5 inches along the coast to 31.5 inches in the inland areas.

The headwaters of the San Dieguito River are located on Volcan Mountain in the Witch Creek basin in East San Diego County. Drainage from Witch Creek and Sutherland Basin flow

through primarily undeveloped or agricultural land into the Sutherland Reservoir, located approximately 45 miles northeast of San Diego, between Ramona and Julian.
From Sutherland Reservoir, the main drainage channel continues its 44 mile course to the coast, flowing southwest through undeveloped land in the southern region of the Poma and Boden basins. The river enters the Las Lomas Muertas basin in Escondido, flowing through open space areas surrounded by agricultural lands and the San Pasqual Valley, where it is known as the San Ysabel Creek. San Ysabel Creek parallels San Pasqual Valley Road until it runs into the intersection of San Ysabel Creek Road and Old San Pasqual Road, where the creek becomes the San Dieguito River. The San Dieguito River continues through open space areas and passes through the western tip of the Highland basin before entering the Del Dios basin, where the river parallels Highland Valley Road until it enters Lake Hodges Reservoir. Lake Hodges, located along the border of San Diego and Escondido approximately 31 miles north of downtown San Diego, serves as both a recreation site and a water supply resource. When full, the reservoir has 1,234 surface acres, a maximum water depth of 115 feet, and 27 shoreline miles.

Three tributaries from surrounding open areas join the San Dieguito River below the dam at Lake Hodges. The river then flows west from Lake Hodges into the Rancho Santa Fe basin, through park area and paralleling Del Dios Highway. Near the intersection of Calle Ambiente and Del Dios Highway, the river meanders toward the south through agricultural and rural residential areas. The river is recharged by Lusadri Creek, a tributary formed from drainage in the La Jolla basin, which passes through mostly agricultural or open space before joining the San Dieguito River in Rancho Santa Fe.

Figure 1-8. The River Mouth at San Dieguito Lagoon

The river continues west through single-family residential and agricultural areas between Via de la Valle and San Dieguito Road. The river flows by a small area used for extractive industry before intersecting El Apajo Road, where it continues southwest through low-density residential area until it intersects El Camino Real, where it then flows primarily through agricultural and open areas. The open areas are primarily the San Dieguito Lagoon and approximately 115 acres of wetland that are in the process of being restored. Mostly low-density residential and light commercial areas border the lagoon, with the Del Mar Racetrack on the northern bank.

The river flow is intermittent and the riverbed upstream of tidal influence is often dry. The channel is substantially unarmored except for a concrete block revetment along the upper bank from approximately Jimmy Durante Boulevard to the ocean.

Today, the water quality of the river and receiving coastal waters is affected by numerous factors, including diverse land uses (residential, industrial, and agricultural), as well as the loss of riparian habitat due to urbanization. Construction of reservoirs within the WMA has affected the natural process of the river, including its sediment transport function.

During 2006-2009, Southern California Edison is restoring approximately 115 acres of wetlands habitat in the lower San Dieguito River area. The wetlands restoration not only creates new salt marsh habitat and least-tern nesting sites, it also creates a tidal basin that is designed to increase the tidal prism of the lagoon. The intent of increasing the tidal prism is to maintain an open lagoon mouth in perpetuity. This will greatly enhance the water quality characteristics of the lower San Dieguito River and Lagoon which has had historical issues with water quality when the lagoon mouth is closed or nearly closed.

Water Supply Resources

The history of San Diego region revolves around a never-ending search for a safe, reliable water supply in this arid area of Southern California. According to historian Kevin Starr, "Old Mission Dam was the first irrigation and domestic water system ever built by Europeans in the Far West[7]," (1990). Mission Dam, which still exists in Mission Trails Regional Park, was only the first water development project in San Diego County.

Beginning with the Native Americans and later the Spanish missionaries and early settlers, local water supplies provided sufficient water for the county until World War II, when a vastly expanded military and industrial presence doubled the local population. When water shortages threatened the area's wartime mission, President Franklin Roosevelt directed the Navy to build the area's first aqueduct connecting the region to the newly completed Colorado River Aqueduct. Additionally, the Navy directed and funded the construction of the San Vicente reservoir (located on a tributary to the San Diego River) to serve as a terminus of the aqueduct.

Imported water now accounts for up to 95 percent of the total water used in the county each year. Local reservoirs store the imported water until it is needed. The amount of water runoff into local reservoirs varies greatly from year-to-year due to weather and hydrology. During wet periods, abundant rainfall and runoff lead to greater local water supply. During dry periods, when rainfall and runoff is minimal, local water supply is severely reduced.

The region served by the San Diego County Water Authority (SDCWA) imports 90 percent of its supply and 10 percent from local sources. CWA is a wholesale water agency that sold approximately 577,250 acre-feet[8] of imported water to its 23 member agencies in San Diego County in 2006.

The San Dieguito River Watershed is home to several water reservoirs: Sutherland, Lake Ramona, Lake Poway, Lake Hodges, Olivenhain and San Dieguito as further described in the table below. Reservoirs are also considered receiving waters within the WMA.

[7] San Diego County Water Authority, 2002 (See www.sdcwa.org/about/who-history).
[8] A quantity of volume of water that covers one acre to a depth of one foot; equal to 43,560 cubic feet or 325,851 gallons. It is estimated that one acre-foot meets the yearly needs of two average families.

Table 1-6. San Dieguito River WMA Reservoirs9.

WATER RESERVOIR	OWNER	WATER SOURCE(S)
Sutherland	City of San Diego	Natural Runoff
Lake Ramona	Ramona Municipal Water District	First Aqueduct
Lake Poway	City of Poway	First Aqueduct
Lake Hodges	City of San Diego	First Aqueduct & Natural Runoff
Olivenhain	San Diego County Water Authority	Natural Runoff
San Dieguito	San Dieguito Water District/Santa Fe Irrigation District	Second Aqueduct & Upstream Releases

Note: Upstream release refers to water that is moved along the natural watercourse from one reservoir to a downstream reservoir within the same sub-basin.

The SDCWA intends to diversify supplies as one of several strategies to meet the increased demand. As population grows, there will be increased pressure on groundwater and surface waters as drinking water resources. Groundwater and surface waters, which currently count for approximately 11 percent of the annual needs, are expected to meet 17 percent of the year 2020 demand.

[9] San Diego County Water Authority, 2002 (See www.sdcwa.org/manage/reservoirs-map).

2. COLLECTIVE WATERSHED STRATEGY

The San Dieguito River WMA Copermittees are responsible for developing and implementing a collective watershed strategy to abate the sources and reduce the discharge of pollutants causing the high priority water quality problems of the WMA. The strategy guides WMA Copermittee selection of Watershed Activities so that the Watershed Activities selected and implemented are appropriate for each WMA Copermittee's contribution to the WMA's high priority water quality problems.

In order to meet this responsibility, the WMA Copermittees have developed a collective watershed strategy that includes elements developed by the Regional Copermittees as a part of the Model Watershed Urban Runoff Management Strategy found in the Regional URMP. The model strategy's primary function is to facilitate identification and selection of the most appropriate watershed water quality and education activities for implementation through the Five-Year Strategic Plan described in Section 4.

In the simplest form, the collective watershed strategy uses the existing data and information that is available to the Copermittees related to water quality and known sources of pollutants to identify the most important water quality problems and sources within the WMA. The water quality status is assessed annually as a part of the regional monitoring program. Some baseline source information is available through existing literature, including the Copermittees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA) where Source Loading Potential ratings were developed and used to assess sources' threat-to-water-quality (TTWQ). Additional information related to sources (Source Loading Potential or SLP, BLTEA 2005) is also needed and can be obtained through many of the activities that are proposed to be implemented at the watershed level. The source information is needed to better characterize what and where the high priority threat-to-water-quality (TTWQ) sites are within the watershed. Having a better understanding of the TTWQ of the known sources will help prioritize activities.

This process is consistent with the Copermittee standard process to implement other programs at the jurisdictional and regional levels. The process applied for the recommended watershed activity selection in the model watershed strategy is summarized below.

Part A: Baseline Watershed Evaluation

Step 1: Step 1 requires an evaluation of each Hydrologic Area to determine whether water quality monitoring data are sufficient and adequate to support management decisions. The water quality ratings presented in theCopermittees' Baseline Long-Term Effectiveness Assessment (BLTEA) should serve as the starting point for performing this step. In addition to the BLTEA, Copermittees may consider supplemental information as appropriate to determine the sufficiency of monitoring data.

Step 2: Based on the results of Step 1, the Watershed Copermittees should evaluate the Hydrologic Area with regard to the quantity, location, and potential threat of pollutant sources to determine if the sources have been adequately identified and characterized to support management decisions. The BLTEA's source loading potential (SLP) and threat-to-water quality (TTWQ) ratings should serve as the starting point for performing Step 2. In addition to the SLP and TTWQ ratings, Copermittees may consider supplemental information as appropriate to determine whether pollutant sources are adequately identified and characterized to support management decisions.

Step 3: The third step in the Model Strategy is to identify potential management actions based on the results of Steps 1 and 2.

Part B: Selection of Watershed Activities

Building upon the potential management actions identified in Step 3 of the baseline watershed evaluation, Copermittees must select specific activities for implementation.

Part C: Five-Year Strategic Plans

Watershed activities selected will be combined into a five-year strategic plan for the WMA. The five-year strategic plan identifies and describes in detail the watershed activities planned for implementation during the upcoming year of implementation and also includes plans for activity implementation beyond the upcoming year of implementation where appropriate.

3. WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

The San Dieguito River WMA Copermittees will annually assess the water quality of receiving waters in the San Dieguito River WMA. The assessment will use applicable water quality data, reports, and analysis generated in accordance with the requirements of the Receiving Waters Monitoring and Reporting Program, as well as applicable information available from other public and private organizations.

The assessment and analysis will annually identify the WMA's water quality problems that are partially or fully attributable to MS4 discharges. Identified water quality problems will include CWA section 303(d) listings, persistent violations of water quality standards, toxicity, impacts to beneficial uses, and other pertinent conditions. From the list of water quality problems, the high priority water quality problems of the WMA will be identified, which shall include those water quality problems which most exceed or impact water quality standards (water quality objectives and beneficial uses).

The assessment will include annual identification of the likely sources of the WMA's high priority water quality problems.

The process for assessment of both water quality problems and potential pollutant sources is described below.

3.1. Water Quality Assessment Approach

3.1.1. Monitoring Program Background

The San Diego Regional Copermittees are covered under a municipal NPDES permit for discharge of urban runoff to waters of the United States. The participating Copermittees share the costs of monitoring required for compliance with this permit. In response to the permit requirements, the Copermittees developed a monitoring framework that includes the following three elements:

Regional Monitoring Programs that provide baseline datasets for comparing information from local monitoring programs. These programs encompass a large spatial area (e.g., the San Diego region, and the entire Southern California Bight), and look at many elements potentially impacted by stormwater runoff. This type of monitoring takes a long-term view of the ultimate receiving waters, the coastal bays, lagoons, and the ocean. Regional monitoring is designed to answer questions concerning the ecological health of a large geographic region and encompass numerous components, including water and sediment quality, fish, benthos, birds, etc. An example of regional monitoring is the Southern California Coastal Waters Research Project (SCCWRP) Bight Monitoring Program that is conducted every five years.

Core Monitoring is long-term monitoring with the objective of tracking compliance with regulatory requirements or limits, or to track trends over time. Core monitoring programs typically involve routine sampling at fixed stations through time. Individual monitoring components are designed to evaluate long-term changes in water quality and mass loading to MS4 and receiving waters. Assessing concentrations of chemical pollutants, toxicity to test organisms, and benthic assemblages provides indications of long-term trends and effects between and within watersheds.

The primary short-term objectives of the Core Receiving Waters Monitoring Program activities are to:

1. Determine the ecological health of receiving waters in the county based on chemical, physical, and biological evidence.

2. Assess compliance with RWQCB order No. R9-2007-0001.

The long-term objectives include:

1. Predict short- and long-term impacts to receiving waters that result from changes in land-use within each watershed, and provide data that can be analyzed to develop pollutant reduction strategies for those impacts.
2. Measure the effectiveness of Urban Runoff Management Plans (URMPs) and other potential pollutant reduction strategies.
3. Develop and implement a program that integrates with other regional programs involved in assessing the overall health of receiving waters in San Diego County and Southern California.

Special Studies supplement both the Core Monitoring and the Regional Monitoring. Special Studies are focused evaluations designed to answer specific questions. These are typically short-term efforts intended to answer specific questions that may be raised during assessment of core monitoring results. Some examples of Special Studies include evaluation of the link between stormwater discharges and impaired water quality, conducting molecular/genetic host tracking for bacterial source identification in a watershed, and source identification studies used for the development of Total Maximum Daily Loads (TMDLs) for 303(d) listed impaired water bodies.

For additional information on the monitoring program, please refer to the San Diego County Municipal Copermittees Urban Runoff Monitoring Program Reports (2001, 2002, 2003, 2004, 2005, 2006, and 2007).

3.1.2. Water Quality Assessment Strategy

As part of the watershed-based water quality assessment, information from the Receiving Water Monitoring and Reporting Program is utilized. The following steps are generally taken in the data evaluation and analysis:

1. Identify pollutants of concern which have been found to exceed administrative water quality standards/objectives as well as the frequency, magnitude and duration of such exceedances;
2. Isolate pollutants of concern shown to exceed applicable water quality standards and/or objectives in a persistent and/or recurrent manner;
3. As data permits, evaluate whether there are any potential effects which could be a result of co-mingling and/or bioaccumulation effects of recorded pollutants and pertinent data/analysis related to source identification investigations or related efforts;
4. Examine how any of the pollutants of concern identified in step (2) above, may contribute to water quality degradation which would negatively impact designated beneficial uses; and,
5. The development of a longer historical record over multiple years of monitoring, allows Copermittees to assess pollutant of concern data to see if there are any increasing or decreasing trends through time applying statistical analysis.

The three data sets (stormwater chemistry, stormwater toxicity and rapid stream bioassessment data) collected under the Core Monitoring program are evaluated using the triad decision matrix. This triad of monitoring data is utilized in a 'weight of evidence' approach. Stormwater chemistry and stormwater toxicity data provide an indication of the pollutant loads during a storm event and potential aquatic impacts during storm events to organisms, respectively. The stream bioassessment provides information related to the ecological health of the watershed and an indication of stream health effects from urban runoff. Stream bioassessment data not

only provide information about the benthic invertebrate community present in the watershed, but also information about the quality and condition of the physical habitat.

The intention of the triad decision matrix is to direct changes in the monitoring program using a consistent and scientific approach. Copermittees use the triad decision matrix as one step in the process of identifying additional monitoring needs, such as performing a Toxicity Identification and Elimination (TIE) study to identify the pollutants causing toxicity.

Two pollutants of concern not considered in the triad approach are bacteria and total dissolved solids (TDS). The bacteria parameters are not considered in the triad because they are not believed to influence toxicity responses in bioassay test organisms. Human health objectives for water contact recreation or non-water contact recreation are the water quality objectives for bacterial indicators. Total dissolved solids are not considered because, while this parameter may exceed water quality objectives in the Basin Plan, the objectives were set for municipal drinking water supply and not ecological impacts.

The Regional Board considers bacterial indicators and TDS pollutants of concern and assesses these parameters by looking at all applicable factors 303(d) listings, beneficial uses, public health considerations, jurisdictional goals, economic impact, etc.). Bacterial indicators and TDS are then included as appropriate in the prioritized strategy. Bacterial indicators and TDS may not have the benefit of the added evidence of benthic community and toxicity, yet they may lead to watershed activities when considered with all other stressors and pollutants of concern in the watershed and their potential impact on beneficial uses.

Historical Data Trend Assessment

Where longer-term data are obtained from the monitoring program, data can be evaluated for trends over time. The assessment of a long-term data set can be accomplished through two statistical tools, regression and power analyses. Because analytical data sets are inherently variable, determining if concentrations of a potential pollutant of concern are significantly decreasing or increasing in a watershed requires statistical analysis of the data.

Linear regression analysis can be performed after applying appropriate data transformations to the data. This regression analysis determines the slope of the trend line to assess either a decreasing or an increasing trend. Care must be taken to examine each data set for outliers or influential data points that unduly influence the results of the analysis.

In addition to determining whether there are significant trends for each of the potential pollutants of concern, it is also important to know the power of the regression line, or in other words, the confidence one has in the regression results based on the slope of the regression and the number of data points (times) in the analysis. Typically, power estimates of 80% or greater (at an alpha level [error] of 0.05) are desired to be able to make strong statements about statistical results.

The historical data will be used in an overall integrated assessment to determine the overall effectiveness of the WURMP program. This is described in more detail in Section 5.

Data Sources

The following comprehensive reports provided most of the water quality data and related information that was evaluated as part of this watershed assessment:

San Diego Regional Previous Stormwater Monitoring Review and Future Recommendations Report (MEC Draft August 20, 2001): This report contains a summary of significant findings from Copermittee monitoring programs implemented from 1993 to 2000. However, this report contains data and analysis pertinent to the historic monitoring sites (Chollas Creek, Tecolote Creek and Agua Hedionda Creek) and therefore only applies to the San Diego Bay Watershed, Mission Bay Watershed, and Carlsbad Watershed.

Urban Runoff Monitoring Report (MEC, 2002): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2001-2002 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (MEC, 2003): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2002-2003 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (MEC, 2004): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2003-2004 season. (This report applies to all watersheds.)

Baseline Long-Term Effectiveness Assessment (Weston, MOE & LWA, 2005): This document establishes a watershed based priority rating system based on the available monitoring data for each individual hydrologic area within the Watersheds. (This report applied to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2005): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2004-2005 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2006): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2005-2006 season. (This report applies to all watersheds.)

Urban Runoff Monitoring Report (Weston, 2007): This report summarizes all data and findings associated with mass loading station and rapid stream bioassessment monitoring activities conducted during the 2006-2007 season. (This report applies to all watersheds.)

Additionally, the October 2006 Clean Water Act Section 303(d) Lists of Water Quality Limited Segments and associated list of pollutants of concern in the watershed were considered as data sources[10].

Over the course of the permit life, new monitoring data will be available for evaluation, including the Temporary Watershed Assessment Station Monitoring, MS4 Outfall Monitoring and Source Identification Monitoring programs. As these programs are developed, the WURMP Annual Reports will include discussions on how the information and data collected from these programs will affect the collective WURMP strategy as well as effectiveness assessment evaluations.

Strategy for Prioritizing Water Quality Issues

Once the Copermittees identify pollutants of concern, the watershed water quality problems are identified using a qualitative process that considers watershed-specific conditions using the weight of the evidence approach as well as best professional judgment to interpret the

[10] SWRCB, 2006.

relationships between exceedances, regulatory mechanisms, and beneficial uses. Factors considered include:

Availability of sufficient qualified data (may include detection levels, number of sample(s), spatial and temporal characteristics);

1. Opportunity to protect and preserve healthy water bodies;
2. Need to integrate additional data;
3. Ability to determine conditions at the sub-watershed level;
4. Current related concerns and/or priorities expressed by local jurisdictions;
5. Stakeholder input;
6. Grant funding opportunities; and,
7. Human and ecological health considerations.

3.2. Receiving Waters Condition

The following receiving waters condition information is take from the Urban Runoff Monitoring Report, Weston 2007. The San Dieguito River WMA was assessed utilizing chemistry and toxicity data collected during storm events from a single mass loading station (MLS), field and chemistry data collected from three dry weather monitoring sites upstream of the MLS and downstream of Lake Hodges Dam, and IBI scores generated at two bioassessment sites. The WMA assessment methods presented in the Urban Runoff Monitoring Report (Weston, 2007) were applied to these data to determine which pollutants are of concern and to develop a high, medium, or low frequency of occurrence for these pollutants. The results of this assessment are presented in 3-1.

It is important to note that the data used for the following assessment was collected from a representative portion of the WMA – not the entire WMA. The San Dieguito River (SDC) mass loading station is located along a natural channel off Via De La Valle in the County of San Diego, behind the Morgan Run Golf Course maintenance shop. The contributing runoff area is over 16,380 acres, which makes up only 8% of the San Dieguito River WMA land area. This station receives only localized runoff from below Lake Hodges. Lake Hodges captures most of the runoff from the upper watershed. The major land uses within the contributing runoff area are parks (25%), residential (25%), undeveloped (24%), and agricultural (12%). In other words, the assessment is not representative of the entire WMA. The assessment will be referenced as the San Dieguito River WMA MLS Area where appropriate to describe the area that is actually assessed.

Table 3-1 Pollutant exceedances in the San Dieguito River WMA MLS Area

Constituents With Any Wet Weather (MLS) WQO or Dry Weather Action Level Exceedance	MLS (Wet Weather) Results														Dry Weather Results *		Frequency of Occurrence	Criterion No.
	2001/2002		2002/2003		2003/2004		2004/2005		2005/2006		2006/2007		CUMULATIVE		2006			
	# /3	%	# /3	%	# /3	%	# /3	%	# /3	%	# /3	%	# /18	%	#	%		
Conventional Parameters																		
pH	0	0	0	0	1	33	0	0	0	0	0	0	1	6	0	0	-	-
BOD	0	0	0	0	1	33	0	0	0	0	0	0	1	6	NA	NA	-	-
COD	0	0	0	0	1	33	1	33	0	0	0	0	2	11	NA	NA	-	-
Total Dissolved Solids	3	100	3	100	3	100	3	100	3	100	3	100	18	100	NA	NA	♦♦♦	1
Total Suspended Solids	0	0	0	0	1	33	0	0	1	33	2	67	4	22	NA	NA	-	-
Turbidity	0	0	0	0	0	0	0	0	1	33	1	33	2	11	2	40	♦	8
Bacteriological																		
Total Coliform	0	0	1	33	1	33	1	33	0	0	0	0	3	17	1	33	♦	8
Fecal Coliform	0	0	2	67	2	67	2	67	2	67	1	33	9	50	0	0	♦♦	5
Enterococcus	0	0	1	33	1	33	1	33	0	0	1	33	4	22	1	33	♦	8
Toxicity																	**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 96-hour	0	0	0	0	0	0	0	0	0	0	1	33	1	6	NA	NA	No	
Ceriodaphnia 7-day survival	0	0	0	0	0	0	0	0	1	33	1	33	2	11	NA	NA	No	
Ceriodaphnia 7-day reproduction	2	67	2	67	0	0	1	33	1	33	2	67	8	44	NA	NA	No	
Selenastrum 96-hour	2	67	0	0	1	33	0	0	2	67	1	33	6	33	NA	NA	No	
Bioassessment	IBI Rating																**EVIDENCE OF BENTHIC ALTERATION?**	
Green Valley Creek	NA		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		NA		Yes	
San Dieguito River (DS)	NA		Poor		Poor		Poor		Very Poor		Very Poor		Very Poor		NA			

* = Total number of observations varied among constituents.
NA = Not assessed
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.
DS= Downstream of MLS

One pollutant was found to have a high frequency of occurrence in the San Dieguito River WMA MLS Area. Total dissolved solids (TDS) were determined to have a high frequency of occurrence rating (three diamonds). Wet weather MLS samples were detected above the WQO in 100% of the monitored events.

One pollutant was found to have a medium frequency of occurrence. Fecal coliform received a two diamond rating based. Wet weather MLS samples were detected above the WQO in 50% of the monitored events.

Three pollutants were found to have a low frequency of occurrence. Turbidity, total coliform, and enterococcus were all assigned a one diamond rating. All pollutants had dry weather results detected above action levels in 10-50% of the samples collected in the past year. Turbidity results were detected above action levels in 40% of the samples and total coliform and enterococcus results were detected above action levels in 33% of the dry weather samples collected in 2006.

Toxicity tests have shown evidence of toxicity to either *Ceriodaphnia* or *Selenastrum* during each year of monitoring events since monitoring began in 2001. However, persistent toxicity is defined as more than 50% of the toxicity tests for any given species have a NOEC of less than 100%. Therefore there is not evidence of persistent toxicity for *Ceriodaphnia* or *Selenastrum* in the San Dieguito River WMA MLS Area.

Other water bodies within the San Dieguito River WMA are 303(d) listed for pollutants and conditions such as bacteria indicators, sulfates, chloride, manganese, color, nitrogen, total dissolved solids, turbidity and phosphorus. 303(d) listed color conditions can be indicative of

elevated nutrient levels, which were not supported by the WMA assessment methodology in the San Dieguito River MLS, but may occur in localized site specific areas.

IBI scores resulting from bioassessment monitoring in the San Dieguito River WMA consistently indicated a rating of Very Poor at the Green Valley Creek bioassessment site. The San Dieguito River site received a rating of poor the first three years of monitoring and very poor in the last two years of monitoring. Therefore, there are indications of benthic alteration within the San Dieguito River WMA.

Figure 3-1 illustrates the number of wet weather detections above the WQO for each monitoring season for six categories of pollutants, including conventional parameters, nutrients, bacteria, pesticides, metals and toxicity. The stacked bar chart represents the number of detections above the WQO from values in Table 3-1 for each pollutant category. The overall number of detections above water quality objectives for the San Dieguito River WMA MLS Area was the lowest during 2001-2002 and highest during 2003-2004. Conventional parameters, such as TDS, TSS and turbidity, constituted the most number of detections above the WQO for monitoring seasons 2003-3004, 2005-2006 and 2006-2007. Toxicity had the most number of detections above WQO during 2001-2002, while bacteriological parameters had the most number during 2002-2003. During 2006-2007, conventional pollutants had the most number of detections above the water quality objective, followed by toxicity and bacteriological parameters.

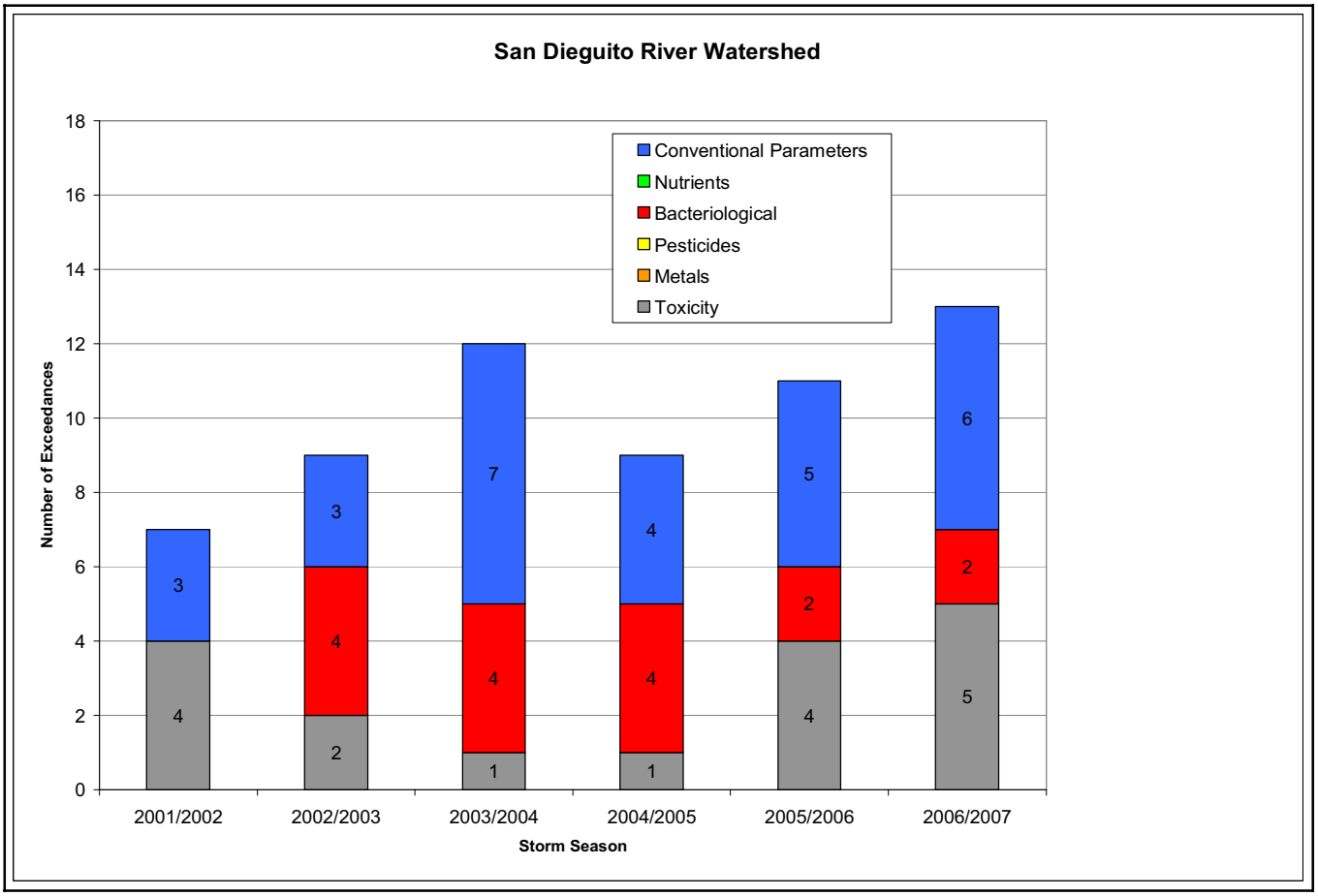

Figure 3-1. Stacked bar chart of the number of wet weather exceedances of pollutant groups in San Dieguito River WMA MLS Area

Triad Decision Matrix

The triad decision matrix combines the occurrence of COC with the toxicity and bioassessment results to determine possible conclusions about the watershed and provide possible actions for future monitoring or assessment. Table 3-2 summarizes these results and lists possible conclusions and potential actions.

Table 3-2. Triad Decision Matrix Results for the San Dieguito River WMA

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Potential Actions or Decisions
No persistent exceedances of water quality objectives	No evidence of persistent toxicity	Indications of alteration	Alteration may be due to physical impacts, not toxic contamination Test organisms not sensitive to problem pollutants	1) No action necessary based on toxic chemicals. 2) Consider whether different or additional test organisms should be evaluated. 3) Consider potential role of physical habitat disturbance.

*Weston 2007

3.3. Water Quality Problem(s)

The WMA Copermittees used the process developed in the regional watershed strategy to identify the water quality problems in the San Dieguito River WMA at the Hydrologic Area (HA) level.

303(d) Impaired Water Bodies Listings

The following table includes the impaired water bodies within the WMA. There are new listings added as a part of the 2006 listings. These new listings are not considered in the Baseline Water Quality Priority Ratings discussed below and summarized in Table 3-4. The new listings include Heavy Metals in the Felicita HSA, Sediments in Felicita HSA and Nutrients in the Sutherland HSA.

Table 3-3. 2006 303(d) listings for San Dieguito River WMA

Water Body Name	Hydrologic Sub Area (HSA)	HSA	Pollutant/Stressor
Pacific Ocean Shoreline	Rancho Santa Fe	905.11	Bacterial Indicators
Green Valley Creek	Rancho Santa Fe	905.21	Sulfates, Chloride, Manganese, PCP
Lake Hodges	Del Dios	905.21	Color, Nitrogen, Phosphorus, Turbidity, Manganese, pH
Kit Carson Creek	Del Dios	905.21	TDS, PCP
Felicita Creek	Felicita	905.23	TDS, Aluminum
Cloverdale Creek	Highland	905.32	Phosphorus, TDS
Sutherland Reservoir	Sutherland	905.53	Color, Manganese, pH

2001-2006 Baseline Water Quality Priority Ratings for the San Dieguito River WMA

The baseline water quality priority ratings are presented in Table 3-4. These tables are tools that assist managers in prioritizing watershed activities or are used for identifying data gaps. The priority ratings are based on the methodology presented in the Baseline Long Term Effectiveness Assessment (WESTON, MOE, & LWA, 2005).

Table 3-4. 2001-2006 Water Quality Priority Ratings for the San Dieguito River WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Pollutant Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
San Dieguito River WMA	**100%**	***D***	***B***	***D***	***D***	***C***	***D***	***C***	***B***	***B***	***B***	***B***
Solana Beach HA (905.10)	13%	*D*	***A***	*D*	*D*	*C*	*D*	*D*	*C*	***A***	*B*	*C*
Hodges HA (905.20)	14%	*D*	***A***	*D*	*D*	*C*	*D*	***A***	*D*	*C*	*B*	*B*
San Pasqual HA (905.30)	20%	*D*	***A***	*D*	*D*	*C*	*D*	***A***	*D*	*C*	*B*	*C*
Santa Maria Valley HA (905.40)	17%	*D*	*B*	*D*	*D*	*C*	*D*	*C*	*C*	*B*	*B*	*B*
Santa Ysabel HA (905.50)	37%	*D*	*C*	*D*	*D*	*D*	*D*	*D*	***A***	*B*	*B*	*B*
2006-2007 High[1] Frequency of Occurrence Ratings			♦♦♦									
Pollutants of Concern			TDS									

1. High frequency of occurrence ratings are derived from the pollutant exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on 303(d) listing (2003)

Pollutant groups and stressor groups are given a ranking from A to D with A being the highest priority rating and D the lowest priority rating. Items ranked with a D indicate that the pollutant group or stressor is a low priority or does not have sufficient data to support a higher ranking. The priority ratings were based on the data record from 2001-2006 from the following programs and will be updated on a 5-year cycle:

1. Stormwater Mass Loading Monitoring (MLS) – Wet Weather Data (2000-2006)
2. Copermittee Dry Weather Data Monitoring (2003-2005)
3. Available Third Party Data (SWAMP, 2003)
4. Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring (2003-2005)
5. Urban Stream Bioassessment Monitoring (2000-2006)
6. Triad Assessment – Toxicity Testing of Stormwater (2000-2006)
7. 303(d) Listing (2003)

Although some sub-watershed areas received high priority (A) ratings, overall there are no high priority (A) ratings for the San Dieguito River WMA. Several pollutants received B ratings which include dissolved minerals, gross pollutants, bacteria, benthic alteration, and toxicity. All other pollutants were given either a C or D priority rating. The complete tables used to calculate the ratings are presented in the Urban Runoff Monitoring Report (Weston, 2007).

After reviewing the available water quality data on a Hydrologic Area level, high priority (A) ratings were identified for the Solana Beach, Hodges, San Pasqual, and Santa Ysabel sub-watersheds in the San Dieguito River WMA. These include dissolved minerals, nutrients, gross pollutants and bacteria.

High frequency of occurrence ratings from the WMA criterion assessments (Table 3-1) were compared to the water quality priority ratings summary table above (Table 3-4). A high frequency of occurrence rating was determined for total dissolved solids for the San Dieguito River WMA. Similarly, the baseline water quality priority ratings found B priority ratings for this

pollutant. This is primarily driven by the weighted averaging. Larger sub-watersheds will have a greater influence in the overall watershed rating.

Baseline Watershed Evaluation

Using the Baseline Watershed Evaluation process described in the regional watershed strategy, the WMA Copermittees developed a list of the water quality problems in the San Dieguito River WMA. Table 3-5 shows the water quality problems and the corresponding recommended actions.

Table 3-5 Water Quality Problems and Recommended Actions Identified by the BWE Process

HA	Pollutant Category	Water Quality Priority Rating (BLTEA)	Frequency of Occurrence	Action
905.1 Solana Beach	Bacteria / Pathogens	A*	♦♦ (Fecal Coliform)	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
905.1 Solana Beach	Dissolved Minerals	A*	♦♦♦ (TDS)	Consider conducting source identification
905.2 Hodges	Bacteria / Pathogens	C	♦♦ (Fecal Coliform)	Consider additional monitoring to confirm water quality prioritization
905.2 Hodges	Nutrients	A*	-	Consider additional monitoring to confirm water quality prioritization and help appropriately select targeted Water Quality Activities and/or Watershed Education Activities.
905.2 Hodges	Dissolved Minerals	A*	♦♦♦ (TDS)	Consider conducting source identification
905.3 San Pasqual	Bacteria / Pathogens	C	♦♦ (Fecal Coliform)	Consider additional monitoring to confirm water quality prioritization
905.3 San Pasqual	Nutrients	A*	-	Consider additional monitoring to confirm water quality prioritization and help appropriately select targeted Water Quality Activities and/or Watershed Education Activities.
905.3 San Pasqual	Dissolved Minerals	A*	♦♦♦ (TDS)	Consider conducting source identification
905.4 Santa Maria Valley	Bacteria / Pathogens	B	♦♦ (Fecal Coliform)	Consider selecting appropriately targeted Watershed Water Quality Activities and/or Watershed Education Activities
905.4 Santa Maria Valley	Dissolved Minerals	B	♦♦♦ (TDS)	Consider conducting source identification.
905.5 Santa Ysabel	Bacteria / Pathogens	B	♦♦ (Fecal Coliform)	Consider conducting source identification.
905.5 Santa Ysabel	Gross Pollutants	A*	-	Consider additional monitoring to confirm water quality prioritization and help appropriately select targeted Water Quality Activities and/or Watershed Education Activities.
905.5 Santa Ysabel	Dissolved Minerals	C	♦♦♦ (TDS)	Consider additional monitoring to confirm water quality prioritization. Consider conducting source identification.

* denotes an “A” rating that is based on the 303(d) listing

High Priority Water Quality Problems
Based on the assessments above and the available water quality data, the Copermittees have determined that the high priority water quality problems in the San Dieguito River WMA are:

1. Bacteria / Pathogens in all Hydrologic Areas
2. Nutrients in the San Pasqual Hydrologic Area

3.4. Potential Pollutant Sources

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the watershed's high priority water quality problems.

With watershed water quality problems identified, the potential sources of pollutants that may be causing the water quality problems need to be identified. In 2005 as part of the BLTEA process, the Regional Copermittees identified thirty-four (34) sources of pollutants on which to focus their efforts. The BLTEA process included characterizing each source and determining a Source Loading Potential (SLP) for each of 8 pollutant types: heavy metals; organics; oil & grease; sediment; pesticides; nutrients; gross pollutants, and; bacteria. The BLTEA also developed a process to establish Threat-To-Water-Quality (TTWQ) ratings for the sources based on water quality priority ratings and the SLP of the inventoried sources within each WMA.

For the San Dieguito River WMA, the TTWQ ratings tables for the high priority water quality problems in each HA are summarized below. Table 3-6 represents the highest TTWQ rated sources within each HA based on the high priority water quality problems. The process used to develop the table was taken directly from the BLTEA. The data used for the process includes the following: (1) 2007 Baseline Water Quality Priority Ratings (Weston Solutions, 2007); (2) 2007 inventory information from all watershed Copermittees; (3) the SLP ratings from the BLTEA (Weston, MOE, LWA, 2005), and; (4) Copermittees' dry weather monitoring data.

Table 3-6 High Priority Sources in HAs

Source	Animal Facilities		Auto Mechanical Repair, Maintenance, Fueling or Cleaning		Botanical/ Zoological Gardens		Eating or Drinking Establishments		Landscaping		POTWs	
	Bacteria	Nutrients	Bacteria	Nutrients	Bacteria	Nutrients	Bacteria	Nutrients	Bacteria	Nutrients	Bacteria	Nutrients
905. 1 - Solana Beach HA (Bacteria)	5				16		92		2			
905.2 - Hodges HA (Bacteria)	1		17		16		42		4		2	
905.3- San Pasqual HA (Bacteria, Nutrients)	2				16		7		3		2	
905.4 - Santa Maria Valley HA (Bacteria)	3				16		66		12		2	
905.5 - Santa Ysabel (Bacteria)	2				1		4					

Shaded Cells mean that the pollutant type is not a high priority for the HA
Note: Source quantities are based on updated inventory information from Copermittees. The geocoding process may limit the representation of sources

Additionally, the Copermittees have mapped the sources on an HA basis. An example of one of these maps is shown below. The source information and mapping help to highlight the areas and locations that the Copermittees may want to select activities.

Figure 3-2 HA 904.5 – High Priority Water Quality Problem = Bacteria

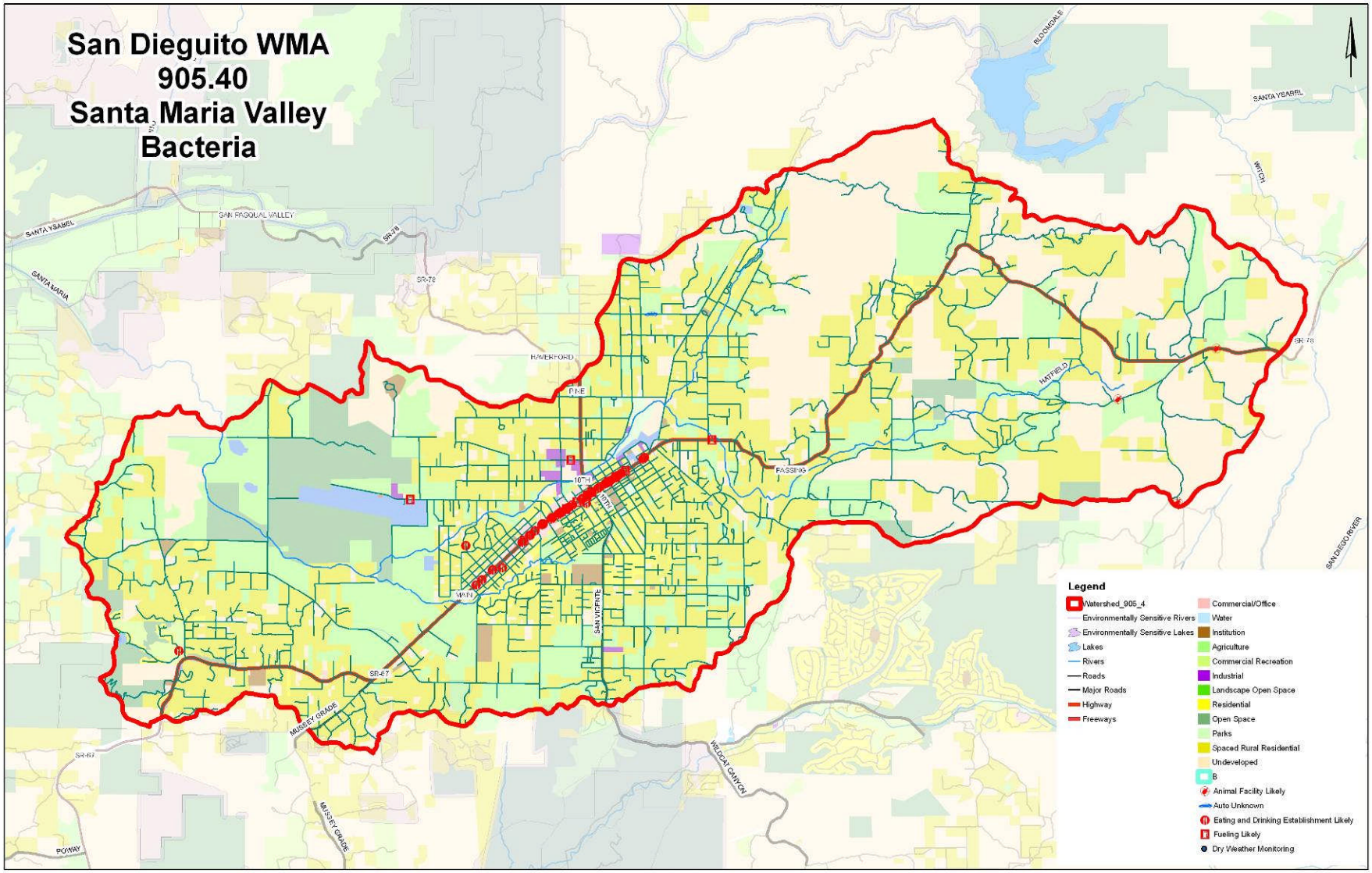

4. FIVE-YEAR STRATEGIC PLAN

This section describes the results of the process described above in Section 2 – Collective Watershed Strategy. The strategy was applied at the Hydrologic Area (HA) level to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first, identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the high priority water quality problems in each HA. For all of the HAs in the San Dieguito WMA, bacteria was determined to be a high priority water quality problem Additionally, in the San Pasqual HA, nutrients were determined to be a high priority water quality problem.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the high priority water quality problems for each HA-high priority water quality problem combination in the WMA. These sources are listed in Table 3-6 in the previous section. Based on the available data, the Copermittees could then make appropriate management decisions when selecting appropriate watershed water quality and education activities.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees will use Table 3-5 to maintain a log of areas where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The remainder of this section discusses the activities that the Copermittees have selected to list as their activities for potential implementation. Each year (starting with Year 1) the Copermittees will evaluate the water quality problems, source information (SLP, TTWQ, and quantities) to determine the most appropriate activities to implement. At the end of the section is a proposed 5-year implementation schedule. This schedule is tentative and subject to change based on the annual evaluation of data and information. Any changes to the proposed schedule will be reflected in future WURMP Annual Reports.

4.1 Proposed Watershed Water Quality Activities

The Watershed Copermittees are responsible for identifying and implementing Watershed Water Quality Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. Watershed Water Quality Activities are activities other than education that address the high priority water quality problems in the WMA.

A list of the proposed Watershed Activities is included below and will be updated with each annual report. Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified high priority water quality problems in the WMA.

Each activity on the Watershed Activities List is fully described in an Activity Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified high priority water quality problem(s) of the watershed;

5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Watershed Copermittees will implement identified Watershed Activities pursuant to the proposed schedule. For each Permit year, no less than two Watershed Water Quality Activities will be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s). Watershed Water Quality Activities that are capital projects are in active implementation for the first year of implementation only.

Based on the watershed strategy for activity selection, the following water quality activities have been selected for first-year implementation. The Water Quality Activity Sheets can be found in Appendix A.

Table 4-1 Watershed Activities – 5-Year Strategic Plan

Watershed HAs					Activity/Project Name	Jurisdiction	Watershed Priorities		Implementation Schedule							Comments
							Bacteria	Nutrients	FY 07-08			FY 08-09			Future Fiscal Year(s)	
905.1	905.2	905.3	905.4	905.5	**SAN DIEGUITO RIVER WATERSHED**											
					Watershed Water Quality Activities (Load Reduction/Source Abatement)											
		X	X	X	Pet Waste Bag Dispenser Program in County Parks	Cnty	X	X	WQI			WQI			WQI	This activity will continue throughout the Permit Cycle
To be determined					Land Acquistions	Cnty	X	X	WQI			*				*Unable to project land acquisitions in advance
			X		Santa Maria Creek Protection and Restoration Project	Cnty	X		I	M		I				Post-project monitoring and assessment is ongoing
X	X	X			Alpha Project for the Homeless, Inc. Trash Cleanups	SD	X		WQI	A						
X	X	X			ILACSD Trash Cleanup Sponsorship	SD	X		WQI	A		WQI	A		WQI	
X	X	X			SDCK Trash Cleanup Sponsorship	SD	X		WQI	A		WQI	A		WQI	
X	X	X			Targeted Animal-Related Facility Inspections	SD	X	X	P			P	WQI		WQI	
X	X	X			Targeted Landscaping-Related Facility Inspections	SD	X	X	P			P	WQI	A		
X	X	X			Targeted Municipal Facility Inspections	SD	X	X	P			WQI	A		WQI	
X	X	X			Targeted Restaurant Facility Inspections	SD	X		P	WQI		P			WQI	
X	X	X			Municipal Rain Barrel Installation	SD	X	X	P	WQI	A					
X	X	X			Trash Segregation Device Installation	SD	X		P			P			P, WQI	
X	X	X			Irrigation Controller & Xeriscaping Incentive Program	SD	X	X							WQI	
X	X	X			Sediment & Peak Flow Controls #1	SD	X	X	P			P	M		P,M, WQI	
X	X	X			Sediment & Peak Flow Controls #2	SD	X	X				P			WQI	
X	X	X			Focused Restaurant Inspections	ESC/SB	X					WQI			WQI	
	X	X			Increase Trash Receptacles and Dogi-Pot stations	POW/ESC	X	X							P, WQI	
To be determined					Stormwater Quality Master Plans for Special Drainage Fee Areas	Cnty	?	?				**				**Contingent upon SDA fee increase in 2009
X					Residential Irrigation Runoff Reduction	SB	X					P			WQI	
X					Park and Open Space Irrigation and Controllers	DM	X					P	WQI	A	A	
X					Median Irrigation System Replacement	DM	X					P	WQI	A	A	
					Watershed Education Activities											
X		X	X	X	LID and Watershed Planning Education	Cnty/DM	X	X	WE			WE				Completion is anticipated in FY 08-09
X	X	X			Public Service Announcements: Karma/Karma Second Chance Public Service Announcements	SD	X		WE			WE			WE	
X	X	X			Mobile Advertising (General; Bacteria)	SD	X		WE			WE			WE	
X	X	X			Restaurant Inspection Outreach	SD	X					P			WE	
X	X	X			CBSM Outreach Pilot Project	SD	X					P			P, WE	
X					Residential Water Conservation Outreach	DM	X		P			P	WE		P, WE	

WQI = Watershed Water Quality Activity Implementation (Active Implementation)
I = Watershed Water Quality Activity Implementation (No WURMP Credit)
A = Watershed Activity Assessment (No WURMP Credit)
P = Watershed Activity Planning (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)
E = Watershed Education Activity (No WURMP Credit)
PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)

4.2 Proposed Watershed Education Activities

The Watershed Copermittees are responsible for identifying and implementing Watershed Education Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. Additionally, watershed water quality activities may be related to watershed education activities. Watershed Education Activities are outreach and training activities that address high priority water quality problems in the WMA.

The Watershed Copermittees will implement identified Watershed Education Activities pursuant to established schedules. For each Permit year, no less than two Watershed Education Activities will be in an active implementation phase. A Watershed Education Activity is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can reasonably be established in target audiences.

A list of the proposed Watershed Education Activities is included Table 4-1 and will be updated with each annual report. Each activity on the Watershed Education Activities List is fully described in an Activity Sheet (Appendix A) and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of Watershed Copermittees in completing the activity;
4. A description of how the activity will address the identified high priority water quality problem(s) of the watershed;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

4.3 Proposed Public Participation Activities

The San Dieguito Watershed Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed (such as other agencies, private companies, and environmental groups, etc.)

Broad participation is critical to the success, further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process, including other regulatory agencies, environmental groups, educational institutions, landowners, and private citizens. Further, the participating jurisdictions recognize that no single agency has the capacity to address water quality issues on its own and broad partnerships are essential to positively affect the water resources in our region. It is only through a collaborative approach that we will develop a better understanding of the issues and processes affecting water quality in our watersheds and subsequently select and address priorities.

San Dieguito River Watershed Copermittees will continue to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as the workgroup continues to develop and implement the program and other watershed related management plans.

Participating jurisdictions will continue to pursue a strategy to actively encourage the participation and input of diverse stakeholders. The County's Project Clean Water has been identified as a forum for future public participation. Other mechanisms identified to foster public

participation include public meetings and community workshops as well as regular interaction with stakeholders as described below.

Project Clean Water
Project Clean Water, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. The relationship of Project Clean Water objectives to permit compliance is important. An underlying tenet of this effort is that Permit compliance alone cannot achieve improved water quality conditions. As such, Project Clean Water seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. This significantly broadens the base of stakeholder input available to consider issues directly related to Permit compliance. As with Copermittee meetings, all Project Clean Water meetings are open to the public and participation is encouraged through a variety of means including a website, electronic notifications and personal phone calls.

Cross-Jurisdictional Collaboration
The San Dieguito River Watershed workgroup, which consists of representatives from the City of San Diego, Del Mar, Escondido, Poway, Solana Beach and County of San Diego collaborate as needed to foster public input and participation on activities related to the watershed program.

In addition, an annual workshop may be held to present updates, revisions, and/or solicit comments in order to actively engage stakeholders affected or potentially affected by program development and its implementation. The watershed Copermittees will utilize various local media to advertise such meetings and efforts will be made to hold each workshop in a centrally located facility.

Integration and Participation in Local Planning Activities
Planning at the watershed scale has become an issue of increasing importance over the past few years. As part of the watershed program, jurisdictions will participate in and support associated efforts which provide opportunities to learn about concerns raised by the public and publicize efforts related to this program. Implementation of the San Dieguito Watershed Management Plan and participation in the Watershed Council are important examples of these efforts.

Direct Interaction
In addition to those methods already described, participating jurisdictions rely heavily on the interaction of their staff with members of the public during their job duties. This facet of jurisdictional programs will provide an additional avenue for obtaining direct feedback from interested stakeholders.

4.4 Proposed Land-Use Planning Activities

The San Dieguito Watershed Copermittees have developed a program for encouraging collaborative, watershed-based, land use planning in their jurisdictional planning departments. The watershed-based land-use planning program is described below.

The California Government Code gives local governments the authority and the responsibility to exercise local land use planning and associated regulatory functions. Because they ultimately control the types and intensities of particular activities that may be allowed within specified geographic areas, land use decisions play a critical role in addressing point and non-point sources of pollution.

Cities and counties have traditionally exercised their land use authority independently, with limited consideration of the chemical, biological, and physical processes that govern the generation, transport, and fate of contaminants and stressors at the watershed scale. Land use policies of individual municipalities have the potential to affect water quality in water bodies well beyond their jurisdictional boundaries.

State law requires that each jurisdiction adopt a comprehensive, long-term General Plan to guide its physical development. The General Plan is the official document that outlines the long-term plans and policies regarding the location of housing, business, industry, roads, parks, and other land uses. Additionally, the General Plan addresses broad issues such as provision of infrastructure and conservation of natural resources. The legislative body of each city (the city council) and each county (board of supervisors) adopts zoning, subdivision and other ordinances to regulate land uses and to carry out the policies of its General Plan. The General Plan can be described as the blueprint for future development. It represents the community's view of its future; a constitution made up of goals and policies upon which local decision makers (hearing officers, planning commissions, city councils and county board of supervisors) base their land use decisions.

California planning law establishes the minimum contents and scope of local general plans. State law requires planning agencies to "prepare, periodically review, and revise, as necessary, the general plan". Keeping the general plan current is important for good planning. State law gives counties and cities wide latitude in how they put a General Plan together, but there are fundamental requirements that must be met. These requirements include seven mandatory elements as described below:

Land Use Element: The land use element dedicates lands to particular purposes. It outlines how the jurisdiction will designate and separate various uses such as commercial, industrial, and residential. Natural resource, agriculture, timber production, and flood plain areas must also be delineated. A major intent of this element is to design areas for development that are compatible with one another.

Housing Element: This element requires local governments to adequately plan to meet the existing and projected housing needs of all economic segments of the community.

Circulation: This element identifies the general location of existing and planned transportation routes and public utilities. It is actually an infrastructure plan that concerns itself with the circulation of people, goods, energy, water, sewage, storm drainage, and communications. Its provisions support the goals, objectives, policies and proposals of the land use element.

Conservation: This element describes how the jurisdiction intends to conserve its natural resources for future utilization. The element covers water resources, soils, forest, wildlife, mineral resources, and fisheries.

Open Space: This element designates areas for preservation and managed production of natural resources, outdoor recreation, and public health and safety. The Open Space element is related to the conservation element in some ways, and designated lands in either element could be actually or nearly the same. The important difference between the two elements is the very specific inclusion of the consideration of public health and safety concerns in open space zoning.

Safety Element: The safety element defines community protection measures in relation to fires, seismic hazards, and geological hazards. It must include provisions for evacuation routes, water supply, minimum road widths, and clearances around structures.

Noise Element: This element is designed to address overall levels of noise in the community by identifying the sources of noise, assessing its effects and establishing policies, criteria and standards to reduce excessive noise to acceptable limits.

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5. PROGRAM EFFECTIVENESS ASSESSMENT

This Section is a description of how the San Dieguito WURMP addresses the requirements of Section I.2. of Order R9-2007-0001. WURMP effectiveness assessments will be based on the concepts first identified and described in the San Diego Copermittees' October 2003 document, "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs" (Framework). The reader is encouraged to become familiar with the concepts described in the Framework to better understand the remainder of this section.

To summarize, the table below describes the six outcome levels identified in the Framework along with potential measures and methods for measuring effectiveness.

Table 5-1 Levels 1-6 Targeted Outcomes and Potential Assessment Measures and Methods

Outcome Type	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements	Verification that required activities were implemented
Level 2: Changes in Knowledge / Awareness	Measure of changes in targeted audiences knowledge and awareness potentially through the use of pre- and post-surveys and observations
Level 3: Behavioral Change / BMP Implementation	Measure of changes in behavior or BMP implementation potentially through the use of observations or inspections
Level 4: Load Reductions	Measured or calculated load reductions as a result of changes in behavior or BMP Implementation. Measurements may be supported by water quality data and calculations may be supported by information and data related to the pollutant generating activities
Level 5: Changes in Discharge Quality	Historical and statistically supportive trends in the levels of pollutants in the discharges from the MS4. This will be assessed periodically using the results of regional, WMA and jurisdictional water quality monitoring data
Level 6: Changes in Receiving Water Quality	Historical and statistically supportive trends in the levels of pollutants in the receiving waters. This will be assessed periodically using the results of regional, WMA and jurisdictional water quality monitoring data

Order R9-2007-0001 requires two types of assessment in the WURMP: 1) assessment of each watershed activity, and 2) assessment of overall WURMP effectiveness. The approach for complying with each requirement is described below in addition to an optional third that deals with assessing programmatic efficiency.

5.1 Watershed Activity Assessment

The effectiveness of each Watershed Water Quality and Watershed Education Activity will be assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes.

Each activity summary sheet in Appendix A identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an

individual watershed activity would be measurable at Levels 5 or 6. Level 5 and 6 Outcomes are typically measurable through cumulative assessments as described in the following section.

5.2 Overall WURMP Assessment

The assessment of overall WURMP effectiveness will focus on the cumulative impacts of program implementation and will include the following elements: 1) an assessment of how well Watershed Copermittees have collectively complied with minimum Permit requirements, 2) an assessment of the cumulative impact of watershed activity implementation, and 3) an integrated assessment of discharge and receiving water quality.

To assess how well Watershed Copermittees have collectively complied with minimum Permit requirements, the following Level 1 Outcomes will be tracked on an annual basis:

1. Update any watershed maps.
2. Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.
3. Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.
4. Update list of potential Watershed Water Quality Activities.
5. Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.
6. Update list of potential Watershed Education Activities.
7. Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.
8. Describe the public participation mechanisms used during the reporting period and the parties that were involved.
9. A description of Copermittee collaboration efforts including meeting as the Los Peñasquitos WMA WURMP Workgroup.
10. Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.
11. When applicable, describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. The description shall include:
    a. Any additional source identification information;
    b. The number, type, location, and other relevant information about BMP implementation, including any expanded or better tailored BMPs necessary to meet the WLAs;
    c. Updates in the BMP implementation prioritization and schedule;
    d. An assessment of the effectiveness of the BMP Implementation Plan, and;
    e. A discussion of the progress to date in meeting the TMDL Numeric Targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.

Assessing the cumulative effectiveness of watershed activity implementation is challenging. The results of individual activities are typically difficult to aggregate at the watershed level. Nevertheless, the Watershed Copermittees will strive to conduct activity-specific assessments in a way that allows for an assessment of cumulative watershed impacts when possible. This may involve the use of consistent methods to assess similar activity types or the use of consistent units of measure to aggregate the results of disparate activity types.

Finally, the Watershed Copermittees will attempt to improve their ability to conduct integrated assessments over the course of this Permit cycle. Integrated assessments aim to identify the relationship between program implementation and resulting effects on discharge and receiving water quality. Integrated assessments therefore attempt to draw links between the activity-specific assessments described above and water quality monitoring data collected at the regional, watershed, and jurisdictional levels. The Watershed Copermittees will use available data and information to determine what impacts, if any, WURMP implementation is having on Outcome Level 5 and 6. It must be recognized, however, that urban runoff management takes place at many levels. For example, jurisdictional and regional urban runoff programs also result in watershed benefits and it is unclear how to isolate the effect of each.

5.3 Program Efficiency

This section presents an optional approach that the Watershed Copermittees may utilize to improve management decisions with respect to WURMP ***and*** JURMP implementation.

Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts. Assessment also determines the efficiency of activities and program implementation. Knowing the efficiency of individual activities and the overall WURMP program implementation, for example, will provide the WMA Copermittees with data to prioritize resources appropriately and maximize pollutant program effectiveness to achieve the ultimate goal of protection and improvement of water quality in the region's creeks, rivers, beaches, and bays.

Some Copermittees plan to refine their programs to implement them as efficiently as possible. The simplified process is to use information obtained about the following program elements to assess which activities are the most effective and efficient for reducing pollutant loads.

1. Water Quality Problems
2. Source Loading Potentials
3. Pollutant Generating Activities
4. BMP Implementation Effectiveness
5. Education and Outreach Effectiveness
6. Program Element Costs

By evaluating the abovementioned elements, the Copermittees can determine the most influential sources/pollutant generating activities and address them with the most effective tools for achieving load reduction. The Copermittees recognize that the most effective way to achieve changes in discharge water quality and receiving water quality (Levels 5 & 6) is through load reductions and source abatement (Level 4).

Through collaboration with JURMP and other WURMP programs throughout the County, the Copermittees may collect data to begin developing efficiency ratings (load-reduction to cost ratios) for activities, including BMP implementation and Outreach and Education activities. It is anticipated that through JURMP activities and evaluation of effectiveness, many activities will be measured for their effectiveness at achieving Levels 1-4 Targeted Outcomes. In addition to what is learned from JURMP effectiveness assessments, the Copermittees will also implement watershed water quality activities that will provide information and data related to effectiveness of specific program activities.

Together, the data from both of the program levels may be used to assist in prioritizing programs to maximize the Levels 1-4 Targeted Outcomes which ultimately maximizes the Levels 5 & 6 Targeted Outcomes. The Levels 5 & 6 Targeted Outcomes will be measured through the water quality monitoring programs described in Section 3 above. This means that some program activities that are less effective may be deemphasized while other activities that are determined to be more effective may be enhanced or used on a more broad-scale.

Note, however, that baseline JURMP activities mandated by the Municipal Permit will always be implemented regardless of efficiency ratings in order for the cities to remain in compliance with the Permit. Pilot activities that are implemented to meet WURMP requirements and to obtain data to determine the efficiency of baseline JURMP activities may be modified, expanded or terminated as deemed appropriate.

6. PROGRAM REVIEW AND MODIFICATION

WURMP implementation is an iterative process that involves assessing the program's effectiveness as described above. The Copermittees will review the overall watershed program annually and make modifications as necessary to improve the overall effectiveness of Copermittee activities. One focus of the program will be to determine the effectiveness of the implemented activities, overall program implementation and the efficiency of the program implementation. Any changes to the program processes or implementation plan will be modified and reported in Annual Reports.

Another focus of the reviews will be to determine if sufficient data as been collected, jurisdictionally, within the WMA, regional or other level, that will help the evaluation conducted in the collective watershed strategy. If there are modifications necessary to the activities list based on the re-evaluation of water quality problems or source information, the Copermittees will provide updates in Annual Reports.

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Appendix A

San Dieguito Watershed Activity Sheets

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San Dieguito Watershed Water Quality Activity Sheets

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TITLE: **Santa Maria Creek Protection and Restoration Project**
ID #: **SD-WQA1**

ACTIVITY DESCRIPTION

The purpose of the Santa Maria Creek Protection and Restoration Project is to reduce the transport of urban and agricultural pollutants, bacteria, and sediment to downstream receiving waters by restoring, enhancing, and protecting the Santa Maria Creek corridor, which flows through the grasslands of Santa Maria Valley, downstream and west of the community of Ramona. As the creek flows westward, it leaves the urban matrix and enters an extensive area of currently unprotected grasslands and vernal pools, used primarily for cattle grazing. For over a century, cattle have had unrestricted access to most of the stream channel which has resulted in incised banks, impaired recruitment of riparian vegetation, and significant adverse effects on water quality.

This project was partially funded through a Proposition 13 grant from the State Water Resources Control Board (SWRCB). The term of the project agreement was from June 1, 2004 – March 31, 2007, and included a $1.5 million grant and a match amount of $990,750 for a sum of $2,490,750. The match amount of $905,614 was from the San Diego County Department of Parks and Recreation (Parks and Open Space General Fund), a contribution from The Nature Conservancy, and in-kind contributions from the City of San Diego Water Department and the Wildlife Research Institute.

Water quality monitoring and assessment of project effectiveness will continue during this Permit cycle.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL at this time.

TIME SCHEDULE FOR IMPLEMENTATION

This restoration project was completed in March 2007. Monitoring and assessment are ongoing.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Sulfate
- Phosphorous
- Low Dissolved Oxygen
- Total Dissolved Solids (TDS)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed including the Santa Maria Valley (905.4). Urban and agricultural land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and

potential source of the problem within the watershed, therefore the activity is consistent with the San Dieguito WMA strategy.

EXPECTED BENEFITS

The water quality monitoring program for the Preserve will be utilized for assessment of the combined effectiveness of stream restoration, grazing management, and re-vegetation for reducing pollutants in Santa Maria Creek.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming completion of all project elements (Level 1 Outcome). Implementation effectiveness will be measured by monitoring Santa Maria Creek for temperature, dissolved oxygen, pH, stream flow, total suspended solids, conductivity, total dissolved solids, total nitrogen, total phosphorus, total coliform bacteria, chloride, and sulfate. Improvements to water quality in Santa Maria Creek will be assessed once prescribed land management actions are implemented from the Area Specific Management Directives and data collected during this period are compared to the baseline data (Level 6 Outcome). The effectiveness of removing non-native invasive plant species in the upland habitat and adjacent to Santa Maria Creek during the on-going management of the Preserve will also be assessed regarding improved water quality within the creek (Level 6 Outcome).

TITLE: **Land Acquisitions**
ID #: **SD-WQA2**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the County of San Diego currently, and the County is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed and nutrients as a

high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads (bacteria, nutrients, etc.) in need of reduction. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **Municipal Rain Barrel Installation and Downspout Disconnects**
ID #: **SD-WQA3**

ACTIVITY DESCRIPTION

This activity will involve the installation of rain barrels and/or the disconnection of downspouts to direct runoff from municipal facility roofs into pervious areas (such as landscaping) for infiltration. Rain barrels, downspout disconnects, and rainwater harvesting/reuse systems help to capture, store, and divert urban runoff to reduce the volume thereof, thus contributing to reduced flooding, erosion, and the contamination of surface water with sediment, fertilizer, metals, and pesticides. In addition, this activity has the added benefit of water conservation; runoff collected and diverted to landscaping would help reduce the amount of potable water needed for irrigation. Roof runoff solutions can be used both in large-scale landscapes, such as municipal buildings, community centers, schools, and commercial sites, as well as in small residential landscapes.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007 and is anticipated to continue until the end of calendar year 2007. Procurement of rain barrels and other items and installation are anticipated to occur from beginning in March 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Minerals
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality pollutants. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention, and infiltration. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing runoff volume via capture, retention, and eventual infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of rain barrels, downspout disconnects, and rainwater harvesting/reuse systems to reduce urban runoff volume and pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of rain barrels and downspout disconnects as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	• Reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	• Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data	• Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

TITLE: **San Diego Coastkeeper Trash Cleanup Sponsorship**
ID #: **SD-WQA4**

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Dieguito River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love A Clean San Diego
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Dieguito River WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Although Coastal Cleanup Day is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[1] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Dieguito River WMA through cleanup events, bacteria loading are reduced.

[1] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Sediment and Peak Flow Controls #1**
ID #: **SD-WQA5**

ACTIVITY DESCRIPTION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff velocity and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality pollutants. Implementation of this activity will address the high priority water quality problems by managing runoff volume—the transport mechanism for pollutants—and treating runoff of pollutants before discharge into receiving waters. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by managing runoff volume and treating runoff of pollutants before discharge into receiving waters.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of sediment and peak flow controls to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of sediment and peak flow controls as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction efficiency of sediment controls?
Targeted Measurable Outcome(s)	• Reduction in TSS at outflow of constructed BMP • Detect water quality improvement in receiving waters downstream of diversion
Assessment Method(s)	• Inspections (e.g., ensure the constructed treatment BMP is working as designed) • Quantification (e.g., use drainage area information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • How much money spent on implementation? (Outcome Level 1) • Receiving water quality improvement downstream (Outcome Level 6)

TITLE: **Sediment and Peak Flow Controls #2**
ID #: **SD-WQA6**

ACTIVITY DESCRIPTION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff velocity and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality pollutants. Implementation of this activity will address the high priority water quality problems by managing runoff volume—the transport mechanism for pollutants—and treating runoff of pollutants before discharge into receiving waters. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by managing runoff volume and treating runoff of pollutants before discharge into receiving waters.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of sediment and peak flow controls to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of sediment and peak flow controls as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction efficiency of sediment controls?
Targeted Measurable Outcome(s)	• Reduction in TSS at outflow of constructed BMP • Detect water quality improvement in receiving waters downstream of diversion
Assessment Method(s)	• Inspections (e.g., ensure the constructed treatment BMP is working as designed) • Quantification (e.g., use drainage area information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • How much money spent on implementation? (Outcome Level 1) • Receiving water quality improvement downstream (Outcome Level 6)

TITLE: **Targeted Animal-Related Facility Inspections**
ID #: **SD-WQA7**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target animal-related facilities within the San Dieguito River WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at animal-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Dieguito River WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality pollutants. Implementation of this focused inspection activity will contribute

to addressing discharges, correct behaviors, and abate sources associated with bacteria and nutrients. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at animal-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Landscaping-Related Facility Inspections**
ID #: **SD-WQA8**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target landscaping-related facilities within the San Dieguito River WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at landscaping-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Dieguito River WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality pollutants. Implementation of this focused inspection activity will contribute

to addressing discharges, correct behaviors, and abate sources associated with bacteria and nutrients. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at landscaping-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Municipal Facility Inspections**
ID #: **SD-WQA9**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target municipal facilities within the San Dieguito River WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Dieguito River WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's municipal facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant in FY 2008 to help develop and implement the activity beginning in FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Dissolved Minerals
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed. The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality pollutants. Implementation of this focused inspection activity will contribute

to addressing discharges, correct behaviors, and abate sources associated with bacteria, dissolved minerals, and gross pollutants at municipal facilities. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at municipal facilities. Knowledge and experience gained through this activity would help the City optimize its municipal facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Targeted Restaurant Facility Inspections**
ID #: **SD-WQA10**

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target restaurant facilities within the San Dieguito River WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at restaurant facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the San Dieguito River WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Dieguito River WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Trash Segregation Device Installation**
ID #: **SD-WQA11**

ACTIVITY DESCRIPTION

This project will involve the installation of devices along certain right-of-ways in the San Dieguito River WMA to prevent trash and debris from entering the MS4. Runoff entering an inlet with such a device will be cleaned of large trash and debris. It is anticipated that accumulation of such pollutants at the mouth of inlets will facilitate their collection by City crews using street sweepers. The City will study the effectiveness (in terms of load reduction) and the efficiency (in terms of load reduction divided by cost) of such devices in improving discharge and water quality impaired by bacteria, both in absolute terms and relative to other potential activities.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Installation is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after installation to assess the effectiveness in bacteria and trash loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Dieguito River WMA identifies bacteria as a high priority water quality problem in the watershed and recommends implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Implementation of this activity will reduce bacteria loading via facilitation of trash and debris removal. Literature published by the United States Environmental Protection Agency on its website[2] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Dieguito River WMA, bacteria loading are reduced.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting of trash

[2] http://www.epa.gov/owow/oceans/debris/

segregation devices to reduce bacteria loading via facilitation of trash and debris removal. In addition, knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of trash segregation devices as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and potential TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Which type of trash segregation device facilitates the most efficient removal of trash and debris? • What is the load reduction efficiency of trash segregation devices in facilitating removal of trash? • How effective are trash segregation devices at facilitating reduction of loads of trash?
Targeted Measurable Outcome(s)	• Determination of most efficient and effective trash segregation device • Reduction in trash based on amount removed from areas with devices • Receiving water quality improvement (less observed trash in receiving water downstream)
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Alpha Project for the Homeless, Inc. Trash Cleanups**
ID #: **SD-WQA12**

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division has partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups and potentially homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2007 and FY 2008.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with Alpha Project to ensure that sites within the San Dieguito River WMA are included in the list of sites to target for cleanups in FY 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for San Dieguito River WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Cleanups by Alpha Project will result in load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Although the cleanups conducted by Alpha Project focus on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[3] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Dieguito River WMA through cleanup events, bacteria loading are reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)

[3] http://www.epa.gov/owow/oceans/debris/

Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **I Love A Clean San Diego Trash Cleanup Sponsorship**
ID #: **SD-WQA13**

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Dieguito River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Dieguito River WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Although Creek to Bay Cleanup is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[4] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the San Dieguito River WMA through cleanup events, bacteria loading are reduced.

[4] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Park and Open Space Irrigation and Controllers**
ID #: **SD-WQA14**

ACTIVITY DESCRIPTION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. While the new ordinance is not yet adopted, one key element has been identified, and that key element is to replace timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in City parks and open space areas. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project is budgeted for FY 2007/2008 and FY 2008/2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

OTHER PARTICIPATING ENTITIES

This project involves monies and support from the State Department of Water Resources.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collaborative watershed strategy identified bacteria as a high priority water quality pollutant in all areas of the watershed, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problems within the watershed, therefore the activity is found to be consistent with the San Dieguito WMA strategy.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Once implemented, the City of Del Mar can track water consumption through the use of flow metering and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **Median Irrigation System Replacement**
ID #: **SD-WQA15**

ACTIVITY DESCRIPTION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. While the new ordinance is not yet adopted, one key element has been identified, and that key element is to replace timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for automated irrigation controllers and irrigation system repairs and retrofits of manual valves and drip systems in the City of Del Mar rights-of-way. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project is budgeted for FY 2007/2008 and FY 2008/2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

OTHER PARTICIPATING ENTITIES

This project involves monies and support from the State Department of Water Resources.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- TDS
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collaborative watershed strategy identified bacteria as a high priority water quality pollutant in all areas of the watershed, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria and nutrients from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problems within the watershed, therefore the activity is found to be consistent with the San Dieguito WMA strategy.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Once implemented, the City of Del Mar can track water consumption through the use of flow metering and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **Increase Trash Receptacles and Dogi-Pot Stations**
ID #: **SD-WQA16**

ACTIVITY DESCRIPTION

This activity will increase the number of pet waste and trash receptacles within the San Dieguito watershed. Pet waste and trash receptacles provide pet owners with litter bags and trash receptacles for easy disposal of pet waste, reducing the amount of pollutants entering receiving waters. Participating jurisdictions will determine locations to increase the number of pet waste bag receptacles, Dogi-Pot stations, and trash receptacles by identifying areas of high pet activity such as parks and trails and areas where trash and animal waste typically accumulate. Increasing the number of stations or bags will further reduce the amount of pet waste present in these areas.

City of Poway: The City of Poway plans to increase the number of trash cans and Dogi-Pot stations around popular trails in the watershed. The City intends to focus these efforts on popular trails utilized by hikers with dogs; and trails where trash or animal waste is found frequently by City staff.

City of Escondido: This activity will increase the number of Dogi-Pot stations in areas of high pet activity throughout parks and other areas located in the San Dieguito watershed such as Kit Carson Park.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Escondido: Installation of additional Dogi-Pot stations is expected to occur at sites such as Kit Carson Park in FY 2010.

Poway: Plan development will occur in FY 2010 and implementation will occur in FY 2011

PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido
- City of Poway

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the entire watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). Pet waste has been identified as a potential source of bacteria and nutrients. This activity addresses high priority water quality problems and potential source of the problems within the watershed. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

This proposed activity is designed to provide pet owners with a convenient means to dispose of pet waste, thereby reducing pollutants in runoff to receiving waters. As a result, Copermittees hope to see a reduction in concentrations of pollutants associated with pet waste in receiving waters.

EFFECTIVENESS MEASUREMENTS

This activity is designed to raise awareness of the potential water quality impacts associated with pet waste and change pet owner behavior by providing a means for pet waste disposal (Levels 2 and 3). Proper disposal of pet waste will reduce pollutant loads in runoff (Level 4).

TITLE: **Focused Restaurant Inspections**
ID #: **SD-WQA17**

ACTIVITY DESCRIPTION

The Cities of Escondido and Solana Beach will conduct focused inspections of restaurants within the San Dieguito watershed to target the pollutants generated by food service facilities. Activities and areas at restaurants such as grease handling and disposal, spills, dumpster and loading docks, parking lots, landscaping and ground maintenance and cleaning of equipment can generate pollutants that have the potential to enter the receiving waters. Pollutants that may be generated by restaurant areas and activities include bacteria from organic materials (i.e., food wastes), oil and grease, trash, and chemicals.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL. However, this activity may be applicable to the recently adopted bacteria TMDL in the future.

TIME SCHEDULE FOR IMPLEMENTATION

City of Escondido - The focused inspections will be conducted during FY 2010.
City of Solana Beach – The focused inspections will be conducted during FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido
- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed. Restaurants have been identified as a potential discharge of bacteria. This activity addresses a high priority water quality problems and potential source of the problem within the watershed. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities.

EFFECTIVENESS MEASUREMENTS

The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

Monitoring data from previous inspections throughout the watershed would be compiled and restaurant NOV status analyzed through GIS. Clusters of problem areas would be targeted for focused inspections and corrective action(s) if necessary.

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TITLE: **Stormwater Quality Master Plans for Special Drainage Fee Areas**
ID #: **SD-WQA18**

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Dieguito River Watershed include:

- SDA 8 (Ramona)
- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur anytime before FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined

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TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID #: **SD-WQA19**

ACTIVITY DESCRIPTION

The County of San Diego maintains an inventory of pet waste bag dispensers in its parks. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. In the San Dieguito River Watershed, there are currently three dispensers located in two County parks:

- San Dieguito Park (2 dispensers)
- Holly Oaks Park (1 dispenser)

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste bag dispensers – Ongoing
- Addition of new dispensers in County parks – To be determined

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). Parks and pet waste have been identified as potential discharges of bacteria and nutrients. This activity addresses high priority water quality problems and potential source of the problems within the watershed. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1 Outcome). Bacteria load reductions (Level 4 Outcome) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

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TITLE: **Irrigation Controller and Xeriscaping Incentive Program**
ID #: **SD-WQA20**

ACTIVITY DESCRIPTION

This activity will involve launching a pilot incentive program to encourage the use of weather-based irrigation devices and xeriscaping to reduce over-irrigation and the overall need for landscaping irrigation. Specific residential and commercial areas will be targeted and monitored to assess the efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in July 2010. Program launch is anticipated to occur in FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter
- City of San Diego Water Department (to be invited to participate)
- San Diego County Water Authority (to be invited to participate)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants
- Dissolved Minerals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the entire watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). The Strategy also recommends implementing load reduction/source abatement activities to address the high priority water quality problems. Implementation of this activity will address the high priority water quality problems by reducing dry weather flows resulting from over-irrigation. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing dry weather flows resulting from over-irrigation. Reduction of runoff means less pollutants conveyed into the storm drain system and out into receiving waters. Water conservation will also be an added benefit as program participants waste less water on irrigation.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (November 2007), which calls for the piloting and monitoring of an irrigation runoff reduction program to combat urban pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of irrigation runoff reduction programs as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions	• Does increased education help reduce dry weather runoff? • Do incentives and/or rebates increase the rate of low-runoff irrigation device installation? • Do neighborhoods targeted for outreach or incentives exhibit fewer incidence of dry weather runoff? • How does the incidence of dry weather runoff relate to load reduction?
Targeted Measurable Outcome(s):	• Achieve zero dry weather runoff in target neighborhoods
Assessment Method(s):	• Inspections (e.g., track number of target behaviors observed, decrease in observed behavior, number of follow-up inspections) • Quantification (e.g., use frequency of observed behavior to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data	• Number of incentives or rebates distributed (Outcome Level 1) • Change (%) in target behavior pre and post-outreach (Outcome Level 3) • Number of follow-up inspections (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Residential Irrigation Runoff Reduction**
ID #: **SD-WQA21**

ACTIVITY DESCRIPTION

The San Dieguito watershed has seen exceedances for various high priority pollutants during the Dry Weather Monitoring Program. A pilot single family residential area in a sub-watershed will be selected to evaluate the load reduction potential related to reducing irrigation runoff. The expected results include reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in pilot area, and reduction in irrigation runoff flow in the pilot area. Planned activities include:

- Use Dry Weather Monitoring Program results, BLTEA info, and field knowledge to select pilot area
- Collect pre-pilot flow data in pilot drainage area, and calculate estimated pollutant loads
- Work with volunteer residences and sites with irrigation runoff to review water usage, conduct water assessment and leak detection as necessary.
- Field reconnaissance to check for corrective action completion
- Collect post-pilot flow measurements in pilot drainage area, and calculate estimated pollutant loads
- Measure effectiveness of overall program by calculating any reduction in pollutant loading through reduction in over-irrigation.

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning will occur in FY 2009 and the implementation and assessment is estimated for FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the watershed. Bacteria have been identified as a potential discharge from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problem within the watershed. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

Expected benefits include a reduction in dry weather urban runoff and therefore load reduction/source abatement of high priority pollutants. Another expected benefit is a reduction in water usage.

EFFECTIVENESS MEASUREMENTS

To be determined once the pilot activity planning is completed.

San Dieguito Watershed Education Activity Sheets

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TITLE: **Residential Water Conservation Outreach**
ID #: **SD-WQEA1**

ACTIVITY DESCRIPTION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies.

While the new ordinance is not yet adopted, one key element has been identified: the replacement timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. While this planned activity does not directly replace controllers in the residential zones of the City, it provides for outreach through direct mail and utility bill enclosures to encourage water-wise approaches to landscaping, including the use of native plants, smart controllers and drip irrigation systems. This is beneficial from an NPDES perspective since any reduction in water usage, including the use of efficient irrigation systems, reduces the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project proposed for FY 2008/2009 and FY 2009/2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collaborative watershed strategy identified bacteria as a high priority water quality pollutant in all areas of the watershed, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is found to be consistent with the San Dieguito WMA strategy.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.

EFFECTIVENESS MEASUREMENTS

Quantification of contacts with the residents regarding water conservation water quality activities can be tracked demonstrating a Level 2 outcome (Change in Knowledge).

TITLE: **LID and Watershed Planning Education**
ID #: **SD-WQEA2**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups for the unincorporated County and the development community in the City of Del Mar on low impact development (LID) and watershed planning principles, practices, and requirements.

In the unincorporated County, local planning and sponsor groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the San Dieguito River Watershed include:

- Palomar Mountain
- Ramona
- Hidden Meadows (North County Metro)
- Twin Oaks (North County Metro)
- San Dieguito
- Pala-Pauma
- Julian
- Valley Center

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

County of San Diego:

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

City of Del Mar:

- Community Outreach Workshops will be implemented in FY 2008

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Del Mar

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant throughout the entire watershed and nutrients as a high priority water quality pollutant in the San Pasqual Hydrologic Area (905.3). New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcome). The County and City of Del Mar will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2 Outcome).

TITLE: **Public Service Announcements: *Karma* and *Karma Second Chance***
ID #: **SD-WQEA3**

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division has retained a contract with a film production company to produce two Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled, *Karma* and *Karma Second Chance*, and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. These PSAs were developed in FY 2007 and FY 2008, and will be broadcast on several television and radio stations throughout the San Dieguito River WMA in FY 2008. The PSAs will be broadcast in both English and Spanish.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with a film production company to complete production in FY 2008, and then will work with various broadcast media outlets to distribute and air the PSAs in FY 2008 and FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radio Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Dieguito River WMA identifies bacteria as a high priority water quality problem in the WMA. The *Karma* and *Karma Second Chance* PSAs will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

The PSAs address bacteria directly by focusing on pet waste, food waste and organic matter, and indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[5] states that *pathogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

[5] http://www.epa.gov/owow/oceans/debris/

EFFECTIVENESS MEASUREMENTS

Management Questions	• What changes in awareness/attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data	• Number of listeners (radio) or homes (television) reached (Outcome Level 1) • Change in knowledge or awareness (Outcome Level 2)

TITLE: **Mobile Advertising**
ID #: **SD-WQEA4**

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division has retained a contract with a mobile advertising company to advertise *Think Blue* messages in both English and Spanish on its static billboard trucks in the San Dieguito River WMA. The City will coordinate with its Printing Services Division in the design of the advertisements and intends to create advertisements that target behaviors associated with bacteria and/or gross pollutants (trash). The trucks will drive predetermined routes in the San Dieguito WMA in an effort to reach targeted, high priority areas within the WMA to increase awareness and promote behavior change.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

The advertisements will be developed and displayed on the billboard trucks in FY 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Dieguito River WMA identifies bacteria as a high priority water quality problem in the WMA. Utilizing billboard trucks will result in increased knowledge and awareness regarding bacteria (and trash as a vector), promote behavior change, and result in future load reduction of trash and debris directly and of bacteria indirectly. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

The advertisements will address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website[6] states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash, bacteria loads are reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys

[6] http://www.epa.gov/owow/oceans/debris/

Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

TITLE: **Restaurant Inspection Outreach**
ID #: **SD-WQEA5**

ACTIVITY DESCRIPTION

The City of San Diego (City) proposes Restaurant Inspection Outreach in support of the planned inspection activity to target restaurant facilities within the San Dieguito River WMA. The purpose of the activity is to characterize activities at restaurant facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach efforts. The City's Storm Water Division will delineate a specific area within the San Dieguito River WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported.

Education and outreach methods, activities and materials will then be developed to supplement the inspections, with the goal of increasing awareness and compliance which will lead to load reductions. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In Fiscal Year 2008, the City retained several outreach consultants, including at least one firm that specializes in Community Outreach. Specific outreach planning will occur in FY09, with implementation, outreach, and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESED

- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The Collective Watershed Strategy identifies bacteria and trash as high priority water quality problem in the San Dieguito WMA and recommends implementing load reduction/source abatement activities to address it. Restaurants have been identified as potential discharges of bacteria. This activity addresses high priority water quality problem and potential source of the problem within the watershed. Therefore, this activity is consistent with the San Dieguito WMA Strategy.

EXPECTED BENEFITS

The Restaurant Inspection Outreach will address bacteria indirectly by removing bacterial sources observed in the WMA, which may include trash and food debris. Literature published by

the United States Environmental Protection Agency on its website[7] states that p*athogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

Management Questions	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors pre- and post- outreach? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the target area compare to other areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in target group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data	• Number of number of stakeholders reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of pollutants removed from study area (Outcome Level 4)

[7] http://www.epa.gov/owow/oceans/factsheets/fact1.html

TITLE: **Community-Based Social Marketing Outreach Pilot Project**
ID #: **SD-WQEA6**

ACTIVITY DESCRIPTION

The City's Storm Division found that research indicated that an emerging public education field called "Community Based Social Marketing" (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City plans to implement a pilot project using this approach in a community in the San Dieguito Watershed Management Area (i.e. Carmel Valley) to attempt to achieve awareness and behavioral change. The City has retained several professional research consultants to develop and initiate the CBSM Pilot Project. Research, observations, and surveys will be conducted, with outreach interventions and assessment methods to follow. Potential results will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In Fiscal Year 2009, the City will retain and consult with several research consultants, including at least one firm that specializes in Community-Based Social Marketing. Research and planning will occur in FY09, with implementation, outreach, assessment and evaluation continuing through FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The San Dieguito Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant and recommends implementing load reduction/source abatement activities to address it.

EXPECTED BENEFITS

The Community-Based Social Marketing (CBSM) Outreach Pilot will address bacteria indirectly by removing bacterial sources observed in the WMA, which may include trash, debris and pet waste. Literature published by the United States Environmental Protection Agency on its

website[8] states that p*athogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

Management Questions	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in pilot group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data	• Number of number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash or other pollutants removed from study area (Outcome Level 4)

[8] http://www.epa.gov/owow/oceans/factsheets/fact1.html

SAN DIEGUITO WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2008
ANNUAL REPORT

January 31, 2009

Prepared and Submitted by the San Dieguito Watershed Copermittees

City of Del Mar
City of Escondido
City of Poway
City of San Diego
City of Solana Beach
County of San Diego

City of Del Mar
1050 Camino Del Mar · Del Mar, California 92014-2698

Where the Turf meets the Surf

January 30, 2008

RE: STATEMENT OF CERTIFICATION
FY 2008 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Karen P. Brust
City Manager
City of Del Mar

Telephone: (858) 755-9313 · Fax: (858) 755-2794

ESCONDIDO
City of Choice

January 30, 2008

RE: STATEMENT OF CERTIFICATION
FY 2008 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lori Vereker
Director of Utilities
City of Escondido

CITY OF POWAY

MICKEY CAFAGNA, Mayor
DON HIGGINSON, Deputy Mayor
MERRILEE BOYACK, Councilmember
JIM CUNNINGHAM, Councilmember
BETTY REXFORD, Councilmember

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Robert J. Manis
Director of Development Services
City of Poway

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THE CITY OF SAN DIEGO

January 30, 2008

RE: STATEMENT OF CERTIFICATION
FY 2008 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

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Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

Storm Water Department
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January 30, 2009

RE: STATEMENT OF CERTIFICATION
FY 2008 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2008 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. Sammak

Mo Sammak
Director of Engineering/Public Works
City of Solana Beach

STATEMENT OF CERTIFICATION

San Dieguito River Watershed Urban Runoff Management Plan (WURMP) FY 2007-2008 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2007-2008 San Dieguito River Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-21-09
Date

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EXECUTIVE SUMMARY

Since January 2002, the County of San Diego and the Cities of Del Mar, Escondido, Poway, San Diego and Solana Beach (herein referred to as the "San Dieguito WURMP Copermittees") have been active in planning, developing and implementing watershed-based programs in the San Dieguito Watershed Management Area (WMA). This Annual Report describes the actions taken by San Dieguito WURMP Copermittees in Fiscal Year (FY) 2008 (July 1st, 2007 to June 30th 2008) to implement and refine the 2008 San Dieguito Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA. The Annual Report consists of the following sections:

Section 1 (Introduction) provides a brief overview of the information included in the Annual Report.

Section 2 (Water Quality and pollutant Source Assessment) includes a summary of an assessment of the quality of the water and pollutant sources in the San Dieguito WMA based on data collected and analyzed from July 2007 through June 2008. In order to assess the water quality of regional WMAs on a yearly basis, Regional Copermittees completed the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report) for FY 2008 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. Based on the data and findings of this report, the San Dieguito WURMP Copermittees have decided to focus their efforts on targeting the following High Priority Water Quality Problems for the San Dieguito WMA:

- Bacteria
- Nutrients

Section 3 (Implementation of Watershed Activities) contains a review of the water quality, education and public participation activities as well as the collaborative land-use planning efforts that occurred during the reporting period as a direct result of the San Dieguito WURMP Copermittees' efforts in implementing the San Dieguito WURMP. San Dieguito WURMP Copermittees implemented five water quality activities and developed and implemented educational programs aimed at decreasing urban runoff and improving water quality. All of these activities are anticipated to have a positive impact on water quality. Specifically, the following water quality activities were in active implementation during the reporting period:

- SD-WQA2 Land Acquisitions
- SD-WQA4 SDCK Trash Cleanup Sponsorship
- SD-WQA10 Targeted Inspections
- SD-WQA13 ILACSD Trash Cleanup Sponsorship
- SD-WQA19 Pet Waste Bag Dispenser Program in County Parks

In addition, the following two education activities were in active implementation during FY 2008:

- SD-WQEA3 Public Service Announcements
- SD-WQEA4 Mobile Advertising

Detailed information for each activity can be found in the Activity Implementation Sheets located in Appendix A and in Section 3.

This section also includes a discussion on the collaborative public participation and land-use planning efforts that took place in the San Dieguito WMA during the reporting period. For example, the San Dieguito WMA web page on the Project Clean Water website received 1,627 hits and the San Dieguito WURMP page received 502 hits during FY 2008. These totals were similar to those seen in the previous reporting period. The San Dieguito WURMP Copermittees will continue to provide opportunities for residents and other interested parties to participate in San Dieguito WURMP activities in FY 2009. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the San Dieguito WMA.

This section also includes a discussion on the Updated 5-Year Strategic Plan. In order to address Priority Water Quality Problems in the WMA—and in particular the High Priority Water Quality Problems discussed above—the San Dieguito WURMP Copermittees implemented the Collective Watershed Strategy process described the 2008 San Dieguito WURMP. The strategy was specifically applied at the Hydrologic Area (HA) level in an effort to focus the Copermittees' activities at a scale in which actions and results can be reasonably measured. The basic strategy applied was to first identify and review water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the High Priority Water Quality Problems in each HA. The second step was to identify the sources that are most likely to contribute to the High Priority Water Quality Problems for each HA in the WMA. Based on the available data, the Copermittees made appropriate management decisions on which water quality and education activities to implement in the WMA.

Section 4 (Effectiveness Assessment) provides an assessment of overall effectiveness of the San Dieguito WURMP. The assessment includes activity specific assessments as well as a comprehensive summary of the effectiveness of the WURMP activities implemented during the reporting period.

Section 5 (Conclusions and Recommendations) offers concluding remarks regarding the accomplishments of the San Dieguito WURMP Copermittees in implementing the 2008 San Dieguito WURMP, and recommendations for further refining the program.

The San Dieguito WURMP Copermittees will continue to refine and augment the San Dieguito WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the San Dieguito WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In short, the FY 2008 San Dieguito WURMP Annual Report presents an update on the San Dieguito WURMP Copermittees' long-term efforts to protect and enhance the water quality of the WMA using a comprehensive watershed-based approach.

1 INTRODUCTION

The San Diego Regional Water Quality Control Board Order No. R9-2007-0001 (Municipal Permit) requires Copermittees sharing jurisdiction within the San Dieguito Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP) for the WMA. The WURMP consists of the Copermittees' combined efforts to address high priority surface water quality issues throughout the San Dieguito WMA. The program includes identifying and addressing High Priority Water Quality Problems in the WMA, and developing and implementing activities that address pollutant load reduction and pollutant source abatement (Watershed Water Quality Activities); improvements in the public's knowledge, awareness and behaviors (Watershed Education Activities); as well as public participation and collaborative land use planning. The updated San Dieguito WURMP was submitted to the San Diego Regional Water Quality Control Board (RWQCB) and began implementation in March 2008.

The new Municipal Permit was adopted in 2007 by the RWQCB and will be in effect until 2012. It is worth noting that because the current Municipal Permit was adopted during Fiscal Year (FY) 2008, this Annual Report covers two permit periods (the previous San Diego Region Order No. 2001-01 and the current San Diego Region Order No. R9-2007-0001).

The following Annual Report is divided into five sections that highlight the Copermittees' efforts to reduce urban runoff and improve water quality in the San Dieguito WMA during the FY 2008 reporting period. The reporting period is from July 1st, 2007 through June 30th, 2008.

1.1 COPERMITTEE COLLABORATION

1.1.1 SAN DIEGUITO WURMP MEETINGS

In order to effectively plan and implement the San Dieguito WURMP, the Copermittees met eleven (11) times during FY 2008 to update the San Dieguito WURMP; develop and prioritize water quality activities that address pollutants of concern in the WMA; exchange ideas on how to address High Priority Water Quality Problems in the WMA; evaluate the effectiveness of actions; and collaborate on development of required submittals. See Table 1-1 below for dates of and pertinent agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
7/23/2007	WURMP Update - watershed strategy & activity development; cost-share agreements; public participation
8/27/2007	WURMP Update - watershed strategy & activity planning; TMDL process; cost-share agreements; public participation; WURMP Annual Reports
9/10/2007	WURMP Update - watershed strategy & activity planning; TMDL process; cost-share agreements; public participation; WURMP Annual Reports
10/9/2007	WURMP Update - watershed strategy & activity planning; TMDL process; public participation; WURMP Annual Reports
10/31/2007	WURMP Update - watershed strategy & activity planning; TMDL process; public participation; WURMP Annual Reports

Date	Agenda Item Topics
1/10/2008	WURMP Update - watershed strategy & activity planning; TMDL process; public participation; WURMP Annual Reports
2/12/2008	WURMP Update - watershed strategy & activity planning; TMDL process; public participation
3/6/2008	WURMP Update - watershed strategy & activity planning; TMDL process; public participation
4/8/2008	WURMP Submittal; RWQCB Audits; Regional Monitoring Report; public participation
4/23/2008	Watershed Presentation; TMDL process; public participation; activity updates
6/5/2008	Watershed Presentation; TMDL process; public participation; activity updates

The general watershed meetings of the San Dieguito WURMP Workgroup were led by the City of Escondido the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks developed were then carried out by the Copermittees, each within the structure of their jurisdictional organization. Task completion was then tracked and assessed at the workgroup meetings and reported in the Annual Report.

1.2 WATERSHED MAP UPDATES

The Copermittees have provided a watershed map as Attachment 1.

2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section provides an updated water quality assessment and pollutant source assessment based upon previously established strategies and processes presented in the 2008 San Dieguito WURMP. This assessment is required to clearly describe and justify any changes made to the WMA's water quality problems since the previous reporting period.

The water quality assessment provides an updated evaluation and analysis of the San Dieguito WMA's receiving waters conditions based on applicable water quality data, reports, analyses, and other information. The update in this annual report is based on the assessment strategy described in the 2008 San Dieguito WURMP and includes information from the *2007-2008 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Urban Runoff Monitoring Report) (Weston, January 2009). The assessment concludes with identification of the High Priority Water Quality Problems for each applicable WMA. As will be described below, no changes in the WMA's water quality problems were identified as a result of the monitoring conducted during the FY 2008 reporting period.

The pollutant source assessment provides an update of the likely sources of pollutant loads in urban runoff based on the currently available data associated with the urban runoff management programs. The source update is directly associated with the identified High Priority Water Quality Problems identified in the water quality assessment.

2.1 WATER QUALITY ASSESSMENT

During the FY 2008 reporting period, the regional water quality monitoring program implemented new changes to both timing and location of monitoring. In addition to the historical Mass Loading Stations (MLS) within the San Dieguito WMA, the Copermittees funded two Temporary Watershed Assessment Stations (TWAS) in key upstream locations of the WMA. During the reporting period, each MLS and TWAS was monitored during both wet weather and ambient seasonal conditions. In previous reporting periods, only wet weather monitoring was conducted at the MLS.

In addition to the MLS and TWAS locations, numerous dry weather sites, coastal storm drains and bioassessment stations were monitored during the reporting period. Figure 2-1 below identifies the various monitoring activities in the WMA.

Aggregate monitoring data from all the monitoring sites was used to assess the overall condition of the WMA. Where applicable, the data was also used to evaluate the water quality conditions in specific areas of the WMA.

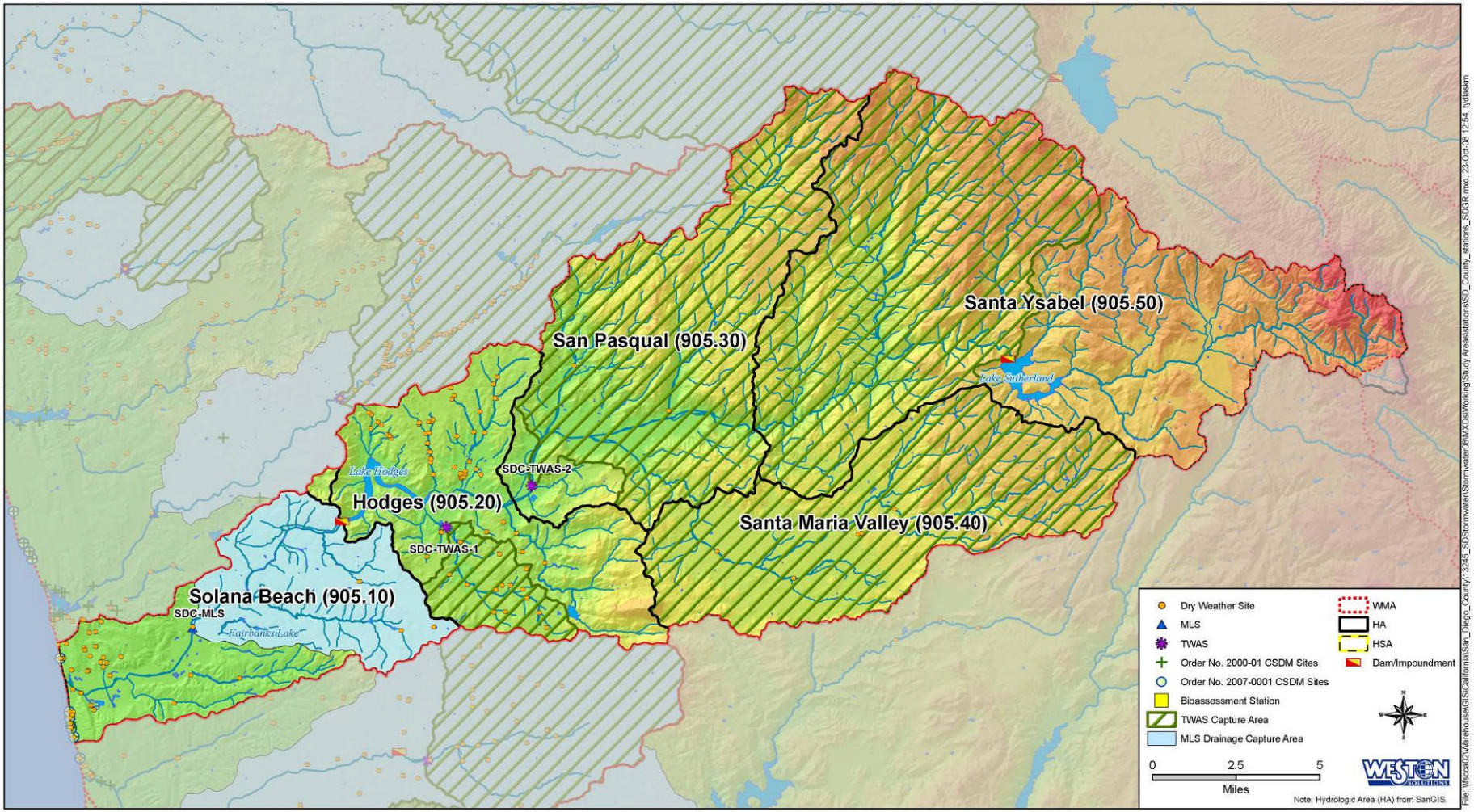

Figure 2-1. San Dieguito Watershed Management Area 2007–2008 Monitoring Station Location Map

The following receiving waters condition information is taken from the Urban Runoff Monitoring Report (Weston, January 2009). During the FY 2008 monitoring period, the San Dieguito WMA was assessed for the first time under the requirements of Order R9-2007-0001 which expanded the scope of Regional Monitoring requirements to now include the following:

- Monitoring continues at the mass loading station (MLS) and new temporary watershed assessment stations (TWAS) during two ambient weather events and two wet weather events. This required the modification of water quality benchmarks (benchmarks) used to assess water quality concentrations. The Copermittees developed a new set of benchmarks based on current and environmentally relevant water quality values. The benchmarks and their associated references are provided in the Methods Section of the Urban Runoff Monitoring Report.
- Ambient weather monitoring water quality results for nutrients were assessed using the Nutrient Numeric Endpoint (NNE) Model to evaluate whether beneficial uses have the potential to be impaired due to concentrations of nitrogen and phosphorus in receiving waters.
- Bioassessment monitoring during the 2007–2008 Monitoring Season was only required during Spring 2008.
- The WMA assessment methodology was modified to assess ambient weather receiving water quality conditions. This provides an assessment of both wet weather and dry weather as well as an integrated assessment of water quality conditions in the WMA.

The WMA assessment methods presented in the Urban Runoff Monitoring Report were applied to these data to determine which constituents are of concern and to develop a high, medium, or low frequency of occurrence for these constituents. It should be noted that the added complexity of the Urban Runoff Monitoring Program for 2007-2008, to comply with Order No. R9-2007-0001, resulted in an expanded set of results that are summarized in new assessment tables which are presented below.

2.1.1 AMBIENT WATER QUALITY ASSESSMENT

The first assessment includes an evaluation of the new ambient weather receiving water quality and the summary of the data is presented in Table 2-1. As shown, ambient weather monitoring at the MLS and both TWAS are in their first year of monitoring; therefore, the results of this assessment are only indicative of conditions over the 2007–2008 monitoring season. In the San Dieguito WMA, six constituents were classified as ambient weather constituents of concern (COC_a) with a low, medium, or high frequency of occurrence. These constituents include TDS, TSS, turbidity, BOD, total coliform, and enterococci.

TDS and enterococci were each identified as a high frequency of occurrence COC_a in FY 2008 and each received three diamonds. The rating for TDS is based on Criterion No. 1, when the MLS or TWAS test results exceed the benchmark in greater than or equal to 80% of the samples. In this case, TDS results have been detected at concentrations above the benchmark in 100% of the ambient weather samples. The rating for enterococci is based on Criterion No. 3, when less than 80% and greater than or equal to 50% of the MLS or TWAS samples exceed the benchmark <u>and</u> at least one DWS exceedance has occurred in the past year.

BOD was identified as a medium frequency of occurrence COC_a and received two diamonds based on Criterion No. 5, when less than 80% and greater than or equal to 50% of the MLS

or TWAS samples exceed the benchmark and no exceedances or data were available for DWS in the past year.

Turbidity, TSS, and total coliform were each identified as a low frequency of occurrence COC_a and each received one diamond. Total coliform received one diamond based on Criterion No. 8, when dry weather site exceedances are found in 10–50% of the samples in the past year. Turbidity and TSS each received one diamond based on Criterion No. 9, when MLS or TWAS exceedances are found in 25% to less than or equal to 50% of the samples and at least one exceedance is found in the last two years at the MLS or TWAS with or without DWS exceedances in the past year. Though no previous ambient weather monitoring data were collected, the criterion was applied for conservative purposes.

The two high frequency of occurrence COC_a (enterococci and TDS) and one low frequency of occurrence COC_a (turbidity) are constituents on the 2006 SWRCB Section 303(d) list (indicator bacteria along the Pacific Ocean shoreline; TDS within Kit Carson Creek and Felicita Creek; and turbidity within Lake Hodges). The 2006 SWRCB Section 303(d) list also includes chloride within Green Valley Creek, which is a constituent that comprises TDS. CSDM data did not indicate that coastal storm drains were contributing to persistent exceedances at coastal waterbodies.

Persistent toxicity is evident when more than 50% of the toxicity tests conducted on any species have an NOEC of less than 100%. There is no evidence of persistent toxicity during ambient weather conditions in the San Dieguito WMA based on the data observed to date.

IBI ratings from bioassessment monitoring at the MLS and the TWAS sites within the San Dieguito WMA were rated Fair to Very Poor. The MLS site has historically been rated Poor for the monitoring period since 2001. The TWAS-1 site received a Very Poor IBI rating, while the TWAS-2 site received a Fair IBI rating. These results indicate that there is evidence of benthic alteration at the TWAS-1 location only.

Table 2-1. Ambient Weather Constituent Exceedances in the San Dieguito Watershed Management Area

Constituents With Any Ambient Receiving Water Benchmark or Dry Weather Action Level Exceedance	Ambient Receiving Water Results at MLS and/or TWAS[2]				Urban Runoff Program Results[1]		Frequency of Occurrence	Criterion No.
	2007/2008		CUMULATIVE		2007*			
	#/6	%	#/6	%	#	%		
Conventional Parameters								
Total dissolved solids	6	100	**6**	**100**	NA	NA	♦♦♦	1
Total suspended solids	2	33	**2**	**33**	NA	NA	♦	9
Turbidity	2	33	**2**	**33**	3	6	♦	9
Biochemical oxygen demand	3	50	**3**	**50**	NA	NA	♦♦	5
MBAS	1	17	**1**	**17**	1	2	-	-
Ammonia	0	0	**0**	**0**	1	2	-	-
Nutrients								
Nitrate as N	0	0	**0**	**0**	2	4	-	-
Bacteriological								
Total coliform	0	0	**0**	**0**	5	16	♦	8
Fecal coliform	1	17	**1**	**17**	1	3	-	-
Enterococci	4	67	**4**	**67**	1	3	♦♦♦	3
Pesticides								
Diazinon	0	0	**0**	**0**	0	0	-	-
Toxicity							**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 7-day reproduction	1	17	**1**	**17**	NA	NA	No	
Selenastrum 96-hour	1	17	**1**	**17**	NA	NA	No	
Bioassessment	**IBI Rating**						**EVIDENCE OF BENTHIC ALTERATION?**	
Green Valley Creek (SDC-TWAS-1)	Very Poor		**Very Poor**		NA		Yes[3]	
San Dieguito River MLS	Poor		**Poor**		NA			
San Pasqual Creek (SDC-TWAS-2)	Fair		**Fair**		NA			

[1] Urban Runoff Program results from Jurisdictional Dry Weather Program, Dry-Coastal Storm Drain Monitoring Program, Dry MS4 Outfall, and Dry Source ID Monitoring Programs.

[2] The TWAS located upstream of Lake Hodges Dam are hydrologically disconnected from the MLS downstream of the dam.
* = Total number of observations varied among constituents.
NA = Not assessed, Not Applicable, or Not Analyzed.
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.
[3] Green Valley Creek (SDC-TWAS-1) and San Pasqual Creek (SDC-TWAS-2) had extensive fire damage during the Fall 2007 Wildfires.

2.1.2 WET WEATHER WATER QUALITY ASSESSMENT

In the San Dieguito WMA, four constituents were classified as wet weather constituents of concern (COC_w) with a low, medium or high frequency of occurrence. These constituents included TDS, turbidity, total coliform, and fecal coliform as shown in Table 2-2.

TDS and fecal coliform were each identified as a high frequency of occurrence COC_w and each received three diamonds. The rating for TDS is based on Criterion No. 2, when six of the last consecutive sampling events at the MLS or TWAS exceed benchmark. The rating for fecal coliform is based on Criterion No. 3, when less than 80% and greater than or equal to 50% of the MLS or TWAS samples exceed the benchmark and at least one DWS exceedance occurred in the past year.

Turbidity and total coliform were each identified as a low frequency of occurrence COC_w and each received one diamond based on Criterion No. 9 and Criterion No. 8, respectively. Criterion No. 9 applies when MLS or TWAS exceedances are found in 25% to less than or equal to 50% of the samples and at least one exceedance was found in the last two years at the MLS or TWAS (with or without DWS exceedances in the past year). Criterion No. 8 applies when dry weather site exceedances are found in 10–50% of the samples in the past year.

The two high frequency of occurrence COC_w (fecal coliform and TDS) and one low frequency of occurrence COC_w (total coliform) are constituents on the 2006 SWRCB Section 303(d) list (indicator bacteria along the Pacific Ocean shoreline; TDS within Kit Carson Creek and Felicita Creek; and turbidity within Lake Hodges). The 2006 SWRCB Section 303(d) list also includes chloride within Green Valley Creek, which is a constituent that comprises TDS. Wet season CSDM data did not indicate that coastal storm drains were contributing to persistent exceedances at coastal waterbodies. Jurisdictional DWM data also did not indicate elevated action level exceedances for indicator bacteria. However, receiving water assessments at the MLS and TWAS indicated elevated concentrations of fecal coliform during both wet weather monitoring events.

Toxicity was observed to the *H. azteca* 96-hour acute endpoint at the TWAS-1 during both wet weather monitoring events. Based upon these results, it is determined that there is persistent occurrence of toxicity at the TWAS-1 site. Toxicity was not determined to be persistent at the MLS or TWAS-2 sites. Bifenthrin was the only synthetic pyrethroid detected above the benchmark in ambient weather and wet weather monitoring events at both the MLS and TWAS-1 sites. Although there are no persistent exceedances of benchmark at the MLS, Bifenthrin was found to be above the benchmark during both wet weather events at the TWAS-1 site.

IBI ratings from bioassessment monitoring at the MLS and the TWAS sites within the San Dieguito WMA were rated Fair to Very Poor. The MLS site has historically been rated Poor for the monitoring period since 2001. The TWAS-1 site received a Very Poor IBI rating, while the TWAS-2 site received a Fair IBI rating. These results indicate that there is evidence of benthic alteration at the TWAS-1 site only.

Table 2-2. San Dieguito Watershed Management Area Wet Weather Constituent Exceedances

Constituents With Any Wet Weather Benchmark or Dry Weather Action Level Exceedance	Wet Weather Receiving Water Results at MLS and/or TWAS[2]																Urban Runoff Program Results[1]		Frequency of Occurrence	Criterion No.
	2001/2002		2002/2003		2003/2004		2004/2005		2005/2006		2006/2007		2007/2008		CUMULATIVE		2007*			
	#/3	%	#/3	%	#/3	%	#/3	%	#/3	%	#/3	%	#/6	%	#/24	%	#	%		
Conventional Parameters																				
pH	0	0	0	0	1	33	0	0	0	0	0	0	1	17	**2**	**8**	0	0	-	-
Conductivity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	0	0	-	-
BOD	0	0	0	0	1	33	0	0	0	0	0	0	2	33	**3**	**13**	NA	NA	-	-
COD	0	0	0	0	1	33	1	33	0	0	0	0	1	17	**3**	**13**	NA	NA	-	-
Total dissolved solids	3	100	3	100	3	100	3	100	3	100	3	100	4	67	**19**	**79**	NA	NA	♦♦♦	2
Total suspended solids	0	0	0	0	1	33	0	0	1	33	2	67	3	50	**5**	**21**	NA	NA	-	-
Turbidity	0	0	0	0	0	0	0	0	1	33	1	33	5	83	**6**	**25**	3	6	♦	9
MBAS	0	0	0	0	0	0	0	0	0	0	0	0	1	17	**1**	**4**	1	2	-	-
Ammonia	0	0	0	0	0	0	0	0	0	0	0	0	1	17	**1**	**4**	2	3	-	-
Nutrients																				
Nitrite	0	0	0	0	0	0	0	0	0	0	0	0	1	17	**1**	**4**	NA	NA	-	-
Nitrate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	2	3	-	-
Orthophosphate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	2	3	-	-
Bacteriological																				
Total coliform	0	0	1	33	1	33	1	33	0	0	0	0	1	17	**4**	**17**	10	21	♦	8
Fecal coliform	0	0	2	67	2	67	2	67	2	67	1	33	4	67	**12**	**50**	7	15	♦♦♦	3
Enterococci	0	0	1	33	1	33	1	33	0	0	1	33	2	33	**5**	**21**	4	8	-	-
Pesticides																				
Chlorpyrifos	0	0	0	0	0	0	0	0	0	0	0	0	2	50	**2**	**9**	0	0	-	-
Diazinon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	0	0	-	-
Toxicity																			**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 96-hour	0	0	0	0	0	0	0	0	0	0	1	33	0	0	**0**	**0**	NA	NA	No	
Ceriodaphnia 7-day survival	0	0	0	0	0	0	0	0	1	33	1	33	0	0	**1**	**4**	NA	NA	No	
Ceriodaphnia 7-day reproduction	2	67	2	67	0	0	1	33	1	33	2	67	1	17	**7**	**29**	NA	NA	No	
Hyalella 96-hour acute	0	0	0	0	0	0	0	0	0	0	0	0	3	75	**3**	**14**	NA	NA	Yes[3]	
Selenastrum 96-hour	2	67	0	0	1	33	0	0	2	67	1	33	0	0	**5**	**21**	NA	NA	No	
Bioassessment	IBI Rating																		**EVIDENCE OF BENTHIC ALTERATION?**	
Green Valley Creek (SDC-TWAS-1)	NA		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		**Very Poor**		NA		Yes[4]	
San Dieguito River MLS	NA		Poor		Poor		Poor		Very Poor		Very Poor		Poor		**Poor**		NA			
San Pasqual Creek (SDC-TWAS-2)	NA		NA		NA		NA		NA		NA		Fair		**Fair**		NA			

[1] Urban Runoff Program results from Jurisdictional Dry Weather Program, Coastal Storm Drain Monitoring Program, Wet MS4 Outfall, and Wet Source ID Monitoring Programs.

[2] The TWAS located upstream of Lake Hodges Dam are hydrologically disconnected from the MLS downstream of the dam.

* = Total number of observations varied among constituents.

NA = Not assessed.

- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.

♦ = Low Frequency of Occurrence rating.

♦♦ = Medium Frequency of Occurrence rating.

♦♦♦ = High Frequency of Occurrence rating.

[3] Persistent toxicity triggered by two of two *Hyalella azteca* toxicity hits at SDC-TWAS-1 with no historical data to suggest otherwise. Synthetic pyrethroids were detected in levels sufficient to induce a toxic response to this organism based on published LC_{50} values. This is common issue on a region wide and statewide basis in urban areas.

[4] Green Valley Creek (SDC-TWAS-1) and San Pasqual Creek (SDC-TWAS-2) had extensive fire damage during the Fall 2007 Wildfires.

2.1.3 TRASH ASSESSMENT

Trash assessments were conducted at receiving water stations during ambient weather and wet weather monitoring events in compliance with Order R9-2007-0001 (Section II.A.1.k). Trash assessments were conducted in accordance with the Monitoring Work Plan for the Assessment of Trash in San Diego County (Weston, 2007). Trash assessment results are presented in Table 2-3.

Table 2-3. Trash Assessment Results in San Dieguito Receiving Waters

Site	Date	Trash Assessment Rating[1]	Threat Rating
SDC-MLS	11/30/2007	Optimal	None
	02/03/2008	Optimal	None
	03/05/2008	Optimal	None
	06/03/2008	Optimal	None
SDC-TWAS-1	11/30/2007	Optimal	Threat to Aquatic Health[2]
	02/03/2008	Suboptimal	None
	03/05/2008	Optimal	None
	06/03/2008	Optimal	None
SDC-TWAS-2	12/01/2007	Optimal	None
	02/03/2008	Suboptimal	None
	03/05/2008	Optimal	None
	06/03/2008	Optimal	None

[1]Trash type ranking, source evaluation, and potential route information is provided in Appendix K for sites with Submarginal or Poor ratings. (Weston, December 2008, Draft)

[2]High turbidity caused by ash and sediment resulting from the recent wildfires

Trash assessments were not required for the 2007 Jurisdictional DWM Program under Order 2001-01; therefore a discussion of the findings on a WMA-wide scale is not appropriate as limited data is available. However, trash assessments are included in the jurisdictional DWM Program for 2008 under Order R9-2007-0001. A discussion of trash assessments will be provided in future reports where inclusion of the dry weather trash assessments will result in a more robust data set that can be used to assess trash on a WMA-wide scale.

2.1.4 NUMERIC NUTRIENT ENDPOINT BENEFICIAL USE ASSESSMENT

An evaluation of the potential impacts of nutrient concentrations in the San Dieguito WMA was conducted using secondary indicators of eutrophication collected during the two ambient weather monitoring events and during one bioassessment monitoring event. The secondary indicators of nutrient-induced eutrophication were selected based on the NNE methodology (Tetra Tech, 2006) and include benthic algal biomass, DO, pH, and dissolved organic carbon (DOC). The purpose of this evaluation is to assess the risk elevated nutrients may pose to beneficial uses by comparing concentrations of secondary indicators at a site to benchmarks established for each beneficial use. Data collected from the site are compared to the benchmark for each secondary indicator and placed into one of three beneficial use risk categories:

I. Presumptive Unimpaired (use is supported).
II. Potential Impaired (may require an impairment assessment).
III. Presumptive Impaired (use is not supported or is highly threatened).

Table 2-4. San Dieguito Watershed NNE Assessment Results

Secondary Indicators	Risk Category Boundary	Beneficial Use Benchmarks					SDC-MLS		SDC-MLS Risk Category Result	SDC-TWAS-1		SDC-TWAS-1 Risk Category Result	SDC-TWAS-2		SDC-TWAS-2 Risk Category Result
		COLD*	WARM	REC-1	REC-2	MUN**	3/4/08-3/5/08	6/2/08-6/3/08		3/4/08-3/5/08	6/2/08-6/3/08		3/4/08-3/5/08	6/2/08-6/3/08	
Benthic algal biomass (mg chlorophyll-a/m^2) maximum	I/II	100	150	C	C	100			II-Potentially Impaired			II-Potentially Impaired		21.6	I-Presumptive Unimpaired
	II/III	150	200	C	C	150		189.6			165.2				
Dissolved oxygen (mg/L) Streams--mean of seven daily minimums	I/II	9.5	6	A	A	A		9.9	I-Presumptive Unimpaired		6.8	I-Presumptive Unimpaired			II-Potentially Impaired
	II/III	5	4	A	A	A								4.24	
pH maximum--photosynthesis driven	I/II	9	9	A	A	A	7.77	7.96	I-Presumptive Unimpaired	8.31	7.91	I-Presumptive Unimpaired	8.16	7.73	I-Presumptive Unimpaired
	II/III	9.5	9.5	A	A	A									
DOC (mg/L)	I/II	A	A	A	A	2	8.2	7.9	NA			III-Presumptive Impaired (for Municipal)			III-Presumptive Impaired (for Municipal)
	II/III	A	A	A	A	5				7.1	8.8		16.5	15.2	

A=No direct linkage

C=Addressed by Aquatic Life Criteria

Source: Tetra Tech, Inc. 2006. Technical Approach to Develop Nutrient Numeric Endpoints for California. Prepared for US EPA Region IX, California State Water Resource Control Board; Planning and Standards Implementation Unit

*Applies only to MLS

**Applies only to TWAS

Beneficial Use Risk-Category I. Presumptive unimpaired (use is supported)

Beneficial Use Risk Category II. Potentially impaired (may require an impairment assessment)

Beneficial Use Risk Category III. Presumptive impaired (use is not supported or highly threatened)

For the San Dieguito WMA, secondary indicators have been established for COLD, WARM, and MUN beneficial uses (Table 2-4). REC-1 and REC-2 beneficial uses are addressed by aquatic life criteria related to benthic algal biomass, but there is no direct link between these beneficial uses and the remaining secondary indicators (DO, pH, and DOC). Therefore, potential impairment to the REC-1 Beneficial Use and REC-2 Beneficial Use was not assessed using the NNE method. Concentrations of benthic algal biomass, DO, and pH at the San Dieguito MLS and TWAS were within Risk Category I for WARM beneficial uses, suggesting that the beneficial uses are supported (Table 2-4).

The results of the analysis indicate that benthic algal biomass concentrations fall into the Potentially Impaired category for WARM beneficial uses for both the MLS and TWAS-1 sites. The COLD Beneficial Use at the MLS is also Potentially Impaired. The TWAS-2 location, which had the highest total phosphorus concentration, fell into the Presumptive Unimpaired category based on low algal biomass concentrations. DO and pH levels fell into the Presumptive Unimpaired category for the MLS and TWAS-1, while the TWAS-2 site was Potentially Impaired due to low DO. The MUN Beneficial Use is listed as Presumptive Impaired at both TWAS-1 and TWAS-2 based on DOC results above the DOC Beneficial Use benchmark.

Comparing concentrations of secondary indicators to established benchmarks can be an effective way to assess the risk of eutrophication and beneficial use impairment. However, it is worth noting that only limited data are available for the 2007–2008 monitoring season. Future monitoring and NNE evaluation will help verify these initial results and will help identify those areas where eutrophication is a potential problem. Nutrient benchmark criteria are currently being developed by the SCCWRP. Results of these efforts will provide additional information for assessment of nutrient impacts in the San Dieguito WMA.

2.1.5 INTEGRATED ASSESSMENT

Assessment of the San Dieguito WMA during both wet weather and ambient weather monitoring conditions is presented in an integrated manner to provide managers with an overall assessment of the WMA and to provide answers to the core management questions as described in the regional monitoring program. The integrated assessment provides the results of the receiving water assessments and urban runoff assessments during both storm events and ambient weather events. It also provides a summary of the overall WMA findings. The integrated assessment further provides the ability to identify where COCs overlap between urban runoff and receiving waters. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as additional data become available in future years. Integrated WMA assessments results are presented in Table 2-5.

Table 2-5. Integrated Watershed Area Management Assessment

Assessment Category		Program	Frequency of Occurrence Assessment Findings	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	**Ambient Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, enterococci ♦♦-BOD ♦-TSS, turbidity	No	Yes	TDS is identified as a high frequency of occurrence COC during both ambient and wet weather conditions. TDS is a known issue related to importation of drinking water, over-irrigation, and potential recycled water uses. Enterococci were identified as a high frequency of occurrence COC during ambient conditions, primarily driven by results in the upper watershed TWAS sites which had an extensive burn impact from the wildfires and significant ash fallout. Indicator bacteria may be related to dry weather runoff due to jurisdictional dry weather data exceedances. Bacterial re-growth in the receiving waters may occur during low velocity conditions. BOD was primarily driven by the results at SDC-TWAS-2. Low frequency of occurrence COCs were primarily related fire impacts at both TWAS sites for TSS and turbidity. Dry weather monitoring data collected in the MS4 was the driver for total coliform.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring, Coastal Storm Drain Monitoring, MS4 Program Data, Source Identification Monitoring	♦-Total coliform	NA		
Wet Weather	**Wet Weather Receiving Water**	MLS, TWAS, and Bioassessment Monitoring	♦♦♦-TDS, fecal coliform ♦-Turbidity	Yes (*Hyalella azteca* at SDC-TWAS-1)		TDS and fecal coliform are high frequency of occurrence COCs during wet weather conditions. Turbidity was also identified as a low frequency COC in both ambient conditions, wet weather conditions, and in jurisdictional dry weather data suggesting a potential link between urban runoff and receiving water conditions. Again, the significant fire impact in this watershed is likely driving these results. Toxicity to *Hyalella azteca* is identified as persistent based on two of two monitoring events at SDC-TWAS-1 (Green Valley Creek). Toxicity to *Hyalella azteca* was also observed only during the first event at the MLS. However, the MLS is hydrologically disconnected from the SDC-TWAS-1 site due to Lake Hodges Dam. Both sites are located within residential land uses. Synthetic pyrethroids were detected at levels sufficient to induce a toxic response to this organism at both the MLS and TWAS during the two wet weather sample events where toxicity was observed. This is a region wide and state wide problem, and is currently being addressed by the Department of Pesticide Regulation.
	Wet Weather Urban Runoff Areas	MS4 Program Data, Source Identification Monitoring, Coastal Storm Drain Monitoring	(No COCw identified or no data from the programs to date)	NA		

* Note: MS4 Outfall Monitoring and Source Identification Monitoring Program data were not included in this assessment and will be incorporated in future data assessments.

2.1.6 TRIAD DECISION MATRIX

The triad decision matrix incorporates the chemistry data from both wet weather and dry weather events with the toxicity and bioassessment results to provide indications of pollutant loading, potential impacts to organisms, and the ecological health of the WMA. The triad assessment presents possible conclusions regarding the WMA and provides possible actions or decisions for future monitoring and assessment efforts. A summary of these results are included in Table2-6.

Table 2-6. San Dieguito Watershed Management Area Triad Decision Matrix Results

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
There were no persistent exceedances of benchmarks (However, synthetic pyrethroids were detected during both events at TWAS-1).	There was evidence of persistent toxicity (SDC-TWAS-1 only).	There were indications of benthic alteration.	There was strong evidence of pollution-induced degradation.	1) Toxicity tests at higher dilutions to better quantify toxicity; Use TIE to identify contaminants of concern, based on TIE metric. 2) Evaluate/identify upstream source as a high priority.

Fecal coliform and TDS were each identified as a high frequency of occurrence COC_w. Enterococci and TDS were each identified as a high frequency of occurrence COC_a. However, neither TDS nor indicator bacteria are considered in the triad decision-making process since they are not believed to induce a toxic response to aquatic organisms (see Methods Section in Appendix B for more complete details). Therefore, based on the triad decision matrix, there is no evidence of either persistent chemistry benchmark exceedances or persistent toxicity.

There were, however, indications of persistent toxicity to *H. azteca* at the TWAS-1 site during both wet weather monitoring events in November 2007 and February 2008. With no previous toxicity results from this site, it is determined that there is persistent occurrence of toxicity at TWAS-1 site. Bifenthrin was the only synthetic pyrethroid detected during both wet weather monitoring events at the TWAS-1 site. Results indicate that benthic alteration is only identified at the TWAS-1 site.

Based on these findings, TIEs may be useful in determining the cause of toxicity at this location. However, pyrethroids are a likely cause of toxicity based on similar results in other urban watersheds throughout the region. This is a region-wide and state-wide problem, and is currently being addressed by the Department of Pesticide Regulation. It is recommended to evaluate upstream sources in the TWAS-1 HA to continue monitoring to gather long-term trend information, and to consider the potential role of physical habitat disturbance.

2.2 WATER QUALITY PROBLEM(S)

The San Dieguito WMA Copermittees used the process developed in the regional watershed strategy to identify the water quality problems in the San Dieguito WMA at the Hydrologic Area (HA) level.

2.2.1 303(D) IMPAIRED WATER BODIES LISTINGS

Table 2-7 includes the impaired water bodies within the San Dieguito WMA. There are new listings added as a part of the 2006 listings. These new listings are not considered in the Baseline Water Quality Priority Ratings discussed below and summarized in Table 2-8. The new listings include Heavy Metals in the Felicita Hydrologic Sub Area (HSA), Sediments in Felicita HSA and Nutrients in the Sutherland HSA.

Table 2-7. 2006 303(d) listings for San Dieguito WMA

Water Body Name	Hydrologic Sub Area (HSA)	HSA	Pollutant/Stressor
Pacific Ocean Shoreline	Rancho Santa Fe	905.11	Bacterial Indicators
Green Valley Creek	Rancho Santa Fe	905.21	Sulfates, Chloride, Manganese, PCP
Lake Hodges	Del Dios	905.21	Color, Nitrogen, Phosphorus, Turbidity, Manganese, pH
Kit Carson Creek	Del Dios	905.21	TDS, PCP
Felicita Creek	Felicita	905.23	TDS, Aluminum
Cloverdale Creek	Highland	905.32	Phosphorus, TDS
Sutherland Reservoir	Sutherland	905.53	Color, Manganese, pH

The baseline water quality priority ratings presented in the 2005–2006 Urban Runoff Monitoring Report are also presented in this report in Table 2-8 to compare annual WMA assessment results. This table is a tool for managers to prioritize WMA activities and to identify data gaps. The priority ratings are based on the methodology presented in the BLTEA report (Weston, MOE, & LWA, 2005) and are summarized in the Methods section of the 2007-2008 Urban Runoff Monitoring Report.

The BLTEA ratings are used to guide long-term programmatic WMA activities and are performed on a five-year cycle. The WMA assessments are used to guide annual water quality monitoring activities and to evaluate annual differences or change through time. The WMA COCs are compared to the BLTEA ratings to evaluate if activities are showing improvements or impairments through the five-year cycle.

Table 2-8. San Dieguito Watershed Management Area 2001–2006 Water Quality Priority Ratings

Watersheds/ Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacterial/ Pathogens	Benthic Alterations	Toxicity
San Dieguito WMA	**100%**	***D***	***B***	***D***	***D***	***C***	***D***	***C***	***B***	***B***	***B***	***B***
Solana Beach HA (905.10)	13%	*D*	*A*	*D*	*D*	*C*	*D*	*D*	*C*	*A*	*B*	*C*
Hodges HA (905.20)	14%	*D*	*A*	*D*	*D*	*C*	*D*	*A*	*D*	*C*	*B*	*B*
San Pasqual HA (905.30)	20%	*D*	*A*	*D*	*D*	*C*	*D*	*A*	*D*	*C*	*B*	*C*
Santa Maria Valley HA (905.40)	17%	*D*	*B*	*D*	*D*	*C*	*D*	*C*	*C*	*B*	*B*	*B*
Santa Ysabel HA (905.50)	37%	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*A*	*B*	*B*	*B*
2006–2008 High Frequency of Occurrence COCs (From WMA Integrated Assessment)												
2006–2007 High[1] Frequency of Occurrence Ratings			♦♦♦ TDS									
2007–2008 High[1] Frequency of Occurrence Ratings	Wet Weather		♦♦♦ TDS							♦♦♦ Fecal coliform		
	Ambient		♦♦♦ TDS							♦♦♦ Entero-cocci		

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest – A to Lowest – D)*

High-Priority Level Based on Data

2006 SWRCB Section 303d listing

Constituent groups and stressor groups are given a ranking from A to D, with A being the highest priority rating and D the lowest. Items ranked with a D indicate that the constituent group or stressor is a low priority or does not have sufficient data to support a higher ranking. The BLTEA priority ratings were based on the data record from 2001–2006 from the following programs and will be updated on a five-year cycle:

- Storm Water Mass Loading Monitoring (MLS)—Wet Weather Data (2000–2006).
- Copermittee Dry Weather Data Monitoring (2003–2005).
- Available Third-Party Data (SWAMP, 2004).
- Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring (2003–2005).
- Urban Stream Bioassessment Monitoring (2000–2006).
- Triad Assessment—Toxicity Testing of Storm Water (2000–2006).
- SWRCB Section 303(d) Listing (2003).

There were several high-priority (A) ratings for the San Dieguito WMA as a whole, including dissolved minerals, nutrients, gross pollutants, and bacteria. Several B priority ratings were identified and include: dissolved minerals, gross pollutants, bacteria, benthic alteration, and toxicity. Other constituents were given either a C or D rating.

High frequency of occurrence ratings from the WMA criterion assessments were compared to the water quality priority ratings summary provided in Table 2-8 for the San Dieguito WMA assessment. A high frequency of occurrence rating was determined for TDS during both wet

and ambient weather conditions. Fecal coliform was identified as a high frequency of occurrence COC_w, while enterococci were identified as a high frequency of occurrence COC_a. In comparison, the BLTEA ratings were similar but found B priority ratings for the overall WMA for dissolved minerals, gross minerals, bacteria, benthic alterations, and toxicity.

High-priority (A) ratings were identified in the Solana Beach HA, which is consistent with higher urbanized land use percentages. This also includes dissolved minerals, nutrients, and bacteria, which had 2006 SWRCB Section 303(d) listings or data to support the rating. Benthic alteration was also a high-priority (B) rated constituent in this HA, which was based primarily on the stream bioassessment findings.

A list of potential likely or unknown sources for the nutrients and bacterial categories in the San Dieguito WMA based on the threat to water quality inventory ratings tables can be found in the BLTEA report (Weston et al., 2005).

2.2.2 HIGH PRIORITY WATER QUALITY PROBLEMS

Based on the assessments above and the available water quality data, the San Dieguito WURMP Copermittees have determined that the High Priority Water Quality Problems in the San Dieguito WMA are:

1. Bacteria in all HAs (under ambient and wet weather conditions)
2. Nutrients in the San Pasqual Hydrologic Area

It should be noted that the High Priority Water Quality Problems have not changed from previous assessments or the 2008 San Dieguito WURMP, even though this year's assessment included the first year of expanded monitoring data as required under Order No. R9-2007-0001.

The information and data presented in Section 2.1.1.4 above gives some preliminary indication of inconclusive nutrient assessment at SDC-TWAS-2 which is located downstream of the San Pasqual HA. Future data collection at this site may provide a clear understanding of the degree of the problem and whether the high priority designation for nutrients is supported.

2.3 POTENTIAL POLLUTANT SOURCES ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Dieguito WMA's high priority water quality problems.

In 2005 as part of the BLTEA process, the Regional Copermittees identified thirty-four (34) sources of pollutants on which to focus their efforts. The process included characterizing the sources and determining the potential for each source (Source Load Potential – SLP) to produce one of the eight pollutant types: heavy metals; organics; oil & grease; sediment; pesticides; nutrients; gross pollutants, and; bacteria.

The BLTEA also developed a process to establish Threat-To-Water-Quality (TTWQ) ratings for the sources based on water quality priority ratings for each HA and the SLP of the inventoried sources within each WMA. Together the water quality ratings and the SLP determined the TTWQ ratings of the sources based the sources' likelihood to generate pollutants that cause the water quality problems.

For the San Dieguito WMA, the TTWQ ratings tables for the high priority water quality problems in each HA are summarized below. Table 2-9 represents the highest TTWQ rated sources within each HA based on the high priority water quality problems.

The process used to develop the table was taken directly from the BLTEA. The data used for the process includes the following: (1) 2007 Baseline Water Quality Priority Ratings (Weston Solutions, 2007); (2) 2007 inventory information from all watershed Copermittees; (3) the SLP ratings from the BLTEA (Weston, MOE, LWA, 2005), and; (4) Copermittees' dry weather monitoring data.

Table 2-9 High Priority Sources in HAs

Source	Animal Facilities		Auto Mechanical Repair, Maintenance, Fueling or Cleaning		Botanical/ Zoological Gardens		Eating or Drinking Establishments		Landscaping		POTWs	
	Bacteria	Nutrients	Bacteria	Nutrients	Bacteria	Nutrients	Bacteria	Nutrients	Bacteria	Nutrients	Bacteria	Nutrients
905. 1 - Solana Beach HA (Bacteria)	5				16		92		2			
905.2 - Hodges HA (Bacteria)	1		17		16		42		4		2	
905.3- San Pasqual HA (Bacteria, Nutrients)	2				16		7		3		2	
905.4 - Santa Maria Valley HA (Bacteria)	3				16		66		12		2	
905.5 - Santa Ysabel (Bacteria)	2				1		4					

Shaded Cells mean that the pollutant type is not a high priority for the HA
Note: Source quantities are based on updated inventory information from Copermittees. The geocoding process may limit the representation of sources

Additionally, the San Dieguito WURMP Copermittees have mapped the sources on an HA basis. An example of one of these maps is shown below in Figure 2-2. The source information and mapping help to highlight the areas and locations that the San Dieguito WURMP Copermittees may want to implement WMA activities.

3 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 WATERSHED WATER QUALITY ACTIVITIES

The San Dieguito WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the High Priority Water Quality Problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed or jurisdictional level. The activity selection process is described fully in the 2008 San Dieguito WURMP.

During the reporting period, the San Dieguito WURMP Copermittees implemented five water quality activities. Table 3-1 below lists the activities that were in active implementation during the FY 2008 reporting period. Details of the each activity can be found in the Activity Implementation Sheets located in Appendix A.

Table 3-1. Watershed Water Quality Activities Implemented During FY 2008

ID #	Activity/Project Name
SD-WQA2	Land Acquisitions
SD-WQA4	SDCK Trash Cleanup Sponsorship
SD-WQA10	Targeted Inspections
SD-WQA13	ILACSD Trash Cleanup Sponsorship
SD-WQA19	Pet Waste Bag Dispenser Program in County Parks

The effectiveness assessments for these activities are presented in the Activity Implementation Sheets (Appendix A) and are summarized in Section 4 – Effectiveness Assessment.

3.2 WATERSHED EDUCATION ACTIVITIES

This section describes activities implemented by the San Dieguito WURMP Copermittees during the FY 2008 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The San Dieguito WURMP Copermittees are responsible for identifying and implementing watershed education activities that address the High Priority Water Quality Problems in the San Dieguito WMA. The activity selection process is described fully in the 2008 San Dieguito WURMP.

The San Dieguito WURMP Copermittees have made significant progress in developing and implementing programs aimed at improving stormwater and urban runoff water quality in the WMA. Table 3-2 below lists the watershed education activities implemented by the Copermittees during FY 2008 by the San Dieguito WURMP Copermittees. Details of the each activity can be found in the Activity Implementation Sheets located in Appendix A.

Table 3-2. Watershed Education Activities Implemented During FY 2008

ID #	Activity/Project Name
SD-WQEA3	Public Service Announcements
SD-WQEA4	Mobile Advertising

The effectiveness assessments for these activities are presented in the Activity Implementation Sheets (Appendix A) and are summarized in Section 4 – Effectiveness Assessment.

3.3 PUBLIC PARTICIPATION ACTIVITIES

3.3.1 INTRODUCTION

The Public Participation component of the 2008 San Dieguito WURMP encourages residents and organizations within the WMA (such as other agencies, private companies, and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water, and other methods, including direct interaction of San Dieguito WURMP Copermittee staff with members of the public.

3.3.2 ACTIVITIES CONDUCTED

WURMP documents and reports are posted on the Project Clean Water website, where they are available to all interested stakeholders. During FY 2008, the San Dieguito watershed web page on the Project Clean Water website received 1,627 hits and the San Dieguito WURMP page received 502 hits. These totals are similar to those seen in the previous reporting period. A monthly breakdown of the hits can be found in the tables below.

Table 3-3 Number of Hits on the Project Clean Water San Dieguito WMA Web Site

July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	Jan 08	Feb 08	March 08	April 08	May 08	June 08	Total
162	136	105	168	131	114	118	125	120	155	136	157	1,627

Table 3-4 Number of Hits on the Project Clean Water San Dieguito WMA Web Site

July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	Jan 08	Feb 08	March 08	April 08	May 08	June 08	Total
57	59	40	43	35	38	36	34	29	53	42	36	502

During this reporting period, the San Dieguito WURMP Copermittees participated in eleven community events that had the potential to reach more than 75,000 participants, as shown in Table 3-5 below. Watershed concepts and principles were incorporated into booth displays and event activities.

Table 3-5 Community Events in FY 2008

Date	Event Title	Target Audience	Estimated Attendance	Location	Jurisdiction
8/25/2007	Beach Blanket Movie Night	Public	500	Fletcher Cove	Solana Beach
9/15/07	Community Day	Public	9,000	Poway Community Park	Poway
9/15/2007	Coastal Cleanup Day	Public	120	Fletcher Cove	Solana Beach
2/29/2008	Spring Home and Garden Show	Public	250	Del Mar Fairgrounds	Del Mar
3/30/2008	Paws in the Park	Public	500	Kit Carson Park	Escondido
4/19/08	Earth Day/Arbor Day Celebration	Public	450	Blue Sky Nature Reserve	Poway
4/26/2008	Paws in the Park	Public	300	La Colonia Community Park	Solana Beach
6/7/08 - 6/8/08	Fiesta Del Sol	Public	60,000	Solana Beach	Solana Beach
6/14/2008	Flower and Garden Show	Public	5,000	Del Mar Fairgrounds	Del Mar
8/23/2008	Beach Blanket Movie Night	Public	500	Solana Beach	Solana Beach
9/20/2008	Coastal Cleanup Day	Public	140	Fletcher Cove	Solana Beach

In addition, the City of San Diego facilitated the development of San Dieguito Valley Conservancy brochures and trail maps for their River Park. In exchange for sponsorship, the City received space on the trail maps and brochures for information about their education and outreach program – Think Blue. During the 2007 San Diego County fires, the brochures and trail maps were destroyed by fire at the Conservancy office. The City of San Diego has coordinated with the Conservancy to develop new trail maps and brochures which are currently in draft format – see Attachment 2.

3.3.3 FUTURE EFFORTS

The San Dieguito WURMP Copermittees will continue to provide opportunities for residents and other interested parties to participate in San Dieguito WURMP activities. Draft documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the San Dieguito WMA.

3.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

3.4.1 INTRODUCTION

The Land-Use Planning component of the 2008 San Dieguito WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across San Dieguito WURMP Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control

measures may be identified and imposed during land development and redevelopment activities.

3.4.2 ACTIVITIES CONDUCTED

As noted in the Activity Implementation Sheets in Appendix A of this report, the City of San Diego has been an active participant in the Integrated Regional Water Management (IRWM) planning process (IRWMPP). The IRWM Plan provides a mechanism for coordinating, refining, and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders. Participation in the IRWMPP has already led to funding approval for a number of BMP installation projects that will benefit the WMA by reducing runoff. In addition, informational presentations on the IRWMP were given to the City Councils of the Cities of Del Mar and Poway to increase awareness of the need to coordinate land-use and other planning activities across WMAs and the region.

Coordination of land-use planning will also benefit from the development of the Low Impact Development (LID) Handbook and the associated education program. The Handbook, which was developed by the County of San Diego in association with the LID Technical Advisory Committee, was completed in December 2007. The LID and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on LID and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved within the unincorporated County, this education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect WMA water quality.

This education program, which consists of a PowerPoint presentation, was successfully developed on schedule during the spring of FY 2008. Presentations have not yet been conducted in the San Dieguito WMA.

3.4.3 FUTURE EFFORTS

In FY 2009, the City of San Diego will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will begin. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the City and other jurisdictions.

LID and Watershed Planning Education for Community Planning and Sponsor Groups will be conducted in the San Dieguito WMA during FY 2009. This watershed education activity will help increase knowledge of watershed planning and LID principles and will provide common guidelines for implementation during land-use planning.

The San Dieguito WURMP Copermittees remain committed to encouraging collaborative, watershed-based land-use planning in their jurisdictional planning departments. The San Dieguito WURMP Copermittees will continue to work together to seek additional means of collaboration in this area.

3.5 UPDATED 5-YEAR STRATEGIC PLAN

3.5.1 NEW WATERSHED ACTIVITIES

A list of the proposed new WMA activities is included below. Activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified High Priority Water Quality Problems in the WMA. Activity Implementation Sheets can be found in Appendix A.

Each activity on the WMA activities list is fully described in an Activity Implementation Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified High Priority Water Quality Problem(s) of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The San Dieguito WURMP Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no less than two watershed water quality activities will be in an active implementation phase. A watershed water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's High Priority Water Quality Problem(s). Watershed water quality activities that are capital projects are in active implementation for the first year of implementation only.

The new proposed activity for the San Dieguito WURMP is a Water Quality Activity – Sweeping Route Posting and Enforcement.

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

3.5.2 UPDATED 5-YEAR STRATEGIC PLAN

This section describes the results of the Collective Watershed Strategy process described the 2008 San Dieguito WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the High Priority Water Quality Problems in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the High Priority Water Quality Problems for each HA-High Priority Water Quality Problem combination in the WMA. Based on the available data, the Copermittees

made appropriate management decisions on which watershed water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the San Dieguito WURMP Copermittees will use available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The Updated 5-Year Strategic Plan presented at the end of this section is intended to supersede the earlier version presented in the 2008 San Dieguito WURMP.

Table 3-6. 5-Year Strategic Plan

Water Quality Activity/Project Name		Jurisdiction	Watershed Priorities		Implementation Schedule			
			Bacteria	Nutrients	FY 2008	FY 08-09	FY 09-10	Future Fiscal Year(s)
SD-WQA1	Santa Maria Creek Protection and Restoration Project	COUNTY	X		I	M, A	M, A	-
SD-WQA2	Land Acquisitions	COUNTY	X		WQI	WQI	WQI	-
SD-WQA3	Municipal Rain Barrel Installation and Downspout Disconnects	SD	X		P	WQI	A	-
SD-WQA4	SDCK Trash Cleanup Sponsorship	SD	X		WQI	WQI	WQI	WQI
SD-WQA5	Sediment & Peak Flow Controls #1	SD	X	X	P	-	-	WQI
SD-WQA6	Sediment & Peak Flow Controls #2	SD	X	X	P	-	-	WQI
SD-WQA7	Targeted Animal-Related Facility Inspections	SD	X	X	Combined with SD-WQA10			
SD-WQA8	Targeted Landscaping-Related Facility Inspections	SD	X	X				
SD-WQA9	Targeted Municipal Facility Inspections	SD	X	X	-	To be reported in City of SD JURMP		
SD-WQA10	Targeted Inspections (formerly Targeted Restaurant Facility Inspections)	SD	X	X	WQI	WQI	WQI	WQI
SD-WQA11	Bernardo Center Drive Trash Segregation BMP	SD	X		P	P	WQI	WQI
SD-WQA12	Alpha Project for the Homeless, Inc. Trash Cleanups	SD	X		-	-	-	-
SD-WQA13	ILACSD Trash Cleanup Sponsorship	SD	X		WQI	WQI	WQI	WQI
SD-WQA14	Park and Open Space Irrigation and Controllers	DM	X	X	P	WQI	A	A
SD-WQA15	Median Irrigation System Replacement	DM	X	X	P	WQI	A	A
SD-WQA16	Increase Trash Receptacles and Dogi-Pot stations	ESC/POW/SD/SB	X	X	P	WQI	WQI	WQI
SD-WQA17	Focused Restaurant Inspections	ESC/SB/DM	X	X	P	P	WQI	WQI
SD-WQA18	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	?	?	P	P	WQI	A
SD-WQA19	Pet Waste Bag Dispenser Program in County Parks	COUNTY	X		WQI	WQI	WQI	WQI
SD-WQA20	Irrigation Controller & Xeriscaping Incentive Program	SD	X	X	-	-	-	P
SD-WQA21	Sweeping Route Posting and Enforcement	SD	X		-	P	P,WQI	WQI
SD-WQA22	City of San Diego *Strategic Plan for Watershed Activity Implementation*	SD	X	X	P	I	I	I

Education Activity/Project Name		Jurisdiction	Watershed Priorities		Implementation Schedule			
			Bacteria	Nutrients	FY 2008	FY 08-09	FY 09-10	Future Fiscal Year(s)
SD-WQEA1	Residential Water Conservation Outreach	DM	X	X	P	WE	WE	-
SD-WQEA2	LID and Watershed Planning Education	COUNTY /DM	X		P	WE	-	-
SD-WQEA3	Public Service Announcements: *Karma/Karma Second Chance Public Service Announcements*	SD	X		WE	WE	WE	WE
SD-WQEA4	Mobile Advertising (General; Bacteria)	SD	X		WE	WE	WE	WE
SD-WQEA5	SD WMA Inspection Outreach (formerly Restaurant Inspection Outreach)	SD	X	X	E	E	E	E
SD-WQEA6	CBSM Outreach Pilot Project	SD	X		-	-	-	-
SD-WQEA7	Our Water, Our Responsibility Pamphlet Distribution	SD	X		E	E	E	E
SD-WQEA8	Erosion and Sediment Control Poster	SD	X		E	E	E	E
SD-WQEA9	Restaurant Best Management Practices Booklet	SD	X		E	E	E	E

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

4 EFFECTIVENESS ASSESSMENT

The Municipal Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, and to assess the effectiveness of the activities conducted to meet those goals and objectives or identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.2.i of the Municipal Permit, and reports on the activities planned and implemented during FY 2008, the first of a 5-year cycle.

4.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

Activities collaborated upon and selected by the San Dieguito WURMP Copermittees address the overall goal of the WURMP by focusing on the High Priority Water Quality Problems within the WMA.

As set forth in the Municipal Permit and outlined in the 2008 San Dieguito WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the San Dieguito WURMP Copermittees in FY 2008, and where in this report required compliance points are fulfilled or described.

Table 4-1. Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Completed.	2.0
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	2.1-2.2
Identify the likely sources, pollutant discharges, and/or other factors causing the High Priority Water Quality Problems within the WMA.	Completed.	2.3
Update list of potential Watershed Water Quality Activities.	Completed.	3.5
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed.	3.1
Update list of potential Watershed Education Activities.	Completed.	3.5
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed.	3.2
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed.	3.3
A description of Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed.	1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed.	3.4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not Applicable	N/A

As shown in the Table 4-1, the San Dieguito WURMP Copermittees were in compliance with all Level 1 WURMP related Municipal Permit requirements during FY 2008.

4.1.1 ACTIVITIES ASSESSMENT

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated on and selected activities that would address high level COCs within not only each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in Appendix A identifies specific targeted outcomes (Levels 1-6 – as described in Table 4-2 below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 4-2. Outcome Levels: Levels 1-6

	Outcome Level	Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/ exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/ measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2008, there were seven activities in the active implementation phase, five of which focused on water quality and two focused on education. These activities addressed the priority pollutants in the San

Dieguito WMA, which include bacteria, nutrients and TDS; and are the activities for which the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. Table 4-3, below, summarizes the assessments of the water quality and education activities to provide a snapshot of the overall effectiveness of the watershed activities.

Generally, more water quality data is available after the first year of Regional Monitoring under the Municipal Permit. However, an initial qualitative assessment of the cumulative impacts of the watershed activities can be made from the activities implemented during this fiscal year.

Also, six activities were in the active planning phase during FY 2008. Activities in active planning are listed in a separate table below. Although these activities should be implemented in future years, some planning progress was made such as site selection or equipment purchases.

4.2 ASSESSMENT OF TMDL BMP IMPLEMENTATION PLAN EFFECTIVENESS

At this time, there are no adopted TMDLs currently in effect within the San Dieguito WMA.

Table 4-3 Summary of Implemented Water Quality and Water Education Activities for FY 2008

Activity:	HA:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
Land Acquisitions	905.21	Water Quality	All	Level 4	*Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 9.99 acres of land acquired during this fiscal year.*
SDCK Trash Cleanup Sponsorship	905.1 905.2 905.3	Water Quality	Bacteria	Level 1 & Level 4	*During this event 55 participants removed approximately 400 pounds of trash and debris with an efficiency of $2.50 per pound collected.*
Targeted Inspections (formally Targeted Restaurant Facility Inspections)	905.1 905.2 905.3	Water Quality	Bacteria & Nutrients	Level 1, Level 3 & Level 4	*Inspections lead to education, BMP implementation, and load-reducing effectiveness.*
ILACSD Trash Cleanup Sponsorship	905.1 905.2 905.3	Water Quality	Bacteria	Level 1 & Level 4	*During one event 98 participants removed 364 pounds of trash and debris and recycled 318 pounds of trash and debris. Sponsorship of this event resulted in a load reduction of 682 pounds with an efficiency of $1.22 per pound collected*
Pet Waste Bag Dispenser Program in County Parks	905.3 905.4 905.5	Water Quality	Bacteria	Level 4	*Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve.*
Public Service Announcements: Karma/Karma Second Chance Public Service Announcements	905.1 905.2 905.3 905.4 905.5	Water Education	Bacteria	Level 1 & Level 2	*PSAs were developed and broadcasted in FY 2008 via TV and radio stations throughout the San Dieguito WMA in both English and Spanish. Effectiveness was measured by tabulating the number of listeners reached by the program via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.*
Mobile Advertising	905.1 905.2 905.3	Water Education	General, Bacteria	Level 1 & Level 2	*The Mobile truck drove pre-determined routes in the San Dieguito WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change.*

Table 4-4. Summary of Planned Water Quality and Water Education Activities for Future Years

Planned Activity:	HA:	Type:	Priority Problems Addressed:	Level Outcomes:	Expected Benefit:
San Dieguito Watershed Municipal Rain Barrel Installation and Downspout Disconnect Project	905.1 905.2 905.3	Water Quality	Bacteria & Metals	Level 1 & Level 4	*To determine whether rain barrel/downspout disconnect systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so, which system is most effective and efficient.*
Increased Trash Receptacles and Dogi-Pot Stations	905.2 905.3	Water Quality	Bacteria & Nutrients	Level 2, Level 3 & Level 4	*To raise awareness of the potential water quality impacts associated with pet waste and change pet owner behavior by providing a means for pet waste disposal. Proper disposal of pet waste will reduce pollutant loads in runoff.*
Median Irrigation System Replacement	905.1	Water Quality	Bacteria & Nutrients	Level 4	*Dry Weather Load Reductions; A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.*
Park and Open Space Irrigation and Controllers	905.1	Water Quality	Bacteria, TDS, Nutrients & Sediment	Level 4	*Dry Weather Load Reductions; A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.*
LID and Watershed Planning Education	905.3 905.4 905.5	Water Education	All	Level 1 & Level 2	*Educating Planning and Sponsor group members on the new permit requirement. Effectiveness will be measured by tabulating results of pre- and post- presentation surveys.*
Residential Water Conservation Outreach	905.1	Water Education	Bacteria	Level 2	*Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities resulting in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.*

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5 CONCLUSIONS AND PROGRAM IMPROVEMENTS

5.1 CONCLUSIONS

During FY 2008, the San Dieguito WURMP Copermittees strove to address the overall goal of the WURMP—to positively impact the water quality of the San Dieguito WMA—by focusing on its High Priority Water Quality Problems. To target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 San Dieguito WURMP, which strives to link identified water quality problems to their potential sources. Based on the Water Quality Assessment in Section 2, the Copermitteees determined that the High Priority Water Quality Problems in the San Dieguito WMA are bacteria/pathogens in all hydrologic areas and nutrients in the San Pasqual HA. It should be noted that the High Priority Water Quality Problems have not changed from previous assessments even though this year's evaluation included the first year of expanded monitoring mandated under the new Municipal Permit.

The San Dieguito WMA consists of five individual hydrologic areas (HAs) or watersheds. Therefore, to effectively address the WMA's water quality issues, the San Dieguito WURMP Copermittees identified and then evaluated them for likely sources at the individual watershed level (please refer to Table 2-9). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; b) water quality and education activities appear to be targeting suspected sources of the high-priority problems and are mostly viewed as effective at reducing the impacts of the sources. Based on this analysis, the San Dieguito WURMP Copermittees focused their activities on the following suspected priority sources: eating/drinking establishments; animal facilities; botanical/zoological gardens; landscaping; auto/mechanical repair, maintenance fueling, or cleaning; and Publicly Owned Treatment Works (POTWs).

Because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. However, despite there being no currently established direct connection between the potential sources and water quality issues, the San Dieguito WURMP Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Municipal Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, seven activities were implemented, five of which focused on water quality and two on education. All of these activities concentrated on the priority pollutants in San Dieguito WMA, including bacteria, nutrients and total dissolved solids (TDS).

5.2 PROGRAM IMPROVEMENTS

The lack of water quality data directly related to sources makes true effectiveness assessment of the activities difficult. Without the data, the Copermittees are limited to qualitative assessments, which contain substantial assumptions linking the sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the San Dieguito WURMP Copermittees must further develop and characterize source inventories and research existing data related to the suspected

sources, or collect data unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research, analysis of existing data and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level, i.e., evaluating the data from the larger watershed level. Analysis of the data at the HA-level may provide useful information to the 2008 San Dieguito WURMP.

In many cases, water quality data may be unavailable to accurately characterize loading from suspected sources. Where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 San Dieguito WURMP—to determine and target the sources contributing to the High Priority Water Quality Problems – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve water quality within the WMA;
- Integrate watershed principles into land use planning;
- Enhance public understanding of water pollution sources; and
- Encourage and develop stakeholder participation.

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. It also recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language where necessary to better develop and meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008.

The San Dieguito WURMP Copermittees are committed to continue their involvement in this process during the 2008/2009 reporting period. It is anticipated that some changes to the Five-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the Copermittees and the RWQCB.

Appendix A

San Dieguito Watershed Activity Sheets

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San Dieguito Watershed Water Quality Activity Sheets

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TITLE: **Santa Maria Creek Protection and Restoration Project**
ID #: **SD-WQA1**

ACTIVITY IMPLEMENTATION

The purpose of the Santa Maria Creek Protection and Restoration Project is to reduce the transport of urban and agricultural pollutants, bacteria, and sediment to downstream receiving waters by restoring, enhancing, and protecting the Santa Maria Creek corridor, which flows through the grasslands of Santa Maria Valley, downstream and west of the community of Ramona. As the creek flows westward, it leaves the urban matrix and enters an extensive area of currently unprotected grasslands and vernal pools, used primarily for cattle grazing. For over a century, cattle have had unrestricted access to most of the stream channel which has resulted in incised banks, impaired recruitment of riparian vegetation, and significant adverse effects on water quality.

This project was partially funded through a Proposition 13 grant from the State Water Resources Control Board (SWRCB). The term of the project agreement was from June 1, 2004 – March 31, 2007, and included a $1.5 million grant and a match amount of $990,750 for a sum of $2,490,750. The match amount of $905,614 was from the San Diego County Department of Parks and Recreation (Parks and Open Space General Fund), a contribution from The Nature Conservancy, and in-kind contributions from the City of San Diego Water Department and the Wildlife Research Institute.

Water quality monitoring and assessment of project effectiveness will continue during this Permit cycle.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL at this time.

TIME SCHEDULE FOR IMPLEMENTATION

This restoration project was completed in March 2007. Monitoring and assessment are ongoing.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Sulfate
- Phosphorous
- Low Dissolved Oxygen
- Total Dissolved Solids (TDS)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito Watershed Management Area (WMA) Collective Watershed Strategy identified bacteria as a high priority water quality pollutant throughout the WMA including the Santa Maria Valley (905.4). Urban and agricultural land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and

potential source of the problem within the watershed, therefore the activity is consistent with the San Dieguito WMA strategy.

EXPECTED BENEFITS

The water quality monitoring program for the Preserve will be utilized for assessment of the combined effectiveness of stream restoration, grazing management, and re-vegetation for reducing pollutants in Santa Maria Creek.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by confirming completion of all project elements (Level 1 Outcome). Implementation effectiveness will be measured by monitoring Santa Maria Creek for temperature, dissolved oxygen, pH, stream flow, total suspended solids, conductivity, total dissolved solids, total nitrogen, total phosphorus, total coliform bacteria, chloride, and sulfate. Improvements to water quality in Santa Maria Creek will be assessed once prescribed land management actions are implemented from the Area Specific Management Directives and data collected during this period are compared to the baseline data (Level 6 Outcome). The effectiveness of removing non-native invasive plant species in the upland habitat and adjacent to Santa Maria Creek during the on-going management of the Preserve will also be assessed regarding improved water quality within the creek (Level 6 Outcome).

TITLE: **LAND ACQUISITIONS**
ID #: **SD-WQA2**

ACTIVITY IMPLEMENTATION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural ability to infiltrate stormwater/runoff.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

During the FY 2008 reporting period there were 35.68 acres of land acquired in the San Dieguito WMA.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the Collective Watershed Strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE:	**SAN DIEGUITO WATERSHED MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROJECT**
ID #:	**SD-WQA3**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the San Dieguito Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities. Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, and effectiveness assessments.

The City is using the prioritization process that is outlined in the *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Dieguito WMA and other watersheds for this project. Based on this prioritization plan, the selected site for rain barrel installation, Rancho Bernardo Recreation Center, was in one of the highest priority sectors of the San Dieguito WMA for potential for pollutant loading.

The first phase of this project will focus on installing rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the project will be applied to implementation in residential areas.

Based on these findings, the City may modify its municipal rain barrel installation and downspout disconnect project to increase effectiveness and/or seek City Council approval for additional funding to implement future phases (i.e., incentives) and additional rain barrel/downspout disconnect systems.

A one page information sheet regarding the rain barrels was developed in the summer of 2007. The Rancho Bernardo Recreation Center was chosen as a site for the installation. The site selection process was long and iterative. Field reconnaissance was required to identify sites with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were also assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites

were also selected for education/outreach opportunities. The Rancho Bernardo Recreation Center is a publicly accessible City facility. One of the systems will be installed near the front door and will be used to redirect flow from traveling down the street/sidewalk into the grassy area near the property. In the back of the facility, flow will also be redirected from the parking lot for storage in the the rain barrel.

The Regional Board requested in a letter[1] documenting its review of the WURMPs that the City provide data on the locations selected, number of barrels installed, and the volume of rain water collected. The location is discussed in this implementation section above. The number of rain barrels has yet to be decided, but will be discussed in future reporting. As the rain barrels are not yet installed, the volume of water captured is not known and will also be discussed in future reporting.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and is anticipated to continue until the end of calendar year 2008. Initially the project was anticipated to be completed in Spring 2008. Planning, site selection, and procurement of the rain barrels took longer than expected. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains began in the second quarter of 2008. Subcontractors will be procured in late 2008. The specifications and installation guidelines will be developed by the end of 2008. A site pre-bid meeting will be held by the end of 2008. Parts and equipment will be installed at the site in March and April 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the High Priority Water Quality Problem by reducing runoff volume via capture, retention and infiltration.

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff		
Management Questions	• What is the effectiveness/efficiency of rain barrel/downspout disconnect systems in reducing storm water runoff volume? • What is the loading reduction of the rain barrel/downspout disconnect systems?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Estimated cost of site preparation, installation and start-up for site	$4,234
	Estimated cost of operation and maintenance evaluation for all sites	$13,086
	Estimated cost of effectiveness monitoring for all sites	$21,526
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives
The goal of the municipal rain barrel installation and downspout disconnect assessment is to determine whether rain barrel/downspout disconnect systems reduce storm water runoff, thereby reducing bacteria loads, and if so, which system is most effective and efficient.

Analysis and Results
Procurement of rain barrels and other materials began in the second quarter of 2008. Estimated costs for rain barrel preparation, installation and start-up total approximately $4,234. Estimated operation and maintenance costs total $13,086 or $2,181 per site for each of the seven sites. Estimated costs for effectiveness monitoring total $13,086 or $3,587.67 per site for each of the seven sites. Further analysis will be completed after installation of the rain barrel through monitoring.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) versus the cost of installing and maintaining the rain barrel system. Conclusions will be made after the assessment is complete.

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TITLE:	**COASTAL CLEANUP DAY SPONSORSHIP**
ID #:	**SD-WQA4**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 15, 2007. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito Watershed Management Area (WMA). Approximately 55 volunteers removed 400 pounds of trash and debris. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

According to Regional Board staff comments[2] for other WURMPs the City is involved in (e.g., San Diego River), the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

In the Regional Board Comment letter, Regional Board staff indicated that the project was completed during FY 2006-2007 and that no WURMP credit would be granted during FY 2007-2008. In this Activity Summary Sheet, the City is reporting on and has provided data for FY 2008.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Dieguito WMA are included in the list for cleanups, and that proper sponsorship arrangements are made.

[2] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDCK's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	400 lbs
	Number of participants (Outcome Level 1)	55
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$6,000
	Amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1)	$1,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$2.50/lb

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

Fifty-five participants removed approximately 400 pounds of trash and debris. Debris removal (i.e., load reduction) was tracked using data cards provided by the Ocean Conservancy. The total estimated sponsorship cost for all six watersheds was $6,000. For cost estimate analysis,

it was assumed that the Los Peñasquitos site was sponsored at the "Garibaldi Sponsor" level, or $1,000. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the sponsorship cost for the Los Peñasquitos WMA by the pounds of trash removed, was $2.50 per pound.

Conclusions

Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2009. Future results may be used to compare various types of trash cleanups completed and their associated costs, as well as comparing the same types of trash cleanups that are sponsored each year over time.

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TITLE:	**SEDIMENT AND PEAK FLOW CONTROLS #1**
ID #:	**SD-WQA5**

ACTIVITY IMPLEMENTATION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007. This project is currently on-hold as staff time and resources are currently allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. However, this project may be started again in the future.

Furthermore, Regional Board staff indicated[3] that this activity will only be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City recognizes that if the project moves forward, additional information will need to be reported to the Regional Board such as selected location and effectiveness assessment in order to receive credit.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by managing runoff volume—the transport mechanism for pollutants—and treating runoff of pollutants before discharge into receiving waters.

[3] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
SEDIMENT AND PEAK FLOW CONTROLS #1 Assess the Efficiency and Effectiveness of the BMP Installations	
Management Questions	• What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity? • What is the loading reduction of the BMPs?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff flow velocity reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of BMPs installed (Outcome Level 1) • Volume of runoff captured/diverted by treatment trains (Outcome Level 4) • Concentrations of COCs in runoff (Outcome Level 4)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of the BMPs installed to reduce runoff flow velocity and associated erosion and sediment.

Analysis and Results
This project is currently on hold; therefore, an effectiveness assessment is not possible at this time.

Conclusions
If the City does go forward with this project, water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff velocity and pollutant loading. Efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE:	**SEDIMENT AND PEAK FLOW CONTROLS #2**
ID #:	**SD-WQA6**

ACTIVITY IMPLEMENTATION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007. This project is currently on-hold as staff time and resources are currently allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. However, this project may be started again in the future.

Furthermore, Regional Board staff indicated[4] that this activity will only be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City recognizes that if the project moves forward, additional information will need to be reported to the Regional Board such as selected location and effectiveness assessment in order to receive credit.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by managing runoff volume—the transport mechanism for pollutants—and treating runoff of pollutants before discharge into receiving waters.

[4] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
SEDIMENT AND PEAK FLOW CONTROLS #2 Assess the Efficiency and Effectiveness of the BMP Installations	
Management Questions	• What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity? • What is the loading reduction of the BMPs?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff flow velocity reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of BMPs installed (Outcome Level 1) • Volume of runoff captured/diverted by treatment trains (Outcome Level 4) • Concentrations of COCs in runoff (Outcome Level 4)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of the BMPs installed to reduce runoff flow velocity and associated erosion and sediment.

Analysis and Results
This project is currently on hold; therefore, an effectiveness assessment is not possible at this time.

Conclusions
If the City does go forward with this project, water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff velocity and pollutant loading. Efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE:	**SAN DIEGUITO TARGETED INSPECTIONS (COMBINED)**
ID #:	**SD-WQA7, SD-WQA8 & SD-WQA10**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a focused inspection program to target facilities that are potential sources of high priority pollutants. In the San Dieguito Watershed Management Area (WMA), the City is focusing on restaurant and landscaping facilities[5]. The long-term goals of the program are:

- Determine the most efficient frequency of inspections to ensure proper Best Management Practices (BMPs) implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The City delineated a specific area within the San Dieguito WMA to conduct the targeted inspections based on factors such as facility clustering and proximity to other watershed activities being conducted. The overall approach of the site selection process focused first on the specific business categories within the prioritized sectors in each WMA. If multiple category types were targeted for inspection in a particular WMA, a fairly equal distribution of sites from each category was selected for inspection where possible. In addition, knowledge gained by the City from past inspections was used to consider the likelihood of certain business types and areas of the City to be more problematic than others regarding constituents of concern in each WMA

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected community, only one inspection was conducted at each facility. The inspections that were conducted provide baseline data for comparison to future years' watershed-focused inspection programs. Information gathered during the FY 2008 watershed-focused inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years.

Fifty full inspection equivalents occurred across the San Dieguito WMA at restaurants and landscaping activities. Full inspection equivalents are equal to the number of full inspections plus one half the number of "other site visits" (site visits that did not result in a full inspection), excluding other site visits where the facility has moved and is gone and a replacement business was found. This metric allows for a more equal comparison of inspection effort among WMAs. There were 34 full inspections conducted for conducted for restaurant facilities with 9 follow-ups and 10 full inspections conducted for landscaping-related facilities with one follow-up. A total of 13 "other site visits" occurred in the WMA.

[5] The 2008 San Dieguito WURMP also identified animal-related facilities as a facility type of interest for the City's targeted inspection program in the WMA; however, these businesses were not inspected in FY 2008. The city has modified its targeted inspection program and will instead inspect these businesses in FY 2009.

This activity is in active implementation, and source abatement information is included in the effectiveness assessment section of this activity summary sheet. The City requests credit for one of the two required watershed water quality activities for this reporting year with this activity.

The City acknowledges Regional Board staff's comment[6] that recorded data and assessment is needed regarding the inspections and that the inspections must be above and beyond JURMP requirements. Inspections under this activity occurred to facilities that were not inspected under the JURMP program. Recorded data and assessment is included in this report.

Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become "business and usual." However, the City is implementing this non-capital activity over multiple years in order to optimize the program prior to incorporating the results and recommendations into the JURMP. Specific changes to the JURMP are not yet planned as the study is ongoing at this time. Incorporating this activity into the JURMP at this time would be premature in putting valuable resources toward wide-scale implementation before the program is optimized. With optimization the City anticipates gaining the strongest improvement to storm water discharge quality that is achievable at this point in time. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as "business as usual."

It should be noted that all of the inspections (restaurants and landscaping facilities) are being reported on one activity summary sheet for FY 2008 due to the structuring of this year's program. The inspections were previously detailed as separate activities in the 2008 San Dieguito WURMP. For consistency, the activity numbers are included in the heading of this summary sheet. The City is not expecting to receive two watershed water activity credits (one for each type of facility) for this program year; the City is requesting credit for one of the two required activities in this program year. However, the program may be restructured in the future and depending on the scale of implementation, the City may request credit for different facilities in the future.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL (restaurant inspections)

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The City selected and hired a consultant who implemented the watershed-focused project from the end of March through June 2008. The City will continue to evaluate ways to optimize the inspection of various facilities in the future. The City is currently developing its 2009 program and anticipates continuing piloting the targeted inspections through FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

[6] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The San Dieguito WMA inspections target the following High Priority Water Quality Problems:

- Bacteria – Restaurants
- Nutrients – Landscaping Related

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria and nutrients as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria and nutrients at a variety of business types.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito		
TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Restaurant Facility Inspections		
Management Questions	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect source abatement? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of source abatement be made from inspection data?	
Targeted Measurable Outcome(s)	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	Number of restaurant facility full inspections, spot and scheduled (Outcome Level 1)	34
	Number of restaurant follow-up inspections (Outcome Level 1)	9
	Number of landscaping facility full inspections, spot and scheduled (Outcome Level 1)	10
	Number of landscaping follow-up inspections (Outcome Level 1)	1

	Number of Sites Needing Corrective Action (Outcome Level 1)	43
	Number of Sites that Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	1
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	1
	Number of missing BMPs (Outcome Level 1)	42
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	0
	Total IC/IDs Receiving Notice of Violation, and therefore abatement (Outcome Level 4)	1
	Total number of full equivalent inspections, spot and scheduled (Outcome Level 1)	50*
Recommended Data	• Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of educational information items passed out (Outcome Level 3) • Potential Pollutant Discharge Assessment (Outcome Level 4)	

* Includes "other site" visits in calculation of the total.

Objectives

The goal of this effectiveness assessment is to determine the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections, and to ensure proper BMP implementation to reduce pollutant loading.

Analysis and Results

A breakdown of the number of sites needing corrective action, and number of sites that implemented at least some corrective action during the inspection, were included in the Watershed-Focused Storm Water Compliance Inspection Program Report[7] and (see Table 1). The table also includes the number of Illegal Connections/Illicit Discharges (IC/ID) observed during the inspections, and the total number of IC/IDs abated during the inspections. One of the 44 sites implemented corrective action during the inspection, which resulted in source abatement at those facilities.

Table 1. Corrective Actions Implemented at Time of Inspection

Area	Number of Sites Needing Corrective Action	Number of Sites That Implemented Some Corrective Action During Inspection	Total IC/IDs Observed	Total IC/IDs Eliminated During Inspection
SDG	43	1	1	0

Although a load reduction was not calculated for each location, abatement of potential sources (Outcome Level 4) may be assumed with corrective actions being implemented due to the inspections. Future years' analysis will include a detailed pollutant discharge potential assessment to better show this source abatement. Inspected facilities were assigned a rating to reflect the level of BMP implementation noted at the site, and a separate rating to reflect the

[7] D-MAX Engineering, *Watershed-Focused Storm Water Compliance Inspection Program* (September 2008).

facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility.

Table 2 presents a breakdown of the average knowledge and average BMP implementation scores for the inspected facilities in each WMA. In the San Dieguito WMA, the Average BMP Implementation Score increased while the Average Knowledge Score decreased. While some conclusions can be drawn based on the results of the FY 2007 and FY 2008 inspection programs, the number of inspections completed, the individual sites visited, and the business types targeted in each WMA were not the same in FY 2008 as in FY 2007. Because of these differences, drawing definitive conclusions is difficult. The City is modifying its strategy for future years, and the use of a new inspection form should provide the ability to derive more solid conclusions in future years to help optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

Table 2. Breakdown of Average Knowledge and BMP Implementation Scores by Area

Area	Average Knowledge Score FY 2007	Average BMP Implementation Score FY 2007	Average Knowledge Score FY 2008	Average BMP Implementation Score FY 2008
SDG	2.0	2.9	2.4	2.4

Conclusions

The inspections that were conducted in the San Dieguito WMA provide baseline data for comparison to future years' watershed-focused inspection programs in the WMA. More inspection data is anticipated in FY 2009 to build on what was gathered in FY 2008. Specifically, information gathered during the FY 2008 San Dieguito WMA targeted inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years. Further analysis of inspection efficiency, BMP implementation and education and their source abatement effectiveness is required before conclusions can be made and will include the cost of inspections, BMP implementations, education data, and enforcement follow-ups.

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TITLE:	**TARGETED MUNICIPAL FACILITY INSPECTIONS**
ID #:	**SD-WQA9**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) had planned to develop a focused inspection activity to target municipal facilities within the San Dieguito WMA. The purpose of the activity was to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

Based on Regional Board staff comments[8], the City will no longer pursue this activity under the WURMP section of the Municipal Permit. The City may choose to reconsider this as a significant JURMP activity in the future, though staff time and resources are currently allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. The reporting of this activity will cease with this annual report.

Regional Board staff further commented that this activity is an internal audit and credit would not be granted as a watershed water quality activity. As noted above, the City will not implement this activity under the WURMP. If the City chooses to move forward with the activity, it may be considered under the JURMP.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning and implementation is not yet scheduled for this activity. If it moves forward, it would be reported under the JURMP.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

[8] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

If implemented under the WURMP, this activity would have been consistent based on the City's *Strategic Plan for Watershed Activity Implementation*, which identifies bacteria and nutrients as High Priority Water Quality Problems in the San Dieguito WMA, and recommends implementing load reduction/source abatement activities to address them. Implementation of this targeted inspection activity if pursued would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria and nutrients at municipal facilities.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
TARGETED MUNICIPAL FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Targeted Municipal Facility Inspections**	
Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation affect the incidence of illicit discharge? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation?
Targeted Measurable Outcome(s)	• Achieve reduced rate of illicit discharge from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated probability of illicit discharge) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)

Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of discharges abated (Outcome Level 4)

City will no longer pursue this activity under the WURMP section of the Municipal Permit. The City may choose to reconsider this as a significant JURMP activity in the future, which would trigger an effectiveness assessment at that time.

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TITLE:	**BERNARDO CENTER DRIVE TRASH SEGREGATION BMP**
ID #:	**SD-WQA11**

ACTIVITY IMPLEMENTATION

The Bernardo Center Drive Trash Segregation BMP Project will involve the installation of catch basin inserts in the San Dieguito Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The inserts will be installed directly in the existing curb inlets along Bernardo Center Drive and Bernardo Heights Parkway. The Bernardo Center Drive site will include the installation of storm drain catch basin inserts as retrofits within the existing storm drain system. The catch basin inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as "Trash Segregation Device Installation" in the 2008 San Dieguito WURMP. In June 2008 the site along Bernardo Center Drive was selected and the conceptual design was released for this project.

According to Regional Board staff comments[9], this activity will only be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City agrees that the Municipal Permit precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that "capital projects are in active implementation for the first year of implementation only."

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, with design anticipated to continue through FY 2009. Installation is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the project in reducing bacteria and trash loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

[9] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
BERNARDO CENTER DRIVE TRASH SEGREGATION BMP Assess the Efficiency and Effectiveness of Catch Basin Inserts	
Management Questions	• What is the load reduction efficiency of the catch basin inserts? • How effective are these catch basin inserts at reducing priority pollutant loads? • Does the implementation of catch basin inserts result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the catch basin inserts are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Change (%) in bacteria load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1)

Objectives
The goal of this assessment is to determine the effectiveness of installing catch basin inserts in curb inlets along Bernardo Center Drive and Bernardo Heights Parkway in preventing trash and debris from entering the MS4. The catch basin inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

Analysis and Results
Short-term assessment is not possible at this time, as the catch basins have not yet been installed and no priority pollutant load data have been taken.

Conclusions
The conceptual design was released in June 2008, and catch basins will be installed in FY 2010. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the catch basin inserts in reducing bacteria and trash loading. Effectiveness and efficiency will be determined by comparing load reduction to implementation costs.

TITLE:	**ALPHA PROJECT FOR THE HOMELESS, INC. CLEANUP SPONSORSHIP**
ID #:	**SD-WQA12**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups and potentially homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2008.

The City focused on high priority sites for its trash/debris cleanup program partnership with Alpha Project. In FY 2008, the City did not locate any high priority sites requiring cleanup within the San Dieguito WMA.

According to Regional Board staff comments[10], the City would receive credit only for the first trash cleanup event in the fiscal year. As no high priority sites requiring cleanup were located within the San Dieguito WMA, the City is not requesting a credit for a trash cleanup activity as a watershed water quality activity.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The City will not continue the Alpha Project trash cleanup sponsorship in FY 2009. The reporting of this activity will cease with this annual report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Cleanups by the Alpha Project result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City will not continue its partnership with Alpha Project in FY 2009. The reporting of this activity will cease with this annual report. Assessment for effectiveness was not completed for this activity because no cleanups occurred in this watershed during FY 2008.

[10] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

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TITLE:	**I LOVE A CLEAN SAN DIEGO TRASH CLEANUP SPONSORSHIP**
ID #:	**SD-WQA13**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on 26 April 2008. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito Watershed Management Area (WMA). Approximately 98 volunteers removed 364 lbs of trash and debris and recycled 318 pounds of trash and debris over a 10-mile area.

According to Regional Board staff comments[11], the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Dieguito WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

[11] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	364 lbs
	Pounds of trash recycled (Outcome Level 4)	318 lbs
	Total pounds of trash removed (Outcome Level 4)	682 lbs
	Number of participants (Outcome Level 1)	98
	Amount of money spent on cleanups for all watersheds (Outcome Level 1)	$5,000
	Efficiency (Total Cost/Pounds of Debris Removed)	$1.22/lb

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On April 26th 2008, 98 participants removed approximately 364 pounds of trash and debris and recycled approximately 318 pounds of trash and debris from numerous sites in the San Dieguito WMA. The average estimated sponsorship cost was $833.33 per watershed ($5,000/6 watersheds). Thus, there was a 682 pound load reduction associated with sponsorship per yearly event, and an efficiency of $1.22 per pound collected.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2009. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

TITLE: **PARK AND OPEN SPACE IRRIGATION AND CONTROLLERS**
ID #: **SD-WQA14**

ACTIVITY IMPLEMENTATION

As part of the review of water quality issues within the San Dieguito Watershed, Copermittees had previously identified overwatering from residential and municipal sources as an activity with a high potential for water quality impacts from nutrients and bacteria. The City of Del Mar had previously identified overwatering as a potential cause of higher levels of bacteria and nutrients in the southern portions of the City, and proposed the replacement of median and park irrigation timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in City parks and open space areas. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. In addition to the installation of the controllers, City of Del Mar staff continue to monitor these sites to ensure that runoff from over irrigation has been minimized to the maximum extent practicable. This includes periodic inspections of the site by the Clean Water Manager, and coordination with the City's landscape contractor.

The Water Conservation in Landscaping Act of 2006 (Act) requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. To date, the new model ordinance has **not** yet been developed by the State, and implementation of the requirements is not anticipated until the year 2010. The City of Del Mar acknowledges Regional Board staff's comment[12] that the activity appears to be solely a response to the Act. However, the City of Del Mar respectfully disagrees with this opinion. Development of this activity took place as a result of Copermittees analysis of specific water quality issues within the WMA, and as part of the investigations conducted in Anderson Canyon. While, one of the key components of the Act is the use of "smart" controllers for irrigation, by addressing runoff using these controllers, the City of Del Mar is able to meet challenges proposed by the Act, and address specific water quality concerns related to overwatering. Further, the City of Del Mar believes that the efficient use of public funds, such as this program, to address multiple needs and requirements is a prudent course of action, and credit should be granted for the Activity.

The City of Solana Beach recently installed a state-of-the-art weather station located at the newly constructed Fletcher Cove Community Park. This weather station has the ability to collect up to the minute real time weather conditions and remotely communicate with similar recently installed "smart" controllers at other City parks, including the Coastal Rail Trail and highway medians. The City now plans to upgrade older controllers at its last remaining park, La Colonia Community Center, so that all City parks will have "smart" controllers connected remotely to the weather station located at Fletcher Cove Community Park. Not only do these "smart" controllers automatically adjust to the local weather, but they also include alarm systems to notify City personnel remotely if there are any abnormalities in flow, resulting from leaking or broken irrigation lines and/or sprinklers. This will provide the City with complete instantaneous wireless control over the irrigation system to prevent any over-irrigation and water waste, resulting in the elimination of over-irrigation at all City facilities, the pollutant transport mechanism during dry weather conditions.

[12] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY
None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION
This project is budgeted for FY 2008 and FY 2009.

PARTICIPATING WATERSHED COPERMITTEES
- City of Del Mar
- City of Solana Beach

OTHER PARTICIPATING ENTITIES
This project involves monies and support from the State Department of Water Resources and the Metropolitan Water Department.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED
- TDS
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
The San Dieguito WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problems within the WMA; therefore, the activity is found to be consistent with the 2008 San Dieguito WURMP.

EXPECTED BENEFITS
Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT
Once implemented, the cities of Del Mar and Solana Beach can track water consumption through the use of flow metering and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **MEDIAN IRRIGATION SYSTEM REPLACEMENT**
ID #: **SD-WQA15**

ACTIVITY IMPLEMENTATION

As part of the review of water quality issues within the San Dieguito Watershed, Copermittees had previously identified overwatering from residential and municipal sources as an activity with a high potential for water quality impacts from nutrients and bacteria. The City of Del Mar had previously identified overwatering as a potential cause of higher levels of bacteria and nutrients in the southern portions of the City, and proposed the replacement of median and park irrigation timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in the City of Del Mar along the medians on Camino Del Mar, through the center of the village. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. In addition to the installation of the controllers, City of Del Mar staff continue to monitor these sites to ensure that runoff from over irrigation has been minimized to the maximum extent practicable. This includes periodic inspections of the site by the Clean Water Manager, and coordination with the City's landscape contractor.

The Water Conservation in Landscaping Act of 2006 (Act) requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. To date, the new model ordinance has **not** yet been developed by the State, and implementation of the requirements is not anticipated until the year 2010. The City of Del Mar acknowledges Regional Board staff's comment[13] that the activity appears to be solely a response to the Act. However, the City of Del Mar respectfully disagrees with this opinion. Development of this activity took place as a result of Copermittees analysis of specific water quality issues within the WMA, and as part of the investigations conducted in Anderson Canyon. While, one of the key components of the Act is the use of "smart" controllers for irrigation, by addressing runoff using these controllers, the City of Del Mar is able to meet challenges proposed by the Act, and address specific water quality concerns related to overwatering. Further, the City of Del Mar believes that the efficient use of public funds, such as this program, to address multiple needs and requirements is a prudent course of action, and credit should be granted for the Activity.

The City of Solana Beach recently installed a state-of-the-art weather station located at the newly constructed Fletcher Cove Community Park. This weather station has the ability to collect up to the minute real time weather conditions and remotely communicate with similar recently installed "smart" controllers at other City parks, including the Coastal Rail Trail and highway medians. The City now plans to upgrade older controllers at its last remaining park, La Colonia Community Center, so that all City parks will have "smart" controllers connected remotely to the weather station located at Fletcher Cove Community Park. Not only do these "smart" controllers automatically adjust to the local weather, but they also include alarm systems to notify City personnel remotely if there are any abnormalities in flow, resulting from leaking or broken irrigation lines and/or sprinklers. This will provide the City with complete instantaneous wireless control over the irrigation system to prevent any over-irrigation and water waste resulting in the elimination of over-irrigation at all City facilities.

[13] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY
None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION
This project is budgeted for FY 2008 and FY 2009.

PARTICIPATING WATERSHED COPERMITTEES
- City of Del Mar
- City of Solana Beach

OTHER PARTICIPATING ENTITIES
This project involves monies and support from the State Department of Water Resources and the Metropolitan Water Department.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED
- Nutrients
- TDS
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
The San Dieguito WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria and nutrients from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problems within the WMA; therefore, the activity is found to be consistent with the 2008 San Dieguito WURMP.

EXPECTED BENEFITS
Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT
Once implemented, the cities of Del Mar and Solana Beach can track water consumption through the use of flow metering and other use management techniques which demonstrates a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **INCREASE TRASH RECEPTACLES AND DOGI-POT STATIONS**
ID #: **SD-WQA16**

ACTIVITY IMPLEMENTATION

This activity will increase the number of pet waste and trash receptacles within the San Dieguito WMA. Pet waste and trash receptacles provide pet owners with litter bags and trash receptacles for easy disposal of pet waste, reducing the amount of pollutants entering receiving waters. Participating jurisdictions will determine locations to increase the number of pet waste bag receptacles, Dogi-Pot stations, and trash receptacles by identifying areas of high pet activity such as parks and trails and areas where trash and animal waste typically accumulate. Increasing the number of stations or bags will further reduce the amount of pet waste present in these areas.

Escondido: This activity will increase the number of Dogi-Pot stations in areas of high pet activity throughout parks and other areas located in the San Dieguito WMA such as Kit Carson Park.

Poway: The City of Poway plans to increase the number of trash cans and Dogi-Pot stations around popular trails in the WMA. The City intends to focus these efforts on popular trails utilized by hikers with dogs; and trails where trash or animal waste is found frequently by City staff.

San Diego: This activity will target areas frequented by pet owners such as municipal parks and/or street and sidewalk right of ways in the San Dieguito WMA. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones

Solana Beach: This activity will increase the number of trash receptacles and Dogi-Pot stations in areas of high pet activity throughout parks and other areas located in the San Dieguito WMA such as the Coastal Rail Trail, Plaza Street Park and La Colonia Community Center.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Escondido: Installation of additional Dogi-Pot stations is expected to occur at sites such as Kit Carson Park in FY 2010.

Poway: Plan development will occur in FY 2010 and implementation will occur in FY 2011

San Diego: Project planning and coordination is anticipated to begin in FY 2009. Implementation is anticipated to begin in FY 2010.

Solana Beach: Installation of additional trash receptacles and Dogi-Pot stations are ongoing in City parks and new Dogi-Pot stations and trash receptacles will be installed at

Plaza Street Park and the Coastal Rail Trail in FY 2009/2010, and at La Colonia Park in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido
- City of Poway
- City of San Diego
- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito WMA Collective Watershed Strategy identified bacteria as a High Priority Water Quality Problem throughout the entire watershed and nutrients as a High Priority Water Quality Problem in the San Pasqual Hydrologic Area (905.3). Pet waste has been identified as a potential source of bacteria and nutrients. This activity addresses High Priority Water Quality Problems and potential source within the WMA. Therefore, this activity is consistent with the 2008 San Dieguito WURMP.

EXPECTED BENEFITS

This proposed activity is designed to provide pet owners with a convenient means to dispose of pet waste, thereby reducing pollutants in runoff to receiving waters. As a result, Copermittees hope to see a reduction in concentrations of pollutants associated with pet waste in receiving waters.

EFFECTIVENESS ASSESSMENT

This activity is designed to raise awareness of the potential water quality impacts associated with pet waste and change pet owner behavior by providing a means for pet waste disposal (Levels 2 and 3). Proper disposal of pet waste will reduce pollutant loads in runoff (Level 4).

The City of San Diego will use the following approach to effectiveness assessment for this activity:

Watershed: San Dieguito	
PET WASTE BAG DISPENSER PROGRAM Assess the Effectiveness of Pet Waste Bag Disposal	
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load

	reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in FY 2009. Program launch is anticipated to occur in FY 2010.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

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TITLE: TARGETED RESTAURANT FACILITY INSPECTIONS AND OUTREACH
ID#: SD-WQA17

ACTIVITY IMPLEMENTATION

The Cities of Escondido and Solana Beach will conduct focused inspections of restaurants within the San Dieguito WMA to target the pollutants generated by food service facilities. Activities and areas at restaurants such as grease handling and disposal, spills, dumpster and loading docks, parking lots, landscaping and ground maintenance and cleaning of equipment can generate pollutants that have the potential to enter the receiving waters. Pollutants that may be generated by restaurant areas and activities include bacteria from organic materials (i.e., food wastes), oil and grease, trash, and chemicals.

In Del Mar during the 2007-2008 reporting year, Coastal Storm Drain Monitoring activities detected sporadic, higher than normal levels of bacteria in the outfall that drains the 15th Street area of Del Mar. While not at levels warranting in-depth source identification studies, this drainage area includes a large number of the City's restaurants and commercial activities with a "high" or "moderate" potential for water quality issues, and as such the sporadic levels were warranted further study, and enhancement of efforts in this area. The program will focus on activities and areas at restaurants such as grease handling and disposal, spills, dumpster and loading docks, parking lots, landscaping and ground maintenance and cleaning of equipment which may generate pollutants that have the potential to enter receiving waters. Pollutants that may be generated by restaurant areas and activities include bacteria from organic materials (i.e., food wastes), oil and grease, trash and chemicals. This program is in addition to the required education and outreach programs, and will supplement the required annual inspections within the JURMP.

ACTIVITY IMPLEMENTATION

During FY 2008-2009, the City of Del Mar will begin implementation of a targeted outreach and inspection program for the restaurants and outdoor vendors within this drainage area. Program development is planned for FY2008-2009, with implementation by the City of Del Mar occurring in FY2009-2010. The program is expected to include specific training for the restaurants in the area, including catering businesses who service the Power House Community Center, and the adjacent parks. The training program is intended to be a collaborative effort between the City of Del Mar and the Del Mar Village Association. Also included in the program plans are additional inspections and focused trainings for restaurants who have received citations or Notices of Violation for stormwater violations during the past reporting period, and those operations which are suspected of contributing to the problems in the drainage area based on anecdotal evidence. The purpose of the activity is to:

- Attempt to determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year);
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections);
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions);
- Work directly with restaurateurs and their staff to develop a more effective training program for use in the specific restaurants in the area; and
- Track and analyze inspection and enforcement actions to estimate potential load reductions resulting from increased inspections and targeted outreach.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

City of Del Mar: As identified above, the program will be in initial planning stages during FY 2009, and implemented during the FY 2010 reporting period. After implementation, the program will be included as a part of the City of Del Mar JURMP.

City of Escondido: The focused inspections will be conducted during FY 2010.

City of Solana Beach: The focused inspections will be conducted during FY 2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of Del Mar
- City of Escondido
- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The San Dieguito WMA Collective Watershed Strategy identified bacteria as a High Priority Water Quality Problem throughout the WMA. Restaurants have been identified as a potential discharge of bacteria. This activity addresses a High Priority Water Quality Problem and potential sources of the problem within the WMA. Therefore, the activity is consistent with the 2008 San Dieguito WURMP.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities.

EFFECTIVENESS ASSESSMENT

The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

Monitoring data from coastal outfall monitoring and previous inspections will be compiled and restaurant NOV status analyzed using GIS. Further narrowing the drainage area to potential sources will be conducted to target the inspections and outreach activities as appropriate. The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: SD-WQA18

ACTIVITY IMPLEMENTATION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Dieguito Watershed include:

- SDA 8 (Ramona)
- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur anytime before FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS ASSESSMENT

To be determined

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TITLE: **PET WASTE DISPENSER PROGRAM IN COUNTY PARKS**
ID #: **SD-WQA19**

ACTIVITY IMPLEMENTATION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County maintains nine dispenser stations at a total of three parks within the San Dieguito WMA, including one new park location and six new dispensers installed during the FY 2008 reporting period. Dispenser locations include:

- Felicita Park (3 new dispensers, 3 total dispensers)
- San Dieguito Park (3 new dispensers, 5 total dispensers)
- Holly Oaks Park (no new dispensers, 1 total dispenser)

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as High Priority Water Quality Problems in the San Dieguito WMA. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a High Priority Water Quality Problem and a priority source, it is consistent with the Collective Watershed Strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	FY 2008		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Holly Oaks Park	1	4,199	840
Felicita Park	3	12,597	2,519
San Dieguito Park*	5	20,995	4,199
Total	**9**	**37,791**	**7,558**

*San Dieguito County Park is counted in both the Carlsbad and San Dieguito HU Totals

Cumulatively, the County maintains nine stations among three County Parks within the San Dieguito WMA. These stations distributed approximately 37,791 bags during the FY 2008 reporting period, preventing an estimated 7,558 lbs. of pet waste from entering the WMA. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE:	**IRRIGATION CONTROLLER AND XERISCAPING INCENTIVE PROGRAM**
ID #:	**SD-WQA20**

ACTIVITY IMPLEMENTATION

This activity will involve launching a pilot incentive program to encourage the use of weather-based irrigation devices and xeriscaping to reduce over-irrigation and the overall need for landscaping irrigation. Specific residential and commercial areas will be targeted and monitored to assess the efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

In the Regional Board Comment letter[14], Regional Board staff indicated that this activity is a combination of smart irrigation system placements with environmentally sound landscaping and education. The Regional Board also stated that the activity addresses residents and does not appear to be a direct response to The Water Conservation in Landscaping Act of 2006. The City agrees.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in July 2010. Program launch is anticipated to occur in FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter
- City of San Diego Water Department (to be invited to participate)
- San Diego County Water Authority (to be invited to participate)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Gross Pollutants
- Dissolved Minerals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria, nutrients, gross pollutants, and dissolved minerals as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them.

[14] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

Implementation of this activity will address the High Priority Water Quality Problems by reducing dry weather flows resulting from over-irrigation.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
IRRIGATION CONTROLLER AND XERISCAPING INCENTIVE PROGRAM Assess the Efficiency and Effectiveness of the Xeriscaping Incentive Program	
Management Questions	• What is the effectiveness/efficiency of the incentive program in reducing storm water runoff volume? • What is the loading reduction of the irrigation controller and xeriscaping?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of systems installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the xeriscaping systems (acres drained) (Outcome Level 4)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of using weather-based irrigation devices and xeriscaping to reduce over irrigation and the overall need for landscaping irrigation.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in July 2010. Program launch is anticipated to occur in FY 2012.

Conclusions

After project lunch, specific residential areas will be targeted and monitored to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads. The program will also include a component to investigate the challenges in convincing

residents to participate in this incentive program to better focus subsequent education and outreach efforts, and to determine whether broad-scale implementation of this activity should be pursued.

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TITLE:	**SWEEPING ROUTE POSTING AND ENFORCEMENT PROJECT**
ID #:	**SD-WQA21**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing an activity to determine the water quality benefits associated with posting previously non-posted routes for street sweeping. The City would post specific routes with no parking signage to allow for street sweeping to occur along the gutters of streets where currently vehicles are allowed to park on days that street sweeping occurs. The vehicles block the street sweepers' access to the gutters along these non-posted routes. This activity will be used to determine whether posting routes improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring will occur to allow for assessment. This activity will occur in three watersheds, including the San Dieguito Watershed Management Area (WMA). One control site will be chosen in one watershed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Street Sweeping Route Posting and Enforcement Project will be piloted first to determine whether posting the routes improves the effectiveness of street sweeping activities before broad scale implementation.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning is anticipated to be developed in FY 2009 and into FY 2010. Implementation is anticipated to occur in FY 2010 and FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address a High Priority Water Quality Problem by targeting increased sweeping and removal of sediment and trash from the City streets.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
SWEEPING ROUTE POSTING AND ENFORCEMENT PROJECT Assess the Effectiveness of Posting Routes on Improving Street Sweeping Activities	
Management Questions	• Is posting previously un-posted sweeping routes effective in removing bacteria and sediment contaminants? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives
The goal of the assessment is to investigate whether posting previously non-posted routes for street sweeping improves the effectiveness of street sweeping activities.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in FY 2009 and into FY 2010. Implementation is anticipated to occur in FY 2010 and FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via water quality and/or debris monitoring efforts) to the cost of project installation, operation and maintenance. Conclusions will be made after the assessment is complete.

TITLE:	**CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**
ID #:	**SD-WQA22**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

City of San Diego Strategic Plan Activities and Projects

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
Tecolote Watershed "Green Street" Infiltration Retrofit	Green Street	Water Quality	Structural	Bacteria, Metals & Sediment
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash
Maple Canyon Water Quality Improvement Project	Sustainable Canyons	Water Quality	Structural	Metals, TSS, Bacteria, Pesticides & Trash
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals
Tijuana River Solid Waste Removal and Transfer Facility	Trash/Debris Separation	Water Quality	Structural	Trash, bacteria
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment
Residential Landscaping Retrofit Pilot Project	Residential Landscaping Retrofit	Water Quality	Non-structural	Targeted Multiple Pollutants
Smart Irrigation and Controller Incentive/Giveaway Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Targeted Multiple Pollutants
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A
Pet Waste Dispenser Program	Doggie Bag Dispenser	Water Quality	Non-structural	Bacteria
Posted Street Sweeping Routes	Street Sweeping	Water Quality	Non-structural	Metals, Trash & TSS

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Commercial Pest Control Art Turf or Product Sub	Product Sub	Water Quality	Non-Structural	Pesticides
Residential Pesticide Management Art Turf or Prod Sub	Product Sub	Water Quality	Non-Structural	Pesticides
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants

ACTIVITY IMPLEMENTATION	Activity Type Classification	Type	Class	Primary Target Pollutant
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Home Auto Activities (Metals) Code Mod and Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease
Alley Cleanup and Sweeping Pilot Project	Street Sweeping	Water Quality	Non-structural	Bacteria, Trash & Metals

TMDL APPLICABILITY

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

San Dieguito Watershed Education Activity Sheets

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TITLE: **RESIDENTIAL WATER CONSERVATION OUTREACH**
ID #: **SD-WQEA1**

ACTIVITY IMPLEMENTATION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies.

While the new ordinance is not yet adopted, one key element has been identified: the replacement timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. While this planned activity does not directly replace controllers in the residential zones of the City, it provides for outreach through direct mail and utility bill enclosures to encourage water-wise approaches to landscaping, including the use of native plants, smart controllers and drip irrigation systems. This is beneficial from an NPDES perspective since any reduction in water usage, including the use of efficient irrigation systems, reduces the potential for runoff from over irrigation.

TMDL APPLICABILITY

None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION

This project is proposed for implementation in FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar
- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2008 San Dieguito WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT

Quantification of contacts with the residents regarding water conservation water quality activities can be tracked demonstrating a Level 2 outcome (Change in Knowledge).

TITLE:	**LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS**
ID #:	**SD-WQEA2**

ACTIVITY IMPLEMENTATION

The LID and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on Low Impact Development (LID) and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved within the unincorporated County, this education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID handbook, including the Management Strategies, the Appendices and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

This education program was successfully developed during the spring of FY 2008, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2008, none were conducted in the San Dieguito WMA.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Local planning and sponsor groups to be trained within the San Dieguito WMA during the FY 2009 timeframe include:

- Palomar/North Mountain (TBD)
- Ramona (TBD)
- San Dieguito (8/14/2008)
- Pala-Pauma (TBD)
- Julian (TBD)
- Valley Center (9/8/2008)

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity focuses on impacts to the WMA as a result of new and re-development. Specifically, impacts from increased impervious cover and any types of pollutants associated with runoff (both urban runoff and stormwater runoff) as it traverses a variety of types of land uses.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the Collective Watershed Strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed during the presentation (Level 1 Outcome). Since no presentations to groups in the San Dieguito WMA were conducted during FY 2008, there are no Level 1 outcomes to assess. The County is targeting presentations to 6 community-planning and sponsor groups during FY 2009.

As described above pre- and post-presentation survey evaluation forms are administered before and after each presentation. The pre- and post- survey form consists of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area (CPA). The survey results are calculated to obtain a mean average (in percentage) of the overall results of the survey. The pre- and post- survey results are then compared, with the anticipated result being a higher percentage obtained on the post-survey to show an increase in knowledge of watershed planning and LID principles (Level 2 Outcome). Since no presentations to groups in the San Dieguito were conducted during FY 2007-08, there are no Level 2 outcomes to assess.

TITLE:	**PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #:	**SD-WQEA3**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) secured a contract with a film production company, American Dream Cinema, to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist*. The goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

According to Regional Board staff comments[15], the City will need to answer effectiveness measurement questions in the annual report. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the San Dieguito WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The City requests that the Regional Board accept this activity as a watershed education activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a change in pollutant-related behavior (Outcome Level 3) during the reporting period.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

These PSAs were developed in FYs 2007 and 2008 and were broadcast on several TV and radio stations throughout the San Dieguito Watershed Management Area (WMA) between February and April 2008. The City will continue to work with various broadcast media outlets to distribute and air the PSAs, as well as produce additional pollutant specific spots in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

[15] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in increased knowledge and awareness regarding bacteria and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST Assess the Efficiency and Effectiveness of Public Service Announcements		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in the San Dieguito WMA (Outcome Level 1)	608,746
	Number of impressions made to the public through radio announcements in the San Dieguito WMA (Outcome Level 1)	195,186
	Change in knowledge or attitude from survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes*

*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The PSAs were developed in the FY 2007-2008, and broadcast on several TV and radio stations throughout the San Dieguito WMA from February 2008 to April 2008. The PSAs were broadcast in both English and Spanish.

Out of 800 total residents from all WMAs who participated in a random digit-dial *Think Blue* survey, 52% of residents became aware of the *Think Blue* message by seeing the television ads, and 13% of residents heard the radio announcements in FY 2008. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. To estimate the number of impressions made in the San Dieguito WMA, the total number of estimated City-wide impressions (15,680,381 for television and 5,027,700 for radio ads) was multiplied by the proportion of residents living in the San Dieguito WMA (4% of the City's total population). According to the random survey, groups most likely to have seen the television ad were: residents who knew that storm water was untreated (25%); people without college degrees (25%); and residents of the San Diego Bay (26%) and San Diego River (25%) WMAs. Groups most likely to have heard the radio ad were: residents who are white (9%); residents in the 35-49 age group (9%); and people between the ages of 18 and 35 (9%).

Conclusions

The City will work with various broadcast media outlets to continue distribution of the PSAs in FY 2008-2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the San Dieguito WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, the *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

It is worth noting that the City's PSAs continue to reach new individuals in the San Dieguito WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

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TITLE:	**MOBILE ADVERTISING**
ID #:	**SD-WQEA4**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has retained a contract with a mobile advertising firm to advertise *Think Blue* messages on its static billboard trucks in the San Dieguito Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria. The goal of mobile advertising is to educate the public about the causes of storm water pollution, and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed in both English and Spanish. The estimated audience was 879,200 impressions per four-week period. The following image shows the San Dieguito WMA route that was driven using a Tri-vision Adtruk.

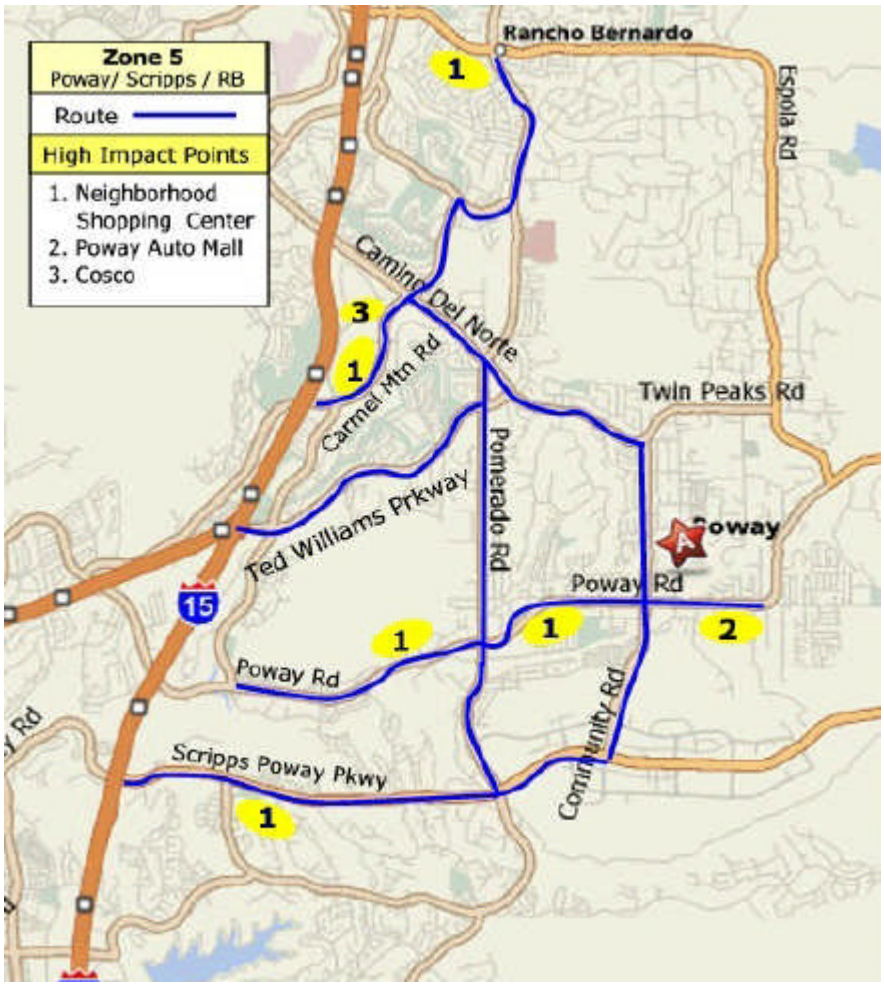

According to Regional Board staff comments[16], the City will need to answer effectiveness measurement questions and provide routes in the annual report. The routes are provided above. Effectiveness will continue to be measured via surveys comprised of a random sample

[16] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

of the residents living in the San Dieguito WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The City requests that the Regional Board accept this activity as a watershed education activity for FY 2008 as the effectiveness assessment below demonstrates that this activity resulted in a change in pollutant-related behavior (Outcome Level 3) during the reporting period.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The City developed the design of the advertisements and had them placed on the company's static billboard trucks in FY 2008. The Mobile truck was driven around pre-determined routes in the San Dieguito WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change. The City plans to continue to implement mobile advertising in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy identify bacteria as a High Priority Water Quality Problem in the San Dieguito WMA, and recommend implementing load reduction/source abatement activities to address it. Utilizing the mobile billboard truck will result in increased knowledge and awareness regarding bacteria (and trash as a vector) directly, and will promote behavior change and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
MOBILE ADVERTISING Assess the Efficiency and Effectiveness of Advertisement on Static Billboard Trucks	
Management Questions	• What changes in awareness /attitude regarding bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)	
Data Recorded	Number of impressions in the San Dieguito WMA (Outcome Level 1)	43,960 DEC*
	Change in knowledge or attitude based on survey results (Outcome Level 2)	45% increase
	Change in pollutant-related behavior based on survey results (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The initial estimated total impressions per 4 week period in the FY 2008 were 879,200 impressions.

**There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of mobile advertising to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

Analysis and Results

The mobile advertisements were developed in FY 2008 and displayed throughout the San Dieguito WMA in both English and Spanish. The estimated audience was 879,200 total impressions per 4-week period. Out of 800 randomly selected residents from all WMAs who participated in the *Think Blue* survey, approximately 33% of residents became aware of the *Think Blue* message via mobile advertising in FY 2008.

Conclusions

The City plans to continue to implement mobile advertisements in FY 2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the San Dieguito WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issue, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all watersheds who participated in the random survey, 45% reported exposure to mobile advertising in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

Furthermore, the increase in impressions made in FY 2008 also indicates that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in

future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE:	**SAN DIEGUITO WMA INSPECTION OUTREACH**
ID #:	**SD-WQEA5**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) plans to implement an outreach program in support of all of its planned inspection activities within the San Dieguito Watershed Management Area (WMA). The purpose of this activity is to provide information on the inspections and their planned frequency to the affected facilities and community. The City delineated a specific area within the San Dieguito WMA to conduct the targeted inspections based on several factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported.

This activity was originally identified as "Restaurant Inspection Outreach" in the 2008 San Dieguito WURMP; however, the City broadened its focus from solely restaurant facilities to include additional outreach efforts for all its inspections in the WMA.

Furthermore, the City acknowledges Regional Board staff's comments[17] that recorded data and assessment is needed regarding inspection outreach efforts and that the inspections must be above and beyond JURMP requirements. Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become "business and usual." Inspections under this activity occurred to facilities that were not inspected under the JURMP program.

Based on the above comment, the City is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities. Individual reporting of this activity will cease with this annual report. Future inspection outreach efforts will be reported concurrently with the City's targeted inspection activities.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This activity will be performed concurrently with all facility inspections.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

[17] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The San Dieguito WMA inspections target the following high priority water quality problems:

- Bacteria – Restaurants
- Nutrients – Landscaping Related

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria and nutrients as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them.

EFFECTIVENESS ASSESSMENT

Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE:	**COMMUNITY-BASED SOCIAL MARKETING OUTREACH PILOT PROJECT**
ID #:	**SD-WQEA6**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) found that research indicated that an emerging public education field called "Community Based Social Marketing" (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has retained several professional research consultants to develop and initiate the CBSM Pilot Project. Research, observations, and surveys will be conducted, with outreach interventions and assessment methods to follow. Potential results will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

In the Regional Board Comment letter[18], Regional Board staff indicated that the previous activity sheet lacked adequate information. If this project is started in the future, adequate information will be provided to the Regional Board.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project is currently on-hold pending the results of CBSM projects in other watersheds. If other CBSM projects prove to be effective, this project may be started.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria and gross pollutants as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. This activity will result in both increased knowledge and awareness regarding bacteria and trash as a vector, as well as future load reductions of trash and debris directly and of bacteria indirectly.

[18] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
PROPOSED COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT STUDY Assess the Effectiveness of the Pilot Study	
Management Questions	• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution?
Targeted Measurable Outcome(s)	• Reach goal number of people within the watershed, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by pamphlet)
Recommended Data	• Number of educational materials distributed in business areas (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

This activity is currently on hold pending the results of CBSM projects in other watersheds; therefore, an effectiveness assessment is not possible at this time. If the City does go forward with this activity, and effectiveness assessment will be conducted and submitted to the Regional Board.

TITLE:	**OUR WATER, OUR RESPONSIBILITY PAMPHLET DISTRIBUTION**
ID #:	**SD-WQEA7**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced pamphlet to be made available at all City lakes as an insert inside a map of the area. The pamphlet includes information about the nine City-owned and operated reservoirs and explains how the public can protect drinking water supplies and natural habitat. Additionally, the pamphlet explains that the habitat surrounding three of the nine reservoirs is protected under the Multiple Species Conservation Program (MSCP) and that by protecting the land around the reservoirs, the community's water supply is kept safe and an important refuge for wildlife is provided. Approximately 611 pamphlets were distributed at Lake Hodges in the San Dieguito Watershed Management Area (WMA) in FY 2008.

The Regional Board provided comments[19] on the March 2008 WURMPs based on an audit conducted by PG Engineering. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet SD-WQA23 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these pamphlets have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to the pamphlets in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

[19] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 611 pamphlets in FY 2008. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the pamphlet to permit applications, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE:	**SAN DIEGUITO WATERSHED EROSION AND SEDIMENT CONTROL POSTER**
ID #:	**SD-WQEA8**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control poster to be handed out to development applicants receiving a grading or public improvement permit from the City. The poster is large and durable enough to be posted outdoors or indoors to serve as a steady reminder to construction managers and workers of storm water issues and Best Management Practices (BMPs). Photos on the poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally to distribute the poster in FY 2008 to development applicants receiving a grading or public improvement permit from the City. Based on the number of permits granted, the total number of posters distributed in the San Dieguito Watershed Management Area (WMA) was 13.

The Regional Board provided comments[20] on the March 2008 WURMPs based on an audit conducted by PG Engineering. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit…pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet SD-WQA23 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

[20] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the poster to permit applicants in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 13 erosion and sediment control posters in FY 2008. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the poster to permit applications, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE:	**SAN DIEGUITO WATERSHED RESTAURANT BEST MANAGEMENT PRACTICES BOOKLET**
ID#:	**SD-WQEA9**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the San Dieguito Watershed Management Area (WMA) during inspections. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer; however, after further evaluation, City staff determined that a booklet to supplement existing fact sheets passed out during inspections would be more effective in educating food and drinking establishment owners and workers about storm water issues and BMPs. After review, the booklet could be kept by owners/managers for reference, and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs.

City staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2008 to City-permitted facilities. The City distributed 109 booklets in the San Dieguito WMA.

The Regional Board provided comments[21] on the March 2008 WURMPs based on an audit conducted by PG Engineering. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit…pollutant reduction is, or should be, the true objective of the WURMP…"

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet SD-WQA23 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these booklets have been distributed over a number of years and the City plan to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with FEWD Program staff for distribution of the booklet in FY 2009 to City-permitted facilities.

[21] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a High Priority Water Quality Problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 109 booklets in FY 2008. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

City of Del Mar

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

KAREN P. BRUST
City Manager
City of Del Mar

1050 Camino Del Mar · Del Mar, CA 92014-2698 · Telephone: (858) 755-9313 · Fax: (858) 755-2794 · www.delmar.ca.us

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lori Vereker
Utilities Director
City of Escondido

CITY OF POWAY

DON HIGGINSON, Mayor
CARL KRUSE, Deputy Mayor
MERRILEE BOYACK, Councilmember
JIM CUNNINGHAM, Councilmember
BETTY REXFORD, Councilmember

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Robert J. Manis
Director of Development Services
City of Poway

City Hall Located at 13325 Civic Center Drive
Mailing Address: P.O. Box 789, Poway, California 92074-0789
www.poway.org

THE CITY OF SAN DIEGO

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

Storm Water Department
9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350

CITY OF SOLANA BEACH
635 SOUTH HIGHWAY 101 • SOLANA BEACH, CALIFORNIA 92075-2215 • (858) 720-2400
www.ci.solana-beach.ca.us FAX (858) 792-6513 / (858) 755-1782

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. Sammak

Mohammad Sammak
Director of Engineering/Public Works
City of Solana Beach

County of San Diego

LAND USE AND ENVIRONMENT GROUP

CHANDRA L. WALLAR
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256
Fax: (619) 531-5476

STATEMENT OF CERTIFICATION

San Dieguito River Watershed Urban Runoff Management Plan (WURMP) FY 2008-09 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2008-2009 San Dieguito River Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-27-10
Date

SAN DIEGUITO WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

FISCAL YEAR 2009 ANNUAL REPORT

JANUARY 31, 2010

PREPARED AND SUBMITTED BY THE SAN DIEGUITO WATERSHED COPERMITTEES

CITY OF DEL MAR
CITY OF ESCONDIDO
CITY OF POWAY
CITY OF SAN DIEGO
CITY OF SOLANA BEACH
COUNTY OF SAN DIEGO

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Executive Summary

Since January 2002, the County of San Diego and the Cities of Del Mar, Escondido, Poway, San Diego and Solana Beach (herein referred to as the "San Dieguito WURMP Copermittees" or "Copermittees") have been active in planning, developing and implementing watershed-based programs in the San Dieguito Watershed Management Area (WMA). This Annual Report describes the actions taken by San Dieguito WURMP Copermittees in Fiscal Year (FY) 2009 (July 1st, 2008 to June 30th, 2009) to implement and refine the 2008 San Dieguito Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA.

The Copermittees collaborated on efforts to address high priority surface water quality issues throughout the San Dieguito WMA. This was coordinated through periodic meetings held throughout the reporting period. The meetings were held in order to effectively plan and implement the San Dieguito WURMP, develop and prioritize water quality activities that address pollutants of concern in the WMA, exchange ideas on how to address High Priority Water Quality Problems (HPWQPs) in the WMA, evaluate the effectiveness of actions, and collaborate on development of required submittals. In order to complete the objectives, the group performed assessments and conducted activities to address the water quality problems. These assessments and activities include: (1) a water quality assessment; (2) a pollutant source assessment; (3) planning and implementation of watershed activities; and (4) an assessment of the Copermittees' activities in the watershed.

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the San Dieguito WMA based on data collected and analyzed from July 2008 through June 2009. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the San Diego County Municipal Copermittees Urban Runoff Monitoring Report (Annual Monitoring Report) for FY 2009 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. Based on the data and findings of this report, the San Dieguito WURMP Copermittees have determined to focus their efforts on targeting the following HPWQPs for the San Dieguito WMA: (1) Bacteria in all hydrologic areas (HAs); and (2) Nutrients in the San Pasqual HA.

The Copermittees also completed an assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of this assessment was to identify the high priority pollutant sources in each hydrologic area based on the HPWQPs identified and each source's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

All WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Details of these activities are found in Section 4 and Appendix C of this Annual Report. A plan for implementation has been developed and updated. The plan identifies the WURMP activities and when they plan to be implemented. Each WURMP Activity is associated to at least one of the HPWQPs in each HA where the activity is to be implemented. Collectively, the Copermittees conducted eleven WURMP Watershed Activities – seven (7) Water Quality Activities and four (4) Water Education Activities.

As required, Copermittees implemented activities in the watershed as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. This data and information is not comprehensive and for some data sets, estimates were used to generate quantities of activities. The Copermittees believe that it is an important first step towards integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees also performed an Effectiveness Assessment to determine the overall effectiveness of the San Dieguito WURMP and the activities conducted by the Copermittees. The assessment includes activity specific assessments as well as a comprehensive summary of the effectiveness of the WURMP activities implemented during the reporting period. This year, the Copermittees have added in their JURMP activities as they were performed in each HA. The JURMP activities reported are limited in type due to the infancy of this type of reporting. The Copermittees are committed to continue this process and further develop the reporting and assessment of all activities conducted on an HA basis.

Activities selected and conducted by the San Dieguito WURMP Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. The effectiveness of the individual activities is variable; however, collectively the Copermittees' program actions are having positive effects on water quality.

The San Dieguito WURMP Copermittees will continue to refine and augment the San Dieguito WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the San Dieguito WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In short, the FY 2009 San Dieguito WURMP Annual Report presents an update on the San Dieguito WURMP Copermittees' long-term efforts to protect and enhance the water quality of the WMA using a comprehensive watershed-based approach.

1 Introduction

The San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit) requires Copermittees within the San Dieguito Watershed Management Area (WMA) to collaborate and implement a Watershed Urban Runoff Management Program (WURMP). The WURMP consists of the Copermittees' combined efforts to address and identify High Priority Water Quality Problems (HPWQPs) in the WMA; develop and implement activities that address pollutant load reduction and pollutant source abatement in Watershed Water Quality Activities and Watershed Education Activities; public participation and collaborative land use planning. The reporting period for this annual report is from July 1st, 2008 through June 30th, 2009.

1.1 Copermittee Collaboration

1.1.1 San Dieguito WURMP Meetings

The San Dieguito Watershed Copermittees met seven (7) times during FY 2009 to develop and implement the San Dieguito WURMP. The Copermittees collaborated to develop, prioritize and implement watershed activities that address pollutants of concern and sources in the WMA and the development of the Annual Report. They exchanged ideas on how to address HPWQPs in the WMA and evaluated the effectiveness of the watershed activities. **Table 1-1** is a summary of San Dieguito WURMP meetings and an outline of agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
8/6/2008	WURMP Update - watershed strategy & activity planning; public participation; WURMP Annual Reports
11/20/2008	WURMP Update - watershed strategy & activity planning; WURMP Annual Reports; RWQCB letter; Regional WURMP
1/13/2009	WURMP Update - watershed strategy & activity planning; WURMP Annual Reports
2/24/2009	WURMP Annual Report; WURMP Update - watershed strategy & activity planning; TMDL process
3/24/2009	WURMP Update - watershed strategy & activity planning; TMDL process; public participation
4/22/2009	WURMP Update - watershed strategy & activity planning; Regional Monitoring Report; cost share agreements; SANDAG Quality of Life Initiative
6/11/2009	WURMP Update - watershed strategy & activity planning; TMDL process; cost-share agreements; public participation; WURMP Annual Reports ; SANDAG Quality of Life Initiative

The general watershed meetings of the San Dieguito WURMP Workgroup were led by the City of Escondido, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks were then carried out by the Copermittees, each within the structure of their jurisdictional organization. Task completion was then tracked and assessed at the Workgroup meetings and reported in the Annual Report.

1.2 Watershed Map Update

The San Dieguito River Watershed drains an area of approximately 221,440 acres in west–central San Diego County. The San Dieguito River watershed extends through a diverse array of habitats from the eastern headwaters in the Volcan Mountains to the outlet at the San Dieguito Lagoon and Pacific Ocean. The watershed consists of five hydrologic areas (HAs). The watershed includes portions of the Cities of Del Mar, Escondido, Poway, San Diego, Solana Beach, and unincorporated areas of San Diego County. Land use within the watershed is classified primarily as vacant and undeveloped land (42%). Other major land use classifications are residential (19%), open space/parks and recreation (17%), and agriculture (15%). Transportation, commercial, industrial, public facility, and water comprise the remaining 7% of the watershed. Over 60% of the watershed is privately owned land. The remaining portions are mostly federally or locally owned, and a small percentage of land is state-owned.

No updates have been made to the previously submitted Watershed Map. See the San Dieguito WURMP Annual Report submitted in January 2009 for the most recent Watershed Map.

2 Water Quality Assessment

This section provides an assessment of the 2008–2009 monitoring programs conducted in the San Dieguito River WMA. A complete presentation of the monitoring efforts conducted during the reporting period is located in **Appendix A** an excerpt of the *2008-2009 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Urban Runoff Monitoring Report) (Weston, January 2010).

2.1 Monitoring Programs

Monitoring activities conducted in the WMA to comply with Order R9-2007-0001 are provided in **Table 2-1**. A map showing the 2008-2009 Monitoring Station Locations is provided on the following page.

Table 2-1 2008-2009 Monitoring Program Activities

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Ambient Monitoring	Water chemistry and toxicity
Rapid Stream Bioassessments	Benthic macroinvertebrates, periphyton, and physical habitat
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria
MS4 Outfall Targeted Monitoring	Chemistry, metals, pesticides and bacteria
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria

2.2 303(d) Listings

Within this WMA, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant total maximum daily load (TMDL) status. However, several changes are currently proposed in the 2008 Draft 303(d) list currently under development.

Table 2-2 San Dieguito WMA SWRCB 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Pacific Ocean Shoreline	Bacterial indicators	Adopted
Green Valley Creek	Sulfates, chloride, manganese, and PCP	Not developed
Lake Hodges	Color, nitrogen, phosphorus, turbidity, manganese, and pH	Not developed
Kit Carson Creek	TDS and PCP	Not developed
Felicita Creek	TDS and aluminum	Not developed
Cloverdale Creek	Phosphorus and TDS	Not developed
Sutherland Reservoir	Color, manganese, and pH	Not developed

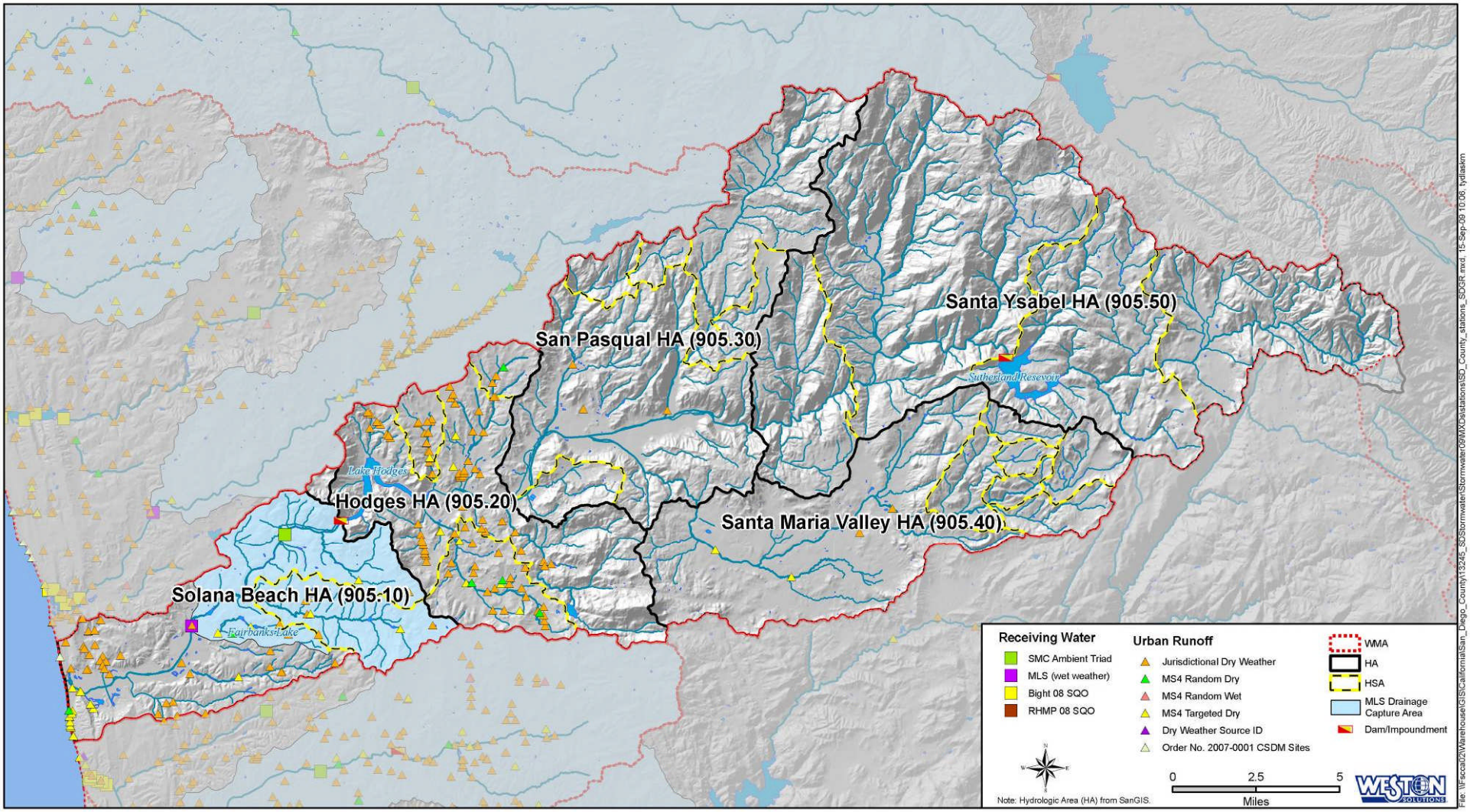

Figure 2-1 San Dieguito WMA 2008–2009 Monitoring Station Location Map

2.3 Assessment

Receiving water monitoring was conducted during one ambient weather event, at one Southern California Stormwater Monitoring Coalition (SMC) site, and one wet weather event at the Mass Loading Station (MLS). Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Order with the exception of Chollas Creek which is monitored each year. In 2008-2009, the scope of the monitoring program was adjusted due to the Copermittees participation in the Southern California Bight Regional Monitoring Program.

Each element of the Permit-required monitoring program was designed to provide scientific data to address five core management questions. The core management questions, as listed in the Permit, are presented as follows:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring program for each WMA vary across spatial and temporal scales. Therefore, data support only partial resolution of each core management question. Through continued monitoring and the refinement of the Permit requirements a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments were conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach. The results for the San Dieguito River WMA are summarized in **Table 2-3** on the following page.

Table 2-3. Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
San Dieguito River WMA	Receiving Water Monitoring Program	Ambient Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS, chloride, sulfate, and total nitrogen). - Medium frequency of occurrence (Biological Oxygen Demand (BOD), total phosphorus, and enterococci). - Low frequency of occurrence (TSS and turbidity). ▪ No constituents had a magnitude of exceedance greater than five times their benchmark. ▪ No persistent toxicity was observed.	1, 2
		Wet Weather Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS). - Medium frequency of occurrence (fecal coliform) - Low frequency of occurrence (TSS, turbidity and Bifenthrin). ▪ No constituents had a magnitude of exceedance greater than five times the benchmark. ▪ No persistent toxicity was observed. ▪ Bifenthrin was not detected in storm water at the MLS site. ▪ No pyrethroids were detected in post-storm sediment samples at the MLS.	
		Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Very Poor IBI rating at TWAS-1 and Poor at MLS).	
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of concern[1]: ▪ High frequency of occurrence (TDS, sulfate, total nitrogen, enterococci, and aluminum). ▪ Medium frequency of occurrence (chloride, total phosphorus, and manganese) ▪ Low frequency of occurrence (copper and fecal coliform). ▪ Results suggest that for some constituents (TDS, chloride, sulfate, total nitrogen, and enterococci) the MS4 runoff may have the potential to contribute to receiving water problems.	3, 4
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions.	
	WMA Assessment	Receiving Water Trend Assessment	▪ Significantly increasing trends were observed for Total Kjedahl Nitrogen (TKN), total phosphorus, and conductivity. ▪ No significantly decreasing trends were evident.	5
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, chloride, sulfate, and total nitrogen are consistent with the 2001–2006 BLTEA ratings as it relates to the Solana Beach HA.	

[1] Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in Appendix B of the Annual Monitoring Report (Weston, 2010).

Based on these results, each of the five Core Management Questions are addressed below.

Core Question 1: Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

The results of the 2008-2009 monitoring program in the San Dieguito River WMA indicate that some Constituents of Concern (COCs) were identified as high frequency of occurrence. In the San Dieguito River WMA, these COCs included TDS, chloride, sulfate, and total nitrogen. This suggests that some beneficial uses may be impaired by these constituents. The results of the CSDM in the San Dieguito River WMA, which provide information on the potential impact that coastal storm drains have on the receiving waters, have not yet been received for analysis.

Historical stream bioassessment results indicate evidence of benthic community impairment in the San Dieguito River WMA, with a Very Poor IBI rating at Site SDC-TWAS-1; see **Figure 2-2** for the location of the 2007-2008 Monitoring Station Locations. The San Dieguito River MLS and Site SDC-TWAS-2 have received IBI ratings of Poor and Fair, respectively, since 2001. Additional bioassessment monitoring conducted at SMC sites in the WMA produced similar results. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat and the presence of pesticides (e.g., the synthetic pyrethroid Bifenthrin was detected during wet weather in the 2007–2008 Monitoring Season at urban sites in the upper watershed). Other constituents not monitored in this program may also play a role in affecting the benthic community. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

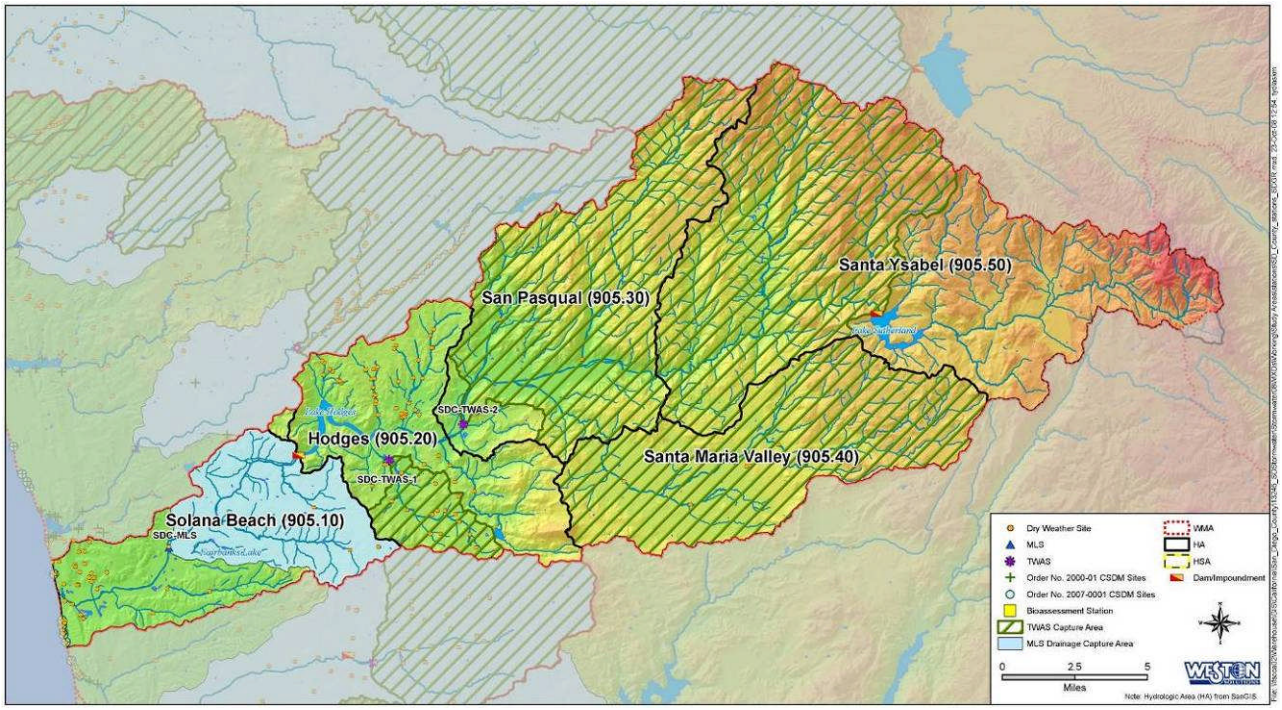

Figure 2-2 San Dieguito WMA 2007–2008 Monitoring Station Location Map

Toxicity was not observed during wet weather conditions in the San Dieguito River WMA when sampling occurred on November 12, 2008, at the MLS. In previous years, toxicity has been sporadic and infrequent at this site. Since 2001, toxicity has been identified at either the TWAS or MLS twelve times to *C. dubia* (one 96-hour, two 7-day survival, and nine 7-day

reproduction) three times to *H. azteca* (96-hour acute), and six times to *S. capricornutum* (96-hour). There is no evidence of persistent toxicity at this site in ambient or wet weather monitoring. The lack or persistent toxicity at this site indicates that the receiving waters are likely protective of beneficial uses, but may be influenced in localized areas.

Core Question 2: What is the extent and magnitude of the current or potential receiving water problems?

The San Dieguito River WMA SMC site was evaluated for ambient weather conditions and the San Dieguito River WMA MLS for wet weather conditions. The greatest exceedance ratios during ambient conditions in the San Dieguito River WMA were observed for TSS, total nitrogen, and chloride, and sulfate. The TSS and chloride concentrations were approximately three times greater than the benchmarks. Total nitrogen and sulfate concentrations were one to two times greater than the benchmark. Exceedance ratios during wet weather at the MLS were greatest for TDS and indicator bacteria (i.e., fecal coliform). The TDS concentration during the 2008 storm event was almost five times greater than the benchmark, which is slightly higher than the historical mean for the site. The fecal coliform concentration during wet weather in 2008–2009 was twice the benchmark, which is lower than the historical mean for the site.

Receiving water spatial patterns in the San Dieguito River WMA could not be evaluated during the 2008–2009 Monitoring Season because only one site was monitored for each of the wet weather and ambient weather conditions.

Historical stream bioassessment ratings conducted in the WMA indicate a Very Poor benthic community at the TWAS-1 (see **Figure 2-2** above) location in the Hodges HA, which is downstream of a residential land use community. The consistent rating of Very Poor at the TWAS-1 location since the 2002–2003 Monitoring Season suggests that the impairment on the benthic community at TWAS-1 continues to persist. The MLS site located downstream of Lake Hodges Dam received an IBI rating of Poor. The TWAS-2 (see **Figure 2-2** above) location in the less populated San Pasqual HA received an IBI rating of Fair. These results, in general, are consistent with assessment conducted in the past at these sites and suggest that urban environments may be a factor influencing degraded benthic conditions.

Core Question 3: What is the relative urban runoff contribution to the receiving water problem(s)?

In 2008–2009, the San Dieguito River WMA MS4 was assessed through the random dry, random wet, and targeted dry monitoring programs.

Twelve sites were visited as part of the random dry weather program, including six dry sites, two ponded sites, and four flowing sites. Concentrations of several analytes, including total nitrogen, total phosphorus, and indicator bacteria were greater than benchmarks at the four sites with flow, suggesting that dry weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3.

Five sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes, including total nitrogen, total phosphorus, and indicator bacteria, were greater than benchmarks at some sites, suggesting that wet weather runoff

from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents primarily at a site located in the upper region of HSA 905.22 (Green HSA). The catchment for this site had the second largest area in comparison to the other four sites and was characterized primarily by residential, spaced residential, and open space/parks and recreation land uses.

A total of 18 sites in the San Dieguito River WMA were visited as part of the targeted dry weather program, 16 of which were flowing at the time of the survey. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving benchmarks for the following constituents: oil & grease, chloride, nitrate, total nitrogen, total phosphorus, sulfate, TDS, total metals, dissolved metals, pesticides (i.e., Chlorpyrifos and Diazinon), and indicator bacteria (i.e., fecal coliform and enterococci). With the exception of oil & grease, pesticides, and dissolved metals, each of the constituents had concentrations greater than their respective benchmarks at a minimum of one of the 14 sites assessed. Concentrations of TDS and total nitrogen exceeded the benchmark most frequently followed by indicator bacteria and total phosphorus. The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded. A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were greatest where flow rates were highest (two sites in the Hodges HA). MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the San Dieguito River WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

Core Question 4: What are the sources of urban runoff that contribute to receiving water problem(s)?

The Jurisdictional Dry Weather Monitoring (DWM) Program (See **Figure 2-3** on the following pages for the Trash Assessment results), the CSDM Program, the Source Identification Program and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources can be found in each Copermittees' Jurisdictional Urban Runoff Monitoring Program Annual Report and in the CSDM Program Annual Report (Appendix N of the 2008-2009 Urban Runoff Monitoring Report).

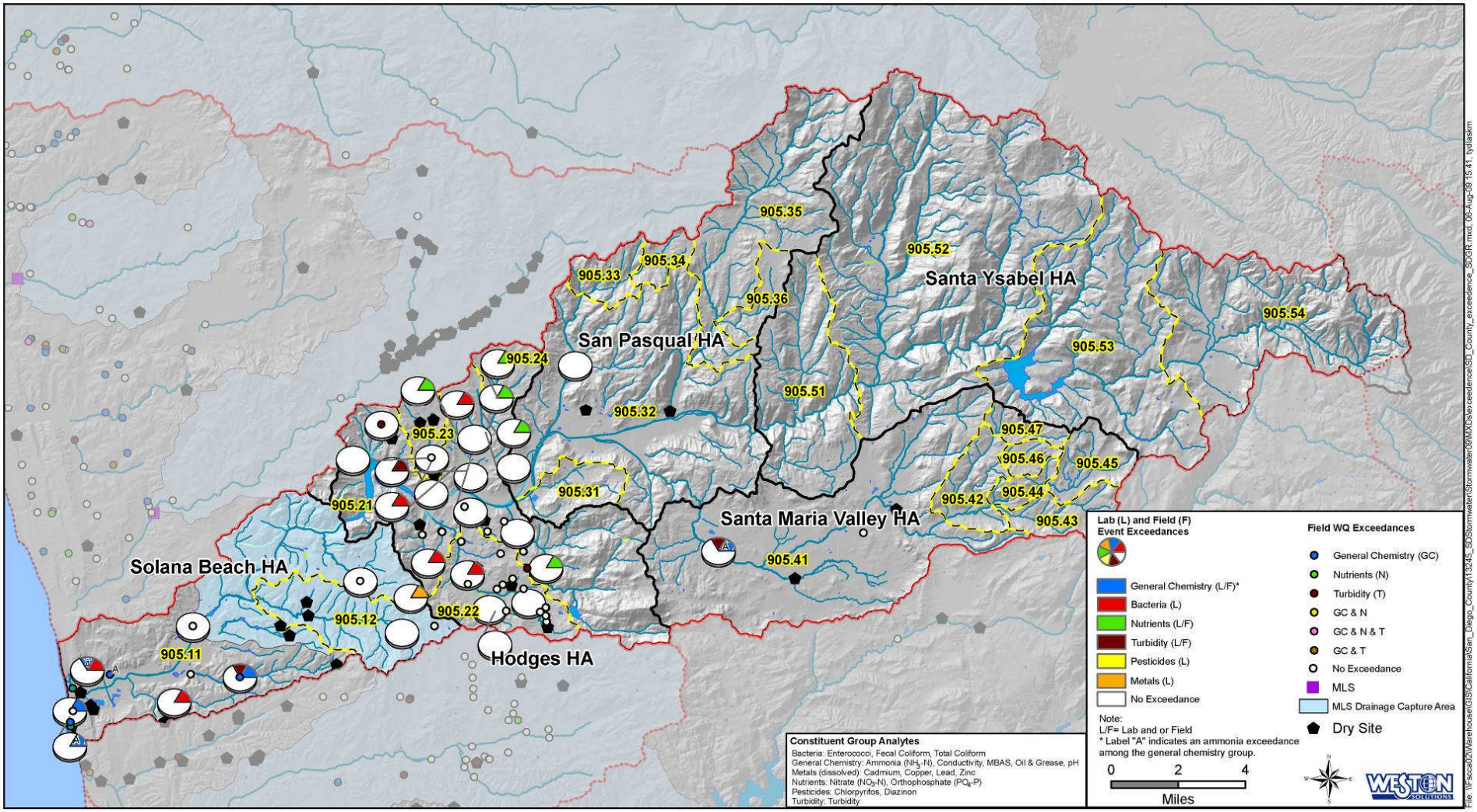

Figure 2-3 San Dieguito WMA 2008–2009 Dry Weather Monitoring Exceedance Map

The trash assessment conducted in 2008–2009 as part of the Jurisdictional dry weather monitoring (DWM) program was used to identify sources of trash in the San Dieguito River WMA. A total of 136 sites spanning five HSAs were assessed for trash in the WMA. The middle area of the lower portion of the WMA had the greatest proportion of trash and the greatest percentage of sites with Suboptimal or Marginal ratings, indicating that this portion of the watershed contained the greatest amount of trash in the WMA. This result coincides with the urbanized population centers and major transportation corridors, which are also found in this portion of the WMA. Trash at one site assessed with a Submarginal rating consisted primarily of food packaging, and trash at six sites consisted of household trash. The potential route of the debris was noted on the field forms for sites with Submarginal and Poor ratings, and possible choices for the route the debris may have taken to arrive at the site included dumping, littering, upstream, and unable to determine. The route of the debris for the Submarginal rated site in the San Dieguito River WMA was listed as dumping. See **Figure 2-4** on the following pages for the Trash Assessment results.

A dry weather source identification study of single family residences was conducted by the Copermittees during the 2008-2009 Monitoring Season. Nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables associated with residential lawn watering).

Core Question 5: Are conditions in receiving waters getting better or worse?
Based on the trend analysis, conductivity, Total Kjedahl Nitrogen (TKN), and total phosphorus appear to be increasing over time at this site.

Although the concentrations of total phosphorus appear to be increasing over time, they do not appear to be a great concern relative to their respective benchmark. The concentrations remain well below the established wet weather benchmark.

Conductivity and TKN do not currently have benchmarks for comparison. If the trends continue at the current observed rate of increase, it is possible that concentrations of TKN will increase by approximately 1 mg/L every 38 years, and the measures of conductivity will increase by approximately 1,000 umhos/cm every 42 years.

The bioassessment ratings at the San Dieguito TWAS-1 were Very Poor during the 2007-2008 season. The bioassessment ratings at the San Dieguito MLS have been Poor in nearly all assessments conducted from 2002 to 2008, and there are no apparent trends in the benthic community. Similarly, the bioassessment ratings at the San Dieguito TWAS-2 have been Fair in the assessments conducted in 2006–2007 Monitoring Season to the 2008–2009 Monitoring Season.

Toxicity is not a persistent issue in the San Dieguito River WMA. However, toxicity has been observed in samples collected from the San Dieguito River MLS during various monitoring years. Between 2001 and 2008, 43% of samples have been toxic to *C. dubia* 7-day reproduction, 29% of samples have been toxic to *S. capricornutum* 96-hour survival, 5% of samples have been toxic to *H. azteca* 96-hour survival, and 5% of samples have been toxic to *C. dubia* 96-hour survival, but no trends in the data set are apparent.

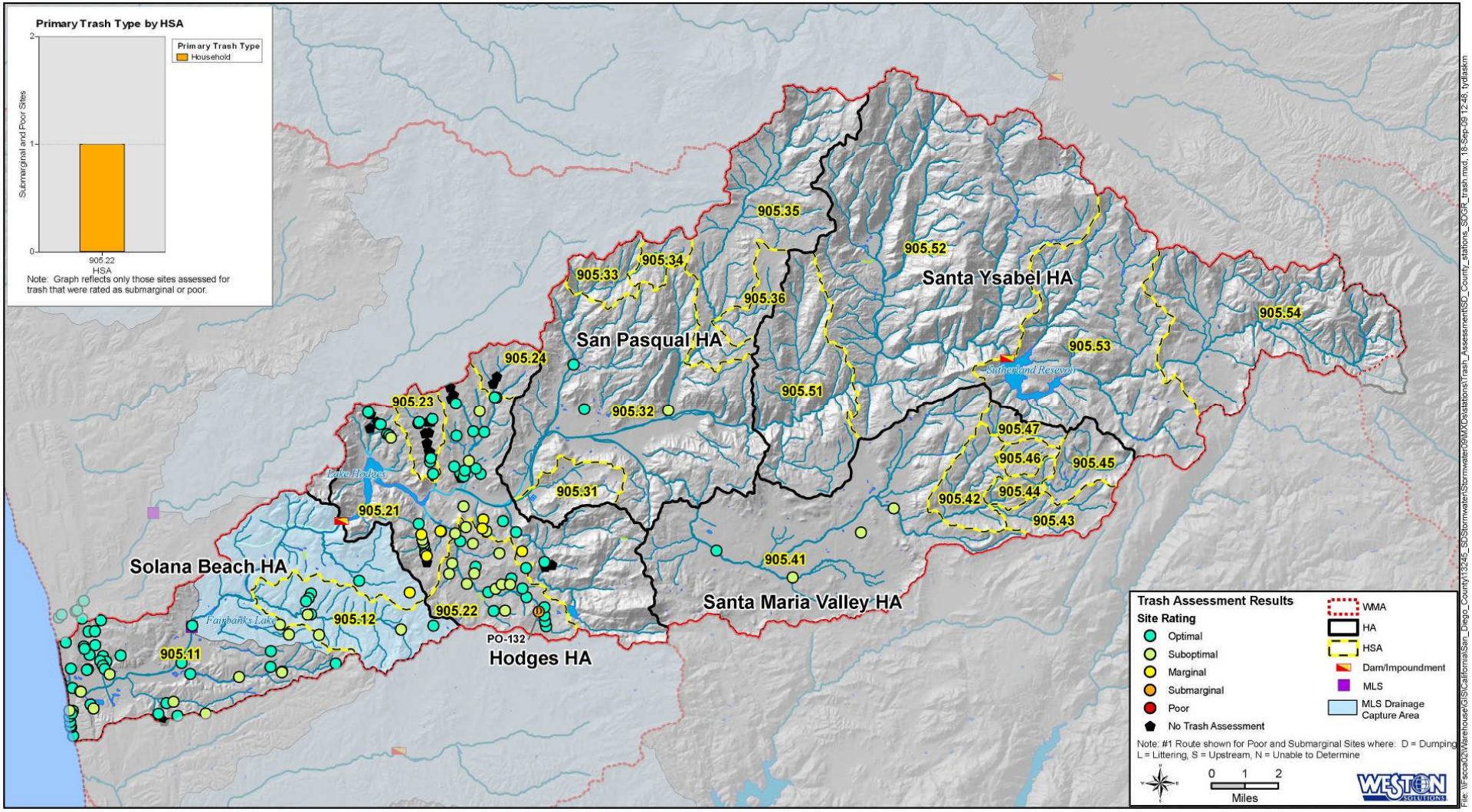

Figure 2-4 San Dieguito WMA 2008–2009 Trash Assessment Results

2.4 INTEGRATED ASSESSMENT

Assessment of the San Dieguito WMA during both wet weather and ambient weather monitoring conditions is presented in an integrated manner to provide managers with an overall assessment of the WMA and to provide answers to the core management questions as described in the regional monitoring program. The integrated assessment provides the results of the receiving water assessments and urban runoff assessments during both storm events and ambient weather events. It also provides a summary of the overall WMA findings. The integrated assessment further provides the ability to identify where COCs overlap between urban runoff and receiving waters. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as additional data become available in future years. Integrated WMA assessments results are presented in **Table 2-4**.

2.5 HIGH PRIORITY WATER QUALITY PROBLEMS

Based on the assessments above and the available water quality data, the San Dieguito WURMP Copermittees have determined that the HPWQPs in the San Dieguito WMA are:

1. Bacteria in all HAs (under ambient and wet weather conditions)
2. Nutrients in the San Pasqual Hydrologic Area

It should be noted that the HPWQPs have not changed from previous assessments or the 2008 San Dieguito WURMP, even though this year's assessment included the second year of expanded monitoring data as required under Order No. R9-2007-0001.

Table 2-4 Integrated Watershed Area Management Assessment

Assessment Category		Program	Parameters With Results Above the Receiving Water Benchmarks or Action Levels For Dry Weather Monitoring Data	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	Ambient Receiving Water	SMC and Bioassessment Monitoring[2]	TDS, TSS, Turbidity, BOD, MBAS, Chloride, Sulfate, Total nitrogen, Total phosphorous, Fecal Coliform, Enterococci	*	Yes	Several constituents were measured at concentrations greater than their respective benchmarks; however, an ambient assessment was not conducted due to the limited data set. The dry weather MS4 monitoring results suggest that the MS4 effluent may have the potential to contribute to receiving water problems for constituents with concentrations greater than the benchmark.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring	Dissolved copper	NA		
		MS4 Random Dry and Targeted Dry Monitoring[2]	TDS, TSS, Chloride, Sulfate, Total nitrogen, Total phosphorus, Fecal coliform, Enterococci, Total Aluminum, Total Manganese	NA		
Wet Weather	Wet Weather Receiving Water[1]	MLS and Bioassessment Monitoring	♦♦♦-TDS ♦♦-Fecal coliform ♦-TSS, Turbidity	No		TDS was identified as a high frequency of occurrence COC during wet weather conditions, fecal coliform as a medium frequency of occurrence COC, and TSS and turbidity as low frequency of occurrence COC. Of these, TDS was concentrations were greater than the benchmark in both ambient and MS4 monitoring; suggesting that the MS4 may have the potential to contribute to elevated TDS in the receiving waters. Toxicity to Hyalella azteca was not identified as persistent based on the cumulative data, but in 2007-2008, toxicity was measured in samples from of two monitoring events at SDC-TWAS-1 (Green Valley Creek) and one storm event at the MLS.
	Wet Weather Urban Runoff Areas	MS4 Random Wet and Targeted Wet Monitoring[2]	Total phosphorus, Total nitrogen, TSS, Fecal coliform	NA		

*Ambient sampling as part of normal permit was not monitored due to Bight '08 participation.

NA = Not assessed, Not Applicable, or Not Analyzed.

[1]Frequency of occurrence ratings are only applicable to wet weather receiving water data. A minimum of 3 years of data is needed for other elements of the program to assess frequency of occurrence.

[2]Concentration was compared to receiving water benchmarks for comparative purposes only.

3 POLLUTANT SOURCES ASSESSMENT

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Dieguito WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by HA.

Table 3-1 summarizes the land use in each of the HAs. Land use information is generally associated with wet weather urban runoff where rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to dry weather urban runoff that is generally associated with point dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant generating activities and from the path of the urban runoff as it enters and travels through the MS4.

Tables 3-2 through **3-6** present a limited inventory that the Copermittees currently track of pollutant generating sources by HA. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight signifies HPWQP). This HPWQP is then associated with the sources that are likely to generate those pollutants (blue highlight). The process used to develop the tables was taken directly from the Baseline Long-Term Effectiveness Assessment (BLTEA) (Weston, MOE, LWA, 2005). The data used for the process includes the following: (1) results in the 2008-2009 Regional Annual Monitoring Report (Weston Solutions, 2007); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the BLTEA (Weston, MOE, LWA, 2005).

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)				
	905.1	905.2	905.3	905.4	905.5
Open Space	11,811.7	12,038.1	27,837.5	15,164.0	67,813.7
Single Family Residential	5,373.5	6,957.5	226.5	802.2	12.5
Transportation	3,275.8	2,424.0	372.6	966.0	354.1
Agricultural	3,196.0	1,818.8	11,392.8	6,517.7	9,561.5
Rural Residential	2,980.4	3,065.0	3,103.5	11,554.5	3,101.8
Park	1,593.3	1,079.2	223.4	233.5	0.0
Industrial	801.5	161.4	91.8	477.8	13.5
Multiple Family Residential	646.1	736.0	4.6	256.7	25.6
Commercial	373.7	410.3	0.0	136.2	11.6
Institutional	229.6	360.8	27.1	254.4	2.7
Recreation	202.7	109.2	102.4	60.7	183.7
Water	162.6	992.9	13.4	0.0	547.2
Under Construction	90.9	15.9	17.3	92.1	34.1
Municipal	48.6	23.1	0.0	37.5	71.8
Military	9.7	15.3	26.2	2.3	0.0
Prison	0.0	0.0	0.0	0.0	0.0

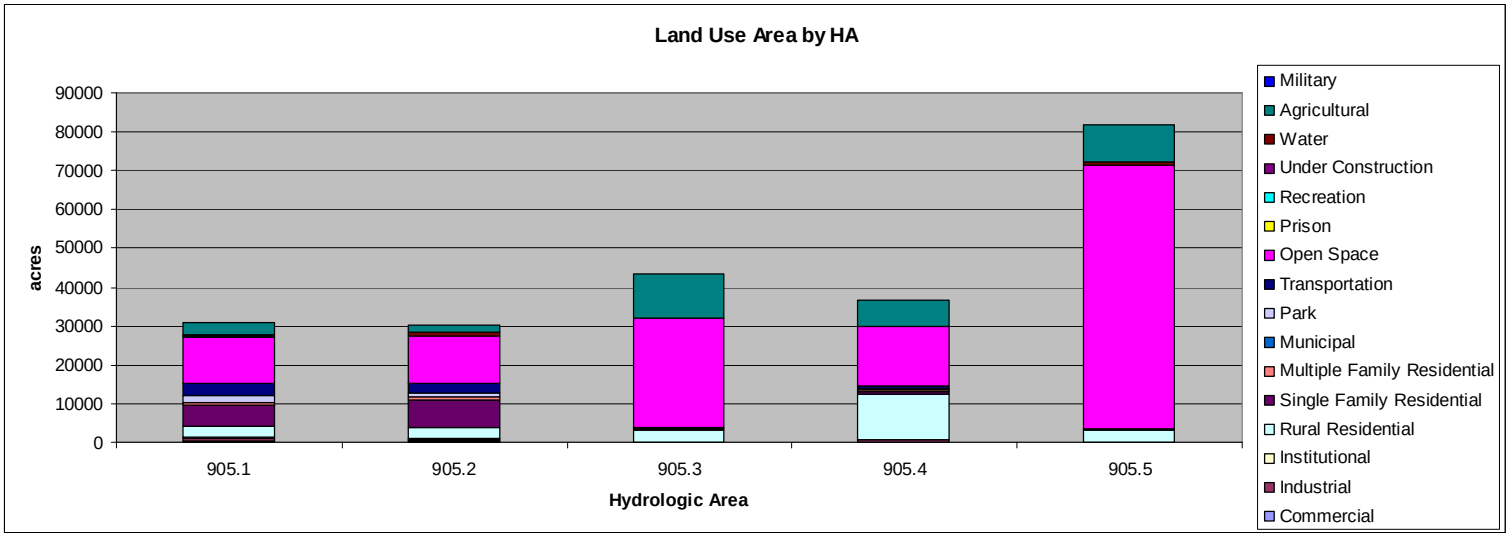

Source: SANDAG

Table 3-2 Pollutant Generating Sources – 905.1 Solana Beach Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	20			N	L	UL	L	UK	L	UK	L
Automotive	58			L	L	L	UL	UL	UK	L	UL
Contractor	58			UL	UL	UL	L	UL	UL	L	UL
Food Establishments	147			N	L	L	UL	UK	UK	L	L
Equipment	6			L	L	L	UL	UL	UK	L	UL
Fueling	6			UK	L	L	UK	N	N	UK	N
General Industrial	1			L	L	L	UK	UK	UK	UK	UK
General Retail	6			UL	UL	UL	L	UL	UL	L	UL
Golf	8			N	N	UL	L	L	L	L	L
Manufacturing	21			L	UK	UK	UK	UK	UK	UK	UL
Metal	5			L	L	L	UK	UK	UK	UK	UL
Nursery	5			L	UL	UL	L	L	L	UK	L
Stone	2			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	54			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	37	17									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	204	10	451								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-2 Pollutant Generating Sources – 905.2 Hodges Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	8			N	L	UL	L	UK	L	UK	L
Automotive	69			L	L	L	UL	UL	UK	L	UL
Contractor	97			UL	UL	UL	L	UL	UL	L	UL
Food Establishments	174			N	L	L	UL	UK	UK	L	L
Equipment	6			L	L	L	UL	UL	UK	L	UL
Fueling	11			UK	L	L	UK	N	N	UK	N
General Retail	4			UL	UL	UL	L	UL	UL	L	UL
Golf	4			N	N	UL	L	L	L	L	L
Institutional	3			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	18			L	UK	UK	UK	UK	UK	UK	UL
Metal	2			L	L	L	UK	UK	UK	UK	UL
Nursery	5			L	UL	UL	L	L	L	UK	L
Storage & Warehousing	54			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	21	4									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	9	29	188								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-3 Pollutant Generating Sources – 905.3 San Pasqual Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	1			N	L	UL	L	UK	L	UK	L
Automotive	1			L	L	L	UL	UL	UK	L	UL
Contractor	1			UL	UL	UL	L	UL	UL	L	UL
Food Establishments	1			N	L	L	UL	UK	UK	L	L
Equipment	1			L	L	L	UL	UL	UK	L	UL
General Retail	1			UL	UL	UL	L	UL	UL	L	UL
Golf	1			N	N	UL	L	L	L	L	L
Institutional	1			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	1			L	UK	UK	UK	UK	UK	UK	UL
Mining	1			L	UK	UK	L	UK	UK	UK	UL
Nursery	7			L	UL	UL	L	L	L	UK	L
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	6	2									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	5	3	137								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-4 Pollutant Generating Sources – 905.4 Santa Maria Hydrologic Area*

Inventory Sites/Facilities**	Quantities	Pollutant Source Loading Potential***							
		Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	17	N	L	UL	L	UK	L	UK	L
Automotive	40	L	L	L	UL	UL	UK	L	UL
Cemetery	1	N	N	UL	L	L	L	L	L
Contractor	6	UL	UL	UL	L	UL	UL	L	UL
Food Establishments	57	N	L	L	UL	UK	UK	L	L
Equipment	7	L	L	L	UL	UL	UK	L	UL
Fueling	11	UK	L	L	UK	N	N	UK	N
General Retail	4	UL	UL	UL	L	UL	UL	L	UL
Golf	1	N	N	UL	L	L	L	L	L
Manufacturing	1	L	UK	UK	UK	UK	UK	UK	UL
Metal	2	L	L	L	UK	UK	UK	UK	UL
Mining	1	L	UK	UK	L	UK	UK	UK	UL
Nursery	16	L	UL	UL	L	L	L	UK	L
Stone	3	L	UK	UK	UK	UK	UK	UK	UL
Municipal	High: 6; Low: 7	L	L	L	L	UK	UK	UK	UL
Construction	High: 7; Medium: 8; Low: 299	UL	UL	UL	L	UL	UL	L	UL

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-5 Pollutant Generating Sources – 905.5 Santa Ysabel Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	2			N	L	UL	L	UK	L	UK	L
Automotive	1			L	L	L	UL	UL	UK	L	UL
Food Establishments	4			N	L	L	UL	UK	UK	L	L
Fueling	1			UK	L	L	UK	N	N	UK	N
Municipal	High	Low		L	L	L	L	UK	UK	UK	UL
	2	0									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	1	0	42								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

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4 IMPLEMENTATION OF WATERSHED ACTIVITIES

4.1 JURMP AND WATERSHED ACTIVITIES

The San Dieguito WURMP Copermittees are responsible for implementing JURMP activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. These activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

In addition to the JURMP activities, the San Dieguito WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed or jurisdictional level. The activity selection process is described fully in the March 2008 San Dieguito WURMP.

The tables below present the Copermittees' initial effort towards reporting all urban runoff management activities on a watershed basis, e.g., reporting of Copermittee activities regardless of bureaucratic program labels. Reporting as many urban runoff management activities as feasible on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements. The tables identify the JURMP and WURMP activities that are associated with the HPWQPs in each HA.

Collectively, the Copermittees conducted:

- Five (5) watershed water quality and two (2) watershed education activities in the Solana Beach HA (905.1);
- Five (5) watershed water quality and two (2) watershed education activities in the Hodges HA (905.2);
- One (1) watershed water quality and two (2) watershed education activities in the San Pasqual HA (905.3);
- Two (2) watershed water quality and two (2) watershed education activities in the Santa Maria HA (905.4); and,
- One (1) watershed water quality and two (2) watershed education activities in the Santa Ysabel HA (905.5);

Some of these activities overlapped HAs.

Table 4-1 JURMP and WURMP Activities – 905.1 Solana Beach Hydrologic Area*

Activity		Results # of Inspections:(Inventory #)	High Priority Water Quality Problem(s) Bacteria/Pathogens
Inspections	Animal	13: (20)	X
	Food Establishment	84 :(147)	X
	Golf	7: (8)	X
	Nursery	5 :(5)	X
Street Sweeping (Tons Collected)		854	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,344	X
SDG-WQA2	Land Acquisitions		X
SDG-WQA10	Targeted Inspections		X
SDG-WQA14	Park and Open Space Irrigation and Controllers		X
SDG-WQA15	Median Irrigation System Replacement		X
SDG-WQA19	Pet Waste Dispenser Program in County Parks		X
SDG-WQEA1	Water Conservation Outreach		X
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist		X

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

Table 4-2 JURMP and WURMP Activities – 905.2 Hodges Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s) Bacteria/Pathogens
Inspections	Animal	3: (8)	X
	Food Establishment	99: (174)	X
	Golf	3: (4)	X
	Nursery	4: (5)	X
Street Sweeping (Tons Collected)		674	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,156	X
SDG-WQA2	Land Acquisitions		X
SDG-WQA4	San Diego Coastkeeper Trash Cleanup Sponsorship		X
SDG-WQA10	Targeted Inspections		X
SDG-WQA13	ILACSD Trash Cleanup Sponsorship		X
SDG-WQA19	Pet Waste Dispenser Program in County Parks		X
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist		X
SDG-WQE4	Mobile Advertising		X

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

Table 4-3 JURMP and WURMP Activities – 905.3 San Pasqual Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s)	
			Bacteria/ Pathogens	Nutrients
Inspections	Animal	0: (1)	X	X
	Food Establishment	1: (1)	X	
	Golf	1: (1)	X	X
	Nursery	3: (7)	X	X
Street Sweeping (Tons Collected)		328	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,388	X	X
SDG-WQA2	Land Acquisitions		X	X
SDG-WQEA2	LID and Watershed Planning Education for Community Planning and Sponsor Groups		X	X
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist		X	X

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

Table 4-4 JURMP and WURMP Activities – 905.4 Santa Maria Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s) Bacteria/Pathogens
Inspections	Animal	10: (17)	X
	Cemetery	1: (1)	X
	Food Establishment	12: (57)	X
	Golf	1: (1)	X
	Nursery	7: (16)	X
Street Sweeping (Tons Collected)		261	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		2,278	X
SDG-WQA2	Land Acquisitions		X
SDG-WQA19	Pet Waste Dispenser Program in County Parks		X
SDG-WQEA2	LID and Watershed Planning Education for Community Planning and Sponsor Groups		X
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist		X

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

Table 4-5 JURMP and WURMP Activities – 905.5 Santa Ysabel Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s) Bacteria/Pathogens
Inspections	Animal	0: (2)	X
	Food Establishment	1: (4)	X
Street Sweeping (Tons Collected)		170	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,483	X
SDG-WQA2	Land Acquisitions		X
SDG-WQEA2	Lid and Watershed Planning Education for Community Planning and Sponsor Groups		X
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist		X

*Prepared based on the WURMP Copermittees FY 2009 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix B** to this report

4.2 Watershed Education Activities

This section describes activities implemented by the San Dieguito WURMP Copermittees during the FY 2009 reporting period to enhance the general public's understanding of basic

watershed principles and sources of water pollution. The San Dieguito WURMP Copermittees are responsible for identifying and implementing education activities that address the HPWQPs in the San Dieguito WMA. The activity selection process is described fully in the 2008 San Dieguito WURMP.

The San Dieguito WURMP Copermittees have made significant progress in developing and implementing programs aimed at improving storm water and urban runoff water quality in the WMA. **Table 4-3** below list the four education activities implemented during FY 2009 by the San Dieguito WURMP Copermittees. In addition, other activities were in the active planning or assessment phases during the reporting period. For more details on all of the activities, refer to **Table 4-10** and **Appendix C**.

Table 4-6. Watershed Education Activities Implemented During FY 2009

ID #	Activity/Project Name
WQEA1	Residential Water Conservation Outreach
WQEA2	LID and Watershed Planning Education
WQEA3	Public Service Announcements: Karma/Karma Second Chance
WQEA4	Mobile Advertising

The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix C**) and are summarized in Section 5 – Effectiveness Assessment.

4.3 Public Participation Activities

4.3.1 Introduction

The Public Participation component of the 2008 San Dieguito WURMP encourages residents and organizations within the WMA (such as other agencies, private companies, and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water, and other methods, including direct interaction of San Dieguito WURMP Copermittee staff with members of the public.

4.3.2 Activities Conducted

WURMP documents and reports are posted on the Project Clean Water website, where they are available to all interested stakeholders. During FY 2009, the San Dieguito watershed web page on the Project Clean Water website received 1,706 hits and the San Dieguito WURMP page received 540 hits. These totals are similar to those seen in the previous reporting period. A monthly breakdown of the hits can be found in the tables below.

Table 4-7 Numbers of Hits on the Project Clean Water San Dieguito WMA Web Site

July 08	Aug 08	Sep 08	Oct 08	Nov 08	Dec 08	Jan 09	Feb 09	March 09	April 09	May 09	June 09	Total
139	142	135	168	159	126	134	162	177	117	124	123	1,706

Table 4-8 Numbers of Hits on the Project Clean Water San Dieguito WMA Web Site

July 08	Aug 08	Sep 08	Oct 08	Nov 08	Dec 08	Jan 09	Feb 09	March 09	April 09	May 09	June 09	Total
41	36	42	58	63	46	46	48	59	30	31	40	540

During this reporting period, the San Dieguito WURMP Copermittees participated in 15 community events that reached more than 5,000 participants, as shown in **Table 4-9** below. Watershed concepts and principles were incorporated into booth displays and event activities.

Table 4-9 Community Events in FY 2009

Date	Event Title	Target Audience	Estimated Attendance	Location	Jurisdiction
8/23/2008	Beach Blanket Movie Night	Public	400	Fletcher Cove	Solana Beach
10/25/2008	Community Cleanup Day	Public	200	Various Locations	Solana Beach
2/8/2009	Community Cleanup Day	Public	200	Various Locations	Solana Beach
2/27/2009	Build It Green Fair	Public	400	Fletcher Cove	Solana Beach
2/29/2008	Spring Home and Garden Show	Public	250	Del Mar Fairgrounds	Del Mar
3/29/2009	Paws in the Park	Public	1,500	Kit Carson Park	Escondido
3/25/2009	Paws in the Park	Public	400	La Colonia Community Park	Solana Beach
05/17/09	Coastal Cleanup Day	Public	200	Fletcher Cove	Solana Beach
04/17/09-04/19/09	Del Mar National Horse Show	Public	62	Del Mar Fair Grounds	Del Mar
04/23/09	Earth Day	Public	50	Ramona	County
04/24/09-04/26/09	Del Mar National Horse Show	Public	85	Del Mar Fair Grounds	Del Mar
05/01/09-05/03/09	Del Mar National Horse Show	Public	25	Del Mar Fair Grounds	Del Mar
6/6/09 - 6/7/09	Fiesta Del Sol	Public	1,000	Solana Beach	Solana Beach
06/01/09	Agriculture Day	Public	125	Del Mar Fair Grounds	Del Mar
09/20/2008	Coastal Cleanup Day	Public	300	Fletcher Cove	Solana Beach

4.3.3 Future Efforts

The San Dieguito WURMP Copermittees will continue to provide opportunities for residents and other interested parties to participate in San Dieguito WURMP activities. Draft documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the San Dieguito WMA.

4.4 Collaborative Land-Use Planning Efforts

4.4.1 Introduction

The Land-Use Planning component of the 2008 San Dieguito WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across San Dieguito WURMP Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities.

4.4.2 Activities Conducted

Integrated Regional Water Management (IRWM)

The WURMP Copermittees have been active participants in the Integrated Regional Water Management (IRWM) planning process (IRWMPP). The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders. Participation in the IRWMPP has already led to funding approval for a number of BMP installation projects that will benefit the WMA by reducing runoff.

Low Impact Development Handbook

Coordination of land-use planning will also benefit from the development of the Low Impact Development (LID) Handbook and the associated education program. The Handbook, which was developed by the County of San Diego in association with the LID Technical Advisory Committee, was completed in December 2007. The LID and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on LID and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved within the unincorporated County, this ongoing education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect WMA water quality.

This education program, which consists of a PowerPoint presentation, was successfully developed on schedule during the spring of FY 2008. During FY 2009, County staff presented the trainings to five (5) planning and sponsor groups in the San Dieguito WMA. More information can be found in **Appendix C** for the activity.

Quality of Life Initiative

The County of San Diego has been invited to participate in SANDAG's Quality of Life Funding Strategy, and asked to take the lead on the Water Quality Enhancement Element. Based upon past analysis from SANDAG's Regional Comprehensive Plan (RCP), it has been determined that the region lacks a long-term and sustainable funding source for different areas of infrastructure, including stormwater. The County will be working collaboratively with other Copermittees, as well as interested regional stakeholders to vet through a variety of funding options, conduct a regional needs assessment and help establish funding priorities related to water quality. This is an ongoing effort, which currently has a vision through 2012. Work products will be produced as early as fall of 2010.

4.4.3 Future Efforts

In FY 2010, the City of San Diego will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will begin. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the City and other jurisdictions.

The San Dieguito WURMP Copermittees remain committed to encouraging collaborative, watershed-based land-use planning in their jurisdictional planning departments. The San Dieguito WURMP Copermittees will continue to work together to seek additional means of collaboration in this area.

4.5 5-Year Strategic Plan

4.5.1 New Watershed Activities

Proposed watershed activities Implementation Sheets can be found in **Appendix C**. New activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA.

Each activity on the WMA activities list is fully described in an Activity Implementation Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQPs of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The San Dieguito WURMP Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no less than two watershed water quality activities will be in an active implementation phase. A watershed water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's HPWQPs. Watershed water quality activities that are capital projects are in active implementation for the first year of implementation only.

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

4.5.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the 2008 San Dieguito WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the High HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees made appropriate management decisions on which watershed water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the San Dieguito WURMP Copermittees used available information to

identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The Updated 5-Year Strategic Plan presented at the end of this section is intended to supersede earlier versions presented in the 2008 San Dieguito WURMP and January 2009 WURMP Annual Report.

Table 4-10 5-Year Strategic Plan

Water Quality Activity/Project Name		Jurisdiction(s)	Watershed Priorities		Implementation Schedule			
			Bacteria	Nutrients	FY 2009	FY 2010	FY 2011	Future Fiscal Year(s)
SDG-WQA1	Santa Maria Creek Protection and Restoration Project	COUNTY	X		Completed – Will no longer be reported			
SDG-WQA2	Land Acquisitions	COUNTY	X		WQI	WQI	WQI	WQI
SDG-WQA3	Municipal Rain Barrel Installation and Downspout Disconnects	SD	X		P	WQI	-	-
SDG-WQA4	SDCK Trash Cleanup Sponsorship	SD	X		WQI	WQI	WQI	WQI
SDG-WQA5	Sediment & Peak Flow Controls #1	SD	X	X	-	-	-	WQI
SDG-WQA6	Sediment & Peak Flow Controls #2	SD	X	X	-	-	-	WQI
SDG-WQA10	Targeted Inspections (formerly Targeted Restaurant Facility Inspections)	SD	X	X	WQI	WQI	WQI	WQI
SDG-WQA11	Bernardo Center Drive Trash Segregation BMP	SD	X		P	P	WQI	WQI
SDG-WQA13	ILACSD Trash Cleanup Sponsorship	SD	X		WQI	WQI	WQI	WQI
SDG-WQA14	Park and Open Space Irrigation and Controllers	DM	X	X	WQI	A	-	-
SDG-WQA15	Median Irrigation System Replacement	DM	X	X	WQI	A	-	-
SDG-WQA16	Increase Trash Receptacles and Dogi-Pot stations	ESC/POW/SD/SB	X	X	P	WQI	WQI	WQI
SDG-WQA17	Focused Restaurant Inspections	ESC/SB/DM	X	X	P	WQI	WQI	WQI
SDG-WQA18	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	X	X	P	P	WQI	A
SDG-WQA19	Pet Waste Bag Dispenser Program in County Parks	COUNTY	X		WQI	WQI	WQI	WQI
SDG-WQA20	Irrigation Hardware Giveaway and Cash for Plants Program	SD	X	X	-	P	P	WQI
SDG-WQA21	Sweeping Route Posting and Enforcement	SD	X		-	P	P,WQI	WQI
SDG-WQA22	City of San Diego *Strategic Plan for Watershed Activity Implementation*	SD	X	X	I	I	I	I
SDG-WQA23	Ramona County Library Project	COUNTY	X	X	-	P	WQI	A
SDG-WQA24	San Dieguito River Volunteer Clean Up Event	COUNTY	X	X	-	WQI		

Table 4-10 5-Year Strategic Plan - Continued

Education Activity/Project Name		Jurisdiction(s)	Watershed Priorities		Implementation Schedule			
			Bacteria	Nutrients	FY 2009	FY 2010	FY 2011	Future Fiscal Year(s)
SD-WQEA1	Residential Water Conservation Outreach	DM	X	X	WE	WE	WE	-
SD-WQEA2	LID and Watershed Planning Education	COUNTY /DM	X		WE	-	-	-
SD-WQEA3	Public Service Announcements: *Karma/Karma Second Chance Public Service Announcements*	SD	X		WE	WE	WE	WE
SD-WQEA4	Mobile Advertising (General; Bacteria)	SD	X		WE	-	-	-
SD-WQEA6	CBSM Outreach Pilot Project	SD	X		Project on hold			
SD-WQEA8	Erosion and Sediment Control Poster	SD	X		E	E	E	E
SD-WQEA9	Restaurant Best Management Practices Booklet	SD	X		E	E	E	E
SD-WQEA10	Watershed Brochure	SD	X	X	P	WE	-	-

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)

E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

5 EFFECTIVENESS ASSESSMENT

The Municipal Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, and to assess the effectiveness of the activities conducted to meet those goals and objectives or identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.2.i of the Municipal Permit, and reports on the activities planned and implemented during FY 2009.

5.1 ASSESSMENT OF OVERALL WURMP EFFECTIVENESS

Activities collaborated upon and selected by the San Dieguito WURMP Copermittees address the overall goal of the WURMP by focusing on the HPWQPs within the WMA.

As set forth in the Municipal Permit and outlined in the 2008 San Dieguito WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the San Dieguito WURMP Copermittees in FY 2009, and where in this report required compliance points are fulfilled or described.

Table 5-1 Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Not Applicable	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the WMA.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
A description of Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not Applicable	N/A

As shown in the **Table 5-1**, the San Dieguito WURMP Copermittees were in compliance with all Level 1 WURMP related Municipal Permit requirements during FY 2009.

5.1.1 ACTIVITIES ASSESSMENT

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated on and selected activities that would address high level HPWQPs within not only each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in **Appendix C** identifies specific targeted outcomes (Levels 1-6 – as described in **Table 5-2** below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 5-2 Outcome Levels: Levels 1-6

Outcome Level		Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2009, there were eleven (11) activities in the active implementation phase, seven (7) of which focused on water quality and four (4) focused on education. These activities addressed the HPWQPs in the San Dieguito WMA, which include bacteria and nutrients; and are the activities for which the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. **Tables 5-3** through **5-7** below, summarize the assessments of the water quality and

education activities, on a HA-basis, to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the table, the WURMP Copermittees are presenting their JURMP activities that are related to the HPWQPs in each HA. It is important to note that not all JURMP activities are included in this presentation. This year's annual reporting effort is intended to be an initial presentation of JURMP activities that are conducted by WURMP Copermittees that are relatable based on hydrologic area of implementation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

5.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs currently in effect within the San Dieguito WMA.

Table 5-3 Summary of Implemented Activities for FY 2009 – 905.1 Solana Beach Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees collectively inspected the following business categories in the HA: Animal Facilities; Food Establishments; Golf Courses and Nurseries. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	The Copermittees collectively removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 17.4 acres of land acquired during this fiscal year in this HA.
SDG-WQA10	Targeted Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SDG-WQA14	Park and Open Space Irrigation and Controllers	Water Quality	Bacteria	Level 4	Based on observation initial results show the implementation of the controllers has resulted in a reduction in the amount of dry-weather flows from landscaped areas, thus a reduction in Additional benefits include water use efficiency and conservation.
SDG-WQA15	Median Irrigation System Replacement	Water Quality	Bacteria	Level 4	Based on observation initial results show the implementation of the controllers has resulted in a reduction in the amount of dry-weather flows from landscaped areas, thus a reduction in associated pollutant load.
SDG-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2 and 4	9 additional dispensers were added to 3 parks in the County. Reducing the amount of pet waste found in parks and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQEA1	Water Conservation Outreach	Water Education	Bacteria	Level 2	Education and outreach to the community regarding water quality benefits and water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff associated with dry-weather flows.
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist	Water Education	All	Levels 1, 2 and 3	PSAs were developed and broadcast in FY 2009 via TV and radio stations throughout the San Dieguito WMA in both English and Spanish. Effectiveness was measured by tabulating the number of listeners reached by the program via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.

Table 5-4 Summary of Implemented Activities for FY 2009 – 905.2 Hodges Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees collectively inspected the following business categories in the HA: Animal Facilities; Food Establishments; Golf Courses and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	The Copermittees collectively removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA.
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 10.2 acres of land acquired during this fiscal year in this HA.
SDG-WQA4	San Diego Coastkeeper Trash Cleanup Sponsorship	Water Quality	Bacteria	Levels 1 and 4	During this event 112 participants removed approximately 338 pounds of trash and debris with an efficiency of $5.91 per pound collected.
SDG-WQA10	Targeted Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SDG-WQA13	ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Levels 1 and 4	During one event 36 participants removed 62 pounds of trash and debris and recycled 16 pounds of trash and debris. Sponsorship of this event resulted in a load reduction of 78 pounds with an efficiency of $64.10 per pound collected.
SDG-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2 and 4	9 additional dispensers were added to 3 parks in the County. Reducing the amount of pet waste found in parks and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist	Water Education	All	Levels 1, 2 and 3	PSAs were developed and broadcast in FY 2009 via TV and radio stations throughout the San Dieguito WMA in both English and Spanish. Effectiveness was measured by tabulating the number of listeners reached by the program via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.
SDG-WQE4	Mobile Advertising	Water Education	All	Levels 1, 2 and 3	Mobile advertising is intended to educate the public about the causes of storm water pollution, and to encourage positive behavioral change.

Table 5-5 Summary of Implemented Activities for FY 2009 – 905.3 San Pasqual Hydrologic Area (HPWQPs = Bacteria & Nutrients)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees collectively inspected the following business categories in the HA: Food Establishments; Golf Courses and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	The Copermittees collectively removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria and nutrients in the HA.
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 1,515 acres of land acquired during this fiscal year in this HA.
SDG-WQEA2	LID and Watershed Planning Education for Community Planning and Sponsor Groups	Water Education	All	Levels 1 and 2	Expected change in knowledge and BMP implementation
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist	Water Education	All	Level 1, 2 and 3	PSAs were developed and broadcast in FY 2009 via TV and radio stations throughout the San Dieguito WMA in both English and Spanish. Effectiveness was measured by tabulating the number of listeners reached by the program via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.

Table 5-6 Summary of Implemented Activities for FY 2009 – 905.4 Santa Maria Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees collectively inspected the following business categories in the HA: Animal Facilities; Cemeteries; Food Establishments; Golf Courses and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees collectively removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA.
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 1,515 acres of land acquired during this fiscal year in this HA.
SDG-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2 and 4	9 additional dispensers were added to 3 parks in the County. Reducing the amount of pet waste found in parks and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQEA2	LID and Watershed Planning Education for Community Planning and Sponsor Groups	Water Education	All	Levels 1 and 2	Expected change in knowledge and BMP implementation
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist	Water Education	All	Level 1, Level 2 and Level 3	PSAs were developed and broadcasted in FY 2009 via TV and radio stations throughout the San Dieguito WMA in both English and Spanish. Effectiveness was measured by tabulating the number of listeners reached by the program via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.

Table 5-7 Summary of Implemented Activities for FY 2009 – 905.5 Santa Ysabel Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees collectively inspected the following business categories in the HA: Food Establishments.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level 1 and 4	The Copermittees collectively removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA.
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 139 acres of land acquired during this fiscal year in this HA.
SDG-WQEA2	LID and Watershed Planning Education for Community Planning and Sponsor Groups	Water Education	All	Levels 1 and 2	Expected change in knowledge and BMP implementation
SDG-WQEA3	Public Service Announcement: Karma, Karma Second Chance, Karma Tourist	Water Education	All	Levels 1, 2 and 3	PSAs were developed and broadcast in FY 2009 via TV and radio stations throughout the San Dieguito WMA in both English and Spanish. Effectiveness was measured by tabulating the number of listeners reached by the program via surveys. After airing the PSAs, another survey will be conducted to assess changes in knowledge and/or behavior.

6 CONCLUSIONS AND PROGRAM IMPROVEMENTS

6.1 CONCLUSIONS

During FY 2009, the San Dieguito WURMP Copermittees strove to address the overall goal of the WURMP—to positively impact the water quality of the San Dieguito WMA—by focusing on its HPWQPs. To target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 San Dieguito WURMP, which strives to link identified water quality problems to their potential sources. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the HPWQPs in the San Dieguito WMA are bacteria/pathogens in all HAs and nutrients in the San Pasqual HA. It should be noted that the HPWQPs have not changed from previous assessments even though this year's evaluation included the first year of expanded monitoring mandated under the new Municipal Permit.

The San Dieguito WMA consists of five individual HAs or watersheds. Therefore, to effectively address the WMA's water quality issues, the San Dieguito WURMP Copermittees identified and then evaluated them for likely sources at the individual watershed level (please refer to **Tables 3-2** through **3-6**). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; b) water quality and education activities appear to be targeting suspected sources of the high-priority problems and are mostly viewed as effective at reducing the impacts of the sources. Based on this analysis, the San Dieguito WURMP Copermittees focused their activities on the following suspected priority sources: eating/drinking establishments; animal facilities; botanical/zoological gardens; landscaping; auto/mechanical repair, maintenance fueling, or cleaning; and Publicly Owned Treatment Works (POTWs).

The San Dieguito WURMP Copermittees then developed and implemented watershed water quality and education activities to address these HPWQPs and their sources. **Tables 4-1** and **4-2** summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the San Dieguito WURMP Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Municipal Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, eleven (11) activities were implemented, seven (7) of which focused on water quality and four (4) on education. All of these activities concentrated on the priority pollutants in San Dieguito WMA, which are bacteria and nutrients.

In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. The Copermittees believe that it is an important first step towards integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The San Dieguito WURMP Copermittees have responded to meet the challenges of implementing the new requirements outlined in the Municipal Permit as they continue to refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs across the region. Furthermore, the San Dieguito WURMP Copermittees will continue to implement the activities described in Section 4 of this document in future reporting periods.

6.2 PROGRAM IMPROVEMENTS

The lack of water quality data directly related to sources makes true effectiveness assessment of the activities difficult. Without the data, the Copermittees are limited to qualitative assessments, which contain substantial assumptions linking the sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the San Dieguito WURMP Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources, or collect data unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research, analysis of existing data and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level, i.e., evaluating the data from the larger watershed level. Analysis of the data at the HA-level may provide useful information to the 2008 San Dieguito WURMP.

In many cases, water quality data may be unavailable to accurately characterize loading from suspected sources. Where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 San Dieguito WURMP—to determine and target the sources contributing to the HPWQPs – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve water quality within the WMA;
- Integrate watershed principles into land use planning;
- Enhance public understanding of water pollution sources; and
- Encourage and develop stakeholder participation.

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the

Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. It is also recommended that a dialogue be initiated between RWQCB staff and the Copermittees to amend permit language where necessary to better develop and meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The San Dieguito WURMP Copermittees are committed to continue their involvement in this process during the FY 2010 reporting period.

REFERENCES

San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Final Report, Weston, January 2010.

San Dieguito Watershed Urban Runoff Management Program, San Dieguito WURMP Copermittees, March 2008

Appendix A

Excerpt from 2008-2009 San Diego County Municipal Copermittees Urban Runoff Monitoring Report

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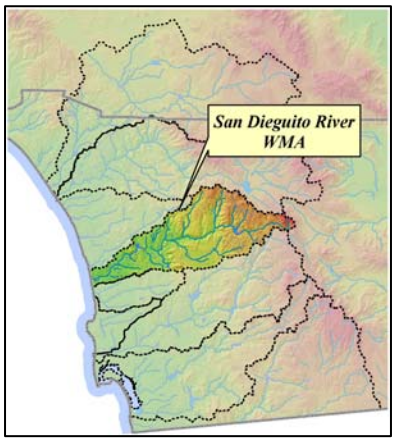

ES.6 SAN DIEGUITO RIVER WATERSHED MANAGEMENT AREA EXECUTIVE SUMMARY

This section summarizes the results and assessment of the 2008–2009 monitoring programs conducted in the San Dieguito River Watershed Management Area (WMA). Monitoring activities conducted in compliance with Regional Water Quality Control Board (RWQCB) Order R9-2007-0001 (Permit) are provided in Table ES.6-1.

Table ES.6-1. 2008–2009 Monitoring Program Activities

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Ambient Monitoring	Water chemistry and toxicity
Rapid Stream Bioassessments	Benthic macroinvertebrates, periphyton, and physical habitat
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, and trash
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria
MS4 Outfall Targeted Monitoring	Chemistry, metals, pesticides and bacteria
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria

The San Dieguito River Watershed drains an area of approximately 221,440 acres in west–central San Diego County. The San Dieguito River watershed extends through a diverse array of habitats from the eastern headwaters in the Volcan Mountains to the outlet at the San Dieguito Lagoon and Pacific Ocean. The watershed consists of five hydrologic areas (HAs). The watershed includes portions of the City of Del Mar, the City of Escondido, the City of Poway, the City of San Diego, the City of Solana Beach, and unincorporated areas of San Diego County. Land use within the watershed is classified primarily as vacant and undeveloped land (42%). Other major land use classifications are residential (19%), open space / parks and recreation (17%), and agriculture (15%). Transportation, commercial, industrial, public facility, and water comprise the remaining 7% of the watershed. Over 60% of the watershed is privately owned land. The remaining portions are mostly federally or locally owned, and a small percentage of land is state-owned.

Within this watershed, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in Table ES.6-2 with relevant total maximum daily load (TMDL) status. However, several changes are currently proposed in the 2008 Draft 303(d) List currently under development.

Table ES.6-2. San Dieguito River Watershed Management Area State Water Resources Control Board Section 303(d) Listed Waterbodies and Total Maximum Daily Load Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Pacific Ocean Shoreline	Bacterial indicators	Adopted
Green Valley Creek	Sulfates, chloride, manganese, and PCP	Not developed
Lake Hodges	Color, nitrogen, phosphorus, turbidity, manganese, and pH	Not developed
Kit Carson Creek	TDS and PCP	Not developed
Felicita Creek	TDS and aluminum	Not developed
Cloverdale Creek	Phosphorus and TDS	Not developed
Sutherland Reservoir	Color, manganese, and pH	Not developed

Summary of Monitoring Program Data to Address the Permit Core Management Questions

Receiving water monitoring was conducted during one ambient weather event (at one SMC site) and one wet weather event (at the MLS). Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit with the exception of Chollas Creek that is monitored each year. In 2008-2009, the scope of the monitoring program was adjusted due to the Copermittees participation in the Southern California Bight Regional Monitoring Program.

Each element of the Permit-required monitoring program was designed to provide scientific data to address five core management questions. The core management questions, as listed in the Permit, are presented as follows:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring program for each WMA vary across spatial and temporal scales. Therefore, data support only partial resolution of each core management question. Through continued monitoring and the refinement of the Permit requirements a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments were conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach. The results for the San Dieguito River WMA are summarized in Table ES.6-3.

Table ES.6-3. Summary of San Dieguito River Watershed Management Area Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
San Dieguito River WMA	Receiving Water Monitoring Program	Ambient Receiving Water Summary	▪ Constituent Summary: - TDS, chloride, sulfate, and total nitrogen > benchmark in 100% of samples. - Total phosphorus and enterococci > benchmark in 51 to 75% of samples. - TSS, Turbidity, and BOD > benchmark in 25 to 51% of samples. ▪ No constituents had a magnitude of exceedance greater than five times their benchmark.	1, 2
		Wet Weather Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS). - Medium frequency of occurrence (fecal coliform) - Low frequency of occurrence (TSS and turbidity). ▪ No constituents had a magnitude of exceedance greater than five times the benchmark. ▪ No persistent toxicity was observed. ▪ Bifenthrin was not detected in storm water at the MLS site*. ▪ No pyrethroids were detected in post-storm sediment samples at the MLS.	
		Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Very Poor IBI rating at TWAS-1 and Poor at MLS).	
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Results above action levels or receiving water benchmarks - Jurisdictional: Dissolved copper - MS4: TDS, TSS Chloride, Sulfate, Total phosphorus, Total nitrogen, Fecal coliform, Enterococci, Total Aluminum, and Total manganese) ▪ Results suggest that for some constituents, the MS4 runoff may have the potential to contribute to receiving water problems. ▪ CSDM: Coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters.	3, 4
		Wet Weather Urban Runoff Areas Assessment (MS4, CSDM)	▪ The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions. ▪ CSDM: Coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters.	
	WMA Assessment	Receiving Water Trend Assessment	▪ Significantly increasing trends were observed for TKN, total phosphorus, and conductivity. ▪ No significantly decreasing trends were evident.	5
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS is consistent with the 2001–2006 BLTEA ratings as it relates to the Solana Beach, Hodges, and San Pasqual HAs.	

*The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.

Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in Appendix B.

Based on these results, each of the five Core Management Questions are addressed below.

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**

Core Management Question 1 was addressed with the wet weather data assessments. The results of the 2008–2009 monitoring program in the San Dieguito River WMA indicate that TDS was identified as high frequency of occurrence COC. This suggests that some beneficial uses may be impaired by this constituent.

Historical stream bioassessment results indicate evidence of benthic community impairment in the San Dieguito River WMA, with a Very Poor IBI rating at Site SDC-TWAS-1. The San Dieguito River MLS and Site SDC-TWAS-2 have received IBI ratings of Poor and Fair, respectively, since 2002. Additional bioassessment monitoring conducted at SMC sites in the WMA produced similar results. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat and the presence of pesticides. Other constituents not monitored in this program may also play a role in affecting the benthic community. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

Toxicity was not observed during wet weather conditions in the San Dieguito River WMA when sampling occurred on November 12, 2008, at the MLS. In previous years, toxicity has been sporadic and infrequent at this site. Since 2001, toxicity has been identified at either the TWAS or MLS twelve times to *C. dubia* (one 96-hour, two 7-day survival, and nine 7-day reproduction) three times to *H. azteca* (96-hour acute), and six times to *S. capricornutum* (96-hour). There is no evidence of persistent toxicity at this site in ambient or wet weather monitoring. The lack or persistent toxicity at this site indicates that the receiving waters are likely protective of beneficial uses, but may be influenced in localized areas.

2. **What is the extent and magnitude of the current or potential receiving water problems?**

Core Management Question 2 was addressed with magnitude of exceedance ratios for ambient and wet weather conditions in the receiving waters. The San Dieguito River WMA SMC site was evaluated for ambient weather conditions and the San Dieguito River WMA MLS for wet weather conditions. The greatest exceedance ratios during ambient conditions in the San Dieguito River WMA were observed for TSS, total nitrogen, and chloride, and sulfate. The TSS and chloride concentrations were approximately three times greater than the benchmarks. Total nitrogen and sulfate concentrations were one to two times greater than the benchmark. Exceedance ratios during wet weather at the MLS were greatest for TDS and indicator bacteria (i.e., fecal coliforms). The TDS concentration during the 2008 storm event was almost five times greater than the benchmark, which is slightly higher than the historical mean for the site. The fecal coliform concentration during wet weather in 2008–2009 was twice the benchmark, which is lower than the historical mean for the site.

Receiving water spatial patterns in the San Dieguito River WMA could not be evaluated during the 2008–2009 Monitoring Season because only one site was monitored for each of the wet weather and ambient weather conditions.

Historical stream bioassessment ratings conducted in the WMA indicate a Very Poor benthic community at the TWAS-1 location in the Hodges HA, which is downstream of a residential land use community. The consistent rating of Very Poor at the TWAS-1 location since the 2002–2003 Monitoring Season suggests that the impairment on the benthic community at TWAS-1 continues to persist. The MLS site located downstream of Lake Hodges Dam received an IBI rating of Poor. The SDC-TWAS-2 location in the less populated San Pasqual HA received an IBI rating of Fair. These results, in general, are consistent with assessment conducted in the past at these sites and suggest that more urban environments may be a factor influencing degraded benthic conditions.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. In 2008–2009, the San Dieguito River WMA MS4 was assessed through the random dry, random wet, and targeted dry monitoring programs.

Twelve sites were visited as part of the random dry weather program, including six dry sites, two ponded sites, and four flowing sites. Concentrations of several analytes, including total nitrogen, total phosphorus, and indicator bacteria, were greater than benchmarks at the four sites with flow, suggesting that dry weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Of the four sites that were flowing, instantaneous loads were greatest for most COCs at a site located in a higher urbanized area and had the greatest amount of flow.

Five sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes, including total nitrogen, total phosphorus, and indicator bacteria, were greater than benchmarks at some sites, suggesting that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents primarily at a site located in the upper region of HSA 905.22 (Green HSA). The catchment for this site had the second largest area in comparison to the other four sites and was characterized primarily by residential, spaced residential, and open space / parks and recreation land uses.

A total of 18 sites in the San Dieguito River WMA were visited as part of the targeted dry weather program, 16 of which were flowing at the time of the survey. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving benchmarks for the following constituents: oil & grease, chloride, nitrate, total nitrogen, total phosphorus, sulfate, TDS, total metals, dissolved metals, pesticides (i.e., Chlorpyrifos and Diazinon), and indicator bacteria (i.e., fecal coliforms and enterococci). With the exception of oil & grease, pesticides, and dissolved

metals, each of these constituents had concentrations greater than their respective benchmarks at a minimum one of the 14 sites assessed. Concentrations of TDS and total nitrogen exceeded the benchmark most frequently followed by indicator bacteria and total phosphorus. The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded. A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were greatest where flow rates were highest (two sites in the Hodges HA). MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the San Dieguito River WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

The CSDM results indicate that coastal storm drains do not appear to be affecting bacterial concentrations in the coastal receiving waters during dry or wet weather conditions.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional DWM Program, the CSDM Program, the Source Identification Program and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources in regards to the Jurisdictional DWM Program and the CSDM Program can be found in each Copermittee's JURMP Annual Report and in the CSDM Program Annual Report, respectively.

The trash assessment conducted in 2008–2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the San Dieguito River WMA. A total of 136 sites were assessed for trash in the WMA, including nine HSAs. The middle area of the lower portion of the WMA had the greatest proportion of trash and the greatest percentage of sites with Suboptimal or Marginal ratings, indicating that this portion of the watershed contained the greatest amount of trash in the WMA. This result coincides with the urbanized population centers and major transportation corridors, which are also found in this portion of the WMA. Trash at one site assessed with a Submarginal rating consisted primarily of food packaging, and trash at six sites consisted of household trash. The potential trash route was listed as dumping for the Submarginal rated site in the San Dieguito River WMA.

A dry weather source identification study of single family residences was conducted by the Copermittees during the 2008–2009 Monitoring Season. Results indicated that synthetic pyrethroids were commonly detected in runoff from residential land uses in concentrations above published toxicity benchmarks for aquatic invertebrates. Bacteria results were generally higher at sites influenced from overland runoff in comparison to one site influenced from continuous groundwater flows. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables).

5. **Are conditions in receiving waters getting better or worse?**

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the San Dieguito River MLS. Based on the trend analysis, conductivity, TKN, and total phosphorus appear to be increasing over time at this site.

Although the concentrations of total phosphorus appear to be increasing over time, they do not appear to be a great concern relative to their respective benchmark. The concentrations remain well below the established wet weather benchmark.

Conductivity and TKN do not currently have benchmarks for comparison. If the trends continue at the current observed rate of increase, it is possible that concentrations of TKN will increase by approximately 1 mg/L every 38 years, and the measures of conductivity will increase by approximately 1,000 µmhos/cm every 42 years.

The bioassessment ratings at the San Dieguito TWAS-1 have been Very Poor in all assessments conducted from 2002 to 2008, and there are no apparent trends in the benthic community. The bioassessment ratings at the San Dieguito MLS have been Poor in nearly all assessments conducted from 2002 to 2008, and there are no apparent trends in the benthic community. Similarly, the bioassessment ratings at the SDC-TWAS-2 have been Fair in the assessments conducted in 2006–2007 Monitoring Season to the 2008–2009 Monitoring Season.

Toxicity is not a persistent issue in the San Dieguito River WMA. However, toxicity has been observed in samples collected from the San Dieguito River MLS during various monitoring years. Between 2001 and 2008, 43% of samples have been toxic to *C. dubia* 7-day reproduction, 29% of samples have been toxic to *S. capricornutum* 96-hour survival, 5% of samples have been toxic to *H. azteca* 96-hour survival, and 5% of samples have been toxic to *C. dubia* 96-hour survival, but no trends in the data set are apparent.

Recommendations

The recommendations for this watershed are to continue monitoring in accordance with the Permit requirements, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. For the next full round of Permit monitoring in north San Diego County (Permit Year 2010–2011), the Copermittee Monitoring Workgroup will review and consider alternate locations for the TWAS to gather relevant information for assessing the watershed.

Specific recommendations for the San Dieguito River WMA are based on the triad assessment listed in the Permit. Based on wet weather conditions, no action is necessary to address toxic chemicals, but addressing the potential role of urban runoff in causing physical habitat disturbance is recommended.

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6.0 SAN DIEGUITO RIVER WATERSHED MANAGEMENT AREA

This section presents the San Dieguito River Watershed Management Area (WMA) monitoring data for the 2008–2009 Monitoring Season. The following subsections are presented in compliance with the Receiving Waters and Urban Runoff Monitoring Program in Regional Water Quality Control Board (RWQCB) Order R9-2007-0001 (Permit) and to address the core management questions listed in the order. The organization of this WMA section is as follows:

- A discussion of the core management questions listed in the Permit and how this monitoring report addresses each question.
- An overview of the WMA, regulatory water quality challenges, and the monitoring site descriptions used to assess the WMA.
- Watershed monitoring activities and discussion of results.
- A loading analysis and a discussion of flow within the watershed.
- WMA assessments, triad assessment, and Baseline Long-Term Effectiveness Assessment (BLTEA) priority ratings.
- Conclusions and recommendations.

The 2008–2009 report includes several changes from the 2007–2008 Monitoring Program, due primarily to the 2008 Southern California Bight (Bight '08) Regional Monitoring Program sampling conducted in 2008–2009. Monitoring under the Regional Monitoring Program conducted in 2008–2009 included the following:

- Monitoring was required at mass loading stations (MLS) as in previous years, but not at the temporary watershed assessment stations (TWAS). One wet weather event was monitored, but dry weather monitoring was not conducted at the MLS. During the 2007–2008 Permit year, the Copermittees developed a new set of benchmarks based on current and environmentally relevant water quality values. The benchmarks and their associated references are provided in the Methods Section (Appendix B). A trash assessment was conducted as part of the storm event monitoring.
- Ambient Bay and Lagoon Monitoring (ABLM) was not conducted as a separate Copermittee program.
- The MS4 Outfall Monitoring Program was implemented in 2008–2009. The program used a stratified random design for a regional evaluation of the MS4 outfalls as well as a targeted approach at the watershed level. Targeted dry weather MS4 monitoring was conducted by the jurisdictions.
- The Source Identification Program was implemented in 2008–2009. Two sites were assessed, including one in the City of La Mesa in the San Diego Bay WMA and one in the City of Del Mar in the Los Peñasquitos WMA.
- The Copermittees participated in the Stormwater Monitoring Coalition (SMC) Bioassessment Workgroup and the Southern California Regional Watershed Monitoring Program. Ambient water quality monitoring and rapid stream bioassessments were conducted at 16 randomly selected sites throughout the region, which included some WMAs, but not all.

- The WMA assessment methods were modified to use bioassessment data from previous years since the MLS sites were not sampled in 2008–2009 due to the Bight '08 Monitoring Program. This provides an assessment of wet weather and dry weather as well as an integrated assessment of water quality conditions in the WMA.

6.1 Watershed Core Management Questions

This WMA Monitoring Report is designed to answer the following five core management questions listed in Section I.B. of the Receiving Waters and Urban Runoff Monitoring Program:

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**
2. **What is the extent and magnitude of the current or potential receiving water problems?**
3. **What is the relative urban runoff contribution to the receiving water problem(s)?**
4. **What are the sources of urban runoff that contribute to receiving water problem(s)?**
5. **Are conditions in receiving waters getting better or worse?**

While some of the core management questions can be answered through the monitoring and data analyses that occur each year consistent with addressing the intended goals of the Permit, some questions can only be partially answered. However, the program can provide needed data to support other monitoring programs (e.g., bacterial source tracking studies) designed to answer specific questions.

Watershed monitoring results were evaluated to answer the core management questions presented above. For the purposes of assessing this Urban Monitoring Runoff Program, results were categorized and assessed as follows:

- Receiving water quality was assessed for ambient and wet weather conditions separately.
- Trend analyses were conducted for receiving water sites.
- Urban runoff data were assessed for wet weather and ambient weather conditions separately.
- Loading analysis was conducted to determine wet weather, ambient weather, and annual loading as data availability allowed.
- Watershed area evaluations were conducted using the following assessments: frequency of occurrence assessments for ambient and wet weather monitoring; an integrated assessment that combines both ambient and wet weather data; a triad decision matrix that uses chemistry, toxicity, and bioassessment results; and a comparison to a long-term effectiveness assessment.
- Conclusions and recommendations provide a final summary of the results and steps forward.

6.2 San Dieguito River Watershed Management Area Description

The San Dieguito River Watershed drains an area of approximately 221,440 acres in west–central San Diego County (Figure 6-1). The watershed includes portions of the City of Del Mar, the City of Escondido, the City of Poway, the City of San Diego, the City of Solana Beach, and unincorporated areas of San Diego County. The San Dieguito River WMA consists of five hydrologic areas (HAs): Solana Beach (905.1), Hodges (905.2), San Pasqual (905.3), Santa Maria Valley (905.4), and Santa Ysabel (905.5). These five HAs include 23 hydrologic subareas (HSAs) also shown on Figure 6-1. The San Dieguito River Watershed extends through a diverse array of habitats from the eastern headwaters in the Volcan Mountains to the outlet at the San Dieguito Lagoon and Pacific Ocean. Annual precipitation ranges from 13.5 inches near the coast to nearly 35 inches in the eastern portion of the watershed. There are several natural areas within the watershed that sustain a number of threatened and endangered species. These natural areas include the 80,000-acre San Dieguito River Park, the 150-acre San Dieguito Lagoon, and five water storage reservoirs, including Olivenhain, Lake Ramona, Lake Hodges, Lake Sutherland, and Lake Poway.

6.2.1 Land Use

Land use categories within the San Dieguito River WMA are shown on Figure 6-2 (SANDAG, 2007). Land use within the watershed is classified primarily as vacant and undeveloped land (42%). Other major land use classifications are residential (19%), open space / parks and recreation (17%), and agriculture (15%). Transportation, commercial, industrial, public facility, and water land use classifications combined comprise the remaining 7% of the watershed. Over 60% of the watershed is privately owned land. The remaining portions are mostly federally or locally owned, and a small percentage of land is state owned.

6.2.2 Population and Jurisdiction

The population in the watershed was estimated at approximately 170,000 in 2005. There are two major population centers in the watershed that are focused in the lower and middle sections of the San Dieguito HA (Figure 6-3), which is reflective of the more urban land use classifications in these areas of the watershed. The population in the WMA is projected to increase by 23%, reaching approximately 210,000 by the year 2020 (SANDAG, 2005).

6.2.3 Beneficial Uses

The San Dieguito River Watershed provides a variety of beneficial uses (Table 6-1). The watershed contains numerous trails and open space and supports valuable habitat with its reservoirs, lakes, rivers, creeks, lagoon, and ocean. The watershed drains to the Pacific Ocean and contains the San Dieguito River, Lake Hodges, Lake Ramona, Lake Poway, the Sutherland Reservoir and the Olivenhain Reservoir. Approximately 86% of the watershed lies upstream of dams (Coastal Conservancy, 2001). The principal aquifers in the watershed include the Santa Maria Basin, San Pasqual Valley Basin, and San Dieguito Valley Basin.

Table 6-1. Beneficial Uses within the San Dieguito River Watershed

Beneficial Uses	Inland Surface Waters	Coastal Waters (excluding Pacific Ocean)	Pacific Ocean	Reservoirs and Lakes	Ground-waters
Municipal and domestic supply	●			●	●
Agricultural supply	●			●	●
Industrial service supply	●		●	●	●
Industrial process supply	●			●	●
Groundwater recharge	O				
Freshwater replenishment					
Hydropower generation					
Navigation			●		
Contact water recreation	●	●	●	●[1]	
Non-contact water recreation	●	●	●	●	
Commercial and sport fishing			●		
Biological habitats of special significance	●	●	●		
Warm freshwater habitat	●			●	
Cold freshwater habitat	●			●	
Estuarine habitat		●			
Wildlife habitat	●	●	●	●	
Rare, threatened, or endangered species	●	●	●	●	
Marine habitat		●	●		
Migration of aquatic organisms		●	●		
Aquaculture			●		
Shellfish harvesting			●		
Spawning, reproduction, and/or early development	●	●	●		

● = Existing
O = Potential
[1] Shore and boat fishing only. Other REC-1 uses prohibited.
Note: Beneficial uses vary by hydrologic unit (HU) basin number. Please refer to the Basin Plan for individual HUs.
Source: Basin Plan September 8, 1994 (tables 2-2, 2-3, 2-4, and 2-5), amendments adopted through February 8, 2006.

6.2.4 Regulatory Water Quality Challenges

Potential impacts affecting this watershed include surface water quality degradation, beach closures, sedimentation, habitat degradation and loss, invasive species, and eutrophication (San Diego County, 2009). Table 6-2 presents the waterbodies in the San Dieguito Watershed that have been placed on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list and are also shown on Figure 6-4. Land use activities, including urban runoff, agricultural runoff, and domestic animals as well as other natural sources, are the primary sources of these impacts (San Diego County, 2009).

Table 6-2. Waterbodies on the 2006 State Water Resources Control Board Section 303(d) List in the San Dieguito River Watershed

Waterbody Name	HSA	HSA No.	Pollutant/Stressor
Pacific Ocean Shoreline	Rancho Santa Fe	905.11	Indicator bacteria
Green Valley Creek	Rancho Santa Fe	905.21	Sulfates, chloride, manganese, and PCP
Lake Hodges	Del Dios	905.21	Color, nitrogen, phosphorus, turbidity, manganese, and pH
Kit Carson Creek	Del Dios	905.21	Total dissolved solids (TDS) and PCP
Felicita Creek	Felicita	905.23	TDS and aluminum
Cloverdale Creek	Highland	905.32	Phosphorus and TDS
Sutherland Reservoir	Sutherland	905.53	Color, manganese, and pH

Source: SWRCB, 2006.

The San Diego RWQCB adopted a Basin Plan amendment on December 12, 2007, to incorporate the 19 indicator bacteria total maximum daily loads (TMDLs) developed in the *Project I – Beaches and Creeks in San Diego County*. Project I involved calculating TMDLs for numerous surface waters throughout San Diego County. Creeks discharging to lagoons, bays, or harbors were not included. A bacterial TMDL for the Pacific Ocean shoreline at the mouth of San Dieguito Lagoon was adopted (Resolution No. R9-2007-0044), and several municipalities have been identified as responsible parties. Interim and final goals for reducing fecal coliform and enterococcus loading over ten years are detailed in the TMDL. Municipalities will achieve these reductions through conditions to be written into the Municipal Separate Storm Sewer System (MS4) Storm Water Permit by the RWQCB. However, recent information indicates that the San Diego RWQCB will revise the TMDL load allocations based on number of allowable exceedance days within the watersheds as opposed to a listed bacterial density most probable number (MPN), as it is currently written (Tobler, pers. comm, 2008).

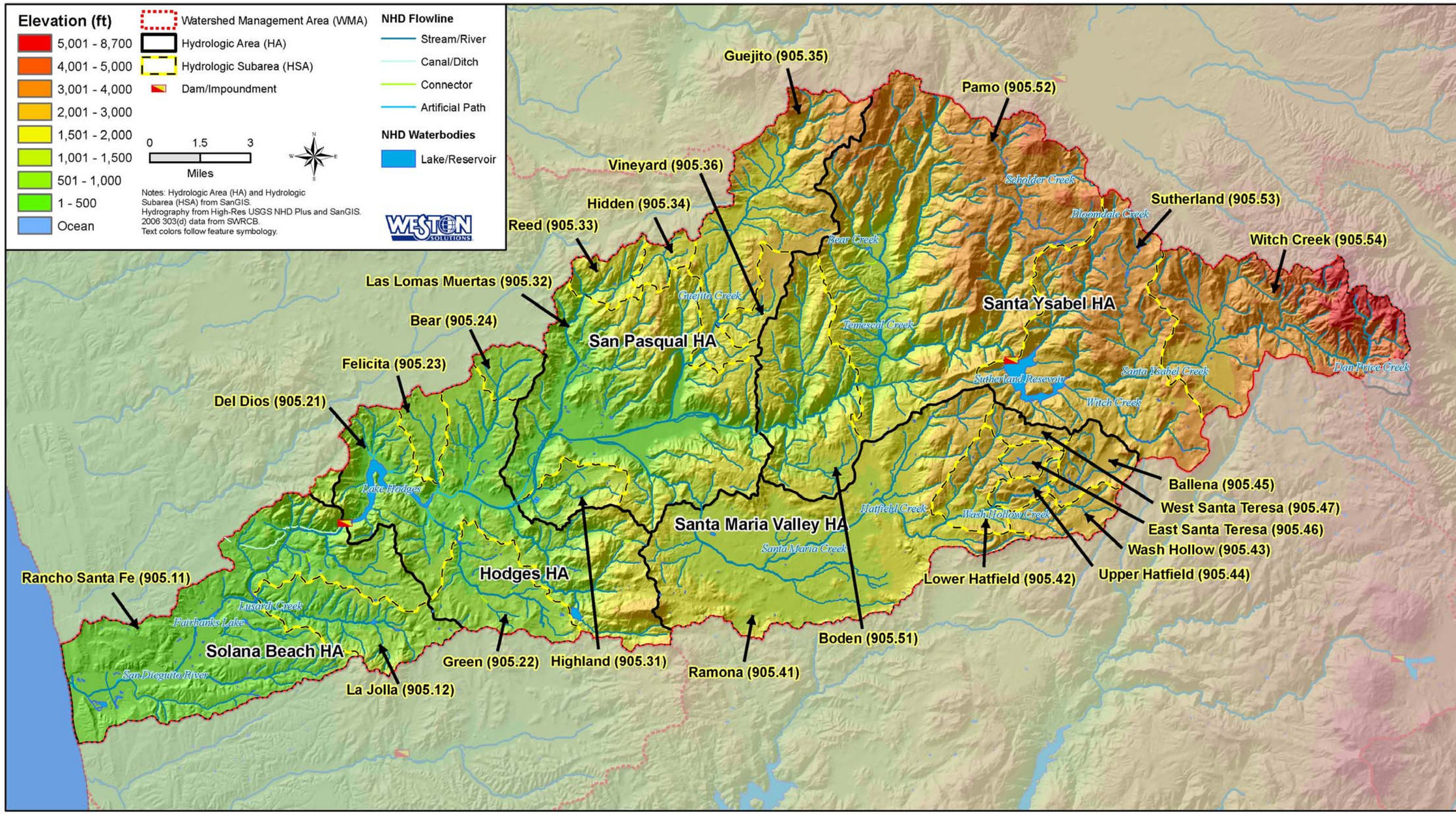

Figure 6-1. San Dieguito River Watershed Management Area

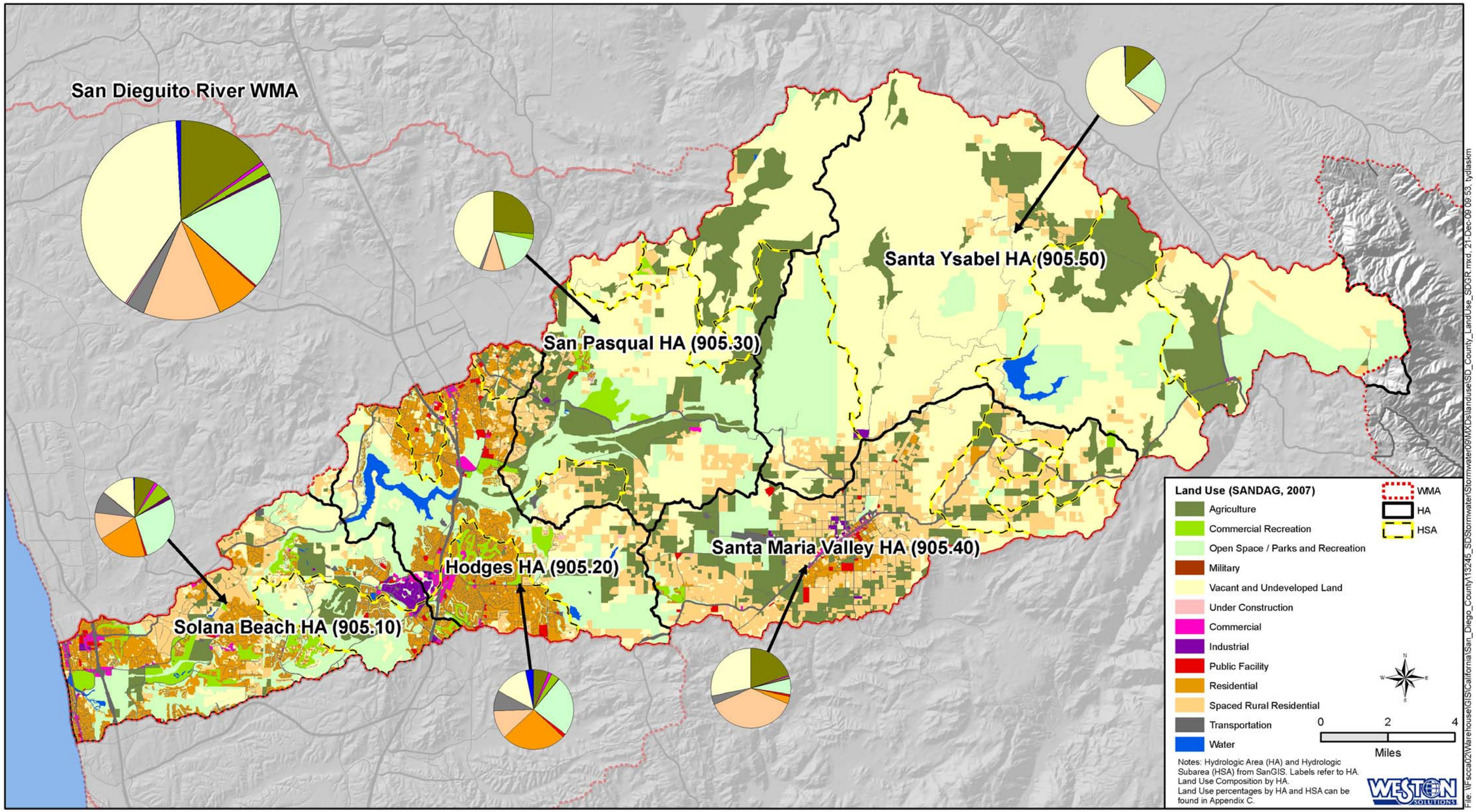

Figure 6-2. San Dieguito River Watershed Management Area Land Use Distribution

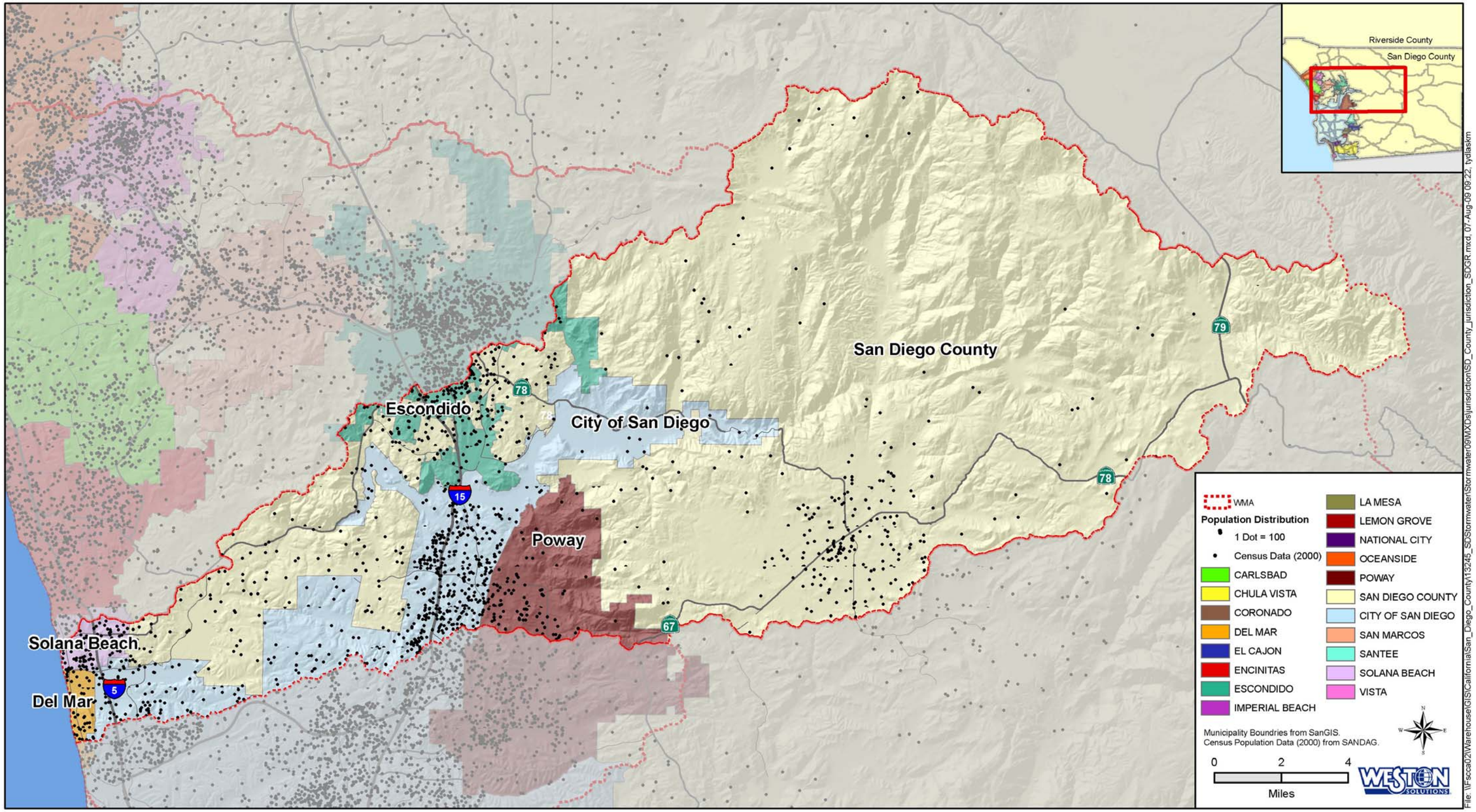

Figure 6-3. San Dieguito River Watershed Management Area Jurisdiction and Population Distribution

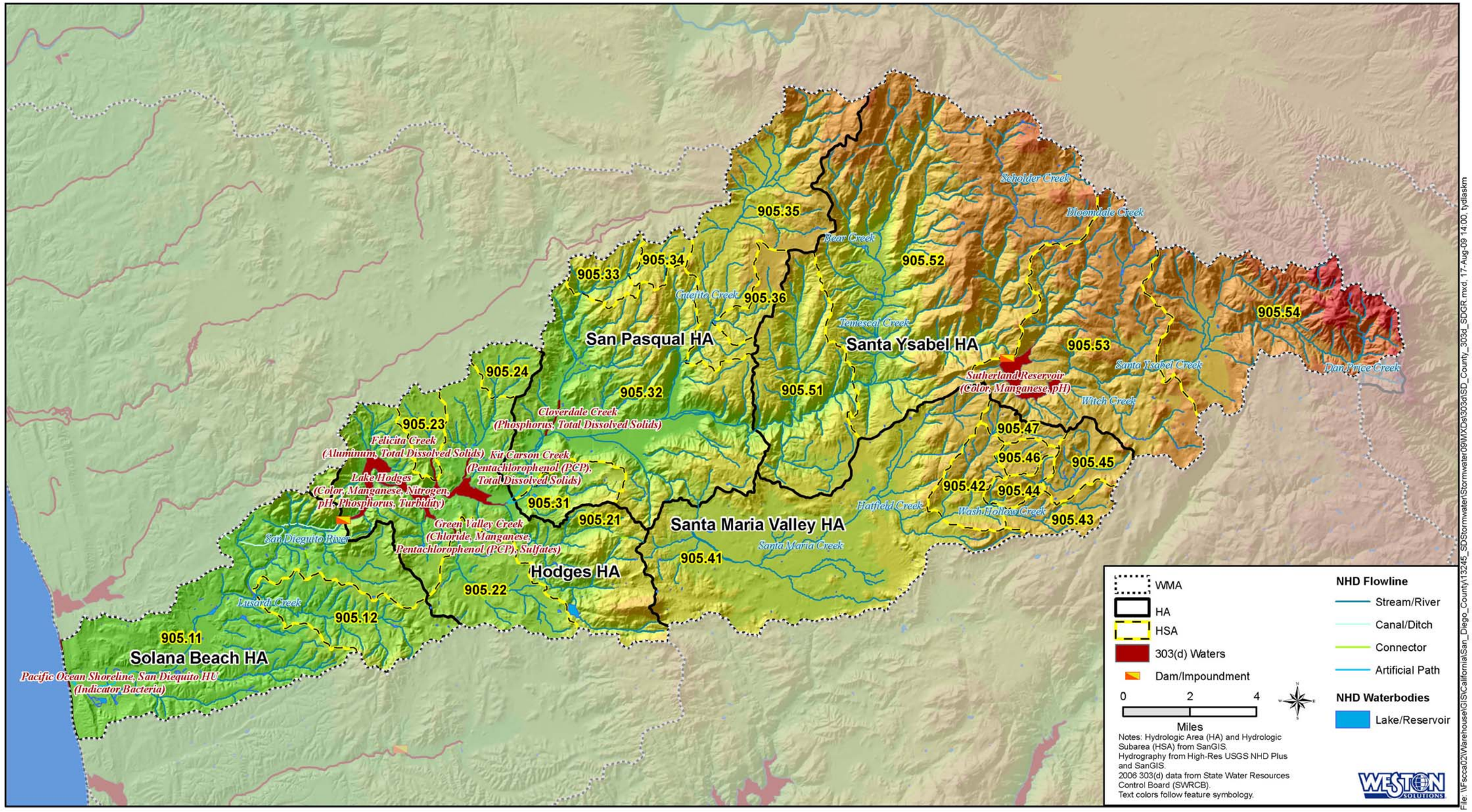

Figure 6-4. San Dieguito River Watershed Management Area 2006 State Water Resources Control Board Section 303(d) Listed Waterbodies

6.3 Watershed Monitoring Activities Summary

The following subsections include the results and analyses of chemistry, bacteria, and toxicity data collected as part of receiving water monitoring programs and urban runoff monitoring programs. The data assessed for the San Dieguito River WMA and the associated monitoring program (in parentheses) are listed below. Assessments of the data from these programs are presented in 6.5, and conclusions and recommendations are presented in Subsection 6.6.

Receiving water monitoring included the following:

- Ambient monitoring – water chemistry and toxicity (Stormwater Monitoring Coalition).
- Rapid Stream Bioassessment – macroinvertebrates, periphyton and physical habitat (SMC).
- Wet weather monitoring – water chemistry, trash, and toxicity (Order R9-2007-0001).
- Receiving water trend assessment (long-term Copermittee data set).
- Post-storm event synthetic pyrethroid monitoring (Order R9-2007-0001).
- Bight ’08 estuary monitoring (Bight ’08).
- Third-party data (Regional Harbor Monitoring Program (RHMP), TMDLs, and special studies).

Urban runoff monitoring included the following:

- Jurisdictional dry weather monitoring (DWM) (Jurisdictional DWM Program).
- Ambient MS4 outfall random DWM (MS4 Program).
- Wet weather MS4 outfall random wet weather monitoring (MS4 Program).
- Ambient MS4 targeted monitoring (MS4 Program).
- Regional dry weather source identification monitoring (Regional Dry Weather Source Identification Program).
- Coastal storm drain monitoring (CSDM) (CSDM Program).

Sample locations from each monitoring program are presented on Figure 6-5.

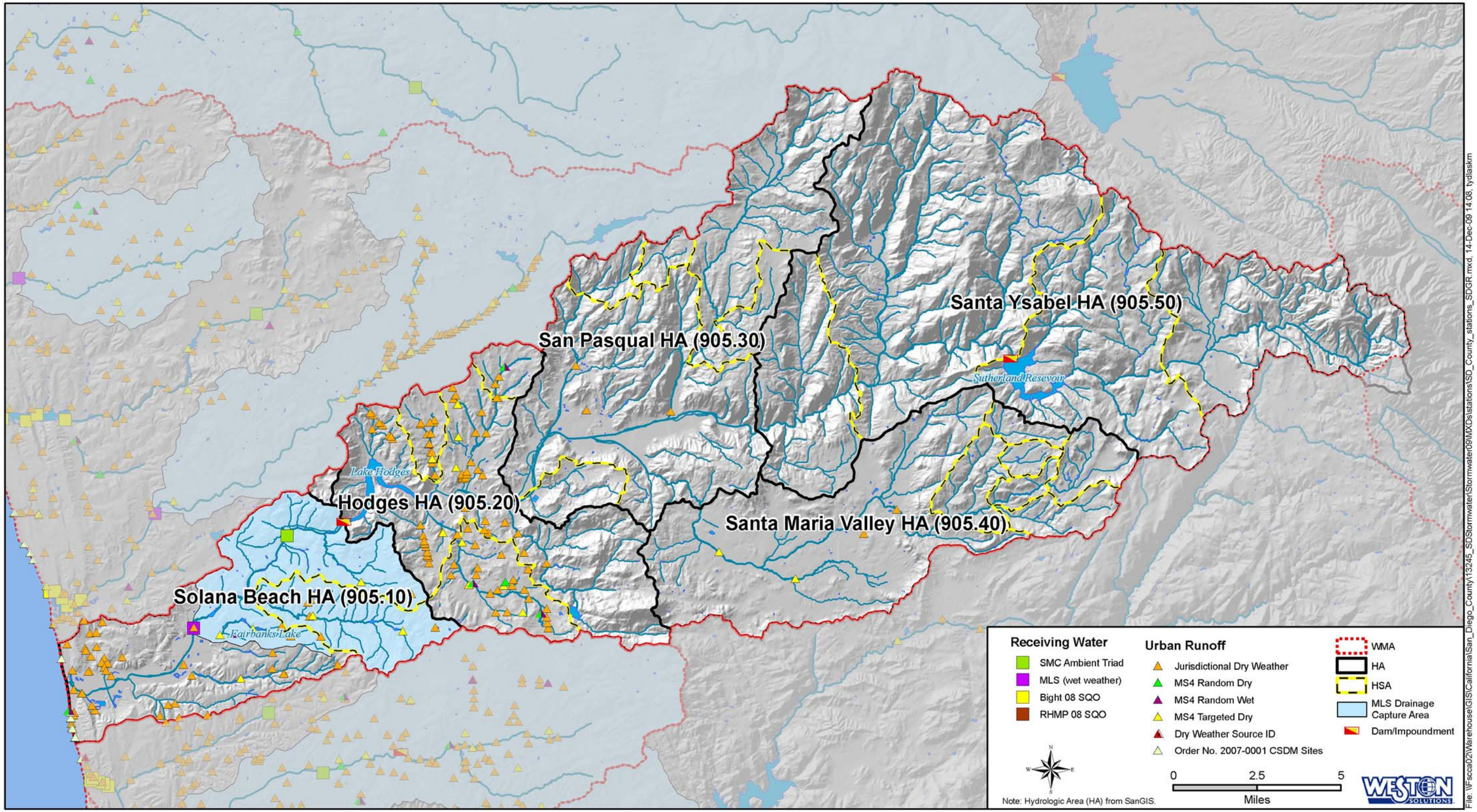

Figure 6-5. San Dieguito River Watershed Management Area 2008–2009 Monitoring Station Location Map

6.3.1 Receiving Water Monitoring

In the 2008–2009 Monitoring Season, data were collected and assessed in receiving waters in San Diego County primarily to address two core management questions: 1) Are conditions in receiving waters protective, or likely to be protective, of beneficial uses? 2) What is the extent and magnitude of the current or potential receiving water problems?

To address these questions, data were collected in the receiving waters of the San Dieguito River WMA during both ambient weather (i.e., dry weather) and wet weather conditions. Ambient weather conditions in the receiving waters of the San Dieguito River WMA were assessed using data collected as part of the SMC Program. The program uses the following three major components of the assessment triad to evaluate the receiving waters: water quality, toxicity, and rapid stream bioassessment. The water quality and toxicity results were evaluated by comparison to benchmarks and magnitudes of exceedance. The rapid stream bioassessment uses four major components, including macroinvertebrate community structure, attached algae (i.e., periphyton) community metrics, physical habitat, and riparian condition. Data tables of chemistry, bacteria, and toxicity results are presented in Appendix D. Bioassessment data tables and discussions are presented in Appendix F.

The wet weather evaluation of the receiving waters in 2008–2009 also included several components. Wet weather monitoring at the MLS was conducted during one storm event, and the water quality and toxicity data were evaluated by comparison to benchmarks and magnitudes of exceedance. A trend assessment was conducted for wet weather data that have been collected at the San Dieguito River WMA, including the 2008–2009 data set. Samples of sediment were collected at the MLS following the storm event and were analyzed for synthetic pyrethroids. The data were compared to toxicity benchmarks for pyrethroids established in the literature. Data tables for these programs are presented in Appendix D.

Finally, the receiving waters were also assessed using data collected in coastal embayments as part of the Bight ’08 Program and other third-party data collected as special studies such as the RHMP or TMDLs. The data tables for these studies are presented in Appendix E and Appendix L, respectively.

6.3.1.1 Ambient Monitoring

Ambient conditions in the receiving waters of the San Dieguito River WMA were assessed using data collected as part of the SMC Program. The program uses the following three major components of the assessment triad to evaluate the receiving waters: water quality, toxicity, and rapid stream bioassessment. Data collected for each of these components were assessed in the following sections.

One receiving water site (Site SMC-00473 in HSA 905.11) was monitored during ambient conditions in the San Dieguito River WMA as part of the 2008–2009 SMC Monitoring Program (Figure 6-5). This site is located in the Solana Beach HA and was monitored June 3, 2009, as

shown in Table 6-3. Water samples collected from the site were monitored for the following water quality constituents (as summarized in Appendix B and detailed in the SMC Regional Monitoring Workplan) (SMCBWG, 2007):

- Physical chemistry.
- Nutrients.
- Total suspended solids (TSS).
- Synthetic pyrethroids.
- Total and dissolved metals.

Water quality results were compared to the benchmarks provided in each table and are based on published values applicable to this monitoring program. These benchmarks were selected by the Copermittee Monitoring Workgroup based on the sources provided in the results table and referenced citations.

The physical parameters measured during the ambient monitoring were conductivity, pH, and water temperature. Conductivity, which is a measure of the dissolved solutes in the water, was relatively high, measuring approximately 2,900 µmhos/cm (Table 6-3). There is no benchmark established for conductivity; however, there is an established benchmark for pH. In streams, pH values can vary widely, even over a 24-hour period. At Site SMC-00473, pH values fell within the range identified in the Basin Plan. Temperature was more consistent among the four sites monitored, ranging from 16.6–18.1ºC.

Ash-free dry weight and chlorophyll-a are measures of stream productivity. Samples for these analyses were taken at Site SMC-00473 as part of the SMC's Bioassessment Program. The results are discussed as part of that program in Subsection 6.3.1.3.

Several nutrients were monitored as part of the ambient monitoring analyte list, including nitrate, nitrite, total kjeldahl nitrogen (TKN), total nitrogen, and total phosphorus (Table 6-3). Of these, benchmarks are available for nitrate, total nitrogen, and total phosphorus. The concentration of total nitrogen at Site SMC-00473 (1.8 mg/L) was greater than the water quality benchmark of 1.0 mg/L. Total nitrogen is the sum of nitrate, nitrite, and TKN (i.e., the sum of ammonia and organic nitrogen such as the protein in plant matter). In most cases, nitrite is ephemeral in aquatic systems where it is quickly converted to nitrate, which can accumulate over time, depending on a variety of physical and biological factors. At Site SMC-00473, the total nitrogen concentration was caused by a combination of nitrate concentrations and an elevated TKN concentration. These results suggest that there may be several different sources of nitrogen contributing to this site.

Table 6-3. San Dieguito River Watershed Management Area Ambient Water Quality Monitoring Results

Parameter	Units	Water Quality Benchmarks	WMA	San Dieguito River
			HA	905.11
			Source	SMC-00473
				06/03/2009
Physical Chemistry				
Conductivity	µmhos/cm	NA		2,908
pH	pH units	6.5–9.0	1. Basin Plan	7.75
Water temperature	°C	NA		19.70
Periphyton				
Ash-free dry weight	g/m^2	NA		139.91
Chlorophyll-a	mg/m^3	NA		2,162.7
Wet Chemistry				
Ammonia as N	mg/L	(a)	6. USEPA Water Quality Criteria (Freshwater)	0.04
Nitrate as N	mg/L	10	1. Basin Plan	0.7
Nitrite as N	mg/L	1	1. Basin Plan	<0.01
Total kjeldahl nitrogen (TKN)	mg/L	NA		1.1
Total nitrogen***	mg/L	1	1. Basin Plan	**1.8**
Total phosphorus***	mg/L	0.1	1. Basin Plan	0.087
Total orthophosphate as P	mg/L	NA		0.06
Chloride	mg/L	250	1. Basin Plan by HA	**741.15**
Silica	mg/L	NA		14.2
Sulfate by IC	mg/L	250	1. Basin Plan by HA	**304.8**
TSS	mg/L	58	14. NSQD	**183**
Hardness				
Total hardness	mg $CaCO_3$/L	NA		739.8
Synthetic Pyrethroids****				
Allethrin	ng/L	NA		<0.5
Bifenthrin	ng/L	9.3/13.0*	15.Anderson et al., 2006 and Weston, 2008	<0.5
Cyfluthrin	ng/L	344	17. Wheelock et al. 2004	<0.5
Cypermethrin	ng/L	683	17. Wheelock et al. 2004	<0.5
Danitol	ng/L	NA		<0.5
Deltamethrin	ng/L	NA		<0.5
Esfenvalerate	ng/L	250	17. Wheelock et al. 2004	<0.5
Fenvalerate	ng/L	NA		<0.5
Fluvalinate	ng/L	NA		0.9J
L-Cyhalothrin	ng/L	200	17. Wheelock et al. 2004	0.6J
Permethrin	ng/L	21/39/47*	15.Anderson et al., 2006 and Weston, 2008	<5
Prallethrin	ng/L	NA		<0.5
Resmethrin	ng/L	NA		<5

Table 6-3. San Dieguito River Watershed Management Area Ambient Water Quality Monitoring Results

Parameter	Units	Water Quality Benchmarks	WMA	San Dieguito River
			HA	905.11
			Source	SMC-00473
				06/03/2009
Total Metals				
Arsenic	mg/L	0.05	1. Basin Plan	0.0028
Cadmium	mg/L	0.005	1. Basin Plan	<0.0002
Chromium	mg/L	0.05	1. Basin Plan	0.0001J
Copper	mg/L	1.0	1. Basin Plan	0.0005J
Lead	mg/L	NA		0.00007J
Nickel	mg/L	0.1	1. Basin Plan	0.0022
Selenium	mg/L	0.005	40 CFR 131.38	0.0006
Zinc	mg/L	5.0	1. Basin Plan	0.0002J
Dissolved Metals				
Arsenic	mg/L	0.34 (acute) and 0.15 (chronic)	40 CFR 131.38	0.003
Cadmium	mg/L	(b)	40 CFR 131.38	<0.0002
Chromium	mg/L	(b)	40 CFR 131.38	<0.0001
Copper	mg/L	(b)	40 CFR 131.38	0.0005J
Lead	mg/L	(b)	40 CFR 131.38	<0.00005
Nickel	mg/L	(b)	40 CFR 131.38	0.0023
Selenium	mg/L	NA		0.0007
Zinc	mg/L	(b)	40 CFR 131.38	0.0004J
Toxicity				
Ceriodaphnia 96-hr	% Survival	NA		100
Ceriodaphnia 7-day survival	% Survival	NA		100
Ceriodaphnia 7-day reproduction	Average Reproduction	NA		18.4

(a) Benchmark is based on criteria maximum concentration (CMC) (salmonids absent) and criteria chronic concentration (CCC) (early life stages present) using water temperature and pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

(b) Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

NA indicate no criteria or published value was available or applicable to the matrix or program.

Shaded text – exceeds benchmarks. Underlined results are above the CMC benchmark for metals.

* The lowest value presented in the range was used for conservative purposes.
** Results are significantly different from the control.
***Total N and Total P are narrative standards in the Basin Plan based on biostimulatory responses to nutrients
****The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.
J flagged values indicate that the reported result is below the reporting limit, but above the method detection limit.

Source
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

The total phosphorus concentration (0.087 mg/L) was slightly below the Basin Plan standard of 0.1 mg/L (Table 6-3). Phosphorus exists in three forms in the environment: orthophosphate, metaphosphate, and organically bound phosphate. Orthophosphate is important in watershed assessments because it can be found at high concentrations in storm water and agricultural runoff

and is easily taken up by plants, which can lead to algal blooms. At Site SMC-00473, the orthophosphate concentration was 0.06 mg/L (Table 6-3). This result indicates that orthophosphate may be contributing more to the total phosphorus concentration than metaphosphate and organically bound phosphate at Site SMC-00473.

TSS is an important parameter for estimating the relative amount of sediment carried by a stream. In the San Dieguito River WMA, the ambient TSS concentration at Site SMC-00473 was 183 mg/L (Table 6-3). This concentration was over three times greater than the water quality benchmark of 58 mg/L.

At Site SMC-00473, concentrations of chloride and sulfate were both above the Basin Plan standard of 250 mg/L. The concentration of chloride was approximately three times the Basin Plan standard. Elevated chloride and sulfate levels are likely the result of elevated dissolved solids which are have historically been problematic region-wide during ambient conditions.

Synthetic pyrethroid pesticides have become increasingly common in urban watershed assessments (WESTON, 2009). These highly toxic pesticides are hydrophobic and are more often associated with sediment than with water in environmental samples. Thirteen synthetic pyrethroids were monitored from water column samples as part of the ambient monitoring program (Table 6-3). Concentrations of the synthetic pyrethroids analyzed were below detection limits for Site SMC-00473 in the San Dieguito River WMA.

The total and dissolved fractions of eight metals were assessed at the sites monitor in the SMC Program. Total metal concentrations, with the exception of selenium, were compared to water quality benchmarks; the selenium concentration was compared to the Title 40 CFR 131.38 standard. Dissolved metal concentrations were compared to standards based on the hardness of Site SMC-00473 water. At Site SMC-00473 in the San Dieguito River WMA, concentrations of total and dissolved metals were low (i.e., not detected or slightly above the detection limit) and none were greater than their respective benchmarks (Table 6-3).

The ambient receiving water sampled in the San Dieguito River WMA was also analyzed for toxicity to the water flea (*Ceriodaphnia dubia*). Three toxicity tests were conducted for Site SMC-00473, including 96-hour survival, 7-day survival, and 7-day reproduction. In the 96-hour and 7-day survival tests, *C. dubia* was exposed to site water for 96-hour and seven-day periods, respectively, and the percent survival was recorded. The results were compared to those of a control test where *C. dubia* was exposed to reconstituted laboratory water (see Appendix B for complete methods). Several replicates of the test were conducted so a statistical comparison could be made between the two groups. In the 7-day reproduction test, *C. dubia* was exposed to site water, and the number of progeny was compared to that produced by control organisms exposed to reconstituted laboratory water. As with the 7-day survival test, a statistical evaluation of the number of progeny produced was conducted to determine differences between the two groups.

Site SMC-00473 in the San Dieguito River WMA was assessed for toxicity to *C. dubia* and results did not show a significant difference in percent survival compared to control results (Table 6-3). In addition, the 7-day reproductive test for the site showed no significant difference

between the numbers of progeny produced by control organisms compared to those exposed to site water. These results suggest that, at the site tested in the San Dieguito River WMA, ambient receiving water was not toxic to test organisms.

6.3.1.2 Magnitude of Exceedance for Ambient Conditions

The concentration of a constituent that exceeded its respective benchmark was compared to its benchmark value to answer the magnitude portion of Core Management Question 2—What is the extent and magnitude of the current or potential receiving water problems? These concentration-to-benchmark ratios were plotted for constituents monitored within the San Dieguito River WMA, whose concentrations were greater than benchmark values (Figure 6-6). This graph is useful to aid in visualizing the magnitude of the exceedance.

Figure 6-6 shows that for the ambient weather monitoring in the San Dieguito River WMA, the total nitrogen, chloride, sulfate, and TSS benchmarks were exceeded. The greatest concentration-to-benchmark ratio was TSS, where the concentration was approximately three times greater than the benchmark.

In contrast to the water quality constituents, the toxicity benchmark is a no-observed-effect concentration (NOEC) of 100%, and anything less than that is considered an exceedance of the benchmark. The NOEC values of the 2008–2009 Monitoring Season samples for the San Dieguito River WMA were each 100%, indicating no observed toxicity from the storm water sample on the test organisms.

The ambient receiving water toxicity results were not evaluated using the concentration-to-benchmark ratios because the results were presented as percent difference between test organisms and controls, rather than a comparison to benchmark values.

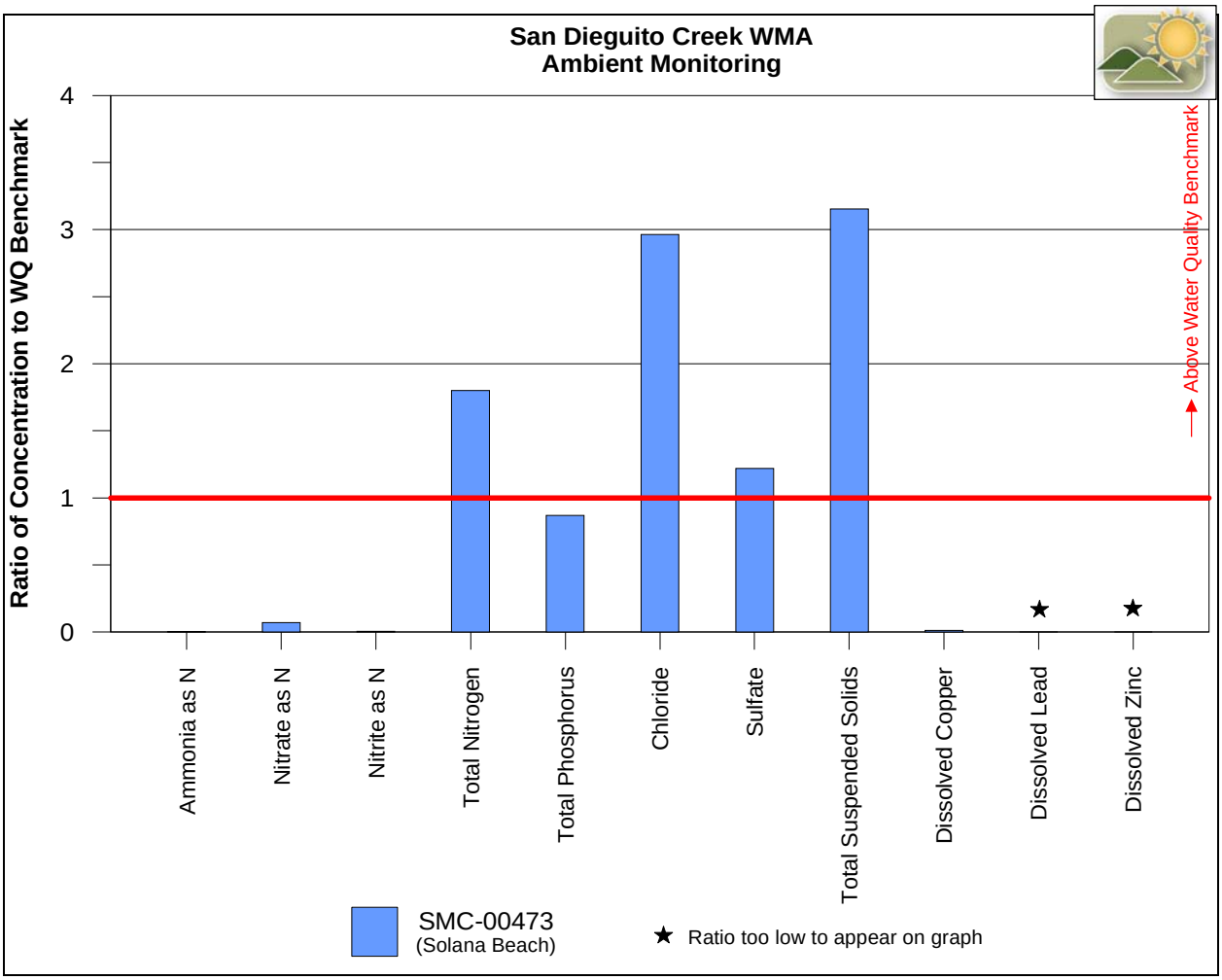

Figure 6-6. San Dieguito River Ambient Water Quality Concentration-to-Benchmark Ratios

6.3.1.3 Rapid Stream Bioassessment

Stream bioassessment in 2009 was conducted according to the SMC Regional Monitoring Program Work Plan (SMCBWG, 2007) at all monitoring sites. Monitoring included the collection of samples for benthic macroinvertebrates (BMI), benthic algae, water chemistry, and aquatic toxicology. The sites were randomly selected and different locations than in previous surveys. To assess the quality of the BMI community at each site, biological metrics were calculated as well as two summary indices. The summary indices included a multi-metric Index of Biotic Integrity (IBI) and a predictive Observed-to-Expected ratio (O/E), both of which identify the level of biological impairment at a site and are specific to Southern California ecological conditions. These indices are described in greater detail in the Methods Section (Appendix B). Benthic algae (i.e., periphyton) samples were collected at the time of the bioassessment surveys, and a taxonomic analysis was performed; however, the benthic algae results are not yet available. These data may be analyzed when metrics and a benthic algal IBI become available; a Southern California algal IBI is being developed by the State of California.

Physical habitat was assessed at each site using two methods, the Surface Water Ambient Monitoring Program (SWAMP) Physical Habitat Assessment Method and the California Rapid Assessment Method (CRAM) for riverine wetlands. Complete lists of taxa, community metrics, indices, and physical habitat information from the bioassessment surveys are presented in Appendix F. A summary of the key metrics and site characteristics are presented in Table 6-4.

Site SMC-00473, in the San Dieguito River mainstem, was a randomly placed SMC monitoring reach monitored in the San Dieguito River WMA in 2009. The site was located along Del Dios Highway near Bing Crosby Blvd., approximately 2 miles below Lake Hodges.

Site SMC-00473 – San Dieguito River

The BMI community IBI quality rating was Very Poor at the San Dieguito River site, with an IBI score of 5 out of 70 possible points (Table 6-4). The O/E ratio was 0.75, which implies that the BMI community has lost an estimated 25% of the biodiversity expected at the site, and it was impaired.

The physical habitat at the site was fair with a low gradient streambed dominated by fine sediment (35%) and sand (30%) (Appendix F). Although excessive organic debris and sediment deposition from burn areas can negatively impact BMI communities, this was not observed at the site. The surrounding landscape was dominated by housing tracts and a golf course, although upstream of the monitoring site there is considerable open space along the river valley. The riparian zone and stream banks were heavily vegetated with an average reach-wide canopy cover of 89%. The CRAM habitat score was 75 out of a possible 100 points. Water quality parameters measured at the time of the survey included temperature, pH, dissolved oxygen (DO), specific conductance, and alkalinity. Temperature, pH, and DO can change dramatically over a 24-hour period in some lotic systems, depending on several variables, but specific conductance and alkalinity can provide more consistent measures of water quality. Specific conductance and alkalinity at the time of the survey were 2.908 ms/cm and 352 mg/L $CaCO_3$, respectively (Table 6-3, Appendix F). Reference streams in San Diego County typically have specific conductance values of less than 1.0 ms/cm and alkalinity of near or below 100 mg/L $CaCO_3$ (WESTON, 2008).

Table 6-4. Selected Biological Metrics and Physical Measures of the San Dieguito River Watershed Management Area for 2009

Parameter	San Dieguito River (SMC-00473)
IBI / Qualitative Rating*	**5** **Very Poor**
O/E Ratio**	**0.75**
Metrics	
Taxon richness	29
EPT taxa (i.e., mayflies, stoneflies, and caddisflies)	3
% Intolerant organisms	0.0%
% Tolerant organisms	37.8%
Physical Measures	
CRAM total physical habitat score (25–100 scale)	75
Elevation	109
% Canopy cover	89%
Dominant substrate type	Sand and fine sediment
Flow (cfs)	0.32
Dominant flow regime	Run/glide
Benthic Algae Measures	
Macroalgae cover (% of reach)	95.2%
Microalgae cover (% of reach)	76.2%
Algal ash-free dry mass (AFDM) (g/m^2)	139.9
Chlorophyll-a (mg/m^3)	2,162.70

*IBI Score 0–13=Very Poor, 14–26=Poor, 27–40=Fair, 41–55=Good, 56–70=Very Good;
IBI scores of >26 represents unimpacted conditions.

**O/E ratio of >0.8 represents unimpacted conditions.

BMI taxon richness included 29 different taxa (Appendix F) with three different EPT taxa (i.e., mayflies, stoneflies, and caddisflies) collected (Table 6-4). Taxa that are highly intolerant (i.e., sensitive) to impairment were not collected at the site. Highly tolerant taxa represented 37.8% of the community. The black fly *Simulium* dominated the site and comprised 36% of the community. The amphipod *Hyalella azteca* was the only other highly abundant organism at the site and comprised 28% of the community. Collector taxa accounted for 83% of the community (Appendix F). Collectors feed on fine particulate organic detritus, algae, and various micro-organisms (Smith, 2001; Usinger, 1956) and generally increase in response to high levels of urbanization and runoff (SLSI, 2003).

Attached macroalgae at Site SMC-00473 observed in the sampling reach was estimated to cover 95.2% of the substrate (Table 6-4). Microalgae (i.e., diatoms) observed in the sample reach were estimated to cover 76.2% of the substrate. Chlorophyll-a had a value of 2,162.7 mg/m^3, and AFDM was 139.9 g/m^2.

6.3.1.4 Wet Weather Monitoring

One wet weather event was monitored during the 2008–2009 Wet Weather Monitoring Season at the San Dieguito River MLS (Figure 6-5). Annual storm water monitoring has been performed at the MLS since the 2001–2002 Wet Weather Monitoring Season. The 2008–2009 wet weather event occurred on November 9, 2008. Concentrations of constituents analyzed from the event for the San Dieguito River WMA are presented in Appendix D. Sample results were compared to the benchmarks based on published values applicable to this monitoring program. These benchmarks were selected by the Copermittee Monitoring Workgroup from the sources provided in the results table and referenced citations.

Rainfall data obtained from the MLS are presented in Table 6-5, and the rain event hydrograph is presented in Appendix G. During the November 9, 2008 storm event, a total of 0.38 inch of rain fell at the San Dieguito River MLS over a 7.7-hour period. The average rain intensity was 0.05 inch per hour. Prior to this storm event, there were five days of dry weather at this site.

Table 6-5. San Dieguito River Watershed Management Area 2008–2009 Rainfall Statistics for the Monitored Storm Event

Start Date – Site	Total Rain (inches)	Duration (hr)	Avg. Intensity (inches/hr)	Antecedent Dry Days
11/09/2008 – SDC-MLC	0.38	7.7	0.05	5

Wet weather water quality data collected at the San Dieguito River MLS from 2001 through 2009 are presented in Appendix D. The results from the 2008–2009 Wet Weather Season are presented in Table 6-6. Concentrations of conventional constituents collected during the November 9, 2008 storm event were below their respective benchmark values, with the exception of total dissolved solids (TDS). The TDS concentration during the storm event was 2,374 mg/L, which was over four times the benchmark value of 500 mg/L. TDS concentrations have been greater than the benchmark value in every storm event sample collected at this site since 2001. This is similar to other WMAs in San Diego County, suggesting a region-wide issue.

Table 6-6. San Dieguito River Watershed Management Area Wet Weather Water Quality Monitoring Results

Analyte	Units	Benchmarks	Watershed	San Dieguito River
			SOURCE	San Dieguito River
				MLS
				11/12/2008
General/Physical/Organic				
Electrical conductivity	µmhos/cm	NA	2. CCR, 5. Goldbook	4,170
Oil & grease	mg/L	10	1. Basin Plan, 3. Anacostia River TMDL, and 4. MSGP 2000	<5
pH	pH scale	6.5–9.0	1. Basin Plan	7.56
Water temperature	Celsius	NA		18.70
Bacteriological				
Enterococci	MPN/100 mL	NA	1. Basin Plan	500
Fecal coliforms	MPN/100 mL	400	1. Basin Plan REC-1/REC-2	**800**
Total coliforms	MPN/100 mL	NA	1. Basin Plan	2,200
Wet Chemistry				
Ammonia as N	mg/L	(a)	6. USEPA Water Quality Criteria (Freshwater)	0.07
Biochemical oxygen demand	mg/L	30	4. MSGP 2000, and 8. McNeeley 1979	<2
Chemical oxygen demand	mg/L	120	4. MSGP 2000	38
Dissolved organic carbon	mg/L	NA		6
Dissolved phosphorus	mg/L	2	4. MSGP 2000	0.072
Nitrate as N	mg/L	10	1. Basin Plan	0.17
Nitrite as N	mg/L	1	1. Basin Plan	0.06
Methylene blue active substances	mg/L	0.5	1. Basin Plan	0.05
TDS	mg/L	500	1. Basin Plan	**2,374**
TKN	mg/L	NA		1.7
Total organic carbon (TOC)	mg/L	NA		6.4
Total phosphorus	mg/L	2	4. MSGP 2000	0.12
TSS	mg/L	100	4. MSGP 2000 and 1. Basin Plan	5
Turbidity	NTU	20	1. Basin Plan	4.4
Pesticides				
Chlorpyrifos	µg/L	0.02 acute / 0.014 chronic	12. California Department of Fish and Game, 2000	<0.002
Diazinon	µg/L	0.08 acute / 0.05 chronic	12. California Department of Fish and Game, 2000, 11. Chollas Creek TMDL for Diazinon, and 10. USEPA, Aquatic Life Ambient Water Quality Criteria Diazinon	<0.004
Malathion	µg/L	0.43	13. California Department of Fish and Game, 1998, 5. Goldbook	<0.006
Hardness				
Hardness	mg $CaCO_3$/L	NA		842.7
Total Metals				
Antimony	mg/L	NA		0.0001J
Arsenic	mg/L	NA		0.0037
Cadmium	mg/L	NA		<0.0004
Chromium	mg/L	NA		0.0001J
Copper	mg/L	NA		<0.0008
Lead	mg/L	NA		0.0001J
Nickel	mg/L	NA		0.0026

Table 6-6. San Dieguito River Watershed Management Area Wet Weather Water Quality Monitoring Results

Analyte	Units	Benchmarks	Watershed	San Dieguito River
			SOURCE	San Dieguito River
				MLS
				11/12/2008
Selenium	mg/L	NA		0.0003J
Zinc	mg/L	NA		0.002
Dissolved Metals				
Antimony	mg/L	0.006	1. Basin Plan	0.0001J
Arsenic	mg/L	0.34 (c)	16. 40 CFR 131.38	0.0037
Cadmium	mg/L	(d)	16. 40 CFR 131.38	<0.0004
Chromium	mg/L	(d)	16. 40 CFR 131.38	<0.0005
Copper	mg/L	(d)	16. 40 CFR 131.38	<0.0008
Lead	mg/L	(d)	16. 40 CFR 131.38	<0.0001
Nickel	mg/L	(d)	16. 40 CFR 131.38	0.0024
Selenium	mg/L	NA		0.0002J
Zinc	mg/L	(d)	16. 40 CFR 131.38	0.0005
Toxicity				
Ceriodaphnia 96-hr	NOEC (%)	100		100
Ceriodaphnia 7-day survival	NOEC (%)	100		100
Ceriodaphnia 7-day reproduction	NOEC (%)	100		100
Hyalella 96-hr	NOEC (%)	100		100
Selenastrum 96-hr	NOEC (%)	100		100

(a) Benchmark is based on CMC (salmonids absent) using pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.
(b) Benchmark for TDS is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).
(c) Benchmark for dissolved metal fractions are based on a default water effects ratios (WER) value of 1 and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.
(d) Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. The CMC was used.
NA indicates no criteria or published value was available or applicable to the matrix or program.
Shaded text – exceeds benchmarks. Underlined results are above the CMC benchmark for metals.
* Indicates detection limit exceeds benchmark.
J flagged values indicate that the reported result is below the reporting limit, but above the method detection limit.

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Concentrations of other conventional constituents, such as indicators of sedimentation (e.g., turbidity and TSS) and eutrophication (e.g., nutrients), were below their respective benchmarks (Table 6-6).

Among the indicator bacteria monitored (i.e., total coliforms, fecal coliforms, and enterococci), fecal coliforms were the only one for which a benchmark has been established for wet weather. During the monitored storm event at the San Dieguito River MLS, the fecal coliform

concentration (taken as a single grab sample) was 800 MPN/100 mL, which is two times greater than the REC-1 benchmark of 400 MPN/100 mL established in the Basin Plan (Table 6-6). The fecal coliform concentration has been greater than the benchmark in 52% of the storm water samples collected at this site since sampling began in 2001 (Appendix D).

Three organophosphate pesticides were monitored during wet weather, including Chlorpyrifos, Malathion, and Diazinon. Concentrations of these were not detected during the November 9, 2008 storm event at the San Dieguito River MLS (Table 6-6). Since monitoring began at the San Dieguito River MLS in 2001, organophosphate concentrations have been detected only once (Diazinon in March 2004) (Appendix D).

The total and dissolved fractions of nine metals were assessed at the MLS during the November 9, 2008 storm event (Table 6-6). There are no benchmarks established for total metals in wet weather runoff. However, benchmarks have been established for dissolved metals in the Basin Plan. These hardness-based benchmarks were used for comparison to concentrations of dissolved metals measured in storm water runoff. Concentrations of the dissolved metals assessed in the November 9, 2008 storm event were below their respective benchmarks and have been since monitoring began at the San Dieguito River MLS in 2001 (Appendix D).

Toxicity testing of storm water runoff was performed using three laboratory test species, including the water flea (*C. dubia*), the amphipod (*Hyalella azteca),* and the algae (*Selenastrum capricornutum)* (Table 6-6). *C. dubia* was used in three separate tests: 96-hour survival, 7-day survival, and 7-day reproduction. The results of the tests were used to calculate a no-observed-effect concentration or NOEC, which is the concentration of the storm water at which the sample has no effect on the test organism. The NOEC for the toxicity tests using *C. dubia, H. azteca*, and *S. capricornutum* were all 100%, indicating no observed toxicity from the storm water sample on the test organisms. Since storm water monitoring began at the San Dieguito River site in 2001, 43% of samples have been toxic to *C. dubia* and 29% of samples have been toxic to *S. capricornutum*. Since storm water monitoring began at the San Dieguito River site in 2001, only one sample has been toxic to *H. azteca* (November 2007) (Appendix D).

Synthetic pyrethroid pesticides were analyzed during wet weather conditions in both the receiving water samples taken during the storm event at the MLS and in post-storm sediment samples (Subsection 6.3.1.7). Over the past 20 years, synthetic pyrethroids have largely replaced organophosphate pesticides and have become the dominant pesticide group throughout the United States for ant, termite, and mosquito control (Weston, D., 2008). Synthetic pyrethroids are considerably more toxic at lower concentrations compared to organophosphates (e.g., Diazinon) and have become increasingly more common in urban runoff (Weston, D., 2008). Ten synthetic pyrethroid pesticides were analyzed in the storm water sample collected from the San Dieguito River WMA, and none were found at concentrations above the detection limit (Table 6-7).

Table 6-7. San Dieguito River Watershed Management Area Wet Weather Pyrethroid Results

Analyte[1]	Units	Benchmarks *	Source	SDC-MLS 11/12/2008
Allethrin	µg/L	NA		<0.002
Bifenthrin	µg/L	0.0093/0.0130	Anderson et al., 2006 and Weston, D., 2008	<0.002
Cyfluthrin	µg/L	0.344	San Diego Regional Monitoring Program	<0.002
Cypermethrin	µg/L	0.683	San Diego Regional Monitoring Program	<0.002
Danitol	µg/L	NA		<0.002
Deltamethrin	µg/L	NA		<0.002
Esfenvalerate	µg/L	0.25	San Diego Regional Monitoring Program	<0.002
L-Cyhalothrin	µg/L	0.2	San Diego Regional Monitoring Program	<0.002
Permethrin	µg/L	0.021/0.039/0.047	Anderson et al., 2006 and Wheelock et al., 2005	<0.025**
Prallethrin	µg/L	NA		<0.002

1 The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.
NA indicates no criteria or published value was available or applicable to the matrix or program.
*Note: The lowest value presented in the range was used for conservative purposes.
**Benchmark was below detection limit, and so detection level exceedance cannot be determined.

6.3.1.5 Magnitude of Exceedance for Wet Weather

As with ambient monitoring, the ratio of a constituent concentration during the storm event that exceeded its respective benchmark was compared to its benchmark value to answer the magnitude portion of Core Management Question 2—What is the extent and magnitude of the current or potential receiving water problems? These concentration-to-benchmark ratios were plotted for several constituents monitored during the November 9, 2008 storm event at the San Dieguito River WMA (Figure 6-7). In addition, the mean ratios for each constituent from wet weather samples collected at the San Dieguito River MLS since 2001 were also plotted, allowing a comparison to historical values at this site. These graphs are useful in visualizing which constituents exceeded the benchmark values as well as the magnitude of the exceedance.

As shown on Figure 6-7, the mean concentration-to-benchmark ratios were greater than one for two constituents monitored at the San Dieguito River MLS, including TDS and fecal coliforms. Historically, the magnitude of the exceedance has been greatest for fecal coliforms and TDS (with ratios of approximately four each). During the November 9, 2008 storm event, concentrations of TDS and fecal coliforms were greater than their respective benchmarks. The TDS concentration was almost five times greater than its benchmark value, which was slightly higher than the mean value for the site (i.e., slightly less than four). The fecal coliform concentration was two times greater than its benchmark value, which is lower than the historical mean of over four.

The concentration-to-benchmark ratios are not applicable for assessing toxicity results. In contrast to the water quality constituents, the toxicity benchmark is a NOEC of 100% and anything less than that is considered an exceedance of the benchmark. Thus, toxicity results were not assessed relative to the magnitudes of exceedances.

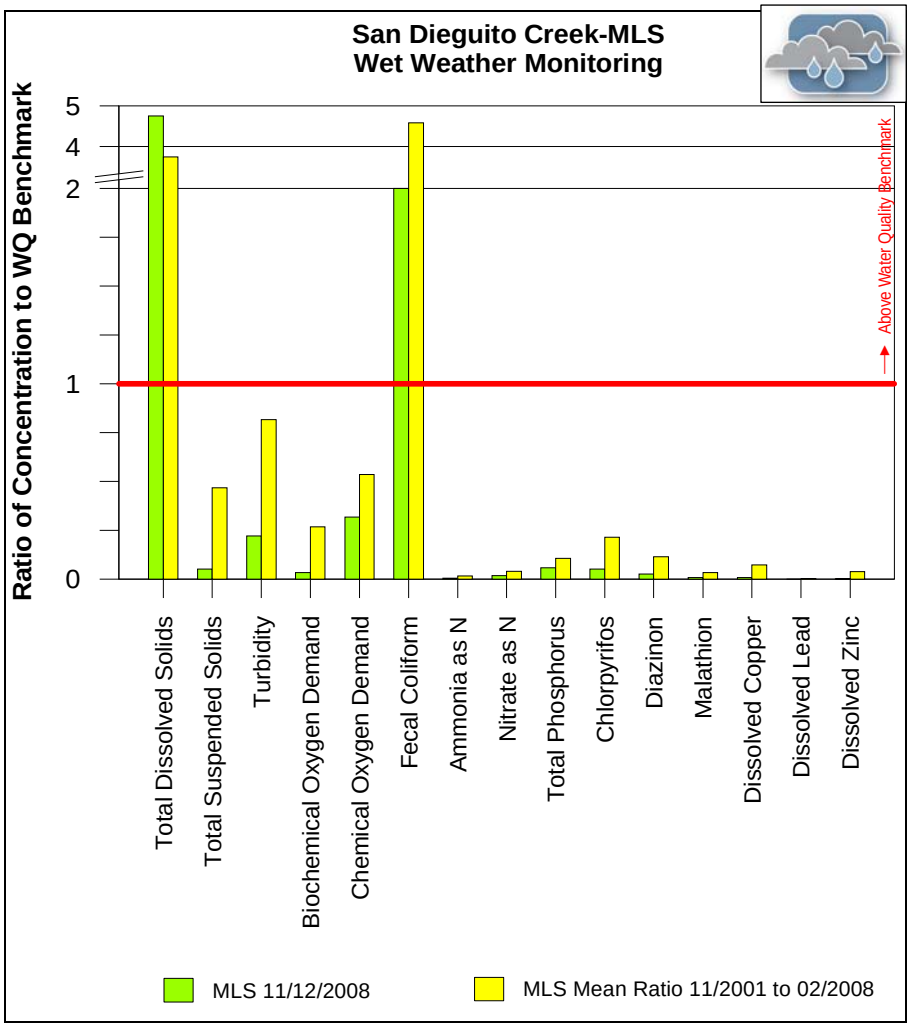

Figure 6-7. San Dieguito River Wet Weather Concentration-to-Benchmark Ratios

6.3.1.6 Receiving Water Trend Assessment

Evaluations of long-term trends in monitoring data address Core Management Question 5—Are conditions in receiving waters getting better or worse? Long-term trends were analyzed for chemical, bacterial, and toxicological parameters for wet weather conditions only, since only one year of ambient weather data has been collected at the monitored site in the San Dieguito River WMA. Additionally, trends in the rapid stream bioassessment results are presented. In 2008–2009, rapid stream bioassessment was conducted at the SMC sites and are therefore not directly comparable to the historical data collected at the MLS. Thus, for assessing bioassessment trends, the historical results through the 2007–2008 Monitoring Season are presented.

Water quality, bacteria, and toxicity results were assessed using the Mann-Kendall trend analysis (i.e., a non-parametric test) to evaluate the presence or absence of significant trends using the available monitoring data (see Appendix B for details). This test is often employed for analysis of environmental time series data. Sen's Estimate of Slope is shown on the graphs to illustrate the median trend of the data per constituent over time. This is not a predictive slope, but rather the median true slope observed to date (i.e., change per unit time). Only significant trends are shown in this WMA section.

At the San Dieguito River MLS, concentrations of some constituents appear to be increasing slightly over time, including TKN and total phosphorus (Figure 6-8). The measured of conductivity also appears to be increasing slightly over time.

Although the concentrations of total phosphorus is increasing over time, it does not appear to be a great concern relative to their respective benchmark. The concentrations remain well below the established benchmark of 2.0 mg/L (Appendix D).

Conductivity and TKN do not currently have benchmarks for comparison. If the trends continue at the current observed rate of increase, it is possible that concentrations of TKN will increase by approximately 1 mg/L every 38 years, and the measures of conductivity will increase by approximately 1,000 µmhos/cm every 42 years. The increase in the measures of conductivity may be related to the increase in concentrations of TKN. This long-term, gradual increase in concentrations of TKN and measures of conductivity are significantly increasing trends.

Other concentrations of constituents do not have noticeable trends at this time. Other scatterplots and a table of trend results, which includes the S-statistic values and critical values, can be found in Appendix H.

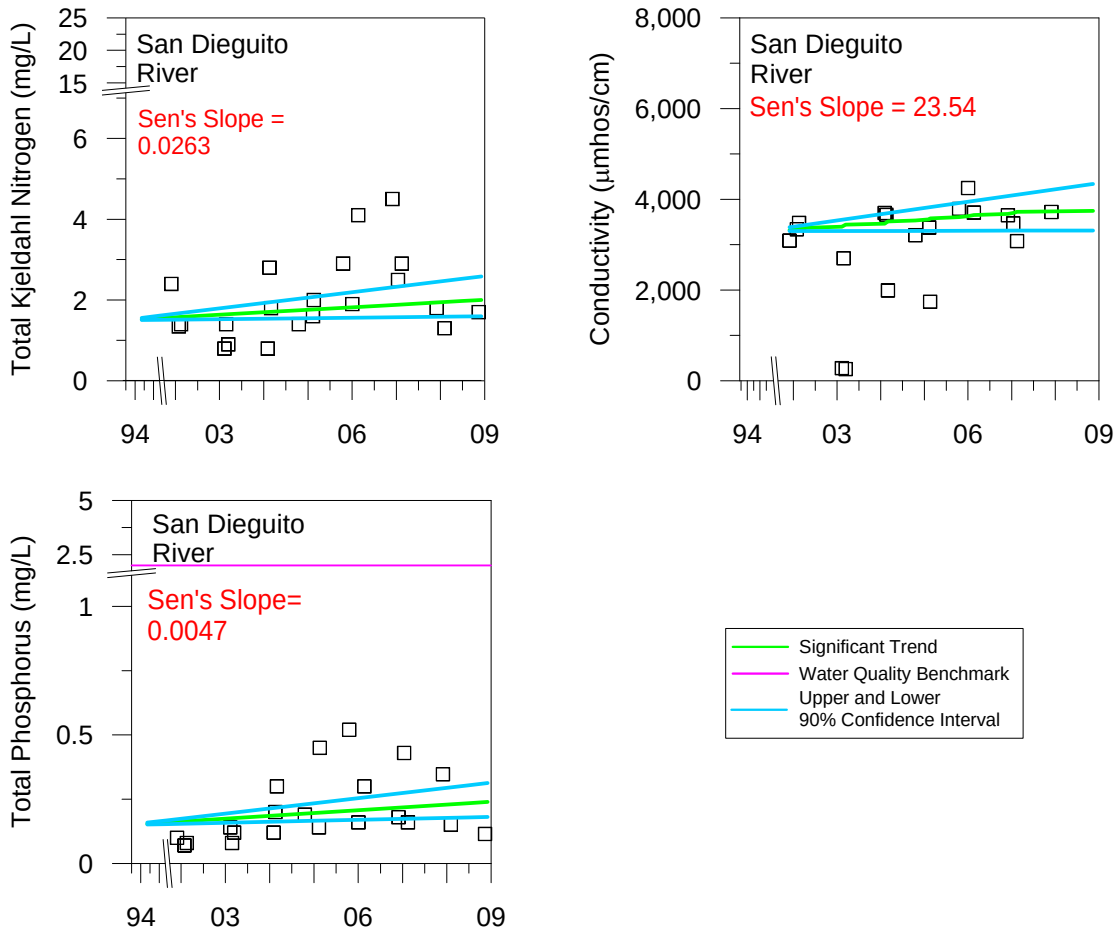

Figure 6-8. Scatterplots of Constituents with Significant Mann-Kendall Trends and Sen's Estimate of Slope

Bioassessment Trends

In the 2008–2009 Monitoring Season, bioassessment was conducted as part of the SMC Monitoring Program. Monitoring sites were not associated with the MLS or TWAS sites as they have been historically. Thus, the 2008–2009 bioassessment data cannot be used in the trend assessment. However, bioassessment trends are an important component of the overall WMA assessment process, and the historical data set from samples collected at the MLS and TWAS through the 2007–2008 Monitoring Period will be used for that purpose. The results presented below are from the 2007–2008 bioassessment trend assessment and will be used with previous data collected at the MLS and TWAS in the final WMA assessments.

An analysis was performed separately for the IBI and O/E ratios to assess macroinvertebrate community quality trends from the beginning of bioassessment monitoring in the San Dieguito River WMA in 2002.

Summary Indices Results over Time

May 2008 was the first time the SDC-MLS site and the SDC-TWAS-2 site had been sampled for benthic macroinvertebrates. Results from the previously monitored site on Del Dios Highway below Lake Hodges Dam were plotted together with the SDC-MLS site during 2008 because these sites are both in the Solana Beach HA. The physical habitat is considerably different at the MLS site and at the Del Dios Highway Site. Trend analyses were not feasible for the SDC-TWAS-2 site because this site has not been sampled previously. The Green Valley Creek Site (SDC-TWAS-1) has been sampled 11 times since the beginning of the program and every season since October 2002. The IBI scores have shown considerable seasonal variation, with mean values of 15.2 for October surveys and 4.8 for May surveys (Figure 6-9). The lowest October score was equivalent to the highest May score throughout the sampling years. IBI scores have ranged from one to 21, with the highest score in October 2004 and the lowest score in May 2006. Since the beginning of the program, the Green Valley Creek Site (TWAS-1) has had a mean IBI score of 9.5 and a mean O/E ratio of 0.55. The highest O/E ratio score the site has received was during the October 2004 survey.

The mean O/E ratios for Green Valley Creek have been 0.69 for October surveys and 0.43 for May surveys (Figure 6-10). The O/E ratios were in agreement with the IBI scores, but with a somewhat higher rating for the October surveys. The October 2004 survey had an O/E ratio indicating an unimpaired benthic community, while IBI scores indicated impairment.

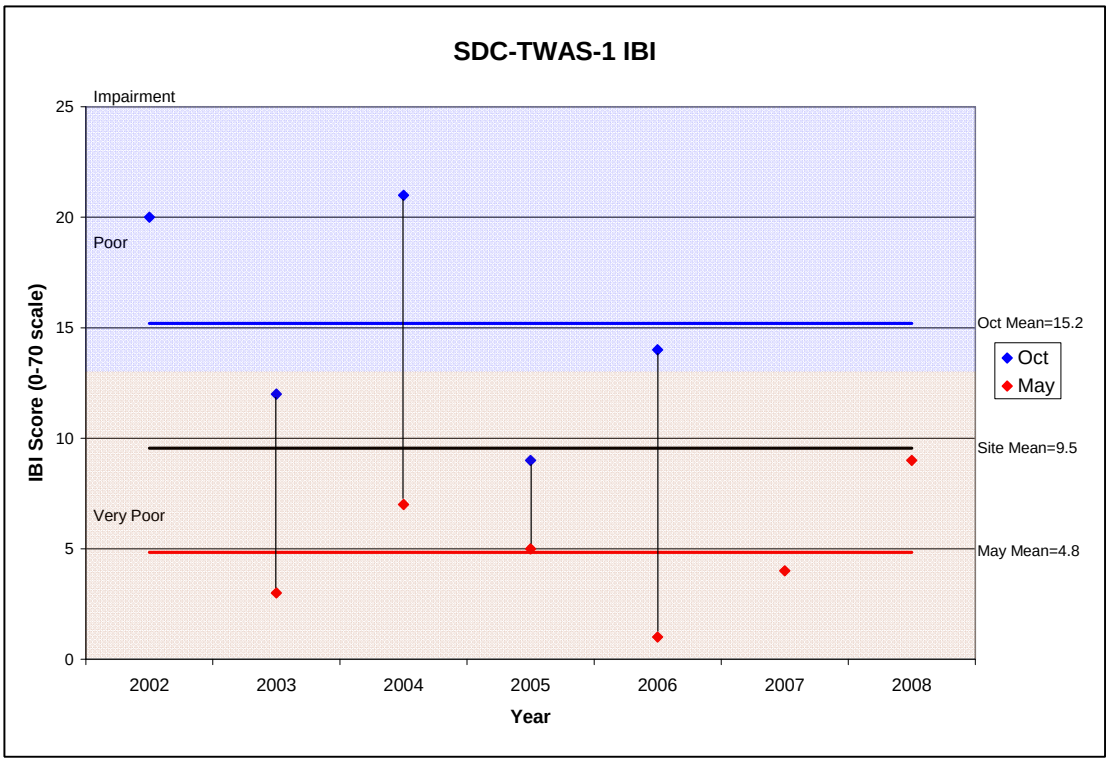

Figure 6-9. Index of Biotic Integrity for Green Valley Creek at West Bernardo

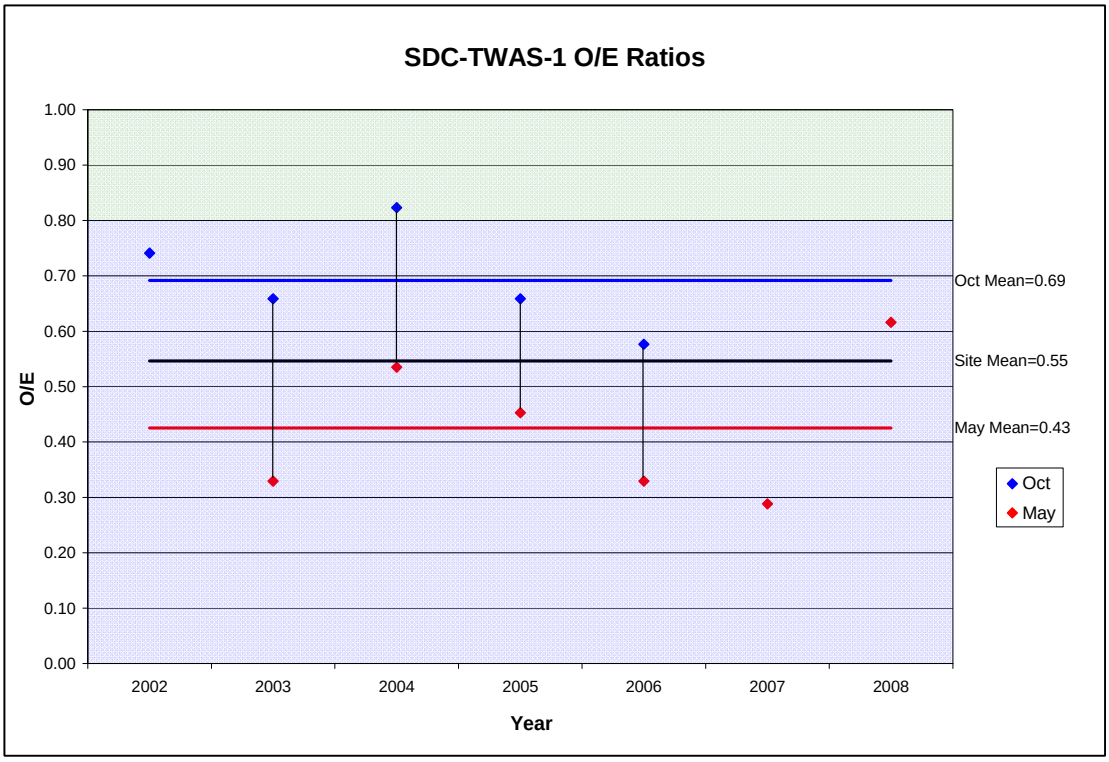

Figure 6-10. Observed to Expected Ratio for Green Valley Creek at West Bernardo

The SDC-MLS site has been sampled one time since the beginning of the program and ten times at the Del Dios Highway Site since October 2002. Both sites are in the Solana Beach HA. The IBI scores have shown considerable seasonal variation, with mean values of 17.0 for October surveys and 11.8 for May surveys (Figure 6-11). IBI scores have ranged from one to 21, with the highest score in October 2003 and the lowest score in May, 2007. Since the beginning of the program, the Solana Beach HA has had a mean IBI score of 14.0 and a mean O/E ratio of 0.6. The highest O/E ratio score the site has received was during the October 2003 survey.

The mean O/E ratios for the Solana Beach HA have been 0.74 for October surveys and 0.49 for May surveys (Figure 6-12). The O/E ratios were in agreement with the IBI scores, but with a somewhat higher rating for the October surveys. The October 2002, 2003, and 2004 surveys had O/E ratios indicating an unimpaired benthic community, while IBI scores indicated impairment.

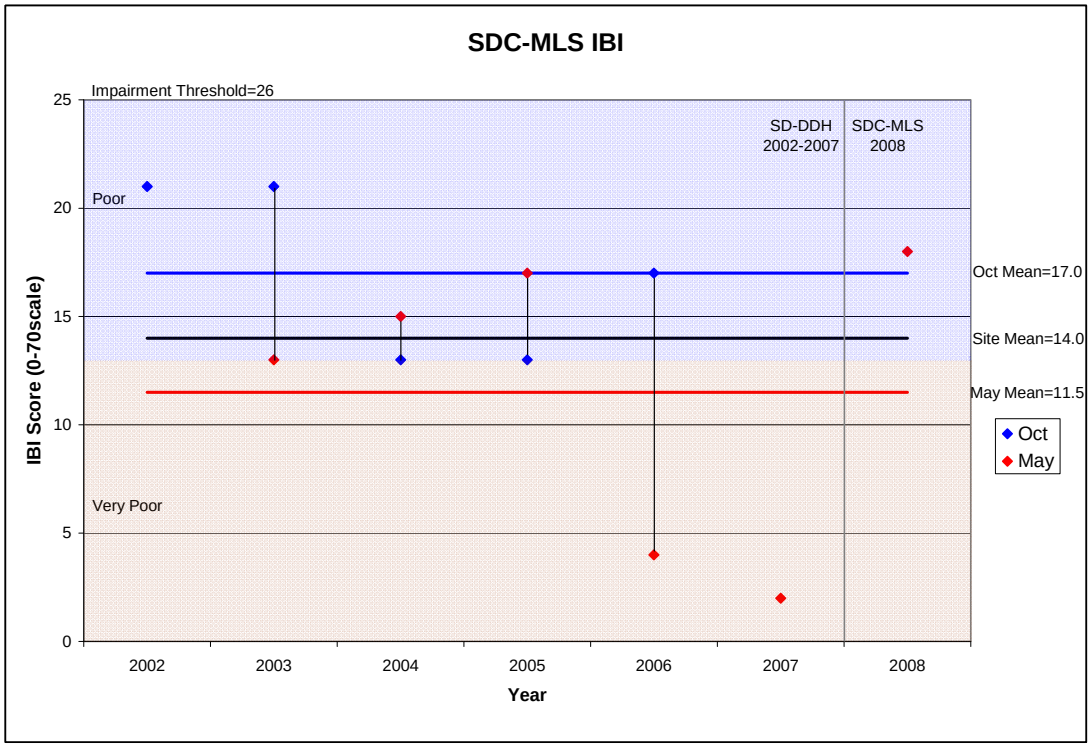

Figure 6-11. Solana Beach Hydrologic Area Index of Biotic Integrity (Del Dios Highway Site and SDC-MLS Site Combined)

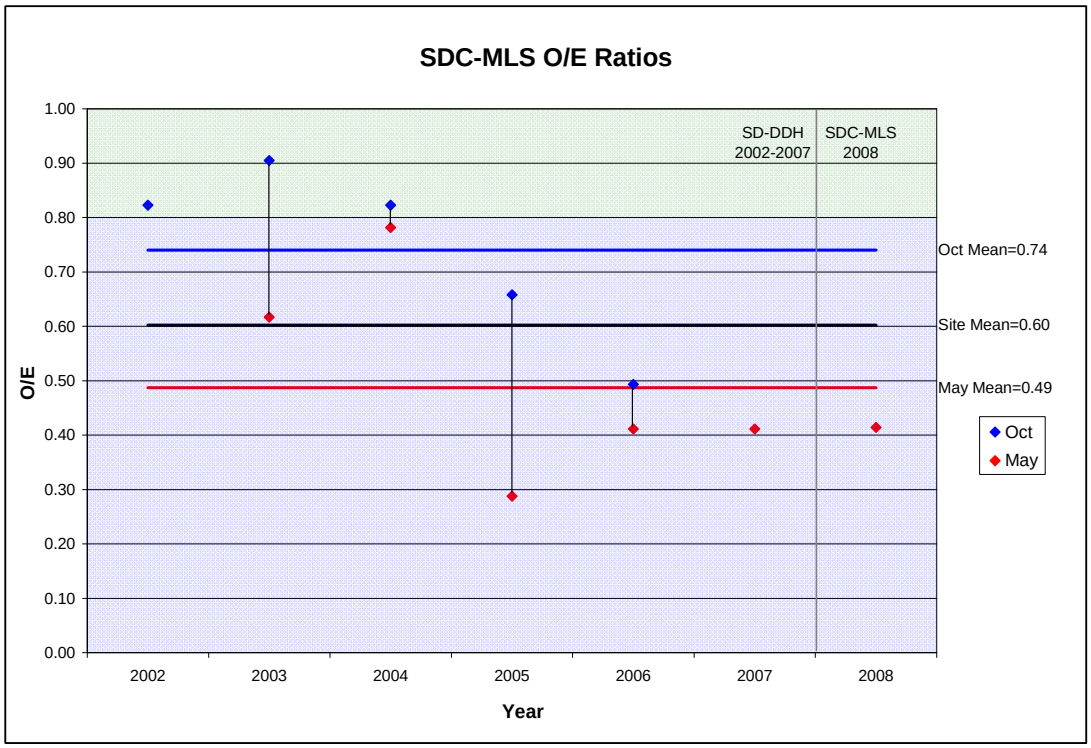

Figure 6-12. Solana Beach Hydrologic Area Observed to Expected Ratio (Del Dios Highway Site and SDC-MLS Site Combined)

6.3.1.7 Post-Storm Event Synthetic Pyrethroid Monitoring

Post-storm sediment sampling was conducted during the 2008–2009 Monitoring Season to comply with Section II.A.7 of the Permit, which requires the assessment of synthetic pyrethroids in San Diego receiving waters. Synthetic pyrethroid monitoring in sediments helps to partially answer two core management questions: 1) Are conditions in receiving water protective, or likely to be protective, of beneficial uses? and 2) What is the extent and magnitude of the current or potential receiving water problem(s)? Sampling occurred at the MLS on November 18, 2008. Sediment samples were analyzed for synthetic pyrethroids, total organic carbon (TOC), and grain-size distribution in accordance with the *Monitoring Work Plan for the Assessment of Synthetic Pyrethroids in San Diego County* (WESTON, 2007b). Wet weather pyrethroid water quality results are discussed in Subsection 6.3.1.4 and are also presented in the data tables in Appendix D.

Results for the post-storm sediment sampling are presented in Table 6-8 and are compared to published LC_{50} values for *H. azteca* from the literature. The LC_{50} value is the concentration at which half of the given test species exhibit mortality. In the sediment samples collected at the San Dieguito River MLS, the ten pyrethroids analyzed were below their respective detection limits.

Table 6-8. San Dieguito River Watershed Management Area Synthetic Pyrethroid Sediment Monitoring Results and Comparison to Published LC_{50} for *Hyalella azteca*

Analyte[1]	Units	Sediment Benchmarks *	Source	SDC-MLS
				11/18/2008
Allethrin	ng/g	NA		<2
Bifenthrin	ng/g	3.0–8.2/5.5	Amweg et al., 2005	<2
Cyfluthrin	ng/g	12.5–14.9	Amweg et al., 2005	<2
Cypermethrin	ng/g	3.6/18.0/23.0	Maund et al., 2002	<2
Danitol	ng/g	NA		<2
Deltamethrin	ng/g	9.8–10.0	Amweg et al., 2005	<2
Esfenvalerate	ng/g	10.4–48.3	Amweg et al., 2005	<2
L-Cyhalothrin	ng/g	5.2–6.0	Amweg et al., 2005	<2
Permethrin	ng/g	57–112	Amweg et al., 2005	<25
Prallethrin	ng/g	NA		<2

[1] The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.
NA indicates no criteria or published value was available or applicable to the matrix or program.
*Note: The lowest value presented in the range was used for conservative purposes.

Sediment at the MLS site consisted primarily of sand (94.0 %) (Table 6-9). Finer-sized particles (e.g., clay and silt) constituted a small fraction of the sediment at this site, and the TOC content was low (0.55%). Pyrethroids are known to attach to fine-grained sediments with high organic carbon content. Thus, the large-grained particles found in the San Dieguito River sediments may have influenced the absence of pyrethroids found at this site.

Table 6-9. San Dieguito River Watershed Management Area Post-Storm Surficial Sediment Sample Grain-Size Distribution and Total Organic Carbon Results

Site	Clay (%)	Silt (%)	Sand (%)	Gravel (%)	TOC (%)
SDC-MLS	2.13	2.98	93.96	0.93	0.55

6.3.1.8 Bight 2008 Estuary Monitoring

Bight '08 monitoring was not conducted in the San Dieguito River WMA.

6.3.1.9 Third-Party Data

Third party data were not collected in the San Dieguito River WMA.

6.3.2 Urban Runoff Monitoring Results

Urban runoff water quality assessments primarily address the following two core management questions: 3) What is the relative urban runoff contribution to the receiving water problem(s)? and 4) What are the sources of urban runoff that contribute to receiving water problem(s)? Under the previous permit (Order R9-2001-01), the jurisdictional DWM and CSDM programs addressed urban runoff. Analyses conducted under these programs focused on a limited subset of parameters to identify illegal connections and illicit discharges (ICIDs) in the MS4.

Several new monitoring programs are required under the new Permit, including an MS4 Outfall Monitoring Program and a Source Identification Program. The Copermittees were granted flexibility in implementing these two new programs over the course of the Permit. The Copermittees developed new work plans—*The MS4 Outfall Monitoring Program in San Diego County Watershed Management Areas* (SDCRC, 2008a) and *The Urban Runoff Source Identification Program in San Diego County Watersheds* (SDCRC, 2008b)—during the 2007–2008 Monitoring Season to comply with the Permit. Methods from these work plans are summarized in Appendix B, and details can be found in the individual work plans. The purpose of MS4 Outfall Monitoring Program is to characterize pollutant discharges from MS4 outfalls in each WMA during wet weather and dry weather, as required by Section II.B.1 of the Permit. The goal of the Source Identification Monitoring Program is to identify and assess the sources of discharges of constituents related to urban runoff causing high-priority water quality problems in the receiving water(s) within each WMA. Both programs were implemented during the 2008–2009 Monitoring Season. The MS4 Outfall Monitoring Program was implemented throughout the County, but the Source Identification Monitoring Program was conducted in only two WMAs (Los Peñasquitos Creek WMA and Pueblo San Diego WMA).

Urban runoff conditions in the San Dieguito River WMA were assessed using data from the following programs:

- Jurisdictional DWM.
- MS4 Outfall Monitoring:
  - Random Wet Weather Monitoring.

- Random DWM.
- Targeted DWM.

- CSDM.

The Jurisdictional DWM data were collected during the 2008 DWM Season (May 1, 2008–September 30, 2008), and the MS4 outfall monitoring and CSDM data were collected during the 2009 DWM Season (May 1, 2009–September 30, 2009). The programs are designed to assess the MS4 and are representative of conditions in the storm drains that have the potential to drain to receiving waters during ambient (i.e., non-rain event) conditions. Each jurisdiction provides a report of their DWM programs in their Jurisdictional Urban Runoff Management Program (JURMP) annual reports. CSDM data were also analyzed separately and are reported in the CSDM Annual Report (Appendix N). The results are summarized in this report, but are not included in the WMA assessments.

The results from each program are presented below.

6.3.2.1 Jurisdictional Dry Weather Monitoring Program

The Jurisdictional DWM Program was conducted in 2008 to fulfill Order No. R9-2007-0001, which requires each Copermittee to conduct a dry weather field screening and analytical monitoring program. The goal of the program is to detect and eliminate ICIDs to the MS4 using frequent, geographically widespread dry weather discharge monitoring and follow-up investigations. The data are also useful in assessing the spatial distribution of the constituents analyzed. The program consists of the following components:

- Field observations,
- Field screening monitoring,
- Analytical monitoring at selected stations, and
- Trash assessment.

Field observations consisted of a visual evaluation of conditions at the site, including an estimate of flow and a thorough trash assessment as described at the end of this section. Field screening monitoring was conducted at all sites where water was present, either ponded or flowing, at the time of the site visit. Samples were collected and analyzed with on-site field test kits. The following constituents were analyzed: specific conductance, turbidity, pH, reactive phosphorus, nitrate, ammonia, and surfactants (MBAS). Analytical monitoring was conducted for at least 25% of the DWM stations where water was present. Samples were analyzed for the following constituents in the laboratory: total hardness, oil & grease, Diazinon, Chlorpyrifos, dissolved copper, dissolved lead, dissolved zinc, and dissolved cadmium, and indicator bacteria (i.e., total coliforms, fecal coliforms, and enterococci).

The results of the field screening and analytical monitoring results were compared to dry weather action levels. These values were established for each constituent by the Copermittees to trigger investigations upstream of the sampling location and to eliminate ICIDs where present. Dry weather action levels are typically much greater than benchmarks to facilitate ICID investigations. They were initially established in 2002 and have been updated on a yearly basis, as necessary.

The Jurisdictional DWM sampling sites in the San Dieguito River WMA are shown on Figure 6-5. The results are depicted on Figure 6-13 as small circles for field screening results and as pie symbols for laboratory analytical results. The colored slices of the pie or circle represent the different constituent groups (i.e., bacteria, general chemistry, metals, nutrients, pesticides, and turbidity) with analyte concentrations greater than the applicable action levels. Constituent groups are represented in the figure rather than individual constituents because of the size and complexity of the dry weather data set submitted by the Copermittees. The complete data set is presented in Appendix M.

Data were collected for 121 sites in the San Dieguito River WMA in 2008 as part of the Jurisdictional DWM Program. Ponded or flowing water conditions were observed at 87 of these sites at the time of the site visit and were sampled for field and/or laboratory analyses. Thirty-four sites were dry during all site visits conducted in 2008, and data were not available for these sites. The majority sites sampled were located in the Solana Beach HA or Hodges HA (Figure 6-13). Two samples were collected San Pasqual HA, one sample was collected in the Santa Maria Valley HA, and no samples were collected in the Santa Ysabel HA, which is located in the relatively higher elevations of the San Dieguito River WMA. The 2008–2009 DWM Program results for the San Dieguito River WMA are summarized in Table 6-10. The total number of samples collected for each analyte may differ from the number of sample sites because multiple samples were taken at some locations (see Appendix B for details on dry weather sampling). Sample results from sites with both flowing and ponded water are included because they have the potential to contribute to receiving water quality impairments, but are not specified in the table.

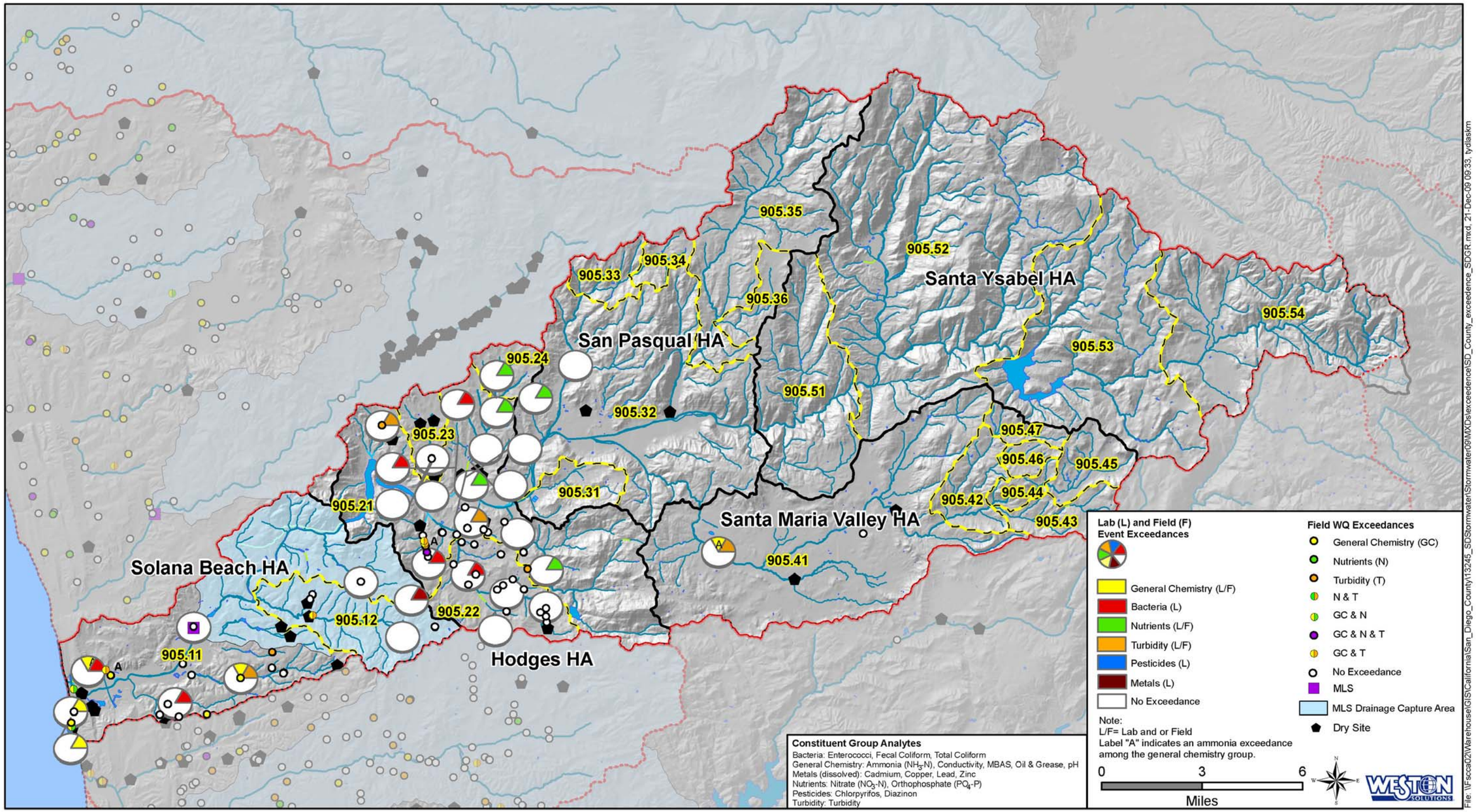

Figure 6-13. San Dieguito River Watershed Management Area Dry Weather Results Map

Table 6-10. San Dieguito River Watershed Management Area Summary of the 2008 Dry Weather Monitoring Results

Analyte	Units	DW Action Level	Number of Samples	RESULTS		
				Minimum	Mean	Maximum
Conductivity*	mS/cm	5	91	0.88	3.61	50.90
Oil & Grease	mg/L	15	32	0.80	-	2.50
pH	pH unit	7	91	6.28	7.72	9.47
Enterococcus	MPN/100 mL	10,000	33	41	4,619	80,000
Fecal Coliform	MPN/100 mL	20,000	33	9	41,889	800,000
Total Coliform	MPN/100 mL	50,000	33	9	532,075	16,000,000
Ammonia (NH_3-N)	mg/L	1	92	0.00	0.28	3.50
Orthophosphate (PO_4-P)	mg/L	2	91	0.03	0.42	2.20
Nitrate (NO_3-N)	mg/L	10	91	0.04	2.30	13.60
MBAS	mg/L	1	94	0.05	0.61	19.50
Turbidity**	NTU	20	91	0.20	30.77	500.00
Chlorpyrifos	µg/L	0.5	32	0.03	-	0.25
Diazinon	µg/L	0.5	32	0.03	-	0.25
Cadmium, Dissolved	µg/L	(a)	32	1.00	-	12.50
Copper, Dissolved	µg/L	(a)	33	2.50	-	730.00
Zinc, Dissolved	µg/L	(a)	33	5.00	-	113.00
Lead, Dissolved	µg/L	(a)	32	2.50	-	12.50
Hardness	mg $CaCO_3$/L		33	190	763	1,300

* Some conductivity data units were converted for comparison with action level. The action levels were adopted by the dry weather workgroup and are based on best professional judgment (BPJ).

** The turbidity action level is BPJ, however, the Basin Plan WQO was used for the interim watershed assessments.

Results are reported as provided by the Dry Weather Workgroup. Mean values are calculated including non-detect results at half the reporting limit. If the mean value was less than the reporting limit, then the mean was not included in the table.

(a) Dry weather action level for dissolved metal fraction based on total hardness and calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. If total hardness was greater than 400 mg/L, then 400 mg/L was used to calculate dissolved metals water quality benchmarks.

Table 6-11 shows the dry weather constituents with concentrations greater than their respective dry weather action levels during sampling conducted in 2008–2009. Analytes that had measured values greater than action levels included general chemistry (conductivity and pH), indicator bacteria (i.e., total coliforms, fecal coliforms, and enterococci), nutrients (i.e., ammonia, orthophosphate, and nitrate), turbidity, and metals (i.e., dissolved copper). Concentrations of pesticides (Diazinon and Chlorpyrifos) were below action levels in all samples analyzed. Measured values of the general chemistry (oil & grease), surfactant (MBAS) and metals (dissolved cadmium, dissolve zinc, and dissolved lead) were also below action levels in all samples analyzed. Measured values for conductivity exceeded the action level the greatest number of times (eight of 63 samples analyzed), followed by total coliforms (six of 33 samples analyzed) and nitrate (five of 63 samples analyzed).

The jurisdictional DWM results were compared to the ambient weather receiving water results to assess the relative urban runoff contribution to the receiving waters (Core Management Question

3). Among the chemical analytes with concentrations greater than their respective action levels in the Jurisdictional DWM Program, none of those monitored in the SMC Ambient Monitoring Program exceeded benchmarks in the San Dieguito River WMA (Table 6-3). Indicator bacteria were not assessed in the ambient monitoring program.

Table 6-11. San Dieguito River Watershed Management Area 2008 Dry Weather Results Matrix

Analyte	Number of Samples	Number > Action Level	Average of Action Ratio	Standard Deviation of Action Ratio
Conductivity	91	9	0.72	1.43
Oil & Grease	32	0	0.12	0.04
pH	91	3	0.30	0.24
Enterococcus	33	2	0.46	1.48
Fecal Coliform	33	2	2.09	8.26
Total Coliform	33	6	10.64	55.58
Ammonia (NH_3-N)	92	4	0.28	0.48
Orthophosphate (PO_4-P)	91	3	0.21	0.24
Nitrate (NO_3-N)	91	5	0.23	0.31
MBAS	94	5	0.61	2.06
Turbidity	91	14	1.54	4.59
Chlorpyrifos	32	0	0.13	0.18
Diazinon	32	0	0.13	0.18
Cadmium, Dissolved	32	0	0.08	0.12
Copper, Dissolved	33	1	0.48	2.29
Zinc, Dissolved	33	0	0.04	0.08
Lead, Dissolved	32	0	0.01	0.01
San Dieguito River Total	**966**	**54**	**0.85**	**10.54**

Concentrations of general chemistry analytes were greater than their respective action levels at a single jurisdictional dry weather site in the Del Dios HSA (905.41) in the Santa Maria Valley HA and at four sites in the Rancho Santa Fe HSA in the Solana Beach HA (Figure 6-13). Ammonia exceeded the action level at one site in the Del Dios HSA and at two sites in the Rancho Santa Fe HSA where higher residential land use occurs within the watershed. The locations where these general chemistry results were greater than their respective action levels are situated in areas where higher residential land use occurs within the watershed. Bacteria results were greater than the action levels at five sites in the Hodges HA and at five sites in the Solana Beach HA in higher populated areas consisting of residential and commercial land uses. Sites with nutrient (orthophosphate and nitrate) concentrations above the action level were found in the Hodges HA (five sites) and Rancho Santa Fe HSA (two sites) in areas where agricultural land use occurs within the watershed. Turbidity results were greater than the action level in the Santa Maria Valley HA (one site), Hodges HA (three sites), and Rancho Santa Fe HSA (one site). These turbidity results provide information regarding potential sources that may contribute to receiving water problems. Concentrations of metals (dissolved copper) were greater than the action level in one site located in the upper region of the Rancho Santa Fe HSA, which is located in an area designated as industrial land use.

There were fewer jurisdictional dry weather sites in the middle watershed (San Pasqual HA and Santa Maria Valley HA) compared with the lower watersheds (Solana Beach HA and Hodges HA), and there were no samples collected in the upper watershed (Santa Ysabel HA) (Figure 6-13). This is likely a function of the Jurisdictional DWM Program's intent to target ICIDs. Because there are few urban land uses in the middle and upper watershed, it appears that the number of dry weather sites is sufficient to meet the intended goals of the DWM Program. For future MS4 outfall monitoring and source identification monitoring, sampling, in general, should be focused on the more populated areas in Solana Beach HA and Hodges HA with some additional sampling in the Santa Maria Valley HA near the west boundary of the populated area. Sampling for nutrients should focus on areas down gradient from agriculture and open space / parks and recreation land uses in the Solana Beach HA and Hodges HA. Continued sampling for metals within the industrial land use area situated at the east side of the Solana Beach HA should be conducted to determine if high metal concentrations continue to be present in that area of the watershed.

Trash was assessed and characterized as part of the Jurisdictional DWM Program at the DWM sites using a trash evaluation protocol developed for the Copermittees (WESTON, 2007a), as summarized in Appendix B. As described in the work plan, the trash monitoring was conducted to answer the following three study questions:

1. **Where is trash being detected in San Diego watersheds?**
2. **How many sites are identified as Submarginal or Poor?**
3. **In locations identified as Submarginal or Poor, what is the nature of the types of trash present?**

When the surveys were conducted, a qualitative estimate of the presence of trash was determined at each site and was categorized into one of the following five categories based on the amount of trash observed:

- **Optimal** – At first glance, no trash is visible. Little or no trash (i.e., less than ten pieces) is evident when the evaluated area is closely examined for litter and debris.
- **Suboptimal** – At first glance, little or no trash is visible. After close inspection, a small amount of trash (i.e., approximately ten to 50 pieces) is evident in the evaluated area.
- **Marginal** – A low to medium amount of trash (i.e., approximately 51–100 pieces) is evident at first glance. Evaluated area contains litter and debris. Evidence of site being used by people (e.g., scattered cans, bottles, food wrappers, blankets, and clothing) is present.
- **Submarginal** – Trash distracts the eye at first glance. Evaluated area contains a substantial amount of litter and debris (i.e., more than 100–400 pieces). Evidence of site being used frequently by people (e.g., many cans, bottles, food wrappers, blankets, and clothing) is present.
- **Poor** – Site is significantly impacted by trash. Evidence of trash accumulation behind a constriction point or evidence of excessive dumping is observed. The evaluated area contains a substantial amount of litter and debris (i.e., more than 400 pieces).

Study questions 1 and 2 can be answered by the trash ratings. A total of 136 sites were assessed for trash in the San Dieguito River WMA in all HAs except Santa Ysabel HA (Table 6-12). The majority of the assessments occurred in the lower portion of the WMA in the Solana Beach HA (HSAs 905.11 and 905.12) and Hodges HA (HSAs 905.21 through 905.24) as shown on Figure 6-14. A few assessments occurred in the San Pasqual HA (HSA 905.32) and Santa Maria Valley HA (HSA 905.41). The relative amount of trash recorded at each site can be determined by the trash ratings, since each rating has a quantitative component (e.g., less than ten pieces for the Optimal rating). As shown in the summary table, the majority of the sites were rated Optimal (i.e., less than ten pieces of trash). Approximately one-third of sites received the rating of Suboptimal (i.e., approximately ten to 50 pieces of trash). A total of seven sites (six sites within HSA 905.22) received the rating of Marginal (i.e., approximately 51–100 pieces of trash). The sites receiving the rating of Marginal were located adjacent to a major transportation corridor and/or within highly urbanized areas of the watershed (Figure 6-2). One site was assessed with a rating of Submarginal (i.e., approximately 100–400 pieces of trash) in HSA 905.22. The information collected for the trash assessment in the San Dieguito River WMA indicates that HSAs 905.21 and 905.22 contained the greatest amount of trash.

Table 6-12. San Dieguito River Watershed Management Area Jurisdictional Dry Weather Trash Summary

HSA	Trash Rating	Number of Sites	Number of Assessments	Human Health Threat	Aquatic Health Threat
905.11	Optimal	38	38	0	0
	Suboptimal	11	11	0	4
	Marginal	1	1	0	0
SUB-TOTAL:		**50**	**50**	**0**	**4**
905.12	Optimal	5	5	0	0
	Suboptimal	3	3	0	0
SUB-TOTAL:		**8**	**8**	**0**	**0**
905.21	Optima	21	21	0	0
	Suboptimal	11	11	0	0
	Marginal	6	6	0	0
SUB-TOTAL:		**38**	**38**	**0**	**0**
905.22	Optimal	12	12	0	0
	Suboptimal	11	11	0	0
	Submarginal	1	1	0	0
SUB-TOTAL:		**24**	**24**	**0**	**0**
905.23	Optimal	7	7	0	0
SUB-TOTAL:		**7**	**7**	**0**	**0**
905.24	Optimal	2	2	0	0
SUB-TOTAL:		**2**	**2**	**0**	**0**
905.32	Optimal	2	2	0	0
	Suboptimal	1	1	0	0
SUB-TOTAL:		**3**	**3**	**0**	**0**
905.41	Optimal	1	1	0	0
	Suboptimal	3	3	0	0
SUB-TOTAL:		**4**	**4**	**0**	**0**
GRAND TOTAL:		**136**	**136**	**0**	**4**

Study Question 3, regarding the nature of the types of trash present, can be answered by examining the trash assessment forms, which included the following three categories: trash type, potential route, and threat to human and/or aquatic health. If a site was rated Submarginal or Poor during the assessment, the type of trash present was further characterized using these categories. The results of the trash type assessment for the San Dieguito River WMA are depicted on Figure 6-14 in the "Primary Trash Type by HSA" inset. In HSA 905.22, trash at one of the 24 sites with a Submarginal rating consisted primarily of household trash.

The potential route of the debris was also noted on the field forms for sites with Submarginal and Poor ratings. Possible choices for the route the debris may have taken to arrive at the site included dumping, littering, upstream, and unable to determine. These potential routes are depicted on Figure 6-14 as letters within the site rating symbols (D (dumping), L (littering), S (upstream), and N (unable to determine)). The potential trash route was listed as D for the one site rated as Submarginal in the San Dieguito River WMA.

In addition to the types of trash at each site and their suspected route, the trash assessment also evaluated whether or not the trash was a threat to human health or aquatic health based on the following criteria (see WESTON, 2007a for a complete description):

- **Threat to Human Health –** Trash and debris have the potential to contain chemicals that may bioaccumulate, transmit dangerous bacteria (e.g., medical waste, diapers, and human waste), or have the potential for physical harm (e.g., sharps, entanglement, and nails).
- **Threat to Aquatic Health –** Trash and debris are a potential threat to aquatic health or wildlife via contact, ingestion, entanglement, etc., including small floatable material that may be ingested; wire, plastic, fishing line, and other material that has the potential for entanglement; and oil and other visible chemicals or chemical containers.

Four sites out of the 136 sites assessed for trash in the San Dieguito River WMA during the Jurisdictional DWM Program were identified as a potential aquatic health threat (Table 6-12). The four sites were in HSA 905.11 and were rated Suboptimal. It is important to note that the 2008–2009 Monitoring Season was the first year that the trash rating system was used to assess trash and debris on a regional level. The field guidelines for rating these sites will be further refined in subsequent years to provide a better assessment of the potential threats to aquatic and human health.

The trash ratings discussed above will not be used in the watershed assessment ranking system since this is the first year that regional trash data have been collected. It is assumed that at least three years of data will be necessary before trash can be considered in the watershed assessments, since the trend evaluation is an important component of the ranking system. As the program is refined and additional data are collected, the assessments may then be used to identify regional strategies to develop targeted outreach strategies, where applicable. When appropriate, these data could be used by watershed groups and/or jurisdictions to single out a commonly occurring predominant source and/or type of trash. The data may also help guide the selection of management actions where appropriate. In addition, evaluating the effectiveness of outcomes, such as behavior changes and load reductions, where applicable, may be appropriate after evaluating multiple years of data and observing improvements or declines in site conditions.

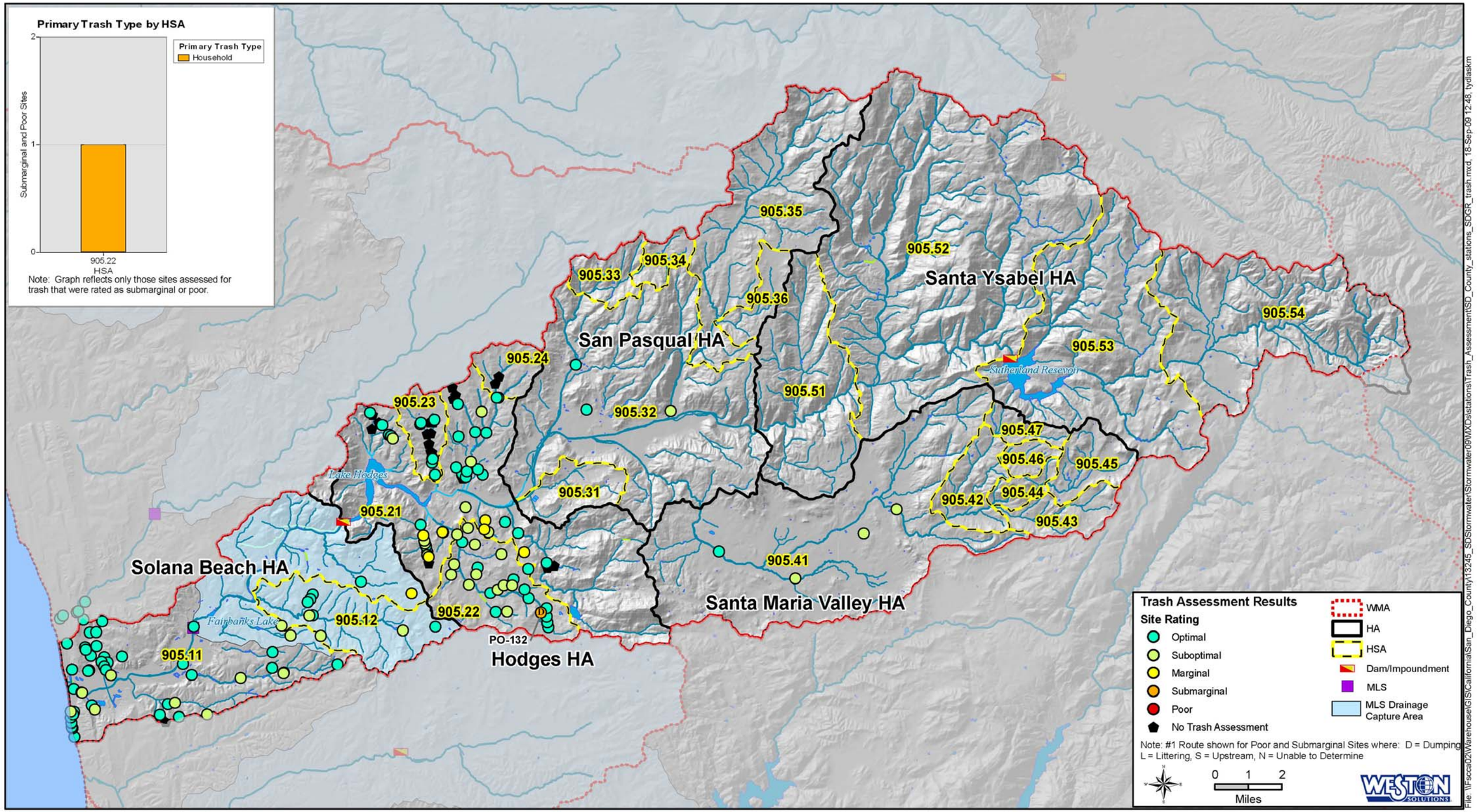

Figure 6-14. San Dieguito River Watershed Management Area Trash Assessment Results

6.3.2.2 Municipal Separate Storm Sewer System Outfall Monitoring – Random Dry Weather

The purpose of MS4 Outfall Monitoring Program is to characterize pollutant discharges from MS4 outfalls in each watershed during wet weather and dry weather, as required by the Permit (Section II.B.1 of the Permit). The collection and analysis of water samples discharging from MS4 outfalls to receiving waters will be used to address Core Management Question 3:

What is the relative urban runoff contribution to the receiving water problem(s)?

The design of the MS4 Outfall Monitoring Program is based on a combination of random and targeted samples to be collected during dry weather and wet weather periods. The program has the following four monitoring components: random dry weather, random wet weather, targeted dry weather, and targeted wet weather. The first three elements were conducted for the first time in 2008–2009 as the first phase of the program. Targeted wet weather monitoring will be implemented in 2009–2010, allowing the Copermittees time to develop a comprehensive program (SDCRC, 2008a).

The Random Dry Weather MS4 Outfall Monitoring Program was developed to deduce statistically valid inferences regarding the region as a whole, rather than analyzing each isolated MS4 station. The region was divided into nine strata delineated by WMA. The original work plan indicates that six sites from each WMA will be selected at random and will be sampled. Outfalls without dry weather flows will be documented, and the next outfall on the randomized list will be sampled. A maximum of 12 sites were visited in each WMA, but in some cases, fewer than six storm drains were flowing at the time of the site visit. Where flowing or ponded water was observed, samples were taken and analyzed for high-priority water quality pollutants identified in the Watershed Urban Runoff Management Programs.

In addition to addressing Core Management Question 3, random sampling was conducted to address the following subquestions:

1. What are the characteristics of the pollutants discharged from the MS4?
2. Are pollutant loadings changing over time?

Question 1 is best answered in a regional context, based on the study design for the random dry weather program. The regional assessment is presented in Section 12. In addition, the characteristics of the pollutants discharged in the dry weather program are presented in this section. Question 2 will be addressed in subsequent years of the program when additional data are available for temporal comparisons. Six MS4 outfall sites in the San Dieguito River WMA were monitored as part of the Random Dry Weather MS4 Outfall Monitoring Program in 2008–2009 (Figure 6-15). Two of the outfall sites were located in the Solana Beach HA, and four of the outfall sites were located in the Hodges HA (Table 6-13). Two sites (Site MS4D-SDC-02 and Site MS4D-SDC-10) had ponded water, which was sampled and analyzed. The six sites are located in predominantly residential land use areas (Figure 6-2). The six sites were each sampled on May 26, 2009.

The chemical characteristics of the water at each site are depicted in Table 6-13. Among the physical characteristics, conductivity was highest at Site SDC-03. The measures of pH were higher at Site MS4D-SDC-01 (8.32) and Site MS4D-SDC-03 (8.44) than at the other sites. Temperature was highest at Site MS4D-SDC-01. The typical high-priority water quality pollutants identified in the Watershed Urban Runoff Management Programs include total nitrogen, total phosphorus, and indicator bacteria (i.e., total coliforms, fecal coliforms, and enterococci). Of the four flowing sites, the concentration total nitrogen was highest at Site MS4D-SDC-11, and the concentration of total phosphorus was highest at Site MS4D-SDC-05. Of the two ponded sites, Site MS4D-SDC-10 had higher concentrations of total nitrogen and total phosphorus. The concentration of TSS was much greater at Site MS4D-SDC-05 than the other sites.

Concentrations of indicator bacteria varied widely among the three sites sampled, which is typical for urban runoff. Enterococcus concentrations were highest at Site MS4D-SDC-02 (700 MPN/100 mL). Fecal coliform concentrations were highest at Site MS4D-SDC-01. Site MS4D-SDC-01 also had a high concentration of enterococci (500 MPN/100 mL). Total coliform concentrations were highest at Site SDC-03.

Concentrations of constituents were compared to water quality benchmarks to help address Core Management Question 3. It is important to note that the water quality benchmarks listed in the table are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. They have been placed in Table 6-13 for comparative purposes only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Of the constituents analyzed, concentrations of total phosphorus, total nitrogen, TSS, and indicator bacteria were greater than their respective benchmarks at some sites. The results suggest that these sites may have the potential to contribute to receiving water problems for the constituents listed.

Table 6-13. San Dieguito River Municipal Separate Storm Sewer System Monitoring – Random Dry Weather Chemistry Results (Water Quality Benchmarks for Comparative Purposes Only)

Group	Analytes	Units	Benchmarks	Source	MS4D-SDC-01	MS4D-SDC-02	MS4D-SDC-03	MS4D-SDC-05	MS4D-SDC-10	MS4D-SDC-11
					8000377	11215	S-07	58-4	310-1755, 1	306-1761, 2
					5/26/2009	5/26/2009	5/26/2009	5/26/2009	5/26/2009	5/26/2009
Flow	Flow	GPM	NA	NA	6.043	Ponded	1.777	1.777	Ponded	2.222
Physical Chemistry	Conductivity	µS/cm	NA	NA	1,792	1,311	1,352	3,990	1,510	2,920
	pH	pH units	6.5-9.0	1. Basin Plan	8.32	7.5	8.44	7	7.1	7.28
	Temperature	°C	NA	NA	22.1	17.4	19.2	17.8	21.4	21.3
General Chemistry	Nitrate as N	mg/L	10	1. Basin Plan	2.190	0.180	0.250	<0.009	0.820	7.680
	Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	2.200	0.180	0.280	<0.009	0.820	7.680
	Nitrite as N	mg/L	1	1. Basin Plan	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
	Phosphorus, Total*	mg/L	0.1	1. Basin Plan	0.11	0.18	0.19	0.46	0.78	0.12
	Total Kjeldahl Nitrogen	mg/L	NA	NA	1.3	1.6	1.5	1.2	6.4	0.9
	Total Nitrogen*	mg/L	1	1. Basin Plan	3.5	1.8	1.8	1.2	7.2	8.6
	Total Suspended Solids	mg/L	58	14. NSQD	<1.0	<1.0	87	295	167	<1.0
Bacteria	Enterococci	MPN/100 mL	151	1. Basin Plan	500	700	230	230	20	300
	Fecal Coliform	MPN/100 mL	400	1. Basin Plan	1,100	170	70	20	<20	500
	Total Coliform	MPN/100 mL	NA	1. Basin Plan	2,800	1,300	13,000	5,000	8,000	800

NA indicate no criteria or published value was available or applicable to the matrix or program.
<= Results less than the method detection limit
*Total N and Total P are narrative standards in the Basin Plan based on biostimulatory responses to nutrients

Source
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

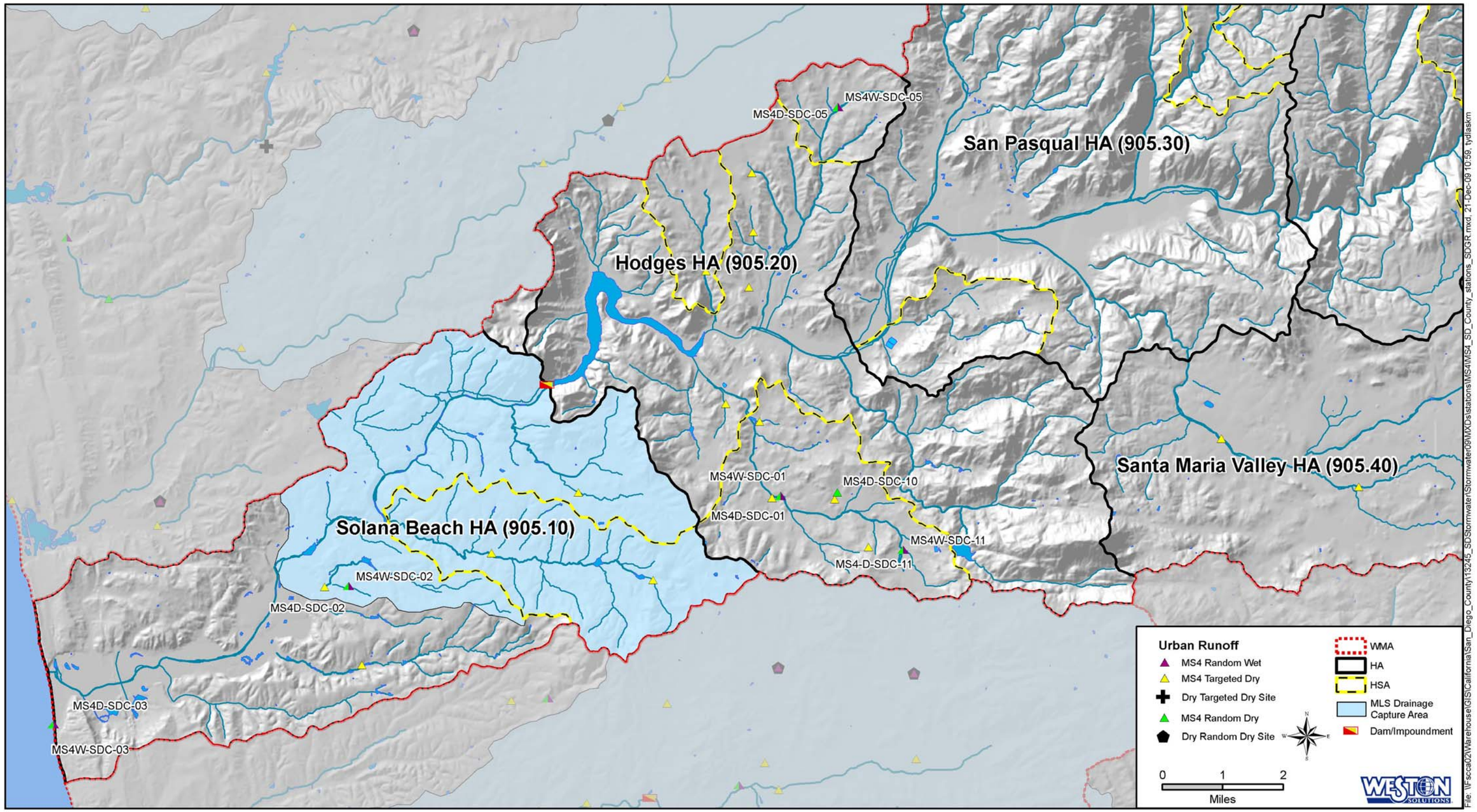

Figure 6-15. Map of San Dieguito River Watershed Management Area Showing Random Dry, Random Wet, and Target Dry Sites Monitored as Part of the Municipal Separate Storm Sewer System Outfall Monitoring Program

In addition to assessing the chemical constituents of the MS4 runoff, instantaneous loads were also calculated to further characterize the pollutants discharged from the MS4. Instantaneous loads represent the load for a given pollutant at the time of data collection. Given the intermittent nature of dry weather flows in this region, instantaneous loads should not be extrapolated to longer time periods, such as day or year. Thus, load is represented in units of pounds per minute. Comparing loads among sites can be useful to assess relative differences between site locations, but it is important to note that the results represent a snapshot in time and may not reflect the overall dry weather characteristics at that site.

Instantaneous loads were estimated for the four MS4 random dry sites that were flowing at the time of the site visit in the San Dieguito River WMA (Table 6-14). The two sites in a ponded condition (i.e., zero flow) are shown with zero instantaneous loads. The instantaneous load of total nitrogen was highest at Site MS4D-SDC-01. However, Site MS4D-SDC-11 had a very similar, but slightly lower, instantaneous load of total nitrogen. Site MS4D-SDC-05 had the highest total phosphorus instantaneous load, closely followed by Site MS4D-SDC-01. Site MS4D-SDC-05 also had the highest TSS instantaneous load. Site SDC-01 had instantaneous loads over four times and six times greater than the other sites for enterococci and fecal coliforms, respectively. Total coliform instantaneous load was over twice as high at Site MS4D-SDC-03 in comparison to the other sites.

Table 6-14. San Dieguito River Municipal Separate Storm Sewer System Monitoring – Random Dry Weather Instantaneous Loads

Group	Analytes	Units	MS4D-SDC-01	MS4D-SDC-02	MS4D-SDC-03	MS4D-SDC-05	MS4D-SDC-10	MS4D-SDC-11
			8000377	11215	S-07	58-4	310-1755, 1	306-1761, 2
			5/26/2009	5/26/2009	5/26/2009	5/26/2009	5/26/2009	5/26/2009
Flow	Flow	GPM	6.043	Ponded	2.932	1.777	Ponded	2.222
General Chemistry	Nitrate as N	lbs/min	1.10E-04	0	6.12E-06	0	0	1.42E-04
	Nitrate/Nitrite as N	lbs/min	1.11E-04	0	6.85E-06	0	0	1.42E-04
	Nitrite as N	lbs/min	0	0	0	0	0	0
	Total Kjeldahl Nitrogen	lbs/min	6.56E-05	0	3.67E-05	1.78E-05	0	1.67E-05
	Total Nitrogen	lbs/min	1.76E-04	0	4.41E-05	1.78E-05	0	1.59E-04
	Phosphorus, Total	lbs/min	5.55E-06	0	4.65E-06	6.82E-06	0	2.22E-06
	Total Suspended Solids	lbs/min	0	0	2.13E-03	4.38E-03	0	0
Bacteria	Enterococci	MPN/min	114,400	0	25,500	15,500	0	25,200
	Fecal Coliform	MPN/min	251,600	0	7,800	1,300	0	42,000
	Total Coliform	MPN/min	640,500	0	1,443,100	336,400	0	67,300

6.3.2.3 Municipal Separate Storm Sewer System Outfall Monitoring – Random Wet Weather

The random wet weather portion of the MS4 Outfall Monitoring Program is designed to answer the same subquestions, as follow, during a rain event as the random dry weather program:

1. What are the characteristics of the pollutants discharged from the MS4?
2. Are pollutant loadings changing over time?

The protocol for the random wet weather monitoring is analogous to that of the random dry weather sampling program, but the sampling is conducted during a storm event through the wet weather season (October 1 through April 30). As part of the protocol, grab samples are to be collected during any part of a storm with at least 0.1 inch of total rainfall.

Four storms were monitored in the San Dieguito River WMA as part of the random wet component of the MS4 Outfall Monitoring Program in 2008–2009 (December 15, 2008; February 6, 2009; February 13, 2009; and April 10, 2009) (Table 6-15). Five MS4 sites were selected at random and were sampled during the storm events. Of the samples site, two are located in the Solana Beach HA (Site MS4W-SDC-02 and Site MS4W-SDC-03), and three are located in the Hodges HA (sites MS4W-SDC-01, MS4W-SDC-05, and MS4W-SDC-11) as shown on Figure 6-15.

The sites can be characterized by assessing the chemical and bacterial parameters during a storm event. Wet weather data collected at Site MS4W-SDC-03, located at lower edge of Rancho Santa Fe HSA (905.11), had substantially higher conductivity and pH values compared with the other sites (Table 6-15). Site MS4W-SDC-02, predominately residential, had the highest concentration of the total phosphorus. Site MS4W-SDC-11 is located in the higher elevations of the Hodges HA and is comprised of residential, rural residential, and open space / parks and recreation land uses. This site had the highest concentrations of total nitrogen and TSS. Site MS4W-SDC-05, consisting primarily of agriculture land use, also had a relatively high concentration of total nitrogen, just slightly lower than that measured at Site MS4W-SDC-11. Total nitrogen was detected in the other three sites sampled, which are comprised primary of residential land use. Enterococcus and fecal coliform concentrations were highest at Site MS4W-SDC-11. Total coliform concentrations were highest at Site MS4W-SDC-02. It is important to note that sampling for these sites occurred during different storm events, which may account for the varying parameter concentrations. In addition, the sizes of the subwatersheds that drain to the monitored MS4 outfalls may also influence concentration. Among the five sites monitored, Site MS4W-SDC-05 and Site MS4W-SDC-11 have the largest subwatersheds (447.1 acres and 408.9 acres, respectively), followed by Site MS4W-SDC-01 (184 acres), Site MS4W-SDC-02 (106.1 acres), and Site MS4W-SDC-03 (96.4 acres).

One way to account for the variability due to different storms is to normalize the rainfall data to a uniform size and to generate flows based on the size of the subwatershed for that site. Normalizing the data by rainfall allows for a relative comparison between sites. Normalized

loads were generated for the five random wet weather sites monitored in the San Dieguito River WMA (Appendix I and Figure 6-16) based on a 0.5-inch storm and the analyte concentrations presented in Table 6-15. The relative comparison between the sites shows that the greatest loads for total nitrogen, total phosphorus, TSS, enterococci, fecal coliforms, and total coliforms were found at Site MS4W-SDC-11. A slight lower load of total nitrogen was estimated at Site MS4W-SDC-05. In contrast, the smallest loads were generally found at Site MS4W-SDC-07, which has the smallest tributary drainage area.

The catchments of the five random wet sites monitored in the San Dieguito River WMA in 2008–2009 and the land uses associated with them are depicted on Figure 6-17 to further characterize the wet weather loads. The catchment for Site MS4W-SDC-11 consists primarily of residential, rural residential, and open space / parks and recreation. In contrast, land use for Site SDC-05 consists primarily of agriculture with some residential. The other three sites consist primarily of residential land use. This difference in land use may account for the greater total nitrogen loads found at sites MS4W-SDC-05 and MS4W-SDC-11 and the greater total phosphorus, TSS, and indicator bacteria loads found at Site MS4W-SDC-05 compared to the other sites monitored. The inset on Figure 6-17 is an aerial photograph of the drainage area of Site MS4W-SDC-11, which shows the various dwellings with associated landscaping and scattered small orchards that may have contributed to the elevated constituent loads.

Table 6-15. San Dieguito River Municipal Separate Storm Sewer System Outfall Monitoring – Random Wet Weather Chemistry Results (Water Quality Benchmarks for Comparative Purposes Only)

Group	Analyte	Units	Benchmarks	Source	MS4W-SDC-01	MS4W-SDC-02	MS4W-SDC-03	MS4W-SDC-05	MS4W-SDC-11
					80000377	11215	S-07	58-4	306-1761, 2
					12/15/2008	12/15/2008	2/6/2009	2/13/2009	4/10/2009
Physical Chemistry	Conductivity	µS/cm	NA	NA	84.4	502.0	5,320.0	2,890.0	360.0
	pH	pH units	6.5-9.0	1. Basin Plan	7.62	7.36	8.41	6.91	7.95
	Temperature	°C	NA	NA	11.3	13.0	14.5	10.0	15.0
General Chemistry	Nitrate as N	mg/L	10	1. Basin Plan	-	-	0.07	1.43	0.99
	Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	0.58	0.88	0.07	1.46	1.12
	Nitrite as N	mg/L	1	1. Basin Plan	-	-	<0.007	<0.007	0.130
	Phosphorus, Total	mg/L	0.1	1. Basin Plan	0.33	0.64	0.09	<0.02	0.27
	Total Kjeldahl Nitrogen	mg/L	NA	NA	<0.3	1.4	1.4	1.6	2.3
	Total Nitrogen	mg/L	1	1. Basin Plan	0.7	2.2	1.5	3.1	3.4
	Total Suspended Solids	mg/L	100	4. MSGP 2000	26	27	<1	<1	129
Bacteria	Enterococci	MPN/100mL	NA	NA	13,000	110,000	5,000	13,000	140,000
	Fecal Coliform	MPN/100mL	400	1. Basin Plan	2,300	17,000	1,700	5,000	30,000
	Total Coliform	MPN/100mL	NA	NA	28,000	230,000	30,000	50,000	110,000

NA indicate no criteria or published value was available or applicable to the matrix or program.
< = Results less than the method detection limit

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

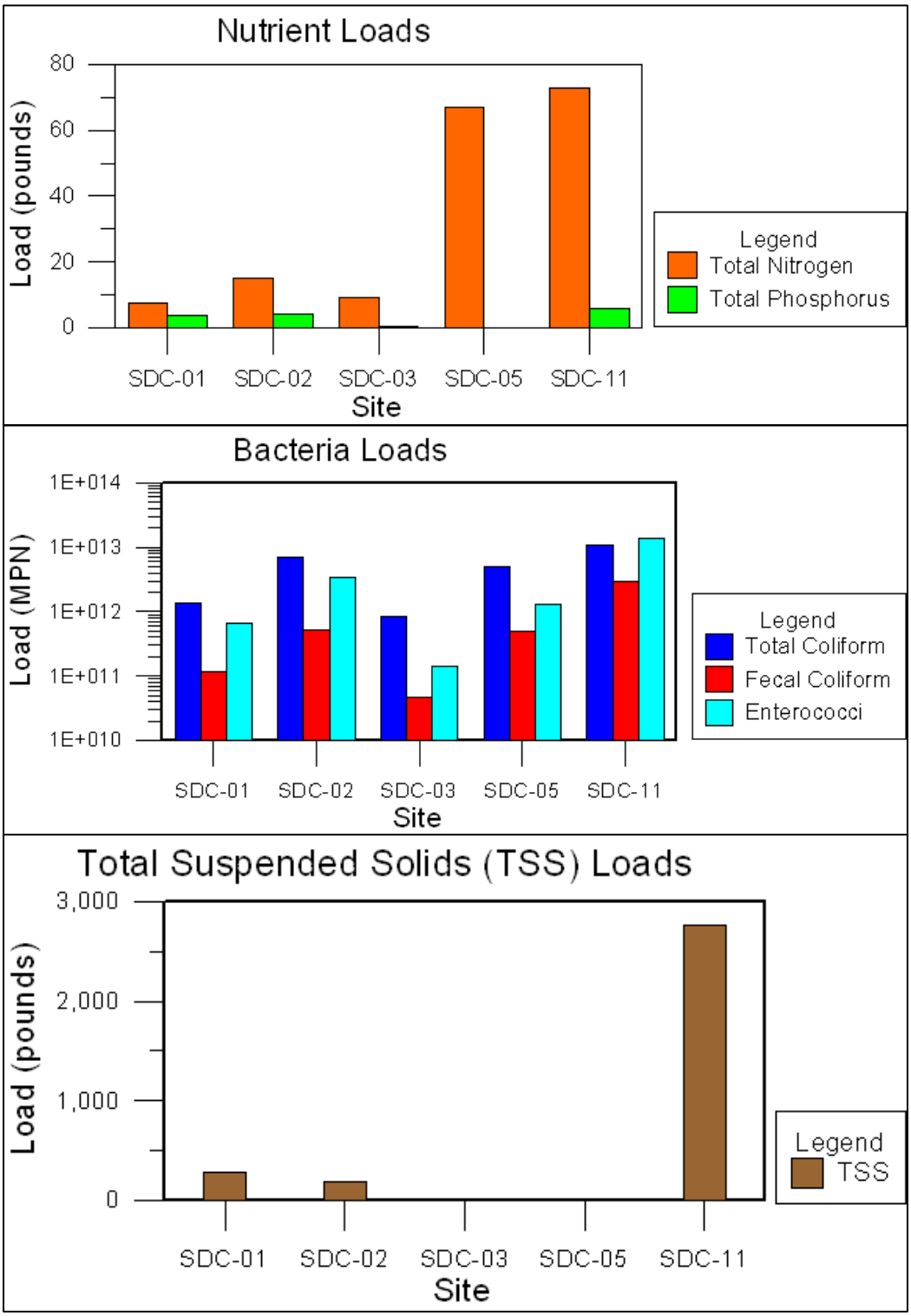

Figure 6-16. San Dieguito River Watershed Management Area Estimated Random Wet Weather Loads for Nutrients, Bacteria, and Total Suspended Solids Based on a 0.5-Inch Simulated Storm

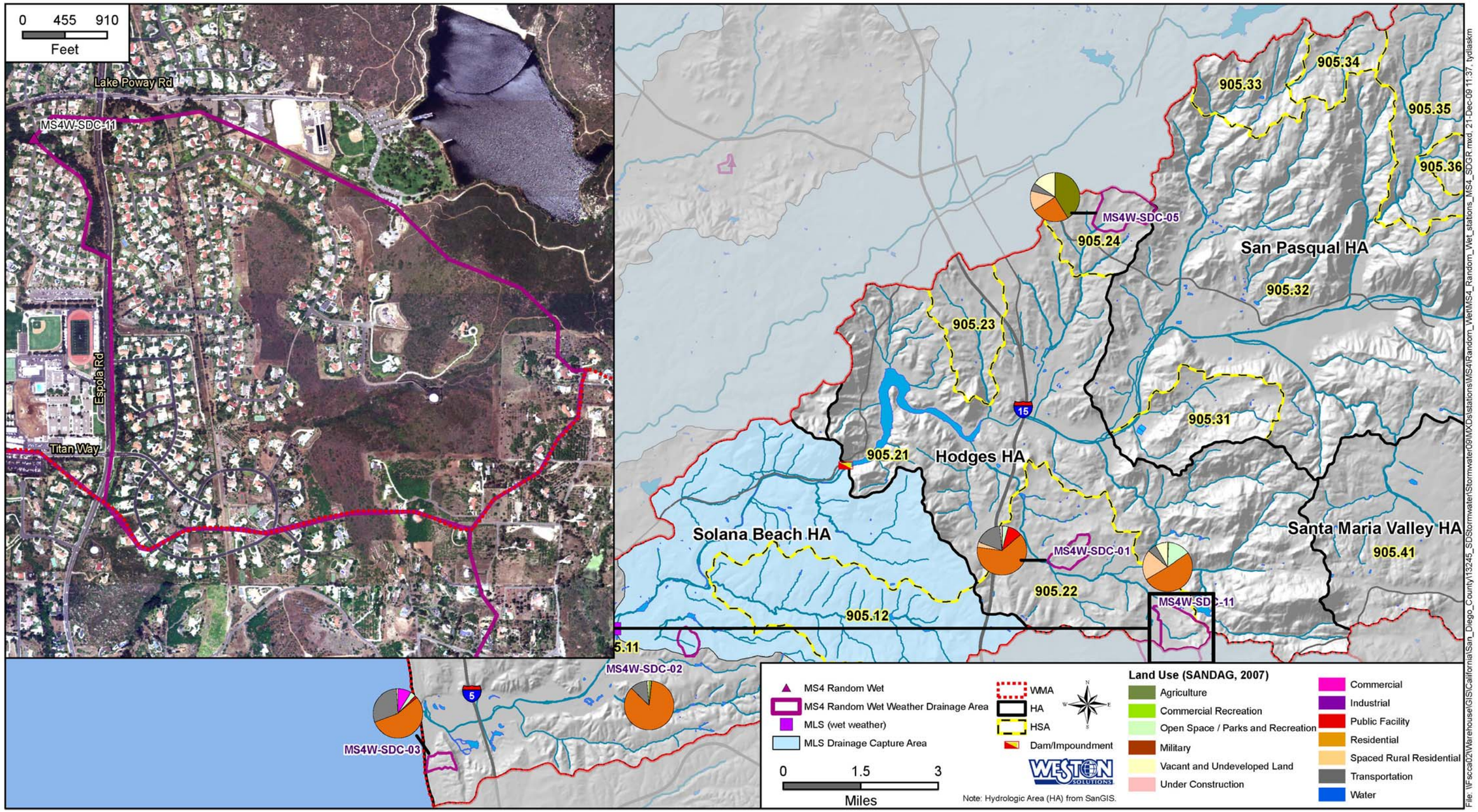

Figure 6-17. San Dieguito River Watershed Management Area Drainage Areas for Municipal Separate Storm Sewer System Random Wet Sites

6.3.2.4 Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather

The targeted dry portion of the MS4 Outfall Monitoring Program focuses monitoring efforts on those MS4 outfalls that are most likely to contribute to receiving water problems (e.g., largest potential pollutant loading) (SDCRC, 2008a). As part of the program, sampling is to occur once each year at preselected outfalls during the dry season (May 1 through September 30).

In addition to addressing Core Management Question 3 above, targeted sampling was conducted to address the following subquestions:

1. Which of the targeted MS4 outfalls have the greatest pollutant loading?
2. Are pollutant loadings changing over time?

A total of 18 MS4 outfall sites in the San Dieguito River WMA were monitored as part of the Targeted Dry Weather MS4 Outfall Monitoring Program in 2008–2009 (Figure 6-18). The sites were generally distributed in the upper portion of the Solana Beach HA and more populated areas of Hodges HA. The sites were visited between May 4, 2009 and June 22, 2009 (Table 6-16). Among the 18 sites, 16 were flowing and two were ponded at the time of the site visits and were sampled and analyzed for the constituents listed in Table 6-16. Two sites were dry at the time of the site visit (represented by a black cross on Figure 6-18).

The chemical characteristics of the water at each site are depicted in Table 6-16. Benchmarks used for assessing receiving waters in ambient conditions (Table 6-3) were placed on the MS4 Targeted Dry table to help address the Core Management Question 3—What is the relative urban runoff contribution to the receiving water problem(s)? It is important to note that the benchmarks listed in the table are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. They have been placed on the table for comparative purposes only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3.

Receiving benchmarks available for comparison to the San Dieguito River WMA MS4 targeted data set include oil & grease, chloride, nitrate, total nitrogen, total phosphorus, sulfate, TDS, total aluminum, total manganese, dissolved cadmium, dissolved copper, dissolved lead, dissolved zinc, Chlorpyrifos, Diazinon, and indicator bacteria (i.e., total coliforms and enterococci) (Table 6-16).

Chloride is a constituent comprising TDS and is typically found at high concentrations where TDS concentrations are also elevated. Chloride concentrations were greater than the benchmark at three of four sites sampled in the Green HSA (905.22) and up gradient of Green Valley Creek. Chloride is on the 2006 SWRCB Section 303(d) list for Green Valley Creek in the Del Dios HSA (905.21) (Table 6-2). TDS concentrations were greater than the TDS benchmark of 500 mg/L at all of the 18 sites monitored, reflecting the elevated TDS concentrations typically found throughout the region. TDS is on the 2006 SWRCB Section 303(d) list for the San Dieguito

River WMA (Table 6-4). The results suggest that chloride and TDS in the MS4 dry weather runoff from these sites may have the potential to contribute to receiving water problems.

Nitrate and total nitrogen are nitrogenous compounds with benchmarks available for comparison to analytes in the targeted DWM program (Table 6-16). The benchmark for nitrate is based on the Basin Plan standard of 10 mg/L, which is a drinking water standard for the protection of human health (RWQCB, 2007). In contrast, the benchmark for total nitrogen is 1.0 mg/L. This value is based on the Basin Plan objective for biostimulatory substances in an effort to maintain nutrient levels below those that stimulate algae and emergent plant growth (RWQCB, 2007). Nitrate is often a large component of the total nitrogen in receiving waters, particularly those influenced by land uses where fertilizers may be applied (e.g., residential and agriculture). However, because the WQOs for the two analytes are an order of magnitude apart, concentrations greater than benchmarks at a given site are more commonly observed for total nitrogen than for nitrate. In the San Dieguito River WMA, nitrate concentrations were less than the benchmark of 10 mg/L at each of three sites monitored, whereas total nitrogen concentrations were greater than the benchmark of 1.0 mg/L at all 11 of the sites sampled. Nitrogen is on the 2006 SWRCB Section 303(d) list for Lake Hodges in the Del Dios HSA (905.21) in the San Dieguito River WMA (Table 6-2). The results suggest that nitrogenous compounds in MS4 dry weather runoff from the targeted dry weather sites may have the potential to contribute to receiving water problems.

In addition to nitrogen, phosphorus compounds can also contribute to eutrophication in a waterbody. Similar to total nitrogen, the benchmark for total phosphorus of 0.1 mg/L (Table 6-16) is based on the Basin Plan objective for biostimulatory substances in an effort to maintain nutrient levels below those that stimulate algae and emergent plant growth (RWQCB, 2007). Concentrations of total phosphorus were greater than the benchmark at seven of 11 targeted dry weather sites where samples were collected in the San Dieguito River WMA. Phosphorus is listed on the 2006 SWRCB Section 303(d) list for Lake Hodges in the Del Dios HSA (905.21) and Cloverdale Creek in the Highland HSA (905.32) in the San Dieguito River WMA. These results suggest that those MS4 sites where the concentrations of total phosphorus were greater than the benchmark of 0.1 mg/L currently do not contribute to receiving water problems.

The benchmark for sulfate is 250 mg/L (Table 6-16). Concentrations of sulfate were greater than the benchmark at all four targeted dry weather sites where samples were collected in the Green HSA (905.22) of the San Dieguito River WMA. Sulfate is on the 2006 SWRCB Section 303(d) list for Green Valley Creek in the Del Dios HSA (905.21), which is located down gradient from the four sites sampled for sulfate. The results suggest that those MS4 sites sampled for sulfate that had concentrations greater than the benchmark of 250 mg/L may have the potential to contribute to receiving water problems.

Manganese is listed on the 2006 SWRCB Section 303(d) list for Green Valley Creek and Lake Hodges in the Del Dios HSA (905.21) and Sutherland Reservoir in the Sutherland HSA (905.53). Aluminum is listed on the 2006 SWRCB Section 303(d) list for Felicita Creek in the Felicita HSA (905.23). The benchmarks for manganese and aluminum are 0.05 mg/L and 0.2 mg/L (Table 6-16), respectively, and are based on the Basin Plan secondary drinking water standards. Concentrations of manganese were greater than the benchmark at eight of 11 targeted dry

weather sites where samples were collected. The concentration of aluminum was greater than the benchmark at the one site where it was sampled in the San Dieguito River WMA. The results suggest that those MS4 sites sampled for these constituents may not currently contribute to receiving water problems.

The benchmarks for indictor bacteria are based on Basin Plan standards of 151 MPN/100 mL for enterococci and 400 MPN/100 mL for fecal coliforms (Table 6-16). Enterococcus concentrations were greater than the benchmark at all but three of the 18 targeted dry weather sites sampled in the San Dieguito River WMA, and concentrations of fecal coliforms were greater than the benchmark at nine of 18 of the sites. Inland waterbodies within the San Dieguito River WMA are not on the 2006 SWRCB Section 303(d) list for indicator bacteria (Table 6-2).

Comparing concentrations of analytes across a WMA provides some information on the potential for runoff from the MS4 to contribute to receiving water problems. However, MS4 dry weather runoff can be extremely variable and the extent to which it contributes to the receiving water is highly dependent on flow. As part of the MS4 Targeted DWM Program, instantaneous flow (i.e., flow measured at the time of the site visit only) was measured at sites where water was flowing. Instantaneous flow combined with the concentration data described above allows for a calculation of instantaneous load at each site, which can then be used to answer subquestion 1 above (Which of the targeted MS4 outfalls have the greatest pollutant loading?). Instantaneous loads represent the load for a given pollutant at the time of data collection. Given the intermittent nature of dry weather flows in this region, instantaneous loads should not be extrapolated to longer time periods, such as day or year. Thus, load is represented in units of pounds per minute, similar to the random dry weather data. Comparing loads among sites can be useful to assess relative differences between site locations, but it is important to note that the results represent a snapshot in time and may not reflect the overall dry weather characteristics at that site.

Instantaneous flows and instantaneous loads for analytes assessed in the MS4 targeted dry weather sites in the San Dieguito River WMA are presented in Table 6-17. Among the 18 sites assessed, flow was greatest at Site ES-861.1.1 (2,356 GPM), which is located in the east portion of the San Pasqual HA, followed by Site ES-863.0.0 (688 GPM) and Site ES-860.1.4 (498 GPM), which are both located north of Lake Hodges in the Del Dios HSA (905.21) (Figure 6-18). Flows at these sites were at least twice as high as those at the other sites assessed. Sites PO-129 and PO-136, which are located south of Lake Hodges in the Green HSA (905.22), and Site CT-SDG03, located in near the coast in the Rancho Santa Fe HSA (905.11), had the lowest instantaneous flows of all sites assessed (2.0 GPM, 1.0 GPM, and 1.9 GPM, respectively), which are several orders of magnitude less than the previously mentioned sites with larger flows.

The high flows at sites ES-861.1.1, ES-863.0.0, and ES-860.1.4 produced the greatest instantaneous loads. Among the 18 sites assessed, loads of all analytes samples at these sites were greatest at one of these three sites (Table 6-17). Instantaneous loads of total nitrogen, total phosphorus, and TDS were greatest at Site 861.1.1. The highest instantaneous load of manganese was measured at Site ES-863.0.0. Of the sites where chloride was sampled, Site SD-DW012, with a flow of 224 GPM, had the highest instantaneous load. Aside from total nitrogen, instantaneous loads of the nitrogenous analytes (i.e., ammonia, nitrate, nitrite, organic nitrogen, and TKN) and orthophosphate as P were greatest at Site CT-SDG09, which had a reported flow

of 44 GPM. The smallest loads were measured at those sites where flow was lowest, reflecting the influence that flow has on the load calculation. The instantaneous loads of total nitrogen and total phosphorus are presented in the inset of Figure 6-18 to demonstrate the relative differences among sites for these nutrients and address subquestion 1 (Which of the targeted MS4 outfalls have the greatest pollutant loading?). This graph depicts single samples taken once during the 2009 dry season, with the exception of Site CT-SDG02, which was sampled twice. Although it is helpful in identifying sites with the greatest analyte loads in this first year of the program, it should not yet be considered representative of dry weather MS4 runoff in the San Dieguito River WMA. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program. Additional temporal data will also allow us to address subquestion 2 (Are pollutant loadings changing over time?) in future assessments.

In addition to nutrients, relative instantaneous loads of indicator bacteria were also assessed at dry weather sites in the San Dieguito River WMA. Instantaneous loads of total coliforms, fecal coliforms and enterococci were greatest at Site ES-861.1.1. Flow was highest at this site (as discussed above); however, bacterial loads often cannot be directly linked to flow or other analytes due to the inherent variability of indicator bacteria populations in the environment. Concentrations of enterococci, for example, can fluctuate over several orders of magnitude at a given location due to environmental variables, such as temperature, pH, TSS, and the presence of organic debris. In addition, several studies have suggested that indicator bacteria concentrations may change from one location to the next due to dieoff and reproduction in the environment, including regrowth within the MS4 (WESTON, 2005). Thus, an assessment of relative bacterial loads within a given area should be interpreted with caution, particularly when the results are based on a single sample. Additional data that will be provided in subsequent years of the MS4 Outfall Monitoring Program are needed for a more meaningful assessment of the spatial and temporal characteristics of bacterial loads in the San Dieguito River WMA.

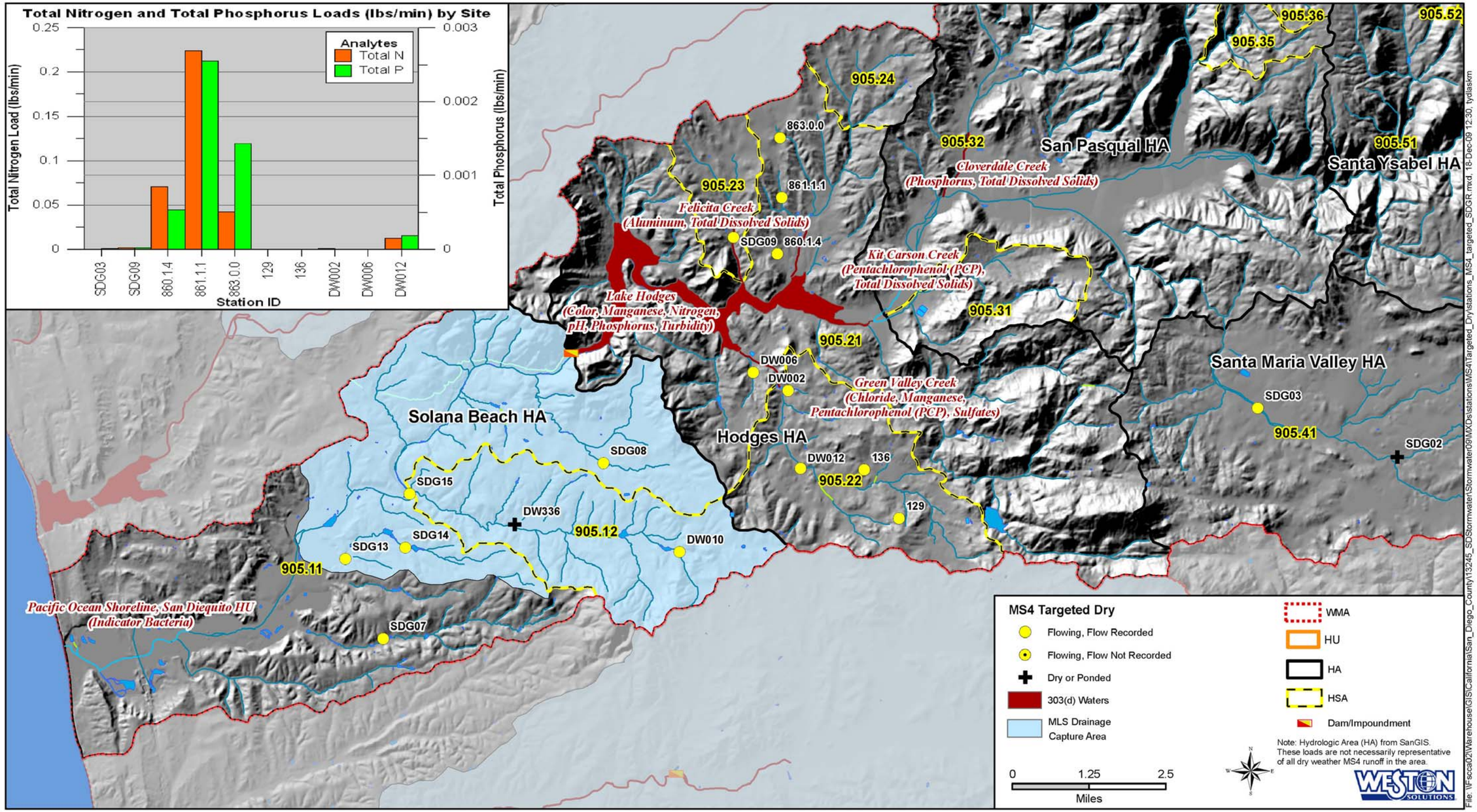

Figure 6-18. San Dieguito River Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Monitoring Sites

Table 6-16. San Dieguito River Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather Chemistry Results with Water Quality Benchmarks for Comparative Purposes Only

Analyte	Unit	Benchmark	Source	CT-SDG02 05/20/2009	CT-SDG02 05/06/2009	CT-SDG03 05/06/2009	CT-SDG07 06/22/2009	CT-SDG08 06/24/2009	CT-SDG09 06/24/2009	CT-SDG13 06/22/2009	CT-SDG14 06/22/2009	CT-SDG15 06/22/2009	ES-860.1.4 06/25/2009
Flow													
Flow	GPM	NA	NA	NS	Ponded	1.88	72.89	52.78	43.62	50.49	37.56	131.61	497.71
General Chemistry													
Oil & Grease	mg/L	10	1. Basin Plan	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 4.9
Wet Chemistry													
Ammonia	mg/L	NA	NA	8.38	3.18	0.07	NS	NS	0.05	NS	NS	NS	NS
Chloride	mg/L	250	1. Basin Plan by Hydrologic Area	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nitrate as N	mg/L	10	1. Basin Plan	NS	< 0.2	0.02	NS	NS	2.9	NS	NS	NS	NS
Nitrate/Nitrite as N	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nitrite as N	mg/L	NA	NA	NS	0.01	< 0.01	NS	NS	0.01	NS	NS	NS	NS
Organic Nitrogen	mg/L	NA	NA	NS	1.87	1.16	NS	NS	0.15	NS	NS	NS	NS
Total Kjeldahl Nitrogen	mg/L	NA	NA	NS	5.04	1.23	NS	NS	0.2	NS	NS	NS	NS
Total Nitrogen	mg/L	1	1. Basin Plan	NS	5.05	1.26	NS	NS	3.1	NS	NS	NS	17.1
Orthophosphate as P	mg/L	NA	NA	2.66	3.4	0.28	NS	NS	0.06***	NS	NS	NS	NS
Total Phosphorus	mg/L	0.1	1. Basin Plan	NS	3.97	0.29	NS	NS	0.05	NS	NS	NS	0.13
Sulfate	mg/L	250	1. Basin Plan by Hydrologic Area	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Dissolved Solids	mg/L	500	1. Basin Plan	NS	2,080	2,000	5,220	2,280	1,640	5,060	5,450	2,880	1,134
Total Suspended Solids	mg/L	58	NA	NS	6.4	3.1	9.5	5.7	0.1	5.1	7.4	1.3	1.1
Total Hardness	mg/L	NA	NA	NS	950	650	NS	NS	820	NS	NS	NS	590
Total Metals													
Aluminum, Total	µg/L	0.2	1. Basin Plan	NS	NS	NS	NS	NS	40	NS	NS	NS	NS
Manganese, Total	mg/L	0.05	1. Basin Plan	NS	2.47	2.53	NS	NS	0.0258	NS	NS	NS	0.1
Dissolved Metals													
Aluminum, Dissolved	µg/L	NA	NA	NS	NS	NS	NS	NS	3.86	NS	NS	NS	NS
Cadmium, Dissolved	mg/L	(a)	40 CFR 131.38	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.005
Copper, Dissolved	mg/L	(a)	40 CFR 131.38	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.0056
Lead, Dissolved	mg/L	(a)	40 CFR 131.38	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.005
Manganese, Dissolved	mg/L	NA	NA	NS	2.11	2.15	NS	NS	0.0176	NS	NS	NS	NS
Zinc, Dissolved	mg/L	(a)	40 CFR 131.38	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.014
Pesticides													
Chlorpyrifos	µg/L	0.02	CA Dept of Fish Game 1998	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.05**
Diazinon	µg/L	0.08	CA Dept of Fish Game 2000	NS	NS	NS	NS	NS	NS	NS	NS	NS	< 0.05
Bacteria													
Enterococci	MPN/100 mL	151	1. Basin Plan	40	16,000	130	2,200	300	500	170	300	40	185
Fecal Coliform	MPN/100 mL	400	1. Basin Plan REC-1/REC-2	20	16,000	40	16,000	300	20	230	40	20	529
Total Coliform	MPN/100 mL	NA	NA	140	50,000	210	16,000	9,000	800	900	5,000	300	32,700
CMC Benchmarks for Dissolved Metals													
Cadmium, Dissolved	mg/L			NS	NS	NS	NS	NS	NS	NS	NS	NS	0.019
Copper, Dissolved	mg/L			NS	NS	NS	NS	NS	NS	NS	NS	NS	0.050
Lead, Dissolved	mg/L			NS	NS	NS	NS	NS	NS	NS	NS	NS	0.281
Zinc, Dissolved	mg/L			NS	NS	NS	NS	NS	NS	NS	NS	NS	0.379

Table 6-16. San Dieguito River Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather Chemistry Results with Water Quality Benchmarks for Comparative Purposes Only (Continued)

Analyte	Unit	Benchmark	Source	ES-861.1.1	ES-863.0.0	PO-129	PO-136	SD-DW002	SD-DW006	SD-DW010	SD-DW012	SD-DW336
				06/25/2009	06/25/2009	06/24/2009	06/23/2009	05/04/2009	05/04/2009	05/05/2009	05/05/2009	05/04/2009
Flow												
Flow	GPM	NA	NA	2356.20	688.14	2.00	1.00	13.46	3.38	31.20	224.42	Ponded
General Chemistry												
Oil & Grease	mg/L	10	1. Basin Plan	< 4.9	< 4.9	NS	NS	NS	NS	NS	NS	NS
Wet Chemistry												
Ammonia	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chloride	mg/L	250	1. Basin Plan by Hydrologic Area	NS	NS	530	226	290	NS	NS	440	NS
Nitrate as N	mg/L	10	1. Basin Plan	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nitrate/Nitrite as N	mg/L	NA	NA	NS	NS	0.68	0.2	NS	NS	NS	NS	NS
Nitrite as N	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Organic Nitrogen	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Kjeldahl Nitrogen	mg/L	NA	NA	NS	NS	2.3	1.5	NS	NS	NS	NS	NS
Total Nitrogen	mg/L	1	1. Basin Plan	11.4	7.4	3	1.7	3.625	3.975	NS	6.65	NS
Orthophosphate as P	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Phosphorus	mg/L	0.1	1. Basin Plan	0.13	0.25	0.18	0.15	< 0.05	0.094	NS	0.098	NS
Sulfate	mg/L	250	1. Basin Plan by Hydrologic Area	NS	NS	974	473	490	NS	NS	380	NS
Total Dissolved Solids	mg/L	500	1. Basin Plan	1,232	1,365	2,440	1,320	1,700	1,400	1,800	1,800	1,500
Total Suspended Solids	mg/L	58	NA	2.5	6	< 20	< 20	< 10	< 10	19	< 10	10
Total Hardness	mg/L	NA	NA	560	640	NS	NS	NS	NS	NS	NS	NS
Total Metals												
Aluminum, Total	µg/L	0.2	1. Basin Plan	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese, Total	mg/L	0.05	1. Basin Plan	< 0.02	0.15	0.2	0.02	0.15	0.061	NS	< 0.02	NS
Dissolved Metals												
Aluminum, Dissolved	µg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium, Dissolved	mg/L	(a)	40 CFR 131.38	< 0.005	< 0.005	NS	NS	NS	NS	NS	NS	NS
Copper, Dissolved	mg/L	(a)	40 CFR 131.38	0.0034	0.01	NS	NS	NS	NS	NS	NS	NS
Lead, Dissolved	mg/L	(a)	40 CFR 131.38	< 0.005	< 0.005	NS	NS	NS	NS	NS	NS	NS
Manganese, Dissolved	mg/L	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc, Dissolved	mg/L	(a)	40 CFR 131.38	0.013	0.017	NS	NS	NS	NS	NS	NS	NS
Pesticides												
Chlorpyrifos	µg/L	0.02	CA Dept of Fish Game 1998	< 0.05**	< 0.05**	NS	NS	NS	NS	NS	NS	NS
Diazinon	µg/L	0.08	CA Dept of Fish Game 2000	< 0.05	< 0.05	NS	NS	NS	NS	NS	NS	NS
Bacteria												
Enterococci	MPN/100 mL	151	1. Basin Plan	327	932	300	800	9,000	860	3,800 E	500	32,000 E
Fecal Coliform	MPN/100 mL	400	1. Basin Plan REC-1/REC-2	931	461	230	30,000	260	130	790	790	7,900
Total Coliform	MPN/100 mL	NA	NA	13,000	27,200	13,000	30,000	49,000	1,300	14,000	1,700	13,000
CMC Benchmarks for Dissolved Metals												
Cadmium, Dissolved	mg/L			0.019	0.019	NS	NS	NS	NS	NS	NS	NS
Copper, Dissolved	mg/L			0.050	0.050	NS	NS	NS	NS	NS	NS	NS
Lead, Dissolved	mg/L			0.281	0.281	NS	NS	NS	NS	NS	NS	NS
Zinc, Dissolved	mg/L			0.379	0.379	NS	NS	NS	NS	NS	NS	NS

E = Estimated
NA indicate no criteria or published value was available or applicable to the matrix or program.
NS=Not Sampled
< = results less than the method detection limit.
***In cases where Orthophosphate results are greater than Total Phosphorus, this may occur when results are near the detection limit and the variability of the analytical method may play a role.
a) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. The Criteria Maximum Concentration (CMC) was used.

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Table 6-17. San Dieguito River Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather Loads

Group	Analytes	Units	CT-SDG02	CT-SDG03	CT-SDG07	CT-SDG08	CT-SDG09	CT-SDG13	CT-SDG14	CT-SDG15	ES-860.1.4
			5/6/2009 & 5/20/2009*	5/6/09	6/22/09	6/24/09	6/24/09	6/22/09	6/22/09	6/22/09	6/25/09
Flow	Flow	GPM	Ponded	1.9	72.9	52.8	43.6	50.5	37.6	131.6	497.7
Oil & Grease	Oil & Grease	lbs/min									0
Bacteria	Enterococcus	MPN/min	0	9.276E+03	6.070E+06	5.994E+05	8.257E+05	3.249E+05	4.266E+05	1.993E+05	3.485E+06
	Fecal Coliform	MPN/min	0	2.854E+03	4.414E+07	5.994E+05	3.303E+04	4.396E+05	5.688E+04	9.964E+04	9.967E+06
	Total Coliform	MPN/min	0	1.498E+04	4.414E+07	1.798E+07	1.321E+06	1.720E+06	7.110E+06	1.495E+06	6.161E+08
Wet Chemistry	Ammonia	lbs/min	0	1.10E-06	NS	NS	1.82E-05	NS	NS	NS	NS
	Chloride	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Orthophosphate as P	lbs/min	0	4.40E-06	NS	NS	2.18E-05	NS	NS	NS	NS
	Nitrate as N	lbs/min	0	3.15E-07	NS	NS	1.06E-03	NS	NS	NS	NS
	Nitrite as N	lbs/min	0	0	NS	NS	3.64E-06	NS	NS	NS	NS
	Nitrate/Nitrite as N	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Organic Nitrogen	lbs/min	0	1.82E-05	NS	NS	5.46E-05	NS	NS	NS	NS
	Sulfate	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Total Phosphorus	lbs/min	0	4.56E-06	NS	NS	1.82E-05	NS	NS	NS	5.40E-04
	Total Kjeldahl Nitrogen	lbs/min	0	1.93E-05	NS	NS	7.28E-05	NS	NS	NS	NS
	Total Nitrogen	lbs/min	0	1.98E-05	NS	NS	1.13E-03	NS	NS	NS	7.10E-02
	Total Suspended Solids (TSS)	lbs/min	0	4.88E-05	5.78E-03	2.51E-03	3.64E-05	2.15E-03	2.32E-03	1.43E-03	4.57E-03
	Total Dissolved Solids (TDS)	lbs/min	0	3.15E-02	3.18E+00	1.00E+00	5.97E-01	2.13E+00	1.71E+00	3.16E+00	4.71E+00
Pesticides	Chlorpyrifos	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	0
	Diazinon	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	0
Total Metals	Aluminum, Total	lbs/min	NS	NS	NS	NS	1.46E-05	NS	NS	NS	NS
	Manganese, Total	lbs/min	0	3.98E-05	NS	NS	9.39E-06	NS	NS	NS	4.15E-04
Dissolved Metals	Aluminum, Dissolved	lbs/min	NS	NS	NS	NS	1.41E-06	NS	NS	NS	NS
	Cadmium, Dissolved	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	0
	Copper, Dissolved	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	2.33E-05
	Lead, Dissolved	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	0
	Manganese, Dissolved	lbs/min	0	3.38E-05	NS	NS	6.41E-06	NS	NS	NS	NS
	Zinc, Dissolved	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	5.82E-05

Table 6-17. San Dieguito River Municipal Separate Storm Sewer System Outfall Monitoring – Targeted Dry Weather Loads (Continued)

Group	Analytes	Units	ES-861.1.1	ES-863.0.0	PO-129	PO-136	SD-DW002	SD-DW006	SD-DW010	SD-DW012	SD-DW336
			6/25/09	6/25/09	6/24/09	6/23/09	5/4/09	5/4/09	5/5/09	5/5/09	5/4/09
Flow	Flow	GPM	2356.2	688.1	2.0	1.0	13.5	3.4	31.2	224.4	NA
Oil & Grease	Oil & Grease	lbs/min	0	0							
Bacteria	Enterococcus	MPN/min	2.917E+07	2.428E+07	2.271E+04	3.028E+04	4.586E+06	1.100E+05	4.488E+06	4.248E+06	0.000E+00
	Fecal Coliform	MPN/min	8.304E+07	1.201E+07	1.741E+04	1.136E+06	1.325E+05	1.663E+04	9.330E+05	6.711E+06	0.000E+00
	Total Coliform	MPN/min	1.159E+09	7.085E+08	9.842E+05	1.136E+06	2.497E+07	1.663E+05	1.653E+07	1.444E+07	0.000E+00
Wet Chemistry	Ammonia	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Chloride	lbs/min	NS	NS	8.85E-03	1.89E-03	3.26E-02	NS	NS	8.24E-01	NS
	Orthophosphate as P	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Nitrate as N	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Nitrite as N	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Nitrate/Nitrite as N	lbs/min	NS	NS	1.13E-05	1.67E-06	NS	NS	NS	NS	NS
	Organic Nitrogen	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Sulfate	lbs/min	NS	NS	1.63E-02	3.95E-03	5.50E-02	NS	NS	7.12E-01	NS
	Total Phosphorus	lbs/min	2.56E-03	1.44E-03	3.00E-06	1.25E-06	0	2.65E-06	NS	1.84E-04	NS
	Total Kjeldahl Nitrogen	lbs/min	NS	NS	3.84E-05	1.25E-05	NS	NS	NS	NS	NS
	Total Nitrogen	lbs/min	2.24E-01	4.25E-02	5.01E-05	1.42E-05	4.07E-04	1.12E-04	NS	1.25E-02	NS
	Total Suspended Solids (TSS)	lbs/min	4.92E-02	3.45E-02	0	0	0	0	4.95E-03	0	0
	Total Dissolved Solids (TDS)	lbs/min	2.42E+01	7.84E+00	4.07E-02	1.10E-02	1.91E-01	3.95E-02	4.69E-01	3.37E+00	0.00E+00
Pesticides	Chlorpyrifos	lbs/min	0	0	NS	NS	NS	NS	NS	NS	NS
	Diazinon	lbs/min	0	0	NS	NS	NS	NS	NS	NS	NS
Total Metals	Aluminum, Total	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Manganese, Total	lbs/min	0	8.61E-04	3.34E-06	1.67E-07	1.68E-05	1.72E-06	NS	0.00E+00	NS
Dissolved Metals	Aluminum, Dissolved	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Cadmium, Dissolved	lbs/min	0	0	NS	NS	NS	NS	NS	NS	NS
	Copper, Dissolved	lbs/min	6.69E-05	5.74E-05	NS	NS	NS	NS	NS	NS	NS
	Lead, Dissolved	lbs/min	0	0	NS	NS	NS	NS	NS	NS	NS
	Manganese, Dissolved	lbs/min	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Zinc, Dissolved	lbs/min	2.56E-04	9.76E-05	NS	NS	NS	NS	NS	NS	NS

*Site visited twice. Flow data only provided from first visit. Assumed same flow for second visit as reported for first visit.
NS=Not Sampled
Note: E+01, E+02, etc. is scientific notation meaning multiply result by 10, 100, etc., respectively.

6.3.2.5 Regional Dry Weather Source Identification Program

The Regional Dry Weather Source Identification Program was conducted in drainages within the Los Peñasquitos WMA and the San Diego Bay WMA. See Section 12 for a summary of the results.

6.3.2.6 CSDM Results (storm drain and receiving water combined)

CSDM was conducted at five dry weather outfall locations during multiple events during the same period as the DWM Program (May 1, 2008–September 30, 2008). Samples were located only in the coastal area of the WMA in the Solana Beach HA and have no relation to the MLS and TWAS locations, but do provide a measure of conditions in the coastal areas. Additionally, CSDM sites include monitoring in the receiving water within direct influence of the outfalls monitored. During the 2008 DWM period, bacterial concentrations from coastal storm drains were greater than the action levels in three samples for enterococci and five samples for fecal coliform and total coliform (Table 6-18). All of the receiving water samples had bacterial concentrations below AB411 criteria (Table 6-19). This suggests that the coastal storm drains monitored do not impact coastal receiving waters with any regular frequency during dry weather conditions. For a complete description of the CSDM Program and monitoring results, please refer to Appendix N.

Table 6-18. San Dieguito River Watershed Management Area Dry Season Coastal Storm Drain Monitoring Results

Season	Analyte	Action Level (MPN/100 mL)	Number of Samples Greater Than Action Level	Number of Samples Collected	Number of Sites Visited
2008 Dry Season (May 1-September 30)	Enterococci	17,820	3	26	5
	Fecal coliform	18,775	5	26	5
	Total coliform	160,000	5	26	5

Table 6-19. San Dieguito River Watershed Management Area Dry Season Coastal Receiving Water Monitoring Results

Season	Analyte	AB 411 (MPN/100 mL)	Number of Samples Greater Than AB 411	Number of Samples Collected
2008 Dry Season (May 1-September 30)	Enterococci	104	0	9
	Fecal coliform	400	0	9
	Total coliform	10,000	0	9

The results of the Wet Season CSDM are presented in Table 6-20 and Table 6-21. Samples were collected between October 1, 2008 and April 30, 2009 from five storm drain outfalls (29 samples). A total of 11 receiving water samples were collected. Among the storm drain samples, bacteria concentrations were greater than the action level in one sample for enterococci, two for fecal coliform and four for total coliform. Bacterial concentrations in the receiving waters were

less than the benchmark in all samples collected. Similar to the dry weather CSDM, These results suggest that coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters during the wet weather season.

Table 6-20. San Dieguito River Watershed Management Area Wet Season Coastal Storm Drain Monitoring Results

Season	Analyte	Action Level (MPN/100 mL)	Number of Samples Greater Than Action Level	Number of Samples Collected	Number of Sites Visited
2008-2009 Wet Season (October 1st-April 30th)	Enterococci	17,820	1	29	5
	Fecal coliform	18,775	2	29	5
	Total coliform	160,000	4	29	5

Table 6-21. San Dieguito River Watershed Management Area Wet Season Coastal Receiving Water Monitoring Results

Season	Analyte	AB 411 (MPN/100 mL)	Number of Samples Greater Than AB 411	Number of Samples
2008-2009 Wet Season (October 1st-April 30th)	Enterococci	104	0	11
	Fecal coliform	400	0	11
	Total coliform	10,000	0	11

6.4 Constituent Load Estimates

Annual loads were estimated for the MLS for the purpose of displaying loads that are discharged to a coastal lagoon, estuary, bay, or the Pacific Ocean. Loads were estimated for wet weather runoff as a result of the monitored storm event in 2008–2009 and are presented in Appendix J.

Wet weather loads were estimated for the San Dieguito River MLS using daily mean flow rates for the 2008–2009 Monitoring Season. For the purposes of calculating loads, the time frame for each monitoring year was defined as July 1 through June 30 of the following year (i.e., July 1, 2008 through June 30, 2009 for the 2008–2009 Monitoring Season). Wet weather loads were calculated by multiplying the average event mean concentration (EMC) for each constituent for the season's wet weather monitoring events by the seasons total wet weather discharge volume. An example calculation is expressed as follows:

$A \times B = C$

where:
A = 2008–2009 Average Wet Weather EMC (pounds/gallon)
B = volume discharged (gallon/year)
C = Wet Weather Load (pounds/year)

If a constituent has never had a result above the detection limit (i.e., non-detect for all results), a load was not calculated. If a constituent had at least one result above the detection limit, that result was used, and all other results were calculated as one-half of the detection limit to estimate the load. For fecal indicator bacteria, values were expressed as MPN/yr. However, the RWQCB has indicated that future assessments of bacterial TMDLs may be based on exceedance days as opposed to loads.

The average ambient weather monitoring EMC for each parameter was multiplied by the total base flow volume, excluding storm event volumes. Base flow volumes were separated from the annual hydrograph by subtracting precipitation-related discharge volumes included in the wet weather load estimate. The total load is the sum of the wet weather load plus the ambient dry weather load. Wet weather loading estimates were prepared using the historical observed wet weather discharge volumes for each monitoring period with the average wet weather EMC from each monitoring season. Because dry weather concentrations were not measured under the previous Permit cycle, historical ambient or total loads could not be estimated.

6.5 San Dieguito River Watershed Management Area Assessment

The San Dieguito River Watershed was assessed for ambient conditions and wet weather conditions using chemistry and toxicity data collected during receiving water monitoring events. Both assessments use the results of the bioassessment surveys, which are considered to represent the long-term assessment of the benthic community. The ambient and wet weather assessments are then combined for integrated watershed assessment intended to provide watershed managers needed information for planning purposes. Watershed water quality monitoring data were assessed using the following:

- San Dieguito River WMA Ambient Monitoring Summary.
- San Dieguito River WMA Wet Weather Assessment.
- Integrated Assessment.
- Triad Decision Matrix.
- 2001–2006 BLTEA Ratings for the San Dieguito River WMA.

6.5.1 San Dieguito River Watershed Management Area Ambient Monitoring Summary

Ambient data were collected in the WMA as part of the SMC Program for the first time in 2008–2009. Therefore, the assessment of ambient conditions was limited to a summary of the number of results for individual constituents with concentrations greater than the benchmark. Data summarized for ambient conditions in the San Dieguito River WMA are presented in Table 6-22.

In the San Dieguito River WMA, the 2008–2009 SMC results were combined with the ambient results collected in 2007–2008. The summary is presented in Table 6-23.

Table 6-22. San Dieguito River Watershed Management Area Ambient Monitoring Summary Data Set

Program Data Set	Data Collection Period	Constituents Summarized
SMC Ambient Monitoring	June, 2009	Chemistry and toxicity
Rapid Stream Bioassessments	May, 2001–May 2008	Benthic macroinvertebrates

A total of eleven constituents monitored in the San Dieguito River WMA have been measured at concentrations greater than their respective benchmarks during ambient conditions (Table 6-23). TDS, chloride, sulfate, and total nitrogen concentrations were greater than the benchmark in all samples collected. Total phosphorus and enterococci concentrations were greater than the benchmarks in 51 to 75% of the samples collected. TSS, turbidity, biochemical oxygen demand (BOD), were greater than the benchmark in 25 to 50% of the samples. MBAS and fecal coliforms were greater than the benchmarks in 1 to 25% of the samples.

Persistent toxicity is evident when more than half of the toxicity tests conducted on any species have a NOEC of less than 100%. There is no evidence of persistent toxicity during ambient conditions in the San Dieguito River WMA based on the data observed to date.

IBI scores from bioassessment monitoring at the MLS and the TWAS within the San Dieguito River Watershed were rated Fair to Very Poor. The San Dieguito River MLS has been rated Poor for the monitoring period since 2002. The Green Valley Creek site (Site SDC-TWAS-1) received a Very Poor IBI rating for 2007–2008 Monitoring Season and 2008–2009 Monitoring Season, while the San Pasqual Creek site (Site SDC-TWAS-2) has received a Fair rating for the same time period. These results indicate that there is evidence of benthic alteration at the MLS and TWAS-1 sites.

Table 6-23. San Dieguito River Watershed Management Area Interim Ambient Monitoring Summary

Constituents With Any Ambient Receiving Water Results Above the Benchmark	Number of Ambient Receiving Water Results Above the Benchmark					
	2007/2008		2008/2009		CUMULATIVE	
	#/6	%	#1	%	#*	%
Conventional Parameters						
Total dissolved solids	6	100	NA	NA	**6**	**100**
Total suspended solids	2	33	1	100	**3**	**43**
Turbidity	2	33	NA	NA	**2**	**33**
BOD	3	50	NA	NA	**3**	**50**
MBAS	1	17	NA	NA	**1**	**17**
Chloride	NA	NA	1	100	**1**	**100**
Sulfate	NA	NA	1	100	**1**	**100**
Nutrients						
Total nitrogen	6	100	1	100	**7**	**100**
Total Phosphorus	5	83	0	0	**5**	**71**
Bacteriological						
Fecal coliform	1	17	NA	NA	**1**	**17**
Enterococci	4	67	NA	NA	**4**	**67**
Toxicity						
Ceriodaphnia 7-day reproduction	1	17	NA**	NA**	**1**	**17**
Selenastrum 96-hour	1	17	NA	NA	**1**	**17**
Bioassessment	**IBI Rating**					
Green Valley Creek (SDC-TWAS-1)	Very Poor[1]		NA		**Very Poor[2]**	
San Dieguito River MLS	Poor		NA		**Poor[2]**	
San Pasqual Creek (SDC-TWAS-2)	Fair		NA		**Fair[2]**	
San Dieguito River (SMC-00473)	Not Sampled		Very Poor		**Very Poor**	

* = Total number of observations varied among constituents.
**Toxicity in 2008-2009 screen values were used therefore data are not comparable.
NA = Not assessed, Not Applicable, or Not Analyzed.

[1]Green Valley Creek (SDC-TWAS-1) and San Pasqual Creek (SDC-TWAS-2) had extensive fire damage during the Fall 2007 Wildfires.

[2]Cumulative result based on average of last 3 years of historic data (refer to wet weather long-term WMA assessment table).

6.5.2 San Dieguito River Watershed Management Area Wet Weather Assessment

Data used to complete the WMA assessment for wet weather conditions are presented in Table 6-24. The WMA assessment methods, discussed in the Methods Section (Appendix B), were applied to these data to determine the COCs and to develop a frequency of occurrence ranking of high, medium, or low. The results of this assessment are presented in Table 6-25.

Table 6-24. San Dieguito River Watershed Management Area Wet Weather Assessment Data Set

Program Data Set	Data Collection Period	Constituents Assessed
MLS Storm Event Monitoring	November 12, 2008	Chemistry, bacteria, and toxicity
Rapid Stream Bioassessments	May, 2002–May 2008	Benthic macroinvertebrates

In the San Dieguito River WMA, the following five constituents were classified as wet weather constituents of concern with low, medium, or high frequency of occurrence (Table 6-25):

- TDS.
- TSS.
- Turbidity.
- Fecal coliforms.

TDS was identified as a high frequency of occurrence COC and received three diamonds. The rating for TDS was based on Criterion No. 1, when test results exceed the benchmark in greater than or equal to 80% of the samples. Historically, TDS concentrations have been greater than the benchmark in 100% of the wet weather samples, with the exception of the 2007–2008 Monitoring Season when concentrations were greater than the benchmark in 50% of the wet weather samples. Fecal coliform was identified as a medium frequency of occurrence COC and received two diamonds The rating for fecal coliform is based on Criterion No. 5, when less than 80% and greater than or equal to 50% of the MLS or TWAS samples exceed the benchmark and no exceedances or data available for DWS in the past year. Fecal coliform concentrations were above the benchmark in 52% of the wet weather samples.

Turbidity and TSS were each identified as a COC having a low frequency of occurrence. Each received one diamond based on Criterion No. 9, when MLS or TWAS exceedances were found in 25% to less than or equal to 50% of the samples and at least one exceedance found in last two years at the MLS or TWAS (with or without DWS exceedances in the past year).

One high frequency of occurrence COC (TDS), one medium frequency of occurrence COC (fecal coliform), and one low frequency of occurrence COC (turbidity) are constituents on the 2006 SWRCB Section 303(d) list—indicator bacteria along the Pacific Ocean shoreline and TDS and turbidity within the San Dieguito River WMA (TDS within Kit Carson Creek and Felicita Creek and turbidity within Lake Hodges). Jurisdictional dry weather data do not indicate elevated action level exceedances for indicator bacteria. However, receiving water assessments at the MLS indicated elevated concentrations of fecal coliforms during the wet weather monitoring event.

Persistent toxicity is evident when more than half of the toxicity tests conducted on any species have a NOEC of less than 100%. There is no evidence of persistent toxicity during wet weather conditions in the MLS for the San Dieguito River WMA based on the data observed to date (Table 6-25).

As discussed above, IBI scores from bioassessment monitoring indicate evidence of benthic alteration at the MLS and TWAS-1 sites.

Table 6-25. San Dieguito River Watershed Management Area Interim Wet Weather Constituent Assessment

Constituents With Any Wet Weather Benchmark or Dry Weather Action Level Exceedance	Wet Weather Receiving Water Results at MLS																		Frequency of Occurrence	Criterion No.
	2001/2002		2002/2003		2003/2003		2003/2005		2005/2006		2006/2007		2007/2008		2008/2009		CUMULATIVE			
	#/3	%	#/3	%	#/3	%	#/3	%	#/3	%	#/3	%	#/6	%	#/1	%	#*	%		
Conventional Parameters																				
pH	0	0	0	0	1	33	0	0	0	0	0	0	1	17	0	0	**2**	**8**	-	-
BOD	0	0	0	0	1	33	0	0	0	0	0	0	2	33	0	0	**3**	**12**	-	-
COD	0	0	0	0	1	33	1	33	0	0	0	0	1	17	0	0	**3**	**12**	-	-
Total dissolved solids	3	100	3	100	3	100	3	100	3	100	3	100	3	50	1	100	**22**	**88**	♦♦♦	1
Total suspended solids	0	0	0	0	1	33	0	0	1	33	2	67	3	50	0	0	**7**	**28**	♦	9
Turbidity	0	0	0	0	0	0	0	0	1	33	1	33	5	83	0	0	**7**	**28**	♦	9
MBAS	0	0	0	0	0	0	0	0	0	0	0	0	1	17	0	0	**1**	**4**	-	-
Ammonia	0	0	0	0	0	0	0	0	0	0	0	0	1	17	0	0	**1**	**4**	-	-
Nutrients																				
Nitrite	0	0	0	0	0	0	0	0	0	0	0	0	1	17	0	0	**1**	**4**	-	-
Bacteriological																				
Total coliform**	0	0	1	33	1	33	1	33	0	0	0	0	1	17	0	0	**4**	**16**	-	-
Fecal coliform	0	0	2	67	2	67	2	67	2	67	1	33	3	50	1	100	**13**	**52**	♦♦	5
Enterococci**	0	0	1	33	1	33	1	33	0	0	1	33	2	33	0	0	**6**	**24**	-	-
Pesticides																				
Chlorpyrifos	0	0	0	0	0	0	0	0	0	0	0	0	2	67	0	0	**2**	**8**	-	-
L-Cyhalothrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	17	0	0	**1**	**14**	-	-
Toxicity																			**EVIDENCE OF PERSISTENT TOXICITY?**	
Ceriodaphnia 96-hour	0	0	0	0	0	0	0	0	0	0	1	33	0	0	0	0	**1**	**4**	No	
Ceriodaphnia 7-day survival	0	0	0	0	0	0	0	0	1	33	1	33	0	0	0	0	**2**	**8**	No	
Ceriodaphnia 7-day reproduction	2	67	2	67	0	0	1	33	1	33	2	67	1	17	0	0	**9**	**36**	No	
Hyalella 96-hour acute	0	0	0	0	0	0	0	0	0	0	0	0	3[1]	50	0	0	**3**	**12**	No	
Selenastrum 96-hour	2	67	0	0	1	33	0	0	2	67	1	33	0	0	0	0	**6**	**24**	No	
Bioassessment	IBI Rating																		**EVIDENCE OF BENTHIC ALTERATION?**	
Green Valley Creek (SDC-TWAS-1)[2]	NA		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		Very Poor		NA		**Very Poor[3]**		Yes	
San Dieguito River MLS	NA		Poor		Poor		Poor		Very Poor		Very Poor		Poor		NA		**Poor[3]**			
San Pasqual Creek (SDC-TWAS-2)[2]	NA		NA		NA		NA		NA		NA		Fair		NA		**Fair[3]**			
San Dieguito River (SMC-00473)[4]	NA		NA		NA		NA		NA		NA		NA		Very Poor		**NA**			

* = Total number of observations varied among constituents.
** = Total coliform and Enterococci were compared to DWS action levels.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1] Persistent toxicity triggered by two of two Hyalella azteca toxicity hits at SDC-TWAS-1 with no historical data to suggest otherwise. Synthetic pyrethroids were detected in levels sufficient to induce a toxic response to this organism based on published LC50 values. This is common issue on a region wide and statewide basis in urban areas.
[2] Green Valley Creek (SDC-TWAS-1) and San Pasqual Creek (SDC-TWAS-2) had extensive fire damage during the Fall 2007 Wildfires.
[3] Cumulative result based on average of last 3 years of historic data.
[4] This is the 1st year of the SMC Regional Monitoring Program. Historical MLS data was used to assess triad recommendations.
- = Constituent results are below the defined requirements for a Low Frequency of Occurrence rating.
♦ = Low Frequency of Occurrence rating.
♦♦ = Medium Frequency of Occurrence rating.
♦♦♦ = High Frequency of Occurrence rating.

6.5.3 Integrated Assessment

Assessment of the watershed during both wet weather and ambient conditions is presented in an integrated manner to present managers with an overall assessment of the WMA and to provide answers to the core management questions. The integrated assessment incorporates both the ambient weather and wet weather assessments and provides a summary of the overall findings for the San Dieguito River WMA. The integrated assessment also identifies which COCs overlap between receiving waters and urban runoff. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as the data become available in future years. Integrated watershed assessments results are presented in Table 6-26.

Table 6-26. San Dieguito River Watershed Management Area Interim Integrated Watershed Area Management Assessment

Assessment Category		Program	Parameters With Results Above the Receiving Water Benchmarks or Action Levels For Dry Weather Monitoring Data	Persistent Toxicity Observed	Evidence of Benthic Impairment	Integrated WMA Assessment Summary
Ambient	Ambient Receiving Water	SMC and Bioassessment Monitoring[2]	TDS, TSS, Turbidity, BOD, MBAS, Chloride, Sulfate, Total nitrogen, Total phosphorus, Fecal Coliform, Enterococci	*	Yes	Several constituents were measured at concentrations greater than their respective benchmarks, however, an ambient assessment was not conducted due to the limited data set. The dry weather MS4 monitoring results suggest that the MS4 effluent may have the potential to contribute to receiving water problems for constituents with concentrations greater than the benhcmark.
	Ambient Urban Runoff Areas	Jurisdictional Dry Weather Monitoring	Dissolved copper	NA		
		MS4 Random Dry and Targeted Dry Monitoring[2]	TDS, TSS, Chloride, Sulfate, Total nitrogen, Total phosphorus, Fecal coliform, Enterococci, Total Aluminum, Total Manganese	NA		
Wet Weather	Wet Weather Receiving Water[1]	MLS and Bioassessment Monitoring	♦♦♦-TDS ♦♦-Fecal coliform ♦-TSS, Turbidity	No		TDS was identified as a high frequency of occurrence COC during wet weather conditions, fecal coliform as a medium frequency of occurrence COC, and TSS and turbidity as low frequency of occurrence COC. Of these, TDS was concentrtions were greater than the benchmark in both ambient and MS4 monitoring, suggesting that the MS4 may have the potential to contribute to elevated TDS in the receiving waters. Toxicity to *Hyalella azteca* was not identified as persistent based on the cumulative data, but in 2007-2008, toxicity was measured in samples from two of two monitoring events at SDC-TWAS-1 (Green Valley Creek) and one storm event at the MLS.
	Wet Weather Urban Runoff Areas	MS4 Random Wet and Targeted Wet Monitoring[2]	Total phosphorus, Total nitrogen, TSS, Fecal coliform	NA		

*Ambient sampling as part of normal permit was not monitored due to Bight '08 participation.
NA = Not assessed, Not Applicable, or Not Analyzed.
[1]Frequency of occurance ratings are only applicable to wet weather receiving water data. A minimum of 3 years of data is needed for other elements of the program to assess frequency of occurance.
[2]Concentration was compared to receiving water benchmarks for comparitive purposes only.

6.5.4 Triad Decision Matrix

The triad decision matrix incorporates the chemistry data from wet weather events with the toxicity and bioassessment results to provide indications of pollutant loading, potential impacts to organisms, and the ecological health of the watershed. The triad assessment presents possible conclusions regarding the watershed and provides possible actions or decisions for future monitoring and assessment based on the Permit. Table 6-27 summarizes these results.

Table 6-27. San Dieguito River Watershed Management Area Triad Decision Matrix Results

Condition	Chemistry	Toxicity	Bioassessment	Action
Wet Weather	No persistent exceedances of water quality objectives.	No evidence of persistent toxicity	Indications of alteration.	No action necessary to address toxic chemicals. Address potential role of urban runoff in causing physical habitat disturbance.

Note: Insufficient data to assess ambient results due to Bight '08 monitoring year.

TDS was identified as a high frequency of occurrence COC, however, TDS is not considered in the triad decision-making process since it is not believed to induce a toxic response to aquatic organisms (see Methods Section in Appendix B for more complete details). In addition, the toxicity results do not suggest persistent toxicity in this WMA.

The bioassessment results suggest that there are indications of benthic alteration at the MLS and TWAS-1 sites.

Based on the possible actions or decisions from the WMA triad framework, no action is necessary to address toxic chemicals. Consideration of additional parameters, continuation of monitoring to gather long-term trend information, and consideration of the potential role of physical habitat disturbance is recommended.

6.5.5 Baseline Long-Term Effectiveness Assessment Ratings for the San Dieguito River Watershed Management Area

The BLTEA tool is used to guide long-term programmatic watershed activities and is performed on a five-year cycle. The WMA assessments are used to guide annual water quality monitoring activities and to evaluate annual differences or change through time. In this section, the WMA COCs identified in 2008–2009 are compared to the long-term BLTEA ratings to evaluate if activities are showing improvements or impairments through the five-year cycle.

The BLTEA baseline water quality priority ratings presented in the 2005–2006 Urban Runoff Monitoring Report are also presented in this report in Table 6-28. The table has been appended to include the 2008–2009 WMA assessment results. These tables are tools that assist managers in prioritizing watershed activities and identifying data gaps. The priority ratings are based on the methods presented in the BLTEA Report (WESTON et al., 2005) and are summarized in Appendix B.

Constituent groups and stressor groups identified in Table 6-28 are given a ranking from A to D, with A being the highest priority rating and D being the lowest priority rating. Items ranked with a D indicate that the constituent group or stressor is a low priority or does not have sufficient data to support a higher ranking. The priority ratings were based on the data record from 2001–2006 from the following programs and will be updated on a five-year cycle:

- Storm Water MLS Monitoring – Wet Weather Data (2000–2006).
- Copermittee Dry Weather Data Monitoring (2003–2005).
- Available Third-Party Data (SWAMP, 2003).
- Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring (2003–2005).
- Urban Stream Bioassessment Monitoring (2000–2006).
- Triad Assessment – Toxicity Testing of Storm Water (2000–2006).
- SWQCB Section 303(d) Listing (2003).

For the overall San Dieguito River WMA, no constituent groups were identified as high-priority (A) rated constituents in the BLTEA system (Table 6-28). Dissolved minerals (e.g., TDS), gross pollutants, bacteria, benthic alteration, and toxicity were assigned B ratings for the overall San Dieguito River WMA. In the Solana Beach HA, dissolved minerals, nutrients, and bacteria were each identified as high-priority (A) rated constituents. This is consistent with the higher urbanized land use percentages in the Solana Beach HA. Benthic alteration was identified as a high-priority (B) rated constituent, which was based primarily on the stream bioassessment findings.

The 2008–2009 WMA assessments for the five HAs in the San Dieguito River WMA were compared to the BLTEA water quality priority ratings by identifying the high frequency COCs for each HA (Table 6-28). TDS (dissolved minerals) was listed as a 2008–2009 high frequency occurrence COC for wet weather, which was similar to previous years. In contrast to the 2007–2008 high frequency of occurrence rating, indicator bacteria (i.e., fecal coliforms and enterococci) were not wet weather high frequency COCs for the 2008–2009 Monitored Season.

The 2008–2009 results are consistent with the long-term BLTEA ratings with respect to dissolved minerals and benthic alteration showing elevated frequencies of occurrence.

A list of potential likely or unknown sources for the sediment, nutrient, and bacterial categories in the San Dieguito Watershed based on the threat to water quality inventory ratings tables can be found in the BLTEA Report (WESTON et al., 2005).

Table 6-28. San Dieguito River Watershed Management Area Water Quality Priority Ratings

Watersheds/Subwatersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
San Dieguito River WMA	**100%**	***D***	***B***	***D***	***D***	***C***	***D***	***C***	***B***	***B***	***B***	***B***
Solana Beach HA (905.10)	13%	*D*	*A*	*D*	*D*	*C*	*D*	*A*	*C*	*A*	*B*	*C*
Hodges HA (905.20)	14%	*D*	*A*	*D*	*D*	*C*	*D*	*A*	*D*	*C*	*B*	*B*
San Pasqual HA (905.30)	20%	*D*	*A*	*D*	*D*	*C*	*D*	*A*	*D*	*C*	*B*	*C*
Santa Maria Valley HA (905.40)	17%	*D*	*B*	*D*	*D*	*C*	*D*	*C*	*C*	*B*	*B*	*B*
Santa Ysabel HA (905.50)	37%	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*A*	*B*	*B*	*B*
2006–2008 High Frequency of Occurrence COCs (From WMA Integrated Assessment)												
2006–2007 High[1] Frequency of Occurrence Ratings and COCs	Wet Weather		♦♦♦ TDS									No
2007–2008 High[1] Frequency of Occurrence Ratings and COCs	Ambient Weather		♦♦♦ TDS					♦♦♦ TN TP		♦♦♦ Enterococci	Very Poor IBI	No
	Wet Weather		♦♦♦ TDS							♦♦♦ Fecal coliform		Yes (SDC-TWAS-1, West Bernardo Rd. Site)
2008–2009 High[1] Frequency of Occurrence Ratings and COCs	Wet Weather		♦♦♦ TDS								Very Poor IBI	No

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the subwatershed areas.*

*** = Priority Level (Highest – A to Lowest – D)*

High-Priority Level Based on Data

2006 SWRCB Section 303d listing

6.6 San Dieguito River Watershed Management Area Conclusions and Recommendations

6.6.1 Conclusions

This WMA Monitoring Report is designed to address the following five core management questions listed in Section I.B. of the Receiving Waters and Urban Runoff Monitoring Program.

1. **Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?**

Core Management Question 1 was addressed with the wet weather data assessments. The results of the 2008–2009 monitoring program in the San Dieguito River WMA indicate that TDS was

identified as high frequency of occurrence COC. This suggests that some beneficial uses may be impaired by this constituent.

Historical stream bioassessment results indicate evidence of benthic community impairment in the San Dieguito River WMA, with a Very Poor IBI rating at Site SDC-TWAS-1. The San Dieguito River MLS and Site SDC-TWAS-2 have received IBI ratings of Poor and Fair, respectively, since 2002. Additional bioassessment monitoring conducted at SMC sites in the WMA produced similar results. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat and the presence of pesticides. Other constituents not monitored in this program may also play a role in affecting the benthic community. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

Toxicity was not observed during wet weather conditions in the San Dieguito River WMA when sampling occurred on November 12, 2008, at the MLS. In previous years, toxicity has been sporadic and infrequent at this site. Since 2001, toxicity has been identified at either the TWAS or MLS twelve times to *C. dubia* (one 96-hour, two 7-day survival, and nine 7-day reproduction) three times to *H. azteca* (96-hour acute), and six times to *S. capricornutum* (96-hour). There is no evidence of persistent toxicity at this site in ambient or wet weather monitoring. The lack or persistent toxicity at this site indicates that the receiving waters are likely protective of beneficial uses, but may be influenced in localized areas.

2. What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed with magnitude of exceedance ratios for ambient and wet weather conditions in the receiving waters. The San Dieguito River WMA SMC site was evaluated for ambient weather conditions and the San Dieguito River WMA MLS for wet weather conditions. The greatest exceedance ratios during ambient conditions in the San Dieguito River WMA were observed for TSS, total nitrogen, and chloride, and sulfate. The TSS and chloride concentrations were approximately three times greater than the benchmarks. Total nitrogen and sulfate concentrations were one to two times greater than the benchmark. Exceedance ratios during wet weather at the MLS were greatest for TDS and indicator bacteria (i.e., fecal coliforms). The TDS concentration during the 2008 storm event was almost five times greater than the benchmark, which is slightly higher than the historical mean for the site. The fecal coliform concentration during wet weather in 2008–2009 was twice the benchmark, which is lower than the historical mean for the site.

Receiving water spatial patterns in the San Dieguito River WMA could not be evaluated during the 2008–2009 Monitoring Season because only one site was monitored for each of the wet weather and ambient weather conditions.

Historical stream bioassessment ratings conducted in the WMA indicate a Very Poor benthic community at the TWAS-1 location in the Hodges HA, which is downstream of a residential land use community. The consistent rating of Very Poor at the TWAS-1 location since the 2002–2003 Monitoring Season suggests that the impairment on the benthic community at TWAS-1 continues to persist. The MLS site located downstream of Lake Hodges Dam received an IBI rating of Poor. The SDC-TWAS-2 location in the less populated San Pasqual HA received an IBI rating of Fair. These results, in general, are consistent with assessment conducted in the past at

these sites and suggest that more urban environments may be a factor influencing degraded benthic conditions.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. In 2008–2009, the San Dieguito River WMA MS4 was assessed through the random dry, random wet, and targeted dry monitoring programs.

Twelve sites were visited as part of the random dry weather program, including six dry sites, two ponded sites, and four flowing sites. Concentrations of several analytes, including total nitrogen, total phosphorus, and indicator bacteria, were greater than benchmarks at the four sites with flow, suggesting that dry weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Of the four sites that were flowing, instantaneous loads were greatest for most COCs at a site located in a higher urbanized area and had the greatest amount of flow.

Five sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes, including total nitrogen, total phosphorus, and indicator bacteria, were greater than benchmarks at some sites, suggesting that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents primarily at a site located in the upper region of HSA 905.22 (Green HSA). The catchment for this site had the second largest area in comparison to the other four sites and was characterized primarily by residential, spaced residential, and open space / parks and recreation land uses.

A total of 18 sites in the San Dieguito River WMA were visited as part of the targeted dry weather program, 16 of which were flowing at the time of the survey. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving benchmarks for the following constituents: oil & grease, chloride, nitrate, total nitrogen, total phosphorus, sulfate, TDS, total metals, dissolved metals, pesticides (i.e., Chlorpyrifos and Diazinon), and indicator bacteria (i.e., fecal coliforms and enterococci). With the exception of oil & grease, pesticides, and dissolved metals, each of these constituents had concentrations greater than their respective benchmarks at a minimum one of the 14 sites assessed. Concentrations of TDS and total nitrogen exceeded the benchmark most frequently followed by indicator bacteria and total phosphorus. The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded. A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were greatest where flow rates were highest (two sites in the Hodges HA). MS4 runoff from these sites may

have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the San Dieguito River WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

The CSDM results indicate that coastal storm drains do not appear to be affecting bacterial concentrations in the coastal receiving waters during dry or wet weather conditions.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional DWM Program, the CSDM Program, the Source Identification Program and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources in regards to the Jurisdictional DWM Program and the CSDM Program can be found in each Copermittee's JURMP Annual Report and in the CSDM Program Annual Report, respectively.

The trash assessment conducted in 2008–2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the San Dieguito River WMA. A total of 136 sites were assessed for trash in the WMA, including nine HSAs. The middle area of the lower portion of the WMA had the greatest proportion of trash and the greatest percentage of sites with Suboptimal or Marginal ratings, indicating that this portion of the watershed contained the greatest amount of trash in the WMA. This result coincides with the urbanized population centers and major transportation corridors, which are also found in this portion of the WMA. Trash at one site assessed with a Submarginal rating consisted primarily of food packaging, and trash at six sites consisted of household trash. The potential trash route was listed as dumping for the Submarginal rated site in the San Dieguito River WMA.

A dry weather source identification study of single family residences was conducted by the Copermittees during the 2008–2009 Monitoring Season. Results indicated that synthetic pyrethroids were commonly detected in runoff from residential land uses in concentrations above published toxicity benchmarks for aquatic invertebrates. Bacteria results were generally higher at sites influenced from overland runoff in comparison to one site influenced from continuous groundwater flows. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables).

5. Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the San Dieguito River MLS. Based on the trend analysis, conductivity, TKN, and total phosphorus appear to be increasing over time at this site.

Although the concentrations of total phosphorus appear to be increasing over time, they do not appear to be a great concern relative to their respective benchmark. The concentrations remain well below the established wet weather benchmark.

Conductivity and TKN do not currently have benchmarks for comparison. If the trends continue at the current observed rate of increase, it is possible that concentrations of TKN will increase by approximately 1 mg/L every 38 years, and the measures of conductivity will increase by approximately 1,000 µmhos/cm every 42 years.

The bioassessment ratings at the San Dieguito TWAS-1 have been Very Poor in all assessments conducted from 2002 to 2008, and there are no apparent trends in the benthic community. The bioassessment ratings at the San Dieguito MLS have been Poor in nearly all assessments conducted from 2002 to 2008, and there are no apparent trends in the benthic community. Similarly, the bioassessment ratings at the SDC-TWAS-2 have been Fair in the assessments conducted in 2006–2007 Monitoring Season to the 2008–2009 Monitoring Season.

Toxicity is not a persistent issue in the San Dieguito River WMA. However, toxicity has been observed in samples collected from the San Dieguito River MLS during various monitoring years. Between 2001 and 2008, 43% of samples have been toxic to *C. dubia* 7-day reproduction, 29% of samples have been toxic to *S. capricornutum* 96-hour survival, 5% of samples have been toxic to *H. azteca* 96-hour survival, and 5% of samples have been toxic to *C. dubia* 96-hour survival, but no trends in the data set are apparent.

6.6.2 Recommendations

The recommendations for this watershed are to continue monitoring in accordance with the Permit requirements, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. For the next full round of Permit monitoring in north San Diego County (Permit Year 2010–2011), the Copermittee Monitoring Workgroup will review and consider alternate locations for the TWAS to gather relevant information for assessing the watershed.

Specific recommendations for the San Dieguito River WMA are based on the triad assessment listed in the Permit. Based on wet weather conditions, no action is necessary to address toxic chemicals, but addressing the potential role of urban runoff in causing physical habitat disturbance is recommended.

Appendix B

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The WURMP Copermittees' FY 2009 (July 1st, 2008 through June 30th, 2009) JURMP Annual Reports were used to determine quantities of inventories. The WURMP Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1. Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2. Identified the Copermittees' total activity quantities for the following activities from the FY 2009 JURMP Annual Reports:
    1. Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
    2. Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3. Determined the amount of urban land use in each Copermittees' jurisdiction
4. Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City
5. Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation is as follows:

Copermittee Activity Quantity * % of land use in each HA for Activity Type = Copermittees's contribution to the HA

6. Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1
Jurisdiction A collected 800 tons of material from street sweeping in FY 2009

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2009

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1
Jurisdiction C collected 250 tons of material fro street sweeping in FY 2009

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:
800 tons of material *(250 urban land use acres/1,000 urban land use acres) = 200 tons

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:
1,000 tons of material *(1,250 urban land use acres/2,000 urban land use acres) = 625 tons

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:
250 tons of material *(500 urban land use acres/500 urban land use acres) = 250 tons

The total amount of estimated street sweepings collected in HA1 is 200+625+250=**1,075 tons**

Appendix C

San Dieguito Watershed Activity Sheets

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San Dieguito Watershed Water Quality Activity Sheets

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TITLE: **LAND ACQUISITIONS**
ID #: **SD-WQA2**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural ability to infiltrate stormwater/runoff.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY2007-08 reporting period there were 9.99 acres of land acquired in the San Dieguito River Watershed.

During the FY2008-09 reporting period there were 3,197.52 acres of land acquired in the San Dieguito River Watershed. See Table Below.

Property	Acres	Date	Watershed ID	APN(s)
County	17.39	2/7/2007	905.11	678-070-22
County	10.18	1/25/2008	905.21	270-010-03
Ramona Grasslands Davis-Eagle	946.29	8/15/2008	905.41, 905.32	279-010-17, -19; 280-010-01, -04; 281-010-09, -10, -16, -17; 281-521-04,-10
Ramona Grasslands Oak Country I	219.85	8/15/2008	905.41, 905.32	277-050-31; 277-111-53; 277-121-14
Ramona Grasslands Gildred	1379.05	9/5/2008	905.41, 905.32	276-041-06; 276-050-04, -05, -07, -08, -09, -26, -27, -28; 276-060-04; 276-101-03; 276-110-02, -09, -10, -11, -12; 276-111-02, -03, -06, -07; 276-121-01, -21, -22; 280-010-05
Ramona Grasslands Highland Valley-Oak Country II	485.77	9/5/2008	905.41, 905.32	276-111-05; 277-050-30; 277-111-52
Volcan Mtn-TNC	139.00	12/23/2008	905.54	249-085-04thru-08*, 249-086-03, -05, 249-232-26*
TOTAL	**3197.53**			***Does not include 67 acres in AB**

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **SAN DIEGUITO WATERSHED MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROJECT**
ID #: **SD-WQA3**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the San Dieguito River Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities.

Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Dieguito River WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the San Dieguito River WMA with adequate roof gutters, downspouts and locations where rain barrels could be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Rancho Bernardo Recreation Center was selected because it is located in one of the highest priority sectors of the San Dieguito River WMA for potential pollutant loading. The recreation center is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor began installation of four rain barrel systems at the recreation center. One 55-gallon rain barrel was connected to an existing downspout adjacent to the main entrance. This system uses a gravity release mechanism to redirect captured runoff from traveling down the street and sidewalk to adjacent vegetated areas and planters. In addition, three systems, each consisting of one 75-gallon rain box, were installed along the back wall of the main building. These systems also use a gravity release mechanism to redirect flow away from the adjacent parking lot.

Rain Barrel at front entrance

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer will be distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer will be posted on the City's *Think Blue* website during the first quarter of FY 2010.

This phase of the pilot project focuses on implementing and assessing the effectiveness of rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the pilot project will be applied to implementation in residential areas.

Based on these findings, the City may modify its municipal rain barrel installation and downspout disconnect project to increase effectiveness and/or seek City Council approval for additional funding to implement future phases (i.e., incentives) and additional rain barrel/downspout disconnect systems.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems began in April 2009, however, due to contractor/construction delays, the project was not completed until FY 2010. Wet-weather monitoring will be preformed from October 2009 to April 2010. Assessment and final reporting for this program will conclude by June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problem by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff		
Management Questions	• What is the effectiveness/efficiency of rain barrel/downspout disconnect systems in reducing storm water runoff volume? • What is the loading reduction of the rain barrel/downspout disconnect systems?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of site preparation, installation and start-up for site	TBD
	Cost of operation and maintenance evaluation for all sites	TBD
	Cost of effectiveness monitoring for all sites	TBD
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives

The goal of the municipal rain barrel installation and downspout disconnect assessment is to determine whether rain barrel/downspout disconnect systems reduce storm water runoff, thereby reducing bacteria loads, and if so, which system is most effective and efficient.

Analysis and Results

The pilot project was not in active implementation during FY 2009. Further analysis will take place after wet-weather monitoring data is collected, which is scheduled for completion by April 2010.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) versus the cost of installing and maintaining the rain barrel system. Conclusions will be made after the effectiveness assessment is completed in June 2010. Any recommendations resulting from this pilot project will be reported in the FY 2010 WURMP Annual Report.

TITLE: **COASTAL CLEANUP DAY SPONSORSHIP**
ID #: **SD-WQA4**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 20, 2008. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito River Watershed Management Area (WMA). Approximately 112 volunteers removed 338 pounds of trash and debris. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2009 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Dieguito River WMA are included in the list for cleanups, and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDCK's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	338 lbs
	Number of participants (Outcome Level 1)	112
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$12,000
	Amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1)	$2,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$5.91/lb

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results
The event's debris removal was tracked using data cards provided by the Ocean Conservancy, a 338 pound load reduction was recorded. There was a total of $12,000 estimated for the sponsorship cost for all six WMAs in the City's jurisdiction and 112 participants for this WMA. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the sponsorship cost for the San Dieguito River WMA by the pounds of trash removed, was $5.91 per pound.

Conclusions
Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs, as well as comparing the same types of trash cleanups that are sponsored each year over time.

TITLE: **SEDIMENT AND PEAK FLOW CONTROLS #1**
ID #: **SD-WQA5**

ACTIVITY IMPLEMENTATION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007. This project is currently on-hold as staff time and resources are currently allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. However, this project may be started again in the future.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by managing runoff volume—the transport mechanism for pollutants—and treating runoff of pollutants before discharge into receiving waters.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
SEDIMENT AND PEAK FLOW CONTROLS #1 Assess the Efficiency and Effectiveness of the BMP Installations	
Management Questions	• What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity? • What is the loading reduction of the BMPs?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff flow velocity reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of BMPs installed (Outcome Level 1) • Volume of runoff captured/diverted by treatment trains (Outcome Level 4) • Concentrations of COCs in runoff (Outcome Level 4)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of the BMPs installed to reduce runoff flow velocity and associated erosion and sediment.

Analysis and Results
This project is currently on hold; therefore, an effectiveness assessment is not possible at this time.

Conclusions
If the City does go forward with this project, water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff velocity and pollutant loading. Efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.
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TITLE: **SEDIMENT AND PEAK FLOW CONTROLS #2**
ID #: **SD-WQA6**

ACTIVITY IMPLEMENTATION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007. This project is currently on-hold as staff time and resources are currently allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. However, this project may be started again in the future.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by managing runoff volume—the transport mechanism for pollutants—and treating runoff of pollutants before discharge into receiving waters.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito	
SEDIMENT AND PEAK FLOW CONTROLS #2 Assess the Efficiency and Effectiveness of the BMP Installations	
Management Questions	• What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity? • What is the loading reduction of the BMPs?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff flow velocity reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of BMPs installed (Outcome Level 1) • Volume of runoff captured/diverted by treatment trains (Outcome Level 4) • Concentrations of COCs in runoff (Outcome Level 4)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of the BMPs installed to reduce runoff flow velocity and associated erosion and sediment.

Analysis and Results
This project is currently on hold; therefore, an effectiveness assessment is not possible at this time.

Conclusions
If the City does go forward with this project, water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff velocity and pollutant loading. Efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE:	**SAN DIEGUITO GEOGRAPHICALLY BASED BUSINESS PROPERTY AND FACILITY INSPECTIONS**
ID #:	**SD-WQA7, SD-WQA8 & SD-WQA10**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What activities and locations at businesses should be targeted during the inspection?
2) Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?
3) Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?

The focus of the activity was to evaluate/inspect properties as a whole as well as individual business regardless of whether they were included in the City's commercial/industrial inventory. Property and business evaluations were not as in-depth as regular commercial inspections, but rather were observation oriented to quickly assess the outdoor activities and impacts of the properties and businesses.

The major findings included problems in trash enclosures, with irrigated landscaped areas, and outdoor good-housekeeping practices. The findings for the FY 2009 activity implementation do not completely answer the management questions; however, by the end of the program, it is anticipated that these questions will be answered.

In FY 2009, 52 full inspections (including supplemental business evaluations), 161 business evaluations only, and 68 property evaluations were conducted in the one geographic area selected in the San Dieguito WMA.

Facilities

The following is a summary of the evaluations performed across the participating watersheds:

Number of Evaluated Properties = 190 as follows:

- 48 Shopping Centers
- 63 Office Parks
- 39 Industrial Parks
- 39 Individual Businesses

Number of Businesses Evaluated = 825 including, but not limited to:

- Medical Offices
- Manufacturing
- General Retail
- Automotive
- Contractors
- Bookstores
- Equipment Repair
- Warehouses
- Food Service Establishments
- Hair and Nail Salons
- Janitorial
- Massage Therapists
- Dry Cleaners
- Home Improvement Centers
- Landscaping
- Lodging
- General Offices
- Pest Control
- Printing
- Storage

Public Outreach
The City developed an inspection letter that was distributed to property owners and businesses informing them of the inspection program. In addition, the City advertised its intent to implement this inspection program in various public outreach media forums.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION
The City conducted its inspection program during FY 2009 and will perform a second round of inspections in FY 2010 to obtain more data to compile and assess. The results of the data analysis will be used to answer the management questions posed by this activity.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Findings
The following represents the primary findings of the activity. Other activity findings are less substantiated and are therefore not presented as a part of this activity. Further studies may be appropriate to develop supported results.

Property Evaluations: Landscaping / Irrigation

- 85% of landscaped areas are watered with spray/rotor delivery irrigation systems
- 94% of landscaped areas show some evidence of over-watering / over-spraying runoff
- Industrial and Office Parks tend to have more evidence of over watering than shopping centers or individual businesses
- Evidence of over watering runoff was rarely observed in areas with no irrigation system or with low flow irrigation

Property Evaluations: Trash/Dumpster Areas

- Shopping centers were most likely property type to have bird guano/feces present

- Shopping centers were somewhat, but not dramatically, more likely to have dirty trash areas
- Cleanliness of the trash area shows the strongest relationship with presence of feces

Property Evaluations: Roof Drains and Parking Areas

- 21% of roof drains discharge to pervious areas
- Almost all parking lots are impervious and directly connected to MS4
- Of the approximately 320 acres of parking lot area inspected:
    - 0% (0 ac.) had porous pavement
    - 1.4% (4.5 ac.) had gravel/dirt
    - 4.9% (15.8 ac.) discharged to pervious areas

Property Evaluations: Outdoor Trash Receptacles

- 25% of outdoor trash receptacles had no cover

All Business Evaluations: Activities and BMP Implementation

- Powerwashing activities – 12% do not implement any BMPs
- Vehicle washing – 43% fully implement BMPs, 34% do not implement BMPs or it is unknown whether BMPs were implemented
- Hosing outdoor areas – 56% do not implement any BMPs
- Loading/unloading areas – 93% uncovered and 25% not protected from run-on

Automotive Business Evaluations: Activities and BMP Implementation

- 10% of Automotive Repair Facilities have outdoor repair activities
    - 50% do not implement coverage BMPs
    - 25% are not protected from run-on
    - 62% partially implemented good-housekeeping BMPs
- 20% of Automotive Repair Facilities have outdoor automotive fluid storage
    - 15% do not implement coverage BMPs
    - 20% do not have any secondary containment

TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Facility Inspections		
Management Questions	• What activities and locations at businesses should be targeted during the inspection? • Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)? • Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the San Dieguito Watershed	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	**Property Evaluations**	
	Number of property evaluations (Outcome Level 1)	68
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	92%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	62%
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	1
	Full Inspections Plus Supplemental Business Evaluation Sheet	
	Number of full inspections plus business evaluations (Outcome Level 1)	52
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	8
	Number of sites needing corrective action (Outcome Level 1)	52
	Number of Sites That Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	2
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	2
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Business Evaluations Only	
	Number of facility evaluations (Outcome Level 1)	161
	Number of sites needing corrective action (Outcome Level 1)	62
	Number of Sites That Implemented Some Corrective Action During Inspection (BMPs implemented) (Outcome Level 3)	0
	Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome Level 4)	N/A
	Total IC/IDs Observed (Outcome Level 1)	2
	Total IC/IDs Assumed Eliminated (Outcome Level 4)	2
Recommended Data	• Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of educational information items passed out (Outcome Level 3) • Potential Pollutant Discharge Assessment (Outcome Level 4)	

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 114 sites. Additionally, the City noted eight sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at two locations, corrective actions were immediately taken. This demonstrates both a Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcome was achieved as a direct result of this activity. Also, in this watershed, the City confirms that three IC/IDs were observed and called into the City's hotline for response and follow-up for abatement.

The City plans to implement the program in FY 2010 to more obtain more data necessary to answer the management questions associated with the program activity.

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TITLE: **BERNARDO CENTER DRIVE TRASH SEGREGATION BMP**
ID #: **SD-WQA11**

ACTIVITY IMPLEMENTATION

The Bernardo Center Drive Trash Segregation Best Management Practice (BMP) Project will involve the installation of catch basin inserts in the San Dieguito River Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The inserts will be installed directly in the existing curb inlets along Bernardo Center Drive and Bernardo Heights Parkway. The Bernardo Center Drive site will include the installation of storm drain catch basin inserts as retrofits within the existing storm drain system. The catch basin inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as "Trash Segregation Device Installation" in the 2008 San Dieguito River WURMP. In June 2008, the site along Bernardo Center Drive was selected and the conceptual design was released for this project.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007. Installation is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the project in reducing bacteria and trash loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
BERNARDO CENTER DRIVE TRASH SEGREGATION BMP Assess the Efficiency and Effectiveness of Catch Basin Inserts	
Management Questions	• What is the load reduction efficiency of the catch basin inserts? • How effective are these catch basin inserts at reducing priority pollutant loads?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the catch basin inserts are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections • Change (%) in bacteria load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1)

Objectives
The goal of this assessment is to determine the effectiveness of installing catch basin inserts in curb inlets along Bernardo Center Drive and Bernardo Heights Parkway in preventing trash and debris from entering the MS4.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time because the catch basins have not been installed and no priority pollutant load data have been collected.

Conclusions
It is anticipated that the catch basins will be installed in FY 2010. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the catch basin inserts in reducing bacteria and trash loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: **I LOVE A CLEAN SAN DIEGO TRASH CLEANUP SPONSORSHIP**
ID #: **SD-WQA13**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on 25 April 2009. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito River Watershed Management Area (WMA). Approximately 36 volunteers removed 78 lbs of trash and debris and recycled 16 pounds of trash and debris over a 5-mile area.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2009 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Dieguito River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	62 lbs
	Pounds of trash recycled (Outcome Level 4)	16 lbs
	Total pounds of trash removed (Outcome Level 4)	78 lbs
	Number of participants (Outcome Level 1)	36
	Amount of money spent on cleanups for all watersheds (Outcome Level 1)	$30,000
	Efficiency (Total Cost/Pounds of Debris Removed)	$64.10/lb

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results
On 25 April 2009, 36 participants removed approximately 62 pounds of trash and debris and recycled approximately 16 pounds of trash and debris from numerous sites in the San Dieguito River WMA. The average estimated sponsorship cost was $5,000 per watershed ($30,000/6 watersheds). Thus, there was a 78 pound load reduction associated with sponsorship per yearly event, and an efficiency of $64.10 per pound collected.

Conclusions
Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

TITLE: **PARK AND OPEN SPACE IRRIGATION AND CONTROLLERS**
ID #: **SD-WQA14**

ACTIVITY IMPLEMENTATION

As part of the review of water quality issues within the San Dieguito Watershed, Copermittees had previously identified overwatering from residential and municipal sources as an activity with a high potential for water quality impacts from nutrients and bacteria. The City of Del Mar had previously identified overwatering as a potential cause of higher levels of bacteria and nutrients in the southern portions of the City, and proposed the replacement of median and park irrigation timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in City parks and open space areas. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. In addition to the installation of the controllers, City of Del Mar staff continue to monitor these sites to ensure that runoff from over irrigation has been minimized to the maximum extent practicable. This includes periodic inspections of the site by the Clean Water Manager, and coordination with the City's landscape contractor.

The Water Conservation in Landscaping Act of 2006 (Act) requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. To date, the new model ordinance has **not** yet been developed by the State, and implementation of the requirements is not anticipated until the year 2010. The City of Del Mar acknowledges Regional Board staff's comment[1] that the activity appears to be solely a response to the Act. However, the City of Del Mar respectfully disagrees with this opinion. Development of this activity took place as a result of Copermittees analysis of specific water quality issues within the WMA, and as part of the investigations conducted in Anderson Canyon. While, one of the key components of the Act is the use of "smart" controllers for irrigation, by addressing runoff using these controllers, the City of Del Mar is able to meet challenges proposed by the Act, and address specific water quality concerns related to overwatering. Further, the City of Del Mar believes that the efficient use of public funds, such as this program, to address multiple needs and requirements is a prudent course of action, and credit should be granted for the Activity.

The City of Solana Beach recently installed a state-of-the-art weather station located at the newly constructed Fletcher Cove Community Park. This weather station has the ability to collect up to the minute real time weather conditions and remotely communicate with similar recently installed "smart" controllers at other City parks, including the Coastal Rail Trail and highway medians. The City now plans to upgrade older controllers at its last remaining park, La Colonia Community Center, so that all City parks will have "smart" controllers connected remotely to the weather station located at Fletcher Cove Community Park. Not only do these "smart" controllers automatically adjust to the local weather, but they also include alarm systems to notify City personnel remotely if there are any abnormalities in flow, resulting from leaking or broken irrigation lines and/or sprinklers. This will provide the City with complete instantaneous wireless control over the irrigation system to prevent any over-irrigation and water waste, resulting in the elimination of over-irrigation at all City facilities, the pollutant transport mechanism during dry weather conditions.

[1] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY
None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION
Program implementation by the City of Del Mar was completed in May 2009. The City of Solana Beach anticipates implementation in FY2010.

PARTICIPATING WATERSHED COPERMITTEES
- City of Del Mar
- City of Solana Beach

OTHER PARTICIPATING ENTITIES
This project involves monies and support from the State Department of Water Resources and the Metropolitan Water Department.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED
- TDS
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
The San Dieguito WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problems within the WMA; therefore, the activity is found to be consistent with the 2008 San Dieguito WURMP.

EXPECTED BENEFITS
Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT
Initial impressions of the results of the implementation by Del Mar staff are that the project has resulted in a reduction in the amount of flows from landscaped areas, based on observation, and community feedback. The City of Del Mar will continue to track water consumption through the use of flow metering (as appropriate) and other use management techniques. Once implemented, the City of Solana Beach can likewise track water consumption through the use of flow metering and other use management techniques, demonstrating a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **MEDIAN IRRIGATION SYSTEM REPLACEMENT**
ID #: **SD-WQA15**

ACTIVITY IMPLEMENTATION

As part of the review of water quality issues within the San Dieguito Watershed, Copermittees had previously identified overwatering from residential and municipal sources as an activity with a high potential for water quality impacts from nutrients and bacteria. The City of Del Mar had previously identified overwatering as a potential cause of higher levels of bacteria and nutrients in the southern portions of the City, and proposed the replacement of median and park irrigation timed irrigation controllers with "smart" controllers which adjust the amount of water used based on weather conditions. This activity provides for the use of these irrigation controllers in the City of Del Mar along the medians on Camino Del Mar, through the center of the village. The City of Del Mar has allocated $60,000.00 of grant and general fund monies for the implementation of this program. In addition to the installation of the controllers, City of Del Mar staff continue to monitor these sites to ensure that runoff from over irrigation has been minimized to the maximum extent practicable. This includes periodic inspections of the site by the Clean Water Manager, and coordination with the City's landscape contractor.

The Water Conservation in Landscaping Act of 2006 (Act) requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies. To date, the new model ordinance has **not** yet been developed by the State, and implementation of the requirements is not anticipated until the year 2010. The City of Del Mar acknowledges Regional Board staff's comment[2] that the activity appears to be solely a response to the Act. However, the City of Del Mar respectfully disagrees with this opinion. Development of this activity took place as a result of Copermittees analysis of specific water quality issues within the WMA, and as part of the investigations conducted in Anderson Canyon. While, one of the key components of the Act is the use of "smart" controllers for irrigation, by addressing runoff using these controllers, the City of Del Mar is able to meet challenges proposed by the Act, and address specific water quality concerns related to overwatering. Further, the City of Del Mar believes that the efficient use of public funds, such as this program, to address multiple needs and requirements is a prudent course of action, and credit should be granted for the Activity.

The City of Solana Beach recently installed a state-of-the-art weather station located at the newly constructed Fletcher Cove Community Park. This weather station has the ability to collect up to the minute real time weather conditions and remotely communicate with similar recently installed "smart" controllers at other City parks, including the Coastal Rail Trail and highway medians. The City now plans to upgrade older controllers at its last remaining park, La Colonia Community Center, so that all City parks will have "smart" controllers connected remotely to the weather station located at Fletcher Cove Community Park. Not only do these "smart" controllers automatically adjust to the local weather, but they also include alarm systems to notify City personnel remotely if there are any abnormalities in flow, resulting from leaking or broken irrigation lines and/or sprinklers. This will provide the City with complete instantaneous wireless control over the irrigation system to prevent any over-irrigation and water waste resulting in the elimination of over-irrigation at all City facilities.

[2] Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

These controllers are beneficial from an NPDES perspective as they operate more efficiently, conserve water, and reduce the potential for runoff from over irrigation.

TMDL APPLICABILITY
None presently identified.

TIME SCHEDULE FOR IMPLEMENTATION
Program implementation by the City of Del Mar was completed in May 2009. The City of Solana Beach anticipates implementation in FY2010.

PARTICIPATING WATERSHED COPERMITTEES
- City of Del Mar
- City of Solana Beach

OTHER PARTICIPATING ENTITIES
This project involves monies and support from the State Department of Water Resources and the Metropolitan Water Department.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED
- Nutrients
- TDS
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
The San Dieguito WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria and nutrients from over-irrigation. In addition, other non-priority pollutants have been identified including TDS, nutrients, and sediment as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problems within the WMA; therefore, the activity is found to be consistent with the 2008 San Dieguito WURMP.

EXPECTED BENEFITS
Primary Activity Goal – Dry Weather Load Reductions: A reduction in runoff from over-irrigation will reduce the dry weather transport mechanism and thereby reduce pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT
Initial impressions of the results of the implementation by Del Mar staff are that the project has resulted in a reduction in the amount of flows from landscaped areas, based on observation, and community feedback. The City of Del Mar will continue to track water consumption through the use of flow metering (as appropriate) and other use management techniques. Once implemented, the City of Solana Beach can likewise track water consumption through the use of flow metering and other use management techniques, demonstrating a Level 4 Outcome (Quantifiable Load Reduction).

TITLE: **PET WASTE BAG DISPENSER PROGRAM**
ID #: **SD-WQA16**

ACTIVITY IMPLEMENTATION

This activity will target areas frequented by pet owners such as municipal parks and/or street and sidewalk right of ways in the San Dieguito River Watershed Management Area (WMA). When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones.

This project was in its design and planning stage during FY 2009. Co-ordination meetings were held between the City of San Diego Education and Outreach staff and the project consultant to outline the strategy associated with educating pet owners about the importance of cleaning up after their pets. Watershed maps were developed and utilized to assist in the selection of potential installation sites. The criteria used to identify potential sites were:

a) High Density Residential areas
b) Routes connecting residential areas to a destination (park, trail, water body, commercial area)
c) Established trail locations
d) Destination (park, open space area)
e) Areas draining to a water body impaired for bacteria, phosphorus or nitrogen
f) Potential for partnership
g) Areas of complaints/chronic pet waste observations

Three watershed management areas (WMAs) were selected for implementation in FY 2010: Los Peñasquitos, San Dieguito River and Tijuana River.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment is anticipated to begin in FY 2010 and continue into FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
PET WASTE BAG DISPENSER PROGRAM Assess the Effectiveness of Pet Waste Bag Disposal	
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results
The pilot project was not in active implementation during FY 2009. Program launch is anticipated to occur in FY 2010.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

TITLE: **STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS**
ID #: **SD-WQA18**

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Dieguito River Watershed include:

- SDA 8 (Ramona)
- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

FY 2007-08 ACTIVITY IMPLEMENTATION

Work began on drafting the SWQMPs for individual SDAs.

FY 2008-09 ACTIVITY IMPLEMENTATION

Work continues on the drafting of the SWQMPs for individual SDAs.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2010-11. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2012.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined

TITLE: **PET WASTE DISPENSER PROGRAM IN COUNTY PARKS**
ID #: **SD-WQA19**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained nine dispenser stations at three parks within the San Dieguito Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain nine dispenser stations at three parks within the San Dieguito Watershed. The parks and the number of dispensers include:

- Felicita Park (3 dispensers)
- San Dieguito Park (5 dispensers)
- Holly Oaks Park (1 dispenser)

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Dieguito Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	FY 08-09		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Holly Oaks Park	1	3,230	646
Felicita Park	3	9,690	1,938
San Dieguito Park*	5	16,150	3,230
Total	**9**	**29,070**	**5,814**

*San Dieguito County Park is counted in both the Carlsbad and San Dieguito HU Totals

During the FY 2008-09 reporting period the County maintained nine stations among three County Parks within the San Dieguito Watershed. These stations distributed approximately 29,070 bags, preventing an estimated 5,814 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, the pet owners themselves bring an additional 30% of pet waste bags to the parks.

TITLE: **IRRIGATION HARDWARE GIVEAWAY AND CASH FOR PLANTS PROGRAM**[3]
ID #: **SD-WQA20**

ACTIVITY IMPLEMENTATION

This activity will involve launching a pilot program offering an opportunity for customized commercial landscape and residential surveys along with state-of the art efficient irrigation free of charge to customers maintaining irrigation systems at landscaped sites throughout the City of San Diego. A group of 200 participating sites will also serve as a study group to demonstrate the link between use of landscape conservation and a reduction in water use. Specific residential and commercial areas will be targeted and monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of irrigation runoff reduction programs as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and Total Maximum Daily Load (TMDL) requirements. A watershed-wide implementation may be considered after the effectiveness of the program is assessed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in FY 2010. Program launch is anticipated to occur in FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- City of San Diego Water Department
- San Diego County Water Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River Watershed Management Area (WMA) identify bacteria and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing dry weather flows resulting from over-irrigation.

[3] This project was originally identified as the "Irrigation Controller and Xeriscaping Incentive Program." A more accurate title was chosen for this activity during program planning.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
IRRIGATION HARDWARE GIVEAWAY AND CASH FOR PLANTS PROGRAM Assess the Efficiency and Effectiveness of Smart Irrigation and Low Water Use Landscaping	
Management Questions	• How effective are smart irrigation and other types of low flow distribution hardware in reducing dry weather runoff? Does replacing high water use landscape with low water use landscape reduce dry weather runoff? • What is the potential load reduction for both residential and commercial properties when utilizing smart irrigation in conjunction with low water use landscaping? • What is the average cost savings from utilizing smart irrigation and or low water use landscaping?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of systems installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the xeriscaping systems (acres drained) (Outcome Level 4)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of using weather-based irrigation devices in conjunction with low water use landscaping to reduce over irrigation. Targeted pollutants include bacteria and nutrients.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time as project planning and coordination is scheduled to begin in FY 2010. Program launch is anticipated to occur in FY 2012.

Conclusions

Project planning and coordination is anticipated to begin in FY 2010. Project launch is anticipated to occur in FY 2012. Monitoring will be conducted to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

After project launch, specific residential areas will be targeted and monitored to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads. The program will also include a component to investigate how to convince residents: 1) to participate in this incentive program; 2) to better focus subsequent education and outreach efforts; and 3) to determine whether broad-scale implementation of this activity should be pursued.

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TITLE: **ROUTE POSTING AND MEDIAN SWEEPING PILOT STUDY**[4]
ID #: **SD-WQA21**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is developing a pilot study to assess the effectiveness of two potential modifications to its street sweeping program: 1) posting limited-hour "no parking" signs along non-posted routes to allow street sweeping near curb areas; and 2) modifying or increasing street sweeping routes to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study will specifically focus on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with these proposed programmatic changes to the City's street sweeping program.

The first program element of this pilot study would require the installation of limited-hour "no parking" signs along existing street sweeping routes that are traditionally "free swept", or swept closer to the centerline of the street due to the presence of curb-park vehicles. Implementation of this programmatic change would allow an effectiveness evaluation of the current "free sweep" practice and calculation of potential increases in pollutant removal efficiency afforded by sweeper access to the curb and gutter. The second program element would expand current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change would allow calculation of potential pollutant removal efficiency afforded by sweeper access to what is believed to be heavily polluted areas.

The overall pilot study will aim to answer the following management questions:

- What is the relative cost-efficiency of integrating additional route posting and median sweeping into the City street sweeping program?
- What level of general debris removal benefit does the posting of street sweeping routes provide?
- What level of metals removal benefit does the posting of street sweeping routes provide?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does the posting of street sweeping routes provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study will be used to determine whether posting routes and sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring will occur to allow for assessment. This activity will occur in multiple watersheds. One control site will be chosen in one watershed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Route Posting and Median Sweeping Pilot Study will be piloted first to determine whether route posting and median sweeping improves the effectiveness of street sweeping activities before broad scale implementation.

[4] In the FY08 WURMP Annual Report, this activity was known as "Sweeping Route Posting and Enforcement Program." A more accurate title was chosen for this activity during project planning that took place in FY09.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2009 and will continue through FY 2010. Implementation is anticipated to occur in FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address this high priority water quality problem by targeting increased sweeping and removal of sediment and trash from City streets.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
ROUTE POSTING AND MEDIAN SWEEPING PILOT STUDY Assess the Effectiveness of Posting Routes and Sweeping Medians on Improving Street Sweeping Activities	
Management Questions	• What is the relative cost-efficiency of integrating additional route posting and median sweeping into the City street sweeping program? • What level of general debris removal benefit does the posting of street sweeping routes provide? • What level of metals removal benefit does the posting of street sweeping routes provide? • What level and type of debris can be removed by sweeping high volume median areas? • What level of metals removal benefit does the posting of street sweeping routes provide? • What type of sweeping equipment optimizes debris removal in or on high volume median areas?
Targeted Measurable Outcome(s)	• Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives
The goal of the assessment is to investigate whether posting previously non-posted routes and sweeping medians improves the effectiveness of street sweeping activities.

Analysis and Results
An effectiveness assessment of this activity is not possible at this time as project planning and coordination will continue through FY 2010. Implementation is anticipated to occur in FY 2011, with final assessment and conclusions being prepared in the first half of FY 2012.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via water quality and/or debris monitoring efforts) to the cost of project installation, operation and maintenance. Conclusions will be made after the assessment is complete.

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TITLE: **CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**
ID #: **SD-WQA22**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Irrigation Hardware Giveaway and Cash for Plants Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, Implementation and assessment completion anticipated in FY2013. WMA: TBD.

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash	Pre-planning
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals	Sponsorship of the Brake Pad Partnership is in progress.
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment	Cancelled
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and	Rain Garden, Xeriscaping, and	Water Quality	Structural or Non-	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Landscape Filtration (2)	Landscape Filtration		Structural		
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: **RAMONA COUNTY LIBRARY PROJECT**
ID #: **SD-WQA23**

ACTIVITY DESCRIPTION

The County of San Diego is building a new library in the Ramona area, located in the immediate vicinity of the previous library. The new library will feature Low Impact Development (LID) design applied throughout the site, ground cover and shrubs that are drought-tolerant native and adaptive species and a large bioswale. A detention basin will also be developed on the north end of the site. Runoff from the site will be directed to the bio-swale area as well as the detention basin, while areas designed with LID will help infiltration and slowing stormwater from the site.

This activity directly benefits the watershed by reducing the amount runoff from impervious surfaces, reusing runoff to aid in drought tolerant irrigation, and filtering runoff through bio-swales to promote infiltration and decrease the amount of pollutants leaving the Ramona Library Facility.

ACTIVITY IMPLEMENTATION

A CEQA Mitigated Negative Declaration (MND) was prepared and adopted for the 2003 Prop 14 submittal of this project. A new MND was prepared and adopted in 2009 which addressed a larger library footprint, the library site and several additional parcels. In addition, the MND addresses a site beyond that to be used for the new library. The original site plan, which was adopted in 2003, had expired and a new site plan is currently in process through the Department of Planning and Land Use (FY 09-10).

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- New site plan scheduled for completion during FY 2009-10.
- The library project is scheduled to be completed in December 2010 (FY 2010-11).

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity demonstrates reduced pollutant loads and source abatement which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming completion of all project elements (Level 1 Outcome).

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TITLE: **SAN DIEGUITO RIVER VOLUNTEER CLEAN UP EVENT**
ID #: **SD-WQA24**

ACTIVITY DESCRIPTION

The County of San Diego will partner with the San Dieguito River Coalition to sponsor a cleanup in an unincorporated portion of the San Dieguito River Watershed. This activity is currently being planned and the location has yet to be determined.

The coalition will be responsible for organizing and performing the cleanup to remove garbage and debris from the chosen area.

ACTIVITY IMPLEMENTATION FY 2008-09

- None

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Initiate planning and coordination – December 2009.
- Conduct cleanup – FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Dieguito River Coalition

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Clean up activities are consistent with the collective watershed strategy because they are an effective means of addressing pollutants in the watershed as well as raising public awareness of the importance of pollution prevention. This activity will constitute a load reduction within the watershed, as well as other quantifiable benefits to discharge or receiving water quality in relation to the watershed's high priority water quality problem(s).

EXPECTED BENEFITS

Previous clean up efforts have yielded thousands of pounds of garbage and debris removed, realizing significant load reductions for this portion of the watershed.

EFFECTIVENESS MEASUREMENTS

Effectiveness will be measured by tabulating the amount of garbage, debris, and abandoned encampments removed.

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San Dieguito Watershed Education Activity Sheets

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TITLE: **RESIDENTIAL WATER CONSERVATION OUTREACH**
ID #: **SD-WQEA1**

ACTIVITY IMPLEMENTATION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies.

While the new ordinance is not yet adopted, one key element has been identified: the replacement timed irrigation controllers with "smart" controllers, which adjust the amount of water used based on weather conditions. While this planned activity does not directly replace controllers in the residential zones of the City, it provides for outreach through direct mail and utility bill enclosures to encourage water-wise approaches to landscaping, including the use of native plants, smart controllers and drip irrigation systems. This is beneficial from an NPDES perspective since any reduction in water usage, including the use of efficient irrigation systems, reduces the potential for runoff from over irrigation.

The City of Del Mar initiated it's education and outreach program through the establishment of an Ad-Hoc Water Conservation Citizen's Advisory Committee in March 2009. The Committee, made up of members of the Del Mar community and appointed by the City Council, has been tasked with developing an outreach and education campaign to address water conservation issues, including a series of public workshops. The Committee met bi-monthly, and developed its first workshop on drought tolerant gardening slated for July 2010.

TMDL APPLICABILITY

While not yet adopted, a Bacteria TMDL has been proposed for the mouth of the San Dieguito Lagoon and the Anderson Canyon area of Los Peñasquitos Lagoon. Reduction of irrigation runoff from residential sources has the potential to decrease bacteria levels in the beaches and lagoons, and is a TMDL applicable activity.

TIME SCHEDULE FOR IMPLEMENTATION

This project is proposed for implementation in FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar
- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been identified as potential discharges of bacteria from over-irrigation. In addition, other pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses

a High Priority Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2009 San Dieguito WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT

Quantification of contacts with the residents regarding water conservation water quality activities can be tracked demonstrating a Level 2 outcome (Change in Knowledge).

TITLE: **LID AND WATERSHED PLANNING EDUCATION FOR COMMUNITY PLANNING AND SPONSOR GROUPS**
ID #: **SD-WQEA2**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID Handbook, including Management Strategies, the Appendices, and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

Local planning and sponsor groups within the San Dieguito River Watershed include:

- Julian
- Pala-Pauma
- Ramona
- San Dieguito
- Valley Center

ACTIVITY IMPLEMENTATION FY 07-08

This education program was successfully developed during the spring of FY 2007-2008, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2007-08, none were conducted in the San Diego River Watershed.

ACTIVITY IMPLEMENTATION FY 08-09

As documented in the table below, presentations were delivered to 5 planning and sponsor groups in the San Diego River Watershed, which included 138 attendees. A total of 40 pre- and post- surveys were completed by 4 of the 5 groups.

Community Group	Presentation Date	No. of Attendees	Surveys Completed
Julian	1/12/09	10	9
Pala-Pauma	5/5/09	7	0
Ramona	1/26/09	19	11
San Dieguito	8/14/08	41	11
Valley Center	9/8/08	61	9
Total		**138**	**40**

TMDL APPLICABILITY
This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION
This activity was completed during FY 2008-09. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES
- County of San Diego

OTHER PARTICIPATING ENTITIES
- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS
Activity effectiveness was assessed by tracking the number of presentations conducted (5), the number of participants in attendance (138), and the number LID Handbooks distributed (56) (Level 1 Outcomes). Furthermore, attendees were asked to complete pre- and post- survey forms, which consisted of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area. Survey results were calculated to measures changes in attendee knowledge regarding watershed planning and LID principles (Level 2 Outcome).

The table below summarizes results from the 4 groups' surveys administered in the San Dieguito River Watershed. Improvements on the post- survey ranged from a 13.33% increase to a 29% increase. This represents a demonstrable increase in knowledge among the target audience.

Community Group	Total Attendees	# of Surveys Given	Pre-survey % correct	Post-survey % correct	% Increase
Julian	10	9	71.11%	84.44%	13.33%
Pala-Pauma	7	0	N/A	N/A	*No Survey*
Ramona	19	11	67.27%	89.09%	21.82%
San Dieguito	41	11	58.18%	87.27%	29%
Valley Center	61	9	62.22%	88.89%	26.67%

Questions posed on the surveys to the participants included:

1. Do watershed and community planning areas share the same boundaries?
a) Yes
b) No
c) Sometimes

2. Increased urbanization (increased development)

a) Has no impact on water quality.
b) Has only a small impact on water quality, and the stormwater (storm drain) system helps to keep the water clean.
c) Increases evapotranspiration & infiltration directly proportional to the amount of development that is built.
d) Affects ground water and stormwater quality by increasing runoff and decreasing infiltration.

3. What are the County requirements with regard to LID for incoming projects?

a) Ensure all project use exactly the same Low Impact Development techniques for site design.
b) Require LID techniques for all priority development projects, and encourage LID techniques for all other projects.
c) There are no County requirements for LID, its all voluntary.
d) None of the above.

4. Priority Development Projects include projects that are:

a) Less than 5000 square feet in size and have no impact on environmentally sensitive areas
b) Are defined as new or redevelopment projects that require a Stormwater Management Plan (SWMP)
c) Small lot splits and do not require a SWMP to be completed.
d) Fast-tracked at the County.

5. Low Impact Development (LID) is

a) Developing fewer homes on larger lots.
b) A method of developing that serves to mimic the natural hydrology of a site.
c) Keeping all water away from storm drains and channeling it to the nearest creek.
d) An identical set of BMPs that are used in exactly the same manner each time to address stormwater runoff.

6. Where does stormwater or urban runoff from your CPA go? (Open answer)

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TITLE:	**PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #:	**SD-WQEA3**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Dieguito River Watershed Management Area (WMA) during FY 2009 from August 2008 to April 2009. The City will work with various broadcast media outlets to distribute and air the PSAs during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as high priority water quality problems in the San Dieguito River WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* PSAs will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST Assess the Efficiency and Effectiveness of Public Service Announcements		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in San Dieguito River WMA (Outcome Level 1)	446,835
	Number of impressions made to the public through radio announcements in San Dieguito River WMA (Outcome Level 1)	613,460
	Change in knowledge or attitude from survey results (Outcome Level 2)	44%
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes**

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The city conducted an effectiveness assessment of *Think Blue* PSAs and storm water messages via field experiment in which 309 individuals were shown eight different *Think Blue* PSAs (including the *Karma* and *Karma Second Chance* PSAs). Participants were then asked questions to determine storm water knowledge, awareness and possible changes to future behavior as a result of the PSA. The results of the field experiment demonstrate the messages in the PSAs are effective in increasing public knowledge that storm water is not treated. 25% of participants were more likely to answer that storm water is not treated than those who had answered the question prior to watching the PSA. Additionally, awareness that storm water pollution is an important issue in San Diego also increased after watching the PSA. Lastly, the *Karma Second Chance* PSA scored the highest of the PSAs in motivating participants to take specific actions to prevent storm water pollution.

The city also obtained assessment information from its annual random-digit dial 2009 *San Diego Storm Water Survey* of 800 total residents from all WMAs. 55% of residents said they saw a *Think Blue* PSA last year (up from 52%) on television while 8% of residents heard the radio announcements in FY 2009. 51% said they prefer to get information about storm water via television. This year's survey also noted that while 44% of residents know that storm water was not treated, significant increases in awareness were detected among women (particularly over the age of 50), residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the city as a whole. To estimate the number of impressions in the San Dieguito River WMA, the total number of estimated city-wide impressions, (11,170,888 for television and 15,336,488 for radio ads) was multiplied by the proportion of residents living in the San Dieguito River WMA (4%) of the city's total population.

Conclusions

Based on assessment from both the survey and the field experiment as well as feedback from the public, *Think Blue* PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the city will continue to monitor public perception and feedback to determine if this is actually occurring. The city will continue to work with appropriate broadcast media outlets to air *Think Blue* television and radio PSAs during FY 2010.

Additionally, the city continued to measure public awareness of the *Think Blue* program via surveys comprised of a random digit dial sample of the residents living in the San Dieguito River WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, while the *2009 San Diego Storm Water Survey* indicated that 39% had heard the phrase "Think Blue" during FY 2009, awareness that storm water is not treated increased. These results, coupled with a continued decrease in the percentage of residents hosing down their driveways, and in residents using pesticide or weed killers, demonstrate that the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the San Dieguito River WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

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TITLE: **MOBILE ADVERTISING**
ID #: **SD-WQEA4**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) has retained a contract with a mobile advertising firm to advertise *Think Blue* messages on its static billboard trucks in the San Dieguito River Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria. The goal of mobile advertising is to educate the public about the causes of storm water pollution, and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed in both English and Spanish on July 22, 23, 24, 25, and August 4, 5, 6, 7, 8, 9 2008. The estimated audience was 454,452 impressions over those dates. The following image shows the San Dieguito River WMA route.

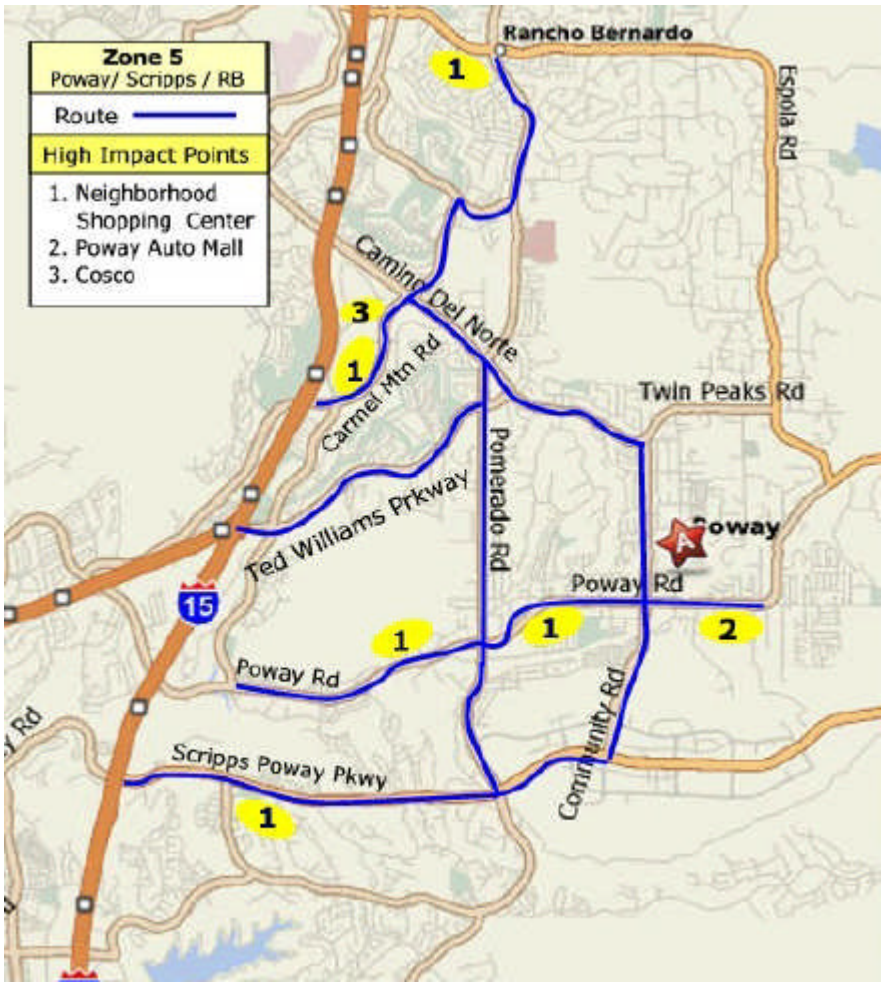

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The activity was completed in FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy identify bacteria as a high priority water quality problem in the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address it. Utilizing the mobile billboard truck will result in increased knowledge and awareness regarding bacteria (and trash as a vector) directly, and will promote behavior change and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
MOBILE ADVERTISING Assess the Efficiency and Effectiveness of Advertisement on Static Billboard Trucks		
Management Questions	• What changes in awareness /attitude regarding bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by advertisements)	
Data Recorded	Number of impressions in the San Dieguito WMA (Outcome Level 1)	43,960 DEC*
	Change in knowledge or attitude based on survey results (Outcome Level 2)	44%
	Change in pollutant-related behavior based on survey results (Outcome Level 3)	Yes**
Recommended Data	Advertisement costs (Outcome Level 1)	

*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewership, and vehicle load (1.3 occupants over age 18 per car). The initial estimated total impressions per 4 week period in the FY 2009 were 879,200 impressions.

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives
The goal of this assessment is to determine the effectiveness of mobile advertising to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

Analysis and Results
The mobile advertisements were developed in FY 2008 and displayed throughout the San Dieguito River WMA in both English and Spanish in FY 2009. The estimated audience was 879,200 total impressions per 4-week period. In FY 2009, out of 800 randomly selected residents from all watersheds who participated in the *Think Blue* survey, approximately 17% of residents stated they became aware of the Think Blue message by seeing mobile advertising.

Conclusions
Based on results from the *2009 Storm Water Survey* it was determined that mobile advertising was not as effective in generating sufficient knowledge and awareness of the *Think Blue* program and storm water issues to justify the cost of continuing the activity. Additionally, the Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. The city has discontinued this activity in the San Dieguito River WMA.

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TITLE: **COMMUNITY-BASED SOCIAL MARKETING OUTREACH PILOT PROJECT**
ID #: **SD-WQEA6**

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department (City) has been using Community Based Social Marketing (CBSM) strategies since FY 2008 to attempt to increase knowledge and change behaviors in target populations and communities. CBSM is an environmental social science model which includes research, pilot programs, data gathering, and assessment that has been successful in environmental sustainability programs throughout the United States. Results could include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacterial TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project was on-hold in FY09 pending the results of CBSM projects in other watersheds. If other CBSM projects prove to be effective, this project may be started.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- TBD

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. This activity will result in both increased knowledge and awareness regarding bacteria and trash as a vector, as well as future load reductions of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
PROPOSED COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT STUDY Assess the Effectiveness of the Pilot Study	
Management Questions	What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution?
Targeted Measurable Outcome(s)	Reach goal number of people within the watershed, based on survey results Increased level of knowledge/attitude based on post-activity surveys
Assessment	• Survey (e.g., administer survey to assess knowledge and

Method(s)	attitude of participants) • Quantification (e.g., number of residents reached by pamphlet) • Observations conducted (Outcome Level 1)
Recommended Data	• Number of educational materials distributed in business areas (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2) • Decrease in observed evidence and acts of pollution (Outcome Levels 3 and 4)

This activity was on hold in FY09 pending the results of CBSM projects in other watersheds; therefore, an effectiveness assessment is not possible at this time. If the City does go forward with this activity, and effectiveness assessment will be conducted and submitted to the Regional Board.

TITLE: **SAN DIEGUITO WATERSHED EROSION AND SEDIMENT CONTROL POSTER**
ID #: **SD-WQEA8**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper Best Management Practices (BMPs.) The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and BMPs for construction. Photos on the brochure and poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally to distribute the poster in FY 2009 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of brochures and posters distributed in the San Dieguito River Watershed Management Area (WMA) was approximately 40. The number of posters distributed by Storm Water inspectors was 14 (8 in English and 6 in Spanish).

At the current time, this activity does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years with positive feedback from users, so the City plans to continue their distribution.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

City staff will continue to distribute the brochures and posters to permit applicants, at construction sites and during inspections and as needed in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as high priority water quality problems throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed approximately 40 clean construction posters and brochures in FY 2009. Due to the nature of this activity, effectiveness assessment beyond Level 1 is not being conducted for this activity. The City may continue to report on the distribution of the brochures and posters, but is not currently requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE:	**SAN DIEGUITO WATERSHED RESTAURANT BEST MANAGEMENT PRACTICES BOOKLET**
ID#:	**SD-WQEA9**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission several years ago from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the San Dieguito River Watershed Management Area (WMA) during inspections. After review by restaurant employees, the booklet could be kept by owners/managers for reference and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs. The booklets were not modified in FY 2009, but continue to be distributed.

City staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2009 to City-permitted facilities. The City distributed 105 booklets in the San Dieguito River WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with FEWD Program staff for distribution of the booklet in FY 2010 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 105 booklets in FY 2009. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

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TITLE: **SAN DIEGUITO WATERSHED BROCHURE**
ID#: **SD-WQEA10**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2010. Implementation and distribution is expected to occur in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	**San Diego River**	**San Diego Bay**	**Mission Bay**	**San Dieguito River**	**Los Peñasquitos**
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants		Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City plans to continue to implement the brochure program in FY 2010. Effectiveness assessments will be conducted after the watershed brochures are implemented in FY 2010. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

SAN DIEGUITO WATERSHED
Urban Runoff Management Program

Fiscal Year 2010 Annual Report

January 31, 2011

Prepared and Submitted by the San Dieguito Watershed Copermittees

City of Del Mar
City of Escondido
City of Poway
City of San Diego
City of Solana Beach
County of San Diego

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Executive Summary

Since January 2002, the County of San Diego and the Cities of Del Mar, Escondido, Poway, San Diego and Solana Beach (herein referred to as the "San Dieguito WURMP Copermittees" or "Copermittees") have been active in planning, developing and implementing watershed-based programs in the San Dieguito Watershed Management Area (WMA). This Annual Report describes the actions taken by San Dieguito WURMP Copermittees in Fiscal Year (FY) 2010 (July 1st, 2009 to June 30th, 2010) to implement and refine the 2008 San Dieguito Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA.

The Copermittees collaborated on efforts to address high priority surface water quality issues throughout the San Dieguito WMA. This was coordinated through periodic meetings held throughout the reporting period. The meetings were held in order to effectively plan and implement the San Dieguito WURMP, develop and prioritize water quality activities that address pollutants of concern in the WMA, exchange ideas on how to address High Priority Water Quality Problems (HPWQPs) in the WMA, evaluate the effectiveness of actions, and collaborate on development of required submittals. In order to complete the objectives, the group performed assessments and conducted activities to address the water quality problems. These assessments and activities include: (1) a water quality assessment; (2) a pollutant source assessment; (3) planning and implementation of watershed activities; and (4) an assessment of the Copermittees' activities in the WMA.

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters analysis in the San Dieguito WMA based on data collected and evaluated from July 2009 through June 2010. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the San Diego County Municipal Copermittees Urban Runoff Monitoring Report (Annual Monitoring Report) for FY 2010 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. Based on the data and findings of this report, the San Dieguito WURMP Copermittees focused their efforts on targeting the following HPWQPs for the San Dieguito WMA: (1) Bacteria in all hydrologic areas (HAs); and (2) Nutrients in the San Pasqual HA.

The Copermittees also completed an assessment of potential pollutant-generating sources in each HA in the WMA. The purpose of this assessment was to identify the high priority pollutant sources in each HA based on the HPWQPs identified and each source's potential to generate those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on their potential for generating bacteria as a pollutant.

All WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Details of these activities are found in Section 4 and **Appendix B** of this Annual Report. A plan for implementation has been developed and updated. The plan identifies the WURMP activities and when they plan to be implemented. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is to be implemented. Collectively, the Copermittees conducted eleven (11) WURMP Watershed Activities – nine (9) Water Quality Activities and two (2) Water Quality Education Activities.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to

report on the Copermittees' actions to improve water quality in the WMA, the Copermittees began the process to collect and report on JURMP and WURMP activities performed on an HA basis. This information is not comprehensive and for some data sets, estimates were used to generate quantities of activities. The Copermittees believe that this is an important first step toward integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees also performed an Effectiveness Assessment to determine the overall effectiveness of the San Dieguito WURMP and the activities conducted by the Copermittees. The assessment includes activity-specific assessments as well as a comprehensive summary of the effectiveness of the WURMP activities implemented during the reporting period. This is the second year in which the Copermittees have included their JURMP activities as they were performed in each HA; however, the JURMP activities reported are limited in type due to the infancy of this type of reporting. The Copermittees are committed to continue this process and further develop the reporting and assessment of all activities conducted on an HA basis.

Activities selected and conducted by the San Dieguito WURMP Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. The effectiveness of the individual activities is variable; however, collectively the Copermittees' program actions are having positive effects on water quality.

As they improve their understanding of the complex issues affecting the WMA, the San Dieguito WURMP Copermittees will continue to refine and augment the San Dieguito WURMP to protect and improve water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the San Dieguito WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

In short, the FY 2010 San Dieguito WURMP Annual Report presents an update on the San Dieguito WURMP Copermittees' successful long-term efforts to protect and enhance the water quality of the WMA using a comprehensive watershed-based approach.

1 INTRODUCTION

The San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit) requires Copermittees within the San Dieguito Watershed Management Area (WMA) to collaborate and implement a Watershed Urban Runoff Management Program (WURMP). The WURMP consists of the Copermittees' combined efforts to address and identify High Priority Water Quality Problems (HPWQPs) in the WMA; develop and implement activities that address pollutant load reduction and pollutant source abatement in Watershed Water Quality Activities and Watershed Education Activities; and participate in collaborative land use planning efforts. The reporting period for this Annual Report is from July 1st, 2009, through June 30th, 2010.

1.1 COPERMITTEE COLLABORATION

1.1.1 SAN DIEGUITO WURMP MEETINGS

The San Dieguito Watershed Copermittees met nine (9) times during FY 2010 to develop and implement the San Dieguito WURMP. The Copermittees collaborated to develop, prioritize and implement watershed activities that address pollutants of concern and sources in the WMA and the development of the Annual Report. The Copermittees exchanged ideas on how to address HPWQPs in the WMA and evaluated the effectiveness of the watershed activities. **Table 1-1** is a summary of the San Dieguito WURMP meetings and an outline of agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Item Topics
8/13/2009	Permit WURMP Language Revisions; Annual Reporting Database; Alternative Reporting; Quality of Life Funding Strategy
10/8/2009	WURMP Annual Report – Database and Alternative Reporting; Permit WURMP Language Revisions; Quality of Life Funding Strategy; Cost Share Agreement; 303(d) Listings
11/12/2009	WURMP Annual Report –Alternative Reporting; Quality of Life Funding Strategy; Cost Share Agreement
1/14/2010	WURMP Annual Report – Certifications and Scheduling; Quality of Life Funding Strategy; Cost Share Agreement; Public Outreach Coordination
2/11/2010	WURMP Activities; Follow-up to Annual Reporting; Quality of Life Funding Strategy; Outreach Coordination – Fiesta de Los Peñasquitos 2010; Bacteria TMDL
3/11/2010	WURMP Activities; Quality of Life Funding Strategy; Outreach Coordination – Fiesta de Los Peñasquitos 2010; Bacteria TMDL
4/15/2010	WURMP Activities – Sediment Basins, Source ID Studies; Quality of Life Funding Strategy; Fiesta de Los Peñasquitos 2010; Bacteria TMDL; Unfunded Mandate Test Claim
5/13/2010	WURMP Activities – Source ID Studies; WURMP Calendar; Quality of Life Funding; Fiesta de Los Peñasquitos; Bacteria TMDL; TWAS Locations; Hodges Basin Natural Treatment System
6/17/2010	WURMP Calendar; Quality of Life Funding Strategy; TWAS Locations; TMDLs – Bacteria, Los Peñasquitos Lagoon; WURMP Activities – Source ID Studies

The general watershed meetings of the San Dieguito WURMP Workgroup were led by the City of Escondido, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks were then carried out by the Copermittees, each within the structure of

their jurisdictional organization. Task completion was then tracked and assessed at the Workgroup meetings and reported in the Annual Report.

1.2 Watershed Map Update

The San Dieguito River Watershed drains an area of approximately 221,440 acres in west–central San Diego County. The San Dieguito River watershed extends through a diverse array of habitats from the eastern headwaters in the Volcan Mountains to the outlet at the San Dieguito Lagoon and Pacific Ocean. The watershed consists of five hydrologic areas (HAs). The watershed includes portions of the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, and unincorporated areas of San Diego County. Land use within the watershed is classified primarily as vacant and undeveloped land (42%). Other major land use classifications are residential (19%), open space/parks and recreation (17%), and agriculture (15%). Transportation, commercial, industrial, public facility, and water comprise the remaining 7% of the watershed. Over 60% of the watershed is privately owned land. The remaining portions are mostly federally or locally owned, and a small percentage of land is state-owned.

No updates have been made to the previously submitted Watershed Map. See the San Dieguito WURMP Annual Report submitted in January 2009 for the most recent Watershed Map.

2 Water Quality Assessment

This section provides an assessment of the 2009-2010 monitoring programs conducted in the San Dieguito River WMA. A complete presentation of the regional monitoring efforts conducted during the reporting period is located in the *2009-2010 San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Urban Runoff Monitoring Report) (Weston, January 2011).

2.1 Monitoring Programs

Monitoring activities conducted in the WMA to comply with Order R9-2007-0001 are provided in **Table 2-1**. Two maps showing the 2009-2010 Monitoring Station Locations are provided on the following pages.

Table 2-1 2009-2010 Monitoring Program Activities

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Ambient Monitoring	Water chemistry and toxicity
Rapid Stream Bioassessments	Benthic macroinvertebrates, periphyton, and physical habitat
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, and bacteria
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria
Regional Source Identification Monitoring	Chemistry, metals, pesticides, and bacteria
Coastal Storm Drain Monitoring (CSDM) Program	Fecal indicator bacteria

2.2 303(d) Listings

Within this WMA, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant total maximum daily load (TMDL) status. However, several changes are currently proposed in the 2008 Draft 303(d) list currently under development.

Table 2-2 San Dieguito WMA SWRCB 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Pacific Ocean Shoreline	Bacterial indicators	Adopted
Green Valley Creek	Sulfates, chloride, manganese, and PCP	Proposed for Completion in 2019
Lake Hodges	Color, nitrogen, phosphorus, turbidity, manganese, and pH	
Kit Carson Creek	TDS and PCP	
Felicita Creek	TDS and aluminum	
Cloverdale Creek	Phosphorus and TDS	
Sutherland Reservoir	Color, manganese, and pH	

Figure 2-1 San Dieguito WMA 2009-2010 Dry Weather Monitoring Station Location Map

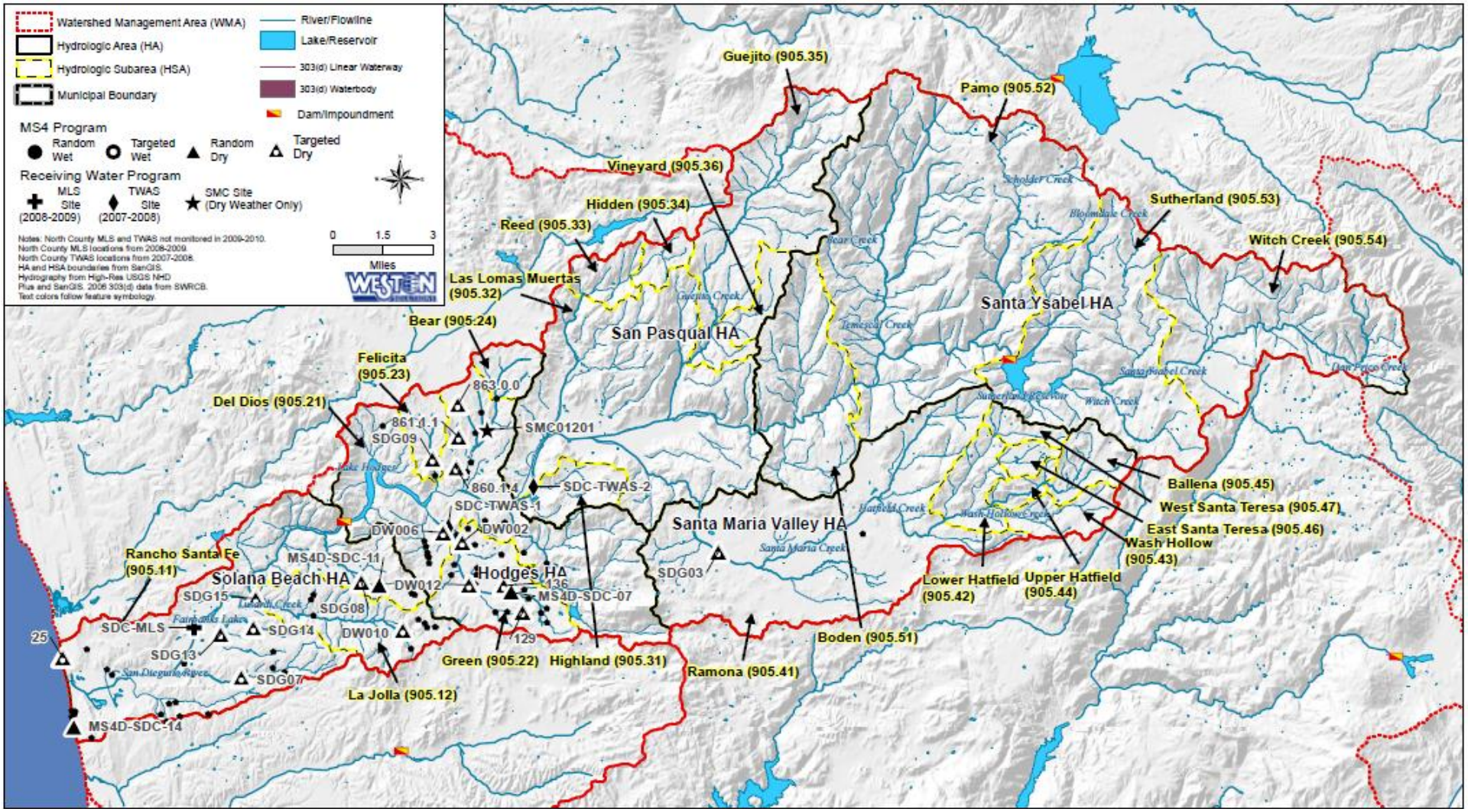

Figure 2-2 San Dieguito WMA 2009-2010 Wet Weather Monitoring Station Location Map

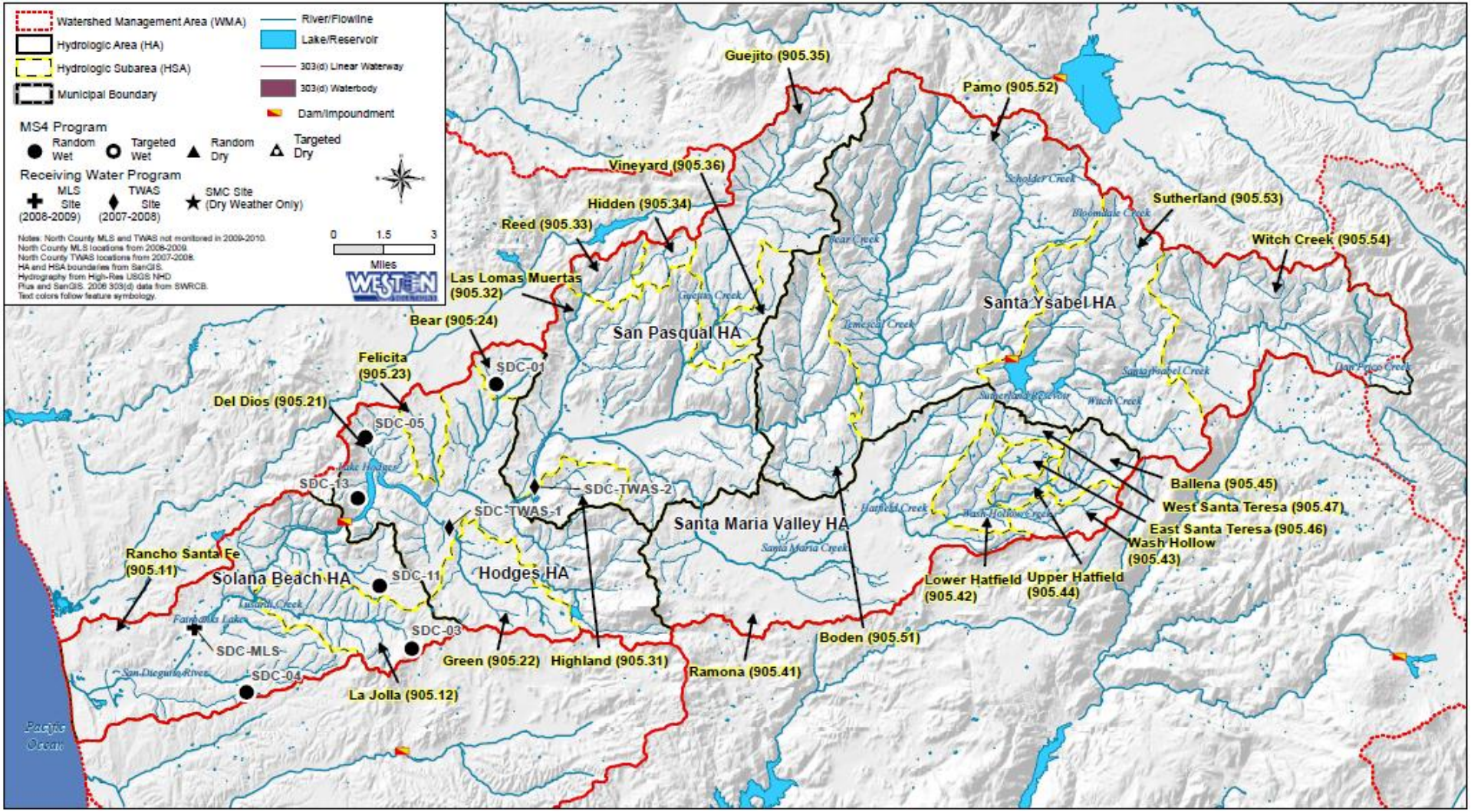

2.3 Assessment

Receiving water monitoring was conducted during one ambient weather event at one Southern California Stormwater Monitoring Coalition (SMC) site. No receiving water monitoring was conducted at the MLS or TWAS in the San Dieguito River WMA in 2009-2010 due to the rotational nature of the permit: the South County received the MLS and TWAS monitoring. Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Order with the exception of Chollas Creek which is monitored each year. Ambient and wet weather receiving water monitoring will be conducted during the 2010–2011 Monitoring Season.

Assessments were conducted using data from multiple current and historical monitoring programs, and the results derived using a weight-of-evidence approach. Each HA in the San Dieguito River WMA was assessed individually and summarized for the entire WMA by program element in **Table 2-3**.

Table 2-3. Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings
San Dieguito River WMA	Receiving Water Monitoring Program	Ambient Receiving Water Assessment	▪ Constituents of concern[1]: – High frequency of occurrence (TDS, chloride, sulfate, Index of Biotic Integrity (IBI), and total nitrogen). – Medium frequency of occurrence (toxicity – *C. dubia* reproduction). ▪ Data based on one site within the SMC Regional Monitoring Program; monitoring at the MLS and TWAS sites did not occur in 2009-2010. ▪ Bacteria were not analyzed as part of the SMC Regional Bioassessment Monitoring Program.
		Wet Weather Receiving Water Assessment	▪ Wet weather receiving water assessment did not occur in 2009-2010. The following results are from 2008-2009: ▪ Constituents of concern[1]: – High frequency of occurrence (TDS). – Medium frequency of occurrence (fecal coliform). – Low frequency of occurrence (TSS, turbidity and Bifenthrin). ▪ No constituents had a magnitude of exceedance greater than five times the benchmark. ▪ No persistent toxicity was observed. ▪ Bifenthrin was not detected in storm water at the MLS site. ▪ No pyrethroids were detected in post-storm sediment samples at the MLS.
		Rapid Stream Bioassessment	▪ Rapid Stream Bioassessment did not occur in 2009-2010. The following results are from 2008-2009: ▪ Altered benthic macroinvertebrate communities (Very Poor IBI rating at TWAS-1 and Poor IBI rating at MLS).
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of concern[1]: – High priority constituents: ▪ Above Lake Hodges (905.2): TDS, sulfate, total nitrogen, total phosphorous, Enterococci, and chloride. ▪ Below Lake Hodges (905.1): TDS, total phosphorous. – Medium priority constituents: ▪ Above Lake Hodges (905.2): fecal coliform. ▪ Below Lake Hodges (905.1): Enterococci. ▪ There were no submarginal or poor trash ratings in the San Dieguito River WMA. No human health or aquatic health threats were identified.
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ Constituents of concern[1]: – High priority constituents: ▪ Above Lake Hodges (905.2): TSS, pH, fecal coliform. ▪ Below Lake Hodges (905.1): fecal coliform. – Medium priority constituents: ▪ Above Lake Hodges (905.2): none identified. ▪ Below Lake Hodges (905.1): TDS, pH.
	WMA Assessment	Receiving Water Trend Assessment	▪ Trend analysis based on available data (2008-2009). ▪ Significantly increasing trends were observed for Total Kjedahl Nitrogen (TKN), total phosphorus, and conductivity. ▪ No significantly decreasing trends were evident.
		2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, chloride, sulfate, and total nitrogen are consistent with the 2001–2006 BLTEA ratings as it relates to the Solana Beach HA.

[1] Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria developed in FY 2009. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in Appendix B of the 2008-2009 Annual Monitoring Report (Weston, 2010).

2.4 INTEGRATED ASSESSMENT

Assessment of the San Dieguito WMA during both wet weather and ambient weather monitoring conditions is presented in an integrated manner to provide managers with an overall assessment of the WMA and to provide answers to the core management questions as described in the regional monitoring program. The integrated assessment provides the results of the receiving water assessments and urban runoff assessments during both storm events and ambient weather events. It also provides a summary of the overall WMA findings. The integrated assessment further provides the ability to identify where COCs (Constituents of Concern) overlap between urban runoff and receiving waters. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as additional data become available in future years. Integrated WMA assessments results are presented in **Tables 2-4** and **2-5**.

Table 2-4 San Dieguito River MLS Drainage Area Assessment Findings Below Lake Hodges Dam

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Receiving Water Monitoring (MLS, TWAS, and SMC)	**No MLS Sampling During 2009-2010 Season** **SMC Results-2009 (1 Station-SMC00473)** • Chemistry – Chloride, Sulfate, TDS, Total Nitrogen, TSS • Bacteria – Not Assessed • Toxicity – *C. dubia* reproduction • Bioassessment – Poor IBI Synthetic Pyrethroids Assessment (2008-2009) – Below thresholds (sediment)	**No MLS Sampling During 2009-2010 Season** **2008-2009 Season Results** • Chemistry – TDS, TSS, Turbidity • Bacteria – Fecal Coliform • Toxicity – No Toxicity • Synthetic Pyrethroids Assessment – Below benchmarks.
Urban Runoff Monitoring (MS4 Outfall)	• Chemistry – TDS, Total Phosphorus • Bacteria – Enterococci (Med)	• Chemistry – TDS (Med), pH (Med) • Bacteria – Fecal Coliform
MLS Trends*		
Increasing		TKN, Total Phosphorus, and Conductivity
Decreasing		No Decreasing Trends

*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data (based on 2008-2009 Season).

1: High and medium priority constituents are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
TDS - total dissolved solids
TKN - total kjeldahl nitrogen
TSS - total suspended solids
TWAS - temporary watershed assessment station

Table 2-5 San Dieguito River MLS Drainage Area Assessment Findings Above Lake Hodges Dam

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Receiving Water Monitoring (MLS, TWAS, and SMC)	**No MLS Sampling During 2009-2010 Season** **SMC Results-2010 (1 Station-SMC01201)** • Chemistry – Chloride, Sulfate, TDS, Total Nitrogen • Bacteria – Not Assessed • Toxicity – *C. dubia* reproduction • Bioassessment – Poor IBI	**No MLS Sampling During 2009-2010 Season** No TWAS Sampling During 2008-2009 Season (Bight '08).
Urban Runoff Monitoring (MS4 Outfall)	• Chemistry – Sulfate, Chloride, TDS, Total Phosphorus, Total Nitrogen • Bacteria – Enterococci, Fecal Coliform (Med)	• Chemistry – TSS, pH • Bacteria – Fecal Coliform

1: High and medium priority constituents are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
TDS - total dissolved solids
TKN - total kjeldahl nitrogen
TSS - total suspended solids
TWAS - temporary watershed assessment station

2.5 High Priority Water Quality Problems

Based on the assessments above and the available water quality data, the San Dieguito WURMP Copermittees have determined that the HPWQPs in the San Dieguito WMA are:

1. Bacteria in all HAs (under ambient and wet weather conditions)
2. Nutrients in the San Pasqual Hydrologic Area

It should be noted that the HPWQPs have not changed from previous assessments or the 2008 San Dieguito WURMP, even though this year's assessment included the third year of expanded monitoring data as required under Order No. R9-2007-0001.

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3 Pollutant Sources Assessment

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Dieguito WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs. The pollutant source assessment is presented by HA.

Table 3-1 summarizes the land use in each of the HAs. Land use information is generally associated with wet weather urban runoff where rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to dry weather urban runoff that is generally associated with point dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant-generating activities and from the conveyance of urban runoff as it enters and travels through the MS4.

Tables 3-2 through **3-6** present a limited inventory of pollutant-generating sources that the Copermittees currently track by HA. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight signifies HPWQP). This HPWQP is then associated with the sources that are likely to generate those pollutants (blue highlight). The process used to develop the tables was taken directly from the Baseline Long-Term Effectiveness Assessment (BLTEA) (Weston, MOE, LWA, 2005). The data used for the process includes the following: (1) results in the 2009-2010 Regional Annual Monitoring Report (Weston Solutions, 2011); (2) current inventory information from all WMA Copermittees; and (3) the Source Loading Potential (SLP) ratings from the BLTEA (Weston, MOE, LWA, 2005).

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)				
	905.1	905.2	905.3	905.4	905.5
Open Space	11,811.7	12,038.1	27,837.5	15,164.0	67,813.7
Single Family Residential	5,373.5	6,957.5	226.5	802.2	12.5
Transportation	3,275.8	2,424.0	372.6	966.0	354.1
Agricultural	3,196.0	1,818.8	11,392.8	6,517.7	9,561.5
Rural Residential	2,980.4	3,065.0	3,103.5	11,554.5	3,101.8
Park	1,593.3	1,079.2	223.4	233.5	0.0
Industrial	801.5	161.4	91.8	477.8	13.5
Multiple Family Residential	646.1	736.0	4.6	256.7	25.6
Commercial	373.7	410.3	0.0	136.2	11.6
Institutional	229.6	360.8	27.1	254.4	2.7
Recreation	202.7	109.2	102.4	60.7	183.7
Water	162.6	992.9	13.4	0.0	547.2
Under Construction	90.9	15.9	17.3	92.1	34.1
Municipal	48.6	23.1	0.0	37.5	71.8
Military	9.7	15.3	26.2	2.3	0.0
Prison	0.0	0.0	0.0	0.0	0.0

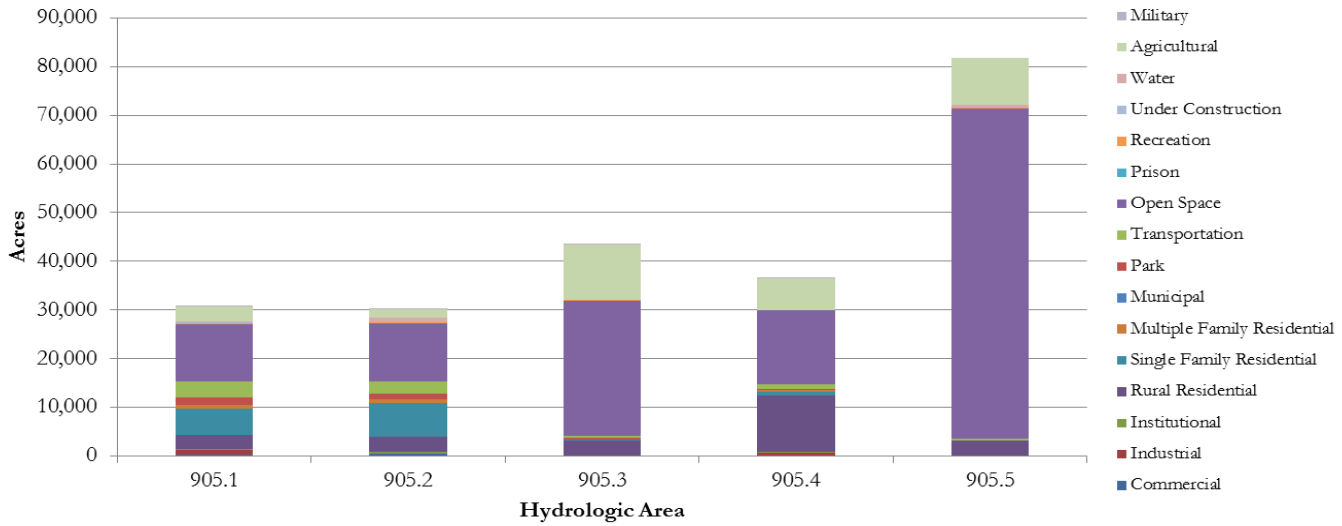

Source: SANDAG

Table 3-2 Pollutant Generating Sources – 905.1 Solana Beach Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	18			N	L	UL	L	UK	L	UK	L
Automotive	57			L	L	L	UL	UL	UK	L	UL
Contractor	62			UL	UL	UL	L	UL	UL	L	UL
Food Establishments	179			N	L	L	UL	UK	UK	L	L
Equipment	8			L	L	L	UL	UL	UK	L	UL
Fueling	6			UK	L	L	UK	N	N	UK	N
General Industrial	2			L	L	L	UK	UK	UK	UK	UK
General Retail	4			UL	UL	UL	L	UL	UL	L	UL
Golf	8			N	N	UL	L	L	L	L	L
Manufacturing	22			L	UK	UK	UK	UK	UK	UK	UL
Metal	5			L	L	L	UK	UK	UK	UK	UL
Nursery	6			L	UL	UL	L	L	L	UK	L
Stone	3			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	53			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	46	24									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	23	44	364								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-3 Pollutant Generating Sources – 905.2 Hodges Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	7			N	L	UL	L	UK	L	UK	L
Automotive	60			L	L	L	UL	UL	UK	L	UL
Contractor	85			UL	UL	UL	L	UL	UL	L	UL
Food Establishments	182			N	L	L	UL	UK	UK	L	L
Equipment	7			L	L	L	UL	UL	UK	L	UL
Fueling	9			UK	L	L	UK	N	N	UK	N
General Retail	6			UL	UL	UL	L	UL	UL	L	UL
Golf	3			N	N	UL	L	L	L	L	L
Institutional	3			L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	14			L	UK	UK	UK	UK	UK	UK	UL
Metal	3			L	L	L	UK	UK	UK	UK	UL
Nursery	7			L	UL	UL	L	L	L	UK	L
Stone	1			L	UK	UK	UK	UK	UK	UK	UL
Storage & Warehousing	43			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	17	8									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	12	24	140								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-4 Pollutant Generating Sources – 905.3 San Pasqual Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	1			N	L	UL	L	UK	L	UK	L
Automotive	1			L	L	L	UL	UL	UK	L	UL
Contractor	1			UL	UL	UL	L	UL	UL	L	UL
Food Establishments	1			N	L	L	UL	UK	UK	L	L
Equipment	1			L	L	L	UL	UL	UK	L	UL
General Retail	1			UL	UL	UL	L	UL	UL	L	UL
Nursery	4			L	UL	UL	L	L	L	UK	L
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	2	0									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	5	9	102								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-5 Pollutant Generating Sources – 905.4 Santa Maria Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	17			N	L	UL	L	UK	L	UK	L
Automotive	34			L	L	L	UL	UL	UK	L	UL
Cemetery	1			N	N	UL	L	L	L	L	L
Contractor	21			UL	UL	UL	L	UL	UL	L	UL
Food Establishments	54			N	L	L	UL	UK	UK	L	L
Equipment	8			L	L	L	UL	UL	UK	L	UL
Fueling	11			UK	L	L	UK	N	N	UK	N
General Industrial	2			L	L	L	UK	UK	UK	UK	UK
General Retail	7			UL	UL	UL	L	UL	UL	L	UL
Golf	1			N	N	UL	L	L	L	L	L
Manufacturing	3			L	UK	UK	UK	UK	UK	UK	UL
Metal	2			L	L	L	UK	UK	UK	UK	UL
Nursery	15			L	UL	UL	L	L	L	UK	L
Stone	3			L	UK	UK	UK	UK	UK	UK	UL
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	2	6									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	1	20	194								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

Table 3-6 Pollutant Generating Sources – 905.5 Santa Ysabel Hydrologic Area*

Inventory Sites/Facilities**	Quantities			Pollutant Source Loading Potential***							
				Heavy Metals	Organics	Oil & Grease	Sediment	Pesticides	Nutrients	Gross Pollutants	Bacteria
Animal	2			N	L	UL	L	UK	L	UK	L
Automotive	1			L	L	L	UL	UL	UK	L	UL
Food Establishments	4			N	L	L	UL	UK	UK	L	L
Fueling	1			UK	L	L	UK	N	N	UK	N
Nursery	1			L	UL	UL	L	L	L	UK	L
Municipal	High	Non-High		L	L	L	L	UK	UK	UK	UL
	1	1									
Construction	High	Medium	Low	UL	UL	UL	L	UL	UL	L	UL
	1	2	25								

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report
**Other sources are not reported in this table including: Land Development, Residential and Non-inventoried Business Sources
***Pollutant Source Loading Potential taken from BLTEA 2005; N = None, UK = Unknown, UL = Unlikely, L = Likely

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4 Implementation of Watershed Activities

4.1 JURMP and Watershed Activities

The San Dieguito WURMP Copermittees are responsible for implementing JURMP activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. These activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

In addition to their JURMP activities, the San Dieguito WURMP Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed or jurisdictional level. The activity selection process is described fully in the March 2008 San Dieguito WURMP.

The tables below present the Copermittees' efforts to report all urban runoff management activities on a watershed basis. Moreover, a comprehensive account of all urban runoff management activities on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements. The tables identify the JURMP and WURMP activities that are associated with the HPWQPs in each HA.

Collectively, the Copermittees conducted:

- Five (5) watershed water quality activities and one (1) watershed education activity in the Solana Beach HA (905.1);
- Seven (7) watershed water quality and two (2) watershed education activities in the Hodges HA (905.2);
- Three (3) watershed water quality activities and one (1) watershed education activity in the San Pasqual HA (905.3);
- Three (3) watershed water quality activities and one (1) watershed education activity in the Santa Maria HA (905.4); and,
- One (1) watershed water quality and one (1) watershed education activity in the Santa Ysabel HA (905.5);

It is worth noting that several of these activities overlapped HAs.

Table 4-1 JURMP and WURMP Activities – 905.1 Solana Beach Hydrologic Area*

Activity		Results # of Inspections:(Inventory #)	High Priority Water Quality Problem(s) Bacteria/Pathogens
Inspections	Animal	8: (18)	X
	Food Establishment	109: (179)	X
	Golf	5: (8)	X
	Nursery	6: (6)	X
Street Sweeping (Tons Collected)		592	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,344	X
SDG-WQA2	Land Acquisitions		X
SDG-WQA10	Targeted Inspections (formerly Targeted Restaurant Facility Inspections)		X
SDG-WQA16	Pet Waste Bag Dispenser Program		X
SDG-WQA17	Targeted Restaurant Facility Inspections and Outreach		X
SDG-WQA19	Pet Waste Dispenser Program in County Parks		X
SDG-WQEA11	Focused Outreach to the Equestrian Community		X

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report

Table 4-2 JURMP and WURMP Activities – 905.2 Hodges Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s) Bacteria/Pathogens
Inspections	Animal	1: (7)	X
	Food Establishment	111: (182)	X
	Golf	3: (3)	X
	Nursery	7: (7)	X
Street Sweeping (Tons Collected)		621	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,294	X
SDG-WQA2	Land Acquisitions		X
SDG-WQA4	San Diego Coastkeeper Trash Cleanup Sponsorship		X
SDG-WQA10	Targeted Inspections (formerly Targeted Restaurant Facility Inspections)		X
SDG-WQA13	ILACSD Trash Cleanup Sponsorship		X
SDG-WQA16	Pet Waste Bag Dispenser Program		X
SDG-WQA17	Targeted Restaurant Facility Inspections and Outreach		X
SDG-WQA19	Pet Waste Dispenser Program in County Parks		X
SDG-WQEA6	Community-Based Social Marketing Outreach Pilot Project		X
SDG-WQEA11	Focused Outreach to the Equestrian Community		X

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report

Table 4-3 JURMP and WURMP Activities – 905.3 San Pasqual Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s)	
			Bacteria/ Pathogens	Nutrients
Inspections	Animal	0: (1)	X	X
	Food Establishment	1: (1)	X	
	Nursery	2: (4)	X	X
Street Sweeping (Tons Collected)		342	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,070	X	X
SDG-WQA2	Land Acquisitions		X	X
SDG-WQA16	Pet Waste Bag Dispenser Program		X	
SDG-WQA17	Targeted Restaurant Facility Inspections and Outreach		X	X
SDG-WQEA11	Focused Outreach to the Equestrian Community		X	X

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report

Table 4-4 JURMP and WURMP Activities – 905.4 Santa Maria Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s) Bacteria/Pathogens
Inspections	Animal	5: (17)	X
	Cemetery	0: (1)	X
	Food Establishment	4: (54)	X
	Golf	0: (1)	X
	Nursery	5: (15)	X
Street Sweeping (Tons Collected)		56	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		231	X
SDG-WQA2	Land Acquisitions		X
SDG-WQA19	Pet Waste Dispenser Program in County Parks		X
SDG-WQA23	Ramona County Library Project		X
SDG-WQEA11	Focused Outreach to the Equestrian Community		X

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report

Table 4-5 JURMP and WURMP Activities – 905.5 Santa Ysabel Hydrologic Area*

Activity		Results # of Inspections: (Inventory #)	High Priority Water Quality Problem(s) Bacteria/Pathogens
Inspections	Animal	0: (2)	X
	Food Establishment	0: (4)	X
	Nursery	0: (1)	X
Street Sweeping (Tons Collected)		126	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		517	X
SDG-WQA2	Land Acquisitions		X
SDG-WQEA11	Focused Outreach to the Equestrian Community		X

*Prepared based on the WURMP Copermittees FY 2010 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report

4.2 Watershed Education Activities

This section describes activities implemented by the San Dieguito WURMP Copermittees during the FY 2010 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The San Dieguito WURMP Copermittees are responsible for identifying and implementing education activities that

address the HPWQPs in the San Dieguito WMA. The activity selection process is described fully in the 2008 San Dieguito WURMP.

The San Dieguito WURMP Copermittees have made significant progress in developing and implementing programs aimed at improving storm water and urban runoff water quality in the WMA. **Table 4-6** below lists the two (2) education activities implemented during FY 2010 by the San Dieguito WURMP Copermittees. In addition, other activities were in the active planning or assessment phases during the reporting period. For more details on all of the activities, refer to **Table 4-10** and **Appendix B**.

Table 4-6. Watershed Education Activities Implemented During FY 2010

ID #	Activity/Project Name
WQEA6	Community-Based Social Marketing Outreach Pilot Project
WQEA11	Focused Outreach to the Equestrian Community

The effectiveness assessments for these activities are presented in the Activity Implementation Sheets (**Appendix B**) and are summarized in Section 5 – Effectiveness Assessment.

4.3 Public Participation Activities

4.3.1 Introduction

The Public Participation component of the 2008 San Dieguito WURMP encourages residents and organizations within the WMA (such as other agencies, private companies, and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water, and other methods, including direct interaction of San Dieguito WURMP Copermittee staff with members of the public.

4.3.2 Activities Conducted

WURMP documents and reports are posted on the Project Clean Water website, http://www.projectcleanwater.org/, where they are available to all interested stakeholders. During FY 2010, the San Dieguito Watershed web page on the Project Clean Water website received 2,092 hits and the San Dieguito WURMP page received 567 hits. These totals are slightly higher than those seen in the previous reporting period. A monthly breakdown of the hits can be found in the tables below.

Table 4-7 Numbers of Hits on the Project Clean Water San Dieguito WMA Web Site

July 09	Aug 09	Sep 09	Oct 09	Nov 09	Dec 09	Jan 10	Feb 10	March 10	April 10	May 10	June 10	Total
140	150	188	164	177	185	210	191	206	181	163	137	2,092

Table 4-8 Numbers of Hits on the Project Clean Water San Dieguito WURMP Web Site

July 09	Aug 09	Sep 09	Oct 09	Nov 09	Dec 09	Jan 10	Feb 10	March 10	April 10	May 10	June 10	Total
39	34	52	74	49	39	45	53	65	45	42	30	567

During this reporting period, the San Dieguito WURMP Copermittees participated in eight (8) community events that reached approximately 798 participants, as shown in **Table 4-9**

below. Watershed concepts and principles were incorporated into booth displays and event activities.

Table 4-9 Community Events in FY 2010

Date	Event Title	Target Audience	Estimated Attendance	Location
9/19/2009	Coastal Cleanup Day	Public	155	Powerhouse Park
9/19/2009	Coastal Cleanup Day	Public	186	Fletcher Cove
9/19/2009	Coastal Cleanup Day	Public	80	Lake Hodges
4/24/2010	Creek to Bay Cleanup	Public	114	Powerhouse Park
4/24/2010	Creek to Bay Cleanup	Public	57	Fletcher Cove
4/24/2010	Creek to Bay Cleanup	Public	113	Lake Hodges
4/24/2010	Creek to Bay Cleanup	Public	67	Ramona Community Park
4/24/2010	Creek to Bay Cleanup	Public	26	Ramona Trash Transfer Station

4.3.3 FUTURE EFFORTS

The San Dieguito WURMP Copermittees will continue to provide opportunities for residents and other interested parties to participate in San Dieguito WURMP activities. Documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the San Dieguito WMA.

4.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

4.4.1 INTRODUCTION

The Land-Use Planning component of the 2008 San Dieguito WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across San Dieguito WURMP Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities.

4.4.2 ACTIVITIES CONDUCTED

Integrated Regional Water Management (IRWM)

The WURMP Copermittees have been active participants in the Integrated Regional Water Management (IRWM) planning process (IRWMPP). The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders. Participation in the IRWMPP has already led to funding approval for a number of BMP (Best Management Practice) installation projects that will benefit the WMA by reducing runoff.

Quality of Life Funding Strategy
The County of San Diego has been invited to participate in SANDAG's Quality of Life Funding Strategy, and asked to take the lead on the Water Quality Enhancement Element. Based upon past analysis from SANDAG's Regional Comprehensive Plan (RCP), it has been determined that the region lacks a long-term and sustainable funding source for different areas of infrastructure, including stormwater. The County has worked collaboratively with other Copermittees, as well as interested regional stakeholders, to explore a variety of funding options, conduct a regional needs assessment, and help establish funding priorities related to water quality. This is an ongoing effort that currently has a vision through 2012.

4.4.3 Future Efforts

In FY 2011, the Copermittees will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will begin. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the Copermittees.

The San Dieguito WURMP Copermittees remain committed to encouraging collaborative, watershed-based land-use planning in their jurisdictional planning departments. The Copermittees will continue to work together to seek additional means of collaboration in this area.

4.5 5-Year Strategic Plan

4.5.1 New Watershed Activities

Proposed watershed activities Implementation Sheets can be found in **Appendix B**. New activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA.

Each activity on the WMA activities list is fully described in an Activity Implementation Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQPs of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The San Dieguito WURMP Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no fewer than two watershed water quality activities will be in an active implementation phase. A watershed water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's HPWQPs. Watershed water quality activities that are capital projects are in active implementation for the first year of implementation only.

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

4.5.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the 2008 San Dieguito WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the High HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees made appropriate management decisions on which watershed water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the San Dieguito WURMP Copermittees used available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The Updated 5-Year Strategic Plan presented at the end of this section is intended to supersede earlier versions presented in the 2008 San Dieguito WURMP and the FY 2008 and FY 2009 WURMP Annual Reports.

Table 4-10 5-Year Strategic Plan

Water Quality Activity/Project Name		Jurisdiction(s)	Watershed Priorities		Implementation Schedule			
			Bacteria	Nutrients	FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
SDG-WQA2	Land Acquisitions	COUNTY	X		WQI	WQI	WQI	WQI
SDG-WQA3	San Dieguito Watershed Municipal Rain Barrel Installation and Downspout Disconnects	SD	X		WQI	Completed – Will no longer be reported		
SDG-WQA4	Coastal Cleanup Day Sponsorship	SD	X		WQI	WQI	WQI	WQI
SDG-WQA5	Sediment and Peak Flow Controls #1	SD	X	X	On hold	P	-	-
SDG-WQA6	Sediment and Peak Flow Controls #2	SD	X	X	Project on hold			
SDG-WQA10	Targeted Inspections (formerly Targeted Restaurant Facility Inspections)	SD	X	X	WQI	WQI	Completed	
SDG-WQA11	Bernardo Center Drive Trash Segregation BMP	SD	X		P	I	WQI	-
SDG-WQA13	ILACSD Trash Cleanup Sponsorship	SD	X		WQI	WQI	WQI	WQI
SDG-WQA14	Park and Open Space Irrigation and Controllers	DM	Completed – Will no longer be reported					
SDG-WQA15	Median Irrigation System Replacement	DM	Completed – Will no longer be reported					
SDG-WQA16	Pet Waste Bag Dispenser Program	SD	X		WQI	Completed – Will no longer be reported		
SDG-WQA17	Targeted Restaurant Facility Inspections and Outreach	ESC/SB/DM	X	X	WQI	WQI	WQI	WQI
SDG-WQA18	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	X	X	P	WQI	A	A
SDG-WQA19	Pet Waste Bag Dispenser Program in County Parks	COUNTY	X		WQI	WQI	WQI	WQI
SDG-WQA20	Outdoor Water Conservation Rebate Program	SD	X	X	P	I	I	WQI
SDG-WQA21	Median Sweeping Pilot Study	SD	Completed – Will no longer be reported					
SDG-WQA22	City of San Diego *Strategic Plan for Watershed Activity Implementation*	SD	X	X	I	I	I	I
SDG-WQA23	Ramona County Library Project	COUNTY	X	X	WQI	-	-	-
SDG-WQA24	San Dieguito River Volunteer Clean Up Event	COUNTY	X	X	Not implemented – Will no longer be reported			
SDG-WQA25	Rancho Bernardo Library Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	SD	X	X	P	P	P	P, WQI
SDG-WQA26	Residential Rain Barrel Subsidies & Distribution	COUNTY	X	X	P	WQI	WQI	WQI

Table 4-10 5-Year Strategic Plan - Continued

Education Activity/Project Name		Jurisdiction(s)	Watershed Priorities		Implementation Schedule			
			Bacteria	Nutrients	FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
SDG-WQEA1	Residential Water Conservation Outreach	DM/SB	X	X	P	WE	-	-
SDG-WQEA2	LID and Watershed Planning Education	COUNTY/DM	Completed – Will no longer be reported					
SDG-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	SD	X		E	-	-	-
SDG-WQEA6	Community-Based Social Marketing Outreach Pilot Project	SD	X		WE	Completed – Will no longer be reported		
SDG-WQEA8	Erosion and Sediment Control Poster	SD	X		E	Completed – Will no longer be reported		
SDG-WQEA9	Restaurant Best Management Practices Booklet	SD	X		E	Completed – Will no longer be reported		
SDG-WQEA10	San Dieguito River Watershed Brochure	SD	X	X	P	P	WE	-
SDG-WQEA11	Focused Outreach to the Equestrian Community	ESC/COUNTY	X	X	WE	WE	WE	-

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)

E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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5 Effectiveness Assessment

The Municipal Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, to assess the effectiveness of the activities conducted to meet those goals and objectives, and to identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.2.i of the Municipal Permit, and reports on the activities planned and implemented during FY 2010.

5.1 Assessment of Overall WURMP Effectiveness

Activities collaborated upon and selected by the San Dieguito WURMP Copermittees address the overall goal of the WURMP by focusing on the HPWQPs within the WMA.

As set forth in the Municipal Permit and outlined in the 2008 San Dieguito WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the San Dieguito WURMP Copermittees in FY 2010, and where in this report required compliance points are fulfilled or described.

Table 5-1 Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Not Applicable	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the WMA.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
Describe Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Not Applicable	N/A

As shown in **Table 5-1**, the San Dieguito WURMP Copermittees were in compliance with all Level 1 WURMP related Municipal Permit requirements during FY 2010.

5.1.1 Activities Assessment

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated on and selected activities that would address high level HPWQPs not only within each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in **Appendix B** identifies specific targeted outcomes (Levels 1-6 – as described in **Table 5-2** below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 5-2 Outcome Levels: Levels 1-6

Outcome Level		Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2010, there were twelve (12) activities in the active implementation phase, ten (10) of which focused on water quality and two (2) focused on education. These activities addressed the HPWQPs in the San Dieguito WMA, which include bacteria and nutrients; and are the activities that the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. **Tables 5-3** through **5-7** below summarize the assessments of the water quality and education activities, on a HA basis, to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the table, the WURMP Copermittees are presenting their JURMP activities that are related to the HPWQPs in each HA. It is important to note that not all JURMP activities are included in this presentation. This year's annual reporting effort is intended to be a follow-up to the initial presentation of JURMP activities conducted by WURMP Copermittees that are relatable based on hydrologic area of implementation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittees' JURMP Annual Reports.

5.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs with implementation plans currently in effect within the San Dieguito WMA.

Table 5-3 Summary of Implemented Activities for FY 2010 – 905.1 Solana Beach Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Food Establishments; Golf Courses and Nurseries. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 61.81 acres of land acquired during this fiscal year in this HA.
SDG-WQA10	Targeted Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SDG-WQA16	Pet Waste Bag Dispenser Program	Water Quality	Bacteria	Levels 1, 2 and 4	Reducing the amount of pet waste and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria	Levels 1, 3 and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SDG-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2 and 4	No additional dispensers were added during FY 2010 to the 9 dispensers located throughout 3 parks in the County. Reducing the amount of pet waste found in parks and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2 and 3	Focused outreach leads to education, BMP implementation, and load-reducing effectiveness. Workshops targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.

Table 5-4 Summary of Implemented Activities for FY 2010 – 905.2 Hodges Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Food Establishments; Golf Courses and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA.
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 187 acres of land acquired during this fiscal year in this HA.
SDG-WQA4	California Coastal Cleanup Day Sponsorship	Water Quality	Bacteria	Levels 1 and 4	During this event 80 participants removed approximately 462 pounds of trash and debris and 75 pounds of recycling within the HA. At an estimated cost of $5,000 spent on the cleanup within the HA, the activity efficiency was approximately $9.31/lb.
SDG-WQA10	Targeted Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SDG-WQA13	ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Levels 1 and 4	During one event 113 participants removed 250 pounds of trash and debris and recycled 20 pounds of trash and debris. Sponsorship of this event resulted in a load reduction of 270 pounds of trash and debris. At an estimated cost of $5,000 spent on the cleanup within the HA, the activity efficiency was approximately $18.52/lb.
SDG-WQA16	Pet Waste Bag Dispenser Program	Water Quality	Bacteria	Levels 1, 2 and 4	Reducing the amount of pet waste and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria	Levels 1, 3 and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SDG-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2 and 4	No additional dispensers were added during FY 2010 to the 9 dispensers located throughout 3 parks in the County. Reducing the amount of pet waste found in parks and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQEA6	Community-Based Social Marketing Outreach Pilot Project	Water Education	Bacteria	Levels 1, 3 and 4	Evaluation of the effectiveness of installing pet waste bag dispensers at parks in San Diego showed that there was an 81% decrease in the number of people who did not pick up after their pet and a 60% decrease in the number of dog piles on the ground.
SDG-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2 and 3	Focused outreach leads to education, BMP implementation, and load-reducing effectiveness. Workshops targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.

Table 5-5 Summary of Implemented Activities for FY 2010 – 905.3 San Pasqual Hydrologic Area (HPWQPs = Bacteria & Nutrients)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees inspected the following business categories in the HA: Food Establishments and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria and nutrients in the HA.
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. No land was acquired during this fiscal year in this HA.
SDG-WQA16	Pet Waste Bag Dispenser Program	Water Quality	Bacteria	Levels 1, 2 and 4	Reducing the amount of pet waste and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria	Levels 1, 3 and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SDG-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2 and 3	Focused outreach leads to education, BMP implementation, and load-reducing effectiveness. Workshops targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.

Table 5-6 Summary of Implemented Activities for FY 2010 – 905.4 Santa Maria Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3 and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Food Establishments and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA.
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. There were 13.51 acres of land acquired during this fiscal year in this HA.
SDG-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2 and 4	No additional dispensers were added during FY 2010 to the 9 dispensers located throughout 3 parks in the County. Reducing the amount of pet waste found in parks and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SDG-WQA23	Ramona County Library Project	Water Quality	All	Levels 1 and 4	The new facility utilizes LID design applied throughout the site. Direct benefits for the watershed include reduction of runoff from impervious surfaces, reuse of runoff for drought tolerant irrigation, and filtering of runoff through bio-swales to decrease the amount of pollutants leaving the facility.
SDG-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2 and 3	Focused outreach leads to education, BMP implementation, and load-reducing effectiveness. Workshops targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.

Table 5-7 Summary of Implemented Activities for FY 2010 – 905.5 Santa Ysabel Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Level 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA.
SDG-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. No land was acquired during this fiscal year in this HA.
SDG-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2 and 3	Focused outreach leads to education, BMP implementation, and load-reducing effectiveness. Workshops targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.

6 Conclusions And Program Improvements

6.1 Conclusions

During FY 2010, the San Dieguito WURMP Copermittees strove to address the overall goal of the WURMP—to t have a positive impact on the water quality of the San Dieguito WMA—by focusing on its HPWQPs. To target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 San Dieguito WURMP, which strives to link identified water quality problems to their potential sources. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the HPWQPs in the San Dieguito WMA are bacteria/pathogens in all HAs and nutrients in the San Pasqual HA. It should be noted that the HPWQPs have not changed from previous assessments even though this year's evaluation included the first year of expanded monitoring mandated under the new Municipal Permit.

The San Dieguito WMA consists of five individual HAs or watersheds. Therefore, to effectively address the WMA's water quality issues, the San Dieguito WURMP Copermittees identified and then evaluated them for likely sources at the individual HA level (please refer to **Tables 3-2** through **3-6**). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; b) water quality and education activities appear to be targeting suspected sources of the HPWQPs and are mostly viewed as effective at reducing the impacts of the sources. Based on this analysis, the San Dieguito WURMP Copermittees focused their activities on the following suspected priority sources: eating/drinking establishments; animal facilities; botanical/zoological gardens; landscaping; auto/mechanical repair, maintenance fueling, or cleaning; and Publicly Owned Treatment Works (POTWs).

The San Dieguito WURMP Copermittees then developed and implemented watershed water quality and education activities to address these HPWQPs and their sources. **Tables 4-1** and **4-2** summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the San Dieguito WURMP Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Municipal Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, twelve (12) activities were implemented, ten (10) of which focused on water quality and two (2) on education. All of these activities targeted the priority pollutants in the San Dieguito WMA, which are bacteria and nutrients. The San Dieguito WURMP Copermittees satisfied the Permit requirement by having at least two water quality activities and two education activities in active implementation during the reporting period.

In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees continued the process to collect and report on JURMP and WURMP activities performed on an HA basis. The Copermittees believe that it is an important step toward integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The San Dieguito WURMP Copermittees have responded to meet the challenges of implementing the new requirements outlined in the Municipal Permit as they continue to refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs across the region. Furthermore, the San Dieguito WURMP Copermittees will continue to implement the activities described in Section 4 of this document in future reporting periods.

6.2 Program Improvements

The lack of water quality data directly related to sources makes true effectiveness assessment of the activities difficult. Without the data, the Copermittees are limited to qualitative assessments, which contain substantial assumptions linking the sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the San Dieguito WURMP Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources, or collect data unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research, analysis of existing data, and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level, i.e., evaluating the data from the larger watershed level. Analysis of the data at the HA level may provide useful information to the 2008 San Dieguito WURMP.

In many cases, water quality data may be unavailable to accurately characterize loading from suspected sources. Where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 San Dieguito WURMP—to determine and target the sources contributing to the HPWQPs – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve water quality within the WMA;
- Integrate watershed principles into land use planning;
- Enhance public understanding of water pollution sources; and
- Encourage and develop stakeholder participation.

References

San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Final Report, Weston, January 2011.

San Dieguito Watershed Urban Runoff Management Program, San Dieguito WURMP Copermittees, March 2008

San Dieguito Watershed Urban Runoff Management Program Annual Report, San Dieguito WURMP Copermittees, January 2009

San Dieguito Watershed Urban Runoff Management Program Annual Report, San Dieguito WURMP Copermittees, January 2010

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Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The WURMP Copermittees' FY 2009 (July 1st, 2008 through June 30th, 2009) JURMP Annual Reports were used to determine quantities of inventories. The WURMP Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1. Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2. Identified the Copermittees' total activity quantities for the following activities from the FY 2009 JURMP Annual Reports:
    1. Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
    2. Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3. Determined the amount of urban land use in each Copermittees' jurisdiction
4. Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City
5. Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation is as follows:

Copermittee Activity Quantity * % of land use in each HA for Activity Type = Copermittees's contribution to the HA

6. Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1
Jurisdiction A collected 800 tons of material from street sweeping in FY 2009

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2009

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1
Jurisdiction C collected 250 tons of material fro street sweeping in FY 2009

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:
800 tons of material *(250 urban land use acres/1,000 urban land use acres) = 200 tons

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:
1,000 tons of material *(1,250 urban land use acres/2,000 urban land use acres) = 625 tons

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:
250 tons of material *(500 urban land use acres/500 urban land use acres) = 250 tons

The total amount of estimated street sweepings collected in HA1 is 200+625+250=**1,075 tons**

Appendix B

San Dieguito Watershed Activity Sheets

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TITLE: **LAND ACQUISITIONS**
ID #: **SDG-WQA2**

ACTIVITY IMPLEMENTATION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural ability to infiltrate stormwater/runoff.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit.

While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY2007-08 reporting period there were 9.99 acres of land acquired in the San Dieguito River Watershed.

During the FY2008-09 reporting period there were 3,197.52 acres of land acquired in the San Dieguito River Watershed.

During the FY2009-10 reporting period there were 262.32 acres of land acquired in the San Dieguito Watershed. See Table Below.

Table 1. Property Acres Date Watershed ID APN(s)

Property	Acres	Date	Watershed	HSA	APN(s)
Pascoe - Del Dios Highlands	37	11/23/2009	San Dieguito	905.21	238-021-07
Helix-Lambron, Del Dios Highlands	150	6/30/2010	San Dieguito	905.21	270-030-17, 270-290-08, 272-060-01, 272-161-03, -04
Ramona TET easements	14	06/07/2009	San Dieguito	905.41	282-010-43 PORTION
Christopherhill TET dedication	62	12/16/2009	San Dieguito	905.11 & 905.12	678-242-11
TOTAL	**262.32**				

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: SAN DIEGUITO WATERSHED MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECTS
ID #: SDG-WQA3

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) completed a municipal rain barrel installation and downspout disconnect project that reduced pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project consisted of installing rain barrel systems, including downspout disconnects and infiltration systems, within the San Dieguito River Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. The project included site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Dieguito River WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the San Dieguito River WMA with adequate roof gutters, downspouts and locations where rain barrels could be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the Rancho Bernardo Recreation Center was selected because it is located in one of the highest priority sectors of the San Dieguito River WMA for potential pollutant loading. The recreation center is also a publicly accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor began installation of four rain barrel systems at the recreation center. One 55-gallon rain barrel was connected to an existing downspout adjacent to the main entrance. This system uses a gravity release mechanism to redirect captured runoff from traveling down the street and sidewalk to adjacent vegetated areas and planters. In addition, three systems, each consisting of one 75-gallon rain box, were installed along the back wall of the main building. These systems also use a gravity release mechanism to redirect flow away from the adjacent parking lot.

Rain Barrel at front entrance

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer was distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer were posted on the City's *Think Blue* website during the first quarter of FY 2010.

ACTIVITY IMPLEMENTATION FY 2009-10

During FY 2010, the City assessed the effectiveness of the rain barrel/rain harvesting systems at the Rancho Bernardo Recreation Center. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems began in April 2009, however, due to contractor/construction delays, the project was not completed until FY 2010. Wet-weather monitoring was preformed from October 2009 to April 2010. Assessment and final reporting for this program concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity addressed this high priority water quality problem by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff		
Management Questions	• What is the effectiveness of rain barrel/downspout disconnect systems in reducing pollutant loads and storm water runoff volume? • What are the potential pollutant load and volume reductions for the three system configurations tested? • Which system configuration is the most cost-efficient?	
Targeted Measurable Outcome(s)	• Pollutant load reductions due to rain barrel/downspout disconnect installation • Runoff reduction due to rain barrel/downspout disconnect installation	
Cost Data	Cost of site preparation, installation and start-up	$12,900
	Cost of operation and maintenance evaluation	$502
	Cost of effectiveness monitoring	$13,684
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/attenuated (Outcome Level 4) • Average concentrations of metals in rainwater or runoff (µg/L) (Outcome Level 4) • Pollutant load reductions for metals for each system configuration (grams) (Outcome Level 4)	

OBJECTIVES

The goal of the municipal rain barrel installation and downspout disconnect assessment was to determine whether rain barrel/downspout disconnect systems reduce storm water runoff, thereby reducing bacteria loads, and if so, which system is most effective and efficient.

ANALYSIS AND RESULTS

The pilot project was assessed in FY 2010 based on monitoring data from two storm events collected over one wet-weather season. The four systems at the Rancho Bernardo Recreation Center captured and attenuated 608.56 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from the

galvanized downspouts were 25 µg/L for copper, 9 µg/L for lead, and 1,436 µg/L for zinc. Over the two monitored storm events, the 55-gallon capacity manual system configuration at the Rancho Bernardo Recreation Center (RB-1) resulted in load reduction of 0.007 grams of copper and 0.440 grams of zinc. During the same two storm events, the 75-gallon gravity-flow system configuration (RB-2) resulted in a load reduction of 0.070 grams of copper and 4.086 grams of zinc. The 75-gallon gravity-flow system configuration (RB-3) resulted in a load reduction of 0.070 grams of copper and 4.086 grams of zinc. The 75-gallon gravity-flow system configuration (RB-4) resulted in a load reduction of 0.070 grams of copper and 4.086 grams of zinc.

The total cost of installation, operation, maintenance, and effectiveness assessment for the four systems at the Rancho Bernardo Recreation Center was approximately $27,086.

Assessment data at this site shows that the gravity-flow system configuration, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, is more effective and reducing pollutant loads and attenuating wet weather flows than other systems tested. Overall, the study found that gravity-flow systems can attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Furthermore, this configuration was the least expensive of the three tested, which makes it the most cost-efficient. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively.

CONCLUSIONS

Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Although less effective than gravity-flow systems at addressing pollutant loads, rain barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas. This activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period and fulfills the requirement of a watershed water quality activity for FY 2010.

TITLE: **COASTAL CLEANUP DAY SPONSORSHIP**
ID #: **SDG-WQA4**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on November 21, 2009. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito River Watershed Management Area (WMA). Approximately 80 volunteers removed 462 pounds of trash and debris and recycled 75 pounds of trash and debris. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2010 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the San Dieguito River WMA are included in the list for cleanups, and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of

Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDCK's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	462 lbs
	Pounds of trash recycled (Outcome Level 4)	75 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	537 lbs
	Number of participants (Outcome Level 1)	80
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$30,000
	Estimated amount of money spent on cleanups for the San Dieguito River watershed (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/Total Pounds Removed)	$9.31/lb

*Calculated by dividing total sponsorship cost by six watersheds.

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

ANALYSIS AND RESULTS

The event's debris removal was tracked using data cards provided by the Ocean Conservancy, a 537 pound load reduction was recorded by 80 participants for this WMA. The average estimated sponsorship cost was $5,000 per watershed. The event's efficiency, calculated by dividing the sponsorship cost for the San Dieguito River WMA by the total pounds of trash removed and recycled, was $9.31 per pound.

CONCLUSIONS

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 537 pounds during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2011.

Attachment: "25th Annual California Coastal Cleanup Day: FINAL REPORT—San Diego County"

25th Annual California Coastal Cleanup Day
FINAL REPORT—San Diego County

Event Overview

The 25th Annual California Coastal Cleanup Day was held on Saturday September 19th, 2009 from 9am to 12noon in San Diego County. This year's event celebrated the 25th anniversary of California Coastal Cleanup Day, and the 24th anniversary of the International Coastal Cleanup. I Love A Clean San Diego (ILACSD) and San Diego Coastkeeper (SDCK) coordinated the effort once again in San Diego County. As in past years, ILACSD coordinated all inland cleanup sites while SDCK coordinated all coastal sites. This was the sixth consecutive year that San Diego Coastkeeper was involved as co-coordinator of the event and the twenty-third year that ILACSD has been involved.

California Coastal Cleanup Day is part of International Coastal Cleanup (ICC), a global volunteer initiative organized by the Ocean Conservancy. Each year, the majority of U.S. states, and over fifty countries worldwide participate in the largest international volunteer event in support of the marine environment. ICC is unique in that all volunteers are asked to track the debris they collect by completing data cards provided by The Ocean Conservancy. These cards track the type and amount of trash and recyclables collected at each site, as well as identify certain items of local concern, including cigarette butts, fishing line, and food wrappers. These data cards are entered into a comprehensive online database managed by the Ocean Conservancy and are used to determine sources of marine debris and pollution trends, making volunteers an important part of a global marine pollution study.

This year Coastal Cleanup Day broke volunteer records once again, making this year a continuation in the tradition of increased volunteer support locally year after year. In San Diego County, 10,283 volunteers participated in Coastal Cleanup Day at 80 sites countywide. Six of these cleanup sites were hosted by Proyecto Fronterizo across the border at beaches in Tijuana. Of all cleanup sites, 38 were coastal and 42 were inland, further demonstrating the shift to inland sites as many local beaches have less of a problem with litter. These volunteers removed an impressive 174,491 pounds or 87 tons of trash, recyclables, and green waste from cleanup sites, showing an increase in the amount of trash collected when compared to 2007 and 2008 debris totals.

Community Participation

Volunteers

San Diego County volunteering reached a milestone this year, with over 10,000 individuals giving their time to Coastal Cleanup Day. This was more than a 25% increase from 2008, when there was a similar jump in numbers from the previous year. Many volunteers came with their family or were part of community service groups, including company teams, scout troops, and school groups. Coordinators hope to encourage youth participation each year to create

environmental stewards at a young age. To reward and engage these youth volunteers, scout troops can earn commemorative event patches for their service, and volunteers in grades K – 6 can enter a coloring contest for a prize and recognition on the website. This year's Coloring Contest theme asked students to create their own CCD mascot to act as a cleanup champion for clean communities, and winners from each grade were rewarded with an art kit.

In order to accommodate the increasing numbers of volunteers, 4 more sites were added and each site captain was given more supplies. This year's 80 sites reached over 150 miles of shoreline, spanning across the majority of the coastline from Oceanside to Rosarito, Baja California, and inland sites as far north as Fallbrook and as far east as El Cajon. In total, 10,283 participants removed 124,236 pounds of trash and 50,255 pounds of recycling for a total of 174,491 pounds or 87 tons of debris. San Diego County had some of the highest accomplishments of coordinating groups in the state of California, where over 78,000 volunteers removed over 1.2 million pounds of debris. San Diego ranked third after Los Angeles and Orange counties in terms of volunteer totals in California. San Diego ranked 2nd only to Los Angeles County for the most debris collected.

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Each coordinating organization enlisted the help of many student volunteers to help with this event. These volunteers were called on to help prepare each site's supplies, distribute materials to site captains, and to manage registration and food at the media site on the day of the event. Some volunteers also helped tabulate data cards after the event. In total, 187 volunteer hours were spent on such activities.

Over 7,500 volunteers registered prior to the cleanup on the San Diego Coastal Cleanup Day website, www.cleanupday.org. This website is regularly maintained by the event coordinators with updated information about site locations, special instructions, scout patches and coloring contests, and press releases/photos/news. Tracking online registration is an important part of distributing volunteer groups to sites with fewer volunteers, as coordinators are able to set a reasonable cap on registration for some of the more popular sites. While it is recognized that a number of registrants will not actually attend, a similar number will attend without registering. Urging volunteers to register is an important part of managing such a large simultaneous event, and accessing that information through the website helps to prepare site captains for the expected number of attendees. Red text is used in the weeks leading up to the event to further encourage participation at sites in need of volunteers. Coordinators recommend adding differentiation for full sites as well so they stand out against sites that are open. There are opportunities to better match the actual capacity of certain sites with the cap set on registration at the website and the quantity of supplies provided. Coordinators hope to further streamline this process next year.

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Site Captains

ILACSD and SDCK are greatly appreciative that many site captains were experienced returning veterans for their site. However, it is inevitable that some captains cannot continue the level of commitment necessary to make the event a success, and some sites required recruiting new eager site captains. Site captains are often associated with a community group or local government agency, or an organization dedicated to supporting the environment. Since many captains work with co-captains, there were well over 100 site captains and co-captains for 80 sites at Coastal Cleanup Day 2009.

Site captains are strongly encouraged to attend one of two training meetings one month before the event to distribute their cleanup supplies and for updates on any news or changes. As an incentive to attend, captains are treated to dinner and entertainment (in the form of a brief educational PowerPoint presentation on marine debris and the history of Coastal Cleanup Day). The meetings were held from 6:00-7:30 pm on Tuesday August 11th at the Oceanside Library Civic Center Community Room and on Monday August 17th at the Naval Training Center Command Center in Point Loma. Statewide coordinators from the Coastal Commission were able to attend and introduce themselves at both meetings; Shannon Waters attended the North County meeting and Eben Schwartz attended the Point Loma meeting. Both meetings had impressive attendance, although due to conflicts some site captains were required to pick up their supplies from the ILACSD or SDCK offices and receive a brief tutorial.

Site captains are responsible for reporting their total volunteer count and trash weight, along with any hazardous waste for pick up, to the coordinators by 12:30 pm on the day of the cleanup. While some follow up calls were necessary, over 85% of totals were recorded before the distribution of the final press release. There are always captains who fail to complete data cards, or do not tally their sites data cards on the site captain summary card, leading to some extra follow up by coordinators after the event.

Marketing & Media

Coordinators decided to hire a professional marketing, advertising and public relations agency, Oster & Associates to help with media buys, press releases and overall event branding this year. Focus was placed on the 25th anniversary component, as well as the bi-national aspect of San Diego's Coastal Cleanup Day to garner more media attention. Coordinators created and disseminated two pre-event press releases, one media advisory, and one post-event release. Outreach was also done by printing 1,000 posters and 5,000 flyers recognizing event sponsors and directing potential volunteers to the local CCD website, www.cleanupday.org. The posters were once again printed with both English and Spanish text on one poster, and the two different versions of the flyers were available, one in English and one in Spanish. These documents were also sent out electronically to all site captains to further disseminate to all email contacts.

Belmont Park in Mission Beach was chosen as the location for this year's media site. This site was chosen for a variety of reasons, including its central location, local landmark status, substantial parking in multiple lots, ability for volunteers to spread out in a large cleanup area, and a new partnership with Belmont Park through Wavehouse and the San Diego Coaster Company. In order to manage the expected 500 + volunteer turnout, ILACSD coordinated a variety of service projects at this site including storm drain stenciling and stenciling beach rules on the boardwalk and seawall.

ILACSD & SDCK updated the "how you heard about the event" field in the online registration form to reflect current media partners as well as other outreach means including schools, sponsors, word of mouth, internet, etc. This field was made mandatory as part of the registration process. A complete breakdown of how registered volunteers heard about the event is shown in the table below. The

feedback shows that online and social marketing and media is an excellent method of reaching a wide audience. Coordinators anticipate a heavier emphasis in online marketing next year, as well as targeting media that will more effectively reach members of the Hispanic community, which makes up 30% of the population of San Diego County.

SOURCE	NUMBER	% of TOTAL
SDCK Website	337	20.46%
Friend	196	11.90%
School	169	10.26%
ILACSD Website	142	8.62%
Internet	99	6.01%
10 News	96	5.83%
Local Newspaper	82	4.98%
Flyer	40	2.43%
Sponsor	34	2.06%
Work	29	1.76%
Radio Latina	25	1.52%
Poster	20	1.21%
Star 94.1	19	1.15%
Previous Participation	19	1.15%
Contigo Univision	10	0.61%
Facebook	10	0.61%
Other	320	19.43%
TOTAL	**1647**	**100.00%**

With the help of Oster & Associates, coordinators were able to get proposals from a variety of television and radio stations in order to find the best partnership at a competitive price. Coordinators received proposals from the following stations: Star 94.1, KPRI 102.1, Sophie 103.7, 10News, Fox5, Azteca America, Univision TV, Radio Latina 104.5 and La Nueva 106.5.

Television

Coordinators worked with media partners ABC 10News and Univision TV to conduct cross-platform outreach in both the English and Spanish language. This marked the 4th year that ABC 10News has acted as the English language television partner providing hundreds of spots as well as web presence and an emcee for the media site. The station produced pre-event public service announcements of the following lengths: :04 seconds, :05 seconds, :10 seconds, :15 seconds, and :30 seconds. Tracking was provided showing the air date, length, and timeslot for each airing. ABC 10News also produced a post-event PSA in lengths of :04 seconds, :15 seconds, and :30 seconds. Online hits were also tracked, with a .03% click and read rate from their web banners. Out of over 3 million impressions, 891 impressions were clicked and read. While ABC 10News did air an impressive number of spots, their new shift away from community news and toward "hard news" has encouraged coordinators to reach out to other stations for the 2010 event.

This year coordinators chose to reach out to other Spanish language television stations as media partners, since previous years Spanish language media outreach was fairly unsuccessful with the current measuring system. Univision TV Channel 17 was chosen as the Spanish language television partner due to the popularity of their nationally syndicated "novellas" as well as their local morning and evening news programs. Univision offered a Coastal Cleanup Day representative the opportunities to be interviewed for their morning show, *Despierta San Diego*, of which ILACSD staff member Gilberto Alfaro attended. Univision aired a total of 62 spots while their sister station Telemundo also aired 60 spots.

Radio

Again, coordinators received proposals from a variety of stations in order to truly select the best partnership to promote the event. Past CCD media sponsors KPRI 102.1FM and Sophie 103.7FM submitted proposals, as did Star 94.1FM, a station that has never promoted Coastal Cleanup Day. While their advertising rates were a bit more expensive, their audience was larger than any other station and the opportunity to advertise during the hugely popular Jeff & Jer Morning Show encouraged coordinators to choose Star 94.1FM. However, the morning show which had been on air for over 20 years was cut right before the advertising campaign began, marking a very sudden and potentially negative change in programming. Star 94.1FM aired 54 spots, 14 of which were 30 seconds and 40 of

which were 15 seconds in length. They also provided an appearance by popular morning and afternoon show personality, Delana at the media site, which added to the event. Clear Channel, the owner of this station also put together a 30 minute pre-recorded interview featuring SDCK & ILACSD Executive Directors Bruce Reznik and Pauline Martinson, which aired across all of their stations in San Diego multiple times. Radio Latina aired a total of 51 spots varying in length from 10 seconds, 30 seconds, and 60 seconds. Radio Latina also adopted two sites, one in Tijuana and one in Imperial Beach, encouraging listeners to attend one of these two sites depending on which side of the border they live on. Their two morning show personalities, Jesse and Nelly, attended one of the two sites, and used live call-ins during the event to compete for who could get the most volunteers at their respective site. As a result, both sites boomed with volunteers as well as fun festivities during and after the cleanup.

Print

Several local papers and magazines covered Coastal Cleanup Day in San Diego County, both before the event and after its completion. These include *The Union Tribune (5X), The Carlsbad Sun, The Peninsula Beacon, Beach and Bay Press (2X), Carmel Valley Leader (3X), Coronado Eagle and Journal (4X), Del Mar Times (5X), East County Magazine, Eagle and Times (3X), El Mexicano (2X), La Jolla Light, Lavender Lens, La Jolla Village News, North County Times (3X), Pacific San Diego Magazine, Rancho Santa Fe Record (3X), Rancho Santa Fe Review (2X), Presidio Sentinel (2X), San Diego News Network, Del Mar Village Voice, Fallbrook Bonsall Village News*, and *Mission Times Courier (2X)*.

Online

Most online marketing directed potential participants to visit the www.cleanupday.org website for more information and to register for a site near them. ILACSD and SDCK highlighted Coastal Cleanup Day as a major volunteer opportunity on both of their websites and through regular email alerts. The www.cleanupday.org website also allows for an email blast to be sent to all previously registered participants, and coordinators sent this reminder when online registration opened on August 1st. As mentioned, ABC10News, Univision, and Star 94.1 posted information and links on their websites. A link was made available on the Belmont Park Roller Coaster Website advertising that viewers could get a free ride on the rollercoaster just for volunteering, and led participants to the registration website. Many site captains' organizations internally advertised the event through email blasts or by posting a link on their website. An email was also sent to San Diego Unified School District Teachers advertising the event, and save the date flyers were distributed to Girl Scout Troop leaders at a meeting early in the summer. Finally, a Facebook event page was created for the San Diego County Cleanup where Facebook members could find more information, RSVP, post photos, ask questions, or make comments about the event.

New in 2009

Online Post-Event Survey

A few changes were introduced at this year's Coastal Cleanup Day Conference with the California Coastal Commission. Surveys were introduced in 2008 in a select few counties that could coordinate it last minute, including San Diego. ILACSD and SDCK chose a few sites to test the surveys based off of the experience level of the site captains. This year, the CCC encouraged all county coordinators to use surveys, and San Diego planned to implement them countywide. However, the CCC was delayed in sending out the surveys, so they were not included in each site captain box. ILACSD and SDCK did not receive surveys until the week leading up to the event, leaving little time to distribute and explain to

captains with such short notice. To remedy this, ILACSD printed surveys to distribute to attendees at the media site, and planned to send out surveys digitally to volunteers in the post-event thank you email. This additionally saves on paper and resources for a more sustainable event.

Online Data Collection System

The Ocean Conservancy presented a new online data collection system at this year's conference. Rather than sending in each data card and summary card as in years past, coordinators will log into an online database to report data from each summary card. The Ocean Conservancy created the initial county profile with a list of cleanup sites that coordinators can log into and edit each year. Summary cards are entered online, giving coordinators immediate access to data and trends calculated countywide.

Crystal Geyser Water Partnership

A partnership with Crystal Geyser was established in 2008 to provide water donations for many counties at a statewide level. The Coastal Commission made an error with order deadlines, and water deliveries could not be secured in time for the first site captain meeting in North County. ILACSD worked with the local Crystal Geyser contact, Bob Flavin, as well as the statewide contact, Jackie Suzuki, to work out a solution. Water coupons were mailed for distribution to all of the North County site captains that attended the first site captain meeting in Oceanside. Recommended stores for redemption included Stater Brothers, Vons, Albertsons, and Wal-Mart. Coordinators did not receive any complaints regarding the coupons from site captains. The CRV added cost may be an issue pending further review.

Site Captain Appreciation Event

Additions were made at a local level to the San Diego County event. Coordinators secured Belmont Park and the San Diego Coaster Company as sponsors of this year's event, who provided each volunteer with a roller coaster ride pass. This sponsorship also provided the venue, food, and service staff for the first ever Site Captain Appreciation Night. Wavehouse, a part of Belmont Park in Mission Beach, hosted the event. Site captains were encouraged to return their supplies while also enjoying food provided by Wavehouse, beer provided by CCD sponsor Alaskan Brewery, and other refreshments from Wavehouse. Photos submitted for the photo contest were shown on a slideshow during the event, and winners were announced for categories that included Volunteers in Action, Group Photo, Kids, and the best Before and After shot. The photo contest was another new addition, and was a successful way to encou captains to submit photos to coordinators. ILACSD and SDCK facilitated conversation amongst site captains through an ice breaker bingo game, and did a short presentation of site captain stand out awards. Awards included best rookie captain, most trash removed, most trash removed per volunteer, and best all around captain, each for coastal and inland sites. A "Golden Grabber" award was presented to Jane Donely for her 20th Anniversary as a site captain with Coastal Cleanup Day.

This event was not only a fun and relaxing way to get to know site captains better, but also proved to be a great way to get supplies back in a timely fashion. Some site captains who were not able to stay for the event still came simply to drop off their supplies, as the "after-hours" timing seems to work better for many people's schedules. This event, held four days after Coastal Cleanup Day provided site captains the opportunity to share their site results and experiences. Spreadsheets with totals from all sites were printed out and placed at each table to help facilitate conversation. Site leaders were also able to bring their children to the event, as the venue had games for both kids and adults to engage in.

Sempra Volunteer Service Projects

The Sempra Energy Foundation partnered with ILACSD for the second year to organize five Coastal Cleanup Day sites chosen for Sempra employees. To keep an expected 200 volunteers occupied and engaged at each site, ILACSD coordinated service projects to compliment the debris removal at one cleanup site in each of the five zones. Sempra asked for sites near their main offices and recommended targeted communities to hit, including National City and Carlsbad. Sempra volunteers could choose from the cleanup option or the side projects at each of their cleanup sites. Below is a list of the service projects coordinated for Sempra volunteers in San Diego County:

Zone 1: North County Coastal
Carlsbad State Beach campgrounds: Campground renovations and amphitheater mural

Zone 2: North County Inland
Dixon Lake: Kayak cleanup, trail maintenance, and bridge installation

Zone 3: Central San Diego
Belmont Park Media Site: Storm Drain Stenciling and stenciling beach rules on the seawall

Zone 4: East County
El Cajon Rose House: Landscaping and facelift for foster care center

Zone 5: South Bay
Paradise Creek Educational Park: Upland creekbed restoration, native planting

When coordinating service projects, a few characteristics were used to qualify sites. Veteran captains that have a history of efficiency were selected because of their ability to handle the added responsibility successfully. Sites also needed to have enough trash and need for additional work, and enough space for the added large group of volunteers. Projects were selected that were varied from the rest, to occupy an assortment of age ranges and physical abilities to satisfy Sempra's diverse volunteer base. The Paradise Creek site was promoted as the family friendly site, and the Dixon Lake was marketed towards sturdier volunteers ready to work hard.

Team Sempra hand selected leaders from their employee base to ensure that volunteers were qualified as a point of contact for the project. Last year, they asked for employee volunteers and had some problems with scheduling and training before the event. By selecting candidates that they felt would be up to the challenge, each team leaders was very helpful and easy to work with. Site visits were scheduled in the weeks leading up to the event. These meetings were very beneficial and crucial to the event's success. Each site captain got to meet the Sempra team leader and discuss supplies, logistics, and give the Sempra employee a specific idea of the layout and plan for the event.

To coordinate supplies, each site captain utilized their knowledge and expertise at each of their sites to establish a supply list of needs for their projects. ILACSD approved the budget and allowed captains to purchase supplies. Receipts were required from each captain for reimbursements. Team Sempra provided pizza from Oggi's for all volunteers at each of the five sites. Some site captains arranged for extra snacks or drinks to compliment the lunch. In addition to pizza arrangements, ILACSD coordinated with Sempra to reserve parking spots for Sempra executives that were assigned to each site.

One Sempra volunteer advised that coordinators provide masks for any project that used paint. This should be taken into consideration for next year's event. All other feedback provided by Sempra volunteers and event coordinators was extremely positive. ILACSD plans to meet with Sempra to discuss an overview of the event, including pros and cons before beginning to plan for the 2010 event.

For more information regarding Coastal Cleanup Day, please contact either of the co-coordinators:

San Diego Coastkeeper:

Alicia Glassco
Alicia@sdcoastkeeper.org
619-758-7743 ext 125

I Love A Clean San Diego:

Morgan Justice-Black
mjusticeblack@cleansd.org
619-291-0103 ext. 3003

Natalie Roberts
nroberts@cleansd.org
619-291-0103 ext. 3014

Sempra Coastal Cleanup Day 2009

Carlsbad State Beach campgrounds

Rose House, El Cajon

Belmont Park, Mission Beach

Paradise Creek, National City

25th Annual Coastal Cleanup Day Site Totals

NORTH COASTAL	Miles Cleaned	Number of Volunteers	Pounds Trash	Pounds Recycling	Total Weight
Beacon's Beach, Encinitas	6	150	165	5	170
Buccaneer Beach, Oceanside	1	154	473	54	527
Carlsbad State Beach (Campgrounds)	1	123	112.5	56.5	169
Fletcher Cove, Solana Beach	1	186	100	64	164
Frazee Beach, Carlsbad	3	172	171	55	226
Oceanside City Beach	2	410	880	0	880
Powerhouse Park, Del Mar	3	155	281	41	322
San Elijo State Beach (Campgrounds)	1	154	67	53	120
San Elijo Lagoon (Trailhead at Rios)	2	94	137	52	189
Seaside Beach, Cardiff	1.5	115	85	15	100
South Carlsbad State Beach (Ponto Beach)	2	289	330	10	340
Swami's Beach, Encinitas	2	182	171	71.5	242.5
Tamarack State Beach & Aqua Hediona Lagoon, Carlsbad	4	108	184	58	242
Torrey Pines and Penasquitos Lagoon	1	148	100	27	127
NORTH INLAND	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Buena Creek, Vista	1	118	1153	220	1373
Buena Vista Creek (3 sites)	1	183	2500	0	2500
Carmel Mountain Preserve	6	85	3,200	75	3,275
De Luz, Daily Rd and Santa Margarita Truck Trail	12	32	34,680	3,320	38,000
Dixon Lake, Escondido	2	327	280	426	706
Fallbrook	15	100	4140	31460	35600
Lake Hodges	3	80	462	75	537
San Elijo Lagoon, Cardiff-by-the-Sea	2	137	400	0	400
CENTRAL SAN DIEGO	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Belmont Park MEDIA SITE	3	759	1,361	62.5	1,423
Bonita Cove, Mission Bay (Kayak Cleanup)	5	16	30	1	31
Chollas Creek, 33rd and National	3	40	5280	10	5290
Chollas Creek, 54th Street	1	25	1,060	30	1,090
Chollas Lake Park, Oak Park	1	59	128	5	133
Chollas Radio Canyon	1	80	200	50	250
Cooper Canyon	1	29	2500	40	2540
Embarcadero Docks (Underwater Cleanup)	1	141	512	59	571
Florida Canyon	2	86	854	91	945
G Street Pier to Broadway Pier	2	45	200	30	230

25th Annual Coastal Cleanup Day Site Totals

CENTRAL SAN DIEGO (cont.)	Miles Cleaned	# Vols	Pounds Trash	Pounds Recycling	Total Weight
Guymon Arms Open Space	1	30	600	50	650
La Jolla Shores	3	278	215	20	235
Lakehurst Canyon	1	43	1400	20	1420
Manzanita Canyon	1	32	0	0	0
Mission Bay - Santa Clara Point	2.5	110	105	25	130
Normal Heights Canyon	0.5	27	346	370	716
North Park (29th and University)	2	26	3280	0	3280
North Swan Canyon	0.5	114	8980	6820	15800
Ocean Beach, Dog Beach	3	207	211	16	227
Ocean Beach Pier	2	351	243	34.5	277.5
Pacific Beach Drive	0.5	92	99	26	125
Rose Creek	3	94	1460	100	1,560
San Diego River, Mission Valley Preserve	1	70	4280	0	4280
Shawn Canyon	0.25	23	1700	110	1810
Sorrento Creek	3	45	465	91	556
South Swan Canyon, City Heights	0.75	16	1,470	20	1,490
Stevenson Canyon	1	11	0	2880	2,880
Tourmaline Beach	1	213	56	1	57
Zena Canyon	2	15	4660	60	4720
47th Street Canyon, City Heights	1.5	35	3,620	6	3,626
EAST COUNTY	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Alvarado Channel, La Mesa	0.25	10	17.5	3	20.5
El Cajon	3	93	161	101	262
Lake Murray	8	253	229	100	329
Lemon Grove	1.5	24	620	250	870
Rancho Mission Canyon	0.1	10	340	100	440
Santee San Diego River	2	164	3000	250	3250
University Channel, La Mesa	0.4	15	539	10	549
SOUTH BAY	**Miles Cleaned**	**# Vols**	**Pounds Trash**	**Pounds Recycling**	**Total Weight**
Borderfield State Park	1	82	668	0	668
Chula Vista Wildlife Reserve off of the Power Plant	1	92	2138	0	2138
Coronado City Beach	2	175	465	184	649
Eastern Otay Valley Regional Park	2.5	112	3000	300	3300
Imperial Beach Pier	3	475	485	0	485
Las Playas, Tijuana	6	1350	8016	0	8016

25th Annual Coastal Cleanup Day Site Totals

SOUTH BAY (cont.)	Miles Cleaned	# Vols	Pounds Trash	Pounds Recycling	Total Weight
Montgomery High School Natives Plant Garden	0.5	8	20	5	25
Paradise Creek Education Park	1	120	100	700	800
Silver Strand State Beach, Coronado	3	205	340	100	440
South Bay Wildlife Refuge	1	15	60	66	126
Sweetwater Regional Park, Western Staging Area	3.7	104	2020	420	2440
Sweetwater River	2	90	2240	20	2,260
Tijuana River Valley	1	92	3680	400	4080
Tijuana Slough , North Beach	1	100	386	55	441
Western Otay Valley Regional Park	1.5	80	326	25	351
TOTALS:	**168.5**	**10,283**	**124,236**	**50,255**	**174,491**

25th Annual Coastal Cleanup Day Site Captains

NORTH COASTAL	Site Captain	Site Captain Affiliation
Beacon's Beach, Encinitas	Bob & Jan Rogers & Family	Heaviland Enterprise, Inc
Buccaneer Beach, Oceanside	Carla Miller	Harrah's Rincon Casino
Carlsbad State Beach (Camp)	Laura Ohman	California State Parks
Fletcher Cove, Solana Beach	Craig Miller	City of Solana Beach
Frazee Beach, Carlsbad	Bill Dodson	Individual
Oceanside City Beach	Cynthia Mallet	City of Oceanside Clean Water Program
Powerhouse Park, Del Mar	Ed Yuskiewicz/ Andrea Eaton	Keep Del Mar Clean/ Women's Environmental Council
San Elijo State Beach (Campgrounds)	Rebecca Bergren, Megan Malaska	SeaLife Aquarium, LegoLand
San Elijo Lagoon (Trailhead, Rios)	Danny King	City of Solana Beach
Seaside Beach, Cardiff	Lisa Hellstrom	Junior Girl Scouts Troop 1259
South Carlsbad State Beach (Ponto Beach)	Dave Boerlin	Kids Korps, Cub Scout Pack 740
Swami's Beach, Encinitas	Carlie Peck/ Kristy Rygiel	Solana Center for Environmental Innovation/City of Encinitas
Tamarack State Beach & Aqua Hediona Lagoon, Carlsbad	Sheree Hildebrandt	City of Carlsbad Environmental Program
Torrey Pines and Penasquitos Lagoon	Alyson Wright	REI
NORTH INLAND	**Site Captain**	**Site Captain Affiliation**
Buena Creek, Vista	Ligeia Heagy	City of Vista, Engineering Dept.
Buena Vista Creek (3 sites)	Cynthia Mallett	City of Oceanside Clean Water
Carmel Mountain Preserve	Sr. Ranger Gina Washington	City of San Diego, Open Space Div.
De Luz, Daily Rd & Santa Margarita Truck Trail	Ali Nusbaum	De Luz Cleanup Committee
Dixon Lake, Escondido	Kathy Winn, Heather Thomas	City of Escondido Recycling Prog.
Fallbrook	Judy Mitchell	Keep Fallbrook Clean & Green
Lake Hodges	County co-coordinators	I Love A Clean SD/SD Coastkeeper
San Elijo Lagoon, Cardiff	Geoffrey Smith	San Elijo Lagoon Conservancy
CENTRAL SAN DIEGO	**Site Captain**	**Site Captain Affiliation**
Belmont Park MEDIA SITE	County Co-coordinators	I Love A Clean SD/SD Coastkeeper
Bonita Cove, Mission Bay (Kayak)	Dave Teafatiller	HikeBikeKayak
Chollas Creek, 33rd and National	Eric Bowlby, Javier Hernandez	San Diego Canyonlands
Chollas Creek, 54th Street	Bill Babcock	Friends of Chollas Creek
Chollas Lake Park, Oak Park	Brigitte Taylor, Sirena Ung	Girls Alliance

25th Annual Coastal Cleanup Day Site Captains

CENTRAL SAN DIEGO (cont.)	Site Captain	Site Captain Affiliation
Chollas Radio Canyon	Liz Faddis	Groundwork SD, Chollas Creek
Cooper Canyon	Laurie Carlock, Jody Carey	Individuals
Embarcadero Docks (Underwater Cleanup)	Cheryl Barnes	San Diego Oceans Foundation
Florida Canyon	Shawn Veen	Florida Canyon
G Street Pier to Broadway Pier	LT Sonja Hedrick	US Coast Guard, Sector San Diego
Guymon Arms Open Space	Ranger Jason Allen	City of San Diego Parks & Rec
La Jolla Shores	Alicia Bravo	Kashi
Lakehurst Canyon	David Prakken, Hal Bosworth	Individuals
Manzanita Canyon	Linda Pennington, Tom Lashbrook	Project CLEAN
Mission Bay - Santa Clara Point	Maruta Gardener	Mission Beach Women's Club
Normal Heights Canyon	Kevin Johnston	Friends of Normal Heights Canyon
North Park (29th and University)	Omar Passons	North Park Community Assn
North Swan Canyon	Valentina Hernandez, Andrea Zinko	North Swan Canyon Neighborhood Association
Ocean Beach, Dog Beach	Jane Donley, Mindy Pellissier	Friends of Dog Beach
Ocean Beach Pier	Sarah Adams, Bill Hickman	Surfrider Foundation, SD Chapter
Pacific Beach Drive	Larissa Johnson/ Eliza Rooks	SD Tufts Alliance/Kiehl's
Rose Creek	Karin Zirk, & Evette Callahan	Friends of Rose Creek
San Diego River, Mission Valley Preserve	Shannon Quigley	San Diego River Park Foundation
Shawn Canyon	Linda Thompson, Carleen Blandin	San Diego Canyonlands
Sorrento Creek	Olen Yoder/Vickie Garner	Friends of Sorrento Creek/Genzyme
South Swan Canyon, City Heights	Brian Moehl, Steve Kaiser	San Diego Canyonlands
Stevenson Canyon	Masada Disenhouse, Dennis Sabella	Individuals
Tourmaline Beach	Mary & Amber Sanborn	Sierra Club
Zena Canyon	Debbie Blake, Audrey Ledesma	Individuals
47th Street Canyon, City Heights	John Hanley	Individual
EAST COUNTY	**Site Captain**	**Site Captain Affiliation**
Alvarado Channel, La Mesa	Joe Kuhn	City of La Mesa
El Cajon	Aaron Unseth, Marilyn Heatherington	First Lutheran Church
Lake Murray	Barbara Cleves	Friends of Lake Murray
Lemon Grove	Cora Long	City of Lemon Grove
Rancho Mission Canyon	Fred Kramer	Friends of Rancho Mission Canyon

25th Annual Coastal Cleanup Day Site Captains

EAST COUNTY (cont.)	Site Captain	Site Captain Affiliation
Santee San Diego River	Richard Dhu	San Diego River Park Foundation
University Channel, La Mesa	Scott Munzenmaier	City of La Mesa
SOUTH BAY	**Site Captain**	**Site Captain Affiliation**
Borderfield State Park	Danielle Litke	TJ River National Estuarine Research Reserve
Chula Vista Wildlife Reserve (Power Plant)	Phil Gibbons	Unified Port of San Diego
Coronado City Beach	Cecilia Lyon	City of Coronado
East Otay Valley Regional Park	Rangers Bill Lipowcan & Robert Major	County of San Diego, Parks & Recreation Dept.
Imperial Beach Pier	Shanti Santulli	US Army Corps of Engineers
Las Playas, Tijuana	Margarita Diaz	Proyecto Fronterizo de Educacion Ambiental
Montgomery High Natives Plant Garden	Theresa Acerro	Montgomery High School
Paradise Creek Education Park	Ted Godshalk	Paradise Creek Education Park
Silver Strand State Beach, Coronado	Barbara Denny	Coronado City Council
South Bay Wildlife Refuge	Debbie Good	California State Parks
Sweetwater Regional Park, W. Staging Area	Jeff Westra	SD County Dept of Parks & Rec
Sweetwater River	Shauna McKellar	DMAX Engineering
Tijuana River Valley	Jay Novak	Tijuana River Concerned Citizens
Tijuana Slough , North Beach	Ann Marie Tipton	TJ River National Estuarine Research Reserve
West Otay Valley Regional Park	Katie Westfall, John Barone	WiLDCOAST

Photos by Matthew Meier

2009 San Diego County Media Site

ILACSD and SDCK pose with event sponsors and Proclaimations from local government.

Coastal and Inland CCD coordinators

SDCK and ILACSD accept Proclamation from County Board Supervisor Greg Cox.

Volunteers check in at registration and get their cleanup supplies.

Belmont Park, Mission Beach

Volunteers contributed to an international study on marine debris through data cards tallying each item they found at CCD.

CCD brings volunteers of all ages together to make a difference.

Additional projects were completed by volunteers to keep the beach safe and clean.

Photos from Coastal Sites

Volunteers celebrated after cleaning near the Chula Vista Wildlife Reserve

ABOVE: Santa Clara Point site captain Maruta Gardener (Mission Bay Women's Club) assists USD students with their trash. RIGHT: A happy family cleaning the Mission Beach boardwalk.

Site captains from Kashi (a CCD sponsor) raffled off prizes to relaxing volunteers after the La Jolla Shores cleanup.

BELOW (L , Center, & R): Volunteers assist the San Diego Oceans Foundation with multiple underwater cleanups on land and in the water of San Diego Bay.

California Coastal Cleanup Day
San Diego County Sponsors 2009

Presented by:

San Diego County Supervisors
Greg Cox & Pam Slater-Price

Think Blue-City of San Diego
Storm Water Department

With additional support from:

Major in-kind donors:

Media Sponsors:

Statewide Sponsors:

Thank you for helping make San Diego's beaches, bays and inland waterways clean, safe and healthy

Most common items found: Cigarette butts, bottle caps, food wrappers

El Cajon

Beacon's Beach, Encinitas

25% more volunteers in 2009 than 2008, and a 8% increase in debris removed

10,283 Volunteers

174,491 pounds of debris removed

80 coastal and inland cleanup sites

169 miles covered

Buena Creek, Vista

Sweetwater River, National City

Before ...

Coastal Cleanup Day 2009

... After

42 Inland Sites and 38 Coastal Sites

3,137 inland volunteers removed 154,403 lbs. of debris
= 50 lbs per volunteer

7,146 coastal volunteers removed 20,058 lbs. of debris
= 2.8 lbs per volunteer

Most unusual items found: ATM machine, fake nose, comb with hairpiece, fencing sword

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TITLE: **SEDIMENT AND PEAK FLOW CONTROLS #1**
ID #: **SDG-WQA5**

ACTIVITY IMPLEMENTATION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the San Dieguito River Watershed Management Area (WMA).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. This project will begin moving forward again in FY11 and staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by managing runoff volume—the transport mechanism for pollutants—and treating runoff of pollutants before discharge into receiving waters.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
SEDIMENT AND PEAK FLOW CONTROLS #1 Assess the Efficiency and Effectiveness of the BMP Installations	
Management Questions	• What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity? • What is the loading reduction of the BMPs?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff flow velocity reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of BMPs installed (Outcome Level 1) • Volume of runoff captured/diverted by treatment trains (Outcome Level 4) • Concentrations of COCs in runoff (Outcome Level 4)

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of the BMPs installed to reduce runoff flow velocity and associated erosion and sediment.

ANALYSIS AND RESULTS

This project did not progress in FY10; therefore, an effectiveness assessment is not possible at this time.

CONCLUSIONS

If the City does go forward with this project, water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff velocity and pollutant loading. Efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: **SEDIMENT AND PEAK FLOW CONTROLS #2**
ID #: **SDG-WQA6**

ACTIVITY IMPLEMENTATION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the San Dieguito River Watershed Management Area (WMA).

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007. This project is currently on-hold as staff time and resources are currently allocated to other high-priority projects and significant activities as outlined in the City's *Strategic Plan for Watershed Activity Implementation*. However, this project may be started again in the future.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by managing runoff volume—the transport mechanism for pollutants—and treating runoff of pollutants before discharge into receiving waters.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
SEDIMENT AND PEAK FLOW CONTROLS #2 Assess the Efficiency and Effectiveness of the BMP Installations	
Management Questions	• What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity? • What is the loading reduction of the BMPs?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff flow velocity reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of BMPs installed (Outcome Level 1) • Volume of runoff captured/diverted by treatment trains (Outcome Level 4) • Concentrations of COCs in runoff (Outcome Level 4)

OBJECTIVES
The goal of this assessment is to determine the effectiveness and efficiency of the BMPs installed to reduce runoff flow velocity and associated erosion and sediment.

ANALYSIS AND RESULTS
This project is currently on hold; therefore, an effectiveness assessment is not possible at this time.

CONCLUSIONS
If the City does go forward with this project, water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff velocity and pollutant loading. Efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: **TARGETED INSPECTIONS**
ID #: **SDG-WQA10**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1. What activities and locations at businesses should be targeted during the inspection?
2. Can the City increase its commercial/industrial program efficiency by using a tiered inspection process (variable inspection forms & procedures) based on site specific characteristics of the businesses?
3. Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?

The focus of the activity was to evaluate/inspect properties as a whole as well as individual business regardless of whether they were included in the City's commercial/industrial inventory. A mixture of individual businesses and multi-suite complexes, such as industrial parks and shopping centers, were located in this selected geographic area. Two types of data collection were performed at the overall property level: geographic property evaluations and property inspections. Two types of additional data collection at the individual business level on these properties were also conducted: pre-contact and post-contact inspections. Details of these evaluations and inspections are included below:

Property level data collection:

- Geographic property evaluations, referred to as "geographic evaluations" for short, recorded detailed information about landscaping, trash/disposal areas, and storm drains within a given property. The purpose of the property evaluations was to characterize the area and collect data additional data beyond the scope of a typical inspection to be used for assessment purposes. For example, a typical inspection answers the question of whether trash areas at a site are clean enough to meet the City's BMP requirements. During property evaluations, more detailed information was recorded: the number of trash areas at a property and the type(s) and quantities of trash observed in them (outside the dumpsters) were recorded.
- Property inspections were performed at shopping centers and industrial parks. Property inspections gathered information about shared areas such as landscaping, trash/dumpster areas, parking lots, outdoor material storage, and high threat to water quality activities. Typically, these areas are the responsibility of the property owner or property management company. These inspections were based solely on information gathered through observations and focused mainly on compliance evaluation.

Individual business level data collection:

- Pre-contact business inspections were performed based on the inspectors' observations only and before speaking with facility representatives. These inspections were performed at all types of businesses on the City's industrial and

commercial inventory. Pre-contact business inspections were not conducted at facilities for which site access required contact with site personnel or for facilities that appeared likely not to be inventoried.

- Post-contact business compliance inspections were conducted at businesses that inspectors determined were or would likely need to be included on the City's industrial and commercial inventory based on pre-contact inspection results and were completed after the pre-contact inspections. The post-contact business inspection involved the same steps as a standard industrial and commercial inspection under the City's JURMP industrial and commercial inspection program. A post-inspection was only conducted if a pre-contact inspection was completed. Educational material was distributed, as applicable, during post-contact inspections.

In FY 2010, three geographic evaluations, three property inspections, 19 pre-contact business inspections and 18 post-contact business industrial/commercial inspections were conducted in the area selected in one geographic area selected in the San Dieguito WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2009 and FY 2010. Assessment and reporting on this activity concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Facility Inspections		
Management Questions	• What activities and locations at businesses should be targeted during the inspection? • Can the City increase its commercial/industrial program efficiency by using a tiered inspection process (variable inspection forms & procedures) based on site specific characteristics of the businesses? • Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the San Dieguito Watershed	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data)	
Data Recorded	**Geographic Evaluations**	
	Number of geographic evaluations (Outcome Level 1)	3
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	67%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	100%
	Percent of storm drains with observed trash, debris, and/or sediment (Outcome Level 1)	70%
	Property Inspections	
	Number of property inspections (Outcome Level 1)	3
	Percent of facilities recommended for follow-up inspection (Outcome Level 1)	67%
	Percent of sites needing corrective action (Outcome Level 1)	100%
	Percent of properties identified of sources of sediment (Outcome Level 1)	0%
	Percent of properties identified of sources of bacteria (Outcome Level 1)	0%
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Pre-Contact Business Inspections	
	Number of full inspections (Outcome Level 1)	19
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	4
	Number of sites needing corrective action (Outcome Level 1)	19
	Number of sites identified of sources of sediment (Outcome Level 1)	0
	Number of sites identified of sources of bacteria (Outcome Level 1)	0
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Post-Contact Business Inspections	
	Number of full inspections (Outcome Level 1)	18
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	4
	Number of sites needing corrective action (Outcome Level 1)	18
	Number of sites identified of sources of sediment (Outcome Level 1)	0
	Number of sites identified of sources of bacteria (Outcome Level 1)	0

Watershed: San Dieguito River		
TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Facility Inspections		
	Number of Sites that Implemented Some Corrective Action During Inspection (i.e. BMPs implemented) (Outcome Level 3)	0
	Number of Sites with Source Abatement (Outcome Level 4)	0
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A

OBJECTIVES

The goal of this assessment is to determine if evaluating facilities based on observation only is an effective and efficient method for identifying and eliminating storm water pollution sources generated on industrial/commercial sites. Furthermore, this program aimed to identify potential sources of constituents of concern in the San Dieguito watershed by assessing industrial and commercial areas, businesses, and activities in the selected geographic areas.

ANALYSIS AND RESULTS

A total of 67% of properties evaluated during geographic evaluations were observed to have some evidence of over irrigation. Additionally, 70% of storm drains were observed to have some level of accumulated trash, litter, and/or sediment. A total of 100% of trash areas were observed to have accumulated trash, debris, and/or sediment.

All of the properties that received property inspections had at least one corrective action; 67% of the properties that received property inspections had corrective actions serious enough to require further follow-up. No IC/IDs were observed during property inspections. Based on the inspections performed and the recorded time for each inspection, it appears that a property inspection is an effective and efficient method for identifying major outdoor activities and storage that contribute to storm water pollutant runoff. Overall property inspections do not provide much ability to assess BMPs for activities outside accessible common areas, but at shopping centers and industrial parks, it is very rare for activities with potential to influence storm water quality to occur outside areas that can be accessed without first contacting a business representative. Occasionally, it was difficult for the inspectors to clearly delineate a property. Different parcels located close to one another can appear to be part of the same property complex, but may actually have different parcel owners.

As previously mentioned, business inspections were conducted in two parts, the pre-contact inspection and the post-contact inspection. Pre-contact inspections are faster and were effective at identifying outdoor BMP implementation deficiencies at properties, such as shopping centers and industrial parks with accessible areas. Pre-contact inspections were not as effective at identifying BMP deficiencies at sites that are more difficult to access or where potentially pollutant-generating activities are conducted in areas closed off to the general public, such as auto repair shops. It should be noted that during pre-contact inspections BMP implementation problems could be identified, but it was often not possible to identify the responsible party without talking to personnel at the site. The number of pre-contact inspections is greater than the number of post-contact inspections because in several instances the pre-contact inspection was performed, but after talking with facility personnel during the post-contact inspection the inspector determined that the facility was not conducting activities for which inclusion on the

industrial/commercial inventory was required. The percentage of sites that required corrective actions were the same for pre and post-contact inspections (100%).

CONCLUSIONS

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

Based on the gathered information, pre-contact inspections of an overall complex assessment with shared areas is an efficient and effective in identifying BMP implementation deficiencies in outdoor areas for shopping centers and industrial parks, but less so for individual businesses that are more difficult to access or areas closed to the public, such as contractor storage yards or automotive repair shops.

Based upon the two year inspections results, the primary areas and activities that should be focused on during inspections are: 1) Over-Irrigation; 2) Trash Areas; and 3) Storm Drains. In addition, there were no other businesses warranted to be on the industrial/commercial inventory.

As a result of this activity during the post-contact business inspections, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 18 sites. Additionally, the City noted four sites that needed to follow-up to verify that corrective actions/BMPs were implemented. There were no locations that required immediate corrective actions during the inspections. Also no illicit connections and no illicit discharges were found during the inspections. Although a load reduction was not calculated, abatement of potential sources may be assumed with corrective actions being implemented due to the inspections; therefore, demonstrating both Level Three (changed in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcomes being achieved as a result of conducting inspections.

The City plans to implement a modified version of the property inspections in the San Dieguito River WMA.

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TITLE: **BERNARDO CENTER DRIVE TRASH SEGREGATION BMP**
ID #: **SDG-WQA11**

ACTIVITY IMPLEMENTATION

The Bernardo Center Drive Trash Segregation Best Management Practice (BMP) Project will involve the installation of two curb inlet inserts in the San Dieguito River Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The inserts will be installed directly in the existing curb inlets along Bernardo Center Drive. The Bernardo Center Drive site will include the installation of storm drain curb inlet inserts as retrofits within the existing storm drain system. The curb inlet inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as "Trash Segregation Device Installation" in the 2008 San Dieguito River WURMP. In June 2008, the site along Bernardo Center Drive was selected and the conceptual design was released for this project.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets will be retrofitted with the selected drainage inserts and the first phase of monitoring will begin immediately after installation.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
BERNARDO CENTER DRIVE TRASH SEGREGATION BMP Assess the Efficiency and Effectiveness of Catch Basin Inserts	
Management Questions	• What is the load reduction efficiency of the catch basin inserts? • How effective are these catch basin inserts at reducing priority pollutant loads?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the catch basin inserts are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections • Change (%) in bacteria load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1)

OBJECTIVES

The goal of this assessment is to determine the effectiveness of installing catch basin inserts in curb inlets along Bernardo Center Drive and Bernardo Heights Parkway in preventing trash and debris from entering the MS4.

ANALYSIS AND RESULTS

An effectiveness assessment of this activity is not possible at this time because the catch basins have not been installed and no priority pollutant load data have been collected. The City will conduct pre and post project monitoring to evaluate the effectives of the drainage insert selected in load reduction and effluent quality.

CONCLUSIONS

It is anticipated that the catch basins will be installed in FY 2011. Water quality monitoring will be conducted before and after installation to assess the effectiveness of the catch basin inserts in reducing bacteria and trash loading. Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: **ILACSD TRASH CLEANUP SPONSORSHIP**
ID #: **SDG-WQA13**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 24, 2010. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito River Watershed Management Area (WMA). Approximately 72 volunteers removed 250 pounds of trash and debris and recycled 20 pounds of trash and debris over a 3-mile area.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2010 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Dieguito River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	250 lbs
	Pounds of trash recycled (Outcome Level 4)	20 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	270 lbs
	Number of participants (Outcome Level 1)	72
	Amount of money spent on cleanups for all watersheds (Outcome Level 1)	$30,000
	Estimated amount of money spent on cleanups for the San Dieguito River watershed (Outcome Level 1)	$5,000*
	Efficiency (Total Cost/Total Pounds Removed and Recycled)	$18.52/lb

*Calculated by dividing total sponsorship cost by six watersheds.

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

ANALYSIS AND RESULTS

On April 24, 2010, 72 participants removed approximately 250 pounds of trash and debris and recycled approximately 20 pounds of trash and debris from numerous sites in the San Dieguito River WMA. The average estimated sponsorship cost was $5,000 per watershed ($30,000/6 watersheds). Thus, there was a 270 pound load reduction and an efficiency of $18.52 per pound collected. The efficiency was calculated by dividing the estimated sponsorship cost for the San Dieguito River WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 270 pounds during the reporting period. Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2011.

I LOVE A CLEAN SAN DIEGO
Serving San Diego County Since 1954.
Community. Environment. Education.

www.ilacsd.org T: 619.291.0103 F: 619.298.1314 4891 Pacific Hwy. Suite 115 San Diego, CA 92110

May 13, 2010

Ruth de la Rosa
County of San Diego Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Dear Ms. De la Rosa,

On behalf of I Love A Clean San Diego, I would like to thank the County of San Diego Watershed Protection Program for its support of the annual Creek to Bay Cleanup. We had a great turnout this year and were able to make a big impact on the quality of local waterways. Our successes would not be possible without the support of invested agencies like the County of San Diego Watershed Protection Program.

Results from this year's cleanup were impressive, and coordinators are happy to report a volunteer surge of over 5,000 participants. Here are a few statistics from the 8th Annual Creek to Bay Cleanup:

- 5,181 volunteers
- 69 sites throughout San Diego County
- 186 miles covered
- Close to 160,000 pounds of trash and recyclables collected

Support from your agency helped ILACSD to expand the event to cover new cleanup sites and provide supplies for more volunteers than ever before. Included is a one page document which highlights event accomplishments and captures volunteers in action.

We value and welcome your feedback on your experience as part of this year's Creek to Bay Cleanup. As we close the book on Creek to Bay, we are busy making plans for the Coastal Cleanup Day 2010 event. Save the date for CCD which will be held on Saturday September 25th this year. Feel free to contact us if you are interested in getting involved in Coastal Cleanup Day this year.

Best regards,

Natalie Roberts
Director of Community Events
I Love A Clean San Diego

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5,181 Volunteers
69 Sites Countywide
186 Miles
160,000 Pounds of Debris
I Love a Clean San Diego's
Creek to Bay 2010

Creek to Bay 2010 Totals by Watershed

Cleanup Site	Watershed	Miles Cleaned	# of Vols	Pounds Trash	Pounds Recycling	Total Weight
Beacon's Beach	Carlsbad	4	58	88	4	92
Buccaneer Beach, Oceanside	Carlsbad	2.5	192	812	203	1,015
Cardiff State Beach	Carlsbad	3	57	226	0	226
Carlsbad State Beach campgrounds	Carlsbad	5	163	231	17	248
Escondido - Lake Dixon	Carlsbad	2	105	181	138	319
Escondido - Lake Wohlford	Carlsbad	2	32	248	42	290
Frazee Beach	Carlsbad	2	43	74	12	86
Loma Alta Creek (3 Sites)	Carlsbad	3	90	2,000	0	2,000
Moonlight Beach, Encinitas	Carlsbad	2	111	106	19	125
Ponto, Carlsbad State Beach	Carlsbad	2.5	200	300	10	310
San Elijo State Beach	Carlsbad	2	47	91	36	127
San Marcos - Walnut Grove Park	Carlsbad	2	28	517	97	614
Tamarack	Carlsbad	1	98	97	19	116
	Carlsbad Subtotal	**33**	**1,224**	**4,971**	**597**	**5,568**
Lower Otay Lakes County Parks	Otay	3	115	600	200	800
Montgomery High School	Otay	1	21	5	805	810
San Ysidro	Otay	2	120	9,180	84	9,264
Silverstrand State Beach Bayside	Otay	1.25	116	297	109	406
Western OVRP	Otay	3	120	406	48	454
	Otay Subtotal	**10.25**	**492**	**10,488**	**1,246**	**11,734**
La Jolla Shores	Penasquitos	6	126	205	0	205
Los Penasquitos Canyon Preserve	Penasquitos	5	43	1,720	50	1,770
Marian Bear Memorial Park, San Clemente Canyon	Penasquitos	2	50	211	36	247
Mission Beach, Belmont Park	Penasquitos	4	366	331	35	366
Pacific Beach - Tourmaline	Penasquitos	1.5	67	163	0	163
Santa Clara Point, Mission Bay	Penasquitos	3	45	61	87	149
Sorrento Creek	Penasquitos	3	44	10,040	35	10,075
South Shores, Mission Bay	Penasquitos	2	105	448	39	487
Stevenson Canyon	Penasquitos	0.75	15	3,120	3	3,123
Torrey Pines State Beach	Penasquitos	3	175	189	53	242
	Penasquitos Subtotal	**30.25**	**1,036**	**16,488**	**338**	**16,827**
47th Street Canyon	Pueblo San Diego	1	11	1,580	50	1,630
Albatross Canyon	Pueblo San Diego	0.5	19	165	20	185
Cervantes Canyon	Pueblo San Diego	0.5	27	1,440	10	1,450
Chollas Creek, 47th Street	Pueblo San Diego	0.5	33	1,560	10	1,570
Cooper Canyon	Pueblo San Diego	3	60	9,960	100	10,060
Downtown San Diego	Pueblo San Diego	1	21	200	0	200
Embarcadero Underwater Dive Site	Pueblo San Diego	0.5	14	60	0	60
Goldfinch Canyon	Pueblo San Diego	2	27	85	10	95
Juniper Canyon	Pueblo San Diego	1.5	52	1,579	24	1,603
Lemon Grove	Pueblo San Diego	2	21	316	122	438
Manzanita Canyon	Pueblo San Diego	1	29	combined	combined	0
Normal Heights Canyon	Pueblo San Diego	0.5	14	246	436	682
North Swan Canyon	Pueblo San Diego	1	45	6,020	0	6,020
Paradise Creek Educational Park	Pueblo San Diego	0.5	45	200	310	510
San Diego High School campus	Pueblo San Diego	1	132	1,148	7	1,155
Shelter Island watercraft cleanup	Pueblo San Diego	30	15	500	10	510
Southcrest Community Park	Pueblo San Diego	2	280	22,600	70	22,670
Sunshine Field Park	Pueblo San Diego	1	92	100	5	105
	Pueblo San Diego Subtotal	**49.5**	**937**	**47,759**	**1,184**	**48,943**

Creek to Bay 2010 Totals by Watershed

Cleanup Site	Watershed	Miles Cleaned	# of Vols	Pounds Trash	Pounds Recycling	Total Weight
El Cajon	San Diego River	3	33	176	504	680
La Mesa - Alvarado Channel	San Diego River	0.25	23	425	10	435
La Mesa - University Channel	San Diego River	0.4	16	335	30	365
Lakeside - Los Coches Creek	San Diego River	1	22	550	5	555
Ocean Beach - Dog Beach	San Diego River	1.5	86	121	6	127
Ocean Beach Pier	San Diego River	3.5	105	243	51	294
Rancho Mission Canyon	San Diego River	5	28	44	9	53
Ruffin Canyon	San Diego River	2	49	4,800	0	4,800
San Diego River - MVP	San Diego River	0.5	202	8,400	0	8,400
Santee	San Diego River	1	98	1,575	20	1,595
	San Diego River Subtotal	**18.15**	**662**	**16,669**	**635**	**17,304**
Del Mar Powerhouse Park	San Dieguito	4	114	328	124	452
Fletcher Cove	San Dieguito	1.5	57	240	21	261
Lake Hodges	San Dieguito	3	113	250	20	270
Ramona Community Park	San Dieguito	3	67	3,040	0	3,040
Ramona Trash Transfer Station	San Dieguito	3	26	5,452	40	5,492
	San Dieguito Subtotal	**14.5**	**377**	**9,310**	**205**	**9,515**
Oceanside Pier	**San Luis Rey**	**1.5**	**188**	**205**	**5**	**210**
De Luz	**Santa Margarita**	**15**	**33**	**39,600**	**6,540**	**46,140**
D Street Fill	Sweetwater	1.5	55	2,111	0	2,111
J Street Marina	Sweetwater	1.5	128	400	150	550
Sweetwater Regional Park	Sweetwater	2	80	780	10	790
	Sweetwater Subtotal	**5**	**263**	**3,291**	**160**	**3,451**
Tijuana River - Dairy Mart Rd	**Tijuana River**	**3**	**20**	**0**	**0**	**0**
TOTALS:		**180.15**	**5,232**	**148,781**	**10,910**	**159,691**

TITLE: **PET WASTE BAG DISPENSER PROGRAM**
ID #: **SDG-WQA16**

ACTIVITY IMPLEMENTATION

The purpose of the activity is to assess the effectiveness of installing pet waste stations at municipal and mixed-use locations. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. The assessment focused on evaluating the installation of pet waste stations as a best management practice (BMP) in reducing pollutant loading in correlation with the number of bags deployed.

The project includes site evaluations and selections, the installation of pet waste bag dispensers and all-in-one pet stations (dispenser and trash receptacle), pre- and post-site observations for the effectiveness assessments.

Watershed maps were developed and utilized to assist in the selection of appropriate municipal and mixed-use locations. Criteria used to identify the sites included:

a) Canine related activity, e.g. dogs being walked
b) Cleanliness (observed pet waste)
c) Trash receptacles present
d) Pet Waste receptacles present
e) Degree of pet waste observed
f) Potential for vandalism

Additionally, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the San Dieguito River watershed management area (WMA).

Two sites within the San Dieguito River WMA were selected: the Overlook Open Space Park at High Bluff Trailhead and Rolling Hills Community Park. During the initial assessments for site selection, moderate degrees (between 10 and 20 piles) of pet waste were observed at both locations.

One All-in-One Pet Station (bag dispenser, trash receptacle and sign), was installed at the entrance to the Overlook Open Space Park High Bluff Trailhead; and one Dogipot pet waste station (bag dispenser and sign), was installed at the Rolling Hills Community Park.

All-in-One Pet Waste Station at High Bluff Park and Trailhead

Pet Waste Bag Dispenser and Sign at Rolling Hills Community Park

Sign

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2009. Installation of the pet waste bag dispensers and the effectiveness assessment concluded during FY 2010. Dispensers will be maintained by the Park and Recreation Department.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River			
PET WASTE BAG DISPENSER PROGRAM Assess the Effectiveness of Pet Waste Bag Disposal			
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?		
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park		
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)		
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)		
Data Recorded		Overlook Open Space Park at High Bluff Trailhead	Rolling Hills Community Park
	Weekly average of waste piles observed prior to installation	31.3	8.7
	Weekly average of waste piles observed after installation	18	6.7
	Weekly average number of bags dispensed	98.3	59.3
	Average Weekly waste pile reduction	13.1	2
	Percent waste reduction	43%	34%
	Ratio of bags dispensed to pet waste piles removed	7.4	29.7

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

ANALYSIS AND RESULTS

Observations and pet waste pile counts were conducted for a total of six weeks. For three weeks prior to the installation of the pet waste bag dispensers, weekly observations and cleaning were conducted to assess the conditions at each site. Prior to the installation of the pet waste bag dispensers a weekly average of 31.3 piles and 8.7 piles were observed at the Overlook Open Space Park at High Bluff Trailhead and Rolling Hills Community Park, respectively. After the installation of the pet waste bag dispensers, a weekly average of 18 piles and 6.7 piles were observed at the Overlook Open Space Park at High Bluff Trailhead and Rolling Hills Community Park, respectively.

The observations show an average weekly reduction of 13.1 piles and 2 piles Overlook Open Space Park at High Bluff Trailhead and Rolling Hills Community Park, respectively. The average weekly reduction was calculated by subtracting the pre-installation average count of observed waste and the post-installation average count of observed waste. This translates to 43% and a 34% reduction in the amount of pet waste piles observed. Additionally, the weekly average number of bags dispensed was 98.3 and 59.3 at the Overlook Open Space Park at High Bluff Trailhead and Rolling Hills Community Park, respectively.

CONCLUSIONS

A review of the collected data revealed that the installation of the pet waste stations contributed to the reduction of pet waste piles within the study area. The average number of bags dispensed weekly at the Overlook Open Space Park at High Bluff Trailhead and Rolling Hills Community Park corresponds to an estimated removal of 19.9 pounds and 11.9 pounds of pet waste per week, respectively[1].

Overall, this activity demonstrated that there are positive, measureable pollutant load reductions (Outcome Level 4) due to the installation of pet waste bag dispensers. This activity fulfills the requirement of one of two required watershed water quality activities for the San Dieguito River WMA because the activity resulted in pollutant load reductions.

[1] Welker, S. 2004. Dog Waste Tracking Project. San Elijo Lagoon Ecological Reserve.

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TITLE: TARGETED RESTAURANT FACILITY INSPECTIONS AND OUTREACH
ID #: SDG-WQA17

ACTIVITY DESCRIPTION

The Cities of Escondido and Solana Beach will conduct focused inspections of restaurants within the San Dieguito WMA to target the pollutants generated by food service facilities. Activities and areas at restaurants such as grease handling and disposal, spills, dumpster and loading docks, parking lots, landscaping and ground maintenance and cleaning of equipment can generate pollutants that have the potential to enter the receiving waters. Pollutants that may be generated by restaurant areas and activities include bacteria from organic materials (i.e., food wastes), oil and grease, trash, and chemicals.

ACTIVITY IMPLEMENTATION FY 2007-08

In Del Mar during the 2007-2008 reporting year, Coastal Storm Drain Monitoring activities detected sporadic, higher than normal levels of bacteria in the outfall that drains the 15th Street area of Del Mar. While not at levels warranting in-depth source identification studies, this drainage area includes a large number of the City's restaurants and commercial activities with a "high" or "moderate" potential for water quality issues, and as such the sporadic levels were warranted further study, and enhancement of efforts in this area. The program will focus on activities and areas at restaurants such as grease handling and disposal, spills, dumpster and loading docks, parking lots, landscaping and ground maintenance and cleaning of equipment which may generate pollutants that have the potential to enter receiving waters. Pollutants that may be generated by restaurant areas and activities include bacteria from organic materials (i.e., food wastes), oil and grease, trash and chemicals. This program is in addition to the required education and outreach programs, and will supplement the required annual inspections within the JURMP.

ACTIVITY IMPLEMENTATION FY 2008-09

During FY 2008-2009, the City of Del Mar will begin implementation of a targeted outreach and inspection program for the restaurants and outdoor vendors within this drainage area. Program development is planned for FY2008-2009, with implementation by the City of Del Mar occurring in FY2009 2010. The program is expected to include specific training for the restaurants in the area, including catering businesses who service the Power House Community Center, and the adjacent parks. The training program is intended to be a collaborative effort between the City of Del Mar and the Del Mar Village Association. Also included in the program plans are additional inspections and focused trainings for restaurants who have received citations or Notices of Violation for stormwater violations during the past reporting period, and those operations which are suspected of contributing to the problems in the drainage area based on anecdotal evidence. The purpose of the activity is to:

- Attempt to determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year);
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections);

- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions);
- Work directly with restaurateurs and their staff to develop a more effective training program for use in the specific restaurants in the area; and
- Track and analyze inspection and enforcement actions to estimate potential load reductions resulting from increased inspections and targeted outreach.

ACTIVITY IMPLEMENTATION FY 2009-10

During 2009-2010, the City of Escondido inspected all of its San Dieguito Watershed restaurant facilities twice to ensure compliance with applicable storm water regulations. This inspection regimen is part of a citywide commitment to semi-annual inspections of all restaurants located within Escondido's jurisdictional boundaries. During these investigations, inspectors work with restaurateurs and their staff to review effective BMP implementation, including proper maintenance of grease traps, trash disposal, and parking areas that can contribute pollutants such as bacteria to the storm sewer conveyance system. The twice-annual inspections also provide staff with an opportunity to assess a facility during varying weather conditions, e.g., those conditions present during winter and summer. They also enable inspectors to more frequently visit facilities that typically have a high staff turnover rate. Overall, although no direct correlation between water quality data and enhanced inspections has been established, the City believes that more frequent inspections of high-threat-to-water-quality facilities help preserve good water quality and/or prevent degradation.

The City of Del Mar continued to inspect all of the restaurants within the City limits, however, the additional planned items were not full implemented. The City will conduct the planned activities in FY 2010-2011.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- To be determined

LEAD WATERSHED COPERMITTEE

- City of Escondido

OTHER PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar
- City of Solana Beach

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Sediment

EFFECTIVENESS MEASUREMENTS

The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

Monitoring data from coastal outfall monitoring and previous inspections will be compiled and restaurant NOV status analyzed using GIS. Further narrowing the drainage area to potential sources will be conducted to target the inspections and outreach activities as appropriate. The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

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TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: SDG-WQA18

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of
SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Dieguito River Watershed include:

- SDA 8 (Ramona)
- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

FY 2007-08 ACTIVITY IMPLEMENTATION
Work began on drafting the SWQMPs for individual SDAs.

FY 2008-09 ACTIVITY IMPLEMENTATION
Work continues on the drafting of the SWQMPs for individual SDAs.

FY 2009-10 ACTIVITY IMPLEMENTATION
The SWQMP for SDA 8, SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2011-12. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2013.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined

TITLE: **PET WASTE DISPENSER PROGRAM IN COUNTY PARKS**
ID #: **SDG-WQA19**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County Parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained nine dispenser stations at three parks within the San Dieguito Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain nine dispenser stations at three parks within the San Dieguito Watershed. The parks and the number of dispensers include:

- Felicita Park (3 dispensers)
- San Dieguito Park (5 dispensers)
- Holly Oaks Park (1 dispenser)

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain nine dispenser stations at three parks within the San Dieguito Watershed. The parks and the number of dispensers include:

- Felicita Park (3 dispensers)
- San Dieguito Park (5 dispensers)
- Holly Oaks Park (1 dispenser)

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Dieguito Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Holly Oaks Park	1	3,230	646
Felicita Park	3	9,690	1,938
San Dieguito Park*	5	16,150	3,230
Total	**9**	**29,070**	**5,814**

*San Dieguito County Park is counted in both the Carlsbad and San Dieguito HU Totals

During the FY 2009-10 reporting period the County maintained nine stations among three County Parks within the San Dieguito Watershed. These stations distributed approximately 29,070 bags, preventing an estimated 5,814 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, the pet owners themselves bring an additional 30% of pet waste bags to the parks.

TITLE: **OUTDOOR WATER CONSERVATION REBATE PROGRAM**[2]
ID #: **SDG-WQA20**

ACTIVITY DESCRIPTION

This activity involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring will be conducted both at the pre and post irrigation modification stage. It is also anticipated that the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of irrigation runoff reduction programs as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and Total Maximum Daily Load (TMDL) requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination occurred in FY 2010. Program launch is anticipated to occur in FY 2011

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River Watershed Management Area (WMA) identify bacteria and nutrients as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them.

[2] This project was originally identified as the "Residential Rain Barrel and Xeriscaping Incentive Program" and "Irrigation Hardware Giveaway And Cash For Plants Program." A more accurate title was chosen for this activity during program planning.

Implementation of this activity will address the high priority water quality problems by reducing dry weather flows resulting from over-irrigation.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
IRRIGATION HARDWARE GIVEAWAY AND CASH FOR PLANTS PROGRAM Assess the Efficiency and Effectiveness of Smart Irrigation and Low Water Use Landscaping	
Management Questions	• How effective are smart irrigation and other types of low flow distribution hardware in reducing dry weather runoff? Does replacing high water use landscape with low water use landscape reduce dry weather runoff? • What is the potential load reduction for both residential and commercial properties when utilizing smart irrigation in conjunction with low water use landscaping? • What is the average cost savings from utilizing smart irrigation and or low water use landscaping?
Targeted Measurable Outcome(s)	• Load reduction due to system installation • Runoff reduction due to system installation
Assessment Method(s)	• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Recommended Data	• Estimated cost of site preparation, installation and start-up for site (Outcome Level 1) • Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1) • Estimated cost of effectiveness monitoring for all sites (Outcome Level 1) • Number of systems installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the xeriscaping systems (acres drained) (Outcome Level 4)

OBJECTIVES

The goal of this assessment is to determine the effectiveness and efficiency of using weather-based irrigation devices in conjunction with low water use landscaping to reduce over irrigation. Targeted pollutants include bacteria and nutrients.

ANALYSIS AND RESULTS

An effectiveness assessment of this activity is not possible at this time as project planning and coordination occurred in FY 2010. Program launch is anticipated to occur in FY 2011.

CONCLUSIONS

Monitoring will be conducted to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad-scale implementation should be pursued.

Specific residential and commercial locations will be monitored to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads.

TITLE: **MEDIAN SWEEPING PILOT STUDY**[3]
ID #: **SDG-WQA21**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) implemented a one-year pilot study to assess the effectiveness of modifying its street sweeping program to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study specifically focused on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with this proposed programmatic change to the City's street sweeping program.

The pilot study specifically looked at expanding current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change allowed calculation of potential pollutant removal efficiency afforded by sweeper access to what was found to be heavily polluted areas.

The overall pilot study was designed to answer the following management questions:

- What is the relative cost-efficiency of integrating median sweeping into the City street sweeping program?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does median sweeping provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study was used to determine whether sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring was conducted to allow for assessment. Although this activity occurred in multiple watersheds, a suitable location in the San Dieguito River WMA could not be identified during project planning; therefore, implementation did not occur.

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2009 and continued into the first quarter of FY 2010. A suitable location could not be identified; therefore, the project was canceled in FY 2010 before implementation. This project is complete, and will no longer be included in future reporting updates.

[3] In the FY09 WURMP Annual Report, this activity was known as "Route Posting and Median Sweeping Pilot Study." A more accurate title was chosen for this activity during project planning and implementation that took place in FY 2010.

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TITLE: CITY OF SAN DIEGO STRATEGIC PLAN FOR WATERSHED ACTIVITY IMPLEMENTATION
ID #: SDG-WQA22

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring (runoff volume) will be conducted both at the pre and post irrigation modification stage. The rebate program is scheduled to be implemented in FY11.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table 1. Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, Implementation and assessment completion anticipated in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and	Rain Garden, Xeriscaping, and	Water Quality	Structural or Non-	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Landscape Filtration (1)	Landscape Filtration		Structural		
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sedimen t Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

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TITLE: **RAMONA COUNTY LIBRARY PROJECT**
ID #: **SDG-WQA23**

ACTIVITY DESCRIPTION

The County of San Diego has built a new library in the Ramona area, located on the same site and in the immediate vicinity of the previous library. The new library features Low Impact Development (LID) design applied throughout the site, including ground cover and shrubs that are drought-tolerant native and adaptive species and a large bio-swale. A detention basin was also developed on the north end of the site. Runoff from the site will be directed to the bio-swale area as well as the detention basin, while areas designed with LID will help infiltration and slowing storm water from the site.

This activity directly benefits the watershed by reducing the amount runoff from impervious surfaces, reusing runoff to aid in drought tolerant irrigation, and filtering runoff through bio-swales to promote infiltration and decrease the amount of pollutants leaving the Ramona Library Facility.

ACTIVITY IMPLEMENTATION

A CEQA Mitigated Negative Declaration (MND) was prepared and adopted for the 2003 Prop 14 submittal of this project. A new MND was prepared and adopted in 2009 which addressed a larger library footprint, the library site and several additional parcels. In addition, the MND addresses a site beyond that to be used for the new library. The updated site plan was processed and adopted through the Department of Planning and Land Use (FY 09-10), and development occurred on schedule.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- New site plan and development completed during FY 2009-10.
- Ribbon cutting for the Library scheduled for February 15, 2011.
- No further activity is planned for this site.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity demonstrates reduced pollutant loads and source abatement which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

All LID features constructed per site plan and project completed as scheduled. Completion of all project elements achieves a Level 1 Outcome.

TITLE: RANCHO BERNARDO LIBRARY LIMITED LOW FLOW STORM DRAIN INLET MULTI-POLLUTANT TREATMENT
ID #: SDG-WQA25

ACTIVITY IMPLEMENTATION

This project will implement a proprietary inlet treatment device at the Rancho Bernardo Library. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in late FY 2011. Construction is anticipated in FY 2015.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria and nutrients as high priority water quality problems throughout the San Dieguito WMA.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River	
RANCHO BERNARDO LIBRARY LIMITED LOW FLOW STORM DRAIN INLET Assess the Efficiency and Effectiveness of a Limited Low Flow Storm Drain Inlet	
Management Question	• What is the bacteria and nutrient load reduction efficiency?
Targeted Measurable Outcome	• Reduction in priority pollutant loads
Assessment Method(s)	• Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

OBJECTIVES

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

ANALYSIS AND RESULTS

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: **RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION**
ID #: **SDG-WQA26**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY09-10

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY09-10. The events are scheduled to occur during FY10-11. Depending upon the success of the initial events, additional events will be considered for implementation during FY11-12 and FY12-13.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes will be achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

TITLE: **RESIDENTIAL WATER CONSERVATION OUTREACH**
ID #: **SD-WQEA1**

ACTIVITY IMPLEMENTATION

The Water Conservation in Landscaping Act of 2006 requires the State Department of Water Resources to update a model Water Efficient Landscape ordinance for adoption by local agencies.

The City adopted the ordinance in the FY 2011 reporting period. One key element identified is the replacement of timed irrigation controllers with "smart" controllers, which adjust the amount of water used based on weather conditions. While this planned activity does not directly replace controllers in the residential zones of the City, it provides for outreach through direct mail and utility bill enclosures to encourage water-wise approaches to landscaping, including the use of native plants, smart controllers and drip irrigation systems. This is beneficial from an NPDES perspective since any reduction in water usage, including the use of efficient irrigation systems, reduces the potential for runoff from over irrigation.

The City of Del Mar initiated it's education and outreach program through the establishment of an Ad-Hoc Water Conservation Citizen's Advisory Committee in March 2009. The Committee, made up of members of the Del Mar community and appointed by the City Council, was tasked with developing an outreach and education campaign to address water conservation issues, including a series of public workshops. The Committee met bi-monthly, and developed its first workshop on drought tolerant gardening slated for the FY 2011 reporting period.

TMDL APPLICABILITY

This activity is related to the Bacteria TMDL adopted for the mouth of the San Dieguito Lagoon and the Anderson Canyon area of the Los Peñasquitos Watershed Management Area. Reduction of irrigation runoff from residential sources has the potential to decrease bacteria levels in the beaches and lagoons, and is a TMDL applicable activity.

TIME SCHEDULE FOR IMPLEMENTATION

This project is proposed for implementation in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Del Mar
- City of Solana Beach

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- TDS
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Dieguito WMA Collaborative Watershed Strategy identified bacteria as a High Priority Water Quality Problem in all areas of the WMA, including the Solana Beach Hydrologic Area (905.1). Landscaping for parks and open space areas has been

identified as potential discharges of bacteria from over-irrigation. In addition, other pollutants have been identified including TDS and nutrients as potential discharges from over-irrigation. This activity addresses a High Priority Water Quality Problem and potential source of the problem within the WMA; therefore, the activity is found to be consistent with the 2009 San Dieguito WURMP.

EXPECTED BENEFITS

Primary Activity Goal – Dry Weather Load Reductions: Education and outreach to the community regarding water quality benefits that couple with water conservation activities should result in an overall reduction in runoff from over-irrigation and will reduce the pollutant loads in urban runoff.

EFFECTIVENESS ASSESSMENT

Quantification of contacts with the residents regarding water conservation water quality activities can be tracked demonstrating a Level 2 outcome (Change in Knowledge).

TITLE: PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST
ID #: SDG-WQEA3

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Dieguito River Watershed Management Area (WMA) in FY 2009 and FY 2010. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

The City will continue to run the *Karma* public service announcements; however, this activity will no longer be included in future reporting updates.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Dieguito River WMA in FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist* Public Service Announcements will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City will continue to run the *Karma* public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program; therefore, no assessment was conducted in FY 2010.

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TITLE:	**COMMUNITY-BASED SOCIAL MARKETING OUTREACH PILOT PROJECT**
ID #:	**SDG-WQEA6**

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department (City) has been using Community Based Social Marketing (CBSM) strategies since FY 2008 to attempt to increase knowledge and change behaviors in target populations and communities. CBSM is an environmental social science model which includes research, pilot programs, data gathering, and assessment that has been successful in environmental sustainability programs throughout the United States. The results of CBSM pilot studies provide concrete, research-driven recommendations for education and outreach strategies by informing education needs and demonstrating the most effective and efficient use of structural interventions, public participation, incentives and specific messaging.

During FY 2010, the City's Think Blue program implemented and evaluated the effectiveness of a structural intervention (pet waste bag dispensers) installed in the common areas leading up to the Rancho Bernardo Dog Park. The goal of the study was to evaluate the potential for strategically placed pet waste bag dispensers to promote proper management of pet waste among dog owners. The study consisted of systematic behavioral observations to evaluate the effectiveness of the dispensers at changing behavior while simultaneously gathering information about the disposal habits of pet owners in the watershed.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

This activity is considered completed in FY10.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. This activity will result in both changes in pet waste management behavior that contributes to bacteria, as well as future load reductions of bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: San Dieguito River		
PROPOSED COMMUNITY-BASED SOCIAL MARKETING (CBSM) PILOT STUDY Assess the Effectiveness of the Pilot Study		
Management Questions	• What changes in instances of improperly managed pet waste were achieved after pet waste bag dispensers were strategically installed outside a dog park?	
Targeted Measurable Outcome(s)	• Observed frequency of pet waste management behaviors • Observed frequency of opportunities for pet waste pick up • Dog owner characteristics (e.g., gender, leash usage). • Observed site characteristics (e.g., trash can presence) • Increased level of pet waste pick up behavior based on pre-post behavioral observations. • Decreased level of existing pet waste on the ground based on pre-post site observations.	
Assessment Method(s)	• Behavioral observations (conducted pre- and post) • Person-level Quantification (e.g., number of individuals observed with dogs, number of dogs observed "in the act") • Site-level quantification (e.g., amount of litter present, condition of trash cans, existing pet waste, etc.)	
Data Recorded	• Number of dispensers installed (Outcome Level 1)	2
	• Total number of people observed (Outcome Level 1)	1124
	• Total number of dog owners observed (Outcome Level 1)	597
	• Observed number of instances where a dog went and the owner had an opportunity to pick up or not (Outcome Level 1)	68
	• Decrease in number of people who did not pick up after their pet (Outcome Levels 3 and 4)	81%
	• Decrease in number of dog piles on the ground (Outcome Levels 3 and 4)	60%

OBJECTIVES

The study utilized an experimental research methodology to evaluate the effectiveness of installing pet waste bag dispensers at parks in San Diego. The study consisted of systematic behavioral observations to evaluate effectiveness of the dispensers at changing behavior as well as to gather information about the disposal habits of pet owners in the region. Pre and post-test observations were conducted to measure site characteristics and pet owner behavior at treatment (dispenser) and control (no dispenser) study areas.

OBSERVATIONS

Pre-installation behavioral observations:

Prior to installation of pet waste bag dispensers, a series of behavioral observations were conducted. The goal of the pre-installation observations was to establish a baseline of behavior, identify structural barriers, and develop a better understanding of behaviors related to the disposal of pet waste. In addition to behavioral observations, existing pet waste and site information was gathered to inform where and how pet waste stations should be installed at the site. Pre-installation observations of accumulated pet waste, environmental characteristics, and pet waste management behavior were conducted over a two-week period (February 20, 2010 to March 5, 2010). To provide

adequate representation of the site visitors, the observation sessions were scheduled to equally cover all daylight hours (6:00 am to dusk), peak and off-peak times, weekdays and weekends.

Installation and monitoring of dispensers:
Following the installation of pet waste dispensers, the research team made periodic visits to the site to monitor the implementation of the experimental treatment (bag dispensers). Specifically, the team monitored the pet waste bag dispensers to ensure that they remained full and in good repair throughout the study period. A total of five site observations were conducted between April 12, 2010 and April 23, 2010. At each visit, the function and appearance of the pet waste dispensers was noted, and dispensers were refilled as needed. In addition to monitoring the condition of the pet waste dispensers, the research team also noted various site characteristics including accumulated pet waste and litter.

Post-installation behavioral observations:
Approximately two-weeks following the installation of the pet waste bag dispensers at the treatment site, the behavioral observation protocol was repeated. Post-test behavioral observations were conducted at the treatment site (and at a control site in another watershed) using the same protocol and materials from the pre-installation observations. Post-installation observations of accumulated pet waste, environmental characteristics, and pet waste management behavior were conducted over a two-week period (April 26, 2010 to May 12, 2010).

ANALYSIS AND RESULTS
Results of the CBSM assessment activities conducted in the San Dieguito watershed are as follows:

OBSERVATION DETAILS

- The behavior and characteristics of over one thousand individuals were observed as part of this study at Rancho Bernardo Community Park (*N*=1124). A total of 493 individuals were observed during the pre-installation observations and 631 were observed during the post-installation observations.
- Pre-installation observations were conducted at the treatment (Rancho Bernardo) study site between February 20, 2010 and March 5, 2010. Post-installation observations were conducted in the same manner between April 26, 2010 and May 12, 2010.

DOG OWNER CHARACTERISTICS

- Across the study period, the behavior of nearly 600 dog owners was observed (*N* = 597). More than half of the individuals observed had a dog. A total of 270 dog owners were observed in the Rancho Bernardo study area during the pre-installation observations and 327 were observed during the post-installation observations.
- 60% of dog owners at Rancho Bernardo were female; Across both observation sessions, dog owners were significantly older (*Mean Age* = 44) than the non dog owners (*Mean Age* = 33).

BASELINE PET WASTE MANAGEMENT BEHAVIOR

- Across all observations (pre and post) at the Rancho Bernardo site, researchers observed a total of 68 instances of a dog "in the act" – that is, 68 instances where an individual had an opportunity to pick up after their pet or not.
- Pre-installation (baseline) observations indicated that at Rancho Bernardo nearly one-third (32%) individuals whose dogs pooped during the observation period did not subsequently pick up after their pet. Across all observations, improper pet waste management was more frequent among those whose animals were off leash.

EXPERIMENTAL RESULTS

- There was a significant ***decrease*** in the overall amount of pet waste following implementation of the bag dispensers (*Mean* = 2.93 out of 4 at pre-test; 2.00 out of 4 at post-test). Ratings of overall pet waste were made on a scale from 1 (none) to 4 (a lot).
- Installation of the pet waste dispensers also produced a 60% decrease in the **number of dog piles** on the ground at Rancho Bernardo Dog Park.
- Installation dispensers at Rancho Bernardo Dog Park led to an 81% reduction in the number of people who did not pick up after their pet.

CONCLUSIONS

In FY 2010, through this effort, the City was able to dramatically reduce a potential source of bacteria pollution (pet waste) in Rancho Bernardo (San Dieguito Watershed). Using a CBSM methodology, the Think Blue program directly addressed a structural barrier to proper pet waste management and then evaluated the efficacy of the approach. Results of the study showed that the outreach effort caused a significant decrease in both accumulated pet waste and in the percentage of people who did not pick up after their pet. These decreases were observed only at the treatment site and not at the control site suggesting that the observed pattern was due to the installation of the dispensers and not to historical or seasonal effects.

Pre and post-test observations that were conducted to measure site characteristics and pet owner behavior at the treatment (dispenser installed) study area in the San Dieguito River watershed and control (no dispenser installed) study area in an adjacent watershed. Results of the experiment showed that the structural intervention was effective at reducing potential pollution caused by mismanaged pet waste. The intervention produced a 60% decrease in the number of pet waste piles observed on the ground and an 81% decrease in the percentage of people who did not pick up after their pet. Importantly these decreases were observed only at the treatment location. The control site where no dispensers were installed showed no change.

The results demonstrated that bag dispensers are an effective means of promoting proper pet waste management, but the observations also highlighted opportunities to maximize the effectiveness of these structural interventions. Specifically, prior to implementation of this study, pet waste bag dispensers were only present inside the dog park. In our preliminary observations, we learned that many dogs "go" before they even reach the perimeter of the dog park. This was particularly the case in Rancho Bernardo where there was a longer approach.

Future outreach efforts can maximize the effectiveness of pet waste bag dispensers by ensuring that they are installed in locations that maximize use by dog owners (e.g., close to parking areas, entrances to dog parks). Results of the experimental evaluation have identified avenues for intervention that will maximize Think Blue's efforts to prevent pet waste and bacteria from entering the storm drain system. In addition to the finding that pet waste bag dispensers are an effective intervention, the study also pointed to important conclusions about the placement and maintenance of bag dispensers for maximum effectiveness.

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TITLE: **EROSION AND SEDIMENT CONTROL POSTER**
ID #: **SDG-WQEA8**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper BMPs. The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and Best Management Practices (BMPs) for construction. Photos on the brochure and poster illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing erosion and sediment control poster to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated internally to distribute the poster in FY 2010 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of brochures and posters distributed in the San Dieguito River Watershed Management Area (WMA) was approximately 31. The number of posters distributed by Storm Water inspectors was 7 (5 in English and 2 in Spanish).

At the current time, this activity does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters have been distributed over a number of years with positive feedback from users, so the City plans to continue their distribution. The City will discontinue reporting on this activity after FY 2010.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

- City staff will continue to distribute the brochures and posters to permit applicants at construction sites and during inspections and as needed in FY 2011, but will no longer report on this activity.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify sediment and bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with sediment and bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed approximately 31 erosion and sediment control brochures and posters in FY 2010. After FY 2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: **RESTAURANT BESTMANAGEMENT PRACTICES BOOKLET**
ID #: **SDG-WQEA9**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) obtained permission several years ago from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the San Dieguito River Watershed Management Area (WMA) during inspections. After review by restaurant employees, the booklet could be kept by owners/managers for reference and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs. The booklets were not modified in FY 2010, and continue to be distributed.

City staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for distribution of the booklet in FY 2010 to City-permitted facilities. The City distributed 98 booklets in the San Dieguito River WMA. The booklets will continue to be distributed in the future; however, the City will not be reporting on this activity.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will continue to coordinate with FEWD Program staff for distribution of the booklet in FY 2011 to City-permitted facilities.

PARTICIPATING WATERSHED COPERMITTEES

- San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EFFECTIVENESS ASSESSMENT

The City distributed 98 booklets in FY 2010. Due to the nature of this activity, effectiveness assessment is not being conducted for this activity. After FY 2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

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TITLE: **SAN DIEGUITO RIVER WATERSHED BROCHURE**
ID#: **SDG-WQEA10**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay and La Jolla
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2011. Implementation and distribution is expected to occur in late FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	**San Diego River**	**San Diego Bay**	**Mission Bay and La Jolla**	**San Dieguito River**	**Los Peñasquitos**
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants		Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

OBJECTIVES

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

ANALYSIS AND RESULTS

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

CONCLUSIONS

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2011. Effectiveness assessments are scheduled to begin in FY 2011. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: **FOCUSED OUTREACH TO THE EQUESTRIAN COMMUNITY**
ID#: **SDG-WQEA11**

ACTIVITY DESCRIPTION

The County of San Diego conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups.

ACTIVITY IMPLEMENTATION FY 2009-10

Workshops

During FY09-10, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Workshops during FY09-10 were held in Bonita, Lakeside, Ramona, and Fallbrook. The table below identifies the primary watershed(s) addressed by each workshop.

Location	Presentation Date	No. of Attendees	Primary Watershed Addressed
Lakeside	11/7/2009	23	San Diego River
Ramona	2/3/2010	43	San Dieguito, San Diego River
Fallbrook	6/19/2010	22	Santa Margarita, San Luis Rey
Bonita	6/28/2010	25	Sweetwater
Total		**113**	

Funded by the County, the workshops were presented by staff from either the Solana Center or the MRCD. They included presentations and handouts identifying resources available to equestrians. Information presented included local watershed awareness, manure management, and composting. Key elements included how proper manure management relates to horse health, water quality, and maintenance of positive relationships with neighbors. Question and answer sessions were conducted in all workshops.

The workshops in Lakeside and Fallbrook were held on Saturday mornings on private properties with horses and active compost piles at each location. Participants were encouraged to observe the compost piles and the BMPs in place to prevent contamination of runoff. The presentation at the Fallbrook workshop included poster

boards of a Power Point presentation. The other two workshops (Ramona and Bonita) were held in classroom settings at community meeting rooms on weeknight evenings. Presentations were casual discussions that included BMPs to improve horse health, protecting properties from erosion, and preventing polluted runoff discharges. San Diego County watershed maps were displayed at all workshops, allowing attendees to locate their local watershed.

Assessment was conducted in the form of pre- and post-workshop surveys.

Community Events

County staff and/or contractors also provided targeted outreach to the equestrian community at four equestrian themed community events during FY09-10. At each of these events, the County staffed a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. Additional details on each community event are provided in the table below.

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
10/17/2009, 10/18/2009	Vaquero Days Western Heritage Festival	Granville Martin Ranch/Museum	45	Sweetwater
5/16/2010	Creek Hollow Ranch Horse Dressage Event	Creek Hollow Ranch	10	San Dieguito
5/28/2010, 5/29/2010	Valley Center Rodeo Days	Valley Center Community Center	35	San Luis Rey
6/19/2010	Sweetwater Farms Hunter/Jumper Horse Event	Sweetwater Farms	15	Sweetwater
Total			**105**	

Development and Distribution of Educational Materials

During FY09-10, County staff created a coloring sheet and handout to direct interested equestrians to more detailed information regarding BMPs for manure management (see attached).

Surveys

In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted a firm with expertise in Community Based Social Marketing (CBSM) to conduct research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (see attached report).

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for beaches and creeks, and with other more localized TMDLs for constituents such as nutrients and sediment.

TIME SCHEDULE FOR IMPLEMENTATION

Additional workshops are planned for equestrians in the Santa Margarita and San Luis Rey Watersheds during FY10-11 and FY11-12. In addition, the County is pursuing a partnership with the San Diego County Equestrian Foundation (SDCEF) to disseminate information about manure management and other BMPs to the equestrian community. County staff will provide outreach at various SDCEF events during FY10-11. Over the long term, the County is interested in pursuing opportunities to facilitate peer mentoring programs that encourage equestrians to learn about proper BMPs such as manure management from one another. Development of such a program in the future is contingent upon identifying a reliable source of funding such as grants.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for an important source of the high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered.

Pre-workshop survey results were as follows:

- 15.2% of participants responded that they live in a watershed.
- 43.2% responded that stormwater is not treated.
- 10.8% felt that horse manure contributes from “some to a great deal” to water pollution.

When asked about what equestrians can do to prevent pollution caused by horse manure, 59.5% of respondents suggested ideas on the pre-workshop survey.

Post-workshop survey results were as follows:

- 90% of respondents indicated that they live in a watershed.
- 74.2% responded that stormwater is not treated.

- 22.8% felt that horse manure contributes from “some to a great deal” to water pollution.

Regarding what equestrians can do to prevent pollution caused by horse manure, 82.8% suggested ideas on the post survey.

These survey results indicate a positive increase in knowledge and awareness about how equestrian activities can affect water quality. Results also show that more equestrians were able to identify positive behavioral changes (Level 3 Outcomes) following the workshops.

Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The Copermittees' FY 2011 (July 1st, 2010 through June 30th, 2011) JURMP Annual Reports were used to determine quantities of inventories. The Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction
5) TCBMP

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1) Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2) Identified the Copermittees' total activity quantities for the following activities from the FY 2011 JURMP Annual Reports:
   a) Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
   b) Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3) Determined the amount of urban land use in each Copermittees' jurisdiction.
4) Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City.
5) Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation determining the Copermittee's contribution to the HA is as follows:

$$(Copermittee\ Activity\ Quantity) \times \left(\frac{Copermittee\ urban\ land\ use\ in\ HA}{Copermittee\ total\ urban\ land\ use}\right)$$

6) Each contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

JURMP Source and Activity Quantities Estimation Example

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1.
Jurisdiction A collected 800 tons of material from street sweeping in FY 2011.

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1.
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2011.

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1.
Jurisdiction C collected 250 tons of material from street sweeping in FY 2011.

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:

$$(800\ tons\ of\ material) \times \left(\frac{250\ urban\ land\ use\ acres\ in\ HA1}{1{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ A}\right) = \mathbf{200\ tons}$$

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:

$$(1{,}000\ tons\ of\ material) \times \left(\frac{1{,}250\ urban\ land\ use\ acres\ in\ HA1}{2{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ B}\right) = \mathbf{625\ tons}$$

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:

$$(250\ tons\ of\ material) \times \left(\frac{500\ urban\ land\ use\ acres\ in\ HA1}{500\ urban\ land\ use\ acres\ in\ Jurisdiction\ C}\right) = \mathbf{250\ tons}$$

The total amount of estimated street sweepings collected in HA1 is therefore:

$$200\ tons + 625\ tons + 250\ tons = \mathbf{1{,}075\ tons}$$

Appendix B

FY 2011 San Dieguito Watershed Activity Sheets

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TITLE: LAND ACQUISITIONS
ID #: SD-WQA2

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION:

During the FY 2007-08 reporting period there were 9.99 acres of land acquired in the San Dieguito River Watershed.

During the FY 2008-09 reporting period there were 3,197.52 acres of land acquired in the San Dieguito River Watershed.

During the FY 2009-10 reporting period there were 262.32 acres of land acquired in the San Dieguito Watershed.

During FY 2010-11 reporting period there were 121.48 acres of land acquired in the San Dieguito Watershed. Table 1 below shows the FY 2010-11 acquisitions.

Table 1: FY 2010-11 Land Acquisitions for San Dieguito Watershed

Property	Acres	Date	Watershed ID	APN(S)
Volcan Mountain- VMPF.	37.18	July -June	905.54	249-084-09
Santa Ysabel - Nature Center donation	84.3	July -June	905.54	247-160-14
TOTAL	**121.48**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: COASTAL CLEANUP DAY SPONSORSHIP
ID #: SD-WQA4

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 25, 2010. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito River Watershed Management Area (WMA). Approximately 117 volunteers removed 410 pounds of trash and debris and recycled 8,700 pounds of trash and debris.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK and ILACSD staff to ensure that sites within the San Dieguito River WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- San Diego Coastkeeper
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water

quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the sponsored cleanup? ($/pound collected)

Targeted Measurable Outcome(s):

Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship.

Assessment Method(s):

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded:

Pounds of trash removed (Outcome Level 4): 410 lbs
Pounds of trash recycled (Outcome Level 4): 8,700 lbs
Total pounds of trash removed and recycled (Outcome Level 4): 9,110 lbs
Number of participants (Outcome Level 1): 117
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
Amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1): $5,000
Activity Efficiency (Total Cost/Total Pounds Removed): $0.55/lb

Expected Benefits:

Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

Analysis Results:

At the event, 117 participants removed 410 pounds of trash and debris and recycled 8,700 pounds of trash and debris, which was tracked using data cards provided by the Ocean Conservancy. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 9,110 pound load reduction and an efficiency of $0.55 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Dieguito River WMA by the total pounds of trash removed and recycled.

Conclusions:

This trash cleanup activity fulfills a watershed water quality activity for FY2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 9,110 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE: **SEDIMENT AND PEAK FLOW CONTROLS #1**
ID #: **SD-WQA5**

ACTIVITY DESCRIPTION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the San Dieguito River Watershed Management Area (WMA).

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's Strategic Plan for Watershed Activity Implementation. This project will is on hold as staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by managing runoff volume - the transport mechanism for pollutants - and treating runoff of pollutants before discharge into receiving waters.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1. What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity?
2. What is the loading reduction of the BMPs?

Targeted Measurable Outcome(s):

1. Reduction in priority pollutant loads

Assessment Method(s):

1. Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
2. Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
3. Tabulation (e.g., amount of money spent on implementation and maintenance)

Expected Benefits:

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis Results:

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions:

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: **SEDIMENT AND PEAK FLOW CONTROLS #2**
ID #: **SD-WQA6**

ACTIVITY DESCRIPTION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the San Dieguito River Watershed Management Area (WMA).

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's Strategic Plan for Watershed Activity Implementation. This project will is on hold as staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water Quality Problems by managing runoff volume - the transport mechanism for pollutants - and treating runoff of pollutants before discharge into receiving waters.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1. What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity?
2. What is the loading reduction of the BMPs?

Targeted Measurable Outcome(s):

1. Reduction in priority pollutant loads

Assessment Method(s):

1. Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
2. Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
3. Tabulation (e.g., amount of money spent on implementation and maintenance)

Data Recorded:
N/A

Expected Benefits:
The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis Results:
This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions:
Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: BERNARDO CENTER DRIVE TRASH SEGREGATION BMP
ID #: SD-WQA11

ACTIVITY DESCRIPTION

The Stormwater Drain Insert Pilot Study involves the installation of two curb inlet inserts in the San Dieguito River Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The inserts will be installed directly in the existing curb inlets along Bernardo Center Drive. The Bernardo Center Drive site will include the installation of storm drain curb inlet inserts as retrofits within the existing storm drain system. The curb inlet inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as Trash Segregation Device Installation in the 2008 San Dieguito River WURMP. In June 2008, the site along Bernardo Center Drive was selected and the conceptual design was released for this project.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets have been retrofitted with the selected drainage inserts during the month of March in 2011 and the first phase of monitoring started during the month of September in 2011.

Planning for this project began in 2010. Implementation is scheduled to begin in 2011. Assessment will be conducted in 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS MEASUREMENTS

Management Questions:
1) What is the load reduction efficiency of the catch basin inserts?
2) How effective are these catch basin inserts at reducing priority pollutant loads?

Targeted Measurable Outcome(s):
1) Reduction in priority pollutant loads Assessment Method(s)

Assessment Method(s):
1) Inspections (e.g., ensure the catch basin inserts are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded:
1) How much money spent on inspections and maintenance
2) Trash Capacity
3) Flooding Issues
4) Functionality during storm event
5) % Trash Bypass

Expected Benefits:
Drain inserts are moderately effective at reducing discharge of trash to receiving waters when loadings are compatible with the maintenance frequency. Excessive flow bypasses is the main cause of reduced performance.

Analysis Results:
An effectiveness assessment of this activity is currently underway. The City will conduct project monitoring to evaluate the effectives of the drainage insert selected in load reduction and effluent quality.

Conclusions:
Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

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TITLE: I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP
ID #: SD-WQA13

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 30, 2011. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito River Watershed Management Area (WMA). Approximately 80 volunteers removed 200 pounds of trash and debris and recycled 10,050 pounds of trash and debris over a five-mile area.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to the event, the City will coordinate with ILACSD staff to ensure a San Dieguito River WMA site is included in the list for cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions:
1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s):
1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s):
1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded:
Pounds of trash removed (Outcome Level 4): 200 lbs
Pounds of trash recycled (Outcome Level 4): 10,050 lbs
Total pounds of trash removed and recycled (Outcome Level 4): 10,250 lbs
Number of participants (Outcome Level 1): 80
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
Estimated amount of money spent on cleanups for the San Dieguito River watershed (Outcome Level 1): $5,000
Efficiency (Total Cost/Total Pounds Removed): $0.49/lb

Expected Benefits:
Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

Analysis Results:
At the event, 80 participants removed 200 pounds of trash and debris and recycled 10,050 pounds of trash and debris. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 10,250 pound load reduction and an efficiency of $0.49 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Dieguito River WMA by the total pounds of trash removed and recycled.

Conclusions:
This trash cleanup activity fulfills a watershed water quality activity for FY2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 10,250 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE: TARGETED RESTAURANT FACILITY INSPECTIONS AND OUTREACH
ID #: SD-WQA17

ACTIVITY DESCRIPTION

The City of Escondido has conducted focused inspections of restaurants within the San Dieguito WMA to target the pollutants generated by food service facilities. Activities and areas at restaurants such as grease handling and disposal, spills, dumpster and loading docks, parking lots, landscaping and ground maintenance and cleaning of equipment can generate pollutants that have the potential to enter the receiving waters. Pollutants that may be generated by restaurant areas and activities include bacteria from organic materials (i.e., food wastes), oil and grease, trash, and chemicals.

FY 2009-10 ACTIVITY IMPLEMENTATION:

During 2009-2010, the City of Escondido inspected all of its San Dieguito Watershed restaurant facilities twice to ensure compliance with applicable storm water regulations. This inspection regimen is part of a citywide commitment to semi-annual inspections of all restaurants located within Escondido's jurisdictional boundaries. During these investigations, inspectors work with restaurateurs and their staff to review effective BMP implementation, including proper maintenance of grease traps, trash disposal, and parking areas that can contribute pollutants such as bacteria to the storm sewer conveyance system. The twice-annual inspections also provide staff with an opportunity to assess a facility during varying weather conditions, e.g., those conditions present during winter and summer. They also enable inspectors to more frequently visit facilities that typically have a high staff turnover rate. Overall, although no direct correlation between water quality data and enhanced inspections has been established, the City believes that more frequent inspections of high-threat-to-water-quality facilities help preserve good water quality and/or prevent degradation.

FY 2010-11 ACTIVITY IMPLEMENTATION:

During 2010-2011, the City inspected over 500 food-based businesses, approximately 100 of which are located in the San Dieguito Watershed. Each business was inspected twice during the program year to assess compliance with stormwater and pretreatment regulations; thus, the annual effort accounts for over 1,000 inspections annually. These bi-annual inspections have been effective in more frequently reaching an industry that has generally high staff turnover, as well as a significant potential to discharge pollutants, such as bacteria, to the storm drain system due to improper maintenance of grease traps, inadequate secondary containment, or poor housekeeping. The City plans to continue the bi-annual inspection of its over 500 restaurant facilities during fiscal year 2011-2012.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

LEAD WATERSHED COPERMITTEE

- City of Escondido

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

EFFECTIVENESS MEASUREMENTS

The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

Monitoring data from coastal outfall monitoring and previous inspections will be compiled and restaurant NOV status analyzed using GIS. Further narrowing the drainage area to potential sources will be conducted to target the inspections and outreach activities as appropriate. The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: SD-WQA18

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Dieguito River Watershed include:
1. SDA 8 (Ramona)
2. SDA 9 (San Dieguito)
3. SDA 10 (North County Metro)

FY 2007-08 ACTIVITY IMPLEMENTATION:
Work began on drafting the SWQMPs for individual SDAs.

FY 2008-09 ACTIVITY IMPLEMENTATION:
Work continues on the drafting of the SWQMPs for individual SDAs.

FY 2009-10 ACTIVITY IMPLEMENTATION:
The SWQMP for SDA 8, SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

FY 2010-11 ACTIVITY IMPLEMENTATION:
The SWQMP for SDA 8, SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2011-12. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Consistency with the Watershed Strategy to be determined.

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined.

TITLE: PET WASTE DISPENSER PROGRAM IN COUNTY PARKS
ID #: SD-WQA19

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

FY 2007-08 ACTIVITY IMPLEMENTATION:

During the FY 2007-08 reporting period the County of San Diego maintained 3 dispenser stations at 2 parks within the San Dieguito Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION:

During FY 2008-09 3 additional stations were added to San Dieguito Park. The County of San Diego maintained 6 dispenser stations at 2 parks within the San Dieguito Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION:

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain 6 dispenser stations at 2 parks within the San Dieguito Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION:

No additional stations were added in FY 2010-11. During this reporting period the County of San Diego continued to maintain 6 dispenser stations at 2 parks within the San Dieguito Watershed. The parks and the number of dispensers include:

1) San Dieguito Park (5)
2) Holly Oaks (1)

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for Beaches and Creeks and with other more localized TMDLs for constituents such as nutrients.

TIME SCHEDULE FOR IMPLEMENTATION

Maintenance of existing pet waste dispensers - Ongoing
Addition of new dispensers in County parks - Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Dieguito Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Table 1. FY 2011 Pet Waste Collections

Facility Name	# of Stations	# of Bags Used	Waste Removed Lbs.
San Dieguito Park	5	16,150	3,230
Holly Oaks Park	1	3,230	646
Total	**6**	**29,380**	**3,876**

During the FY 2010-11 reporting period the County maintained 6 stations among 2 County Parks within the San Dieguito Watershed. These stations distributed approximately 29,380 bags, preventing an estimated 3,876 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs.
Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: OUTDOOR WATER CONSERVATION REBATE PROGRAM
ID #: SD-WQA20

ACTIVITY DESCRIPTION

This activity involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring will be conducted both at the pre and post irrigation modification stage. It is also anticipated the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad scale implementation should be pursued.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination occurred in FY 2010. Program launch occurred in FY 2011. There was no assessment due to a lack of qualified applicants meeting the assessment criteria, this project assessment was withdrawn and no longer included in future reporting updates.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito Watershed Management Area (WMA) identify bacteria as high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problem by reducing dry weather flows resulting from over irrigation.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) How effective are smart irrigation and other types of low flow distribution hardware in reducing dry weather runoff? Does replacing high water use landscape with low water use landscape reduce dry weather runoff?
2) What is the potential load reduction for both residential and commercial properties when utilizing smart irrigation in conjunction with low water use landscaping?
3) What is the average cost savings from utilizing smart irrigation and or low water use landscaping?

Targeted Measurable Outcome(s):

1) Load reduction due to system installation
2) Runoff reduction due to system installation

Assessment Method(s):

1) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
2) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
3) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)

Recommended Data:

1) Estimated cost of site preparation, installation and start-up for site (Outcome Level 1)
2) Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1)
3) Estimated cost of effectiveness monitoring for all sites (Outcome Level 1)
4) Number of systems installed (Outcome Level 1)
5) Volume of storm water captured/diverted (Outcome Level 4)
6) Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4)
7) Percent capture of the xeriscaping systems (acres drained) (Outcome Level 4)

Expected Benefits:
The initial goal was to conduct the assessment to determine the effectiveness and efficiency of using weather-based irrigation devices in conjunction with low water use landscaping to reduce over irrigation. However due to a lack of applicants meeting the assessment criteria, e.g. residence proximity to storm drain, the project assessment was withdrawn.

Analysis Results:
No assessment occurred due to a lack of applicants.

Conclusions:
Monitoring was not conducted to assess the effectiveness and efficiency of the incentive program in reducing runoff volume and pollutant loads.

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TITLE: **CITY OF SAN DIEGO STRATEGIC PLAN FOR WATERSHED ACTIVITY IMPLEMENTATION**
ID #: **SD-WQA22**

ACTIVITY DESCRIPTION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the Strategic Plan for Watershed Activity Implementation (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program conducted by the Public Utilities Department involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. The rebate program was implemented in FY 2011.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the support of storm water and urban runoff pollution management efforts of the public.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics

- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City Strategic Plan and the Copermittees Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS MEASUREMENTS

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

Table 1. Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, implementation and assessment completion anticipated in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/ Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

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TITLE: **RANCHO BERNARDO LIBRARY LIMITED LOW FLOW STORM DRAIN INLET MULTI-POLLUTANT TREATMENT**
ID #: **SD-WQA25**

ACTIVITY DESCRIPTION

This project will implement a proprietary inlet treatment device at the Rancho Bernardo Library. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in FY 2013. Construction is anticipated in FY 2016.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria and nutrients as high priority water quality problems throughout the San Dieguito WMA.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1) What is the bacteria and nutrient load reduction efficiency?

Targeted Measurable Outcome(s):

1) Reduction in priority pollutant loads

Assessment Method(s):

1) Inspections (e.g., ensure the treatment is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded:
N/A

Expected Benefits:
The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis Results:
This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

Conclusions:
Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION
ID #: SD-WQA26

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate. Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10:

Activity during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY 2010-11:

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

On September 26, 2010, there was a buzz in Fallbrook as eager residents stood in line before the 9 a.m. start time for the distribution event at Fallbrook Village Square. By the 1 p.m. closing time, 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County (Table 1).

Table 1. Residents by Watershed

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	San Diego River	San Diego Bay	Tijuana	Unknown
Total Residents	2	24	61	6	8	4	27	50	2	1

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Additional events are being considered for implementation in FY 2012-13.

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

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TITLE: SAN DIEGUITO PROPERTY-BASED INSPECTIONS
ID #: SD-WQA27

ACTIVITY DESCRIPTION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, San Diego River and Tijuana River watershed management areas (WMAs). The City of San Diego (City) performed an inspection program activity specifically focused on properties with multi-businesses. The activity involved inspecting properties and the businesses located on the properties regardless whether they are part of the City's commercial and industrial inventory. Traditionally, the City performs individual business inspections in the City's commercial and industrial inventory.

The City developed and implemented a focused inspection activity designed to evaluate the effectiveness of performing multi-business property-based inspections and answer the following management questions related to the commercial and industrial inspections program:

1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

The areas selected for inspection were shopping centers, industrial parks, and office parks within five watershed management areas.

The inspections occurred over two phases. Property inspections and business investigations were conducted during both phases. During the first phase, inspectors performed a full inspection of each property. Properties were inspected for BMP compliance, general site observations, pollutant discharge potential, and illicit connections/illegal discharges (IC/IDs) similar to an individual business inspection. Site observations and BMP deficiencies were noted on the inspection form. When an issue was noted during the property inspection and could be associated to a particular business, the inspector initiated an investigation of the business, or businesses. These individual business inspections were limited to investigating the significant deficiencies observed. If an issue could not be associated to one or more businesses on the property, the issue was considered to be the responsibility of the property owner or management company, and no business inspections were performed.

The property inspection reports were sent to the property management company, or to the property owner on file. Where applicable, business inspections reports were sent to corporate offices. If a business was not part of a corporation, the report was sent directly to the business at its physical location, or mailing address.

In phase two of the activity, selected properties from phase one that were determined to be high priority follow-ups were inspected. Each property was inspected using the same procedures utilized in the initial inspections. As part of phase two, business investigations were also performed to those businesses likely responsible for potential storm water issue(s) in the area.

During both phases, if violations were identified, they were recorded for appropriate follow-up. Follow-up inspections occurred based on the severity of the identified violations. If discharges were identified, they were immediately reported to the City's Storm Water hotline number. Lastly, education material was distributed, as applicable, during phase one and two of the inspection activity.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment took place during FY 2011. This project is complete, and will no longer be included in future reporting updates.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the San Dieguito River WMA identifies bacteria as high priority water quality problems in the San Dieguito River WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of the property inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1. Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2. Are Property-Based inspections feasible?

Targeted Measurable Outcome(s):

1. Identification of sources of constituents of concern in the San Dieguito River Watershed

Assessment Method(s):

1. Inspections
2. Quantification
3. Monitoring
4. Tabulation
5. Reporting

Data Recorded:

Phase One Property Inspections

Number of property inspections = 31
Number of properties recommended for follow-up inspection= 10
Total IC/IDs Observed = 4
Total IC/IDs Eliminated During Inspection = 0

Phase One Business Investigations

Number of business investigations = 36
Number of sites recommended for follow-up inspection = 30
Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 0
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = N/A
Total IC/IDs Observed = 5
Total IC/IDs Eliminated During Inspection = 0

Phase Two Property Inspections

Number of property inspections = 8
Number of properties recommended for follow-up inspection = 4
Total IC/IDs Observed = 0
Total IC/IDs Eliminated During Inspection = N/A

Phase Two Business Investigations

Number of business investigations = 10
Number of sites recommended for follow-up inspection = 10
Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 0
Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = N/A
Total IC/IDs Observed = 0
Total IC/IDs Eliminated During Inspection = N/A

Overall

Number of Sites That Implemented Some Corrective Action Between the Two Phases (Outcome Level 3) = 4

Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = 4

Expected Benefits:

The goal of this assessment is to determine the effectiveness of property-based inspections as a method to conduct inspections, which includes identifying and eliminating potential sources of storm water pollution.

Analysis Results:

During phase one, 31 properties received property inspections. A total of 32% of these properties needed follow-up to verify that corrective actions/BMPs were implemented. From the phase one property inspections, thirty-six businesses were investigated. For phase two, eight properties from phase one received a follow-up property inspection. Four of the eight properties were recommended for follow-up to verify that corrective actions/BMPs were implemented. From the eight property inspections, there were ten business investigations in phase two. Overall between the two phases of inspections, there were four sites that implemented some corrective action. Lastly, the number of IC/IDs decreased from four to zero between the two phases of the eight property inspections.

Property inspections are an efficient and effective method to assess shared areas and evaluate visible, outdoor areas for BMP implementation at shopping centers, industrial parks, and office parks. Overall, there was a reduction of IC/IDs and improvement in BMP implementation at the properties inspected between the two phases of inspection. There are some BMPs normally addressed during business inspections that did not apply to property inspections, as they require input from a business representative, or are requirements specific to business operations, such as employee training. In addition, follow-up inspection priorities improved between the inspection phases. Lastly, common areas that have the highest threat to water quality, such as trash, landscaping, and storm drain areas, can be effectively evaluated during a property inspection.

Conclusions:

Overall, property-based commercial and industrial inspections provide efficiency in both cost and coverage, with the ability to inspect a large area with multiple businesses in a short amount of time. Also common areas of high pollutant generating activities are addressed during these inspections, including IC/IDs, trash areas, landscaping and storm drain issues. Only four IC/IDs were observed during the first property inspections phase, and called into the City's hotline for response and follow-up for abatement. No IC/IDs were found during the second property inspections phase in the San Dieguito River WMA. In addition, four sites implement some corrective action between the two phases of inspections. Although a load reduction was not calculated, abatement of potential sources may be assumed with corrective actions being implemented; therefore, demonstrating both Level Three (change in behavior/BMP

implementation) and Level Four (source abatement/load reduction) outcomes being achieved as a result of conducting the property inspection activity. This activity fulfills the requirement of one of the two required watershed water quality activities.

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TITLE: RAINWATER HARVESTING REBATE PILOT PROGRAM
ID #: SD-WQA28

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). During this reporting period staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program will be open to the residents of the City of San Diego on a first come first serve basis and will provide a rebate of .50 cents per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department will administer the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in the last quarter of FY 2011 with a tentative implementation start date in FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- City of San Diego Public Utilities Department

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Los Peñasquitos Watershed Management Area (WMA) identify several water quality problems throughout the watershed. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

Data to be recorded:

1) Most common water catchment device installed
2) Average size of water catchment device installed

EXPECTED BENEFITS

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

The project is currently being planned so there are no conclusions to report.

TITLE: RESIDENTIAL PATROLLING
ID #: SD-WQA29

ACTIVITY DESCRIPTION

The City of Del Mar is a small jurisdiction with a relatively small residential community. The majority of the City consists of single family dwellings set in a hilly terrain that drains towards the Pacific Ocean and the San Dieguito and Los Peñasquitos lagoons. One of the primary sources of urban runoff within the City is residential irrigation runoff. Through this activity, the City intends to identify sources of urban runoff and abate them through a cycle of patrolling activities.

This activity includes periodically patrolling the entire City to identify residential and municipal sources of urban runoff and pollutant generating activities at various times of the week and day (non-working hours). The patrols will be conducted both before and after work hours to capture the likely times when residents are irrigating their properties. In addition to identification of urban runoff and their sources, patrollers will also look to identify other pollutant generating activities that need to be abated.

Identified issues will be followed up on in a timely manner (within 72 hours) using educational outreach materials the City has recently developed.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

This activity is related to the Bacteria TMDL as it addresses sources of indicator bacteria as well as dry weather urban runoff that have been shown to contribute to regrowth of indicator bacteria within MS4 systems.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is planned for implementation during Fiscal Years 2012 and 2013 with continual assessment to determine if modifications are necessary.

LEAD WATERSHED COPERMITTEE

- City of Del Mar

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Oil and Grease
- Sediment

- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses high priority water quality problems and sources of the associated pollutants and is therefore consistent with the 2008 WURMP watershed strategy.

EFFECTIVENESS MEASUREMENTS

The City will maintain records on each of the parcels for the following information that will be used for effectiveness assessment:

- Parcel information for those that are identified to be contributing urban runoff and conducting potential pollutant generating activities
- Follow-up activities conducted by the City including outreach and enforcement
- Dates of identified issues and indication of repeat issues

It is anticipated that the follow-up contact with the identified sources will lead to some abatement of their contributions to urban runoff and pollutant generating activities.

TITLE: COMMERCIAL AREA PATROLLING INSPECTIONS
ID #: SD-WQA30

ACTIVITY DESCRIPTION

The City of Del Mar is a small jurisdiction with a relatively small commercial community. The majority of the commercial areas are within three zones that drain towards the Pacific Ocean and the San Dieguito and Los Peñasquitos lagoons. Through this activity, the City intends to provide a more frequent and broader inspection program for all commercial facilities within the City, regardless of whether they are on the City's commercial/industrial JURMP inventory.

The City of San Diego conducted several studies related to property based inspections. The outcome of the studies was that it was both feasible and effective to use a property based inspection program to address all businesses at a property rather than those included on the City's JURMP commercial/industrial inventory. This activity includes periodically performing patrolling inspections of the entire City's commercial areas to identify sources of urban runoff and pollutant generating activities that need to be abated. It is anticipated that in addition to the annual inspections required by the JURMP, the City will conduct eight to nine additional rounds of inspections.

Identified issues will be followed up on in a timely manner (within 72 hours) using educational outreach materials and enforcement when necessary.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region.

This activity is related to the Bacteria TMDL as it addresses sources of indicator bacteria as well as dry weather urban runoff that have been shown to contribute to regrowth of indicator bacteria within MS4 systems.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is planned for implementation during Fiscal Years 2012 and 2013 with continual assessment to determine if modifications are necessary.

LEAD WATERSHED COPERMITTEE

- City of Del Mar

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Oil and Grease

- Sediment
- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses high priority water quality problems and sources of the associated pollutants and is therefore consistent with the 2008 WURMP watershed strategy.

EFFECTIVENESS MEASUREMENTS

The City will maintain records on each of the parcels for the following information that will be used for effectiveness assessment:

- Parcel information for those that are identified to be contributing urban runoff and conducting potential pollutant generating activities
- Pollutant generating activities identified
- BMP issues identified
- Follow-up activities conducted by the City including outreach and enforcement
- Dates of identified issues and indication of repeat issues

It is anticipated that the follow-up contact with the identified sources will lead to some abatement of their contributions to urban runoff and pollutant generating activities. This more frequent approach is also intended to strengthen the City's positive rapport with the business community and obtain positive results for BMP implementation.

TITLE: **PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #: **SD-WQEA3**

ACTIVITY DESCRIPTION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled Karma, Karma Second Chance, and Karma Tourist and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Dieguito River Watershed Management Area (WMA) from April 2011 to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

According to Regional Board staff comments, the City will need to answer effectiveness measurement questions in the annual report. Effectiveness measurement questions can be found in the Effectiveness Assessment section of this activity summary sheet.

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Dieguito River WMA from April 2011 to June 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as high priority water quality problems in the WMA. The Karma, Karma Second Chance, and Karma Tourist Public Service Announcements will result in both increased knowledge and awareness regarding

bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1. What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation?
2. How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s):

1. Reach goal of number of listeners (radio) and homes (television) reached, based on survey results
2. Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s):

1. Survey (e.g., administer survey to assess knowledge and attitude of participants)
2. Quantification (e.g., number of residents reached by PSA)

Data Recorded:

1. Number of impressions made in homes through television in San Dieguito River WMA (Outcome Level 1): 374,865
2. Number of impressions made to the public through radio announcements in San Dieguito River WMA (Outcome Level 1): 536,760
3. Change in knowledge or attitude from survey results (Outcome Level 2): 32%
4. Change in pollutant-related behavior from survey results (Outcome Level 3): Yes**

**32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Higher levels of response to this question are found among those who have greater familiarity with the Think Blue program, suggesting the effectiveness of outreach efforts in changing behavior. There was also an increase in the numbers of respondents who cited proper disposal of pet waste and motor oil as behaviors they had changed recently. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Expected Benefits:

The goal of this assessment is to determine the effectiveness of the Karma, Karma Second Chance, and Karma Tourist PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis Results:
The PSAs were developed in the FY 2007-2008, and broadcast on several TV and radio stations throughout the San Dieguito River WMA from April 2011 to June 2011. The PSAs were broadcast in both English and Spanish.

The City also obtained assessment information from its annual random-digit dial 2011 San Diego Storm Water Survey of 800 total residents from all WMAs. 58% of residents said they saw a Think Blue PSA last year on television while 14% of residents heard the radio announcements in FY 2010. 51% said they prefer to get information about storm water via television. This year's survey also noted that 57% of residents know that storm water was not treated, a continued rise in the public's awareness, up from 39% in 2008. Significant increases in awareness were continuing to grow among white residents, women and residents under the age of 65. Additionally, 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" an increasing number reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the City as a whole. To estimate the number of impressions in the San Dieguito River WMA, the total number of estimated City-wide impressions was multiplied by the proportion of residents living in the San Dieguito River WMA (4%) of the City's total population.

Conclusions:
Based on assessment from both the survey and the field experiment as well as feedback from the public, Think Blue PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the City will continue to monitor public perception and feedback to determine if this is actually occurring. The City will continue to work with appropriate broadcast media outlets to air Think Blue television and radio PSAs in FY 2012.

Additionally, the City continued to measure public awareness of the Think Blue program via surveys comprised of a random digit dial sample of the residents living in the San Dieguito River WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, the 2011 San Diego Storm Water Survey indicated that 53% had heard the phrase “Think Blue” in 2011, and awareness that storm water is not treated had increased. These results, coupled with a continued increase in the percentage of residents in taking steps to reduce pollution demonstrate the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the San Dieguito River WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE: SAN DIEGUITO WATERSHED BROCHURE
ID #: SD-WQEA10

ACTIVITY DESCRIPTION

The City of San Diego (City) and Think Blue will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the attention of the audience, enhance the understanding of basic watershed principals of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

1. Tijuana River
2. San Diego River
3. San Diego Bay
4. Mission Bay/La Jolla
5. San Dieguito River
6. Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2012. Implementation and distribution is expected to occur in early FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1. Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?
2. Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

Targeted Measurable Outcome(s):

1. Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.
2. Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.
3. Increased intent to act to prevent storm water pollution after reading the watershed brochure.

Assessment Method(s):

1. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Data Recorded:
N/A

Expected Benefits:
The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

Analysis Results:
An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions:
The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2012. In FY 2011 it was determined that the watershed brochures for all six (6) watersheds within the City of San Diego would need to be revised, including the already completed Tijuana and San Diego River watershed brochures. Watershed brochure revision will be completed in FY2012. Effectiveness assessments are scheduled to begin in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

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TITLE: FOCUSED OUTREACH TO THE EQUESTRIAN COMMUNITY
ID #: SD-WQEA11

ACTIVITY DESCRIPTION

The County of San Diego conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups.

ACTIVITY IMPLEMENTATION FY 2009-10:

Workshops:

A total of 113 people attended four workshops during FY 2009-10. The County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Funded by the County, the workshops were presented by staff from either the Solana Center or the MRCD. They included presentations and handouts identifying resources available to equestrians. Information presented included local watershed awareness, manure management, and composting. Key elements included how proper manure management relates to horse health, water quality, and maintenance of positive relationships with neighbors. Question and answer sessions were conducted in all workshops.

The workshops in Lakeside and Fallbrook were held on Saturday mornings on private properties with horses and active compost piles at each location. Participants were encouraged to observe the compost piles and the BMPs in place to prevent contamination of runoff. The presentation at the Fallbrook workshop included poster boards of a Power Point presentation. The other two workshops (Ramona and Bonita) were held in classroom settings at community meeting rooms on weeknight evenings. Presentations were casual discussions that included BMPs to improve horse health, protecting properties from erosion, and preventing polluted runoff discharges. San Diego County watershed maps were displayed at all workshops, allowing attendees to locate their local watershed.

Assessment was conducted in the form of pre- and post-workshop surveys.

Community Events:
A total of 105 people at 4 events approached the booths during FY 2009-10. County staff and/or contractors also provided targeted outreach to the equestrian community equestrian themed community events. At each of these events, the County staffed a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness.

Development and Distribution of Educational Materials:
During FY 2009-10, County staff created a coloring sheet and handout to direct interested equestrians to more detailed information regarding BMPs for manure management.

Surveys:
In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted a firm with expertise in Community Based Social Marketing (CBSM) to conduct research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development.

ACTIVITY IMPLEMENTATION FY 2010-11:
Workshops:
During FY 2010-11, the County of San Diego, again in coordination with the Solana Center for Solana Center and the MRCD, conducted similar workshops targeting equestrians. Workshops were held in Lakeside, Ramona*, Bonsall, and Rainbow. Table 1 below identifies the primary watershed(s) addressed by each workshop. Ramona event was rescheduled due to low attendance and the 'make-up' workshop will be held on November 19, 2011.

Table 1 FY 2010-11 Workshop Location and Attendance

Location	Presentation Date	No. of Attendees	Primary Watersheds Addressed
Lakeside	6/25/11	24	San Diego River
Ramona	6/18/11	1	San Diego River, San Dieguito
Bonsall	6/25/11	22	Santa Margarita, San Luis Rey
Rainbow	6/18/11	14	Santa Margarita, San Luis Rey
Total		**69**	

Community Events:
During FY 2010-11 County staff and/or contractors provided targeted outreach to the equestrian community at three equestrian themed community events. At these events, County staff made presentations or hosted a booth, answered questions from attendees, and disseminated information on manure management, composting, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. Additional details on each community event are provided in Table 2 below.

Table 2 FY 2010-11 Community Event Location and Attendance

Date	Event Title	Location	No. of Attendees	Primary Watershed(s) Addressed
8/2/2010	San Diego Equestrian Foundation	Hunter Equestrian Center	35	Carlsbad
10/10/2010	Horse Heritage Festival	Walnut Grove Park	75	Carlsbad
10/16/2011	Vaquero Days Western Heritage Festival	Granville Martin Ranch/Museum	150	Sweetwater
Total			**215**	

Surveys:
Information was gathered via survey questionnaires and in person interviews during the Lakeside manure composting workshop. A total of 24 horse owners participated in the survey. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (see Attachment A for the attached report).

TMDL APPLICABILITY

TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for beaches and creeks, and with other more localized TMDLs for constituents such as nutrients and sediment.

TIME SCHEDULE FOR IMPLEMENTATION

Additional workshops are planned for equestrians in the Santa Margarita and San Luis Rey Watersheds during FY 2011-12. The County is interested in pursuing opportunities to facilitate peer mentoring programs that encourage equestrians to learn about proper BMPs such as manure management from one another. Development of such a program in the future is contingent upon identifying a reliable source of funding such as grants.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for an important source of the high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

Composting Workshop Lakeside:

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered. Pre-workshop survey results were as follows:

- 65% responded correctly that stormwater is not treated.
- A mean score of 3.59 responded that they believe horse manure contributes to pollution of local waterways. (Scale was 0 to 10)
- The mean score for how much manure they currently composted was 4.07 on a scale from 0 (none) to 10 (all).
- 38% responded that they currently pick up manure more often than once per week.
- 50% responded that they currently compost manure.

When asked about what equestrians can do to prevent pollution caused by horse manure, 59.5% of respondents suggested ideas on the pre-workshop survey.

Post-workshop survey results were as follows:

- 71% responded correctly that stormwater is not treated.
- A mean score of 4.41 responded that they believe horse manure contributes to pollution of local waterways. (Scale was 0 to 10)
- The amount of manure they plan to compost was a mean score of 7.36, indicating a statistically significant increase from the 4.07 mean score initially reported.
- 53% responded that they plan to remove manure from corrals and stalls every day in the future.
- 87% responded they plan to manage manure generated by composting in the future.

Based on the pre and post assessment at the Lakeside workshop, it appears that the workshop was successful at fostering positive attitudes and perceived control about composting. Future workshops might benefit from highlighting key issues such as the potential for manure to pollute waterways and the fact that stormwater is not treated.

Composting Workshop Rainbow:
To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, in the Rainbow manure management workshop pre- and post-workshop surveys were administered. Survey results indicate a positive change in awareness such as: knowing they live in a watershed, knowing water in the storm drain is not treated, and consideration of how horses and livestock manure can contribute to water pollution.

Results of the pre surveys administered by Mission RCD found the following results:

- 50% responded that they did not know they lived in a watershed
- 50% responded that water in the storm drain system is not treated
- 12.5% felt that livestock and horse manure did not contribute to water pollution
- 62.5% responded that they believe livestock and horses contribute 'some' to water pollution
- 12.5% felt that livestock and horses contribute 'a great deal' to water pollution

Post survey results found:

- 100% responded correctly that they now know they live in a watershed
- 100% responded that water in the storm drain system is not treated
- 0% responded that they believe livestock and horses contribute 'not at all' to water pollution
- 37.5% responded that they believe livestock and horses contribute 'some' to water pollution
- 50% felt that livestock and horses contribute 'a great deal' to water pollution

After the workshop all but one of the attendees responded positively that they plan to start composting at least some portion of the manure generated. While one person will continue to give away the manure, all others indicate they will begin composting some portion of the manure generated onsite, but may still continue to use other disposal methods, such as applying to their land or giving some of it away.

BMP Workshop - San Luis Rey:
The first Horse Property BMP Workshop was held in the San Luis Rey Watershed. A presentation and site tour were utilized for the event. Pre and post surveys were used to evaluate change of awareness and knowledge.

Surveys showed this to be a very well informed group, in that 100% of the attendees responded correctly that they live in a watershed. When surveyed on identification of BMPs the following results were found:

- 37.5% believe horse manure contributes 'a great deal' to water pollution.
- 70% responded correctly by identifying erosion control BMPs.
- 50% correctly identified drainage control BMPs.

- 70% correctly identified manure management BMPs.

Post survey results showed:

- 17% believe horse manure contributes 'a great deal' to water pollution.
- 100% responded correctly by identifying erosion control BMPs.
- 92% could correctly identify drainage control BMPs
- 83% correctly identified manure management BMPs.

The overall impression of the BMP workshop was extremely positive. Attendees were excited and enthusiastic about the subject matter and appeared to be open to hearing about horse property BMPs. Many asked a lot of pointed questions, indicating they were trying to determine the best BMPs for their properties.

SD-WQEA11 – Focused Outreach to the Equestrian Community

Attachment A

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2011

San Diego County Manure Management Workshops

Prepared for:
San Diego County, Department of Public Works
Watershed Protection Program

Prepared by:
Action Research
3630 Ocean Ranch Blvd.
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June 30, 2011

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Project Background

Horse manure has been linked to the contamination of ground water as well as surface water, much to the detriment of fish and other aquatic life. As part of the County of San Diego's ongoing commitment to preventing the pollution of local waterways, the county implemented a manure management research and outreach plan to promote proper management of horse manure in unincorporated areas of San Diego County.

In order to improve the knowledge and behavior of horse owners, the County of San Diego contracted with Action Research to utilize a Community-Based Social Marketing approach. CBSM packages basic principles of psychology with applied research methods in a way that provides a usable framework for practitioners working to promote behavior change across a variety of settings (McKenzie-Mohr,1999;2011).

The CBSM approach begins with the careful selection of a specific target behavior and then uses a step-by-step process to foster sustainable behavior change. The basic steps are as follows: (1) identify the barriers to a targeted behavior, (2) develop strategies to remove barriers, (3) pilot the selected tools using empirical research methodology and a control group, and (4) evaluate the project once it has been widely implemented. Because the programs developed under this approach are piloted on a small scale, the program can be refined as needed until there is documented evidence to show that the program works before it is broadly implemented.

Identifying Barriers. In 2010, Action Research conducted in-person interviews with horse owners living in two unincorporated areas of the county: Lakeside and Ramona. A total of 96 horse owners were interviewed between June 16, and June 27, 2010. The primary goal of the study was to identify the benefits and barriers to specific manure management practices (such as composting) as well as gather information about the current manure management practices of horse owners.

Develop Strategies to Remove Barriers. Informaton obtained from the barrier and benefit survey was used to develop a pilot outreach program. The pilot program recommendations included a community-based outreach model (i.e., local workshops) and incorporated known tools of behavior change such as social norms and commitment.

Pilot the Selected Tools. In the present report, we present the results of a small pilot to assess the efficacy of conducting composting workshops with horse owners. An assessment instrument was developed to determine if the outreach approach successfully increased knowledge and awareness regarding best management practices for manure management. The information was gathered during the workshops in the form of pre- and post-tests. This information was analyzed, and based on the results, recommendations are provided for future outreach and marketing activities.

Summary of Barrier Research and Outreach Recommendations

The 2010 barrier survey of horse owners in Ramona and Lakeside revealed that horse owners place a lot of importance on their manure-management practices. Additionally, when considering manure-management practices, horse owners were very concerned about horse and human health. Finally, the results indicated that horse owners' found value in using un-composted and composted manure on their property. Based on the survey results, we recommended that following elements be addressed through education and outreach:

Address Knowledge Barriers

- **Provide education about proper composting as a means to maintain fly control and cleanliness.** The survey revealed that those who disposed of the manure in the trash or dumpster listed *fly control* and *cleanliness* as the greatest benefits to this method. To decrease trash and dumpster practices, and increase the use of composting, we recommended that outreach to horse owners should highlight the ability of best management practices to achieve fly control and maintain the cleanliness of their property, while also gaining the benefits of composting (fertilizer).

- **Distinguish between the properties of un-composted and composted manure, as well as proper methods for achieving composted manure.** The survey revealed that those who stated they compost the manure on their property also stated they used (1) un-composted manure, (2) pile-up and leave the manure, and (3) leave the manure as-is on their property. This indicated that horse owners didn't understand the difference between un-composted and composted manure and they perceived that composting could be achieved through a variety of means.

Promote Positive Social Norms

- ***Engage horse owners who utilize landfill methods with those who are doing the right thing.*** We recommended the use of community workshops where horse owners who currently compost demonstrate the proper methods. Additionally, we recommended that the workshops take place at the host horse owner's property and include vivid visual demonstration methods, detailed descriptive language and hands-on activities.

- ***Utilize respected peers as models.*** Social norms are effective for changing behaviors in cohesive communities such as the community of horse owners in these two areas of San Diego County. Sustainable behaviors can spread quickly when modeled by peers and others who are respected in the community.

- ***Utilize testimonials from horse owners who currently compost.*** We recommended testimonials in the form of an informational flyer to be handed out at the workshops. Outreach materials could profile a horse owner in each area who is currently composting manure.

Outreach Strategy

Based on the results and recommendations summarized in the barrier survey final report titled "*Community-Based Social Marketing: Horse Manure Management Intercept Interviews,"* Action Research developed an outreach strategy that consisted of the following elements.

Manure Composting Workshops

Community composting workshops were developed to increase knowledge, awareness, and the use of best practices for manure management. The workshops were designed to focus specifically on composting. Content of the workshops included: demonstrations of proper composting methods, messages highlighting the ability of proper composting to achieve fly control and maintain cleanliness, messages highlighting the benefits of composting, education about the properties of un-composted and composted manure, and information about proper methods for achieving composted manure.

Informational Flyer

A unique flyer was created for each of the location workshops, Lakeside and Ramona (See Appendix A and B respectively). Each flyer included testimonials from horse owners in each of those locations. The flyers were styled like a small town newspaper, with the headline reading, "Happy Healthy Horses Here." The information presented on the flyer highlighted composting as important to horse health and fly/vector control and addressed some of the barriers to composting (e.g., time, space, money) identified in the previous research. The flyer also included information about the essentials of composting including bin sizes, site selection, turning frequency, covering methods, watering frequency, and piling techniques. The flyers served both to provide education as well as to develop and reinforce positive social norms about composting in the community.

Testimonials

The outreach strategy incorporated social norms in the form of testimonials. Using contact information gathered during the intercept interviews (barrier research), Action Research gathered testimonials from actual Lakeside and Ramona horse owners who currently compost. Two testimonials and one picture were gathered from Lakeside horse owners and three testimonials were obtained from Ramona horse owners. The testimonials, and picture, were included on informational flyers (described above) and distributed during the composting workshops.

Commitment

The final element of the outreach strategy was commitment. Research shows that when individuals agree to a small request, it can alter the way they perceive themselves. Indeed, individuals who agree to a small initial request are far more likely to argee to a subsequent larger request. In order to foster a commitment among horse owners to proper manure management practices (specifically, composting), we developed a commitment strategy that included the following:

Name badges. Upon arriving at the workshops each participant received a name badge to wear during the workshop. The name badge read, "*Join your NEIGHbors in boasting about composting*." The message hints that neighbors are already composting; thereby, utilizing social norms.

Figure 1: Join your NEIGHbors name badges

Informational Flyer. At the end of the workshop, each participant was offered two of the informational flyers and asked to make a commitment to share the flyer and what they learned at the workshop with one other person in their community.

Figure 2: Sample informational flyer

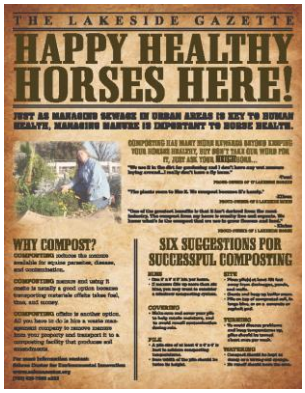

Prompt. If a participant agreed to share a flyer with another community member, they received a large refrigerator magnet that read, "*I'm boasting about composting!*" The magnet served as a a visual reminder (prompt) of their commitment and participation in the workshop.

Figure 3: Composting magnet (prompt)

Public Commitment. A large blanket with the picture of a quarter horse was displayed at the workshop to provide a public forum for displaying commitments. This medium served both to strengthen commitments (by making them public) as well as to reinforce social norms. Participants who made a commitment to share the flyer with one other person in their community were asked to sign the blanket as a symbol of their commitment. To foster social norms, the blanket can be displayed and used at future workshops to display the growing list of individuals committed to composting.

Figure 4: Signature horse blanket

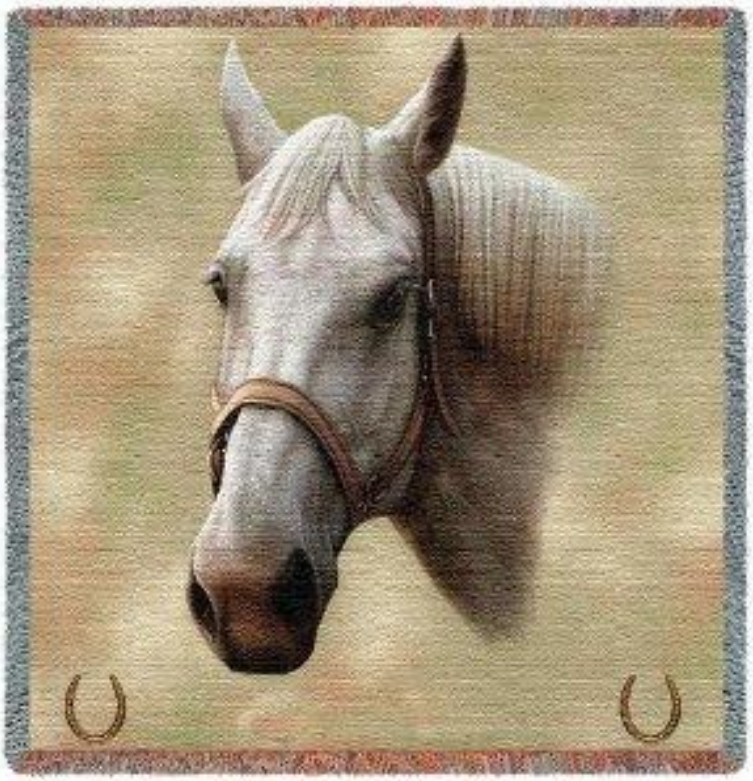

Implementation Summary

In order to pilot the outreach approach, we implemented the Community-Based Social Marketing outreach strategy and materials at two manure composting workshops in diverse regions of unincorporated San Diego County: Ramona and Lakeside. All workshops were conducted by Lisa Wood, a well-known master composter and experienced horse ranch owner/operator. The workshops were also attended by a representative from Solana Center as well an Action Research staff member. A summary of the implementation outcomes is provided below.

Ramona

The Ramona workshop was held at the Ramona Library on Saturday, June 18, 2011. Due to a lack of sufficient outreach, only one participant attended the Ramona workshop. Because there was only one participant, the workshop was informal and unstructured and a variety of other topics beyond manure composting were discussed. As a result, we could not effectively implement the behavioral components or evaluate the workshop outcomes. One thing that was observed was that due to the multiple entities involved (Instructor, Action Research, and Solana Center), there was an overwhelming amount of information that was being distributed including several handouts, assessment components, and product samples.

Lakeside

The Lakeside workshop was held outdoors on Saturday, June 25, 2011 on a local ranch that maintains over 50 horses. The ranch owner was a manure composter. A total of 24 people attended the Lakeside workshop. Upon arrival, participants were greeted by an Action Research staff member who provided each individual with a name badge and the pre-test. At the same time, the staff from the Solana Center asked participants to sign in and then provided them with a workshop evaluation survey which led to some confusion. As people finished their pre-tests, Action Research collected them and put them into an envelope. Contrary to the Ramona workshop, the Lakeside workshop was more effectively focused on composting manure.

After the majority of the information was provided, the workshop participants walked over to view an actual compost pile and talk about large manure volume composting. At the conclusion of the workshop, the Action Research staff member asked each participant to complete the post-test. Upon completing the post-test, participants were asked to return the survey and then complete the commitment activities (i.e., accept the flyer and sign the blanket). Unfortunately, participants were bombarded with additional information provided by Solana Center at the end of the workshop (an additional survey and raffle entry for a composting thermometor). This additional information drew attention away from the ability for the commitment exercise to be implemented as designed.

Assessment Outcomes

An assessment instrument was developed to assess changes in knowledge, attitudes, and behavioral intention associated with attending the workshop. Participants were administered a similar set of items before and after participation in the workshop. The pre- and post-test survey instruments are attached as Appendix C. A total of 24 pre-tests and 22 post-test were collected from participants resulting in 22 matched cases (a few people snuck out during the composting demonstration and did not complete the post test). Key findings for the Lakeside workshop are presented below.

Sample Characteristics

- **Gender.** Participants were 12 males and 12 females.

- **Age.** Particpants ranged in age from 27 to 75 years of age (*Mean Age* = 58.35).

- **Number of horses.** Participants reported having between 0 and 65 horses (*Mean* = 11.92 horses, *SD* = 21.00). Of the 22 participants who completed demographic information, six (27%) reported not having any horses.

- **Property size.** Property size ranged from 0 to 30 acres (*Mean* = 5.90 acres, *SD* = 7.69). Nearly half of participants (48%) lived on one acre or less and two-thirds lived on less than two acres.

- **Residence.** Participants were from communities all over the county, including some from incorporated areas. Just less than one-third (32%) of workshop participants were from Lakeside. See Table 1 below.

Table 1: What town or community do you live in?

Community	N	%
Lakeside	7	31.8
El Cajon	2	9.1
Bonita	2	9.1
Guatay	2	9.1
Unknown/Blank	2	9.1
Ramona	1	4.5
Valley Center	1	4.5
Vista	1	4.5
Oceanside	1	4.5
Jamul	1	4.5
Shelter Island	1	4.5
Rancho Bernardo	1	4.5
San Diego	1	4.5
San Marcos	1	4.5

Manure Management Behavior

On the pre-test, participants were asked about their current manure management practices such as removal frequency, disposal methods, and composting frequency. On the post-test, participants were asked a modified version of the question where by they were asked to report their intentions to participate in such practices "in the future."

Manure Removal Frequency. Among horse owners (*N* = 16), there is some evidence that the workshop sparked behavioral intentions to remove manure from corrals and stalls more frequently. Prior to the workshop, 32% of horse owners reported that they currently removed manure from their property once a week or less often. Following the workshop, only 7% of horse owners said that they planned to remove manure once per week or less often. Similarly, following the workshop 53% of horse owners said that they planned to remove manure from corrals and stalls every day, compared to 38% who said that they were currently doing so.

Table 2: How often is manure removed from the horse corrals or stalls on your property?

Manure Removal Frequency	PRE Current	POST Future Plans
Less than once per week	13%	0%
Once per week	19%	7%
2-3 times per week	6%	27%
4-6 times per week	0%	0%
Daily	**38%**	**53%**
Other	25%	13%

Manure Disposal Practices. Among horse owners (*N=16)*, the workshop led to positive behavioral intentions to manage manure by composting. Prior to the workshop, 50% of horse owners said that they currently composted. Following the workshop, 87% said that in the future they planned to manage the manure generated on their property by composting. Note that multiple responses were allowed, so totals do not equal 100%.

Table 3: How do you dispose of the manure generated on your property?

Manure Disposal Methods	PRE Current	POST Future Plans
Compost	**50%**	**87%**
Send to landfill	25%	25%
Give it away	19%	6%
Pile it up (not for compost)	6%	0%
Apply to land	44%	31%
Other	6%	0%

Quantity of Manure Composted. On the pre-test, participants were asked to report how much of the manure generated by their horses was managed by composting. On the post-test, participants were asked, "*in the future, how much of the manure generated by your horse(s) do you plan on managing by composting?*" Responses were made on a scale from 0 (none) to 10 (all). Results indicate that the workshop promoted positive behavioral intentions regarding the amount of manure that would be managed through composting.

- **Pre.** At pre-test, the average amount of manure that was currently composted was 4.07 on the scale from 0 (none) to 10 (all).

- **Post.** Following the workshop, the average amount of manure that participants planned to compost was 7.36 on the scale from 0 (none) to 10 (all). This corresponded to a statistically significant increase $t(13)=3.14$, $p<.01$

Knowledge and Awareness about Stormwater Pollution

Is Stormwater Treated? Participants were asked to report whether water that passes through the storm drain system in San Diego is treated at a wastewater treatement plant, or if it is released into creeks or the ocean without treatment. Valid responses were "Treated," "Not treated," or "Don't Know." Across all participants (not just horse owners), results showed high baseline knowledge of the concept that stormwater is not treated before being released. Unfortuntely, the results showed a small increase from pre- to post-test in the proportion of workshop participants who beleieved that stormwater was treated.

Table 4: Is water that passes through the storm drain system treated or not…?

Is Stormwater Treated?	PRE	POST
Not treated	65%	71%
Treated	4%	14%
Don't know	31%	14%

Perception of Manure as Pollutant. Participants were asked to rate the extent to which they believed that horse manure contributes to pollution of local waterways using a scale from 0 (not at all) to 10 (a great deal). Overall, workshop participants believed that horse manure was not a strong contributer to pollution rating it lower than the mid-point on the 0 – 10 scale. Although perceptions increased slightly following the workshop, the difference was not statistically significant with the current sample size.

Table 5: How much do you think that horse manure contributes to pollution..?

Horse Manure as A Pollutant	PRE	POST
Mean Score	3.59	4.41

Perceived Barriers and Benefits to Composting Horse Manure

Perceptions about Composting. Participants were asked to rate their pereceptions about composting horse manure across a variety of dimensions. All responses were made on a scale from 0 to 10, but the anchors of the scale changed as a function of the construct being measured. Results showed that:

- Participants pereceived composting manure to be **significantly less difficult** following the workshop compared to pre-test.
- Participants provided **equally high ratings regarding the importance** of composting both before and after the workshop.
- Following the workshop, participants pereceived composting manure to be **significantly more common** in their community compared to pre-test.
- Both before and after the workshop, participants provided **equally high ratings regarding composting being healthy for horses**.

Table 6: Composting the manure from my horse(s) seems...

Construct	Scale Anchors	PRE	POST
DIFFICULT	(0 = Easy; 10 = Difficult**)**	3.11	2.05
IMPORTANT	(0 = Unimportant; 10 = Important)	8.30	8.85
COMMON	(0 = Uncommon; 10 = Common) Reverse coded	3.24	6.76
HEALTHY FOR HORSES	(0 = Unhealthy; 10 = Healthy)	8.27	8.93

Benefits of Composting. Both before and after the workshop, participants were asked, *"how could you benefit from composting the manure on your property?"* A range of responses were provided on both the pre- and post-tests including: use on property, fly/vector control, fertilizer/soil amendment, generate income, and reduced manure volume.

Barriers to Composting. Both before and after the workshop, participants were asked, *"is there anything that would make it difficult for you to compost the manure on your property?"* A range of responses were provided on both the pre- and post-tests including: worry about smell and/or flies, need for space, and labor/equipment needs. Interestingly, following the workshop there were no mentions about concerns for smell, flies, or pests and the majority of the response were focused on labor and equipment needs.

Conclusions and Recommendations

Conclusions

Based on the pre/post assessment conducted at the Lakeside workshop, it appears that the workshop was successful at fostering positive attitudes and perceived control about composting. Clearly, intentions to compost in the future were greater than current levels of composting. The only area where the workshop appeared to be ineffective in terms of raising knowledge and awareness was with regard to stormwater concepts. Future workshops might benefit from highlighting key issues such as the potential for manure to pollute waterways and the fact that stormwater is not treated.

Future Workshop Recommendations

While the assessment component demonstrated positive increases in knowledge, awareness, and behavioral intention as a result of attending the workshop, we have several concrete recommendations regarding delivery of future workshops.

#1. Limit competing materials. Allowing contracted partners to include their own, distally-related materials (handouts, raffles, surveys), potentially limited the effectiveness of the social marketing materials aimed at sustainable behavior change. The overuse of handouts and surveys might also overwhelm workshop participants and make it difficult for them to retain critical information .

#2. Provide visual aids. We recommend incorporating additional visual aids during the presentation of composting information to enhance the vividness of the material.

#3. Cohesive planning. It is essential for the success of the workshop that the workshop materials, flow, and process are planned in a coordinated manner. Without this cohesive planning the workshops can be disjointed and confusing to participants. Additionally, we recommend that future workshops include a written protocol that outlines the procedures, roles, and responsibilities of those involved.

#4. Commitment alterations. We recommend simplifying the commitment process to decrease the effort on the part of participants. Instead of having participant sign the blanket (one more step in the process), participants can simply pin their name badge to the blanket as they leave. The name badges would simplify the process and stand out against the blanket better than the signatures.

#5. Better instructional flow. To the extent possible, we recommend that the material is presented in a linear fashion. If composting information is intermixed with regulation information, vector control, and horse health, the presentation becomes convoluted and

confusing for participants. It is best to completely cover one topic, and allow for questions and answers, before moving on to the next topic.

#6. Focused outreach and recruitment. Outreach efforts for a workshop that is specific to residents in a specific area should be focused on recruiting from that area. Workshop materials and content are created to be unique to a specific workshop/location. If too many participants are from out-of-area, then the materials and content may not be relevant to them.

Appendix A: Lakeside Flyer

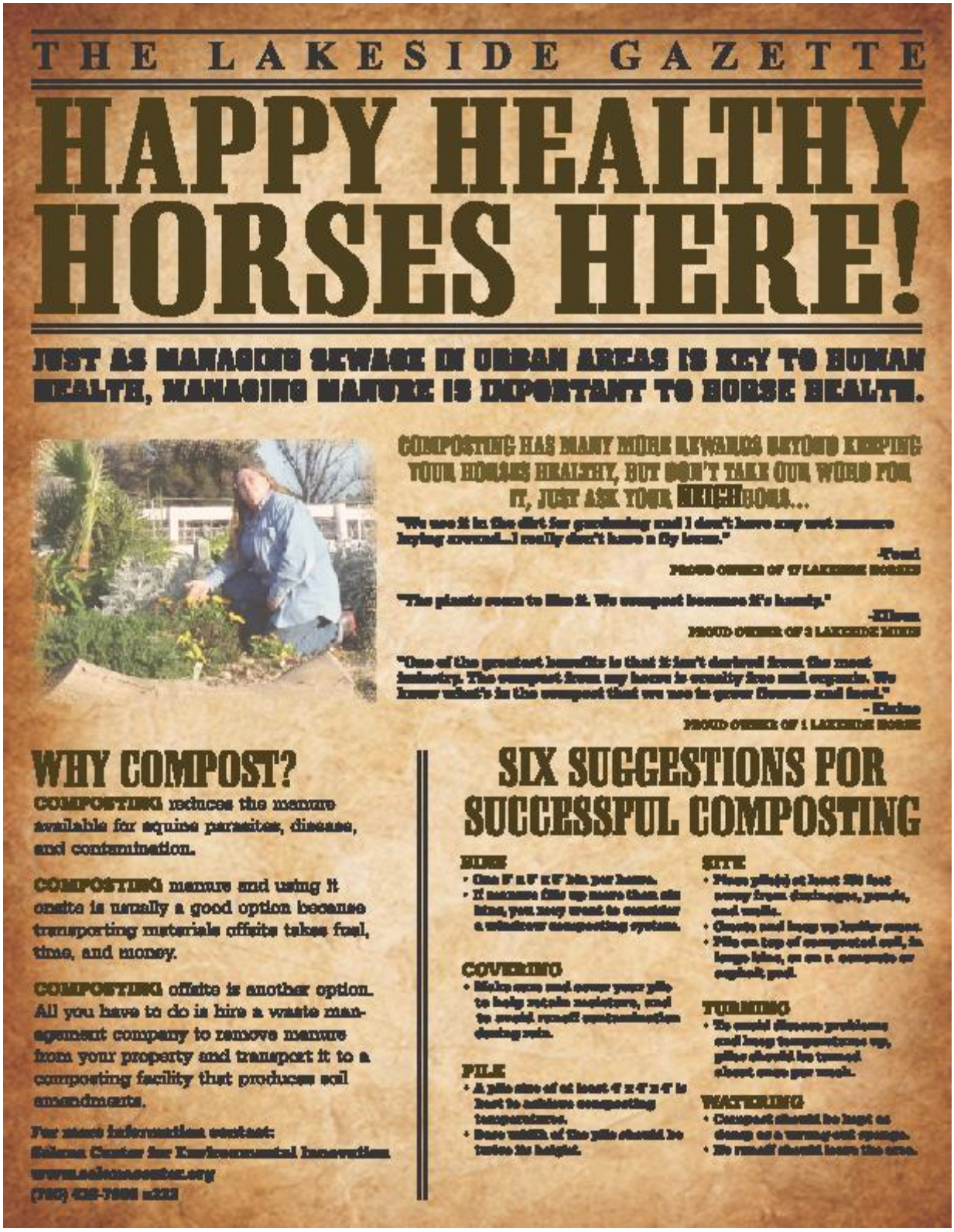

THE LAKESIDE GAZETTE

HAPPY HEALTHY HORSES HERE!

JUST AS MANAGING SEWAGE IN URBAN AREAS IS KEY TO HUMAN HEALTH, MANAGING MANURE IS IMPORTANT TO HORSE HEALTH.

COMPOSTING HAS MANY MORE REWARDS BEYOND KEEPING YOUR HORSES HEALTHY, BUT DON'T TAKE OUR WORD FOR IT, JUST ASK YOUR NEIGHBORS...

"We use it in the dirt for gardening and I don't have any wet manure laying around...I really don't have a fly issue."

-Todd

PROUD OWNER OF 17 LAKESIDE HORSES

"The plants seem to like it. We compost because it's handy."

-Eileen

PROUD OWNER OF 3 LAKESIDE HORSES

"One of the greatest benefits is that it isn't derived from the meat industry. The compost from my horses is cruelty free and organic. We know what's in the compost that we use to grow flowers and food."

- Elaine

PROUD OWNER OF 1 LAKESIDE HORSE

WHY COMPOST?

COMPOSTING reduces the manure available for equine parasites, disease, and contamination.

COMPOSTING manure and using it onsite is usually a good option because transporting materials offsite takes fuel, time, and money.

COMPOSTING offsite is another option. All you have to do is hire a waste management company to remove manure from your property and transport it to a composting facility that produces soil amendments.

For more information contact:
Silicon Center for Environmental Innovation
www.siliconcenter.org
(760) 438-7000 x222

SIX SUGGESTIONS FOR SUCCESSFUL COMPOSTING

SIZE
- One 5' x 5' x 5' bin per horse.
- If manure fills up more than six bins, you may want to consider a windrow composting system.

COVERING
- Make sure and cover your pile to help retain moisture, and to avoid runoff contamination during rain.

PILE
- A pile size of at least 4' x 4' x 4' is best to achieve composting temperatures.
- Base width of the pile should be twice its height.

SITE
- Place pile(s) at least 100 feet away from drainages, ponds, and wells.
- Create and keep up berm cover.
- Pile on top of compacted soil, in large bins, or on a concrete or asphalt pad.

TURNING
- To avoid disease problems and keep temperatures up, piles should be turned about once per week.

WATERING
- Compost should be kept as damp as a wrung-out sponge.
- No runoff should leave the area.

Appendix B: Ramona Flyer

THE RAMONA GAZETTE

HAPPY HEALTHY HORSES HERE!

JUST AS MANAGING SEWAGE IN URBAN AREAS IS KEY TO HUMAN HEALTH, MANAGING MANURE IS IMPORTANT TO HORSE HEALTH.

COMPOSTING HAS MANY MORE REWARDS BEYOND KEEPING YOUR HORSES HEALTHY, BUT DON'T TAKE OUR WORD FOR IT, JUST ASK YOUR NEIGHBORS...

"I think it's the cheapest way to manage manure... it's environmentally friendly."

-Amelia

PROUD OWNER OF RANCHER HORSES

"I can use it in my garden; it doesn't fill up the dumpster; it's free; it's good for roses and it's more sanitary."

- Rosa

PROUD OWNER OF RANCHER HORSES

WHY COMPOST?

COMPOSTING reduces the manure available for equine parasites, disease, and contamination.

COMPOSTING manure and using it onsite is usually a good option because transporting materials offsite takes fuel, time, and money.

COMPOSTING offsite is another option. All you have to do is hire a waste management company to remove manure from your property and transport it to a composting facility that produces soil amendments.

For more information contact:
Silicon Center for Environmental Innovation
www.siliconcenter.org
(760) 438-7888 x222

SIX SUGGESTIONS FOR SUCCESSFUL COMPOSTING

BINS
- One 5' x 5' x 5' bin per horse.
- If manure fills up more than six bins, you may want to consider a windrow composting system.

COVERING
- Make sure and cover your pile to help retain moisture, and to avoid runoff contamination during rain.

PILE
- A pile size of at least 4' x 4' x 4' is best to achieve composting temperatures.
- Base width of the pile should be twice its height.

SITE
- Place pile(s) at least 50 feet away from drainages, ponds, and wells.
- Create and keep up buffer zones.
- Pile on top of compacted soil, in large bins, or on a composite or asphalt pad.

TURNING
- To avoid disease problems and keep temperatures up, piles should be turned about once per week.

WATERING
- Compost should be kept as damp as a wrung-out sponge.
- No runoff should leave the area.

Appendix C: Pre/Post Test

First Name: _____ Last Initial: _____ **PRE**

San Diego County Manure Composting Survey - Summer 2011

1. What town or community do you live in? _____

2.	**How often is manure removed from the horse corrals or stalls on your property? Check one.**	☐ Less than once per week ☐ Once per week ☐ 2-3 times per week ☐ 4-6 times per week ☐ Daily ☐ Other: _____
3.	**How do you dispose of the manure generated on your property? Check all that apply.**	☐ Compost ☐ Send to landfill ☐ Give it away ☐ Pile it up (not for compost) ☐ Apply to land ☐ Other: _____
4.	**Currently, how much of the manure generated by your horse(s) do you manage by composting?**	0 1 2 3 4 5 6 7 8 9 10 None Half All
5.	**Is water that passes through the storm drain system in San Diego County treated at a wastewater treatment plant, or is it released into creeks or the ocean without treatment?**	☐ Treated ☐ Not Treated ☐ Don't Know
6.	**How much do you think that horse manure contributes to pollution of local waterways? Circle one.**	0 1 2 3 4 5 6 7 8 9 10 Not at all A great deal
7a.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Easy to me Difficult to me
7b.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Unimportant to me Important to me
7c.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Common in my community Uncommon in my community
7d.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Unhealthy for my horse(s) Healthy for my horse(s)

8. How could you benefit from composting the manure on your property?

9. Is there anything that would make it difficult for you to compost the manure on your property?

10. For classification purposes, please provide the following information:

Gender: ☐ Male ☐ Female **Zip Code:** _____ **Year of Birth:** _____

Number of horses on property: _____ **Property Acreage:** _____

First Name: _____ Last Initial: _____ POST

San Diego County Manure Composting Survey - Summer 2011

1.	**In the future, how often do you plan to remove manure from the horse corrals or stalls on your property? Check one.**	☐ Less than once per week ☐ Once per week ☐ 2-3 times per week ☐ 4-6 times per week ☐ Daily ☐ Other:_____
2.	**In the future, how do you plan to dispose of the manure generated on your property? Check all that apply.**	☐ Compost ☐ Send to landfill ☐ Give it away ☐ Pile it up (not for compost) ☐ Apply to land ☐ Other:_____
3.	**In the future, how much of the manure generated by your horse(s) do you plan on managing by composting?**	0 1 2 3 4 5 6 7 8 9 10 None Half All
4.	**Is water that passes through the storm drain system in San Diego County treated at a wastewater treatment plant, or is it released into creeks or the ocean without treatment?**	☐ Treated ☐ Not Treated ☐ Don't Know
5.	**How much do you think that horse manure contributes to pollution of local waterways? Circle one.**	0 1 2 3 4 5 6 7 8 9 10 Not at all A great deal
6a.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Easy to me Difficult to me
6b.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Unimportant to me Important to me
6c.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Uncommon in my community Common in my community
6d.	**Composting the manure from my horse(s) seems…**	0 1 2 3 4 5 6 7 8 9 10 Unhealthy for my horse(s) Healthy for my horse(s)

7. **How could you benefit from composting the manure on your property?**

8. **Is there anything that would make it difficult for you to compost the manure on your property?**

9. **For classification purposes, please provide the following information:**

Gender: ☐ Male ☐ Female **Zip Code:** _____ **Year of Birth:** _____

Number of horses on property: _____ **Property Acreage:** _____

Provide your contact information below if you would like additional information on manure management or horse-related activities and events organized by the County of San Diego.

Name: _____ Email: _____

Address: _____City/State: _____

☐ Please send me additional information about manure management by: ☐ Print ☐ Electronic

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TITLE: **RB ALIVE! EXPO STREET FAIR**
ID #: **SD-WQEA12**

ACTIVITY DESCRIPTION

In FY 2012, the City of San Diego (City) and Think Blue will target pollution prevention by attending the annual RB Alive! EXPO Street Fair. The RB Alive! event is designed to bring the community together to showcase local arts & crafts, regional & local businesses, service clubs and religious organizations, and provides an excellent venue to focus on watershed-based constituents of concern and pollution prevention methods. The Think Blue sponsorship will include staffing a booth to provide the opportunity to educate the public about preserving the local environment, promoting stewardship of the San Dieguito River Watershed and encouraging the public to take proactive steps in preventing pollution from entering the storm drain system. Think Blue staff will offer free BMP related giveaway items to the public in exchange for their participation in a survey designed to assess their knowledge and attitudes towards storm water pollution. In addition, Think Blue will provide information on steps residents can take to help reduce pollution of waterways within the watershed (i.e. San Dieguito River).

The event will take place at Bernardo Center Drive between Lomica Drive and Bernardo Plaza Court in Rancho Bernardo, San Diego, CA 92127. Rancho Bernardo is located in the Southwest section of the watershed, within the City of San Diego.

TMDL APPLICABILITY

Event attendance will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2011. Implementation and assessment is expected to occur in FY 2012 and FY 2013.

Phase	Year
Planning	FY 2011
Implementation	FY 2012 – FY 2013
Assessment	FY 2012 – FY 2013

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the San Dieguito River Watershed Management Area.

EFFECTIVENESS MEASUREMENTS

Management Questions:

1. What change in awareness /attitude regarding bacteria was achieved after implementation?
2. How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s):

1. Reach pre-set percentage of residents within target watershed
2. Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s):

1. Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants)
2. Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

Data Recorded:

1. Estimated total visitors exposed to the Think Blue Booth at the RB Alive! EXPO in FY 2012 (Outcome Level 1) = 55,000
2. Number of Surveys administered in FY 2012 (Outcome Level 1) = TBD
3. Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2) = TBD
4. Percentage of individuals able to name a concrete action to prevent storm water pollution (Outcome Level 3) = TBD
5. Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3) = TBD

Expected Benefits:

The goal of this activity is increasing knowledge and awareness in the residents and visitors in the San Dieguito River Watershed in order create positive behavioral change that will reduce the presence of bacteria, nutrients and other pollutants in nearby water bodies, such as the San Dieguito River and the San Dieguito Lagoon.

Analysis Results:

In FY2011, the event was in the planning phase. Therefore, effectiveness assessment of this activity is not possible at this time because the event has not yet taken place. Outcome Levels 1-3 are expected to be reported via attendance and assessment of on-site event surveys.

Conclusions:
This activity will be used as a watershed education activity as required by the Municipal Permit for education activities. Implementation and assessment of the event sponsorship will occur in FY 2012 and FY 2013.

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Attachment A

2008 San Dieguito WURMP Watershed Map

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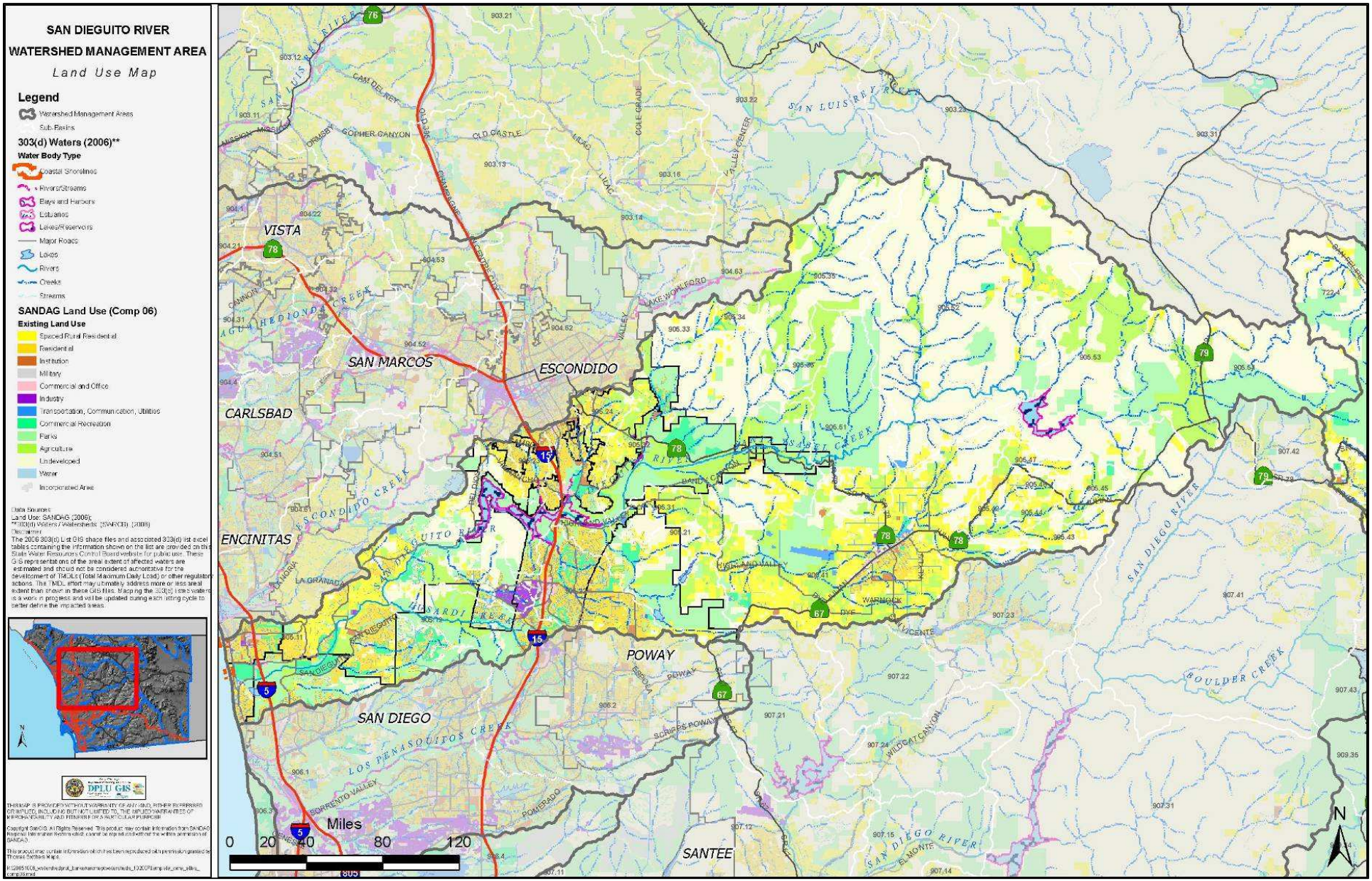
SAN DIEGUITO RIVER
WATERSHED MANAGEMENT AREA
Land Use Map
Legend
Watershed Management Areas
Sub-Basins
303(d) Waters (2006)**
Water Body Type
Coastal Shorelines
Rivers/Streams
Bays and Harbors
Estuaries
Lakes/Reservoirs
Major Roads
Lakes
Rivers
Creeks
Streams
SANDAG Land Use (Comp 06)
Existing Land Use
Spaced Rural Residential
Residential
Institution
Military
Commercial and Office
Industry
Transportation, Communication, Utilities
Commercial Recreation
Parks
Agriculture
Undeveloped
Water
Incorporated Area
VISTA
SAN MARCOS
ESCONDIDO
CARLSBAD
ENCINITAS
POWAY
SAN DIEGO
SANTEE
Miles
0 20 40 80 120
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SAN DIEGUITO WATERSHED
Urban Runoff Management Program

Fiscal Year 2011 Annual Report

January 31, 2012

Prepared and Submitted by the San Dieguito Watershed Copermittees

City of Del Mar
City of Escondido
City of Poway
City of San Diego
City of Solana Beach
County of San Diego

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EXECUTIVE SUMMARY

Since January 2002, the County of San Diego and the Cities of Del Mar, Escondido, Poway, San Diego and Solana Beach (herein referred to as the "Copermittees") have been active in planning, developing and implementing watershed-based programs in the San Dieguito Watershed Management Area (WMA) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). This Annual Report describes the actions taken by Copermittees in Fiscal Year (FY) 2011 (July 1st, 2010 to June 30th, 2011) to implement and refine the 2008 San Dieguito Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA.

The Copermittees collaborated on efforts to address high priority surface water quality issues throughout the San Dieguito WMA. This was coordinated through periodic meetings held throughout the reporting period. The meetings were held in order to effectively plan and implement the San Dieguito WURMP, develop and prioritize water quality activities that address pollutants of concern in the WMA, exchange ideas on how to address High Priority Water Quality Problems (HPWQPs) in the WMA, evaluate the effectiveness of actions, and collaborate on development of required submittals. In order to complete the objectives, the group performed assessments and conducted activities to address the water quality problems. These assessments and activities include: (1) a water quality assessment; (2) a pollutant source assessment; (3) planning and implementation of watershed activities; and (4) an assessment of the Copermittees' activities in the WMA.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees collected and reported JURMP and WURMP activities performed on a hydrologic area (HA) basis. This information is not comprehensive and for some data sets, estimates were used to generate quantities of activities (this process is explained in **Appendix A**). The Copermittees believe that this is an important step to integrate the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees will continue to refine and augment the San Dieguito WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the San Dieguito WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

A summary of the program accomplishments for FY 2011 is found below:

San Dieguito Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Copermittees continued to develop and implement a watershed-based program that addresses the HPWQPs and their sources in the San Dieguito WMA. The WURMP Copermittees met nine (9) times over the course of the reporting period to plan, implement and assess watershed activities. Through workgroup collaboration, there has been an increase in the ability of the Copermittees to identify and address watershed source pollutants, an increase in public awareness,

partnerships formed with other organizations, and opportunities provided for collaboration resulting in cost-effective activities.

Water Quality Assessment

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the San Dieguito WMA based on data collected and analyzed during the reporting period. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the *2010-2011 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2012) for FY 2011 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 San Dieguito WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

HPWQPs in the San Dieguito WMA:

- Bacteria in all HAs
- Nutrients in the San Pasqual HA

Pollutant Source Assessment

During this reporting period, the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the HPWQPs identified and each source category's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Food Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

Planning and Implementation of Watershed Activities

WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Collectively, nine (9) WURMP Watershed Activities were actively implemented for WURMP credit during the reporting period – this includes seven (7) Water Quality Activities (one of which had an educational component) and two (2) Water Quality Education Activities. Additional activities were also in other phases such as planning and assessment in FY 2011. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. Details of these activities are found in Section 4 and **Appendix B** of this Annual Report. The listing below identifies the activities actively implemented for WURMP credit:

Watershed Water Quality Activities

- Land Acquisitions
- Coastal Cleanup Day Sponsorship
- ILACSD Trash Cleanup Sponsorship
- Targeted Restaurant Facility Inspections and Outreach
- Pet Waste Bag Dispenser Program in County Parks
- Residential Rain Barrel Subsidies & Distribution
- San Dieguito Property-Based Inspections

Watershed Education Activities

- Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*
- Focused Outreach to the Equestrian Community
- Residential Rain Barrel Subsidies & Distribution (Educational Component)

Activities selected and conducted by the Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. The effectiveness of the individual activities is variable; however, collectively the Copermittees' program actions intend to have positive effects on water quality.

Effectiveness Assessment

The San Dieguito Watershed Copermittees continue to improve the program's effectiveness assessment by utilizing where appropriate the six-level assessment framework prepared by the Regional Copermittees in October 2003. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, the effectiveness assessment continues to lay the foundation for future in-depth evaluations of activities and program implementation.

Based upon the requirements of the Permit, the Copermittees are compliant and effective in implementing the San Dieguito WURMP.

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1 Introduction

This Annual Report describes the Copermittees' activities during the reporting period (July 1, 2010 through June 30, 2011) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007 by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Permit, the Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout Fiscal Year (FY) 2011. The Copermittees will continue to work to implement, improve, and enhance their programs and activities.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Escondido. Other participating jurisdictions include the Cities of Del Mar, Poway, San Diego and Solana Beach, and the County of San Diego.

The Permit requires that the Copermittees within the San Dieguito Watershed collaborate in the development and implementation of a watershed-scale program that addresses urban runoff[1] quality. The rationale for this approach is simple: urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon downstream receiving waters. The mechanism that the Permit uses to require watershed collaboration is the development and implementation of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, the Permit requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied. The overall goal of the San Dieguito Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

Water quality priorities are evaluated each year and take into consideration the water quality assessment performed during each previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 San Dieguito WURMP. For the San Dieguito WMA, the water quality priorities are: bacteria and nutrients.

To target these water quality priorities, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the

[1] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

collective watershed strategy as the basis for developing and implementing the activities, the Copermittees focused their efforts on the potential sources that are the likely high-priority pollutant contributors in the San Dieguito WMA. This FY 2011 report details the implementation of the San Dieguito WURMP's collective watershed strategy.

1.1 COPERMITTEE COLLABORATION

1.1.1 SAN DIEGUITO WURMP MEETINGS

The Copermittees met nine (9) times during FY 2011 to develop and implement the San Dieguito WURMP. Four (4) of the San Dieguito Copermittees also participate in the Los Peñasquitos WURMP, so to maximize efficiency and prevent overlap of discussion, these meetings were held concurrently with the Los Peñasquitos WURMP Copermittees. The Copermittees collaborated to develop, prioritize and implement watershed activities that address pollutants of concern and sources in the WMA and the development of the Annual Report. The Copermittees also exchanged ideas on how to address HPWQPs in the WMA and evaluated the effectiveness of the watershed activities. **Table 1-1** is a summary of the San Dieguito WURMP meetings and an outline of agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Items Discussed
7/8/2010	IRWM, Quality of Life Funding Strategy, TMDLs (Bacteria), WURMP Activity Planning, Unfunded Mandate Test Claim Discussion
10/14/2010	Annual Water Quality Monitoring Report Update, WURMP Annual Report, Quality of Life Funding Strategy, TMDLs (Bacteria), Watershed Activity Presentation (Beyond Inspections)
12/9/2010	WURMP Annual Report, Quality of Life Funding Strategy, TMDLs (Bacteria), Workgroup Updates
1/13/2011	WURMP Annual Report, Quality of Life Funding Strategy, TMDLs (Bacteria), Workgroup Updates
2/10/2011	WURMP Annual Report, Quality of Life Funding Strategy, TMDLs (Bacteria), Workgroup Updates, Fiesta de San Dieguito 2011
3/10/2011	Quality of Life Funding Strategy, TMDLs (Bacteria), Workgroup Updates (Regional WURMP Workgroup & Program Planning Committee)
4/14/2011	Quality of Life Funding Strategy, TMDLs (Bacteria – Schedule, MOU, LRPs, Cost Sharing and Compliance Monitoring), Workgroup Updates (Regional WURMP Workgroup & Program Planning Committee)
5/11/2011	Quality of Life Funding Strategy, TMDLs (Bacteria – Schedule, MOU, LRPs, and Cost Sharing), Workgroup Updates (Regional WURMP Workgroup & Program Planning Committee)
6/16/2011	TMDLs (Bacteria – Schedule, MOU, LRPs, and Cost Sharing)

The general watershed meetings of the San Dieguito WURMP Workgroup were led by the City of Escondido, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program. Activities and tasks were then carried out by the Copermittees, each within the structure of their jurisdictional organization. Task completion was tracked and assessed at the Workgroup meetings and reported in this Annual Report.

1.2 WATERSHED MAP UPDATE

The San Dieguito River Watershed drains an area of approximately 221,440 acres in west–central San Diego County. The San Dieguito River watershed extends through a diverse array of habitats from the eastern headwaters in the Volcan Mountains to the outlet at the San Dieguito Lagoon and Pacific Ocean. The watershed consists of five hydrologic areas (HAs). The watershed includes portions of the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, and unincorporated areas of San Diego County. Land use within the watershed is classified primarily as vacant and undeveloped land (42%). Other major land use classifications are residential (19%), open space/parks and recreation (17%), and agriculture (15%). Transportation, commercial, industrial, public facility, and water comprise the remaining 7% of the watershed. Over 60% of the watershed is privately owned land. The remaining portions are mostly federally or locally owned, and a small percentage of land is state-owned.

No updates have been made to the previously submitted Watershed Map. A copy of the most recent Watershed Map from the San Dieguito WURMP Annual Report submitted in January 2009 can be found in **Attachment A** to this report.

1.3 ORGANIZATION AND CONTENT OF REPORT

SECTION 1 - Introduction
Section 1 of the Annual Report provides a summary of the Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2 - Water Quality Assessment
Section 2 provides an updated evaluation and analysis of the San Dieguito WMA's receiving water conditions based on applicable water quality data from the *2010-2011 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2012).

SECTION 3 - Pollutant Source Assessment
Section 3 provides an update on the likely sources of urban runoff. Although the assessment covers the entire WMA, it specifically addresses the distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA.

SECTION 4 - Implementation of Watershed Activities
Section 4 describes activities implemented by the Copermittees during the FY 2011 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution. The activities selected and conducted by the Copermittees during FY 2011 address the overall goal of the WURMP and the Permit by focusing on the HPWQPs in both HAs.

SECTION 5 - Effectiveness Assessment
Section 5 provides an assessment of the implementation and effectiveness of the San Dieguito WURMP for the FY 2011 reporting period using concepts from "A Framework for Assessing the Effectiveness of Jurisdictional Runoff Management Programs." The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and best management practice (BMP) implementation and resulting changes in receiving water quality. Consistent with the requirements of the

Permit, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 6 - Conclusions
Section 6 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

2 WATER QUALITY ASSESSMENT

This section provides an assessment of the 2010-2011 monitoring programs conducted in the San Dieguito River WMA. A complete presentation of the regional monitoring efforts conducted during the reporting period is located in the *2010-2011 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2012).

2.1 MONITORING PROGRAMS

Monitoring activities conducted in the WMA to comply with Order R9-2007-0001 are provided in **Table 2-1**. Two maps showing the 2010-2011 Monitoring Station Locations are provided in **Figures 2-1** and **2-2** on the following pages.

Table 2-1 2010-2011 Monitoring Program Activities

Program Data Set	Constituents Assessed	Number of Sites Assessed
Receiving Water Monitoring		**7**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	1 MLS, 2 TWAS, 1 SMC[1]
Rapid Stream Bioassessment	Water chemistry, toxicity, bacteria, rapid stream bioassessment	1 MLS, 2 TWAS, 1 SMC
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, trash	1 MLS, 2 TWAS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, TOC	1 MLS, 2 TWAS
Third-Party Data	General chemistry and bacteria	3 Coastkeeper
Urban Runoff Monitoring		**247**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	87
Jurisdictional Dry Weather Monitoring	Trash	126
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	4
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	6
MS4 Outfall Targeted Dry Monitoring	Chemistry, metals, and bacteria	17
MS4 Outfall Targeted Wet Monitoring	Chemistry, metals, pesticides, and bacteria	0
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	0
CSDM Program	Coastal Outfall and Receiving Waters bacteria	7

1: The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over 5 years.
CSDM – Coastal Storm Drain Monitoring
MLS – Mass Loading Station
SMC – Stormwater Monitoring Coalition
TOC – Total Organic Carbon
TWAS – Temporary Watershed Assessment Station

Figure 2-1 San Dieguito WMA 2010-2011 Dry Weather Monitoring Station Location Map

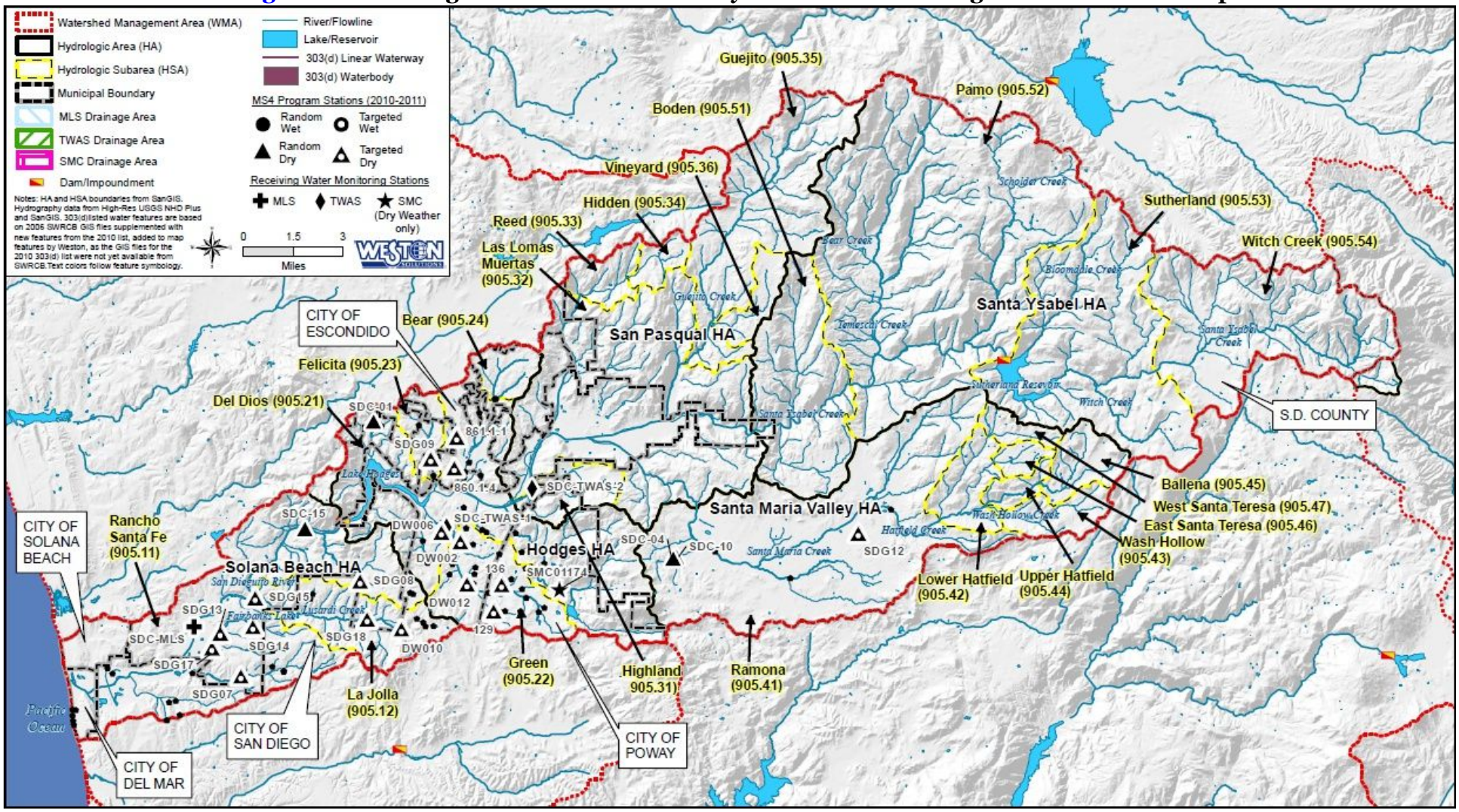

Figure 2-2 San Dieguito WMA 2010-2011 Wet Weather Monitoring Station Location Map

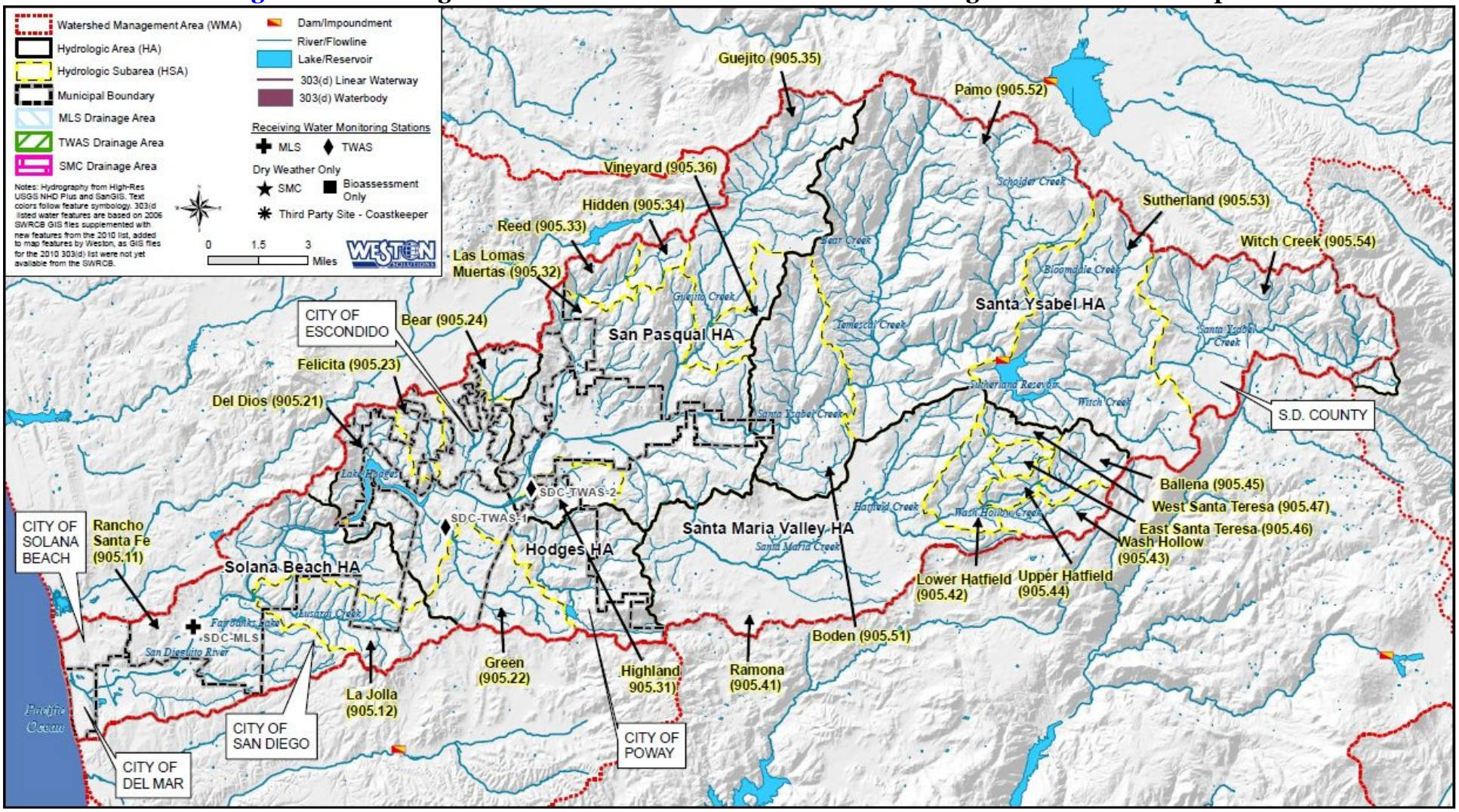

2.2 303(D) LISTINGS

Within the watershed, contaminants identified on the 2010 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant TMDL status/activity. On November 12, 2010, USEPA approved California's 2008-2010 Section 303(d) list of impaired waters and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. At that time, USEPA identified additional water bodies and pollutants for inclusion on the State's 303(d) list and provided public notice and the opportunity for public comment on the proposed additions which ended December 23, 2010. On October 11, 2011, USEPA issued its final decision regarding the waters EPA added to the State's 303(d) list.

Table 2-2 San Dieguito WMA 2010 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	HA	Pollutant/Stressor on 2010 SWRCB 303(d) List	TMDL Status
Pacific Ocean Shoreline, San Dieguito Lagoon Mouth	905.1	Total coliform	Approved June 2011
San Dieguito River	905.1	*Enterococcus*, fecal coliform, nitrogen, phosphorous, TDS, and toxicity	Proposed for completion in 2021
Green Valley Creek	905.2	Sulfates, chloride, manganese, and PCP	Proposed for completion in 2019
Lake Hodges	905.2	Phosphorous	Proposed for completion in 2013
		Color, nitrogen, turbidity, manganese, and pH	Proposed for completion in 2019
		Mercury	Proposed for completion in 2021
Kit Carson Creek	905.2	TDS and PCP	Proposed for completion in 2019
Felicita Creek	905.2	TDS and aluminum	Proposed for completion in 2019
Cloverdale Creek	905.3	Phosphorus and TDS	Proposed for completion in 2019
Sutherland Reservoir	905.5	Color, manganese, and pH	Proposed for completion in 2019
		Total nitrogen as N and iron	Proposed for completion in 2021
Santa Ysabel Creek, Upper	905.5	Toxicity	Proposed for completion in 2021

Source: SWRCB, 2010

In February 2010, the San Diego Water Board adopted Resolution No. R9-2010-0001, an Amendment to the Water Quality Control Plan for the San Diego Region to Incorporate the Revised Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Project I - Twenty Beaches and Creeks in the San Diego Region. This TMDL Basin Plan amendment includes the Pacific Ocean Shoreline at San Dieguito Lagoon Mouth. It was approved by the SWRCB in December 2010 and the USEPA on June 22, 2011.

2.3 ASSESSMENT

This section includes an integrated presentation of the watershed monitoring during both ambient and wet weather. The integrated assessment incorporates the results from watershed receiving water and urban runoff monitoring (MS4, MLS, TWAS, and SMC), with the purpose of overlapping constituents between the programs. Assessments were conducted using data from multiple current and historical monitoring programs, and the results derived using a weight-of-evidence approach. Each HA in the San Dieguito River WMA was assessed individually and summarized for the entire WMA by program element in **Table 2-3**.

Table 2-3 Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings
San Dieguito WMA	Intermediate Receiving Water Monitoring[3]	Ambient Receiving Water Assessment (MLS, TWAS, SMC, and 3rd Party Data)	▪ MLS and TWAS Constituents of Concern[1]: - High priority: *Enterococcus*, TDS, Toxicity (*C. dubia* acute, *S. capricornutum* acute), Very Poor IBI, Total N, Total P. - Medium priority: Dissolved P. ▪ SMC Program (SMC01174)[2]: - High priority: Sulfate, Poor IBI, Total N, Total P, TDS. ▪ Third Party Data (Coastkeeper): - High priority: *Enterococcus*. ▪ Lagoon, Estuary, and Bay Monitoring were not applicable during the 2010-2011 monitoring year.
		Wet Weather Receiving Water Assessment (MLS and TWAS)	▪ MLS and TWAS Constituents of Concern[1]: - High priority: Fecal Coliform, Very Poor IBI, TDS. - Medium priority: Toxicity (*C. dubia* acute). ▪ Pyrethroid concentrations were below detection limits in all sediment samples. ▪ Lagoon, Estuary, and Bay Monitoring were not applicable during the 2010-2011 monitoring year.
		Rapid Stream Bioassessment	One bioassessment sample is collected each year at each MLS and TWAS location during ambient conditions and used for both the ambient and wet assessment. ▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed during the 2010-2011 monitoring year.
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of Concern[1]: - High priority: *Enterococcus,* Fecal Coliform, Total N, Total P, TDS, Chloride, Sulfate, DO, Dissolved P[2]. - Medium priority: Nitrate, Turbidity. ▪ 128 trash assessments were made in the San Dieguito WMA. 96% were rated optimal or suboptimal, and the remaining 4% were marginal assessments. No sites assessed received submarginal or poor ratings, and no threats to human or aquatic health were identified.
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ Constituents of Concern[1]: - High priority: Fecal Coliform, TDS. - Medium priority: None observed.
	WMA Assessment	Receiving Water Trend Assessment	Trends are based on historical data, including data from the 2010-2011 monitoring year: ▪ Significantly increasing trends were observed for Total Phosphorous, Total Nickel, and TDS. ▪ Significantly decreasing trends were not observed for any constituents.
		2011 Long-Term Effectiveness Assessment (LTEA) Ratings	▪ WMA high priority ratings for Fecal Coliform, *Enterococcus*, Total P, Total N, TDS, TSS, Turbidity, Bifenthrin, Chlorpyrifos, Benthic Algae, BOD, and COD. ▪ Results are generally consistent with the 5-year assessment in the LTEA. TSS, Turbidity, BOD, COD, Bifenthrin, and Chlorpyrifos were not confirmed during wet weather receiving water monitoring, and Turbidity, TSS, BOD, and Benthic Algae not confirmed during ambient weather receiving water monitoring.

Notes:
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.

IBI – Index of Biotic Integrity
TDS – Total Dissolved Solids
TSS – Total Suspended Solids
DO – Dissolved Oxygen
BOD – Biological Oxygen Demand
COD – Chemical Oxygen Demand

2.4 Integrated Assessment

Assessment of the San Dieguito WMA during both wet weather and ambient weather monitoring conditions is presented in an integrated manner to provide managers with an overall assessment of the WMA and to provide answers to the core management questions as described in the regional monitoring program. The integrated assessment provides the results of the receiving water assessments and urban runoff assessments during both storm events and ambient weather events. It also provides a summary of the overall WMA findings. The integrated assessment further provides the ability to identify where Constituents of Concern (COCs) overlap between urban runoff and receiving waters. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as additional data become available in future years. Integrated WMA assessments results are presented in **Tables 2-4** and **2-5**.

Table 2-4 San Dieguito River MLS Drainage Area Assessment Findings Below Lake Hodges Dam

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Intermediate Receiving Water Monitoring[3] (MLS, TWAS, and SMC)	**NPDES Program – MLS** • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen, Total Phosphorous, Dissolved Phosphorous (Med) • TDS – Observed **SMC Program** No samples collected **Third-Party Data (Coastkeeper)** • Bacteria – *Enterococcus*	**NPDES Program** • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – Observed **Synthetic Pyrethroids in Sediment[2]** • No priority constituents identified
Urban Runoff Monitoring (MS4 Outfall and DWM)	**MS4 Program** • Chemistry – Chloride, Sulfate • Bacteria – *Enterococcus*, Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – Observed	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Observed
MLS Trends[4]		
Increasing		Total Phosphorus, Total Nickel, and TDS
Decreasing		No Decreasing Trends

1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.
4: Trends are based on historical data, including data from the 2010-2011 monitoring year.

DO - Dissolved Oxygen
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the San Dieguito River MLS drainage area below Lake Hodges Dam, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, total phosphorous, and TDS High-priority constituents for the MLS include TDS, total nitrogen, total phosphorus, and *Enterococcus*, which is consistent with the Copermittees' *2011 Long-Term Effectiveness Assessment* (LTEA) (MOE, LWA, Weston, 2011) with the exception of a medium-priority designation for *Enterococcus*. The LTEA rated benthic algae and BOD as a high-priority, although these constituents were found to be low-priority during the 2010-2011 monitoring.

Fecal coliform and TDS are the only wet weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters below Lake Hodges. TDS is the only high-priority constituent and fecal coliform is the only medium-priority constituent identified at the MLS. TDS results are consistent with the 5-year assessment in the LTEA, whereas fecal coliform is rated a high-priority constituent. The

LTEA included TSS, turbidity, and bifenthrin as medium-priority constituents, although 2010-2011 monitoring results indicated the three constituents were low-priority.

Long-term trend analysis in the San Dieguito WMA is currently limited to wet weather data collected at the MLS. Three constituents are significantly increasing – TDS, total phosphorous, and total nickel. Of these three constituents, only TDS is above the wet weather water quality benchmark – concentrations of TDS are significantly increasing, but results are also consistently above water quality benchmarks; TDS has been identified as a high-priority constituent during wet weather. Concentrations of total phosphorus are significantly increasing; however monitoring results have been consistently below water quality benchmarks during wet weather. Total nickel does not have wet weather water quality benchmarks.

Table 2-5 San Dieguito River MLS Drainage Area Assessment Findings Above Lake Hodges Dam

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Intermediate Receiving Water Monitoring[3] (MLS, TWAS, and SMC)	**NPDES Program – SDC-TWAS-1** • Chemistry – No priority constituents identified • Toxicity – *C. capricornutum* acute • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Total Phosphorous (Med), Dissolved Phosphorous (Med) • TDS – Observed **NPDES Program – SDC-TWAS-2** • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med), *C. capricornutum* acute • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Total Phosphorous (Med), Dissolved Phosphorous (Med) • TDS – Observed **SMC Program (One Station)[2]** • Chemistry – Sulfate • Toxicity – No toxicity observed • Bioassessment – Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed **Third-Party Data** No samples collected	**NPDES Program – SDC-TWAS-1** • Chemistry – No priority constituents identified • Toxicity – No toxicity observed • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Observed **NPDES Program – SDC-TWAS-2** • Chemistry – No priority constituents identified • Toxicity – *C. capricornutum* acute • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Total Phosphorous (Med), Dissolved Phosphorous (Med) • TDS – Observed **Synthetic Pyrethroids in Sediment[2]** No priority constituents identified
Urban Runoff Monitoring (MS4 Outfall and DWM)	**MS4 Program** • Chemistry – Chloride, Sulfate • Bacteria – *Enterococcus*, Fecal Coliform • Nutrients – Total Nitrogen, Total Phosphorous, Dissolved Phosphorous[2] • TDS – Observed	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Observed

1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.

DO - Dissolved Oxygen
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Above Lake Hodges Dam, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, total nitrogen, total and dissolved phosphorous, and TDS. TDS is the only ambient weather high-priority constituents for SDC-TWAS-1, which is consistent with the LTEA. Total and dissolved phosphorus and *Enterococcus* were rated as medium priorities. The LTEA indicated total nitrogen, total phosphorus, TDS, and benthic algae (rated a low-priority at SDC-TWAS-1 in 2010-2011) were high priorities. *Enterococcus* and dissolved phosphorus were medium-priority constituents in the LTEA. High-priority ambient constituents for SDC-TWAS-2 include TDS, total nitrogen, and total phosphorus, which is consistent with

the LTEA. *Enterococcus* and dissolved phosphorus are medium-priority constituents. BOD, TSS, turbidity (all low-priority in 2010-2011), and *Enterococcus* were rated as high priorities and MBAS (another low-priority constituent in 2010-2011 monitoring) was rated a medium-priority constituent in the LTEA.

Fecal coliform and TDS are the only wet weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters above Lake Hodges. Wet weather high-priority constituents upstream of Lake Hodges at SDC-TWAS-1 include TDS and fecal coliform. This compares to a medium priority rating for these constituents in the LTEA. Turbidity, bifenthrin, and chlorpyrifos were rated as high priorities, and TSS as a medium priority in the LTEA (all four constituents were rated as low-priority during the 2010-2011 monitoring). TDS is the only high-priority constituent monitored at SDC-TWAS-2. This annual assessment result compares to the high-priority assessment determination in the LTEA for TSS, turbidity, BOD, COD, total phosphorus and fecal coliform, and the medium-priority ratings for pH, ammonia, nitrite, MBAS, and TDS. All of these constituents, with the exception of TDS, were rated as low-priority during the 2010-2011 monitoring at SDC-TWAS-2.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data upstream of the Lake Hodges dam as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

2.5 High Priority Water Quality Problems

Based on the assessments above and the available water quality data, the Copermittees have determined that the HPWQPs in the San Dieguito WMA are:

1. Bacteria in all HAs
2. Nutrients in the San Pasqual Hydrologic Area

It should be noted that the HPWQPs have not changed from previous assessments or the 2008 San Dieguito WURMP.

3 Pollutant Sources Assessment

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Dieguito WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs and is presented by HA.

Table 3-1 summarizes the land use in each of the HAs. Land use information is generally associated with wet weather urban runoff where rainfall runoff mobilizes and transports pollutants from areas that are collectively associated with particular land uses. This is opposed to dry weather urban runoff that is generally associated with point dischargers such as residences, commercial facilities, etc. Pollutants in the dry weather urban runoff enter the runoff from pollutant-generating activities and from the conveyance of urban runoff as it enters and travels through the MS4. Potential pollutant generating activities include irrigation runoff, sanitary sewer overflows, improper landscape maintenance, and improper use of fertilizers, herbicides, and pesticides.

Through four studies performed by the City of San Diego – *Tecolote Creek Microbial Source Tracking Summary* (City of San Diego, 2010); *San Diego River Source Tracking Investigation* (City of San Diego, 2010); *Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek* (City of San Diego and Weston, 2009); and, *San Diego County Enterococcus Regrowth Study* (SCCWRP, 2012) – it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates that regrowth in catch basins is a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[2], was found to provide both a transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishii et al., 2007; Yamahara et al., 2009).

Tables 3-2 through **3-6** present an inventory of pollutant-generating sources that the Copermittees currently track by HA. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight signifies HPWQP). This HPWQP is then associated with the sources that are likely to generate those pollutants (blue highlight). The process used to develop the tables was taken directly from the Copermittees' LTEA. The data used for the process includes the following: (1) results in the 2010-2011 Regional Annual Monitoring Report (Weston Solutions, January 2012); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the LTEA (MOE, LWA, Weston, 2011).

[2] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)				
	905.1	905.2	905.3	905.4	905.5
Open Space	8,515.0	7,992.4	8,846.9	2,686.9	19,936.5
Single Family Residential	5,324.2	7,024.4	233.1	857.4	38.2
Vacant and Undeveloped Land	3,393.6	3,794.6	18,875.4	12,481.8	48,041.7
Spaced Rural Residential	3,114.5	3,127.6	3,187.4	11,584.3	3,118.6
Roads and Freeways	2,541.3	2,457.9	371.4	959.1	393.0
Agricultural, Orchards, Vineyards	1,217.2	1,802.9	11,357.3	6,479.8	9,561.9
Parks, Golf Courses, Cemeteries	1,888.1	1,183.5	248.4	225.0	0.0
Lake, Reservoir, Large Pond	56.2	992.9	13.4	0.0	535.0
Multi-Family Residential	620.3	716.7	31.1	119.9	0.0
Commercial	445.2	437.3	643.4	236.1	11.6
Institutional	303.0	374.3	27.1	276.7	2.7
Recreation	464.3	106.1	102.4	60.7	183.7
Industrial	389.9	88.5	18.6	90.5	0.0
Construction	116.3	77.8	47.4	84.6	48.2
Utilities	145.2	66.4	55.7	101.3	13.4
Health Services	6.5	14.7	0.0	5.4	0.0
Automotive and Transportation	8.8	9.5	0.0	264.1	0.0
Storage and Warehousing	42.8	2.4	0.0	11.9	0.0
Junkyard, Dump, Landfill	0.0	0.0	0.0	11.1	72.4
Beach, Bay, Lagoon	100.3	0.0	0.0	0.0	0.0

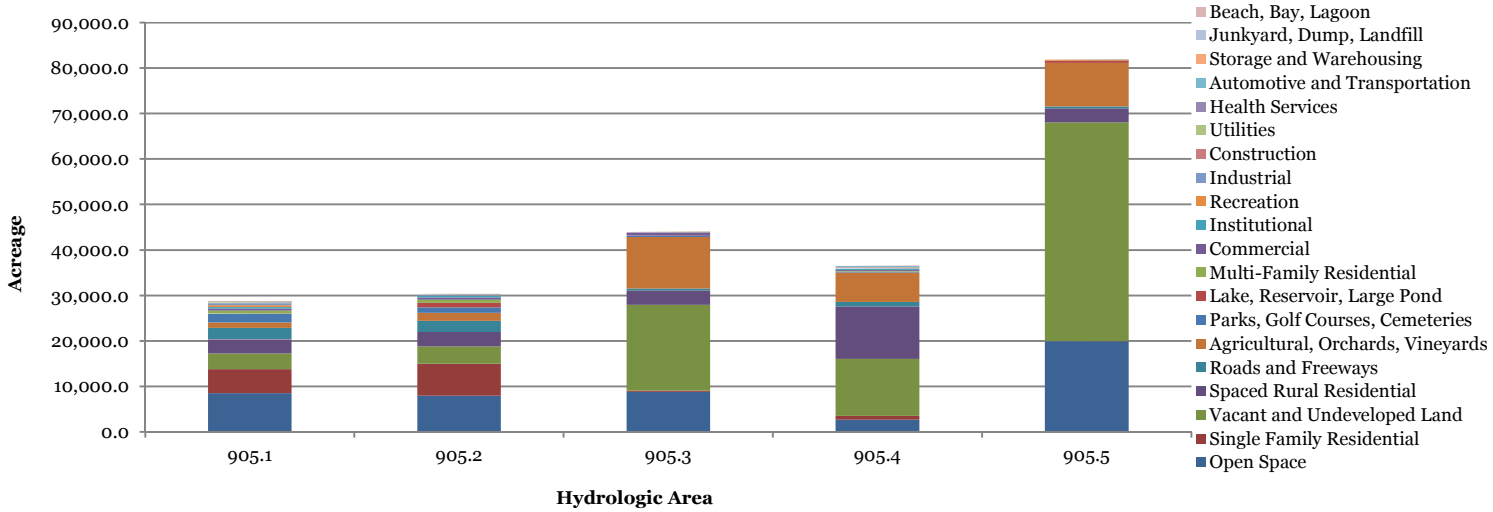

Source: SANDAG, 2009

Table 3-2 Pollutant Generating Sources – 905.1 Solana Beach Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities			Pollutant Source Loading Potential[3]							
				Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Agriculture	2			UK	L	L	L	L	L	UK	L
Animal	10			N	UL	L	UK	L	L	N	L
Automotive	12			L	L	UL	UL	UK	UK	L	L
Contractor	12			UL	UL	L	UL	UL	UL	UL	UL
Food Establishments	156			N	L	UL	UK	UK	L	UL	L
Equipment	6			L	L	UL	UL	UK	UL	UL	L
Fueling	4			UK	L	UK	N	N	N	N	L
General Industrial	4			L	L	UK	UK	UK	UK	UK	L
General Retail	8			UL	UL	L	UL	UL	UL	UK	UL
Golf	9			UK	UK	UK	UK	L	UK	UL	UK
Manufacturing	18			L	L	L	UL	UL	UL	UL	L
Metal	5			L	L	UK	UK	UK	UL	UL	L
Nursery	5			L	UL	L	L	L	L	UL	UL
Stone & Aggregates	2			L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	57			L	L	L	UK	UK	UL	UL	L
Municipal	High	Non-High		N	N	L	N	N	UK	UL	N
	38	23									
Construction	High	Medium	Low	UL	UL	L	UL	UL	UL	L	UL
	152	44	660								
Residential	9,059 acres			L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-3 Pollutant Generating Sources – 905.2 Hodges Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Agriculture	1	UK	L	L	L	L	L	UK	L
Animal	11	N	UL	L	UK	L	L	N	L
Automotive	44	L	L	UL	UL	UK	UK	L	L
Contractor	37	UL	UL	L	UL	UL	UL	UL	UL
Food Establishments	191	N	L	UL	UK	UK	L	UL	L
Equipment	7	L	L	UL	UL	UK	UL	UL	L
Fueling	8	UK	L	UK	N	N	N	N	L
General Retail	191	UL	UL	L	UL	UL	UL	UK	UL
Golf	7	UK	UK	UK	UK	L	UK	UL	UK
Institutional	5	L	UK	UK	UK	UK	UK	UK	UL
Manufacturing	15	L	L	L	UL	UL	UL	UL	L
Metal	3	L	L	UK	UK	UK	UL	UL	L
Nursery	5	L	UL	L	L	L	L	UL	UL
Stone & Aggregates	4	L	L	L	UL	UL	UL	UL	L
Storage & Warehousing	49	L	L	L	UK	UK	UL	UL	L
Municipal	High: 32; Non-High: 23	N	N	L	N	N	UK	UL	N
Construction	High: 13; Medium: 20; Low: 429	UL	UL	L	UL	UL	UL	L	UL
Residential	10,869 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-4 Pollutant Generating Sources – 905.3 San Pasqual Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities			Pollutant Source Loading Potential[3]							
				Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Animal	1			N	UL	L	UK	L	L	N	L
Automotive	1			L	L	UL	UL	UK	UK	L	L
Contractor	1			UL	UL	L	UL	UL	UL	UL	UL
Food Establishments	1			N	L	UL	UK	UK	L	UL	L
Equipment	1			L	L	UL	UL	UK	UL	UL	L
General Retail	1			UL	UL	UL	L	UL	UL	L	UL
Nursery	4			L	UL	L	L	L	L	UL	UL
Municipal	High	Non-High		N	N	L	N	N	UK	UL	N
	3	6									
Construction	High	Medium	Low	UL	UL	L	UL	UL	UL	L	UL
	6	15	102								
Residential	3,352 acres			L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-5 Pollutant Generating Sources – 905.4 Santa Maria Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Animal	15	N	UL	L	UK	L	L	N	L
Automotive	35	L	L	UL	UL	UK	UK	L	L
Cemetery	1	UK	UK	UK	UK	L	UK	UL	UK
Contractor	4	UL	UL	L	UL	UL	UL	UL	UL
Food Establishments	55	N	L	UL	UK	UK	L	UL	L
Equipment	10	L	L	UL	UL	UK	UL	UL	L
Fueling	11	UK	L	UK	N	N	N	N	L
General Industrial	5	L	L	UK	UK	UK	UK	UK	L
General Retail	3	UL	UL	L	UL	UL	UL	UK	UL
Golf	1	UK	UK	UK	UK	L	UK	UL	UK
Manufacturing	1	L	L	L	UL	UL	UL	UL	L
Metal	2	L	L	UK	UK	UK	UL	UL	L
Mining	1	L	UK	L	UK	L	UL	L	UL
Nursery	14	L	UL	L	L	L	L	UL	UL
Stone & Aggregates	5	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	4	L	L	L	UK	UK	UL	UL	L
Municipal	High: 2; Non-High: 6	N	N	L	N	N	UK	UL	N
Construction	High: 1; Medium: 8; Low: 131	UL	UL	L	UL	UL	UL	L	UL
Residential	12,561 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-6 Pollutant Generating Sources – 905.5 Santa Ysabel Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities			Pollutant Source Loading Potential[3]							
				Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Animal	2			N	UL	L	UK	L	L	N	L
Automotive	1			L	L	UL	UL	UK	UK	L	L
Food Establishments	4			N	L	UL	UK	UK	L	UL	L
Fueling	1			UK	L	UK	N	N	N	N	L
Nursery	1			L	UL	L	L	L	L	UL	UL
Municipal	High	Non-High		N	N	L	N	N	UK	UL	N
	1	3									
Construction	High	Medium	Low	UL	UL	L	UL	UL	UL	L	UL
	1	0	21								
Residential	3,147 acres			L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

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4 Implementation of Watershed Activities

4.1 JURMP and Watershed Activities

The Copermittees are responsible for implementing Jurisdictional Urban Runoff Management Program (JURMP) activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. These activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. To develop meaningful analysis of the results and assessment of activities conducted, the data and information is reported on an HA basis. However, the JURMP data and information is not comprehensive and for some data sets, estimates were used to generate quantities on an HA basis – this estimation process is explained in **Appendix A** of the report.

In addition to their JURMP activities, the Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed or jurisdictional level. The activity selection process is described fully in the March 2008 San Dieguito WURMP.

The tables below present the Copermittees' efforts to report all urban runoff management activities on a watershed basis. Moreover, a comprehensive account of all urban runoff management activities on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements. The tables identify the WURMP and many of the JURMP activities that are associated with the HPWQPs in each HA.

Collectively, the Copermittees actively implemented:

- Three (3) watershed water quality activities and one (1) watershed education activity in the Solana Beach HA (905.1);
- Six (6) watershed water quality activities and one (1) watershed education activity in the Hodges HA (905.2);
- Two (2) watershed water quality activities and one (1) watershed education activity in the San Pasqual HA (905.3);
- Two (2) watershed water quality activities and two (2) watershed education activities in the Santa Maria HA (905.4); and,
- One (1) watershed water quality and two (2) watershed education activities in the Santa Ysabel HA (905.5).

It is worth noting that several of these activities overlapped HAs. The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

Table 4-1 JURMP and WURMP Activities – 905.1 Solana Beach Hydrologic Area[1]

Activity		Results	HPWQP Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Agriculture	2: (2)	✓
	Animal	8: (10)	✓
	Food Establishment	121: (156)	✓
	Nursery	1: (5)	✓
Street Sweeping (Tons Collected)		472.5	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,874.5	✓
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach		✓
SD-WQA19	Pet Waste Dispenser Program in County Parks		✓
SD-WQA27	San Dieguito Property-Based Inspections		✓
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*		✓

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-2 JURMP and WURMP Activities – 905.2 Hodges Hydrologic Area[1]

Activity		Results	HPWQP Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Agriculture	0: (1)	✓
	Animal	3: (11)	✓
	Food Establishment	126: (191)	✓
	Nursery	1: (5)	✓
Street Sweeping (Tons Collected)		492.0	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,704.8	✓
SD-WQA2	Land Acquisitions		✓
SD-WQA4	Coastal Cleanup Day Sponsorship		✓
SD-WQA13	ILACSD Trash Cleanup Sponsorship		✓
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach		✓
SD-WQA26	Residential Rain Barrel Subsidies & Distribution		✓
SD-WQA27	San Dieguito Property-Based Inspections		✓
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*		✓

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-3 JURMP and WURMP Activities – 905.3 San Pasqual Hydrologic Area[1]

Activity		Results	HPWQPs	
			Bacteria/ Pathogens	Nutrients
Inspections # of Inspections: (Inventory #)	Animal	1: (2)	✓	✓
	Food Establishment	6: (1)	✓	
	Nursery	3: (6)	✓	✓
Street Sweeping (Tons Collected)		604.9	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,168.5	✓	✓
SD-WQA2	Land Acquisitions		✓	✓
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach		✓	✓
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*		✓	

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-4 JURMP and WURMP Activities – 905.4 Santa Maria Hydrologic Area[1]

Activity		Results	HPWQP
			Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Animal	8: (15)	✓
	Food Establishment	4: (55)	✓
	Nursery	0: (14)	✓
Street Sweeping (Tons Collected)		109.4	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		661.6	✓
SD-WQA2	Land Acquisitions		✓
SD-WQA19	Pet Waste Dispenser Program in County Parks		✓
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*		✓
SD-WQEA11	Focused Outreach to the Equestrian Community		✓

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-5 JURMP and WURMP Activities – 905.5 Santa Ysabel Hydrologic Area[1]

Activity		Results	HPWQP
			Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Animal	1: (2)	✓
	Food Establishment	0: (4)	✓
	Nursery	0: (1)	✓
Street Sweeping (Tons Collected)		71.3	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		431.4	✓
SD-WQA2	Land Acquisitions		✓
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*		✓
SD-WQEA11	Focused Outreach to the Equestrian Community		✓

1: Prepared based on the Copermittees FY 2011 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

4.2 WATERSHED EDUCATION ACTIVITIES

This section describes activities implemented by the San Dieguito WURMP Copermittees during the FY 2011 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing education activities that address the HPWQPs in the San Dieguito WMA. The activity selection process is described fully in the 2008 San Dieguito WURMP.

The Copermittees continue to make progress in implementing programs aimed at improving storm water and urban runoff water quality in the WMA. **Table 4-6** below lists the education activities implemented during FY 2011 by the Copermittees. In addition, another education activity was in the active planning phase during the reporting period. For more details on all of the activities, refer to **Table 4-10** and **Appendix B**.

Table 4-6. Watershed Education Activities Implemented During FY 2011

ID #	Activity/Project Name
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*
SD-WQEA11	Focused Outreach to the Equestrian Community
SD-WQA26	Residential Rain Barrel Subsidies & Distribution

The effectiveness assessments for these activities are presented in the Activity Implementation Sheets (**Appendix B**) and are summarized in Section 5 – Effectiveness Assessment.

4.3 PUBLIC PARTICIPATION ACTIVITIES

4.3.1 INTRODUCTION

The Public Participation component of the 2008 San Dieguito WURMP encourages residents and organizations within the WMA (such as other agencies, private companies, and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water, and other methods, including direct interaction of San Dieguito WURMP Copermittee staff with members of the public.

4.3.2 ACTIVITIES CONDUCTED

WURMP documents and reports are posted on the Project Clean Water website, http://www.projectcleanwater.org/, where they are available to all interested stakeholders. During FY 2011, the San Dieguito Watershed web page on the Project Clean Water website received 1,274 hits and the San Dieguito WURMP page received 405 hits. A monthly breakdown of the hits can be found in the tables below.

Table 4-7 Numbers of Hits on the Project Clean Water San Dieguito WMA Web Site

July 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	March 11	April 11	May 11	June 11	Total
114	136	133	165	140	154	66	67	79	67	67	86	1,274

Table 4-8 Numbers of Hits on the Project Clean Water San Dieguito WURMP Web Site

July 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	March 11	April 11	May 11	June 11	Total
33	41	39	51	43	51	24	28	24	28	15	28	405

Copermittees worked in cooperation with the Regional Education and Residential Sources workgroup. During this reporting period, the Copermittees participated in fourteen (14) community events outlined in the list below.

Outreach Events

The Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- June 11 - July 5, 2010 – San Diego County Fair
- August 28, 2010 – Beach Blanket Movie Night
- September 25, 2010 – Coastal Cleanup Day
- October 23, 2010 – Families on Foot
- December 15, 2010 – Day Without a Bag (Countywide)
- March 14, 2011 – San Pasqual High School Career Fair
- March 20, 2010 – Solana Beach Paws in the Park
- March 26, 2011 – Solana Beach Green Fair
- March 27, 2011 – Escondido Paws in the Park
- April 10, 2011 – Earth Day/Spring Street Fair at Blue Sky Ecological Reserve
- April 13, 2011 – Escondido Compact
- April 30, 2011 – Creek to Bay Cleanup
- June 4 - June 5, 2011 – Fiesta Del Sol
- June 18, 2011 – San Diego County Fair – Enviro Fair

Two (2) cleanup events took place at six (6) locations in the WMA that included approximately 718 participants. These events are presented in **Table 4-9** below. Watershed concepts and principles were incorporated into outreach efforts at booth displays and event activities.

Table 4-9 Community Cleanup Events in FY 2011

Date	Name	Location	# of Participants	# of Pounds Removed	Hydrologic Area
9/25/2010	Coastal Cleanup Day	Fletcher Cove, Solana Beach	131	300	Solana Beach (905.1)
		Powerhouse Park, Del Mar	127	361	Solana Beach (905.1)
		San Dieguito Lagoon, Del Mar	39	441	Solana Beach (905.1)
		Lake Hodges, Escondido	117	9,110	Hodges (905.2)
		Santa Maria Creek, Ramona	23	924	Santa Maria (905.4)
4/30/2011	Creek to Bay Cleanup	Fletcher Cove, Solana Beach	53	130	Solana Beach (905.1)
		Powerhouse Park, Del Mar	115	350	Solana Beach (905.1)
		Lake Hodges, Escondido	80	10,050	Hodges (905.2)
		Santa Maria Creek, Ramona	17	1,342	Santa Maria (905.4)
		Ramona Community Park, Ramona	16	920	Santa Maria (905.4)

Other events included focused presentations to residents, stormwater training for municipal employees, guided watershed hikes, residential oil and hazardous waste collections and tire collections.

4.3.3 FUTURE EFFORTS

The Copermittees will continue to provide opportunities for residents and other interested parties to participate in San Dieguito WURMP activities. Documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the San Dieguito WMA.

4.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

4.4.1 INTRODUCTION

The Land-Use Planning component of the 2008 San Dieguito WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities.

4.4.2 ACTIVITIES CONDUCTED

Integrated Regional Water Management (IRWM)

The Copermittees have been active participants in the Integrated Regional Water Management (IRWM) planning process (IRWMPP) since its beginning in 2005. The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders.

During FY 2010-11, the IRWM Program held five (5) Regional Advisory Committee (RAC) meetings providing updates on Basin Plan Triennial Review, Quality of Life Initiative, role of salinity management in water supply, and a discussion on the concept of the public goods charge for water. Participation in the IRWMPP has already led to funding approval for a number of BMP (Best Management Practice) installation projects that will benefit the region by reducing runoff. On January 7, 2011, the IRWM Program successfully submitted an implementation grant proposal for $7.9 million to fund 11 projects as part of the Round 1 of Proposition 84 IRWM Implementation grants.

Quality of Life Funding Strategy

The County of San Diego has participated in the SANDAG Quality of Life Funding Strategy since 2009, taking the lead on the Water Quality Enhancement Element. The County has worked collaboratively with other Copermittees, as well as interested regional stakeholders, to explore a variety of funding options, develop a regional needs assessment (published in April 2011), and help establish funding priorities related to water quality. The Needs Assessment and Cost Estimate was developed primarily to provide water quality need and costing information to SANDAG, but has been found to be a useful tool when estimating costs for TMDLs that were recently adopted in the region. This is an ongoing effort that currently has a vision through 2016.

4.4.3 FUTURE EFFORTS

In FY 2012, the Copermittees will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will begin. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the Copermittees.

The Copermittees remain committed to encouraging collaborative, watershed-based land-use planning in their jurisdictional planning departments. The Copermittees will continue to work together to seek additional means of collaboration in this area.

4.5 5-YEAR STRATEGIC PLAN

4.5.1 NEW WATERSHED ACTIVITIES

Proposed watershed activities Implementation Sheets can be found in **Appendix B**. New activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA.

Each activity on the WMA activities list is fully described in an Activity Implementation Sheet and includes the following information:

1. A description of the activity;

2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQPs of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no fewer than two watershed water quality activities will be in an active implementation phase. A watershed water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's HPWQPs. Watershed water quality activities that are capital projects are in active implementation for the first year of implementation only.

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

4.5.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the 2008 San Dieguito WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the High HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees made appropriate management decisions on which watershed water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees used available information to identify where additional water quality monitoring may be conducted to effectively determine the level of water quality problems.

The Updated 5-Year Strategic Plan presented at the end of this section is intended to supersede earlier versions presented in the 2008 San Dieguito WURMP and the FY 2008 through FY 2010 WURMP Annual Reports.

Table 4-10 Updated 5-Year Strategic Plan

Water Quality Activity/Project Name		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Nutrients	FY 2011	FY 2012	FY 2013	Future Fiscal Year(s)
Watershed Water Quality Activities								
SD-WQA2	Land Acquisitions	COUNTY	✓	✓	WQI	WQI	WQI	WQI
SD-WQA4	Coastal Cleanup Day Sponsorship	SD	✓		WQI	WQI	WQI	WQI
SD-WQA5	Sediment and Peak Flow Controls #1	SD	✓	✓	Project on hold			
SD-WQA6	Sediment and Peak Flow Controls #2	SD	✓	✓	Project on hold			
SD-WQA11	Bernardo Center Drive Trash Segregation BMP	SD	✓		M	WQI	Completed	
SD-WQA13	ILACSD Trash Cleanup Sponsorship	SD	✓		WQI	WQI	WQI	WQI
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach	ESC	✓	✓	WQI	WQI	-	-
SD-WQA18	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	✓	✓	P	WQI	A	-
SD-WQA19	Pet Waste Bag Dispenser Program in County Parks	COUNTY	✓		WQI	WQI	WQI	WQI
SD-WQA20	Outdoor Water Conservation Rebate Program	SD	✓	✓	Completed – Will no longer be reported			
SD-WQA22	City of San Diego *Strategic Plan for Watershed Activity Implementation*	SD	✓	✓	I	I	I	I
SD-WQA25	Rancho Bernardo Library Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	SD	✓	✓	P	P	P	P, WQI
SD-WQA26	Residential Rain Barrel Subsidies & Distribution	COUNTY	✓	✓	WQI	WQI	WQI	WQI
SD-WQA27	San Dieguito Property-Based Inspections	SD	✓		WQI	Completed – Will no longer be reported		
SD-WQA28	Rainwater Harvesting Rebate Pilot Program	SD	✓	✓	P	WQI	-	-
SD-WQA29	Residential Patrolling	DM	✓	✓	P	WQI	WQI	A
SD-WQA30	Commercial Area Patrolling Inspections	DM	✓	✓	P	WQI	WQI	A

Table 4-10 Updated 5-Year Strategic Plan - Continued

Activity/Project Name		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Nutrients	FY 2011	FY 2012	FY 2013	Future Fiscal Year(s)
Watershed Education Activities								
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	SD	✓		WE	WE	E	E
SD-WQEA10	San Dieguito River Watershed Brochure	SD	✓	✓	P	WE	WE	-
SD-WQEA11	Focused Outreach to the Equestrian Community	COUNTY	✓	✓	WE	WE	-	-
SD-WQEA12	RB Alive! Expo Street Fair	SD	✓	✓	P	WE	WE	-
SD-WQA26	Residential Rain Barrel Subsidies & Distribution	COUNTY	✓	✓	WE	WE	WE	WE

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

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5 Effectiveness Assessment

The Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, to assess the effectiveness of the activities conducted to meet those goals and objectives, and to identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.2.i of the Permit, and reports on the activities planned and implemented during FY 2011.

5.1 Assessment of Overall WURMP Effectiveness

Activities collaborated upon and selected by the Copermittees address the overall goal of the WURMP by focusing on the HPWQPs within the WMA.

As set forth in the Permit and outlined in the 2008 San Dieguito WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the Copermittees in FY 2011, and where in this report required compliance points are fulfilled or described.

Table 5-1 Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Not Applicable	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the WMA.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
Describe Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	In Progress	5.2

As shown in **Table 5-1**, the Copermittees were in compliance with all Level 1 WURMP related Permit requirements during FY 2011.

5.1.1 ACTIVITIES ASSESSMENT

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated on and selected activities that would address high level HPWQPs not only within each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in **Appendix B** identifies specific targeted outcomes (Levels 1 through 6 – as described in **Table 5-2** below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 5-2 Outcome Levels: Levels 1 through 6

Outcome Level		Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2011, there were nine (9) activities in the active implementation phase, seven (7) of which focused on water quality and two (2) focused on education. One of the water quality activities also included an educational component. These activities addressed the HPWQPs in the San Dieguito WMA, which include bacteria and nutrients; they are the activities that the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. **Tables 5-3** through **5-7**

below summarize the assessments of the water quality and education activities, on a HA basis, to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the table, the WURMP Copermittees are presenting their JURMP activities that are related to the HPWQPs in each HA. It is important to note that not all JURMP activities are included in this presentation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittee's FY 2011 JURMP Annual Report.

5.2 Assessment of TMDL BMP Implementation Plan Effectiveness

Regional Water Quality Control Board Order R9-2010-0001 (Bacteria TMDL) became effective on April 4, 2011. During the reporting period, the Copermittees initiated efforts to develop a Comprehensive Load Reduction Plan (CLRP). The CRLP is scheduled to be completed in October 2012 for submission to the RWQCB. The CLRP will include BMPs and activities selected specifically to address bacteria and other pollutants within the San Dieguito WMA. At this time, there are no adopted TMDLs with BMP implementation plans currently in effect within the San Dieguito WMA.

Table 5-3 Summary of Implemented Activities for FY 2011 – 905.1 Solana Beach Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Agricultural Facilities; Animal Facilities; Food Establishments; and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA. Approximately 473 tons were removed via street sweeping, and 1,875 tons were removed from the MS4 in this HA.
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SD-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2, and 4	No additional dispensers were added during FY 2011 to the 6 dispensers located throughout 2 parks in the WMA. Reducing the amount of pet waste found in parks and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SD-WQA27	San Dieguito Property-Based Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	Water Education	Bacteria	Levels 1, 2, and 3	Three Public Service Announcements (PSAs) were developed and broadcast on several TV and radio stations throughout the WMA from April to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean.

Table 5-4 Summary of Implemented Activities for FY 2011 – 905.2 Hodges Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Food Establishments; and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA. Approximately 492 tons were removed via street sweeping, and 1,705 tons were removed from the MS4 in this HA.
SD-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. No land was acquired during this fiscal year in this HA.
SD-WQA4	Coastal Cleanup Day Sponsorship	Water Quality	Bacteria	Levels 1 and 4	During this event 117 participants removed approximately 410 pounds of trash and debris and 8,700 pounds of recycling within the HA. At an estimated cost of $5,000 spent on the cleanup within the HA, the activity efficiency was approximately $0.55/lb.
SD-WQA13	ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Levels 1 and 4	During one event 80 participants removed 200 pounds of trash and debris and recycled 10,050 pounds of trash and debris. Sponsorship of this event resulted in a load reduction of 10,250 pounds of trash and debris. At an estimated cost of $5,000 spent on the cleanup within the HA, the activity efficiency was approximately $0.49/lb.
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SD-WQA26	Residential Rain Barrel Subsidies & Distribution	Water Quality	Bacteria	Levels 1 and 4	Rain barrel use is encouraged through a subsidy eligible to residents of unincorporated areas, and residents of incorporated cities are able to purchase rain barrels at an affordable price. The program promotes outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events. A total of 185 residents participated in these events and a total of 240 rain barrels were sold.
SD-WQA27	San Dieguito Property-Based Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	Water Education	Bacteria	Levels 1, 2, and 3	Three Public Service Announcements (PSAs) were developed and broadcast on several TV and radio stations throughout the WMA from April to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean.

Table 5-5 Summary of Implemented Activities for FY 2011 – 905.3 San Pasqual Hydrologic Area (HPWQPs = Bacteria & Nutrients)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria and Nutrients	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Food Establishments; and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria and nutrients in the HA. Approximately 605 tons were removed via street sweeping, and 1,169 tons were removed from the MS4 in this HA.
SD-WQA2	Land Acquisitions	Water Quality	Bacteria and Nutrients	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. No land was acquired during this fiscal year in this HA.
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria and Nutrients	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	Water Education	Bacteria	Levels 1, 2, and 3	Three Public Service Announcements (PSAs) were developed and broadcast on several TV and radio stations throughout the WMA from April to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean.

Table 5-6 Summary of Implemented Activities for FY 2011 – 905.4 Santa Maria Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Food Establishments; and Nurseries.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA. Approximately 109 tons were removed via street sweeping, and 662 tons were removed from the MS4 in this HA.
SD-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. No land was acquired during this fiscal year in this HA.
SD-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2, and 4	No additional dispensers were added during FY 2011 to the 6 dispensers located throughout 2 parks in the WMA. Reducing the amount of pet waste found in parks and educating the public on the need to cleanup after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	Water Education	Bacteria	Levels 1, 2, and 3	Three Public Service Announcements (PSAs) were developed and broadcast on several TV and radio stations throughout the WMA from April to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean.
SD-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2, and 3	Focused outreach leads to education, BMP implementation, and load-reducing effectiveness. Workshops targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.

Table 5-7 Summary of Implemented Activities for FY 2011 – 905.5 Santa Ysabel Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping which has a direct Load Reduction of bacteria in the HA. Approximately 71 tons were removed via street sweeping, and 431 tons were removed from the MS4 in this HA.
SD-WQA2	Land Acquisitions	Water Quality	All	Level 4	Land acquisitions can directly benefit water quality by precluding future development in those areas acquired. 121.48 acres of land were acquired during FY 2011 in this HA.
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	Water Education	Bacteria	Levels 1, 2, and 3	Three Public Service Announcements (PSAs) were developed and broadcast on several TV and radio stations throughout the WMA from April to June 2011. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. 32% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean.
SD-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2, and 3	Focused outreach leads to education, BMP implementation, and load-reducing effectiveness. Workshops targeted the equestrian community, including manure management, composting, and erosion control. Controlling animal waste and educating the public on BMPs will result in the reduction of pollutant loads, particularly bacteria and nutrients.

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6 Conclusions And Program Improvements

6.1 Conclusions

During FY 2011, the San Dieguito WURMP Copermittees strove to address the overall goal of the WURMP – to have a positive impact on the water quality of the San Dieguito WMA – by focusing on its HPWQPs. In order to target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 San Dieguito WURMP, which aims to link identified water quality problems to their potential sources. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the HPWQPs in the San Dieguito WMA are bacteria in all HAs and nutrients in the San Pasqual HA.

The San Dieguito WMA consists of five individual HAs. Therefore, to effectively address the WMA's water quality issues, the Copermittees identified and then evaluated the HPWQPs for likely sources at the individual HA level (see **Tables 3-2** through **3-6**). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; and b) water quality and education activities appear to be targeting sources of the HPWQPs and are considered effective at reducing the impacts of the sources. Based on this analysis, the Copermittees focused their activities on the following suspected priority sources: residential areas/activities; eating/drinking establishments; animal facilities; botanical/zoological gardens and nurseries; auto/mechanical repair, maintenance fueling, or cleaning; and Publicly Owned Treatment Works (POTWs). Potential sources of bacteria and nutrients from the residential, commercial, and industrial communities include activities such as irrigation runoff, sanitary sewer overflows, improper landscape maintenance, and improper use of fertilizers, herbicides and pesticides.

The Copermittees then developed and implemented watershed water quality and education activities to address these HPWQPs and their sources. **Tables 4-1** through **4-5** summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, nine (9) activities were implemented, seven (7) of which focused on water quality and two (2) on education, where one (1) of these water quality activities also had an educational component. All of these activities targeted the priority pollutants in the San Dieguito WMA, which are bacteria and nutrients. The Copermittees satisfied the Permit requirement by having at least two water quality activities and two education activities in active implementation during the reporting period.

The Copermittees performed additional JURMP activities addressing potential community sources during the reporting period. These included activities such as complaint response, dry weather urban runoff monitoring and source identification, and inspections of treatment control BMPs, as some in are designed to mitigate bacteria. Additionally, there are significant outreach events performed which are focused on the residential community

through the Copermittees' jurisdictional program and aimed at reducing over-irrigation, improper landscape maintenance, and improper use of fertilizers, herbicides, and pesticides.

In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees continued the process of collecting and reporting on JURMP and WURMP activities performed on an HA basis. The Copermittees believe that it is an important step toward integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees have responded to meet the challenges of implementing the requirements outlined in the Permit as they continue to refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs across the region. Furthermore, the San Dieguito WURMP Copermittees will continue to implement the activities described in Section 4 of this document in future reporting periods.

6.2 Program Improvements

The lack of water quality data directly related to sources makes true effectiveness assessment of the activities difficult. Without the data, the Copermittees are limited to qualitative assessments, which contain substantial assumptions linking the sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources, or collect data unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research and analysis of existing data, and monitoring. Significant source identification studies have been undertaken in southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level, i.e., evaluating the data from the larger watershed level. Analysis of the data at the HA level may provide useful information to the 2008 San Dieguito WURMP.

In many cases, water quality data may be unavailable to accurately characterize loading from suspected sources. Where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to collect water quality data to characterize the impacts. Without this confirmatory step, further assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true, effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 San Dieguito WURMP – to determine and target the sources contributing to the HPWQPs – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve water quality within the WMA;
- Integrate watershed principles into land use planning;
- Enhance public understanding of water pollution sources; and
- Encourage and develop stakeholder participation.

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SAN DIEGUITO WATERSHED
Urban Runoff Management Program

Fiscal Year 2012 Annual Report

January 31, 2013

Prepared and Submitted by the San Dieguito Watershed Copermittees

City of Del Mar
City of Escondido
City of Poway
City of San Diego
City of Solana Beach
County of San Diego

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County of San Diego

LAND USE AND ENVIRONMENT GROUP

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January 18, 2013

SAN DIEGUITO RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM (WURMP) FY 2011-12 ANNUAL REPORT STATEMENT OF CERTIFICATION

I certify, under penalty of perjury of law, that the County of San Diego's contributions to this FY 2011-12 San Dieguito River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer
Land Use and Environment Group
County of San Diego

Date 1/18/13

City of Del Mar

January 18, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott Huth
City Manager
City of Del Mar

January 31, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Christopher W. McKinney

Christopher W. McKinney
Director of Utilities
City of Escondido

CITY OF POWAY

DON HIGGINSON, Mayor
JOHN MULLIN, Deputy Mayor
JIM CUNNINGHAM, Councilmember
DAVE GROSCH, Councilmember
STEVE VAUS, Councilmember

January 31, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Robert J. Manis
Director of Development Services
City of Poway

Leah Browder
Director of Public Works
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THE CITY OF SAN DIEGO

January 18, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

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January 31, 2013

RE: STATEMENT OF CERTIFICATION
FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Dieguito Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. Sammak

Mohammed Sammak, P.E.
Director of Public Works/City Engineer
City of Solana Beach

EXECUTIVE SUMMARY

Since January 2002, the County of San Diego and the Cities of Del Mar, Escondido, Poway, San Diego and Solana Beach (herein referred to as the "Copermittees") have been active in planning, developing and implementing watershed-based programs in the San Dieguito Watershed Management Area (WMA) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007, by the San Diego Regional Water Quality Control Board (RWQCB). This Annual Report describes the actions taken by Copermittees in Fiscal Year (FY) 2012 (July 1st, 2011 to June 30th, 2012) to implement and refine the 2008 San Dieguito Watershed Urban Runoff Management Program (WURMP), and the progress made towards decreasing urban runoff and improving receiving water quality in the WMA.

The Copermittees collaborated on efforts to address high priority surface water quality issues throughout the San Dieguito WMA. This was coordinated through periodic meetings held throughout the reporting period. The meetings were held in order to effectively plan and implement the San Dieguito WURMP, develop and prioritize water quality activities that address pollutants of concern in the WMA, exchange ideas on how to address High Priority Water Quality Problems (HPWQPs) in the WMA, evaluate the effectiveness of actions, and collaborate on development of required submittals. In order to complete the objectives, the group performed assessments and conducted activities to address the water quality problems. These assessments and activities include: (1) a water quality assessment, (2) a pollutant source assessment, (3) planning and implementation of watershed activities, and (4) an assessment of the Copermittees' activities in the WMA.

As required, Copermittees implemented activities in the WMA as part of their Jurisdictional Urban Runoff Management Program (JURMP) and WURMP programs. In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees collected and reported JURMP and WURMP activities performed on a hydrologic area (HA) basis. This information is not comprehensive and, for some data sets, estimates were used to generate quantities of activities (this process is explained in **Appendix A**). The Copermittees believe that this is an important step to integrate the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees will continue to refine and augment the San Dieguito WURMP as they improve their understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality in the region. Such refinement and augmentation are supported by the iterative process used to develop and implement the San Dieguito WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

A summary of the program accomplishments for FY 2012 is found below:

San Dieguito Watershed URMP Workgroup

Building on the efforts in previous reporting periods, the Copermittees continued to develop and implement a watershed-based program that addresses the HPWQPs and their sources in the San Dieguito WMA. The WURMP Copermittees met ten (10) times over the course of the reporting period to plan, implement and assess watershed activities. Through workgroup collaboration, there has been an increase in the ability of the Copermittees to identify and address watershed source pollutants, an increase in public awareness,

partnerships formed with other organizations, and opportunities provided for collaboration resulting in cost-effective activities.

Water Quality Assessment

A water quality assessment was performed that includes a summary of analysis of the urban runoff and receiving waters in the San Dieguito WMA based on data collected and analyzed during the reporting period. In order to assess the water quality of regional WMAs on an annual basis, Regional Copermittees completed the *2011-2012 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2013) for FY 2012 in compliance with the San Diego Regional Water Quality Control Board Order No. R9-2007-0001. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 San Dieguito WURMP. As such, they do not represent a change from the previous year's high-priority water quality problems and constituents of concern.

HPWQPs in the San Dieguito WMA:

- Bacteria in all HAs
- Nutrients in the San Pasqual HA

Pollutant Source Assessment

During this reporting period, the Copermittees updated their assessment of potential pollutant generating sources in each hydrologic area in the WMA. The purpose of the assessment was to identify the high priority pollutant sources in each hydrologic area based on the HPWQPs identified and each source category's likelihood of generating those pollutants. For example, an HA with bacteria as a HPWQP would have sources such as Eating or Drinking Establishments and Animal Facilities included as high priority sources (in addition to others) based on these sources potential for generating bacteria as a pollutant.

Planning and Implementation of Watershed Activities

WURMP activities required by Order R9-2007-0001 were conducted during the reporting period. Collectively, fourteen (14) WURMP Watershed Activities were actively implemented for WURMP credit during the reporting period – this includes eleven (11) Water Quality Activities (one of which had an educational component) and three (3) Water Quality Education Activities. Additional activities were also in other phases such as planning and assessment in FY 2012. Each WURMP Activity is associated with at least one of the HPWQPs in each HA where the activity is implemented. Details of these activities are found in Section 4 and **Appendix B** of this Annual Report. The listing below identifies the activities actively implemented for WURMP credit:

Watershed Water Quality Activities

- Land Acquisitions
- Coastal Cleanup Day Sponsorship
- Bernardo Center Drive Trash Segregation BMP
- ILACSD Trash Cleanup Sponsorship
- Targeted Restaurant Facility Inspections and Outreach
- Pet Waste Bag Dispenser Program in County Parks
- Residential Rain Barrel Subsidies & Distribution
- Rainwater Harvesting Rebate Pilot Program
- Residential Patrolling

- Commercial Area Patrolling Inspections
- Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship

Watershed Education Activities

- San Dieguito River Watershed Brochure
- Focused Outreach to the Equestrian Community
- RB Alive! Expo Street Fair
- Residential Rain Barrel Subsidies & Distribution (Educational Component)

Activities selected and conducted by the Copermittees during the reporting period address the overall goal of the WURMP and the Permit by focusing on the HPWQPs within the WMA. The effectiveness of the individual activities is variable; however, collectively the Copermittees' program actions intend to have positive effects on water quality.

Effectiveness Assessment

The San Dieguito Watershed Copermittees continue to improve the program's effectiveness assessment by utilizing where appropriate the six-level assessment framework prepared by the Regional Copermittees in October 2003. This year's assessment continues to not only evaluate the effectiveness of each individual activity implemented during the reporting period, but also the overall program effectiveness. Although not comprehensive, the effectiveness assessment continues to lay the foundation for future in-depth evaluations of activities and program implementation.

Based upon the requirements of the Permit, the Copermittees are compliant and effective in implementing the San Dieguito WURMP.

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1 Introduction

This Annual Report describes the Copermittees' activities during the reporting period (July 1, 2011, through June 30, 2012) to implement Order No. R9-2007-0001 (Permit), issued on January 24, 2007, by the San Diego Regional Water Quality Control Board (RWQCB). To respond to the Permit, the Copermittees worked collaboratively to improve water quality within the Watershed Management Area (WMA) throughout Fiscal Year (FY) 2012. The Copermittees will continue to work to implement, improve, and enhance their programs and activities.

This annual report was prepared as a collaborative effort by all jurisdictions within the watershed. The lead Copermittee in this watershed is the City of Escondido. Other participating jurisdictions include the Cities of Del Mar, Poway, San Diego and Solana Beach, and the County of San Diego.

The Permit requires that the Copermittees within the San Dieguito Watershed collaborate in the development and implementation of a watershed-scale program that addresses urban runoff[1] quality. The rationale for this approach is simple: urban runoff does not adhere to jurisdictional boundaries and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative effect upon downstream receiving waters. The mechanism that the Permit uses to require watershed collaboration is the development and implementation of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to collaboratively identify and address the highest priority water quality issues/pollutants in each watershed and to develop and implement activities to reduce pollutant contributions from jurisdictions' urban runoff, which is conveyed through their respective stormwater infrastructure, (i.e., their municipal separate storm sewer systems, or MS4s). In addition, the Permit requires that the Copermittees develop education, public participation, and land use planning activities that complement and enhance the goals and objectives of their water quality activity program.

Fundamental to both establishing specific WURMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if they are correctly, collaboratively, and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions may be applied. The overall goal of the San Dieguito Watershed Urban Runoff Management Program is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP) and to prevent urban runoff discharges from causing or contributing to a violation of water quality standards.

Water quality priorities are evaluated each year and take into consideration the water quality assessment performed during each previous reporting period. The water quality activities performed during this reporting period were based on the water quality priorities identified in the 2008 San Dieguito WURMP. For the San Dieguito WMA, the water quality priorities are bacteria and nutrients.

[1] Urban runoff in the context of this report generally follows the Order R9-2007-0001 definition, and includes stormwater from precipitation events and non stormwater dry weather flows.

To target these water quality priorities, the program has identified a series of ongoing and planned water quality, education, public participation, and land use activities. Using the collective watershed strategy as the basis for developing and implementing the activities, the Copermittees focused their efforts on the potential sources that are the likely high-priority pollutant contributors in the San Dieguito WMA. This FY 2012 report details the implementation of the San Dieguito WURMP's collective watershed strategy.

1.1 COPERMITTEE COLLABORATION

1.1.1 SAN DIEGUITO WURMP MEETINGS

The Copermittees met ten (10) times during FY 2012 to develop and implement the San Dieguito WURMP. Four (4) of the San Dieguito Copermittees also participate in the Los Peñasquitos WURMP, so to maximize efficiency and prevent overlap of discussion, these meetings were held concurrently with the Los Peñasquitos WURMP Copermittees. The Copermittees collaborated to develop, prioritize, and implement watershed activities that address pollutants of concern and sources in the WMA and the development of the Annual Report. The Copermittees also exchanged ideas on how to address HPWQPs in the WMA and evaluated the effectiveness of the watershed activities. **Table 1-1** is a summary of the San Dieguito WURMP meetings and an outline of agenda items discussed at these meetings.

Table 1-1 WURMP Meeting Dates and Agenda Items Discussed

Date	Agenda Items Discussed
9/8/2011	TMDLs (Bacteria, Peñasquitos Lagoon), Annual Report, Temporary MLS Locations
10/13/2011	Presentation of Watershed Results, Cost Share Agreement, Annual Report, Temporary MLS Locations, TMDLs (Bacteria, Peñasquitos Lagoon), Workgroup Updates, Permit Reissuance Process
11/10/2011	ILACSD, Cost Share Agreement, Annual Report, TMDLs (Bacteria, Peñasquitos Lagoon), Workgroup Updates, Permit Reissuance Process
12/8/2011	Annual Report, TMDLs (Bacteria, Peñasquitos Lagoon), Cost Share Agreement, Workgroup Updates, Permit Reissuance Process, ILACSD Follow-Up
1/12/2012	CLRP Discussion, Annual Report, TMDLs (Bacteria, Peñasquitos Lagoon), Cost Share Agreement, Workgroup Updates, Permit Reissuance Process
2/9/2012	Outreach and Assessment, CLRP Development, Annual Report, TMDLs (Peñasquitos Lagoon), Cost Share Agreement, Permit Reissuance Process
3/8/2012	TMDLs (Peñasquitos Lagoon), CLRP Development, Cost Share Agreement, Permit Reissuance Process, Workgroup Updates, Activities, Updates
4/12/2012	Tentative Order R9-2012-0011, Follow-up 303(d) List, TMDLs (Bacteria, Peñasquitos Lagoon), CLRP Development, Cost Share Agreement, Workgroup Updates, Activities Updates
5/8/2012	Tentative Order R9-2012-0011, Follow-up 303(d) List, TMDLs (Bacteria, Peñasquitos Lagoon), CLRP Development, Cost Share Agreement, Workgroup Updates, Activities Updates, AMEC CLRP Special Studies Memo Discussion
6/7/2012	Tentative Order R9-2012-0011 and WQIPs, Follow-up 303(d) List, TMDLs (Bacteria, Peñasquitos Lagoon), CLRP Development, Cost Share Agreement, PPS Meeting Update, TWAS Locations

The general watershed meetings of the San Dieguito WURMP Workgroup were led by the City of Escondido, the WURMP lead Copermittee. A cost-share agreement was executed by the Copermittees to cover the cost of technical assistance for the watershed program.

Activities and tasks were then carried out by the Copermittees, each within the structure of their jurisdictional organization. Task completion was tracked and assessed at the Workgroup meetings and reported in this Annual Report.

1.2 WATERSHED MAP UPDATE

The San Dieguito River Watershed drains an area of approximately 221,440 acres in west–central San Diego County. The San Dieguito River watershed extends through a diverse array of habitats from the eastern headwaters in the Volcan Mountains to the outlet at the San Dieguito Lagoon and Pacific Ocean. The watershed consists of five hydrologic areas (HAs). The watershed includes portions of the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, and unincorporated areas of San Diego County. Land use within the watershed is classified primarily as vacant and undeveloped land (42%). Other major land use classifications are residential (19%), open space/parks and recreation (17%), and agriculture (15%). Transportation, commercial, industrial, public facility, and water comprise the remaining 7% of the watershed. Over 60% of the watershed is privately owned land. The remaining portions are mostly federally or locally owned, and a small percentage of land is state-owned.

No updates have been made to the previously submitted Watershed Map. A copy of the most recent Watershed Map from the San Dieguito WURMP Annual Report submitted in January 2009 can be found in **Attachment A** to this report.

1.3 ORGANIZATION AND CONTENT OF REPORT

SECTION 1 - Introduction
Section 1 of the Annual Report provides a summary of the Copermittees' efforts to implement the watershed program, including exchanging ideas and information on how best to address high-priority water quality pollutants in the watershed, as well as prioritizing water quality activities based on existing data and identified pollutant sources.

SECTION 2 - Water Quality Assessment
Section 2 provides an updated evaluation and analysis of the San Dieguito WMA's receiving water conditions based on applicable water quality data from the *2011-2012 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2013).

SECTION 3 - Pollutant Source Assessment
Section 3 provides an update on the likely sources of urban runoff. Although the assessment covers the entire WMA, it specifically addresses the distinct hydrologic areas that it encompasses; therefore, where applicable, an assessment is provided for each HA.

SECTION 4 - Implementation of Watershed Activities
Section 4 describes activities implemented by the Copermittees during the FY 2012 reporting period to enhance the public's understanding of basic watershed principles and sources of water pollution. The activities selected and conducted by the Copermittees during FY 2012 address the overall goal of the WURMP and the Permit by focusing on the HPWQPs in all HAs.

SECTION 5 - Effectiveness Assessment
Section 5 provides an assessment of the implementation and effectiveness of the San Dieguito WURMP for the FY 2012 reporting period using concepts from *A Framework for*

Assessing the Effectiveness of Jurisdictional Runoff Management Programs. The assessment includes evaluating compliance with the activity-based permit requirements, changes in knowledge and behavior, and best management practice (BMP) implementation and resulting changes in receiving water quality. Consistent with the requirements of the Permit, this assessment involves not only a comprehensive assessment of the WURMP, but also each water quality activity.

SECTION 6 - Conclusions

Section 6 provides conclusions and suggests improvements for focusing future program efforts based on the information presented in the Annual Report.

2 WATER QUALITY ASSESSMENT

This section provides an assessment of the 2011-2012 monitoring programs conducted in the San Dieguito River WMA. A complete presentation of the regional monitoring efforts conducted during the reporting period is located in the *2011-2012 San Diego County Municipal Copermittees Receiving Waters and Urban Runoff Monitoring Report* (Regional Annual Monitoring Report) (Weston, January 2013).

2.1 MONITORING PROGRAMS

Monitoring activities conducted in the WMA to comply with Order R9-2007-0001 are provided in **Table 2-1**. Two maps showing the monitoring station locations are provided in **Figures 2-1** and **2-2** on the following pages.

Table 2-1 2011-2012 Monitoring Program Activities

Program Data Set	Constituents Assessed	Number of Sites Assessed
Receiving Water Monitoring		**4**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	0
Rapid Stream Bioassessment and SMC Regional Monitoring Participation	Water chemistry, toxicity, bacteria, rapid stream bioassessment	1 SMC[1]
Wet Weather Monitoring	Water chemistry, toxicity, bacteria, and trash	0
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, TOC	0
Third-Party Data	Water chemistry and bacteria	3 Coastkeeper
Urban Runoff Monitoring		**179**
Jurisdictional Dry Weather Monitoring	Field and analytical water chemistry	95
Jurisdictional Dry Weather Monitoring	Trash	147
MS4 Outfall Random Dry Weather Monitoring	Water chemistry and bacteria	6
MS4 Outfall Random Wet Weather Monitoring	Water chemistry and bacteria	6
MS4 Outfall Targeted Dry Monitoring	Water chemistry, metals, and bacteria	12
MS4 Outfall Targeted Wet Monitoring	Water chemistry, metals, bacteria, and pesticides	1
Regional Source Identification Monitoring	Water chemistry, metals, bacteria, and pesticides	0
CSDM Program	Coastal Outfall and Receiving Waters bacteria	7

1: The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over 5 years.
CSDM – Coastal Storm Drain Monitoring
MLS – Mass Loading Station
SMC – Stormwater Monitoring Coalition
TOC – Total Organic Carbon
TWAS – Temporary Watershed Assessment Station

Annual receiving water monitoring is conducted by the Copermittees on a rotating schedule between the north and south portions of San Diego County as described in Table 1 of the Permit. Receiving waters ambient and wet weather monitoring occurred within the San Dieguito WMA during the 2010-2011 reporting period. During the 2011-2012 reporting period, limited receiving water monitoring was conducted by third party groups. MLS and TWAS stations were not monitored in 2011-2012 as the regional program was on South County rotation.

Figure 2-1 San Dieguito WMA Dry Weather Monitoring Station Location Map

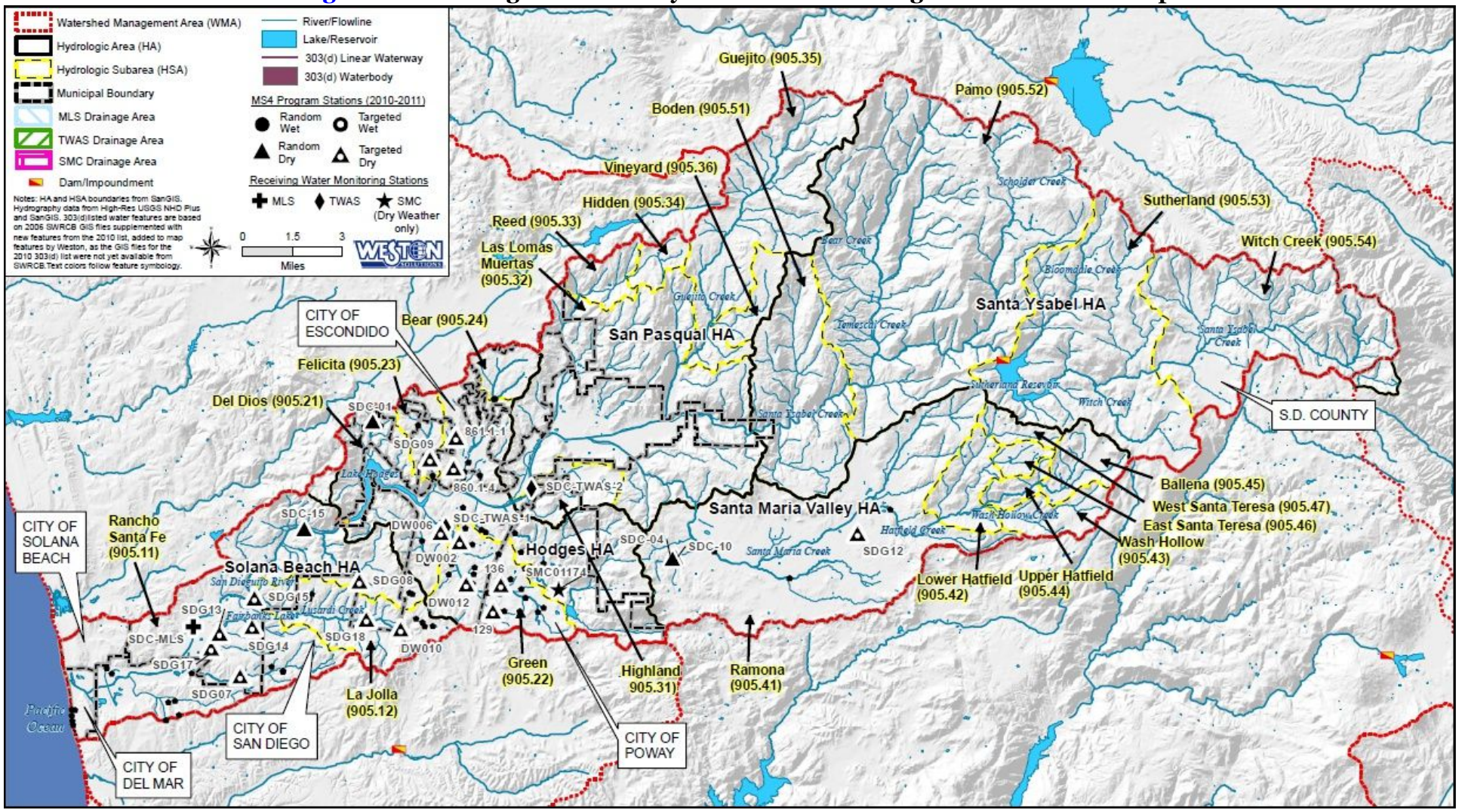

Figure 2-2 San Dieguito WMA Wet Weather Monitoring Station Location Map

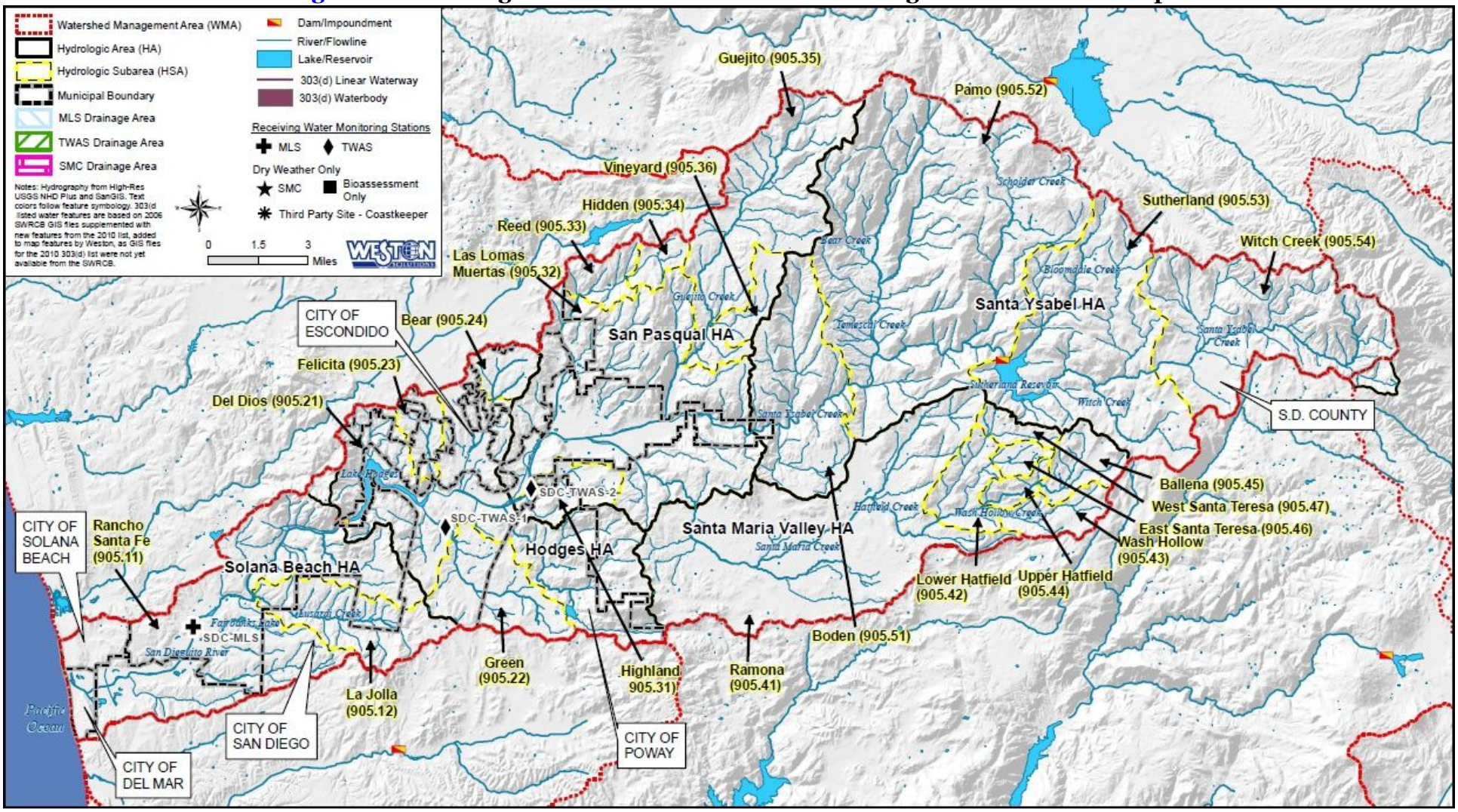

2.2 303(D) LISTINGS

Within the watershed, contaminants identified on the 2010 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in **Table 2-2** with relevant TMDL status/activity. On November 12, 2010, USEPA approved California's 2008-2010 Section 303(d) list of impaired waters and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. At that time, USEPA identified additional water bodies and pollutants for inclusion on the State's 303(d) list and provided public notice and the opportunity for public comment on the proposed additions which ended December 23, 2010. On October 11, 2011, USEPA issued its final decision regarding the waters EPA added to the State's 303(d) list.

Table 2-2 San Dieguito WMA 2010 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	HA	Pollutant/Stressor on 2010 SWRCB 303(d) List	TMDL Status
Pacific Ocean Shoreline, San Dieguito Lagoon Mouth	905.1	Total coliform	Approved June 2011
San Dieguito River	905.1	*Enterococcus*, fecal coliform, nitrogen, phosphorous, TDS, and toxicity	Proposed for completion in 2021
Green Valley Creek	905.2	Sulfates, chloride, manganese, and PCP	Proposed for completion in 2019
Lake Hodges	905.2	Phosphorous	Proposed for completion in 2013
		Color, nitrogen, turbidity, manganese, and pH	Proposed for completion in 2019
		Mercury	Proposed for completion in 2021
Kit Carson Creek	905.2	TDS and PCP	Proposed for completion in 2019
Felicita Creek	905.2	TDS and aluminum	Proposed for completion in 2019
Cloverdale Creek	905.3	Phosphorus and TDS	Proposed for completion in 2019
Sutherland Reservoir	905.5	Color, manganese, and pH	Proposed for completion in 2019
		Total nitrogen as N and iron	Proposed for completion in 2021
Santa Ysabel Creek, Upper	905.5	Toxicity	Proposed for completion in 2021

Source: SWRCB, 2010

In February 2010, the San Diego Water Board adopted Resolution No. R9-2010-0001, an Amendment to the Water Quality Control Plan for the San Diego Region to Incorporate the Revised Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Project I - Twenty Beaches and Creeks in the San Diego Region. This TMDL Basin Plan amendment includes the Pacific Ocean Shoreline at San Dieguito Lagoon Mouth. It was approved by the SWRCB in December 2010 and the USEPA on June 22, 2011.

2.3 ASSESSMENT

This section includes an integrated presentation of the watershed monitoring during both ambient and wet weather. The integrated assessment incorporates the results from watershed receiving water and urban runoff monitoring (MS4, MLS, TWAS, and SMC), with the purpose of overlapping constituents between the programs. Assessments were conducted using data from multiple current and historical monitoring programs, and the results derived using a weight-of-evidence approach. Each HA in the San Dieguito River WMA was assessed individually and summarized for the entire WMA by program element in **Table 2-3**.

Table 2-3 Summary of WMA Assessment Findings

WMA	Monitoring Program Elements	Assessment	Summary of Findings
San Dieguito WMA	Intermediate Receiving Water Monitoring[3]	Ambient Receiving Water Assessment (MLS, TWAS, SMC, and 3rd Party Data)	▪ SMC Program (SMC03222)[2]: - High priority: Chloride, Sulfate, Poor IBI, Total N, Total P, TDS ▪ Third Party Data (Coastkeeper): - High priority: *Enterococcus* MLS/TWAS receiving water monitoring was not conducted in FY 2012 FY 2011 Results: ▪ MLS and TWAS Constituents of Concern[1]: - High priority: *Enterococcus*, TDS, Toxicity (*C. dubia* acute, *S. capricornutum* acute), Very Poor IBI, Total N, Total P - Medium priority: Dissolved P
		Wet Weather Receiving Water Assessment (MLS and TWAS)	MLS/TWAS receiving water monitoring was not conducted in FY 2012 FY 2011 Results: ▪ MLS and TWAS Constituents of Concern[1]: - High priority: Fecal Coliform, Very Poor IBI, TDS - Medium priority: Toxicity (*C. dubia* acute) ▪ Pyrethroid concentrations were below detection limits in all sediment samples
		Rapid Stream Bioassessment	One bioassessment sample collected during ambient conditions and used for both the ambient and wet assessment. ▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed during the 2011-2012 monitoring year at SMC03222
	Urban Runoff Monitoring	Ambient Urban Runoff Areas Assessment (Jurisdictional, MS4, CSDM)	▪ Constituents of Concern[1]: - High priority: *Enterococcus,* Fecal Coliform, Total N, Total P, TDS, Chloride[2], Sulfate - Medium priority: Nitrate, Turbidity, TSS ▪ 147 trash assessments were made in the San Dieguito WMA. 95% were rated optimal or suboptimal, and the remaining 5% were marginal assessments. No sites assessed received submarginal or poor ratings, and no threats to human or aquatic health were identified.
		Wet Weather Urban Runoff Areas Assessment (MS4)	▪ Constituents of Concern[1]: - High priority: Fecal Coliform, TDS, Nitrate, Nitrate/Nitrite - Medium priority: TSS
	WMA Assessment	Receiving Water Trend Assessment	Trends are based on historical data, 2011-2012 monitoring year data unavailable due to South County rotation. ▪ Significantly increasing trends were observed for Total Phosphorous, Total Nickel, and TDS ▪ Significantly decreasing trends were not observed for any constituents
		2011 Long-Term Effectiveness Assessment (LTEA) Ratings	▪ WMA high priority ratings for Fecal Coliform, *Enterococcus*, Total P, Total N, TDS, TSS, Turbidity, Bifenthrin, Chlorpyrifos, Benthic Algae, BOD, and COD.

Notes:
1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.

IBI – Index of Biotic Integrity
TDS – Total Dissolved Solids
TSS – Total Suspended Solids
DO – Dissolved Oxygen
BOD – Biological Oxygen Demand
COD – Chemical Oxygen Demand

2.4 INTEGRATED ASSESSMENT

Assessment of the San Dieguito WMA during both wet weather and ambient weather monitoring conditions is presented in an integrated manner to provide managers with an overall assessment of the WMA and to provide answers to the core management questions as described in the regional monitoring program. The integrated assessment provides the results of the receiving water assessments and urban runoff assessments during both storm events and ambient weather events. It also provides a summary of the overall WMA findings. The integrated assessment further provides the ability to identify where Constituents of Concern (COCs) overlap between urban runoff and receiving waters. It is anticipated that MS4 Outfall Program data and Source Identification Monitoring Program data will bolster the assessment process as additional data become available in future years. Integrated WMA assessments results are presented in **Tables 2-4** and **2-5**.

Table 2-4 San Dieguito River MLS Drainage Area Assessment Findings Below Lake Hodges Dam

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Intermediate Receiving Water Monitoring[3] (MLS, TWAS, and SMC)	**Third-Party Data (Coastkeeper)** Bacteria – *Enterococcus* **SMC Program** No samples collected No MLS/TWAS monitoring during 2011-2012 FY 2011 Results: **NPDES Program – MLS** • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen, Total Phosphorous, Dissolved Phosphorous (Med) • TDS – Observed	No MLS/TWAS monitoring during 2011-2012 FY 2011 Results: **NPDES Program** • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med) • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – Observed **Synthetic Pyrethroids in Sediment[2]** • No priority constituents identified
Urban Runoff Monitoring (MS4 Outfall and DWM)	**MS4 Program** • Chemistry – Chloride[2], Sulfate[2] • Bacteria – *Enterococcus*, Fecal Coliform (Med) • Nutrients – Total Phosphorous, Total Nitrogen (Med) • TDS – Observed	**MS4 Program** • Chemistry – No priority constituents identified • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Not observed
MLS Trends[4]		
Increasing		Total Phosphorus, Total Nickel, and TDS
Decreasing		No Decreasing Trends

1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.
4: Trends are based on historical data, including data from the 2010-2011 monitoring year.

DO - Dissolved Oxygen
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Within the San Dieguito River MLS drainage area below Lake Hodges Dam, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, total nitrogen, total phosphorous, and TDS. High-priority constituents for the MLS include TDS, total nitrogen, total phosphorus, and *Enterococcus*, which is consistent with the Copermittees' *2011 Long-Term Effectiveness Assessment* (LTEA) (MOE, LWA, Weston, 2011), with the exception of a medium-priority designation for *Enterococcus*. The LTEA rated benthic algae and BOD as a high-priority, although these constituents were found to be low-priority according to current monitoring data.

Fecal coliform is the only wet weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters below Lake Hodges. TDS is the only high-priority constituent and fecal coliform is the only medium-priority constituent identified at the MLS based on the 2010-2011 monitoring data. TDS results are

consistent with the 5-year assessment in the LTEA, whereas fecal coliform is rated a high-priority constituent. The LTEA included TSS, turbidity, and bifenthrin as medium-priority constituents, although current monitoring data do not support these results.

Long-term trend analysis in the San Dieguito WMA is currently limited to wet weather data collected at the MLS. Due to rotational nature of the monitoring program, receiving water data for this station is not available for the 2011-2012 monitoring year; therefore, these trends did not change from those presented in the FY 2011 WURMP Annual Report. Based on the past data, three constituents are significantly increasing –total phosphorous, total nickel, and TDS. Of these three constituents, only TDS is above the wet weather water quality benchmark – concentrations of TDS are significantly increasing, but results are also consistently above water quality benchmarks. TDS has also been identified as a high-priority constituent during wet weather. Concentrations of total phosphorus are significantly increasing; however, monitoring results have been consistently below water quality benchmarks during wet weather. Total nickel does not have wet weather water quality benchmarks.

Table 2-5 San Dieguito River MLS Drainage Area Assessment Findings Above Lake Hodges Dam

System Assessed	Annual Dry Weather Constituent Assessment[1]	Annual Wet Weather Constituent Assessment[1]
Intermediate Receiving Water Monitoring[3] (MLS, TWAS, and SMC)	**SMC Program (One Station)[2]** • Chemistry – Chloride, Sulfate • Toxicity – No toxicity observed • Bioassessment – Very Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed **Third-Party Data** No samples collected No MLS/TWAS monitoring during 2011-2012 FY 2011 Results: **NPDES Program – SDC-TWAS-1** • Chemistry – No priority constituents identified • Toxicity – *C. capricornutum* acute • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Total Phosphorous (Med), Dissolved Phosphorous (Med) • TDS – Observed **NPDES Program – SDC-TWAS-2** • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med), *C. capricornutum* acute • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Total Phosphorous (Med), Dissolved Phosphorous (Med) • TDS – Observed	No MLS/TWAS monitoring during 2011-2012 FY 2011 Results: **NPDES Program – SDC-TWAS-1** • Chemistry – No priority constituents identified • Toxicity – No toxicity observed • Bioassessment – Very Poor IBI[2] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – Observed **NPDES Program – SDC-TWAS-2** • Chemistry – No priority constituents identified • Toxicity – *C. capricornutum* acute • Bioassessment – Very Poor IBI[2] • Bacteria – *Enterococcus* (Med) • Nutrients – Total Phosphorous (Med), Dissolved Phosphorous (Med) • TDS – Observed **Synthetic Pyrethroids in Sediment[2]** No priority constituents identified
Urban Runoff Monitoring (MS4 Outfall and DWM)	**MS4 Program** • Chemistry – Sulfate, Chloride (Med) • Bacteria – *Enterococcus*[2], Fecal Coliform[2] • Nutrients – Total Nitrogen, Total Phosphorous • TDS – Observed	**MS4 Program[2]** • Chemistry – No priority constituents identified • Bacteria – No priority constituents identified • Nutrients – Nitrate as N, Nitrate/Nitrite as N • TDS – Observed

1: High and medium priority constituents are determined following the WMA Assessment Methodology developed during the 2009-2010 Monitoring Season (Weston 2011).
2: One sample used in the analysis.
3: Intermediate receiving waters are creeks and rivers.

DO - Dissolved Oxygen
DWM - Dry Weather Monitoring
IBI - Index of Biotic Integrity
Med - Medium Priority Constituent
MLS - Mass Loading Station
MS4 - Municipal Separate Storm Sewer System
SMC - Stormwater Monitoring Coalition
TDS - Total Dissolved Solids
TSS - Total Suspended Solids
TWAS - Temporary Watershed Assessment Station

Above Lake Hodges Dam, ambient weather water quality issues outlined by the monitoring programs in both urban runoff and intermediate receiving waters include: *Enterococcus*, total nitrogen, total phosphorous, and TDS. Based on the 2010-2011 monitoring data, TDS is the only ambient weather high-priority constituent at SDC-TWAS-1, which is consistent with the LTEA. Total and dissolved phosphorus and *Enterococcus* were rated as medium priorities. Based on the 2010-2011 data, TDS is the only high-priority ambient constituent at SDC-TWAS-2 which is consistent with the LTEA. *Enterococcus*, total phosphorous, and

dissolved phosphorus are medium-priority constituents at SDC-TWAS2. BOD, TSS, turbidity (all low-priority in 2010-2011), and *Enterococcus* were rated as high priorities and MBAS (another low-priority constituent based on the 2010-2011 monitoring data) was rated a medium-priority constituent in the LTEA.

No wet weather water quality issues were outlined by both monitoring programs above Lake Hodges, although only one wet weather MS4 outfall sample was collected during the 2011-2012 monitoring year. Wet weather high-priority constituents upstream of Lake Hodges at SDC-TWAS-1 include TDS and fecal coliform. This compares to a medium priority rating for these constituents in the LTEA. TDS is the only high-priority constituent monitored at SDC-TWAS-2.

At present there are insufficient data to complete trend analyses on available ambient and wet weather receiving water data upstream of the Lake Hodges dam as three (3) years of monitoring are necessary. Additional monitoring efforts will result in a more robust data set that may be analyzed for trends during future reporting periods.

2.5 HIGH PRIORITY WATER QUALITY PROBLEMS

Based on the assessments above and the available water quality data, the Copermittees have determined that the HPWQPs in the San Dieguito WMA are:

1. Bacteria in all HAs
2. Nutrients in the San Pasqual Hydrologic Area

It should be noted that the HPWQPs have not changed from previous assessments or the 2008 San Dieguito WURMP.

3 Pollutant Sources Assessment

This section identifies, to the extent possible, the potential sources, pollutant discharges, and/or other factors causing the San Dieguito WMA's HPWQPs. The pollutant source assessment is based on currently available data associated with the urban runoff management programs and is presented by HA.

Table 3-1 summarizes the land use in each of the HAs. Land use information is generally associated with wet weather urban runoff, where rainfall runoff has the potential to contribute pollutants to the receiving waters from areas that are collectively associated with particular land use types. Conversely, dry weather urban runoff is generally associated with point dischargers such as residences, commercial facilities, etc., where pollutants enter the runoff from pollutant-generating activities and from the conveyances as runoff enters and travels through the MS4. Potential pollutant generating activities include irrigation runoff, sanitary sewer overflows, improper landscape maintenance, and improper use of fertilizers, herbicides, and pesticides.

Through four studies performed by the City of San Diego – *Tecolote Creek Microbial Source Tracking Summary* (City of San Diego, 2010), *San Diego River Source Tracking Investigation* (City of San Diego, 2010), *Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek* (City of San Diego and Weston, 2009), and, *San Diego County Enterococcus Regrowth Study* (SCCWRP, 2012) – it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates that regrowth in catch basins is a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[2], was found to provide both a transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishii et al., 2007; Yamahara et al., 2009).

Tables 3-2 through **3-6** present an inventory of pollutant-generating sources that the Copermittees currently track by HA. The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in each table (yellow highlight signifies HPWQP). This HPWQP is then associated with the sources that are likely to generate those pollutants (blue highlight). The process used to develop the tables was taken directly from the Copermittees' LTEA. The data used for the process includes the following: (1) results in the *2011-2012 Regional Annual Monitoring Report* (Weston Solutions, January 2013); (2) current inventory information from all watershed Copermittees; and (3) the Source Loading Potential (SLP) ratings from the LTEA (MOE, LWA, Weston, 2011).

[2] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

Table 3-1 Land Use Acreage by Hydrologic Area

Land Use	Hydrologic Area (acres)				
	905.1	905.2	905.3	905.4	905.5
Open Space	8,515.0	7,992.4	8,846.9	2,686.9	19,936.5
Single Family Residential	5,324.2	7,024.4	233.1	857.4	38.2
Vacant and Undeveloped Land	3,393.6	3,794.6	18,875.4	12,481.8	48,041.7
Spaced Rural Residential	3,114.5	3,127.6	3,187.4	11,584.3	3,118.6
Roads and Freeways	2,541.3	2,457.9	371.4	959.1	393.0
Agricultural, Orchards, Vineyards	1,217.2	1,802.9	11,357.3	6,479.8	9,561.9
Parks, Golf Courses, Cemeteries	1,888.1	1,183.5	248.4	225.0	0.0
Lake, Reservoir, Large Pond	56.2	992.9	13.4	0.0	535.0
Multi-Family Residential	620.3	716.7	31.1	119.9	0.0
Commercial	445.2	437.3	643.4	236.1	11.6
Institutional	303.0	374.3	27.1	276.7	2.7
Recreation	464.3	106.1	102.4	60.7	183.7
Industrial	389.9	88.5	18.6	90.5	0.0
Construction	116.3	77.8	47.4	84.6	48.2
Utilities	145.2	66.4	55.7	101.3	13.4
Health Services	6.5	14.7	0.0	5.4	0.0
Automotive and Transportation	8.8	9.5	0.0	264.1	0.0
Storage and Warehousing	42.8	2.4	0.0	11.9	0.0
Junkyard, Dump, Landfill	0.0	0.0	0.0	11.1	72.4
Beach, Bay, Lagoon	100.3	0.0	0.0	0.0	0.0

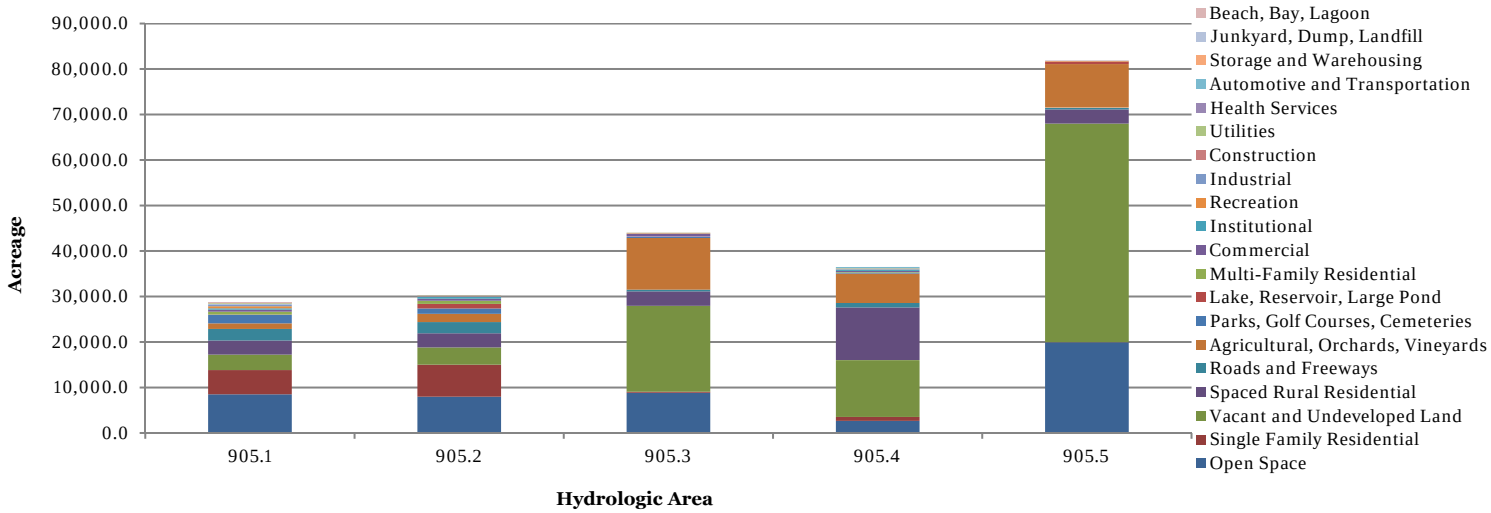

Source: SANDAG, 2009

Table 3-2 Pollutant Generating Sources – 905.1 Solana Beach Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Animal Facilities	15	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	19	L	L	UL	UL	UK	UL	L	L
Auto Body Repair or Painting	3	L	L	UL	UL	UL	UL	L	L
Building Materials Retail	1	L	L	L	UL	UL	UL	UL	L
Concrete Manufacturing	1	L	L	L	UL	UL	UL	UL	L
Eating or Drinking Establishments	181	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	5	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	14	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	6	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	9	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	10	L	L	UK	UK	UK	UK	UK	L
General Retail	35	UL	UL	L	UL	UL	UL	UL	UL
Health Services	3	N	UL	L	UK	L	UL	UK	L
Institutional	2	L	UK	UK	UK	UK	UL	UK	UK
Mobile Landscaping	1	N	UL	L	L	L	L	UL	N
Motor Freight	6	L	L	UK	UK	UK	UK	UL	L
Nurseries/Greenhouses	5	L	UL	L	L	L	L	UL	UL
Offices	33	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	9	UK	UK	UK	UK	L	UK	UL	UK
Stone/Glass Manufacturing	1	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	55	L	L	L	UL	UL	UL	UL	L
Municipal	High: 40; Non-High: 24	N	N	L	N	N	UK	UL	N
Construction	High: 225; Medium: 41; Low: 768	UL	UL	L	UL	UL	UL	L	UL
Residential	9,059 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-3 Pollutant Generating Sources – 905.2 Hodges Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Agriculture	2	L	UL	L	L	L	L	UK	UL
Animal Facilities	16	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	23	L	L	UL	UL	UK	UL	L	L
Auto Body Repair or Painting	8	L	L	UL	UL	UL	UL	L	L
Eating or Drinking Establishments	179	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	9	L	L	UL	UL	UK	UL	UL	L
Fabricated Metal	8	L	L	UK	UK	UK	UL	UL	L
Food Manufacturing	2	UL	UL	UL	UL	UL	UL	UL	UL
General Contractors	20	UL	UL	L	UL	UL	UL	UL	UL
General Industrial	11	L	L	UK	UK	UK	UK	UK	L
General Retail	27	UL	UL	L	UL	UL	UL	UL	UL
Health Services	1	N	UL	L	UK	L	UL	UK	L
Institutional	6	L	UK	UK	UK	UK	UL	UK	UK
Mobile Upholstery Cleaning	1	N	UK	UL	N	UK	UL	N	UL
Mobile Landscaping	2	N	UL	L	L	L	L	UL	N
Motor Freight	14	L	L	UK	UK	UK	UK	UL	L
Nurseries/Greenhouses	7	L	UL	L	L	L	L	UL	UL
Offices	4	UK	UK	UK	UK	UK	UK	UK	UK
Parks and Rec (incl. Golf, Cemetery)	6	UK	UK	UK	UK	L	UK	UL	UK
Pest Control Services	3	N	UK	N	L	N	UK	N	UK
Pool and Fountain Cleaning	3	N	N	N	N	UK	N	N	UK
Stone/Glass Manufacturing	1	L	L	L	UL	UL	UL	UL	L
Storage/Warehousing	47	L	L	L	UL	UL	UL	UL	L
Municipal	High: 32; Non-High: 23	N	N	L	N	N	UK	UL	N
Construction	High: 5; Medium: 17; Low: 423	UL	UL	L	UL	UL	UL	L	UL
Residential	10,869 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-4 Pollutant Generating Sources – 905.3 San Pasqual Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities			Pollutant Source Loading Potential[3]							
				Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Animal Facilities	2			N	UL	L	UK	L	L	N	L
Auto Parking Lots or Storage	1			L	L	L	UK	UK	UK	UL	L
Equipment Repair or Fueling	1			L	L	UL	UL	UK	UL	UL	L
Food Manufacturing	1			UL	UL	UL	UL	UL	UL	UL	UL
Institutional	1			L	UK	UK	UK	UK	UL	UK	UK
Nurseries/Greenhouses	7			L	UL	L	L	L	L	UL	UL
Parks and Rec (incl. Golf, Cemetery)	1			UK	UK	UK	UK	L	UK	UL	UK
Municipal	High	Non-High		N	N	L	N	N	UK	UL	N
	3	5									
Construction	High	Medium	Low	UL	UL	L	UL	UL	UL	L	UL
	11	15	406								
Residential	3,352 acres			L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-5 Pollutant Generating Sources – 905.4 Santa Maria Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities	Pollutant Source Loading Potential[3]							
		Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Animal Facilities	13	N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	29	L	L	UL	UL	UK	UL	L	L
Auto Body Repair or Painting	14	L	L	UL	UL	UL	UL	L	L
Eating or Drinking Establishments	56	N	L	UL	UK	UK	L	UL	L
Equipment Repair or Fueling	7	L	L	UL	UL	UK	UL	UL	L
General Contractors	4	UL	UL	L	UL	UL	UL	UL	UL
General Retail	3	UL	UL	L	UL	UL	UL	UL	UL
Nurseries/Greenhouses	14	L	UL	L	L	L	L	UL	UL
Parks and Rec (incl. Golf, Cemetery)	3	UK	UK	UK	UK	L	UK	UL	UK
Roads, Streets & Parking	2	L	L	L	UL	L	L	L	L
Municipal	High: 2; Non-High: 16	N	N	L	N	N	UK	UL	N
Construction	High: 1; Medium: 7; Low: 123	UL	UL	L	UL	UL	UL	L	UL
Residential	12,561 acres	L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

Table 3-6 Pollutant Generating Sources – 905.5 Santa Ysabel Hydrologic Area[1]

Inventory Sites/Facilities[2]	Quantities			Pollutant Source Loading Potential[3]							
				Metals	Oil & Grease	Sediment	Pesticides	Nutrients	Bacteria/ Pathogens	Dissolved Minerals	Organics
Animal Facilities	3			N	UL	L	UK	L	L	N	L
Auto Repair, Fueling, or Cleaning	2			L	L	UL	UL	UK	UL	L	L
Eating or Drinking Establishments	4			N	L	UL	UK	UK	L	UL	L
Nurseries/Greenhouses	1			L	UL	L	L	L	L	UL	UL
Municipal	High	Non-High		N	N	L	N	N	UK	UL	N
	1	3									
Construction	High	Medium	Low	UL	UL	L	UL	UL	UL	L	UL
	1	1	36								
Residential	3,147 acres			L	L	L	L	L	L	L	L

The highest threat-to-water-quality (TTWQ) rated sources within each HA based on the HPWQPs are identified in the table (yellow highlight signifies HPWQP). The HPWQP is associated with the sources that are likely to generate those pollutants (blue highlight).

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.
2: Other sources are not reported in this table including: Land Development and Non-inventoried Businesses.
3: Pollutant Source Loading Potential taken from LTEA 2011; N = None, UK = Unknown, UL = Unlikely, L = Likely.

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4 Implementation of Watershed Activities

4.1 JURMP and Watershed Activities

The Copermittees are responsible for implementing Jurisdictional Urban Runoff Management Program (JURMP) activities throughout their jurisdictions in an effort to improve the water quality of urban runoff. These activities have historically been reported only in jurisdictional annual reports. The Copermittees recognize that in order to assess the effectiveness of urban runoff management programs, it is important to track and report the data and information on a watershed basis.

Copermittees implemented activities in the watershed as part of the JURMP and WURMP programs. To develop meaningful analysis of the results and assessment of activities conducted, the data and information is reported on an HA basis. However, the JURMP data and information is not comprehensive and for some data sets, estimates were used to generate quantities on an HA basis – this estimation process is explained in **Appendix A** of the report.

In addition to their JURMP activities, the Copermittees are responsible for identifying and implementing watershed water quality activities that address the HPWQPs in the WMA. These activities may be implemented individually or collectively at the regional, watershed or jurisdictional level. The activity selection process is described fully in the March 2008 San Dieguito WURMP.

The tables below present the Copermittees' efforts to report all urban runoff management activities on a watershed basis. Moreover, a comprehensive account of all urban runoff management activities on a watershed basis will assist in the effectiveness assessment when attempting to connect sources to urban runoff water quality problems and activities to urban runoff water quality improvements. The tables identify the WURMP and many of the JURMP activities that are associated with the HPWQPs in each HA.

Collectively, the Copermittees actively implemented:

- Six (6) watershed water quality activities and two (2) watershed education activities in the Solana Beach HA (905.1);
- Eight (8) watershed water quality activities and two (2) watershed education activities in the Hodges HA (905.2);
- Five (5) watershed water quality activities and one (1) watershed education activity in the San Pasqual HA (905.3);
- Two (2) watershed water quality activities and two (2) watershed education activities in the Santa Maria HA (905.4); and,
- One (1) watershed water quality and two (2) watershed education activities in the Santa Ysabel HA (905.5).

It is worth noting that several of these activities overlapped HAs. The effectiveness assessments for these activities are presented on the Activity Implementation Sheets (**Appendix B**) and are summarized in the Section 5 – Effectiveness Assessment.

Table 4-1 JURMP and WURMP Activities – 905.1 Solana Beach Hydrologic Area[1]

Activity		Results	HPWQP Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Animal Facilities	41: (15)	✓
	Eating or Drinking Establishments	532: (181)	✓
	Mobile Landscaping	1: (1)	✓
	Nurseries/Greenhouses	5: (5)	✓
Street Sweeping (Tons Collected)		604.6	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		147.9	✓
SD-WQA2	Land Acquisitions		✓
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach		✓
SD-WQA28	Rainwater Harvesting Rebate Pilot Program		✓
SD-WQA29	Residential Patrolling		✓
SD-WQA30	Commercial Area Patrolling Inspections		✓
SD-WQA31	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship		✓
SD-WQEA10	San Dieguito River Watershed Brochure		✓
SD-WQEA12	RB Alive! Expo Street Fair		✓

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-2 JURMP and WURMP Activities – 905.2 Hodges Hydrologic Area[1]

Activity		Results	HPWQP Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Agriculture	2: (2)	✓
	Animal Facilities	5: (16)	✓
	Eating or Drinking Establishments	138: (179)	✓
	Mobile Landscaping	0: (2)	✓
	Nurseries/Greenhouses	3: (7)	✓
Street Sweeping (Tons Collected)		844.4	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		450.2	✓
SD-WQA4	Coastal Cleanup Day Sponsorship		✓
SD-WQA11	Bernardo Center Drive Trash Segregation BMP		✓
SD-WQA13	ILACSD Trash Cleanup Sponsorship		✓
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach		✓
SD-WQA19	Pet Waste Dispenser Program in County Parks		✓
SD-WQA26	Residential Rain Barrel Subsidies & Distribution		✓
SD-WQA28	Rainwater Harvesting Rebate Pilot Program		✓
SD-WQA31	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship		✓
SD-WQEA10	San Dieguito River Watershed Brochure		✓
SD-WQEA12	RB Alive! Expo Street Fair		✓

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-3 JURMP and WURMP Activities – 905.3 San Pasqual Hydrologic Area[1]

Activity		Results	HPWQPs	
			Bacteria/ Pathogens	Nutrients
Inspections # of Inspections: (Inventory #)	Animal Facilities	2: (2)	✓	✓
	Nurseries/Greenhouses	2: (7)	✓	✓
	Parks and Rec (incl. Golf, Cemetery)	1: (1)		✓
Street Sweeping (Tons Collected)		492.6	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		253.5	✓	✓
SD-WQA2	Land Acquisitions		✓	✓
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach		✓	✓
SD-WQA19	Pet Waste Dispenser Program in County Parks		✓	
SD-WQA28	Rainwater Harvesting Rebate Pilot Program		✓	✓
SD-WQA31	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship		✓	
SD-WQEA10	San Dieguito River Watershed Brochure		✓	✓

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-4 JURMP and WURMP Activities – 905.4 Santa Maria Hydrologic Area[1]

Activity		Results	HPWQP
			Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Animal Facilities	3: (13)	✓
	Eating or Drinking Establishments	9: (56)	✓
	Nurseries/Greenhouses	3: (14)	✓
	Roads, Streets & Parking	2: (2)	✓
Street Sweeping (Tons Collected)		211.6	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		215.1	✓
SD-WQA19	Pet Waste Dispenser Program in County Parks		✓
SD-WQA26	Residential Rain Barrel Subsidies & Distribution		✓
SD-WQEA10	San Dieguito River Watershed Brochure		✓
SD-WQEA11	Focused Outreach to the Equestrian Community		✓

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

Table 4-5 JURMP and WURMP Activities – 905.5 Santa Ysabel Hydrologic Area[1]

Activity		Results	HPWQP Bacteria/Pathogens
Inspections # of Inspections: (Inventory #)	Animal Facilities	1: (3)	✓
	Eating or Drinking Establishments	0: (4)	✓
	Nurseries/Greenhouses	0: (1)	✓
Street Sweeping (Tons Collected)		479.1	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		481.6	✓
SD-WQA26	Residential Rain Barrel Subsidies & Distribution		✓
SD-WQEA10	San Dieguito River Watershed Brochure		✓
SD-WQEA11	Focused Outreach to the Equestrian Community		✓

1: Prepared based on the Copermittees FY 2012 JURMP Annual Reports. The methodology for developing the tables is included as **Appendix A** to this report.

4.2 WATERSHED EDUCATION ACTIVITIES

This section describes activities implemented by the San Dieguito WURMP Copermittees during the FY 2012 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing education activities that address the HPWQPs in the San Dieguito WMA. The activity selection process is described fully in the 2008 San Dieguito WURMP.

The Copermittees continue to make progress in implementing programs aimed at improving storm water and urban runoff water quality in the WMA. **Table 4-6** below lists the education activities implemented during FY 2012 by the Copermittees. In addition, another education activity was in the active planning phase during the reporting period. For more details on all of the activities, refer to **Table 4-8** and **Appendix B**.

Table 4-6. Watershed Education Activities Implemented During FY 2012

ID #	Activity/Project Name
SD-WQEA10	San Dieguito River Watershed Brochure
SD-WQEA11	Focused Outreach to the Equestrian Community
SD-WQEA12	RB Alive! Expo Street Fair
SD-WQA26	Residential Rain Barrel Subsidies & Distribution (Educational Component)

The effectiveness assessments for these activities are presented in the Activity Implementation Sheets (**Appendix B**) and are summarized in Section 5 – Effectiveness Assessment.

4.3 Public Participation Activities

4.3.1 Introduction

The Public Participation component of the 2008 San Dieguito WURMP encourages residents and organizations within the WMA (such as other agencies, private companies, and environmental groups) to become involved in improving water quality in their communities. This is achieved through public meetings and community workshops, Project Clean Water, and other methods, including direct interaction of San Dieguito WURMP Copermittee staff with members of the public.

4.3.2 Activities Conducted

WURMP documents and reports are posted on the Project Clean Water website, http://www.projectcleanwater.org, where they are available to all interested stakeholders. During the previous reporting period, revisions were made to update the content and documents available via the site. During FY 2012, hits at the Project Clean Water website totaled 35,299, or an average of 97 site visits per day.

Copermittees worked in cooperation with the Regional Education and Residential Sources workgroup. During this reporting period, the Copermittees participated in twenty-six (26) community events outlined in the list below.

Outreach Events

The Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- June 10 - July 3, 2011 – San Diego County Fair
- July 19, 2011 – Escondido Farmers Market
- August 10, 2011 – Escondido Rustic Village
- August 16, 2011 – Escondido Farmers Market
- August 27, 2011 – Beach Blanket Movie Night, Solana Beach
- September 10, 2011 – Escondido Grape Day Festival
- September 17, 2011 – California Coastal Cleanup Day
- September 18, 2011 – Rendezvous in Poway Festival
- September 19-29, 2011 – Escondido Pollution Prevention Week
- September 28, 2011 – Educators' Night Out
- October 18, 2011 – Escondido Farmers Market
- November 3, 2011 – Employee Health & Lifestyle EXPO
- November 9, 2011 – California Friendly Landscape Class
- November 19, 2011 – International Equestrian Center Workshop
- December 6, 2011 – Escondido Farmers Market
- December 15-17, 2011 – Day Without a Bag (Countywide)
- March 10, 2012 – Ramona Community Garden Workshop
- March 25, 2012 – Paws in the Park
- April 5, 2012 – Used Oil Recycling Presentation
- April 28, 2012 – Dia del Nino
- April 28, 2012 – Creek to Bay Cleanup
- May 18, 2012 – Ramona Rodeo
- May 20, 2012 – Escondido Street Faire

- June 2 - June 3, 2012 – Fiesta del Sol
- June 3, 2012 – RB Alive! Expo Street Fair
- June 23, 2012 – San Diego County Fair – Enviro Fair

Two (2) cleanup events took place at seven (7) locations in the WMA that included approximately 820 participants. These events are presented in **Table 4-7** below. Watershed concepts and principles were incorporated into outreach efforts at booth displays and event activities.

Table 4-7 Community Cleanup Events in FY 2012

Date	Name	Location	# of Participants	# of Pounds Removed	Hydrologic Area
9/17/2011	Coastal Cleanup Day	Fletcher Cove, Solana Beach	105	230	Solana Beach (905.1)
		Powerhouse Park, Del Mar	90	157	Solana Beach (905.1)
		San Dieguito Lagoon, Del Mar	44	1,574	Solana Beach (905.1)
		Lake Hodges, Escondido	73	12,210	Hodges (905.2)
		Poway Lake, Poway	137	180.5	Hodges (905.2)
4/28/2012	Creek to Bay Cleanup	Fletcher Cove, Solana Beach	89	310	Solana Beach (905.1)
		Lake Hodges, Escondido	63	14,430	Hodges (905.2)
		Rancho Bernardo Community Park, San Diego	134	422	Hodges (905.2)
		Ramona Community Park, Ramona	85	1,880	Santa Maria (905.4)
		Totals	**820**	**31,393.5**	-

Other events included focused presentations to residents and targeted communities, stormwater training for municipal employees, guided watershed hikes, residential oil and hazardous waste collections and tire collections.

4.3.3 FUTURE EFFORTS

The Copermittees will continue to provide opportunities for residents and other interested parties to participate in San Dieguito WURMP activities. Documents and other information will be posted on the Project Clean Water website to elicit feedback. Community events and workshops will encourage involvement of all stakeholders in improving water quality throughout the San Dieguito WMA.

4.4 COLLABORATIVE LAND-USE PLANNING EFFORTS

4.4.1 INTRODUCTION

The Land-Use Planning component of the 2008 San Dieguito WURMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning and to increase coordination of land-use planning goals and principles across Copermittees within the WMA. Effective land-use planning can provide important water quality protection by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control

measures may be identified and imposed during land development and redevelopment activities.

4.4.2 ACTIVITIES CONDUCTED

Integrated Regional Water Management (IRWM)

The Copermittees have been active participants in the Integrated Regional Water Management (IRWM) planning process (IRWMPP) since its beginning in 2005. The IRWM Plan provides a mechanism for coordinating, refining and integrating existing planning efforts within a comprehensive, regional context; identifying specific regional and watershed-based priorities for implementation projects; and providing funding support for the plans, programs, projects, and priorities of existing agencies and stakeholders.

During FY 2012, the IRWM Program held five (5) Regional advisory Committee (RAC) meetings plus the first ever IRWM Summit to kick off the formal public participation for the update of the IRWM Plan. The RAC meetings provided updates on the IRWM Planning efforts, City of San Diego Climate Change Mitigation and Adaptation Plan, Municipal Stormwater NPDES Permit renewal, and Bacteria TMDL implementation plans.

Quality of Life Funding Strategy

The County of San Diego has participated in the SANDAG Quality of Life Funding Strategy since 2009, taking the lead on the Water Quality Enhancement Element. The County continues to work collaboratively with other Copermittees and interested regional stakeholders, to explore funding options, and priorities for water quality needs within the region. In April 2011 a Needs Assessment Cost Estimate (report) was developed for the region, to begin the process of establishing funding priorities related to water quality and to provide water quality need and costing information to SANDAG for the Quality of Life Funding Strategy. The report has also been found to be a useful tool when estimating costs for TMDLs that were recently adopted in the region.

SANDAG conducted additional polling in late 2011 to test the climate for a ballot measure, as the TransNet Extension Ordinance required the agency to take the funding strategy to the voters 'no later than November of 2012'. Given the current economic climate, a measure was not determined to be feasible, and would likely fail. In 2012 SANDAG voted to amend the TransNet Extension Ordinance language to reflect a date 'no later than November of 2016'. Furthermore, SANDAG is developing an update to the Regional Comprehensive Plan (RCP) which will incorporate the newly adopted Regional Transportation Plan (RTP) creating a comprehensive regional infrastructure document. SANDAG is currently considering using the Funding Strategy as the funding mechanism for regional infrastructure, operations and maintenance. This is an ongoing effort that currently has a vision beyond 2016.

4.4.3 FUTURE EFFORTS

In FY 2013, the Copermittees will continue to participate in the IWRMP process, and the expenditure of grant money and implementation of BMP projects will begin. Monitoring the effectiveness and maintenance requirements of the BMPs during the lifecycle of the grant will allow for the development of recommendations for future use by the Copermittees.

4.5 5-Year Strategic Plan

4.5.1 New Watershed Activities

Proposed watershed activities Implementation Sheets can be found in **Appendix B**. New activity information includes a description of how each activity was selected, and how the activities are expected to abate sources and reduce pollutant discharges that may be causing the identified HPWQPs in the WMA.

Each activity on the WMA activities list is fully described in an Activity Implementation Sheet and includes the following information:

1. A description of the activity;
2. A time schedule for implementation of the activity, including key milestones;
3. An identification of the specific responsibilities of WMA Copermittees in completing the activity;
4. A description of how the activity will address the identified HPWQPs of the WMA;
5. A description of how the activity is consistent with the collective watershed strategy;
6. A description of the expected benefits of implementing the activity; and
7. A description of how implementation effectiveness will be measured.

The Copermittees will implement identified WMA activities pursuant to the proposed schedule. For each Permit year, no fewer than two watershed water quality activities will be in an active implementation phase. A watershed water quality activity is in an active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the WMA's HPWQPs. Watershed water quality activities that are capital projects are in active implementation for the first year of implementation only.

See the Updated 5-Year Strategic Plan below for specific information about the implementation schedule for these new watershed activities.

4.5.2 Updated 5-Year Strategic Plan

This section describes the results of the Collective Watershed Strategy process described in the 2008 San Dieguito WURMP. The strategy was specifically applied at the HA level in an effort to focus the Copermittees' activities at a scale where actions and results can be reasonably measured.

To reiterate, the basic strategy applied was to first identify (where sufficient data is available) water quality problems. From those water quality problems, the Copermittees reviewed water quality data and used best professional judgment to determine the HPWQPs in each HA.

The second step was to identify the sources that are most likely to contribute (having the highest TTWQ ratings) to the High HPWQPs for each HA-HPWQP combination in the WMA. Based on the available data, the Copermittees made appropriate management decisions on which watershed water quality and education activities to implement in the WMA.

Where sufficient data was not available to make a determination about the state of water quality in an HA, the Copermittees used available information to identify where additional

water quality monitoring may be conducted to effectively determine the level of water quality problems.

The Updated 5-Year Strategic Plan presented at the end of this section is intended to supersede earlier versions presented in the 2008 San Dieguito WURMP and the FY 2008 through FY 2011 WURMP Annual Reports.

Table 4-8 Updated 5-Year Strategic Plan

Water Quality Activity/Project Name		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Nutrients	FY 2012	FY 2013	FY 2014[1]	Future Fiscal Year(s)[1]
Watershed Water Quality Activities								
SD-WQA2	Land Acquisitions	COUNTY	✓	✓	WQI	WQI	WQI	WQI
SD-WQA4	Coastal Cleanup Day Sponsorship	SD	✓		WQI	WQI	WQI	WQI
SD-WQA5	Sediment and Peak Flow Controls #1	SD	✓	✓	Project on hold			
SD-WQA6	Sediment and Peak Flow Controls #2	SD	✓	✓	Project on hold			
SD-WQA11	Bernardo Center Drive Trash Segregation BMP	SD	✓		WQI	Completed – Will no longer be reported		
SD-WQA13	ILACSD Trash Cleanup Sponsorship	SD	✓		WQI	WQI	WQI	WQI
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach	ESC	✓	✓	WQI	-	-	-
SD-WQA18	Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	✓	✓	P	WQI	WQI	-
SD-WQA19	Pet Waste Bag Dispenser Program in County Parks	COUNTY	✓		WQI	WQI	WQI	WQI
SD-WQA22	City of San Diego *Strategic Plan for Watershed Activity Implementation*	SD	✓	✓	Will no longer be reported			
SD-WQA25	Rancho Bernardo Library Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment	SD	✓	✓	Cancelled – Will no longer be reported			
SD-WQA26	Residential Rain Barrel Subsidies & Distribution	COUNTY	✓	✓	WQI	WQI	WQI	WQI
SD-WQA27	San Dieguito Property-Based Inspections	SD	✓		Completed – Will no longer be reported			
SD-WQA28	Rainwater Harvesting Rebate Pilot Program	SD	✓	✓	WQI	-	-	-
SD-WQA29	Residential Patrolling	DM	✓	✓	WQI	WQI	A	-
SD-WQA30	Commercial Area Patrolling Inspections	DM	✓	✓	WQI	WQI	A	-
SD-WQA31	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	SD	✓		WQI	-	-	-

Note: 1 - Under the proposed Water Quality Improvement Plan process, these activities may change.

Table 4-8 Updated 5-Year Strategic Plan - Continued

Activity/Project Name		Jurisdiction(s)	HPWQPs		Implementation Schedule			
			Bacteria	Nutrients	FY 2012	FY 2013	FY 2014[1]	Future Fiscal Year(s)[1]
Watershed Education Activities								
SD-WQEA3	Public Service Announcements: *Karma, Karma Second Chance, Karma Tourist*	SD	✓		E	E	E	E
SD-WQEA10	San Dieguito River Watershed Brochure	SD	✓	✓	WE	WE	WE	A
SD-WQEA11	Focused Outreach to the Equestrian Community	COUNTY	✓	✓	WE	-	-	-
SD-WQEA12	RB Alive! Expo Street Fair	SD	✓	✓	WE	WE	WE	WE
SD-WQA26	Residential Rain Barrel Subsidies & Distribution	COUNTY	✓	✓	WE	WE	WE	WE

Note: 1 - Under the proposed Water Quality Improvement Plan process, these activities may change.

WQI	= Watershed Water Quality Activity Implementation (Active Implementation)
I	= Watershed Water Quality Activity Implementation (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)
P	= Watershed Activity Planning (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
E	= Watershed Education Activity (No WURMP Credit)
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)

5 Effectiveness Assessment

The Permit requires that the effectiveness of the WURMP program and activities be assessed on an annual basis. The purpose of the assessment is to determine if the management and implementation of the program is achieving its goals and objectives, to assess the effectiveness of the activities conducted to meet those goals and objectives, and to identify areas that may need improvement. This report section is written pursuant to the requirements of Section J.1.b. of the Permit, and reports on the activities planned and implemented during FY 2012.

5.1 Assessment of Overall WURMP Effectiveness

Activities collaborated upon and selected by the Copermittees address the overall goal of the WURMP by focusing on the HPWQPs within the WMA.

As set forth in the Permit and outlined in the 2008 San Dieguito WURMP, the following minimum permit requirements (Level 1 Outcomes) are tracked annually to demonstrate permit compliance. This table describes whether or not compliance was demonstrated by the Copermittees in FY 2012, and where in this report required compliance points are fulfilled or described.

Table 5-1 Permit Component Compliance (Level 1)

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Not Applicable	1
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and HPWQP(s) during the reporting period.	Completed	2
Identify the likely sources, pollutant discharges, and/or other factors causing the HPWQPs within the WMA.	Completed	3
Update list of potential Watershed Water Quality Activities.	Completed	4
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed	4, **Appendix B**
Update list of potential Watershed Education Activities.	Completed	4
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed	4, **Appendix B**
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed	4
Describe Copermittee collaboration efforts including meeting as the San Dieguito WMA WURMP Workgroup.	Completed	1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed	4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date meeting the TMDL numeric targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	In Progress	5.2

As shown in **Table 5-1**, the Copermittees were in compliance with all Level 1 WURMP related Permit requirements during FY 2012.

5.1.1 ACTIVITIES ASSESSMENT

The effectiveness of each Watershed Water Quality and Watershed Education Activity is assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated on and selected activities that would address high level HPWQPs not only within each jurisdiction, but throughout the WMA. In some cases, these activities can reach a regional audience. The following is a description of the activities planned and implemented during this timeframe.

Each activity summary sheet in **Appendix B** identifies specific targeted outcomes (Levels 1 through 6 – as described in **Table 5-2** below) that will be assessed, and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, while a capital project may result in pollutant load reductions (Level 4), it may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6.

Table 5-2 Outcome Levels: Levels 1 through 6

Outcome Level		Anticipated Outcome of Activity	Effectiveness Metrics or Methods
1	Permit Compliance	Compliance with Permit requirement to implement Watershed Activities	Number of applicable Watershed Activities implemented per jurisdiction per year.
2	Changes in Attitudes	Increased awareness among the targeted audience regarding sources of pollutants and the need to reduce pollutant discharges/exposure.	Pre and post implementation surveys targeted audience attitudes.
3	Behavioral Change	Reduction in targeted audience behaviors that generate pollutants. Increase in targeted audience behaviors that support watershed health and water quality.	Pre and post implementation observations of targeted audience behavior. Behavior may be directly observed/measured or inferred from observed or documented conditions.
4	Load Reductions	Identification of sources and quantification of baseline loadings. Reduced volume of flow and/or reduced concentration of priority pollutants in dry and wet weather runoff.	Use permit required source identification monitoring data for targeted sources. If necessary, supplement with a special study.
5	Discharge Quality	Reduced volume of flow and/or concentration of priority pollutants in dry and wet weather discharges at storm drain outfalls.	Use permit required outfall and dry weather monitoring data down gradient of targeted sources. If necessary, supplement with a special study.
6	Receiving Water Quality	Reduced frequency of receiving water violations of WQOs for targeted priority pollutants.	Use permit required and other available regional monitoring data down gradient of targeted sources. If necessary, supplement with a special study.

During FY 2012, there were fourteen (14) activities in the active implementation phase, of which eleven (11) focused on water quality and three (3) focused on education. One of the water quality activities also included an educational component. These activities addressed the HPWQPs in the San Dieguito WMA, which include bacteria and nutrients; they are the activities that the Copermittees are counting towards the minimum requirement to have two active water quality and two active education activities each year. **Tables 5-3** through **5-7**

below summarize the assessments of the water quality and education activities, on a HA basis, to provide a snapshot of the overall effectiveness of the watershed activities.

In addition to the WURMP activities included in the table, the WURMP Copermittees are presenting their JURMP activities that are related to the HPWQPs in each HA. It is important to note that not all JURMP activities are included in this presentation. For complete assessment of JURMP activities, the reader may review each WURMP Copermittee's FY 2012 JURMP Annual Report.

5.2 Assessment of TMDL BMP Implementation Plan Effectiveness

In FY 2012, the Copermittees and Caltrans (Responsible Parties) began the development of the Comprehensive Load Reduction Plan (CLRP) for the San Dieguito Watershed for compliance with the *Revised Total Maximum Daily Loads for Indicator Bacteria, Project 1 - Twenty Beaches and Creeks in the San Diego Region* (Bacteria TMDL), which was approved by the San Diego Regional Water Quality Control Board and took effect April 4, 2011. Due to the fact that the Pacific Ocean Shoreline within the San Dieguito Watershed is not impaired for Recreational Use (REC-1) Beneficial uses per the 2010 303(d) list for bacteria, the Copermittees and Caltrans received confirmation in FY 2013 that the submittal of a CLRP for the San Dieguito Watershed is not required at this time.

Table 5-3 Summary of Implemented Activities for FY 2012 – 905.1 Solana Beach Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities, Eating or Drinking Establishments, Mobile Landscaping Facilities, and Nurseries/Greenhouses.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping, which has a direct load reduction of bacteria in the HA. Approximately 605 tons were removed via street sweeping, and 148 tons were removed from the MS4 in this HA.
SD-WQA2	Land Acquisitions	Water Quality	All	Levels 1 and 4	1.22 acres was acquired during this fiscal year in this HA.
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SD-WQA28	Rainwater Harvesting Rebate Pilot Program	Water Quality	Bacteria	Levels 1, 3, and 4	Rebate program for water capture and smart irrigation controllers. The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Rebates provided for 196 rain barrels, and 297 outdoor water conservation devices (smart controllers, micro-irrigation, and turf conversion).
SD-WQA29	Residential Patrolling	Water Quality	Bacteria	Levels 1, 2, and 3	Periodic patrols of residential and municipal areas within the City of Del Mar in order to identify sources of urban runoff and pollutant generating activities at various times of the week and day. Identified issues are followed up using educational outreach materials developed by the City (door hangers). 216 door hangers were distributed at residential properties over 14 patrols in FY 2012. City will continue to pursue activity and will gather more information to assess correlation between activity implementation and changes in behavior.
SD-WQA30	Commercial Area Patrolling Inspections	Water Quality	Bacteria	Levels 1, 2, and 3	Monthly patrols of commercial arterials and municipal areas within the City of Del Mar to investigate BMP deficiencies and potential discharges to the MS4. During FY 2012, 118 issues were recorded over 11 patrol inspections, all of which were resolved by the end of the reporting period using educational materials and follow-up inspections.
SD-WQA31	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	Water Quality	Bacteria	Levels 1, 3, and 4	The City of San Diego conducted a drop-off clean-up event open to all City residents and targeted items such as appliances, metals, junk furniture, mattresses and tires. A total of 112,000 pounds were collected, of which 44,000 pounds were recycled.
SD-WQEA10	San Dieguito River Watershed Brochure	Water Education	Bacteria	Levels 1 and 2	New brochure program for the WMA. The education pieces will help address HPWQPs in the WMA. The main goals of the brochures are to enhance the understanding of basic watershed principles, address HPWQPs in each WMA, educate BMPs for future use, and encourage citizens to prevent pollution from entering the storm drain system.
SD-WQEA12	RB Alive! Expo Street Fair	Water Education	Bacteria	Levels 1 and 2	Booth staffing at regional event offering free giveaways in exchange for participation in storm water survey. Educational information dissemination on steps for residential protection of storm water.

Table 5-4 Summary of Implemented Activities for FY 2012 – 905.2 Hodges Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Agricultural Facilities, Animal Facilities, Eating or Drinking Establishments, Mobile Landscaping Facilities, and Nurseries/Greenhouses.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping, which has a direct load reduction of bacteria in the HA. Approximately 844 tons were removed via street sweeping, and 450 tons were removed from the MS4 in this HA.
SD-WQA4	Coastal Cleanup Day Sponsorship	Water Quality	Bacteria	Levels 1 and 4	During this event 73 participants removed approximately 12,210 pounds of trash and debris, recycling, and green waste within the HA. At an estimated cost of $2,500 spent on the cleanup within the HA, the activity efficiency was approximately $0.20/lb.
SD-WQA11	Bernardo Center Drive Trash Segregation BMP	Water Quality	Bacteria	Levels 1 and 4	Installation of two curb inlet inserts to prevent trash and debris from entering the MS4. Pilot study to assess effectiveness of the inserts through monitoring. Results showed that these BMPs lack the capacity needed to quantify the level of maintenance desired by City O&M. Due to large drainage areas, typical of street drainage, the pilot showed maintenance required in excess of 4 times per year.
SD-WQA13	ILACSD Trash Cleanup Sponsorship	Water Quality	Bacteria	Levels 1 and 4	During one event 195 participants removed 429 pounds of trash and debris, recycled 123 pounds of trash, and removed 14,300 pounds of green waste. Sponsorship of this event resulted in a load reduction of 14,852 pounds of waste. At an estimated cost of $2,500 spent on the cleanup within the HA, the activity efficiency was approximately $0.17/lb.
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SD-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2, and 4	The County continued to maintain the 6 dispensers located throughout 2 parks in the WMA. Reducing the amount of pet waste found in parks and educating the public on the need to clean up after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SD-WQA26	Residential Rain Barrel Subsidies & Distribution	Water Quality	Bacteria	Levels 1 and 4	During FY 2012, 50 customers who purchased rain barrels were surveyed to ensure the rain barrels had been installed and maintained.
SD-WQA28	Rainwater Harvesting Rebate Pilot Program	Water Quality	Bacteria & Sediment	Levels 1, 3, and 4	Rebate program for water capture and smart irrigation controllers. Devices reduce wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Rebates provided for 196 rain barrels, and 297 outdoor water conservation devices (smart controllers, micro-irrigation, and turf conversion).
SD-WQA31	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	Water Quality	Bacteria	Levels 1, 3, and 4	The City of San Diego conducted a drop-off clean-up event open to all City residents and targeted items such as appliances, metals, junk furniture, mattresses and tires. A total of 112,000 pounds were collected, of which 44,000 pounds were recycled.
SD-WQEA10	San Dieguito River Watershed Brochure	Water Education	Bacteria	Levels 1 and 2	New brochure program for the WMA. The education pieces will help address HPWQPs in the WMA. The main goals of the brochures are to enhance the understanding of basic watershed principles, address HPWQPs in each WMA, educate BMPs for future use, and encourage citizens to prevent pollution from entering the storm drain system.

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
SD-WQEA12	RB Alive! Expo Street Fair	Water Education	Bacteria	Levels 1 and 2	Booth staffing at regional event offering free giveaways in exchange for participation in storm water survey. Educational information dissemination on steps for residential protection of storm water.

Table 5-5 Summary of Implemented Activities for FY 2012 – 905.3 San Pasqual Hydrologic Area (HPWQPs = Bacteria & Nutrients)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria and Nutrients	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities, Nurseries/Greenhouses, and Parks and Rec.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria and Nutrients	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping, which has a direct load reduction of bacteria and nutrients in the HA. Approximately 492 tons were removed via street sweeping, and 254 tons were removed from the MS4 in this HA.
SD-WQA2	Land Acquisitions	Water Quality	All	Level 4	4.05 acres were acquired during this fiscal year in this HA.
SD-WQA17	Targeted Restaurant Facility Inspections and Outreach	Water Quality	Bacteria and Nutrients	Levels 1, 3, and 4	Inspections lead to education, BMP implementation, and load-reducing effectiveness. Inspections with immediate corrective actions initiated are confirmed source abatement activities. Additionally, when IC/IDs are observed, immediate corrections are required to eliminate the pollutant loading.
SD-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria and Nutrients	Levels 1, 2, and 4	The County continued to maintain the 6 dispensers located throughout 2 parks in the WMA. Reducing the amount of pet waste found in parks and educating the public on the need to clean up after their pets will result in the reduction of pollutant loads, particularly bacteria and nutrients.
SD-WQA28	Rainwater Harvesting Rebate Pilot Program	Water Quality	Bacteria and Nutrients	Levels 1, 3, and 4	Rebate program for water capture and smart irrigation controllers. Devices reduce wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Rebates provided for 196 rain barrels, and 297 outdoor water conservation devices (smart controllers, micro-irrigation, and turf conversion).
SD-WQA31	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	Water Quality	Bacteria	Levels 1, 3, and 4	The City of San Diego conducted a drop-off clean-up event open to all City residents and targeted items such as appliances, metals, junk furniture, mattresses and tires. A total of 112,000 pounds were collected, of which 44,000 pounds were recycled.
SD-WQEA10	San Dieguito River Watershed Brochure	Water Education	Bacteria	Levels 1 and 2	New brochure program for the WMA. The education pieces will help address HPWQPs in the WMA. The main goals of the brochures are to enhance the understanding of basic watershed principles, address HPWQPs in each WMA, educate BMPs for future use, and encourage citizens to prevent pollution from entering the storm drain system.

Table 5-6 Summary of Implemented Activities for FY 2012 – 905.4 Santa Maria Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities; Eating or Drinking Establishments; Nurseries/Greenhouses; and Roads, Streets & Parking Facilities.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping, which has a direct load reduction of bacteria in the HA. Approximately 212 tons were removed via street sweeping, and 215 tons were removed from the MS4 in this HA.
SD-WQA19	Pet Waste Dispenser Program in County Parks	Water Quality	Bacteria	Levels 1, 2, and 4	The County continued to maintain the 6 dispensers located throughout 2 parks in the WMA.
SD-WQA26	Residential Rain Barrel Subsidies & Distribution	Water Quality	Bacteria	Levels 1 and 4	During FY 2012, 50 customers who purchased rain barrels were surveyed to ensure the rain barrels had been installed and maintained.
SD-WQEA10	San Dieguito River Watershed Brochure	Water Education	Bacteria	Levels 1 and 2	New brochure program for the WMA. The education pieces will help address HPWQPs in the WMA. The main goals of the brochures are to enhance the understanding of basic watershed principles, address HPWQPs in each WMA, educate BMPs for future use, and encourage citizens to prevent pollution from entering the storm drain system.
SD-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2, and 3	FY 2012 workshops held in Ramona addressed San Dieguito as a primary watershed for the equestrian community.

Table 5-7 Summary of Implemented Activities for FY 2012 – 905.5 Santa Ysabel Hydrologic Area (HPWQP = Bacteria)

#	Activity:	Type:	Priority Problems Addressed:	Level Outcomes:	Pollutant Load Reduction, Source Abatement or Other Benefit Derived:
-	JURMP Industrial/Commercial Inspections	Water Quality	Bacteria	Levels 1, 3, and 4	The Copermittees inspected the following business categories in the HA: Animal Facilities.
-	JURMP MS4 Cleaning & Street Sweeping	Water Quality	Bacteria	Levels 1 and 4	The Copermittees removed materials from the MS4 and by street sweeping, which has a direct load reduction of bacteria in the HA. Approximately 479 tons were removed via street sweeping, and 482 tons were removed from the MS4 in this HA.
SD-WQA26	Residential Rain Barrel Subsidies & Distribution	Water Quality	Bacteria	Levels 1 and 4	During FY 2012, 50 customers who purchased rain barrels were surveyed to ensure the rain barrels had been installed and maintained.
SD-WQEA10	San Dieguito River Watershed Brochure	Water Education	Bacteria	Levels 1 and 2	New brochure program for the WMA. The education pieces will help address HPWQPs in the WMA. The main goals of the brochures are to enhance the understanding of basic watershed principles, address HPWQPs in each WMA, educate BMPs for future use, and encourage citizens to prevent pollution from entering the storm drain system.
SD-WQEA11	Focused Outreach to the Equestrian Community	Water Education	All	Levels 1, 2, and 3	FY 2012 workshops held in Ramona addressed San Dieguito as a primary watershed for the equestrian community.

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6 Conclusions And Program Improvements

6.1 Conclusions

During FY 2012, the San Dieguito WURMP Copermittees strove to address the overall goal of the WURMP – to have a positive impact on the water quality of the San Dieguito WMA – by focusing on its HPWQPs. In order to target the identified pollutants, the Copermittees employed the strategy articulated in their 2008 San Dieguito WURMP, which aims to link identified water quality problems to their potential sources and pollutant generating activities. Based on the Water Quality Assessment in Section 2, the Copermittees determined that the HPWQPs in the San Dieguito WMA are bacteria in all HAs and nutrients in the San Pasqual HA.

The San Dieguito WMA consists of five individual HAs. Therefore, to effectively address the WMA's water quality issues, the Copermittees identified and then evaluated the HPWQPs for likely sources at the individual HA level (see **Tables 3-2** through **3-6**). As a result of examining each HA in the WMA, the Copermittees drew some general conclusions: a) water quality problems appear to be well characterized in the receiving waters and consistent throughout the WURMP and Regional Monitoring Programs; and b) water quality and education activities appear to be targeting sources of the HPWQPs and are considered effective at reducing the impacts of the sources. Based on this analysis, the Copermittees focused their activities on the following suspected priority sources: residential areas/activities; eating/drinking establishments; animal facilities; botanical/zoological gardens and nurseries; auto/mechanical repair, maintenance fueling, or cleaning; and Publicly Owned Treatment Works (POTWs). Potential sources of bacteria and nutrients from the residential, commercial, and industrial communities include activities such as irrigation runoff, sanitary sewer overflows, improper landscape maintenance, and improper use of fertilizers, herbicides and pesticides.

The Copermittees then developed and implemented watershed water quality and education activities to address these HPWQPs and their sources. **Tables 4-1** through **4-5** summarize the activities implemented during the reporting period. However, because there is currently no definitive link between identified water quality sources and their impacts on water quality, it is difficult to quantitatively assess the activities' effect on overall water quality. Despite there being no currently established direct connection between the potential sources and water quality issues, the Copermittees undertook a qualitative assessment of their water quality activities, which determined that they were in compliance with all Level 1 Permit requirements (e.g., identifying likely pollutant sources, updating water quality and education activities, updating assessments and analyses, etc.). Moreover, fourteen (14) activities were implemented, of which eleven (11) focused on water quality and three (3) on education, where one (1) of these water quality activities also had an educational component. All of these activities targeted the priority pollutants in the San Dieguito WMA, which are bacteria and nutrients. The Copermittees satisfied the Permit requirement by having at least two water quality activities and two education activities in active implementation during the reporting period.

The Copermittees performed additional JURMP activities addressing potential community sources during the reporting period. These included activities such as complaint response, dry weather urban runoff monitoring and source identification, and inspections of treatment control BMPs, as some in are designed to mitigate bacteria. Additionally, there are

significant outreach events performed which are focused on the residential community through the Copermittees' jurisdictional program and aimed at reducing over-irrigation, improper landscape maintenance, and improper use of fertilizers, herbicides, and pesticides.

In an effort to report on the Copermittees' actions to improve water quality in the WMA, the Copermittees continued the process of collecting and reporting on JURMP and WURMP activities performed on an HA basis. The Copermittees believe that it is an important step toward integrating the activities and reporting to best assess and plan for activities that address the identified HPWQPs on an HA basis.

The Copermittees have responded to meet the challenges of implementing the requirements outlined in the Permit as they continue to refine and improve their WURMP program. In addition to evaluating the WURMP program, the Copermittees worked diligently at a regional level with other WMA working groups during the reporting period to collaborate for consistent implementation of the WURMPs across the region. The San Dieguito WURMP Copermittees will continue to implement the activities described in Section 4 of this document in future reporting periods, although under the proposed Water Quality Improvement Plan process, these activities may change.

6.2 Program Improvements

Copermittees' true effectiveness assessment of the activities is difficult because the evaluation is currently limited to qualitative assessments that contain substantial assumptions linking the potential sources to the water quality problems. In order to work toward more effective management of water quality in the WMA, the Copermittees must further develop and characterize source inventories and research existing data related to the suspected sources that is unique to the WMA. In doing so, the linkage between sources and pollutants may be more directly confirmed, allowing the Copermittees to justifiably prioritize the sources for activity development.

Moreover, once inventories are developed specific to the HAs, linkages need to be established between the suspected sources and water quality. This may be accomplished through a combination of research and analysis of existing data, and monitoring. Significant source identification studies have been undertaken in Southern California, which may provide relevant data linking some of the suspected sources to water quality problems in the WMA. In some studies, pollutant loading estimates specific to sources and/or land uses have been developed. There are also substantial amounts of data collected in the jurisdictional dry weather monitoring programs that may provide insight into specific sources, since this program is designed to detect illicit discharges and connections. To date, analysis of this data has been performed only at the macro level, i.e., evaluating the data from the larger watershed level. Analysis of the data at the HA level may provide useful information to the 2008 San Dieguito WURMP.

In cases where there is sufficient evidence of impacts to water quality from suspected sources, the Copermittees may need to further assess water quality data to characterize the impacts. Without this confirmatory step, other assumptions related to effectiveness may be unsubstantiated. With confirmed linkages between the sources and the water quality problems, watershed Copermittees can prioritize activities and provide true effective assessments of them and their impacts on water quality.

To further support the goal of the 2008 San Dieguito WURMP – to determine and target the sources contributing to the HPWQPs – the Copermittees will continue to implement the following complementary objectives:

- Develop activities to assess and improve storm water quality within the WMA;
- Integrate storm water quality principles into land use planning;
- Enhance public understanding of storm water pollution sources; and
- Encourage and develop stakeholder participation.

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Appendix A

JURMP Source and Activity Methodology

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Methodology for Developing JURMP Source and Activity Quantities

Source Quantities

The Copermittees' FY 2012 (July 1st, 2011, through June 30th, 2012) JURMP Annual Reports were used to determine quantities of inventories. The Copermittees' inventories included Hydrologic Area (HA) information for the associated facilities. In the event that HA information was not easily locatable, a GIS geocoding process was used to identify the associate HA information. This process was used for the following source inventories:

1) Commercial
2) Industrial
3) Municipal Facilities
4) Construction

Activity Quantities

The Copermittees' JURMP activities fall into one of two categories: (1) easily associated with HA information, e.g., commercial/industrial inspections; (2) not easily associated with HA information, e.g., MS4 cleanings. For the commercial/industrial inspections, the HA information was used to develop the quantities of inspections in each HA. For the activities that are not easily associated with HA information, the following process was used to estimate the quantities of each activity in each of the HAs.

1) Used SanGIS data: Municipal boundaries, Land Use, Hydrologic Areas, etc.
2) Identified the Copermittees' total activity quantities for the following activities from the FY 2012 JURMP Annual Reports:
   a) Amount of Street Sweeping Collections (total of parking lot, streets, etc.)
   b) Amount of MS4 Cleanings (total of basins, inlets, ditches, MS4 pipes)
3) Determined the amount of urban land use in each Copermittees' jurisdiction.
4) Distributed the total quantities of activities across each Copermittees jurisdiction based on the urban land use in the City.
5) Determined the contributing activity quantities for each Copermittee in an HA based on the amount of urban land use the Copermittee contributes to the HA. The equation determining the Copermittee's contribution to the HA is as follows:

$$(Copermittee\ Activity\ Quantity) \times \left(\frac{Copermittee\ urban\ land\ use\ in\ HA}{Copermittee\ total\ urban\ land\ use}\right)$$

6) All contributing Copermittees' activity quantities were then totaled on an HA basis. See below for an example.

JURMP Source and Activity Quantities Estimation Example

HA1 has 3 jurisdictions.

Jurisdiction A is a total of 1,000 urban land use acres, 250 of which are in HA1.
Jurisdiction A collected 800 tons of material from street sweeping in FY 2012.

Jurisdiction B is a total of 2,000 urban land use acres, 1,250 of which are in HA1.
Jurisdiction B collected 1,000 tons of material from street sweeping in FY 2012.

Jurisdiction C is a total of 500 urban land use acres, all 500 are in HA1.
Jurisdiction C collected 250 tons of material from street sweeping in FY 2012.

Jurisdiction A contributes the following tonnage of street sweeping materials to HA1:

$$(800\ tons\ of\ material) \times \left(\frac{250\ urban\ land\ use\ acres\ in\ HA1}{1{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ A}\right) = \mathbf{200\ tons}$$

Jurisdiction B contributes the following tonnage of street sweeping materials to HA1:

$$(1{,}000\ tons\ of\ material) \times \left(\frac{1{,}250\ urban\ land\ use\ acres\ in\ HA1}{2{,}000\ urban\ land\ use\ acres\ in\ Jurisdiction\ B}\right) = \mathbf{625\ tons}$$

Jurisdiction C contributes the following tonnage of street sweeping materials to HA1:

$$(250\ tons\ of\ material) \times \left(\frac{500\ urban\ land\ use\ acres\ in\ HA1}{500\ urban\ land\ use\ acres\ in\ Jurisdiction\ C}\right) = \mathbf{250\ tons}$$

The total amount of estimated street sweepings collected in HA1 is therefore:

$$200\ tons + 625\ tons + 250\ tons = \mathbf{1{,}075\ tons}$$

Appendix B

FY 2012 San Dieguito Watershed Activity Sheets

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TITLE: **LAND ACQUISITIONS**
ID #: **SD-WQA2**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period there were 9.99 acres of land acquired in the San Dieguito River Watershed.
During the FY 2008-09 reporting period there were 3,197.52 acres of land acquired in the San Dieguito River Watershed.
During the FY 2009-10 reporting period there were 262.32 acres of land acquired in the San Dieguito Watershed.
During FY 2010-11 reporting period there were 121.48 acres of land acquired in the San Dieguito Watershed.
During FY 2011-12 reporting period there were 5.27 acres of land acquired in the San Dieguito Watershed. Table 1 below shows the FY 2011-12 acquisitions.

Table 1. FY 2011-12 Land Acquisitions for San Dieguito Watershed

Property	Acres	Date	HSA	APN(S)
PM20909	1.22	Nov 2011	905.11	267-132-31
Petersen	1.86	Nov 2011	905.32	237-090-79
Petersen	2.19	Nov 2011	905.32	237-090-80
TOTAL	**5.27**	-	-	-

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: COASTAL CLEANUP DAY SPONSORSHIP
ID #: SD-WQA4

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 17, 2011. The City of San Diego (City) sponsored the Lake Hodges site in the San Dieguito River Watershed Management Area (WMA). Approximately 73 volunteers removed 115 pounds of trash and debris; recycled 95 pounds of trash and debris; and removed 12,000 pounds of green waste.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK and ILACSD staff to ensure that sites within the San Dieguito River WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- San Diego Coastkeeper
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority

water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the sponsored cleanup? ($/pound collected)

TARGETED MEASURABLE OUTCOME(S)

Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

ASSESSMENT METHOD(S)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

DATA RECORDED

Pounds of trash removed (Outcome Level 4): 115 lbs.
Pounds of trash recycled (Outcome Level 4): 95 lbs.
Pounds of green waste (Outcome Level 4): 12,000 lbs.
Total pounds of trash and green waste removed and trash recycled (Outcome Level 4): 12,210 lbs.
Number of participants (Outcome Level 1): 73
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $15,000
Amount of money spent on cleanups for the San Dieguito watershed (Outcome Level 1): $2,500
Activity Efficiency (Total Cost/Total Pounds Removed): $0.20/lbs.

EXPECTED BENEFITS

Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS

At the event, 73 participants removed 115 pounds of trash and debris; recycled 95 pounds of trash and debris; and removed 12,000 pounds of green waste. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 12,210 pound load reduction and an efficiency of $0.20 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Dieguito WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This trash cleanup activity fulfills a watershed water quality activity for FY 2012 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of

12,210 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

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TITLE: **SEDIMENT AND PEAK FLOW CONTROLS #1**
ID #: **SD-WQA5**

ACTIVITY DESCRIPTION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the San Dieguito River Watershed Management Area (WMA).

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's Strategic Plan for Watershed Activity Implementation. This project will is on hold as staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water

Quality Problems by managing runoff volume - the transport mechanism for pollutants - and treating runoff of pollutants before discharge into receiving waters.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity?
2) What is the loading reduction of the BMPs?

TARGETED MEASURABLE OUTCOME(S)

1) Reduction in priority pollutant loads

ASSESSMENT METHOD(S)

1) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
2) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
3) Tabulation (e.g., amount of money spent on implementation and maintenance)

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

ANALYSIS RESULTS

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

This project is on hold as staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

TITLE: SEDIMENT AND PEAK FLOW CONTROLS #2
ID #: SD-WQA6

ACTIVITY DESCRIPTION

This activity will involve the installation of BMPs to reduce runoff flow velocity and associated erosion and sedimentation. The project may consist of a treatment train composed of, for example, inlet devices to trap gross solids, followed by a storage system to collect runoff and allow for pollutant settlement and slow release, and then a device to treat bacteria. Exact locations and BMPs will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the San Dieguito River Watershed Management Area (WMA).

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City's Strategic Plan for Watershed Activity Implementation. This project will is on hold as staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria, nutrients, and gross pollutants as High Priority Water Quality Problems throughout the San Dieguito River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the High Priority Water

Quality Problems by managing runoff volume - the transport mechanism for pollutants - and treating runoff of pollutants before discharge into receiving waters.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the effectiveness/efficiency of the BMP installation in reducing runoff flow velocity?
2) What is the loading reduction of the BMPs?

TARGETED MEASURABLE OUTCOME(S)

1) Reduction in priority pollutant loads

ASSESSMENT METHOD(S)

1) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
2) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
3) Tabulation (e.g., amount of money spent on implementation and maintenance)

DATA RECORDED

N/A

EXPECTED BENEFITS

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

ANALYSIS RESULTS

This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

This project is on hold as staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

TITLE: BERNARDO CENTER DRIVE TRASH SEGREGATION BMP
ID #: SD-WQA11

ACTIVITY DESCRIPTION

The Stormwater Drain Insert Pilot Study involves the installation of two curb inlet inserts in the San Dieguito River Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The inserts will be installed directly in the existing curb inlets along Bernardo Center Drive. The Bernardo Center Drive site will include the installation of storm drain curb inlet inserts as retrofits within the existing storm drain system. The curb inlet inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as Trash Segregation Device Installation in the 2008 San Dieguito River WURMP. In June 2008, the site along Bernardo Center Drive was selected and the conceptual design was released for this project.

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY 2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets have been retrofitted with the selected drainage inserts during the month of March in 2011 and the first phase of monitoring started during the month of September in 2011.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this project began in 2010. Implementation began in 2011. Assessment was conducted in 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction efficiency of the catch basin inserts?
2) How effective are these catch basin inserts at reducing priority pollutant loads?

TARGETED MEASURABLE OUTCOME

1) Reduction in priority pollutant loads

ASSESSMENT METHOD(S)

1) Inspections (e.g., ensure the catch basin inserts are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

DATA RECORDED

1) How much money spent on inspections and maintenance- N/A
2) Trash Capacity- 100 lbs.
3) Flooding Issues- No
4) Functionality during storm event- Significant Flow Bypass, Re-suspension of material from filter into basin.
5) % Trash Bypass- Unknown

EXPECTED BENEFITS

Drain inserts are moderately effective at reducing discharge of trash to receiving waters when loadings are compatible with the maintenance frequency. Excessive flow bypasses is the main cause of reduced performance.

ANALYSIS RESULTS

Results showed that these BMPs lack the capacity needed to quantify the level of maintenance desired by City O&M. Due to large drainage areas, typical of street drainage, the pilot showed maintenance required in excess of 4 times per year.

CONCLUSIONS

Effectiveness and efficiency, determined by comparing future load reductions to the cost of installation, maintenance, and monitoring efforts, are deemed insufficient to meet City goals.

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TITLE: **I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP**
ID #: **SD-WQA13**

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 28, 2012. The City of San Diego (City) sponsored the Lake Hodges site, with two meeting points, in the San Dieguito River Watershed Management Area (WMA). Approximately 195 volunteers removed 429 pounds of trash and debris; recycled 123 pounds of trash and debris; and removed 14,300 pounds of green waste in a seven-mile area.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

This has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the San Dieguito River WMA are included in the list for cleanups with proper sponsorship arrangements made.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as a high priority

water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

TARGETED MEASURABLE OUTCOME

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

ASSESSMENT METHOD(S)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

DATA RECORDED

Pounds of trash removed (Outcome Level 4): 429 lbs.
Pounds of trash recycled (Outcome Level 4): 123 lbs.
Pounds of green waste (Outcome Level 4): 14,300
Total pounds of trash removed and recycled (Outcome Level 4): 14,852 lbs.
Number of participants (Outcome Level 1): 195
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $15,000
Estimated amount of money spent on cleanups for the San Dieguito River watershed (Outcome Level 1): $2,500
Efficiency (Total Cost/Total Pounds Removed): $0.17/lbs.

EXPECTED BENEFITS

Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

ANALYSIS RESULTS

At the event, 195 participants removed 429 pounds of trash and debris; recycled 123 pounds of trash and debris; and removed 14,300 pounds of green waste. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 14,852 pound load reduction and an efficiency of $0.17 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the San Dieguito River WMA by the total pounds of trash removed and recycled.

CONCLUSIONS

This trash cleanup activity fulfills a watershed water quality activity for FY 2012 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 14,852 pounds of trash and green waste removed, and trash recycled during the

reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

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TITLE: TARGETED RESTAURANT FACILITY INSPECTIONS AND OUTREACH
ID #: SD-WQA17

ACTIVITY DESCRIPTION

The City of Escondido conducted focused inspections of restaurants within the San Dieguito WMA to target the pollutants generated by food service facilities. Activities and areas at restaurants such as grease handling and disposal, spills, dumpster and loading docks, parking lots, landscaping and ground maintenance and cleaning of equipment can generate pollutants that have the potential to enter the receiving waters. Pollutants that may be generated by restaurant areas and activities include bacteria from organic materials (i.e., food wastes), oil and grease, trash, and chemicals.

The purpose of the activity is to:

1. Attempt to determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year);
2. Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections);
3. Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions);
4. Work directly with restaurateurs and their staff to develop a more effective training program for use in the specific restaurants in the area; and
5. Track and analyze inspection and enforcement actions to estimate potential load reductions resulting from increased inspections and targeted outreach.

During 2011-2012, the City of Escondido inspected all of its San Dieguito Watershed restaurant facilities twice to ensure compliance with applicable storm water regulations. This inspection regimen is part of a citywide commitment to semi-annual inspections of all restaurants located within Escondido's jurisdictional boundaries. During these investigations, inspectors work with restaurateurs and their staff to review effective BMP implementation, including proper maintenance of grease traps, trash disposal, and parking areas that can contribute pollutants such as bacteria to the storm sewer conveyance system. The twice-annual inspections also provide staff with an opportunity to assess a facility during varying weather conditions, e.g., those conditions present during winter and summer. They also enable inspectors to more frequently visit facilities that typically have a high staff turnover rate. Overall, although no direct correlation between water quality data and enhanced inspections has been established, the City believes that more frequent inspections of high-threat-to-water-quality facilities help preserve good water quality and/or prevent degradation.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

LEAD WATERSHED COPERMITTEE

- City of Escondido

OTHER PARTICIPATING COPERMITTEES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients
- Oil & Grease
- Trash

EFFECTIVENESS MEASUREMENTS

The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

Monitoring data from coastal outfall monitoring and previous inspections will be compiled and restaurant NOV status analyzed using GIS. Further narrowing the drainage area to potential sources will be conducted to target the inspections and outreach activities as appropriate. The results of focused inspections will be compared with traditional approaches and used to enhance routine inspections and improve outreach communications. Measures will be primarily at Levels 1 through 4, with marginal measurement capability at Level 5 (discharge quality improvements).

TITLE: STORMWATER QUALITY MASTER PLANS FOR SPECIAL DRAINAGE FEE AREAS
ID #: SD-WQA18

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize a list of potential regional BMPs for implementation. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Dieguito River Watershed include:

1. SDA 8 (Ramona)
2. SDA 9 (San Dieguito)
3. SDA 10 (North County Metro)

FY 2007-08 ACTIVITY IMPLEMENTATION

Work began on drafting the SWQMPs for individual SDAs.

FY 2008-09 ACTIVITY IMPLEMENTATION

Work continues on the drafting of the SWQMPs for individual SDAs.

FY 2009-10 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 8, SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

FY 2010-11 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 8, SDA 9 and SDA 10 are in draft form and undergoing review by County personnel.

FY 2011-12 ACTIVITY IMPLEMENTATION

The SWQMP for SDA 6 and SDA 8 are in draft form and undergoing review by County personnel.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Review and adoption of the Storm Water Quality Master Plan is expected to take place in FY 2012-13. Construction of BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. If adopted, the Board is likely to consider fee increases in 2014.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Consistency with the Watershed Strategy to be determined.

EFFECTIVENESS MEASUREMENTS

To be determined.

TITLE: PET WASTE DISPENSER PROGRAM IN COUNTY PARKS
ID #: SD-WQA19

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 3 dispenser stations at 2 parks within the San Dieguito Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

During FY 2008-09 3 additional stations were added to San Dieguito Park. The County of San Diego maintained 6 dispenser stations at 2 parks within the San Dieguito Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain 6 dispenser stations at 2 parks within the San Dieguito Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2010-11. During this reporting period the County of San Diego continued to maintain 6 dispenser stations at 2 parks within the San Dieguito Watershed.

FY 2011-12 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2011-12. During this reporting period the County of San Diego continued to maintain 6 dispenser stations at 2 parks within the San Dieguito Watershed. The parks and the number of dispensers include:

1) San Dieguito Park (5)
2) Holly Oaks (1)

TMDL APPLICABILITY

This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for Beaches and Creeks and with other more localized TMDLs for constituents such as nutrients.

TIME SCHEDULE FOR IMPLEMENTATION

Maintenance of existing pet waste dispensers - Ongoing
Addition of new dispensers in County parks - Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Dieguito Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Table 1. FY 2012 Pet Waste Collections

Facility Name	# of Stations	# of Bags Used	Waste Removed (lbs.)
San Dieguito Park	5	16,150	3,230
Holly Oaks Park	1	3,230	646
Total	**6**	**29,380**	**3,876**

During the FY 2011-12 reporting period the County maintained 6 stations among 2 County Parks within the San Dieguito Watershed. These stations distributed approximately 29,380 bags, preventing an estimated 3,876 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs.

Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: **RANCHO BERNARDO LIBRARY LIMITED LOW FLOW STORM DRAIN INLET MULTI-POLLUTANT TREATMENT - CANCELLED**
ID #: **SD-WQA25**

ACTIVITY DESCRIPTION

This project will implement a proprietary inlet treatment device at the Rancho Bernardo Library. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in FY 2013. Construction is anticipated in FY 2016.

Upon further review of the concept plan, it was found that the project was proposed on a private parcel. Additionally, the area that drained in to the proposed bmp was also a private parcel. This project has been cancelled.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria and nutrients as high priority water quality problems throughout the San Dieguito WMA.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the bacteria and nutrient load reduction efficiency?

TARGETED MEASURABLE OUTCOME(S)
1) Reduction in priority pollutant loads

ASSESSMENT METHOD(S)
1) Inspections (e.g., ensure the treatment is working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

DATA RECORDED
N/A

EXPECTED BENEFITS
The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

ANALYSIS RESULTS
This project is still in the preliminary engineering phase and has not been implemented; therefore, effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

CONCLUSIONS
This project has been cancelled and will no longer be reported in future reporting periods.

TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTION
ID #: SD-WQA26

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate. Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

Activity during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In

addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY 2010-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents participated and purchased a total of 102 rain barrels. The County of San Diego subsidized the purchase of 69 rain barrels at the rate of $30 plus tax, and additional 33 rain barrels were sold at the full price of $60 plus tax.

The Fallbrook event took place on September 26, 2010 at the Fallbrook Village Square. During this event 138 barrels were purchased by105 residents. The County of San Diego subsidized 103 of the barrels which were sold to unincorporated residents.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County (Table 1).

Table 1. Residents by Watershed

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	San Diego River	San Diego Bay	Tijuana	Unknown
Total Residents	2	24	61	6	8	4	27	50	2	1

ACTIVITY IMPLEMENTATION FY 2011-12

During FY 2011-12, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Survey results will be summarized in FY 2012-13. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2009-10: Planning for this activity occurred.

FY 2010-11: Two events were scheduled: August 28, 2010 (Cuyamaca College) and September 26, 2010 (Fallbrook Village).

FY 2011-12: County of San Diego conducted a customer survey of 50 residents who purchased rain barrels.

FY 2012-13: Results of the survey will be provided and additional events are being considered.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

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TITLE: RAINWATER HARVESTING REBATE PILOT PROGRAM
ID #: SD-WQA28

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division in FY 2011 collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). Staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program was implemented in FY 2012 and was open to the residents of the City of San Diego on a first come first serve basis and provided a rebate of $0.50 per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department administered the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program.

In addition to Rain Barrels Rebate Program an Outdoor Water Conservation Rebate Program was also offered to the residents of the City of San Diego. The Outdoor Water Conservation Rebate Program involved a rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in FY 2011, implementation occurred in FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito Watershed Management Area (WMA) identify bacteria as high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

EXPECTED BENEFITS

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Reduction in runoff can be achieved with the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants.

ANALYSIS RESULTS

Data recorded

1) Total amount of Rain Barrels rebated: 196 rain barrels
2) Average size of Rain Barrels installed: 60 gallons
3) Total Rain Barrel gallons rebated: 17,400 gallons
4) Number of Outdoor Water Conservation items rebated: 297 rebates
    - Smart Controllers: 106
    - Micro Irrigation: 93
    - Turf Conversion: 98

CONCLUSIONS

Rebate program is ongoing.

RECOMMENDATIONS

No recommendations at this point in time.

TITLE: RESIDENTIAL PATROLLING
ID #: SD-WQA29

ACTIVITY DESCRIPTION

The City of Del Mar is a small jurisdiction with a relatively small residential community. The majority of the City consists of single family dwellings set in a hilly terrain that drains towards the Pacific Ocean and the San Dieguito and Los Peñasquitos lagoons. One of the primary sources of urban runoff within the City is residential irrigation runoff. Through this activity, the City intends to identify sources of urban runoff and abate them through a cycle of patrolling activities.

This activity includes periodically patrolling the entire City to identify residential and municipal sources of urban runoff and pollutant generating activities at various times of the week and day. The patrols will be conducted both before and after work hours to capture the likely times when residents are irrigating their properties. In addition to identification of urban runoff and their sources, patrollers will also look to identify other pollutant generating activities that need to be abated.

Identified issues will be followed up on in a timely manner (within 72 hours) using educational outreach materials the City has recently developed.

FY 2011-12 ACTIVITY IMPLEMENTATION

The City conducted four rounds of patrols throughout the City. Each round of patrols consisted of at least fourteen (14) patrols to capture each day of the week and both early morning and later evening time periods.

Within 72 hours of each daily patrol, educational outreach materials, in the form of door hangars, were provided to each residence where irrigation runoff had been observed. A total of 216 door hangars were placed as a result of the fourteen City-wide patrols.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

This activity is related to the Bacteria TMDL as it addresses sources of indicator bacteria as well as dry weather urban runoff that have been shown to contribute to regrowth of indicator bacteria within MS4 systems.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred in FY 2011. Activity implementation began in FY 2012 and will continue through FY 2013, with continual assessment to determine if modifications are necessary.

LEAD WATERSHED COPERMITTEE

- City of Del Mar

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Oil and Grease
- Sediment
- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses high priority water quality problems and sources of the associated pollutants and is therefore consistent with the 2008 WURMP watershed strategy.

EFFECTIVENESS MEASUREMENTS

The City will maintain records on each of the parcels for the following information that will be used for effectiveness assessment:

- Parcel information for those that are identified to be contributing urban runoff and conducting potential pollutant generating activities
- Follow-up activities conducted by the City including outreach and enforcement
- Dates of identified issues and indication of repeat issues

It is anticipated that the follow-up contact with the identified sources will lead to some abatement of their contributions to urban runoff and pollutant generating activities.

FY 2011-12 EFFECTIVENESS ASSESSMENT

Although identifying 216 instances of irrigation runoff and distributing educational materials is a significant effort, the data collected thus far does not provide correlations between educational material distribution and changes in irrigation runoff behaviors, e.g. reduction of over-spray and over-irrigation.

TITLE: COMMERCIAL AREA PATROLLING INSPECTIONS
ID #: SD-WQA30

ACTIVITY DESCRIPTION

The City of Del Mar (City) is a small jurisdiction with a relatively small commercial community. The majority of the commercial areas are within three zones that drain towards the Pacific Ocean and the San Dieguito and Los Peñasquitos lagoons. Through this activity, the City intends to provide a more frequent and broader inspection program for all commercial facilities within the City, regardless of whether they are on the City's commercial/industrial JURMP inventory.

The City of San Diego conducted several studies related to property based inspections. The outcome of the studies was that it was both feasible and effective to use a property based inspection program to address all businesses at a property rather than those included on the City's JURMP commercial/industrial inventory. This activity includes periodically performing patrolling inspections of the entire City of Del Mar's commercial, industrial, and municipal areas to identify sources of urban runoff and pollutant generating activities that need to be abated. It is anticipated that in addition to the annual inspections required by the JURMP, the City will conduct ten to eleven additional rounds of inspections on a monthly basis.

The City's enforcement process is to perform a follow-up visit for those businesses found to be out of compliance during the patrol inspections. After a BMP deficiency is initially observed during the patrol inspection, the City mails a Clean Water letter outlining the issue to the business owner or property manager. The letter includes information on how the deficiency can impact local beaches and water quality, and further provides assistance by offering recommendations for how the issue can be resolved. Inspectors will then follow-up with the business or property by performing another patrol inspection to see whether the issue has been corrected. If the business is still out of compliance after the follow-up visit, City Code Enforcement is notified whereby a Notice of Violation (NOV) or citation may be issued if there is still no evidence of compliance.

FY 2011-12 ACTIVITY IMPLEMENTATION

The Clean Water Program conducted eleven (11) patrols during the reporting period, resulting in 118 issues requiring follow-up. Clean Water reminder letters were sent to the responsible parties following each patrol, and all outstanding issues were resolved by the end of the reporting period.

One (1) NOV was issued to a commercial property during FY 2012 as a result of the patrolling inspections. The issue prompting the NOV was resolved by the end of the reporting period.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

This activity is related to the Bacteria TMDL as it addresses sources of indicator bacteria as well as dry weather urban runoff that have been shown to contribute to regrowth of indicator bacteria within MS4 systems.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred in FY 2011. Activity implementation began in FY 2012 and will continue through FY 2013, with continual assessment to determine if modifications are necessary.

LEAD WATERSHED COPERMITTEE

- City of Del Mar

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Oil and Grease
- Sediment
- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity addresses high priority water quality problems and sources of the associated pollutants and is therefore consistent with the 2008 WURMP watershed strategy.

EFFECTIVENESS MEASUREMENTS

It is anticipated that the follow-up contact with the identified sources will lead to some abatement of their contributions to urban runoff and pollutant generating activities. This more frequent approach is also intended to strengthen the City's positive rapport with the business community and obtain positive results for BMP implementation.

FY 2011-12 ANALYSIS RESULTS

Issues observed during the commercial/industrial patrol inspections are summarized in Table 1 below.

Table 1: Industrial and Commercial Patrol Inspection Summary

Issue	No. Observed
Irrigation Runoff	5
Leaking Hose	5
Leaking Fountain	1
Broken Sprinkler Causing Runoff	1
Uncontained Hosing	5
Dumpster Lids Open or Missing	37
Dumpster Overflowing	15
Excessive Trash	7
Grease Lid Open or Missing	11
Grease Stains or Tracking	15
Excessive Leaves, Sediment Build-up	1
Secondary Containment Missing or Inadequate	9
MS4 Discharge or Evidence of Discharge	6
Total	**118**

FY 2011-12 EFFECTIVENESS ASSESSMENT

Through the patrolling inspections, the industrial/commercial communities were further educated using Clean Water notification letters, which were distributed to the target communities during the reporting period. More than 70 letters were mailed to business/property owners as a result of the patrol implementation. These numbers represent a net increase in public education (Level 2) as compared to previous years when these educational materials were not distributed.

Based on the findings of the patrol inspections of municipal, commercial and industrial sites, it is evident that the community as a whole is exhibiting a greater rate of BMP implementation. During the fiscal year, BMP deficiencies were observed at 32 commercial properties within the City. Of these, 18 (approximately 56%) corrected the issue after the first Clean Water reminder letter was mailed to the responsible party. At all 18 facilities, the deficiency was not observed a second time during the remainder of the fiscal year. Other facilities were eventually brought into full compliance, although additional letters and inspections were required. With the help of the City's educational materials, business owners and residents are making the behavioral changes necessary to increase BMP implementation and protect local water quality (Level 3).

The commercial patrols are likely causing load reductions (Level 4) through the Level 3 changes in the City's business and residential populations, although this cannot be quantified at this time. The commercial/industrial patrolling program is resulting in fewer observations of BMP deficiencies now that it has been in place for a year, which may result in positive load reduction impacts in the long term.

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TITLE: **QUALCOMM STADIUM DROP-OFF COMMUNITY CLEANUP AND RECYCLING EVENT SPONSORSHIP**
ID #: **SD-WQA31**

ACTIVITY DESCRIPTION

The City of San Diego Environmental Services Department (ESD) conducted a drop off clean up event in March. The event was open to all City residents and targeted items like appliances, metals, junk furniture, mattresses and tires. The Qualcomm Stadium parking lot was the site for the drop off and ESD staff conducted both events. This event was selected based upon citizen requests, pledges of community involvement and previous citizen participation levels.

A total of 112,000 pounds were collected of which 44,000 pounds were recycled. Some of the items collected were refrigerators, microwaves, stoves, window air conditioners, clothes washers and dryers, dishwashers and tires.

TMDL APPLICABILITY

Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region

TIME SCHEDULE FOR IMPLEMENTATION

This event took place in March and was in the planning stages for approximately 2-3 months. Scheduling and coordinating available dates at Qualcomm stadium, writing traffic control patterns if needed, reserving equipment for use and scheduling drivers, creating a site map of the staging area and traffic flow pattern for ease of use.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Cleanup events will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the sponsored cleanup? ($/lbs. collected)

TARGETED MEASURABLE OUTCOME(S)

Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

ASSESSMENT METHOD(S)

Quantification (e.g., pounds of trash collected)
Pounds of trash removed (Outcome Level 4): 68,000 lbs.
Pounds of trash recycled (Outcome Level 4): 44,000 lbs.
Total pounds of trash removed and recycled (Outcome Level 4): 112,000 lbs.
Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $2,200
Efficiency (Total Cost/Total Pounds Removed and Recycled): $0.03/lbs.

EXPECTED BENEFITS

The goal of this assessment is to determine the effectiveness and efficiency of free drop off clean up and recycling events. In sponsoring these clean up events, the City is providing a convenient drop off location for the free drop off/disposal of furniture, appliances and tires. These community cleanup events are also intended to deter residents from illegally dumping unwanted items in street and alley rights-of-way, canyons, creeks and riverbeds as well as other locations throughout the City. They also replace a house by house bulky item pick up.

ANALYSIS RESULTS

ESD staff collected a total of 112,000 lbs. of metals, appliances, junk furniture and mattresses. Disposed 68,000 lbs. and recycled 44,000 lbs. The sponsorship from the City of San Diego Transportation and Storm Water Department, Storm Water Division for this event was $2,200.

CONCLUSIONS

This activity fulfills a watershed water quality activity for FY 2012 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 112,000 pounds during the reporting period.

RECOMMENDATIONS

There are no recommendations at this time.

TITLE: **PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST**
ID #: **SD-WQEA3**

ACTIVITY DESCRIPTION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled Karma, Karma Second Chance, and Karma Tourist and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Dieguito River Watershed Management Area (WMA). The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

Indicator Bacteria - Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the San Dieguito River WMA.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River WMA identify bacteria as high priority water quality problems in the WMA. The Karma, Karma Second Chance, and Karma Tourist Public Service Announcements will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation?

2) How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

TARGETED MEASURABLE OUTCOME(S)

1) Reach goal of number of listeners (radio) and homes (television) reached, based on survey results

2) Increased level of knowledge/attitude based on post-activity surveys

ASSESSMENT METHOD(S)

1) Survey (e.g., administer survey to assess knowledge and attitude of participants)

2) Quantification (e.g., number of residents reached by PSA)

DATA RECORDED

1) Number of impressions made in homes through television in San Dieguito River WMA (Outcome Level 1)

2) Number of impressions made to the public through radio announcements in San Dieguito River WMA (Outcome Level 1)

3) Change in knowledge or attitude from survey results (Outcome Level 2)

4) Change in pollutant-related behavior from survey results (Outcome Level 3)

EXPECTED BENEFITS

The goal of Karma, Karma Second Chance, and Karma Tourist PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

ANALYSIS RESULTS

The City will continue to run the Karma public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program; therefore, no assessment was conducted in FY 2012.

CONCLUSIONS

The PSAs educate the public about causes of pollution and encourage positive behavior changes in preventing pollution from entering the storm drain system. The City will continue to run the Karma public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program.

TITLE: **SAN DIEGUITO WATERSHED BROCHURE**
ID #: **SD-WQEA10**

ACTIVITY DESCRIPTION

The City of San Diego (City) and Think Blue will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the attention of the audience, enhance the understanding of basic watershed principals of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:
1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay
5) San Dieguito River
6) Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2012. Implementation and distribution started in FY 2012 and will continue through FY 2015. Assessment is proposed in FY 2015.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1) Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?

2) Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

TARGETED MEASURABLE OUTCOME(S)

1) Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.

2) Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.

3) Increased intent to act to prevent storm water pollution after reading the watershed brochure.

ASSESSMENT METHOD(S)

1) Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

DATA RECORDED
N/A

EXPECTED BENEFITS
The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

ANALYSIS RESULTS
An effectiveness assessment of this activity is not possible at this time because the watershed brochures have not been distributed to enough residents within the Watershed Management Area. Data will be collected throughout FY 2012–2015.

CONCLUSIONS
All six watershed brochure revisions were completed in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

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TITLE: FOCUSED OUTREACH TO THE EQUESTRIAN COMMUNITY
ID #: SD-WQEA11

ACTIVITY DESCRIPTION

The County of San Diego provides funding and or conducts focused water quality outreach and education to the equestrian community and other owners of small animals and livestock in the unincorporated area. Education focuses on BMPs of importance to this community, including manure management, composting, and erosion control. Activities include, but are not limited to: workshops, booths at community events, development and distribution of educational materials, surveys, and partnerships with equestrian community groups. These activities may be coordinated with groups such as the Mission Resource Conservation District (MRCD) and the Solana Center for Environmental Innovation (Solana Center).

ACTIVITY IMPLEMENTATION FY 2009-10

WORKSHOPS

During FY 2009-10, a total of 113 people attended four workshops in Lakeside, Fallbrook, Ramona and Bonita. The events were coordinated with Solana Center and the MRCD. The workshops provide training on a variety of equestrian topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources

COMMUNITY EVENTS

During FY 2009-10, a total of 105 people visited four booths manned by the County or its partners during four community events. Targeted outreach to the equestrian community was provided at each event. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness.

DEVELOPMENT AND DISTRIBUTION OF EDUCATIONAL MATERIALS

During FY 2009-10, County staff created a coloring sheet and handout to direct interested equestrians to more detailed information regarding BMPs for manure management.

During FY 2009-10 surveys were conducted at four retail outlets (feed stores) reaching a total of 96 horse owners. A final report was prepared and was attached to the FY 2009-10 County JURMP Annual Report.

ACTIVITY IMPLEMENTATION FY 2010-11

WORKSHOPS

During FY 2010-11, the County of San Diego in coordination with the Solana Center and the MRCD, conducted additional workshops targeting equestrians. A total of 69 people attended four workshops held in Lakeside, Ramona, Bonsall, and Rainbow. The Ramona workshop had to be rescheduled due to lack of participants but a make-up workshop was held on November 19, 2011.

COMMUNITY EVENTS

During FY 2010-11 County staff and/or contractors attended three equestrian events and provided targeted outreach. A total of 215 horse owners visited or attended the presentations at these events.

SURVEYS

Questionnaires and in person interviews were conducted during the Lakeside manure composting workshop. A total of 24 horse owners participated in the survey. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development. A final report was attached to the FY 2010-11 County JURMP Annual Report.

ACTIVITY IMPLEMENTATION FY 2011-12

WORKSHOPS

During FY 2011-12, the County of San Diego, in coordination with the Solana Center and the MRCD, conducted four workshops attended by 127 people were held in Ramona, Spring Valley, Fallbrook and Bonsall. Table 1 includes a summary of the four workshops.

Table 1. FY 2011-12 Workshop Location and Attendance

Location	Date	No. of Attendees	Primary Watersheds Addressed
Ramona	11/19/11	24	San Diego River, San Dieguito
Spring Valley	1/14/12	24	Sweetwater
Fallbrook	5/26/12	64	Santa Margarita, San Luis Rey
Bonsall	6/2/12	15	Santa Margarita, San Luis Rey
Total		**127**	

COMMUNITY EVENTS

During FY 2011-12 County staff and/or contractors provided targeted outreach to the equestrian community at the Ramona Rodeo. The County hosted a booth, answered questions from attendees, and disseminated information on manure management, composting, general recycling, and erosion control practices. A watershed map was displayed and participants were asked to complete surveys assessing general knowledge and awareness. During the three day event (May 18th through 20th) a total of 200 horse owners participated.

SURVEYS
Questionnaires and in person interviews were conducted during the Ramona and Spring Valley manure composting workshops. A total of 45 horse owners participated in the survey, however only 36 matched sets could be identified for the pre and post tests. A summary of the results can be found in the effectiveness section below. The full report titled "San Diego County Manure Management Workshop Survey Results FY12" is included as an attachment in the County FY 2011-12 JURMP Annual Report.

TMDL APPLICABILITY
This activity will assist the County to achieve compliance with the multi-watershed Bacteria TMDL for beaches and creeks and with other more localized TMDLs for constituents such as nutrients and sediment.

TIME SCHEDULE FOR IMPLEMENTATION
FY 2009-10: Four workshops and four community events held. Development of Education Materials was included and surveys were provided.

FY 2010-11: Four workshops and three community events were held. Surveys were conducted at two of the workshops.

FY 2011-12: Four workshops and one event (3 days) were held. Surveys were provided at two of the workshops.

FY 2012-13: Additional workshops or events are planned for Santa Margarita and San Luis Rey watersheds. County will also be discussing future program development and funding.

LEAD WATERSHED COPERMITTEE
- County of San Diego

OTHER PARTICIPATING ENTITIES
- Solana Center for Environmental Innovation
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
Providing education to the equestrian community is consistent with the Collective Watershed Strategy in that it promotes source control for an important source of the high priority water quality problems in this watershed.

EFFECTIVENESS MEASUREMENTS

Composting Workshop (Ramona and Spring Valley Results combined)

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered. Pre-workshop survey results were as follows:

- 56% responded correctly that stormwater is not treated.
- A mean score of 5.5 responded that they believe horse manure contributes to pollution of local waterways. (Scale was 0 to 10).
- The mean score for how much manure they currently composted was 2.75 on a scale from 0 (none) to 10 (all).
- 89% responded that they currently pick up manure more often than once per week.
- 16% responded that they currently compost manure.

When asked about what equestrians can do to prevent pollution caused by horse manure, few respondents suggested ideas on the pre-workshop survey.

Post-workshop survey results were as follows:

- 91% responded correctly that stormwater is not treated.
- Participants perceived composting manure to be much less difficult following the workshop compared to the pre-test.
- 95% responded that they plan to remove manure from corrals and stalls every day in the future.
- 90% responded they plan to manage manure generated by composting in the future.

Based on the pre and post assessment at the Lakeside and Ramona workshops, it appears that the workshop was successful at fostering positive attitudes and perceived control about composting. Future workshops might benefit from highlighting key issues such as the potential for manure to pollute waterways and the fact that stormwater is not treated.

TITLE: **RB ALIVE! EXPO STREET FAIR**
ID #: **SD-WQEA12**

ACTIVITY DESCRIPTION

In FY 2012, the City of San Diego (City) and Think Blue will target pollution prevention by attending the annual RB Alive! EXPO Street Fair. The RB Alive! event is designed to bring the community together to showcase local arts & crafts, regional & local businesses, service clubs and religious organizations, and provides an excellent venue to focus on watershed-based constituents of concern and pollution prevention methods. The Think Blue sponsorship will include staffing a booth to provide the opportunity to educate the public about preserving the local environment, promoting stewardship of the San Dieguito River Watershed and encouraging the public to take proactive steps in preventing pollution from entering the storm drain system.

Think Blue staff will offer free BMP related giveaway items to the public in exchange for their participation in a survey designed to assess their knowledge and attitudes towards storm water pollution. In addition, Think Blue will provide information on steps residents can take to help reduce pollution of waterways within the watershed (i.e. San Dieguito River).

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2011. Implementation and assessment occurred in FY 2012, and will continue through FY 2014.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the San Dieguito River Watershed Management Area.

EFFECTIVENESS MEASUREMENTS

MANAGEMENT QUESTIONS

1. What change in awareness /attitude regarding bacteria was achieved after implementation?
2. How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

TARGETED MEASURABLE OUTCOME(S)

1. Reach pre-set percentage of residents within target watershed
2. Increased level of knowledge/attitude based on post-activity surveys

ASSESSMENT METHOD(S)

1. Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants)
2. Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

DATA RECORDED

1. Estimated total visitors exposed to the Think Blue Booth at the RB Alive! EXPO in FY 2012 (Outcome Level 1) = 55,000
2. Number of Surveys administered in FY 2012 (Outcome Level 1) = 324
3. Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2) = 67%
4. Percentage of individuals able to name a concrete action to prevent storm water pollution (Outcome Level 3) = 92%
5. Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3) = 86%

EXPECTED BENEFITS

The goal of this activity is increasing knowledge and awareness in the residents and visitors in the San Dieguito River Watershed in order create positive behavioral change that will reduce the presence of bacteria, nutrients and other pollutants in nearby water bodies, such as the San Dieguito River and Lake Hodges.

ANALYSIS RESULTS

Effectiveness assessment results of this activity will be in FY 2014 in order to have a statistically significant sample size and provide an opportunity to note any behavioral changes over a longer period of time. Efforts were made to educate attendees on awareness of pollutant sources and pollution prevention methods.

CONCLUSIONS

Our presence at the RB Alive! event provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of storm drain

pollution prevention. Based on attendance size and demographics, the City plans to continue to sponsor and staff the RB Alive! event. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

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Attachment A

2008 San Dieguito WURMP Watershed Map

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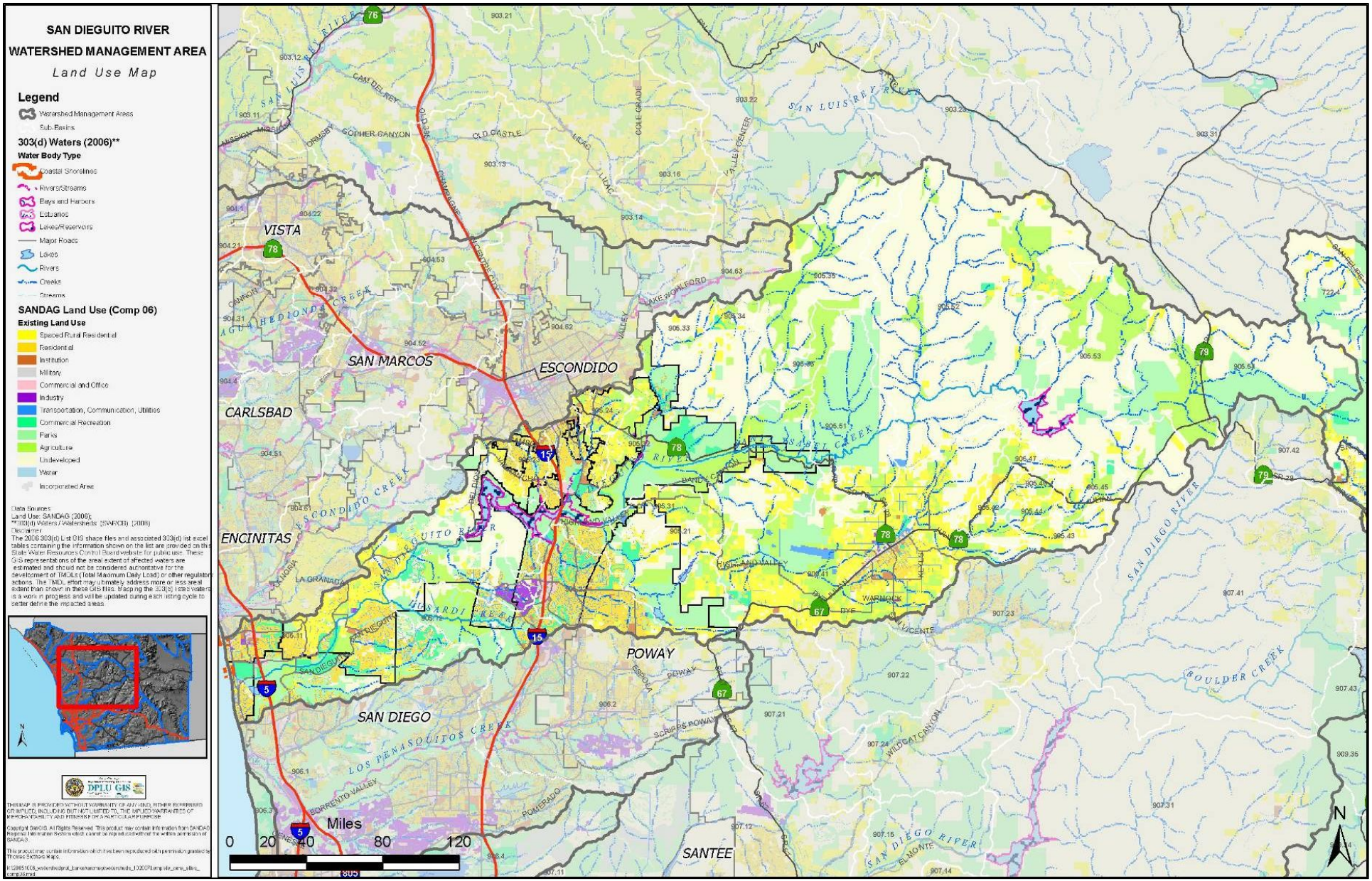

Attachment A – San Dieguito WURMP Watershed Map

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SAN LUIS REY RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside ● City of Vista ● County of San Diego

March 2008

City of Vista

March 19, 2008

RE: San Luis Rey Watershed Urban Runoff Management Program Statement of Certification

I certify under penalty of law that the City of Vista participated in the development of the San Luis Rey Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita L. Geldert
City Manager
City of Vista

Lawrence D. Pierce
Director of Engineering
City of Vista

STATEMENT OF CERTIFICATION
San Luis Rey River Watershed Urban Runoff Management Program

I certify under penalty of law that the County of San Diego participated in the development of the San Luis Rey River Watershed Urban Runoff Management Program and all attachments. County staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

3-21-08
Date

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 19, 2008

RE: STATEMENT OF CERTIFICATION
2008 Watershed Urban Runoff Management Program Update for the San Luis Rey Watershed

I certify under penalty of law that the 2008 Watershed Urban Runoff Management Program Update for the San Luis Rey Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahsaizadeh

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

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SAN LUIS REY RIVER WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside
City of Vista
County of San Diego

March 2008

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EXECUTIVE SUMMARY

Since January 2003, the San Luis Rey (SLR) Watershed Copermittees have been actively implementing a Watershed Urban Runoff Management Program (WURMP). The City of Oceanside, as lead agency, in collaboration with the City of Vista and the County of San Diego – all local agencies which have jurisdiction within the San Luis Rey River Watershed Management Area (SLR WMA) – are continuing their efforts to develop and implement a watershed-based program in the SLR WMA. This document discusses the SLR Watershed Copermittees' efforts to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (Municipal Permit) for San Diego Copermittees (Order No. 2007-0001, NPDES No. CAS0108758). More importantly, this document describes collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the SLR WMA to the maximum extent practicable.

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.
- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement within the SLR WMA in activities related to urban runoff management.

To help reach these goal and objectives, the SLR Copermittees will work to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

The SLR WMA is located along the northern border of the County of San Diego, California. It encompasses approximately 562 square miles and includes three Hydrologic Areas (HAs): Lower San Luis, Monserate and Warner Valley. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level (MSL), and extends over 55 miles across northern San Diego County before discharging to the Pacific Ocean in the City of Oceanside. Of the nine watersheds in the San Diego region, the SLR River Watershed is the third largest (SANDAG 1998).

Residential and agriculture serve as the dominant land uses in the watershed. The majority of the watershed has remained undeveloped with higher population concentrations in the Lower San Luis HA. Although the SLR River Watershed is the third largest of the San Diego region watersheds, its population is one of the smallest. The population of the SLR River Watershed was 146,383 according to the 2000 census and is forecasted to increase to 219,252 by 2020 and 249,673 by 2030. This growth is expected to occur mostly within vacant land in the unincorporated areas of the watershed.

The SLR WURMP is a continuation of a long-term effort to protect and enhance the water quality of the rivers and creeks at the watershed level. It is the goal of all participating jurisdictions to work cooperatively with other agencies, non-governmental organizations, and private citizens at the watershed level in order to positively affect the water resources of the region and achieve compliance with the Municipal Permit. This program provides a mechanism for coordination of existing water quality-related efforts in the watershed. The Program, where possible, will integrate its efforts with other projects such as those of the SLR Watershed Council.

Copermittees have developed a Model Watershed Urban Runoff Management Strategy to guide the selection and implementation of Watershed Activities that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. Data analyzed to date for the SLR Watershed suggests that bacteria and nutrients are high priority water quality problems in the Lower San Luis HA. The water quality assessment is discussed in detail in Section 3.

To address water quality problems, this Plan identifies a series of watershed water quality and education activities in Section 4, in addition to other ongoing and planned activities. Having used the watershed strategy as the basis for developing the activities, the Copermittees have focused activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the SLR WMA. Where receiving water conditions and pollutants sources are not clearly characterized, monitoring and source identification activities will be implemented.

The Cities of Oceanside and Vista and the County of San Diego share the implementation responsibilities for the WURMP along with other interested stakeholders. Due to the commitments of these agencies, this watershed program is expected to extend beyond the Municipal permit expiration of January 24, 2012. Using the watershed approach, the SLR Watershed Copermittees aim to positively affect the water quality of the SLR River Watershed in a cost effective, environmentally sensitive, and collaborative manner.

1.0 INTRODUCTION

This Watershed Urban Runoff Management Program for the San Luis Rey Watershed (SLR WURMP) describes the activities that the Copermittees within the San Luis Rey River Hydrologic Unit 903 (SLR River Watershed) are implementing or will implement to ensure compliance with the Waste Discharge Requirements of the San Diego Region of the California Regional Water Quality Control Board (SDRWQCB) Order R9-2007-0001 (Municipal Permit). More importantly, this document describes collaborative plans and efforts to reduce the impacts of urban activity on the water quality of receiving waters within the SLR River Watershed to the maximum extent practicable.

1.1 Program Framework

Preparation of this SLR WURMP is based on input from the three responsible Watershed Copermittees, as identified in the Municipal Permit. These Copermittees are the cities of Oceanside and Vista and the County of San Diego, and are referred to as the Watershed Copermittees. The WURMP is based on guidance and model documents prepared by the various Copermittee working groups to ensure regional consistency, yet tailored to address the specific needs and concerns associated with the SLR River Watershed. This WURMP includes material that describes the SLR River Watershed Copermittees' intended approach to meeting their watershed-related Municipal Permit obligations as specified under Sections E and J of the Municipal Permit. The following briefly summarizes the contents of each section of the document:

1.0 – Introduction

Section 1.1 Program Framework – This section provides a brief introduction to the WURMP and its organization; regulatory background and regulatory requirements of the Municipal Permit; and the purpose, goals and objectives of the WURMP.

Section 1.2 Watershed Description & Map – This section provides a description of the SLR Watershed including the topographical and drainage features, jurisdictional areas, various waterbodies, and the existing and planned land uses within the watershed.

2.0 – Collective Watershed Strategy

As required by section J.1.b.(4)(g) of the Municipal Permit, this section describes the Copermittees' model watershed strategy used to guide the selection and implementation of effective watershed water quality activities and watershed education activities.

3.0 - Water Quality and Pollutant Source Assessment

Section 3.1 Water Quality Assessment Approach – This section includes an assessment of all existing water quality data collected for the watershed and identification and prioritization of specific constituents targeted for improvement.

Section 3.2 Receiving Waters Condition – This section describes the condition of receiving waters within the watershed, including 303(d) listings for water quality impairments.

Section 3.3 Water Quality Problem(s) – This section identifies the watershed's water quality problems and discusses the SLR Watershed Copermittees' prioritization in addressing these problems.

Section 3.4 Likely Pollutant Sources - This section identifies possible pollutant sources, pollutant discharges, and/or other factors causing the SLR Watershed's high priority water quality problems. The sources are identified based on regional monitoring data and information specific to the SLR Watershed, as well as the threat-to-water-quality ratings presented in the Copermittees' Baseline Long Term Effectiveness Assessment (BLTEA).

4.0 - Five-Year Strategic Plan

Section 4.1 Proposed Watershed Water Quality Activities – This section describes the watershed water quality activities proposed for implementation as part of the five-year strategic plan and includes a Proposed Watershed Activity Summary Sheet for each watershed water quality activity planned for implementation.

Section 4.2 Proposed Education Activities – This section provides details on the watershed education activities proposed for implementation as part of the five-year strategic plan and includes a *Proposed Watershed Activity Summary Sheet* for each watershed education activity planned for implementation.

Section 4.3 Proposed Public Participation Activities –This section describes the mechanisms used to encourage public participation in the development, implementation, and assessment of the WURMP.

Section 4.4 Proposed Land Use Planning Activities – This section describes the mechanisms used to encourage collaborative, watershed-based, land-use planning among jurisdictional planning departments.

5.0 – Program Effectiveness Assessment

This section summarizes the objectives of the SLR River WURMP and the activities to be conducted towards meeting these objectives. The section also defines how achievement of the WURMP goal and objectives will be measured over the life of the Municipal Permit.

6.0 – Program Review and Modification

This section describes the process for reviewing and modifying the SLR WURMP. Changes to the WURMP (i.e., modified priorities, implementation schedule changes, map updates) will be described and justified in WURMP Annual Reports. Each WURMP Annual Report will serve as an appendix to the WURMP itself.

7.0 – Conclusions and Recommendations

This section provides a summary and conclusions of the SLR WURMP.

It is the intent of the SLR River Watershed Copermittees that the SLR WURMP be a "living document" which is periodically updated as the program evolves and additional needs are identified. Updates are anticipated to occur for the following reasons:

- To ensure compliance with the Municipal Permit.
- To address specific and targeted water quality issues within the SLR River Watershed.
- To improve collaboration among the SLR River Watershed Copermittees with respect to land use planning issues.
- To facilitate public involvement and ensure a consistent educational message.
- To assist the Watershed Copermittees' staffs in understanding and implementing the WURMP.

1.1.1 Regulatory Requirements

In January 2007, Municipal Separate Storm Sewer Systems Permit Order No. R9-2007-0001 was issued to the Copermittees as a renewal permit for Order 2001-01. The Municipal Permit was issued to the following jurisdictions:

City of Carlsbad	City of Imperial Beach	City of San Marcos
City of Chula Vista	City of La Mesa	City of Santee
City of Coronado	City of Lemon Grove	City of Solana Beach
City of Del Mar	City of National City	City of Vista
City of El Cajon	City of Oceanside	County of San Diego
City of Encinitas	City of Poway	SD Regional Airport Authority
City of Escondido	City of San Diego	SD Unified Port District

Under the Municipal Permit, each Copermittee is required to address the following principal elements:

- Establish, maintain and enforce adequate legal authority to control pollutant discharges into and from its municipal separate storm sewer systems.
- Develop and implement a Jurisdictional Urban Runoff Management Program, which will reduce discharges of pollutants and runoff flow during each major phase of urban development (i.e., planning, construction, and use or operation phases) within its jurisdiction.
- Collaborate with other San Diego Copermittees within its watershed(s) to develop and implement a Watershed Urban Runoff Management Program, which identifies and addresses the highest priority water quality issues/pollutants in their respective watershed(s).
- Collaborate with all other San Diego Copermittees to address common issues, promote consistency, and plan and coordinate urban runoff activities.
- Develop and implement a Receiving Waters Monitoring Program, which shall focus on the collection of monitoring data to be used for the achievement of water quality policies and the protection of beneficial uses.
- Submit various reports describing the measures it is undertaking to meet the requirements of the Municipal Permit.

Section E of the Municipal Permit defines the Copermittees within the nine regional watersheds, as well as a Lead Copermittee for each watershed. The following Copermittees are included in the SLR River Watershed:

- City of Oceanside
- City of Vista
- County of San Diego

This section of the Municipal Permit designates the City of Oceanside as the default Lead Copermittee for the SLR River Watershed, and the City of Oceanside has agreed to continue to fulfill this role. The Municipal Permit requires that the Lead Watershed Copermittee be responsible for producing and submitting the WURMP. They are also responsible for coordinating meetings among watershed Copermittees to facilitate the implementation of watershed activities. The City of Oceanside continues to coordinate meetings quarterly (minimum frequency), to discuss and implement the various watershed activities and coordinate required regulatory submittals.

In accordance with Section E of the Municipal Permit, the Copermittees listed for each watershed must participate in the development and implementation of a WURMP. The requirements for the WURMP are listed in the Municipal Permit and include the following:

- Mapping the watershed and identifying all receiving waters, all impaired receiving waters, land uses, highways, jurisdictional boundaries, and inventoried commercial, industrial, construction, municipal sites, and residential areas.
- Assessing the water quality of all receiving waters in the watershed based on existing data, and eventually performing watershed-based water quality monitoring activities.
- Identifying and prioritizing major water quality problems in the watershed caused or contributed to by discharges from MS4s, including potential sources of the problems.
- Developing and implementing a strategy of water quality and educational activities needed to address the highest priority water quality problems.
- Identifying which Copermittees are responsible for implementing each recommended watershed activity.
- Developing and implementing a mechanism for public participation in watershed activities.
- Developing and implementing watershed-based education activities.
- Developing a mechanism to facilitate collaborative watershed-based land use planning with other Copermittees in the watershed.
- Developing a long-term strategy for assessing the effectiveness of the WURMP.
- Submitting annual WURMP reports which shall document the Copermittees' activities during the preceding year. At a minimum, the annual report must include:
    - A comprehensive description of all watershed activities conducted by the Watershed Copermittees for permit compliance.
    - Public participation mechanisms utilized during implementation.
    - Watershed-based land use planning mechanism description.
    - Effectiveness assessment of the WURMP.
    - Summary of watershed-related data not already included in the annual monitoring report.
    - Identification of water quality improvements or degradation.

1.1.2 Purpose, Goals and Objectives

In broad terms, the overall purpose of the SLR River WURMP is to ensure compliance with the requirements of the Municipal Permit and, more importantly, to address water quality issues and any degradation occurring within the SLR River Watershed. Fundamental to both, establishing specific WURMP goals and measuring achievement, is the understanding that long-term solutions to water quality problems will be more effective if the issues are correctly and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true "watershed-approach" solutions can then be applied. Consistent with the intent of the Municipal Permit, use of a "watershed-approach" considers the complex dynamics of the entire watershed as opposed to focusing on activities within specific jurisdictions. This approach will be attempted and implemented where feasible given existing and potential new frameworks and structures. However, jurisdictional constraints and variations in codes, regulations, and practices (which are not related to water quality, but rather political autonomy) must also be recognized.

This section provides an overview of the goal and objectives of the SLR WURMP. Section 5.0 of this document directly relates to the goal and objectives of this WURMP, because it identifies mechanisms for assessing the effectiveness of attaining the goal and objectives and the time frames associated with the long-term strategy.

The goal of the SLR River WURMP is to:
Positively affect the water quality of the SLR River Watershed while balancing economic, social, and environmental constraints.

This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR River Watershed, which responds to identifiable problems and reflects the beneficial uses of the watershed.

This objective is based on the overall purpose of a Jurisdictional or Watershed URMP, which is to ultimately improve the water quality of the watershed. However, it recognizes that for effective improvement of water quality, activities must be based on documented problems. Furthermore, identification of problems should take into account the beneficial uses of the watershed and particular attention to unique beneficial uses of the watershed, such as the agricultural and municipal water supply uses of the SLR River Watershed groundwater.

Objective #2: Integrate watershed principles into land use planning that affects the SLR River Watershed.

Urban runoff does not follow jurisdictional boundaries, and urban runoff flowing to receiving waters often originates in or flows through multiple jurisdictions. However, cities and counties have traditionally exercised their land use authority independently, with limited consideration of the chemical, biological, and physical processes that govern the generation, transport, and fate of contaminants and stressors at the watershed scale.

Land use policies of individual municipalities have the potential to affect water quality in water bodies well beyond their individual jurisdictional boundaries. One of the overriding purposes of the SLR WURMP is to integrate watershed-based planning principles into decision-making that is often fragmented and jurisdictionally focused.

Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR River Watershed.

Education is the foundation of an effective WURMP and the basis for changes in behavior at the individual and societal levels. Therefore, an effective public education program is a cornerstone in positively affecting the water quality of the watershed.

Objective #4: Encourage and enhance public involvement within the SLR River Watershed in activities related to urban runoff management.

The public is a resource that should be utilized to the greatest extent possible to effectively implement a resource plan such as the SLR WURMP. Public support is necessary because of the impact the policies and project will have on the public. Furthermore, the public and their activities are the largest non-point source affecting the water quality of the watershed. To effectively improve water quality of the watershed, changes must occur at the public level.

1.2 Watershed Description and Map

The SLR River Watershed is located along the northern border of the County of San Diego, California (Appendix A, Figure 1-1). The watershed is bordered to the north by the Santa Margarita River Watershed and to the south by the Carlsbad and San Dieguito River Watersheds. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level (MSL), as well as several other mountain ranges along the western border of the Anza Borrego Desert Park. The river extends over 55 miles across northern San Diego County forming a watershed with an area of approximately 360,000 acres or 562 square miles. The river ultimately discharges to the Pacific Ocean in the City of Oceanside. Of the nine watersheds in the San Diego region, the SLR River Watershed is the third largest (SANDAG 1998).

Local jurisdictions occurring within the watershed include the cities of Oceanside, Vista, and Escondido, and the counties of San Diego and Riverside (Appendix A, Figure 1-2). A number of other governmental agencies also administer lands within the unincorporated areas of San Diego County. Federal government jurisdiction applies to military lands (predominately the Camp Pendleton Marine Corps Base), Forest Service lands (Cleveland National Forest), and miscellaneous Bureau of Land Management holdings. In addition, the State of California manages lands within the watershed including state parks, state roadways, and some miscellaneous holdings. A general breakdown of jurisdictional areas within the watershed is shown in Table 1-1.

Table 1-1. Watershed Acreages by Jurisdiction.

Jurisdiction	Acres	Percentage of Watershed (%)
Escondido	52	0.0
Oceanside	15,883	4.4
Vista	743	0.2
Unincorporated San Diego County	342,566	95.2
Riverside County	649	0.2
Total	**359,893**	**100**

Source: SANDAG 1998. (Note: Of the sources reviewed, values for total size of the watershed and the breakdown of the watershed by jurisdictions were similar but often different. Therefore, the values provided in this table are for general purposes only and should be verified if used for other purposes.)

About half (49%) of the land in the watershed is privately owned. Publicly owned land accounts for approximately 37% of the area, and the remaining 14% consists of numerous reservations in the watershed. In the western half of the watershed, private ownership dominates. Moving east through the watershed, public lands increase and dominate in the Warner Valley HA. The Vista Irrigation District (VID) is the single largest landowner in the watershed.

The SLR River Watershed or SLR Hydrologic Unit (Unit 903.00) is comprised of three Hydrologic Areas (HAs), which have been delineated by the SDRWQCB based on drainage patterns: Lower San Luis (HA 903.1), Monserate (HA 903.2), and Warner Valley (HA 903.3) (Appendix A, Figure 1-2). These HAs are described further in subsequent sections.

1.2.1 SLR River Watershed Land Uses

There are numerous land uses within the SLR River Watershed which are summarized in Table 1-2 and illustrated in Figure 1-3 in Appendix A. The majority of the watershed has remained undeveloped. Residential and agriculture serve as the dominant land uses in the watershed. The agricultural uses include cattle grazing, nurseries, citrus groves and avocado groves.

1.2.2 Warner Valley HA

The Warner Valley HA is furthest inland and contains the headwaters for the SLR River (Appendix A, Figure 1-2). Its drainage area consists mainly of unimproved brush land with forests at elevations over approximately 4,000 feet. This HA encompasses approximately 206 square miles that drain to Lake Henshaw, which was formed by the Henshaw Dam built in 1923. The HA is defined to the north by Palomar Mountain (6,140 feet) and the Aguanga Mountains, with elevations up to 5,600 feet above MSL and to the west by the Henshaw Dam which lies at an elevation of approximately 2,700 feet above MSL. South of Lake Henshaw is the Santa Ysabel Indian Reservation and east of the lake are the communities of Warner Springs and Ranchita, and the Los Coyotes Indian Reservations.

Table 1-2. Existing Land Uses in the SLR River Watershed.

Land Uses	1998 Acres[1]	Percent of Total[2]	2006 Acres	Percent of Total	Change (percent)
Residential	25,270	7.0%	54,842	15.2%	117%
Commercial/Industrial	12,321	3.4%	13,739	3.8%	12%
Schools	451	0.1%	567	0.2%	26%
Recreation	2,154	0.6%	3,325	0.9%	54%
Freeways/Roads[3]	12,698	3.5%	7,225	2.0%	-43%
Parks/Open Space	23,011	6.5%	31,854	8.9%	38%
Agriculture	85,548	23%	52,092	14.5%	-39%
Vacant/Undeveloped	197,790	55.0%	195,593	54.3%	-1%
County of Riverside *(data not available)*	649	0.2%	649	0.2%	0%
Total	**359,893**	**99.7%**	**359,885**	**100.0%**	**0%**

Source: SANDAG 1998 (taken from original WURMP) and SANDAG 2006 (raw data provided by County of San Diego). (Note: Of the sources reviewed, values for total size of the watershed and the breakdown of the watershed by land uses were similar but often different. Therefore, the values provided in this table are for general purposes only and should be verified if used for other purposes.)

[1] Due to rounding, values do not equal total.

[2] Due to rounding, values do not equal 100%.

[3] This category shows a significant reduction in area between 1998 and 2006. This reduction is likely due to changes in the categorization of land use and not a true reduction. Since it is overall less than 4% of the watershed the inconsistency is not considered consequential for this WURMP characterization.

The majority of this HA is undeveloped. There are scattered residences within the HA, however, open space and rangeland are the predominant land uses. Above Henshaw Dam the population is centered around the community of Warner Springs, and agriculture lands, which produce tree fruit, grapes and other crops. Cattle graze near Lake Henshaw on the surrounding VID property. Also located in this area are rural recreational uses, such as hiking trails, campgrounds and a glider port.

1.2.3 Monserate HA

Monserate HA begins below the Henshaw Dam and covers an area of approximately 383 square miles (Appendix A, Figure 1-2). This HA includes the communities of Rincon, Pauma Valley, and Pala. In addition, portions of the Pala, Pauma, La Jolla, Rincon and Yuima Indian Reservations are located within this HA. The river is paralleled to the north by mountains that rise from 2,200 feet to 5,300 feet above MSL, and to the south by mountains reaching from 2,000 to 3,300 feet above MSL. The proposed Gregory Canyon Landfill is located in this HA. As with the Warner Valley HA, a large portion of the Monserate HA is undeveloped. Agriculture is the dominant land use in this HA with small residential communities scattered throughout. Significant development is proposed for the western portion of this HA.

The communities of Pala and Pauma are located to the west of Lake Henshaw and are the primary population centers in the Monserate HA. Portions of the Rincon and San Pasqual Reservations are found in this area and also include the Pala Band of Mission Indians Reservation and Casino. The Gregory Canyon Landfill is proposed to be located in this HA. The Wilderness Gardens Preserve and several campgrounds and parks are also found in this area. The remainder of the area is primarily undeveloped with the exception of agricultural uses, which

occur adjacent to the SLR River and on the northeast and southwest facing hillsides near Pauma Valley.

The major industrial uses in this area involve extraction operations that consist of sand and gravel mining. At one time there were at least ten mining operations occurring in the watershed. Extraction mining has been a source of major disagreements in the watershed due to its impacts on watershed resources. Currently there are no active in-stream mining operations with two operations recently closing that were managed by Hanson Aggregates and Vulcan Materials. The Rosemary Mountain Quarry has received a land-use permit, issued by the County of San Diego in 2002, to mine "aggregate" which is a mix of sand and crushed rock that are key ingredients in asphalt and concrete. The total size of the project is 94 acres, but only 38 acres will be used for mining purposes.

1.2.4 Lower San Luis HA

The Lower SLR HA is the furthest downstream of the HAs, as well as the largest and most populated (Appendix A, Figure 1-2). The easternmost portion of this HA encompasses the community of Valley Center, which is located to the south of the Pala and Pauma Valley communities. West of Valley Center, the HA includes the communities of Hidden Valley, Bonsall, and Fallbrook, and further west the HA includes the City of Oceanside and the southern portion of Camp Pendleton. The SLR River flows through the northern portion of the City of Oceanside and discharges to the Pacific Ocean south of the Oceanside Harbor.

To the south of Pala and Pauma is the rapidly growing community of Valley Center, which is located in the Lower San Luis HA and drains to the west. Valley Center is a residential community dominated by large lot, low-density development with a minimum of two acres per dwelling unit. Limited commercial uses are located throughout the residential areas.

Agricultural uses still account for the majority of the developed land in this area and generally consist of perennial trees and ornamental crops. This community also contains several public and private parks, and recreational areas.

Further west in the watershed, residential uses increase with the communities of Fallbrook, Rainbow and Bonsall, and a small portion of the City of Vista. In general, agriculturally developed land is interspersed with residential development in this area. Residential development is generally at a density of less than one dwelling unit per acre.

Commercial developments are limited and occur in small quantities in Bonsall and Fallbrook and in the City of Vista. No major industrial centers have been developed in this area. The Fallbrook Community Airpark, numerous parks and recreation facilities are located in Fallbrook. The SLR River Park is proposed to be located in the eastern portion of the HA and will include passive and active recreational opportunities.

The westernmost portion of the watershed contains a portion of Camp Pendleton and the City of Oceanside. The portion of Camp Pendleton in the watershed is primarily undeveloped with the exception of two military residential areas and a golf course. The City of Oceanside, which is predominantly developed, is located south of Camp Pendleton. The primary agricultural area in

Oceanside (approximately 7,000 acres) borders the southeast side of Camp Pendleton. Commercial development is mostly located close to the coast, with additional commercial areas along Mission Avenue and State Route 76 (SR-76) near College Boulevard. Within the City of Oceanside, the SLR River has been channelized by levees for the purposes of flood control. The surrounding floodplain has been developed with numerous industrial uses including auto recycling, concrete batch plants and the Oceanside Municipal Airport.

1.2.5 Population and Growth

Although the SLR River Watershed is the third largest of the San Diego region watersheds, its population is one of the smallest. The population of the SLR River Watershed was 146,383 according to the 2000 census and is forecasted to increase to 219,252 by 2020 and 249,673 by 2030. This growth is expected to occur mostly within vacant land in the unincorporated areas of the watershed. Within the unincorporated areas of the watershed, the communities of Fallbrook, Bonsall, Valley Center, and Rainbow are anticipated to produce the greatest population increases (SLR Watershed Council 2002).

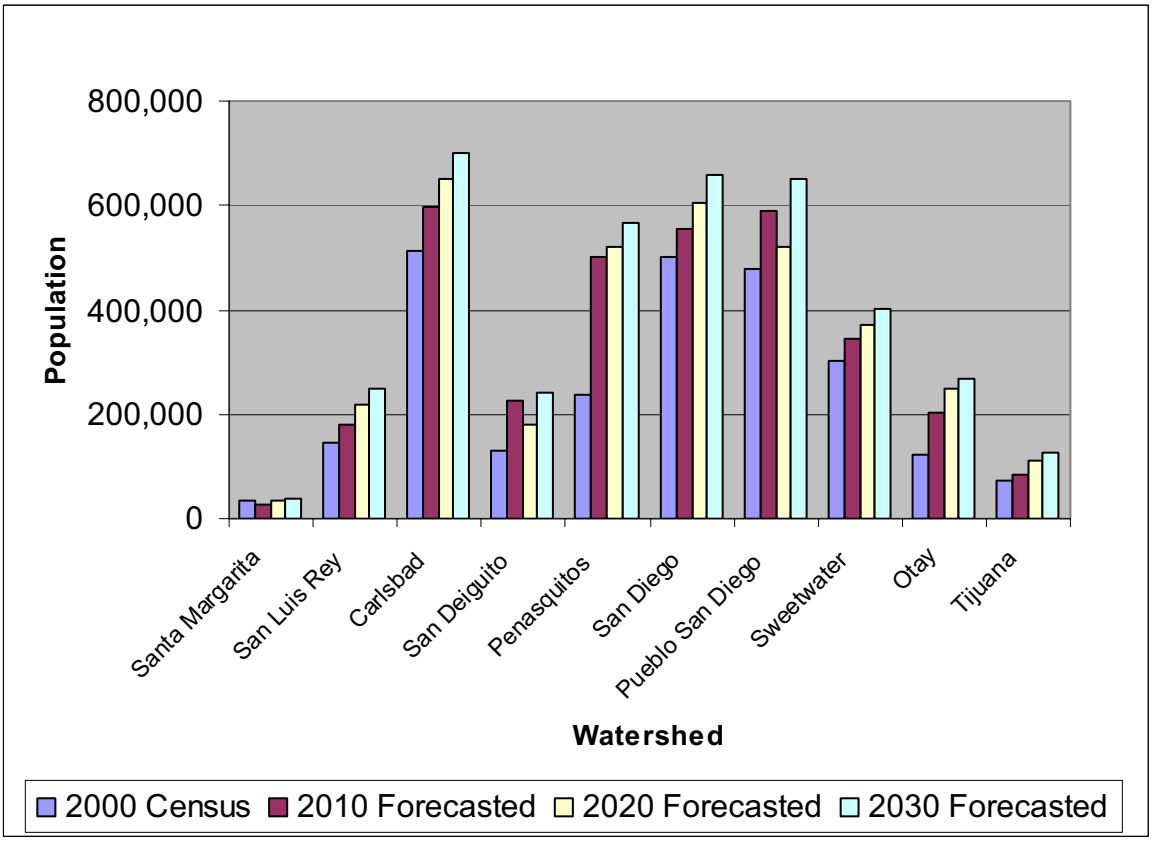

Figure 1-4. Population Increases in San Diego Watersheds.

1.2.6 Hydrology

Hydrology in the upper portion of the watershed is controlled by the Henshaw Dam and the Escondido Canal. Henshaw Dam forms Lake Henshaw, a reservoir with 55,000 acre-feet of storage capacity that is owned by the VID. VID provides water to much of northern San Diego County including the city of Vista, and portions of San Marcos, Escondido, Oceanside and unincorporated areas of the county. In order to transport water the to the City of Escondido, water from Lake Henshaw is released down the main channel of the SLR River and diverted into the man-made Escondido Canal. This diversion is just east of the La Jolla Indian Reservation, approximately seven miles downstream of Henshaw Dam. The Escondido Canal was constructed in 1895 for the purposes of supplying water to what is known today as the City of Escondido. The canal diverts up to 55 cubic feet per second (cfs) of water out of the SLR River and conveys it to Lake Wohlford, which is an intermediate storage and distribution reservoir located in the Escondido Creek drainage basin of the Carlsbad Watershed. Practically all of the flows are diverted from the river into the canal, typically leaving the river dry below the diversion. In addition, because the releases from the dam are driven by water demand, it is not uncommon for there to be extended periods when there is no water being released from the dam.

Furthermore, annual maintenance is performed on the Escondido Canal for a six- to eight-week period from October to December. No releases of water occur during this maintenance period. During these periods when water is not being released, it is not uncommon for the entire Monserate HA portion of the river to be dry down to the Monserate Narrows.

When water is being released from the dam, the river typically regains surface flows from the surrounding tributaries and surfacing groundwater in the area where Couser Canyon Creek combines with the SLR River. The remainder of the SLR River is intermittent through the Pauma and Pala areas and is a perennial river through Oceanside. Surface flows during dry weather are directly related to groundwater levels and this relationship is described further in Section 1.2.7.

Flood flow in the SLR River is limited to short durations. Flood discharges in the river are recorded throughout the basin at 32 United States Geological Survey (USGS) stream-gauging stations. The largest recorded flood occurred in January 1916 with a maximum discharge of 95,600 cfs recorded at Oceanside. Since the completion of Henshaw Dam, the largest flood event (estimated to be a 40-year flood) occurred in February 1980 with an estimated peak discharge of 25,000 cfs at Oceanside and 15,000 cfs at the Monserate Narrows.

1.2.7 Groundwater

Several shallow alluvial groundwater aquifers have been identified in the SLR River Watershed and groundwater is used throughout the watershed for agricultural, industrial, and municipal supplies. The aquifers consist of the Warner, Pauma, Pala, Bonsall, Moosa Canyon, and Mission Basins (Appendix A, Figure 1-5).

In general, surface water and groundwater exist within different physical and chemical systems. Due to these differences (e.g. evaporation rates, absorption, dispersion, diffusion, attenuation, flow velocities, temperatures, biological activity), the water quality in each system can be quite different. However, in the case of the SLR River Watershed, surface water and groundwater

have become an integrated system. Since groundwater provides base flow to the river for most of the year, groundwater quality will have an effect on surface water quality. In addition, because surface waters recharge the shallow alluvial groundwater basins, surface water quality affects groundwater quality.

The relationship between the surface water and the shallow, alluvial aquifer in the SLR River basin has evolved over time. Prior to the 1960s, the SLR River was considered ephemeral and only flowed on rare occasions when there was above normal precipitation. Also during this time, groundwater withdrawals from the SLR River basin generally exceeded recharge to the basin, which resulted in a lowering of groundwater levels. By 1956, groundwater levels in the Mission Basin had declined to approximately 43 feet below sea level, which allowed a trough of seawater to extend for a distance of two to six miles inland from the coast.

After the completion of the first San Diego Aqueduct in 1947, imported Colorado River water became available for use in the region. Since that time, the volume in the SLR River has increased significantly, and by the late 1960s, it was considered a perennial river in the vicinity of the City of Oceanside. For example, mean annual flow of the river at Oceanside from 1947 to 1967 was 0.6 cfs and from 1967 to 1990 the mean annual flow had increased to 84.0 cfs.

As the demand and availability of water for applied uses increased, so did the volume of imported water. Conversely, the volume of groundwater being pumped decreased, which had two general consequences. By 1970, the decrease in pumping coupled with percolation of storm water and irrigation flows allowed groundwater levels in the Mission Basin and elsewhere to recover to historical levels. This reestablished the natural seaward gradient of the aquifer and gradually diminished the effects of seawater intrusion. However, the salinity of the water in the aquifer continued to increase because of the salt load entering the groundwater from storm water and irrigation flows. As groundwater quality declined, so did the use of groundwater and the level of the water table continued to rise. As the depth of the groundwater has risen, perennial waters in the river have moved upstream (RECON 1996).

1.2.8 Geology and Soils

The soils within the SLR River Watershed range from excessively drained gravelly sands to well drained clays, and include areas of rough broken land, terrace escarpments, and steep gullied land. However, many of the soil series have characteristics that can have a significant effect on water quality related issues. There are many properties and qualities that affect soil erodibility. Factors include slope, surface layer texture, restricted permeability, and the grade of structure in the surface layer. Since severely erodible soils comprise 95% of the watershed, caution must be used when developing land use plans and implementing grading ordinances. Probable development areas, built on highly erodible soil, pose a potential threat to the water quality and sediment management of the watershed.

Other important soil characteristics include infiltration rate (the rate at which soil absorbs precipitation), and shrink-swell factor (the amount of water a soil can hold and how quickly water can be released). Both of these characteristics affect how quickly precipitation is transformed into surface runoff and how long subsurface flows will continue into the dry season. Soils that have a slow infiltration rate and a high shrink-swell factor are likely to generate surface

runoff sooner, but also continue to discharge subsurface flows longer than a soil with a fast infiltration rate and a low shrink-swell factor.

The predominant material on hillsides adjacent to the SLR River is decomposed granite. The bed material in the river below Lake Henshaw is a mixture of sand and gravel, with an insignificant amount of silt or other finer materials. The size of bed material decreases along the river channel but becomes fairly uniform from Pala to the ocean. The dominant material below Pala is median sand, which is highly transportable during floods (LMA 1995).

1.2.9 Biology

Historically, the SLR River Watershed was comprised of corridors of riparian forest, woodlands and scrub along the primary drainages, with grasslands along the valley bottoms and gently sloping hills transitioning into coastal sage and chaparral scrubs in the upland areas and groves of oak woodlands. Currently, there are 36 vegetation communities within the SLR River Watershed, with the coastal sage scrub, chaparral, and grassland communities being the most abundant. Wildlife habitats within the SLR River Watershed consist of six major types: shrublands, grasslands, woodlands/forest, rock outcrops/cliffs, wetlands, and open water (lacustrine). Three physiographically defined freshwater fish communities exist within the SLR River Watershed: upland (high gradient), lowland (low gradient), and coastal lagoons.

Numerous protected and otherwise designated sensitive species and vegetation communities occur throughout the watershed. The County of San Diego completed the development of the Multiple Species Conservation Program (MSCP) in 1997. The overall effect of the MSCP is that it provides for large, connected preserve areas that address a number of species at the habitat level rather than species by species, and area-by-area. This creates a more efficient and effective preserve system as well as better protection for the rare, threatened and endangered species in the region. The MSCP was the result of six years of planning and review by a diverse group including private conservationists, developers, and a number of public agencies, including the Wildlife agencies. The San Diego County Board of Supervisors approved the MSCP on October 22, 1997. The County of San Diego entered into an Implementing Agreement with the Wildlife Agencies for the MSCP on March 17, 1998. The County is currently working on a plan for the northern part of the unincorporated area (North County Subarea Plan) that extends from the area around the incorporated cities of Oceanside, Encinitas, San Marcos, Vista, and Escondido east to the Cleveland National Forest and north to the County line (County of San Diego 2008).

The Multiple Habitat Conservation Program (MHCP) is a comprehensive conservation planning process that addresses the needs of multiple plant and animal species in North Western San Diego County. The MHCP encompasses the cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista. Its goal is to conserve approximately 19,000 acres of habitat, of which roughly 8,800 acres (46 percent) are already in public ownership and contribute toward the habitat preserve system for the protection of more than 80 rare, threatened, or endangered species (SANDAG 2008).

The MHCP Subregional Plan and Final Environmental Impact Statement / Environmental Impact Report (EIS/EIR) were adopted and certified by the SANDAG Board of Directors on March 28, 2003. Subarea plans for the cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, and Vista are being prepared and must be adopted by each City Council and implementing agreements with the California Department of Fish and Game and U.S. Fish and Wildlife Service must be signed before incidental take permits can be issued.

Other agencies with jurisdiction over resources within the watershed include the United States Army Corps of Engineers (USACOE), the SDRWQCB, and the California Coastal Commission (CCC). Wetland issues fall under the jurisdiction the USACOE for placement of dredged or fill material within waters of the U.S. pursuant to the Clean Water Act (CWA), Section 404, the RWQCB for any action that may result in degradation of waters of the State pursuant to the CWA Section 401, and CDFG for alteration of a streambed pursuant to the California Fish and Game Code, Section 1603. The CCC regulates land and water uses located within the coastal zone consistent with the policies of the California Coastal Act (CCA).

1.2.10 Climate

The climate variations within the SLR Watershed are primarily the result of the degree of coastal influence and elevation. The average minimum temperatures within the watershed range from approximately 39° Fahrenheit (F) to 47°F in the winter, and from 51°F to 63°F during the summer months. The average maximum temperatures within the watershed range from approximately 65°F to 69°F in the winter and from 70°F to 91°F during the summer months. Precipitation records are available from 88 precipitation stations in and near the watershed. For the most part, precipitation rates decrease significantly from east to west. The annual average precipitation ranges from approximately 10 inches within the coastal areas to 45 inches within the more mountainous inland areas. Most of the precipitation falls as rain during the months from November to February with snow common only in the higher mountains.

1.2.11 Receiving Waters

The SLR River Watershed includes numerous receiving waters extending from Lake Henshaw and its tributaries to the Pacific Ocean. In the Water Quality Control Plan for the San Diego Basin, referred to as the Basin Plan, the SDRWQCB has provided a comprehensive list of the receiving waters in the watershed and the beneficial uses of those waters (SDRWQCB 1994). Table 1-3 provides the definitions of the applicable beneficial uses used by the SDRWQCB and Table 1-4 replicates the list of receiving waters in the Basin Plan with their designated beneficial uses. The remainder of this section provides a brief overview of some of the major receiving waters in the watershed.

Table 1-3. Beneficial Use Definitions.

Designation	Abbrev.	Definition
Municipal and Domestic Supply	MUN	Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Agricultural Supply	AGR	Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Industrial Service Supply	IND	Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
Industrial Process Supply	PROC	Includes uses of water for industrial activities that depend primarily on water quality.
Freshwater Replenishment	FRSH	Includes uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).
Hydropower Generation	POW	Includes uses of water for hydropower generation.
Contact Water Recreation	REC-1	Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.
Non-contact Water Recreation	REC-2	Includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Preservation of Biological Habitats of Special Significance	BIOL	Includes uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.
Warm Freshwater Habitat	WARM	Includes uses of water that supports warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.
Cold Freshwater Habitat	COLD	Includes uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.
Wildlife Habitat	WILD	Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife, or wildlife water and food sources.
Rare, Threatened, or Endangered Species	RARE	Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.
Marine Habitat	MAR	Includes uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).
Migration of Aquatic Organisms	MIGR	Includes uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.

Source: SDRWQCB 1994

Table 1-4. SLR River Watershed Receiving Waters.

Inland Surface Waters	Hydrologic Unit Basin Number	Beneficial Use														
		MUN	AGR	IND	PROC	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	MAR	MIGR
San Luis Rey River	3.32	●	●	●		●	●	●	●		●		●			
Johnson Canyon	3.32	●	●	●		●	●	●	●		●		●			
San Luis Rey River	3.31	●	●	●		●	●	●	●		●		●			
Canada Aguanga	3.31	●	●	●		●	●	●	●		●		●			
Dark Canyon	3.31	●	●	●		●	●	●	●		●		●			
Bear Canyon	3.31	●	●	●		●	●	●	●		●		●			
Cow Canyon	3.31	●	●	●		●	●	●	●		●		●			
Blue Canyon	3.31	●	●	●		●	●	●	●		●		●			
Rock Canyon	3.31	●	●	●		●	●	●	●		●		●			
Agua Caliente Creek	3.31	●	●	●		●	●	●	●		●		●			
Canada Agua Caliente	3.31	●	●	●		●	●	●	●		●		●			
Canada Verde	3.31	●	●	●		●	●	●	●		●		●			
Ward Canyon	3.31	●	●	●		●	●	●	●		●		●			
Lake Henshaw	3.31	●	●	●	●	●	●	●1	●		●		●	●		
West Fork San Luis Rey River	3.31	●	●	●		●	●	●	●		●		●			
Fry Creek	3.31	●	●	●		●	●	●	●		●		●			
Iron Springs Creek	3.31	●	●	●		●	●	●	●		●		●			
Buena Vista Creek	3.31	●	●	●		●	●	●	●		●		●			
Cherry Canyon	3.31	●	●	●		●	●	●	●		●		●			
Bertha Canyon	3.31	●	●	●		●	●	●	●		●		●			
Hoover Canyon	3.31	●	●	●		●	●	●	●		●		●			
Buck Canyon	3.31	●	●	●		●	●	●	●		●		●			
Bergstrom Canyon	3.31	●	●	●		●	●	●	●		●		●			
San Ysidro Creek	3.31	●	●	●		●	●	●	●		●		●			
Matagual Creek	3.31	●	●	●		●	●	●	●		●		●			
Carrizo Creek	3.31	●	●	●		●	●	●	●		●		●			
Carrista Creek	3.31	●	●	●		●	●	●	●		●		●			

Inland Surface Waters	Hydrologic Unit Basin Number	Beneficial Use														
		MUN	AGR	IND	PROC	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	MAR	MIGR
Kumpohui Creek	3.31	●	●	●		●	●	●	●		●		●			
San Luis Rey River	3.31	●	●	●		●	●	●	●		●		●			
San Luis Rey River	3.23	●	●	●			●	●	●		●	●	●			
Wigham Creek	3.23	●	●	●			●	●	●		●	●	●			
Prisoner Creek	3.23	●	●	●			●	●	●		●	●	●			
Lusardi Canyon	3.23	●	●	●			●	●	●		●	●	●			
Cedar Creek	3.23	●	●	●			●	●	●		●	●	●			
San Luis Rey River	3.22	●	●	●			●	●	●		●	●	●			
Bee Canyon	3.22	●	●	●			●	●	●		●	●	●			
Paradise Creek	3.22	●	●	●			●	●	●		●	●	●			
Hell Creek	3.22	●	●	●			●	●	●		●	●	●			
Horsethief Canyon	3.22	●	●	●			●	●	●		●	●	●			
Potrero Creek	3.22	●	●	●			●	●	●		●	●	●			
Plaisted Creek	3.22	●	●	●			●	●	●		●	●	●			
Yuima Creek	3.22	●	●	●			●	●	●		●	●	●			
Sycamore Canyon	3.22	●	●	●			●	●	●		●	●	●			
Pauma Creek	3.22	●	●	●			●	●	●		●	●	●			
Doane Creek	3.22	●	●	●			●	●	●		●	●	●			
Chimney Creek	3.22	●	●	●			●	●	●		●	●	●			
French Creek	3.22	●	●	●			●	●	●		●	●	●			
Lion Creek	3.22	●	●	●			●	●	●		●	●	●			
Harrison Canyon	3.22	●	●	●			●	●	●		●	●	●			
Jaybird Creek	3.22	●	●	●			●	●	●		●	●	●			
Frey Creek	3.22	●	●	●			●	●	●		●	●	●			
Agua Tibia Creek	3.22	●	●	●			●	●	●		●	●	●			
San Luis Rey River	3.21	●	●	●				●	●		●	●	●			
Marion Canyon	3.21	●	●	●				●	●		●	●	●			
Magee Creek	3.21	●	●	●				●	●		●	●	●			

Inland Surface Waters	Hydrologic Unit Basin Number	Beneficial Use														
		MUN	AGR	IND	PROC	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	MAR	MIGR
Castro Canyon	3.21	●	●	●				●	●		●	●	●			
Trujillo Creek	3.21	●	●	●				●	●		●	●	●			
Pala Creek	3.21	●	●	●				●	●		●	●	●			
Gomez Creek	3.21	●	●	●				●	●		●	●	●			
Couser Canyon	3.21	●	●	●				●	●		●	●	●			
Double Canyon	3.21	●	●	●				●	●		●	●	●			
Rice Canyon	3.21	●	●	●				●	●		●	●	●			
San Luis Rey River	3.12	+	●	●				●	●		●		●	●		
Keys Creek	3.12	+	●	●				●	●		●		●			
Moosa Canyon	3.15	+	●	●				●	●		●		●			
unnamed intermittent streams	3.16	+	●	●				●	●		●		●			
Moosa Canyon	3.14	+	●	●				●	●		●		●			
Moosa Canyon	3.13	+	●	●				●	●		●		●			
Turner Lake	3.13	●	●	●				○	●		●					
South Fork Moosa Canyon	3.13	+	●	●				●	●		●		●			
Moosa Canyon	3.12	+	●	●				●	●		●		●			
Gopher Canyon	3.12	+	●	●				●	●		●		●			
South Fork Gopher Canyon	3.12	+	●	●				●	●		●		●			
San Luis Rey River	3.11	+	●	●				●	●		●		●	●		
Pilgrim Creek	3.11	+	●	●				●	●		●		●	●		
Windmill Canyon	3.11	+	●	●				●	●		●		●			
Tuley Canyon	3.11	+	●	●				●	●		●		●			
Lawrence Canyon	3.11	+	●	●				●	●		●		●			
Mouth of San Luis Rey River	3.11							●	●				●	●	●	●

Source: SDRWQCB 1994.

[1] Fishing from shore or boat permitted, but other water contact recreational (REC-1) uses are prohibited.

● Existing Beneficial Use ○ Potential Beneficial Use +Excepted From MUN

In the upper watershed, Lake Henshaw is the primary receiving water. The lake is a water supply for VID and the lake is also used for boating and fishing. There are numerous tributaries to the lake with three major ones: Aqua Caliente Creek, Buena Vista Creek, and the West Fork SLR River.

Aqua Caliente Creek is located to the northeast of Lake Henshaw. The Aqua Caliente Creek drains the northern portion of the Los Coyote Indian Reservation, north of Warner Springs, west to SLR River and ultimately into Lake Henshaw. The surrounding land uses of this tributary include municipal land, undeveloped land, residential developments and parkland.

Buena Vista Creek (which is also the name of a creek in the Carlsbad Watershed) is located southeast of the lake and drains the southern portion of the Los Coyote Indian Reservation and the northern side of Pinyo Ridge, southeast of Warner Springs, west to Lake Henshaw. The surrounding land uses includes municipal land, undeveloped land, residential developments, and park and recreational uses.

The West Fork SLR River is located northwest of Lake Henshaw in the northern portion of the SLR Watershed. The West Fork SLR River drains the eastern side of Palomar Mountain and the Cleveland National Forest southeast to Lake Henshaw. The land uses surrounding this tributary include undeveloped land, park and recreational land and agriculture.

Other than the section of the river between Henshaw Dam and the Escondido Canal diversion, surface water in the river below Lake Henshaw is minimal. Use of the river is limited and the primary beneficial uses are wildlife related. Riparian habitats in these areas are home to numerous protected species, and maintenance of groundwater and adequate flow in the river is important for the protection of species.

Several major tributaries occur along the river from Lake Henshaw to the Pacific Ocean:

- Paradise Creek is located between the Rincon and La Jolla Indian Reservations in the southern portion of the SLR Watershed. Paradise Creek drains the west side of Rincon Indian Reservation, the north side of San Pasqual Indian Reservation and the east side of La Jolla Indian Reservation northwest to the SLR River. The surrounding land uses include undeveloped land, park and recreational land, municipal land, agriculture, and residential development.
- Pauma Creek is located north of the Pauma Indian Reservation in the northern portion of the SLR Watershed. Pauma Creek drains the west side of Palomar Mountain and the Cleveland National Forest southwest to the SLR River. The surrounding land uses include undeveloped land, park and recreational land, municipal land, agriculture and residential development.
- Pala Creek is located north of the Pala Indian Reservation and west of the Cleveland National Forest in the northern portion of the SLR Watershed. Pala Creek drains the west side of the Cleveland National Forest and the east side of Mount Olympus southwest to the SLR River. The surrounding land uses include undeveloped land, park and recreational land, agriculture, industrial and residential development.
- Couser Canyon Creek is located east of Interstate 15 (I-15) west of Pala Indian Reservation in the middle portion of the SLR Watershed. Couser Canyon Creek drains

the west side of the Pala Mountains and the east side of Lancaster Mountain area northwest to the SLR River. The surrounding land uses include undeveloped land, agriculture and residential development.

- Keys Canyon Creek is located west of Couser Canyon Creek and east of I-15 in the middle portion of the watershed south of SLR River. Keys Canyon Creek drains the west side of Lancaster Mountain northwest to the SLR River. The surrounding land uses include undeveloped land, agriculture and residential development.
- Rice Canyon Creek is located east of the Monserate Mountains west of Mount Olympus in the middle of the watershed, north of the SLR River. Rice Canyon Creek drains the Rainbow area south to the SLR River. The surrounding land uses include undeveloped land, agriculture, municipal land, and industrial and residential development.
- Moosa Canyon Creek is located east of I-15 northwest of Valley Center in the middle portion of the watershed south of SLR River. Moosa Canyon Creek drains the Valley Center area northwest to the SLR River. The surrounding land uses include undeveloped land, agriculture, municipal land, and residential development.
- Pilgrim Creek is located between Interstate 5 (I-5) and I-15 in the northwestern portion of the SLR Watershed. Pilgrim Creek drains the Fallbrook area southwest to the SLR River. The surrounding land uses include undeveloped land, agriculture, military land and residential development.
- Windmill Canyon Creek is located east of Pilgrim Creek and north of Windmill Lake in the northwestern portion of the SLR Watershed. Windmill Canyon Creek drains Camp Pendleton area southwest to Pilgrim Creek and ultimately into the SLR River. The surrounding land uses include undeveloped land, agriculture, military land and residential development.

In the lower watershed, the river is primarily channelized, a project sponsored by the USACOE. The channel, considered to be a grouted rip-rap flood control channel, has concrete covered boulder sides and a natural bed, allowing for some of the natural flow of the river through this area. Like the rest of the river, this lower section has limited surface flows and uses.

The SLR River eventually empties into the Pacific Ocean south of Oceanside Harbor. Prior to it's confluence with the beach and ocean, the river has historically been routed under Pacific Street through an Arizona crossing. In the fall of 2008, the new Pacific Street Bridge will be completed and the old Arizona crossing removed to allow more natural flow at the mouth of the river. The beneficial uses of the coastal waters are predominantly recreational and include swimming, surfing, boating, fishing and other water sports.

1.2.12 Watershed Mapping Requirements

Section J.2.a of the Municipal Permit requires that the WURMP provide an accurate map of the watershed that identifies the following: All receiving waters (including the Pacific Ocean); Clean Water Act Section 303(d) impaired receiving waters (including the Pacific Ocean); land uses; MS4s; major highways; jurisdictional boundaries; and inventoried commercial, construction, industrial, municipal sites and residential areas. See Appendix A for Figure 1-3 SLR River Watershed Land Use Map and Figure 1-6 for the Municipal Separate Storm Sewer System (MS4) Map. Land use and facility source data have been examined and mapped for the entire watershed. See Section 3.4 for detailed information and map references.

2.0 WATERSHED STRATEGY

The Municipal Stormwater Permit requires the development of a collective watershed strategy to abate the sources and reduce the discharge of pollutants causing the WMA's high priority water quality problems. In response to this requirement, the Copermittees created a Model Watershed Urban Runoff Management Strategy (Model Strategy) to guide the selection and implementation of activities at the watershed scale. The Model Strategy provides a set of standard definitions for the types of watershed activities that are included in the WURMPs. As shown in Table 2-1, a distinction is made between watershed activities that receive WURMP compliance credit under the Permit and those that provide value to the watershed, but do not receive compliance credit. Each activity type is defined in Section 4.

Table 2-1. Watershed Activity Types

Watershed Activity Types That Receive WURMP Compliance Credit	Watershed Activity Types That Do Not Receive WURMP Compliance Credit
Watershed Water Quality Activities	Watershed Water Quality Monitoring Activities
Watershed Education Activities	Watershed Source ID/Characterization Activities
Watershed Public Participation Activities	Watershed Data Management/Assessment Activities
Watershed-Based Land Use Planning Activities	Other Watershed Activities

The Model Strategy also outlines a process for selecting appropriate activities for implementation at the watershed scale. A three-step baseline evaluation of the watershed at the HA scale is recommended prior to proceeding with watershed activity selection. The baseline watershed evaluation (illustrated by the flow chart in Figure 2-1) focuses on assessing what is known about water quality and pollutant source data, then selecting appropriate watershed activities accordingly. It also addresses the effect of data gaps on the watershed activity selection process and takes into consideration the appropriate scale at which management actions should be implemented. The watershed water quality ratings presented in the Copermittees' Baseline Long-Term Effectiveness Assessment (BLTEA) are used as a starting point for performing the baseline watershed evaluation. The BLTEA water quality ratings are useful in that they represent the Copermittees' first attempt to identify pollutant-specific water quality priorities at the HA scale. The Copermittees believe that the HA is a more appropriate geographic scale for identifying watershed water quality problems and for planning watershed management actions, primarily because they are smaller and more manageable in size than WMAs. The Model Strategy also acknowledges that there are other important considerations that factor into the watershed activity selection process, not the least of which are total maximum daily loads (TMDLs) and other regulatory drivers.

The remainder of the Model Strategy consists of a series of templates and tools intended to assist watershed groups in selecting appropriate activities to abate the sources and reduce the discharge of pollutants causing the WMA's high priority water quality problems. The Model Strategy is included as an attachment to the Regional Urban Runoff Management Plan (RURMP). Results from applying the Model Strategy to the SLR WMA are discussed in Section 4.

Figure 2-1. Baseline Watershed Evaluation Flow Chart

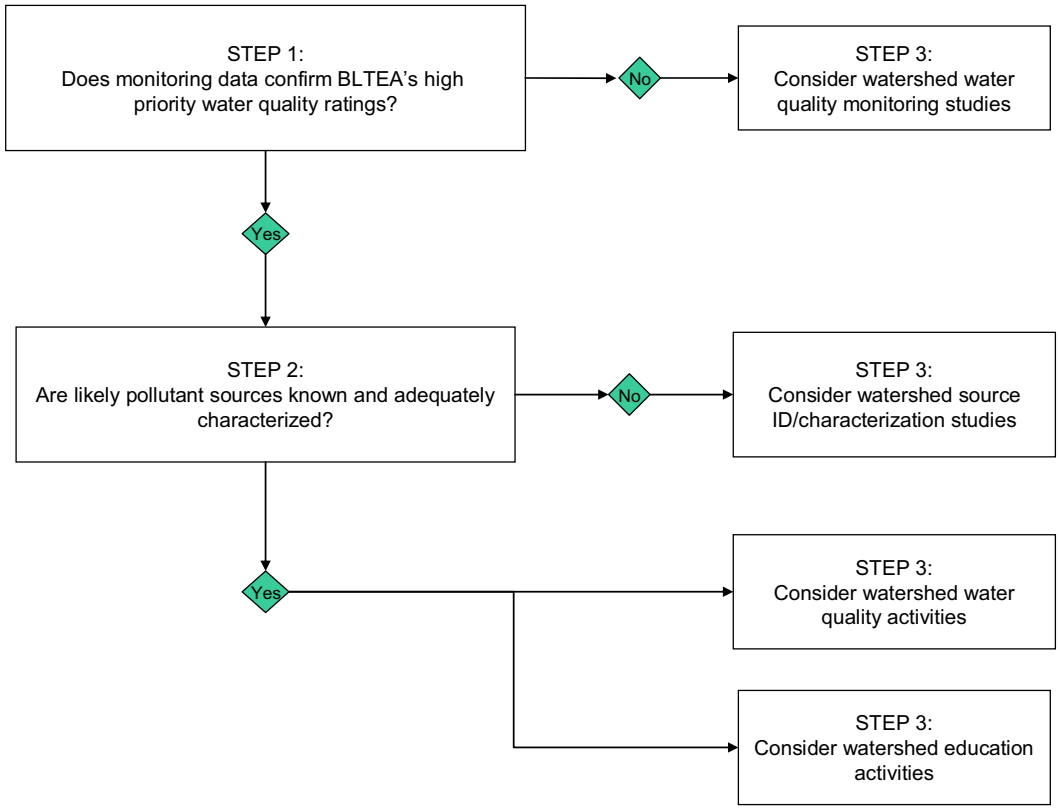

3.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

3.1 Water Quality Assessment Approach

The Municipal Storm Water Permit requires annual assessments of receiving water quality by watershed and outlines specific elements and analyses to be included.[1] The water quality assessment approach outlined below is subject to change based on the outcome of ongoing efforts to improve the content, structure, and presentation of the Copermittees' regional monitoring reports.

3.1.1 Data Sets

As shown in Table 3-1, watershed water quality assessments will rely on applicable water quality data, reports, and analysis generated from the Copermittees' Receiving Waters Monitoring Program as well as applicable information available from other public and private organizations. Data sets that are applicable to the SLR River Watershed are described in further detail in Section 3.2.

Table 3-1. Data Sets To Be Considered in Watershed Water Quality Assessment.

DATA SET	REFERENCE
RECEIVING WATERS MONITORING PROGRAM	
- Mass Loading Station (MLS) Monitoring	3.2.1
- Temporary Watershed Assessment Station Monitoring	3.2.8
- Bioassessment Monitoring	3.2.2
- Ambient Bay and Lagoon Monitoring (ABLM)	3.2.3
- Coastal Storm Drain Monitoring	3.2.4
- Pyrethroids Monitoring	3.2.1
URBAN RUNOFF MONITORING PROGRAM	
- MS4 Outfall Monitoring	3.2.8
- Source Identification Monitoring	3.2.8
- Dry Weather Field Screening and Analytical Monitoring	3.2.5
REGIONAL MONITORING PROGRAM	
- Bight '08	3.2.8
SPECIAL STUDIES	3.2.7
THIRD-PARTY DATA	3.2.6

[1] Permit Section E.2.c. and Section III.A.2 of the Permit's *Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001*

[1] Permit Section E.2.c. and Section III.A.2 of the Permit's *Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001*

3.1.2 Core Management Questions

Watershed water quality assessments will attempt to answer each of the following core management questions specific to conditions in the SLR River Watershed:

- Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
- What is the extent and magnitude of the current or potential receiving water problems?
- What is the relative urban runoff contribution to receiving water problems?
- What are the sources of urban runoff that contribute to the receiving water problems?
- Are conditions in receiving water getting better or worse?

To answer these questions, data will be segregated according to whether they are representative of receiving water conditions or urban runoff inputs. Additional segregation of data by season (i.e., wet weather and dry weather conditions) or sub-watershed will be considered as appropriate. Importantly, the watershed water quality assessment will clearly identify areas of the watershed where data gaps exist.

3.1.3 Identification of Priority Watershed Water Quality Problems

The watershed water quality assessment will also serve as the foundation for identifying priority watershed water quality problems. Building upon minimum Permit requirements[2], the SLR Watershed Copermittees have identified the following criteria for identifying priority watershed water quality problems:

- All Clean Water Act Section 303(d) listings within the County's portion of the watershed will be considered priority watershed water quality problems.
- Watershed data will be analyzed to identify persistent violations of water quality standards, toxicity, impacts to beneficial uses, and other pertinent conditions. All such findings will be considered priority watershed water quality problems. The following steps are generally taken to analyze and evaluate water quality data on an annual basis:
    - Identify the constituents of concern (COCs) that have been found to exceed administrative water quality reference standards and Basin Plan water quality objectives as well as the frequency, magnitude, and duration of such exceedances;
    - Isolate the COCs that are shown to exceed reference values in a persistent and/or recurrent manner;
    - Consider bioassessment rankings and toxicity results;
    - Examine how COCs may contribute to water quality degradation which would negatively impact designated beneficial uses;
    - Compare COCs with third-party data that do not meet the quality control/quality assurance standards of the regional monitoring program and were therefore not included in the steps above;
    - As a longer historical record is developed over multiple years of monitoring, assess COC data to determine whether there are any increasing or decreasing trends through time applying statistical methods.

[2] Permit Section E.2.c

- To better identify the scale of watershed water quality problems, the WURMP will make use as necessary of the methodology presented in the Copermittees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA) (Weston 2005). The BLTEA methodology assigns water quality priorities at the sub-watershed, or hydrologic area, level. The BLTEA methodology is imperfect and based on limited data, so priority rankings must be interpreted with great care. All BLTEA rankings of "A" at the hydrologic area level will be added to the list of priority watershed water quality problems.

- From the list of watershed water quality problems, high priority water quality problems will be identified at the discretion of the SLR Watershed Copermittees. At a minimum, high priority watershed water quality problems will include those that most significantly exceed or impact water quality standards. Pollutants for which TMDLs have been approved will also be considered high priority watershed water quality problems.

3.2 Receiving Water Conditions

This section describes the data sets that will be utilized to conduct watershed water quality assessments in the SLR River WURMP and summarizes available information about the condition of receiving waters. Some of the data sets identified are from existing monitoring programs; others will become available when implementation of new monitoring programs begins during this Permit cycle.

3.2.1 Mass Loading Station

3.2.1.1 Description

The historical mass loading station (MLS) in the SLR River is located in Oceanside, under the Benet Road Bridge, along a natural channel north of Highway 76 (Latitude: 33° 13.239', Longitude: 117° 21.494') (Appendix A, Figure 3-1). This station is co-located with a USGS stream gauging station allowing both MLS flow data and flow data collected from the USGS station to be utilized. The channel consists of a shallow, wide, sandy bottom area with a significant amount of cobble and boulder comprising the substrate. The contributing runoff area to the MLS consists of more than 224,000 acres, which covers over 62% of the SLR River Watershed. The area above Lake Henshaw does not contribute flows to the MLS because there is no direct hydrologic connection due to municipal water supply diversions. The major land uses in the MLS drainage area are undeveloped, residential, and agriculture.

3.2.1.2 Results to Date

Annual storm water monitoring has been performed at the SLR River MLS since the 2001-2002 wet weather monitoring season. An evaluation of wet weather monitoring data collected at the SLR River MLS over the past six years was performed as part of the Regional Monitoring Program (Weston 2008a). This evaluation compares the frequency of constituents measured above water quality objectives (WQOs), statistical trend analyses, and comparison of the magnitude of exceedance. The following is a summary of MLS results over the period of record.

- **Conventional Constituents:** Total Dissolved Solids (TDS) results have been measured above the WQO in each of the 18 storms sampled. Conventional constituents that have

only occasionally had concentrations detected above their WQO include pH, Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), and turbidity. BOD shows a statistically significant increasing trend and has been measured above the WQO two times over the past six monitoring seasons (Figure 3-2). BOD has between 15% and 35% non-detected values for the period of record and does not lend itself to determining a Sen's slope.

- **Bacteria:** Fecal coliform results have been detected at levels above the WQO in 11 out of 18 storms sampled since 2001 (61%). Fecal coliform is the only bacteriological indicator with a WQO for wet weather monitoring. Total coliform and enterococci are generally higher during the first storms of the season. A review of the trend analysis for bacteriological constituents indicates statistically significant increasing trends for total coliform, fecal coliform and enterococci over the monitoring period. The magnitudes of the trends are flat at 0.308 MPN/100mL/yr, 0.218 MPN/100mL/yr, and 0.173 MPN/100mL/yr, respectively (Figure 3-2).

- **Nutrients** have not been detected above their WQO over the past six years of wet weather monitoring. Nitrate shows a statistically significant increasing trend with a magnitude of the trend of 0.333 mg/l/yr (Figure 3-2). At the current observed rate of increase, it does not appear that nitrate will exceed the WQO during the 2007-0001 permit cycle.

- **Pesticides:** Chlorpyrifos, Diazinon, and Malathion have not been detected at levels above their respective WQO since a single exceedance of Diazinon was detected in November 2001. It should be noted that during the 2001-2002 and 2002-2003 monitoring seasons the reporting limit for Chlorpyrifos was higher than the WQO.

- **Metals** have remained at low concentrations and have not been detected at levels above their respective WQOs since monitoring began in 2001.

- **Toxicity:** There is no evidence of persistent toxicity in the SLR River. Toxicity to Ceriodaphnia reproduction was detected once in storms in 2001/02 and 2003/04 and toxicity to Selenastrum was detected once in 2003/04. In 2006/07, toxicity to Hyalella azteca was detected during the first storm of the season with a no observed effect concentration (NOEC) of 50%. Toxicity was not observed to Ceriodaphnia dubia or Selenastrum capricornutum during any of the three monitoring events or to Hyalella azteca during the remaining two monitoring events.

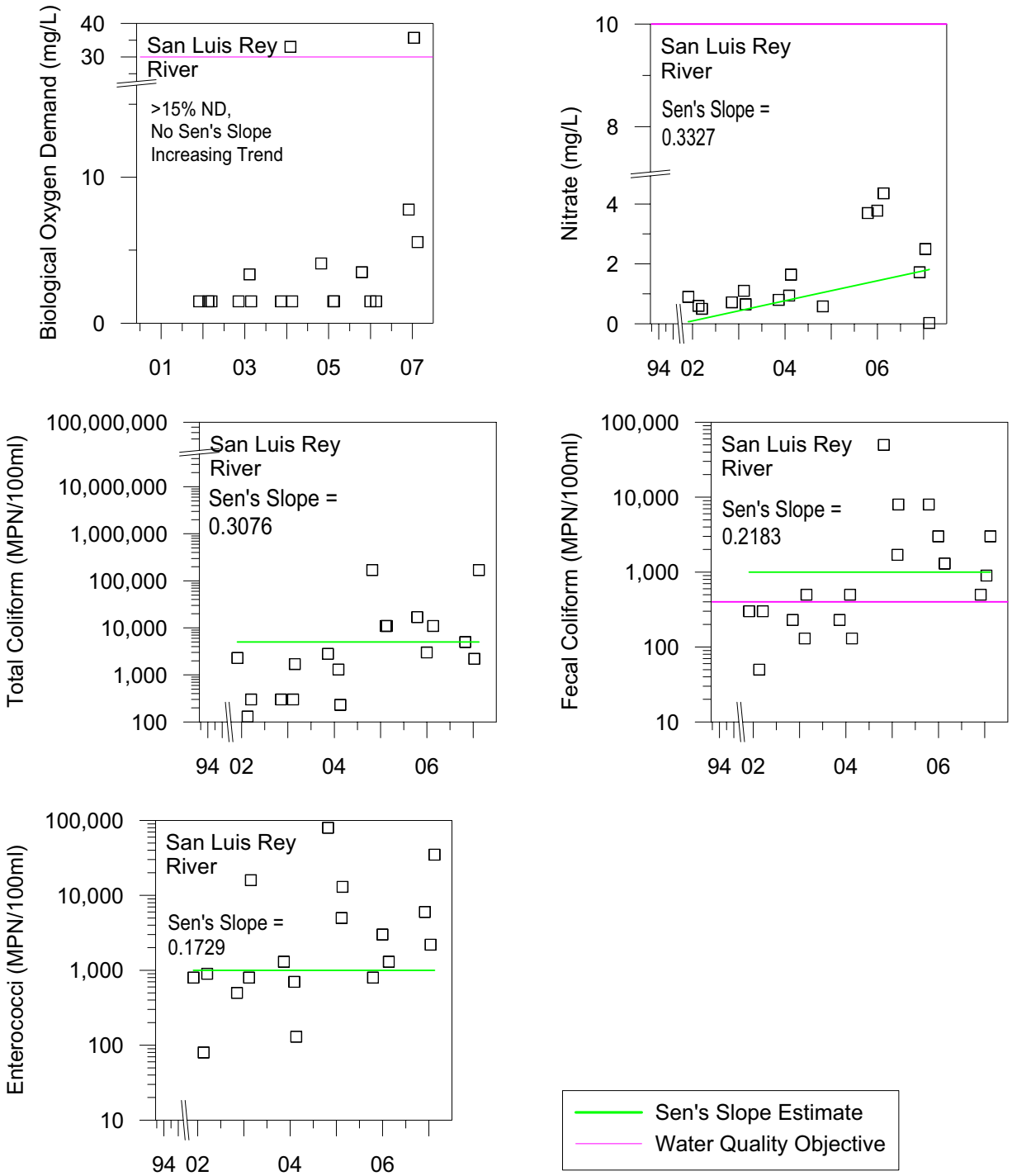

Figure 3-2. Scatterplots of Constituents with Significant Trends & Sen's Estimate of Slope.

NOTE: Sen's estimate of slope is shown on the graphs to illustrate the median trend of the data per constituent unit per year. This is not a predictive slope, but rather the median true slope observed to date (change per unit time).

3.2.1.3 Future Monitoring

Beginning in the 2007-08 monitoring year, MLS sampling will be conducted on a rotating-watershed basis. Sampling of two storms and two dry weather events at the SLR River MLS is scheduled to occur during both the 2007-08 and 2010-11 monitoring years. One storm will be sampled at the MLS during the 2008-09 monitoring year when most of the region's monitoring resources will be directed toward participation in the Southern California Bight Monitoring Program.

In addition to measuring flow rates and volumes, MLS samples will be analyzed for the constituents identified in Table 2 of the Permit's *Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001*. Toxicity testing is also performed on MLS samples to assess the potential impact of complex mixtures of unknown pollutants on aquatic life in receiving waters. If persistent toxicity is detected, specialized toxicity identification evaluations (TIE) may be used to help characterize and identify constituent(s) causing toxicity. Beginning in the 2007-08 monitoring season, trash assessments will also be conducted at the MLS in accordance with the *Monitoring Workplan for the Assessment of Trash in San Diego County*. Finally, sediment samples will be collected within two weeks of the first storm of the season. The sediment samples will be analyzed for synthetic pyrethroids, total organic carbon, and grain-size distribution in accordance with the *Monitoring Workplan for the Assessment of Synthetic Pyrethroids in San Diego County*.

3.2.2 Bioassessment Monitoring

3.2.2.1 Description

The Permit requires rapid stream bioassessment monitoring at various sites in the SLR River Watershed. The Copermittees' bioassessment monitoring program utilizes the California Department of Fish and Game's Stream Bioassessment Procedure to sample and analyze populations of benthic macroinvertebrates (BMIs). The program also involves an assessment of the quality and condition of physical habitat at each monitoring location. To assess the quality of the BMI communities at each site, biological metrics are calculated as well as two summary indices. The summary indices include a multi-metric Index of Biotic Integrity (IBI) and an Observed-to-Expected (O/E) ratio, both of which are specific to Southern California ecological conditions. The IBI is the cumulative score (0-70) of seven biological metrics, with the final score divided into five quality rating categories ranging from Very Poor to Very Good. An IBI score above 26 is presumed to represent unimpacted conditions. O/E is the ratio of organisms observed at a site (O) to the organisms expected to occur at a site (E). An O/E ratio of greater than 0.8 indicates unimpacted conditions, and represents a 20 percent loss of expected taxa (i.e. 0.8 is 20 percent below 1.0). While the IBI and O/E ratio are useful for broadly identifying impairment, analysis of individual metrics and taxa present (often in low numbers) may provide signals of benthic community quality that are too weak to be represented by summary indices.

Stream bioassessment in the SLR River Watershed includes two urban-affected sites. The upper site is located at the Mission Road (Highway 76) overcrossing near Bonsall, and the lower site is at the USGS gauging station downstream of the MLS near the Benet Road Bridge in Oceanside.

A reference site is sampled in Doane Creek in Palomar Mountain State Park (Appendix A, Figure 3-1).

3.2.2.2 Results to Date

The sites have been sampled twice annually, once during spring and once during fall, since the 2001-02 monitoring year. IBI scores from bioassessment monitoring at both sites within the SLR River Watershed have been rated Very Poor throughout the monitoring period. These results indicate that there is evidence of benthic alteration.

Mission Road: The Mission Road site has been sampled 13 times since the beginning of the program. The mean IBI scores have been seasonally similar, with values of 6.8 for October surveys and 6.6 for May surveys. The site has shown consistency, and all but one survey had IBI scores between two and eight points. The October 2001 survey had a significantly higher IBI score than all other surveys with a score of 22, and several uncommon and/or sensitive taxa were collected in that survey that have not been collected since (MEC 2003).

The mean O/E ratios for the site have been 0.53 for October surveys and 0.47 for May surveys. The October 2001 survey had an O/E ratio well above the impairment threshold. Interestingly, the 2004 surveys had the highest average O/E rating while the IBI scores for that year had the lowest average rating. Additionally, the May 2007 O/E ratio was very low (due to high dominance by *Gammarus*) while the IBI was similar to other survey results.

Benet Road: The Benet Road site has been sampled 11 times since the beginning of the program. The mean IBI scores have shown moderate seasonal variability, with mean values of 7.8 for October surveys and 2.1 for May surveys, with an overall mean of 4.7). The site has shown consistency for May surveys and October surveys have declined since October 2004, but all IBI scores for the site have consistently been in the Very Poor range.

The mean O/E ratios for the site were 0.35 for October surveys and 0.44 for May surveys, with an overall mean of 0.39. The May 2006 survey had the highest O/E ratio with a value of 0.68 although the IBI score for that survey was quite low. The October 2006 and May 2007 O/E ratios and IBI scores were in agreement and both indicated a high level of impairment. This was likely due to a very high dominance by the amphipod, *Gammarus*, which had not been seen at this site before October 2006.

Doane Creek Reference Site: The Doane Creek Reference Site has been sampled 7 times since the beginning of the program. Six of the 7 scores have been rated Very Good and one, in October 2005 was Good. The mean IBI score for the site was 58 indicating excellent biotic integrity. The same was true for the O/E ratios that were 1.07 in May 2007, 0.99 in October 2006 and 0.71 in May 2006. Overall, the biotic community at Doane Creek was most dynamically functioning of all sites sampled throughout the County with substantially more EPT and highly sensitive taxa present.

3.2.2.3 Future Monitoring

Beginning in 2007-08, monitoring will be conducted on a rotating-watershed basis. Stream bioassessment will not occur in fall 2007. Instead, the Copermittees will participate in the sampling of seven or eight sites using the protocols of the Southern California Storm Water

Monitoring Coalition Regional Bioassessment Program. Stream bioassessment will resume at the stations identified above during spring 2008. Periphyton (algae) monitoring will be conducted in accordance with the EPA's Rapid Bioassessment Protocols for use in Streams and Wadeable Rivers. Ash-free dry mass (AFDM) and chlorophyll-A analysis will also be conducted. No additional bioassessment monitoring is scheduled until the 2010-11 monitoring season.

3.2.3 Ambient Bay & Lagoon Monitoring

3.2.3.1 Description

The SLR River empties into the SLR River Estuary in the City of Oceanside, just south of Oceanside Harbor. The Copermittees implemented the Ambient Bay and Lagoon Monitoring (ABLM) program from 2003 through 2005 in compliance with RWQCB Order 2001-01. ABLM monitoring consisted of the collection of sediment samples from the SLR River Estuary to assess the potential for adverse effects from the watershed and to compare sediment quality with other coastal embayments in San Diego County. Three sites were sampled within the SLR River Estuary: one in the lower portion south of the railroad crossing; one in the middle portion south of Interstate 5; and one in the upper portion east of Interstate 5. In Phase I of each year, a stratified random approach was used to identify the three sites where COCs were most likely to be found (i.e., those with the highest total organic carbon and smallest grain size). Each site was sampled in Phase II of the assessment and analyzed for sediment chemistry, toxicity, and benthic community structure. It should be noted that the ABLM Program utilized the association between small grain size, high total organic carbon levels, and contaminants to spatially target areas in each embayment where contaminants were most likely to be found. Therefore, it is considered to represent a worst-case scenario.

3.2.3.2 Results to Date

The ABLM program used the weight-of-evidence Triad approach to examine sediment contaminant conditions, benthic community health, and toxicity using the amphipod *Eohaustorius estuarius*. These results were then compared to the Triad results used to examine freshwater conditions at upstream MLS stations, along with benthic community health and toxicity test data. The results presented are based on three years of data collection. In addition to the Triad approach, a multivariate analysis was completed to determine if benthic infaunal communities are closely related between years within lagoons, if communities are similar between lagoons, if there is a detectable difference between open, closed, and intermittently open lagoons, and what physical or chemical characteristics may be driving these relationships.

- **Sediment Chemistry.** Sediments were analyzed for four categories of constituents: metals, PCBs, PAHs, and pesticides. Of these, six metals were detected above the detection limit in the SLR River Estuary in all three years: arsenic, chromium, copper, lead, nickel, and zinc (Table 3-2). However, none exceeded their respective ERL or ERM sediment quality value. There were no PAHs found above the detection limit in the SLR River Estuary. For pesticides, 6.91 µg/kg of 4,4'-DDE were detected at this site. This concentration exceeds the ERL value of 2.2 µg/kg for 4,4'-DDE but is below the respective ERM value of 27 µg/kg. The mean ERM-Q value, which is a measure of the cumulative effects of the COCs for which ERM sediment quality values are available,

Table 3-2. Summary Results in SLR River Estuary.

CHEMISTRY*					TOXICITY*	BENTHIC COMMUNITY						
Analyte	**ERL**	**ERM**	**Result**	**ERM-Q**	**Percent Survival**	**Index**	**1R-3**	**2L-3**	**3M-5**	**Mean**	**St. Dev.**	**Total**
METALS (mg/kg)						Abundance	246	24	591	320	242	961
Antimony	NA	NA	<1.04	NA		Richness	30	3	16	19.67	9.07	34
Arsenic	8.2	70	1.63	0.02		Diversity	2.46	.93	1.75	2.05	0.37	NA
Cadmium	1.2	9.6	<0.174	0.01	**90%**	Evenness	0.72	.75	0.63	0.70	0.06	NA
Chromium	81	370	15.2	0.04		Dominance	6	4	3	4.33	1.53	NA
Copper	34	270	10.2	0.04	Not Significantly different from Control							
Lead	46.	218	4.4	0.02								
Nickel	20.	51.6	6	0.12								
Selenium	NA	NA	<1.04	NA								
Zinc	150	410	33.6	0.08								
Mean ERM-Q				0.05								

* Analysis performed on composite samples from the three sites.
Bold – exceeds ERL or ERM value

was 0.05. This value did not exceed the threshold of 0.10. During the 2003 ABLM Program, the mean ERM-Q value was also very low (0.06), which was one of the three lowest embayments during that program. In contrast, the 2004 mean ERM-Q value for was higher, 0.12. Sediments with mean ERM-Q values above the 0.10 threshold have a higher probability of producing adverse biological effects than those with mean ERM-Qs below the threshold (Long et al. 1998).

- **Toxicity.** The mean percent survival of E. estuarius exposed to the SLR River Estuary sediments in a 10-day acute toxicity test was 90% and not significantly different from that of the Control (97%), suggesting that SLR River Estuary sediments were not toxic to the test organisms. Unlike in 2004 and 2005, toxicity was observed in the samples collected in 2003.

- **Simultaneously Extracted Metals (SEM)/Acid-Volatile Sulfides (AVS) Ratio.** In the SLR River Estuary sediment, the SEM:AVS ratio was 1.76, indicating that the concentration of SEM was slightly higher than the concentration of AVS in this sediment sample. These results indicate that not all of the metals in the SLR River Estuary sediment were bound by AVS and therefore may be bioavailable and potentially toxic to benthic organisms. No toxicity was observed in the 10-day solid phase toxicity test using E. estuarius; survival of E. estuarius was not significantly different in the SLR sediment (90%) as compared to in control sediment (97%). This indicates that bioavailable metals found in the SLR River Estuary sediment were not toxic to the amphipod E. estuarius.

- **Benthic Community Structure.** A total of 961 organisms were collected from the SLR River Estuary, representing 34 taxa. The benthic infauna were more diverse in species richness in 2005 than in 2003 (11 taxa) or 2004 (16 taxa) while abundances were similar (1,153 and 1,251 respectively). Among the three sites assessed in 2005, Site 1R-3 had the greatest species diversity, dominance and richness, while Site 3M-5 had the greatest abundance.

Unlike the 2003 and 2004 ABLM Programs where the gammarid amphipod *Grandidierella japonica* dominated the benthic community in the SLR River Estuary, the benthic infauna community collected in the 2005 sampling was dominated by polychaetes, with *Polydora cornuta* and *Scolelepsis sp*. SD1 making up the majority. Another polychaete, *Capitella capitata* Complex was the third most abundant taxa represented in the Estuary samples. For comparison, in the 2004 ABLM sampling of the Estuary, *Polydora nuchalis,* accounted for 31.5% of the benthic community, while the mollusk, *Tryonia imitator,* was the third most abundant, accounting for 9.5% of the total abundance.

Lagoons were analyzed using the Benthic Response Index (BRI) and Relative Benthic Index (RBI) scores as a primary indicator of lagoon health. The BRI is the abundance-weighted average pollution tolerance score of organisms occurring in a sample and is most applicable to marine environments (Smith et al., 2001; Smith et al., 2003; Ranasinghe et al., 2004). The RBI is the weighted sum of three measures of abundance: 1) total number of species, number of crustacean species, number of crustacean individuals, and number of mollusk species; 2) abundance of three positive and 3) two negative indicator organisms (Hunt et al. 2001). The RBI is less dependent on marine benthic species, and more applicable to lagoons. The two indices combined provided some differences in benthic community health. Overall, for the SLR River Estuary, the benthic community health was assessed at poor to fair (7) a lower BRI score indicates better conditions, while a higher RBI score relates to better conditions (Table 3-3).

Table 3-3. Indices of Sediment Biological Health in SLR River Estuary.

Index	2003	2004	2005
BRI	58	50	35
RBI	0.29	0.26	0.37
* BRI-Good <31, Fair 31-53, Poor >53 RBI-Good >0.61, Fair 0.31-0.60, Poor <0.30			

- **Triad Relationships.** The Triad method was used to assess the relationships between chemistry, biology, and toxicity for the lagoon sediments. This method is an integrated approach that depends on "weight of evidence" (Chapman 1996) and integrates chemistry, biological observation, and toxicity endpoints. The results for the SLR River Estuary are presented in Figure 3-3 for the 2003, 2004 and 2005 ABLM Monitoring Programs. For the 2005 ABLM sampling, the SLR River Estuary scored good for toxicology, fair for biology, and good for chemistry. Correspondence between the three legs of the triad was inconsistent over the program

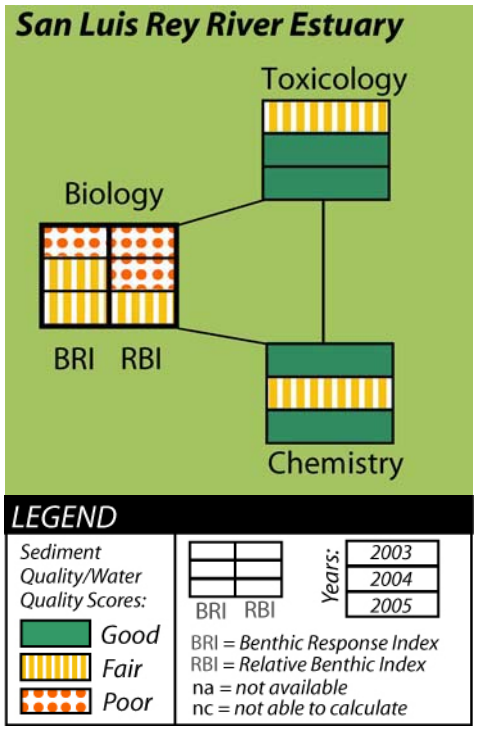

Figure 3-3. Triad Relationships for the SLR River Estuary.

3.2.3.3 Future Monitoring

Implementation of the ABLM Program will be described in the Copermittees' annual monitoring scope of work submitted to the RWQCB by September 1 of each year.

3.2.4 Coastal Storm Drain Monitoring Program

3.2.4.1 Description

The Coastal Storm Drain Monitoring (CSDM) Program has been monitoring bacteria levels in urban runoff from coastal and lagoon outfalls, and evaluating the relationship between storm drain discharges and exceedances of bacteriological water quality standards in the coastal receiving waters. This program includes sampling of both storm drains and adjacent receiving waters. As part of this regional monitoring program, twelve outfall sites were monitored at the coast in the SLR River Watershed. Eight of these outfall sites were located in Oceanside Harbor, while the remaining four were located at beach outfalls.

3.2.4.2 Results to Date

The majority of the CSDM Program outfalls within the SLR River Watershed do not have flow during dry weather. However, the outfall in Oceanside Harbor, near the small boat ramp that drains the boat wash area and RV pump-out (Coast 8) flows daily when boaters, jet-skiers, and RVers use this Harbor resource. The outfall has had reoccurring exceedances and occasional receiving water standards exceedances during the last several monitoring years. In FY 2005-06, an anti-microbial product was installed in the marina vault. While there was an initial reduction in bacteria levels, the product did not display long-term effectiveness. In FY 2006-07 storm drain cleaning was increased from quarterly to once a month beginning in February of 2007. There was not another exceedance until late June 2007, when use of the boat ramp and the RV

sewage dump increased for the high use summer months. After a July exceedance, the Harbor increased storm drain cleaning in August, and for the remaining summer months, to twice a month. Visual observations of the outlet toward the end of the high use months showed a grey algae/film build up when not cleaned. After the drain is cleaned, the algae/film is gone and bacteria levels are generally reduced. The City of Oceanside continues to work on identifying other BMPs that may be useful in reducing bacterial loads to the harbor.

3.2.4.3 Future Monitoring

The new Permit requires monitoring at every outfall and therefore adds approximately 40 sites to the monitoring program within the Harbor. Monitoring will continue monthly at all sites, except for Coast 8, the Harbor boat wash. This site will be visited twice a month for ongoing monitoring.

3.2.5 Dry Weather Monitoring Program

3.2.5.1 Description

The Permit requires each Copermittee to implement a dry weather field screening and analytical monitoring program as part of its Jurisdictional Urban Runoff Management Program (JURMP). The Dry Weather Monitoring Program is designed to identify water quality problems that may be the result of non-storm water discharges to or from the municipal separate storm sewer system (MS4). Dry weather monitoring data also provide useful information for the purposes of watershed assessment. However, it should be noted that the Dry Weather Monitoring Program is targeted toward identification and elimination of illicit connections and illegal discharges (IC/ID) and are not necessarily representative of receiving water conditions. In some cases, Copermittees have conducted monitoring in the receiving waters. These sites are identified in Table 3-4.

The City of Oceanside, City of Vista, and the County monitored 53 sites in 2006 (Appendix A, Figure 3-1), 58 sites in 2005, 57 sites in 2004, 36 sites in 2003, and 15 sites in 2002. Over the years, sites were removed or relocated from the dry weather monitoring program due either to safety and accessibility or inclusion in a special monitoring program.

3.2.5.2 Results to Date

A summary of the Action Level exceedances for the past four years is shown in Table 3-4. The action levels that are applied to dry weather monitoring results are established by the Copermittees and trigger investigations upstream of the sampling location to identify and eliminate IC/IDs. Action levels are not necessarily established compliance levels or standards, but are trigger levels set by the Copermittees for program management. In comparing the exceedances in 2003 through 2006, indicator bacteria and nutrients were the most common parameters exceeding action levels in this watershed (Table 3-4).

3.2.5.3 Future Monitoring

The SLR River Copermittees will continue implementation of their Dry Weather Monitoring Program in accordance with Permit requirements over the course of this Permit cycle. Beginning in FY 2007-08, the number and locations of individual Copermittee monitoring sites will be

adjusted based on program and data review, as well as compliance with the new Municipal Permit requirements.

Table 3-4. Summary of Action Level Exceedances in SLR River Watershed.

Station ID	HSA	Primary Land Use	Sample Location	Sampled by	Action Level Exceedances from 2003-2006			
					2003	2004	2005	2006
S105	903.11	Agricultural	MS4 Outfall	Oceanside	NS	NS	NS	NS
S106	903.11	Agricultural	MS4 Outfall	Oceanside	Ammonia; Nitrate[1]	Ammonia; Total Coliform	Nitrate Total Coliform	Nitrate; Total Coliform
S107	903.11	Agricultural	MS4 Outfall	Oceanside	NS	NS	None	Orthophosphate
S108	903.11	Agricultural	MS4 Outfall	Oceanside	Ammonia; Nitrate[1]; Reactive Phosphorous	Total Coliform Enterococcus	Orthophosphate	None
S047	903.11	Commercial	MS4 Outfall	Oceanside	NS	NS	NS	None
S048	903.11	Commercial	MS4 Outfall	Oceanside	NS	NS	NS	None
S025	903.11	Industrial	MS4 Outfall	Oceanside	NS	NS	NS	NS
S013	903.11	Landfill	MS4 Outfall	Oceanside	NS	NS	NS	NS
S052	903.11	Parks	MS4 Outfall	Oceanside	Ammonia; Nitrate[1]	Ammonia	NS	NS
S006	903.11	Residential	MS4 Outfall	Oceanside	Ammonia	Ammonia	Total Coliform	None
S018[2]	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	NS
S032	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	NS
S035	903.11	Residential	MS4 Outfall	Oceanside	Nitrate[1]	NS	None	None
S041	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	NS
S043	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	None	NS
S044	903.11	Residential	MS4 Outfall	Oceanside	Ammonia	Ammonia	NS	None
S045	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	None	None
S065	903.11	Residential	Receiving Waters	Oceanside	Ammonia	NS	Total Coliform Fecal Coliform Enterococcus	Enterococcus Total Coliform
S072	903.11	Residential	MS4 Outfall	Oceanside	Ammonia; Reactive Phosphorous	NS	NS	None
S075	903.11	Residential	MS4 Outfall	Oceanside	Ammonia; Nitrate[1]	NS	Phosphate	None
S077[2]	903.11	Residential	MS4 Outfall	Oceanside	Ammonia	Ammonia; Total Coliform	None	None
S085	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	None
S088	903.11	Residential	MS4 Outfall	Oceanside	Ammonia; Nitrate[1]	Ammonia; Total Coliform	None	None
S102[2]	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	None
S103	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	NS
S104[2]	903.11	Residential	MS4 Outfall	Oceanside	Ammonia	NS	NS	None
S110	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	None	Ammonia Orthophosphate

Station ID	HSA	Primary Land Use	Sample Location	Sampled by	Action Level Exceedances from 2003-2006			
					2003	2004	2005	2006
S111	903.11	Residential	MS4 Outfall	Oceanside	Ammonia	NS	NS	pH
S112	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	NS
S113	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	Ammonia Orthophosphate
S114	903.11	Residential	MS4 Outfall	Oceanside	NS	NS	NS	NS
SLR04	903.11	Rural Residential	Receiving Waters	County	Nitrate	Nitrate	Nitrate Total Coliform	Nitrate
G-1	903.11	Residential	MS4 Outfall	Vista	None	NS	NS	NS
G-2	903.11	Residential	MS4 Outfall	Vista	New in 2005	New in 2005	New in 2005	NS
G-3	903.11	Residential	MS4 Outfall	Vista	Nitrate	None	Orthophosphate	NS
G-4	903.11	Residential	MS4 Outfall	Vista	New in 2005	New in 2005	New in 2005	pH
GC-1	903.11	Residential	Receiving Waters	Vista	New site in 2003	Total Coliform Fecal Coliform	None	None
SLR12	903.12	Agriculture	Receiving Waters	County	Oil & grease Total Coliform Fecal Coliform	Nitrate	Total Coliform	None
SLR29	903.12	Agriculture	Receiving Waters	County	New site in 2004	None	Nitrate	None
SLR30	903.12	Agriculture	Receiving Waters	County	New site in 2004	Nitrate	Nitrate	Nitrate
SLR16	903.12	Open	Receiving Waters	County	Oil & grease	None	None	None
SLR17	903.12	Open	Receiving Waters	County	None	Total Coliform	Total Coliform	None
SLR01	903.12	Parks	Receiving Waters	County	Oil & grease	None	None	None
SLR06	903.12	Parks	Receiving Waters	County	None	Total Coliform	Nitrate, Total Coliform	Nitrate
SLR02	903.12	Rural Residential	Receiving Waters	County	Oil & grease	None	Nitrate	Nitrate
SLR27	903.12	Rural Residential	Receiving Waters	County	NS	NS	NS	NS
SLR10	903.13	Open	Receiving Waters	County	NS	NS	NS	NS
SLR11	903.13	Parks	Receiving Waters	County	None	None	None	Total Coliform
SLR15	903.13	Rural Residential	Receiving Waters	County	None	Nitrate	None	None
SLR08	903.14	Parks	Receiving Waters	County	Nitrate	None	None	None
SLR18	903.21	Agriculture	Receiving Waters	County	None	Ammonia	Ammonia	None
SLR20	903.22	Agriculture	Receiving Waters	County	NS	NS	NS	NS
SLR21	903.22	Agriculture	Receiving Waters	County	NS	NS	NS	NS

NS= Not Sampled. May not have been visited or was dry.
[1] Results may have been reported as NO_3^- instead of NO_3-N and thus were identified as exceeding action levels, when they may not have been.
[2] Indicates storm drain had a variation in sampling. e.g. the storm drain sampled in 2005 was a different drain sampled in 2003, 2004, and 2006.

3.2.6 Third Party Data

The SLR River Copermittees will consider incorporating data obtained from third parties as determined appropriate in its assessment of watershed water quality. Third-party data may be considered if they meet the acceptance criteria outlined in Section 3.1.1 of the Watershed Data Assessment Framework (MEC/Weston 2004).

3.2.6.1 Surface Water Ambient Monitoring Program

Third party data were collected from the SLR River Watershed under the Surface Water Ambient Monitoring Program (SWAMP) in 2004-2005. Sampling was conducted in three general areas of the watershed (upper, middle, and lower). The Iron Springs Creek 2 and SLR River 2 sites were located in the upper watershed area away from urbanized areas. The Gird 1, Gird 2, Moosa Creek 2, and Keys Creek 3 sites were located in various tributaries in the middle urbanized area of the watershed. The SLR River 8 site was the furthest downstream site in the watershed. The data from the SLR River 8 site provides a snapshot of the ambient conditions near the current MLS site in this watershed. As previously mentioned, the upper watershed is hydraulically disconnected from the lower watershed due to diversions related to municipal water supplies. A full suite of constituents was analyzed including organochlorine pesticides, triazine herbicides, PAHs, and PCBs in addition to metals, inorganics, and physical measurements.

Turbidity was observed at a level above the benchmark WQO at the upstream SLR River 2 site and the Keys Creek 3 site in the middle watershed. An estimated value was above the benchmark WQO for turbidity in the Lower SLR River 8 site. Sulfate was observed above the basin plan WQO (250 mg/l) in the downstream SLR River site and the middle tributary sites, and was below the basin plan WQO in the upper watersheds. This suggests that the middle watershed tributaries may be a source of elevated sulfate. Manganese was above the basin plan WQO (50 mg/l) at the downstream and upstream SLR River sites but was highest in the downstream sites. Only three single exceedances occurred for manganese (during 3/1/05), just above the WQO, in the middle watershed tributary sites. Nitrate was above the benchmark WQO (10 mg/l) during 3 of 3 monitoring events in the Gird Creek tributary and during 1 of 3 events at the Keys Creek tributary (both sites in the middle watershed). Pesticides, PAH, and PCB concentrations were primarily below detection limits with a few trace level detections of atrazine, oxidiazon, simazine, terbuthylazine, dibenzothiopene, naphthalene C1, naphthalene C2, and benzo(g,h,i)perylene. Trace levels of oxadiazon were more commonly detected and were limited to the lower and middle watershed areas.

3.2.7 Special Studies

The SLR Watershed Copermittees have led or participated in several special studies in the SLR River Watershed that provide data useful for evaluating water quality conditions. In addition to the special studies described below, the Watershed Copermittees will conduct and participate in additional special studies as determined appropriate over the course of this Permit cycle.

3.2.7.1 Joint Water Quality Sampling Program

In March 2004, the County of San Diego and the City of Oceanside initiated a Joint Water Quality Sampling Program. A total of 15 sites in the SLR River Watershed have been monitored as part of this program; seven sampling sites are located along the SLR River and eight in tributaries. Data are collected to better characterize levels of bacterial indicators and other

constituents of interest in the SLR River located west from I-15. Data analysis of bacterial indicators, TDS, and chloride has been conducted and results are described below.

3.2.7.2 Bacteria Results from Joint Water Quality Monitoring Program

Throughout the study period (March 2004 through June 2007) *Enterococci* exceeded the State single sample standard more often than total coliform and fecal coliform in both the SLR River and its tributaries. Similarly, while the geometric mean of total coliform and fecal coliform indicators remained below their corresponding AB411 single sample standards, the geometric mean for *Enterococcus* in the SLR River and its tributaries generally exceeded that standard. The ANOVA results showed that location along the river had some significant effect on the bacterial concentration. In the tributaries, only the results for fecal coliform bacteria were statistically significant (City of Oceanside and County of San Diego 2006a).

Pacific Street Crossing at the mouth of SLR River is an estuarine environment influenced by the Pacific Ocean (as indicated by high chloride concentration and high conductivity). Survival rates of indicator bacteria are lower in salt water as opposed to fresh water environments (Anderson et.al., 2005 and Lisle et. al., 2004). As expected, the concentrations of *Enterococcus* and total coliform bacteria were significantly lower at Pacific Street than at the freshwater sites upstream. However, this was not true for the fecal coliform bacteria that did not show a significantly lower concentration at this site.

The design of the current study does not address, in detail, these confounding factors of differing bacteria decay and regrowth rates or the possible influence of local bird populations on fecal indicator bacteria concentrations in the water. Since single grab samples were employed in the current study, the results may have been affected by short-term localized changes in bacterial concentrations that may not always have been representative of the true concentrations at the sampled sites over the time periods considered.

The results of paired comparisons of bacterial concentrations at the Pacific Street Crossing to those along the Pacific shoreline nearby showed higher bacterial concentrations in the river. This result, however, was only statistically significant for the Total Coliform and Fecal Coliform bacteria. Due to the small sample size (10 pairs), these results are only preliminary and more samples will need to be collected in the future to further evaluate the relationships. Moreover, many factors may have contributed to the observed difference in bacterial counts between the river and the shoreline samples. Bacterial re-growth rates are expected to be higher in the river than in the open ocean while bacterial die-off rates have been shown to increase with salinity, UV light (decreased shading), and mixing; all three variables bound to be higher at the shoreline site. For this reason, a direct comparison between the two sites based on fecal indicator bacteria may not be helpful in determining whether the increased bacterial counts along the Pacific shore are significantly affected by the river. In future studies the use of specific genetic markers pinpointing the source of the bacteria may prove to be helpful in providing additional insight to answer this question.

In general, the source of bacterial contamination at the mouth of the SLR River remains undetermined. Due to the small sample size (10 pairs) as well as confounding factors (salinity, mixing, re-growth rates and UV light), the relationship between bacterial counts in the river and

the adjacent shoreline was difficult to evaluate. It is likely that the contamination does not originate from the River and/or its tributaries but from local sources such as shorebird feces. This, however, must be investigated further. Future sampling should include flow measurements at all sites so that mass loading can be determined. New technologies such as the use of genetic markers specific to the bacteria originating from the river may prove helpful in future studies. The sampling design should also address the effect of localized, short-term variation in bacterial concentrations due to differences in weather (i.e. sunlight and temperature), canopy cover, and other factors.

3.2.7.3 TDS & Chloride Results from Joint Monitoring Program

Surface water samples were collected and analyzed for TDS and chloride as well as other constituents including dissolved nutrients, dissolved metals, and minerals. A preliminary data evaluation was conducted using two-way ANOVAs and correlation analysis (City of Oceanside and County of San Diego 2006b).

The results indicate that TDS concentrations in the SLR River from the area in the vicinity of Interstate 15 west to Douglas Street exceeded the water quality objective of 500 mg/L. The TDS concentration at Shearer Crossing, the site located furthest east along the main stem of the river, was significantly lower than that of the remaining sites but still higher than 500 mg/L. The chloride concentration in the river significantly exceeded the water quality objective of 250 mg/L at all sampling sites except for Shearer Crossing. The chloride concentration in the SLR was highest at the westernmost location upstream of tidal influence, Benet Bridge.

A wet and dry season comparison of the TDS and chloride data indicate that neither the TDS nor chloride concentrations varied significantly between the seasons for any of the sites along the main stem of the river. A review of groundwater data support previous studies that the baseflow of the SLR River is most likely to be primarily composed of locally derived groundwater, which exceeds the surface water quality objectives for TDS and chloride.

Within the tributaries, Pilgrim Creek (the westernmost tributary) had significantly higher TDS and chloride levels than the remaining locations. Both chloride and TDS concentrations were above the Basin Plan Objectives at all the sampled tributaries. A wet to dry season comparison of the TDS and chloride data indicate that the TDS concentration at Pilgrim Creek varied significantly with wet/dry season but the difference was mostly due to significantly higher TDS level at Pilgrim Creek during the dry season. Chloride concentration was also significantly higher in Pilgrim Creek during the dry season while there were no significant differences among locations and between seasons for the remaining tributaries. Sodium concentration in Pilgrim Creek was approximately three orders of magnitude higher than in the remaining tributaries which suggests that, at that specific location, salt water intrusion may have contributed to the elevated TDS and Chloride levels especially during the dry season. Another factor in this area is the historical presence of Foss Lake, one of the only inland salt water wetlands in San Diego County. Foss Lake has been altered dramatically in the last 50 years, but has been historically present in the Pilgrim Creek watershed. Although now only 75 acres in size, the historical alkali marsh did extend into the present day golf course and it may still have an effect on the tributary.

Based on the preliminary data evaluation, TDS and chloride continue to be water quality concerns for the SLR River and its tributaries. There are too few data points to make strong conclusions and determine trends; therefore, additional data are needed for further assessment.

3.2.7.4 Guajome Lake Water Quality Monitoring Program

The County also developed a monitoring program to assess the contribution of urban runoff to the eutrophication of Guajome Lake. The 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments identifies Guajome Lake as impaired due to eutrophication. On January 7, 2005, DPW conducted a joint reconnaissance of the Guajome Lake area with the City of Oceanside, the County Department of Agriculture, Weights, & Measures (AWM), and the County Department of Parks and Recreation (DPR). All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, seven locations in the northern subbasin were monitored and two of those were selected as long-term monitoring sites. They included the East Channel Creek at Hutchison Street and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL2 is located in the middle of the subbasin and is co-located with the County of San Diego's dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. The 2005 preliminary monitoring of the East Channel Creek indicated that nutrients do enter Guajome Lake and may contribute to the existing eutrophic conditions. Data collected from the two sites of the East Channel Creek during FY 2005-06 indicated that concentrations of nutrients continue to enter Guajome Lake. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities (City of Oceanside and County of San Diego 2006c)

Data collected from the two sites of the East Channel Creek indicate that concentrations of nutrients do in fact enter the Guajome Lake and may contribute to the existing eutrophic conditions. Even though the total phosphorus concentration at both sampling locations has remained higher than the 0.1 mg/L limit throughout the sampling period, the mean orthophosphate-P concentration has decreased significantly at GUL2 over time. The mean nitrate-N concentration has also shown a significant decrease from FY 2005-06 to FY 2006-07 and there is evidence of some assimilation of the nitrate-N between the two sampling sites. The N:P ratio, however, has mostly remained above the 10:1 Basin Plan objective. Preliminary investigations into land uses have identified potential phosphorus and nitrogen sources to include residential areas, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources will continue.

3.2.8 Future Data Sets

Temporary Watershed Assessment Station (TWAS)

Beginning with the 2007-08 wet season a new monitoring station will be installed in the upper SLR River Watershed in the Bonsall HSA (903.12) near Camino Del Rey. Monitoring at this site will include sampling during two storms and two dry weather periods. This sampling will be performed every other year during the upcoming Municipal Permit cycle.

Bight '08

The San Diego Copermittees will participate in the Bight '08 regional monitoring program being coordinated by the Southern California Coastal Water Monitoring Project (SCCWRP). Bight '08 could potentially provide data useful for assessing the condition of receiving waters as part of this WURMP. The details of the Bight '08 program are still being determined at the time of this writing.

MS4 Outfall Monitoring

The Permit requires the development and implementation of a new MS4 Outfall Monitoring Program. At the time of this writing, Copermittees are still in the process of defining the scope of this program. A workplan will be developed by July 2008. The goal of the MS4 Outfall Monitoring Program will be to assess the quality of MS4 discharges countywide and their relative contribution to receiving water conditions within each watershed. Analysis of discharges from MS4 outfalls to receiving waters will address the management question: "What is the relative urban runoff contribution to the receiving water problem(s)?" The MS4 outfall monitoring design will be based on a combination of both random and targeted sampling, during both dry weather and wet weather conditions.

Source Identification Monitoring Program

The Permit requires the development and implementation of a new Source Identification Monitoring Program. At the time of this writing, Copermittees are still in the process of defining the scope of this program. A workplan will be developed by July 2008. The goal of the Source Identification Monitoring Program is to identify and assess pollutant sources that may be impacting receiving water conditions. Collection and analysis of urban runoff within MS4 conveyances during both dry and wet weather periods will address the management question: "What are the sources of urban runoff that contribute to receiving water problems?" The main purpose of the question is to identify pollutant sources so that appropriate management actions can be applied to eliminate the source from entering receiving waters.

Bacteria Source Tracking Study in the Lower San Luis Rey River

The City of Oceanside has been awarded a Proposition 50 Clean Beaches Initiative grant to track sources of bacteria in the Lower San Luis Rey River. The objective of this study is to identify the sources and quantify the loading of bacterial contamination in the Lower SLR River and River Mouth using a multi-tiered approach and to recommend appropriate actions and activities to eliminate the input of those sources. Dry and wet weather monitoring will occur throughout 2008 and 2009 with a final report completed by April 2010.

3.3 Watershed Water Quality Problems

Utilizing the criteria defined in Section 3.1, the tables below identify the priority water quality problems in the SLR River Watershed.

3.3.1 Priority Watershed Water Quality Problems

The 2006 303(d) list was adopted by the SWRCB on October 25, 2006 and finalized by the U.S. EPA on June 28, 2007. Waterbodies in the SLR River Watershed that have been placed on the SWRCB 2006 303(d) list are presented in Table 3-5.

Table 3-5. Waterbodies on the 2006 SWRCB 303(d) List in the SLR River Watershed.

Waterbody	Hydrologic Subarea (HSA)	Pollutant or Stressor	Estimated Area Affected
Pacific Ocean Shoreline	Mission 903.11	Indicator Bacteria	0.49 miles (at river mouth)
San Luis Rey River	Mission 903.11	Chloride, TDS	19 miles
Guajome Lake	Mission 903.11	Eutrophic	33 acres

All of the COCs identified in Table 3-6 below are considered priority watershed water quality problems since they have been observed to exhibit at least some degree of persistence in MLS and/or dry weather sampling (Weston 2008). As noted in Section 3.2.1 above, there is no evidence of persistent toxicity in the SLR River.

Table 3-6. Frequency of Occurance for COCs in SLR River Watershed.

	Bact. Indicators/ Fecal Coliform	Bact. Indicators/ Total Coliform	Ammonia / Nitrate	Total Dissolved Solids	Turbidity
San Luis Rey River 2007	♦♦♦	♦	♦	♦♦♦	♦

♦♦♦- Higher frequency of occurrence ♦♦- Medium frequency of occurrence ♦- Lower frequency of occurrence

Several "A" ratings were identified in the Lower San Luis HA (903.1), including dissolved minerals, nutrients, and bacteria (Table 3-7). Benthic alteration was also an "A"-rated constituent in this HA based primarily on the stream bioassessment findings. The ratings for bacteria and nutrients are dictated by 303(d) listings focused on two localized areas within the Mission HSA (903.11): bacteria at the mouth of the SLR River and nutrients in Guajome Lake.

Table 3-7. 2001-2006 Water Quality Priority Ratings for the SLR River WMA.

Watersheds/ Sub-watersheds	*Percentage of Total Area*	*Priority Ratings**										
		Constituent Groups									*Stressor Groups*	
		Heavy Metals	*Dissolved Minerals*	*Organics*	*Oil and Grease*	*Sediments*	*Pesticides*	*Nutrients*	*Gross Pollutants*	*Bacteria/ Pathogens*	*Benthic Alterations*	*Toxicity*
San Luis Rey WMA	***100%***	***D***	***B***	***D***	***D***	***C***	***D***	***C***	***D***	***B***	***B***	***C***
Lower San Luis HA (903.10)	*33%*	*D*	*A*	*D*	*D*	*C*	*C*	*A*	*D*	*A*	*A*	*C*
Monserate HA (903.20)	*30%*	*C*	*C*	*D*	*D*	*C*	*D*	*C*	*C*	*C*	*B*	*C*
Warner Valley HA (903.30)	*37%*	*D*	*C*	*D*	*D*	*D*	*D*	*D*	*D*	*B*	*B*	*C*

Notes:
** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*
*** = Priority Level (Highest-A to Lowest-D)*
High Priority Level Based on Data
303d listing

3.3.2 High Priority Watershed Water Quality Problems

Utilizing the criteria defined in Section 3.1, the Table 3-8 below identifies the high priority water quality problems in the SLR River Watershed.

Table 3-8. High Priority Water Quality Problems in the SLR River Watershed.

Water Quality Problem	Priority	Scale	Explanation
Bacteria	High	Mission HSA (903.11)[3]	- Proposed TMDL for bacterial indicators at the mouth of the SLR River - 303(d) listing for bacterial indicators at the Pacific Coast Shoreline - Persistent exceedances of fecal coliform WQO at the historical MLS - Dry weather data indicate exceedances of the established criteria in approximately 50% of samples taken in the Mission HSA (903.11)
Nutrients	High	Mission HSA (903.11)[4]	- 303(d) listing for Eutrophication at Guajome Lake - Dry weather data indicate exceedances of the established criteria in approximately 60% of samples taken in the Mission HSA.

[3] Data in the remaining sub-areas of the Lower San Luis HA, either are not adequate or do not support a high priority designation. There are no 303(d) listings or wet weather MLS data available. A significant amount of dry weather data is available and bacteria indicators only exceed the established criteria approximately 20% of the samples in the Bonsall HSA and 10% in the remaining HSAs (Moosa, Valley Center, Woods, and Rincon).

[4] Dry weather data indicate exceedances of the established criteria in 40% of the samples in the Bonsall HSA and less than 20% in the remaining HSAs (Moosa, Valley Center, Woods, and Rincon). This would lead to a B rating in the Bonsall HSA and a C in the remaining areas.

3.4 Likely Pollutant Sources

Land use and facility source data have been examined and mapped for the entire watershed in order to identify the potential pollutant sources contributing to the watershed's high priority water quality problems (Appendix A, Figure 3-4). Table 3-9 presents an overview of the land use distribution for major land use categories and potential sources within each HSA. This table supports the Watershed Copermittees' focus on activities in the Lower SLR Hydrologic Area. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date (Appendix A, Figure 3-1).

Table 3-9 shows the contrast between the lower and upper watershed. Residential and agriculture land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed.

Table 3-9. Overview of Major Land Uses for SLR River Watershed.

Hydrologic Sub Area	Major Land Use Categories[1]												
	Residential		Commercial / Industrial		Agriculture		OS/Preserve		Vacant		Military		Total Area Accounted for
	acres	%	acres	%	acres	%	acres	%	acres	%	acres	%	%
Mission HSA (903.11)	7,700	26	1,000	3	3,900	12	2,500	8	2,000	7	9,600	32	88
Bonsall HSA (902.12)	24,000	37	1,800	3	20,900	32	1,100	2	14,000	21	400	<1	8
Moosa HSA (903.13) Valley Center (903.14) Woods HSA (903.15) Rincon HSA (903.16)	8,400	38	600	3	5,400	21	500	2	6,600	28	0	0	92
Monserate HA (903.2)	9,200	9	800	1	18,300	17	14,000	13	64,200	59	0	0	99
Warner Valley HA (903.3)	4,300	3	400	<1	3,600	3	14,200	9	108,600	82	0	0	98
Total Land Area	53,600				52,100		32,300		195,400				

1. Source: County of San Diego based on SANDAG 2006 data, land use categories have been grouped for demonstration purposes.

3.4.1 Potential Bacteria Sources

The BLTEA represented the Copermittees' first attempt to identify sources of bacteria in the SLR River Watershed. Table 3-10 presents the BLTEA's list of "Likely" and "Unknown" bacteria sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE 2005). Table 3-11 lists the number of potential bacteria sources by HSA in addition to relevant land uses with the greatest potential to generate bacteria. Potential bacteria sources for which facility inventories have been developed are shown on maps in Appendix A, Figures 3-5 through 3-10.

Table 3-10. Potential Bacteria Sources for the SLR River Watershed (From BLTEA).

Potential Bacteria Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Eating or drinking establishments	277	Likely
Animal Facilities	47	Likely
POTWs (water and wastewater)	17	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Sites for disposing and treating sewage sludge	-	Likely
Development subject to SUSMPs	115	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Motor Freight	2	Unknown
Auto parking lots and storage facilities	-	Unknown
Pest Control Services	49	Unknown
Flood management projects and flood control devices	-	Unknown
MS4s	-	Unknown
Park and Recreational facilities	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego – 2005

Table 3-11. Potential Bacteria Sources by Hydrologic Sub-Area.

HSA	Potential Bacteria Source	Number of Facilities or % Land Use
Mission HSA 903.11	Food Establishments	198
	Commercial Animal Facilities	66
	Auto Facilities	7
	Nurseries	54
	% Residential	26%
	% Agricultural	12%
Bonsall HSA 903.12	Food Establishments	48
	Commercial Animal Facilities	168
	Auto Facilities	34
	Nurseries	15
	% Residential	37%
	% Agricultural	32%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Food Establishments	20
	Commercial Animal Facilities	47
	Auto Facilities	4
	Nurseries	15
	% Residential	38%
	% Agricultural	21%
Monserate HSA 903.20	Food Establishments	9

HSA	Potential Bacteria Source	Number of Facilities or % Land Use
	Commercial Animal Facilities	34
	Auto Facilities	1
	Nurseries	4
	% Residential	9%
	% Agricultural	17%
Warner Valley HSA 903.30	Food Establishments	7
	Commercial Animal Facilities	0
	Auto Facilities	1
	Nurseries	2
	% Residential	3%
	% Agricultural	3%

There is currently only one location within the watershed where an adequate source identification study has been performed to characterize the bacterial pollutant source: the Oceanside Harbor Boat Wash outfall. The City of Oceanside performs routine sampling at the harbor boat wash and recreational vehicle sewage pump out area as part of its Coastal Storm Drain Monitoring Program. This monitoring has revealed high levels of bacteria in samples collected from the boat wash outfall. The outfall drains a short storm drain system where the only influence is from the public boat wash area which borders the sewage dump area for recreation vehicles. (Weston 2008b).

To identify the other source of bacteria, specifically related to beach closures at the mouth of the SLR River, the City of Oceanside was awarded a Proposition 50 Clean Beaches Imitative grant. With matching funds from the County of San Diego and City of Vista, the bacteria source tracking project will:

- Identify point and non-point sources of bacteria contamination in the lower SLR River and at the River mouth during dry and wet weather.
- Estimate the dry, wet, and annual bacterial loading in the lower SLR River and at the River mouth.
- Recommend Best Management Practices (BMP) to reduce and eliminate bacterial sources.

The project will include dry and wet weather monitoring during 2008 and 2009. A final report will be completed in April 2010.

3.4.2 Potential Nutrient Sources

The BLTEA represented the Copermittees' first attempt to identify sources of nutrients in the SLR River Watershed. Table 3-12 presents the BLTEA's list of "Likely" and "Unknown" sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE, 2005). Table 3-13 lists the number of potential nutrient sources by HSA in addition to relevant land uses with the greatest potential to generate nutrients. Potential nutrient sources for which facility inventories have been developed are shown on maps in

Appendix A, Figures 3-11 through 3-16. Preliminary investigations into land uses in the Guajome Lake drainage area have identified potential sources of nutrients to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities. Further investigation of potential sources in this drainage area will continue as described in Section 4 of this plan.

Table 3-12. Potential Nutrient Sources for the SLR River Watershed (From BLTEA).

Potential Nutrient Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Commercial Animal Facilities	47	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Park and Recreational facilities	-	Likely
Eating or drinking establishments	277	Unknown
Development subject to SUSMPs	115	Unknown
Auto mechanical repair, maintenance, fueling, or cleaning	57	Unknown
POTWs (water and wastewater)	17	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Corporate yards (incl. maintenance/storage yards)	4	Unknown
Fabricated metal	4	Unknown
Equipment mechanical repair, maintenance, fueling, or cleaning	3	Unknown
Chemical and allied products	2	Unknown
Airfields	2	Unknown
Motor Freight	2	Unknown
Primary metal	1	Unknown
Auto parking lots and storage facilities	-	Unknown
Mobile carpet, drape, or furniture cleaning	76	Unknown
Pool and Fountain cleaning	60	Unknown
Sites for disposing and treating sewage sludge	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego - 2005

Table 3-13. Potential Nutrient Sources by Hydrologic Sub-Area.

HSA	Potential Nutrient Source	Number of Facilities or % Land Use
Mission HSA 903.11	Commercial Animal Facilities	7
	Nurseries	66
	% Residential	26%
	% Agricultural	12%
	% Open Space	8%

HSA	Potential Nutrient Source	Number of Facilities or % Land Use
	% Industrial/Commercial	3%
Bonsall HSA 903.12	Commercial Animal Facilities	34
	Nurseries	168
	% Residential	37%
	% Agricultural	32%
	% Open Space	2%
	% Industrial/Commercial	3%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Commercial Animal Facilities	4
	Nurseries	47
	% Residential	38%
	% Agricultural	21%
	% Open Space	2%
	% Industrial/Commercial	3%
Monserate HSA 903.20	Commercial Animal Facilities	1
	Nurseries	34
	% Residential	9%
	%Agricultural	17%
	%Open Space	13%
	% Industrial/Commercial	1%
Warner Valley HSA 903.30	Commercial Animal Facilities	1
	Nurseries	0
	% Residential	3%
	%Agricultural	3%
	%Open Space	9%
	% Industrial/Commercial	<1%

3.4.3 Other Potential Pollutant Sources

In addition to the potential pollutant sources discussed in the preceding sections, there are other likely pollutant sources that contribute to water quality degradation in the SLR River Watershed. These sources include naturally occurring groundwater, imported water supply, aerial deposition, wildlife impacts, natural erosion, transportation corridors, and military facilities and activities. These potential sources present very unique and difficult challenges in their identification, quantification and assessment of either degradation or improvement. Also noteworthy is the Copermittees' jurisdictional and regulatory inability to control these sources or regulate their impacts and contribution to water quality degradation in the watershed.

4.0 FIVE-YEAR STRATEGIC PLAN

The Watershed Copermittees utilized the strategy summarized in Section 2.0 to develop a Five-Year Strategic Plan for implementation of the SLR River WURMP. Individual baseline watershed evaluations (BWEs) were conducted for each of the following hydrologic areas (HAs) and sub-areas (HSAs) within the SLR WMA: Mission HSA (903.11); Bonsall HSA (903.12); Moosa, Valley Center, Woods, and Rincon HSAs (903.13 – 903.16)[5]; Monserate HA (903.2); Warner Valley HA (903.3). These areas are shown in Appendix A, Figure 1-2 and below in Figure 4-1.

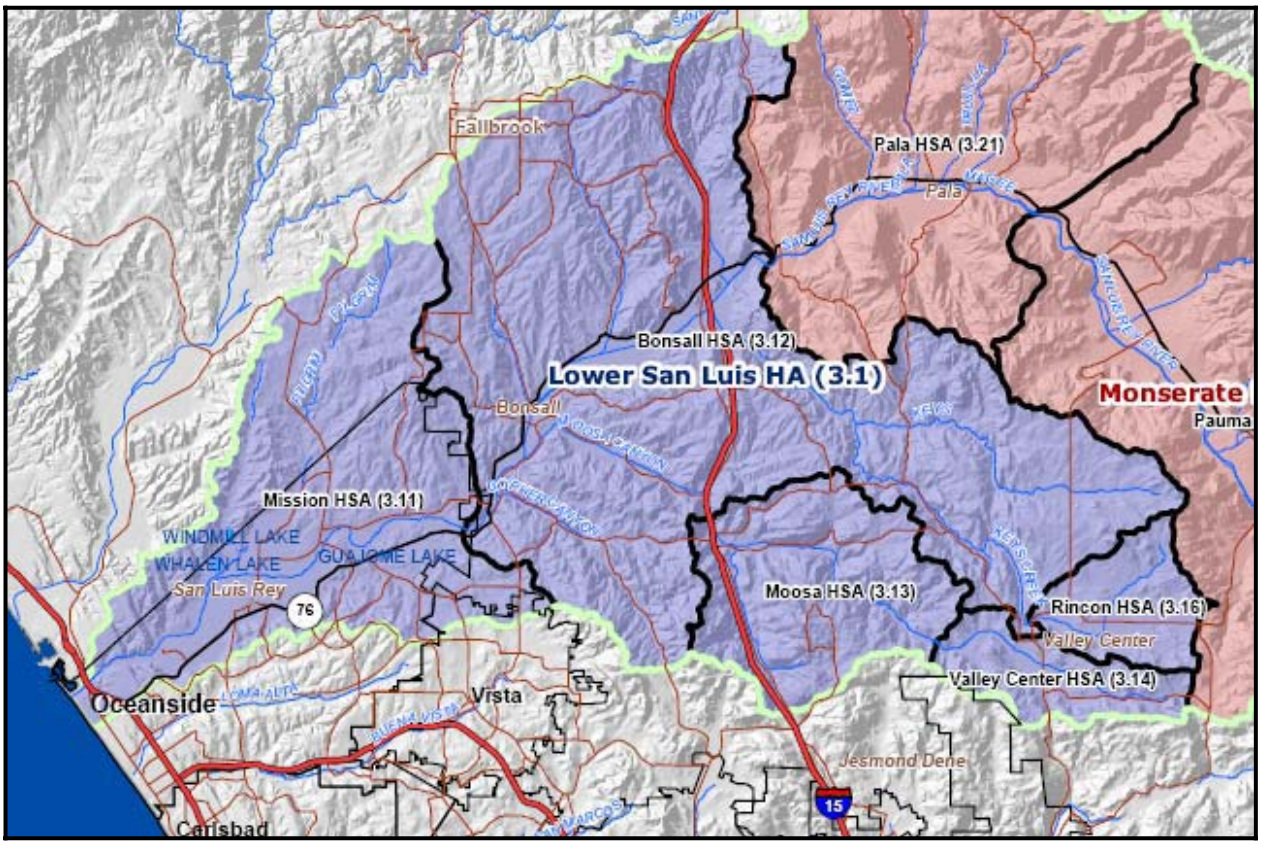

* These four HSAs were grouped together due to their small size and because of their similarities.

Figure 4-1. Lower San Luis Rey Hydrologic Area (Source PBS&J 2003).

In general, the Monserate and Warner Valley HAs are not adequately characterized in terms of water quality to enable the selection of appropriately targeted watershed water quality and education activities. Moreover, as described in Section 3.4, there appear to be relatively few potential pollutant sources in these upstream HAs. As a result, the Five-Year Strategic Plan for this watershed emphasizes actions in the Lower SLR HA (903.1) where both water quality data and potential pollutant sources are more prevalent, and where urbanization is most significant.

Water quality monitoring data collected by the Watershed Copermittees confirm the existence of two water quality problems identified on the Clean Water Act Section 303(d) List: 1) bacterial

[5] These four HSAs were grouped together due to their small size and because of their similarities.

indicators at the Pacific Ocean shoreline (SLR River mouth), and 2) eutrophication in Guajome Lake. While some work has already been conducted to identify the sources of these problems, follow up investigations have yielded little definitive information. Upcoming projects will intensify water quality monitoring, source identification, inspection, education, and enforcement as determined necessary.

One goal of conducting the BWEs was to identify areas where additional monitoring or source identification studies were needed to properly target load reduction and source abatement activities. The Watershed Copermittees have determined that most areas of the watershed would benefit from additional monitoring or source identification studies since the relationship between observed water quality problems and potential pollutant sources is rarely clear. Priority monitoring projects at this time include:

- Bacteria source tracking and identification in the Lower SLR HA;
- Nutrient monitoring in the Lower SLR HA to identify problem areas and contributing sources; and,

Despite much uncertainty about the extent and source of the watershed's high priority water quality problems, there are several land use types and pollutant source categories that Watershed Copermittees agree would benefit from increased attention over the next five years. These include:

- *Agriculture*: The SLR River Watershed has a high percentage of agricultural land use. Agriculture is a likely source of nutrients throughout the watershed due to widespread fertilization and irrigation, particularly for crops such as avocados and tomatoes which are common in the watershed. Since nutrients, including nitrates, have been identified as a water quality concern in various parts of the watershed during dry weather, a focus on agriculture as a likely pollutant source appears to be justified. It should be noted, however, that traditional agricultural operations are not subject to regulation by the Watershed Copermittees under the Municipal Storm Water Permit.

- *Nurseries*: As a subset of agriculture, nurseries are considered by the Copermittees to be a potentially significant source of nutrients and worthy of special focus. As described in Section 3.4, there are a significant number of nurseries throughout the watershed. Moreover, several clusters of nurseries have been identified that appear to coincide with nitrate exceedances in Copermittee dry weather monitoring programs. As presented in the Five-Year Strategic Plan, two clusters in particular are targeted for immediate action: 1) upstream of Guajome Lake, and 2) along Sleeping Indian Road in the northeastern section of Oceanside. The Watershed Copermittees will continue to identify additional problem areas throughout the course of the Permit cycle.

- *Residential Areas*: Residential areas are considered to be potentially significant sources of nutrients and bacteria, two of the high priority water quality problems in the SLR River Watershed. Specific residential activities of concern include: 1) over irrigation, 2) improper disposal of pet waste, 3) maintenance and cleaning of outdoor areas, 4) lawn and garden care, and 5) trash and litter management. Residents will be the focus of a regional, cross-watershed, educational program to measurably increase awareness and

reduce harmful behaviors. To the extent possible, this WURMP emphasizes the implementation of activities that complement the Copermittees' Regional Residential Education Program while focusing on specific residential areas identified as problem areas in the watershed. Because both the Mission and Bonsall HSAs include over 20% residential land use, these areas are considered to be appropriate locations for WURMP activity implementation.

- *Restaurants*: There are nearly 200 restaurants in the lower portion of the Mission HSA. Restaurants have been identified as potentially significant sources of bacteria due to sewer overflows from poor grease management, poor trash management, and outdoor cleaning practices. Because bacteria have been identified as a high priority in the Mission HSA, this WURMP encourages efforts to improve BMP implementation at restaurants in the lower watershed.

- *New Development*: The SLR River Watershed is anticipated to grow significantly in population over the next ten years. Much of that growth is projected to occur in the rural communities of Fallbrook, Bonsall, Valley Center, and Rainbow. As mandated by the Municipal Storm Water Permit, low impact development (LID) techniques will be required on all significant development and redevelopment projects, regardless of location. There may be opportunities during this Permit cycle to implement WURMP activities that complement the LID provisions now required as part of each Watershed Copermittee's Jurisdictional Urban Runoff Urban Runoff Management Program (JURMP).

Table 4-1 in Appendix B summarizes the Five-Year Strategic Plan for the SLR River Watershed. The proposed activities are detailed in Attachment B as Watershed Activity Summary Sheets. The Watershed Copermittees anticipate that changes to this plan will be necessary over the course of the Permit cycle due to unforeseen barriers to implementation, identification of new activities, or other factors. Any updates made to this Five-Year Strategic Plan will be described in the annual reports submitted to the RWQCB each January.

4.1 Proposed Watershed Water Quality Activities

The Municipal Storm Water Permit imposes the following restrictions on the number and types of WWQAs to be considered for implementation by the Watershed Copermittees:

- WWQAs are activities other than education that address the high priority water quality problems in the WMA.

- WWQAs may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. However, a WWQA implemented on a jurisdictional basis must be organized and implemented to target a watershed's high priority water quality problems or must exceed the baseline jurisdictional requirements established by Section D of the Municipal Storm Water Permit.

- For each Permit year, no less than two WWQAs shall be in an active implementation phase. A WWQA is in an active implementation phase when significant pollutant load

reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s).

- WWQAs that are capital projects are in active implementation for the first year of implementation only.

The WWQAs described below are consistent with the collective watershed strategy described elsewhere in this report. In short, the Watershed Copermittees determined that immediate load reduction and source abatement projects are necessary in the Mission HSA to address two well established problems: 1) bacteria at the Pacific Ocean shoreline at the SLR River mouth, and 2) eutrophication in Guajome Lake. Most other areas of the watershed require additional monitoring or source identification prior to moving forward with activity implementation. Existing and planned monitoring studies are described in activity summary sheets below. Independent of the results of these additional studies, the Watershed Copermittees agree that the following pollutant sources would benefit from increased attention over the course of this Permit cycle: agriculture, nurseries, residential areas, restaurants, and development projects.

4.2 Proposed Watershed Education Activities

The Municipal Storm Water Permit imposes the following restrictions on the number and types of WEAs to be considered for implementation by the Watershed Copermittees:

- WEAs are outreach and training activities that address the high priority water quality problems in the WMA.

- WEAs may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level.

- For each Permit year, no less than two WEAs shall be in an active implementation phase. A WEA is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can reasonably be established in target audiences.

The WEAs described in Appendix B are consistent with the collective watershed strategy described elsewhere in this report. Target audiences associated with agriculture, nurseries, residential areas, restaurants, and significant new development will be the focus of most WEAs.

4.3 Proposed Public Participation Activities

This section describes the mechanisms that will be used to encourage public participation in the development and implementation of the SLR River WURMP. In accordance with Section E.2.h of the Municipal Storm Water Permit, Watershed Copermittees are required to implement a watershed-specific public participation mechanism and to encourage participation from other organizations within the watershed. While the Watershed Copermittees aim to improve coordination among there own agencies, the watershed approach requires participation from a diverse group of stakeholders, including other regulatory agencies, environmental groups, educational institutions, landowners, and private citizens. The Watershed Copermittees

recognize that no single agency has the capacity to address water quality issues on its own and that broad partnerships are essential to positively affect watershed conditions.

The Watershed Copermittees plan to use multiple avenues to engage their residents and businesses in the WURMP process. As a first step, the Watershed Copermittees have established WURMP Objective #4: "To encourage and enhance public involvement within the SLR River Watershed in activities related to urban runoff management." Public participation is also an important element in many of the education activities described in section 4.2 above. Specific public participation initiatives will vary from year to year depending on events that are planned by other stakeholders (e.g., cities, county, NGOs, civic groups), and the assessment of existing activities. A general list of existing and potential public participation activities includes:

- Cleanup events for the SLR River, beaches, and targeted neighborhoods.
- Booths at community events such as Pepper Tree Day at Mission SLR and the Avocado Festival in Fallbrook.
- Workshops targeting specific industries (agriculture, restaurants, etc.) or municipal staff and advisory groups, including planners, engineers, architects, and citizen advisory groups.
- Presentations at public forums such as city council meetings, community planning group meetings, civic meetings, conferences, and other public venues.
- Collaboration and information sharing with established groups in the watershed, including the SLR Watershed Council (SLRWC) and the Mission Resource Conservation District.
- Use of the Project Clean Water website to post important WURMP program documents, including the SLR River WURMP itself and subsequent annual reports.

4.4 Proposed Land-Use Planning Activities

This section describes the mechanisms to be used to encourage collaborative, watershed-based, land-use planning. In accordance with Section E.2.d of the Municipal Storm Water Permit, Watershed Copermittees are required to develop, implement, and modify, as necessary, a program for encouraging collaborative, watershed-based land use planning in their jurisdictional planning departments. Cities and counties generally exercise their land use planning authorities independently. As a result, the land use policies of individual municipalities have the potential to impact water quality in areas beyond their jurisdictional boundaries. The goal of encouraging watershed-based land use planning is to ensure that jurisdictional land use policies and decisions do not negatively affect upstream or downstream uses within shared watersheds.

The Watershed Copermittees plan to use multiple avenues to encourage watershed-based land use planning during this Permit cycle. As a first step, the Watershed Copermittees have established WURMP Objective #2: "To integrate watershed principles into land use planning

that affects the SLR River Watershed." Existing and potential activities to encourage watershed-based land activities are described in the sections below.

4.4.1 Existing Inter-Jurisdictional Planning Efforts

State law requires that local governments hold public hearings prior to most planning actions. Jurisdictions, as well as the public at large, have the opportunity to comment on and to participate in hearings related to land use development. Also, discretionary development projects subject to review under the California Environmental Quality Act (CEQA) that may affect downstream water resources are studied to determine the potential effects of such projects, and affected jurisdictions or agencies are notified of such projects. Each Watershed Copermittee accepts comments from affected jurisdictions or agencies concerning watershed impacts, and implements the recommendations of such affected parties whenever feasible. As part of jurisdictional Standard Urban Storm Water Mitigation Plans (SUSMP), discretionary projects are required to prepare a Storm Water Management Plan (SWMP) or similar document for review and approval. The purpose of the SWMP is to provide the information needed to fully and adequately characterize the existing water quality, analyze the drainage, develop effective post-construction storm water protection, and ensure the effectiveness of best management practices (BMPs) through proper maintenance and long-term fiscal responsibility. Prior to being approved by a hearing body, environmental documents prepared for the project (including the SWMP) are made available to interested members of the public and adjacent jurisdictions for review and comment on development-related storm water issues.

4.4.2 Potential Watershed-Based Land Use Planning Mechanisms

In addition to the processes described above, the Watershed Copermittees will consider additional watershed-based land use planning mechanisms as appropriate. Each jurisdiction will determine the degree to which each of these mechanisms will be employed.

Forums for Watershed-based Collaboration

For watershed issues to be successfully integrated into the land use planning process, effective dialogue must be established between the responsible parties. To this end, storm water managers within the SLR River Watershed, the Copermittee staff with primary responsibility for completion and implementation of the WURMP, have begun to establish forums to ensure effective communication with planning staff, both jurisdictionally and on a watershed basis. In both instances, the purpose of the meetings is to facilitate the exchange of pertinent watershed-specific information and to explore the collaborative development of planning strategies between storm water managers and planners. Through enhanced communication and strong relationships, jurisdictions can better address watershed needs as a whole. Potential pollutant load reductions may be realized through cooperative planning and creating cross jurisdictional awareness.

Staff Training

In addition to providing general education on water quality and watershed issues, land use planning information gathered during water quality assessments will form the basis of watershed-specific training elements developed either individually or collaboratively by the SLR River Watershed Copermittees. One main focus of this training will be promoting the implementation of Low Impact Development (LID) for new development and redevelopment projects. The SLR River Watershed is anticipated to grow significantly in population over the

next ten years, particularly in unincorporated County areas. The Copermittees will educate land use planners and advisory groups on how to incorporate LID principals during the planning phase to reduce the impact of development and redevelopment on water quality in the watershed.

Information and Material Sharing

Continued collaboration on WURMP development will result in the identification or generation of various written and electronic forms of data and information relevant to land use planning. Utilizing electronic distribution systems (e-mail) to the extent practical, the Watershed Copermittees will ensure that such materials are shared with land use planning staff within their individual jurisdictions as well as other jurisdictions within the watershed.

Examples of relevant information, materials, or work products, which may be shared periodically, include:

- Grant proposals.
- Restoration or BMP development projects.
- Approvals for unique (e.g. projects approved with SUSMP waivers) or large development projects.
- Monthly meeting notices.
- Information on various other activities such as mitigation or structural BMP efforts, educational activities, and grant proposals.

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5.0 EFFECTIVENESS ASSESSMENT

This section describes how the SLR River WURMP addresses the requirements of Section I.2. of the Municipal Storm Water Permit. WURMP effectiveness assessments will be based on the concepts first identified and described in the San Diego Copermittees' October 2003 document *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs* (Framework). The reader is encouraged to become familiar with the concepts described in the Framework to better understand the remainder of this section. To summarize, Table 5-1 describes the six outcome levels identified in the Framework along with potential measures and methods for measuring effectiveness.

Table 5-1. Targeted Outcomes and Potential Assessment Measures and Methods.

Outcome Type	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements	Verification that required activities were implemented (Yes / No) Quantification of activity outputs
Level 2: Changes in Knowledge / Awareness	Changes in a targeted audience's knowledge and awareness potentially through the use of pre- and post-surveys and/or direct observations
Level 3: Behavioral Change / BMP Implementation	Changes in a targeted population's behavior or BMP implementation potentially through the use of direct observations (i.e., inspections)
Level 4: Load Reductions	Measured or estimated pollutant load reductions from a project, site, or group of sites. Measurements may be supported by water quality data and calculations may be supported by information and data related to the pollutant-generating activities.
Level 5: Changes in Discharge Quality	Historical and statistically supported trends in the level of pollutants in discharges from the MS4. This can be assessed using the results of water quality monitoring data.
Level 6: Changes in Receiving Water Quality	Historical and statistically supported trends in the level of pollutants in receiving waters. This can be assessed using the results of water quality monitoring data.

The Permit requires two general types of effectiveness assessment in the WURMP: 1) assessment of each watershed activity, and 2) assessment of overall WURMP effectiveness. The approach for complying with each requirement is described below.

5.1 Watershed Activity Assessment

The effectiveness of each Watershed Water Quality Activity and Watershed Education Activity will be assessed on an annual basis. Other watershed activities types (i.e., Watershed Water Quality Monitoring Activities, Watershed Source Identification/Characterization Activities) will

be assessed as determined appropriate. Data are typically collected during or after activity implementation to assess effectiveness in achieving targeted outcomes.

Each watershed activity is unique, and its impacts on water quality are equally distinctive. The activity summary sheets included in Section 4 identify specific targeted outcomes (Levels 1–6) as well as the measures and methods that will be used to gauge activity effectiveness. Measurable outcomes do not always follow a linear path (i.e., assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may have no bearing on changes in the awareness or behavior of a targeted population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6. Level 5 and Level 6 Outcomes are typically measurable through cumulative assessments as described in the following section.

5.2 Overall WURMP Assessment

The assessment of overall WURMP effectiveness will focus on the cumulative impacts of program implementation and will include the following elements: 1) an assessment of how well Watershed Copermittees have collectively complied with minimum Permit requirements; 2) an assessment of the cumulative impact of watershed activity implementation; and 3) an integrated assessment of discharge and receiving water quality.

To assess how well Watershed Copermittees have collectively complied with minimum Permit requirements, Table 5-2 provides the Level 1 Outcomes that will be tracked on an annual basis:

Table 5-2. Level 1 Outcomes for Assessing Compliance with Minimum Permit Requirements.

Targeted Outcome	Measure
Update watershed map	Completion (Yes / No)
Update watershed water quality assessment, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completion (Yes / No)
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completion (Yes / No)
Update list of potential Watershed Water Quality Activities.	Completion (Yes / No)
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completion (Yes / No)
Update list of potential Watershed Education Activities.	Completion (Yes / No)
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completion (Yes / No)

Targeted Outcome	Measure
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completion (Yes / No)
A description of Copermittee collaboration efforts	Completion (Yes / No)
Minimum quarterly meetings of the SLR WURMP Workgroup	# Meetings
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completion (Yes / No)
When applicable, describe TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed.	Completion (Yes / No)

Assessing the cumulative effectiveness of watershed activity implementation is challenging. The results of individual activities are typically difficult to aggregate at the watershed level. Nevertheless, the Watershed Copermittees will strive to conduct activity-specific assessments in a way that allows for an assessment of cumulative watershed impacts when possible. This may involve the use of consistent methods to assess similar activity types or the use of consistent units of measure to aggregate the results of disparate activity types.

Finally, the Watershed Copermittees will attempt to improve their ability to conduct integrated assessments over the course of this Permit cycle. Integrated assessments aim to identify the relationship between program implementation and resulting effects on discharge and receiving water quality. Integrated assessments, therefore, attempt to draw links between the activity-specific assessments described above and water quality monitoring data collected at the regional, watershed, and jurisdictional levels. The Watershed Copermittees will use available data and information to determine what impacts, if any, WURMP implementation is having at Outcome Levels 5 and 6. It must be recognized, however, that urban runoff management takes place at many scales. For example, jurisdictional and regional urban runoff programs also result in watershed benefits, and a state-of-the-art does not exist to isolate the effect of each.

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6.0 PROGRAM REVIEW AND MODIFICATION

The SLR Watershed Copermittees will meet on a regular basis, at least quarterly, to review the status and progress of cooperation within the WMA. These meetings will be designed to ensure adequate collaboration between the various jurisdictions and departments as needed to implement this WURMP. The Watershed Copermittees will review the progress of the watershed program and coordinate their activity planning, implementation and effectiveness evaluations. The Watershed Copermittees will also cooperate in the preparation of WURMP annual reports.

The Watershed Copermittees will review the overall watershed program annually and make modifications as necessary to improve the overall effectiveness of Copermittee activities. Future reviews will generally follow the same process used in this WURMP, but will primarily be concerned with consistency between the data collected that year and the data used to support the assumptions and conclusions described in this WURMP. If the data collected and evaluated each year continues to support the current conclusions regarding the priority pollutants and targeted land uses in the WMA, then the Strategic Goals for the WMA will not be modified. Conversely, if the data calls into question the assumptions and conclusions supporting the current Strategic Goals, appropriate modifications will be made as necessary so that the Strategic Goals continue to address the top watershed level priorities. Any changes to the Strategic Goals will also result in changes to the selection and implementation of the activities supporting those Strategic Goals. Changes to the WURMP will be described in the WURMP Annual Reports.

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7.0 CONCLUSIONS

Since January 2003, the SLR Watershed Copermittees have been actively implementing a Watershed Urban Runoff Management Program (WURMP). The City of Oceanside, as lead agency, in collaboration with the City of Vista and the County of San Diego – all local agencies which have jurisdiction within the San Luis Rey River Watershed Management Area (SLR WMA) – are continuing their efforts to develop and implement a watershed-based program in the SLR WMA. This document discusses the SLR Copermittees' efforts to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (Municipal Permit) for San Diego Copermittees (Order No. 2007-0001, NPDES No. CAS0108758). More importantly, this document describes collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the SLR WMA to the maximum extent practicable.

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.
- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement within the SLR WMA in activities related to urban runoff management.

To help reach these goal and objectives, the SLR Copermittees will work to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

The SLR WMA is located along the northern border of the County of San Diego, California. It encompasses approximately 562 square miles and includes three Hydrologic Areas (HAs): Lower San Luis, Monserate and Warner Valley. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level (MSL), and extends over 55 miles across northern San Diego County before discharging to the Pacific Ocean in the City of Oceanside. Of the nine watersheds in the San Diego region, the SLR River Watershed is the third largest (SANDAG 1998).

Residential and agriculture serve as the dominant land uses in the watershed. The majority of the watershed has remained undeveloped with higher population concentrations in the Lower San Luis HA. Although the SLR River Watershed is the third largest of the San Diego region watersheds, its population is one of the smallest. The population of the SLR River Watershed was 146,383 according to the 2000 census and is forecasted to increase to 219,252 by 2020 and 249,673 by 2030. This growth is expected to occur mostly within vacant land in the unincorporated areas of the watershed.

The SLR WURMP is a continuation of a long-term effort to protect and enhance the water quality of the rivers and creeks at the watershed level. It is the goal of all participating jurisdictions to work cooperatively with other agencies, non-governmental organizations, and private citizens at the watershed level in order to positively affect the water resources of the region and achieve compliance with the Municipal Permit. This program provides a mechanism for coordination of existing water quality-related efforts in the watershed. The Program, where possible, will integrate its efforts with other projects such as those of the SLR Watershed Council.

Copermittees have developed a Model Watershed Urban Runoff Management Strategy to guide the selection and implementation of Watershed Activities that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. Data analyzed to date for the SLR Watershed suggests that bacteria and nutrients are high priority water quality problems in the Lower San Luis HA. The water quality assessment is discussed in detail in Section 3.

To address water quality problems, this Plan identifies a series of watershed water quality and education activities in Section 4, in addition to other ongoing and planned activities. Having used the watershed strategy as the basis for developing the activities, the Copermittees have focused activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the SLR WMA. Where receiving water conditions and pollutants sources are not clearly characterized, monitoring and source identification activities will be implemented.

The Cities of Oceanside and Vista and the County of San Diego share the implementation responsibilities for the WURMP along with other interested stakeholders. Due to the commitments of these agencies, this watershed program is expected to extend beyond the Municipal permit expiration of January 24, 2012. Using the watershed approach, the SLR Watershed Copermittees aim to positively affect the water quality of the SLR River Watershed in a cost effective, environmentally sensitive, and collaborative manner.

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Appendix A

Figures

2008 San Luis Rey WURMP

San Luis Rey River Watershed

Location Map

FIGURE 1-1

0 2 4 8 12 16 Miles

Figure 3-8
Valley Center (903.14) and Rincon (903.16) HSA's

Bacteria Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations

Bacteria

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Food Facilities (Likely)
- Golf Courses (Likely)
- Municipal Landfills (Unknown)
- Nurseries (Likely)
- POTWs (Likely)
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes
- (MS4) Escondido Storm Drain Facilities
- (MS4) Escondido Storm Drain Mains

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reservoirs, Large Ponds

N

1:12,597

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

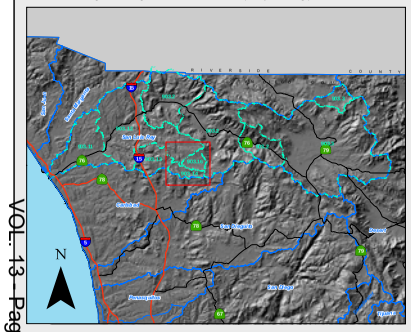

Location Map

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DPLU GIS

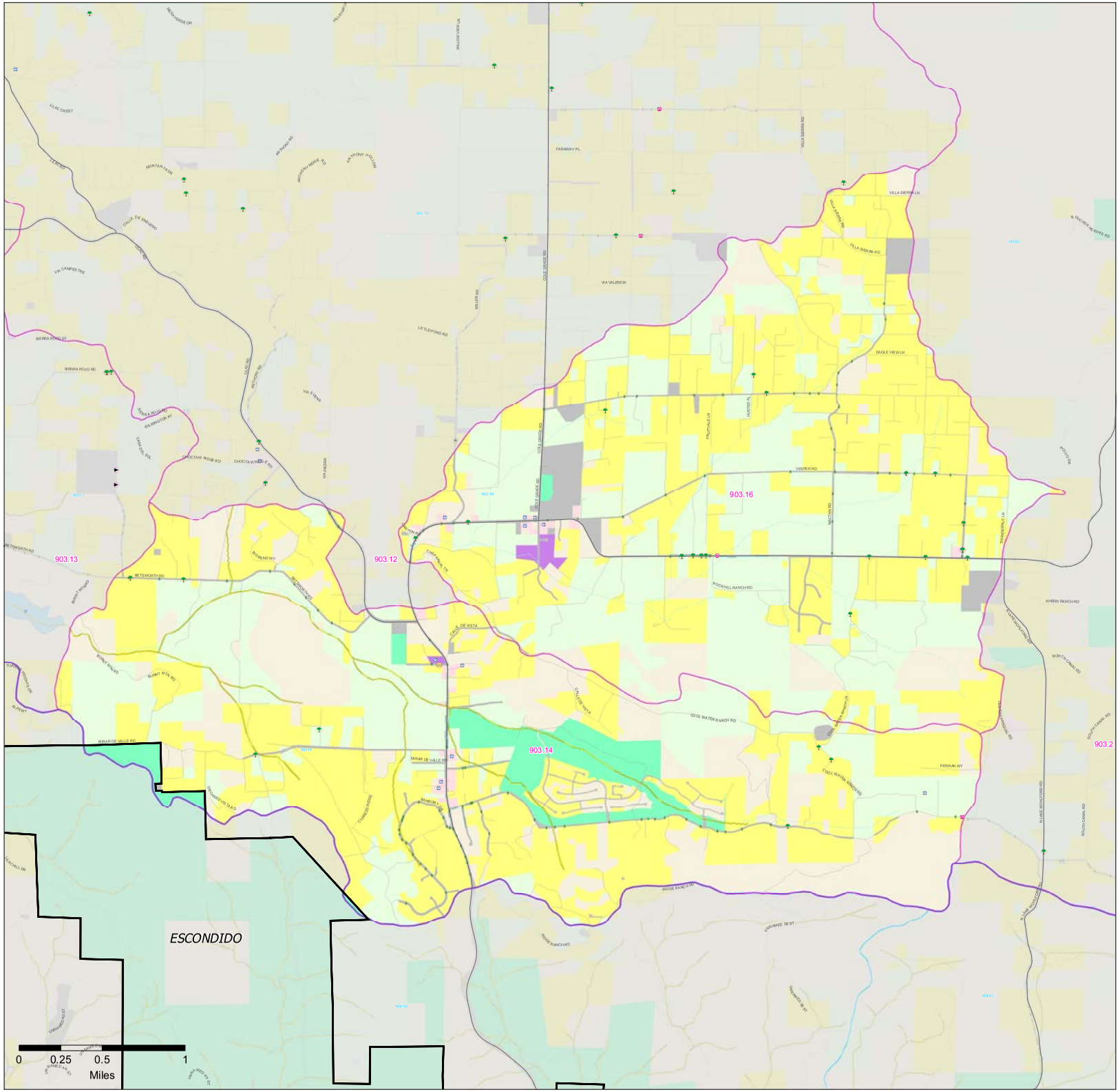

Figure 3-7

Moosa HSA (903.13)

Bacteria Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

Bacteria

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Food Facilities (Likely)
- Golf Courses (Likely)
- Municipal Landfills (Unknown)
- Nurseries (Likely)
- POTWs (Likely)

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reservoirs, Large Ponds

N

1:12,570

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

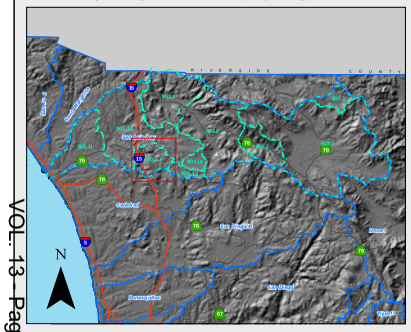

Location Map

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County of San Diego
Department of Planning and Land Use
DPLU GIS

903.12

903.13

903.14

ESCONDIDO

0 0.2 0.4 0.8
Miles

Figure 3-6

Bonsall HSA (903.12)

Bacteria Source Map

Pollutant Source Inventory

- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

Bacteria

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Food Facilities (Likely)
- Golf Courses (Likely)
- Municipal Landfills (Unknown)
- Nurseries (Likely)
- POTWs (Likely)

SANDAG 2005 Existing Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reserviors, Large Ponds

N

1:34,200

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

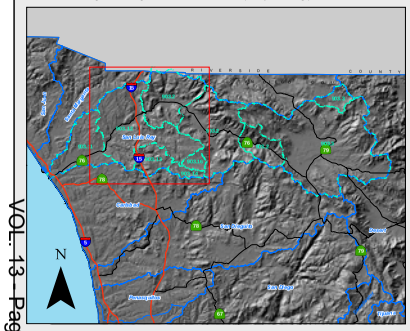

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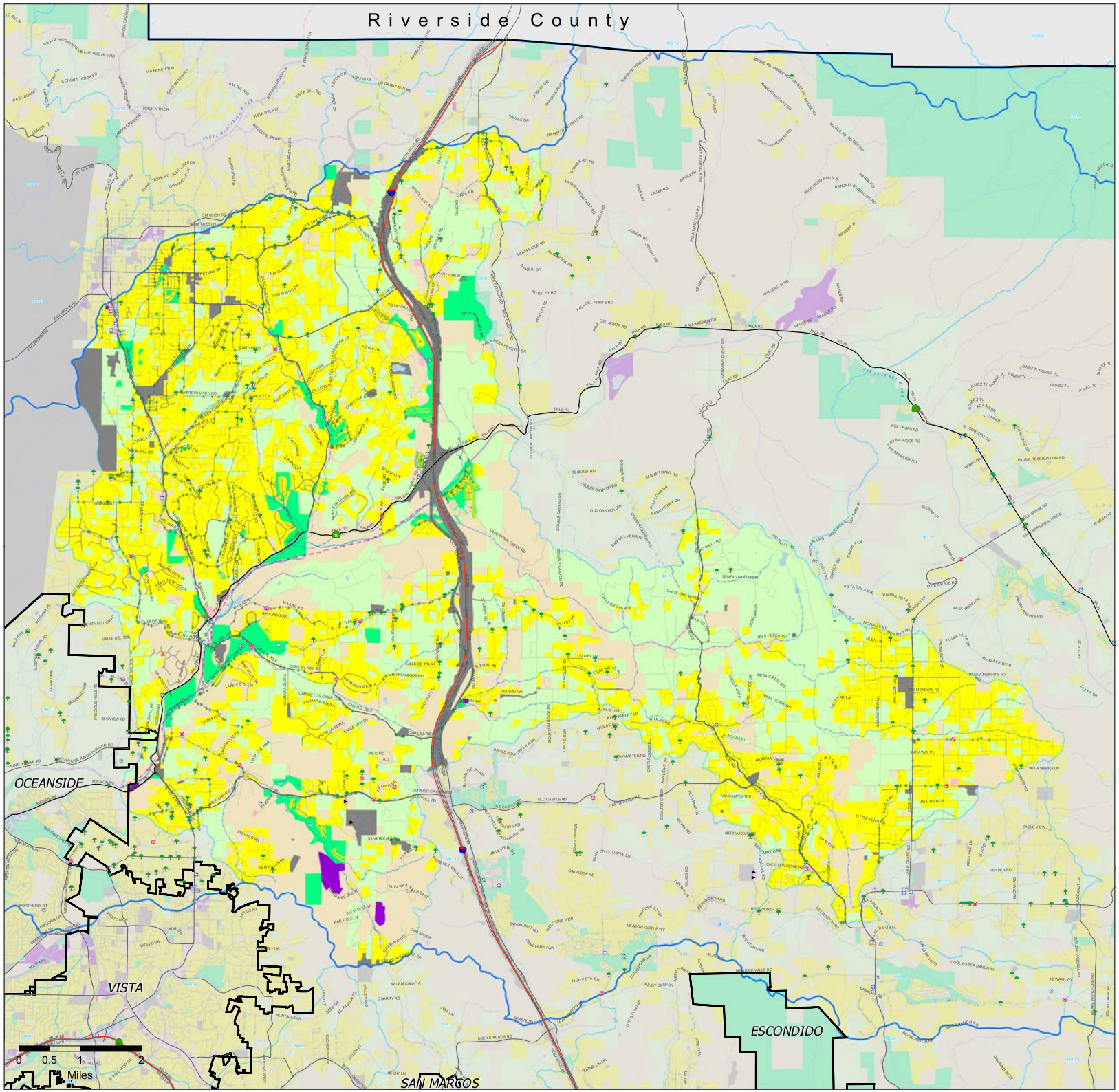

Figure 3-5

Mission HSA (903.11)

Bacteria Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations

Bacteria

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Food Facilities (Likely)
- Golf Courses (Likely)
- Municipal Landfills (Unknown)
- Nurseries (Likely)
- POTWs (Likely)
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reservoirs, Large Ponds

N

1:22,433

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

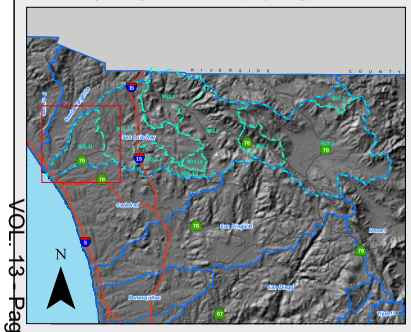

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903.12

903.11

OCEANSIDE

VISTA

0 0.5 1 2
Miles

FIGURE 3-4. SLR RIVER WATERSHED MANAGEMENT AREA

Pollutant Source Map

Legend

Watershed Sub-Basins

Potential Pollutant Sources

Baseline Long-Term Effectiveness Assessment (2005)

- Airfield
- AirplaneRepair
- Animal Facilities
- AutoPaint
- AutoRepair
- BoatRepair
- Cemetary
- Food
- Fuel
- GolfCourses
- LandApplication
- Landfill
- MaintenanceYard
- Marina
- Nursery
- POTW
- Paintball
- SolidWasteTransfer
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego / Ogawa Engineering)
**303(d) Waters / Watersheds: (SWRCB). (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

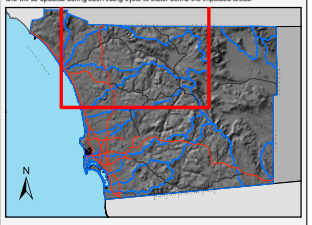

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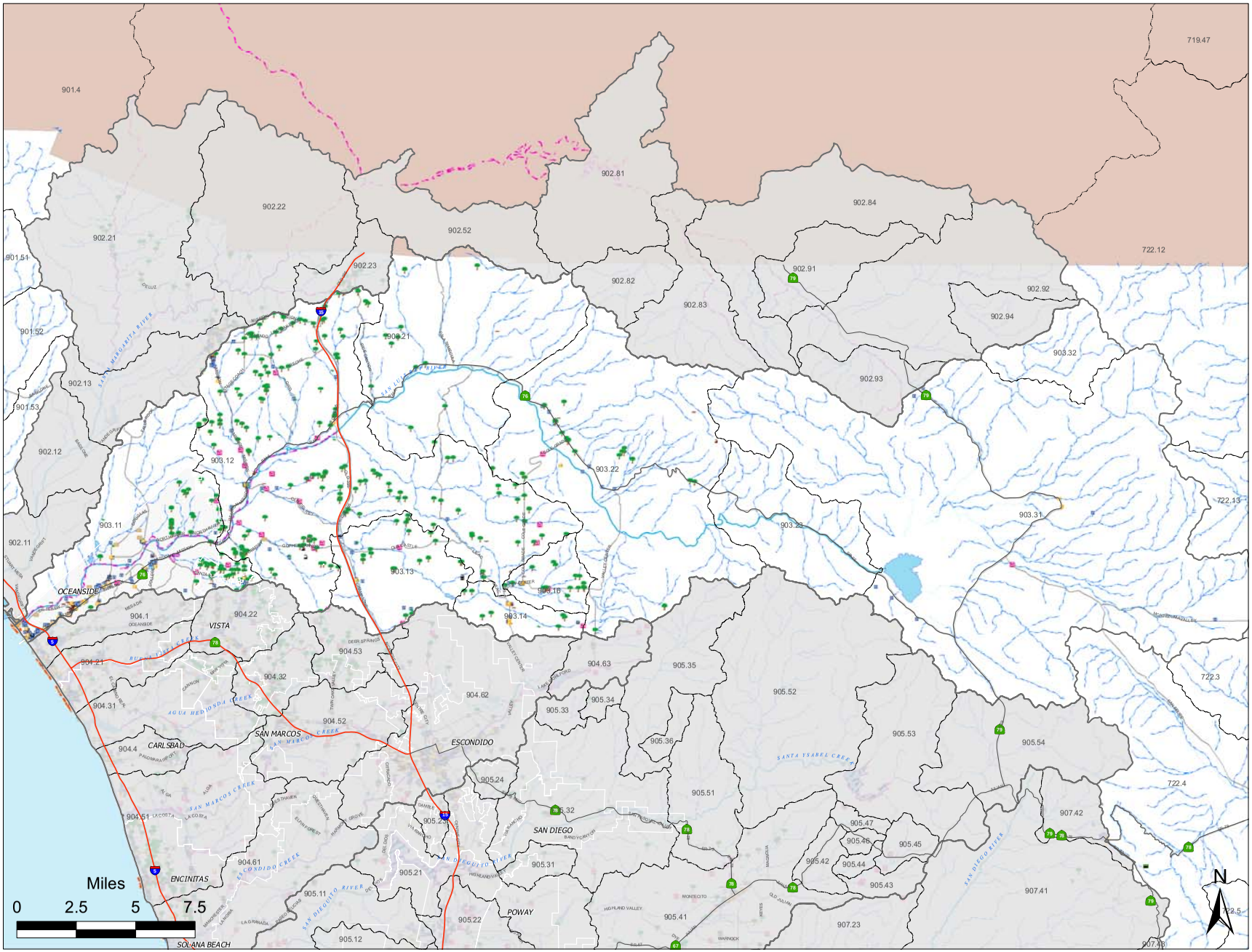

Figure 3-16. Warner Valley (903.3) HA

Nutrient Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations

Nutrients

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Golf Courses (Likely)
- Nurseries (Likely)
- Zoos (Likely)
- Auto Repair Facilities (Unknown)
- Corporate Yards (Unknown)
- Equipment Repair (Unknown)
- Food Facilities (Unknown)
- Municipal Airfields (Unknown)
- Municipal Landfills (Unknown)
- POTWs (Unknown)

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reserviors, Large Ponds
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

N

1:48,054

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

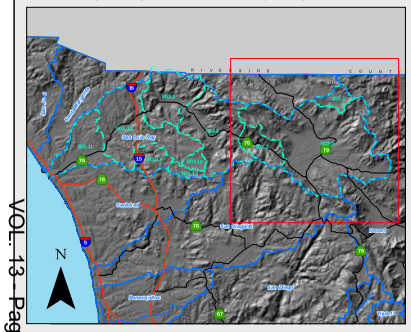

Location Map

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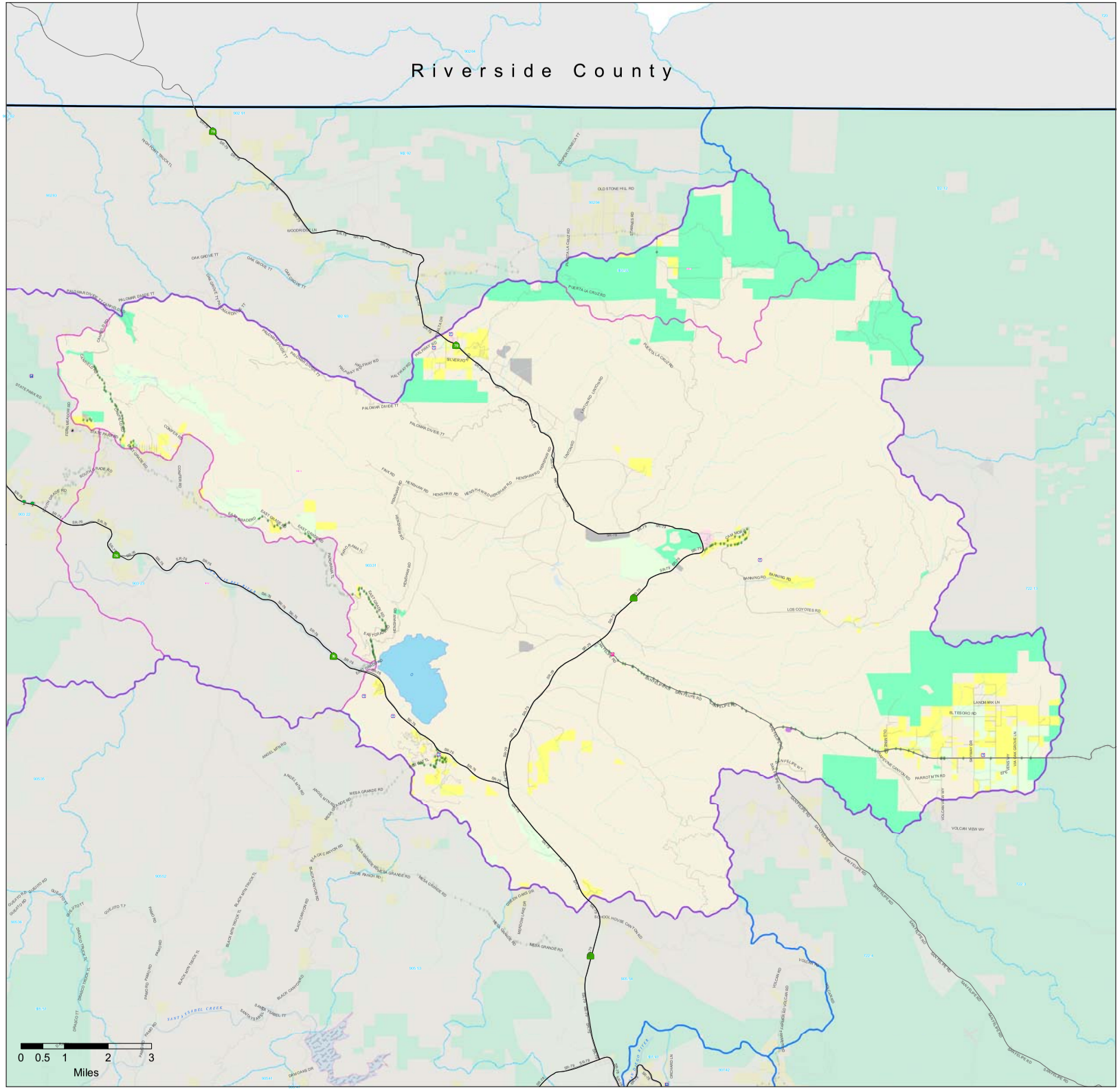

Figure 3-15

Monserate (903.2) HA

Nutrient Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations

Nutrients

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Golf Courses (Likely)
- Nurseries (Likely)
- Zoos (Likely)
- Auto Repair Facilities (Unknown)
- Corporate Yards (Unknown)
- Equipment Repair (Unknown)
- Food Facilities (Unknown)
- Municipal Airfields (Unknown)
- Municipal Landfills (Unknown)
- POTWs (Unknown)
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reserviors, Large Ponds

N

1:46,000

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

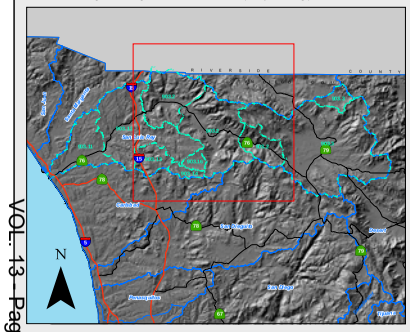

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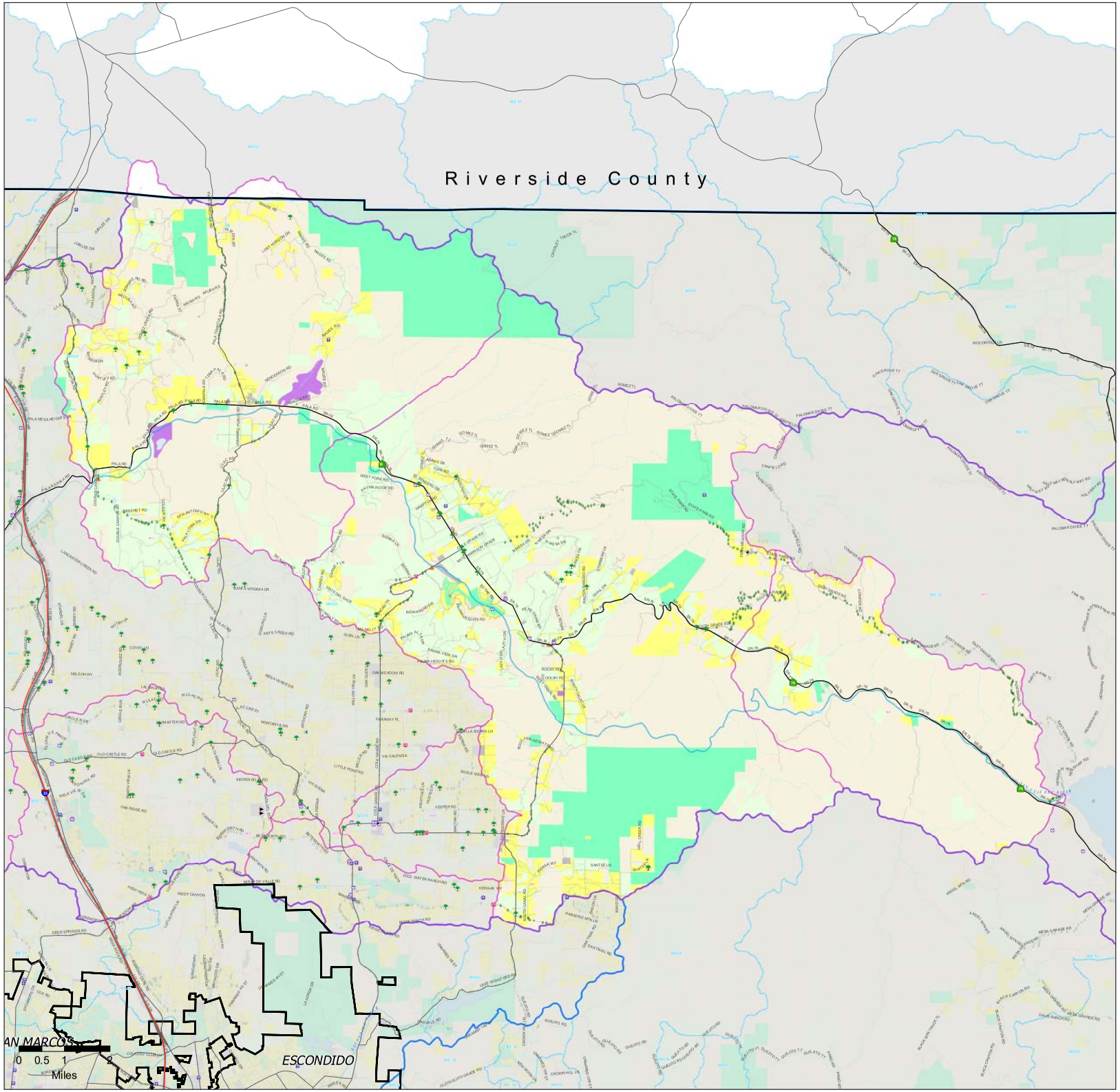

Figure 3-14
Valley Center (903.14) and Rincon (903.16) HSA's

Nutrients Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations

Nutrients

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Golf Courses (Likely)
- Nurseries (Likely)
- Zoos (Likely)
- Auto Repair Facilities (Unknown)
- Corporate Yards (Unknown)
- Equipment Repair (Unknown)
- Food Facilities (Unknown)
- Municipal Airfields (Unknown)
- Municipal Landfills (Unknown)
- POTWs (Unknown)
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reserviors, Large Ponds

N

1:12,597

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

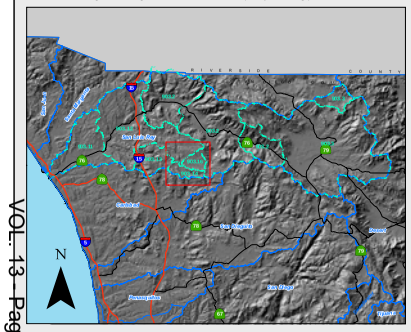

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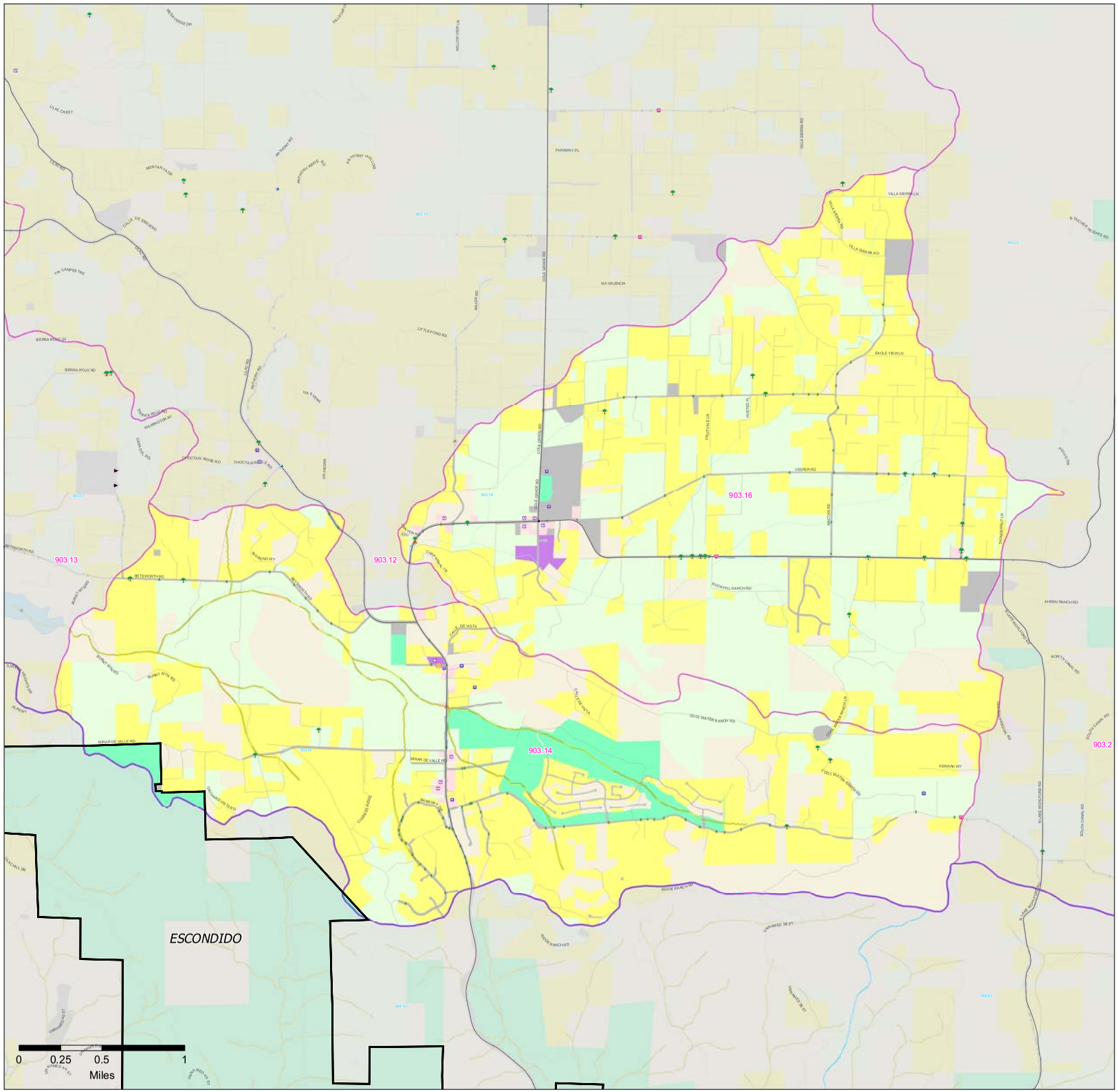

Figure 3-13 Moosa HSA (903.13)

Nutrient Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations

Nutrients

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Golf Courses (Likely)
- Nurseries (Likely)
- Zoos (Likely)
- Auto Repair Facilities (Unknown)
- Corporate Yards (Unknown)
- Equipment Repair (Unknown)
- Food Facilities (Unknown)
- Municipal Airfields (Unknown)
- Municipal Landfills (Unknown)
- POTWs (Unknown)
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reserviors, Large Ponds

N

1:12,570

Data Sources:
Land Use: SANDAG (2005); MS4: Various juridictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

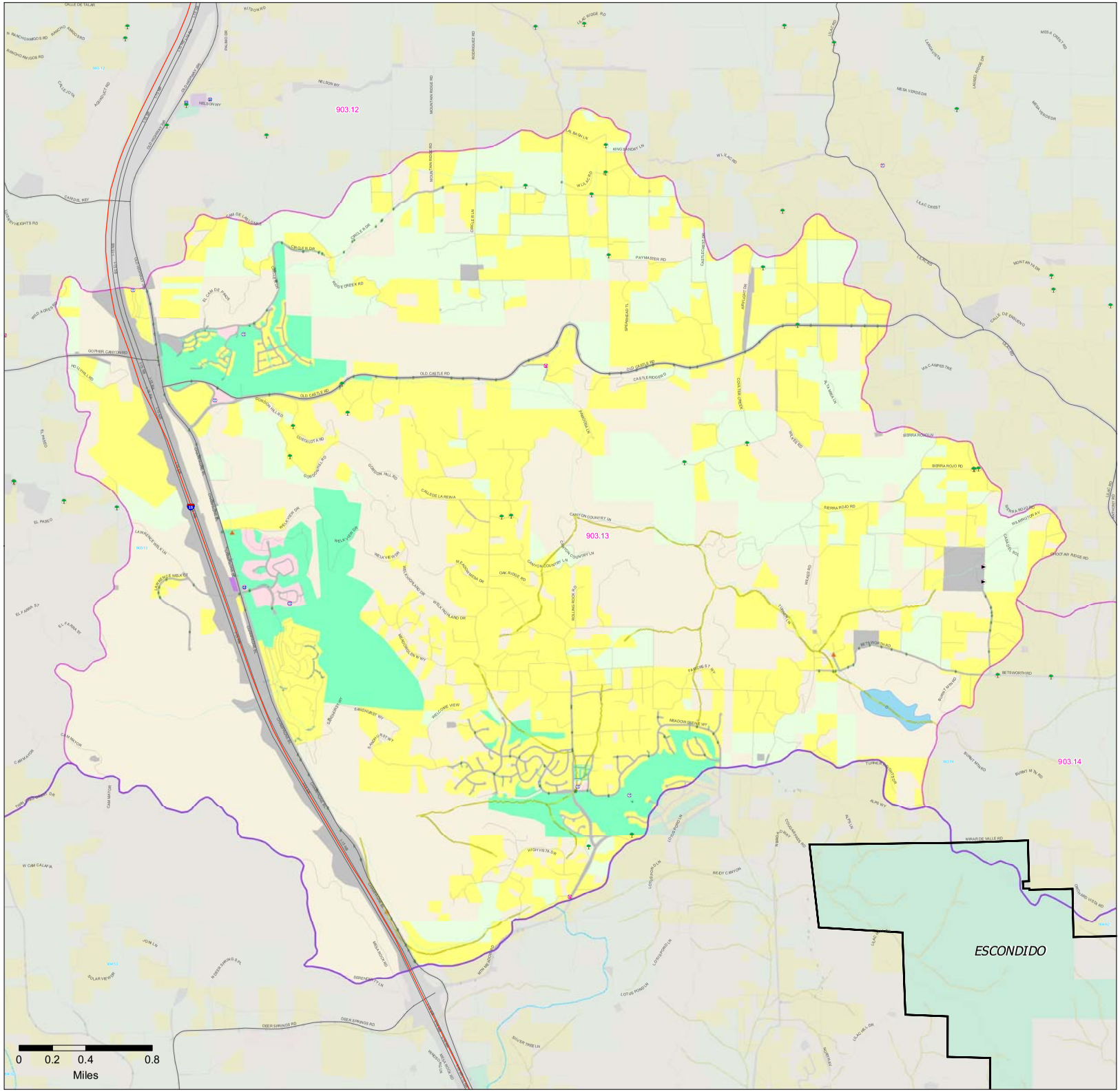

N

Location Map

County of San Diego Department of Planning and Land Use DPLU GIS

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Figure 3-12 Bonsall HSA (903.12)

Nutrient Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations

Nutrients

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Golf Courses (Likely)
- Nurseries (Likely)
- Zoos (Likely)
- Auto Repair Facilities (Unknown)
- Corporate Yards (Unknown)
- Equipment Repair (Unknown)
- Food Facilities (Unknown)
- Municipal Airfields (Unknown)
- Municipal Landfills (Unknown)
- POTWs (Unknown)
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reservoirs, Large Ponds

N

1:34,200

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

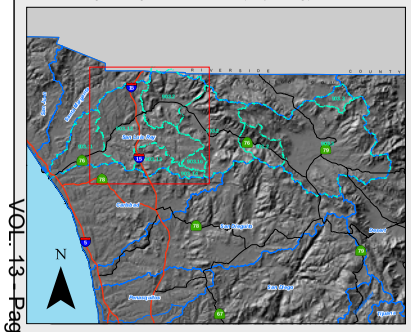

Location Map

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County of San Diego
Department of Planning and Land Use
DPLU GIS

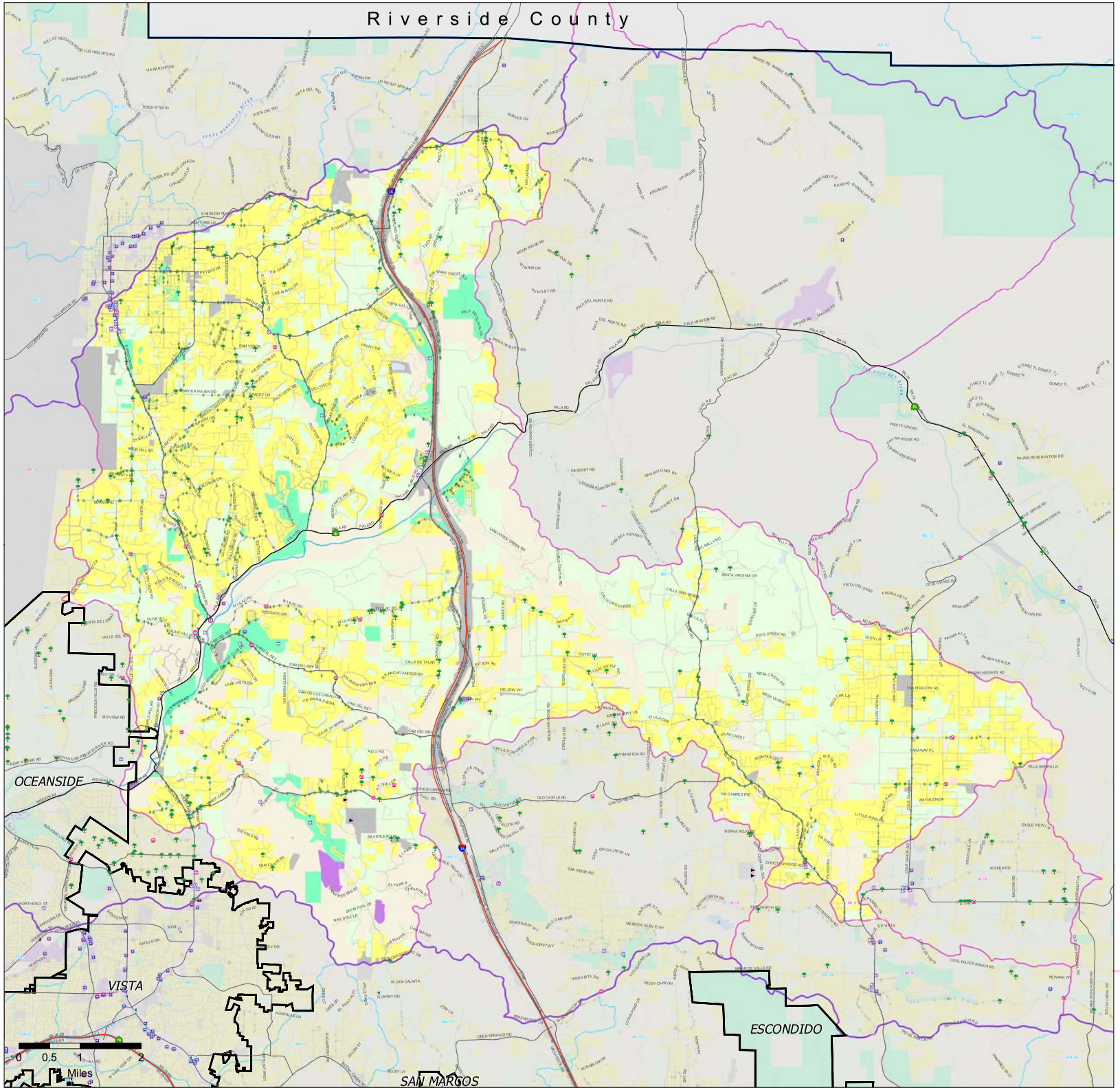

Figure 3-11 Mission HSA (903.11)

Nutrient Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations

Nutrients

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Golf Courses (Likely)
- Nurseries (Likely)
- Zoos (Likely)
- Auto Repair Facilities (Unknown)
- Corporate Yards (Unknown)
- Equipment Repair (Unknown)
- Food Facilities (Unknown)
- Municipal Airfields (Unknown)
- Municipal Landfills (Unknown)
- POTWs (Unknown)
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reserviors, Large Ponds

N

1:22,417

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

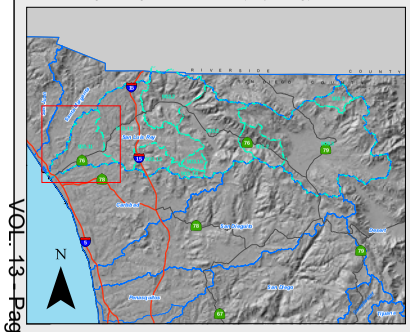

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County of San Diego Department of Planning and Land Use DPLU GIS

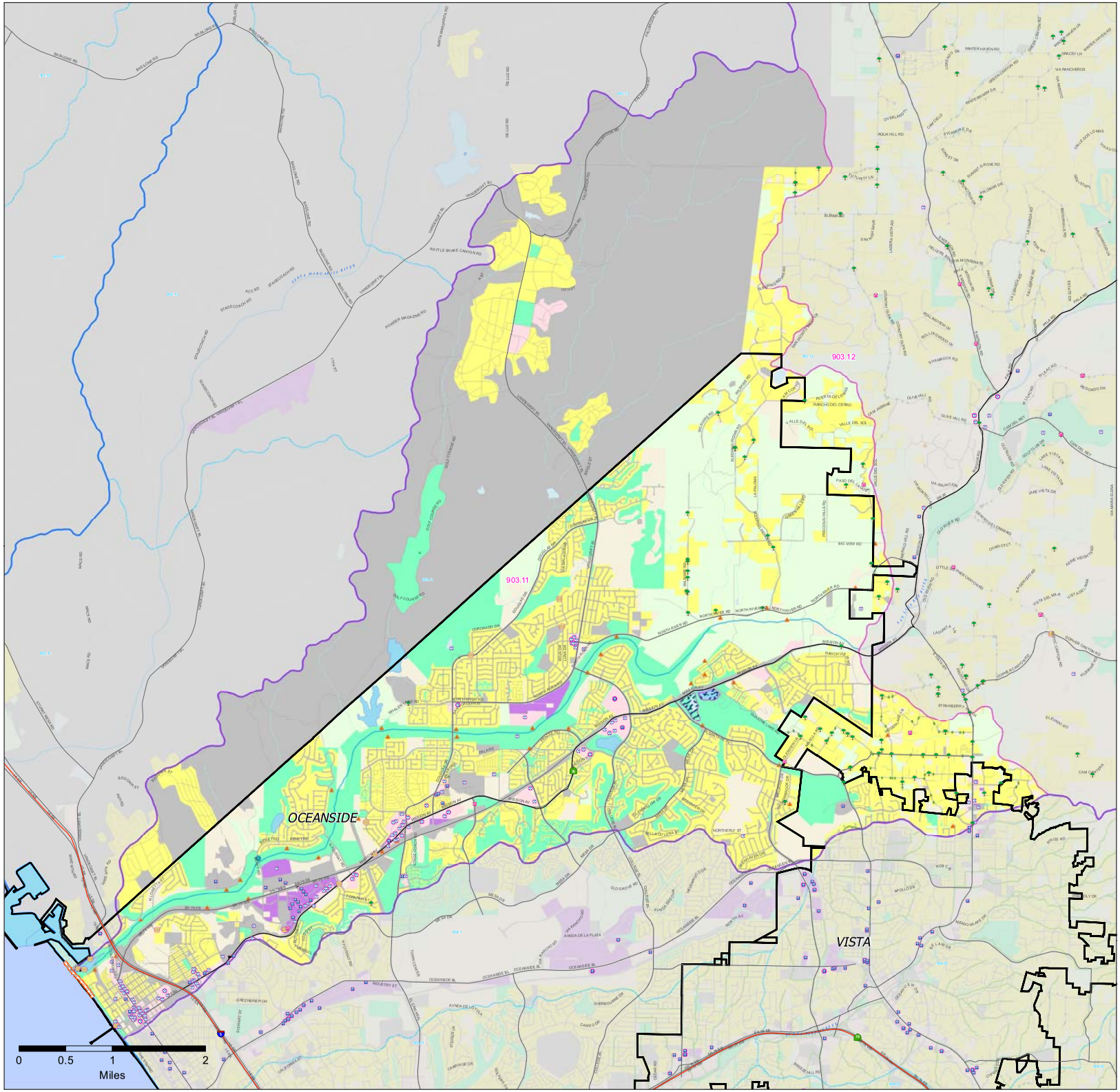

Figure 3-10

Warner Valley (903.3) HA

Bacteria Source Map

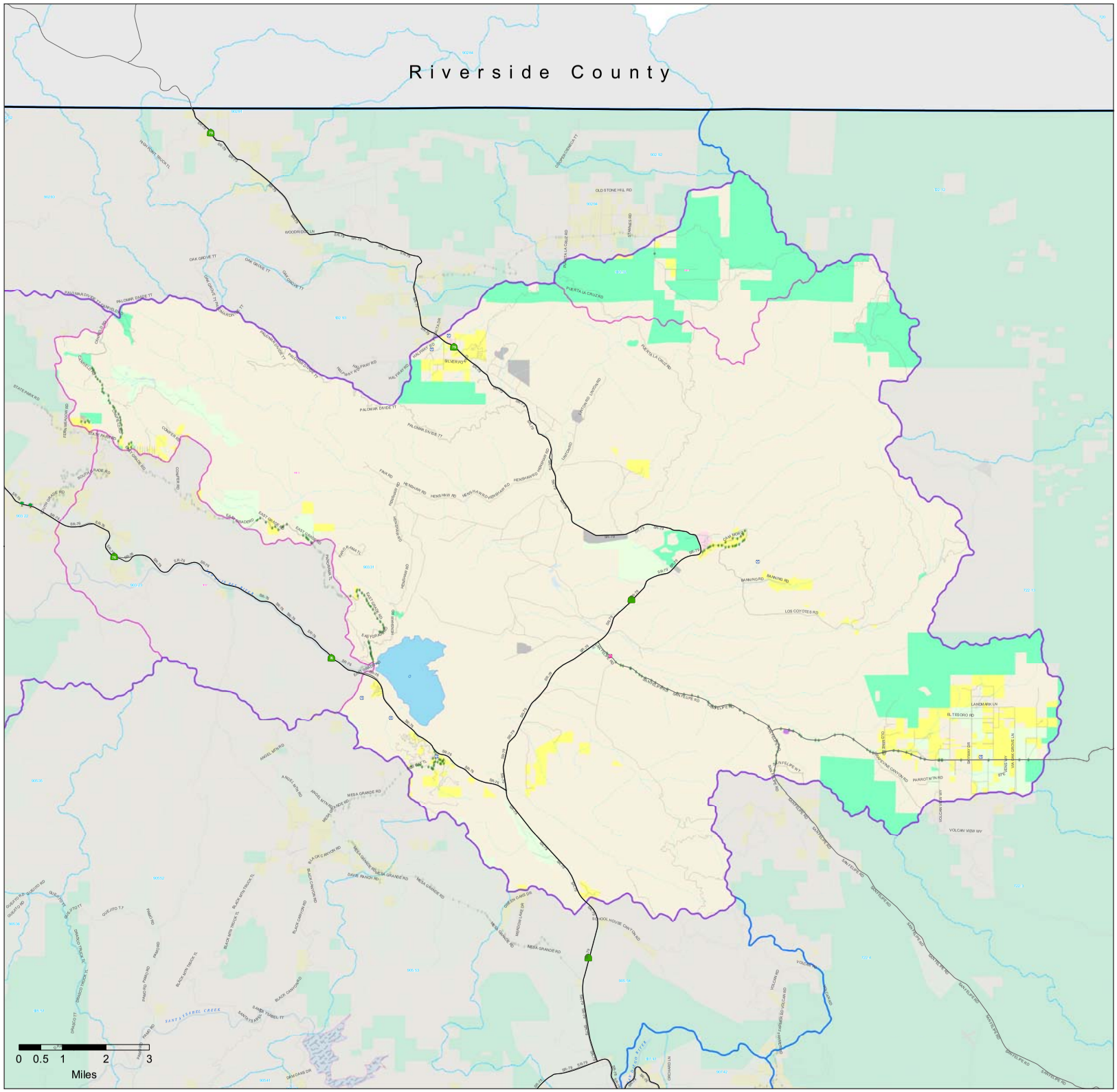

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

Bacteria

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Food Facilities (Likely)
- Golf Courses (Likely)
- Municipal Landfills (Unknown)
- Nurseries (Likely)
- POTWs (Likely)

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reserviors, Large Ponds

N

1:48,054

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

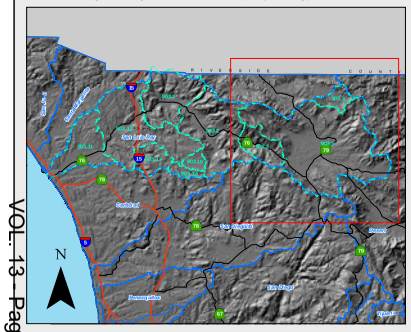

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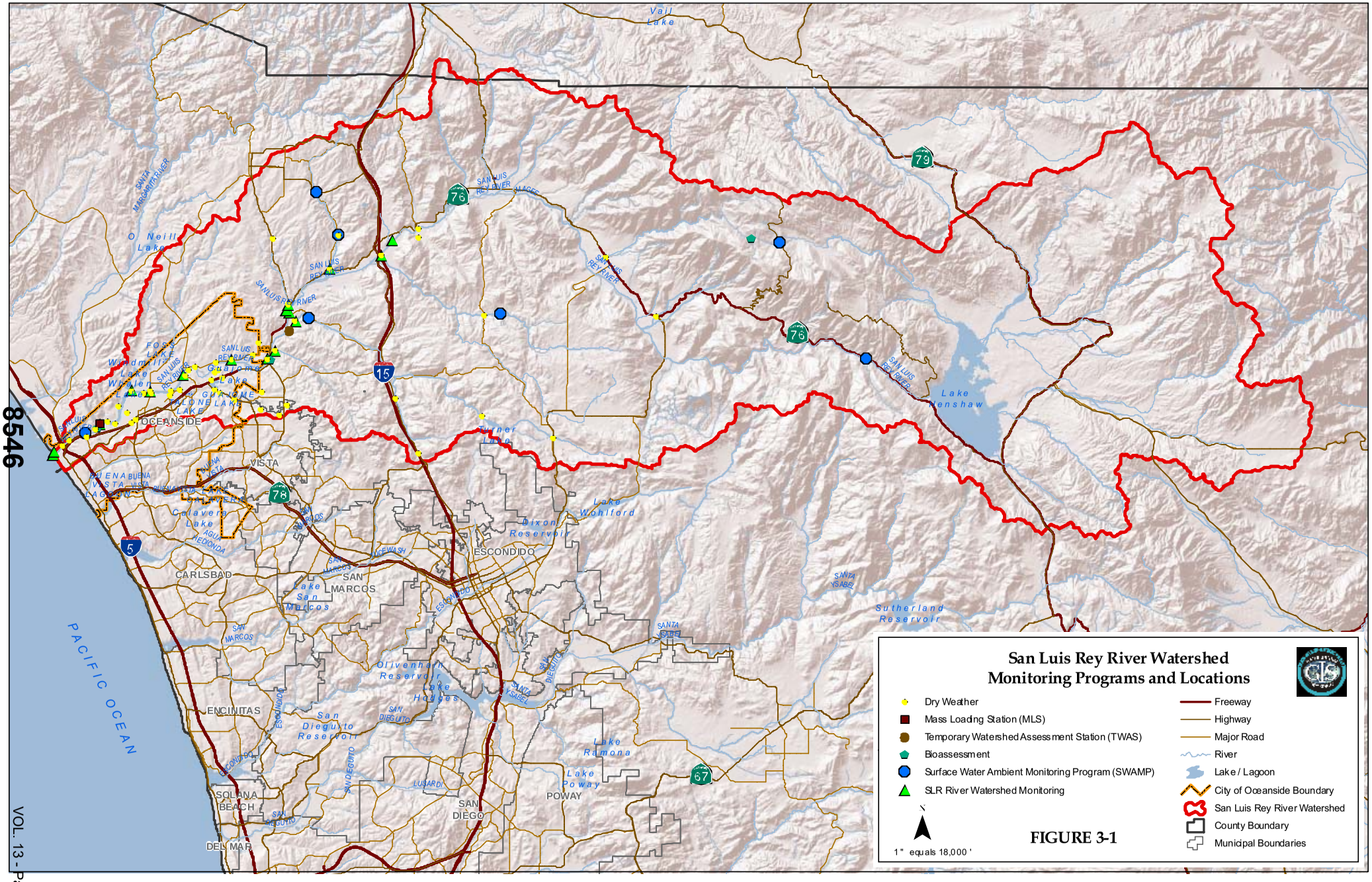
San Luis Rey River Watershed
Monitoring Programs and Locations
Dry Weather
Mass Loading Station (MLS)
Temporary Watershed Assessment Station (TWAS)
Bioassessment
Surface Water Ambient Monitoring Program (SWAMP)
SLR River Watershed Monitoring
Freeway
Highway
Major Road
River
Lake / Lagoon
City of Oceanside Boundary
San Luis Rey River Watershed
County Boundary
Municipal Boundaries
1" equals 18,000 '
FIGURE 3-1
PACIFIC OCEAN
OCEANSIDE
VISTA
CARLSBAD
ENCINITAS
SOLANA BEACH
DEL MAR
SAN MARCOS
ESCONDIDO
POWAY
SAN DIEGO
Lake Henshaw
Sutherland Reservoir
Lake Wohlford
Dixon Reservoir
Olivenhain Reservoir
Lake Hodges
San Dieguito Reservoir
Lake Ramona
Lake Poway
Lake San Marcos
Guajome Lake
Buena Vista Lagoon
Calavera Lake
Vail Lake
O Neill Lake
Turner Lake
SAN LUIS REY RIVER
SANTA MARGARITA RIVER
SAN MARCOS
ESCONDIDO
SAN DIEGUITO
SANTA ISABEL
SANTA YSABEL
LUSARDI
15
5
76
78
79
67

FIGURE 1-6 SLR RIVER WATERSHED MANAGEMENT AREA

Municipal Separate Storm Sewer System Map (MS4)

Legend

- Watershed Sub-Basins
- (MS4) Point Features
- (MS4) Linear Features
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:

MS4: Various jurisdictions (2007);
MS4 data were provided by individual Copermittees to the County of San Diego. Jurisdictional MS4 layers are in various stages of completion and have been simplified into a simple point and line symbology for the purposes of this map. Some of the MS4 layers shown are still in draft form. Gaps in the MS4 data are most likely a reflection of missing data rather than a true inventory of drainage structures in the watershed. This map is not intended for any use other than to respond to Permit section E.2.b., which requires development of a map of the WMA including MS4 features.

**303(d) Waters / Watersheds: (SWRCB). (2006)
Disclaimer:
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

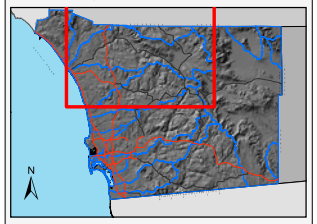

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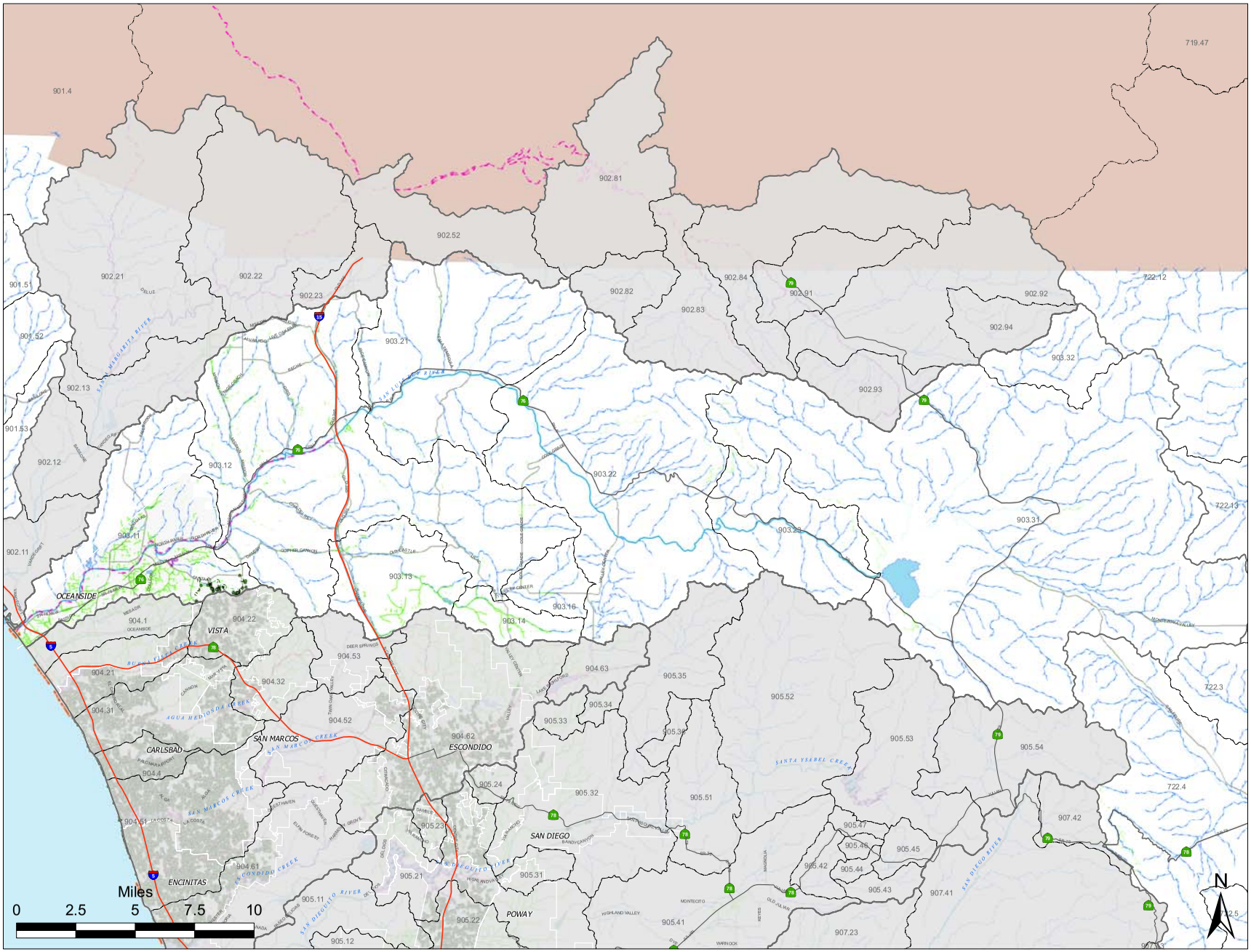

Figure 1-5. Principal Aquifers in Western San Diego County.

FIGURE 1-3. SLR RIVER WATERSHED MANAGEMENT AREA

Land Use Map

Legend

Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

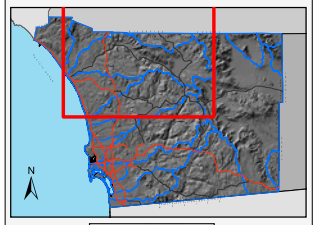

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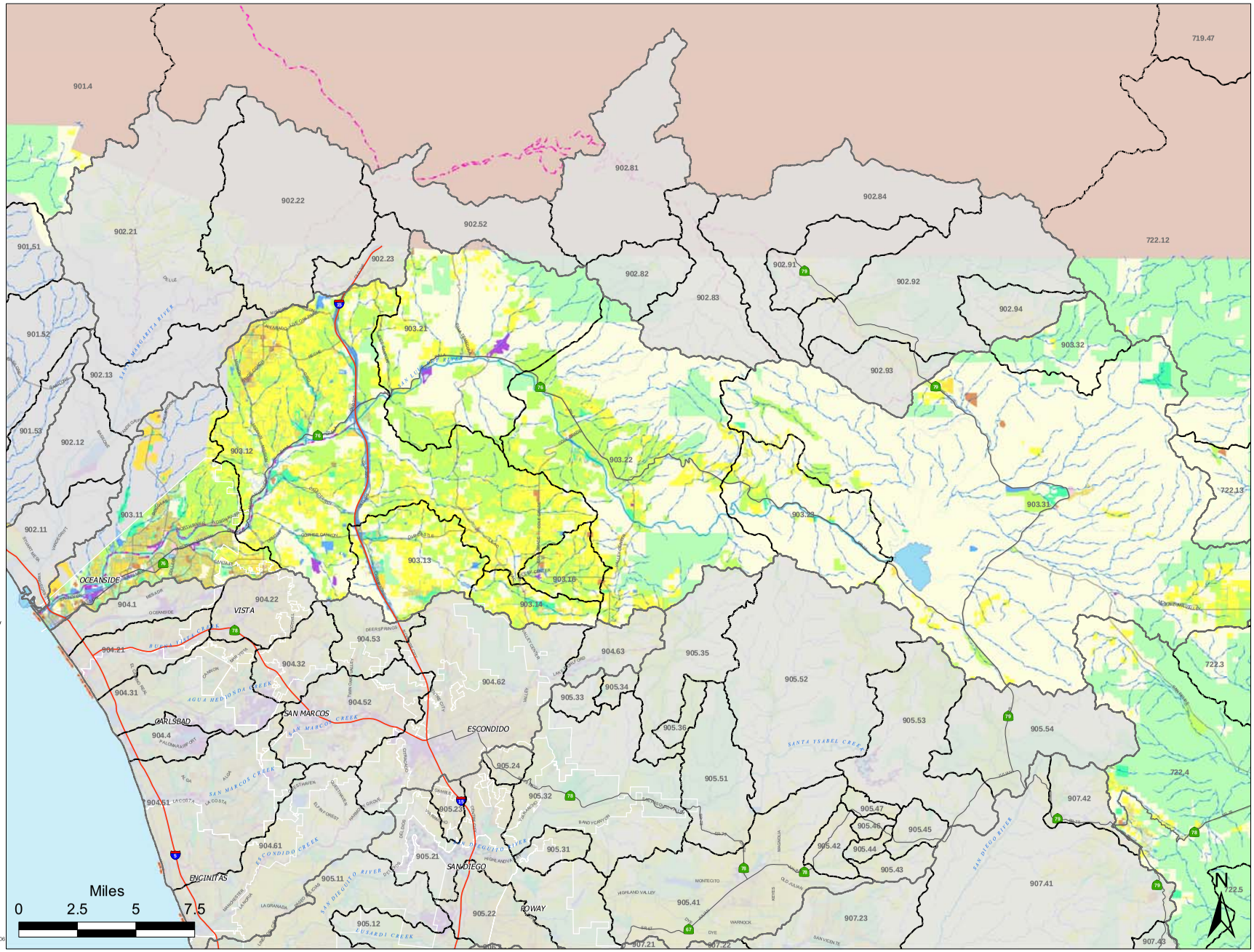

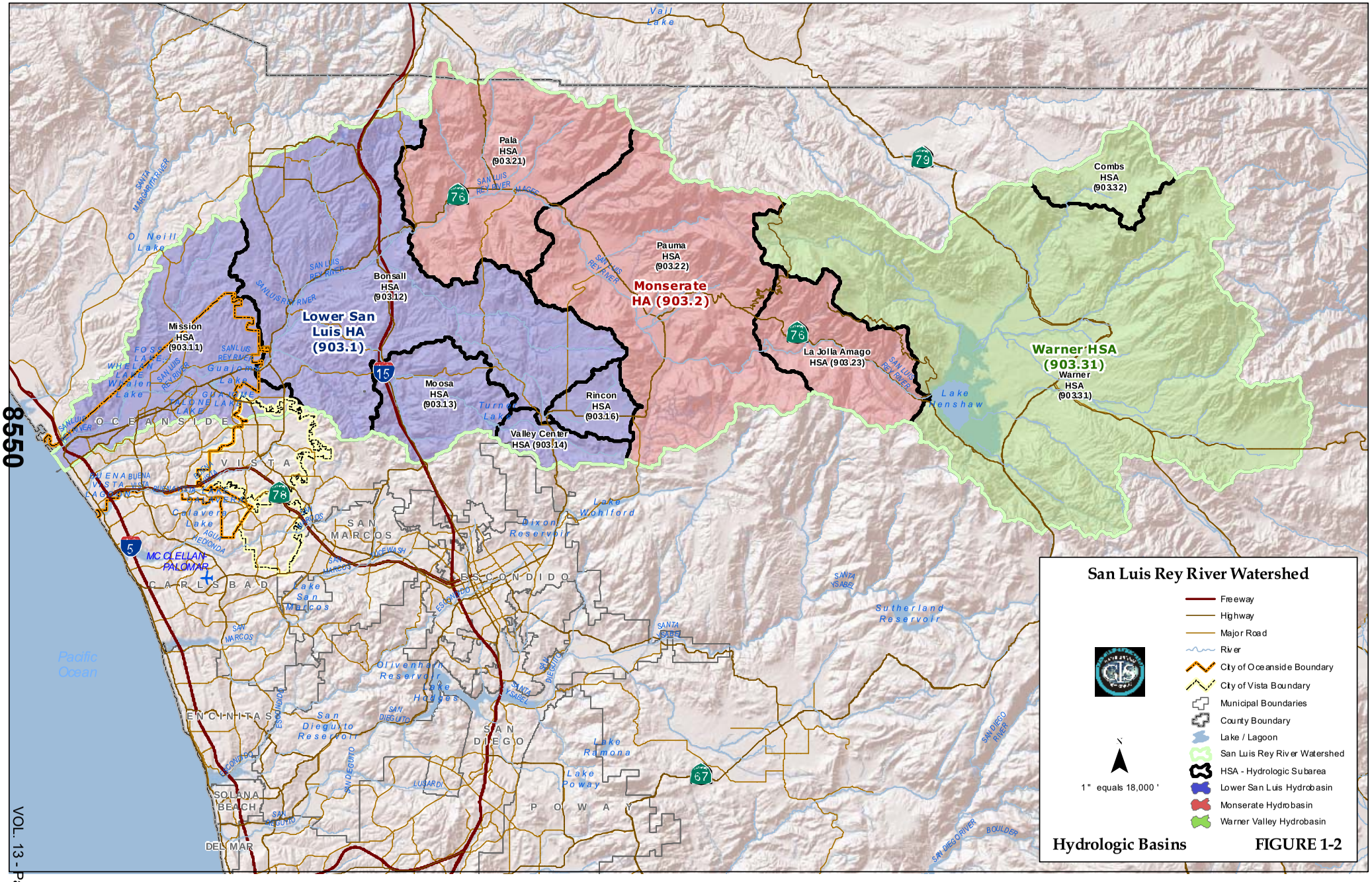
San Luis Rey River Watershed
Freeway
Highway
Major Road
River
City of Oceanside Boundary
City of Vista Boundary
Municipal Boundaries
County Boundary
Lake / Lagoon
San Luis Rey River Watershed
HSA - Hydrologic Subarea
Lower San Luis Hydrobasin
Monserate Hydrobasin
Warner Valley Hydrobasin
1" equals 18,000 '
Pala HSA (903.21)
Pauma HSA (903.22)
Monserate HA (903.2)
Combs HSA (903.32)
Bonsall HSA (903.12)
Lower San Luis HA (903.1)
Mission HSA (903.11)
Moosa HSA (903.13)
Rincon HSA (903.16)
Valley Center HSA (903.14)
La Jolla Amago HSA (903.23)
Warner HSA (903.31)
Warner HSA (903.31)
Lake Henshaw
Vail Lake
O Neill Lake
Guajome Lake
Lake Wohlford
Dixon Reservoir
Sutherland Reservoir
Olivenhain Reservoir
Lake Hodges
San Dieguito Reservoir
Lake Ramona
Lake Poway
Lake San Marcos
Calavera Lake
Pacific Ocean
OCEANSIDE
VISTA
SAN MARCOS
CARLSBAD
ESCONDIDO
ENCINITAS
SAN DIEGO
POWAY
SOLANA BEACH
DEL MAR
MCCLELLAN PALOMAR
Hydrologic Basins
FIGURE 1-2

Figure 3-9

Monserate (903.2) HA

Bacteria Source Map

Pollutant Source Inventory

- Hydrologic Areas (903)
- Watersheds
- Hydrologic Sub-Areas
- Lakes
- Rivers
- Creeks
- Bays - 303(d) Waters
- Estuaries - 303(d) Waters
- Lakes - 303(d) Waters
- Coastal Bays and Shorelines - 303(d) Waters
- Rivers - 303(d) Waters
- Incorporated Area
- Dry Weather Monitoring Stations
- Wet Weather Monitoring Stations
- (MS4) County Culverts- RGP53
- (MS4) County Channels- Pipes

Bacteria

- Likely
- Unknown
- Animal Facilities (Likely)
- Cemeteries (Likely)
- Food Facilities (Likely)
- Golf Courses (Likely)
- Municipal Landfills (Unknown)
- Nurseries (Likely)
- POTWs (Likely)

SANDAG 2005 Land Use*

- Spaced Rural Residential; Residential; Mobile Home Parks
- Commercial and Office
- Heavy Industry, Industrial Parks, Extractive Uses
- Institution; Military; Transportation, Communication, Utilities
- Parks, Beaches,Tourism, Racetracks, Golf Courses, Other Rec.
- Orchards, Vineyards, Intensive Agriculture, Field Crops
- Vacant and Under Construction
- Bay, Lakes, Reservoirs, Large Ponds

N

1:46,000

Data Sources:
Land Use: SANDAG (2005); MS4: Various jurisdictions; 303(d) Waters / Watersheds: National Hydrographic Dataset (2003)
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego)

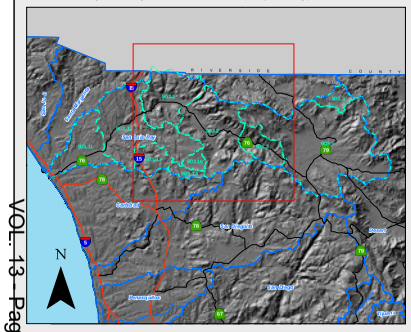

Location Map

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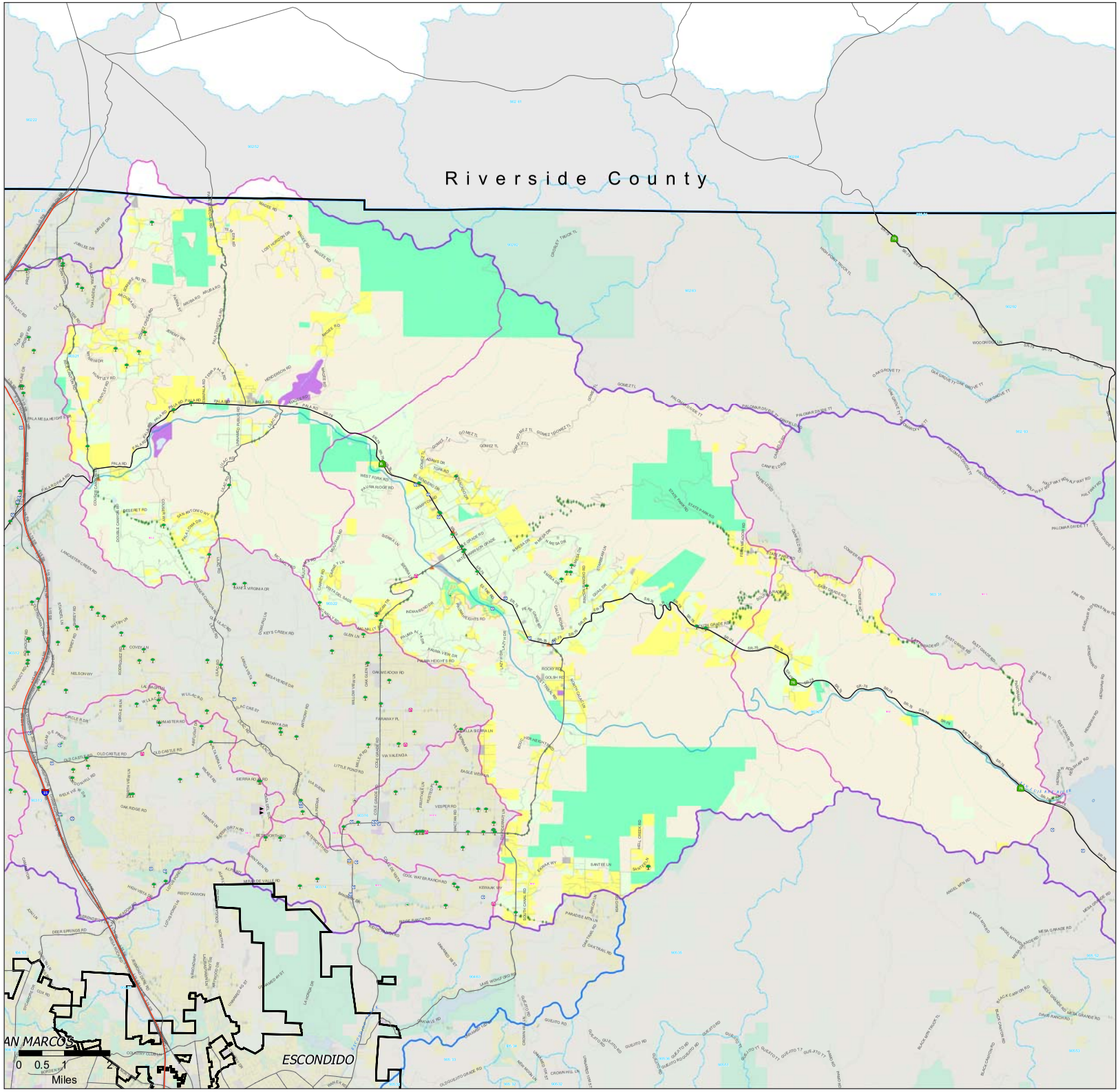

Appendix B

Watershed Activity Summary Sheets

2008 San Luis Rey WURMP

Table 4-1. Five-Year Strategic Plan

SAN LUIS REY RIVER WATERSHED	HA			Priority Pollutant		Implementation Schedule						
	903.1	903.2	903.3	Bacteria	Nutrients	FY 07-08			FY 08-09			FY 2010 through FY 2012
Watershed Activities Planned for Implementation in FY 07-08 and FY 08-09												
SLR-001: SLR Watershed Water Quality Monitoring Program	x			x	x	M			M			This program will continue through FY08/09
SLR-002: Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall	x			x		WQ						
SLR-003: Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	x			x					WQ			
SLR-004: Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail	x			x		WE			WQ	WE		
SLR-005: Pet Waste Bag Dispenser Program in County Parks	x			x		WQ			WQ			This activity will continue throughout the Permit cycle
SLR-006: Agricultural and Nursery Operations Runoff Assessment & Monitoring Program	x	x	x	x	x	M			M			
SLR-007: Water Quality Runoff Management and Agricultural Waiver Workshop	x	x	x	x	x	WE						This workshop will be conducted every two years
SLR-008: Guajome Lake Water Quality Monitoring Program	x			x	x	M			M			This activity will be reevaluated after FY 08-09
SLR-009: Nutrient Source Identification and Abatement: Guajome Lake	x				x	M	S		M	S		Future activity will be assessed based on program results
SLR-010: Lower SLR River Bacteria Source Tracking Study	x			x		M	S		M	S		
SLR-011: LID & Watershed Planning Education for Community Planners & Sponsor Groups	x	x	x	x	x	WE			WE			Completion is anticipated in FY 08-09
SLR-012: Land Acquisitions	x			x		WQ			*			* Unable to project land acquisitions in advance
Potential Future Activities												
SLR River Bacteria BMP Implementation	x			x		N/A						Contingent upon funding for prirotized BMPs
Pet Waste BMP Implementation Along SLR Recreation Trail	x			x								This project will continue as funding is secured
Restaurant Activity	x			x								Based upon results from pilot project implemented in Encinitas
Stormwater Quality Master Plans for Special Drainage Fee Areas												Contingent upon SDA fee increse in 2009
San Luis Rey River Park	x			x	x							

WQ = Watershed Water Quality Activity
WE = Watershed Education Activity
PP = Watershed Public Participation Activity
LU = Watershed-based Land Use Planning Activity

WQ = Watershed Water Quality Activity (not in active implementation)
WE = Watershed Education Activity (not in active implementation)
M = Watershed Water Quality Monitoring Activity
S = Source ID/Characterization Activity
D = Watershed Data Management/Assessment Activity
O = Other Watershed Activity

Watershed Activity Summary Sheets

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **San Luis Rey Watershed Water Quality Monitoring Program**

ID NUMBER: **SLR-001**

ACTIVITY DESCRIPTION

A primary component of the San Luis Rey WURMP is to identify and characterize the constituents of concern adversely affecting water quality in the San Luis Rey River Watershed. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program in 2004 consisting of both field observations and field and analytical water quality sampling. This activity was developed collaboratively by the Watershed Copermittees within the San Luis Rey Watershed.

The activity includes the following tasks to be performed by the Watershed Copermittees:

- Update the monitoring plan as needed.
- Implement monitoring plan with field and laboratory analyses of constituents.
- Collect, compile, and analyze data.
- Prepare an annual written report including conclusions and recommendations.

A description of the monitoring program, including sampling locations, procedures, and analyses is included as Attachment A to the FY 2006-07 San Luis Rey WURMP Annual Report.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring activities will be conducted at least quarterly and will continue through FY 08-09. The program will be reevaluated for continued relevance in future years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the Mission HSA (903.11). This monitoring program is therefore consistent with the strategy.

EXPECTED BENEFITS

The expected benefit of this activity is to identify and characterize the constituents of concern adversely affecting water quality in the San Luis Rey River Watershed. This activity will provide useful information for the purpose of developing future program activities.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by confirming completion of the monitoring program described above (Level 1). The water quality monitoring data collected as part of this activity may be useful for assessing changes in receiving water quality over time (Level 6).

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Low Impact Development and Watershed Planning Education for Community Planning and Sponsor Groups**

ID NUMBER: **SLR-011**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the San Luis Rey Watershed include:

- Bonsall
- Fallbrook
- North Mountain/Palomar Mountain
- Pala-Pauma
- Valley Center
- Twin Oaks (North County Metro)
- Hidden Meadows (North County Metro)

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcomes). The County will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2 Outcome).

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Lower San Luis Rey River Bacteria Source Tracking Study**

ID NUMBER: **SLR-010**

ACTIVITY DESCRIPTION

This project will identify sources of bacterial contamination in the Lower San Luis Rey River and San Luis Rey River mouth and recommend appropriate actions and activities to eliminate the input of those bacterial sources.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring will begin in the summer of 2008 and continue through the summer of 2009. The final report including results and BMP recommendations will be completed by March 2010. Planning, implementation and assessment of recommended BMPs and/or activities to reduce or eliminate the bacterial sources will be done in subsequent years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

A private consulting firm will be contracted to complete the work required under the grant. In addition, CoastKeeper and the Regional Water Quality Control Board will provide a staff person to serve on the TAC. The TAC members will offer oversight and guidance in the development, implementation, and reporting of the study.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity will identify the bacterial sources of contamination and provide recommendations for potential Best Management Practices to reduce or eliminate bacteria sources in the Lower San Luis Rey River and at the river mouth. Once these recommendations have been developed, planning, implementation, and assessment of BMPs will be conducted.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Because the sources of bacterial contamination in the Lower San Luis Rey River are not adequately characterized, characterization in the form of a source identification study is consistence with the collective watershed strategy. The City of Oceanside submitted and was awarded funding to implement this study. Once the sources have been better characterized, the City will move forward with developing and implementing BMPs to reduce and eliminate the bacterial source to the maximum extent practicable.

EXPECTED BENEFITS

This activity will identify BMPs to reduce and eliminate bacterial loads to the San Luis Rey River. Project goals and desired outcomes are as follows: Assess and prioritize where and what sources and activities have contributed to bacterial impairment; contribute to future achievement of bacterial TMDL objectives by identifying current bacteria loads and effectively targeting sources and identifying BMPs and Management Measures; lead to future development of source-specific and watershed-wide bacterial source reduction management options capable of meeting TMDL implementation targets; future reduction of bacterial levels.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this activity will be determined by the identification of bacterial sources contributing to water quality impairments. In addition, a list of BMPs developed as a result of this project will determine the effectiveness of the overall study.

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Nutrient Source Identification and Abatement: Guajome Lake**

ID NUMBER: **SLR-009**

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) will collaborate on a project to identify and abate the source(s) of elevated nutrient levels entering Guajome Lake. Nitrate concentrations have been observed to exceed dry weather action levels at the County's SLR 04 dry weather monitoring station (Hutchinson Street at Hidden Lake Lane) since 2002. Guajome Lake is listed as impaired for eutrophication on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. Phosphorous is another nutrient potentially contributing to this problem. To date, follow up investigations conducted as part of the County's illicit discharge detection and elimination program have yielded little definitive information about the source(s) of this problem. This activity will consist of intensified water quality monitoring, source identification, inspection, education, and enforcement as determined necessary.

Planned tasks include:

- Compile an inventory and map of potential nitrate sources in the SLR 04 drainage area.
- Compile baseline information on BMP implementation and compliance history for nurseries within the SLR 04 drainage area.
- Perform frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04
- Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conduct targeted inspections as necessary to abate sources of nitrates.
- Conduct targeted education activities as necessary to abate sources of nitrates.
- Conduct enforcement activities as necessary to abate sources of nitrates.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL. However, Guajome Lake is listed as impaired for eutrophication on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development by 2019.

TIME SCHEDULE FOR IMPLEMENTATION

The proposed implementation schedule below is tentative subject to changes based on results obtained over the course of the project or unforeseen changes in departmental staffing or budgets.

Planned Tasks	FY 07-08	FY 08-09
Compile an inventory and map of potential nutrient sources in the SLR 04 drainage area.	X	
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	X	
Perform frequent water quality screenings for nutrients and other parameters at SLR 04	X	X
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Mission HSA (HSA 903.11) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EXPECTED BENEFITS

This project is expected to provide a better understanding of the source(s) of nutrients entering Guajome Lake upstream of the SLR 04 dry weather monitoring station. If it is determined that the contributing sources are subject to the County's Watershed Protection Ordinance, this activity is expected to improve BMP implementation and eliminate illicit discharges through a combination of inspection, education, and enforcement actions. It is possible that non-point sources, including resurfacing groundwater, are responsible for the elevated nutrient levels observed at SLR 04. If this is found to be the case, the County may be limited in its ability to address the problem at this location. Regardless, this activity will provide useful information for the purpose of developing future program activities.

EFFECTIVENESS MEASUREMENTS

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the SLR 04 drainage area.	1	Completion	Yes / No
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes / No
Perform frequent water quality screenings for nutrient and other parameters at SLR 04	1	4 field screenings / yr at SLR 04	# field screenings / yr at SLR 04
	6	Reduction in exceedances of dry weather action level for nitrates measured at SLR 04 by 2012	% reduction in exceedances of dry weather action level for nitrates measured at SLR 04 by 2012
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the SLR 04 drainage area by June 2009	% of nurseries inspected in the SLR 04 drainage area by June 2009
	3	Reduction in nursery BMP violations observed during nursery inspections in the SLR 04 drainage area by 2010	% change in nursery BMP violations observed during nursery inspections in the SLR 04 drainage area by 2010
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the SLR 04 drainage area by 2012	% change in stormwater knowledge assessment surveys administered to nursery staff in the SLR 04 drainage area by 2012

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Guajome Lake Water Quality Monitoring Program**

ID NUMBER: **SLR-008**

ACTIVITY DESCRIPTION

The County of San Diego is implementing a monitoring program to assess the contribution of urban runoff (specifically nutrients) to the eutrophication of Guajome Lake. On January 7, 2005 a joint reconnaissance of the Guajome Lake area was conducted with the City of Oceanside, the County Department of Agriculture, Weights, & Measures (AWM), the County Department of Parks and Recreation (DPR), and the County Department of Public Works (DPW). All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, seven locations in the northern subbasin were monitored and two of those were selected as long-term monitoring sites. They included the East Channel Creek at Hutchison Street and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL2 is located in the middle of the subbasin and is co-located with the County of San Diego's dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities.

The Guajome Lake water quality monitoring component includes the following tasks:

- Collection of samples to investigate ongoing contribution of nutrients to the lake
- Analysis of sampling results
- Identification of potential sources of phosphorous and nitrogen
- Preparation of a written report with conclusions and recommendations.

Study methods and results to date are described in detail in Attachment D of the FY 2006-07 WURMP Annual Report. A map of the two monitoring locations is shown below.

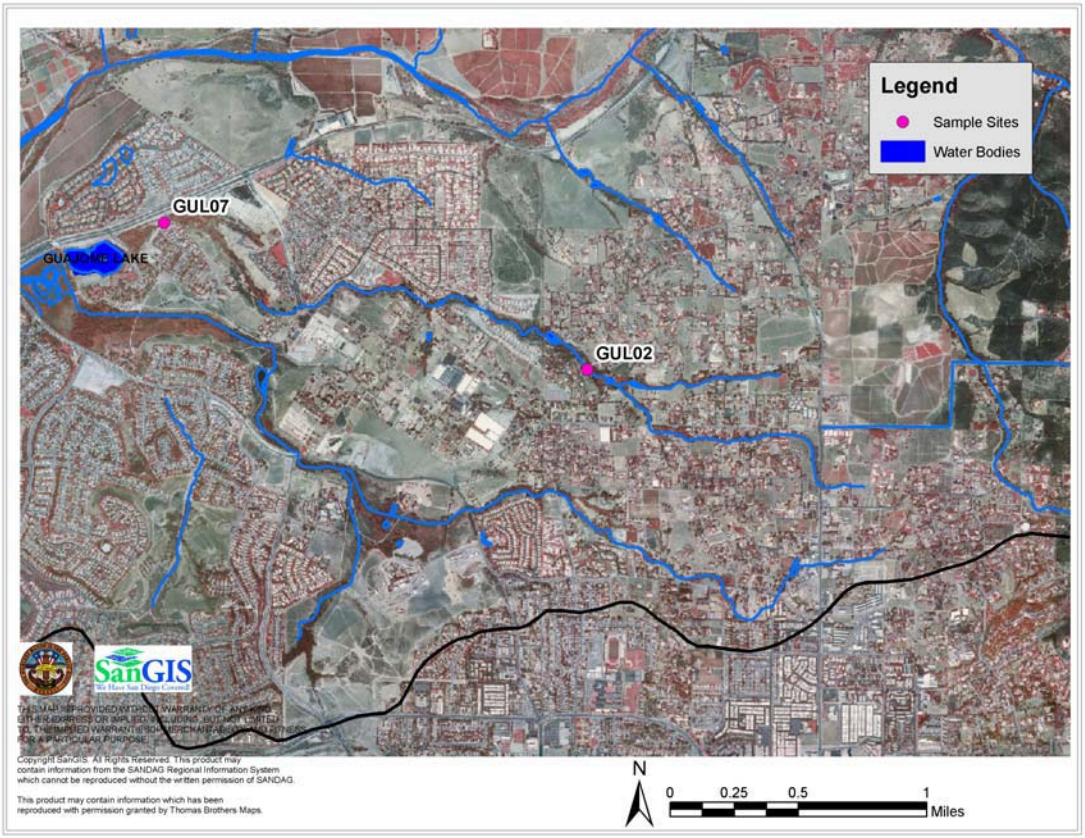

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program. The 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments identifies Guajome Lake as impaired due to eutrophication.

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring will be conducted approximately monthly.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients as a high priority water quality problem in the San Luis Rey WMA. This nutrient monitoring program is therefore consistent with the strategy.

EXPECTED BENEFITS

This activity is expected to better characterize urban runoff potentially contributing to the eutrophication problem in Guajome Lake. Preliminary investigations into land uses have also identified potential phosphorus and nitrogen sources to include residential areas, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources will continue.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming that monitoring is conducted as planned (Level 1). Results will be assessed over time to track any discernible changes in discharge and receiving water quality (Levels 5 and 6).

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses**

ID NUMBER: **SLR-007**

ACTIVITY DESCRIPTION

This free education workshop will target nurseries and agricultural businesses and provide owners and operators of a better understanding of water quality runoff management and how the conditional agricultural waiver for discharges will affect their operations. This workshop is being conducted to keep growers and operators updated on runoff regulations, available resources to address any runoff and stormwater related issues and to share information on how to conduct a site self-assessment prior to inspections. Growers from north San Diego County watersheds are invited to attend, including San Luis Rey, San Dieguito and the Carlsbad Hydrologic Unit. This workshop will typically be held every two years. The City of Oceanside will secure speakers, develop workshop announcement materials and moderate the workshop. Other co-permittees will assist with information dissemination to constituents within their jurisdictions and provide additional support during the workshop.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

The educational workshop will be conducted during the 2007-08 fiscal year and every two years thereafter.

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad
- City of Encinitas
- City of Escondido
- City of Oceanside
- City of Poway
- City of San Marcos
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- County of San Diego, Agriculture Weights and Measures Division
- US Department of Agriculture, Natural Resources Conservation Service
- University of California Cooperative Extension
- Regional Water Quality Control Board
- San Diego County Farm Bureau
- Upper San Luis Rey Resource Conservation District
- Henry's Farmers Market

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This watershed education activity was selected beginning with a baseline watershed evaluation which incorporated water quality data and pollutant source information. Watershed Copermittees determined that the nursery and agricultural operations can contribute the above mentioned pollutants to the receiving waters. Thus, this workshop is designed to provide nursery and agricultural owners and operators with the tools they need to implement BMPs to reduce and eliminate polluted runoff from their operations. This workshop is hopefully the catalyst to implementing structural and operational BMPs at these facilities.

EXPECTED BENEFITS

This workshop will increase knowledge of growers by providing updated runoff regulations, information about the new agricultural waiver that became effective in 2008, how to conduct a site self-assessment to determine any runoff issues and the financial resources available to implement best management practices applicable to their operations.

EFFECTIVENESS MEASUREMENTS

This workshop is designed to educate the agriculture industry in coming into compliance with permit requirements (Level 1) and increase their knowledge and awareness of runoff related issues (Level 2). Three assessments will be used to determine the effectiveness of the workshop:

- Attendance goal.
- Score increase for pre- and post-quizzes.
- Number of businesses conducting a self site-assessment.

The attendance goal for this workshop is to have at least one representative from 20 north San Diego County agricultural operations. A short quiz will be provided to each attendee prior to the start of the meeting to assess their knowledge on topics being addressed by the speakers. The same quiz will be provided after the completion of all speakers. The quizzes will be analyzed with the goal increased in knowledge of issues related to water quality runoff management and the agricultural waiver. A self site-assessment form will be provided to each business in attendance. These businesses will be polled during the next six months to determine if the self site-assessment was conducted.

Planned Tasks	Targeted Outcome	Assessment Measures
Compile attendance list	20 businesses represented	# represented
Conduct pre- and post-quizzes	Knowledge increase	% knowledge increase
Conduct Self Site-Assessment	25% of attendees within six months of workshop	% of attendees conducting self-site assessment

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Agricultural and Nursery Operations Runoff Assessment and Monitoring Program**

ID NUMBER: **SLR-006**

ACTIVITY DESCRIPTION

The northeast area of Oceanside has a high concentration of nursery and agricultural operations that are potential sources of associated pollutants (according to the BLTEA) including organics, sediment, pesticides, nutrients and bacteria. This activity will conduct water quality monitoring upstream and downstream of agricultural and nursery operations to assess the impacts to water quality during dry and wet weather. Results will be used to prioritize and recommend Best Management Practices to agricultural and nursery operations to reduce and eliminate potentially contaminated runoff to the San Luis Rey River.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

This activity is scheduled to begin in 2007-08 with commitment from voluntary and non-voluntary growers and nurseries. A list of BMPs specific to each operation will be developed in cooperation with the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS), the UC Cooperative Extension, and the Farm Bureau. Implementation of those BMPs will occur in subsequent years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- US Department of Agriculture, Natural Resources Conservation Service
- University of California Cooperative Extension
- San Diego County Farm Bureau

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Through the City's Dry Weather Monitoring Program and subsequent WURMP monitoring activities, it has been observed that areas within the City with heavy agricultural use have elevated nutrient and bacteria levels in the runoff to the San Luis Rey River. However, the specific sources have gone uncharacterized. The next step in the collective watershed strategy is to characterize the sources. To characterize the source(s) of the potential contamination, the City has built a relationship with several of the growers in the area and has received a commitment to

voluntarily allow the City to monitor the runoff upstream and downstream of their properties. Once these sources are characterized, the activity will move into an implementation phase to reduce and eliminate the pollutant sources. Because this activity targets private operations, the implementation of BMPs will be during subsequent years at the discretion of the grower.

EXPECTED BENEFITS

The benefit of this activity will be a characterization and prioritization of sources of high priority water quality problems in a high agricultural use area of the San Luis Rey watershed. The source identification will then lead to BMP recommendations for the reduction and elimination of high priority pollutants in irrigation and storm water runoff from agricultural operations to the San Luis Rey River.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by confirming that monitoring is conducted as planned (Level 1). Results will be used to prioritize and recommend Best Management Practices, where needed, to agricultural and nursery operations to reduce and eliminate potentially contaminated runoff to the San Luis Rey River.

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Pet Waste Bag Dispenser Program in County Parks**

ID NUMBER: **SLR-005**

ACTIVITY DESCRIPTION

The County of San Diego maintains an inventory of pet waste dispensers in its parks. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. In the San Luis Rey River Watershed, there are currently eight dispensers located in two County parks:

- Guajome Regional Park (7 dispensers)
- Live Oak Park (1 dispenser)

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – To be determined

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey River Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail**

ID NUMBER: **SLR-004**

ACTIVITY DESCRIPTION

This activity will encourage dog owners to pick up and dispose of pet waste while walking their dog in a targeted area of the City located along the Recreation Bike Trail which parallels the San Luis Rey River. This trail has high recreational traffic including walkers and bikers some of who walk and run their dogs along the trail. The goal of this project is to determine which types of educational BMPs will enact a behavioral change amongst people who do not pick up pet waste.

Three areas along this trail will be part of the project. One area will serve as the control area and no signage or additional BMPs will be installed. Another area will have signs installed stating "Pet Waste Transmits Disease" and with appropriate city codes on the sign. Another area will have signs installed as well as a dog waste bag dispenser and trash can for disposal. Targeted areas will be cleaned prior to the implementation of the various BMPs. The weight of the bags will be calculated before during and after the project to determine load reductions and the effectiveness of the various BMPs.

TMDL APPLICABILITY

This section of the river is not under TMDL development or implementation. However, the Pacific Ocean Shoreline at the mouth of the San Luis Rey River is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development in 2008.

TIME SCHEDULE FOR IMPLEMENTATION

This activity is scheduled for planning during FY 2007-08 with implementation and assessment during FY 2008-09.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

A private firm will be hired to clean the area and conduct visual and quantitative assessments throughout the entirety of the project.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria has been identified as a priority water quality problem in the San Luis Rey River Watershed. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria from the San Luis Rey Recreation Trail. This pilot project will also determine which BMPs encourage people to pick up dog feces and dispose of the waste in a safe and environmentally sound way. Successful components of this pilot project will be shared with other copermittees for implementation in their watersheds and jurisdictions.

EFFECTIVENESS MEASUREMENTS

Load reductions will be calculated from each of the three specified areas by assessing the amount of fecal matter prior to implementation of the program and during program implementation by assessing how much fecal matter is placed in provided trash cans. Also, the number of pet waste bags used from the dispenser will be tabulated in addition to the bags personally brought by trail users.

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland**

ID NUMBER: **SLR-003**

ACTIVITY DESCRIPTION

Oceanside Harbor has over 40 storm drains that carry flows a short distance to the harbor. One drain with historical bacterial exceedance receives flows from the harbor boat wash and a sewage dump for recreational vehicles (RV) via a separator vault.

Two bacteria reduction pilot projects have been implemented in the past: installation of an antimicrobial fabric in FY 2006/07 and additional storm drain cleaning in FY 2007-08. The antimicrobial fabric did not display long-term effectiveness, possibly the result of added hydrocarbons and sediment in the runoff. The city then implemented monthly cleaning of the storm drain outfall in May 2007 which showed reductions in bacterial counts, though there were still some bacterial level exceedances which may be due to re-growth in the pipe. During fiscal year 2007/08 the City will increase the cleaning frequency to twice per month. Also, the City will install additional education signage during fiscal year 2007/08.

In addition to the above mentioned BMPs the City is working with a private company to install a modular wetland in the boat wash outfall drainage. This modular wetland has multiple features to capture, screen, separate and filter incoming water. A catch basin provides the first stage of treatment by capturing trash and litter, gross solids, and sediment. A perimeter filters provides a third stage of treatment by physically and chemically capturing various pollutants including bacteria. The wetland chamber provides the final stage of treatment through a combination of physical, chemical, and biological processes.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL. However, the Pacific Ocean Shoreline at the mouth of the San Luis Rey River is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development in 2008.

TIME SCHEDULE FOR IMPLEMENTATION

The modular wetland is scheduled to be installed in fiscal year 2007/08. The site will be visited twice per month and water quality samples taken when flow is present.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EXPECTED BENEFITS

The expected benefits of the program are to:

- Reduce bacterial concentrations that are discharged into the Oceanside Harbor.
- Determine the effectiveness of this BMP in the pilot study to assess if the need for a change in BMPs or if additional BMPs need to be implemented.

EFFECTIVENESS MEASUREMENTS

A reduction in bacterial exceedances will determine the effectiveness of the modular wetland.

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Increased Cleaning Frequency and Additional Education Signage**

ID NUMBER: **SLR-002**

ACTIVITY DESCRIPTION

Oceanside Harbor has over 40 storm drains that carry flows a short distance to the harbor. One drain with historical bacterial exceedances receives flows from the harbor boat wash and a sewage dump for recreational vehicles (RV) via a separator vault.

Two bacteria reduction pilot projects have been implemented in the past: installation of an antimicrobial fabric in FY 2006/07 and increased frequency of storm drain cleaning in FY 2007-08. The antimicrobial fabric did not display long-term effectiveness, possibly the result of added hydrocarbons and sediment in the runoff. The City then implemented monthly cleaning of the boat wash outfall in May 2007, which showed reductions in bacterial counts, though there were still some bacterial level exceedances which may be due to re-growth in the pipe. The City decided to increase the cleaning frequency to twice per month during high use summer months, which will be implemented during fiscal year 2007/08.

In order to supplement the additional cleanings, the City will install additional educational signage at the RV dump station in FY 2007/08 encouraging proper hook-up and removal of sewage pipes from RVs and the need to prevent spills while emptying RV sewage tanks.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL. However, the Pacific Ocean Shoreline at the mouth of the San Luis Rey River is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development in 2008.

TIME SCHEDULE FOR IMPLEMENTATION

Increased frequency of cleaning will occur during high use summer months in FY 2007/08
Additional education signage is scheduled to be installed in FY 2007/08.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EXPECTED BENEFITS

The expected benefits of the program are to:

- Reduce bacterial concentrations that are discharged into the Oceanside Harbor.
- Determine the effectiveness of this BMP in the pilot study to assess the need for a change in BMPs or if additional BMPs need to be implemented.

EFFECTIVENESS MEASUREMENTS

A reduction in bacterial exceedances will determine the effectiveness of the two BMPs.

WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Land Acquisitions**

ID NUMBER: **SLR-012**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

Potential Future Activity Summary Sheets

POTENTIAL FUTURE ACTIVITY SUMMARY SHEET

TITLE: **Pet Waste BMP Implementation Along San Luis Rey Recreation Trail**

ID NUMBER: **SLR-TBD**

ACTIVITY DESCRIPTION
Based on the assessment of BMPs implemented under the Pet Waste Removal Pilot Project along the San Luis Rey Recreation Trail, additional BMPs will be installed that were determined to be effective in getting dog walkers to pick up and properly dispose of waste along the trail.

TMDL APPLICABILITY
This section of the river is not under TMDL development or implementation. However, the Pacific Ocean Shoreline at the mouth of the San Luis Rey River is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development in 2008.

TIME SCHEDULE FOR IMPLEMENTATION
To be determined

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside

OTHER PARTICIPATING ENTITIES
To be determined

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
To be determined

EXPECTED BENEFITS
To be determined

EFFECTIVENESS MEASUREMENTS
To be determined

POTENTIAL FUTURE ACTIVITY SUMMARY SHEET

TITLE: **San Luis Rey River Park**

ID NUMBER: **SLR-TBD**

ACTIVITY DESCRIPTION
The San Luis Rey River Park Master Plan includes development of an 8.5-mile length of San Luis Rey corridor between I-15 and the old Bonsall Bridge in North San Diego County to address a need for public recreational park land, trails and land preservation, in coordination CalTrans SR-76 realignment and the North County MSCP. The San Luis Rey River Park Master Plan Programmatic Environmental Impact Report (PEIR) document is currently out for public review and comment. Several project components under consideration will have the potential to improve watershed water quality, including: 1) land acquisition for purposes of conservation, 2) Low Impact Development (LID) features in the park itself, and 3) policies and or programs to abate the effect of pets in the park.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
To be determined

PARTICIPATING WATERSHED COPERMITTEES
- County of San Diego

OTHER PARTICIPATING ENTITIES
To be determined

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
To be determined

EXPECTED BENEFITS
To be determined

EFFECTIVENESS MEASUREMENTS
To be determined

POTENTIAL FUTURE ACTIVITY SUMMARY SHEET

TITLE: **San Luis Rey River Bacteria BMP Implementation**

ID NUMBER: **SLR-TBD**

ACTIVITY DESCRIPTION
The San Luis Rey River Bacteria BMP Implementation activity will be initiated based on BMP recommendations from the Lower San Luis Rey Bacteria Source Tracking Study (Study). Planning, implementation and assessment of recommended BMPs and/or activities to reduce or eliminate the bacterial sources will be done after completion of the Study to the maximum extent practicable.

TMDL APPLICABILITY
This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION
To be determined

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES
To be determined

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
To be determined

EXPECTED BENEFITS
To be determined

EFFECTIVENESS MEASUREMENTS
To be determined

POTENTIAL FUTURE ACTIVITY SUMMARY SHEET

TITLE: **Restaurant Activity**

ID NUMBER: **SLR-TBD**

ACTIVITY DESCRIPTION
Based on the assessment of the Pilot Restaurant Activity conducted by the City of Encinitas in 2008, effective components of that project will be implemented within the San Luis Rey Watershed.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
To be determined

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside

OTHER PARTICIPATING ENTITIES
To be determined

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
To be determined

EXPECTED BENEFITS
To be determined

EFFECTIVENESS MEASUREMENTS
To be determined

POTENTIAL FUTURE ACTIVITY SUMMARY SHEET

TITLE: **Stormwater Quality Master Plans for Special Drainage Fee Areas**

ID NUMBER: **SLR-TBD**

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the San Luis Rey River Watershed include:

- SDA 10 (North County Metro)

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur anytime before FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
To be determined

EXPECTED BENEFITS
The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS
To be determined

SAN LUIS REY RIVER WATERSHED

Urban Runoff Management Program
Annual Report for Fiscal Year 2007-08

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside ● City of Vista ● County of San Diego

January 2009

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CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

January 29, 2009

Re: STATEMENT OF CERTIFICAITON
2007-08 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed

I certify under penalty of law that the 2007-08 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahsaiezadeh

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

300 NORTH COAST HIGHWAY • OCEANSIDE, CA 92054 • TELEPHONE 760-435-5800 • FAX 760-435-5814

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City of Vista

January 28, 2009

RE: STATEMENT OF CERTIFICATION
2007-08 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed

I certify under penalty of law that the FY 2007-08 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Rita L. Geldert
City Manager
City of Vista

Lawrence D. Pierce
Director of Engineering
City of Vista

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STATEMENT OF CERTIFICATION

San Luis Rey River Watershed Urban Runoff Management Plan (WURMP) FY 2007-2008 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2007-2008 San Luis Rey River Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-21-09
Date

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SAN LUIS REY RIVER WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM
Annual report for Fiscal Year 2007-08

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside
City of Vista
County of San Diego

January 2009

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EXECUTIVE SUMMARY

Introduction

This San Luis Rey (SLR) Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) is the first annual report by the San Luis Rey Watershed Copermittees (SLR Copermittees) addressing Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit). The San Luis Rey Watershed Copermittees (SLR Copermittees) include the City of Oceanside, the City of Vista, and the County of San Diego. The City of Oceanside serves as the Lead Watershed Copermittee for the SLR Watershed Management Area (WMA). The SLR WURMP AR covers the time period July 1, 2007 – June 30, 2008 (FY 2007-08) and describes the SLR Copermittees collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the SLR WMA to the maximum extent practicable.

During this reporting period the SLR Copermittees continued to address the watershed's high priority water quality pollutants identified in the 2008 San Luis Rey WURMP (2008 SLR WURMP) as bacteria and nutrients. This focus is reflected in Section 3.0 - Implementation of Watershed Activities, which enumerates the high-priority-focused watershed water quality and watershed education activities.

The SLR Copermittees will continue to re-evaluate and refine the SLR WURMP by implementing an effectiveness assessment component for the overall program. As more knowledge about pollutant sources and innovative and effective management measures to address those sources become available the SLR Copermittees will use the Model Watershed Urban Runoff Management strategy to guide selection and implementation of watershed activities. Moreover, the SLR Copermittees will continue to utilize the Baseline Long-Term Effectiveness Assessment (BLTEA) process to assist in further identifying pollutant sources and focusing program efforts to control those sources.

Program Highlights

During this reporting period the SLR Copermittees made significant progress in developing and implementing watershed water quality and watershed education activities that receive WURMP credit based on the new Municipal Permit. In addition to these activities the SLR Copermittees coordinated other activities that they feel work toward the overall goal of the SLR WURMP.

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.

- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach these goal and objectives, the SLR Copermittees worked to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

Report Organization

The 2007-08 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed and gives a general overview of the organization and content of the report. It also describes Copermittee collaboration during the reporting period and provides an updated watershed map which is being provided in a larger format at the request of the RWQCB.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the reporting period FY 2007-08. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic plan that the SLR Copermittees have proposed for the SLR WMA, including new watershed water quality and education activities.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of Copermittee collaboration efforts during the reporting period

- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.
- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Conclusions and Recommendations

Lower San Luis Hydrologic Area

Conclusions

Water quality data collected during FY 2007-08 supports listing bacteria as a high priority water quality problem in the Lower San Luis Rey HA. Bacteria exceeded benchmarks frequently in samples collected during ambient and storm conditions.

During FY 2007-08, three water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed, most designed to address bacteria.

During FY 2008-09, three additional activities will be implemented, all designed to address water quality problems related to bacteria.

During FY 08-09, six total water quality activities will be implemented, with five designed to address water quality problems related to bacteria. One of the water quality activities will be focused on source identification and abatement of nutrients.

During FY 2007-08, education activities in the HA addressed all high priority water quality problems in the HA. Inspections occurring as part of the Nutrient Source Identification and Abatement for Guajome Lake activity educated nursery owners about the effects their operations may have on downstream water quality, specifically targeting nutrient related runoff issues. Coupled with the Agriculture Workshop, these events have provided useful information to nursery and agricultural owners and operators. Watershed focused LID workshops are also addressing specific water quality concerns in the watershed.

In FY 2008-09, education activities continue. Targeted outreach related to pet waste will educate residents on the impacts of pet waste and proper disposal. Continued LID

workshops will also provide more information to the community about the impacts of development on water quality in their watershed.

Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Recommendations
Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WUMRPs but will be limited in scope.

Some of the hydrologic areas in the SLR Hydrologic Unit (HU) have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs where funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the workshops. For example, if the LID and Watershed Planning workshops, sponsored by the County of San Diego, are proved effective, additional workshops, sponsored by other Copermittees may be implemented within other HAs. Other topics such as the recently submitted Model SUSMP may also be added to these workshops to include the most updated and relevant information for land use planners.

Activities in the watershed appear to be properly focused on identified water quality problems in the HU. These types of activities should continue as bacteria and nutrients show increasing trends at receiving water monitoring stations. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected nutrient pollution. TWAS data should be examined carefully as it is available to discern between water quality in the upper and lower watershed. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

FY 2007-08 was the first year that Copermittees collected data during ambient conditions at the TWAS and MLS. This data will provide new information in regards to the sources of and conditions where identified high priority pollutants occur. Future analyses of monitoring data should be specific to ambient and storm conditions, allowing for better characterization of problems, ultimately leading to implementation of more appropriate BMPs.

Warner and Monserate Hydrologic Areas

Conclusions and Recommendations

With minimal development in both the Warner and Monserate HAs, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for these HAs is lacking, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

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1 INTRODUCTION

The San Luis Rey (SLR) River Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) describes the watershed activities conducted by the City of Oceanside, the City of Vista, and the County of San Diego (SLR Copermittees) from July 1, 2007 through June 30, 2008. During this reporting period, the SLR Copermittees worked extensively to develop and implement activities that address water quality issues affecting the SLR River Watershed Management Area (WMA) based on requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (Municipal Permit) for San Diego County Copermittees, Order No. 2007-0001, NPDES No. CAS0108758.

Organization and Content of the Report

This annual report is organized according to the *Standardized format for Watershed Urban Runoff Management Program Annual Reports* outline included with the updated Watershed Urban Runoff Management Program (WURMP) documents submitted to the Regional Water Quality Control Board (RWQCB) in March 2008. This report endeavors to adhere to the organizational requirements of Municipal Perrmit issued to 21 San Diego County Copermittees (County Copermittees) in January 2007.

The 2007-08 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed and gives a general overview of the organization and content of the report. It also describes Copermittee collaboration during the reporting period and provides an updated watershed map which is being provided in a larger format at the request of the RWQCB.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the reporting period FY 2007-08. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic

plan that the SLR Copermittees have proposed for the SLR WMA, including new watershed water quality and education activities.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of Copermittee collaboration efforts during the reporting period
- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.
- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Regulatory Requirements

In January 2007, Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit) was issued to the San Diego County Copermittees as a renewal permit for Order No. 2001-01. The Permit was issued to 21 jurisdictions and agencies in San Diego County. The Permit addresses the basic federal requirement for a program that reduces pollutants discharged from municipal separate storm sewer systems (MS4s) to the maximum extent practicable (MEP).

Section E of the Municipal Permit requires that the Copermittees within the SLR River Watershed collaborate to develop and implement a watershed-based program that addresses urban runoff and surface water quality. The rationale for this program is simple: urban runoff does not follow jurisdictional boundaries and often travels through multiple jurisdictions while flowing to receiving waters. Therefore, the actions of various municipalities within a watershed regarding urban runoff can have a cumulative impact upon shared receiving waters. The Municipal Permit directs County Copermittees with land use authority within the watershed to collaborate in developing and implementing the WURMP, the purpose of which is to identify and address the watershed's highest priority water quality problems. In addition, the Municipal Permit requires that the Copermittees develop activities that address education, public participation, and watershed-based land use planning.

Section E of the Municipal Permit defines the Copermittees within the nine regional watersheds, as well as a Lead Copermittee for each watershed. The following Copermittees are included in the SLR River Watershed:

- City of Oceanside
- City of Vista
- County of San Diego

The Municipal Permit designates the City of Oceanside as the default Lead Copermittee for the SLR River Watershed, and the City of Oceanside has agreed to continue to fulfill this role. The Municipal Permit requires that the Lead Watershed Copermittee be responsible for producing and submitting the WURMP. They are also responsible for coordinating meetings among watershed Copermittees to facilitate the implementation of watershed activities. The City of Oceanside continues to coordinate meetings at least quarterly, to discuss and implement the various watershed activities and coordinate required regulatory submittals.

In accordance with Section E of the Municipal Permit, the Copermittees listed for each watershed must participate in the development and implementation of a WURMP. The requirements for the WURMP are listed in the Municipal Permit and include the following:

- Mapping the watershed and identifying all receiving waters, all impaired receiving waters, land uses, highways, jurisdictional boundaries, and inventoried commercial, industrial, construction, municipal sites, and residential areas.
- Assessing the water quality of all receiving waters in the watershed based on existing data and eventually performing watershed-based water quality monitoring activities.
- Identifying and prioritizing major water quality problems in the watershed caused or contributed to by discharges from MS4s, including potential sources of the problems.
- Developing and implementing a strategy of water quality and educational activities needed to address the highest priority water quality problems.
- Identifying which Copermittees are responsible for implementing each recommended watershed activity.
- Developing and implementing a mechanism for public participation in watershed activities.
- Developing and implementing watershed-based education activities.
- Developing a mechanism to facilitate collaborative watershed-based land use planning with other Copermittees in the watershed.
- Developing a long-term strategy for assessing the effectiveness of the WURMP.
- Submitting annual WURMP reports which shall document the Copermittees' activities during the preceding year. At a minimum, the annual report must include:
    - A comprehensive description of all watershed activities conducted by the Watershed Copermittees for permit compliance.
    - Public participation mechanisms utilized during implementation.

- Watershed-based land use planning mechanism description.
- Effectiveness assessment of the WURMP.
- Summary of watershed-related data not already included in the annual monitoring report.
- Identification of water quality improvements or degradation.

SLR WURMP Goals and Objectives

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.
- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach these goal and objectives, the SLR Copermittees work collaboratively to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

San Luis Rey Watershed Description

The SLR River Watershed is located along the northern border of San Diego County. It is bordered to the north by the Santa Margarita River Watershed and to the south by the Carlsbad and San Dieguito River Watersheds. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level (MSL), and extends over 55 miles to form a watershed with an area of approximately 360,000 acres, or 562 square miles (see Figure 1-1). The river ultimately discharges to the Pacific Ocean at the western boundary of the City of Oceanside. Of the nine major watersheds in the San Diego region, the SLR River Watershed is the third largest in terms of land area (SANDAG 1998).

The SLR River Watershed or SLR Hydrologic Unit (Unit 903.00) is comprised of three HAs, which have been delineated by the San Diego Regional Water Quality Control Board (RWQCB) based on drainage patterns: Lower San Luis (HA 903.1), Monserate (HA 903.2), and Warner Valley (HA 903.3) (Figure 1-1). Over 54% of the land in the watershed is vacant or undeveloped. The next largest land uses in the watershed are residential (15%) and agriculture (14%). The highest concentration of population is located in the Lower San Luis HA. There are six federally recognized Tribal Indian Reservations with land in the watershed. The highest point in the San Luis Rey Watershed (and in San Diego County) is Hot Springs Mountain with an elevation of 6,533 feet (1,991 meters).

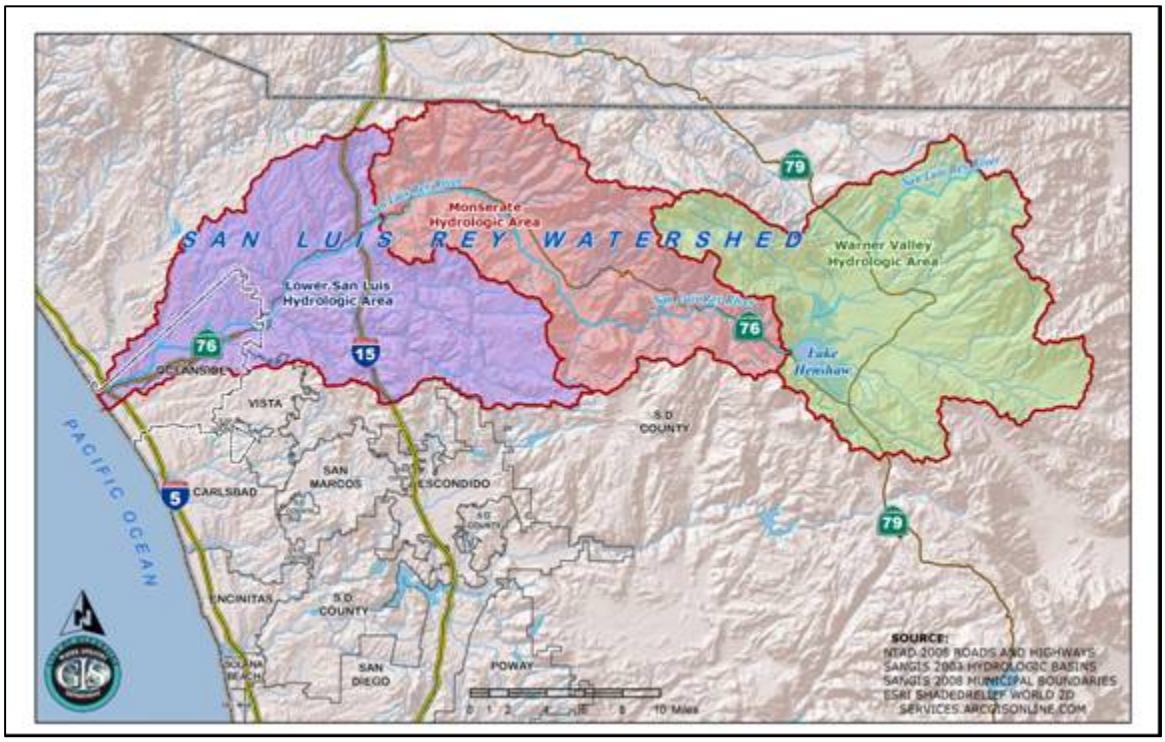

Figure 1-1. San Luis Rey Watershed Hydrologic Areas.

About half (49%) of the land in the watershed is privately owned. Publicly owned land accounts for approximately 37% of the area, and the remaining 14% consists of numerous reservations in the watershed. In the western half of the watershed, private ownership dominates. Moving east through the watershed, public lands increase and dominate in the Warner Valley HA. The Vista Irrigation District (VID) is the single largest landowner in the watershed.

Five jurisdictions have land use authority in the SLR Watershed and include the Cities of Oceanside and Vista and the Counties of San Diego and Riverside. A number of other governmental agencies also administer lands within the unincorporated areas of San Diego County. A general breakdown of jurisdictional areas within the watershed is shown in Table 1-1.

Table 1-1. Watershed Acreages by Jurisdiction.

Jurisdiction	Acres	Percentage of Watershed (%)
Escondido	52	0.0
Oceanside	15,883	4.4
Vista	743	0.2
Unincorporated San Diego County	342,566	95.2
Riverside County	649	0.2
Total	**359,893**	**100.0**

Source: SANDAG 1998. (Note: Of the sources reviewed, values for total size of the watershed and the breakdown of the watershed by jurisdictions were similar but often different. Therefore, the values provided in this table are for general purposes only and should be verified if used for other purposes.)

1.1 Copermittee Collaboration

The Cities of Oceanside and Vista and the County of San Diego share the implementation responsibilities for the SLR WURMP. Using the watershed approach, the SLR Copermittees aim to positively affect the water quality of the SLR River Watershed in a cost effective, environmentally sensitive, and collaborative manner.

The County Copermittees have developed a Model Watershed Urban Runoff Management Strategy (Strategy) to guide the selection and implementation of Watershed Activities that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. Data analyzed to date for the SLR Watershed suggests that bacteria and nutrients are high priority water quality problems in the Lower San Luis HA.

Having used the watershed strategy as the basis for developing the activities, the SLR Copermittees have focused activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the SLR WMA. Where receiving water conditions and pollutants sources were not clearly characterized, monitoring and source identification activities were planned and implemented.

1.1.1 San Luis Rey WURMP Meetings

In order to effectively develop the 2008 SLR WURMP Update required by Municipal Permit Order R9-2007-0001 and to plan and implement the San Luis Rey WURMP in current and subsequent years the SLR Copermittees met ten (10) times during FY 2007-08. The SLR Copermittees developed and prioritized water quality activities that address pollutants of concern in the watershed, exchanged ideas on how to address high priority water quality pollutants in the watershed, evaluated the effectiveness of actions, and collaborated on development of required submittals. See Table 1-2 for dates of these meetings and pertinent agenda items discussed at these meetings.

The general watershed meetings of the San Luis Rey WURMP workgroup were led by the City of Oceanside. Activities and tasks developed by the Copermittees were then carried out by the Copermittees within the structure of their jurisdictional organization. Task completion was then tracked and assessed at the workgroup meetings and is being reported in this Annual Report.

Table 1-2. SLR WURMP meeting dates and agenda items discussed.

Date	Agenda Item Topics
7/18/2007	WURMP Update – standardized Template/Format; High priority water quality constituents of concern (COC); Watershed strategy & activity planning; Section assignments
8/21/2007	Hydrologic Subarea high priority water quality COC; Review of jurisdictional data for priority COC; WURMP watershed activity planning
9/24/2007	Review hydrologic sub-area data and findings; WURMP watershed activity planning WURMP Update - overview of process, schedule and activity worksheets
10/30/2007	WURMP Update – section updates; five-year strategy;
11/14/2007	WURMP - Section updates; Five-year strategy; Review of watershed activities; Impact of Army Corps of Engineers channel maintenance; Dept of Fish and Game steelhead assessment project along SLR
12/06/2007	Review draft of WURMP Update; Review five-year strategy including watershed activities
2/5/2008	Review draft of WURMP Update; Review five-year strategy including watershed activities; Revised WURMP due dates and annual report due dates
3/12/2008	Review draft of WURMP Update; Review five-year strategy including watershed activities; Review figures and tables
4/22/2008	Review & provide comment on regional monitoring report; public participation component; Revised WURMP; Targeted MS4 outfall monitoring program; RWQCB audits
6/17/2008	Five-year strategy; MS4 monitoring program; Annual report schedule

1.2 Watershed Map Updates

Section J.2. of the Municipal Permit requires that the WURMP provide an accurate map of the watershed that identifies the following: All receiving waters (including the Pacific Ocean); Clean Water Act section 303(d) impaired receiving waters; land uses; MS4s, major highways, jurisdictional boundaries; and inventoried commercial, industrial and municipal sites. In a letter dated September 23, 2008, the Regional Water Quality Control Board requested Copermittees increase the size of the watershed maps to no smaller than 36 inches by 24 inches. See Appendix B for a copy of the increased map size.

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2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section presents a current assessment of surface water quality and potential pollutant sources within the SLR WMA. The water quality assessment is largely based on data collected on behalf of the County Copermittees in compliance with Municipal Stormwater Permit requirements. The County Copermittees' *2007-08 Urban Runoff Monitoring Annual Report* (Regional Monitoring Report) provides a much more detailed watershed assessment based on this year's monitoring results (Weston 2009). It also references several special studies performed within the watershed in addition to Municipal Permit requirements. The pollutant source assessment is based on land use coverages, facility source inventories, as well as past and present source characterization efforts.

2.1 Watershed Water Quality Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period.

2.1.1 2007-2008 WATER QUALITY PROGRAMS AND DATA

Table 2-1 identifies the active water quality monitoring programs within the SLR River Watershed Management Area (WMA) and briefly summarizes monitoring activity during FY 2007-08.

For further details on the following programs, please refer to the 2007-08 Regional Monitoring Report (Weston 2009):

- Mass Loading Station (MLS) Ambient and Storm Monitoring
- Temporary Watershed Assessment Station (TWAS) Ambient and Storm Monitoring
- Post-Storm Sediment Pyrethroid Monitoring
- Rapid Stream Bioassessments
- Jurisdictional Dry Weather Monitoring (DWM)
- Coastal Storm Drain Monitoring (CSDM)

Jurisdictional DWM Program results are also discussed in individual Jurisdictional Urban Runoff Management Program (JURMP) Annual Reports. CSDM Program results are also included as an attachment to the 2007-08 Regional Monitoring Report.

In addition to jurisdictional and regional monitoring, monitoring is conducted by the SLR Copermittees as part of two WURMP Activities. The SLR Watershed Water Quality Monitoring Activity (SLR-001) and the Guajome Lake Water Quality Monitoring Activity (SLR-008) results are provided in Appendix A of this document. SLR-001 monitoring is conducted jointly by the City of Oceanside and the County of San Diego. This study specifically addresses TDS, chloride, and bacteria through the lower SLR

River and its tributaries. SLR-008 monitoring is conducted by the County of San Diego to characterize the contribution of nutrients to Guajome Lake.

Table 2-1. Water Quality Monitoring Activities in the San Luis Rey River WMA (FY 2007-08)

Program Data Set	Type of Assessment	Constituents Assessed	FY 2007-08 Activity
Permit-Related Monitoring			
Mass Loading Station (MLS)	Ambient and Wet Weather Receiving Water	Toxicity, chemistry, and trash	1 station sampled during 2 storm events and 2 ambient events
Temporary Watershed Assessment Station (TWAS) Ambient and Storm Monitoring	Ambient and Wet Weather Receiving Water	Toxicity, chemistry, and trash	1 station sampled during 2 storm events and 2 ambient events
Post-Storm Sediment Pyrethroid Monitoring	Ambient and Wet Weather Receiving Water	Grain size, synthetic pyrethroid pesticides, and TOC	2 stations sampled following 1 storm event and 1 ambient event
Rapid Stream Bioassessments	Ambient Receiving Water	Benthic macroinvertebrates	3 stations sampled during ambient conditions
Jurisdictional Dry Weather Monitoring (DWM)	Ambient Urban Runoff	Field parameters and chemistry	56 sites sampled at varying frequencies
Coastal Storm Drain Monitoring (CSDM) Program	Ambient Receiving Water & Urban Runoff	Fecal indicator bacteria	1 location sampled during multiple events
Special Studies			
Joint Watershed Water Quality Monitoring Program	Ambient Receiving Water	Field parameters, TDS, chloride, fecal indicator bacteria	TDS & chloride (17 sites sampled at varying frequencies) Fecal indicator bacteria (19 sites sampled at varying frequencies)
Guajome Lake Water Quality Monitoring Program	Ambient Receiving Water & Urban Runoff	Field parameters, nutrients	Approximately monthly samples from 2 sites

2.1.2 2007-2008 WATER QUALITY MONITORING RESULTS

Table 2-2 summarizes the findings of the various monitoring elements as presented in the 2007-08 Regional Monitoring Report. It also identifies the core management question(s) addressed by each program. This year, for the first time, data were segregated and analyzed according to whether they are representative of wet weather or ambient conditions. A distinction is also made between data indicative of either receiving water conditions or urban runoff discharges. Also for the first time this year, ambient and wet weather samples were collected upstream of the historic MLS station. The TWAS is located in the Bonsall HSA (903.12) east of the intersection of Highway 76 and Camino Del Rey, and is intended to provide better spatial coverage of the WMA.

Table 2-2. Summary of San Luis Rey River WMA Assessment Findings from the 2007-08 Regional Monitoring Report (Weston 2009)

Monitoring Program Elements	Summary of Findings	Core Questions Addressed
Ambient Receiving Water Assessment	▪ Constituents of concern: - TDS (high frequency of occurrence) - Enterococci (high frequency of occurrence). - Turbidity - Fecal coliform - Chemical Oxygen Demand. ▪ Constituents with a magnitude of exceedance greater than five times their benchmark included enterococci. ▪ No persistent toxicity was observed at the MLS or TWAS ▪ Concentrations of benthic algal biomass, DO, and pH (secondary indicators of eutrophication) do not suggest nutrient levels are impairing WARM beneficial uses at the MLS or TWAS. ▪ No pyrethroids were detected in sediment at concentrations sufficient to cause toxicity at the MLS or TWAS. ▪ See also Attachments B, C, and D	1, 2
Wet Weather Receiving Water Assessment	▪ Constituents of concern: - TDS (high frequency of occurrence) - Fecal coliform (high frequency of occurrence). - Turbidity - Enterococci ▪ Constituents with a magnitude of exceedance by more than five times the benchmark included fecal coliform and turbidity. ▪ No persistent toxicity was observed at the MLS or TWAS. ▪ Bifenthrin was detected in stormwater at concentrations likely to cause toxicity at the TWAS; however, no toxicity was observed.	1, 2
Rapid Stream Bioassessment	▪ Altered macroinvertebrate communities (Very Poor IBI ratings) were observed	1,2
Ambient Urban Runoff Areas Assessment	▪ Constituents of concern: - Turbidity ▪ See also Attachment D	3, 4
Wet Weather Urban Runoff Areas Assessment	▪ No exceedances or data analyzed from this program to date.	3, 4
Receiving Water Trend Assessment	▪ Significantly increasing trends were observed for turbidity, fecal coliform, total coliform, nitrate, and enterococci. ▪ No significantly decreasing trends were evident.	5

Based upon the data collected from the County Copermittees' Regional Monitoring Program and the Jurisdictional and Watershed monitoring programs, preliminary answers to the five Core Management Questions have been formulated.

Core Management Question 1.
Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Based on the monitoring and data analyses conducted during the 2007-08 monitoring season, the conditions in the San Luis Rey River WMA indicate that the chemical constituents monitored are not detected at concentrations expected to cause beneficial use impairments. However, TDS and bacteria were detected above their respective benchmarks during both ambient and wet weather conditions with varying frequencies of occurrence. Nitrate continues to show an increasing trend in the watershed, but is still well below its corresponding benchmark value. Table 2-3 summarizes the constituents of concern identified in the 2007-08 Regional Monitoring Report (Weston 2009).

Table 2-3. Summary of Constituents of Concern Identified in the 2007-08 Regional Monitoring Report.

Constituent	Ambient	Wet Weather	Urban Runoff	Receiving Water	Frequency of Occurrence
Enterococcus	X			X	High
		X		X	Low
Fecal Coliform		X		X	High
	X			X	Low
TDS	X	X		X	High
COD	X			X	Low
Turbidity	X	X	X	X	Low

Additional monitoring conducted jointly between the City of Oceanside and the County of San Diego as WURMP Water Quality Activity SLR-001 provides additional ambient bacteriological data for eight main stem sites of the San Luis Rey River. Monthly sampling conducted year-round during ambient conditions since 2004 indicates that the geometric means of total coliform and fecal coliform indicators remained below their corresponding AB411 single sample standards. However, the geometric mean for Enterococcus generally exceeded that standard. Beginning in 2006, a sample from the Pacific Ocean and San Luis Rey River Mouth mixing zone has been collected. The mean bacteria results from this shore sample were below the AB411 single samples standards for all bacteria indicators indicating that conditions are likely protective of beneficial uses during ambient conditions along the shoreline. See Appendix A for more detailed information.

The stream bioassessment results indicate evidence of benthic community impairment with Very Poor IBI ratings at both the TWAS and MLS. However, the health of the stream biological community may be related to constituents not measured under this program or physical habitat disturbances. Use of the numeric nutrient endpoint (NNE) assessment tool indicated that secondary indicators were protective of WARM beneficial uses. Current nutrient levels at the MLS and TWAS do not appear to be inducing low dissolved oxygen (DO) or elevated biomass.

There were no indications of ambient weather toxicity to any organism at either MLS or TWAS. Only one wet weather event at the TWAS exhibited toxicity to the reproduction endpoint for *Ceriodaphnia dubia*, but this toxicity was not determined to be a persistent occurrence. Synthetic pyrethroids were not detected at concentrations sufficient to induce toxicity to *Hyalella azteca* in either sediment or water at the MLS or TWAS.

Core Management Question 2
What is the extent and magnitude of the current or potential receiving water problems?

Receiving water problems related to turbidity, TDS and bacteria were prevalent throughout the lower watershed. The magnitude of the constituents of concern's concentration varied by season, as indicated in Table 2-3 above. Fecal coliform and turbidity concentrations were more than five times their respective benchmarks during wet weather events. Enterococci and TDS were more than five times their respective benchmarks during ambient weather events. TDS and indicator bacteria had consistent spatial variation and magnitude of exceedance between both MLS and TWAS sites.

Activity SLR-001, the City of Oceanside and County of San Diego Joint Monitoring Program, conducts sampling from the Pacific Ocean shoreline east to Shearer Crossing in the main stem of the San Luis Rey River. Although the sample size for sites east of Bonsall Bridge is limited, statistical analysis indicates that fecal coliform mean concentrations are higher west of Bonsall Bridge. Enterococcus mean concentrations do not show a significant difference in extent throughout the sites sampled (Appendix A-SLR-001).

Stream bioassessment data indicate a benthic community impairment rating of Very Poor at both MLS and TWAS locations. The reference site, located in the Monserate HA on Doane Creek, had a Very Good IBI rating.

Core Management Question 3
What is the relative urban runoff contribution to the receiving water problem(s)?

Urban runoff contributions during the 2007-08 reporting year were addressed primarily through jurisdictional programs, such as the DWM Program and the CSDM Program, and WURMP programs, such as Activity SLR-001, the City of Oceanside and County of San Diego Joint Monitoring Program, and Activity SLR-008, the Guajome Lake Water Quality Monitoring Program. A discussion of the urban runoff contributions of bacteria, nutrients, and TDS is provided below.

Bacteria

Bacteria exceedances of benchmark values have been decreasing over the past several years in both the DWM and the CSDM programs. Figure 2-1 provides a summary of the percent of action level exceedances from the City of Oceanside's DWM program. Total and fecal coliform exceedances have decreased. Enterococcus exceedances decreased in 2006 and have remained stable during the last two monitoring years (Oceanside 2008).

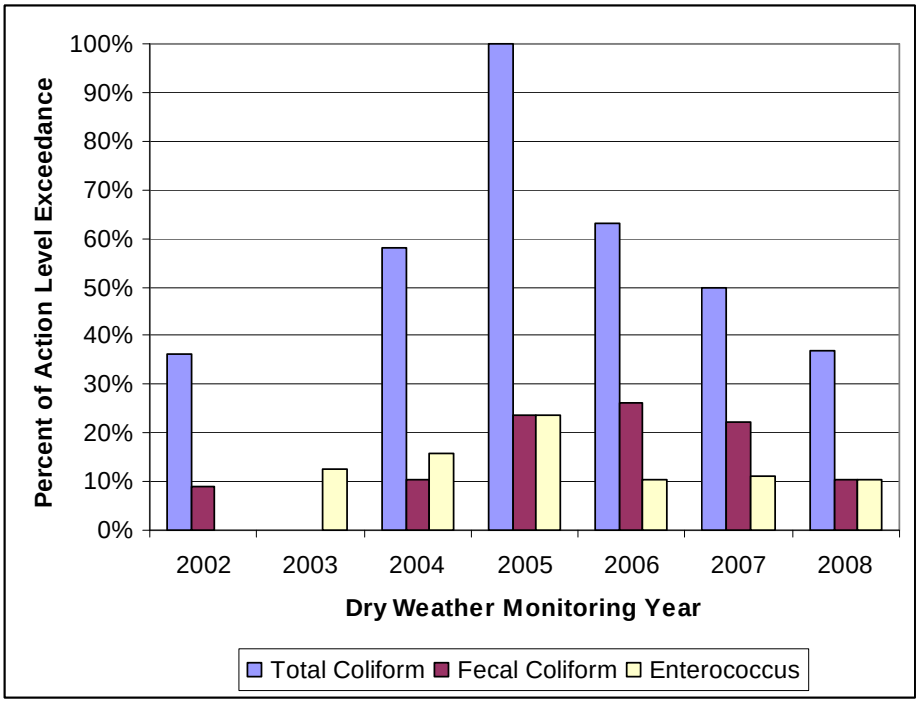

Figure 2-1. Summary of the Dry Weather Monitoring Program Bacterial Action Level Exceedances from 2002 – 2008.

While bacteria indicators have continued to regularly exceed CSDM action levels at one harbor storm drain, the Harbor Boat Wash, during the 2007-08 fiscal year, there were only occasional, episodic exceedances throughout the remaining 15 coastal and 36 harbor CSDM sites. These exceedances were attributed to illicit dischargers that were immediately identified and remedied. This indicates limited urban runoff contribution to the receiving waters of the Pacific Ocean within the SLR Watershed boundary.

Activity SLR-001 targets eight main stem river sites as well as eight tributaries to the San Luis Rey. Although two sites have been identified as having significantly higher relative mean concentrations of bacteria, Sleeping Indian for total coliform and Pilgrim Creek for fecal coliform, the receiving water samples do not show similar trends at the corresponding downstream sites. This indicates that the two tributaries identified as having the relatively higher concentrations of bacteria are not likely a large contributor to ambient receiving water conditions.

Nutrients
Nutrients in urban runoff were analyzed at two sites specific to Guajome Lake as part of WURMP Activity SLR-008 and as part of the DWM program. The data collected by the County of San Diego at two sites along East Channel Creek, part of the Guajome Lake watershed, indicate that nutrients do in fact enter Guajome Lake and may contribute to the existing eutrophic conditions. There is, however, evidence of some assimilation of nitrogen as water flows downstream from the sites that results in a significantly lower N:P ratio and lower nitrate-N and total nitrogen concentrations at the site closer to the lake. Additional a decreasing trend over time in nitrate-N and total nitrogen concentrations has been observed at both sampling locations (Appendix A).

While receiving water data does show an increasing trend in nitrate, results are well below benchmark values in the SLR River. DWM results do not show an increasing trend in nitrate exceedances. Nitrate action level exceedances have remained at just 5% of all sites sampled for the last four years within the City of Oceanside. However, nitrate in urban runoff and groundwater seepage within the agricultural areas of the watershed, as seen in WURMP Activity SLR-006, are greater than the DWM action levels by five times. Nitrate from this agricultural area may be contributing to the increasing trend, but the level of contribution has not been identified.

Core Management Question 3 is partially answered through the evaluation of Urban Runoff Area Assessments and future trash assessments. Organic contaminants (e.g., pesticides) and trash are derived from anthropogenic activity. Their route to receiving waters occurs through urban runoff, direct dumping, or via indirect sources (e.g., wind or animals, such as birds, coyotes, rodents). Organic compounds have not been identified as constituents of concern in this WMA. Future trash information collected during the 2008 Jurisdictional DWM Program should provide a more robust data set for answering Core Management Question 3 thoroughly.

Core Management Question 4
What are the sources of urban runoff that contribute to receiving water problem(s)?
Core Management Question 4 is partially answered through land use analysis and monitoring data. The Jurisdictional DWM Program, the CSDM Program, and several WURMP activities provide some evaluation of urban runoff sources.

Bacteria
Sources of bacteria within the San Luis Rey Watershed continue to be unidentified with the exception of one site at the Harbor Boat Wash. This site, monitored through the CSDM program, has a clear source of runoff associated with a boat wash and RV sewage dump area. Several BMPs are being implemented at this site to reduce bacteria in the runoff, including WURMP Activities SLR-002 and SLR-003. Because urban runoff monitoring does not indicate storm drains or tributaries to be a major contributor to the bacteria problem, the City sought a grant to assist in identifying the bacteria sources using genetic analysis. WURMP Activity SLR-010 describes this two-year project in detail.

Nutrients

Preliminary investigations into land uses and sources within the Guajome Lake watershed have been identified in WURMP Activity SLR-008. These potential phosphorus and nitrogen sources include residential areas, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources will continue through this activity.

While urban runoff of nutrients is minimal in the main stem of the San Luis Rey River, there is one drainage area that continues to exceed DWM action levels for nitrate. This site was included in WURMP Activity SLR-006, the Agricultural and Nursery Operations Runoff Assessment and Monitoring Program. The upstream investigation did not identify a point source but indicated that groundwater seeping to the surface was high in nitrates. The land use in the area surrounding the drainage is primarily agricultural including row crops, groves, and nurseries. Further monitoring will be required in the agricultural areas throughout the watershed through the revised Agricultural Waiver, approved during this fiscal year, which may help identify types of agricultural uses that have a higher contribution of nitrates and other pollutants.

The lower watershed sites are located downstream of residential and agricultural land uses which have the highest potential to contribute pollutants to receiving waters. Trash assessments were conducted at the TWAS site, where one Submarginal and one Poor ranking indicated that the most prevalent trash observed was food packaging, household waste, business waste, and fabric and clothing. The potential routes indicated for these assessments were determined to be dumping or littering, with the potential sources being transients or undetermined. However, due to the limited data set, this assessment is limited to the area in close proximity to the MLS and TWAS. Future trash information collected during the 2008 Jurisdictional DWM Program should provide a more robust data set for answering Core Management Question 4 thoroughly.

The Jurisdictional DWM and CSDM programs have measures to identify and eliminate illicit connections/illicit discharges. Future MS4 Outfall Monitoring and Source Identification Monitoring will provide additional data useful in answering Core Management Question 4.

Core Management Question 5
Are conditions in receiving waters getting better or worse?

In general terms, the conditions of the receiving water remain consistent with previous monitoring years with relatively few increasing trends.

Significantly increasing trends were noted for the three indicator bacteria, as well as nitrate, and turbidity. There were no significantly decreasing trends. Nitrate shows a significantly increasing trend ($p=0.049$) with a magnitude of the trend of 0.05 mg/L/yr which is down from the 2006–07 trend assessment. At the current observed rate of increase, nitrate will not likely exceed the wet weather benchmark during the current permit cycle. Turbidity shows a significantly increasing trend ($p=0.022$) with a slight magnitude of the trend at 0.48 NTU/yr. This is likely driven by the higher turbidity

results measured during the 2007–08 Monitoring Season and may be related to the 2007 wildfires in the WMA drainage area.

Trend analysis of the monitoring results for bacteriological constituents indicates significantly increasing trends for total coliform (p=0.004), fecal coliform (p=0.001), and enterococci (p=0.013). The magnitudes of the trends show increases in bacteriological concentrations of 473 MPN/100mL/yr, 63.2 MPN/100mL/yr, and 113 MPN/100mL/yr, respectively.

Bioassessment data results over the period of monitoring from 2001–08 do not indicate any observed changes in benthic quality ratings. The reference site has always had IBI ratings of Very Good or Good, while the MLS and TWAS have always had Very Poor or Poor IBI ratings.

Toxicity has rarely been observed in samples collected from the San Luis Rey MLS. The exceedance rate for toxicity for any given species is less than 10%, and there has never been toxicity observed to either of the survival endpoints for *Ceriodaphnia dubia* (acute or chronic). There is no evidence of persistent toxicity to any of the three toxicity species tested.

2.1.3 WATERSHED WATER QUALITY PROBLEMS

Section 3.1.3 of the March 2008 WURMP identifies criteria to be used by the SLR Copermittees to identify priority and high priority water quality problems within the SLR WMA (SLR WURMP 2008). Based on these criteria, Table 2-4 identifies all the watershed water quality problems, including high priorities, and provides a brief explanation of the supporting information used to make each decision. There is only one minor change to the high priority water quality problems as they were identified in the March 2008 WURMP. The scale of the bacteria problem has been expanded to include HSA 903.12 in addition to HSA 903.11. This is the result of newly available data from the TWAS.

Table 2-4. Water Quality Problems in the San Luis Rey WMA.

Water Quality Problem	WURMP High Priority?	HSA(s)	Explanation
Bacteria	Yes	HSA 903.11 HSA 903.12	- Pending TMDL for bacterial indicators at the mouth the San Luis Rey River - 303(d) listing for bacterial indicators at the Pacific Ocean Shoreline - Persistent exceedances of fecal coliform and enterococcus benchmarks at the MLS and TWAS. Also see Attachment A, SLR-001. - Bacteria BLTEA rating of “A” for HA 903.1
Nutrients	Yes	HSA 903.11	- 303(d) listing for Eutrophication at Guajome Lake - Nutrients BLTEA rating of “A” for HA 903.1

Water Quality Problem	WURMP High Priority?	HSA(s)	Explanation
Dissolved Minerals (TDS & Chloride)	No	HSA 903.11	- 303(d) listings for TDS and chloride for 19-mile downstream reach of San Luis Rey River - Dissolved Minerals BLTEA rating of "A" for HA 903.1 - Persistent exceedances of TDS and chloride benchmarks observed in SLR River and Tributaries (see Attachment A, SLR-001)
Benthic Alteration	No	HSA 903.11 HSA 903.12	- Consistent "Poor" or "Very Poor" IBI ratings at the MLS and TWAS - Benthic Alteration BLTEA rating of "A" for HA 903.1

2.2 Pollutant Source Assessment

This section describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed. Land use and facility source data have been examined and mapped for the entire watershed in order to identify the potential pollutant sources contributing to the watershed's high priority water quality problems presented in Appendix A, Figure 3-4 of the 2008 San Luis Rey WURMP (SLR WURMP 2008)). Table 2-5 presents an overview of the land use distribution for major land use categories and potential sources within each HSA. This table supports the Watershed Copermittees' focus on activities in the Lower SLR Hydrologic Area. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date. Figure 3-1 in Appendix A of the SLR WURMP 2008 provides a map of sampling locations in the SLR Watershed (SLR WURMP 2008).

Table 2-5 shows the contrast between the lower and upper watershed. Residential and agriculture land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed.

Table 2-5. Overview of Major Land Uses for San Luis Rey River WMA.

Hydrologic Sub Area	Major Land Use Categories[1]												
	Residential		Commercial / Industrial		Agriculture		OS/Preserve		Vacant		Military		Total Area Accounted for
	acres	%	acres	%	acres	%	acres	%	acres	%	acres	%	%
Lower San Luis HA (903.1)													
Mission HSA (903.11)	7,700	26	1,000	3	3,900	12	2,500	8	2,000	7	9,600	32	88
Bonsall HSA (902.12)	24,000	37	1,800	3	20,900	32	1,100	2	14,000	21	400	<1	8
Moosa HSA (903.13) Valley Center (903.14) Woods HSA (903.15) Rincon HSA (903.16)	8,400	38	600	3	5,400	21	500	2	6,600	28	0	0	92
Monserate HA (903.2)	9,200	9	800	1	18,300	17	14,000	13	64,200	59	0	0	99
Warner Valley HA (903.3)	4,300	3	400	<1	3,600	3	14,200	9	108,600	82	0	0	98
Total Land Area	53,600				52,100		32,300		195,400				

1. Source: County of San Diego based on SANDAG 2006 data, land use categories have been grouped for demonstration purposes.

2.2.1 Potential Bacteria Sources

The Baseline Long Term Effectiveness Assessment (BLTEA) represented the County Copermittees' first attempt to identify sources of bacteria in the SLR River Watershed. Table 2-6 presents the BLTEA's list of "Likely" and "Unknown" bacteria sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE 2005). Table 2-7 lists the number of potential bacteria sources by HSA in addition to relevant land uses with the greatest potential to generate bacteria. Potential bacteria sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-5 through 3-10 (SLR WURMP 2008).

Table 2-6. Potential Bacteria Sources for the SLR River Watershed (From BLTEA).

Potential Bacteria Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Eating or drinking establishments	277	Likely
Animal Facilities	47	Likely
POTWs (water and wastewater)	17	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Sites for disposing and treating sewage sludge	-	Likely
Development subject to SUSMPs	115	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Motor Freight	2	Unknown
Auto parking lots and storage facilities	-	Unknown
Pest Control Services	49	Unknown
Flood management projects and flood control devices	-	Unknown
MS4s	-	Unknown
Park and Recreational facilities	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego – 2005

Table 2-7. Potential Bacteria Sources by Hydrologic Sub-Area.

HSA	Potential Bacteria Source	Number of Facilities or % Land Use
Mission HSA 903.11	Food Establishments	198
	Commercial Animal Facilities	66
	Auto Facilities	7
	Nurseries	54
	% Residential	26%
	% Agricultural	12%
Bonsall HSA 903.12	Food Establishments	48
	Commercial Animal Facilities	168
	Auto Facilities	34
	Nurseries	15
	% Residential	37%
	% Agricultural	32%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Food Establishments	20
	Commercial Animal Facilities	47
	Auto Facilities	4
	Nurseries	15
	% Residential	38%
	% Agricultural	21%
Monserate HSA 903.20	Food Establishments	9
	Commercial Animal Facilities	34
	Auto Facilities	1
	Nurseries	4
	% Residential	9%
	% Agricultural	17%
Warner Valley HSA 903.30	Food Establishments	7
	Commercial Animal Facilities	0
	Auto Facilities	1
	Nurseries	2
	% Residential	3%
	% Agricultural	3%

There is currently only one location within the watershed where an adequate source identification study has been performed to characterize the bacterial pollutant source: the Oceanside Harbor Boat Wash outfall. The City of Oceanside performs routine sampling at the harbor boat wash and recreational vehicle sewage dump area as part of its Coastal Storm Drain Monitoring (CSDM) Program. This monitoring has revealed high levels of bacteria in samples collected from the boat wash outfall. The outfall drains a short storm drain system where the only influence is from the public boat wash area which borders the sewage dump area for recreation vehicles.

To identify the other sources of bacteria, specifically related to beach closures at the mouth of the SLR River, the City of Oceanside was awarded a Proposition 50 Clean Beaches Initiative grant. With matching funds from the County of San Diego and City of Vista, the bacteria source tracking project will:

- Identify point and non-point sources of bacteria contamination in the lower SLR River and at the River mouth during dry and wet weather.
- Estimate the dry, wet, and annual bacterial loading in the lower SLR River and at the River mouth.
- Recommend Best Management Practices (BMP) to reduce and eliminate bacterial sources.

The project will include dry and wet weather monitoring during 2008 and 2009. A final report is scheduled for completion in April 2010.

2.2.2 Potential Nutrient Sources

The BLTEA represented the Copermittees' first attempt to identify sources of nutrients in the SLR River Watershed. Table 2-8 presents the BLTEA's list of "Likely" and "Unknown" sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE, 2005). Table 2-9 lists the number of potential nutrient sources by HSA in addition to relevant land uses with the greatest potential to generate nutrients. Potential nutrient sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-11 through 3-16 (SLR WURMP 2008). Preliminary investigations into land uses in the Guajome Lake drainage area have identified potential sources of nutrients to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities.

Table 2-8. Potential Nutrient Sources for the SLR River Watershed (From BLTEA).

Potential Nutrient Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Commercial Animal Facilities	47	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Park and Recreational facilities	-	Likely
Eating or drinking establishments	277	Unknown
Development subject to SUSMPs	115	Unknown
Auto mechanical repair, maintenance, fueling, or cleaning	57	Unknown
POTWs (water and wastewater)	17	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Corporate yards (incl. maintenance/storage yards)	4	Unknown
Fabricated metal	4	Unknown
Equipment mechanical repair, maintenance, fueling, or cleaning	3	Unknown
Chemical and allied products	2	Unknown
Airfields	2	Unknown
Motor Freight	2	Unknown
Primary metal	1	Unknown
Auto parking lots and storage facilities	-	Unknown
Mobile carpet, drape, or furniture cleaning	76	Unknown
Pool and Fountain cleaning	60	Unknown
Sites for disposing and treating sewage sludge	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego - 2005

Table 2-9. Potential Nutrient Sources by Hydrologic Sub-Area.

HSA	Potential Nutrient Source	Number of Facilities or % Land Use
Mission HSA 903.11	Commercial Animal Facilities	7
	Nurseries	66
	% Residential	26%
	% Agricultural	12%
	% Open Space	8%
	% Industrial/Commercial	3%
Bonsall HSA 903.12	Commercial Animal Facilities	34
	Nurseries	168
	% Residential	37%
	% Agricultural	32%
	% Open Space	2%
	% Industrial/Commercial	3%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Commercial Animal Facilities	4
	Nurseries	47
	% Residential	38%
	% Agricultural	21%
	% Open Space	2%
	% Industrial/Commercial	3%
Monserate HSA 903.20	Commercial Animal Facilities	1
	Nurseries	34
	% Residential	9%
	%Agricultural	17%
	%Open Space	13%
	% Industrial/Commercial	1%
Warner Valley HSA 903.30	Commercial Animal Facilities	1
	Nurseries	0
	% Residential	3%
	%Agricultural	3%
	%Open Space	9%
	% Industrial/Commercial	<1%

2.2.3 Other Potential Pollutant Sources

In addition to the potential pollutant sources discussed in the preceding sections, there are other likely pollutant sources that contribute to water quality degradation in the San Luis Rey River WMA. These sources include naturally occurring groundwater, imported water supply, aerial deposition, wildlife impacts, natural erosion, transportation corridors, and military facilities and activities. These potential sources present very unique and difficult challenges in their identification, quantification and assessment of either degradation or improvement. Also noteworthy is the Copermittees' jurisdictional and regulatory inability to control these sources or regulate their impacts and contribution to water quality degradation in the watershed.

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3 IMPLEMENTATION OF WATERSHED ACTIVITIES

Per the requirements of the Municipal Permit, the SLR Copermittees are required to identify and implement Watershed Activities that address the high priority water quality problems in the WMA. Watershed Activities shall include both Watershed Water Quality Activities and Watershed Education Activities. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level.

Activity Selection Process

During the planning process for the SLR WURMP 2008 the SLR Copermittees identified Watershed Activities that address the high priority water quality problems specific to the SLR WMA. Activity planning was conducted using the Collective Watershed Strategy which is a component of the Model Watershed Urban Runoff Management strategy found in the Regional URMP. This process allows for the County Copermittees to establish and prioritize activities through the integration of water quality data to the loading potential of sources within the watershed and sub-watershed areas.

The first step in the strategy is to identify water quality problems watershed-wide and in each HA, where sufficient data is available. The second step is to identify the sources that are most likely contributing to the high priority water quality problems. The process used for the selection of potential sources that can contribute particular pollutants to the MS4 is outlined in the BLTEA document created by the San Diego County Copermittees in 2005. Based on the available data and the assessment of the first year of completed activities under the new Municipal Permit, the SLR Copermittees made appropriate management decisions when selecting and designing watershed water quality and watershed education activities. The overall goal of these activities is to reduce the discharge of pollutants causing the high priority water quality problems.

Activity Implementation

WURMP activities may be implemented individually or collectively, but do not need to be implemented watershed wide. WURMP activities can be implemented by one or more jurisdictions in the watershed yet should be a part of an overall watershed strategy collaboratively developed by the watershed Copermittees. Some of the activities the SLR Copermittees conducted or planned during this reporting period were implemented jurisdictionally while others were implemented watershed-wide or regionally. See section 3.5 below for an updated five-year strategic plan. This plan provides summary information about each of the proposed activities (both water quality and education) including, the watershed priority pollutants targeted by the activity and an implementation schedule for that activity.

The Copermittees have made significant progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed during this reporting period. See Section 3.1 for information about Watershed Water Quality Activities implemented and Section 3.2 for Watershed Education Activities implemented during this reporting period.

3.1 Watershed Water Quality Activities

The SLR Copermittees are responsible for identifying and implementing Watershed Water Quality Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. The activity selection process is briefly described above and more fully in the SLR WURMP 2008.

During this reporting period, the SLR Copermittees implemented five water quality activities. Table 3-1 lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-002	WQ	I	Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall
SLR-003	WQ	P	Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall
SLR-004	WQ	P	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-012	WQ	I	Land Acquisitions

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented; P = Planning

3.2 Watershed Education Activities

This section describes actions planned by the SLR Copermittees during the 2007-08 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the high priority water quality problems in the San Luis Rey WMA.

During the reporting period, the Copermittees implemented two watershed education activities. Table 3-2 below lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	P	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail - Oceanside
SLR-007	WE	I	Water Quality Runoff Management and Agricultural Waiver Workshop (Oceanside, Vista and County of San Diego)
SLR-011	WE	I	LID & Watershed Planning Education for Community Planners & Sponsor Groups (County of San Diego)

[1] WE = Watershed Education Activity
[2] I = Implemented; P = Planning

3.2.1 Additional Watershed Activities

In addition to the Watershed Water Quality and Watershed Education activities, the SLR Copermittees implemented or planned activities that they feel are important to implementation of the WURMP and development of future activities but don't receive WURMP credit. During the reporting period, the Copermittees implemented five additional watershed activities. Table 3-3 below lists the activities that were in active implementation during the reporting period. Details of the each activity can be found in the Activity Implementation Sheets located in Appendix A.

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-001	M	SLR Watershed Water Quality Monitoring Program (Oceanside and County of San Diego)
SLR-006	M	Agricultural and Nursery Operations Runoff Assessment & Monitoring Program (Oceanside)
SLR-008	M	Guajome Lake Water Quality Monitoring Program (County of San Diego)
SLR-009	M, S	Nutrient Source Identification and Abatement: Guajome Lake (County of San Diego)
SLR-010	M, S	Lower SLR River Bacteria Source Tracking Study (Oceanside, Vista, and County of San Diego)

*M = Watershed Water Quality Monitoring Activity; S = Source identification/characterization activity

In addition to the above activity sheets the SLR Copermittees implemented various public participation and collaborative planning efforts that they feel are notable and should be reported in this WURMP Annual Report. The Copermittees feel that these additional activities are vital to the implementation of the overall WURMP and are complementary to the activities that qualify to receive WURMP credit. Details of each of these additional activities can be found Section 3.3.

3.3 Public Participation Activities

The SLR Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed which could include other agencies, private companies, non-governmental organizations, environmental groups, etc. Several opportunities are available to the public to engage them in the implementation of the

WURMP. Below is a summary of these opportunities and information about how they were implemented during this reporting period.

North County Storm Water Program

The North County Storm Water Program (NCSWP) is a group of north San Diego County Copermittees that develop education outreach materials and collaborate on special events based on the needs of the activities planned for the WURMPs and other needs the group felt were vital to educating the public about storm water pollution. This group met regularly during the reporting period and collaborated on the following:

- Staffing booths at outreach events
- Collaboration with the Carlsbad and San Luis Rey WURMP workgroups
- Implementation/Compilation/Assessment of Pet Waste Surveys
- Implementation/Compilation/Assessment of BMP Knowledge and assessment scores
- Revisions of the Restaurant Compact Disc for inclusion with outreach binders
- Coordination with the San Diego County Regional Education Outreach group
- Standardized brand and message for San Diego County Copermittees

Outreach Events

Through the North County Storm Water Program the Copermittees collaborated to staff informational and informative booths at special events throughout the watershed. During this reporting period Copermittees staffed booths at the following events and disseminated storm water related educational materials:

- March 30, 2008 – North County Earth Day at Mission San Luis Rey
- April 20, 2008 - Fallbrook Avocado Festival
- June 19, 2008 – Sunset Market in Oceanside
- June 14 to July 6 – San Diego County Fair

Educational Materials Distributed

The Carlsbad Watershed Copermittees continued the distribution of the following items that were produced by the NCSWP during previous reporting periods at special events, inspections, classroom presentation and other public interactive venues:

- Construction brochure highlighting construction BMPs for large or small scale developments
- North County watershed map ("We All Live Downstream" poster)
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Click-message pens
- San Diego County Integrated Pest Management (IPM)program materials, including English and Spanish IPM Pest Tip Cards
- Personal pet waste bag dispensers

Pet Waste Surveys

The SLR Copermittees determined that a potential source of bacteria and nutrients in the San Luis Rey WMA is from pet waste not picked up and left on the ground. In FY 2005-06 The San Luis Rey and Carlsbad Copermittees implemented the Pet Waste Bacterial Load Reduction Program that incorporated four components: personal pet waste bag dispenser distribution, a public knowledge and behavior survey, installation of doggie bag dispensers in county parks, and the implementation of a dog waste tracking project at San Elijo Lagoon Ecological Reserve. During FY 2007-08 two of these components continued: distribution of the personal pet waste bag dispensers and the implementation of public knowledge and behavior surveys in regards to pet waste.

The SLR Copermittees continued to distribute pet waste bag dispensers at outreach booths located within their jurisdiction. And, in order to better design and appropriately implement future BMPs that encourage people to pick up pet waste, the NCSWP cities continued to conduct pet waste surveys asking the public various questions about picking up after pets. The NCSWP developed and disseminated a one-page survey for residents to complete, during public events, which measures pet waste pollution knowledge and typical behaviors.

While staffing booths at local outreach events Copermittees asked individuals who requested a pet waste bag dispenser and others who approached the tables to complete a short five question survey. During the reporting period, the survey was distributed at and tabulated from several public events in the Carlsbad and San Luis Rey Watersheds. There were 346 surveys completed, with at least one personal pet waste bag dispenser distributed for each survey. Data collected from these surveys provides additional data on the baseline knowledge of North County residents and provides potential direction in upcoming educational outreach efforts. An assessment of the survey is presented in Section 4 of this annual report.

River, Creek, and Beach Cleanup Events

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were five major cleanup events that had staging sites at several locations throughout the SLR watershed. A total of 667 volunteers removed over 5,000 pounds of trash and debris from coastal beaches and inland sites along the San Luis Rey River. Table 3-4 below provides a summary of these cleanup events.

Table 3-4. River, Creek and Beach Cleanup Event Summary.

Date	Name	Location	# of Participants		Total # of Participants	# of Pounds Removed
			Inland Sites	Coastal Sites		
7/05/2007	Morning After Mess	Oceanside Harbor		60	60	463
9/15/2007	Oceanside Beach Cleanup	South side of Pier		300	300	257
9/15/2007	Fallbrook Cleanup	Fallbrook	37		37	800
11/10/2007	San Luis Rey River Cleanup	Inland River Sites	136		136	1000

4/26/2008	Oceanside Beach Cleanup	South side of Pier		134	134	3000
	Totals		**173**	**494**	**667**	**5,520**

San Luis Rey Watershed Council

The SLR Copermittees continued participating in monthly meetings of the San Luis Rey Watershed Council (SLRWC). The SLRWC is a partnership of local landowners, agricultural growers, Native American Tribal bands, community and environmental organizations, government agencies, and special districts with ties to the watershed. The SLRWC's primary goal is to develop and implement a comprehensive resource management plan for the San Luis Rey watershed. During this reporting period SLRWC members embarked on establishing the SLRWC as a non-profit corporation. Once established, the SLRWC can submit grants on behalf of the watershed stakeholders and move toward implementing priority projects identified by the members.

San Luis Rey River Trail and Riparian Restoration and Flood Risk Reduction Project

Mission Resource Conservation District was awarded funding from the California River Parkways Program Proposition 50 Beach Protection Act of 2002 to implement the San Luis Rey River Trail and Riparian Restoration and Flood Risk Reduction Project. This project proposes the creation of the last section (1.6 miles) of the San Luis Rey River Recreation trail that will connect Oceanside with Guajome Lake County Park, and implement habitat restoration of 22.5 acres of riparian habitat infested with *Arundo donax*, an invasive non-native plant. The trail alignment allows passive use of the riparian zone without physically entering or disturbing it. A map of the project area is shown in Figure 3-1.

This project involves the collaboration of the following entities: The City of Oceanside, County of San Diego Parks and Recreation Department, Mission Resource Conservation District, and the San Luis Rey Watershed Council. A public comment component was incorporated into the overall project allowing for the public to provide comments about both the trail extension and the invasive species removal component. The City of Oceanside Parks and Recreation Department held public workshops and meetings over the past ten years to get feedback from the community about this final segment of trail to be completed. During the public comment period the community expressed their strong support of the project and showed their excitement about Guajome Park connecting to the San Luis Rey River Recreation Trail.

During this reporting period the first phase of the trail construction was completed. Also the initial removal, treatment and revegetation of habitat infested with *Arundo donax* was completed. The *Arundo donax* eradication and re-vegetation project restored 22.5 acres of critical habitat within 250 acres of riparian habitat. This portion of the river, just east of the College Boulevard river crossing, has three federally endangered species that will immediately benefit from the project: Least Bell's vireo, Southwestern willow flycatcher, and the Arroyo toad.

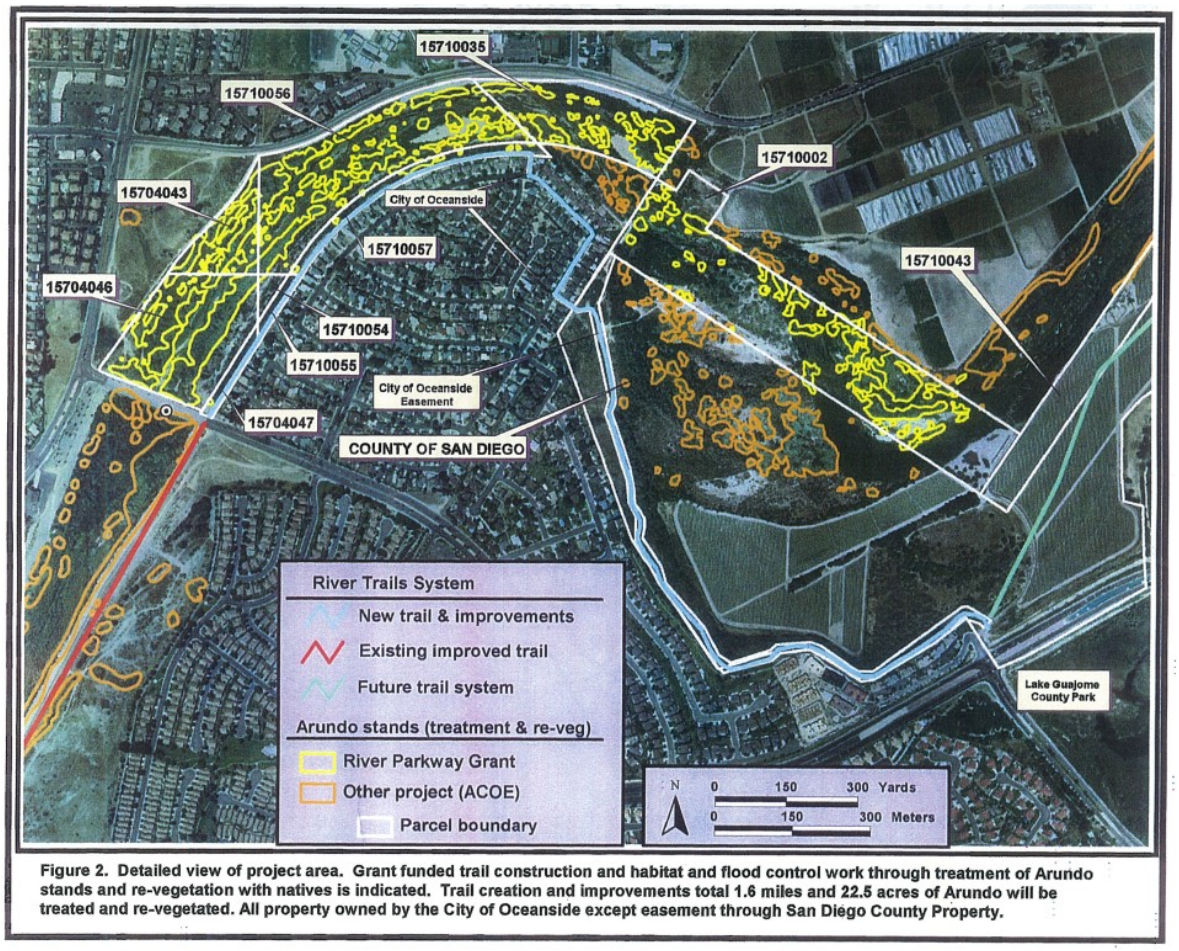

Figure 3-1. Project Map for San Luis Rey River Trail and Riparian Restoration and Flood Risk Reduction Project (MRCD 2005).

This project provides water quality benefits that are calculable from eradication of *Arundo donax* stands. Water savings is 4.6 acre feet per year. The water savings is the result of increased water consumption by *Arundo donax, which* consumes more groundwater than native woodland, shrub, or open substrate that would naturally exist at the site. *Arundo donax* stands also increase sediment accumulation within the riparian profile due to obstruction of flows causing increased sedimentation in the river bed and potential flooding hazards.

Project Clean Water

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. Project Clean Water was initiated in July 2000 to provide a broad and inclusive forum for exploring water quality issues of regional significance. In early 2004, in response to input provided by participants, organizational changes were put into place to streamline the overall Project Clean Water process and to focus more closely on the issues of greatest interest to stakeholders. More than 600 people participating in four Technical Advisory Committees (TACs) and numerous, ad hoc Technical Workgroups worked to establish a visible forum

to discuss issues of shared concern, to find consensus solutions to priority water quality problems, and to characterize baseline conditions in the region's watersheds.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds (www.projectcleanwater.org). There are several WebPages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. On this website is information about the San Luis Rey Watershed Program and a link to the 2008 SLR WURMP allowing the public to access this document remotely.

During FY 2007-08 the hits for the San Luis Rey Watershed totaled 2,289 and there were also 581 hits on the SLR WURMP 2008 document. Also during this time frame the San Luis Rey Watershed Webpage of the Project Clean Water Website was reviewed and updated with current information.

San Diego County Regional Education Outreach Workgroup

During FY 2007-08, the San Diego County Regional Education Outreach Workgroup was co-chaired by the City of San Diego and the County of San Diego with support from the Port of San Diego as Secretary. This workgroup made an official name change during this reporting period and is now called the Education and Residential Sources Workgroup (ERS Workgroup). The ERS Workgroup advises the Copermittee Management Committee on regional shared outreach activities as necessary to support the requirements of the Municipal Permit. The ERS Workgroup met eight times during FY 2007-08. Table 3-5 summarizes meeting dates, locations, and agenda items.

During FY 2007-08, the ERS Workgroup developed a Regional Residential Education Plan. As a part of the plan development, the City of San Diego and County of San Diego staff provided an update to the San Diego County Copermittees on the development of the Regional Residential Education Program. This included a discussion of recommended approaches for program implementation, as well as the ERS Workgroup objectives for implementation. The plan was approved and submitted to the Regional Water Quality Control Board as part of the March 2008 RURMP.

In addition to the development and completion of the documents, the ERS Workgroup also began to focus on the development of regional branding during the reporting period. Regional branding helps to unify the region's stormwater outreach messages. The ERS Workgroup, through the City of San Diego, selected and hired a consultant to assist in this process. The consultant facilitated focus group discussions during the reporting period to receive input from all Copermittees regarding a regional icon to be easily recognized as a symbol of the regional stormwater programs.

The City of San Diego developed a potential assessment methodology for event surveys that can be administered by all County Copermittees. An example of the use of the assessment is described below in the San Diego County Fair Residential BMP Outreach description.

Table 3-5. ERS Workgroup Meeting Dates and Agenda Items.

Date	Location	Agenda
8/15/2007	San Diego County Water Authority (SDCWA) 4677 Overland Avenue San Diego, CA	• Presentation on Outreach to the Hispanic Community by Pilar Montoya, Director of Community Affairs of the Neighborhood House Association • Request for future speaker topics and or volunteers • Updates from subcommittees • Project updates/new business/announcements/roundtable
9/19/2007	SDCWA 4677 Overland Avenue San Diego, CA	• Regional Residential Education Plan
10/17/2007	SDCWA 4677 Overland Avenue San Diego, CA	• Low Socio-Economic Status community target audience discussion • Updates from subcommittees • Next Meeting • Project updates/new business/announcements/roundtable
11/14/2007	SDCWA 4677 Overland Avenue San Diego, CA	• Updates from subcommittees • Project updates/new business/announcements/roundtable
12/19/2007	SDCWA 4677 Overland Avenue San Diego, CA	• Timeline for Deliverables to Copermittee Management Committee • Update from Mobile Business subcommittee • Regional Education Plan – Review and Update of Final Draft • Regional Education Budge FY 08/09 – Review of Final Draft • Discussion of Regularly Scheduled Outreach Workgroup Meeting Day and Time • San Diego County Fair Opportunity • Announcements
2/13/2008	City of San Diego, Stormwater 1920 B Street San Diego, CA	• Updates from Subcommittees • San Diego County Fair • Regional IPM Sustainability • Recommendations for Chair and Secretary • Announcements • Focus Group for Regional Think Blue Logo
3/13/2008	County of San Diego Ruffin Road Annex 5201 Ruffin Road Suite B San Diego, CA	• Updates from Subcommittees • Residential Education Plan – Vote on Recommendation to Copermittee Management Committee • Review Proposed Regional 08/09 Budget – Vote on Recommendation to Copermittee Management Committee • Discussion of Outreach Workgroup/Education Technical Advisory Committee (TAC) combined Meetings • Announcements
5/21/2008	City of San Diego, Stormwater 1920 B Street San Diego, CA	• Updates from Subcommittees • Discussion of Regional Outreach Workgroup (Regional Education and Residential Sources Workgroup) and Regional Education Technical Advisory Committee Merger and Schedule Details • Think Blue Logo Update • Green Wrench Guide Updates • San Diego County Water Authority Media Campaign Update • Announcements

San Diego County Fair Residential BMP Outreach
The San Diego County Copermittees sponsored the San Diego County Fair (Fair) in 2008 as an education and outreach activity. The sponsorship was a joint effort between the City of San Diego's Think Blue program and the San Diego County Copermittees, with each entity contributing approximately half the overall cost. The Fair was selected as a regional event due to its unique ability to potentially reach more than one million San Diegans and convey a strong environmental message. The ERS Workgroup was responsible for overseeing sponsorship activities with the City of San Diego and leading the coordination and implementation efforts.

The attendance for the Fair was estimated at 1,235,698 persons over the 21 days the event occurred. Sponsorship for the Fair included staffing an outreach booth for 11 days, in which the majority of the San Diego County Copermittees provided staffing support. The outreach booth served as the primary method for educating the public about watershed protection and pollution prevention. The ERS Workgroup elected to promote Integrated Pest Management (IPM) as the primary theme and collaborated on the distribution of IPM materials in both English and Spanish. Individual jurisdictions were invited to distribute their own materials in addition to the IPM materials. The Copermittees received billing as both a Flower & Garden Show sponsor and an Enviro-Fair sponsor.

Think Blue was designated as the brand for the San Diego County Copermittees' during the event. Signage demarking the symbol included banners, planter box displays, and recycle bin stickers that were visible at over 500 locations throughout the Fair. Media exposure included TV, radio and press releases. The sponsorship was printed in both the Fair program and included on the Fair map. Other promotions included newspaper advertisements, electronic messaging over the Jumbo Tron, website logos and links, and public announcement system messages in both English and Spanish.

Event specific survey cards were developed for assessment of general storm water knowledge and awareness of the event attendees. Over 1,200 survey cards were completed during the 11 days the booth was staffed. The results are being tabulated and will be reported in the FY 2008-09 Annual Report.

3.4 Collaborative Land-Use Planning Efforts

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the SLR Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding (MOU) in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the SLR Copermittees have the ability to participate in and comment on land use planning efforts outside of

their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

The SLR Watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP Annual Reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances. Below are summaries of activities conducted by the Copermittees in the land use planning arena.

Low Impact Development Handbook

The County of San Diego developed a Low Impact Development (LID) Handbook (http://www.sdcounty.ca.gov/LID_PR.html). The primary goal of the LID Handbook is to assist land developers with the selection of design features that mimic natural hydrologic functions. In addition to reducing stormwater runoff, providing water quality benefits, and assisting with water conservation, LID practices fall under the definition of BMPs as required under the NPDES stormwater permit.

During FY 2007-08 a public review of the LID Handbook occurred for 30 days from July 20, 2007 until August 20, 2007. Public Notice was released on the Department of Planning and Land Use website and was published twice in the Daily Transcript newspaper. The public e-mail distribution list included over 340 people & agencies affiliated with The County of San Diego. The County of San Diego received eight comment letters including 100 comments. The County of San Diego published the Final LID Handbook in November 2008.

A continued education and outreach program on the LID Handbook was ongoing during this reporting period. Table 3-6 below provides information on the groups who received a presentation about the use of the LID Handbook. In addition the Watershed Protection Ordinance was updated in January 2008 incorporating minimum LID requirements as defined in the Municipal Permit.

Table 3-6. Participants in the FY2007-08 LID Handbook Outreach Effort.

Date	Group	# of Participants
July 19, 2007	Regional Copermittee Management Committee	50
July 26, 2007	City of Chula Vista	30
August 1, 2007	IRWMP & State Representatives	35
August 16, 2007	Cities of El Cajon & Santee	30
August 21, 2007	Port of San Diego	20
September 20, 2007	Industry Advisory Group	10

Date	Group	# of Participants
November 13, 2007	Building Industry Association	100
February 25, 2008	American Public Works Association Conf.	110
February 27, 2008	American Public Works Association Conf.	110
June 26, 2008	Hidden Meadows Community Sponsor Group	12

LID Watershed Planning for Community Planning/Sponsor Groups (Activity ID# SLR-011)

The SLR Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant re-development. In addition to the education and training that is provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego's development of a LID and Watershed Planning Education Activity. As part of the normal planning process for the County of San Diego local planning and sponsor groups of unincorporated areas are given the opportunity to advise and assist the Director of Planning, the Zoning Administrator, the Planning Commission and the Board of Supervisors in the preparation, amendment and implementation of community and sub-regional plans. The principal function of the planning and sponsor groups is to be an information link between the community and the County of San Diego on matters dealing with planning and the use of land within their community.

The County of San Diego determined the importance of educating the local planning and sponsor groups on LID and watershed planning principles, practices, and requirements because the recommendations of these groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. By educating these advisory bodies about LID they can make informed recommendations on aspects of development projects that could affect watershed water quality. The Watershed Planning and LID training program was successfully developed during the spring of FY 2007-08, on schedule. The program consists of a PowerPoint presentation formally made to each of the planning and sponsor groups located within the unincorporated County, with a specific focus on the watershed(s) within which the community lies. For more details on the implementation of this education activity see Activity Implementation Sheet ID# SLR-011in Appendix A.

San Luis Rey River Trail and Riparian Restoration and Flood Risk Reduction Project

Mission Resource Conservation District was awarded funding from the California River Parkways Program Proposition 50 Beach Protection Act of 2002 to implement the San Luis Rey River Trail and Riparian Restoration and Flood Risk Reduction Project. This project proposes the creation of the last section (1.6 miles) of the San Luis Rey River Recreation trail that will connect Oceanside with Guajome Lake County Park, and implement habitat restoration of 22.5 acres of riparian habitat infested with *Arundo donax*, an invasive non-native plant. The trail alignment allows passive use of the riparian zone without physically entering or disturbing it. See Section 3.3, Public Participation

Activities, of this annual report for more information about this collaborative land use planning project.

3.5 Updated 5-year Strategic Plan

Watershed Water Quality and Education Activities for future reporting periods

As mentioned at the beginning of this section the SLR Copermittees are responsible for identifying and implementing Watershed Water Quality and Education Activities that address the high priority water quality problems in the SLR WMA. Utilizing the Collective Watershed strategy the SLR Copermittees have identified activities that will address priority pollutants in the SLR WMA. See Table 3-7 for an updated 5-year SLR WURMP Strategic Plan.

3.5.1 New Watershed Activities

Three new watershed activities have been planned for implementation during FY 2008-09. These new activities are reflected in the updated 5-year SLR WURMP Strategic Plan. Activity Summary Sheets for these new activities are provided in Appendix A of this annual report. Activities proposed for implementation during FY 2008-09 not originally included with the March 2008 SLR WURMP are as follows:

- SLR-013: Harbor Boat Wash Security Camera
- SLR-014: Harbor Boat Wash Coin Operated Water Dispenser
- SLR-015: Community Based Residential Horse Property Pilot Project

Activities being considered for implementation in future reporting periods are as follows:

- SLR-007: Agricultural workshop – proposed implementation in FY 2008-09
- Stormwater Quality Master Plans for Special Drainage Fee Areas
- Low Impact Development and SUSMP Workshops
- Restaurant Activity – Based on Encinitas assessment of pilot project

3.5.2 Updated 5-Year Strategic Plan

Table 3-7 provides an updated 5-year Strategic Plan that reflects the status of watershed activities and includes new activities planned for future reporting periods. The updated 5-year strategic plan supersedes the version presented in the 2008 SLR WURMP.

Table 3-7. SLR Watershed Five-Year WURMP Strategic Plan FY 2007-08 Update.

SAN LUIS REY RIVER WATERSHED
5-YEAR WURMP STRATEGIC PLAN
Update for FY 07-08 Annual Report

SAN LUIS REY RIVER WATERSHED	HA			Priority Pollutant		Implementation Schedule											
	903.1	903.2	903.3	Bacteria	Nutrients	FY 2007-08			FY 2008-09			FY 2009-10			FYs 2010-12		
Watershed Activities Implemented in FY 2007-08 and Planned for Implementation in FY 2008-09 and FY 2009-10																	
SLR-001: SLR Watershed Water Quality Monitoring Program	x			x	x	M			M			M					
SLR-002: Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall-Signage & Cleaning Frequency	x			x		WQ											
SLR-003: Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	x			x		P			WQ								
SLR-004: Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail	x			x		WE			WQ	WE							
SLR-005: Pet Waste Bag Dispenser Program in County Parks	x			x		WQ			WQ			WQ			WQ		
SLR-006: Agricultural and Nursery Operations Runoff Assessment & Monitoring Program	x	x	x	x	x	M											
SLR-007: Water Quality Runoff Management and Agricultural Waiver Workshop	x	x	x	x	x	WE						WE					
SLR-008: Guajome Lake Water Quality Monitoring Program	x			x	x	M			M			M					
SLR-009: Nutrient Source Identification and Abatement: Guajome Lake	x				x	M	S		WQ	M	S	*					
SLR-010: Lower SLR River Bacteria Source Tracking Study	x			x		M	S		M	S		M	S				
SLR-011: LID & Watershed Planning Education for Community Planners & Sponsor Groups	x		x	x	x	WE			WE								
SLR-012: Land Acquisitions	x			x		WQ			**			**			**		
SLR-013: Harbor Boat Wash Camera	x			x					WQ								
SLR-014: Harbor Boat Wash Coin Operated Water Dispenser	x			x					WQ								
SLR-015: Community Based Residential Horse Property Pilot Project	x	x		x	x				P	WQ	WE	WQ	WE				
Potential Future Activities																	
SLR River Bacteria BMP Implementation	x			x		Contigent upon funding for prioritized BMPs											
Restaurant Activity	x			x		Based upon results from Encinitas pilot project											
Stormwater Quality Master Plans for Special Drainage Fee Areas						Contingent upon SDA fee increase in 2009											
Low Impact Development and SUSMP Workshop	x	x	x	x	x												

* Future activity will be assessed based upon program results
** Unable to project land acquisitions in advance

WQ = Watershed Water Quality Activity
WE = Watershed Education Activity
WQ = Watershed Water Quality Activity (not in active implementation)
WE = Watershed Education Activity (not in active implementation)
M = Watershed Water Quality Monitoring Activity
S = Source ID/Characterization Activity
P = Activity in Planning Stages
O = Other Watershed Activity

3.6 TMDL BMP Implementation (if Applicable)

There are no approved TMDLs on the San Luis Rey River. However, in preparation of the Bacteria I TMDL that is being prepared by the RWQCB, the Cities of Oceanside and Vista and the County of San Diego have begun implementing a bacteria source tracking study along the lower San Luis Rey River. For more information about this project refer to Appendix Activity ID# SLR-010.

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4 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2008. In addition, there is an assessment of the effectiveness of the collective WURMP implementation.

Each activity summary sheet in Appendix A of the SLR WURMP 2008 identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measureable at levels 5 or 6. Levels 5 and 6 outcomes are typically measureable through cumulative assessments. The assessment levels are defined below. Definitions are from the Municipal Permit.

Effectiveness Assessment Outcome Level 1 - Compliance with Activity-based Permit Requirements – Level 1 outcomes are those directly related to the implementation of specific activities prescribed by Order 2007-0001 or established pursuant to it.

Effectiveness Assessment Outcome Level 2 - Changes in Attitudes, Knowledge, and Awareness – Level 2 outcomes are measured as increases in knowledge and awareness among target audiences such as residents, businesses, and municipal employees.

Effectiveness Assessment Outcome Level 3 - Behavioral Change and BMP Implementation – Level 3 outcomes measure the effectiveness of activities in affecting behavioral change and BMP implementation.

Effectiveness Assessment Outcome Level 4 - Load Reductions – Level 4 outcomes measure load reductions which quantify changes in the amounts of pollutants associated with specific sources before and after a BMP or other control measure is employed.

Effectiveness Assessment Outcome Level 5 - Changes in Urban Runoff and Discharge Quality– Level 5 outcomes are measured as changes in one or more specific constituents or stressors in discharges into or from MS4s.

Effectiveness Assessment Outcome Level 6 - Changes in Receiving Water Quality – Level 6 outcomes measure changes to receiving water quality resulting from discharges into and from MS4s, and may be expressed through a variety of means such as compliance with water quality objectives or other regulatory benchmarks, protection of biological integrity, or beneficial use attainment.

The activity summary sheets presented in Section 3 include effectiveness assessment summaries for each water quality and education activity, as required in the Municipal Permit, I.2.a.(1).

4.1 Assessment of Overall WURMP Effectiveness

4.1.1 Permit Compliance (Level 1)

A basic Municipal Permit compliance assessment is presented in Table 4-1. This table describes minimum permit requirements set forth in the Municipal Permit, whether or not compliance was achieved by the SLR Copermittees in FY 2007-08, and where in this report, required compliance points are fulfilled or described. As shown in the table, the Copermittees were in compliance with all WURMP related Municipal Permit requirements during FY 2007-08.

Table 4-1. SLR WURMP Municipal Permit Compliance Assessment.

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Completed.	Section 1.2
Update watershed water quality assessment, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	Section 2.1
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	Section 2.2
Update list of potential Watershed Water Quality Activities.	Completed.	Section 3.5
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.1
Update list of potential Watershed Education Activities.	Completed.	Section 3.5
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.2
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed.	Section 3.3
A description of Copermittee collaboration efforts.	Completed.	Section 1.1, Section 3.4
Minimum quarterly meetings of the SLR WURMP Workgroup.	Ten (10) meetings	Section 1.1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed.	Section 3.4
Describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed.	Not applicable at this time.	Section 3.6

4.1.2 Cumulative Impacts of Activities (Levels, 2, 3, and 4)

Activity Assessments

During FY 2007-08, there were 12 activities in various stages of implementation. Three focused on water quality, three focused on education, and six activities focused on planning, monitoring, and/or source identification. All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

Although more water quality data are available after the first year of Regional Monitoring under this Municipal Permit, it is not feasible to link changes in discharge or receiving water directly to

watershed activities. At this point, several questions may be helpful in assessing the cumulative impacts of the watershed activities. Table 4-2 summarizes the assessments of the water quality and education activities in an effort to provide a collective picture of the overall effectiveness of the watershed activities. The activities will be related to historical and recent water quality data and examined by hydrologic area in subsequent sections.

Table 4-2. Summary of Watershed Water Quality and Education Activities in the SLR WMA.

Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Sources Reduced or Abated?
San Luis Rey Watershed Water Quality Monitoring Program (SLR-001)	Bacteria, Nutrients	Not applicable, monitoring activity only.	Not applicable, monitoring activity only.	All sources have not been identified.	Not as part of the monitoring program.
Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Increased Cleaning Frequency and Education Signage (SLR-002)	Bacteria	Not measured, assumed due to additional signage.	Increased cleaning frequency of storm drain.	Bacteria generated due to proximity of boat washing and RV sewage dump station to storm drain.	Bacteria exceedances continue to occur.
Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland (SLR-003)	Bacteria	Not applicable.	Not Applicable	Bacteria generated due to proximity of boat washing and RV sewage dump station to storm drain.	BMP implemented during FY08, data collection is in progress and will be assessed in the future.
Pet Waste Removal Pilot Project Along San Luis Rey Recreational Trail (SLR-004)	Bacteria	Anticipated in FY09	Anticipated in FY10	Yes, dog waste.	Cleanup contractors to be used in FY08-09 for BMP assessment purposes.
Pet Waste Bag Dispenser Program in County Parks (SLR-005)	Bacteria, Nutrients	Yes, via dispensers and positive examples.	Yes, in general, more people picking up after their pets.	Parks, specifically pet waste.	Yes, provided additional mechanisms (3 new stations) for proper disposal of pet waste. In total, estimated that 2,939 pounds of pet waste were removed from the watershed.
Agricultural and Nursery Operations Runoff Assessment and Monitoring Program (SLR-006)	Bacteria, Nutrients	Not applicable, monitoring activity only.	Not applicable, monitoring activity only.	Attempting to characterize suspected sources identified in the BL TEA.	Not as part of the monitoring program.

Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Sources Reduced or Abated?
Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses (Agriculture Workshop) (SLR-007)	Bacteria, Nutrients	Yes, measured via pre and post quizzes, knowledge increased by approximately 150%	Yes, BMPs implemented as assessed through follow-up assessment form; most operations have BMPs in place, two operations implemented new BMPs.	Potentially nurseries and agriculture operations; these have been identified as potential sources previously, but not confirmed.	Yes, reduced via BMP implementation.
Guajome Lake Water Quality Monitoring Program (SLR-008)	Nutrients, Bacteria	Not applicable, monitoring activity only.	Not applicable, monitoring activity only.	Attempting to characterize sources; potential sources include residential areas, commercial nurseries, and commercial and residential horse facilities.	Not applicable, monitoring activity only.
Nutrient Source Identification and Abatement: Guajome Lake (SLR-009)	Nutrients	On going via assessments during inspections; insufficient data collected at this time to make assessment.	On going via assessments during inspections; insufficient data collected at this time to make assessment.	Eight nurseries identified as potential sources in the drainage area; baseline information compiled including compliance information and BMP implementation.	Three of eight nurseries inspected; inspections will continue during FY09; BMPs implemented as a result will likely reduce and abate sources.
Lower San Luis Rey River Bacteria Source Tracking Study (SLR-010	Bacteria	Not applicable, monitoring activity only.	Not applicable, monitoring activity only.	Ongoing study using genetic analysis to determine bacteria sources.	Once sources are identified, reduction and abatement activities will be pursued.
LID and Watershed Planning for Community Planning/Sponsor Groups (SLR-011)	General Pollution	Measured via pre and post quizzes. Evidence of a decrease in knowledge.	Not specifically measured.	Future Development.	Not specifically.
Land Acquisitions (SLR-012)	Bacteria, Nutrients	None measured.	None measured.	Potential development.	142.9 acres acquired and preserved by the County of San Diego Parks Dept.

High Priority Water Quality Problems

All activities addressed high priority water quality problems as identified in the WURMP. Bacteria was specifically addressed in 11 activities and nutrients in six activities. A combination of water quality, education, source identification and monitoring activities appear effective at addressing identified high priority water quality problems in the San Luis Rey HU.

Level 2 - Changes in Knowledge and Awareness

Changes in knowledge and awareness of water quality problems were measured in two of the 11 activities implemented during this reporting period. Additionally, increases in knowledge are assumed in two activities with no mechanism in place to measure the changes.

There were three watershed education activities implemented during the reporting period, two of which implemented measures to assess changes in knowledge and awareness. The agriculture workshop produced measured results of increased knowledge and awareness specific to agriculture and nursery operations. The LID workshop was designed with mechanisms to measure changes in knowledge and actually detected a decrease in knowledge in those in attendance. This is suspected to be due to the wording of the survey questions and has been modified for subsequent presentations. The pet waste removal project along the SLR Recreation Trail was primarily in the planning phase during FY 2007-08. It is anticipated that implementation of the activity will include ways to measurably assess changes in knowledge and behavior of the target audience.

Although several of the activities can be assumed to result in increased awareness only two of the activities formally measured knowledge change. The Bacteria Reduction Pilot Project included the installation of additional signage at the boat wash, informing the public of the impacts of misuse of the stations. Knowledge was also increased through the implementation of pet waste bags and signage at County parks. The activities that did not result in increased awareness were designed solely to implement BMPs targeting load reductions. These activities focused on public lands and implemented BMPs to reduce the effects of bacteria and other pollutants on receiving waters.

Collectively, the water quality activities are focused efforts leading to localized changes in knowledge and awareness. However, the education activities are broad based, applicable to all hydrologic areas in the watershed and are expected to provide for a general increase in knowledge in the San Luis Rey River Watershed over time.

Two additional mechanisms have been developed to track changes in knowledge and behavior over time, one using standardized ratings at commercial and industrial facilities and the other using a survey targeting pet owners and their knowledge of the effects of pet waste on the environment. Data for both activities were compiled for the San Luis Rey and Carlsbad Watersheds combined and has not been separated by land area at this time.

Inspection Assessment Questions

Results of the inspections ratings for FY 2007-08 are illustrated in the graphs below. In previous years, these results have not been compiled at the watershed level. Beginning next year, these assessment questions can be compared over time to illustrate changes in stormwater knowledge and awareness (Level 2) and in BMP implementation or behavior changes (Level 3). In general, results show that most businesses have an above average understanding of stormwater concepts and most are implementing appropriate BMPs, although not always to the extent necessary (Figure 4-1).

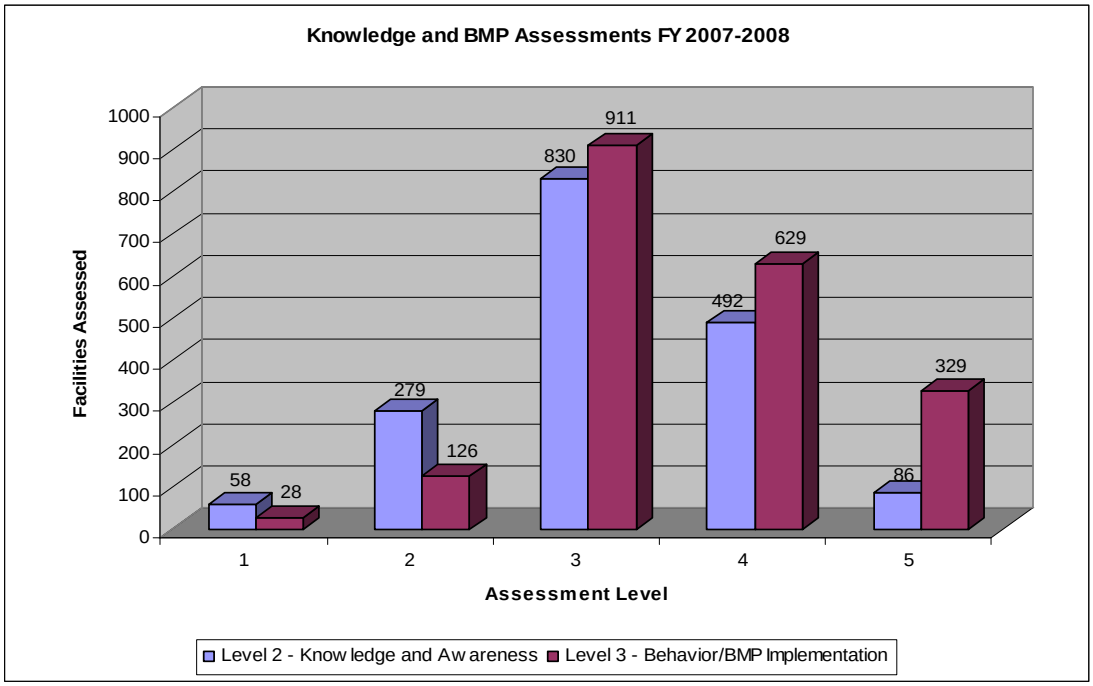

Figure 4-1. Knowledge and BMP Assessments FY 2007-08.

Pet Waste Surveys

While staffing booths at local outreach events during the reporting period, some North County Copermittees asked individuals who requested a pet waste bag dispenser and others who approached the tables to complete a short five-question survey. The survey was distributed at and the results were tabulated from several public events in the Carlsbad and San Luis Rey Watersheds. There were 346 surveys completed, with at least one personal pet waste bag dispenser distributed for each survey. This information provides additional data on the baseline knowledge of North County residents and provides potential direction in upcoming educational outreach efforts.

The five questions on the survey were:
What is your zip code?
Where do you most often walk your dog?
What happens to the pet waste that is not picked up?
If you saw people not picking up after their pet, what would be your reaction?
Why do you think people would not pick up after their pet?

The demographics of the survey showed that 95% of the participants were California residents, with 89% living in San Diego County, and approximately 75% living in the Carlsbad or San Luis Rey Watershed. Most survey participants, approximately 63%, walk their dog most often in their neighborhood, while 15% use parks, and 13% walk their dog at the beach. *This implies that outreach efforts with respect to pet waste are well targeted in parks and beaches, but may prove useful in residential neighborhoods as well.* The majority of people surveyed, approximately 63%, appear to understand that pet waste washes into creeks, lagoons, and the ocean if it is not picked up. Others either do not know what happens to the waste, or believe that it disintegrates into and fertilizes the ground, or believe that someone else picks it up. *This implies that outreach efforts have reached nearly two-thirds of dog owners but should be continued or expanded in an attempt to reach all dog owners.* Approximately two-thirds of people surveyed said that if they were to observe someone not picking up after their pet, they would ask them to do so. The survey also showed that most likely do not pick up after their pet because either they do not care, do not have a bag, and/or do not believe anyone will see them. *This implies that through outreach efforts, Copermittees must continue to help people understand why it is important and continue to provide bags for cleaning up pet waste where feasible.*

Level 3 – Changes in Behavior, Implementation of BMPs

In three of the 12 activities, changes in behavior were observed and BMPs were implemented. BMPs were implemented to address bacteria and nutrients. Sources addressed included nurseries, pet waste, and recreational areas. It is expected that more BMPs will be implemented in the future as a result of LID workshops. The connection of the BMPs to the specific water quality problems will be further discussed below.

Source Abatement

In general, water quality and monitoring activities appear effective at identifying and abating sources of high priority water quality problems in the SLR HU. The Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall included two activities designed to reduce bacteria at the outfall. The source of the bacteria has been well characterized. The City of Oceanside has increased the cleaning frequency at the outfall, provided more educational signage at the boat wash, and will implement a new Modular Wetlands BMP in FY 2008-09. Although data collected to date does not indicate a reduction in bacteria, reductions are anticipated in the future with continued implementation of new BMPs such as the Modular Wetlands system. The Pet Waste Bag Dispenser Activity in County Parks has caused a direct, measurable reduction in pet waste, estimated at nearly 3,000 pounds of pet waste during FY 2007-08. The acquisition of land by public agencies, specifically San Diego County, will provide for preservation of the land in the future, reducing the negative effects of development on the watershed. The source has been identified as new development and by acquiring the land for public use, the source has been prevented.

In addition to the three water quality activities under implementation during the reporting period, there were five monitoring activities occurring in an attempt to characterize and identify sources. Three of these activities are designed to address nutrients specifically,

one to address bacteria, and one addresses both. Each of the monitoring activities currently supports or will support future watershed activities.

4.1.3 Integrated Assessment: Level 5 (Changes in Discharge Water Quality) and Level 6 (Changes in Receiving Water Quality)

4.1.3.1 Warner Valley Hydrologic Area

With minimal development in the HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for the HA is lacking, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

4.1.3.2 Monserate Hydrologic Area

With minimal development in the HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for the HA is lacking, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

4.1.3.3 Lower San Luis Hydrologic Area

As discussed in Section 2.2, residential and agricultural land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date (SLR WURMP 2008). For these reasons, the watershed activities and monitoring programs focus primarily on the Lower San Luis HA and are discussed below.

4.1.3.3.1 Water Quality

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Recent monitoring performed in FY 2007-08 provides new information as well, specific to the HA, as there was a TWAS installed towards the bottom of the Bonsall HSA for this monitoring year in addition to the historical MLS. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. In addition, the City of Oceanside and the County of San Diego continued sampling in the receiving water and tributaries of the Lower San Luis HA for WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Monitoring to assess urban runoff contribution in the Lower San Luis HA was completed through the DWM and CSDM programs as well as through several WURMP activities.

Elevated total dissolved solids (TDS) concentrations are persistent throughout the San Luis Rey HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater

recharge in San Diego aquifers. As this is a region-wide problem, TDS has not been identified as a high priority water quality problem specific to the SLR WURMP.

Bacteria

Bacteria has been identified as a high priority water quality problem in the SLR WURMP 2008. This decision is further supported by recent water quality data collected during ambient and storm conditions. The SLR Copermittees have implemented several activities designed to address identified sources of bacteria in the watershed. There are also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

During this reporting period, two water quality activities have been focused on the abatement of specific sources of bacteria: the Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall (SLR-002) and the Pet Waste Bag Dispenser Program in County Parks (SLR-005).

The SLR-002 activity is designed to address the pollutant sources identified at the boat wash. Because concentrations of bacteria continue to exceed action levels on occasion, the project has been adaptively managed to incorporate various BMPs intended to reduce bacteria concentrations at the outfall. Previously, antimicrobial fabric has been tested as a BMP to reduce bacteria at the outfall, with limited success. Implementation this year has involved increased cleaning of the storm drains in the area and the addition of signage at the boat wash and RV dump areas to encourage people to utilize the facilities properly. In the next reporting period, FY 2008-09, additional BMPs will be implemented, designed to reduce bacteria concentrations through the use of a modular wetlands system (SLR-003), decreased water use (SLR-014), and through the installation of a video camera (SLR-013). This project is a good example of the use of an iterative process to address an identified problem in the watershed. The City of Oceanside will continue to investigate ways to reduce the bacteria concentrations at this location. Although the projects have been limited in their effectiveness and bacteria problems have not been eliminated at this location, there is continued commitment to solving the problem.

The SLR-005 activity has had direct and positive impacts on bacteria in the HA during this reporting period. The implementation of four new pet waste dispenser stations in County parks is estimated to have reduced the amount of pet waste entering the watershed by 2,939 pounds over the reporting period. To put this in perspective, beach postings occur based on concentrations of fecal coliform at 400 cfu/100 ml of water. The installation and use of these BMPs has proven effective at reducing the amount of fecal bacteria entering the watershed and its water bodies. For this reason, the County will continue to install pet waste bag dispensers at County Parks during the FY 2008-09 reporting period. Additionally, the Pet Waste Removal Pilot Project along the San Luis Rey Recreational Trail (SLR-004) has been initiated during this reporting period and will continue during the coming fiscal year. This project will implement BMPs to educate those using the San Luis Rey Recreational Trail, as well as BMPs to remove pet waste, and will provide Pet Waste stations at various points along the trail. The activity is

designed to evaluate the most effective places and types of BMPs to implement and is likely to be effective in further removing pet waste from the watershed.

During this reporting period, two education activities have been focused on the abatement of specific sources of bacteria: SLR-004 and the Water Quality Runoff Management and Agricultural Waiver Workshop (SLR-007).

The SLR-004 project will implement BMPs to educate those using the San Luis Rey Recreational Trail and will use Community-Based Social Marketing (CBSM) techniques to determine the most effective methods of education and BMP implementation targeting pet waste along the trail. The activity was initiated during this reporting period and will continue into FY 2008-09. The activity is expected to be effective in further removing pet waste from the watershed.

The SLR-007 activity is designed to target and educate owners and operators of nurseries and agricultural areas in the watershed. Using a workshop format, the attendees were provided information on appropriate pollution reduction strategies for their operations, including stormwater BMPs and water conservation techniques. As these facilities have been identified as sources of bacteria (and nutrients), the workshops are addressing high priority water quality problems. With the use of pre- and post quizzes and follow up surveys, the workshops seem to have been effective in educating and influencing positive changes in operations of those in attendance.

In addition to the required water quality and education activities, the watershed Copermittees have also invested significant resources in monitoring activities. Three of the monitoring activities include sample collection and analyses pertaining to bacteria concentrations and sources in the watershed. These efforts include: the SLR Watershed Water Quality Monitoring Program (SLR-001), the Agricultural and Nursery Operations Runoff Assessment and Monitoring Program (SLR-006), and the Lower SLR River Bacteria Source Tracking Study (SLR-010). These monitoring programs are designed to compliment ongoing activities in the watershed and will provide useful source information in the future. The SLR-001 monitoring project was designed to identify and characterize the constituents of concern affecting water quality in the watershed. The SLR-006 project was designed to assess sources of the high priority water quality problems in the watershed, specifically targeting nurseries and agricultural operations. The SLR-010 activity is an intensive bacteria source tracking study that is designed to provide insight into specific sources of bacteria in the watershed. Specific data and analyses pertaining to each activity are provided in Appendix A to this report.

Through the implementation of a combination of water quality and education activities, complimented by specific monitoring projects, the SLR Copermittees are moving forward in addressing the bacteria problems in the watershed. By implementing practical activities that are targeting identified sources of bacteria, the Copermittees are effectively addressing bacteria problems in the watershed, with demonstrated load reductions resulting. The combination of activities is having significant positive impacts on the watershed. However, this does not always translate to changes in discharge and/or

receiving water quality, especially related to bacteria. With many diverse sources of bacteria suspected in the watershed, some identified and others not, the Copermittees are implementing activities to address known sources and conducting monitoring activities to identify or confirm other sources.

Various amounts of discharge water quality data related to bacteria has been collected as part of several monitoring programs in the watershed. However, the data has not been assessed in relation to trends. Therefore, at this time it is not feasible to link the watershed activities and program to changes in discharge water quality.

Trend analyses of the monitoring results at the MLS for bacteriological constituents indicates significantly increasing trends for total coliform (p=0.001), fecal coliform (p=0.004), and enterococci (p=0.013) over the monitoring period (Weston 2009). These trends are illustrated in the figures below.

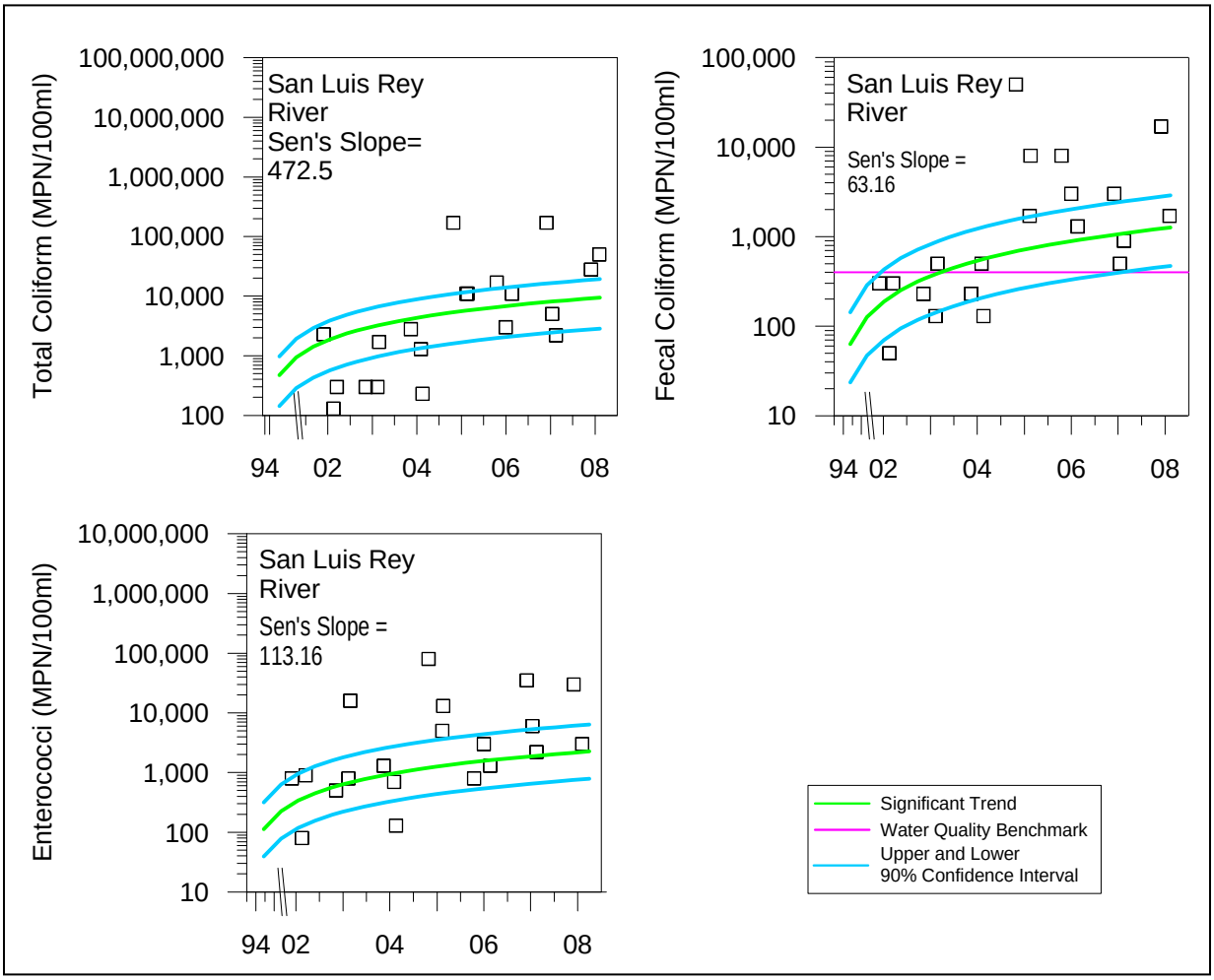

Figure 4-2. Trend Analysis for Bacteriological Constituents at the SLR MLS.

Nutrients

Nutrients have also been identified as a high priority water quality problem in the SLR Watershed. The decision to identify nutrients as a high priority problem is based primarily on the listing of Guajome Lake as impaired for nutrients on the 2006 303(d) listing. In addition, analysis at the MLS shows an increasing trend for nitrates, although the nitrate concentrations are well below action levels.

During this reporting period, there were three monitoring and source identification activities that were specifically focused on the sources of nutrients. These were chosen because the sources of the nutrients remain largely uncharacterized in the watershed. Specifically, the Copermittees chose to implement three activities that involved monitoring and source identification related to nutrients: the Agricultural and Nursery Operations Runoff Assessment and Monitoring Program (SLR-006); Guajome Lake Water Quality Monitoring Program (SLR-008); and Nutrient Source Identification and Abatement for Guajome Lake (SLR-009). Each of these activities is designed to assess sources of nutrients causing or contributing to water quality problems in the watershed. Results of each activity are presented in Appendix A.

During this reporting period, one education activity was focused on the abatement of specific sources of nutrients: the Water Quality and Runoff Management and Agricultural Waiver Workshop. Participation in the Agricultural Workshop included several business owners representing eight facilities located in the Lower San Luis Rey HA. BMPs implemented as a result of the Agriculture Workshop do address the pollutants specific to the HA, including bacteria and nutrients.

In the next fiscal year, two of the monitoring and source identification activities related to nutrients will continue to collect data and source information: SLR-008 and SLR-009. The SLR-009 activity will also complete all targeted nursery inspections, leading to increased knowledge, BMP implementation, and stormwater compliance. With the completion of the inspections, this activity will be the only water quality activity related to nutrients in the upcoming year. The activity will include some education of the nursery owners as well. Findings from these activities may assist in the development of nutrient related activities in the future.

Through the implementation of monitoring and source identification projects and education activities, the SLR WURMP group is moving forward in addressing the nutrient problems in the watershed. In the future, it is expected that the combination of activities will have positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality. With many diverse sources of nutrients suspected in the watershed, the Copermittees are conducting monitoring activities to identify or confirm sources as a precursor to designing water quality and education activities in the future.

Various amounts of discharge water quality data has been collected as part of several monitoring programs in the watershed. Often, the data related to nutrients has been collected using field test kits. The data has not been assessed in relation to trends.

Therefore, at this time it is not feasible to link the watershed activities and program to changes in discharge water quality.

With respect to nutrients, nitrates do show significantly increasing trends at long term receiving waters monitoring stations during storm events. Nitrate shows a significantly increasing trend (p=0.049) with a magnitude of the trend of 0.05 mg/L/yr which is lower than the 2006–2007 trend assessment. At the current observed rate of increase, nitrate will not likely exceed the wet weather benchmark during the current Permit cycle (Weston 2009). The graph below illustrates the increasing nitrate trend during storm events. At this time, it is not feasible to link the watershed activities to receiving water data, as the trend data has been collected over many years, while the watershed activities are relatively new. Changes in water quality trends will take place slowly and will continue to be assessed in future years.

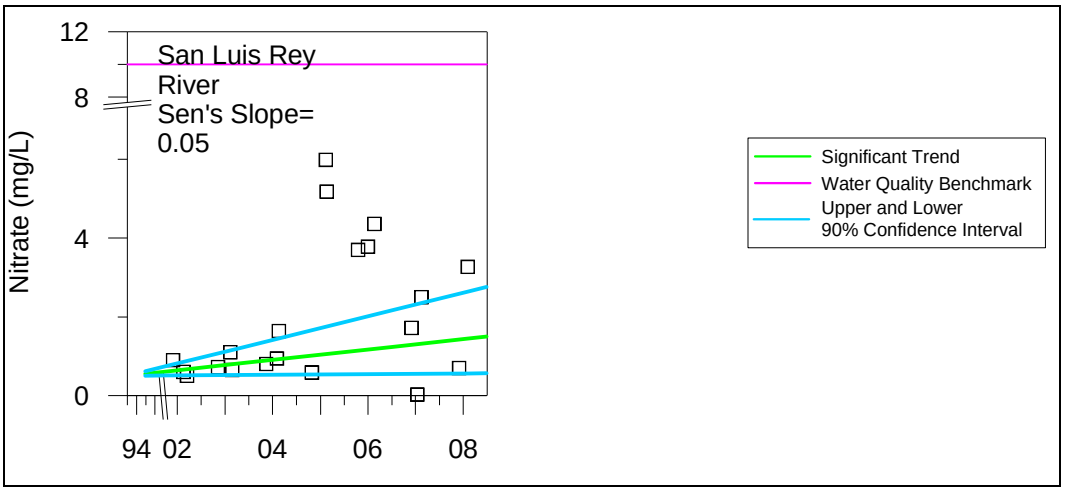

Figure 4-3. Trent Analysis for Nitrate at the SLR MLS.

Other Activities

The LID and Watershed Planning Education for Community Planners and Sponsor Groups (SLR-011) is not intended to reduce existing pollutant loading but is intended to prevent future loading of pollutants related to new development. The series of workshops is designed to educate land use planners and community members on LID concepts and post construction BMPs specifically related to the problem pollutants in their watersheds. It is anticipated that these workshops will help shape future land use decisions in the planning process, addressing appropriate pollutant concerns related to new development.

The Land Acquisitions (SLR-012) activity does not reduce existing loads, but is intended to prevent future loading of pollutants related to new development. Loading estimations are difficult to predict based on land use; however acquisition of the land for public use will prevent the development of commercial and residential areas on the land, both of which have been shown to contribute to bacteria loading. Land acquisition also helps maintain the natural conditions of the site, allowing for natural processes such as infiltration and pollutant uptake to continue. When land is developed, these natural processes are often reduced or eliminated by increasing impervious areas and

channelizing or undergrounding stream systems. Preservation of the land will provide for less pollutant generation and may provide for continued pollutant removal, depending on the land acquired. This would directly apply to the bacteria and nutrient water quality problems identified in the WURMP.

Conclusions for the Lower San Luis HA

During FY 2007-08, three water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed. During FY 2008-09, six water quality activities will be implemented, with five designed to address water quality problems related to bacteria and one directly addressing nutrient sources. During FY 2007-08, education activities in the HA address all high priority water quality problems in the HA. Inspections occurring as part of the Nutrient Source Identification and Abatement for Guajome Lake activity educate nursery owners about the effects their operations may have on downstream water quality, specifically targeting nutrient related runoff issues. Coupled with the Agriculture Workshop, these events have provided useful information to the nursery owners. Watershed focused LID workshops are also addressing specific water quality concerns in the watershed. In FY 2008-09, education activities will continue. Targeted outreach related to pet waste will educate residents on the impacts of pet waste and proper disposal. Continued LID workshops will also provide more information to the community about the impacts of development on water quality in their watershed.

Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

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5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions for Warner Valley HA

With minimal development in this HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for this HA is lacking, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

5.2 Conclusions for Monserate HA

With minimal development in this HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for this HA is lacking, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

5.3 Conclusions for the Lower San Luis HA

Water quality data collected during FY 2007-08 supports listing bacteria as a high priority water quality problem in the Lower San Luis Rey HA. Bacteria exceeded benchmarks frequently in samples collected during ambient and storm conditions.

During FY 2007-08, three water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed, most designed to address bacteria.

During FY 2008-09, three additional activities will be implemented, all designed to address water quality problems related to bacteria.

During FY 08-09, six total water quality activities will be implemented, with five designed to address water quality problems related to bacteria. One of the water quality activities will be focused on source identification and abatement of nutrients.

During FY 2007-08, education activities in the HA addressed all high priority water quality problems in the HA. Inspections occurring as part of the Nutrient Source Identification and Abatement for Guajome Lake activity educated nursery owners about the effects their operations may have on downstream water quality, specifically targeting nutrient related runoff issues. Coupled with the Agriculture Workshop, these events have provided useful information to nursery and agricultural owners and operators. Watershed focused LID workshops are also addressing specific water quality concerns in the watershed.

In FY 2008-09, education activities continue. Targeted outreach related to pet waste will educate residents on the impacts of pet waste and proper disposal. Continued LID workshops will also provide more information to the community about the impacts of development on water quality in their watershed.

Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

5.4 Recommendations

Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WUMRPs but will be limited in scope.

Some of the hydrologic areas in the SLR HU have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs where funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the workshops. For example, if the LID and Watershed Planning workshops, sponsored by the County of San Diego, are proved effective, additional workshops, sponsored by other Copermittees may be implemented within other HAs. Other topics such as the recently submitted Model SUSMP may also be added to these workshops to include the most updated and relevant information for land use planners.

Activities in the watershed appear to be properly focused on identified water quality problems in the HU. These types of activities should continue as bacteria and nutrients show increasing trends at receiving water monitoring stations. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected nutrient pollution. TWAS data should be examined carefully as it is available to discern between water quality in the upper and lower watershed. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's

reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

FY 2007-08 was the first year that Copermittees collected data during ambient conditions at the TWAS and MLS. This data will provide new information in regards to the sources of and conditions where identified high priority pollutants occur. Future analyses of monitoring data should be specific to ambient and storm conditions, allowing for better characterization of problems, ultimately leading to implementation of more appropriate BMPs.

WURMP permit language revision discussion

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written.

It also recommended that a dialogue be initiated between RWQCB staff and Copermittees to amend permit language where necessary to better meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The San Luis Rey Copermittees are committed to continue their involvement in this process during the 2008-09 reporting period and in subsequent years. It is anticipated that some changes to the Five-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the Copermittees and the RWQCB.

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6 REFERENCES

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Appendix A

San Luis Rey

Watershed Activity
Implementation Summary Sheets
And
Proposed Watershed Activity Summary Sheets

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San Luis Rey
Watershed Activity Implementation Sheets

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **San Luis Rey Watershed Water Quality Monitoring Program**
ID NUMBER: **SLR-001**

ACTIVITY IMPLEMENTATION

A primary component of the San Luis Rey WURMP is to identify and characterize the constituents of concern adversely affecting water quality in the San Luis Rey River Watershed. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program in 2004 consisting of both field observations and field and analytical water quality sampling. This activity was developed collaboratively by the Watershed Copermittees within the San Luis Rey Watershed.

The activity includes the following tasks to be performed by the Watershed Copermittees:

- Update the monitoring plan as needed.
- Implement monitoring plan with field and laboratory analyses of constituents.
- Collect, compile, and analyze data.
- Prepare an annual written report including conclusions and recommendations.

A description of the monitoring program, including sampling locations, procedures, and analyses is included as Attachment A to this Activity Implementation Sheet.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring activities will continue into FY 2009-10. The program will be reevaluated for continued implementation in future years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the Mission HSA (903.11). This monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

The County of San Diego and the City of Oceanside collected periodic samples from San Luis Rey River and its tributaries beginning March 2004, sampling bacteria, TDS, Chloride, Magnesium, Iron, Manganese, Total Phosphorus, Nitrates, and pH samples from San Luis Rey River and its tributaries.

- Bacterial indicators, total dissolved solids (TDS) and chloride data were compiled and analyzed.
- Written reports including conclusions and recommendations were prepared.

An overview of the joint monitoring program is provided in Attachment A. Detailed analysis of bacteria results is provided in Attachment B. Detailed analysis of TDS and chloride results is provided in Attachment C.

ATTACHMENT A TO SLR-001

2007-2008 SAN LUIS REY RIVER MONITORING PROGRAM

1.0 PROGRAM DESCRIPTION

The San Diego Regional Water Quality Control Board reissued the Municipal National Pollutant Discharge Elimination System (NPDES) permit, Order 2007-0001, to all 21 San Diego County Copermittees. Order 2007-0001 continues to require Copermittees to implement Watershed Urban Runoff Management Plans (WURMP) for all watersheds in San Diego County. A primary component of the San Luis Rey WURMP (SLRWURMP) is to identify the constituents of concern adversely affecting the water quality of the River. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program of the lower 19 miles of the San Luis Rey River, on March 10, 2004, consisting of both field observations, and field and analytical sampling.

The City of Oceanside will be monitoring eight sites in the lower half of the watershed segment[1]. The County will monitor nine sites in the upper portion of the watershed segment. The City is in the midst of developing a long-term plan to use the Mission Groundwater Basin, the primary aquifer beneath the San Luis Rey River, as an increasingly larger source of the City's water supply. The San Diego County Water Authority, the Metropolitan Water District, and the City of Oceanside are currently conducting an assessment of the viability of this long-term plan.

2.0 PROGRAM DESIGN

The County and the City will coordinate monitoring to collect samples on the same day when possible. Sampling will not be conducted if rainfall over 0.1 inches has occurred within 72 hours prior to the sampling date. Rescheduling with the County must occur if the regularly scheduled sampling date has been interrupted.

[1] The City of Oceanside will collect total dissolved solids and chloride samples from seven locations, while an extra sampling location will be added for the bacteria sampling program.

Sample Locations

The following table shows a list of the City and County monitoring sites:

Jurisdiction	Site Name	Site Description	Latitude (NAD 83 decimal degrees)	Longitude (NAD 83 decimal degrees)
Oceanside	Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Oceanside	Pacific	San Luis Rey River on the east side of Pacific St.	33.20303	-117.39117
Oceanside	Benet Benet (Site moved downstream in June 2008 for improved flow monitoring)	San Luis Rey River on the west side of Benet Bridge, north of Hwy 76 and Airport Rd. At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.22037 33.21790	-117.35836 -117.35958
Oceanside	Douglas	San Luis Rey River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Oceanside	Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Oceanside	Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Oceanside	Guajome Lake Outlet (Sampling of this site ended in FY 06/07)	South side of SLR River, where Guajome Lake effluent flows into river. 5030 Tyler Road. Easement Key #A227. Drive North, then walk.	33.25342	-117.28889
Oceanside	Sleeping Indian (Sampling of this site began in FY 06/07)	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Oceanside County	Bonsall (SLR 16)	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833
County	SLR25	San Luis Rey River at Olive Hill Road	33.28838	-117.22335
County	SLR28	San Luis Rey River at Pankey Rd	33.33281	-117.14975

Jurisdiction	Site Name	Site Description	Latitude (NAD 83 decimal degrees)	Longitude (NAD 83 decimal degrees)
County	SLR01	Moosa Canyon Creek at Old River Road	33.2836	-117.218683
County	SLR02	Little Gopher Canyon Creek at Old River Road	33.265683	-117.2332
County	SLR26	Bonsall Creek at Highway 76	33.28959	-117.22525
County	SLR14	Ostrich Farm Creek at Highway 76	33.29335	-117.22396
County	SLR27	Live Oak Creek at Highway 76	33.31514	-117.19418
County	SLR17	Keys Creek at Dulin Rd	33.32363	-117.15744
County	SLR 34	San Luis Rey River East of East Vista Way and Mission Rd. Intersection	33.26062	-117.23842

Field Screening, Sample Collection and Analysis

For each site visit, the sampler should use the San Luis Rey River Monitoring form. Samples should not be collected until 72 hours after a rainstorm.

Observations

Qualitative field observations will be made during each site visit. These observations are intended to provide a general assessment of the site and include the following runoff characteristics: odor, clarity, color, floatables, deposits, vegetation and biology.

Flow

Flow measurement will be used to estimate pollutant mass loading and identify significant changes in discharge that may be indicative of an illegal release upstream.

Field Analysis

The City of Oceanside and the County of San Diego will collect and analyze grab samples at each site in the field for the following constituents:

- Water temperature
- pH
- Conductivity
- Turbidity
- Dissolved Oxygen
- Nitrate as N[2]
- Orthophosphate as P
- Ammonia as N

[2] Field testing for nitrate is occasionally unattainable using current testing equipment, due to high conductivity levels

Laboratory Analysis for City of Oceanside

Collected samples need to be submitted to a California Department of Health Services certified laboratory for analytical testing of the following parameters:

- Total and Fecal Coliforms
- Enterococcus
- Chloride
- Sulfate
- Total Suspended Solids
- Total Dissolved Solids (quarterly)
- Dissolved Magnesium
- Dissolved Iron
- Dissolved Manganese
- Dissolved Calcium (quarterly)
- Dissolved Sodium (quarterly)
- Dissolved Potassium (quarterly)

Note: Bacteria samples are taken weekly at the Pacific Mix site through a separate program within the City of Oceanside.

Lab Analysis for County of San Diego

Collected samples need to be submitted to a California Department of Health Services certified laboratory for analytical testing of the following parameters:

- Total Alkalinity
- Bicarbonate Alkalinity
- Carbonate Alkalinity
- Hydroxide Alkalinity
- Ammonia-N
- Boron
- Total Calcium
- Total Residual Chloride
- Chloride
- Specific Conductance
- Total Anions
- Total Cations
- Total Dissolved Solids
- Total Fluoride
- Iron
- Total Magnesium
- Nitrate-N
- pH
- Total Potassium
- Total Sodium
- Sulfate
- Total Hardness
- Total Phosphate
- Phosphorus-P
- Percent Sodium
- Total Suspended Solids
- Total and Fecal Coliforms (SLR16 only)
- *Enterococcus* (SLR16 only)

Note: Laboratory analysis for the County of San Diego will be conducted on a quarterly basis.

Quality Assurance/Quality Control (QA/QC)

During each sampling event one site will be selected (at random or rotating) to conduct duplicate analyses of all laboratory measured parameters.

Laboratory Parameters

1 container – grab sample will be collected for bacteria analysis
1 container – grab sample, for TDS and Chloride
1 container – grab sample, for Fe, Mn, and Mg.

Data

Sample data will be kept separate from the Dry Weather database except sampling events and parameter that overlap with the Dry Weather Monitoring; these need to be entered in both databases.

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ATTACHMENT B TO SLR-001

2007-2008 SAN LUIS REY RIVER BACTERIA MONITORING PROGRAM

Introduction

The City of Oceanside and the County of San Diego began a joint bacteria monitoring program in the San Luis Rey River in March 2004. The goal of this project is to better characterize levels of bacterial indicators in the watershed segment from Interstate 15 to the Pacific Ocean in an effort to determine if the river is responsible for exceedances of water quality objectives at the river mouth.

Methods

From March 2004 through June 2008, 19 locations (Figure 1, Table 1) were sampled: 8 by the City of Oceanside and 8 by the County of San Diego. An additional 3 locations were added by the County in June 2008. Both agencies collected samples on the same days. Eight sampling sites were located along the San Luis Rey River and 11 in the River's tributaries. One site along the river's main stem, Bonsall Bridge, was sampled by both agencies for quality control reasons. Results from only nine of the 11 tributaries are presented below because the two tributaries added to the study in June 2008, Moulder Ranch Creek and Horse Ranch Creek, were dry. Samples were collected monthly from Bonsall Bridge to the ocean and less frequently at sampling points east of Bonsall Bridge (Camino Del Rey through Vista Way). The tributaries were sampled monthly from March through December 2004 and less frequently thereafter. Since July 2006, sampling at Guajome Lake Outlet, which was frequently dry, was abandoned and the always-flowing Sleeping Indian outlet was added to the schedule. Also, beginning in July 2006, additional bacterial samples were collected at the Pacific shoreline (named "Pacific Mix Zone" in Tables 3-5) in order to compare bacterial concentration at the mouth of SLR to those at the shoreline nearby (75 ft south of the river mouth).

All samples were collected during dry weather conditions; i.e. at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches. The samples were grab samples collected from the center of the stream using a 100 ml sterilized collection bottle supplied with sodium sulfite as a preservative. Samples were stored at 4ºC and transported to the laboratory to be analyzed for total coliform, fecal coliform and *Entrococcus* employing a multi-tube fermentation method to estimate bacterial counts.

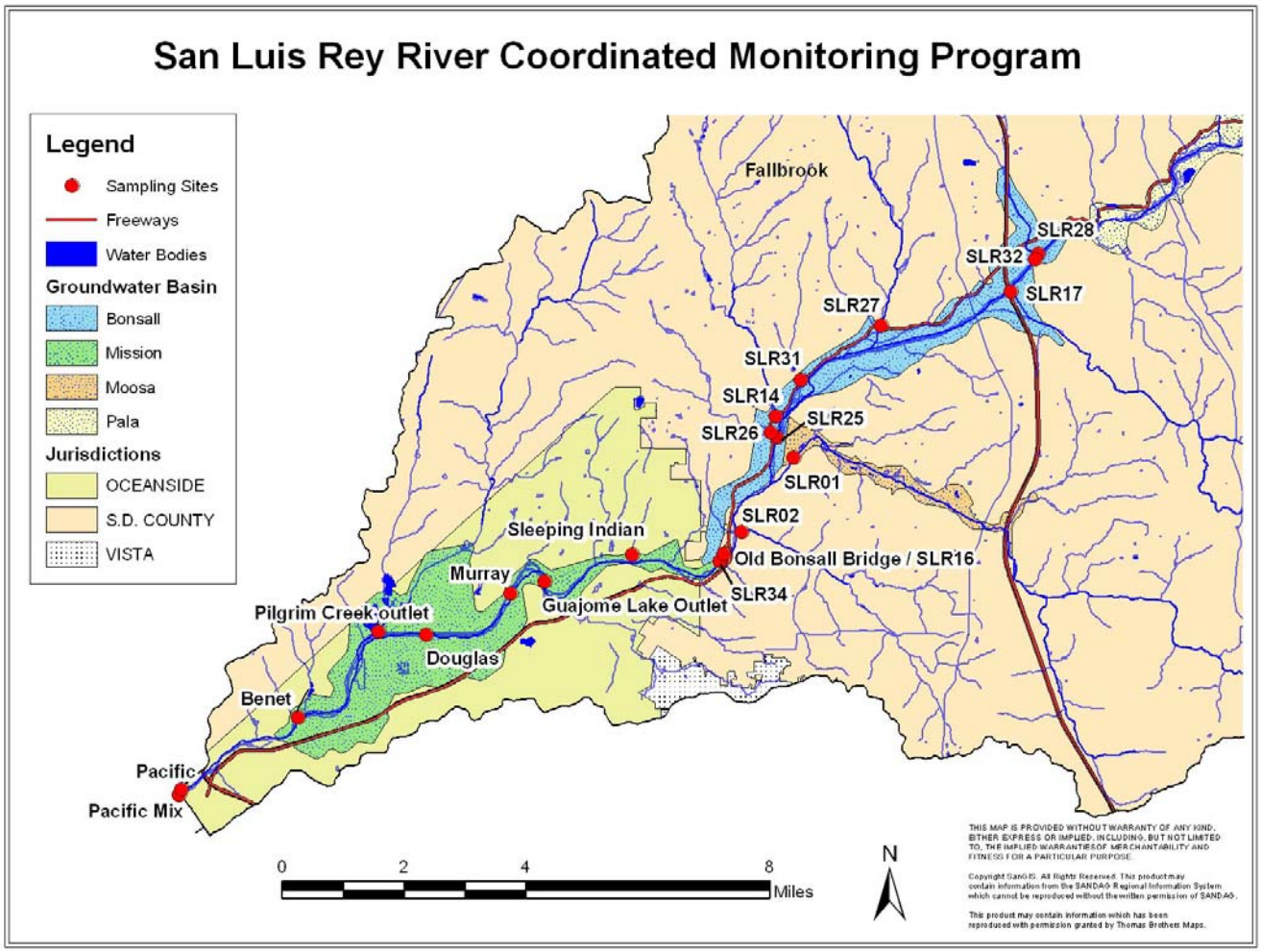

Figure 1: Sampling locations in the San Luis Rey River Watershed.

Table 1: Sample Site Identification and Locations

City of Oceanside Sampling Sites				
Site ID	**Site Description**	**Thomas Bros.**	**Latitude**	**Longitude**
Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	1085 J7	33.20156	-117.39178
Pacific St. Crossing	San Luis Rey River on the east side of Pacific Street crossing	1085 J6	33.20307	-117.39113
Benet Bridge	San Luis Rey River on the east side of Benet Bridge on north side of SR#76/Airport Road	1086 C4	33.22055	-117.35827
	Site moved downstream in June 2008 for improved flow monitoring)	1086 C4	33.21790	-117.35958
Douglas Bridge	San Luis Rey River on the east side of Douglas Bridge on north side of SR#76/Douglas Drive	1086 G1	33.24051	-117.32238
Pilgrim Creek Outlet	North side of SLR River at end if Flood Control Embankment, entering from Whelan Ranch Road	1086 F1	33.24103	-117.33590
Murray Bridge	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandegrift	1067 A7	33.25050	-117.29866
Guajome Lake Outlet (Sampling ended in FY 06/07)	South side of SLR River where Guajome Lake effluent flows into river. 5030 Tyler Road.	1067 B6	33.25343	-117.28868
Sleeping Indian (Sampling began in FY 06/07)	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	1067 E5	33.25998	-117.26422
Bonsall Bridge	San Luis Rey River under the Bonsall Bridge	1067 H5	33.26042	-117.23833

County of San Diego Sampling Sites				
Site ID	**Site Description**	**Thomas Bros.**	**Latitude**	**Longitude**
Olive Hill (SLR25)	San Luis Rey River at Olive Hill Road	1068 A1	33.28838	-117.22335
Shearer Crossing (SLR28)	San Luis Rey River at Pankey Road	1048 H3	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek at Old River Road	1068 A2	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek at Old River Road	1067 J4	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek at Highway 76	1067 J1	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek at Highway 67	1048 A7	33.29335	-117.22396

Live Oak Creek (SLR27)	Live Oak Creek at Highway 67	1048 D4	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek at Dulin Road	1048 H3	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek	1048 B6	33.30205	117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek	1048 J2	33.33138	-117.15067
East Vista Way (SLR 34)	San Luis Rey River East of East Vista Way and Mission Rd. Intersection	1067 H5	33.25872	-117.23931
Bonsall Bridge (SLR16)	San Luis Rey River under the Bonsall Bridge	1067 H5	33.26042	-117.23833

Rain Event Summary

Rain occurred in trace amounts in June and October 2004, in larger quantities January through March 2005, and again in April of 2005 and 2006 (Table 2). Significant rainfall also took place three and four days prior the December 4, 2007 sampling event and some rain occurred prior to February 7, 2008 sampling. Forty four out of 51 samples collected at Pacific St. Crossing appeared to have been influenced by seawater as evidenced by the high concentration of chloride and high conductivity (Table 9).

Table 2: Rain Event Summary.

Date	Fallbrook Airport	Oceanside Airport	Oceanside Harbor
3/10/2004	None	None	None
4/14/2004	None	None	None
5/12/2004	None	None	None
6/9/2004	None	Trace on 6/8 and 6/7	None
7/14/2004	None	None	None
8/17/2004	None	None	None
9/13/2004	None	None	None
10/13/2004	None	Trace on 10/12	None
11/17/2004	None	None	None
12/15/2004	None	None	None
1/26/2005	0.25” on 1/26	Trace on 1/26	None
2/9/2005	0.48” on 2/7	0.04” on 2/7	None
3/9/2005	0.01” on 3/9	None	Trace on 3/8
4/6/2005	None	Trace on 4/4	None
5/3/2005	None	None	None
6/8/2005	None	None	None
7/12/05	None	None	None
7/13/05	None	None	None
8/9/05	None	None	None
8/10/05	None	None	None
9/6/05	None	None	None
10/4/05	None	None	None
11/1/05	None	None	None
12/7/05	None	None	None
1/10/06	None	None	None
2/7/06	None	None	None
4/3/06	0.07” on 4/1	0.02” on 3/31, 0.05” on 4/1 & 0.02” on 4/3	0.06” on 4/2
5/17/06	None	None	None
5/30/06	None	None	None
6/20/06	None	None	None
7/11/06	None	None	None
8/1/06	None	None	Trace on 8/1, 7/31 & 7/30
9/12/06	None	None	None
10/3/6	None	None	Trace on 10/2
11/7/06	None	None	None
12/5/06	None	None	None
1/9/07	None	None	None
2/7/07	None	None	None
3/6/07	None	None	None
4/3/07	None	None	None
5/1/07	None	Trace on 5/1	None
6/5/07	None	None	None
7/10/07	None	None	None
8/7/07	None	None	None

Table 2: Rain Event Summary.

Date	Fallbrook Airport	Oceanside Airport	Oceanside Harbor
9/4/07	None	None	None
10/2/07	None	None	None
11/6/07	None	None	None
12/4/07	Missing Data	0.94" on 12/1/07	1.84" on 11/30 & 1.14" on 12/1/07
1/14/08	None	None	None
2/7/08	2/3-4 Data Missing	0.4" on 2/3 & 0.06" on 2/4	2/3-4 Data Missing
3/4/08	None	None	None
4/8/08	Missing Data	None	None
5/13/08	None	None	None
6/17/08	Missing Data	None	None

Analysis of Data

All data beginning in March 2004 through the end of June 2008 were listed in tables (Tables 3-8) separated by the bacterial indicator type (total coliform, fecal coliform and *Enterococcus*) and sampling location (either along the river's main stem or in the tributaries). In each table, the total number of samples exceeding the State single sample standard and the percentage of samples exceeding were calculated for each sampling date and location and for all dates and locations combined.

The log mean bacterial counts and 95% confidence intervals were then calculated for each bacterial indicator type and sampling location and the results were represented graphically in Figures 2 through 7. One-way analyses of variance (ANOVAs)[‡] were conducted in order to determine whether different locations along the San Luis Rey River and its tributaries differed from one another with respect to any of the measured fecal bacterial indicator concentrations. Sidak post-hoc multiple comparisons of means ($\alpha = 0.05$) (SPSS Inc., 2003) were further conducted to tease out differences in bacteria counts among particular sampling locations in the river's main stem and in its tributaries. For the purpose of the ANOVA and multiple comparisons analyses, the data were log transformed.

[‡] A one-way ANOVA examines the association between a nominal predictor variable (here: sampling locations) and a continuous outcome variable (here: fecal indicator bacteria concentrations). The goal of this procedure is to split the total variation in the data into a portion due to random error (variation in bacteria concentrations within locations) and a portion due to changes in the values of the predictor variable (variation in bacteria concentrations between locations). The statistics calculated in an ANOVA procedure include F and *p*. The F value is the test statistic used to decide whether the sample means are within sampling variability of each other. The null hypothesis is rejected if the F value is large. The *p* value indicates the probability of the F statistic that is as extreme as or more extreme than currently observed assuming the predictor has no effect on the outcome. *P*-values smaller than 0.05 indicate statistically significant results ($\alpha < 0.05$).

In order to determine whether bacterial concentrations at the mouth of the SLR River may have had an effect on those at the Pacific Ocean shoreline nearby, a correlation analysis was conducted on the bacterial counts from the river month (Pacific Street Crossing) and the Pacific Mix Zone located 72 feet south of the river mouth. In order to normalize the data, the counts were log-transformed. Correlation coefficients (r^2) and significance (p values) were calculated for each set of the 22 sample pairs analyzed.[§]

Results

Table 9, located at the end of this attachment, provides a full record of all data collected by the bacteria study.

Total Coliform Bacteria in the San Luis Rey River

The total coliform bacteria counts exceeded the State single sample standard of 10,000 MPN/100ml in 40 out of 257 (16%) samples analyzed (Table 3). Shearer Crossing had the highest percent (40%) of exceedances. Exceedances were recorded throughout the sampling period with the greatest percentage (100%) occurring in December 2007. The highest exceedance of 500,000 MPN/100 ml occurred at Bonsall Bridge in December 2007. It is noteworthy that the December 2007 sampling event may have been influenced by substantial rainfall that took place four and three days prior; on November 30, 2007 and December 1, 2007 (Table 2).

The overall mean concentrations of total coliform along the San Luis Rey River tended to remain below the single sample standard at all sampled locations (Figure 2). According to the one-way ANOVA analysis ($F= 12.85$; $p < 0.001$), the mean total coliform concentration at Pacific St. Crossing was significantly lower than that at any of the sites further upstream. However, the mean total coliform concentration in the Pacific Mix Zone was lower than that at the Pacific St. Crossing. The mean total coliform counts at the six sampling sites upstream of Pacific St. Crossing were not significantly different from each other.

[§] The correlation coefficient (r^2) gives a measure of the nature and magnitude of each correlation. Positive r^2 values indicate that counts at the two sites increase or decrease together; negative values of r^2 indicate that while counts at one location increase, they decrease at the other; the higher the value of r^2, the stronger the correlation with a higher percentage of variability in bacterial counts being explained by the sampling location. *P*-values lower than 0.05 indicate statistically significant correlations.

Table 3: . Total Coliform Densities (MPN/100ml) in the San Luis Rey River.

Date	Pacific Mix Zone	Pacific Street Crossing	Benet Bridge	Douglas St. Bridge	Murray Bridge	Bonsall Bridge	E. Vista Way	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	1,700	1,700	3,000	6,500	1,400	NS	23	500	7	0	0%
4/14/04	NS	5,000	13,000	5,800	2,200	1,400	NS	NS	NS	5	1	20%
5/12/04	NS	1,100	22,000	24,000	13,000	3,500	NS	NS	NS	5	3	60%
6/9/04	NS	130	11,000	22,000	13,000	16,000	NS	13,000	dry	6	5	83%
7/14/04	NS	900	1,600	1,600	dry	1,600	NS	NS	NS	4	0	0%
8/17/04	NS	6,500	2,300	dry	dry	7,000	NS	NS	NS	3	0	0%
9/13/04	NS	800	11,000	dry	dry	13,000	NS	9,000	dry	4	2	50%
10/13/04	NS	3,000	1,700	3,000	dry	2,400	NS	47,750	dry	5	1	20%
11/17/04	NS	1,000	1,300	1,300	3,000	NS	NS	5,000	30,000	6	1	17%
12/15/04	NS	20	800	9,000	3,000	300	NS	305	700	7	0	0%
1/26/05	NS	5,000	7,000	2,000	230	11,000	NS	NS	NS	5	1	20%
2/9/05	NS	800	2,300	2,400	1,700	260	NS	NS	NS	5	0	0%
3/9/05	NS	1,700	2,200	5,000	5,000	3,000	NS	NS	NS	5	0	0%
4/6/05	NS	75	8,000	800	3,000	3,000	NS	NS	NS	5	0	0%
5/3/05	NS	17,000	9,500	13,000	11,000	2,800	NS	11,000	NS	6	4	67%
6/8/05	NS	5,000	8,000	5,000	1,300	2,200	NS	NS	NS	5	0	0%
7/12-7/13/05	NS	2,200	4,700	230	1,400	800	NS	NS	NS	5	0	0%
8/9-8/10/05	NS	750	8,000	50,000	11,000	3,000	NS	NS	NS	5	1	20%
9/6/05	NS	10	3,000	5,000	2,400	3,000	NS	NS	NS	5	0	0%
10/4/05	NS	10	5,000	3,000	5,000	3,000	NS	NS	NS	5	0	0%
11/1/05	NS	500	2,200	12,000	3,000	1,300	NS	NS	NS	5	1	20%
12/7/05	NS	520	300	13,000	500	1,700	NS	NS	1,700	6	1	17%
1/10/06	NS	4,900	800	5,000	7,000	1,700	NS	NS	NS	5	0	0%
2/7/06	NS	800	700	5,200	1,700	300	NS	NS	NS	5	0	0%
4/3/06	NS	500	1,700	4,300	2,600	700	NS	5,000	NS	6	0	0%
5/17/06	NS	NS	NS	NS	NS	17,000	NS	8,000	13,000	3	2	67%
5/30/06	NS	800	2,200	6,000	NS	NS	NS	NS	NS	3	0	0%
6/20/06	NS	300	5,000	2,200	5,200	2,200	NS	NS	NS	5	0	0%
7/11/06	20	20	5,000	700	2,200	5,000	NS	NS	NS	5	0	0%
8/1/06	320	1,100	1,700	dry	5,000	2,200	NS	NS	NS	4	0	0%
9/12/06	20	500	8,000	dry	4,000	1,100	NS	NS	NS	4	0	0%
10/3/06	NS	300	13,000	dry	13,000	8,000	NS	NS	NS	4	2	50%
11/7/06	50	60	3,000	dry	5,000	1,300	NS	NS	NS	4	0	0%
12/5/06	20	80	750	5,000	2,200	170	NS	NS	NS	5	0	0%
1/9/07	NS	20	340	1,300	800	220	NS	NS	NS	5	0	0%
2/7/07	300	400	300	1,300	1,900	1,700	NS	NS	NS	5	0	0%
3/6/07	170	850	300	5,000	1,200	230	NS	NS	NS	5	0	0%
4/3/07	500	260	260	800	800	210	NS	NS	NS	5	0	0%
5/1/07	220	200	1,100	3,900	1,300	1,300	NS	NS	NS	5	0	0%
6/5/07	170	2,200	2,300	30,000	8,000	500	NS	NS	NS	5	1	20%
7/10/07	2	480	13,000	1,100	5,000	800	NS	NS	dry	5	1	20%
8/7/07	4	110	1,400	4,300	dry	900	NS	NS	dry	4	0	0%
9/4/07	ND	70	3,000	30,000	dry	800	NS	NS	dry	4	1	25%
10/2/07	800	300	3,000	13,000	dry	6,000	NS	NS	dry	4	1	25%
11/6/07	1,700	2,600	800	5,000	dry	800	NS	NS	NS	4	0	0%
12/4/07	300,000	97,000	22,000	30,000	240,000	500,000	NS	NS	NS	5	5	100%
1/14/08	1,700	13,000	2,300	2,200	3,000	3,000	NS	500	NS	6	1	17%
2/7/08	1,700	3,000	13,000	5,000	23,000	800	NS	NS	NS	5	2	40%
3/4/08	2,200	5,000	2,300	2,200	3,000	270	NS	NS	NS	5	0	0%
4/8/08	500	500	800	2,800	1,300	3,000	NS	NS	NS	5	0	0%
5/13/08	80	130	11,000	7,000	2,300	3,000	NS	NS	NS	5	1	20%
6/17/08	22	500	30,000	70,000	5,000	2,200	1,100	3,000	dry	7	2	29%
Total # of Samples	**22**	**51**	**51**	**45**	**42**	**50**	**1**	**11**	**5**	**256**		
# Samples Exceeding AB411	**1**	**3**	**10**	**11**	**6**	**5**	**0**	**3**	**2**		**40**	
% Exceeding AB411	**5%**	**6%**	**20%**	**24%**	**14%**	**10%**	**0%**	**27%**	**40%**			**16%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 10,000 MPN/100 mL.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

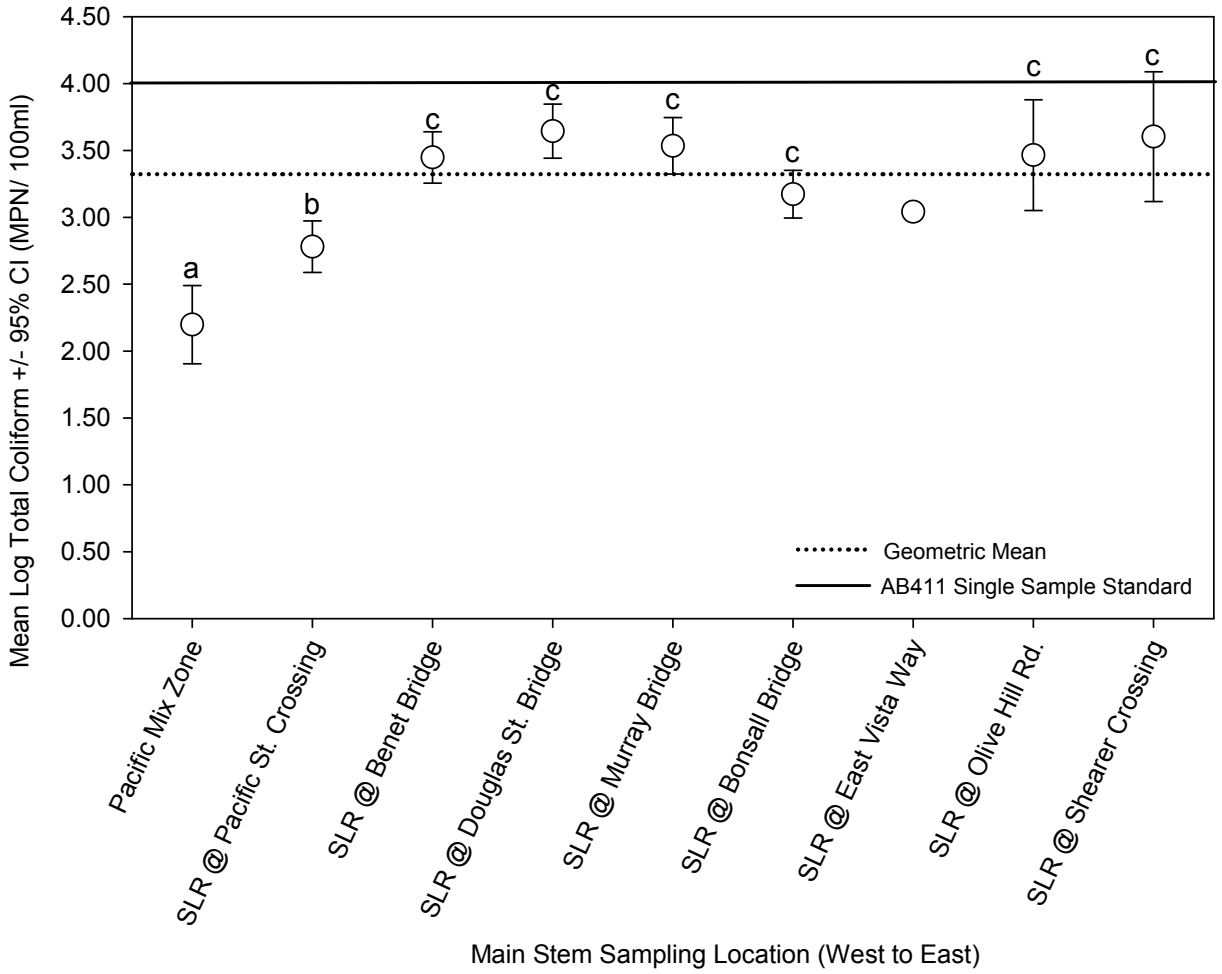

Figure 2: Relative mean concentrations ± 95% confidence intervals of total coliform bacteria in San Luis Rey River and in the Pacific Mix Zone. Location means with letters in common are not significantly different (α= 0.05).

Fecal Coliform Bacteria in the San Luis Rey River

The fecal coliform bacteria counts exceeded the State single sample standard of 400 MPN/100ml in 73 of 253 (29%) samples analyzed (Table 4). Exceedances occurred throughout the sampling period; the greatest percentage (80%) was recorded in December 2007. The highest exceedance of 23,000 MPN/100ml was recorded at Murray Bridge on December 4, 2007. Coincidently, the December 2007 sampling was preceded by substantial rain 3 and 4 days prior (Table 2). The highest percentage of exceedances (58%) was recorded at Douglas Bridge.

With the exception of Douglas Bridge, the overall mean concentrations of fecal coliform along the main stem of San Luis Rey River tended to remain below the AB411 Single Sample Standard (Figure 3). According to the one-way ANOVA, the mean concentrations of fecal coliform were

significantly different among at least some of the sampling locations (F= 6.09; $p < 0.001$) with Douglas Bridge site having a significantly higher fecal coliform concentration than any of the remaining sites (Figure 3).

Table 4: Fecal Coliform Densities (MPN/100 mL) in the San Luis Rey River.

Date	Pacific Mix Zone	Pacific Street Crossing	Benet Bridge	Douglas St. Bridge	Murray Bridge	Bonsall Bridge	E. Vista Way	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	500	130	1,700	60	170	NS	ND	23	7	2	29%
4/14/04	NS	2,300	260	360	300	20	NS	NS	NS	5	1	20%
5/12/04	NS	400	40	170	40	20	NS	NS	NS	5	1	20%
6/9/04	NS	40	500	800	170	80	NS	130	dry	6	2	33%
7/14/04	NS	300	50	50	dry	50	NS	NS	NS	4	0	0%
8/17/04	NS	5,000	80	dry	dry	40	NS	NS	NS	3	1	33%
9/13/04	NS	160	170	dry	dry	20	NS	75	dry	4	0	0%
10/13/04	NS	3,000	20	20	dry	20	NS	188	dry	5	1	20%
11/17/04	NS	700	220	1,300	300	NS	NS	130	20	6	2	33%
12/15/04	NS	20	500	9,000	110	40	NS	50	40	7	2	29%
1/26/05	NS	300	1,400	360	230	3,000	NS	NS	NS	5	2	40%
2/9/05	NS	300	500	500	500	ND	NS	NS	NS	5	3	60%
3/9/05	NS	500	800	1,300	230	140	NS	NS	NS	5	3	60%
4/6/05	NS	ND	70	230	ND	80	NS	NS	NS	5	0	0%
5/3/05	NS	300	270	300	130	130	NS	700	NS	6	1	17%
6/8/05	NS	80	170	80	500	140	NS	NS	NS	5	1	20%
7/12-7/13/05	NS	80	95	230	300	130	NS	NS	NS	5	0	0%
8/9-8/10/05	NS	160	500	500	270	300	NS	NS	NS	5	2	40%
9/6/05	NS	10	300	500	400	800	NS	NS	NS	5	3	60%
10/4/05	NS	10	170	300	1,300	140	NS	NS	NS	5	1	20%
11/1/05	NS	130	1,100	9,500	220	230	NS	NS	NS	5	2	40%
12/7/05	NS	220	230	13,000	30	40	NS	NS	NS	5	1	20%
1/10/06	NS	4,400	500	80	80	90	NS	NS	NS	5	2	40%
2/7/06	NS	500	300	5,200	300	110	NS	NS	NS	5	2	40%
4/3/06	NS	80	40	1,700	160	8,130	NS	40	NS	6	2	33%
5/17/06	NS	NS	NS	NS	NS	NS	NS	50	NS	1	0	0%
5/30/06	NS	170	80	500	NS	NS	NS	NS	NS	3	1	33%
6/20/06	NS	230	800	300	260	500	NS	NS	NS	5	2	40%
7/11/06	20	20	1,300	230	130	20	NS	NS	NS	5	1	20%
8/1/06	220	700	80	dry	300	80	NS	NS	NS	4	1	25%
9/12/06	20	230	800	dry	220	110	NS	NS	NS	4	1	25%
10/3/06	NS	20	300	dry	500	80	NS	NS	NS	4	1	25%
11/7/06	50	60	500	dry	300	130	NS	NS	NS	4	1	25%
12/5/06	20	40	260	3,000	300	130	NS	NS	NS	5	1	20%
1/9/07	NS	20	140	1,300	80	130	NS	NS	NS	5	1	20%
2/7/07	300	400	20	800	110	70	NS	NS	NS	5	2	40%
3/6/07	110	700	230	700	300	110	NS	NS	NS	5	2	40%
4/3/07	500	260	170	300	300	90	NS	NS	NS	5	0	0%
5/1/07	70	100	230	530	70	80	NS	NS	NS	5	1	20%
6/5/07	170	2,200	2,300	2,300	230	20	NS	NS	NS	5	3	60%
7/10/07	ND	170	500	40	170	170	NS	NS	dry	5	1	20%
8/7/07	2	110	70	500	dry	40	NS	NS	dry	4	1	25%
9/4/07	ND	20	220	700	dry	130	NS	NS	dry	4	1	25%
10/2/07	800	230	2,300	40	dry	80	NS	NS	dry	4	1	25%
11/6/07	1,700	2,000	110	40	dry	130	NS	NS	NS	4	1	25%
12/4/07	2,300	2,200	500	230	23,000	7,000	NS	NS	NS	5	4	80%
1/14/08	40	500	130	300	40	230	NS	300	NS	6	1	17%
2/7/08	800	1,300	700	800	260	170	NS	NS	NS	5	3	60%
3/4/08	800	300	170	1,300	20	220	NS	NS	NS	5	1	20%
4/8/08	40	300	110	900	70	170	NS	NS	NS	5	1	20%
5/13/08	ND	80	80	800	300	110	NS	NS	NS	5	1	20%
6/17/08	ND	220	70	3,000	500	140	130	130	dry	7	2	29%
Total # of Samples	**22**	**51**	**51**	**45**	**42**	**49**	**1**	**11**	**3**	**253**		
# Samples Exceeding AB411	**6**	**17**	**17**	**26**	**7**	**5**	**0**	**1**	**0**		**73**	
% Exceeding AB411	**27%**	**33%**	**33%**	**58%**	**17%**	**10%**	**0%**	**9%**	**0%**			**29%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 400 MPN/100 mL
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

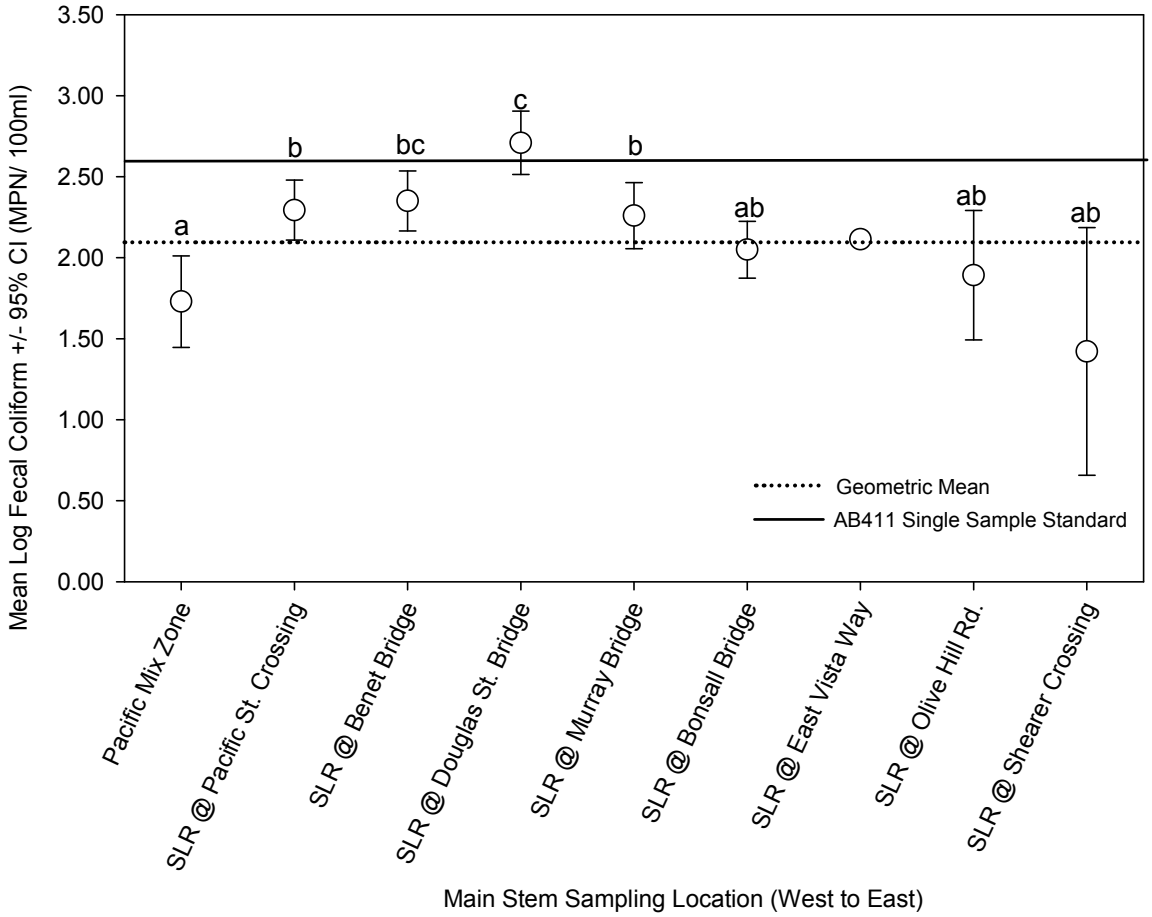

Figure 3: Relative mean concentrations ± 95% confidence intervals of fecal coliform bacteria in San Luis Rey River and in the Pacific Mix Zone. Location means with letters in common are not significantly different (α= 0.05).

Enterococcus Bacteria in the San Luis Rey River

Enterococcus bacteria counts exceeded the State Single Sample Standard of 104 MPN/100ml in 163 out of 254 (64%) samples analyzed (Table 5). For the FY 2007/2008, exceedances occurred throughout the sampling period with the greatest percentage (100%) recorded in February 2008. Olive Hill Rd. and East Vista Way had the highest percentage of exceedances.

The overall mean counts of *Enterococcus* bacteria along the San Luis Rey River were above the AB411 Single Sample Standard (Figure 4). The one-way ANOVA indicated that location along the river had a significant effect on the mean concentrations of *Enterococci* ($F= 14.23$; $p < 0.001$). The lowest *Enterococcus* counts were found at Pacific St. Crossing and at Shearer Crossing and there was no significant difference between the Pacific St. Crossing and the Pacific Mix Zone.

Table 5: *Enterococcus* Densities (MPN/100ml) in the San Luis Rey River.

Date	Pacific Mix Zone	Pacific Street Crossing	Benet Bridge	Douglas St. Bridge	Murray Bridge	Bonsall Bridge	E. Vista Way	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	52	265	2,063	116	285	NS	8	ND	7	4	57%
4/14/04	NS	290	170	310	200	34	NS	NS	NS	5	4	80%
5/12/04	NS	110	63	259	51	10	NS	NS	NS	5	2	40%
6/9/04	NS	10	490	230	292	160	NS	300	NS	6	5	83%
7/14/04	NS	300	130	50	dry	1,100	NS	NS	NS	4	3	75%
8/17/04	NS	400	98	dry	dry	140	NS	NS	NS	3	2	67%
9/13/04	NS	36	470	dry	dry	260	NS	180	dry	4	3	75%
10/13/04	NS	360	170	81	dry	93	NS	970	dry	5	3	60%
11/17/04	NS	96	300	2,240	310	NS	NS	140	170	6	5	83%
12/15/04	NS	10	170	5,470	241	31	NS	140	40	7	4	57%
1/26/05	NS	300	600	330	940	670	NS	NS	NS	5	5	100%
2/9/05	NS	20	850	420	31	20	NS	NS	NS	5	2	40%
3/9/05	NS	93	500	240	170	92	NS	NS	NS	5	3	60%
4/6/05	NS	ND	122	180	52	76	NS	NS	NS	5	2	40%
5/3/05	NS	171	110	180	190	140	NS	24,000	NS	6	6	100%
6/8/05	NS	78	190	280	170	140	NS	NS	NS	5	4	80%
7/12-7/13/05	NS	240	220	100	110	160	NS	NS	NS	5	4	80%
8/9-8/10/05	NS	10	140	250	360	270	NS	NS	NS	5	4	80%
9/6/05	NS	5	120	260	150	175	NS	NS	NS	5	4	80%
10/4/05	NS	5	96	410	226	132	NS	NS	NS	5	3	60%
11/1/05	NS	31	650	4,480	210	140	NS	NS	NS	5	4	80%
12/7/05	NS	540	600	4,760	190	3,040	NS	40	40	7	5	71%
1/10/06	NS	300	1,870	170	170	160	NS	NS	NS	5	5	100%
2/7/06	NS	190	330	4,220	74	82	NS	NS	NS	5	3	60%
4/3/06	NS	31	30	780	84	120	NS	130	NS	6	3	50%
5/17/06	NS	NS	NS	NS	NS	700	NS	NS	NS	1	1	100%
5/30/06	NS	31	190	85	NS	NS	NS	NS	NS	3	1	33%
6/20/06	NS	108	340	87	110	228	NS	NS	NS	5	4	80%
7/11/06	10	ND	540	88	200	190	NS	NS	NS	5	3	60%
8/1/06	10	20	200	NS	260	250	NS	NS	NS	4	3	75%
9/12/06	10	ND	290	NS	320	40	NS	NS	NS	4	2	50%
10/3/06	NS	20	130	NS	110	80	NS	NS	NS	4	2	50%
11/7/06	10	ND	120	NS	213	52	NS	NS	NS	4	2	50%
12/5/06	10	ND	240	4,510	260	80	NS	NS	NS	4	3	75%
1/9/07		10	135	1,290	85	31	NS	NS	NS	5	2	40%
2/7/07	62	110	250	1,180	134	98	NS	NS	NS	5	4	80%
3/6/07	20	190	310	490	88	130	NS	NS	NS	5	4	80%
4/3/07	10	58	76	360	76	88	NS	NS	NS	5	1	20%
5/1/07	10	35	120	430	190	200	NS	NS	NS	5	4	80%
6/5/07	60	ND	240	209	180	20	NS	NS	NS	5	3	60%
7/10/07	ND	10	160	144	31	230	NS	NS	dry	5	3	60%
8/7/07	10	ND	98	200	dry	93	NS	NS	dry	4	1	25%
9/4/07	ND	ND	206	301	dry	31	NS	NS	dry	4	2	50%
10/2/07	185	93	320	52	dry	30	NS	NS	dry	4	1	25%
11/6/07	831	240	85	41	dry	100	NS	NS	NS	4	1	25%
12/4/07	380	360	86	210	770	942	NS	NS	NS	5	4	80%
1/14/08	62	73	20	98	31	52	NS	300	NS	6	1	17%
2/7/08	450	743	677	2,224	158	161	NS	NS	NS	5	5	100%
3/4/08	98	213	233	759	41	155	NS	NS	NS	5	4	80%
4/8/08	ND	20	ND	1,274	122	148	NS	NS	NS	5	3	60%
5/13/08	41	ND	63	1,119	86	187	NS	NS	NS	5	2	40%
6/17/08	ND	359	31	488	1,203	84	500	500	dry	7	5	71%
Total # of Samples	**22**	**51**	**51**	**45**	**42**	**50**	**1**	**11**	**4**	**254**		
# Samples Exceeding AB411	**4**	**19**	**39**	**36**	**28**	**26**	**1**	**9**	**1**		**163**	
% Exceeding AB411	**18%**	**37%**	**76%**	**80%**	**67%**	**52%**	**100%**	**82%**	**25%**			**64%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 104 MPN/100ml.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

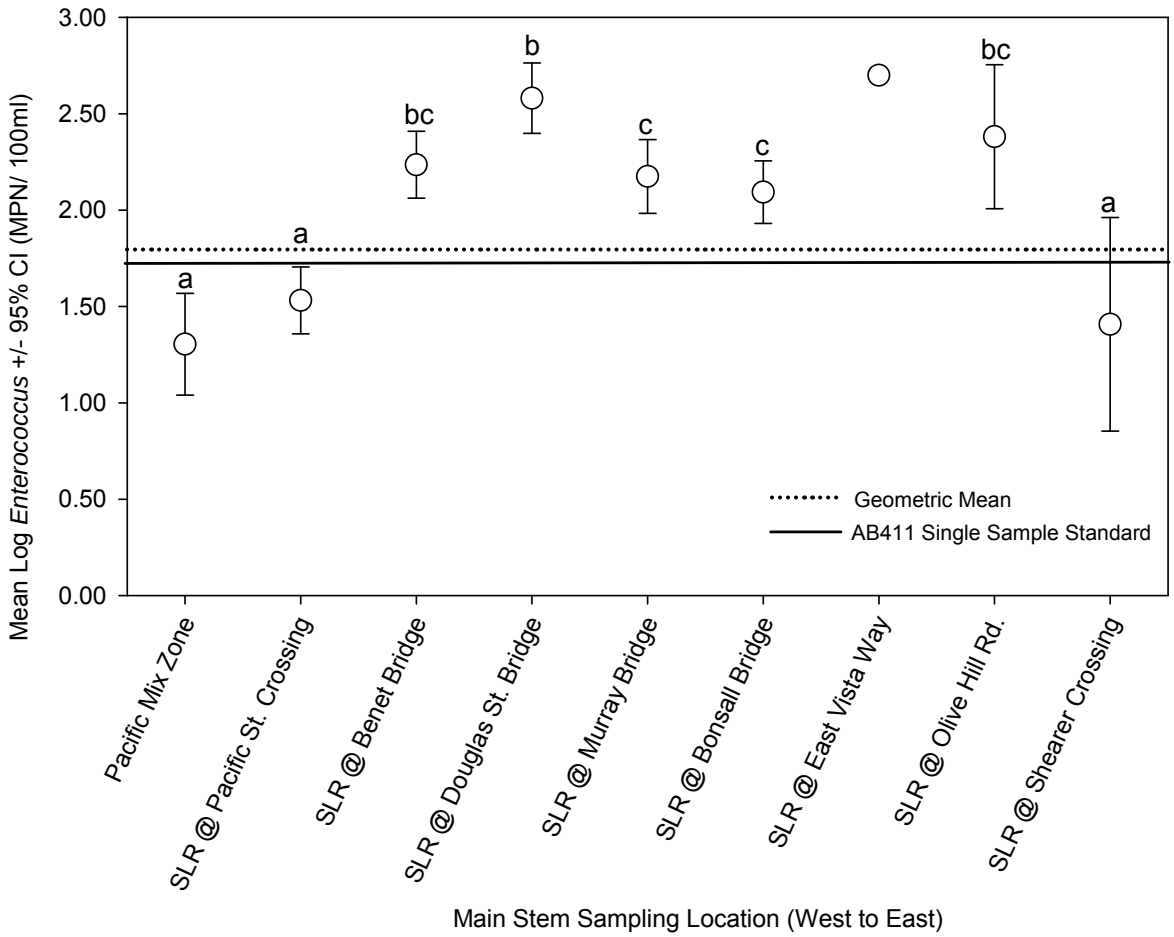

Figure 4: Relative mean concentrations ± 95% confidence intervals of *Enterococcus* bacteria in San Luis Rey River and in the Pacific Mix Zone. Location means with letters in common are not significantly different (α= 0.05).

Total Coliform Bacteria in Tributaries to the San Luis Rey River

Total coliform bacteria samples collected from the tributaries to the San Luis Rey River exceeded the State single sample standard of 10,000 MPN/100ml in 49 out of 122 (40%) samples analyzed (Table 6). For the FY 2007/2008 exceedances occurred throughout the sampling period with 100% recorded in June, October and December of 2007. Sleeping Indian Outlet had the highest percentage of exceedances (84%).

The overall mean concentrations of total coliform in the San Luis Rey River tributaries tended to remain below the AB411 single sample standard (Figure 5). The one-way ANOVA indicated that, with respect to the tributaries, sampling location did have a significant effect on the total coliform bacterial counts (F= 3.86; $p < 0.001$).

Table 6: Total Coliform Densities (MPN/100ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	Little Gopher Canyon Creek	Moosa Canyon Creek	Bansall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	5,000	1,300	NS	80	130	50	23	22	30	8	0	0%
4/14/04	8,000	dry	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	13,000	5,000	dry	11,000	2,300	30,000	5	3	60%
9/13/04	dry	dry	NS	130,000	23,000	dry	30,000	23,000	dry	4	4	100%
10/13/04	dry	dry	NS	dry	17,000	dry	39,000	23,000	dry	3	3	100%
11/17/04	2,300	1,300	NS	8,000	8,000	8,000	12,000	24,000	24,000	8	3	38%
12/15/04	1,700	1,300	NS	1,700	1,400	1,400	1,700	1,700	1,700	8	0	0%
1/26/05	1,700	3,000	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	2,300	800	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	7,000	2,300	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	8,000	30,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/3/05	5,000	dry	NS	5,000	5,000	NS	NS	NS	NS	3	0	0%
6/8/05	14,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
7/12/05	17,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
8/9/05	3,000	dry	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	5,000	dry	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	30,000	dry	NS	NS	NS	NS	NS	NS	1,700	2	1	50%
1/10/06	11,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
2/7/06	13,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
4/3/06	23,000	dry	NS	1,700	NS	5,000	5,000	5,000	5,000	6	1	17%
5/17/06	NS	NS	NS	8,130	8,000	11,000	11,000	11,000	13,000	6	4	67%
5/30/06	11,000	3,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/20/06	5,000	5,000	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/11/06	7,000	1,700	NS	NS	NS	NS	NS	NS	NS	2	0	0%
8/1/06	8,000	5,000	NS	NS	NS	NS	NS	NS	NS	2	0	0%
9/12/06	50,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
10/3/06	30,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
11/7/06	5,000	dry	23,000	NS	NS	NS	NS	NS	NS	2	1	50%
12/5/06	22,000	dry	13,000	NS	NS	NS	NS	NS	NS	2	2	100%
1/9/07	5,000	dry	8,000	NS	NS	NS	NS	NS	NS	2	0	0%
2/7/07	8,000	230	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/6/07	30,000	NS	23,000	NS	NS	NS	NS	NS	NS	2	2	100%
4/3/07	2,800	NS	22,000	NS	NS	NS	NS	NS	NS	2	1	50%
5/1/07	8,000	NS	23,000	NS	NS	NS	NS	NS	NS	2	1	50%
6/5/07	900,000	NS	13,000	NS	NS	NS	NS	NS	NS	2	2	100%
7/10/07	NS	NS	5,000	NS	NS	NS	NS	NS	dry	1	0	0%
8/7/07	NS	NS	13,000	NS	NS	NS	NS	NS	dry	1	1	100%
9/4/07	NS	NS	130,000	NS	NS	NS	NS	NS	dry	1	1	100%
10/2/07	300,000	NS	17,000	NS	NS	NS	NS	NS	dry	2	2	100%
11/6/07	NS	NS	17,000	NS	NS	NS	NS	NS	NS	1	1	100%
12/4/07	50,000	NS	13,000	NS	NS	NS	NS	NS	NS	2	2	100%
1/14/08	3,000	NS	80,000	1,100	24,000	NS	800	800	NS	6	2	33%
2/7/08	8,000	NS	13,000	NS	NS	NS	NS	NS	dry	2	1	50%
3/4/08	2,200	NS	2,200	NS	NS	NS	NS	NS	NS	2	0	0%
4/8/08	7,000	NS	80,000	NS	NS	NS	NS	NS	NS	2	1	50%
5/13/08	8,000	NS	50,000	NS	NS	NS	NS	NS	NS	2	1	50%
6/17-18/2008	NS	NS	17,000	1,100	3,000	2,200	2,200	1,700	dry	6	1	17%
Total # of Samples	**36**	**11**	**19**	**7**	**7**	**5**	**7**	**7**	**5**	**122**		
# Samples Exceeding AB411	**14**	**1**	**16**	**2**	**3**	**1**	**5**	**4**	**3**		**49**	
% Exceeding AB411	**39%**	**9%**	**84%**	**29%**	**43%**	**20%**	**71%**	**57%**	**60%**			**40%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 10,000 MPN/100 mL.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

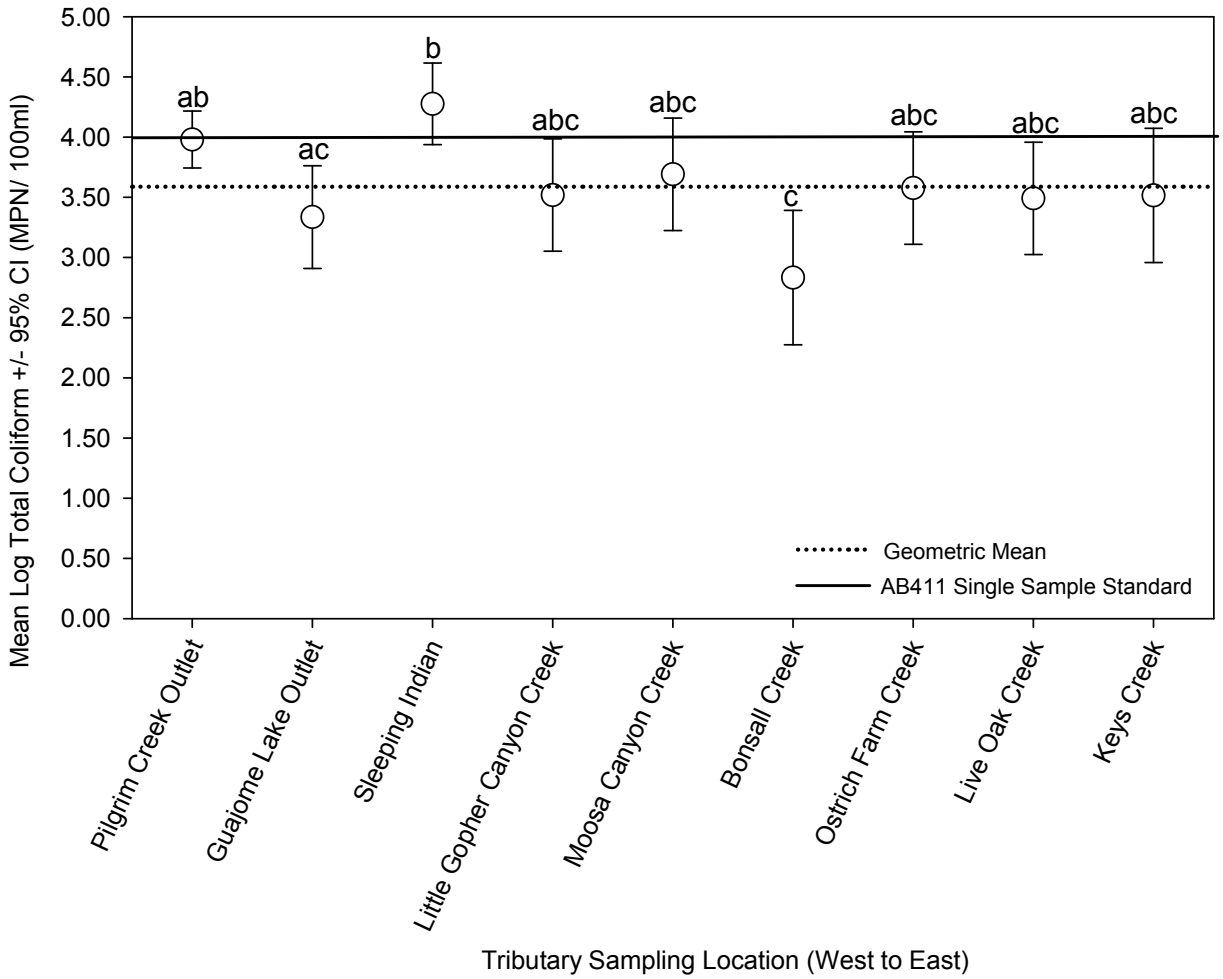

Figure 5: Relative mean concentrations ± 95% confidence intervals of total coliform bacteria in San Luis Rey River tributaries. Location means with letters in common are not significantly different (α= 0.05).

Fecal Coliform Bacteria in Tributaries to the San Luis Rey River

Fecal coliform bacteria samples collected in tributaries to the San Luis Rey River exceeded the State single sample standard of 400 MPN/100ml in 32 out of 92 (32%) samples analyzed (Table 7). For FY 2007/ 2008 exceedances occurred throughout the sampling period with 100% recorded October of 2007. The highest percentage of exceedances (79%) occurred at the Pilgrim Creek.

With the exception of Pilgrim Creek Outlet, the mean concentrations of fecal coliform in the San Luis Rey River tributaries remained below the AB411 Single Sample Standard (Figure 6). The one-way ANOVA indicated that the mean fecal coliform bacteria concentrations did differ significantly among at least some of the tributaries ($F = 6.82$; $p < 0.001$) with Pilgrim Creek Outlet having a significantly higher mean fecal coliform concentration than all but one of the remaining tributaries (Key's Creek).

Table 7: Fecal Coliform Densities (MPN/100 ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	Little Gopher Canyon Creek	Moosa Canyon Creek	Bansall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	500	20	NS	8	4	ND	2	4	2	8	1	13%
4/14/04	230	dry	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	800	220	dry	20	220	5,000	5	2	40%
9/13/04	dry	dry	NS	8,000	20	dry	20	170	dry	4	1	25%
10/13/04	dry	dry	NS	NS	110	dry	4,050	500	dry	3	2	67%
11/17/04	220	90	NS	110	130	130	75	230	110	8	0	0%
12/15/04	170	170	NS	170	230	80	20	82	90	8	0	0%
1/26/05	500	70	NS	NS	NS	NS	NS	NS	NS	2	1	50%
2/9/05	130	70	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	800	20	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/6/05	500	40	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/3/05	800	dry	NS	300	40	NS	NS	NS	NS	3	1	33%
6/8/05	7,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
7/12/05	11,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
8/9/05	500	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
10/4/05	1,700	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
12/7/05	1,700	dry	NS	8	NS	NS	NS	224	1,024	4	2	50%
1/10/06	700	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
2/7/06	600	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
4/3/06	900	dry	NS	40	5,040	40	40	170	360	7	2	29%
5/30/06	1,100	130	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/20/06	5,000	130	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/11/06	3,000	300	NS	NS	NS	NS	NS	NS	NS	2	1	50%
8/1/06	1,300	800	NS	NS	NS	NS	NS	NS	NS	2	2	100%
9/12/06	170	dry	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	5,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
11/7/06	300	dry	170	NS	NS	NS	NS	NS	NS	2	0	0%
12/5/06	800	dry	170	NS	NS	NS	NS	NS	NS	2	1	50%
1/9/07	1,300	dry	500	NS	NS	NS	NS	NS	NS	2	2	100%
2/7/07	2,200	40	NS	NS	NS	NS	NS	NS	NS	2	1	50%
3/6/07	700	NS	40	NS	NS	NS	NS	NS	NS	2	1	50%
4/3/07	300	NS	170	NS	NS	NS	NS	NS	NS	2	0	0%
5/1/07	300	NS	80	NS	NS	NS	NS	NS	NS	2	0	0%
6/5/07	50,000	NS	40	NS	NS	NS	NS	NS	NS	2	1	50%
7/10/07	NS	NS	130	NS	NS	NS	NS	NS	dry	1	0	0%
8/7/07	NS	NS	140	NS	NS	NS	NS	NS	dry	1	0	0%
9/4/07	NS	NS	260	NS	NS	NS	NS	NS	dry	1	0	0%
10/2/07	23,000	NS	2,200	NS	NS	NS	NS	NS	dry	2	2	100%
11/6/07	NS	NS	20	NS	NS	NS	NS	NS	NS	1	0	0%
12/4/07	3,000	NS	300	NS	NS	NS	NS	NS	NS	2	1	50%
1/14/08	300	NS	20	230	330	NS	140	270	NS	6	0	0%
2/7/08	110	NS	70	NS	NS	NS	NS	NS	dry	2	0	0%
3/4/08	210	NS	20	NS	NS	NS	NS	NS	NS	2	0	0%
4/8/08	800	NS	230	NS	NS	NS	NS	NS	NS	2	1	50%
5/13/08	2,200	NS	230	NS	NS	NS	NS	NS	NS	2	1	50%
6/17-18/2008	NS	NS	1,300	500	2,400	900	80	230	dry	6	4	67%
Total # of Samples	**29**	**11**	**8**	**5**	**5**	**3**	**4**	**5**	**4**	**92**		
# Samples Exceeding AB411	**23**	**1**	**1**	**2**	**1**	**0**	**1**	**1**	**2**		**32**	
% Exceeding AB411	**79%**	**9%**	**13%**	**40%**	**20%**	**0%**	**25%**	**20%**	**50%**			**35%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 400 MPN/100 mL.

ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

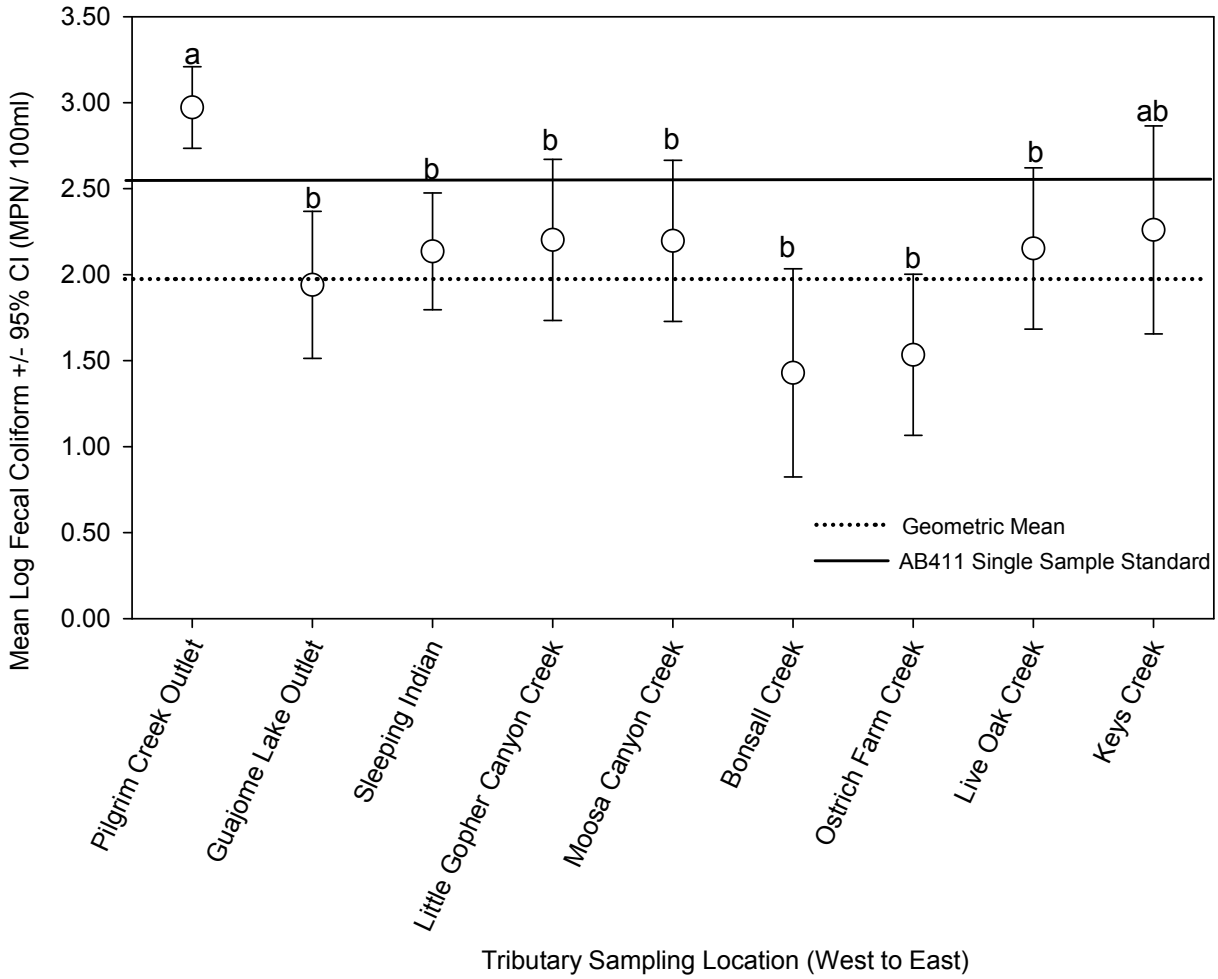

Figure 6: Relative mean concentrations ± 95% confidence intervals of fecal coliform bacteria in San Luis Rey River tributaries. Location means with letters in common are not significantly different (α= 0.05).

Enterococcus Bacteria in Tributaries to the San Luis Rey River

Enterococcus bacteria samples collected in tributaries to the San Luis Rey River exceeded the State single sample standard of 104 MPN/100ml in 95 out of 120 (79%) samples analyzed (Table 8). Exceedances occurred throughout the sampling period. The highest percentage of exceedances (95%) occurred at Pilgrim Creek. The highest exceedance of 18,980 MPN/100ml was also found at the Pilgrim Creek Outlet in October of 2007.

Only the Pilgrim Creek Outlet and the Sleeping Indian Outlet tributaries significantly exceeded the AB411 single sample standard for *Enterococcus* bacteria (Fig. 7). The one-way ANOVA indicated there were no significant differences among the tributaries (F= 1.76; p = 0.09).

Table 8: *Enterococcus* Densities (MPN/100ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	Little Gopher Canyon Creek	Moosa Canyon Creek	Bansall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	336	216	NS	2	4	4	2	2	2	8	2	25%
4/14/04	310	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
6/9/04	dry	dry	NS	700	260	dry	230	80	3,000	5	4	80%
9/13/04	dry	dry	NS	3,500	130	dry	40	800	dry	4	3	75%
10/13/04	dry	dry	NS	dry	110	dry	170	2,300	dry	3	3	100%
11/17/04	160	170	NS	500	170	800	635	110	500	8	8	100%
12/15/04	180	21,100	NS	40	170	230	40	20	40	8	4	50%
1/26/05	350	31	NS	NS	NS	NS	NS	NS	NS	2	1	50%
2/9/05	410	52	NS	NS	NS	NS	NS	NS	NS	2	1	50%
3/9/05	10	31	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	200	170	NS	NS	NS	NS	NS	NS	NS	2	2	100%
5/3/05	360	dry	NS	500	700	NS	NS	NS	NS	3	3	100%
6/8/05	660	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
7/12/05	760	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
8/9/05	710	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
10/4/05	390	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
12/7/05	1,150	dry	NS	NS	NS	44	844	840	40	5	3	60%
1/10/06	1,000	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
2/7/06	410	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
4/3/06	260	dry	NS	3,500	270	360	360	230	NS	6	6	100%
5/17/06	NS	dry	NS	NS	NS	NS	NS	70	NS	1	0	0%
5/30/06	140	73	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/20/06	200	140	NS	NS	NS	NS	NS	NS	NS	2	2	100%
7/11/06	1,060	150	NS	NS	NS	NS	NS	NS	NS	2	2	100%
8/1/06	1,710	270	NS	NS	NS	NS	NS	NS	NS	2	2	100%
9/12/06	2,070	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
10/3/06	340	dry	NS	NS	NS	NS	NS	NS	NS	1	1	100%
11/7/06	240	dry	170	NS	NS	NS	NS	NS	NS	2	2	100%
12/5/06	140	dry	830	NS	NS	NS	NS	NS	NS	2	2	100%
1/9/07	130	dry	160	NS	NS	NS	NS	NS	NS	2	2	100%
2/7/07	2,550	120	NS	NS	NS	NS	NS	NS	NS	2	2	100%
3/6/07	1,130	NS	340	NS	NS	NS	NS	NS	NS	2	2	100%
4/3/07	150	NS	360	NS	NS	NS	NS	NS	NS	2	2	100%
5/1/07	1,000	NS	1,400	NS	NS	NS	NS	NS	NS	2	2	100%
6/5/07	18,820	NS	465	NS	NS	NS	NS	NS	NS	2	2	100%
7/10/07	NS	NS	119	NS	NS	NS	NS	NS	dry	1	1	100%
8/7/07	NS	NS	490	NS	NS	NS	NS	NS	dry	1	1	100%
9/4/07	NS	NS	191	NS	NS	NS	NS	NS	dry	1	1	100%
10/2/07	18,980	NS	1,200	NS	NS	NS	NS	NS	dry	2	2	100%
11/6/07	NS	NS	63	NS	NS	NS	NS	NS	NS	1	0	0%
12/4/07	720	NS	260	NS	NS	NS	NS	NS	NS	2	2	100%
1/14/08	243	NS	73	220	500	NS	500	220	NS	6	5	83%
2/7/08	305	NS	228	NS	NS	NS	NS	NS	dry	2	2	100%
3/4/08	97	NS	221	NS	NS	NS	NS	NS	NS	2	1	50%
4/8/08	488	NS	2,400	NS	NS	NS	NS	NS	NS	2	2	100%
5/13/08	201	NS	2,187	NS	NS	NS	NS	NS	NS	2	2	100%
6/17-18/2008	NS	NS	985	300	500	170	170	300	dry	6	4	67%
Total # of Samples	**38**	**12**	**19**	**9**	**10**	**6**	**10**	**11**	**5**	**120**		
# Samples Exceeding AB411	**36**	**8**	**17**	**7**	**9**	**4**	**6**	**6**	**2**		**95**	
% Exceeding AB411	**95%**	**67%**	**89%**	**78%**	**90%**	**67%**	**60%**	**55%**	**40%**			**79%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 104 MPN/100ml.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

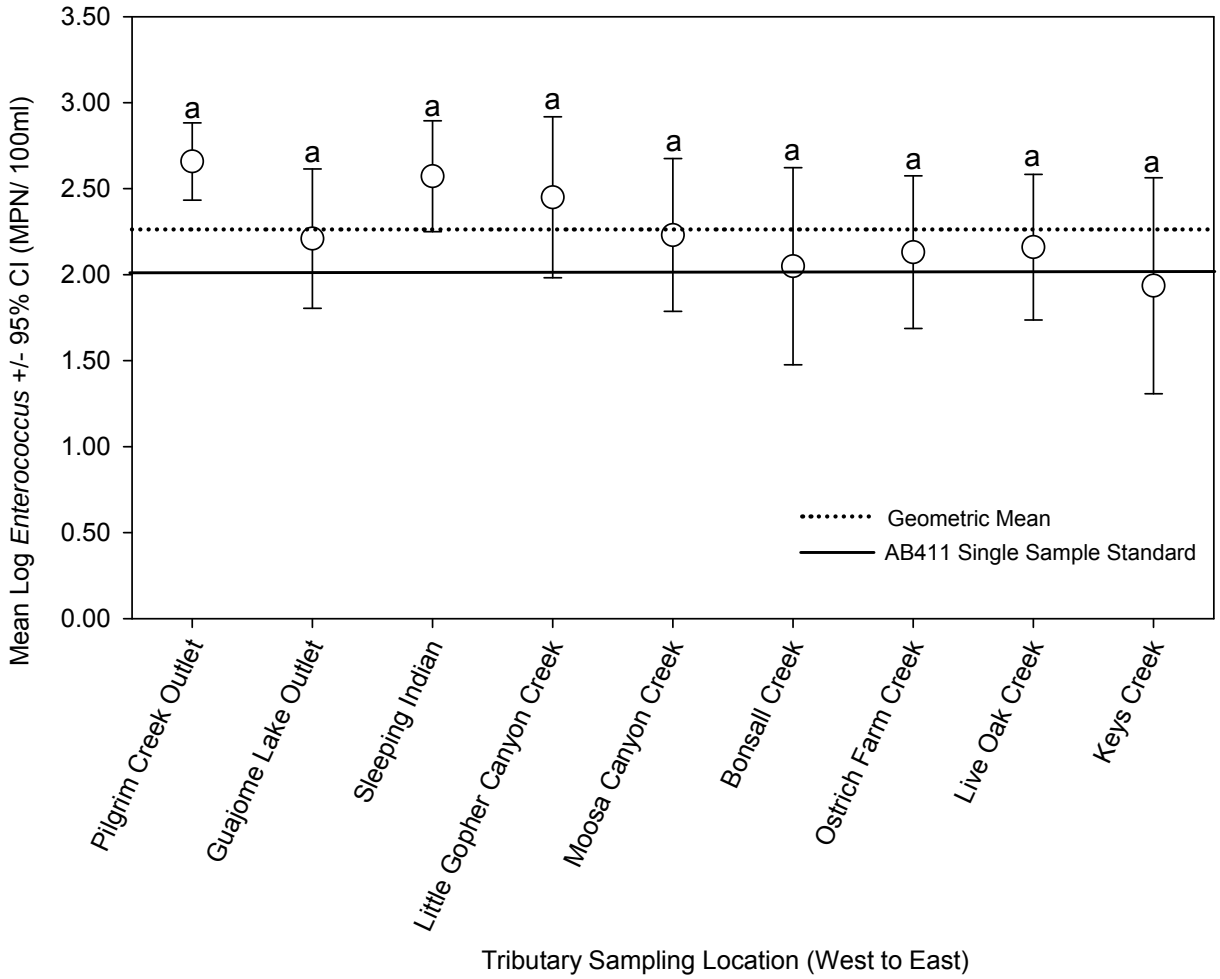

Figure 7: Relative mean concentrations ± 95% confidence intervals of* Enterococcus *bacteria in San Luis Rey River tributaries. Location means with letters in common are not significantly different (α= 0.05).

Results of the Correlation Analysis of Bacterial Counts between the River Mouth and the Pacific Shoreline

Tables 3 through 5 list bacterial concentrations as detected in samples collected at the Pacific St. Crossing and the Pacific Mix Zone for the Total Coliform (Table 3), Fecal Coliform (Table 4) and *Enterococcus* (Table 5) bacteria. The results of the correlation analysis between the bacterial concentrations at the mouth (Pacific St. Crossing) of the river to those at the Pacific shoreline (Pacific Mix Zone), 75 feet south of that location, are presented in Table 9 below. As indicated by the r^2 value of 0.79, the Total Coliform counts were strongly correlated between the two locations. Significant correlations were also found for Fecal Coliform (r^2 = 0.66) and *Enterococcus* (r^2 = 0.44). Since the mean bacterial counts for the Total and Fecal Coliform at Pacific Mix Zone were significantly lower than those in the Pacific St. Crossing, this indicates that at least some of the bacteria in the Pacific Mix Zone may have originated from the SLR River mouth; this being especially true for the Total Coliform. Alternatively, bacteria originating

from the Pacific Ocean during incoming tides may have also affected the counts in the river mouth.

Table 9: Results of the correlation analysis of the bacterial concentrations of 22 sample pairs, each collected at the mouth of SLR River and at the Pacific shoreline. The bacterial counts were log-transformed to normalize the data. The correlation coefficients (Pearson's r^2) and their corresponding *p* values are presented.

Total Coliform		Fecal Coliform		*Enterococcus*	
Correlation Coefficient (r^2)	*p*	Correlation Coefficient (r^2)	*p*	Correlation Coefficient (r^2)	*p*
0.79	<0.001	0.66	0.001	0.44	0.038

Summary of Results and Discussion

Throughout the study period (March 2004 through June 2008) *Enterococci* exceeded the State single sample standard more often than total coliform and fecal coliform in both the San Luis Rey River and its tributaries (Tables 3 through 8). Similarly, while the geometric means of total coliform and fecal coliform indicators remained below their corresponding AB411 single sample standards (Figures 2 ,3, 5 and 6), the geometric mean for *Enterococcus* in the San Luis Rey River and its tributaries generally exceeded that standard (Figures 4 and 7). The ANOVA results showed that location along the river had some significant effect on the mean bacterial concentrations. In the tributaries, only the results for total coliform and fecal coliform bacteria were statistically significant.

Pacific Street Crossing at the mouth of San Luis Rey river is an estuarine environment influenced by the Pacific Ocean (as indicated by high chloride concentration and high conductivity; Table 10). Survival rates of indicator bacteria are lower in salt water as opposed to fresh water environments (Anderson et.al., 2005 and Lisle et. al., 2004). As expected, the concentrations of *Enterococcus* and total coliform bacteria were significantly lower at Pacific Street than at the freshwater sites upstream. However, this was not true for the fecal coliform bacteria that did not show a significantly lower concentration at this site.

The design of the current study does not address, in detail, the confounding factors of differing bacteria decay and regrowth rates or the possible influence of local bird populations on fecal indicator bacteria concentrations in the water. Since single grab samples were employed in the current study, the results may have been affected by short-term localized changes in bacterial counts that may not always have been representative.

The results of the correlation analysis of bacterial concentrations between the Pacific Street Crossing and Pacific shoreline nearby showed significant positive correlations for all three bacterial species with the highest correlation detected for the Total Coliform followed by the Fecal Coliform and *Enterococcus*. Furthermore, the mean bacterial counts of Total Coliform and Fecal Coliform bacteria in the Pacific Mix Zone were significantly lower than those at the river mouth, Pacific St. Crossing (Figs. 2 and 3). This indicates that at least some of the bacteria in the Pacific Mix Zone may have originated from the SLR River mouth. Alternatively, bacteria

originating from the Pacific Ocean during incoming tides may have also affected the counts in the river mouth.

In general, the source of bacteria at the mouth of the San Luis Rey River remains undetermined. It is likely that the contamination does not originate from the River and/or its tributaries but from local sources such as shorebird feces, etc. This, however, must be investigated further. Future sampling should include flow measurements at all sites so that mass loading can be determined. Also, congruent with the present study, the City of Oceanside has been awarded a grant to conduct a more detailed bacterial source Identification study in the lower San Luis Rey watershed. The study utilizes a more detailed sampling design to identify point and non-point sources of bacteria contamination in the lower San Luis Rey River and at the river mouth during both dry and wet weather. In the course of the study, genetic markers specific to the bacteria originating from the river may also be employed. Changes to the sampling design will be considered based on the results of the grant-funded study.

Table 9: Monitoring Results for FY 2007/2008

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	PO4-P	P tot	NH4	Hard.	TC	FC	EN	TDS	TSS	HCO3	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	CaCO3	F
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Bonsall Creek	7/10/07	dry																											
	8/7/07	dry																											
	9/4/07	dry																											
	10/2/07	dry																											
	1/14/08	0.53	7.81	2.01	3	10.33	10.5	2.10	0.06	0.07	0.02	740				1290	2	338	89.4	5.22	169	144		0.24	270	393	0.14		0.3
	2/7/08	1.53	7.78	1.80	8	11.61	12.3	1.24	0.11		0.10					1224													
	3/11/08	1.03	7.87	2.07	2	11.39	13.7	1.13	0.07		0.10					1408													
	4/8/08	0.42	7.70	2.15	4	9.84	14	0.88	0.06	0.07	0.02	910				1380	3	336	95.6	4.13	205	148		0.16	280	440	0.37		0.48
	5/20/08	0.24	7.92	2.34	3	9.79	20	0.34	0.10		0.10					1591													
	6/17/08	0.02	8.04	2.36	3	8.42	21.5	0.17	0.10	0.11	0.03	890	2,200	900	170	1620	2.9	376	108	3.48	218	144		0.06	365	463	0.21		0.61
Horse Ranch Creek	4/8/08	1.14	7.88	2.48	29	10.05	15.3	4.69	0.18	0.18	0.02	1090				1840	10	376	133	5.31	186	273		0.17	344	596	0.45		0.22
	6/18/08	dry																											
Keys Creek	7/10/07	dry																											
	8/7/07	dry																											
	9/4/07	dry																											
	10/2/07	dry																											
	1/14/08	11.70	8.09	2.47	24	10.41	13	7.92	0.09	0.10	0.01	900				1660	14	298	112	7.3	206	193		0.1	361	602	0.15		0.21
	2/7/08	23.16	8.01	2.45	50	11.04	13.4	6.88	0.15		0.30					1666													
	3/11/08	11.28	8.07	2.40	49	9.86	16.9	4.18	0.11		0.10					1632													
	4/8/08	7.82	8.04	2.44	10	10.24	16.3	7.24	0.07	0.08	0.02	890				1700	6.9	303	127	5.9	230	208		0.05	343	572	0.44		0.27
	5/20/08	0.03	8.34	2.51	2	8.65	30.7									1707													
	6/18/08	dry																											
Little Gopher Canyon Creek	7/10/07	0.18	7.93	2.43	3	6.91	19.5	4.18	0.03		0.20					1652													
	8/7/07	0.14	7.85	2.44	5	7.32	21.5	1.58	0.05		0.30					1659													
	9/4/07	0.09	7.89	2.65	10	8.50	23.4	5.46	0.03	0.04	0.01	920				1620	6.1	415	122	2.7	262	56.7		0.08	409	419	0.3		0.48
	10/2/07	0.07	8.00	2.44	18	5.52	14.5	4.74	0.03		0.40					1659													
	1/14/08	3.38	7.93	2.61	131	10.81	10.5	8.74	0.14	0.16	0.02	820	1,100	230	220	1690	21.8	383	158	8.43	385	219		0.26	422	473	0.2		0.33
	2/7/08	11.18	7.86	2.55	69	12.20	10.8	3.50	0.16		0.10					1734													
	3/11/08	2.93	7.82	2.67	25	11.53	12.2	3.95	0.05		0.05					1816													
	4/8/08	2.59	7.74	2.77	4	9.97	14.4	7.67	0.13	0.13	0.02	930				1800	2.4	417	134	5.58	299	180		0.03	425	481	0.26		0.53
	5/20/08	3.11	7.57	2.66	2	9.65	19.1	2.60	0.07		0.10					1809													
	6/17/08	0.37	7.99	2.52	1	9.57	19.5	8.71	0.03	0.03	0.03	910	1,100	500	300	1750	1.7	340	116	5.11	259	141		0.02	416	455	0.26		0.31
Live Oak Creek	7/10/07	0.46	8.16	2.34	6	8.44	20.4	4.06	0.16		0.20					1591													
	8/7/07	0.95	8.06	1.96	33	8.85	22.2	2.71	0.18		0.30					1333													
	9/4/07	0.07	8.05	2.48	1	7.69	23.4	4.56	0.16	0.17	0.02	940				1630	3.5	360	119	4.9	179	97.7		0.08	333	581	0.2		0.47
	10/2/07	0.21	8.10	2.43	9	6.63	16.5	4.06	0.20		0.20					1652													
	1/14/08	7.92	7.97	2.21	23	9.72	13.7	8.62	0.15	0.47	0.02	930	800	270	220	1490	4.4	304	112	4.63	154	177		0.07	287	545	0.13		0.22
	2/7/08	12.52	7.86	2.25	40	9.14	15.3	8.01	0.21		0.20					1530													
	3/11/08	5.64	8.00	2.21	20	9.68	17.4	7.00	0.13		0.10					1503													
	4/8/08	2.77	7.87	2.26	4	9.99	15.4	7.53	0.13	0.14	0.02	1050				1580	3.7	315	93.5	3.05	184	183		0.04	295	557	0.35		0.26
	5/20/08	0.72	8.06	2.31	5	8.94	20.6	3.05	0.16		0.05					1571													
	6/18/08	0.39	8.07	2.30	4	9.10	18.7	5.63	0.12	0.14	0.03	920	1,700	230	300	1650	3.6	329	134	2.64	189	157		ND	316	568	0.18		0.37
Moosa Canyon Creek	7/10/07	1.70	7.68	2.37	5	6.33	19.9	2.60	0.31		0.20					1612													
	8/7/07	0.61	7.56	2.42	12	5.91	21.3	3.72	0.34		0.30					1646													
	9/4/07	0.60	7.33	2.62	8	3.95	22.8	1.98	0.31	0.34	0.07	940				1660	15	368	108	2.46	246	71.9		0.17	396	499	0.3		0.37
	10/2/07	1.09	7.46	2.63	2	6.22	16.9	1.92	0.18		0.30					1788													
	1/14/08	22.38	7.95	2.42	18	10.24	13	4.74	0.33	0.35	0.03	780	24,000	330	500	1500	13.2	315	87.3	7.91	210	141		0.15	361	499	0.18		0.18
	2/7/08	44.89	7.81	2.12	48	11.31	13.3	1.92	0.41		0.10					1442													
	3/11/08	15.47	7.85	2.20	17	10.15	14	2.71	0.34		0.10					1496													
	4/8/08	9.26	7.71	2.36	4	9.03	15.4	4.01	0.37	0.38	0.02	700				1520	1.4	3150	100	8.24	245	171		0.05	330	462	0.37		0.26
	5/20/08	5.60	7.72	2.42	20	8.77	21									1646													
	6/17/08	1.95	7.87	2.42	6	9.48	21	4.10	0.05	0.79	0.03	920	3,000	2,400	500	1680	5.8	274	91.7	5.92	246	137		0.06	392	525	0.25		0.25

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	PO4-P	P tot	NH4	Hard.	TC	FC	EN	TDS	TSS	HCO3	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	CaCO3	F
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mulder Ranch Creek	6/18/08	dry																											
Ostrich Farm Creek	7/10/07	0.54	8.11	2.06	7	8.26	20.4	2.03	0.16		0.10					1401													
	8/7/07	0.40	8.03	2.12	5	8.68	21.5	1.24	0.16		0.50					1442													
	9/4/07	0.16	7.97	2.15	12	9.07	23.7	3.18	0.13	0.15	0.02	950				1330	28.4	381	126	ND	157	82.1		0.13	277	466	0.23		0.4
	10/2/07	0.67	7.93	2.11	1	6.48	16.1	1.81	0.16		0.00					1435													
	1/14/08	4.92	7.91	2.09	6	9.05	13.1	5.87	0.38	0.40	0.02	760	800	140	500	1290	2.5	329	97.1	6.63	130	156		0.06	262	433	0.11		0.2
	2/7/08	6.86	7.88	1.97	16	9.95	14.9	4.18	0.51		0.10					1340													
	3/11/08	4.14	8.07	1.97	6	9.83	18.8	5.19	0.77		0.50					1340													
	4/8/08	2.23	7.90	2.00	3	10.63	15	6.24	0.29	0.30	0.03	940				1400	2.1	345	107	5.11	161	178		0.01	268	446	0.33		0.25
	5/20/08	1.80	8.01	2.15	1	9.28	20.3	1.92	0.15		0.10					1462													
	6/18/08	1.14	7.92	2.02	5	8.14	18.6	4.90	0.22	0.22	0.03	850	2,200	80	170	1150	1.1	342	112	4.62	133	115		ND	273	451	0.17		0.33
Pacific Mix Zone	7/10/07												2	ND	ND														
	8/7/07												4	2	10														
	9/4/07												ND	ND	ND														
	10/2/07												800	800	185														
	11/6/07												1,700	1,700	831														
	12/4/07												300,000	2,300	380														
	1/14/08												1,700	40	62														
	2/7/08												1,700	800	450														
	3/4/08												2,200	800	98														
	4/8/08												500	40	ND														
	5/13/08												80	ND	41														
	6/17/08												22	ND	ND														
Pilgrim Creek Outlet	10/2/07	28.68	7.82	5.38	114	1.15	20.1	4.60	3.90		3.00		300,000	23,000	18,980	3660	110		88	33	877	186	0.48	ND	1070	852			
	12/4/07	NM	7.86	2.42	74	9.22	12.4	0.90	1.70		0.60		50,000	3,000	720	1646	34		56.6			83.3	0.13	0.06	462	291			
	1/14/08	2024.74	8.04	2.18	25	12.68	10	0.54	1.20		0.40		3,000	300	243	1320	4		58.8			95.5	0.24	0.271	383	237			
	2/7/08	3170.16	8.48	2.55	10	18.94	12.7	1.35	0.85		0.30	632	8,000	110	305	1734	ND		73.2				0.21	ND	500	336			
	3/4/08	1273.44	8.37	3.12	5	13.18	14.9	0.90	0.80		0.40	701	2,200	210	97	2122	ND		78.5				0.25	ND	610	447			
	4/8/08	480.26	8.23	5.10	7	5.71	18.4	0.56	0.95		0.60	1210	7,000	800	488	3140	ND		138	9.84	839	204	0.7	ND	1100	686			
	5/13/08	127.99	8.40	5.33	6	10.70	19.1	0.79	0.65		0.30	1060	8,000	2,200	201	3624	ND		180				0.14	ND	959	696			
Sleeping Indian	7/10/07	62.40	7.96	3.52	7	6.68	19.3	90.90	0.10		0.20		5,000	130	119	2400	16		160	2.86	382	188	0	ND	434	626			
	8/7/07	18.38	8.23	3.76	2	8.85	21	76.00	0.20		0.20		13,000	140	490	2557	6.4		177				ND	ND	451	659			
	9/4/07	18.40	8.14	4.19	1	8.22	22.6	84.00	0.50		0.30		130,000	260	191	2849	2.2		206				ND	ND	479	742			
	10/2/07	7.78	8.26	3.86	7	9.15	16.7	42.00	0.00		0.20		17,000	2,200	1,200	2680	7.4		96.8	4.04	410	236	ND	ND	458	674			
	11/6/07	31.72	8.23	3.67	9	8.70	16.1	82.00	0.00		0.20	1190	17,000	20	63	2496	1		154				ND	ND	444	704			
	12/4/07	NM	8.20	3.93	2	10.27	10.9	75.60	1.75		0.60		13,000	300	260	2672	1		163			205	0.22	ND	490	706			
	1/14/08	174.06	8.39	3.77	39	10.82	9.1	73.40	0.95		0.40		80,000	20	73	2400	14		141			182	0.7	0.148	443	677			
	2/7/08	127.86	8.47	3.59	23	10.79	9	62.60	0.70			1120	13,000	70	228	2441	ND		140				0.76	ND	430	708			
	3/4/08	178.75	10.40	3.63	9	14.56	8.52	90.00	0.40		0.20	1750	2,200	20	221	2468	ND		169				0.5	ND	430	856			
	4/8/08	19.45	8.36	3.57	8	7.79	14.6	90.00	0.30		0.30	1240	80,000	230	2,400	2450	ND		154	3.49	434	213	0.13	ND	440	614			
	5/13/08	70.80	8.40	3.47	3	12.22	15.8	67.00	0.85		0.60	1120	50,000	230	2,187	2360	ND		173				ND	ND	440	654			
	6/17/08	53.05	8.28	3.69	1	6.05	18.2	81.00	0.30		0.40	1300	17,000	1,300	985	2509	ND		174				ND	ND	480	642			
SLR @ Bernet Bridge	7/10/07	NM	7.43	2.60	7	7.13	19.2	1.13	0.65		0.20		13,000	500	160	1750	6.6		89.3	7.83	254	199	0.67	ND	408	439			
	8/7/07	NM	7.85	2.69	7	6.93	20.7	1.10	0.75		0.20		1,400	70	98	1829	6.8		93.2				0.62	ND	418	444			
	9/4/07	NM	7.77	2.73	8	6.76	22.3	0.70	0.80		0.20		3,000	220	206	1856	5.6		90.9				0.84	ND	431	450			
	10/2/07	63.57	7.77	2.78	5	6.74	17	1.10	0.55		0.20		3,000	2,300	320	1900	6		88.5	9.07	285	231	0.39	ND	437	451			
	11/6/07	NM	7.77	2.84	4	6.88	16	0.60	0.30		0.30	930	800	110	85	1931	3.2		78.4				0.33	ND	446	551			
	12/4/07	16987.27	7.66	2.06	84	5.86	10.6	1.35	1.20		0.80		22,000	500	86	1401	10		73.1			152	0.09	0.221	248	406			
	1/14/08	40297.17	8.04	2.31	94	8.34	11	2.82	0.65		0.30		2,300	130	20	1490	6		87.7			166	0.08	0.19	284	444			
	2/7/08	67426.00	8.19	1.63	33	10.03	10.9	2.82	0.65		0.20	578	13,000	700	677	1108	ND		61.4				ND	ND	200	314			
	3/4/08	47204.15	8.18	2.25	18	9.52	13.3	3.20	0.60		0.30	747	2,300	170	233	1530	ND		77.7				0.07	ND	300	532			
	4/8/08	55452.90	7.99	2.45	53	5.51	15.3	2.03	0.65		0.30	938	800	110	0	1550	ND		86.2	6.16	259	198	0.16	ND	340	505			

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	PO4-P	P tot	NH4	Hard.	TC	FC	EN	TDS	TSS	HCO3	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	CaCO3	F
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	5/13/08	1896.59	8.01	2.51		10.51	16.2	1.35	0.75		0.40	920	11,000	80	63	1707	ND		85.3				0.49	ND	380	452			
	6/17/08	2619.01	8.14	2.55	53	10.26	18.9	0.30	0.70		0.60	938	30,000	70	31	1734	ND		82				0.76	ND	600	441			
SLR @ Bonsall Bridge	9/4/07	0.47	7.41	2.89	12	6.02	21.2		0.09	0.10	0.03	1050	1,700	800	110	1820	9.7	423	218	ND	257	115		0.35	418	552	0.25		0.39
	1/14/08	137.40	7.88	2.28	23	9.25	12.3		0.15	0.19	0.04	900				1430	8.8	318	88.6	8.12	175	162		0.23	305	488	0.14		0.21
	4/8/08	64.26	7.87	2.29	11	9.76	16.3	2.22	0.21	0.22	0.01	800	230	130	170	1500	9	336	108	8.93	215	189		0.16	315	494	0.48		0.26
	6/17/08	14.45	7.64	2.46	9	8.02	17.4	0.74	0.10	0.15	0.03	900	1,100	80	300	1720	6.2	300	103	8.99	233	172		0.3	350	620	0.2		0.26
SLR @ Bonsall Bridge - OC	7/10/07	NM	7.24	2.71	3	6.62	17.3	0.60	0.35		0.20		800	170	230	1820	9.6		107	6.91	258	196	0.42	ND	372	544			
	8/7/07	NM	7.65	2.77	3	5.85	18.6	1.20	0.40		0.20		900	40	93	1884	2		109				0.35	ND	383	545			
	9/4/07	NM	7.46	2.83	1	6.10	19.4	0.90	0.55		0.20		800	130	31	1924	1		116				0.36	ND	402	560			
	10/2/07	1240.28	7.59	2.85	6	6.59	15.5	1.00	0.25		0.10		6,000	80	30	2050	3.4		94.8	6.68	276	210	0.22	ND	399	571			
	11/6/07	NM	7.81	2.75	4	7.01	15.9	0.70	0.20		0.20	1020	800	130	100	1870	2		110				0.15	ND	378	610			
	12/4/07	Ponded	7.79	2.43	54	8.19	10.8	2.36	0.60		0.40		500,000	7,000	942	1652	24		94.5			180	0.73	0.06	290	535			
	1/14/08	37005.59	8.02	2.31	21	9.09	10	2.48	0.25		0.30		3,000	230	52	1510	9.4		86.8			162	0.39	0.328	267	471			
	2/7/08	31434.60	8.09	1.71	62	9.37	9.3	13.00	0.45			594	800	170	161	1163	29		65				0.15	ND	200	371			
	3/4/08	32876.36	8.07	2.08	28	12.24	10.8	2.60	0.25		0.10	820	270	220	155	1414	ND		77.6				0.2	ND	270	537			
	4/8/08	13656.41	7.92	2.32	17	7.39	14.2	1.47	0.45		0.30	979	3,000	170	148	1540	ND		84.3	6.04	255	206	0.23	ND	310	546			
	5/13/08	12004.73	7.95	2.40	10	11.88	15	1.80	0.45		0.30	897	3,000	110	187	1632	ND		104				0.33	ND	320	549			
	6/17/08	7633.97	7.80	2.55	9	10.14	16.3	0.40	0.40		0.40	961	2,200	140	84	1734	ND		89.8				0.42	ND	370	528			
SLR @ Douglas St. Bridge	7/10/07	0.95	7.40	2.67	15	7.95	23.5	0.79	1.30		0.60		1,100	40	144	1830	165		107	8.55	255	195	1.66	0.06	384	500			
	8/7/07	Ponded	8.45	2.54	85	8.87	28.9	0.90	0.75		0.60		4,300	500	200	1727	105		108				1.61	ND	392	399			
	9/4/07	Ponded	7.55	2.65	165	4.63	25.9	0.90	1.85		0.80		30,000	700	301	1802	200		113				4.38	0.156	403	512			
	10/2/07	Ponded	7.87	1.92	12	4.15	17	0.70	2.80		0.40		13,000	40	52	1460	44.8		85.8	7.32	254	145	2.14	ND	339	315			
	11/6/07	Ponded	8.11	2.00	12	7.96	18.6	0.70	1.00		0.40	647	5,000	40	41	1360	15		59.2				2.46	ND	280	294			
	12/4/07	NM	7.72	2.26	22	7.28	10	1.92	0.80		0.60		30,000	230	210	1537	4.5		81.1			159	0.06	ND	270	474			
	1/14/08	164510.07	8.05	2.35	9	8.95	10.6	1.92	0.55		0.30		2,200	300	98	1460	4.4		86.4			162	0.16	0.211	280	460			
	2/7/08	271804.18	8.15	1.66	112	9.80	10.2	2.48	0.75		0.30	602	5,000	800	2,224	1129	20		60.5				0.09	ND	190	355			
	3/4/08	190344.21	8.19	2.23	65	9.50	12.6	2.60	0.60		0.30	787	2,200	1,300	759	1516	ND		78.2				0.19	ND	290	590			
	4/8/08	11932.94	8.10	2.40	5	7.10	14.5	1.58	0.35		0.20	976	2,800	900	1,274	1540	ND		88.4	6.2	257	205	0.15	ND	320	526			
	5/13/08	17184.25	8.12	2.46	25	13.32	15.6	1.92	0.36		0.40	913	7,000	800	1,119	1673	ND		117				0.26	ND	340	522			
	6/17/08	2750.70	8.20	2.48	6	10.65	17.9	0.50	0.30		0.40	956	70,000	3,000	488	1686	ND		85.1				0.37	ND	370	514			
SLR @ East Vista Way	6/17/08	0.20	7.83	2.02	7	7.08	18.5	15.10	0.10	0.11	0.03	600	1,100	130	500	1360	0.4	330	94.6	5.64	222	73.2		0.05	235	397	0.36		0.27
SLR @ Murray Bridge	7/10/07	Ponded	7.79	2.98	35	7.71	22.7	11.00	0.20		0.40		5,000	170	31	1900	74.4		123	8.1	293	182	0.07	ND	469	556			
	12/4/07	7457.22	7.79	2.32	50	6.57	11.7	2.37	0.80		0.60		240,000	23,000	770	1578	16		85			162	0.31	ND	285	483			
	1/14/08	16171.88	8.01	2.38	13	9.59	11.2	3.95	0.50		0.30		3,000	40	31	1500	9.6		85.8			159	0.23	0.223	282	468			
	2/7/08	42381.60	8.08	1.72	52	9.24	10.1	3.16	0.60		0.20	612	23,000	260	158	1170	ND		68				0.13	ND	210	372			
	3/4/08	Ponded	8.10	2.26	10	4.40	12.9	3.84	0.50		0.20	812	3,000	20	41	1537	ND		82.1				0.2	ND	290	566			
	4/8/08	52579.99	8.03	2.44	5	7.37	15.2	4.29	0.35		0.20	880	1,300	70	122	1580	ND		92.7	6.47	231	184	0.14	ND	320	544			
	5/13/08	32471.91	8.24	2.52	2	16.68	16.4	3.39	0.25		0.30	982	2,300	300	86	1714	ND		116				ND	ND	360	558			
	6/17/08	5184.02	7.96	2.67	23	8.42	18.3	4.25	0.00		0.40	1010	5,000	500	1,203	1816	ND		127				ND	ND	390	502			
SLR @ Olive Hill Rd.	7/10/07	3.42	7.72	2.36	33	7.10	17.4	0.79	0.10		0.20					1605													
	8/7/07	1.26	7.57	2.52	17	6.64	18.3	0.90	0.16		0.20					1714													
	9/4/07	1.39	7.41	2.58	16	6.02	19.4	0.06	0.09	0.10	0.01	1080				1770	4.2	382	112	1	224	153		0.23	394	604	0.22		0.27
	10/2/07	1.05	7.57	2.55	5	7.44	14.8	1.13	0.13		0.20					1734													
	1/14/08	52.38	7.76	2.13	19	9.43	10.4	3.48	0.12	0.15	0.03	880	500	300	300	1380	8.2	316	91	8.55	165	162		0.29	280	482	0.13		0.21
	2/7/08	111.60	7.70	1.61	72	11.62	10.7	3.50	0.21		0.20					1095													
	3/11/08	23.35	7.79	2.07	14	10.75	13	1.24	0.16		0.05					1408													
	4/8/08	28.22	7.70	2.18	13	9.31	14.1	1.96	0.14	0.15	0.02	940				1530	1.6	334	102	10.9	192	188		0.2	292	494	0.34		0.35
	5/20/08	2.16	7.72	2.27	52	8.56	17.6	0.45	0.11		0.20					1544													
	6/17/08	11.82	7.72	2.23	26	7.93	17.3	0.56	0.12	0.13	0.04	1000	3,000	130	500	1640	14.2	285	99.6	9.4	186	164		0.2	334	551	0.17		0.25
sing	7/10/07	NM	7.59	32.90	8	6.92	27.4		0.35		0.40		480	170	10	22100	5.6		862	238	6560	318	0.15	ND	12000	1800			
	8/7/07	NM	8.01	31.10	2	7.52	28.4		0.40				110	110	ND	21148	5.2		846				0.11	ND	11000	1700			
	9/4/07	Ponded	8.21	16.20	4		29		0.35		0.20		70	20	ND	11016	3		433				0	ND	5350	1010			

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	PO4-P	P tot	NH4	Hard.	TC	FC	EN	TDS	TSS	HCO3	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	CaCO3	F
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SLR @ Pacific St. Cross	10/2/07	Tidal	8.04	48.00	11	7.96	17.7		0.00		0.20		300	230	93	36100	31.8		1760	428	15200	409	0	ND	19000	2580			
	11/6/07	NM	7.99	24.40	3	9.49	18.4		0.15		0.10	3070	2,600	2,000	240	16592	2.6		578				0.07	ND	8270	1540			
	12/4/07	28929.64	7.53	3.43	172	4.20	12.1		1.95		1.00		97,000	2,200	360	2332			103			143	0.23	0.07	820	406			
	1/14/08	Tidal	7.95	5.29	27	8.90	12.9		0.75		0.10		13,000	500	73	3080	13		138			164	0.28	0.312	1120				
	2/7/08	38171.55	8.10	3.82	42	9.38	11.8		0.85			684	3,000	1,300	743	2598	33		75.5				0.06	ND	500	324			
	3/4/08	41273.76	8.14	9.70	16	10.15	14.8		0.35		0.10	1520	5,000	300	213	6596	ND		277				0.09	ND	2780	902			
	4/8/08	15642.28	8.01	24.10	31	6.40	17.9		0.30		0.10	3070	500	300	20	14700	ND		578	179	5510	265	0.25	ND	8400	1320			
	5/13/08	21026.24	8.35	34.60	11	14.49	21.4		0.35			4440	130	80	ND	23528	ND		846				0.3	ND	2110	1910			
	6/17/08	1873.91	8.51	18.20	39	11.76	25.5		0.20		0.30	2610	500	220	359	12376	ND		463				ND	ND	5880	1050			
SLR @ Shearer Crossing	7/10/07	dry																											
	8/7/07	dry																											
	9/4/07	dry																											
	10/2/07	dry																											
	1/14/08	8.00	7.81	1.67	25	8.16	14.2	9.68	0.16	0.19	0.13	600				1010	10.4	251	63.7	12.6	113	127		0.23	185	368	0.12		0.16
	2/7/08	61.88	7.59	0.91	152	9.36	14.1	3.61	0.28		0.10					615													
	3/11/08	17.78	7.95	1.44	9	11.12	19.4	2.71	0.13		0.10					979													
	4/8/08	11.30	8.00	1.60	4	11.73	19.4	8.76	0.13	0.15	0.01	700				1110	2.6	243	74.4	15.5	136	139		0.07	180	349	0.44		0.23
	5/20/08	1.28	8.37	1.61	ND	13.67	24.1	3.61	0.10		0.10					1095													
	6/18/08	Ponded																											

Values of nutrient concentrations outlined in red have been obtained through the use of field test kits while values in black are the results of analytical laboratory testing; values of TDS outlined in red are extrapolated from Conductivity while those in black were determined through analytical laboratory testing

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ATTACHMENT C TO SLR-001

Total Dissolved Solids and Chloride Study In the San Luis Rey River and its Tributaries

In 2002, the lower 19 miles of the San Luis Rey River were added to the CWA 303(d) list of impaired waterbodies for total dissolved solids (TDS) and chloride and they remain on the 2006 303(d) list. The water quality objectives for TDS and chloride are based on the beneficial uses for the San Luis Rey River assigned in the Water Quality Control Plan (Basin Plan, RWQCB, 1994). The Basin Plan objectives for TDS and chloride are 500 mg/L and 250 mg/L, respectively.

The San Luis Rey River WURMP group initiated a monitoring program in March 2004. The purpose of the program is to address the following questions:

1) Which areas along the main stem of the San Luis Rey River and its tributaries exhibit the highest concentrations of TDS and Chloride?
2) What are the possible sources of those high concentrations?
3) What are the possible solutions to addressing the high TDS and Chloride concentrations?

From March 2004 through June 2008, the City of Oceanside and the County of San Diego collected surface water samples in the San Luis Rey River and its tributaries and analyzed them for TDS and chloride as well as several other constituents. The results of the study are presented below.

TDS are comprised of inorganic salts and small amounts of organic matter that are dissolved in water. The principal constituents are usually the cations calcium, magnesium, sodium, and potassium, and the anions carbonate, bicarbonate, chloride, sulphate, and, particularly in groundwater, nitrates and phosphates (from agricultural use). TDS in water supplies may originate from natural sources such as weathering rocks and soils, leaves, silt and plankton. Other sources of TDS include point sources such as industrial wastewater and sewage as well as urban and agricultural runoff. Chlorides are a component of TDS; they are salts composed of the chlorine gas and a metal molecule. The common chlorides include sodium chloride and magnesium chloride. While moderate concentrations of chlorides are essential to life, excessive amounts are toxic to plant and animal life. The sources of chlorides can be natural and man-made. The man-made sources include point sources such as industrial wastewater and sewage as well as urban and agricultural runoff.

Hydrologic Setting

The San Luis Rey River originates in the Palomar and Hot Springs Mountains. Henshaw Dam was built at the base of Palomar Mountain which formed Lake Henshaw. The water in Lake Henshaw has TDS and chloride concentrations that fall below the Basin Plan standards. The Vista Irrigation District (VID) owns Lake Henshaw and uses the lake as a drinking water source.

In order to transport drinking water to Lake Wohlford, water is released down the main channel of the SLR River and diverted into the man-made Escondido Canal, seven miles downstream of the dam. Nearly all flows are diverted from the river into the canal, typically leaving the river dry below the diversion. The remainder of the SLR River is intermittent through the Pauma and Pala areas. It is also intermittent through Oceanside leaving some small pools in the Murray and Douglas Bridge areas of the riverbed during the dry season. It is flowing perennially at Bonsall Bridge and again at and west of Benet Bridge.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and Palomar Mountain receives about 45 inches/yr. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The river is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the river bed and form perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

From March 2004 through June 2008, 16 locations (Figure 1) were sampled: seven by the City of Oceanside and eight by the County of San Diego (Table 1). An additional three sites were added to by the County after June 2008, bringing the total sites sampled to 18 locations. Both agencies collected samples on the same days. Eight sampling sites were located along the San Luis Rey River and 11 in the River's tributaries. One site along the river's main stem, Bonsall Bridge, was sampled by both agencies for quality control reasons. Only nine of the 11 tributaries sampled are shown in figures below because two of the new tributaries added to the study in June 2008, Moulder Ranch Creek and Horse Ranch Creek, were dry.

Both the City of Oceanside and the County of San Diego collected and tested grab samples for pH, temperature, electrical conductivity, dissolved oxygen, turbidity, ammonia, nitrate, ortho-phosphate, total dissolved solids (TDS), total suspended solids (TSS), chloride, magnesium, manganese, total iron, sulfate, potassium, sodium and calcium. Field test kits were used to test for ammonia, ortho-phosphate and nitrate. Also, periodically, the County samples were analyzed for these constituents and total phosphorus in the laboratory. The County also analyzed grab samples for alkalinity (carbonate, bicarbonate and hydroxide), carbonate, hardness, fluoride, total boron and residual chlorine. The County did not test for manganese in FY 2007/2008. The methods used for the in-situ measurements and the laboratory analysis are presented in Table 2. All samples were collected during dry weather conditions i.e. at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches.

For samples where TDS was not measured directly, electrical conductivity was used as an indirect measure for TDS. The average ratio of electrical conductivity to direct measured TDS is 0.68. Therefore, the electrical conductivity measurements were multiplied by 0.68(*1000) to calculate TDS.

For the purpose of visualization TDS and chloride concentrations were plotted against time for all tributary and main stem sites (Figure 2). The means and 95% confidence intervals were then calculated for the TDS and chloride concentrations and they were plotted for the tributaries and main stem sites separately (Figure 3). This was done to look for any differences among sites and to compare them to the overall mean concentration, the Basin Plan objective and the mean groundwater concentrations in the Mission and Bonsall groundwater basins. The anion and cation data were also plotted in a Piper diagram to visualize the ion compositions of samples collected in the different tributaries and the Mission groundwater basin (Figure 4). Due to lack of data, the Bonsall groundwater basin could not be included in this analysis. Groundwater data from two wells in the Mission basin were obtained from the last year's Attachment C to the WURMP report. Table 5 lists the groundwater data used. The Piper diagram shows the major ions as percentages of milli-equivalents in two base triangles. The total cations and the total anions are set equal to 100% and the data points in the two triangles are projected onto an adjacent grid. The main purpose of the Piper diagram is to show clustering of data points to indicate samples that have similar or different composition.

In order to determine which constituents may contribute to the TDS concentrations, and to what extent, the Pearson product-moment correlation coefficient (r^2) was calculated between all soluble constituents measured (including chloride) and TDS (SPSS Inc., 2003). The Pearson product-moment correlation coefficient is a measure of the tendency of two variables to increase or decrease together. The coefficient ranges from −1 to 1. A value of 1 shows 100% positive correlation where the value of one variable increases as the value of the other increases. A score of −1 shows 100% negative correlation where the value of one variable decreases as the value of the other increases. Values in-between 1 and -1 indicate the extent of the positive or negative relationship and a value of 0 indicates no linear relationship between the two variables. For the purpose of the present report, the higher the value of r^2, the greater the association of a given constituent with the value of TDS or chloride given $p < 0.05$ (SPSS Inc., 2003). The results of the Pearson product-moment correlation analysis are presented in Table 3 below.

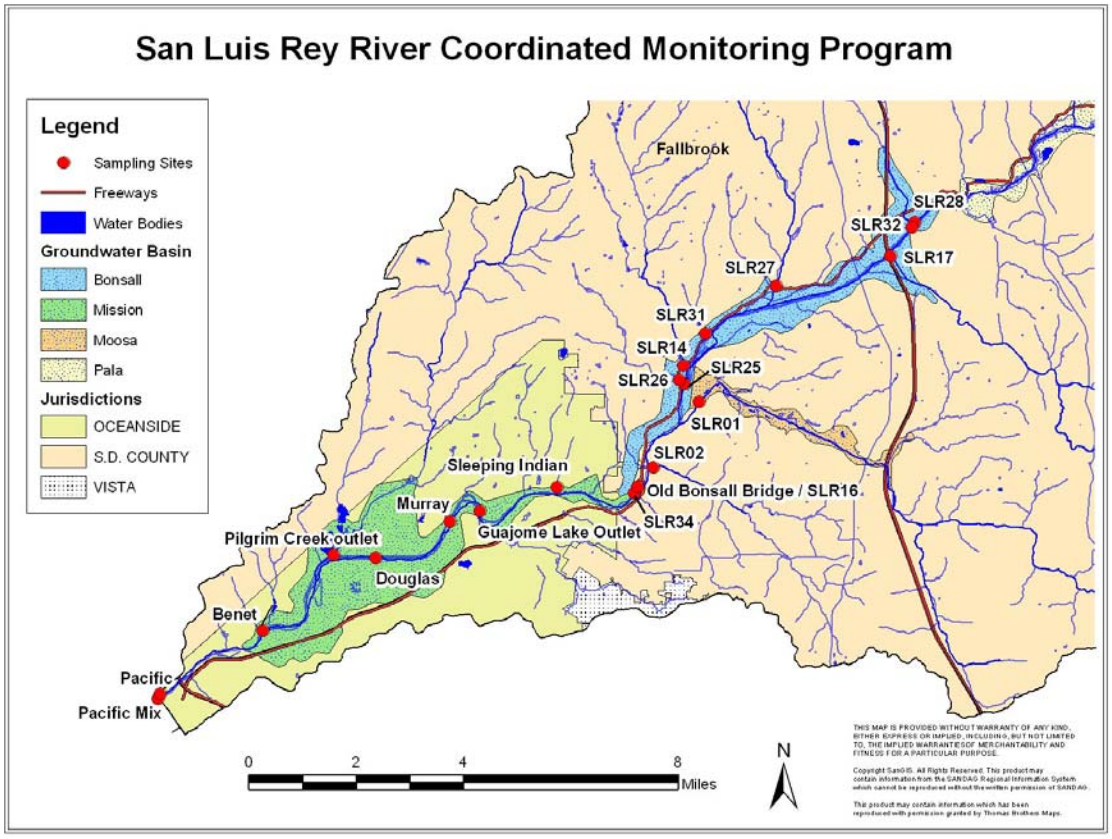

Figure 1. Sample site and groundwater basin locations.

Table 1: Sample Site Identification and Locations

City of Oceanside Sampling Sites				
Site ID	**Site Description**	**Thomas Bros.**	**Latitude**	**Longitude**
Pacific St. Crossing	San Luis Rey River on the east side of Pacific Street crossing	1085 J6	33.20307	-117.39113
Benet Bridge	San Luis Rey River on the east side of Benet Bridge on north side of SR#76/Airport Road	1086 C4	33.22055	-117.35827
	Site moved downstream in June 2008 for improved flow monitoring)	1086 C4	33.21790	-117.35958
Douglas Bridge	San Luis Rey River on the east side of Douglas Bridge on north side of SR#76/Douglas Drive	1086 G1	33.24051	-117.32238
Pilgrim Creek Outlet	North side of SLR River at end if Flood Control Embankment, entering from Whelan Ranch Road	1086 F1	33.24103	-117.33590
Murray Bridge	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandegrift	1067 A7	33.25050	-117.29866
Guajome Lake Outlet (Sampling ended in FY 06/07)	South side of SLR River where Guajome Lake effluent flows into river. 5030 Tyler Road.	1067 B6	33.25343	-117.28868
Sleeping Indian (Sampling began in FY 06/07)	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	1067 E5	33.25998	-117.26422
Bonsall Bridge	San Luis Rey River under the Bonsall Bridge	1067 H5	33.26042	-117.23833

County of San Diego Sampling Sites				
Site ID	**Site Description**	**Thomas Bros.**	**Latitude**	**Longitude**
Olive Hill (SLR25)	San Luis Rey River at Olive Hill Road	1068 A1	33.28838	-117.22335
Shearer Crossing (SLR28)	San Luis Rey River at Pankey Road	1048 H3	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek at Old River Road	1068 A2	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek at Old River Road	1067 J4	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek at Highway 76	1067 J1	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek at Highway 67	1048 A7	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek at Highway 67	1048 D4	33.31514	-117.19418

Keys Creek (SLR17)	Keys Creek at Dulin Road	1048 H3	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek	1048 B6	33.30205	117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek	1048 J2	33.33138	-117.15067
East Vista Way (SLR 34)	San Luis Rey River East of East Vista Way and Mission Rd. Intersection	1067 H5	33.25872	-117.23931

Table 2: Water Quality Parameters and Methods for San Luis Rey River

Measured Parameter	***City of Oceanside Methods***	***County of San Diego Methods***
Flow	Estimated	Flow Probe FP101
pH	In-situ, Horiba U-10	In-situ, Horiba U-10
Temperature	In-situ, Horiba U-10	In-situ, Horiba U-10
Conductivity	In-situ, Horiba U-10	In-situ, Horiba U-10
Dissolved Oxygen	In-situ, Horiba U-10	In-situ, Horiba U-10
Turbidity	In-situ, Horiba U-10	In-situ, Horiba U-10
Ammonia	CHEMetrics K-1501	CHEMetrics K-1501
Nitrate	CHEMetrics K-6923 and K-6933	CHEMetrics V-6933
Ortho-phosphate	CHEMetrics K-8513	CHEMetrics V-8513
Ammonia	NM in laboratory	EPA 350.2
Orthophosphate	NM in laboratory	EPA 365.2
Nitrate	EPA 300.0	EPA 300.0
Total Phosphorus	NM	EPA 365.3
Total Dissolved Solids	SM 2540C	EPA 160.1
Total Suspended Solids	SM2540 D	EPA 160.2
Bicarbonate Alkalinity	NM	EPA 310.1, SM 2320B
Carbonate Alkalinity	NM	EPA 310.1, SM 2320B
Hydroxide Alkalinity	NM	SM 2320B
Carbonate (Calculated)	NM	SM 2320B
Chloride	EPA 300.0	EPA 300.0
Magnesium	EPA 200.7	EPA 200.7
Manganese	EPA 200.7	NM in 07/08
Iron, Total	EPA 6010	EPA 200.7
Sulfate	EPA 300.0	EPA 300.0
Potassium	EPA 200.7	EPA 200.7
Sodium	EPA 200.7	EPA 200.7
Calcium	EPA 200.7	EPA 200.7
Hardness	NM	EPA 130.2
Boron, Total	NM	EPA 200.8
Fluoride	NM	EPA 300.0
Residual Chlorine	NM	EPA 330.1

NM – Not Measured

Results and Discussion

All data collected during FY 2007-08 are listed in Table 6. TDS and chloride concentrations in samples collected since March 2004 are graphed for each sample location along the main stem and tributaries in Figure 2. The mean TDS and chloride concentrations +/- 95% confidence intervals as measured along the main stem of and tributaries to the San Luis Rey River are presented in Figure 3. Figure 4 is a Piper diagram of ion concentrations at different tributaries and the Mission groundwater basin. Finally, Table 3 presents the results (Pearson's r^2) of the correlation analysis between TDS and other mineral constituents including chloride.

The mean total dissolved solids concentrations greatly exceeded the Basin Plan objective of 500 mg/L both along the main stem of San Luis Rey River and in its tributaries (Fig. 3A and C). With the exception of Shearer Crossing and possibly East Vista Way main stem sampling sites, the chloride Basin Plan objective of 250 mg/L was also exceeded (Fig. 3B and D). Along the main stem of the river, the easternmost location, Shearer Crossing had the lowest mean concentration of TDS and chloride and the westernmost location, Benet Bridge, had the highest (Fig. 3A and B). For the tributaries, Pilgrim Creek Outlet had TDS and chloride concentrations that were significantly higher than the remaining tributaries and the main stem sampling sites (Fig. 3C and D). Sleeping Indian, not sampled before FY 2006-07, also had a very high mean TDS concentration but the mean chloride concentration at the Sleeping Indian tributary was not significantly different from all other tributaries further upstream. This is most likely because TDS at Pilgrim Creek is most highly correlated with chloride, sodium, magnesium and sulfide while TDS at Sleeping Indian is most highly correlated with potassium and to a lesser extent with calcium and chloride (Table 3). The Piper diagram (Fig. 4) also illustrates this difference and shows that, while the mineral composition at Pilgrim Creek renders that tributary characteristically different from the remaining ones and from the Mission groundwater basin, Sleeping Indian differs only slightly due to its unusually high nitrate concentration which is not significantly correlated with TDS (Table 3).

With the exception of Pilgrim Creek and Sleeping Indian, all other tributaries had TDS concentrations that closely resembled or fell below the mean groundwater TDS concentration. With respect to chloride, the mean concentrations in the tributaries again fell close to the mean groundwater concentration with the exception of Pilgrim Creek. For the main stem of SLR, the mean TDS and chloride concentrations again fell close to below the mean groundwater concentration. We did not include Pacific Crossing in this analysis due to saltwater intrusion from tidal influence at that site.

As described in Attachment C to FY 2006-07 WURMP Annual Report, a special study conducted on April 17, 2007 upstream of Pilgrim Creek indicated that concentrations of TDS and chloride in that area are also unusually high. The most likely reason for this is the existence of an inland alkali marsh that was filled 50 years ago and used as an agricultural site supporting crops and cattle.

A.

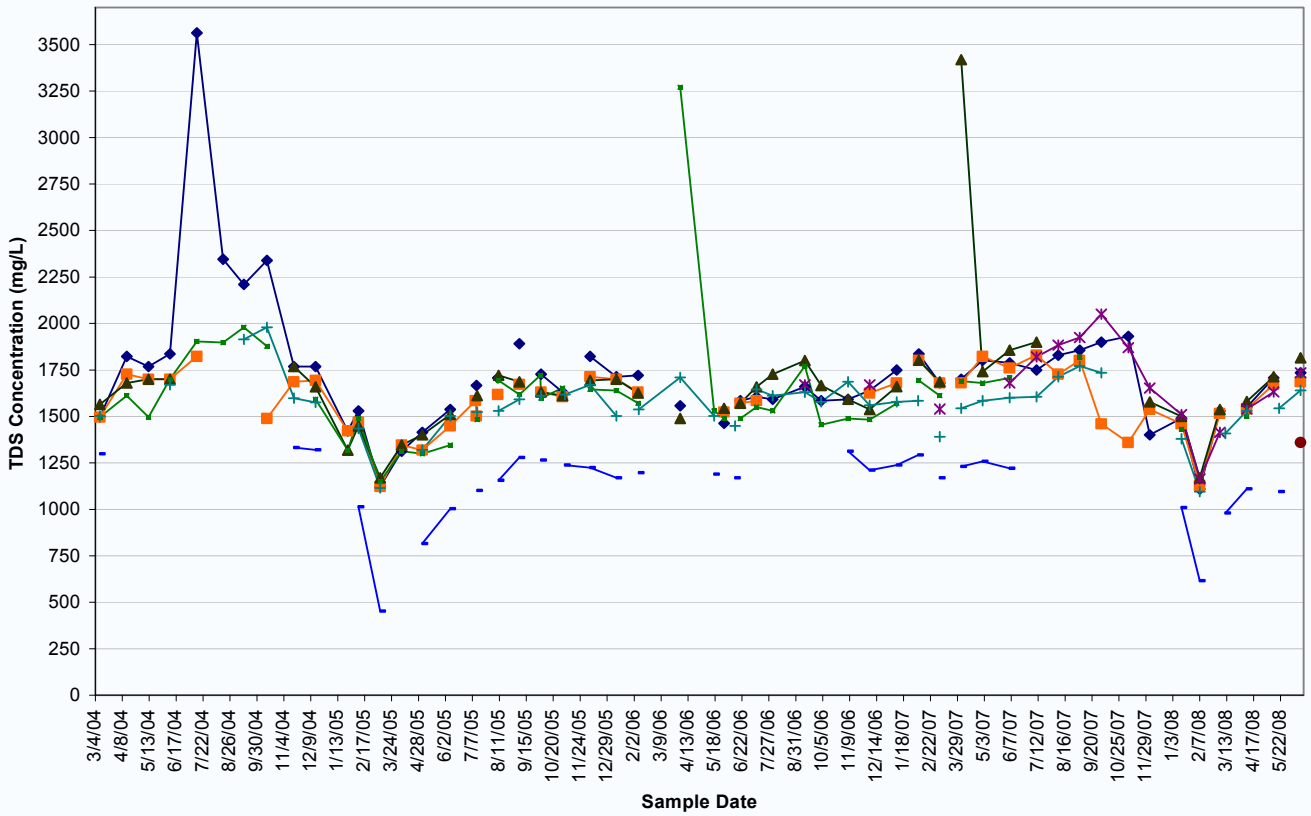
TDS Concentration (mg/L)
Sample Date

B.

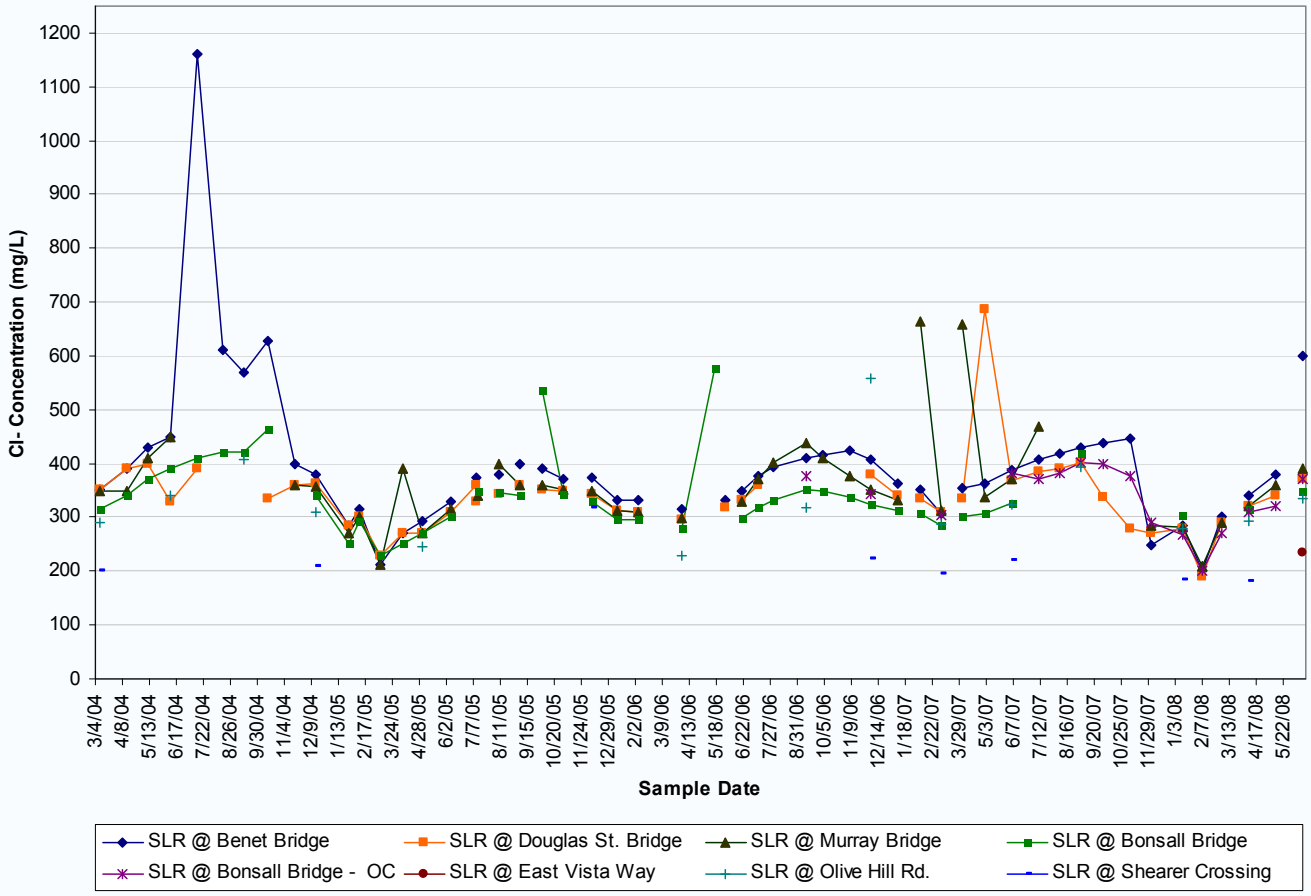
Cl- Concentration (mg/L)
Sample Date
SLR @ Benet Bridge
SLR @ Douglas St. Bridge
SLR @ Murray Bridge
SLR @ Bonsall Bridge
SLR @ Bonsall Bridge - OC
SLR @ East Vista Way
SLR @ Olive Hill Rd.
SLR @ Shearer Crossing

C.

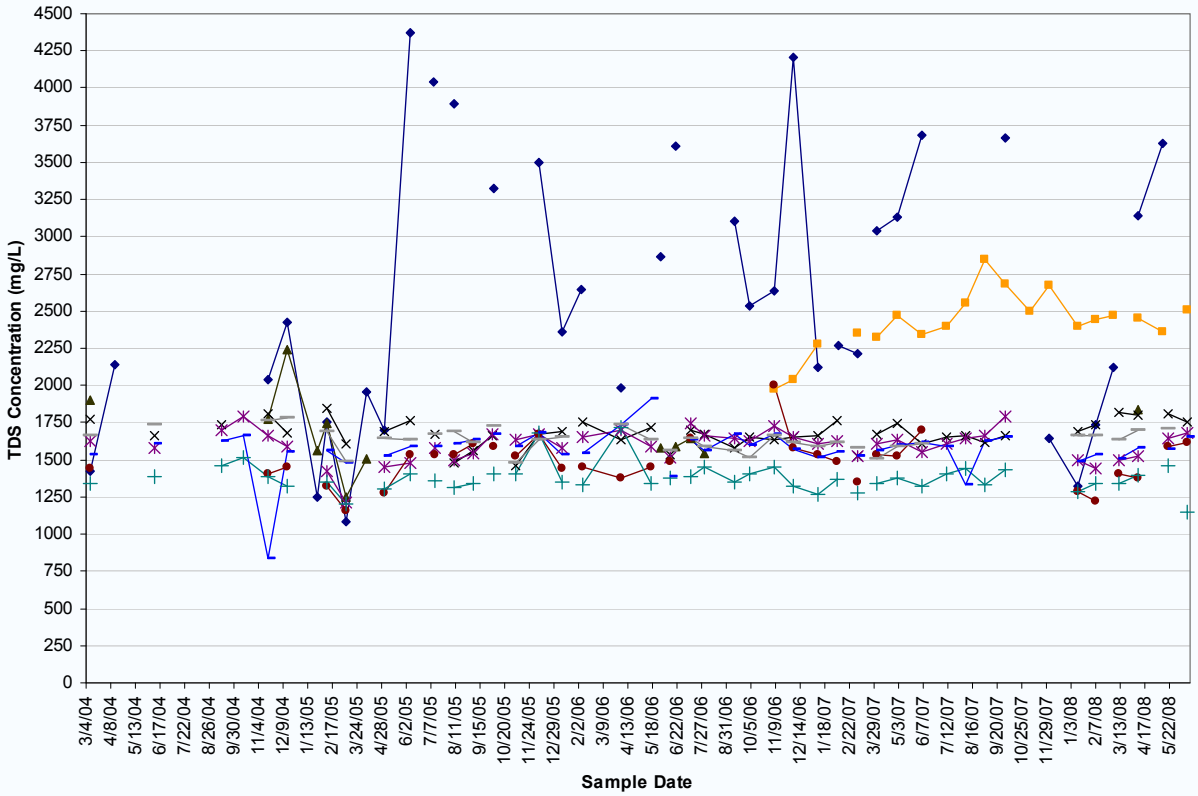

D.

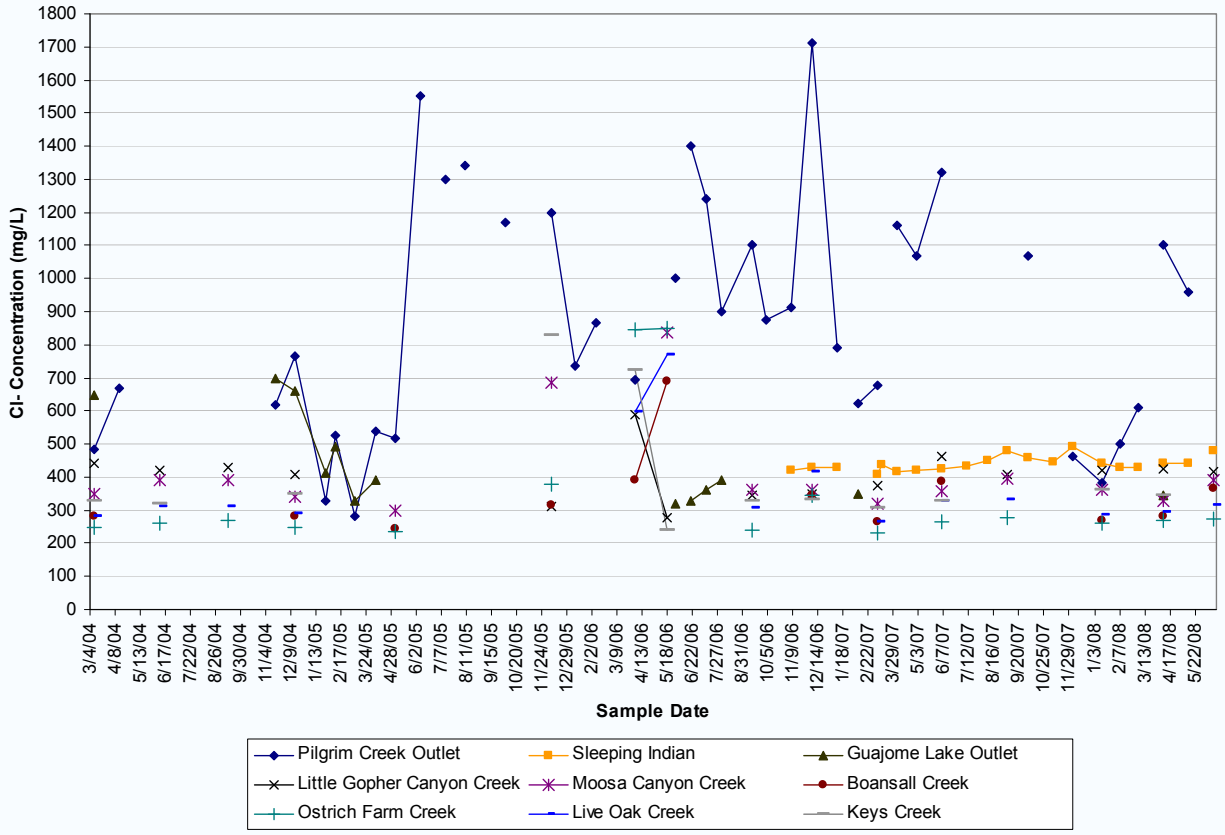

Figure 2: Temporal variation in TDS (A and C) and chloride (B and D) concentrations in the main stem of (A and B) and tributaries to (C and D) San Luis Rey River

A.

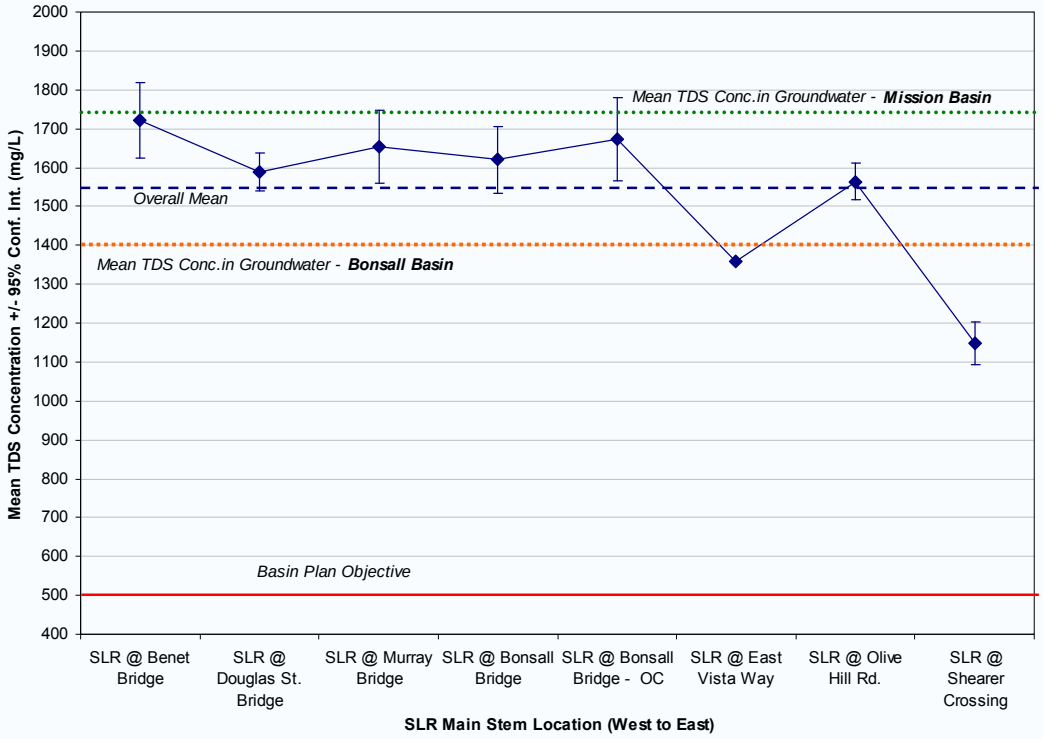
Mean TDS Conc.in Groundwater - Mission Basin
Overall Mean
Mean TDS Conc.in Groundwater - Bonsall Basin
Basin Plan Objective
Mean TDS Concentration +/- 95% Conf. Int. (mg/L)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
SLR @ Benet Bridge
SLR @ Douglas St. Bridge
SLR @ Murray Bridge
SLR @ Bonsall Bridge
SLR @ Bonsall Bridge - OC
SLR @ East Vista Way
SLR @ Olive Hill Rd.
SLR @ Shearer Crossing
SLR Main Stem Location (West to East)

B.

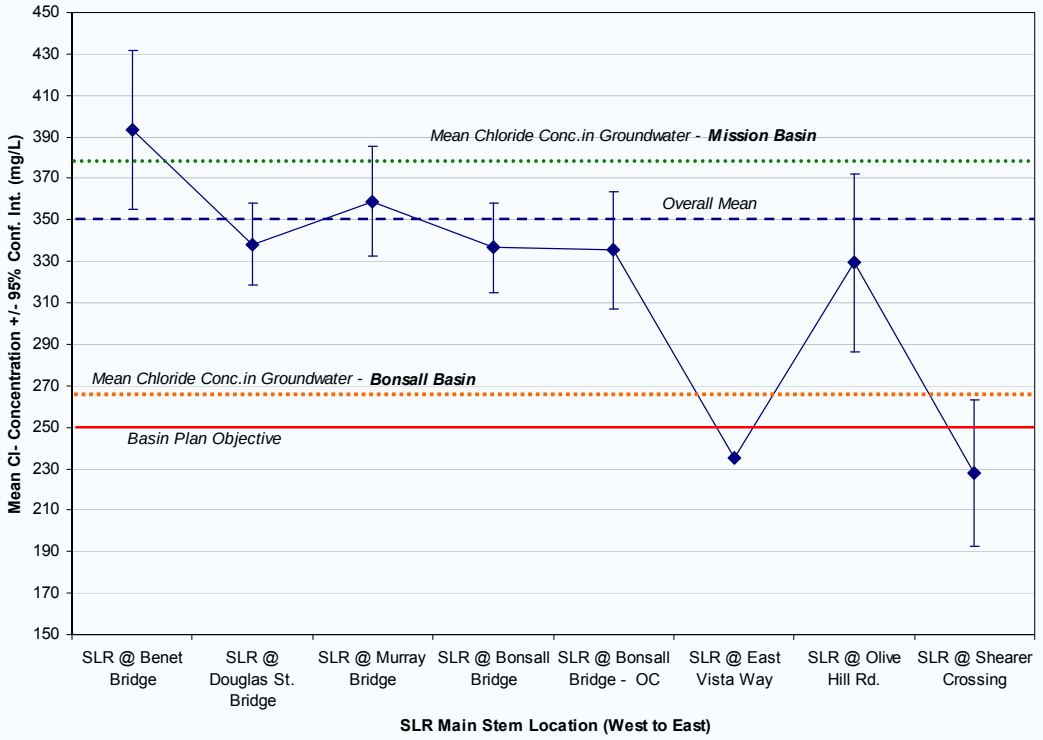
Mean Chloride Conc.in Groundwater - Mission Basin
Overall Mean
Mean Chloride Conc.in Groundwater - Bonsall Basin
Basin Plan Objective
Mean Cl- Concentration +/- 95% Conf. Int. (mg/L)
450
430
410
390
370
350
330
310
290
270
250
230
210
190
170
150
SLR @ Benet Bridge
SLR @ Douglas St. Bridge
SLR @ Murray Bridge
SLR @ Bonsall Bridge
SLR @ Bonsall Bridge - OC
SLR @ East Vista Way
SLR @ Olive Hill Rd.
SLR @ Shearer Crossing
SLR Main Stem Location (West to East)

C.

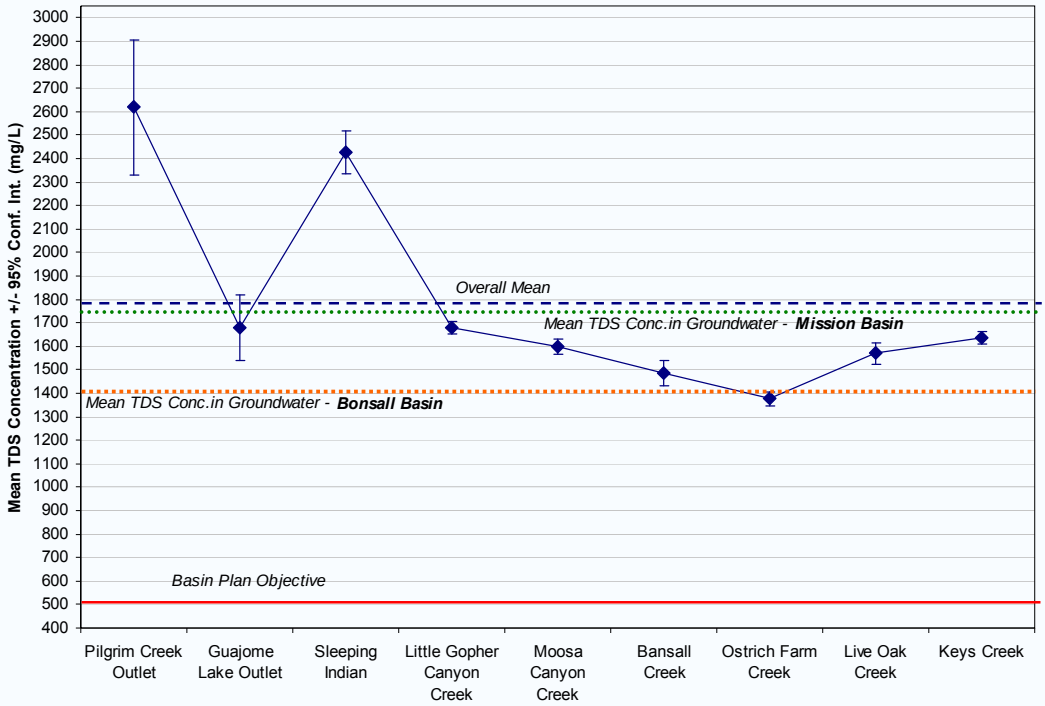

D.

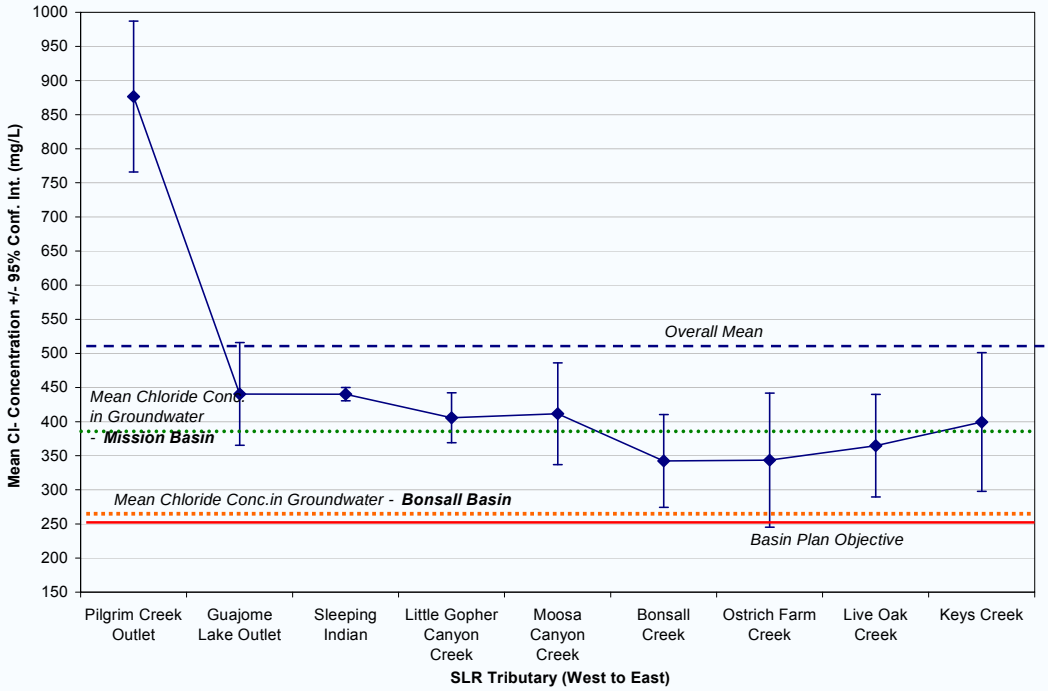

Figure 3: Mean concentrations +/- 95% confidence intervals of TDS (A and C) and chloride (B and D) at sampling sites along the main stem of (A and B) and tributaries to (C and D) the San Luis Rey river.

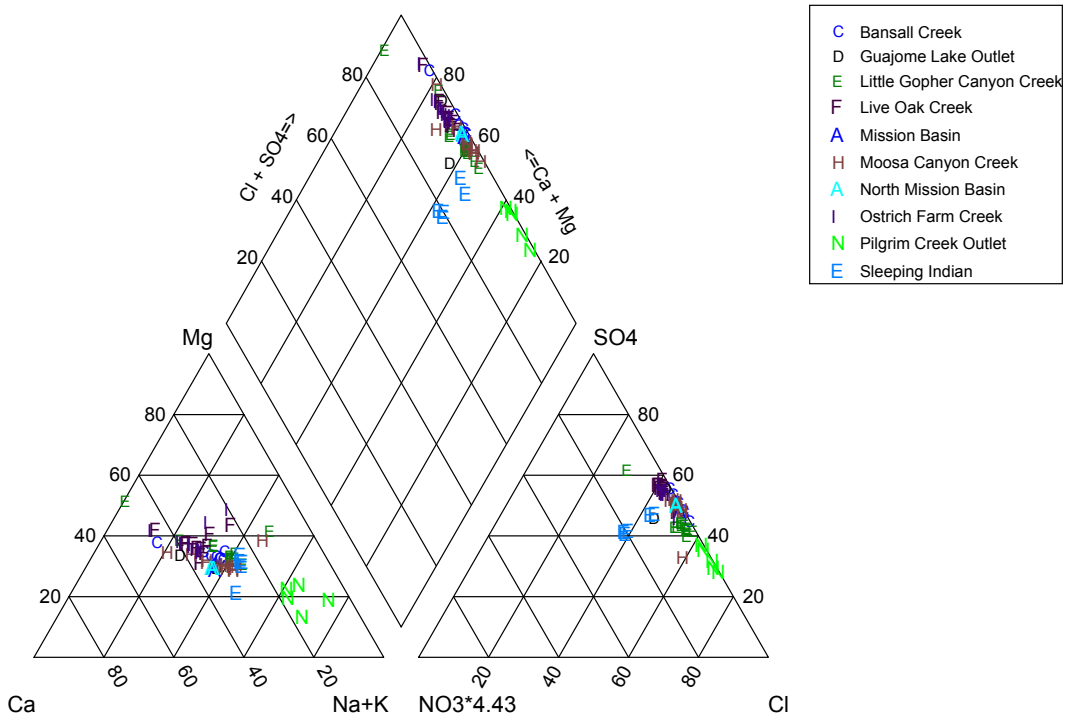

Figure 4: Piper diagram for sampled tributaries (2004-2008) and the Mission groundwater basin.

Table 3: Results of the correlation analysis between TDS and other mineral constituents. Pearson's r^2 values are presented for each site and mineral constituent as it was correlated to TDS. Statistically significant r^2 values are outlined in bold. Results significant at $p < 0.05$ are marked with single asterisks (*). Double asterisks (**) indicate results that are significant at $p < 0.01$. Tests were not performed when $n<5$.

Site	Cl-	Mg	SO4	NO3-N	PO4-P	K	Na	Ca	Fe tot	Mn	CaCO3	HCO3
SLR @ Pacific St. Crossing	**.67(**)**	**.69(**)**	**.71(**)**	**-.57(**)**	**-.50(**)**	**.98(**)**	**.93(**)**	**.98(**)**	-.43	-.10		
SLR @ Shearer Crossing	.32	**.63(*)**	.34	**.41(*)**	-.31	-.31	.17	.28	.28			.09
SLR @ Olive Hill Rd.	.39	.49	**.53(*)**	**-.38(*)**	-.29	-.01	.43	.26	.41	.69		.38
SLR @ Bonsall Bridge - OC	**.92(**)**	**.81(**)**	**.76(**)**	**-.72(**)**	-.01	-.14	.60	.61	-.23	.17		
SLR @ Bonsall Bridge	**.54(**)**	**.33(*)**	**.94(**)**	-.31	-.03	-.41	.17	.11	.26	-.15		.14
SLR @ Murray Bridge	**.76(**)**	**.79(**)**	**.73(**)**	-.14	-.24	**.98(**)**	**.99(**)**	**.99(**)**	-.18	-.17		
SLR @ Douglas Bridge	**.70(**)**	**.54(**)**	**.54(**)**	.02	-.12	.41	-.18	.66	.21	.00		
SLR @ Benet Bridge	**.94(**)**	**.72(**)**	**.67(**)**	-.10	**.47(**)**	.68	.53	**.90(**)**	-.40	**.68(**)**		
Keys Creek	.20	.46	**.75(*)**	.25	-.04	-.07	.62	.41	-.72	-.10		-.14
Live Oak Creek	**.88(**)**	.13	.15	-.10	.00	**.74(**)**	-.02	-.20	.26	.16		.04
Ostrich Farm Creek	**.50(*)**	.23	**.76(**)**	-.28	-.21	-.20	.22	.42	**.89(**)**	.00		-.48
Bonsall Creek	.25	**.71(*)**	.45	-.11	.16	.06	.54	.56	-.49			.47
Moosa Canyon Creek	.27	.24	.05	.04	**-.36(*)**	.29	.13	.25	.36	.48		-.21
Little Gopher Canyon Creek	.05	.46	.31	-.05	-.22	.06	.36	.34	-.03	.10		-.29
Sleeping Indian	**.70(**)**	.35	**.57(*)**	0.01	-.02	**.93(*)**	.55	**.78(*)**	-.27	-.09		
Guajome Lake Outlet	**.71(*)**	.54		-.36	**-.59(*)**					.37		
Pilgrim Creek Outlet	**.97(**)**	**.91(**)**	**.87(**)**	**.43(*)**	.19	.68	**.90(*)**	.57	-.60	-.27		

Table 5: Chemical Analysis of Groundwater, Mission and Bonsall Basin

Location	**Mission Basin[1]** Lat 33.245216N Long 117.303294W		**Mission Basin[1]** Lat 33.246914N Long 117.302295W		**Bonsall Basin[2]** Lat 33.3245341N Long 117.1629566W				
Sample Site	**RO Well 4**	**RO Well 4**	**RO Well 5**	**RO Well 5**	**Site 26/27/MW Deep (85 ft)**	**Site 26/27/MW Shallow (20ft)**			
Sampling Date	**3/26/2002**	**2/23/2004**	**3/26/2002**	**2/23/2004**	**10/7/2003**	**10/7/2003**			
Analyte							**Unit**	**MDL**	**Method**
Hardness	---	---	---	---	----	----	mg/L	---	EPA 200.7
Calcium Hardness as CaCO3	425	479	450	457	----	----			
Total Hardness as CaCO3	787	895	833	859	680	760			
Ion Chromatograph	---	---	---	---	----	----	mg/L	---	EPA 300.0
Chloride	377	387	371	377	230	300		100	
Fluoride	0.39	0.3	0.38	0.4	----	----		0.045	
Nitrate as N	2.41	2.26	3.06	2.73	6.1	5.6		0.05	
Nitrite as N	0.1	<0.05	<0.02	<0.05	----	----		0.05	
Sulfate	479	528	506	518	370	380		100	
Metals	---	---	---	---			mg/L	---	EPA 200.7
Calcium	170	192	180	183	150	180		0.1	
Iron	<0.02	<0.02	<0.02	<0.02	----	----		0.02	
Magnesium	88	101	93	97.6	----	----		0.2	
Manganese	0.25	0.396	0.16	0.227	----	----		0.002	
Potassium	----	----	----	----	4.7	5.5		0.5	
Sodium	220	241	220	233	170	200		1	
Other									
Conductivity	2364	2430	2405	2350	1900	2200	µmhos/cm	20	SM 2510 B
Total Alkalinity as CaCO3	290	305	300	300	210	270	mg/L	---	SM 2320 B
Total Dissolved Solids	1680	1770	1780	1760	1300	1500	mg/L	10	SM 2540 C
pH	7.44	7.42	7.43	7.43	7.46	7.46	pH	---	SM 4500-H+ B

[1] Data provided by the City of Oceanside, Commun. September 2005,Guss Pennel.
[2] Data provided by the County Water Authority, Commun. September 2005, Dan Diehr

Generally, it may be concluded that the mean concentrations of both TDS and chloride in the San Luis Rey River tend to increase from east to west and mostly exceed the surface water Basin Plan objectives. The mean concentrations are very similar to the mean groundwater concentrations which indicate that groundwater is influencing water quality in the main stem of the river and its tributaries. The exceptions are Pilgrim Creek tributary (for TDS and chloride) and Sleeping Indian tributary (for TDS).

The San Luis Rey River flows through an alluvial valley that contains unconfined groundwater and there is a considerable interchange between surface flow and groundwater flow within the valley. According to NBS/Lowry (1995), the surface infiltration of river flow can exceed 30 cfs during periods of significant runoff. Conversely, surfacing groundwater can contribute several cfs to surface flows during the dry season. Therefore, the shallow groundwater and surface waters of the alluvial San Luis Rey River valley are considered one hydrogeologic system. As shown in Figure 5, groundwater quality in the San Luis Rey River continually degrades from the mountains towards the coastline. The areas that contain TDS concentration below 500 mg/L are restricted to upper reaches of the watershed in areas where there is minimal use of irrigation water. The TDS in shallow aquifers near the coast are typically above 1500 mg/L as a result of saltwater incursion and salt loads due to imported water use. This pattern is mirrored by the results of the present study.

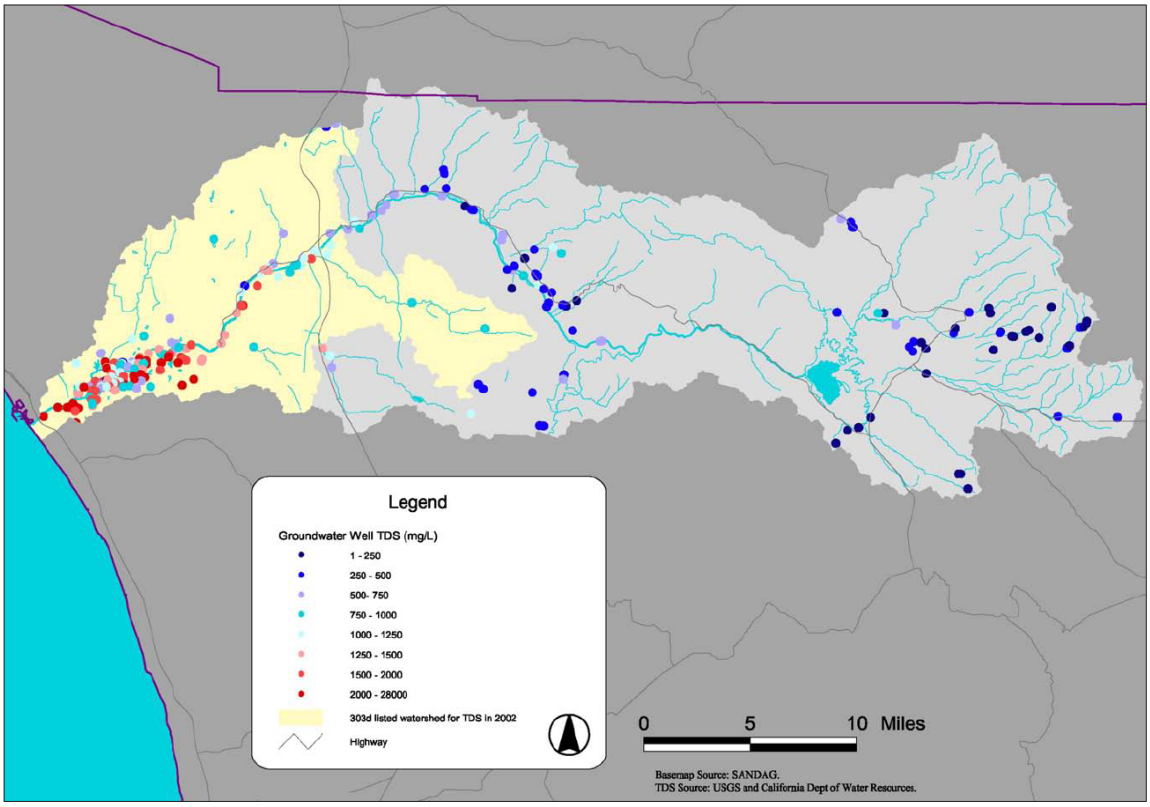

Figure 5: Variation in TDS concentration in shallow groundwater wells throughout the San Luis River watershed (adopted from the 2003 WURMP Report, PBS and J, 2003).

Table 6: Monitoring Results for FY 2007/2008

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	PO4-P	P tot	NH4	Hard.	TC	FC	EN	TDS	TSS	HCO3	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	CaCO3	F
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Bennett Creek	7/10/07	dry																											
	8/7/07	dry																											
	9/4/07	dry																											
	10/2/07	dry																											
	1/14/08	0.53	7.81	2.01	3	10.33	10.5	2.10	0.06	0.07	0.02	740				1290	2	338	89.4	5.22	169	144		0.24	270	393	0.14		0.3
	2/7/08	1.53	7.78	1.80	8	11.61	12.3	1.24	0.11		0.10					1224													
	3/11/08	1.03	7.87	2.07	2	11.39	13.7	1.13	0.07		0.10					1408													
	4/8/08	0.42	7.70	2.15	4	9.84	14	0.88	0.06	0.07	0.02	910				1380	3	336	95.6	4.13	205	148		0.16	280	440	0.37		0.48
	5/20/08	0.24	7.92	2.34	3	9.79	20	0.34	0.10		0.10					1591													
	6/17/08	0.02	8.04	2.36	3	8.42	21.5	0.17	0.10	0.11	0.03	890	2,200	900	170	1620	2.9	376	108	3.48	218	144		0.06	365	463	0.21		0.61
Horse Ranch Creek	4/8/08	1.14	7.88	2.48	29	10.05	15.3	4.69	0.18	0.18	0.02	1090				1840	10	376	133	5.31	186	273		0.17	344	596	0.45		0.22
	6/18/08	dry																											
Keys Creek	7/10/07	dry																											
	8/7/07	dry																											
	9/4/07	dry																											
	10/2/07	dry																											
	1/14/08	11.70	8.09	2.47	24	10.41	13	7.92	0.09	0.10	0.01	900				1660	14	298	112	7.3	206	193		0.1	361	602	0.15		0.21
	2/7/08	23.16	8.01	2.45	50	11.04	13.4	6.88	0.15		0.30					1666													
	3/11/08	11.28	8.07	2.40	49	9.86	16.9	4.18	0.11		0.10					1632													
	4/8/08	7.82	8.04	2.44	10	10.24	16.3	7.24	0.07	0.08	0.02	890				1700	6.9	303	127	5.9	230	208		0.05	343	572	0.44		0.27
	5/20/08	0.03	8.34	2.51	2	8.65	30.7									1707													
	6/18/08	dry																											
Little Gopher Canyon Creek	7/10/07	0.18	7.93	2.43	3	6.91	19.5	4.18	0.03		0.20					1652													
	8/7/07	0.14	7.85	2.44	5	7.32	21.5	1.58	0.05		0.30					1659													
	9/4/07	0.09	7.89	2.65	10	8.50	23.4	5.46	0.03	0.04	0.01	920				1620	6.1	415	122	2.7	262	56.7		0.08	409	419	0.3		0.48
	10/2/07	0.07	8.00	2.44	18	5.52	14.5	4.74	0.03		0.40					1659													
	1/14/08	3.38	7.93	2.61	131	10.81	10.5	8.74	0.14	0.16	0.02	820	1,100	230	220	1690	21.8	383	158	8.43	385	219		0.26	422	473	0.2		0.33
	2/7/08	11.18	7.86	2.55	69	12.20	10.8	3.50	0.16		0.10					1734													
	3/11/08	2.93	7.82	2.67	25	11.53	12.2	3.95	0.05		0.05					1816													
	4/8/08	2.59	7.74	2.77	4	9.97	14.4	7.67	0.13	0.13	0.02	930				1800	2.4	417	134	5.58	299	180		0.03	425	481	0.26		0.53
	5/20/08	3.11	7.57	2.66	2	9.65	19.1	2.60	0.07		0.10					1809													
	6/17/08	0.37	7.99	2.52	1	9.57	19.5	8.71	0.03	0.03	0.03	910	1,100	500	300	1750	1.7	340	116	5.11	259	141		0.02	416	455	0.26		0.31
Live Oak Creek	7/10/07	0.46	8.16	2.34	6	8.44	20.4	4.06	0.16		0.20					1591													
	8/7/07	0.95	8.06	1.96	33	8.85	22.2	2.71	0.18		0.30					1333													
	9/4/07	0.07	8.05	2.48	1	7.69	23.4	4.56	0.16	0.17	0.02	940				1630	3.5	360	119	4.9	179	97.7		0.08	333	581	0.2		0.47
	10/2/07	0.21	8.10	2.43	9	6.63	16.5	4.06	0.20		0.20					1652													
	1/14/08	7.92	7.97	2.21	23	9.72	13.7	8.62	0.15	0.47	0.02	930	800	270	220	1490	4.4	304	112	4.63	154	177		0.07	287	545	0.13		0.22
	2/7/08	12.52	7.86	2.25	40	9.14	15.3	8.01	0.21		0.20					1530													
	3/11/08	5.64	8.00	2.21	20	9.68	17.4	7.00	0.13		0.10					1503													
	4/8/08	2.77	7.87	2.26	4	9.99	15.4	7.53	0.13	0.14	0.02	1050				1580	3.7	315	93.5	3.05	184	183		0.04	295	557	0.35		0.26
	5/20/08	0.72	8.06	2.31	5	8.94	20.6	3.05	0.16		0.05					1571													
	6/18/08	0.39	8.07	2.30	4	9.10	18.7	5.63	0.12	0.14	0.03	920	1,700	230	300	1650	3.6	329	134	2.64	189	157		ND	316	568	0.18		0.37
Moses Canyon Creek	7/10/07	1.70	7.68	2.37	5	6.33	19.9	2.60	0.31		0.20					1612													
	8/7/07	0.61	7.56	2.42	12	5.91	21.3	3.72	0.34		0.30					1646													
	9/4/07	0.60	7.33	2.62	8	3.95	22.8	1.98	0.31	0.34	0.07	940				1660	15	368	108	2.46	246	71.9		0.17	396	499	0.3		0.37
	10/2/07	1.09	7.46	2.63	2	6.22	16.9	1.92	0.18		0.30					1788													
	1/14/08	22.38	7.95	2.42	18	10.24	13	4.74	0.33	0.35	0.03	780	24,000	330	500	1500	13.2	315	87.3	7.91	210	141		0.15	361	499	0.18		0.18
	2/7/08	44.89	7.81	2.12	48	11.31	13.3	1.92	0.41		0.10					1442													
	3/11/08	15.47	7.85	2.20	17	10.15	14	2.71	0.34		0.10					1496													
	4/8/08	9.26	7.71	2.36	4	9.03	15.4	4.01	0.37	0.38	0.02	700				1520	1.4	3150	100	8.24	245	171		0.05	330	462	0.37		0.26
	5/20/08	5.60	7.72	2.42	20	8.77	21									1646													
	6/17/08	1.95	7.87	2.42	6	9.48	21	4.10	0.05	0.79	0.03	920	3,000	2,400	500	1680	5.8	274	91.7	5.92	246	137		0.06	392	525	0.25		0.25

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	PO4-P	P tot	NH4	Hard.	TC	FC	EN	TDS	TSS	HCO3	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	CaCO3	F
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Mulder Ranch Creek	6/18/08	dry																											
Ostrich Farm Creek	7/10/07	0.54	8.11	2.06	7	8.26	20.4	2.03	0.16		0.10					1401													
	8/7/07	0.40	8.03	2.12	5	8.68	21.5	1.24	0.16		0.50					1442													
	9/4/07	0.16	7.97	2.15	12	9.07	23.7	3.18	0.13	0.15	0.02	950				1330	28.4	381	126	ND	157	82.1		0.13	277	466	0.23		0.4
	10/2/07	0.67	7.93	2.11	1	6.48	16.1	1.81	0.16		0.00					1435													
	1/14/08	4.92	7.91	2.09	6	9.05	13.1	5.87	0.38	0.40	0.02	760	800	140	500	1290	2.5	329	97.1	6.63	130	156		0.06	262	433	0.11		0.2
	2/7/08	6.86	7.88	1.97	16	9.95	14.9	4.18	0.51		0.10					1340													
	3/11/08	4.14	8.07	1.97	6	9.83	18.8	5.19	0.77		0.50					1340													
	4/8/08	2.23	7.90	2.00	3	10.63	15	6.24	0.29	0.30	0.03	940				1400	2.1	345	107	5.11	161	178		0.01	268	446	0.33		0.25
	5/20/08	1.80	8.01	2.15	1	9.28	20.3	1.92	0.15		0.10					1462													
	6/18/08	1.14	7.92	2.02	5	8.14	18.6	4.90	0.22	0.22	0.03	850	2,200	80	170	1150	1.1	342	112	4.62	133	115		ND	273	451	0.17		0.33
Pacific Mix Zone	7/10/07												2	ND	ND														
	8/7/07												4	2	10														
	9/4/07												ND	ND	ND														
	10/2/07												800	800	185														
	11/6/07												1,700	1,700	831														
	12/4/07												300,000	2,300	380														
	1/14/08												1,700	40	62														
	2/7/08												1,700	800	450														
	3/4/08												2,200	800	98														
	4/8/08												500	40	ND														
	5/13/08												80	ND	41														
	6/17/08												22	ND	ND														
Pilgrim Creek Outlet	10/2/07	28.68	7.82	5.38	114	1.15	20.1	4.60	3.90		3.00		300,000	23,000	18,980	3660	110		88	33	877	186	0.48	ND	1070	852			
	12/4/07	NM	7.86	2.42	74	9.22	12.4	0.90	1.70		0.60		50,000	3,000	720	1646	34		56.6			83.3	0.13	0.06	462	291			
	1/14/08	2024.74	8.04	2.18	25	12.68	10	0.54	1.20		0.40		3,000	300	243	1320	4		58.8			95.5	0.24	0.271	383	237			
	2/7/08	3170.16	8.48	2.55	10	18.94	12.7	1.35	0.85		0.30	632	8,000	110	305	1734	ND		73.2				0.21	ND	500	336			
	3/4/08	1273.44	8.37	3.12	5	13.18	14.9	0.90	0.80		0.40	701	2,200	210	97	2122	ND		78.5				0.25	ND	610	447			
	4/8/08	480.26	8.23	5.10	7	5.71	18.4	0.56	0.95		0.60	1210	7,000	800	488	3140	ND		138	9.84	839	204	0.7	ND	1100	686			
	5/13/08	127.99	8.40	5.33	6	10.70	19.1	0.79	0.65		0.30	1060	8,000	2,200	201	3624	ND		180				0.14	ND	959	696			
Sleeping Indian	7/10/07	62.40	7.96	3.52	7	6.68	19.3	90.90	0.10		0.20		5,000	130	119	2400	16		160	2.86	382	188	0	ND	434	626			
	8/7/07	18.38	8.23	3.76	2	8.85	21	76.00	0.20		0.20		13,000	140	490	2557	6.4		177				ND	ND	451	659			
	9/4/07	18.40	8.14	4.19	1	8.22	22.6	84.00	0.50		0.30		130,000	260	191	2849	2.2		206				ND	ND	479	742			
	10/2/07	7.78	8.26	3.86	7	9.15	16.7	42.00	0.00		0.20		17,000	2,200	1,200	2680	7.4		96.8	4.04	410	236	ND	ND	458	674			
	11/6/07	31.72	8.23	3.67	9	8.70	16.1	82.00	0.00		0.20	1190	17,000	20	63	2496	1		154				ND	ND	444	704			
	12/4/07	NM	8.20	3.93	2	10.27	10.9	75.60	1.75		0.60		13,000	300	260	2672	1		163			205	0.22	ND	490	706			
	1/14/08	174.06	8.39	3.77	39	10.82	9.1	73.40	0.95		0.40		80,000	20	73	2400	14		141			182	0.7	0.148	443	677			
	2/7/08	127.86	8.47	3.59	23	10.79	9	62.60	0.70			1120	13,000	70	228	2441	ND		140				0.76	ND	430	708			
	3/4/08	178.75	10.40	3.63	9	14.56	8.52	90.00	0.40		0.20	1750	2,200	20	221	2468	ND		169				0.5	ND	430	856			
	4/8/08	19.45	8.36	3.57	8	7.79	14.6	90.00	0.30		0.30	1240	80,000	230	2,400	2450	ND		154	3.49	434	213	0.13	ND	440	614			
	5/13/08	70.80	8.40	3.47	3	12.22	15.8	67.00	0.85		0.60	1120	50,000	230	2,187	2360	ND		173				ND	ND	440	654			
	6/17/08	53.05	8.28	3.69	1	6.05	18.2	81.00	0.30		0.40	1300	17,000	1,300	985	2509	ND		174				ND	ND	480	642			
SLR @ Bennet Bridge	7/10/07	NM	7.43	2.60	7	7.13	19.2	1.13	0.65		0.20		13,000	500	160	1750	6.6		89.3	7.83	254	199	0.67	ND	408	439			
	8/7/07	NM	7.85	2.69	7	6.93	20.7	1.10	0.75		0.20		1,400	70	98	1829	6.8		93.2				0.62	ND	418	444			
	9/4/07	NM	7.77	2.73	8	6.76	22.3	0.70	0.80		0.20		3,000	220	206	1856	5.6		90.9				0.84	ND	431	450			
	10/2/07	63.57	7.77	2.78	5	6.74	17	1.10	0.55		0.20		3,000	2,300	320	1900	6		88.5	9.07	285	231	0.39	ND	437	451			
	11/6/07	NM	7.77	2.84	4	6.88	16	0.60	0.30		0.30	930	800	110	85	1931	3.2		78.4				0.33	ND	446	551			
	12/4/07	16987.27	7.66	2.06	84	5.86	10.6	1.35	1.20		0.80		22,000	500	86	1401	10		73.1			152	0.09	0.221	248	406			
	1/14/08	40297.17	8.04	2.31	94	8.34	11	2.82	0.65		0.30		2,300	130	20	1490	6		87.7			166	0.08	0.19	284	444			
	2/7/08	67426.00	8.19	1.63	33	10.03	10.9	2.82	0.65		0.20	578	13,000	700	677	1108	ND		61.4				ND	ND	200	314			
	3/4/08	47204.15	8.18	2.25	18	9.52	13.3	3.20	0.60		0.30	747	2,300	170	233	1530	ND		77.7				0.07	ND	300	532			
	4/8/08	55452.90	7.99	2.45	53	5.51	15.3	2.03	0.65		0.30	938	800	110	0	1550	ND		86.2	6.16	259	198	0.16	ND	340	505			

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	PO4-P	P tot	NH4	Hard.	TC	FC	EN	TDS	TSS	HCO3	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	CaCO3	F
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	5/13/08	1896.59	8.01	2.51		10.51	16.2	1.35	0.75		0.40	920	11,000	80	63	1707	ND		85.3				0.49	ND	380	452			
	6/17/08	2619.01	8.14	2.55	53	10.26	18.9	0.30	0.70		0.60	938	30,000	70	31	1734	ND		82				0.76	ND	600	441			
	9/4/07	0.47	7.41	2.89	12	6.02	21.2		0.09	0.10	0.03	1050	1,700	800	110	1820	9.7	423	218	ND	257	115		0.35	418	552	0.25		0.39
SLR @	1/14/08	137.40	7.88	2.28	23	9.25	12.3		0.15	0.19	0.04	900				1430	8.8	318	88.6	8.12	175	162		0.23	305	488	0.14		0.21
Bonsall	4/8/08	64.26	7.87	2.29	11	9.76	16.3	2.22	0.21	0.22	0.01	800	230	130	170	1500	9	336	108	8.93	215	189		0.16	315	494	0.48		0.26
Bridge	6/17/08	14.45	7.64	2.46	9	8.02	17.4	0.74	0.10	0.15	0.03	900	1,100	80	300	1720	6.2	300	103	8.99	233	172		0.3	350	620	0.2		0.26
	7/10/07	NM	7.24	2.71	3	6.62	17.3	0.60	0.35		0.20		800	170	230	1820	9.6		107	6.91	258	196	0.42	ND	372	544			
	8/7/07	NM	7.65	2.77	3	5.85	18.6	1.20	0.40		0.20		900	40	93	1884	2		109				0.35	ND	383	545			
	9/4/07	NM	7.46	2.83	1	6.10	19.4	0.90	0.55		0.20		800	130	31	1924	1		116				0.36	ND	402	560			
	10/2/07	1240.28	7.59	2.85	6	6.59	15.5	1.00	0.25		0.10		6,000	80	30	2050	3.4		94.8	6.68	276	210	0.22	ND	399	571			
	11/6/07	NM	7.81	2.75	4	7.01	15.9	0.70	0.20		0.20	1020	800	130	100	1870	2		110				0.15	ND	378	610			
SLR @ Bonsall Bridge - OC	12/4/07	Ponded	7.79	2.43	54	8.19	10.8	2.36	0.60		0.40		500,000	7,000	942	1652	24		94.5			180	0.73	0.06	290	535			
	1/14/08	37005.59	8.02	2.31	21	9.09	10	2.48	0.25		0.30		3,000	230	52	1510	9.4		86.8			162	0.39	0.328	267	471			
	2/7/08	31434.60	8.09	1.71	62	9.37	9.3	13.00	0.45			594	800	170	161	1163	29		65				0.15	ND	200	371			
	3/4/08	32876.36	8.07	2.08	28	12.24	10.8	2.60	0.25		0.10	820	270	220	155	1414	ND		77.6				0.2	ND	270	537			
	4/8/08	13656.41	7.92	2.32	17	7.39	14.2	1.47	0.45		0.30	979	3,000	170	148	1540	ND		84.3	6.04	255	206	0.23	ND	310	546			
	5/13/08	12004.73	7.95	2.40	10	11.88	15	1.80	0.45		0.30	897	3,000	110	187	1632	ND		104				0.33	ND	320	549			
	6/17/08	7633.97	7.80	2.55	9	10.14	16.3	0.40	0.40		0.40	961	2,200	140	84	1734	ND		89.8				0.42	ND	370	528			
	7/10/07	0.95	7.40	2.67	15	7.95	23.5	0.79	1.30		0.60		1,100	40	144	1830	165		107	8.55	255	195	1.66	0.06	384	500			
	8/7/07	Ponded	8.45	2.54	85	8.87	28.9	0.90	0.75		0.60		4,300	500	200	1727	105		108				1.61	ND	392	399			
	9/4/07	Ponded	7.55	2.65	165	4.63	25.9	0.90	1.85		0.80		30,000	700	301	1802	200		113				4.38	0.156	403	512			
	10/2/07	Ponded	7.87	1.92	12	4.15	17	0.70	2.80		0.40		13,000	40	52	1460	44.8		85.8	7.32	254	145	2.14	ND	339	315			
	11/6/07	Ponded	8.11	2.00	12	7.96	18.6	0.70	1.00		0.40	647	5,000	40	41	1360	15		59.2				2.46	ND	280	294			
SLR @ Douglas St. Bridge	12/4/07	NM	7.72	2.26	22	7.28	10	1.92	0.80		0.60		30,000	230	210	1537	4.5		81.1			159	0.06	ND	270	474			
	1/14/08	164510.07	8.05	2.35	9	8.95	10.6	1.92	0.55		0.30		2,200	300	98	1460	4.4		86.4			162	0.16	0.211	280	460			
	2/7/08	271804.18	8.15	1.66	112	9.80	10.2	2.48	0.75		0.30	602	5,000	800	2,224	1129	20		60.5				0.09	ND	190	355			
	3/4/08	190344.21	8.19	2.23	65	9.50	12.6	2.60	0.60		0.30	787	2,200	1,300	759	1516	ND		78.2				0.19	ND	290	590			
	4/8/08	11932.94	8.10	2.40	5	7.10	14.5	1.58	0.35		0.20	976	2,800	900	1,274	1540	ND		88.4	6.2	257	205	0.15	ND	320	526			
	5/13/08	17184.25	8.12	2.46	25	13.32	15.6	1.92	0.36		0.40	913	7,000	800	1,119	1673	ND		117				0.26	ND	340	522			
	6/17/08	2750.70	8.20	2.48	6	10.65	17.9	0.50	0.30		0.40	956	70,000	3,000	488	1686	ND		85.1				0.37	ND	370	514			
SLR @ East Vista Way	6/17/08	0.20	7.83	2.02	7	7.08	18.5	15.10	0.10	0.11	0.03	600	1,100	130	500	1360	0.4	330	94.6	5.64	222	73.2		0.05	235	397	0.36		0.27
	7/10/07	Ponded	7.79	2.98	35	7.71	22.7	11.00	0.20		0.40		5,000	170	31	1900	74.4		123	8.1	293	182	0.07	ND	469	556			
	12/4/07	7457.22	7.79	2.32	50	6.57	11.7	2.37	0.80		0.60		240,000	23,000	770	1578	16		85			162	0.31	ND	285	483			
	1/14/08	16171.88	8.01	2.38	13	9.59	11.2	3.95	0.50		0.30		3,000	40	31	1500	9.6		85.8			159	0.23	0.223	282	468			
SLR @ Murray Bridge	2/7/08	42381.60	8.08	1.72	52	9.24	10.1	3.16	0.60		0.20	612	23,000	260	158	1170	ND		68				0.13	ND	210	372			
	3/4/08	Ponded	8.10	2.26	10	4.40	12.9	3.84	0.50		0.20	812	3,000	20	41	1537	ND		82.1				0.2	ND	290	566			
	4/8/08	52579.99	8.03	2.44	5	7.37	15.2	4.29	0.35		0.20	880	1,300	70	122	1580	ND		92.7	6.47	231	184	0.14	ND	320	544			
	5/13/08	32471.91	8.24	2.52	2	16.68	16.4	3.39	0.25		0.30	982	2,300	300	86	1714	ND		116				ND	ND	360	558			
	6/17/08	5184.02	7.96	2.67	23	8.42	18.3	4.25	0.00		0.40	1010	5,000	500	1,203	1816	ND		127				ND	ND	390	502			
	7/10/07	3.42	7.72	2.36	33	7.10	17.4	0.79	0.10		0.20					1605													
	8/7/07	1.26	7.57	2.52	17	6.64	18.3	0.90	0.16		0.20					1714													
	9/4/07	1.39	7.41	2.58	16	6.02	19.4	0.06	0.09	0.10	0.01	1080				1770	4.2	382	112	1	224	153		0.23	394	604	0.22		0.27
	10/2/07	1.05	7.57	2.55	5	7.44	14.8	1.13	0.13		0.20					1734													
SLR @ Olive Hill Rd.	1/14/08	52.38	7.76	2.13	19	9.43	10.4	3.48	0.12	0.15	0.03	880	500	300	300	1380	8.2	316	91	8.55	165	162		0.29	280	482	0.13		0.21
	2/7/08	111.60	7.70	1.61	72	11.62	10.7	3.50	0.21		0.20					1095													
	3/11/08	23.35	7.79	2.07	14	10.75	13	1.24	0.16		0.05					1408													
	4/8/08	28.22	7.70	2.18	13	9.31	14.1	1.96	0.14	0.15	0.02	940				1530	1.6	334	102	10.9	192	188		0.2	292	494	0.34		0.35
	5/20/08	2.16	7.72	2.27	52	8.56	17.6	0.45	0.11		0.20					1544													
	6/17/08	11.82	7.72	2.23	26	7.93	17.3	0.56	0.12	0.13	0.04	1000	3,000	130	500	1640	14.2	285	99.6	9.4	186	164		0.2	334	551	0.17		0.25
	7/10/07	NM	7.59	32.90	8	6.92	27.4		0.35		0.40		480	170	10	22100	5.6		862	238	6560	318	0.15	ND	12000	1800			
	8/7/07	NM	8.01	31.10	2	7.52	28.4		0.40				110	110	ND	21148	5.2		846				0.11	ND	11000	1700			
sing	9/4/07	Ponded	8.21	16.20	4		29		0.35		0.20		70	20	ND	11016	3		433				0	ND	5350	1010			

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	PO4-P	P tot	NH4	Hard.	TC	FC	EN	TDS	TSS	HCO3	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	CaCO3	F
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SLR @ Pacific St. Cros	10/2/07	Tidal	8.04	48.00	11	7.96	17.7		0.00		0.20		300	230	93	36100	31.8		1760	428	15200	409	0	ND	19000	2580			
	11/6/07	NM	7.99	24.40	3	9.49	18.4		0.15		0.10	3070	2,600	2,000	240	16592	2.6		578				0.07	ND	8270	1540			
	12/4/07	28929.64	7.53	3.43	172	4.20	12.1		1.95		1.00		97,000	2,200	360	2332			103			143	0.23	0.07	820	406			
	1/14/08	Tidal	7.95	5.29	27	8.90	12.9		0.75		0.10		13,000	500	73	3080	13		138			164	0.28	0.312	1120				
	2/7/08	38171.55	8.10	3.82	42	9.38	11.8		0.85			684	3,000	1,300	743	2598	33		75.5				0.06	ND	500	324			
	3/4/08	41273.76	8.14	9.70	16	10.15	14.8		0.35		0.10	1520	5,000	300	213	6596	ND		277				0.09	ND	2780	902			
	4/8/08	15642.28	8.01	24.10	31	6.40	17.9		0.30		0.10	3070	500	300	20	14700	ND		578	179	5510	265	0.25	ND	8400	1320			
	5/13/08	21026.24	8.35	34.60	11	14.49	21.4		0.35			4440	130	80	ND	23528	ND		846				0.3	ND	2110	1910			
	6/17/08	1873.91	8.51	18.20	39	11.76	25.5		0.20		0.30	2610	500	220	359	12376	ND		463				ND	ND	5880	1050			
SLR @ Shearer Crossing	7/10/07	dry																											
	8/7/07	dry																											
	9/4/07	dry																											
	10/2/07	dry																											
	1/14/08	8.00	7.81	1.67	25	8.16	14.2	9.68	0.16	0.19	0.13	600				1010	10.4	251	63.7	12.6	113	127		0.23	185	368	0.12		0.16
	2/7/08	61.88	7.59	0.91	152	9.36	14.1	3.61	0.28		0.10					615													
	3/11/08	17.78	7.95	1.44	9	11.12	19.4	2.71	0.13		0.10					979													
	4/8/08	11.30	8.00	1.60	4	11.73	19.4	8.76	0.13	0.15	0.01	700				1110	2.6	243	74.4	15.5	136	139		0.07	180	349	0.44		0.23
	5/20/08	1.28	8.37	1.61	ND	13.67	24.1	3.61	0.10		0.10					1095													
	6/18/08	Ponded																											

Values of nutrient concentrations outlined in red have been obtained through the use of field test kits while values in black are the results of analytical laboratory testing; values of TDS outlined in red are extrapolated from Conductivity while those in black were determined through analytical laboratory testing

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WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Increased Cleaning Frequency and Additional Education Signage**

ID NUMBER: **SLR-002**

ACTIVITY IMPLEMENTATION

One Oceanside harbor storm drain has had historical bacterial exceedances due to flows from a public boat wash area located next to a sewage dump for recreational vehicles (RV). Several bacteria reduction pilot projects have been implemented in the past four years including the installation of an antimicrobial fabric in FY 2006-07 and increased cleaning frequency of this specific storm drain during FY 2007-08. The antimicrobial fabric did not display long-term effectiveness, possibly the result of added hydrocarbons and sediment in the runoff. The increased monthly cleaning of the boat wash outfall did show reductions in bacterial counts, though there were still some bacterial level exceedances which may have been due to re-growth in the pipe.

During FY 2007-08 the City decided to increase the storm drain pipe cleaning frequency to twice per month during high use summer months. The City also installed additional educational signage at the RV dump station encouraging proper hook-up and removal of sewage pipes from RVs and the need to prevent spills while emptying RV sewage tanks.

The expected benefits of these pilot programs were to:

- Reduce bacterial concentrations that are discharged into the Oceanside Harbor.
- Determine the effectiveness of this BMP in the pilot study to assess the need for a change in BMPs or if additional BMPs need to be implemented.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Increased frequency of cleaning will occur during high use summer months in FY 2007-08 Additional education signage installed in FY 2007-08.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS ASSESSMENT

Increased cleaning frequency

During FY 2007-08 the harbor boat wash storm drain outfall pipe was cleaned twice per month during the high use months of August and September 2007. Cleaning was reduced to once per month during the winter. In April, 2008, a BMP consisting of a modular wetland (Activity SLR-003) was installed and the cleaning frequency remained at once per month for the remainder of the fiscal year. While the increased cleaning frequency resulted in fewer exceedances in August, a fecal coliform exceedance occurred in late September. In addition, just two days after the monthly cleaning in October, the outfall exceeded the fecal and total coliform action levels.

Additional educational signage

On October 22, 2007 additional signage was installed at the boat wash outfall to encourage the proper hook-up and removal of RV sewage dump lines. The sign text read "Use Caution When Removing Hose". These thermal signs were heat baked on to the curbed areas but began to peel off during the year. The Department of Harbors and Beaches removed the thermal signs and continued to use the stencil and paint application process for sign installation. This application process seems to weather the elements better than other application processes. Signs stenciled at the RV dump station during this reporting period are shown below:

RV Dump station hookup location

Storm drain in Boat Wash and RV dump station area

Signs in place during previous reporting periods:

Signs at entrance of Boat Wash and RV dump station

Signs at Boat Wash area

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WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland**

ID NUMBER: **SLR-003**

ACTIVITY IMPLEMENTATION

Oceanside Harbor has over 40 storm drains with small drainage areas that carry flow to the harbor. One drain with historic bacterial exceedances receives flow from the harbor boat wash. Located within 15 feet of the drain are two wastewater discharge hook-ups for recreational vehicles (RV). Education for improper pump out of RV holding tanks is being addressed by WURMP Activity SLR-002. This activity, SLR-003, addresses new structural BMP implementation.

Two bacteria reduction pilot projects have been implemented in the past: installation of an antimicrobial fabric in FY 2006-07 and increased frequency of storm drain cleaning in FY 2007-08. The antimicrobial fabric did not display long-term effectiveness, possibly the result of added hydrocarbons and sediment in the runoff. The City then implemented monthly cleaning of the storm drain outfall in May 2007 which showed reductions in bacterial counts, though there were still some bacterial level exceedances which may be due to re-growth in the pipe.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor Boat Wash storm drain. This system utilizes a combination of technologies to not only address the high priority pollutant of bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. The wetland consists of a vault 22 feet long, five feet wide, and five feet deep. The peak treatment volume is 4000 cubic feet per second with a bypass for higher flows.

To address bacteria, the Modular Wetland is utilizing BioMediaGreen, a new type of media in lightweight block format that is easy to handle and replace, for primary filtration. The wetland is then using a sub-surface flow wetland for biological remediation. Because the harbor is a harsh, salt-water environment, the system is using a hardy, fast growing plant with large root bundles, called Vetiver grass. It was estimated that it take about six months for the plants to get established in the wetland and the roots to get to the bottom of the vault, and therefore, peak treatment to begin.

Monitoring of this outfall pipe has been ongoing since 2004 and will continue through the Coastal Storm Drain Monitoring (CSDM) Program for total coliforms, fecal coliforms, and Enterococcus.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

The Modular Wetland was installed at the beginning of April 2008. The peak treatment efficiencies were expected to be reached by October 2008, but may take up to a year to reach due to plant growth and media maturity.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- BioClean Environmental Services, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS ASSESSMENT

The Modular Wetland was installed in FY 2007-08. Because of the maturation time required for the biological remediation, the effectiveness of the BMP has not been assessed. However, historical data was reviewed for trend analysis.

Figure 1 presents the percentage of sites that exceeded the CSDM action levels at the Harbor Boat Wash for total coliforms, fecal coliforms, and Enterococcus by month from July 1, 2004 through June 30, 2008. CSDM samples are collected during dry events preceded by 72 hours of dry weather once or twice a month when the outfall is flowing. Therefore, the number of samples collected varies month by month and year by year. In general, the summer, high-use months, appear to have more exceedances than the late winter/early spring months. However, total coliform exceedances vary across the year and there does not appear to be a trend.

Figure 2 presents the percentage of samples that exceeded the CSDM action levels by fiscal year for the three bacteria indicators. Again, no trends can be found; the percentage of exceedances has remained relatively steady with total coliform exceedances ranging from 47% to 59% of the samples collected over the past four years. Fecal coliforms have exceeded the action levels between 22% and 41% and Enterococcus between 6% and 13% from July 1, 2004 through June 30, 2008. These results will be the baseline for the effectiveness assessment of the Modular Wetland in the coming years.

Initial observations from the Modular Wetland results included more hydrocarbons than expected, possibly from engine flushing, parking lot runoff, and bilge water and unexpected sand and sediment blown into the unit. BioClean increased the maintenance schedule to adjust for the findings. In addition, the amount of water flowing through the unit was higher than expected. This may lead to an additional structural BMP of installing a coin-operated water dispenser to reduce the amount of water running into the Harbor and to promote water conservation.

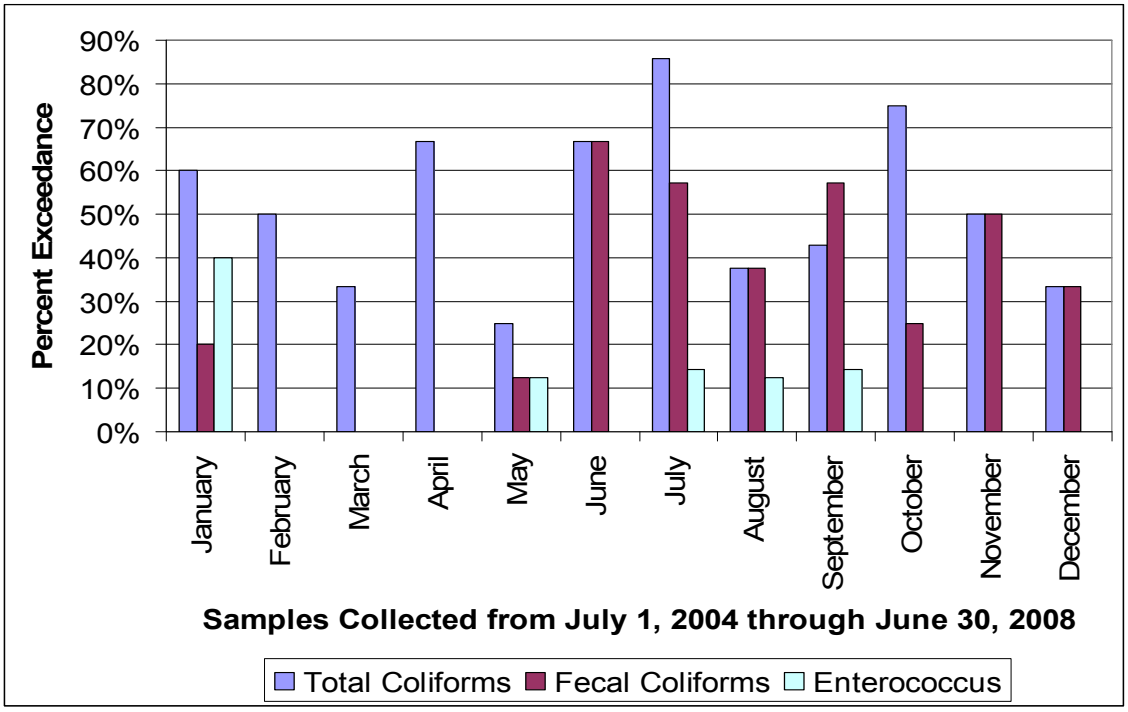

Figure 2. Percent Exceedance of CSDM Action Levels by Month from July 1, 2004 through June 30, 2008 at the Harbor Boat Wash Outfall.

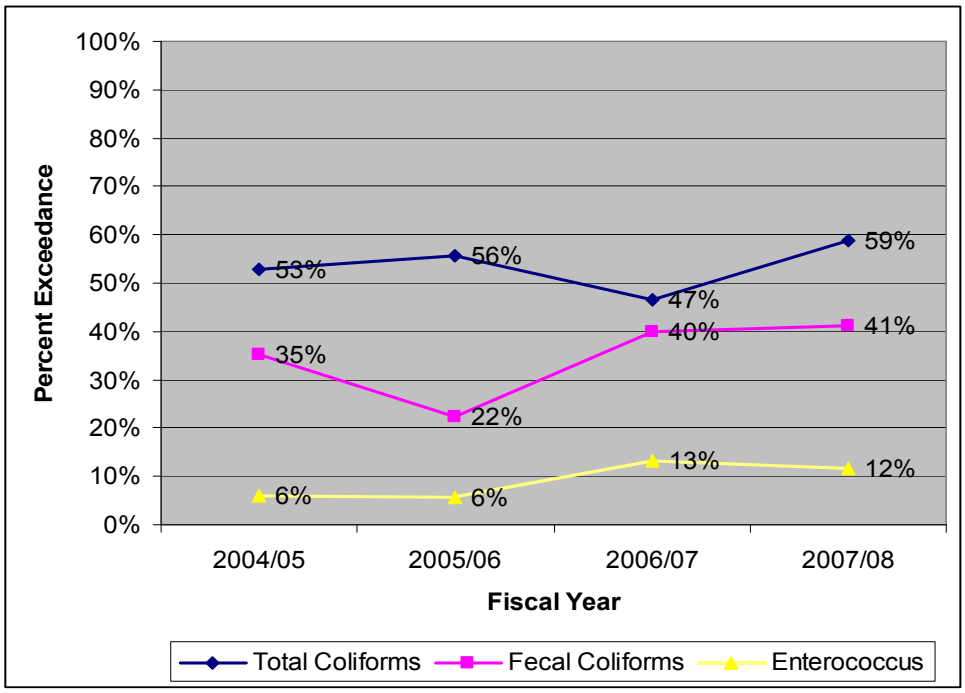

Figure 3. Percent Exceedance of CSDM Action Levels by Fiscal Year at the Harbor Boat Wash Outfall.

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WATERSHED ACTIVITY SUMMARY SHEET

Water Quality and Education Activity

TITLE: **Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail**

ID NUMBER: **SLR-004**

ACTIVITY IMPLEMENTATION

The City of Oceanside manages an eight mile recreational walking and biking trail that is adjacent to the San Luis Rey River. This trail has high recreational traffic including bikers and walkers some of who walk and run their dogs along the trail. Since the trail was opened in 2000, city crews have noticed that pet waste, specifically dog waste, is not always picked up and properly disposed in trash cans, but is left on the trail. The City wants to install pet waste bag dispensers, signage, and trash cans along the trail. City crews have expressed concern about potential problems with installing some of these BMPs including the cost for maintenance and probable vandalism to signs and pet waste bag dispensers. The goal of this project is to determine which types of educational BMPs will enact a behavioral change amongst people who do not pick up pet waste and prioritize specific locations for BMP installation.

The following planning activities occurred during FY 2007-08:

- Different types and designs of pet waste bag dispensers were researched. At least two different dispensers will be installed to determine the type is used by the public, ease of maintenance and vandalism potential.
- Estimates from pet waste removal companies were received for temporary cleanup services and assessment of waste not picked up along the trail. The company will be asked to provide feedback on sections of the trail that have more waste than other sections. This will help determine the high use areas and where it may be most effective to install the dispensers, signs, and trash cans.
- A local Girl Scout troop has “adopted” this pilot program as part of their Bronze Award requirements. They have agreed to assist in the outreach component of the program. Their activities may include staffing tables along the trail as part of a kick-off event, to be taped on a local television show encouraging people to pick up dog waste, and assess the data collected from the project. They may provide additional assistance where needed.
- A Community Based Social Marketing (CBSM) component is planned to be implemented as part of the projects education outreach component. Activities proposed to assist with the CBSM may include a visual observation component, identification of experimental and control areas along the trail, a mail survey to residents to identify barriers, an assessment of survey responses, and recommendations for BMP implementation as a result of the survey assessment.

TMDL APPLICABILITY

This section of the river is not under TMDL development or implementation. However, the Pacific Ocean Shoreline at the mouth of the San Luis Rey River is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments.

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Program planning for this activity was completed during this reporting period, FY 2007-08, and implementation and assessment is scheduled for FY 2008-09. Based on the assessment results effective BMPs may be installed throughout the trail in FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

A private firm will be hired to clean the area and conduct visual and quantitative assessments throughout the entirety of the project.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a priority water quality problem in the San Luis Rey River Watershed. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

During FY 2007-08 this activity was in the planning stages. Effectiveness assessment of the various components of the project will be completed once implementation is completed. Some of the effectiveness assessment components will include the following:

Baseline loads will be calculated along the entire trail prior to implementation of the program by collecting and weighing dog waste left on the trail and disposed in trash cans located along the trail. During program implementation the same calculations will be done to determine which of the BMPs installed were most effective in reducing fecal waste left along the trail.

The number of pet waste bags used from the new dispensers installed along the trail will be tabulated and compared with bags personally brought by trail users.

Determination if the various BMPs installed during the pilot program period are effective in the areas installed. And, which BMPs can be effective if installed in other areas of the trail.

WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Pet Waste Bag Dispenser Program in County Parks**

ID NUMBER: **SLR-005**

ACTIVITY IMPLEMENTATION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County maintains four dispenser stations at a total of two parks, including one new location (park) and three new dispensers within the San Luis Rey River Watershed. The parks and the number of dispensers include:

- Live Oak Park (2 new dispensers, 3 total dispensers)
- Palomar Park (1 new dispenser, 1 total dispenser)

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey River Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	FY 07-08		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Live Oak Park	3	10,498	2,100
Palomar Park	1	4,199	840
Total	**4**	**14,697**	**2,939**

Cumulatively, the County maintains four stations among two County Parks within the San Luis Rey River Watershed. These stations distributed approximately 14,697 bags during the FY 07-08 reporting period, preventing an estimated 2,939 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **Agricultural and Nursery Operations Runoff Assessment and Monitoring Program**

ID NUMBER: **SLR-006**

ACTIVITY IMPLEMENTATION

The northeast area of Oceanside has a high concentration of nursery and agricultural operations that are potential sources of associated pollutants (according to the BLTEA) including organics, sediment, pesticides, nutrients and bacteria. This activity was intended to reach out to these operations, conduct water quality monitoring upstream and downstream of agricultural and nursery operations to assess the impacts to water quality during dry and wet weather, and use these results to prioritize and recommend Best Management Practices.

Site visits at the operations of Mellano & Company and Pardee Tree Nursery were completed on November 11, 2007. Site visits of Harry Singh & Sons and Milagro Ranch Strawberry Farm agricultural operation were completed on December 17, 2007 in preparation for the project. A Monitoring Plan and Field Data Sheet were created in February 2008 (Attachment A).

Wet Weather Monitoring

A rain event during the day on February 20, 2008 was sampled. Sampling was planned for Pardee Tree Nursery and Mellano & Company. Sampling took longer than expected and access to some sites was not possible due to safety and limited access on muddy roads. Four sites at Pardee Tree Nursery were visited and field measurements were collected. Field measurements including pH, temperature, conductivity, dissolved oxygen, turbidity, ammonia as N, nitrate as N, and orthophosphate were collected. In addition, samples were also collected at these four sites for indicator bacteria analysis. Mellano & Company was not visited due to time constraints.

Pardee Tree Nursery was one of the first agricultural operations in the area to implement erosion control and best management practices to capture, store, and reuse runoff. Therefore, the main drainage area through the middle of the operation leads to a detention basin so no runoff was released to the watershed during this event. However, the run-on entering Pardee's property was sampled (Pardee4). A smaller drainage area on the east side of the property that weaves in and out of the property (and in and out of City and unincorporated County area) was sampled and was flowing to the San Luis Rey River. This drainage receives a small amount of flow from Pardee then enters a property in the unincorporated area of the County of San Deigo where cows were grazing in an open pasture with access to the stream. The stream then reenters Pardee property and outlets at the south end of Pardee Nursery under N. River Road. Sampling was conducted at three points along this drainage:

- As the drainage leaves the City east of Pardee property on Big View and Via Puerta del Sol (Pardee3),
- As the drainage enters back into the City and Pardee property at Puerta del Sol (Pardee2),

- Upstream of the bridge on N. River Road (Pardee1).

A map of sampling sites along the drainage areas is presented in Figure 1. Results from the sampling are presented in Table 1. Enterococcus results at these locations increased by a log difference from exiting the City and coming back to Pardee property. In addition, turbidity almost doubled between Pardee3 and Pardee2.

Figure 1. Wet Weather Sampling Locations at Pardee Tree Nursery.

Table 3. February 20, 2008 Wet Weather Results at Pardee Tree Nursery.

Site ID	Pardee4	Pardee3	Pardee2	Pardee1
	Run-on of Main Flow	East Flow Upstream → Downstream		
Date	2/20/2008	2/20/2008	2/20/2008	2/20/2008
Time	1250	1230	1210	1135
FlowRate (gpm)	239	464	795	208
Cond (mS/cm)	1.05	2.47	2.38	2.49
DO (mg/L)	11.55	19.01	8.73	18.25
pH (pH units)	7.48	8.71	8.68	7.83
Temp (˚C)	14.1	13.9	14.6	15.1
Turb (NTU)	>800	83	156	56
Ammonia (mg/L)	4	0.6	0.8	0.6
Nitrate as N (mg/L)	10	6.9	8.8	8.8
Orthophosphate (mg/L)	16.5	2.05	2.2	1.3
E. coli (MPN/100mL)	450	4110	9800	3870
Enterococcus (MPN/100ml)	669	185	1050	1080

Dry Weather Monitoring

On May 21, 2008, a dry weather investigation of nitrate levels in the Sleeping Indian drainage area was conducted. This investigation did not focus on particular agricultural or nursery operations, but instead on one drainage area that has historically exceeded the Jurisdictional Dry Weather Monitoring Program's nitrate-N action level of 10mg/L. Figure 2 presents the nitrate results for the investigation. Only one overland tributary was identified which had nitrate values of 41 mg/L. This overland flow was coming from the Singh property but was not further investigated. The remaining increased flow and nitrate results moving downstream appear to be a result of groundwater seepage.

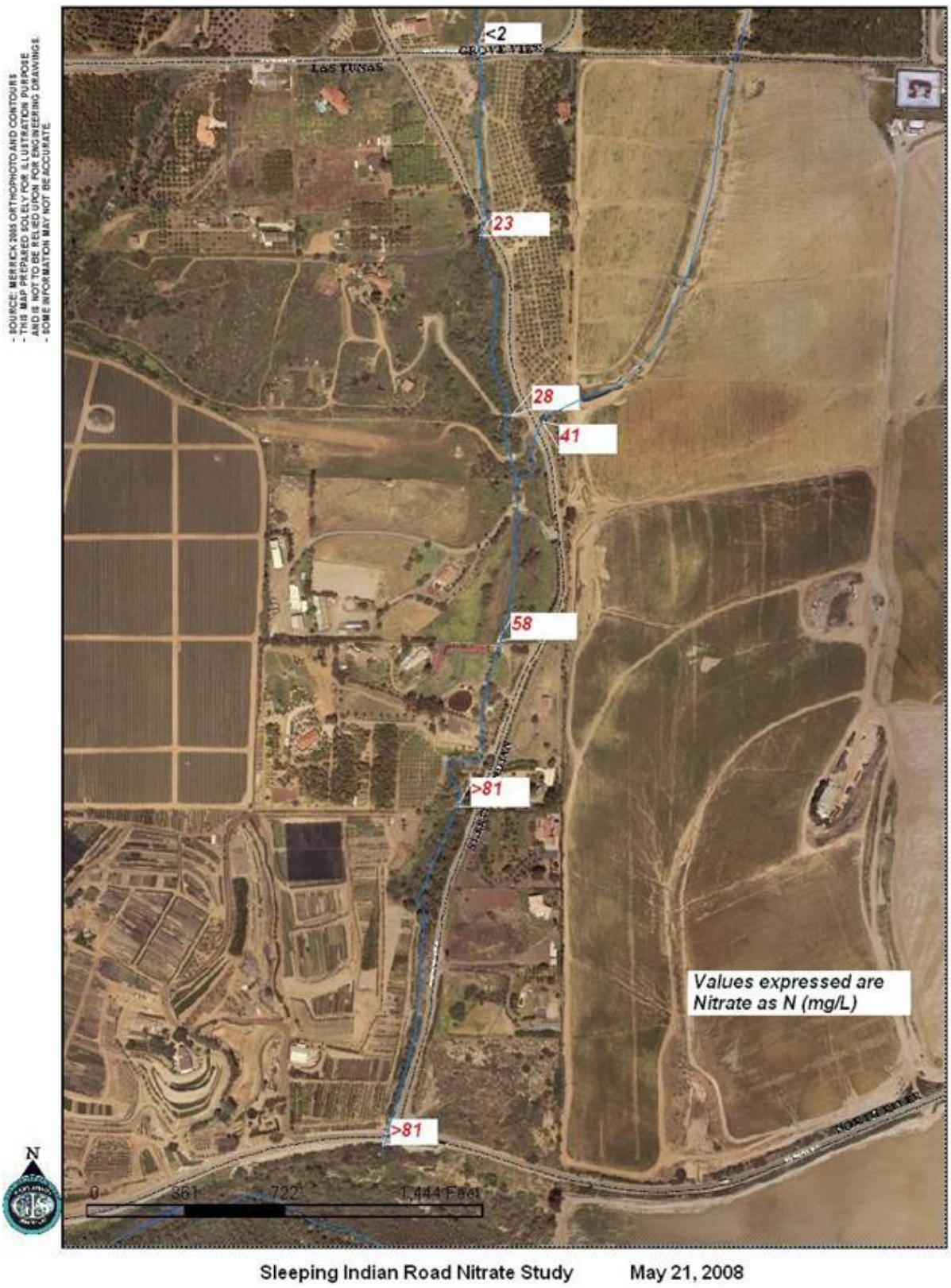

Figure 2. Sleeping Indian Road Nitrate Investigation completed May 21, 2008.

TMDL APPLICABILITY

The fecal indicator bacteria monitoring during this activity may be used for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was scheduled to begin in FY 2007-08 with voluntary commitment from several growers and nurseries. Due to approval of Resolution No. R9-2007-0104 this activity will be discontinued. See the Effectiveness Assessment of this activity below.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- US Department of Agriculture, Natural Resources Conservation Service
- University of California Cooperative Extension

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Through the City's Dry Weather Monitoring Program and subsequent WURMP monitoring activities, it has been observed that areas within the City with heavy agricultural use have elevated nutrient and bacteria levels in the runoff to the San Luis Rey River. However, the specific sources have gone uncharacterized. The next step to be consistent with the collective watershed strategy was to characterize the sources. The City has built a relationship with several of the growers in the area and had received a commitment to voluntarily allow the City to monitor the runoff upstream and downstream of their properties. The original plan for this activity was once these sources were characterized, the activity would move into an implementation phase to reduce and eliminate the pollutant sources. Because this activity targets private operations, and new regulations have been approved, the implementation of further monitoring and installation of BMPs will be during subsequent years under the RWQCB Agricultural Waiver monitoring and BMP requirements.

EFFECTIVENESS ASSESSMENT

Limitations of this monitoring effort included safety and accessibility during wet weather, limited jurisdictional enforcement within the agricultural and nursery operations and limited City resources for a large scale monitoring effort.

In addition, during FY 2007-08, the San Diego Regional Water Quality Control Board (RWQCB) approved Resolution No. R9-2007-0104. This resolution amended the Basin Plan to renew and issue the revised conditional waivers which include Waiver No. 4 for Discharges from Agricultural and Nursery Operations. This resolution requires the targeted operations to form and/or join monitoring groups by December 31, 2010. This resolution was adopted by the RWQCB on October 10, 2007 and approved by the State Water Board on November 4, 2008. In

WURMP Activity SLR-007, the Water Quality Runoff Management and Agricultural Waiver Workshop, speakers presented some preliminary information about the monitoring requirements of the Agricultural Waiver and also provided tools for how to assess an operations runoff and resources for help in implementing BMPs.

The monitoring effort in Activity SLR-006 was created in the absence of this requirement. The City was and continues working with the agricultural and nursery operations within the City to come to a similar result of assessing each operations runoff so they can take the appropriate actions to manage the pollutants from their operation. In effect, this requirement of the resolution will meet the goals of this activity in a more complete and unified approach. Therefore, the City will not continue this activity into the next fiscal year.

Attachment A to SLR-006
Agricultural and Nursery Operations
Runoff Assessment and Monitoring Program

Program Description

The San Diego Regional Water Quality Control Board renewed the County's National Pollutant Discharge Elimination System (NPDES) permit, Order 2007-0001, which requires all of the San Diego County Copermittees to develop Watershed Urban Runoff Management Plans (WURMP) for each watershed. The County of San Diego, and the Cities of Oceanside, Vista, and Escondido reside within the San Luis Rey River Watershed and have developed and are implementing urban runoff management programs and assessments to comply with the Regional Permit. The Agricultural and Nursery Operations Runoff Assessment and Monitoring Program will identify constituents of concern adversely affecting water quality in the River within the City of Oceanside during dry and wet weather. The monitoring results will then be used to prioritize and recommend Best Management Practices to the agricultural and nursery operations to reduce and eliminate potentially contaminated runoff to the San Luis Rey River

Program Design

The City of Oceanside will be implementing an assessment program in coordination with the agricultural and nursery operations within the SLR River Watershed. Through the City's Dry Weather Monitoring Program and subsequent WURMP monitoring activities, it has been observed that areas within the City with primarily agricultural land use have elevated nutrient and bacteria levels in the runoff to the San Luis Rey River. However, the specific sources have gone uncharacterized. To characterize the source(s) of the potential contamination, the City has built a relationship with several of the growers in the area and has received a commitment to voluntarily allow the City to monitor the runoff coming onto and off of their properties.

Once these sources are characterized, the activity will move into an implementation phase to reduce and eliminate the pollutant sources. The United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS), the UC-Cooperative Extension, and the Farm Bureau will assist in providing guidance to the growers in determining the appropriate Best Management Practice to implement and will recommend potential funding opportunities to implement those BMPs.

Site Selection

The sites that will be selected for dry and wet weather monitoring may vary throughout the project. Sites will be targeted in areas where agricultural and nursery operations have voluntarily allowed access to City staff. Due to daily operations and weather conditions, some areas may be inaccessible for safety reasons.

Every effort will be made to monitor runoff during dry and wet weather conditions at least once for each operation. As this project progresses, the City will continue outreach to more growers

and expand the monitoring throughout the City agricultural areas within the San Luis Rey Watershed.

Monitoring

Periodic wet and dry weather monitoring will take place at various agricultural and nursery operations. Dry weather monitoring is defined as monitoring conducted after 72 hours with less than one tenth of an inch of rain.

A field data sheet will be completed at each sampling site. A photo will also be taken at each site. Qualitative field observations will be recorded to provide a general assessment of the site. Flow measurements will also be used to estimate pollutant loading and identify significant changes in discharge.

Field analyses may include, but are not limited to:

- Temperature
- pH
- Conductivity
- Turbidity
- Dissolved Oxygen
- Nitrate as N
- Orthophosphate as P
- Ammonia as N

Laboratory analyses may include, but are not limited to:

- Total and Fecal Coliforms (or *E. coli*)
- Enterococcus
- Total Suspended Solids
- Total Dissolved Solids
- Anions
- Dissolved Metals
- Pesticides

Reporting

Data will be reported annually in the San Luis Rey WURMP Annual Report. Information specific to each grower will be made available to the operation and any of the supporting agencies to assist with BMP selection and management decisions. The City will also encourage the operations to conduct their own monitoring pursuant to the Agricultural Waiver to the Basin Plan.

City of Oceanside
Agricultural Monitoring Field Datasheet

☐ **Wet Weather** ☐ **Dry Weather** ☐ **Follow-Up For:** _____

GENERAL SITE DESCRIPTION (NAD 83 decimal degrees to 5th place)

Site ID		**Latitude**		**Watershed**	**Hydrologic Unit**	
Location		**Longitude**			**Hydrologic Area**	
Date		**TB Page**			**Hydrologic Subarea** (Optional)	
Time		**Observer**		**Discharge Area** (Optional)		

Land Use (Primary) (Check one only) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open

Land Use (Secondary) (Optional, greater than 10%) ☐ Residential ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Parks ☐ Open ☐ None

Conveyance (Check one only) ☐ Manhole ☐ Catch Basin ☐ Outlet ☐ Concrete Channel ☐ Natural Creek ☐ Earthen Channel ☐ Curb/Gutter

ATMOSPHERIC CONDITIONS

Weather ☐ Sunny ☐ Partly Cloudy ☐ Overcast ☐ Fog ☐ Rain

Last Rain ☐ > 72 hours ☐ < 72 hours

Rainfall ☐ None ☐ < 0.1" ☐ > 0.1"

RUNOFF CHARACTERISTICS

Odor ☐ None ☐ Musty ☐ Rotten Eggs ☐ Chemical ☐ Sewage ☐ Other

Color ☐ None ☐ Yellow ☐ Brown ☐ White ☐ Gray ☐ Other

Clarity ☐ Clear ☐ Slightly Cloudy ☐ Opaque ☐ Other

Floatables ☐ None ☐ Trash ☐ Bubbles/Foam ☐ Sheen ☐ Fecal Matter ☐ Other

Deposits ☐ None ☐ Sediment/Gravel ☐ Fine Particulates ☐ Stains ☐ Oily Deposits ☐ Other

Vegetation ☐ None ☐ Limited ☐ Normal ☐ Excessive ☐ Other

Biology ☐ None ☐ Insects ☐ Algae ☐ Fish ☐ Snails ☐ Mussels/ Barnacles ☐ Insect/ Algae ☐ Insect/ Snail ☐ Other

Water Flow ☐ Flowing ☐ Ponded ☐ Dry

Does the storm drain flow reach the Receiving Water? ☐ Yes ☐ No ☐ Not Sure

Evidence of Overland Flow? ☐ Yes ☐ No Source(s): _____

Photo Taken ☐ Yes ☐ No **Photo #** _____

Field Screening Samples Collected? ☐ Yes ☐ No

Water Temp (°C)		NH_3-N (mg/L)		NO_3-N (mg/L)		Ortho-PO_4 (mg/L)	
pH (pH units)		TURB (NTU)		COND (mS/cm)		DO (mg/L)	

Analytical Lab Samples Collected? ☐ No ☐ Bacteria ☐ Metals ☐ Pesticides ☐ Other:_____ **Time Collected:** _____

FLOW ESTIMATION WORKSHEETS

Flowing Creek or Box Culvert

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

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WATERSHED ACTIVITY SUMMARY SHEET

Education Activity

TITLE: **Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses**

ID NUMBER: **SLR-007**

ACTIVITY IMPLEMENTATION

This free educational workshop targeted nurseries and agricultural businesses and was held at the San Diego County Farm Bureau in Escondido on March 27, 2008. Four speakers provided the owners and operators a better understanding of water quality runoff management issues related to their operations. Growers from north San Diego County watersheds were invited to attend (San Luis Rey, San Dieguito, Santa Margarita, and the Carlsbad Hydrologic Unit).

Topics covered during the workshop were as follows:

- Water quality runoff regulations and BMPs for pollution prevention.
- Irrigated Agricultural Waivers.
- Storm water quality issues and typical inspection elements.
- Federal assistance for development of conservation management plans and other programs to assist operations in complying with water quality regulations.

Respective speakers for the topics above were as follows:

- Dr. Valerie Mellano, University of California Cooperative Extension
- Wayne Chiu – Regional Water Quality Control Board
- Nancy Appel – County of San Diego Ag, Weights and Measures
- Victor Smothers – USDA, Natural Resources Conservation Service

A total of 48 people were in attendance at the workshop including workshop organizers and speakers: 29 agricultural related and 19 governmental/jurisdictional. A breakdown of attendees of the workshop was as follows:

Agricultural (29)
5 - Advisors/Grove Care
1 - Farm Supplier
6 - Grove (Avocado or other)
2 - Hatchery
8 - Nursery
1 - Range Livestock
6 - Combination Nursery and Grove

Other (19)
Governmental - 13
Jurisdictional - 6

See Figure 1 for a map of the facilities represented at the workshop.

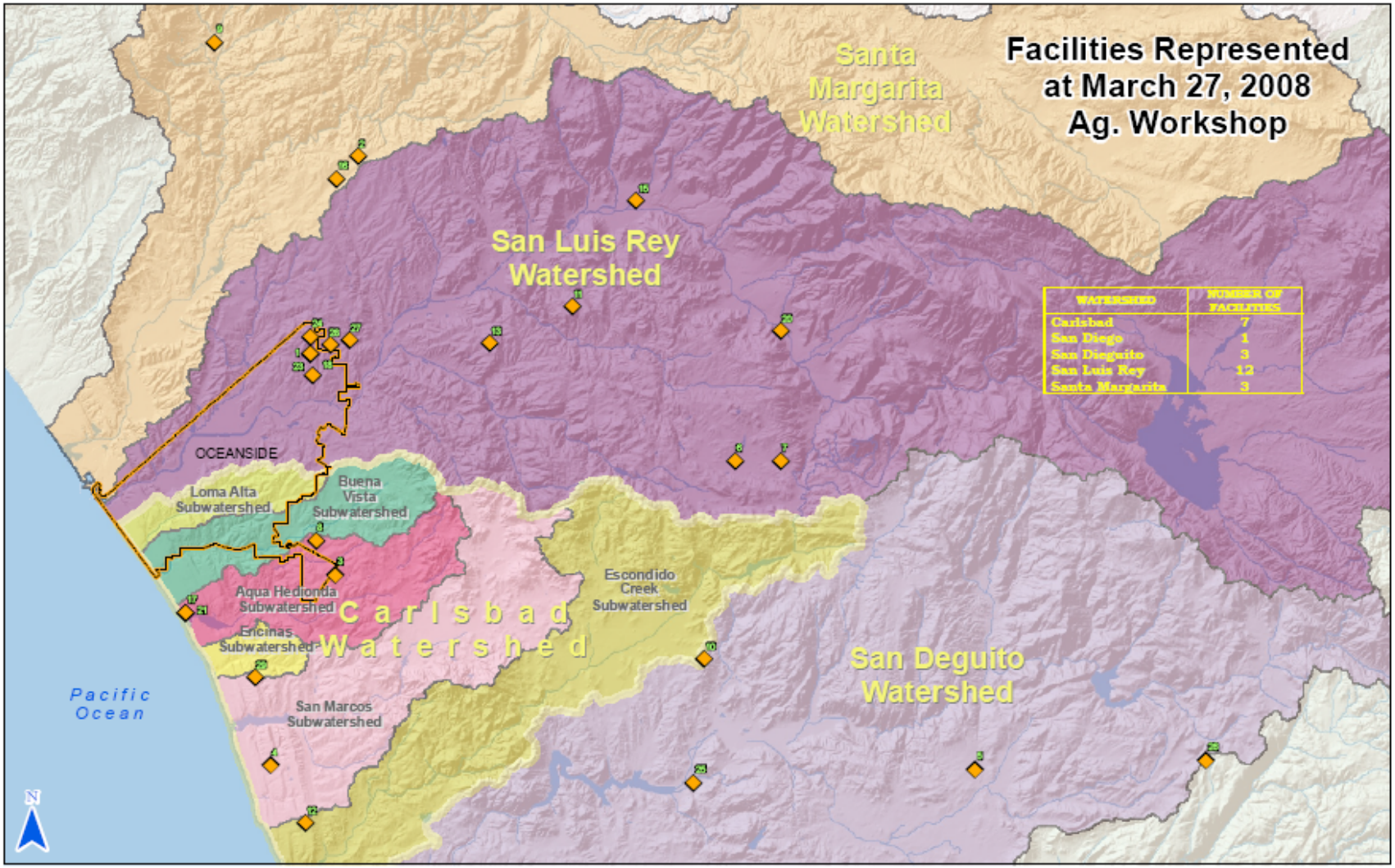

Figure 1. Facilities Represented at the March 27, 2008 Agricultural Workshop.

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 23 attendees took both the pre-test and post-test (some attendees arrived after the pre-test was given or left before the post-test was given). This test included seven questions that were provided by the speakers. The average pre-test score was 2.91. The average post-test score was 6.04. These scores represent a 150% increase in knowledge of the topics reviewed during the workshop.

Dr. Valerie Mellano, UC Cooperative Extension, provided the attendees with a Runoff & Nonpoint Source Pollution Self-Assessment (assessment) form for assessing potential runoff from their operation. Approximately seven months after the workshop, agricultural growers who attended the workshop were called to see if they conducted the assessment and to get feedback about the workshop as a whole. Following is a summary of answers from the agricultural growers who attended the workshop.

- Did you utilize the self-site assessment form: All answered yes.
- Did you make changes to your operation as a result of conducting the assessment: All confirmed that their operations had BMPs in place. Two businesses added additional BMPs based on the assessment.
- Did you contact any of the agencies who presented at the workshop? All of the operations had been in contact with at least one of the representing agencies either prior to or after the workshop. Some businesses had developed detailed tail water recovery systems as a result of working with the NRCS and UC Cooperative Extension. Some businesses contacted the agencies after the workshop in regards to the following topics: tail water recovery systems, grove road erosion issues, proposal to form a water quality monitoring co-op, and the individual waiver program.
- Was the assessment helpful to the operation? All answered yes.
- Was the workshop itself helpful to the operation. All answered yes, and stated that the topics were timely and of great interest.
- Recommendations for future workshop topics: Topics of interest to the attendees includes water quantity cutbacks, required water quality monitoring program for growers, and the use of recycled/reclaimed water.

Answers to these questions will help Copermittees focus on timely topics of interest to agricultural growers for future workshops. Since all of the operations stated that they had BMPs already in place demonstrates that they had knowledge of runoff related issues. The assessment form confirmed that the operations had BMPs in place and/or there was a need for additional BMPs. Some growers contacted the representative agencies for information specific to the agency. And, the growers provided specific topics that would be of interest to them for future workshops.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This workshop was initially scheduled for October 27, 2007. Due to fires in the San Diego County area during that time the workshop was postponed until March 27, 2008.

PARTICIPATING WATERSHED COPERMITTEES

All watershed Copermittees within the four watersheds (Carlsbad, Encinitas, Escondido, Oceanside, Poway, San Marcos and Vista, and the County of San Diego) disseminated information to constituents in their jurisdictions. The City of Oceanside secured speakers, developed workshop announcement materials, paid for materials printing and moderated the workshop. The Upper San Luis Rey Resource Conservation District provided refreshments for the workshop. Other Copermittees provided support during the workshop itself.

OTHER PARTICIPATING ENTITIES

- University of California Cooperative Extension
- Regional Water Quality Control Board
- USDA, Natural Resources Conservation Service
- San Diego County Farm Bureau
- Upper San Luis Rey Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Organics
- Sediment
- Pesticides
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey River Watershed strategy identifies bacteria and nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and Agricultural operations have been identified as potential discharge contributors of bacteria and nutrients. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the San Luis Rey WMA strategy.

EFFECTIVENESS ASSESSMENT

A total of 23 attendees took both the pre-test and post-test which included seven questions that were provided by the speakers. The average pre-test score was 2.91 and the average post-test score was 6.04. This demonstrates an increase in knowledge and awareness of the topics presented (Level 2).

All growers who answered post-workshop follow-up questions stated that they had implemented the self-site assessment form. Most stated that this form helped confirm that their operation had appropriate BMPs in place while two growers stated that they increased BMPs as a result of conducting the assessment. If appropriate BMPs were not in place they were then installed (Level 3).

WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **Guajome Lake Water Quality Monitoring Program**
ID NUMBER: **SLR-008**

ACTIVITY IMPLEMENTATION

The County of San Diego is implementing a monitoring program to assess the contribution of urban runoff (specifically nutrients) to the eutrophication of Guajome Lake. On January 7, 2005 a joint reconnaissance of the Guajome Lake area was conducted with the City of Oceanside, the County Department of Agriculture, Weights, & Measures (AWM), the County Department of Parks and Recreation (DPR), and the County Department of Public Works (DPW). All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, seven locations in the northern subbasin were monitored and two of those were selected as long-term monitoring sites. They included the East Channel Creek at Hutchinson Street and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL02 is located in the middle of the subbasin and is co-located with the County of San Diego's dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities.

During the FY 07-08 reporting period the County of San Diego continued monitoring at the two long term sites at Guajome Lake. For additional information refer to Attachment A of this Activity Implementation Sheet.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region. The 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments identifies Guajome Lake as impaired due to eutrophication.

TIME SCHEDULE FOR IMPLEMENTATION

- Monthly sampling of long-term stations - Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients as a high priority water quality problem in the San Luis Rey WMA. This nutrient monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

During the FY 2007-08 reporting period the County of San Diego conducted monthly sampling at the two long-term locations in Guajome Lake. Due to staff reassignment during wildfires, no sampling was conducted from October 2007 through January 2008.

ATTACHMENT A TO SLR-008

Guajome Lake Water Quality Monitoring 2005 through 2008

Introduction

The San Diego County Department of Public Works, Watershed Protection Program developed a monitoring program to assess the contribution of urban runoff to the eutrophication of Guajome Lake. The 2006 Clean Water Act Section 303(d) list identified that beneficial uses of Guajome Lake are impaired due to eutrophication. On January 7, 2005 a joint reconnaissance of the Guajome Lake area was conducted with The City of Oceanside, the County Department of Agriculture, Weights, & Measures, County Department of Parks and Recreation, and the Watershed Protection Program. All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, 7 locations in the northern subbasin were monitored and two of those were selected as long term monitoring sites. They included the East Channel Creek at Hutchinson St. and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL02 is located in the middle of the subbasin and is co-located with the dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. The 2005 preliminary monitoring of the East Channel Creek indicated that nutrients do enter Guajome Lake and may contribute to the existing eutrophic conditions. Data collected from the two sites of the East Channel Creek during fiscal year 2005/2006 indicate that concentrations of nutrients continue to enter the Guajome Lake. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources continued through FY 2007-08. Due to staff reassignment during wildfires, no sampling was conducted from October 2007 through January 2008.

Additional background information and a description of hydrologic setting are provided in the 2004-05, 2005-06 and 2006-07 WURMP Annual Reports.

Figure 1. Guajome Lake Sample Location Map.

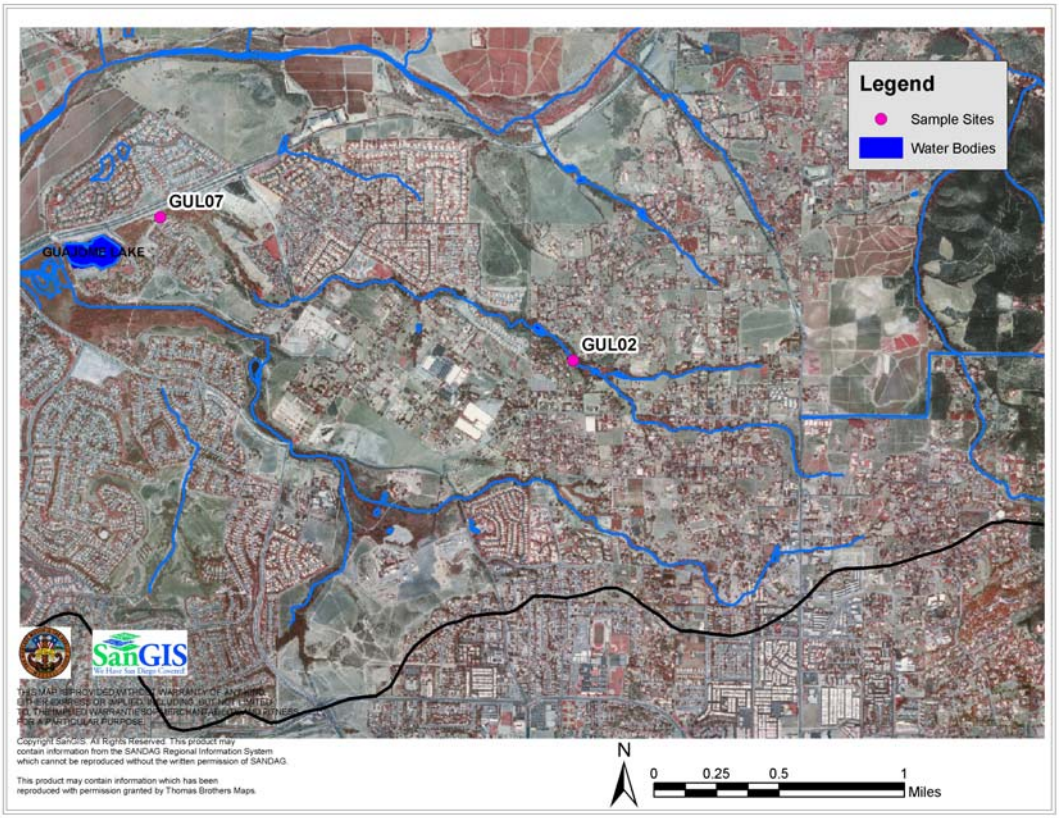

Methods

During the Fiscal Year 2007-08, monitoring continued at the two long term sites (GUL02 and GUL07). Sampling was conducted monthly except from October 2007 through January 2008, when no samples were collected at Guajome Lake due to staff reassignment to wildfire-related tasks. All samples were collected during dry weather conditions (no precipitation greater than 0.1 inches within 72 hours prior to sampling). Flow, pH, conductivity, turbidity, dissolved oxygen and temperature were measured in the field while grab samples were sent to the analytical laboratory to determine concentrations of orthophosphate as P, total phosphorus, nitrate as N, nitrite as N, ammonia, total Kjeldahl nitrogen, organic nitrogen and total suspended solids.

For the purpose of visual comparison, all data (beginning in May 2005) were grouped by collection site and date. They were then represented graphically to show variation over time in nitrate-N, orthophosphate-P, total nitrogen and total phosphorus concentrations. The same procedure was applied to discharge and N:P ratio data. Linear regression analysis was then implemented to determine if significant trends exist in nutrient concentrations and the N:P ratio over time at the two sampling locations. A paired t-test was used to compare mean nutrient concentrations, discharge rates and the N:P ratio between the two locations while accounting for the variability in data due to the sampling date.

Results

All data collected during FY 2007/ 2008 are summarized in Table 1. Figures 2 through 7 show variation in discharge and nutrient concentrations at GUL02 and GUL07 over time. Generally, estimated discharge at both sites tended to remain below 1 ft^3/s (Fig. 2). An exceptionally high discharge occurred on 2/28/2008 at GUL07 (Table 1). Orthophosphate concentration at both GUL07 and GUL02 downstream also increased on that date (Fig. 4) and a smaller peak was observed for nitrate-N (Fig. 3), total nitrogen (Fig. 5) and total phosphorus (Fig. 6). Unfortunately no samples were collected in the preceding months (Oct-Jan) due to wildfires. As shown in Figures 5 and 6, the Basin Plan objectives for total nitrogen and total phosphorus were exceeded at both sampling sites on all sampling dates since the initiation of this project in May, 2005. With the exception of one sampling occasion, the N:P ratio also remained above the 10:1 Basin Plan objective throughout the sampling period (Fig. 7).

The paired t-test analysis results are shown in Table 2. Overall, nitrate-N, total nitrogen concentrations and the N:P ratio were significantly higher at GUL02 than at GUL07; the reverse was true for the orthophosphate-P concentration (Table 2). This may indicate that nutrient assimilation may be taking place for the nitrogen but not for the phosphorus species between the two sampling sites.

The results of regression analysis are presented in Figure 8 and Table 3. There was a significant decreasing trend over time for both nitrate-N and total nitrogen concentrations at both sampling locations (Fig. 8A,B; Table 3). No such trends were observed for Orthophosphate-P (Fig. 8C; Table 3). A negative trend also occurred for the total phosphorus at GUL02 but not at GUL07 downstream (Fig. 8D; Table 3) and there was a negative trend for the N:P ratio at GUL07 but not at GUL02 (Fig. 8E; Table 3).

Conclusions

Generally, the data collected at the two sites along the East Channel Creek indicate that nutrients do in fact enter Guajome Lake and may contribute to the existing eutrophic conditions. There is, however, evidence of some assimilation of nitrogen as water flows downstream from GUL02 toward GUL07 that results in a significantly lower N:P ratio and lower nitrate-N and total N concentrations at GUL07. Additionally, a decreasing trend over time in nitrate-N and total nitrogen concentrations has been observed at both sampling locations. No such trend was observed for the Orthophosphate-P concentration but the N:P ratio showed a decreasing trend at GUL07 and there is a decreasing trend in the total-P concentration at GUL02. Preliminary investigations into land uses have identified potential phosphorus and nitrogen sources to include residential areas, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources will continue.

Table 1. A summary of results from the Guajome Lake 2007/ 2008 Fiscal Year monitoring study. Due to wildfires, no sampling was conducted from October 2007 through January 2008.

Site ID	Date	Flow Observed	Discharge (cfs)	pH	Electrical Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (oC)	Ammonia as N (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Organic Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Suspended Solids (mg/L)
GUL02	7/16/07	Yes	0.22	7.85	2.27	14	7.62	19.50	0.02	13.40	0.02	0.67	0.65	14.10	0.13	0.14	6.1
GUL07	7/16/07	Yes	0.08	8.21	2.57	18	7.70	21.30	0.07	7.63	0.02	0.95	0.88	8.60	0.24	0.29	15.9
GUL02	8/15/07	Yes	0.19	7.81	2.19	40	7.72	20.30	0.03	15.10	0.02	0.92	0.89	16.00	0.22	0.23	5.9
GUL07	8/15/07	Yes	0.09	8.05	3.02	8	8.43	23.40	0.04	6.88	0.01	0.78	0.74	7.68	0.18	0.19	7.5
GUL02	9/26/07	Yes	0.26	7.73	2.22	14	8.16	17.10	0.10	14.60	0.02	0.56	0.47	15.10	0.13	0.13	4.7
GUL07	9/26/07	Yes	0.04	8.20	3.05	11	8.96	19.40	0.08	8.11	0.01	0.92	0.84	9.04	0.19	0.19	20.7
GUL02	2/28/08	Yes	0.73	7.58	1.99	112	10.55	13.20	0.05	14.10	0.03	1.23	1.19	15.40	0.30	0.31	12.0
GUL07	2/28/08	Yes	1.80	7.66	2.02	8	10.05	13.30	0.05	7.80	0.02	0.98	0.93	8.80	0.36	0.42	4.4
GUL02	3/25/08	Yes	0.42	7.57	2.18	30	10.38	13.90	0.04	16.70	0.03	0.42	0.38	17.20	0.15	0.18	3.0
GUL07	3/25/08	Yes	0.38	7.83	2.59	12	9.66	14.20	0.04	9.34	0.01	0.67	0.63	10.00	0.18	0.19	6.0
GUL02	4/15/08	Yes	0.38	7.54	2.33	29	9.73	15.30	0.04	16.20	0.02	1.57	1.53	17.80	0.22	0.22	8.0
GUL07	4/15/08	Yes	0.47	7.77	2.56	7	8.92	15.50	0.04	7.90	0.01	1.18	1.15	9.09	0.24	0.27	6.0
GUL02	5/28/08	Yes	0.90	7.74	2.28	29	9.48	15.70	0.03	14.30	0.02	0.48	0.45	14.80	0.21	0.18	14.6
GUL07	5/28/08	Yes	0.48	7.86	2.63	19	8.64	15.90	0.03	6.16	0.01	0.56	0.53	6.73	0.21	0.23	14.4
GUL02	6/23/08	Yes	0.24	7.83	2.19	8	6.96	18.90	0.05	13.60	0.03	0.53	0.48	14.10	0.15	0.13	4.7
GUL07	6/23/08	Yes	0.08	8.03	2.36	21	6.82	19.80	0.05	2.34	0.01	0.64	0.60	2.99	0.19	0.18	19.6

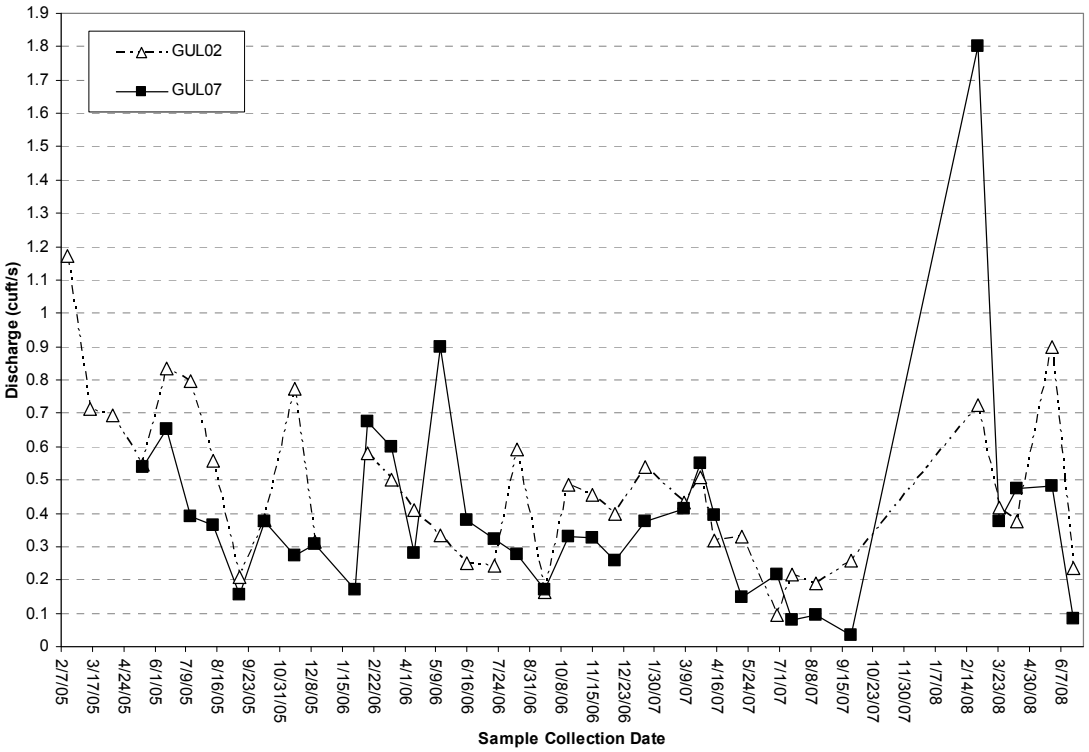

Figure 2: Variation in discharge over time at the two sampling sites. All samples were collected during dry weather conditions (no rain during or within 72 hours prior to sampling).

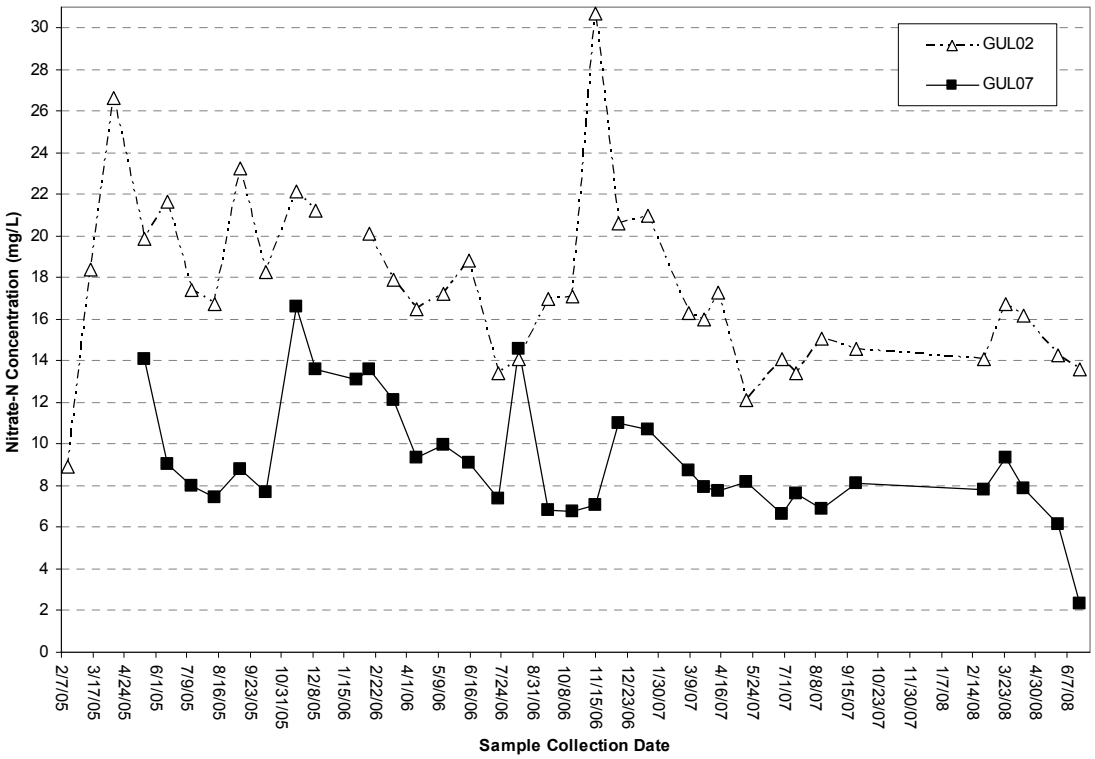

Figure 3: Variation in Nitrate-N concentrations over time throughout the sampling period at GUL02 and GUL07.

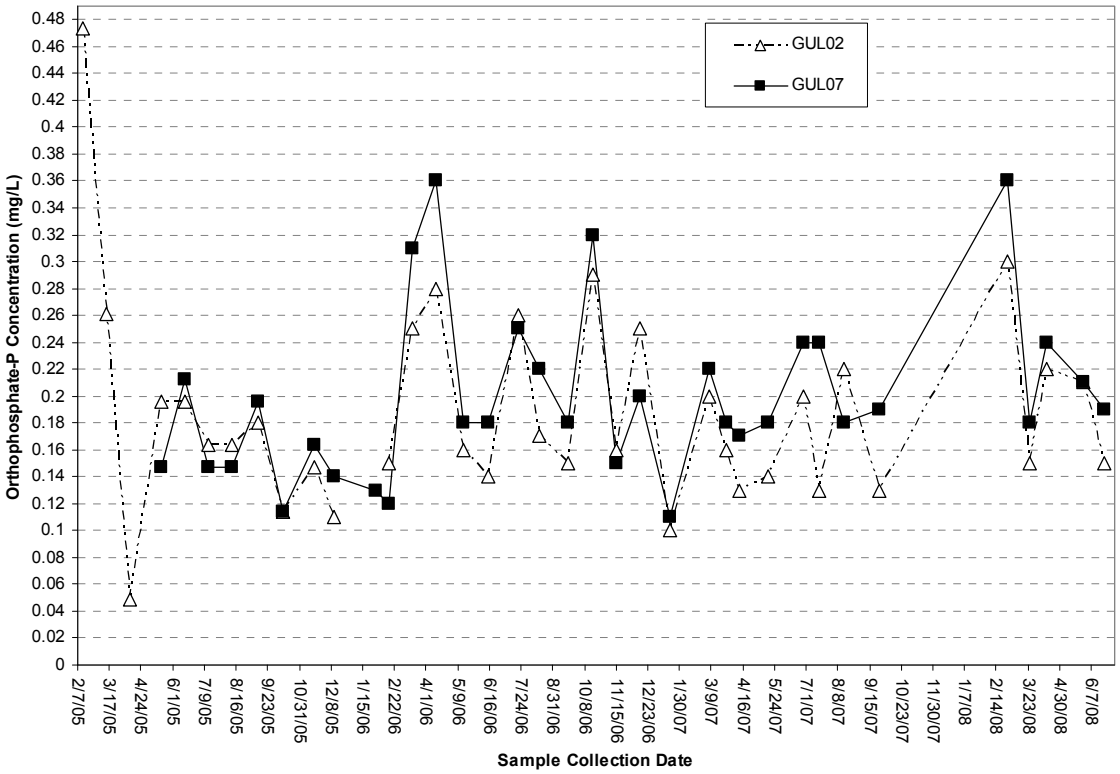

Figure 4: Variation in Orthophosphate-P concentrations over time throughout the sampling period at GUL02 and GUL07.

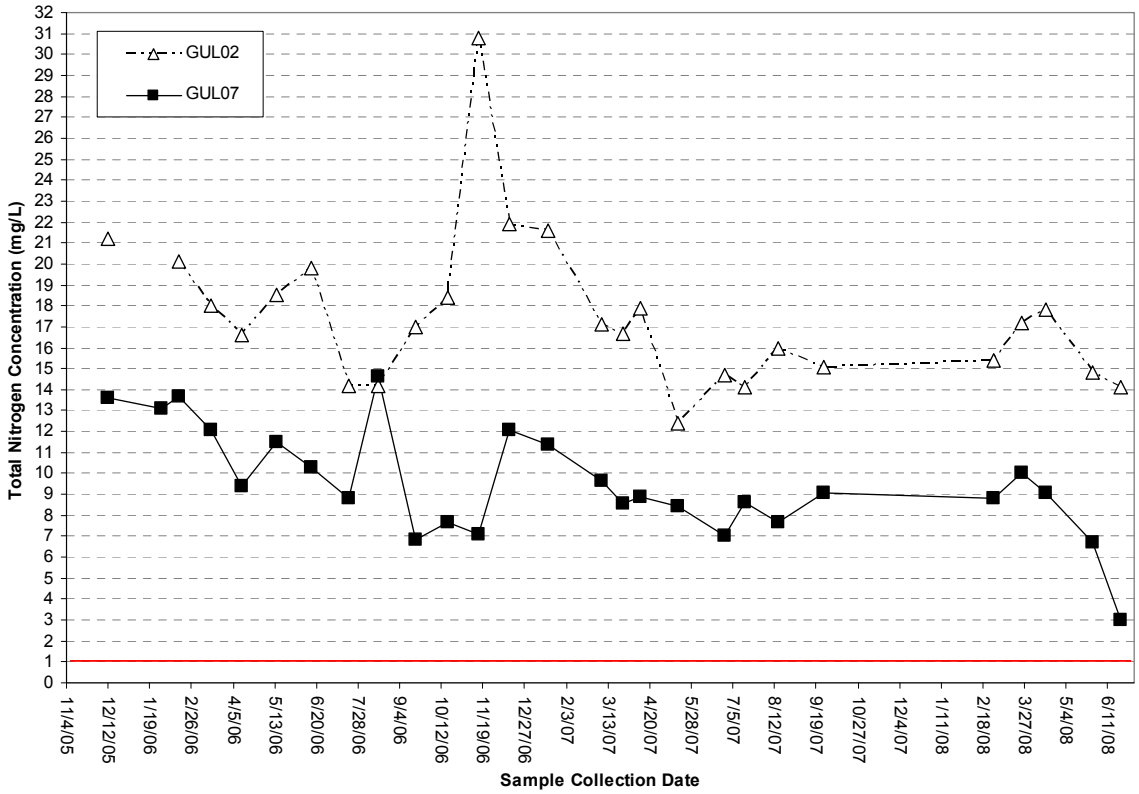

Figure 5: Variation in total nitrogen concentration over time at the two sampling sites. The solid red line indicates 1 mg/L Basin Plan objective for flowing water.

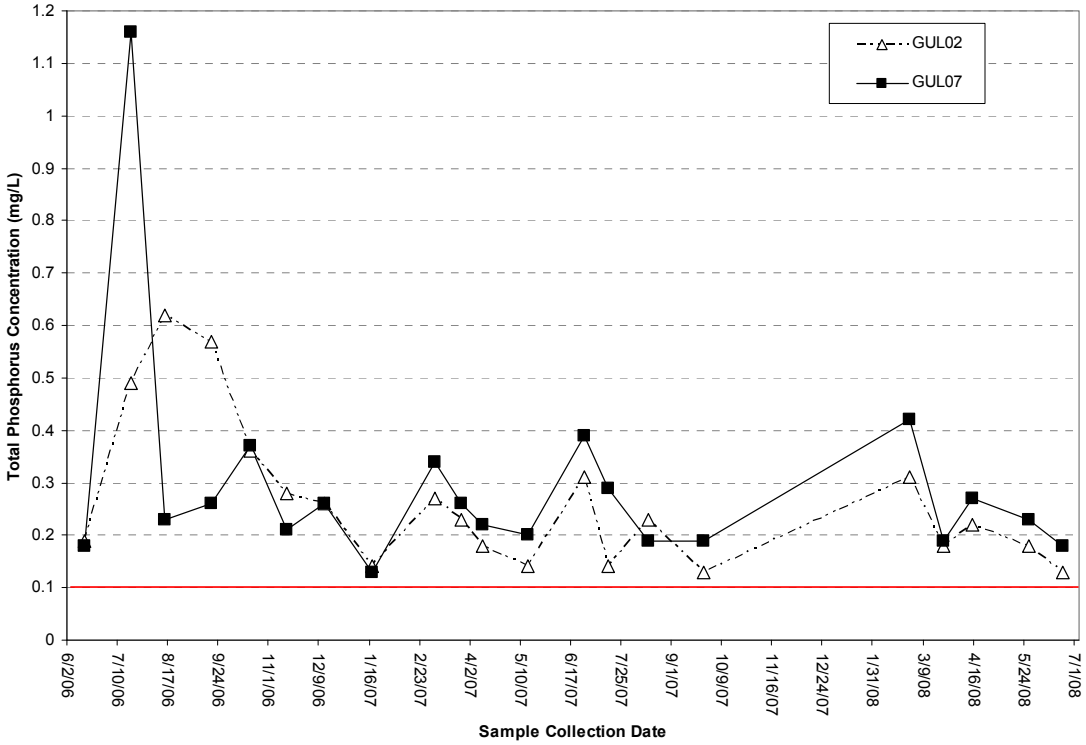

Figure 6: Variation in total phosphorus concentrations over time throughout the sampling period at GUL02 and GUL07. The solid red line indicates 0.1 mg/L Basin Plan objective for flowing water.

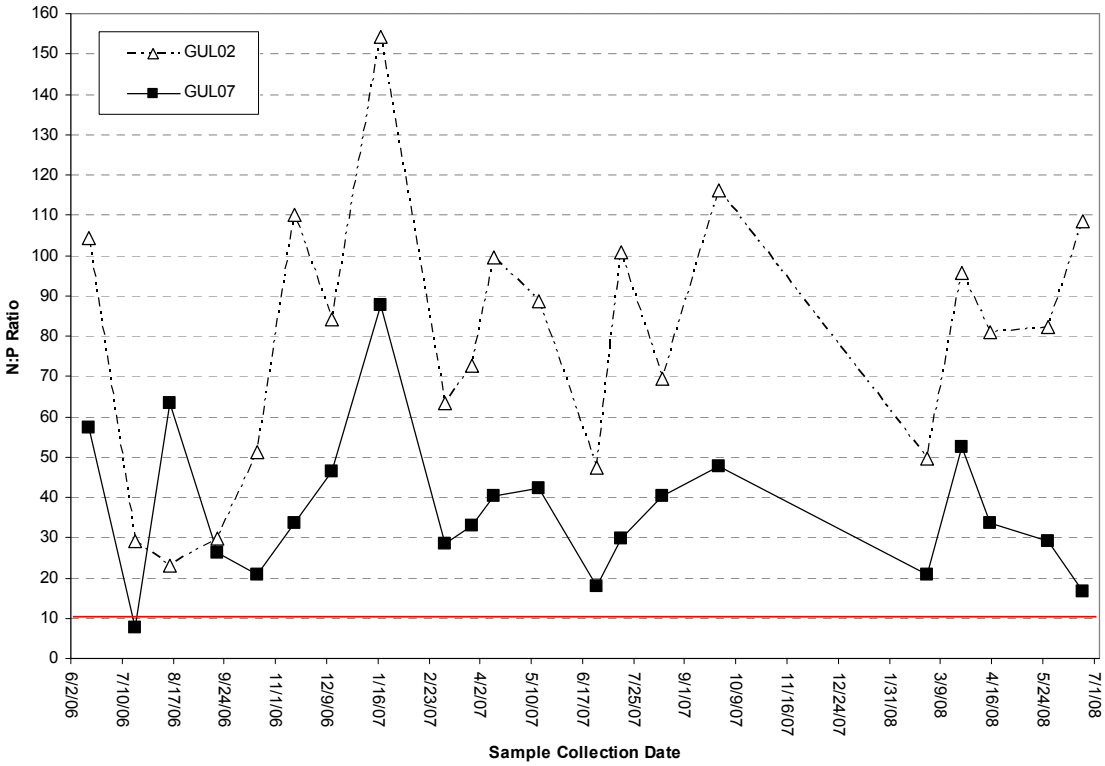

Figure 7: Variation in N:P ratio over time throughout the sampling period at GUL02 and GUL07. The red line indicates 10:1 Basin Plan objective.

Table 2: Results of the paired t-test performed to compare data collected from GUL02 (upstream) and GUL07 (downstream) from May 2005 through present. Comparisons with positive t-values and p-values smaller then 0.05 indicate parameters that were significantly higher at GUL02 than GUL07. Comparisons with negative t-values and p-values smaller then 0.05 indicate parameters that were significantly lower at GUL02 than GUL07.

Parameter	***t***	p
Discharge	1.09	0.28
Nitrate-N Conc.	13.12	<0.001
Total N Conc.	10.82	<0.001
Orthophosphate-P Conc.	-3.16	0.003
Total P Conc.	-0.79	0.45
N:P Ratio	3.97	0.002

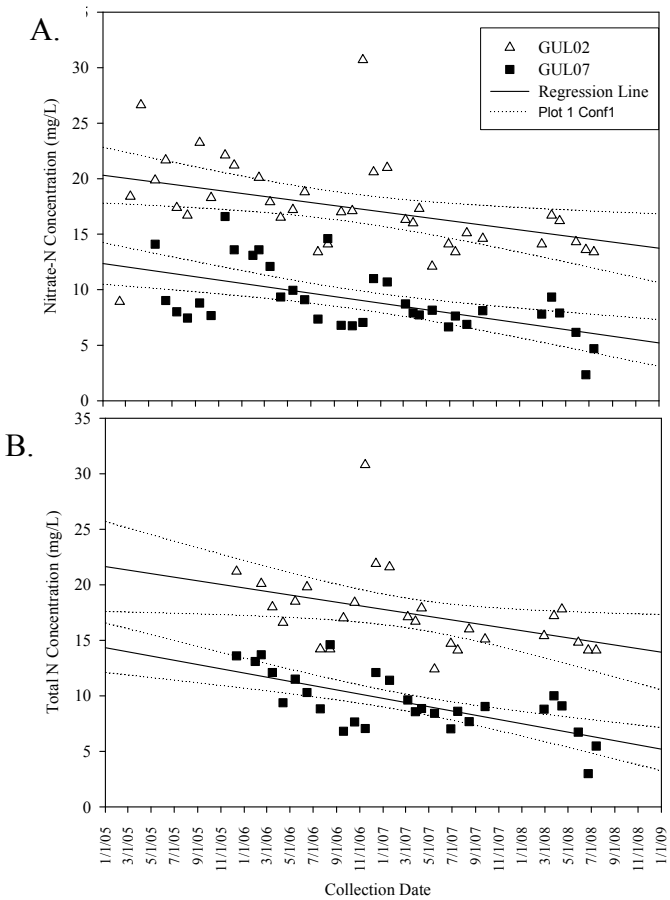
A.
GUL02
GUL07
Regression Line
Plot 1 Conf1
Nitrate-N Concentration (mg/L)
B.
Total N Concentration (mg/L)
Collection Date

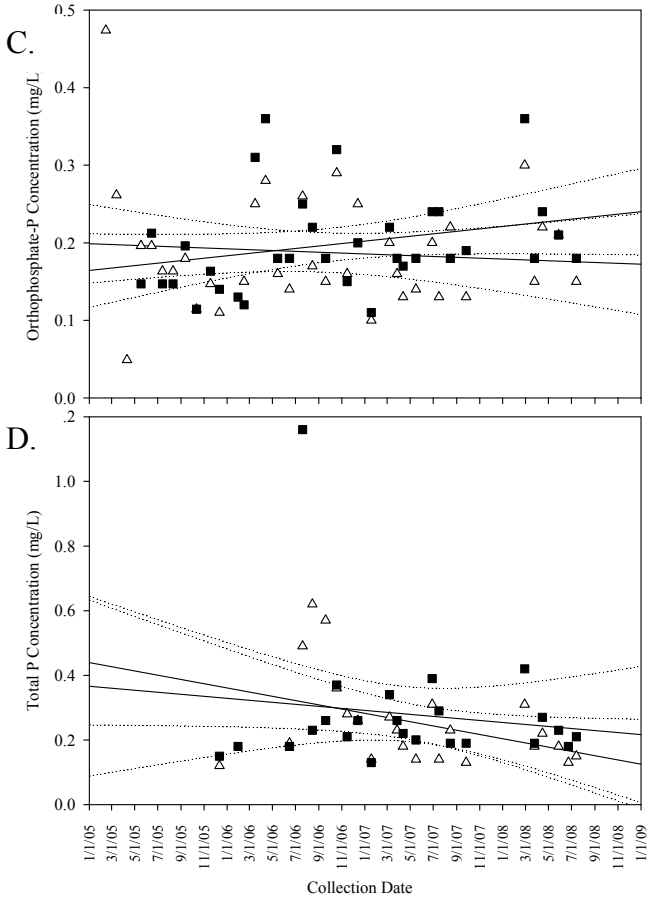
C.
Orthophosphate-P Concentration (mg/L
D.
Total P Concentration (mg/L)
Collection Date

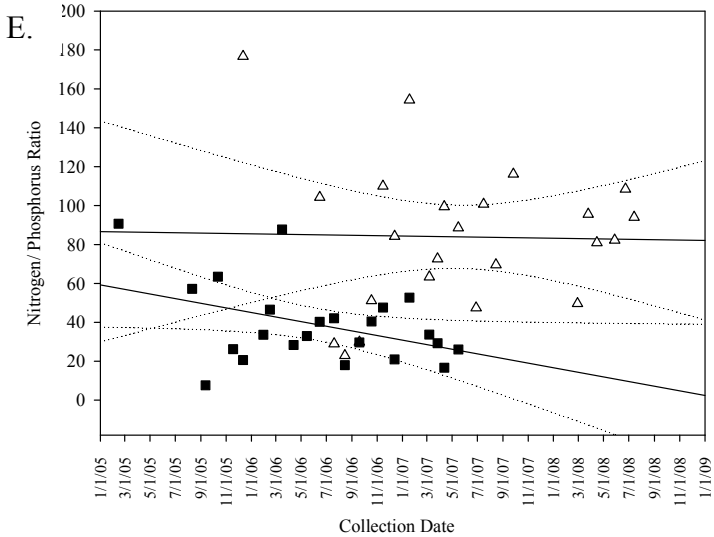
E.
Nitrogen/ Phosphorus Ratio
Collection Date

Figure 8: Regression analysis results for (A) Nitrate-N, (B) Total Nitrogen, (C) Orthophosphate, (D) Total Phosphorus and (E) Nitrogen/ Phosphorus ratio for GUL02 and GUL07. The 95% confidence intervals for the regression lines (solid black) are outlined by the dotted lines.

Table 3: Regression analysis slope and r^2 values. Negative slopes indicate downward trends; r^2 values are directly proportional to the percentage of variation in each parameter that can be explained by the corresponding regression line.

Nutrient Variable	Sample Site	r^2	Slope
Nitrate	GUL02	0.17	-0.0045
	GUL07	0.32	-0.0049
Total N	GUL02	0.17	-0.0053
	GUL07	0.46	-0.0063
Orthophosphate-P	GUL02	0.0075	-0.000018
	GUL07	0.08	0.000052
Total-P	GUL02	0.17	-0.00022
	GUL07	0.02	-0.00010
N:P Ratio	GUL02	0.00049	-0.0032
	GUL07	0.17	-0.039

References

California Regional Water Quality Control Board, San Diego Region. *Water Quality Control Plan for the San Diego Basin (9).* September 8, 1994).

Ogden Environmental and Energy Services, *Guajome Lake Water Pollution Control and Management Plan, Final Report*. Prepared for the County of San Diego Department of Parks and Recreation. January 1994.

Woodward-Clyde Consultants. *Hydrology Assessment of Guajome Marsh*, Prepared for the County of San Diego Department of Parks and Recreation. January 1992.

WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: Nutrient Source Identification and Abatement: Guajome Lake

ID #: SLR-009

ACTIVITY IMPLEMENTATION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels entering Guajome Lake. Nitrate concentrations have been observed to exceed dry weather action levels at the County's SLR 04 dry weather monitoring station (Hutchinson Street at Hidden Lake Lane) since 2002. This station is upstream of Guajome Lake. Guajome Lake is listed as impaired for eutrophication on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. Phosphorous is another nutrient potentially contributing to the eutrophication problem.

The following tasks were completed during FY 2007-08:

- Perform frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at filed site SLR 04.

- Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.

- Compilation of an inventory and map of potential nitrate sources in the SLR 04 drainage area. It was determined that there are eight nurseries within the unincorporated area tributary to the SLR 04 monitoring station.

- Compilation of baseline information on BMP implementation and compliance history for nurseries within the SLR 04 drainage area. Of the eight nurseries in this drainage area, three have been inspected by the County AWM Department. Two of the three inspected nurseries had one or more violations. Most violations were related to a failure to maintain adequate training records.

The following tasks remain to be completed:

- Conduct targeted inspections to abate potential sources of nitrates. All eight nurseries with the SLR 04 drainage area will be inspected during FY 2008-09.

- Conduct targeted education activities as necessary to abate sources of nitrates. Education to nursery operations in the activity areas will focus on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators will be supplied with information and tools to

assess and manage fertilizer use at their site. The UC Cooperative Extension Service Self-Assessment for Greenhouses and Nurseries and Management Options for Nonpoint Source Pollution, Greenhouse and Container Crop Industries documents will be provided where appropriate and the sections on nutrients will be reviewed. The Rainbow Creek Nutrient Reduction Management Plan is another source of valuable information for nitrate pollution prevention that will be referenced as a tool for the operators. Presentations and outreach events with audiences from these identified areas will focus on information regarding nitrate pollution prevention.

- Conduct enforcement activities as necessary to abate sources of nitrates.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planned Tasks	FY 07-08	FY 08-09	Status
Compile an inventory and map of potential nutrient sources in the SLR 04 drainage area.	X		Complete
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	X		Complete
Perform water quality screenings for nutrients and other parameters at SLR 04	X	X	Ongoing
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	To be completed in FY 08-09
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	To be completed in FY 08-09
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	To be completed as necessary

PARTICIPATING WATERHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Mission HSA (HSA 903.11) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS ASSESSMENT

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the SLR 04 drainage area.	1	Completion	Yes
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at SLR 04	1	4 field screenings / yr at SLR 04	During the FY 2007/08 field personnel conducted only a single screening, due to staff reassignment during wildfires.
	6	Reduction in exceedances of dry weather action level for nitrates measured at SLR 04 by 2012	TBD
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the SLR 04 drainage area by June 2009	TBD
	3	Reduction in nursery BMP violations observed during nursery inspections in the SLR 04 drainage area by 2010	TBD
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the SLR 04 drainage area by 2012	TBD

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WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **Lower San Luis Rey Source Identification Project**

ID NUMBER: **SLR-010**

ACTIVITY IMPLEMENTATION

Implementation of this project began with the City being awarded a Proposition 50 Clean Beaches Initiative Grant from the State Water Resources Control Board (SWRCB) to identify the potential sources of bacteria in the Lower San Luis Rey River. The City then sought out a diverse group of experts in bacteria source tracking, Copermittees, and non-profit groups to create a Technical Advisory Committee (TAC) to guide the project. The first TAC meeting was held on November 1, 2007 and included representatives from the Cities of Oceanside and Vista, the County's Department of Environmental Health and Watershed Protection Program, the Regional Water Quality Control Board (RWQCB), and CoastKeeper.

A Request for Proposals (RFP) was sent out on November 8, 2007 to solicit proposals from interested and experienced consultants. Proposals were due to the City by December 4th and a subcommittee of the TAC reviewed the proposals on December 7, 2007. MACTEC Engineering and Consulting, Inc. was awarded the contract. Oceanside City Council approved the contract with MACTEC on February 20, 2008.

A TAC meeting was held on February 4, 2008 where the MACTEC project team presented the proposed project approach. The approach was discussed and the TAC made recommendations to be included in the Monitoring Plan and QAPP. The Monitoring Plan and QAPP were submitted to the SWRCB for approval on April 28, 2008. The SWRCB and the Moss Landing QA Research Group reviewed the Monitoring Plan and QAPP and the final version of the documents were approved by the SWRCB on June 19, 2008.

The final project plan consists of a phased approach. During the summer of 2008, two, two-day dry weather sampling events were scheduled and completed. Composite samples were collected. A portion of the composite sample was processed for immediate fecal indicator bacteria analysis. The remaining portion was filtered and frozen. Results from the indicator bacteria sampling from both events will be used to select which frozen samples will be processed for genetic analysis. During the winter of 2008-09, two, two-day wet weather sampling events are scheduled along with a one-day baseline sampling event to be scheduled after 72-hours of dry weather. The sampling design and analysis during the summer of 2009 will be dependant on the first two season's results. In addition to river and tributary sampling, a visual observation program utilizing CoastKeeper volunteers will also be implemented to identify residential and commercial land use behavior surrounding the San Luis Rey River that may be affecting bacteria levels.

The main objectives of this project are to:

- Identify point and non-point sources of bacteria contamination in the Lower San Luis Rey River and at the river mouth during dry and wet seasons,
- Estimate the bacterial loading from tributaries and along the main stem of the San Luis Rey River during dry and wet seasons,
- Recommend Best Management Practices (BMPs) to reduce and/or eliminate bacterial sources.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

The consultant team was finalized on February 20, 2008. Monitoring for the first dry event began on June 18, 2008. All monitoring is scheduled to be completed by October 1, 2009. The Final Project Report is due to the SWRCB on February 1, 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- MACTEC Engineering and Consulting, Inc.
- Technical Advisory Committee includes representatives from:
  - RWQCB
  - CoastKeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Because the sources of bacterial contamination in the Lower San Luis Rey River are not adequately characterized, characterization in the form of a source identification study is consistence with the collective watershed strategy. Once the sources have been better characterized, the City will move forward with developing and implementing BMPs to reduce and eliminate the bacterial source to the maximum extent practicable.

EFFECTIVENESS ASSESSMENT

During the FY 2007-08, work completed on the Lower San Luis Rey Source Identification Project focused on contract and project set-up and design. The first of two dry season sampling events did occur. The effectiveness of this activity will be determined by the identification of bacterial sources contributing to water quality impairments at the end of the project. In addition, a list of BMPs developed as a result of this project will determine the effectiveness of the overall study.

WATERSHED ACTIVITY SUMMARY SHEET

Education Activity

TITLE: **Low Impact Development and Watershed Planning Education for Community Planning and Sponsor Groups**

ID NUMBER: **SLR-011**

ACTIVITY IMPLEMENTATION

The Low Impact Development (LID) and Watershed Planning Education activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development and watershed planning principles, practices, and requirements. Since the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved, this education is intended to aid these groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups were provided copies of the LID handbook, including the Management Strategies, the Appendices and the Literary Guide. Advisory groups and audience members who wished to participate were also given a pre- and post- survey to assess their general knowledge of watershed planning and LID both before and after the presentation was given. The training sessions average fifty minutes depending upon the amount and type of questions asked during and after the presentation.

Staff began presenting the education activity during FY 2007-08, with the first presentation made to the Hidden Meadows Community Sponsor group on June 26, 2008, at the local community center. The sponsor group consists of 9 members, all of whom were present. Three audience members from the community were also present for the presentation. Including County staff, a total of 14 people were present for the presentation.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

The Watershed Planning and Low Impact Development training program was successfully developed during the spring of FY 2007-08, on schedule. The program consists of a PowerPoint presentation formally made to each of the planning and sponsor

groups located within the unincorporated County, with a specific focus on the watershed(s) within which the community lies.

Local planning and sponsor groups to be trained within the San Luis Rey River Watershed during the FY 2008-09 timeframe include:

- Fallbrook (8/18/2008)
- Bonsall (10/7/2008)
- Rainbow (TBD)
- Valley Center (9/8/2008)
- Pala Pauma (TBD)
- Palomar / North Mountain (TBD)

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

This activity focuses on impacts to the watershed as a result of new and re-development. Specifically, impacts from increased impervious cover and any types of pollutants associated with runoff (both urban runoff and stormwater runoff) as it traverses a variety of types of land uses.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed during the presentation (Level 1 Outcome). Pre- and post-presentation survey evaluation forms are also provided to participants, which assesses whether the participants learned something valuable during the presentation (Level 2 Outcome). The 9 members of the Hidden Meadows Sponsor group and 2 audience members participated in both the pre- and post surveys during the presentation time.

The pre- and post- survey form consists of (the same) 5 multiple choice questions and a 6th open answer section which asks the participant to provide information on drainage within the community planning area (CPA). The survey results are calculated to obtain a mean average (in percentage) of the overall results of the survey. The pre- and post-survey results are then compared, with the anticipated result being a higher percentage

obtained on the post-survey to show an increase in knowledge of watershed planning principles and LID.

The pre- and post- survey results for the Hidden Meadows Sponsor group showed a *decrease* in knowledge after the presentation was given. Survey results for the pre-survey scored an average of 69% and for the post- survey an average of 67%, showing and average 2% decrease in knowledge. Because two of the questions (questions 2 and 5) were consistently answered incorrectly in the post survey, staff reviewed the questions and found the wording may have caused confusion with the reader. Subsequently, questions 2 and 5 were modified slightly to clarify their intent. All future trainings will provide pre- and post- surveys with the modified questions.

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WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Land Acquisitions**

ID NUMBER: **SLR-012**

ACTIVITY IMPLEMENTATION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plans have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

During the FY 2007-08 reporting period the County of San Diego purchased 142.9 acres of property located in the San Luis Rey River Watershed.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups

- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that is averts development, thereby eliminating the possibility of future sources in need of abatement or future pollution loads in need of reduction.

EFFECTIVENESS ASSESSMENT

During the FY 2007-08 reporting period the County of San Diego acquired 142.9 acres in the San Luis Rey River Watershed Area. This land acquisition will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural perviousness.

Property Purchased in 2008	Acres
County of San Diego Park Acquisitions	142.9
Total	**142.9**

Proposed Watershed Activity Summary Sheets

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FUTURE WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Harbor Boat Wash Security Camera**

ID NUMBER: **SLR-013**

ACTIVITY DESCRIPTION

Oceanside Harbor offers the use of a boat launch ramp free of charge, as well as free use of a boat wash area and a recreation vehicle (RV) sewage dump station. Runoff from the boat wash area drains through the storm drain system and flows to the harbor a short distance away. This storm drain has had historical bacterial exceedances possibly due to improper use of the dump station, illegal dumping, and/or regrowth in the storm drain itself.

To address illegal dumping/illegal use of the sewage dump station and boat wash area, a security camera will be installed. The camera will be used in coordination with public notification of improper use. Once a report of illegal use is filed, the City of Oceanside Department of Harbor and Beaches will be able to reference the historical footage and view a license plate number to pursue possible enforcement actions. The digital video will be stored for two weeks before being deleted. Additional signage to make boat wash and dump station users aware of the camera and the appropriate number to call to report potential illegal discharges will be installed as well.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

Installation is scheduled to occur in October 2008. The unit camera, signage, and operating procedures should be installed and completed by the end of FY 2007-08.

PARTICIPATING WATERSHED COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EXPECTED BENEFITS

It is anticipated that just the signage and presence of a security camera will deter some illegal use/dumping at this site. For those offenders that still misuse the area, it is anticipated that enforcement actions will change their behavior. With reduced illegal dumping of sewage, bacteria levels should lessen and the treatment BMP installed at the wash area will be more effective at removing the lower levels of bacteria that are either naturally occurring or from small accidental spills.

EFFECTIVENESS MEASUREMENTS

Because illegal dumping of sewage and other items are isolated instances usually occurring during low-use times or at night, it will be difficult to show a reduction in illegal occurrences. However, the number of reports of potential misuse and the corresponding follow-up enforcement actions will be tracked to show the effectiveness of the camera.

FUTURE WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Harbor Boat Wash Coin Operated Water Dispenser**

ID NUMBER: **SLR-014**

ACTIVITY DESCRIPTION

Oceanside Harbor offers the use of a boat launch ramp free of charge, as well as free use of a boat wash area and a recreation vehicle (RV) sewage dump station. Runoff from the boat wash area drains through the storm drain system and flows to the harbor a short distance away. This storm drain has had historical bacterial exceedances possibly due to improper use of the dump station and/or regrowth in the storm drain itself. Several bacteria reduction pilot projects have been implemented in the past four years to reduce not only bacteria, but also oil and grease and sediment from flowing to the harbor. During the most recent pilot project, the installation and operation of a modular wetland to treat boat wash runoff, excessive use of the free water provided at the boat wash was observed. Not only are summer, high-use flows greater than what the installed BMP can handle to effectively treat the runoff, but with an impending drought, water conservation efforts are not being enforced.

To address water quality and water conservation needs, the City of Oceanside's Department of Harbor and Beaches is investigating the installation of coin-operated machines that dispense water for use at the wash area. It is anticipated that this will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted. This will, in turn, reduce the amount of water flowing into the harbor which is expected to reduce the bacterial loading at this site.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

During FY 2008-09, the City will be researching options and costs for installations of the coin-operated machines. Installation is tentatively expected in FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

To be determined

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EXPECTED BENEFITS

It is anticipated that the installation of coin-operated water dispensers at the Harbor will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted. This will, in turn, reduce the amount of water flowing into the harbor which is expected to reduce the bacterial loading at this site.

EFFECTIVENESS MEASUREMENTS

The amount of water being used from the meter at the Harbor boat wash area will be tracked to determine any reductions in use. This will allow a comparison for water use before and after installation. Water quality monitoring at this site will continue under the Coastal Storm Drain Monitoring Program at the boat wash outfall under the program's requirements. Because high use flows bypass the treatment BMP and are isolated events, exact load reductions will not likely be available. However, depending on the results of the water use, loading estimates may be extrapolated.

FUTURE WATERSHED ACTIVITY SUMMARY SHEET

TITLE: **Community Based Residential Horse Property Pilot Project**

ID NUMBER: **SLR-015**

ACTIVITY DESCRIPTION
This project will establish a volunteer based education program with practical approaches to proper manure and erosion control for residential horse properties within the San Luis Rey Watershed. The project may include activities such as: educational workshops, hands on erosion control and composting workshops, demonstrations sites to showcase BMPs that work for horse properties, peer mentors to assist with design and hands on implementation workshops where volunteers assist in building or establishing appropriate BMPs to protect water quality.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
This activity is scheduled for planning during FY 08-09 with implementation scheduled for FY 09-10, if funding is available.

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside
- County of San Diego
- City of Vista

OTHER PARTICIPATING ENTITIES
- To be determined

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Animal facilities have been identified as potential sources of bacteria and nutrients. Since this activity addresses two priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS
The program anticipates formation of a community of knowledgeable horse enthusiasts that will share what they learn with neighbors and friends in the horse community and

beyond. This project could serve as a pilot program that could be expanded to other communities in the region that have significant horse populations.

EFFECTIVENESS MEASUREMENTS

Effectiveness measurements being considered include: surveys of horse owners in the San Luis Rey River, pre- and post tests of participants at workshops, implementation of BMPs on horse properties, water quality analysis at properties directly adjacent to creeks and streams, a reduction in the volume of manure being hauled to landfill or the number of non-compliant residential properties found as a result of this program/study.

Appendix B

San Luis Rey Watershed

Enlarged Land Use Map

SAN LUIS REY RIVER WATERSHED

Urban Runoff Management Program
Annual Report for Fiscal Year 2008-09

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside ● City of Vista ● County of San Diego

January 2010

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CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

January 29, 2010

Re: STATEMENT OF CERTIFICAITON
2008-09 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed

I certify under penalty of law that the 2008-09 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahsaiezadeh

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

300 NORTH COAST HIGHWAY • OCEANSIDE, CA 92054 • TELEPHONE 760-435-5800 • FAX 760-435-5814

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City of Vista

January 30, 2010

RE: STATEMENT OF CERTIFICATION
FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed Management Area

I certify under penalty of law that the FY 2009 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lawrence Pierce
Director of Engineering
City of Vista

for **Rita Geldert**
City Manager
City of Vista

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County of San Diego

LAND USE AND ENVIRONMENT GROUP

CHANDRA L. WALLAR
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256
Fax: (619) 531-5476

STATEMENT OF CERTIFICATION

San Luis Rey River Watershed Urban Runoff Management Plan (WURMP) FY 2008-09 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to the **FY 2008-2009 San Luis Rey River Watershed Urban Runoff Management Plan (WURMP) Annual Report** were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-27-10
Date

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SAN LUIS REY RIVER WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM
Annual report for Fiscal Year 2008-09

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside
City of Vista
County of San Diego

January 2010

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EXECUTIVE SUMMARY

Introduction

This San Luis Rey (SLR) Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) is the second annual report by the San Luis Rey Watershed Copermittees (SLR Copermittees) addressing Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit). The San Luis Rey Watershed Copermittees (SLR Copermittees) include the City of Oceanside, the City of Vista, and the County of San Diego. The City of Oceanside serves as the Lead Watershed Copermittee for the SLR Watershed Management Area (WMA). The SLR WURMP AR covers the time period July 1, 2008 – June 30, 2009 (FY 2008-09) and describes the SLR Copermittees collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the SLR WMA to the maximum extent practicable.

During this reporting period the SLR Copermittees continued to address the watershed's high priority water quality pollutants identified in the 2008 San Luis Rey WURMP (2008 SLR WURMP) as bacteria and nutrients. This focus is reflected in Section 3.0 - Implementation of Watershed Activities, which enumerates the high-priority-focused watershed water quality and watershed education activities.

The SLR Copermittees will continue to re-evaluate and refine the SLR WURMP by implementing an effectiveness assessment component for the overall program. As more knowledge about pollutant sources and innovative and effective management measures to address those sources become available, the SLR Copermittees will use the Model Watershed Urban Runoff Management strategy to guide selection and implementation of watershed activities. Moreover, the SLR Copermittees will continue to utilize the Baseline Long-Term Effectiveness Assessment (BLTEA) process to assist in further identifying pollutant sources and focusing program efforts to control those sources.

Program Highlights

During this reporting period the SLR Copermittees made significant progress in developing and implementing watershed water quality and watershed education activities that receive WURMP credit based on the current Municipal Permit. In addition to these activities the SLR Copermittees coordinated other activities that they feel work toward reaching the overall goal of the SLR WURMP.

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.

- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach this goal and the objectives, the SLR Copermittees worked to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

Report Organization

The 2008-09 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed and gives a general overview of the organization and content of the report. It also describes Copermittee collaboration during the reporting period.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the reporting period FY 2008-09. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic plan that the SLR Copermittees have proposed for the SLR WMA, including new watershed water quality and education activities.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of SLR Copermittee collaboration efforts during the reporting period

- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.
- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Conclusions and Recommendations

Lower San Luis Hydrologic Area

Conclusions

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Water quality data collected in FY 2007-08 and FY 2008-09 provides new information as well, specific to the HA, as there was a TWAS installed towards the bottom of the Bonsall HSA (FY 2007-08 only) in addition to the historical MLS. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. This data continues to support listing bacteria and nutrients as high priority water quality problems in the Lower San Luis Rey HA.

Watershed Water Quality Activities

During FY 2008-09, five water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed. Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

During FY 2009-10, six total water quality activities are planned to be implemented, with three designed to address water quality problems related to bacteria, two designed to address nutrients, and one that addresses both bacteria and nutrients.

Watershed Education Activities

During FY 2008-09, two watershed education activities were implemented, one focused on bacteria and one focused on both bacteria and nutrients. During this reporting period, outreach related to pet waste educated residents on the impacts of pet waste and proper

pick-up and disposal. Continued LID workshops also provided more information to the community about the impacts of development on water quality in their watershed.

In FY 2009-10, five education activities are planned with one designed to address water quality problems related to bacteria, one designed to address nutrients, and three that address both bacteria and nutrients.

Recommendations
Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope.

Some of the hydrologic areas in the SLR Hydrologic Unit (HU) have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs where funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the specific education activities.

Activities in the watershed appear to be properly focused on identified water quality problems in the HU. These types of activities should continue as bacteria and nutrients show increasing trends at receiving water monitoring stations. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected nutrient pollution. TWAS data should be examined carefully as it is available to discern between water quality in the upper and lower watersheds. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

Warner and Monserate Hydrologic Areas

Conclusions and Recommendations

With minimal development in both the Warner and Monserate HAs, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for these HAs is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

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1 INTRODUCTION

The San Luis Rey (SLR) River Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) describes the watershed activities conducted by the City of Oceanside, the City of Vista, and the County of San Diego (SLR Copermittees) from July 1, 2008 through June 30, 2009. During this reporting period, the SLR Copermittees worked extensively to develop and implement activities that address water quality issues affecting the SLR River Watershed Management Area (WMA) based on requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (Municipal Permit) for San Diego County Copermittees, Order No. 2007-0001, NPDES No. CAS0108758.

Organization and Content of the Report

This annual report is organized according to the *Standardized Format for Watershed Urban Runoff Management Program Annual Reports* outline included with the updated Watershed Urban Runoff Management Program (WURMP) documents submitted to the Regional Water Quality Control Board (RWQCB) in March 2008. This report endeavors to adhere to the organizational requirements of the Municipal Permit issued to 21 San Diego County Copermittees (County Copermittees) in January 2007.

The 2008-09 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed, gives a general overview of the organization and content of the report, and describes Copermittee collaboration during the reporting period.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the reporting period FY 2008-09. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic

plan that the SLR Copermittees have proposed for the SLR WMA, including new watershed water quality and education activities.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of SLR Copermittee collaboration efforts during the reporting period
- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.
- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Regulatory Requirements

In January 2007, Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit) was issued to the San Diego County Copermittees as a renewal permit for Order No. 2001-01. The Permit was issued to 21 jurisdictions and agencies in San Diego County. The Permit addresses the basic federal requirement for a program that reduces pollutants discharged from municipal separate storm sewer systems (MS4s) to the maximum extent practicable (MEP).

Section E of the Municipal Permit requires that the Copermittees within the SLR River Watershed collaborate to develop and implement a watershed-based program that addresses urban runoff and surface water quality. The rationale for this program is simple: urban runoff does not follow jurisdictional boundaries and often travels through multiple jurisdictions while flowing to receiving waters. Therefore, the actions of various municipalities within a watershed regarding urban runoff can have a cumulative impact upon shared receiving waters. The Municipal Permit directs County Copermittees with land use authority within the watershed to collaborate in developing and implementing the WURMP, the purpose of which is to identify and address the watershed's highest priority water quality problems. In addition, the Municipal Permit requires that the Copermittees develop activities that address education, public participation, and watershed-based land use planning.

Section E of the Municipal Permit defines the Copermittees within the nine regional watersheds, as well as a Lead Copermittee for each watershed. The following Copermittees are included in the SLR River Watershed:

- City of Oceanside
- City of Vista
- County of San Diego

The Municipal Permit designates the City of Oceanside as the default Lead Copermittee for the SLR River Watershed, and the City of Oceanside has agreed to continue to fulfill this role. The Municipal Permit requires that the Lead Watershed Copermittee be responsible for producing and submitting the WURMP. They are also responsible for coordinating meetings among watershed Copermittees to facilitate the development and implementation of watershed activities. The City of Oceanside continues to coordinate meetings at least quarterly to discuss and implement the various watershed activities and coordinate required regulatory submittals.

In accordance with Section E of the Municipal Permit, the Copermittees listed for each watershed must participate in the development and implementation of a WURMP. The requirements for the WURMP are listed in the Municipal Permit and include the following:

- Mapping the watershed and identifying all receiving waters, all impaired receiving waters, land uses, highways, jurisdictional boundaries, and inventoried commercial, industrial, construction, municipal sites, and residential areas.
- Assessing the water quality of all receiving waters in the watershed based on existing data and eventually performing watershed-based water quality monitoring activities.
- Identifying and prioritizing major water quality problems in the watershed caused or contributed to by discharges from MS4s, including potential sources of the problems.
- Developing and implementing a strategy of water quality and educational activities needed to address the highest priority water quality problems.
- Identifying which Copermittees are responsible for implementing each recommended watershed activity.
- Developing and implementing a mechanism for public participation in watershed activities.
- Developing and implementing watershed-based education activities.
- Developing a mechanism to facilitate collaborative watershed-based land use planning with other Copermittees in the watershed.
- Developing a long-term strategy for assessing the effectiveness of the WURMP.
- Submitting annual WURMP reports which shall document the Copermittees' activities during the preceding year. At a minimum, the annual report must include:
    - A comprehensive description of all watershed activities conducted by the Watershed Copermittees for permit compliance.
    - Public participation mechanisms utilized during implementation.

- Watershed-based land use planning mechanism description.
- Effectiveness assessment of the WURMP.
- Summary of watershed-related data not already included in the annual monitoring report.
- Identification of water quality improvements or degradation.

SLR WURMP Goals and Objectives

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.
- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach this goal and the objectives, the SLR Copermittees work collaboratively to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

San Luis Rey Watershed Description

The SLR River Watershed is located along the northern border of San Diego County. It is bordered to the north by the Santa Margarita River Watershed and to the south by the Carlsbad and San Dieguito River Watersheds. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level (MSL), and extends west over 55 miles to form a watershed with an area of approximately 360,000 acres, or 562 square miles (see Figure 1-1). The river ultimately discharges to the Pacific Ocean at the western boundary of the City of Oceanside. Of the nine major watersheds in the San Diego region, the SLR River Watershed is the third largest in terms of land area (SANDAG 1998).

The SLR River Watershed or SLR Hydrologic Unit (HU) (903.00) is comprised of three HAs, which have been delineated by the San Diego Regional Water Quality Control Board (RWQCB) based on drainage patterns: Lower San Luis (HA 903.1), Monserate (HA 903.2), and Warner Valley (HA 903.3) (see Figure 1-1). Over 54% of the land in the watershed is vacant or undeveloped. The next largest land uses in the watershed are residential (15%) and agriculture (14%). The highest concentration of population is located in the Lower San Luis HA. There are six federally recognized Tribal Indian Reservations with land in the watershed. The highest point in the San Luis Rey Watershed (and in San Diego County) is Hot Springs Mountain with an elevation of 6,533 feet (1,991 meters).

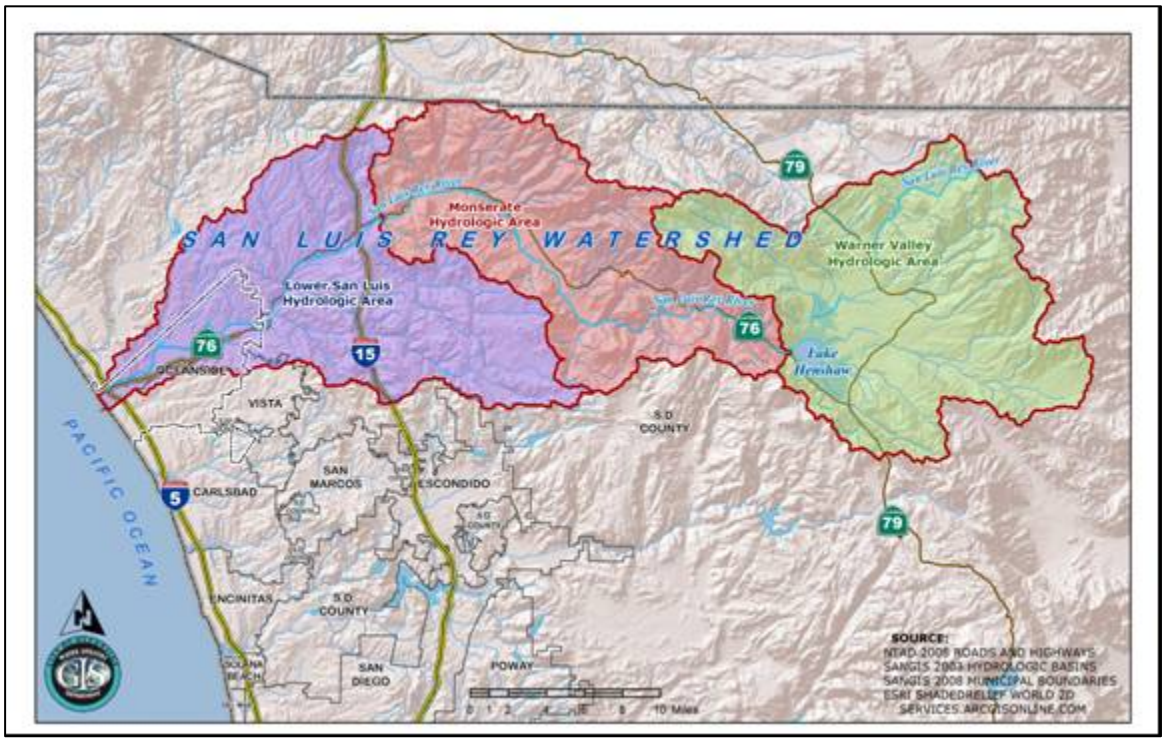

Figure 1-1. San Luis Rey Watershed Hydrologic Areas.

About half (49%) of the land in the watershed is privately owned. Publicly owned land accounts for approximately 37% of the area, and the remaining 14% consists of numerous reservations in the watershed. In the western half of the watershed, private ownership dominates. Moving east through the watershed, public lands increase and dominate in the Warner Valley HA. The Vista Irrigation District (VID) is the single largest landowner in the watershed.

Five jurisdictions have land use authority in the SLR Watershed and include the Cities of Escondido, Oceanside and Vista and the Counties of San Diego and Riverside. A number of other governmental agencies also administer lands within the unincorporated areas of San Diego County. A general breakdown of jurisdictional areas within the watershed is shown in Table 1-1.

Table 1-1. Watershed Acreages by Jurisdiction.

Jurisdiction	Acres	Percentage of Watershed (%)
Escondido	52	0.0
Oceanside	15,883	4.4
Vista	743	0.2
Unincorporated San Diego County	342,566	95.2
Riverside County	649	0.2
Total	**359,893**	**100.0**

Source: SANDAG 1998. (Note: Of the sources reviewed, values for total size of the watershed and the breakdown of the watershed by jurisdictions were similar but often different. Therefore, the values provided in this table are for general purposes only and should be verified if used for other purposes.)

1.1 Copermittee Collaboration

The Cities of Oceanside and Vista and the County of San Diego share the implementation responsibilities for the SLR WURMP. Using the watershed approach, the SLR Copermittees aim to positively affect the water quality of the SLR River Watershed in a cost effective, environmentally sensitive, and collaborative manner.

The County Copermittees have developed a Model Watershed Urban Runoff Management Strategy (Strategy) to guide the selection and implementation of Watershed Activities that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. Data analyzed to date for the SLR Watershed suggests that bacteria and nutrients are high priority water quality problems in the Lower San Luis HA.

Having used the watershed strategy as the basis for developing the activities, the SLR Copermittees have focused activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the SLR WMA. Where receiving water conditions and pollutants sources were not clearly characterized, monitoring and source identification activities were planned and implemented.

1.1.1 San Luis Rey WURMP Meetings

In order to effectively develop the 2008 SLR WURMP Update required by Municipal Permit Order R9-2007-0001 and to plan and implement the San Luis Rey WURMP in current and subsequent years the SLR Copermittees met five (5) times during FY 2008-09. The SLR Copermittees developed and prioritized water quality activities that address pollutants of concern in the watershed, exchanged ideas on how to address high priority water quality pollutants in the watershed, evaluated the effectiveness of actions, and collaborated on development of required submittals. See Table 1-2 for dates of these meetings and pertinent agenda items discussed at these meetings.

The general watershed meetings of the San Luis Rey WURMP workgroup were led by the City of Oceanside. Activities and tasks developed by the Copermittees were then carried out by the Copermittees within the structure of their jurisdictional organization. Task completion was then tracked and assessed at the workgroup meetings and is being reported in this Annual Report.

Table 1-2. SLR WURMP meeting dates and agenda items discussed.

Date	Agenda Item Topics
8/19/08	Review of 07-08 activities; Review of 08-09 Activities; Future activity planning; Annual report schedule
10/21/08	Discussion of RWQCB comments on activities; Watershed activity planning
11/18/08	Annual report section assignments; Watershed activity review, implementation, and future planning
1/05/09	Review of activity sheets - past, present and future; WURMP permit language rewrite
1/22/09	Review of annual report section comments; Review of watershed activities; Five-year strategic planning; Certification statements

1.2 Watershed Map Updates

Section J.2. of the Municipal Permit requires that the WURMP provide an accurate map of the watershed that identifies the following: All receiving waters (including the Pacific Ocean); Clean Water Act section 303(d) impaired receiving waters; land uses; MS4s, major highways, jurisdictional boundaries; and inventoried commercial, industrial and municipal sites. In a letter dated September 23, 2008, the Regional Water Quality Control Board requested Copermittees increase the size of the watershed maps to no smaller than 36 inches by 24 inches. See Appendix B of the 2007-08 WURMP AR for a copy of the increased map size.

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2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section presents a current assessment of surface water quality and potential pollutant sources within the SLR WMA. The water quality assessment is largely based on data collected on behalf of the County Copermittees in compliance with Municipal Permit requirements. The County Copermittees' *2008-09 Urban Runoff Monitoring Annual Report* (Regional Monitoring Report) provides a much more detailed watershed assessment based on this year's monitoring results (Weston 2010). It also references several special studies performed within the watershed in addition to Municipal Permit requirements. The pollutant source assessment is based on land use coverages, facility source inventories, as well as past and present source characterization efforts.

2.1 Watershed Water Quality Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period.

2.1.1 2008-09 WATER QUALITY PROGRAMS AND DATA

Table 2-1 identifies the active water quality monitoring programs within the SLR River Watershed Management Area (WMA) and briefly summarizes monitoring activity during FY 2008-09.

For further details on the following programs, please refer to the 2008-09 Regional Monitoring Report (Weston 2010):

- Mass Loading Station (MLS) Ambient and Storm Monitoring
- Post-Storm Sediment Pyrethroid Monitoring
- Stormwater Monitoring Coalition (SMC) Program
- Jurisdictional Dry Weather Monitoring (DWM)
- Coastal Storm Drain Monitoring (CSDM)
- Regional Harbor Monitoring Report (RHMP)

Jurisdictional DWM Program results are also discussed in individual Jurisdictional Urban Runoff Management Program (JURMP) Annual Reports. CSDM Program results are also included as an attachment to the 2008-09 Regional Monitoring Report.

In addition to jurisdictional and regional efforts, monitoring is conducted by the SLR Copermittees as part of two WURMP Activities. The SLR Watershed Water Quality Monitoring Activity (SLR-001) and the Guajome Lake Water Quality Monitoring Activity (SLR-008) results are provided in the appendices of this document. SLR-001 monitoring is conducted jointly by the City of Oceanside and the County of San Diego. This study specifically addresses TDS, chloride, nutrients, and bacteria through the lower SLR River and its tributaries. SLR-008 monitoring is conducted by the County of San Diego to characterize the contribution of nutrients to Guajome Lake.

Table 2-1. Water Quality Monitoring Activities in the San Luis Rey River WMA (FY 2008-09)

Program Data Set	Type of Assessment	Constituents Assessed	FY 2008-09 Activity
Permit-Related Monitoring			
Mass Loading Station (MLS)	Ambient and Wet Weather Receiving Water	Toxicity, chemistry, and trash	1 station sampled during 1 storm event
Post-Storm Sediment Pyrethroid Monitoring	Ambient and Wet Weather Receiving Water	Grain size, synthetic pyrethroid pesticides, and TOC	1 station sampled following 1 storm event and 1 ambient event
Stormwater Monitoring Coalition (SMC) Program	Ambient Receiving Water	Benthic macroinvertebrates, chemistry, toxicity	4 stations sampled once during ambient conditions
Jurisdictional Dry Weather Monitoring (DWM)	Ambient Urban Runoff	Field parameters and chemistry	51 sites sampled at least once per dry weather season
Coastal Storm Drain Monitoring (CSDM) Program	Ambient Receiving Water & Urban Runoff	Fecal indicator bacteria	36 Harbor sites and 6 beach sites sampled at varying frequencies
MS4 Outfall Monitoring (Random Wet, Random Dry, Targeted Dry)	Ambient and Wet Weather Urban Runoff	Chemistry and fecal indicator bacteria	Sites visited once during reporting year: Random Dry: 12 sites Random Wet: 4 sites Targeted Dry: 24 sites
Special Studies			
Joint Watershed Water Quality Monitoring Program	Ambient Receiving Water	Field parameters, TDS, chloride, nutrients, fecal indicator bacteria	20 sites visited either monthly or quarterly depending on constituent
Guajome Lake Water Quality Monitoring Program	Ambient Receiving Water & Urban Runoff	Field parameters, nutrients	2 sites sampled monthly
Regional Harbor Monitoring Program (RHMP)	Ambient Receiving Water	Chemistry, bacteria, metals, and pesticides	3 stations sampled on August 4th, 2008.

2.1.2 2008-09 WATER QUALITY MONITORING RESULTS

Table 2-2 summarizes the findings of the various monitoring elements as presented in the 2008-09 Regional Monitoring Report. It also identifies the core management question(s) addressed by each program. Data is segregated and analyzed according to whether they are representative of wet weather or ambient conditions. A distinction is also made between data indicative of either receiving water conditions or urban runoff discharges. This is the second monitoring season that ambient and wet weather samples were collected upstream of the historic MLS station.

Table 2-2. Summary of San Luis Rey River WMA Assessment Findings from the 2008-09 Regional Monitoring Report (Weston 2010)

Monitoring Program Elements	Summary of Findings	Core Questions Addressed
Ambient Receiving Water Assessment	▪ Constituent Summary: - TDS > benchmark in 100% of samples. - Total nitrogen, total phosphorus, chloride, and sulfate and enterococci > benchmark in 75% of samples - Turbidity, COD, and fecal coliform > benchmark in 25% of samples. ▪ Total nitrogen was the only constituent with a magnitude of exceedance greater than five times its benchmark ▪ No persistent toxicity was observed. ▪ No pyrethroids were detected in post storm sediments*.	1, 2
Wet Weather Receiving Water Assessment	▪ Constituents of concern[1]: - High frequency of occurrence (TDS and fecal coliform). - Medium frequency of occurrence (Bifenthrin*) - Low frequency of occurrence (turbidity, total coliform and enterococci). ▪ Fecal coliform was the only constituent with a magnitude of exceedance more than five times the benchmark. ▪ No persistent toxicity was observed. ▪ Bifenthrin* was detected in storm water at concentrations likely to cause toxicity; however, no toxicity was observed.	1, 2
Rapid Stream Bioassessment	▪ Altered benthic macroinvertebrate communities (Very Poor IBI ratings) were observed.	1,2
Third Party	▪ RHMP – in Oceanside Harbor, dissolved copper (likely associated with marine antifouling paint on boat hulls) was the only analyte to exceed water quality benchmarks. Sediment quality objective results indicated that one site was reference, one was possibly impacted, and one site was likely impacted based on Sediment Quality Objective (SQO) Guidelines. This site is hydrologically disconnected from the San Luis Rey River.	1,2
Ambient Urban Runoff Areas Assessment	▪ Results above action levels or receiving water benchmarks: - Jurisdictional: pH, conductivity, turbidity, ammonia, orthophosphate, nitrate, Total coliform, Fecal coliform, Enterococci. - MS4: TDS, Chloride, TSS, Nitrate, Total Nitrogen, Total phosphorus, Fecal coliform, Enterococci). ▪ CSDM: Coastal storm drains monitored in this program do not appear to be impacting coastal receiving waters.	3, 4
Wet Weather Urban Runoff Areas Assessment	▪ The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions.	3, 4
Receiving Water Trend Assessment	▪ Significantly increasing trends were observed for indicator bacteria (total coliforms, fecal coliforms, and enterococci), dissolved phosphorus, and turbidity. ▪ Significantly decreasing trends were observed for TDS and total hardness.	5

Monitoring Program Elements	Summary of Findings	Core Questions Addressed
2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	▪ WMA high frequency of occurrence rating for TDS, and fecal coliform are consistent with the 2001–2006 BLTEA ratings as it relates to Lower San Luis Rey HA.	

* The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.
[1] Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in 2008-09 Regional Monitoring Report (Weston 2010).

Based upon the data collected from the County Copermittees' Regional Monitoring Program and the Jurisdictional and Watershed monitoring programs, preliminary answers to the five Core Management Questions have been formulated.

Core Management Question 1.
Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed with the wet weather data assessment. The results of the 2008–2009 Monitoring Program in the San Luis Rey River WMA indicate that some of the constituents monitored were identified as high frequency of occurrence constituents of concern (COC) whose concentrations have frequently exceeded their respective benchmarks. In the San Luis Rey River WMA, these COC included TDS and indicator bacteria, although TDS and hardness show decreasing trends over time for wet weather. This suggests that some beneficial uses may be impaired by these constituents.

Additional monitoring conducted jointly between the City of Oceanside and the County of San Diego as WURMP Water Quality Activity SLR-001 provides additional ambient data for bacteria, TDS, and nutrients for eight main stem sites of the San Luis Rey River. Monthly sampling conducted year-round during ambient conditions since 2004 indicates that the geometric means of total coliform and fecal coliform indicators remained below their corresponding AB411 single sample standards. In addition, assessment of the geometric mean for Enterococcus was also below the AB411 single sample standard, which indicates that the additional results of the 2008/09 reporting year show a decrease in the Enterococcus results. Beginning in 2006, a sample from the Pacific Ocean and San Luis Rey River Mouth mixing zone has been collected. The mean bacteria results from this shore sample were below the AB411 single samples standards for all bacteria indicators indicating that conditions are likely protective of beneficial uses during ambient conditions along the shoreline. In this reporting year, there were no total coliform exceedances at the shoreline or in the river mouth, there was one exceedance at the shoreline for fecal coliform, but none at the river mouth, and there were two exceedances for Enterococcus at the shoreline and four at the river mouth. The number of exceedances has all been reduced from the previous year. See Appendix A for more detailed information.

Historical stream bioassessment results indicate evidence of benthic community impairment in the San Luis Rey River WMA, with Very Poor IBI ratings at the TWAS and either Very Poor or Poor ratings at the MLS since 2001. Additional bioassessment

monitoring conducted at SMC sites in the WMA produced similar results in the WMA. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat, the presence of pesticides (e.g., the synthetic pyrethroid Bifenthrin was detected during wet weather monitoring) or other constituents not monitored in this program. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

Toxicity to *S. capricornutum* during wet weather conditions in the San Luis Rey River WMA was observed on December 16, 2008 at the MLS. In previous years, toxicity has been sporadic and infrequent at this site. Since 2001, toxicity has been identified three times to *C. dubia*, once to *H. azteca* and twice to *S. capricornutum.* There is no evidence of persistent toxicity at this site in ambient or wet weather monitoring. The lack of persistent toxicity at this site indicates that the receiving waters are likely protective of beneficial uses.

Third party data provided by the Regional Harbor Monitoring Program indicate that Oceanside Harbor sediments were variable with one reference site, one possibly impacted site, and one likely impacted site based on sediment quality objective (SQO) Guidelines. Dissolved copper (likely associated with marine antifouling paint on boat hulls) was also identified above the benchmark.

Core Management Question 2
What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed with magnitude of exceedance ratios for ambient and wet weather conditions in the receiving waters and a spatial analysis of COC during ambient conditions (wet weather monitoring was conducted only once at the MLS in 2008–2009 due to participation in the Bight ’08 Program). The greatest concentration-to-benchmark exceedances during ambient conditions in the San Luis Rey River WMA were observed for total nitrogen and total phosphorus. Ratios varied among the four sites assessed. Total nitrogen concentrations were one to eight times greater than the benchmark and total phosphorus concentrations were one to four times greater. Concentration-to-benchmark exceedances during wet weather at the MLS were greatest for indicator bacteria. The fecal coliform concentration during the 2008 storm event was more than 30 times greater than the water quality benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at the MLS on average have been 12 times greater than the benchmark. The TDS concentration during wet weather in 2008–2009 was 50% greater than the water quality benchmark, which is lower than the historical mean for the site.

Receiving water spatial patterns in the San Luis Rey River WMA varied by constituent. During ambient conditions, receiving water concentrations of total nitrogen, total phosphorus, and constituents comprising TDS (chloride and sulfate) were greater than their respective benchmarks. Total nitrogen concentrations were greater than the benchmark at all four ambient sites monitored in the WMA. Total nitrogen concentration was greatest at one site in the lower portion of the watershed. Total phosphorus

concentrations were greater than the benchmark at three of the sites. The lowest total phosphorus concentration was observed at one site in the lower portion of the watershed where the total nitrogen concentration was greatest. Concentrations of chloride and sulfate, which are constituents comprising TDS, were greater than the benchmark at all ambient sites monitored in the lower portion of the WMA, but were below the benchmark at the one site in the upper portion of the WMA. These results provide a snapshot of receiving water conditions during the time of the survey. Additional data is needed to provide a more robust assessment of the spatial patterns of water quality constituents within the San Luis Rey River WMA.

The joint monitoring conducted by the County of San Diego and the City of Oceanside, detailed in Appendix A, provides a spatial extent of exceedances for bacteria, TDS and chloride, and nutrients for mean results from 2004 through 2009. Indicator bacteria means are typically lowest at the eastern and western most sampling stations, with a peak at the Douglas sampling location. TDS and chloride increase from east to west, with a slightly lower mean result at Douglas and a larger increase at Benet. All stations except for Shearer Crossing exceed the Basin Plan water quality objectives for TDS and chloride. The mean nitrate concentrations are highest at the eastern most location, Shearer Crossing, decrease moving west, and then spike again at the Murray sampling location.

Historical stream bioassessment ratings conducted in the WMA indicate a Very Poor benthic community at both MLS and TWAS locations. The consistent rating of Very Poor at both the MLS and TWAS since 2001 suggests that the extent of the impairment on the benthic community is not isolated to one area. This is supported by the 2008–2009 bioassessment results, which indicate a Very Poor benthic community at all random SMC sites monitored within the WMA.

Core Management Question 3
What is the relative urban runoff contribution to the receiving water problem(s)?
Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. In 2008–2009, the San Luis Rey River WMA MS4 was assessed through the random dry, random wet and targeted dry programs.

Twelve sites were visited as part of the random dry program, but only one was flowing at the time of the survey, precluding a spatial comparison among sites. The results are illustrative in that over 90% of the sites were not flowing at the time of the survey.

Four sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes including total nitrogen, total phosphorus, TSS, and indicator bacteria were greater than water quality benchmarks at some sites, suggesting that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the water quality benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Normalized loads calculated for

the sites assessed were greatest for most constituents primarily at one site in the upper region of HSA 903.12 (Bonsall HSA). The catchment for this site was characterized by primarily agricultural and open space land uses.

A total of 24 sites in the San Luis Rey River WMA were visited as part of the targeted dry weather program, 15 of which were flowing at the time of the survey. Thus, 38% of the targeted dry weather sites were ponded or dry, compared to over 90% of the random dry weather sites. Drought restrictions implemented in the summer of 2009 may have helped to reduce flows from some areas. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving water quality benchmarks for the following constituents: oil & grease, chloride, nitrate, total nitrogen, total phosphorus, TDS, and indicator bacteria (fecal coliforms and enterococci). Each of these constituents had concentrations that were greater than their respective benchmarks at at least one of the 15 sites assessed. Concentrations of total nitrogen exceeded the benchmark most frequently followed by total phosphorus. The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey, suggests that loads were greatest where flow rates were highest: One site in the Lower San Luis HA and one site in the Monserate HA had the greatest instantaneous loads. MS4 runoff from these sites may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 targeted MS4 monitoring data allow for a relative comparison of instantaneous loads among sites in the San Luis Rey River WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

The CSDM results indicate that coastal storm drains do not appear to be affecting bacterial concentrations in the coastal receiving waters during dry weather conditions among the sites sampled.

Activity SLR-001 targets eight main stem river sites as well as ten tributaries to the San Luis Rey River. Although two sites have been identified as having higher relative mean concentrations of bacteria, Pilgrim Creek for all three indicators and Sleeping Indian for total coliforms and Enterococcus, the receiving water samples do not show similar trends at the corresponding downstream sites. This indicates that the two tributaries identified as having the higher concentrations are not likely a large contributor to ambient receiving water conditions for bacteria. There are no tributaries or consistent sources of urban runoff between the Murray and Douglas sites, yet Douglas consistently has higher bacteria concentrations. The same two tributaries have also been identified as having higher TDS concentrations and Pilgrim Creek had a significantly higher chloride concentration. Both sites downstream of these tributaries do show a slight increase in TDS and chloride levels. However, mineral composition of TDS at Pilgrim Creek renders that tributary characteristically different from the remaining ones. The mean

concentrations of the main stem samples are very similar to the mean groundwater concentrations which indicate that groundwater is influencing water quality in the main stem. Nitrate concentrations at the Sleeping Indian tributary are significantly higher than the other tributaries. The location downstream of Sleeping Indian does have an increase in nitrate concentrations. Shearer Crossing, in the main stem, has the highest mean nitrate concentration, but is the easternmost sampling location and is therefore not associated with a tributary upstream. Orthophosphate concentrations are again highest at Sleeping Indian and Pilgrim Creek Outlet. Murray, downstream of Sleeping Indian shows a decrease in orthophosphate levels. Benet, downstream of Pilgrim Creek, does show a slight increase indicating the tributary may have an affect on the receiving waters.

Core Management Question 4
What are the sources of urban runoff that contribute to receiving water problem(s)?
Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional DWM Program, the CSDM Program, and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources can be found in each Copermittees Jurisdictional Urban Runoff Monitoring Program Annual Report and in the CSDM Program Annual Report.

In the CSDM Program, one site has reoccurring exceedances for which the source has been sufficiently characterized. Coast 8 outfall drains the Harbor boat wash and RV dump station. Signage and structural BMPs have reduced the frequency of exceedances there. The sources of bacteria, TDS, and nutrients at the two tributaries with the highest concentrations of constituents of concern found through Activity SLR-001, the joint monitoring program, are only partly characterized. A source investigation into the Sleeping Indian tributary, found only a small, less than one gallon per minute, overland flow from an agricultural field. The remaining flow was from groundwater seepage. TDS and hardness has been shown to decrease to the northeast and above the golf course, but the sources of the minerals, nutrients, and bacteria have not been identified.

The trash assessment conducted in 2008–2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the San Luis Rey River WMA. A total of 51 sites were assessed for trash in the WMA, including six HSAs. The lower portion of the WMA had the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained the greatest amount of trash in the WMA. This result coincides with the urbanized population centers, which are also found in the lower portion of the WMA. Trash at seven of the 14 sites with Submarginal or Poor ratings consisted primarily of food packaging, trash at six sites consisted of household trash, and trash at one site consisted primarily of construction debris. The potential trash route was listed as littering for ten of the sites rated as Submarginal or Poor in the San Luis Rey River WMA, dumping for three of the sites, and upstream for two of the sites. The sites listed as littering were clustered near the center of HSA 903.11 in the lower portion of the WMA.

A dry weather source identification study of single family residences was conducted by the Copermittees during the 2008–2009 Monitoring Season. Results indicated that

synthetic pyrethroids were commonly detected in runoff from residential land uses in concentrations above published toxicity benchmarks for aquatic invertebrates. However, the Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Bacteria concentrations were generally higher at sites influenced from overland runoff in comparison to one site influenced from continuous groundwater flows. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables).

Core Management Question 5
Are conditions in receiving waters getting better or worse?
Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the San Luis Rey MLS. Based on the trend analysis, indicator bacteria (i.e., total coliforms, fecal coliforms, and enterococci), dissolved phosphorus, and turbidity are increasing over time at this site. In contrast, concentrations of TDS, total hardness and dissolved nickel are decreasing over time.

Although dissolved phosphorus and turbidity appear to be increasing over time, the slopes of all three are shallow, and most concentrations have been well below the respective benchmark values. At the current observed rate of increase, it does not appear that any of these constituents will exceed wet weather benchmarks during the current Permit cycle.

Concentrations of TDS and total hardness appear to be decreasing over time at the San Luis Rey MLS. In 2008–2009, TDS concentrations were below the benchmark for the first time since monitoring began at the site. Relatively low TDS values in 2008–2009 are reflected in the total hardness values, which were also much lower during this sampling period compared with previous years. Future monitoring will determine if this trend can be sustained. The decreasing trend in dissolved nickel concentrations is likely inconsequential in terms of benchmarks, since concentrations of this constituent have been very low historically at this site.

The bioassessment ratings at the San Luis Rey MLS and TWAS have been Very Poor in nearly all assessments conducted from 2001 to 2008 and there are no apparent trends in the benthic community.

Toxicity has rarely been observed in samples collected from the San Luis Rey MLS. Between 2001 and 2008, toxicity to *C. dubia* was observed during the first storm season of 2001-2002 as well as toxicity to *H. azteca* during the 2007–2008 Monitoring Season, but no trends in the data set are apparent.

In general, overall water and sediment quality throughout RHMP harbors, including Oceanside Harbor, appears to be improving based on a weight-of-evidence approach. Primary indicators of long-term water quality as well as sediment chemistry, toxicity, and benthic infaunal community have improved or are similar to historical conditions.

2.1.3 WATERSHED WATER QUALITY PROBLEMS

Section 3.1.3 of the March 2008 WURMP identifies criteria to be used by the SLR Copermittees to identify priority and high priority water quality problems within the SLR WMA (SLR WURMP 2008). Based on these criteria, Table 2-3 identifies all the watershed water quality problems, including high priorities, and provides a brief explanation of the supporting information used to make each decision. In the 2007-2008 SLR WURMP AR the scale of the bacteria problem was expanded to include HSA 903.12 in addition to HSA 903.11. This change to the March 2008 WURMP was the result of new data that became available from the TWAS.

Table 2-3. Water Quality Problems in the San Luis Rey WMA.

Water Quality Problem	WURMP High Priority?	HSA(s)	Explanation
Bacteria	Yes	HSA 903.11 HSA 903.12	- Pending TMDL for bacterial indicators at the mouth of the San Luis Rey River - 303(d) listing for bacterial indicators at the Pacific Ocean Shoreline - Persistent exceedances of fecal coliform and enterococcus benchmarks at the MLS and TWAS. Also see Attachment A, SLR-001. - Bacteria BLTEA rating of "A" for HA 903.1
Nutrients	Yes	HSA 903.11	- 303(d) listing for Eutrophication at Guajome Lake - Nutrients BLTEA rating of "A" for HA 903.1
Dissolved Minerals (TDS & Chloride)	No	HSA 903.11	- 303(d) listings for TDS and chloride for 19-mile downstream reach of San Luis Rey River - Dissolved Minerals BLTEA rating of "A" for HA 903.1 - Persistent exceedances of TDS and chloride benchmarks observed in SLR River and Tributaries (see Appendix A, SLR-001)
Benthic Alteration	No	HSA 903.11 HSA 903.12	- Consistent "Poor" or "Very Poor" IBI ratings at the MLS and TWAS - Benthic Alteration BLTEA rating of "A" for HA 903.1

2.2 Pollutant Source Assessment

This section describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed. Land use and facility source data have been examined and mapped for the entire watershed in order to identify the potential pollutant sources contributing to the watershed's high priority water quality problems presented in Appendix A, Figure 3-4 of the 2008 San Luis Rey WURMP (SLR WURMP 2008). Table 2-4 presents an overview of the land use distribution for major land use categories and potential sources within each HSA. This table supports the

Watershed Copermittees' focus on activities in the Lower SLR Hydrologic Area. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date. Figure 3-1 in Appendix A of the SLR WURMP 2008 provides a map of sampling locations in the SLR Watershed (SLR WURMP 2008).

Table 2-5 shows the contrast between the lower and upper watershed. Residential and agriculture land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed.

Table 2-4. Overview of Major Land Uses for San Luis Rey River WMA.

Hydrologic Sub Area	Major Land Use Categories[1]												
	Residential		Commercial / Industrial		Agriculture		OS/Preserve		Vacant		Military		Total Area Accounted for
	acres	%	acres	%	acres	%	acres	%	acres	%	acres	%	%
Lower San Luis HA (903.1)													
Mission HSA (903.11)	7,700	26	1,000	3	3,900	12	2,500	8	2,000	7	9,600	32	88
Bonsall HSA (902.12)	24,000	37	1,800	3	20,900	32	1,100	2	14,000	21	400	<1	96
Moosa HSA (903.13) Valley Center (903.14) Woods HSA (903.15) Rincon HSA (903.16)	8,400	38	600	3	5,400	21	500	2	6,600	28	0	0	92
Monserate HA (903.2)	9,200	9	800	1	18,300	17	14,000	13	64,200	59	0	0	99
Warner Valley HA (903.3)	4,300	3	400	<1	3,600	3	14,200	9	108,600	82	0	0	98
Total Land Area	53,600				52,100		32,300		195,400				

1. Source: County of San Diego based on SANDAG 2006 data, land use categories have been grouped for demonstration purposes.

2.2.1 Potential Bacteria Sources

The Baseline Long Term Effectiveness Assessment (BLTEA) represented the County Copermittees' first attempt to identify sources of bacteria in the SLR River Watershed. Table 2-5 presents the BLTEA's list of "Likely" and "Unknown" bacteria sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE 2005). Table 2-6 lists the number of potential bacteria sources by HSA in addition to relevant land uses with the greatest potential to generate bacteria. Potential bacteria sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-5 through 3-10 (SLR WURMP 2008).

Table 2-5. Potential Bacteria Sources for the SLR River Watershed (From BLTEA).

Potential Bacteria Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Eating or drinking establishments	277	Likely
Animal Facilities	47	Likely
POTWs (water and wastewater)	17	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Sites for disposing and treating sewage sludge	-	Likely
Development subject to SUSMPs	115	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Motor Freight	2	Unknown
Auto parking lots and storage facilities	-	Unknown
Pest Control Services	49	Unknown
Flood management projects and flood control devices	-	Unknown
MS4s	-	Unknown
Park and Recreational facilities	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego – 2005

Table 2-6. Potential Bacteria Sources by Hydrologic Sub-Area.

HSA	Potential Bacteria Source	Number of Facilities or % Land Use
Mission HSA 903.11	Food Establishments	198
	Commercial Animal Facilities	66
	Auto Facilities	7
	Nurseries	54
	% Residential	26%
	% Agricultural	12%
Bonsall HSA 903.12	Food Establishments	48
	Commercial Animal Facilities	168
	Auto Facilities	34
	Nurseries	15
	% Residential	37%
	% Agricultural	32%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Food Establishments	20
	Commercial Animal Facilities	47
	Auto Facilities	4
	Nurseries	15
	% Residential	38%
	% Agricultural	21%
Monserate HSA 903.20	Food Establishments	9
	Commercial Animal Facilities	34
	Auto Facilities	1
	Nurseries	4
	% Residential	9%
	% Agricultural	17%
Warner Valley HSA 903.30	Food Establishments	7
	Commercial Animal Facilities	0
	Auto Facilities	1
	Nurseries	2
	% Residential	3%
	% Agricultural	3%

There is currently only one location within the watershed where an adequate source identification study has been performed to characterize the bacterial pollutant source: the Oceanside Harbor Boat Wash outfall. The City of Oceanside performs routine sampling at the harbor boat wash and recreational vehicle sewage dump area as part of its Coastal Storm Drain Monitoring (CSDM) Program. This monitoring has revealed high levels of bacteria in samples collected from the boat wash outfall. The outfall drains a short storm drain system where the only influence is from the public boat wash area which borders the sewage dump area for recreation vehicles.

To identify the other sources of bacteria, specifically related to beach closures at the mouth of the SLR River, the City of Oceanside was awarded a Proposition 50 Clean Beaches Initiative grant. With matching funds from the County of San Diego and City of Vista, the bacteria source tracking project planned to:

- Identify point and non-point sources of bacteria contamination in the lower SLR River and at the River mouth during dry and wet weather.
- Estimate the dry, wet, and annual bacterial loading in the lower SLR River and at the River mouth.
- Recommend Best Management Practices (BMP) to reduce and eliminate bacterial sources.

However, grant funding for this project was suspended in December of 2008 for an indefinite period of time. Though funding had ceased monitoring by the City of Oceanside and County of San Diego continued monthly through June 2009. The project is on hold until further notice from the State Water Resources Control Board (SWRCB).

2.2.2 Potential Nutrient Sources

The BLTEA represented the Copermittees' first attempt to identify sources of nutrients in the SLR River Watershed. Table 2-7 presents the BLTEA's list of "Likely" and "Unknown" sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE, 2005). Table 2-8 lists the number of potential nutrient sources by HSA in addition to relevant land uses with the greatest potential to generate nutrients. Potential nutrient sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-11 through 3-16 (SLR WURMP 2008). Preliminary investigations into land uses in the Guajome Lake drainage area have identified potential sources of nutrients to include residential, agricultural sources, commercial nurseries and agriculture, commercial horse facilities, and residential horse facilities.

Table 2-7. Potential Nutrient Sources for the SLR River Watershed (From BLTEA).

Potential Nutrient Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Commercial Animal Facilities	47	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Park and Recreational facilities	-	Likely
Eating or drinking establishments	277	Unknown
Development subject to SUSMPs	115	Unknown
Auto mechanical repair, maintenance, fueling, or cleaning	57	Unknown
POTWs (water and wastewater)	17	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Corporate yards (incl. maintenance/storage yards)	4	Unknown
Fabricated metal	4	Unknown
Equipment mechanical repair, maintenance, fueling, or cleaning	3	Unknown
Chemical and allied products	2	Unknown
Airfields	2	Unknown
Motor Freight	2	Unknown
Primary metal	1	Unknown
Auto parking lots and storage facilities	-	Unknown
Mobile carpet, drape, or furniture cleaning	76	Unknown
Pool and Fountain cleaning	60	Unknown
Sites for disposing and treating sewage sludge	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego - 2005

Table 2-8. Potential Nutrient Sources by Hydrologic Sub-Area.

HSA	Potential Nutrient Source	Number of Facilities or % Land Use
Mission HSA 903.11	Commercial Animal Facilities	7
	Nurseries	66
	% Residential	26%
	% Agricultural	12%
	% Open Space	8%
	% Industrial/Commercial	3%
Bonsall HSA 903.12	Commercial Animal Facilities	34
	Nurseries	168
	% Residential	37%
	% Agricultural	32%
	% Open Space	2%
	% Industrial/Commercial	3%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Commercial Animal Facilities	4
	Nurseries	47
	% Residential	38%
	% Agricultural	21%
	% Open Space	2%
	% Industrial/Commercial	3%
Monserate HSA 903.20	Commercial Animal Facilities	1
	Nurseries	34
	% Residential	9%
	%Agricultural	17%
	%Open Space	13%
	% Industrial/Commercial	1%
Warner Valley HSA 903.30	Commercial Animal Facilities	1
	Nurseries	0
	% Residential	3%
	%Agricultural	3%
	%Open Space	9%
	% Industrial/Commercial	<1%

2.2.3 Other Potential Pollutant Sources

In addition to the potential pollutant sources discussed in the preceding sections, there are other likely pollutant sources that contribute to water quality degradation in the San Luis Rey River WMA. These sources include natural groundwater, imported water supply, aerial deposition, wildlife impacts, natural erosion, transportation corridors, and military facilities and activities. These potential sources present very unique and difficult challenges in their identification, quantification and assessment of either degradation or improvement. Also noteworthy is the Copermittees' jurisdictional and regulatory inability to control these sources or regulate their impacts and contribution to water quality degradation in the watershed.

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3 IMPLEMENTATION OF WATERSHED ACTIVITIES

Per the requirements of the Municipal Permit, the SLR Copermittees are required to identify and implement Watershed Activities that address the high priority water quality problems in the WMA. Watershed Activities shall include both Watershed Water Quality Activities and Watershed Education Activities. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level.

Activity Selection Process

During the planning process for the SLR WURMP 2008 the SLR Copermittees identified Watershed Activities that address the high priority water quality problems specific to the SLR WMA. Activity planning was conducted using the Collective Watershed Strategy which is a component of the Model Watershed Urban Runoff Management strategy found in the Regional Urban Runoff Management Program (RURMP). This process allows for the County Copermittees to establish and prioritize activities through the integration of water quality data to the loading potential of sources within the watershed and sub-watershed areas.

The first step in the strategy is to identify water quality problems watershed-wide and in each HA, where sufficient data is available. The second step is to identify the sources that are most likely contributing to the high priority water quality problems. The process used for the selection of potential sources that can contribute particular pollutants to the MS4 is outlined in the BLTEA document created by the San Diego County Copermittees in 2005. Based on the available data and the assessment of the first year of completed activities under the new Municipal Permit, the SLR Copermittees made appropriate management decisions when selecting and designing watershed water quality and watershed education activities. The overall goal of these activities is to reduce the discharge of pollutants causing the high priority water quality problems.

Activity Implementation

WURMP activities may be implemented individually or collectively, but do not need to be implemented watershed wide. WURMP activities can be implemented by one or more jurisdictions in the watershed yet should be a part of an overall watershed strategy collaboratively developed by the watershed Copermittees. Some of the activities the SLR Copermittees conducted or planned during this reporting period were implemented jurisdictionally while others were implemented watershed-wide or regionally. See Section 3.5 below for an updated five-year strategic plan. This plan provides summary information about each of the proposed watershed activities (both water quality and education) including, the watershed priority pollutants targeted by the activity and an implementation schedule for that activity.

The Copermittees have made significant progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed during this reporting period. See Section 3.1 for information about Watershed Water

Quality Activities implemented and Section 3.2 for Watershed Education Activities implemented during this reporting period.

3.1 Watershed Water Quality Activities

The SLR Copermittees are responsible for identifying and implementing Watershed Water Quality Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. The activity selection process is briefly described above and more fully in the SLR WURMP 2008.

During this reporting period, the SLR Copermittees implemented five water quality activities. Table 3-1 lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-003	WQ	I	Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall
SLR-004	WQ	P	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-009	WQ	I	Nutrient Source Identification and Abatement: Guajome Lake
SLR-012	WQ	I	Land Acquisitions
SLR-013	WQ	I	Harbor Boat Wash Security Camera

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented; P = Planning

3.2 Watershed Education Activities

This section describes actions planned by the SLR Copermittees during the 2008-09 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the high priority water quality problems in the San Luis Rey WMA.

During the reporting period, the Copermittees implemented two watershed education activities. Table 3-2 below lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail - Oceanside
SLR-011	WE	I	LID & Watershed Planning Education for Community Planners & Sponsor Groups (County of San Diego)

[1] WE = Watershed Education Activity
[2]I = Implemented

3.2.1 Additional Watershed Activities

In addition to the Watershed Water Quality and Watershed Education activities that qualify for WURMP credit, the SLR Copermittees implemented or planned activities that they feel are important to implementation of the WURMP and development of future activities but don't receive WURMP credit. During the reporting period, the Copermittees implemented and planned five additional watershed activities. Table 3-3 below lists the activities that were in active implementation and being planned during the reporting period. Details of the each activity can be found in the Activity Implementation Sheets located in Appendix A.

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-001	M, S	SLR Watershed Water Quality Monitoring Program (Oceanside and County of San Diego)
SLR-008	M, S	Guajome Lake Water Quality Monitoring Program (County of San Diego)
SLR-010	M, S	Lower SLR River Bacteria Source Tracking Study (Oceanside, Vista, and County of San Diego)
SLR-014	P	Harbor Boat Wash Coin Operated Water Dispenser
SLR-015	P	Community Based Residential Horse Property Pilot Project

*M = Watershed Water Quality Monitoring Activity; S = Source Identification/Characterization Activity
P = Activity in Planning Stages

In addition to the above activity sheets the SLR Copermittees implemented various public participation and collaborative planning efforts that they feel are notable and should be reported in this WURMP Annual Report. The Copermittees feel that these additional activities are vital to the implementation of the overall WURMP and are complementary to the activities that qualify to receive WURMP credit. Details of each of these additional activities can be found Section 3.3.

3.3 Public Participation Activities

The SLR Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed which could include other agencies, private companies, non-governmental organizations, environmental groups, etc. Several opportunities are available to the public to engage them in the implementation of the

WURMP. Below is a summary of these opportunities and information about how they were implemented during this reporting period.

North County Storm Water Program
The North County Storm Water Program was originally established in 2002 and comprised stormwater staff from nine North San Diego County cities. The NCSWP developed and implemented general public storm water and watershed awareness education programs for the Northern San Diego County Region and collaborated on special events based on the needs of the activities planned for the WURMPs. This group has met regularly since 2002 and developed several brochures and staffed many education outreach events.

With the initiation of the Regional Education and Residential Sources Workgroup in 2007-08 San Luis Rey Copermittee staff began attending bi-monthly meetings collaborating with all 21 Copermittees on regional stormwater education programs. Therefore the NCSWP group combined efforts with the Regional group during this reporting period. In the future, if it is determined that a specific WURMP activity could utilize a focused group of SLR Copermittee staff to develop and implement a component of the activity the NCSWP group would initiate meetings again.

Educational Materials Distributed
The SLR Watershed Copermittees collaborated on the dissemination of education pieces developed in previous years by the NCSWP and coordinated the staffing of education outreach booths at various events. Below is a summary of the activities of the SLR Copermittees, the materials distributed by the SLR Copermittees, and the events at which a table was collaboratively staffed by one or more Copermittees and/or gathered pet waste surveys.

- Construction brochure highlighting construction BMPs for large or small scale developments
- North County watershed map ("We All Live Downstream" poster)
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Click-message pens
- San Diego County Integrated Pest Management (IPM) program materials, including English and Spanish IPM Pest Tip Cards
- Personal pet waste bag dispensers

Outreach Events
The SLR Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period SLR Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- June 14 – July 6, 2008 - San Diego County Fair
- August 3, 2008 – Vista Rod Run

- September 11, 2008 – Dimensions 1 Spas Health and Wellness Fair (Vista)
- October 11, 2008 – Pride at the Beach (Oceanside Amphitheatre)
- October 26, 2008 – Oceanside Humane Society PAWS Festival
- March 7, 2009 – Kragen Auto Parts used Oil Filter Event (Vista)
- April 17, 18, 19, 24, 25, 26 and May 1 – 3, 2009 - Del Mar National Horse Show
- April 19, 2009 - Fallbrook Avocado Festival
- April 26, 2009 – North County Earth Day at Mission San Luis Rey
- May 16, 2009 – Operation Appreciation (Oceanside Amphitheatre)
- May 24, 2009 – Chocolate Festival (Vista)
- June 20, 2009 - Enviro Fair Day at the San Diego County Fair

Pet Waste Surveys

The SLR Copermittees determined that a potential source of bacteria and nutrients in the San Luis Rey WMA is from pet waste not picked up and left on the ground. In FY 2005-06 the San Luis Rey and Carlsbad Copermittees implemented the Pet Waste Bacterial Load Reduction Program that incorporated four components: personal pet waste bag dispenser distribution, a public knowledge and behavior survey, installation of doggie bag dispensers in county parks, and the implementation of a dog waste tracking project at San Elijo Lagoon Ecological Reserve. During FY 2008-09 two of these components continued: distribution of the personal pet waste bag dispensers and the implementation of public knowledge and behavior surveys in regards to pet waste.

The SLR Copermittees continued to distribute pet waste bag dispensers at outreach booths located within their jurisdiction. And, in order to better design and appropriately implement future BMPs that encourage people to pick up pet waste, the SLR Copermittees continued to conduct pet waste surveys asking the public various questions about picking up after pets. The Cities of Oceanside and Vista utilized a one-page survey for residents to complete, during public events, which measures pet waste pollution knowledge and typical behaviors. The County of San Diego's survey had different questions than those utilized by Oceanside and Vista.

While staffing booths at local outreach events Copermittees asked individuals who requested a pet waste bag dispenser and others who approached the tables to complete a short five question survey. During the reporting period, the survey was distributed at and tabulated from several public events in the Carlsbad and San Luis Rey Watersheds. There were 291 surveys completed, with at least one personal pet waste bag dispenser distributed for each survey. Data collected from these surveys provides additional data on the baseline knowledge of North County residents and provides potential direction in upcoming educational outreach efforts. An assessment of the surveys obtained during FYs 07-08 and 08-09 are included in Section 4.1.1 of this AR.

River, Creek, and Beach Cleanup Events

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there

were five major cleanup events that had staging sites at several locations throughout the SLR watershed. A total of 882 volunteers removed over 6,500 pounds of trash and debris from coastal beaches and inland sites along the San Luis Rey River. The number of volunteers increased from 667 during the previous reporting period. Table 3-4 below provides a summary of these cleanup events.

Table 3-4. River, Creek and Beach Cleanup Event Summary.

Date	Name	Location	# of Participants		Total # of Participants	# of Pounds Removed
			Inland Sites	Coastal Sites		
7/05/2008	Morning After Mess	Oceanside Harbor		305	305	175
9/20/2008	Oceanside Beach Cleanup	South side of Pier		303	307	215
11/08/2008	San Luis Rey River Cleanup	Inland River Sites	245		245	5000
11/08/2008	Oceanside Beach Cleanup	Harbor South Jetty		70	70	1000
4/25/2009	Oceanside Beach Cleanup	South side of Pier		204	204	127
	Totals		**245**	**882**	**1,127**	**6,517**

San Luis Rey Watershed Council

The SLR Copermittees continued participating in regular meetings of the San Luis Rey Watershed Council (SLRWC). The SLRWC is a partnership of local landowners, agricultural growers, Native American Tribal bands, community and environmental organizations, government agencies, and special districts with ties to the watershed. The SLRWC's primary goal is to keep stakeholders apprised of issues and projects concerning the SLR Watershed and to develop and implement a comprehensive resource management plan for the SLR watershed. During FY 2008-09 the SLRWC submitted paperwork to the State of California and Federal Internal Revenue service to form a nonprofit organization. In February 2009 the SLRWC received notification from the State of California that the group was a recognized business. The SLRWC is anticipating that the nonprofit status will be confirmed from the IRS during FY 2009-10. Once established as a nonprofit organization, the SLRWC can submit grants on behalf of the watershed stakeholders and move toward implementing priority projects identified by the members. The SLR Copermittees are planning to continue participating as members of the SLRWC and to assist in the development and implementation of projects designed or implemented with other stakeholders and members of the SLRWC.

San Luis Rey River Trail and Riparian Restoration and Flood Risk Reduction Project

Mission Resource Conservation District was awarded funding from the California River Parkways Program Proposition 50 Beach Protection Act of 2002 to implement the San Luis Rey River Trail and Riparian Restoration and Flood Risk Reduction Project. This project proposed the construction of the last section (1.6 miles) of the San Luis Rey River Recreation Trail that will connect Oceanside with Guajome Lake County Park, and implement habitat restoration of 22.5 acres of riparian habitat infested with *Arundo*

donax, an invasive non-native plant. The trail alignment allows passive use of the riparian zone without physically entering or disturbing it. A map of the project area is shown in Figure 3-1.

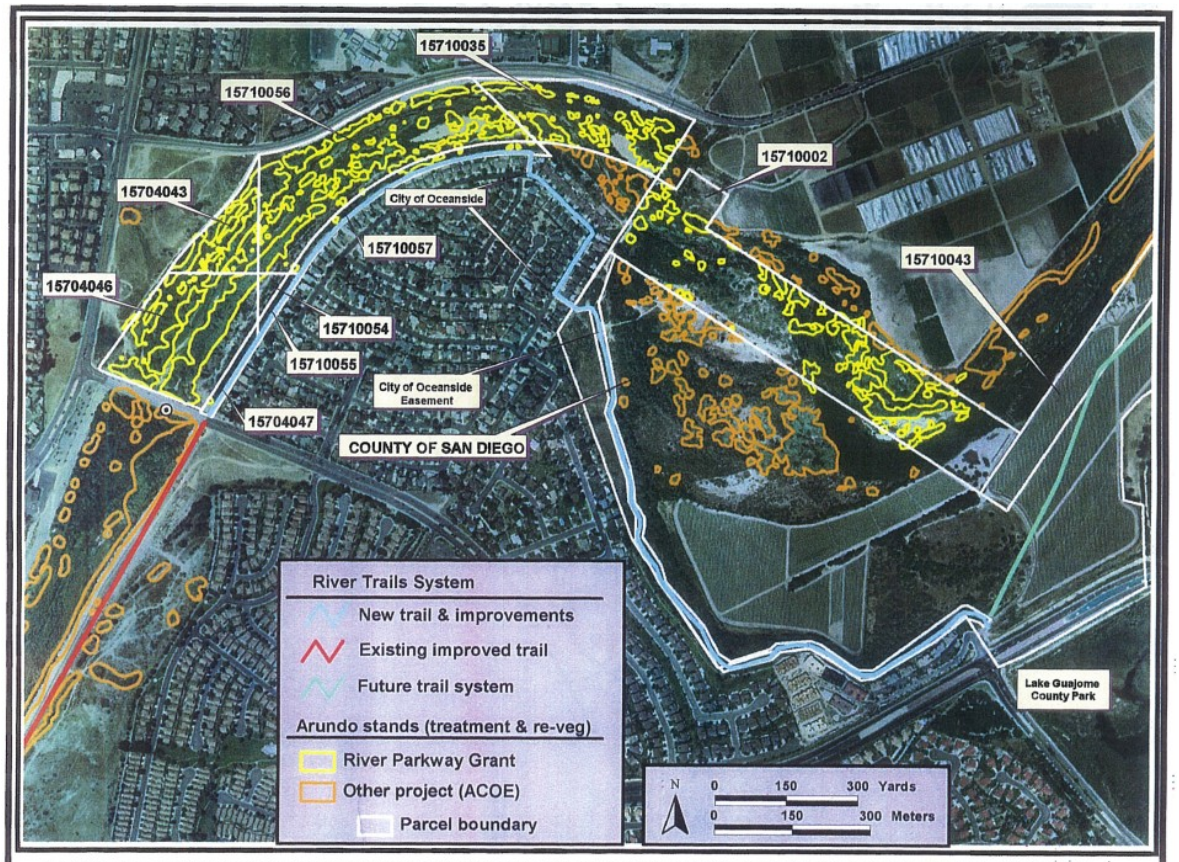

Figure 2. Detailed view of project area. Grant funded trail construction and habitat and flood control work through treatment of Arundo stands and re-vegetation with natives is indicated. Trail creation and improvements total 1.6 miles and 22.5 acres of Arundo will be treated and re-vegetated. All property owned by the City of Oceanside except easement through San Diego County Property.

Figure 3-1. Project Map for San Luis Rey River Trail and Riparian Restoration and Flood Risk Reduction Project (MRCD 2005).

This project involves the collaboration of the following entities: The City of Oceanside, County of San Diego Parks and Recreation Department, Mission Resource Conservation District, and the SLRWC. A public comment component was incorporated into the overall project allowing for the public to provide comments about both the trail extension and the invasive species removal component. The City of Oceanside Parks and Recreation Department held public workshops and meetings over the past ten years to get feedback from the community about this final segment of trail to be completed. During the public comment period the community expressed their strong support of the project and showed their excitement about Guajome Park connecting to the San Luis Rey River Recreation Trail.

During the FY 2007-08 reporting period the first phase of the trail construction was completed. Also the initial removal, treatment and revegetation of habitat infested with *Arundo donax* was completed. The *Arundo donax* eradication and re-vegetation project

restored 22.5 acres of critical habitat within 250 acres of riparian habitat. This portion of the river, just east of the College Boulevard river crossing, has three federally endangered species that will immediately benefit from the project: Least Bell's vireo, Southwestern willow flycatcher, and the Arroyo toad.

During the FY 2008-09 reporting period the final 0.75 miles of the San Luis Rey Bike Trail Extension project was completed between Andrew Jackson St and College Boulevard (October 2008). Also during this reporting period re-treatments of *Arundo donax* were carried out (foliar application of herbicide to live *Arundo* canes). Additional re-vegetation was carried out in early spring 2009 in areas where more plant cover was desired. Some additional biomass reduction occurred in a few areas using hand crews. Retreatment of *Arundo donax* stands are planned for fall 2009.

This project provides water quality benefits that are calculable from eradication of *Arundo donax* stands. Water savings is 4.6 acre feet per year. The water savings is the result of increased water consumption by *Arundo donax*, which consumes more groundwater than native woodland, shrub, or open substrate that would naturally exist at the site. *Arundo donax* stands also increase sediment accumulation within the riparian profile due to obstruction of flows causing increased sedimentation in the river bed and potential flooding hazards.

Project Clean Water

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. PCW, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. PCW seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. It was formed under the guidance of a Technical Advisory Committee made up of local stormwater-related professionals. For more details on the development of PCW refer to the FY 2007-08 SLR WURMP AR.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds. There are several web pages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website provides Best Management Practices information for both residential and industrial/commercial audiences (http://www.projectcleanwater.org/bmp/).

PCW features a page devoted to the SLR WMA, with details on the watershed, major pollutants, and organizations related to water quality. Additionally the webpage also offers links to relevant documents such as the WURMP and WURMP Annual Reports. During the FY 2008-09 reporting period, revisions were made to update the content and documents available via the site. During FY 2008-09 the hits for the SLR Watershed page totaled 2,713 and there were also 545 hits on the SLR WURMP document.

Regional Education and Residential Sources Workgroup

The Regional Education and Residential Sources Workgroup (ERS Workgroup), previously known as the San Diego County Regional Education and Outreach workgroup, was formed under the auspices of the MOU between the 21 San Diego County Copermittees. During FY 2008-09, the ERS Workgroup was co-chaired by the City of Oceanside and City of Imperial Beach with support from the San Diego Regional Airport Authority as Secretary. The ERS Workgroup met six times during FY 2008-09. A list of meeting dates, locations, agenda items and accomplishments are provided in the RURMP AR scheduled to be submitted to the RWQCB in January 2010.

During FY 2007-08, the ERS Workgroup developed a Regional Residential Education Plan (Plan) which was submitted to the Regional Water Quality Control Board as part of the March 2008 RURMP. During FY 2008-09 the SLR Copermittees, in conjunction with County Copermittees, continued to implement components of this Plan. A brief summary of the accomplishments of the ERS Workgroup are mentioned below.

Regional Branding

Regional Branding was finalized which includes an icon and the name *Think Blue San Diego Region* which is how the ERS Workgroup will identify itself to the public. Regional branding helps to unify the region's stormwater outreach messages. The ERS Workgroup, through the City of San Diego, selected and hired a consultant to assist in this process. The consultant facilitated focus group discussions during the reporting period to receive input from all Copermittees regarding a regional icon to be easily recognized as a symbol of the regional stormwater programs.

The City of San Diego developed a potential assessment methodology for event surveys that can be administered by all County Copermittees. An example of the use of the assessment is described below in the San Diego County Fair Residential BMP Outreach description.

San Diego County Fair Residential BMP Outreach

The San Diego County Copermittees sponsored the San Diego County Fair (Fair) in 2008 as an education and outreach activity. The sponsorship was a joint effort between the City of San Diego's Think Blue program and the San Diego County Copermittees, with each entity contributing approximately half the overall cost. The Fair was selected as a regional event due to its unique ability to potentially reach more than one million San Diegans and convey a strong environmental message. The ERS Workgroup was responsible for overseeing sponsorship activities with the City of San Diego and leading the coordination and implementation efforts.

The attendance for the Fair was estimated at 1,235,698 persons over the 21 days the event occurred. Sponsorship for the Fair included staffing an outreach booth for 11 days, in which the majority of the San Diego County Copermittees provided staffing support. The outreach booth served as the primary method for educating the public about watershed protection and pollution prevention. The ERS Workgroup elected to promote Integrated Pest Management (IPM) as the primary theme and collaborated on the distribution of IPM materials in both English and Spanish. Individual jurisdictions were invited to distribute their own materials in addition to the IPM materials. The Copermittees received billing as both a Flower & Garden Show sponsor and an Enviro-Fair sponsor.

Think Blue was designated as the brand for the San Diego County Copermittees' during the event. Signage demarking the symbol included banners, planter box displays, and recycle bin stickers that were visible at over 500 locations throughout the Fair. Media exposure included TV, radio and press releases. The sponsorship was printed in both the Fair program and included on the Fair map. Other promotions included newspaper advertisements, electronic messaging over the Jumbo Tron, website logos and links, and public announcement system messages in both English and Spanish.

Event specific survey cards were developed for assessment of general storm water knowledge and awareness of the event attendees. Over 1,200 survey cards were completed during the 11 days the booth was staffed. The results have been tabulated and will be reported in the FY 2008-09 RURMP AR.

3.4 Collaborative Land-Use Planning Efforts

This section describes collaborative land use planning efforts within the San Luis Rey Watershed during FY 2008-09. The SLR Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

LID Watershed Planning for Community Planning/Sponsor Groups (Activity ID# SLR-011)

The SLR Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant re-development. In addition to the education and training that is provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego’s development of a LID and Watershed Planning Education Activity.

As part of the normal planning process for the County of San Diego local planning and sponsor groups of unincorporated areas are given the opportunity to advise and assist the

Director of Planning, the Zoning Administrator, the Planning Commission and the Board of Supervisors in the preparation, amendment and implementation of community and sub-regional plans. The principal function of the planning and sponsor groups is to be an information link between the community and the County of San Diego on matters dealing with planning and the use of land within their community. This activity is intended to educate local planning and sponsor groups on LID and watershed planning principles, practices, and requirements. The recommendations of local planning and sponsor groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. This education activity is intended to aid these advisory bodies in making informed recommendations on aspects of development projects that could affect watershed water quality.

During the FY 2008-09, the County of San Diego made presentations to six local planning groups at least partially within the San Luis Rey Watershed. These groups are listed below and additional information can be found in the LID and Watershed Planning Education for Community Planning and Sponsor Groups WURMP Water Quality Education Sheet ID# SLR-011in Appendix A:

- Bonsall
- Fallbrook
- Julian
- Pala-Pauma
- Twin Oaks
- Valley Center

3.4.1 Cross-Jurisdictional Communication

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the SLR Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the SLR Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to ‘catch’ potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

3.5 Updated 5-year Strategic Plan

As mentioned at the beginning of this section the SLR Copermittees are responsible for identifying and implementing Watershed Water Quality and Education Activities that

address the high priority water quality problems in the SLR WMA. Utilizing the Collective Watershed strategy the SLR Copermittees have identified activities that will address priority pollutants in the SLR WMA. See Table 3-5 for an updated 5-year SLR WURMP Strategic Plan.

3.5.1 New Watershed Activities

Two new watershed activities are scheduled to be implemented during FY 2009-10 and one activity is scheduled for planning during this time period. Activities proposed for implementation during FY 2009-10 not originally included with the March 2008 SLR WURMP are as follows:

- SLR-016: Focused Grove and Nursery Outreach in the SLR River Watershed
- SLR-017: Focused Onsite wastewater System Outreach in the SLR River Watershed

One activity being considered for planning during FY 01-10 and implementation in FY 2010-11 is:

- SLR-018: Sports Park Watershed Education Signs

These new activities are reflected in the updated 5-year SLR WURMP Strategic Plan. Activity Summary Sheets for these new activities are provided in Appendix A of this annual report.

3.5.2 Updated 5-Year Strategic Plan

Table 3-5 at the end of this section provides an updated 5-year Strategic Plan that reflects the status of watershed activities and includes new activities planned for future reporting periods. The updated 5-year strategic plan supersedes the version presented in the 2008 SLR WURMP

3.6 TMDL BMP Implementation (if Applicable)

There are no approved TMDLs on the San Luis Rey River. However, in preparation of the Bacteria I TMDL that is being prepared by the RWQCB, the Cities of Oceanside and Vista and the County of San Diego have begun implementing a bacteria source tracking study along the lower San Luis Rey River. For more information about this project refer to Appendix A, Activity SLR-010.

Table 3-5. SLR Watershed Five-Year WURMP Strategic Plan FY 2008-09 Update.

SAN LUIS REY RIVER WATERSHED	HA			Priority Pollutant		Implementation Schedule														
	903.1	903.2	903.3	Bacteria	Nutrients	FY 2007-08			FY 2008-09			FY 2009-10			FY 2010-11			FY 2011-12		
Watershed Activities Implemented in FY 2007-08 and Planned for Implementation in FY 2008-09 and FY 2009-10																				
SLR-001: SLR Watershed Water Quality Monitoring Program	x			x	x	M			M	S		M	S		M	S		M	S	
SLR-002: Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall-Signage & Cleaning Frequency	x			x		WQ														
SLR-003: Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	x			x		P			WQ			M			M			M		
SLR-004: Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail	x			x		WE			WE			WQ	WE		WQ			WQ		
SLR-005: Pet Waste Bag Dispenser Program in County Parks	x			x		WQ			WQ			WQ			WQ			WQ		
SLR-006: Agricultural and Nursery Operations Runoff Assessment & Monitoring Program	x	x	x	x	x	M														
SLR-007: Water Quality Runoff Management and Agricultural Waiver Workshop	x	x	x	x	x	WE						WE						WE		
SLR-008: Guajome Lake Water Quality Monitoring Program	x			x	x	M	S		M	S		M	S		M	S		M	S	
SLR-009: Nutrient Source Identification and Abatement: Guajome Lake	x				x	M	S		WQ	M	S	WQ	M	S	*			*		
SLR-010: Lower SLR River Bacteria Source Tracking Study	x			x		M	S		M	S		M	S		M	S		M	S	
SLR-011: LID & Watershed Planning Education for Community Planners & Sponsor Groups	x		x	x	x	WE			WE											
SLR-012: Land Acquisitions	x			x		WQ			WQ			**			**			**		
SLR-013: Harbor Boat Wash Camera	x			x					WQ											
SLR-014: Harbor Boat Wash Coin Operated Water Dispenser	x			x					WQ	P		WQ								
SLR-015: Community Based Residential Horse Property Pilot Project	x	x		x	x				WQ	WE	P	WQ	WE		WQ	WE		WQ	WE	
SLR-016: Focused Grove and Nursery Outreach in the SLR River Watershed	x	x			x							WQ	WE		WQ	WE		WQ	WE	
SLR-017: Focused Onsite Wastewater System Outreach in the SLR River Watershed	x	x		x	x							WE			WQ	WE		WQ	WE	
SLR-018: Guajome Sports Park Watershed Educational Signage	x											WE	P		WE					
Potential Future Activities																				
SLR River Bacteria BMP Implementation	x			x		Contingent upon funding for prioritized BMPs														
Low Impact Development and SUSMP Workshop	x	x	x	x	x															
Pilgrim Creek Source ID				x	x															
	x	x	x	x	x															

* Future activity will be assessed based upon program results
** Unable to project land acquisitions in advance

WQ - Watershed Water Quality Activity
WE - Watershed Education Activity
WQ - Watershed Water Quality Activity (not in active implementation)
WE - Watershed Education Activity (not in active implementation)
M - Watershed Water Quality Monitoring Activity
S - Source ID/Characterization Activity
P - Activity in Planning Stages
O - Other Watershed Activity

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4 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2009. In addition, there is an assessment of the effectiveness of the collective WURMP implementation.

Each activity summary sheet in Appendix A of the SLR WURMP 2009 identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measureable at levels 5 or 6. Levels 5 and 6 outcomes are typically measureable through cumulative assessments. The assessment levels are defined below. Definitions are from the Municipal Permit.

Effectiveness Assessment Outcome Level 1 - Compliance with Activity-based Permit Requirements – Level 1 outcomes are those directly related to the implementation of specific activities prescribed by Order 2007-0001 or established pursuant to it.

Effectiveness Assessment Outcome Level 2 - Changes in Attitudes, Knowledge, and Awareness – Level 2 outcomes are measured as increases in knowledge and awareness among target audiences such as residents, businesses, and municipal employees.

Effectiveness Assessment Outcome Level 3 - Behavioral Change and BMP Implementation – Level 3 outcomes measure the effectiveness of activities in affecting behavioral change and BMP implementation.

Effectiveness Assessment Outcome Level 4 - Load Reductions – Level 4 outcomes measure load reductions which quantify changes in the amounts of pollutants associated with specific sources before and after a BMP or other control measure is employed.

Effectiveness Assessment Outcome Level 5 - Changes in Urban Runoff and Discharge Quality– Level 5 outcomes are measured as changes in one or more specific constituents or stressors in discharges into or from MS4s.

Effectiveness Assessment Outcome Level 6 - Changes in Receiving Water Quality – Level 6 outcomes measure changes to receiving water quality resulting from discharges into and from MS4s, and may be expressed through a variety of means such as compliance with water quality objectives or other regulatory benchmarks, protection of biological integrity, or beneficial use attainment.

The activity summary sheets presented in Section 3 include effectiveness assessment summaries for each water quality and education activity, as required in the Municipal Permit, I.2.a.(1).

4.1 Assessment of Overall WURMP Effectiveness

4.1. Permit Compliance (Level 1)

A basic Municipal Permit compliance assessment is presented in Table 4-1. This table describes minimum permit requirements set forth in the Municipal Permit, whether or not compliance was achieved by the SLR Copermittees in FY 2008-09, and where in this report, required compliance points are fulfilled or described. As shown in the table, the Copermittees were in compliance with all WURMP related Municipal Permit requirements during FY 2008-09.

Table 4-1. SLR WURMP Municipal Permit Compliance Assessment.

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Completed during FY 2007-08, no updates necessary this FY.	Section 1.2
Update watershed water quality assessment, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	Section 2.1
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	Section 2.2
Update list of potential Watershed Water Quality Activities.	Completed.	Section 3.5
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.1
Update list of potential Watershed Education Activities.	Completed.	Section 3.5
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.2
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed.	Section 3.3
A description of Copermittee collaboration efforts.	Completed.	Section 1.1, Section 3.4
Minimum quarterly meetings of the SLR WURMP Workgroup.	Five (5) meetings	Section 1.1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed.	Section 3.4
Describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed.	Not applicable at this time.	Section 3.6

4.1.1 Cumulative Impacts of Activities (Levels, 2, 3, and 4)

Activity Assessments

During FY 2008-09, there were 10 activities in various stages of implementation. Five focused on water quality, two focused on education, and three activities focused on monitoring, and/or source identification. Two activities were in planning stages during FY 2008-09 (SLR-014, SLR-015). All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

Although more water quality data are available after two years of Regional Monitoring under this Municipal Permit, it is not feasible to link changes in discharge or receiving water directly to most of the watershed activities. At this point, several questions may be helpful in assessing the cumulative impacts of the watershed activities. Table 4-2 summarizes the assessments of the water quality and education activities in an effort to provide a collective picture of the overall effectiveness of the watershed activities. The activities will be related to historical and recent water quality data and examined by hydrologic area in subsequent sections.

Table 4-2. Summary of Watershed Water Quality and Education Activities in the SLR WMA.

Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
San Luis Rey Watershed Water Quality Monitoring Program (SLR-001)	Bacteria, Nutrients	Not applicable, monitoring activity only	Not applicable, monitoring activity only	All sources have not been identified	Not as part of the monitoring program
Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland (SLR-003)	Bacteria	No	No	Yes, bacteria generated due to proximity of boat washing and RV sewage dump station to storm drain.	BMPs implemented during FYs 07-08, and 08-09; it appears that loads have been reduced although not calculated at this time.
Pet Waste Removal Pilot Project Along San Luis Rey Recreational Trail (SLR-004)	Bacteria	Yes, anticipated but not measured.	No, analysis anticipated in FY09-10	Yes, dog waste.	Cleanup contractors to be used in FY09-10 for BMP assessment purposes.
Pet Waste Bag Dispenser Program in County Parks (SLR-005)	Bacteria	Yes, via dispensers and positive examples	Yes, in general, more people picking up after their pets	Parks, specifically pet waste	In total, estimated that 6,738 pounds of pet waste were removed from the watershed.
Guajome Lake Water Quality Monitoring Program (SLR-008)	Nutrients, Bacteria	Not applicable, monitoring activity only	Not applicable, monitoring activity only	Attempting to characterize sources; potential sources include residential areas, commercial nurseries, and commercial and residential horse facilities	Not applicable, monitoring activity only
Nutrient Source Identification and Abatement: Guajome Lake (SLR-009)	Nutrients	On going via assessments during inspections; overall an improvement was evident over baseline scores or no change was detected	On going via assessments during inspections; BMP compliance improved at all facilities but one.	Eight nurseries identified as potential sources in the drainage area; baseline information compiled including compliance information and BMP implementation.	Three of eight nurseries inspected; inspections will continue during FY09 10; BMPs implemented as a result of inspections will likely reduce and abate sources.

Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
Lower San Luis Rey River Bacteria Source Tracking Study (SLR-010)	Bacteria	Not applicable, monitoring activity only	Not applicable, monitoring activity only	Ongoing study using genetic analysis to determine bacteria sources	Once sources are identified, reduction and abatement activities will be pursued
LID and Watershed Planning for Community Planning/Sponsor Groups (SLR-011)	General Pollution	Measured via pre and post quizzes. Evidence of an increase in knowledge.	Not specifically measured	Yes, future development.	Not specifically.
Land Acquisitions (SLR-012)	Bacteria	None measured	None measured	Potential development	77.73 acres acquired and preserved by the County of San Diego
Harbor Boat Wash Camera (SLR-013)	Bacteria	None measured.	No; Anticipated in FY09-10	Yes, bacteria generated due to proximity of boat washing and RV sewage dump station to storm drain.	None measured.

High Priority Water Quality Problems

All activities addressed high priority water quality problems as identified in the WURMP. Bacteria was specifically addressed in nine activities and nutrients in four activities. A combination of water quality, education, source identification and monitoring activities appear effective at addressing identified high priority water quality problems in the San Luis Rey HU.

Level 2 - Changes in Knowledge and Awareness

Changes in knowledge and awareness of water quality problems were measured in three of the 10 water quality and education activities implemented during this reporting period. Additionally, increases in knowledge are assumed in one activity with no mechanism in place to measure the changes.

Two of the watershed education activities conducted during the reporting period implemented specific measures to assess changes in knowledge and awareness. The pet waste removal pilot project produced measured results of increased knowledge and awareness specific to pet waste and its effects on water quality. The LID workshop was designed with mechanisms to measure changes in knowledge and detected an increase in knowledge of those in attendance.

Several of the activities can be assumed to result in increased awareness, although a formal mechanism to measure the change may not be feasible. For example, knowledge was likely increased through the implementation of pet waste bags and signage at County parks, but was not measured. The activities that did not result in increased awareness were designed solely to implement BMPs targeting load reductions. These activities generally focused on public lands and implemented BMPs to reduce the effects of bacteria, nutrients, and other pollutants on receiving waters.

Collectively, the water quality activities are focused efforts leading to localized changes in knowledge and awareness. However, the education activities are broad based, applicable to all hydrologic areas in the watershed and are expected to provide for a general increase in knowledge in the San Luis Rey River Watershed over time.

Two additional mechanisms have been developed to track changes in knowledge and behavior over time, one using standardized ratings at commercial and industrial facilities and the other using a survey targeting pet owners and their knowledge of the effects of pet waste on the environment. Data for both activities were compiled for the San Luis Rey and Carlsbad Watersheds combined and has not been separated by land area at this time.

Inspection Assessment Questions

Results of the inspections ratings for FY 2007-08 and 2008-09 are illustrated in the graphs below (excluding County of San Diego Inspection data). In previous years, these results have not been compiled at the watershed level. Two years of the results are compared over time to illustrate changes in stormwater knowledge and awareness (Level 2) and in BMP implementation or behavior changes (Level 3). The higher the score

selected, the higher the stormwater knowledge and BMP implementation at the business upon inspection. In general, results show that most businesses have an above average understanding of stormwater concepts and most are implementing appropriate BMPs. Figure 4-1 illustrates an increase in the number of businesses ranking in the upper range of the knowledge assessments (4 and 5) from FY 2007-08 to FY 2008-09. There is also a smaller increase in the numbers of businesses on the lower end of the range (1 and 2).

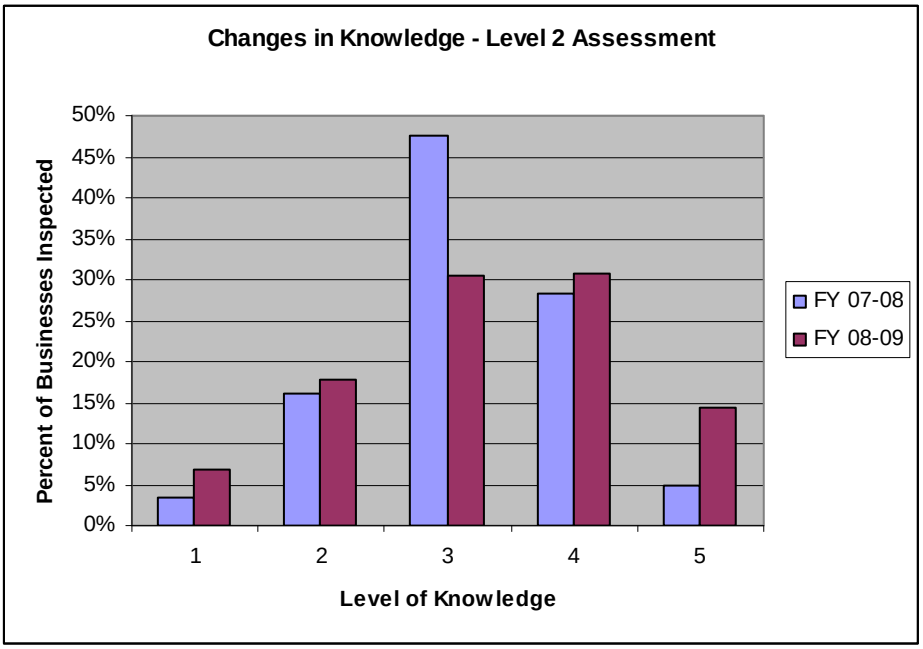

Figure 4-1. Stormwater Knowledge Assessment, Industrial/Commercial Facilities in the San Luis Rey and Carlsbad Hydrologic Units, FY 2007-08 and FY 2008-09.

Figure 4-2 illustrates data collected at the industrial/commercial facilities related to BMP implementation. The percentage of businesses achieving a score of five nearly doubled between FY 2007-08 and FY 2008-09. There were also slight increases in those businesses with lower BMP rankings. Overall, the data on the higher end (three to five) were distributed more evenly than in the previous year.

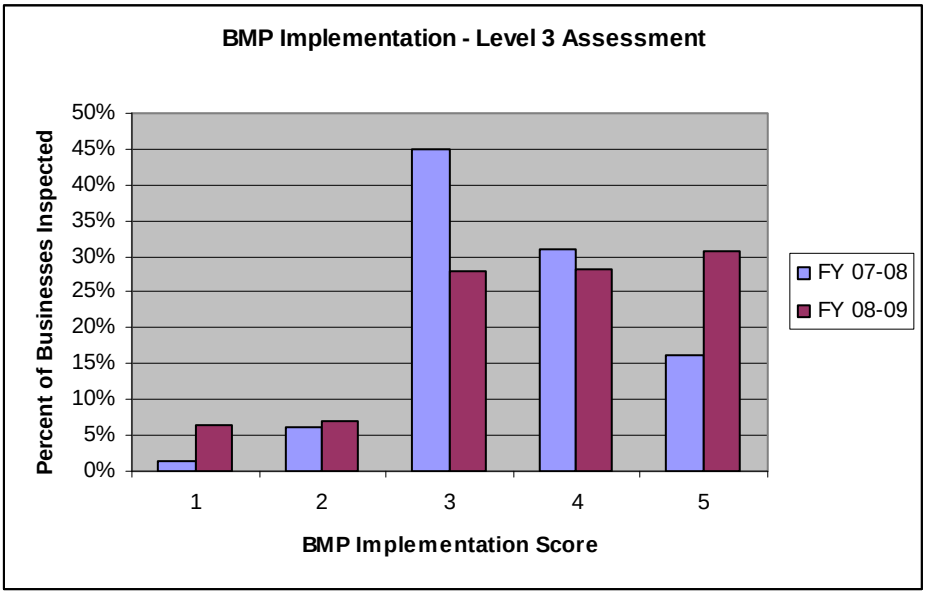

Figure 4-2. Stormwater BMP Assessments FY 2007-08 and FY 2008-09.

Because of the limited sets of data used for comparison, it is difficult to draw conclusions based on the data. In future years, as more data is collected, these measures may assist in further assessing the effectiveness of the industrial/commercial inspections programs on a watershed scale.

Pet Waste Surveys

While staffing booths at local outreach events during the reporting period, some North County Copermittees asked individuals who requested a pet waste bag dispenser and others who approached the tables to complete a short five-question survey. The survey was distributed at and the results were tabulated from several public events and tabulated for both the Carlsbad and San Luis Rey Watersheds. There were 291 surveys completed, with at least one personal pet waste bag dispenser distributed for each survey. This information provides additional data on the baseline knowledge of North County residents and provides potential direction in upcoming educational outreach efforts.

The five questions on the survey were:

- What is your zip code?
- Where do you most often walk your dog?
- What happens to the pet waste that is not picked up?
- If you saw people not picking up after their pet, what would be your reaction?
- Why do you think people would not pick up after their pet?

The demographics of the survey showed that 97% of the participants were California residents, with 96% living in San Diego County, and approximately 84% living in the Carlsbad or San Luis Rey Watershed. Most survey participants, approximately 65%, walk their dog most often in their neighborhood, while 15% use parks, and 9% walk their dog at the beach. This implies that outreach efforts with respect to pet waste are well targeted in parks and beaches, but may prove useful in residential neighborhoods as well.

The majority of people surveyed, approximately 67%, appear to understand that pet waste washes into creeks, lagoons, and the ocean if it is not picked up. This is an increase from 63% during FY 2007-08 indicating a small increase in stormwater knowledge among dog owners. Others either do not know what happens to the waste, or believe that it disintegrates into and fertilizes the ground, or believe that someone else picks it up. This implies that outreach efforts have reached nearly two-thirds of dog owners but should be continued or expanded in an attempt to reach all dog owners. Approximately two-thirds of people surveyed said that if they were to observe someone not picking up after their pet, they would ask them to do so. The survey also showed that most likely do not pick up after their pet because either they do not care, do not have a bag, and/or do not believe anyone will see them. This implies that through outreach efforts, Copermittees must continue to help people understand why it is important to pick up after their pet and continue to provide bags and personal pet waste bag dispensers for cleaning up pet waste where feasible.

Level 3 – Changes in Behavior, Implementation of BMPs

In three of the 10 activities, changes in behavior were observed and BMPs were implemented. BMPs were implemented to address bacteria and nutrients. Sources addressed included nurseries, pet waste, and recreational areas. It is expected that more BMPs will be implemented in the future as a result of LID workshops. The connection of the BMPs to the specific water quality problems will be further discussed below.

Level 4 – Load Reductions

In general, water quality and monitoring activities appear effective at identifying and abating sources of high priority water quality problems in the SLR HU.

The Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall included two activities designed to reduce bacteria at the outfall. The source of the bacteria has been well characterized. In previous reporting periods the City of Oceanside increased the cleaning frequency at the outfall, provided more educational signage at the boat wash, and implemented a new Modular Wetlands BMP. During this reporting period a video surveillance camera was installed to monitor activity at the station. Data collected to date indicates a reduction in bacteria. Continued reductions are anticipated in the future with implementation of new BMPs such as the coin operated water dispenser.

The Pet Waste Bag Dispenser Activity in County Parks and Pet Waste Removal Project along the SLR Trail have caused a direct, measurable reduction in pet waste, estimated at nearly 6,783 pounds of pet waste during FY 2008-09.

The acquisition of land by public agencies, specifically San Diego County, will provide for preservation of the land in the future, reducing the negative effects of development on the watershed. The source has been identified as new development and by acquiring the land for public use, the pollutants associated with this source have been prevented. New development and redevelopment have also been addressed as sources in the LID and Watershed Planning Workshops presented by the County.

Other sources of bacteria and nutrients such as nurseries and commercial and residential horse facilities have also been identified. There are activities in the implementation or planning phase to address these sources.

In addition to the five watershed water quality activities under implementation during the reporting period, there were three monitoring activities occurring in an attempt to characterize and identify sources. One of these activities is designed to address bacteria specifically and two address bacteria and nutrients. Each of the monitoring activities currently supports or will support future watershed activities.

4.1.2 Integrated Assessment: Level 5 (Changes in Discharge Water Quality) and Level 6 (Changes in Receiving Water Quality)

4.1.2.1 Warner Valley Hydrologic Area

With minimal development in the HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for the HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

4.1.2.2 Monserate Hydrologic Area

With minimal development in the HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for the HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

4.1.2.3 Lower San Luis Hydrologic Area

As discussed in Section 2.2, residential and agricultural land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date (SLR WURMP 2008). For these reasons, the watershed activities and monitoring programs focus primarily on the Lower San Luis HA and are discussed below.

4.1.2.3.1 Water Quality

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Recent monitoring performed in FY 2007-08 and FY 2008-09 provides new information as well, specific to the HA, as there was a TWAS installed towards the bottom of the Bonsall HSA (FY 2007-08 only) in addition to the historical MLS. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. In addition, the City of Oceanside and the County of San Diego continued sampling in the receiving water and tributaries of the Lower San Luis HA for

WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Monitoring to assess urban runoff contribution in the Lower San Luis HA was completed through the DWM and CSDM programs as well as through several WURMP activities.

Elevated total dissolved solids (TDS) concentrations are persistent throughout the San Luis Rey HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers. As this is a region-wide problem, TDS has not been identified as a high priority water quality problem specific to the SLR WURMP.

Bacteria

Bacteria has been identified as a high priority water quality problem in the SLR WURMP 2008. This decision is further supported by recent water quality data collected during ambient and storm conditions. The SLR Copermittees have implemented several activities designed to address identified sources of bacteria in the watershed. There are also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

During this reporting period, four water quality activities have been focused on the abatement of specific sources of bacteria: the Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall (SLR-003), Pet Waste Bag Dispenser Program in County Parks (SLR-005), Land Acquisitions in the County (SLR-012), and the installation of a camera at the Harbor Boat Wash Station (SLR-013).

The SLR-003 activity is designed to address the pollutant sources identified at the boat wash. Because concentrations of bacteria continue to exceed action levels on occasion, the project has been adaptively managed to incorporate various BMPs intended to reduce bacteria concentrations at the outfall. Previously, antimicrobial fabric had been tested as a BMP to reduce bacteria at the outfall, with limited success. Implementation during FY 2007-08 involved increased cleaning of the storm drains in the area and the addition of signage at the boat wash and RV dump areas to encourage people to utilize the facilities properly. During FY 2008-09, additional BMPs were implemented, designed to reduce bacteria concentrations through the use of a modular wetlands system (SLR-003) and through the installation of a video camera (SLR-013). A coin operated water dispenser is planned for installation in FY 2009-10 to limit the amount of water usage at the station (SLR-014). This project is a good example of the use of an iterative process to address an identified problem in the watershed. The City of Oceanside will continue to investigate ways to reduce the bacteria concentrations at this location. Although the projects have been limited in their effectiveness and bacteria problems have not been eliminated at this location, there is continued commitment to solving the problem. Level 5 assessments may be performed in the future as the data collected appears to show a reduction in bacteria concentrations at the storm drain outfall. However, the data has not been formally analyzed at this time.

The SLR-005 activity has had direct and positive impacts on bacteria in the HA during this reporting period. The existing pet waste dispenser stations in County parks is

estimated to have reduced the amount of pet waste entering the watershed by 6,783 pounds over the reporting period. To put this in perspective, beach postings occur based on concentrations of fecal coliform at 400 cfu/100 ml of water. The installation and use of these BMPs has proven effective at reducing the amount of fecal bacteria entering the watershed and its water bodies. For this reason, the County will continue to service pet waste bag dispensers at County Parks during the FY 2009-10 reporting period and install additional dispensers where needed.

During this reporting period, one education activity was focused on the abatement of specific sources of bacteria: the Pet Waste Removal Pilot Project (SLR-004). The SLR-004 project implemented BMPs to educate those using the San Luis Rey Recreational Trail and used Community-Based Social Marketing (CBSM) techniques to determine the most effective methods of education and BMP implementation targeting pet waste along the trail. The activity was initiated during FY 2007-08 and continued during this reporting period. The activity has been effective in educating residents about the importance of picking up after their pet. BMP installation and focused education outreach to the target audience along the trail is scheduled for implementation in FY 2009-10.

In addition to the required water quality and education activities, the watershed Copermittees have also invested significant resources in monitoring activities. Three of the monitoring activities include sample collection and analyses pertaining to bacteria concentrations and sources in the watershed. These efforts include: the SLR Watershed Water Quality Monitoring Program (SLR-001), the Guajome Lake Water Quality Monitoring Program (SLR-008), and the Lower SLR River Bacteria Source Tracking Study (SLR-010). These monitoring programs are designed to complement ongoing activities in the watershed and will provide useful source information in the future. The SLR-001 monitoring project was designed to identify and characterize the constituents of concern affecting water quality in the watershed. The SLR-008 project was designed to assess sources of the high priority water quality problems in the watershed, specifically targeting nurseries and agricultural operations. The SLR-010 activity is an intensive bacteria source tracking study that is designed to provide insight into specific sources of bacteria in the watershed. Specific data and analyses pertaining to each activity are provided in Appendix A to this report.

Through the implementation of a combination of water quality and education activities, complemented by specific monitoring projects, the SLR Copermittees are moving forward in addressing the bacteria problems in the watershed. By implementing practical activities that are targeting identified sources of bacteria, the Copermittees are effectively addressing bacteria problems in the watershed, with demonstrated load reductions resulting. The combination of activities is having significant positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality, especially related to bacteria. With many diverse sources of bacteria suspected in the watershed, some identified and others not, the Copermittees are implementing activities to address known sources and conducting monitoring activities to identify or confirm other sources.

Various amounts of discharge water quality data related to bacteria have been collected as part of several monitoring programs in the watershed. However, the data has not been assessed in relation to trends. Therefore, at this time it is not feasible to link the watershed activities and program to changes in discharge water quality. Because data collected as part of SLR-003 and SLR-008 are indicating improvements in water quality, this data may be further assessed in the future to address changes in discharge water quality (Level 5).

Trend analyses of the monitoring results for bacteriological constituents indicates significantly increasing trends for total coliform ($p < 0.001$), fecal coliform ($p = 0.002$), and enterococci ($p = 0.004$) over the monitoring period (Weston 2010). These trends are illustrated in Figure 4-3 below.

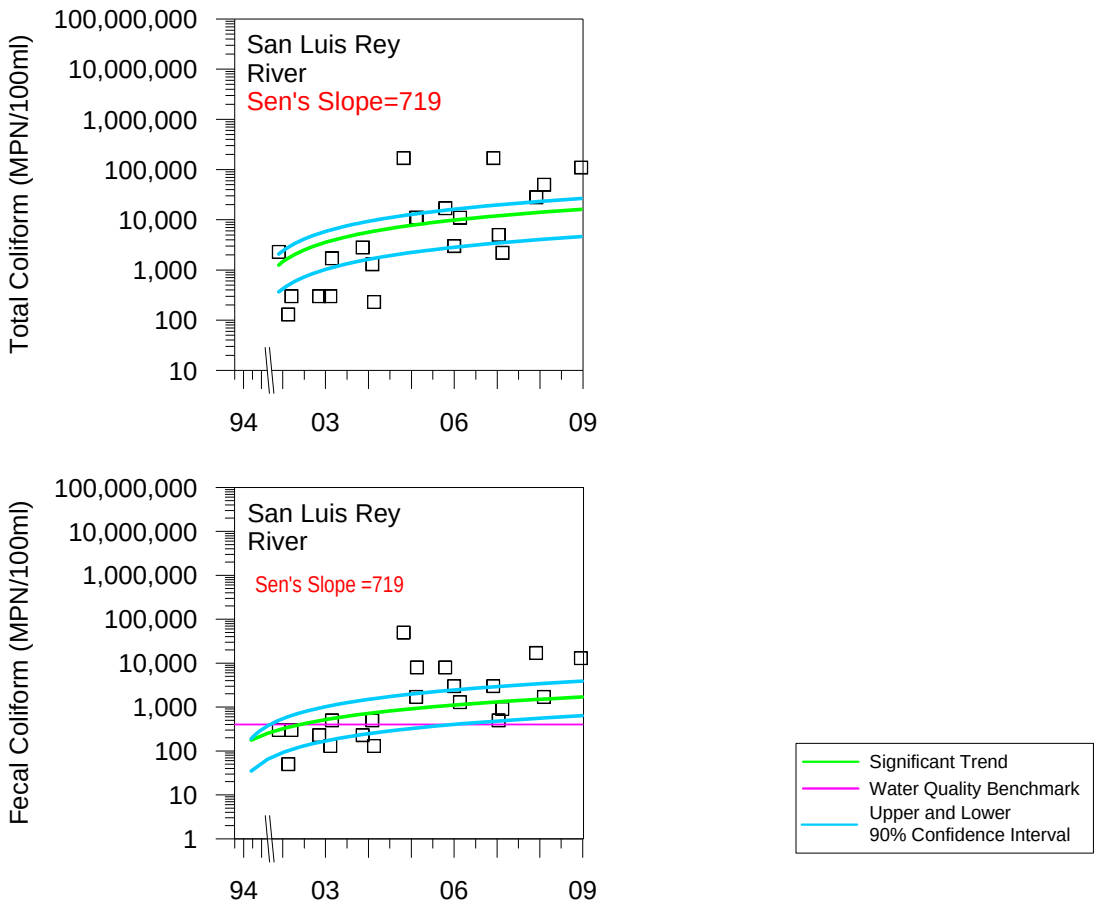

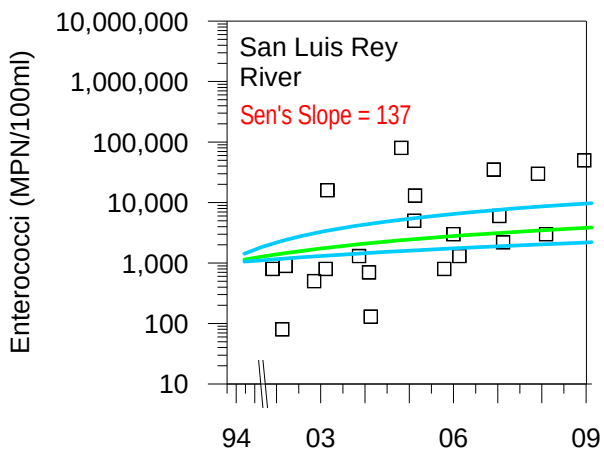

Figure 4-3. Trend Analysis for Bacteriological Constituents at the SLR MLS.

Nutrients

Nutrients have also been identified as a high priority water quality problem in the SLR Watershed. The decision to identify nutrients as a high priority problem is based primarily on the listing of Guajome Lake as impaired for nutrients on the 2006 303(d) listing.

During this reporting period, there were three monitoring and source identification activities that were specifically focused on the sources of nutrients. These were chosen because the sources of the nutrients remain largely uncharacterized in the watershed. Specifically, the Copermittees chose to implement three activities that involved monitoring and source identification related to nutrients: the SLR Watershed Water Quality Monitoring Program (SLR-001); Guajome Lake Water Quality Monitoring Program (SLR-008); and Nutrient Source Identification and Abatement for Guajome Lake (SLR-009). Each of these activities is designed to assess sources of nutrients causing or contributing to water quality problems in the watershed. Results of each activity are presented in Appendix A. The SLR-009 activity completed all targeted nursery inspections during FY 2008-09, leading to increased knowledge, BMP implementation, and stormwater compliance.

Through the implementation of monitoring and source identification projects and education activities, the SLR WURMP group is moving forward in addressing the nutrient problems in the watershed. In the future, it is expected that the combination of activities will have positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality. With many diverse sources of nutrients suspected in the watershed, the Copermittees are conducting monitoring activities to identify or confirm sources as a precursor to designing water quality and education activities in the future.

Various amounts of discharge water quality data has been collected as part of several monitoring programs in the watershed. Often, the data related to nutrients has been collected using field test kits. The data has not been assessed in relation to trends.

Therefore, at this time it is not feasible to link the watershed activities and program to changes in discharge water quality.

With respect to nutrients, with the inclusion of recent data, nitrates no longer show significantly increasing trends at long term receiving waters monitoring stations during storm events. However, dissolved phosphorus, although well below action levels, shows a slight increasing trend. Figure 4-4 below illustrates the increasing ortho-phosphate trend during storm events. At this time, it is not feasible to link the watershed activities to receiving water data. Changes in water quality trends will take place slowly and will continue to be assessed in future years.

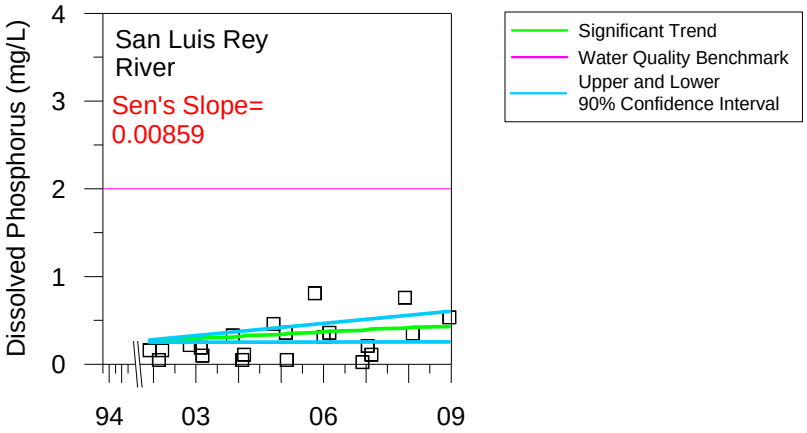

Figure 4-4. Trend Analysis for Dissolved Phosphorus at the SLR MLS.

Other Activities

The LID and Watershed Planning Education for Community Planners and Sponsor Groups Activity (SLR-011) is not intended to reduce existing pollutant loading but is intended to prevent future loading of pollutants related to new development. The series of workshops is designed to educate land use planners and community members on LID concepts and post construction BMPs specifically related to the problem pollutants in their watersheds. It is anticipated that these workshops will help shape future land use decisions in the planning process, addressing appropriate pollutant concerns related to new development.

The Land Acquisitions (SLR-012) activity does not reduce existing loads, but is intended to prevent future loading of pollutants related to new development. Loading estimations are difficult to predict based on land use; however acquisition of the land for public use will prevent the development of commercial and residential areas on the land, both of which have been shown to contribute to bacteria loading. Land acquisition also helps maintain the natural conditions of the site, allowing for natural processes such as infiltration and pollutant uptake to continue. When land is developed, these natural processes are often reduced or eliminated by increasing impervious areas and channelizing or undergrounding stream systems. Preservation of the land will provide for less pollutant generation and may provide for continued pollutant removal, depending on

the land acquired. This would directly apply to the bacteria and nutrient water quality problems identified in the WURMP.

Conclusions for the Lower San Luis HA

During FY 2008-09, five water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed. During FY 2008-09, the two education activities in the HA addressed all high priority water quality problems in the HA. During this reporting period targeted outreach related to pet waste educated residents on the impacts of pet waste and improper disposal proved successful and activity implementation is recommended to continue in FY 2009-10. Continued LID workshops also provided more information to the community about the impacts of development on water quality in their watershed.

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions for Warner Valley HA

With minimal development in this HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for this HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

5.2 Conclusions for Monserate HA

With minimal development in this HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for this HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

5.3 Conclusions for the Lower San Luis HA

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Water quality data collected in FY 2007-08 and FY 2008-09 provides new information as well, specific to the HA, as there was a TWAS installed towards the bottom of the Bonsall HSA (FY 2007-08 only) in addition to the historical MLS. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. This data continues to support listing bacteria and nutrients as high priority water quality problems in the Lower San Luis Rey HA.

5.3.1 Water Quality Activities

During FY 2008-09, five water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed. Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

During FY 2009-10, six total water quality activities are planned to be implemented, with three designed to address water quality problems related to bacteria, two designed to address nutrients, and one that addresses both bacteria and nutrients.

Bacteria
The SLR Copermittees have implemented several activities designed to address identified sources of bacteria in the watershed. During FY 2008-09, four water quality activities focused on the abatement of specific sources of bacteria. There are also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

Nutrients
During FY 2008-09, one water quality activity focused on the abatement of specific sources of nutrients. There were three monitoring and source identification activities that were specifically focused on the sources of nutrients. These were chosen because the sources of the nutrients remain largely uncharacterized in the watershed. Each of these activities appears to be well designed to assess sources of nutrients causing or contributing to water quality problems in the watershed.

5.3.2 Water Quality Education Activities

During FY 2008-09, two water quality education activities were implemented, one focused on bacteria and one focused on both bacteria and nutrients. During this reporting period targeted outreach related to pet waste educated residents on the impacts of pet waste and improper disposal proved successful and activity implementation is recommended to continue in FY 2009-10. Continued LID workshops conducted during this reporting period also provided more information to the community about the impacts of development on water quality in their watershed.

In FY 2009-10, five education activities are planned with one designed to address water quality problems related to bacteria, one designed to address nutrients, and three that address both bacteria and nutrients.

5.4 Recommendations

Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope.

Some of the hydrologic areas in the SLR HU have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs where funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the specific education activities.

Activities in the watershed appear to be properly focused on identified water quality problems in the SLR HU. These types of activities should continue as bacteria and nutrients show increasing trends at receiving water monitoring stations. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected nutrient pollution. TWAS data should be examined carefully as it is available to discern between water quality in the upper and lower watershed. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

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6 REFERENCES

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Appendix A

SAN LUIS REY

Watershed Activity Implementation Summary Sheets with Associated Attachments

and

Proposed Watershed Activity Summary Sheets Annual Report for Fiscal Year 2008-09

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **San Luis Rey Watershed Water Quality Monitoring Program**
ID NUMBER: **SLR-001**

ACTIVITY DESCRIPTION

A primary component of the San Luis Rey WURMP is to identify and characterize the constituents of concern adversely affecting water quality in the San Luis Rey River Watershed. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program in 2004 consisting of both field observations and field and analytical water quality sampling. This activity was developed collaboratively by the Watershed Copermittees within the San Luis Rey Watershed.

The activity includes the following tasks to be performed by the Watershed Copermittees:

- Update the monitoring plan as needed.
- Implement monitoring plan with field and laboratory analyses of constituents.
- Collect, compile, and analyze data.
- Prepare an annual written report including conclusions and recommendations.

A description of the monitoring program, including sampling locations, procedures, and analyses is included as Attachment A to this Activity Implementation Sheet.

ACTIVITY IMPLEMENTATION FY 2007-08

A description of the FY 2007-08 monitoring program, including sampling locations, procedures, and analyses is included in the FY 2007-08 WURMP Annual Report

ACTIVITY IMPLEMENTATION FY 2008-09

A description of the FY 2008-09 monitoring program, including sampling locations, procedures, and analyses is included as Attachment A to this Activity Implementation Sheet.

TMDL APPLICABILITY

This activity is planned for future implementation of the TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring activities will continue into FY 2009-10. The program will be reevaluated for continued implementation in future years.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the Mission HSA (903.11). This monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

The County of San Diego and the City of Oceanside collected periodic samples from San Luis Rey River and its tributaries beginning March 2004, sampling bacteria, TDS, Chloride, Magnesium, Iron, Manganese, Total Phosphorus, Nitrates, and pH samples from San Luis Rey River and its tributaries.

- Bacterial indicators, total dissolved solids (TDS) and chloride data were compiled and analyzed.
- Written reports including conclusions and recommendations were prepared.

An overview of the joint monitoring program is provided in Attachment A. Detailed analysis of bacteria results is provided in Attachment B. Detailed analysis of TDS and chloride results is provided in Attachment C.

ATTACHMENT A TO SLR-001
SLR WATERSHED WATER QUALITY MONITORING PROGRAM
2008-09 SLR WURMP Annual Report

1.0 PROGRAM DESCRIPTION

The San Diego Regional Water Quality Control Board reissued the Municipal National Pollutant Discharge Elimination System (NPDES) permit, Order 2007-0001, to all 21 San Diego County Copermittees. Order 2007-0001 continues to require Copermittees to implement Watershed Urban Runoff Management Plans (WURMP) for all watersheds in San Diego County. A primary component of the San Luis Rey WURMP (SLR WURMP) is to identify the constituents of concern adversely affecting the water quality of the River. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program of the lower 19 miles of the San Luis Rey River, on March 10, 2004, consisting of both field observations and field and analytical sampling.

Historically, the City of Oceanside monitored eight sites in the lower half of the watershed segment and the County monitored eight locations in the upper portion of the watershed segment in both the main stem of the River and tributaries to the Lower San Luis Rey River. In this reporting year, the County added three additional sites in June 2008. In addition, in 2007, the City of Oceanside was awarded a State Proposition 50, Clean Beaches Initiative grant to conduct a bacteria source tracking study in the Lower San Luis Rey River. As part of the grant, the City and County agreed to continue the joint monitoring program and updated the bacteria sampling protocols to be compliant with the Surface Water Ambient Monitoring Program (SWAMP) during the duration of the project which began in June of 2008 and was scheduled to end in 2010. Although funding for the grant was halted in December 2008, monitoring continued monthly through June 2009

2.0 PROGRAM DESIGN

The County and the City coordinate monitoring to collect samples on the same day when possible. No sampling is conducted if rainfall over 0.1 inches has occurred within 72 hours prior to the sampling date. Rescheduling with the County must occur if the regularly scheduled sampling date has been interrupted.

Sample Locations

The following table shows a list of the City and County monitoring sites:

Jurisdiction	Site Name	Site Description	Latitude (NAD 83 decimal degrees)	Longitude (NAD 83 decimal degrees)
Oceanside	Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Oceanside	Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Oceanside	Benet Benet (Site moved downstream in June 2008 for improved flow monitoring)	San Luis Rey River on the west side of Benet Bridge, north of Hwy 76 and Airport Rd. At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.22037 33.21790	-117.35836 -117.35958
Oceanside	Douglas	San Luis Rey River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Oceanside	Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Oceanside	Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Oceanside	Guajome Lake Outlet (Sampling of this site ended in FY 06/07)	South side of SLR River, where Guajome Lake effluent flows into river. 5030 Tyler Road. Easement Key #A227. Drive North, then walk.	33.25342	-117.28889
Oceanside	Sleeping Indian (Sampling of this site began in FY 06/07)	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Oceanside County	Bonsall (SLR 16)	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833
County	SLR25	San Luis Rey River at Olive Hill Road	33.28838	-117.22335
County	SLR28	San Luis Rey River at Pankey Rd	33.33281	-117.14975

Jurisdiction	Site Name	Site Description	Latitude (NAD 83 decimal degrees)	Longitude (NAD 83 decimal degrees)
County	SLR01	Moosa Canyon Creek at Old River Road	33.2836	-117.218683
County	SLR02	Little Gopher Canyon Creek at Old River Road	33.265683	-117.2332
County	SLR26	Bonsall Creek at Highway 76	33.28959	-117.22525
County	SLR14	Ostrich Farm Creek at Highway 76	33.29335	-117.22396
County	SLR27	Live Oak Creek at Highway 76	33.31514	-117.19418
County	SLR17	Keys Creek at Dulin Rd	33.32363	-117.15744
County	SLR 34 (Sampling begun in June 2008)	Tributary to the San Luis Rey River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931
County	SLR 32 (Sampling begun in June 2008)	Horse Ranch Creek	33.33138	-117.15067
County	SLR31 (Sampling begun in June 2008)	Moulder Ranch Creek	33.30205	-117.21691

Field Screening, Sample Collection and Analysis

For each site visit, the sampler should use the San Luis Rey River Monitoring form. Samples should not be collected until 72 hours after a rainstorm.

Observations
Qualitative field observations are made during each site visit. These observations are intended to provide a general assessment of the site and include the following runoff characteristics: odor, clarity, color, floatables, deposits, vegetation and biology.

Flow
Flow measurements are used to estimate pollutant mass loading and identify significant changes in discharge that may be indicative of an illegal release upstream.

Field Analysis
The City of Oceanside and the County of San Diego conduct the following in-situ water quality measurements:

- Water temperature
- pH
- Conductivity
- Turbidity
- Dissolved Oxygen
- Flow

The City conducts field test kit analysis for the following constituents:

- Nitrate as N[1]
- Orthophosphate as P
- Ammonia as N

Laboratory Analysis for City of Oceanside

The analytical laboratory analyses conducted by the City include the following constituents[2]:

- Total and Fecal Coliforms
- Enterococcus
- Chloride
- Sulfate
- Total Suspended Solids
- Total Dissolved Solids (quarterly)
- Dissolved Magnesium
- Iron
- Dissolved Manganese
- Dissolved Calcium (quarterly)
- Dissolved Sodium (quarterly)
- Dissolved Potassium (quarterly)
- Total Hardness

Note: At Pacific and Pacific Mix monitoring locations, only indicator bacteria samples are collected and analyzed due to the saltwater/freshwater influence. At Pacific, general chemistry is also recorded from the in-situ measurements.

Lab Analysis for County of San Diego

The analytical laboratory analyses conducted by the County include the following constituents[2]:

- Total and Fecal Coliforms
- Enterococcus
- Chloride
- Sulfate
- Total Suspended Solids
- Total Dissolved Solids
- Dissolved Magnesium
- Iron
- Dissolved Calcium
- Dissolved Sodium
- Dissolved Potassium
- Total Hardness
- Bicarbonate Alkalinity
- Carbonate Alkalinity
  - Hydroxide Alkalinity
  - Boron
  - Fluoride

[1] Field testing for nitrate is occasionally unattainable using current testing equipment, due to high conductivity levels
[2] Collected samples are submitted to a California Department of Health Services certified laboratory

- Ammonia-N
- Nitrate-N
- Nitrite-N
- TKN
- Organic Nitrogen
- Orthophosphate as P
- Total Phosphorus

Bacteria Monitoring Protocols
As detailed in the Lower San Luis Rey River Source Identification Project Quality Assurance Project Plan (QAPP), sample collection for indicator bacteria consists of composite bacterial grab samples and lower detection limits. These samples were collected with equivalent volumes taken from three points perpendicular to stream flow at approximately 10, 50, and 90% stream width away from the stream bank. Detection limits for total and fecal coliform were 2 MPN/100ml and for Enterococcus was 1 MPN/100ml.

Quality Assurance/Quality Control (QA/QC)
During each sampling event one site is selected (at random or rotating) to conduct duplicate analyses of all laboratory measured parameters.

Laboratory Parameters
1 container – grab sample is collected for bacteria analysis
1 container – grab sample, for TDS and Chloride
1 container – grab sample, for Fe, Mn, and Mg.
1 container – grab sample, for nutrients (County only)

ATTACHMENT B TO SLR-001
SLR WATERSHED WATER QUALITY MONITORING PROGRAM
2008-09 SLR WURMP Annual Report

Introduction

In 2006, the "Pacific Ocean Shoreline, San Luis Rey HU" was listed on the 303(d) list of Impaired Waterbodies for indicator bacteria. In 2008, the Regional Water Quality Control Board (RWQCB) has proposed to change the shoreline listing to reflect smaller segments where samples are collected and for specific bacteria listings. The Draft 2008 Integrated Report lists the "Pacific Ocean Shoreline, San Luis Rey HU, at San Luis Rey River mouth," for total coliforms and Enterococcus. In addition, the lower 19 miles of the San Luis Rey River are being considered for *Enterococcus* and Fecal Coliform bacteria. The City of Oceanside and the County of San Diego began a joint bacteria monitoring program in the San Luis Rey River in March 2004. The goal of this project is to better characterize levels of bacterial indicators in the watershed segment from Interstate 15 to the Pacific Ocean.

In 2007, the City of Oceanside was awarded a State Proposition 50, Clean Beaches Initiative grant to conduct a bacteria source tracking study in the Lower San Luis Rey River. As part of the grant, the City and County agreed to continue the study. They also updated the bacteria sampling protocols to match the Surface Water Ambient Monitoring Program (SWAMP) guidelines over the duration of the project: starting in June 2008 and scheduled to end in 2010. New monitoring protocols that included composite sampling and lower detection limits for indicator bacteria analysis were also implemented in June 2008. Although funding for the grant was halted in December 2008, monitoring continued monthly through June 2009.

Hydrologic Setting

The San Luis Rey River emanates from Henshaw Dam, which formed Lake Henshaw at the base of Palomar Mountain. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a drinking water source. In order to transport drinking water to Lake Wohlford, water is released down the main channel of the SLR River and diverted into the man-made Escondido Canal, seven miles downstream of the dam. Nearly all flows are diverted from the River into the canal, typically leaving the River dry below the diversion. The remainder of the SLR River is intermittent through the Pauma and Pala areas and is a perennial river through Oceanside, flowing only underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and Palomar Mountain receives about 45 inches/yr. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The River is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the river bed and form perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

From March 2004 through June 2009, 18 locations (Figure 1) were sampled: eight by the City of Oceanside and eight by the County of San Diego (Table 1). Additional three locations were added to the eight sampled by the County in June 2008. Both agencies collected samples on the same days or within one or two days of one another. Six sampling sites were located along the

San Luis Rey River and 12 in the River's tributaries. One site along the River's main stem, Bonsall Bridge, was sampled by both agencies for quality control.

During FY 2008/2009 samples were collected monthly from all locations. Prior to FY 2008/2009, main stem samples were collected monthly from Bonsall Bridge to the ocean and less frequently at sampling points east of Bonsall Bridge; the tributaries were sampled monthly from March through December 2004 and less frequently thereafter. Since July 2006, sampling at Guajome Lake Outlet, which was frequently dry, was abandoned and replaced by sampling at the Sleeping Indian outlet. Also, beginning in July 2006, additional bacterial samples were collected at the Pacific shoreline (named "Pacific Mix Zone" in Tables 3 through 5) in order to compare bacterial concentration at the mouth of SLR to those at the shoreline nearby (75 ft south of the River mouth).

All samples were collected during dry weather; i.e. at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches. Prior to June 2008, samples were collected as single grab samples from the center of the stream. Thereafter, as detailed in the Lower San Luis Rey River Source Identification Project Quality Assurance Project Plan (QAPP), composite samples were collected with equivalent volumes taken from three points perpendicular to stream flow at approximately 10, 50, and 90% stream width away from the stream bank and placed in sterilized collection bottle supplied with sodium thiosulfate as a preservative. Samples were stored at 4ºC and transported to the laboratory to be analyzed for Total Coliform, Fecal Coliform and *Entrococcus* employing a multi-tube fermentation method to estimate bacterial counts.

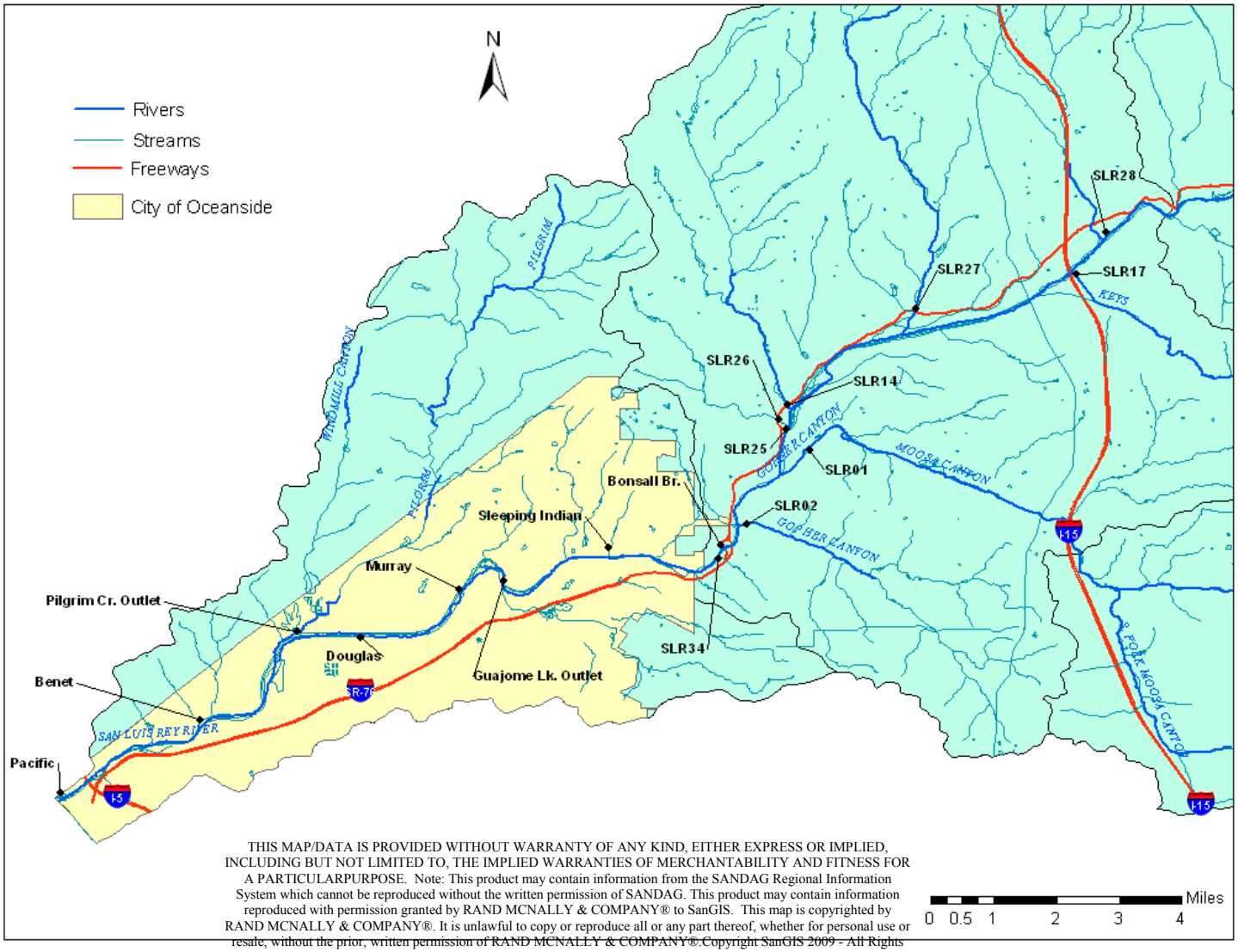

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Figure 1: Sampling locations in the San Luis Rey River Watershed.

Table 1: Sample Site Identification and Locations

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	San Luis Rey River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall Bridge	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Olive Hill (SLR25)	San Luis Rey River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	San Luis Rey River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to the San Luis Rey River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Rain Event Summary

Rain occurred in trace amounts in June and October 2004, in larger quantities January through March 2005, and again in April of 2005 and 2006 (Table 2). Significant rainfall also took place three and four days prior the December 4, 2007 sampling event and some rain occurred prior to February 7, 2008 sampling. Significant rainfall also occurred in late November 2008 and in mid February 2009. Fifty six out of 63 samples collected at Pacific St. Crossing appeared to have been influenced by seawater as evidenced by the high concentration of chloride and high conductivity (Table 10).

Table 2: Rain Event Summary.

Date	Fallbrook Airport	Oceanside Airport	Oceanside Harbor
3/10/2004	None	None	None
4/14/2004	None	None	None
5/12/2004	None	None	None
6/9/2004	None	Trace on 6/8 and 6/7	None
7/14/2004	None	None	None
8/17/2004	None	None	None
9/13/2004	None	None	None
10/13/2004	None	Trace on 10/12	None
11/17/2004	None	None	None
12/15/2004	None	None	None
1/26/2005	0.25” on 1/26	Trace on 1/26	None
2/9/2005	0.48” on 2/7	0.04” on 2/7	None
3/9/2005	0.01” on 3/9	None	Trace on 3/8
4/6/2005	None	Trace on 4/4	None
5/3/2005	None	None	None
6/8/2005	None	None	None
7/12/05	None	None	None
7/13/05	None	None	None
8/9/05	None	None	None
8/10/05	None	None	None
9/6/05	None	None	None
10/4/05	None	None	None
11/1/05	None	None	None
12/7/05	None	None	None
1/10/06	None	None	None
2/7/06	None	None	None
4/3/06	0.07” on 4/1	0.02” on 3/31, 0.05” on 4/1 & 0.02” on 4/3	0.06” on 4/2
5/17/06	None	None	None
5/30/06	None	None	None
6/20/06	None	None	None
7/11/06	None	None	None
8/1/06	None	None	Trace on 8/1, 7/31 & 7/30
9/12/06	None	None	None
10/3/6	None	None	Trace on 10/2
11/7/06	None	None	None
12/5/06	None	None	None
1/9/07	None	None	None
2/7/07	None	None	None
3/6/07	None	None	None
4/3/07	None	None	None
5/1/07	None	Trace on 5/1	None
6/5/07	None	None	None
7/10/07	None	None	None
8/7/07	None	None	None
9/4/07	None	None	None
10/2/07	None	None	None
11/6/07	None	None	None
12/4/07	Missing Data	0.94” on 12/1/07	1.84” on 11/30 & 1.14” on 12/1/07
1/14/08	None	None	None
2/7/08	2/3-4 Data Missing	0.4” on 2/3 & 0.06” on 2/4	2/3-4 Data Missing
3/4/08	None	None	None
4/8/08	Missing Data	None	None
5/13/08	None	None	None

Table 2: Rain Event Summary.

Date	Fallbrook Airport	Oceanside Airport	Oceanside Harbor
6/17/08	Missing Data	None	None
7/8/08	None	None	None
8/12/08	None	None	None
8/13/08	None	None	None
9/9/08	None	None	None
9/10/08	None	None	None
10/13/08	None	None	None
11/17/08	None	None	None
11/18/08	None	None	None
12/9/08	0.75" on 11/26 & 0.80" on 11/27	Trace on 12/8 & 0.82" on11/26 & 0.72" on 11/27	0.87" on 11/26 & 11/27 Data Missing
12/10/08	0.75" on 11/26 & 0.80" on 11/27	Trace on 12/8 & 0.82" on11/26 & 0.72" on 11/27	0.87" on 11/26 & 11/27 Data Missing
1/13/09	0.07" on 1/3	0.25" on 1/3	1/3 Data Missing
1/17/09	None	None	None
2/23/09	0.49" on 2/16 & 0.19 on 2/17	Trace on 2/23 & 0.20" on 2/16 & 0.28 on 2/17	0.30" on 2/16 & 0.21 on 2/17
2/24/09	0.49" on 2/16 & 0.19 on 2/17	Trace on 2/23 & 0.20" on 2/16 & 0.28 on 2/17	0.30" on 2/16 & 0.21 on 2/17
3/10/09	0.01" on 3/5	Trace on 3/5	None
3/11/09	0.01" on 3/5	Trace on 3/5	None
4/14/09	None	None	None
4/15/09	None	None	None
5/12/09	None	None	None
5/13/09	None	None	None
6/9/09	None	None	None
6/11/09	None	Trace on 6/7	None

*Data for this table were obtained from the National Weather Service Forecast Office for San Diego CA (http://www.wrh.noaa.gov/sgx/obs/rtp/rtpmap.php?wfo=sgx)

Analysis of Data

All data beginning in March 2004 through the end of June 2009 are listed in tables 3 through 8 below; sorted by the bacterial indicator type (Total Coliform, Fecal Coliform and *Enterococcus*) and sampling location (either along the River's main stem or in the tributaries). In each table, the total number of samples exceeding the corresponding State AB411 single sample standards and the percentage of samples exceeding were calculated for each sampling date and location and for all dates and locations combined. The log mean bacterial counts and 95% confidence intervals were then calculated for each bacterial indicator type and sampling location and the results were represented graphically in Figures 2 through 7.

In order to determine whether bacterial concentrations at the mouth of the SLR River may have had an effect on those at the Pacific Ocean shoreline nearby, a correlation analysis was conducted on the bacterial counts from the River mouth (Pacific) and 75 feet south of the river mouth along the shoreline (Pacific Mix). In order to normalize the data, the counts were log-transformed. Correlation coefficients (r^2) and significance (p values) were calculated for each set of the 34 sample pairs analyzed.*

* The correlation coefficient (r^2) gives a measure of the nature and magnitude of each correlation. Positive r^2 values indicate that counts at the two sites increase or decrease together; negative values of r^2 indicate that while counts at one location increase, they decrease at the other; the higher the value of r^2, the stronger the correlation with a higher percentage of variability in bacterial counts being explained by the sampling location. *P*-values lower than 0.05 indicate statistically significant correlations.

Results

Table 10, at the end of this attachment, provides a full record of all data collected during FY 2008/ 2009.

Total Coliform Bacteria in the Main Stem

The Total Coliform bacteria counts exceeded the State single sample standard of 10,000 MPN/100ml in 55 out of 271 (20%) samples analyzed (Table 3). Douglas had the highest percent (28%) of exceedances and the highest mean concentration (Figure 2). During FY 2008/ 2009, exceedances were recorded throughout the sampling period with the greatest percentage (50%) occurring in May 2009. For FY 2008/ 2009, the highest exceedance of 50,000 MPN/100 ml occurred at both Benet and Douglas.

The overall mean concentrations of Total Coliform along the San Luis Rey River tended to remain below the single sample standard at all sampled locations (Figure 2). The mean Total Coliform concentration at Pacific was lower than that of the sites further upstream but this difference was not statistically significant for Olive Hill Rd (SLR25) and Shearer Crossing (SLR28) most probably due to the small number of samples collected. The mean Total Coliform concentration in the Pacific Mix Zone was significantly lower than that at any of the River and tributary locations.

Table 3: . Total Coliform Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	1,700	1,700	3,000	6,500	NS	1,400	23	500	7	0	0%
4/14/04	NS	5,000	13,000	5,800	2,200	NS	1,400	NS	NS	5	1	20%
5/12/04	NS	1,100	22,000	24,000	13,000	NS	3,500	NS	NS	5	3	60%
6/9/04	NS	130	11,000	22,000	13,000	NS	16,000	13,000	dry	6	5	83%
7/14/04	NS	900	1,600	1,600	dry	NS	1,600	NS	NS	4	0	0%
8/17/04	NS	6,500	2,300	dry	dry	NS	7,000	NS	NS	3	0	0%
9/13/04	NS	800	11,000	dry	dry	NS	13,000	9,000	dry	4	2	50%
10/13/04	NS	3,000	1,700	3,000	dry	NS	2,400	47,750	dry	5	1	20%
11/17/04	NS	1,000	1,300	1,300	3,000	NS	NS	5,000	30,000	6	1	17%
12/15/04	NS	20	800	9,000	3,000	NS	300	305	700	7	0	0%
1/26/05	NS	5,000	7,000	2,000	230	NS	11,000	NS	NS	5	1	20%
2/9/05	NS	800	2,300	2,400	1,700	NS	260	NS	NS	5	0	0%
3/9/05	NS	1,700	2,200	5,000	5,000	NS	3,000	NS	NS	5	0	0%
4/6/05	NS	75	8,000	800	3,000	NS	3,000	NS	NS	5	0	0%
5/3/05	NS	17,000	9,500	13,000	11,000	NS	2,800	11,000	NS	6	4	67%
6/8/05	NS	5,000	8,000	5,000	1,300	NS	2,200	NS	NS	5	0	0%
7/12-7/13/05	NS	2,200	4,700	230	1,400	NS	800	NS	NS	5	0	0%
8/9-8/10/05	NS	750	8,000	50,000	11,000	NS	3,000	NS	NS	5	1	20%
9/6/05	NS	10	3,000	5,000	2,400	NS	3,000	NS	NS	5	0	0%
10/4/05	NS	10	5,000	3,000	5,000	NS	3,000	NS	NS	5	0	0%
11/1/05	NS	500	2,200	12,000	3,000	NS	1,300	NS	NS	5	1	20%
12/7/05	NS	520	300	13,000	500	NS	1,700	NS	1,700	6	1	17%
1/10/06	NS	4,900	800	5,000	7,000	NS	1,700	NS	NS	5	0	0%
2/7/06	NS	800	700	5,200	1,700	NS	300	NS	NS	5	0	0%
4/3/06	NS	500	1,700	4,300	2,600	NS	700	5,000	NS	6	0	0%
5/17/06	NS	NS	NS	NS	NS	NS	17,000	8,000	13,000	3	2	67%
5/30/06	NS	800	2,200	6,000	NS	NS	NS	NS	NS	3	0	0%
6/20/06	NS	300	5,000	2,200	5,200	NS	2,200	NS	NS	5	0	0%
7/11/06	20	20	5,000	700	2,200	NS	5,000	NS	NS	5	0	0%
8/1/06	320	1,100	1,700	dry	5,000	NS	2,200	NS	NS	4	0	0%
9/12/06	20	500	8,000	dry	4,000	1,100	1,100	NS	NS	5	0	0%
10/3/06	NS	300	13,000	dry	13,000	NS	8,000	NS	NS	4	2	50%
11/7/06	50	60	3,000	dry	5,000	NS	1,300	NS	NS	4	0	0%
12/5/06	20	80	750	5,000	2,200	170	170	NS	NS	6	0	0%
1/9/07	NS	20	340	1,300	800	NS	220	NS	NS	5	0	0%
2/7/07	300	400	300	1,300	1,900	NS	1,700	NS	NS	5	0	0%
3/6/07	170	850	300	5,000	1,200	230	230	NS	NS	6	0	0%
4/3/07	500	260	260	800	800	NS	210	NS	NS	5	0	0%
5/1/07	220	200	1,100	3,900	1,300	NS	1,300	NS	NS	5	0	0%
6/5/07	170	2,200	2,300	30,000	8,000	500	500	NS	NS	6	1	17%
7/10/07	2	480	13,000	1,100	5,000	800	800	NS	dry	6	1	17%
8/7/07	4	110	1,400	4,300	dry	900	900	NS	dry	5	0	0%
9/4/07	ND	70	3,000	30,000	dry	800	800	NS	dry	5	1	20%
10/2/07	800	300	3,000	13,000	dry	6,000	6,000	NS	dry	5	1	20%
11/6/07	1,700	2,600	800	5,000	dry	800	800	NS	NS	5	0	0%
12/4/07	300,000	97,000	22,000	30,000	240,000	500,000	500,000	NS	NS	6	6	100%
1/14/08	1,700	13,000	2,300	2,200	3,000	3,000	3,000	500	NS	7	1	14%
2/7/08	1,700	3,000	13,000	5,000	23,000	800	800	NS	NS	6	2	33%
3/4/08	2,200	5,000	2,300	2,200	3,000	270	270	NS	NS	6	0	0%
4/8/08	500	500	800	2,800	1,300	3,000	3,000	NS	NS	6	0	0%
5/13/08	80	130	11,000	7,000	2,300	3,000	3,000	NS	NS	6	1	17%
6/17/08	22	500	30,000	70,000	5,000	2,200	2,200	3,000	dry	7	2	29%
7/8/08	2	4	50,000	13,000	5,000	5,000	1,100	24,000	dry	7	3	43%
8/12-8/13/08	2	50	3,000	350	3,000	5,000	170	340	dry	7	0	0%
9/9-9/10/08	13	30	5,000	500	dry	1,300	700	1,400	dry	6	0	0%
10/13/08	11	220	3,000	700	dry	2,300	500	130	dry	6	0	0%
11/17-11/18/08	130	130	3,000	500	dry	280	230	300	dry	6	0	0%
12/9-12/10/08	500	1,300	800	50,000	11,000	5,000	210	300	dry	7	2	29%
1/13-1/17/09	300	230	800	23,000	3,000	2,300	170	40	1,700	8	1	13%
2/23-2/24/09	5,000	1,100	5,000	5,000	1,300	3,000	230	210	130	8	0	0%
3/10-3/11/09	800	800	3,000	5,000	2,300	1,700	130	230	40	8	0	0%
4/14-/15/09	11	2,200	2,300	5,000	2,300	17,000	130	130	210	8	1	13%
5/12-5/13/09	170	80	23,000	50,000	23,000	17,000	220	300	500	8	4	50%
6/9-6/11/09	30	130	1,600	13,000	30,000	13,000	230	230	3,500	8	3	38%
Total # of Samples	**33**	**63**	**63**	**57**	**51**	**28**	**62**	**23**	**11**	**271**		
# Samples Exceeding AB411	**1**	**3**	**12**	**16**	**9**	**4**	**5**	**4**	**2**		**55**	
% Exceeding AB411	**3%**	**5%**	**19%**	**28%**	**18%**	**14%**	**8%**	**17%**	**18%**			**20%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 10,000 MPN/100 mL.

ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected

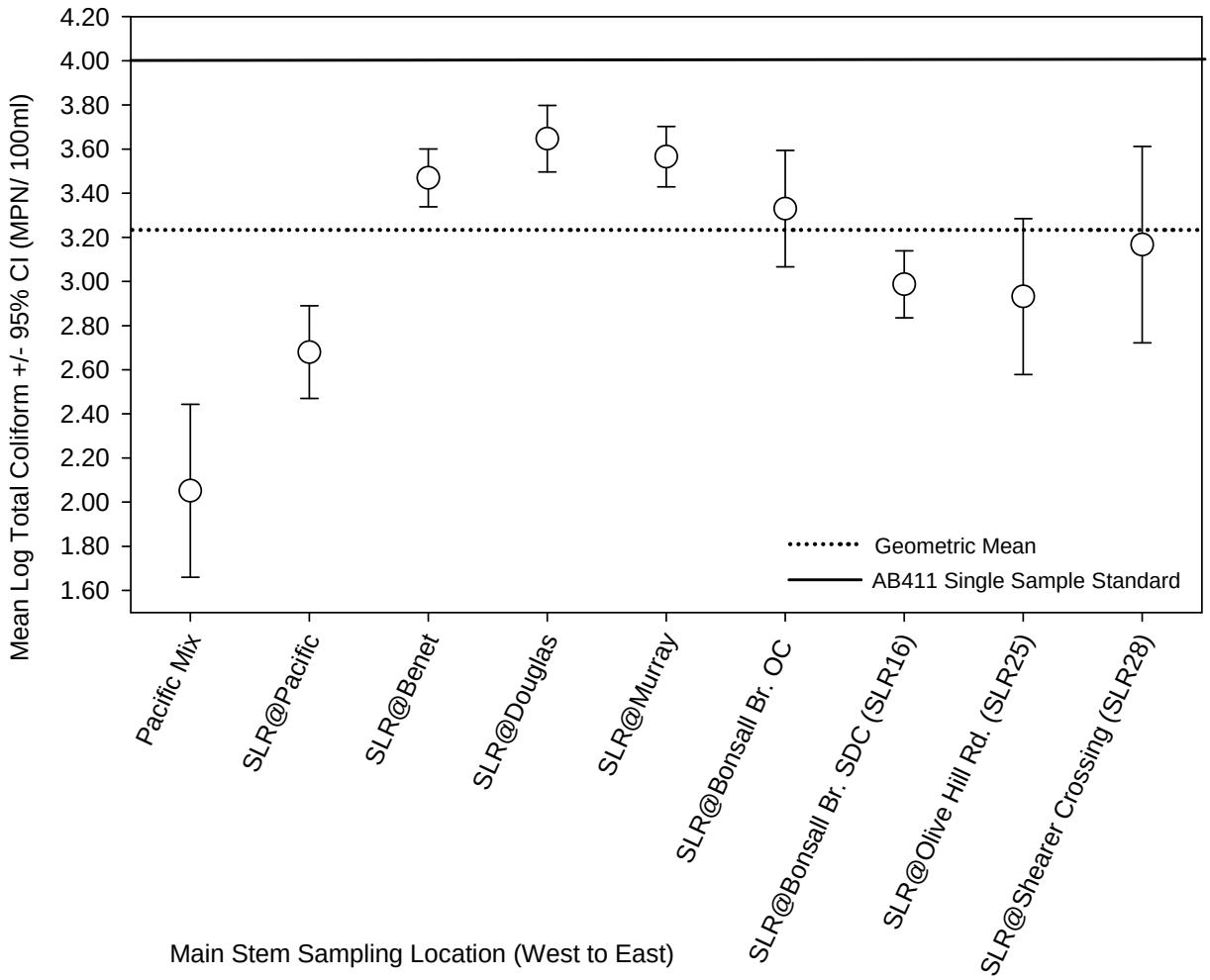

Figure 2: Relative mean concentrations ± 95% confidence intervals of Total Coliform bacteria in San Luis Rey River and in the Pacific Mix Zone.

Fecal Coliform Bacteria in the Main Stem

The Fecal Coliform bacteria counts exceeded the State single sample standard of 400 MPN/100ml in 81 of 353 (23%) samples analyzed (Table 4). During FY 2008/ 2009, exceedances occurred throughout the sampling period; the greatest percentage (29%) was recorded in July 2008. The highest exceedance of 1,400 MPN/100ml was recorded at Douglas on July 8, 2008. The highest percentage of exceedances (50%) and the highest mean concentration of Fecal Coliform bacteria (Figure 3) were also recorded at Douglas.

With the exception of Douglas, the overall mean concentrations of Fecal Coliform along the main stem of San Luis Rey River remained below the AB411 Single Sample Standard (Figure 3). The mean Fecal Coliform concentration at Douglas was also significantly higher than at any of the remaining sites (Figure 3). The lowest mean Fecal Coliform concentrations were observed at Pacific Mix Zone and at Shearer Crossing (SLR28).

Table 3: Fecal Coliform Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	500	130	1,700	60	NS	170	ND	23	7	2	29%
4/14/04	NS	2,300	260	360	300	NS	20	NS	NS	5	1	20%
5/12/04	NS	400	40	170	40	NS	20	NS	NS	5	1	20%
6/9/04	NS	40	500	800	170	NS	80	130	dry	6	2	33%
7/14/04	NS	300	50	50	dry	NS	50	NS	NS	4	0	0%
8/17/04	NS	5,000	80	dry	dry	NS	40	NS	NS	3	1	33%
9/13/04	NS	160	170	dry	dry	NS	20	75	dry	4	0	0%
10/13/04	NS	3,000	20	20	dry	NS	20	188	dry	5	1	20%
11/17/04	NS	700	220	1,300	300	NS	NS	130	20	6	2	33%
12/15/04	NS	20	500	9,000	110	NS	40	50	40	7	2	29%
1/26/05	NS	300	1,400	360	230	NS	3,000	NS	NS	5	2	40%
2/9/05	NS	300	500	500	500	NS	ND	NS	NS	5	3	60%
3/9/05	NS	500	800	1,300	230	NS	140	NS	NS	5	3	60%
4/6/05	NS	ND	70	230	ND	NS	80	NS	NS	5	0	0%
5/3/05	NS	300	270	300	130	NS	130	700	NS	6	1	17%
6/8/05	NS	80	170	80	500	NS	140	NS	NS	5	1	20%
7/12-7/13/05	NS	80	95	230	300	NS	130	NS	NS	5	0	0%
8/9-8/10/05	NS	160	500	500	270	NS	300	NS	NS	5	2	40%
9/6/05	NS	10	300	500	400	NS	800	NS	NS	5	3	60%
10/4/05	NS	10	170	300	1,300	NS	140	NS	NS	5	1	20%
11/1/05	NS	130	1,100	9,500	220	NS	230	NS	NS	5	2	40%
12/7/05	NS	220	230	13,000	30	NS	40	NS	NS	5	1	20%
1/10/06	NS	4,400	500	80	80	NS	90	NS	NS	5	2	40%
2/7/06	NS	500	300	5,200	300	NS	110	NS	NS	5	2	40%
4/3/06	NS	80	40	1,700	160	NS	8,130	40	NS	6	2	33%
5/17/06	NS	NS	NS	NS	NS	NS	NS	50	NS	1	0	0%
5/30/06	NS	170	80	500	NS	NS	NS	NS	NS	3	1	33%
6/20/06	NS	230	800	300	260	NS	500	NS	NS	5	2	40%
7/11/06	20	20	1,300	230	130	NS	20	NS	NS	5	1	20%
8/1/06	220	700	80	dry	300	NS	80	NS	NS	4	1	25%
9/12/06	20	230	800	dry	220	NS	110	NS	NS	4	1	25%
10/3/06	NS	20	300	dry	500	NS	80	NS	NS	4	1	25%
11/7/06	50	60	500	dry	300	NS	130	NS	NS	4	1	25%
12/5/06	20	40	260	3,000	300	130	130	NS	NS	6	1	17%
1/9/07	NS	20	140	1,300	80	NS	130	NS	NS	5	1	20%
2/7/07	300	400	20	800	110	NS	70	NS	NS	5	2	40%
3/6/07	110	700	230	700	300	110	110	NS	NS	6	2	33%
4/3/07	500	260	170	300	300	NS	90	NS	NS	5	0	0%
5/1/07	70	100	230	530	70	NS	80	NS	NS	5	1	20%
6/5/07	170	2,200	2,300	2,300	230	20	20	NS	NS	6	3	50%
7/10/07	ND	170	500	40	170	170	170	NS	dry	6	1	17%
8/7/07	2	110	70	500	dry	40	40	NS	dry	5	1	20%
9/4/07	ND	20	220	700	dry	130	130	NS	dry	5	1	20%
10/2/07	800	230	2,300	40	dry	80	80	NS	dry	5	1	20%
11/6/07	1,700	2,000	110	40	dry	130	130	NS	NS	5	1	20%
12/4/07	2,300	2,200	500	230	23,000	7,000	7,000	NS	NS	6	5	83%
1/14/08	40	500	130	300	40	230	230	300	NS	7	1	14%
2/7/08	800	1,300	700	800	260	170	170	NS	NS	6	3	50%
3/4/08	800	300	170	1,300	20	220	220	NS	NS	6	1	17%
4/8/08	40	300	110	900	70	170	170	NS	NS	6	1	17%
5/13/08	ND	80	80	800	300	110	110	NS	NS	6	1	17%
6/17/08	ND	220	70	3,000	500	140	140	130	dry	7	2	29%
7/8/08	2	4	80	1,400	50	500	130	300	dry	7	2	29%
8/12-8/13/08	2	11	50	23	8	50	40	130	dry	7	0	0%
9/9-9/10/08	13	30	30	220	dry	500	130	110	dry	6	1	17%
10/13/08	7	50	30	13	dry	300	300	20	dry	6	0	0%
1/17-11/18/0	80	130	50	8	dry	130	130	110	dry	6	0	0%
12/9-12/10/08	500	170	30	370	300	110	40	130	dry	7	0	0%
1/13-1/17/09	80	80	130	700	50	1,300	110	20	40	8	2	25%
2/23-2/24/09	300	170	600	170	130	67	40	110	80	8	1	13%
3/10-3/11/09	300	300	230	60	50	30	80	20	40	8	0	0%
4/14-/15/09	2	50	230	220	40	90	80	40	ND	7	0	0%
5/12-5/13/09	170	80	30	800	300	80	70	40	110	8	1	13%
6/9-6/11/09	13	30	50	230	220	50	40	130	110	8	0	0%
Total # of Samples	**31**	**63**	**64**	**58**	**51**	**28**	**61**	**23**	**9**	**353**		
# Samples Exceeding AB411	**7**	**17**	**18**	**29**	**7**	**4**	**5**	**1**	**0**		**81**	
% Exceeding AB411	**23%**	**27%**	**28%**	**50%**	**14%**	**14%**	**8%**	**4%**	**0%**			**23%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 400 MPN/100 mL
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

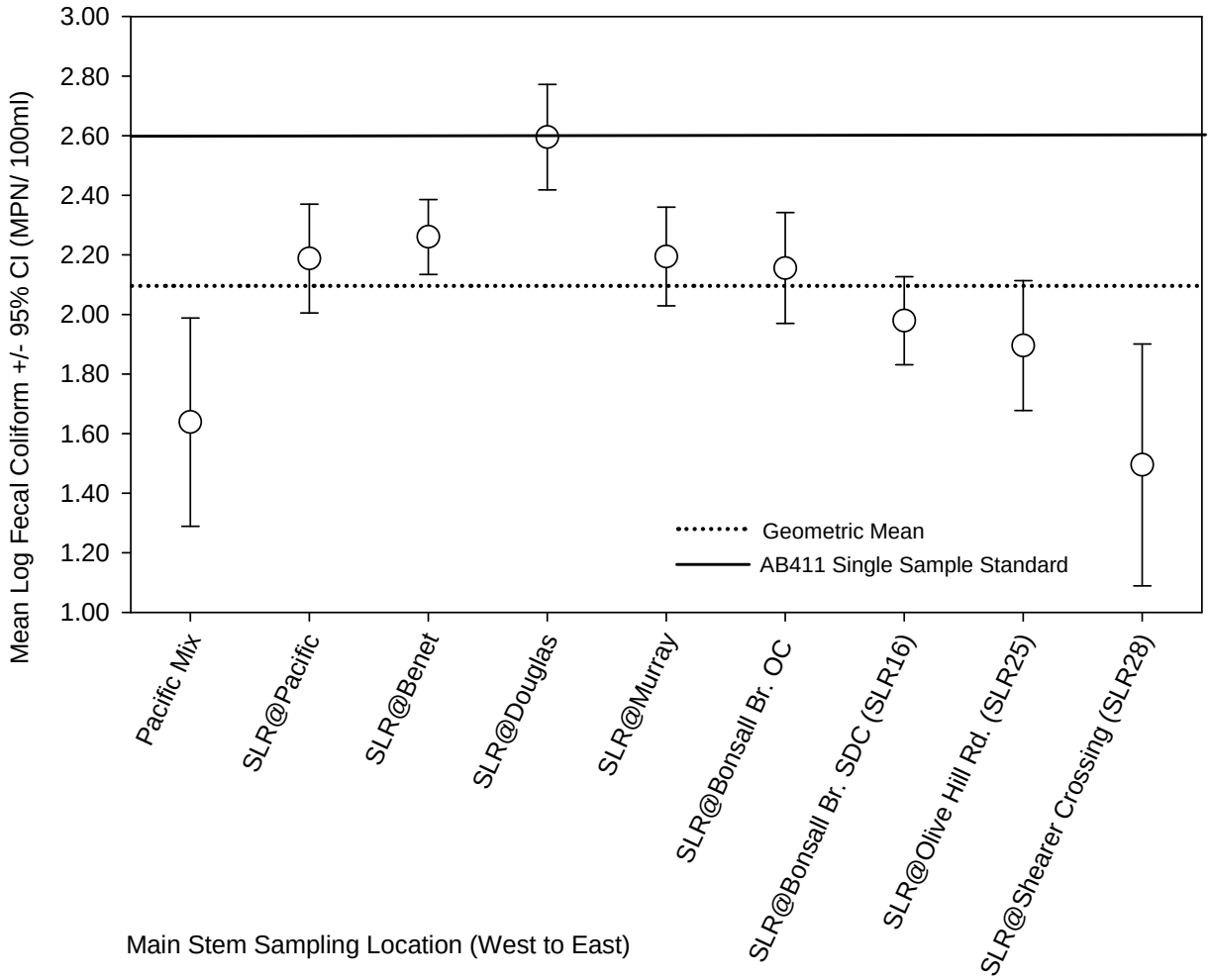

Figure 3: Relative mean concentrations ± 95% confidence intervals of Fecal Coliform bacteria in San Luis Rey River and in the Pacific Mix Zone.

Enterococcus Bacteria in the Main Stem

Enterococcus bacteria counts exceeded the State Single Sample Standard of 104 MPN/100ml in 73 out of 209 (35%) samples analyzed (Table 5). For the FY 2008/2009, exceedances occurred throughout the sampling period with the greatest percentage (88%) recorded in June 2009. Douglas had the highest overall percentage of exceedances (64%) and the highest mean concentration (Figure 4).

The overall mean counts of *Enterococcus* bacteria along the main stem of San Luis Rey River were below the AB411 Single Sample Standard (Figure 4). The lowest *Enterococcus* counts were found at Pacific and at Shearer Crossing and there was no significant difference between the Pacific and the Pacific Mix Zone. Surprisingly, the mean *Enterococcus* concentrations measured at Bonsall were significantly different between samples taken by the County of San Diego and those collected by the City of Oceanside. There was also a large difference in the percent of exceedances at that site with 51% of samples exceeding the AB411 when sampled by the County and only 22% of the City of Oceanside's samples exceeding the standard. These results underscore the unreliability of bacterial density estimations based on single grab samples.

Table 5: *Enterococcus* Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix Zone	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	52	265	2,063	116	NS	285	8	ND	7	4	57%
4/14/04	NS	290	170	310	200	NS	34	NS	NS	5	4	80%
5/12/04	NS	110	63	259	51	NS	10	NS	NS	5	2	40%
6/9/04	NS	10	490	230	292	NS	160	300	NS	6	5	83%
7/14/04	NS	300	130	50	dry	NS	1,100	NS	NS	4	3	75%
8/17/04	NS	400	98	dry	dry	NS	140	NS	NS	3	2	67%
9/13/04	NS	36	470	dry	dry	NS	260	180	dry	4	3	75%
10/13/04	NS	360	170	81	dry	NS	93	970	dry	5	3	60%
11/17/04	NS	96	300	2,240	310	NS	NS	140	170	6	5	83%
12/15/04	NS	10	170	5,470	241	NS	31	140	40	7	4	57%
1/26/05	NS	300	600	330	940	NS	670	NS	NS	5	5	100%
2/9/05	NS	20	850	420	31	NS	20	NS	NS	5	2	40%
3/9/05	NS	93	500	240	170	NS	92	NS	NS	5	3	60%
4/6/05	NS	ND	122	180	52	NS	76	NS	NS	5	2	40%
5/3/05	NS	171	110	180	190	NS	140	24,000	NS	6	6	100%
6/8/05	NS	78	190	280	170	NS	140	NS	NS	5	4	80%
7/12-7/13/05	NS	240	220	100	110	NS	160	NS	NS	5	4	80%
8/9-8/10/05	NS	10	140	250	360	NS	270	NS	NS	5	4	80%
9/6/05	NS	5	120	260	150	NS	175	NS	NS	5	4	80%
10/4/05	NS	5	96	410	226	NS	132	NS	NS	5	3	60%
11/1/05	NS	31	650	4,480	210	NS	140	NS	NS	5	4	80%
12/7/05	NS	540	600	4,760	190	NS	3,040	40	40	7	5	71%
1/10/06	NS	300	1,870	170	170	NS	160	NS	NS	5	5	100%
2/7/06	NS	190	330	4,220	74	NS	82	NS	NS	5	3	60%
4/3/06	NS	31	30	780	84	NS	120	130	NS	6	3	50%
5/17/06	NS	NS	NS	NS	NS	NS	700	NS	NS	1	1	100%
5/30/06	NS	31	190	85	NS	NS	NS	NS	NS	3	1	33%
6/20/06	NS	108	340	87	110	NS	228	NS	NS	5	4	80%
7/11/06	10	ND	540	88	200	NS	190	NS	NS	5	3	60%
8/1/06	10	20	200	NS	260	NS	250	NS	NS	4	3	75%
9/12/06	10	ND	290	NS	320	40	40	NS	NS	4	2	50%
10/3/06	NS	20	130	NS	110	NS	80	NS	NS	4	2	50%
11/7/06	10	ND	120	NS	213	NS	52	NS	NS	4	2	50%
12/5/06	10	ND	240	4,510	260	80	80	NS	NS	4	3	75%
1/9/07		10	135	1,290	85	NS	31	NS	NS	5	2	40%
2/7/07	62	110	250	1,180	134	NS	98	NS	NS	5	4	80%
3/6/07	20	190	310	490	88	130	130	NS	NS	6	5	83%
4/3/07	10	58	76	360	76	NS	88	NS	NS	5	1	20%
5/1/07	10	35	120	430	190	NS	200	NS	NS	5	4	80%
6/5/07	60	ND	240	209	180	20	20	NS	NS	5	3	60%
7/10/07	ND	10	160	144	31	230	230	NS	dry	6	4	67%
8/7/07	10	ND	98	200	dry	93	93	NS	dry	4	1	25%
9/4/07	ND	ND	206	301	dry	31	31	NS	dry	4	2	50%
10/2/07	185	93	320	52	dry	30	30	NS	dry	5	1	20%
11/6/07	831	240	85	41	dry	100	100	NS	NS	5	1	20%
12/4/07	380	360	86	210	770	942	942	NS	NS	6	5	83%
1/14/08	62	73	20	98	31	52	52	300	NS	7	1	14%
2/7/08	450	743	677	2,224	158	161	161	NS	NS	6	6	100%
3/4/08	98	213	233	759	41	155	155	NS	NS	6	5	83%
4/8/08	ND	20	ND	1,274	122	148	148	NS	NS	5	4	80%
5/13/08	41	ND	63	1,119	86	187	187	NS	NS	5	3	60%
6/17/08	ND	359	31	488	1,203	84	84	500	dry	7	4	57%
7/8/08	21	326	70	613	687	64	230	500	dry	7	5	71%
8/12-8/13/08	10	145	32	26	192	35	340	2,800	dry	7	4	57%
9/9-9/10/08	10	10	36	6	dry	16	110	130	dry	6	2	33%
10/13/08	20	63	61	15	dry	32	80	40	dry	6	0	0%
1/17-11/18/0	31	122	2	25	dry	18	170	40	dry	6	2	33%
12/9-12/10/08	146	31	12	2,420	1,414	12	20	130	dry	7	3	43%
1/13-1/17/09	75	75	26	548	126	11	20	220	80	8	3	38%
2/23-2/24/09	228	231	248	147	248	99	80	230	500	8	6	75%
3/10-3/11/09	52	52	42	77	248	53	170	ND	70	7	2	29%
4/14-/15/09	10	10	47	148	142	86	170	ND	230	7	4	57%
5/12-5/13/09	30	41	41	46	64	76	130	110	20	8	2	25%
6/9-6/11/09	10	41	111	225	435	112	170	230	300	8	7	88%
Total # of Samples	**39**	**63**	**71**	**66**	**60**	**37**	**71**	**30**	**18**	**73**		
# Samples Exceeding AB411	**6**	**23**	**41**	**42**	**38**	**8**	**36**	**17**	**4**		**209**	
% Exceeding AB411	**15%**	**37%**	**58%**	**64%**	**63%**	**22%**	**51%**	**57%**	**22%**			**35%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 104 MPN/100ml.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

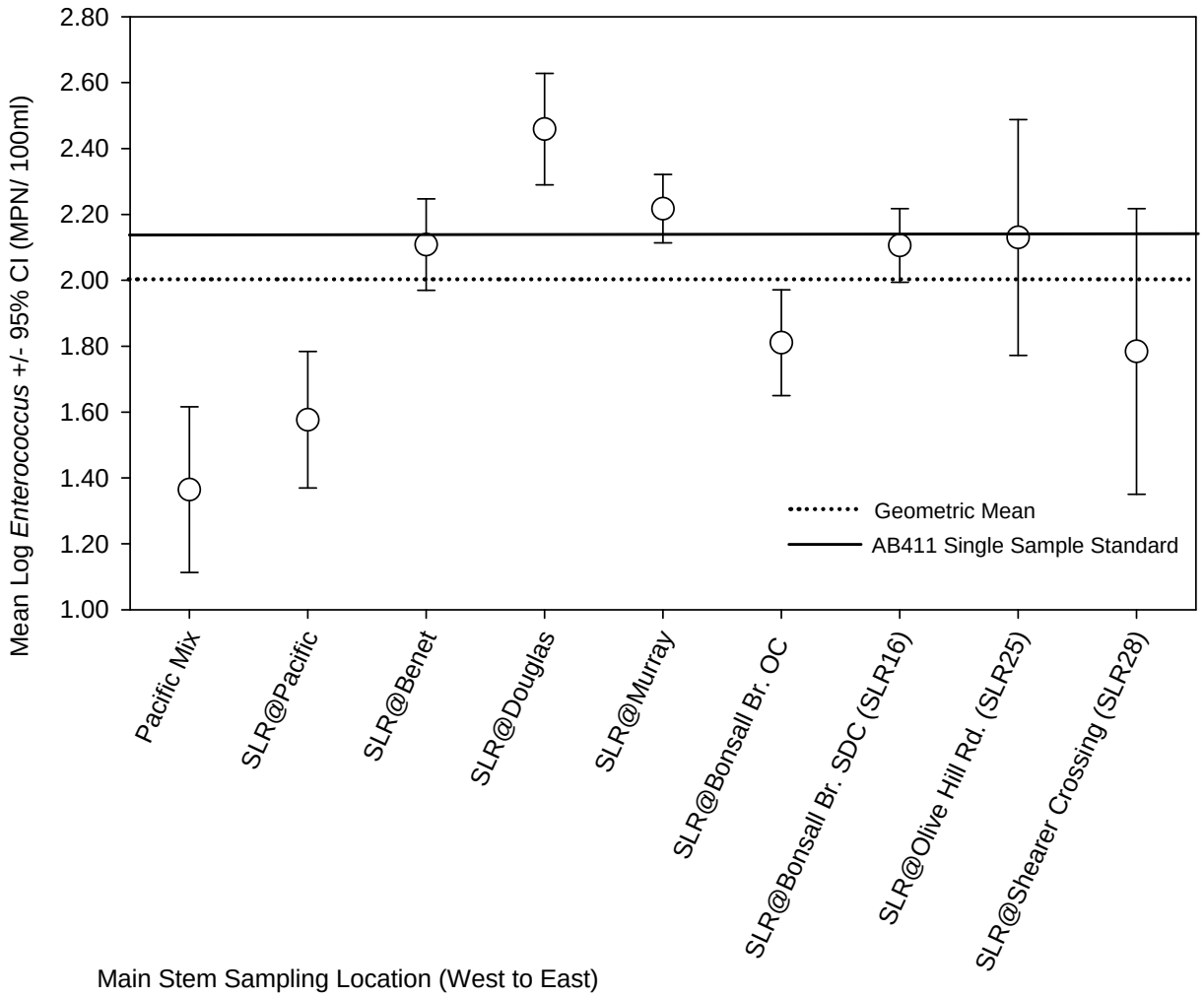

Figure 4: Relative mean concentrations ± 95% confidence intervals of *Enterococcus* bacteria in San Luis Rey River and in the Pacific Mix Zone.

Total Coliform Bacteria in Tributaries

Total Coliform bacteria samples collected from the tributaries to the San Luis Rey River exceeded the State single sample standard of 10,000 MPN/100ml in 49 out of 199 (25%) samples analyzed (Table 6). For FY 2008/2009 exceedances occurred throughout the sampling period with the highest percentage (40%) recorded in September 2008. Sleeping Indian Outlet had the highest percentage of exceedances (87%) and the highest mean concentration (Figure 5).

The overall mean concentrations of Total Coliform in the San Luis Rey River tributaries remained below the AB411 single sample standard (Figure 5). Two sampling locations, Sleeping Indian and Pilgrim Creek Outlet had the mean concentrations that were significantly higher than any of the remaining tributaries. The mean concentration of Total Coliform bacteria at Sleeping Indian was also significantly higher than the AB411 standard.

Table 6: Total Coliform Densities (MPN/100ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bansall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	5,000	1,300	NS	NS	80	130	50	23	22	30	8	0	0%
4/14/04	8,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	13,000	5,000	dry	11,000	2,300	30,000	5	3	60%
9/13/04	dry	dry	NS	NS	130,000	23,000	dry	30,000	23,000	dry	4	4	100%
10/13/04	dry	dry	NS	NS	dry	17,000	dry	39,000	23,000	dry	3	3	100%
11/17/04	2,300	1,300	NS	NS	8,000	8,000	8,000	12,000	24,000	24,000	8	3	38%
12/15/04	1,700	1,300	NS	NS	1,700	1,400	1,400	1,700	1,700	1,700	8	0	0%
1/26/05	1,700	3,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	2,300	800	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	7,000	2,300	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	8,000	30,000	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/3/05	5,000	dry	NS	NS	5,000	5,000	NS	NS	NS	NS	3	0	0%
6/8/05	14,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	17,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	3,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	5,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	30,000	dry	NS	NS	NS	NS	NS	NS	NS	1,700	2	0	0%
1/10/06	11,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	13,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	23,000	dry	NS	NS	1,700	NS	5,000	5,000	5,000	5,000	6	0	0%
5/17/06	NS	NS	NS	NS	8,130	8,000	11,000	11,000	11,000	13,000	6	4	67%
5/30/06	11,000	3,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	5,000	5,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/11/06	7,000	1,700	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
8/1/06	8,000	5,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
9/12/06	50,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	30,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	5,000	dry	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
12/5/06	22,000	dry	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/9/07	5,000	dry	8,000	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/7/07	8,000	230	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/6/07	30,000	NS	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/3/07	2,800	NS	22,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/1/07	8,000	NS	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/5/07	900,000	NS	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/10/07	dry	NS	5,000	NS	NS	NS	NS	NS	NS	dry	1	0	0%
8/7/07	dry	NS	13,000	NS	NS	NS	NS	NS	NS	dry	1	1	100%
9/4/07	dry	NS	130,000	NS	NS	NS	NS	NS	NS	dry	1	1	100%
10/2/07	300,000	NS	17,000	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	17,000	NS	NS	NS	NS	NS	NS	NS	1	1	100%
12/4/07	50,000	NS	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/14/08	3,000	NS	80,000	NS	1,100	24,000	NS	800	800	NS	6	2	33%
2/7/08	8,000	NS	13,000	NS	NS	NS	NS	NS	NS	dry	2	1	50%
3/4/08	2,200	NS	2,200	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/8/08	7,000	NS	80,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/13/08	8,000	NS	50,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/17-18/2008	dry	NS	17,000	1,100	1,100	3,000	2,200	2,200	1,700	dry	7	1	14%
7/8/08	dry	NS	23,000	2,400	340	3,500	dry	1,700	16,000	dry	6	2	33%
8/12-8/13/08	dry	NS	80,000	800	3,000	9,000	dry	500	5,000	dry	6	1	17%
9/9-9/10/08	dry	NS	23,000	1,300	dry	9,000	dry	300	16,000	dry	5	2	40%
10/13/08	dry	NS	23,000	NS	dry	3,000	dry	700	1,700	dry	4	1	25%
11/17-11/18/08	dry	NS	5,000	NS	dry	3,000	dry	800	30,000	dry	4	1	25%
12/9-12/10/08	dry	NS	50,000	NS	5,000	230	5,000	800	1,300	dry	6	1	17%
1/13-1/17/09	5,000	NS	70,000	NS	220	170	1,300	220	300	500	8	1	13%
2/23-2/24/09	13,000	NS	70,000	NS	220	300	500	210	700	220	8	1	13%
3/10-3/11/09	50,000	NS	13,000	NS	1,100	500	500	110	300	500	8	1	13%
4/14-/15/09	5,000	NS	23,000	NS	1,700	500	800	230	700	800	8	1	13%
5/12-5/13/09	30,000	NS	30,000	NS	260	5,000	dry	1,300	230	170	7	1	14%
6/9-6/11/09	dry	NS	23,000	NS	230	1,700	dry	300	340	1,300	6	1	17%
Total # of Samples	**41**	**11**	**31**	**4**	**16**	**19**	**10**	**19**	**19**	**11**	**199**		
# Samples Exceeding AB411	**17**	**1**	**27**	**0**	**2**	**3**	**1**	**5**	**7**	**3**		**49**	
% Exceeding AB411	**41%**	**9%**	**87%**	**0%**	**13%**	**16%**	**10%**	**26%**	**37%**	**27%**			**25%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 10,000 MPN/100 mL.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

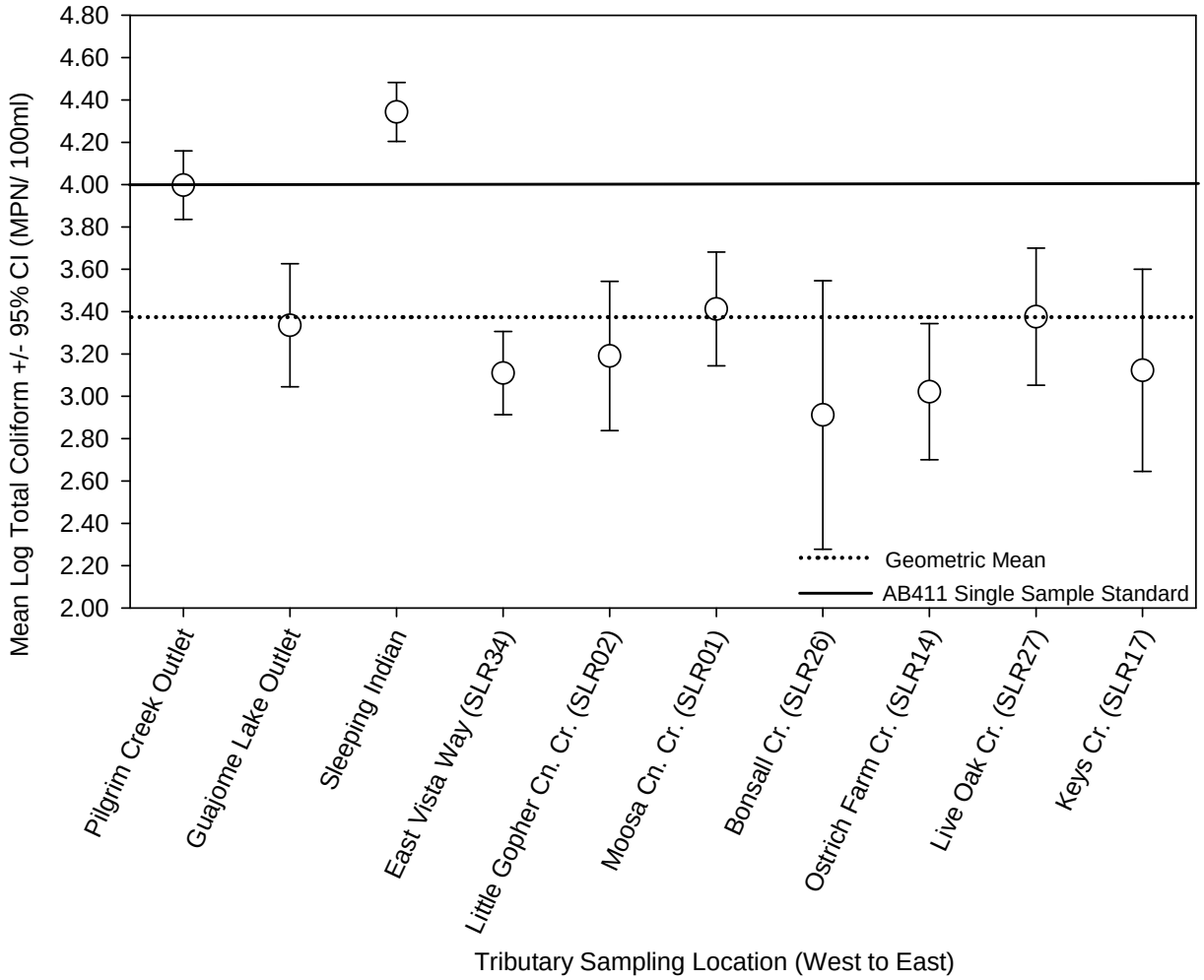

Figure 5: Relative mean concentrations ± 95% confidence intervals of Total Coliform bacteria in San Luis Rey River tributaries.

Fecal Coliform Bacteria in Tributaries

Fecal Coliform bacteria samples collected in tributaries to the San Luis Rey River exceeded the State single sample standard of 400 MPN/100ml in 35 out of 195 (18%) samples analyzed (Table 7). For FY 2008/ 2009 exceedances occurred throughout the sampling period with 67% recorded July of 2008. The highest percentage of exceedances (71%) and the highest mean concentration occurred at Pilgrim Creek Outlet. With the exception of Pilgrim Creek Outlet, the mean concentrations of Fecal Coliform in all remaining tributaries were below the AB411 Single Sample Standard (Figure 6).

Table 7: Fecal Coliform Densities (MPN/100 ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bansall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	500	20	NS	NS	8	4	ND	2	4	2	8	0	0%
4/14/04	230	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	800	220	dry	20	220	5,000	5	2	40%
9/13/04	dry	dry	NS	NS	8,000	20	dry	20	170	dry	4	1	25%
10/13/04	dry	dry	NS	NS	NS	110	dry	4,050	500	dry	3	2	67%
11/17/04	220	90	NS	NS	110	130	130	75	230	110	8	0	0%
12/15/04	170	170	NS	NS	170	230	80	20	82	90	8	0	0%
1/26/05	500	70	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	130	70	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	800	20	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	500	40	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/3/05	800	dry	NS	NS	300	40	NS	NS	NS	NS	3	0	0%
6/8/05	7,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	11,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	500	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	1,700	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	1,700	dry	NS	NS	8	NS	NS	NS	224	1,024	4	1	25%
1/10/06	700	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	600	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	900	dry	NS	NS	40	5,040	40	40	170	360	7	1	14%
5/30/06	1,100	130	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	5,000	130	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/11/06	3,000	300	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
8/1/06	1,300	800	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
9/12/06	170	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	5,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	300	dry	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
12/5/06	800	dry	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
1/9/07	1,300	dry	500	NS	NS	NS	NS	NS	NS	NS	2	1	50%
2/7/07	2,200	40	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/6/07	700	NS	40	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/3/07	300	NS	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/1/07	300	NS	80	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/5/07	50,000	NS	40	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/10/07	dry	NS	130	NS	NS	NS	NS	NS	NS	dry	1	0	0%
8/7/07	dry	NS	140	NS	NS	NS	NS	NS	NS	dry	1	0	0%
9/4/07	dry	NS	260	NS	NS	NS	NS	NS	NS	dry	1	0	0%
10/2/07	23,000	NS	2,200	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	20	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/4/07	3,000	NS	300	NS	NS	NS	NS	NS	NS	NS	2	0	0%
1/14/08	300	NS	20	NS	230	330	NS	140	270	NS	6	0	0%
2/7/08	110	NS	70	NS	NS	NS	NS	NS	NS	dry	2	0	0%
3/4/08	210	NS	20	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/8/08	800	NS	230	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/13/08	2,200	NS	230	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/17-18/2008	dry	NS	1,300	NS	500	2,400	900	80	230	dry	6	4	67%
7/8/08	dry	NS	30	80	40	140	dry	700	9,000	dry	6	2	33%
8/12-8/13/08	dry	NS	80	140	800	600	dry	130	270	dry	6	2	33%
9/9-9/10/08	dry	NS	3,000	300	dry	40	dry	20	1,400	dry	5	2	40%
10/13/08	dry	NS	130	NS	dry	130	dry	130	700	dry	4	1	25%
11/17-11/18/08	dry	NS	130	NS	dry	500	dry	500	500	dry	4	3	75%
12/9-12/10/08	dry	NS	300	NS	5,000	130	800	110	340	dry	6	2	33%
1/13-1/17/09	300	NS	80	NS	130	-99	1,300	80	170	80	8	1	13%
2/23-2/24/09	800	NS	300	NS	220	130	500	20	500	140	8	2	25%
3/10-3/11/09	17,000	NS	500	NS	1,100	170	230	-99	230	40	8	2	25%
4/14-/15/09	230	NS	130	NS	1,100	110	800	20	210	300	8	2	25%
5/12-5/13/09	70	NS	170	NS	40	1,300	dry	340	130	70	7	1	14%
6/9-6/11/09	dry	NS	26	NS	130	1,100	dry	80	220	70	6	1	17%
Total # of Samples	**41**	**11**	**31**	**3**	**16**	**19**	**9**	**18**	**19**	**10**	**195**		
# Samples Exceeding AB411	**29**	**1**	**5**	**0**	**7**	**6**	**5**	**3**	**6**	**2**		**35**	
% Exceeding AB411	**71%**	**9%**	**16%**	**0%**	**44%**	**32%**	**56%**	**17%**	**32%**	**20%**			**18%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 400 MPN/100 mL.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

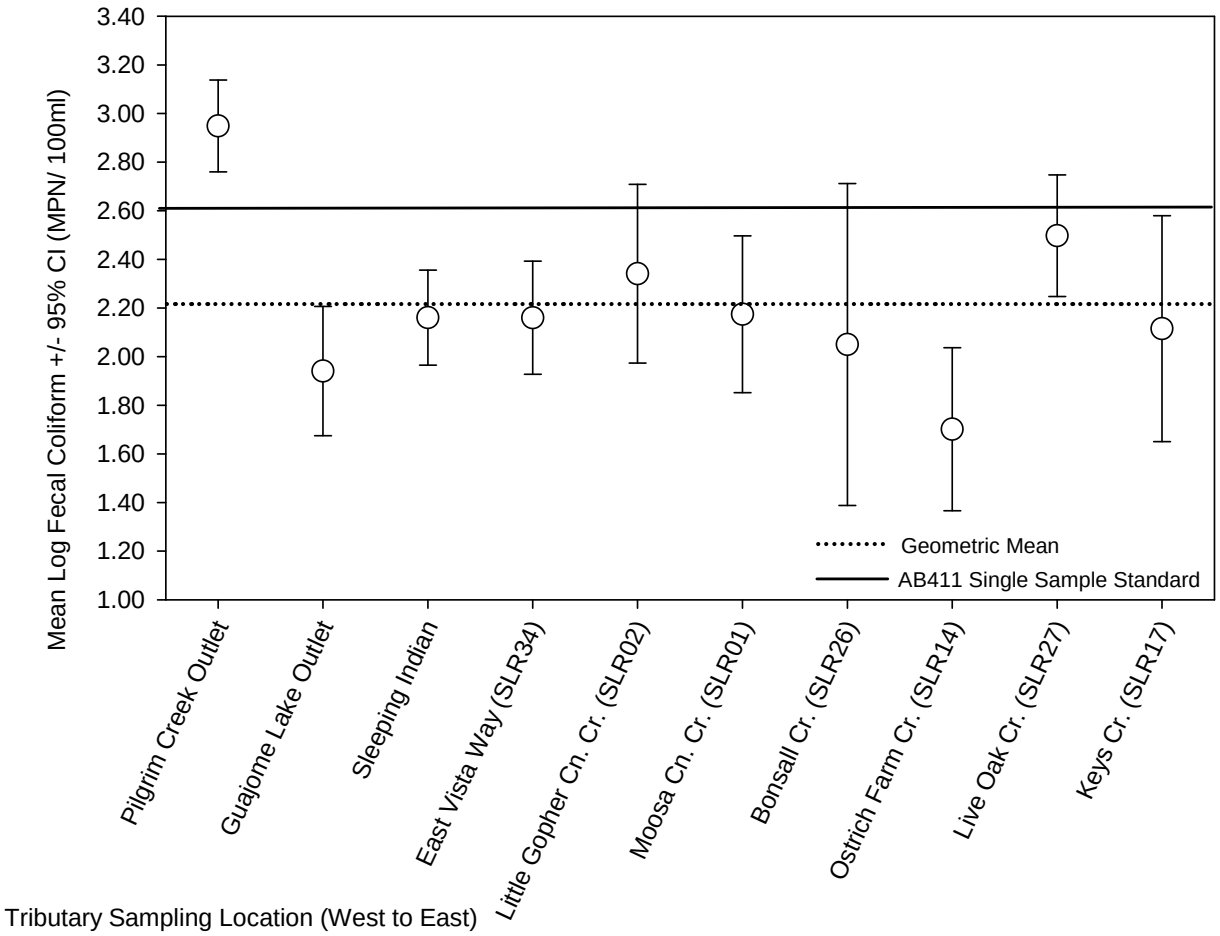

Figure 6: Relative mean concentrations ± 95% confidence intervals of Fecal Coliform bacteria in San Luis Rey River tributaries. Location means with letters in common are not significantly different (α= 0.05).

Enterococcus Bacteria in Tributaries

Enterococcus bacteria samples collected in tributaries to the San Luis Rey River exceeded the State single sample standard of 104 MPN/100ml in 123 out of 196 (63%) samples analyzed (Table 8). During FY 2008/ 2009, exceedances occurred throughout the sampling period with 100% found in July, August and December of 2008 and in June of 2009. East Vista Way had the highest percentage of exceedances (100%) but only 3 samples were collected at that location. Pilgrim Creek Outlet followed with 93% of exceedances. Surprisingly, the highest bacterial density of 50,000 MPN/ 100ml (for FY 2008/ 2009) was measured at Live Oak Creek in November 2008.

The mean bacterial counts in most of the tributaries significantly exceeded the AB411 single sample standard for *Enterococcus* bacteria (Fig. 7). The exceptions were the Guajome Lake Outlet (not sampled since February 2007), Bonsall Creek (SLRR26) and Ostrich Farm Creek (SLR14).

Table 8: *Enterococcus* Densities (MPN/100ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bansall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	336	216	NS	NS	2	4	4	2	2	2	8	1	13%
4/14/04	310	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	700	260	dry	230	80	3,000	5	4	80%
9/13/04	dry	dry	NS	NS	3,500	130	dry	40	800	dry	4	3	75%
10/13/04	dry	dry	NS	NS	dry	110	dry	170	2,300	dry	3	3	100%
11/17/04	160	170	NS	NS	500	170	800	635	110	500	8	7	88%
12/15/04	180	21,100	NS	NS	40	170	230	40	20	40	8	3	38%
1/26/05	350	31	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	410	52	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	10	31	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	200	170	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/3/05	360	dry	NS	NS	500	700	NS	NS	NS	NS	3	2	67%
6/8/05	660	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	760	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	710	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	390	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	1,150	dry	NS	NS	NS	NS	44	844	840	40	5	2	40%
1/10/06	1,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	410	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	260	dry	NS	NS	3,500	270	360	360	230	NS	6	5	83%
5/17/06	NS	dry	NS	NS	NS	NS	NS	NS	70	NS	1	0	0%
5/30/06	140	73	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	200	140	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/11/06	1,060	150	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
8/1/06	1,710	270	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
9/12/06	2,070	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	340	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	240	dry	170	NS	NS	NS	NS	NS	NS	NS	2	1	50%
12/5/06	140	dry	830	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/9/07	130	dry	160	NS	NS	NS	NS	NS	NS	NS	2	1	50%
2/7/07	2,550	120	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
3/6/07	1,130	NS	340	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/3/07	150	NS	360	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/1/07	1,000	NS	1,400	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/5/07	18,820	NS	465	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/10/07	dry	NS	119	NS	NS	NS	NS	NS	NS	dry	1	1	100%
8/7/07	dry	NS	490	NS	NS	NS	NS	NS	NS	dry	1	1	100%
9/4/07	dry	NS	191	NS	NS	NS	NS	NS	NS	dry	1	1	100%
10/2/07	18,980	NS	1,200	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	63	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/4/07	720	NS	260	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/14/08	243	NS	73	NS	220	500	NS	500	220	NS	6	4	67%
2/7/08	305	NS	228	NS	NS	NS	NS	NS	NS	dry	2	1	50%
3/4/08	97	NS	221	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/8/08	488	NS	2,400	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/13/08	201	NS	2,187	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/17-18/2008	dry	NS	985	NS	300	500	170	170	300	dry	6	6	100%
7/8/08	dry	NS	3,654	500	300	170	dry	500	800	dry	6	6	100%
8/12-8/13/08	dry	NS	2,723	500	800	300	dry	270	800	dry	6	6	100%
9/9-9/10/08	dry	NS	1,733	230	dry	1,100	dry	80	220	dry	5	4	80%
10/13/08	dry	NS	2,282	NS	dry	300	dry	90	270	dry	4	3	75%
11/17-11/18/08	dry	NS	2,420	NS	dry	1,300	dry	80	50,000	dry	4	3	75%
12/9-12/10/08	dry	NS	959	NS	500	800	2,400	130	300	dry	6	6	100%
1/13-1/17/09	687	NS	1,553	NS	300	40	500	220	80	300	8	5	63%
2/23-2/24/09	1,120	NS	1,733	NS	230	220	300	70	130	230	8	6	75%
3/10-3/11/09	2,143	NS	496	NS	2,200	170	230	80	500	210	8	6	75%
4/14-/15/09	1,300	NS	1,986	NS	270	40	300	110	500	170	8	6	75%
5/12-5/13/09	76	NS	250	NS	220	3,000	dry	300	800	70	7	5	71%
6/9-6/11/09	dry	NS	1,733	NS	300	1,300	dry	230	500	300	6	6	100%
Total # of Samples	**43**	**12**	**31**	**3**	**18**	**22**	**11**	**22**	**23**	**11**	**196**		
# Samples Exceeding AB411	**40**	**8**	**29**	**3**	**16**	**19**	**9**	**14**	**18**	**7**		**123**	
% Exceeding AB411	**93%**	**67%**	**94%**	**100%**	**89%**	**86%**	**82%**	**64%**	**78%**	**64%**			**63%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 104 MPN/100ml.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

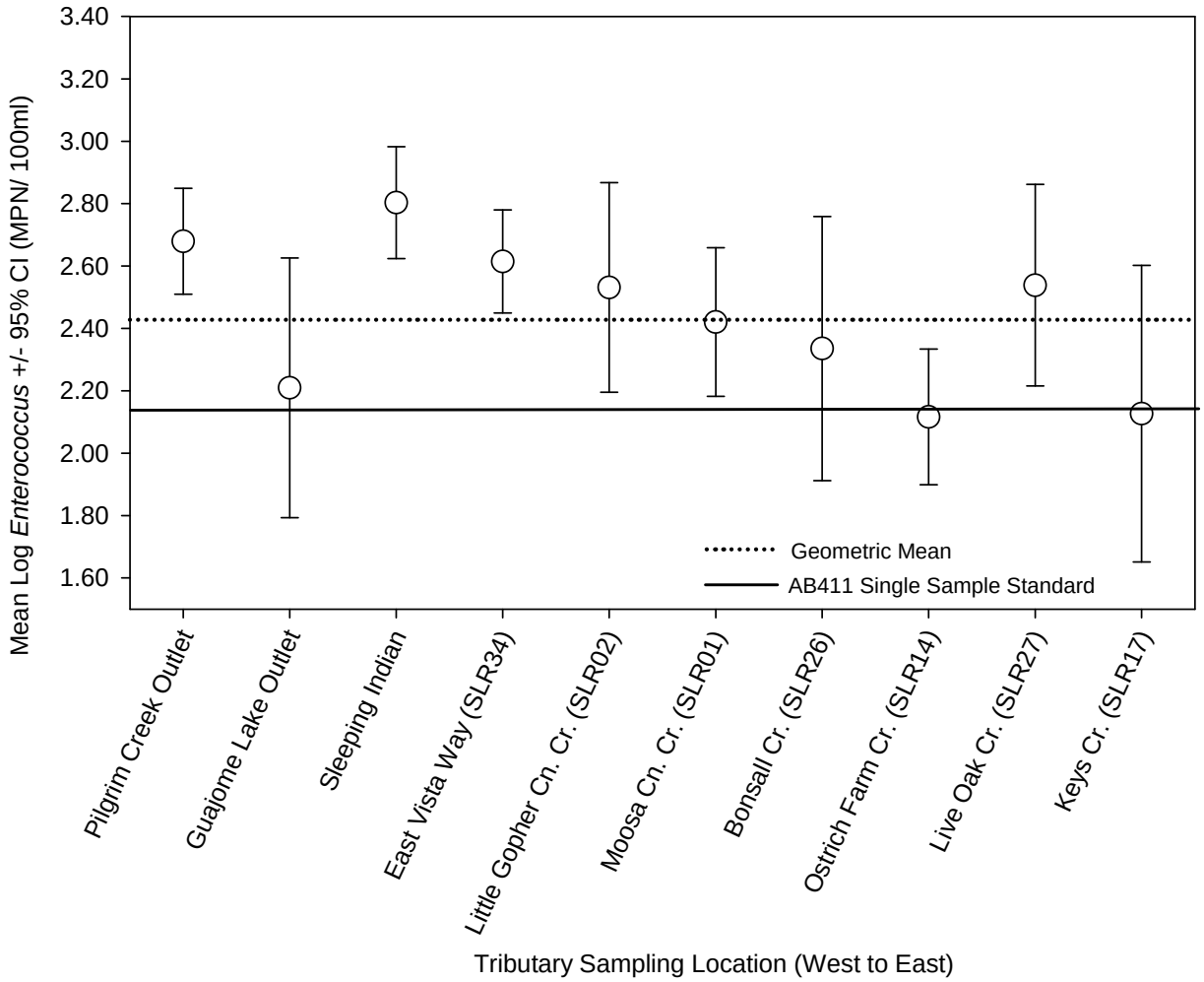

Figure 7: Relative mean concentrations ± 95% confidence intervals of *Enterococcus* bacteria in San Luis Rey River tributaries.

Results of the Correlation Analysis of Bacterial Counts between the River Mouth and the Pacific Shoreline

Tables 3 through 5 list bacterial concentrations as detected in samples collected at Pacific (located at the mouth of the River) and Pacific Mix (located at the shoreline 75 feet south of the river mouth) for Total Coliform (Table 3), Fecal Coliform (Table 4) and *Enterococcus* (Table 5). The results of the correlation analysis between the bacterial concentrations mouth at the mouth of the River and the Pacific shoreline are presented in Table 9 below. As indicated by the r^2 value of 0.75, the Total Coliform counts were strongly correlated between the two locations. Significant correlations were also found for Fecal Coliform (r^2 = 0.68) and *Enterococcus* (r^2 = 0.45). Since the mean bacterial counts for the Total and Fecal Coliform at Pacific were significantly (α = 0.05) higher than those in the Pacific Mix Zone, this indicates that at least some of the bacteria in the Pacific Mix may have originated from the SLR River mouth; this being especially true for the Total Coliform. Alternatively, bacteria originating from the Pacific Ocean during incoming tides may have also affected the counts in the River mouth.

Table 9: Results of the correlation analysis of the bacterial concentrations of 34 sample pairs, each collected at the mouth of SLR River and at the Pacific shoreline. The bacterial counts were log-transformed to normalize the data. The correlation coefficients (Pearson's r^2) and their corresponding *p* values are presented.

Total Coliform		Fecal Coliform		*Enterococcus*	
r^2	*p*	R^2	*P*	r^2	*p*
0.75	<0.001	0.68	<0.001	0.45	0.008

Summary of Results and Discussion

Generally, sampling locations with the greatest frequency of AB411 single sample standard exceedances also had the highest overall mean bacterial concentrations. Also, in the main stem of the River, one location, Douglas, had the highest mean concentration and frequency of exceedances for all measured bacterial indicator species. In the future, special focus should be placed on Douglas as well as the tributaries with the highest rate of exceedances and the highest geometric means. These locations should be considered for prioritization in any special investigations of the sources of bacteria. Furthermore, it is suggested that flow be measured as accurately as possible by both jurisdictions in order to estimate bacterial loadings to the River from the tributaries.

Throughout the study period (March 2004 through June 2009) *Enterococci* exceeded the State single sample standard more often than Total Coliform and Fecal Coliform in both the San Luis Rey River and its tributaries (Tables 3 through 8). Similarly, while the geometric means of Total Coliform and Fecal Coliform indicators remained below their corresponding AB411 single sample standards (Figures 2,3,5 and 6), the overall geometric mean for *Enterococcus* in the San Luis Rey River and its tributaries generally exceeded that standard (Figures 4 and 7). In the next reporting year, the standards will be reevaluated based on the TMDL for Indicator Bacteria Project I – Creeks and Beaches that will likely be adopted during 2009/2010. The AB411 oceans standards will likely be replaced by the fresh water standards set forth in the TMDL for the San Luis Rey River. These may include a slightly higher water quality objective for Enterococcus based on the frequency of use of the waterbody.

The mean Total and Fecal Coliform concentrations as well as percent exceedances varied quite widely between the samples collected from Bonsall Bridge by the County of San Diego and those taken by the City of Oceanside. For *Enterococcus*, those mean concentrations were significantly different and 51% of samples exceeded the AB411 when sampled by the County with only 22% of the City's samples exceeding. This variability may be due to the microplumes of bacteria in the River both in space and time. The variability due to the possible patchy temporal distribution of bacteria could be minimized if the sampling at Bonsall Bridge by the two jurisdictions was conducted within the same time interval. Up to this point, the City samples are being collected in the morning while the County's are taken in the early afternoon or, sometimes, the next day.

The design of the current study does not address, in detail, the confounding factors of differing bacteria decay and regrowth rates or the possible influence of local bird populations on fecal indicator bacteria concentrations in the water. As mentioned above, single grab samples were employed in the current study, the results may have been affected by short-term localized changes in bacterial counts that may not always have been representative. The grant-funded Lower San Luis Rey River Source Identification Project was designed to build upon the joint

monitoring program and then go beyond its scope by looking at the River and the river mouth separately during dry and wet weather conditions. The goals of the project were to: 1) identify point and non-point sources of bacteria during dry and wet weather, 2) estimate bacterial loading from tributaries and along the main stem of the River, and 3) recommend Best Management Practices (BMPs) to reduce and/or eliminate the sources of bacteria. The bacteria source tracking study was to be performed on a tiered approach utilizing indicator bacteria results to identify "hot spots" for further genetic testing; for example, further genetic testing was to be completed at Douglas, where indicator bacteria results are higher. Unfortunately, the State funding was halted in December 2008. The project is on hold until funding comes through again.

The significantly lower mean concentrations of *Enterococcus* and Total Coliform bacteria at Pacific as compared to the other main stem river sites may be attributed to the site's location at the mouth of San Luis Rey River. The River mouth is an estuarine environment influenced by the Pacific Ocean (as indicated by high chloride concentration and high conductivity; Table 10) and the survival rates of indicator bacteria are lower in salt water as opposed to fresh water environments (Anderson et.al., 2005 and Lisle et. al., 2004). With respect to the highly correlated bacterial counts from the River mouth and shoreline nearby, it is possible that at least some of the bacteria in the Pacific Mix Zone may have originated from the River. Alternatively, bacteria originating from the Pacific Ocean during incoming tides may have also affected the counts at the River mouth.

In general, the source of bacteria at the mouth of the San Luis Rey River remains undetermined. It is likely that the contamination at the shoreline does not originate from the River and/or its tributaries but from local sources such as shorebird feces, etc. This, however, must be investigated further and was one component to the Lower San Luis Rey River Source Identification Project. It is recommended that future sampling include more accurate flow measurements. However, due to the difficulty in measuring flow in the main stem of the River, as it ranges from intermittent springs during summer to un-wadable swift flows during the wet season, it is difficult to meet this objective. Notwithstanding, flow measurements were a key component of the grant-funded study. Without this assistance, it is suggested that the County and City continue sampling and measurements of flow so that loads can be estimated where possible.

Table 10-: Monitoring Results for FY 2008-09

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	Org. N	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Carbonate Alkalinity	Bicarbonate Alkalinity	Hydroxide Alkalinity	Carbonate
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Bonsall Cr. (SLR26)	7/8/08	dry																																	
	8/12/08	dry																																	
	9/10/08	dry																																	
	10/13/08	dry																																	
	11/18/08	dry																																	
	12/9/08	0.06	7.78	2.70	2	8.64	12.3	0.10	ND	0.05	0.59	0.53	0.69	0.12	0.13		5,000	800	2,400	1836															
	1/13/09	0.55	7.86	1.95	1	11.16	13	0.73	0.00	0.05	0.50	0.46	1.24	0.10	0.14	670	1,300	1,300	500	1220	1	65.1	4.08	149	102		0.09	266	377		0.56	270	270	ND	ND
	2/23/09	0.92	7.96	1.79	2	9.96	14.1	0.78	0.01	0.04	0.84	0.80	1.62	0.18	0.20		500	500	300	1217															
	3/10/09	0.95	7.94	1.54	1	9.45	12.7	0.46	0.00	0.06	0.64	0.59	1.10	0.05	0.05		500	230	230	1047															
	4/13/09	0.19	7.89	1.93	1	6.72	16.2	0.09	0.00	0.04	0.50	0.47	0.60	0.06	0.08	600	800	800	300	1190	0.8	75.8	3.74	170	131		0.09	238	334		0.55	301	301	ND	ND
	5/12/09	dry																																	
	6/9/09	dry																																	
East Vista Way (SLR34)	7/8/08	0.09	7.74	2.06	14	6.86	20	14.7		0.03				0.12	0.14	640				1410	3.7	102	5.65	247	81.1		0.06	231	390	0.42	0.39	346	421	ND	ND
	7/9/08	0.06	7.72	2.10	11	6.98	20.3										2400	80	500																
	8/12/08	0.10	7.83	2.14	10	6.84	20.2	12.70		0.04				0.15	0.20	620	800	140	500	1330	7.6	101	6.2	229	76.1		0.02	242	409	0.46	0.34	361	361	ND	ND
	9/9/08	0.0	7.80	2.15	10	6.98	20.6	11.80		0.05				0.16	0.17	620	1,300	300	230	1280	8.8	76.5	5.89	188	61.1		0.35	229	373	0.37	0.34	372	372	ND	ND
Keys Cr. (SLR17)	7/9/08	dry																																	
	8/13/08	dry																																	
	9/10/08	dry																																	
	10/13/08	dry																																	
	11/18/08	dry																																	
	12/10/08	dry																																	
	1/17/09	2.39	7.96	2.75	2	10.09	14.8	7.04	0.04	0.03	0.59	0.56	7.67	0.07	0.07	1070	500	80	300	1790	3	105	5.66	197	182		0.08	393	696		0.32	247	245	ND	2
	2/24/09	6.61	7.99	2.55	14	9.10	14.7	7.05	0.03	0.03	0.78	0.75	7.86	0.07	0.08		220	140	230	1734															
	3/11/09	3.74	8.04	2.62	7	9.66	13.9	6.48	0.03	0.04	0.50	0.47	7.01	0.05	0.04		500	40	210	1782															
	4/14/09	3.85	8.06	2.58	6	8.53	17	5.99	0.03	0.05	0.84	0.84	7.15	0.06	0.08	800	800	300	170	1710	5	109	6.22	211	187		0.26	335	585		0.35	252	ND	ND	ND
	5/13/09	0.28	8.58	2.55	1	15.80	28.2	2.48	0.01	0.04	0.39	0.35	2.88	0.00	0.01		170	70	70	1734															
	6/11/09	0.42	8.27	2.64	1	11.48	21.2	3.06	0.02	0.05	1.37	1.32	4.45	0.00	0.01		1,300	70	300	1795															
Little Gopher Cn. Cr. (SLR02)	7/8/08	0.03	7.69	2.57	1	7.70	19.9	7.59		0.03				0.03	0.03	880	340	40	300	1760	0.4	119	5.26	250	152		ND	424	475	0.3	0.31	349	426	ND	ND
	8/12/08	0.01	7.72	2.66	3	6.20	21.5	6.03		0.03				0.03	0.04	1000	3,000	800	800	1690	2	116	5.19	289	147		ND	413	469	0.36	0.42	348	348	ND	ND
	9/10/08	dry																																	
	10/13/08	dry																																	
	11/18/08	dry																																	
	12/10/08	0.22	8.08	2.66	4	11.47	10	10.70	0.09	0.03	0.39	0.36	11.20	0.09	0.10		5,000	5,000	500	1809															
	1/13/09	0.45	7.95	2.63	8	11.20	12.1	11.70	0.08	0.04	0.45	0.41	12.30	0.06	0.06	760	220	130	300	1640	3.9	104	4.48	213	135		0.07	386	433		0.4	358	358	ND	ND
	2/23/09	2.02	8.15	2.58	20	10.56	14.2	5.46	0.03	0.04	0.64	0.60	6.13	0.08	0.10		220	220	230	1754															
	3/10/09	1.13	8.11	2.80	5	9.37	11.7	5.80	0.03	0.05	0.59	0.54	6.42	0.04	0.03		1,100	1,100	2,200	1904															
	4/13/09	0.73	8.26	2.69	2	11.12	13.6	6.61	0.04	0.05	0.56	0.51	7.20	0.10	0.09	750	1,700	1,100	270	1690	1.5	104	4.7	248	150		0.12	423	472		0.48	353	349	ND	4
	5/12/09	0.20	8.08	2.67	0	8.31	17.6	5.60	0.07	0.04	0.56	0.52	6.23	0.02	0.03		260	40	220	1816															
	6/9/09	0.12	7.91	2.76	1	8.19	17.8	6.46	0.04	0.10	0.87	0.77	7.37	0.03	0.03		230	130	300	1877															
Live Oak Cr. (SLR27)	7/9/08	0.78	7.87	2.33	3	8.71	19.8	5.19		0.02				0.18	0.21	900	16000	9000	800	1570	6.3	128	2.46	197	185		0.07	317	557	0.2	0.48	271	331	ND	ND
	8/13/08	0.27	7.90	2.29	11	8.38	20.5	4.85		0.03				0.22	0.30	1000	5,000	270	800	1610	2.7	99.8	2.41	176	167		0.06	316	557	0.18	0.51	291	291	ND	ND
	9/9/08	0.07	8.01	2.37	13	8.33	21.4	4.79		0.04				0.23	0.24	830	16,000	1,400	220	1660	8	112	2.46	172	158		0.27	318	551	0.11	0.43	293	291	ND	2
	10/13/08	0.23	8.06	2.29	6	10.15	12.3	5.09		0.02				0.54	0.81	780	1,700	700	270	1560	4	124	2.29	201	147		0.16	312	544		0.49	293	291	ND	2
	11/17/08	0.10	8.13	2.45	1	9.68	13.6	4.87	0.01	0.03	0.73	0.70	5.60	1.94	0.39		30,000	500	50,000	1666															
	12/10/08	2.15	7.97	2.39	5	9.98	11.7	6.11	0.02	0.04	0.42	0.38	6.55	0.11	0.14		1,300	340	300	1625															
	1/14/09	2.80	7.85	2.36	4	9.75	12.3	7.88	0.01	0.04	0.70	0.66	8.59	0.14	0.19	900	300	170	80	1550	2.9	103	2.7	149	155		0.05	307	571		0.31	260	260	ND	ND
	2/24/09	4.5	7.99	2.29	7	9.26	14.2	7.98	0.02	0.03	0.53	0.50	8.53	0.13	0.14		700	500	130	1557															
	3/11/09	2.7	8.00	2.30	13	9.04	12.7	7.89	0.02	0.04	0.53	0.49	8.45	0.13	0.13		300	230	500	1564															
	4/14/09	1.1	7.99	2.37	4	7.77	15.4	5.59	0.01	0.04	0.53	0.53	6.16	0.11	0.11	820	700	210	500	1480	6.2	109	2.47	187	173		0.3	300	534		0.38	272	272	ND	ND
	5/13/09	0.8	8.19	2.37	2	9.16	17.6	4.81	0.01	0.05	0.70	0.65	5.52	0.12	0.10		230	130	800	1612															
	6/11/09	0.50	8.00	2.30	4	8.65	17.8	4.79	0.01	0.06	0.50	0.44	5.30	0.15	0.16		340	220	500	1564															
Cn. Cr. (SLR01)	7/8/08	1.07	7.46	2.48	12	8.60	22.4	2.27		0.04				0.16	0.17	720	3500	140	170	1660	4.1	105	5.34	261	174		0.17	394	519	0.29	0.39	280	342	ND	ND
	8/12/08	0.51	7.69	2.58	6	8.02	22.1	2.16		0.05				0.24	0.26	760	9,000	600	300	1680	6.5	102	6.44	270	155		0.12	414	537	0.34	0.35	293	293	ND	ND
	9/9/08	0.57	7.58	2.78	7	6.35	21.9	0.97		0.08				0.27	0.33	660	9,000	40	1,100	1760	5.4	104	6.54	183	162		0.23	413	520	0.18	0.34	303	303	ND	ND
	10/13/08	0.39	7.60	2.66	2	7.44	14.7	1.69		0.05				0.44	0.65	820	3,000	130	300	1700	2.6	111	6.94	276	134		0.33	401	515		0.34	307	307	ND	ND
	11/17/08	0.56	7.58	2.71	1	6.72	14.6	2.61	0.01	0.06	0.50	0.45	3.13	0.28	0.29		3,000	500	1,300	1843															
	12/9/08	1.77	7.70	2.55	1	8.29	13.3	2.90	0.01	0.06	0.50	0.44	3.41	0.27	0.27		230	130	800	1734															
	1/13/09	3.77	7.97	2.50	3	10.54	13.7	4.44	0.01	0.05	0.59	0.54	5.04	0.34	0.35	700	170	ND	40	1560	4	92.1	4.94	205	138		0.08	357	485		0.33	282	282	ND	ND

Table 10-: Monitoring Results for FY 2008-09

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	Org. N	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Carbonate Alkalinity	Bicarbonate Alkalinity	Hydroxide Alkalinity	Carbonate
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Moosa	2/23/09	8.53	7.96	2.32	11	8.74	15.3	3.58	0.02	0.05	0.73	0.68	4.33	0.33	0.35		300	130	220	1578															
	3/10/09	7.82	7.91	2.74	9	7.75	13.2	3.21	0.01	0.06	0.73	0.67	3.95	0.30	0.28		500	170	170	1863															
	4/13/09	4.52	8.11	2.41	6	10.65	16.1	3.71	0.02	0.06	1.12	1.06	4.85	0.27	0.31	640	500	110	40	1350	1.2	87.8	7.31	217	148		0.09	342	479		0.32	267	267	ND	ND
	5/12/09	2.28	7.89	2.52	6	8.19	19.2	2.19	0.02	0.05	0.59	0.54	2.79	0.32	0.34		5,000	1,300	3,000	1714															
	6/9/09	2.02	7.83	2.51	5	8.26	19.2	2.03	0.02	0.10	0.50	0.41	2.56	0.33	0.35		1,700	1,100	1,300	1707															
Ostrich Farm Cr. (SLR14)	7/9/08	1.34	7.84	2.06	5	8.16	19.9	4.47		0.02				0.2	0.22	1100	1700	700	500	1340	1.7	112	4.49	151	163		0.02	280	467	0.19	0.42	287	350	ND	ND
	8/13/08	0.43	7.98	2.06	7	8.23	21.1	4.23		0.02				0.20	0.25	920	500	130	270	1410	4.7	101	4.18	162	153		ND	276	461	0.19	0.25	302	ND	ND	ND
	9/9/08	0.14	7.94	2.13	1	8.26	23.4	3.94		0.03				0.20	0.22	840	300	20	80	1500	3.4	106	3.87	167	145		0.13	281	469	0.09	0.36	303	301	ND	2
	10/13/08	0.49	8.04	2.16	2	10.03	12.7	5.31		0.02				0.48	0.65	800	700	130	90	1570	3	124	4.36	170	146		0.1	266	452		0.38	301	299	ND	2
	11/17/08	0.55	8.15	2.16	2	9.07	14.4	6.28	0.02	0.02	0.73	0.70	7.03	0.30	0.32		800	500	80	1469															
	12/10/08	1.06	8.04	2.22	2	10.20	11.4	5.98	0.03	0.04	ND	0.19	6.24	0.27	0.31		800	110	130	1510															
	1/14/09	2.26	7.99	2.15	1	9.17	12	7.40	0.02	0.03	0.45	0.01	7.50	0.50	0.51	800	220	80	220	1400	2.3	85.3	4.83	126	136		ND	281	460		0.3	273	273	ND	ND
	2/24/09	4.19	8.00	2.00	3	8.93	14.5	6.06	0.02	0.04	0.50	0.47	6.58	0.48	0.52		210	20	70	1360															
	3/11/09	2.42	8.17	2.07	3	9.94	12.5	5.83	0.02	0.04	0.39	0.36	6.24	0.27	0.25		110	ND	80	1408															
	4/14/09	1.84	7.94	2.10	2	7.29	14.7	5.39	0.02	0.05	0.53	0.53	5.94	0.20	0.20	780	230	20	110	1280	1	87.9	3.88	130	148		0.08	271	445		0.32	285	285	ND	ND
	5/13/09	1.74	8.08	2.16	6	9.17	17.4	4.54	0.02	0.04	0.45	0.41	5.01	0.19	0.17		1,300	340	300	1469															
	6/11/09	0.99	7.88	2.15	1	8.39	17.5	4.85	0.02	0.05	0.56	0.51	5.43	0.22	0.24		300	80	230	1462															
Pacific Mix Zone	7/8/08																2	2	21																
	8/12/08																2	2	10																
	9/9/08																13	13	10																
	10/13/08																11	7	20																
	11/17/08																130	80	31																
	12/9/08																500	500	146																
	1/13/09																300	80	75																
	2/23/09																5,000	300	228																
	3/10/09																800	300	52																
	4/15/09																11	2	10																
	5/12/09																170	170	30																
	6/9/09																30	13	10																
Pilgrim Creek Outlet	1/13/09	300.67	8.04	3.58	4.7	11.39	12.36	0.43		0.40				0.50		983	5,000	300	687	2200	20	130	13.8	572	190	0.31	0.1	820	257						
	2/23/09	208.71	8.07	2.86	5.2	13.57	14.07	0.50		0.40				0.70		827	13,000	800	1,120	1945	20	74.7				0.19	0.1	1920	292						
	3/10/09	22.45	8.15	3.95	5.6	10.79	17.3	0.59		0.40				0.75		871	50,000	17,000	2,143	2686	20	134				0.19	0.1	880	401						
	4/15/09	105.50	7.94	5.16	11.1	7.62	15.1	0.54		0.40				0.60		1020	5,000	230	1,300	3120	20	153	10.7	864	147	0.06	0.1	1240	722						
	5/12/09		7.67	4.76	10.5	1.98	20.32	0.34		0.37				1.90		865	30,000	70	76	3237	20	120				0.55	0.1	1170	593						
Sleeping Indian	7/8/08	53.80	8.38	3.69	2	9.50	21.9	86.34		0.40				0.70		1220	23,000	30	3,654	2530	20	183	6.45	439	209	0.03	0.1	460	636						
	8/12/08	60.37	8.31	3.79	3	9.60	20.8	68.00		0.60				0.35		1350	80,000	80	2,723	2577	20	203				0.03	0.1	490	639						
	9/9/08	14.41	8.10	3.87	2	8.51	20.8	68.00		0.40				0.20		1250	23,000	3,000	1,733	2632	20	172				0.03	0.1	490	643						
	10/13/08	5.79	8.11	3.77	1	10.19	11.8	67.70		0.20				0.20		1240	23,000	130	2,282	2480	20	195	4.86	454	208	0.03	0.1	470	686						
	11/17/08	9.94	8.24	3.90	1		12.9	81.00		0.30				0.15		1400	5,000	130	2,420	2652	20	196				0.03	0.1	537	152						
	12/9/08	44.89	8.28	3.49	1	10.34	11.63	64.90		0.30				0.65		1270	50,000	300	959	2373	20	174				0.03	0.1	500	668						
	1/13/09	70.97	8.24	3.72	3.2	9.65	11.65	79.10		0.30				0.50		1360	70,000	80	1,553	2500	20	186	3.68	527	230	0.03	0.1	490	600						
	2/23/09	100.63	8.15	3.63	2.9	8.74	13.56	84.00						0.40		1350	70,000	300	1,733	2468	20	192				0.03	0.1	270	729						
	3/10/09	71.81	8.33	3.45	1	9.06	11.4	0.00		0.30				0.15		1190	13,000	500	496	2346	20	202				0.03	0.1	470	655						
	4/15/09	136.17	8.02	3.89	0	7.80	12.79	67.70		0.40				0.10		1350	23,000	130	1,986	2560	20	180	2.91	474	225	0.03	0.1	480	746						
	5/12/09	38.14	7.97	4.30	3.3	5.86	18.05	56.00		0.14				2.63		1460	30,000	170	250	2924	20	170				0.03	0.1	520	803						
	6/9/09	59.47	7.86	4.28	3.2	4.68	18.33	56.43		0.17				1.43			23,000	26	1,733	2910															
SLR@Benet Br.	7/8/08	2635.75	8.02	2.60	33	8.02	20.1	0.30		0.40				0.80		905	50,000	80	70	1620	20	79.6	7.99	274	209	0.92	0.1	420	425						
	8/12/08	1427.28	7.89	2.62	17	6.05	20.8	0.73		0.40				0.80		986	3,000	50	32	1782	20	80				0.63	0.1	430	436						
	9/9/08	2669.42	7.75	2.65	11	6.03	19.8	0.83		0.30				0.70		950	5,000	30	36	1802	20	80.8				0.38	0.1	430	396						
	10/13/08		7.74	2.77	20	6.72	14.4	0.60		0.40				0.90		962	3,000	30	61	1680	20	104	10.8	304	225	0.7	0.1	460	456						
	11/17/08	1837.96	7.54	2.78	4		14	0.54		0.30				0.80		1020	3,000	50	2	1890	20	83				0.39	0.1	710	431						
	12/9/08	5958.22	7.78	2.52	5.5	7.38	13.2	0.65		0.30				0.85		1070	800	30	12	1714	165	87.8				0.46	0.1	460	452						
	1/13/09	17571.69	7.65	2.32	3.2	8.82	12.4	1.08		0.30				0.50		974	800	130	26	1580	20	82.6	10	296	210	0.1	0.1	360	302						
	2/23/09	28051.88	7.95	2.12	7.2	9.93	14.15	1.30		0.30				0.65		883	5,000	600	248	1442	20	69.6				0.08	0.1	320	432						
	3/10/09	16213.98	8.03	2.39	5	8.54	14	1.10		0.20				0.55		773	3,000	230	42	1625	20	84.2				0.16	0	320	447						
	4/15/09	15727.00	7.88	2.28	8.4	7.81	14.62	0.78		0.30				0.65		751	2,300	230	47	1510	20	75.2	6.64	262	164	0.23	0.1	330	489						
	5/12/09	2896.59	7.88	2.39	12.8	6.59	18.75	0.65		0.35				0.65		1030	23,000	30	41	1625	20	86.8				0.55	0.1	370	502						
	6/9/09	7944.29	7.85	2.47	9.8	7.13	18.85	0.54		0.57				0.60			1,600	50	111	1680															
	7/8/08	2491.01	7.65	2.61	7	9.85	18.2	0.30		0.30				0.45		920	5,000	500	64	1720	20	116	6.43	254	198	0.44	0.1	370	556						

Table 10-: Monitoring Results for FY 2008-09

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	Org. N	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Carbonate Alkalinity	Bicarbonate Alkalinity	Hydroxide Alkalinity	Carbonate
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SLR@Bonsall Br. OC	8/12/08	801.16	7.63	2.77	5	6.35	18.2	0.67		0.40				0.40		1150	5,000	50	35	1884	20	128				0.39	0.1	410	618						
	9/9/08	1918.41	7.56	2.74	9	6.58	18.70	0.72		0				0.25		1,010	1,300	500	16	1863	20	103				0	0.1	400	439						
	10/13/08	1556.07	7.59	2.61	5	7.85	13	0.80		0.30				0.30		985	2,300	300	32	1650	20	102	6.29	282	212	0.27	0.1	380	418						
	11/17/08	2692.98	7.80	2.59	4		13.2	0.81		0.30				0.30		1100	280	130	18	1761	20	104				0.23	0.1	370	333						
	12/9/08	8150.75	7.80	2.21	3.5	7.87	12.73	1.02		0.30				0.20		1040	5,000	110	12	1503	20	87.9				0.34	0.1	340	527						
	1/13/09	16716.67	7.77	2.11	4.7	8.71	11.19	1.88		0.30				0.35		870	2,300	1,300	11	1480	20	80.5	6.49	247	184	0.2	0.1	280	830						
	2/23/09	43480.41	7.81	2.00	10	8.69	13.27	1.80		0.20				0.40		879	3,000	67	99	1360	20	67.2				0.12	0.1	290	464						
	3/10/09	30340.91	8.03	2.06	11	9.30	12.1	1.37		0.30				0.35		733	1,700	30	53	1401	20	77.6				0.17	0.1	290	422						
	4/15/09	20682.09	7.82	2.10	10	8.18	13.7	0.80		0.30				0.35		806	17,000	90	86	1390	20	77.9	6.63	215	172	0.17	0.1	299	450						
	5/12/09	10412.86	7.75	2.12	11.7	7.49	17.09	0.65		0.19				0.20		798	17,000	80	76	1442	20	77.3				0.26	0.1	280	491						
	6/9/09	7590.61	7.70	2.09	10	7.58	17.01	0.73		0.17				0.34			13,000	50	112	1421															
SLR@Bonsall Br. SD County (SLR16)	7/8/08	8.05	7.36	2.56	21	7.55	18.7	0.54		0.04				0.10	0.12	1000	1,100	130	230	1880	5.6	110	9.84	236	208		0.31	388	574	0.24	0.4	313	382	ND	ND
	8/12/08	3.49	7.55	2.65	5	6.35	19	0.65		0.04				0.15	0.20	600	170	40	340	1870	3.3	115	7.89	251	190		0.21	418	591	0.29	0.41	331	331	ND	ND
	9/9/08	3.17	7.58	2.61	9	6.80	19.4	0.51		0.05				0.18	0.20	900	700	130	110	1880	3.3	105	9.43	138	168		0.34	408	574	0.14	0.35	330	330	ND	ND
	10/13/08	4.28	7.52	2.51	6	8.19	13.4	0.44		0.02				0.43	0.56	1040	500	300	80	1760	2.9	115	10.6	252	167		0.37	384	553		0.36	311	311	ND	ND
	11/17/08	7.03	7.78	2.63	2	8.23	14.1	0.40	0.01	0.04	0.53	0.50	0.94	0.18	0.19		230	130	170	1788															
	12/9/08	15.84	7.72	2.53	17	8.40	13.3	0.92	0.01	0.07	0.48	0.4	1.41	0.1	0.1		210	40	20	1720															
	1/13/09	43.94	7.75	2.31	7	9.00	12.1	1.86	0.01	0.04	0.48	0.43	2.35	0.13	0.14	760	170	110	20	1500	2.5	86.8	5.68	181	157		0.15	315	505		0.39	262	262	ND	ND
	2/23/09	110.25	7.89	2.18	27	8.63	13.7	2.64	0.01	0.05	0.64	0.60	3.30	0.18	0.18		230	40	80	1482															
	3/10/09	48.30	7.93	2.23	8	7.90	12.6	1.85	0.01	0.05	0.53	0.48	2.40	0.12	0.10		130	80	170	1516															
	4/13/09	35.25	7.93	2.20	26	6.80	13.9	1.16	0.02	0.06	0.53	0.47	1.71	0.12	0.16	640	130	80	170	1450	6.4	85.1	8.29	198	155		0.5	294	471		0.42	260	260	ND	ND
	5/12/09	20.86	7.66	2.08	12	8.04	17.1	0.46	0.01	0.04	0.59	0.55	1.06	0.08	0.11		220	70	130	1414															
	6/9/09	14.17	7.56	2.12	17	8.31	17.3	0.38	0.01	0.09	1.26	1.17	1.65	0.09	0.10		230	40	170	1442															
SLR@Douglas Br.	7/8/08	357.74	7.94	2.38	5	8.78	19.6	0.13		0.30				0.35		837	13,000	1,400	613	1520	20	83.6	6.67	247	184	1.26	0.1	370	636						
	8/12/08		7.69	2.39	14	1.94	18.2	0.56		0.40				0.95		913	350	23	26	1625	20	87.2				1.34	0.1	360	500						
	9/9/08	5.30	7.71	2.15	1	3.11	18.2	0.48		0.20				0.65		734	500	220	6	1462	20	80.4				1.27	0.1	330	370						
	10/13/08		7.27	2.18	1	1.87	15.7	0.40		0.20				0.65		842	700	13	15	1380	20	71.4	7.06	254	180	1.15	0.1	310	315						
	11/17/08		7.40	2.24	2		15.5	0.20		0.20				0.75		718	500	8	25	1523	20	73.5				1.16	0.1	300	226						
	12/9/08	502.71	7.75	2.52	0	6.17	13	1.10		0.30				0.50		1060	50,000	370	2,420	1714	20	106				0.07	0.1	390	582						
	1/13/09	22203.62	0.85	2.14	5.4	11.93	12.62	1.73		0.30				0.45		899	23,000	700	548	1550	20	83.4	6.97	251	190	0.07	0.1	350	257						
	2/23/09	17975.64	8.04	2.27	13.4	10.48	14.23	2.00		0.40				0.50		897	5,000	170	147	1544	20	75.2				0.08	0.1	290	512						
	3/10/09	11781.79	8.23	2.32	9.4	10.50	13.5	1.80						0.50		777	5,000	60	77	1578	20	86				0.12	0.1	320	454						
	4/15/09	12679.45	8.21	2.21	2.3	13.19	15	1.42		0.20				0.25		819	5,000	220	148	1410	20	79.4	6.63	224	175	0.06	0.1	310	456						
	5/12/09	5762.98	8.07	2.31	7.8	11.15	18.18	1.12		0.27				0.22		868	50,000	800	46	1571	20	87.2				0.05	0.1	310	529						
	6/9/09	2861.29	8.02	2.36	15.1	10.69	18.72	0.72		0.22				0.31			13,000	230	225	1605															
SLR@Murray Br.	7/8/08	314.18	7.84	2.83	15	5.56	20.6	8.35		0.40				0.45		955	5,000	50	687	1850	20	116	7.8	269	201	0.03	0.1	410	566						
	8/12/08	11.78	7.89	2.89	0	3.02	22	11.29		0.30				0.55		1090	3,000	8	192	1965	20	127				0.09	0.1	430	530						
	12/9/08	1987.42	8.10	2.34	11.8	11.02	13.33	2.42		0.30				0.45		1000	11,000	300	1,414	1591	20	106				0.11	0.1	360	550						
	1/13/09	18662.35	8.06	2.21	7.1	11.23	12.14	2.26		0.30				0.40		925	3,000	50	126	1770	20	83.1	6.9	266	196	0.11	0.1	320	431						
	2/23/09	11992.74	7.89	2.11	12.8	8.95	13.85	2.20		0.20				0.55		887	1,300	130	248	1435	20	73.7				0.11	0.1	320	489						
	3/10/09	23563.58	8.14	2.30	10.7	9.87	13.5	2.26		0.30				0.45		778	2,300	50	248	1564	20	83.4				0.11	0.1	320	438						
	4/15/09	12078.02	8.13	2.21	14.3	11.42	14.66	1.88		0.20				0.25		836	2,300	40	142	1480	20	75	6.44	226	179	0.03	0.1	310	464						
	5/12/09	9762.05	7.89	2.32	2.8	8.00	17.6	2.62		0.22				0.37		871	23,000	300	64	1578	20	83				0.03	0.1	320	558						
	6/9/09	2558.33	7.91	2.40	6.7	8.75	17.55	3.33		0.40				0.28			30,000	220	435	1632															
SLR@Olive Hill Rd. (SLR25)	7/8/08	4.33	7.65	2.35	41	7.79	18.2	0.41		0.03				0.12	0.17	1000	24000	300	500	1634	12.4	99	9.03	186	187		0.24	341	565	0.2	0.23	286	349	ND	ND
	8/12/08	0.61	7.71	1.15	23	7.41	18.1	0.14		0.03				0.16	0.29	900	340	130	2,800	1670	7.7	98.1	10.1	237	195		0.14	343	557	0.25	0.3	302	302	ND	ND
	9/9/08	0.70	7.73	2.28	22	7.47	18.9	ND		0.05				0.14	0.22	900	1,400	110	130	1600	4.7	101	9.68	115	182		0.16	327	521	0.11	0.34	325	325	ND	ND
	10/13/08	1.72	7.61	2.28	7	8.42	13.1	0.18		0.03				0.30	0.50	800	130	20	40	1540	7	103	9.7	212	144		0.45	315	514		0.36	270	270	ND	ND
	11/17/08	2.93	7.70	2.33	2	8.31	13.4	0.46	0.01	0.04	0.67	0.64	1.14	0.39	0.41		300	110	40	1584															
	12/9/08	7.88	7.67	2.31	5	8.03	12.8	0.97	0.01	0.04	0.50	0.46	1.49	0.09	0.10		300	130	130	1571															
	1/13/09	19.88	7.68	2.19	14	8.20	12.5	1.50	0.01	0.05	0.81	0.76	2.32	0.16	0.19	770	40	20	220	1380	6	74.7	4.82	145	134		0	280	481		0.39	247	247	ND	ND
	2/23/09	72.54	7.88	2.13	5	7.83	13.6	2.75	0.01	0.05	0.78	0.74	3.55	0.21	0.27		210	110	230	1448															
	3/10/09	26.06	7.89	2.10	4	8.00	12.4	1.73	0.02	0.07	0.42	0.35	2.17	0.08	0.08		230	20	ND	1428															
	4/13/09	15.48	7.89	2.06	8	6.36	14.2	1.00	0.03	0.07	1.01	0.94	2.04	0.08	0.09	740	130	40	ND	1400	5.3	80	8.43	172	150		0.44	258	450		0.44	263	263	ND	ND
	5/12/09	8.57	7.90	1.97	20	7.86	17.4	0.45	0.01	0.05	0.53	0.49	0.99	0.11	0.09		300	40	110	1340															
	6/9/09	8.42	7.77	1.86	11	7.52	18	0.40	0.01	0.05	0.45	0.40	0.85	0.10	0.11		230	130	230	1265															
ng	7/8/08		8.14	47.70	4	8.05	20.2			0.10				0.15		6530	4	4	326	33900	20	1470	466	10900	383	0.3	1	19400	421						
	8/12/08		8.01	28.60	4	6.69	28.8			0.60				0.45		3990	50	11	145	19448	52	735				0.3	1	11200	1430						
	9/9/08		8.08	45.00	7	7.95	27.1			0.20				0.10		5020	30	30	10	30600	20	844				0.3	1	12900	1680						

Table 10-: Monitoring Results for FY 2008-09

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	Org. N	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Carbonate Alkalinity	Bicarbonate Alkalinity	Hydroxide Alkalinity	Carbonate
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SLR@Pacific St. Crossi	10/13/08		8.00	25.90	3	9.64	19.6			0.10				0.20		3570	220	50	63	13200	38	625	386	4970	599	0.3	1	7200	1010						
	11/17/08	48024.81	7.91	30.80	2		17.5			0.20				0.10		6810	130	130	122	20944	137	1190				0.3	1	450	2200						
	12/9/08	20237.74	7.81	36.90	10.4	7.57	17.1			0.10				0.15		5310	1,300	170	31	25092	20	854				0.36	1	13900	2390						
	1/13/09	84707.69	7.87	35.30	3	8.68	14.67			0.10				0.15		5560	230	80	75	24000	20	822	371	7960	419	0.3	1	13000	1190						
	2/23/09	58168.37	7.79	11.23	3.2	8.61	15.04			0.10				0.35		2150	1,100	170	231	7636	20	310				0.15	0.1	1490	704						
	3/10/09	47261.80	8.08	23.20	3.7	9.41	16.6			0.00				0.30		3300	800	300	52	15776	44	707				0.3	1	10700	1650						
	4/15/09	7136.40	7.85	24.20	4.3	7.45	18.28			0.10				0.35		3130	2,200	50	10	15100	20	524	210	5060	280	0.3	1	9000	1500						
	5/12/09	6788.28	8.06	47.30	5.2	6.66	23.77							0.11		5310	80	80	41	32164	20	1090				3	10	18700	2460						
	6/9/09	11239.18	7.93	49.20	2.1	7.82	23.07							0.17			130	30	41	33456															
SLR@Shearer Crossing (SLR28)	7/9/08	dry																																	
	8/13/08	dry																																	
	9/10/08	dry																																	
	10/13/08	dry																																	
	11/18/08	dry																																	
	12/10/08	dry																																	
	1/14/09	2.73	7.76	1.92	0	11.71	15.1	12.80	0.09	0.02	0.76	0.74	13.60	0.18	0.22	640	1,700	40	80	1240	0.9	65.1	13.3	125	121		ND	227	438		0.27	218	218	ND	ND
	2/24/09	19.35	7.85	1.75	1	11.20	17.1	10.60	0.04	0.03	1.09	1.06	11.80	0.12	0.12		130	80	500	1190															
	3/11/09	7.1	7.84	1.81	1	11.05	15.3	10.10	0.05	0.04	0.70	0.66	10.90	0.10	0.09		40	40	70	1231															
	4/14/09	1.62	7.78	1.90	1	10.38	17.6	9.50	0.07	0.04	0.59	0.59	10.60	0.09	0.08	700	210	ND	230	1210	1	70.6	15.2	140	131		0.05	204	393		0.31	227	227	ND	ND
	5/13/09	0.67	8.23	1.93	7	13.03	20.9	9.20	0.05	0.04	0.48	0.43	9.73	0.06	0.07		500	110	20	1312															
	6/11/09	0.76	7.85	1.96	1	10.84	18.9	9.93	0.05	0.04	0.84	0.80	10.80	0.07	0.07		3,500	110	300	1333															

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ATTACHMENT C TO SLR-001
SLR WATERSHED WATER QUALITY MONITORING PROGRAM
2008-09 SLR WURMP Annual Report

Total Dissolved Solids and Chloride Study
In the San Luis Rey River

In 2002, the lower 19 miles of the San Luis Rey River were added to the CWA 303(d) list of impaired waterbodies for TDS and chloride and they remain on the 2006 303(d) list. The water quality objectives for TDS and chloride are based on the beneficial uses for the San Luis Rey River assigned in the Water Quality Control Plan (Basin Plan, RWQCB, 1994). The Basin Plan objectives for TDS and chloride are 500 mg/L and 250 mg/L, respectively.

The San Luis Rey River WUMRP group initiated a monitoring program in March 2004. The purpose of the program was to determine which areas along main stem of San Luis Rey River and its tributaries exhibit the highest concentrations of TDS and chloride. From March 2004 through June 2009, the City of Oceanside and the County of San Diego collected surface water samples in the San Luis Rey River and its tributaries and analyzed them for TDS and chloride as well as several other constituents. The results of the study are presented below.

Total dissolved solids (TDS) are comprised of inorganic salts and small amounts of organic matter that are dissolved in water. The principal constituents are usually the cations calcium, magnesium, sodium, and potassium, and the anions carbonate, bicarbonate, chloride, sulphate, and, particularly in groundwater, nitrates and phosphates (from agricultural use). TDS in water supplies may originate from natural sources such as weathering rocks and soils, leaves, silt and plankton. Other sources of TDS include point sources such as industrial wastewater and sewage as well as the urban and agricultural runoff. Chlorides are a component of TDS; they are salts composed of the chlorine gas and a metal molecule. The common chlorides include sodium chloride and magnesium chloride. While moderate concentrations of chlorides are essential to life, excessive amounts are toxic to plant and animal life. The sources of chlorides can be natural and man-made. The man-made sources include point sources such as industrial wastewater and sewage as well as the urban and agricultural runoff.

Hydrologic Setting

The San Luis Rey River originates mainly in the Palomar and Hot Springs Mountains. In 1922, Henshaw Dam was built and Lake Henshaw was formed at the base of Palomar Mountain. No imported water is released directly into the lake and TDS and chloride concentrations in the lake fall below Basin Plan standards. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a drinking water source. In order to transport drinking water to Lake Wohlford, water is released down the main channel of the SLR River and diverted into the man-made Escondido Canal, seven miles downstream of the dam. Nearly all flows are diverted from the River into the canal, typically leaving the River dry below the diversion. The remainder of the SLR River is intermittent through the Pauma and Pala areas and is a perennial river through Oceanside, although flowing underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and Palomar Mountain receives about 45 inches/yr. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The River is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the river bed and form perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

From March 2004 through June 2009, 18 locations (Figure 1) were sampled: eight by the City of Oceanside and eight by the County of San Diego (Table 1). Additional three locations were added to the eight sampled by the County in June 2008. Both agencies collected samples on the same days or within one or two days of one another. Six sampling sites were located along the San Luis Rey River and 12 in the River's tributaries. One site along the River's main stem, Bonsall Bridge, was sampled by both agencies for quality control.

Both the City of Oceanside and the County of San Diego collected and tested grab samples for pH, temperature, electrical conductivity, dissolved oxygen, turbidity, total dissolved solids (TDS), total suspended solids (TSS), chloride, magnesium, manganese, total iron, sulfate, potassium, sodium, calcium and hardness. The County also analyzed grab samples for alkalinity (carbonate and bicarbonate), fluoride and total boron. The County did not test for manganese in FY 2008/2009. The methods used for the in-situ measurements and the laboratory analysis are presented in Table 2. All samples were collected during dry weather conditions i.e. at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches.

For samples where TDS was not measured directly, electrical conductivity was used as an indirect measure for TDS. The average ratio of electrical conductivity to direct measured TDS is 0.68. Therefore, the electrical conductivity measurements were multiplied by 0.68(*1000) to calculate TDS.

Analysis of Data

The means and 95% confidence intervals were calculated for the TDS and chloride concentrations and they were plotted for the tributaries and main stem sites separately (Figure 2). This was done to look for any differences among sites and to compare them to the overall mean concentration and the Basin Plan objective.
In order to determine which constituents may contribute to the TDS concentrations, and to what extent, the Pearson product-moment correlation coefficient (r2) was calculated between all soluble constituents measured (including chloride) and TDS (SPSS Inc., 2003). The Pearson product-moment correlation coefficient is a measure of the tendency

of two variables to increase or decrease together. The coefficient ranges from −1 to 1. A value of 1 shows 100% positive correlation where the value of one variable increases as the value of the other increases. A score of −1 shows 100% negative correlation where the value of one variable decreases as the value of the other increases. Values in-between 1 and -1 indicate the extent of the positive or negative relationship and r2 = 0 is equivalent no linear relationship between the two variables. For the purpose of the present report, the higher the value of r2, the greater the association of a given constituent with the value of TDS or chloride given $p < 0.051$ (SPSS Inc., 2003). The results of the Pearson product-moment correlation analysis are presented in Table 3.

[1] *p* value indicates the probability that an observed result (here: correlation coefficient or r^2) occurred by chance alone. A result is conventionally regarded as 'statistically significant' if the likelihood that it is due to chance alone is less than five times out of 100 ($p < 0.05$).

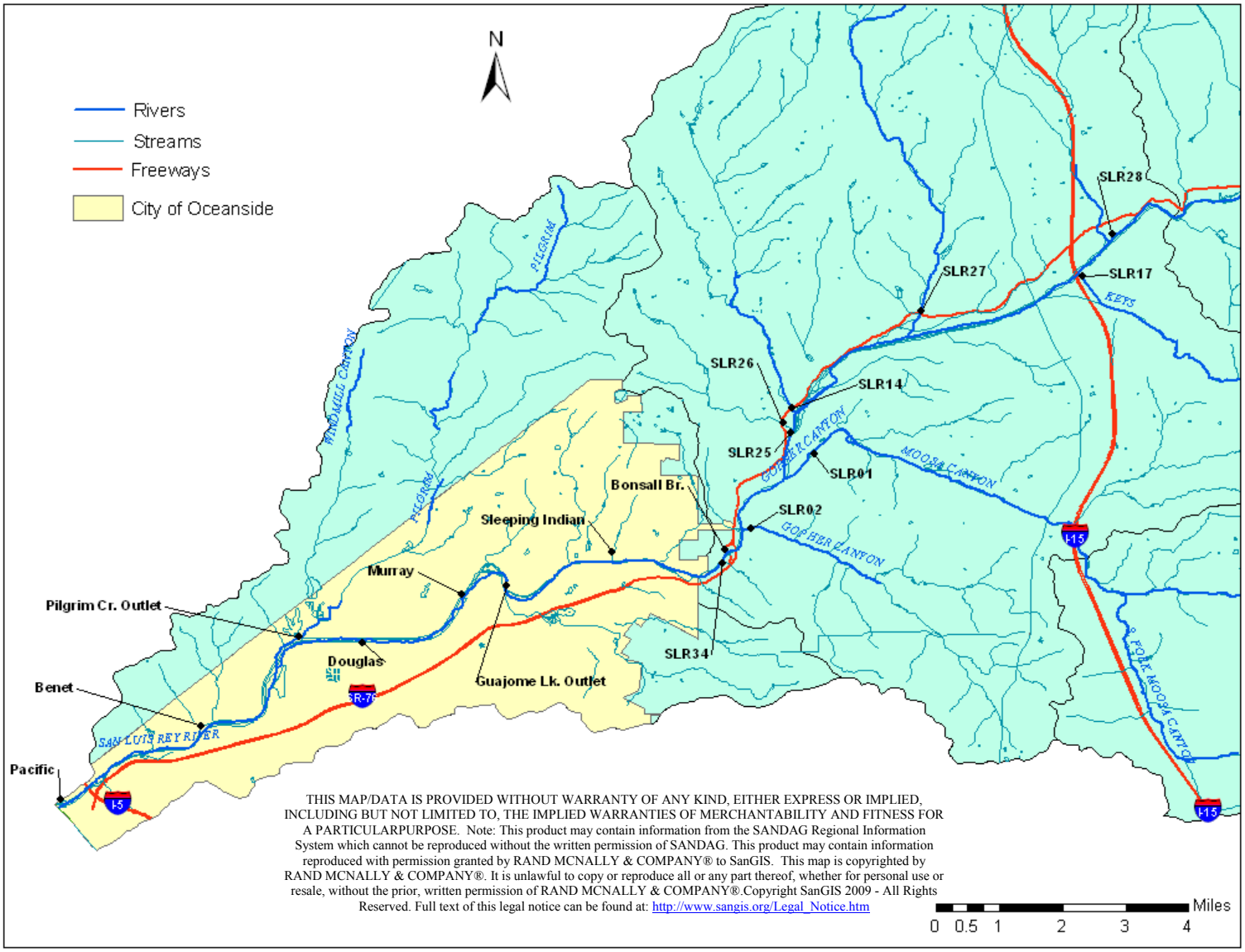

Figure 1. Sample site and groundwater basin locations.

Table 1: Sample Site Identification and Locations

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	San Luis Rey River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall Bridge	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Olive Hill (SLR25)	San Luis Rey River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	San Luis Rey River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to the San Luis Rey River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Table 2: Water Quality Parameters and Methods for San Luis Rey River

Measured Parameter	*City of Oceanside Methods*	*County of San Diego Methods*
Flow	Estimated, Global Flow Probe	Flow Probe FP101
pH	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Temperature	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Conductivity	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Dissolved Oxygen	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Turbidity	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Total Dissolved Solids	SM 2540C	EPA 160.1
Total Suspended Solids	SM2540 D	EPA 160.2
Bicarbonate Alkalinity	NM	EPA 310.1, SM 2320B
Carbonate Alkalinity	NM	EPA 310.1, SM 2320B
Chloride	EPA 300.0	EPA 300.0
Magnesium	EPA 200.7	EPA 200.7
Manganese	EPA 200.7	NM
Iron, Total	EPA 6010	EPA 200.7
Sulfate	EPA 300.0	EPA 300.0
Potassium	EPA 200.7	EPA 200.7
Sodium	EPA 200.7	EPA 200.7
Calcium	EPA 200.7	EPA 200.7
Hardness	EPA 130.2	EPA 130.2
Boron, Total	NM	EPA 200.8
Fluoride	NM	EPA 300.0

NM – Not Measured

Results and Discussion

All data collected during FY 2008/2009 are listed in Table 10 of Attachment A. The mean TDS and chloride concentrations +/- 95% confidence intervals as measured along the main stem of and tributaries to the San Luis Rey River are presented in Figure 2. Table 3 presents the results (Pearson's r^2) of the correlation analysis between TDS and other mineral constituents including chloride.

The mean TDS concentrations exceeded the Basin Plan objective of 500 mg/L both along the main stem of San Luis Rey River and in its tributaries by approximately three-fold (Figs. 3A and C). With the exception of Shearer Crossing and East Vista Way sampling locations, the chloride Basin Plan objective of 250 mg/L was also exceeded (Fig. 3B and D).

A.

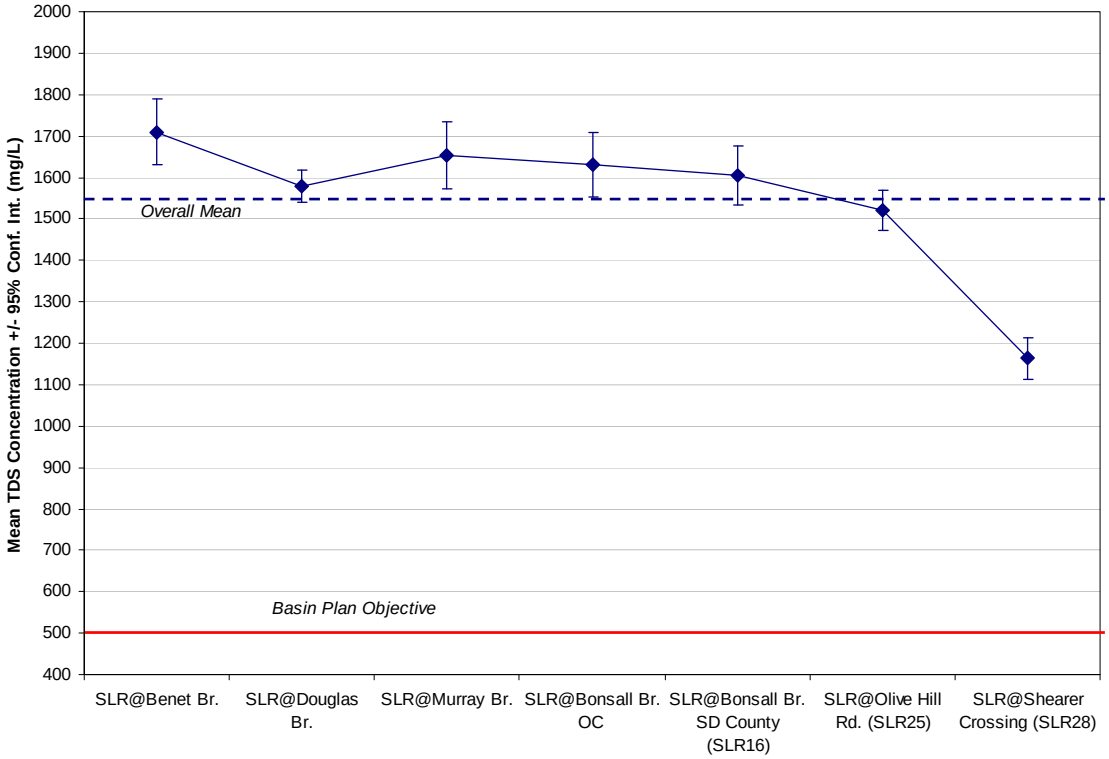
Mean TDS Concentration +/- 95% Conf. Int. (mg/L)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
Overall Mean
Basin Plan Objective
SLR@Benet Br.
SLR@Douglas Br.
SLR@Murray Br.
SLR@Bonsall Br. OC
SLR@Bonsall Br. SD County (SLR16)
SLR@Olive Hill Rd. (SLR25)
SLR@Shearer Crossing (SLR28)

B.

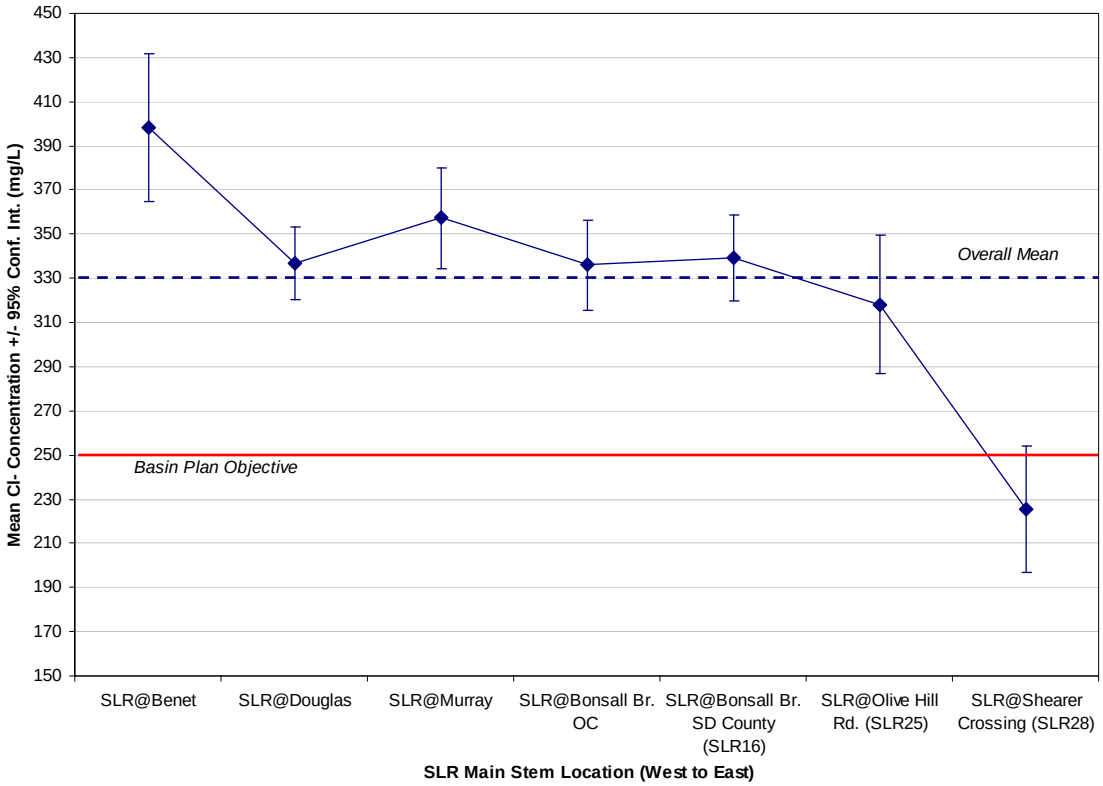
Mean Cl- Concentration +/- 95% Conf. Int. (mg/L)
450
430
410
390
370
350
330
310
290
270
250
230
210
190
170
150
Overall Mean
Basin Plan Objective
SLR@Benet
SLR@Douglas
SLR@Murray
SLR@Bonsall Br. OC
SLR@Bonsall Br. SD County (SLR16)
SLR@Olive Hill Rd. (SLR25)
SLR@Shearer Crossing (SLR28)
SLR Main Stem Location (West to East)

C.

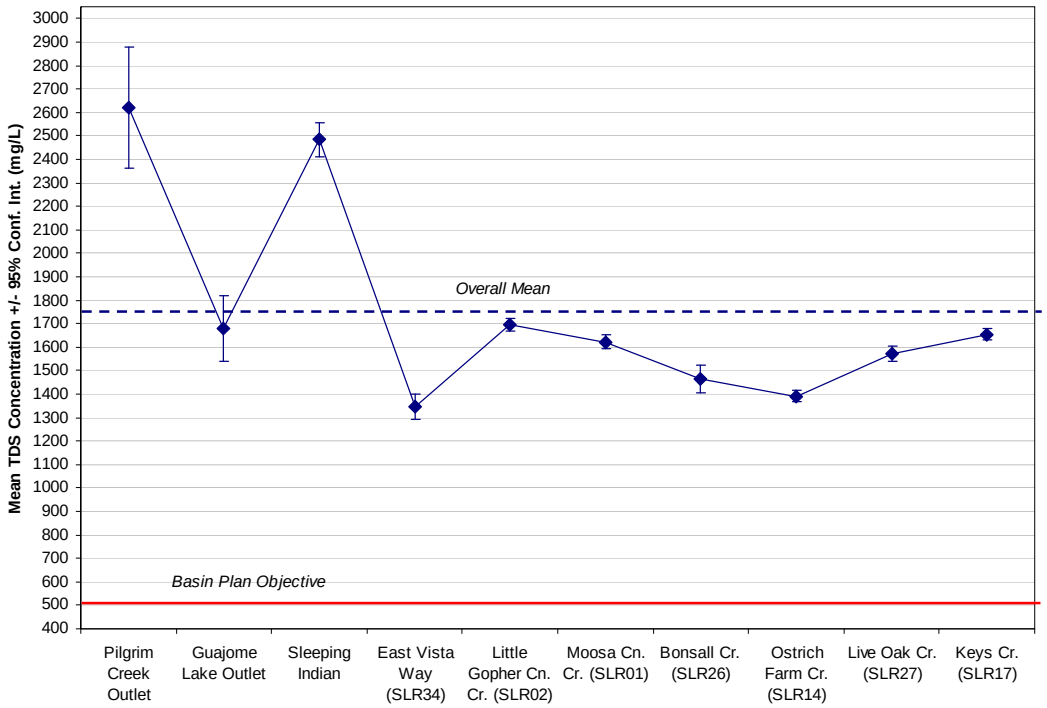

D.

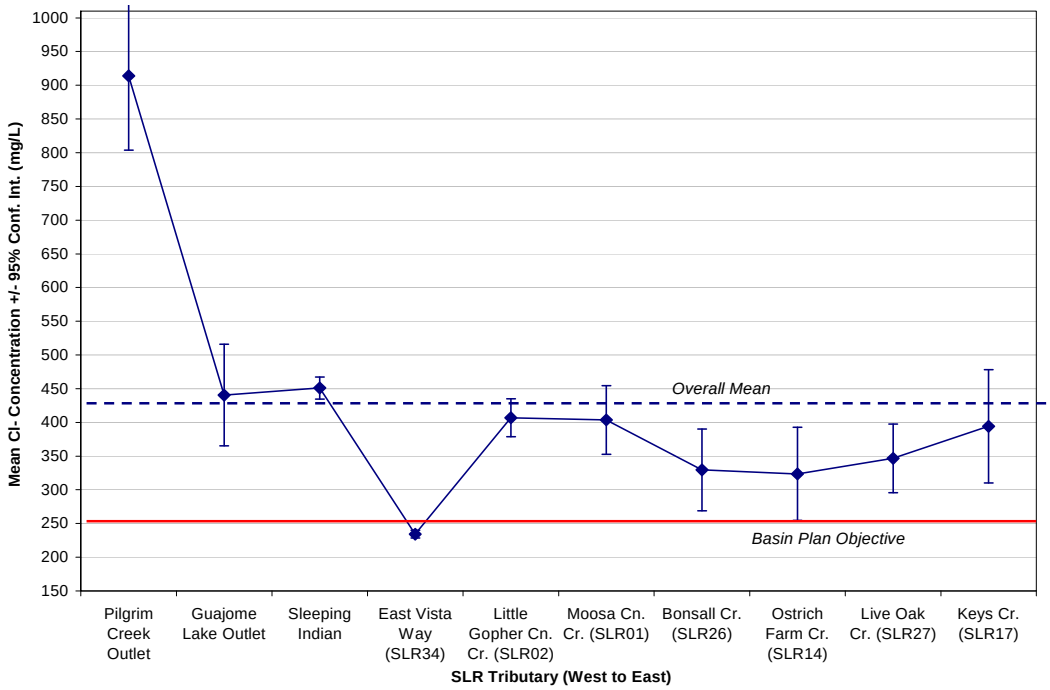

Figure 2: Mean concentrations +/- 95% confidence intervals of TDS (A and C) and chloride (B and D) at sampling sites along the main stem of (A and B) and tributaries to (C and D) the San Luis Rey River.

Table 3: Results of the correlation analysis between TDS and other mineral constituents. Pearson's r^2 values are presented for each site and mineral constituent as it was correlated to TDS. Statistically significant r^2 values are outlined in bold. Results significant at $p < 0.05$ are marked with single asterisks (*). Double asterisks (**) indicate results that are significant at $p < 0.01$. Tests were not performed when $n<5$.

Site	Cl-	Mg	SO4	K	Na	Ca	Mn	Fe tot	B tot	Fl	Crbonate Alkalinity	Bicarbonate Alkalinity
SLR @ Pacific	**.69(**)**	**.72(**)**	**.57(**)**	**.78(**)**	**.94(**)**	**.59(*)**	0.20	0.39				
SLR @ Benet	**.91(**)**	**.69(**)**	**.52(**)**	0.25	0.04	**.77(**)**	**.65(**)**	-0.29				
SLR @ Douglas	**.69(**)**	**.56(**)**	**.52(**)**	0.30	-0.01	0.49	0.01	0.11				
SLR @ Murray	**.76(**)**	**.79(**)**	**.71(**)**	**.98(**)**	**.99(**)**	**.98(**)**	-0.16	-0.04				
SLR @ Bonsall Bridge - OC	**.90(**)**	**.84(**)**	0.27	0.09	0.34	**.59(*)**	0.35	-0.25				
SLR @ Bonsall Bridge (SLR16)	**.60(**)**	**.30(*)**	**.94(**)**	0.06	0.20	0.26	-0.14	0.04	-0.24	-0.14	**.99(**)**	0.28
SLR @ Olive Hill Rd. (SLR25)	**.55(*)**	**.74(**)**	**.66(**)**	0.08	0.41	**.45(*)**	0.69	-0.36	0.34	**-.69(**)**	**.93(**)**	**.51(*)**
SLR @ Shearer Crossing (SLR28)	0.30	0.50	0.29	-0.27	0.11	0.14		0.09	-0.11	0.71	0.02	0.00
Pilgrim Creek Outlet	**.81(**)**	**.89(**)**	**.87(**)**	0.56	**.92(**)**	0.44	-0.25	-0.47				
Guajome Lake Outlet	**.71(*)**	0.54					0.37					
Sleeping Indian	**.46(*)**	0.35	0.19	0.43	0.48	**.74(**)**	-0.16	-0.03				
Little Gopher Canyon Creek (SLR02)	0.08	0.47	0.28	0.09	0.33	0.30	0.10	-0.08	0.45	-0.33	0.51	-0.19
Moosa Canyon Creek (SLR01)	0.24	0.41	0.08	0.18	0.19	0.19	0.48	0.42	0.01	0.41	**.78(**)**	-0.15
Bonsall Creek (SLR26)	0.37	**.80(**)**	0.54	0.10	0.56	**.70(**)**		-0.16	-0.09	0.38	**.98(**)**	0.53
Ostrich Farm Creek (SLR14)	**.42(*)**	0.35	**.70(**)**	-0.02	0.21	0.29	-0.01	**.69(**)**	0.07	0.14	0.59	-0.24
Live Oak Creek (SLR27)	**.84(**)**	0.10	0.19	**.72(**)**	-0.10	-0.14	0.16	0.24	-0.08	0.45	.65(*)	0.06
Keys Creek (SLR17)	0.15	0.40	**.79(**)**	-0.06	0.55	0.40	-0.09	-0.56	0.66	-0.45	0.35	-0.26

Along the main stem of the River, the easternmost location, Shearer Crossing had the lowest mean concentration of TDS and chloride and the westernmost location, Benet Br. had the highest (Fig. 3A and B). For the tributaries, Pilgrim Creek Outlet had TDS and chloride concentrations that were significantly higher than the remaining tributaries and the main stem sampling sites (Fig. 3C and D). Sleeping Indian, not sampled before FY 2006/2007, also had a very high mean TDS concentration but the mean chloride concentration at the Sleeping Indian tributary was not significantly different from all other tributaries further upstream. This is most likely because TDS at Pilgrim Creek was most highly correlated with sodium, magnesium, sulfide and chloride while TDS at Sleeping Indian was most highly correlated with calcium and chloride (Table 3). In the last year's study (see Appendix C to SLR-001 of the 2007-2008 WURMP report), the TDS concentration at Sleeping Indian was also highly correlated with Nitrate. The mineral composition of TDS at Pilgrim Creek renders that tributary characteristically different from the remaining ones. This point is further illustrated in Appendix C to SLR-001 of the 2007-2008 WURMP report (WURMP, 2008). Appendix C also contains an analysis and discussion regarding the relationship of the ionic composition of water samples collected from the different sampling locations to that in the ground water basins directly below.

Generally, it may be concluded that the mean concentrations of both TDS and chloride in the San Luis Rey River tend to increase from east to west and mostly exceed the surface water Basin Plan objectives. Those mean concentrations are very similar to the mean groundwater concentrations which indicate that groundwater is influencing water quality in the main stem of the River and its tributaries (WURMP, 2008). The exceptions are Pilgrim Creek tributary (for TDS and chloride) and Sleeping Indian tributary (for TDS).

The San Luis Rey River flows through an alluvial valley that contains unconfined groundwater and there is a considerable interchange between surface flow and groundwater flow within the valley. According to NBS/Lowry (1995), the surface infiltration of river flow can exceed 30 cfs during periods of significant runoff. Conversely, surfacing groundwater can contribute several cfs to surface flows during the dry season. Therefore, the shallow groundwater and surface waters of the alluvial San Luis Rey River valley are considered one hydrogeologic system. As shown in Figure 5, groundwater quality in the San Luis Rey River continually degrades from the mountains towards the coastline. The areas that contain TDS concentration below 500 mg/L are restricted to upper reaches of the watershed in areas where there is minimal use of irrigation water. The TDS in shallow aquifers near the coast are typically above 1500 mg/L as a result of saltwater incursion and salt loads due to imported water use. This pattern is mirrored by the results of the present study.

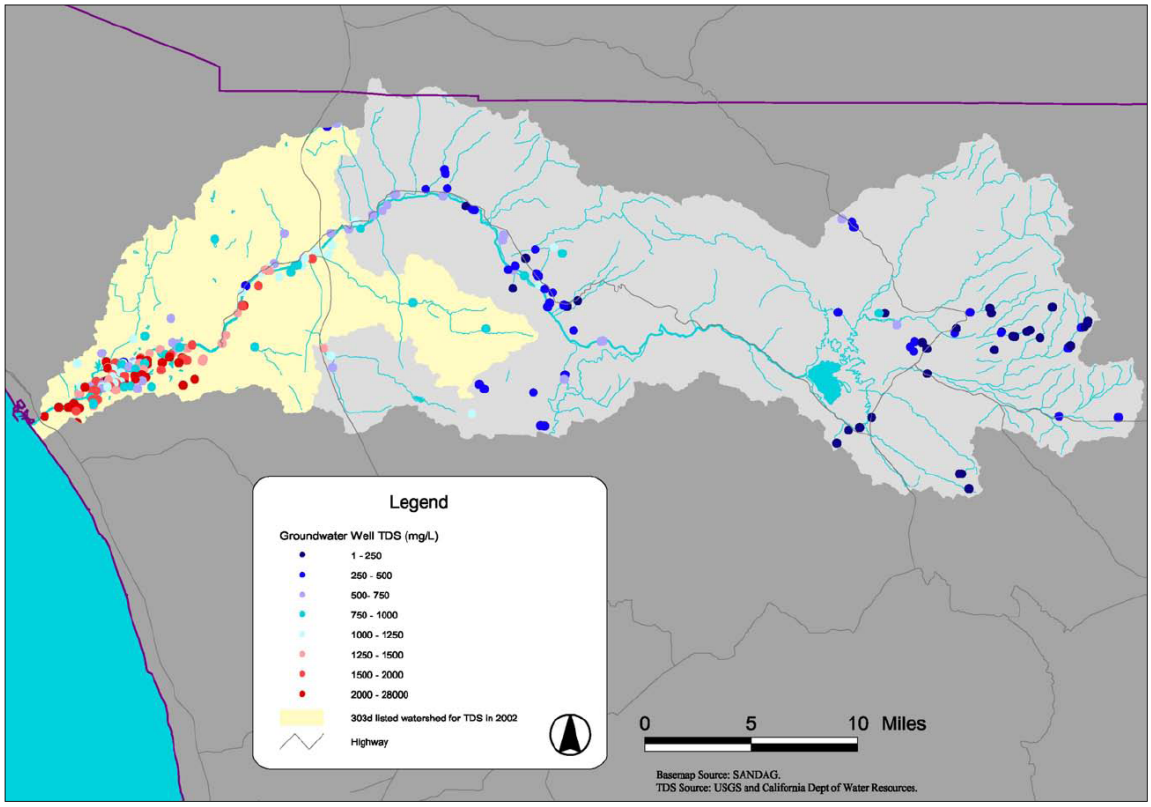

Figure 5: Variation in TDS concentration in shallow groundwater wells throughout the San Luis River watershed (adopted from the 2003 WURMP Report, PBS and J, 2003).

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ATTACHMENT D TO SLR-001
Nutrient Joint Monitoring Study
In the San Luis Rey River and its Tributaries
2008-09 SLR WURMP Annual Report

Nutrient Joint Monitoring Study
In the San Luis Rey River and its Tributaries

The lower 19 miles of the San Luis Rey River are being considered for listing on the 2008 CWA 303(d) list of impaired waterbodies for total nitrogen and total phosphorus. The water quality objectives are narrative and based on the requirement that water bodies shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses. According to the Water Quality Control Plan for the San Diego Region (Basin Plan), a desired goal to prevent plant nuisance in streams and other flowing waters is 0.1 mg/L total P. This value is not to be exceeded more than 10% of the time unless studies of the specific water body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1, on a weight to weight basis shall be used (RWQCB, 1994).

Nitrogen and phosphorus-containing compounds in streams may originate from agricultural sources where the excess of nutrients from fertilizers leach out of the soil and is transported into the river and its tributaries in surface runoff and subsurface discharges. Other sources of nutrients include failed septic tanks, urban runoff and wastewater/ sewage spills. Much of the San Luis Rey River dry weather flow (or base flow) during the summer months originates from groundwater seeps and springs in the river bed. Those seeps and springs may also have elevated nutrient levels.

The San Luis Rey River WUMRP group initiated a nutrient monitoring program in March 2004. The purpose of the program is to address the following questions:

1) Which areas along main stem of San Luis Rey River and its tributaries exhibit the highest concentrations of nutrients?
2) What are the possible sources of those high concentrations?
3) What are the possible solutions to addressing the high nutrient concentrations?

From March 2004 through June 2009, the City of Oceanside and the County of San Diego collected surface water samples in the San Luis Rey River and its tributaries and analyzed them for ammonia-N, nitrate-N and orthophosphate-P using field test kits. Some of grab samples were also analyzed in the laboratory for ammonia-N, nitrate-N, nitrite-N, total Kjeldahl nitrogen (TKN), orthophosphate-P and total phosphorus (Table 2). The results of the study are presented below.

Hydrologic Setting

The San Luis Rey River emanates from Henshaw Dam, which formed Lake Henshaw at the base of Palomar Mountain. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a drinking water source. In order to transport drinking water to Lake Wohlford, water is released down the main channel of the SLR River and diverted into

the man-made Escondido Canal, seven miles downstream of the dam. Nearly all flows are diverted from the River into the canal, typically leaving the River dry below the diversion. The remainder of the SLR River is intermittent through the Pauma and Pala areas and is a perennial river through Oceanside, flowing only underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and Palomar Mountain receives about 45 inches/yr. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The River is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the river bed and form perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

From March 2004 through June 2009, 18 locations (Figure 1) were sampled: eight by the City of Oceanside and eight by the County of San Diego (Table 1). Additional three locations were added to the eight sampled by the County in June 2008. Both agencies collected samples on the same days or within one or two days of one another. Six sampling sites were located along the San Luis Rey River and 12 in the River's tributaries. One site along the River's main stem, Bonsall Bridge, was sampled by both agencies for quality control.

Both the City of Oceanside and the County of San Diego conducted in-situ testing for dissolved oxygen. A hand-held flow meter or the floating object technique was used to estimate flow. The County of San Diego personnel conducted flow measurements when samples were collected throughout the study period. Due to the difficulty in measuring the river through Oceanside, where in the summer there are sporadic springs and in the winter it is an extensive, un-wadable river, flow measurements were attempted, but not recorded prior to July 2007. The City of Oceanside then began recording tributary flow measurements and continues to work to collect more accurate main stem flows. Field test kits were employed to analyze grab samples for ammonia, nitrate and orthophosphate. Also, periodically, the County samples were analyzed for these constituents, nitrite, TKN and total phosphorus in the laboratory. The methods used for the in-situ dissolved oxygen measurements, field test kits and the laboratory analysis are presented in Table 2. All samples were collected during dry weather conditions i.e. at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches.

For the purpose of data analysis, all non-detect values were assigned one half of the method detection limit. To calculate the means and standard deviations, field test kit and analytical data for ammonia, nitrate-N and orthophosphate-P were combined. The mean nitrate-N, orthophosphate-P and ammonia concentrations and their 95% confidence

intervals were then compared among the SLR River main stem sites and tributary locations using bar graphs (Figures 2 through 4). In Figures 2-4, sampling locations are presented from west to east (downstream to upstream).

Mean Nitrate-N and Orthophosphate-P concentrations were further classified into 5 categories and plotted on maps (Figures 5 and 6). Nutrient mean, dry weather, instantaneous loadings (mg/s) and mean, dry weather, instantaneous nutrient flux (mg/s/acre) were also calculated for the tributaries, using tributary drainage areas and estimated flows where available (Table 4). The mean instantaneous loads were calculated by finding each month's instantaneous load and then calculating the mean dry weather load for the year. Flux measurements were calculated the same way using the mean, dry weather, instantaneous load standardized by the drainage area size.

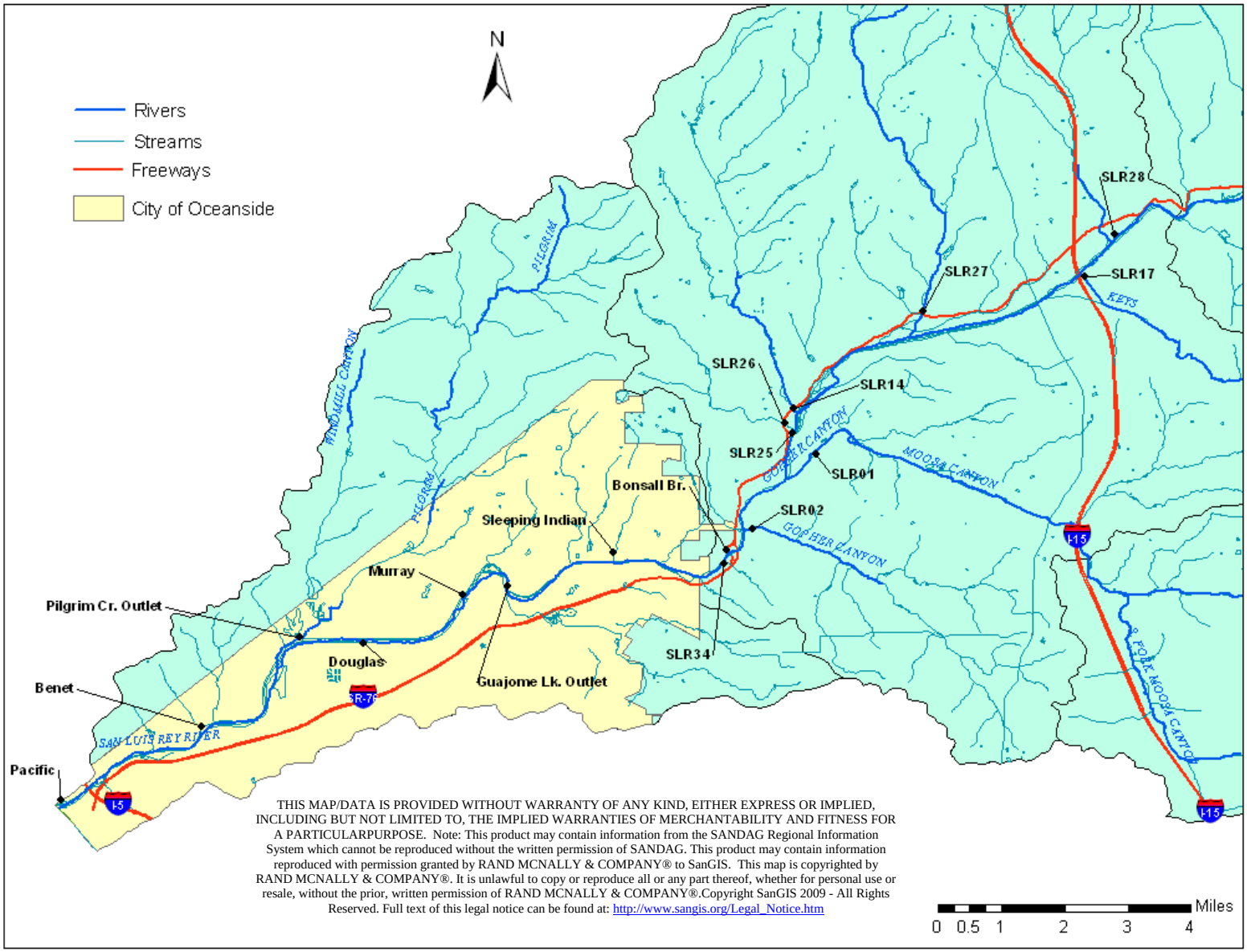

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Figure 1. Sample site locations.

Table 1: Sample Site Identification and Locations

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	San Luis Rey River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall Bridge	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Olive Hill (SLR25)	San Luis Rey River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	San Luis Rey River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to the San Luis Rey River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Table 2: Water Quality Parameters and Methods for San Luis Rey River

Measured Parameter	*City of Oceanside*		*County of San Diego*	
	Method	*RL/ MDL*	*Method*	*RL/ MDL*
Flow	Estimated		Flow Probe FP101	0.01 cfs
Dissolved Oxygen	In-situ, Hydrolab Quanta	1 mg/L	In-situ, Horiba U-10	1 mg/L
Ammonia as N	CHEMetrics test kit	0.05/ 0.01 mg/L	CHEMetrics K-1501	0.01 mg/L
Nitrate as N	CHEMetrics test kit	1/ 0.1 mg/L	CHEMetrics V-6933	0.1 mg/L
Orthophosphate as P	CHEMetrics test kit	0.05/ 0.01 mg/L	CHEMetrics V-8513	0.01 mg/L
Ammonia as N	NM in laboratory		EPA 350.2, SM4500	0.01/ 0.05 mg/L
Nitrate as N	NM in laboratory		SM4500, EPA 300.0	0.1/ 0.05 mg/L
Nitrite as N	NM		EPA354.1, SM4500	0.01 mg/L
Total Kjeldahl Nitrogen	NM		EPA351.1, SM4500 (since Nov. 2008)	0.5 mg/L
Total Nitrogen	NM		By Calculation (since Nov. 2008)	
Organic Nitrogen	NM		By Calculation (since Nov. 2008)	
Orthophosphate as P	NM in laboratory		EPA 365.2, SM4500	0.05/ 0.01 mg/L
Total Phosphorus	NM		EPA 365.3, SM4500 (since Dec. 2005)	0.02 mg/L

NM – Not Measured

Results

All data collected since the inception of the study in March 2004 are presented in Table 6 at the end of this Attachment. Table 3 below lists the numbers of samples analyzed, means and standard deviations for the sample concentrations of ammonia, nitrate-N, total nitrogen, orthophosphate-P and total phosphorus at each sampling location. Total nitrogen and total phosphorus concentrations were available only from the County of San Diego sampling locations as those results could only by obtained through tests conducted in the analytical laboratory. The total phosphorus results reflect data collected after December 2005. Total nitrogen measurements were available only for the time period beginning in November 2008 through June 2009. The highest mean total phosphorus concentration, 0.37 mg/L, was found at Moosa Canyon Creek (SLR01) and the lowest (0.08 mg/L) at Keys Creek (SLR17), the tributary located furthest upstream in the sampled section of the SLR watershed. The highest mean total nitrogen concentration, 11.16 mg/L, was at Shearer Crossing (SLR28) while the lowest, 1.05 mg/L, was detected at Bonsall Creek (SLR26).

The mean nitrate-N concentrations (Figure 2, Table 3) at Murray Bridge and Shearer Crossing (SLR28) were significantly higher than at any of the remaining main stem locations. Of the tributaries, Sleeping Indian had nitrate-N concentration that was nearly six times higher than any of the remaining tributaries. East Vista Way (SLR34) had the second highest, followed by Little Gopher Creek (SLR01), Live Oak Creek (SLR27) and Keys Creek (SLR17). Pligrim Creek Outlet and Bonsall Creek (SLR26) had mean nitrate-N concentrations that were significantly lower than those of the remaining tributaries (except for the Guajome Lake Outlet that had a very large 95% confidence interval due to fewer samples collected).

Table 3. Number of samples analyzed (N), mean concentrations in mg/L (Avg) and standard deviations (S) of samples collected from locations along the SLR River and its tributaries from 2004 through June, 2009. Main stem locations and tributaries are listed separately downstream to upstream. For the purpose of data analysis, field test kit and analytical laboratory results were combined form ammonia-N, nitrate-N and orthophosphate-P.

Sampling Location	Ammonia-N (mg/L)			Nitrate-N (mg/L)			Total Nitrogen (mg/L)			Orthophosphate-P (mg/L)			Total Phosphorus (mg/L)		
	N	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*
SLR @ Pacific	57	0.71	1.22	36	2.35	3.02				61	0.33	0.29			
SLR @ Benet	62	0.55	0.59	62	3.24	4.28				62	0.80	0.59			
SLR @ Douglas	61	0.46	0.53	62	3.53	5.50				62	0.73	1.53			
SLR @ Murray	55	0.43	0.52	55	8.10	9.64				55	0.37	0.21			
SLR @ Bonsall Br. - OC	61	0.50	0.61	62	3.16	3.99				62	0.52	0.91			
SLR @ Bonsall Br. - SDC	23	0.06	0.09	23	1.29	1.06	9	1.65	0.89	22	0.14	0.07	21	0.17	0.10
SLR @ Olive Hill Rd. (SLR25)	54	0.15	0.12	55	1.65	1.46	10	1.66	0.86	53	0.13	0.06	21	0.18	0.11
SLR @ Shearer Crossing (SLR28)	35	0.14	0.10	35	9.27	3.24	6	11.16	1.40	34	0.11	0.05	11	0.12	0.05
Pilgrim Creek Outlet	50	0.52	0.59	50	1.91	2.25				50	0.78	0.76			
Guajome Lake Outlet	30	0.28	0.62	30	2.76	7.85				30	0.26	0.41			
Sleeping Indian	29	0.30	0.13	31	69.26	19.40				31	0.55	0.55			
East Vistay Way (SLR34)	3	0.04	0.01	3	13.20	1.71				3	0.14	0.03	3	0.16	0.05
Little Gopher Cn. Cr. (SLR02)	50	0.15	0.11	50	7.39	3.13	7	8.11	2.52	49	0.08	0.04	17	0.14	0.20
Moosa Cn. Cr. ('SLR01)	54	0.14	0.11	55	3.88	1.76	10	3.37	1.22	53	0.30	0.09	22	0.37	0.12
Bonsall Cr. (SLR26)	37	0.16	0.13	37	1.75	1.62	5	1.05	0.42	36	0.09	0.05	11	0.10	0.05
Ostrich Farm Cr. (SLR14)	53	0.15	0.12	54	4.95	2.14	9	5.96	1.07	52	0.25	0.14	20	0.36	0.32
Live Oak Cr. (SLR27)	54	0.13	0.11	56	6.74	2.56	10	6.58	1.38	53	0.19	0.26	21	0.25	0.18
Keys Cr. (SLR17)	40	0.15	0.11	40	5.97	2.28	6	6.12	2.00	39	0.08	0.05	12	0.08	0.06

Table 4. Mean estimated instantaneous loadings (mg/s) +/- 95% confidence intervals for samples collected from the tributaries from 2004 through June, 2009. For the purpose of data analysis, field test kit and analytical laboratory results were combined for ammonia-N, nitrate-N and orthophosphate-P.

Sampling Location	Instantaneous Loading (mg/s)									
	Ammonia (mg/s)		Nitrate-N (mg/s)		Total Nitrogen (mg/s)		Orthophosphate-P (mg/s)		Total Phosphorus (mg/s)	
	Mean	95% Conf.	Mean	95% Conf.	Mean	95% Conf.	Mean	95% Conf.	Mean	95% Conf.
Pilgrim Cr. Outlet	95,318	75,595	685,541	617,591			166,949	150,987	148	269
Sleeping Indian	29,709	26,043	178,557	169,958			43,505	40,134		
East Vista Way (SLR34)	1	2	1,089	1,381			4	1	64	81
Little Gopher Cn. Cr. (SLR02)	2,700	3,561	22,388	26,830	2,064	2,020	3,894	4,914	113	78
Moosa Cn. Cr. (SLR01)	5,949	8,803	47,961	77,722	267	177	11,283	17,353	11	11
Bonsall Cr. (SLR26)	189	345	638	468	238	332	11,840	23,143	9	6
Ostrich Farm Cr. (SLR14)	3,193	5,868	2,761	2,440	764	691	11,479	20,919	29	21
Live Oak Cr. (SLR27)	1,016	1,424	4,529	5,605	1,014	723	2,607	3,525	28	13
Keys Cr. (SLR17)	17,050	17,305	28,441	36,340	685	580	23,813	22,126	41	40

Table 5. Mean estimated instantaneous flux (mg/s/acre) +/- 95% confidence intervals for samples collected from the tributaries from 2004 through June, 2009. For the purpose of data analysis, field test kit and analytical laboratory results were combined for ammonia-N, nitrate-N and orthophosphate-P.

Sampling Location	Drainage Area (Ac)	Instantaneous Flux (mg/s/acre)									
		Ammonia		Nitrate-N		Total Nitrogen		Orthophosphate-P		Total Phosphorus	
		Mean	95% Conf.	Mean	95% Conf.	Mean	95% Conf.	Mean	95% Conf.	Mean	95% Conf.
Pilgrim Cr. Outlet	12,030	7.9233	6.2838	56.9849	51.3367			13.8775	12.5507	0.0123	0.0224
Sleeping Indian	511	58.1358	50.9610	349.4050	332.5780			85.1317	78.5345		
East Vista Way (SLR34)	316	0.0044	0.0071	3.4452	4.3698			0.0113	0.0041	0.2018	0.2559
Little Gopher Cn. Cr. (SLR02)	7,047	0.3831	0.5054	3.1769	3.8073	0.2929	0.2867	0.5526	0.6973	0.0160	0.0111
Moosa Cn. Cr. (SLR01)	27,313	0.2178	0.3223	1.7560	2.8456	0.0098	0.0065	0.4131	0.6353	0.0004	0.0004
Bonsall Cr. (SLR26)	2,104	0.0896	0.1639	0.3032	0.2226	0.1131	0.1579	5.6277	11.0001	0.0041	0.0028
Ostrich Farm Cr. (SLR14)	7,014	0.4553	0.8366	0.3936	0.3478	0.1090	0.0984	1.6365	2.9823	0.0041	0.0029
Live Oak Cr. (SLR27)	5,304	0.1915	0.2685	0.8539	1.0567	0.1911	0.1364	0.4914	0.6646	0.0052	0.0024
Keys Cr. (SLR17)	23,502	0.7255	0.7363	1.2101	1.5463	0.0291	0.0247	1.0133	0.9415	0.0017	0.0017

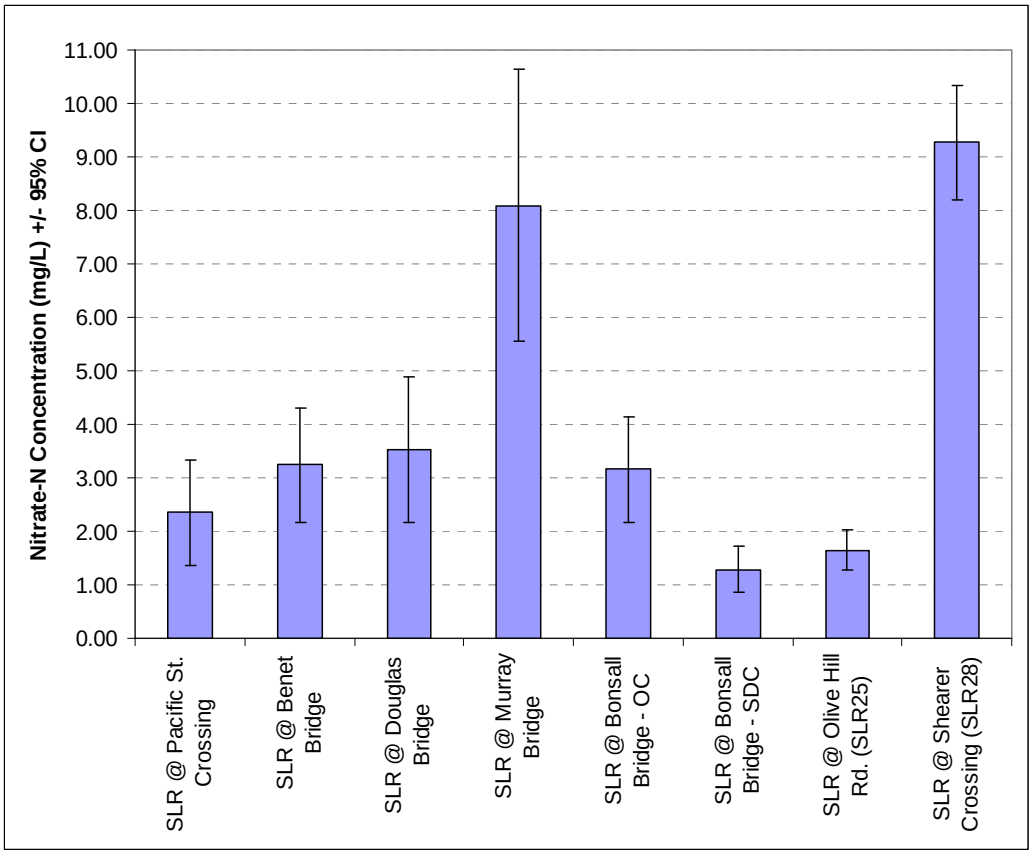

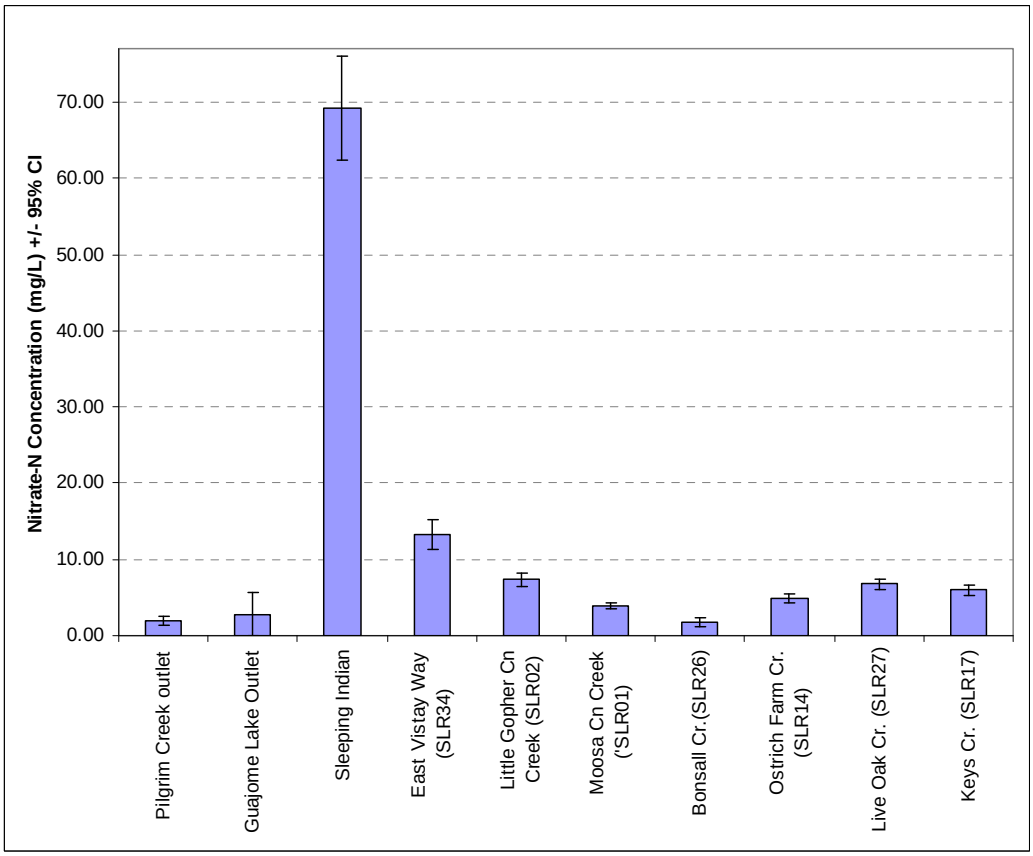

Figure 2. Mean concentrations and 95% Confidence intervals of nitrate-N in the main stem of San Luis Rey River and its tributaries.

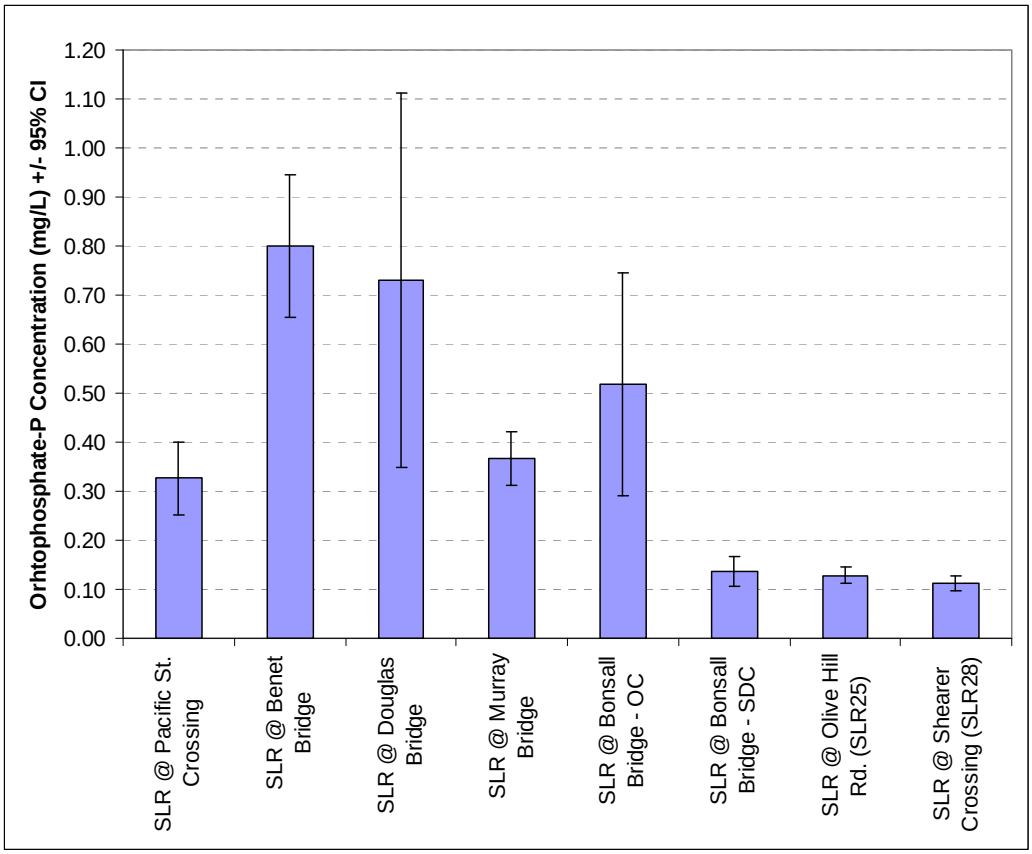

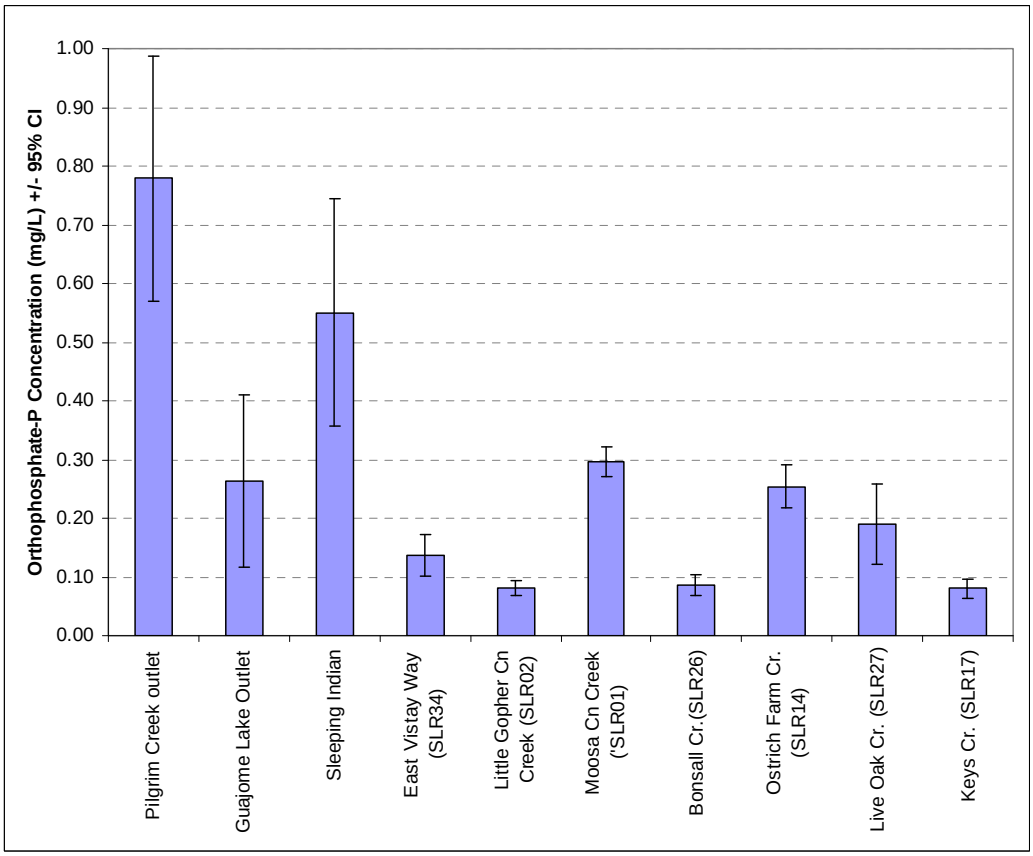

Figure 3. Mean concentrations and 95% Confidence intervals of Orthophosphate-P in the main stem of San Luis Rey River and its tributaries.

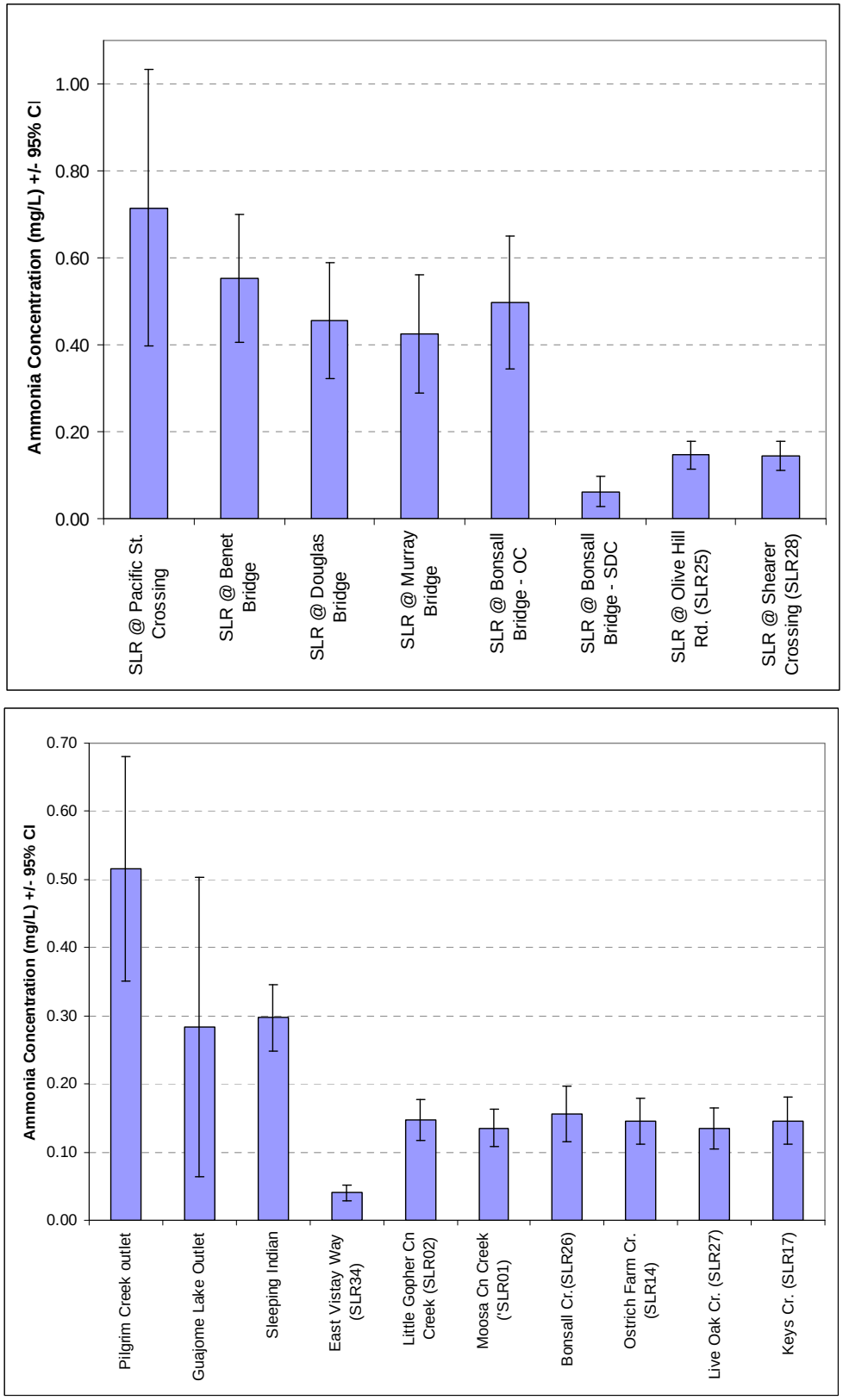

Figure 4. Mean concentrations and 95% Confidence intervals of Ammonia in the main stem of San Luis Rey River and its tributaries.

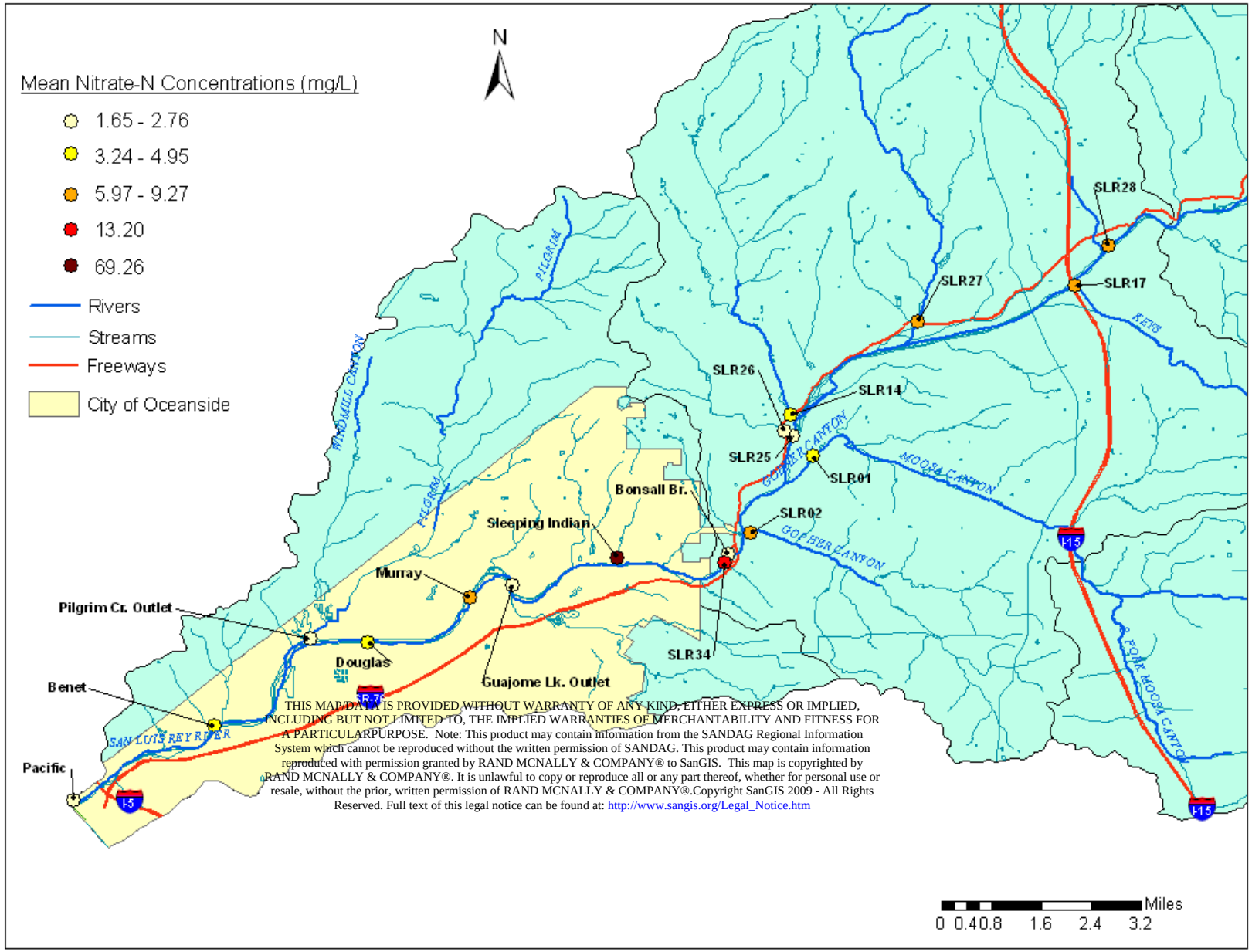

Figure 5. Sampling locations and relative Nitrate-N concentrations along the San Luis Rey River and its tributaries.

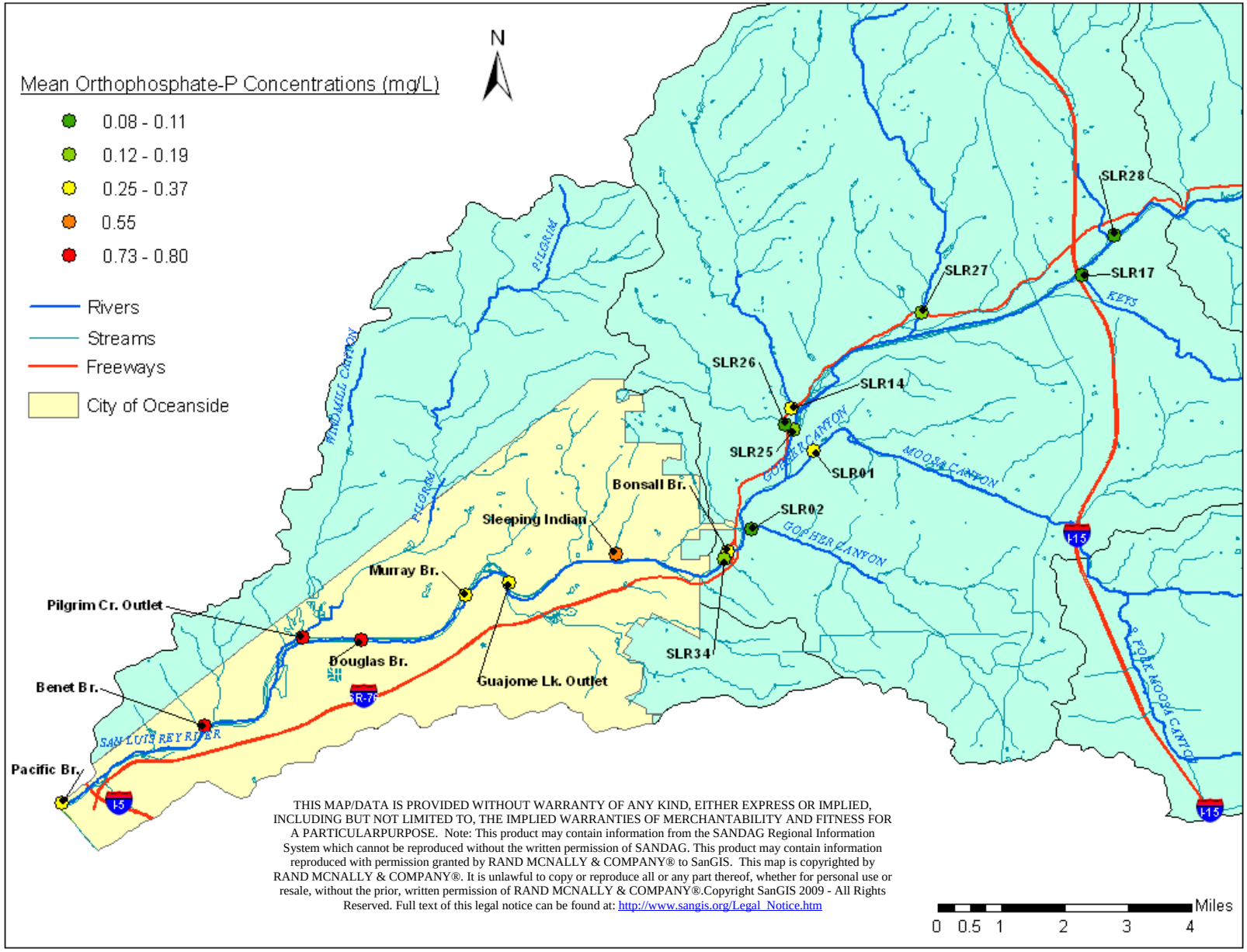

Figure 6. Sampling locations and relative Orthophosphate-P concentrations along the San Luis Rey River and its tributaries.

The mean orthophosphate-P concentrations (Figure 3, Table 3) in the main stem of the River were significantly higher downstream of the Bonsall Bridge sampling location. In the tributaries, the mean orthophospahte-P concentration was highest at Pilgrim Creek Outlet and at Sleeping Indian while Little Gopher Canyon Creek (SLR02, Bonsall Creek (SLR26) and Keys Creek (SLR17) had orthophosphate-P concentrations that were significantly lower from those of the remaining tributaries.

The mean ammonia concentrations (Figure 4, Table 3) exhibited a pattern similar to that of orhtophosphate-P: main stem locations downstream of Bonsall Bridge and Pilgirm Creek and Sleeping Indian tributaries exhibited the highest values.

When the mean, dry weather, instantaneous loadings were calculated for the tributary locations (Table 4), the highest value for nitrate-N was found for Pilgrim Creek followed by the Sleeping Indian tributary. A similar pattern was observed for orthophosphate-P and ammonia.

The highest flux values were estimated for the Sleeping Indian tributary for all nutrients measured (including ammonia, nitrate-N and orthophosphate-P) (Table 5). Pilgrim Creek Outlet was the second highest with the remaining tributaries showing relative flux values that varied depending on the nutrient species considered. Total nitrogen data were not available for Pilgrim Creek Outlet, Sleeping Indian and East Vista Way tributaries and no total phosphorus data were available for the Sleeping Indian tributary.

Discussion

Generally, along the River's main stem, the mean concentrations of orthophosphate-P tended to increase from upstream to downstream with the lowest concentrations found in the upstream-most sampling location, Shearer Crossing (SLR28). Shearer Crossing, however, had the highest main stem nitrate-N concentration that decreased significantly as the River reached Olive Hill Rd. (SLR25) and Bonsall Bridge sampling locations downstream indicating that some nitrate assimilation may have taken place along that stretch of the River. The tributaries contributing to this River section did have nitrate-N concentrations that were lower than that found at Shearer Crossing, with the exception of Bonsall Creek (SLR26), which was significantly higher than Olive Hill Rd. and Bonsall Bridge. Therefore, the tributaries may have acted to "dilute" the nutrient concentration but, also due to their still generally higher nitrate levels and the very low dry weather flow rates, could not have been solely responsible for the drop in the mean nitrate-N concentration at Olive Hill Rd. The Shearer Crossing sampling location is typically dry from July/ August through October of each year. In the future, it would be useful to conduct a reconnaissance study to find the point where the River begins to flow downstream of Shearer Crossing and to determine the source(s) of that flow and the nutrient concentrations at that point.

The highest mean nitrate-N concentration (69.26 mg/L) as well as the highest flux for all nutrients measured were observed for the Sleeping Indian tributary. However, because of the relatively low flow, the instantaneous loading from this tributary was four times lower

than that from Pilgrim Creek. The potential sources of nitrate, orthophosphate and ammonia to the Sleeping Indian tributary should be considered a priority in future investigations. The East Vista Way (SLR34) tributary had the second highest mean nitrate-N concentration, yet it has only been sampled on 5 occasions from June through September 2008. It is recommended that this tributary should be considered a priority for future investigations as a possible contributor of nitrate to the SLR River.

When the mean, dry weather, instantaneous loadings were calculated for the tributary locations (Table 4), Pilgrim Creek had the highest nitrate-N loading followed by the Sleeping Indian tributary. A similar pattern was observed for orthophosphate-P and ammonia. It may therefore be concluded that flow was the largest factor affecting loading Even though Sleeping Indian tributary had the highest mean nitrate-N concentration, it was only second to Pilgrim Creek in the instantaneous nitrate-N load contributed to the River.

Mean, dry weather, instantaneous nutrient flux was highest for all nutrients measured (ammonia, nitrate-N and orthophosphate-P) at the Sleeping Indian tributary. Pilgrim Creek Outlet had the second highest mean flux for the three nutrients. It is therefore recommended that these two tributaries should be considered a priority for future monitoring and investigations.

As the lower 19 miles of the San Luis Rey River are being considered for listing on the 2008 CWA 303(d) list of impaired waterbodies for total nitrogen and total phosphorus, data documenting nutrient concentrations, loading and flux throughout the watershed are crucial. Presently, the water quality objective employed for nutrients is a narrative objective to prevent biostimulatory growth of algae with a current goal of 0.1 mg/L for total phosphorus and 1 mg/L for total nitrogen. These values are not to be exceeded more than 10% of the time. Future studies that support site-specific nutrient water quality objectives may be beneficial. These would allow nutrient concentrations to be related to aquatic growth through studies of algal populations in the watershed.
It is also recommended that accurate flow measurements be made at all tributary sampling locations in order to properly estimate loads. Laboratory analysis for total phosphorus and nitrogen are also recommended. Studies of nutrient concentrations in ground water should also be considered in order to determine if and how they are related to those in dry weather surface flows. Collection of wet weather data may also be considered for future investigations or programs to determine relative wet weather contributions of nutrients to SLR River from the different tributaries.

Reference

Regional Water Quality Control Board. 1994. Water Quality Control Plan for the San Diego Basin (9).
http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Water Quality Activity

TITLE: **Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland**
ID NUMBER: **SLR-003**

ACTIVITY IMPLEMENTATION
Oceanside Harbor has over 40 storm drains with small drainage areas that carry flow to the harbor. One drain with historic bacterial exceedances receives flow from the harbor boat wash. Located within 15 feet of the drain are two wastewater discharge hook-ups for recreational vehicles (RV). This activity, SLR-003, addresses structural BMP implementation at the boat wash drain.

ACTIVITY IMPLEMENTATION FYs 2006-07 and 2007-08
Two bacteria reduction pilot projects have been implemented in the past: installation of an antimicrobial fabric in FY 2006/07 and increased frequency of storm drain cleaning in FY 2007-08. The antimicrobial fabric did not display long-term effectiveness, possibly the result of added hydrocarbons and sediment in the runoff. The City then implemented monthly cleaning of the storm drain outfall in May 2007 which showed reductions in bacterial counts, though there were still some bacterial level exceedances which may be due to re-growth in the pipe.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor Boat Wash storm drain. This system utilizes a combination of technologies to not only address the high priority pollutant of bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. The wetland consists of a vault 22 feet long, five feet wide, and five feet deep. The peak treatment volume is 4000 cubic feet per second with a bypass for higher flows.

To address bacteria, the Modular Wetland is utilizing BioMediaGreen, a new type of media in lightweight block format that is easy to handle and replace, for primary filtration. The wetland is then using a sub-surface flow wetland for biological remediation. Because the harbor is a harsh, salt-water environment, the system is using a hardy, fast growing plant with large root bundles, called Vetiver grass. It was estimated that it take about six months for the plants to get established in the wetland and the roots to get to the bottom of the vault, and therefore, peak treatment to begin.

ACTIVITY IMPLEMENTATION FY 2008-09
After the installation of the wetland, the separator vault was filled to remove the possibility of growth/regrowth between the wetland and the outfall. For six months (July 2008 – January 2009), the City conducted paired sampling of the wetland outfall and the storm drain outfall and found that there was no evidence of regrowth in the pipe. Monitoring of this outfall pipe continued during FY 2008-09 and has been ongoing since 2004 and will continue through the Coastal Storm Drain Monitoring (CSDM) Program for total coliforms, fecal coliforms, and Enterococcus. Not quantified, but pollutants also being addressed by this BMP are oil and grease and trash.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
The Modular Wetland was installed at the beginning of April 2008. The peak treatment efficiencies were expected to be reached by October 2008, depending on plant growth and media maturity.

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside

OTHER PARTICIPATING ENTITIES
- BioClean Environmental Services, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS ASSESSMENT
The Modular Wetland was installed in FY 2007-08 and peak treatment efficiencies were expected in FY 2008-09. The City continued to test the outfall through the CSDM program and also conducted a six month regrowth study between the wetland and the outfall pipe. A comprehensive look at the historical data, regrowth study, and bacteria trends are provided in Attachment A.

In summary, exceedance days (according to CSDM action levels) have decreased to their lowest point since monitoring began. From FY 2007/08 to FY 2008/09 total coliform exceedance days have been reduced from 59% to 44% and fecal coliform exceedance days have been reduced from 41% to 17%. The regrowth study did not provide any evidence that re-growth in the pipe was causing the exceedances. Exceedances at the outfall do still occur, although receiving water exceedances rarely occur (one total coliform exceedance of AB411 standards throughout FY 2008-09).

These reductions show a change in Level 5 Effective Assessment Outcomes, changes in urban runoff and discharge quality. Assessment will continue through the next fiscal year.

Attachment A to SLR-003
Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall
2008-09 SLR WURMP ANNUAL REPORT

Results Summary
June 2004 – September 2009
Modular Wetland Installed April 2008

The City of Oceanside's Clean Water Program has been monitoring the Oceanside Harbor boat wash outfall, located adjacent to the boat ramp, since 2004 as part of the Coastal Storm Drain Monitoring (CSDM) Program. This outfall drains the boat wash-down area, which includes four fresh water spigots, and two sewage dump stations for recreational vehicles, and is located approximately 150 feet upstream of the outfall. Exceedances of CSDM action levels for total and fecal coliforms have been occurring at the outfall since monitoring began. However, exceedances of REC-1 receiving water standards have rarely occurred at this site. Average flow rates from the outfall are 1gpm or less.

Several BMPs have been attempted to reduce bacteria levels and exceedances at the outfall. Until late 2008, this drainage line did have a separator vault to separate debris, sediment, and hydrocarbons from entering the harbor. It is suspected that while this did assist in sediment and debris separation, the vault may have allowed bacteria growth and/or regrowth which would result in bacteria action level exceedances. Other BMPs included installation of anti-microbial fabric in the vault, increased cleaning frequency of the storm drain line, and additional signage for RV users.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor boat wash storm drain inlet. This system utilizes a combination of technologies to not only address bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. It was agreed that the City would continue to sample the outfall for bacteria, under the CSDM program guidelines, and BioClean would complete the product effectiveness testing.

RESULTS

Table 1 provides the indicator bacteria results from the outfall (also known as Coast 08 under the CSDM program). Bacteria samples were processed either by Weston Solutions, Inc. or the City of Oceanside's San Luis Rey Wastewater Treatment Plant Laboratory using the multiple tube fermentation (MTF) method. Results in red and bold indicate an exceedance of the CSDM action levels which are presented in Table 2.

After the installation of the wetland, the separator vault was filled in to remove the possibility of growth/regrowth between the wetland and the outfall. For six months, the City conducted paired sampling of the wetland outfall and the storm drain outfall and found that there was no evidence of regrowth in the pipe. These results are presented in Table 3.

Table 1. Oceanside Harbor Boat Wash Outfall Monitoring Results from June 2004 through September 2009.

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
6/22/2004	11800	6500	**160000**
6/30/2004	1730	**80000**	**1600000**
7/13/2004	726	**24000**	**160000**
8/11/2004	**23500**	**160000**	**160000**

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
9/7/2004	8660	800	9000
11/16/2004	1400	**1600000**	**1600000**
12/14/2004	17100	20	500
1/18/2005	460	5000	130000
2/8/2005	2250	500	**900000**
3/8/2005	3730	8000	**1600000**
4/12/2005	5	400	8000
4/19/2005	580	1100	**300000**
4/26/2005	130	3000	**900000**
5/3/2005	8220	300	80000
5/10/2005	2340	3000	110000
5/24/2005	210	**30000**	50000
6/7/2005	210	**50000**	130000
6/21/2005	290	7000	**300000**
6/21/2005	6520	**50000**	**1600000**
7/19/2005	210	5000	**500000**
8/2/2005	590	**130000**	**220000**
8/16/2005	340	8000	130000
8/30/2005	270	5000	50000
9/13/2005	240	17000	140000
9/27/2005	51	**80000**	80000
10/11/2005	75	17000	50000
10/25/2005	1000	5000	**170000**
11/8/2005	3140	1300	23000
1/17/2006	**98040**	13000	**900000**
2/14/2006	150	300	5000
3/27/2006	5	1300	130000
4/10/2006	230	10000	**400000**
4/10/2006	230	10000	**400000**
5/1/2006	120	230	**1600000**
5/30/2006	20	1600	**160000**
6/12/2006	360	**20000**	**420000**
6/26/2006	430	**900000**	**1600000**
7/10/2006	2970	**30000**	**500000**
7/24/2006	**54800**	**80000**	**1600000**
8/7/2006	1750	**30000**	**900000**
8/21/2006	990	500	23000
9/5/2006	1400	2800	**500000**
9/18/2006	**50000**	**160000**	**1600000**
9/18/2006	11000	**160000**	**900000**
11/20/2006	580	3000	50000
12/20/2006	2190	2800	110000
2/26/2007	107	110	11000
3/20/2007	5	1700	110000
5/7/2007	120	1400	80000
5/21/2007	5	40	23000
6/11/2007	100	3000	130000

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
6/25/2007	1782	**50000**	**900000**
7/3/2007	296	1100	**240000**
7/17/2007	150	13000	80000
7/30/2007	569	**1300000**	**1600000**
8/13/2007	760	800	130000
8/27/2007	130	5000	13000
9/24/2007	190	**23000**	30000
10/17/2007	4,050	**500,000**	**900,000**
10/29/2007	210	1,100	**1,600,000**
11/13/2007	1,935	**23,000**	**1,600,000**
12/18/2007	368	**70,000**	**300,000**
1/17/2008	**24,196**	**30,000**	**1,600,000**
1/31/2008	30	1,100	**900,000**
2/28/2008	213	13,000	**1,600,000**
4/1/2008 – Modular Wetland Installed			
4/14/2008	5	300	50,000
5/12/2008	**24,196**	600	140,000
6/2/2008	14,136	**110,000**	**170,000**
6/10/2008	5	20	40
7/7/2008	622	5,000	**1,600,000**
7/15/2008	41	2,200	17,000
7/21/2008	95	3,000	17,000
8/4/2008	63	1,700	110,000
9/2/2008	670	17,000	**300,000**
9/11/2008	2,062	2,800	13,000
10/7/2008	1,989	17,000	80,000
11/10/2008	15,531	**170,000**	**1,600,000**
11/18/2008	7,270	**30,000**	**1,600,000**
12/8/2008	250	1,300	30,000
1/12/2009	85	700	**900,000**
1/21/2009	73	13,000	**220,000**
2/1/2009 - BioMediaGREEN +AM (Anti-Microbial) Filter Installed in the Discharge Chamber of the Wetland			
2/4/2009	52	300	**500,000**
2/13/2009	134	20	11,000
3/3/2009	1,850	1,400	17,000
4/6/2009	226	1,100	130,000
5/14/2009	471	5,000	50,000
6/1/2009	**24,800**	**80,000**	**1,600,000**
6/9/2009 – Wetland maintenance. Replaced all media components in the wetland chamber.			
8/17/2009	790	3,500	70,000
9/8/2009	3,100	17,000	**170,000**
9/15/2009	610	**30,000**	**300,000**

Table 2. CSDM Action Levels.

Total Coliform	160,000 MPN/100ml
Fecal Coliform	18,755 MPN/100ml
Enterococcus	17,820 MPN/100ml

Table 3. Test for Regrowth between Wetland Outfall and Storm Drain Outfall.

Date	Location of Sample (WO = Wetland Outfall, OF = Storm Drain Outfall)	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
7/7/2008	WO	332	17,000	1,600,000
	OF	622	5,000	1,600,000
8/4/2008	WO	20	2,300	110,000
	OF	63	1,700	110,000
9/2/2008	WO	51	30,000	500,000
	OF	670	17,000	300,000
9/11/2008	WO	1,775	170,000	900,000
	OF	2,062	2,800	13,000
10/7/2008	WO	275	11,000	170,000
	OF	1,989	17,000	80,000
11/10/2008	WO	4,198	110,000	900,000
	OF	15,531	170,000	1,600,000
11/18/2008	WO	15,531	70,000	1,600,000
	OF	7,270	30,000	1,600,000
12/8/2008	WO	121	3,000	110,000
	OF	250	1,300	30,000
1/12/2009	WO	121	300	900,000
	OF	85	700	900,000

CONCLUSIONS

While the City has not been conducting the BMP removal efficiency testing, it does appear that the number of exceedance days (as defined by the CSDM program) have decreased during the 2008/09 fiscal year, during which the modular wetland has been in place. This also accounts for the time that the separator vault has been filled. No additional signage or BMPs have been in place during this time. Table 4 and Figure 1 present the exceedance day data for all indicator bacteria.

Table 4. Exceedance Day Results by Fiscal Year for Harbor Boat Wash Outfall.

Fiscal Year	Total Coliforms		Fecal Coliforms		Enterococcus		# Days Sampled
	Frequency of Exceedance	% Exceedance	Frequency of Exceedance	% Exceedance	Frequency of Exceedance	% Exceedance	
2004/05	9	53%	6	35%	1	6%	17
2005/06	10	56%	4	22%	1	6%	18
2006/07	7	47%	6	40%	2	13%	15
2007/08	10	59%	7	41%	2	12%	17
2008/09	8	44%	3	17%	1	6%	18

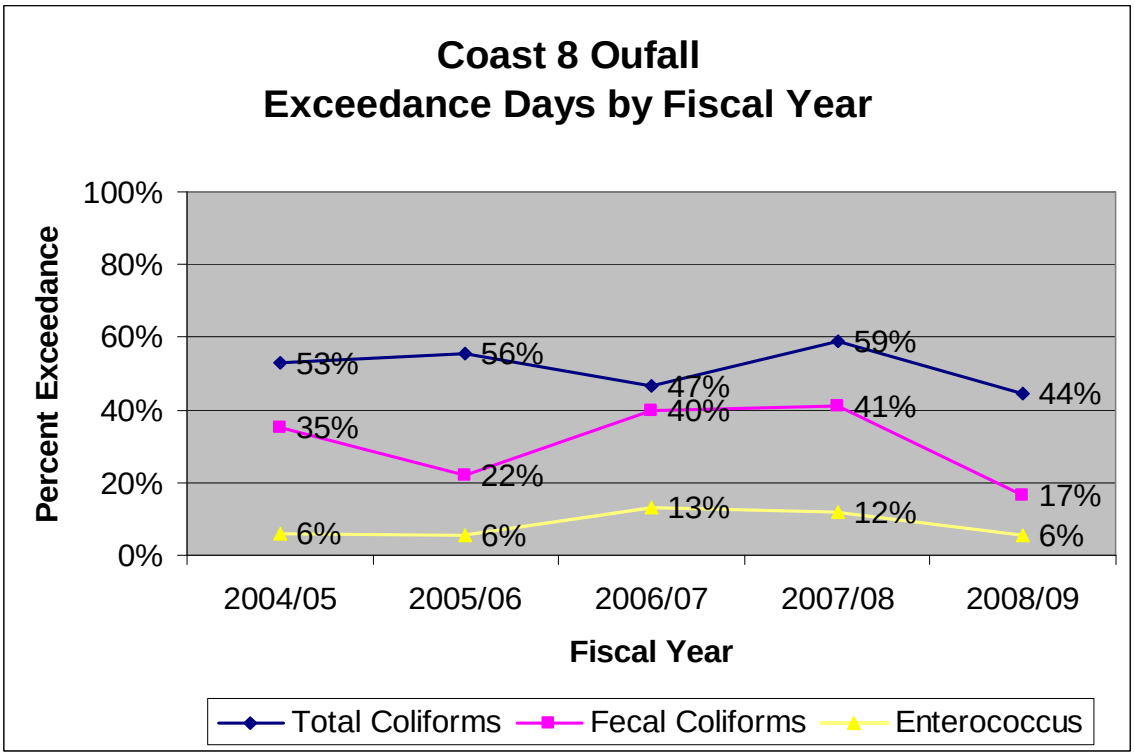

Figure 1. Exceedance Day Results by Fiscal Year for Harbor Boat Wash Outfall.

Both total and fecal coliform exceedance days are less than they have been since monitoring began, although exceedances are still occurring. From FY 2007/08 to FY 2008/09 total coliform exceedance days have been reduced from 59% to 44% and fecal coliform exceedance days have been reduced from 41% to 17%.

Ideally, these results could be matched to the removal efficiency results of the wetland to show that, indeed, the wetland is the cause of the reduced number of exceedances. BioClean Environmental, Inc. collected five samples between June and July of 2008 that appear to show removal efficiencies of the wetland itself. Further BMP effectiveness testing was conducted in the spring of 2009, with five samples collected, but testing was only conducted on the BioMediaGREEN+AM filter that was installed in the discharge chamber.

In summary, monitoring will continue at the Harbor boat wash outfall for indicator bacteria and long term effectiveness will continue to be assessed. Although removal amounts of trash and hydrocarbons have not been quantified, visual observations of the absorbent pads and trash collection devices all indicate that the wetland is assisting with the removal of these pollutants.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality and Education Activity

TITLE: **Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail**
ID NUMBER: **SLR-004**

ACTIVITY DESCRIPTION
The City of Oceanside manages an eight mile recreational walking and biking trail that is adjacent to the San Luis Rey River. This trail has high recreational traffic including bikers and walkers some of who walk and run their dogs along the trail. Since the trail was opened in 2000, city crews have noticed that pet waste, specifically dog waste, is not always picked up and properly disposed in trash cans, but is left on the trail. The City wants to install pet waste bag dispensers, signage, and trash cans along the trail. City crews have expressed concern about potential problems with installing some of these BMPs including the cost for maintenance and probable vandalism to signs and pet waste bag dispensers. The goal of this project is to determine which types of educational BMPs will enact a behavioral change amongst people who do not pick up pet waste and prioritize specific locations for BMP installation.

Pet waste left on grass, sidewalks, and along trails is not only a leading cause of bacterial contamination in waterways, but it also an issue that concerns Oceanside residents. In the spring of 2009, the City of Oceanside Clean Water Program launched a Pick up Your Pet Waste Campaign to encourage dog owners to clean up after their pets. The project focused on the San Luis Rey River Trail (Trail) which is a location where pet waste still accumulates.

ACTIVITY IMPLEMENTATION FY 2007-08
- Different types and designs of pet waste bag dispensers were researched. At least two different dispensers will be installed to determine the type used by the public, ease of maintenance, and vandalism potential.
- Service estimates from pet waste removal companies were received for temporary cleanup services and assessment of waste not picked up along the trail. The company will be asked to provide feedback on sections of the trail that have more waste than other sections. This will help determine the high use areas and where it may be most effective to install the dispensers, signs, and trash cans.
- A local Girl Scout troop “adopted” this pilot program as part of their Bronze Award requirements. They agreed to assist in some of the components of the education outreach program. Their activities may include staffing tables along the trail as part of a kick-off event, to be taped on a local television show encouraging people to pick up dog waste, and assess the data collected from the project. They may provide additional assistance where needed.
- A Community Based Social Marketing component is planned to be implemented as part of the projects education outreach component. Activities proposed to assist with the CBSM may include a visual observation component, identification of experimental and control areas along the trail, a mail survey to residents to identify barriers, an assessment of survey responses, and recommendations for BMP implementation as a result of the survey assessment.

ACTIVITY IMPLEMENTATION FY 2008-09

Girl Scout Troop 1215 of Oceanside began assisting with tasks related to the education outreach component which were also part of an overall a Community Based Social Marketing (CBSM) project. The goal of the overall CBSM project is to decrease the amount of pet waste left along the San Luis Rey Recreation Trail and bike path. The four main tasks of the CBSM project include:

- Task1: Establish a baseline measure of dog waste in pilot and control areas. This is done to establish the overall effectiveness of the CBSM pet waste pilot project. This task began with a series of observations prior to project implementation to establish a baseline of prevalence of pet waste along the trail. The bike path was divided into one experimental and one control area.
- Task 2: Mail survey of residents to identify barriers. The use of a mail survey will identify knowledge, awareness, behavior, and primary barriers with respect to pet waste and pet waste pick-up among residents of the communities surrounding the trail.
- Task 3: Analysis and Recommendations. Based on results of the barrier survey program recommendations that incorporate the use of various CBSM components will be developed.
- Task 4: Program Implementation: Post-test Evaluation: In order to evaluate effectiveness of the CBSM pet waste project, repeating of the behavioral observations conducted at the start of the project are recommended. Observations should be conduced in the experimental section of the path (where program materials are implemented) as well as in one control section of the path (no materials).

During this reporting period Tasks 1 – 3 were completed and are detailed below.

Task1 - Establish a baseline measure of dog waste in pilot and control areas.

As part of the implementation of the CBSM project described above, Girl Scout Troop 1215, located in Oceanside, offered their assistance in implementing components of the CBSM project. Some tasks detailed below were part of the official CBSM project while others were tasks as part of their requirements to earn the Bronze Award which is the highest honor a Girl Scout Junior can achieve:

Skit during Troop meeting

During one of the regular Troop meetings, two of the girls conducted a skit demonstrating the importance of picking up after the dog. See Attachment A to this activity sheet for a picture of the two girls during their skit. This task assisted these two girls in earning their Bronze Award.

Intercept surveys along trail

This task was part of the CBSM project and was implemented by four girls from Troop 1215. The four girls, along with the Troop Leader and one other parent, conducted intercept surveys along the Trail on a Saturday morning, April 4, 2009. Two different intercept surveys were utilized – one for dog walkers and one for bike trial visitors. See Attachment A to this activity sheet for a copy of the two surveys.

The portion of the Trail targeted for this project was divided into three sections: A, B and C. See Attachment A to this activity sheet for a map of the trail and its identified sections. There is a

paved bike trial on the south side of the river and a dirt trail on the north side. The Girl Scout troop divided into two groups. One group walked the north side of the trail and one group walked the south side of the trial to conduct the surveys. Prior to conducting the intercept surveys the girls were given direction on how to properly approach people and conduct the surveys.

Troop members approached people on the trail and asked if they would answer four questions. If the trail user had a dog with them, the Girl Scout asked the questions on the Dog Walker Survey. If the trail user did not have a dog with them, the Girl Scout asked the questions on the Bike Trail Visitor Survey. The Girl Scouts also carried pet waste bags with them and offered them to trail visitors who had dogs if they needed them.

There were four objectives to the intercept surveys:

1. Determine if Trail visitors lived in Oceanside
2. Determine which street they lived on in Oceanside
3. Determine where they accessed the Trail
4. Determine if dog walkers had a pet waste bag in hand already.

As a result of question number two on the surveys, a map was created to identity which streets the trail visitors lived on that accessed the trail that day. Question number three provided information on the most common access points to the trail. These two questions helped target the addresses to which the mail survey would be sent and potentially prioritizing BMP installation locations. Because there are thousands of homes located in the vicinity of the trail it was not feasible to mail surveys to all households due to funding limitations. Thus 300 addresses were selected based on the streets and access points noted from the surveys. See Attachment A to this activity for a map denoting streets where trail visitors lived.

Existing Poop Pile Assessment

While the Girl Scouts were conducting the surveys, they also counted the number of poop piles on both on the north and south side trails. This helped identify the locations on the trail that had higher concentrations of poop piles. It was determined that the unpaved trail on the north side of the river had more poop piles than the south side. But, this may be due to the fact that City crews clean the paved bike trail on a monthly basis, whereas no cleaning services are conducted on the unpaved trail on the north side.

Tasks 2: Mail survey to identify barriers

To inform the public in the development of the campaign, a random sample of 300 Oceanside households located in neighborhoods near the Trail were mailed several pieces of information in April and May 2009. The goal of the survey was to identify the reasons why people do or do not pick up after their pets on the Trail and other public areas. The mail survey included the following items:

- Pre notification letter informing residents that they will soon be receiving a brief one-page survey (dated April 27, 2009).
- Cover letter requesting the resident to complete the enclosed survey (dated May 1, 2009).
- Copy of the survey titled “City of Oceanside Survey of Dog Waste in the Community”.
- Postcard reminding residents that a survey was sent the previous week and requesting them to complete and send the survey if not already done (dated May 7, 2009).

- Self-addressed stamped envelope for respondents to mail their completed survey.
- Follow-up letter to addresses from which survey not received as of yet (dated May 14, 2009).
- See attachment # for a copy of all the correspondence listed above.

Task 3: Analysis and Recommendations

Of the 300 surveys that were mailed 180 surveys were completed and mailed back. This is a 63% completion rate which is higher than the anticipated 50% completion rate. Of those residents who completed the survey, 70% had visited the Trail in the past and 48% reported that they had a dog in their household. See Attachment A to this activity sheet for complete survey results.

The results of the survey provided clear recommendations for the Pick Up Your Pet Waste Campaign at the Trail including the installation of additional trash cans and pet waste bag dispensers as well as modifying signage to emphasize pet owner responsibility. Ninety-three percent of survey respondents agreed that more pet waste dispensers are needed in the community. As a result, the City plans to move forward with installing additional signage, trash cans, and pet waste bag dispensers along the Trail.

Tasks planned for FY 09-10

Post project evaluation

The trail will be divided into an experimental and control section. Installation of the pet waste bag dispensers, trash cans and signage will occur along the experimental section of the trail during FY 2009-10. No dispensers, trash cans or signs will be installed in the control area. Signage will show the positive behavior of picking up pet waste. Sections B and C on both the north and south sides of the river, will serve as the experimental section and will have pet waste bag dispensers, trash cans and signs installed. Section A of the trail, on both the north and south sides of the river, will serve as the control area where no dispensers, signs or trash cans will be installed. During project assessment the exact number of each BMPs to be installed will be determined.

A pet waste removal service company will be hired to count and remove poop piles along the trail prior to and after the installation of the dispensers, signs and trash cans. The company will assess the number of poop piles in the control and experimental sections of the trail. This will help determine if the BMPs are reducing the amount of pet waste left along the trail. After the completion of this component it will be determined if the BMPs are successful and if additional pet waste bag dispensers, trash cans and signs should be installed in the control area.

Video presentation on Oceanside Update (KOCT)

Three members of Girl Scout Troop 1215 are scheduled to be videotaped in July 2009 to inform the public about the importance of picking up after their dog. This three minute presentation is scheduled to be shown during the month of August 2009.

Survey results provided to the public

Survey results will be provided in an article of the Fall/Winter 2009 edition of the Oceanside Magazine. These results will also be summarized in the fall 2009 issue of Oceanside's Clean Water Program newsletter. Both of these publications are mailed to over 40,000 households in Oceanside.

TMDL APPLICABILITY

This section of the river is not under TMDL development or implementation. However, the Pacific Ocean Shoreline at the mouth of the San Luis Rey River is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development in 2008.

TIME SCHEDULE FOR IMPLEMENTATION

Program planning for this activity was completed during the 2007-08 reporting period, with components of the project implemented during FY 2008-09. Additional components of the program will be conducted during FY 2009-10. Based on the assessment results Pet waste bag dispensers with positive signage are scheduled to be installed along the trail in FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- Girl Scout Troop 1215

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a priority water quality problem in the San Luis Rey River Watershed. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

It was anticipated that there would be a 50% return rate on the surveys mailed to random addresses near the trail. Of the 300 surveys that were mailed 63% completed surveys were returned. This demonstrated that the survey protocols were very effective in getting feedback from residents about pet waste in their community.

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Identify sections of trail to target CBSM project through intercept surveys	1	Trail map and trail visitor map	Yes
Conduct Mail Survey	1	50% Completion rate	Yes – 63% completion rate

During FY 2009-10 it is anticipated that the following assessment will be conducted:

- Baseline loads will be calculated along the entire trail prior to installation of pet waste bag dispensers by collecting and weighing dog waste left on the trail and disposed in trash cans located along the trail. After BMP installation the same calculations will be done to determine which of the BMPs installed were most effective in reducing fecal waste left along the trail.
- The number of pet waste bags used from the new dispensers installed along the trail will be tabulated as dispensers are refilled.
- Assessment of the type of dispensers and signs installed in the experimental area are effective and acceptable for installation in the control area.

ATTACHMENT A TO SLR-004
Pet Waste Removal Pilot Project Along San Luis Recreation Trail
2008-09 SLR WURMP Annual Report

Figure 1: Members of Girl Scout Troop 1215 during Pick Up Your Pet Waste skit

DOG WALKER SURVEY

Do you live in Oceanside? YES NO

What is the name of the street you live on? _____

Where did you get on the trail today? _____

Did you bring a bag with you for your dog's poop? YES NO

↓

Would you like a bag?

Do you live in Oceanside? YES NO

What is the name of the street you live on? _____

Where did you get on the trail today? _____

Did you bring a bag with you for your dog's poop? YES NO

↓

Would you like a bag?

Do you live in Oceanside? YES NO

What is the name of the street you live on? _____

Where did you get on the trail today? _____

Did you bring a bag with you for your dog's poop? YES NO

↓

Would you like a bag?

Figure 2: Dog Walker Survey

BIKE TRAIL VISITOR SURVEY

(for visitors who are not walking a dog)

Do you live in Oceanside? YES NO

What is the name of the street you live on?_____

Where did you get on the trail today?_____

Do you have a dog? YES NO

↓

Do you ever walk your dog here on this trail? YES NO

Do you live in Oceanside? YES NO

What is the name of the street you live on?_____

Where did you get on the trail today?_____

Do you have a dog? YES NO

↓

Do you ever walk your dog here on this trail? YES NO

Do you live in Oceanside? YES NO

What is the name of the street you live on?_____

Where did you get on the trail today?_____

Do you have a dog? YES NO

↓

Do you ever walk your dog here on this trail? YES NO

Figure 3: Bike Trail Visitor Survey

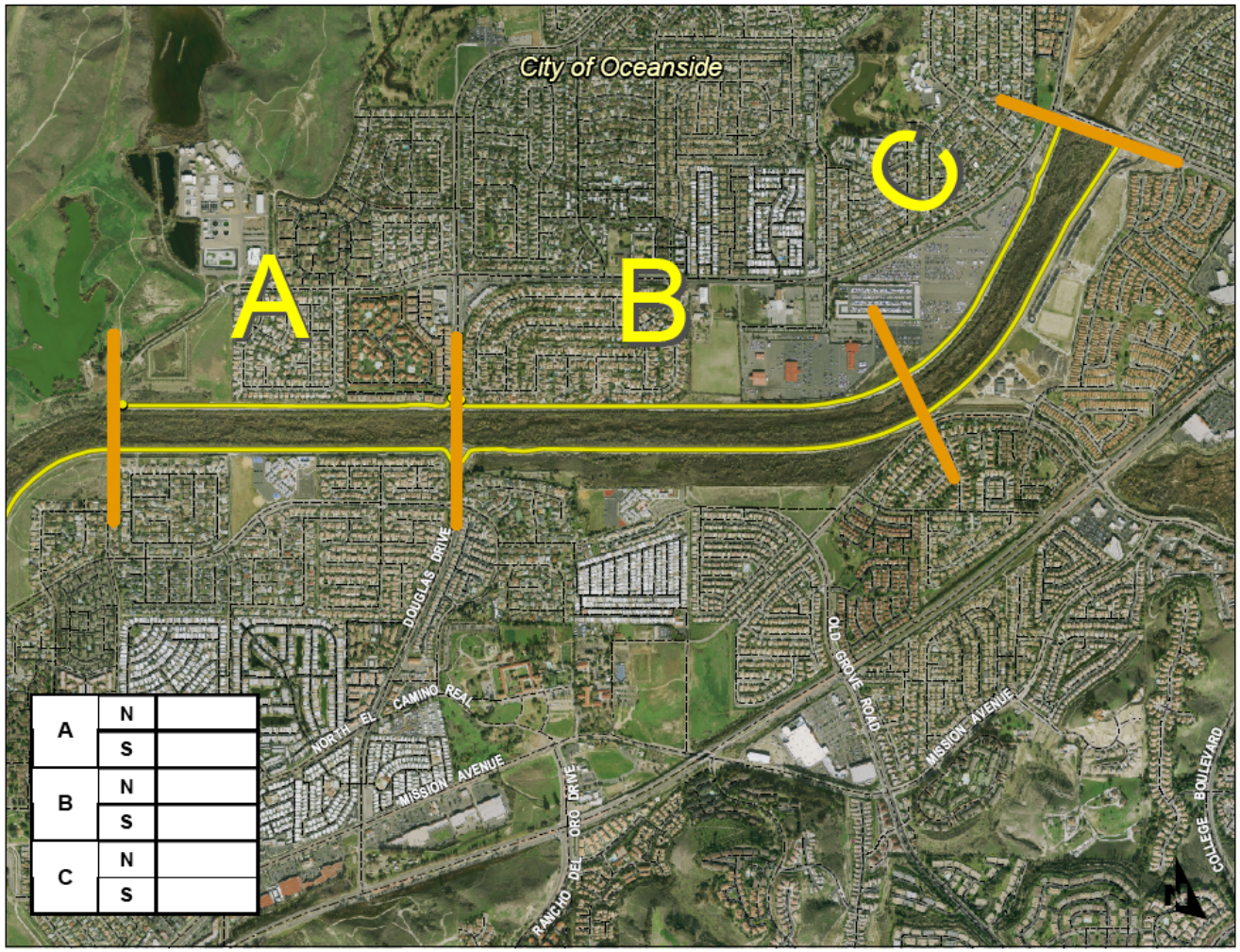

Figure 4: Map of San Luis Rey Recreation Trail targeted for Pet Waste Removal Pilot Project

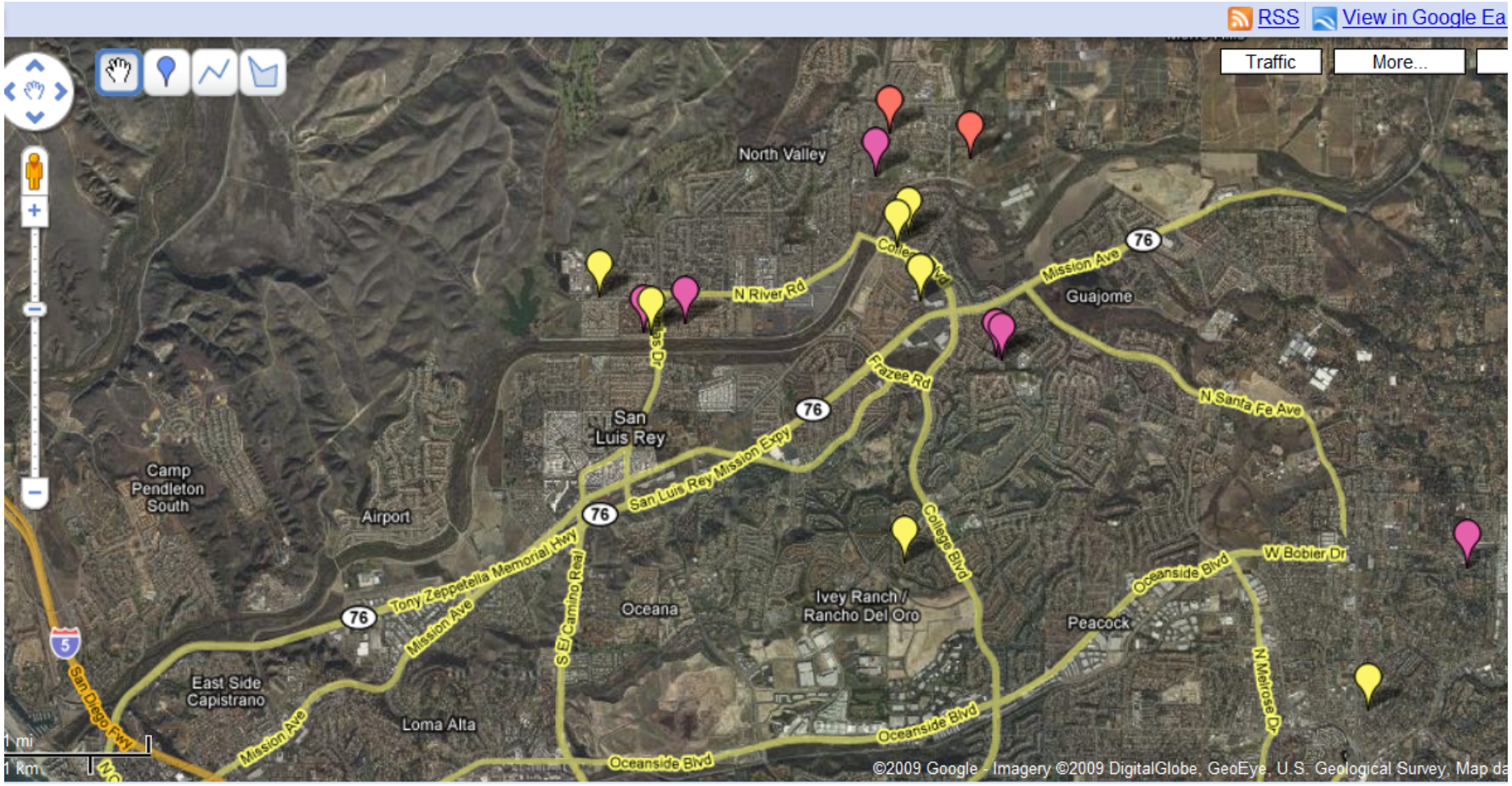

Figure 5: Map of streets where trail visitors lived on day of intercept surveys

City of Oceanside: Pick Up Your Pet Waste Campaign
Mail Survey Results

Response Rate Details

- 300 Surveys Mailed, 285 Valid Addresses
- 183 Responded = **64% Response Rate**
- 180 Surveys were Completed = **63% Completion Rate**

Overall Sample Characteristics

- **Dog Ownership:** 45% report having a dog in their household (N=81)
- **Age:** Mean Age = 53.77
- **Gender:** 49% Female, 46% Male, 5% Did not report gender
- **Interest in Results:** 52 residents (29%) requested a copy of the survey results
- **Trail Visitors:** 70% have visited the San Luis Rey River Bike Trail (N = 123)

Characteristics of Dog Owners (N=81)

- Mean Age = 51.51; Range = 24-84 years
- 84% walk their dogs (N=69)
- **17% of dog walkers said that there are times when they leave their dog's waste behind:** "When you walk your dog, how often do you leave your dog's waste behind without picking it up?"
    - Never = 82.6%; Rarely = 13.0%; Sometimes = 4.3%
- 74% of dog owners have visited the San Luis Rey River Trail

How often do you see dog waste in your community
that is left behind and not cleaned up?

Dog Waste in the community is a relevant Issue. Seventy percent (70%) of residents report that they see dog waste left behind in their community at least sometimes.

Never	Rarely	Sometimes	Often	Always
4%	26%	36%	21%	13%

"I would like to see more pet waste bag dispensers in my community. "
0 = Strongly Disagree; 10 = Strongly Agree

Residents are overall positive about the idea of pet waste bag dispensers.

- 53% responded "strongly agree"; 67% responded 8 or higher on the 10-point scale
- Only 7% of respondents strongly disagreed with this suggestion.
    - Mean = 7.84 (Dog Owners = 8.36 , Non Owners = 7.43)

How important is it that dog owners always pick up their dog's waste?
0 = Not at all Important; 10 = Extremely Important

Both dog owners and non owners agree that it is important to pick up dog waste.

- Mean = 9.61 out of 10 (Dog Owners = 9.42 , Non Owners = 9.76)

Motivations for Picking up Dog Waste

Among dog owners, the top rated reasons for picking up dog waste and throwing it in the trash were: **"it is the right thing to do"** and **"because it pollutes parks, rivers, and beaches".**
Other important reasons mentioned for picking up dog waste were: because it is the personal responsibility of pet owners, because it smells and attracts bugs, because it is rude and inconsiderate to others, and to keep the community clean.

It is important for pet owners to pick up dog waste and throw it in the trash…	Dog Owners	Non Owners	Total
…because it is the right thing to do.	9.23	9.66	9.47
…because it pollutes parks, rivers, and beaches.	9.05	9.58	9.34
…because it is unsafe for children.	8.81	9.85	9.38
…because it washes into creeks, rivers, and the ocean.	8.90	9.15	9.03
...because it makes the community look bad.	8.75	9.21	8.99
…because someone might step in it.	8.56	9.30	8.97
…because pet waste transmits disease.	8.61	8.99	8.82
…because it is the law.	8.35	9.13	8.77

Barriers to Picking up Pet Waste

Among dog owners, the top rated barriers for why someone might not pick up after their dog were: **"no one else is around to see them," "forget to bring a bag," and "nowhere to throw it away."** Of the 12 people who reported that they left dog waste behind at least sometimes, the highest rated barriers were: other people don't pick up after their pets (*M* = 7.25), nowhere to throw it away (7.25), no one is around to see them (6.83), and they think it is gross (6.75).
Other barriers mentioned by residents included: laziness (42%), lack of enforcement, loose stool, no trash cans or bags, thinking someone else should do it, among others.

In my community, someone might not pick up after their dog because…	Dog Owners	Non Owners	Total
…no one else is around to see them.	6.69	5.61	6.08
…they forget to bring a bag with them.	6.58	5.44	5.94
…there is nowhere to throw it away.	6.32	4.44	5.28
…they think it is gross.	6.17	5.28	5.68
…they don't think it is important.	6.07	5.39	5.69
…other people don't pick up after their pets.	5.88	4.34	5.02
…someone will come later to clean it up.	3.88	3.92	3.90

San Luis Rey River Trail Results

710% of residents have visited the trail (N=123). Of those who have visited the trail, 83% have seen dog waste on the trail. A total of 158 reasons were listed for why there is dog waste on the trail. The primary reasons provided for why there is dog waste on the trail

are listed below. Among dog owners who have visited the trail, No Bags and Trash Cans that are too far apart.

	Overall Sample		Target Population	
Reason	N	%	N	%
People are Lazy/Don't Care/Rude	63	40%	19	29%
No Bags	30	19%	19	29%
No Trash Cans/Trash too Far Away	29	19%	17	26%
Other	11	7%	4	6%
No One Around	10	6%	3	5%
Interrupts Exercise	5	3%	1	2%
Not Paved/Feel it is the Country	4	3%	1	2%
Lack of Enforcement	3	2%	0	0%
Already Coyote Poop	3	2%	2	3%
TOTAL	158	100%	66	100%

Target Population Results

The target population for this Pick Up Your Pet Waste CBSM project is dog owners who walk their dogs on the San Luis Rey River Trail. Because the response rate was so high, the sample included a sufficient number of responses to look at the target population as a group. The results below reflect the responses of those who met the following criteria:

- Dog Owners
- who Walk their Dogs
- and who have visited the San Luis Rey River Trail

A total of 51 participants met these criteria (28%)

- 18% have left dog waste behind rarely or sometimes
- Most important reasons for picking up dog waste were:
    - "right thing to do" (9.20),
    - "pollutes parks, rivers, and beaches" (8.76),
    - "unsafe for children" (8.62), and
    - "washes into creeks, rivers, and ocean" (8.60).
- Highest rated barriers to picking up dog waste were:
    - "forget a bag" (7.02)
    - "nowhere to throw it away" (6.68)
    - "no one around to see" (6.59)

RECOMMENDATIONS

- **Remove Structural Barriers to Action**
  - Trash cans and bag dispensers are needed on the SLR Trail.
  - Existing trash cans are lacking and too far apart.
  - Not having a bag and lack of trash cans are frequently cited as important barriers.
- **Use Messaging/Approaches that Resonate with Motivations of Target Group**
  - Messages should focus on shared perception that it is the right thing to do.
  - Normative messages that others approve of it and others do it. Emphasize that others are watching to remove anonymity.
  - Messages that focus on pollution will also resonate well with the target audience.
  - Avoid messages that focus on the "law" or that pet waste "transmits disease"
- **Change Existing Trail Signage**
  - We recommend simple, easy to read, focused messaging that highlights the motivations described above.
  - To keep the message focused on ONE activity, leave leash law message off or use other signs for that message.
  - **Our recommendation for the sign is as follows:**
    - "Scoop the Poop – It's Your Doody!"
    - Underneath the text include a picture of a person cleaning up after their dog (should look easy and comfortable)
  - Place signs along the trail, at trail heads, and at trash cans
  - If funds permit, place signage ON the trash cans as well as along the trail. (see example below).
  - The message below is also a good example of a graphic that depicts picking up waste as easy/pleasant

This is good example of a graphic. It shows the correct action, and makes it

This is a bad example. The sign lacks focus and the picture makes picking up the waste look REALLY uncomfortable, awkward, and difficult.

- **Other Community Activities**
  - **Utilize Girl Scouts to Emphasize Social Responsibility.** Use girl scouts to talk to trail visitors and inform them about the newly available dispensers and trash cans. This builds on the social responsibility aspect of the campaign.
  - **Trail Guide for Dog Walkers.** Show placement of bins on trail maps. These could be handed out at trail or at events. Show the map of the river trail, information about pet waste cleanup, and location of dogi-pots/trash cans along trail.

NEXT STEPS

- **Clean Up All Existing Waste in Pilot and Control Areas**
- **Separately Record Quantity of Pet Waste in**
  - Pilot Area North
  - Pilot Area South
  - Control Area North
  - Control Area South
- **Install New Signage**
- **Install New Dog Waste Bag Dispensers and Trash Bins**
- **North Side (un paved)**
  - We recommend a minimum of 3 trash bins and dispensers. 1 at each access point and 1 or 2 spaced evenly along the trail

-
- **South Side**
    - If placement along the trail is not feasible, we recommend bag dispensers placed near the access points of the trail.
    - Position the dispensers so that they are highly visible.
- **Record information about implementation**
    - Number installed
    - Frequency of Refill
    - Maintenance Issues
    - Vandalism Issues
- **After one month**
    - Clean up/count poo again along trail (4 sections)

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WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID NUMBER: **SLR-005**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste bag dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION FY 2007-08

During the FY 2007-08 reporting period the County of San Diego maintained eleven dispenser stations at three parks within the San Luis Rey River Watershed.

ACTIVITY IMPLEMENTATION FY 2008-09

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed. The parks and the number of dispensers include:

- Live Oak Park (3 dispensers)
- Palomar Park (1 dispenser)
- Guajome Regional Park (7 dispensers)

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey River Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	FY 08-09		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Live Oak Park	3	8,075	1,615
Palomar Park	1	3,230	646
Guajome Regional Park	7	22,610	4,522
Total	**11**	**33,915**	**6,783**

During the FY 2008-09 reporting period the County maintained 11 stations among three County Parks within the San Luis Rey River Watershed. These stations distributed approximately 33,915 bags, preventing an estimated 6,783 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **Guajome Lake Water Quality Monitoring Program**
ID NUMBER: **SLR-008**

ACTIVITY DESCRIPTION

The County of San Diego is implementing a monitoring program to assess the contribution of urban runoff (specifically nutrients) to the eutrophication of Guajome Lake. On January 7, 2005 a joint reconnaissance of the Guajome Lake area was conducted with the City of Oceanside, the County Department of Agriculture, Weights, & Measures (AWM), the County Department of Parks and Recreation (DPR), and the County Department of Public Works (DPW). All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, seven locations in the northern subbasin were monitored and two of those were selected as long-term monitoring sites. They included the East Channel Creek at Hutchison Street and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL02 is located in the middle of the subbasin and is co-located with the County of San Diego's dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities.

ACTIVITY IMPLEMENTATION FY 2007-08

During the FY 2007-08 reporting period the County of San Diego continued monitoring activities at the two long term sites at Guajome Lake (GUL02 and GUL07).

ACTIVITY IMPLEMENTATION FY 2008-09

During the FY 2008-09 reporting period the County of San Diego continued monitoring activities at the two long term sites at Guajome Lake (GUL02 and GUL07). For additional information refer to Attachment A of this Watershed Activity Summary Sheet.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region. The 2008 Clean Water Act Section 303(d) List of Water Quality Limited Segments identifies Guajome Lake as impaired due to eutrophication.

TIME SCHEDULE FOR IMPLEMENTATION

- Monthly sampling of long-term stations - Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients as a high priority water quality problem in the San Luis Rey WMA. This nutrient monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

During the FY 2008-09 reporting period the County of San Diego conducted monthly sampling at the two long-term locations in Guajome Lake (GUL02 and GUL07).

ATTACHMENT A TO SLR-008
Guajome Lake Water Quality Monitoring
2005 to 2009
2008-09 SLR WURMP Annual Report

Introduction

The San Diego County Department of Public Works, Watershed Protection Program developed a monitoring program to assess the contribution of urban runoff to the eutrophication of Guajome Lake. The 2007 Clean Water Act Section 303(d) list identified that beneficial uses of Guajome Lake are impaired due to eutrophication. On January 7, 2005 a joint reconnaissance of the Guajome Lake area was conducted with The City of Oceanside, the County Department of Agriculture, Weights, & Measures, County Department of Parks and Recreation, and the Watershed Protection Program. All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, 7 locations in the northern subbasin were monitored and two of those were selected as long term monitoring sites. They included the East Channel Creek at Hutchinson St. and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL02 is located in the middle of the subbasin and is co-located with the dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. The 2005 preliminary monitoring of the East Channel Creek indicated that nutrients do enter Guajome Lake and may contribute to the existing eutrophic conditions. Data collected from the two sites of the East Channel Creek during fiscal year 2005/2006 indicate that concentrations of nutrients continue to enter the Guajome Lake. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources continued through fiscal year 2008/2009.

Additional background information and a description of hydrologic setting are provided in the 2004-2005, 2005-2006 and 2006-2007 WURMP Annual Reports.

Figure 1. Guajome Lake Sample Location Map.

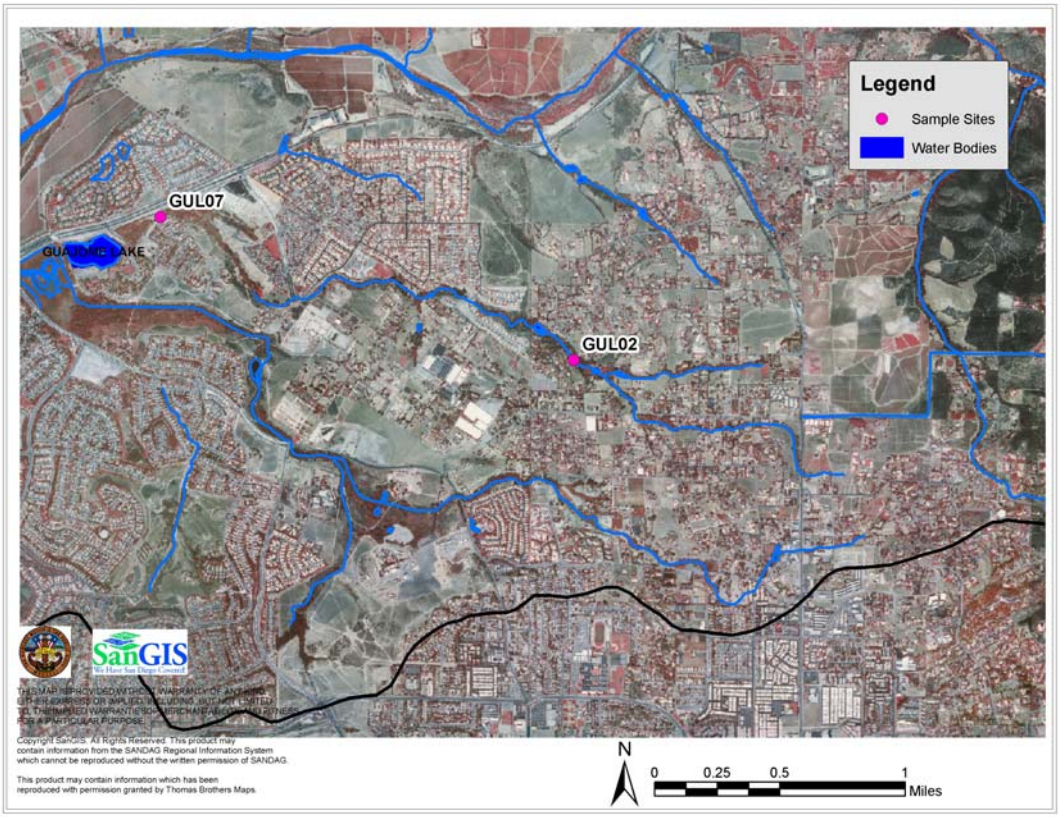

Methods

During the Fiscal Year 2008-2009, monitoring continued at the two long term sites (GUL02 and GUL07). Sampling was conducted monthly. All samples were collected during dry weather conditions (no precipitation greater than 0.1 inches within 72 hours prior to sampling). Flow, pH, conductivity, turbidity, dissolved oxygen and temperature were measured in the field while grab samples were sent to the analytical laboratory to determine concentrations of orthophosphate as P, total phosphorus, nitrate as N, nitrite as N, ammonia, total Kjeldahl nitrogen, organic nitrogen and total suspended solids.

For the purpose of visual comparison, all data (beginning in May 2005) were grouped by collection site and date. They were then represented graphically to show variation over time in nitrate-N, orthophosphate-P, total nitrogen and total phosphorus concentrations. The same procedure was applied to discharge and N:P ratio data. Linear regression analysis was then implemented to determine if significant trends exist in nutrient concentrations and the N:P ratio over time at the two sampling locations. A paired t-test was used to compare mean nutrient concentrations, discharge rates and the N:P ratio between the two locations while accounting for the variability in data due to the sampling date.

Results

All data collected during FY 2008-2009 are summarized in Table 1. Figures 2 through 7 show variation in discharge and nutrient concentrations at GUL02 and GUL07 over time. Generally, estimated discharge at both sites tended to remain below 1 ft^3/s (Fig. 2). An exceptionally high discharge occurred on 2/28/2008 at GUL07 (Table 1). Orhthophosphate concentration at both GUL07 and GUL02 downstream also increased on that date (Fig. 4) and a smaller peak was observed for nitrate-N (Fig. 3), total nitrogen (Fig. 5) and total phosphorus (Fig. 6). Unfortunately no samples were collected in the preceding months (Oct-Jan) due to wildfires. There was also a marked increase in Orthophosphate-P concentrations at both locations on two sampling occasions in November 2008 and February 2009 (Fig. 4). As shown in Figures 5 and 6, the Basin Plan objectives for Total Nitrogen and Total Phosphorus were exceeded at both sampling sites on all sampling dates since the initiation of this project in May, 2005. With the exception of one sampling occasion, the N:P ratio also remained above the 1:10 Basin Plan objective throughout the sampling period (Fig. 7).

The paired t-test analysis results are shown in Table 2. Overall, Nitrate-N, Total Nitrogen concentrations and the N:P ratio were significantly higher at GUL02 than at GUL07. This, however, was not true for the Orthophosphate-P and Total P concentrations. This may indicate that nutrient assimilation may be taking place for the nitrogen but not for the phosphorus species between the two sampling sites.

The results of regression analysis are presented in Figure 8 and Table 3. There was a significant decreasing trend over time for both Nitrate-N and Total Nitrogen concentrations at both sampling locations (Fig. 8B and C; Table 3). No such trends were observed for Orthophosphate-P (Fig. 8D; Table 3). A negative trend also occurred for the Total Phosphorus at GUL02 but not at GUL07 downstream (Fig. 8E; Table 3) and there was a negative trend for the N:P ratio at GUL07 but not at GUL02 (Fig. 8F; Table 3).

Conclusions

Generally, the data collected at the two sites along the East Channel Creek indicate that nutrients do in fact enter Guajome Lake and may contribute to the existing eutrophic conditions. There is, however, evidence of some assimilation of nitrogen as water flows downstream from GUL02 toward GUL07 that results in a significantly lower N:P ratio and lower Nitrate-N and Total N concentrations at GUL07. Additionally, a decreasing trend over time in Nitrate-N and Total Nitrogen concentrations has been observed at both sampling locations. No such trend was observed for the Orthophosphate-P concentration but the N:P ratio showed a decreasing trend at GUL07 and there is a decreasing trend in the Total-P concentration at GUL02. Preliminary investigations into land uses have identified potential phosphorus and nitrogen sources to

include residential areas, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources will continue.

Table 1. A summary of results from the Guajome Lake 2008/ 2009 Fiscal Year monitoring study.

Site ID	Date	Flow Observed	Discharge (cfs)	pH	Electrical Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (oC)	Ammonia as N (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Organic Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Suspended Solids (mg/L)
GUL02	7/14/08	Yes	0.38	7.62	2.20	8	7.34	20.10	0.04	13.40	0.03	0.67	0.63	14.10	0.15	0.15	4.9
GUL07	7/14/08	Yes	0.12	7.92	2.77	13	7.97	22.50	0.05	4.69	0.01	0.78	0.73	5.48	0.18	0.21	16.1
GUL02	8/19/08	Yes	0.34	7.70	2.22	10	7.29	19.40	0.05	12.80	0.01	0.56	0.45	13.30	0.16	0.20	6.4
GUL07	8/19/08	Yes	0.08	8.14	2.93	4	8.35	20.80	0.08	7.76	0.01	0.59	0.42	8.27	0.19	0.21	6.0
GUL02	9/16/08	Yes	0.21	7.59	2.31	11	7.86	18.50	0.04	13.00	0.02	0.53	0.49	13.50	0.16	0.16	11.0
GUL07	9/16/08	Yes	0.14	8.12	2.78	9	8.21	18.50	0.04	7.39	0.01	0.64	0.60	8.04	0.17	0.18	16.4
GUL02	10/27/08	Yes	0.22	7.69	2.30	7	9.04	13.20	0.08	15.40	0.02	0.56	0.48	16.00	0.60	0.62	6.3
GUL07	10/27/08	Yes	0.04	8.13	3.02	5	9.99	12.40	0.09	9.32	0.01	0.59	0.50	9.91	0.61	0.64	2.1
GUL02	11/24/08	Yes	0.31	7.86	2.37	3	8.83	13.00	0.04	15.50	0.02	0.73	0.69	16.20	0.08	0.12	6.5
GUL07	11/24/08	Yes	0.22	8.17	2.78	2	9.47	12.90	0.04	7.40	0.01	0.62	0.58	8.02	0.12	0.13	6.4
GUL02	12/30/08	Yes	0.35	7.89	2.43	7	7.50	10.00	0.05	15.60	0.02	0.67	0.62	16.30	0.35	0.20	2.6
GUL07	12/30/08	Yes	0.38	7.96	2.40	1	7.31	9.70	0.05	7.13	0.01	1.07	1.02	8.21	0.63	0.44	0.8
GUL02	1/21/09	Yes	0.30	7.86	2.44	3	8.60	13.30	0.04	16.50	0.03	0.76	0.71	17.30	0.13	0.14	5.0
GUL07	1/21/09	Yes	0.30	7.99	2.68	2	7.31	13.10	0.11	8.25	0.01	0.53	0.43	8.80	0.16	0.18	1.8
GUL02	2/26/09	Yes	0.40	7.86	2.32	8	8.08	12.50	0.04	14.40	0.02	0.87	0.83	15.30	0.23	0.23	5.9
GUL07	2/26/09	Yes	0.43	8.02	2.34	2	8.45	12.30	0.04	7.84	0.01	0.98	0.95	8.83	0.26	0.25	4.5
GUL02	3/24/09	Yes	0.37	7.95	2.34	3	7.52	11.50	0.05	15.40	0.02	0.62	0.56	16.00	0.13	0.13	3.0
GUL07	3/24/09	Yes	0.41	8.10	2.53	3	6.77	11.00	0.05	7.52	0.01	0.62	0.57	8.14	0.12	0.11	3.3
GUL02	4/28/09	Yes	0.33	7.56	2.39	9	8.57	14.50	0.06	14.20	0.02	0.70	0.64	14.90	0.12	0.19	3.7
GUL07	4/28/09	Yes	0.16	7.86	2.72	8	7.93	14.50	0.06	6.39	0.01	0.70	0.64	7.10	0.14	0.20	9.5
GUL02	5/28/09	Yes	0.35	7.80	2.35	5	7.84	16.70	0.05	13.40	0.03	0.56	0.51	14.00	0.12	0.12	6.7
GUL07	5/28/09	Yes	0.16	8.09	2.79	2	7.35	16.40	0.06	5.47	0.02	0.92	0.86	6.41	0.16	0.16	7.3
GUL02	6/25/09	Yes	0.45	7.67	2.35	22	7.72	17.90	0.04	12.30	0.03	0.06	0.02	12.40	0.14	0.12	2.3
GUL07	6/25/09	Yes	0.13	7.95	3.24	5	7.95	19.30	0.05	7.12	0.02	0.11	0.07	7.25	0.16	0.14	4.0

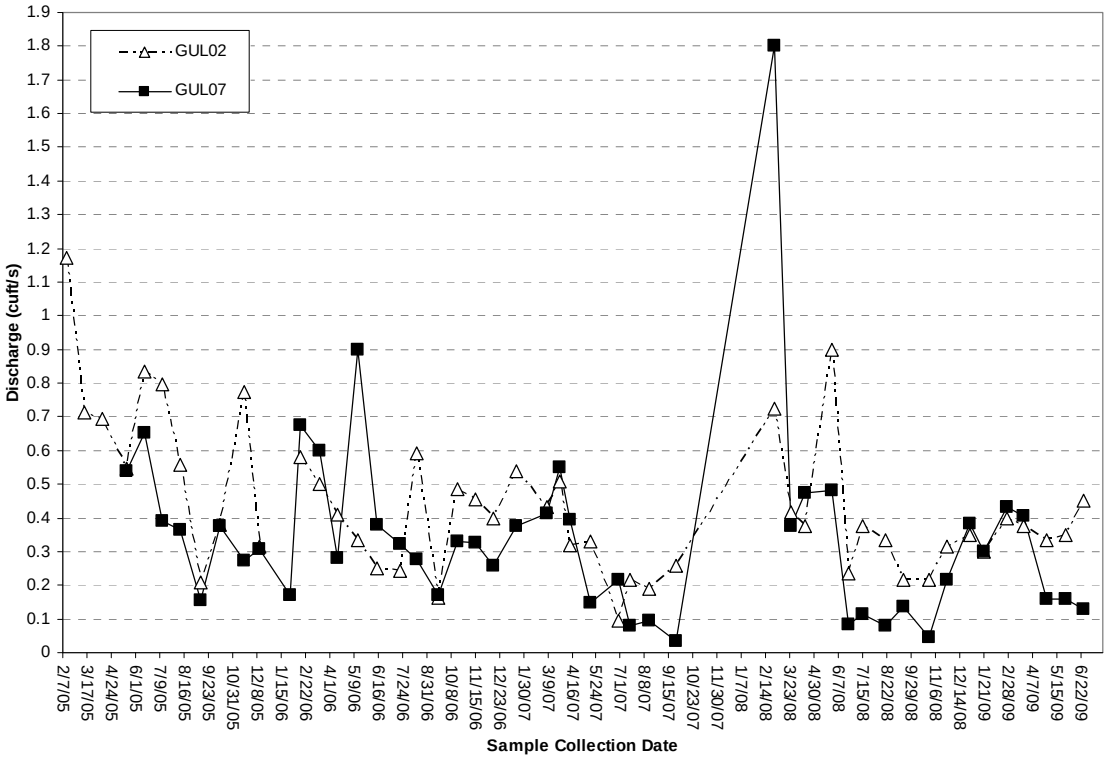

Figure 2: Variation in discharge over time at the two sampling sites. All samples were collected during dry weather conditions (no rain during or within 72 hours prior to sampling).

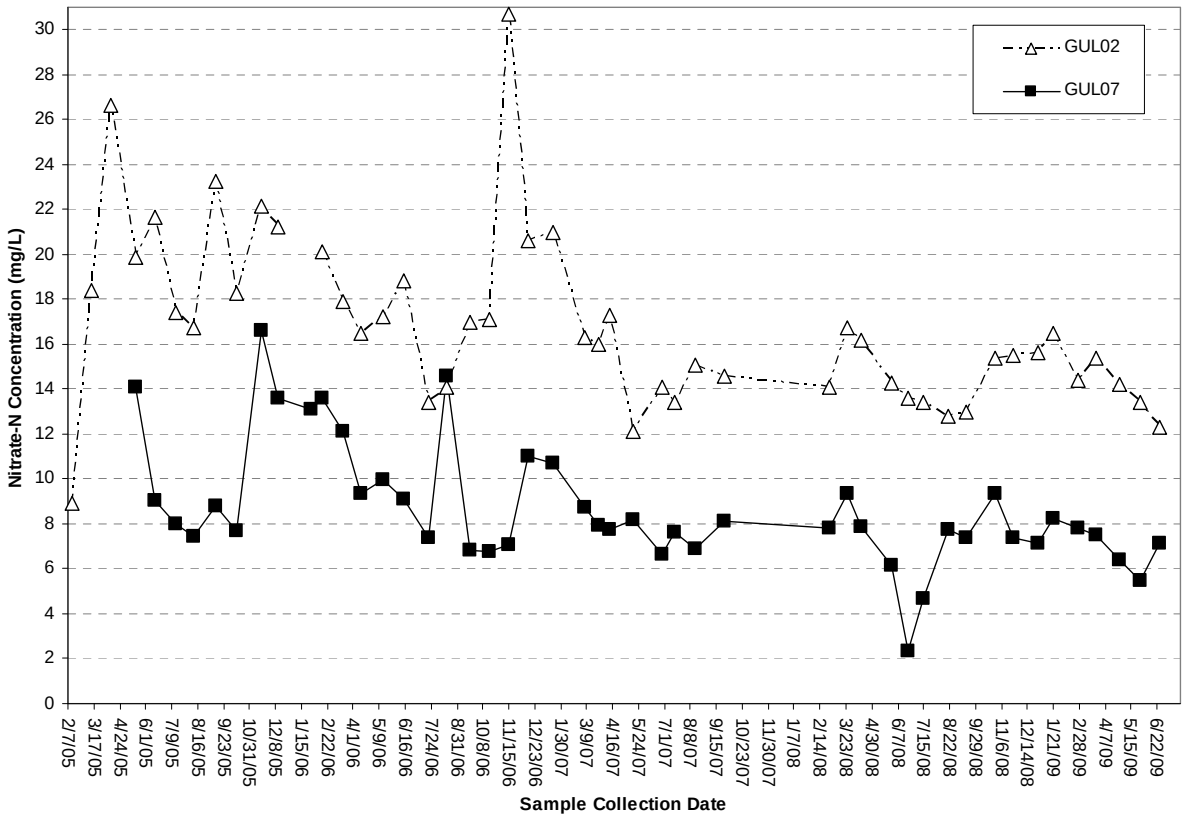

Figure 3: Variation in Nitrate-N concentrations over time throughout the sampling period at GUL2 and GUL7.

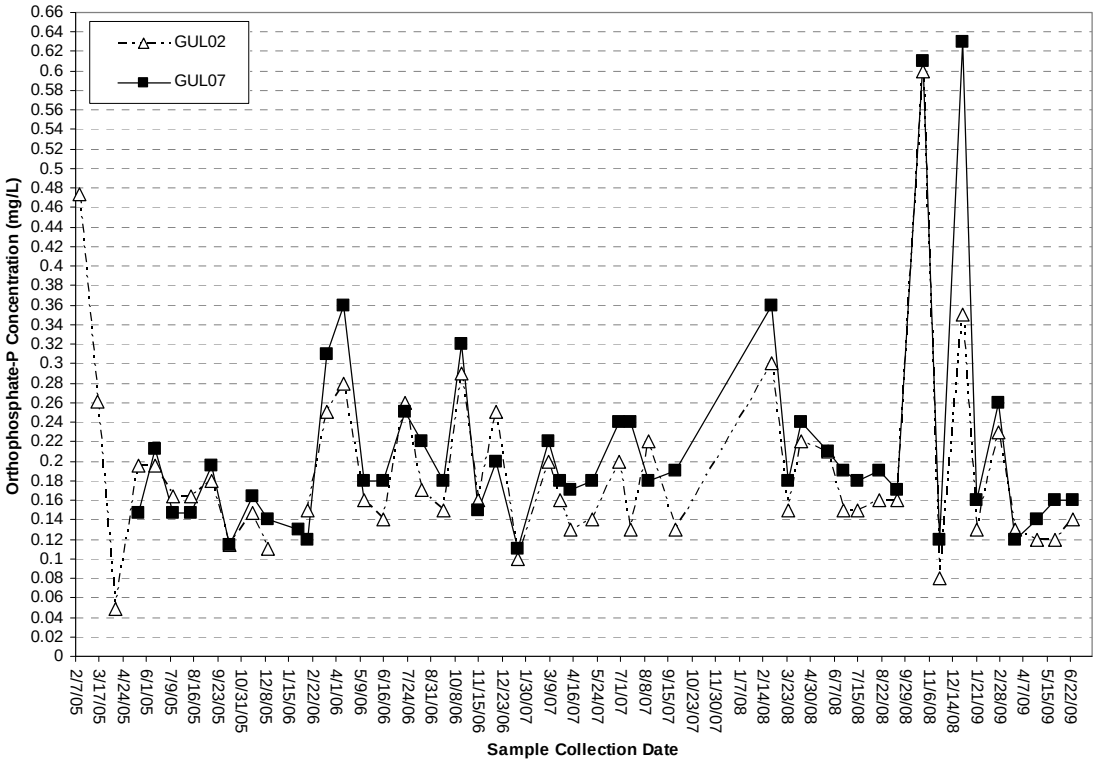

Figure 4: Variation in Orthophosphate-P concentrations over time throughout the sampling period at GUL2 and GUL7.

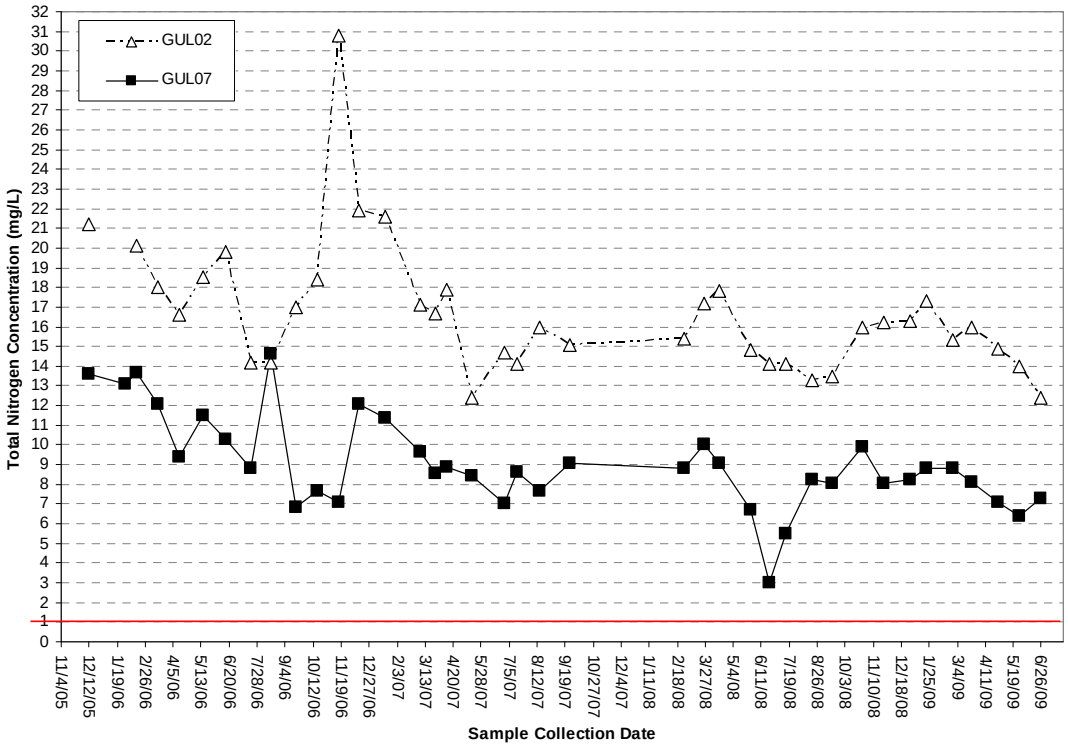

Figure 5: Variation in total nitrogen concentration over time at the two sampling sites. The solid red line indicates 1 mg/L Basin Plan objective for flowing water.

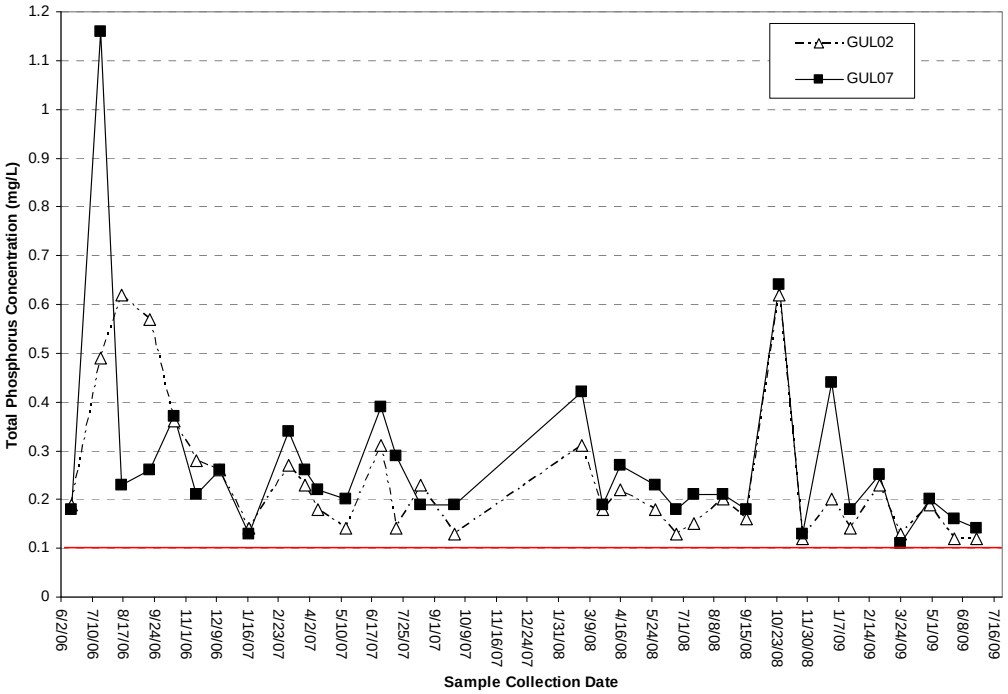

Figure 6: Variation in total phosphorus concentrations over time throughout the sampling period at GUL2 and GUL7. The solid red line indicates 0.1 mg/L Basin Plan objective for flowing water.

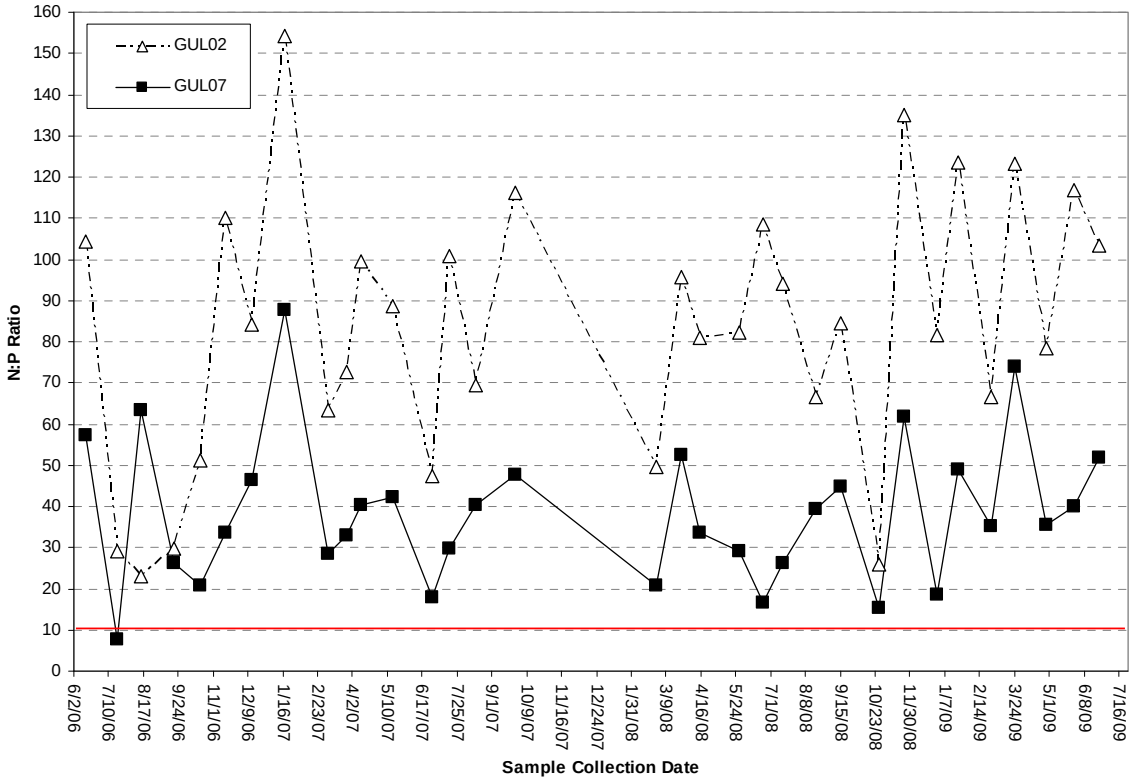

Figure 7: Variation in N:P ratio over time throughout the sampling period at GUL2 and GUL7. The red line indicates 10:1 Basin Plan objective.

Table 2: Results of the paired t-test performed to compare data collected from GUL02 (upstream) and GUL07 (downstream) from May 2005 through present. Comparisons with positive t-values and p-values smaller then 0.05 indicate parameters that were significantly higher at GUL02 than GUL07. Comparisons with negative t-values and p-values smaller then 0.05 indicate parameters that were significantly lower at GUL02 than GUL07.

Parameter	*t*	*p*
Discharge	1.92	0.06
Nitrate-N Conc.	11.79	<0.001
Total N Conc.	12.03	<0.001
Orthophosphate-P Conc.	-1.19	0.24
Total P Conc.	-0.74	0.46
N:P Ratio	6.95	<0.001

A.

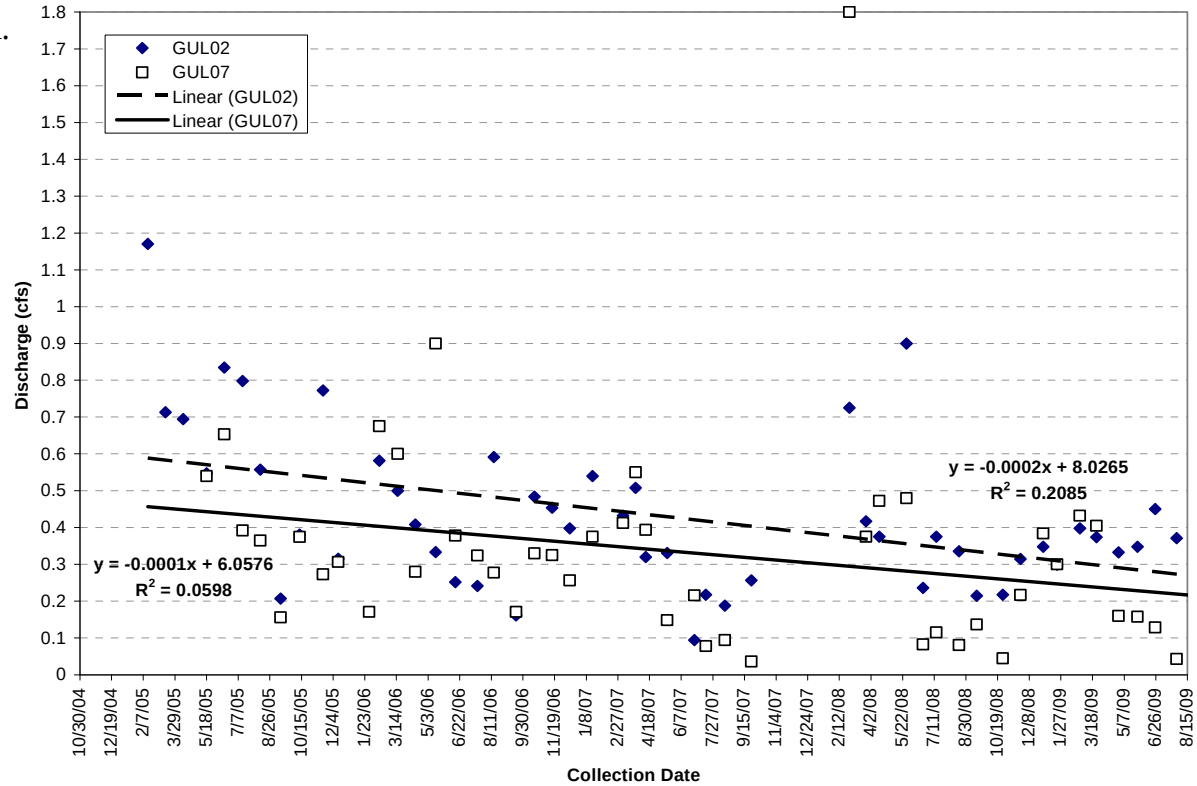

B.

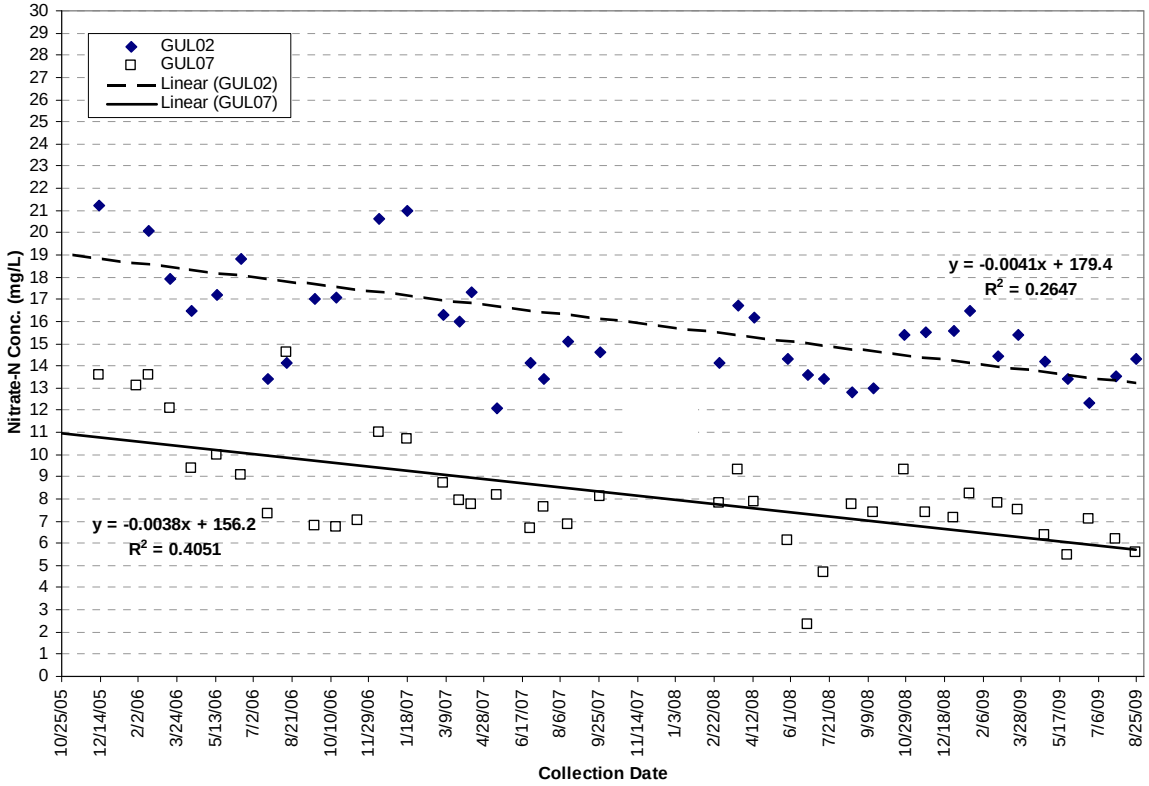
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = -0.0041x + 179.4
R2 = 0.2647
y = -0.0038x + 156.2
R2 = 0.4051
Nitrate-N Conc. (mg/L)
Collection Date

C.

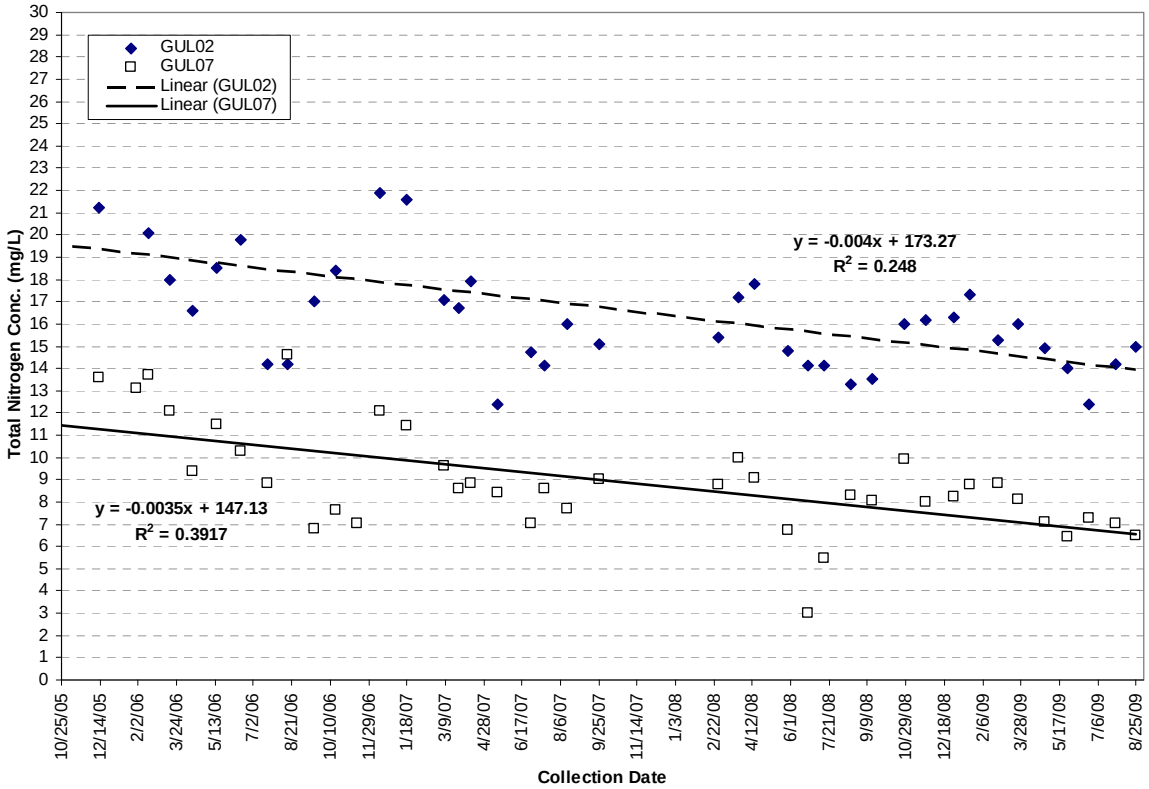
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = -0.004x + 173.27
R2 = 0.248
y = -0.0035x + 147.13
R2 = 0.3917
Total Nitrogen Conc. (mg/L)
Collection Date

D.

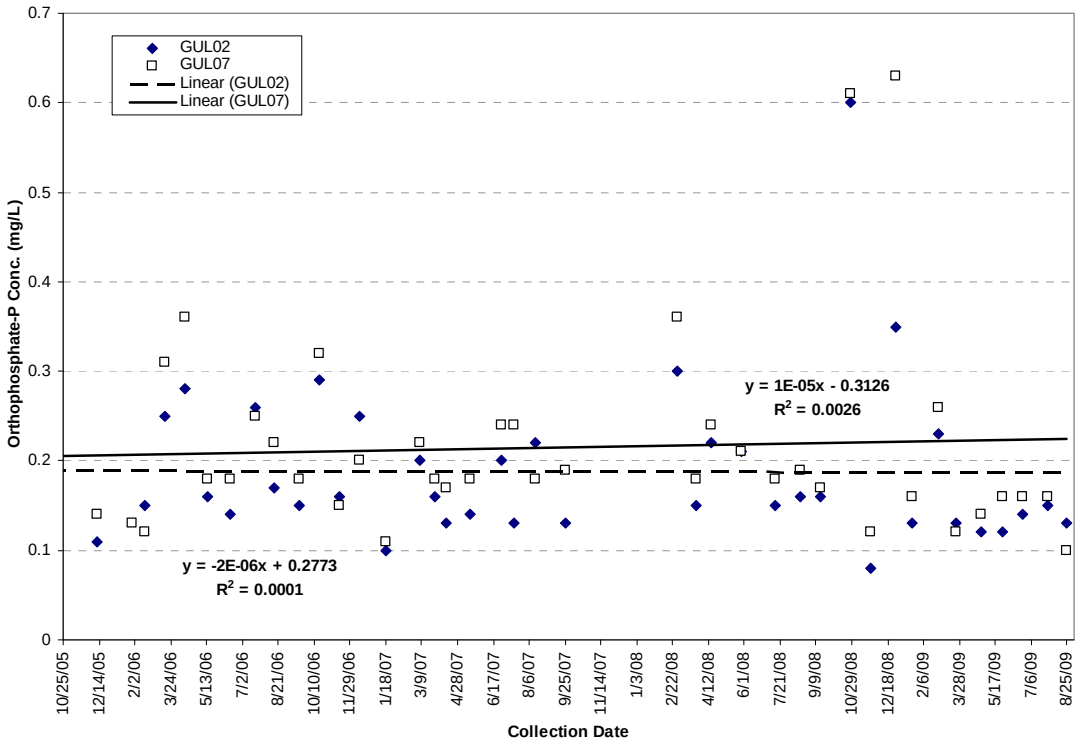
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = 1E-05x - 0.3126
R2 = 0.0026
y = -2E-06x + 0.2773
R2 = 0.0001
Orthophosphate-P Conc. (mg/L)
Collection Date

E.

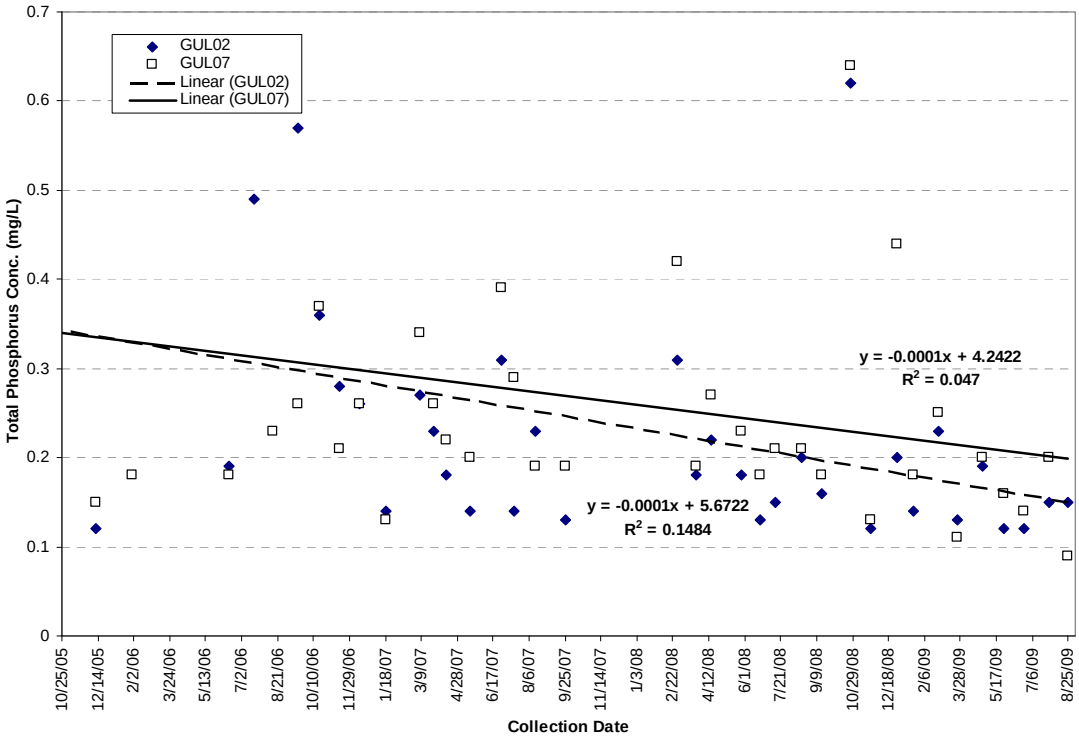
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = -0.0001x + 4.2422
R2 = 0.047
y = -0.0001x + 5.6722
R2 = 0.1484
Total Phosphorus Conc. (mg/L)
Collection Date

F.

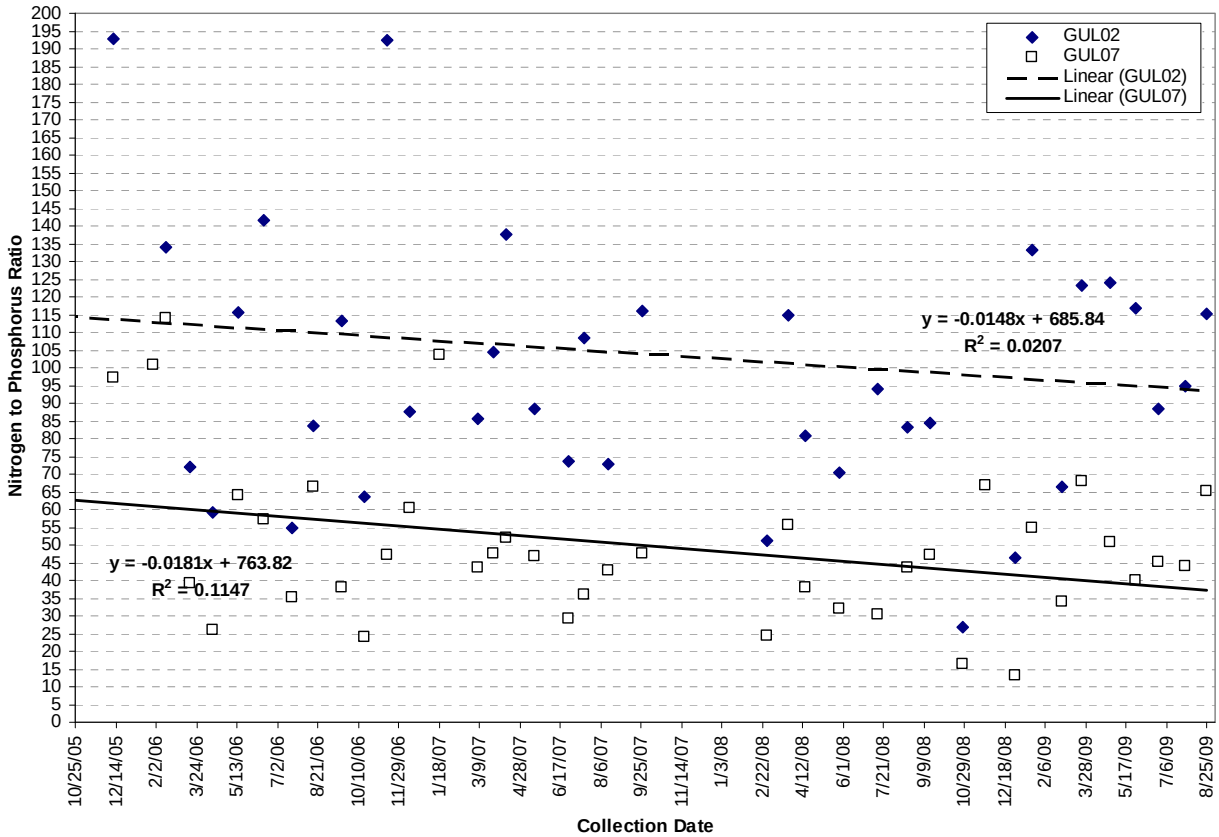

Figure 8: Scatter plots, and regression lines and equations with R^2 values for Flow (A), Nitrate-N (B), Total Nitrogen (C), Orthophosphate-P (D), Total Phosphorus (E), and Nitrogen/ Phosphorus ratio (F) for GUL02 and GUL07 sampling locations.

Table 3: Regression analysis summary showing the slope and r^2 values. Negative slopes indicate downward trends; r^2 values are directly proportional to the percentage of variation in each parameter that can be explained by the corresponding regression line.

Nutrient Variable	Sample Site	r^2	*Slope*
Discharge	GUL02	0.21	-0.0002
	GUL07	0.06	-0.0001
Nitrate	GUL02	0.26	-0.0041
	GUL07	0.41	-0.0039
Total N	GUL02	0.25	-0.0040
	GUL07	0.39	-0.0035
Orthophosphate-P	GUL02	0.0001	-0.000002
	GUL07	0.003	0.00001
Total-P	GUL02	0.15	-0.00010
	GUL07	0.047	-0.00010
N:P Ratio	GUL02	0.02	-0.0148
	GUL07	0.11	-0.0181

References

California Regional Water Quality Control Board, San Diego Region. *Water Quality Control Plan for the San Diego Basin (9).* September 8, 1994).

Ogden Environmental and Energy Services, *Guajome Lake Water Pollution Control and Management Plan, Final Report*. Prepared for the County of San Diego Department of Parks and Recreation. January 1994.

Woodward-Clyde Consultants. *Hydrology Assessment of Guajome Marsh*, Prepared for the County of San Diego Department of Parks and Recreation. January 1992.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality Activity

TITLE: **Nutrient Source Identification and Abatement: Guajome Lake**
ID NUMBER: **SLR-009**

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels entering Guajome Lake. Nitrate concentrations have been observed to exceed dry weather action levels at the County's SLR 04 dry weather monitoring station (Hutchison Street at Hidden Lake Lane) since 2002. This station is upstream of Guajome Lake. Guajome Lake is listed as impaired for eutrophication on the 2008 Clean Water Act 303(d) List of Water Quality Limited Segments. Phosphorous is another nutrient potentially contributing to the eutrophication problem.

ACTIVITY IMPLEMENTATION FY 2007-08

The following tasks were completed during FY 2007-08:

- Perform frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at field site SLR 04.
- Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Compilation of an inventory and map of potential nitrate sources in the SLR 04 drainage area. It was determined that there are eight nurseries within the unincorporated area tributary to the SLR 04 monitoring station.
- Compilation of baseline information on BMP implementation and compliance history for nurseries within the SLR 04 drainage area. Of the eight nurseries in this drainage area, three have been inspected by the County AWM Department. Two of the three inspected nurseries had one or more violations. Most violations were related to a failure to maintain adequate training records.

ACTIVITY IMPLEMENTATION FY 2008-09

The following tasks were completed during FY 2008-09:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Six nurseries in the SLR 04 drainage area were inspected during FY 2008-09. One cactus/succulent nursery was inspected in late FY 2007-08, but was not inspected in FY 2008-09 because of good compliance history and low threat classification. One nursery went out of business. One additional nursery was identified and inspected in September 2009.
- Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries, the operators were supplied with information and tools to assess and manage fertilizer use at

their site. The UC Cooperative Extension Service document *Runoff & Nonpoint Source Pollution Self-Assessment* was provided to the nurseries. The Rainbow Creek Nutrient Reduction Management Plan is another source of valuable information for nitrate pollution prevention that will be referenced as a tool for the operators.

- Notices of Violations were issued and follow up inspections were conducted whenever non-compliances were found at the nurseries. During FY 2008-09, excluding paperwork violations, only one nursery had best management practice non-compliance See Table 3 below. No direct sources of nitrates from the nurseries were identified.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 07-08	FY 08-09	Status
Compile an inventory and map of potential nutrient sources in the SLR 04 drainage area.	X		Complete
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	X		Complete
Perform water quality screenings for nutrients and other parameters at SLR 04	X	X	Ongoing
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	Complete
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	Complete
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	Complete
Identify field grown agricultural businesses in drainage area			TBD
Conduct inspections for best management practices, education, and enforcement as necessary at field grown agricultural businesses			TBD

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Mission HSA (HSA 903.11) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS ASSESSMENT

Table 2. Effectiveness Assessment

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the SLR 04 drainage area.	1	Completion	Yes
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at SLR 04	1	4 field screenings / yr at SLR 04	Yes
	6	Reduction in exceedances of dry weather action level for nitrates measured at SLR 04 by 2012	To be determined
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the SLR 04 drainage area by June 2009	Yes
	3	Reduction in nursery BMP violations observed during nursery inspections in the SLR 04 drainage area by 2010	BMP compliance improved at all nurseries except one. Only one BMP violation was documented in FY 2008-09.
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in Stormwater Knowledge Assessments (SKA) scores administered to nursery staff in the SLR 04 drainage area by 2012	Baseline SKA scores have been recorded for all nurseries. All nurseries with multiple scores have either improved or remained the same.

Table 3.

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time
Booman Floral #2	6/25/2009	0	9	Yes	N/A
	1/8/2007	0	N/A		
	10/6/2004	0	N/A		
	4/8/2004	1	N/A		
Booman Floral #3	6/25/2009	0	9	None	N/A
	1/8/2007	0	N/A		
C & J Cactus Nursery #1	4/18/2008	0	10	Yes	N/A
	9/5/2006	1	N/A		
Exotica Rare Fruit	6/30/2009	0	9	None	N/A
	4/23/2007	0	N/A		
	1/6/2006	0	N/A		
Joanie's Greenhouse	9/3/2008	0	8	Yes	Yes
	6/12/2008	1	7		
Pacific Verde Nursery Inc	5/27/2009	1	5	No	N/A
	1/15/2008	1	N/A		
Parker Greenhouse	7/29/2009	OOB		N/A	N/A
	6/26/2009	0	7	None	Same
	6/25/2008	0	7		
Sphaeroid Institute	8/13/2008	0	7	None	N/A
Weeks Xeroic Succulent Gardens	9/29/2009	0	5	N/A	N/A

*Does not include paperwork violations.

ATTACHMENT A TO SLR-009
Nutrient Source Identification and Abatement: Guajome lake
2008-09 SLR WURMP Annual Report

Introduction

The San Diego County Department of Public Works, Watershed Protection Program developed a monitoring program to assess the contribution of urban runoff to the eutrophication of Guajome Lake. The 2007 Clean Water Act Section 303(d) list identified that beneficial uses of Guajome Lake are impaired due to eutrophication. On January 7, 2005 a joint reconnaissance of the Guajome Lake area was conducted with The City of Oceanside, the County Department of Agriculture, Weights, & Measures, County Department of Parks and Recreation, and the Watershed Protection Program. All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, 7 locations in the northern subbasin were monitored and two of those were selected as long term monitoring sites. They included the East Channel Creek at Hutchinson St. and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL02 is located in the middle of the subbasin and is co-located with the dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. The 2005 preliminary monitoring of the East Channel Creek indicated that nutrients do enter Guajome Lake and may contribute to the existing eutrophic conditions. Data collected from the two sites of the East Channel Creek during fiscal year 2005/2006 indicate that concentrations of nutrients continue to enter the Guajome Lake. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources continued through fiscal year 2008/2009.

Additional background information and a description of hydrologic setting are provided in the 2004-2005, 2005-2006 and 2006-2007 WURMP Annual Reports.

Figure 1. Guajome Lake Sample Location Map.

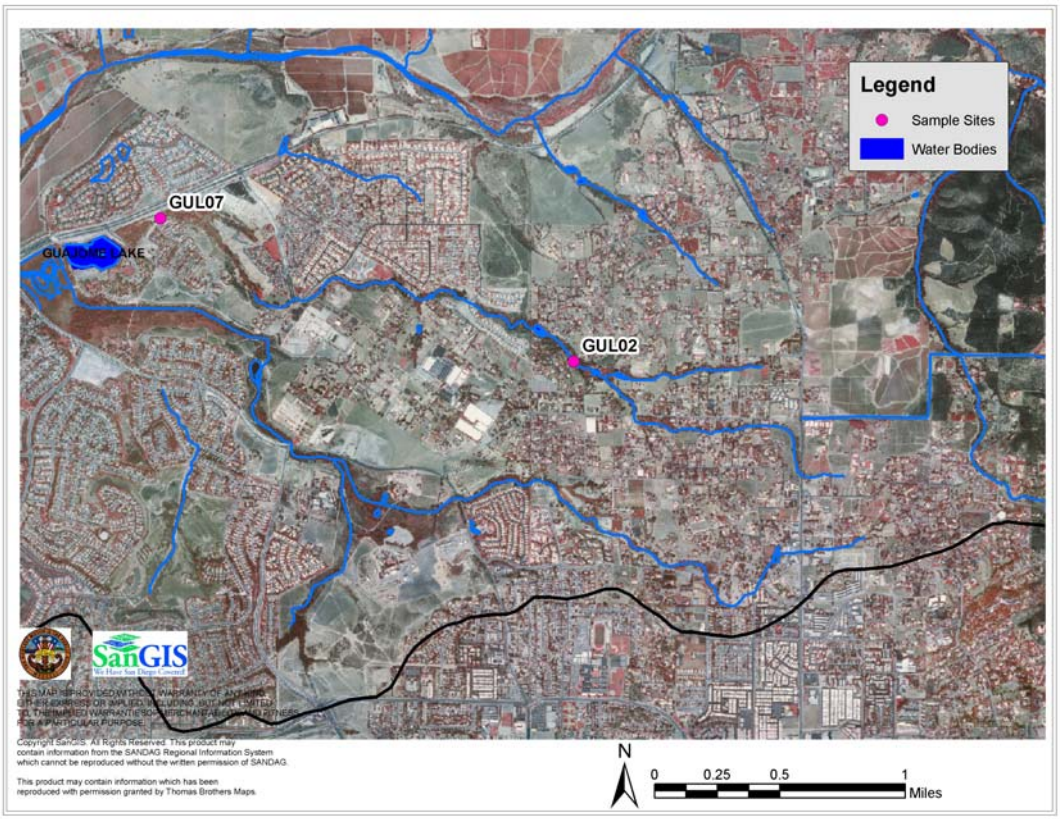

Methods

During the Fiscal Year 2008-2009, monitoring continued at the two long term sites (GUL02 and GUL07). Sampling was conducted monthly. All samples were collected during dry weather conditions (no precipitation greater than 0.1 inches within 72 hours prior to sampling). Flow, pH, conductivity, turbidity, dissolved oxygen and temperature were measured in the field while grab samples were sent to the analytical laboratory to determine concentrations of orthophosphate as P, total phosphorus, nitrate as N, nitrite as N, ammonia, total Kjeldahl nitrogen, organic nitrogen and total suspended solids.

For the purpose of visual comparison, all data (beginning in May 2005) were grouped by collection site and date. They were then represented graphically to show variation over time in nitrate-N, orthophosphate-P, total nitrogen and total phosphorus concentrations. The same procedure was applied to discharge and N:P ratio data. Linear regression analysis was then implemented to determine if significant trends exist in nutrient concentrations and the N:P ratio over time at the two sampling locations. A paired t-test was used to compare mean nutrient concentrations, discharge rates and the N:P ratio between the two locations while accounting for the variability in data due to the sampling date.

Results

All data collected during FY 2008-2009 are summarized in Table 1. Figures 2 through 7 show variation in discharge and nutrient concentrations at GUL02 and GUL07 over time. Generally, estimated discharge at both sites tended to remain below 1 ft^3/s (Fig. 2). An exceptionally high discharge occurred on 2/28/2008 at GUL07 (Table 1). Orhthophosphate concentration at both GUL07 and GUL02 downstream also increased on that date (Fig. 4) and a smaller peak was observed for nitrate-N (Fig. 3), total nitrogen (Fig. 5) and total phosphorus (Fig. 6). Unfortunately no samples were collected in the preceding months (Oct-Jan) due to wildfires. There was also a marked increase in Orthophosphate-P concentrations at both locations on two sampling occasions in November 2008 and February 2009 (Fig. 4). As shown in Figures 5 and 6, the Basin Plan objectives for Total Nitrogen and Total Phosphorus were exceeded at both sampling sites on all sampling dates since the initiation of this project in May, 2005. With the exception of one sampling occasion, the N:P ratio also remained above the 1:10 Basin Plan objective throughout the sampling period (Fig. 7).

The paired t-test analysis results are shown in Table 2. Overall, Nitrate-N, Total Nitrogen concentrations and the N:P ratio were significantly higher at GUL02 than at GUL07. This, however, was not true for the Orthophosphate-P and Total P concentrations. This may indicate that nutrient assimilation may be taking place for the nitrogen but not for the phosphorus species between the two sampling sites.

The results of regression analysis are presented in Figure 8 and Table 3. There was a significant decreasing trend over time for both Nitrate-N and Total Nitrogen concentrations at both sampling locations (Fig. 8B and C; Table 3). No such trends were observed for Orthophosphate-P (Fig. 8D; Table 3). A negative trend also occurred for the Total Phosphorus at GUL02 but not at GUL07 downstream (Fig. 8E; Table 3) and there was a negative trend for the N:P ratio at GUL07 but not at GUL02 (Fig. 8F; Table 3).

Conclusions

Generally, the data collected at the two sites along the East Channel Creek indicate that nutrients do in fact enter Guajome Lake and may contribute to the existing eutrophic conditions. There is, however, evidence of some assimilation of nitrogen as water flows downstream from GUL02 toward GUL07 that results in a significantly lower N:P ratio and lower Nitrate-N and Total N concentrations at GUL07. Additionally, a decreasing trend over time in Nitrate-N and Total Nitrogen concentrations has been observed at both sampling locations. No such trend was observed for the Orthophosphate-P concentration but the N:P ratio showed a decreasing trend at GUL07 and there is a decreasing trend in the Total-P concentration at GUL02. Preliminary investigations into land uses have identified potential phosphorus and nitrogen sources to

include residential areas, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources will continue.

Table 1. A summary of results from the Guajome Lake 2008/ 2009 Fiscal Year monitoring study.

Site ID	Date	Flow Observed	Discharge (cfs)	pH	Electrical Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (oC)	Ammonia as N (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Organic Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Suspended Solids (mg/L)
GUL02	7/14/08	Yes	0.38	7.62	2.20	8	7.34	20.10	0.04	13.40	0.03	0.67	0.63	14.10	0.15	0.15	4.9
GUL07	7/14/08	Yes	0.12	7.92	2.77	13	7.97	22.50	0.05	4.69	0.01	0.78	0.73	5.48	0.18	0.21	16.1
GUL02	8/19/08	Yes	0.34	7.70	2.22	10	7.29	19.40	0.05	12.80	0.01	0.56	0.45	13.30	0.16	0.20	6.4
GUL07	8/19/08	Yes	0.08	8.14	2.93	4	8.35	20.80	0.08	7.76	0.01	0.59	0.42	8.27	0.19	0.21	6.0
GUL02	9/16/08	Yes	0.21	7.59	2.31	11	7.86	18.50	0.04	13.00	0.02	0.53	0.49	13.50	0.16	0.16	11.0
GUL07	9/16/08	Yes	0.14	8.12	2.78	9	8.21	18.50	0.04	7.39	0.01	0.64	0.60	8.04	0.17	0.18	16.4
GUL02	10/27/08	Yes	0.22	7.69	2.30	7	9.04	13.20	0.08	15.40	0.02	0.56	0.48	16.00	0.60	0.62	6.3
GUL07	10/27/08	Yes	0.04	8.13	3.02	5	9.99	12.40	0.09	9.32	0.01	0.59	0.50	9.91	0.61	0.64	2.1
GUL02	11/24/08	Yes	0.31	7.86	2.37	3	8.83	13.00	0.04	15.50	0.02	0.73	0.69	16.20	0.08	0.12	6.5
GUL07	11/24/08	Yes	0.22	8.17	2.78	2	9.47	12.90	0.04	7.40	0.01	0.62	0.58	8.02	0.12	0.13	6.4
GUL02	12/30/08	Yes	0.35	7.89	2.43	7	7.50	10.00	0.05	15.60	0.02	0.67	0.62	16.30	0.35	0.20	2.6
GUL07	12/30/08	Yes	0.38	7.96	2.40	1	7.31	9.70	0.05	7.13	0.01	1.07	1.02	8.21	0.63	0.44	0.8
GUL02	1/21/09	Yes	0.30	7.86	2.44	3	8.60	13.30	0.04	16.50	0.03	0.76	0.71	17.30	0.13	0.14	5.0
GUL07	1/21/09	Yes	0.30	7.99	2.68	2	7.31	13.10	0.11	8.25	0.01	0.53	0.43	8.80	0.16	0.18	1.8
GUL02	2/26/09	Yes	0.40	7.86	2.32	8	8.08	12.50	0.04	14.40	0.02	0.87	0.83	15.30	0.23	0.23	5.9
GUL07	2/26/09	Yes	0.43	8.02	2.34	2	8.45	12.30	0.04	7.84	0.01	0.98	0.95	8.83	0.26	0.25	4.5
GUL02	3/24/09	Yes	0.37	7.95	2.34	3	7.52	11.50	0.05	15.40	0.02	0.62	0.56	16.00	0.13	0.13	3.0
GUL07	3/24/09	Yes	0.41	8.10	2.53	3	6.77	11.00	0.05	7.52	0.01	0.62	0.57	8.14	0.12	0.11	3.3
GUL02	4/28/09	Yes	0.33	7.56	2.39	9	8.57	14.50	0.06	14.20	0.02	0.70	0.64	14.90	0.12	0.19	3.7
GUL07	4/28/09	Yes	0.16	7.86	2.72	8	7.93	14.50	0.06	6.39	0.01	0.70	0.64	7.10	0.14	0.20	9.5
GUL02	5/28/09	Yes	0.35	7.80	2.35	5	7.84	16.70	0.05	13.40	0.03	0.56	0.51	14.00	0.12	0.12	6.7
GUL07	5/28/09	Yes	0.16	8.09	2.79	2	7.35	16.40	0.06	5.47	0.02	0.92	0.86	6.41	0.16	0.16	7.3
GUL02	6/25/09	Yes	0.45	7.67	2.35	22	7.72	17.90	0.04	12.30	0.03	0.06	0.02	12.40	0.14	0.12	2.3
GUL07	6/25/09	Yes	0.13	7.95	3.24	5	7.95	19.30	0.05	7.12	0.02	0.11	0.07	7.25	0.16	0.14	4.0

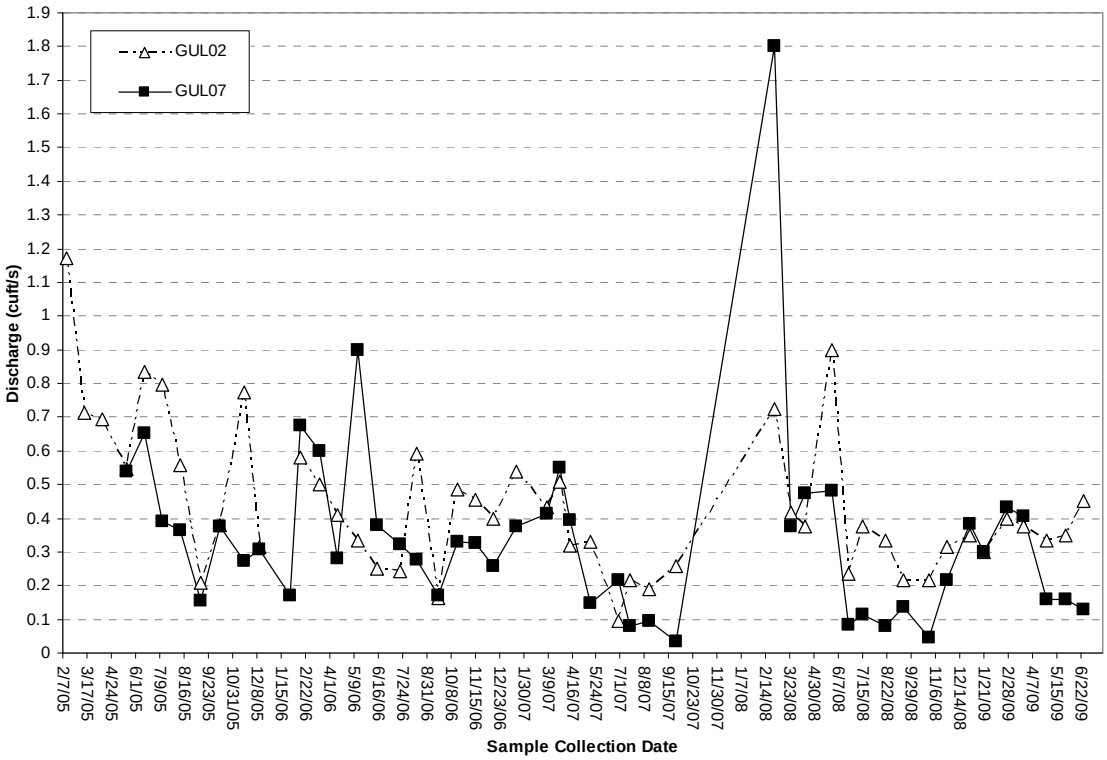

Figure 2: Variation in discharge over time at the two sampling sites. All samples were collected during dry weather conditions (no rain during or within 72 hours prior to sampling).

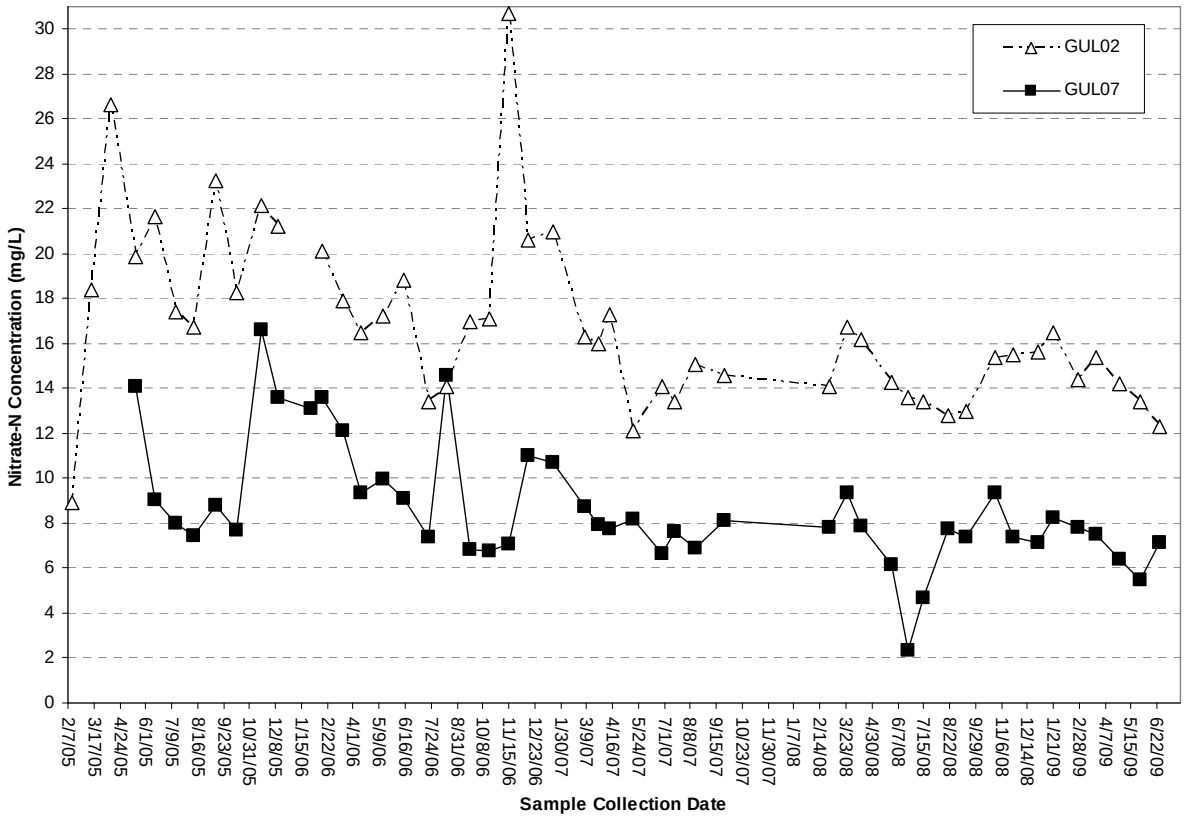

Figure 3: Variation in Nitrate-N concentrations over time throughout the sampling period at GUL2 and GUL7.

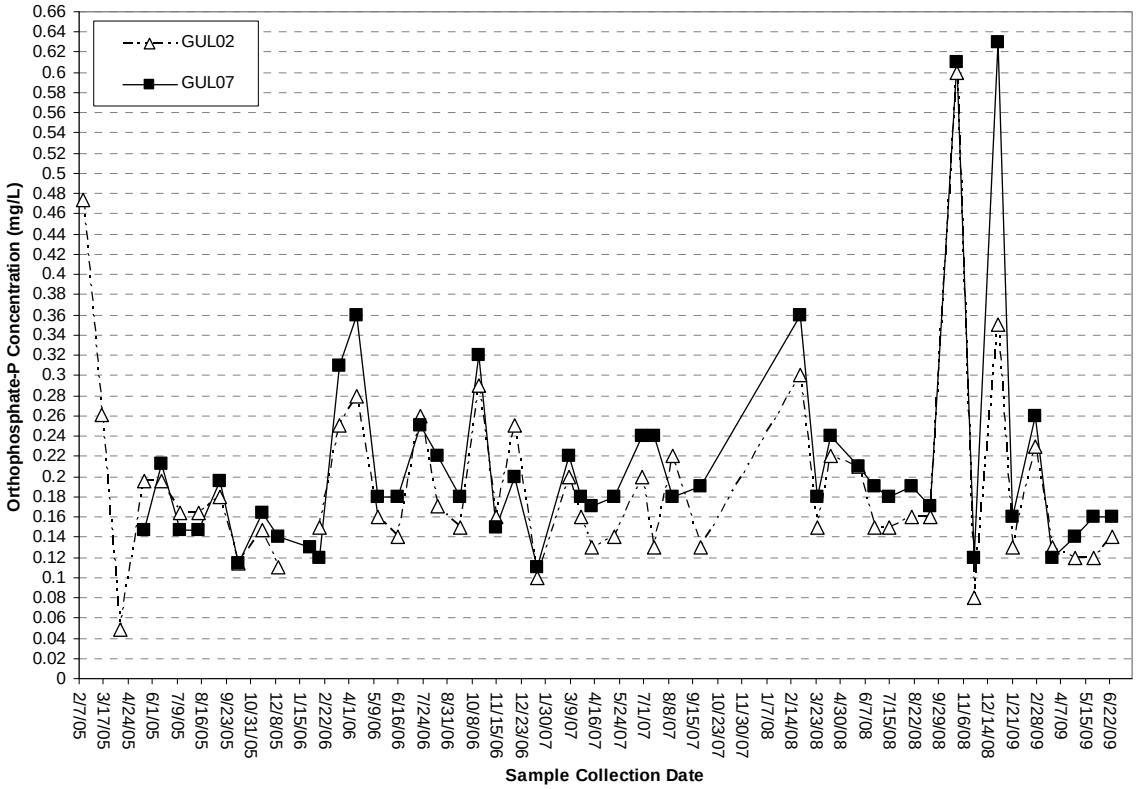

Figure 4: Variation in Orthophosphate-P concentrations over time throughout the sampling period at GUL2 and GUL7.

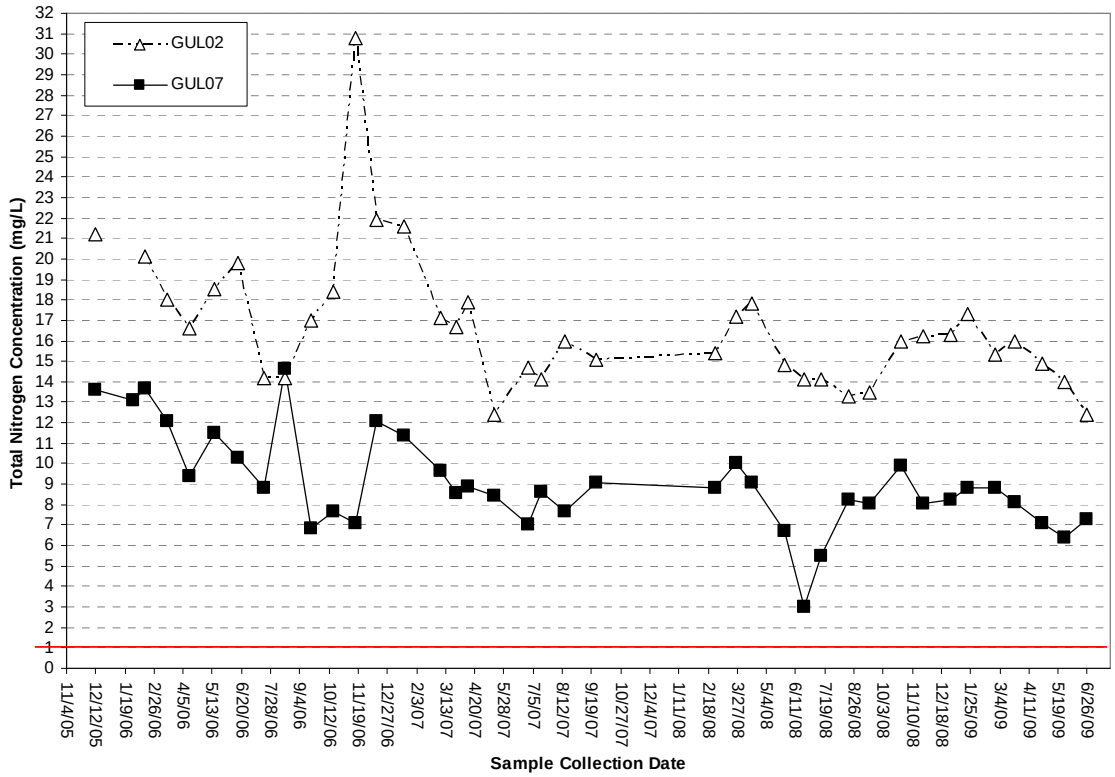

Figure 5: Variation in total nitrogen concentration over time at the two sampling sites. The solid red line indicates 1 mg/L Basin Plan objective for flowing water.

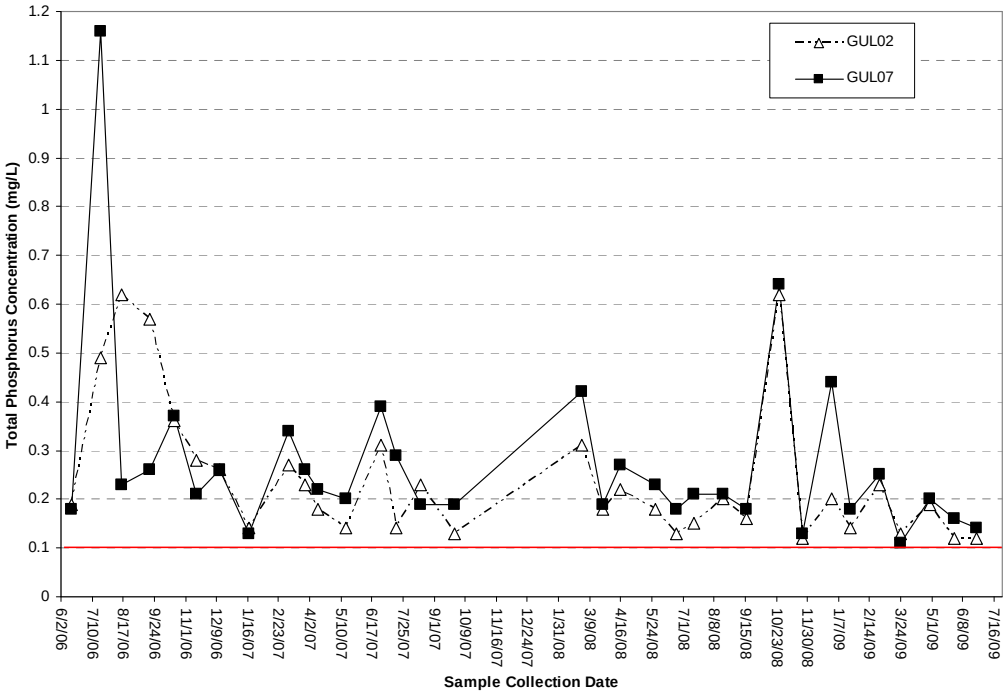

Figure 6: Variation in total phosphorus concentrations over time throughout the sampling period at GUL2 and GUL7. The solid red line indicates 0.1 mg/L Basin Plan objective for flowing water.

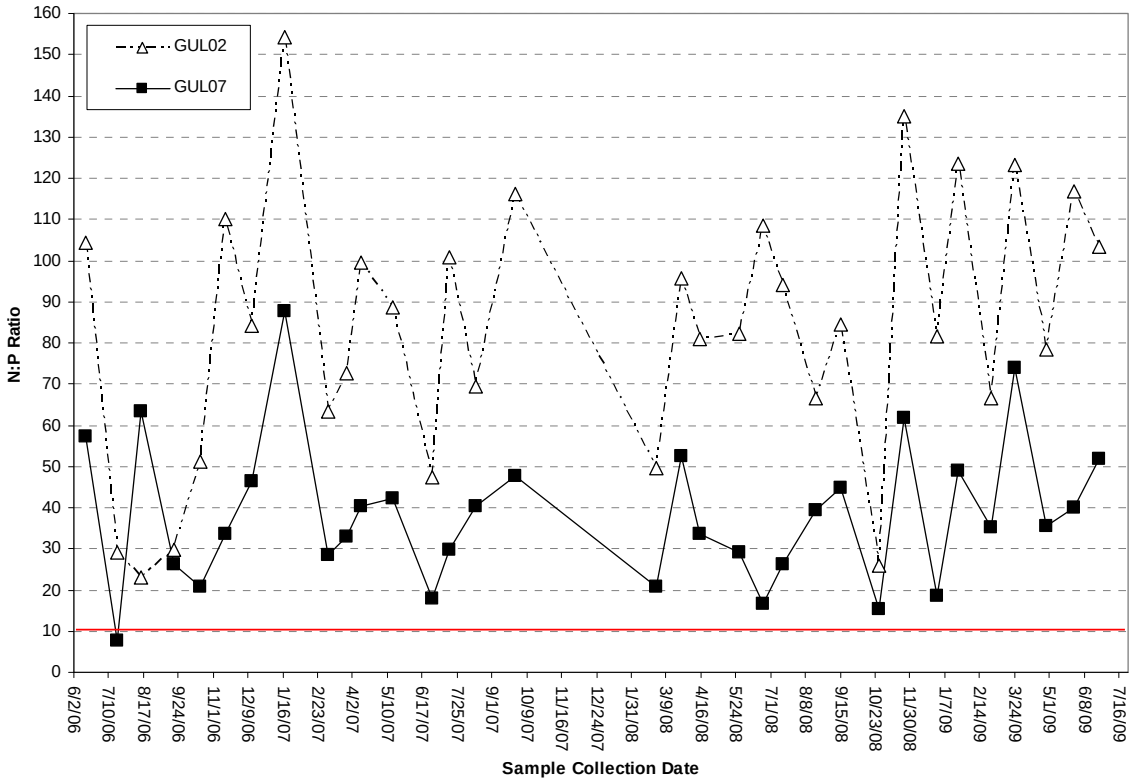

Figure 7: Variation in N:P ratio over time throughout the sampling period at GUL2 and GUL7. The red line indicates 10:1 Basin Plan objective.

Table 2: Results of the paired t-test performed to compare data collected from GUL02 (upstream) and GUL07 (downstream) from May 2005 through present. Comparisons with positive t-values and p-values smaller then 0.05 indicate parameters that were significantly higher at GUL02 than GUL07. Comparisons with negative t-values and p-values smaller then 0.05 indicate parameters that were significantly lower at GUL02 than GUL07.

Parameter	*t*	*p*
Discharge	1.92	0.06
Nitrate-N Conc.	11.79	<0.001
Total N Conc.	12.03	<0.001
Orthophosphate-P Conc.	-1.19	0.24
Total P Conc.	-0.74	0.46
N:P Ratio	6.95	<0.001

A.

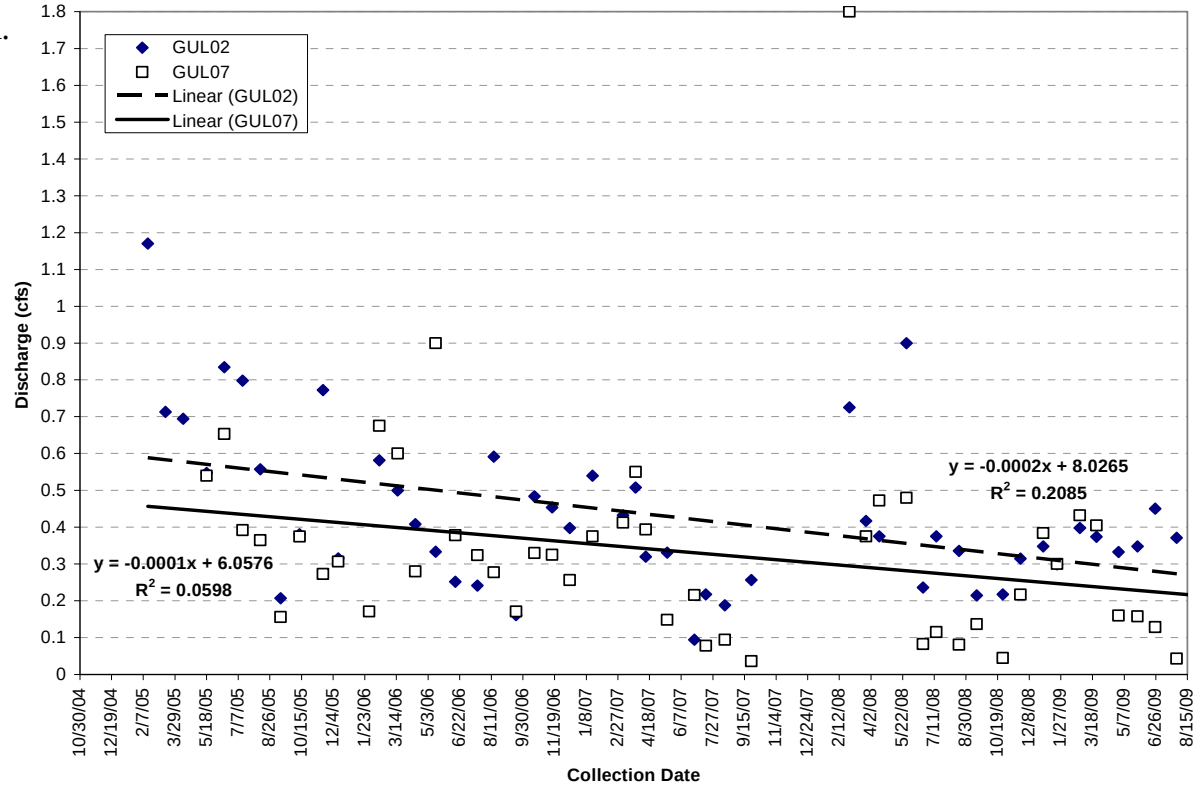
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = -0.0002x + 8.0265
R2 = 0.2085
y = -0.0001x + 6.0576
R2 = 0.0598
Discharge (cfs)
Collection Date
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10/30/04
12/19/04
2/7/05
3/29/05
5/18/05
7/7/05
8/26/05
10/15/05
12/4/05
1/23/06
3/14/06
5/3/06
6/22/06
8/11/06
9/30/06
11/19/06
1/8/07
2/27/07
4/18/07
6/7/07
7/27/07
9/15/07
11/4/07
12/24/07
2/12/08
4/2/08
5/22/08
7/11/08
8/30/08
10/19/08
12/8/08
1/27/09
3/18/09
5/7/09
6/26/09
8/15/09

B.

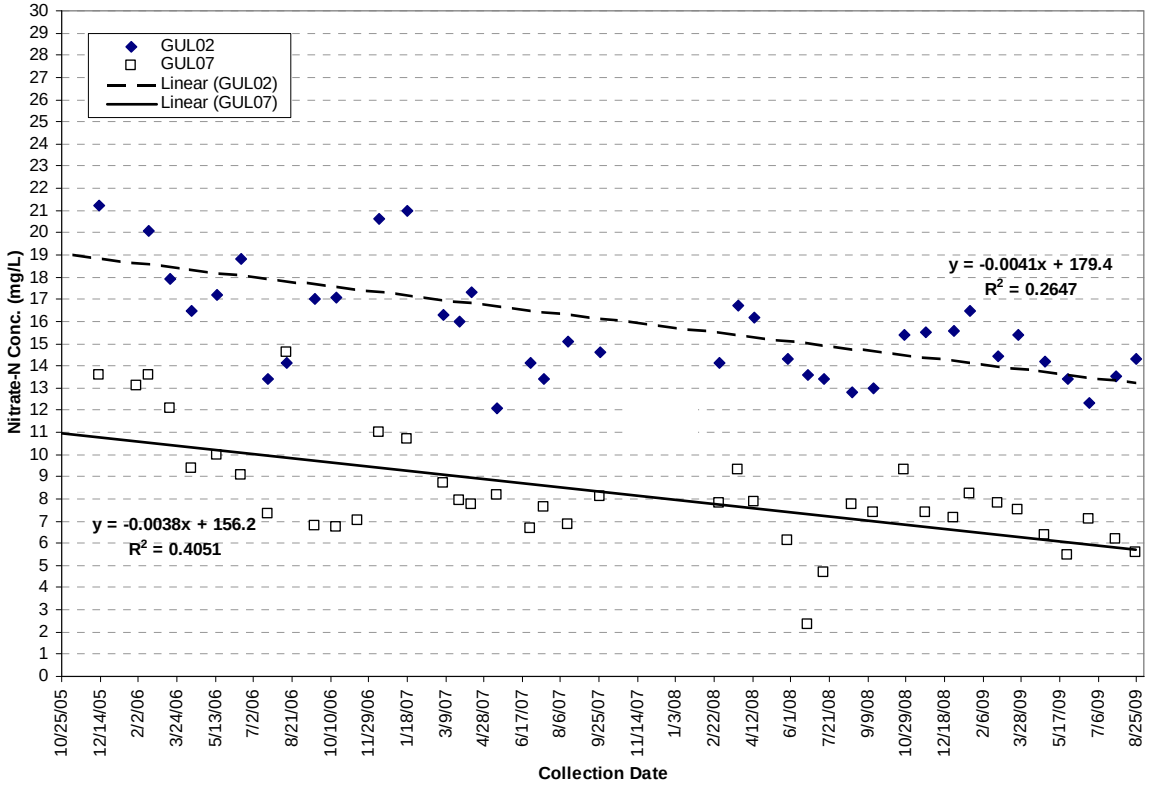
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = -0.0041x + 179.4
R2 = 0.2647
y = -0.0038x + 156.2
R2 = 0.4051
Nitrate-N Conc. (mg/L)
Collection Date

C.

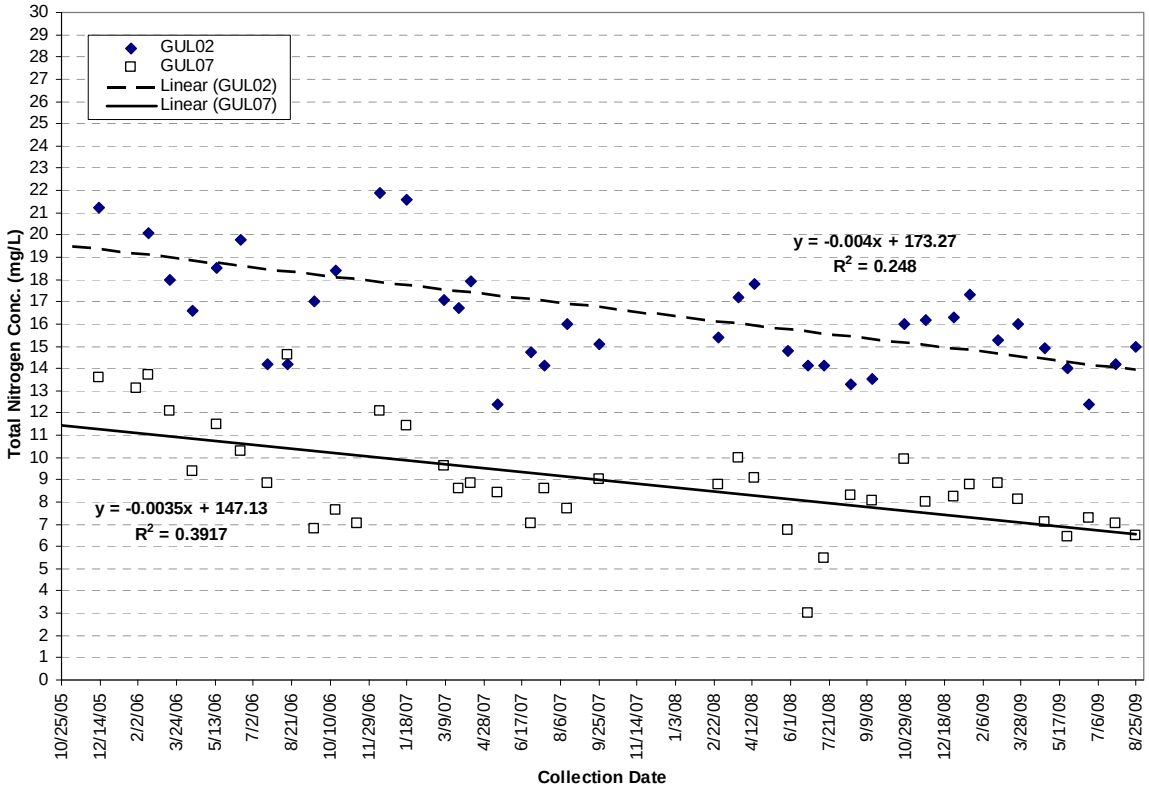
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = -0.004x + 173.27
R2 = 0.248
y = -0.0035x + 147.13
R2 = 0.3917
Total Nitrogen Conc. (mg/L)
Collection Date

D.

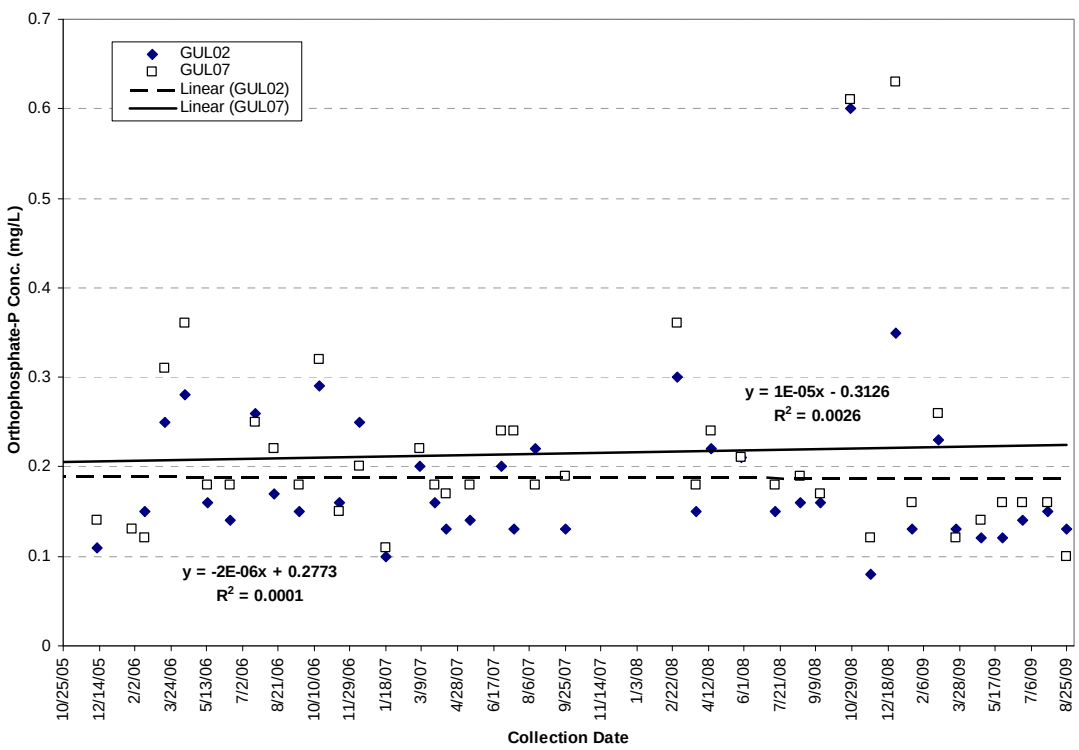
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = 1E-05x - 0.3126
R2 = 0.0026
y = -2E-06x + 0.2773
R2 = 0.0001
Orthophosphate-P Conc. (mg/L)
Collection Date

E.

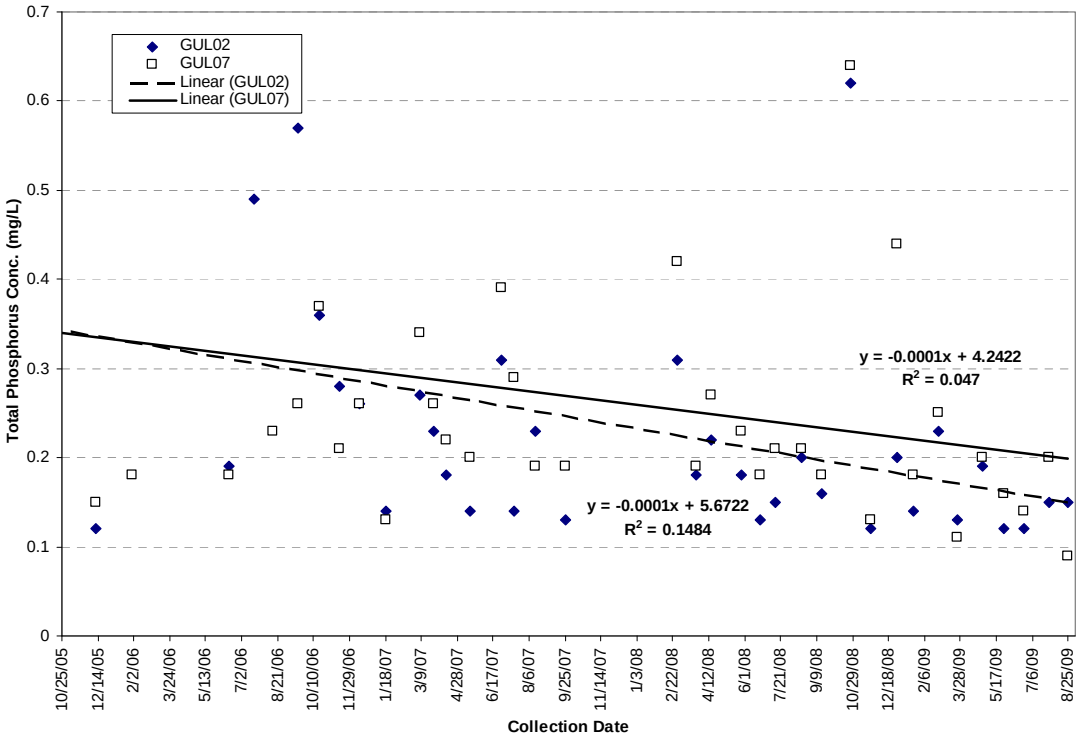
GUL02
GUL07
Linear (GUL02)
Linear (GUL07)
y = -0.0001x + 4.2422
R2 = 0.047
y = -0.0001x + 5.6722
R2 = 0.1484
Total Phosphorus Conc. (mg/L)
Collection Date

F.

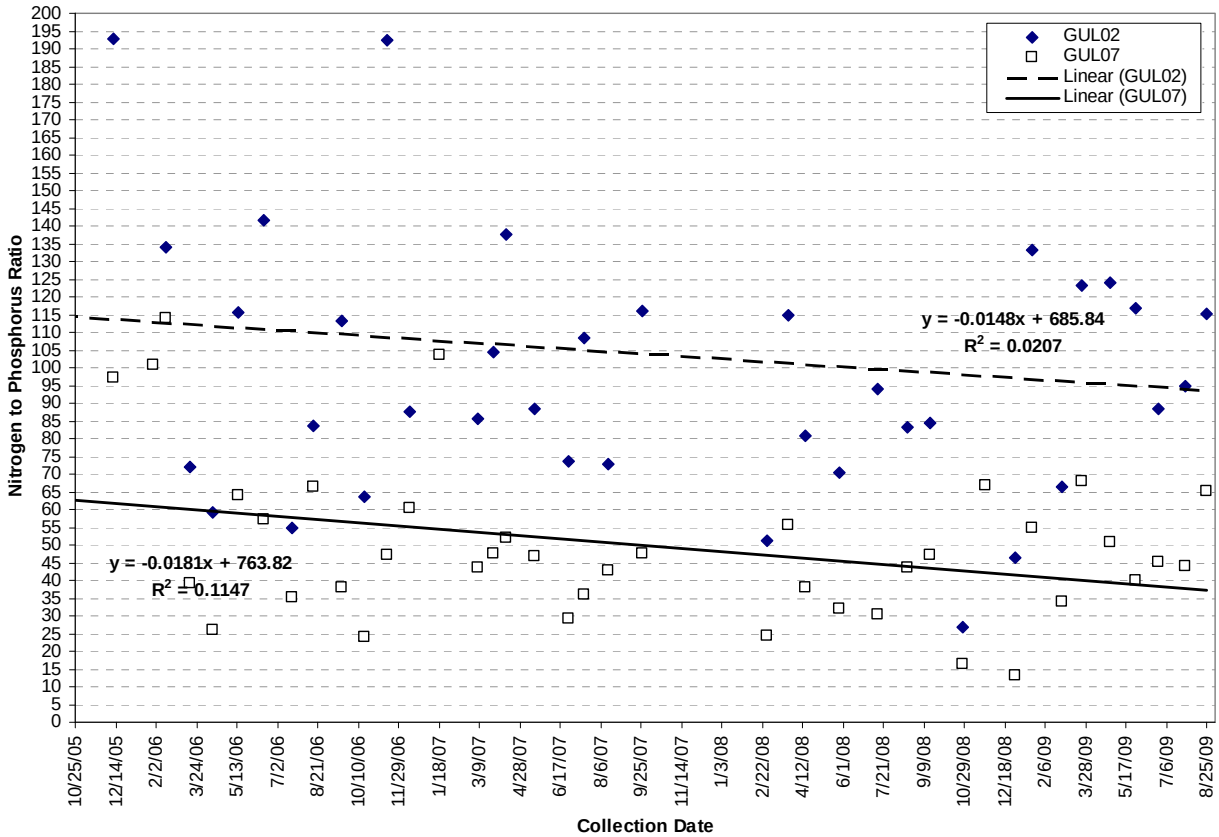

Figure 8: Scatter plots, and regression lines and equations with R^2 values for Flow (A), Nitrate-N (B), Total Nitrogen (C), Orthophosphate-P (D), Total Phosphorus (E), and Nitrogen/ Phosphorus ratio (F) for GUL02 and GUL07 sampling locations.

Table 3: Regression analysis summary showing the slope and r^2 values. Negative slopes indicate downward trends; r^2 values are directly proportional to the percentage of variation in each parameter that can be explained by the corresponding regression line.

Nutrient Variable	Sample Site	r^2	*Slope*
Discharge	GUL02	0.21	-0.0002
	GUL07	0.06	-0.0001
Nitrate	GUL02	0.26	-0.0041
	GUL07	0.41	-0.0039
Total N	GUL02	0.25	-0.0040
	GUL07	0.39	-0.0035
Orthophosphate-P	GUL02	0.0001	-0.000002
	GUL07	0.003	0.00001
Total-P	GUL02	0.15	-0.00010
	GUL07	0.047	-0.00010
N:P Ratio	GUL02	0.02	-0.0148
	GUL07	0.11	-0.0181

References

California Regional Water Quality Control Board, San Diego Region. *Water Quality Control Plan for the San Diego Basin (9)*. September 8, 1994).

Ogden Environmental and Energy Services, *Guajome Lake Water Pollution Control and Management Plan, Final Report*. Prepared for the County of San Diego Department of Parks and Recreation. January 1994.

Woodward-Clyde Consultants. *Hydrology Assessment of Guajome Marsh*, Prepared for the County of San Diego Department of Parks and Recreation. January 1992.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality/Monitoring Activity

TITLE: **Lower San Luis Rey Source Identification Project**
ID NUMBER: **SLR-010**

ACTIVITY IMPLEMENTATION

The main objectives of this project are to:

- Identify point and non-point sources of bacteria contamination in the Lower San Luis Rey River and at the river mouth during dry and wet seasons.
- Estimate the bacterial loading from tributaries and along the main stem of the San Luis Rey River during dry and wet seasons.
- Recommend Best Management Practices (BMPs) to reduce and/or eliminate bacterial sources.

ACTIVITY IMPLEMENTATION FY 2007-08

Implementation of this project began in FY 2007-08 with the City being awarded a Proposition 50 Clean Beaches Initiative Grant from the State Water Resources Control Board (SWRCB) to identify the potential sources of bacteria in the Lower San Luis Rey River. The City then sought out a diverse group of experts in bacteria source tracking, Copermittees, and non-profit groups to create a Technical Advisory Committee (TAC) to guide the project. The first TAC meeting was held on November 1, 2007 and included representatives from the Cities of Oceanside and Vista, the County's Department of Environmental Health and Watershed Protection Program, the Regional Water Quality Control Board (RWQCB), and CoastKeeper.

A Request for Proposals (RFP) was sent out on November 8, 2007 to solicit proposals from interested and experienced consultants. Proposals were due to the City by December 4th and a subcommittee of the TAC reviewed the proposals on December 7, 2007. MACTEC Engineering and Consulting, Inc. was awarded the contract. Oceanside City Council approved the contract with MACTEC on February 20, 2008.

A TAC meeting was held on February 4, 2008 where the MACTEC project team presented the proposed project approach. The approach was discussed and the TAC made recommendations to be included in the Monitoring Plan and QAPP. The Monitoring Plan and QAPP were submitted to the SWRCB for approval on April 28, 2008. The SWRCB and the Moss Landing QA Research Group reviewed the Monitoring Plan and QAPP and the final version of the documents were approved by the SWRCB on June 19, 2008.

The first dry season monitoring event took place on June 18 and 19, 2008. Dr. Rachel Noble traveled to San Diego to prepare for the first event with the project team and participate both days of monitoring. The project team collected bacteria samples and flow measurements at six monitoring locations in the Lower San Luis Rey River. The bacteria samples were analyzed for fecal indicator bacteria and the remaining sample volume was filtered and frozen for molecular analysis. The river mouth was not sampled, as planned, due to construction of the Pacific Street Bridge.

ACTIVITY IMPLEMENTATION FY 2008-09

The second dry season event took place in FY 2008-09 on July 23 and 24, 2008. The project team collected bacteria samples and flow measurements at five of six monitoring locations in the Lower San Luis Rey River. As part of the Visual Observation Program, observations were conducted July 23 and 24, 2008 within the Lower San Luis Rey River and upstream in the drainage basin to identify possible sources of bacteria. The river mouth was again not sampled, due to construction of the Pacific Street Bridge.

Based on the fecal indicator bacteria (FIB) results of the first two dry weather monitoring events, four of six project sampling sites (Murray Bridge, Douglas Bridge, Pilgrim Creek, and Sleeping Indian) were selected for additional genetic molecular analysis. Two were river sites and two were tributaries. Genetic molecular analysis was conducted on samples collected at these sites during days 1 and 2 of the June 2008 event. There were no FIB exceedances of standards during the July 2008 event and, therefore, none of those sites were chosen for additional analysis per the QAPP and Monitoring Plan.

On December 19, 2008, the SWRCB issued a Budget Letter that suspended all projects including the Lower San Luis Rey Source Identification Project. All work on the Visual Observation Program and all planned wet and dry weather events were stopped. The work completed after this notice was primarily to assess the status of various elements of the project, including laboratory work and the effect of the stop work notice on genetic analysis. In addition, the potential for American Relief and Recovery Act (ARRA) funds was assessed and answers to the survey were researched and submitted on March 13, 2009. On April 6, 2009, The City of Oceanside received a conditional approval letter that the project was eligible for funding from the ARRA. Unfortunately on April 7, 2009 the City of Oceanside received a letter saying that new guidance from the EPA regarding “shovel ready” projects indicated our project was no longer eligible for the ARRA funding.

With more time passing, the City of Oceanside requested an assessment from MACTEC of the molecular sample holding times for samples not yet analyzed and a summary from our contractors of what and where data that had been analyzed is located. Unfortunately, samples for two of the three types of genetic analyses had expired and are therefore no longer available for use to the program. Samples were analyzed for *Enterovirus A* by Dr. Jed Furman’s laboratory at the University of Southern California. *Enterovirus A* was not detected in any of the samples.

The monthly joint monitoring program conducted by the City of Oceanside and the County of San Diego continued as modified for the Grant project until June of 2009. For FY 2009-10 (or the project is restarted), the City and County agreed to continue the monitoring program, but the City brought the monitoring in-house to the San Luis Rey Wastewater Treatment Plan Laboratory. The same field procedures were followed, but the reporting limits changed to above SWAMP recommendations. This change is not expected to effect results, as bacteria levels are usually at or above these reporting limits.

The City and MACTEC are prepared to restart the project as soon as approval is received from the State Board.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Due to the stop work notice issued in December of 2008, the schedule for implementation/completion is uncertain. Monitoring was originally scheduled to be completed by October 1, 2009 with the Final Project Report due to the SWRCB on February 1, 2010. Once funding is secured again, a schedule will have to be created taking into account the loss of the genetic samples and the need for another wet and dry monitoring season.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- MACTEC Engineering and Consulting, Inc.
- Technical Advisory Committee includes representatives from:
  - RWQCB
  - CoastKeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Because the sources of bacterial contamination in the Lower San Luis Rey River are not adequately characterized, characterization in the form of a source identification study is consistence with the collective watershed strategy. Once the sources have been better characterized, the City will move forward with developing and implementing BMPs to reduce and eliminate the bacterial source to the maximum extent practicable.

EFFECTIVENESS ASSESSMENT

The outcome of this project is the identification of bacterial sources contributing to water quality impairments in addition to the development of a list of potential BMPs for these sources. It is anticipated that the implementation of BMPs, which will be separate, future activities, will lead to Level 4, 5, and 6 effectiveness assessment outcomes.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Education Activity

TITLE: **LID and Watershed Planning Education for Community Planning and Sponsor Groups**

ID NUMBER: **SLR-011**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID Handbook, including Management Strategies, the Appendices, and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

Local planning groups within the San Luis Rey River Watershed include:

- Bonsall
- Fallbrook
- Hidden Meadows
- Julian
- Pala-Pauma
- Twin Oaks
- Valley Center

ACTIVITY IMPLEMENTATION FY 07-08

This education program was successfully developed during the spring of FY 2007-08, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. County staff began conducting presentations to planning and sponsor groups in the San Luis Rey River Watershed during FY 2007-08, beginning with the Hidden Meadows Sponsor Group in the North County Metro Area.

Community Group	Presentation Date	No. of Attendees	Surveys Completed
Hidden Meadows	6/26/08	13	11
Total		**13**	**11**

ACTIVITY IMPLEMENTATION FY 08-09

As documented in the table below, presentations were delivered to 6 planning and sponsor groups in the San Luis Rey River Watershed, which included 151 attendees. A total of 45 pre- and post- surveys were completed by the groups.

Community Group	Presentation Date	No. of Attendees	Surveys Completed
Bonsall	10/7/08	11	5
Fallbrook	8/18/08	43	10
Julian	1/12/09	10	9
Pala-Pauma	5/5/09	7	0
Twin Oaks	7/16/08	19	12
Valley Center	9/8/08	61	9
Total		**151**	**45**

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This activity was completed during FY 2008-09. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcomes). Furthermore, attendees were asked to complete pre- and post- survey forms, which consisted of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area. Survey results were calculated to measures changes in attendee knowledge regarding watershed planning and LID principles (Level 2 Outcome).

The table below summarizes results from the seven surveys administered to groups in the San Luis Rey River Watershed. Improvements on the post- survey ranged from a 13.33% increase to

a 26.67% increase. This represents a demonstrable increase in knowledge among the target audience.

Community Group	Total Attendees	# of Surveys Given	Pre-survey % correct	Post-survey % correct	% Increase
Bonsall	11	5	68%	92%	24%
Fallbrook	43	10	40%	56.36%	16.36%
Hidden Meadows	13	11	69.09%	67.27%	-1.82%[1]
Julian	10	9	71.11%	84.44%	13.33%
Pala-Pauma	7	0	N/A	N/A	*No Survey*
Twin Oaks	19	12	60%	84.44%	24.44%
Valley Center	61	9	62.22%	88.89%	26.67%

[1] Effectiveness of the Hidden Meadows Sponsor Group result was reported in the 07-08 Annual Report. Because one question on the survey was found to be confusing to participants, the question was rephrased for subsequent presentations. Results have since shown an increase in knowledge between the post- and pre- surveys.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality Activity

TITLE: **Land Acquisitions**
ID NUMBER: **SLR-012**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plans have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION FY 2007-08

During the FY 2007-08 reporting period the County of San Diego purchased 142.9 acres of property located in the San Luis Rey River Watershed.

ACTIVITY IMPLEMENTATION FY 2008-09

During the FY 2008-09 reporting period the County of San Diego purchased 77.73 acres of property located in the San Luis Rey River Watershed. The current acquisitions are shown in the table below.

Property	Acres	Date	Watershed ID	APN(s)
Pala-TET Wilderness Gardens	19.24	8/20/2008	903.21	110-190-15
Lauderbaugh Mt. Olympus	37.80	12/2/2008	903.21	109-080-12
Knollwood TET dedication	20.69	6/30/2009	903.13	185-240-18
TOTAL	**77.73**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that is averts development, thereby eliminating the possibility of future sources in need of abatement or future pollution loads in need of reduction.

EFFECTIVENESS ASSESSMENT

During the FY 2007-08 reporting period the County of San Diego acquired 142.9 acres in the San Luis Rey River Watershed Area. During the FY 2008-09 reporting period the County of San Diego acquired 77.73 acres in the San Luis Rey River Watershed Area. This land acquisition will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural perviousness.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality Activity

TITLE: **Harbor Boat Wash Security Camera**
ID NUMBER: **SLR-013**

ACTIVITY DESCRIPTION
Oceanside Harbor offers the use of a boat launch ramp free of charge, as well as free use of a boat wash area and a recreation vehicle (RV) sewage dump station. Runoff from the boat wash area drains through the storm drain system and flows to the harbor a short distance away. This storm drain has had historical bacterial exceedances possibly due to improper use of the dump station, illegal dumping, and/or regrowth in the storm drain itself.

To address illegal dumping/illegal use of the sewage dump station and boat wash area, a security camera was installed. The intent of the camera was to use it in coordination with public notification of improper use. Once a report of illegal use was filed, the City of Oceanside Department of Harbor and Beaches, Harbor Police, or the Clean Water Program would be able to reference the historical footage and view a license plate number to pursue possible enforcement actions. The digital video is stored for two weeks before being overwritten.

ACTIVITY IMPLEMENTATION FY 2008-09
During the 2008-09 fiscal year, the City of Oceanside Beaches and Harbors Department installed a camera to view the boat wash and RV dump stations at Oceanside Harbor. The camera was installed on the storage facility next to the boat wash. Harbor Police, Harbor Maintenance, and Harbor Administration have access to all of the cameras around the Harbor. In addition, access to live and recorded views from the boat wash camera was installed on the desktop of Clean Water Program personnel.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
Installation occurred in October 2008. Maintenance of the cameras is ongoing.

PARTICIPATING WATERSHED COPERMITTEES
N/A

OTHER PARTICIPATING ENTITIES
N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
The source of the bacteria has been characterized. The City is moving forward with implementing several pilot programs, including the surveillance camera, to determine the BMP,

or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS MEASUREMENTS

In 2008-09, no reports of potential misuse of the boat wash area were reported to the Clean Water Program. The Harbor Police did attempt to use the video from the cameras for a few of their illegal dumping reports, but the quality of the picture was not clear enough to be helpful.

In using the camera the first year, it has been assessed that the quality of the video from the camera is not sufficient to create enforcement actions. The cameras used in the Harbor utilize an older technology that cannot pan and do not have the resolution to zoom in for details such as license plate numbers. Additionally, insufficient lighting at night reduces the use of the cameras. A quote for upgrading the camera has been requested and funding sources for the camera are being researched.

Additional signage to make boat wash and dump station users aware of the camera and the appropriate number to call to report potential illegal discharges has been discussed as well. It is anticipated that the signage may deter some illegal use/dumping at this site.

Unfortunately, an assessment of the current camera has shown that the camera has not been effective at changing behavior or enabling enforcement actions and thus reducing spills at this site. It had been anticipated that for those offenders that misused the area, enforcement actions would have changed their behavior as many visitors to the Harbor use the area frequently.

If the camera is updated and/or signage is installed in the 2009-10 fiscal year, effectiveness of the camera may increase. With reduced illegal dumping of sewage, bacteria levels should lessen and the treatment BMP installed at the wash area will be more effective at removing the lower levels of bacteria that are either naturally occurring or from small accidental spills.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality Activity

TITLE: **Harbor Boat Wash Coin Operated Water Dispenser**
ID NUMBER: **SLR-014**

ACTIVITY DESCRIPTION
Oceanside Harbor offers the use of a boat launch ramp free of charge, as well as free use of a boat wash area and a recreation vehicle (RV) sewage dump station. Runoff from the boat wash area drains through the storm drain system and flows to the harbor a short distance away. This storm drain has had historical bacterial exceedances possibly due to improper use of the dump station and/or regrowth in the storm drain itself. Several bacteria reduction pilot projects have been implemented in the past four years to reduce not only bacteria, but also oil and grease and sediment from flowing to the harbor. During the most recent pilot project, the installation and operation of a modular wetland to treat boat wash runoff, excessive use of the free water provided at the boat wash was observed. Not only are summer, high-use flows greater than what the installed BMP can handle to effectively treat the runoff, but with an impending drought, water conservation efforts are not being enforced.

To address water quality and water conservation needs, the City of Oceanside's Department of Harbor and Beaches is investigating the installation of coin-operated machines that dispense water for use at the wash area. It is anticipated that this will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted. This will, in turn, reduce the amount of water flowing into the harbor which is expected to reduce the bacterial loading at this site.

ACTIVITY IMPLEMENTATION FY 2008-09
The Department of Harbor and Beaches and the Clean Water Program investigated options for coin-operated machines. A few out-of-state vendors were found, but the City will continue to research more cost-efficient and local options with implementation still planned for FY 2009-10.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
Installation is tentatively expected in FY 09-10.

PARTICIPATING WATERSHED COPERMITTEES
N/A

OTHER PARTICIPATING ENTITIES
N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS MEASUREMENTS

It is anticipated that the installation of coin-operated water dispensers at the Harbor boat wash will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted, resulting in a Level 3 Effectiveness Assessment outcome, behavioral changes. This will, in turn, reduce the amount of water flowing into the Harbor which is expected to reduce the bacterial loading at this site, resulting in a Level 4 Effectiveness Assessment outcome, load reductions.

To track the amount of water being used at the Harbor boat wash area, the water meter for the spigots has been isolated. This will allow a comparison for water use before and after installation. Water quality monitoring at this site will continue under the Coastal Storm Drain Monitoring Program at the boat wash outfall under the program's requirements. Because high use flows bypass the treatment BMP and are isolated events, exact load reductions will not likely be available. However, depending on the results of the water use, loading estimates may be extrapolated.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Horse Property Outreach in the San Luis Rey River Watershed**

ID NUMBER: **SLR-015**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many properties with commercial or residential horse operations. Horse operations are a potential source of nutrients, bacteria, and sediment. To reduce the likelihood of impacts on beneficial uses in the San Luis Rey Watershed, the County of San Diego and the City of Oceanside will implement a program to educate horse owners and ranch operators regarding proper manure and corral management through focused outreach and implementation of best management practices (BMPs). The program will consist of a variety of activities, including staffing booths at public outreach events, conducting an annual workshop targeting horse owners, and establishing a pilot program that encourages and facilitates BMP implementation on horse properties through BMP demonstrations and peer mentoring.

The FY 2009-10 annual workshop will focus on manure composting and management. Educational materials, including "how-to" information and instructions on the construction of manure composting bins, will be developed and distributed at this workshop. This workshop may also include a manure composting demonstration site, where attendees can observe BMPs in action.

The FY 2010-11 annual workshop will focus on property and corral management. Educational materials, including a facility check list that is used to assess current practices and provides recommendations for improvements, will be developed for and distributed at this workshop. This workshop may include a demonstration site showcasing good house keeping practices and proper BMP installation.

The County of San Diego and City of Oceanside will also conduct a pilot program that seeks to convene a group of peer mentors committed to improving horse property management through the implementation of BMPs and horse owner outreach. If this program is successful, it may be expanded to other communities in the region that have significant horse populations.

ACTIVITY IMPLEMENTATION FY 2008-09

- County staff initiated creation of a booth display to share information about proper manure management practices and photographic examples of successful implementation of BMPs. This display will accompany staff at outreach events and presentations.
- County staff initiated creation of a binder of information and resources pertaining to effective manure management practices and photographic examples of BMPs. This folder is displayed at events and outreach presentations.
- County and Oceanside staff initiated contact with interested parties to inquire about participation in the peer mentoring component of this activity and to arrange a coordination meeting.

- County and Oceanside staff developed a timeline and activities for implementation during FY 2009-10.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
- Create horse cut outs for booth display - October 2009
- Create resource sheet for Equestrians - October 2009
- Revise Equestrian Community Survey - October 2009
- Staff booth at Bonsall Country Festival - September 2009
- Distribute Equestrian Community Survey – December 2009
- Schedule and meet with parties interested in participating in the Peer Mentor Program - December 2009 & February 2010
- Develop manure composting informational materials – January 2010
- Hold "Manure Composting" workshop for horse owners – April 2010
- Develop horse facility checklist – January 2011
- Hold "Property and Corral Management" workshop for horse owners – 2011 (TBD)

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside
- County of San Diego

OTHER PARTICIPATING ENTITIES
- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Animal facilities have been identified as potential sources of bacteria and nutrients. Since this activity addresses two priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS
This program seeks to reduce the impacts of nutrients, bacteria, and sediment by practices related to manure management, composting, and other horse-related BMPs. Additionally, the program anticipates formation of a community of knowledgeable horse enthusiasts that will share what they learn with neighbors and friends in the horse community and beyond. The pilot component of this program could be expanded to other communities in the region that have significant horse or animal populations.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by completion of the following tasks (Level 1 Outcomes):

- Completion of resource sheet for equestrians
- Completion of manure composting informational materials
- Completion of horse facility checklist
- Formation of a peer mentor group
- Number of booths staffed
- Number of participants contacted through booths
- Number of workshops conducted
- Number of participants attending workshops
- Number and type of materials distributed during workshop presentations

Pre- and post-participation survey forms will be administered to assess whether participants learn something valuable from this activity (Level 2 Outcome).

As additional activities are designed and implemented, other effective measurements may be developed.

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FUTURE WATERSHED ACTIVITY SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Grove and Nursery Outreach in the San Luis Rey River Watershed**

ID NUMBER: **SLR-016**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many grove and nursery operations. Groves and nurseries have been shown to be potentially significant sources of nutrients to waterways in surrounding watersheds. To reduce the likelihood of impacts on beneficial uses in the San Luis Rey Watershed, the County of San Diego has contracted with the Mission Resource Conservation District (MRCD) to conduct focused outreach to nurseries and groves in the watershed. These outreach efforts will focus on issues related to water conservation, fertilization techniques, erosion prevention, and best management practices (BMPs) to reduce potential nutrient loads.

Tasks associated with this activity include:

- Conduct one focused workshop and disseminate updated educational information annually.
- Develop pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in behaviors resulting from this activity.
- Develop and distribute informational materials relating to BMPs for various fertilization methods.
- Augment the MRCD's current Agricultural Water Management Program Irrigation System Evaluation to include evaluation of additional practices with the potential to impact water quality.
- Conduct onsite irrigation evaluations and disseminate information about fertilization BMPs and erosion control.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

The first annual workshop and irrigation evaluations will take place in FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Nursery and grove operations are potentially significant sources of nutrients. Since this activity addresses a priority water quality problem, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Groves and nurseries operations have been shown to be potentially significant sources of nutrients to waterways in surrounding watersheds. This program seeks to reduce the impacts of nutrients on the San Luis Rey Watershed by educating nursery and grove operators on issues related to water conservation, fertilization techniques, erosion prevention, and BMPs.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by the completion of an annual workshop, the number of participants in attendance, the number of materials distributed, and the number of irrigation evaluations conducted (Level 1 Outcomes).

Workshop attendees will be asked to complete pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in awareness of proper irrigation and fertilization practices (Level 2 Outcomes).

Additionally, effectiveness will be assessed by estimating the total amount of nutrients reduction possible through the implementation of irrigation BMPs recommended during irrigation evaluations (Level 4 Outcomes).

FUTURE WATERSHED ACTIVITY SUMMARY SHEET

Watershed Education Activity

TITLE: **Focused Onsite Wastewater System Outreach in the San Luis Rey River Watershed**

ID NUMBER: **SLR-017**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many rural areas in which property owners utilize onsite wastewater treatment. In order to promote the proper care and maintenance of onsite wastewater treatment systems, the County has contracted with the Mission Resource Conservation District (MRCD) to implement an onsite wastewater system outreach and rebate program in the San Luis Rey and Santa Margarita River Watersheds. Residents interested in obtaining a rebate to offset the cost of pumping out their system will be required to attend an MRCD-facilitated workshop devoted to the proper care and maintenance of onsite wastewater systems. The rebate program will operate on a first come, first served basis offering 30 pumping rebates annually for three years. The rebates will be in the amount of $100.00 and will only be applicable to pumping by permitted septic waste haulers. The MRCD and County staff will administer pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in awareness of proper onsite wastewater system maintenance.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

The first annual workshop and distribution of rebate certificates will take place in FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Onsite wastewater treatment systems have the potential to act as a significant source of bacteria and nutrients. Since this activity addresses two priority water quality problems, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This program will provide homeowners with an economic incentive to maintain their onsite wastewater treatment systems, while educating them on the proper care and maintenance protocol. Through incentives and education, this program seeks to decrease the likelihood of onsite wastewater system failure.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of workshops conducted, the number of participants in attendance, and the number of pumping vouchers distributed (Level 1 Outcomes).

Attendees will be asked to complete a pre- and post-workshop survey that will assess knowledge of general watershed principles and changes in awareness of proper onsite wastewater system maintenance (Level 2 Outcomes).

Additionally, effectiveness will be assessed by tracking the number of pumping vouchers used to demonstrate a change in behavior (Level 3 Outcomes).

Finally, the amount of sewage removed from onsite wastewater systems will be tabulated (pumping volume, estimated percent solids, and location). From this information, some estimates of load reduction may be possible (Level 4 Outcome).

PROPOSED WATERSHED ACTIVITY SUMMARY SHEET

Watershed Education Activity

TITLE: **Guajome Sports Park Watershed Educational Signage**
ID NUMBER: **SLR-018**

ACTIVITY DESCRIPTION

A new city park in Vista called Guajome Sports Park (Park) is currently under construction that will include sports fields and walking trails. The Park is situated high atop a hillside in the San Luis Rey Hydrologic Unit, providing spectacular views of the San Luis Rey River corridor and watershed. The Park is expected to draw many visitors and will provide a great opportunity for educating the public on the physical features of the watershed and the water quality issues within. This activity will provide for design and installation of watershed educational signage at various locations in the sports park. The signage will address the physical features in the watershed, water quality problems identified in the watershed, and provide tips that the residents can use to improve conditions in the watershed through their daily activities and interactions.

TMDL APPLICABILITY

The only TMDL adopted in the watershed, although presently on hold, is the Bacteria Project I for Beaches and Creeks. This TMDL is for bacteria and addresses the impaired segment of the Pacific Ocean listed at the San Luis Rey River mouth. The educational signage in the park will address sources of bacteria and solutions to bacteria problems.

TIME SCHEDULE FOR IMPLEMENTATION

- FY 2010-11 Sign Design and Installation
- FY 2011-12 Effectiveness Assessments

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The high priority water quality problems identified in the San Luis Rey HU are bacteria and nutrients, both of which will be addressed via the educational signage.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey HU collective watershed strategy identifies bacteria and nutrients as high priority water quality pollutants in the watershed. Potential sources of bacteria and nutrients have been identified within the watershed and include industrial/commercial, residential, and open space land uses. This activity addresses both high priority water quality problems and

primarily will address potential sources of the problem related to residential activities within the watershed; therefore the activity is consistent with the Carlsbad WMA Strategy.

EXPECTED BENEFITS

It is expected that through the educational information presented on the signage, the residents will improve their knowledge related to stormwater and urban runoff and implement appropriate BMPs in their everyday activities affecting water quality.

EFFECTIVENESS MEASUREMENTS

The effectiveness assessment of the project has not been completely developed at this time. It is expected that estimates of numbers of visitors may be used to measure the impressions made by the signs. This may allow for some measure of knowledge change (level 2); however measuring of actual changes in behavior related to the signage will be difficult to assess. The participating agencies will work together to develop appropriate assessment measures where feasible.

SAN LUIS REY RIVER WATERSHED

Urban Runoff Management Program Annual Report for Fiscal Year 2009-10

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside • City of Vista • County of San Diego

January 2011

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CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT

January 28, 2011

Re: STATEMENT OF CERTIFICATION
2009-10 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed

I certify under penalty of law that the 2009-10 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M.A. Lahsaiezadeh

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Clean Water Program Coordinator
City of Oceanside

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CITY OF VISTA
CALIFORNIA

January 25, 2011

RE: STATEMENT OF CERTIFICATION

FY 2010 WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT FOR THE SAN LUIS REY WATERSHED MANAGEMENT AREA

I certify under penalty of law that the FY 2010 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

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STATEMENT OF CERTIFICATION

San Luis Rey River Watershed Urban Runoff Management Program (WURMP) FY 2009-10 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to this FY 2009-10 San Luis Rey River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer

1/21/11
Date

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SAN LUIS REY RIVER WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM
Annual report for Fiscal Year 2009-10

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside
City of Vista
County of San Diego

January 2011

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EXECUTIVE SUMMARY

Introduction

This San Luis Rey (SLR) Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) is the third annual report by the San Luis Rey Watershed Copermittees (SLR Copermittees) addressing Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit). The San Luis Rey Watershed Copermittees (SLR Copermittees) include the City of Oceanside, the City of Vista, and the County of San Diego. The City of Oceanside serves as the Lead Watershed Copermittee for the SLR Watershed Management Area (WMA). The SLR WURMP AR covers the time period July 1, 2009 – June 30, 2010 (FY 2009-10) and describes the SLR Copermittees collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the SLR WMA to the maximum extent practicable.

During this reporting period the SLR Copermittees continued to address the watershed's high priority water quality pollutants identified in the 2008 San Luis Rey WURMP (2008 SLR WURMP) as bacteria and nutrients. This focus is reflected in Section 3.0 - Implementation of Watershed Activities, which enumerates the high-priority-focused watershed water quality and watershed education activities.

The SLR Copermittees will continue to re-evaluate and refine the SLR WURMP by implementing an effectiveness assessment component for the overall program. As more knowledge about pollutant sources and innovative and effective management measures to address those sources become available, the SLR Copermittees will use the Model Watershed Urban Runoff Management strategy to guide selection and implementation of watershed activities. Moreover, the SLR Copermittees will continue to utilize the Baseline Long-Term Effectiveness Assessment (BLTEA) process to assist in further identifying pollutant sources and focusing program efforts to control those sources.

Program Highlights

During this reporting period the SLR Copermittees made significant progress in developing and implementing watershed water quality and watershed education activities that receive WURMP credit based on the current Municipal Permit. In addition to these activities the SLR Copermittees coordinated other activities that they feel work toward reaching the overall goal of the SLR WURMP.

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.
- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.

- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach this goal and the objectives, the SLR Copermittees worked to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

Report Organization

The 2009-10 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed and gives a general overview of the organization and content of the report. It also describes Copermittee collaboration during the reporting period.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the reporting period FY 2009-10. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic plan that the SLR Copermittees have proposed for the SLR WMA, including new watershed water quality and education activities.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of SLR Copermittee collaboration efforts during the reporting period
- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.

- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Conclusions and Recommendations

Lower San Luis Hydrologic Area

Conclusions

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Water quality data collected during previous reporting periods in FY 2007-08 and FY 2008-09 provided new information specific to the HA, as there was a TWAS installed towards the bottom of the Bonsall HSA (FY 2007-08 only) in addition to the historical MLS. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. Data collected from water quality monitoring activities during FY 2009-10, in addition to the data mentioned above continues to support listing bacteria and nutrients as high priority water quality problems in the Lower San Luis Rey HA.

Watershed Water Quality Activities

During FY 2009-10, six water quality activities in the HA were in the implementation phase, two designed to address water quality problems related to bacteria, two designed to address nutrients, and two that address both bacteria and nutrients. These activities appear well designed to address high priority water quality problems in the watershed. Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

During FY 2010-11, eight water quality activities are planned to be implemented, with three designed to address water quality problems related to bacteria, two designed to address nutrients, and three that address both bacteria and nutrients.

Watershed Education Activities

During FY 2009-10, the Copermittees implemented six watershed education activities: one focused on bacteria, one focused on nutrients, and four focused on both bacteria and nutrients. Through these education activities outreach was conducted to a variety of populations including pet owners, nurseries, and horse property owner/operators.

In FY 2010-11, seven education activities are planned with one designed to address water quality problems related to bacteria, two designed to address nutrients, and four that address both bacteria and nutrients.

Recommendations

Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope.

Some of the hydrologic areas in the SLR Hydrologic Unit (HU) have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs where funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the specific education activities.

Activities in the watershed appear to be properly focused on identified water quality problems in the HU. These types of activities should continue as bacteria and nutrients show increasing trends at receiving water monitoring stations. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected bacteria and nutrient pollution. TWAS data should be examined carefully as it is available to discern between water quality in the upper and lower watersheds. At this time, it appears that the focusing of activities in the lower watershed is appropriate. Additional TWAS and MLS data will be collected during FY 2010-11.

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

Warner and Monserate Hydrologic Areas

Conclusions and Recommendations

With minimal development in both the Warner and Monserate HAs, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for these HAs is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

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1 INTRODUCTION

The San Luis Rey (SLR) River Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) describes the watershed activities conducted by the City of Oceanside, the City of Vista, and the County of San Diego (SLR Copermittees) from July 1, 2009 through June 30, 2010. During this reporting period, the SLR Copermittees worked extensively to develop and implement activities that address water quality issues affecting the SLR River Watershed Management Area (WMA) based on requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (Municipal Permit) for San Diego County Copermittees, Order No. 2007-0001, NPDES No. CAS0108758.

Organization and Content of the Report

This annual report is organized according to the *Standardized Format for Watershed Urban Runoff Management Program Annual Reports* outline included with the updated Watershed Urban Runoff Management Program (WURMP) documents submitted to the Regional Water Quality Control Board (RWQCB) in March 2008. This report endeavors to adhere to the organizational requirements of the Municipal Permit issued to 21 San Diego County Copermittees (County Copermittees) in January 2007.

The 2009-10 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed, gives a general overview of the organization and content of the report, and describes Copermittee collaboration during the reporting period.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the reporting period FY 2009-10. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic plan that the SLR Copermittees have proposed for the SLR WMA, including new watershed water quality and education activities.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of SLR Copermittee collaboration efforts during the reporting period
- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.
- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Regulatory Requirements

In January 2007, Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit) was issued to the San Diego County Copermittees as a renewal permit for Order No. 2001-01. The Permit was issued to 21 jurisdictions and agencies in San Diego County. The Permit addresses the basic federal requirement for a program that reduces pollutants discharged from municipal separate storm sewer systems (MS4s) to the maximum extent practicable (MEP).

Section E of the Municipal Permit requires that the Copermittees within the SLR River Watershed collaborate to develop and implement a watershed-based program that addresses urban runoff and surface water quality. The rationale for this program is simple: urban runoff does not follow jurisdictional boundaries and often travels through multiple jurisdictions while flowing to receiving waters. Therefore, the actions of various municipalities within a watershed regarding urban runoff can have a cumulative impact upon shared receiving waters. The Municipal Permit directs San Diego County Copermittees with land use authority within the watershed to collaborate in developing and implementing the WURMP, the purpose of which is to identify and address the watershed's highest priority water quality problems. In addition, the Municipal Permit requires that the Copermittees develop activities that address education, public participation, and watershed-based land use planning.

Section E of the Municipal Permit defines the Copermittees within the nine regional watersheds, as well as a Lead Copermittee for each watershed. The following Copermittees are included in the SLR River Watershed:

- City of Oceanside
- City of Vista
- County of San Diego

The Municipal Permit designates the City of Oceanside as the default Lead Copermittee for the SLR River Watershed, and the City of Oceanside has agreed to continue to fulfill this role. The Municipal Permit requires that the Lead Watershed Copermittee be responsible for producing and submitting the WURMP. They are also responsible for coordinating meetings among watershed Copermittees to facilitate the development and implementation of watershed activities. The City of Oceanside continues to coordinate meetings at least quarterly to discuss and implement the various watershed activities and coordinate required regulatory submittals.

In accordance with Section E of the Municipal Permit, the Copermittees listed for each watershed must participate in the development and implementation of a WURMP. The requirements for the WURMP are listed in the Municipal Permit and include the following:

- Mapping the watershed and identifying all receiving waters, all impaired receiving waters, land uses, highways, jurisdictional boundaries, and inventoried commercial, industrial, construction, municipal sites, and residential areas.
- Assessing the water quality of all receiving waters in the watershed based on existing data and eventually performing watershed-based water quality monitoring activities.
- Identifying and prioritizing major water quality problems in the watershed caused or contributed to by discharges from MS4s, including potential sources of the problems.
- Developing and implementing a strategy of water quality and educational activities needed to address the highest priority water quality problems.
- Identifying which Copermittees are responsible for implementing each recommended watershed activity.
- Developing and implementing a mechanism for public participation in watershed activities.
- Developing and implementing watershed-based education activities.
- Developing a mechanism to facilitate collaborative watershed-based land use planning with other Copermittees in the watershed.
- Developing a long-term strategy for assessing the effectiveness of the WURMP.
- Submitting annual WURMP reports which shall document the Copermittees' activities during the preceding year. At a minimum, the annual report must include:
    - A comprehensive description of all watershed activities conducted by the Watershed Copermittees for permit compliance.
    - Public participation mechanisms utilized during implementation.
    - Watershed-based land use planning mechanism description.
    - Effectiveness assessment of the WURMP.
    - Summary of watershed-related data not already included in the annual monitoring report.
    - Identification of water quality improvements or degradation.

SLR WURMP Goals and Objectives

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.
- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach this goal and the objectives, the SLR Copermittees work collaboratively to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

San Luis Rey Watershed Description

The SLR River Watershed is located along the northern border of San Diego County. It is bordered to the north by the Santa Margarita River Watershed and to the south by the Carlsbad and San Dieguito River Watersheds. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level (MSL), and extends west over 55 miles to form a watershed with an area of approximately 360,000 acres, or 562 square miles (see Figure 1-1). The river ultimately discharges to the Pacific Ocean at the western boundary of the City of Oceanside. Of the nine major watersheds in the San Diego region, the SLR River Watershed is the third largest in terms of land area (SANDAG 1998).

The SLR River Watershed or SLR Hydrologic Unit (HU) (903.00) is comprised of three HAs, which have been delineated by the San Diego Regional Water Quality Control Board (RWQCB) based on drainage patterns: Lower San Luis (HA 903.1), Monserate (HA 903.2), and Warner Valley (HA 903.3) (see Figure 1-1). Over 54% of the land in the watershed is vacant or undeveloped. The next largest land uses in the watershed are residential (15%) and agriculture (14%). The highest concentration of population is located in the Lower San Luis HA. There are six federally recognized Tribal Indian Reservations with land in the watershed. The highest point in the San Luis Rey Watershed (and in San Diego County) is Hot Springs Mountain with an elevation of 6,533 feet (1,991 meters).

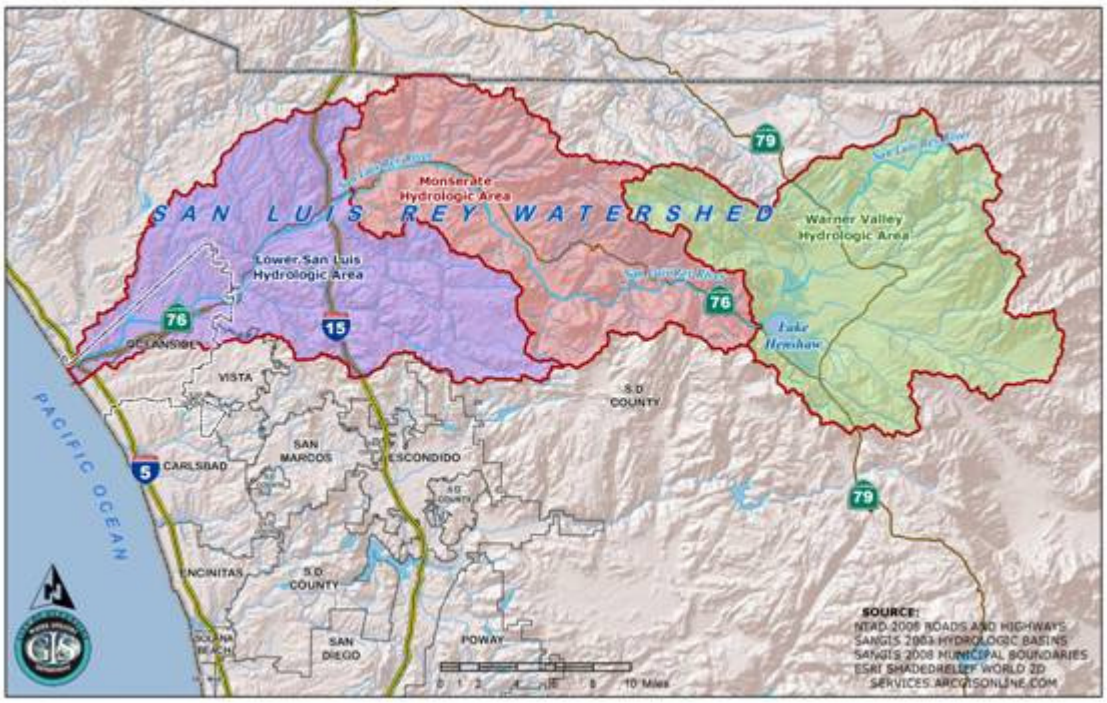

Figure 1-1. San Luis Rey Watershed Hydrologic Areas.

About half (49%) of the land in the watershed is privately owned. Publicly owned land accounts for approximately 37% of the area, and the remaining 14% consists of numerous reservations in the watershed. In the western half of the watershed, private ownership dominates. Moving east through the watershed, public lands increase and dominate in the Warner Valley HA. The Vista Irrigation District (VID) is the single largest landowner in the watershed.

Five jurisdictions have land use authority in the SLR Watershed and include the Cities of Escondido, Oceanside and Vista and the Counties of San Diego and Riverside. A number of other governmental agencies also administer lands within the unincorporated areas of San Diego County. A general breakdown of jurisdictional areas within the watershed is shown in Table 1-1.

Table 1-1. Watershed Acreages by Jurisdiction.

Jurisdiction	Acres	Percentage of Watershed (%)
Escondido	52	0.0
Oceanside	15,883	4.4
Vista	743	0.2
Unincorporated San Diego County	342,566	95.2
Riverside County	649	0.2
Total	**359,893**	**100.0**

Source: SANDAG 1998. (Note: Of the sources reviewed, values for total size of the watershed and the breakdown of the watershed by jurisdictions were similar but often different. Therefore, the values provided in this table are for general purposes only and should be verified if used for other purposes.)

1.1 Copermittee Collaboration

The Cities of Oceanside and Vista and the County of San Diego share the implementation responsibilities for the SLR WURMP. Using the watershed approach, the SLR Copermittees aim to positively affect the water quality of the SLR River Watershed in a cost effective, environmentally sensitive, and collaborative manner.

The San Diego County Copermittees have developed a Model Watershed Urban Runoff Management Strategy (Strategy) to guide the selection and implementation of Watershed Activities that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. Data analyzed to date for the SLR Watershed suggests that bacteria and nutrients are high priority water quality problems in the Lower San Luis HA.

Having used the watershed strategy as the basis for developing the activities, the SLR Copermittees have focused activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the SLR WMA. Where receiving water conditions and pollutants sources were not clearly characterized, monitoring and source identification activities were planned and implemented.

1.1.1 San Luis Rey WURMP Meetings

In order to effectively develop the 2008 SLR WURMP Update required by Municipal Permit Order R9-2007-0001 and to plan and implement the San Luis Rey WURMP in current and subsequent years the SLR Copermittees met five times during FY 2009-10. The SLR Copermittees developed and prioritized water quality activities that address pollutants of concern in the watershed, exchanged ideas on how to address high priority water quality pollutants in the watershed, evaluated the effectiveness of actions, and collaborated on development of required submittals. See Table 1-2 for dates of these meetings and pertinent agenda items discussed at these meetings.

The general watershed meetings of the San Luis Rey WURMP workgroup were led by the City of Oceanside. Activities and tasks developed by the Copermittees were then carried out by the Copermittees within the structure of their jurisdictional organization. Task completion was then tracked and assessed at the workgroup meetings and is being reported in this Annual Report.

Table 1-2. SLR WURMP Meeting Dates and Agenda Items Discussed.

Date	Agenda Item Topics
10/20/09	Review of 08-09 activities; Review of 09-10 Activities; Proposed 303(d) listings; Annual report schedule and section assignments
01/05/10	WURMP Annual Report section updates; New 303(d) listings; Watershed activity review and updates; 2010-11 activity planning; meeting schedule
02/16/10	Assessment of activities; Activity updates; Monitoring and reporting;
4/20/10	Regional water quality monitoring results; Review of Copermittee SLR water quality monitoring efforts; activity updates
06/15/10	Review of SLR River monitoring programs; 2012 303(d) list call for data; Activity updates;

1.2 Watershed Map Updates

Section J.2. of the Municipal Permit requires that the WURMP provide an accurate map of the watershed that identifies the following: All receiving waters (including the Pacific Ocean); Clean Water Act section 303(d) impaired receiving waters; land uses; MS4s, major highways, jurisdictional boundaries; and inventoried commercial, industrial and municipal sites. In a letter dated September 23, 2008, the Regional Water Quality Control Board requested Copermittees increase the size of the watershed maps to no smaller than 36 inches by 24 inches. See Appendix B of the 2007-08 WURMP AR for a copy of the increased map size.

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2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section presents a current assessment of surface water quality and potential pollutant sources within the SLR WMA. The SLR Copermittees participate in a regional monitoring program, which rotates between the northern and southern watersheds of San Diego County every other year. During the FY 2009-10 reporting period, regional monitoring efforts were focused in the southern watersheds. Therefore, the current water quality assessment for the SLR WMA does not include FY 2009-10 data from several major monitoring programs, including the Temporary Watershed Assessment Stations (TWAS) and Mass Loading Stations (MLS). Instead, this assessment is largely based on historical MLS and TWAS data as well as data collected from jurisdictional monitoring programs, Stormwater Monitoring Coalition (SMC) Program ambient monitoring, and special watershed studies. A detailed review of all monitoring activities taking place within the SLR watershed over the current reporting period can be found in the *2009-10 Urban Runoff Monitoring Annual Report* (Regional Monitoring Report). The pollutant source assessment is based on land use coverages, facility source inventories, as well as past and present source characterization efforts.

2.1 Watershed Water Quality Assessment

This section provides an updated assessment of applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems.

2.1.1 2009-10 WATER QUALITY PROGRAMS AND DATA

Table 2-1 identifies the active water quality monitoring programs within the SLR WMA and briefly summarizes monitoring activity during FY 2009-10.

For further details on the following programs, please refer to the Regional Monitoring Report, which is submitted under separate cover:

- Stormwater Monitoring Coalition (SMC) Program
- Jurisdictional Dry Weather Monitoring (DWM)
- Coastal Storm Drain Monitoring (CSDM)

Jurisdictional DWM Program results are also discussed in individual Jurisdictional Urban Runoff Management Program (JURMP) Annual Reports. CSDM Program results are also included as an attachment to the 2009-10 Regional Monitoring Report.

In addition to jurisdictional and regional efforts, monitoring is conducted by the SLR Copermittees as part of two collaborative WURMP activities. Results from the SLR Watershed Water Quality Monitoring Activity (SLR-001) and the Guajome Lake Water Quality Monitoring Activity (SLR-008) are provided in the appendices to the respective activity sheets located in Appendix A of this document. SLR-001 monitoring is conducted jointly by the City of Oceanside and the County of San Diego. This monitoring specifically addresses total dissolved solids (TDS), chloride, nutrients, and bacteria throughout the lower SLR River and its tributaries.

SLR-008 monitoring is conducted by the County of San Diego to characterize the contribution of nutrients to Guajome Lake.

Table 2-1. Water Quality Monitoring Activities in the San Luis Rey River WMA (FY 2009-10)

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**3**
Ambient Monitoring – SMC Regional Monitoring Participation	Water chemistry and toxicity	3-SMC Sites*
Rapid Stream Bioassessment –SMC Regional Monitoring Participation	Benthic macroinvertebrates, periphyton, and physical habitat	3-SMC Sites*
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	None (Off rotation)
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and total organic carbon (TOC)	None (Off rotation)
Urban Runoff Monitoring		**118**
Jurisdictional Dry Weather Monitoring	Field, analytical chemistry, and trash	38
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	13 randomly selected outfalls visited: 8 sites dry, 5 flowing sites sampled
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	5 randomly selected outfalls
MS4 Outfall Targeted Dry Weather Monitoring	Chemistry, metals, and bacteria	19
MS4 Outfall Targeted Wet Weather Monitoring	Chemistry, metals, pesticides, and bacteria	None
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	2 sites (1 in SLR)
Coastal Storm Drain Monitoring (CSDM) Program	Coastal Outfall and Receiving Waters	5 coastal sites, 36 harbor sites
WURMP Monitoring Activities		**21**
SLR-001: SLR Receiving Water and Urban Runoff Monitoring	Field, TDS, chloride, nutrients, and bacteria	8 Receiving Water Sites; 11 Tributary Sites
SLR-008: Guajome Lake Urban Runoff Monitoring	Field, nutrients, TSS	2 Tributary Sites
* The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over five years (http://socalsmc.org/ProjectThree.aspx).		

2.1.2 2009-10 WATER QUALITY MONITORING RESULTS

Table 2-2 summarizes annual monitoring results and identifies relationships between receiving water and municipal separate storm sewer system (MS4) outfall results during both wet and dry weather. The constituents listed in Table 2-2 represent medium and high priority constituents based on the *Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas*, Final Draft-Version 1 (SDCRC, 2010).

Key findings for the San Luis Rey River WMA include the following:

- Comparison of Wet Weather and Dry Weather Results:
  - *Receiving Water:* No receiving water data were collected at the MLS or TWAS in this WMA due to the rotational nature of the Permit. Data from the three SMC sites and data from the previous monitoring season are presented for discussion purposes only with regard to potential relationships between priority constituents. The 2009-10 SMC data were collected as grab samples during ambient, dry season conditions. The priority constituents identified include total dissolved solids (TDS), total nitrogen, total phosphorus, chloride, and sulfate. In comparison, the wet weather priority constituents identified in 2008-09 were TDS and bacteria indicators. TDS was, therefore, a common priority constituent for both wet and dry weather flows. The SMC dry weather program did not include bacteria monitoring; therefore, the priority of bacteria in receiving waters in dry weather conditions cannot be determined from the available data.
  - *MS4:* The results of the MS4 outfall program indicated TDS and bacteria as priority constituents for both wet and dry weather flows at MS4 outfalls.
- Comparison of Receiving Water and MS4 Results:
  - *Wet Weather:* No wet weather MLS or TWAS data were available for receiving waters for 2009-10. The MS4 data for wet weather flows indicated bacteria, TDS, and pH were priority constituents. For comparison purposes, the 2008-09 wet weather results identified TDS and bacteria as priority constituents.
  - *Dry Weather:* No dry weather MLS or TWAS data were available for receiving waters for 2009-10. The MS4 data for dry weather flows indicated that bacteria, TDS, chloride, total nitrogen, total phosphorus, nitrate, and nitrate/nitrite were priority constituents. For discussion purposes, in comparing the dry weather MS4 results with the SMC receiving water dry weather results, nutrients (total nitrogen and total phosphorus) and TDS were identified as common priority constituents. Bacteria were not measured in the SMC sample.

No Copermittee composite, toxicity data were available for this reporting year due to the rotational nature of the Permit. For discussion purposes, the SMC toxicity grab sample results for dry weather indicated toxicity to *C. dubia* for chronic survival and reproduction at two of three SMC sites in the Bonsall HSA. The historical wet weather results from 2008-09 did not indicate toxicity as a concern. No toxic chemicals were identified as high priority constituents based on the MS4 data. TDS was considered a high priority constituent for both wet and dry weather based on the MS4 data. For comparison purposes, TDS was also rated as a high priority constituent in receiving waters based on the SMC dry weather results and historical Permit wet weather results. Several aquatic species, including *C. dubia,* have a low tolerance to higher concentrations of TDS and ion imbalance and thus TDS may be a cause of the toxicity (Mount et al., 1997).

The results of the SMC bioassessment survey indicated a Very Poor Index of Biotic Integrity (IBI) rating at two locations and a Fair IBI at an upper watershed location. These results are similar to the most recent Permit bioassessment survey results for the mass loading station (MLS) and temporary watershed assessment station (TWAS) locations from 2008-09 that were

rated Very Poor. The physical habitat was rated good and moderate at the two SMC sites with Very Poor ratings.

Table 2-2. Summary of San Luis Rey River Watershed Management Area Assessment Findings

San Luis Rey River MLS Drainage Area			
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**	**Core Questions Addressed**
Receiving Water Monitoring (MLS, TWAS, and SMC)	**No MLS or TWAS Sampling During 2009-10 Season (South County Rotation)** **SMC Results-2010 (3 Stations) (for discussion purposes only)** • Chemistry – Chloride, Sulfate, TDS, Total Nitrogen, Total Phosphorus (station dependent) • Bacteria – Not Assessed • Toxicity – *C. dubia* (station dependent) • Bioassessment – Very Poor IBI at lower stations, Fair IBI at SMC00693 Synthetic Pyrethroids Assessment (2008-09) – Below thresholds (sediment)	**No MLS or TWAS Sampling During 2009-10 Season (South County Rotation)** **2008-09 Season Results (for comparison purposes only)** • Chemistry – TDS • Bacteria – Fecal Coliform • Toxicity – None • Synthetic Pyrethroids Assessment – Bifenthrin (Med)	1, 2
Urban Runoff Monitoring (MS4 Outfall)	• Chemistry – TDS, Chloride, Total Nitrogen, Total Phosphorus, Nitrate (Med), Nitrate/Nitrite (Med) • Bacteria – Enterococci	• Chemistry – TDS, pH (Med) • Bacteria – Fecal Coliform (Med)	3, 4
MLS Trends*			
Increasing		Total coliforms, fecal coliforms, enterococci, dissolved phosphorus, and turbidity.	5
Decreasing		TDS and total hardness	
Regional Source Study: Results of the Regional Source Study for Residential Land Use in San Luis Rey WMA (City of Oceanside) indicated that single-family residential land uses may be potential sources of TSS, turbidity, fecal coliforms and synthetic pyrethroids (bifenthrin, cyfluthrin, L-cyhalothrin, and permethrin) in stormwater flows during wet weather events. Residences with architectural copper may also be a source of copper to wet weather storm flows.			
*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data (based on 2008-09 monitoring season). 1: High frequency constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-10 Monitoring Season.			

Figure 2-1 presents the locations of the Copermittee and SMC receiving water monitoring locations in addition to the jurisdictional and HSA boundaries. The MLS station has been monitored since 2001. The TWAS station was monitored during the 2007-08 FY, and the SMC sites were monitored during ambient weather this fiscal year.

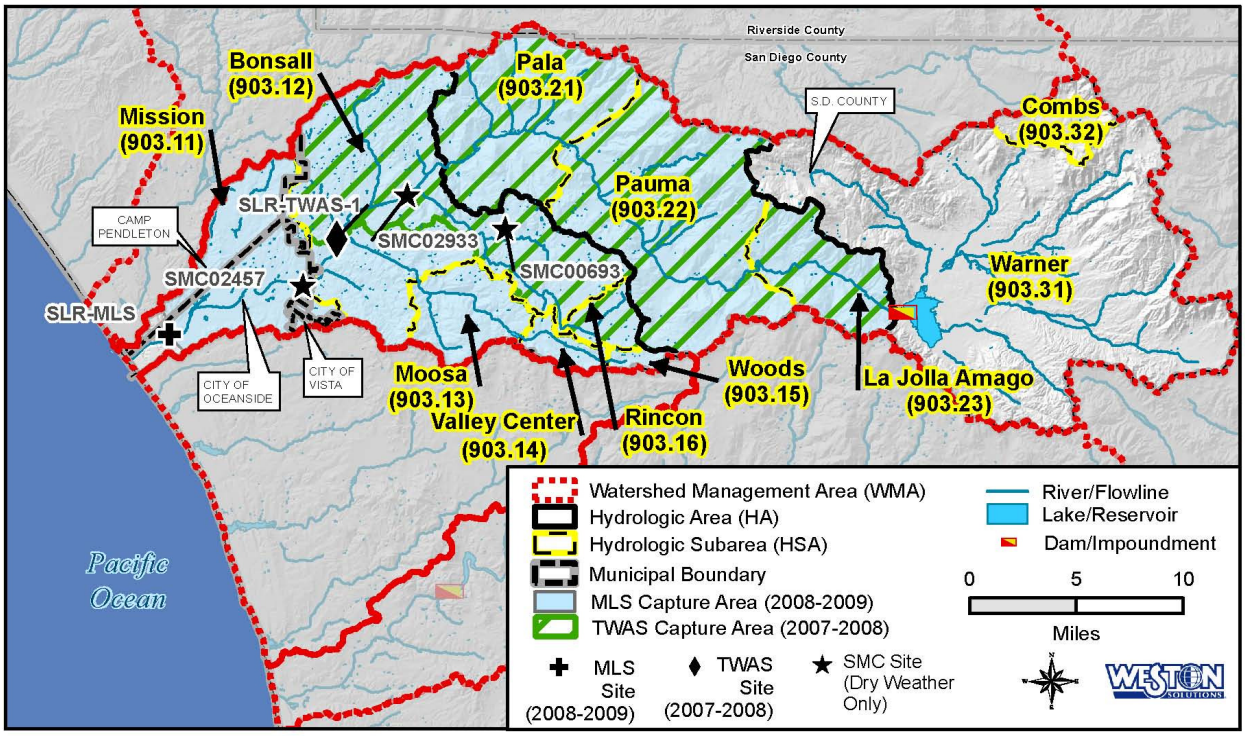

Figure 2-1. Location of MLS, TWAS, and HSA – San Luis Rey River WMA

Tables 2-3 and 2-4 present the wet and dry weather priority constituents, respectively, for receiving waters and allow a spatial comparison for MS4 data. The wet weather priority constituents were identified as such based on 2008-09 Copermittee data. The dry weather priority constituents were identified as such based on the 2009-10 SMC data. Because bacteria were not sampled as part of the SMC program, fecal coliform and Enterococci were added based on the MS4 outfall data. These tables summarize the spatial distribution of MS4 data compared to the priority constituents in the receiving water.

Table 2-3. Summary of Spatial Distribution of Priority Wet Weather Constituents Compared to 2009-10 Random Wet MS4 Outfall Data.

Station Type	HA	HSA	Parameter	Total Dissolved Solids (estimated)	Fecal Coliforms	Bifenthrin (Med)
MS4 by HSA	*Lower San Luis (903.1)*	*Mission (903.11)*	*n*	1*	1*	0
			% > Criteria	0%	100%	NA
		Bonsall (903.12)	*n*	3	3	0
			% > Criteria	67%	67%	NA
		Moonsa (903.13)	*NA*	NA	NA	NA
		Valley Center (903.14)	*NA*	NA	NA	NA
		Woods (903.15)	*NA*	NA	NA	NA
		Rincon (903.16)	*NA*	NA	NA	NA
	Monserate (903.2)	*Pala (903.21)*	*n*	1*	1*	0
			% > Criteria	100%	100%	NA
		Pauma (903.22)	*NA*	NA	NA	NA
		La Jolla Amago (903.23)	*NA*	NA	NA	NA
SLR-MLS Summary (MS4 to RW Comparison)			*MS4 (n)*	5	5	0
			MS4 (%) > Criteria	60%	80%	NA
			*RW Score***	High*	High*	Med*

*One station was used in the summary.

**No receiving water data for current year. 2008-2009 data used for SLR-MLS receiving water comparison.

HAs without MS4 data are not listed and include Warner Valley (903.3).

Key

High	> 50%
Medium	> 25% and ≤
Low	≤ 25% Exceedance
No Data	

HA - hydrologic area
HSA- hydrologic subarea
MLS - mass loading station
MS4 - municipal separate storm sewer system
NA – not available
RW – receiving water
SLR - San Luis Rey River

Table 2-4. Summary of Spatial Distribution of Priority Dry Weather Constituents Compared to 2009-10 Random and Targeted Dry MS4 Outfall Data.

Station Type	HA	HSA	Parameter	Total Nitrogen (calculated)	Total Phosphorus	Total Dissolved Solids	Fecal Coliform	Entero-coccus	Chloride	Sulfate
MS4 by HSA	*Lower San Luis (903.1)*	*Mission (903.11)*	*n*	0	2	2	2	2	2	0
			% > Criteria	NA	100%	100%	100%	100%	50%	NA
		Bonsall (903.12)	*n*	4	13	13	13	13	9	0
			% > Criteria	75%	85%	100%	23%	54%	89%	NA
		Moonsa (903.13)	*n*	0	2	2	2	2	2	0
			% > Criteria	NA	100%	100%	0%	0%	0%	NA
		Valley Center (903.14)	*NA*	NA	NA	NA	NA	NA	NA	NA
		Woods (903.15)	*NA*	NA	NA	NA	NA	NA	NA	NA
		Rincon (903.16)	*NA*	NA	NA	NA	NA	NA	NA	NA
	Monserate (903.2)	*Pala (903.21)*	*n*	1*	2	2	2	2	1*	0
			% > Criteria	100%	100%	100%	0%	100%	0%	NA
		Pauma (903.22)	*NA*	NA	NA	NA	NA	NA	NA	NA
		La Jolla Amago (903.23)	*NA*	NA	NA	NA	NA	NA	NA	NA
*RW***	***SMC 02457***		*Score*	Above Benchmark*	Above Benchmark*	Above Benchmark*	NA	NA	Above Benchmark*	Above Benchmark*
	SMC 02933		*Score*	Above Benchmark*	Below Benchmark*	Above Benchmark*	NA	NA	Above Benchmark*	Above Benchmark*
	SMC 00693		*Score*	Above Benchmark*	Above Benchmark*	Above Benchmark*	NA	NA	Above Benchmark*	Above Benchmark*

*One station was used in the summary.

**No MLS data for current year. SMC sites are located in Lower San Luis HA and results for a station based on single grab sample.

HAs without MS4 data are not listed and include Warner Valley (903.3).

Key

High	> 50% Above benchmark
Medium	> 25% and ≤ 50% Above benchmark
Low	≤ 25% Above benchmark
No Data	

HA - hydrologic area
HSA- hydrologic subarea
MLS - mass loading station
MS4 - municipal separate storm sewer system
NA – not available
RW – receiving water
SMC – Stormwater Monitoring Coalition

The Regional Monitoring Program also included a source identification study that characterized runoff from two residential neighborhoods in Oceanside and Del Mar. The site in Oceanside was located in the SLR WMA and indicated that single-family residential land uses may be potential sources of total suspended solids (TSS), turbidity, fecal coliforms, and synthetic pyrethroids (bifenthrin, cyfluthrin, L-cyhalothrin, permethrin) in stormwater flows during wet weather events. Residences with architectural copper may also be a source of copper to wet weather storm flows. The Lower San Luis Rey hydrologic area (HA) is the most developed within the

WMA and is characterized by primarily residential/spaced rural residential (35%) land uses. The land uses are primarily undeveloped in the upper HAs.

Table 2-5 summarizes the §303(d) listed water bodies and constituents within the San Luis Rey River WMA, and identifies whether available data support the listings. Table 2-5 also identifies where there are no data, and whether total maximum daily loads (TMDLs) have been developed. As identified in the table, there are listed waterbodies where data may be needed to verify impairments.

Table 2-5. San Luis Rey River WMA Assessment Conclusions in Relation to 2006 Section 303(d) Listings[1]

Waterbody Name	HSA	HSA No.	303(d) Listed Pollutant/ Stressor	Supported by Regional Data	Supported by SMC/ Third-Party Data	No Data	TMDL
Pacific Ocean Shoreline	**Mission**	**903.11**	**Indicator bacteria**	✓	✓		✓
San Luis Rey River	**Mission**	**903.11**	**Chloride and TDS**	✓	✓		
Guajome Lake	**Mission**	**903.11**	**Eutrophic**			✓	

Source: SWRCB, 2006.
1. The 2010 Section 303(d) List was made available after the development of this report and will be updated in future reports.

HSA – hydrologic subarea
SMC – Stormwater Monitoring Coalition
SWRCB – State Water Resources Control Board
TDS – total dissolved solids
TMDL – total maximum daily load

Answers to the five Core Management Questions are provided below. Since the SLR WMA was not sampled as a part of the Regional Monitoring Program during FY 2009-10, the answers have been formulated based on jurisdictional monitoring programs and SMC data, as well as historical regional monitoring data results.

Core Management Question 1.
Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 aims to link water and habitat quality and species toxicity to the many beneficial uses of the San Luis Rey River Watershed. This question is best addressed using a long-term assessment in addition to a more detailed look at the linkage between priority constituents and specific beneficial uses. The Long-Term Effectiveness Assessment five-year analysis to be completed in the next fiscal year will provide a more robust data analysis, using a triad approach, and may provide the opportunity to better link these long-term trends with beneficial uses.

To present an annual snapshot, the question is best addressed with the Copermittee wet weather data assessment from the most recent wet weather data collection in 2008-09. The results of the 2008–09 wet weather monitoring data in the San Luis Rey River WMA indicate that TDS and indicator bacteria are priority constituents, although TDS and hardness show decreasing trends over time for wet weather. During the 2009-10 monitoring period ambient monitoring at three SMC sites identified chloride, sulfate, total nitrogen, and TDS above their respective benchmarks. Total phosphorus and nitrate were measured above the benchmarks in one of three SMC sites.

Historical stream bioassessment results indicate evidence of benthic community impairment in the San Luis Rey River WMA, with either Very Poor or Poor ratings. In 2010, two of the SMC bioassessment sites had Very Poor ratings. The third SMC site had a Fair rating and was the furthest upstream site sampled within the Lower San Luis HA. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat, and the presence of pesticides (e.g., the synthetic pyrethroid Bifenthrin was detected during wet weather monitoring).

In previous years, toxicity has been sporadic and infrequent at the MLS. Since 2001, toxicity has been identified three times to *C. dubia*, once to *H. azteca* and twice to *S. capricornutum.* There is no evidence of persistent toxicity at the MLS during ambient or wet weather monitoring. In 2010, toxicity to *C. dubia* chronic survival and reproduction was observed in the furthest upstream SMC site in the Bonsall HSA, and to C. dubia reproduction at the other Bonsall HSA SMC site. Both of these SMC sites had results above the benchmarks for TDS, chloride, and sulfate, which may have contributed to the observed toxicity.

The monitoring conducted jointly between the City of Oceanside and the County of San Diego as WURMP Water Quality Activity SLR-001 provides additional ambient data for bacteria, TDS, and nutrients for eight main stem sites of the San Luis Rey River.

Monthly bacteria sampling conducted year-round during ambient conditions since 2004 indicates that the means of total coliform, fecal coliform and Enterococcus indicators remained below their corresponding AB411 single sample standards in the receiving water. Individual site means for two sites in the Mission HSA and one site in the Bonsall HSA were above the AB411 single sample standard for Enterococcus. Beginning in 2006, sampling has taken place at the Pacific Ocean and San Luis Rey River Mouth mixing zone. The mean bacteria results from this shore sampling were below the AB411 single samples standards for all bacteria indicators indicating

that conditions are likely protective of beneficial uses during ambient conditions along the shoreline. Eleven samples of total coliform, fecal coliform, and Enterococcus were conducted under the SLR-001 program in FY 2009-10. In this reporting year, there were no total coliform exceedances at the shoreline or in the river mouth. There was one exceedance at the shoreline for fecal coliform and three at the river mouth, and there were two exceedances for Enterococcus at the shoreline and nine at the river mouth. The number of exceedances has increased from the previous year. See Appendix A for more detailed information.

Supporting the 2009-10 SMC priority constituent findings, the WURMP monitoring Activity SLR-001 results show that both the mean total nitrogen and total phosphorous concentrations exceeded the Basin Plan water quality objectives of 0.1 mg/L for total phosphorus and 1.0 mg/L for total nitrogen at all monitoring locations. Along the main stem of the River, mean total phosphorous concentrations increased gradually from upstream (east) to downstream (west) but this pattern was not observed for total nitrogen whose highest mean concentration was recorded at the easternmost sampling location within the Bonsall HSA.

TDS and chloride concentrations were also collected through WURMP Activity SLR-001. The results support the SMC priority constituent findings for those analytes, as well. Generally, the mean concentrations of both TDS and chloride in the River tend to increase from east to west and mostly exceed the surface water Basin Plan objectives.

Core Management Question 2
What is the extent and magnitude of the current or potential receiving water problems?

As identified through multiple receiving water monitoring programs, the priority constituents during wet weather are TDS and bacteria. The priority constituents during dry weather are bacteria, nutrients, and TDS constituents including chloride and sulfate. Core Management Question 2 was addressed with magnitude of exceedance ratios for the FY 2008-09 ambient and wet weather conditions in the receiving waters and a spatial analysis of priority constituents during ambient conditions (wet weather monitoring was conducted only once at the MLS in 2008–09 due to participation in the Bight ’08 Program). The joint monitoring conducted by the County of San Diego and the City of Oceanside, detailed in Appendix A, also provides a spatial extent of exceedances for bacteria, TDS and chloride, and nutrients for mean results from 2004 through 2010 to supplement the regional and SMC data.

The greatest concentration-to-benchmark exceedances during ambient conditions in the San Luis Rey River WMA were observed for total nitrogen and TDS. Ratios varied among the three SMC sites assessed. Total nitrogen concentrations were sixteen times greater than the benchmark at the uppermost Bonsall HSA site and TDS concentrations were over three times greater at all three sites. Concentration-to-benchmark exceedances during wet weather at the MLS were greatest for indicator bacteria. The fecal coliform concentration during the 2008-09 storm event was more than 30 times greater than the water quality benchmark. Bacterial concentrations vary widely in storm water runoff, but fecal coliform concentrations at the MLS on average have been 12 times greater than the benchmark. The TDS concentration during wet weather in 2008–09 was 50 percent greater than the water quality benchmark, which is lower than the historical mean for the site.

Receiving water spatial patterns in the San Luis Rey River WMA varied by constituent. Total nitrogen concentrations were greater than the benchmark at all three ambient SMC sites monitored in the WMA. Total nitrogen concentration was greatest at the most upstream site in the Bonsall HSA. The total nitrogen value at this site was driven entirely by nitrate. This site is located within a dense agricultural land use setting. Total phosphorus concentrations exceeded benchmark values only at the most downstream site in the Mission HSA and only by a small amount. The joint monitoring program, WURMP Activity SLR-001, observed similar spatial trends for nutrient data. The mean nitrate concentrations are highest at the eastern most location, Shearer Crossing, decrease moving west, and then spike again at the Murray sampling location.

Concentrations of chloride and sulfate, which are constituents comprising TDS, were one to two times greater than the benchmark at all ambient sites monitored by the SMC program. The uppermost site in the Bonsall HSA had the highest concentrations of chloride, sulfate, and TDS values, decreased at the next downstream site in the Bonsall HSA, and then increased slightly at the site in the Mission HSA. These results provide a snapshot of receiving water conditions during the time of the survey. Additional data are needed to provide a more robust assessment of the spatial patterns of water quality constituents within the San Luis Rey River WMA. The joint monitoring program results (SLR-001) show TDS and chloride increasing from east to west, with a slightly lower mean result at Douglas and a larger increase at Benet. All stations except for Shearer Crossing exceed the Basin Plan water quality objectives for TDS and chloride.

The joint monitoring program (SLR-001) also concluded that indicator bacteria means are typically lowest at the eastern and western most sampling stations, with a peak at the Douglas sampling location.

Historical stream bioassessment ratings conducted in the WMA indicate a Very Poor benthic community at both MLS and TWAS locations. The consistent rating of Very Poor at both the MLS and TWAS since 2001 suggests that the extent of the impairment on the benthic community is not isolated only to a single location. The SMC 2009–2010 bioassessment results also indicate a Very Poor benthic community at two of three random sites monitored within the WMA. However, the SMC site located furthest upstream had a fair rating that may suggest some variability in biological conditions spatially.

For a snapshot of spatial extent, toxicity results were assessed and varied by site during ambient weather SMC monitoring. Toxicity to *C. dubia* chronic survival was observed at the furthest upstream site in the Bonsall HSA and toxicity to *C. dubia* reproduction was observed at the next downstream SMC site within the Bonsall HSA.

Core Management Question 3
What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. In 2009–2010, the San Luis Rey River WMA MS4 was assessed through the random dry, random wet, and targeted dry components of the MS4 Outfall Monitoring Program. The Long-Term Effectiveness Assessment five-year analysis to be completed in the next fiscal year will provide a more robust data analysis to answer this question. In addition, CSDM results and

WURMP Activity SLR-001 provide supplemental information to address the relative urban runoff contribution to the receiving water problems.

During wet weather (random), results showed that fecal coliform and TDS were identified as high priority constituents while pH was identified as a medium priority constituent. The elevated TDS in the outfalls may be related to groundwater influences during the time of sampling as most outfalls were located in the Bonsall HSA and are likely within natural or earthen channels. The random MS4 Outfall Monitoring Program data will be more robust following the 5-year planned assessment period.

During dry weather (random and targeted), MS4 results showed that total nitrogen, total phosphorus, TDS, chloride, and enterococci were identified as high priority constituents. Nitrate was identified as a medium priority dry weather constituent. At the HSA level, results indicate a high number of the high priority constituents occurred in the Bonsall HSA, which is also the area with a high proportion of agricultural and spaced rural residential land use.

The CSDM results indicate that coastal storm drains do not appear to be affecting bacterial concentrations in the coastal receiving waters during dry weather conditions among the sites sampled.

Activity SLR-001 targets eight main stem river sites as well as eleven tributaries to the San Luis Rey River. Bacteria, nutrients and constituents comprising TDS (including chloride) were monitored in both the main stem and tributary sites. For bacteria, the total and fecal coliform relative mean concentration results are all below AB411 single sample standards and do not appear to correlate with the spikes in tributary concentrations. All but one tributary sampled for Enterococcus had results that were equal to or greater than the AB411 single sample standard; however, the majority of main stem sites and relative mean concentrations were less than the standard. The site with the highest mean concentration (Douglas) has no visible tributaries or outfalls between it and the next upstream main stem site (Murray).

All of the tributaries sampled during joint monitoring have a mean concentration greater than the Basin Plan objective for TDS and all but one have mean concentrations greater than the objective for chloride. Two tributaries in the Mission HSA (Sleeping Indian and Pilgrim Creek) have also been identified as having high TDS concentrations. Pilgrim Creek was also identified as having the highest chloride concentration. Both sites downstream of these tributaries do show a slight increase in TDS and chloride levels. However, mineral composition of TDS at Pilgrim Creek renders that tributary characteristically different from the others. The mean concentrations of the main stem samples are very similar to the mean groundwater concentrations, which indicate that groundwater is influencing water quality in the main stem.

Nitrate concentrations at the Sleeping Indian tributary are significantly higher than the other tributaries, although it does not contribute the highest loading amounts. However, the location downstream of Sleeping Indian does have an increase in nitrate concentrations. Shearer Crossing, in the main stem, has the highest mean nitrate concentration, but is the easternmost sampling location and is therefore not associated with a tributary upstream. Orthophosphate concentrations are again highest at the Sleeping Indian and Pilgrim Creek outlets. Murray,

downstream of Sleeping Indian, shows a decrease in orthophosphate levels. Benet, downstream of Pilgrim Creek, does show a slight increase in orthophosphate levels indicating the tributary may have an affect on the receiving waters.

Core Management Question 4
What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data through the Source Identification Monitoring Program. The Source Identification Monitoring Program targeted single family residential neighborhoods to characterize discharges from this land use. During the previous fiscal year, monitoring was focused on ambient conditions. During FY 2009-10, monitoring was focused on assessing wet weather conditions. The Jurisdictional DWM Program, the CSDM Program, and trash assessment in the receiving waters also provide some information on urban runoff sources. More detailed discussion of urban runoff sources can be found in each Copermittees Jurisdictional Urban Runoff Monitoring Program Annual Report and in the CSDM Program Annual Report.

A wet weather source identification study of single family residences was conducted by the Copermittees during the 2009–2010 monitoring season. Results from this study suggest that fecal coliforms, TSS, turbidity, synthetic pyrethroids, dissolved metals, and Malathion may locally occur in concentrations above wet weather benchmarks. The results of the dry weather source identification study conducted by the Copermittees during the 2008–2009 Monitoring Season also indicated that synthetic pyrethroids were commonly detected in runoff from residential land uses in concentrations above published toxicity benchmarks for aquatic invertebrates. However, the Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks are provided for comparison purposes only and should be used as tool for further assessment when compared with toxicity results. The 2008-2009 dry weather monitoring source identification study also indicated bacteria concentrations were generally higher at sites influenced from overland runoff in comparison to one site influenced from continuous groundwater flows. Additionally, nitrate, chloride, and elevated conductivities were associated with areas influenced by groundwater discharges (which may be a result of perched water tables).

In the CSDM Program, one site has reoccurring exceedances for which the source has been sufficiently characterized. Coast 8 outfall drains the Harbor boat wash and RV dump station. Signage and structural BMPs have reduced the frequency of exceedances there.

The trash assessment conducted in 2009-10 as part of the Jurisdictional DWM Program was used to identify sources of trash in the San Luis Rey River WMA. A total of 41 sites were assessed for trash in the San Luis Rey River WMA, including six HSAs (some sites were visited multiple times). The highest number of submarginal or poor ratings occurred in the Mission HSA (25 submarginal and 3 poor ratings). This result coincides with the urbanized population centers, which are also found in the lower portion of the WMA. Two assessments were conducted in areas where an aquatic health threat was identified. The remaining ratings for the watershed were marginal, suboptimal, or optimal. No human health threats were identified.

The sources of bacteria, TDS, and nutrients at the two tributaries with the highest concentrations of constituents of concern found through the joint monitoring program (SLR-001) are only partly characterized. A source investigation into the Sleeping Indian tributary found only a small, less than one gallon per minute, overland flow from an agricultural field. The remaining flow was from groundwater seepage. TDS and hardness has been shown to decrease to the northeast, but the sources of the minerals, nutrients, and bacteria have not been identified.

Core Management Question 5
Are conditions in receiving waters getting better or worse?

Core Management Question 5 is best addressed through trend analysis of constituent concentrations from monitoring over time. The majority of historical data is from wet weather monitoring at the San Luis Rey MLS (2001 through 2008). Because of the rotational nature of the permit, no new Copermittee data were collected in the SLR Watershed during this reporting period. Therefore, the following analysis is based on previous data assessments. The Long-Term Effectiveness Assessment five-year analysis to be completed in the next fiscal year will provide a more robust data analysis to assist in answering this question.

Based on the trend analysis, indicator bacteria (i.e., total coliforms, fecal coliforms, and enterococci), dissolved phosphorus, and turbidity are increasing over time at this site. In contrast, concentrations of TDS, total hardness, and dissolved nickel are decreasing over time.

Although dissolved phosphorus and turbidity appear to be increasing over time, the slopes of all three are shallow, and most concentrations have been well below the respective benchmark values. At the current observed rate of increase, it does not appear that any of these constituents will exceed wet weather benchmarks during the current Permit cycle.

Concentrations of TDS and total hardness appear to be decreasing over time at the San Luis Rey MLS. In 2008–2009, TDS concentrations were below the benchmark for the first time since monitoring began at the site. Relatively low TDS values in 2008–2009 are reflected in the total hardness values, which were also much lower during this sampling period compared with previous years. Future monitoring will determine if this trend can be sustained. The decreasing trend in dissolved nickel concentrations is likely inconsequential in terms of benchmarks, since concentrations of this constituent have been very low historically at this site.

The bioassessment ratings at the San Luis Rey MLS and TWAS have been Very Poor in nearly all assessments conducted from 2001 to 2008 and there are no apparent trends in the benthic community.

Toxicity has rarely been observed in samples collected from the San Luis Rey MLS. Between 2001 and 2008, toxicity to *C. dubia* was observed during the first storm season of 2001-2002 as well as toxicity to *H. azteca* during the 2007–2008 Monitoring Season, but no trends in the data set are apparent.

2.1.3 WATERSHED WATER QUALITY PROBLEMS

Section 3.1.3 of the March 2008 WURMP identifies criteria to be used by the SLR Copermittees to identify priority and high priority water quality problems within the SLR WMA (SLR

WURMP 2008). Based on these criteria, Table 2-6 identifies all the watershed water quality problems, including high priorities, and provides a brief explanation of the supporting information used to make each decision. In the 2007-2008 SLR WURMP Annual Report, the scale of the bacteria problem was expanded to include HSA 903.12 in addition to HSA 903.11. This change to the March 2008 WURMP was the result of new data that became available from the TWAS.

Table 2-6. Water Quality Problems in the San Luis Rey WMA.

Water Quality Problem	WURMP High Priority?	HSA(s)	Explanation
Bacteria	Yes	HSA 903.11 HSA 903.12	- Pending TMDL for bacterial indicators at the mouth of the San Luis Rey River - 303(d) listing for bacterial indicators at the Pacific Ocean Shoreline - Persistent exceedances of fecal coliform and enterococcus benchmarks at the MLS and TWAS. Also see Appendix A, SLR-001. - Bacteria BLTEA rating of "A" for HA 903.1
Nutrients	Yes	HSA 903.11	- 303(d) listing for Eutrophication at Guajome Lake - Nutrients BLTEA rating of "A" for HA 903.1
Dissolved Minerals (TDS & Chloride)	No	HSA 903.11	- 303(d) listings for TDS and chloride for 19-mile downstream reach of San Luis Rey River - Dissolved Minerals BLTEA rating of "A" for HA 903.1 - Persistent exceedances of TDS and chloride benchmarks observed in SLR River and Tributaries (see Appendix A, SLR-001)
Benthic Alteration	No	HSA 903.11 HSA 903.12	- Consistent "Poor" or "Very Poor" IBI ratings at the MLS and TWAS - Benthic Alteration BLTEA rating of "A" for HA 903.1

2.2 Pollutant Source Assessment

This section describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed. Land use and facility source data have been examined and mapped for the entire watershed in order to identify the potential pollutant sources contributing to the watershed's high priority water quality problems presented in Appendix A, Figure 3-4 of the 2008 San Luis Rey WURMP (SLR WURMP 2008). Table 2-7 presents an overview of the land use distribution for major land use categories and potential sources within each HSA. This table supports the Watershed Copermittees' focus on activities in the Lower SLR Hydrologic Area. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date. Figure 3-1 in Appendix A of the SLR WURMP 2008 provides a map of sampling locations in the SLR Watershed (SLR WURMP 2008).

Table 2-7 shows the contrast between the lower and upper watershed. Residential and agriculture land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed.

Table 2-7. Overview of Major Land Uses for San Luis Rey River WMA.

Hydrologic Sub Area	Major Land Use Categories[1]												
	Residential		Commercial / Industrial		Agriculture		OS/Preserve		Vacant		Military		Total Area Accounted for
	acres	%	acres	%	acres	%	acres	%	acres	%	acres	%	%
Lower San Luis HA (903.1)													
Mission HSA (903.11)	7,700	26	1,000	3	3,900	12	2,500	8	2,000	7	9,600	32	88
Bonsall HSA (902.12)	24,000	37	1,800	3	20,900	32	1,100	2	14,000	21	400	<1	96
Moosa HSA (903.13) Valley Center (903.14) Woods HSA (903.15) Rincon HSA (903.16)	8,400	38	600	3	5,400	21	500	2	6,600	28	0	0	92
Monserate HA (903.2)	9,200	9	800	1	18,300	17	14,000	13	64,200	59	0	0	99
Warner Valley HA (903.3)	4,300	3	400	<1	3,600	3	14,200	9	108,600	82	0	0	98
Total Land Area	53,600				52,100		32,300		195,400				

1. Source: County of San Diego based on SANDAG 2006 data, land use categories have been grouped for demonstration purposes.

2.2.1 Potential Bacteria Sources

The Baseline Long Term Effectiveness Assessment (BLTEA) represented the Copermittees' first attempt to identify sources of bacteria in the SLR River Watershed. Table 2-8 presents the

BLTEA's list of "Likely" and "Unknown" bacteria sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE 2005).

Table 2-9 lists the number of potential bacteria sources by HSA in addition to relevant land uses with the greatest potential to generate bacteria. Potential bacteria sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-5 through 3-10 (SLR WURMP 2008).

Table 2-8. Potential Bacteria Sources for the SLR River Watershed (From BLTEA).

Potential Bacteria Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Eating or drinking establishments	277	Likely
Animal Facilities	47	Likely
POTWs (water and wastewater)	17	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Sites for disposing and treating sewage sludge	-	Likely
Development subject to SUSMPs	115	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Motor Freight	2	Unknown
Auto parking lots and storage facilities	-	Unknown
Pest Control Services	49	Unknown
Flood management projects and flood control devices	-	Unknown
MS4s	-	Unknown
Park and Recreational facilities	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego – 2005

Table 2-9. Potential Bacteria Sources by Hydrologic Sub-Area.

HSA	Potential Bacteria Source	Number of Facilities or % Land Use
Mission HSA 903.11	Food Establishments	198
	Commercial Animal Facilities	66
	Auto Facilities	7
	Nurseries	54
	% Residential	26%
	% Agricultural	12%
Bonsall HSA 903.12	Food Establishments	48
	Commercial Animal Facilities	168
	Auto Facilities	34
	Nurseries	15
	% Residential	37%
	% Agricultural	32%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Food Establishments	20
	Commercial Animal Facilities	47
	Auto Facilities	4
	Nurseries	15
	% Residential	38%
	% Agricultural	21%
Monserate HSA 903.20	Food Establishments	9
	Commercial Animal Facilities	34
	Auto Facilities	1
	Nurseries	4
	% Residential	9%
	% Agricultural	17%
Warner Valley HSA 903.30	Food Establishments	7
	Commercial Animal Facilities	0
	Auto Facilities	1
	Nurseries	2
	% Residential	3%
	% Agricultural	3%

There is currently only one location within the watershed where an adequate source identification study has been performed to characterize the bacterial pollutant source: the Oceanside Harbor Boat Wash outfall. The City of Oceanside performs routine sampling at the harbor boat wash and recreational vehicle sewage dump area as part of its CSDM Program. This monitoring has revealed high levels of bacteria in samples collected from the boat wash outfall. The outfall drains a short storm drain system where the only influence is from the public boat wash area which borders the sewage dump area for recreation vehicles. Educational signage and the installation of structural BMPs have decreased the exceedances of benchmark values at this site.

To identify the other sources of bacteria, specifically related to beach closures at the mouth of the SLR River, the City of Oceanside was awarded a Proposition 50 Clean Beaches Initiative grant. With matching funds from the County of San Diego and City of Oceanside, the bacteria source tracking project planned to:

- Identify point and non-point sources of bacteria contamination in the lower SLR River and at the River mouth during dry and wet weather.
- Estimate the dry, wet, and annual bacterial loading in the lower SLR River and at the River mouth.
- Recommend Best Management Practices (BMP) to reduce and eliminate bacterial sources.

Grant funding for this project was suspended in December of 2008 for one year. Though funding had ceased, monitoring by the City of Oceanside and County of San Diego continued monthly. Funding was reallocated and a new contract was approved in the Spring of 2010. Monitoring for the project is expected to be completed by the end of April 2011, with a final report due in the fall.

2.2.2 Potential Nutrient Sources

The BLTEA represented the Copermittees' first attempt to identify sources of nutrients in the SLR River Watershed. Table 2-10 presents the BLTEA's list of "Likely" and "Unknown" sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE, 2005).

Table 2-11 lists the number of potential nutrient sources by HSA in addition to relevant land uses with the greatest potential to generate nutrients. Potential nutrient sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-11 through 3-16 (SLR WURMP 2008). Preliminary investigations into land uses in the Guajome Lake drainage area have identified potential sources of nutrients to include residential, agricultural sources, commercial nurseries and agriculture, commercial horse facilities, and residential horse facilities.

Table 2-10. Potential Nutrient Sources for the SLR River Watershed (From BLTEA).

Potential Nutrient Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Commercial Animal Facilities	47	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Park and Recreational facilities	-	Likely
Eating or drinking establishments	277	Unknown
Development subject to SUSMPs	115	Unknown
Auto mechanical repair, maintenance, fueling, or cleaning	57	Unknown
POTWs (water and wastewater)	17	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Corporate yards (incl. maintenance/storage yards)	4	Unknown
Fabricated metal	4	Unknown
Equipment mechanical repair, maintenance, fueling, or cleaning	3	Unknown
Chemical and allied products	2	Unknown
Airfields	2	Unknown
Motor Freight	2	Unknown
Primary metal	1	Unknown
Auto parking lots and storage facilities	-	Unknown
Mobile carpet, drape, or furniture cleaning	76	Unknown
Pool and Fountain cleaning	60	Unknown
Sites for disposing and treating sewage sludge	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego - 2005

Table 2-11. Potential Nutrient Sources by Hydrologic Sub-Area.

HSA	Potential Nutrient Source	Number of Facilities or % Land Use
Mission HSA 903.11	Commercial Animal Facilities	7
	Nurseries	66
	% Residential	26%
	% Agricultural	12%
	% Open Space	8%
	% Industrial/Commercial	3%
Bonsall HSA 903.12	Commercial Animal Facilities	34
	Nurseries	168
	% Residential	37%
	% Agricultural	32%
	% Open Space	2%
	% Industrial/Commercial	3%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Commercial Animal Facilities	4
	Nurseries	47
	% Residential	38%
	% Agricultural	21%
	% Open Space	2%
	% Industrial/Commercial	3%
Monserate HSA 903.20	Commercial Animal Facilities	1
	Nurseries	34
	% Residential	9%
	%Agricultural	17%
	%Open Space	13%
	% Industrial/Commercial	1%
Warner Valley HSA 903.30	Commercial Animal Facilities	1
	Nurseries	0
	% Residential	3%
	%Agricultural	3%
	%Open Space	9%
	% Industrial/Commercial	<1%

2.2.3 Other Potential Pollutant Sources

In addition to the potential pollutant sources discussed in the preceding sections, there are other likely pollutant sources that contribute to water quality degradation in the San Luis Rey River WMA. These sources include natural groundwater, imported water supply, aerial deposition, wildlife impacts, natural erosion, transportation corridors, and military facilities and activities. These potential sources present very unique and difficult challenges in their identification, quantification and assessment of either degradation or improvement. Also noteworthy is the Copermittees' jurisdictional and regulatory inability to control these sources or regulate their impacts and contribution to water quality degradation in the watershed.

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3 IMPLEMENTATION OF WATERSHED ACTIVITIES

Per the requirements of the Municipal Permit, the SLR Copermittees are required to identify and implement Watershed Activities that address the high priority water quality problems in the WMA. Watershed Activities shall include both Watershed Water Quality Activities and Watershed Education Activities. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level.

Activity Selection Process

During the planning process for the SLR WURMP 2008 the SLR Copermittees identified Watershed Activities that address the high priority water quality problems specific to the SLR WMA. Activity planning was conducted using the Collective Watershed Strategy which is a component of the Model Watershed Urban Runoff Management strategy found in the Regional Urban Runoff Management Program (RURMP). This process allows for the San Diego County Copermittees to establish and prioritize activities through the integration of water quality data to the loading potential of sources within the watershed and sub-watershed areas.

The first step in the strategy is to identify water quality problems watershed-wide and in each HA, where sufficient data is available. The second step is to identify the sources that are most likely contributing to the high priority water quality problems. The process used for the selection of potential sources that can contribute particular pollutants to the MS4 is outlined in the BLTEA document created by the San Diego County Copermittees in 2005. Based on the available data and the assessment of the first year of completed activities under the new Municipal Permit, the SLR Copermittees made appropriate management decisions when selecting and designing watershed water quality and watershed education activities. The overall goal of these activities is to reduce the discharge of pollutants causing the high priority water quality problems.

Activity Implementation

WURMP activities may be implemented individually or collectively, but do not need to be implemented watershed wide. WURMP activities can be implemented by one or more jurisdictions in the watershed yet should be a part of an overall watershed strategy collaboratively developed by the watershed Copermittees. Some of the activities the SLR Copermittees conducted or planned during this reporting period were implemented jurisdictionally while others were implemented watershed-wide or regionally. See Section 3.5 below for an updated five-year strategic plan. This plan provides summary information about each of the proposed watershed activities (both water quality and education) including, the watershed priority pollutants targeted by the activity and an implementation schedule for that activity.

The Copermittees have made significant progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed during this reporting period. See Section 3.1 for information about Watershed Water Quality Activities implemented and Section 3.2 for Watershed Education Activities implemented during this reporting period.

3.1 Watershed Water Quality Activities

The SLR Copermittees are responsible for identifying and implementing Watershed Water Quality Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. The activity selection process is briefly described above and more fully in the SLR WURMP 2008.

During this reporting period, the SLR Copermittees implemented six water quality activities. Table 3-1 lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-004	WQ	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-009	WQ	I	Nutrient Source Identification and Abatement: Guajome Lake
SLR-012	WQ	I	Land Acquisitions
SLR-015	WQ	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-021	WQ	I	Fallbrook Community Center Artificial Turf

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented

3.2 Watershed Education Activities

This section describes actions planned by the SLR Copermittees during the 2009-10 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the high priority water quality problems in the San Luis Rey WMA.

During the reporting period, the Copermittees implemented six watershed education activities. Table 3-2 below lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-007	WE	I	Water Runoff Management and Agricultural Waiver Workshop
SLR-015	WE	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WE	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WE	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-019	WE	I	Hellhole Canyon County Park Educational Signage

[1] WE = Watershed Education Activity
[2] I = Implemented

3.2.1 Additional Watershed Activities

In addition to the Watershed Water Quality and Watershed Education activities that qualify for WURMP credit, the SLR Copermittees implemented, planned or assessed nine activities that they feel are important to implementation of the WURMP and development of future activities but don't receive WURMP credit. Table 3-3 below lists the activities for which tasks were implemented, planned or assessed during the reporting period. Details of each activity can be found in the Activity Implementation Sheets located in Appendix A.

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-001	M, S	SLR Watershed Water Quality Monitoring Program
SLR-003	M	Modular Wetland Installation of Oceanside Harbor Boat Wash Outfall
SLR-008	M, S	Guajome Lake Water Quality Monitoring Program
SLR-010	M, S	Lower SLR River Bacteria Source Tracking Study
SLR-013	A	Harbor Boat Wash Camera
SLR-014	P	Harbor Boat Wash Coin Operated Water Dispenser
SLR-018	P	Sports Park Watershed Education Signs
SLR-020	P	Residential Composting Workshop
SLR-022	P	Residential Rain Barrel Subsidies and Distribution

M = Watershed Water Quality Monitoring Activity; S = Source Identification/Characterization Activity
A = Assessment; P = Activity in Planning Stages

In addition to the above activity sheets the SLR Copermittees implemented various public participation and collaborative planning efforts that they feel are notable and should be reported in this WURMP Annual Report. The Copermittees feel that these additional activities are vital to the implementation of the overall WURMP and are complementary to the activities that qualify to receive WURMP credit. Details of each of these additional activities can be found Section 3.3.

3.3 Public Participation Activities

The SLR Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from

other organizations within the watershed which could include other agencies, private companies, non-governmental organizations, environmental groups, etc. Several opportunities are available to the public to engage them in the implementation of the WURMP. Below is a summary of these opportunities and information about how they were implemented during this reporting period.

Outreach Events

The SLR Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period SLR Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- August 1 & 2, 2009 – Vista Rod Run
- September 26, 2009 – Bates Nut Farm Education Day (Valley Center)
- October 10, 2009 – Bonsall Country Festival
- October 10, 2009 – Pride at the Beach (Oceanside Amphitheatre)
- February 17, 2010 – Watershed Interpretation Signs at Hellhole Canyon Preserve
- March 8, 2010 – Oceanside Green Fair (Oceanside Amphitheatre)
- March 10, 2010 – San Diego County High Tech Fair
- April 18, 2010 - Fallbrook Avocado Festival
- April 25, 2010 – North County Earth Day at Mission San Luis Rey
- May 15, 2010 – Operation Appreciation (Oceanside Amphitheatre)
- May 22, 2010 – Strawberry Festival (Vista)
- June 19, 2010 - EnviroFair Day at the San Diego County Fair

Educational Materials Distributed

The SLR Watershed Copermittees collaborated on the dissemination of stormwater education pieces at outreach events. These materials were developed by the Copermittees, the Regional Education and Residential Sources Workgroup (ERS Workgroup) or developed in previous years by the North County Storm Water Program (NCSWP). Below is a summary of the materials distributed by the SLR Copermittees during this reporting period.

- Construction brochure highlighting construction site BMPs
- North County watershed map ("We All Live Downstream" poster)
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Click-message pens
- Pencils with Regional Stormwater Hotline
- Integrated Pest Management (IPM) Tip Cards, English and Spanish
- Personal pet waste bag dispensers
- Fats, oil and grease (FOG) education materials

River, Creek, and Beach Cleanup Events

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were five major cleanup

events that had staging sites at several locations throughout the SLR watershed. A total of 880 volunteers removed over 7,200 pounds of trash and debris from coastal beaches and inland sites along the San Luis Rey River. Table 3-4 below provides summary information about these cleanup events.

Table 3-4. River, Creek and Beach Cleanup Event Summary.

Date	Name	Location	# of Participants		Total # of Participants	# of Pounds Removed
			Inland Sites	Coastal Sites		
7/06/2009	Morning After Mess	Oceanside Harbor		71	71	476
9/19/2009	Oceanside Beach Cleanup	South side of Pier		410	410	880
11/07/2009	San Luis Rey River Cleanup	Inland River Sites	154		154	5,500
11/07/2009	Oceanside Beach Cleanup	Harbor South Jetty		57	57	175
4/25/2010	Oceanside Beach Cleanup	South side of Pier		188	188	205
	Totals		**154**	**726**	**880**	**7,236**

North County Storm Water Program

Since the initiation of the ERS Workgroup in 2007-08 the San Luis Rey Copermittees have been attending bi-monthly meetings of the ERS Workgroup collaborating with all 21 Copermittees on regional stormwater education programs. Therefore the NCSWP group combined efforts with the ERS Workgroup during the FY 08-09 reporting period and has discontinued meeting.

San Luis Rey Watershed Council

The SLR Watershed Copermittees continued participating in regular meetings of the San Luis Rey Watershed Council (SLRWC) during this reporting period. The SLRWC is a partnership of local landowners, agricultural growers, Native American Tribal bands, community and environmental organizations, government agencies, and special districts with ties to the watershed. The SLRWC's primary goal is to keep stakeholders apprised of issues and projects concerning the SLR Watershed and to develop and implement a comprehensive resource management plan for the SLR watershed. During FY 2009-10 the SLRWC was awarded nonprofit status by the Federal Internal Revenue Service. The SLRWC can now submit grants on behalf of the watershed stakeholders and move toward implementing priority projects identified by the members. Staff from two SLR Copermittees (Oceanside and County of San Diego) fill seats on the Board of Directors of the organization.

Pet Waste Surveys

Since FY 2005-06 the SLR and Carlsbad Copermittees have collected and analyzed pet waste survey data and implemented pet waste pilot projects in areas where pet waste accumulates. During this reporting period compilation of Pet Waste Surveys was discontinued for the following reasons:

- Data analyzed from north county pet waste surveys collected during previous reporting periods showed no significant changes in survey answers.

- Barriers to picking up pet waste were clearly identified through survey data collected from activity SLR-004 Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail.

Since survey data seems to be consistent, the SLR Copermittees determined it best to focus efforts on implementation of pilot projects where pet waste accumulates and to address the barriers that prevent people from picking up their pet waste. Some Copermittees distributed pet waste bag dispensers at community events encouraging people to pickup after their pets.

Project Clean Water

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. PCW, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. PCW seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. It was formed under the guidance of a Technical Advisory Committee made up of local stormwater-related professionals. For more details on the development of PCW refer to the FY 2007-08 SLR WURMP Annual Report.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds. There are several web pages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website provides Best Management Practices information for both residential and industrial/commercial audiences (http://www.projectcleanwater.org/bmp/).

PCW features a page devoted to the SLR WMA, with details on the watershed, major pollutants, and organizations related to water quality. Additionally the webpage also offers links to relevant documents such as the WURMP and WURMP Annual Reports. During FY 2009-10 the hits for the SLR Watershed page totaled 2,859 and there were also 536 hits on the SLR WURMP document.

Regional Education and Residential Sources Workgroup

The Regional Education and Residential Sources Workgroup (ERS Workgroup), was formed during FY 2007-08 under the auspices of the MOU between the 21 San Diego County Copermittees. During FY 2009-10, the ERS Workgroup was co-chaired by the City of Oceanside and City of Imperial Beach with support from the San Diego Regional Airport Authority as Secretary. The ERS Workgroup met six times during FY 2009-10. A list of meeting dates, locations, agenda items and accomplishments are provided in the Regional Urban Runoff Management Program (RURMP) Annual Report scheduled to be submitted to the RWQCB in January 2011.

During FY 2007-08, the ERS Workgroup developed a Regional Residential Education Plan (Plan) which was submitted to the Regional Water Quality Control Board as part of the March 2008 RURMP. During FY 2009-10 the SLR Copermittees, in conjunction with County Copermittees, continued to implement components of this Plan. A brief summary of the accomplishments of the ERS Workgroup are mentioned below.

Regional Branding
Regional Branding was finalized in FY 2008-09 which includes an icon and the name *Think Blue San Diego Region* which is how the ERS Workgroup identifies itself to the public. Regional branding helps to unify the region's stormwater outreach messages. During this reporting period the logo was officially released for use by San Diego County Copermittees for regional stormwater activities, outreach materials, and promotional items.

EnviroFair at the San Diego County Fair
During this reporting period Copermittees collectively staffed a table at EnviroFair held on June 19, 2010 during the San Diego County Fair. This event is an excellent opportunity for Copermittees to collect event surveys that gather knowledge and awareness from event attendees related to stormwater related activities. Event survey results have been tabulated and are summarized in the RURMP AR due to the RWQCB in January 2011.

Mass Media
The ERS Workgroup continues to purchase media buys at various outlets. These include radio and television ads, as well as Public Service Announcements shown at movie theatres throughout the county.

3.4 Collaborative Land-Use Planning Efforts

This section describes collaborative land use planning efforts within the San Luis Rey Watershed during FY 2009-10. The SLR Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Land Acquisitions (Activity ID# SLR-012)
During this reporting period the County of San Diego acquired 167.1 acres of land within the San Luis Rey Watershed. These land acquisitions will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural perviousness. All SLR Copermittees support the purchase of these lands with this purpose in mind.

3.4.1 Cross-Jurisdictional Communication

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the SLR Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on

discretionary projects located near jurisdictional borders. Through this process, the SLR Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

3.5 Updated 5-year Strategic Plan

As mentioned at the beginning of this section the SLR Copermittees are responsible for identifying and implementing Watershed Water Quality and Education Activities that address the high priority water quality problems in the SLR WMA. Utilizing the Collective Watershed strategy the SLR Copermittees have identified activities that will address priority pollutants in the SLR WMA. See Table 3-5 for an updated 5-year SLR WURMP Strategic Plan.

3.5.1 New Watershed Activities

Three new watershed activities not listed in the FY 2008-09 SLR WURMP Annual Report 5-year strategic plan were implemented during this reporting period:

- SLR-019: Hellhole Canyon County Park Educational Signage
- SLR-021: Fallbrook Community Center Artificial Turf
- SLR-022: Residential Rain Barrel Subsidies and Distribution

Following is one additional activity not listed in the FY 2008-09 SLR WURMP Annual Report 5-year strategic plan that was not implemented during this reporting period and is planned for implementation in FY 2010-11:

- SLR-020: Residential Composting Workshop

These new activities are reflected in the updated 5-year SLR WURMP Strategic Plan. Activity Summary Sheets for these new activities are provided in Appendix A of this annual report.

3.5.2 Updated 5-Year Strategic Plan

Table 3-5 at the end of this section provides an updated 5-year Strategic Plan that reflects the status of watershed activities and includes new activities planned for future reporting periods. The updated 5-year strategic plan supersedes the version presented in the FY 2008-09 SLR WURMP Annual Report.

3.6 TMDL BMP Implementation

The TMDL for Indicator Bacteria Project I – Twenty Beaches and Creeks in the San Diego Region (Bacteria I TMDL) was adopted by the SDRWQCB in February 2010. The Pacific Ocean Shoreline at the San Luis Rey River mouth is specifically addressed in this TMDL. Final approval by the SWRCB and EPA are pending. In preparation for the Bacteria I TMDL, the City of Oceanside, with matching fund support provided by the County of San Diego and the City of Vista, was awarded a Proposition 50 Clean Beaches Initiative grant to conduct a bacteria source tracking study along the lower San Luis Rey River. For more information about this project refer to Appendix A, Activity SLR-010.

Table 3-5. SLR Watershed Five-Year WURMP Strategic Plan FY 2009-10 Update.

SAN LUIS REY RIVER WATERSHED	HA			Priority Pollutant		Implementation Schedule														
	903.1	903.2	903.3	Bacteria	Nutrients	FY 2007-08			FY 2008-09			FY 2009-10			FY 2010-11			FY 2011-12		
Watershed Activities Implemented in FY 2009-10 and Planned for Implementation in FY 2010-11 and FY 2011-12																				
SLR-001: SLR Watershed Water Quality Monitoring Program	x			x	x	M			M			M			M			M		
SLR-002: Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall-Signage & Cleaning Frequency	x			x		WQ														
SLR-003: Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	x			x		P			WQ			M			M			M		
SLR-004: Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail	x			x		WE			WE			WQ	WE		WQ	WE		WQ		
SLR-005: Pet Waste Bag Dispenser Program in County Parks	x			x		WQ			WQ			WQ			WQ			WQ		
SLR-006: Agricultural and Nursery Operations Runoff Assessment & Monitoring Program	x	x	x	x	x	M														
SLR-007: Water Quality Runoff Management and Agricultural Waiver Workshop	x	x	x	x	x	WE						WE						WE		
SLR-008: Guajome Lake Water Quality Monitoring Program	x			x	x	M			M			M			M			M		
SLR-009: Nutrient Source Identification and Abatement: Guajome Lake	x				x	M	S		WQ	M	S	WQ	M	S	WQ	M	S	*		
SLR-010: Lower SLR River Bacteria Source Tracking Study	x			x		M	S		M	S		M	S		M	S		M	S	
SLR-011: LID & Watershed Planning Education for Community Planners & Sponsor Groups	x		x	x	x	WE			WE											
SLR-012: Land Acquisitions	x			x	x	WQ			WQ			WQ			**			**		
SLR-013: Harbor Boat Wash Camera	x			x					WQ			A								
SLR-014: Harbor Boat Wash Coin Operated Water Dispenser	x			x					WQ	P		WQ	P		WQ					
SLR-015: Focused Horse Property Outreach in the SLR River Watershed***	x	x		x	x				WQ	WE	P	WQ	WE		WQ	WE		WQ	WE	
SLR-016: Focused Grove and Nursery Outreach in the SLR River Watershed	x	x			x							WE			WQ	WE		WQ	WE	
SLR-017: Focused Onsite Wastewater System Outreach in the SLR River Watershed	x	x		x	x							WE			WQ	WE		WQ	WE	
SLR-018: Sports Park Watershed Education Signs	x			x	x							WE	P		WE					
SLR-019: Hellhole Canyon County Park Educational Signage				x	x							WE								
SLR-020: Residential Composting Workshop					x							WE	P		WE					
SLR-021: Fallbrook Community Center Artificial Turf					x							WQ								
SLR-022: Residential Rain Barrel Subsidies and Distribution				x	x							WQ	WE	P	WQ	WE				
Potential Future Activities																				
SLR River Bacteria BMP Implementation	x			x		Contingent upon funding for prioritized BMPs														
Low Impact Development and SUSMP Workshop	x	x	x	x	x															
Pilgrim Creek Source ID				x	x															

* Future activity will be assessed based upon program results
** Unable to project land acquisitions in advance
*** Activity previously named Community Based Residential Horse Property Pilot Project

WQ	= Watershed Water Quality Activity
WE	= Watershed Education Activity
WQ	= Watershed Water Quality Activity (not in active implementation)
WE	= Watershed Education Activity (not in active implementation)
M	= Watershed Water Quality Monitoring Activity
S	= Source ID/Characterization Activity
P	= Activity in Planning Stages
A	= Activity Assessment

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4 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2009-10. In addition, there is an assessment of the effectiveness of the collective WURMP implementation.

Each activity summary sheet in Appendix A of the FY 2009-10 SLR WURMP Annual Report identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measureable at levels 5 or 6 which are typically measureable through cumulative assessments. The assessment levels are defined below. Definitions are from the Municipal Permit.

Effectiveness Assessment Outcome Level 1 - Compliance with Activity-based Permit Requirements – Level 1 outcomes are those directly related to the implementation of specific activities prescribed by Order 2007-0001 or established pursuant to it.

Effectiveness Assessment Outcome Level 2 - Changes in Attitudes, Knowledge, and Awareness – Level 2 outcomes are measured as increases in knowledge and awareness among target audiences such as residents, businesses, and municipal employees.

Effectiveness Assessment Outcome Level 3 - Behavioral Change and BMP Implementation – Level 3 outcomes measure the effectiveness of activities in affecting behavioral change and BMP implementation.

Effectiveness Assessment Outcome Level 4 - Load Reductions – Level 4 outcomes measure load reductions which quantify changes in the amounts of pollutants associated with specific sources before and after a BMP or other control measure is employed.

Effectiveness Assessment Outcome Level 5 - Changes in Urban Runoff and Discharge Quality– Level 5 outcomes are measured as changes in one or more specific constituents or stressors in discharges into or from MS4s.

Effectiveness Assessment Outcome Level 6 - Changes in Receiving Water Quality – Level 6 outcomes measure changes to receiving water quality resulting from discharges into and from MS4s, and may be expressed through a variety of means such as compliance with water quality objectives or other regulatory benchmarks, protection of biological integrity, or beneficial use attainment.

The activity summary sheets presented in Appendix A include effectiveness assessment summaries for each water quality and education activity, as required in the Municipal Permit, I.2.a.(1).

4.1 Assessment of Overall WURMP Effectiveness

4.1. Permit Compliance (Level 1)

A basic Municipal Permit compliance assessment is presented in Table 4-1. This table describes minimum permit requirements set forth in the Municipal Permit, whether or not compliance was achieved by the SLR Copermittees in FY 2009-10, and where in this report, required compliance points are fulfilled or described. As shown in the table, the Copermittees were in compliance with all WURMP related Municipal Permit requirements during FY 2009-10.

Table 4-1. SLR WURMP Municipal Permit Compliance Assessment.

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Completed during FY 2007-08, no updates necessary this FY.	Section 1.2
Update watershed water quality assessment, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	Section 2.1
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	Section 2.2
Update list of potential Watershed Water Quality Activities.	Completed.	Section 3.5
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.1
Update list of potential Watershed Education Activities.	Completed.	Section 3.5
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.2
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed.	Section 3.3
A description of Copermittee collaboration efforts.	Completed.	Section 1.1, Section 3.4
Minimum quarterly meetings of the SLR WURMP Workgroup.	Five (5) meetings	Section 1.1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed.	Section 3.4
Describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed.	Not applicable at this time.	Section 3.6

4.1.1 Cumulative Impacts of Activities (Levels 2, 3, and 4)

Activity Assessments

During FY 2009-10, there were 19 activities in various stages of implementation, planning or assessment. Four activities focused solely on water quality, four focused solely on education, two focused on water quality and education, four focused on monitoring, and/or source identification and four activities were in planning stages during FY 2009-10 (SLR-014, SLR-018, SLR-020, and SLR-22). SLR-013 was in an assessment phase during this reporting period. All activities

focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

Although more water quality data are available after three years of Regional Monitoring under this Municipal Permit, it is not feasible to link changes in discharge or receiving water directly to most of the watershed activities. At this point, several questions may be helpful in assessing the cumulative impacts of the watershed activities. Table 4-2 summarizes the assessments of the water quality and education activities that were in active implementation phase during this reporting period in an effort to provide a collective picture of the overall effectiveness of the watershed activities. The activities will be related to historical and recent water quality data and examined by hydrologic area in subsequent sections.

Table 4-2. Summary of Watershed Water Quality and Education Activities in the SLR WMA.

Activity Number	Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
SLR-001	San Luis Rey Watershed Water Quality Monitoring Program	Bacteria, Nutrients	Not applicable, monitoring activity only	Not applicable, monitoring activity only	All sources have not been identified	Not as part of the monitoring program
SLR-003	Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland	Bacteria	No	No	Yes, bacteria generated due to proximity of boat washing and RV sewage dump station to storm drain.	BMPs implemented during FYs 07-08, 08-09, and 09-10; it appears that loads have been reduced as illustrated through reductions in exceedances of Coastal Storm Drain Monitoring Program Action Levels in the storm drain and exceedances of AB411 standards in the receiving water.
SLR-004	Pet Waste Removal Pilot Project Along San Luis Rey Recreational Trail	Bacteria	Yes, anticipated but not measured.	Controlled experiment will be completed in early FY10-11, complete results to be reported in next Annual Report	Yes, pet waste in recreational areas.	Cleanup contractor used to remove pet waste from trail prior to installation of BMPs; removed 23.25 pounds of pet waste (229 piles)
SLR-005	Pet Waste Bag Dispenser Program in County Parks	Bacteria	Yes, via based on usage of bags and positive examples	Yes, in general, more people picking up after their pets	Yes, pet waste in parks.	In total, estimated that 6,738 pounds of pet waste were removed from the watershed.

Activity Number	Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
SLR-007	Water Quality Runoff Management and Agricultural Waiver Workshop	Nutrients, Bacteria	Yes, measured through pre and post tests, pre test scores averaged 5.48 and post test scores averaged 8.36, representing an increase in knowledge of 61%	None measured	Yes, nurseries have been identified as potential sources of nutrients and bacteria	None measured
SLR-008	Guajome Lake Water Quality Monitoring Program	Nutrients, Bacteria	Not applicable, monitoring activity only	Not applicable, monitoring activity only	Attempting to characterize sources; potential sources include residential areas, commercial nurseries, and commercial and residential horse facilities	Not applicable, monitoring activity only
SLR-009	Nutrient Source Identification and Abatement: Guajome Lake	Nutrients	Measured through assessments during inspections; all sites but one showed improvement or similar scores from previous reporting periods.	On going via assessments during inspections; BMP compliance improved or stayed the same at all facilities but one.	Study area was expanded and 25 nurseries in the upstream area were inspected; although four nurseries were found to have BMP violations, there were no direct sources of nitrates identified.	Twenty-five nurseries inspected; BMPs implemented as a result of inspections will likely reduce and abate sources.
SLR-010	Lower San Luis Rey River Bacteria Source Tracking Study	Bacteria	Not applicable, monitoring activity only	Not applicable, monitoring activity only	Not at this time, ongoing study using genetic analysis to determine bacteria sources	Once sources are identified, reduction and abatement activities will be pursued
SLR-012	Land Acquisitions	Bacteria, Nutrients	None measured	None measured	Potential development	167.1 acres acquired and preserved by the County of San Diego.

Activity Number	Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
SLR-015	Focused Horse Property Outreach in the San Luis Rey River Watershed	Bacteria, Nutrients	Pre and Post Tests show improvements in knowledge	In the Pre and Post Tests, a question regarding ideas for BMPs to prevent pollution showed that participants were able to identify more positive behavioral changes after the workshops.	Residential Equestrian Properties	Not measured
SLR-016	Focused Grove and Nursery Outreach	Nutrients	Pre and Post Test show improvements in knowledge	None measured	Groves and Nurseries	None measured
SLR-017	Focused Onsite Wastewater System Outreach	Bacteria, Nutrients	Pre and Post Tests were administered but no pre tests were returned	Three vouchers were distributed.	Onsite Wastewater Systems	None measured, in the future it may be possible to estimate load reductions through calculated volumes of sewage removed.
SLR-019	Hellhole Canyon County Park Educational Signage	Nutrients, Bacteria	Anticipated but not quantified	None measured	No	No
SLR-021	Fallbrook Community Center Artificial Turf	Nutrients	None	None	Yes, fertilizer and irrigation associated with natural turf management	Reduction in fertilizer usage by 120 pounds per year and irrigation by 170,000 gallons annually

High Priority Water Quality Problems

All activities addressed high priority water quality problems as identified in the WURMP. Of the activities in active implementation, bacteria was specifically addressed in 11 activities and nutrients in 10 activities. A combination of water quality, education, source identification and monitoring activities appear effective at addressing identified high priority water quality problems in the San Luis Rey HU.

Level 2 - Changes in Knowledge and Awareness

Changes in knowledge and awareness of water quality problems were measured in six of the water quality and education activities implemented during this reporting period. Additionally, increases in knowledge are assumed in two activities with no mechanism in place to measure the changes.

Six of the watershed education activities conducted during the reporting period implemented specific measures to assess changes in knowledge and awareness.

- The Pet Waste Bag Dispenser Program in County Parks accounts for changes in knowledge based on changes in behavior. In FY 2009-10, there were 33,915 bags used from the 11 stations in the SLR Watershed.
- The Water Quality Runoff Management and Agricultural Waiver Workshop measured changes in knowledge by administering pre- and post-workshop surveys. Scores increased in the post-workshop survey by 61% over the pre-workshop survey indicating an increase in knowledge.
- The Nutrient Source Identification and Abatement in the Guajome Lake Drainage Area also quantified changes in knowledge during inspections. Standardized assessment ratings were given to each facility during inspections over the three years of implementation. A comparison of these numbers over time indicates that overall all sites but one showed improvement or similar scores from previous years.
- The Focused Horse Property Outreach in the San Luis Rey River Watershed illustrated increases in knowledge by administering pre- and post-workshop surveys at the workshop conducted on February 3, 2010. These surveys showed increases in knowledge related to people being aware that they live in a watershed, stormwater treatment (or lack of), and the contribution of horse manure to water quality problems.
- The Focused Grove and Nursery Outreach assessments included pre- and post- workshop surveys to assess knowledge of general watershed principles and changes in awareness of proper irrigation and fertilization practices. An increase was noted in general watershed concepts and in knowledge pertaining to agriculture as a potential source of pollutants.
- The Focused Onsite Wastewater System Outreach was a public workshop focused on septic system maintenance. Attendees at the workshop were asked to complete pre- and post-workshop surveys to assess changes in knowledge. There were eight post workshop surveys completed, however there were no pre-workshop surveys returned therefore the intended assessment was not feasible.

Several of the activities can be assumed to result in increased awareness, although a formal mechanism to measure the change may not be feasible. For example, knowledge was likely increased through the implementation of pet waste bag dispensers and signage at County Parks,

but was not quantified. Similarly, with the installation of educational signage in Hellhole Canyon Park, an increase in knowledge is anticipated, but not measured. The activities that did not result in increased awareness were designed solely to implement BMPs targeting load reductions. These activities generally focused on public lands and implemented BMPs to reduce the effects of bacteria, nutrients, and other pollutants on receiving waters.

Collectively, the water quality activities are focused efforts leading to localized changes in knowledge and awareness. However, the education activities are broad based, applicable to all hydrologic areas in the watershed and are expected to provide for a general increase in knowledge in the San Luis Rey River Watershed over time.

Level 3 – Changes in Behavior, Implementation of BMPs

A change in behavior was observed and BMPs were implemented in three of the activities implemented during the Fiscal Year. One additional activity also assumed a change in behavior with no mechanism to measure. Each change in behavior is described below.

- In the activity targeting pet waste in County Parks there was evidence that people continued utilizing the pet waste bags from installed dispensers to pick-up and properly dispose of pet waste.
- In the Nutrient Source Identification and Abatement activity focusing on the Guajome Lake drainage area within the County, changes in behavior were assessed by tracking the number of violations observed during inspections of the nursery facilities. In most cases, BMP compliance has been shown to improve over time.
- The activity focused on Horse Property Outreach, the pre and post surveys included a question regarding BMPs to prevent pollution. Survey scores showed that participants were able to identify more positive behavioral changes after the workshops.
- The activity designed around Focused Onsite Wastewater System Outreach illustrated the intent of the participants to positively change their behavior in that three vouchers were distributed that would pay for a portion of the pumping costs for residents' onsite wastewater systems.

Sources addressed through these activities included nurseries, pet waste, horse properties, and recreational areas. The connection of the BMPs to the specific water quality problems are further discussed below.

Level 4 – Load Reductions

In general, water quality and monitoring activities appear effective at identifying and abating sources of high priority water quality problems in the SLR HU.

The Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall included activities designed to reduce bacteria at the outfall. The source of the bacteria has been well characterized. In previous reporting periods the City of Oceanside increased the cleaning frequency at the outfall, provided more educational signage at the boat wash, implemented a new Modular Wetlands BMP, and installed a video surveillance camera to monitor activity at the station. Since the implementation of these activities exceedances at the outfall do still occur, but flow rates are usually less than one gallon per minute (gpm) and receiving water exceedances

rarely occur (two total coliform and fecal coliform exceedance of AB411 single-sample standards throughout FY 2009-10).

The Pet Waste Project addressing behaviors along the San Luis Rey Trail included cleanup of pet waste along the trail. A cleanup contractor was used to remove pet waste from trail prior to installation of BMPs. In total, 23.25 pounds of pet waste (229 piles) was removed.

The Pet Waste Bag Dispenser Activity in County Parks and Pet Waste Removal Project along the SLR Trail have caused a direct, measurable reduction in pet waste, estimated at nearly 6,738 pounds of pet waste during FY 2009-10.

The acquisition of land by public agencies, specifically the County of San Diego, will provide for preservation of the land in the future, reducing the negative effects of development on the watershed. The source has been identified as new development and by acquiring the land for public use, the pollutants associated with this source have been prevented. Although load reductions are not quantifiable, the 167.1 acres acquired by the County this fiscal year will contribute to preservation of existing water quality within the watershed.

In the activity that installed Artificial Turf at the Fallbrook Community Center, estimations of water and fertilizer savings were calculated. The annual use of irrigation water at the facility was reduced by 18% (approximately 170,000 gallons) and the annual amount of fertilizer used decreased by 25% (approximately 120 pounds). The reductions in the amount of fertilizers used and in the transport mechanism both play important roles in reducing dry weather nutrient loads.

In addition to the six watershed water quality activities actively implemented during the reporting period, there were four monitoring activities occurring in an attempt to characterize and identify sources. Two of these activities are designed to address bacteria and two that address bacteria and nutrients. Each of the monitoring activities currently supports or will support future watershed activities.

4.1.2 Integrated Assessment: Level 5 (Changes in Discharge Water Quality) and Level 6 (Changes in Receiving Water Quality)

4.1.2.1 Warner Valley Hydrologic Area

With minimal development in the HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for the HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

4.1.2.2 Monserate Hydrologic Area

With minimal development in the HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for the HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

4.1.2.3 Lower San Luis Hydrologic Area

As discussed in Section 2.2, residential and agricultural land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date (SLR WURMP 2008). For these reasons, the watershed activities and monitoring programs focus primarily on the Lower San Luis HA and are discussed below.

4.1.2.3.1 Water Quality

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Recent monitoring efforts performed in FY 2007-08 and FY 2008-09 provide new information specific to the HA, as there was a TWAS installed towards the bottom of the Bonsall HSA (FY 2007-08 only) in addition to the historical MLS. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. Due to the rotational nature of monitoring required at these stations in the Permit, there has been no additional monitoring at MLS or TWAS sites over the past year. However, the City of Oceanside and the County of San Diego continued sampling in the receiving water and tributaries of the Lower San Luis HA for WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Monitoring to assess urban runoff contribution in the Lower San Luis HA was completed through the DWM and CSDM programs as well as through several WURMP activities.

Bacteria

Bacteria have been identified as a high priority water quality problem in the SLR WURMP 2008. This decision is further supported by recent water quality data collected during ambient and storm conditions. The SLR Copermittees have implemented several activities designed to address identified sources of bacteria in the watershed. There are also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

During this reporting period, four water quality activities focused on the abatement of specific sources of bacteria: the Pet Waste Removal Pilot Project along the San Luis Rey Recreational Trial (SLR-004), the Pet Waste Bag Dispenser Program in County Parks (SLR-005), Land Acquisitions in the County (SLR-012), and the Focused Horse Property Outreach in the San Luis Rey River Watershed (SLR-015).

During this permit cycle several activities have been designed to address the pollutant sources identified at the Oceanside Harbor Boat Wash Outfall. Because concentrations of bacteria continued to exceed action levels on occasion, the project has been adaptively managed to incorporate various BMPs intended to reduce bacteria concentrations at the outfall. Previously, antimicrobial fabric had been tested as a BMP to reduce bacteria at the outfall, with limited success. Implementation during FY 2007-08 involved increased cleaning of the storm drains in the area and the addition of signage at the boat wash and RV dump areas to encourage people to utilize the facilities properly. During FY 2008-09, additional BMPs were implemented, designed to reduce bacteria concentrations through the use of a modular wetlands system (SLR-003) and through the installation of a video camera (SLR-013). This project is a good example of the use

of an iterative process to address an identified problem in the watershed. Although the activities have had some success in their effectiveness to address bacteria, the problem has not been entirely eliminated at this location. The City of Oceanside will continue to investigate ways to reduce the bacteria concentrations at this location. Preliminary Level 5 assessments have been performed at this outfall. Results indicate that fecal coliform and enterococcus concentrations have been reduced by the implementation of the various BMPs at the location, while the total coliform concentrations have remained relatively consistent. For further details on the assessment methods, refer to the Activity Sheet in Attachment A of this report.

The SLR-004 and SLR-005 activities have had direct and positive impacts on bacteria in the HA during this reporting period. The project along the SLR Recreational Trail has examined the ways to positively influence behavior during this reporting period. The existing pet waste dispenser stations in County parks are estimated to have reduced the amount of pet waste entering the watershed by 6,738 pounds over the reporting period. The installation and use of these BMPs has proven effective at reducing the amount of fecal bacteria entering the watershed and its water bodies. For this reason, the City of Oceanside and the County will continue to service pet waste bag dispensers at these locations during the coming years consider installing additional dispensers where needed.

One activity focused on residential horse properties this year. The activity focused on outreach to horse owners and is expected to result in BMP implementation by residents in the future. Through implementation of these BMPs, it is expected that there will be less contact with rainwater and pollutants generated on residential horse properties, thereby reducing the impacts of these activities on stormwater flows, specifically related to bacteria and nutrients.

During this reporting period, five education activities focused on the abatement of specific sources of bacteria: the Pet Waste Removal Pilot Project (SLR-004), the Water Quality Runoff Management and Agriculture Waiver Workshop (SLR-007), the Focused Horse Property Outreach in the San Luis Rey River Watershed (SLR-015), Focused Onsite Wastewater System Outreach (SLR-017) and the Hellhole Canyon County Park Educational Signage (SLR-019).

During previous reporting periods the SLR-004 project implemented BMPs to educate people using the San Luis Rey Recreational Trail and used Community-Based Social Marketing (CBSM) techniques to determine the most effective methods of education and BMP implementation targeting pet waste along the trail. The activity was initiated during FY 2007-08 and continued during this reporting period. The activity has been effective in educating residents about the importance of picking up after their pet. BMP installation and focused education outreach to the target audience along the trail will be performed in FY 2010-11.

Other outreach activities focused on sources of bacteria such as agriculture, via fertilizer, compost, and trash management; residential horse properties through manure management education; and septic systems, through efforts to implement a voucher program to partially subsidize pumping of onsite wastewater systems.

In addition to the required water quality and education activities, the watershed Copermittees also invested significant resources in monitoring activities. Four of the monitoring activities

include sample collection and analyses pertaining to bacteria concentrations and sources in the watershed. These efforts include: the SLR Watershed Water Quality Monitoring Program (SLR-001), monitoring at the Harbor Boat Wash outfall (SLR-003), the Guajome Lake Water Quality Monitoring Program (SLR-008), and the Lower SLR River Bacteria Source Tracking Study (SLR-010). These monitoring programs are designed to complement ongoing activities in the watershed and will provide useful source information in the future. The SLR-001 monitoring project was designed to identify and characterize the constituents of concern affecting water quality in the lower watershed. The SLR-003 monitoring activity assesses the effectiveness of the various BMPs implemented at the Boat Wash. The SLR-008 project was designed to assess sources of the high priority water quality problems in the watershed, specifically targeting nurseries and agricultural operations. The SLR-010 activity is an intensive bacteria source tracking study that is designed to provide insight into specific sources of bacteria in the watershed. Specific data and analyses pertaining to each activity are provided in Appendix A of this report.

Through the implementation of a combination of water quality and education activities, complemented by specific monitoring projects, the SLR Copermittees are moving forward in addressing the bacteria problems in the watershed. By implementing practical activities that are targeting identified sources of bacteria, the Copermittees are effectively addressing bacteria problems in the watershed, with demonstrated load reductions resulting. The combination of activities is having significant positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality, especially related to bacteria. With many diverse sources of bacteria suspected in the watershed, some identified and others not, the Copermittees are implementing activities to address known sources and conducting monitoring activities to identify or confirm other sources.

Various amounts of discharge water quality data related to bacteria have been collected as part of several monitoring programs in the watershed. However, the data have not been assessed in relation to trends. Therefore, at this time it is not feasible to link the watershed activities and program to changes in discharge water quality. Because data collected as part of SLR-003 and SLR-008 are indicating improvements in water quality, this data may be further assessed in the future to address changes in discharge water quality (Level 5).

Because there was no additional data collected at the MLS or TWAS stations during FY 2009-10, trend analyses have not changed over the past year and are based on data collected previously. Trend analyses of the monitoring results at historical mass loading stations for bacteriological constituents indicates significantly increasing trends for total coliform ($p < 0.001$), fecal coliform ($p = 0.002$), and enterococci ($p = 0.004$) over the monitoring period (Weston 2010). These samples are collected during storm events only. These trends are illustrated in Figure 4-3 below.

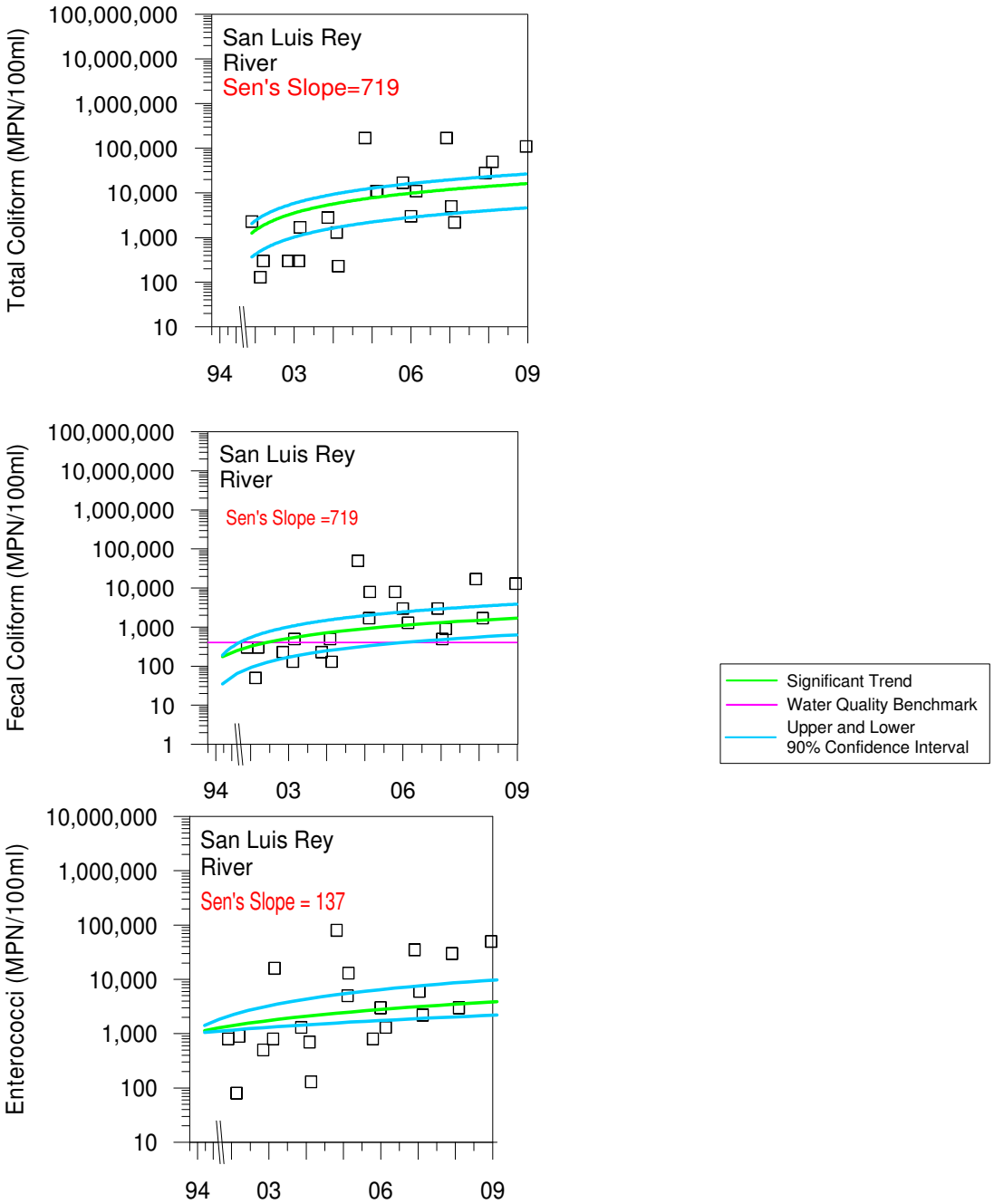

Figure 4-1. Trend Analysis for Bacteriological Constituents at the SLR MLS.

Nutrients

Nutrients have also been identified as a high priority water quality problem in the SLR Watershed. The decision to identify nutrients as a high priority problem is based primarily on the listing of Guajome Lake as impaired for nutrients on the 2006 303(d) listing.

During this reporting period, there were two monitoring and four water quality activities that were specifically focused on the sources of nutrients. These were chosen because the sources of the nutrients remain largely uncharacterized in the watershed. Nutrient-related monitoring activities occurring during the FY 2009-10 reporting period included the SLR Watershed Water

Quality Monitoring Program (SLR-001) and the Guajome Lake Water Quality Monitoring Program (SLR-008). In addition Copermittees implemented four water quality activities intended to identify and and/or address nutrient sources: Nutrient Source Identification and Abatement for Guajome Lake (SLR-009); the Focused Horse Property Outreach in the San Luis Rey River Watershed (SLR-015); the Focused Grove and Nursery Outreach in the SLR Watershed (SLR-016); and the Fallbrook Community Center Artificial Turf Activity (SLR-021). Each of these activities is designed to assess sources of nutrients causing or contributing to water quality problems in the watershed. Results of each activity are presented in Appendix A.

Through the implementation of monitoring, source identification projects, and education activities, the SLR WURMP group is moving forward in addressing the nutrient problems in the watershed. In the future, it is expected that the combination of activities will have positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality. With many diverse sources of nutrients suspected in the watershed, the Copermittees are conducting monitoring activities to identify or confirm sources as a precursor to designing water quality and education activities in the future.

Various amounts of discharge water quality data have been collected as part of several monitoring programs in the watershed. Often, the data related to nutrients has been collected using field test kits. The data have been partially assessed in relation to spatial distribution in the watershed but have not been assessed in relation to trends. Section 2 of this report contains more detailed information on nutrient data collected in the watershed. At this time it is not feasible to link the watershed activities and program to changes in discharge water quality.

Because there was no additional data collected at the MLS or TWAS stations during FY 2009-10, nutrient trend analyses have not changed over the past year and are based on data collected previously. With respect to nutrients, recent data indicate that nitrates no longer show significantly increasing trends at long term receiving waters monitoring stations during storm events. However, dissolved phosphorus, although well below action levels, shows a slight increasing trend. Figure 4-4 below illustrates the increasing ortho-phosphate trend during storm events. At this time, it is not feasible to link the watershed activities to receiving water data. Changes in water quality trends will take place slowly and will continue to be assessed in future years.

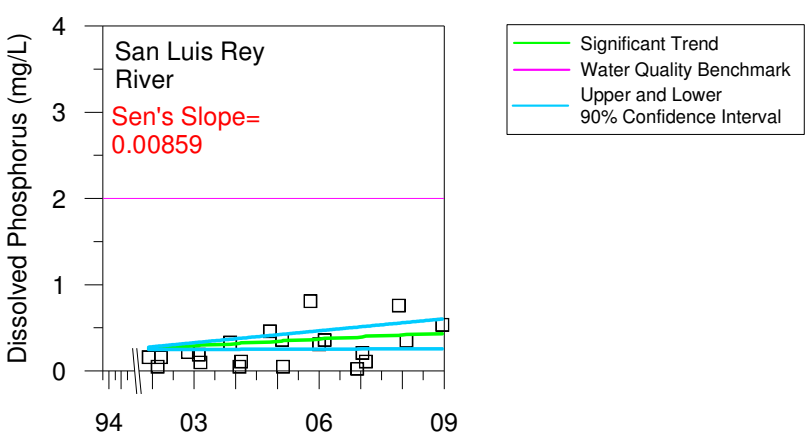

Figure 4-2. Trend Analysis for Dissolved Phosphorus at the SLR MLS.

Elevated total dissolved solids (TDS) concentrations are persistent throughout the San Luis Rey HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers. As this is a region-wide problem, TDS has not been identified as a high priority water quality problem specific to the SLR WURMP.

Other Activities

The Land Acquisitions activity (SLR-012) does not reduce existing loads, but is intended to prevent future loading of pollutants related to new development. Loading estimations are difficult to predict based on land use; however acquisition of the land for public use will prevent the development of commercial and residential areas on the land, both of which have been shown to contribute to bacteria loading. Land acquisition also helps maintain the natural conditions of the site, allowing for natural processes such as infiltration and pollutant uptake to continue. When land is developed, these natural processes are often reduced or eliminated by increasing impervious areas and channelizing or undergrounding stream systems. Preservation of the land will provide for less pollutant generation and may provide for continued pollutant removal, depending on the land acquired. This would directly apply to the bacteria and nutrient water quality problems identified in the WURMP.

Conclusions for the Lower San Luis HA

During FY 2009-10, six water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed with four addressing bacteria and four addressing nutrients. During FY 2009-10, the six education activities in the HA addressed all high priority water quality problems in the HA, with five addressing bacteria and five addressing nutrients.

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

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5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions for Warner Valley HA

With minimal development in this HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for this HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

5.2 Conclusions for Monserate HA

With minimal development in this HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for this HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

5.3 Conclusions for the Lower San Luis HA

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Water quality data collected in FY 2007-08 and FY 2008-09 provided new information specific to the HA. A TWAS was installed towards the bottom of the Bonsall HSA in FY 2007-08 and gathered data in addition to the historical MLS. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. Due to the rotational nature of the TWAS between northern and southern watersheds no new data was acquired from the TWAS during this reporting period. The data collected to date continues to support listing bacteria and nutrients as high priority water quality problems in the Lower San Luis Rey HA.

5.3.1 Water Quality Activities

During FY 2009-10, six water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed. Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

During FY 2010-11, eight total water quality activities are planned to be implemented, with three designed to address water quality problems related to bacteria, two designed to address nutrients, and three that address both bacteria and nutrients.

Bacteria
The SLR Copermittees have implemented several activities designed to address identified sources of bacteria in the watershed. During FY 2009-10, four water quality activities focused on the abatement of specific sources of bacteria. There are also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

Nutrients
During FY 2009-10, two water quality activities focused on the abatement of specific sources of nutrients. In addition there were two monitoring and source identification activities specifically focused on the sources of nutrients. These were chosen because the sources of the nutrients remain largely uncharacterized in the watershed. Each of these activities appears to be well designed to assess sources of nutrients causing or contributing to water quality problems in the watershed.

5.3.2 Water Quality Education Activities

During FY 2009-10, six water quality education activities were implemented, one focused on bacteria, one focused on Nutrients, and four focused on both bacteria and nutrients. During this reporting period targeted outreach related to pet waste educating residents on the impacts of pet waste and improper disposal proved successful and activity implementation is recommended to continue in FY 2010-11. Newsletters distributed through utility bills to over 40,000 Oceanside households provided information about picking up and properly disposing pet waste along the SLR Recreational Trail.

In FY 2010-11, six education activities are planned with one designed to address water quality problems related to bacteria, two designed to address nutrients, and four that address both bacteria and nutrients. See table 3-7 and associated activity sheets in Appendix A for more information about implementation tasks related to these activities.

5.4 Recommendations

Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope.

Some of the hydrologic areas in the SLR HU have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs when funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the specific education activities.

Activities in the watershed appear to be properly focused on identified water quality problems in the SLR HU. These types of activities should continue as bacteria and nutrients show increasing trends at receiving water monitoring stations. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected bacteria and nutrient pollution. Future TWAS data will be examined carefully to discern between water quality in the upper and lower watershed. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

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6 References

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Appendix A

SAN LUIS REY

Watershed Activity Implementation Summary Sheets with Associated Attachments
and
Proposed Watershed Activity Summary Sheets

Annual Report for Fiscal Year 2009-10

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **San Luis Rey Watershed Water Quality Monitoring Program**
ID NUMBER: **SLR-001**

ACTIVITY DESCRIPTION

A primary component of the San Luis Rey WURMP is to identify and characterize the constituents of concern adversely affecting water quality in the San Luis Rey River Watershed. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program in 2004 consisting of both field observations and field and analytical water quality sampling. This activity was developed collaboratively by the Watershed Copermittees within the San Luis Rey Watershed.

The activity includes the following tasks to be performed by the Watershed Copermittees:

- Update the monitoring plan as needed.
- Implement monitoring plan with field and laboratory analyses of constituents.
- Collect, compile, and analyze data.
- Prepare an annual written report including conclusions and recommendations.

A full description of the monitoring program, including sampling locations, procedures, and analyses is provided in the following attachments to this Activity Implementation Sheet:

- Attachment A: General Program Description
- Attachment B: Bacteria Sampling Description and Analyses
- Attachment C: TDS and Chloride Sampling Description and Analyses
- Attachment D: Nutrient Sampling Description and Analyses
- Attachment E: Monitoring Results for FY 2009-10

ACTIVITY IMPLEMENTATION FY 2007-08

A description of the FY 2007-08 monitoring program, including sampling locations, procedures, and analyses is included in the FY 2007-08 WURMP Annual Report

ACTIVITY IMPLEMENTATION FY 2008-09

A description of the FY 2008-09 monitoring program, including sampling locations, procedures, and analyses is included in the FY 2008-09 WURMP Annual Report

ACTIVITY IMPLEMENTATION FY 2009-10

A description of the FY 2009-10 monitoring program, including sampling locations, procedures, and analyses is included as Attachments A–D to this Activity Implementation Sheet.

In addition, the County of San Diego and the City of Oceanside initiated a review of existing efforts to explore how the voluntary sampling program may be refined to increase program efficiencies and provide useful data in light of upcoming regulatory drivers. Future regulatory drivers which may impact the current sampling efforts may include the agricultural waiver monitoring program, the Draft Total Maximum Daily Load (TMDL) for Indicator Bacteria in the

San Luis Rey watershed, and the recent addition of pollutants to the US EPA Clean Water Act Section 303(d) list. In order to assist with assessment efforts the County of San Diego convened a Technical Advisory Committee (TAC) composed of watershed stakeholders and water quality experts. The TAC met twice during the FY 2009-10 and efforts will continue during FY 2010-11. TAC recommendations will likely result in changes to the joint monitoring program in FY 2010-11.

TMDL APPLICABILITY

This activity is planned for future implementation of the TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring activities will be revised in response to recommendations from the San Luis Rey Voluntary Monitoring TAC when released in FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Luis Rey Joint Water Quality Monitoring TAC

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the Mission HSA (903.11). This monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

The County of San Diego and the City of Oceanside collected periodic samples from San Luis Rey River and its tributaries beginning March 2004, sampling bacteria, TDS, Chloride, Magnesium, Iron, Manganese, Total Phosphorus, Nitrates, and pH samples from San Luis Rey River and its tributaries.

- Bacterial indicators, total dissolved solids (TDS) and chloride data were compiled and analyzed (Level 1 Outcome).
- Written reports including conclusions and recommendations were prepared (Level 1 Outcome).

An overview of the joint monitoring program is provided in Attachment A; detailed analysis of bacteria results is provided in Attachment B; detailed analysis of TDS and chloride results is provided in Attachment C; detailed analysis of nutrient results is provided in Attachment D.

ATTACHMENT A TO SLR-001

SAN LUIS REY WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY
2009-10 SLR WURMP Annual Report

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1.0 PROGRAM DESCRIPTION

The San Diego Regional Water Quality Control Board reissued the Municipal National Pollutant Discharge Elimination System (NPDES) permit, Order 2007-0001, to all 21 San Diego County Copermittees. Order 2007-0001 continues to require Copermittees to implement Watershed Urban Runoff Management Plans (WURMP) for all watersheds in San Diego County. A primary component of the San Luis Rey WURMP (SLR WURMP) is to identify the constituents of concern adversely affecting the water quality of the River. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program of the lower 19 miles of the San Luis Rey River, on March 10, 2004, consisting of both field observations and field and analytical sampling.

From March 2004 through June 2010, 20 locations were sampled: nine by the City of Oceanside and 12 by the County of San Diego. Seven sampling sites were located along the San Luis Rey River and 11 in the mouths of River's tributaries. One location, Pacific Mix Zone, was in the Pacific Ocean 75 ft south of San Luis Rey River outlet. This location was sampled for bacteria only. One site along the River's main stem, Bonsall Bridge (SLR16), was sampled by both agencies for quality control. All sampling locations are described in more detail in the table below.

In addition, in 2007, the City of Oceanside was awarded a State Proposition 50, Clean Beaches Initiative grant to conduct a bacteria source tracking study in the Lower San Luis Rey River. As part of the grant, the City and County agreed to continue the joint monitoring program and updated the bacteria sampling protocols to be compliant with the Surface Water Ambient Monitoring Program (SWAMP) during the duration of the project which began in June of 2008 and was scheduled to end in 2010. The grant was halted during calendar year 2009 due to State budget cuts, but was restarted in the beginning of 2010. Joint monthly monitoring continued through 2009 and is planned to continue through April 2010, the expected end date for monitoring under the grant-funded study.

2.0 PROGRAM DESIGN

The County and the City coordinate monitoring to collect samples on the same day when possible. No sampling is conducted if rainfall over 0.1 inches has occurred within 72 hours prior to the sampling date. Rescheduling with the County must occur if the regularly scheduled sampling date has been interrupted.

Sample Locations

The following table shows a list of the City and County monitoring sites:

Jurisdiction	Site Name	Site Description	Latitude (NAD 83 decimal degrees)	Longitude (NAD 83 decimal degrees)
Oceanside	Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Oceanside	Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Oceanside	Benet Benet (Site moved downstream in June 2008 for improved flow monitoring)	San Luis Rey River on the west side of Benet Bridge, north of Hwy 76 and Airport Rd. At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.22037 33.21790	-117.35836 -117.35958
Oceanside	Douglas	San Luis Rey River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Oceanside	Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Oceanside	Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Oceanside	Guajome Lake Outlet (Sampling of this site ended in FY 06/07)	South side of SLR River, where Guajome Lake effluent flows into river. 5030 Tyler Road. Easement Key #A227. Drive North, then walk.	33.25342	-117.28889
Oceanside	Sleeping Indian (Sampling of this site began in FY 06/07)	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Oceanside County	Bonsall (SLR 16)	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833
County	SLR25	San Luis Rey River at Olive Hill Road	33.28838	-117.22335
County	SLR28	San Luis Rey River at Pankey Rd	33.33281	-117.14975

Jurisdiction	Site Name	Site Description	Latitude (NAD 83 decimal degrees)	Longitude (NAD 83 decimal degrees)
County	SLR01	Moosa Canyon Creek at Old River Road	33.2836	-117.218683
County	SLR02	Little Gopher Canyon Creek at Old River Road	33.265683	-117.2332
County	SLR26	Bonsall Creek at Highway 76	33.28959	-117.22525
County	SLR14	Ostrich Farm Creek at Highway 76	33.29335	-117.22396
County	SLR27	Live Oak Creek at Highway 76	33.31514	-117.19418
County	SLR17	Keys Creek at Dulin Rd	33.32363	-117.15744
County	SLR 34 (Sampling begun in June 2008)	Tributary to the San Luis Rey River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931
County	SLR 32 (Sampling begun in June 2008)	Horse Ranch Creek	33.33138	-117.15067
County	SLR31 (Sampling begun in June 2008)	Moulder Ranch Creek	33.30205	-117.21691

Field Screening, Sample Collection and Analysis

For each site visit, the sampler should use the San Luis Rey River Monitoring form. Samples should not be collected until 72 hours after a rainstorm.

Observations

Qualitative field observations are made during each site visit. These observations are intended to provide a general assessment of the site and include the following runoff characteristics: odor, clarity, color, floatables, deposits, vegetation and biology.

Flow

Instantaneous flow measurements are used to estimate pollutant mass loading and identify significant changes in discharge that may be indicative of an illegal release upstream.

Field Analysis

The City of Oceanside and the County of San Diego conduct the following in-situ water quality measurements:

- Water temperature
- pH
- Conductivity

- Turbidity
- Dissolved Oxygen
- Flow

Prior to 2005, field test kits were employed to measure sample concentrations of Nitrate as N[1], Orthophosphate as P and Ammonia as N by both the County of San Diego and the City of Oceanside. Prior to October 2009, the City used field test kits exclusively while the County supplemented field test kit results with analytical laboratory testing. After October 2008, the County discontinued all field test kit testing in favor of laboratory analysis. The City initiated laboratory analysis for nutrients in October 2009.

Laboratory Analysis for City of Oceanside

The analytical laboratory analyses conducted by the City include the following constituents[2]

- Ammonia as N (quarterly)
- Nitrate as N (quarterly)
- Nitrite as N (quarterly)
- Total Kjeldahl Nitrogen (quarterly)
- Orthophosphate as P (quarterly)
- Total Phosphorus (quarterly)
- Total and Fecal Coliforms
- Enterococcus
- Chloride (quarterly)
- Sulfate (quarterly)
- Total Suspended Solids (quarterly)
- Total Dissolved Solids (quarterly)
- Total Hardness (quarterly)
- Bicarbonate Alkalinity (quarterly)
- Carbonate Alkalinity (quarterly)
- Total Alkalinity as CaCO3 (quarterly)
- Dissolved Magnesium (quarterly)
- Dissolved Iron (quarterly)
- Dissolved Manganese (quarterly)
- Dissolved Calcium (quarterly) (quarterly)
- Dissolved Sodium (quarterly)
- Dissolved Potassium (quarterly)
-

Note: At Pacific and Pacific Mix monitoring locations, only indicator bacteria samples are collected and analyzed due to the saltwater/freshwater influence. At Pacific, general chemistry is also recorded from the in-situ measurements.

Lab Analysis for County of San Diego

The analytical laboratory analyses conducted by the County include the following constituents[2]:

[1] Field testing for nitrate is occasionally unattainable using current testing equipment, due to high conductivity levels
[2] Collected samples are submitted to a California Department of Health Services certified laboratory

- Ammonia as N
- Nitrate as N
- Nitrite as N
- Total Kjeldahl Nitrogen
- Organic Nitrogen
- Orthophosphate as P
- Total Phosphorus
- Total and Fecal Coliforms
- Enterococcus
- Chloride (quarterly)
- Sulfate (quarterly)
- Total Suspended Solids (quarterly)
- Total Dissolved Solids (quarterly)
- Total Hardness (quarterly)
- Bicarbonate Alkalinity (quarterly)
- Carbonate Alkalinity (quarterly)
- Hydroxide Alkalinity (quarterly)
- Total Alkalinity (quarterly)
- Dissolved Magnesium (quarterly)
- Iron (quarterly)
- Dissolved Manganese (quarterly)
- Dissolved Calcium (quarterly)
- Dissolved Sodium (quarterly)
- Dissolved Potassium (quarterly)Boron (quarterly)
- Fluoride (quarterly)

Bacteria Monitoring Protocols

As detailed in the Lower San Luis Rey River Source Identification Project Quality Assurance Project Plan (QAPP), sample collection for indicator bacteria consists of composite bacterial grab samples and lower detection limits. These samples were collected with equivalent volumes taken from three points perpendicular to stream flow at approximately 10, 50, and 90% stream width away from the stream bank. Detection limits for total and fecal coliform were 2 MPN/100ml and for Enterococcus was 1 MPN/100ml.

Quality Assurance/Quality Control (QA/QC)

During each sampling event one site is selected (at random or rotating) to conduct duplicate analyses of all laboratory measured parameters.

Laboratory Parameters

1 container – grab sample is collected for bacteria analysis
1 container – grab sample, for TDS and Chloride
1 container – grab sample, for Fe, Mn, and Mg.
1 container – grab sample, for nutrients

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ATTACHMENT B TO SLR-001

SAN LUIS REY WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY 2009-10 SLR WURMP Annual Report

Joint Bacteria Monitoring Program

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Introduction

The Pacific Ocean Shoreline at the San Luis Rey River mouth was included on the 2006 California Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) for indicator bacteria. The 2008 303(d) List, which was partially approved by the USEPA on November 18, 2010, adds the Lower San Luis Rey River (west of Interstate 15) as impaired for fecal coliform and Enterococcus, and changes the listing for the Pacific Ocean shoreline from indicator bacteria to total coliform and Enterococcus. In addition, a Total Maximum Daily Load (TMDL) for indicator bacteria was adopted by the San Diego Regional Water Quality Control Board for the San Luis Rey River on February 10, 2010, as part of the Beaches & Creeks TMDL. Once formally adopted by the State Water Resources Control Board, the TMDL will establish limits for indicator bacteria at the Pacific Shoreline.

The City of Oceanside (City) and the County of San Diego (County) began a joint bacteria monitoring program in the San Luis Rey River in March 2004. The goal of this project is to better characterize levels of bacterial indicators in the watershed segment from Interstate 15 to the Pacific Ocean. In 2007, the City was awarded a Proposition 50 Clean Beaches Initiative grant to conduct a bacteria source tracking study in the Lower San Luis Rey River. As part of the grant, the City and County agreed to continue their joint bacteria monitoring program. They also updated the bacteria sampling protocols to match Surface Water Ambient Monitoring Program (SWAMP) guidelines over the duration of the project: starting in June 2008 and scheduled to end in 2010. New monitoring protocols that included composite sampling and lower detection limits for indicator bacteria analysis were also implemented in June 2008. Although funding for the City's bacteria source tracking study was halted in December 2008, routine bacteria monitoring continued monthly through June 2010.

Hydrologic Setting

The San Luis Rey River originates mainly in the Palomar and Hot Springs Mountains. In 1922, Henshaw Dam was built and Lake Henshaw was formed at the base of Palomar Mountain. No imported water is released directly into the lake and TDS and chloride concentrations in the lake fall below Basin Plan standards. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a drinking water reservoir. Seven miles downstream of the Lake Henshaw dam, water from the main channel of the River is diverted into the man-made Escondido Canal. Nearly all non-storm flows are diverted from that section of the SLR River into the canal, which discharges to Lake Wohlford in the Carlsbad Watershed. The flow in the remainder of SLR River is intermittent through Pauma and Pala. The River is perennial through Oceanside, although it flows underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and about 45 inches/yr at Palomar Mountain. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The River is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the river bed and form perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

From March 2004 through June 2010, 18 locations (Figure 1) were sampled: seven by the City of Oceanside and 12 by the County of San Diego (Table 1). Both agencies collected samples on the same days or within one or two days of one another. Seven sampling sites were located along the San Luis Rey River and 11 in the mouths of the River's tributaries. One site along the River's mainstem, Bonsall Bridge (SLR16), was sampled by both agencies for quality control.

During FY 2009/2010, monthly sample collection was attempted from all locations. Prior to FY 2008/2009, main stem samples were collected monthly from Bonsall Bridge to the ocean and less frequently at sampling points east of Bonsall Bridge. The tributaries were sampled monthly from March through December 2004 and less frequently thereafter. Since July 2006, sampling at the Guajome Lake Outlet, which was frequently dry, was abandoned and replaced by sampling at the Sleeping Indian Outlet. Also, beginning in July 2006, additional bacterial samples were collected at the Pacific shoreline (named "Pacific Mix Zone" in Tables 3 through 5) in order to compare bacterial concentrations at the mouth of SLR to those at the shoreline nearby (75 ft south of the River mouth).

All samples were collected during dry weather, which was defined as at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches. During FY 2009/2010, the April 2010 sampling event was postponed several times due to rain and then cancelled. Sampling was continued in May. Prior to June 2008, single grab samples were collected from the center of the stream. Thereafter, as detailed in the Lower San Luis Rey River Source Identification Project Quality Assurance Project Plan (QAPP), composite samples were collected with equivalent volumes taken from three points perpendicular to stream flow at approximately 10, 50, and 90% stream width away from the stream bank. Samples were placed in sterilized collection bottles supplied with sodium thiosulfate as a preservative. Samples were stored at 4ºC and transported to the laboratory to be analyzed with multi-tube fermentation method to estimate bacterial counts for total and fecal coliforms and Enterolert methodology for Enterococcus.

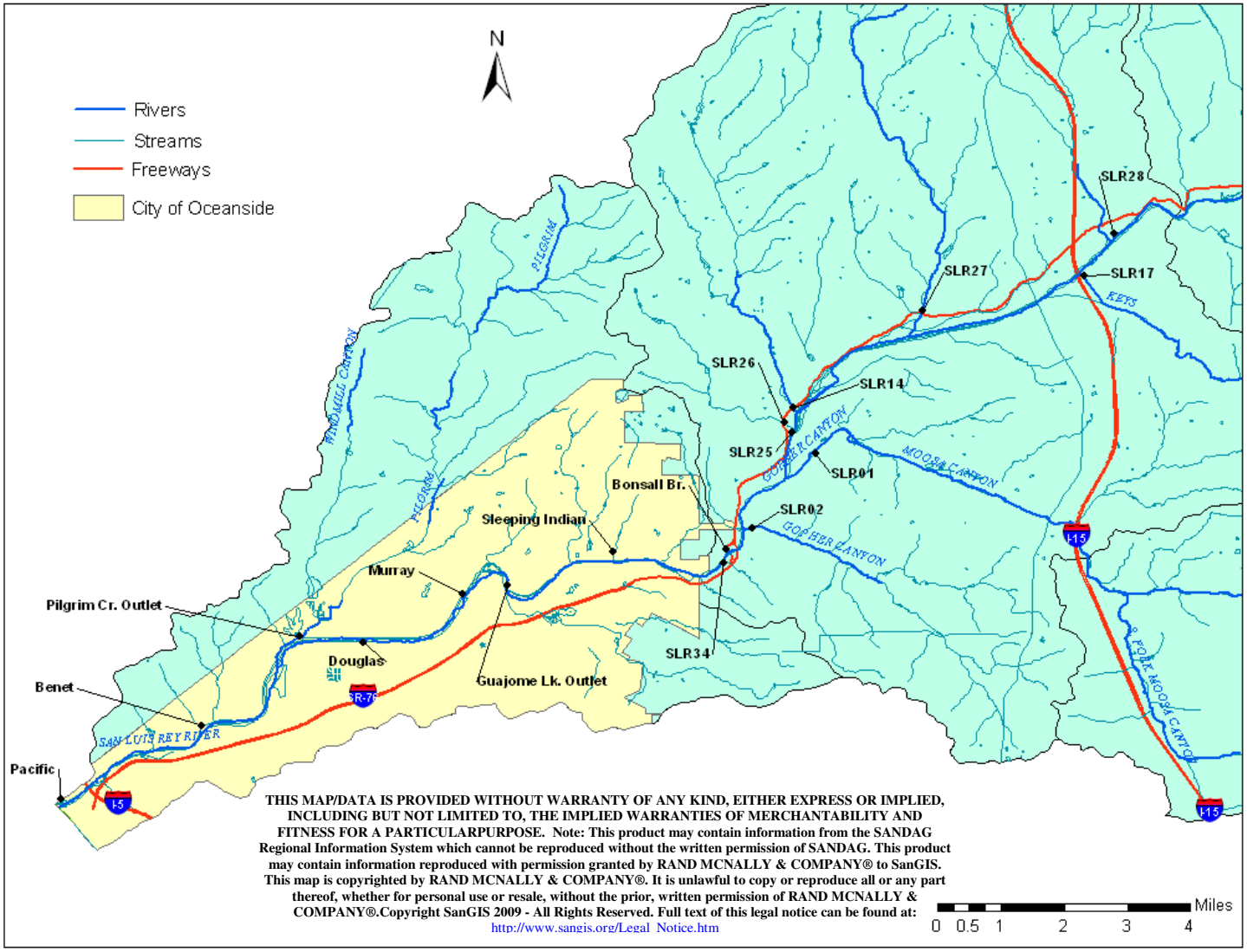

Figure 1: Sampling locations.

Table 1: Sample Site Identification and Locations

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	San Luis Rey River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Bonsall (SLR16)	SLR River under the Bonsall Bridge	33.26042	-117.23833
Olive Hill (SLR25)	SLR River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	SLR River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek tributary at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek tributary at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek tributary at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek tributary at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek tributary at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek tributary at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek tributary	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek tributary	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to SLR River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Rain Event Summary

Rain occurred in trace amounts in June and October 2004, in larger quantities January through March 2005, and again in April 2005 and 2006 (Table 2). Significant rainfall also took place three and four days prior to the December 4, 2007, sampling event. Some rain also occurred prior to the February 7, 2008, sampling. Significant rainfall also occurred in late November 2008 and in mid-February 2009. In 2010, several rain events occurred from December through April

2010. The April 2010 sampling was postponed and eventually cancelled due to several rain events. Sixty-one (61) out of 74 samples collected at Pacific St. Crossing appeared to have been influenced by seawater as evidenced by the high concentration of chloride and high conductivity (Attachment E).

Table 2: Rain Event Summary.

Date	Fallbrook Airport	Oceanside Airport	Oceanside Harbor
3/10/2004	None	None	None
4/14/2004	None	None	None
5/12/2004	None	None	None
6/9/2004	None	Trace on 6/8 and 6/7	None
7/14/2004	None	None	None
8/17/2004	None	None	None
9/13/2004	None	None	None
10/13/2004	None	Trace on 10/12	None
11/17/2004	None	None	None
12/15/2004	None	None	None
1/26/2005	0.25” on 1/26	Trace on 1/26	None
2/9/2005	0.48” on 2/7	0.04” on 2/7	None
3/9/2005	0.01” on 3/9	None	Trace on 3/8
4/6/2005	None	Trace on 4/4	None
5/3/2005	None	None	None
6/8/2005	None	None	None
7/12/05	None	None	None
7/13/05	None	None	None
8/9/05	None	None	None
8/10/05	None	None	None
9/6/05	None	None	None
10/4/05	None	None	None
11/1/05	None	None	None
12/7/05	None	None	None
1/10/06	None	None	None
2/7/06	None	None	None
4/3/06	0.07” on 4/1	0.02” on 3/31, 0.05” on 4/1 & 0.02” on 4/3	0.06” on 4/2
5/17/06	None	None	None
5/30/06	None	None	None
6/20/06	None	None	None
7/11/06	None	None	None
8/1/06	None	None	Trace on 8/1, 7/31 & 7/30
9/12/06	None	None	None
10/3/6	None	None	Trace on 10/2
11/7/06	None	None	None
12/5/06	None	None	None
1/9/07	None	None	None
2/7/07	None	None	None
3/6/07	None	None	None
4/3/07	None	None	None
5/1/07	None	Trace on 5/1	None
6/5/07	None	None	None
7/10/07	None	None	None
8/7/07	None	None	None
9/4/07	None	None	None
10/2/07	None	None	None
11/6/07	None	None	None
12/4/07	Missing Data	0.94” on 12/1/07	1.84” on 11/30 & 1.14” on 12/1/07
1/14/08	None	None	None
2/7/08	2/3-4 Data Missing	0.4” on 2/3 & 0.06” on 2/4	2/3-4 Data Missing
3/4/08	None	None	None
4/8/08	Missing Data	None	None

Table 2: Rain Event Summary.

Date	Fallbrook Airport	Oceanside Airport	Oceanside Harbor
5/13/08	None	None	None
6/17/08	Missing Data	None	None
7/8/08	None	None	None
8/12/08	None	None	None
8/13/08	None	None	None
9/9/08	None	None	None
9/10/08	None	None	None
10/13/08	None	None	None
11/17/08	None	None	None
11/18/08	None	None	None
12/9/08	0.75” on 11/26 & 0.80” on 11/27	Trace on 12/8 & 0.82” on11/26 & 0.72” on 11/27	0.87” on 11/26 & 11/27 Data Missing
12/10/08	0.75” on 11/26 & 0.80” on 11/27	Trace on 12/8 & 0.82” on11/26 & 0.72” on 11/27	0.87” on 11/26 & 11/27 Data Missing
1/13/09	0.07” on 1/3	0.25” on 1/3	1/3 Data Missing
1/17/09	None	None	None
2/23/09	0.49” on 2/16 & 0.19 on 2/17	Trace on 2/23 & 0.20” on 2/16 & 0.28 on 2/17	0.30” on 2/16 & 0.21 on 2/17
2/24/09	0.49” on 2/16 & 0.19 on 2/17	Trace on 2/23 & 0.20” on 2/16 & 0.28 on 2/17	0.30” on 2/16 & 0.21 on 2/17
3/10/09	0.01” on 3/5	Trace on 3/5	None
3/11/09	0.01” on 3/5	Trace on 3/5	None
4/14/09	None	None	None
4/15/09	None	None	None
5/12/09	None	None	None
5/13/09	None	None	None
6/9/09	None	None	None
6/11/09	None	Trace on 6/7	None
7/14/09	None	None	None
7/15/09	None	None	None
8/10/09	None	None	None
9/22/09	None	None	None
9/28/09	None	None	None
10/27/09	None	None	None
11/17/09	None	None	None
12/17/09	0.41” on 12/12 & 0.98” on 2/13	Total of 1.08” from 12/11 to 12/14	More than 1.66” from 12/7 to 12/13
1/26/10	More than 5.69” from 1/18 to 1/23	Trace on 1/26 & total of 4.24” from 1/18 to 1/23	More than 2.49” from 1/18 to 1/23
2/17/10	Total of 1.63” from 2/6 to 2/7	Total of 1.19” from 2/5 to 2/10	Missing Data
2/18/10	Total of 1.63” from 2/6 to 2/7	Total of 1.19” from 2/5 to 2/10	Missing Data
3/15/10	More than 0.61” from 3/4 to 3/8	Total of 0.41” from 3/4 to 3/10	Missing Data
3/17/10	More than 0.61” from 3/4 to 3/8	Total of 0.41” from 3/4 to 3/10	Missing Data
5/18/10	Trace on 5/17	Trace on 5/18	Trace on 5/18
5/19/10	Trace on 5/17	Trace on 5/18	Trace on 5/18
6/8/10	None	None	None
6/9/10	None	None	None

*Data for this table were obtained from the National Weather Service Forecast Office for San Diego CA (http://www.wrh.noaa.gov/sgx/obs/rtp/rtpmap.php?wfo=sgx)

Analysis of Data

All data beginning in March 2004 through the end of June 2010 are listed in Tables 3 through 8 below. The data are sorted by the bacterial indicator type (total coliform, fecal coliform and Enterococcus) and sampling location (either along the River's main stem or in the tributaries). In each table, the total number and percentage of samples exceeding the corresponding State AB411 single sample standards were calculated for each sampling date and location. Results are also presented for all dates and locations combined. The log mean bacterial counts and 95% confidence intervals were then calculated for each bacterial indicator type by sampling location and the results were represented graphically in Figures 2 through 7.

In order to determine whether bacterial concentrations at the mouth of the SLR River may have had an effect on those at the Pacific Ocean shoreline nearby, a correlation analysis was conducted on bacterial counts from the River mouth (Pacific) and the location 75 feet south of the river mouth along the shoreline (Pacific Mix). In order to normalize the data, the counts were log-transformed. Correlation coefficients (r) and significance (p values) were calculated for each set of the 45 sample pairs analyzed.*

Results

Attachment E, at the end of this attachment, provides a full record of all data collected during FY 2009/ 2010.

Total Coliform Bacteria in the Main Stem

The total coliform bacteria counts exceeded the State single sample standard of 10,000 MPN/100ml in 65 out of 435 (15%) samples analyzed (Table 3). Douglas had the highest exceedance rate (26%) and the highest mean concentration (Figure 2). During FY 2009/ 2010, exceedances were recorded occasionally with the greatest percentage (38%) occurring in January 2010. For FY 2009/ 2010, the highest exceedance of 28,000 MPN/100 ml occurred at Douglas.

The overall mean concentrations of total coliform along the San Luis Rey River tended to remain below the single sample standard at all sampled locations (Figure 2). The mean total coliform concentration at Pacific was lower than that of the sites further upstream but this difference was not statistically significant for Olive Hill Rd (SLR25) and Shearer Crossing (SLR28) - most probably due to the small number of samples collected at those two sites. The mean total coliform concentration in the Pacific Mix Zone was significantly lower than that at any of the River and tributary locations.

* The correlation coefficient (r) gives a measure of the nature and magnitude of each correlation. Positive r values indicate that counts at the two sites increase or decrease together; negative values of r indicate that while counts at one location increase, they decrease at the other; the higher the value of r, the stronger the correlation with a higher percentage of variability in bacterial counts being explained by the sampling location. P-values lower than 0.05 indicate statistically significant correlations.

Table 3: Total Coliform Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	1,700	1,700	3,000	6,500	NS	1,400	23	500	7	0	0%
4/14/04	NS	5,000	13,000	5,800	2,200	NS	1,400	NS	NS	5	1	20%
5/12/04	NS	1,100	22,000	24,000	13,000	NS	3,500	NS	NS	5	3	60%
6/9/04	NS	130	11,000	22,000	13,000	NS	16,000	13,000	dry	6	5	83%
7/14/04	NS	900	1,600	1,600	dry	NS	1,600	NS	NS	4	0	0%
8/17/04	NS	6,500	2,300	dry	dry	NS	7,000	NS	NS	3	0	0%
9/13/04	NS	800	11,000	dry	dry	NS	13,000	9,000	dry	4	2	50%
10/13/04	NS	3,000	1,700	3,000	dry	NS	2,400	47,750	dry	5	1	20%
11/17/04	NS	1,000	1,300	1,300	3,000	NS	NS	5,000	30,000	6	1	17%
12/15/04	NS	20	800	9,000	3,000	NS	300	305	700	7	0	0%
1/26/05	NS	5,000	7,000	2,000	230	NS	11,000	NS	NS	5	1	20%
2/9/05	NS	800	2,300	2,400	1,700	NS	260	NS	NS	5	0	0%
3/9/05	NS	1,700	2,200	5,000	5,000	NS	3,000	NS	NS	5	0	0%
4/6/05	NS	75	8,000	800	3,000	NS	3,000	NS	NS	5	0	0%
5/3/05	NS	17,000	9,500	13,000	11,000	NS	2,800	11,000	NS	6	4	67%
6/8/05	NS	5,000	8,000	5,000	1,300	NS	2,200	NS	NS	5	0	0%
7/12-7/13/05	NS	2,200	4,700	230	1,400	NS	800	NS	NS	5	0	0%
8/9-8/10/05	NS	750	8,000	50,000	11,000	NS	3,000	NS	NS	5	1	20%
9/6/05	NS	10	3,000	5,000	2,400	NS	3,000	NS	NS	5	0	0%
10/4/05	NS	10	5,000	3,000	5,000	NS	3,000	NS	NS	5	0	0%
11/1/05	NS	500	2,200	12,000	3,000	NS	1,300	NS	NS	5	1	20%
12/7/05	NS	520	300	13,000	500	NS	1,700	NS	1,700	6	1	17%
1/10/06	NS	4,900	800	5,000	7,000	NS	1,700	NS	NS	5	0	0%
2/7/06	NS	800	700	5,200	1,700	NS	300	NS	NS	5	0	0%
4/3/06	NS	500	1,700	4,300	2,600	NS	700	5,000	NS	6	0	0%
5/17/06	NS	NS	NS	NS	NS	NS	17,000	8,000	13,000	3	2	67%
5/30/06	NS	800	2,200	6,000	NS	NS	NS	NS	NS	3	0	0%
6/20/06	NS	300	5,000	2,200	5,200	NS	2,200	NS	NS	5	0	0%
7/11/06	20	20	5,000	700	2,200	NS	5,000	NS	NS	5	0	0%
8/1/06	320	1,100	1,700	dry	5,000	NS	2,200	NS	NS	4	0	0%
9/12/06	20	500	8,000	dry	4,000	1,100	1,100	NS	NS	5	0	0%
10/3/06	NS	300	13,000	dry	13,000	NS	8,000	NS	NS	4	2	50%
11/7/06	50	60	3,000	dry	5,000	NS	1,300	NS	NS	4	0	0%
12/5/06	20	80	750	5,000	2,200	170	170	NS	NS	6	0	0%
1/9/07	NS	20	340	1,300	800	NS	220	NS	NS	5	0	0%
2/7/07	300	400	300	1,300	1,900	NS	1,700	NS	NS	5	0	0%
3/6/07	170	850	300	5,000	1,200	230	230	NS	NS	6	0	0%
4/3/07	500	260	260	800	800	NS	210	NS	NS	5	0	0%
5/1/07	220	200	1,100	3,900	1,300	NS	1,300	NS	NS	5	0	0%
6/5/07	170	2,200	2,300	30,000	8,000	500	500	NS	NS	6	1	17%
7/10/07	2	480	13,000	1,100	5,000	800	800	NS	dry	6	1	17%
8/7/07	4	110	1,400	4,300	dry	900	900	NS	dry	5	0	0%
9/4/07	ND	70	3,000	30,000	dry	800	800	NS	dry	5	1	20%
10/2/07	800	300	3,000	13,000	dry	6,000	6,000	NS	dry	5	1	20%
11/6/07	1,700	2,600	800	5,000	dry	800	800	NS	NS	5	0	0%
12/4/07	300,000	97,000	22,000	30,000	240,000	500,000	500,000	NS	NS	6	6	100%
1/14/08	1,700	13,000	2,300	2,200	3,000	3,000	3,000	500	NS	7	1	14%
2/7/08	1,700	3,000	13,000	5,000	23,000	800	800	NS	NS	6	2	33%

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/4/08	2,200	5,000	2,300	2,200	3,000	270	270	NS	NS	6	0	0%
4/8/08	500	500	800	2,800	1,300	3,000	3,000	NS	NS	6	0	0%
5/13/08	80	130	11,000	7,000	2,300	3,000	3,000	NS	NS	6	1	17%
6/17/08	22	500	30,000	70,000	5,000	2,200	2,200	3,000	dry	7	2	29%
7/8/08	2	4	50,000	13,000	5,000	5,000	1,100	24,000	dry	7	3	43%
8/12-8/13/08	2	50	3,000	350	3,000	5,000	170	340	dry	7	0	0%
9/9-9/10/08	13	30	5,000	500	dry	1,300	700	1,400	dry	6	0	0%
10/13/08	11	220	3,000	700	dry	2,300	500	130	dry	6	0	0%
11/17-11/18/08	130	130	3,000	500	dry	280	230	300	dry	6	0	0%
12/9-12/10/08	500	1,300	800	50,000	11,000	5,000	210	300	dry	7	2	29%
1/13-1/17/09	300	230	800	23,000	3,000	2,300	170	40	1,700	8	1	13%
2/23-2/24/09	5,000	1,100	5,000	5,000	1,300	3,000	230	210	130	8	0	0%
3/10-3/11/09	800	800	3,000	5,000	2,300	1,700	130	230	40	8	0	0%
4/14-/15/09	11	2,200	2,300	5,000	2,300	17,000	130	130	210	8	1	13%
5/12-5/13/09	170	80	23,000	50,000	23,000	17,000	220	300	500	8	4	50%
6/9-6/11/09	30	130	1,600	13,000	30,000	13,000	230	230	3500	8	3	38%
7/14-7/15/09	13	300	14,000	7,000	23,000	3,000	140	300	Dry	7	2	29%
8/10/09	7	2,300	3,000	700	300	1,700	300	220	Dry	7	0	0%
9/22-9/28/09	23	220	dry	2,300	11,000	1,300	NM	NM	Dry	4	1	25%
10/27/09	ND	400	dry	8,000	5,000	500	700	500	Dry	6	0	0%
11/17/09	ND	300	dry	170	1,300	300	500	700	Dry	6	0	0%
12/17/09	130	800	2,200	3,000	11,000	2,300	1,700	300	Dry	7	1	14%
1/26/10	1,700	2,300	5,000	13,000	13,000	8,000	16,000	1,100	5,000	8	3	38%
2/17-2/18/10	350	1,100	2,300	3,000	1,300	800	900	900	900	8	0	0%
3/15-3/17/10	1,100	900	1,700	2,200	1,700	5,000	9,000	1,100	1,300	8	0	0%
5/18-5/19/10	80	600	23,000	8,000	8,000	1,700	1,700	1,300	2,800	8	1	13%
6/8-6/9/10	30	5,000	13,000	28,000	5,000	3,000	2,300	2,300	3,500	8	2	25%
Total # of Samples	**33**	**74**	**71**	**68**	**62**	**39**	**72**	**33**	**16**	**435**		
# Samples Exceeding AB411	**1**	**3**	**15**	**18**	**13**	**6**	**4**	**4**	**2**		**65**	
% Exceeding AB411	**3%**	**4%**	**21%**	**26%**	**21%**	**15%**	**6%**	**12%**	**13%**			**15%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 10,000 MPN/100 mL.
ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected

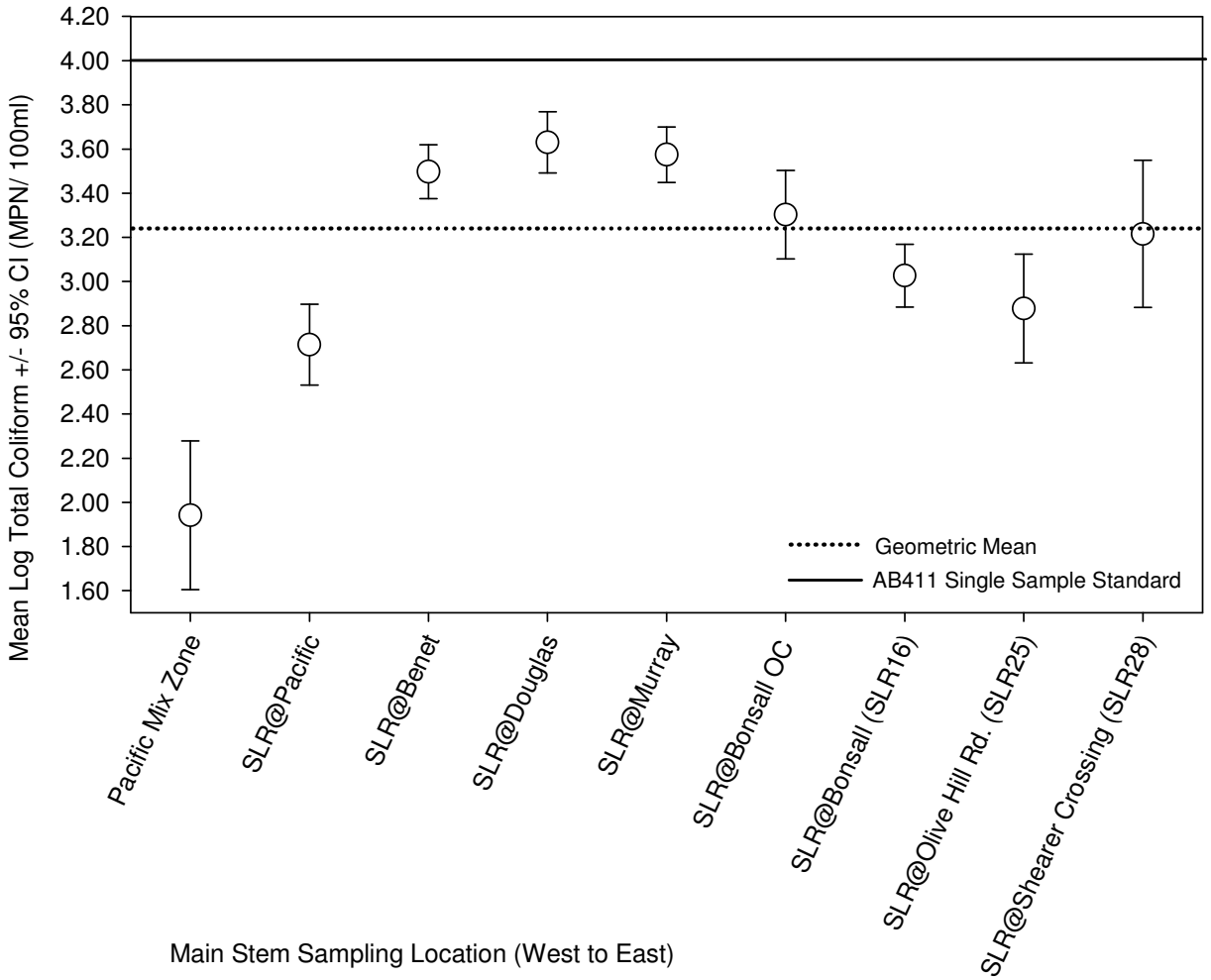

Figure 2: Relative mean concentrations ± 95% confidence intervals of Total Coliform bacteria in San Luis Rey River and in the Pacific Mix Zone.

Fecal Coliform Bacteria in the Main Stem

The fecal coliform bacteria counts exceeded the State single sample standard of 400 MPN/100ml in 97 of 430 (23%) samples analyzed (Table 4). During FY 2009/2010, exceedances occurred occasionally; the greatest percentage (50%) was recorded in October 2009 and January 2010. The highest exceedance of 1,760 MPN/100ml was recorded at Murray on October 27, 2009. The highest exceedance rate (48%) and the highest mean concentration of fecal coliform bacteria (Figure 3) were recorded at Douglas.

With the exception of Douglas, the overall mean concentrations of fecal coliform along the main stem of San Luis Rey River remained below the AB411 single sample standard (Figure 3). The

mean fecal coliform concentration at Douglas was also significantly higher than at any of the remaining sites (Figure 3). The lowest mean fecal coliform concentrations were observed at Pacific Mix Zone and at Shearer Crossing (SLR28).

Table 4: Fecal Coliform Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	500	130	1,700	60	NS	170	ND	23	7	2	29%
4/14/04	NS	2,300	260	360	300	NS	20	NS	NS	5	1	20%
5/12/04	NS	400	40	170	40	NS	20	NS	NS	5	1	20%
6/9/04	NS	40	500	800	170	NS	80	130	dry	6	2	33%
7/14/04	NS	300	50	50	dry	NS	50	NS	NS	4	0	0%
8/17/04	NS	5,000	80	dry	dry	NS	40	NS	NS	3	1	33%
9/13/04	NS	160	170	dry	dry	NS	20	75	dry	4	0	0%
10/13/04	NS	3,000	20	20	dry	NS	20	188	dry	5	1	20%
11/17/04	NS	700	220	1,300	300	NS	NS	130	20	6	2	33%
12/15/04	NS	20	500	9,000	110	NS	40	50	40	7	2	29%
1/26/05	NS	300	1,400	360	230	NS	3,000	NS	NS	5	2	40%
2/9/05	NS	300	500	500	500	NS	ND	NS	NS	5	3	60%
3/9/05	NS	500	800	1,300	230	NS	140	NS	NS	5	3	60%
4/6/05	NS	ND	70	230	ND	NS	80	NS	NS	5	0	0%
5/3/05	NS	300	270	300	130	NS	130	700	NS	6	1	17%
6/8/05	NS	80	170	80	500	NS	140	NS	NS	5	1	20%
7/12-7/13/05	NS	80	95	230	300	NS	130	NS	NS	5	0	0%
8/9-8/10/05	NS	160	500	500	270	NS	300	NS	NS	5	2	40%
9/6/05	NS	10	300	500	400	NS	800	NS	NS	5	3	60%
10/4/05	NS	10	170	300	1,300	NS	140	NS	NS	5	1	20%
11/1/05	NS	130	1,100	9,500	220	NS	230	NS	NS	5	2	40%
12/7/05	NS	220	230	13,000	30	NS	40	NS	NS	5	1	20%
1/10/06	NS	4,400	500	80	80	NS	90	NS	NS	5	2	40%
2/7/06	NS	500	300	5,200	300	NS	110	NS	NS	5	2	40%
4/3/06	NS	80	40	1,700	160	NS	8,130	40	NS	6	2	33%
5/17/06	NS	NS	NS	NS	NS	NS	NS	50	NS	1	0	0%
5/30/06	NS	170	80	500	NS	NS	NS	NS	NS	3	1	33%
6/20/06	NS	230	800	300	260	NS	500	NS	NS	5	2	40%
7/11/06	20	20	1,300	230	130	NS	20	NS	NS	5	1	20%
8/1/06	220	700	80	dry	300	NS	80	NS	NS	4	1	25%
9/12/06	20	230	800	dry	220	NS	110	NS	NS	4	1	25%
10/3/06	NS	20	300	dry	500	NS	80	NS	NS	4	1	25%
11/7/06	50	60	500	dry	300	NS	130	NS	NS	4	1	25%
12/5/06	20	40	260	3,000	300	130	130	NS	NS	6	1	17%
1/9/07	NS	20	140	1,300	80	NS	130	NS	NS	5	1	20%
2/7/07	300	400	20	800	110	NS	70	NS	NS	5	2	40%
3/6/07	110	700	230	700	300	110	110	NS	NS	6	2	33%
4/3/07	500	260	170	300	300	NS	90	NS	NS	5	0	0%
5/1/07	70	100	230	530	70	NS	80	NS	NS	5	1	20%

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
6/5/07	170	2,200	2,300	2,300	230	20	20	NS	NS	6	3	50%
7/10/07	ND	170	500	40	170	170	170	NS	dry	6	1	17%
8/7/07	2	110	70	500	dry	40	40	NS	dry	5	1	20%
9/4/07	ND	20	220	700	dry	130	130	NS	dry	5	1	20%
10/2/07	800	230	2,300	40	dry	80	80	NS	dry	5	1	20%
11/6/07	1,700	2,000	110	40	dry	130	130	NS	NS	5	1	20%
12/4/07	2,300	2,200	500	230	23,000	7,000	7,000	NS	NS	6	5	83%
1/14/08	40	500	130	300	40	230	230	300	NS	7	1	14%
2/7/08	800	1,300	700	800	260	170	170	NS	NS	6	3	50%
3/4/08	800	300	170	1,300	20	220	220	NS	NS	6	1	17%
4/8/08	40	300	110	900	70	170	170	NS	NS	6	1	17%
5/13/08	ND	80	80	800	300	110	110	NS	NS	6	1	17%
6/17/08	ND	220	70	3,000	500	140	140	130	dry	7	2	29%
7/8/08	2	4	80	1,400	50	500	130	300	dry	7	2	29%
8/12-8/13/08	2	11	50	23	8	50	40	130	dry	7	0	0%
9/9-9/10/08	13	30	30	220	dry	500	130	110	dry	6	1	17%
10/13/08	7	50	30	13	dry	300	300	20	dry	6	0	0%
11/17-11/18/08	80	130	50	8	dry	130	130	110	dry	6	0	0%
12/9-12/10/08	500	170	30	370	300	110	40	130	dry	7	0	0%
1/13-1/17/09	80	80	130	700	50	1,300	110	20	40	8	2	25%
2/23-2/24/09	300	170	600	170	130	67	40	110	80	8	1	13%
3/10-3/11/09	300	300	230	60	50	30	80	20	40	8	0	0%
4/14-/15/09	2	50	230	220	40	90	80	40	ND	7	0	0%
5/12-5/13/09	170	80	30	800	300	80	70	40	110	8	1	13%
6/9-6/11/09	13	30	50	230	220	50	40	130	110	8	0	0%
7/14-7/15/09	1	203	36	613	1,120	79	140	300	Dry	7	2	29%
8/10/09	1	108	98	140	10	52	40	110	Dry	7	0	0%
9/22-9/28/09	10	1	dry	320	1,700	340	NS	NS	Dry	4	1	25%
10/27/09	53	95	dry	900	1,760	199	230	500	Dry	6	3	50%
11/17/09	1	10	dry	180	360	360	300	300	Dry	6	0	0%
12/17/09	134	31	373	414	556	272	300	80	Dry	7	2	29%
1/26/10	1,076	1,376	548	548	205	461	300	230	40	8	4	50%
2/17-2/18/10	211	880	816	129	155	114	130	240	120	8	2	25%
3/15-3/17/10	10	75	236	114	141	60	170	230	130	8	0	0%

5/18-5/19/10	31	20	37	91	143	71	50	70	170	8	0	0%
6/8-6/9/10	1	512	69	260	272	96	170	50	500	8	2	25%
Total # of Samples	**42**	**74**	**72**	**69**	**62**	**39**	**71**	**33**	**14**	**430**		
# Samples Exceeding AB411	**8**	**20**	**20**	**33**	**11**	**5**	**5**	**2**	**1**		**97**	
% Exceeding AB411	**19%**	**27%**	**28%**	**48%**	**18%**	**13%**	**7%**	**6%**	**7%**			**23%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 400 MPN/100 mL.
ND – Not Detected; NS – Not Sampled; dry – the site was dry (no samples collected

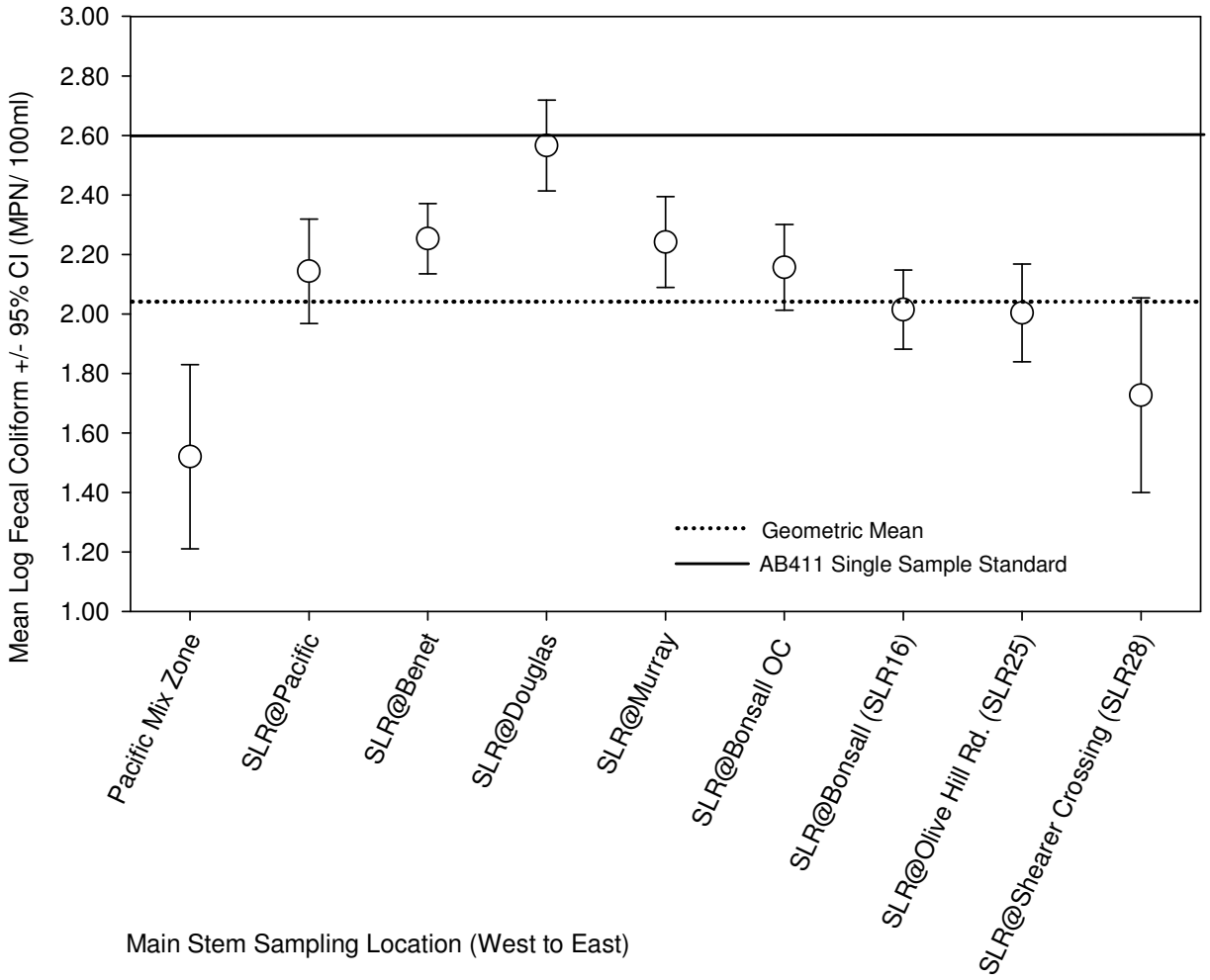

Figure 3: Relative mean concentrations ± 95% confidence intervals of Fecal Coliform bacteria in San Luis Rey River and in the Pacific Mix Zone.

Enterococcus *Bacteria in the Main Stem*

Enterococcus bacteria counts exceeded the State single sample standard of 104 MPN/100ml in 84 out of 258 (33%) samples analyzed (Table 5). For the FY 2009/2010, exceedances occurred throughout the sampling period with the greatest percentage (100%) recorded in July 2009 and June 2010. Douglas and Murray had the highest overall percentage of exceedances (62%); Douglas also had the highest mean concentration (Figure 4).

The overall mean counts of Enterococcus bacteria along the main stem of the San Luis Rey River were below the AB411 single sample standard (Figure 4). The lowest Enterococcus counts were found at Pacific and Shearer Crossing. The Pacific Mix Zone results were not significantly lower than the results at Pacific.

Table 5: *Enterococcus* Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix Zone	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	52	265	2,063	116	NS	285	8	ND	7	4	57%
4/14/04	NS	290	170	310	200	NS	34	NS	NS	5	4	80%
5/12/04	NS	110	63	259	51	NS	10	NS	NS	5	2	40%
6/9/04	NS	10	490	230	292	NS	160	300	NS	6	5	83%
7/14/04	NS	300	130	50	dry	NS	1,100	NS	NS	4	3	75%
8/17/04	NS	400	98	dry	dry	NS	140	NS	NS	3	2	67%
9/13/04	NS	36	470	dry	dry	NS	260	180	dry	4	3	75%
10/13/04	NS	360	170	81	dry	NS	93	970	dry	5	3	60%
11/17/04	NS	96	300	2,240	310	NS	NS	140	170	6	5	83%
12/15/04	NS	10	170	5,470	241	NS	31	140	40	7	4	57%
1/26/05	NS	300	600	330	940	NS	670	NS	NS	5	5	100%
2/9/05	NS	20	850	420	31	NS	20	NS	NS	5	2	40%
3/9/05	NS	93	500	240	170	NS	92	NS	NS	5	3	60%
4/6/05	NS	ND	122	180	52	NS	76	NS	NS	5	2	40%
5/3/05	NS	171	110	180	190	NS	140	24,000	NS	6	6	100%
6/8/05	NS	78	190	280	170	NS	140	NS	NS	5	4	80%
7/12-7/13/05	NS	240	220	100	110	NS	160	NS	NS	5	4	80%
8/9-8/10/05	NS	10	140	250	360	NS	270	NS	NS	5	4	80%
9/6/05	NS	5	120	260	150	NS	175	NS	NS	5	4	80%
10/4/05	NS	5	96	410	226	NS	132	NS	NS	5	3	60%
11/1/05	NS	31	650	4,480	210	NS	140	NS	NS	5	4	80%
12/7/05	NS	540	600	4,760	190	NS	3,040	40	40	7	5	71%
1/10/06	NS	300	1,870	170	170	NS	160	NS	NS	5	5	100%
2/7/06	NS	190	330	4,220	74	NS	82	NS	NS	5	3	60%
4/3/06	NS	31	30	780	84	NS	120	130	NS	6	3	50%
5/17/06	NS	NS	NS	NS	NS	NS	700	NS	NS	1	1	100%
5/30/06	NS	31	190	85	NS	NS	NS	NS	NS	3	1	33%
6/20/06	NS	108	340	87	110	NS	228	NS	NS	5	4	80%
7/11/06	10	ND	540	88	200	NS	190	NS	NS	5	3	60%
8/1/06	10	20	200	NS	260	NS	250	NS	NS	4	3	75%

Date	Pacific Mix Zone	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
9/12/06	10	ND	290	NS	320	40	40	NS	NS	4	2	50%
10/3/06	NS	20	130	NS	110	NS	80	NS	NS	4	2	50%
11/7/06	10	ND	120	NS	213	NS	52	NS	NS	4	2	50%
12/5/06	10	ND	240	4,510	260	80	80	NS	NS	4	3	75%
1/9/07		10	135	1,290	85	NS	31	NS	NS	5	2	40%
2/7/07	62	110	250	1,180	134	NS	98	NS	NS	5	4	80%
3/6/07	20	190	310	490	88	130	130	NS	NS	6	5	83%
4/3/07	10	58	76	360	76	NS	88	NS	NS	5	1	20%
5/1/07	10	35	120	430	190	NS	200	NS	NS	5	4	80%
6/5/07	60	ND	240	209	180	20	20	NS	NS	5	3	60%
7/10/07	ND	10	160	144	31	230	230	NS	dry	6	4	67%
8/7/07	10	ND	98	200	dry	93	93	NS	dry	4	1	25%
9/4/07	ND	ND	206	301	dry	31	31	NS	dry	4	2	50%
10/2/07	185	93	320	52	dry	30	30	NS	dry	5	1	20%
11/6/07	831	240	85	41	dry	100	100	NS	NS	5	1	20%
12/4/07	380	360	86	210	770	942	942	NS	NS	6	5	83%
1/14/08	62	73	20	98	31	52	52	300	NS	7	1	14%
2/7/08	450	743	677	2,224	158	161	161	NS	NS	6	6	100%
3/4/08	98	213	233	759	41	155	155	NS	NS	6	5	83%
4/8/08	ND	20	ND	1,274	122	148	148	NS	NS	5	4	80%
5/13/08	41	ND	63	1,119	86	187	187	NS	NS	5	3	60%
6/17/08	ND	359	31	488	1,203	84	84	500	dry	7	4	57%
7/8/08	21	326	70	613	687	64	230	500	dry	7	5	71%
8/12-8/13/08	10	145	32	26	192	35	340	2,800	dry	7	4	57%
9/9-9/10/08	10	10	36	6	dry	16	110	130	dry	6	2	33%
10/13/08	20	63	61	15	dry	32	80	40	dry	6	0	0%
11/17-11/18/08	31	122	2	25	dry	18	170	40	dry	6	2	33%
12/9-12/10/08	146	31	12	2,420	1,414	12	20	130	dry	7	3	43%
1/13-1/17/09	75	75	26	548	126	11	20	220	80	8	3	38%
2/23-2/24/09	228	231	248	147	248	99	80	230	500	8	6	75%
3/10-3/11/09	52	52	42	77	248	53	170	ND	70	7	2	29%
4/14-/15/09	10	10	47	148	142	86	170	ND	230	7	4	57%
5/12-5/13/09	30	41	41	46	64	76	130	110	20	8	2	25%
6/9-6/11/09	10	41	111	225	435	112	170	230	300	8	7	88%
7/14-7/15/09	13	170	110	1,300	700	500	170	170		7	7	100%
8/10/09	2	500	70	40	1	80	40	140		7	2	29%
9/22-9/28/09	23	80	Dry	220	70	300				4	2	50%
10/27/09	5	260	Dry	80	500	170	97	213		6	4	67%
11/17/09	5	300	Dry	20	230	130	135	275		6	5	83%
12/17/09	130	130	300	130	130	170	85	86		7	5	71%

Date	Pacific Mix Zone	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
1/26/10	300	1,300	130	170	70	220	80	80	20	8	4	50%
2/17-2/18/10	50	230	350	50	30	21	55	77	50	8	2	25%
3/15-3/17/10	70	170	300	30	80	130	230	500	50	8	5	63%
5/18-5/19/10	23	80	170	300	170	80	140	110	9	8	5	63%
6/8-6/9/10	8	3,000	170	500	350	170	230	130	130	8	8	100%
Total # of Samples	**50**	**74**	**79**	**77**	**71**	**48**	**81**	**40**	**23**	**84**		
# Samples Exceeding AB411	**8**	**32**	**48**	**48**	**44**	**16**	**41**	**24**	**5**		**258**	
% Exceeding AB411	**16%**	**43%**	**61%**	**62%**	**62%**	**33%**	**51%**	**60%**	**22%**			**33%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 104 MPN/100ml.
ND – Not Detected; NS – Not Sampled; ND- Not Applicable; dry – the site was dry (no samples collected)

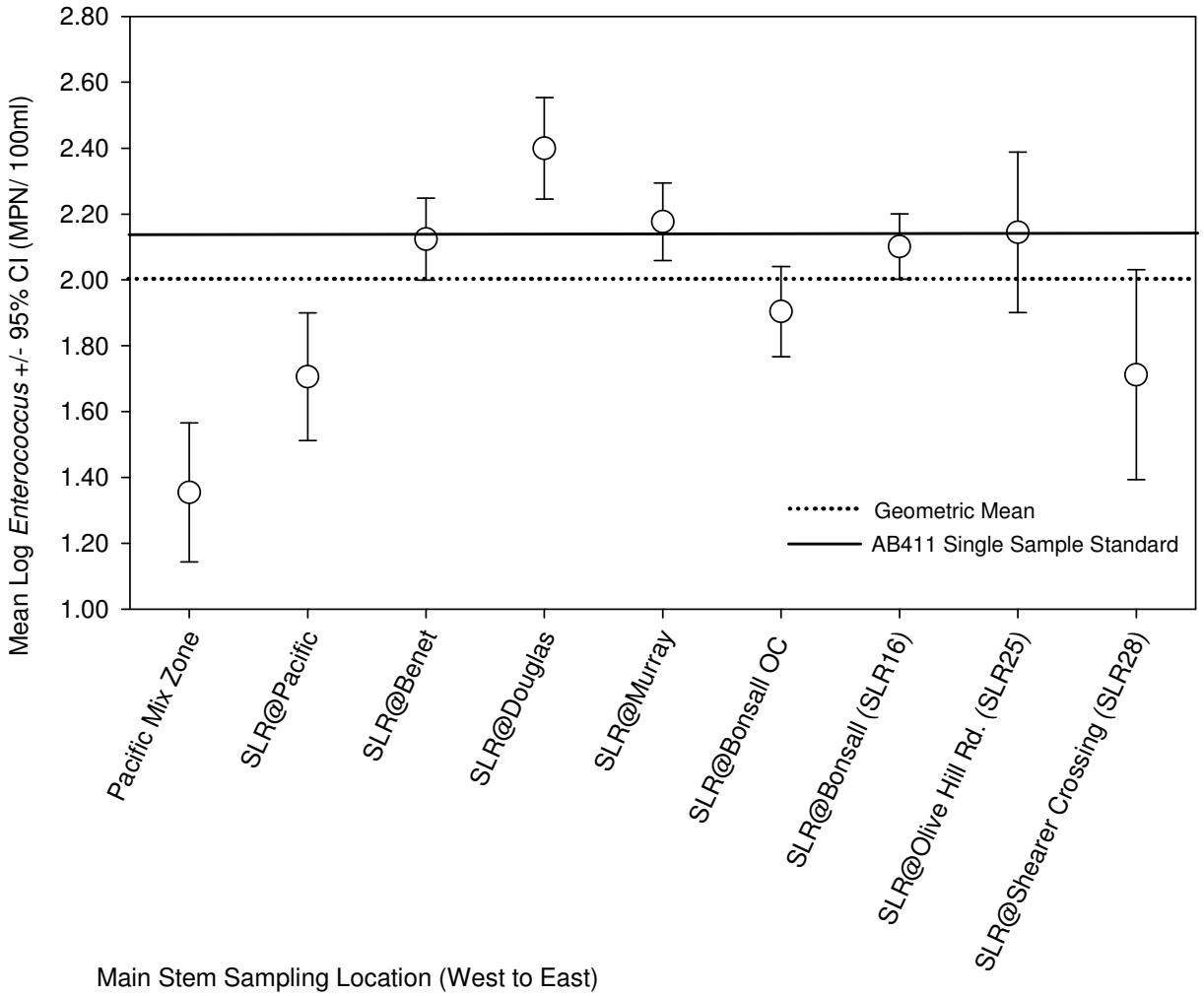

Figure 4: Relative mean concentrations ± 95% confidence intervals of *Enterococcus* bacteria in San Luis Rey River and in the Pacific Mix Zone.

Total Coliform Bacteria in Tributaries

Total coliform bacteria samples collected from the tributaries to the San Luis Rey River exceeded the State single sample standard of 10,000 MPN/100ml in 61 out of 253 (24%) samples analyzed (Table 6). For FY 2009/2010, exceedances occurred throughout the sampling period with the highest percentage (40%) recorded in December 2009. Sleeping Indian Outlet had the highest percentage of exceedances (90%) - two to three times higher than other tributary sites. Sleeping Indian Outlet also had the highest mean total coliform concentration (Figure 5).

The overall mean concentrations of total coliform in the San Luis Rey River tributaries remained below the AB411 single sample standard (Figure 5). Two sampling locations, Sleeping Indian Outlet and Pilgrim Creek Outlet had mean concentrations that were significantly higher than any of the remaining tributaries. The mean concentration of total coliform bacteria at Sleeping Indian was also significantly higher than the AB411 standard.

Table 6: Total Coliform Densities (MPN/100ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	5,000	1,300	NS	NS	80	130	50	23	22	30	8	0	0%
4/14/04	8,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	13,000	5,000	dry	11,000	2,300	30,000	5	3	60%
9/13/04	dry	dry	NS	NS	130,000	23,000	dry	30,000	23,000	dry	4	4	100%
10/13/04	dry	dry	NS	NS	dry	17,000	dry	39,000	23,000	dry	3	3	100%
11/17/04	2,300	1,300	NS	NS	8,000	8,000	8,000	12,000	24,000	24,000	8	3	38%
12/15/04	1,700	1,300	NS	NS	1,700	1,400	1,400	1,700	1,700	1,700	8	0	0%
1/26/05	1,700	3,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	2,300	800	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	7,000	2,300	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	8,000	30,000	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/3/05	5,000	dry	NS	NS	5,000	5,000	NS	NS	NS	NS	3	0	0%
6/8/05	14,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	17,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	3,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	5,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	30,000	dry	NS	NS	NS	NS	NS	NS	NS	1,700	2	0	0%
1/10/06	11,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	13,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	23,000	dry	NS	NS	1,700	NS	5,000	5,000	5,000	5,000	6	0	0%
5/17/06	NS	NS	NS	NS	8,130	8,000	11,000	11,000	11,000	13,000	6	4	67%
5/30/06	11,000	3,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	5,000	5,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/11/06	7,000	1,700	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
8/1/06	8,000	5,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
9/12/06	50,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	30,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	5,000	dry	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
12/5/06	22,000	dry	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/9/07	5,000	dry	8,000	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/7/07	8,000	230	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/6/07	30,000	NS	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/3/07	2,800	NS	22,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/1/07	8,000	NS	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/5/07	900,000	NS	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/10/07	dry	NS	5,000	NS	NS	NS	NS	NS	NS	dry	1	0	0%
8/7/07	dry	NS	13,000	NS	NS	NS	NS	NS	NS	dry	1	1	100%
9/4/07	dry	NS	130,000	NS	NS	NS	NS	NS	NS	dry	1	1	100%
10/2/07	300,000	NS	17,000	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	17,000	NS	NS	NS	NS	NS	NS	NS	1	1	100%
12/4/07	50,000	NS	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
1/14/08	3,000	NS	80,000	NS	1,100	24,000	NS	800	800	NS	6	2	33%
2/7/08	8,000	NS	13,000	NS	NS	NS	NS	NS	NS	dry	2	1	50%
3/4/08	2,200	NS	2,200	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/8/08	7,000	NS	80,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/13/08	8,000	NS	50,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/17-18/2008	dry	NS	17,000	1,100	1,100	3,000	2,200	2,200	1,700	dry	7	1	14%
7/8/08	dry	NS	23,000	2,400	340	3,500	dry	1,700	16,000	dry	6	2	33%
8/12-8/13/08	dry	NS	80,000	800	3,000	9,000	dry	500	5,000	dry	6	1	17%
9/9-9/10/08	dry	NS	23,000	1,300	dry	9,000	dry	300	16,000	dry	5	2	40%
10/13/08	dry	NS	23,000	NS	dry	3,000	dry	700	1,700	dry	4	1	25%
11/17-11/18/08	dry	NS	5,000	NS	dry	3,000	dry	800	30,000	dry	4	1	25%
12/9-12/10/08	dry	NS	50,000	NS	5,000	230	5,000	800	1,300	dry	6	1	17%
1/13-1/17/09	5,000	NS	70,000	NS	220	170	1,300	220	300	500	8	1	13%
2/23-2/24/09	13,000	NS	70,000	NS	220	300	500	210	700	220	8	1	13%
3/10-3/11/09	50,000	NS	13,000	NS	1,100	500	500	110	300	500	8	1	13%
4/14-/15/09	5,000	NS	23,000	NS	1,700	500	800	230	700	800	8	1	13%
5/12-5/13/09	30,000	NS	30,000	NS	260	5,000	dry	1,300	230	170	7	1	14%
6/9-6/11/09	dry	NS	23,000	NS	230	1,700	dry	300	340	1,300	6	1	17%
7/14-7/15/09	dry	NS	80,000	NS	dry	9,000	dry	500	9,000	dry	4	1	25%
8/10/09	dry	NS	110,000	NS	dry	1,700	dry	220	5,000	dry	4	1	25%
9/22-9/28/09	dry	NS	dry	NS	dry	NS	dry	NS	NS	dry	0	0	NA
10/27/09	dry	NS	dry	NS	dry	9,000	dry	1,300	5,000	dry	3	0	0%
11/17/09	dry	NS	dry	NS	dry	16,000	dry	800	3,000	dry	3	1	33%
12/17/09	8,000	NS	110,000	NS	dry	1,700	dry	1,300	11,000	dry	5	2	40%
1/26/10	5,000	NS	140,000	NS	9,000	9,000	2,400	9,000	2,800	16,000	8	2	25%
2/17-2/18/10	2,300	NS	23,000	NS	1,600	1,600	1,600	NS	NS	NS	5	1	20%
3/15-3/17/10	3,000	NS	23,000	NS	5,000	3,000	3,000	1,700	1,300	800	8	1	13%
5/18-5/19/10	5,000	NS	23,000	NS	1,300	5,000	160,000	1,300	2,300	1,700	8	2	25%
6/8-6/9/10	13,000	NS	30,000	NS	5,000	3,000	dry	800	2,300	dry	6	1	17%
Total # of Samples	**47**	**11**	**39**	**4**	**21**	**29**	**14**	**28**	**28**	**14**	**253**		

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
# Samples Exceeding AB411	**18**	**1**	**35**	**0**	**2**	**4**	**2**	**5**	**8**	**4**		**61**	
% Exceeding AB411	**38%**	**9%**	**90%**	**0%**	**10%**	**14%**	**14%**	**18%**	**29%**	**29%**			**24%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 10,000 MPN/100 mL.
ND – Not Detected; NS – Not Sampled; NA – Not Applicable; dry – the site was dry (no samples collected)

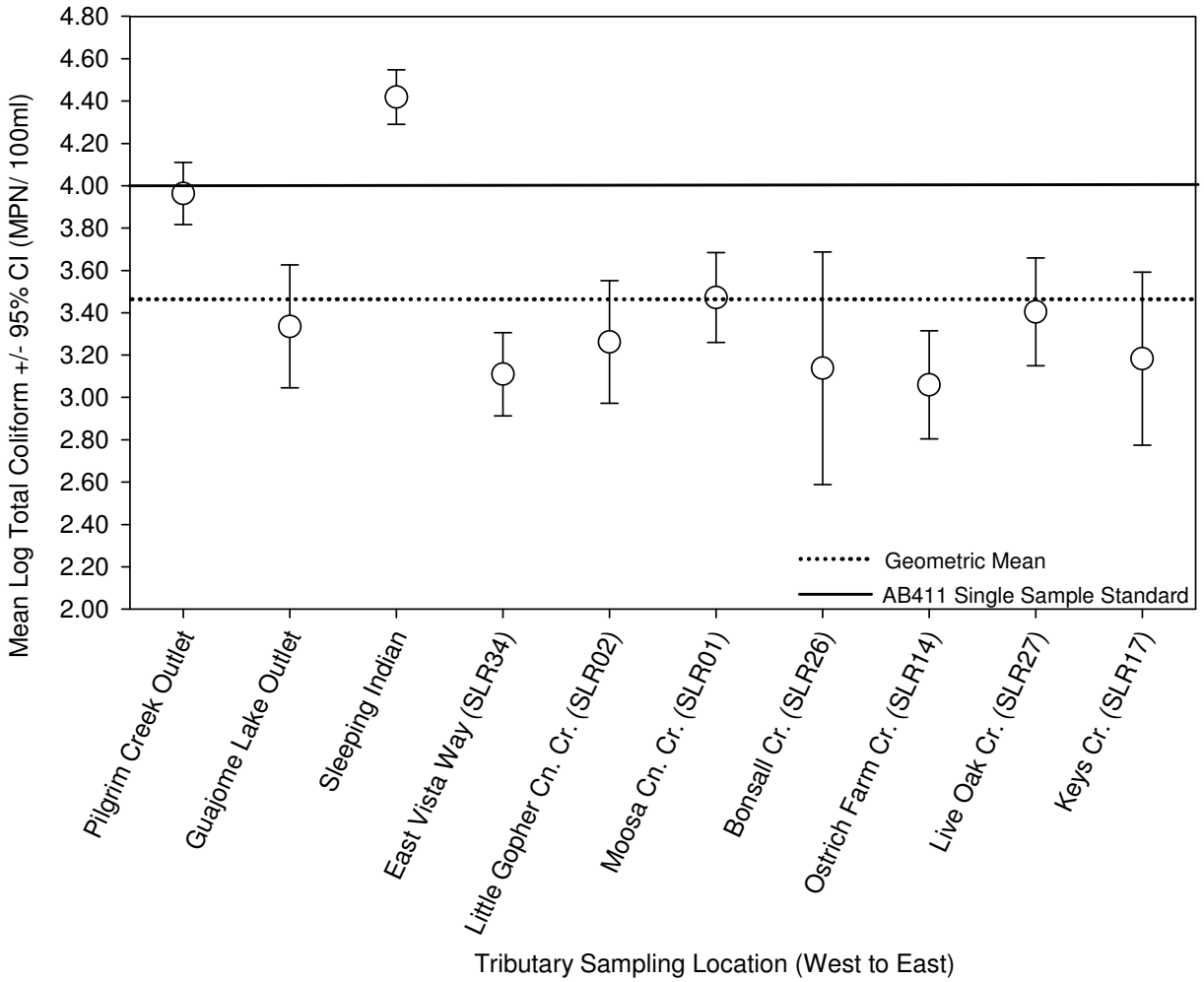

Figure 5: Relative mean concentrations ± 95% confidence intervals of Total Coliform bacteria in San Luis Rey River tributaries.

Fecal Coliform Bacteria in Tributaries

Fecal coliform bacteria samples collected in tributaries to the San Luis Rey River exceeded the State single sample standard of 400 MPN/100ml in 55 out of 248 (22%) samples analyzed (Table 7). For FY 2009/2010, exceedances occurred throughout the sampling period with the highest percentage (100%) recorded in October 2009. The highest percentage of exceedances (68%) and the highest mean concentration occurred at Pilgrim Creek Outlet. With the exception of Pilgrim Creek Outlet, the mean concentrations of fecal coliform in all remaining tributaries were below the AB411 single sample standard (Figure 6).

Table 7: Fecal Coliform Densities (MPN/100 ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	500	20	NS	NS	8	4	ND	2	4	2	8	0	0%
4/14/04	230	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	800	220	dry	20	220	5,000	5	2	40%
9/13/04	dry	dry	NS	NS	8,000	20	dry	20	170	dry	4	1	25%
10/13/04	dry	dry	NS	NS	NS	110	dry	4,050	500	dry	3	2	67%
11/17/04	220	90	NS	NS	110	130	130	75	230	110	8	0	0%
12/15/04	170	170	NS	NS	170	230	80	20	82	90	8	0	0%
1/26/05	500	70	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	130	70	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	800	20	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	500	40	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/3/05	800	dry	NS	NS	300	40	NS	NS	NS	NS	3	0	0%
6/8/05	7,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	11,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	500	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	1,700	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	1,700	dry	NS	NS	8	NS	NS	NS	224	1,024	4	1	25%
1/10/06	700	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	600	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	900	dry	NS	NS	40	5,040	40	40	170	360	7	1	14%
5/30/06	1,100	130	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	5,000	130	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/11/06	3,000	300	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
8/1/06	1,300	800	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
9/12/06	170	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	5,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	300	dry	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
12/5/06	800	dry	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
1/9/07	1,300	dry	500	NS	NS	NS	NS	NS	NS	NS	2	1	50%
2/7/07	2,200	40	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/6/07	700	NS	40	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/3/07	300	NS	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/1/07	300	NS	80	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/5/07	50,000	NS	40	NS	NS	NS	NS	NS	NS	NS	2	0	0%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
7/10/07	dry	NS	130	NS	NS	NS	NS	NS	NS	dry	1	0	0%
8/7/07	dry	NS	140	NS	NS	NS	NS	NS	NS	dry	1	0	0%
9/4/07	dry	NS	260	NS	NS	NS	NS	NS	NS	dry	1	0	0%
10/2/07	23,000	NS	2,200	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	20	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/4/07	3,000	NS	300	NS	NS	NS	NS	NS	NS	NS	2	0	0%
1/14/08	300	NS	20	NS	230	330	NS	140	270	NS	6	0	0%
2/7/08	110	NS	70	NS	NS	NS	NS	NS	NS	dry	2	0	0%
3/4/08	210	NS	20	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/8/08	800	NS	230	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/13/08	2,200	NS	230	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/17-18/2008	dry	NS	1,300	NS	500	2,400	900	80	230	dry	6	4	67%
7/8/08	dry	NS	30	80	40	140	dry	700	9,000	dry	6	2	33%
8/12-8/13/08	dry	NS	80	140	800	600	dry	130	270	dry	6	2	33%
9/9-9/10/08	dry	NS	3,000	300	dry	40	dry	20	1,400	dry	5	2	40%
10/13/08	dry	NS	130	NS	dry	130	dry	130	700	dry	4	1	25%
11/17-11/18/08	dry	NS	130	NS	dry	500	dry	500	500	dry	4	3	75%
12/9-12/10/08	dry	NS	300	NS	5,000	130	800	110	340	dry	6	2	33%
1/13-1/17/09	300	NS	80	NS	130	-99	1,300	80	170	80	8	1	13%
2/23-2/24/09	800	NS	300	NS	220	130	500	20	500	140	8	2	25%
3/10-3/11/09	17,000	NS	500	NS	1,100	170	230	ND	230	40	7	2	29%
4/14-/15/09	230	NS	130	NS	1,100	110	800	20	210	300	8	2	25%
5/12-5/13/09	70	NS	170	NS	40	1,300	dry	340	130	70	7	1	14%
6/9-6/11/09	dry	NS	26	NS	130	1,100	dry	80	220	70	6	1	17%
7/14-7/15/09	dry	NS	402	NS	dry	130	dry	40	1,100	dry	4	2	50%
8/10/09	dry	NS	5,670	NS	dry	130	dry	70	5,000	dry	4	2	50%
9/22-9/28/09	dry	NS	dry	NS	dry	NS	dry	NS	NS	dry	0	0	NA
10/27/09	dry	NS	dry	NS	dry	1,100	dry	800	1,300	dry	3	3	100%
11/17/09	dry	NS	dry	NS	dry	80	dry	80	300	dry	3	0	0%
12/17/09	1,850	NS	1,354	NS	dry	220	dry	110	500	dry	5	2	40%
1/26/10	387	NS	1,733	NS	230	130	40	130	130	300	8	1	13%
2/17-2/18/10	387	NS	980	NS	50	50	300	NS	NS	NS	5	1	20%
3/15-	276	NS	1,414	NS	500	23	300	130	500	170	8	3	38%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/17/10													
5/18-5/19/10	1,553	NS	2,420	NS	500	130	21	80	300	500	8	3	38%
6/8-6/9/10	770	NS	12,997	NS	130	500	dry	23	500	dry	6	3	50%
Total # of Samples	**47**	**11**	**39**	**3**	**21**	**29**	**13**	**26**	**28**	**13**	**248**		
# Samples Exceeding AB411	**32**	**1**	**13**	**0**	**9**	**8**	**5**	**4**	**12**	**3**		**55**	
% Exceeding AB411	**68%**	**9%**	**33%**	**0%**	**43%**	**28%**	**38%**	**15%**	**43%**	**23%**			**22%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 400 MPN/100 mL.
ND – Not Detected; NS – Not Sampled; NA- Not Applicable; dry – the site was dry (no samples collected)

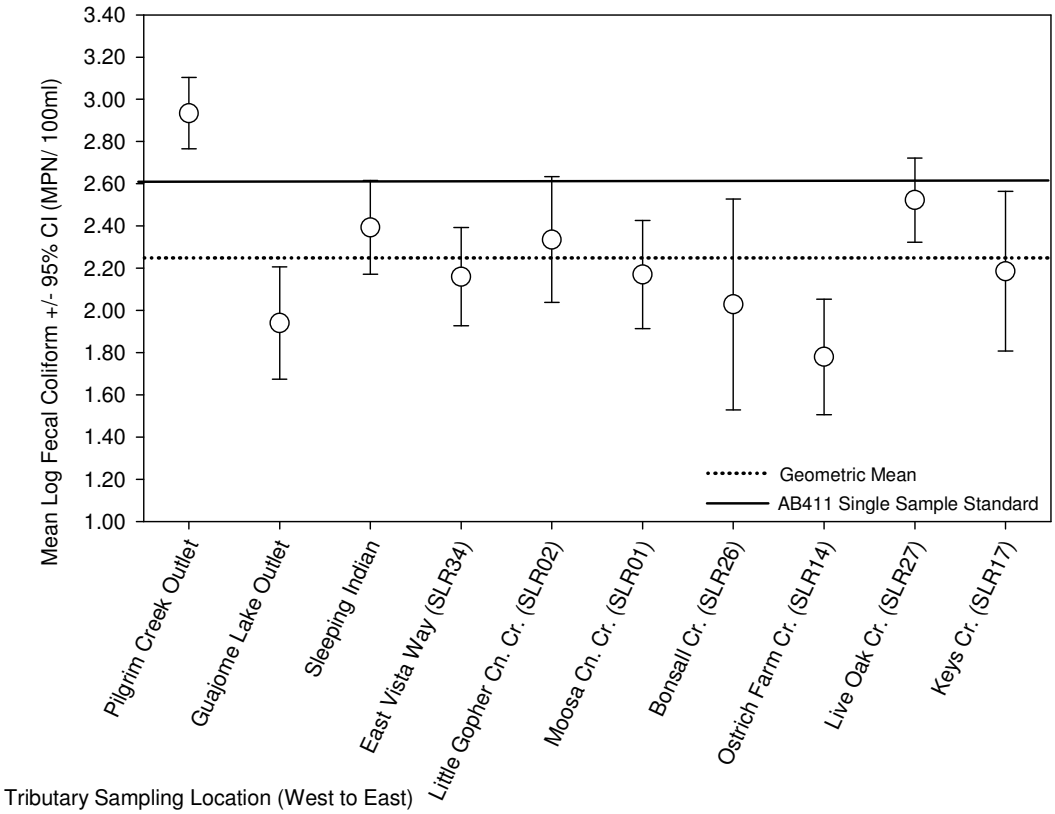

Figure 6: Relative mean concentrations ± 95% confidence intervals of Fecal Coliform bacteria in San Luis Rey River tributaries. Location means with letters in common are not significantly different (α= 0.05).

Enterococcus *Bacteria in Tributaries*

Enterococcus bacteria samples collected in tributaries to the San Luis Rey River exceeded the State single sample standard of 104 MPN/100ml in 151 out of 253 (60%) samples analyzed (Table 8). During FY 2009/ 2010, exceedances occurred throughout the sampling period with the highest percentage (67%) found in October 2009. Of currently sampled locations, Pilgrim Creek Outlet had the highest percentage of exceedances (92%). The highest bacterial density of 5,000 MPN/ 100ml (for FY 2009/ 2010) was measured at Live Oak Creek in August 2009.

The mean bacterial counts in most of the tributaries significantly exceeded the AB411 single sample standard for Enterococcus bacteria (Fig. 7). The exceptions were the Guajome Lake Outlet (not sampled since February 2007), Moosa Canyon Creek, Bonsall Creek (SLRR26), Ostrich Farm Creek (SLR14), and Keys Creek (SLR17).

Table 8: *Enterococcus* Densities (MPN/100ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	336	216	NS	NS	2	4	4	2	2	2	8	1	13%
4/14/04	310	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	700	260	dry	230	80	3,000	5	4	80%
9/13/04	dry	dry	NS	NS	3,500	130	dry	40	800	dry	4	3	75%
10/13/04	dry	dry	NS	NS	dry	110	dry	170	2,300	dry	3	3	100%
11/17/04	160	170	NS	NS	500	170	800	635	110	500	8	7	88%
12/15/04	180	21,100	NS	NS	40	170	230	40	20	40	8	3	38%
1/26/05	350	31	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	410	52	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	10	31	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	200	170	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/3/05	360	dry	NS	NS	500	700	NS	NS	NS	NS	3	2	67%
6/8/05	660	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	760	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	710	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	390	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	1,150	dry	NS	NS	NS	NS	44	844	840	40	5	2	40%
1/10/06	1,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	410	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	260	dry	NS	NS	3,500	270	360	360	230	NS	6	5	83%
5/17/06	NS	dry	NS	NS	NS	NS	NS	NS	70	NS	1	0	0%
5/30/06	140	73	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	200	140	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/11/06	1,060	150	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
8/1/06	1,710	270	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
9/12/06	2,070	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	340	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	240	dry	170	NS	NS	NS	NS	NS	NS	NS	2	1	50%
12/5/06	140	dry	830	NS	NS	NS	NS	NS	NS	NS	2	1	50%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
1/9/07	130	dry	160	NS	NS	NS	NS	NS	NS	NS	2	1	50%
2/7/07	2,550	120	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
3/6/07	1,130	NS	340	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/3/07	150	NS	360	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/1/07	1,000	NS	1,400	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/5/07	18,820	NS	465	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/10/07	dry	NS	119	NS	NS	NS	NS	NS	NS	dry	1	1	100%
8/7/07	dry	NS	490	NS	NS	NS	NS	NS	NS	dry	1	1	100%
9/4/07	dry	NS	191	NS	NS	NS	NS	NS	NS	dry	1	1	100%
10/2/07	18,980	NS	1,200	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	63	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/4/07	720	NS	260	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/14/08	243	NS	73	NS	220	500	NS	500	220	NS	6	4	67%
2/7/08	305	NS	228	NS	NS	NS	NS	NS	NS	dry	2	1	50%
3/4/08	97	NS	221	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/8/08	488	NS	2,400	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/13/08	201	NS	2,187	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/17-18/2008	dry	NS	985	NS	300	500	170	170	300	dry	6	6	100%
7/8/08	dry	NS	3,654	500	300	170	dry	500	800	dry	6	6	100%
8/12-8/13/08	dry	NS	2,723	500	800	300	dry	270	800	dry	6	6	100%
9/9-9/10/08	dry	NS	1,733	230	dry	1,100	dry	80	220	dry	5	4	80%
10/13/08	dry	NS	2,282	NS	dry	300	dry	90	270	dry	4	3	75%
11/17-11/18/08	dry	NS	2,420	NS	dry	1,300	dry	80	50,000	dry	4	3	75%
12/9-12/10/08	dry	NS	959	NS	500	800	2,400	130	300	dry	6	6	100%
1/13-1/17/09	687	NS	1,553	NS	300	40	500	220	80	300	8	5	63%
2/23-2/24/09	1,120	NS	1,733	NS	230	220	300	70	130	230	8	6	75%
3/10-3/11/09	2,143	NS	496	NS	2,200	170	230	80	500	210	8	6	75%
4/14-/15/09	1,300	NS	1,986	NS	270	40	300	110	500	170	8	6	75%
5/12-5/13/09	76	NS	250	NS	220	3,000	dry	300	800	70	7	5	71%
6/9-6/11/09	dry	NS	1,733	NS	300	1,300	dry	230	500	300	6	6	100%
7/14-7/15/09	dry	NS	4	NS	dry	500	dry	40	1,700	dry	4	2	50%
8/10/09	dry	NS	40	NS	dry	300	dry	80	5,000	dry	4	2	50%
9/22-9/28/09	dry	NS	dry	NS	dry	NS	dry	NS	NS	dry	0	0	NA
10/27/09	dry	NS	dry	NS	dry	173	dry	96	135	dry	3	2	67%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
11/17/09	dry	NS	dry	NS	dry	52	dry	20	520	dry	3	1	33%
12/17/09	800	NS	230	NS	dry	96	dry	74	243	dry	5	2	40%
1/26/10	140	NS	170	NS	170	90	90	170	300	210	8	5	63%
2/17-2/18/10	27	NS	300	NS	387	127	172	80	80	86	8	4	50%
3/15-3/17/10	500	NS	500	NS	130	17	130	110	50	50	8	4	50%
5/18-5/19/10	1,700	NS	80	NS	500	30	1,100	30	50	500	8	3	38%
6/8-6/9/10	500	NS	3,000	NS	500	34	dry	30	130	dry	6	3	50%
Total # of Samples	**49**	**12**	**39**	**3**	**23**	**32**	**15**	**32**	**33**	**15**	**253**		
# Samples Exceeding AB411	**45**	**8**	**34**	**3**	**21**	**23**	**12**	**16**	**25**	**9**		**151**	
% Exceeding AB411	**92%**	**67%**	**87%**	**100%**	**91%**	**72%**	**80%**	**50%**	**76%**	**60%**			**60%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 104 MPN/100ml. ND – Not detected; NS – Not Sampled; dry – the site was dry (no samples collected)

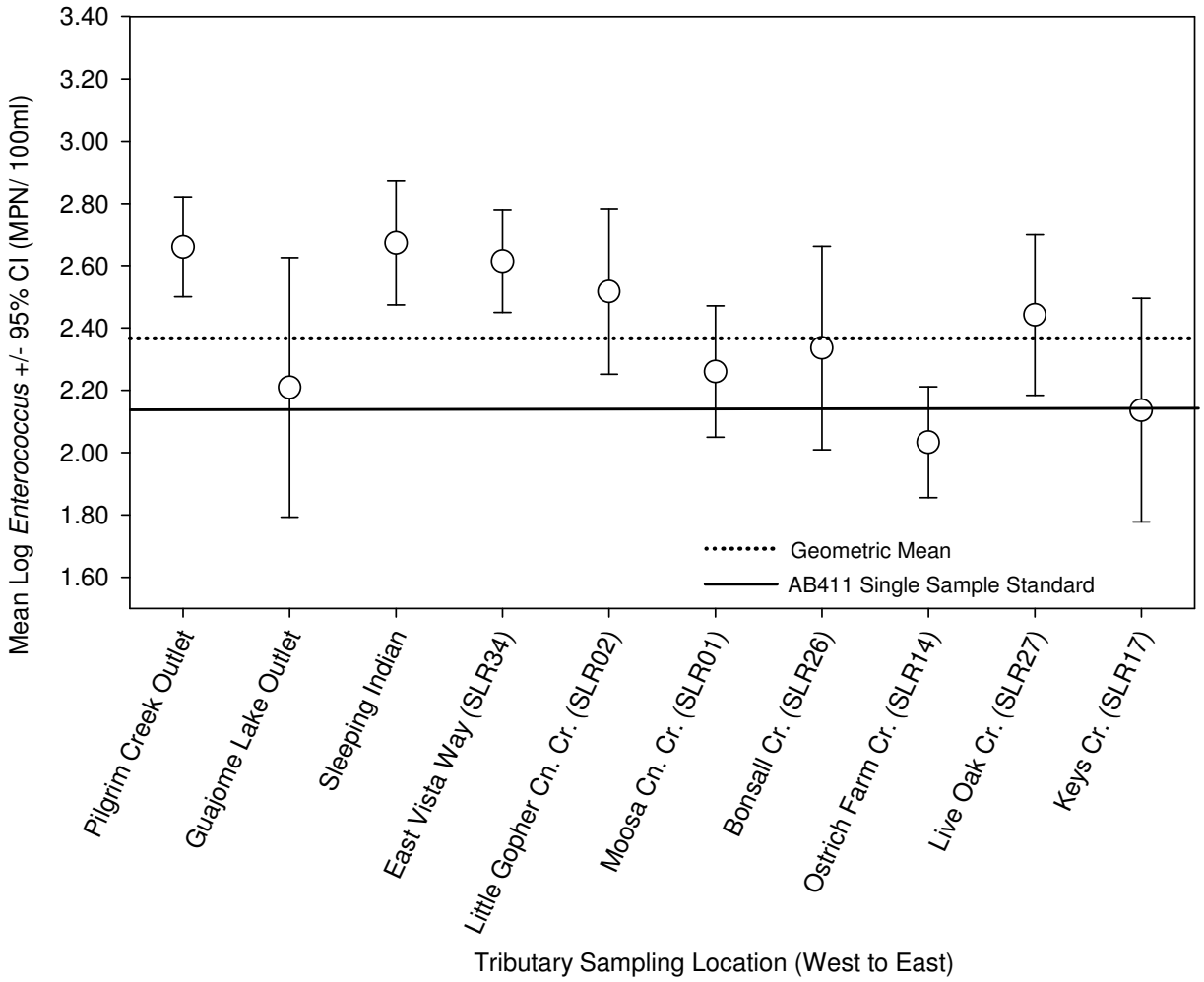

Figure 7: Relative mean concentrations ± 95% confidence intervals of *Enterococcus* bacteria in San Luis Rey River tributaries.

Results of the Correlation Analysis of Bacterial Counts between the River Mouth and the Pacific Shoreline

Tables 3 through 5 list bacterial concentrations as detected in samples collected at Pacific (located at the mouth of the River) and Pacific Mix (located at the shoreline 75 feet south of the river mouth) for total coliform (Table 3), fecal coliform (Table 4) and Enterococcus (Table 5). The results of the correlation analysis between the bacterial concentrations at the mouth of the River and the Pacific shoreline are presented in Table 9. The correlation coefficient (r) gives a measure of the nature and magnitude of each correlation. Positive r values indicate that counts at the two sites increase or decrease together; negative values of r indicate that while counts at one location increase, they decrease at the other; the higher the value of r, the stronger the correlation with a higher percentage of variability in bacterial counts being explained by the sampling location. P-values lower than 0.05 indicate statistically significant correlations.

As indicated by the *r* value of 0.64 the total coliform counts were strongly correlated between the two locations. Moderate correlations were also found for fecal coliform (r = 0.56) and Enterococcus (r = 0.32). All correlations were statistically significant at $\alpha = 0.05$ indicating that at least some of the bacteria in the Pacific Mix may have originated from the SLR River mouth and, conversely, bacteria originating from the Pacific Ocean during incoming tides may have also affected the counts in the River mouth. Because the correlation was strongest for total coliforms, this may be especially true for the total coliform indicator.

Table 9: Results of the correlation analysis of the bacterial concentrations of 45 sample pairs, each collected at the mouth of SLR River and at the Pacific shoreline. The bacterial counts were log-transformed to normalize the data. The correlation coefficients (Pearson's r^2) and their corresponding *p* values are presented.

Total Coliform		Fecal Coliform		*Enterococcus*	
r^2	*P*	R^2	*P*	r^2	*p*
0.64	**<0.001**	**0.56**	**<0.001**	**0.32**	**0.008**

Summary of Results and Discussion

Generally, sampling locations with the greatest frequency of AB411 single sample standard exceedances also had the highest overall mean bacterial concentrations. Also, in the main stem of the River, one location (Douglas) had the highest mean concentration and frequency of exceedances for all measured bacterial indicator species. In the future, special focus should be placed on Douglas as well as the tributaries with the highest rate of exceedances and the highest mean concentrations of indicator bacteria. These locations should be considered for prioritization in any special investigations of the sources of bacteria. Furthermore, it is suggested that flow be measured as accurately as possible by both jurisdictions in order to estimate bacterial loadings to the River from the tributaries.

Throughout the study period (March 2004 through June 2010) Enterococci exceeded the State single sample standard more often than total coliform and fecal coliform in both the San Luis Rey River and at tributary mouths (Tables 3 through 8). Similarly, while the mean concentrations of total coliform and fecal coliform indicators remained below their corresponding AB411 single sample standards (Figures 2,3,5 and 6), the overall mean concentration of Enterococcus in the San Luis Rey River and tributary locations studied generally exceeded that standard (Figures 4 and 7).

The mean indicator bacteria concentrations as well as percent exceedances varied quite widely between the samples collected from Bonsall Bridge by the County and those taken by the City. This variability may be due to patchy distribution of bacteria (microplumes) in the River occurring on both spatial and temporal scales. Variability due to the possible patchy temporal distribution of bacteria could be minimized if the sampling at Bonsall Bridge by the two jurisdictions was conducted within the same time interval. Up to this point, the City samples are being collected in the morning while the County's are taken in the early afternoon or, sometimes, the next day.

The design of the current study does not address, in detail, the confounding factors of differing bacteria decay and re-growth rates or the possible influence of local bird populations on fecal

indicator bacteria concentrations in the water. As mentioned above, single grab samples were employed in the current study, the results may have been affected by short-term localized changes in bacterial counts that may not always have been representative. As an example, Douglas, the site with the highest percent exceedances, during the dry season does not have any upstream influence and is usually ponded or slightly flowing with shallow groundwater seepage. In addition, visual observations between Douglas and the next upstream site have not identified any contributing storm drains or other point sources. Other potential sources may need to be investigated.

The significantly lower mean concentrations of Enterococcus and total coliform bacteria at Pacific as compared to the other main stem river sites may be attributed to the site's location at the mouth of San Luis Rey River. The River mouth is an estuarine environment influenced by the Pacific Ocean (as indicated by high chloride concentration and high conductivity; Attachment E) and the survival rates of indicator bacteria are lower in salt water as opposed to fresh water environments (Anderson et.al., 2005 and Lisle et. al., 2004). With respect to the correlated bacterial counts from the River mouth and the shoreline nearby, it is possible that at least some of the bacteria in the Pacific Mix Zone may have originated from the River. Alternatively, bacteria originating from the Pacific Ocean during incoming tides may have also affected the counts at the River mouth.

In general, the source of bacteria at the mouth of the San Luis Rey River remains undetermined. It is likely that the contamination at the shoreline does not originate from the River and/or its tributaries but from local sources such as shorebird feces, etc. This, however, must be investigated further and is one component to the City bacteria source tracking study being implemented with grant funds from Proposition 50.

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Lisle, J.T., J.J. Smith, D.D. Edwards and G.A. McFeters. 2004. Occurrence of Microbial Indicators and *Clostridium perfringens* in Wastewater, Water Column Samples, Sediments, Drinking Water, and Weddell Seal Feces Collected at McMurdo Station, Antarctica. Applied Environmental Microbiology. 70(12): 7269–7276.

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ATTACHMENT C TO SLR-001

SAN LUIS REY WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY 2009-10 SLR WURMP Annual Report

Total Dissolved Solids and Chloride Study In the San Luis Rey River and its Tributaries

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Introduction

In 2002, the lower 19 miles of the San Luis Rey River were added to the State Water Resources Control Board (SWRCB) Section (§)303(d) list of impaired waterbodies for TDS and chloride and they remain on the 2006 303(d) list and the 2010 303(d) list that was partially approved by the USEPA on November 18, 2010. The water quality objectives for TDS and chloride are based on the beneficial uses for the San Luis Rey River assigned in the Water Quality Control Plan (Basin Plan, RWQCB, 1994). The Basin Plan objectives for TDS and chloride are 500 mg/L and 250 mg/L, respectively.

The San Luis Rey River WUMRP group initiated a monitoring program in March 2004. The purpose of the program was to determine which areas along main stem of San Luis Rey River and its tributaries exhibit the highest concentrations of TDS and chloride.
From March 2004 through June 2010, the City of Oceanside and the County of San Diego collected surface water samples in the San Luis Rey River and its tributaries and analyzed them for TDS and chloride as well as several other constituents. The results of the study are presented below.

Total dissolved solids (TDS) are comprised of inorganic salts and small amounts of organic matter that are dissolved in water. The principal constituents are usually the cations calcium, magnesium, sodium, and potassium, and the anions carbonate, bicarbonate, chloride, sulphate, and, particularly in groundwater, nitrates and phosphates (from agricultural use). TDS in water supplies may originate from natural sources such as weathering rocks and soils, leaves, silt and plankton. Other sources of TDS include point sources such as industrial wastewater and sewage as well as the urban and agricultural runoff. Chlorides are a component of TDS; they are salts composed of the chlorine gas and a metal molecule. The common chlorides include sodium chloride and magnesium chloride. While moderate concentrations of chlorides are essential to life, excessive amounts are toxic to plant and animal life. The sources of chlorides can be natural and man-made. The man-made sources include point sources such as industrial wastewater and sewage as well as the urban and agricultural runoff.

Hydrologic Setting

The San Luis Rey River originates mainly in the Palomar and Hot Springs Mountains. In 1922, Henshaw Dam was built and Lake Henshaw was formed at the base of Palomar Mountain. No imported water is released directly into the lake and TDS and chloride concentrations in the lake fall below Basin Plan standards. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a drinking water reservoir. Downstream of Lake Henshaw, water from the main channel of the River is diverted into the man-made Escondido Canal, seven miles below the dam. Nearly all non-storm flows are diverted from that section of SLR River into the canal, typically leaving the River dry below the diversion. The flow in the remainder of SLR River is intermittent through Pauma and Pala. The River is perennial through Oceanside, although it flows underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and Palomar Mountain receives about 45 inches/yr. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically

provides 85 to 90 percent of the annual average rainfall in the coastal areas. The River is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the River bed and form perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

From March 2004 through June 2010, 18 locations (Figure 1) were sampled: seven by the City of Oceanside and 12 by the County of San Diego (Table 1). Both agencies collected samples on the same days or within one or two days of one another. Seven sampling sites were located along the San Luis Rey River and 11 in the River's tributaries. One site along the River's main stem, Bonsall Bridge (SLR16), was sampled by both agencies for quality control.

Both the City of Oceanside and the County of San Diego took in-situ field measurements for pH, temperature, electrical conductivity, dissolved oxygen, and turbidity. A hand-held flow meter or the floating object technique was used to estimate flow. Instantaneous flow rate was also estimated at each sampling location by multiplying averaged results of three instantaneous current velocity measurements by approximate channel width and depth. The County of San Diego personnel conducted flow measurements whenever water quality samples were collected throughout the study period. Throughout the City of Oceanside, flow in the San Luis Ray River is intermittent during summer and extensive (unwadable) during winter thus difficult to measure. Due to those difficulties, flow measurements were attempted but not recorded by the City of Oceanside personnel prior to July 2007. The City then began recording tributary flow measurements and continues to work to collect more accurate main stem flow data.

On each sampling occasion a grab sample was also collected at each site and sent to an analytical laboratory to test for total dissolved solids (TDS), total suspended solids (TSS), alkalinity, chloride, magnesium, manganese, total iron, sulfate, potassium, sodium, calcium and hardness. The County also analyzed grab samples for fluoride and boron. The methods used for the in-situ measurements and the laboratory analysis are presented in Table 2. All samples were collected during non-storm flow conditions; i.e. at least 72 hours following any rain event with precipitation greater or equal to 0.10 inches.

For samples where TDS was not measured directly, electrical conductivity was used as an indirect measure for TDS. The average ratio of electrical conductivity to direct measured TDS is 0.68. Therefore, the electrical conductivity measurements were multiplied by 0.68(*1000) to calculate TDS.

Analysis of Data

The means and 95% confidence intervals were calculated for the TDS and chloride concentrations and they were plotted for the tributaries and main stem sites separately (Figure 2). This was done to look for any differences among sites and to compare them to the overall mean concentrations and Basin Plan objectives.

In order to determine which constituents may contribute to the TDS concentrations, and to what extent, the Pearson product-moment correlation coefficient (r) was calculated between all soluble constituents measured (including chloride) and TDS (SPSS Inc., 2003). The Pearson product-moment correlation coefficient is a measure of the tendency of two variables to increase or decrease together. The coefficient ranges from −1 to 1. When $r = 1$, the two variables are 100% correlated as one increases together with the other. When $r = -1$ shows, there is a 100% negative correlation where the value of one variable decreases as the value of the other increases. Values of r that fall between 1 and -1 indicate the extent of the positive or negative relationship and $r = 0$ is equivalent to no linear relationship between the two variables. In the present report, the higher the value of r, the greater the association of a given constituent concentration with TDS concentration ($p < 0.05$[1]) (SPSS Inc., 2003). The results of the Pearson product-moment correlation analysis are presented in Table 3.

[1] p value indicates the probability that an observed result (here: correlation coefficient or r) occurred by chance alone. A result is conventionally regarded as 'statistically significant' if the likelihood that it is due to chance alone is less than five times out of 100 ($p < 0.05$).

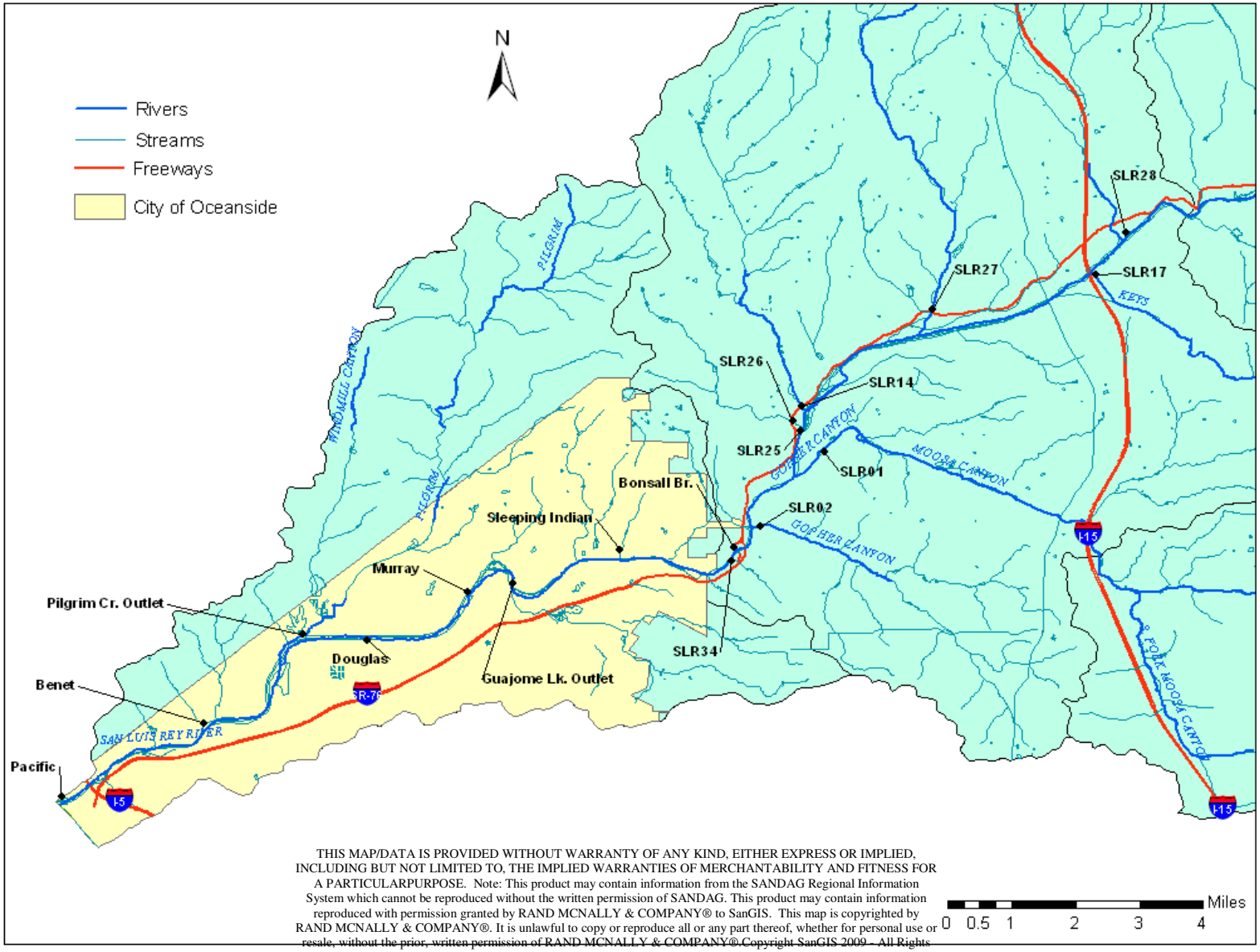

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Figure 1. Sample site locations.

Table 1: Sample Site Identification and Locations

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	SLR River at USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	SLR River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	Tributary to north side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	SLR River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	Tributary to north side of SLR River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall Bridge	SLR River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Bonsall Bridge (SLR16)	SLR River under the Bonsall Bridge	33.26042	-117.23833
Olive Hill (SLR25)	SLR River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	SLR River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek tributary at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek tributary at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek tributary at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek tributary at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek tributary at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek tributary at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek tributary	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek tributary	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to SLR River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Table 2: Water Quality Parameters and Methods for San Luis Rey River

Measured Parameter	*City of Oceanside Methods*	*County of San Diego Methods*
Flow	Estimated, Global Flow Probe	Flow Probe FP101
pH	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Temperature	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Conductivity	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Dissolved Oxygen	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Turbidity	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Total Dissolved Solids	SM 2540 C	EPA 160.1; SM 2540 C
Total Suspended Solids	SM 2540 D	EPA 160.2; SM 2540 D
Bicarbonate Alkalinity	SM 2320 B	EPA 310.1, SM 2320 B
Carbonate Alkalinity	NM	EPA 310.1, SM 2320 B
Hydroxide, Alkalinity	NM	SM 2320 B
Total Alkalinity	SM 2320 B	SM 2320 B
Chloride	EPA 300.0	EPA 300.0
Magnesium	EPA 200.7	EPA 200.7; EPA 200.8m; EPA 6010
Manganese	EPA 200.7	EPA 200.7; EPA 6010
Iron, Total	EPA 6010	EPA 200.7; EPA 200.8m; EPA 6010
Sulfate	EPA 300.0	EPA 300.0; SM4500 SO4 E
Potassium	EPA 200.7	EPA 200.7; EPA 200.8m; EPA 6010
Sodium	EPA 200.7	EPA 200.7; EPA 200.8m; EPA 6010
Calcium	EPA 200.7	EPA 200.7
Hardness	EPA 130.2	EPA 130.2; SM 2340 B
Boron, Total	NM	EPA 200.8; EPA 200.7
Fluoride	NM	EPA 300.0; SM 4500 F C

NM – Not Measured

Results and Discussion

All data collected during FY 2009/2010 are listed in Attachment E. The mean TDS and chloride concentrations +/- 95% confidence intervals as measured along the main stem of and tributaries to the San Luis Rey River are presented in Figure 2. Table 3 presents the results (Pearson's *r*) of the correlation analysis between TDS and other mineral constituents including chloride.

Generally, the results of this study were not significantly altered by the addition of FY 2009/2010 data. The mean TDS concentrations exceeded the Basin Plan objective of 500 mg/L both along the main stem of San Luis Rey River and in its tributaries by approximately three-fold (Figs. 3A and C). With the exception of Shearer Crossing and East Vista Way sampling locations, the chloride Basin Plan objective of 250 mg/L was also exceeded (Fig. 3B and D).

A.

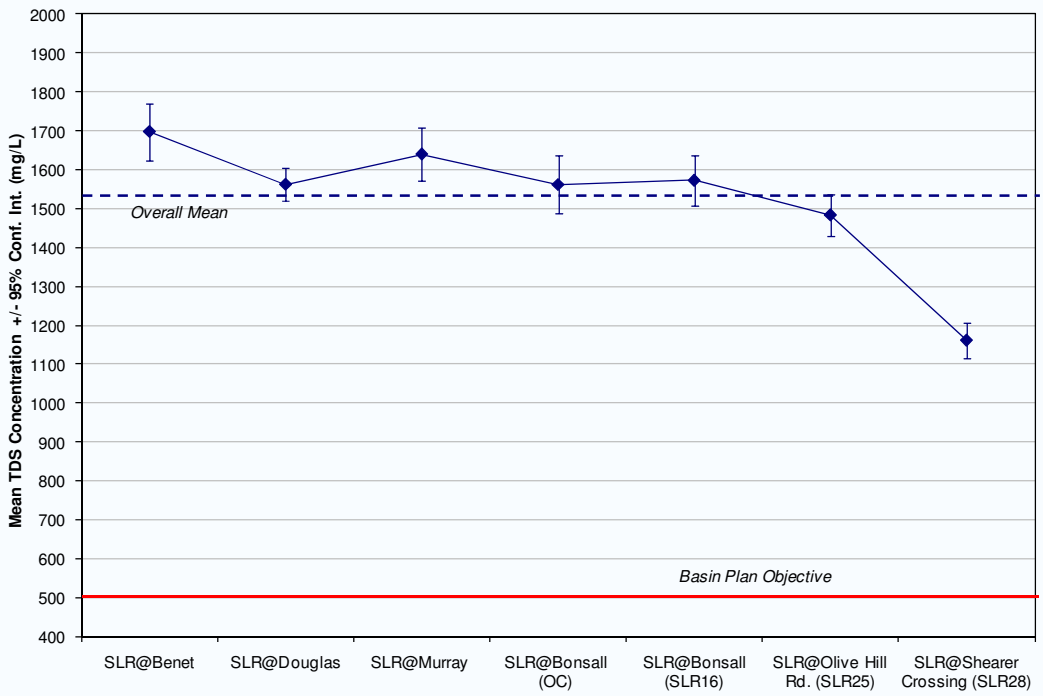
Mean TDS Concentration +/- 95% Conf. Int. (mg/L)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
Overall Mean
Basin Plan Objective
SLR@Benet
SLR@Douglas
SLR@Murray
SLR@Bonsall (OC)
SLR@Bonsall (SLR16)
SLR@Olive Hill Rd. (SLR25)
SLR@Shearer Crossing (SLR28)

B.

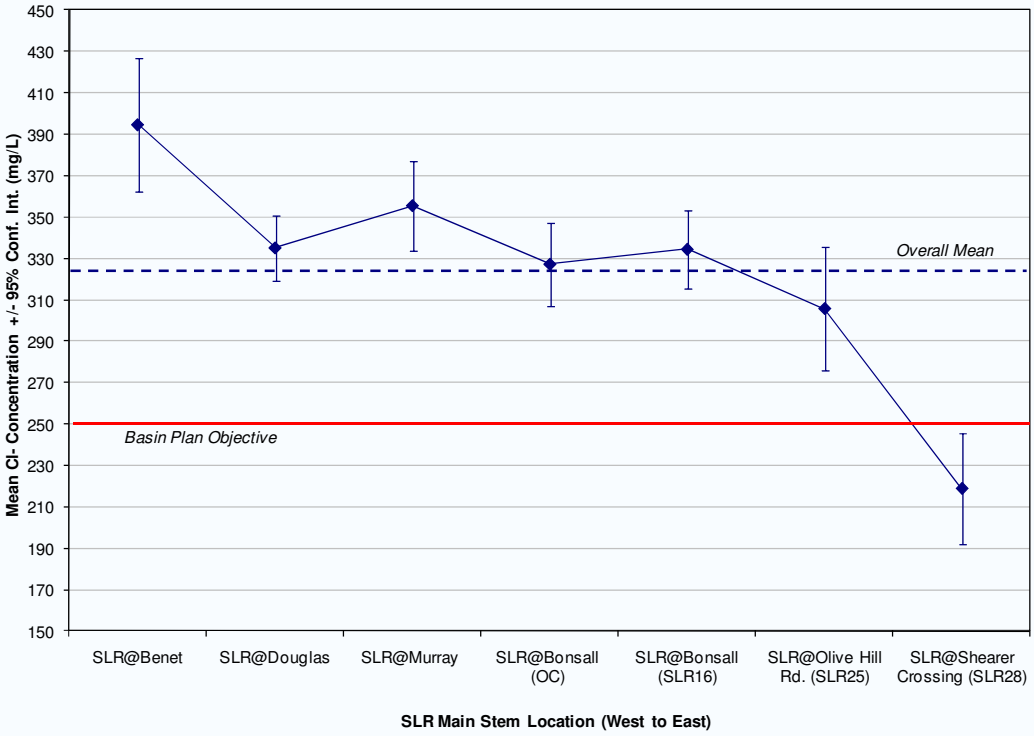
Mean Cl- Concentration +/- 95% Conf. Int. (mg/L)
450
430
410
390
370
350
330
310
290
270
250
230
210
190
170
150
Overall Mean
Basin Plan Objective
SLR@Benet
SLR@Douglas
SLR@Murray
SLR@Bonsall (OC)
SLR@Bonsall (SLR16)
SLR@Olive Hill Rd. (SLR25)
SLR@Shearer Crossing (SLR28)
SLR Main Stem Location (West to East)

C.

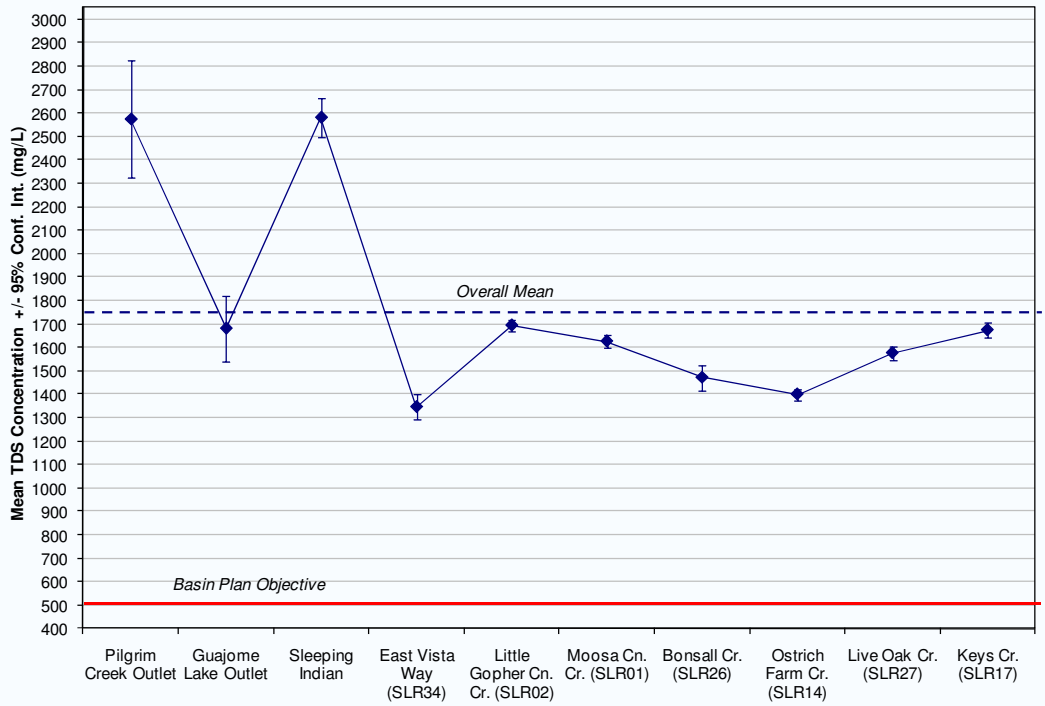

D.

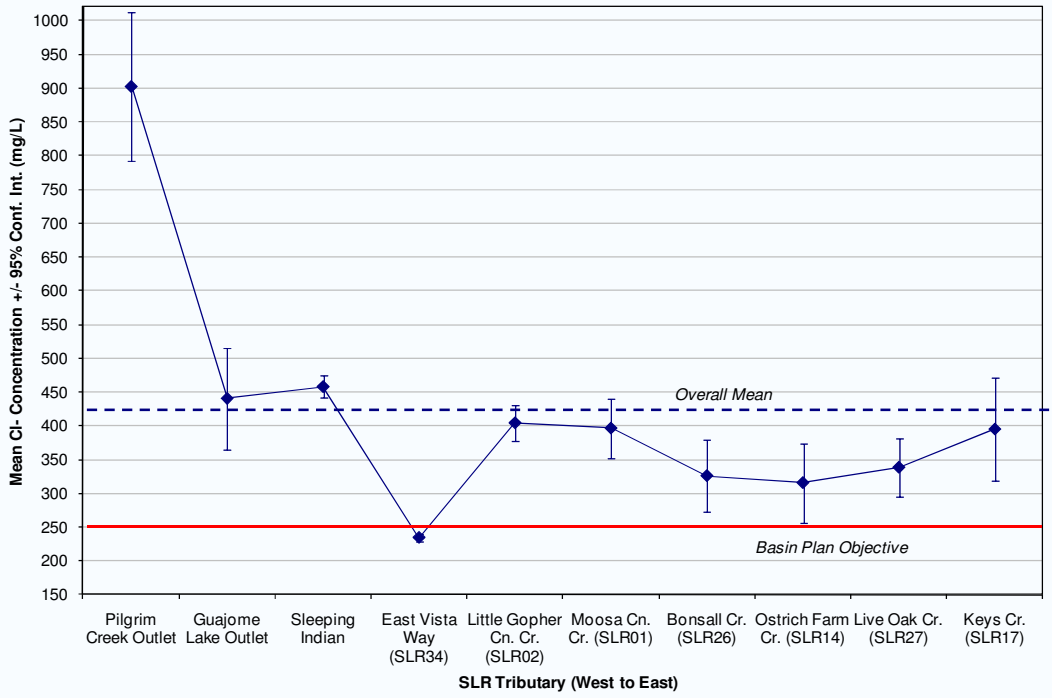

Figure 2: Mean concentrations +/- 95% confidence intervals of TDS (A and C) and chloride (B and D) at sampling sites along the main stem of (A and B) and tributaries (C and D) to the San Luis Rey River.

Table 3: Results of the correlation analysis between TDS and other mineral constituents. Pearson's *r* values are presented for each site and mineral constituent as it was correlated to TDS. Statistically significant *r* values are outlined in bold. Results significant at $p < 0.05$ are marked with single asterisks (*). Double asterisks (**) indicate results that are significant at $p < 0.01$. Tests were not performed when $n<5$.

Site	Cl-	Mg	SO4	K	Na	Ca	Mn	Fe tot	B tot	Fl	Carbonate Alkalinity	Bicarbonate Alkalinity
SLR @ Pacific St. Crossing	**.69(**)**	**.72(**)**	**.57(**)**	**.78(**)**	**.94(**)**	**.59(*)**	.20	.39				
SLR @ Benet Bridge	**.91(**)**	**.70(**)**	**.59(**)**	-.16	**.64(*)**	**.72(**)**	**.65(**)**	-.29				
SLR @ Douglas Bridge	**.70(**)**	**.56(**)**	**.53(**)**	-.34	**.63(*)**	**.59(*)**	.01	.11				
SLR @ Murray Bridge	**.77(**)**	**.79(**)**	**.72(**)**	**.77(**)**	**.98(**)**	**.97(**)**	-.16	-.04				
SLR @ Bonsall Bridge - OC	**.91(**)**	**.88(**)**	**.46(**)**	.18	.46	**.82(**)**	.36	-.25				.75
SLR @ Bonsall Bridge (SLR16)	**.64(**)**	**.30(*)**	**.94(**)**	.04	.38	**.44(*)**	**-.39(*)**	-.29	**-.65(*)**	-.34	**.78(**)**	.40
SLR @ Olive Hill Rd. (SLR25)	**.66(*)**	**.86(**)**	**.77(**)**	.26	**.44(*)**	**.60(**)**	-.35	**-0.58(**)**	**-.87(**)**	**-.79(**)**	**.62(*)**	**.62(**)**
SLR @ Shearer Crossing (SLR28)	0.47	**.65(*)**	0.37	-.29	.16	.29		.00	.02	**.70(*)**	.72	.14
Pilgrim Creek Outlet	**.83(**)**	**.91(**)**	**.86(**)**	.49	**.97(**)**	**.60(*)**	-.25	-.47				
Guajome Lake Outlet	**.71(*)**	.54					.37					
Sleeping Indian	**.60(**)**	**0.44(*)**	**0.41(*)**	**.75(**)**	.37	**.75(**)**	-.16	-.03				
Little Gopher Canyon Creek (SLR02)	.15	**0.51(*)**	0.31	-.09	.30	.31	-.73	-.06	.49	-.32	.28	.08
Moosa Canyon Creek (SLR01)	.30	**0.46(*)**	0.11	-.05	.21	.20	-.05	.26	.34	.43	.18	-.11
Bonsall Creek (SLR26)	.29	**.78(**)**	**0.55(*)**	.13	**.63(*)**	**.71(**)**	.87	-.23	-.27	.31	-.14	.41
Ostrich Farm Creek (SLR14)	**.40(*)**	.30	**.69(**)**	.17	.17	.22	.17	.36	**.64(*)**	.15	-.02	-.22
Live Oak Creek (SLR27)	**.84(**)**	.05	.20	**.71(**)**	-.13	-.18	-.33	.15	.20	.45	.11	.09
Keys Creek (SLR17)	.17	**0.66(**)**	**.78(**)**	-.19	**.71(**)**	**.69(**)**	**.78(*)**	-.38	-.19	-.18	-.70	-.24

Along the main stem of the River, the easternmost location, Shearer Crossing had the lowest mean concentration of TDS and chloride and the westernmost location, Benet Br. had the highest (Fig. 3A and B). For the tributaries, Pilgrim Creek Outlet had TDS and chloride concentrations that were significantly higher than the remaining tributaries and the main stem sampling sites (Fig. 3C and D). Sleeping Indian, not sampled before FY 2006/2007, also had an equally high mean TDS concentration but the mean chloride concentration at the Sleeping Indian tributary was not significantly different from all other tributaries further upstream. This is most likely because TDS concentration at Pilgrim Creek was most highly correlated with sodium, magnesium, sulfide and chloride while TDS at Sleeping Indian was most highly correlated with calcium and potassium (Table 3). The mineral composition of TDS at Pilgrim Creek renders that tributary characteristically different from the remaining ones. This point is further illustrated in Appendix C to SLR-001 of the 2007-2008 WURMP report (WURMP, 2008). Appendix C also contains an analysis and discussion regarding the relationship of the ionic composition of water samples collected from the different sampling locations to that in the ground water basins directly below.

Generally, it may be concluded that the mean concentrations of both TDS and chloride in the San Luis Rey River tend to increase from east to west and mostly exceed the surface water Basin Plan objectives. Those mean concentrations are very similar to the mean groundwater concentrations which indicate that groundwater is influencing water quality in the main stem of the River and its tributaries (WURMP, 2008). The exceptions are Pilgrim Creek tributary (for TDS and chloride) and Sleeping Indian tributary (for TDS).

The San Luis Rey River flows through an alluvial valley that contains unconfined groundwater and there is a considerable interchange between surface flow and groundwater flow within the valley. According to NBS/Lowry (1995), the surface infiltration of river flow can exceed 30 cfs during periods of significant runoff. Conversely, surfacing groundwater can contribute several cfs to surface flows during the dry season. Therefore, the shallow groundwater and surface waters of the alluvial San Luis Rey River valley are considered one hydrogeologic system. As shown in Figure 5, groundwater quality in the San Luis Rey River continually degrades from the mountains towards the coastline. The areas that contain TDS concentration below 500 mg/L are restricted to upper reaches of the watershed in areas where there is minimal use of irrigation water. The TDS in shallow aquifers near the coast are typically above 1500 mg/L as a result of saltwater incursion and salt loads due to imported water use. This pattern is mirrored by the results of the present study.

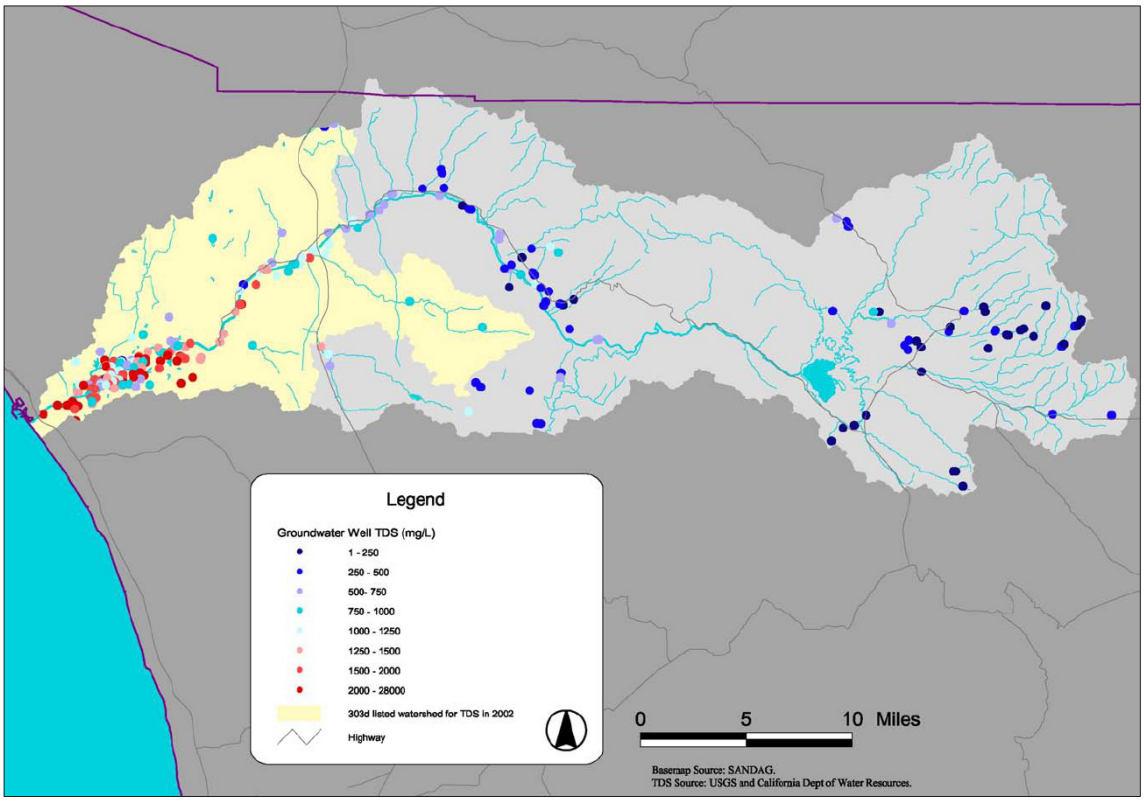

Figure 5: Variation in TDS concentration in shallow groundwater wells throughout the San Luis River watershed (adopted from the 2003 WURMP Report, PBS and J, 2003).

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ATTACHMENT D TO SLR-001

SAN LUIS REY WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY 2009-10 SLR WURMP Annual Report

Nutrient Joint Monitoring Study In the San Luis Rey River and its Tributaries

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Introduction

The lower 19 miles of the San Luis Rey (SLR) River are listed for total nitrogen and phosphorus on the 2008 California State Water Resources Control Board (SWRCB) Clean Water Act Section 303(d) List of Water Quality Limited Segments that was partially approved by the USEPA on November 18, 2010. Furthermore, the upper SLR River is also listed for total nitrogen on the 2008 303(d) list. The water quality objectives are narrative and based on the requirement that water bodies shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses. According to the Water Quality Control Plan for the San Diego Region (Basin Plan), a desired goal to prevent plant nuisance in streams and other flowing waters is 0.1 mg/L total P. This value is not to be exceeded more than 10% of the time unless studies of the specific water body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1, on a weight to weight basis shall be used (RWQCB, 1994).

Nitrogen and phosphorus-containing compounds in streams may originate from agricultural sources where the excess of nutrients from fertilizers leach out of the soil and is transported into the river and its tributaries in surface runoff and subsurface discharges. Other sources of nutrients include failed septic tanks, urban runoff and wastewater/ sewage spills. Much of the San Luis Rey River dry weather flow (or base flow) during the summer months originates from groundwater seeps and springs in the river bed. Those seeps and springs may also have elevated nutrient levels.

The San Luis Rey River WUMRP group initiated a nutrient monitoring program in March 2004. The purpose of the program is to address the following questions:

1) Which areas along main stem of San Luis Rey River and its tributaries exhibit the highest concentrations of nutrients?
2) What are the possible sources of those high concentrations?
3) What are the possible solutions to addressing the high nutrient concentrations?

From March 2004 through June 2010, the City of Oceanside (City) and the County of San Diego (County) collected surface water samples in the San Luis Rey River and its tributaries and analyzed them for ammonia-N, nitrate-N and orthophosphate-P using field test kits. Some grab samples were also analyzed in the laboratory for ammonia-N, nitrate-N, nitrite-N, total Kjeldahl nitrogen (TKN), orthophosphate-P and total phosphorus (Table 2). The results of the study are presented below.

Hydrologic Setting

The San Luis Rey River originates mainly in the Palomar and Hot Springs Mountains. In 1922, Henshaw Dam was built and Lake Henshaw was formed at the base of Palomar Mountain. No imported water is released directly into the lake and TDS and chloride concentrations in the lake fall below Basin Plan standards. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a source of drinking water. Seven miles downstream of the Lake Henshaw dam, water from the main channel of the River is diverted into the man-made Escondido Canal. Nearly all non-storm flows are diverted from that section of the SLR River into the canal, which discharges to Lake Wohlford in the Carlsbad Watershed. The flow in the remainder of SLR River is intermittent through Pauma and Pala. The River is perennial through Oceanside, although it flows underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and about 45 inches/yr at Palomar Mountain. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The River is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the river bed and support perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

Water Quality Sampling

From March 2004 through June 2010, 18 locations (Figure 1) were sampled: seven by the City and 12 by the County (Table 1). Both agencies collected samples on the same days or within one or two days of one another. Seven sampling sites were located along the San Luis Rey River and 11 in the mouths of the River's tributaries. One site along the River's main stem, Bonsall Bridge (SLR16), was sampled by both agencies for quality control.

Both the City and the County conducted in-situ testing for dissolved oxygen. On each sampling occasion, a hand-held flow meter or the floating object technique was used to measure current velocity that was then multiplied by the approximate channel width and depth to estimate instantaneous flow rate. County conducted the instantaneous flow measurements whenever water quality samples were collected throughout the study period. Throughout the City, flow in the SLR River is intermittent during summer and extensive (unwadable) during winter. Due to these factors, flow measurements were attempted but not recorded by City personnel prior to July 2007. The City then began recording instantaneous flow rates in the tributaries and continues to work to collect more accurate main stem flow data.

Prior to 2005, field test kits were employed to collect most of the nutrient data by both the County and the City. Prior to October 2009, the City used field test kits exclusively while the County supplemented field test kit results with analytical laboratory testing. After October 2008,

the County discontinued all field test kit testing in favor of laboratory analysis. The City initiated the same process in October 2009. Because field test kit results supplied only estimated data with respect to concentrations of nitrate-N, ammonia-N and orthophosphate-P, total nitrogen and total phosphorus concentrations are not available for sampling dates when field test kits were employed. Because, prior to November 2008, the County analyzed laboratory samples periodically for total phosphorus, orthophosphate-P, nitrate-N and ammonia-N only, total nitrogen concentration data are not available for the subset of samples collected from September 2006 through October 2008.

The methods used for the in-situ dissolved oxygen measurements, field test kits, and the analytical laboratory analysis are presented in Table 2. All samples were collected during dry weather, which was defined as at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches.

Analysis of Data

For the purpose of data analysis, all non-detect values were assigned one half of the method detection limit. To calculate the means and standard deviations, field test kit and analytical data for ammonia-N, nitrate-N and orthophosphate-P were combined. The mean nitrate-N, orthophosphate-P and ammonia-N concentrations and their 95% confidence intervals were then compared among the SLR River main stem sites and tributary locations using bar graphs.

Summary statistics (mean, instantaneous loadings (mg/s), and flux (mg/s/acre)) were also calculated for the tributaries, using tributary drainage areas (in acres) and estimated flows where available. Mean instantaneous loads were calculated by identifying each month's instantaneous load and then calculating the mean dry weather load for the entire sampling period (2004 through June 2010). Flux was calculated by dividing instantaneous loads by the area of the drainage corresponding to each sampling location.

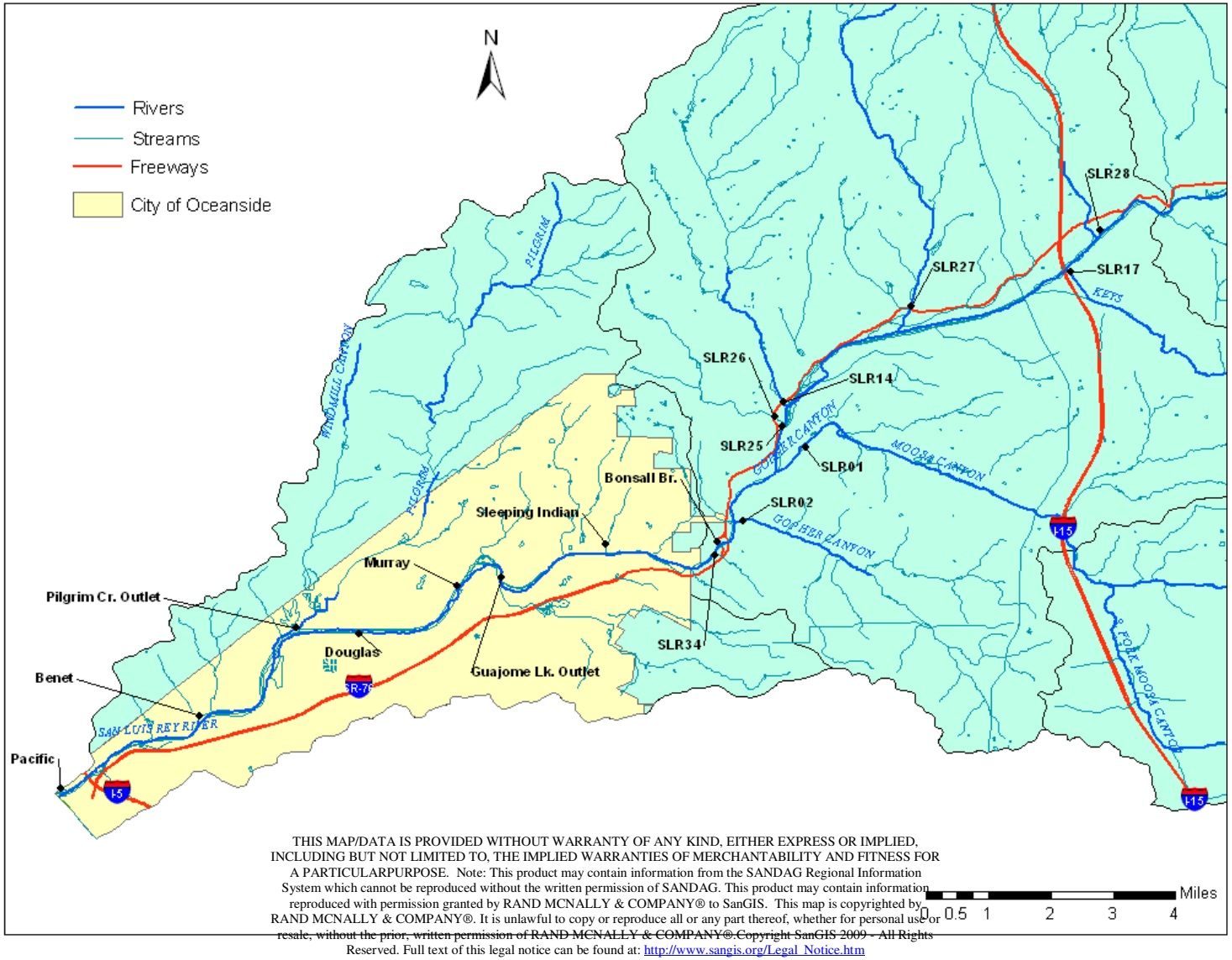

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Figure 1. Sample site locations.

Table 1: Sample Site Identification and Locations

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	SLR River at USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	SLR River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	Tributary to north side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	SLR River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	Tributary to north side of SLR River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall	SLR River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Bonsall (SLR16)	SLR River under the Bonsall Bridge	33.26042	-117.23833
Olive Hill (SLR25)	SLR River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	SLR River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek tributary at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek tributary at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek tributary at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek tributary at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek tributary at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek tributary at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek tributary	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek tributary	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to SLR River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Table 2: Water Quality Parameters and Methods for San Luis Rey River

Measured Parameter	*City of Oceanside*		*County of San Diego*	
	Method	*RL/ MDL*	*Method*	*RL/ MDL*
Flow	Estimated, Global Flow Probe		Flow Probe FP101	0.01 cfs
Dissolved Oxygen	In-situ, Hydrolab Quanta	1 mg/L	In-situ, Horiba U-10	1 mg/L
Ammonia as N	CHEMetrics test kit	0.05/ 0.01 mg/L	CHEMetrics K-1501 and K-1403	0.01 mg/L
Nitrate as N	CHEMetrics test kit	1/ 0.1 mg/L	CHEMetrics V-6933 and K-6923	0.1 mg/L
Orthophosphate as P	CHEMetrics test kit	0.05/ 0.01 mg/L	CHEMetrics V-8513 and K-8593	0.01 mg/L
Ammonia as N	SM 4500 (since Oct. 2010)	0.1/ 0.05 mg/L	EPA 350.2, SM4500 , EPA 300.0	0.05/0.01 mg/L
Nitrate as N	SM 4500 (since Oct. 2010)	0.05/ 0.01 mg/L	SM4500, EPA 300.0	0.05/ 0.01 mg/L
Nitrite as N	SM 4500 (since Oct. 2010)	0.05/ 0.01 mg/L	EPA354.1, SM4500, EPA 300.0	0.05/ 0.01 mg/L
Total Kjeldahl Nitrogen	SM 4500 (since Oct. 2010)	0.5 mg/L	EPA351.1, SM4500 (since Nov. 2008)	1.0/ 0.5 mg/L
Total Nitrogen	By Calculation (since Oct. 2010)	NA	By Calculation (since Nov. 2008)	NA
Organic Nitrogen	By Calculation (since Oct. 2010)	NA	By Calculation (since Nov. 2008)	NA
Orthophosphate as P	SM 4500 (since Oct. 2010)	0.05/ mg/L	EPA 365.2, SM4500, EPA 300.0	0.05/ 0.01 mg/L
Total Phosphorus	SM 4500 (since Oct. 2010)	0.05/ mg/L	EPA 365.3, SM4500 (since Dec. 2005)	0.05/ 0.01 mg/L

NM – Not Measured

Results

All data collected during FY 2009/2010 are listed in Table 10 of Attachment A. For locations upstream of Bonsall Bridge, including SLR16 (County jurisdiction), the total phosphorus results reflect data collected after August 2006, while total nitrogen measurements were available only after October 2008. Downstream of Bonsall (within City boundaries), total phosphorus and total nitrogen analysis were performed only on samples collected after September 2009. As mentioned above, all nutrient data collected by the City prior to October 2009 were obtained with field test kits, while the County employed an analytical laboratory for nutrient analysis periodically prior to November 2008 and exclusively thereafter.

Table 3 lists the numbers of samples analyzed, the means and standard deviations for the sample concentrations of ammonia, nitrate-N, total nitrogen, orthophosphate-P and total phosphorus at each location sampled between 2004 and June of 2010. Both the mean total nitrogen and total phosphorus concentrations exceeded the Basin Plan water quality objectives (WQOs) of 0.1 mg/L for total phosphorus and 1.0 mg/L for total nitrogen at all monitored locations. Along the main stem of the River, the mean total phosphorus concentration increased gradually from east to west with the lowest value (0.15 mg/L) recorded at the upstream-most location, Shearer Crossing (SLR28), and the highest (0.59 mg/L) measured at Pacific station, located furthest downstream. This pattern was not apparent for total nitrogen for which the highest mean concentration (10.3 mg/L) was recorded at Shearer Crossing and the lowest at Bonsall (1.8 mg/L). Of the tributaries, Sleeping Indian had the highest total nitrogen and total phosphorus concentrations. Nutrient concentrations at the mouth of all remaining tributaries sampled were orders of magnitude lower.

The mean nitrate-N concentrations and corresponding 95% confidence intervals for the River's main stem and the monitored tributaries are plotted in Figure 2. For the main stem, nitrate-N concentrations at Murray Bridge and Shearer Crossing were significantly higher than at any of the remaining locations. For the tributaries, Sleeping Indian had nitrate-N concentrations that were more than six times higher than any of the remaining tributaries. East Vista Way (SLR34)

and Guajome Lake Outlet had the second highest nitrate-N concentrations, while the lowest was recorded for Bonsall Creek (SLR26) and Pilgrim Creek Outlet.

The mean orthophosphate-P concentrations and corresponding 95% confidence intervals for the River's main stem and tributary mouths are presented in Figure 3. Along the main stem, Benet and Douglas had the highest orthophosphate-P concentrations. The lowest concentrations were found furthest upstream at Olive Hill (SLR25) and Shearer Crossing (SLR28). For the tributaries, the mean orthophosphate-P concentration was highest at Pilgrim Creek and lowest at Keys Creek (SLR17) as it generally tended to decrease from west to east.

Figure 4 shows the mean ammonia-N concentrations and corresponding 95% confidence intervals. In general, ammonia-N exhibited a pattern similar to that of orthophosphate-P as its mean concentrations tended to increase from east to west.

When the mean, dry weather instantaneous loadings were calculated for the tributary locations (Table 4), the highest total nitrogen load was found at Keys Creek followed by Moosa Canyon Creek. Pilgrim Creek Outlet had the highest total phosphorus loading and Moosa Canyon Creek had the second highest. It must be noted, however, that the instantaneous nutrient loads at all locations sampled were highly variable as reflected by very high values of standard deviation. This is most likely due to the large variability in the estimated instantaneous flow measurements as well as to the small sample size, especially for total nitrogen and total phosphorus. Furthermore, the highest nutrient loading and flux for nitrate-N and orthophosphate-P were found for Guajome Lake Outlet. However, these high values are based on only one sample point where flow rate at that location was unusually high. Sampling at Guajome Lake Outlet was discontinued after April 2008 as the site became dry. The highest total phosphorus flux was calculated for Pilgrim Creek Outlet, but Ostrich Farm Creek had the highest flux for orthophosphate-P. Similar to instantaneous loading, nutrient flux was highly variable among samples as it was affected by the high variability in the estimated instantaneous discharge rates and the small sample sizes.

Table 3. Number of samples analyzed (N), mean concentrations in mg/L (Avg) and standard deviations (S) of samples collected from locations along the SLR River and its tributaries from 2004 through June 2010. Main stem locations and tributaries are listed separately downstream to upstream. Field test kit and analytical laboratory results were combined for ammonia-N, nitrate-N and orthophosphate-P.

Sampling Location	Ammonia-N			Nitrate-N			Total Nitrogen			Orthophosphate-P			Total Phosphorus		
	N	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*
SLR @ Pacific	55	0.74	1.24	20	4.19	2.96				60	0.33	0.29			
SLR @ Benet	65	0.54	0.58	50	4.10	4.37	2	3.43	1.07	65	0.79	0.58	2	0.59	0.50
SLR @ Douglas	60	0.48	0.52	48	4.93	5.84	3	2.92	1.64	60	0.79	1.54	3	0.51	0.25
SLR @ Murray	55	0.43	0.51	44	10.63	9.43	3	6.15	0.64	55	0.39	0.19	3	0.43	0.21
SLR @ Bonsall - OC	31	0.24	0.11	32	1.59	2.26	3	3.04	2.61	32	0.30	0.14	7	0.25	0.13
SLR @ Bonsall (SLR16)	69	0.38	0.62	54	4.55	6.56	21	1.80	1.46	69	0.42	0.89	29	0.19	0.21
SLR @ Olive Hill Rd. (SLR25)	65	0.13	0.12	67	0.35	12.52	21	1.85	1.30	64	0.12	0.06	33	0.18	0.12
SLR @ Shearer Crossing (SLR28)	49	0.12	0.10	48	9.22	3.09	11	10.31	1.59	46	0.12	0.05	15	0.15	0.13
Pilgrim Creek Outlet	43	0.58	0.61	34	2.56	2.20	2	1.61	1.07	43	0.91	0.74	2	0.53	0.30
Guajome Lake Outlet	12	0.70	0.82	5	17.24	11.77				12	0.67	0.39	1	0.18	NA
Sleeping Indian	32	0.27	0.15	33	71.51	20.86	2	105.30	8.73	34	0.52	0.53	2	0.66	0.18
East Vistay Way (SLR34)	4	0.04	0.01	4	13.58	1.58				4	0.13	0.03	4	0.16	0.04
Little Gopher Cn. Cr. (SLR02)	55	0.14	0.11	56	8.54	7.74	12	7.57	2.11	54	0.09	0.09	22	0.16	0.18
Moosa Cn. Cr. ('SLR01)	64	0.14	0.10	66	4.02	4.51	21	3.21	1.51	63	0.32	0.15	33	0.38	0.14
Bonsall Cr. (SLR26)	41	0.15	0.12	41	2.81	8.37	9	1.29	0.47	40	0.10	0.09	15	0.17	0.18
Ostrich Farm Cr. (SLR14)	65	0.13	0.12	68	5.04	2.10	21	6.00	1.04	65	0.26	0.13	32	0.30	0.14
Live Oak Cr. (SLR27)	68	0.12	0.11	67	6.37	2.47	21	6.52	1.43	65	0.18	0.23	32	0.23	0.18
Keys Cr. (SLR17)	44	0.14	0.11	40	6.79	5.85	10	7.18	2.54	42	0.09	0.06	15	0.14	0.17

Table 4. Mean estimated instantaneous loadings (mg/s) (Avg) with the corresponding numbers of samples analyzed (*N*) and standard deviations (*S*) calculated for tributaries monitored from 2004 through June 2010. Field test kit and analytical laboratory results were combined for ammonia-N, nitrate-N and orthophosphate-P.

Sampling Location	Ammonia-N			Nitrate-N			Total Nitrogen			Orthophosphate-P			Total Phosphorus		
	N	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*
Pilgrim Creek Outlet	22	1.1	1.5	26	6.0	17.1	2	422.5	589.5	22	5.7	17.2	2	132.4	184.2
Guajome Lake Outlet	3	29.8	51.5	3	2,342.8	4,053.8				3	37.3	64.3	1	0.0	NA
Sleeping Indian	29	0.5	1.4	34	162.0	612.2	2	179.1	193.3	31	1.1	3.6	2	1.4	1.6
East Vista Way (SLR34)	4	0.1	0.1	5	34.0	32.5				4	0.4	0.2	4	0.4	0.2
Little Gopher Cn. Cr. (SLR02)	54	8.9	16.2	56	820.8	2,584.4	12	212.3	211.0	54	12.7	44.3	22	19.3	66.2
Moosa Cn. Cr. (SLR01)	64	29.5	50.8	69	1,022.8	1,919.6	21	702.1	1,253.8	63	85.8	172.0	33	86.1	220.4
Bonsall Cr. (SLR26)	40	8.3	22.7	42	168.2	412.0	9	15.5	13.9	40	8.8	24.7	15	11.6	36.6
Ostrich Farm Cr. (SLR14)	65	25.5	113.2	68	760.9	2,302.3	21	274.6	258.9	65	55.0	199.1	32	39.1	140.8
Live Oak Cr. (SLR27)	65	11.1	25.4	69	858.7	2,647.0	21	341.8	408.1	65	16.9	49.0	32	21.8	65.9
Keys Cr. (SLR17)	43	26.8	40.6	45	1,698.1	3,475.8	10	1,534.2	2,046.6	42	26.5	50.2	15	46.1	105.4

Table 5. Mean estimated instantaneous flux (mg/s/acre) (Avg) with the corresponding numbers of samples analyzed (*N*) and standard deviations (*S*) calculated for tributaries monitored from 2004 through June 2010. Field test kit and analytical laboratory results were combined for ammonia-N, nitrate-N and orthophosphate-P.

Sampling Location	Ammonia-N			Nitrate-N			Total Nitrogen			Orthophosphate-P			Total Phosphorus		
	N	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*
Pilgrim Creek Outlet	22	0.0002	0.0002	22	0.0012	0.0030	2	0.0691	0.0964	22	0.0009	0.0028	2	0.0216	0.0301
Guajome Lake Outlet	3	0.0450	0.0779	3	3.5464	6.1363				3	0.0564	0.0973	1	0.0000	NA
Sleeping Indian	29	0.0009	0.0028	30	0.3592	1.2718	2	0.3504	0.3782	31	0.0022	0.0071	2	0.0027	0.0032
East Vista Way (SLR34)	4	0.0003	0.0002	4	0.1344	0.0963				4	0.0012	0.0005	4	0.0014	0.0007
Little Gopher Cn. Cr. (SLR02)	54	0.0013	0.0023	56	0.1163	0.3662	12	0.0301	0.0299	54	0.0018	0.0063	22	0.0027	0.0094
Moosa Cn. Cr. (SLR01)	64	0.0011	0.0019	66	0.0397	0.0724	21	0.0261	0.0466	63	0.0032	0.0064	33	0.0032	0.0082
Bonsall Cr. (SLR26)	40	0.0040	0.0109	41	0.0827	0.1998	9	0.0075	0.0066	40	0.0042	0.0119	15	0.0056	0.0176
Ostrich Farm Cr. (SLR14)	65	0.0035	0.0157	67	0.1072	0.3220	21	0.0382	0.0360	65	0.0076	0.0277	32	0.0054	0.0196
Live Oak Cr. (SLR27)	65	0.0020	0.0046	67	0.1612	0.4892	21	0.0623	0.0744	65	0.0031	0.0089	32	0.0040	0.0120
Keys Cr. (SLR17)	43	0.0011	0.0017	40	0.0805	0.1531	10	0.0646	0.0862	42	0.0011	0.0021	15	0.0019	0.0044

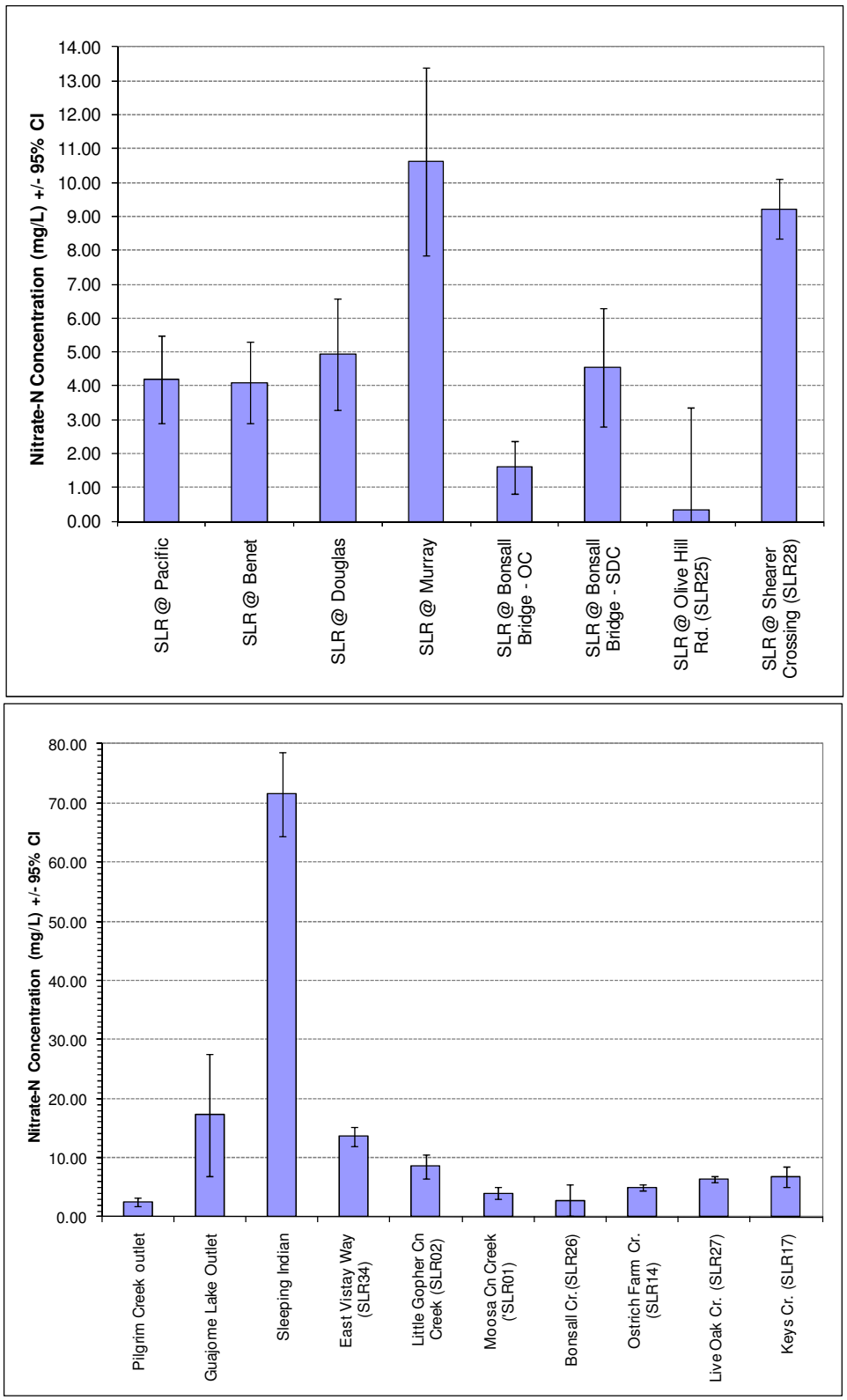

Figure 2. Mean concentrations and 95% Confidence intervals of nitrate-N in the main stem of San Luis Rey River and its tributaries. Station locations are listed along the horizontal axis from West to East.

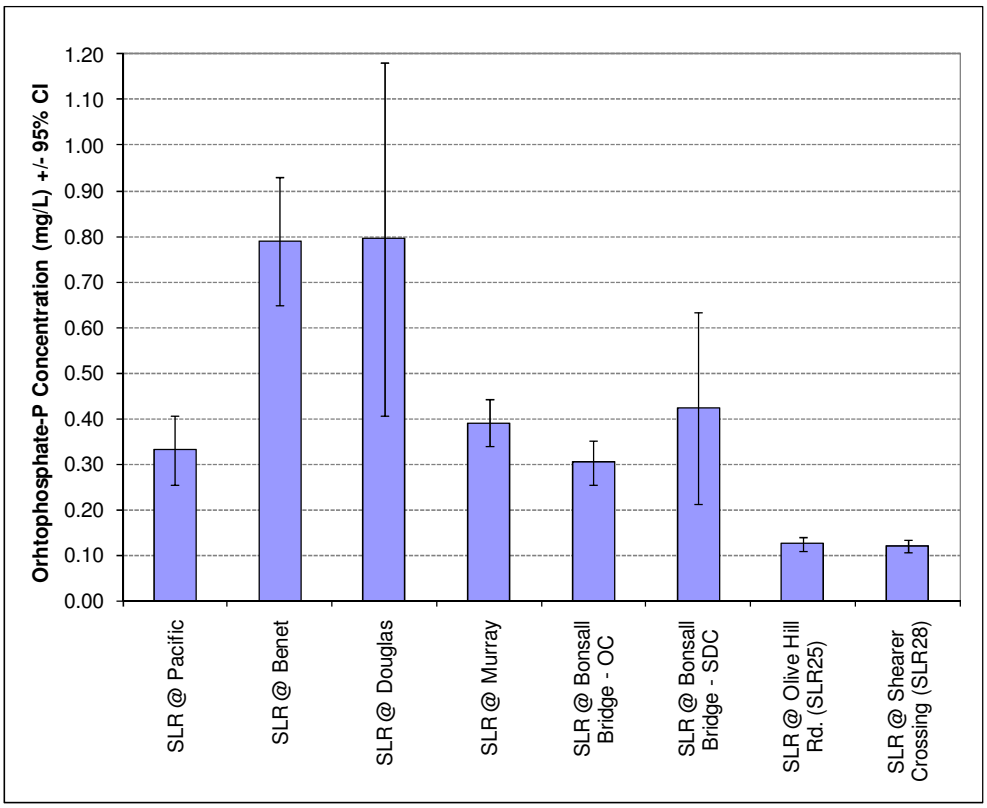

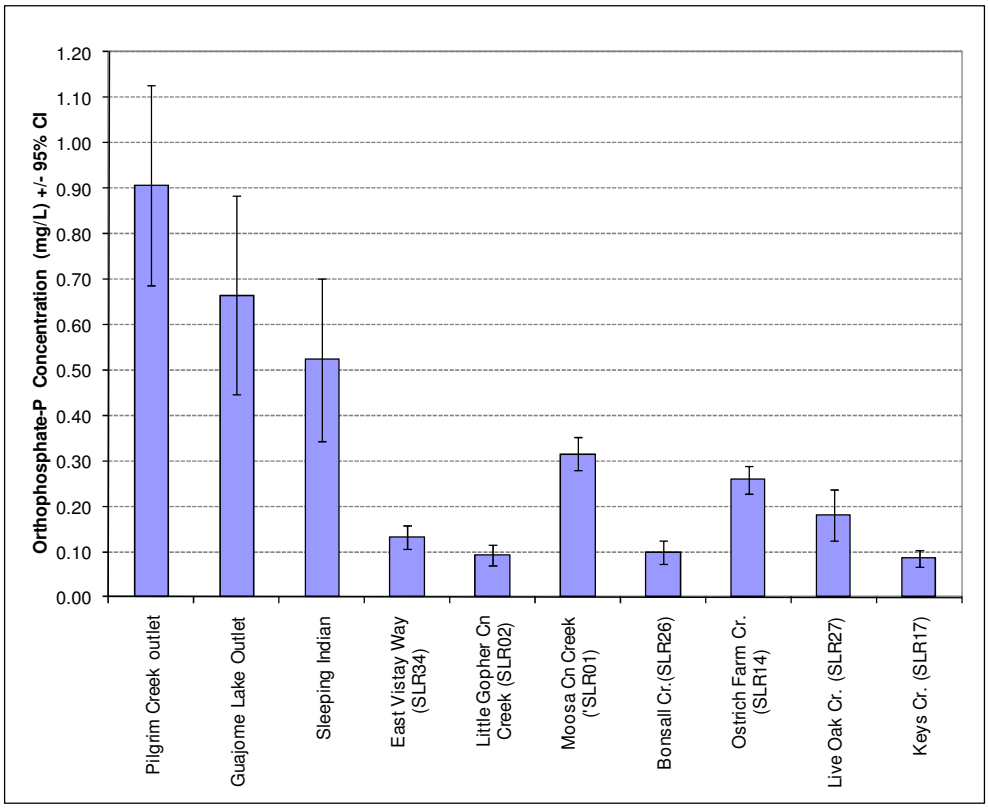

Figure 3. Mean concentrations and 95% Confidence intervals of Orthophosphate-P in the main stem of San Luis Rey River and its tributaries. Station locations are listed along the horizontal axis from West to East.

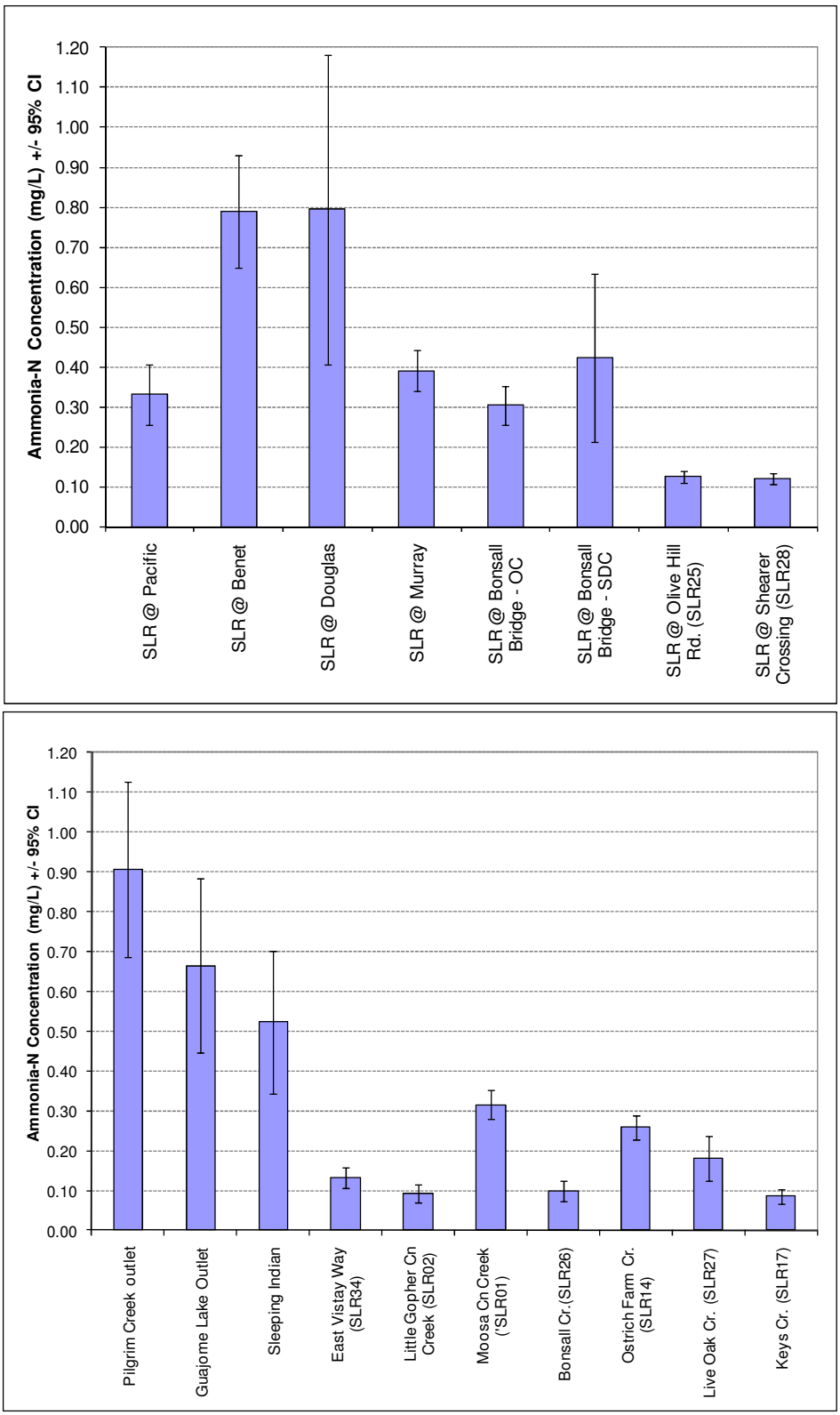

Figure 4. Mean concentrations and 95% Confidence intervals of Ammonia in the main stem of San Luis Rey River and its tributaries. Station locations are listed along the horizontal axis from West to East.

Discussion

The lower 19 miles of the San Luis Rey River are listed for total nitrogen and total phosphorous on the partially approved 2008 CWA 303(d) list of impaired waterbodies. This study provides preliminary information on nutrient concentrations, loading, and flux in this segment of the River and its tributaries. Presently, the water quality objective (WQO) employed for nutrients is a narrative objective to prevent biostimulatory growth of algae with a current goal of 0.1 mg/L for total phosphorus and 1 mg/L for total nitrogen. These values are not to be exceeded more than 10% of the time. Nitrogen and phosphorous loading can result in low dissolved oxygen and increased algal blooms in stream segments. Addressing these adverse effects requires the use of appropriate WQOs based on the level of nutrients a waterbody can sustainably assimilate. This level varies greatly due to site-specific factors such as hydrology, shading, and temperature, which modulate biological response to nutrients. Current N and P WQOs are problematic in part because they do not consider site-specific factors. The Nutrient Numeric Endpoint (NNE) framework, an alternative regulatory approach advocated by SWRCB staff and USEPA Region 9, is currently under development.

Samples collected in the present study were taken during dry weather only and, therefore, represent nutrient concentrations that are only characteristic of non-storm flows. Water quality samples were collected in the main stem of the lower River and at the mouths of some of its tributaries, thus helping to characterize nutrient concentrations at those locations only. The sample locations were not selected at random and therefore cannot be used to characterize the conditions of the entire study area. Because samples were collected at the mouths of the tributaries, resulting data provide information as to the nutrient concentrations in flows entering the River but not about possible sources upstream of those locations. Since the same locations have been sampled for six years, a trend analysis could be performed to examine any temporal characteristics of the data. However, because field test kits were used for most of the sampling period, trend analysis may not be very accurate.

Given these limitations, the results of the study show that both the mean total nitrogen and total phosphorus concentrations exceeded the Basin Plan water quality objectives (WQOs) of 0.1 mg/L for total phosphorus and 1.0 mg/L for total nitrogen at all monitored locations. Along the main stem of the River, mean total phosphorus concentrations increased gradually from upstream (east) to downstream (west), but this pattern was not observed for total nitrogen for which the highest mean concentration (10.3 mg/L) was recorded at the easternmost sampling location. Of the tributaries, Sleeping Indian had the highest total nitrogen and total phosphorus concentrations; nutrient concentrations at the mouth of all remaining tributaries sampled were orders of magnitude lower.

Instantaneous nutrient loads were calculated for tributary mouths only using instantaneous discharge estimates and grab sample concentrations. The instantaneous nutrient loads at all sampled locations were highly variable, which was likely due to the large variability in the estimated instantaneous flow measurements as well as the small sample size. Given this large variability and the instantaneous nature of the measurements, it is difficult to compare loads among locations. The results (Table 4) are therefore only preliminary. The Sleeping Indian

tributary, in spite of having very high nutrient concentrations, did not contribute the highest instantaneous nutrient loadings. Instead, the highest total nitrogen loading was identified at Keys Creek, followed by Moosa Canyon Creek. Pilgrim Creek Outlet had the highest total phosphorus loading and Moosa Canyon Creek had the second highest.

The instantaneous load estimates were transformed into flux (load per unit area) by dividing the load values by the drainage areas of the corresponding tributaries (Table 5). As with mean concentrations, the Sleeping Indian tributary had the highest total nitrogen flux; Pilgrim Creek Outlet was the second highest. Pilgrim Creek Outlet also had the highest total phosphorus flux. Similar to instantaneous loading, nutrient flux was highly variable among samples as it was affected by the high variability in the estimated instantaneous discharge rates and the small sample sizes.

Improved flow measurements and continued laboratory analysis for nutrient constituents would help increase the accuracy of trend analysis and estimates of nutrient loading and flux in the watershed. As always, this will have to be balanced with considerations of cost. If future funding permits, the San Luis Rey joint monitoring program may be modified to include alternative studies that either supplement or replace the current monitoring program. Potentially useful studies could include assessments of the relationship between nutrient concentrations and aquatic growth through the examination of algal populations in the watershed, or investigations of nutrient concentrations in groundwater to determine if and how groundwater affect nutrients concentrations in dry weather surface flows. As the current program was designed to supplement permit-required monitoring within the watershed to assess problem areas, continuing the current program or any supplemental or substitute program(s) is dependent on available County and City resources, which vary from year to year. The City and the County will continue to annually assess the goals of the San Luis Rey joint monitoring program and recommend changes where appropriate.

Reference

Regional Water Quality Control Board. 1994. Water Quality Control Plan for the San Diego Basin (9).
http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

ATTACHMENT E TO SLR-001

SAN LUIS REY WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY 2009-10 SLR WURMP Annual Report

Monitoring Results for FY 2009-10

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Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	Org. N	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Bicarbonate Alkalinity	Crbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Benet	7/14/09	3.32	7.8	2.53	10	6.48	21.2	0.62	NM	0.85	NM	NM	NM	1.11	NM	690	14000	36	110	1720	10	74	7.2	230	150	NM	NM	388	406	NM	NM	NM	NM	NM	NM
	8/10/09	0.54	7.59	2.65	7	5.58	19.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	3000	98	70	1802	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/22/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/27/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/17/09	31.69	7.55	2.5	<1	8.12	10.3	NM	NM	NM	NM	NM	NM	NM	NM	NM	2200	373	300	1700	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	131.67	7.64	1.75	19	7.74	11.4	2.06	<0.05	0.1	2.1	2.0	4.2	0.3	0.94	554	5000	548	130	1050	8.4	62.4	9.31	156	119	NM	NM	220	331	NM	NM	205	NM	NM	205
	2/17/10	161.00	7.88	2.28	3	9.68	13.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	2300	816	350	1550	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	67.40	7.75	2.28	5	9.64	12.7	NM	NM	NM	NM	NM	NM	NM	NM	NM	1700	236	300	1550	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	18.63	7.79	2.49	12	7.98	16.0	1.85	<0.05	<0.02	0.8	0.8	2.7	0.22	0.23	433.4	23000	37	170	1740	12	96.4	6.65	237	169	NM	NM	372	469	NM	NM	330	NM	NM	330
	6/8/10	5.41	7.62	2.57	15	6.71	18.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	13000	69	170	1748	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	7/14/09	6.65	7.63	2.02	8	7.04	19.0	0.2	NM	0.4	NM	NM	NM	0.42	NM	560	3000	79	500	1260	7.8	62	5.5	190	120	NM	NM	262	394	NM	NM	NM	NM	NM	240
	8/10/09	1.33	7.49	1.86	7	7.19	19.7	NM	NM	NM	NM	NM	NM	NM	NM	NM	1700	52	80	1265	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/22/09	5.91	7.62	1.79	12	7.28	19.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	1300	340	300	1217	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	NM	NM	NM	NM	NM	NM	0.33	<0.05	0.16	0.7	0.5	1.1	<0.05	0.28	509	500	199	170	1040	7.2	55.2	5.28	158	113	NM	NM	234	314	NM	NM	NM	NM	NM	210
Bonsall	11/17/09	14.00	7.63	1.79	7	8.34	12.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	300	360	130	1217	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	35.10	7.75	2.38	5	8.42	11.8	NM	NM	NM	NM	NM	NM	NM	NM	NM	2300	272	170	1618	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	98.64	7.62	2.01	19	8.5	11.0	4.55	0.05	<0.02	1.4	1.4	6.0	0.19	0.51	689	8000	461	220	1260	14	79.5	9.38	182	145	NM	NM	250	413	NM	NM	225	NM	NM	225
	2/17/10	45.90	7.59	2.21	5	9	12.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	800	114	21	1503	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	55.58	7.68	2.18	5	8.9	11.6	NM	NM	NM	NM	NM	NM	NM	NM	NM	5000	60	130	1482	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	19.80	7.59	2.39	6	7.72	15.6	1.35	<0.05	0.1	0.7	0.6	2.1	0.16	0.3	846	1700	71	80	1730	7.2	103	6.17	219	169	NM	NM	322	506	NM	NM	300	NM	NM	300
	6/8/10	10.62	7.47	2.47	9	7.67	17.6	NM	NM	NM	NM	NM	NM	NM	NM	NM	3000	96	170	1680	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	7/14/09	1.89	7.9	2.4	9	9.47	22.1	0.49	NM	0.46	NM	NM	NM	0.6	NM	700	7000	613	1300	1720	15	80	6.6	230	150	NM	NM	350	408	NM	NM	NM	NM	NM	330
	8/10/09	0.12	7.22	2.25	1	1.86	18.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	700	140	40	1530	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/22/09	0.11	7.14	2.3	2	0.98	17.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	2300	320	220	1564	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	NM	NM	NM	NM	NM	NM	<0.05	<0.05	0.17	1	0.8	1.1	0.32	0.32	645	8000	900	80	1310	2	71.7	6.48	193	140	NM	NM	312	318	NM	NM	NM	NM	NM	332
Douglas	11/17/09	0.03	7.34	1.36	1	3.4	15.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	170	180	20	925	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	31.62	7.78	2.44	2	8.4	11.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	3000	414	130	1659	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	229.50	7.74	1.85	24	8.6	11.5	3.37	<0.05	<0.02	<0.5	0.2	3.6	0.22	0.79	610	13000	548	170	1100	11	68.7	9.11	163	131	NM	NM	231	357	NM	NM	220	NM	NM	220
	2/17/10	60.60	7.87	2.25	7	9.61	12.8	NM	NM	NM	NM	NM	NM	NM	NM	NM	3000	129	50	1530	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	50.25	7.9	2.23	5	9.21	12.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	2200	114	30	1516	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	17.00	7.89	2.45	14	9.02	15.8	3.45	<0.05	<0.02	0.6	0.6	4.1	0.41	0.43	840	8000	91	300	1660	12	101	6.38	225	170	NM	NM	350	485	NM	NM	390	NM	NM	320
	6/8/10	2.27	7.71	2.5	31	8.07	18.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	28000	260	500	1700	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	7/14/09	1.58	7.89	2.49	2	8.02	20.2	2.52	NM	0.34	NM	NM	NM	0.3	NM	730	23000	1120	700	1700	4.2	84	7	230	150	NM	NM	349	459	NM	NM	NM	NM	NM	300
	8/10/09	0.23	7.4	2.43	<1	2.26	21.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	300	10	<1	1652	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/22/09	0.01	7.38	2.31	16	3.06	21.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	11000	1700	70	1571	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	NM	NM	NM	NM	NM	NM	5.15	0.93	<0.02	0.7	0.7	6.8	0.09	0.31	802	5000	1760	500	1640	2.2	91	8.41	230	171	NM	NM	397	484	NM	NM	NM	NM	NM	315
Murray	11/17/09	1.56	7.81	2.21	1	8.87	11.7	NM	NM	NM	NM	NM	NM	NM	NM	NM	1300	360	230	1503	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	31.20	7.88	2.45	22	9.06	12.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	11000	556	130	1666	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	213.60	7.7	1.93	25	8.56	11.7	4.72	0.05	<0.02	1.4	1.4	6.2	0.62	0.68	646	13000	205	70	1170	20.4	73.2	9.12	174	138	NM	NM	243	382	NM	NM	220	NM	NM	220
	2/17/10	200.00	7.8	2.27	10	9.63	13.8	NM	NM	NM	NM	NM	NM	NM	NM	NM	1300	155	30	1544	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	167.25	7.73	2.25	12	8.41	13.6	NM	NM	NM	NM	NM	NM	NM	NM	NM	1700	141	80	1530	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	35.60	7.82	2.5	7	8.98	16.1	4.96	0.05	<0.02	0.5	0.5	5.5	0.31	0.31	867	8000	143	170	1700	5.2	105	6.23	227	174	NM	NM	352	503	NM	NM	378			310
	6/8/10	0.60	7.57	2.51	8	6.7	18.8	NM	NM	NM	NM	NM	NM	NM	NM	NM	5000	272	350	1707	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	7/14/09	NA	7.76	35.3	<1	6.78	31.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	300	203	170	24004	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/10/09	0.00	7.74	28	7	6.67	26.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	2300	108	500	19040	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/22/09	0.00	8.16	21.5	17	6.99	24.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	220	<2	80	14620	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	400	95	260	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Pacific	11/17/09	NA	7.9	13.79	2	8.63	13.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	300	10	300	9377	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	NA	7.73	41.5	3	8.6	14.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	800	31	130	28220	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	NA	7.55	3.44	32	7.49	12.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	2300	1376	1300	2339	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/17/10	NA	7.77	7.03	5	8.17	14.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	1100	880	230	4780	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	NA	7.88	2.37	6	10.22	14.2	NM	NM	NM	NM	NM	NM	NM	NM	NM	900	75	170	1612	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	NA	7.92	7.5	11	11.54	12.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	600	20	80	5100	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	6/8/10	NA	7.7	4.05	12	5.27	22.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	5000	512	3000	2754	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	7/14/09	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	13	<2	13	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/10/09	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	7	<2	2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/22/09	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	23	10	23	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<2	53	<10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Pacific Mix	11/17/09	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<2	<2	<10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	130	134	130	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1700	1076	300	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	Org. N	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Bicarbonate Alkalinity	Crbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Pilgrim Creek	2/17/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	350	211	50	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	1100	10	70	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	80	31	23	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	6/8/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	30	<2	8	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	1.45	7.84	2.05	19	9.75	9.8	NM	NM	NM	NM	NM	NM	NM	NM	NM	8000	1850	800	1394	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	12.53	7.27	1.17	21	6.35	12.3	0.24	<0.05	<0.02	2.1	2.1	2.4	0.23	0.74	287	5000	387	140	580	7.6	33.8	7.83	136	59.2	NM	NM	200	128	NM	NM	131	NM	NM	131
	2/17/10	2.27	7.85	3.29	2	12.97	12.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	2300	387	27	2237	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	1.41	7.63	3.62	3	8.51	11.7	NM	NM	NM	NM	NM	NM	NM	NM	NM	3000	276	500	2462	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	0.24	8.1	5.05	8	8.25	18.8	<0.05	<0.05	<0.02	0.8	0.8	0.9	0.29	0.32	941	5000	1553	1700	3120	7	140	8.28	754	146	NM	NM	1130	573	NM	NM	476	NM	NM	400
	6/8/10	0.01	7.76	5.35	11	4.64	22.7	NM	NM	NM	NM	NM	NM	NM	NM	NM	13000	770	500	3638	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Sleeping Indian	7/14/09	0.03	7.98	4.41	7	7.93	22.5	NM	NM	<0.02	NM	NM	NM	0.35	NM	1300	80000	402	4	2980	8.8	170	5.5	430	220	NM	NM	511	806	NM	NM	NM	NM	NM	340
	8/10/09	<0.01	8.05	4.48	2	8.25	21.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	110000	5670	40	3046	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/22/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/27/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/17/09	0.02	8.23	4.68	8	10.36	11.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	110000	1354	230	3182	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	0.11	8.1	4.44	26	10.39	11.3	98.5	0.37	<0.02	<0.5	0.2	99.1	0.18	0.79	1430	140000	1733	170	3000	16	196	6.04	464	249	NM	NM	556	914	NM	NM	400	NM	<1	400
	2/17/10	0.07	8.21	4.28	9	11.52	12.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	23000	980	300	2910	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	0.11	8.16	4.07	5	11.07	10.7	NM	NM	NM	NM	NM	NM	NM	NM	NM	23000	1414	500	2768	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	0.01	8.21	4.2	1	9.57	16.8	111	0.22	<0.02	<0.5	0.2	111.5	0.3	0.53	1420	23000	2420	80	2920	1	207	6.97	456	226	NM	NM	526	788	NM	NM	456	NM	NM	400
	6/8/10	<0.01	8.09	4.14	7	8.22	19.9	NM	NM	NM	NM	NM	NM	NM	NM	NM	30000	12997	3000	2815	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SLR01	7/14/09	1.29	7.7	2.59	7	10.08	23.1	1.7	0.03	0.04	0.87	0.8	2.6	0.33	0.35	800	9000	130	500	1680	12.6	105	8.32	250	171	105	0.51	386	509		0.39	291	<1	<1	291
	8/10/09	0.29	7.76	2.69	5	12.87	23.1	0.36	0.02	0.06	0.64	0.6	1.0	0.34	0.36	NM	1700	130	300	1829	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/28/09	0.09	7.51	2.44	16	5.76	22.0	0.08	<0.007	0.19	0.81	0.6	0.9	0.4472	0.586	NM	NM	NM	NM	1659	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	0.17	7.39	2.68	8	10.84		0.06	<0.007	0.3	0.736	0.4	0.8	0.3191	0.449	701.2	9000	1100	173	1728	3.5	88.78	5.7	268.3	134.4	88.78	977	409.12	478.59	333.8		305	<1	<1	
	11/17/09	0.40	7.44	2.58	2	7.58	16.6	0.4	<0.007	0.27	0.85	0.6	1.3	0.238	0.355	NM	16000	80	52	1754	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	5.08	7.88	2.5	10	9.8	13.2	2.97	0.07	0.12	0.464	0.3	3.5	0.338	0.339	NM	1700	220	96	1700	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	37.92	7.92	2.1	28	8.06	12.8	3.76	0.06	0.13	1.2	1.1	5.0	0.29	0.8	884	9000	130	90	1370	30	78.7	11.6	225	136	78.7	2.4	280	468	<0.25	NM	250	<1	<1	250
	2/17/10	15.54	8.15	2.13	10	15.08	16.3	3.17	<0.05	0.11	1.4	1.3	4.6	0.42	0.44	NM	1600	50	127	1448	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	16.02	8.17	2.52	10	9.82	17.2	3.67	<0.05	<0.02	1.5	1.5	5.2	1.3	0.27	NM	3000	23	17	1714	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<1	NM	NM
	5/18/10	2.91	8.39	2.47	9	13.05	21.5	3.51	0.03	0.07	1.1	1.0	4.6	0.38	0.41	782	5000	130	30	1540	9.8	87.6	5.15	245	144	87.6	0.399	350	441	<0.25	0.329	230	<1	<1	230
	6/8/10	2.03	8.47	2.45	5	14.66	22.8	3.25	0.06	0.13	0.8	0.7	4.1	0.26	0.27	NM	3000	500	34	1666	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SLR02	7/14/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/10/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/28/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/27/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	1/26/10	3.07	7.88	2.42	22	9.71	11.4	7.05	0.07	<0.02	1.6	1.6	8.7	0.16	0.4	1070	9000	230	170	1560	20	97	7.76	276	139	97	1.11	340	403	<0.25	NM	230	<1	<1	230
	2/17/10	1.98	7.84	2.51	10	10.91	13.6	4.65	0.05	<0.02	1.8	1.8	6.5	0.07	0.17	NM	1600	50	387	1707	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/15/10	1.72	8.16	2.49	8	10.37	13.2	4.79	0.05	<0.02	1.5	1.5	6.3	0.61	0.13	NM	5000	500	130	1693	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	0.58	7.96	2.74	1	10.68	16.0	5.32	0.06	0.04	<0.5	0.2	5.6	0.1	0.11	901	1300	500	500	1650	<1	112	3.43	273	154	112	0.053	420	412	<0.25	0.401	340	<1	<1	340
	6/8/10	0.17	7.8	2.65	0	7.44	18.3	6.32	<0.05	0.1	0.5	0.4	6.8	0.07	0.29	NM	5000	130	500	1802	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SLR14	7/15/09	0.26	8.05	2.14	4	7.67	19.8	3.8	0.03	0.04	0.84	0.8	4.7	0.2	0.23	780	500	40	40	1380	0.6	100	4.25	146	165	100	0.08	293	477	NM	0.4	299	<1	<1	299
	8/10/09	0.18	7.96	2.1	0	8.67	19.5	3.84	0.03	0.04	1.04	1.0	4.9	0.19	0.18	NM	220	70	80	1428	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/28/09	0.25	8.04	2.23	2	9.04	20.3	3.87	<0.05	0.03	<0.5	0.2	4.1	0.2125	0.23	NM	NM	NM	NM	1516	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	0.49	7.69	2.22	1	10.52		6.15	<0.05	<0.02	<0.5	0.2	6.4	0.2795	0.314	726.3	1300	800	96	1572	0.7	92.39	0.5	155.4	138.5	92.39	734	274.28	463.21	185.2	NM	275	16	<1	NM
	11/17/09	0.53	7.84	1.82	5	10.1	11.0	6.38	<0.05	0.03	0.46	0.4	6.9	0.344	0.406	NM	800	80	20	1238	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	1.94	7.9	2.25	2	9.22	12.2	5.65	0.08	0.08	0.802	0.7	6.5	0.271	0.236	NM	1300	110	74	1530	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	4.70	7.91	2.03	6	7.89	13.1	5.36	0.05	0.11	0.8	0.7	6.2	0.42	0.68	982	9000	130	170	1280	<1	91.4	6.67	163	150	91.4	0.315	240	408	<0.25	NM	270	<1	<1	270
	2/18/10	3.29	7.9	2.1	2	10.1	14.2	7.2	<0.05	<0.02	<0.5	0.2	7.5	0.48	NM	NM	NM	NM	80	1428	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/17/10	2.46	8.11	2.49	0	9.89	13.3	6.48	<0.05	<0.02	1.3	1.3	7.8	0.39	0.38	NM	1700	130	110	1693	1.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/19/10	1.37	8.01	2.15	0	8.38	16.8	4.98	<0.05	<0.02	<0.5	0.2	5.3	0.14	0.15	757	1300	80	30	1320	1.1	96.8	3.26	162	151	96.8	<0.05	270	NM	<0.25	0.345	270	<1	<1	270
	6/8/10	0.73	8.05	2.13	2	8.66	19.6	5.95	<0.05	0.11	<0.5	0.1	6.2	0.31	0.44	NM	800	23	30	1448	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SLR16	7/14/09	7.49	7.6	1.97	26	10.03	19.4	0.27	0.01	0.05	0.42	0.4	0.7	0.1	0.1	620	140	140	170	1260	4.7	74.7	8.14	174	150	74.7	0.59	268	400	NM	0.56	232	<1	<1	232
	8/10/09	6.53	7.63	1.94	8	7.8	20.4	0.23	0.01	0.05	0.48	0.4	0.7	0.09	0.1	NM	300	40	40	1319	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/28/09	8.12	7.63	1.73	15	7.28	19.5	0.24	<0.05	0.03	<0.5	0.2	0.5	0.0594	0.108	NM	NM	NM	NM	1176	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	11.52	7.39	1.75	16	10.23		0.29	<0.05	0.04	<0.5	0.2	0.6	0.0462	0.084	464.6	700	230	97	1096	5.3	54.09	5.1	153.2	96.86	54.09	884	229.87	326.12	212.4	NM	203	<1	<1	NM
	11/17/09	11.83	7.36	1.75	4	9.57	12.6	0.25	<0.05	0.03	<0.5	0.2	0.5	0.046	0.074	NM	500	300	135	1190	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	19.60	7.67	2.41	4	8.83	12.2	0.84	<0.05	0.05	0.462	0.4	1.3	0.107	0.154	NM	1700	300	85	1639	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	163.80	7.8	1.99	18	8.02	11.0	3.35	<0.05	0.13	2.2	2.1	5.6	0.18	1.16	974	16000	300	80	1320	<1	77.4	10.4	186	147	77.4	0.914	260	482	<0.25	NM	200	<1	<1	200
	2/17/10	104.80	7.48	2.2	24	10.38	12.9	2.71	<0.05	<0.02	1.4	1.4	4.1	0.18	0.23	NM	900	130	55	1496	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	Org. N	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Bicarbonate Alkalinity	Crbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SLR17	3/15/10	83.05	7.84	2.33	9	9.64	12.7	3.85	<0.05	<0.02	0.8	0.8	4.7	0.7	0.13	NM	9000	170	230	1584	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	18.72	7.46	2.37	9	9.09	16.0	1.07	<0.05	0.15	0.8	0.7	1.9	0.14	0.15	803	1700	50	140	1490	5.8	94.8	6.47	219	167	94.8	0.363	350	491	<0.25	0.355	270	<1	<1	270
	6/8/10	13.44	7.61	2.48	12	7.43	17.8	0.67	<0.05	0.1	<0.5	0.2	0.9	0.31	0.33	NM	2300	170	230	1686	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	7/15/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/10/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/28/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/27/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	1/26/10	19.56	8.01	2.49	41	8.3	12.6	9.09	0.05	<0.02	3	3.0	12.1	0.11	0.7	1240	16000	300	210	1740	47	108	7.49	241	188	108	0.453	330	592	<0.25		230	<1	<1	230
	2/18/10	10.50	7.94	2.6	19	10.12	17.7	8.52	<0.05	<0.02	<0.5	0.2	8.8	0.19	NM	NM	NM	NM	86	1768	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/17/10	10.05	8.17	2.6	8	9.82	19.0	7.28	<0.05	0.12	1	0.9	8.3	0.11	0.12	NM	800	170	50	1768	13.8	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/19/10	0.33	8.26	3.33	3	9.28	29.5	5.24	<0.05	<0.02	<0.5	0.2	5.5	0.29	0.31	1150	1700	500	500	2210	5	141	4.43	308	227	141	<0.05	470		<0.25	0.341	210	<1	<1	210
	6/9/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
SLR25	7/14/09	1.18	7.66	1.65	12	10.65	21.1	0.23	0.01	0.04	0.84	0.8	1.1	0.12	0.16	500	300	300	170	1010	7.4	53.9	6.83	128	115	53.9	0.81	208	344		0.59	194	<1	<1	194
	8/10/09	2.70	7.61	1.53	9	7.18	21.4	0.27	0.04	0.04	0.62	0.6	0.9	0.1	0.11	NM	220	110	140	1040	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/28/09	5.51	7.78	1.61	6	7.07	21.0	0.34	0.06	0.04	0.844	0.8	1.2	0.0442	0.086	NM	NM	NM	NM	1095	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	3.93	7.53	1.43	6	9.46		0.31	0.05	0.07	<0.5	0.2	0.6	0.0297	0.076	364.7	500	500	213	858	4.8	41.32	<5	120.3	77.92	41.32	749	183.85	262.23	193.5		157	<1	<1	NM
	11/17/09	4.68	7.56	1.53	6	8.69	14.0	0.29	<0.05	0.03	<0.5	0.2	0.6	0.039	0.083	NM	700	300	275	1040	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	5.92	7.72	2.29	3	8.23	11.5	0.99	0.05	0.09	0.904	0.8	1.9	0.09	0.116	NM	300	80	86	1557	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	115.20	7.84	2.09	13	8.03	11.2	4.13	<0.05	0.14	1.5	1.4	5.7	0.06	0.58	1000	1100	230	80	1460	<1	82.4	10.2	186	159	82.4	0.401	250	410	<0.25	NM	240	<1	<1	240
	2/17/10	57.15	7.81	2.06	20	12.15	14.3	3.03	<0.05	0.1	0.5	0.4	3.6	0.3	0.32	NM	900	240	77	1401	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/17/10	43.43	7.8	2.29	4	8.64	12.7	2.72	<0.05	0.1	1.1	1.0	3.8	0.14	0.14	NM	1100	230	500	1557	5.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	11.88	7.96	2.36	4	8.89	15.6	1.08	<0.05	<0.02	0.5	0.5	1.6	0.11	0.12	863	1300	70	110	1520	4.9	90.9	6.74	198	164	90.9	0.399	320	502	<0.25	0.316	280	<1	<1	280
	6/8/10	4.32	8	2.29	16	7.45	17.4	0.59	<0.05	<0.02	0.6	0.6	1.2	0.12	0.15	NM	2300	50	130	1557	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SLR26	7/14/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/10/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/28/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/27/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	1/26/10	0.27	7.76	2.4	1	8.49	11.4	0.77	<0.05	0.21	0.8	0.6	1.6	0.11	0.79	1230	2400	40	90	1630	<1	107	8.78	229	187	107	<0.05	270	664	<0.25	NM	250	<1	<1	250
	2/17/10	0.27	7.9	2.06	1	16.13	16.1	0.14	<0.05	<0.02	1.8	1.8	2.0	0.06	0.22	NM	1600	300	172	1401	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/17/10	0.35	7.88	2.21	1	10.62	13.3	<0.05	<0.05	0.14	1.7	1.6	1.8	0.15	0.16	NM	3000	300	130	1503	1.7	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/18/10	0.01	7.96	2.57	1	8.5	21.0	0.8	<0.05	<0.02	<0.5	0.2	1.1	0.11	0.2	843	160000	21	1100	1600	3.3	101	2.56	235	160	101	0.154	330	424	<0.25	0.48	380	<1	<1	380
	6/8/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
SLR27	7/15/09	0.16	8.14	2.33	16	9.16	18.6	4.95	0.01	0.04	0.7	0.7	5.7	0.17	0.17	740	9000	1100	1700	1570	2.9	105	2.27	165	178	105	0.38	305	526		0.45	288	2	<1	290
	8/10/09	0.21	7.98	2.37	18	8.81	18.5	4.91	0.01	0.05	0.59	0.5	5.5	0.19	0.17	NM	5000	5000	5000	1612	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/28/09	0.07	8.13	2.24	10	9.12	19.1	4.21	<0.05	0.03	0.492	0.5	4.7	0.1538	0.179	NM	NM	NM	NM	1523	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/27/09	0.10	7.89	2.39	1	10.75	NM	4.48	<0.05	<0.02	<0.5	0.2	4.8	0.1274	0.154	777.5	5000	1300	135	1630	1.7	98.65	<5	182.7	148.7	98.65	815	294.47	516.63	193.1	NM	264	28	<1	NM
	11/17/09	0.10	8.02	2.37	15	11.54	10.1	5.08	<0.05	0.03	0.528	0.5	5.6	0.123	0.148	NM	3000	300	520	1612	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/17/09	1.74	7.95	2.4	3	9.59	12.9	5.06	0.07	0.06	0.694	0.6	5.8	0.173	0.177	NM	11000	500	243	1632	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/26/10	5.12	7.94	2.31	11	9.43	12.7	7.38	<0.05	0.1	1.3	1.2	8.7	0.11	0.86	1300	2800	130	300	1560	<1	112	3.89	189	169	112	0.386	270	481	<0.25		230	<1	<1	230
	2/18/10	4.32	7.89	2.2	10	9.87	13.9	8.28	<0.05	<0.02	0.5	0.5	8.8	0.15	NM	NM	NM	NM	80	1496	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/17/10	3.24	8.06	2.46	5	9.69	13.8	7.52	<0.05	0.1	0.8	0.7	8.3	0.14	0.19	NM	1300	500	50	1673	6	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/19/10	1.60	8.09	2.28	3	8.74	17.7	5.2	<0.05	<0.02	0.7	0.7	5.9	0.09	0.12	908	2300	300	50	1550	5.1	112	1.56	201	175	112	0.152	310		<0.25	0.351	230	<1	<1	230
	6/9/10	0.80	8.01	2.44	4	8.86	18.5	6.45	<0.05	<0.02	0.8	0.8	7.3	0.25	0.36	NM	2300	500	130	1659	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SLR28	7/15/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/10/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/28/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/27/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/17/09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	1/26/10	47.70	7.68	1.53	17	6.72	13.4	8.72	0.07	<0.02	0.5	0.5	9.3	0.14	0.59	674	5000	40	20	1000	<1	58.2	14.3	137	120	58.2	0.749	150	328	<0.25		150	<1	<1	150
	2/18/10	24.95	7.95	1.64	5	13.97	16.2	10.2	0.07	<0.02	<0.5	0.2	10.5	0.13	NM	NM	900	120	50	1115	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/17/10	27.90	8.05	1.65	5	12.01	16.8	8.78	0.07	<0.02	0.7	0.7	9.6	0.14	0.13	NM	1300	130	50	1122	15.2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	5/19/10	1.26	8.18	1.93	0	10.36	20.8	7.1	<0.05	<0.02	<0.5	0.2	7.4	<0.007	<0.02	647	2800	170	9	1180	1.6	70.2	13.4	154	131	70.2	<0.05	210	NM	<0.25	0.282	230	<1	<1	230
	6/9/10	0.38	8.03	1.94	0	11.05	21.0	9.02	<0.05	<0.02	<0.5	0.2	9.3	0.12	0.14	NM	3500	500	130	1319	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

NM - Not Measured

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	Org. N	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Bicarbonate Alkalinity	Crbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L

ND - Not Detected

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Water Quality Activity

TITLE: **Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland**
ID NUMBER: **SLR-003**

ACTIVITY IMPLEMENTATION
Oceanside Harbor has over 40 storm drains with small drainage areas that carry flow to the harbor. One drain with historic bacterial exceedances receives flow from the harbor boat wash. Located within 15 feet of the drain are two wastewater discharge hook-ups for recreational vehicles (RV). This activity, SLR-003, addresses structural BMP implementation at the boat wash drain.

ACTIVITY IMPLEMENTATION FYs 2006-07 and 2007-08
Two bacteria reduction pilot projects have been implemented in the past: installation of an antimicrobial fabric in FY 2006/07 and increased frequency of storm drain cleaning in FY 2007-08. The antimicrobial fabric did not display long-term effectiveness, possibly the result of added hydrocarbons and sediment in the runoff. The City then implemented monthly cleaning of the storm drain outfall in May 2007 which showed reductions in bacterial counts, though there were still some bacterial level exceedances which may be due to re-growth in the pipe.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor Boat Wash storm drain. This system utilizes a combination of technologies to not only address the high priority pollutant of bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. The wetland consists of a vault 22 feet long, five feet wide, and five feet deep. The peak treatment volume is 4000 cubic feet per second with a bypass for higher flows.

To address bacteria, the Modular Wetland is utilizing BioMediaGreen, a new type of media in lightweight block format that is easy to handle and replace, for primary filtration. The wetland is then using a sub-surface flow wetland for biological remediation. Because the harbor is a harsh, salt-water environment, the system is using a hardy, fast growing plant with large root bundles, called Vetiver grass. It was estimated that it take about six months for the plants to get established in the wetland and the roots to get to the bottom of the vault, and therefore, peak treatment to begin.

ACTIVITY IMPLEMENTATION FY 2008-09
After the installation of the wetland, the separator vault was filled to remove the possibility of growth/regrowth between the wetland and the outfall. For six months (July 2008 – January 2009), the City conducted paired sampling of the wetland outfall and the storm drain outfall and found that there was no evidence of regrowth in the pipe. Monitoring of this outfall pipe continued during FY 2008-09 and has been ongoing since 2004 and will continue through the Coastal Storm Drain Monitoring (CSDM) Program for total coliforms, fecal coliforms, and Enterococcus. Not quantified, but pollutants also being addressed by this BMP are oil and grease and trash.

ACTIVITY IMPLEMENTATION FY 2009-10

During FY 2009-10, bacteria monitoring continued through the Coastal Storm Drain Monitoring program. BioClean Environmental Services, Inc continued to service the wetland.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

The Modular Wetland was installed at the beginning of April 2008. The peak treatment efficiencies were expected to be reached by October 2008 and were dependent on plant growth and media maturity.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- BioClean Environmental Services, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS ASSESSMENT

The Modular Wetland was installed in FY 2007-08 and peak treatment efficiencies were expected in FY 2008-09. A six month regrowth study between the wetland and the outfall pipe was also conducted in FY 2008-09. Outfall monitoring continued this fiscal year through the CSDM program. A comprehensive report of the current and historical data, regrowth study, and bacteria trends are provided in Attachment A.

FY 2008/09 provided the least number of exceedance days since monitoring began. The current fiscal year had less monitoring days, 15 as opposed to18 in the previous year, and exceedance days (according to CSDM action levels) were about the same. Enterococcus action levels were not exceeded this fiscal year, and total and fecal coliform levels exceeded one additional day from the previous year. The modular wetland may be having a positive affect on Enterococcus and fecal coliform levels, but total coliform levels remain the same. Although exceedances at the outfall do still occur, flow rates are usually less than one gallon/minute (gpm) and receiving water exceedances rarely occur (two total coliform and fecal coliform exceedance of AB411 single-sample standards throughout FY 2009/10).

These reductions show a change in Level 5 Effective Assessment Outcomes, changes in urban runoff and discharge quality. Assessment will continue through the next fiscal year.

ATTACHMENT A TO SLR-003

Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall 2009-10 SLR WURMP Annual Report

Results Summary

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Introduction

The City of Oceanside's Clean Water Program has been monitoring the Oceanside Harbor boat wash outfall, located adjacent to the boat ramp, since 2004 as part of the Coastal Storm Drain Monitoring (CSDM) Program. This outfall drains the boat wash-down area, which includes four fresh water spigots, and two sewage dump stations for recreational vehicles, and is located approximately 150 feet upstream of the outfall. Exceedances of CSDM action levels for total and fecal coliforms have been occurring at the outfall since monitoring began. However, exceedances of REC-1 receiving water standards have rarely occurred at this site. Average flow rates from the outfall are 1gpm or less.

Several BMPs have been attempted to reduce bacteria levels and exceedances at the outfall. Until late 2008, this drainage line did have a separator vault to separate debris, sediment, and hydrocarbons from entering the harbor. It is suspected that while this did assist in sediment and debris separation, the vault may have allowed bacteria growth and/or regrowth which would result in bacteria action level exceedances. Other BMPs included installation of anti-microbial fabric in the vault, increased cleaning frequency of the storm drain line, and additional signage for RV users.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor boat wash storm drain inlet. This system utilizes a combination of technologies to not only address bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. It was agreed that the City would continue to sample the outfall for bacteria, under the CSDM program guidelines, and BioClean would complete the product effectiveness testing.

Results

Table 1 provides the indicator bacteria results from the outfall (also known as Coast 08 under the CSDM program). Bacteria samples were processed by Weston Solutions, Inc. or the City of Oceanside's San Luis Rey Wastewater Treatment Plant Laboratory using the multiple tube fermentation (MTF) method. Results in red and bold indicate an exceedance of the CSDM action levels which are presented in Table 2.

After the installation of the wetland, the separator vault was filled in to remove the possibility of growth/regrowth between the wetland and the outfall. For six months, the City conducted paired sampling of the wetland outfall and the storm drain outfall and found that there was no evidence of regrowth in the pipe. These results are presented in Table 3.

Table 1. Oceanside Harbor Boat Wash Outfall Monitoring Results from June 2004 through June 2010.

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
6/22/2004	11800	6500	**160000**
6/30/2004	1730	**80000**	**1600000**
7/13/2004	726	**24000**	**160000**
8/11/2004	**23500**	**160000**	**160000**
9/7/2004	8660	800	9000
11/16/2004	1400	**1600000**	**1600000**
12/14/2004	17100	20	500
1/18/2005	460	5000	130000
2/8/2005	2250	500	**900000**
3/8/2005	3730	8000	**1600000**
4/12/2005	5	400	8000
4/19/2005	580	1100	**300000**
4/26/2005	130	3000	**900000**
5/3/2005	8220	300	80000
5/10/2005	2340	3000	110000
5/24/2005	210	**30000**	50000
6/7/2005	210	**50000**	130000
6/21/2005	290	7000	**300000**
6/21/2005	6520	**50000**	**1600000**
7/19/2005	210	5000	**500000**
8/2/2005	590	**130000**	**220000**
8/16/2005	340	8000	130000
8/30/2005	270	5000	50000
9/13/2005	240	17000	140000
9/27/2005	51	**80000**	80000
10/11/2005	75	17000	50000
10/25/2005	1000	5000	**170000**
11/8/2005	3140	1300	23000
1/17/2006	**98040**	13000	**900000**
2/14/2006	150	300	5000
3/27/2006	5	1300	130000
4/10/2006	230	10000	**400000**
4/10/2006	230	10000	**400000**
5/1/2006	120	230	**1600000**
5/30/2006	20	1600	**160000**
6/12/2006	360	**20000**	**420000**
6/26/2006	430	**900000**	**1600000**
7/10/2006	2970	**30000**	**500000**
7/24/2006	**54800**	**80000**	**1600000**
8/7/2006	1750	**30000**	**900000**
8/21/2006	990	500	23000
9/5/2006	1400	2800	**500000**
9/18/2006	**50000**	**160000**	**1600000**
9/18/2006	11000	**160000**	**900000**
11/20/2006	580	3000	50000

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
12/20/2006	2190	2800	110000
2/26/2007	107	110	11000
3/20/2007	5	1700	110000
5/7/2007	120	1400	80000
5/21/2007	5	40	23000
6/11/2007	100	3000	130000
6/25/2007	1782	**50000**	**900000**
7/3/2007	296	1100	**240000**
7/17/2007	150	13000	80000
7/30/2007	569	**1300000**	**1600000**
8/13/2007	760	800	130000
8/27/2007	130	5000	13000
9/24/2007	190	**23000**	30000
10/17/2007	4,050	**500,000**	**900,000**
10/29/2007	210	1,100	**1,600,000**
11/13/2007	1,935	**23,000**	**1,600,000**
12/18/2007	368	**70,000**	**300,000**
1/17/2008	**24,196**	**30,000**	**1,600,000**
1/31/2008	30	1,100	**900,000**
2/28/2008	213	13,000	**1,600,000**
4/1/2008 – Modular Wetland Installed			
4/14/2008	5	300	50,000
5/12/2008	**24,196**	600	140,000
6/2/2008	14,136	**110,000**	**170,000**
6/10/2008	5	20	40
7/7/2008	622	5,000	**1,600,000**
7/15/2008	41	2,200	17,000
7/21/2008	95	3,000	17,000
8/4/2008	63	1,700	110,000
9/2/2008	670	17,000	**300,000**
9/11/2008	2,062	2,800	13,000
10/7/2008	1,989	17,000	80,000
11/10/2008	15,531	**170,000**	**1,600,000**
11/18/2008	7,270	**30,000**	**1,600,000**
12/8/2008	250	1,300	30,000
1/12/2009	85	700	**900,000**
1/21/2009	73	13,000	**220,000**
2/1/2009 - BioMediaGREEN +AM (Anti-Microbial) Filter Installed in the Discharge Chamber of the Wetland			
2/4/2009	52	300	**500,000**
2/13/2009	134	20	11,000
3/3/2009	1,850	1,400	17,000
4/6/2009	226	1,100	130,000
5/14/2009	471	5,000	50,000
6/1/2009	**24,800**	**80,000**	**1,600,000**
6/9/2009 – Wetland maintenance. Replaced all media components in the wetland chamber.			

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
8/17/2009	790	3,500	70,000
9/8/2009	3,100	17,000	170,000
9/15/2009	610	30,000	300,000
10/21/2009	16,000	1,600,000	>1,600,000
10/27/2009	3,330	23,000	80,000
11/3/2009	170	2,200	80,000
11/9/09	200	1,300	22,000
12/2/09	3,310	2,800	350,000
12/17/09	7,270	230	220,000
1/11/2010	420	1,100	900,000
2/15/10	10,700	900,000	900,000
2/24/10	1,700	80	28,000
4/15/10	145	2,200	110,000
6/9/10	8,800	3,000	500,000
6/14/10	1,090	11,000	500,000

Table 2. CSDM Action Levels.

Total Coliform	160,000 MPN/100ml
Fecal Coliform	18,755 MPN/100ml
Enterococcus	17,820 MPN/100ml

Table 3. Test for Regrowth between Wetland Outfall and Storm Drain Outfall.

Date	Location of Sample (WO = Wetland Outfall, OF = Storm Drain Outfall)	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
7/7/2008	WO	332	17,000	1,600,000
	OF	622	5,000	1,600,000
8/4/2008	WO	20	2,300	110,000
	OF	63	1,700	110,000
9/2/2008	WO	51	30,000	500,000
	OF	670	17,000	300,000
9/11/2008	WO	1,775	170,000	900,000
	OF	2,062	2,800	13,000
10/7/2008	WO	275	11,000	170,000
	OF	1,989	17,000	80,000
11/10/2008	WO	4,198	110,000	900,000
	OF	15,531	170,000	1,600,000
11/18/2008	WO	15,531	70,000	1,600,000
	OF	7,270	30,000	1,600,000
12/8/2008	WO	121	3,000	110,000
	OF	250	1,300	30,000
1/12/2009	WO	121	300	900,000
	OF	85	700	900,000

Conclusions

While the City has not been conducting the BMP removal efficiency testing, it did appear that the number of exceedance days (as defined by the CSDM program) decreased during the 2008/09 fiscal year, during which the modular wetland has been in place. In fiscal year 2009/10, there were no Enterococcus exceedances. Fecal coliform exceedances were about the same and total coliform exceedances increased slightly. No additional signage or BMPs have been in place during this time. Table 4 and Figure 1 present the exceedance day data for all indicator bacteria.

Table 4. Exceedance Day Results by Fiscal Year for Harbor Boat Wash Outfall.

Fiscal Year	Total Coliforms		Fecal Coliforms		Enterococcus		# Days Sampled
	Frequency of Exceedance	% Exceedance	Frequency of Exceedance	% Exceedance	Frequency of Exceedance	% Exceedance	
2004/05	9	53%	6	35%	1	6%	17
2005/06	10	56%	4	22%	1	6%	18
2006/07	7	47%	6	40%	2	13%	15
2007/08	10	59%	7	41%	2	12%	17
2008/09	8	44%	3	17%	1	6%	18
2009/10	9	60%	4	27%	0	0%	15

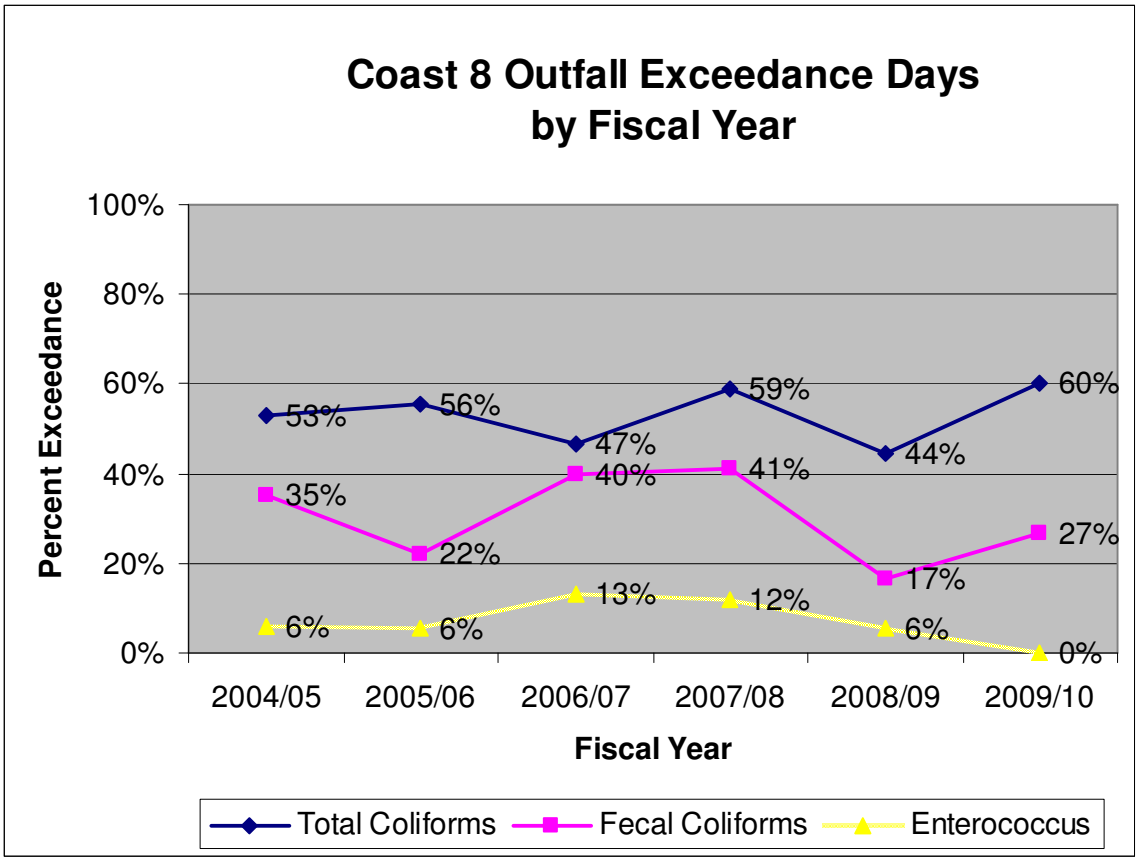

Figure 1. Exceedance Day Results by Fiscal Year for Harbor Boat Wash Outfall.

The 2009/10 fiscal year had the first year with no Enterococcus exceedances; down from just one exceedance the previous year. The percentage for fecal coliform results increased, but only by one additional exceedance day. The same occurred for total coliform exceedances; nine exceedances during the fiscal year, as opposed to eight the previous year. While there were fewer days with ample water to sample, the number of exceedances was about the same as the previous year; implying mixed results.

Ideally, these results could be matched to the removal efficiency results of the wetland to show that, indeed, the wetland is the cause of the reduced number of exceedances. BioClean Environmental, Inc. collected five samples between June and July of 2008 that appear to show removal efficiencies of the wetland itself. Further BMP effectiveness testing was conducted in the spring of 2009, with five samples collected, but testing was only conducted on the BioMediaGREEN+AM filter that was installed in the discharge chamber.

In summary, monitoring will continue at the Harbor boat wash outfall for indicator bacteria and long term effectiveness will continue to be assessed, through Coastal Storm Drain Monitoring. Although removal amounts of trash and hydrocarbons have not been quantified, visual observations of the absorbent pads and trash collection devices all indicate that the wetland is very successful in the removal of these pollutants. The effectiveness for bacteria pollution seems to be less so, although the number of fecal coliform exceedances seems to have decreased the most compared to historical results.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality and Education Activity

TITLE: **Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail**
ID NUMBER: **SLR-004**

ACTIVITY DESCRIPTION
The City of Oceanside manages an eight mile recreational walking and biking trail that is adjacent to the San Luis Rey River. This trail has high recreational traffic including bikers and walkers some of who walk and run their dogs along the trail. Since the trail was opened in 2000, city crews have noticed that pet waste, specifically dog waste, is not always picked up and properly disposed in trash cans, but is left on the trail. The City wants to install pet waste bag dispensers, signage, and trash cans along the trail. City crews have expressed concern about potential problems with installing some of these BMPs including the cost for maintenance and probable vandalism to signs and pet waste bag dispensers. The goal of this project is to determine which types of educational BMPs will enact a behavioral change amongst people who do not pick up pet waste and prioritize specific locations for BMP installation.

Pet waste left on grass, sidewalks, and along trails is not only a leading cause of bacterial contamination in waterways, but it also an issue that concerns Oceanside residents. In the spring of 2009, the City of Oceanside Clean Water Program launched a Pick up Your Pet Waste Campaign to encourage dog owners to clean up after their pets. The project focused on the San Luis Rey River Trail (Trail) which is a location where pet waste still accumulates.

ACTIVITY IMPLEMENTATION FY 2007-08
- Different types and designs of pet waste bag dispensers were researched. At least two different dispensers will be installed to determine the type used by the public, ease of maintenance, and vandalism potential.
- Service estimates from pet waste removal companies were received for temporary cleanup services and assessment of waste not picked up along the trail. The company will be asked to provide feedback on sections of the trail that have more waste than other sections. This will help determine the high use areas and where it may be most effective to install the dispensers, signs, and trash cans.
- A local Girl Scout troop "adopted" this pilot program as part of their Bronze Award requirements. They agreed to assist in some of the components of the education outreach program. Their activities may include staffing tables along the trail as part of a kick-off event, to be taped on a local television show encouraging people to pick up dog waste, and assess the data collected from the project. They may provide additional assistance where needed.
- A Community Based Social Marketing component is planned to be implemented as part of the projects education outreach component. Activities proposed to assist with the CBSM may include a visual observation component, identification of experimental and control areas along the trail, a mail survey to residents to identify barriers, an assessment of survey responses, and recommendations for BMP implementation as a result of the survey assessment.

ACTIVITY IMPLEMENTATION FY 2008-09

Girl Scout Troop 1215 of Oceanside began assisting with tasks related to the education outreach component which were also part of an overall a Community Based Social Marketing (CBSM) project. The goal of the overall CBSM project is to decrease the amount of pet waste left along the San Luis Rey Recreation Trail and bike path. The four main tasks of the CBSM project include:

- Task1: Establish a baseline measure of dog waste in pilot and control areas. This is done to establish the overall effectiveness of the CBSM pet waste pilot project. This task began with a series of observations prior to project implementation to establish a baseline of prevalence of pet waste along the trail. The bike path was divided into one experimental and one control area.
- Task 2: Mail survey of residents to identify barriers. The use of a mail survey will identify knowledge, awareness, behavior, and primary barriers with respect to pet waste and pet waste pick-up among residents of the communities surrounding the trail.
- Task 3: Analysis and Recommendations. Based on results of the barrier survey program recommendations that incorporate the use of various CBSM components will be developed.
- Task 4: Program Implementation: Post-test Evaluation: In order to evaluate effectiveness of the CBSM pet waste project, repeating of the behavioral observations conducted at the start of the project are recommended. Observations should be conduced in the experimental section of the path (where program materials are implemented) as well as in one control section of the path (no materials).

During this reporting period Tasks 1 – 3 were completed and are detailed below.

Task1 - Establish a baseline measure of dog waste in pilot and control areas.

As part of the implementation of the CBSM project described above, Girl Scout Troop 1215, located in Oceanside, offered their assistance in implementing components of the CBSM project. Some tasks detailed below were part of the official CBSM project while others were tasks as part of their requirements to earn the Bronze Award which is the highest honor a Girl Scout Junior can achieve:

Skit during Troop meeting

During one of the regular Troop meetings, two of the girls conducted a skit demonstrating the importance of picking up after the dog. See Attachment A to this activity sheet for a picture of the two girls during their skit. This task assisted these two girls in earning their Bronze Award.

Intercept surveys along trail

This task was part of the CBSM project and was implemented by four girls from Troop 1215. The four girls, along with the Troop Leader and one other parent, conducted intercept surveys along the Trail on a Saturday morning, April 4, 2009. Two different intercept surveys were utilized – one for dog walkers and one for bike trial visitors. See Attachment A to this activity sheet for a copy of the two surveys.

The portion of the Trail targeted for this project was divided into three sections: A, B and C. See Attachment A to this activity sheet for a map of the trail and its identified sections. There is a

paved bike trial on the south side of the river and a dirt trail on the north side. The Girl Scout troop divided into two groups. One group walked the north side of the trail and one group walked the south side of the trial to conduct the surveys. Prior to conducting the intercept surveys the girls were given direction on how to properly approach people and conduct the surveys.

Troop members approached people on the trail and asked if they would answer four questions. If the trail user had a dog with them, the Girl Scout asked the questions on the Dog Walker Survey. If the trail user did not have a dog with them, the Girl Scout asked the questions on the Bike Trail Visitor Survey. The Girl Scouts also carried pet waste bags with them and offered them to trail visitors who had dogs if they needed them.

There were four objectives to the intercept surveys:

1. Determine if Trail visitors lived in Oceanside
2. Determine which street they lived on in Oceanside
3. Determine where they accessed the Trail
4. Determine if dog walkers had a pet waste bag in hand already.

As a result of question number two on the surveys, a map was created to identity which streets the trail visitors lived on that accessed the trail that day. Question number three provided information on the most common access points to the trail. These two questions helped target the addresses to which the mail survey would be sent and potentially prioritizing BMP installation locations. Because there are thousands of homes located in the vicinity of the trail it was not feasible to mail surveys to all households due to funding limitations. Thus 300 addresses were selected based on the streets and access points noted from the surveys. See Attachment A to this activity for a map denoting streets where trail visitors lived.

Existing Poop Pile Assessment

While the Girl Scouts were conducting the surveys, they also counted the number of poop piles on both on the north and south side trails. This helped identify the locations on the trail that had higher concentrations of poop piles. It was determined that the unpaved trail on the north side of the river had more poop piles than the south side. But, this may be due to the fact that City crews clean the paved bike trail on a monthly basis, whereas no cleaning services are conducted on the unpaved trail on the north side.

Tasks 2: Mail survey to identify barriers

To inform the public in the development of the campaign, a random sample of 300 Oceanside households located in neighborhoods near the Trail were mailed several pieces of information in April and May 2009. The goal of the survey was to identify the reasons why people do or do not pick up after their pets on the Trail and other public areas. The mail survey included the following items:

- Pre notification letter informing residents that they will soon be receiving a brief one-page survey (dated April 27, 2009).
- Cover letter requesting the resident to complete the enclosed survey (dated May 1, 2009).
- Copy of the survey titled “City of Oceanside Survey of Dog Waste in the Community”.
- Postcard reminding residents that a survey was sent the previous week and requesting them to complete and send the survey if not already done (dated May 7, 2009).

- Self-addressed stamped envelope for respondents to mail their completed survey.
- Follow-up letter to addresses from which survey not received as of yet (dated May 14, 2009).
- See attachment # for a copy of all the correspondence listed above.

Task 3: Analysis and Recommendations

Of the 300 surveys that were mailed 180 surveys were completed and mailed back. This is a 63% completion rate which is higher than the anticipated 50% completion rate. Of those residents who completed the survey, 70% had visited the Trail in the past and 48% reported that they had a dog in their household. See Attachment A to this activity sheet for complete survey results.

The results of the survey provided clear recommendations for the Pick Up Your Pet Waste Campaign at the Trail including the installation of additional trash cans and pet waste bag dispensers as well as modifying signage to emphasize pet owner responsibility. Ninety-three percent of survey respondents agreed that more pet waste dispensers are needed in the community. As a result, the City plans to move forward with installing additional signage, trash cans, and pet waste bag dispensers along the Trail.

ACTIVITY IMPLEMENTATION FY 2009-10

During this reporting period several tasks of the overall project were implemented.

Identification of pilot and control areas along trail

The trail was divided into experimental (pilot) and control sections. See Figure 1 below for a map of the trail that shows these trail sections. These different sections will be used to assess the effectiveness of the program.

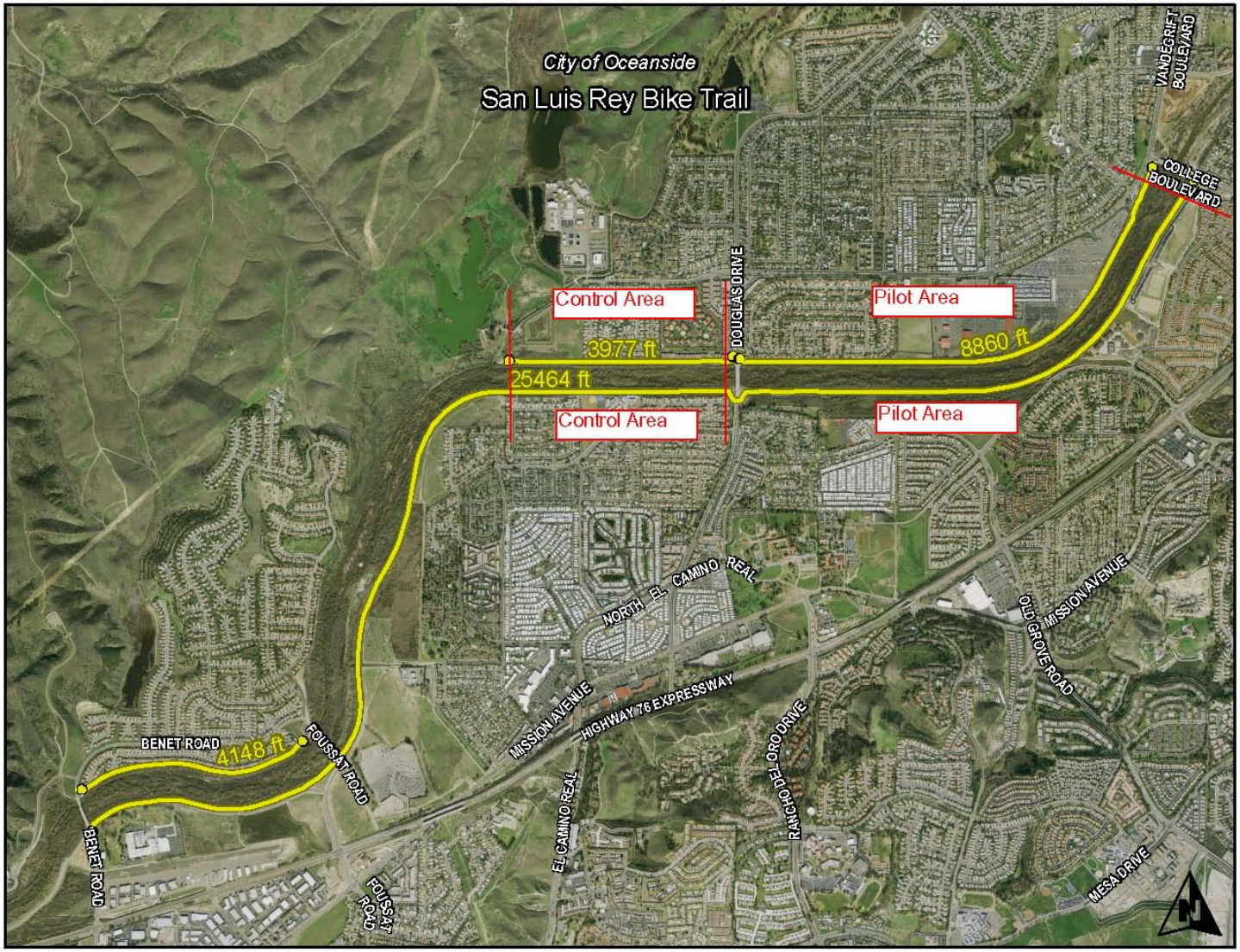

Figure 1: San Luis Rey Recreation Trail Control and Pilot Areas for Pet Waste Campaign

Pet Waste Bag Dispensers
Various pet waste bag dispensers were researched to determine the most appropriate to install in the trail based on aesthetics, vandalism potential and ease of use by the public and City staff to maintain and service. One type of dispenser was selected for installation. Four dispensers are scheduled to be installed during FY 2010-11 at the eastern and western ends of the pilot areas on both the north and south sides of the trail.

Signage
Signage to be installed at the pet waste bag dispenser stations was produced during this reporting period. With recommendations from Action Research, a community based social marketing company, a sign was created that was simple, easy to read and focused on the behavior that is the "right thing to do". It was also recommended that the sign focus on one activity, picking up pet waste, and to leave off any leash law messages. See Figure 2 below for the artwork created during this reporting period. Four of these signs are scheduled to be installed along with the pet waste bag dispensers during FY 2010-11.

Figure 2: Pet waste sign created for placement on Oceanside Recreation Trail

Pet Waste Removal
As part of the project evaluation it was recommended that all waste be removed from both the pilot and control sections of the trail just prior to installation of the pet waste bag dispenser stations. During this reporting period a contractor was hired to count the number of piles in each section of the trail, remove accumulated pet waste from the trail, and obtain an average weight of the waste piles. This task occurred on June 23 and 24, 2010.

Clean Water Program Newsletter Article
During this reporting period an article about the Pick Up Your Pet Waste Campaign was published in the Oceanside Clean Water Program Newsletter. This newsletter was mailed to over 40,000 households. See Attachment A to this activity for a copy of this newsletter that includes this article.

Video presentation on Oceanside Update (KOCT)
The Oceanside Update is produced by Oceanside's local television station, KOCT, and is a thirty minute program providing information to Oceanside citizens about upcoming community events. Speakers are allowed approximately 3 minutes to provide information specific to their division, department or program. Oceanside's Clean Water Program regularly tapes for this program about beach and river cleanup vents, other environmental programs and updates on Clean Water Program projects.

In July 2009 three members of Girl Scout Troop 1215, a local Oceanside troop, were videotaped for the Oceanside Update program providing information about the Pick Up Your Pet Waste campaign along the San Luis Rey Recreation trail. This video was shown during the month of August 2009. The half hour Oceanside Update is shown twice per day. See Attachment B to this activity in DVD format for a copy of the Oceanside update program section showing the Girl Scout taping (Cyberlink Power DVD required to view).

Tasks planned for FY 10-11
The following tasks are planned for implementation during FY 2010-11:
1. Installation of pet waste bag dispensers and signage in pilot area.
2. Pet waste piles to be tabulated then removed in pilot and control areas of the trail just after installation of pet waste bag dispensers.
3. Final Report for the Pick Up Your Pet Waste CBSM Campaign
4. If assessment results come back positive, the City will consider installation of dispensers in control areas depending on funding availability.

TMDL APPLICABILITY
This section of the river is not under TMDL development or implementation. However, the Pacific Ocean Shoreline at the mouth of the San Luis Rey River is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development in 2008.

TIME SCHEDULE FOR IMPLEMENTATION
Program planning for this activity was completed during the 2007-08 reporting period, with components of the project implemented during FY 2008-09. Additional components of the program were conducted during FY 2009-10. Based on the assessment results Pet waste bag dispensers with positive signage are scheduled to be installed along the trail in FY 2010-11. A final report for the overall project is scheduled for completion during FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside

OTHER PARTICIPATING ENTITIES
- Girl Scout Troop 1215

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a priority water quality problem in the San Luis Rey River Watershed. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

FY 2009-10

During FY 2009-10 a survey was mailed to households near the trial. Of the 300 surveys that were mailed 63% completed surveys were returned. This demonstrated that the survey protocols were very effective in getting feedback from residents about pet waste in their community. See the FY 2008-09 SLR WURMP Annual Report for the assessment of the survey.

FY 2010-11

During FY 2010-10 it is anticipated that the following assessment will be conducted:

- Baseline loads of pet waste were tabulated during FY 2009-10. During FY 2010-11 pet waste piles will be tabulated along the entire trail just after installation of pet waste bag dispensers. Task will include collecting and weighing of dog waste left on the trail and disposed in trash cans located along the trail. This will determine if the dispensers are being used by the public.
- The number of pet waste bags used from the new dispensers installed along the trail will be tabulated as dispensers are refilled.
- Assessment of the type of dispensers and signs installed in the experimental area are effective and acceptable for installation in the control area.

Attachment A to SLR-004
Pet Waste Removal Pilot Project
Along San Luis Rey Recreation Trail

FY 2009-10 SLR WURMP Annual Report

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CITY OF OCEANSIDE clean water program

Volume 7, Issue 2 - Fall 2009

California Coastal Cleanup Day & Buena Vista Creek Cleanup September 19, 2009 9 a.m. - 12 p.m.

Celebrate the 25th Anniversary of California Coastal Cleanup Day by participating in the ninth annual Buena Vista Creek Cleanup and Oceanside Beach Cleanup. The City of Oceanside, together with I Love a Clean San Diego, Coastkeeper, and 1-800-GOT-JUNK will be hosting a cleanup along the banks of Buena Vista Creek, as well as a beach cleanup, on September 19th, from 9 a.m. to 12 p.m. Volunteers will receive cleanup supplies, refreshments, community service hours, and a free give-away item. Call the Clean Water Program Event Information Line for more details at 760-435-5536.

Cleanup sites

- Behind Dicks Sporting Goods at Plaza Drive and College Boulevard (3514 College Boulevard)
- North of Fire Station #4 located at Thunder Drive and Lake Boulevard.
- Behind Kohl's store at College Boulevard and Marron Road
- South side of Oceanside Pier
- Buccaneer Beach at Pacific and Morse Streets (1500 South Pacific Street)

To register for this event click on www.cleanupday.org.

For more information about Oceanside cleanup events and how you can prevent water pollution, visit this Web site: www.oceansidecleanwaterprogram.org.

In This Issue

- Upcoming creek, river and beach cleanup events
- Pick Up Your Pet Waste Campaign - Pet waste survey results
- Water conservation and water pollution prevention tips

Pick Up Your Pet Waste Campaign along the San Luis Rey Recreation Trail

Pet Waste Survey Results

Pet waste left on grass, sidewalks, and along trails is not only a leading cause of bacterial contamination in waterways, but it is also an issue that concerns Oceanside residents. In the spring of 2009, the City of Oceanside Clean Water Program launched a Pick Up Your Pet Waste Campaign to encourage dog owners to clean up after their pets. The project focuses on the San Luis Rey River Trail which is used for a variety of recreational purposes including walking, running, and biking. Many people also bring their dogs with them to the Trail. Although most dog owners who use the trail clean up after their pets, some pet waste still accumulates along the trail.

To kick off the campaign, a brief survey was mailed to 300 Oceanside households located in neighborhoods near the Trail. The goal of the survey was to identify the reasons why people do or do not pick up after their pets on the Trail and in other public areas. Sixty-five percent of the households completed the survey and returned it to the City. Of those residents who completed the survey, 70 percent had visited the Trail in the past and 48 percent reported that they had a dog in their household.

Reasons for Picking Up Dog Waste

Both dog owners and non-dog-owners agree that it is important to pick up dog waste, rating the importance of the issue as 9.6 out of 10. The top-rated reasons for picking up dog waste and throwing it in the trash were because: "It is the right thing to do" and "It pollutes parks, rivers, and beaches."

Continued on back page

Urban Runoff Hotline - Help protect our local waterways

Please report anything other than rain water entering the storm drain.

760-435-5800 "Only Rain in the Storm Drain!"

Pet Waste Survey Results continued from front page

Barriers to Picking up Dog Waste

The vast majority of Oceanside dog owners who walk their dogs reported that they ***always*** pick up after their pet, but 17 percent stated that they sometimes leave their dog's waste behind without picking it up. Among dog owners, the most common reasons cited for why someone might leave dog waste behind while walking the Trail were:

- Forgot to bring a bag
- Nowhere to throw it away
- No one else around to see them

Survey Recommendations

The results of the survey provided clear recommendations for the Pick Up Your Pet Waste Campaign at the Trail including the installation of additional trash cans and pet waste bag dispensers as well as modifying signage to emphasize pet owner responsibility. Ninety-three percent of survey respondents agreed that more pet waste dispensers are needed in the community. As a result, the City plans to move forward with installing additional signage, trash cans, and pet waste bag dispensers along the Trail.

Scoop the Poop – It's a Dog Owner Doody!

The City asks that you keep the following tips in mind when you plan to walk your dog.

- Take a bag with you or use a personal pet waste bag dispenser
- Pick up and dispose of waste in a trash can, not along the side of the trail or sidewalk

For copies of the survey along with final survey results log on to www.oceansidecleanwaterprogram.org. Thank you for doing your part to protect water quality by picking up after your dog.

2009-2010 River, Creek, & Beach Cleanup Events

Please join the Clean Water Program staff and citizen volunteers to assist in removing trash and debris from our local rivers, creeks, and beaches.

Event Times: 9:00 a.m. - 12:00 p.m.
Event Details: 760-435-5536

- November 7, 2009: San Luis Rey River Cleanup
- April 24, 2010: Loma Alta Creek Cleanup
- July 5, 2010: Morning After Mess - City Beaches (8 - 11 a.m.)
- September 18, 2010: Buena Vista Creek Cleanup and California Coastal Cleanup Day
- November 6, 2010: San Luis Rey River Cleanup

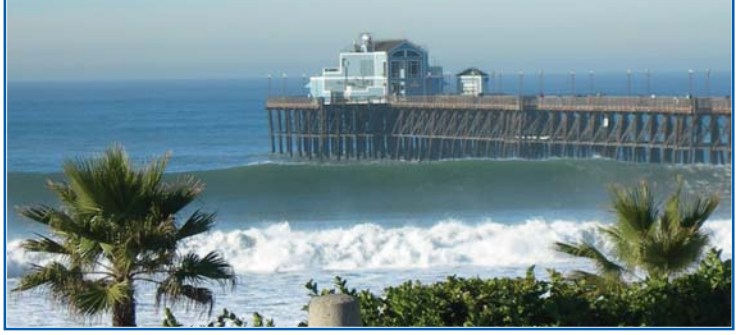

Protect Water Quality and Conserve Water by following these simple tips

The City of Oceanside is committed to water conservation and water pollution prevention. Oceanside is in a Drought Level 2 with mandatory water restrictions to reduce its water use by at least 8 percent. Follow these simple tips to help conserve water and prevent water pollution.

- Repair broken or leaking hose bibs, sprinklers and valves.
- Eliminate water runoff.
- Sweep driveway, sidewalk, patio and deck. No hosing down of paved surfaces.
- Use a shutoff nozzle on your hose.
- Add 2" to 3" of mulch around trees and plants to reduce evaporation.
- Replace grass with low-water-use plants.
- Check faucets and toilets for leaks and fix promptly.
- Take shorter showers.

Online Resources

www.SaveWaterOceanside.com

The City of Oceanside now has a Web site dedicated to water conservation. Log onto www.SaveWaterOceanside.com for more water-saving tips and useful resource information.

www.bewaterwise.com

The Metropolitan Water District is offering free online low-water-use landscape classes for residents and professionals at www.bewaterwise.com. The following classes are available:

- Mini tutorials on the Basics: Four short lessons cover the key points of water-wise gardening. (15 minutes each)
- In-Depth tutorials for Home Gardeners: Residential gardeners can dig into these more detailed lessons. (60 minutes each)
- Professional Landscape Maintenance tutorials: If you landscape for a living, update your knowledge on landscape irrigation systems, fine tuning the controller, irrigation scheduling considerations, and much more.
- Seminarios Profesionales de Mantenimiento de Paisaje - Ahora en español: Si usted trabaja en mantenimiento de jardines, actualice su conocimiento en sistemas de riego, en ajustar el controlador, en el plan de riego, y mucho más.

Get a No-Cost Home Energy and Water Savings Kit from SDG&E

Save energy, save money, and help the environment with this complimentary kit which contains a low-flow shower head and three faucet aerators. When installed, they can help you save water and the energy used to heat it. To request your kit today, visit www.sdge.com/energykit, or call 1-800-644-6133.

City of Oceanside

Clean Water Program
300 North Coast Highway
Oceanside, California 92054
760-435-5800
www.oceansidecleanwaterprogram.org

WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID NUMBER: **SLR-005**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained eleven dispenser stations at three parks within the San Luis Rey River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed. The parks and the number of dispensers include:

- Live Oak Park (3 dispensers)
- Palomar Park (1 dispenser)
- Guajome Regional Park (7 dispensers)

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed. The parks and the number of dispensers include:

- Live Oak Park (3 dispensers)
- Palomar Park (1 dispenser)
- Guajome Regional Park (7 dispensers)

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey River Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Facility Name	FY 09-10		
	# of Stations	# of Bags Used	Dog Waste Removed (lbs)
Live Oak Park	3	8,075	1,615
Palomar Park	1	3,230	646
Guajome Regional Park	7	22,610	4,522
Total	**11**	**33,915**	**6,783**

During the FY 2009-10 reporting period the County maintained 11 stations among three County Parks within the San Luis Rey River Watershed. These stations distributed approximately 33,915 bags, preventing an estimated 6,783 lbs. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

WATERSHED ACTIVITY SUMMARY SHEET
Education Activity
FY 2009-10 Implementation Summary

TITLE: **Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses**

ID NUMBER: **SLR-007**

ACTIVITY IMPLEMENTATION

This free educational workshop targeted nurseries and agricultural businesses and was held at the San Diego County Farm Bureau in Escondido on June 24, 2010. Four speakers provided owners and operators and agricultural resources agencies with a better understanding of water quality runoff management issues related to their operations. Growers from north San Diego County watersheds were invited to attend (San Luis Rey, San Dieguito, and the Carlsbad Hydrologic Unit).

Topics covered during the workshop were as follows:

- Overview.
- Irrigated Agricultural Waivers.
- Irrigated lands group.
- Federal assistance.

Respective speakers for the topics above were as follows:

- Cynthia Mallett – City of Oceanside
- Eric Larson – San Diego County Farm Bureau (SDCFB)
- Pete Peuron – San Diego Regional Water Quality Control Board (SDRWQCB)
- Cori Calvert – United States Department of Agriculture and National Resource Conservation Service USDA/NRCS

Speakers and Topics

- Cynthia Mallett from the City of Oceanside provided an overview of the regulations that affect Nursery and Agricultural operations. She also provided information on the role that municipalities play in assisting growers in complying with these regulations. There was also a sample employee training tracking form provided.
- Pete Peuron from the SDRWQCB discussed the conditional waiver for discharges from agricultural and nursery operations, that became effective in 2008.
- Eric Larson from the SDCFB provided an overview of monitoring groups and how their operation can benefit from participating in a collective approach to runoff compliance.
- Cori Calvert from the USDA/NRCS explained how NRCS can assist growers to develop conservation plans, as well as discussing funds available through the 2008 Farm Bill to help nurseries and agricultural operations in complying with water quality regulations.

A total of 62 people were in attendance at the workshop including workshop organizers and speakers: 45 agricultural related and 17 governmental/jurisdictional. A breakdown of attendees of the workshop is as follows:

Agricultural (45)
11- Advisors/Grove Care
3 - Farm Supplier
21 - Grove (Avocado or other)
9 - Nursery
1- Combination Nursery and Grove

Other (17)
Governmental - 10
Jurisdictional - 7

See Figure 1 below for a map that identifies agricultural facilities represented at the workshop. This map does no reflect representatives from governmental agencies that attended the workshop. Also, some facilities are not represented on the map because multiple attendees represented the same facility and other workshop attendees represented agricultural operations outside of San Diego County and in watersheds south of the northern San Diego County watersheds shown on the map.

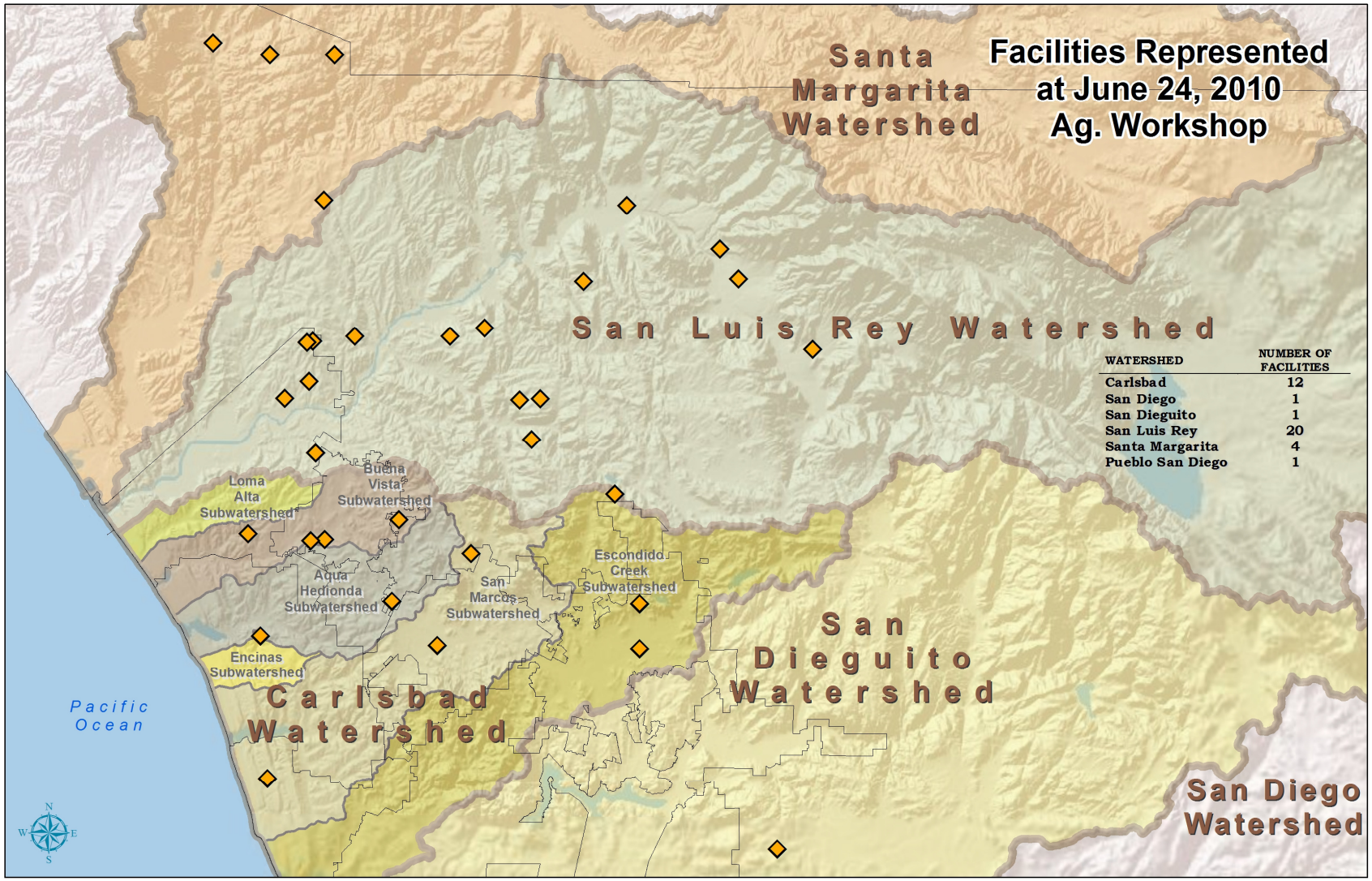

Figure 1. Facilities Represented at the June 24, 2010 Agricultural Workshop.

Prior to and after the completion of the workshop each attendee was given a pre- and post-test to determine their knowledge of the topics covered during the workshop. A total of 25 attendees took both the pre-test and post-test (some attendees arrived after the pre-test was given or left before the post-test was given). This test included ten questions that were provided by the speakers. The average pre-test score was 5.48. The average post-test score was 8.36. These scores represent a 61.03% increase in knowledge of the topics reviewed during the workshop.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This workshop is planned to be implemented every two years. The first workshop was held on March 27, 2008. The second workshop was held on June 24, 2010. The next workshop is slated to be held during FY 2011-12.

PARTICIPATING WATERSHED COPERMITTEES

All watershed copermittees within the three watersheds (Oceanside, Vista and County of San Diego) disseminated information to constituents in their jurisdictions. The City of Oceanside secured speakers, developed workshop announcement materials, paid for material printing and moderated the workshop. The Upper San Luis Rey Resource Conservation District provided lunch and refreshments for the workshop. Other copermittees provided support during the workshop itself.

OTHER PARTICIPATING ENTITIES

- University of California Cooperative Extension
- Regional Water Quality Control Board
- County of San Diego Ag, Weights and Measures
- USDA, Natural Resources Conservation Service
- San Diego County Farm Bureau
- Upper San Luis Rey Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Organics
- Sediment
- Pesticides
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey River Watershed strategy identifies bacteria and nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and Agricultural operations have been identified as potential discharge contributors of bacteria and nutrients. This activity addresses high priority water quality problems and potential sources of

the problems within the watershed. Therefore the activity is consistent with the San Luis Rey WMA strategy.

EXPECTED BENEFITS

Expected benefits included educating agricultural growers and operators about storm water regulations and the best management practices that can be implemented to eliminate runoff from growing operations.

EFFECTIVENESS ASSESSMENT

A total of 25 attendees took both the pre-test and post-test which included ten questions that were provided by the speakers. The average pre-test score was 5.48 and the average post-test score was 8.36 representing a 61.03% increase in knowledge of the topics reviewed during the workshop. This demonstrates an increase in knowledge and awareness of the topics presented (Level 2).

RECOMMENDATIONS

It is recommended that this workshop be implemented every two years that addresses stormwater topics relevant to the agricultural industry.

CONCLUSIONS

Implementing a pre- and post-test to determine attendee knowledge of the topics covered during the workshop was deemed successful with a 61% increase in score. Also, 62 people were in attendance demonstrating the strong interest from the agricultural community to learn about stormwater related issues and the BMPS that can be implemented and resources available to assist in complying with regulations. This workshop saw an increase in agricultural operator and owners attendee from the Agricultural workshop conducted in March 2008. 45 agricultural related people attended this meeting compared to 29 in March 2008. The number of governmental and jurisdictional attendees stayed consistent: 17 for the 2010 workshop and 19 for the 2008 workshop.

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WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **Guajome Lake Water Quality Monitoring Program**
ID NUMBER: **SLR-008**

ACTIVITY DESCRIPTION

The County of San Diego is implementing a monitoring program to assess the contribution of urban runoff (specifically nutrients) to the eutrophication of Guajome Lake. On January 7, 2005, a joint reconnaissance of the Guajome Lake area was conducted with the City of Oceanside, the County Department of Agriculture, Weights, & Measures (AWM), the County Department of Parks and Recreation (DPR), and the County Department of Public Works (DPW). All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, seven locations in the northern subbasin were monitored and two of those were selected as long-term monitoring sites. They included the East Channel Creek at Hutchison Street and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL02 is located in the middle of the subbasin and is co-located with the County of San Diego's dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities.

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07). For additional information, refer to Attachment A of this Watershed Activity Summary Sheet.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Monthly sampling of long-term stations - Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients as a high priority water quality problem in the San Luis Rey WMA. This nutrient monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

During the FY 2009-10 reporting period, the County of San Diego conducted sampling at the two long-term locations in Guajome Lake (Level 1 Outcome). For additional information, refer to Attachment A of this Watershed Activity Summary Sheet.

WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Nutrient Source Identification and Abatement: Guajome Lake**
ID #: **SLR-009**

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels entering Guajome Lake. Nitrate concentrations have been observed to exceed dry weather action levels at the County's SLR 04 dry weather monitoring station (Hutchison Street at Hidden Lake Lane) since 2002. This station is upstream of Guajome Lake. Guajome Lake is listed as impaired for eutrophication on the 2008 Clean Water Act 303(d) List of Water Quality Limited Segments. Phosphorous is another nutrient potentially contributing to the eutrophication problem.

FY 2007-08 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2007-08:

- Performed frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at field site SLR 04.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Compiled an inventory and map of potential nitrate sources in the SLR 04 drainage area. It was determined that there are eight nurseries within the unincorporated area tributary to the SLR 04 monitoring station.
- Compiled baseline information on BMP implementation and compliance history for nurseries within the SLR 04 drainage area. Of the eight nurseries in this drainage area, three have been inspected by the County AWM Department. Two of the three inspected nurseries had one or more violations. Most violations were related to a failure to maintain adequate training records.

FY 2008-09 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2008-09:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Six nurseries in the SLR 04 drainage area were inspected during FY 2008-09. One cactus/succulent nursery was inspected in late FY 2007-08, but was not inspected in FY 2008-09 because of good compliance history and low threat classification. One nursery went out of business. One additional nursery was identified and inspected in September 2009.
- Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries, the operators were supplied with information and tools to assess and manage fertilizer use at

their site. The UC Cooperative Extension Service document *Runoff & Nonpoint Source Pollution Self-Assessment* was provided to the nurseries. The Rainbow Creek Nutrient Reduction Management Plan is another source of valuable information for nitrate pollution prevention that will be referenced as a tool for the operators.

- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2008-09, excluding paperwork violations, only one nursery had best management practice non-compliance; see Table 3. No direct sources of nitrates from the nurseries were identified.

FY 2009-10 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2009-10:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on three dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. The contributing area was expanded to include additional upstream sources and 25 nurseries in the expanded SLR 04 drainage area were inspected during FY 2009-10.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2009-10, excluding paperwork violations, four nurseries had best management practice non-compliances (See Table 3). No direct sources of nitrates from the nurseries were identified.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	Status
Compile (update) an inventory and map of potential nutrient sources in the SLR 04 drainage area.	X	X	X	X	Complete
Compile (update) baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	X	X	X	X	Complete
Perform water quality screenings for nutrients and other parameters at SLR 04	X	X	X	X	Ongoing
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	X	X	Ongoing
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	X	X	Ongoing
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	X	X	Ongoing
Identify field grown agricultural businesses in drainage area					TBD

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Mission HSA (HSA 903.11) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS ASSESSMENT

Table 2. Effectiveness Assessment

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the SLR 04 drainage area.	1	Completion	Yes
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at SLR 04	1	4 field screenings / yr at SLR 04	75% complete, 3 screenings complete
	6	Reduction in exceedances of dry weather action level for nitrates measured at SLR 04 by 2012	To be determined
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the SLR 04 drainage area by June 2009	Yes
	3	Reduction in nursery BMP violations observed during nursery inspections in the SLR 04 drainage area by 2010	Of those nurseries with multiple scores, BMP compliance improved or stayed the same at all nurseries except one in FY 2009-10
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in Stormwater Knowledge Assessments (SKA) scores administered to nursery staff in the SLR 04 drainage area by 2012	Of those nurseries with multiple scores, only one decreased in SKA score. All other nurseries have either improved or remained the same.

Table 3. Updated Inventory

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time	TTWQ
Aloha Tropicals	9/22/2009	0	6	N/A	N/A	Low
Aquino Greenhouse	2/8/2010	0	1	N/A	N/A	Medium
Booman Floral #1	7/6/2009	0	9	N/A	N/A	Medium
Booman Floral #2	7/6/2009	0	9	Yes	N/A	Medium
	1/8/2007	0	N/A			
	10/6/2004	0	N/A			
	4/8/2004	1	N/A			
Booman Floral #3	7/6/2009	0	9	None	N/A	Medium
	1/8/2007	0	N/A			
Butterfly Nursery	10/20/2009	0	N/A	None	N/A	Medium
C & J Cactus Nursery #1	4/18/2008	0	10	Yes	N/A	N/A
	9/5/2006	1	N/A			
Choice Nursery	6/10/2010	0	8	None	N/A	Medium
Emmanuel Growers	7/22/2009	2	2	N/A	N/A	Low
Exotica Rare Fruit	6/10/2010	0	7	None	N/A	High
	4/23/2007	0	N/A			
	1/6/2006	0	N/A			
Garden Glories	5/28/2010	0	8	N/A	N/A	Medium
Green Acres Nursery Inc #1	2/16/2010	0	5	Yes	Same	Medium
	9/8/2009	3	5			
Gutierrez Nursery	4/2/2010	0	7	N/A	N/A	Low
Joanie's Greenhouse	9/11/2009	0	6	Yes	No	Low
	9/3/2008	0	8			
	6/12/2008	1	7			
Kent's Bromeliads #2	4/23/2010	1	N/A	No	N/A	Medium
	10/14/2009	0	8			

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time	TTWQ
Martin Carvillo	9/21/2009	0	N/A	N/A	N/A	N/A
Pacific Verde Nursery Inc	7/13/2009	0	5	Yes	Same	Low
	5/27/2009	1	5			
	1/15/2008	1	N/A			
Parker Greenhouse	7/29/2009	OOB		N/A	N/A	N/A
	6/26/2009	0	7	None	Same	Same
	6/25/2008	0	7			
Plug Connection	6/24/2010	0	10	None	Yes	
	4/19/2010	0	9			
	9/3/2009	0	8			
Ponto Nursery #1	4/19/2010	0	7	Yes	Yes	Medium
	1/27/2010	7	5			
Ponto Nursery #2	1/27/2010	0	5	None	N/A	
Rancho Del Oro Landscape	11/2/2009	0	4	N/A	N/A	Medium
Rivera's Garden Treasures	1/6/2010	0	3	N/A	N/A	Medium
Sphaeroid Institute	6/4/2010	0	10	None	Yes	Medium
	8/13/2008	0	7			
Tony's Tropicals	3/1/2010	0	5	N/A	N/A	Low
Vista Ventura Inc #1, DBA Botanical Partners	5/24/2010	0	10	N/A	N/A	High
Weeks Xeroic Succulent Gardens	9/25/2009	0	5	N/A	N/A	N/A

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality/Monitoring Activity

TITLE: **Lower San Luis Rey Source Identification Project**
ID NUMBER: **SLR-010**

ACTIVITY IMPLEMENTATION

The main objectives of this project are to:

- Identify point and non-point sources of bacteria contamination in the Lower San Luis Rey River and at the river mouth during dry and wet seasons.
- Estimate the bacterial loading from tributaries and along the main stem of the San Luis Rey River during dry and wet seasons.
- Recommend Best Management Practices (BMPs) to reduce and/or eliminate bacterial sources.

ACTIVITY IMPLEMENTATION FY 2007-08

Implementation of this project began in FY 2007-08 with the City being awarded a Proposition 50 Clean Beaches Initiative Grant from the State Water Resources Control Board (SWRCB) to identify the potential sources of bacteria in the Lower San Luis Rey River. The City then sought out a diverse group of experts in bacteria source tracking, Copermittees, and non-profit groups to create a Technical Advisory Committee (TAC) to guide the project. The first TAC meeting was held on November 1, 2007 and included representatives from the Cities of Oceanside and Vista, the County's Department of Environmental Health and Watershed Protection Program, the Regional Water Quality Control Board (RWQCB), and CoastKeeper.

A Request for Proposals (RFP) was sent out on November 8, 2007 to solicit proposals from interested and experienced consultants. Proposals were due to the City by December 4th and a subcommittee of the TAC reviewed the proposals on December 7, 2007. MACTEC Engineering and Consulting, Inc. was awarded the contract. Oceanside City Council approved the contract with MACTEC on February 20, 2008.

A TAC meeting was held on February 4, 2008 where the MACTEC project team presented the proposed project approach. The approach was discussed and the TAC made recommendations to be included in the Monitoring Plan and QAPP. The Monitoring Plan and QAPP were submitted to the SWRCB for approval on April 28, 2008. The SWRCB and the Moss Landing QA Research Group reviewed the Monitoring Plan and QAPP and the final version of the documents were approved by the SWRCB on June 19, 2008.

The first dry season monitoring event took place on June 18 and 19, 2008. Dr. Rachel Noble traveled to San Diego to prepare for the first event with the project team and participate both days of monitoring. The project team collected bacteria samples and flow measurements at six monitoring locations in the Lower San Luis Rey River. The bacteria samples were analyzed for fecal indicator bacteria and the remaining sample volume was filtered and frozen for molecular analysis. The river mouth was not sampled, as planned, due to construction of the Pacific Street Bridge.

ACTIVITY IMPLEMENTATION FY 2008-09

The second dry season event took place in FY 2008-09 on July 23 and 24, 2008. The project team collected bacteria samples and flow measurements at five of six monitoring locations in the Lower San Luis Rey River. As part of the Visual Observation Program, observations were conducted July 23 and 24, 2008 within the Lower San Luis Rey River and upstream in the drainage basin to identify possible sources of bacteria. The river mouth was again not sampled, due to construction of the Pacific Street Bridge.

Based on the fecal indicator bacteria (FIB) results of the first two dry weather monitoring events, four of six project sampling sites (Murray Bridge, Douglas Bridge, Pilgrim Creek, and Sleeping Indian) were selected for additional genetic molecular analysis. Two were river sites and two were tributaries. Genetic molecular analysis was conducted on samples collected at these sites during days 1 and 2 of the June 2008 event. There were no FIB exceedances of standards during the July 2008 event and, therefore, none of those sites were chosen for additional analysis per the QAPP and Monitoring Plan.

On December 19, 2008, the SWRCB issued a Budget Letter that suspended all projects including the Lower San Luis Rey Source Identification Project. The work completed after this notice was primarily to assess the status of various elements of the project, including laboratory work and the effect of the stop work notice on genetic analysis. The City of Oceanside requested an assessment from MACTEC of the molecular sample holding times for samples not yet analyzed and a summary from our contractors of what and where data that had been analyzed is located. Unfortunately, samples for two of the three types of genetic analyses had expired and are therefore no longer available for use to the program. Samples were analyzed for *Enterovirus A* by Dr. Jed Furman's laboratory at the University of Southern California. *Enterovirus A* was not detected in any of the samples.

The monthly joint monitoring program conducted by the City of Oceanside and the County of San Diego continued as modified for the Grant project until June of 2009.

ACTIVITY IMPLEMENTATION FY 2009-10

Beginning in July 2009, the City brought the monitoring in-house to the San Luis Rey Wastewater Treatment Plan Laboratory. The same field procedures were followed, but the reporting limits changed to above SWAMP recommendations. This change is not expected to effect results, as bacteria levels are usually at or above these reporting limits.

On December 17, 2009, the State Water Resources Control Board gave the City of Oceanside notice that the Lower San Luis Rey Source Identification Project grant had been selected to restart. With an original grant end date of March 31, 2010, the City of Oceanside, on January 4, 2010, submitted a Request for Time Extension in order to complete the remaining two-thirds of the field and laboratory work required.

On April 14, 2010, the City of Oceanside received the executed amendment to the Grant Agreement and work began immediately to restart the project.

The third dry season monitoring event in the Lower San Luis Rey River/River Mouth was implemented on May 18, 19, and 20, 2010. On May 18, 2010, The City of Oceanside and the County of San Diego conducted the joint monitoring at 17 locations in Lower San Luis Rey River and the grant project team collected composite water samples and sediment samples at five locations in the River Mouth. In addition, the City of Oceanside collected additional samples at each Watershed monitoring location for potential further genetic analysis on upstream sites within the City boundary. On May 19 and 20, 2010, the grant project team collected composite water samples and sediment samples at five locations in the River Mouth and composite water samples at two river locations (Bonsall Bridge and the Critical Point).

Although the FIB results for the river mouth samples were all below AB411 standards a total of eleven water samples, ten river samples and one river mouth sample, were selected for genetic testing including Bacteriodes and Human Enteroviruses based on steady state standards. In addition, ten paired water and sediment samples from four sites were selected for bacterial community fingerprinting which will compare the bacteria community of the water samples to the bacterial community of the sediment samples.

The Visual Observations Program was implemented on the first day of sampling, May 18, 2010. Two teams of two, walked a total of four locations adjacent to the river mouth. Teams were looking for urban runoff and wildlife that could be affecting the river mouth. Observations that were recorded included human behavior, maintenance procedures, and wildlife distribution.

The remaining dry weather sampling event and four wet season (two wet-weather and two ambient events) will be completed in the 2010-11 fiscal year.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Due to the stop work notice issued in December of 2008, the schedule for implementation/completion was amended. The Final Project Report is due to the SWRCB on June 1, 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- MACTEC Engineering and Consulting, Inc.
- Technical Advisory Committee includes representatives from:
  - RWQCB
  - CoastKeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Because the sources of bacterial contamination in the Lower San Luis Rey River are not adequately characterized, characterization in the form of a source identification study is consistence with the collective watershed strategy. Once the sources have been better characterized, the City will move forward with developing and implementing BMPs to reduce and eliminate the bacterial source to the maximum extent practicable.

EFFECTIVENESS ASSESSMENT

The outcome of this project is the identification of bacterial sources contributing to water quality impairments in addition to the development of a list of potential BMPs for these sources. It is anticipated that the implementation of BMPs, which will be separate, future activities, will lead to Level 4, 5, and 6 effectiveness assessment outcomes.

WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Land Acquisitions**
ID NUMBER: **SLR-012**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plans have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego purchased 142.9 acres of property located in the San Luis Rey River watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period the County of San Diego purchased 77.73 acres of property located in the San Luis Rey River watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting period the County of San Diego purchased 167.1 acres of property located in the San Luis Rey River watershed. The current acquisitions are shown in the table below.

Property	Acres	Date	Watershed ID	APN(s)
Vessels Open Space Addition SLR	69.6	8/27/2009	903.12	124-150-30, -31
Bonsall Land Group SLR	97.5	10/20/2009	903.12	126-060-80, -81
TOTAL	**167.1**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that is averts development, thereby eliminating the possibility of future sources in need of abatement or future pollution loads in need of reduction.

EFFECTIVENESS ASSESSMENT

During the FY 2009-10 reporting period the County of San Diego acquired 167.1 acres in the San Luis Rey River watershed. Over the past three fiscal periods the County has acquired a total of 387.76 acres in the San Luis Rey River watershed. These land acquisitions will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural perviousness.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality Activity

TITLE: **Harbor Boat Wash Security Camera**
ID NUMBER: **SLR-013**

ACTIVITY DESCRIPTION
Oceanside Harbor offers the use of a boat launch ramp free of charge, as well as free use of a boat wash area and a recreation vehicle (RV) sewage dump station. Runoff from the boat wash area drains through the storm drain system and flows to the harbor a short distance away. This storm drain has had historical bacterial exceedances possibly due to improper use of the dump station, illegal dumping, and/or regrowth in the storm drain itself.

To address illegal dumping/illegal use of the sewage dump station and boat wash area, a security camera was installed. The intent of the camera was to use it in coordination with public notification of improper use. Once a report of illegal use was filed, the City of Oceanside Department of Harbor and Beaches, Harbor Police, or the Clean Water Program would be able to reference the historical footage and view a license plate number to pursue possible enforcement actions. The digital video is stored for two weeks before being overwritten.

ACTIVITY IMPLEMENTATION FY 2008-09
During the 2008-09 fiscal year, the City of Oceanside Beaches and Harbors Department installed a camera to view the boat wash and RV dump stations at Oceanside Harbor. The camera was installed on the storage facility next to the boat wash. Harbor Police, Harbor Maintenance, and Harbor Administration have access to all of the cameras around the Harbor. In addition, access to live and recorded views from the boat wash camera was installed on the desktop of Clean Water Program personnel.

ACTIVITY IMPLEMENTATION FY 2009-10
No changes to the camera nor additional signage was added during the 2009-10 fiscal year.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
Installation occurred in October 2008. Maintenance of the cameras is ongoing.

PARTICIPATING WATERSHED COPERMITTEES
N/A

OTHER PARTICIPATING ENTITIES
N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been characterized. The City is moving forward with implementing several pilot programs, including the surveillance camera, to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS MEASUREMENTS

In 2008-09, no reports of potential misuse of the boat wash area were reported to the Clean Water Program. The Harbor Police did attempt to use the video from the cameras for a few of their illegal dumping reports, but the quality of the picture was not clear enough to be helpful.

In using the camera during the previous fiscal year, it was assessed that the quality of the video from the camera is not sufficient to create enforcement actions. Both the quality and insufficient night-time lighting reduce the effectiveness of the camera. There were no reports of use of the original camera during this fiscal year. In addition, funding for a camera using newer technology was not approved during the 2009-10 fiscal year.

The assessment of the current camera has shown that the camera has not been effective at changing behavior or enabling enforcement actions and thus reducing spills at this site. It had been anticipated that for those offenders that misused the area, enforcement actions would have changed their behavior as many visitors to the Harbor use the area frequently.

It is recommended that this activity be discontinued until funding for a camera or other technology is available.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality Activity

TITLE: **Harbor Boat Wash Coin Operated Water Dispenser**
ID NUMBER: **SLR-014**

ACTIVITY DESCRIPTION
Oceanside Harbor offers the use of a boat launch ramp free of charge, as well as free use of a boat wash area and a recreation vehicle (RV) sewage dump station. Runoff from the boat wash area drains through the storm drain system and flows to the harbor a short distance away. This storm drain has had historical bacterial exceedances possibly due to improper use of the dump station and/or regrowth in the storm drain itself. Several bacteria reduction pilot projects have been implemented in the past four years to reduce not only bacteria, but also oil and grease and sediment from flowing to the harbor. During the most recent pilot project, the installation and operation of a modular wetland to treat boat wash runoff, excessive use of the free water provided at the boat wash was observed. Not only are summer, high-use flows greater than what the installed BMP can handle to effectively treat the runoff, but with an impending drought, water conservation efforts are not being enforced.

To address water quality and water conservation needs, the City of Oceanside's Department of Harbor and Beaches is investigating the installation of coin-operated machines that dispense water for use at the wash area. It is anticipated that this will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted. This will, in turn, reduce the amount of water flowing into the harbor which is expected to reduce the bacterial loading at this site.

ACTIVITY IMPLEMENTATION FY 2009-10
During the 2009-10 fiscal year, the Clean Water Program and Harbor Administration staff researched vendor alternatives for coin-operated water dispensers. A vendor with previous work in California state parks was identified. The plan to install coin-operated water dispensers was presented to the Oceanside Harbor and Beaches Advisory Committee in May 2010.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
In July and August of 2010, the infrastructure for the coin-operated system was installed with the exception of the coin boxes. The switch from free water to a pay-per use system must be approved by the Harbor and Beaches Advisory Committee and the City Council. It is expected to be presented to the Harbor and Beaches Advisory Committee in January 2011. Approval and implementation are expected by the end of FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES
N/A

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS MEASUREMENTS

It is anticipated that the installation of coin-operated water dispensers at the Harbor boat wash will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted, resulting in a Level 3 Effectiveness Assessment outcome, behavioral changes. This will, in turn, reduce the amount of water flowing into the Harbor which is expected to reduce the bacterial loading at this site, resulting in a Level 4 Effectiveness Assessment outcome, load reductions.

To track the amount of water being used at the Harbor boat wash area, the water meter for the spigots has been isolated. This will allow a comparison for water use before and after installation. Water quality monitoring at this site will continue under the Coastal Storm Drain Monitoring Program at the boat wash outfall under the program's requirements. Because high use flows bypass the treatment BMP and are isolated events, exact load reductions will not likely be available. However, depending on the results of the water use, loading estimates may be extrapolated.

WATERSHED ACTIVITY SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Horse Property Outreach in the San Luis Rey River Watershed**[1]

ID NUMBER: **SLR-015**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many properties with commercial or residential horse operations. Horse operations are a potential source of nutrients, bacteria, and sediment. To reduce the likelihood of impacts on beneficial uses in the San Luis Rey Watershed, the County of San Diego and the City of Oceanside will implement a program to educate horse owners and ranch operators regarding proper manure and corral management through focused outreach and implementation of best management practices (BMPs). The program will consist of a variety of activities, including staffing booths at public outreach events, conducting workshops targeting horse owners, and establishing a pilot program that encourages and facilitates BMP implementation on horse properties through BMP demonstrations and peer mentoring.

Workshops will focus on various topics of relevance to owners and operators of horse facilities, including manure composting and management, and property and corral management. Educational materials, including "how-to" information, instructions on the construction of manure composting bins, and facility checklists to assess current practices will be developed and distributed at the workshops. Workshops may also include demonstration sites, where attendees can observe BMPs in action.

The County of San Diego and City of Oceanside will also conduct a pilot program that seeks to convene a group of peer mentors committed to improving horse property management through the implementation of BMPs and horse owner outreach. If this program is successful, it may be expanded to other communities in the region that have significant horse populations.

ACTIVITY IMPLEMENTATION FY 2008-09

- County staff initiated creation of a booth display to share information about proper manure management practices and photographic examples of successful implementation of BMPs. This display will accompany staff at outreach events and presentations.
- County staff initiated creation of a binder of information and resources pertaining to effective manure management practices and photographic examples of BMPs. This folder is displayed at events and outreach presentations.
- County and Oceanside staff initiated contact with interested parties to inquire about participation in the peer mentoring component of this activity and to arrange a coordination meeting.
- County and Oceanside staff developed a timeline and activities for implementation during FY 2009-10.

[1] Activity was previously named *SLR-015: Community-based Social Marketing Residential Horse Property Pilot Project*

ACTIVITY IMPLEMENTATION FY 2009-10

- During FY 2009-10, The County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians throughout the County unincorporated areas. Training provided in these workshops covered a variety of topics including:
    - Manure management and composting basics
    - Prevention of odors and flies
    - Benefits of composting
    - Application of compost to gardens and landscapes
    - Land use regulations
    - Protection of local water sources.

  A workshop was conducted in the Fallbrook area on February 3, 2010. Twenty-two participants attended the workshop, which included presentation of BMPs, a manure composting demonstration, and corral management practices. Assessment was conducted in the form of pre- and post-workshop surveys.

- County staff also hosted equestrian themed public outreach and education booths at the following events:
    - Bonsall Country Festival (10/10/2009)
    - Valley Center Rodeo Days (5/28/2010-5/29/2010)

- Staff developed educational materials and outreach tools for use at equestrian event presentations and booth displays. These included:
    - Two "life-size" horse cut outs
    - Development of an Equestrian Resource Sheet
    - Manure composting information materials
    - Coloring sheet
    - Additional materials focused on BMPs for manure management

- In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted Action Research, Inc. to conduct community based social marketing (CBSM) research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (Attachment A).

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Additional equestrian workshops are planned in the Fallbrook area during FY 2010-11 and FY 2011-12. In addition, the County is pursuing a partnership with the San Diego County Equestrian Foundation (SDCEF) to disseminate information about manure management and other BMPs to the equestrian community. The County and Oceanside are pursuing the potential involvement of the SDCEF in the pilot peer mentoring program. Development of such a program in the future is contingent upon identifying a reliable source of funding such as grants. County staff will provide outreach at various SDCEF events during FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District (MRCD)
- San Diego County Equestrian Foundation (SDCEF)
- Action Research, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Animal facilities have been identified as potential sources of bacteria and nutrients. Since this activity addresses two priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This program seeks to reduce the impacts of nutrients, bacteria, and sediment by practices related to manure management, composting, and other horse-related BMPs. Additionally, the program anticipates formation of a community of knowledgeable horse enthusiasts that will share what they learn with neighbors and friends in the horse community and beyond. The pilot component of this program could be expanded to other communities in the region that have significant horse or animal populations.

EFFECTIVENESS MEASUREMENTS

During the FY 2009-10 reporting period, the following events were assessed using Level 1 Outcomes (Table 1).

Table 1: Effectiveness Measures

Planned Tasks	Assessment	Outcome
Horse Facility Checklist	Complete	Level 1
Manure Composting Information Materials	Complete	Level 1
Resource Guide for Equestrians	Complete	Level 1
Staff Booths at Education and Outreach Events	2 events, (>35 participants)	Level 1
Conduct Equestrian Workshops	1 event, (22 participants)	Level 1
Development of Equestrian Peer Mentor Program	Meetings conducted, development ongoing	Level 1
Completion of Pre and Post Workshop Survey Questionnaire	Complete, 96 participants.	Level 1

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the County-wide workshops described above, pre- and post-workshop surveys were administered. The results presented here are the cumulative results of all County participants and do not reflect San Luis Rey Watershed participants only.

Pre-workshop survey results were as follows:

- 15.2% of participants responded that they live in a watershed.
- 43.2% responded that stormwater is not treated.
- 10.8% felt that horse manure contributes from "some to a great deal" to water pollution.

When asked about what equestrians can do to prevent pollution caused by horse manure, 59.5% of respondents suggested ideas on the pre-workshop survey.

Post-workshop survey results were as follows:

- 90% of respondents indicated that they live in a watershed.
- 74.2% responded that stormwater is not treated.
- 22.8% felt that horse manure contributes from "some to a great deal" to water pollution.
- 82.8% suggested ideas of what equestrians can do to prevent pollution caused by horse manure on the post survey.

These survey results indicate a positive increase in knowledge and awareness about how equestrian activities can affect water quality. Results also show that more equestrians were able to identify positive behavioral changes (Level 3 Outcomes) following the workshops.

As additional activities are designed and implemented, other effectiveness measurements may be developed.

WATERSHED ACTIVITY SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Grove and Nursery Outreach in the San Luis Rey River Watershed**

ID NUMBER: **SLR-016**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many grove and nursery operations. Groves and nurseries have been shown to be potentially significant sources of nutrients to waterways in surrounding watersheds. To reduce the likelihood of impacts on beneficial uses in the San Luis Rey Watershed, the County of San Diego has contracted with the Mission Resource Conservation District (MRCD) to conduct focused outreach to nurseries and groves in the watershed. These outreach efforts will focus on issues related to water conservation, fertilization techniques, erosion prevention, and best management practices (BMPs) to reduce potential nutrient loads.

Tasks associated with this activity include:

- Conduct focused workshops and disseminate updated educational information.
- Develop pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in behaviors resulting from this activity.
- Develop and distribute informational materials relating to BMPs for various fertilization methods.
- Augment the MRCD's current Agricultural Water Management Program Irrigation System Evaluation to include evaluation of additional practices with the potential to impact water quality.
- Conduct onsite irrigation evaluations and disseminate information about fertilization BMPs and erosion control.

ACTIVITY IMPLEMENTATION FY 2009-10

A workshop targeting agricultural operators was conducted on June 14, 2010 at the Rainbow Grange. Twenty participants attended the workshop. Speakers and presentations featured at the workshop included:

- Valerie Mellano, UC Cooperative Extension's Farm and Home Advisors Office, presented on Rainbow Creek's Total Maximum Daily Load (TMDL) for Nitrogen and Phosphorous, and the Rainbow Creek Nutrient Reduction Management Plan (NRMP).
- Eric Larson, San Diego County Farm Bureau and San Diego Irrigation Lands Group, presented on the Agricultural Discharge Waiver and the formation of agricultural water quality monitoring groups.
- A panel was held after the presentations for a question/answer session with the workshop attendees. The panel consisted of:
    - Pete Peuron, Regional Water Quality Control Board
    - Dave Seymour, Rainbow Municipal Water District

- Eric Larson, San Diego County Farm Bureau and San Diego Irrigation Lands Group
- Valerie Mellano (Facilitator), UC Cooperative Extension's Farm and Home Advisors Office

A postcard announcing the workshop time, location, and topics to be discussed at the workshop was also developed and distributed during this reporting period. Pre- and post-workshop assessment surveys were administered to assess attendees' knowledge of general watershed principles and changes in behaviors resulting from this activity.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Additional equestrian workshops are planned in the Fallbrook area during FY 2010-11 and FY 2011-12. Continued development and distribution of informational materials will take place in FY 2010-11. Onsite irrigation evaluations will be scheduled and conducted as needed.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Nursery and grove operations are potentially significant sources of nutrients. Since this activity addresses a priority water quality problem, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Groves and nurseries operations have been shown to be potentially significant sources of nutrients to waterways in surrounding watersheds. This program seeks to reduce the impacts of nutrients on the San Luis Rey Watershed by educating nursery and grove operators on issues related to water conservation, fertilization techniques, erosion prevention, and BMPs.

EFFECTIVENESS ASSESSMENT

Activity effectiveness measurements include assessment of completion of an annual workshop, the number of participants in attendance, the number of materials distributed, and the number of irrigation evaluations conducted (Level 1 Outcomes). Activity effectiveness measures assessed in the FY 2009-10 reporting period include:

Table 1: Effectiveness Measures

Planned Tasks	Assessment	Outcome
Conduct Workshop for Grove and Nursery Operators	1 event, 20 participants	Level 1
Completion of Pre and Post Workshop Surveys	Complete, 10 Pre-surveys, 9 Post-surveys	Level 1

Pre- and post-workshop surveys were distributed to all attendees to assess knowledge of general watershed principles and changes in awareness of proper irrigation and fertilization practices (Level 2 Outcomes). Ten pre-workshop surveys were completed and nine post-workshop surveys were completed. Prior to the workshop only 80 percent of workshop participants knew they lived in a watershed; while after the workshop 100 percent affirmed that they lived within a watershed. This change demonstrates an increase in general watershed knowledge. Additionally the surveys measured an increase in knowledge pertaining to agriculture as a potential pollutant source. Before participating in the workshop survey takers indicated that agricultural activities contributed to water pollution: “a little bit” (20% of respondents), “some” (50% of respondents), and “a great deal” (30% of respondents). After the workshop participants indicated that agriculture contributed to water pollution: “a little bit” (11% of respondents), “some” (33% of respondents), and “a great deal” (55% respondents).

In the future, effectiveness may be assessed by estimating the total amount of nutrients reduction possible through the implementation of irrigation BMPs recommended during irrigation evaluations (Level 4 Outcomes).

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WATERSHED ACTIVITY SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Onsite Wastewater System Outreach in the San Luis Rey River Watershed**

ID NUMBER: **SLR-017**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many rural areas in which property owners utilize onsite wastewater treatment (septic systems). In order to promote the proper care and maintenance of onsite wastewater treatment systems, the County has contracted with the Mission Resource Conservation District (MRCD) to implement an onsite wastewater system outreach and rebate program in the San Luis Rey and Santa Margarita River Watersheds. Residents interested in obtaining a rebate to offset the cost of pumping out their system will be required to attend an MRCD-facilitated workshop devoted to the proper care and maintenance of onsite wastewater systems. The rebate program will operate on a first come, first served basis offering 30 pumping rebates annually for three years. The rebates will be in the amount of $100.00 and will only be applicable to pumping by permitted septic waste haulers. The MRCD and County staff will administer pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in awareness of proper onsite wastewater system maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

- Press Release to local newspapers on Septic Maintenance

A news release announcing the Septic System Workshop and Rebate Program was submitted to three local newspapers: the *North County Times*, the *San Diego Union Tribune*, and the *Fallbrook/Bonsall Village News*. The *Fallbrook/Bonsall Village News* published the press release in its entirety.

- Septic System Workshop and Rebate Program

A public workshop focusing on septic tank awareness and proper maintenance procedures was conducted on May 20, 2010, at the Rainbow Grange. A total of ten residents attended the workshop. Eric Klein, County of San Diego Department of Environmental Health, was the featured presenter. The presentation included a detailed description of the components of a septic system and appropriate preventative maintenance measures for proper septic system functioning. The workshop also featured an open question and answer forum, during which the speaker answered specific questions from the attendees. Participants were asked to complete a pre- and post-workshop questionnaire to assess workshop effectiveness. By completing the workshop, residents were eligible to receive a rebate to offset the cost of pumping out their system. Three rebate certificates were distributed at this workshop.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

An additional workshop is planned for implementation in FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Onsite wastewater treatment systems have the potential to be significant sources of bacteria and nutrients. Since this activity addresses two priority water quality problems, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This program will provide homeowners with an economic incentive to maintain their onsite wastewater treatment systems, while educating them on the proper care and maintenance protocol. Through incentives and education, this program seeks to decrease the likelihood of onsite wastewater system failure.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is assessed by tracking the number of workshops conducted, the number of participants in attendance, and the number of pumping vouchers distributed (Level 1 Outcomes).

Attendees were asked to complete a pre- and post-workshop survey to assess knowledge of general watershed principles and changes in awareness of proper onsite wastewater system maintenance (Level 2 Outcomes). While pre-workshop surveys were distributed to all workshop participants, none were completed. Eight post-workshop surveys were completed. Post-workshop survey respondents were able to identify at least six BMP for maintaining a healthy septic system and were able to identify five signs of a failed septic system.

Three pumping vouchers were distributed at the workshop, indicating a small-scale behavioral change (Level 3 Outcomes).

Finally, the amount of sewage removed from onsite wastewater systems will be tabulated (pumping volume, estimated percent solids, and location). From this information, some estimates of load reduction may be possible (Level 4 Outcome).

Table 1: Effectiveness Measures

Task	Level	Assessment Measures	Effectiveness Measure
Septic Outreach Workshop	1	Complete annual workshop	Workshop completed
	1	Number of attendees	10 workshop attendees
	2	Pre/Post-Workshop Survey Questionnaire	0 pre-workshop surveys completed* 8 post-workshop surveys completed
Septic System Rebate Program	1	Number of vouchers distributed	3 vouchers distributed**
	3	Number of vouchers used	0 vouchers used
	4	Volume of sewage removed (percent solids)	N/A

*Pre-workshop surveys were distributed to all participants, but no surveys were completed.
** Workshop included San Luis Rey River Watershed and Santa Margarita River Watershed participants. A total of three vouchers were distributed to all participants.

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PROPOSED WATERSHED ACTIVITY SUMMARY SHEET

Watershed Education Activity

TITLE: **Guajome Sports Park Watershed Educational Signage**
ID NUMBER: **SLR-018**

ACTIVITY DESCRIPTION

A new City Park was recently constructed that includes sports fields and walking trails. The Park is situated high atop a hillside in the San Luis Rey Hydrologic Unit, providing spectacular views of the San Luis Rey River corridor and watershed. The Park is expected to draw many visitors and will provide a great opportunity for educating the public on the physical features of the watershed and the water quality issues within. This activity will provide for design and installation of watershed educational signage at various locations in the sports park. The signage will address the physical features in the watershed, water quality problems identified in the watershed, and provide tips that the residents can use to improve conditions in the watershed through their daily activities and interactions.

TMDL APPLICABILITY

The only TMDL adopted in the watershed is the Bacteria Project I for Beaches and Creeks. This TMDL is for bacteria and addresses the impaired segment of the Pacific Ocean listed at the San Luis Rey River mouth. The educational signage in the park will address sources of bacteria and solutions to bacteria problems.

TIME SCHEDULE FOR IMPLEMENTATION

- FY 2010-11 Sign Design and Installation
- FY 2011-12 Effectiveness Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey HU collective watershed strategy identifies bacteria and nutrients as high priority water quality pollutants in the watershed. Potential sources of bacteria and nutrients have been identified within the watershed and include industrial/commercial, residential, and open space land uses. This activity addresses both high priority water quality problems and

primarily will address potential sources of the problem related to residential activities within the watershed; therefore the activity is consistent with the Carlsbad WMA Strategy.

EXPECTED BENEFITS

It is expected that through the educational information presented on the signage, the residents will improve their knowledge related to stormwater and urban runoff and implement appropriate BMPs in their everyday activities affecting water quality.

EFFECTIVENESS MEASUREMENTS

The effectiveness assessment of the project has not been completely developed at this time. At a minimum level 1 will be assessed via installation of the signs. Additionally, estimates of numbers of visitors may be used to measure the impressions made by the signs. This may allow for some measure of knowledge change (level 2); however measuring of actual changes in behavior related to the signage will be difficult to assess (level 3) and may not be feasible.

WATERSHED ACTIVITY SUMMARY SHEET

Watershed Education Activity

TITLE: **Hellhole Canyon County Park Educational Signage**
ID #: **SLR-019**

ACTIVITY DESCRIPTION

Hellhole Canyon County Preserve is a 1,907 acre preserve located near Valley Center in the San Luis Rey River watershed. The area offers 13.5 miles of public access trails, as well as campsites, an amphitheatre, and an equestrian staging area. In January of 2010 three interpretive signs were installed in the interior of the Hellhole Canyon County Preserve to help educate visitors about watershed themed messages. The signs include a focus on three primary topics:

- What Is A Watershed? – a description of what a watershed is and a map of the San Luis Rey River watershed boundaries. This educational signage also contains BMPs for maintaining a healthy watershed, including messages on reducing pesticide use, proper disposal of household hazardous waste, and ways to prevent runoff pollution.
- Wildlife Linkages – a description of the habitats located within the preserve and four species associated with them. These four species are the mountain lion, coyote, mule deer, and bobcat.
- The Escondido Flume – an outline of the history of the Escondido Flume, which diverts water from the San Luis Rey River watershed into Lake Wohlford (located in the Carlsbad Hydrologic Unit Watershed).

FY 2009-10 ACTIVITY IMPLEMENTATION

Interpretive educational sign development and installation was completed in January of 2010.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

No further implementation actions are planned for this activity.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients and bacteria are identified as a high priority water quality problem in the San Luis Rey River watershed (HU 903) and this activity is aimed at abating sources in the watershed.

EFFECTIVENESS ASSESSMENT

Activity effectiveness was measured by the completion of development and installation activities (Level 1). These goals were achieved and no further effectiveness assessment measures are planned at this time.

WATERSHED ACTIVITY SUMMARY SHEET
Watershed Water Quality and Education Activity

TITLE: **Residential Composting Workshop**
ID NUMBER: **SLR-020**

ACTIVITY IMPLEMENTATION
Residents from the San Luis Rey and Carlsbad watersheds will be invited to attend a free composting workshop to be held during fiscal year 2010-11. This workshop will provide an overview of composting, hands-on demonstrations on how to compost, proper application of compost, and the benefits of compost to soil and water quality.

Topics to be covered during the workshop are as follows:
- Static Composting
- Active Composting
- Vermicomposting (worm composting)
- Compostable materials
- Composting bins and tools
- Applying compost in landscapes and gardens
- How compost benefits soil and protects water quality
- Reduction of waste being land filled

Potential speakers for the workshop and their specific topics include:
- Cynthia Mallett – City of Oceanside: Composting Overview
- Shamsa Visone– Solana Center for Environmental Innovation: Composting Techniques
- Mary Matava – Agri-Service: technical information about how compost protects water quality be improving soil

TMDL APPLICABILITY
This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION
This workshop is scheduled for implementation in Spring 2011.

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES
- Solana Center for Environmental Innovation
- Agri-Service

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey River Watershed strategy identifies nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. The use of chemical fertilizers has been identified as a potential source of eutrophication in local water bodies. Using compost as a natural fertilizer will reduce the amount of chemical fertilizer that resident use in their landscapes. It also reduces the need for pesticides. Also, erosion and sedimentation can be reduced through the proper application of compost. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the San Luis Rey WMA strategy.

EXPECTED BENEFITS

Expected benefits included educating residents about how to compost and providing them with information and tools to incorporate composting into their daily lives. Getting residents to actually compost and utilize the soil in their landscapes will help reduce pollutants from entering our local water bodies.

EFFECTIVENESS ASSESSMENT

A pre- and post-test will be administered at the workshop. Attendees will be asked to complete the same set of questions before the workshop begins and after the completion of the workshop. This will help determine the effectiveness of the speakers in improving attendees' knowledge of composting and applying compost in landscapes. Questions will also be asked to determine barriers to composting. (Level 2).

RECOMMENDATIONS

Depending on the success of this workshop, future workshops may be implemented.

WATERSHED ACTIVITY SUMMARY SHEET

Water Quality Activity

TITLE: **Fallbrook Community Center Artificial Turf**
ID #: **SLR-021**

ACTIVITY DESCRIPTION

The County of San Diego has converted 7,200 square feet of turf planters to artificial turf at the Fallbrook Community Center facility. This project included the capping of existing irrigation lines throughout three planters, with the exception of a single bubbler unit used to irrigate a pine tree. A French drain system and gravel bed system was installed beneath the planters to help protect against the unlikely occurrence of runoff due to over-saturation during large storm events.

The installation of the artificial turf is estimated to reduce the application of fertilizer by as much as 120 pounds per year and annual water consumption by nearly 170,000 gallons.

This activity directly benefits the watershed by reducing the need for irrigation of turf planters, increasing storm water filtration, and decreasing the potential of nutrient loading to the watershed.

ACTIVITY IMPLEMENTATION FY 2009-10

During the FY 2009-10 over 7,200 square feet of natural turf was removed and replaced with artificial turf (see attached figure). This activity included excavating to a depth of 3 inches, installing a French drain system below the surface, backfilling with decomposed granite (DG), and compressing the DG to a 90% compaction rate.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Future artificial turf installation was planned for FY 2010-11, but has been placed on hold due to budgetary constraints.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity demonstrates reduced pollutant loads and source abatement which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness was measured by confirming completion of all project elements (Level 1 Outcome) during FY 2009-10. Irrigation water use at the facility has decreased approximately 18% based on comparison of pre- and post-installation assessments. Turf nutrient fertilizer applied to community center landscaping has decreased by 120 lbs, or 25%, since the installation of artificial turf. The reduction in irrigation volume and the decrease in the amount of nutrients applied result in a maximum potential load reduction of up to 120 lbs of nutrients from the watershed (Level 4 Outcome).

Natural Turf
N
Heald Ln, Fallbrook, CA 92028
Artificial Turf
Natural Turf
179 ft
© 2009 Tele Atlas
©2008 Google
33°22'39.56" N 117°14'07.27" W
elev 721 ft
Feb 2008
Eye alt 1357 ft

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WATERSHED ACTIVITY SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Residential Rain Barrel Subsidies & Distribution**
ID NUMBER: **SLR-022**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

FY 2009-10 ACTIVITY IMPLEMENTATION

Activity during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY 2009-10. The events are scheduled to occur during FY 2010-11. Depending upon the success of the initial events, additional events will be considered for implementation during FY 2011-12 and FY 2012-13.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- San Luis Rey Watershed Council

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS ASSESSMENT

Level 1 Outcomes will be assessed based on the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

SAN LUIS REY RIVER WATERSHED

Urban Runoff Management Program
Annual Report for Fiscal Year 2011-12

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside ● City of Vista ● County of San Diego

January 2013

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SAN LUIS REY RIVER WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM
Annual report for Fiscal Year 2011-12

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside
City of Vista
County of San Diego

January 2013

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CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

January 28, 2013

Re: STATEMENT OF CERTIFICATION
2011-12 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed

I certify under penalty of law that the 2011-12 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahsaiezadeh

Mo Lahsaie, Ph.D., REHS
Environmental Officer
City of Oceanside

300 NORTH COAST HIGHWAY • OCEANSIDE, CA 92054 • TELEPHONE 760-435-5800 • FAX 760-435-5814

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CITY OF VISTA
CALIFORNIA

January 7, 2013

RE: STATEMENT OF CERTIFICATION

FY 2012 WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

SAN LUIS REY WATERSHED MANAGEMENT AREA

I certify under penalty of law that the FY 2012 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Patrick Johnson
Patrick Johnson
City Manager

John Conley
John Conley
Director of Engineering

1/8/2013
Date

1/8/13
Date

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County of San Diego

LAND USE AND ENVIRONMENT GROUP

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

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January 18, 2013

SAN LUIS REY RIVER WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM (WURMP) FY 2011-12 ANNUAL REPORT STATEMENT OF CERTIFICATION

I certify, under penalty of perjury of law, that the County of San Diego's contributions to this FY 2011-12 San Luis Rey River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer
Land Use and Environment Group
County of San Diego

Date 1/18/13

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EXECUTIVE SUMMARY

Introduction

This San Luis Rey (SLR) Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) is the fifth annual report by the San Luis Rey Watershed Copermittees (SLR Copermittees) addressing Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit). The SLR Copermittees include the City of Oceanside, the City of Vista, and the County of San Diego. The City of Oceanside serves as the Lead Watershed Copermittee for the SLR Watershed Management Area (WMA). The SLR WURMP AR covers the time period July 1, 2011 – June 30, 2012 (FY 2011-12) and describes the SLR Copermittees collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the SLR WMA to the maximum extent practicable.

During this reporting period the SLR Copermittees continued to address the watershed's high priority water quality pollutants identified in the 2008 San Luis Rey WURMP (2008 SLR WURMP) as bacteria and nutrients. This focus is reflected in Section 3.0 - Implementation of Watershed Activities, which enumerates the high-priority-focused watershed water quality and watershed education activities.

The SLR Copermittees will continue to re-evaluate and refine the SLR WURMP by implementing an effectiveness assessment component for the overall program. As more knowledge about pollutant sources and innovative and effective management measures to address those sources become available, the SLR Copermittees will use the Model Watershed Urban Runoff Management strategy to guide selection and implementation of watershed activities. Moreover, the SLR Copermittees will continue to utilize long-term effectiveness assessments to assist in further identifying pollutant sources and focusing program efforts to control those sources.

Program Highlights

During this reporting period the SLR Copermittees made significant progress in developing and implementing watershed water quality and watershed education activities that receive WURMP credit based on the current Municipal Permit. In addition to these activities the SLR Copermittees coordinated other activities that they feel work toward reaching the overall goal of the SLR WURMP.

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.

- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach this goal and the objectives, the SLR Copermittees worked to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

Report Organization

The 2011-12 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed and gives a general overview of the organization and content of the report. It also describes Copermittee collaboration during the reporting period.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the FY 2011-12 reporting period. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic plan that the SLR Copermittees have proposed for the SLR WMA.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of SLR Copermittee collaboration efforts during the reporting period.
- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the

Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.

- Measurable targeted outcomes and assessment measures will be used to facilitate assessment, whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Conclusions and Recommendations

Lower San Luis Hydrologic Area

Conclusions

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Water quality data collected during previous reporting periods in FY 2007-08, FY 2008-09, FY 2009-10, and FY 2010-11 provided information specific to the HA. In addition to the historical MLS, a TWAS installed towards the bottom of the Bonsall HSA collected data during fiscal years 2007-08 and 2010-11. Data collected from water quality monitoring activities during FY 2011-12, in addition to the data mentioned above continues to support listing bacteria and nutrients as high priority water quality problems in the Lower San Luis Rey HA.

Watershed Activities

During FY 2011-12, there were 20 activities in various stages of implementation. Eleven activities focused on water quality and seven focused on education. Four of these activities included both a water quality component and an education component. Of these twenty activities, thirteen receive WURMP credit during this reporting period due to their active implementation stage. In addition, three activities focused on monitoring and/or source identification (SLR-003, SLR-008, and SLR-028), two activities were in planning stages (SLR-007, SLR-026), and two activities were in assessment phases (SLR-010 and SLR-022). All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

Watershed Water Quality Activities

During FY 2011-12, there were eleven watershed water quality activities in the implementation stage. All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

During the next reporting period, FY 2012-13, eight watershed water quality activities are planned to be implemented, with two designed to address water quality problems related to bacteria, two designed to address nutrients, and four that address both bacteria and nutrients.

Watershed Education Activities
During FY 2011-12, the Copermittees implemented seven watershed education activities: one focused on bacteria, one focused on nutrients, and five focused on both bacteria and nutrients. Through these education activities, outreach was conducted to a variety of populations including pet owners, nurseries, and residential and horse property owner/operators.

During the next reporting period, FY 2012-13, eight education activities are planned with one focused on bacteria, one focused on nutrients, and six focused on both bacteria and nutrients.

Recommendations
Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope.

Some of the hydrologic areas in the SLR Hydrologic Unit (HU) have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs where funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the specific education activities.

Activities in the watershed appear to be properly focused on identified water quality problems in the HU. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected bacteria and nutrient pollution. TWAS data should be examined carefully as it is available to discern between water quality in the upper and lower

watersheds. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program reported in previous SLR WURMP annual reports. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

Warner and Monserate Hydrologic Areas

Conclusions and Recommendations

With minimal development in both the Warner and Monserate HAs, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for these HAs is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

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1 INTRODUCTION

The San Luis Rey (SLR) River Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) describes the watershed activities conducted by the City of Oceanside, the City of Vista, and the County of San Diego (SLR Copermittees) from July 1, 2011 through June 30, 2012. During this reporting period, the SLR Copermittees worked extensively to develop and implement activities that address water quality issues affecting the SLR River Watershed Management Area (WMA) based on requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (Municipal Permit) for San Diego County Copermittees, Order No. 2007-0001, NPDES No. CAS0108758.

Organization and Content of the Report

This annual report is organized according to the *Standardized Format for Watershed Urban Runoff Management Program Annual Reports* outline included with the updated Watershed Urban Runoff Management Program (WURMP) documents submitted to the Regional Water Quality Control Board (RWQCB) in March 2008. This report endeavors to adhere to the organizational requirements of the Municipal Permit issued to 21 San Diego County Copermittees (County Copermittees) in January 2007.

The 2011-12 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed, gives a general overview of the organization and content of the report, and describes Copermittee collaboration during the reporting period.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the reporting period FY 2011-12. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic plan that the SLR Copermittees have proposed for the SLR WMA, including new watershed water quality and education activities.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of SLR Copermittee collaboration efforts during the reporting period.
- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.
- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Regulatory Requirements

In January 2007, Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit) was issued to the San Diego County Copermittees as a renewal permit for Order No. 2001-01. The Permit was issued to 21 jurisdictions and agencies in San Diego County. The Permit addresses the basic federal requirement for a program that reduces pollutants discharged from municipal separate storm sewer systems (MS4s) to the maximum extent practicable (MEP).

Section E of the Municipal Permit requires that the Copermittees within the SLR River Watershed collaborate to develop and implement a watershed-based program that addresses urban runoff and surface water quality. The rationale for this program is simple: urban runoff does not follow jurisdictional boundaries and often travels through multiple jurisdictions while flowing to receiving waters. Therefore, the actions of various municipalities within a watershed regarding urban runoff can have a cumulative impact upon shared receiving waters. The Municipal Permit directs San Diego County Copermittees with land use authority within the watershed to collaborate in developing and implementing the WURMP, the purpose of which is to identify and address the watershed's highest priority water quality problems. In addition, the Municipal Permit requires that the Copermittees develop activities that address education, public participation, and watershed-based land use planning.

Section E of the Municipal Permit defines the Copermittees within the nine regional watersheds, as well as a Lead Copermittee for each watershed. The following Copermittees are included in the SLR River Watershed:

- City of Oceanside
- City of Vista
- County of San Diego

The Municipal Permit designates the City of Oceanside as the default Lead Copermittee for the SLR River Watershed, and the City of Oceanside has agreed to continue to fulfill this role. The Municipal Permit requires that the Lead Watershed Copermittee be responsible for producing and submitting the WURMP and subsequent annual reports. They are also responsible for coordinating meetings among watershed Copermittees to facilitate the development and implementation of watershed activities. During this reporting period the City of Oceanside coordinated meetings at least quarterly to discuss and implement the various watershed activities and coordinate required regulatory submittals.

In accordance with Section E of the Municipal Permit, the Copermittees listed for each watershed must participate in the development and implementation of a WURMP. The requirements for the WURMP are listed in the Municipal Permit and include the following:

- Mapping the watershed and identifying all receiving waters, all impaired receiving waters, land uses, highways, jurisdictional boundaries, and inventoried commercial, industrial, construction, municipal sites, and residential areas.
- Assessing the water quality of all receiving waters in the watershed based on existing data and eventually performing watershed-based water quality monitoring activities.
- Identifying and prioritizing major water quality problems in the watershed caused or contributed to by discharges from MS4s, including potential sources of the problems.
- Developing and implementing a strategy of water quality and educational activities needed to address the highest priority water quality problems.
- Identifying which Copermittees are responsible for implementing each recommended watershed activity.
- Developing and implementing a mechanism for public participation in watershed activities.
- Developing and implementing watershed-based education activities.
- Developing a mechanism to facilitate collaborative watershed-based land use planning with other Copermittees in the watershed.
- Developing a long-term strategy for assessing the effectiveness of the WURMP.
- Submitting annual WURMP reports which shall document the Copermittees' activities during the preceding year. At a minimum, the annual report must include:
    - A comprehensive description of all watershed activities conducted by the Watershed Copermittees for permit compliance.
    - Public participation mechanisms utilized during implementation.
    - Watershed-based land use planning mechanism description.
    - Effectiveness assessment of the WURMP.
    - Summary of watershed-related data not already included in the annual monitoring report.
    - Identification of water quality improvements or degradation.

SLR WURMP Goals and Objectives

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.
- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach this goal and the objectives, the SLR Copermittees work collaboratively to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

San Luis Rey Watershed Description

The SLR River Watershed is located along the northern border of San Diego County. It is bordered to the north by the Santa Margarita River Watershed and to the south by the Carlsbad and San Dieguito River Watersheds. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level (MSL), and extends west over 55 miles to form a watershed with an area of approximately 360,000 acres, or 562 square miles (see Figure 1-1). The river ultimately discharges to the Pacific Ocean at the western boundary of the City of Oceanside. Of the nine major watersheds in the San Diego region, the SLR River Watershed is the third largest in terms of land area (SANDAG 1998).

The SLR River Watershed or SLR Hydrologic Unit (HU) (903.00) is comprised of three HAs, which have been delineated by the San Diego Regional Water Quality Control Board (RWQCB) based on drainage patterns: Lower San Luis (HA 903.1), Monserate (HA 903.2), and Warner Valley (HA 903.3) (see Figure 1-1). Over 54% of the land in the watershed is vacant or undeveloped. The next largest land uses in the watershed are residential (15%) and agriculture (14%). The highest concentration of population is located in the Lower San Luis HA. There are six federally recognized Tribal Indian Reservations with land in the watershed. The highest point in the San Luis Rey Watershed (and in San Diego County) is Hot Springs Mountain with an elevation of 6,533 feet (1,991 meters).

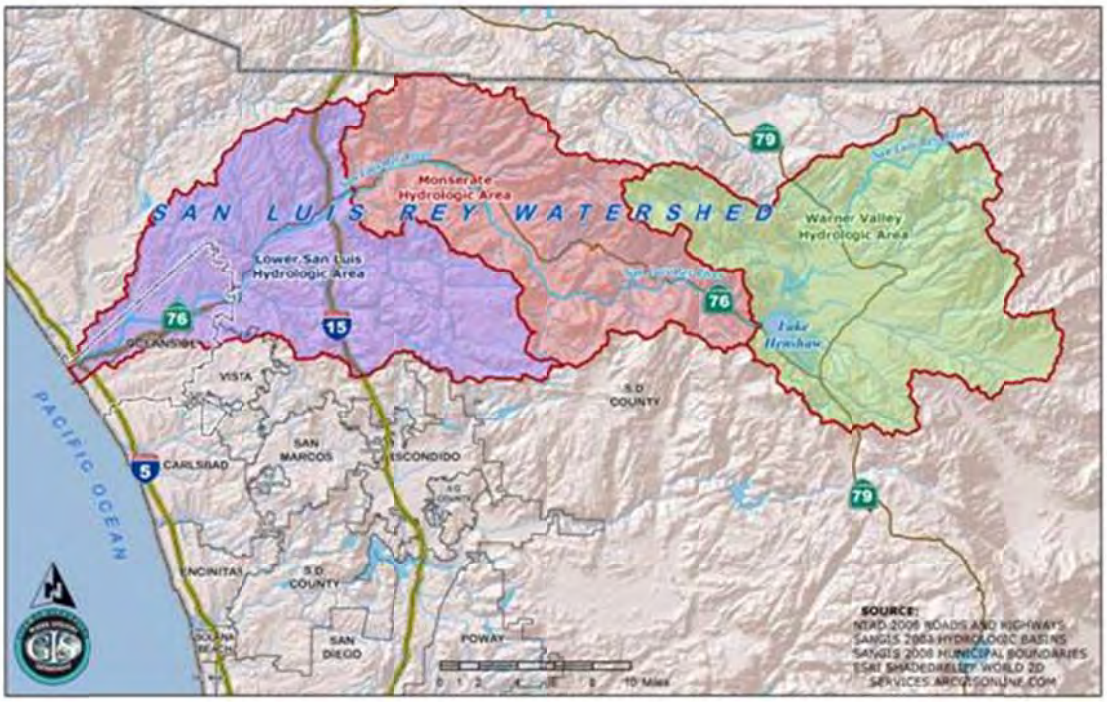

Figure 1-1. San Luis Rey Watershed Hydrologic Areas.

About half (49%) of the land in the watershed is privately owned. Publicly owned land accounts for approximately 37% of the area, and the remaining 14% consists of numerous reservations in the watershed. In the western half of the watershed, private ownership dominates. Moving east through the watershed, public lands increase and dominate in the Warner Valley HA. The Vista Irrigation District (VID) is the single largest landowner in the watershed.

Five jurisdictions have land use authority in the SLR Watershed and include the Cities of Escondido, Oceanside and Vista and the Counties of San Diego and Riverside. A number of other governmental agencies also administer lands within the unincorporated areas of San Diego County. A general breakdown of jurisdictional areas within the watershed is shown in Table 1-1.

Table 1-1. Watershed Acreages by Jurisdiction.

Jurisdiction	Acres	Percentage of Watershed (%)
Escondido	52	0.0
Oceanside	15,883	4.4
Vista	743	0.2
Unincorporated San Diego County	342,566	95.2
Riverside County	649	0.2
Total	**359,893**	**100.0**

Source: SANDAG 1998. (Note: Of the sources reviewed, values for total size of the watershed and the breakdown of the watershed by jurisdictions were similar but often different. Therefore, the values provided in this table are for general purposes only and should be verified if used for other purposes.)

1.1 Copermittee Collaboration

The Cities of Oceanside and Vista and the County of San Diego share the implementation responsibilities for the SLR WURMP. Using the watershed approach, the SLR Copermittees aim to positively affect the water quality of the SLR River Watershed in a cost effective, environmentally sensitive, and collaborative manner.

The San Diego County Copermittees have developed a Model Watershed Urban Runoff Management Strategy (Strategy) to guide the selection and implementation of Watershed Activities that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. Data analyzed to date for the SLR Watershed suggests that bacteria and nutrients are high priority water quality problems in the Lower San Luis HA.

Having used the watershed strategy as the basis for developing the activities, the SLR Copermittees have focused activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the SLR WMA. Where receiving water conditions and pollutant sources were not clearly characterized, monitoring and source identification activities were planned and implemented.

1.1.1 San Luis Rey WURMP Meetings

In order to effectively develop the 2008 SLR WURMP Update required by Municipal Permit Order R9-2007-0001 and to plan and implement the San Luis Rey WURMP in current and subsequent years the SLR Copermittees met six times during FY 2011-12. See Table 1-2 for dates of these meetings and pertinent agenda items discussed at these meetings. The SLR Copermittees developed and prioritized water quality activities that address pollutants of concern in the watershed, exchanged ideas on how to address high priority water quality pollutants in the watershed, evaluated the effectiveness of actions, collaborated on development of a Comprehensive Load Reduction Plan (CLRP) for the Bacteria I TMDL, and collaborated on development of required submittals to the RWQCB.

The general watershed meetings of the San Luis Rey WURMP workgroup were led by the City of Oceanside. Activities and tasks developed by the Copermittees were then carried out by the Copermittees within the structure of their jurisdictional organization. Task completion was then tracked and assessed at the workgroup meetings and is being reported in this Annual Report.

Table 1-2. SLR WURMP Meeting Dates and Agenda Items Discussed.

Date	Agenda Item Topics
8/16/11	Bacteria I TMDL Comprehensive Load Reduction Plan development update; Copermittee SLR watershed monitoring program update; Report of Waste Discharge development update; Watershed activity updates; Annual report schedule.
10/18/11	Overview of Regional Monitoring Programs specific to SLR Watershed (Weston Solutions); Bacteria I TMDL Comprehensive Load Reduction Plan development update; Annual report assignments and schedule; Review of FY 11-12 activities.
12/20/11	(Via conference call) WURMP Annual Report section updates; Watershed activity review and updates; meeting schedule.

Date	Agenda Item Topics
1/15/12	Annual report development and feedback.
1/17/12	Review of Final SLR WURMP Annual Report (via conference call)
05/15/12	Draft of new MS4 Administrative Permit; Comprehensive Load Reduction Plan development update; Monitoring, scheduling, and deliverables related to the Bacteria 1 TMDL; Potential grant/funding opportunities; watershed activity updates.

In addition to the meetings listed above, the San Luis Rey Copermittees met several times during FY 2011-12 to address requirements of the Bacteria Total Maximum Daily Load (TMDL) for Beaches and Creeks. The San Luis Rey Copermittees began developing a Comprehensive Load Reduction Plan (CLRP) for the San Luis Rey River Watershed. The CLRP outlines a proposed program of activities that will be capable of achieving TMDL-specified bacteria load reductions. For more information, refer to Activity SLR-026 in Appendix A of this report.

1.1 Watershed Map Updates

Section J.2. of the Municipal Permit requires that the WURMP provide an accurate map of the watershed that identifies the following: All receiving waters (including the Pacific Ocean); Clean Water Act section 303(d) impaired receiving waters; land uses; MS4s, major highways, jurisdictional boundaries; and inventoried commercial, industrial and municipal sites. In a letter dated September 23, 2008, the Regional Water Quality Control Board requested Copermittees increase the size of the watershed maps to no smaller than 36 inches by 24 inches. See Appendix B of the 2007-08 WURMP AR for a copy of the increased map size.

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2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section presents a current assessment of surface water quality and potential pollutant sources within the SLR WMA. The SLR Copermittees participate in a regional monitoring program, which rotates between the northern and southern watersheds of San Diego County every other year. During the FY 2011-12 reporting period, regional monitoring efforts were focused in the southern watersheds. A detailed review of all monitoring activities taking place within the SLR watershed over the current reporting period can be found in the *2011-12 Urban Runoff Monitoring Annual Report* (Regional Monitoring Report). The pollutant source assessment is based on land use coverages, facility source inventories, as well as past and present source characterization efforts.

2.1 Watershed Water Quality Assessment

This section provides an updated assessment of applicable water quality data reports, analyses, and other information, including identification of the watershed's high priority water quality problems.

2.1.1 2011-12 WATER QUALITY PROGRAMS AND DATA

Table 2-1 identifies the active water quality monitoring programs within the SLR WMA and briefly summarizes monitoring activity during FY 2011-12.

For further details on the following programs, please refer to the Regional Monitoring Report, which is submitted under separate cover:

- Stormwater Monitoring Coalition (SMC) Program
- Jurisdictional Dry Weather Monitoring (DWM)
- Coastal Storm Drain Monitoring (CSDM)

Jurisdictional DWM Program results are also discussed in individual Jurisdictional Urban Runoff Management Program (JURMP) Annual Reports. CSDM Program results are also included as an attachment to the 2011-12 Regional Monitoring Report.

Table 2-1. Water Quality Monitoring Activities in the San Luis Rey River WMA (FY 2011-12).

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**8**
Ambient (Dry) Monitoring	Water chemistry, toxicity, bacteria, rapid stream bioassessment, and trash	0
SMC Regional Monitoring	Water chemistry, toxicity, and rapid stream bioassessment	2-SMC*
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	0
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	0
Third-Party Data (Coastkeeper)	General chemistry and bacteria	4-Coastkeeper
Urban Runoff Monitoring		**119**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	37
Jurisdictional Dry Weather Monitoring –Trash Assessment	Trash	50
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	6
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	6
MS4 Outfall Targeted Dry Weather Monitoring	Chemistry, metals, and bacteria	14
MS4 Outfall Targeted Wet Weather Monitoring	Chemistry, metals, pesticides, and bacteria	0
CSDM Program	Coastal Outfall and Receiving Waters	6

SMC – Stormwater Monitoring Coalition
TOC – total organic carbon
MS4 - municipal separate storm sewer systems
CSDM – coastal storm drain monitoring
*The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over 5 years (http://socalsmc.org/ProjectThree.aspx).

2.1.2 2011-12 WATER QUALITY MONITORING RESULTS

Figure 2-1 below presents a map of the San Luis Rey River WMA, including monitoring sites, jurisdictional boundaries, and drainage areas.

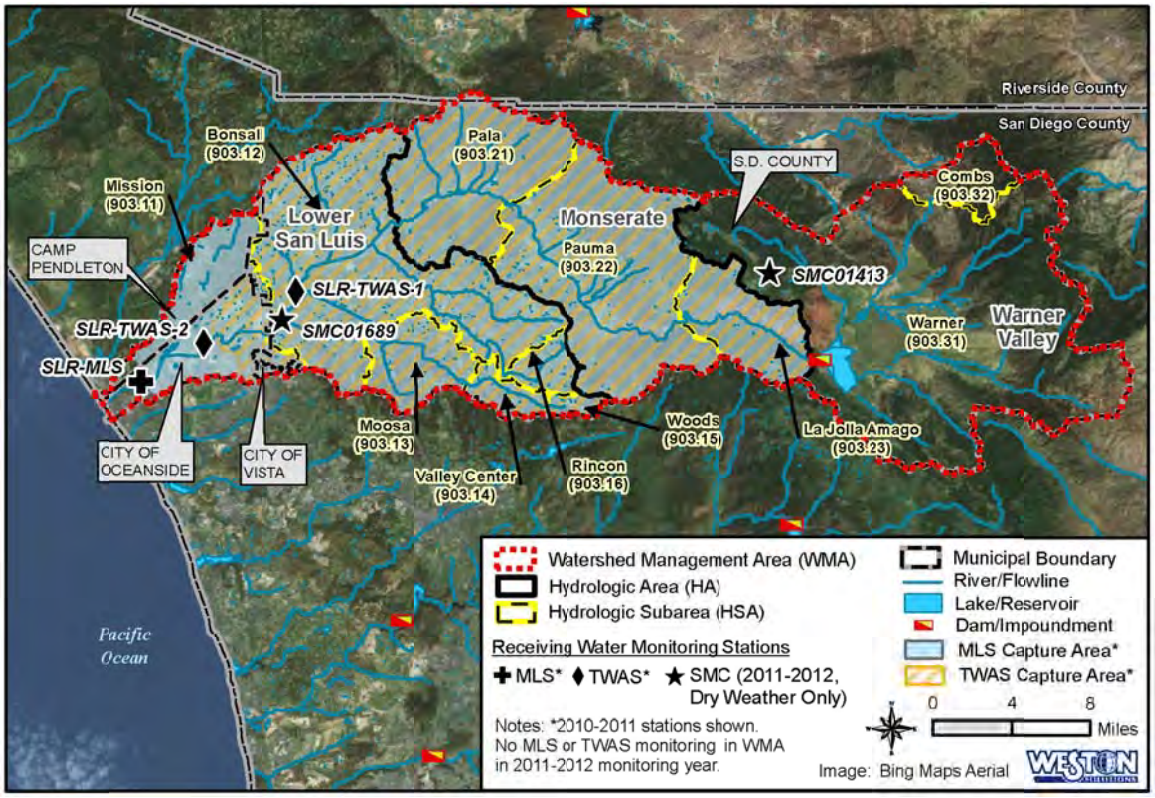

Figure 2-1. San Luis Rey River WMA 2011-12 Monitoring Locations.

Table 2-2, Table 2-3, and Table 2-4 below summarize the annual monitoring results and identify relationships between receiving water and municipal separate storm sewer system (MS4) outfall results during both wet and dry weather. Each of the tables describes a specific catchment area:

- Table 2-2: SLR Mass Loading Station (SLR-MLS),
- Table 2-3: SLR Temporary Watershed Assessment Station 2 (SLR-TWAS-2), and
- Table 2-4: SLR Temporary Watershed Assessment Station 1 (SLR-TWAS-1).

The constituents listed in these tables represent medium and high priority constituents based on the *Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas*, Final Draft-Version 1 (SDCRC, 2010).

Key findings from the monitoring data collected at these stations include the following:

- Receiving Water – The WMA is off-rotation, and therefore no Permit-required NPDES receiving water data were collected. Receiving water data were collected under the SMC program at two locations during dry weather. The SMC site located above Lake Henshaw in the most upstream watershed (SMC01413) is not representative of the drainage areas monitored in the NPDES program (MLS and TWAS are below the reservoir), and therefore data from this station are not presented in the tables. The results from SMC01413 indicate overall good water quality with no constituents exceeding the benchmarks. Biology as rated by the bioassessment Index of Biotic Integrity (IBI) score was also Good. The second SMC site (SMC01689) represents receiving water conditions in the Bonsall hydrologic subarea (HSA) upstream from the MLS and SLR-TWAS-2, but

located below SLR-TWAS-1 and Lake Henshaw. For SMC01689, the high priority constituents identified for dry weather flows included total phosphorus and total dissolved solids (TDS). The IBI score was Very Poor. SMC analysis does not include indicator bacteria.

- MS4 – Wet vs. Dry Weather – The results from the 2011-2012 monitoring of MS4 outfalls indicated that fecal coliform is a high priority during wet weather; and, fecal coliform, *Enterococcus,* nutrients, and TDS are high-priority constituents during dry weather. These results represent MS4 outfall conditions in the MLS and both TWAS drainage areas below Lake Henshaw. The MS4 results for this WMA indicate similar results to regional MS4 priorities in both wet and dry weather, and corresponding priorities in regional receiving water quality based on historic and current data from southern (on-rotation) WMAs. Chloride was also identified as a high priority in dry weather MS4 flows. This constituent was added to the NPDES Program to better assess TDS exceedances. Chloride is a component of TDS.
- Bioassessment Monitoring: The SMC location above Lake Henshaw in the Warner HSA (SMC01413) was rated by the bioassessment Index of Biotic Integrity (IBI) as Good. At the SMC site located in the lower watershed (SMC01689), toxicity to *C. dubia* reproduction (but not acute or chronic survival) was observed.

Table 2-2. Summary of San Luis Rey River MLS Drainage Area Assessment Findings.

San Luis Rey River MLS			
System Assessed	Dry Weather Priority Constituents[1]	Wet Weather Priority Constituents[1]	Core Management Question(s) Addressed
Receiving Water Monitoring (MLS, TWAS, SMC)	NPDES Program • No data SMC Program (One Station, SMC01689)* • Chemistry – No Priority constituents identified • Toxicity – *C. dubia* reproduction (Med) • Biology – Very Poor IBI • Bacteria – Not analyzed • Nutrients – Total Phosphorus • TDS – TDS Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Bacteria – *Enterococcus*, *E. coli*	NPDES Program • No data Synthetic Pyrethroids in Sediment • No data	1, 2
Urban Runoff Monitoring (MS4 Outfall)	MS4 Program • Chemistry – Chloride • Bacteria – Fecal Coliform, *Enterococcus* • Nutrients – Total Nitrogen, Total Phosphorus, Dissolved Phosphorus • TDS – TDS	MS4 Program • Chemistry – TSS (Med) • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – TDS (Med)	3, 4
Lagoon/ Estuary/ Bay Monitoring	Not Applicable	Not Applicable	1, 2
Trends[3]			
Increasing[4,5,6,7]		Fecal Coliform, Total Coliform, *Enterococcus*, Ammonia, pH, Turbidity, Dissolved Phosphorus	5
Decreasing		Conductivity, Total Hardness, TDS	

Note: All results included in this table reflect data collected above the receiving water station and below Lake Henshaw.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons among assessment tables. In the case of toxicity "no observed toxicity" was stated.
[2] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples. Constituent list for third-party data are provided in Appendix M. Indicator bacteria analyzed include: *E. coli*, *Enterococcus*, total coliform.
[3] Trends based on wet weather historical data. Due to rotational structure of the monitoring program, receiving water data for this station are not available for the 2011-2012 monitoring year.
[4] Fecal coliform and TDS results have consistently been above the WQB.
[5] Ammonia and dissolved phosphorus concentrations have consistently been below the WQB.
[6] Turbidity was below the WQB for the past two years monitored.
[7] pH exceeded the WQB in one sample from the 2010-2011monitoring year; however, it is historically below the WQB.
*One sample used in analysis.

IBI – Index of Biotic Integrity
Med – medium-priority constituent
MLS – mass loading station
MS4 – municipal separate storm sewer system
NPDES – National Pollutant Discharge Elimination System
SMC – Stormwater Monitoring Coalition
TDS – total dissolved solids
TSS – total suspended solids
TWAS – temporary watershed assessment station
WQB – water quality benchmark

Table 2-3. Summary of San Luis Rey River TWAS 2 Drainage Area Assessment Findings.

San Luis Rey River TWAS-2			
System Assessed	Dry Weather Priority Constituents[1]	Wet Weather Priority Constituents[1]	Core Management Question(s) Addressed
Receiving Water Monitoring (MLS, TWAS, SMC)	NPDES Program • No data SMC Program (One Station, SMC01689)* • Chemistry – No Priority constituents identified • Toxicity – *C. dubia* reproduction (Med) • Biology – Very Poor IBI • Bacteria – Not analyzed • Nutrients – Total Phosphorus • TDS – TDS Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Bacteria – *Enterococcus*	NPDES Program • No data Synthetic Pyrethroids in Sediment • No data	1, 2
Urban Runoff Monitoring (MS4 Outfall)	MS4 Program • Chemistry – Chloride Dissolved Oxygen (Med) • Bacteria – Fecal Coliform, *Enterococcus* • Nutrients – Total Nitrogen, Total Phosphorus, Dissolved Phosphorus • TDS – TDS	MS4 Program • Chemistry – TSS (Med) • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – TDS (Med)	3, 4
Lagoon/ Estuary/ Bay Monitoring	Not Applicable	Not Applicable	1, 2

Note: All Results included in this table reflect data collected above the receiving water station and below Lake Henshaw. Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons among assessment tables. In the case of toxicity "no observed toxicity" was stated.

[2] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples. Constituent list for third-party data is provided in Appendix M. Indicator bacteria analyzed include *E. coli*, *Enterococcus*, and total coliform.

*One sample used in analysis.

IBI – Index of Biotic Integrity	SMC – Stormwater Monitoring Coalition
Med – medium-priority constituent	TDS – total dissolved solids
MS4 – municipal separate storm sewer system	TSS – total suspended solids
NPDES – National Pollutant Discharge Elimination System	TWAS – temporary watershed assessment station
MLS – mass loading station	WQB – water quality benchmark

Table 2-4. Summary of San Luis Rey River TWAS 1 Drainage Area Assessment Findings.

San Luis Rey River TWAS-1			
System Assessed	Dry Weather Priority Constituents[1]	Wet Weather Priority Constituents[1]	Core Management Question(s) Addressed
Receiving Water Monitoring (MLS, TWAS, SMC)	NPDES Program • No data SMC Program • No samples collected upstream of SLR-TWAS-1 Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Bacteria – *Enterococcus*, *E. coli*	NPDES Program • No data Synthetic Pyrethroids in Sediment • No data	1, 2
Urban Runoff Monitoring (MS4 Outfall)	MS4 Program • Chemistry – Chloride • Bacteria – Fecal Coliform, *Enterococcus* • Nutrients – Total Nitrogen, Total Phosphorus, Dissolved Phosphorus Nitrate as N (Med), Nitrate/Nitrite as N (Med) • TDS – TDS	MS4 Program • Chemistry – TSS (Med) • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – TDS (Med)	3, 4
Lagoon/ Estuary/ Bay Monitoring	Not Applicable	Not Applicable	1, 2

Note: All results included in this table reflect data collected above the receiving water station and below Lake Henshaw. Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons among assessment tables. In the case of toxicity "no observed toxicity" was stated.

[2] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples. Constituent list for third-party data is provided in Appendix M. Indicator bacteria analyzed include *E. coli*, *Enterococcus*, and total coliform.

MLS – mass loading station
Med – medium priority constituent
MS4 – municipal separate storm sewer system
NPDES – National Pollutant Discharge Elimination System
SMC – Stormwater Monitoring Coalition
TDS – total dissolved solids
TSS – total suspended solids
TWAS – temporary watershed assessment station
WQB – water quality benchmark

Table 2-5 summarizes the 303(d) listed water bodies and constituents within the San Luis Rey River WMA, and identifies whether available data support the listings. Table 2-5 also identifies where there are no data, and whether total maximum daily loads (TMDLs) have been developed. As identified in the table, there are listed waterbodies where data may be needed to verify impairments.

Table 2-5. San Luis Rey River WMA Assessment Conclusions in Relation to 2008 Section 303(d) Listings.

Waterbody Name	HSA	HSA No.	303(d) Listed Pollutant/ Stressor	Supported by Regional Data	Supported by SMC/ Third-Party Data	TMDL
Pacific Ocean Shoreline	Mission	903.11	Enterococcus and total coliform	✓	✓	✓
Lower San Luis Rey River	Mission	903.11	Chloride, TDS, *Enterococcus*, fecal coliform, phosphorus, nitrogen, and toxicity	✓	✓	
Guajome Lake	Mission	903.11	Eutrophic	No data	No data	
Upper San Luis Rey River	Bonsall	903.12	Nitrogen	No data	✓	
Keys Creek	Bonsall	903.12	Selenium	No data	No data	

Source: SWRCB, 2011.

HSA – hydrologic subarea
SMC – Stormwater Monitoring Coalition
SWRCB – State Water Resources Control Board
TDS – total dissolved solids
TMDL – total maximum daily load

Answers to the five Core Management Questions are provided below.

Core Management Question 1.
Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 aims to link water and habitat quality and species toxicity to the many beneficial uses of the San Luis Rey River Watershed. This question is best addressed using a long-term assessment in addition to a more detailed look at the linkage between priority constituents and specific beneficial uses. The Long-Term Effectiveness Assessment (LTEA) five-year analysis was completed during FY 2010-11. The LTEA analysis offers the opportunity to compare annual water quality conditions with longer term trends in receiving water and habitat quality. This comparison is best addressed by comparing the FY 2010-11 data collected at the MLS and TWAS stations and evaluating the similarities in priority constituent ratings with the LTEA dataset. Both assessments use a triad approach for receiving water that includes chemistry, toxicity, and benthic community assessments. The triad approach provides a more holistic assessment of the overall health and conditions protective of beneficial uses, rather than just identifying priorities based solely on chemistry results. In addition, historical bacteria, nutrients, and dissolved minerals monitoring results associated with WURMP Activity SLR-001 also inform the discussion of the conditions in the San Luis Rey River.

During wet weather, fecal coliforms and TDS have consistently been identified as high priority constituents historically in the LTEA and in the FY 2010-11 regional data assessments. TSS, turbidity, and the pesticide, bifenthrin, have been identified intermittently as medium or high priorities during previous assessments.

Toxicity is not a high priority during wet weather. It is identified as a medium priority at all sites during the FY 2010-11 regional monitoring and at the TWAS-1 station in the LTEA assessment. It was identified as a low priority at the MLS in the LTEA assessment.

During ambient conditions, Enterococcus, dissolved phosphorous, total phosphorous, total nitrogen and TDS stood out as consistent high or medium priority analytes in the LTEA and the FY 2010-11 regional monitoring data assessment at all sites assessed. The previous monitoring conducted jointly between the City of Oceanside and the County of San Diego as WURMP Water Quality Activity SLR-001 provides additional ambient data for bacteria, TDS, and nutrients for eight main stem sites of the San Luis Rey River. The data supports the high-priority designations of indicator bacteria, nutrients, and TDS.

Toxicity surveys conducted in wet and dry weather resulted in low to medium priority ratings indicating that there is no evidence of persistent toxicity. TDS is consistently observed above the benchmark throughout the Lower San Luis and Monserate HAs and it has been demonstrated that several aquatic organisms (e.g., *C. dubia*) have a low tolerance to elevated TDS and ion imbalance (Mount et al., 1997). This may be the cause of the intermittent toxicity to test organism reproduction.

Bioassessment surveys assess the biological indicators within the receiving waters. The surveys are conducted in ambient conditions, but results apply to overall benthic conditions year round. Biological indicators, as measured by IBI scores, are rated as a high priority in both the LTEA and the FY 2010-11 regional monitoring assessments.

In summary, exceedances of bacteria, nutrients, and dissolved mineral Water Quality Objectives (WQOs) and poor rapid stream bioassessment results indicate that conditions in the San Luis Rey River may not be protective of some beneficial uses. The receiving water monitoring results support the selection of bacteria and nutrients as high priority constituents and therefore support the activities in active implementation and those planned for future implementation within the Watershed.

Core Management Question 2.
What is the extent and magnitude of the current or potential receiving water problems?
As identified in previous years through multiple receiving water monitoring programs, the priority constituents during wet weather are TDS and bacteria. The priority constituents during dry weather are bacteria, nutrients, and TDS. Core Management Question 2 was addressed with magnitude of exceedance ratios and spatial analysis of priority constituents using the FY 2010-11 regional monitoring ambient and wet weather assessments in the receiving waters. The joint monitoring conducted by the County of San Diego and the City of Oceanside also provides a spatial extent of exceedances for bacteria, TDS and chloride, and nutrients for mean results from 2004 through 2011 to supplement the regional data.

The magnitude of the receiving water problems can be assessed by reviewing the frequency that the results are above the benchmark, which is how the constituent priorities are determined, and by the ratio of the measured concentration to the appropriate benchmark. The constituent priorities are addressed in Core Management Question 1. During wet weather, the highest median ratio to benchmark for TDS is 2.8 at SLR-TWAS-1 and the highest median ratio to benchmark for fecal coliform was 629 at SLR-MLS. During ambient conditions, the median ratio to benchmark for TDS is 2.9 at all three locations in the watershed. The highest median ratio to benchmark for Enterococcus is 7.28 at the MLS. The highest median ratios to benchmark for nutrients are 3.89 for total nitrogen at the MLS, 1.80 for total phosphorus at TWAS-2, and 1.55 for dissolved phosphorus at the MLS and TWAS-2.

The MLS and TWAS stations are located within the lower 12 miles of the San Luis Rey River. Therefore, the discussion of the extent of the spatial receiving water problems are confined to the discussion presented in Core Management Question 1 and the discussion on magnitude above. Overall, the high priority constituents are uniform throughout the sampling area during wet and dry weather. The SMC Program, which uses a random sample selection method and samples during ambient conditions, includes sites that are within this lower 12 mile area and some that are upstream, depending on the monitoring year's selection. The SMC results have generally supported the priority ratings used in the LTEA and the Regional Monitoring Program assessments. In the FY 2011-12 monitoring year, two SMC sites were sampled in the receiving waters during dry weather. One site was located above Lake Henshaw in the upper watershed and is not representative of the drainage areas monitored in the NPDES program (MLS and TWAS are located below the impoundment). The second SMC site was located in the Bonsall hydrologic subarea (HSA) upstream of the MLS and TWAS-2 stations, but below the TWAS-1

station. The high priority constituents identified for dry weather flows included total phosphorus and TDS, which is consistent with the NPDES monitoring results in the sampling area.
Analysis of the 2004 through 2011 data collected by the joint monitoring program, SLR-001, also found that total nitrogen concentrations were consistent, and actually greater, at the most upstream site while total phosphorus concentrations increased gradually from upstream to downstream. The joint monitoring program results show TDS and chloride increasing from east to west, with a slightly lower mean result at Douglas and a larger increase at Benet. All stations exceed the Basin Plan water quality objectives for TDS and all but the most upstream site exceeded the Basin Plan water quality objectives for chloride. The joint monitoring program also concluded that indicator bacteria means are typically lowest at the eastern and western most sampling stations, with a peak at the Douglas sampling location.

Historical stream bioassessment monitoring conducted in the WMA indicates a Very Poor benthic community at both MLS and TWAS locations. The consistent rating of Very Poor at both the MLS and TWAS since 2001 suggests that the extent of the impairment on the benthic community is not isolated only to a single location. The SMC 2011-12 bioassessment results collected in the Bonsall HSA indicate a Very Poor benthic community at the site closest to the MLS and TWAS stations, However, the SMC site located upstream of Lake Henshaw had a Good rating that suggests some variability in biological conditions spatially.

Toxicity results were a medium priority at all MLS and TWAS wet weather sites during the FY 2010-11 monitoring year. However, while slight toxicity to *C. dubia* reproduction was observed at the MLS and TWAS-1, *C. dubia* survival and reproduction and toxicity to H. Azteca survival was observed during one monitoring event at TWAS-2. TSS, turbidity, and two banned pesticides, malathion and diazinon, were found in the water chemistry during the same event and are likely linked to the toxicity results. During ambient monitoring, toxicity to *C. daphnia* reproduction was observed during one event at the MLS and TWAS-2 creating a medium priority. FY 2011-12 SMC sampling at the station located above the MLS and TWAS-2 also indicated toxicity to *C. daphnia* reproduction.

Residential and agricultural land uses make up the highest percentage in the Lower San Luis HA whereas open space and vacant land make up most of the Monserate and Warner Valley HAs. Thus the extent of the current and potential receiving water problems are likely concentrated in the Lower San Luis HA, and coincide with more intensive monitoring. Bacteria and nutrients have the highest median ratio to benchmark results from the monitoring, which indicate a higher magnitude of exceedance, and are therefore designated as high priority constituents. Lower HA results indicate that total nitrogen concentrations tend to decrease downstream, while bacteria increase. TDS also increases as the River flows towards the ocean.

Core Management Question 3
What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 is partially answered through the MS4 Outfall Monitoring Program. During the FY 2011-12 monitoring program, the San Luis Rey River WMA MS4 was assessed through the random dry, random wet, and targeted dry components of the MS4 Outfall Monitoring Program. The CSDM results and historical data from WURMP Activity SLR-001

provide supplemental information to address the relative urban runoff contribution to the receiving water problems.

In wet weather, MS4 outfall data indicates that the indicator bacteria fecal coliform is a priority constituent for wet weather flows. There is a linkage between MS4 outfall priorities for this indicator bacteria with receiving water wet weather flows based on historical data trends at the MLS. Fecal coliform was identified as a priority in receiving water in the previous Annual Reports and the LTEA based on data from the MLS and TWAS in the lower watershed below Lake Henshaw. TDS was identified as a medium priority for wet weather flows from MS4 outfalls. The LTEA identified TDS as a high priority in dry weather flows in receiving water at the MLS, indicating a potential linkage with MS4 results. TDS is generally a dry weather issue in the San Diego region. Higher TDS concentrations in wet weather flows may be influenced by the longer dry periods and lower rainfall that result in a greater build-up of natural minerals. Drier wet seasons might also be influenced by dry weather flows that may be from imported sources of water for irrigation and other purposes.

In dry weather, MS4 outfall data indicated priority constituents include indicator bacteria (*Enterococcus*), nutrients and TDS. These constituents were also identified as priorities for receiving water dry weather flows based on select SMC data and past receiving water data within the drainage areas above the MLS and TWAS and below Lake Henshaw. *Enterococcus*, nutrients, and TDS are regional issues in developed areas of the County based on the LTEA. Fecal coliform was also identified as a high priority in dry weather MS4 outfalls, which is not consistent with regional dry weather priorities. This indicator bacteria is typically a priority for wet weather flows in both MS4 outfalls and receiving water. Chloride was also identified as a priority constituent in dry weather flows and is associated with the TDS priority rating.

Historical CSDM results indicate that coastal storm drains do not appear to be effecting bacterial concentrations in the coastal receiving waters during dry weather conditions among the sites sampled.

Data collected through the joint monitoring program (SLR-001) from 2004 to 2011 also provides information on both tributary and receiving water quality. The total and fecal coliform relative mean concentration results remained below the AB411 single sample standard at all main stem sites. While there are peaks in the spatial data, none appear to correlate with the tributary results. The site with the highest mean concentration of Enterococcus (Douglas) had no visible tributaries or outfalls between it and the next upstream main stem site (Murray).
All of the tributaries sampled in the joint monitoring program have a relative mean concentration greater than the Basin Plan objective for TDS and all but one have relative mean concentrations greater than the objective for chloride. Two tributaries in the Mission HSA (Sleeping Indian and Pilgrim Creek) have been identified as having higher TDS concentrations than the other sampling sites. Pilgrim Creek was also identified as having the highest chloride concentration. Results at both main stem sites downstream of these tributaries have a slight increase in TDS and chloride levels. However, mineral composition of TDS at Pilgrim Creek renders that tributary characteristically different from the others. The mean concentrations of the main stem samples are very similar to the mean groundwater concentrations, which indicate that groundwater is influencing water quality in the main stem.

Bacteria, nutrients, and dissolved minerals are identified as priority constituents in the receiving water and the MS4 indicating that there is the potential for urban runoff contribution to the receiving water. Currently, four of the five years of data for the random wet MS4 program have been collected. The probability-based random monitoring program was developed to assess the data after a five-year period when the data set is complete. Therefore, this question may be answered with a higher level of confidence with the five-year assessment required by the MS4 Outfall Monitoring Workplan.

Core Management Question 4
What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is addressed through the previously completed Regional Source Identification Monitoring Program, Land-use Based Water Quality Monitoring (SLR-028), and also from the completion of the Lower San Luis Rey Bacteria Source Identification Project, a State Clean Beaches Initiative Grant.

In 2009-10, the County of San Diego conducted land-use based monitoring activities (SLR-028) to characterize water quality in catchments consisting primarily of agricultural and rural residential land uses. Two of the sites included in this sampling effort were located in the San Luis Rey Watershed. The Couser Canyon site, located in the Monserate HA (903.2), was composed primarily of agricultural land uses (86 percent); of which orchard and vineyard agricultural uses accounted for 75 percent of the watershed's land uses. Water quality data collected at this site suggest that agricultural parcels within the study area contributed bacteria, ammonia as nitrogen, nitrogen, phosphorus, TDS, iron, and manganese at levels above water quality benchmarks during storm events. Dry weather results indicate that parcels within the study area contributed bacteria, ammonia as nitrogen, nitrogen, phosphorus and TDS. The Valley Center sampling location, also located in the Monserate HA (903.2) consisted of a mix of spaced rural residential and agricultural land uses (primarily orchard and vineyard). Water quality data collected at this site suggest that during wet weather events runoff exceeded bacteria, nitrogen, and TDS water quality benchmarks. Additional sampling, conducted in the San Diego River Watershed, Blossom Valley sampling site, indicate that spaced rural residential land uses within the study area contributed bacteria, ammonia as nitrogen, nitrogen, phosphorus, and lead at levels greater than water quality benchmarks.

Similar studies were conducted in 2010-11 (Regional Source Identification Program) to assess dry weather and wet weather runoff from single-family residential areas. The studies were conducted at two locations, one within the San Luis Rey Watershed (Mission HSA) in the City of Oceanside. Wet weather results from the site within the San Luis Rey Watershed indicate that residential parcels within the study area contributed bacteria, dissolved copper, and pesticides (specifically bifenthrin) above water quality benchmarks during storm events. Dry weather results indicate that residential parcels within the study area contributed nutrients, dissolved and suspended solids (TSS, TDS, and turbidity), bacteria, and dissolved copper above water quality benchmarks during ambient conditions.

During 2010-11, the City of Oceanside, with match funding from the County of San Diego and the City of Vista, completed a three year, grant-funded bacteria source tracking study in the Lower San Luis Rey River. Genetic bacterial analysis focused primarily on identifying if there

were bacteria from human and avian sources in the main stem and tributaries of the lower watershed. The results of the project did point to both human and avian sources present during wet and dry weather at the river mouth and human sources (avian sources were not tested) in main stem and tributary locations of the Lower San Luis Rey River. Other sources are likely present (pets, other animals, and/or vegetation), but the quantification or division of percentage of these sources is not available from the project.

Core Management Question 5
Are conditions in receiving waters getting better or worse?

Core management question 5 is addressed using the trend results evaluated during the 2010-2011 Annual Monitoring Report (SDCRC, 2011a). Trend analysis is conducted on historical wet weather data collected at the MLS. Trend results do not typically change from year to year; therefore, they can be tracked on a less frequent basis in receiving waters. As of 2011, conductivity, hardness, and TDS were significantly decreasing trends. TDS has generally been below the benchmarks, but was above in MS4 outfall and SMC receiving water sites monitored in the 2011-2012 monitoring period. Significantly increasing constituents included fecal coliform, total coliform, *Enterococcus*, dissolved phosphorus, ammonia, pH, and turbidity. Of these constituents, fecal coliform has consistently been above the benchmarks. Ammonia, dissolved phosphorus, and turbidity have consistently been below the water quality benchmarks.

The bioassessment ratings at the San Luis Rey MLS and TWAS have been Very Poor in nearly all assessments conducted between 2001 and 2012 in the Lower San Luis HA and there are no apparent trends in the benthic community.

Toxicity has rarely been observed in samples collected from the San Luis Rey MLS. Between 2001 and 2011, toxicity was observed during just three storm events. The dry weather SMC data collected in the Lower San Luis HA indicated toxicity to *C. dubia* reproduction (but not acute or chronic survival). There are no significant trends for toxicity in the data set and toxicity is not a persistent issue in the Watershed.

2.1.3 WATERSHED WATER QUALITY PROBLEMS

Section 3.1.3 of the March 2008 WURMP identifies criteria to be used by the SLR Copermittees to identify priority and high priority water quality problems within the SLR WMA (SLR WURMP 2008). Based on these criteria, Table 2-6 identifies all the watershed water quality problems, including high priorities, and provides a brief explanation of the supporting information used to make each decision.

Table 2-6. Water Quality Problems in the San Luis Rey WMA.

Water Quality Problem	WURMP High Priority?	Explanation
Bacteria	Yes	- TMDL for bacterial indicators at the Pacific Ocean Shoreline, San Luis Rey River mouth - 303(d) listing for Enterococcus and fecal coliform for the Lower San Luis Rey River - Persistent exceedances of bacterial indicators benchmarks at the MLS and TWAS.
Nutrients	Yes	- 303(d) listing for Eutrophication at Guajome Lake - 303(d) listing for Total Nitrogen and Total Phosphorus for the Lower San Luis Rey River. - 303(d) listing for Total Nitrogen for the Upper San Luis Rey River. - Persistent exceedances of nutrient-related constituents at the MLS and TWAS.
Dissolved Minerals (TDS & Chloride)	No	- 303(d) listings for TDS and chloride for Lower San Luis Rey River - Persistent exceedances of TDS benchmarks observed at the MLS and TWAS.
Benthic Alteration	No	- Consistent "Poor" or "Very Poor" IBI scores and O/E ratio results at the MLS and TWAS
Selenium	No	- 303(d) listing for Eutrophication at Keys Creek
Toxicity	No	- 303(d) listing for Lower San Luis Rey River

2.2 Pollutant Source Assessment

This section describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed. Land use and facility source data have been examined and mapped for the entire watershed in order to identify the potential pollutant sources contributing to the watershed's high priority water quality problems presented in Appendix A, Figure 3-4 of the 2008 San Luis Rey WURMP (SLR WURMP 2008). Table 2-7 presents an overview of the land use distribution for major land use categories and potential sources within each HSA. This table supports the Watershed Copermittees' focus on activities in the Lower SLR Hydrologic Area. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date. Figure 3-1 in Appendix A of the SLR WURMP 2008 provides a map of sampling locations in the SLR Watershed (SLR WURMP 2008).

Table 2-7 shows the contrast between the lower and upper watershed. Residential and agriculture land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed.

Table 2-7. Overview of Major Land Uses for San Luis Rey River WMA.

Hydrologic Sub Area	Major Land Use Categories[1]												
	Residential		Commercial / Industrial		Agriculture		OS/Preserve		Vacant		Military		Total Area Accounted for
	acres	%	acres	%	acres	%	acres	%	acres	%	acres	%	%
Lower San Luis HA (903.1)													
Mission HSA (903.11)	7,700	26	1,000	3	3,900	12	2,500	8	2,000	7	9,600	32	88
Bonsall HSA (902.12)	24,000	37	1,800	3	20,900	32	1,100	2	14,000	21	400	<1	96
Moosa HSA (903.13) Valley Center (903.14) Woods HSA (903.15) Rincon HSA (903.16)	8,400	38	600	3	5,400	21	500	2	6,600	28	0	0	92
Monserate HA (903.2)	9,200	9	800	1	18,300	17	14,000	13	64,200	59	0	0	99
Warner Valley HA (903.3)	4,300	3	400	<1	3,600	3	14,200	9	108,600	82	0	0	98
Total Land Area	53,600				52,100		32,300		195,400				

1. Source: County of San Diego based on SANDAG 2006 data, land use categories have been grouped for demonstration purposes.

2.2.1 Potential Bacteria Sources

The Baseline Long Term Effectiveness Assessment (BLTEA) represented the Copermittees' first attempt to identify sources of bacteria in the SLR River Watershed. Table 2-8 presents the BLTEA's list of "Likely" and "Unknown" bacteria sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE 2005). Table 2-9 lists the number of potential bacteria sources by HSA in addition to relevant land uses with the greatest potential to generate bacteria. Potential bacteria sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-5 through 3-10 (SLR WURMP 2008).

Table 2-8. Potential Bacteria Sources for the SLR River Watershed (From BLTEA).

Potential Bacteria Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Eating or drinking establishments	277	Likely
Animal Facilities	47	Likely
POTWs (water and wastewater)	17	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Sites for disposing and treating sewage sludge	-	Likely
Development subject to SUSMPs	115	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Motor Freight	2	Unknown
Auto parking lots and storage facilities	-	Unknown
Pest Control Services	49	Unknown
Flood management projects and flood control devices	-	Unknown
MS4s	-	Unknown
Park and Recreational facilities	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego – 2005

Table 2-9. Potential Bacteria Sources by Hydrologic Sub-Area.

HSA	Potential Bacteria Source	Number of Facilities or % Land Use
Mission HSA 903.11	Food Establishments	198
	Commercial Animal Facilities	66
	Auto Facilities	7
	Nurseries	54
	% Residential	26%
	% Agricultural	12%
Bonsall HSA 903.12	Food Establishments	48
	Commercial Animal Facilities	168
	Auto Facilities	34
	Nurseries	15
	% Residential	37%
	% Agricultural	32%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Food Establishments	20
	Commercial Animal Facilities	47
	Auto Facilities	4
	Nurseries	15
	% Residential	38%
	% Agricultural	21%
Monserate HSA 903.20	Food Establishments	9
	Commercial Animal Facilities	34
	Auto Facilities	1
	Nurseries	4
	% Residential	9%
	% Agricultural	17%
Warner Valley HSA 903.30	Food Establishments	7
	Commercial Animal Facilities	0
	Auto Facilities	1
	Nurseries	2
	% Residential	3%
	% Agricultural	3%

There is currently only one location within the watershed where an adequate source identification study has been performed to characterize the bacterial pollutant source: the Oceanside Harbor Boat Wash outfall. The City of Oceanside performs routine sampling at the

harbor boat wash and recreational vehicle sewage dump area as part of its CSDM Program. This monitoring has revealed high levels of bacteria in samples collected from the boat wash outfall. The outfall drains a short storm drain system where the only influence is from the public boat wash area which borders the sewage dump area for recreation vehicles. Educational signage and the installation of structural BMPs have decreased the exceedances of benchmark values at this site.

To identify other sources of bacteria specifically related to beach closures at the mouth of the SLR River the City of Oceanside was awarded a Proposition 50 Clean Beaches Initiative grant. With grant funding and matching funds from the City of Oceanside, County of San Diego and City of Vista, the bacteria source tracking project focused on identifying the presence or absence of human bacteria sources where human health risks were highest; at the river mouth. Therefore, river mouth specific sampling was prioritized, although additional sampling in the main stem and tributaries was also conducted. In addition, a weight of evidence approach to determining the presence of human bacteria sources was used at all sites, as well as a gull marker utilized at the river mouth.

The results of the project did point to both human and avian sources present during wet and dry weather at the river mouth and human sources (avian sources were not tested) in main stem and tributary locations of the Lower San Luis Rey River. Other sources are likely, but the quantification or division of percentage of these sources is not available from the Project. However, the results indicate and steer recommendations for the City and other Watershed stakeholders to prioritize future management action and studies on activities that may result in human bacteria, such as sewer infrastructure, on-site wastewater systems, and homeless encampments.

2.2.2 Potential Nutrient Sources

The BLTEA represented the Copermittees' first attempt to identify sources of nutrients in the SLR River Watershed. Table 2-12 presents the BLTEA's list of "Likely" and "Unknown" sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE, 2005).

Table 2-10 lists the number of potential nutrient sources by HSA in addition to relevant land uses with the greatest potential to generate nutrients. Table 2-11 lists the number of potential nutrient sources by HAS in addition to relevant land uses with the greatest potential to generate nutrients. Potential nutrient sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-11 through 3-16 (SLR WURMP 2008). Preliminary investigations into land uses in the Guajome Lake drainage area have identified potential sources of nutrients to include residential, agricultural sources, commercial nurseries and agriculture, commercial horse facilities, and residential horse facilities.

Table 2-10. Potential Nutrient Sources for the SLR River Watershed (From BLTEA).

Potential Nutrient Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Commercial Animal Facilities	47	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Park and Recreational facilities	-	Likely
Eating or drinking establishments	277	Unknown
Development subject to SUSMPs	115	Unknown
Auto mechanical repair, maintenance, fueling, or cleaning	57	Unknown
POTWs (water and wastewater)	17	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Corporate yards (incl. maintenance/storage yards)	4	Unknown
Fabricated metal	4	Unknown
Equipment mechanical repair, maintenance, fueling, or cleaning	3	Unknown
Chemical and allied products	2	Unknown
Airfields	2	Unknown
Motor Freight	2	Unknown
Primary metal	1	Unknown
Auto parking lots and storage facilities	-	Unknown
Mobile carpet, drape, or furniture cleaning	76	Unknown
Pool and Fountain cleaning	60	Unknown
Sites for disposing and treating sewage sludge	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego – 2005

Table 2-11. Potential Nutrient Sources by Hydrologic Sub-Area.

HSA	Potential Nutrient Source	Number of Facilities or % Land Use
Mission HSA 903.11	Commercial Animal Facilities	7
	Nurseries	66
	% Residential	26%
	% Agricultural	12%
	% Open Space	8%
	% Industrial/Commercial	3%
Bonsall HSA 903.12	Commercial Animal Facilities	34
	Nurseries	168
	% Residential	37%
	% Agricultural	32%
	% Open Space	2%
	% Industrial/Commercial	3%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Commercial Animal Facilities	4
	Nurseries	47
	% Residential	38%
	% Agricultural	21%
	% Open Space	2%
	% Industrial/Commercial	3%
Monserate HSA 903.20	Commercial Animal Facilities	1
	Nurseries	34
	% Residential	9%
	%Agricultural	17%
	%Open Space	13%
	% Industrial/Commercial	1%
Warner Valley HSA 903.30	Commercial Animal Facilities	1
	Nurseries	0
	% Residential	3%
	%Agricultural	3%
	%Open Space	9%
	% Industrial/Commercial	<1%

2.2.3 Other Potential Pollutant Sources

In addition to the potential pollutant sources discussed in the preceding sections, there are other likely pollutant sources that contribute to water quality degradation in the San Luis Rey River WMA. These sources include natural groundwater, imported water supply, aerial deposition, wildlife impacts, natural erosion, transportation corridors, and military facilities and activities. These potential sources present very unique and difficult challenges in their identification, quantification and assessment of either degradation or improvement. Also noteworthy is the Copermittees' jurisdictional and regulatory inability to control these sources or regulate their impacts and contribution to water quality degradation in the watershed.

3 IMPLEMENTATION OF WATERSHED ACTIVITIES

Per the requirements of the Municipal Permit, the SLR Copermittees are required to identify and implement Watershed Activities that address the high priority water quality problems in the WMA. Watershed Activities shall include both Watershed Water Quality Activities and Watershed Education Activities. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level.

Activity Selection Process

During the planning process for the SLR WURMP 2008 the SLR Copermittees identified Watershed Activities that address the high priority water quality problems specific to the SLR WMA. Activity planning was conducted using the Collective Watershed Strategy which is a component of the Model Watershed Urban Runoff Management strategy found in the Regional Urban Runoff Management Program (RURMP). This process allows for the San Diego County Copermittees to establish and prioritize activities through the integration of water quality data to the loading potential of sources within the watershed and sub-watershed areas.

The first step in the strategy is to identify water quality problems watershed-wide and in each HA, where sufficient data is available. The second step is to identify the sources that are most likely contributing to the high priority water quality problems. The process used for the selection of potential sources that can contribute particular pollutants to the MS4 is outlined in the BLTEA document created by the San Diego County Copermittees in 2005. Based on the available data and the assessment of the four years of completed activities under the current Municipal Permit, the SLR Copermittees made appropriate management decisions when selecting and designing watershed water quality and watershed education activities. The overall goal of these activities is to reduce the discharge of pollutants causing the high priority water quality problems.

Activity Implementation

WURMP activities may be implemented individually or collectively, but do not need to be implemented watershed wide. WURMP activities can be implemented by one or more jurisdictions in the watershed yet should be a part of an overall watershed strategy collaboratively developed by the watershed Copermittees. Some of the activities the SLR Copermittees conducted or planned during this reporting period were implemented jurisdictionally while others were implemented watershed-wide or regionally. See Section 3.5 below for an updated five-year strategic plan. This plan provides summary information about each of the proposed watershed activities (both water quality and education) including, the watershed priority pollutants targeted by the activity and an implementation schedule for that activity.

The Copermittees have made significant progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed during this reporting period. See Section 3.1 for information about Watershed Water Quality Activities implemented and Section 3.2 for Watershed Education Activities implemented during this reporting period.

During FY 2011-12, there were 20 activities in various stages of implementation. Eleven activities focused on water quality and seven focused on education. Four of these activities

included both a water quality component and an education component. Of these twenty activities, thirteen receive WURMP credit during this reporting period due to their active implementation stage. In addition, three activities focused on monitoring and/or source identification (SLR-003, SLR-008, and SLR-028), two activities were in planning stages (SLR-007, SLR-026), and two activities were in assessment phases (SLR-010 and SLR-022). All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

3.1 Watershed Water Quality Activities

The SLR Copermittees are responsible for identifying and implementing Watershed Water Quality Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. The activity selection process is briefly described above and more fully in the SLR WURMP 2008.

During this reporting period, the SLR Copermittees implemented eleven water quality activities. Table 3-1 lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-004	WQ	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-009	WQ	I	Nutrient Source Identification and Abatement: Guajome Lake
SLR-012	WQ	I	Land Acquisitions
SLR-014	WQ	I	Harbor Boat Wash Coin Operated Water Dispenser
SLR-015	WQ	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WQ	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WQ	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-021	WQ	I	Fallbrook Community Center Artificial Turf
SLR-024	WQ	I	Water Smart Incentive for Outdoor Water Efficiency
SLR-025	WQ	I	Live Turf Replacement Incentive Program

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented

3.2 Watershed Education Activities

This section describes actions implemented by the SLR Copermittees during the 2011-12 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the high priority water quality problems in the San Luis Rey WMA.

During the reporting period, the Copermittees implemented seven watershed education activities. Table 3-2 below lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-015	WE	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WE	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WE	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-018	WE	I	Sports Park Watershed Educational Signage
SLR-023	WE	I	Residential Smart Landscape Evaluation Program
SLR-024	WE	I	Water Smart Incentive for Outdoor Water Efficiency

[1] WE = Watershed Education Activity
[2] I = Implemented

3.2.1 Additional Watershed Activities

In addition to the Watershed Water Quality and Watershed Education activities that qualify for WURMP credit, the SLR Copermittees implemented, planned or assessed seven activities that they feel are important to implementation of the WURMP and development of future activities but don't receive WURMP credit. Table 3-3 below lists the activities for which tasks were implemented, planned, or assessed during this reporting period. Details of each activity can be found in the Activity Implementation Sheets located in Appendix A.

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-003	M	Modular Wetland Installation of Oceanside Harbor Boat Wash Outfall
SLR-007	P	Water Quality Runoff Management and Agricultural Waiver Workshop
SLR-008	M, S	Guajome Lake Water Quality Monitoring Program
SLR-010	A, S	Lower SLR River Bacteria Source Tracking Study
SLR-022	A	Residential Rain Barrel Subsidies and Distribution
SLR-026	P	Comprehensive Load Reduction Plan
SLR-028	M	Land Use Based Water Quality Monitoring

M = Watershed Water Quality Monitoring Activity; S = Source Identification/Characterization Activity
A = Assessment; P = Activity in Planning Stages

In addition to the above activities the SLR Copermittees implemented various public participation and collaborative planning efforts that they feel are notable and should be reported in this WURMP Annual Report. The Copermittees feel that these additional activities are vital to

the implementation of the overall WURMP and are complementary to the activities that qualify to receive WURMP credit. Details of each of these additional activities can be found Section 3.3.

3.3 Public Participation Activities

The SLR Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed which could include other agencies, private companies, non-governmental organizations, environmental groups, etc. Several opportunities are available to the public to engage them in the implementation of the WURMP. Below is a summary of these opportunities and information about how they were implemented during this reporting period.

Outreach Events

The SLR Copermittees collaborated to staff informational booths at special events and coordinate cleanup events throughout the watershed. During this reporting period SLR Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- July 5, 2011 – Morning After Mess
- August 5-7, 2011 – Rod Run 21 Annual Car Show & Smokin' Q Classic BBQ
- September 17, 2011 – California Coastal Cleanup Day
- September 24-25, 2011 – Oceanside Harbor Days
- November 5, 2011 – San Luis Rey River Cleanup
- November 12, 2011 – Vista Invitational Band Tournament
- December 15, 2011 – Day Without A Bag
- March 24, 2012 – Vista Community Clinic Fundraiser
- March 25, 2012 – Paws in the Park
- April 23-29, 2012 – Oceanside Green Week
- April 28, 2012 – Oceanside Green Fair (Oceanside Amphitheatre)
- April 28, 2012 – Creek to Bay Cleanup
- April 28, 2012 – Alta Vista Gardens Earth Day
- April 28, 2012 – Vista Library Re-dedication
- May 27, 2012 – City of Vista Strawberry Festival and Street Fair
- June 23, 2012 – San Diego County Fair - Enviro Fair
- June 27, 2012 – Taste of Vista

Educational Materials Distributed

The SLR Watershed Copermittees collaborated on the dissemination of stormwater education pieces at outreach events. These materials were developed by the Copermittees, the Regional Education and Residential Sources Workgroup (ERS Workgroup) or developed in previous years by the North County Storm Water Program (NCSWP). Below is a summary of the materials distributed by the SLR Copermittees during this reporting period.

- Construction brochure highlighting construction site BMPs
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents

- Door hangers for residents with observed violations
- Click-message pens
- Pencils with Regional Stormwater Hotline
- Integrated Pest Management (IPM) Tip Cards, English and Spanish
- Personal pet waste bag dispensers
- Fats, oil and grease (FOG) education materials
- Regional Think Blue San Diego Stormwater Pollution Calendars
- Storm water coloring book and crayons

River, Creek, and Beach Cleanup Events

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were six major cleanup events that had staging sites at several locations throughout the SLR watershed. A total of 958 volunteers removed approximately 6,881 pounds of trash and debris from coastal beaches and inland sites in the San Luis Rey River Watershed. Table 3-4 below provides summary information about these cleanup events.

Table 3-4. River, Creek and Beach Cleanup Event Summary.

Date	Name	Location	# of Participants		Total # of Participants	# of Pounds Removed
			Inland Sites	Coastal Sites		
7/05/2011	Morning After Mess	Oceanside Harbor		77	77	225
9/17/2011	Oceanside Beach Cleanup	South side of Pier and Harbor		454	454	955
11/05/2011	San Luis Rey River Cleanup	Inland River Sites	82		82	2,000
11/05/2011	Oceanside Beach Cleanup	Harbor South Jetty		18	18	300
4/28/2012	SLR River Cleanup	Old 395 and Highway 76	42		42	2,990
4/28/2012	Oceanside Beach Cleanup	South side of Pier		285	285	411
	Totals		**124**	**834**	**958**	**6,881**

North County Storm Water Program

Since the initiation of the Regional Education and Residential Sources (ERS) Workgroup in FY 2007-08 the San Luis Rey Copermittees have been attending meetings of the Regional ERS Workgroup collaborating with all 21 Copermittees on regional stormwater education outreach programs. Therefore the NCSWP group combined efforts with the ERS Workgroup during the FY 08-09 reporting period and has discontinued meeting. Materials developed under this group are still in use by SLR Copermittees including the following:

- Construction brochure highlighting construction site BMPs
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities

San Luis Rey Watershed Council

The SLR Watershed Copermittees continued participating in regular meetings of the San Luis Rey Watershed Council (SLRWC) during this reporting period. The SLRWC is a partnership of local landowners, agricultural growers, Native American Tribal bands, community and environmental organizations, government agencies, and special districts with ties to the watershed. The SLRWC's primary goal is to keep stakeholders apprised of issues and projects concerning the SLR Watershed and to develop and implement a comprehensive resource management plan for the SLR watershed. During FY 2009-10 the SLRWC received nonprofit status by the Federal Internal Revenue Service. The SLRWC can now submit grants on behalf of the watershed stakeholders and move toward implementing priority projects identified by the members. Staff from two SLR Copermittees (City of Oceanside and County of San Diego) fill seats on the Board of Directors of the organization.

Project Clean Water

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. PCW, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. PCW seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. It was formed under the guidance of a Technical Advisory Committee made up of local stormwater-related professionals. For more details on the development of PCW refer to the FY 2007-08 SLR WURMP Annual Report.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds. There are several web pages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website provides Best Management Practices information for both residential and industrial/commercial audiences (http://www.projectcleanwater.org/bmp/).

PCW features a page devoted to the SLR WMA, with details on the watershed, major pollutants, and organizations related to water quality. Additionally the webpage also offers links to relevant documents such as the WURMP and WURMP Annual Reports. During FY 2011-12 the hits for the Project Clean Water Main Webpage totaled 35,299 visitors (an average of 97 per day).

Regional Education and Residential Sources Workgroup

The Regional Education and Residential Sources Workgroup (ERS Workgroup), was formed during FY 2007-08 under the auspices of the MOU between the 21 San Diego County Copermittees. During FY 2010-11, the ERS Workgroup was co-chaired by the City of Oceanside and City of Imperial Beach with support from the San Diego Regional Airport Authority as Secretary. The ERS Workgroup met four times during FY 2011-12. A list of meeting dates, locations, agenda items and accomplishments are provided in the Regional Urban Runoff Management Program (RURMP) Annual Report scheduled to be submitted to the RWQCB in January 2013.

During FY 2007-08, the ERS Workgroup developed a Regional Residential Education Plan (Plan) which was submitted to the Regional Water Quality Control Board as part of the March

2008 RURMP. During FY 2011-12 the SLR Copermittees, in conjunction with County Copermittees, continued to implement components of this Plan. A brief summary of the accomplishments of the ERS Workgroup are mentioned below. More details on workgroup products will be provided in the (RURMP) Annual Report scheduled to be submitted to the RWQCB in January 2012.

Regional Branding

The ERS workgroup continues to use the approved logo on its work products for unified branding as well as the Think Blue San Diego Region name. Regional Branding helps to unify the region's stormwater outreach messages.

EnviroFair at the San Diego County Fair

During this reporting period, Copermittees collectively staffed a table at EnviroFair on June 23, 2012 during the San Diego County Fair. This event is an excellent opportunity for Copermittees to collect event surveys that gather knowledge and awareness from event attendees related to stormwater related activities. Event survey results will be summarized in the RURMP Annual Report (RURMP AR) due to the RWQCB in January 2013.

Mass Media

The ERS Workgroup continues to purchase media buys at various outlets. These include radio and television ads, as well as Public Service Announcements shown at movie theatres throughout the county.

Materials Development

The ERS Workgroup developed and distributed several outreach materials and continued distribution of products produced during previous reporting periods to residents in the San Diego County region:

- 2012 English and Spanish Stormwater Calendars
- Sponsorship and distribution of reusable tote bags in a region-wide Day Without A Disposable Bag event
- Development of a bilingual stormwater coloring book
- Pencils with the regional stormwater hotline phone number
- Pet waste bag dispensers

Partnership Development

Spanish stormwater calendars were distributed via a partnership with Wildcoast and I Love A Clean San Diego to underserved communities.

Market Research and Development

Assessment of the following work products will be provided in the RURMP AR due to the RWQCB in January 2013:

- Draft tourism video aimed towards tourism operators to educate tourists to the San Diego region about stormwater pollution.
- Revision of the English stormwater calendar based on previous assessment.

3.4 Collaborative Land-Use Planning Efforts

This section describes collaborative land use planning efforts within the San Luis Rey Watershed during FY 2011-12. The SLR Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Land Acquisitions (Activity ID# SLR-012)
During this reporting period the County of San Diego acquired 86.43 acres of land within the San Luis Rey Watershed. These land acquisitions will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural runoff characteristics. All SLR Copermittees support the purchase of these lands with this purpose in mind.

3.4.1 Cross-Jurisdictional Communication

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the SLR Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the SLR Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to ‘catch’ potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

3.5 Updated 5-year Strategic Plan

As mentioned at the beginning of this section the SLR Copermittees are responsible for identifying and implementing Watershed Water Quality and Education Activities that address the high priority water quality problems in the SLR WMA. Utilizing the Collective Watershed strategy the SLR Copermittees have identified activities that will address priority pollutants in the SLR WMA. See Table 3-5 below for an updated 5-year SLR WURMP Strategic Plan.

3.5.1 New Watershed Activities

Five new watershed activities not listed in the FY 2010-11 SLR WURMP Annual Report 5-year strategic plan were implemented during this reporting period:

- SLR-024: Water Smart Incentive for Outdoor Water Efficiency
- SLR-025: Live Turf Replacement Incentive Program

- SLR-026: Comprehensive Load Reduction Plan
- SLR-027: Bacteria Source Investigation Focused on Exfiltration From Sanitary Sewers
- SLR-028: Land Use Based Water Quality Monitoring

These new activities are reflected in the updated 5-year SLR WURMP Strategic Plan. Activity Summary Sheets for the new activities are provided in Appendix A of this annual report.

3.5.2 Updated 5-Year Strategic Plan

Table 3-5 at the end of this section provides an updated 5-year Strategic Plan that reflects the status of watershed activities and includes new activities planned for future reporting periods. The updated 5-year strategic plan supersedes the version presented in the FY 2010-11 SLR WURMP Annual Report.

3.6 TMDL BMP Implementation

On February 10, 2010 the San Diego Water Quality Control Board (San Diego Water Board) adopted Resolution No. R9-2010-0001 amending the Basin Plan to incorporate the revised TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region. This TMDL Basin Plan amendment was subsequently approved by the State Water Resources Control Board on December 14, 2010, the Office of Administrative Law (OAL) on April 4, 2011, and the United States Environmental Protection Agency (USEPA) on June 22, 2011. Under state law, this TMDL Basin Plan Amendment became fully effective on April 4, 2011, the date of OAL approval.

The Pacific Ocean Shoreline at the San Luis Rey River mouth is specifically addressed in this TMDL. The SLR agencies involved in the SLR watershed are as follows:

- County of San Diego
- City of Oceanside
- City of Vista
- California Department of Transportation

During FY 2011-12, in compliance with the Bacteria Total Maximum Daily Load (TMDL) for Beaches and Creeks, the San Luis Rey agencies began developing a Comprehensive Load Reduction Plan (CLRP) for the San Luis Rey River Watershed. The CLRP outlines a proposed program of activities that will be capable of achieving TMDL-specified bacteria load reductions. To qualify for an extended 20-year wet weather compliance timeline, the Responsible Parties opted to develop a plan that addresses multiple constituents (specifically, bacteria, nitrogen, and phosphorous). See activity SLR-026 in Appendix A of this report for more information.

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Table 3-5. Five-Year Strategic Plan

SAN LUIS REY RIVER WATERSHED	HA			Priority Pollutant		Implementation Schedule																	
	903.1	903.2	903.3	Bacteria	Nutrients	FY 2007-08			FY 2008-09			FY 2009-10			FY 2010-11			FY 2011-12			FY 2012-13		
Watershed Activities Implemented in FY 2011-12 and Planned for Implementation in FY 2012-13																							
SLR-001: SLR Watershed Water Quality Monitoring Program	x			x	x	M			M			M			M								
SLR-003: Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	x			x		P			WQ			M			M			M			M		
SLR-004: Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail	x			x		WE			WE			WQ	WE		WQ	WE		WQ	WE		WQ	WE	
SLR-005: Pet Waste Bag Dispenser Program in County Parks	x			x		WQ			WQ			WQ			WQ			WQ			WQ		
SLR-007: Water Quality Runoff Management and Agricultural Waiver Workshop	x	x	x	x	x	WE						WE						P			WE		
SLR-008: Guajome Lake Water Quality Monitoring Program	x			x	x	M			M			M			M			M			M		
SLR-009: Nutrient Source Identification and Abatement: Guajome Lake	x				x	M	S		WQ	M	S	WQ	M	S	WQ	M	S	WQ	M	S	*		
SLR-010: Lower SLR River Bacteria Source Tracking Study	x			x		M	S		M	S		M	S		M	S		A	S				
SLR-012: Land Acquisitions	x			x	x	WQ			WQ			WQ			WQ			WQ			**		
SLR-014: Harbor Boat Wash Coin Operated Water Dispenser	x			x					WQ	P		WQ	P		WQ	P		WQ					
SLR-015: Focused Horse Property Outreach in the SLR River Watershed***	x	x		x	x				WQ	WE	P	WQ	WE		WQ	WE		WQ	WE				
SLR-016: Focused Grove and Nursery Outreach in the SLR River Watershed	x	x			x							WE			WQ	WE		WQ	WE		WQ	WE	
SLR-017: Focused Onsite Wastewater System Outreach in the SLR River Watershed	x	x		x	x							WE			WQ	WE		WQ	WE		WE		
SLR-018: Sports Park Watershed Education Signs	x			x	x							WE	P		WE	P		WE			WE		
SLR-021: Fallbrook Community Center Artificial Turf					x							WQ			WQ			WQ			WQ		
SLR-022: Residential Rain Barrel Subsidies and Distribution				x	x							WQ	WE	P	WQ	WE		A			WQ	WE	
SLR-023: Residential Smart Landscape Evaluation Program	x			x	x										WE			WE			WE		
SLR-024: Water Smart Incentive for Outdoor Water Efficiency	x			x	x										P			WQ	WE		WQ	WE	
SLR-025: Live Turf Replacement Incentive Program	x			x	x													WQ			WQ		
SLR-026: Comprehensive Load Reduction Plan	x	x	x	x	x													P			P		
SLR-027: Bacteria Source Investigation Focused on Exfiltration From Sanitary Sewers	x			x	x																WQ		
SLR-028: Land Use Based Water Quality Monitoring				x	x							M			S			M			M		
Potential Future Activities																							
SLR River Bacteria BMP Implementation	x			x		Contingent upon funding for prioritized BMPs																	

* Future activity will be assessed based upon program results
** Unable to project land acquisitions in advance
*** Activity previously named Community Based Residential Horse Property Pilot Project

WQ = Watershed Water Quality Activity
WE = Watershed Education Activity
WQ = Watershed Water Quality Activity (not in active implementation)
WE = Watershed Education Activity (not in active implementation)
M = Watershed Water Quality Monitoring Activity
S = Source ID/Characterization Activity
P = Activity in Planning Stages
A = Activity Assessment

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4 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2011-12. In addition, there is an assessment of the effectiveness of the collective WURMP implementation.

Each activity summary sheet in Appendix A of the FY 2011-12 SLR WURMP Annual Report identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measureable at levels 5 or 6 which are typically measureable through cumulative assessments. The assessment levels are defined below. Definitions are from the Municipal Permit.

Effectiveness Assessment Outcome Level 1 - Compliance with Activity-based Permit Requirements – Level 1 outcomes are those directly related to the implementation of specific activities prescribed by Order 2007-0001 or established pursuant to it.

Effectiveness Assessment Outcome Level 2 - Changes in Attitudes, Knowledge, and Awareness – Level 2 outcomes are measured as increases in knowledge and awareness among target audiences such as residents, businesses, and municipal employees.

Effectiveness Assessment Outcome Level 3 - Behavioral Change and BMP Implementation – Level 3 outcomes measure the effectiveness of activities in affecting behavioral change and BMP implementation.

Effectiveness Assessment Outcome Level 4 - Load Reductions – Level 4 outcomes measure load reductions which quantify changes in the amounts of pollutants associated with specific sources before and after a BMP or other control measure is employed.

Effectiveness Assessment Outcome Level 5 - Changes in Urban Runoff and Discharge Quality– Level 5 outcomes are measured as changes in one or more specific constituents or stressors in discharges into or from MS4s.

Effectiveness Assessment Outcome Level 6 - Changes in Receiving Water Quality – Level 6 outcomes measure changes to receiving water quality resulting from discharges into and from MS4s, and may be expressed through a variety of means such as compliance with water quality objectives or other regulatory benchmarks, protection of biological integrity, or beneficial use attainment.

The activity summary sheets presented in Appendix A include effectiveness assessment summaries for each water quality and education activity, as required in the Municipal Permit, I.2.a.(1).

4.1 Assessment of Overall WURMP Effectiveness

4.1.1 Permit Compliance (Level 1)

A basic Municipal Permit compliance assessment is presented in Table 4-1. This table describes minimum permit requirements set forth in the Municipal Permit, whether or not compliance was achieved by the SLR Copermittees in FY 2011-12, and where in this report, required compliance points are fulfilled or described. As shown in the table, the Copermittees were in compliance with all WURMP related Municipal Permit requirements during FY 2011-12.

Table 4-1. SLR WURMP Municipal Permit Compliance Assessment.

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Completed during FY 2007-08, no updates necessary this FY.	Section 1.2
Update watershed water quality assessment, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	Section 2.1
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	Section 2.2
Update list of potential Watershed Water Quality Activities.	Completed.	Section 3.5
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.1
Update list of potential Watershed Education Activities.	Completed.	Section 3.5
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.2
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed.	Section 3.3
A description of Copermittee collaboration efforts.	Completed.	Section 1.1, Section 3.4
Minimum quarterly meetings of the SLR WURMP Workgroup.	Six (6) meetings.	Section 1.1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed.	Section 3.4
Describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed.	Developed Comprehensive Load Reduction Plan.	Section 3.6

4.1.2 Cumulative Impacts of Activities (Levels 2, 3, and 4)

Activity Assessments

During FY 2011-12, there were 20 activities in various stages of implementation. Eleven activities focused on water quality and seven focused on education. Four of these activities included both a water quality component and an education component. Of these twenty activities, thirteen receive WURMP credit during this reporting period due to their active implementation stage. In addition, three activities focused on monitoring and/or source identification (SLR-003, SLR-008, and SLR-028), two activities were in planning stages (SLR-

007, SLR-026), and two activities were in assessment phases (SLR-010 and SLR-022). All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

Although more water quality data are available via implementation of the Regional Monitoring Program under the current Municipal Permit, it is not feasible to link changes in discharge or receiving water directly to most of the watershed activities. At this point, several questions may be helpful in assessing the cumulative impacts of the watershed activities. Table 4-2 summarizes the assessments of the water quality and education activities that were in active implementation phase during this reporting period in an effort to provide a collective picture of the overall effectiveness of the watershed activities. The activities will be related to historical and recent water quality data and will be examined by hydrologic area in subsequent sections.

Table 4-2. Summary of Watershed Water Quality and Education Activities in the SLR WMA (FY11-12).

Activity Number	Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
SLR-004	Pet Waste Removal Pilot Project Along San Luis Rey Recreational Trail	Bacteria	Yes, based on usage of bags and positive examples	A reduction in the number of pet waste piles observed on the North Trail was noted after installation of new stations; Approximately 4,000 pet waste bags were used during the FY.	Pet waste in recreational areas.	Estimated that 1,040 pounds of pet waste were removed from the watershed.
SLR-005	Pet Waste Bag Dispenser Program in County Parks	Bacteria	Yes, based on usage of bags and positive examples	In general, more people picking up after their pets; 33,915 bags were used during this FY.	Pet waste in parks.	Estimated that 6,783 pounds of pet waste were removed from the watershed.
SLR-009	Nutrient Source Identification and Abatement: Guajome Lake	Nutrients	Of those nurseries with multiple scores, two decreased in Stormwater Knowledge Assessment (SKA) Score. All other nurseries have either improved or remained the same.	Of those nurseries with multiple scores, BMP compliance improved or stayed the same at all nurseries in FY 2011-12.	Study area included inspection of 10 nurseries in the upstream area during this FY; no nurseries were found to have BMP violations, there were no direct sources of nitrates identified.	Ten nurseries inspected; BMPs implemented as a result of inspections will likely reduce and abate sources.
SLR-012	Land Acquisitions	Bacteria, Nutrients	None measured	None measured	Potential development	86.43 acres acquired and preserved by the County of San Diego.
SLR-014	Harbor Boat Wash Coin Operated Water Dispenser	Bacteria	None measured	Encourages users to use the water they are paying for more wisely, reducing the amount of water wasted.	Water runoff from washing activities	Expected, although not confirmed, to see a reduction in the amount of water flowing from the site, thereby reducing bacteria loads.

SLR-015	Focused Horse Property Outreach in the San Luis Rey River Watershed	Bacteria, Nutrients	Pre- and post-workshop surveys were administered to the participants of the Equestrian BMP Workshop. Results indicate a positive increase in knowledge among participants able to correctly identify appropriate equestrian-related BMPs.	Results also show that more equestrians were able to identify positive behavioral changes (Level 3 Outcomes) following the workshops and all responded that they would change future behaviors.	Residential Equestrian Properties	None measured
SLR-016	Focused Grove and Nursery Outreach	Nutrients	Pre- and post-workshop surveys indicate improvements in knowledge of general watershed concepts.	Pre- and post-workshop surveys indicate an increase in those who were able to identify appropriate BMPs.	Groves and Nurseries	None measured
SLR-017	Focused Onsite Wastewater System Outreach	Bacteria, Nutrients	Pre- and post-workshop surveys indicate an increase in knowledge related to stormwater and septic system BMPs.	Thirty-four pumping vouchers were distributed and utilized by program participants, indicating a behavioral change.	Onsite Wastewater Systems	No estimates available at this time.
SLR-018	Sports Park Watershed Education Signs	Bacteria, Nutrients	Yes, based on visitors to the park and usage of the trail.	None measured	Irrigation runoff, litter, fertilizer, pet waste.	None measured
SLR-021	Fallbrook Community Center Artificial Turf	Nutrients	None	None	Fertilizer and irrigation associated with natural turf management	Reduction in fertilizer usage by 25% and irrigation by 18% annually, thereby reducing the loading of nutrients into the watershed by up to 120 pounds of nutrients per year.

SLR-023	Residential Smart Landscape Evaluation Program	Bacteria, Nutrients	Thirty-eight property owners/managers were educated on appropriate and efficient use of water, specifically focusing on irrigation, thus raising awareness.	None measured	Over-irrigation is a prominent transport mechanism and potential source of dry weather residential contributions to water quality issues.	None measured
SLR-024	Water Smart Incentive for Outdoor Water Efficiency	Bacteria, Nutrients	Twenty participating property owners were educated on appropriate and efficient use of water, specifically focusing on irrigation, although no formal metric to evaluate change in awareness was implemented.	Behaviors were changed as a result of installing 393 Rotating Sprinkler Nozzles and 9 Weather Based Irrigation Controllers.	Over-irrigation is a prominent transport mechanism and potential source of dry weather residential contributions to water quality issues.	The installation of the devices will reduce water use, thus reducing flow leaving the property as urban runoff, although this reduction in flow has not been quantified at this time.
SLR-025	Live Turf Replacement Incentive Program	Bacteria, Nutrients	The City of Oceanside will be promoting the pilot areas in the future to raise awareness for water conservation and turf replacement.	None measured	Over-irrigation is a prominent transport mechanism and potential source of dry weather residential contributions to water quality issues.	The removal of turf followed by landscaping that is less dependent on irrigation water will ultimately reduce over-irrigation flow leaving properties as urban runoff, in turn reducing pollutant loading.

4.2 High Priority Water Quality Problems

All activities addressed high priority water quality problems as identified in the WURMP. Of the activities in implementation, bacteria were specifically addressed in three activities, nutrients in three activities and both bacteria and nutrients in seven activities. A combination of water quality, education, source identification and monitoring activities appear effective at addressing identified high priority water quality problems in the San Luis Rey HU.

Level 2 - Changes in Knowledge and Awareness

Changes in knowledge and awareness of water quality problems were measured in six of the water quality and education activities implemented during this reporting period. Additionally, increases in knowledge are assumed in two activities with no mechanism in place to measure the changes.

Six of the watershed education activities conducted during the reporting period implemented specific measures to assess changes in knowledge and awareness.

- SLR-004: The Pet Waste Removal Pilot Project along the San Luis Rey Recreational Trail accounts for changes in knowledge based on changes in behavior. In FY 2011-12, there were 4,000 bags used from the four stations along the trail.
- SLR-005: The Pet Waste Bag Dispenser Program in County Parks accounts for changes in knowledge based on changes in behavior. In FY 2011-12, there were 33,915 bags used from the 11 stations in the SLR Watershed.
- SLR-009: The Nutrient Source Identification and Abatement in the Guajome Lake Drainage Area also quantified changes in knowledge during inspections. Standardized assessment ratings were given to each facility during inspections over the five years of implementation. A comparison of these numbers over time indicates that two sites decreased in knowledge over time while all other nurseries have either improved or remained the same.
- SLR-015: The Focused Horse Property Outreach in the San Luis Rey River Watershed illustrated increases in knowledge by administering pre- and post-workshop surveys at the workshops conducted in May and June 2012. These surveys showed increases in knowledge related to BMPs designed to address the effects of horse manure on water quality.
- SLR-016: The Focused Grove and Nursery Outreach assessments included pre- and post-workshop surveys to assess knowledge of general watershed principles and changes in awareness of proper irrigation and fertilization practices. An increase was noted in general watershed concepts.
- SLR-017: The Focused Onsite Wastewater System Outreach Activity developed an online web portal offering information on septic tank awareness and proper maintenance procedures for maintaining a healthy septic system. Participants were asked to complete a pre- and post-program questionnaire to assess the effectiveness of the outreach. Pre- and post-program surveys indicated an increase in knowledge related to stormwater and septic system BMPs.

Certain activities can be assumed to result in increased awareness, although a formal mechanism to measure the change may not be feasible. For example, knowledge was likely increased through the implementation of SLR-018, with the implementation of educational signage at a popular sports park, but was not quantified. Likewise, through the implementation of SLR-023 and SLR-024, fifty-eight participating property owners were educated on the appropriate and efficient use of water; however, no specific mechanism was implemented to measure the change in knowledge. The activities that did not result in increased awareness were designed as monitoring activities or to implement BMPs targeting load reductions. These activities generally focused on public lands and implemented BMPs to reduce the effects of bacteria, nutrients, and other pollutants on receiving waters.

Collectively, the water quality activities are focused efforts leading to localized changes in knowledge and awareness. However, the education activities are broad based, applicable to all hydrologic areas in the watershed and are expected to provide for a general increase in knowledge in the San Luis Rey River Watershed over time.

Level 3 – Changes in Behavior, Implementation of BMPs

A change in behavior was observed and BMPs were implemented in seven of the activities implemented during the Fiscal Year. One additional activity also assumed a change in behavior with no mechanism to measure. Each change in behavior is described below.

- SLR-004: In this activity targeting pet waste along a recreational trail on the San Luis Rey River, there was evidence that people continued utilizing the pet waste bags from installed dispensers to pick-up and properly dispose of pet waste. Approximately 4,000 bags were used during FY 11-12.
- SLR-005: In this activity targeting pet waste in County Parks, there was evidence that people continued utilizing the pet waste bags from installed dispensers to pick-up and properly dispose of pet waste. Approximately 33,915 bags were used during FY 11-12.
- SLR-009: In the Nutrient Source Identification and Abatement activity focusing on the Guajome Lake drainage area within the County, changes in behavior were assessed by tracking the number of violations observed during inspections of the nursery facilities. In most cases, BMP compliance (i.e. behavior) has been shown to improve over time.
- SLR-015: The activity focused on Horse Property Outreach, the pre- and post-workshop surveys included a question regarding BMPs to prevent pollution. Survey scores showed that participants were able to identify more positive behavioral changes after the workshops and all responded that they would change future behaviors.
- SLR-016: This activity focused on outreach to groves and nurseries. Changes in behaviors were not directly measured, but were addressed through pre- and post-workshop surveys administered at the training. Pre- and post-workshop surveys demonstrated that there was an increase in those who were able to identify appropriate BMPs.
- SLR-017: The activity designed around Focused Onsite Wastewater System Outreach illustrated the intent of the participants to positively change their behavior in that 34 vouchers were distributed and utilized. The vouchers reimburse participants for a portion of the pumping costs for residents' onsite wastewater systems.

- SLR-024: This activity provided outreach and incentives for property owners to utilize water smart irrigation controllers to improve water efficiency and reduce irrigation related runoff. Behaviors were changed as a result of installing 393 Rotating Sprinkler Nozzles and 9 Weather Based Irrigation Controllers.

Certain activities can be assumed to result in positive behavioral changes, although a formal mechanism to measure the change may not be feasible. For example, behaviors were likely improved through the implementation of SLR-014, with the implementation of a coin operated water dispenser at the Harbor Boat Wash Station. This activity encourages users to use the water they are paying for more wisely, reducing the amount of water wasted. Although data collected did not support this assumption, it may prove valid as further data is collected related to water usage.

Sources addressed through these activities included nurseries, pet waste, horse properties, on-site wastewater systems, residential land uses, and recreational areas. The connection of the BMPs to the specific water quality problems are further discussed below.

Level 4 – Load Reductions

In general, water quality and monitoring activities appear effective at identifying and abating sources of high priority water quality problems in the SLR HU.

- SLR-004: The Pet Waste Project along the San Luis Rey Trail has caused a direct, measurable reduction in pet waste, estimated at approximately 1,040 pounds of pet waste removed during FY 2011-12.
- SLR-005: The Pet Waste Bag Dispenser Activity in County Parks has caused a direct, measurable reduction in pet waste, estimated at nearly 6,783 pounds of pet waste during FY 2010-11.
- SLR-009: The Nutrient Source Identification and Abatement at Guajome Lake consists of inspections which require and enforce BMP implementation at the nursery facilities in the drainage area. Ten nurseries were inspected this FY. BMPs implemented as a result of these inspections are expected to reduce the negative impacts of nursery activities on water quality through load reductions. At this time, through BMP implementation, load reductions are assumed, although not quantified.
- SLR-012: The acquisition of land by public agencies, specifically the County of San Diego, will provide for preservation of the land in the future, reducing the negative effects of development on the watershed. The source has been identified as new development and by acquiring the land for public use, the pollutants associated with this source have been prevented. Although load reductions are not quantifiable, the 86.43 acres acquired by the County this fiscal year will contribute to preservation of existing water quality within the watershed.
- SLR-021: In the activity that installed Artificial Turf at the Fallbrook Community Center, estimations of water and fertilizer savings were calculated. The annual use of irrigation water at the facility was reduced by 18% (approximately 170,000 gallons) and the annual amount of fertilizer used decreased by 25% (approximately 120 pounds). The reductions in the amount of fertilizers used and in the transport mechanism both play important roles in reducing dry weather nutrient loads.

- SLR-024: In providing Water Smart Incentives for Outdoor Water Efficiency, 393 Rotating Sprinkler Nozzles and 9 Weather Based Irrigation Controllers were installed on single family residential properties. The installation of the devices will reduce water use, thus reducing flow leaving the property as urban runoff, although this reduction in flow has not been quantified at this time.
- SLR-025: In providing an Incentive Program for Live Turf Replacement, over 53,000 square feet of live turf was removed and replaced with less water dependent landscaping. The removal of turf followed by landscaping that is less dependent on irrigation water will ultimately reduce over-irrigation flow leaving properties as urban runoff, in turn reducing pollutant loading. However, this assumed reduction in urban runoff has not been quantified at this time.

In addition to the eleven watershed water quality activities actively implemented during the reporting period, there were three monitoring/source identification activities occurring in an attempt to characterize and identify sources. One of these activities is designed to address bacteria and two address both high priority water quality problems. Each of the monitoring/source identification activities currently supports or will support future watershed activities.

4.2.1 Integrated Assessment: Level 5 (Changes in Discharge Water Quality) and Level 6 (Changes in Receiving Water Quality)

4.2.1.1 Warner Valley and Monserate Hydrologic Areas

As discussed in Section 2.2, residential and agricultural land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. With minimal development in these HAs, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for these HAs is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

4.2.1.2 Lower San Luis Hydrologic Area

Residential and agriculture land uses make up the highest percentage of land use in the lower watershed. Significant industrial and commercial activities are also present. The majority of the monitoring in the watershed has been conducted in the Lower San Luis HA and results indicate that anthropogenic activities are likely having a negative effect on receiving water quality. For these reasons, the watershed activities and monitoring programs focus primarily on the Lower San Luis HA and are discussed below.

4.2.1.2.1 Water Quality

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. In 2010-11 monitoring efforts provided useful information specific to the HA, as there were Temporary Watershed Assessment Stations (TWAS) installed at various locations in the watershed in addition to the historical MLS. Data

was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. Due to the rotational nature of monitoring required by the Permit, monitoring at these stations was not conducted during FY 2011-12. Monitoring to assess urban runoff contribution in the Lower San Luis HA was completed through the DWM and CSDM programs as well as through several WURMP activities.

Bacteria

Bacteria have been identified as a high priority water quality problem in the SLR WURMP 2008. This decision is further supported by recent water quality data collected during ambient and storm conditions. The SLR Copermittees have implemented many water quality and education activities designed to address identified sources of bacteria in the watershed. There are also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

During this reporting period, eight water quality activities focused on the abatement of specific sources of bacteria. These activities are listed in Table 4-3.

Table 4-3. Watershed Water Quality Activities – Bacteria.

Activity Number	Activity Name	Source of Bacteria
SLR-004	Pet Waste Removal Pilot Project Along SLR Recreation Trail	Pet Waste
SLR-005	Pet Waste Bag Dispenser Program in County Parks	Pet Waste
SLR-012	Land Acquisitions	Developed Land
SLR-014	Harbor Boat Wash Coin Operated Water Dispenser	Washing/Cleaning Activities associated with Recreational Boating
SLR-015	Focused Horse Property Outreach in the SLR River Watershed	Equestrian
SLR-017	Focused Onsite Wastewater System Outreach in the SLR River Watershed	Onsite Wastewater Systems (i.e. septic)
SLR-024	Water Smart Incentive for Outdoor Water Efficiency	Irrigation Runoff
SLR-025	Live Turf Replacement Incentive Program	Irrigation Runoff

During this reporting period, six education activities focused on the abatement of specific sources of bacteria. These activities are listed in Table 4-4.

Table 4-4. Watershed Education Activities – Bacteria.

Activity Number	Activity Name	Source of Bacteria
SLR-004	Pet Waste Removal Pilot Project Along SLR Recreation Trail	Pet Waste
SLR-015	Focused Horse Property Outreach in the SLR River Watershed	Equestrian
SLR-017	Focused Onsite Wastewater System Outreach in the SLR River Watershed	Onsite Wastewater Systems (i.e. septic)
SLR-018	Sports Park Watershed Educational Signs	Pet Waste, Trash
SLR-023	Residential Smart Landscape Evaluation Program	Residential Landscaping
SLR-024	Water Smart Incentive for Outdoor Water Efficiency	Irrigation Runoff

In addition to the required water quality and education activities, the watershed Copermittees also invested significant resources in monitoring activities. Three of the monitoring activities include sample collection and analyses pertaining to bacteria concentrations and sources in the watershed. These are listed in Table 4-5.

Table 4-5. Watershed Monitoring Activities – Bacteria.

Activity Number	Activity Name	Waterbody Focus
SLR-003	Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	MS4 and Oceanside Harbor
SLR-008	Guajome Lake Water Quality Monitoring Program	Guajome Lake
SLR-028	Land Use Based Water Quality Monitoring	SLR River

Discharge Water Quality

Various amounts of discharge water quality data related to bacteria have been collected as part of several monitoring programs in the watershed. However, the data have not been assessed in relation to trends. Therefore, at this time it is not feasible to link the watershed activities and program to changes in discharge water quality. Because data collected as part of SLR-003 and SLR-008 are indicating improvements in water quality, this data may be further assessed in the future to address changes in discharge water quality (Level 5).

Receiving Water Quality

Long-term trend analysis of receiving water data provides a measurement of changes in water quality. With no new data collected at the MLS and TWAS stations during FY 2011-12, trend analyses have not been updated over the past year. Long-term trend analysis is limited to wet weather data collected at the MLS in previous years.

The long-term trend analysis related to bacteria for the SLR-MLS wet weather data indicates statistically significant trends as follows in Table 4-6:

Table 4-6. Water Quality Trends at MLS – Bacteria.

Constituent	Trend	Sen's Slope[1]
Fecal coliform	Increasing	90
Total coliform	Increasing	692
Enterococcus	Increasing	133

[1]Sen's slope estimator is a non-parametric method that is insensitive to outliers and can be used to infer the magnitude of a trend in the data over time.

Of the constituents significantly increasing, fecal coliform has been consistently above water quality benchmarks. Total coliform and enterococcus do not have wet weather water quality benchmarks. (Weston 2012)

At this time, it is not feasible to link the watershed activities to receiving water data. Changes in water quality trends will take place slowly and will continue to be assessed in future years.

Summary

Through the implementation of a combination of water quality and education activities, complemented by specific monitoring projects, the SLR Copermittees are moving forward in addressing the bacteria problems in the watershed. By implementing practical activities that are targeting identified sources of bacteria, the Copermittees are effectively addressing bacteria problems in the watershed. The combination of activities is having positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality, especially related to bacteria. With many diverse sources of bacteria suspected in the watershed, some identified and others not, the Copermittees are implementing activities to address known sources and conducting monitoring activities to identify or confirm other sources.

Nutrients

Nutrients have also been identified as a high priority water quality problem in the SLR Watershed. The decision to identify nutrients as a high priority problem was initially based on the listing of Guajome Lake as impaired for nutrients on the 2006 303(d) listing. Recent revisions to the 303(d) listings include nutrient impairment on the SLR River as well. Based on these impairment listings, and recently collected water quality data, nutrients remain a high priority water quality problem in the SLR Watershed.

During this reporting period, eight water quality activities focused on the abatement of specific sources of nutrients. These activities are listed in Table 4-7.

Table 4-7. Water Quality Activities – Nutrients.

Activity Number	Activity Name	Source of Nutrients
SLR-009	Nutrient Source Identification and Abatement: Guajome Lake	Nurseries
SLR-012	Land Acquisitions	Developed Land
SLR-015	Focused Horse Property Outreach in the SLR River Watershed	Equestrian
SLR-016	Focused Grove and Nursery Outreach in the SLR River Watershed	Groves and Nurseries
SLR-017	Focused Onsite Wastewater System Outreach in the SLR River Watershed	Onsite Wastewater Systems (i.e. septic)
SLR-021	Fallbrook Community Center Artificial Turf	Turf and Irrigation Runoff
SLR-024	Water Smart Incentive for Outdoor Water Efficiency	Irrigation Runoff
SLR-025	Live Turf Replacement Incentive Program	Irrigation Runoff

During this reporting period, six education activities focused on the abatement of specific sources of nutrients. These activities are listed in Table 4-8.

Table 4-8. Water Education Activities – Nutrients.

Activity Number	Activity Name	Source of Nutrients
SLR-015	Focused Horse Property Outreach in the SLR River Watershed	Equestrian
SLR-016	Focused Grove ad Nursery Outreach in the SLR River Watershed	Groves and Nurseries
SLR-017	Focused Onsite Wastewater System Outreach in the SLR River Watershed	Onsite Wastewater Systems (i.e. septic)
SLR-018	Sports Park Watershed Educational Signs	Irrigation Runoff, Fertilizer, Pet Waste
SLR-023	Residential Smart Landscape Evaluation Program	Residential Landscaping
SLR-024	Water Smart Incentive for Outdoor Water Efficiency	Irrigation Runoff

Each of these water quality and education activities is designed to address sources of nutrients causing or contributing to water quality problems in the watershed. Results of each activity are presented in Appendix A.

In addition to the required water quality and education activities, the watershed Copermittees also invested significant resources in monitoring activities. Three of the monitoring activities

include sample collection and analyses pertaining to nutrient concentrations and sources in the watershed. These are listed in Table 4-9.

Table 4-9. Watershed Monitoring Activities – Nutrients.

Activity Number	Activity Name	Waterbody Focus
SLR-008	Guajome Lake Water Quality Monitoring Program	Guajome Lake
SLR-009	Nutrient Source Identification and Abatement: Guajome Lake	MS4
SLR-028	Land Use Based Water Quality Monitoring	SLR River

MS4 Water Quality

Various amounts of discharge water quality data have been collected as part of several monitoring programs in the watershed. Often, the data related to nutrients has been collected using field test kits. The data have been partially assessed in relation to spatial distribution in the watershed but have not been assessed in relation to trends. Section 2 of this report contains more detailed information on nutrient data collected in the watershed. At this time it is not feasible to link the watershed activities and program to changes in discharge water quality.

Receiving Water Quality

Long-term trend analysis of receiving water data provides a measurement of changes in water quality. With no new data collected at the MLS and TWAS stations during FY 2011-12, trend analyses have not been updated. Long-term trend analysis is limited to wet weather data collected at the MLS in previous years.

The long-term trend analysis for the SLR-MLS wet weather related to nutrient data indicates statistically significant trends as follows in Table 4-10:

Table 4-10. Water Quality Trends at MLS - Nutrients.

Constituent	Trend	Sen's Slope[1]
Ammonia	Increasing	0
Turbidity	Increasing	0.21
Dissolved phosphorus	Decreasing	-0.0075

[1]Sen's slope estimator is a non-parametric method that is insensitive to outliers and can be used to infer the magnitude of a trend in the data over time.

Ammonia levels are below water quality benchmarks and turbidity results have been below water quality benchmarks for the last 2 years of monitoring. Dissolved phosphorus is showing a decreasing trend and is also currently below water quality benchmarks (Weston 2012).

At this time, it is not feasible to link the watershed activities to receiving water data. Changes in water quality trends will take place slowly and will continue to be assessed in future years.

Summary

Through the implementation of monitoring, source identification projects, water quality, and education activities, the SLR WURMP group is moving forward in addressing the nutrient

problems in the watershed. In the future, it is expected that the combination of activities will have positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality. With many diverse sources of nutrients suspected in the watershed, the Copermittees are conducting monitoring activities to identify or confirm sources as a precursor to designing water quality and education activities in the future.

Other Activities

The Land Acquisitions activity (SLR-012) does not reduce existing loads, but is intended to prevent future loading of pollutants related to new development. Loading estimations are difficult to predict based on land use; however acquisition of the land for public use will prevent the development of commercial and residential areas on the land, both of which have been shown to contribute to bacteria loading. Land acquisition also helps maintain the natural conditions of the site, allowing for natural processes such as infiltration and pollutant uptake to continue. When land is developed, these natural processes are often reduced or eliminated by increasing impervious areas and channelizing or undergrounding stream systems. Preservation of the land will provide for less pollutant generation and may provide for continued pollutant removal, depending on the land acquired. This would directly apply to the bacteria and nutrient water quality problems identified in the WURMP.

Conclusions for the Lower San Luis HA

During FY 2011-12, eleven water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed with ten addressing bacteria and ten addressing nutrients (five address both constituents). During FY 2011-12, the seven education activities in the HA addressed both high priority water quality problems in the HA, with six addressing bacteria and six addressing nutrients (five address both constituents).

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions for Warner Valley and Monserate HA

With minimal development in this HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for this HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

5.2 Conclusions for the Lower San Luis HA

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Water quality data collected during previous reporting periods in FY 2007-08, FY 2008-09, FY 2009-10, and 2010-11 provided information specific to the HA. The historical MLS and TWAS installed towards the bottom of the Bonsall HSA collected data during fiscal years 2007-08 and 2010-11. Data collected from water quality monitoring activities during FY 2011-12, in addition to the data mentioned above continues to support listing bacteria and nutrients as high priority water quality problems in the Lower San Luis Rey HA.

Watershed Activities
During FY 2011-12, there were 20 activities in various stages of implementation. Eleven activities focused on water quality and seven focused on education. Four of these activities included both a water quality component and an education component. Of these twenty activities, thirteen receive WURMP credit during this reporting period due to their active implementation stage. In addition, three activities focused on monitoring and/or source identification (SLR-003, SLR-008, and SLR-028), two activities were in planning stages (SLR-007, SLR-026), and two activities were in assessment phases (SLR-010 and SLR-022). All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

5.2.1 Watershed Water Quality Activities

During FY 2011-12, there were eleven watershed water quality activities in the implementation stage. All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

During the next reporting period FY 2012-13, eight watershed water quality activities are planned to be implemented, with two designed to address water quality problems related to bacteria, two designed to address nutrients, and four that address both bacteria and nutrients.

Bacteria
The SLR Copermittees have implemented several activities designed to address identified sources of bacteria in the watershed. During this reporting period, eight water quality activities focused on the abatement of specific sources of bacteria. There were also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

Nutrients
During this reporting period, eight water quality activities focused on the abatement of specific sources of nutrients. There were also several monitoring and source identification activities related to nutrients in the planning or implementation phase. These were chosen because the sources of the nutrients remain largely uncharacterized in the watershed. Each of these activities appears to be well designed to assess sources of nutrients causing or contributing to water quality problems in the watershed.

5.2.2 Watershed Education Activities

During FY 2011-12, the Copermittees implemented seven watershed education activities: one focused on bacteria, one focused on nutrients, and five focused on both bacteria and nutrients. Through these education activities, outreach was conducted to a variety of populations including pet owners, nurseries, and residential and horse property owner/operators.

During the next reporting period, FY 2012-13, eight education activities are planned with one focused on bacteria, one focused on nutrients, and six focused on both bacteria and nutrients.

5.3 Recommendations

Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope.

Some of the hydrologic areas in the SLR HU have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs when funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the specific education activities.

Activities in the watershed appear to be properly focused on identified water quality problems in the SLR HU. These types of activities should continue as bacteria and nutrients show increasing trends at receiving water monitoring stations. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected bacteria and nutrient pollution. Future TWAS data will be examined carefully to discern between water quality in the upper and lower watershed. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

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Appendix A

SAN LUIS REY

Watershed Activity Implementation Summary Sheets with Associated Attachments

Annual Report for Fiscal Year 2011-12

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Water Quality Activity

TITLE: **Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland**
ID NUMBER: **SLR-003**

ACTIVITY IMPLEMENTATION
Oceanside Harbor has over 40 storm drains with small drainage areas that carry flow to the harbor. One drain with historic bacterial exceedances receives flow from the harbor boat wash. Located within 15 feet of the drain are two wastewater discharge hook-ups for recreational vehicles (RV). This activity, SLR-003, addresses structural BMP implementation at the boat wash drain.

ACTIVITY IMPLEMENTATION FYs 2006-07 and 2007-08
Two bacteria reduction pilot projects have been implemented in the past: installation of an antimicrobial fabric in FY 2006-07 and increased frequency of storm drain cleaning in FY 2007-08. The antimicrobial fabric did not display long-term effectiveness, possibly the result of added hydrocarbons and sediment in the runoff. The City then implemented monthly cleaning of the storm drain outfall in May 2007 which showed reductions in bacterial counts, though there were still some bacterial level exceedances which may be due to re-growth in the pipe.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor Boat Wash storm drain. This system utilizes a combination of technologies to not only address the high priority pollutant of bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. The wetland consists of a vault 22 feet long, five feet wide, and five feet deep. The peak treatment volume is 4000 cubic feet per second with a bypass for higher flows.

To address bacteria, the Modular Wetland is utilizing BioMediaGreen, a new type of media in lightweight block format that is easy to handle and replace, for primary filtration. The wetland is then using a sub-surface flow wetland for biological remediation. Because the harbor is a harsh, salt-water environment, the system is using a hardy, fast growing plant with large root bundles, called Vetiver grass. It was estimated that it take about six months for the plants to get established in the wetland and the roots to get to the bottom of the vault, and therefore, peak treatment to begin.

ACTIVITY IMPLEMENTATION FY 2008-09
After the installation of the wetland, the separator vault was filled to remove the possibility of growth/regrowth between the wetland and the outfall. For six months (July 2008 – January 2009), the City conducted paired sampling of the wetland outfall and the storm drain outfall and found that there was no evidence of regrowth in the pipe. Monitoring of this outfall pipe continued during FY 2008-09 and has been ongoing since 2004 and will continue through the Coastal Storm Drain Monitoring (CSDM) Program for total coliforms, fecal coliforms, and Enterococcus. Not quantified, but pollutants also being addressed by this BMP are oil and grease and trash.

ACTIVITY IMPLEMENTATION FY 2009-10

During FY 2009-10, bacteria monitoring continued through the Coastal Storm Drain Monitoring program. BioClean Environmental Services, Inc. continued to service the wetland.

ACTIVITY IMPLEMENTATION FY 2010-11

During FY 2010-11, bacteria monitoring continued through the Coastal Storm Drain Monitoring program. BioClean Environmental Services, Inc. continued to service the wetland.

ACTIVITY IMPLEMENTATION FY 2011-12

During FY 2011-12, bacteria monitoring continued through the Coastal Storm Drain Monitoring program. BioClean Environmental Services, Inc. continued to service the wetland.

TMDL APPLICABILITY

- Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

The Modular Wetland was installed at the beginning of April 2008. The peak treatment efficiencies were expected to be reached by October 2008 and were dependent on plant growth and media maturity.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- BioClean Environmental Services, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS ASSESSMENT

The Modular Wetland was installed in FY 2007-08 and peak treatment efficiencies were expected in FY 2008-09. A six month regrowth study between the wetland and the outfall pipe was also conducted in FY 2008-09. Outfall monitoring continued this fiscal year through the CSDM program. A comprehensive report of the current and historical data, regrowth study, and bacteria trends are provided in Attachment A.

While the City has not been conducting the BMP removal efficiency testing, it did appear that the number of exceedance days (as defined by the CSDM program) for fecal coliforms and Enterococcus decreased during the previous three monitoring periods (2008-2011) and could be attributable to the modular wetland. However, there was an increase in the fecal coliform bacteria exceedance rate in the 2011-12 fiscal year, increasing from 0% to 67%. The cause of

this increase is unclear. Further study is needed to demonstrate if the bacteria results are occurring within and from the wetland or within the outfall pipe after treatment.

The percent exceedance rate for total coliform bacteria has been steadily increasing in the last four monitoring periods (2008 – 2012), including 2011-12, indicating that the modular wetland is not as efficient for removing total coliform bacteria.

In comparison to previous fiscal years, the 2011-12 fiscal year had the highest percentage of samples which exceeded action levels for both total and fecal coliform bacteria. Additionally, the period from the 2010-11 to the 2011-12 fiscal year showed the greatest increase in percentage of exceedances for both fecal coliform and enterococcus bacteria. There was, however, only one exceedance of REC-1 receiving water bacterial indicator standards at the Coast 8 outfall (on 9/21/11) and the follow-up sample did not exceed REC-1 receiving water samples.

Bacteria monitoring will continue at the Harbor boat wash outfall for indicator bacteria and long term effectiveness will continue to be assessed through the Coastal Storm Drain Monitoring Program or other outfall monitoring program in the future NPDES MS4 permit. Further study will attempt to identify the increase in fecal coliform and Enterococcus exceedances this reporting year. In addition, although removal amounts of trash and hydrocarbons were not quantified for the first three years following installation of the modular wetland, visual observations of the absorbent pads and trash collection devices indicated that the wetland was very successful in the removal of these pollutants. Data will be provided in the future by BioClean Inc. for tracking the pollutant removal efficiency of the modular wetland system at Coast 08.

In previous years, this activity has shown a Level 5 effectiveness assessment outcome, change in urban runoff and discharge quality. However, this year, the discharge quality has declined. It is unclear if the results are reflective of decreased effectiveness of the modular wetland or if there are other factors downstream of the wetland. This will be assessed in the next fiscal year.

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Introduction

The City of Oceanside's Clean Water Program has been monitoring the Oceanside Harbor boat wash outfall, located adjacent to the boat ramp, since 2004 as part of the Coastal Storm Drain Monitoring (CSDM) Program. This outfall drains the boat wash-down area, which includes four fresh water spigots, and two sewage dump stations for recreational vehicles, and is located approximately 150 feet upstream of the outfall. Exceedances of CSDM action levels for total and fecal coliforms have been occurring at the outfall since monitoring began. However, exceedances of REC-1 receiving water standards rarely occur at this site. Average flow rates from the outfall are 1gpm or less.

Several BMPs have been attempted to reduce bacteria levels and exceedances at the outfall. Until late 2008, this drainage line did have a separator vault to separate debris, sediment, and hydrocarbons from entering the harbor. It is suspected that while this did assist in sediment and debris separation, the vault may have allowed bacteria growth and/or regrowth which would result in bacteria action level exceedances. Other BMPs included installation of anti-microbial fabric in the vault, increased cleaning frequency of the storm drain line, and additional signage for RV users.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor boat wash storm drain inlet. This system utilizes a combination of technologies to not only address bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. It was agreed that the City would continue to sample the outfall for bacteria, under the CSDM program guidelines, and BioClean would complete the product effectiveness testing.

Results

Table 1 provides the fecal indicator bacteria (FIB) results from the outfall (also known as Coast 08 under the CSDM program). Bacteria samples were processed by Weston Solutions, Inc. or the City of Oceanside's San Luis Rey Wastewater Treatment Plant Laboratory using the multiple tube fermentation (MTF) method. Results in red and bold indicate an exceedance of the CSDM action levels which are presented in Table 2.

After the installation of the wetland, the separator vault was filled in to remove the possibility of growth/regrowth between the wetland and the outfall. For six months, the City conducted paired sampling of the wetland outfall and the storm drain outfall and found that there was no evidence of regrowth in the pipe. These results are presented in Table 3. Visual observations found that there was fine sediment and large rocks in the storm drain above the outlet. Additionally a coating of algae was frequently noticed at the outfall pipe during sampling events. Regrowth of bacteria downstream of the wetland can occur in this environment.

In the 2010/11 and 2011/12 fiscal years, the harbor boat wash outfall was sampled less frequently than in previous years due to a decrease in flow. The outfall is frequently wet, but there is not enough flow to sample. A potential reason for the decreased flow is that the modular wetland gradually releases treated water at a very flow rate.

Table 1. Oceanside Harbor Boat Wash Outfall Monitoring Results from June 2004 through June 2012.

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
6/22/2004	11,800	6,500	**160,000**
6/30/2004	1,730	**80,000**	**1,600,000**
7/13/2004	726	**24,000**	**160,000**
8/11/2004	**23,500**	**160,000**	**160,000**
9/7/2004	8,660	800	9,000
11/16/2004	1,400	**1,600,000**	**1,600,000**
12/14/2004	17,100	20	500
1/18/2005	460	5,000	130,000
2/8/2005	2,250	500	**900,000**
3/8/2005	3,730	8,000	**1,600,000**
4/12/2005	5	400	8,000
4/19/2005	580	1,100	**300,000**
4/26/2005	130	3,000	**900,000**
5/3/2005	8,220	300	80,000
5/10/2005	2,340	3,000	110,000
5/24/2005	210	**30,000**	50,000
6/7/2005	210	**50,000**	130,000
6/21/2005	290	7,000	**300,000**
6/21/2005	6,520	**50,000**	**1,600,000**
7/19/2005	210	5,000	**500,000**
8/2/2005	590	**130,000**	**220,000**
8/16/2005	340	8,000	130,000
8/30/2005	270	5,000	50,000
9/13/2005	240	17,000	140,000
9/27/2005	51	**80,000**	80,000
10/11/2005	75	17,000	50,000
10/25/2005	1,000	5,000	**170,000**
11/8/2005	3,140	1,300	23,000
1/17/2006	**98,040**	13,000	**900,000**
2/14/2006	150	300	5,000
3/27/2006	5	1,300	130,000
4/10/2006	230	10,000	**400,000**
4/10/2006	230	10,000	**400,000**
5/1/2006	120	230	**1,600,000**
5/30/2006	20	1,600	**160,000**
6/12/2006	360	**20,000**	**420,000**
6/26/2006	430	**900,000**	**1,600,000**
7/10/2006	2,970	**30,000**	**500,000**
7/24/2006	**54,800**	**80,000**	**1,600,000**
8/7/2006	1,750	**30,000**	**900,000**
8/21/2006	990	500	23,000
9/5/2006	1,400	2,800	**500,000**
9/18/2006	**50,000**	**160,000**	**1,600,000**
9/18/2006	11,000	**160,000**	**900,000**
11/20/2006	580	3,000	50,000

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
12/20/2006	2,190	2,800	110,000
2/26/2007	107	110	11,000
3/20/2007	5	1,700	110,000
5/7/2007	120	1,400	80,000
5/21/2007	5	40	23,000
6/11/2007	100	3,000	130,000
6/25/2007	1,782	**50,000**	**900,000**
7/3/2007	296	1,100	**240,000**
7/17/2007	150	13,000	80,000
7/30/2007	569	**1,300,000**	**1,600,000**
8/13/2007	760	800	130,000
8/27/2007	130	5,000	13,000
9/24/2007	190	**23,000**	30,000
10/17/2007	4,050	**500,000**	**900,000**
10/29/2007	210	1,100	**1,600,000**
11/13/2007	1,935	**23,000**	**1,600,000**
12/18/2007	368	**70,000**	**300,000**
1/17/2008	**24,196**	**30,000**	**1,600,000**
1/31/2008	30	1,100	**900,000**
2/28/2008	213	13,000	**1,600,000**
4/1/2008 – Modular Wetland Installed			
4/14/2008	5	300	50,000
5/12/2008	**24,196**	600	140,000
6/2/2008	14,136	**110,000**	**170,000**
6/10/2008	5	20	40
7/7/2008	622	5,000	**1,600,000**
7/15/2008	41	2,200	17,000
7/21/2008	95	3,000	17,000
8/4/2008	63	1,700	110,000
9/2/2008	670	17,000	**300,000**
9/11/2008	2,062	2,800	13,000
10/7/2008	1,989	17,000	80,000
11/10/2008	15,531	**170,000**	**1,600,000**
11/18/2008	7,270	**30,000**	**1,600,000**
12/8/2008	250	1,300	30,000
1/12/2009	85	700	**900,000**
1/21/2009	73	13,000	**220,000**
2/1/2009 – BioMediaGREEN +AM (Anti-Microbial) Filter Installed in the Discharge Chamber of the Wetland			
2/4/2009	52	300	**500,000**
2/13/2009	134	20	11,000
3/3/2009	1,850	1,400	17,000
4/6/2009	226	1,100	130,000
5/14/2009	471	5,000	50,000
6/1/2009	**24,800**	**80,000**	**1,600,000**
6/9/2009 – Wetland maintenance. Replaced all media components in the wetland chamber.			

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
8/17/2009	790	3,500	70,000
9/8/2009	3,100	17,000	**170,000**
9/15/2009	610	**30,000**	**300,000**
10/21/2009	16,000	**1,600,000**	**>1,600,000**
10/27/2009	3,330	**23,000**	80,000
11/3/2009	170	2,200	80,000
11/9/09	200	1,300	22,000
12/2/09	3,310	2,800	**350,000**
12/17/09	7,270	230	**220,000**
1/11/2010	420	1,100	**900,000**
2/15/10	10,700	**900,000**	**900,000**
2/24/10	1,700	80	28,000
4/15/10	145	2,200	110,000
6/9/10	8,800	3,000	**500,000**
6/14/10	1,090	11,000	**500,000**
8/4/10*	850	17,000	**1,600,000**
9/1/10*	110	1,300	80,000
01/19/11	690	1,300	17,000
03/14/11	670	2,300	**500,000**
04/05/11	800	3,000	**240,000**
05/10/11	2,940	3,000	**300,000**
7/12/11	12,600	**80,000**	**1,600,000**
7/19/11	5,920	**50,000**	130,000
8/9/11	**23,800**	**50,000**	**1,600,000**
10/11/11	2,480	**900,000**	**1,600,000**
1/4/12	310	17,000	**300,000**
2/20/12	260	1,400	**170,000**
4/10/12	75	230	80,000
6/12/12	590	**900,000**	**1,600,000**

*Sample data from August and September 2010 were excluded in the 2010/11 fiscal year assessment. The data has been added to this table and the analysis.

Table 2. CSDM Action Levels.

Total Coliform	160,000 MPN/100ml
Fecal Coliform	17,450 MPN/100ml
Enterococcus	13,200 MPN/100ml

Table 3. Test for Regrowth between Wetland Outfall and Storm Drain Outfall.

Date	Location of Sample (WO = Wetland Outfall, OF = Storm Drain Outfall)	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
7/7/2008	WO	332	17,000	1,600,000
	OF	622	5,000	1,600,000
8/4/2008	WO	20	2,300	110,000
	OF	63	1,700	110,000
9/2/2008	WO	51	30,000	500,000
	OF	670	17,000	300,000
9/11/2008	WO	1,775	170,000	900,000
	OF	2,062	2,800	13,000
10/7/2008	WO	275	11,000	170,000
	OF	1,989	17,000	80,000
11/10/2008	WO	4,198	110,000	900,000
	OF	15,531	170,000	1,600,000
11/18/2008	WO	15,531	70,000	1,600,000
	OF	7,270	30,000	1,600,000
12/8/2008	WO	121	3,000	110,000
	OF	250	1,300	30,000
1/12/2009	WO	121	300	900,000
	OF	85	700	900,000

Conclusions

While the City has not been conducting the BMP removal efficiency testing, it did appear that the number of exceedance days (as defined by the CSDM program) for fecal coliforms and Enterococcus decreased during the previous three monitoring periods (2008-2011) and could be attributable to the modular wetland. However, there was an increase in the fecal coliform bacteria exceedance rate in the 2011/12 fiscal year, increasing from 0% to 67%. The cause of this increase is unclear. Further study is needed to demonstrate if the bacteria results are occurring within and from the wetland or within the outfall pipe after treatment.

The percent exceedance rate for total coliform bacteria has been steadily increasing in the last four monitoring periods (2008 – 2012), including this monitoring period, from 60% to 75%, indicating that the modular wetland is not as efficient for removing total coliform bacteria. Table 4 and Figure 1 present the exceedance day data for all indicator bacteria.

In comparison to previous fiscal years, the 2011/12 fiscal year had the highest percentage of samples which exceeded action levels for both total and fecal coliform bacteria. Additionally, the period from the 2010/11 to the 2011/12 fiscal year showed the greatest increase in percentage of exceedances for both fecal coliform and enterococcus bacteria. There was, however, only one exceedance of REC-1 receiving water bacterial indicator standards at the Coast 8 outfall (on 8/09/11) and the follow-up sample did not exceed REC-1 receiving water samples.

Table 4. Exceedance Day Results by Fiscal Year for Harbor Boat Wash Outfall.

Fiscal Year	Total Coliforms		Fecal Coliforms		Enterococcus		# Days Sampled
	Frequency of Exceedance	% Exceedance	Frequency of Exceedance	% Exceedance	Frequency of Exceedance	% Exceedance	
2004/05	9	53%	6	35%	1	6%	17
2005/06	10	56%	4	22%	1	6%	18
2006/07	7	47%	6	40%	2	13%	15
2007/08	10	59%	7	41%	2	12%	17
2008/09	8	44%	3	17%	1	6%	18
2009/10	9	60%	4	27%	0	0%	15
2010/11	4	67%	0	0%	0	0%	6
2011/12	6	75%	5	63%	1	13%	8

*Sample data from August and September 2010 were excluded in the 2010/11 fiscal year assessment. The data has been added for this year's assessment.

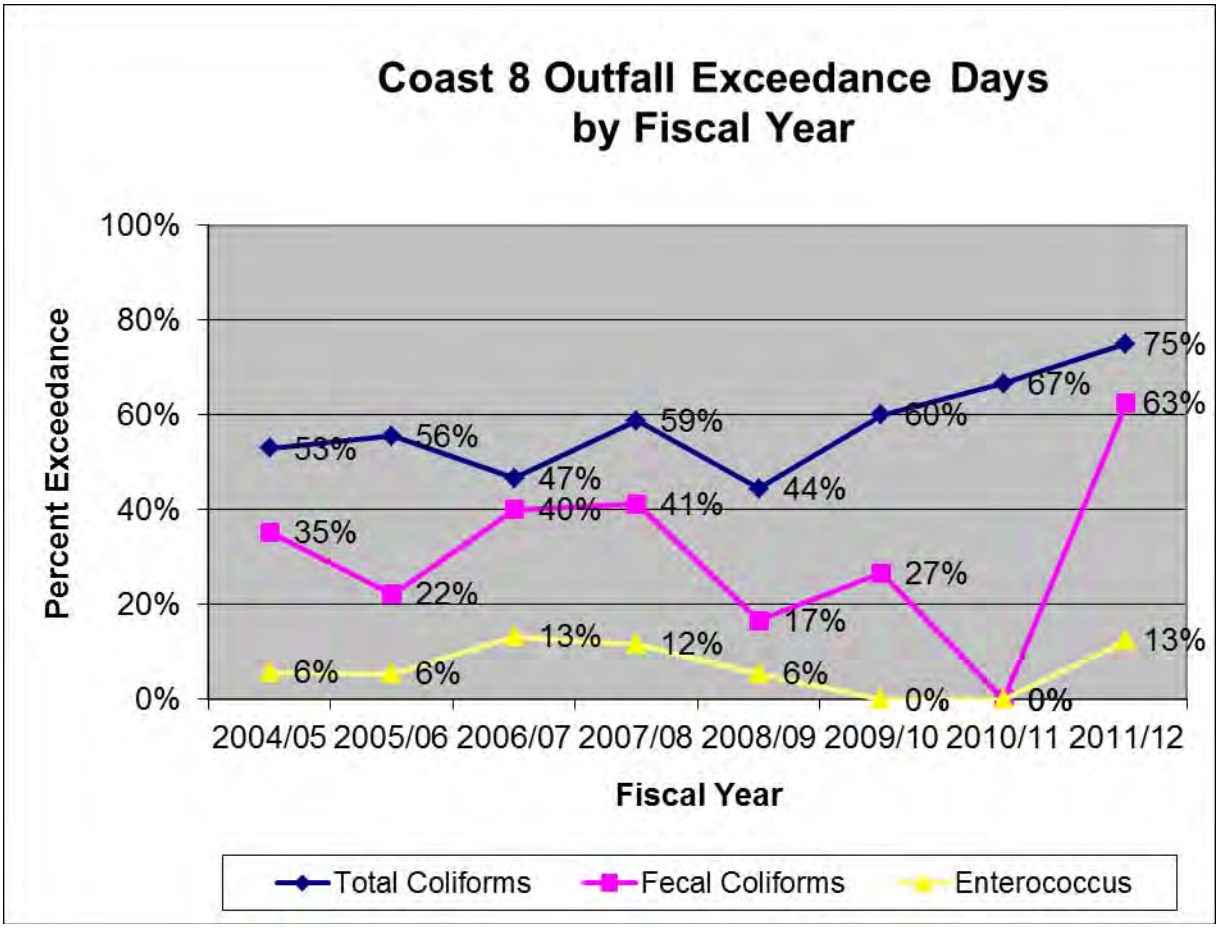

Sample data from August and September 2010 were excluded in the 2010/11 fiscal year assessment. The data has been added for this year's assessment.

Figure 1. Exceedance Day Results by Fiscal Year for Harbor Boat Wash Outfall.

Bacteria monitoring will continue at the Harbor boat wash outfall for indicator bacteria and long term effectiveness will continue to be assessed through the Coastal Storm Drain Monitoring Program or other outfall monitoring program in the future NPDES MS4 permit. Further study

will attempt to identify the increase in fecal coliform and Enterococcus exceedances this reporting year. In addition, although removal amounts of trash and hydrocarbons were not quantified for the first three years following installation of the modular wetland, visual observations of the absorbent pads and trash collection devices indicated that the wetland was very successful in the removal of these pollutants. Data will be provided in the future by BioClean Inc. for tracking the pollutant removal efficiency of the modular wetland system at Coast 08.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Water Quality and Education Activity

TITLE: **Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail**
ID NUMBER: **SLR-004**

ACTIVITY DESCRIPTION
The City of Oceanside manages an eight mile recreational walking and biking trail that is adjacent to the San Luis Rey River. This trail has high recreational traffic including bikers and walkers some of who walk and run their dogs along the trail. Since the trail was opened in 2000, city crews have noticed that pet waste, specifically dog waste, is not always picked up and properly disposed in trash cans, but is left on the trail. The City wants to install pet waste bag dispensers, signage, and trash cans along the trail. City crews have expressed concern about potential problems with installing some of these BMPs including the cost for maintenance and probable vandalism to signs and pet waste bag dispensers. The goal of this project is to determine which types of educational BMPs will enact a behavioral change amongst people who do not pick up pet waste and prioritize specific locations for BMP installation.

Pet waste left on grass, sidewalks, and along trails is not only a leading cause of bacterial contamination in waterways, but it also an issue that concerns Oceanside residents. In the spring of 2009, the City of Oceanside Clean Water Program launched a Pick up Your Pet Waste Campaign to encourage dog owners to clean up after their pets. The project focused on the San Luis Rey River Trail (Trail) which is a location where pet waste still accumulates.

ACTIVITY IMPLEMENTATION FY 2007-08
- Different types and designs of pet waste bag dispensers were researched. At least two different dispensers will be installed to determine the type used by the public, ease of maintenance, and vandalism potential.
- Service estimates from pet waste removal companies were received for temporary cleanup services and assessment of waste not picked up along the trail. The company will be asked to provide feedback on sections of the trail that have more waste than other sections. This will help determine the high use areas and where it may be most effective to install the dispensers, signs, and trash cans.
- A local Girl Scout troop “adopted” this pilot program as part of their Bronze Award requirements. They agreed to assist in some of the components of the education outreach program. Their activities may include staffing tables along the trail as part of a kick-off event, to be taped on a local television show encouraging people to pick up dog waste, and assess the data collected from the project. They may provide additional assistance where needed.
- A Community Based Social Marketing component is planned to be implemented as part of the projects education outreach component. Activities proposed to assist with the CBSM may include a visual observation component, identification of experimental and control areas along the trail, a mail survey to residents to identify barriers, an assessment of survey responses, and recommendations for BMP implementation as a result of the survey assessment.

ACTIVITY IMPLEMENTATION FY 2008-09

Girl Scout Troop 1215 of Oceanside began assisting with tasks related to the education outreach component which were also part of an overall a Community Based Social Marketing (CBSM) project. The goal of the overall CBSM project is to decrease the amount of pet waste left along the San Luis Rey Recreation Trail and bike path. The four main tasks of the CBSM project include:

- Task1: Establish a baseline measure of dog waste in pilot and control areas. This is done to establish the overall effectiveness of the CBSM pet waste pilot project. This task began with a series of observations prior to project implementation to establish a baseline of prevalence of pet waste along the trail. The bike path was divided into one experimental and one control area.
- Task 2: Mail survey of residents to identify barriers. The use of a mail survey will identify knowledge, awareness, behavior, and primary barriers with respect to pet waste and pet waste pick-up among residents of the communities surrounding the trail.
- Task 3: Analysis and Recommendations. Based on results of the barrier survey program recommendations that incorporate the use of various CBSM components will be developed.
- Task 4: Program Implementation: Post-test Evaluation: In order to evaluate effectiveness of the CBSM pet waste project, repeating of the behavioral observations conducted at the start of the project are recommended. Observations should be conduced in the experimental section of the path (where program materials are implemented) as well as in one control section of the path (no materials).

During the FY 2008-09 reporting period Tasks 1 – 3 were completed and are detailed below.

Task 1 - Establish a baseline measure of dog waste in pilot and control areas.

As part of the implementation of the CBSM project described above, Girl Scout Troop 1215, located in Oceanside, offered their assistance in implementing components of the CBSM project. Some tasks detailed below were part of the official CBSM project while others were tasks as part of their requirements to earn the Bronze Award which is the highest honor a Girl Scout Junior can achieve:

Skit during Troop meeting

During one of the regular Troop meetings, two of the girls conducted a skit demonstrating the importance of picking up after the dog. See Attachment A to this activity sheet for a picture of the two girls during their skit. This task assisted these two girls in earning their Bronze Award.

Intercept surveys along trail

This task was part of the CBSM project and was implemented by four girls from Troop 1215. The four girls, along with the Troop Leader and one other parent, conducted intercept surveys along the Trail on a Saturday morning, April 4, 2009. Two different intercept surveys were utilized – one for dog walkers and one for bike trial visitors. See Attachment A to this activity sheet for a copy of the two surveys.

The portion of the Trail targeted for this project was divided into three sections: A, B and C. See Attachment A to this activity sheet for a map of the trail and its identified sections. There is a paved bike trial on the south side of the river and a dirt trail on the north side. The Girl Scout

troop divided into two groups. One group walked the north side of the trail and one group walked the south side of the trial to conduct the surveys. Prior to conducting the intercept surveys the girls were given direction on how to properly approach people and conduct the surveys.

Troop members approached people on the trail and asked if they would answer four questions. If the trail user had a dog with them, the Girl Scout asked the questions on the Dog Walker Survey. If the trail user did not have a dog with them, the Girl Scout asked the questions on the Bike Trail Visitor Survey. The Girl Scouts also carried pet waste bags with them and offered them to trail visitors who had dogs if they needed them.

There were four objectives to the intercept surveys:

1. Determine if Trail visitors lived in Oceanside
2. Determine which street they lived on in Oceanside
3. Determine where they accessed the Trail
4. Determine if dog walkers had a pet waste bag in hand already.

As a result of question number two on the surveys, a map was created to identity which streets the trail visitors lived on that accessed the trail that day. Question number three provided information on the most common access points to the trail. These two questions helped target the addresses to which the mail survey would be sent and potentially prioritizing BMP installation locations. Because there are thousands of homes located in the vicinity of the trail it was not feasible to mail surveys to all households due to funding limitations. Thus 300 addresses were selected based on the streets and access points noted from the surveys. See Attachment A to this activity for a map denoting streets where trail visitors lived.

Existing Poop Pile Assessment

While the Girl Scouts were conducting the surveys, they also counted the number of poop piles on both on the north and south side trails. This helped identify the locations on the trail that had higher concentrations of poop piles. It was determined that the unpaved trail on the north side of the river had more poop piles than the south side. But, this may be due to the fact that City crews clean the paved bike trail on a monthly basis, whereas no cleaning services are conducted on the unpaved trail on the north side.

Tasks 2: Mail survey to identify barriers

To inform the public in the development of the campaign, a random sample of 300 Oceanside households located in neighborhoods near the Trail were mailed several pieces of information in April and May 2009. The goal of the survey was to identify the reasons why people do or do not pick up after their pets on the Trail and other public areas. The mail survey included the following items:

- Pre notification letter informing residents that they will soon be receiving a brief one-page survey (dated April 27, 2009).
- Cover letter requesting the resident to complete the enclosed survey (dated May 1, 2009).
- Copy of the survey titled “City of Oceanside Survey of Dog Waste in the Community”.
- Postcard reminding residents that a survey was sent the previous week and requesting them to complete and send the survey if not already done (dated May 7, 2009).
- Self-addressed stamped envelope for respondents to mail their completed survey.

- Follow-up letter to addresses from which survey not received as of yet (dated May 14, 2009).
- See attachment A to the FY 2008-09 activity sheet for a copy of all the correspondence listed above.

Task 3: Analysis and Recommendations

Of the 300 surveys that were mailed 180 surveys were completed and mailed back. This is a 63% completion rate which is higher than the anticipated 50% completion rate. Of those residents who completed the survey, 70% had visited the Trail in the past and 48% reported that they had a dog in their household. See Attachment A to this activity sheet for complete survey results.

The results of the survey provided clear recommendations for the Pick Up Your Pet Waste Campaign at the Trail including the installation of additional trash cans and pet waste bag dispensers as well as modifying signage to emphasize pet owner responsibility. Ninety-three percent of survey respondents agreed that more pet waste dispensers are needed in the community. As a result, the City plans to move forward with installing additional signage, trash cans, and pet waste bag dispensers along the Trail.

ACTIVITY IMPLEMENTATION FY 2009-10

During this reporting period several tasks of the overall project were implemented.

Identification of pilot and control areas along trail

The trail was divided into experimental (pilot) and control sections. See Figure 1 below for a map of the trail that shows these trail sections. These different sections will be used to assess the effectiveness of the program.

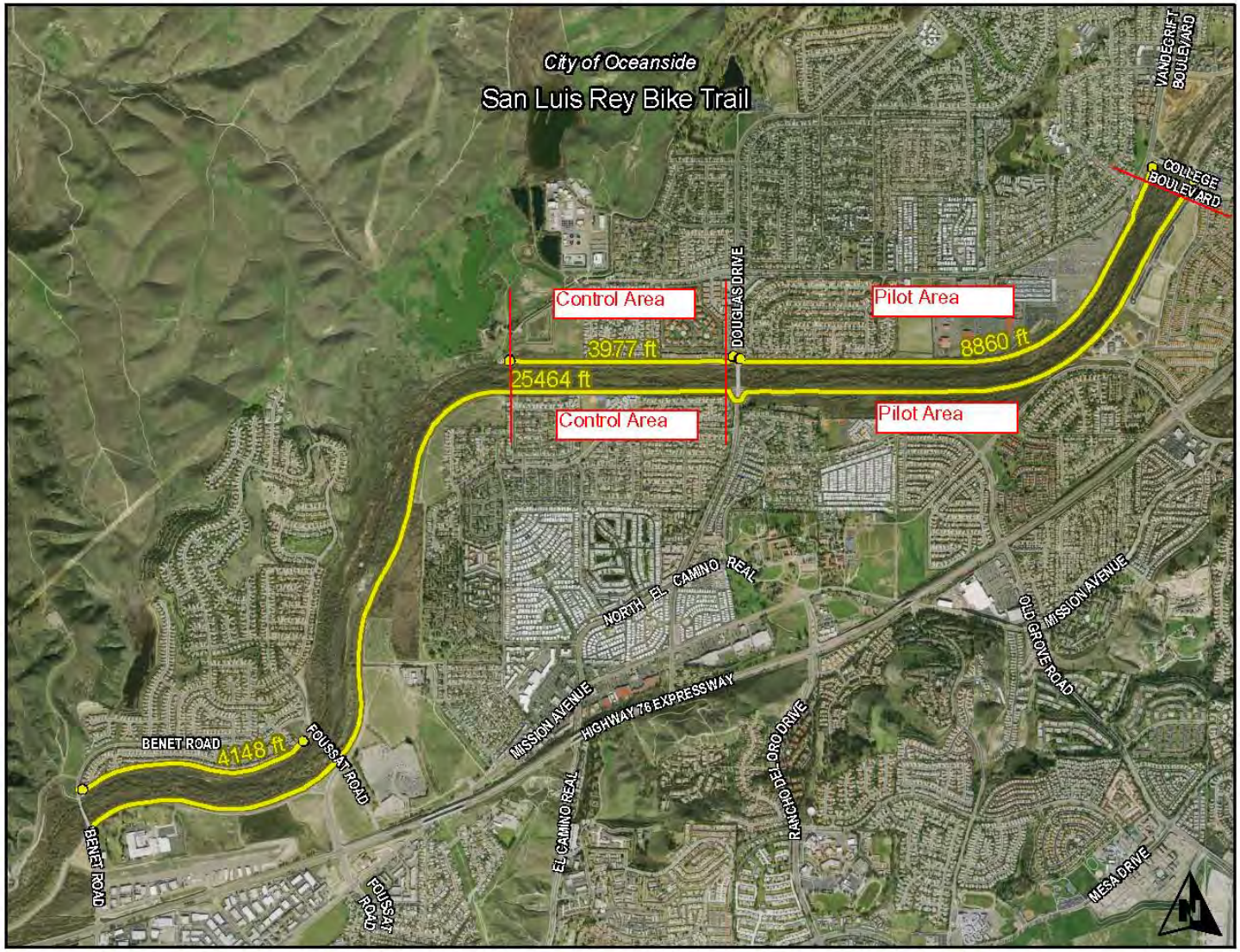

Figure 1: San Luis Rey Recreation Trail Control and Pilot Areas for Pet Waste Campaign

Pet Waste Bag Dispensers
Various pet waste bag dispensers were researched to determine the most appropriate to install in the trail based on aesthetics, vandalism potential and ease of use by the public and City staff to maintain and service. One type of dispenser was selected for installation. Four dispensers are scheduled to be installed during FY 2010-11 at the eastern and western ends of the pilot areas on both the north and south sides of the trail.

Signage
Signage to be installed at the pet waste bag dispenser stations was produced during this reporting period. With recommendations from Action Research, a community based social marketing company, a sign was created that was simple, easy to read and focused on the behavior that is the "right thing to do". It was also recommended that the sign focus on one activity, picking up pet waste, and to leave off any leash law messages. See Figure 2 below for the artwork created during this reporting period. Four of these signs are scheduled to be installed along with the pet waste bag dispensers during FY 2010-11.

Figure 2: Pet waste sign created for placement on Oceanside Recreation Trail

Pet Waste Removal
As part of the project evaluation it was recommended that all waste be removed from both the pilot and control sections of the trail just prior to installation of the pet waste bag dispenser stations. During this reporting period a contractor was hired to count the number of piles in each section of the trail, remove accumulated pet waste from the trail, and obtain an average weight of the waste piles. This task occurred on June 23 and 24, 2010.

Clean Water Program Newsletter Article
During this reporting period an article about the Pick Up Your Pet Waste Campaign was published in the Oceanside Clean Water Program Newsletter. This newsletter was mailed to over 40,000 households. See Attachment A to this activity for a copy of this newsletter that includes this article.

Video presentation on Oceanside Update (KOCT)
The Oceanside Update is produced by Oceanside's local television station, KOCT, and is a thirty minute program providing information to Oceanside citizens about upcoming community events. Speakers are allowed approximately 3 minutes to provide information specific to their division, department or program. Oceanside's Clean Water Program regularly tapes for this program about beach and river cleanup vents, other environmental programs and updates on Clean Water Program projects.

In July 2009 three members of Girl Scout Troop 1215, a local Oceanside troop, were videotaped for the Oceanside Update program providing information about the Pick Up Your Pet Waste campaign along the San Luis Rey Recreation trail. This video was shown during the month of August 2009. The half hour Oceanside Update is shown twice per day. See Attachment B to this activity in DVD format for a copy of the Oceanside update program section showing the Girl Scout taping (Cyberlink Power DVD required to view).

ACTIVITY IMPLEMENTATION FY 2010-11
During the FY 2010-11 reporting period the City installed four pet waste bag dispensers (Mutt Mitt brand) and four additional trash cans at trail head access points. Modified signage was also installed at the dispenser stations to emphasize pet owner responsibility. See Figure 3 for a photo of one of the installed pet waste bag dispenser stations.

Figure 3. Pet waste bag dispenser station installed along San Luis Rey Recreation Trail.

One week prior to installation and one week after installation a private contractor was hired to count, pick up and weigh pet waste piles on both the north and south sides of the Trail. The south side of the Trail which is paved and heavily used by bicycle riders, walkers and runners, did not have as much waste as the north side of the Trail. This may be due to the fact that the north Trail is not as heavily used as the south trail and the peer pressure to pick after their pets because someone is watching them is not as prevalent as on the south side Trail. Figure 4 provides a chart of the number of pet waste piles found on both the north and south side Trails prior to installation and after installation of the dispensers and trash cans. The south side Trail does not show much change in the number of piles. The north side Trail does show a reduction in the piles. But there is still a significant amount of pet waste left along both sides of the Trail even with resources

provided for pickup and proper disposal. Additional assessment and outreach is needed to address the ongoing problem of pet waste left along these Trails.

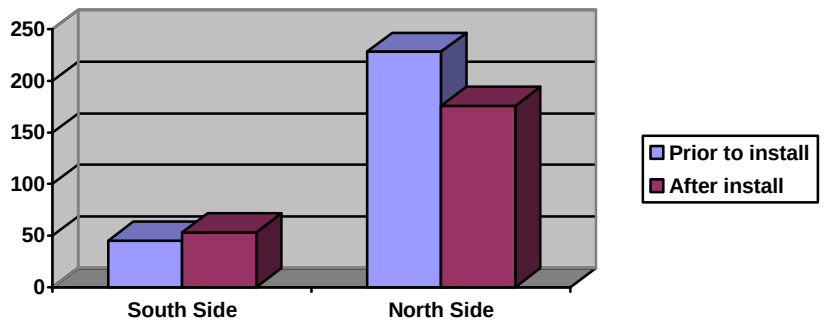

Figure 4. Number of pet waste piles found along Trail prior to and after installation of pet waste bag dispenser stations.

One week after installation of the dispensers and trash cans, a contractor was used to assess the specific types of bags being used to dispose of pet waste. The contractor retrieved all of the bags that had pet waste inside from each of the four trash cans. The bags were then categorized to determine the types of bags used to pickup and dispose of pet waste. The majority of the bags used were from the new dispensers. Other bag types used were plastic grocery bags, newspaper bags, and other miscellaneous bags. Figure 5 provides a graph of the types of bags used one week after installation of the dispenser stations.

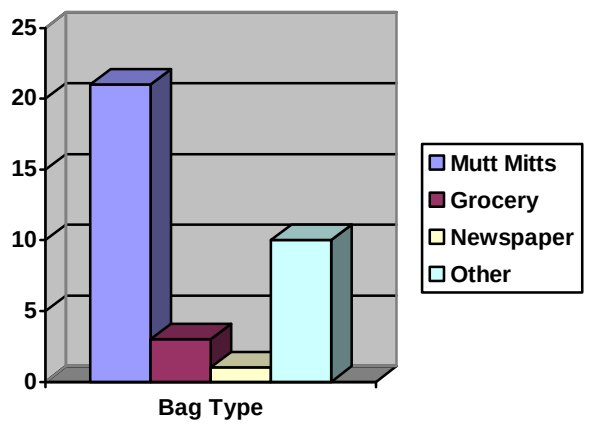

Figure 5. Types of bags used along Trail after dispenser station installation.

Ongoing maintenance and stocking of bags is conducted by public works staff throughout the year. During this reporting period approximately 4000 pet waste bags were used from these four dispensers. The number of dispenser bags found in the trash can and the number of bags being replaced in the dispensers demonstrates that this resource is being used by the public. See Attachment 1 for a copy of the final report for the Pick up your Pet Waste Campaign.

ACTIVITY IMPLEMENTATION FY 2011-12

During the 2011-12 reporting period the City of Oceanside of Oceanside maintained four pet waste bag dispensers along the San Luis Rey Recreation Trail. Approximately 4,000 pet waste bags were distributed from these four dispensers during this reporting period.

TASKS PLANNED FOR FY 12-13

The City of Oceanside Clean Water Program will continue to purchase and replace pet waste bags for each of the four dispensers.

TMDL APPLICABILITY

On February 10, 2010 the San Diego Water Quality Control Board (San Diego Water Board) adopted Resolution No. R9-2010-0001 amending the Basin Plan to incorporate the revised TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region. This TMDL Basin Plan amendment was subsequently approved by the State Water Resources Control Board on December 14, 2010, the Office of Administrative Law (OAL) on April 4, 2011, and the United States Environmental Protection Agency (USEPA) on June 22, 2011. Under state law, this TMDL Basin Plan Amendment became fully effective on April 4, 2011, the date of OAL approval.

This activity will assist TMDL listed agencies in the SLR Watershed to address the bacteria problem at the Pacific Ocean Shoreline at the mouth of the San Luis Rey River which is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments.

TIME SCHEDULE FOR IMPLEMENTATION

Program planning for this activity was completed during the 2007-08 reporting period, with components of the project implemented during fiscal years 2008-09, 2009-10, and 2010-11. Based on the assessment results, pet waste bag dispensers with positive signage were installed along the trail in FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- Girl Scout Troop 1215 (FYs 2008-09 and 2009-10)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a priority water quality problem in the San Luis Rey River Watershed. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

FY 2009-10

During FY 2009-10 a survey was mailed to households near the trial. Of the 300 surveys that were mailed 63% completed surveys were returned. This demonstrated that the survey protocols were very effective in getting feedback from residents about pet waste in their community. See the FY 2008-09 SLR WURMP Annual Report for the assessment of the survey.

FY 2010-11

During FY 2010-11 the following assessment tasks were conducted:

- Baseline loads of pet waste were tabulated one week prior to dispenser installation and one week after dispenser installation. See the Activity Implementation FY 2010-11 portion of this activity sheet for more details.
- During this reporting period approximately 4000 pet waste bags were used from these four dispensers Demonstrating that this resource is being used by the public.
- The type of dispensers and signs installed in the experimental area appear to be effective for the target area.

FY 2011-12

During the 2011-12 reporting period approximately 4,000 pet waste bags were distributed from four dispensers along the San Luis Rey Recreation Trail. Signage on the pet waste bag dispensers educates trail users with dogs about the proper behavior needed to protect water quality from pet waste. This activity is targeted at Levels 1, 2, and 4 effectiveness assessment outcomes. The program was implemented during FYs 2009-10 and 2010-11. (Level 1 outcome). The educational signage raises awareness on the proper behavior to protect water quality (Level 2 outcome). The installation of the dispensers reduces the pollutant loading into the San Luis Rey River by providing a resource for people to pick up and properly dispose of pet waste (Level 4 outcome).

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID NUMBER: **SLR-005**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained eleven dispenser stations at three parks within the San Luis Rey River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2010-11. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed.

FY 2011-12 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2011-12. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed. The parks and the number of dispensers include:

- Live Oak Park (3 dispensers)
- Palomar Park (1 dispenser)
- Guajome Regional Park (7 dispensers)

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey River Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Table 1. Effectiveness Assessment

Facility Name	FY 11-12		
	# of Stations	# of Bags Used	Dog Waste Removed (pounds)
Live Oak Park	3	8,075	1,615
Palomar Park	1	3,230	646
Guajome Regional Park	7	22,610	4,522
Total	**11**	**33,915**	**6,783**

During the FY 2011-12 reporting period the County maintained 11 stations among three County Parks within the San Luis Rey River Watershed. These stations distributed approximately 33,915 bags, preventing an estimated 6,783 pounds of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 pounds
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Monitoring Activity

TITLE: **Guajome Lake Water Quality Monitoring Program**
ID NUMBER: **SLR-008**

ACTIVITY DESCRIPTION

The County of San Diego is implementing a monitoring program to assess the contribution of urban runoff (specifically nutrients) to the eutrophication of Guajome Lake. On January 7, 2005, a joint reconnaissance of the Guajome Lake area was conducted with the City of Oceanside, the County Department of Agriculture, Weights, & Measures (AWM), the County Department of Parks and Recreation (DPR), and the County Department of Public Works (DPW). All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, seven locations in the northern subbasin were monitored and two of those were selected as long-term monitoring sites. They included the East Channel Creek at Hutchison Street and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL02 is located in the middle of the subbasin and is co-located with the County of San Diego's dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities.

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting period, reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2010-11 ACTIVITY IMPLEMENTATION

During the FY 2010-11 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2011-12 ACTIVITY IMPLEMENTATION

During the FY 2011-12 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07). For additional information, refer to Attachment A of this Watershed Activity Summary Sheet.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Monthly sampling of long-term stations - Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients as a high priority water quality problem in the San Luis Rey WMA. This nutrient monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

During the FY 2011-12 reporting period, the County of San Diego conducted sampling at the two long-term locations in Guajome Lake (Level 1 Outcome). For additional information, refer to Attachment A of this Watershed Activity Summary Sheet.

Guajome Lake Water Quality Monitoring
2005 through 2012

Introduction

The San Diego County Department of Public Works, Watershed Protection Program developed a monitoring program to assess the contribution of urban runoff to the eutrophication of Guajome Lake. The 2010 Clean Water Act Section 303(d) List of Water Quality Limited Segments identified that beneficial uses of Guajome Lake are impaired due to eutrophication. On January 7, 2005 a joint reconnaissance of the Guajome Lake area was conducted with The City of Oceanside, the County Department of Agriculture, Weights, & Measures, County Department of Parks and Recreation, and the Watershed Protection Program. All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the Lake. From February through April 2005, 7 locations in the northern subbasin were monitored and two of those were selected as long term monitoring sites. They included the East Channel Creek at Hutchison St. and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GLU2 is located in the middle of the subbasin and is co-located with the dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. The 2005 preliminary monitoring of the East Channel Creek indicated that nutrients do enter Guajome Lake and may contribute to the existing eutrophic conditions. Data collected from the two sites of the East Channel Creek during fiscal year 2005/2006 indicated that concentrations of nutrients continued to enter Guajome Lake. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities. Further monitoring and investigation of potential sources continued through fiscal year 2011-12.

Additional background information and a description of hydrologic setting are provided in the 2004-2005, 2005-2006 and 2006-2007 WURMP Annual Reports.

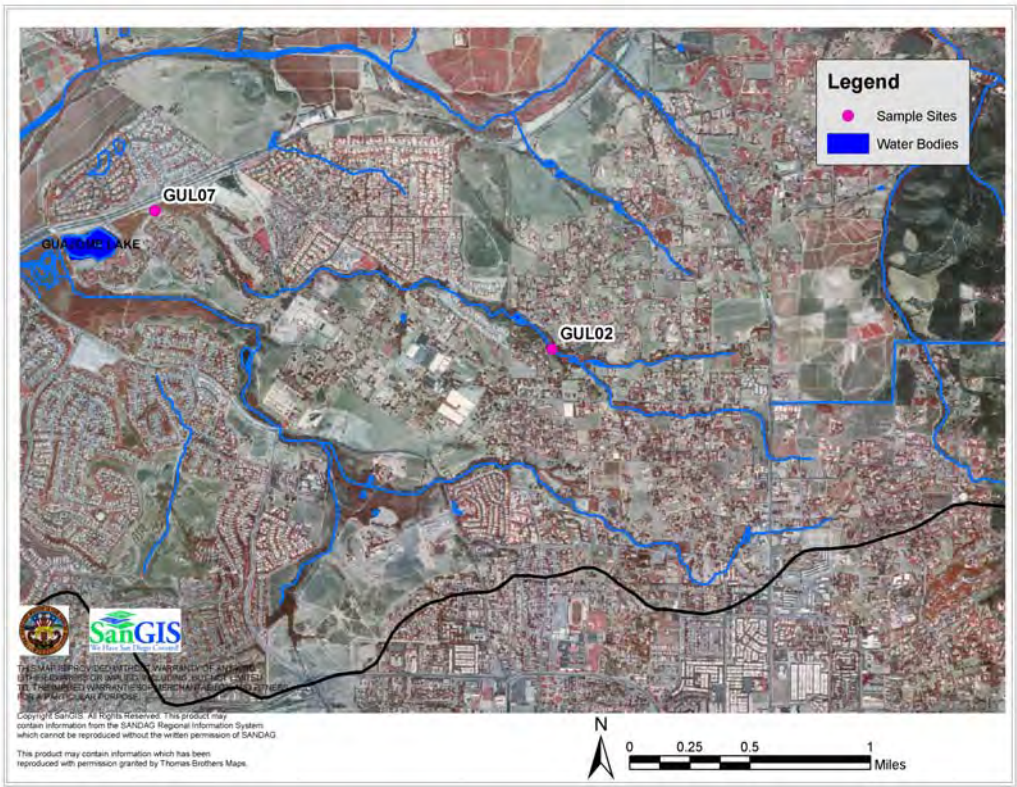

Figure 1. Guajome Lake Sample Location Map.

Methods

During the FY 2011-12, monitoring continued at the two long term sites (GUL02 and GUL07). Sampling was conducted monthly. All samples were collected during dry weather (no precipitation greater than 0.1 inches within 72 hours prior to sampling). Flow, pH, conductivity, turbidity, dissolved oxygen and temperature were measured in the field while grab samples were sent to the analytical laboratory to determine concentrations of orthophosphate as P, total phosphorus, nitrate as N, nitrite as N, ammonia, total Kjeldahl nitrogen, and total suspended solids.

For the purpose of visual comparison, all data (beginning in May 2005) were grouped by sample site and date. They were then represented graphically to show variation over time in nitrate-N, orthophosphate-P, total nitrogen and total phosphorus concentrations. The same procedure was applied to discharge and N:P ratio data. Linear regression analysis was then implemented to determine if significant trends exist in nutrient concentrations and the N:P ratio over time at the two sampling locations. A paired t-test was used to compare mean nutrient concentrations, discharge rates and the N:P ratio between the two locations while accounting for the variability in data due to the sampling date.

Results

All data collected during FY 2011-12 are summarized in Table 1. Figures 2 through 7 show variations in discharge rates and nutrient concentrations at GUL02 and GUL07, over time. Generally, estimated discharge rates at both sites tended to remain below 1 ft^3/s (Fig. 2). An exceptionally high discharge occurred on 2/28/2008 at GUL07 (Table 1). Orthophosphate-P concentration at both GUL07 and GUL02 downstream also increased slightly on that date (Fig. 4). Unfortunately, no samples were collected in the preceding months (Oct-Jan of 2007) due to wildfires.

As shown in Figures 5 and 6, the Basin Plan objectives for total nitrogen and total phosphorus were exceeded at both sampling sites on all sampling dates since the initiation of this project in May 2005. With the exception of three samples collected at GUL7 in July 2006, January 2010, and November 2011, the nitrogen to phosphorus ratio also remained above the 1:10 Basin Plan objective throughout the sampling period (Fig. 7). Also, exceptionally high total phosphorus (3.88 mg/L) and orthophosphate as P (2.93 mg/L) concentrations were measured at GUL07 on November 17, 2012 while, although still very high, the corresponding total nitrogen concentrations remained typical for the site (9.91 mg/L) . This would account for the lower than usual nitrogen to phosphorus ratio observed at GUL07 on that day (2.55).

The paired t-test analysis results are shown in Table 2. Overall, discharge, nitrate-N, total nitrogen concentrations and the nitrogen to phosphorus ratio were significantly higher at GUL02 than at GUL07. This, however, was not true for the orthophosphate-P and total phosphorus concentrations. This may indicate that nutrient assimilation may be taking place for the nitrogen but not for the phosphorus species between the two sampling sites.

The results of regression analysis are presented in Figure 8 and Table 3. No strong decreasing or increasing trends over time were observed for the nutrient concentrations for any of the nitrogen or phosphorus species at either sampling location (Fig. 8B and C; Table 3). However, the resulting nitrogen to phosphorus ratios continued to show a small decreasing trend (Fig. 8F, Table 3).

Conclusions

Generally, the data collected at the two sites along the East Channel Creek indicate that nutrients do in fact enter Guajome Lake and may contribute to the existing eutrophic conditions as nutrient concentrations at both sampling locations continue to exceed Basin Plan objectives. There is, however, evidence of some assimilation of nitrogen as water flows downstream from GUL02 toward GUL07 that resulted in significantly lower nitrogen to phosphorus ratios and lower nitrate-N and total

nitrogen concentrations at GUL07. Additionally, a small decreasing trend over time was observed for the nitrogen to phosphorus ratio.

Although no obvious discharge or surface runoff to the creek was observed, potential sources for nutrients in the drainage area include residential properties, nurseries, agriculture, and or horse stables. Further monitoring and investigation of potential sources will continue.

Table 1. A summary of results from the Guajome Lake 2011- 2012 Fiscal Year monitoring study.

Site ID	Date	Flow Observed	Discharge (cfs)	pH	Electrical Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Ammonia as N (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Orthophosphate as P (mg/L)	Total Phosphorus (mg/L)	Total Suspended Solids (mg/L)
GUL02	7/21/11	Flowing	0.52	7.62	2.27	9	7.67	18.5	0.03	13.1	0.06	1.2	14.36	0.14	0.19	11.8
GUL07	7/21/11	Flowing	0.28	8.07	2.63	7	6.67	19.1	0.43	6.96	0.02	1	7.98	0.17	0.3	17.6
GUL02	8/10/11	Flowing	0.33	7.6	2.32	8	8.33	17.8	0.09	14.6	0.03	0.5	15.13	0.26	0.3	11.2
GUL07	8/10/11	Flowing	0.45	7.99	2.58	5	7.87	17.6	0.13	4.61	0.008	0.6	5.218	0.14	0.2	13.2
GUL02	9/30/11	Flowing	0.31	7.83	2.3	10	7.93	17.2	0.09	17	0.04	1	18.04	0.17	0.18	8.5
GUL07	9/30/11	Flowing	0.29	8.17	2.49	4	7.82	17.5	0.1	5.92	0.007	2.9	8.827	0.18	0.26	10
GUL02	10/25/11	Flowing	0.48	7.83	2.32	9	8.06	16.5	0.11	16.8	0.05	0.8	17.65	0.09	0.14	7.8
GUL07	10/25/11	Flowing	0.34	8.15	2.46	10	8.08	16.7	0.14	5.62	0.02	2.5	8.14	0.12	0.17	17.4
GUL02	11/17/11	Flowing	0.39	7.79	2.3	5	8.58	13.9	0.42	10.9	0.04	0.7	11.64	0.27	0.27	8
GUL07	11/17/11	Flowing	0.37	8.03	2.46	4	7.6	13.9	0.05	9.1	0.01	0.8	9.91	2.93	3.88	7.3
GUL02	12/22/11	Flowing	0.31	7.73	2.35	6	NM	11.2	0.15	20.9	0.03	1.6	22.53	0.18	0.18	3.5
GUL07	12/22/11	Flowing	0.20	7.96	2.58	1	NM	10.5	0.04	6.6	0.01	2.2	8.81	0.34	0.38	4
GUL02	1/30/12	Flowing	0.45	7.72	2.33	6	9.48	9.7	0.16	14.4	0.02	1	15.42	0.12	0.17	2.8
GUL07	1/30/12	Flowing	0.24	8.05	2.64	1	10.33	8.9	0.11	8.38	0.007	1.1	9.487	0.09	0.17	2
GUL02	2/22/12	Flowing	0.59	7.71	2.23	10	9.26	11.6	0.04	19.6	0.02	1.2	20.82	0.2	0.24	6.4
GUL07	2/22/12	Flowing	0.48	8.01	2.4	2	9.28	11.6	0.03	12.6	0.01	0.6	13.21	0.15	0.18	22.8
GUL02	3/15/12	Flowing	0.54	7.79	2.36	6	8.83	13.2	0.09	17.2	0.03	1	18.23	0.1	0.18	6.8
GUL07	3/15/12	Flowing	0.54	8	2.53	2	8.53	12.8	0.07	8.35	0.01	1.2	9.56	0.16	0.21	4.6
GUL02	4/30/12	Flowing	0.45	7.8	2.32	7	8.06	16.2	<0.02	19.5	0.04	<0.3	19.69	0.19	0.19	46
GUL07	4/30/12	Flowing	0.56	8	2.44	9	7.2	16.1	<0.02	9.59	0.01	0.3	9.9	0.25	0.26	29
GUL02	5/30/12	Flowing	0.25	7.75	2.47	4	NM	17.4	0.02	18.2	0.04	<0.3	18.39	0.49	0.52	3.9
GUL07	5/30/12	Flowing	0.36	8.04	2.78	9	NM	19	0.07	5.46	0.02	<0.3	5.63	0.3	0.44	16
GUL02	6/21/12	Flowing	0.21	7.58	2.29	7	NM	17	<0.02	16.3	0.04	<0.3	16.49	0.48	0.49	4
GUL07	6/21/12	Flowing	0.05	7.92	2.87	6	NM	17.2	0.06	5.55	0.02	<0.3	5.72	0.42	0.48	11.9

NM – Not Measured; NA – Not Applicable

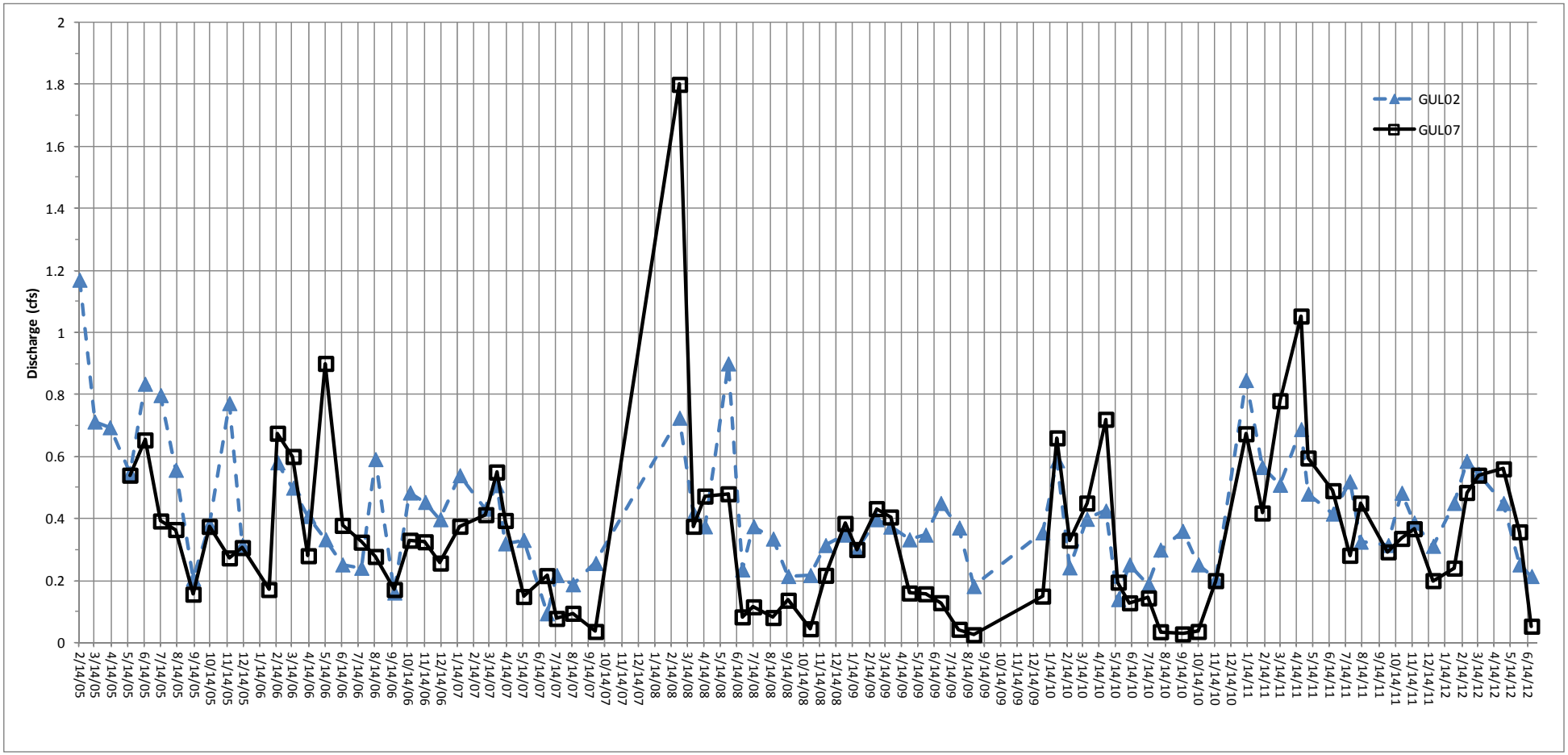

Figure 2: Variation in discharge rates over time at the two sampling sites. All samples were collected during dry weather conditions (no rain during or within 72 hours prior to sampling).

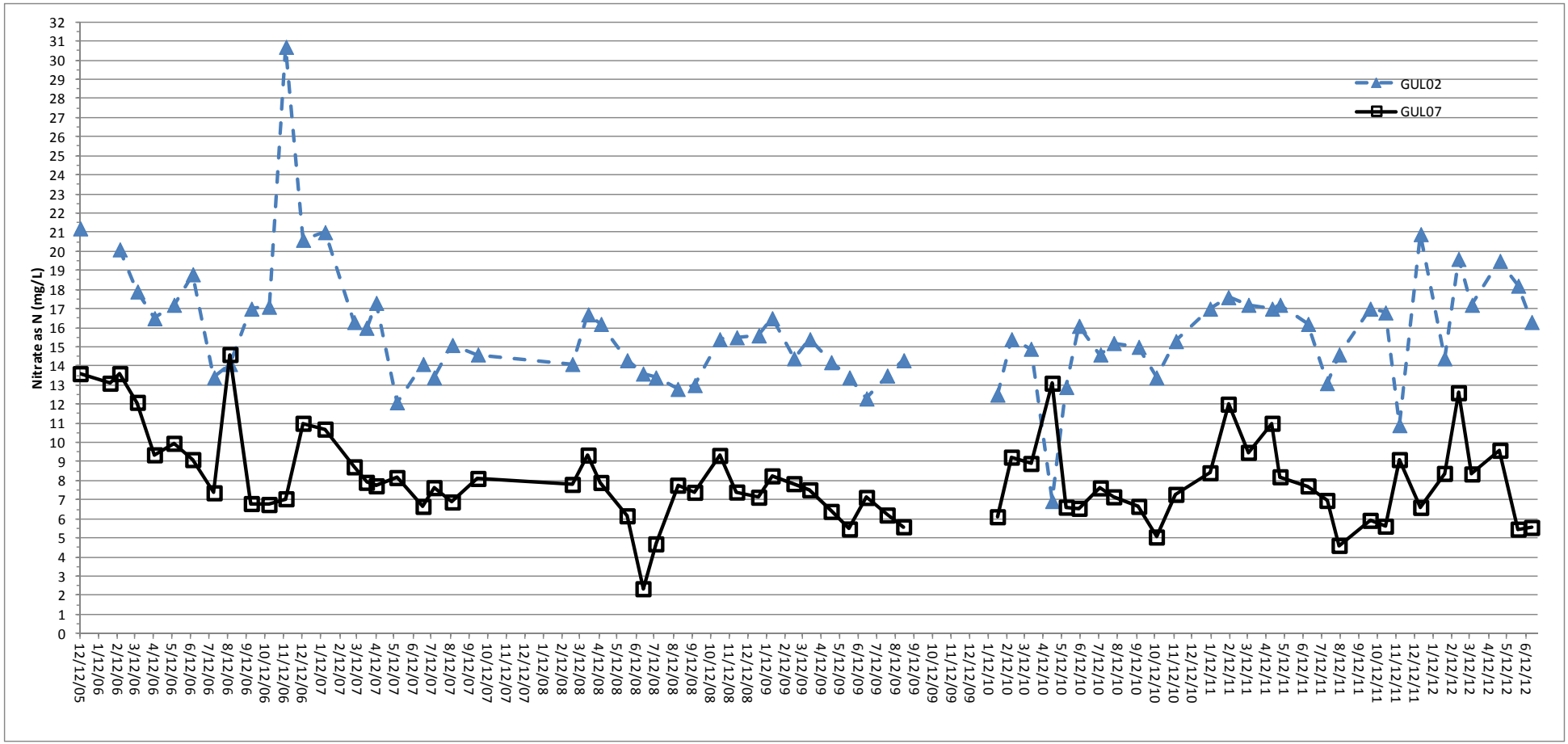

Figure 3: Variation in Nitrate-N concentrations over time throughout the sampling period at GUL2 and GUL7.

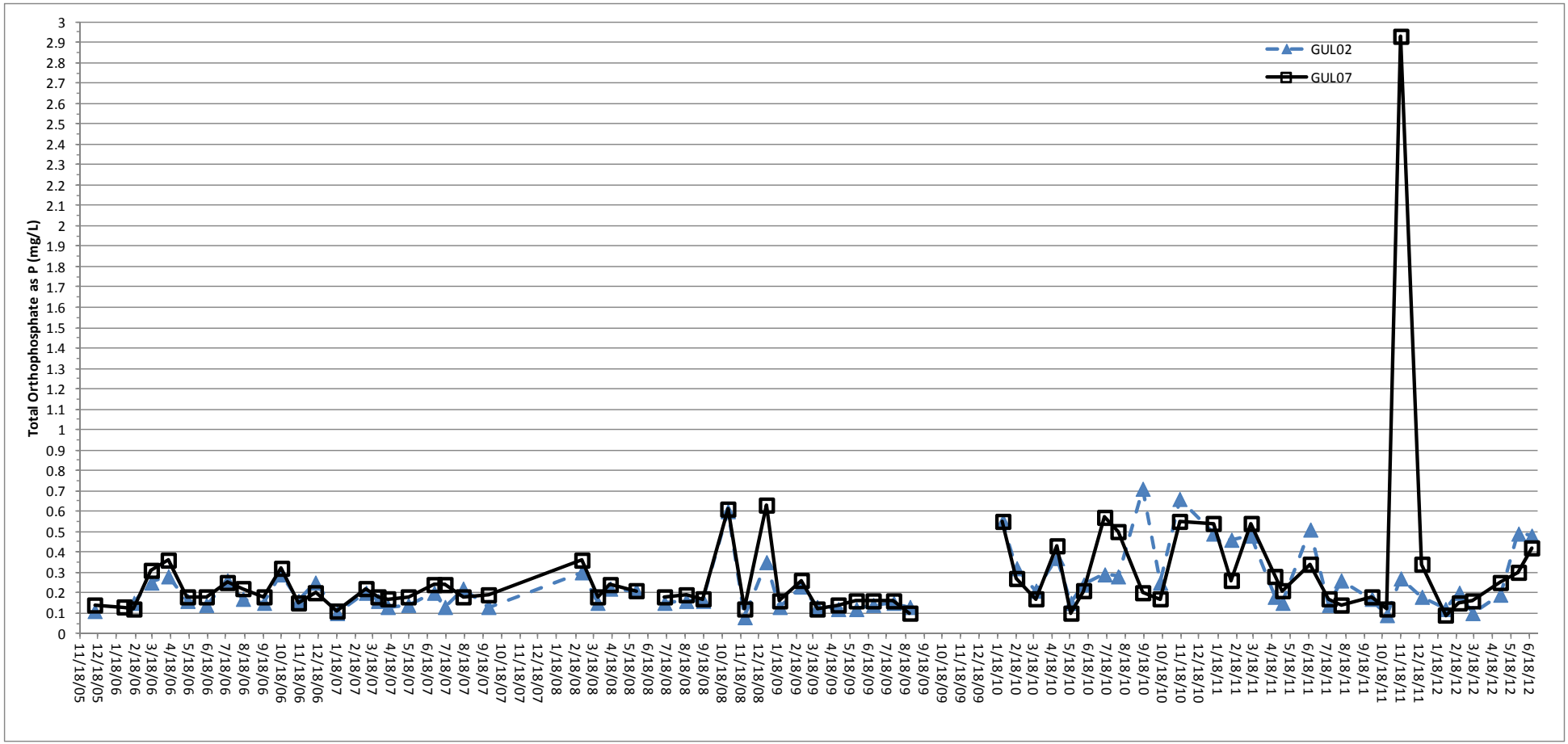

Figure 4: Variation in Orthophosphate-P concentrations over time throughout the sampling period at GUL2 and GUL7.

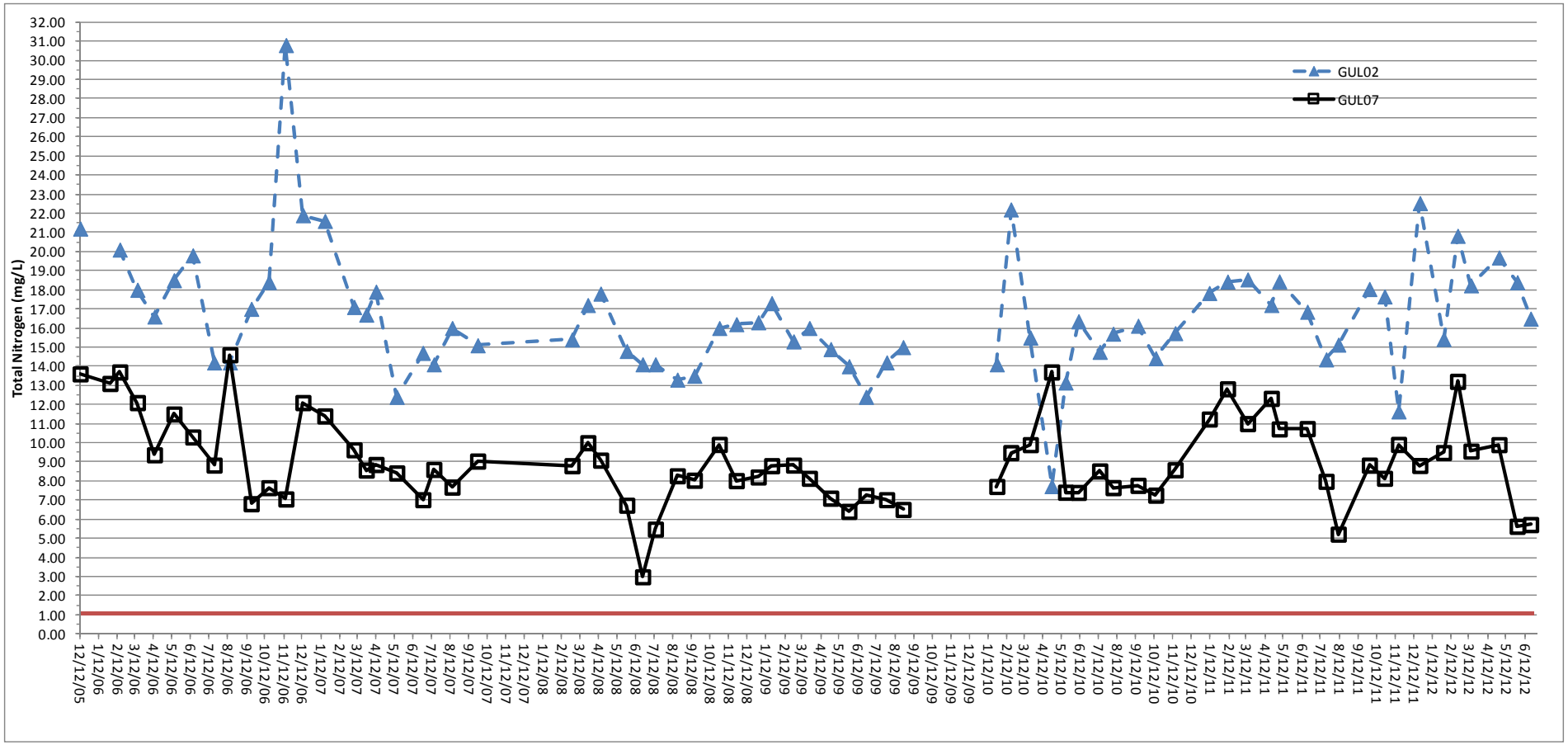

Figure 5: Variation in total nitrogen concentration over time at the two sampling sites. The solid red line indicates 1 mg/L Basin Plan objective for flowing water.

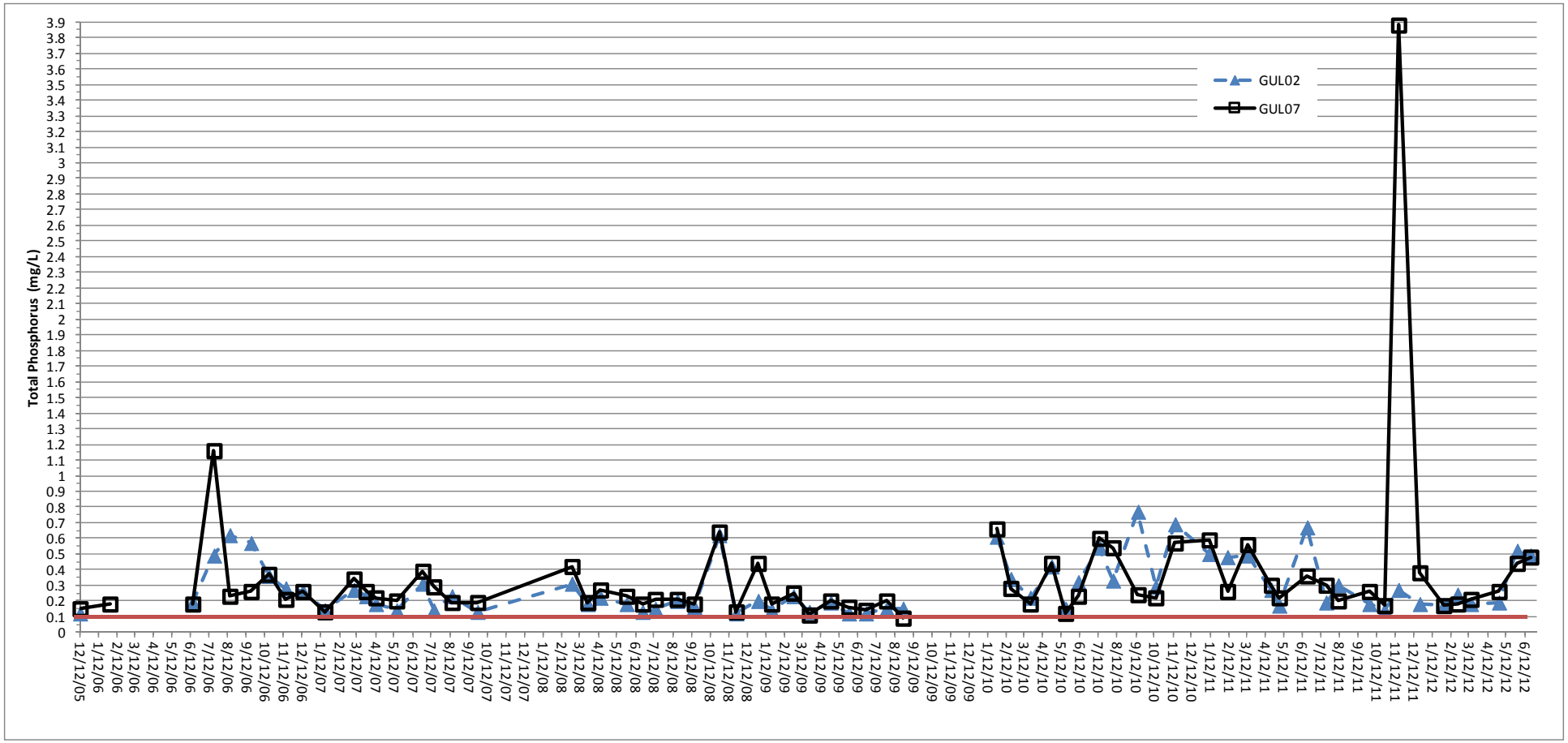

Figure 6: Variation in total phosphorus concentrations over time throughout the sampling period at GUL2 and GUL7. The solid red line indicates 0.1 mg/L Basin Plan objective for flowing water.

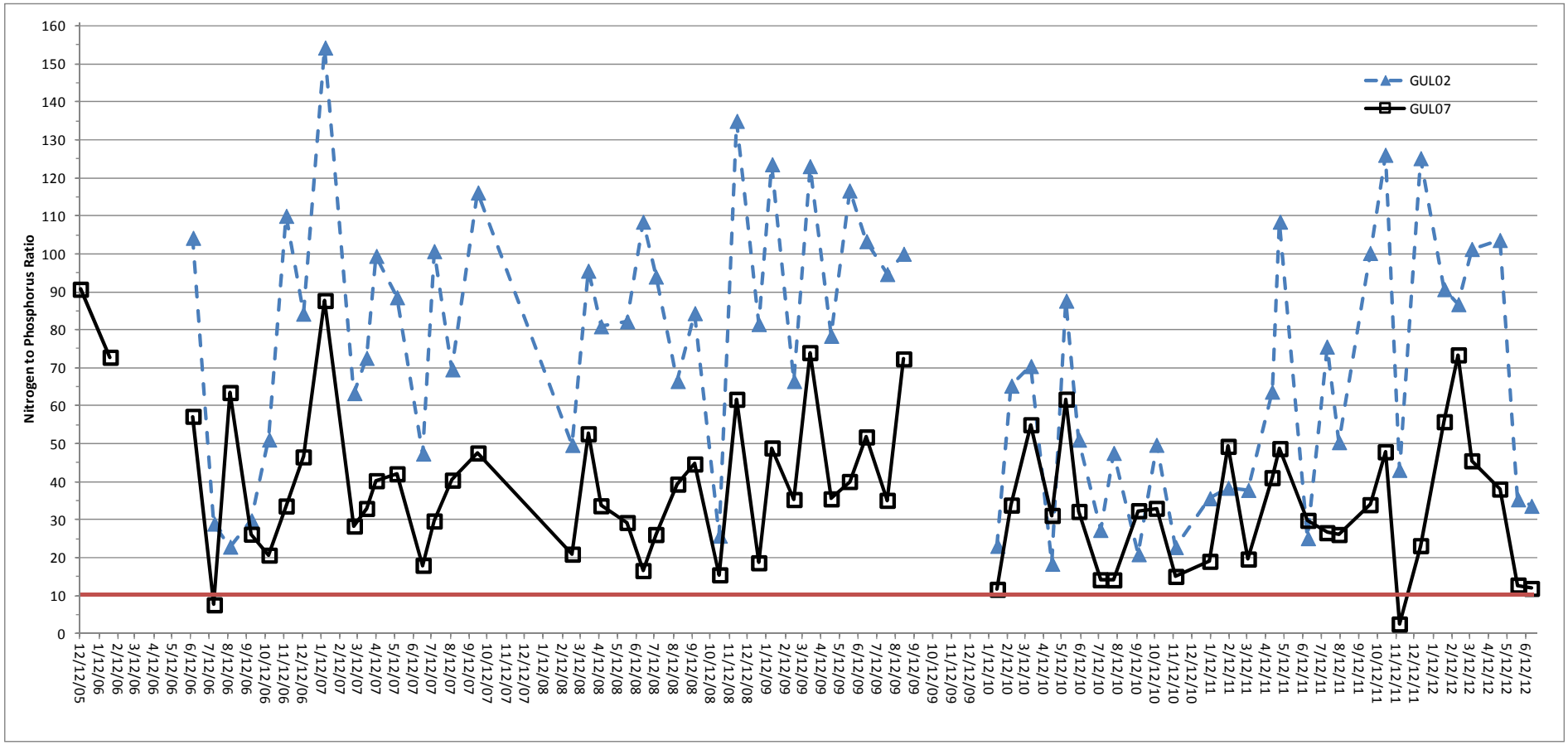

Figure 7: Variation in N:P ratio over time throughout the sampling period at GUL2 and GUL7. The red line indicates 10:1 Basin Plan objective.

Table 2: Results of the paired t-test performed to compare data collected from GUL02 (upstream) and GUL07 (downstream) from May 2005 through June 2012. Comparisons with positive *t*-values and *p*-values smaller then 0.05 indicate parameters that were significantly higher at GUL02 than GUL07. Comparisons with negative *t*-values and *p*-values smaller then 0.05 indicate parameters that were significantly lower at GUL02 than GUL07 (none observed).

Parameter	***Mean***		***t***	***p (2-tailed)***
	GUL2	**GUL7**		
Discharge Rate (cfs)	**0.40**	**0.34**	**2.32**	**0.02**
Nitrate-N Conc.	**15.8**	**8.0**	**21.89**	**< 0.001**
Total N Conc.	**16.6**	**8.9**	**18.80**	**< 0.001**
Orthophosphate-P Conc.	0.24	0.29	-1.21	0.23
Total P Conc.	0.29	0.35	-1.09	0.28
N:P Ratio	**75.4**	**36.8**	**11.34**	**<0.001**

Table 3: Regression analysis summary showing the slope and r^2 values. Negative slopes indicate downward trends; r^2 values are directly proportional to the percentage of variation in each parameter that can be explained by the corresponding regression line.

Nutrient Variable	***Sample Site***	r^2	***Slope***
Discharge	GUL02	0.11	-0.00001
	GUL07	0.002	-0.0000
Nitrate	GUL02	0.01	-0.0005
	GUL07	0.10	-0.0010
Total N	GUL02	0.01	-0.0004
	GUL07	0.04	-0.0007
Orthophosphate-P	GUL02	0.08	0.0001
	GUL07	0.05	0.0001
Total-P	GUL02	0.02	0.0000
	GUL07	0.03	0.0001
N:P Ratio	GUL02	0.16	-0.0259
	GUL07	0.14	-0.0110

A.

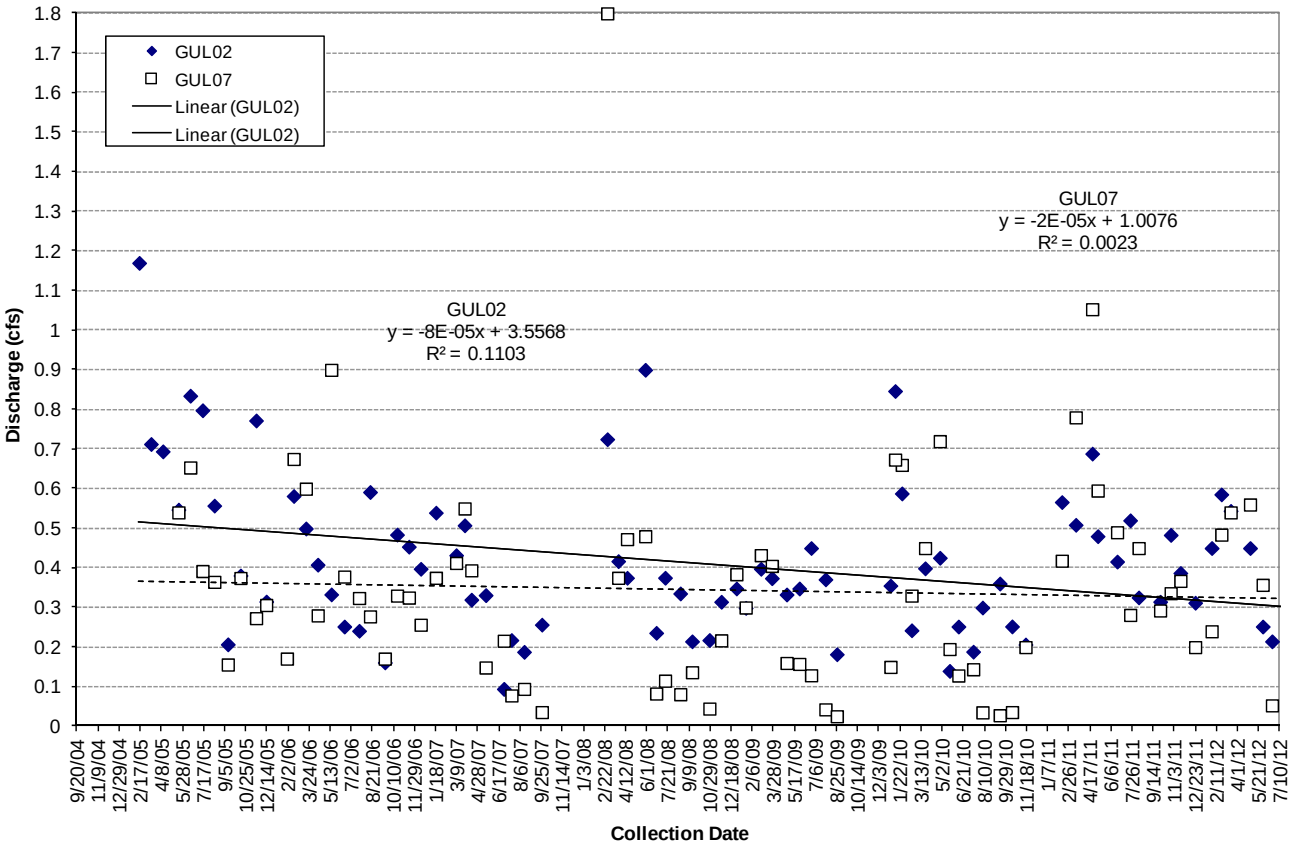
GUL02
GUL07
Linear (GUL02)
Linear (GUL02)
GUL07
y = -2E-05x + 1.0076
R² = 0.0023
GUL02
y = -8E-05x + 3.5568
R² = 0.1103
Discharge (cfs)
Collection Date

B.

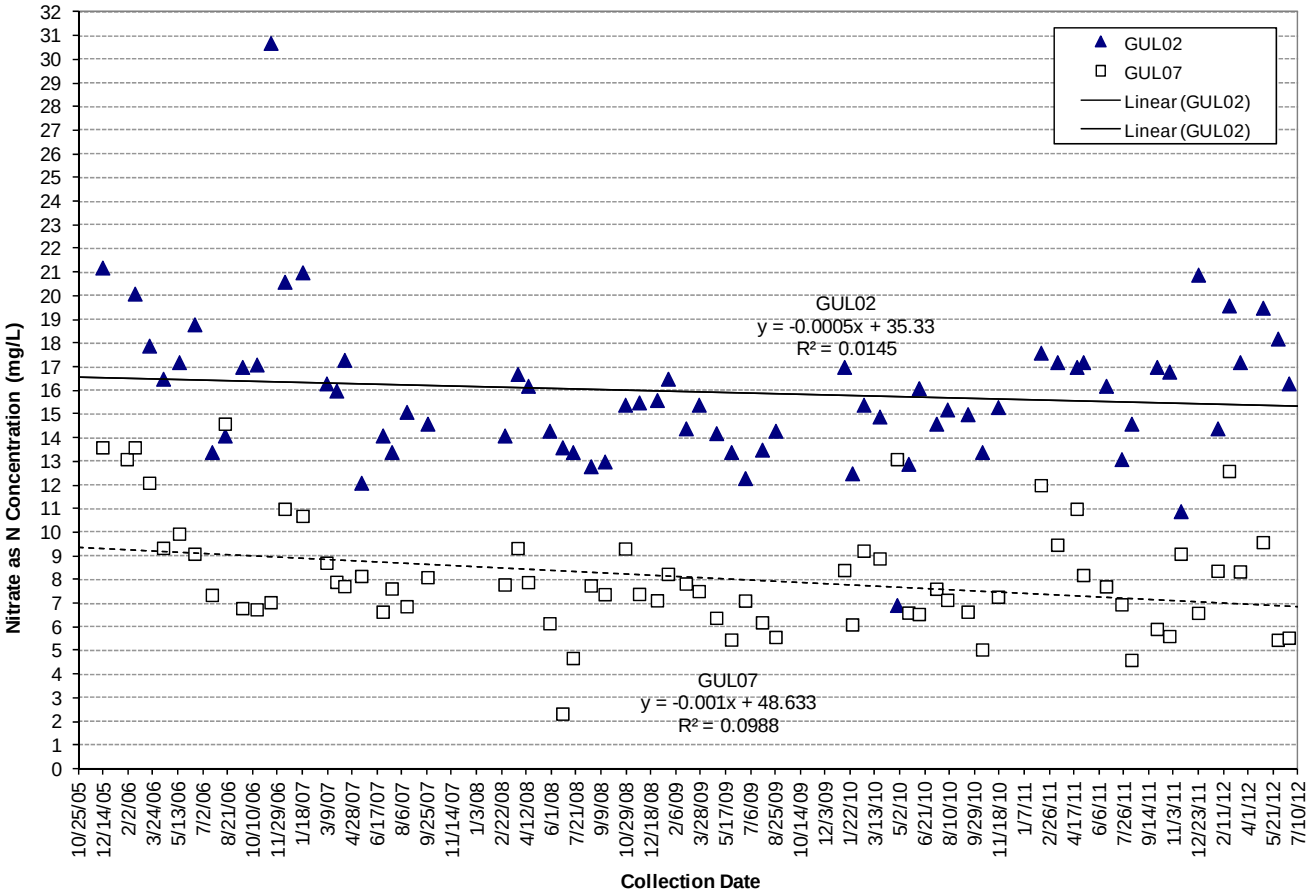
GUL02
GUL07
Linear (GUL02)
Linear (GUL02)
GUL02
y = -0.0005x + 35.33
R² = 0.0145
GUL07
y = -0.001x + 48.633
R² = 0.0988
Nitrate as N Concentration (mg/L)
Collection Date

C.

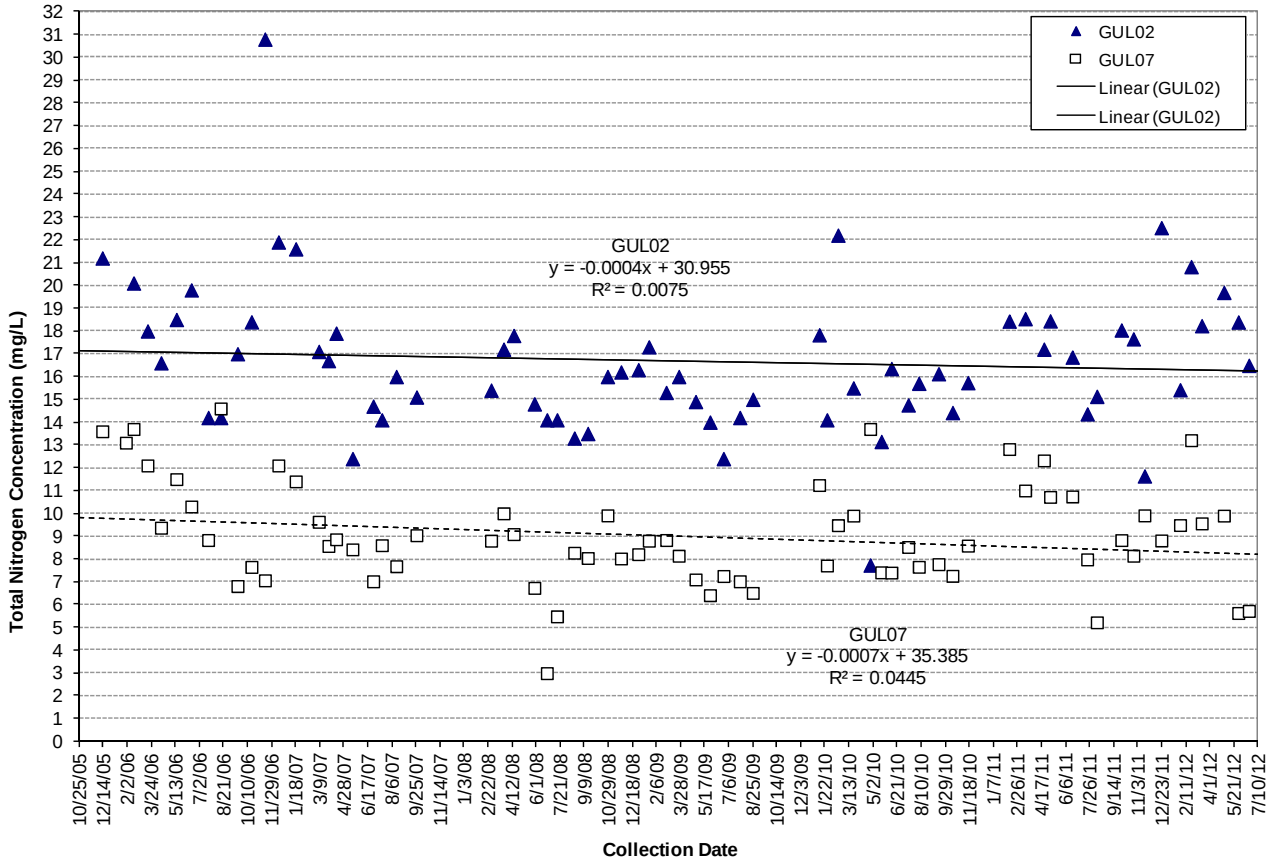
GUL02
GUL07
Linear (GUL02)
Linear (GUL02)
GUL02
y = -0.0004x + 30.955
R² = 0.0075
GUL07
y = -0.0007x + 35.385
R² = 0.0445
Total Nitrogen Concentration (mg/L)
Collection Date

D.

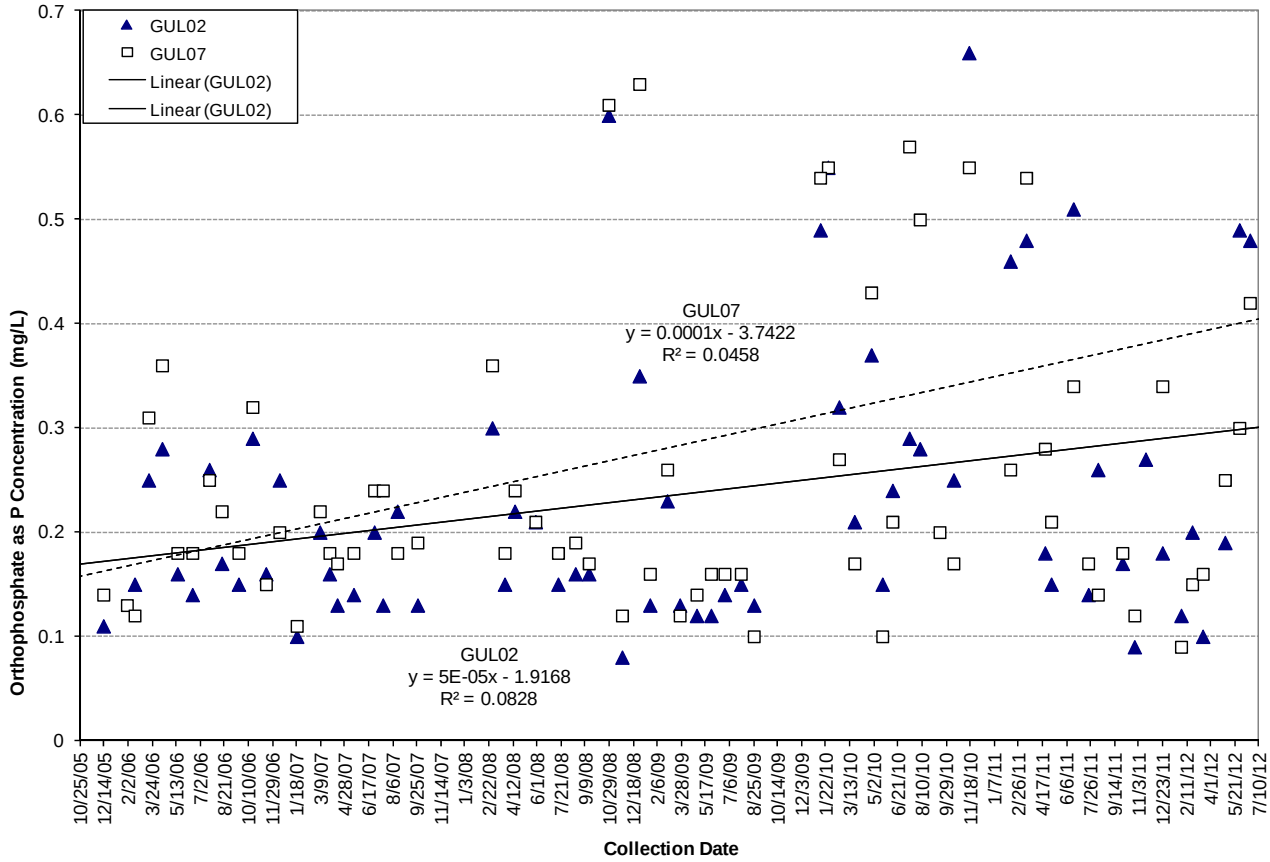
GUL02
GUL07
Linear (GUL02)
Linear (GUL02)
GUL07
y = 0.0001x - 3.7422
R² = 0.0458
GUL02
y = 5E-05x - 1.9168
R² = 0.0828
Orthophosphate as P Concentration (mg/L)
Collection Date

E.

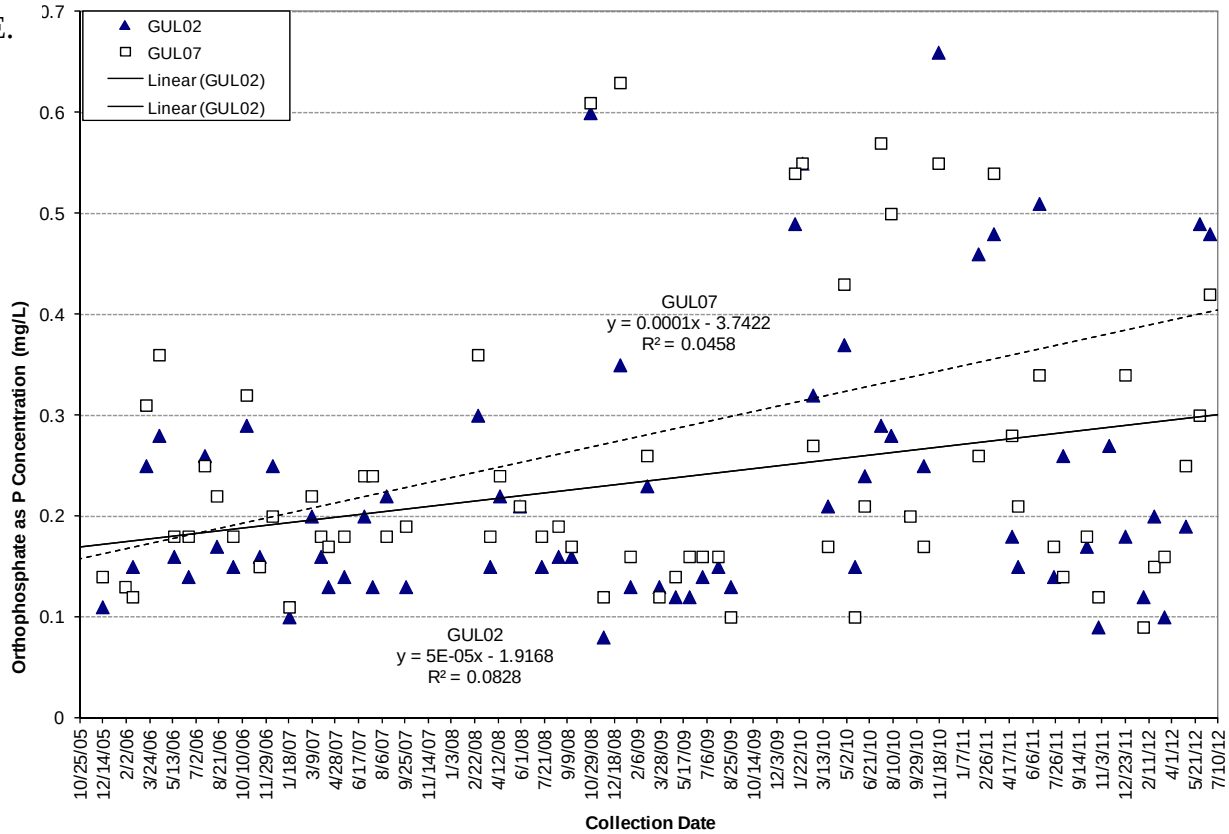
GUL02
GUL07
Linear (GUL02)
Linear (GUL02)
GUL07
y = 0.0001x - 3.7422
R² = 0.0458
GUL02
y = 5E-05x - 1.9168
R² = 0.0828
Orthophosphate as P Concentration (mg/L)
Collection Date

F.

F.

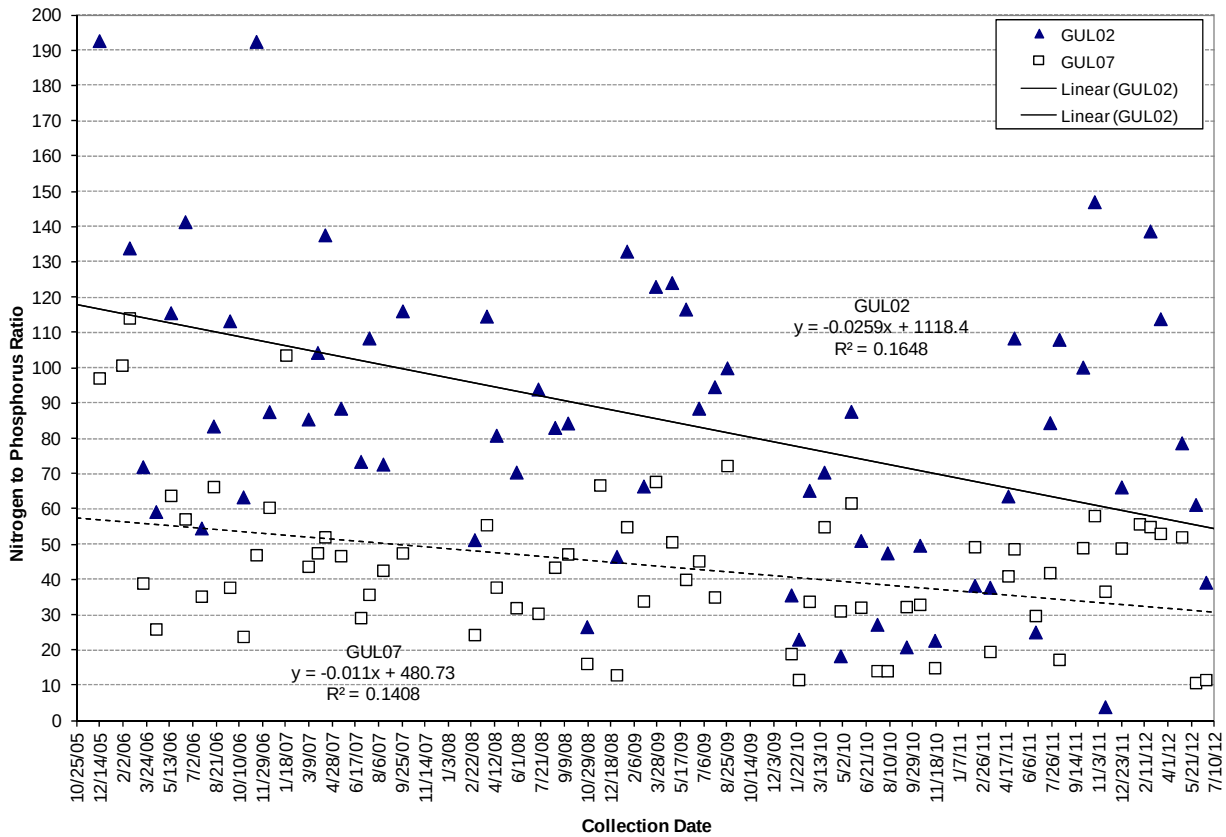

Figure 8: Scatter plots, and regression lines and equations with r^2 values for Flow (A), Nitrate-N (B), Total Nitrogen (C), Orthophosphate-P (D), Total Phosphorus (E), and Nitrogen/ Phosphorus ratio (F) for GUL02 and GUL07 sampling locations.

References

California Regional Water Quality Control Board, San Diego Region. *Water Quality Control Plan for the San Diego Basin (9).* September 8, 1994).

Ogden Environmental and Energy Services, *Guajome Lake Water Pollution Control and Management Plan, Final Report.* Prepared for the County of San Diego Department of Parks and Recreation. January 1994.

Woodward-Clyde Consultants. *Hydrology Assessment of Guajome Marsh*, Prepared for the County of San Diego Department of Parks and Recreation. January 1992.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Nutrient Source Identification and Abatement: Guajome Lake**
ID #: **SLR-009**

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels entering Guajome Lake. Nitrate concentrations have been observed to exceed dry weather action levels at the County's SLR 04 dry weather monitoring station (Hutchison Street at Hidden Lake Lane) since 2002. This station is upstream of Guajome Lake. Guajome Lake is listed as impaired for eutrophication on the 2008 Clean Water Act 303(d) List of Water Quality Limited Segments. Phosphorous is another nutrient potentially contributing to the eutrophication problem.

FY 2007-08 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2007-08:

- Performed frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at field site SLR 04.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Compiled an inventory and map of potential nitrate sources in the SLR 04 drainage area. It was determined that there are eight nurseries within the unincorporated area tributary to the SLR 04 monitoring station.
- Compiled baseline information on BMP implementation and compliance history for nurseries within the SLR 04 drainage area. Of the eight nurseries in this drainage area, three have been inspected by the County AWM Department. Two of the three inspected nurseries had one or more violations. Most violations were related to a failure to maintain adequate training records.

FY 2008-09 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2008-09:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Six nurseries in the SLR 04 drainage area were inspected during FY 2008-09. One cactus/succulent nursery was inspected in late FY 2007-08, but was not inspected in FY 2008-09 because of good compliance history and low threat classification. One nursery went out of business. One additional nursery was identified and inspected in September 2009.
- Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries, the

operators were supplied with information and tools to assess and manage fertilizer use at their site. The UC Cooperative Extension Service document Runoff & Nonpoint Source Pollution Self-Assessment was provided to the nurseries. The Rainbow Creek Nutrient Reduction Management Plan is another source of valuable information for nitrate pollution prevention that will be referenced as a tool for the operators.

- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2008-09, excluding paperwork violations, only one nursery had best management practice non-compliance; see Table 3. No direct sources of nitrates from the nurseries were identified.

FY 2009-10 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2009-10:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on three dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. The contributing area was expanded to include additional upstream sources and 25 nurseries in the expanded SLR 04 drainage area were inspected during FY 2009-10.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2009-10, excluding paperwork violations, four nurseries had best management practice non-compliances (See Table 3). No direct sources of nitrates from the nurseries were identified.

FY 2010-11 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2010-11:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on three dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Twelve nurseries in the SLR 04 area were inspected during FY 2010-11. During FY 2009-10, the project area was expanded to include adjacent nurseries. These properties were not included in the FY 2010-11 program as it was determined that inspection results could not be coordinated with monitoring due to distance from the sampling locations. Three nurseries in the area went out of business.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.

- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2010-11, excluding paperwork violations, none of the nurseries had best management practice non-compliances (See Table 3). No direct sources of nitrates from the nurseries were identified.

FY 2011-12 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2011-12:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Ten nurseries in the SLR 04 area were inspected during FY 2011-12. Two nurseries in the area went out of business.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2011-12, excluding paperwork violations, none of the nurseries had best management practice non-compliances (See Table 3). No direct sources of nitrates from the nurseries were identified.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	Status
Compile (update) an inventory and map of potential nutrient sources in the SLR 04 drainage area.	X	X	X	X	X	X	Complete
Compile (update) baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	X	X	X	X	X	X	Complete
Perform water quality screenings for nutrients and other parameters at SLR 04	X	X	X	X	X	X	Ongoing
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	X	X	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	X	Ongoing
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	X	Ongoing
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	X	Ongoing
Identify field grown agricultural businesses in drainage area							TBD

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Mission HSA (HSA 903.11) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS ASSESSMENT

Table 2. Effectiveness Assessment

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile (update) an inventory and map of potential nutrient sources in the SLR 04 drainage area.	1	Completion	Yes
Compile (update) baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at SLR 04	1	4 field screenings / yr at SLR 04	100% complete, 4 screenings complete
	6	Reduction in exceedances of dry weather action level for nitrates measured at SLR 04 by 2014	To be determined
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the SLR 04 drainage area by June 2009	Yes
	3	Reduction in nursery BMP violations observed during nursery inspections in the SLR 04 drainage area by 2010	100% complete. Of those nurseries with multiple scores, BMP compliance improved or stayed the same at all nurseries in FY 2011-12.
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in Stormwater Knowledge Assessments (SKA) scores administered to nursery staff in the SLR 04 drainage area by 2012	80% complete. Of those nurseries with multiple scores, two decreased in SKA score. All other nurseries have either improved or remained the same.

Table 3. Updated Inventory

Facility Name	Inspection Date	# of BMP Violations[1]	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA Score Over Time[2]	TTWQ
Aloha Tropicals	3/13/2012	0	8	None	Yes	Medium
	4/6/2011	0	8			
	9/22/2009	0	6			
Booman Floral #2	2/6/2012	0	8	Yes	No	Medium
	4/4/2011	0	9			
	7/6/2009	0	9			
	1/8/2007	0	N/A			
	10/6/2004	0	N/A			
	4/8/2004	1	N/A			
Booman Floral #3	2/6/2012	0	8	None	Same	Medium
	4/4/2011	0	9			
	7/6/2009	0	9			
	1/8/2007	0	N/A			
C & J Cactus Nursery #1	1/6/2012	0	8	Yes	No	Medium
	8/20/2010	0	8			
	4/18/2008	0	10			
	9/5/2006	1	N/A			
Exotica Rare Fruit	1/27/2012	0	7	None	Same	Medium
	3/22/2011	0	7			
	6/10/2010	0	7			
	4/23/2007	0	N/A			
	1/6/2006	0	N/A			
Joanie's Greenhouse	2/2/2012	0	8	Yes	Yes	Low
	3/29/2011	0	8			
	9/11/2009	0	6			
	9/3/2008	0	8			
	6/12/2008	1	7			
	10/14/2009	0	8			
Pacific Verde Nursery Inc	4/23/2012	0	7	Yes	Yes	Low

Facility Name	Inspection Date	# of BMP Violations[1]	SKA Score		Reduced # of BMP Violations Over Time	Improved SKA Score Over Time[2]	TTWQ
	3/22/2011	0	6				
	7/13/2009	0	5				
	5/27/2009	1	5				
	1/15/2008	1	N/A				
Plants For Less (Ana E. Ruiz Perez)	3/13/2012	0	6		Yes	Yes	Medium
	3/28/2011	0	6				
	6/1/2010	0	5				
	2/23/2009	2	2				
Sphaeroid Institute	2/3/2012	0	9		None	Yes	Medium
	3/29/2011	0	8				
	6/4/2010	0	10				
	8/13/2008	0	7				
Weeks Xeric Succulent Gardens	2/6/2012	0	9		None	Yes	Medium
	3/30/2011	0	9				
	9/25/2009	0	5				

1. Does not include paperwork violations.
2. When three or more SKA scores are available, last SKA score is compared to average of three previous scores

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality/Monitoring Activity

TITLE: **Lower San Luis Rey Source Identification Project**
ID NUMBER: **SLR-010**

ACTIVITY IMPLEMENTATION

The Lower San Luis Rey River Bacterial Source Identification Project (Project) was designed to attain the following goals:

- Assess what sources and activities have contributed most to the bacterial impairment of the SLR River mouth and from where those sources and activities may have originated.
- Analyze potential bacteria source elimination or reduction practices targeted at the identified source and activities.
- Contribute to future achievement of the Bacteria Total Maximum Daily Load (TMDL) objectives by identifying potential management measures (MMs) and follow-up studies to target sources and activities more effectively.

ACTIVITY IMPLEMENTATION FY 2007-08

Implementation of this project began in FY 2007-08 with the City being awarded a Proposition 50 Clean Beaches Initiative Grant from the State Water Resources Control Board (SWRCB) to identify the potential sources of bacteria in the Lower San Luis Rey River. The City then sought out a diverse group of experts in bacteria source tracking, Copermittees, and non-profit groups to create a Technical Advisory Committee (TAC) to guide the project. The first TAC meeting was held on November 1, 2007 and included representatives from the Cities of Oceanside and Vista, the County's Department of Environmental Health and Watershed Protection Program, the Regional Water Quality Control Board (RWQCB), and CoastKeeper.

A Request for Proposals (RFP) was sent out on November 8, 2007 to solicit proposals from interested and experienced consultants. Proposals were due to the City by December 4th and a subcommittee of the TAC reviewed the proposals on December 7, 2007. MACTEC Engineering and Consulting, Inc. (MACTEC) was awarded the contract. Oceanside City Council approved the contract with MACTEC on February 20, 2008.

A TAC meeting was held on February 4, 2008 where the MACTEC project team presented the proposed project approach. The approach was discussed and the TAC made recommendations to be included in the Monitoring Plan and QAPP. The Monitoring Plan and QAPP were submitted to the SWRCB for approval on April 28, 2008. The SWRCB and the Moss Landing QA Research Group reviewed the Monitoring Plan and QAPP and the final version of the documents were approved by the SWRCB on June 19, 2008.

The first dry season monitoring event took place on June 18 and 19, 2008. Dr. Rachel Noble traveled to San Diego to prepare for the first event with the project team and participate in both days of monitoring. The project team collected bacteria samples and flow measurements at six monitoring locations in the Lower San Luis Rey River. The bacteria samples were analyzed for fecal indicator bacteria and the remaining sample volume was filtered and frozen for molecular

analysis. The river mouth was not sampled, as planned, due to construction of the Pacific Street Bridge.

ACTIVITY IMPLEMENTATION FY 2008-09

The second dry season event took place in FY 2008-09 on July 23 and 24, 2008. The project team collected bacteria samples and flow measurements at five of six monitoring locations in the Lower San Luis Rey River. As part of the Visual Observation Program, observations were conducted July 23 and 24, 2008 within the Lower San Luis Rey River and upstream in the drainage basin to identify possible sources of bacteria. The river mouth was again not sampled, due to construction of the Pacific Street Bridge.

Based on the fecal indicator bacteria (FIB) results of the first two dry weather monitoring events, four of six project sampling sites were selected for additional genetic molecular analysis. Two were river sites and two were tributaries. There were no FIB exceedances of standards during the July 2008 event and, therefore, none of those sites were chosen for additional analysis per the QAPP and Monitoring Plan.

On December 19, 2008, the SWRCB issued a Budget Letter that suspended all projects including the Lower San Luis Rey Source Identification Project. The work completed after this notice was primarily to assess the status of various elements of the project, including laboratory work and the effect of the stop work notice on genetic analysis. The City of Oceanside requested an assessment from MACTEC of the molecular sample holding times for samples not yet analyzed and a summary from our contractors of what and where data that had been analyzed is located. Unfortunately, samples for two of the three types of genetic analyses had expired and were therefore no longer available for use to the program. Samples were analyzed for *Enterovirus A* by Dr. Jed Furman's laboratory at the University of Southern California. *Enterovirus A* was not detected in any of the samples.

The monthly joint monitoring program conducted by the City of Oceanside and the County of San Diego continued as modified for the Grant project until June of 2009.

ACTIVITY IMPLEMENTATION FY 2009-10

Beginning in July 2009, the City brought the laboratory analysis in-house to the San Luis Rey Wastewater Treatment Plan Laboratory. The same field procedures were followed, but the reporting limits changed to above SWAMP recommendations. This change is not expected to effect results, as bacteria levels are usually at or above these reporting limits.

On December 17, 2009, the State Water Resources Control Board gave the City of Oceanside notice that the Lower San Luis Rey Source Identification Project grant had been selected to restart. With an original grant end date of March 31, 2010, the City of Oceanside, on January 4, 2010, submitted a Request for Time Extension in order to complete the remaining two-thirds of the field and laboratory work required.

While the project team was awaiting the Grant Amendment, the Technical Advisory Committee (TAC) met to reassess the status of the project resources and decide on amendments to the project schedule and methods. The TAC agreed that to make the most of the remaining

resources, the Project should focus on identifying the presence or absence of human sources where human health risks were highest, at the river mouth. Therefore, river mouth specific sampling was prioritized, although additional sampling in the main stem and tributaries was continued. In addition, a weight of evidence approach to determining the presence of human bacteria sources was used at all sites, in addition to a gull marker utilized at the river mouth.

On April 14, 2010, the City of Oceanside received the executed amendment to the Grant Agreement and work began immediately to restart the project.

The third dry season monitoring event in the Lower San Luis Rey River/River Mouth was implemented on May 18, 19, and 20, 2010. On May 18, 2010, The City of Oceanside and the County of San Diego conducted the joint monitoring at 17 locations in Lower San Luis Rey River and the grant project team collected composite water samples and sediment samples at five locations in the River Mouth. In addition, the City of Oceanside collected additional samples at each Watershed monitoring location for potential further genetic analysis on upstream sites within the City boundary. On May 19 and 20, 2010, the grant project team collected composite water samples and sediment samples at five locations in the River Mouth and composite water samples at two river locations.

Although the FIB results for the river mouth samples were all below AB411 standards a total of eleven water samples, ten river samples and one river mouth sample, were selected for genetic testing including Bacteriodes and Human Enteroviruses based on steady state standards. In addition, ten paired water and sediment samples from four sites were selected for bacterial community fingerprinting which will compare the bacteria community of the water samples to the bacterial community of the sediment samples.

The Visual Observations Program was implemented on the first day of sampling, May 18, 2010. Two teams of two people, walked a total of four locations adjacent to the river mouth. Teams were looking for urban runoff and wildlife that could be affecting the river mouth. Observations that were recorded included human behavior, maintenance procedures, and wildlife distribution.

ACTIVITY IMPLEMENTATION FY 2010-11

The fourth and final dry season monitoring event was implemented on August 3 and 4, 2010. The grant project team collected composite water samples and paired sediment samples at four locations in the river mouth (eight water and eight sediment samples total). Four of eight of the water samples were selected for additional genetic testing based on the second tier selection criteria. The paired water and sediment samples were selected for bacterial community fingerprinting to compare the two matrices. The Visual Observations Program was implemented on both days by two teams of two in a total of four locations adjacent to the river mouth.

Table 1 provides a summary of the wet season monitoring including base line, storm, and base flow events.

Table 1. Summary of Wet Season Monitoring in FY 2010-11.

Event	Date(s)	Total Rainfall	No. of Sites Exceeding A Minimum of One Single-Sample AB411 Criteria	Visual Observation Date
Baseline Event	12/9/11, 12/15/11	(Cumulative rainfall since 10/1/2010 of 5.04 inches)	4 of 8	12/9/11
Storm Event 1	1/3/11, 1/4/11	1.11 inches	18 of 18	-
Base Flow Event 1	1/20/11	N/A	7 of 9	-
Storm Event 2	2/17/11, 2/18/11	0.35 inches	14 of 18	2/14/11
Base Flow Event 2	2/24/11	N/A	9 of 9	2/24/11

After monitoring was completed, the team continued to compile FIB results, flow data, and visual observation data and began data assessment and analysis for the Project Report during the remaining portion of the fiscal year. With TAC review and comments, the Draft Project Report was submitted to the State Water Board on July 29, 2011 and the Final Project Report submitted on September 1, 2011. In response to additional State Board comments, an Addendum to the Final Report was submitted on September 12, 2011.

ACTIVITY IMPLEMENTATION FY 2011-12

Project Report

The Draft Final Report was submitted to the SWRCB on August 1, 2011. The City received comments from the SWRCB on August 18, 2011. The Final Report with changes was submitted on September 1, 2011. The Grant Manager had additional questions, which were addressed by an Addendum submitted to the SWRCB by the City on September 12, 2011.

Summary of Results and Conclusions

The Prop 50 Grant Project was effective in characterizing bacterial concentrations throughout the Lower SLR River and river mouth during wet and dry seasons. A summary of conclusions is provided below.

<u>River Mouth:</u>

- FIB concentrations were generally below WQOs in the river mouth during the summer months when human exposure and health risks are highest at the Pacific Ocean.
- Although FIB concentrations were below WQOs, multiple MST molecular markers for human-related bacterial sources were present in August when the river mouth was closed to ocean inputs and SLR River flow was significantly reduced. Human sources of contamination have been identified subsequently in this area, including an active sewer pipe. Other factors could be important to the retention of fecal contamination in this area, including low residence time and hydrologic conditions in the river mouth during low flow.

- The bacterial community analysis showed a lack of relationship between the sediment and water samples in May when the river mouth is open to tidal exchange. Conversely, there was a strong relationship between the sediment and water samples in August when the river mouth is closed. The sediment bacterial community is stable during the dry season and was not analyzed during the wet season. It should be noted that the bacterial community analysis was only conducted on river mouth samples and no analysis was conducted to evaluate the relationship between the SLR River's main stem and tributaries and the river mouth monitoring locations.
- No enteroviruses were recorded during the dry season.
- A strong signal of gull feces was found in the river mouth during the wet and dry seasons.
- FIB concentrations significantly increased in the wet season resulting in a higher frequency of WQO exceedances.
- There was evidence of potential human-related bacterial sources (a minimum of two out of three markers) at River Mouth 1 and River Mouth 3 throughout the wet season, while at Point Zero there was evidence of potential human-related bacterial sources (a minimum of two out of three markers) at a lower frequency.
- One sample collected at River Mouth 1 during Wet Event 1 was positive for enteroviruses.
- Of the 74 samples from the DEH AB411 program, 12 results for *Enterococcus* sp, and 4 results for fecal coliform were above the respective WQOs, whereas no total coliform results exceeded the WQO.

SLR River Main Stem:

- The MST Program study data at the SLR main stem reinforced trends in elevated FIB concentrations seen in the data collected by the Joint Monitoring Program.
- In May of 2010, there were potential (two of three markers) human-related bacterial sources present at Bonsall Bridge, Douglas Bridge, and the Critical Point.
- No enteroviruses were detected in samples at the main stem monitoring locations during dry or wet seasons.
- During the wet season, the Douglas Bridge and Critical Point locations exhibited strong positive signals for all three MST molecular markers of human fecal *Bacteroides* spp.
- FIB concentrations and loadings did not change significantly in the river during base flow conditions.
- A trend toward delivery of bacterial loadings in the first half of the storm event was demonstrated by a simple first flush analysis. This indicates a possible first flush effect and may aid in the future selection and design of appropriate BMPs.

Tributaries:

- The MST Program study data at the SLR tributaries reinforced trends in elevated FIB concentrations seen in the data collected by the Joint Monitoring Program.
- In May of 2010, there were potential human-related bacterial sources present at Sleeping Indian and Pilgrim Creek.
- No enteroviruses were detected in samples at the tributaries during dry or wet seasons.
- During the wet season, Sleeping Indian and Pilgrim Creek exhibited strong positive signals for all three MST molecular markers of human fecal *Bacteroides* spp.

- FIB concentrations and loadings did not change significantly in the tributaries after storms passed during base flow conditions.
- The assessment of flow relative to concentrations of FIB and human-specific markers indicates the importance of bacterial sources stemming from low flow areas or low dilution (i.e., tributaries).
- A trend toward delivery of bacterial loadings in the first half of the storm event was demonstrated by a simple first flush analysis. This indicates a possible first flush effect and may aid in the future selection and design of appropriate BMPs.

Recommendations

The Project was designed as the first phase in source identification to assess the magnitude and extent of elevated FIB and to characterize sources on a broad scale. Based on results from this study, recommendations were developed to provide further information to help select the most feasible and effective management strategies necessary to reduce bacterial concentrations. Recommendations included follow-up source investigations, an assessment of the relationship between the river mouth and ocean, and focused management measures including source controls, decentralized treatment controls and centralized treatment controls. Some general recommendations include:

- To identify possible sources of overflow or leaks along the main stem river and tributaries, a desktop GIS analysis of the City's sewer infrastructure and septic systems may be conducted. Field surveys, such as dye testing or the use of closed circuit television (CCTV), may be considered to identify leaks or illicit connections.
- Focus education and outreach based on activities documented in visual surveys and known land use types.
- Higher resolution data is required for an evaluation of loading and possible implementation of structural treatment control BMPs. This may be accomplished through continuous flow and higher resolution FIB sampling at the outlets during the wet season to characterize conditions over the course of the hydrograph and continuous flow and higher resolution FIB sampling at the outlet over a 24 hour period during dry weather (including base flow conditions and dry season, when flow is present).
- Characterize the flow patterns within the river mouth system to understand the general transport of fecal bacteria sources and their ultimate fate.
- Design a groundwater study to gain a better understanding of groundwater dynamics and their relationship to surface water in the SLR River and river mouth during base flow conditions.
- To contribute to future achievement of the Bacteria TMDL, it will be important to assess the interaction between the river mouth and the Pacific Ocean. To characterize the dispersal of the bacterial and viral material from the SLR River outlet along the shoreline, multiple sampling locations between the river mouth and the AB411 monitoring location may be monitored.
- To allow for accurate loading calculations and an assessment of bacterial loads and flux over the course of the monitoring period at the river mouth, pollutograph monitoring may be employed at a river mouth location to characterize bacteria on a higher resolution time frame. Acoustic Doppler current profilers (ADCPs) may be utilized to collect continuous flow measurements during sampling events.

- To identify potentially failing septic (onsite) wastewater systems viral tracking, dye testing, inspections and/or other methods may be utilized. Once identified, an inspection and maintenance schedule may be developed and revised to prioritize the septic systems in the SLR watershed, based on threats to groundwater and receiving water quality. Based on available resources and feasibility, a capital improvement plan for conversion of septic systems to sanitary sewers may be developed in appropriate areas.
- To address the human-related bacterial sources present in the river mouth during the dry season, when the river mouth is closed to ocean inputs and the SLR River flow is significantly reduced, the feasibility of hydraulic modifications to the river mouth and/or the SLR River outlet may be evaluated to reduce residence time and increase flushing during the dry season. A feasibility study may be implemented after additional monitoring has been conducted to better understand the hydrology of the river mouth and retention of FIB in the river mouth. Based on available resources, the feasibility study could identify benefits and constraints for current and alternative hydraulic configurations of the river mouth.

Future Actions

The SLR Watershed TMDL Responsible Parties have developed and are finalizing a Comprehensive Load Reduction Plan (CLRP) for the SLR Watershed to address the Bacteria I TMDL. The CLRP will provide a watershed-based approach to assess impairments and sources and implement a phased approach to pollutant reduction strategies. The results of this project will be used immediately by the SLR TMDL Responsible Parties in the development of the CLRP addressing bacteria. Project data will be used to focus the initial phase of CLRP implementation by assisting in the prioritization of source and sub-watershed activities.

With preliminary results indicating human sources of bacteria, the City of Oceanside has taken a proactive approach and already has begun to implement a key recommendation from this project, initiating the desktop GIS analysis of the City's sewage infrastructure. The City's Clean Water Program is working closely with the City's Sewer Division to develop an action plan to investigate the City's sewage infrastructure.

Project Closure

The City submitted the final quarterly report and invoice on October 7, 2011. The SWRCB closed the project on October 25, 2011.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Due to the stop work notice issued in December of 2008, the schedule for implementation/completion was amended. In addition, an additional extension was requested and granted in February 2011 due to dry conditions within the main stem and tributaries. The Final Project Report is due to the SWRCB on September 1, 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- MACTEC Engineering and Consulting, Inc.
- Technical Advisory Committee includes representatives from:
  - RWQCB
  - CoastKeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Because the sources of bacterial contamination in the Lower San Luis Rey River are not adequately characterized, characterization in the form of a source identification study is consistence with the collective watershed strategy. Once the sources have been better characterized, the City will move forward with developing and implementing BMPs to reduce and eliminate the bacterial source to the maximum extent practicable.

EFFECTIVENESS ASSESSMENT

The original goal of this project was the identification of bacterial sources and activities contributing to water quality impairments in addition to the development of a list of potential management measures and future studies for these sources.

The Stop Work Notice had two effects on this Project and the original goals and outcomes. The first is that the samples from the first and second dry weather events that were frozen and awaiting further genetic analysis exceeded holding times and were no longer viable for processing. Therefore, resources needed to be adjusted to make up for the lost samples. Second, a year had passed and in that time new genetic methods were available for use; specifically human source markers. This created an opportunity and need to adjust the projected outcome. The TAC agreed that to make the most of the remaining resources, the Project should focus on identifying the presence or absence of human sources where human health risks were highest, at the river mouth. Therefore, river mouth specific sampling was prioritized, although additional sampling in the main stem and tributaries was continued. In addition, a weight of evidence approach to determining the presence of human bacteria sources was used at all sites, in addition to a gull marker utilized at the river mouth.

The results of the Project did point to both human and avian sources present during wet and dry weather at the river mouth and human sources (avian sources were not tested) in main stem and tributary locations of the Lower San Luis Rey River. Other sources are likely, but the quantification or division of percentage of these sources is not available from the Project. However, the results indicate and steer recommendations for the City and other Watershed stakeholders to prioritize future management action and studies on activities that may result in

human bacteria, such as sewer infrastructure, on-site wastewater systems, and homeless encampments.

It is anticipated that the implementation of BMPs, which will be separate, future activities, will lead to Level 4, 5, and 6 effectiveness assessment outcomes.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Land Acquisitions**
ID NUMBER: **SLR-012**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plans have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego purchased 142.9 acres of property located in the San Luis Rey River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period the County of San Diego purchased 77.73 acres of property located in the San Luis Rey River Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting period the County of San Diego purchased 167.1 acres of property located in the San Luis Rey River Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

During the FY 2010-11 reporting period the County of San Diego purchased 33.85 acres of property located in the San Luis Rey River Watershed.

FY 2011-12 ACTIVITY IMPLEMENTATION

During the FY 2011-12 reporting period the County of San Diego purchased 86.43 acres of property located in the San Luis Rey River Watershed. This year's acquisitions are shown in the Table 1 below.

Table 1. SLR Lands Acquired

Property	Acres	Date	Watershed ID	APN(s)
Mt. Olympus Oswald	86.43	1/2012	903.21	109-411-2400
TOTAL	**86.43**			

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollution loads in need of reduction.

EFFECTIVENESS ASSESSMENT

During the FY 2011-12 reporting period the County of San Diego acquired 86.43 acres in the San Luis Rey River watershed (Level 1 Outcome). Over the past five fiscal periods the County has acquired a total of 508.04 acres in the San Luis Rey River watershed (Level 1 Outcome). These land acquisitions will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural perviousness.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality Activity

TITLE: **Harbor Boat Wash Coin Operated Water Dispenser**
ID NUMBER: **SLR-014**

ACTIVITY DESCRIPTION

Oceanside Harbor offers the use of a boat launch ramp free of charge, as well as free use of a boat wash area and a recreation vehicle (RV) sewage dump station. Runoff from the boat wash area drains through the storm drain system and flows to the harbor a short distance away. This storm drain has had historical bacterial exceedances possibly due to improper use of the dump station and/or regrowth in the storm drain itself. Several bacteria reduction pilot projects have been implemented in the past four years to reduce not only bacteria, but also oil and grease and sediment from flowing to the harbor. In 2008 a modular wetland was installed to treat the flow from the boat wash area. (See Activity SLR-003). It was observed that excessive use of the free water provided at the boat wash was greater than what the installed BMP can handle to effectively treat the runoff.

To address water quality and water conservation needs, the City of Oceanside's Department of Harbor and Beaches installed coin-operated machines that dispense water for use at the wash area. Because users now need to insert money to dispense water it was anticipated that this would encourage users to use the water more wisely thereby reducing the amount of water wasted. This would, in turn, reduce the amount of water flowing into the harbor which was expected to reduce the bacterial loading at this site.

ACTIVITY PLANNING FY 2009-10

During the 2009-10 fiscal year, the Clean Water Program and Harbor Administration staff researched vendor alternatives for coin-operated water dispensers. A vendor with previous work in California state parks was identified. The switch from free water to a pay-per use system must be approved by the Harbor and Beaches Advisory Committee and the City Council. The plan to install coin-operated water dispensers was presented to the Oceanside Harbor and Beaches Advisory Committee in May 2010. The decision was postponed.

ACTIVITY PLANNING FY 2010-11

In July and August of 2010, the infrastructure for the coin-operated system was installed with the exception of the coin boxes. The decision to approve the increased fees, including the pay-per-

use boat wash water, was approved by the Harbor and Beaches Advisory Committee in January 2011 and later approved by City Council. The coin boxes were installed, but not operational.

ACTIVITY IMPLEMENTATION FY 2011-12

The coin-operated water dispensing system began operation in January of 2012. The cost for water use is $0.25 for five minutes.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

Operation of the system began in January 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS MEASUREMENTS

It is anticipated that the installation of coin-operated water dispensers at the Harbor boat wash will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted, resulting in a Level 3 Effectiveness Assessment outcome, behavioral changes. This will, in turn, reduce the amount of water flowing into the Harbor which is expected to reduce the bacterial loading at this site, resulting in a Level 4 Effectiveness Assessment outcome, load reductions.

To track the amount of water being used at the Harbor boat wash area, the water meter for the spigots has been isolated. This will allow a comparison for water use before and after installation. Table 1 provides historical water use for this meter (#68857273), in addition to the results from the first six months of operation.

Initial results are inconclusive as there is a mixed response to the implementation of a pay-per-use system. In February, March, and April, water use decreased. In January, May, and June it increased. In the initial six months, there was an overall increase in water use compared to the same months the previous year. However, the total fiscal year water use was lower in FY 2011-12 than in FY 2010-11. Additional analysis is needed as implementation continues.

Table 1. FY 2011-12 Monthly Water Consumption for Harbor Boat Wash.

Month	Monthly Water Consumption FY 10/11 (hcf)	Monthly Water Consumption FY 11/12 (hcf)	Percent Change
July	82	97	
August	103	85	
September	96	50	
October	91	65	
November	61	43	
December	62	40	
January	43	54	↑ 26%
February	64	44	↓ 31%
March	45	41	↓ 9%
April	49	48	↓ 2%
May	65	73	↑ 12%
June	73	90	↑ 23%
FY Total	**834**	**730**	

= The activity was implemented at the beginning of January 2012.
One hundred cubic feet (hcf) is equal to approximately 748 gallons.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Horse Property Outreach in the San Luis Rey River Watershed**[1]

ID NUMBER: **SLR-015**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many properties with commercial or residential horse operations. Horse operations are a potential source of nutrients, bacteria, and sediment. To reduce the likelihood of impacts on beneficial uses in the San Luis Rey Watershed, the County of San Diego and the City of Oceanside will implement a program to educate horse owners and ranch operators regarding proper manure and corral management through focused outreach and implementation of best management practices (BMPs). The program will consist of a variety of activities, including staffing booths at public outreach events, conducting workshops targeting horse owners, and establishing a pilot program that encourages and facilitates BMP implementation on horse properties through BMP demonstrations and peer mentoring.

Workshops will focus on various topics of relevance to owners and operators of horse facilities, including manure composting and management, and property and corral management. Educational materials, including "how-to" information, instructions on the construction of manure composting bins, and facility checklists to assess current practices will be developed and distributed at the workshops. Workshops may also include demonstration sites, where attendees can observe BMPs in action.

The County of San Diego and City of Oceanside will also conduct a pilot program that seeks to convene a group of peer mentors committed to improving horse property management through the implementation of BMPs and horse owner outreach. If this program is successful, it may be expanded to other communities in the region that have significant horse populations.

ACTIVITY IMPLEMENTATION FY 2008-09

- County staff initiated creation of a booth display to share information about proper manure management practices and photographic examples of successful implementation of BMPs. This display will accompany staff at outreach events and presentations.
- County staff initiated creation of a binder of information and resources pertaining to effective manure management practices and photographic examples of BMPs. This folder is displayed at events and outreach presentations.
- County and Oceanside staff initiated contact with interested parties to inquire about participation in the peer mentoring component of this activity and to arrange a coordination meeting.
- County and Oceanside staff developed a timeline and activities for implementation during FY 2009-10.

[1] Activity was previously named *SLR-015: Community-based Social Marketing Residential Horse Property Pilot Project*

ACTIVITY IMPLEMENTATION FY 2009-10

During FY 2009-10, The County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians throughout the County unincorporated areas. Training provided in these workshops covered a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources

A workshop was conducted in the Fallbrook area on February 3, 2010. Twenty-two participants attended the workshop, which included presentation of BMPs, a manure composting demonstration, and corral management practices. Assessment was conducted in the form of pre- and post-workshop surveys.

County staff also hosted equestrian themed public outreach and education booths at the following events:

1. Bonsall County Festival (10/10/2009)
2. Valley Center Rodeo Days (5/28/2010-5/29/2010)

Staff developed educational materials and outreach tools for use at equestrian event presentations and booth displays. These included:

1. Two “life-size” horse cut outs
2. Development of an Equestrian Resource Sheet
3. Manure composting information materials
4. Coloring sheet
5. Additional materials focused on BMPs for manure management

In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted Action Research, Inc. to conduct community based social marketing (CBSM) research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (Attachment A).

ACTIVITY IMPLEMENTATION FY 2010-11

During FY 2010-11, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District

(MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

County staff also hosted equestrian themed public outreach and education booths at the following equestrian related events during FY 2010-11:

1. Horse Heritage Festival (10/10/2010)
2. San Diego County Equestrian Foundation (8/2/2010)
3. Vaquero Days (10/16/2010)

ACTIVITY IMPLEMENTATION FY 2011-12

During FY 2011-12, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Workshops during FY 2011-12 were held in Bonsall and Rainbow; dates and the number of attendees are listed in Table 1.

Table 1. Equestrian Workshops in the San Luis Rey Watershed Area

Location	Presentation Date	No. of Attendees	Primary Watershed Addressed
Fallbrook	5/26/12	62	Santa Margarita, San Luis Rey
Bonsall	6/2/12	15	Santa Margarita, San Luis Rey
TOTAL		**77**	

During FY 2011-12, County staff also hosted equestrian themed public outreach and education booths during the Ramona Rodeo (5/18/2012 – 5/20/2012).

In addition, the County of San Diego, in coordination with the Mission Resource Conservation District (MRCD) and UC Cooperative Extension Farm and Home Advisor's office (UCCE), developed the Equestrian Property Best Management Practice Checklist during the current reporting year. The checklist is self-assessment tool that can be used by equestrian property owners to identify where BMPs are already in place and those areas where BMPs could be

installed or implemented to help prevent nutrients, sediments, pesticides and pathogenic organisms on the property from entering local waterways. Please see attached document for additional information.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Additional equestrian workshops are planned in during FY 2012-13. In addition, the County is pursuing partnerships with equestrian organizations to disseminate information about manure management and other BMPs to the equestrian community. The County and Oceanside are pursuing the potential creation of a pilot peer mentoring program. Development of such a program in the future is contingent upon identifying a reliable source of funding such as grants. County staff will continue to provide outreach at equestrian related events during FY 2012-13.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District (MRCD)
- UC Cooperative Extension Farm and Home Advisor's office (UCCE)
- San Diego County Equestrian Foundation (SDCEF)
- Action Research, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Animal facilities have been identified as potential sources of bacteria and nutrients. Since this activity addresses two priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This program seeks to reduce the impacts of nutrients, bacteria, and sediment by practices related to manure management, composting, and other horse-related BMPs. Additionally, the program anticipates formation of a community of knowledgeable horse enthusiasts that will share what they learn with neighbors and friends in the horse community and beyond. The pilot component of this program could be expanded to other communities in the region that have significant horse or animal populations.

EFFECTIVENESS MEASUREMENTS

During the FY 2011-12 reporting period, the following events were assessed using Level 1 Outcomes (Table 2).

Table 2: Effectiveness Measures

Planned Tasks	Assessment	Outcome
Staff Booths at Education and Outreach Events	1 event (3 days)	Level 1
Completion of Equestrian Property Best Management Practice Checklist	Complete	Level 1
Conduct Equestrian BMP/Composting Workshops	2 events, (77 participants)	Level 1
Completion of Pre and Post Workshop Survey Questionnaire	Complete, 76 participants.	Level 1

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, in the Rainbow manure management workshop pre- and post-workshop surveys were administered. Survey results indicate a positive change in awareness such as: knowing they live in a watershed, knowing water in the storm drain is not treated, and consideration of how horses and livestock manure can contribute to water pollution.

Results of the pre surveys administered by MRCD found the following results:

- 58% responded that they did not know they lived in a watershed
- 80% responded that water in the storm drain system is not treated
- 46% responded that they believe livestock and horses contribute “some” to water pollution

Post survey results found:

- 98% responded correctly that they now know they live in a watershed
- 98% responded that water in the storm drain system is not treated
- 85% responded that they believe livestock and horses contribute “some” to water pollution

Following the workshops, all attendees responded that the information gained during the presentation would change future behaviors (Outcome Level 3).

Pre- and post-workshop surveys were also administered to the participants of the San Luis Rey Equestrian BMP Workshop. Results indicate a positive increase in knowledge among participants able to correctly identify appropriate equestrian-related BMPs.

BMPs pre-survey results found:

- 64% responded correctly that they live in a watershed.
- 91% believe horse manure contributes “some” to water pollution.
- 45% responded correctly by identifying erosion control BMPs.
- 36% correctly identified drainage control BMPs.
- 67% correctly identified manure management BMPs.

Post survey results showed:

- 100% knew they live in a watershed.

- 91% believe horse manure contributes “some” to “a great deal” to water pollution.
- 82% responded correctly by identifying erosion control BMPs.
- 91% could correctly identify drainage control BMPs
- 82% correctly identified manure management BMPs.

These survey results indicate a positive increase in knowledge and awareness about how equestrian activities can affect water quality. Results also show that more equestrians were able to identify positive behavioral changes (Level 3 Outcomes) following the workshops.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Focused Grove and Nursery Outreach in the San Luis Rey River Watershed**

ID NUMBER: **SLR-016**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many grove and nursery operations. Groves and nurseries have been shown to be potentially significant sources of nutrients to waterways in surrounding watersheds. To reduce the likelihood of impacts on beneficial uses in the San Luis Rey Watershed, the County of San Diego has contracted with the Mission Resource Conservation District (MRCD) to conduct focused outreach to nurseries and groves in the watershed. These outreach efforts will focus on issues related to water conservation, fertilization techniques, erosion prevention, and best management practices (BMPs) to reduce potential nutrient loads.

Tasks associated with this activity include:

- Conduct focused workshops and disseminate updated educational information.
- Develop pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in behaviors resulting from this activity.
- Develop and distribute informational materials relating to BMPs for various fertilization methods.
- Augment the MRCD's current Agricultural Water Management Program Irrigation System Evaluation to include evaluation of additional practices with the potential to impact water quality.
- Conduct onsite irrigation evaluations and disseminate information about fertilization BMPs and erosion control.

ACTIVITY IMPLEMENTATION FY 2009-10

A workshop targeting agricultural operators was conducted on June 14, 2010 at the Rainbow Grange. Twenty participants attended the workshop. Speakers and presentations featured at the workshop included:

- Valerie Mellano, UC Cooperative Extension's Farm and Home Advisors Office, presented on Rainbow Creek's Total Maximum Daily Load (TMDL) for Nitrogen and Phosphorous, and the Rainbow Creek Nutrient Reduction Management Plan (NRMP).
- Eric Larson, San Diego County Farm Bureau and San Diego Irrigation Lands Group, presented on the Agricultural Discharge Waiver and the formation of agricultural water quality monitoring groups.
- A panel was held after the presentations for a question/answer session with the workshop attendees. The panel consisted of:
    - Pete Peuron, Regional Water Quality Control Board
    - Dave Seymour, Rainbow Municipal Water District
    - Eric Larson, San Diego County Farm Bureau and San Diego Irrigation Lands Group

- Valerie Mellano (Facilitator), UC Cooperative Extension's Farm and Home Advisors Office

A postcard announcing the workshop time, location, and topics to be discussed at the workshop was also developed and distributed during this reporting period. Pre- and post-workshop assessment surveys were administered to assess attendees' knowledge of general watershed principles and changes in behaviors resulting from this activity.

ACTIVITY IMPLEMENTATION FY 2010-11

A workshop targeting agricultural operators was conducted on June 20, 2011 at the Fallbrook Public Utility District Boardroom. Thirty-six participants attended the workshop. Speakers and presentations featured at the workshop included:

- Valerie Mellano, UC Cooperative Extension's Farm and Home Advisors Office, presented on the history, requirements, and impacts of the Agricultural Discharge Waiver. While scheduled for only a twenty minute session, there were so many questions and interest concerning this subject, it continued for over one hour in length. She also gave a second presentation on how to properly maintain records for a wide variety of agriculture-related inventories and practices (e.g.; fertilizers, training records). Dr. Mellano emphasized the importance of properly maintained documents in meeting compliance standards with regulating agencies.
- Alec Mayall, Mission Resource Conservation District's Irrigation System Specialist, spoke about Mission RCD's Irrigation System Evaluation Program that is available for agricultural properties.

A postcard announcing the workshop time, location, and topics to be discussed at the workshop was also developed and distributed during this reporting period. In addition to the mailed post cards, a press release was submitted to three local newspapers. Pre- and post-workshop assessment surveys were administered to assess attendees' knowledge of general watershed principles and changes in behaviors resulting from this activity.

ACTIVITY IMPLEMENTATION FY 2011-12

A workshop targeting agricultural operators was conducted on May 22, 2012 at the San Diego County Fallbrook Library. Fifty-eight participants attended the workshop. One speaker was featured at the workshop a summary of the topics discussed is below:

- Valerie Mellano, UC Cooperative Extension's Farm and Home Advisors Office, presented on the history, requirements, and impacts of the Agricultural Discharge Waiver. She also gave a second presentation on how to properly maintain records for a wide variety of agriculture-related inventories and practices (e.g.; fertilizers, training records). Dr. Mellano emphasized the importance of properly maintained documents in meeting compliance standards with regulating agencies. Dr. Mellano's third and final presentation of the workshop focused on erosion issues associated with agricultural properties. During the presentation she discussed why erosion is important to control and the appropriate BMPs that can be applied to prevent or eliminate erosion.

A postcard announcing the workshop time, location, and topics to be discussed at the workshop was also developed and distributed during this reporting period. In addition to the mailed post cards, a press release was submitted to and in printed in the Fallbrook/Bonsall Village News

prior to the workshop. Pre- and post-workshop assessment surveys were administered to assess attendees' knowledge of general watershed principles and changes in behaviors resulting from this activity.

TMDL APPLICABILITY

This activity supports implementation of the Comprehensive Load Reduction Plan (nutrient component) for the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

No additional workshops are planned at this time. Onsite irrigation evaluations will be scheduled and conducted as needed.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients and bacteria have been identified as priority water quality problems in the San Luis Rey Watershed. Nursery and grove operations are potentially significant sources of nutrients and bacteria. Since this activity address priority water quality problem, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Groves and nurseries operations have been shown to be potentially significant sources of nutrients and bacteria to waterways in surrounding watersheds. This program seeks to reduce the impacts of nutrients on the San Luis Rey Watershed by educating nursery and grove operators on issues related to water conservation, fertilization techniques, erosion prevention, and BMPs.

EFFECTIVENESS ASSESSMENT

Activity effectiveness measurements include assessment of completion of an annual workshop, the number of participants in attendance, the number of materials distributed, and the number of irrigation evaluations conducted (Level 1 Outcomes). Activity effectiveness measures assessed in the FY 2011-12 reporting period include:

Table 1: Effectiveness Measures

Planned Tasks	Assessment	Outcome
Conduct Workshop for Grove and Nursery Operators	1 event, 58 participants	Level 1
Completion of Pre and Post Workshop Surveys	Complete; 36 Pre-workshop surveys, 45 Post-workshop surveys	Level 1

Pre- and post-workshop surveys were distributed to all attendees to assess knowledge of general watershed principles and changes in awareness of proper irrigation and fertilization practices (Level 2 Outcomes). Thirty-six pre-workshop surveys were completed and 45 post-workshop surveys were completed. Prior to the workshop only 20 percent of the surveyed attendees knew they lived in a watershed; while after the workshop 100 percent affirmed they lived in a watershed. When asked to identify stormwater runoff BMPs to prevent pollution, 58 percent of the pre-workshop participants correctly identified appropriate BMPs; after the workshop 80 percent of participants correctly identified BMPs. This change demonstrates an increase in general watershed knowledge and BMP implementation (Level 3 Outcome).

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Onsite Wastewater System Outreach in the San Luis Rey River Watershed**

ID NUMBER: **SLR-017**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many rural areas in which property owners utilize onsite wastewater treatment (septic systems). In order to promote the proper care and maintenance of onsite wastewater treatment systems, the County has contracted with the Mission Resource Conservation District (MRCD) to implement an onsite wastewater system outreach and rebate program in the San Luis Rey and Santa Margarita River Watersheds. Residents interested in obtaining a rebate to offset the cost of pumping out their system will be required to attend an MRCD-facilitated workshop devoted to the proper care and maintenance of onsite wastewater systems. The rebate program will operate on a first come, first served basis offering 30 pumping rebates annually for three years. The rebates will be in the amount of $100.00 and will only be applicable to pumping by permitted septic waste haulers. The MRCD and County staff will administer pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in awareness of proper onsite wastewater system maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

Press Release to local newspapers on Septic Maintenance

A news release announcing the Septic System Workshop and Rebate Program was submitted to three local newspapers: the North County Times, the San Diego Union Tribune, and the Fallbrook/Bonsall Village News. The Fallbrook/Bonsall Village News published the press release in its entirety.

Septic System Workshop and Rebate Program

A public workshop focusing on septic tank awareness and proper maintenance procedures was conducted on May 20, 2010, at the Rainbow Grange. A total of ten residents attended the workshop. Eric Klein, County of San Diego Department of Environmental Health, was the featured presenter. The presentation included a detailed description of the components of a septic system and appropriate preventative maintenance measures for proper septic system functioning. The workshop also featured an open question and answer forum, during which the speaker answered specific questions from the attendees. Participants were asked to complete a pre- and post-workshop questionnaire to assess workshop effectiveness. By completing the workshop, residents were eligible to receive a rebate to offset the cost of pumping out their system. Three rebate certificates were distributed at this workshop.

ACTIVITY IMPLEMENTATION FY 2010-11

Online Septic System Education Pilot Program

The County of San Diego moved forward with the development and implementation of an Online Septic System Education Pilot Program. This online web portal course was implemented in October of 2010 and offers information on septic tank awareness and proper maintenance

procedures for maintaining a healthy septic system. The portal was placed on the County of San Diego website. Participants were asked to complete a pre- and post-workshop questionnaire to assess workshop effectiveness. Residents completing the program and living within the San Luis Rey and Santa Margarita may be eligible to receive a rebate to offset the cost of pumping out their system by a qualified professional. For those participants that do not have access to the internet, paper copies of the education program were sent to them.

Septic System Rebate Program
A total of 30 rebates were offered to participants in the San Luis Rey and Santa Margarita Watersheds. In order to be eligible for the rebate program, participants were required to complete the online training course. All 30 available rebates were granted to participants in FY 2010-11. Of the 30 program participants, 27 lived within the San Luis Rey Watershed. Those participants that were unable to receive rebates in 2010-11 were placed on a waiting list for the FY 2011-12 program.

ACTIVITY IMPLEMENTATION FY 2011-12

Online Septic System Education Pilot Program
The County of San Diego continued implementation of the Online Septic System Education Pilot Program initiated in FY 2010-11. This online web portal course began implementation in October of 2010 and offers information on septic tank awareness and proper maintenance procedures for maintaining a healthy septic system. Participants are required to complete a pre- and post-training survey to assess knowledge increase.

Septic System Rebate Program
A total of 46 rebates were offered to participants in the San Luis Rey and Santa Margarita Watersheds. In order to be eligible for the rebate program, participants were required to complete the online training course. All 46 available rebates were granted to participants in FY 2011-12. Of the 46 program participants, 34 lived within the San Luis Rey Watershed.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

The Online Septic System Education Program will undergo assessment to consider additional implementation in future years.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Onsite wastewater treatment systems have the potential to be significant sources of bacteria and nutrients. Since this activity addresses two priority water quality problems, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This program will provide homeowners with an economic incentive to maintain their onsite wastewater treatment systems, while educating them on the proper care and maintenance protocol. Through incentives and education, this program seeks to decrease the likelihood of onsite wastewater system failure.

EFFECTIVENESS ASSESSMENT

Table 1: Effectiveness Measures

Task	Level	Assessment Measures	Effectiveness Measure
Septic System Outreach Program	1	Implementation of Online Septic System Education Program	Implementation Complete
	1	Number of participants	46 program participants
	2	Pre/Post-Training Survey Questionnaire	46 pre-workshop surveys completed. 46 post-workshop surveys completed.
Septic System Rebate Program	1	Number of vouchers distributed	46 vouchers distributed; 34 to San Luis Rey Watershed participants.
	3	Number of vouchers used	46 vouchers used; 34 by San Luis Rey Watershed participants.
	4	Volume of sewage removed (percent solids)	N/A

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WATERSHED ACTIVITY SUMMARY SHEET

Watershed Education Activity

TITLE: **Guajome Sports Park Watershed Educational Signage**
ID NUMBER: **SLR-018**

ACTIVITY DESCRIPTION

A Vista City Park was constructed in 2009 that includes sports fields and walking trails. The Park is situated high atop a hillside in the San Luis Rey Hydrologic Unit, providing spectacular views of the San Luis Rey River corridor and watershed. The Park is expected to draw many visitors and will provide a great opportunity for educating the public on the physical features of the watershed and the water quality issues within. This activity will provide for design and installation of watershed educational signage at various locations in the sports park. The signage will address the physical features in the watershed, water quality problems identified in the watershed, and provide tips that the residents can use to improve conditions in the watershed through their daily activities and interactions.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

- FY 2010-11 Sign Design
- FY 2011-12 Sign Installation
- FY 2012-13 Effectiveness Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey HU collective watershed strategy identifies bacteria and nutrients as high priority water quality pollutants in the watershed. Potential sources of bacteria and nutrients have been identified within the watershed and include industrial/commercial, residential, and open space land uses. This activity addresses both high priority water quality problems and primarily will address potential sources of the problem related to residential activities within the watershed. Specifically, the sign addresses litter, irrigation runoff, fertilizer, and pet waste.

EXPECTED BENEFITS

It is expected that through the educational information presented on the signage, residents and park attendees will improve their knowledge related to stormwater and urban runoff and implement appropriate BMPs in their everyday activities affecting water quality.

EFFECTIVENESS MEASUREMENTS

The effectiveness assessment of the project has not been completely developed at this time. At a minimum, level 1 will be assessed via installation of the signage. The signage was installed in FY11-12, meeting the basic implementation requirement. Additionally, estimates of numbers of visitors may be used to measure the impressions made by the signs. This may allow for some measure of knowledge change (level 2); however measuring of actual changes in behavior related to the signage will be difficult to assess (level 3) and may not be feasible.

San Luis Rey's Water Wisdom

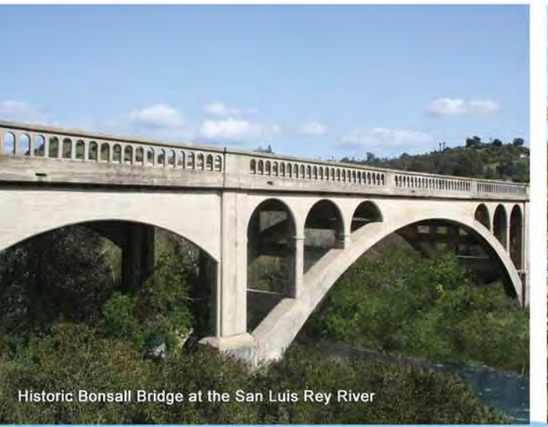
Historic Bonsall Bridge at the San Luis Rey River

Guajome Lake

Mouth of the San Luis Rey River

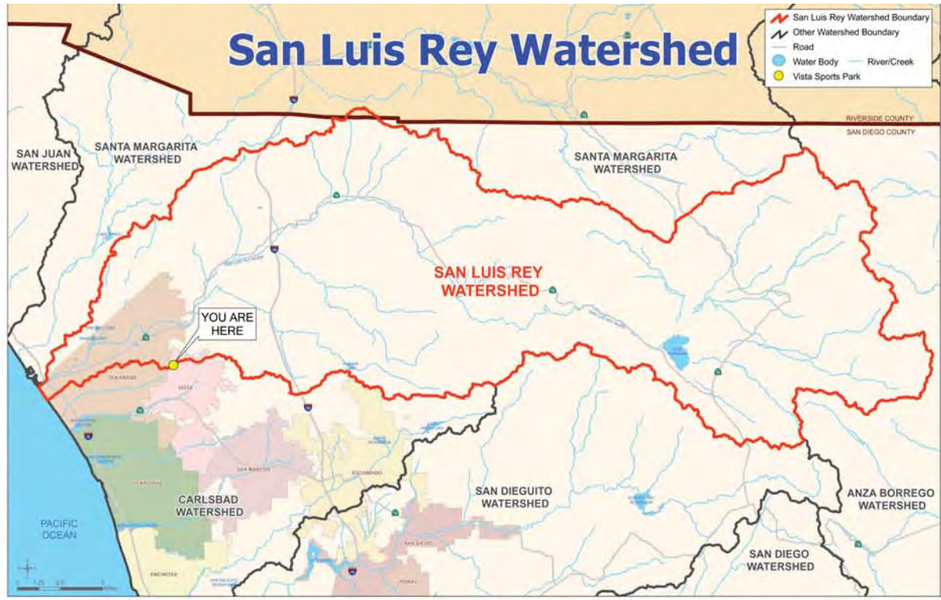

Stop the Ocean Blues...

watershed (n): An area of land that drains to a common waterbody. A waterbody can be a river, lake, bay or the ocean.

We all live in a watershed...

In fact, every area where water collects is called a watershed. Watersheds drain rain and melted snow through creeks, streams, lakes, and rivers, eventually draining into the ocean.

Some watersheds are big, where several rivers come together. Others are made of small brooks and streams.

The Vista Sports Park lies within the San Luis Rey Watershed. The San Luis Rey Watershed is a drainage area of approximately 562 square miles, extending from the Palomar and Hot Springs Mountains to the Pacific Ocean.

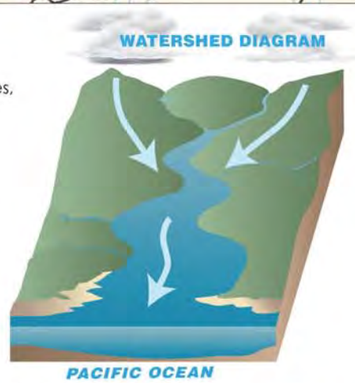

stormwater (n): Surface water runoff created by rain or snowmelt. Stormwater drains by gravity to the nearest waterbody without the benefit of treatment.

CITY OF VISTA
Water Quality Protection Program

We can all protect the watershed by:

- reducing irrigation runoff from our homes
- keeping our waterways clean
- picking up after our pets
- reducing litter

Report Stormwater Pollution:
(760) 726-1340 x1686
waterquality@cityofvista.com

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: Fallbrook Community Center Artificial Turf
ID Number: SLR-021

ACTIVITY DESCRIPTION

The County of San Diego has converted 7,200 square feet of turf planters to artificial turf at the Fallbrook Community Center facility. This project included the capping of existing irrigation lines throughout three planters, with the exception of a single bubbler unit used to irrigate a pine tree. A French drain system and gravel bed system was installed beneath the planters to help protect against the unlikely occurrence of runoff due to over-saturation during large storm events.

The installation of the artificial turf is estimated to reduce the application of fertilizer by as much as 120 pounds per year and annual water consumption by nearly 170,000 gallons annually.

This activity directly benefits the watershed by reducing the need for irrigation of turf planters, increasing storm water filtration, and decreasing the potential of nutrient loading to the watershed.

ACTIVITY IMPLEMENTATION FY 2009-10

During the FY 2009-10 over 7,200 square feet of natural turf was removed and replaced with artificial turf (see attached figure). This activity included excavating to a depth of 3 inches, installing a French drain system below the surface, backfilling with decomposed granite (DG), and compressing the DG to a 90% compaction rate.

ACTIVITY IMPLEMENTATION FY 2010-11

Due to the installation of the artificial turf, community center staff was able to significantly reduce watering and maintenance activities of the planter area.

ACTIVITY IMPLEMENTATION FY 2011-12

The artificial turf continues to reduce watering and fertilization needs for the community center. Future installation of additional turf area is being considered at this time.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Future artificial turf installation will be implemented as funding becomes available.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity demonstrates reduced pollutant loads and source abatement which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Irrigation water use at the facility decreased approximately 18 percent following the first year of implementation, based on comparison of pre- and post-installation assessments. Turf nutrient fertilizer applied to community center landscaping has decreased by 120 pounds per year, or 25 percent, since the installation of artificial turf. The reduction in irrigation volume and the decrease in the amount of nutrients applied result in a maximum potential load reduction of up to 120 pounds of nutrients from the watershed in per year (Level 4 Outcome).

Natural Turf
N
Heald Ln, Fallbrook, CA 92028
Artificial Turf
Natural Turf
179 ft
© 2009 Tele Atlas
©2008 Google
33°22'39.56" N 117°14'07.27" W
elev 721 ft
Feb 2008
Eye alt 1357 ft

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Residential Rain Barrel Subsides and Distribution**
ID NUMBER: **SLR-022**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

FY 2009-10 ACTIVITY IMPLEMENTATION

Activity tasks implemented during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

FY 2010-11 ACTIVITY IMPLEMENTATION

During FY 2010-11 the County of San Diego hosted two rain barrel distribution events. At each event informational booths were staffed by water quality experts who educated residents on watershed concepts and distributed outreach materials. In order to participate in the program residents were required to sign a rain barrel maintenance agreement that would ensure continued effective operations of the rain barrels.

The first event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

The Fallbrook Sales event took place at Fallbrook Village Square on September 26, 2010, from 9 a.m. until 1 p.m. Upon completion of the event 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price

A total of 183 residents participated in these events and a total of 240 rain barrels were sold. Sixty-one (61) of the participants were residents of the San Luis Rey Watershed; the highest number of participants from any watershed.

FY 2011-12 ACTIVITY IMPLEMENTATION

During FY11-12, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Survey results will be summarized in FY 2012-13. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Additional events are being considered for implementation in FY 2012-13, dependent on available funding.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Luis Rey Watershed Council

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS ASSESSMENT

During the FY 2011-12 reporting period 50 residents completed surveys (Level 1 Outcome) to evaluate the program for future implementation.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality Activity

TITLE: **Residential Smart Landscape Evaluation Program**
ID NUMBER: **SLR-023**

ACTIVITY DESCRIPTION

The City of Oceanside offers a free landscape irrigation evaluation service to single-family and multi-family residences within its jurisdiction. The program is in conjunction with the San Diego County Water Authority (SDCWA) irrigation check-up program. The SDCWA and the City of Oceanside provide funding for the Mission Resource Conservation District to send professional technicians to visit the residential property and provide site-specific water-saving recommendations. Participants can expect to have the technician review and evaluate the performance of their site's outside irrigation system. At the end, the participant will receive a list of recommendations and a proposed watering schedule. For multi-family customers, participants will receive a report outlining site specific irrigation and maintenance recommendations as well as plant alternatives designed to reduce water waste and use.

Over-irrigation is the most prominent transport mechanism and potential source of dry weather residential contributions to water quality issues. This one-on-one, site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property. It is also a useful tool for Clean Water Program Inspectors and Code Enforcement Officers when following-up on customer or staff complaints of over-irrigation. The inspector or officer can provide general education on the regulations and suggest this hand's-on evaluation.

ACTIVITY IMPLEMENTATION FY 2010-11

During FY 2010-11, eight single-family and two multi-family residential landscape evaluations were completed within the City of Oceanside in the San Luis Rey Watershed. Table 1 presents a summary of the types and dates of the evaluations completed during this reporting year.

Table 1. Summary of Residential Landscape Evaluations Completed in FY 2010-11.

Hydrologic Area	Multi-Family	Single-Family	Completed
Lower San Luis		X	7/29/2010
Lower San Luis		X	7/22/2010
Lower San Luis		X	10/5/2010
Lower San Luis		X	10/4/2010
Lower San Luis		X	11/29/2010
Lower San Luis		X	1/18/2011
Lower San Luis	X		3/24/2011
Lower San Luis		X	5/3/2011
Lower San Luis	X		6/1/2011
Lower San Luis		X	6/28/2011

ACTIVITY IMPLEMENTATION FY 2011-12

During FY 2011-12, 38 single-family and three multi-family residential landscape evaluations were completed within the City of Oceanside in the San Luis Rey Watershed. Table 1 presents a summary of the types and dates of the evaluations completed during this reporting year.

Table 1. Summary of Residential Landscape Evaluations Completed in FY 2011-12.

Hydrologic Area	Multi-Family	Single-Family	Completed
Lower San Luis		X	7/11/2011
Lower San Luis		X	7/25/2011
Lower San Luis		X	8/2/2011
Lower San Luis		X	8/4/2011
Lower San Luis		X	8/16/2011
Lower San Luis		X	8/23/2011
Lower San Luis		X	8/23/2011
Lower San Luis		X	8/29/2011
Lower San Luis		X	8/30/2011
Lower San Luis		X	8/30/2011
Lower San Luis		X	9/27/2011
Lower San Luis		X	10/4/2011
Lower San Luis		X	10/10/2011
Lower San Luis	X		10/11/2011
Lower San Luis		X	10/13/2011
Lower San Luis		X	10/18/2011
Lower San Luis		X	10/21/2011
Lower San Luis		X	10/21/2011
Lower San Luis		X	10/31/2011
Lower San Luis		X	10/31/2011
Lower San Luis		X	11/3/2011
Lower San Luis		X	11/16/2011
Lower San Luis		X	11/17/2011
Lower San Luis		X	11/18/2011
Lower San Luis		X	11/22/2011
Lower San Luis		X	1/3/2012
Lower San Luis		X	1/12/2012
Lower San Luis	X		1/5/2012
Lower San Luis		X	2/1/2012
Lower San Luis		X	2/1/2012
Lower San Luis		X	2/4/2012
Lower San Luis		X	2/24/2012
Lower San Luis		X	1/3/2012
Lower San Luis		X	1/3/2012
Lower San Luis		X	3/15/2012
Lower San Luis		X	3/15/2012
Lower San Luis	X		3/2/2012
Lower San Luis		X	4/12/2012
Lower San Luis		X	4/12/2012
Lower San Luis		X	4/16/2012
Lower San Luis		X	6/1/2012

The cost to the City for implementation of the program during FY 2011-12 was $2,369.50.

TMDL APPLICABILITY

This activity is anticipated to provide education and assist in the reduction of bacteria loading, as required by TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region. The TMDL was approved by the Office of Administrative Law on April 4, 2011. The Comprehensive Load Reduction Plan (CLRP) is currently under development.

TIME SCHEDULE FOR IMPLEMENTATION

Each year, implementation is based on program funding and the number of customers who call to take advantage of the service. It is anticipated that the program will continue during the next fiscal year.

PARTICIPATING WATERSHED COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

San Diego County Water Authority
Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as a priority water quality problem in the San Luis Rey River Watershed. In addition, residential runoff has been targeted as a high priority through several Copermittee activities. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This program is targeted at Levels 1 and 2 effectiveness assessment outcomes. The program was implemented during the reporting year (Level 1 outcome) and 38 single-family and three multi-family residential properties were visited in the San Luis Rey Watershed. The property owners/managers were educated on appropriate and efficient use of water, specifically focusing on irrigation, thus raising awareness (Level 2 outcome).

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality Activity

TITLE: **Water Smart Incentive for Outdoor Water Efficiency**
ID NUMBER: **SLR-024**

ACTIVITY DESCRIPTION
The City of Oceanside promotes and participates in several of the Metropolitan Water District of Southern California's (MWD) SoCal Water$mart programs. The SoCal Water$mart single-family residential rebate program for water-efficient devices is a program that not only addresses water conservation, but also addresses urban runoff and water quality. The SoCal Water$mart Program provides two water-efficient devices used outdoors: Weather Based Irrigation 'Smart' Controller (WBIC) and Rotating Sprinkler Nozzles (RSN).

The weather based irrigation controllers automatically adjust the irrigation schedule to account for changing weather and plant types. It can save over 13,500 gallons of water per year which translates into a similar reduction for the amount of irrigation runoff that can occur without frequent adjustments. The rotating sprinkler nozzles apply water more slowly and uniformly to prevent over-watering and encourage healthy plant growth. This water-efficient device is estimated to use 20% less water than conventional nozzles. The use of water-efficient irrigation systems saves water and prevents over-irrigation which is the most prominent transport mechanism and potential source of dry weather residential contributions to water quality issues.

ACTIVITY IMPLEMENTATION FY 2011-12
During FY 2011-12, 20 single-family residences within the City of Oceanside in the San Luis Rey Watershed took advantage of the rebate program. Table 1 presents a summary of the type of incentive, quantity, and date of installation during this reporting year.

Table 1. Summary of Residential Rebate Program for FY 2011.

Watershed	Type of Incentive	Date Installed	Quantity
Lower San Luis	Rotating Nozzle	8/9/11	38
Lower San Luis	Rotating Nozzle	9/23/11	31
Lower San Luis	Rotating Nozzle	9/23/11	2
Lower San Luis	Rotating Nozzle	9/23/11	2
Lower San Luis	Rotating Nozzle	10/14/11	140
Lower San Luis	Rotating Nozzle	2/27/12	24
Lower San Luis	Rotating Nozzle	2/27/12	3
Lower San Luis	Rotating Nozzle	3/31/12	81
Lower San Luis	Rotating Nozzle	4/26/12	22
Lower San Luis	Rotating Nozzle	4/26/12	42
Lower San Luis	Rotating Nozzle	4/26/12	8
Lower San Luis	WBIC	7/7/11	1
Lower San Luis	WBIC	7/17/11	1
Lower San Luis	WBIC	7/19/11	1
Lower San Luis	WBIC	8/10/11	1
Lower San Luis	WBIC	8/15/11	1
Lower San Luis	WBIC	10/9/11	1
Lower San Luis	WBIC	2/12/12	1

Watershed	Type of Incentive	Date Installed	Quantity
Lower San Luis	WBIC	2/25/12	1
Lower San Luis	WBIC	5/5/12	1

TMDL APPLICABILITY

This activity is anticipated to provide education and assist in the reduction of bacteria loading, as required by TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region. The TMDL was approved by the Office of Administrative Law on April 4, 2011. Non-structural BMPs targeting dry weather urban runoff flow reduction, such as this education and implementation opportunity to residential communities is a key component of the Comprehensive Load Reduction Plan (CLRP) for TMDL implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each year, implementation is based on program funding and the number of customers who call to take advantage of the service. It is anticipated that the program will continue during the next fiscal year.

PARTICIPATING WATERSHED COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- San Diego County Water Authority
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as a priority water quality problem in the San Luis Rey River Watershed. In addition, residential runoff has been targeted as a high priority through several Copermittee activities. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This program is targeted at Levels 1, 2, and 4 effectiveness assessment outcomes. The program was implemented during the reporting year (Level 1 outcome) and 20 single-family residential properties participated within the San Luis Rey Watershed, within the City of Oceanside's jurisdiction. Simply by researching and applying for the rebate opportunity, the property owners were educated on appropriate and efficient use of water, specifically focusing on irrigation, thus raising awareness (Level 2 outcome). The installation of the devices will reduce water use, thus reducing flow leaving the property as urban runoff. This will then reduce the pollutant loading into the storm drains, creeks, and ocean resulting in a Level 4 Effectiveness Assessment outcome, load reductions. The level 4 effectiveness assessment may be completed in future

years through analysis of dry weather monitoring data where it can be paired with drainage areas where water-efficient devices have been installed.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Water Quality Activity

TITLE: **Live Turf Replacement Incentive Program**
ID NUMBER: **SLR-025**

ACTIVITY DESCRIPTION
In conjunction with the San Diego County Water Authority and the Metropolitan Water District of Southern California, the City of Oceanside is replacing existing live turf (grass) with planted areas and permeable surfaces. The conservation incentive program pays up to $1 per square foot of turf removal; 30% of which will be paid by the City of Oceanside. Turf is the most water-thirsty landscape component. Replacement of live turf allows for less water dependent landscaping to be planted which will reduce the potential for over-irrigation. The incentive program ensures this by specifying that no grass, synthetic turf or impermeable surfaces are eligible for rebates. Over-irrigation is the most prominent transport mechanism and potential source of dry weather residential contributions to water quality issues.

The City of Oceanside incorporated turf replacement into existing municipal projects across the City. Within the San Luis Rey River Watershed, turf replacement occurred at two parks, Melba Bishop Park and Women's Club Park, and around for municipal building landscaping at the Civic Center where the Housing Division is located. From December 2011 to April 2012, total turf removed within the City was 257,848 square feet, which was the most turf removed compared to other San Diego water agencies during this time period.

ACTIVITY IMPLEMENTATION FY 2011-12
Table 1 presents a summary of the turf replaced in the City of Oceanside in the San Luis Rey Watershed during FY2011-12.

Table 1. Summary of Turf Replacement Program for FY 2011.

Service Address	Description	Watershed	Sq. Ft. Replaced	Post-Inspection
Melba Bishop Park	Warning Track A	Lower San Luis	5,424	12/19/2011
	Warning Track B	Lower San Luis	3,900	12/19/2011
	Planter	Lower San Luis	12,300	4/12/2012
Women's Club Park	Women's Club Park	Lower San Luis	31,279	6/1/2012
Civic Center	Near Housing Division	Lower San Luis	650	12/19/2011

Total turf removed in the San Luis Rey Watershed was 53,553 sq. ft. at a cost to the City of $16,065.90.

TMDL APPLICABILITY
This activity is anticipated to provide dry weather load reductions as required by the TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region. The TMDL was approved by the Office of Administrative Law on April 4, 2011. Non-structural BMPs targeting dry weather urban runoff flow reduction, such as this implementation activity on municipal property is a key component of the Comprehensive Load Reduction Plan (CLRP) for TMDL

implementation. This will also set a precedent for the City and allow the City to serve as a model for water efficient behavior from the community.

TIME SCHEDULE FOR IMPLEMENTATION

Each year, implementation is based on program funding and the number of customers who call to take advantage of the service. It is anticipated that the program will continue during the next fiscal year and may be opened up to residential and/or commercial land uses, as well as other municipal areas.

PARTICIPATING WATERSHED COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- United States Bureau of Reclamation
- California Department of Water Resources
- Metropolitan Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as a priority water quality problem in the San Luis Rey River Watershed. In addition, residential runoff has been targeted as a high priority through several Copermittee activities. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This program is targeted at Levels 1, 2, and 4 effectiveness assessment outcomes. The program was implemented during the reporting year (Level 1 outcome) and 53,553 sq. ft. of turf was removed within the San Luis Rey HU. The FY2011-12 City turf replacement program was primarily utilized on City property. The City will be promoting these areas to raise awareness for water conservation and turf replacement, a Level 2 outcome. It is planned that turf removal will then be offered to residential and/or commercial land uses. The removal of turf followed by landscaping that is less dependent on irrigation water will ultimately reduce over-irrigation flow leaving properties as urban runoff. This will then reduce the pollutant loading into the storm drains, creeks, and ocean resulting in a Level 4 Effectiveness Assessment outcome, load reductions. The level 4 effectiveness assessment may be completed in future years through analysis of dry weather monitoring data where it can be paired with drainage areas where turf replacement has occurred.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Comprehensive Load Reduction Plans**
ID NUMBER: **SLR-026**

ACTIVITY DESCRIPTION

During FY 2011-12, in compliance with the Bacteria Total Maximum Daily Load (TMDL) for Beaches and Creeks, the San Luis Rey Copermittees began developing a Comprehensive Load Reduction Plan (CLRP) for the San Luis Rey River Watershed. The CLRP outlines a proposed program of activities that will be capable of achieving TMDL-specified bacteria load reductions. To qualify for an extended 20-year wet weather compliance timeline, the Responsible Parties opted to develop a plan that addresses multiple constituents (specifically, bacteria, nitrogen, and phosphorous).

In order to identify a program of activities that will be capable of achieving TMDL-required bacteria load reductions during wet weather, the Copermittees used a robust, public-domain computer model with the ability to simulate hydrologic and pollutant loadings and to evaluate various best management practice (BMP) implementation scenarios. The water quality model was used to estimate the target bacteria load reductions for various BMP implementation scenarios that are predicted to achieve compliance with the TMDL's allowable exceedance frequency-based Waste Load Allocations.

ACTIVITY IMPLEMENTATION FY 2011-12

CLRP development was initiated during FY 2011-12 and continued throughout the reporting period. The process will continue during the FY 2012-13 period, culminating in the submission of the CLRP to the RWQCB in October 2012.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

CLRP development was initiated during FY 2011-12 and continued throughout the reporting period. The process will continue during the FY 2012-13 period, culminating in the submission of the CLRP to the RWQCB in October 2012.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of Oceanside
- City of Vista

OTHER PARTICIPATING ENTITIES

- Caltrans

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Since this activity addresses two priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This program will provide homeowners with an economic incentive to maintain their onsite wastewater treatment systems, while educating them on the proper care and maintenance protocol. Through incentives and education, this program seeks to decrease the likelihood of onsite wastewater system failure.

EFFECTIVENESS ASSESSMENT

The San Luis Rey Watershed Responsible Parties participated in an ongoing, collaborative planning process for CLRP development (Level 1 Outcome). Activity assessment will be measured by the completion of the CLRP and submittal to the RWQCB by the October 2012 deadline.

WATERSHED ACTIVITY SUMMARY SHEET

Watershed Education Activity

TITLE: **Bacteria Source Investigation Focused on Exfiltration from Sanitary Sewers**

ID NUMBER: **SLR-027**

ACTIVITY DESCRIPTION

A recently performed San Luis Rey Microbial Source Tracking Study identified human markers in bacteria samples collected during wet and dry weather. Potential sources of human bacteria include sanitary sewers, on-site wastewater treatment systems, and homeless encampments. This project is designed to investigate the City of Vista's sanitary sewer infrastructure to evaluate its integrity and identify any potential areas where it may contribute to bacteria loading into the storm drain system. This special study will build on recommendations from work performed by the City of Santa Barbara. This activity will focus on the sanitary sewer and MS4 within the Vista City limits that are in the San Luis Rey Watershed. This encompasses approximately 750 acres in the northern part of Vista.

TMDL APPLICABILITY

The Pacific Ocean at the mouth of the San Luis Rey River is listed as impaired for total coliform and enterococcus. A TMDL was developed to address this impairment (Bacti I) A Comprehensive Load Reduction Plan (CLRP) was developed and submitted to the Regional Water Quality Control Board as required in October 2012. This plan identified non-structural BMPs (as well as others) to be implemented by Copermittees in the watershed aimed at reducing sources of bacteria contributing to the impairment. This activity is in line with the priorities in the CLRP.

TIME SCHEDULE FOR IMPLEMENTATION

Phase I involves the desktop portion of the investigation which will utilize the City's GIS, record drawings, and closed circuit television (CCTV) inspections to develop an initial prioritization and selection of potential sites.

Phase II involves the field portion of the investigation which will result in a refined selection and prioritization of potential sites through methods such as visual inspections, CCTV inspections of the MS4, and water sampling.

Phase III involves further field testing of the sites identified as having the highest potential for bacteria contributions from sanitary sewers into storm drains. This phase is intended to confirm or deny the potential for connectivity and may include soils testing, dye testing and/or tracer testing, as well as flow and/or water quality monitoring.

Phase IV will proceed at sites where positive connectivity is established. This phase will involve the development of prioritized recommendations of potential approaches for repair or rehabilitation of sanitary sewers to eliminate any contributions of sanitary sewer to the MS4.

Phase V will involve the actual repair or rehabilitation of sanitary sewers as recommended in Phase IV. This Phase will be dependent on priorities of the Sanitation Department and available funding.

FY 12-13: Phases I, II (potentially III)
FY 13-14: Phase III (and IV if necessary)

PARTICIPATING WATERSHED COPERMITTEES

- City of Vista

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey HU collective watershed strategy identifies bacteria and nutrients as high priority water quality pollutants in the watershed. The Pacific Ocean at the mouth of the San Luis Rey River is listed as impaired for total coliform and enterococcus. A TMDL was developed to address this impairment (Bacti I) A Comprehensive Load Reduction Plan (CLRP) was developed and submitted to the Regional Water Quality Control Board as required in October 2012. This plan identified non-structural BMPs (as well as others) to be implemented by Copermittees in the watershed aimed at reducing sources of bacteria contributing to the impairment. This activity is in line with the priorities in the CLRP and primarily addresses bacteria, one of the highest priorities in the San Luis Rey Watershed. The project will also nutrients as an ancillary benefit.

EXPECTED BENEFITS

This project is designed to detect areas where the sanitary sewer is potentially contributing fecal indicator bacteria to the MS4. The benefits of the project include a full survey of the sanitary system where it is proximal to the MS4, the identification of potential problematic areas, and repair of problems where located. If problematic locations are discovered, this will lead to reductions in bacteria within the MS4. If problematic locations are not evident, it will rule out the City of Vista's sanitary sewer system as a source of bacteria within the San Luis Rey Watershed.

EFFECTIVENESS MEASUREMENTS

Level 1 effectiveness will be measured via progress in Phases I, II, and III. Since the project is not targeting increases in awareness or behavioral changes, Levels 2 and 3 will not be assessed. If areas are located where sanitary sewer infrastructure is contributing to bacteria concentrations within the MS4, loading estimates will be calculated where feasible, which may lead to load reductions, level 4. This may also lead to improved MS4 water quality. Where it is feasible to measure a difference in water quality before and after a repair is made, level 5 assessments may also be feasible.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Monitoring Activity

TITLE: **Land Use Based Water Quality Monitoring**
ID NUMBER: **SLR-028**

ACTIVITY DESCRIPTION

The County of San Diego will collect bacteria and general water chemistry data to characterize water quality in catchments consisting primarily of agricultural and rural residential land uses. Water quality sampling will take place at sites located in rural areas of the San Luis Rey and San Diego River Watersheds. Data gathered can be used to inform future watershed modeling efforts or to predict the potential pollutant load associated with activities or characteristics common to these land use categories. These data will be added to the existing body of land use-based water quality data collected by the San Diego County Copermittees.

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting year, monitoring took place at three sites throughout San Diego County (Table 1). The Couser Canyon site was monitored during two wet weather events and one dry period; Valley Center and Blossom Valley sites were monitored during two wet weather events. For additional information, refer to Attachment A of this Watershed Activity Summary Sheet.

Table 1. FY 2009-10 Monitoring Activities

Location	Watershed	Primary Land Use	Sampling Type
Couser Canyon	San Luis Rey	Agricultural (Grove/Orchard)	Wet (two events), Dry (one event)
Valley Center	San Luis Rey	Rural Residential, Agricultural (Grove/Orchard)	Wet (two events)
Blossom Valley	San Diego River	Rural Residential	Wet (two events)

FY 2010-11 ACTIVITY IMPLEMENTATION

During FY 2010-11, the County of San Diego completed analysis of the data collected during FY 20009-10. Results indicate that the For additional information, refer to Attachment A of this Watershed Activity Summary Sheet.

FY 2011-12 ACTIVITY IMPLEMENTATION

During the FY 2011-12 reporting year, additional monitoring took place at two sites (Table 2). Couser Canyon and Blossom Valley were monitored during three wet weather events. For additional information, refer to Attachment B of this Watershed Activity Summary Sheet.

Table 2. FY 2011-12 Monitoring Activities

Location	Watershed	Primary Land Use	Sampling Type
Couser Canyon	San Luis Rey	Agricultural (Grove/Orchard)	Wet (three events),
Blossom Valley	San Diego River	Rural Residential	Wet (three events)

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Analysis of the FY 2011-12 will be completed in FY 2012-13 and included in future WURMP Annual Reports.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the San Luis Rey WMA. This monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

During the FY 2011-12 reporting period, the County of San Diego conducted sampling at two locations (Level 1 Outcome). For additional information, refer to Attachment B of this activity sheet.

Attachment A

to

SAN LUIS REY WURMP Annual Report

Watershed Activity SLR-028

for Fiscal Year 2011-12

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this study was to collect analytical data at mass loading stations (MLSs) draining primarily agricultural and/or rural residential lands during storms and non-storm conditions. Three sampling locations, two in the lower San Luis Rey (SLR) Watershed (Couser Canyon and Valley Center) and one in the San Diego River Watershed (Blossom Valley) were monitored over two storm events for nutrients, conventional constituents, fecal indicator bacteria (FIB), metals, and herbicides. *In situ* field measurements of temperature, specific conductance, dissolved oxygen (DO), pH, and turbidity were also taken at each location during each storm. In addition, at Couser Canyon, a composite post-storm sediment sample was collected to test for synthetic pyrethroid insecticides. The Couser Canyon location was also monitored over a non-storm flow event for all water quality constituents listed above.

2.0 METHODS AND MATERIALS

Stream flow gauging and water quality sampling were conducted at the three monitoring locations. One sediment quality sample was collected at the Couser Canyon monitoring location after the February 6-8 storm event. Detailed descriptions of sampling locations, stream flow gauging methods, storm selection criteria, methods utilized in sample collection, and quality assurance/quality control procedures are provided in the Quality Assurance Project Plan (QAPP) (Appendix A).

2.1 MONITORING LOCATIONS

Sampling locations were selected to characterize runoff from agricultural and spaced rural residential land uses during wet weather and non-storm flow (dry weather) conditions. Table 2-1 provides site names and GPS coordinates. A map of the monitoring locations and the associated drainage areas is provided in Figure 2-1. Pie diagrams showing landuse compositions of the drainage areas associated with the monitoring locations are presented in Figure 2-2.

Table 2-1: Approximate Locations of Monitoring Sites

Site	Watershed	Latitude[(a)]	Longitude[(a)]
Blossom Valley	San Diego River	32.86608	-116.83415
Couser Canyon	San Luis Rey	33.33176	-117.12483
Valley Center	San Luis Rey	33.25589	-117.06857

(a) GPS positions are based on the NAD 83 Datum.

Figure 2-1: Monitoring Locations within Watersheds and Land Use Designations

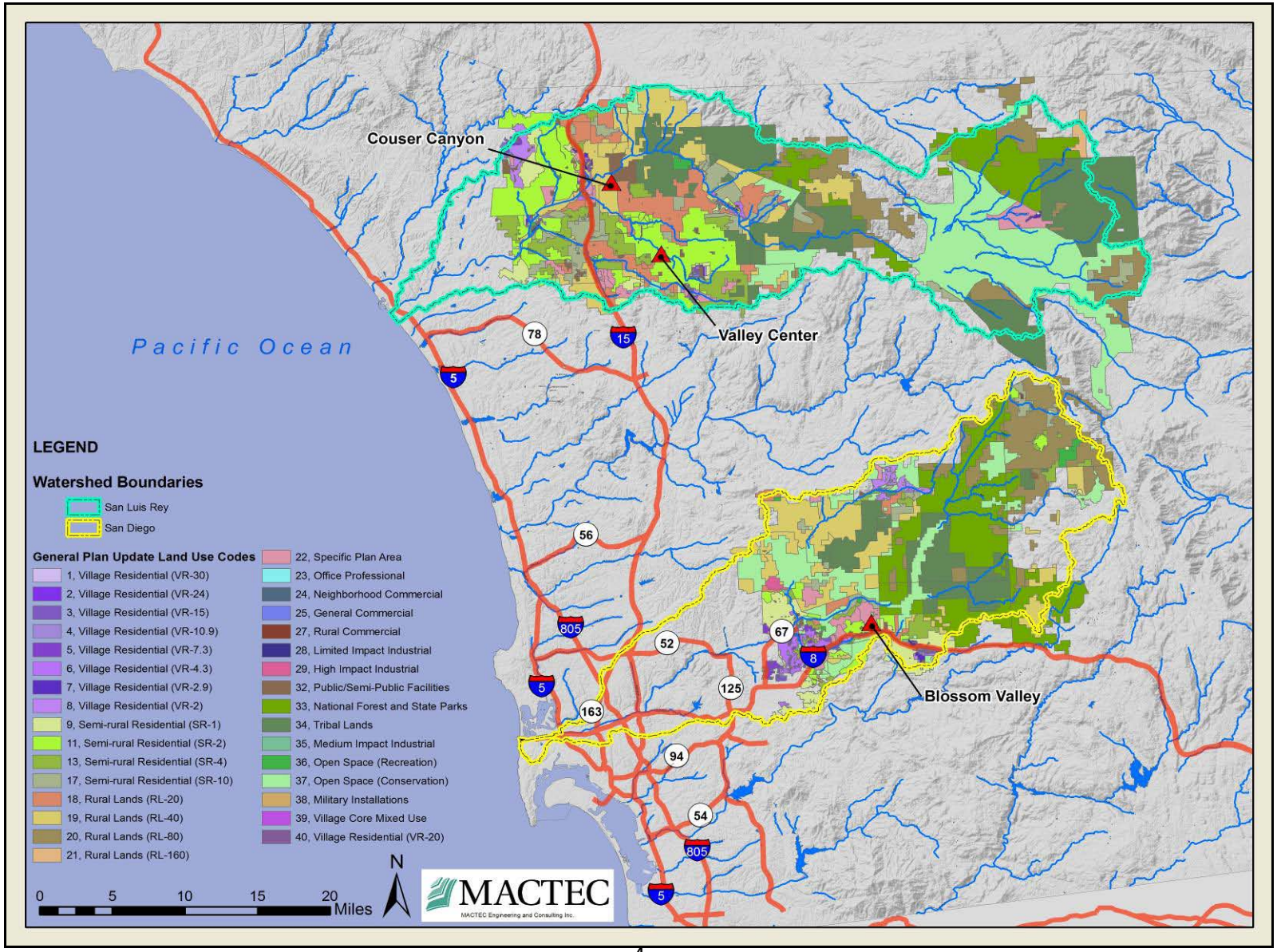
Couser Canyon
Valley Center
Blossom Valley
Pacific Ocean
LEGEND
Watershed Boundaries
San Luis Rey
San Diego
General Plan Update Land Use Codes
1, Village Residential (VR-30)
2, Village Residential (VR-24)
3, Village Residential (VR-15)
4, Village Residential (VR-10.9)
5, Village Residential (VR-7.3)
6, Village Residential (VR-4.3)
7, Village Residential (VR-2.9)
8, Village Residential (VR-2)
9, Semi-rural Residential (SR-1)
11, Semi-rural Residential (SR-2)
13, Semi-rural Residential (SR-4)
17, Semi-rural Residential (SR-10)
18, Rural Lands (RL-20)
19, Rural Lands (RL-40)
20, Rural Lands (RL-80)
21, Rural Lands (RL-160)
22, Specific Plan Area
23, Office Professional
24, Neighborhood Commercial
25, General Commercial
27, Rural Commercial
28, Limited Impact Industrial
29, High Impact Industrial
32, Public/Semi-Public Facilities
33, National Forest and State Parks
34, Tribal Lands
35, Medium Impact Industrial
36, Open Space (Recreation)
37, Open Space (Conservation)
38, Military Installations
39, Village Core Mixed Use
40, Village Residential (VR-20)
0 5 10 15 20 Miles
N
MACTEC
MACTEC Engineering and Consulting Inc.

Figure 2-2: Comparison of Drainage Area Landuse Compositions among the Three Monitoring Locations

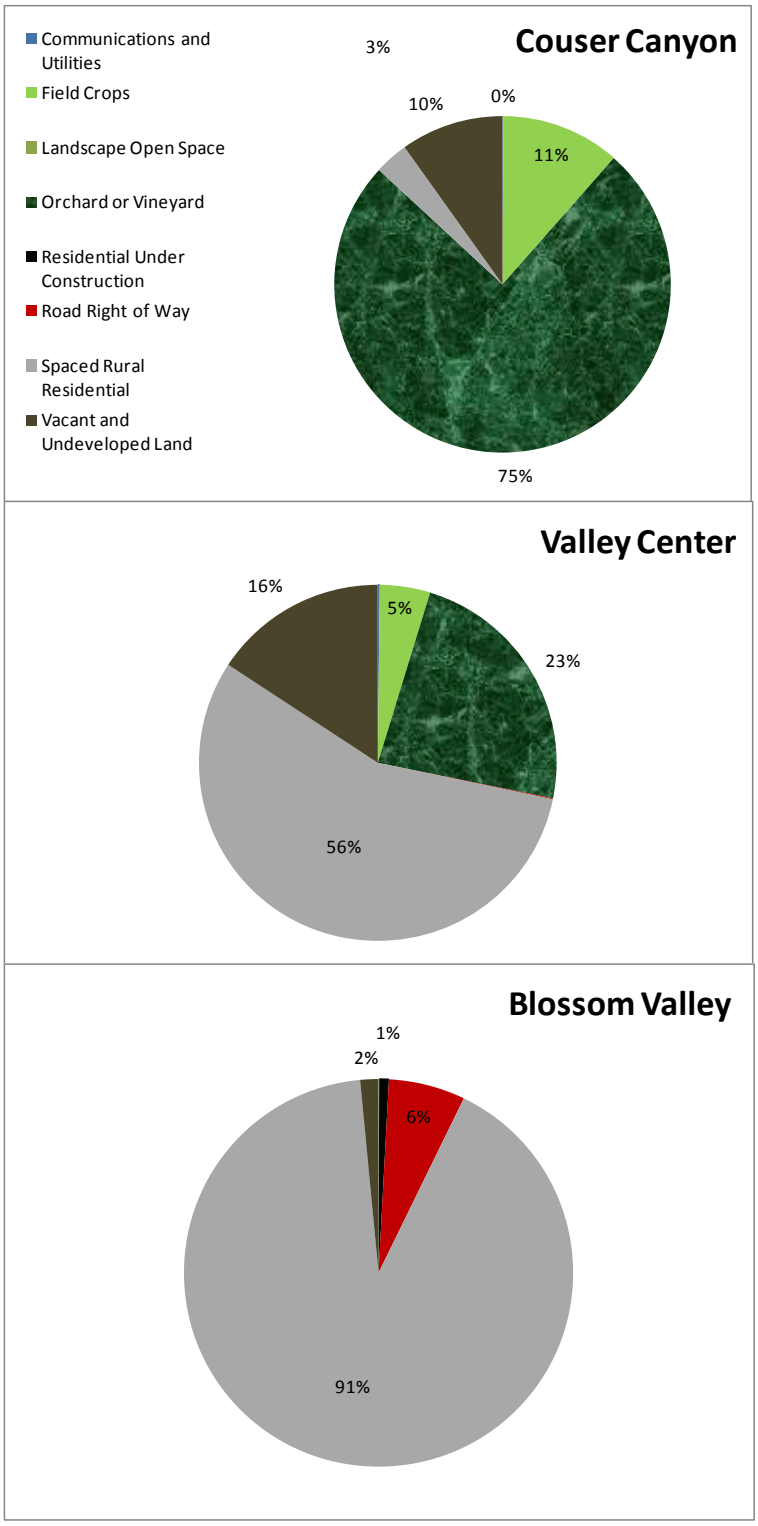

2.1.1 Couser Canyon and Valley Center Sites

The Couser Canyon and Valley Center monitoring sites are located within the San Luis Rey River Watershed (Fig. 2.1). The Couser Canyon site, draining approximately 1,155 acres, was established at the north-western edge of the Monserate sub-basin on Couser Canyon Road, approximately 1.1 miles south of Highway 76. The drainage area associated with the site is dominated by agriculture including orchard and vineyards (75%) and field crops (11%) with the remaining 13% being composed of vacant and undeveloped land (10%) and spaced rural residential land use areas (3%) (Figs. 2-2 and 2-4). The water quality monitoring equipment for Couser Canyon was installed on County property near the upstream end of two 18-inch corrugated steel pipes that run below Couser Canyon Road (Figure 2-3). Midway through the monitoring period one of the two pipes was bent over and closed off from the majority of flow as a result of high flows that flooded the area.

Figure 2-3: Couser Canyon Monitoring Location Photo

Figure 2-4: Couser Canyon Monitoring Location Drainage Area Landuse Composition

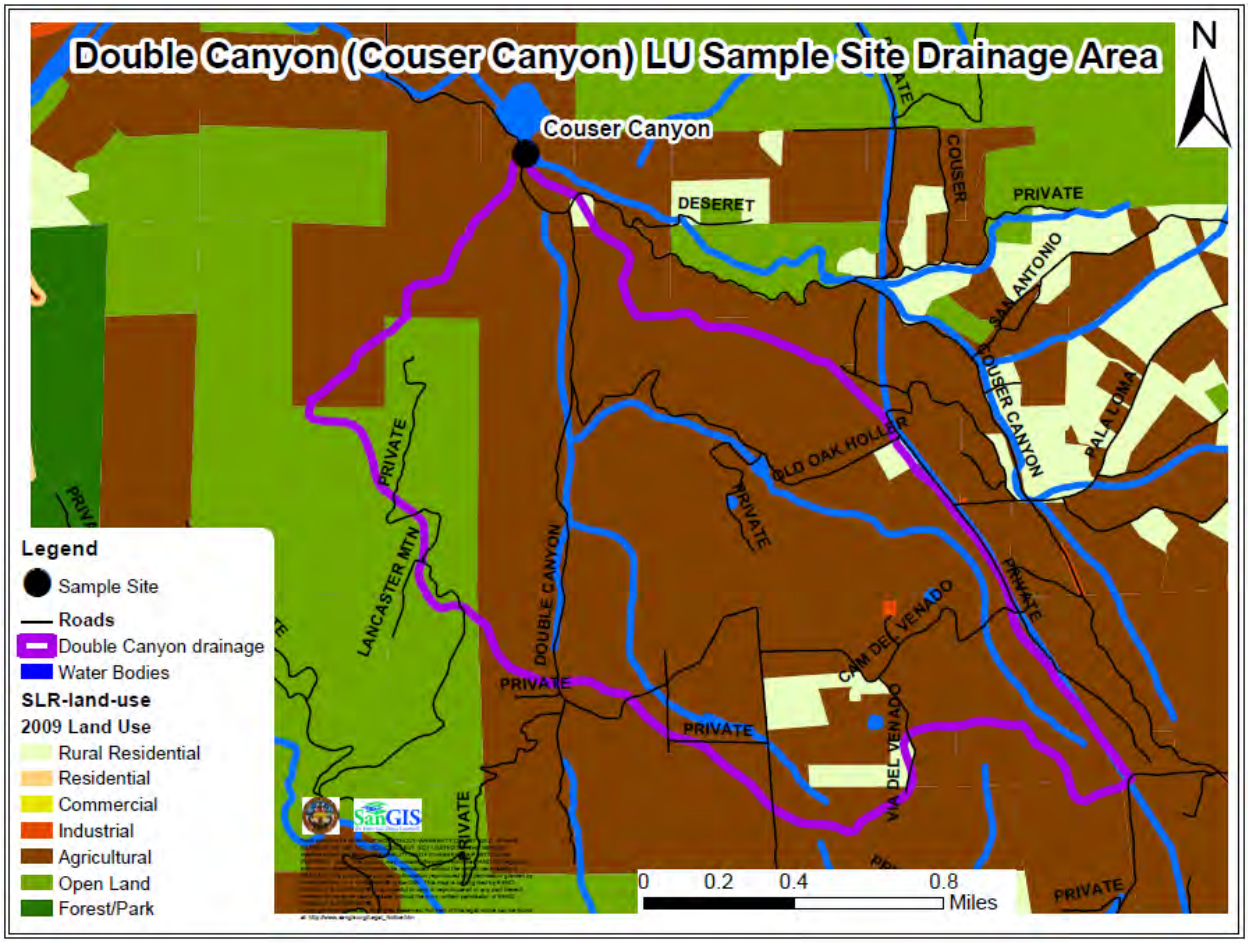

The Valley Center site, with a drainage area of 423 acres, was established in the eastern portion of the Lower San Luis Rey sub-basin at the intersection of Old Castle Road and Lilac Road. The drainage area associated with the site consists mainly of spaced rural residential (56%) and agricultural (27%) land uses; undeveloped or vacant lands occupy 16% of the area (Figs. 2-2 and 2-6). The water quality monitoring equipment for the Valley Center site was installed on County property in the single 48-inch corrugated metal pipe that extends under Old Castle Road just west of the intersection with Lilac Road (Figure 2-5).

Figure 2-5: Valley Center Monitoring Location

Figure 2-6: Valley Center Monitoring Location Drainage Area Landuse Composition

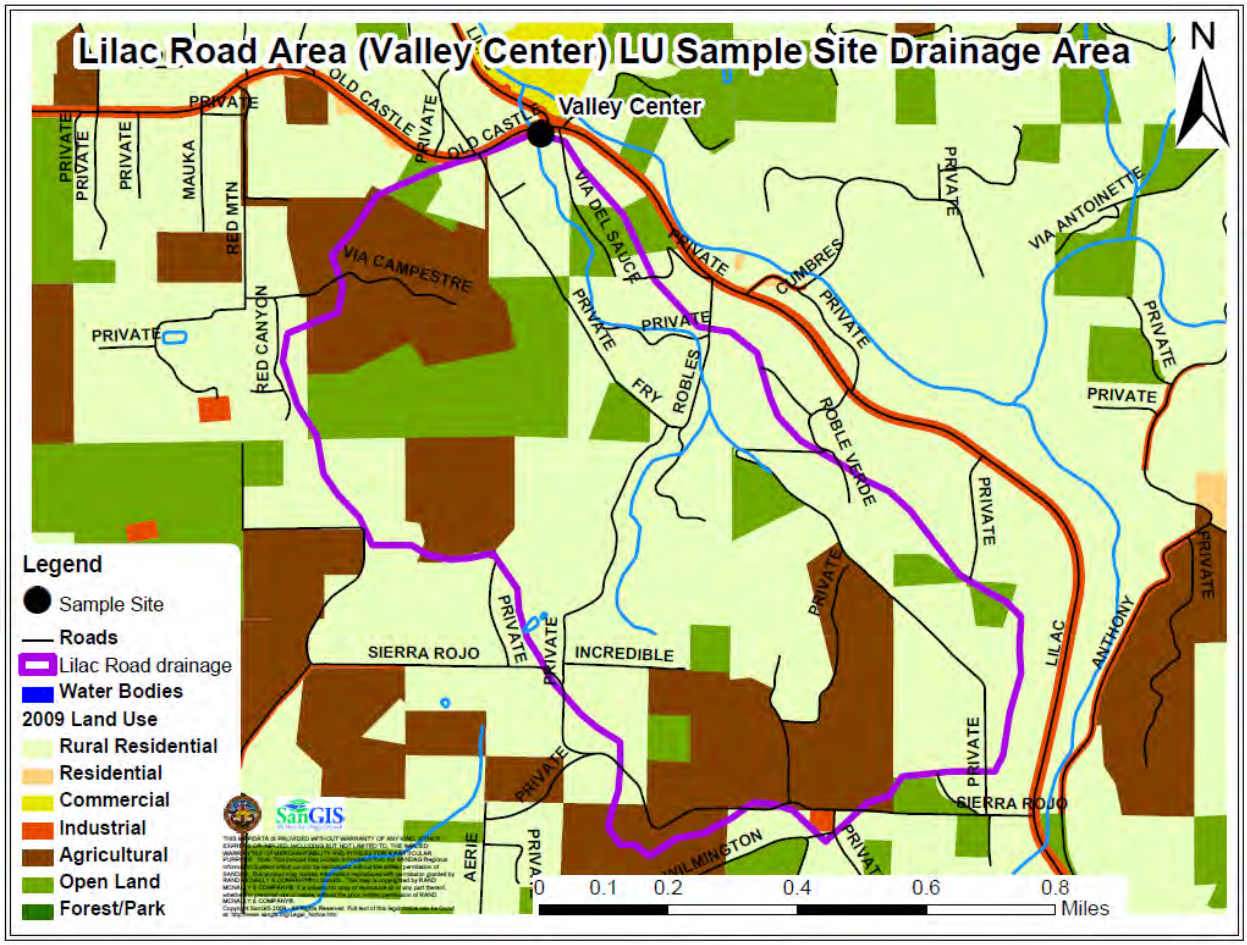

2.1.2 Blossom Valley Site

The Blossom Valley monitoring site, draining approximately 185 acres, was established located within the San Diego River Watershed on Hawley Road, approximately 0.65 miles north of Old Highway 80. The site, was set near the eastern edge of the Lower San Diego sub-basin targeting runoff from spaced rural residential land use (91%) (Figs 2-2 and 2-8). The water quality monitoring equipment for the site was installed on County property in the single 36-inch concrete pipe that runs below Hawley Road (Figure 2-5).

Figure 2-7: Blossom Valley Monitoring Location

Figure 2-8: Valley Center Monitoring Location Drainage Area Landuse Composition

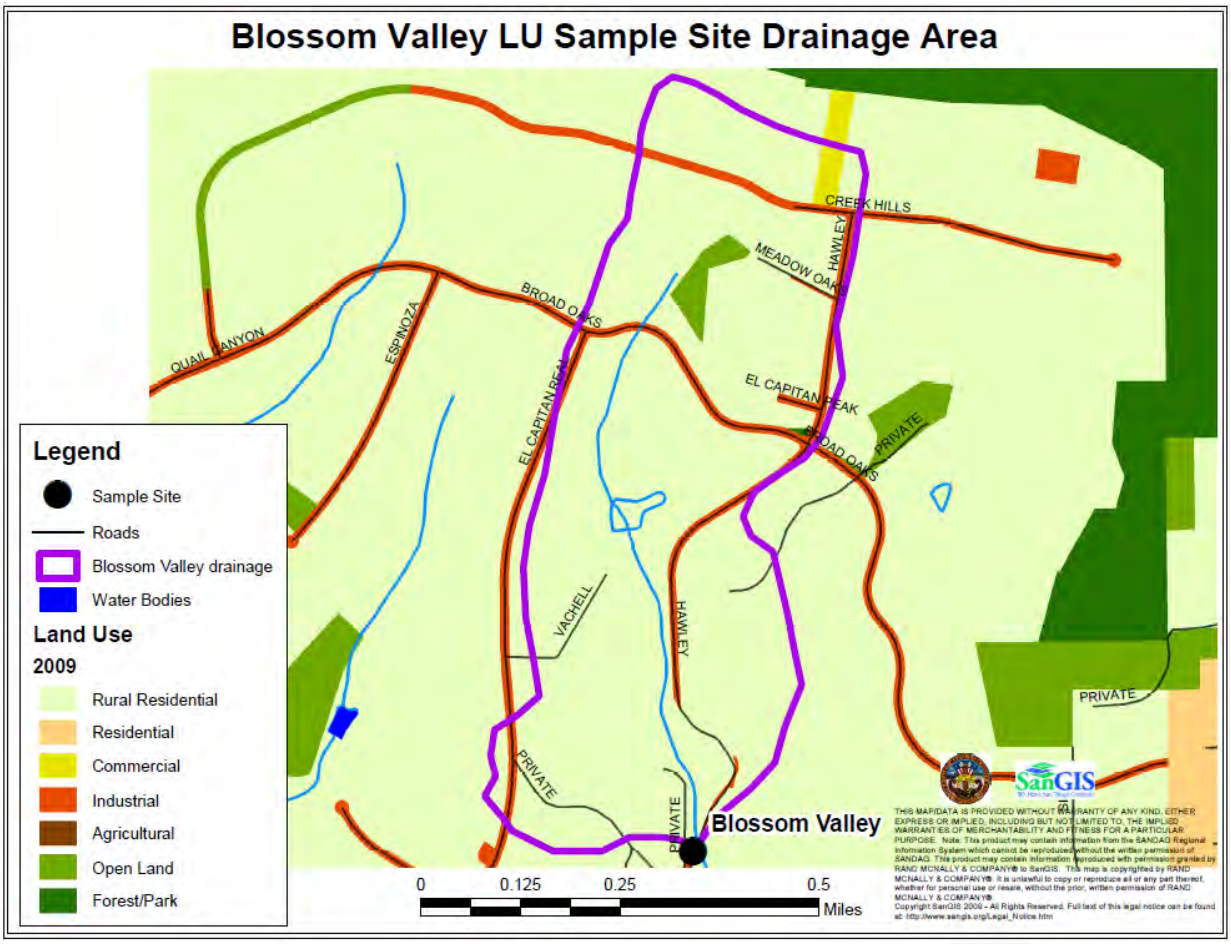

2.2 ANALYTICAL METHODS

Specific analytical parameters were selected for each site based on land uses within the associated drainage areas and the specific 303(d) listings of the receiving waters. Tables 2-2, 2-3, and 2-4 show the analytes by site and include methods, maximum holding times, and reporting limit requirements. At all locations, *in-situ* water quality field measurements were collected for parameters listed in Table 2-5.

Water and sediment samples were analyzed by CRG Marine Laboratories, Inc. (CRG), for both wet weather sampling events. EnviroMatrix Analytical, Inc. (EMA) performed the dry weather sample analysis.

Table 2-2: Analytical Requirements for Couser Canyon MLS Water Samples

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Microbiology	Coliform, Fecal	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100mL
	Coliform, Total	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100mL
	Enterococcus	Enterolert	6 hours at ≤ 6°C	10 MPN/100mL
Nutrients and Conventionals	Ammonia-Nitrogen	SM 4500-NH_3 F/ SM 4500 NH_3 B,C	28 days	0.03 mg/L
	Nitrate-Nitrogen	EPA 300.0/ SM 4500 NO_3 E	48 hours	0.20 mg/L
	Nitrite-Nitrogen	EPA 300.0/ SM 4500 NO_2 B	48 hours	0.05 mg/L
	Ortho-Phosphate Phosphorus	EPA 300.0/ SM 4500-P E[c]	48 hours	0.01 mg/L

Table 2-2: Analytical Requirements for Couser Canyon MLS Water Samples (continued)

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Nutrients and Conventionals	Chloride	EPA 300.0/ SM 4500 Cl C	28 days	0.20 mg/L
	Fluoride	EPA 300.0/ SM 4500 F C	28 days	0.20 mg/L
	Sulfate	EPA 300.0/ SM 4500 SO_4 E	28 days	0.05 mg/L
	Total Kjeldahl Nitrogen	SM 4500-N Org B/ SM 4500 N C	28 days	0.50 mg/L
	Total Phosphorus	SM 4500-P E/ SM 4500 P B, E	28 days	0.05 mg/L
	Total Suspended Solids	SM 2540-D	7 days	5.0 mg/L
	Total Dissolved Solids (TDS)	SM 2540-C	7 days	5.0 mg/L
	Alkalinity, Bicarbonate	SM 2320-B	14 days	5.0 mg/L
	Alkalinity, Carbonate	SM 2320-B	14 days	5.0 mg/L
	Alkalinity, Hydroxide	SM 2320-B	14 days	5.0 mg/L
	Hardness, Total	SM 2340-C/ EPA 200.7	6 months	5.0 mg $CaCO_3$/L

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit
Metals	Iron, Total	EPA 200.8(m)	6 months	20.0 ug/L
	Manganese, Total	EPA 200.8(m)	6 months	1.0 ug/L
	Boron, Total	EPA 200.8(m)/ EPA 200.7	6 months	5.0 ug/L
	Magnesium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	0.1 mg/L
	Potassium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	10.0 mg/L
	Sodium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	10.0 mg/L
	Calcium, Dissolved	EPA 200.8(m)/ EPA 200.7	6 months	0.1 mg/L
Herbicides	Terbuthylazine	EPA 625(m)	7 days	0.01 ug/L
	Secbumeton	EPA 625(m)	7 days	0.01 ug/L
	Simazine	EPA 625(m)	7 days	0.01 ug/L
	Oxadiazon	EPA 625(m)	7 days	0.05 ug/L
	Atrazine	EPA 625(m)	7 days	0.01 ug/L

(a) Filtering for dissolved constituents was conducted by the laboratory as soon as possible.

(b) If a second method number is listed, it is the method used by EnviroMatrix Analytical, Inc., for the dry weather sampling event.

(c) The County requested the analytical method for Orthophosphate-Phosphorus be changed from EPA 300.0 to SM 4500-P E.

Table 2-3: Analytical Requirements for Blossom Valley and Valley Center MLS Water Samples

Constituent Category	Analytical Parameter[a]	Analytical Method[b]	Maximum Holding Time	Reporting Limit

Microbiology	Coliform, Fecal	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100 mL
	Coliform, Total	SM 9221 B/E	6 hours at ≤ 6°C	20 MPN/100 mL
	Enterococcus	Enterolert	6 hours at ≤ 6°C	10 MPN/100 mL
Nutrients and Conventionals	Ammonia-Nitrogen	SM 4500-NH_3 F	28 days	0.03 mg/L
	Nitrate-Nitrogen	EPA 300.0	48 hours	0.20 mg/L
	Nitrite-Nitrogen	EPA 300.0	48 hours	0.05 mg/L
	Ortho-Phosphate Phosphorus	SM 4500-P E	48 hours	0.01 mg/L
	Hardness, Total	SM 2340-C	6 months	5.0 mg $CaCO_3$/L
	Total Kjeldahl Nitrogen	SM 4500-N Org B	28 days	0.50 mg/L
	Total Phosphorus	SM 4500-P E	28 days	0.05 mg/L
	Total Suspended Solids	SM 2540-D	7 days	5.0 mg/L
	Total Dissolved Solids (TDS)	SM 2540-C	7 days	5.0 mg/L
Metals	Antimony, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Arsenic, Dissolved	EPA 200.8(m)	6 months	1.0 ug/L
	Cadmium, Dissolved	EPA 200.8(m)	6 months	1.0 ug/L
	Chromium, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L

	Copper, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Lead, Dissolved	EPA 200.8(m)	6 months	2.0 ug/L
	Lead, Total	EPA 200.8(m)	6 months	2.0 ug/L
	Nickel, Dissolved	EPA 200.8(m)	6 months	2.0 ug/L
	Selenium, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
	Selenium, Total	EPA 200.8(m)	6 months	5.0 ug/L
	Zinc, Dissolved	EPA 200.8(m)	6 months	5.0 ug/L
Organophosphorus Pesticides	Chlorpyrifos	EPA 625(m)	7 days	0.02 ug/L
	Diazinon	EPA 625(m)	7 days	0.04 ug/L
	Malathion	EPA 625(m)	7 days	0.06 ug/L

(a) Filtering for dissolved constituents was conducted by the laboratory as soon as possible.

(b) Acid preservation will be conducted by the laboratory as soon as possible.

Table 2-4: Analytical Requirements for Couser Canyon MLS Sediment Samples

Constituent Category	Analytical Parameter	Analytical Method	Maximum Holding Time	Reporting Limit
Pyrethroid Pesticides	Allethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Bifenthrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g

Constituent Category	Analytical Parameter	Analytical Method	Maximum Holding Time	Reporting Limit
	Cyfluthrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Cypermethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Danitol	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Deltamethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	lambda-Cyhalothrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Permethrin	EPA 8270 NCI GC/MS	40 days	25.0 ng/g
	Prallethrin	EPA 8270 NCI GC/MS	40 days	2.0 ng/g
	Piperonyl butoxide (PBO)	EPA 8270C(m)	40 days	20.0 ng/g

Table 2-5: *In-Situ* Field Measurements at All Locations

Analyte	Range
Conductivity	0 – 9.99 S/cm
Dissolved Oxygen (DO)	0 – 19.99 mg/L or 0 – 199% saturated air
pH	0 – 14

Temperature	0 °C – 55 °C
Turbidity	0 – 800 NTU

2.3 WATER QUALITY OBJECTIVES

Certain water bodies (Table 2-6) associated with this monitoring program are listed as impaired on the Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List). The Lower and Upper SLR River is listed for total nitrogen. The Lower SLR River is also listed for chloride, phosphorus, and total dissolved solids (TDS). The Lower SLR River and the Pacific Ocean shoreline at the SLR River mouth are listed for bacteria. The Lower San Diego River is listed for bacteria, phosphorus, total nitrogen, TDS, and low DO. In addition, a Total Maximum Daily Load (TMDL) for indicator bacteria was adopted by the California State Water Resources Control Board on December 14, 2010 that includes San Luis Rey River and the San Diego River watersheds. In this report, applicable Water Quality Objectives (WQOs), if available, were utilized for comparison purposes only and are outlined in Table 2-7. Sediment quality objectives applicable to this project are not available in current literature. The State Water Resources Control Board (SWRCB) intends to develop sediment quality objectives for enclosed bays and estuaries, but anticipates that the process will require approximately four years to complete (SWRCB, 2009).

Table 2-6: Clean Water Act Section 303(d) Listings Related to the Study Sites

Impaired Water Bodies	CWA Section 303(d) 2008 Listings								
	Nutrients			Dissolved Minerals		Low Dissolved Oxygen	FIB		
	Total N	Phosphorus	Eutrophic	Chloride	TDS		Enterococcus	Fecal Coliform	Total Coliform
San Luis Rey River (Lower)	X	X		X	X		X	X	
San Luis Rey River (Upper)	X								

Pacific Ocean Shoreline at SLR River mouth							X		X
San Diego River (Lower)	X	X			X	X	X	X	

FIB = Fecal Indicator Bacteria

N = Nitrogen

Table 2-7: Available Water Quality Objectives

Analyte	Units	Water Quality Objective	Source
Microbiology			
Coliform, Fecal	colonies/100mL	400	Basin Plan
Coliform, Total	colonies/100mL	10,000[a]	Basin Plan
Enterococcus	colonies/100mL	104[b]	Basin Plan
Nutrients and Conventionals			
Ammonia-Nitrogen	mg/L	< 0.025	Basin Plan
Nitrate-Nitrogen	mg/L	10[c]	Basin Plan
Nitrite-Nitrogen	mg/L	1[c]	Basin Plan
Total Nitrogen	mg/L	1[d]	Basin Plan
Chloride	mg/L	250[e]	Basin Plan
		50[f]	
Fluoride	mg/L	1.0	Basin Plan
Total Phosphorus	mg/L	0.1[g]	Basin Plan
Dissolved Oxygen	mg/L	> 5.0 mg/l	Basin Plan
Total Dissolved Solids	mg/L	500[e]	Basin Plan
		300[f]	

Table 2-7: Available Water Quality Objectives (continued)

Metals			
Arsenic, Dissolved	µg/L	340[h, i]	California Toxics Rule
		150[i, j]	
Boron, Total	mg/L	0.75[e]	Basin Plan
		1.0[f]	
Cadmium, Dissolved	µg/L	4.3[h, k]	California Toxics Rule
		2.2[j, k]	
Chromium, Dissolved	µg/L	550[h, k]	California Toxics Rule
		180[j, k]	
Copper, Dissolved	µg/L	13[h, k]	California Toxics Rule
		9.0[j, k]	
Iron, Total	mg/L	0.3	Basin Plan
Lead, Dissolved	µg/L	65[h, k]	California Toxics Rule
		2.5[j, k]	
Lead, Total	µg/L	82[h, k]	California Toxics Rule
		3.2[j, k]	
Manganese, Total	mg/L	0.05	Basin Plan
Nickel, Dissolved	µg/L	470[h, k]	California Toxics Rule
		52[j, k]	
Selenium, Dissolved	µg/L	Acute N/A	USEPA Recommended Water Quality Criteria
		4.6[j]	
Selenium, Total	µg/L	Acute N/A	USEPA Recommended Water Quality Criteria
		5.0[j]	
Sodium, Dissolved	%	60[l]	Basin Plan

Zinc, Dissolved	µg/L	120[h, k] 120[j, k]	California Toxics Rule
Organics			
Diazinon	µg/L	Acute: 0.08 Chronic: 0.05	SDRWQCB Resolution No. R9-2002-0123
Simazine	ng/L	4000 ng/L	Basin Plan
Atrazine	mg/L	0.001	Basin Plan

N/A = Water quality objective is not available at this time.

(a) WQO for bays and estuaries.

(b) Although criteria are for saltwater, these criteria are commonly used in San Diego Co-Permitee projects.

(c) Although criteria are for drinking water standards, these criteria are commonly used in San Diego Co-Permitee projects.

(d) From Basin Plan (1994): "Threshold values have not been set for nitrogen compounds; however natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 shall be used." Given WQO for total P = 0.1, WQO for total N = 1.

(e) WQO specified for Inland Surface Waters in the San Luis Rey Hydrologic Unit and Sweetwater Hydrologic Unit.

(f) WQO specified for Inland Surface Waters in the San Diego Hydrologic Unit.

(g) Not to be exceeded more than 10% of the time

(h) Criteria Maximum Concentration (CMC).

(i) Criteria are expressed as a function of the water effect ratio.

(j) Criteria Continuous Concentration (CCC).

(k) Criteria are expressed as a function of total hardness (mg/L as $CaCO_3$). Values assume a hardness of 100 mg/L.

(l) The WQO for sodium is expressed as percent sodium.

2.4 WET WEATHER SAMPLING

Wet weather sampling was conducted during two storm events at each of the three monitoring locations. A viable storm event was one that produced a minimum of 0.25 inches of rainfall and was within ± 50 percent of the average storm volume for the region. Storm qualification was determined by the mobilization criteria established in the QAPP (Appendix A). Rain gauges were installed at each sampling location to measure precipitation during monitored storm events.

Wet weather sampling included single *in-situ* field measurements as listed in Table 2-5, and collection of flow-weighted composite samples for chemical constituent analysis and grab samples for FIB analysis. Chemistry and microbiology analyses were performed according to Table 2-2 for the Couser Canyon site and Table 2-3 for the Blossom Valley and Valley Center sites. The flow-weighted composite sample aliquots were collected throughout the storm events until rain stopped and flow rates returned to baseflow. A single grab sample was collected for each storm event at each sampling location to test for FIB. Field duplicate grab samples were taken once per storm event and one field blank grab sample was analyzed for the program.

One post-storm sediment sample was collected at Couser Canyon after the first monitored wet weather event (February 6-8). The sample was taken as a composite along a cross-section of the creek. To collect the sample, a pre-cleaned stainless steel spoon was used to scoop the top two inches of sediment at locations approximately 25 percent, 50 percent, and 75 percent of the total distance across the channel. The sample was collected approximately five feet upstream of the water sample collection point and was analyzed according to Table 2-4.

2.5 DRY WEATHER SAMPLING

One non-storm flow sampling event was monitored at Couser Canyon only. The Valley Center and Blossom Valley sites were dry. The sampling at Couser Canyon included collection of single *in-situ* field measurements as listed in Table 2-5, and collection of a flow-weighted composite sample for chemical constituent analysis and a grab sample for FIB analysis. Chemistry and microbiology analyses were performed according to Table 2-2. The flow-weighted composite sample aliquots were collected every 30 minutes for a 24–hour period. A field duplicate grab sample was also collected and analyzed for FIB.

2.6 STREAM GAUGING

Stream flow gauging was conducted, based on site characteristics, using either standard USGS wading stream flow gauging protocol (Rantz, 1982), or installed area-velocity bubbler (AVB) probes. The resulting data were used to develop stage-discharge relationships that were incorporated into the flow monitoring equipment used during wet weather sampling events.

2.6.1 Couser Canyon

The Couser Canyon monitoring location consisted of a small natural channel leading to two 18-inch misshapen corrugated metal pipes. Stream gauging at this site was conducted using the 0.6 depth USGS protocol (Rantz, 1982). Multiple gauging events occurred at this site; however, development of a reliable discharge rating curve was not possible because of the transitional nature of the sandy bottom of the channel. Although depths in the gauging area did not vary much throughout the season, current velocities did, resulting in highly variable discharge rates. When these rates were compared with the associated stage heights from the installed bubbler, the data did not allow for rating curve establishment. As a result, sample pacings at this site were determined based on site conditions prior to each monitored event. Field data sheets from the gauging events are included in Appendix C.

2.6.2 Valley Center

The Valley Center monitoring location consisted of a 48-inch corrugated metal pipe. This site was selected late in the season, which did not allow for early season discharge measurements. Gauging data were collected using a HACH flow meter and AVB probe. This was advantageous over traditional stream gauging (the 0.6 depth USGS protocol) because, based on field observations, stage heights at the Valley Center site did not vary much over the monitoring season. The selected approach allowed for discharge data collection during higher stage heights associated with rain events.

2.6.3 Blossom Valley

The Blossom Valley monitoring location consisted of a 36-inch concrete pipe that contained flowing water only during storms. This did not allow for traditional stream gauging using the 0.6 depth USGS protocol (Rantz, 1982) and therefore, gauging data at this site were collected using a HACH flow meter and AVB probe during monitored events only.

3.0 RESULTS

Due to varying local hydrology, wet weather sampling occurred on different days at different sites. As mentioned in Section 2.5, dry weather sampling was conducted only at Couser Canyon as the other two sites were dry. The pertinent field data sheets are included in Appendix C. Table 3-1 lists the locations sampled, events monitored, and sample dates.

Table 3-1: Sampling Event Summary

Monitoring Location	First Wet Weather Event	Second Wet Weather Event	Dry Weather Event
Couser Canyon	2/6 – 2/8/2010	2/20/2010	6/2 - 6/3/2010
Valley Center	2/20/2010	3/6 – 3/7/2010	Not Sampled[(a)]
Blossom Valley	2/21-22/2010	3/7/2010	Not Sampled[(a)]

(a) Blossom Valley and Valley Center were not sampled during the dry weather sampling event as there was no flow at the sites.

3.1 WET WEATHER MONITORING

Monthly and annual rainfall data for the 2009-2010 wet weather season (October through May) (Table 3-2) were obtained from the National Weather Service (NWS) Fallbrook station, located near the Couser Canyon and Valley Center monitoring sites, and Alpine station, located near the Blossom Valley monitoring site. Isopluvial maps from the San Diego County Hydrology Manual indicate that the mean annual rainfall for both areas ranges from approximately 15 to 18 inches (Chang, 2009). Based on this data, the total rainfall for the area was within the average range.

Table 3-2: Regional Monthly Rainfall Summaries, 2009-2010 Storm Water Season

Month	Total Rainfall (inches)	
	Fallbrook (near Couser Canyon and Valley Center)	Alpine (near Blossom Valley)
October 2009	0.05	0.08
November 2009	0.42	0.85

Month	Total Rainfall (inches)	
	Fallbrook (near Couser Canyon and Valley Center)	**Alpine** (near Blossom Valley)
December 2009	3.43	3.85
January 2010	5.84	4.70
February 2010	4.12	3.36
March 2010	0.61	0.86
April 2010	1.99	2.76
May 2010	0.00	0.05
Season Total (October 2009 - May 2010)	16.46	16.51

Note: Data is from the National Oceanic and Atmospheric Administration website (http://www.wrh.noaa.gov/sgx/obs/rtp/rtpmap.php?wfo=sgx)

3.1.1 Couser Canyon

Two wet weather events were monitored at Couser Canyon with one post-storm sediment grab sample collected after the first storm.

3.1.1.1 February 6-8 Wet Weather Event

Rainfall began at 4:21 pm on February 5, 2010 and ended at 6:43 am on February 7 totaling 1.13 inches in precipitation. Flow began to increase in response to rainfall at approximately 10:00 pm on February 5 and the first composite sample aliquot was collected at 3:32 am on February 6. The last sample aliquot was taken at 7:21 am on February 8 as the flow rate returned to baseline. There were occasional drops in flow due to debris either slowing flow or clogging the pipes immediately downstream of the sample area. The debris clogs were cleared by field crews and flows returned to typical levels. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent

capture for this event. The total discharge for the event was 880,719 cubic feet. The event hydrograph is provided in Figure 3-1.

Figure 3-1: Couser Canyon Hydrograph – February 6-8 Wet Weather Event

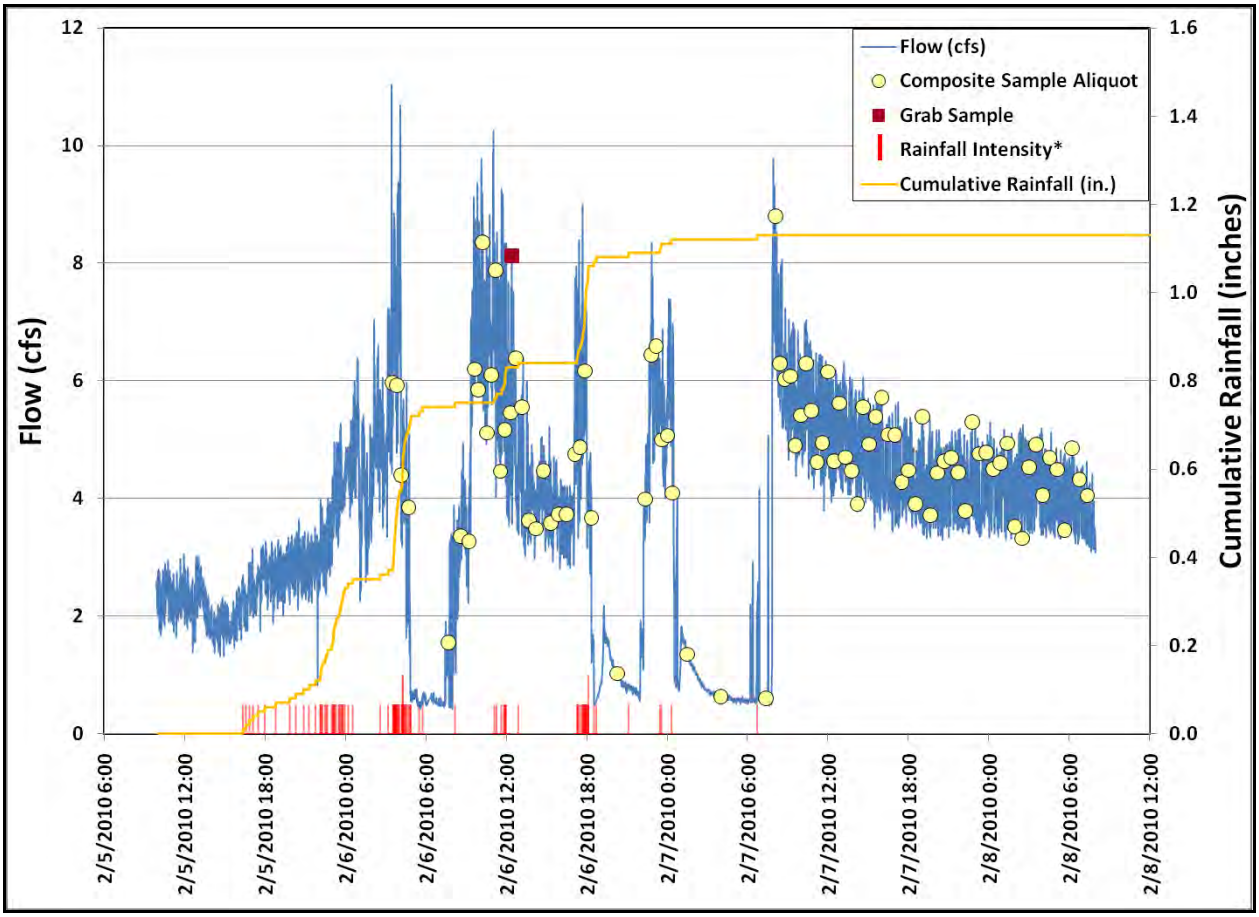

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.1.2 February 20 Wet Weather Event

Rainfall began at 10:26 pm on February 19, 2010 and ended at 9:11 am on February 20 producing 0.44 inches in precipitation. Flow began to increase in response to rainfall at approximately 2:30 am on February 20 and the first sample aliquot was collected at 6:33 am. The last aliquot was taken at 4:26 pm

on February 20 as flow returned to baseline shortly after. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event was 592,604 cubic feet. The event hydrograph is provided in Figure 3-2.

Figure 3-2: Couser Canyon Hydrograph – February 20 Wet Weather Event

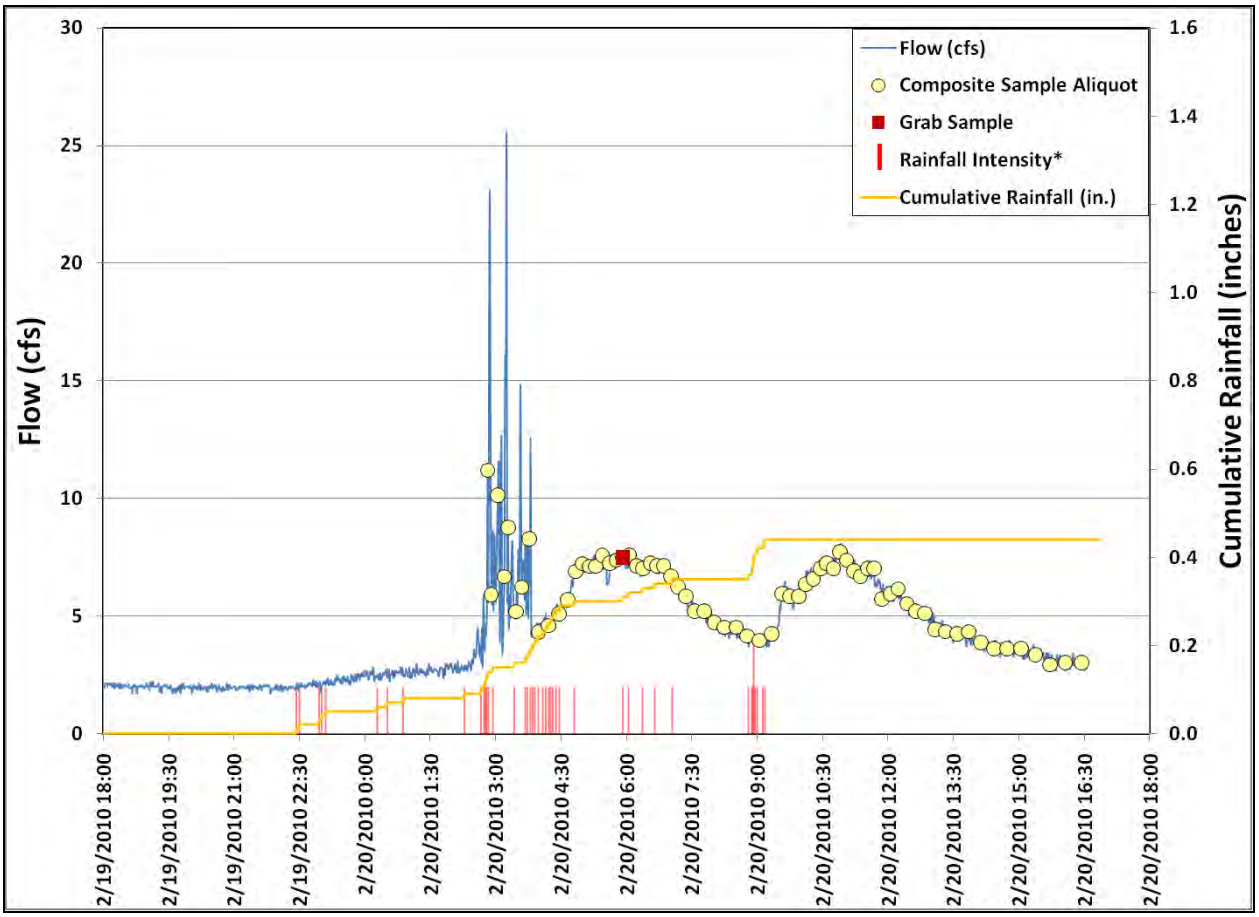

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.1.3 Water Quality and Sediment Testing Results

Water quality analytical laboratory testing results are presented in Table 3-3; Table 3-4 shows the *in-situ* field measurement results. The post-storm sediment sample results are presented in Table 3-5.

None of the 13 synthetic pyrethroids considered were detected in the sediment sample. Simazine was the only herbicide detected in the water samples. The simazine-positive sample was collected during the February 20 Wet Weather Event and the simazine concentration in the sample exceeded the 4,000 ng/L WQO.

Of the remaining water quality constituents, the following nine exceeded their respective WQOs (Table 2-7) during both storms:

- Fecal Coli*f*orm
- Total Coliform
- *Enterococcus*
- Ammonia as Nitrogen
- Total Nitrogen (total N concentrations for storm events one and two equaled 29 mg/L and 27 mg/L, respectively, greatly exceeding the 1.0 mg/L WQO)
- Total Phosphorus
- Total Dissolved Solids
- Total Iron
- Total Manganese

Table 3-6 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-3: Analytical Results for Wet Weather Events at Couser Canyon

Constituent Category	Analyte	Analytical Method	Units	Feb. 6-8 Event	Feb. 20 Event
Microbiology	*Enterococcus*	Enterolert	MPN/100mL	309	2,359
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	800	1,700
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	17,000	50,000
Nutrients and Conventionals	Ammonia as Nitrogen	SM 4500-NH_3 F	mg/L	0.05	0.03J
	Nitrate as Nitrogen	EPA 300.0	mg/L	27.70	24.42
	Nitrite as Nitrogen	EPA 300.0	mg/L	0.03J	0.05
	Total Nitrogen	by Calculation	mg/L	29.02	27.41
	Orthophosphate as Phosphorus	SM 4500-P E	mg/L	0.15	0.11
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	1.29Q9	2.94Q9
	Total Phosphorus	SM 4500-P E	mg/L	0.36	0.36
	Chloride	EPA 300.0	mg/L	183.47	196.15
	Fluoride	EPA 300.0	mg/L	0.32	0.36
	Sulfate	EPA 300.0	mg/L	390.6	401.1
	Total Suspended Solids	SM 2540 D	mg/L	244	261
	Total Dissolved Solids	SM 2540 C	mg/L	1132	1218
	Alkalinity, Bicarbonate	SM 2320 B	mg/L	131.0	137.0
	Alkalinity, Carbonate	SM 2320 B	mg/L	< 1.0	< 1.0
	Alkalinity, Hydroxide	SM 2320 B	mg/L	< 1.0	< 1.0
	Total Hardness as CaCO3	SM 2340 B	mg/L	534.4	609.1
Metals	Boron (B), Total	EPA 200.8m	µg/L	227.3	180.5
	Calcium (Ca), Dissolved	EPA 200.8m	mg/L	88.26	100.40
	Iron (Fe), Total	EPA 200.8m	µg/L	2562	2283
	Magnesium (Mg), Dissolved	EPA 200.8m	mg/L	76.25	87.04

	Manganese (Mn), Total	EPA 200.8m	µg/L	235.9	239.9
	Potassium (K), Dissolved	EPA 200.8m	mg/L	< 5.0	< 5.0
	Sodium (Na), Dissolved	EPA 200.8m	mg/L	189.8	214.8
Herbicides	Atrazine	EPA 625m	ng/L	< 5.0	19.00
	Oxadiazon	EPA 625m	ng/L	< 18.97	< 18.97
	Secbumeton	EPA 625m	ng/L	< 5.0	< 5.0
	Simazine	EPA 625m	ng/L	806.4	4820.9
	Terbuthylazine	EPA 625m	ng/L	< 5.0	< 5.0

Notes when Basin Plan water quality criteria were exceeded.

Notes when California Toxics Rule Criterion Continuous Concentration (CCC) water quality criteria were exceeded.

J qualifier notes when the analyte was detected above the MDL but below the RL. Therefore, the result is considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-4: *In-Situ* Field Measurements for Wet Weather Events at Couser Canyon

Parameter	Units	Feb. 6-8 Event	Feb. 20 Event
Conductivity	uS/cm	1,840	1,780
Dissolved Oxygen	mg/L	9.06	8.59
pH	pH Units	7.67	7.51
Temperature	°C	15.3	13.3
Turbidity	NTU	417	70

Table 3-5: Sediment Analytical Results for February 6-8 Wet Weather Event at Couser Canyon

Constituent Category	Analyte	Analytical Method	Units	Feb. 6-8 Event
Synthetic Pyrethroids	Allethrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Bifenthrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Cyfluthrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Cypermethrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Danitol	EPA 8270CmNCI	ng/dry g	< 0.5
	Deltamethrin	EPA 8270CmNCI	ng/dry g	< 0.5Q9[(a)]
	Esfenvalerate	EPA 8270CmNCI	ng/dry g	< 0.5
	Fenvalerate	EPA 8270CmNCI	ng/dry g	< 0.5
	Fluvalinate	EPA 8270CmNCI	ng/dry g	< 0.5
	L-Cyhalothrin	EPA 8270CmNCI	ng/dry g	< 0.5
	Permethrin	EPA 8270CmNCI	ng/dry g	< 5.0Q9[(a)]
	Piperonyl Butoxide (PBO)	EPA 8270Cm	ng/dry g	< 5.0Q9[(a)]
	Prallethrin	EPA 8270CmNCI	ng/dry g	< 0.5

(a) Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Table 3-6: Mass Loading and Flux Values for the Wet Weather Events at Couser Canyon

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Feb. 20	Units	Feb. 6-8	Feb. 20
Micro -biology	Enterococcus	MPN/ storm event	77,062,081,096	395,856,160,110	MPN/ storm event/ acre	66,720,417	342,732,606
	Fecal Coliform		199,513,478,566	285,271,501,563		172,738,942	246,988,313
	Total Coliform		4,239,661,419,520	8,390,338,281,273		3,670,702,528	7,264,362,148
Nutrients and Conventionals	Ammonia as N	kg/ storm event	1.25	0.50	kg/ storm event/ acre	0.00	0.00
	Nitrate as N		690.82	409.78		0.60	0.35
	Nitrite as N		0.75	0.84		0.00	0.00
	Total N		723.74	459.96		0.63	0.40
	Orthophosphate as P		3.74	1.85		0.00	0.00
	TKN		32.17	49.34		0.03	0.04
	Total P		8.98	6.04		0.01	0.01

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Feb. 20	Units	Feb. 6-8	Feb. 20
	Chloride		4575.59	3291.53		3.96	2.85
	Fluoride		7.98	6.04		0.01	0.01
	Sulfate		9741.25	6730.73		8.43	5.83
	TSS		6085.16	4379.76		5.27	3.79
	TDS		28231.16	20438.86		24.44	17.70
	Alkalinity, Bicarbonate		3267.03	2298.95		2.83	1.99
	Alkalinity, Carbonate		12.47	8.39		0.01	0.01
	Alkalinity, Hydroxide		12.47	8.39		0.01	0.01
	Total Hardness as CaCO3		13327.50	10221.11		11.54	8.85
Metals	Boron (B), Total	g/ storm event	5668.68	3028.91	g/ storm event/ acre	4.91	2.62
	Calcium (Ca), Dissolved		2201132.45	1684779.93		1905.74	1458.68
	Iron (Fe), Total		63894.19	38310.28		55.32	33.17
	Magnesium (Mg), Dissolved		1901612.84	1460590.09		1646.42	1264.58

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Feb. 20	Units	Feb. 6-8	Feb. 20
	Manganese (Mn), Total		5883.15	4025.68		5.09	3.49
	Potassium (K), Dissolved		62347.96	41951.69		53.98	36.32
	Sodium (Na), Dissolved		4733457.28	3604489.33		4098.23	3120.77
Herbicides	Atrazine	mg/ storm event	62.35	318.83	mg/ storm event/ acre	0.05	0.28
	Oxadiazon		236.55	159.16		0.20	0.14
	Secbumeton		62.35	41.95		0.05	0.04
	Simazine		20110.96	80897.96		17.41	70.04
	Terbuthylazine		62.35	41.95		0.05	0.04

3.1.2 Valley Center

Two wet weather events were monitored at Valley Center.

3.1.2.1 February 20 Wet Weather Event

Rainfall began at 8:37 pm on February 19, 2010 and ended at 6:43 am on February 20 producing 0.32 inches in precipitation. Flow began to increase in response to rainfall at approximately 2:30 am on February 20 and the first sample aliquot was collected at 3:14 am. Flow returned to baseline levels and monitoring ended at 3:38 pm on February 20. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event was 24,031 cubic feet. The resulting hydrograph is presented in Figure 3-3.

Figure 3-3: Valley Center Hydrograph – February 20 Wet Weather Event

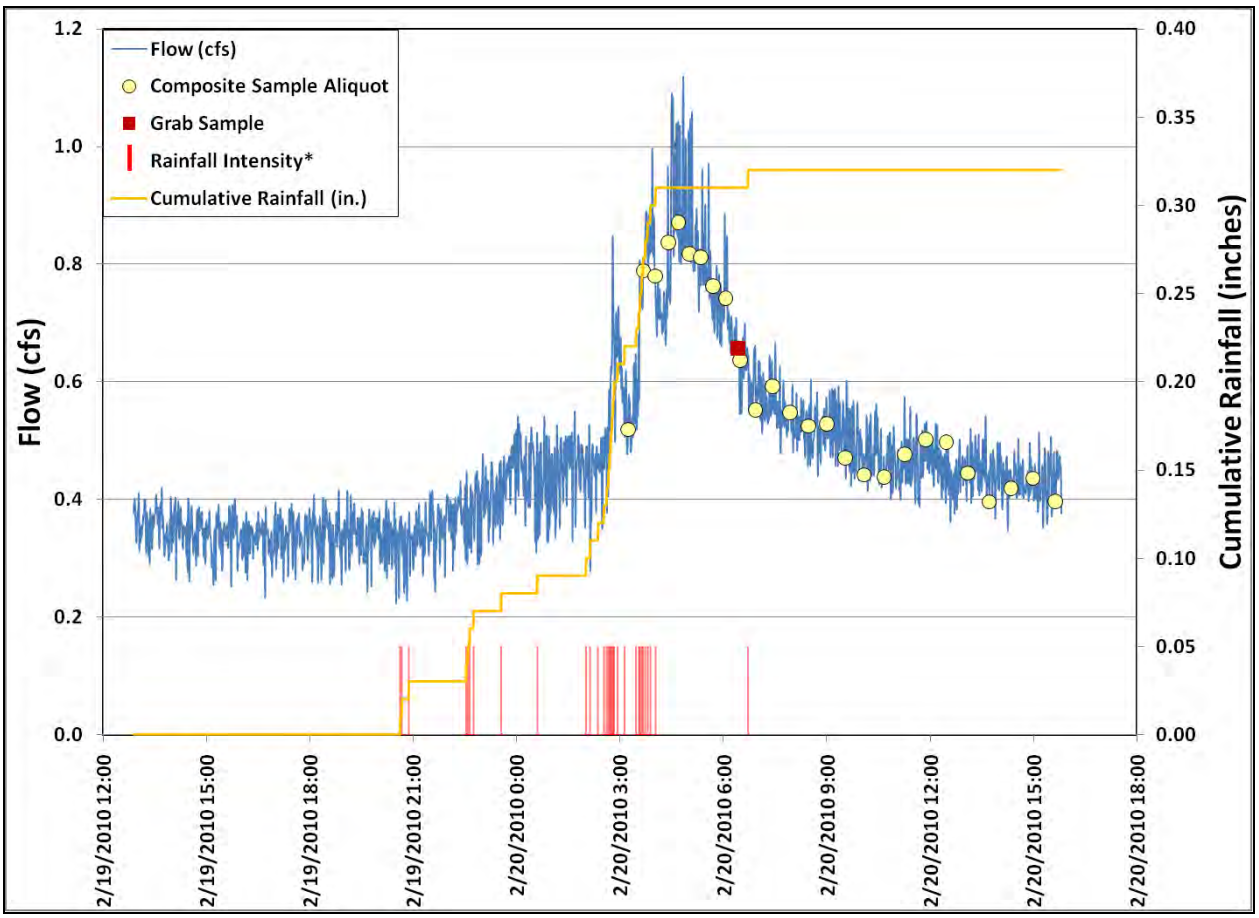

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.2 March 6-7 Wet Weather Event

Rainfall began at 4:16 pm on March 6, 2010 and ended at 9:37 am on March 7 resulting in a total precipitation of 0.14 inches, much less than the forecasted amount. Flow began to increase in response to rainfall at approximately 6:30 pm on March 6 and sampling begun at 8:05 pm. The majority of sampling took place during flows that were only slightly above base flow conditions. Sampling continued for approximately 20 hours. The required grab samples and composite sample volumes were collected during this time period, resulting in 100-percent capture for this event. The total discharge for the event equaled 31,189 cubic feet. The resulting hydrograph is presented in Figure 3-4.

Figure 3-4: Valley Center Hydrograph – March 6-7 Wet Weather Event

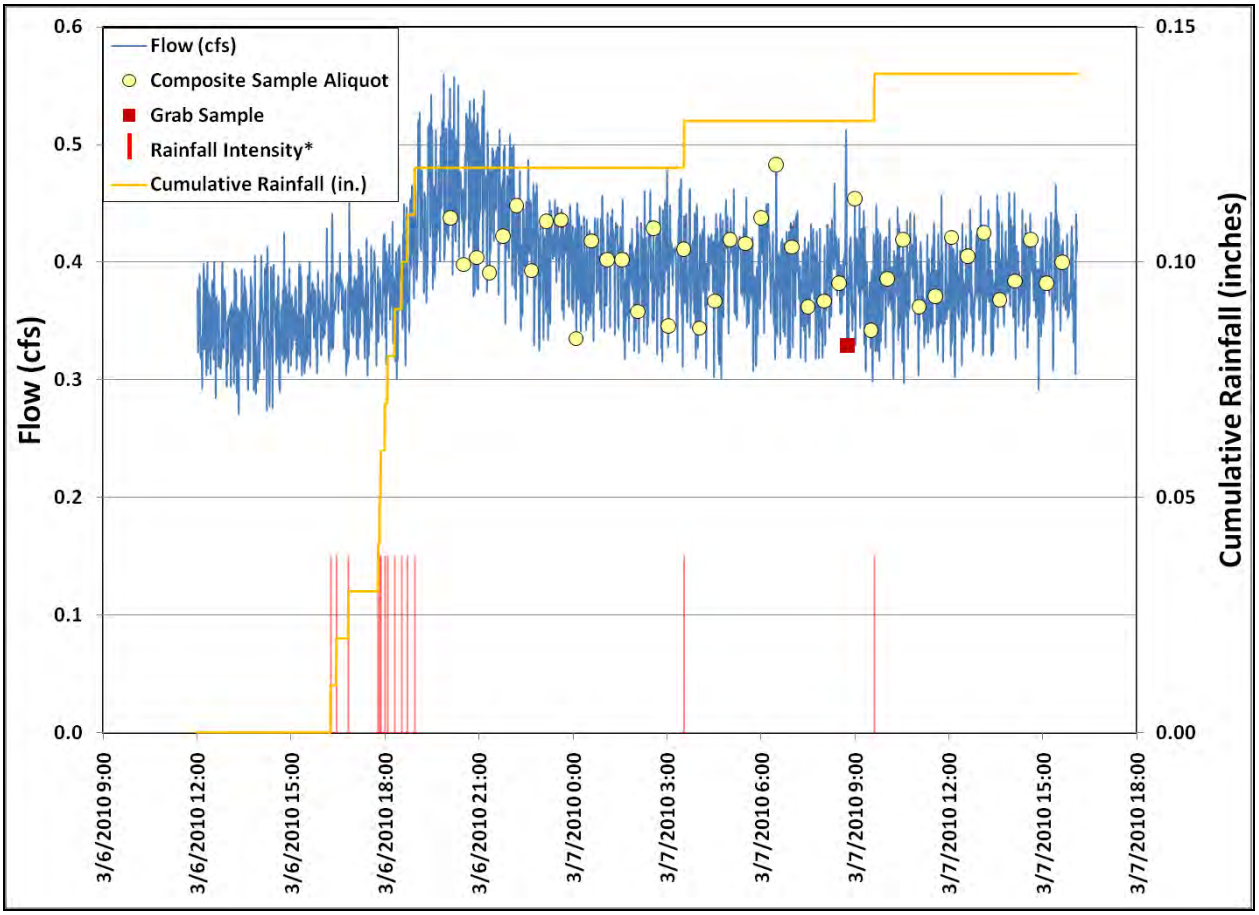

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.2.3 Water Quality Testing Results

Water quality analytical laboratory testing results are presented in Table 3-7; Table 3-8 shows the *in-situ* field measurement results. The following constituents exceeded WQOs for both wet weather events as outlined in Table 2-7:

- *Enterococcus*
- Total Nitrogen
- Total Dissolved Solids

Table 3-9 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-7: Analytical Results for Wet Weather Events at Valley Center

Constituent Category	Analyte	Analytical Method	Units	Feb. 20 Event	March 6-7 Event
Microbiology	Enterococcus	Enterolert	MPN/100mL	355	31
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	230	40
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	3,000	140
Nutrients and Conventionals	Ammonia as Nitrogen	SM 4500-NH_3 F	mg/L	< 0.03	< 0.03
	Nitrate as N	EPA 300.0	mg/L	3.14	3.82
	Nitrite as N	EPA 300.0	mg/L	0.04J	0.03J
	Total Nitrogen	by calculation	mg/L	4.97	4.55
	Orthophosphate as P	SM 4500-P E	mg/L	0.10	0.02
	Total Hardness as CaCO3	SM 2340 B	mg/L	552.5	445.6
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	1.79Q9	0.698J
	Total Phosphorus-Low Range	SM 4500-P E	mg/L	0.048J	0.027J
	Total Suspended Solids	SM 2540 D	mg/L	12	3J
	Total Dissolved Solids	SM 2540 C	mg/L	1272	1368B
Metals	Antimony (Sb), Dissolved	EPA 200.8m	µg/L	0.1J	0.70

Constituent Category	Analyte	Analytical Method	Units	Feb. 20 Event	March 6-7 Event
	Arsenic (As), Dissolved	EPA 200.8m	µg/L	0.2J	0.4J
	Cadmium (Cd), Dissolved	EPA 200.8m	µg/L	< 0.2	< 0.2
	Chromium (Cr), Dissolved	EPA 200.8m	µg/L	0.2J	0.3J
	Copper (Cu), Dissolved	EPA 200.8m	µg/L	1.90	1.20
	Lead (Pb), Dissolved	EPA 200.8m	µg/L	< 0.05	< 0.05
	Lead (Pb), Total	EPA 200.8m	µg/L	0.27	< 0.05
	Nickel (Ni), Dissolved	EPA 200.8m	µg/L	1.30	1.00
	Selenium (Se), Dissolved	EPA 200.8m	µg/L	0.4J	0.3J
	Selenium (Se), Total	EPA 200.8m	µg/L	0.70	< 0.2
	Zinc (Zn), Dissolved	EPA 200.8m	µg/L	7.80	0.90
Organophosphorus Pesticides	Chlorpyrifos	EPA 625m	ng/L	< 1.0	< 1.0
	Diazinon	EPA 625m	ng/L	< 2.0	< 2.0
	Malathion	EPA 625m	ng/L	< 3.0	< 3.0

Notes when Basin Plan water quality criteria were exceeded.

The result for the dissolved fraction is greater than the total fraction for particular constituent. This is typically caused by the analytical variation for each result and indicates that the target parameter is primarily in the dissolved phase.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Q9 qualifier notes when the results for this compound may be biased low. This is due to the recovery of the blank spike and/or blank spike duplicate compound below the method DQO acceptance limits.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-8: *In-Situ* Field Measurements for Wet Weather Events at Valley Center

Parameter	Units	Feb. 20 Event	March 6-7 Event
Conductivity	uS/cm	1,890	2,150
Dissolved Oxygen	mg/L	9.94	6.89
pH	pH Units	7.62	7.39
Temperature	°C	12.7	11.1
Turbidity	NTU	19	0

Table 3-9: Mass Loading and Flux Values for the Wet Weather Events at Valley Center

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 20	Mar. 6-7	Units	Feb. 20	Mar. 6-7
Micro -biology	Enterococcus	MPN/ storm event	2,415,711,599	273,783,980	MPN/ storm event/ acre	5,710,902	647,243
	Fecal Coliform		1,565,108,923	353,269,651		3,700,021	835,153
	Total Coliform		20,414,464,219	1,236,443,780		48,261,145	2,923,035
Nutrients and Conventionals	Ammonia as N	kg/ storm event	0.01	0.01	kg/ storm event/ acre	0.0000	0.0000
	Nitrate as N		2.14	3.37		0.0051	0.0080
	Nitrite as N		0.03	0.03		0.0001	0.0001
	Total N		3.38	4.02		0.0080	0.0095
	Orthophosphate as P		0.07	0.02		0.0002	0.0000
	Total Hardness as CaCO3		375.97	393.54		0.8888	0.9304
	TKN		1.22	0.62		0.0029	0.0015
	Total P		0.03	0.02		0.0001	0.0001
	TSS		8.17	2.65		0.0193	0.0063

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 20	Mar. 6-7	Units	Feb. 20	Mar. 6-7
	TDS		865.57	1208.18		2.0463	2.8562
Metals	Antimony (Sb), Dissolved	g/ storm event	0.07	0.62	g/ storm event/ acre	0.0002	0.0015
	Arsenic (As), Dissolved		0.14	0.35		0.0003	0.0008
	Cadmium (Cd), Dissolved		0.07	0.09		0.0002	0.0002
	Chromium (Cr), Dissolved		0.14	0.26		0.0003	0.0006
	Copper (Cu), Dissolved		1.29	1.06		0.0031	0.0025
	Lead (Pb), Dissolved		0.02	0.02		0.0000	0.0001
	Lead (Pb), Total		0.18	0.02		0.0004	0.0001
	Nickel (Ni), Dissolved		0.88	0.88		0.0021	0.0021
	Selenium (Se), Dissolved		0.27	0.26		0.0006	0.0006
	Selenium (Se), Total		0.48	0.09		0.0011	0.0002
	Zinc (Zn), Dissolved		5.31	0.79		0.0125	0.0019
Organo-phosphate Pesticides	Chlorpyrifos	mg/ storm event	0.34	0.44		0.0008	0.0010
	Diazinon		0.68	0.88		0.0016	0.0021
	Malathion		1.02	1.32		0.0024	0.0031

3.1.3 Blossom Valley

The Blossom Valley site was dry early in the wet season and flow appeared only after the majority of rainfall had occurred in the area.

3.1.3.1 February 21-22 Wet Weather Event

Although monitoring equipment for this event was set up on February 20, 2010 (some rainfall occurred on February 20 through early February 21), flow in the creek appeared congruent with the rain event that began at 9:45 pm on February 21 and ended at 9:34 am on February 22; the rain event produced 0.38 inches of precipitation. As flow in the creek began at 10:11 pm on February 21, the first sample aliquot was collected shortly after, at 11:00 pm; the flow ended at 8:43 am on February 22 with the last sample aliquot taken at 7:42 am. All required grab samples and composite sample volumes were successfully collected, resulting in 100-percent capture. The total discharge for the event equaled 4,622 cubic feet. The associated hydrograph is presented in Figure 3-5.

Figure 3-5: Blossom Valley Hydrograph – February 21-22 Wet Weather Event

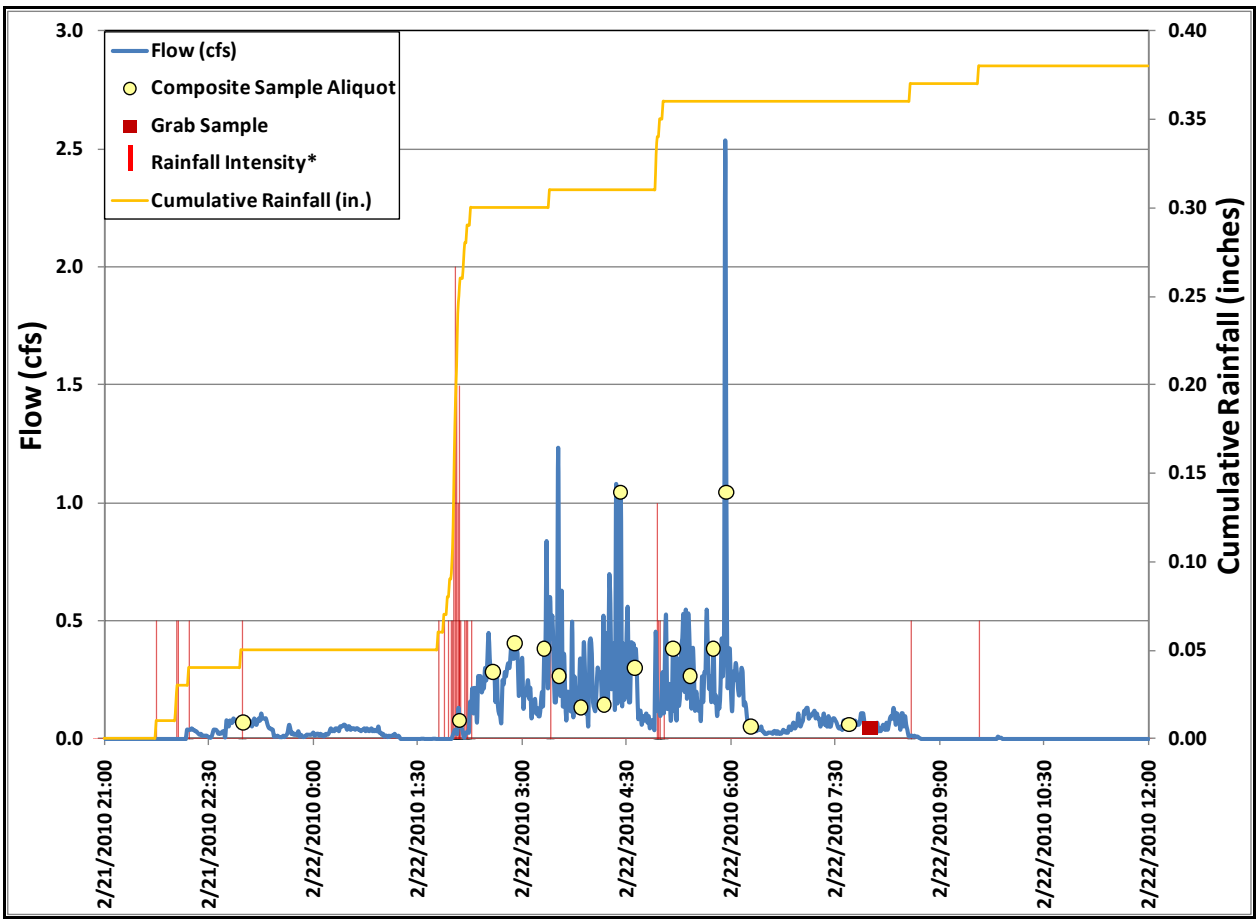

*Rainfall Intensity is not to scale but is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.2 March 7 Wet Weather Event

Rainfall began at 5:24 pm on March 6, 2010 and ended at 5:39 pm on March 7, totaling 0.69 inches in precipitation. Flow began at 9:39 am on March 7 and sampling began at 9:54 am. Sampling ended at 6:12 pm on March 7 and water flow in the creek stopped shortly thereafter (at 6:46 pm on March 7). The required grab and composite samples were successfully collected during this time period. There were some missed sample aliquots due to intake clogging. The intake was subsequently cleared by field crews and sampling resumed normally. Despite the missed samples, the composite sample is considered representative of the monitored event with 88.5 percent capture. The total discharge for the event was 7,648 cubic feet. The corresponding hydrograph is presented in Figure 3-6.

Figure 3-6: Blossom Valley Hydrograph – March 7 Wet Weather Event

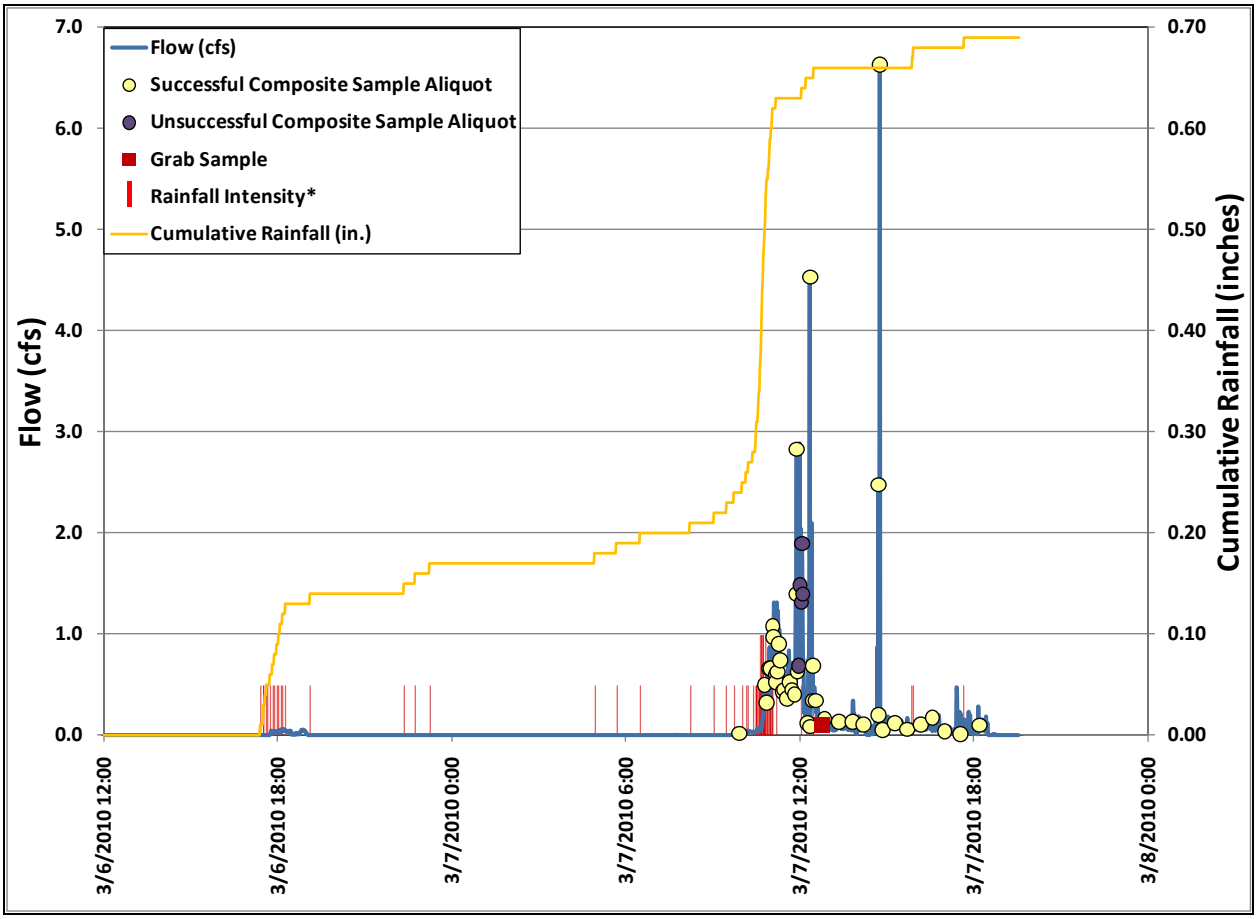

*Rainfall Intensity is not to scale and is reflective of when the 0.01-inch bucket tips occurred. Taller lines indicate when more than one bucket tip occurred within one minute.

3.1.3.3 Water Quality Testing Results

Analytical laboratory testing results are presented in Table 3-8; Table 3-9 shows the *in-situ* field measurement results. For both wet weather events, the following constituents exceeded WQOs, as outlined in Table 2-7:

- Fecal Coliform
- Total Coliform
- *Enterococcus*
- Ammonia as Nitrogen
- Total Nitrogen
- Total Phosphorus
- Total Lead

Table 3-12 shows the mass loading (calculated for each storm event) and flux (loading per storm event per drainage area in acres) of each constituent.

Table 3-10: Analytical Results for Wet Weather Events at Blossom Valley

Constituent Category	Analyte	Analytical Method	Units	Feb. 21-22 Event	March 7 Event
Microbiology	*Enterococcus*	Enterolert	MPN/100mL	14,136	9,208
	Coliform, Fecal/MTF 20	SM 9221E	MPN/100mL	8,000	5,000
	Coliform, Total/MTF 20	SM 9221B	MPN/100mL	13,000	13,000
Nutrients and Conventionals	Ammonia as N	SM 4500-NH_3 F	mg/L	0.14B	0.08
	Nitrate as N	EPA 300.0	mg/L	1.23	1.72
	Nitrite as N	EPA 300.0	mg/L	0.04J	0.02J
	Total Nitrogen	Calculation	mg/L	4.31	3.92
	Orthophosphate as P	SM 4500-P E	mg/L	0.09	0.15
	Total Hardness as CaCO3	SM 2340 B	mg/L	76.5	88.6
	Total Kjeldahl Nitrogen	SM 4500-N D	mg/L	3.04	2.18
	Total Phosphorus	SM 4500-P E	mg/L	1.92	1.16
	Total Suspended Solids	SM 2540 D	mg/L	3217	1404
	Total Dissolved Solids	SM 2540 C	mg/L	275	278B
Metals	Antimony (Sb), Dissolved	EPA 200.8m	µg/L	0.3J	0.90
	Arsenic (As), Dissolved	EPA 200.8m	µg/L	< 0.2	0.50
	Cadmium (Cd), Dissolved	EPA 200.8m	µg/L	< 0.2	< 0.2
	Chromium (Cr), Dissolved	EPA 200.8m	µg/L	0.60	0.3J
	Copper (Cu), Dissolved	EPA 200.8m	µg/L	5.10	3.00
	Lead (Pb), Dissolved	EPA 200.8m	µg/L	0.28	< 0.05
	Lead (Pb), Total	EPA 200.8m	µg/L	25.74	15.73
	Nickel (Ni), Dissolved	EPA 200.8m	µg/L	0.90	0.50
	Selenium (Se), Dissolved	EPA 200.8m	µg/L	0.50	0.2J
	Selenium (Se), Total	EPA 200.8m	µg/L	< 0.2	< 0.2

	Zinc (Zn), Dissolved	EPA 200.8m	µg/L	8.40	0.50
Organo-phosphorus Pesticides	Chlorpyrifos	EPA 625m	ng/L	< 1.0	< 1.0
	Diazinon	EPA 625m	ng/L	< 2.0	< 2.0
	Malathion	EPA 625m	ng/L	< 3.0	< 3.0

Notes when Basin Plan water quality criteria were exceeded.

Notes when California Toxics Rule Criterion Continuous Concentration (CCC) water quality criteria were exceeded.

The result for the dissolved fraction is greater than the total fraction for particular constituent. This is typically caused by the analytical variability for each result and indicates that the target parameter is primarily in the dissolved phase.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

Values with a "<" symbol were not detected at or above the MDL and are, therefore, noted as less than the MDL.

Table 3-11: *In-Situ* Field Measurements for Wet Weather Events at Blossom Valley

Parameter	Units	Feb. 21-22 Event	March 7 Event
Conductivity	uS/cm	534	940
Dissolved Oxygen	mg/L	7.91	7.75
pH	pH Units	7.25	7.55
Temperature	°C	11.6	11.3
Turbidity	NTU	> 800	381-430[(a)]

(a) Turbidity values varied within the noted range.

Table 3-12: Mass Loading and Flux Values for the Wet Weather Events at Blossom Valley.

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Mar. 6-7	Units	Feb. 20	Mar. 6-7
Micro -biology	Enterococcus	MPN/ storm event	18,501,262,530	19,941,511,717	MPN/ storm event/ acre	100,006,824	107,791,955
	Coliform, Fecal/MTF 20		10,470,437,199	10,828,362,140		56,596,958	58,531,687
	Coliform, Total/MTF 20		17,014,460,448	28,153,741,564		91,970,056	152,182,387
Nutrients and Conventionals	Ammonia as N	kg/ storm event	0.02	0.02	kg/ storm event/ acre	0.0001	0.0001
	Nitrate as N		0.16	0.37		0.0009	0.0020
	Nitrite as N		0.01	0.00		0.0000	0.0000
	Total N		0.56	0.85		0.0030	0.0046
	Orthophosphate as P		0.01	0.03		0.0001	0.0002
	Total Hardness as CaCO3		10.01	19.19		0.0541	0.1037
	TKN		0.40	0.47		0.0022	0.0026
	Total P		0.25	0.25		0.0014	0.0014

Constituent Category	Analyte	Mass Loading			Flux		
		Units	Feb. 6-8	Mar. 6-7	Units	Feb. 20	Mar. 6-7
	TSS		421.04	304.06		2.2759	1.6436
	TDS		35.99	60.21		0.1946	0.3254
Metals	Antimony (Sb), Dissolved	g/ storm event	0.04	0.19	g/ storm event/ acre	0.0002	0.0011
	Arsenic (As), Dissolved		0.01	0.11		0.0001	0.0006
	Cadmium (Cd), Dissolved		0.01	0.02		0.0001	0.0001
	Chromium (Cr), Dissolved		0.08	0.06		0.0004	0.0004
	Copper (Cu), Dissolved		0.67	0.65		0.0036	0.0035
	Lead (Pb), Dissolved		0.04	0.01		0.0002	0.0000
	Lead (Pb), Total		3.37	3.41		0.0182	0.0184
	Nickel (Ni), Dissolved		0.12	0.11		0.0006	0.0006
	Selenium (Se), Dissolved		0.07	0.04		0.0004	0.0002
	Selenium (Se), Total		0.01	0.02		0.0001	0.0001
	Zinc (Zn), Dissolved		1.10	0.11		0.0059	0.0006
Organo-phosphate Pesticides	Chlorpyrifos	mg/ storm event	0.07	0.11		0.0004	0.0006
	Diazinon		0.13	0.22		0.0007	0.0012
	Malathion		0.20	0.32		0.0011	0.0018

3.2 DRY WEATHER MONITORING

Dry weather monitoring was conducted from June 2 through June 3, 2010 at the Couser Canyon location only as both Valley Center and Blossom Valley sampling sites were dry. A time-weighted composite sample was collected and analyzed for chemical constituents, *in-situ* field measurements were taken,

and a grab sample was collected for FIB analysis once during the event. The total discharge for the event was 245,390 cubic feet. A hydrograph of the event is provided in Figure 3-7.

Figure 3-7: Couser Canyon Hydrograph – Dry Weather Event

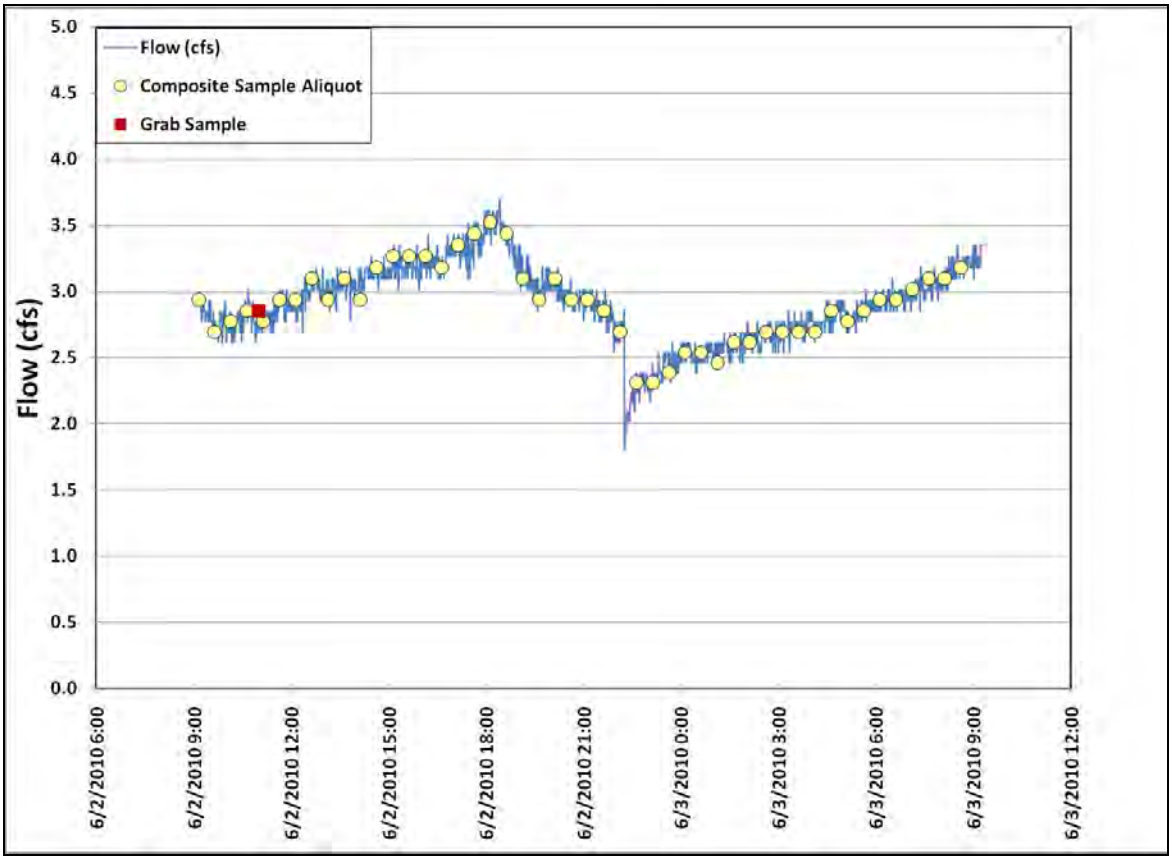

3.2.1 Water Quality Testing Results

Water quality analytical laboratory testing results are presented in Table 3-10; Table 3-11 shows the *in-situ* field measurement results. The following constituents exceeded WQOs (Table 2.7)for the single dry weather event as outlined in Table 3-10:

- Total Nitrogen
- Total Phosphorus
- Ammonia as Nitrogen

- *Enterococcus*
- Total Dissolved Solids

Simazine was the only herbicide detected in the composite water sample.

Table 3-12 shows the mass loading (calculated for the entire non-storm event) and flux (loading per drainage area in acres) of each constituent.

Table 3-10: Analytical Results for the Dry Weather Event at Couser Canyon

Constituent Category	Constituent	Method	Units	Dry Weather Event
Microbiology	*Enterococcus*	Enterolert	MPN/100 ml	426
	Coliforms, Fecal	SM 9221 B, E	MPN/100 ml	230
	Coliforms, Total	SM 9221 B, E	MPN/100 ml	2800
Nutrients and Conventionals	Ammonia as N	SM 4500 NH_3 B,C	mg/l	0.14 QM-05
	Nitrate as N	SM 4500 NO_3 E	mg/l	24.9J
	Nitrite as N	SM 4500 NO_2 B	mg/l	0.3J
	Total Nitrogen	by calculation	mg/L	25.35
	Orthophosphate as P	SM 4500 P E	mg/l	0.22
	Total Kjeldahl Nitrogen	SM 4500 N C	mg/l	< 0.3
	Phosphorus, Total	SM 4500 P B, E	mg/l	0.26
	Chloride	SM 4500 Cl C	mg/l	214
	Fluoride	SM 4500 F C	mg/l	0.229
	Sulfate as SO4	SM 4500 SO_4 E	mg/l	441
	Total Suspended Solids	SM 2540 D	mg/l	6J
	Total Dissolved Solids	SM 2540 C	mg/l	1,210
	Alkalinity, Bicarbonate	SM 2320B	mg CaCO3/L	152
	Alkalinity, Carbonate	SM 2320B	mg CaCO3/L	< 5
	Alkalinity, Hydroxide	SM 2320B	mg CaCO3/L	< 5
	Hardness ,Total	EPA 200.7	mg CaCO3/L	582
Metals	Boron, Total	EPA 200.7	mg/l	< 0.25 QM-06
	Calcium, Dissolved	EPA 200.7	mg/l	112 QM-4X
	Iron, Total	EPA 200.8	mg/l	0.084 QR-02, QM-06
	Magnesium, Dissolved	EPA 200.7	mg/l	73.7 QM-4X

	Manganese, Total	EPA 200.8	mg/l	0.044 QM-4X
	Potassium, Dissolved	EPA 200.7	mg/l	< 10 QM-4X
	Sodium, Dissolved	EPA 200.7	mg/l	185 QM-4X
Herbicides	Atrazine	EPA 625(m)	ng/L	< 5.05
	Oxadiazon	EPA 625 (M)	ng/L	< 5.05
	Secbumeton	EPA 625(m)	ng/L	< 5.05
	Simazine	EPA 625(m)	ng/L	50.5
	Terbuthylazine	EPA 625(m)	ng/L	< 19.2

Notes when Basin Plan water quality criteria were exceeded.

J qualifier notes when the analyte was detected above the MDL but below the RL. The result is, therefore, considered an estimate.

B qualifier notes when the analyte was detected in the laboratory blank samples.

QR-02 qualifier indicates that the RPD for the associated laboratory sample duplicate pair exceeded the DQO of ± 30% due to sample non-homogeneity. The results were accepted by the laboratory because the corresponding LCS/LCSD percent recoveries and RPD values fell within DQOs. Note: This qualifier is associated with laboratory duplicate data during laboratory QA/QC procedures and was added to this primary data table.

QM-4X qualifier indicates that the spike recovery was outside of the QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

QM-05 qualifier indicates that the spike recovery was outside acceptance limits (low in this case) for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control (retrieving reliable results) and the data is acceptable. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

QM-06 qualifier indicates that due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values. Note: This qualifier is associated with matrix spike data during laboratory QA/QC procedures and was added to this primary data table.

Values with a "<" symbol were not detected at or above the MDL and are therefore noted as less than the MDL. Some detection limits were increased from those stated in the QAPP due to dilutions required by the laboratory.

Table 3-11: *In-Situ* Field Measurements for the Dry Weather Event at Couser Canyon

Parameter	Units	Dry Weather Event
Conductivity	uS/cm	0.202

Dissolved Oxygen	mg/L	9.52
pH	pH Units	7.82
Temperature	°C	17.8
Turbidity	NTU	73

Table 3-12: Mass Loading and Flux Values for the Dry Weather Event at Couser Canyon

Constituent Category	Analyte	Mass Loading		Flux	
		Units	Value	Units	Value
Micro -biology	Enterococcus	MPN/ 24h event	29,601,338,405	MPN/ storm event/ acre	25,628,864
	Fecal Coliform		15,981,943,271		13,837,180
	Total Coliform		194,562,787,641		168,452,630
Nutrients and Conventionals	Ammonia as N	kg/ 24h event	0.97	kg/ storm event/ acre	0.001
	Nitrate as N		173.02		0.150
	Nitrite as N		2.08		0.002
	Total N		176.15		0.153
	Orthophosphate as P		1.53		0.001
	TKN		10.42		0.009
	Total P		1.81		0.002
	Chloride		1487.02		1.287
	Fluoride		1.59		0.001
	Sulfate		3064.36		2.653

Constituent Category	Analyte	Mass Loading		Flux	
		Units	Value	Units	Value
	TSS		41.69		0.036
	TDS		8407.89		7.280
	Alkalinity, Bicarbonate		1056.20		0.914
	Alkalinity, Carbonate		17.37		0.015
	Alkalinity, Hydroxide		17.37		0.015
	Total Hardness as CaCO3		4044.13		3.501
Metals	Boron (B), Total	g/ 24h event	868.58	g/ storm event/ acre	0.75
	Calcium (Ca), Dissolved		778251.15		673.81
	Iron (Fe), Total		583.69		0.51
	Magnesium (Mg), Dissolved		512117.05		443.39
	Manganese (Mn), Total		305.74		0.26
	Potassium (K), Dissolved		34743.35		30.08
	Sodium (Na), Dissolved		1285504.13		1112.99
Herbicides	Atrazine	mg/ 24h event	17.55	mg/ storm event/ acre	0.015
	Oxadiazon		17.55		0.015
	Secbumeton		17.55		0.015
	Simazine		350.91		0.304
	Terbuthylazine		66.71		0.058

4.0 SUMMARY OF KEY FINDINGS

Of the three locations monitored, Couser Canyon dominated by agricultural land uses while spaced rural residential is the dominant landuse at Blossoom Valley (Fig. 2-2). The Valley Center site is influenced by both landuse types, At Couser Canyon, the great majority of drainage area (75%) is occupied by orchards and vineyards. Twenty three percent of Valley Center drainage area is occupied by orchards.

For the 2009-2010 monitoring season, precipitation totals for the study areas were within the average range for San Diego County. Based on site visits during the project period, it was observed that Couser Canyon is a perennial stream, Blossom Valley is an ephemeral stream, and Valley Center appears to be an intermittent stream. The monitored events met the criteria defined in the QAPP and the composite samples collected were representative of site conditions during each event.

It must be noted that the findings of this study are preliminary as results are based on only six wet weather samples collected at three locations over three storm events, one post-storm sediment sample collected at one location, and one dry weather sample also collected at only one location. Due to the fact that dry weather samples and the sediment samples were collected at only one of the three locations, Couser Canyon, comparisons among locations of sediment and dry weather loads and concentrations for different constituents analyzed could not be made. Also, some of the constituents monitored at Couser Canyon, including boron, calcium, iron, magnesium, manganese, potassium and sodium, were not included in the analysis for the other two locations while samples collected at Blossom Valley and Valley Center were tested for a suite of metals including antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium and zinc; these metals were not included in the Couser Canyon analysis. For this reason, wet weather results comparisons for these constituents between Couser Canyon and the remaining two sites were not possible.

With this in mind, a summary of key findings for each sampling location as characterized by its land use composition is provided below.

4.1 AGRICULTURAL LAND USE – COUSER CANYON

At the predominantly agricultural Couser Canyon site, all wet weather samples exceeded WQO for all FIB species considered (*Enterococcus*, fecal coliform, and total coliform) while the dry weather sample exceeded WQO only for *Enterococcus*. As expected, bacteria loads and flux were higher during the storm events than for the non-storm flows (data available for Couser Canyon only) and, with the exception of *Enterococcus*, Couser Canyon had the highest bacteria loads (flux) of the three locations sampled.

Samples from Couser Canyon exceeded WQOs during all monitored events for TDS and nutrients including total nitrogen, ammonia as nitrogen, and total phosphorus. The total nitrogen and total phosphorus loads were two to five times higher during storm events than during non-storm conditions; the total suspended solids loads were 105 to 146 times higher, and the total dissolved solids loads were two to three times higher. Also, when compared to the other two locations, Couser Canyon had the highest wet weather total nitrogen, total phosphorus, TSS, and TDS loads whether considered for the entire drainage area or on the per-acre basis (as flux).

All metal and mineral samples collected at Couser Canyon during dry weather met the associated WQOs while, during storms, iron and total manganese exceeded WQOs. With the exception of sodium and potassium, mass loadings of all metals and minerals analyzed were higher during storms than during non-storm conditions. Correspondingly, TDS loads were also higher in the wet weather samples while TDS concentrations were about the same during both wet and dry weather and, as mentioned above, they exceeded the Basin Plan WQO.

Of the five herbicides analyzed one, Simazine, was detected in all samples, and exceeded the WQO during the February 20 storm event. The mass loading of Simazine was 230 times higher in the sample collected during the February 20 storm event than in that taken during non-storm conditions. It was 57 times higher in the February 6-8 storm event sample. Loads of the remaining four herbicides were not compared as their concentrations were below the method detection limits.

A post-storm sediment sample from the February 6-8 storm event at Couser Canyon was tested for thirteen synthetic pyrethroids. None were detected.

4.2 RURAL RESIDENTIAL LAND USE – BLOSSOM VALLEY

At the predominantly rural residential Blossom Valley location, all wet weather samples exceeded WQO for all FIB species. *Enterococcus* flux was highest at the Blossom Valley site when compared among sites within the same storms.

Samples from Blossom Valley exceeded WQOs during all monitored events for nutrients including total nitrogen, ammonia as nitrogen, and total phosphorus. Also, of the three locations sampled, Blossom Valley had the highest TSS concentrations of 3,217 mg/L and 1,404 mg/L.

All Blossom Valley samples met the associated WQOs for antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium and zinc with the exception of lead whose concentrations exceeded the CTR WQO during both storm events. Lead had a total loading of approximately 3.4 grams at Blossom Valley over each of the monitored storm events.

4.3 RURAL RESIDENTIAL AND AGRICULTURAL LAND USES – VALLEY CENTER

At Valley Center, only *Enterococcus* counts exceeded the 104 MPN/100ml WQO and only during one of the storms monitored (the February 20 storm event). On per acre basis, Valley Center had the lowest wet weather bacteria loads (flux) of the three locations sampled. While samples collected at the site exceeded the WQO for TDS and total nitrogen, ammonia as nitrogen was not detected in the samples and total phosphorus was detected below the reporting limit. Valley Center also had the lowest TSS concentrations of 3 mg/L and 12 mg/L.

All samples from Valley Center met the associated WQOs for antimony, arsenic, cadmium, chromium, copper, lead, nickel selenium, and zinc and no organophosphate pesticides were detected during the monitored events.

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APPENDIX A
DATA QUALITY REPORT

Generally, project data met the data quality objectives (DQOs) for precision, accuracy, representativeness and completeness as outlined in the QAPP (Appendix B) (Table A-1) and the equipment blanking results showed zero contamination (Table A-2). Details regarding the DQO assessment are discussed below.

Table A-1: Project Analytical DQO Achievement Summary

DQO Measurement	Number of Values Out of DQO Acceptance Range	Total Number of DQO Measurements	Achievement Percent
Precision	2[(a)]	160	99%
Accuracy	23	485	95%
Representativeness	0[(b)]	7	100%
Completeness	NA	NA	100%

(a) Three RPD values were greater than 30 percent; however, the results for all three were less than 10 times the MDL, resulting in a Q3 qualifier noting that the RPD values are considered not to be accurate and, therefore, not applicable to the quality of the data.

(b) Composite samples collected during this monitoring program met the acceptance criteria based on rainfall and number of aliquots as outlined in Section 4.3 below.

NA = Not applicable to this DQO measurement as completeness is measured as a percentage of actual measurements out of the number of planned measurements. There is not a range by which a single measurement collection is considered accepted. This DQO measurement does not have a specified acceptance range by which a single measurement is considered collected.

Table A-2: Project Equipment DQO Achievement Summary

DQO Measurement	Number of Values Out of Range	Total Number Values	Achievement Percent
Equipment Blanking Results[(a)]	0	493	100%

(a) Equipment Blanks included Teflon tubing, silicon tubing, and 19-L sample containers.

A.1 PRECISION

The precision objectives outlined in the QAPP apply to field and laboratory duplicate and split samples. Precision measures how well repeated measurements agree and is expressed as the RPD.

For this project, precision was measured by assessing field duplicate samples collected for bacteria, laboratory duplicates, blank spike duplicates, and matrix spike duplicates. All but two duplicate pairs met the DQO of RPD < ± 30%. The two pairs included laboratory duplicates and matrix spike duplicates for total iron from the dry weather event. For the laboratory duplicate pair, the DQO exceedance was attributed to sample non-homogeneity by the analytical laboratory; for the matrix spike duplicate pair, the exceedance was attributed to the QC sample matrix non-homogeneity by the analytical laboratory. The results were accepted by the laboratory because the corresponding LCS/LCSD percent recoveries and RPD values fell within DQOs. In Table 3-10, the total iron results have been flagged to reflect this finding.

Three other RPD values fell outside the DQOs but the exceedances were not considered valid because primary sample and/or duplicate sample concentrations were lower than 10 times the corresponding MDLs per laboratory data qualifier Q3. The three RPD exceedances included the dissolved selenium result from February 21-22 Wet Weather Event at Blossom Valley, and dissolved selenium and nitrite concentrations form March 6-7 Wet Weather Event at Valley Center. For the Valley Center results, selenium and nitrate concentrations were also J-flagged meaning that the analytes were detected above MDLs, but below RLs.

In conclusion, 99% of the results met the project DQOs for precision as summarized in Table A-1.

A.2 ACCURACY

Accuracy is the degree of agreement between an observed value and a "true" value or an accepted reference (e.g., standard); accuracy is evaluated by analyzing samples of known concentration (Laboratory Control Samples) or by adding a known concentration of analyte of interest to field-collected samples (Matrix Spike Samples). Accuracy may further be assessed with field and laboratory blank samples. Accuracy of laboratory control samples and matrix spike samples is expressed as percent recovery. The percent recovery DQO for all chemical constituents analyzed in this project was set at ±20 percent and the overall accuracy quality objective achievement for this project was 95 percent as summarized in Table A-1.

All laboratory blank results were non-detect. One field blank was collected and analyzed for FIB analyses and all results were non-detect. Equipment blanks were conducted once per batch for Teflon tubing, silicone tubing, and 19-L sample containers. Overall 100 percent of equipment blanks met the DQOs, all equipment blank results were non-detects. In one batch of Teflon tubing there was a detection of zinc just above the RL. The laboratory was requested to re-run the analyses and zinc was not detected at or above the MDL in the primary or laboratory duplicate sample.

All spiked samples, with the exception of fourteen specific results, met the DQOs for recovery within a range of 80 to 120 percent. A description of the fourteen results that were outside of the ±20 percent recovery range is provided below:

- Four matrix spikes and four matrix duplicates of calcium, magnesium, potassium, and sodium samples associated with the dry weather event at Couser Canyon had low recoveries. These eight results were qualified due to analyte concentrations at four times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits. The primary results associated with these QA/QC issues were noted with a QM-4X qualifier in the primary data table.
- One matrix spike and one matrix duplicate of ammonia samples associated with the dry weather event at Couser Canyon had low recoveries. The spike recoveries were outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control by retrieving reliable results and the data are acceptable. The primary result associated with these QA/QC issues was noted with a QM-05 qualifier in the primary data table.
- Two matrix spikes and two matrix spike duplicates of total boron and total iron samples associated with the dry weather event at Couser Canyon had recoveries outside of the acceptance limits due to noted non-homogeneity of the QC sample matrix. The MS/MSD did not provide reliable results for accuracy and precision and the sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values. The primary results associated with these QA/QC issues were noted with a QM-06 qualifier in the primary data table.
- Low blank spike and/or blank spike recoveries occurred on three occasions with water analyses and three occasions with sediment analyses. For the water analyses, these three occasions all occurred with TKN analysis on two batches. One batch had low recovery of both the blank spike and the blank spike duplicate samples and was associated with the first wet weather event at Couser Canyon. The second batch had low recovery of the blank spike sample and was associated with the second wet weather event at Couser Canyon and the first wet weather event at Valley Center. For the sediment analyses, the three occasions occurred with Permethrin, Piperonyl Butoxide, and Deltamethrin, all associated with one analytical batch. This batch had low recovery of the blank spike samples for Permethrin and Piperonyl Butoxide and low recovery of the blank spike duplicate sample for Deltamethrin. This batch was associated with the sediment sample collected during the first wet weather event at Couser Canyon. The results associated with these batches are qualified in the analytical results tables (Tables 2-5, 2-7, and 2-8) with a Q9 qualifier. This qualifier notes that the recovery of the blank spike and/or blank spike duplicate compound was below the DQO of 80 percent for water samples, and 49 to 65 percent for the designated sediment samples, and, therefore, the results for these compounds may be biased low. It should be noted that the recoveries for the three occasions

for water analyses ranged from 72 to 78 percent, and from 48 to 62 percent for the three sediment analysis occasions, all of which are just outside of the DQOs. Although the data are qualified, the effects of these low recoveries are minimal on the true quality and accuracy of the data.

4.3 REPRESENTATIVENESS

Representativeness describes the degree to which the results of analyses represent the samples collected, and the degree to which the samples in turn represent the environment from which they were taken. Representativeness of the sample locations and storm events was addressed by collecting flow-weighted composite samples. Although there is no prescribed DQO for representativeness, general industry standards for percent capture DQOs vary based on rainfall amounts as summarized in Table A-3 (Caltrans, 2003).

Table A-3: Monitoring Event Representativeness Requirements

Total Event Precipitation (in.)	Minimum Acceptable Number of Aliquots	Percent Capture Requirement
0 - 0.25	6	85
0.25 - 0.5	8	80
0.5 - 1.0	10	80
> 1.0	12	75

For this project, representativeness was measured by assessing percent capture during all sampling events at all sites. Composite samples collected throughout this monitoring program met the representativeness requirements outlined in Table A-3 in order to be considered acceptable samples. The overall representativeness quality objective achievement for this project was 100 percent and is summarized in Table A-1.

A.4 COMPLETENESS

Completeness is the percentage of actual measurements that are judged to be valid, over the planned overall measurements. An invalid measurement is one that does not meet the sampling method requirements and the data quality objectives. Data loss may also occur due to adverse weather conditions, safety concerns, and equipment problems. For the present project, the DQO for completeness was set at 90 percent.

For this project, all planned samples were collected and all planned analyses were performed. The overall completeness quality objective achievement for this project was 100 percent and is summarized in Table A-1.

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN (QAPP) FOR LAND USE WATER QUALITY SAMPLING IN THE SAN LUIS REY AND SAN DIEGO WATERSHEDS

(Available on request)

APPENDIX C

TASK ORDER STOP-WORK NOTIFICATION

(Available on request)

APPENDIX D

FIELD DATA SHEETS

(Available on request)

APPENDIX E

LABORATORY ANALYTICAL RESULTS

(Available on request)

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APPENDICES

Appendix A: Laboratory SOP/QA Manual for CRG Marine Laboratories, Inc.
Appendix B: Example Chain-of-Custody (COC) Form
Appendix C: MACTEC Standard Operating Procedure for Stormwater Sampling
Appendix D: Instrument Operation and Maintenance Manuals
Appendix E: Data Quality Objectives (DQOs)

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1.0 PROJECT MANAGEMENT

1.1 DISTRIBUTION LIST

The individuals specified in Table 1-1 each will receive a copy of the approved Quality Assurance Project Plan (QAPP) and any subsequent revisions. The QAPP will be kept on file at and maintained by MACTEC Engineering and Consulting, Inc. (MACTEC).

Table 1-1: QAPP Distribution List

Title	Name (Affiliation)	Contact Number	No. of Copies
Contract Manager, Contracting Officer's Technical Representative (COTR)	Jo Ann Weber (County)	858.495.5317	1
Project Manager	Joanna Wisniewska (County)	858.694.2312	1
Project Manager	Jay Shrake (MACTEC)	858.514.6459	1
Quality Assurance Officer	Jerome Welch (MACTEC)	858.514.6454	1
Laboratory Director	Marycarol Valenzuela (CRG Marine Laboratories)	310.533.5190	1

1.2 PROJECT/TASK ORGANIZATION

1.2.1 Involved Parties and Roles

The County of San Diego (County) is the municipal government agency overseeing the project. Jo Ann Weber is the County's Contract Manager and County Officer's Technical Representative (COTR) for this task order. She will provide technical assistance to the project team as needed. Joanna Wisniewska is the County's Project Manager for this task order. She has responsibility for program oversight.

MACTEC is responsible for sample collection, field measurements, data review, maintenance of contracts with CRG Marine Laboratories (CRG), and all report preparation. Jay Shrake is the MACTEC Project Manager and is responsible for overall project development, budget management, and oversight of all project plans and report development. Jeremy Burns is the MACTEC Project Coordinator and is responsible for developing the monitoring approach and implementing the monitoring activities. Jerome Welch is the MACTEC Quality Assurance Officer and is responsible for the project quality assurance and

quality control procedures implemented during sampling, laboratory analysis, data management, and data analysis.

CRG Marine Laboratories, located in Torrance CA, will perform the chemical analyses of the water and sediment samples collected during this program. Marycarol Valenzuela is the CRG Chemistry Laboratory Director. She will make sure that chemistry samples are analyzed in accordance with the methods and quality assurance requirements outlined in this QAPP. Antony Basil is the CRG Microbiology Laboratory Director. He will make sure that microbiology samples are analyzed in accordance with the methods and quality assurance requirements outlined in this QAPP.

Table 1-2 summarizes the responsibilities of the involved personnel and their contact information. The organizational chart is provided in Figure 1-1.

Table 1-2: Personnel Responsibilities

Name	Organizational Affiliation	Title	Contact Information (telephone, fax, email)
Jo Ann Weber	San Diego County DPW	Contract Manager, COTR	Tel: 858.495.5317 Fax: 858.495.5263 JoAnn.Weber@sdcounty.ca.gov
Joanna Wisniewska	San Diego County DPW	Project Manager	Tel: 858.694.2312 Fax: 858.495.5263 Joanna.Wisniewska@sdcounty.ca.gov
Jay Shrake	MACTEC	Project Manager	Tel: 858.514.6459 Fax: 858.278.5300 jjshrake@mactec.com
Jerome Welch	MACTEC	Quality Assurance Officer	Tel: 858.514.6454 Fax: 858.278.5300 jewelch@mactec.com
Mark Clinton	MACTEC	Health and Safety Officer	Tel: 858.514.6417 Fax: 858.278.5300 maclinton@mactec.com
Jeremy Burns	MACTEC	Project Coordinator	Tel: 858.514.6464 Fax: 858.278.5300 jburns@mactec.com
Marycarol Valenzuela	CRG Marine Laboratories	Laboratory Director	Tel: 310.533.5190 Fax: 310.320.1276 mvalenzuela@crglabs.com
Antony Basil	CRG Marine Laboratories	Microbiology Laboratory Manager	Tel: 310.320.3211 Fax: 310.320.3170 abasil@crglabs.com

1.2.2 Quality Assurance Officer Role

Jerome Welch, Ph.D., is MACTEC's Quality Assurance Officer. Dr. Welch's role is to establish the Quality Assurance/Quality Control (QA/QC) procedures found in this QAPP as part of the sampling, field analysis, and in-house analysis procedures. Dr. Welch will also work with the Quality Assurance Officer for CRG by communicating to the laboratory all QA/QC issues contained in this QAPP.

Dr. Welch will also review and assess all procedures during the life of the contract against QAPP requirements. Dr. Welch will report all findings to the MACTEC Project Manager, including all requests

for corrective action. Dr. Welch may stop all actions, including those conducted by CRG, if there are significant deviations from required practices or if there is evidence of a systematic failure.

Figure 1-1: Organizational Chart and Responsibilities

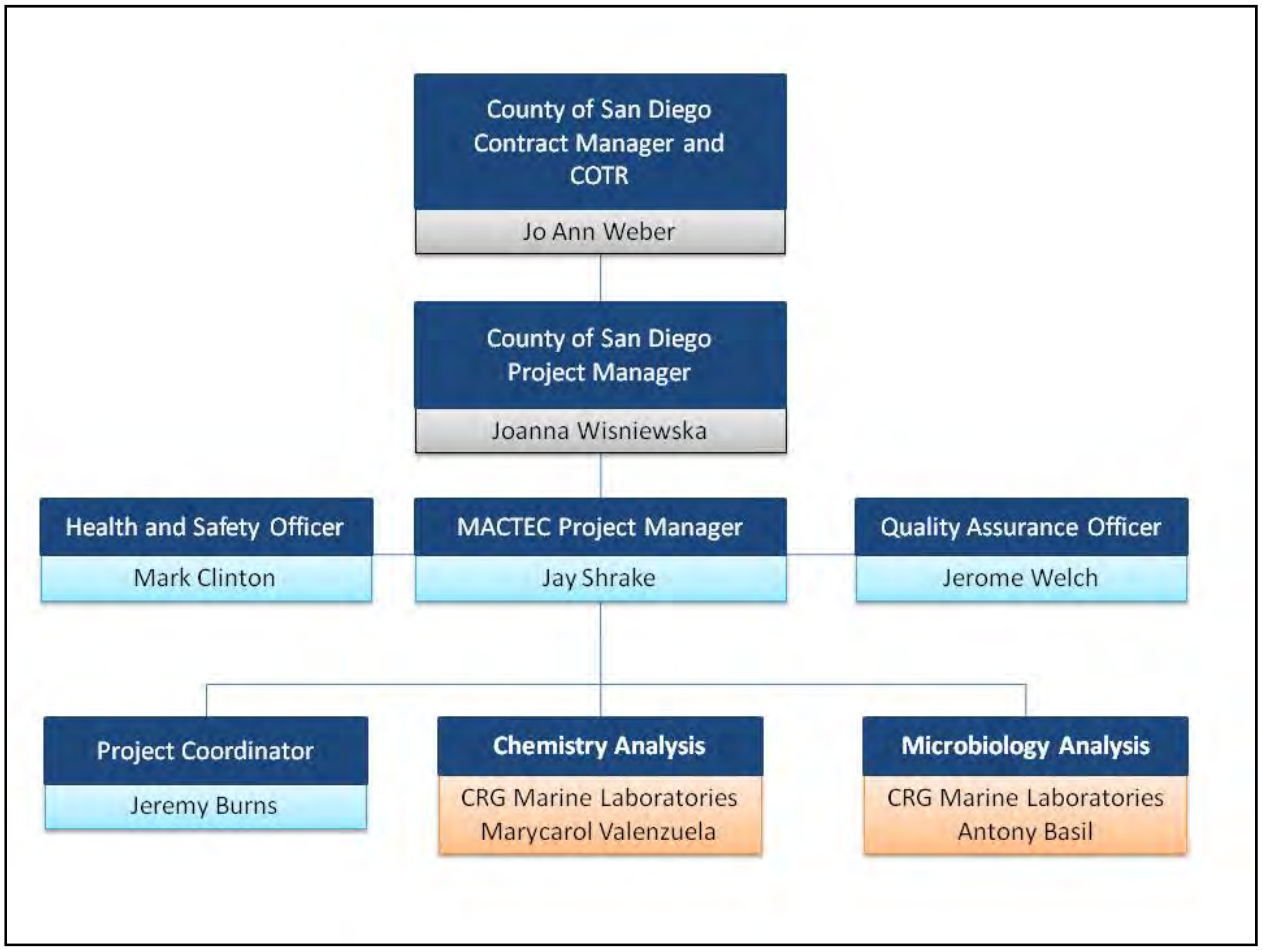

1.2.3 Persons Responsible for QAPP Update and Maintenance

Changes and updates to this QAPP may be made after a review of the evidence for change by MACTEC's Project Manager and Quality Assurance Officer, and with the concurrence of both the Contract Manager and Quality Assurance Officer. MACTEC will be responsible for making the changes, submitting drafts for review, preparing a final copy, and submitting the final for signature.

1.3 PROBLEM DEFINITION/BACKGROUND

1.3.1 Problem Statement

This project is a County special study to be conducted for agricultural and rural residential land use characterization in portions of the San Luis Rey, San Diego, and Sweetwater Watersheds. The purpose of this study is to provide additional information about the condition of receiving waters at predetermined mass loading stations (MLS). Results will help to define the scope of water quality impairments associated with agricultural and rural residential land uses.

1.3.2 Decisions or Outcomes

Results will help to define the scope of water quality impairments associated with agricultural and rural residential land uses within each watershed.

1.3.3 Water Quality/Regulatory Criteria

This project is not the result of regulatory action. However, certain water bodies associated with this monitoring program are listed as impaired under Section 303(d) of the CWA. The Lower San Luis Rey River is listed for chloride and total dissolved solids (TDS). The Lower San Diego River is listed for fecal coliform, phosphorus, TDS, and low dissolved oxygen (DO). Therefore, applicable Water Quality Objectives (WQOs), if available, will be utilized, but only for comparison purposes (Table 1-3). Sediment quality objectives applicable to this project are not available in current literature at this time. The State Water Resources Control Board (SWRCB) intends to develop sediment quality objectives for enclosed bays and estuaries but anticipates that the process will require approximately four years to complete (SWRCB, 2009)

Table 1-3: Available Water Quality Objectives

Analyte	Units	Water Quality Objective (WQO)	Source
Microbiology			
Coliform, Fecal	colonies/100mL	400	Basin Plan
Coliform, Total	colonies/100mL	10,000[a]	Basin Plan
Enterococcus	colonies/100mL	104[j]	Basin Plan
Nutrients and Conventionals			
Ammonia-Nitrogen	mg/L	<0.025	Basin Plan
Nitrate-Nitrogen	N/A	45[k]	Basin Plan
Nitrite-Nitrogen	N/A	1[k]	Basin Plan
Chloride	mg/L	250[b]	Basin Plan
		50[c]	
Flouride	mg/L	1.0	Basin Plan
Total Phosphorus	mg/L	<0.1	Basin Plan
Total Dissolved Solids	mg/L	500[b]	Basin Plan
		300[c]	
Metals			
Arsenic, Dissolved	µg/L	340[e, h]	California Toxics Rule
		150[f, h]	
Boron, Total	mg/L	0.75[b]	Basin Plan
		1.0[c]	
Cadmium, Dissolved	µg/L	4.3[e, g]	California Toxics Rule
		2.2[f, g]	
Chromium, Dissolved	µg/L	550[e, g]	California Toxics Rule
		180[f, g]	
Copper, Dissolved	µg/L	13[e, g]	California Toxics Rule
		9.0[f, g]	
Iron, Total	mg/L	0.3	Basin Plan

N/A = Water quality objective is not available at this time.
Basin Plan (SDRWQCB, 2007):
(a) WQO for bays and estuaries
(b) WQO specified for Inland Surface Waters in the San Luis Rey Hydrologic Unit and Sweetwater Hydrologic Unit
(c) WQO specified for Inland Surface Waters in the San Diego Hydrologic Unit
(d) The WQO for sodium is expressed as percent sodium.
California Toxics Rule (USEPA, 2000) and USEPA Recommended Water Quality Criteria (USEPA, 2009):
(e) Criteria Maximum Concentration (CMC)
(f) Criteria Continuous Concentration (CCC)
(g) Criteria are expressed as a function of total hardness (mg/L as CaCO3). Values assume a hardness of 100 mg/L.
(h) Criteria are expressed as a function of the water effect ratio.
(i) Criteria are expressed as total recoverable.
(j) Criteria is for saltwater however client requested this criteria as it is commonly used in San Diego Co-Permitee projects.
(k) Criteria is for drinking water standards however client requested this criteria as it is commonly used in San Diego Co-Permitee projects.

Table 1-3: Available Water Quality Objectives (continued)

Analyte	Units	Water Quality Objective (WQO)	Source
Metals (continued)			
Lead, Dissolved	µg/L	65[e, g]	California Toxics Rule
		2.5[f, g]	
Lead, Total	µg/L	82[e, g]	California Toxics Rule
		3.2[f, g]	
Manganese, Total	mg/L	0.05	Basin Plan
Nickel, Dissolved	µg/L	470[e, g]	California Toxics Rule
		52[f, g]	
Selenium, Dissolved	µg/L	Acute N/A	USEPA Recommended Water Quality Criteria
		4.6[f]	
Selenium, Total	µg/L	Acute N/A	USEPA Recommended Water Quality Criteria
		5.0[f]	
Sodium, Dissolved	%	60[d]	Basin Plan
Zinc, Dissolved	µg/L	120[e, g]	California Toxics Rule
		120[f, g]	
Organics			
Diazinon	µg/L	Acute: 0.08	SDRWQCB Resolution No. R9-2002-0123
		Chronic: 0.05	
Simazine	mg/L	0.004	Basin Plan
Atrazine	mg/L	0.001	Basin Plan

N/A = Water quality objective is not available at this time.
Basin Plan (SDRWQCB, 2007):
(a) WQO for bays and estuaries.
(b) WQO specified for Inland Surface Waters in the San Luis Rey Hydrologic Unit and Sweetwater Hydrologic Unit.
(c) WQO specified for Inland Surface Waters in the San Diego Hydrologic Unit.
(d) The WQO for sodium is expressed as percent sodium.
California Toxics Rule (USEPA, 2000) and USEPA Recommended Water Quality Criteria (USEPA, 2009):
(e) Criteria Maximum Concentration (CMC).
(f) Criteria Continuous Concentration (CCC).
(g) Criteria are expressed as a function of total hardness (mg/L as CaCO3). Values assume a hardness of 100 mg/L.
(h) Criteria are expressed as a function of the water effect ratio.
(i) Criteria are expressed as total recoverable.
(j) Criteria are for saltwater; however, client requested criteria as it is commonly used in San Diego Co-Permitee projects.
(k) Criteria are for drinking water standards; however, client requested criteria as it is commonly used in San Diego Co-Permitee projects.

1.4 PROJECT/TASK DESCRIPTION

1.4.1 Work Statement and Work Products

Activities for this project and work completion and due dates are outlined by task in Table 1-4. Three monitoring locations were selected, one for each watershed (Figure 1-2 and Table 1-5). In-situ water quality field measurements will be conducted for parameters listed in Table 1-6. Water and sediment samples will be analyzed by CRG for the constituents listed in Tables 4-4, 4-5, and 4-6.

This project consists of stream flow gauging and water quality sampling at three monitoring locations, one each within the San Luis Rey, San Diego, and Sweetwater Watersheds. Monitoring sites will be located at existing County MLS locations. One sediment quality sample will be collected at the Couser Canyon Site after the first storm only. No other sediment samples will be collected during this monitoring program. Monitoring locations are provided in Table 1-5. Site installation (Task 3) will occur prior to the first wet season sampling event and site demobilization (Task 7) will occur after the dry weather sampling event. Between events, all equipment will be removed from the sites with the exception of the mounted sensors and intake tubing.

Stream flow gauging (Task 4) will occur at all three monitoring locations on three separate occasions throughout this monitoring program. Stream flow gauging events will occur once at the beginning of the wet weather season, once during the wet weather season, and once after the wet weather season. Stream flow gauging will provide data for the development of discharge tables which will be utilized by flow monitoring equipment during wet weather sampling events.

The dry season monitoring (Task 5) will consist of one 24-hour time-weighted composite sample collected at each of the three monitoring sites. In-situ field measurements will be conducted for parameters listed in Table 1-6. Grab samples will be collected and analyzed for bacteria. All other analyses will be performed from composite samples collected according to Table 1-7 for the Couser Canyon site and Table 1-8 for the Blossom Valley and North Jamul sites.

The wet season monitoring (Task 5) will consist of flow-weighted composite samples collected during wet weather events at each of the three monitoring locations during two wet weather events throughout the wet season. In-situ field measurements will be conducted for parameters listed in Table 1-6. Grab samples will be collected and analyzed for bacteria. All other analyses will be performed from composite samples collected according to Table 1-7 for the Couser Canyon site and Table 1-8 for the Blossom

Valley and North Jamul sites. One post-storm sediment sample will be collected at Couser Canyon after the first wet weather event only. The sediment sample will be analyzed according to Table 1-9.

Once all monitoring is complete and results from laboratory analysis (Task 6) have been received, Draft and Final Reports (Task 8) will be prepared, each consisting of an executive summary, introduction, sampling and analytical methods, results, and discussion. The Draft Report will be submitted for review to the County of San Diego Project Manager. Comments will be addressed and incorporated into the Final Report.

1.4.2 Project Schedule

It is anticipated that monitoring will begin during the 2009-2010 wet season and extend into the early 2010 dry season. Table 1-4 outlines the timeline as known at the date of this document.

Table 1-4: Project Schedule

Activity	Anticipated Date of Completion	Deliverable	Deliverable Due Date
Task 1. Selection of three monitoring sites within San Luis Rey, San Diego, and Sweetwater Watersheds	September 2009	NA	NA
Task 2. QAPP Production	October 2009	Final QAPP	November 13, 2009
Task 3. Installation	November 2009	NA	NA
Task 4. Stream Gauging	May 2010	NA	August 31, 2010
Task 5. Dry Weather Sampling	May 2010	NA	August 31, 2010
Task 5. Wet Weather Sampling	May 2010	NA	August 31, 2010
Task 6. Laboratory Analysis	May 2010	NA	August 31, 2010
Task 7. Site Demobilization	May 2010	NA	NA
Task 8. Draft Report	August 2010	Draft Report	August 10, 2010
Task 8. Final Report	August 2010	Final Report	August 31, 2010

1.4.3 Geographic Setting

The Blossom Valley monitoring location is located within the San Diego River Watershed. The size of the watershed is approximately 440 square miles and contains portions of the cities of San Diego, El Cajon, La Mesa, Poway, and Santee, California, along with several unincorporated jurisdictions. There are five water stage reservoirs within the watershed: Cuyamaca Reservoir, El Capitan Reservoir, San

Vincente Reservoir, Lake Murray, and Lake Jennings (San Diego River Watershed Management Plan/Anchor, 2005). Approximately 58.4 percent of the San Diego River watershed is currently undeveloped. The majority of this undeveloped land is in the upper, eastern portion of the watershed, while the lower reaches are more highly urbanized with residential (14.9 percent), freeways and roads (5.5 percent), and commercial/industrial (4.2 percent) land uses predominating (Project Clean Water website, 2009). The Blossom Valley site is located near the eastern edge of the Lower San Diego sub-basin, near Interstate 8 (Figure 1-2).

The North Jamul monitoring location is located within the Sweetwater River Watershed. The size of the watershed is approximately 230 square miles and contains portions of the cities of San Diego, National City, Chula Vista, La Mesa, and Lemon Grove, California. Chula Vista represents the greatest importance in terms of land area. Over 86 percent of the watershed is within unincorporated jurisdictions. The dominant land uses in the Sweetwater River watershed are urban (29 percent), open space/agriculture (22 percent), and undeveloped (49 percent). Approximately two-thirds of the land area categorized as urban is composed of residential communities. The upper watershed contains large undeveloped areas within the Cleveland National Forest and Cuyamaca Rancho State Park, the unincorporated communities of Pine Valley, Descanso, and Alpine, and the Viejas Indian Reservation. Unincorporated rural and suburban communities characterize the central part of the watershed. The urbanized lower portion of the Sweetwater Watershed contains the cities stated previously (Project Clean Water website, 2009). The North Jamul site is located in the south-central area of the Middle Sweetwater sub-basin near State Route 94 (Figure 1-2).

The Couser Canyon monitoring location is located within the San Luis Rey River Watershed. The size of the watershed is approximately 562 square miles and contains portions of the City of Oceanside, California, and the unincorporated communities of Fallbrook, Bonsall, and Valley Center. Over 54 percent of the land in the watershed is vacant or undeveloped. The next largest land uses in the watershed are residential (15 percent) and agriculture (14 percent). Principal agricultural uses include cattle grazing, nurseries, citrus groves, and avocado groves. Lake Henshaw is the only reservoir in the watershed, supplying drinking water to customers in Escondido and Vista (Project Clean Water website, 2009). The Couser Canyon site is located at the north-western edge of the Monserate sub-basin, near State Route 76 (Figure 1-2).

Table 1-5: Approximate Locations of Monitoring Sites

Site	Watershed	Latitude[(a)]	Longitude[(a)]
Blossom Valley	San Diego River	32.86608	-116.83415
North Jamul	Sweetwater	32.73443	-116.88398
Couser Canyon	San Luis Rey	33.33176	-117.12483

(a) GPS positions are based on the NAD 83 Datum.

Figure 1-2: Monitoring Locations

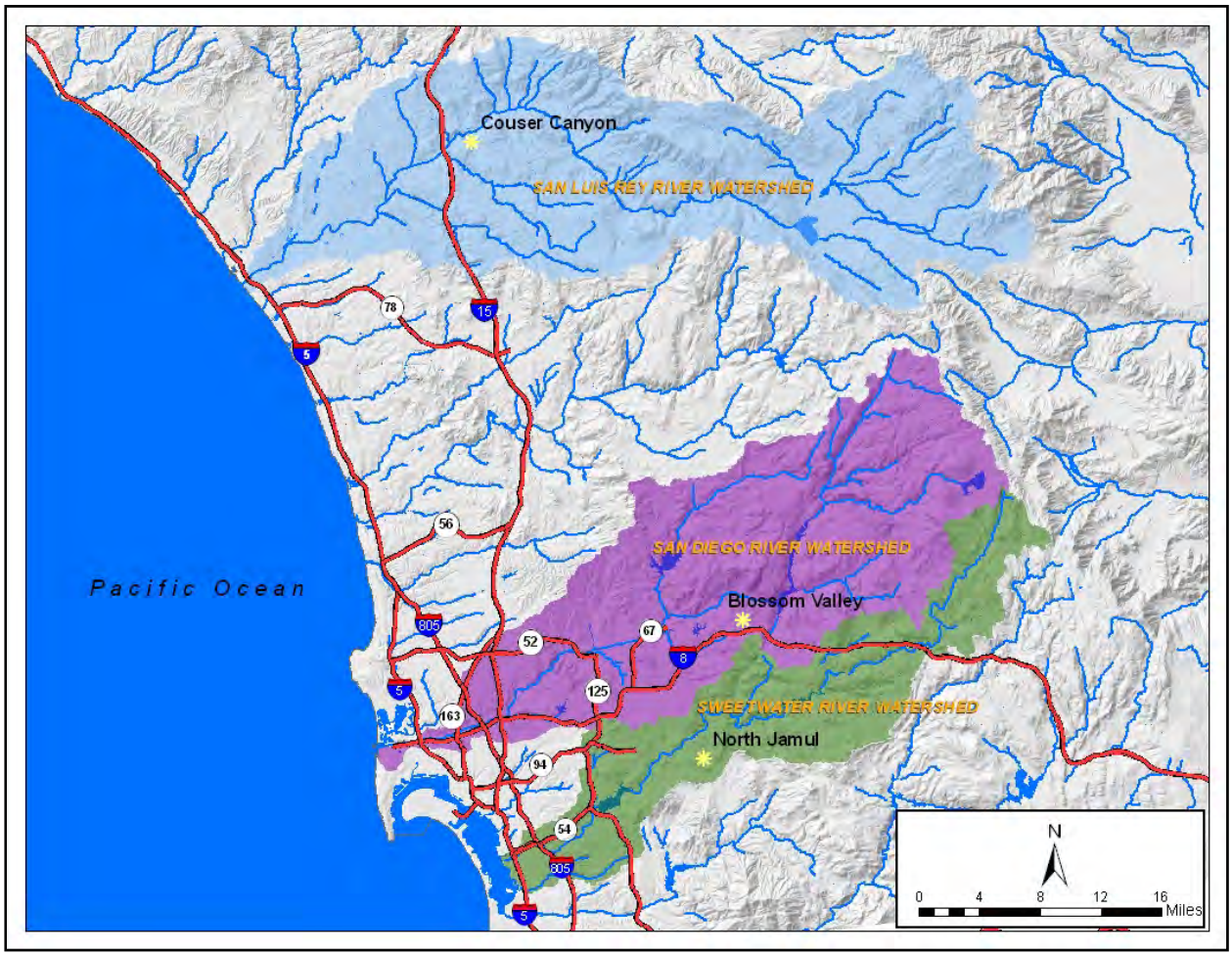

1.4.4 Constituents to Be Monitored and Analytical Methods

Analytical constituents selected for monitoring in this study include those commonly detected in non-point source runoff from agricultural and rural areas. In-situ field measurements will be conducted for the parameters listed in Table 1-6. Analytical constituents and test method requirements associated with this project are outlined in Tables 4-3, 4-4, and 4-5.

Table 1-6: *In-Situ* Field Measurements at All Locations

Analyte	Range
Conductivity	0 – 9.99 S/cm
Dissolved Oxygen	0 – 19.99 mg/L or 0 – 199% saturated air
pH	0 – 14
Temperature	0 °C – 55 °C
Turbidity	0 – 800 NTU

Table 1-7: Analytical Requirements for Couser Canyon MLS Water Samples

Analytical Parameter[(a)]	Analytical Method	Sample Volume	Preservative[(b)]	Maximum Holding Time	Reporting Limit
Microbiology					
Coliform, Fecal	SM 9221 B/E	100 mL	$Na_2S_2O_3$	6 hours at ≤ 6°C	20 MPN/100mL
Coliform, Total	SM 9221 B/E	100 mL	$Na_2S_2O_3$	6 hours at ≤ 6°C	20 MPN/100mL
Enterococcus	Enterolert	100 mL	$Na_2S_2O_3$	6 hours at ≤ 6°C	10 MPN/100mL
Nutrients and Conventionals					
Ammonia-Nitrogen	SM 4500-NH3 F	250 mL	Acidify to pH < 2 with H_2SO_4	28 days	0.03 mg/L
Nitrate-Nitrogen	EPA 300.0	250 mL	≤ 6 °C	48 hours	0.20 mg/L
Nitrite-Nitrogen	EPA 300.0	250 mL	≤ 6 °C	48 hours	0.05 mg/L
Ortho-Phosphate Phosphorus	SM 4500-P E	250 mL	≤ 6 °C	48 hours	0.01 mg/L
Chloride	EPA 300.0	250 mL	≤ 6 °C	28 days	0.20 mg/L
Flouride	EPA 300.0	250 mL	≤ 6 °C	28 days	0.20 mg/L
Sulfate	EPA 300.0	250 mL	≤ 6 °C	28 days	0.05 mg/L
Total Kjeldahl Nitrogen	SM 4500-N Org B	1,000 mL	Acidify to pH < 2 with H_2SO_4	28 days	0.50 mg/L
Total Phosphorus	SM 4500-P E	250 mL	Acidify to pH < 2 with H_2SO_4	28 days	0.05 mg/L
Total Suspended Solids	SM 2540-D	1,000 mL	≤ 6 °C	7 days	5.0 mg/L
Total Dissolved Solids	SM 2540-C	1,000 mL	≤ 6 °C	7 days	5.0 mg/L
Alkalinity, Bicarbonate	SM 2320-B	250 mL	≤ 6 °C	14 days	5.0 mg/L
Alkalinity, Carbonate	SM 2320-B	250 mL	≤ 6 °C	14 days	5.0 mg/L
Alkalinity, Hydroxide	SM 2320-B	250 mL	≤ 6 °C	14 days	5.0 mg/L
Hardness, Total	SM 2340-C	250 mL	≤ 6 °C	6 months	5.0 mg $CaCO_3$/L

(a) Filtering for dissolved constituents will be conducted by the laboratory as soon as possible.
(b) Acid preservation will be conducted by the laboratory as soon as possible.

Table 1-7: Analytical Requirements for Couser Canyon MLS Water Samples (continued)

Analytical Parameter[(a)]	Analytical Method	Sample Volume	Preservative[(b)]	Maximum Holding Time	Reporting Limit
Metals					
Iron, Total	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	20.0 ug/L
Manganese, Total	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	1.0 ug/L
Boron, Total	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	5.0 ug/L
Magnesium, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	0.1 mg/L
Potassium, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	10.0 mg/L
Sodium, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	10.0 mg/L
Calcium, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	0.1 mg/L
Organics					
Terbuthylazine	EPA 625(m)	1,000 mL	≤ 6 °C	7 days	0.01 ug/L
Secbumeton	EPA 625(m)	1,000 mL	≤ 6 °C	7 days	0.01 ug/L
Simazine	EPA 625(m)	1,000 mL	≤ 6 °C	7 days	0.01 ug/L
Oxadiazon	EPA 625(m)	1,000 mL	≤ 6 °C	7 days	0.06 ug/L[(c)]
Atrazine	EPA 625(m)	1,000 mL	≤ 6 °C	7 days	0.01 ug/L

(a) Filtering for dissolved constituents will be conducted by the laboratory as soon as possible.
(b) Acid preservation will be conducted by the laboratory as soon as possible.
(c) Target Reporting Limit for Oxadiazon is tentative. The final value is being determined by laboratory test procedures.

Table 1-8: Analytical Requirements for Blossom Valley and North Jamul MLS Water Samples

Analytical Parameter[(a)]	Analytical Method	Sample Volume	Preservative[(b)]	Maximum Holding Time	Reporting Limit
Microbiology					
Coliform, Fecal	SM 9221 B/E	100 mL	$Na_2S_2O_3$	6 hours at ≤ 6°C	20 MPN/100 mL
Coliform, Total	SM 9221 B/E	100 mL	$Na_2S_2O_3$	6 hours at ≤ 6°C	20 MPN/100 mL
Enterococcus	Enterolert	100 mL	$Na_2S_2O_3$	6 hours at ≤ 6°C	10 MPN/100 mL
Nutrients and Conventionals					
Ammonia-Nitrogen	SM 4500-NH3 F	250 mL	Acidify to pH < 2 with H_2SO_4	28 days	0.03 mg/L
Nitrate-Nitrogen	EPA 300.0	250 mL	≤ 6 °C	48 hours	0.20 mg/L
Nitrite-Nitrogen	EPA 300.0	250 mL	≤ 6 °C	48 hours	0.05 mg/L
Ortho-Phosphate Phosphorus	SM 4500-P E	250 mL	≤ 6 °C	48 hours	0.01 mg/L
Hardness, Total	SM 2340-C	250 mL	≤ 6 °C	6 months	5.0 mg $CaCO_3$/L
Total Kjeldahl Nitrogen	SM 4500-N Org B	1,000 mL	Acidify to pH < 2 with H_2SO_4	28 days	0.50 mg/L
Total Phosphorus	SM 4500-P E	250 mL	Acidify to pH < 2 with H_2SO_4	28 days	0.05 mg/L
Total Suspended Solids	SM 2540-D	1,000 mL	≤ 6 °C	7 days	5.0 mg/L
Total Dissolved Solids	SM 2540-C	1,000 mL	≤ 6 °C	7 days	5.0 mg/L

(a) Filtering for dissolved constituents will be conducted by the laboratory as soon as possible.
(b) Acid preservation will be conducted by the laboratory as soon as possible.

Table 1-8: Analytical Requirements for Blossom Valley and North Jamul MLS Water Samples (continued)

Analytical Parameter[(a)]	Analytical Method	Sample Volume	Preservative[(b)]	Maximum Holding Time	Reporting Limit
Metals					
Antimony, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	5.0 ug/L
Arsenic, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	1.0 ug/L
Cadmium, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	1.0 ug/L
Chromium, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	5.0 ug/L
Copper, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	5.0 ug/L
Lead, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	2.0 ug/L
Lead, Total	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	2.0 ug/L
Nickel, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	2.0 ug/L
Selenium, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	5.0 ug/L
Selenium, Total	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	5.0 ug/L
Zinc, Dissolved	EPA 200.8(m)	250 mL	Acidify to pH < 2 with HNO_3	6 months	5.0 ug/L
Organics					
Chlorpyrifos	EPA 625(m)	1,000 mL	≤ 6 °C	7 days	0.02 ug/L
Diazinon	EPA 625(m)	1,000 mL	≤ 6 °C	7 days	0.04 ug/L
Malathion	EPA 625(m)	1,000 mL	≤ 6 °C	7 days	0.06 ug/L

(a) Filtering for dissolved constituents will be conducted by the laboratory as soon as possible.
(b) Acid preservation will be conducted by the laboratory as soon as possible.

Table 1-9: Analytical Requirements for Couser Canyon MLS Sediment Samples

Analytical Parameter	Analytical Method	Sample Volume/Mass	Preservative	Maximum Holding Time	Reporting Limit
Allethrin	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	2.0 ng/g
Bifenthrin	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	2.0 ng/g
Cyfluthrin	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	2.0 ng/g
Cypermethrin	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	2.0 ng/g
Danitol	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	2.0 ng/g
Deltamethrin	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	2.0 ng/g
lambda-Cyhalothrin	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	2.0 ng/g
Permethrin	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	25.0 ng/g
Prallethrin	EPA 8270 NCI GC/MS	500 mL/50 g	≤ 6 °C	40 days	2.0 ng/g
Piperonyl butoxide (PBO)	EPA 8270C(m)	50 g	≤ 6 °C	40 days	20.0 ng/g

1.4.5 Constraints

Typical weather patterns for Southern California include the highest probability of rain to occur between October and April. The possibility of appreciable rainfall or limited rainfall amounts may result in little or no runoff. Sampling will not be conducted during events with too little runoff to be monitored. Therefore, the scheduled timeline may not be achievable if runoff events do not occur. If rainfall amounts exceed predicted storm amounts and elevated wet weather flows exceed one or more days, the collection of flow-weighted composite samples will not continue beyond the time required to meet analytical holding times of 48 hours.

1.5 DATA QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

Data Quality Objectives (DQOs) are quantitative and qualitative statements that clarify study objectives, and specify the acceptable levels of potential errors in the data (USEPA, 2000). As defined in this plan, DQOs specify the quantity and quality of data required to support the study objectives. DQOs are generally used to determine the level of error considered to be acceptable in the data produced by the sampling or monitoring program. They are used to specify acceptable ranges of field sampling and

laboratory performance. Each data quality category is described below. Numerical DQOs for the constituents being sampled are listed in Tables 1-10 and 1-11.

1.5.1 Precision

The precision objectives apply to duplicate and split samples during field sampling and laboratory analysis as part of periodic QC checks. Precision describes how well repeated measurements agree. The evaluation of precision described here relates to repeated samples collected in the field (i.e., field duplicate samples) or generated in the laboratory. Precision is measured as relative percent difference (RPD) between the repeated measurements. Precision for in-situ field parameters is provided by the manufacturer and is presented in Table 1-10. Precision for field duplicate samples and laboratory measurements are presented in Table 1-11. Precision for microbiology samples will be measured using the equation presented in Table 1-11 for field grab samples and field duplicate grab samples. One field duplicate grab sample will be collected during two separate monitoring events. Field duplicates will not be performed on composite samples as this would require a complete separate sampling system.

1.5.2 Accuracy

Accuracy describes how close a measurement is to its true value. Accuracy is the measurement of a sample of known concentration and comparing the known value against the measured value. The accuracy of chemical measurements will be checked by performing tests on laboratory control standards (LCSs) at the laboratory. An LCS is a sample free from analytes of interest, spiked with verified known amounts of analytes. It is generally used to establish intra-laboratory or analyst specific precision and bias or assess the performance of all or a portion of the measurement system. Standards can be purchased from chemical or scientific supply companies. Standards can also be prepared by a professional partner (a commercial or research laboratory). The concentrations of the standards should be within the mid-range of the equipment. Accuracy for in-situ field parameters is provided by the manufacturer and is presented in Table 1-10. Accuracy of the laboratory data will be determined by analysis of LCS and comparison of the results to the accuracy objectives specified in Table 1-11.

1.5.3 Completeness

Completeness is the amount of planned data that must be collected to fulfill the objectives of the project. There are no statistical criteria that require a certain percentage of data. However, it is expected that 90 percent of all measurements will be completed when anticipated. This accounts for adverse weather conditions, safety concerns, and equipment problems. Completeness will be determined by comparing the

number of measurements planned to be collected to the number of measurements actually collected that also were deemed valid. An invalid measurement would be one that does not meet the sampling methods requirements and the data quality objectives. Completeness results will be checked quarterly. This will allow identification and correction of problems in a timely fashion (Table 1-10 and 1-11).

1.5.4 Representativeness

Representativeness describes the degree to which the results of analyses represent the samples collected, and the samples in turn represent the environment from which they were taken. Representativeness of the sample locations and storm events will be addressed by collecting flow-weighted composite samples. Samples collected in this manner will represent the varying flow regimes that occur during a storm event by collecting sample aliquots more frequently when flow rates are increased and less frequently when flow rates are lower.

Table 1-10: *In-Situ* Field Measurement Data Quality Objectives

Parameter	Accuracy	Precision	Completeness
Temperature	± 1.0 ^{o}C	± 0.3	90%
Conductivity	± 3%	± 1%	90%
pH	± 0.1 units	± 0.05	90%
Dissolved Oxygen	± 0.2 mg/L, ± 2% air	0.1 mg/L, ± 1% air	90%
Turbidity	± 5%	± 3%	90%

Table 1-11: Data Quality Objectives

Group	Matrix	Reporting Limit	Accuracy	Precision (RPD)	Completeness
Microbiology	Water	10-20 MPN/100mL	< RL[(a)]	$R_{log} \leq 3.27 \bullet \text{mean } R_{log}$[(b)(c)]	90%
Nutrients/ Conventionals	Water	0.01-5 mg/L	80 -120%	0-30	90%
Metals	Water	1-10,000 ug/L	80-120%	0-30	90%
Organics	Water	0.01-0.06 ug/L	40-142%	0-30	90%
Synthetic Pyrethroid Pesticides	Sediment	2-25 ng/g	0-148%	0-30	90%
Piperonyl Butoxide (BPO)	Sediment	20 ng/g	65-125%	0-30	90%

NA= Not Applicable
RPD= Relative Percent Difference
RL=Reporting Limit
(a) Accuracy DQOs for microbiology are based on field blank samples collected in the field and reagent blank samples performed in the laboratory.

(b) Precision DQOs for microbiology are based on field duplicate samples. Laboratory duplicate samples are not run on microbiology samples.
(c) Rlog is the absolute difference between logarithms of coliform counts for duplicate samples.

1.6 SPECIAL TRAINING NEEDS/CERTIFICATION

1.6.1 Specialized Training or Certifications

The field staff at MACTEC has completed all applicable certification and training to conduct storm water sampling. CRG is certified by the California Environmental Laboratory Accreditation Program (ELAP Certification #2261) for the analysis of organics, inorganics, and toxic chemical elements in wastewater. Details of the training are available from the laboratory.

Standard Operating Procedures (SOPs) for field and laboratory tasks will be developed and updated on a regular basis in order to maintain procedural consistency. The maintenance of an SOP Manual will provide project personnel with a reference guide for training new personnel as well as a standardized information source that personnel can access. The laboratory SOP/QA Manual is provided in Appendix A. The MACTEC sampling SOP is provided in Appendix C.

1.6.2 Training and Certification Documentation

Field personnel will be trained properly in the use of monitoring equipment and clean sample handling techniques, along with all appropriate health and safety protocols prior to conducting monitoring activities. Specifically, the following elements will be included in the training of all MACTEC field personnel:

- Review of QAPP
- Classroom training
- Field training

CRG's QA officer provides training to laboratory personnel. Details of this training are available from the laboratory director.

1.6.3 Training Personnel

MACTEC's Quality Assurance Officer and Project Coordinator will provide training to the monitoring personnel. The QA officer and Project Coordinator will train field personnel in sampling protocols and procedures in accordance with the QAPP. The Project Coordinator will communicate any updates or

revisions of these protocols in a timely manner. All internal training will be documented via the MACTEC timesheet program, which is based on unique project and task numbers.

CRG provides training to all staff members to ensure they are adequately qualified and trained to perform assigned tasks. Details of CRG training plans are described in CRG's Quality Assurance Program Document Revision G, located in Appendix A.

1.7 DOCUMENTS AND RECORDS

All records generated by this project will be stored at MACTEC, including this QAPP, analytical and hydrological records, field observations and measurements, and the final report (Table 1-12). Hard copies of records generated by this project will be stored and maintained by the Project Coordinator. Electronic records and scanned versions of hard-copy data will be stored on the MACTEC project network storage and is backed up on a separate hard drive on a nightly basis. Project records will be stored for a minimum of five (5) years from the time the study is completed.

All field results will be recorded at the time of completion, using standard field data sheets. The data sheets will be reviewed before leaving the sample site. Chain-of-custody (COC) forms will be completed for all water samples before the samples are delivered to the laboratory. Completed field data sheets and COC forms will be scanned and stored in the MACTEC project folder.

Copies of this QAPP will be distributed to all parties involved with the project, including field collectors and laboratory analysts. Any future amended QAPPs will be distributed as hard copies by the MACTEC Project Coordinator to all parties listed in Table 1-1. All originals of this and subsequent amended QAPPs will be stored in the project folder at MACTEC.

The Project Coordinator will receive the analytical results in original hard copy from the laboratory, verify completeness, and log the date of receipt. The originals will then be transferred to the Project Manager and filed with all other original project documentation in order to maintain complete project records. In addition to hard copies, the laboratory also will provide analytical data in electronic format. Laboratory data will be maintained and managed with Microsoft Access® and/or Excel® by the Project Coordinator. Data from the monitoring site flow meters and data loggers, including rainfall, sampling history, and discharge totals, also will be stored in the same project file. Following project completion, a copy of the data will be filed with all other original project documentation. Electronic copies of the

Access® database and/or Excel® workbooks, along with the COCs and field forms, will be provided to the County for their records.

The final report will be in the form of a letter report summarizing sampling dates, methods used, flow measurements, data summarized for all events in Excel tables, and event mean concentrations including Excel tables showing calculation steps. Original laboratory reports will be provided as an appendix.

Table 1-12: Document Record Retention, Archival, and Disposition Information

Record Type	Information	Retention	Archival	Disposition
Sample Collection Records	Sample times for grab and composite samples	MACTEC	MACTEC	MACTEC
Field Records	Station location, start/stop time	MACTEC	MACTEC	MACTEC
Analytical Records	Constituent concentrations	MACTEC and CRG	MACTEC and CRG	MACTEC and CRG
Data Records	Hydrographs and supporting data	MACTEC	MACTEC	MACTEC
Assessment Records	Water quality assessment and hydrodynamics	MACTEC	MACTEC	MACTEC

2.0 DATA GENERATION AND ACQUISTION

2.1 SAMPLING PROCESS DESIGN

The flow monitoring and sampling methods utilized during the dry weather and the wet weather events at Couser Canyon, Blossom Valley, and North Jamul are summarized below. Sampling location information is provided in Section 1.4.3. Wet weather sampling will occur during qualifying storm events and will continue throughout the event until rain has stopped and flows have returned to within 20 percent of baseline flows. Dry weather sampling will occur over a 24-hour period.

The sampling process design will consist of American Sigma flow meters, automated samplers, and rain gauges installed at each of the three locations. Monitoring for this program will be conducted during two wet weather flow-weighted composite sampling events and one 24-hour dry weather time-weighted composite sampling event at all three sites. Flow-weighted composite samples will be collected into pre-cleaned, 19-liter (L) borosilicate glass jars. Grab samples for microbiology will be collected at all three sites during both wet and dry weather monitoring programs. Microbiology grab samples will be collected in sterile, 100-milliliter plastic containers. One sediment sample will be manually collected at Couser Canyon immediately following the first monitored storm event.

Flow rates will be monitored using a flow meter with an ultrasonic sensor. A submerged bubbler may also be installed as a measuring device. The sensor will continuously measure stage (stream height) and relay that information to the flow meter. The flow meter will continuously calculate flow rates by inserting the stage information into the preprogrammed discharge equation or by utilizing velocity measured by the ultrasonic sensor. Using this system, the flow meter will be able to actuate the automated sampler to achieve a flow-weighted composite sample. Sampling and flow equipment will be monitored manually.

All sampling and analyses conducted for this monitoring program will be in accordance with applicable USEPA regulations and guidance. All samples will be sent to the analytical laboratory within specified holding time (Table 2-4).

Natural variability and sample bias are concerns with all sampling programs. Natural variability at a monitoring site can occur both on a seasonal basis and on a within-event basis. Seasonal variation will be addressed by monitoring three events at different points during wet and dry seasons. One of the wet weather monitoring events will occur in the early wet season and the second monitoring event will occur during a late wet season storm event. The third event will be a dry season event which will occur at least

72 hours after a storm event. Within-event variations will be addressed by sampling for extended periods of time during each monitoring event. During wet weather events flow-weighted sampling will occur over the entire hydrograph. Flows are not anticipated to vary a great deal during dry weather so the dry weather event will occur over a 24-hour period. Sample bias is being addressed during all sampling events by using flow-weighted composites. This type of sampling allows for proportional representation of the discharge throughout the monitoring event. Some analytical constituents do not allow for composite sampling and must be collected as a grab sample. For these constituents attempts will be made to minimize bias by collecting grab samples at or near the peak of the hydrograph.

Although not anticipated, if sites become inaccessible during monitoring events efforts will be made by field crews to move monitoring equipment to an accessible location. If it is not possible to move equipment to an accessible location that location will not be monitored during that event and will be monitored at a later event or time period. All notable variations in project schedule or variations occurring at the monitoring locations will be assessed and discussed in the final report.

2.2 SAMPLING METHODS

2.2.1 Sampling Protocols

Sample bottles and bottle caps will be protected from contact with solvents, dust, or other contaminants. The 19-L borosilicate sample bottles will be laboratory, protocol cleaned based on the analytical suite prior to reuse during this project. All other sample containers are “Certified Clean” at the time of purchase. Because additional volumes are necessary for laboratory QA/QC, sample containers will have greater sample volume than the minimum necessary to perform the requested analyses.

Sampling requires automated collection of flow-weighted aliquots at each of the monitoring locations. In-situ field measurements listed in Table 1-6 will be taken. Manual grab samples for microbiology analysis will be collected for this monitoring program. The sediment sample collected at Couser Canyon will be collected directly from the stream bed using a pre-cleaned stainless steel spoon and placed directly in a “Certified Clean” sample container. Sediment sample homogenization will be conducted by the laboratory prior to analysis. The complete sampling Standard Operating Procedures (SOP) from MACTEC is presented in Appendix C.

The following sample handling protocols will be followed when collecting samples to minimize the possibility of contamination:

- Automated samples will be collected using a peristaltic pump as part of an automated sampler unit. The sample aliquots will be composited based on flow during wet weather and time during dry weather events.
- Grab samples for microbiology analysis will be collected manually directly from the conveyance into separate sterile containers.
- Grab samples for sediment will be collected manually directly from the stream bed and placed in to "Certified Clean" sample containers provided by the laboratory.
- Samples will be packed in ice and will be delivered to the laboratory by field crews in order to meet analytical holding times.
- Sample containers will be labeled with a unique sample ID, date, time, project, analyses, and collector's initials.

The MACTEC team has responsibility for assessing the safety of sampling the sites during storm events and determining whether it is safe to proceed. A two-person team will conduct all sampling during storm events, and the sampling team will have access to a cellular phone in order to alert rescue agencies should an accident occur. Sampling will be postponed if the sampling team determines that the conditions are unsafe.

Failure to collect a sample due to safety concerns or technical issues will be promptly reported to the Project Manager, who will determine if any corrective action is needed and make arrangements to collect a replacement sample (if possible). The MACTEC Quality Assurance Officer will document sampling failures and the effectiveness of corrective actions.

2.2.2 Sampling Locations

Sampling locations were chosen to characterize runoff from agricultural and rural residential land uses under wet weather and dry weather conditions. Sites selected consist of concrete pipe or culvert conveyance locations. Three mass loading sampling stations were chosen for this project. The stations are located in the San Luis Rey, San Diego, and Sweetwater Watersheds. Specific locations for each site are described in Table 1-5 and shown on Figure 1-2.

2.2.3 Storm Selection Criteria

Weather will be tracked for monitoring purposes from October 1, 2009 to April 30, 2010. Throughout the storm season, several sources for weather information will be monitored continuously. Internet web pages for the National Weather Service and local ALERT systems will be monitored. Quantitative precipitation

forecasts (QPFs) and probability of precipitation (POPs) will be closely monitored by geographic zone to help in the decision process for event mobilization.

A viable storm event is considered an event that produces a minimum of 0.25 inches of rainfall and is within ± 50 percent of the average storm volume for the region. Storm qualification is determined by the following mobilization criteria based on Antecedent Moisture Condition (AMC) (Table 2-1), which is an evaluation of the runoff potential of the site. The AMC is determined by the length of time since and the amount of prior rainfall, along with other factors such as recent humidity and professional judgment. Notification of a qualifying event will be given to the COTR for final mobilization approval. If mobilization criteria have been met and the COTR is unavailable mobilization will proceed without final approval.

Table 2-1: Mobilization Criteria Based on Antecedent Moisture Condition (AMC)

AMC[(a)]	QPF[(b)]	Probability of Precipitation	Minimum Forecast Time
I	0.50 inches	≥ 60%	24 hours
II	0.38 inches	≥ 60%	24 hours
III	0.25 inches	≥ 60%	24 hours

(a) AMC I represents low runoff potential, such as from a dry watershed. AMC II represents moderate runoff potential. AMC III represents high runoff potential, such as a watershed saturated from previous rain events.
(b) Quantitative Precipitation Forecast.

For safety and staffing reasons, mobilization will not occur on the following holidays:

- Thanksgiving: November 26 and 27, 2009
- Christmas: December 24 and 25, 2009
- New Year's: December 31, 2009 and January 1, 2010

The dry weather sampling event must be preceded by at least 72 hours of dry conditions (< 0.1 inches of precipitation) unless otherwise directed by the COTR.

2.2.4 Sample Analysis

Wet weather and dry weather samples will be analyzed for bacteria, nutrient, conventional, metal, and organic constituents commonly found in storm water runoff. A list of analytical constituents, methods, reporting limits, and method detection limits for water samples is presented in Table 2-2. A list of analytical constituents, methods, reporting limits, and method detection limits for the sediment sample is presented in Table 2-3.

Table 2-2: Analytical Constituents and Method Requirements for Water Samples

Analytical Parameter[(a)]	Laboratory	Analytical Method	Method Detection Limit	Reporting Limit
Microbiology				
Coliform, Fecal	CRG	SM 9221 B/E	20 MPN/100 mL	20 MPN/100 mL
Coliform, Total	CRG	SM 9221 B/E	20 MPN/100 mL	20 MPN/100 mL
Enterococcus	CRG	Enterolert	10 MPN/100 mL	10 MPN/100 mL
Nutrients and Conventionals				
Ammonia-Nitrogen	CRG	SM 4500-NH3 F	0.03 mg/L	0.03 mg/L
Nitrate-Nitrogen	CRG	EPA 300.0	0.01 mg/L	0.20 mg/L
Nitrite-Nitrogen	CRG	EPA 300.0	0.01 mg/L	0.05 mg/L
Ortho-Phosphate Phosphorus	CRG	SM 4500-P E	0.01 mg/L	0.01 mg/L
Chloride	CRG	EPA 300.0	0.01 mg/L	0.20 mg/L
Flouride	CRG	EPA 300.0	0.01 mg/L	0.20 mg/L
Sulfate	CRG	EPA 300.0	0.01 mg/L	0.05 mg/L
Total Kjeldahl Nitrogen	CRG	SM 4500-N Org B	0.455 mg/L	0.50 mg/L
Total Phosphorus	CRG	SM 4500-P E	0.016 mg/L	0.05 mg/L
Total Suspended Solids	CRG	SM 2540-D	0.5 mg/L	5.0 mg/L
Total Dissolved Solids	CRG	SM 2540-C	0.1 mg/L	5.0 mg/L
Alkalinity, Bicarbonate	CRG	SM 2320-B	1.0 mg/L	5.0 mg/L
Alkalinity, Carbonate	CRG	SM 2320-B	1.0 mg/L	5.0 mg/L
Alkalinity, Hydroxide	CRG	SM 2320-B	1.0 mg/L	5.0 mg/L
Hardness, Total	CRG	SM 2340-C	1.0 mg/L	5.0 mg $CaCO_3$/L
Metals				
Iron, Total	CRG	EPA 200.8(m)	5.0 ug/L	20.0 ug/L
Manganese, Total	CRG	EPA 200.8(m)	0.1 ug/L	0.2 ug/L
Boron, Total	CRG	EPA 200.8(m)	1.0 ug/L	5.0 ug/L
Magnesium, Dissolved	CRG	EPA 200.8(m)	0.05 mg/L	0.1 mg/L
Potassium, Dissolved	CRG	EPA 200.8(m)	5.0 mg/L	10.0 mg/L
Sodium, Dissolved	CRG	EPA 200.8(m)	5.0 mg/L	10.0 mg/L
Calcium, Dissolved	CRG	EPA 200.8(m)	0.05 mg/L	0.1 mg/L
Antimony, Dissolved	CRG	EPA 200.8(m)	0.1 ug/L	5.0 ug/L

Table 2-2: Analytical Constituents and Method Requirements for Water Samples (continued)

Analytical Parameter[a]	Laboratory	Analytical Method	Method Detection Limit	Reporting Limit
Metals (continued)				
Arsenic, Dissolved	CRG	EPA 200.8(m)	0.2 ug/L	1.0 ug/L
Cadmium, Dissolved	CRG	EPA 200.8(m)	0.2 ug/L	1.0 ug/L
Chromium, Dissolved	CRG	EPA 200.8(m)	0.1 ug/L	5.0 ug/L
Copper, Dissolved	CRG	EPA 200.8(m)	0.4 ug/L	5.0 ug/L
Lead, Dissolved	CRG	EPA 200.8(m)	0.05 ug/L	2.0 ug/L
Lead, Total	CRG	EPA 200.8(m)	0.05 ug/L	2.0 ug/L
Nickel, Dissolved	CRG	EPA 200.8(m)	0.2 ug/L	2.0 ug/L
Selenium, Dissolved	CRG	EPA 200.8(m)	0.2 ug/L	5.0 ug/L
Selenium, Total	CRG	EPA 200.8(m)	0.2 ug/L	5.0 ug/L
Zinc, Dissolved	CRG	EPA 200.8(m)	0.1 ug/L	5.0 ug/L
Organics				
Chlorpyrifos	CRG	EPA 625(m)	1.0 ng/L	0.02 ug/L
Diazinon	CRG	EPA 625(m)	2.0 ng/L	0.04 ug/L
Malathion	CRG	EPA 625(m)	3.0 ng/L	0.06 ug/L
Terbuthylazine	CRG	EPA 625(m)	5.0 ng/L	0.01 ug/L
Secbumeton	CRG	EPA 625(m)	5.0 ng/L	0.01 ug/L
Simazine	CRG	EPA 625(m)	5.0 ng/L	0.01 ug/L
Oxadiazon	CRG	EPA 625(m)	5.0 ng/L[b]	0.06 ug/L[b]
Atrazine	CRG	EPA 625(m)	5.0 ng/L	0.01 ug/L

(a) Filtering for dissolved constituents will be conducted by the laboratory as soon as possible.
(b) Method Detection Limit and Target Reporting Limit for Oxadiazon are tentative. Final values are being determined by laboratory test procedures.

Table 2-3: Analytical Constituents and Method Requirements for Sediment Samples

Analytical Parameter	Laboratory	Analytical Method	Method Detection Limit	Reporting Limit
Allethrin	CRG	EPA 8270 NCI GC/MS	0.5 ng/g	2.0 ng/g
Bifenthrin	CRG	EPA 8270 NCI GC/MS	0.5 ng/g	2.0 ng/g
Cyfluthrin	CRG	EPA 8270 NCI GC/MS	0.5 ng/g	2.0 ng/g
Cypermethrin	CRG	EPA 8270 NCI GC/MS	0.5 ng/g	2.0 ng/g
Danitol	CRG	EPA 8270 NCI GC/MS	0.5 ng/g	2.0 ng/g
Deltamethrin	CRG	EPA 8270 NCI GC/MS	0.5 ng/g	2.0 ng/g
lambda-Cyhalothrin	CRG	EPA 8270 NCI GC/MS	0.5 ng/g	2.0 ng/g
Permethrin	CRG	EPA 8270 NCI GC/MS	5.0 ng/g	25 ng/g
Prallethrin	CRG	EPA 8270 NCI GC/MS	0.5 ng/g	2.0 ng/g
Piperonyl butoxide (PBO)	CRG	EPA 8270C(m)	5.0 ng/g	20 ng/g

2.2.5 Sampling Event Hydrologic Data

The flow meters will measure and log rainfall, water stage, flow, total runoff volume, and sample history. During storm events, the flow meters convert instantaneous flow into total runoff volume. All flow data will be stored in the flow meter and be used to generate storm hydrographs.

2.2.6 Stream Flow Gauging

Stream flow gauging will occur at each of the monitoring locations on three different occasions throughout the monitoring program. Gauging will occur once at the beginning of the wet season, when flow is present; once in the middle of the season; and once at the end of the season. Stream flow gauging will be done in accordance with USGS methodology by measuring velocity at 0.6 of the depth from the water surface at equal increments over a cross-section of the stream. Discharge rates will be calculated by summing the total of all incremental rates which are calculated by multiplying the depth of the stream, the width of a given measurement point along the cross-section, and velocity at that same point (see equation below). Gauging event data will be utilized to assist in determining flow pacing for sampling events (Rantz et al., 1982).

$$\text{Total Discharge (cfs)} = \Sigma\,[D_i\ (\text{ft}) \times W_i\ (\text{ft}) \times V_i\ (\text{ft/sec})]$$

Where D = Depth (feet) at the ith interval
W = Width (feet) of the ith interval
V = Velocity (feet per second) at the ith interval

2.3 SAMPLE HANDLING AND CUSTODY

The sample containers, preservation methods, and chemicals listed in Table 2-4 for water samples and Table 2-5 for sediment samples were confirmed by the laboratory. All samples will be pre-labeled with the project name, site ID, sample type, bottle number, sampler name, preservative, and analysis. All samples bottles will also be pre-labeled with a unique Sample ID to track the sample throughout its analyses. At the time of sample collection, the sample labels will be completed in the field with the date and time. The Sample ID's will also be entered directly onto the COC forms. The COC forms will accompany all samples from the time of sample collection to delivery to the analytical laboratory.

The following sample handling protocols will be followed when collecting samples to minimize the possibility of contamination:

- Only previously unused sample bottles will be employed. Sample bottles and bottle caps will be protected from contact with solvents, dust, or other contaminants during storage and bottle handing. Sample bottles will not be reused until the laboratory has cleaned and blanked the containers.
- The grab sampler will make an effort, within reason, to prevent uncharacteristic floating debris from entering the sample containers. The sampler will also make an effort to not stir up sediments at the bottom of the channel.
- The inside of the sampling container will not be touched to the maximum extent practicable during preparation and sampling activities.
- Vehicle engines will be turned off during sampling activities to minimize exposure of samples to exhaust fumes.
- All samples will be collecting in accordance with the "clean sampling" techniques outlined in Appendix C.
- Manual water grab samples will be collected by inserting the transfer container under or down current of the direction of flow, with the container opening facing upstream.
- Composite sampling requires multiple automated samples to be transferred into a composite bottle. After the composite samples are collected, the bottle will be immediately tipped to decant enough volume to make sure 1-2 inches of airspace is in the sample bottle and the bottle will be capped tightly.
- Once composite sample containers are filled or within 48 hours after the start of sampling, they will be promptly placed in a clean bin with ice (target temperature 6 degrees Celsius), in the dark (lid covering bin) and transported to the laboratory for processing to meet the 48 hour holding time for nutrients. All necessary pre-processing for analysis, such as filtration and acidification, will take place in the laboratory by certified personnel.
- After the field crew collects and delivers the composite samples to the laboratory, the laboratory will conduct the analysis within the holding times listed in Tables 2-4 and 2-5. These field and laboratory activities will be coordinated to make sure all samples are processed within the proper holding times. Nutrient parameters have a critical holding time requirement of 48 hours. This will require close coordination between the laboratory and monitoring personnel to make sure these analyses are completed within holding times. With composite samples, the start of holding times is considered to be the time that the last aliquot was collected.

After the laboratory receives the water samples, certified laboratory technicians will dispense the 19-liter composite sample contents into containers that contain the required volume and preservatives specified in Table 2-4.

Table 2-4: Sample Handling for Water Samples

Analytical Parameter[(a)]	Container	Preservative[(b)]	Maximum Holding Time
Coliform, Fecal	100-mL Sterile Plastic	$Na_2S_2O_3$	6 hours
Coliform, Total	100-mL Sterile Plastic	$Na_2S_2O_3$	6 hours
Enterococcus	100-mL Sterile Plastic	$Na_2S_2O_3$	6 hours
Ammonia-Nitrogen	250 mL Glass Jar	Acidify to pH < 2 with H_2SO_4	28 days
Nitrate-Nitrogen	250 mL HDPE Plastic	≤ 6 °C	48 hours
Nitrite-Nitrogen	250 mL HDPE Plastic	≤ 6 °C	48 hours
Ortho-Phosphate Phosphorus	250 mL HDPE Plastic	≤ 6 °C	48 hours
Chloride	250 mL HDPE Plastic	≤ 6 °C	28 days
Flouride	250 mL HDPE Plastic	≤ 6 °C	ASAP (24 hours)
Sulfate	250 mL HDPE Plastic	≤ 6 °C	28 days
Total Kjeldahl Nitrogen	500 mL Amber Glass Jar	Acidify to pH < 2 with H_2SO_4	28 days
Total Phosphorus	250 mL HDPE Plastic	Acidify to pH < 2 with H_2SO_4	28 days
Total Suspended Solids	1 L HDPE Plastic	≤ 6 °C	7 days
Total Dissolved Solids	1 L HDPE Plastic	≤ 6 °C	7 days
Alkalinity, Bicarbonate	250 mL HDPE Plastic	≤ 6 °C	14 days
Alkalinity, Carbonate	250 mL HDPE Plastic	≤ 6 °C	14 days
Alkalinity, Hydroxide	250 mL HDPE Plastic	≤ 6 °C	14 days
Hardness, Total	250 mL HDPE Plastic	≤ 6 °C	6 months

(a) Filtering for dissolved constituents will be conducted by the laboratory as soon as possible.
(b) Acid preservation will be conducted by the laboratory as soon as possible.

Table 2-4: Sample Handling for Water Samples (continued)

Analytical Parameter[(a)]	Container	Preservative[(b)]	Maximum Holding Time
Iron, Total	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Manganese, Total	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Boron, Total	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Magnesium, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Potassium, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Sodium, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Calcium, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Antimony, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Arsenic, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Cadmium, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Chromium, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Copper, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Lead, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Lead, Total	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Nickel, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Selenium, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Selenium, Total	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Zinc, Dissolved	1 L HDPE Plastic	Acidify to pH < 2 with HNO_3	6 months
Chlorpyrifos	1 L Amber Glass Jar	≤ 6 °C	7 days
Diazinon	1 L Amber Glass Jar	≤ 6 °C	7 days
Malathion	1 L Amber Glass Jar	≤ 6 °C	7 days
Terbuthylazine	1 L Amber Glass Jar	≤ 6 °C	7 days
Secbumeton	1 L Amber Glass Jar	≤ 6 °C	7 days
Simazine	1 L Amber Glass Jar	≤ 6 °C	7 days
Oxadiazon	1 L Amber Glass Jar	≤ 6 °C	7 days
Atrazine	1 L Amber Glass Jar	≤ 6 °C	7 days

(a) Filtering for dissolved constituents will be conducted by the laboratory as soon as possible.
(b) Acid preservation will be conducted by the laboratory as soon as possible.

Table 2-5: Sample Handling for Sediment Samples

Analytical Parameter	Container	Preservative	Maximum Holding Time
Allethrin	500-mL Glass Jar	≤ 6 °C	40 days
Bifenthrin	500-mL Glass Jar	≤ 6 °C	40 days
Cyfluthrin	500-mL Glass Jar	≤ 6 °C	40 days
Cypermethrin	500-mL Glass Jar	≤ 6°C	40 days
Danitol	500-mL Glass Jar	≤ 6 °C	40 days
Deltamethrin	500-mL Glass Jar	≤ 6 °C	40 days
L-Cyhalothrin	500-mL Glass Jar	≤ 6 °C	40 days
Permethrin	500-mL Glass Jar	≤ 6 °C	40 days
Prallethrin	500-mL Glass Jar	≤ 6 °C	40 days
Piperonyl butoxide (PBO)	500-mL Glass Jar	≤ 6 °C	40 days

2.3.1 Chain-of-Custody Procedures

Chains-of-custody will be pre-printed along with the bottle labels. The COC forms will contain the same data as the labels, including the name of the laboratory the samples are being submitted to, and, in some cases, even greater detail. The COCs will be completed in the field with dates, times, and sample team names, and will be cross-checked with the bottles to ensure the proper samples have been collected.

The COC forms for the samples will be transported with the samples to the analytical laboratory. Sampled water will be kept properly chilled and transferred to the analytical laboratory within holding times. When custody of the samples is transferred to the courier, the COC will be signed and dated, and a PDF copy will be sent from the laboratory to MACTEC. An example of a COC form is included in Appendix B. The COCs will be reviewed by personnel at the receiving laboratories to make sure that no samples have been lost in transport. The laboratory also will verify that each sample has been received within the required holding time.

2.3.2 Sample Disposal Procedures

After analysis, including QA/QC procedures, any excess sample will be disposed of by the analytical laboratories.

2.3.3 Corrective Action Procedures

Corrective action is taken when an analysis is deemed suspect for some reason. The reasons include contamination and exceedances of the RPD ranges, spike recoveries, and blanks. Corrective action varies somewhat from analysis to analysis, but typically involves the following:

- Check of procedure
- Review of documents and calculations to identify any possible error
- Error correction
- Re-analysis of the sample extract, if available, to see if results can be improved
- Complete reprocessing and re-analysis of additional sample material, if it is available

Any failures (e.g., instrument failures) that occur during data collection and laboratory analyses will be the responsibility of the field crew or laboratory, respectively. In the case of field instruments, problems will be addressed through instrument cleaning, repair, or replacement of parts or the entire instrument, as warranted. Field crews will carry basic spare parts and consumables with them, and will have access to spare parts stored at the office. Records of all repairs or replacements of field instruments will be maintained at MACTEC. The laboratory has procedures in place to follow when failures occur, and will identify individuals responsible for corrective action and develop appropriate documentation. The QA Officer at the laboratory has procedures in place to follow when failures occur, and will identify individuals responsible for corrective action and develop appropriate documentation. Any corrective actions taken will be documented in the laboratory's hard copy deliverable or in a Corrective Action Plan. For additional information on CRG's QA procedures, please refer to Appendix A.

2.4 ANALYTICAL METHODS

2.4.1 Analysis Methods

The list of constituents, measurement techniques, method detection limit (MDL) and report limit (RL) are presented in Tables 2-2 for water samples and 2-3 for sediment samples. The analytical methods are from the Standard Methods for the Examination of Water and Wastewater (Greenberg, et. al., 2005) and USEPA. Field probes used for in-situ measurements are presented in Table 2-6.

2.4.2 Laboratory Analytical Methods

Laboratory analytical methods are presented in Table2-2 for water analyses and Table 2-3 for sediment analyses.

2.4.3 Field Analytical Methods

Field measurements will include specific conductivity, dissolved oxygen, pH, temperature, and turbidity (Table 2-6).

Table 2-6: Field Analytical Constituents and Methods

Parameter	Instrument	Analytical Method
Conductivity	Horiba U-20 Series	Field Probe
Dissolved Oxygen	Horiba U-20 Series	Field Probe
pH	Horiba U-20 Series	Field Probe
Temperature	Horiba U-20 Series	Field Probe
Turbidity	Horiba U-20 Series	Field Probe

2.5 QUALITY ASSURANCE/QUALITY CONTROL

This section addresses Quality Assurance/Quality Control (QA/QC) activities associated with both field sampling and laboratory analyses. The field QA/QC samples are used to evaluate potential contamination and sampling errors introduced prior to submittal of the samples to the analytical laboratory. Field QA/QC activities for this program include two field duplicates collected for grab samples only and one field blank sample. Laboratory QA/QC samples provide information to assess potential laboratory contamination, analytical precision, and accuracy. Laboratory QA/QC activities performed on water samples includes method blanks, laboratory duplicates, matrix spikes, and matrix spike duplicates. Laboratory QA/QC activities performed on sediment samples includes laboratory duplicate, matrix spike, and matrix spike duplicate. The details of QA/QC procedures are discussed below. If any QA/QC standards are not met, the appropriate corrective actions will be taken in accordance with Section 2.3.3 of this document and laboratory QA manuals provided in Appendix A.

2.5.1 Method Blanks

Blank samples help verify that the equipment, sample containers, and reagents are not a source of contamination, and that the sampling techniques used are non-contaminating. Both field and laboratory blanks are included in the program.

Field blanks are used to determine if field sampling activities are a potential source for contamination. These blanks are collected by pouring "blank water" (contaminant-free deionized water) into sampling containers in the field during a sampling event. The same equipment used for collection of the grab samples will be used to transfer the blank water into the blank sample containers. One field blank will be collected during this monitoring program.

Method blanks will be run by the analytical laboratory to determine the level of contamination associated with laboratory reagents and equipment. A method blank is a sample of a known matrix that has been subjected to the same complete analytical procedure as the submitted samples to determine if contamination has been introduced into the samples during processing. Results of method blank analysis should be less than the reporting limits for each analyte.

2.5.2 Field and Laboratory Duplicates

Field duplicates are used to assess variability attributable to collection, handling, shipment, and storage. Procedures for collecting field duplicates should be the same as that used for collecting the field samples. Duplicates of manual grab samples will be collected by filling two grab sample containers at the same time or in rapid sequence. Field duplicate samples are not conducted on composite samples as this would require a complete and separate second sampling system. One field duplicate sample will be collected during two separate monitoring events throughout this program.

Laboratory duplicates are used to assess variability attributable to laboratory analytical methods. Laboratory duplicates are two sub-samples taken from the same primary sample and analyzed using the same methods and techniques. Laboratory duplicates will be performed on water and sediment samples.

Duplicate results are evaluated by calculating the relative percent difference (RPD) between the two sets of results. This serves as a measure of the reproducibility (precision) of the sample results. The acceptable RPD limits are shown in Table 1-11. The RPD is calculated as:

Relative percent difference = 100 x (sample 1 – sample 2)/average

2.5.3 Spikes

Spikes are used to assess precision and accuracy of the laboratory analytical method, and to evaluate matrix interference. The matrix spike/matrix spike duplicates (MS/MSD) approach will be used with the field samples. A MS sample is an aliquot of a field sample into which the laboratory adds a known quantity of a compound. Reported percent recovery of the known compound in the sample indicates matrix effect on the analysis. A MSD sample is a duplicate aliquot of the matrix spike sample that is analyzed separately. The MSD results are compared to the matrix spike results to assess the precision of the laboratory analytical method. Duplicate results are evaluated by calculating the relative percent difference (RPD) between the two sets of results. This serves as a measure of the reproducibility (precision) of the sample results. The acceptable RPD limits are shown in Table 1-11.

2.6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

2.6.1 Sampling Equipment

A complete inspection and maintenance program will be performed on each Sigma 950 flow meter, Sigma 900 Max Autosampler, and Sigma rain gauge before each monitoring event. Inspection and maintenance of the flow meter and automated sampler will include the following items based on a combination of manufacturer requirements specified in Appendix D and the duration of equipment deployment:

- Checking the performance using standard test procedures
- Checking the power supplies and replacing batteries, as needed
- Performing necessary equipment calibrations (see Section 2.7)
- Checking and replacing desiccant, as needed
- Checking the automated sampler and replacing the peristaltic pump tubing when necessary

Equipment inspections and maintenance will be documented during each visit, including the action taken and the date performed. Deficiencies discovered during inspections may be corrected by replacing batteries, replacing membranes, replacing cables, remediating cable connections, or cleaning probes. A re-inspection will be performed and the effectiveness of the corrective action will be determined and documented. If equipment continues to be compromised to the point where accurate data collection may be suspect, the Project Manager will determine the extent of damage and repair, if possible, return to the

manufacturer for repair, or replace the device entirely. Accurate records of the equipment inspection and maintenance (repair and replacement) logs will be maintained along with all other project documentation.

Inspections and maintenance of field instruments, including the handheld field measurement devices, will be addressed through instrument cleaning, repair, or replacement of parts or the entire instrument, as warranted. Crews will carry basic spare parts and consumables with them to the field, and will have access to spare parts and instruments stored at the MACTEC office.

2.6.2 Analytical Instruments

CRG maintains analytical equipment in accordance with their QA Manual provided in Appendix A, which includes specifications by the manufacturer and the method. If deficiencies occur, the laboratory will resolve and document the issue in accordance with their QA procedures. These SOPs have been reviewed by the Project QA Officer and found to be in compliance with acceptable criteria.

If failures or errors occur with analytical instrumentation, the proper corrective action must be taken. The laboratory is responsible for taking the appropriate measures in accordance with their QA procedures and/or manufacturer's agreements. The Laboratory Director (Figure 1-1) is responsible for notifying the Project Manager. Refer to Section 2.3.3 for more details regarding corrective action procedures.

Table 2-7: Testing, Inspection, and Maintenance of Field Equipment and Monitoring Instruments

Equipment	Maintenance/ Testing/Inspection Activity	Responsible Person	Frequency	SOP Reference
American Sigma 950 AVB Flow Meter	Maintenance and Inspection	MACTEC Technical Staff	Semi-annually or as needed	Sigma 950 O&M Manual 3314 (see Appendix D-1)
American Sigma 900 MAX Automated Sampler	Maintenance and Inspection	MACTEC Technical Staff	Semi-annually or as needed	Sigma 900 MAX Sampler O&M Manual 8992 (see Appendix D-2)
American Sigma Rain Gauge	Maintenance and Inspection	MACTEC Technical Staff	Semi-annually or as needed	NA
Horiba U-20 Series	Maintenance and Inspection	MACTEC Technical Staff	Semi-annually or as needed	NA

2.7 INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

All laboratory equipment is calibrated based on manufacturer recommendations and accepted laboratory protocol. Laboratories maintain calibration practices as part of their method SOPs maintained by their Laboratory Directors and QA officers, and can be provided upon request. Information regarding the calibration activities performed by CRG is provided in Appendix A.

Calibration for all flow meters and automated samplers will be conducted prior to installation and, thereafter, per the calibration frequencies discussed in Table 2-8. The Sigma 950 Flow Meter will be calibrated using the procedures described in the Sigma 950 O&M Manual (Hach Catalog No. 3314) provided in Appendix D-1. For flow meter calibration, the recorded water level will be checked by operation of the flow meter while the bubbler is submersed in water of a known level. Results that deviate from the known level will be documented and will require the equipment to be replaced or repaired. The Sigma 900 Max Sampler will be calibrated using the procedures described in the Sigma 900MAX Sampler O&M Manual (Hach Catalog No. 8992) in Appendix D-2. For automated sampler calibration, the aliquot volume will be calibrated using a graduated flask or beaker. Rain gauges are not adjustable and cannot be calibrated. If a rain gauge fails to record simulated rainfall, the instrument is repaired or replaced. Calibration of the handheld measurement devices will be performed daily during sampling activities or as needed. All calibration measurements will be recorded and a calibration log will be maintained.

Table 2-8: Calibration of Field Sampling Equipment and Monitoring Instruments

Equipment	Calibration Description	Responsible Person	Frequency	SOP Reference
American Sigma 950 AVB Flow Meter	Water level check against known levels	MACTEC Technical Staff	Semi-annually	Sigma 950 O&M Manual 3314 (see Appendix D-1)
American Sigma 900MAX Automated Sampler	Aliquot calibration	MACTEC Technical Staff	Semi-annually	Sigma 900MAX Sampler O&M Manual 8992 (see Appendix D-2)
American Sigma Rain Gauge	NA	MACTEC Technical Staff	Semi-annually	NA
Horiba U-20 Series	Calibration using standard solutions	MACTEC Technical Staff	Prior to each event	NA

2.8 INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES

All glassware, sample bottles, and collection equipment will be inspected prior to their use. Some sampling containers and caps will be obtained from the participating laboratory, CRG Marine Laboratories. The Project Coordinator will be in charge of ordering sampling containers. All ordered supplies will be examined for damage as they are received. CRG maintains logbooks for all consumables that are checked against all materials received. Bottles and caps will be inspected for damage prior to sampling, and only sound bottles will be used. The container caps will be tested for tightness prior to transport of samples.

The Sampling Manager and Field Monitoring Coordinator will make sure sufficient field supplies are on hand prior to the start of sampling for each period. Field supplies will be stored at MACTEC and laboratory supplies will be stored at the laboratories conducting the work. Inspection and testing requirements for laboratory supplies are covered in the laboratory's QA/QC procedures.

Table 2-9: Inspection/Acceptance Testing Requirements for Consumables and Supplies

Project-Related Supplies/ Consumables	Inspection/ Testing Specifications/ Source	Acceptance Criteria	Frequency	Responsible Individual
Pre-Cleaned Sample Bottles	Open bottle	Lids screwed on bottles	100%	MACTEC
Composite Sample Bottles	Laboratory cleaned and blanked	Pass blanking analysis	New bottles each monitoring event	CRG/MACTEC
Silicone Tubing	Laboratory cleaned and blanked	Pass blanking analysis	New tubing each season	CRG/MACTEC
Teflon Tubing	Laboratory cleaned and blanked	Pass blanking analysis	New tubing each season	CRG/MACTEC
Gloves	New box (Cole Parmer)	New box	Monthly	MACTEC

2.9 NON-DIRECT MEASUREMENTS

No other data sources will be used for this project.

2.10 DATA MANAGEMENT

2.10.1 Laboratory Data Management

The Project Manager is responsible for leading laboratory data management. Overall management of the data will be consistent with established consultant procedures for stormwater monitoring projects. The

Project Coordinator will be responsible for tracking the analytical process to assure that the laboratory is meeting the required turnaround times and is providing a complete deliverable package. The laboratory will conduct the quality control checks prior to data submittal, for more details regarding laboratory quality assurance and record keeping protocols refer to the QA Manuals included as Appendix A. The Project Coordinator receives the original hard copy from the laboratory, verifies completeness, and logs the date of receipt. Data will be screened for the following major items:

- A 100-percent check between laboratory electronic data and the hard copy reports
- Conformity check between the COC Forms and laboratory reports
- A check for laboratory data report completeness
- A check for typographical errors on the laboratory reports
- A check for suspect values

The originals are then transferred to the Project Manager and filed with all other original project documentation in order to maintain complete project records.

Following the initial screening, a more complete QA/QC review process will be performed, which will include an evaluation of holding times, method and equipment blank contamination, and analytical accuracy and precision.

The laboratory will be requested to provide data in both hard copy and electronic formats. A project file will be developed and used for all electronic data. Laboratory data will be maintained and managed with Microsoft Access® and/or Excel® by the Project Coordinator. The original laboratory Electronic Data Deliverables (EDDs) will be maintained in a folder separate to the managed electronic data so the original is maintained as received from the laboratory and can be used as a reference. If data is reissued, the file name will include the date and the word 'revised.' To manage the revision and prevent duplicate entries, the erroneous dataset will be removed from the folder prior to uploading the revised dataset.

2.10.2 Hydraulic Data Management

The Project Manager is responsible for hydraulic data management in a manner that is consistent with established consultant procedures for stormwater monitoring projects. The Project Coordinator will be responsible for tracking the data logger results, which includes rainfall, sampling history, and discharge (velocity, stage, and instantaneous flow) data.

During storm monitoring events, the Project Manager or Project Coordinator may remotely check the data logger results throughout the monitoring event, and all remote monitoring of the storm stations will be logged. In addition, sampling teams will manually check the data logger results while at the site. The visual discharge and precipitation observed by crew during the storm and the precipitation posted for nearby sites on the National Weather Service website will be compared to the logged data. If a large discrepancy exists, all equipment will be checked for malfunction and any other site problems, such as debris clogging the conduits, will be checked and eradicated during the monitoring event. After each storm event, the logged data will be screened for the following major items:

- A check of the meter and sampler settings associated with each data logger file, including site ID and units, to verify that correct information matches the flow data set. Incorrect settings will be re-programmed for future events
- A data gap check to identify time periods with no recorded data during the monitoring event. Any data gaps will be identified, logged, and investigated
- A check of the discharge start time and precipitation start time to verify that the discharge increased after the start of the storm
- A check of rainfall intensity and discharge values throughout the monitoring event to verify that the discharge increased and decreased when the rainfall intensity increased and decreased
- A check of the number of samples and discharge to verify that the frequency of sampling increased when discharge increased

The original electronic data logger files will be saved as Insight files electronically on the project file. A copy of the electronic data logger files will be stored in Microsoft Excel® workbooks. Hydrographs containing flow, rainfall, and sample information, will be created using the laboratory and data logger results and will be saved as Microsoft Excel® workbooks.

2.10.3 Field Data Management

The Project Coordinator will be responsible for the proper management of field measurement and observation data. The Project Coordinator will review all field data sheets for completeness and maintain the original hardcopies in the project file. Photographs of the monitoring sites and equipment installations taken by field personnel will be uploaded into the project file. Calibration logs for the measurements device will be reviewed by the Project Coordinator and be stored in the project file.

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3.0 ASSESSMENT AND OVERSIGHT

3.1 ASSESSMENTS AND RESPONSE ACTIONS

The Project Manager will be responsible for the day-to-day oversight of the Project. The Project's QA Officer will review progress of the monitoring program. The managers of the project, along with the Project QA Officer, will meet to discuss the siting, sampling, laboratory analyses, data management, and the overall status of the Project. This information will be communicated as needed between the County of San Diego and the Project Manager and Project Coordinator. The Project Coordinator will review laboratory, field, and hydraulic data as the data is produced (i.e., after each monitoring event). The Project's QA Officer has the power to halt all sampling and analytical work by the monitoring personnel, CRG, if the deviations noted are considered detrimental to data quality.

Three types of assessments will be performed as part of this project to ensure that the sampling and analysis activities are in accordance with the approved QAPP.

1. Surveillance of Sample Collection Activities – The Project Coordinator will be responsible for oversight of sampling activities and will review field datasheets to verify that the samples were collected in accordance with QAPP requirements. The QA Officer will accompany the field crew at least once, toward the beginning of the data collection phase of the project, and again at some later point, if deemed necessary, to audit field activities. If the QA Officer finds any of the field activities to be in violation of QAPP requirements, he has the authority to stop these activities until corrective actions are successfully implemented. These include additional training to improve field team performance and QAPP compliance, and appropriate re-sampling of sites, as needed. The QA Officer will report all such actions to the Project Manager and document it in the project file.
2. Data Quality Assessment – The Project Coordinator is responsible for reviewing laboratory reports to verify that the performance criteria of the QAPP were met. This will occur following receipt of each report from the contract laboratories. If it is determined that the precision and accuracy objectives were not met, the Project Coordinator will notify the QA Officer and Project Manager. The contract laboratory QA Officer will review laboratory techniques to minimize errors, and samples will be re-analyzed, if possible.
3. Assessment of Data Entry – Once the performance criteria are met, data analysis and hydrographs can be conducted. The Project Coordinator will review data files to ensure that errors are detected and corrected.

If an audit discovers any discrepancy, the Project's QA Officer will discuss the observed discrepancy with the appropriate personnel responsible for the activity (see Figure 1-1). The discussion will determine whether the information collected is accurate, what caused the deviation, how the deviation impacts data quality, and what corrective actions are necessary as provided in Section 2.3.3. Any corrective actions

taken will be verified based on satisfactory collection of data in accordance with the QAPP, following these actions. The QAPP violation(s), corrective action(s), and verification of correction will be reported in a Corrective Action Plan by the QA Officer to the Project Manager and kept on record.

3.2 REPORTS TO MANAGEMENT

The status of data collection during this project will be reported by the MACTEC Project Manager. The status of data collection during this project will be reported to Joanna Wisniewska, the County Project Manager, within two weeks after each sampling event. Depending on the duration of the sampling, a final project report will be filed to the County no later than six months after the project work is complete (Table 3-1). MACTEC will complete one EDD that includes all data in electronic data format that is requested by the Contracting Officer's Technical Representative (COTR). The EDD will contain laboratory and data logger results, hydrographs (containing flow, rainfall, and sample information), and photographs.

Table 3-1: Quality Assurance Management Report

Report	Due By
Complete data set and summary	August 30, 2010
Draft Final Report for review	August 10, 2010
Final Report	August 30, 2010

4.0 DATA VALIDATION AND USABLILITY

4.1 DATA REVIEW, VERIFICATION, AND VALIDATION

All analytical data will be reviewed and compared to the DQOs described in Section 1.5. If results fail to meet any DQO, the Project Coordinator and/or the Project QA Officer will flag them for further review. Batch QA samples will be reviewed to determine the potential cause of failure to meet the DQO. If the cause cannot be readily ascertained, reserve samples will be reanalyzed (if within designated holding times). If subsequent analyses meet the DQO, the samples will be deemed acceptable. If samples fail to meet the DQOs a second time, or if the cause of the failure cannot be identified and rectified, the data will be excluded from inclusion in the study results. All rejected data will be retained in the Project database, and qualified as "rejected". The ultimate decision of whether to accept or reject a data point will be made by the Project Manager in consultation with the Project QA Officer.

If the analysis for more than ten percent of any given analyte fails to meet the DQOs, the Project Manager and Project QA Officer shall meet to discuss the appropriateness of the DQO and any potential modifications. All proposed modifications of DQOs shall be reviewed by the County of San Diego

4.2 VERIFICATION AND VALIDATION METHODS

Data verification is the process of evaluating the completeness, correctness, and conformance of the dataset against the method, procedural, or contractual requirements. Data validation evaluates whether the data quality goals established during the planning phase have been achieved (USEPA, 2002). Data quality indicators will be continuously monitored by the analyst producing the data (field and lab personnel), as well as the Project Coordinator, with assistance from the QA Officer, throughout the project to make sure corrective actions are taken in a timely manner. Data validation is an analyte- and sample-specific process that extends verification to determine the analytical quality of the dataset (USEPA, 2002). Laboratory and field personnel responsible for conducting QA analysis will be responsible for documenting when data does not meet measurement quality objectives as determined by data quality indicators.

4.2.1 Verification and Validation Responsibilities

In coordination with the QA Advisor, the Project Coordinator will verify and validate field measurements and activities (sample collection and handling) and laboratory activities (sample analysis and handling). Following sample delivery, the laboratories will maintain COCs and sample manifests. Laboratory verification and validation of the data generated is the responsibility of each laboratory. Each laboratory

supervisor maintains analytical reports in a database format as well as all QA/QC documentation for the laboratory. The Laboratory QA Officer will perform checks of all of its records.

The Project Coordinator is responsible for oversight of data collection and the initial analysis of the raw data obtained from the field and the contracted laboratory. All data records will be checked visually and recorded as checked by initials and dates. Reconciliation and correction of any data that fails to meet the DQOs will be done by the Project Coordinator in consultation with the Project QA Officer and the Project Manager. Any corrections require a unanimous agreement that the correction is appropriate.

4.2.2 Process for Verification and Validation

Data verification and validation for field sample collection and handling activities will consist of the following tasks:

- Verification that the sampling activities, sample locations, number of samples collected, and type of analysis performed is in accordance with QAPP requirements
- Documentation of any field changes or discrepancies
- Verification that the field activities (including sample location, sample type, sample date and time, name of field personnel. etc) were properly documented
- Verification of proper completion of sample labels and COCs forms, and secure storage of samples

Data verification and validation for the laboratory sample analysis and handling activities will include the following tasks:

- Verification that all samples recorded on COCs forms were received by the laboratory
- Verification that the appropriate analytical methodology has been followed
- Verification that QC samples meet performance criteria
- Verification that analytical results and documentation are complete

Verification and validation of data entry includes:

- Sorting data to identify missing or mistyped (too large or too small) values
- Double-checking all typed values
- Data is entered in the proper format for each database fields (i.e., text for text, integers for integers, number for numbers, dates for dates, times for times, etc.)

4.3 RECONCILIATION WITH USER REQUIREMENTS

The wet weather and dry weather data produced by this project will be used by the end user (County of San Diego) to complete the assessment of water quality of discharges from agricultural and rural residential land uses. The limitations and assumption of the data will be provided to the end user to allow the user to determine the data's usefulness. Data will be qualified in the Access database and/or Excel workbooks to identify any data considered suspect, rejected, or estimated.

The Draft and Final Reports produced for the end user will provide information about the POCs using dry weather and wet weather monitoring data associated with this project.

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5.0 REFERENCES

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APPENDIX A

LABORATORY SOP/QA MANUAL FOR CRG MARINE LABORATORIES, INC.

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CRG MARINE LABORATORIES
2020 Del Amo Blvd, Torrance, California 90501, (310) 533-5190

QUALITY ASSURANCE PROGRAM DOCUMENT

Approved by:	
Rhonda Moeller, QA Officer	5/15/07 Date
Richard Gossett, Laboratory Director	5/15/07 Date

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2.0 INTRODUCTION

2.1 CRG Marine Laboratories, Inc., Torrance, CA (CRG) is committed to providing quality environmental analytical services to all of its clients. To maintain this high level of quality, an extensive Quality Assurance Program (QA) has been implemented within CRG. The purpose of this manual is to document the QA practices utilized by CRG. It describes the applications and concepts employed to assure that results generated by CRG are in control, scientifically valid, of known highest possible quality, and can be used with a high degree of confidence by the client or user.

2.2 CRG is certified by the California Environmental Laboratory Accreditation Program (ELAP) for the analyses of inorganics, toxic chemical elements and organics in wastewater, Certificate No. 2261.

2.3 The format of this manual is patterned after that outlined in the California Department of Health Services Application for Environmental Laboratory Accreditation.

2.4 This document is intended for use as a reference document to CRG's Quality Assurance Program. It is designed to assist all staff members to perform the operations necessary to comply with all client and contractual requirements and to ensure that data produced by CRG conforms to the highest standards set by state and/or federal regulations.

3.0 ORGANIZATIONS AND RESPONSIBILITY

3.1 CRG operates two environmental laboratories at the following locations:

2020 Del Amo Blvd, Suite 200
Torrance, CA 90501

355 Van Ness, Suite 115
Torrance, California 90501

3.2 Quality Assurance Staff Responsibilities

The Laboratory Director is ultimately responsible and accountable for all activities related to the generation of technical data by or for CRG. In order to carry out these QA responsibilities and facilitate

the integration of QA into all data generation activities, certain responsibilities have been delegated to other CRG employees.

3.2.1 The **Laboratory Director** is responsible for the following activities:

A. Provides leadership and technical direction for the organization

B. Removes barriers that limit the ability of individuals to obtain their goals and introduces change as a positive opportunity for the growth of the individual and CRG

C. Ensures that adequate QA/QC provisions are developed and incorporated into all laboratory data generation activities

D. Ensure that adequate resources are provided to meet these objectives

E. Ensure that specific QC procedures conform to the requirements specified by the client or project manager

F. Participates in appropriate certification programs and audit programs to establish credibility and demonstrate proficiency

G. Ensure that deficiencies or problems identified through audits are corrected as expeditiously as possible

H. Ensure that all routinely used analytical and administrative procedures are covered by well-written Laboratory Operating Procedures (LOP)

I. Ensure that all staff members are adequately qualified and trained to perform assigned tasks

J. Ensure that equipment is adequately maintained for the intended use

K. Ensure that the laboratory is a safe, efficient, and productive work environment.

3.2.2 The **Quality Assurance Specialist** is responsible for the following activities:

A. Maintain and update the Quality Assurance Program and this QA Manual

B. Serve as a QA liaison with clients and project managers

C. Coordinate accreditation/certification and auditing activities

D. Assess the adequacy of QC activities within the laboratory and keep the Laboratory Director informed of their effectiveness

E. Ensure that data is validated with respect to QC criteria

F. Ensure that all chain-of-custody requirements are met

G. Issue and evaluate the analyses of performance evaluation samples

H. Ensure that audit results are communicated with the appropriate staff and corrective actions are taken when needed

I. Identify and recommend staff training needs

J Work with the various laboratory staff to assure that LOPs are documented and meet the established quality standards

3.2.3 The **Organics Supervisor** is responsible for the following activities:

A. Develop, update, and implement modern state-of-the-art instrumental analysis techniques to cost-effectively meet CRG's requirements

B. Provide organic analytical testing services including priority pollutants and other regulated organic chemicals to CRG's clients

C. Validate data generated by the Organic Chemistry Section to assure that all quality objectives are met

D. Responsible for financial performance of the Organic Chemistry Section

E. Provide necessary training for all subordinates

F. Provide a safe working environment.

3.2.4 The **Inorganics Supervisor** is responsible for the following activities:

A. Develop, update, and implement modern state-of-the-art instrumental analysis techniques to cost-effectively meet CRG's requirements

B. Provide inorganic analytical testing services including metals and wet chemistry to CRG's clients

C. Validate data generated by the Inorganic Chemistry Section to assure that all quality objectives are met

D. Responsible for financial performance of the Inorganic Chemistry Section

E. Provide necessary training for all subordinates

F. Provide a safe working environment.

3.2.5 The **Microbiology Supervisor** is responsible for the following activities:

A. Develop, update, and implement modern state-of-the-art analytical techniques to cost-effectively meet CRG's requirements

B. Provide Microbiology analytical testing services including indicator bacteria, bacterial viruses and other microorganisms CRG's clients

C. Validate data generated by the Microbiology Section to assure that all quality objectives are met

D. Responsible for financial performance of the Microbiology Section

E. Provide necessary training for all subordinates

F. Provide a safe working environment.

3.2.5 The **Sample Custodian** is responsible for the following activities:

A. Receipt, login, and storage of all analytical chemistry samples

B. Review all chain-of-custody forms, record sample condition, and resolve inconsistencies and problems

C. Serve as liaison between Project Managers and Analysts with respect to handling rush orders

D. Purchase, label, preserve, pack, and ship all appropriate sample containers provided to clients

E. Ensure that all laboratory samples are ultimately disposed of according to the laboratory guidelines.

4.0 QA OBJECTIVES FOR MEASUREMENT DATA

4.1 Data Quality Objectives (DQOs) for the data collection activity describe the overall level of uncertainty that a decision-maker is willing to accept in results derived from environmental analyses. The objective of CRG's Quality Assurance Program is to ensure that the validity and reliability of the data meets client's requirements in terms of DQOs. The program follows the guidelines established by the California Department of Health Services and the U.S. EPA.

Since DQOs often vary with individual projects, CRG sets internal specifications that are strict enough to meet a majority of client's requirements. Project-specific DQO's can be found in the Quality Assurance Project Plans (QAPPs) for that project.

4.2 DQOs for analytical determinations are expressed in terms of accuracy, precision, detection limits, completeness, and comparability. Section 11 of this manual describes the types of quality control checks used to measure these objectives and the procedures used to derive them. Table 1 outlines typical accuracy, precision, and method detection limit objectives for each field of

testing. Specific DQOs for each parameter are contained within the LOP used for anlaysis.

5.0 SAMPLING PROCEDURES

CRG provides trained staff for sample collection purposes. Proper sampling includes using appropriate equipment, containers, and preservation as well as following strict procedures for collection, storage, and transport to prevent cross contamination and loss of sample integrity.

CRG provides appropriate containers and sampling procedures to those clients who choose to perform their own sampling. CRG staff refers to EPA guidelines published in the Federal Register, 40 CFR Part 136.3 and Standard Methods for the Examination of Water and Wastewater, 20th Ed, for container selection and preservation.

6.0 SAMPLE CUSTODY

To produce legally defensible data, CRG maintains and demonstrates custody control of all samples. Two components of custody are addressed: physical possession and documentation.

6.1 Documentation begins with field records, including a chain-of-custody (COC) form, which follows the physical sample from the field to the laboratory. The Sample Custodian checks to insure that:

A. The sample container is clearly marked and agrees with the information provided on the chain-of-custody sheet

B. The evidence tape is unaltered and the container is intact

C. The sample was supplied in the proper type of container

D. The sample has not exceeded its maximum holding time

E. Sufficient sample volume exists to perform the requested analyses

F. Samples requiring analysis by a contract laboratory are packaged with an ice substitute and dunnage, and are shipped in an ice chest to the contract laboratory. A chain-of-custody sheet accompanies all samples shipped from CRG.

6.2 If samples are delivered without a COC, one is completed at the laboratory prior to acceptance of the samples. The Sample Custodian shall note on the COC any discrepancies between the physical sample and the custody record.

6.3 Once received, each sample is assigned a unique laboratory ID number and logged into a bound Sample Receiving Logbook. Key characteristics are recorded into the logbook, the COC is filed with the project file, and the sample is placed in the appropriate storage location until analysis.

7.0 CALIBRATION PROCEDURES AND FREQUENCY

7.1 All instrumentation is calibrated at a frequency that ensures the validity of the results. These procedures are carried out following USEPA guidelines and the recommendations of the instrument manufacturer.

7.2 Calibration standards are prepared either from purchased stock standards or from stock standards prepared in-house utilizing reagents suitable for the preparation of standards. When available, calibration standards are prepared from starting materials that are certified traceable to the National Institute of Standards Technology (NIST).

7.3 The following is a brief summary of the instrumentation calibration procedures employed at CRG. Detailed descriptions of these procedures are contained with the appropriate method.

7.3.1 The gas chromatograph or gas chromatograph mass spectrometer is calibrated using either an external calibration procedure or internal standard. For each parameter of interest, at least three to five different concentrations of standards are employed. One of the concentrations is near the Method Detection Limit (MDL) for each parameter. Concentrations of the remaining standards correspond to the expected range of concentrations found in the samples analyzed. Calibration standards are prepared by utilizing secondary dilution standards and/or stock solutions. Calibration standards may include a set of internal standards at a known constant amount. The base peak m/z shall be used as the primary m/z for quantification of the standards. Sensitivity of the instrument is checked every 10 samples by analyzing the external reference samples. If the result is not within a predetermined range, the problem is corrected, and

the samples immediately following the last acceptable check are reanalyzed

7.3.2 The Inductively Coupled Mass Spectrometer (ICPMS) is calibrated before each use. For each parameter of interest, at least three to five different concentrations of standards are employed. One of the concentrations is near the Method Detection Limit (MDL) for each parameter. Concentrations of the remaining standards correspond to the expected range of concentrations found in the samples analyzed. Calibration standards are prepared by utilizing secondary dilution standards and/or stock solutions. Calibration standards may include a set of internal standards at a known constant amount. Sensitivity of the instrument is checked every 10 samples by analyzing the external reference samples. If the result is not within a predetermined range, the problem is corrected, and the samples immediately following the last acceptable check are reanalyzed

7.3.3 The performance of the balances is monitored against a set of calibration weights that are traceable to NIST (a log is maintained of these inspections)

7.3.4 Temperature records are maintained for all refrigerators, incubators, water baths, ovens. The temperatures are monitored at a frequency determined by how often the equipment is placed in service.

8.0 ANALYTICAL PROCEDURES

Analytical procedures are determined by current environmental regulations set forth by both state and federal guidelines. Analytical methods are published in CRG's Laboratory Operating Procedures Manual (LOPM). Revisions and updates of the LOPMs are developed as required. The LOPMs are numbered to correspond with their standard reference method.

8.1 The manual includes the methods employed by CRG for the analyses required to support CRG's clients

8.2 The format of the LOPM is patterned after those listed in the Code of Federal Regulations.

8.3 The LOPMs are prepared by senior members of the technical staff and approved by the Laboratory Director.

8.4 The LOPM is a controlled document. Each manual is assigned to an individual who has custodial responsibilities. Revised LOPMs are issued with a new revision letter. The custodian updates the manual and is responsible for replacing the previous section(s) with the revised section(s). This insures that the analyst is always working to the latest revision of test procedures and protocols. A history file is maintained of all revisions to the LOPM. A memorandum is attached to each revision in the history file summarizing the reason for the change.

8.5 Research and development projects and methods development projects are documented in bound laboratory notebooks.

9.0 DATA REDUCTION, VALIDATION, AND REPORTING

Laboratory results are communicated to CRG's clients through the analytical report delivered either electronically or by mail. This document is based on the client's laboratory order or by group of related samples.

9.1 Data reduction- Data reduction is the process by which the analyst translates raw data into a reported result that is reviewed by a second party then approved by the section supervisor before being released in the final report. Specific calculations and verification processes are summarized in the respective LOPMs.

All determinations are performed by dedicated instrumentation equipped with a microcomputer. Results are stored in a computer file, reported in a printed report and then electronically transferred to the database. A sequence logs containing the sample position, and order of analysis is kept both electronically and hardcopy. Sample results are tracked by the computer filename cross-referenced to the unique sample ID number.

9.2 Data validation - Data validation involves ensuring the correct assignment of sample labels before instrument operation, checking the performance of the instrument, verification of successful completion of all quality-control checks, and fitness of the calculations performed by the computer.

9.3 Data Management **-** Sample analytical data including ID, date and time of collection and analyses, type of requested field and laboratory analyses, and results are entered into a Laboratory Information Management System (LIMS), which is a Microsoft Access-based database system. After data entry, all results from

sample analyses and QA/QC are reviewed for accuracy and completeness and any reporting of laboratory results are based on queries from the LIMS.

9.4 Reports **-** Electronic and/or hard copy reports are provided based on client's need. The basic report includes a header containing the CRG sample ID number, date collected, date received, date processed, prepared, date analyzed, client sample information, batch ID number, replicate number, and instrument identification. Electronic data deliverables can be designed to meet any client requests and based upon queries of the LIMS database. The section supervisor prior to release to the client reviews the final report.

9.5 Records Storage - CRG archives all client final reports and instrument files in electronic format (pdf and/or Excel) for a period of 7 years following completion of project. CRG archives all laboratory records including raw data, charts, printouts and data books in hard copy format for a period of 7 years following completion of project.

10.0 INTERNAL QUALITY CONTROL CHECKS

Quality control measurements verify the integrity of the analytical results. While the goal of all quality control procedures remains constant, specific quality control procedures vary from method to method. Every analyst is responsible for a thorough understanding of the goals of each quality control measurements and the control analyses as required per method.

10.1 A batch is defined as a group of 20 or fewer samples of similar matrix, processed together under the same conditions and with the same reagents. Quality control samples are associated with each batch and are used to assess the validity of the sample analyses. Control limits can be found in Table 4.1 of this document. Each batch must include the following QC checks:

10.1.1 Method Blank- A method blank is a sample that contains no analytes of interest. For solid matrices, no matrix is used. The method blank serves to measure contamination associated with processing the sample within the laboratory.

10.1.2 Laboratory Control Material (LCM) or Certified Reference Material (CRM)- A LCM or CRM is a sample with a matrix similar to the client samples that contains analytes of interest at known or certified concentrations. It is used to determine

the accuracy of the results based on the comparison of the measured concentration with the true value. For analytes that are greater than 10 times the MDL, the acceptable percent recovery is presented in Table 4.1.

10.1.3 Duplicate Analyses- Duplicate analyses are samples that have been split and processed within a single batch. They are used to determine the precision of the results based on the percent relative difference (%RSD) between the two sets of results. Control limits for %RSD are presented in Table 4.1.

10.1.4 Matrix Spike/Matrix Spike Duplicates (MS/MSD)- MS/MSD are samples of similar matrix to the client's samples that are spiked with a known amount of analyte. Spike recovery measures the effect of interferences caused by the sample matrix and reflects the accuracy of the determination. The spike level should be at least ten times the MDL. The duplicate spike may be used to determine the precision of the analytical results similar to Section 10.1.3.

10.1.5 Tuning Check- The tuning of the mass spectrometer is checked at the beginning of each run to insure that it is providing adequate spectra.

10.1.6 Initial Calibration- Initial calibration is performed by analyzing standards of known levels of concentration. The lowest level should be less than or equal to ten times the MDL and the remaining levels should represent the entire range of expected concentrations in the samples.

10.1.7 Calibration Verification- When a calibration curve is not performed for each run, a calibration verification is performed with a standard from, preferably a second source, is used to verify that the instrument is still operating within the original calibration curve.

10.1.8 Internal Standard- An internal standard is a non-target analyte, which is added to samples and QC checks after the preparation of the sample, just prior to analysis. It is used to compensate for variations in the instrument response from one sample to the next.

10.1.9 Recovery Surrogate- A recovery surrogate is a non-target analyte or analytes that are added to the sample prior to

processing. It is used to indicate the extraction efficiency and instrument variation from sample to sample.

11.0 PERFORMANCE AND SYSTEM EVALUATIONS

CRG is dedicated to the continuous improvement of all of its operational systems. This is an essential part of everyone's job within CRG. Internal evaluations are conducted by staff from the Laboratory and are performed on a periodic basis.

11.1 CRG employs the philosophy of Continuous Measurable Improvement systems to evaluate its process performance and to identify opportunities for improvement on a continual basis. Five key elements are essential for the Continuous Measurable Improvement system to work efficiently. The first is to establish open and honest communication among all personnel. The second is to encourage decision making by delegating responsibility to the lowest appropriate levels of the work force. The third is to provide positive recognition for achievements and to strive continuously to identify and strengthen areas needing improvements. The fourth is to provide employees with the knowledge, skills, motivation, and working environment to meet their full potential and find personal satisfaction in their work. The fifth is to accept the concept of change as a positive opportunity for growth for both the individual and the organization.

11.2 With the five key elements of this philosophy in place, all levels of personnel can develop a true quantitative measurement system for assessing the status of meeting target goals in a wide variety of processes (i.e. improved accuracy, precision, training, safety, working environment, etc.). The system begins with a quantitative evaluation of the process based on a review of both historical and current capability and performance. Individual processes are selected as proposed projects based on whether they are in statistical control, predictable, and have attained target goals. CRG then prioritizes the selected projects based on frequency and magnitude of problem recurrence. Root-cause analysis is employed to establish control and eliminate the true sources of problems. Corrective actions are taken and the process is rerun to verify stability, capability and quality. If necessary, new target goals are set for the process and the system is repeated until the acceptable goal is achieved.

12.0 PREVENTIVE MAINTENANCE

12.1 Service contracts may be maintained for the major instrumentation and equipment that are no longer under warranty. The gas chromatographs, ICPMS instrumentation, ion chromatograph and balances are typical examples of equipment that might be covered by a maintenance contract. Records of maintenance are kept by the person responsible for the equipment. Specific examples of routine preventive maintenance are further discussed in the following sections:

A. Hewlett Packard 5972 Gas Chromatograph/Mass Spectrometer System

1. Every six months, replace the MSD foreline pump oil and foreline trap pellets. During the fluid exchange, replace the outlet mist filter

2. Every year, check and if necessary replace the diffusion pump fluid

3. As needed, clean the ion source of the MSD (typically every six months)

4. As needed, the glass injector sleeve and injector septum for the split-splitless injector is replaced (typically once per month)

5. As needed, the gas purifiers and filters for the carrier gas are replaced

B. Hewlett Packard 4500 ICPMS System

1. Every six months, replace the oil and foreline trap pellets for the rough pumps. During the fluid exchange, replace the outlet mist filter

2. Every year check and replace the turbo molecular pump fluid

3. Once per month, clean the sample and skimmer cones

4. Once per week, replace the peripump tubing

5. As needed, clean the ion source of the mass spectrometer

6. Every three months, clean the nebulizer

13.0 ASSESSMENT OF PRECISION AND ACCURACY

13.1 CRG utilizes several methods to monitor precision and accuracy. These are designed to determine the reproducibility of the analysis (precision) or agreement of the result to the actual value of the analyte (accuracy). CRG routinely performs analysis of blind samples. This procedure is explained in section 14. The following definitions describe the types of analyses performed to assess precision and accuracy:

A. Duplicate analyses involve performing two separate analyses of a particular parameter on the same sample. Precision is measured by the degree of agreement between the two sample results. Duplicate analyses are designed to measure the precision of a determination when the sample contains detectable amounts of the constituent

B. Laboratory control material or certified reference material are samples that have known concentrations of the target analytes. These concentrations are either based on a series of analyses or are certified by an external laboratory such as NIST. Accuracy is determined by comparing the measured amount of analyte recovered during analysis to the known value

C. Sample spikes are samples that a known amount of the analyte has been added. Accuracy is determined by the amount of the added material recovered during analysis

D. Blank spikes or water spikes are used if poor recovery from a spiked sample occurs, analysis of blank spikes is useful to determine if the poor performance is a function of the sample matrix or the analytical process. These consist of the usual sample portion of deionized water spiked with the constituent at a concentration equivalent to that of the sample spike

E. Replicate spike analyses are employed to determine the precision and accuracy of an analysis when some or all of the parameters being determined are below the detection limit. The replicate spike procedure involves analyzing the sample and two portions of the sample spiked with a measured portion of the same analyte. Relative precision of

the spikes can be determined as well as the accuracy of the analysis. Spike concentrations are sufficient to eliminate the bias that would be created by the undetectable quantity of the parameter being determined

13.2 One set of duplicate samples or spike duplicates, a LCM or CRM sample, and a method blank are analyzed with each batch of samples.

13.3 The ongoing evaluation of relative precision and accuracy performance is accomplished by the generation of control charts. Employing a minimum of 20 results, control limits are generated utilizing the mean and standard deviation of the data set. Upper and lower “warning" limits are twice the standard deviation from the mean of the set of results for accuracy charts and twice the standard deviation from the origin for precision charts. Upper and lower "out of control" limits are three times the standard deviation from the mean for accuracy charts and three times the standard deviation from the origin for precision charts. When relative precision or accuracy results suggest atypical performance, an investigation into the problem is initiated. If a sample result is outside the out-of-control limits, the sample is reanalyzed. If samples cannot be reanalyzed, the result is flagged.

14.0 CORRECTIVE ACTIONS AND TRAINING

14.1 Corrective Actions

14.1.1 Corrective action is the process of defining- root-cause, identifying and implementing corrective action plans, educating - and training to provide system-wide solutions, and verifying that the improved system is being followed. Corrective action responses are divided into three separate categories based on the time required to complete the-corrective action. An immediate corrective action occurs when a response that fully meets closure criteria can be carried out in the same time frame that the observation of the discrepancy occurs. An intermediate corrective action is one that will require a maximum of 30 days to complete the response satisfactorily. A long-term corrective action requires a time period greater than 30 days to provide a complete response. Long-term corrective actions typically involve cooperation of additional organizational elements.

14.1.2 Both intermediate and long-term corrective actions require a detailed corrective action plan showing clearly defined

milestones, task descriptions, and responsibilities. CRG's Quality Assurance Specialist must approve all intermediate and long-term corrective action plans. Closure of corrective actions require verifiable, objective evidence that the corrective action be thorough, comprehensive, and will permanently prevent the problem from reoccurring. Corrective actions result from a wide variety of situations including:

A. Inspection of the sample indicates the: samples are 1) not representative of their source, 2) deteriorated, 3) improperly labeled, 4) damaged in transport, or 5) collected in an inappropriate container. In this case, the CRG Sample Custodian or Quality Assurance Specialist will notify the sample collector of the-problem(s) and request a new sample(s) to be collected following proper sample collection and handling methods

B. Samples that are not properly preserved, stored at incorrect temperatures, or exhibit deficiencies in the chain-of-custody records are not analyzed. The CRG Sample Custodian or Quality Assurance Specialist reviews the discrepancy with appropriate personnel and new samples are collected employing correct methods

C. The required LOPM has not been followed correctly. The supervisor reviews the Method with the analyst and requests the analyst to rerun the analysis, per the method, under the supervisor's direct observation. The analyst repeats the procedure until it is correctly performed. The analyst's performance of the method's protocol and results are evaluated randomly over a minimum of a two week period to ensure adherence to all requirements of the method

D. Instrumentation malfunctions are immediately noted in the instrument logbook and the supervisor is notified. Senior technical staff with specific in-depth knowledge of the particular instrument reviews the problem and attempt to fix the instrument. Major problems may require trained field service personnel from the manufacturer to be brought in to fix the problem. If the projected downtime will extend beyond the samples required holding time, the sample will be

either analyzed on another instrument or sent to an approved contract laboratory for analysis

E. When duplicate results, spike recovery results, or Quality Assurance reference samples are outside their acceptance limits, the supervisor is notified and the complete analytical procedure is reviewed with the analyst. The data entry and calculations are reviewed for transcription errors. Reagents and standards are checked to see if they were properly prepared and whether they are within their shelf life. The equipment is examined for proper performance. The calibration and maintenance record is reviewed to ensure the instrumentation is performing optimally. The methodology is reviewed to make sure that it is properly applied. Sampling and sample handling protocols are verified to ensure that the sample was collected properly and the recommended preservation and holding times were observed. If the cause of the problem is found, the Quality Assurance Specialist sends a Quality Assurance reference sample to the analyst for analysis. If the Quality Assurance check sample is acceptable, the duplicate or spike analysis is reanalyzed. However, if the same result is obtained in the repeat analysis, the problem is probably due to matrix interference effect. The results of the sample batch are reported with an accompanying explanation of possible matrix interference. If the precision of duplicate spike analyses improves and are in control, the sample batch run with the initial duplicate spike analysis sample is reanalyzed. A different scenario must be followed in circumstances such as insufficient sample or analysis of the sample after the prescribed holding time exists. In these situations, the original result is reported and accompanied by a failure report stating the circumstances that occurred in the initial and repeat analysis. If the results for the Quality Assurance reference sample are not satisfactory, a team will be formed to identify and correct the problem. The analysis will not be resumed until the system is in control

F. CRG's internal evaluation and corrective action program and external agency audits can result in corrective actions. The response to these evaluation studies requires a written corrective action plan that

has been accepted by the Quality Assurance Specialist. Closure requires objective evidence that the corrective action be thorough, complete, and will permanently solve the problem

G. CRG's Continuous Measurable Improvement program is designed to identify opportunities for improvements systematically. This program leads to specific corrective actions initiated by either a combination of senior technical staff and analysts or a team established to address the specific problem. A quantitative measurement is applied to ensure that the corrective action has had a positive impact on eliminating the problem.

14.2 Training

14.2.1 Educational background- the minimum qualification for conducting analyses in the laboratory is two years of college-level course work in science and two years of related analytical work experience or an equivalent combination of education and experience. These education and experience requirements provide the analysts with a proper background in the fundamentals of chemistry to assist in understanding the principles behind work that they perform.

14.2.2 Orientation- CRG provides a general orientation to working in an environmental chemistry laboratory. CRG also provides a basic safety orientation, which includes lab coats, specific safety instructions, approved footwear, location of first aid supplies, location of eyewash stations, location of emergency showers, and location of fire extinguishers.

14.2.3 Ongoing Training- CRG maintains a technical library of key journals and books for staff's use. Staffs are encouraged to join professional societies, attend conferences, and receive additional training in their technical fields.

14.2.4 Discrete Job Training- CRG Provides:

A. On-the-job training to new analysts or analysts assuming additional responsibilities.

B. Maintains a file for each employee which contains all information relating to the analysts education and training including:

Resume
Certificates from training classes and courses
Completed Training Documentation Forms
Related data

C. The following approach is used for providing staff on-the-job training:

1. Read the appropriate Laboratory Operating Procedures Method which details the analytical procedure

2. Review the associated material safety data sheets if you are not knowledgeable of the

safety hazards of the reagents used in the analysis

3. Observe the procedure in use by an analyst who is approved for performing this analysis

4. Perform the analysis under the direct supervision of a qualified analyst who will certify the successful completion of training

5. Demonstrate proficiency using the method by analyzing blind check samples

6. Document the successful completion of your training using the following Training Documentation Form:

CRG Marine Laboratories, Inc.
2020 Del Amo Boulevard, Suite 2020
Torrance, California 90501-1206

TRAINING DOCUMENTATION FORM

EMPLOYEE NAME _____

METHOD NUMBER	DATE COMPLETED	CERTIFIED BY
COMMENTS:		

15.0 QA REPORTS

Numerical results of quality control analyses are delivered as part of the analytical report package. Reports that discuss corrective actions, Quality accomplishments, control charts, and ad-hoc inquiries are generated internally on a regular basis and made available to clients upon request.

Table 1. Metals, Organic Chemistry and Inorganic Chemistry

EPA ANALYSIS METHOD	PRECISION (% RSD)	ACCURACY (% Recovery)	MDL	
200.8 TOTAL & DISSOLVED METALS BY ICPMS- LIQUID MATRIX				
Aluminum (Al)	0-30	50 - 140%	5	µg/L
Antimony (Sb)	0-30	65 - 135%	0.1	µg/L
Arsenic (As)	0-30	70 - 130%	0.2	µg/L
Barium (Ba)	0-30	70 - 130%	0.2	µg/L
Beryllium (Be)	0-30	60 - 130%	0.2	µg/L
Bismuth (Bi)	0-30	70 - 130%	5	µg/L
Cadmium (Cd)	0-30	75 - 130%	0.2	µg/L
Chromium (Cr)	0-30	70 - 130%	0.1	µg/L
Cobalt (Co)	0-30	70 - 130%	0.1	µg/L
Copper (Cu)	0-30	70 - 130%	0.4	µg/L
Iron (Fe)	0-30	55 - 140%	5	µg/L
Lead (Pb)	0-30	65 - 135%	0.05	µg/L
Lithium (Li)	0-30	75 - 125%	0.1	µg/L
Manganese (Mn)	0-30	70 - 130%	0.2	µg/L
Mercury (Hg) (245.7)	0-30	60 - 140%	0.01	µg/L
Methylmercury	0-30	75 - 125%	0.05	µg/L
Molybdenum (Mo)	0-30	70 - 130%	0.2	µg/L
Nickel (Ni)	0-30	70 - 130%	0.2	µg/L
Selenium (Se)	0-30	60 - 150%	0.2	µg/L
SEM	0-30	70 - 130%		
Silicon (Si)	0-30	70 - 130%	1	µg/L
Silver (Ag)	0-30	50 - 155%	0.5	µg/L
Strontium (Sr)	0-30	70 - 130%	0.1	µg/L
Thallium (Tl)	0-30	70 - 130%	0.1	µg/L
Tin (Sn)	0-30	65 - 140%	0.1	µg/L
Titanium (Ti)	0-30	70 - 130%	0.2	µg/L
Lanthanum (La)	0-30	75 - 125%		
Vanadium (V)	0-30	70 - 130%	0.2	µg/L
Zinc (Zn)	0-30	50 - 150%	0.1	ng/L
Boron (B)	0-30	70 - 130%	1	µg/L
Calcium (Ca)	0-30	70 - 130%	0.05	mg/L
Magnesium (Mg)	0-30	75 - 125%	0.05	mg/L
Sodium (Na)	0-30	70 - 130%	5	mg/L
Potassium (K)	0-30	70 - 130%	5	mg/L
1640 TOTAL & DISSOLVED METALS BY ICPMS- LIQUID MATRIX				
Aluminum (Al)	0-30	35 - 150%	3	µg/L
Antimony (Sb)	0-30	40 - 105%	0.01	µg/L
Arsenic (As)	0-30	65 - 125%	0.01	µg/L
Barium (Ba)	0-30	70 - 130%	0.5	µg/L
Beryllium (Be)	0-30	50 - 110%	0.005	µg/L
Bismuth (Bi)	0-30	70 - 130%	1	µg/L
Cadmium (Cd)	0-30	60 - 120%	0.005	µg/L
Chromium (Cr)	0-30	70 - 130%	0.025	µg/L

Cobalt (Co)	0-30	65 - 120%	0.005	µg/L
Copper (Cu)	0-30	55 - 120%	0.01	µg/L
Iron (Fe)	0-30	30 - 110%	0.5	µg/L
Lead (Pb)	0-30	50 - 120%	0.005	µg/L
Lithium (Li)	0-30	70 - 130%	0.01	µg/L
Manganese (Mn)	0-30	50 - 120%	0.01	µg/L
Mercury (Hg) (245.7)	0-30	70 - 130%	0.01	µg/L
Molybdenum (Mo)	0-30	55 - 135%	0.005	µg/L
Nickel (Ni)	0-30	50 - 120%	0.005	µg/L
Selenium (Se)	0-30	50 - 110%	0.01	µg/L
Silicon (Si)	0-30	70 - 130%	0.5	µg/L
Silver (Ag)	0-30	50 - 125%	0.02	µg/L
Strontium (Sr)	0-30	70 - 130%	0.01	mg/L
Thallium (Tl)	0-30	50 - 120%	0.005	µg/L
Tin (Sn)	0-30	50 - 125%	0.005	µg/L
Titanium (Ti)	0-30	70 - 130%	0.035	µg/L
Lanthanum (La)	0-30	60 - 120%	1	µg/L
Vanadium (V)	0-30	70 - 130%	0.02	µg/L
Zinc (Zn)	0-30	45 - 105%	0.005	µg/L
Boron (B)	0-30	70 - 130%	1	µg/L
Calcium (Ca)	0-30	70 - 130%	0.05	mg/L
Magnesium (Mg)	0-30	70 - 130%	0.05	mg/L
Sodium (Na)	0-30	70 - 130%	5	mg/L
Potassium (K)	0-30	70 - 130%	5	mg/L

6020 TOTAL METALS BY ICPMS- SOLID MATRIX

Aluminum (Al)	0-30	10 - 180%	1	µg/g
Antimony (Sb)	0-30	70 - 130%	0.025	µg/g
Arsenic (As)	0-30	70 - 130%	0.025	µg/g
Barium (Ba)	0-30	70 - 140%	0.025	µg/g
Beryllium (Be)	0-30	50 - 120%	0.025	µg/g
Bismuth (Bi)	0-30	70 - 130%	0.5	µg/g
Cadmium (Cd)	0-30	70 - 130%	0.025	µg/g
Chromium (Cr)	0-30	55 - 135%	0.025	µg/g
Cobalt (Co)	0-30	65 - 125%	0.025	µg/g
Copper (Cu)	0-30	65 - 125%	0.025	µg/g
Iron (Fe)	0-30	50 - 140%	1	µg/g
Lead (Pb)	0-30	55 - 120%	0.025	µg/g
Lithium (Li)	0-30	70 - 130%	0.05	µg/g
Manganese (Mn)	0-30	50 - 140%	0.025	µg/g
Mercury (Hg) (245.7)	0-30	65 - 140%	0.01	µg/dry g
Methylmercury	0-30	70 - 130%	0.01	µg/g
Molybdenum (Mo)	0-30	70 - 160%	0.025	µg/g
Nickel (Ni)	0-30	70 - 130%	0.025	µg/g
Selenium (Se)	0-30	60 - 125%	0.025	µg/g
Silicon (Si)	0-30	70 - 130%	0.1	µg/g
Silver (Ag)	0-30	50 - 120%	0.025	µg/g
Strontium (Sr)	0-30	50 - 160%	0.025	µg/dry g
Thallium (Tl)	0-30	65 - 125%	0.025	µg/g
Tin (Sn)	0-30	70 - 150%	0.025	µg/g
Titanium (Ti)	0-30	50 - 150%	0.025	µg/g

Vanadium (V)	0-30	50 - 160%	0.025	µg/g
Zinc (Zn)	0-30	60 - 120%	0.025	µg/g
Boron (B)	0-30	60 - 140%	0.025	µg/dry g
Calcium (Ca)	0-30	70 - 130%	1	µg/dry g
Magnesium (Mg)	0-30	70 - 130%	1	µg/dry g
Sodium (Na)	0-30	70 - 130%	1	µg/dry g
Potassium (K)	0-30	70 - 130%	1	µg/dry g

625 SEMI-VOLATILE ORGANICS BY GC/MS- LIQUID MATRIX

Polynuclear Aromatic Hydrocarbons

1-Methylnaphthalene	0-30	50 - 120%	1	ng/L
1-Methylphenanthrene	0-30	70 - 130%	1	ng/L
2,3,5-Trimethylnaphthalene	0-30	45 - 130%	1	ng/L
2,6-Dimethylnaphthalene	0-30	55 - 125%	1	ng/L
2-Methylnaphthalene	0-30	50 - 130%	1	ng/L
Acenaphthene	0-30	70 - 130%	1	ng/L
Acenaphthylene	0-30	60 - 120%	1	ng/L
Anthracene	0-30	60 - 130%	1	ng/L
Benz[a]anthracene	0-30	70 - 140%	1	ng/L
Benzo[a]pyrene	0-30	70 - 130%	1	ng/L
Benzo[b]fluoranthene	0-30	60 - 140%	1	ng/L
Benzo[e]pyrene	0-30	70 - 130%	1	ng/L
Benzo[g,h,i]perylene	0-30	50 - 140%	1	ng/L
Benzo[k]fluoranthene	0-30	70 - 130%	1	ng/L
Biphenyl	0-30	50 - 120%	1	ng/L
Chrysene	0-30	70 - 130%	1	ng/L
Dibenz[a,h]anthracene	0-30	60 - 130%	1	ng/L
Fluoranthene	0-30	70 - 130%	1	ng/L
Fluorene	0-30	70 - 130%	1	ng/L
Indeno[1,2,3-c,d]pyrene	0-30	70 - 130%	1	ng/L
Naphthalene	0-30	50 - 120%	1	ng/L
Perylene	0-30	65 - 135%	1	ng/L
Phenanthrene	0-30	70 - 130%	1	ng/L
Pyrene	0-30	70 - 130%	1	ng/L
Dibenzothiophene	0-30	70 - 130%	1	ng/L

Base Neutrals

1,2,4-Trichlorobenzene	0-30	65 - 140%	10	ng/L
1,2-Dichlorobenzene	0-30	30 - 130%	10	ng/L
1,3-Dichlorobenzene	0-30	MDL - 170%	10	ng/L
1,4-Dichlorobenzene	0-30	50 - 140%	10	ng/L
1,4-Dioxane	0-30	40 - 120%	50	ng/L
2,3,7,8-TCDD	0-30	40 - 120%	1	ng/L
2,4-Dinitrotoluene	0-30	70 - 130%	50	ng/L
2,6-Dinitrotoluene	0-30	40 - 120%	50	ng/L
2-Chloronaphthalene	0-30	60 - 140%	50	ng/L
2-Nitroaniline	0-30	40 - 120%	50	ng/L
3,3'-Dichlorobenzidine	0-30	60 - 140%	50	ng/L
3-Nitroaniline	0-30	20 - 120%	50	ng/L
4-Bromophenylphenylether	0-30	60 - 140%	50	ng/L
4-Chloroaniline	0-30	40 - 120%	50	ng/L

4-Chlorophenylphenylether	0-30	60 - 140%	50	ng/L
4-Nitroaniline	0-30	40 - 120%	50	ng/L
Acrylonitrile	0-30	40 - 120%	10	ng/L
Aniline	0-30	40 - 120%	50	ng/L
Azobenzene	0-30	40 - 120%	50	ng/L
Benzidine	0-30	60 - 140%	50	ng/L
bis (2-Ethylhexyl) phthalate	0-30	20 - 190%	5	ng/L
bis(2-Chloroethoxy)methane	0-30	60 - 140%	50	ng/L
bis(2-Chloroethyl)ether	0-30	60 - 140%	50	ng/L
bis(2-Chloroisopropyl)ether	0-30	60 - 140%	50	ng/L
bis(2-Ethylhexyl) Phthalate	0-30	20 - 190%	5	ng/L
Butylbenzyl Phthalate	0-30	65 - 160%	5	ng/L
Caffeine	0-30	60 - 140%	10	ng/L
Carbazole	0-30	40 - 120%	50	ng/L
Dibenzofuran	0-30	40 - 120%	50	ng/L
Dibutyl Phthalate	0-30	1 - 120%	5	ng/L
Diethyl Phthalate	0-30	50 - 150%	5	ng/L
Dimethyl Phthalate	0-30	40 - 155%	5	ng/L
Di-n-butyl Phthalate	0-30	65 - 145%	5	ng/L
Di-n-octyl Phthalate	0-30	50 - 165%	5	ng/L
Hexachlorobenzene	0-30	65 - 135%	1	ng/L
Hexachlorobutadiene	0-30	60 - 140%	50	ng/L
Hexachlorocyclopentadiene	0-30	60 - 140%	50	ng/L
Hexachloroethane	0-30	60 - 140%	50	ng/L
Isophorone	0-30	60 - 140%	50	ng/L
Nitrobenzene	0-30	60 - 140%	50	ng/L
N-Nitrosodimethylamine	0-30	60 - 140%	50	ng/L
N-Nitrosodi-n-propylamine	0-30	55 - 125%	50	ng/L
N-Nitrosodiphenylamine	0-30	60 - 140%	50	ng/L
Trifluralin	0-30	60 - 140%	1	ng/L
Pentachloronitrobenzene	0-30	60 - 140%	5	ng/L
Chlorothalonil	0-30	60 - 140%	5	ng/L
Molinate	0-30	60 - 140%	50	ng/L
Thiobencarb	0-30	60 - 140%	50	ng/L
Pendimethalin	0-30	60 - 140%	50	ng/L
Propargite	0-30	60 - 140%	50	ng/L
Oxyfluorfen	0-30	60 - 140%	50	ng/L

625 ACID EXTRACTABLE ORGANICS BY GC/MS- LIQUID MATRIX

2,4,6-Trichlorophenol	0-30	30 - 150%	50ng/L
2,4,6-Tribromophenol	0-30	10 - 160%	50ng/L
2,4-Dichlorophenol	0-30	40 - 140%	50ng/L
2,4-Dimethylphenol	0-30	30 - 120%	100ng/L

2,4-Dinitrophenol	0-30	MDL - 190%	100ng/L
2-Chlorophenol	0-30	35 - 130%	50ng/L
2-Methyl-4,6-dinitrophenol	0-30	MDL - 180%	100ng/L
2-Methylphenol	0-30	20 - 120%	100ng/L
2-Nitrophenol	0-30	30 - 180%	100ng/L
3-Methylphenol	0-30	20 - 120%	100ng/L
4-Chloro-3-methylphenol	0-30	30 - 150%	100ng/L
4-Nitrophenol	0-30	MDL - 130%	100ng/L
Benzoic Acid	0-30	40 - 120%	100ng/L
Benzyl Alcohol	0-30	20 - 120%	100ng/L
Pentachlorophenol	0-30	10 - 160%	50ng/L
Phenol	0-30	MDL - 115%	100ng/L
(2-Fluorobiphenyl)	0-30	60 - 130%	ng/L
Nonylphenol	0-30	70 - 130%	5ng/L

SEMI-VOLATILE ORGANICS BY GC/MS- SOLID MATRIX

8270 Polynuclear Aromatic Hydrocarbons

1-Methylnaphthalene	0-30	40 - 120%	1	ng/g
1-Methylphenanthrene	0-30	40 - 160%	1	ng/g
2,3,5-Trimethylnaphthalene	0-30	45 - 120%	1	ng/g
2,6-Dimethylnaphthalene	0-30	40 - 130%	1	ng/g
2-Methylnaphthalene	0-30	35 - 125%	1	ng/g
Acenaphthene	0-30	40 - 125%	1	ng/g
Acenaphthylene	0-30	40 - 130%	1	ng/g
Anthracene	0-30	45 - 150%	1	ng/g
Benz[a]anthracene	0-30	50- 175%	1	ng/g
Benzo[a]pyrene	0-30	50 - 160%	1	ng/g
Benzo[b]fluoranthene	0-30	45 - 160%	1	ng/g
Benzo[e]pyrene	0-30	40 - 160%	1	ng/g
Benzo[g,h,i]perylene	0-30	30 - 170%	1	ng/g
Benzo[k]fluoranthene	0-30	50 - 150%	1	ng/g
Biphenyl	0-30	45 - 120%	1	ng/g
Chrysene	0-30	40 - 160%	1	ng/g
Dibenz[a,h]anthracene	0-30	40 - 165%	1	ng/g
Fluoranthene	0-30	45 - 165%	1	ng/g
Fluorene	0-30	55 - 150%	1	ng/g
Indeno[1,2,3-c,d]pyrene	0-30	40 - 170%	1	ng/g
Naphthalene	0-30	30 - 120%	1	ng/g
Perylene	0-30	30 - 175%	1	ng/g
Phenanthrene	0-30	35 - 160%	1	ng/g
Pyrene	0-30	50 - 150%	1	ng/g
Dibenzothiophene	0-30	65 - 125%	1	ng/g

Base Neutrals

1,2,4-Trichlorobenzene	0-30	65 - 115%	10	ng/g
1,2-Dichlorobenzene	0-30	50 - 110%	10	ng/g
1,3-Dichlorobenzene	0-30	MDL - 175%	10	ng/g
1,4-Dichlorobenzene	0-30	45 - 135%	10	ng/g

1,4-Dioxane	0-30	40 - 120%	50	ng/g
2,3,7,8-TCDD	0-30	40 - 120%	1	ng/g
2,4-Dinitrotoluene	0-30	70 - 130%	50	ng/g
2,6-Dinitrotoluene	0-30	40 - 120%	50	ng/g
2-Chloronaphthalene	0-30	60 - 140%	50	ng/g
2-Nitroaniline	0-30	40 - 120%	50	ng/g
3,3'-Dichlorobenzidine	0-30	60 - 140%	50	ng/g
3-Nitroaniline	0-30	20 - 120%	50	ng/g
4-Bromophenylphenylether	0-30	60 - 140%	50	ng/g
4-Chloroaniline	0-30	40 - 120%	50	ng/g
4-Chlorophenylphenylether	0-30	60 - 140%	50	ng/g
4-Nitroaniline	0-30	40 - 120%	50	ng/g
Acrylonitrile	0-30	40 - 120%	10	ng/g
Aniline	0-30	40 - 120%	50	ng/g
Azobenzene	0-30	40 - 120%	50	ng/g
Benzidine	0-30	40 - 120%	50	ng/g
bis (2-Ethylhexyl) phthalate	0-30	MDL - 195%	5	ng/g
bis(2-Chloroethoxy)methane	0-30	60 - 140%	50	ng/g
bis(2-Chloroethyl)ether	0-30	60 - 140%	50	ng/g
bis(2-Chloroisopropyl)ether	0-30	60 - 140%	50	ng/g
bis(2-Ethylhexyl) Phthalate	0-30	5 - 160%	5	ng/g
Butylbenzyl Phthalate	0-30	MDL - 195%	5	ng/g
Caffeine	0-30	60 - 140%	10	ng/g
Carbazole	0-30	40 - 120%	50	ng/g
Dibenzofuran	0-30	40 - 120%	50	ng/g
Dibutyl Phthalate	0-30	1 - 120%	5	ng/g
Diethyl Phthalate	0-30	10 - 190%	5	ng/g
Dimethyl Phthalate	0-30	50 - 140%	5	ng/g
Di-n-butyl Phthalate	0-30	10 - 175%	5	ng/g
Di-n-octyl Phthalate	0-30	35 - 145%	5	ng/g
Hexachlorobenzene	0-30	65 - 135%	1	ng/g
Hexachlorobutadiene	0-30	60 - 140%	50	ng/g
Hexachlorocyclopentadiene	0-30	60 - 140%	50	ng/g
Hexachloroethane	0-30	60 - 140%	50	ng/g
Isophorone	0-30	60 - 140%	50	ng/g
Nitrobenzene	0-30	60 - 140%	50	ng/g
N-Nitrosodimethylamine	0-30	60 - 140%	50	ng/g
N-Nitrosodi-n-propylamine	0-30	40 - 120%	50	ng/g
N-Nitrosodiphenylamine	0-30	60 - 140%	50	ng/g
Trifluralin	0-30	60 - 140%	1	ng/g

8270 ACID EXTRACTABLE ORGANICS BY GC/MS- SOLID MATRIX

2,4,6-Trichlorophenol	0-30	35 - 145%	50	ng/g
2,4,6-Tribromophenol	0-30	10 - 165%	50	ng/g
2,4-Dichlorophenol	0-30	40 - 135%	50	ng/g
2,4-Dimethylphenol	0-30	30 - 120%	100	ng/g
2,4-Dinitrophenol	0-30	MDL - 190%	100	ng/g
2-Chlorophenol	0-30	15 - 140%	50	ng/g
2-Methyl-4,6-dinitrophenol	0-30	MDL - 180%	100	ng/g

2-Methylphenol	0-30	20 - 120%	100	ng/g
2-Nitrophenol	0-30	30 - 185%	100	ng/g
3-Methylphenol	0-30	20 - 120%	100	ng/g
4-Chloro-3-methylphenol	0-30	30 - 135%	100	ng/g
4-Nitrophenol	0-30	20 - 140%	100	ng/g
Benzoic Acid	0-30	40 - 120%	100	ng/g
Benzyl Alcohol	0-30	20 - 120%	100	ng/g
Pentachlorophenol	0-30	MDL - 150%	50	ng/g
Phenol	0-30	10 - 140%	100	ng/g
4-Methylphenol	0-30	20 - 120%	100	ng/g
3+4-Methylphenol	0-30	20 - 120%	100	ng/g

8270 CHLORINATED HYDROCARBONS BY GC/MS- SOLID MATRIX

2,4'-DDD	0-30	50 - 135%	1	ng/g
2,4'-DDE	0-30	60 - 130%	1	ng/g
2,4'-DDT	0-30	40 - 135%	1	ng/g
4,4'-DDD	0-30	70 - 130%	1	ng/g
4,4'-DDE	0-30	65 - 130%	1	ng/g
4,4'-DDT	0-30	35 - 140%	1	ng/g
Alachlor	0-30	60 - 140%	2	ng/g
Aldrin	0-30	50 - 125%	1	ng/g
BHC-alpha	0-30	60 - 120%	1	ng/g
BHC-beta	0-30	60 - 120%	1	ng/g
BHC-delta	0-30	60 - 120%	1	ng/g
BHC-gamma	0-30	60 - 120%	1	ng/g
Chlordane-alpha	0-30	70 - 130%	1	ng/g
Chlordane-gamma	0-30	60 - 120%	1	ng/g
cis-Nonachlor	0-30	60 - 120%	1	ng/g
DCPA (Dacthal)	0-30	60 - 140%	5	ng/g
Dieldrin	0-30	50 - 125%	1	ng/g
Endosulfan Sulfate	0-30	25 - 125%	1	ng/g
Endosulfan-I	0-30	45 - 125%	1	ng/g
Endosulfan-II	0-30	25 - 145%	1	ng/g
Endrin	0-30	60 - 125%	1	ng/g
Endrin Aldehyde	0-30	60 - 120%	1	ng/g
Endrin Ketone	0-30	45 - 125%	1	ng/g
Heptachlor	0-30	45 - 125%	1	ng/g
Heptachlor Epoxide	0-30	60 - 120%	1	ng/g
Methoxychlor	0-30	35 - 140%	1	ng/g
Mirex	0-30	50 - 130%	1	ng/g
Oxychlordane	0-30	70 - 130%	1	ng/g
Toxaphene	0-30	65 - 135%	10	ng/g
trans-Nonachlor	0-30	60 - 120%	1	ng/g
Perthane	0-30	60 - 140%	5	ng/g
Hexachlorobenzene	0-30	70 - 130%	1	ng/g
Aroclor 1016	0-30	65 - 135%	10	ng/g
Aroclor 1221	0-30	65 - 135%	10	ng/g
Aroclor 1232	0-30	65 - 135%	10	ng/g
Aroclor 1242	0-30	65 - 135%	10	ng/g

Aroclor 1248	0-30	65 - 135%	10	ng/g
Aroclor 1254	0-30	65 - 135%	10	ng/g
Aroclor 1260	0-30	65 - 135%	10	ng/g
PCB001	0-30	60 - 125%	1	ng/g
PCB002	0-30	60 - 125%	1	ng/g
PCB003	0-30	60 - 125%	1	ng/g
PCB004	0-30	60 - 125%	1	ng/g
PCB006	0-30	60 - 125%	1	ng/g
PCB008	0-30	60 - 125%	1	ng/g
PCB009	0-30	60 - 125%	1	ng/g
PCB016	0-30	60 - 125%	1	ng/g
PCB018	0-30	60 - 125%	1	ng/g
PCB019	0-30	60 - 125%	1	ng/g
PCB022	0-30	60 - 125%	1	ng/g
PCB025	0-30	60 - 125%	1	ng/g
PCB028	0-30	60 - 125%	1	ng/g
PCB031	0-30	60 - 125%	1	ng/g
PCB033	0-30	60 - 125%	1	ng/g
PCB037	0-30	60 - 125%	1	ng/g
PCB044	0-30	60 - 125%	1	ng/g
PCB049	0-30	60 - 125%	1	ng/g
PCB052	0-30	60 - 125%	1	ng/g
PCB056	0-30	60 - 125%	1	ng/g
PCB065	0-30	60 - 125%	1	ng/g
PCB066	0-30	60 - 125%	1	ng/g
PCB067	0-30	60 - 125%	1	ng/g
PCB070	0-30	60 - 125%	1	ng/g
PCB071	0-30	60 - 125%	1	ng/g
PCB074	0-30	60 - 125%	1	ng/g
PCB077	0-30	60 - 125%	1	ng/g
PCB081	0-30	60 - 125%	1	ng/g
PCB082	0-30	60 - 125%	1	ng/g
PCB087	0-30	60 - 125%	1	ng/g
PCB095	0-30	60 - 125%	1	ng/g
PCB097	0-30	60 - 125%	1	ng/g
PCB099	0-30	60 - 125%	1	ng/g
PCB101	0-30	60 - 125%	1	ng/g
PCB105	0-30	60 - 125%	1	ng/g
PCB110	0-30	60 - 125%	1	ng/g
PCB114	0-30	60 - 125%	1	ng/g
PCB118	0-30	60 - 125%	1	ng/g
PCB119	0-30	60 - 125%	1	ng/g
PCB123	0-30	60 - 125%	1	ng/g
PCB126	0-30	60 - 125%	1	ng/g
PCB128	0-30	60 - 125%	1	ng/g
PCB128+167	0-30	60 - 125%	1	ng/g
PCB132	0-30	60 - 125%	1	ng/g
PCB138	0-30	60 - 125%	1	ng/g
PCB141	0-30	60 - 125%	1	ng/g
PCB146	0-30	60 - 125%	1	ng/g

PCB147	0-30	60 - 125%	1	ng/g
PCB149	0-30	60 - 125%	1	ng/g
PCB151	0-30	60 - 125%	1	ng/g
PCB153	0-30	60 - 125%	1	ng/g
PCB156	0-30	60 - 125%	1	ng/g
PCB157	0-30	60 - 125%	1	ng/g
PCB158	0-30	60 - 125%	1	ng/g
PCB167	0-30	60 - 125%	1	ng/g
PCB168	0-30	60 - 125%	1	ng/g
PCB168+132	0-30	60 - 125%	1	ng/g
PCB169	0-30	60 - 125%	1	ng/g
PCB170	0-30	60 - 125%	1	ng/g
PCB173	0-30	60 - 125%	1	ng/g
PCB174	0-30	60 - 125%	1	ng/g
PCB177	0-30	60 - 125%	1	ng/g
PCB179	0-30	60 - 125%	1	ng/g
PCB180	0-30	60 - 125%	1	ng/g
PCB183	0-30	60 - 125%	1	ng/g
PCB187	0-30	60 - 125%	1	ng/g
PCB189	0-30	60 - 125%	1	ng/g
PCB194	0-30	60 - 125%	1	ng/g
PCB195	0-30	60 - 125%	1	ng/g
PCB200	0-30	60 - 125%	1	ng/g
PCB201	0-30	60 - 125%	1	ng/g
PCB203	0-30	60 - 125%	1	ng/g
PCB205	0-30	60 - 125%	1	ng/g
PCB206	0-30	60 - 125%	1	ng/g
PCB209	0-30	60 - 125%	1	ng/g

L

625 CHLORINATED HYDROCARBONS BY GC/MS- LIQUID MATRIX

2,4'-DDD	0-30	50 - 140%	1	ng/L
2,4'-DDE	0-30	60 - 130%	1	ng/L
2,4'-DDT	0-30	40 - 130%	1	ng/L
4,4'-DDD	0-30	70 - 130%	1	ng/L
4,4'-DDE	0-30	70 - 130%	1	ng/L
4,4'-DDT	0-30	MDL - 150%	1	ng/L
Alachlor	0-30	60 - 140%	2	ng/L
Aldrin	0-30	50 - 130%	1	ng/L
BHC-alpha	0-30	60 - 130%	1	ng/L
BHC-beta	0-30	65 - 125%	1	ng/L
BHC-delta	0-30	65 - 125%	1	ng/L
BHC-gamma	0-30	50 - 125%	1	ng/L
Chlordane-alpha	0-30	60 - 130%	1	ng/L
Chlordane-gamma	0-30	60 - 130%	1	ng/L
cis-Nonachlor	0-30	60 - 120%	1	ng/L
DCPA (Dacthal)	0-30	60 - 140%	5	ng/L
Dieldrin	0-30	65 - 125%	1	ng/L
Endosulfan Sulfate	0-30	60 - 125%	1	ng/L
Endosulfan-I	0-30	60 - 125%	1	ng/L

Endosulfan-II	0-30	60 - 125%	1	ng/L
Endrin	0-30	65 - 135%	1	ng/L
Endrin Aldehyde	0-30	60 - 110%	1	ng/L
Endrin Ketone	0-30	40 - 130%	1	ng/L
Heptachlor	0-30	45 - 135%	1	ng/L
Heptachlor Epoxide	0-30	65 - 130%	1	ng/L
Methoxychlor	0-30	MDL - 155%	1	ng/L
Mirex	0-30	50 - 125%	1	ng/L
Oxychlordane	0-30	60 - 120%	1	ng/L
Total Detectable DDTs	0-30			ng/L
Toxaphene	0-30	65 - 135%	10	ng/L
trans-Nonachlor	0-30	55 - 130%	1	ng/L
(PCB030)	0-30	40 - 130%		ng/L
Perthane	0-30	60 - 140%	5	ng/L
Total Chlordane	0-30			ng/L
Hexachlorobenzene	0-30	75 - 125%	1	ng/L
Dicofol	0-30	70 - 130%	50	ng/L
Aroclor 1016	0-30	65 - 135%	10	ng/L
Aroclor 1221	0-30	65 - 135%	10	ng/L
Aroclor 1232	0-30	65 - 135%	10	ng/L
Aroclor 1242	0-30	65 - 135%	10	ng/L
Aroclor 1248	0-30	65 - 135%	10	ng/L
Aroclor 1254	0-30	65 - 135%	10	ng/L
Aroclor 1260	0-30	65 - 135%	10	ng/L
PCB001	0-30	60 - 125%	1	ng/L
PCB002	0-30	60 - 125%	1	ng/L
PCB003	0-30	60 - 125%	1	ng/L
PCB004	0-30	60 - 125%	1	ng/L
PCB006	0-30	60 - 125%	1	ng/L
PCB008	0-30	60 - 125%	1	ng/L
PCB009	0-30	60 - 125%	1	ng/L
PCB016	0-30	60 - 125%	1	ng/L
PCB018	0-30	60 - 125%	1	ng/L
PCB019	0-30	60 - 125%	1	ng/L
PCB022	0-30	60 - 125%	1	ng/L
PCB025	0-30	60 - 125%	1	ng/L
PCB028	0-30	60 - 125%	1	ng/L
PCB031	0-30	60 - 125%	1	ng/L
PCB033	0-30	60 - 125%	1	ng/L
PCB037	0-30	60 - 125%	1	ng/L
PCB044	0-30	60 - 125%	1	ng/L
PCB049	0-30	60 - 125%	1	ng/L
PCB052	0-30	60 - 125%	1	ng/L
PCB056	0-30	60 - 125%	1	ng/L
PCB065	0-30	60 - 125%	1	ng/L
PCB066	0-30	60 - 125%	1	ng/L
PCB067	0-30	60 - 125%	1	ng/L
PCB070	0-30	60 - 125%	1	ng/L
PCB071	0-30	60 - 125%	1	ng/L
PCB074	0-30	60 - 125%	1	ng/L

PCB077	0-30	60 - 125%	1	ng/L
PCB081	0-30	60 - 125%	1	ng/L
PCB082	0-30	60 - 125%	1	ng/L
PCB087	0-30	60 - 125%	1	ng/L
PCB095	0-30	60 - 125%	1	ng/L
PCB097	0-30	60 - 125%	1	ng/L
PCB099	0-30	60 - 125%	1	ng/L
PCB101	0-30	60 - 125%	1	ng/L
PCB105	0-30	60 - 125%	1	ng/L
PCB110	0-30	60 - 125%	1	ng/L
PCB114	0-30	60 - 125%	1	ng/L
PCB118	0-30	60 - 125%	1	ng/L
PCB119	0-30	60 - 125%	1	ng/L
PCB123	0-30	60 - 125%	1	ng/L
PCB126	0-30	60 - 125%	1	ng/L
PCB128	0-30	60 - 125%	1	ng/L
PCB128+167	0-30	60 - 125%	1	ng/L
PCB132	0-30	60 - 125%	1	ng/L
PCB138	0-30	60 - 125%	1	ng/L
PCB141	0-30	60 - 125%	1	ng/L
PCB146	0-30	60 - 125%	1	ng/L
PCB147	0-30	60 - 125%	1	ng/L
PCB149	0-30	60 - 125%	1	ng/L
PCB151	0-30	60 - 125%	1	ng/L
PCB153	0-30	60 - 125%	1	ng/L
PCB156	0-30	60 - 125%	1	ng/L
PCB157	0-30	60 - 125%	1	ng/L
PCB158	0-30	60 - 125%	1	ng/L
PCB167	0-30	60 - 125%	1	ng/L
PCB168	0-30	60 - 125%	1	ng/L
PCB168+132	0-30	60 - 125%	1	ng/L
PCB169	0-30	60 - 125%	1	ng/L
PCB170	0-30	60 - 125%	1	ng/L
PCB173	0-30	60 - 125%	1	ng/L
PCB174	0-30	60 - 125%	1	ng/L
PCB177	0-30	60 - 125%	1	ng/L
PCB179	0-30	60 - 125%	1	ng/L
PCB180	0-30	60 - 125%	1	ng/L
PCB183	0-30	60 - 125%	1	ng/L
PCB187	0-30	60 - 125%	1	ng/L
PCB189	0-30	60 - 125%	1	ng/L
PCB194	0-30	60 - 125%	1	ng/L
PCB195	0-30	60 - 125%	1	ng/L
PCB200	0-30	60 - 125%	1	ng/L
PCB201	0-30	60 - 125%	1	ng/L
PCB203	0-30	60 - 125%	1	ng/L
PCB205	0-30	60 - 125%	1	ng/L
PCB206	0-30	60 - 125%	1	ng/L
PCB209	0-30	60 - 125%	1	ng/L

625 ORGANOPHOSPHORUS PESTICIDES BY GC/MS- LIQUID MATRIX

Bolstar (Sulprofos)	0-30	65 - 125%	2	ng/L
Chlorpyrifos	0-30	65 - 125%	1	ng/L
Coumaphos	0-30	65 - 125%	5	ng/L
Demeton	0-30	45 - 105%	1	ng/L
Diazinon	0-30	65 - 125%	2	ng/L
Dichlorvos	0-30	65 - 125%	3	ng/L
Dimethoate	0-30	65 - 125%	3	ng/L
Disulfoton	0-30	45 - 105%	1	ng/L
Ethoprop (Ethoprofos)	0-30	65 - 125%	1	ng/L
Fenchlorphos (Ronnel)	0-30	65 - 125%	2	ng/L
Fensulfothion	0-30	65 - 125%	1	ng/L
Fenthion	0-30	65 - 125%	2	ng/L
Guthion	0-30	65 - 125%	10	ng/L
Malathion	0-30	65 - 125%	3	ng/L
Merphos	0-30	65 - 125%	1	ng/L
Methyl Parathion	0-30	60 - 120%	1	ng/L
Mevinphos (Phosdrin)	0-30	65 - 125%	8	ng/L
Phorate	0-30	45 - 105%	6	ng/L
Tetrachlorvinphos (Stirofos)	0-30	65 - 125%	2	ng/L
Tokuthion	0-30	65 - 125%	3	ng/L
Trichloronate	0-30	65 - 125%	1	ng/L
Methamidophos (Monitor)	0-30	65 - 125%	50	ng/L
Ethyl Parathion	0-30	60 - 120%	10	ng/L
Methidathion	0-30	60 - 120%	10	ng/L
Phosmet	0-30	60 - 120%	50	ng/L
Azinphos Methyl	0-30	60 - 120%	10	ng/L

8270 ORGANOPHOSPHORUS PESTICIDES BY GC/MS- SOLID MATRIX

Bolstar (Sulprofos)	0-30	65 - 125%	10	ng/g
Chlorpyrifos	0-30	65 - 125%	5	ng/g
Coumaphos	0-30	65 - 125%	10	ng/g
Demeton	0-30	MDL - 145%	10	ng/g
Diazinon	0-30	45 - 125%	5	ng/g
Dichlorvos	0-30	65 - 125%	10	ng/g
Dicofol	0-30	65 - 125%	1	ng/g
Dimethoate	0-30	MDL - 160%	5	ng/g
Disulfoton	0-30	MDL - 155%	10	ng/g
Ethoprop (Ethoprofos)	0-30	65 - 125%	10	ng/g
Fenchlorphos (Ronnel)	0-30	65 - 125%	10	ng/g
Fensulfothion	0-30	10 - 160%	10	ng/g
Fenthion	0-30	10 - 150%	10	ng/g
Guthion	0-30	65 - 125%	10	ng/g
Malathion	0-30	65 - 125%	5	ng/g
Merphos	0-30	MDL - 165%	10	ng/g
Methyl Parathion	0-30	60 - 120%	10	ng/g
Mevinphos (Phosdrin)	0-30	65 - 125%	10	ng/g
Phorate	0-30	MDL - 150	10	ng/g
Tetrachlorvinphos (Stirofos)	0-30	65 - 125%	10	ng/g

Tokuthion	0-30	65 - 125%	10	ng/g
Trichloronate	0-30	65 - 125%	10	ng/g
Methamidophos (Monitor)	0-30	65 - 125%	50	ng/g
Ethyl Parathion	0-30	60 - 120%	10	ng/g
Methidathion	0-30	60 - 120%	10	ng/g
Phosmet	0-30	60 - 120%	50	ng/g
Azinphos Methyl	0-30	60 - 120%	50	ng/g

625 PYRETHROID PESTICIDES BY GC/MS- LIQUID MATRIX

Allethrin	0-30	65 - 125%	5	ng/L
Bifenthrin	0-30	65 - 125%	5	ng/L
Cyfluthrin	0-30	65 - 125%	5	ng/L
Cypermethrin	0-30	65 - 125%	5	ng/L
Danitol	0-30	65 - 125%	5	ng/L
Deltamethrin	0-30	65 - 125%	5	ng/L
L-Cyhalothrin	0-30	65 - 125%	5	ng/L
Permethrin	0-30	65 - 125%	5	ng/L
Prallethrin	0-30	65 - 125%	5	ng/L
Esfenvalerate/Fenvalerate	0-30	65 - 125%	5	ng/L
Pyrethrins	0-30	65 - 125%	100	ng/L
Piperonyl Butoxide	0-30	65 - 125%	5	ng/L
Esfenvalerate	0-30	65 - 125%	5	ng/L
Fenvalerate	0-30	65 - 125%	5	ng/L

8270 PYRETHROID PESTICIDES BY GC/MS- SOLID MATRIX

Allethrin	0-30	70 - 130%	5	ng/g
Bifenthrin	0-30	55 - 130%	5	ng/g
Cyfluthrin	0-30	65 - 130%	5	ng/g
Cypermethrin	0-30	70 - 130%	5	ng/g
Danitol	0-30	65 - 130%	5	ng/g
Deltamethrin	0-30	60 - 120%	5	ng/g
L-Cyhalothrin	0-30	55 - 120%	5	ng/g
Permethrin	0-30	70 - 130%	5	ng/g
Prallethrin	0-30	35 - 130%	5	ng/g
Esfenvalerate/Fenvalerate	0-30		5	ng/g
Pyrethrins	0-30	30 - 120%	100	ng/g

625 TRIAZINE PESTICIDES BY GC/MS- LIQUID MATRIX

1,2-Diphenylhydrazine	0-30	70 - 130%	5	ng/L
Atraton	0-30	70 - 130%	5	ng/L
Simazine	0-30	70 - 130%	5	ng/L
Prometon	0-30	70 - 130%	5	ng/L
Atrazine	0-30	70 - 130%	5	ng/L
Propazine	0-30	70 - 130%	5	ng/L
Terbuthylazine	0-30	70 - 130%	5	ng/L
Secbumeton	0-30	70 - 130%	5	ng/L
Simetryn	0-30	70 - 130%	5	ng/L
Ametryn	0-30	70 - 130%	5	ng/L
Prometryne	0-30	70 - 130%	5	ng/L

Terbutryn	0-30	70 - 130%	5	ng/L
Cyanazine	0-30	70 - 130%	5	ng/L

8270 TRIAZINE PESTICIDES BY GC/MS- SOLID MATRIX

1,2-Diphenylhydrazine	0-30	65 - 125%	5	ng/g
Atraton	0-30	50 - 120%	5	ng/g
Simazine	0-30	35 - 135%	5	ng/g
Prometon	0-30	65 - 125%	5	ng/g
Atrazine	0-30	50 - 125%	5	ng/g
Propazine	0-30	35 - 140%	5	ng/g
Terbuthylazine	0-30	40 - 135%	5	ng/g
Secbumeton	0-30	40 - 120%	5	ng/g
Simetryn	0-30	MDL - 145%	5	ng/g
Ametryn	0-30	MDL - 150%	5	ng/g
Prometryne	0-30	35 - 130%	5	ng/g
Terbutryn	0-30	10 - 135%	5	ng/g
Cyanazine	0-30	65 - 125%	5	ng/g

INORGANIC CHEMISTRY – CONVENTIONAL CONSTITUENTS

SM4500NH3 F	Ammonia (as N)	0-30	70-130	0.01 mg/L
SM 4500 Cl^-	Chloride	0-30	70-130	0.01 mg/L
SM10200H	Chlorophyll-a	0-30	70-130	0.005mg/m^3
SM2510	Conductivity	0-30	70-130	0.1 mS/m
SM 3500-F D	Fluoride	0-30	70-130	0.01 mg/L
SM 4500NO_3 E	Nitrate (as N)	0-30	70-130	0.01 mg/L
SM 4500NO_2 B	Nitrite (as N)	0-30	70-130	0.01 mg/L
SM4500P E	Orthophosphate (as P)	0-30	70-130	0.01 mg/L
EPA 150.1	pH	0-30	70-130	0.1 pH Unit
SM4500P E	Soluble Reactive Phosphorus	0-30	70-130	0.075 mg/L
SM2540 C	Total Dissolved Solids	0-30	70-130	5.0 mg/L
SM2340 B	Total Hardness	0-30	70-130	1.0 mg/L
SM4500P C	Total Phosphorus	0-30	70-130	0.016 mg/L
SM4500SO_4 F	Total Sulfate	0-30	70-130	0.01 mg/L
SM2540 D	Total Suspended Solids	0-30	70-130	4.0 mg/L
EPA 180.1	Turbidity	0-30	70-130	1.0 NTU

MDL: Method Detection Limits

Table 2. Microbiology

METHOD	ANALYSIS	MAXIMUM HOLDING TIME	MDL
	INDICATOR BACTERIA- STORM, SEA & RECREATIONAL WATER		
SM9221B	Total Coliform	6 hrs	2 MPN/100 mL
SM9222B	Total Coliform	6 hrs	2 CFU/100 mL
SM9223B	Total Coliform	6 hrs	2 MPN/100 Ml
SM9221E	Fecal Coliform	6 hrs	2 MPN/100 mL
SM9222D	Fecal Coliform	6 hrs	2 CFU/100 mL
SM9223B	*E. coli*	6 hrs	2 MPN/100 mL
EPA1600	Enterococci	6 hrs	1 CFU/100 mL
SM9230C	Enterococci	6 hrs	1 CFU/100 mL
Enterolert	Enterococci	6 hrs	1 MPN/100 mL
SM9215B/C	Heterotrophic Plate Count	6 hrs	1 CFU/1mL
	INDICATOR BACTERIA- DRINKING WATER		
SM9223B	Total Coliform	24 hrs	Presence/Absence
SM9223B	*E. coli*	24 hrs	Presence/Absence
EPA1600	Enterococci	6 hrs	1 CFU/100 mL
SM9215B/C	Heterotrophic Plate Count	6 hrs	1 CFU/1mL
	BACTERIOPHAGE		
Adams	Coliphage	6 hrs	1 PFU/100 mL

MPN: Most Probable Number
CFU: Colony Forming Unit
PFU: Plaque Forming Unit

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APPENDIX B

EXAMPLE CHAIN-OF-CUSTODY (COC) FORM

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CRG Marine Laboratories, Inc.
"A Center for Excellence in Analytical Chemistry and Environmental Microbiology"
2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206 (310) 533-5190 Fax (310) 533-5003 www.crglabs.com

CHAIN-OF-CUSTODY

page ____ of ____

CRG RID:

Client Name	
Address	
Project Manager	
Email	
Phone	
FAX	
Project Name/Number	
P.O. Number	
Sampled By	

REQUESTED ANALYSES

	Client Sample ID / Description	Sample Date	Sample Time	Sample Matrix*	Container Quantity	Container Type
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

CRG Containers used:	Yes	No	
Type of Ice used:	Wet	Blue	None
Sample Preservative:	Yes	No	
TAT:	STD 15-20 bd	RUSH specify in comments section	

COMMENTS:

CRG PID:

RELINQUISHED BY			
Signature:		DATE:	
Print:		TIME:	
Company:			
RECEIVED BY			
Signature:		DATE:	
Print:		TIME:	
Company:			
RELINQUISHED BY			
Signature:		DATE:	
Print:		TIME:	
Company:			
RECEIVED BY			
Signature:		DATE:	
Print:		TIME:	
Company:			

*CRG MATRIX CODES: (SED = Sediment); (TISS = Tissue); (SW = Seawater, Saltwater); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater); (W = other Water)

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APPENDIX C

MACTEC STANDARD OPERATING PROCEDURE FOR STORMWATER SAMPLING

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FLOW MONITORING AND SAMPLING STANDARD OPERATING PROCEDURE

FIELD FLOW MONITORING AND SAMPLING TECHNIQUES

The following text describes clean sampling techniques that should be used when low-level analytical detection limits are to be employed for sampling.

The following topics are discussed below:

- Clean Sample and Equipment Handling
- Composite Bottle changing
- Bottle and Equipment Cleaning

CLEAN SAMPLE AND EQUIPMENT HANDLING

During all sampling operations, extreme care must be taken to minimize exposure of the sample and sample collection equipment to human, atmospheric, and other sources of contamination. This section provides clean sample and equipment handling procedures to be used when samples are collected for-level analysis.

Clean sampling techniques typically require a two person sampling team. Upon arrival at the sampling site, one member of the sampling team is designated as “dirty hands”; the second member is designated as “clean hands”. All operations involving contact with the sample bottle, sample bottle lid, sample suction tubing, and the transfer of the sample from the sample collection device (if the sample is not directly collected in the bottle) to the sample bottle are handled by “clean hands” wearing clean powder-free nitrile gloves. “Dirty hands” (also wearing clean powder-free nitrile gloves) is responsible for preparation of the sampler (except the sample container itself), operation of any machinery, and for all other activities that do not involve handling items that have direct contact with the sample. “Clean hands” will change into clean gloves as frequently as required to ensure that the gloved hands contacting the sample

container, container lid, and laboratory cleaned sampling equipment have not contacted any source of potential contamination.

Although the duties of "clean hands" and "dirty hands" would appear to be a logical separation of responsibilities, in fact, the completion of the entire protocol may require a good deal of coordination and practice. For example, "dirty hands" must open the box or ice chest containing the sample bottle and unzip the outer bag; "clean hands" must reach into the outer bag, open the inner bag, remove the bottle, collect the sample, replace the bottle lid, put the bottle back into the inner bag, and zip the inner bag. "Dirty hands" must close the outer bag and place the double-bagged sample in an ice-filled ice chest.

COMPOSITE BOTTLE CHANGING

If an automated monitoring station is used for the collection of composite stormwater samples and a composite bottle change is required, composite bottle changing is conducted using the following steps:

1. The automated sampling equipment is placed in pause mode prior to the initiation of a composite bottle change. This action is accomplished in the field or by remote monitoring personnel if the monitoring station is equipped with telemetry.
2. Composite bottle changing requires two field crew members- "clean hands" and "dirty hands". Both team members wear clean, powder-free nitrile gloves. "Clean hands" only touches suction tubing and Teflon composite bottle lids. Keep extra gloves within easy reach.
3. Prior to putting on clean gloves, the clean empty sample bottle is placed near the automated sampling unit, and the sampler is opened.
4. Wearing clean powder-free nitrile gloves, "dirty hands" removes the lid clamps from both the full sample bottle and the clean sample bottle.
5. "Clean hands" removes the end of the pump tubing from the composite bottle and "dirty hands" places a clean ziplock bag over the end of the tubing securing it with a rubber band. The inside of the bag should never be touched by sampling personnel.
6. "Clean hands" switches the bottle lids, putting the solid lid on the full bottle and the perforated id on the clean empty bottle.
7. "Dirty hands" installs the lid clamps on both bottles, removes the full bottle from the sampler, replacing it with the clean empty bottle.
8. "Clean hands" holds the tubing while "dirty hands" removes the ziplock bag from the end of the pump tubing, being careful not to touch the tubing.
9. "Clean hands" inserts the tubing through the lid of the clean bottle.
10. The sampler is closed and sampling equipment is placed in sample mode. Remote operation personnel are notified as soon as the bottle change is complete.
11. The sampling team fills out the appropriate information on the label of the full sample bottle.

12. The full bottle is surrounded with fresh ice or frozen refreezable ice packets, and secured inside the vehicle for transport.

BOTTLE AND EQUIPMENT CLEANING

When use of the preceding clean techniques is called for, additional effort should also be made in the area of bottle and equipment cleaning. Consult also EPA Method 1669, *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels*, and relevant individual 1600 series methods for further information.

Automated Sampling Equipment

Key components required for successful automated sample collection include an automated sampler, tubing with strainer, and sample bottle(s).

Automated Sampler

Automated samplers are comprised of a peristaltic pump, pump control electronics, a sample distribution system, a power supply, and a housing that contains the composite bottle(s). A peristaltic pump creates suction by compressing a flexible tube with a rotating roller, drawing a sample that is then pushed out of the pump. The pump operates best when placed close to the source; this reduces the suction head or lift (experience has shown that the reliability of peristaltic pumps drawing a consistent sample volume is greatly reduced as the static suction head increases). According to manufacturer's specifications, vertical lift must be no greater than 26 feet. When sampling with an automated sampler, static head height refers to the vertical distance from the surface of the flow stream to the automated sampler pump inlet. Automated samplers may be configured for single or multiple bottle composite collection. Samplers configured to fill multiple sample bottles have a sample distribution mechanism. Tubing from the discharge port of the intake pump is connected to a rotating distributor arm that dispenses the samples into several sample bottles. If flow-weighted sampling is planned, the automated sampler must be capable of accepting a signal from a flow meter that is used to trigger collection of a sample aliquot. Cables can be purchased that connect each type of flow meter to an automated sampler. Automated samplers are equipped with internal memory circuits, and typically a small LCD data screen. The memory holds the user-programmed values for the sample aliquot volume, sample bottle configuration, and number of samples per bottle. The memory also retains information describing the status of the sampling program and the time at which each triggering signal was received from the flow meter. Messages can be displayed on the data screen for the user regarding any sample collection failures.

Samplers are powered by 12-volt (V) DC batteries, AC power, or solar-powered batteries. Two types of 12-V DC batteries are available: nickel-cadmium and lead-acid. Most automated sampler manufacturers offer AC power packs for use where line power is available. Use of AC power decreases routine maintenance requirements, as battery changes are not necessary. The preferred configuration includes AC power with an in-line battery backup. However, back-up batteries typically will not provide adequate power for refrigerated units.

Sampler Intake Strainer, Intake Tubing and Flexible Pump Tubing

The intake strainer is attached to the intake tubing and mounted to the bottom of a pipe or channel. Intake strainers prevent rocks and debris from clogging or damaging the intake tubing or pump. Sizes vary, but smaller intake strainers are generally better for use under low flow conditions. Sample intake strainers are typically made of stainless steel, or a combination of stainless steel and Teflon. For trace metals analyses, all intake strainer parts must be Teflon, or coated with Teflon or Teflon-like material. Specific intake and pump tubing requirements are listed below:

- Intake tubing: Teflon
  - Maximum vertical lift = 26 feet
  - Maximum length = 99 feet
- Pump tubing: Silicon or other medical grade flexible tubing

Limit to length needed to feed through peristaltic pump, connect to Teflon intake tubing and sample bottle Teflon tubing is used for the sample intake tubing because of its inert properties. This tubing is connected from the intake strainer to the pump tubing, and may range from 3 to 99 feet in length. EPA protocols permit the use of the minimum amount of flexible pump tubing needed to carry the sample water through a peristaltic pump. Silicone tubing is normally used for this purpose.

Sample Bottle(s)

Automated samplers may be configured to have a variety of sample bottles, from one to a dozen or more sample bottles. If a sampler holds a single bottle, all of the sample aliquots are pumped into this bottle, resulting in one large composite sample. Use of a single composite bottle has the advantage of providing for the estimation of the event mean concentrations (EMCs) directly from analysis of the constituents in the one bottle. However, it does not allow for isolation of specific samples or groups of samples from

specific periods of the runoff hydrograph, and provides less visual indication of sampler malfunction (if this should occur). A multiple bottle configuration, however, provides these latter capabilities.

It is important to keep extra bottles (for either the single or multiple bottle configuration) available in case bottles are contaminated or damaged, or in the event that bottles need to be changed to accommodate a larger-than-expected storm. If a storm delivers more precipitation than expected, sample bottles will fill prior to the end of the storm, prompting sample bottle replacement.

AUTOMATED SAMPLER INSTALLATION

The automated sample collection equipment should be installed and maintained according to manufacturer specifications. See Section 5 regarding selection of automated equipment. Installation The automated sampler should be installed inside the protective enclosure in such a way that all controls, display windows and cable connections are easily accessed. All wiring should be secured, in a well organized fashion to the inside of the enclosure to prevent accidental disconnection or damage. The sampler must be oriented in a way that will allow the sample intake tubing to enter the sampler without sharp bends or kinking, and to allow easy access for tubing replacement. At the sampler peristaltic pump, where the sample intake tubing is connected to the pump tubing, no metallic fittings or clamps should be used. Using “clean techniques”, the Teflon intake tubing should be inserted (at least a half inch) into the flexible pump tubing and fastened using a non-metallic clamp or cable tie. At no time during this procedure should the ends of the tubing be allowed to touch any object that is not known to be clean. The flexible pump tubing should then be fed through the peristaltic pump and into the area of the sampler where the sample bottle(s) are housed. Adequate space must be available in the equipment enclosure to easily remove and replace sample bottles from the automated sampler. Proper placement of the sampler intake assures the collection of representative samples. The intake strainer should be placed in the main flow. The vertical position of the intake strainer in the flow is important. Placement at the bottom may result in excess heavy solids and no floating material, while placement at the top may result in excess floating material and no heavy solids. The constituents of interest must be considered when positioning the intake strainer. Placement of the intake strainer is usually at the channel invert, but may be mounted slightly above the invert on one side of the channel wall if high solids loadings are expected. This will reduce the amount of solids that may enter the intake strainer, and help prevent blockages. However, with the intake strainer offset above the channel invert, low flows may not adequately submerge the strainer, thus preventing sample collection. Maintenance using laboratory provided blank water, the automated sampler should be calibrated according to manufacturer specifications to collect the desired sample aliquot. At a minimum, the calibration should be checked prior to each stormwater monitoring season.

After each stormwater monitoring event, the sample bottle(s) should be checked to verify that the programmed sample volume was delivered to the sample bottle(s). If the programmed sample volume was not delivered accurately to the sample bottle(s), the automated sampler should be recalibrated prior to the next monitoring event.

APPENDIX D

INSTRUMENT OPERATION AND MAINTENANCE MANUALS

(Provided electronically on CD only)

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APPENDIX E

DATA QUALITY OBJECTIVES (DQOs)

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Table E-1: Data Quality Objectives for Water Analyses

Analyte	Matrix	Reporting Limit	Accuracy	Precision (RPD)	Recovery	Completeness
MICROBIOLOGY						
Coliform, Fecal	Water	20 MPN/100mL	N/A	N/A	N/A	90%
Coliform, Total	Water	20 MPN/100mL	N/A	N/A	N/A	90%
Enterococcus	Water	10 MPN/100mL	N/A	N/A	N/A	90%
NUTRIENTS AND CONVENTIONALS						
Ammonia-N	Water	0.03 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Nitrate-N	Water	0.20 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Nitrite-N	Water	0.05 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Ortho-Phosphate-P	Water	0.01 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Chloride	Water	0.20 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Flouride	Water	0.20 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Sulfate	Water	0.20 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Total Kjeldahl Nitrogen	Water	0.50 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Total Phosphorus	Water	0.05 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Total Suspended Solids	Water	5 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Total Dissolved Solids	Water	5.0 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Alkalinity, Bicarbonate	Water	5 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Alkalinity, Carbonate	Water	5 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Alkalinity, Hydroxide	Water	5 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Hardness, Total	Water	5.0 mg $CaCO_3$/L	80 - 120%	0 - 30	80 - 120%	90%
METALS						
Iron, Total	Water	20.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Manganese, Total	Water	1.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Boron, Total	Water	5 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Magnesium, Dissolved	Water	0.1 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Potassium, Dissolved	Water	10 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Sodium, Dissolved	Water	10 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Calcium, Dissolved	Water	0.1 mg/L	80 - 120%	0 - 30	80 - 120%	90%
Antimony, Dissolved	Water	5.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Arsenic, Dissolved	Water	1.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Cadmium, Dissolved	Water	1.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Chromium, Dissolved	Water	5.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Copper, Dissolved	Water	5.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Lead, Dissolved	Water	2.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Lead, Total	Water	2.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Nickel, Dissolved	Water	2.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Selenium, Dissolved	Water	5.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Selenium, Total	Water	5.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
Zinc, Dissolved	Water	5.0 ug/L	80 - 120%	0 - 30	80 - 120%	90%
ORGANICS						
Chlorpyrifos	Water	0.02 ug/L	55 - 137%	0 - 30	55 - 137%	90%
Diazinon	Water	0.04 ug/L	56 - 134%	0 - 30	56 - 134%	90%
Malathion	Water	0.06 ug/L	64 - 142%	0 - 30	64 - 142%	90%
Terbuthylazine	Water	0.01 ug/L	40 - 135 %	0 - 30	40 - 135 %	90%
Secbumeton	Water	0.01 ug/L	40 - 130 %	0 - 30	40 - 130 %	90%
Simazine	Water	0.01 ug/L	70 - 122%	0 - 30	70 - 122%	90%
Oxadiazon	Water	0.06 ug/L[(a)]	60 - 140%	0 - 30	60 - 140%	90%
Atrazine	Water	0.01 ug/L	72 - 120%	0 - 30	72 - 120%	90%

NA= Not Applicable
RPD= Relative Percent Difference
(a) Target Reporting Limit for Oxadiazon is tentative. The final value is being determined by laboratory test procedures.

Table E-2: Data Quality Objectives for Sediment Analyses

Analyte	Matrix	Reporting Limit	Accuracy	Precision (RPD)	Recovery	Completeness
Allethrin	Sediment	2 ng/g	59 - 104%	0 - 30	59 - 104%	90%
Bifenthrin	Sediment	2 ng/g	57 - 121%	0 - 30	57 - 121%	90%
Cyfluthrin	Sediment	2 ng/g	62 - 134%	0 - 30	62 - 134%	90%
Cypermethrin	Sediment	2 ng/g	63 - 131%	0 - 30	63 - 131%	90%
Danitol	Sediment	2 ng/g	47 - 122%	0 - 30	47 - 122%	90%
Deltamethrin	Sediment	2 ng/g	49 - 102%	0 - 30	49 - 102%	90%
L-Cyhalothrin	Sediment	2 ng/g	60 - 121%	0 - 30	60 - 121%	90%
Permethrin	Sediment	25 ng/g	73 - 139%	0 - 30	73 - 139%	90%
Prallethrin	Sediment	2 ng/g	0 - 148%	0 - 30	0 - 148%	90%
Piperonyl butoxide (PBO)	Sediment	20 ng/g	65 - 125%	0 - 30	65 - 125%	90%

NA= Not Applicable
RPD= Relative Percent Difference

APPENDIX C

TASK ORDER STOP-WORK NOTIFICATION

(Available on request)

APPENDIX D

FIELD DATA SHEETS

(Available on request)

APPENDIX E

LABORATORY ANALYTICAL RESULTS

(Available on request)

Attachment B

to

SAN LUIS REY WURMP Annual Report

Watershed Activity SLR-028

for Fiscal Year 2011-12

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San Diego River and San Luis Rey Watersheds
Land Use Monitoring Report 2011-12

County of San Diego

November 2012

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List of Abbreviations

County	County of San Diego
Cfs	cubic feet per second
EnviroMatrix	EnviroMatrix Analytical, Inc.
FC	Flow Composite
HD	Hydrograph Discrete
MLS	Mass Loading Stations
PSD	Post Storm Discrete
SWAMP	Surface Water Ambient Monitoring Program

Section 1
Introduction

1.1 Purpose and Scope

The purpose of this study was to provide water quality, flow, and visual observation data of the receiving waters at predetermined mass loading stations (MLS) over three wet weather events. The data may be used to assist in watershed modeling and/or to characterize the storm water quality that may be associated with the agricultural and rural residential land uses.

1.1.1 Sampling Stations

Table 1-1 lists the two sites and their respective GPS coordinates. Pie diagrams showing land use compositions of the drainage areas associated with the monitoring locations are presented in Figure 1-1.

Table 1-1. Approximate GPS Locations of Watershed Monitoring Sites

Site	Watershed	Datum NAD 83 GPS Coordinates
Blossom Valley – 10125 Hawley Road	San Diego River	N 32° 51' 57.34" W 116°50' 2.16"
Double Canyon Creek at Couser Canyon Road	San Luis Rey	N 33° 19' 54.34" W 117°7' 29.39"

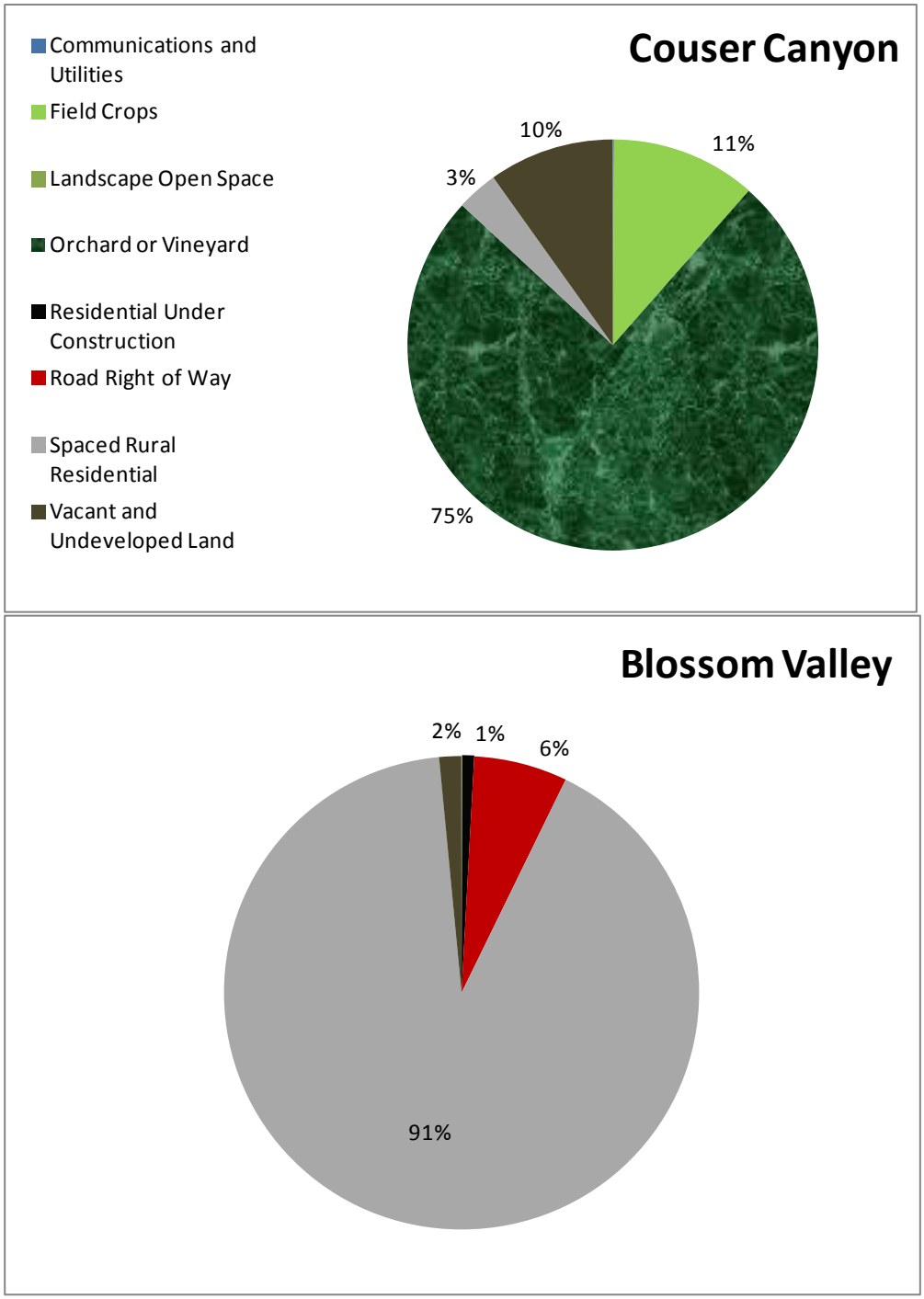

Figure 1-1. Drainage Area Land Use Compositions of the Two Monitoring Locations

1.1.1.1 Couser Canyon

The Couser Canyon monitoring site is located within the San Luis Rey River (SLR) Watershed and drains approximately 1,155 acres. It was established at the north-western edge of the Monserate sub-basin on Couser Canyon Road, approximately 1.1 miles south of Highway 76. The drainage area associated with the site is dominated by agriculture including orchards and vineyards (75%) and field crops (11%) with the remaining 13% being composed of vacant and undeveloped land (10%) and spaced rural residential land use areas (3%) (Figures 1-1 and 1-2).

The water quality monitoring equipment for the site was installed on County property near the downstream end of two 24-inch concrete pipes that run below Couser Canyon Road. The two culverts are of relatively new construction and have replaced the two 18-inch corrugated steel culverts present during previous studies. A data logging pressure transducer was installed within the southern concrete culvert where flow exits on the right. The device provided continuous water level measurements in the pipe, stream flow data and peak flow information. A sampling strainer was installed at a location just adjacent to the data logging equipment, but not so close as to interfere with the flow monitoring efforts.

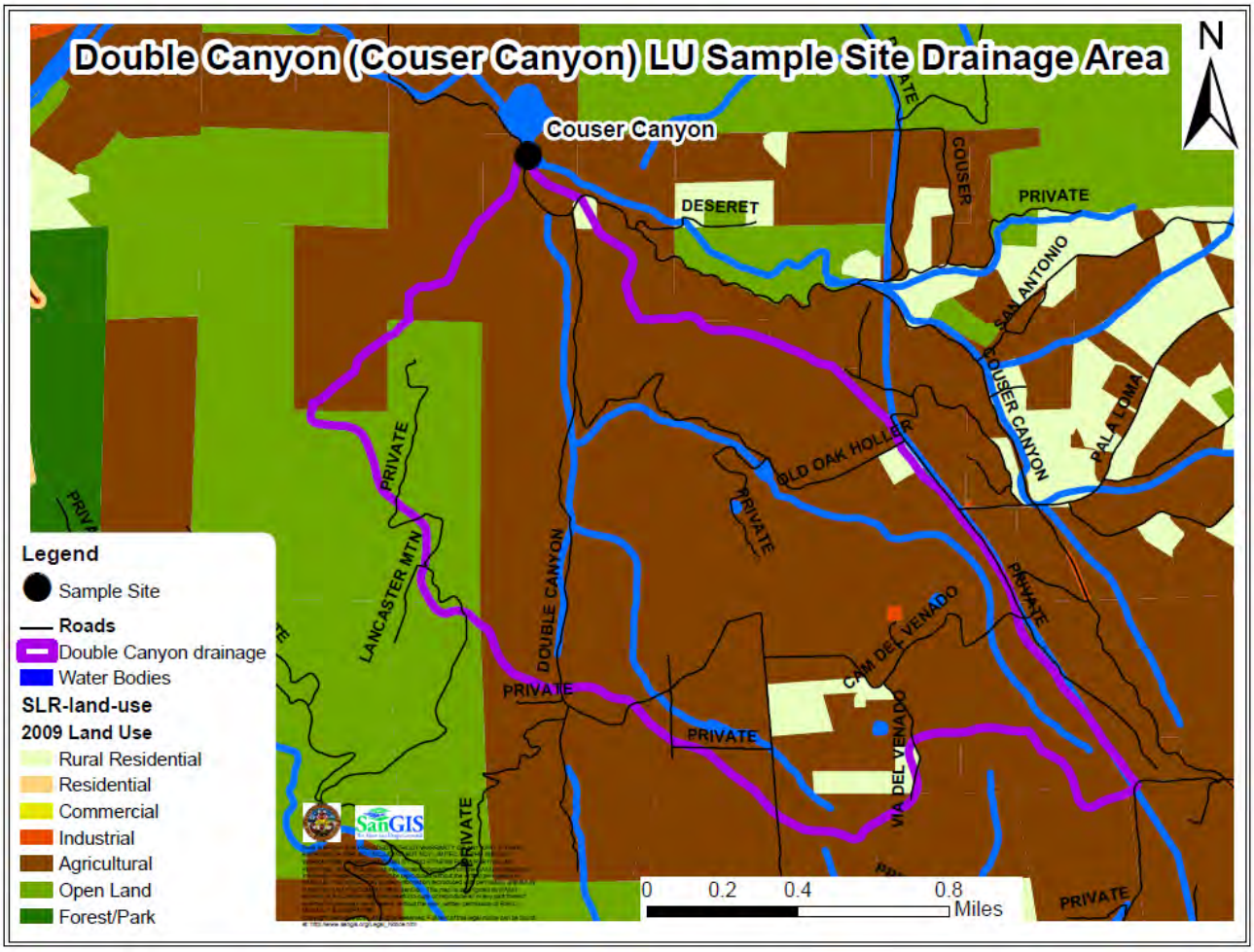

Figure 1-2. Drainage Area and Land Use Composition at Couser Canyon.

1.1.1.2 Blossom Valley

The Blossom Valley monitoring site, draining approximately 185 acres, is located within the San Diego River (SDR) Watershed on Hawley Road, approximately 0.65 miles north of Old Highway 60. The site, set near the eastern edge of the Lower San Diego sub-basin, targets runoff from spaced rural residential land use (91%) (Figs 1-1 and 1-3).

The water quality monitoring equipment for the site was installed on County property adjacent to the energy dissipation structure and a single 36-inch concrete pipe outlet that runs below Hawley Road. A data logging pressure transducer was installed within the 36-inch concrete pipe to continuously measure water level, and stream flow. A sampling strainer was installed at a location just adjacent to the data logging equipment, but not so close as to interfere with the flow monitoring efforts.

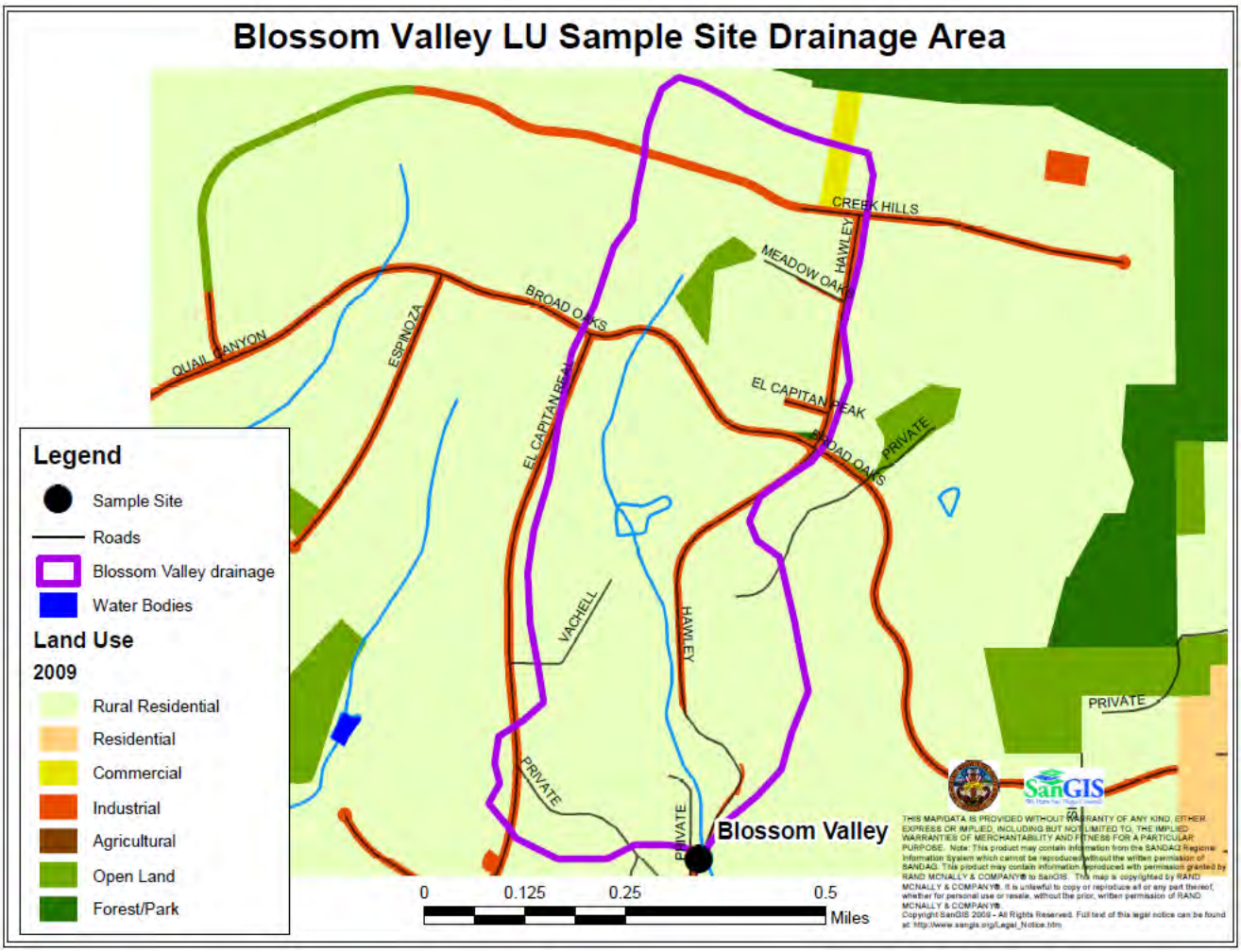

Figure 1-3. Drainage Area and Land Use Composition at Blossom Valley.

1.1.2 Monitoring Methods

Three storm events were monitored at both locations beginning in November 2011 and ending in January 2012. The equipment installation and storm event monitoring dates are shown in Table 1.2,

Table 1-2. Installation Schedule and Sampling Event Record

Activity	2010 Sampling Event Record
Site Assessment	10/07/2011 – 10/13/2011
Blossom Valley Site Installation	10/25/2011 - 11/03/2011
Couser Canyon Site Installation	10/27/2011 - 11/03/2011
First Storm Event Monitoring	11/12/2011 – 11/15/2011
Second Storm Event Monitoring	12/11/2011 – 12/13/2011
Third Storm Event Monitoring	1/21/2012 – 1/24/2012

Monitoring was conducted for the duration of each storm and the additional 72 hr following the end of the storm. Rain gauges (Hatch750) were installed at each sampling site to monitor precipitation.

1.1.2.1 Weather Tracking and Baseline Flow Measurements

In order to improve the probability of a successful storm capture, a qualifying event was defined as having quantitative precipitation forecast of at least 0.25 inches over a 24-hour period. Sampling did not occur if baseline flow remained steady.

Baseline flow was observed at the Couser Canyon site only. This was taken into account for setting the flow-weighted sample pacing and when estimating the total stormwater discharge volume.

1.1.2.2 Water Quality Sample Collection and Analysis

Two types of samples were taken at each location during each storm event: flow-weighted composite samples collected throughout each storm and grab samples collected once during the storm and 24, 48 and 78 hours following the end of each storm event. Per the Bacteria Total Maximum Daily Load (Attachment A, Page 52, footnote 77), "The end of a storm event is when there is no more precipitation."

The flow weighted composite samples were collected using ISCO 6712 automatic sampler with a single bottle in which a series of aliquots of equal volume taken at equal increments of flow were combined to reflect average pollutant concentrations of the stormwater discharge. The flow volume was measured using HACH 750 flow rate sensor installed in the round culvert pipe. The samples were analyzed for fecal indicator bacteria (FIB) including total coliform, fecal coliform, *Enterococcus and E. coli* and for chemical constituents as shown in Table 1-3. The grab samples were analyzed only for FIB (Table 1-3).

Table 1-3. Constituents, Analytical Methods, Sample Volumes, Preservatives, Maximum Holding Times and Laboratory Reporting Limits Employed in the Analysis of Flow Weighted Composite Samples

Constituent	Analytical Method	Sample Volume (mL)	Preservative	Maximum Holding Time	Laboratory Reporting Limit (units)
Coliform, Fecal	SM 9221	100	Na2S2O3	6 hours at 4°C	2 to 1,600,000 (MPN/100mL)
Coliform, Total	SM 9221 SM 9223	100	Na2S2O3	6 hours at 4°C	2 to 1,600,000 (MPN/100mL)
Enterococcus	ASTM D6503	100	Na2S2O3	6 hours at 4°C	1 to 2,419,600 (MPN/100mL)
E. coli	SM 9223 (Colilert)	100	Na2S2O3	6 hours at 4°C	1 to 2,419,600 (MPN/100mL)
Chloride	SM4500 NH_3 B & C	250	None	25 days	0.20 (mg/L)
Sulfate	SM4500 SO_4 E	250	None	28 days	0.50 (mg/L)
Hardness, Total	EPA 200.7	250	None	6 months	5.0 (mg CaCO3/mL)
Alkalinity, Bicarbonate	SM 2320B	250	None	14 days	5 (mg/L)
Alkalinity, Carbonate	SM 2320B	250	None	14 days	5 (mg/L)
Alkalinity, Hydroxide	SM 2320B	250	None	14 days	5 (mg/L)
Antimony, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)

Antimony, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Arsenic, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Arsenic, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Boron, Total	EPA 200.7	250	Acidify to pH<2 with HNO3	6 months	50 (µg/L)
Boron, Dissolved	DO NOT PERFORM ANALYSIS				
Cadmium, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Cadmium, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Chromium, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Chromium, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Copper, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Copper, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Lead, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Lead, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Nickel, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Nickel, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Iron, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	20.0 (µg/L)
Iron, Dissolved	DO NOT PERFORM ANALYSIS				
Manganese, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Manganese, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	1.0 (µg/L)
Selenium, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Selenium, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	2.0 (µg/L)
Zinc, Total	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)
Zinc, Dissolved	EPA 200.8	250	Acidify to pH<2 with HNO3	6 months	5.0 (µg/L)

Total Dissolved Solids	SM 2540 C	1000	None	7 days	5.0 (mg/L)
Total Suspended Solids	SM 2540-D	1000	None	7 days	5 (mg/L)
Ammonia as N	SM4500 NH_3 B & C	1000	None	7 days	0.02 (mg/L)
Nitrate as N	SM4500 NO_3 E	1000	None	7 days	0.05 (mg/L)
Nitrite as N	SM4500 NO_2 B	1000	None	7 days	0.05 (mg/L)
Total Kjeldahl Nitrogen as N	SM4500 N & E	1000	None	7 days	0.5 (mg/L)
Orthophosphate as P	SM4500 P & E	1000	None	7 days	0.05 (mg/L)
Total Phosphate as P	SM4500 P, B & E	1000	None	7 days	0.05 (mg/L)
Terbuthylazine	EPA 625(m)	1000	Refrigerate	7 days	0.01 (µg/L)
Secbumeton	EPA 625(m)	1000	Refrigerate	7 days	0.01 (µg/L)
Simazine	EPA 625(m)	1000	Refrigerate	7 days	0.01 (µg/L)
Atrazine	EPA 625(m)	1000	Refrigerate	7 days	0.01 (µg/L)

Table 1-4. Constituents, Analytical Methods, Sample Volumes, Preservatives, Maximum Holding Times and Laboratory Reporting Limits Employed in the Analysis of the Grab Samples

Analytical Parameter	Analytical Method	Sample Volume (mL)	Preservative	Maximum Holding Time	Laboratory Reporting Limit (units)[3]
Coliform, Fecal	SM 9221	100	Na2S2O3	6 hours at 4°C	2 to 1,600,000 (MPN/100mL)
Coliform, Total	SM 9221 SM 9223	100	Na2S2O3	6 hours at 4°C	2 to 1,600,000 (MPN/100mL)
Enterococcus	ASTM D6503	100	Na2S2O3	6 hours at 4°C	1 to 2,419,600 (MPN/100mL)
E. coli	SM 9223 (Colilert)	100	Na2S2O3	6 hours at 4°C	1 to 2,419,600 (MPN/100mL)

1.1.2.3 In-Situ Physical Parameter Measurements

In addition to grab samples and flow-weighted composite samples, physical parameters including dissolved oxygen, water temperature, specific conductance, pH and turbidity were measured at the centroid and sides of the stream using a Horiba U-10 multi-parameter water quality meter. When flow was too low, stormwater was gathered within a clean bucket for the measurements. Table 1-5 lists the *in-situ* parameters together with the corresponding measurement methods, units and ranges.

Table 1-5. *In-Situ* Measurement Types Collected at Both Locations During Each Monitoring Event.

Parameter	Principle	Units	Range	Accuracy
Temperature	Thermistor	Degrees Celsius (°C)	0 – 50 oC	+/- 0.1 °C
Dissolved Oxygen	Membrane/ galvanic cell	mg/L	0 – 19.9	+/- 0.1 mg/L
pH	Glass Electrode	s.u.	0 – 14.0	+/-0.1 s.u.
Conductivity	Alternating four-electrode	uS/cm	0 - 100	+/-1 uS/cm
Turbidity	Scattering/ transmitting light	NTUs	0 - 999	+/-1 NTU

1.1.2.4 Calculations of Flow

A detailed description of calculations performed to determine sample pacing and aliquot volumes is provided in the Monitoring Plan (Appendix B). At Couser Canyon, the creek flows through a set of twin culverts as illustrated in Figure 2-10 but sampling and flow measurements were conducted in only one of the two concrete pipes. For the purpose of flow calculations, it was assumed that equal valumes flow through both culverts.

Section 2
Results

2.1 Couser Canyon

2.1.1 – Flow and *In-Situ* Measurement Results

2.1.1.1 First Storm Event – November 12, 2011

Field crew arrived on site November 11, 2011 (Friday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations. The mean base flow was 0.578 cubic feet per second (cfs).

According to the on-site rain gauge, measurable precipitation (0.01 inches) began at 4:17 a.m. on November 12, 2011 (Saturday) and ended at 5:52 p.m. the same day (9.5 hours) for a total of 0.77 inches. The storm event was not uniform as it arrived in two main fronts. The first front lasted about 2 hours Saturday morning and deposited nearly 0.27 inches of rain. For the next 6 hours, no measurable precipitation was recorded. The second front arrived at 1:21 p.m. and deposited the remaining 0.54 inches over the course of 4 hours. While the rain intensity varied throughout the day, the flow rate was steady throughout the storm as shown on the hydrograph (Figures 2-1 and 2-2). Precipitation wise, the peak of the storm event occurred around 2:20 p.m. Flow wise, the peak occurred at 5:45 p.m. A picture of the flow through the outfall is provided in Figure 2-6. Only one of the twin culverts is shown in the photo.

The storm grab sample (at 4:50 p.m.), subsequent post-storm grab samples, and the composite sample were collected successfully, resulting in 100-percent capture for this event.

The total discharge for the event was 44,937 cubic feet assuming (1) mean dry weather flow of 0.578 cfs; and (2) equal flow volumes through both pipes.

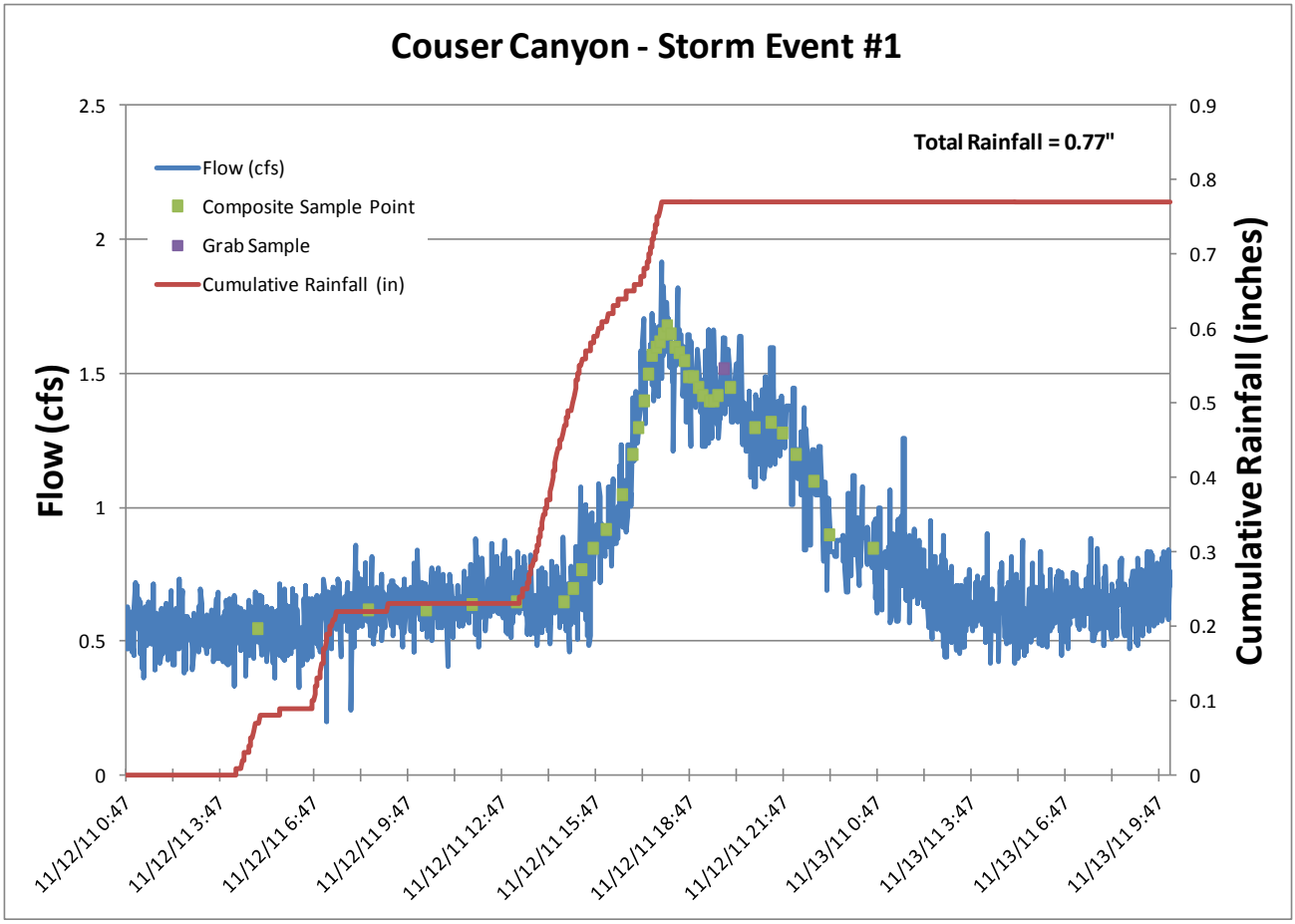

Figure 2-1. Couser Canyon Hydrograph – November 12, 2011 Strom Event

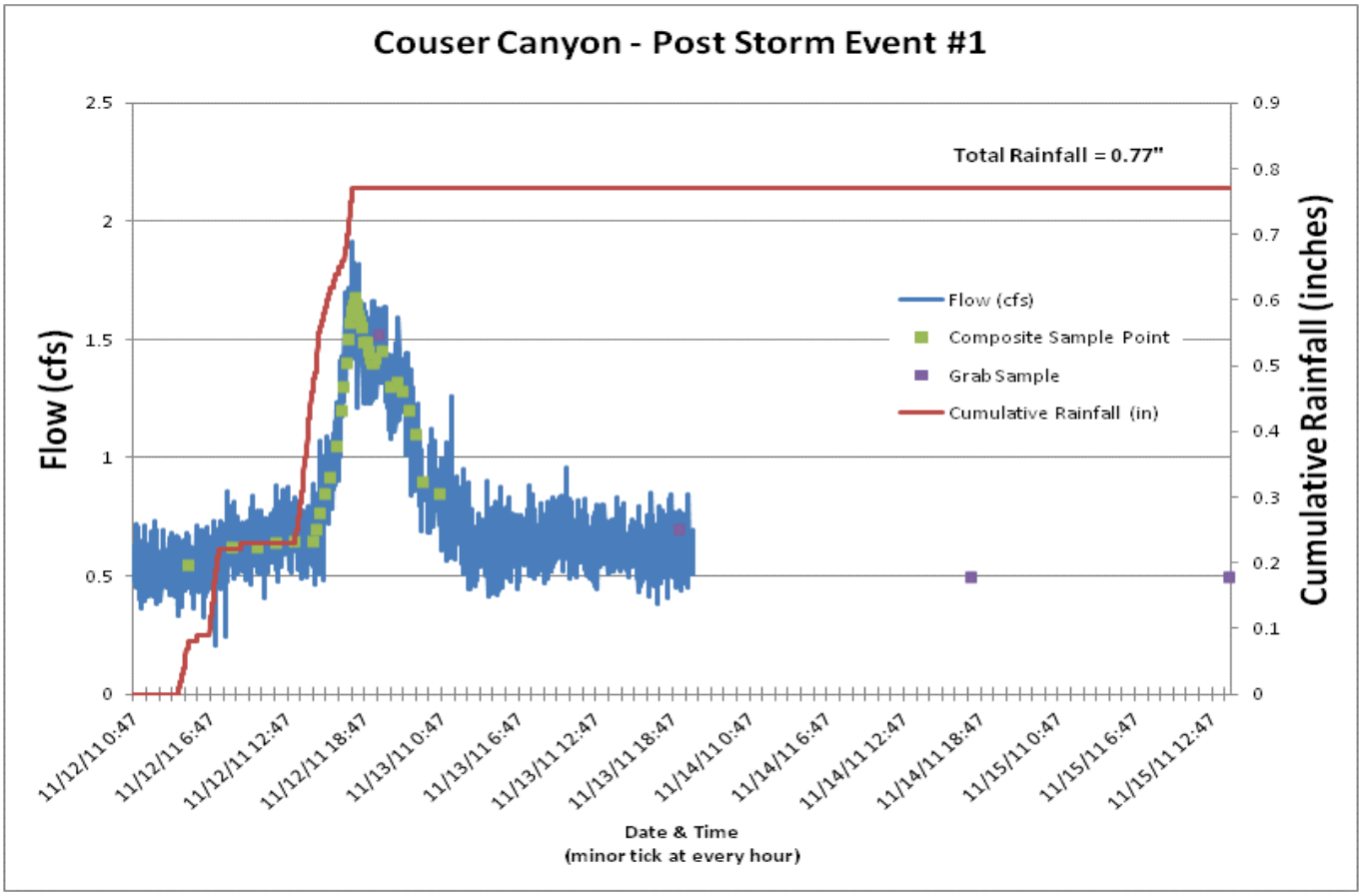

Figure 2-2. Couser Canyon – November 12, 2011 Storm Event and Post-Storm Sampling. Flow monitoring was discontinued following the end of the storm event. No precipitation occurred after 11/13/2011 and, based on visual observations, baseflow remained the same throughout the 72-hour post-storm sampling period.

The results of the in-situ measurements taken during the storm event and every 24 hours for 72 hours thereafter are presented in Table 2-1 and illustrated in Figures 2-3 through 2-5. Water temperature, pH, specific conductance and dissolved oxygen concentrations remained fairly constant throughout this time period while turbidity increased from about 10 NTU to nearly 300 NTU during the storm event and returned to its original level 24, 48 and 72 hours following the end of the storm.

Table 2-1. Results of the *In-Situ* Field Measurements for First Storm Event at Couser Canyon

	Analytical Constituent	Units	Range	11/12/2012						11/13 2011		11/14 2011	11/15 2011
				08:25	09:15	10:05	13:10	17:53	19:50	00:36	19:15	18:00	14:00
Storm Event #1	Water Temperature	°C	0 - 50	13.9	13.8	14.1	13.9	16.2	14	12.9	15.4	16.2	17.2
	pH	s.u.	0 – 14	7.81	7.82	7.85	8.42	8.66	8.36	8.54	8.64	8.59	8.69
	Dissolved Oxygen	mg/L	0 – 19.9	14.26	14.51	13.21	12.57	11.63	12.71	11.92	11.71	11.27	11.1
	Specific Conductivity	uS/cm	0 – 10,000	1800	1800	1800	1890	1660	1750	1870	1880	1630	1890
	Turbidity	NTU	0 - 999	54	79	53	47	11	294	22	14	19	11

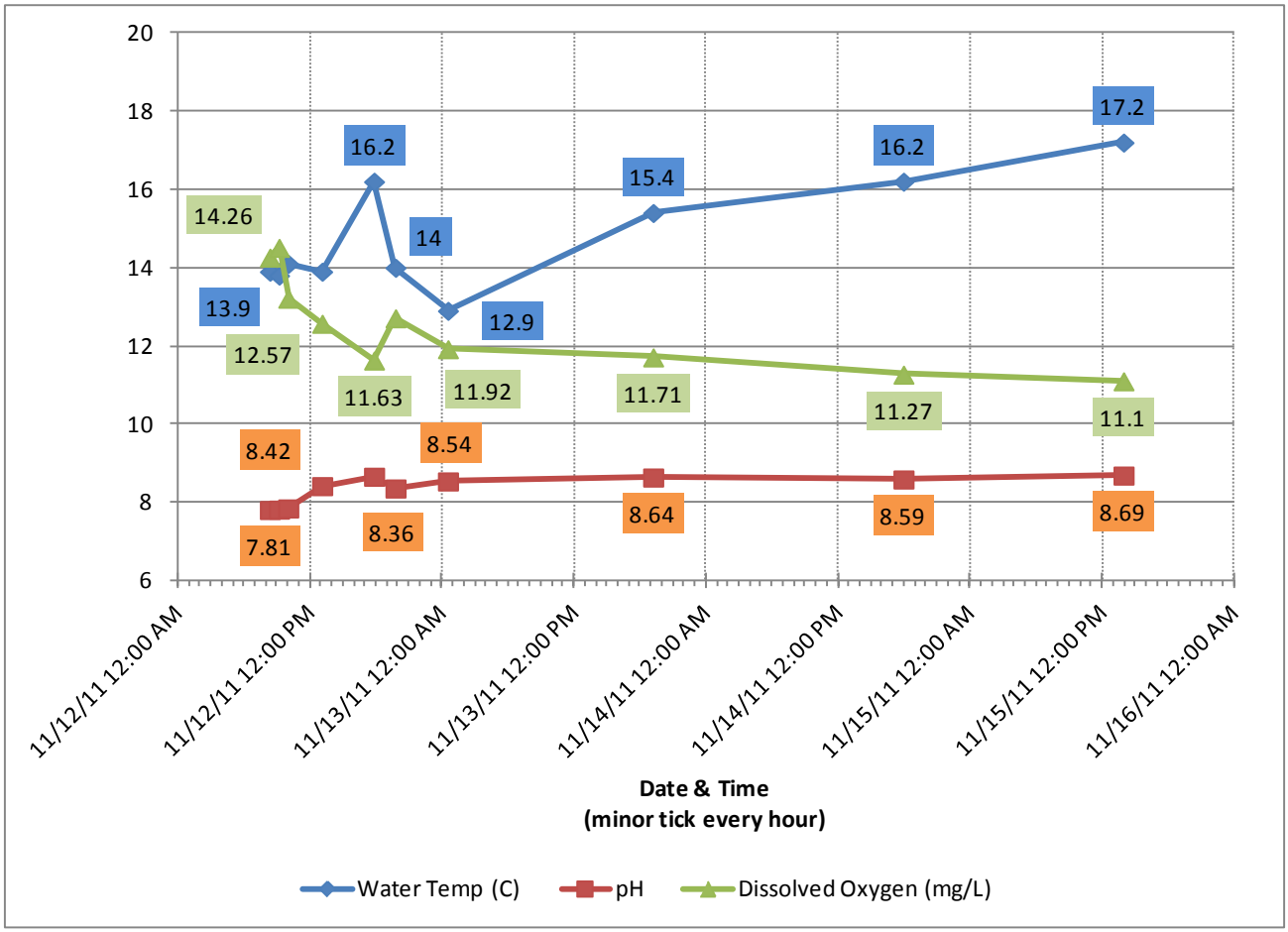

Figure 2-3. Water Temperature, pH and Dissolved Oxygen Concentrations – Couser Canyon, November 12-16, 2011.

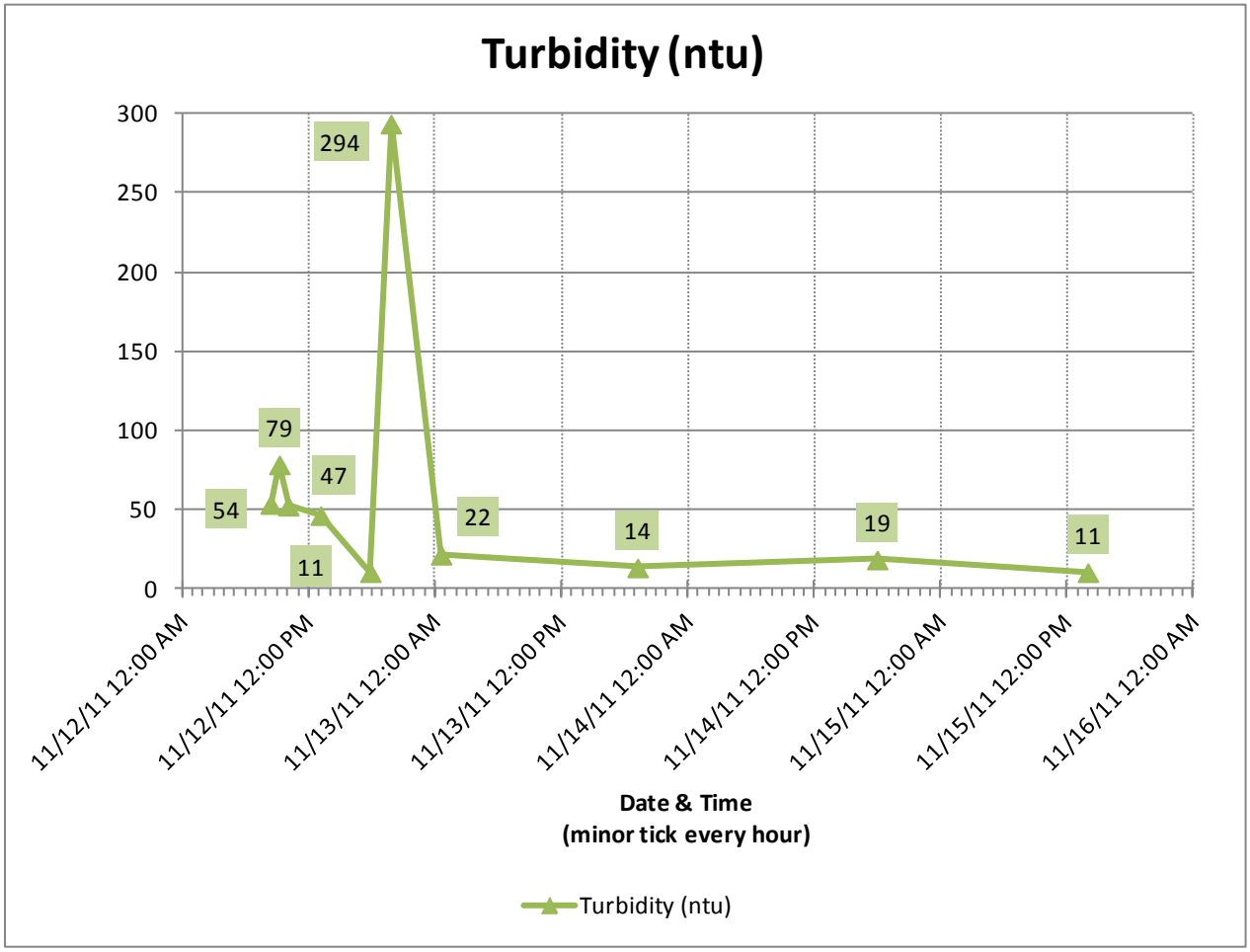

Figure 2-4. Turbidity– Couser Canyon, November 12-16, 2011.

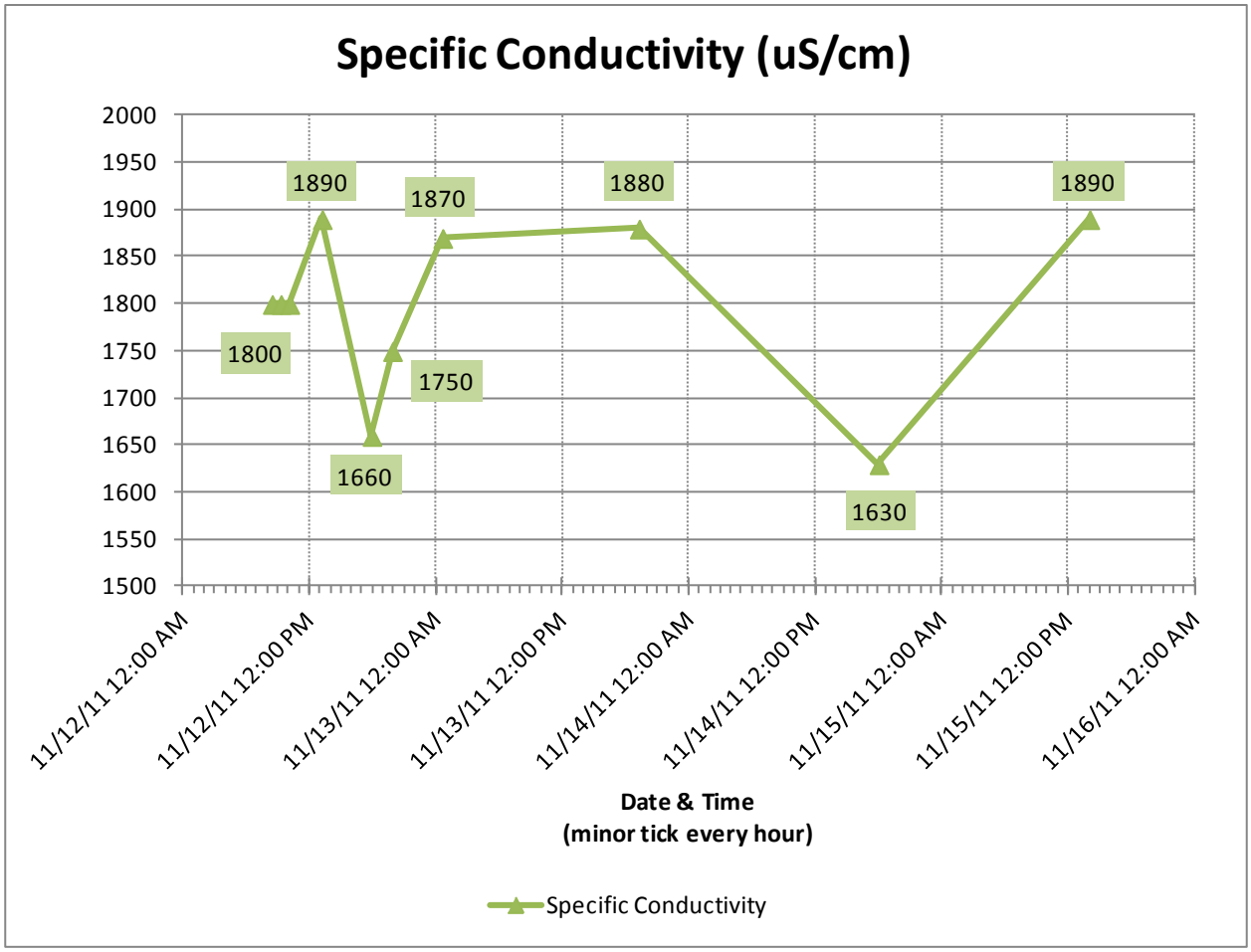

Figure 2-5. Specific Conductivity – Couser Canyon, November 12-16, 2011.

Figure 2-6. Stormwater Flow from One of the Twin Culverts at Couser Canyon on November 12, 2011 at 7:05pm.

2.1.1.2 Second Storm Event – December 12, 2011

Field crew arrived onsite December 11, 2011 (Sunday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations. The mean base flow was 0.323 cfs.

According to the onsite rain gauge, measurable precipitation (0.01 inches) began at 9:18 a.m. on December 12, 2011 (Monday) and ended at 3:18 p.m. the same day for a total of 0.84 inches. The storm event was fairly uniform with the rain intensity peaking between 1 and 2 p.m. During this time, 0.25 inches of rain fell over 20 minutes. The flow rate was steady throughout the storm as shown in the hydrograph (Figure 2-7). Post storm, the flow remained at baseflow as additional grab samples were collected (Figure 2-8). A picture of the flow through the outfall is provided in Figure 2-12. Both culverts are shown in the photo.

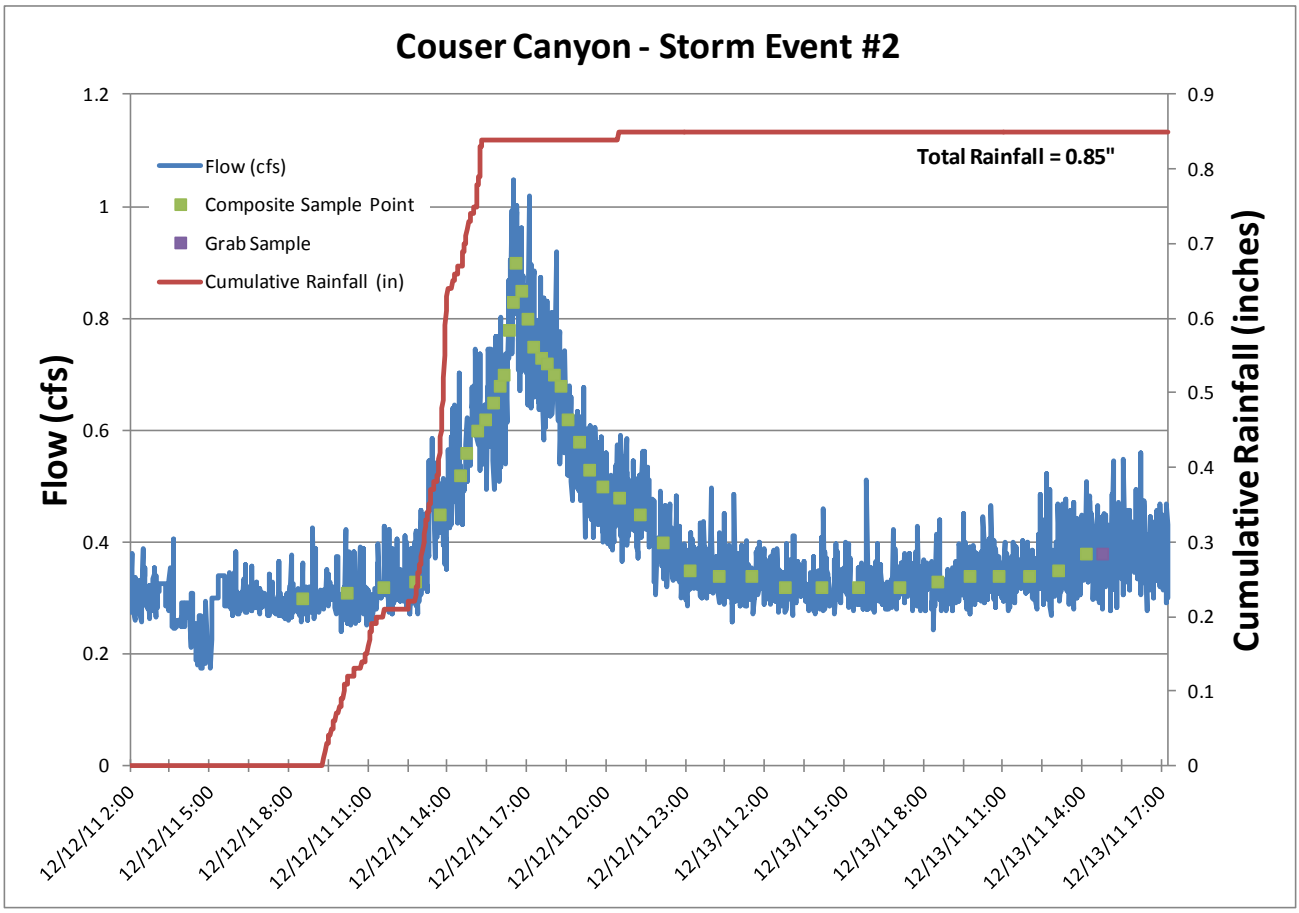

Figure 2-7. Couser Canyon Hydrograph – December 12, 2011 Storm Event.

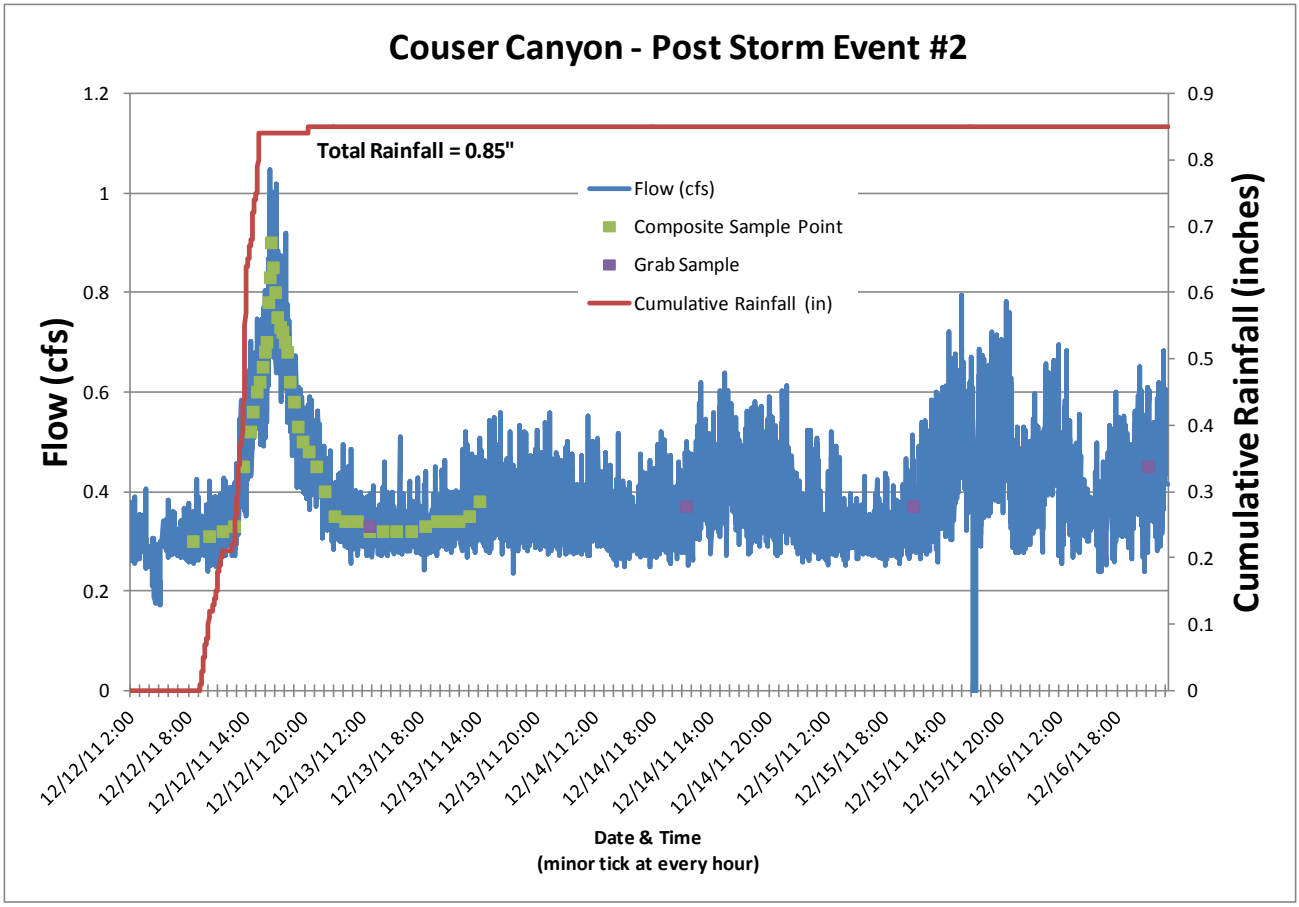

Figure 2-8. Couser Canyon – December 12, 2011 Storm Event and Post-Storm Sampling.

Precipitation wise, the peak of the storm event occurred around 1:55 p.m. Flow wise, the peak of the storm event occurred at 5:25 p.m. The composite sample was collected successfully resulting in 100-percent capture for this event (Figure 2-8). Due to a miscalculation, the storm grab sample (December 13, 2011 at 2:45 a.m.) was collected after precipitation ended and flow returned to base level but it was still collected within the first 24 hours of the storm (Figure 2-7); the three post storm grab samples were collected successfully at approximate 24-hour intervals following the end for the storm (Figure 2-8).

The total discharge for the event was 16,264 cubic feet assuming (1) mean dry weather flow of 0.323 cfs; and (2) equal flow volumes through both pipes.

The results of the in-situ measurements taken during the storm event and every 24 hours for 3 days thereafter are provided in Table 2-2 and illustrated in Figures 2-9 through 2-11. Water temperature, pH, specific conductance, turbidity and dissolved oxygen remained fairly constant throughout the storm.

Table 2-2. Results of the *In-Situ* Field Measurements for Second Storm Event at Couser Canyon

	Analytical Constituent	Units	Range	12/11 2012	12/13/2012					12/14 2012	12/15 2012	12/16 2012
				13:01	13:40	14:10	14:40	10:40	12:26	11:30	11:00	11:15
Storm Event #2	Water Temperature	°C	0 - 50	13.38	10.99	11	11.04	12.34	13.04	12.99	11.71	12.64
	pH	s.u.	0 – 14	8.2	8.42	8.1	8.06	8.27	8.32	8.39	8.46	8.45
	Dissolved Oxygen	mg/L	0 – 19.9	11.19	11.08	11.15	10.87	10.89	11.02	11.47	12.76	11.28
	Specific Conductivity	uS/cm	0 – 10,000	1550	1440	1540	1520	1530	1500	1430	1330	1520
	Turbidity	NTU	0 - 999	14.8	40.6	39.8	44.1	25.9	26.7	21.6	19.1	20.3

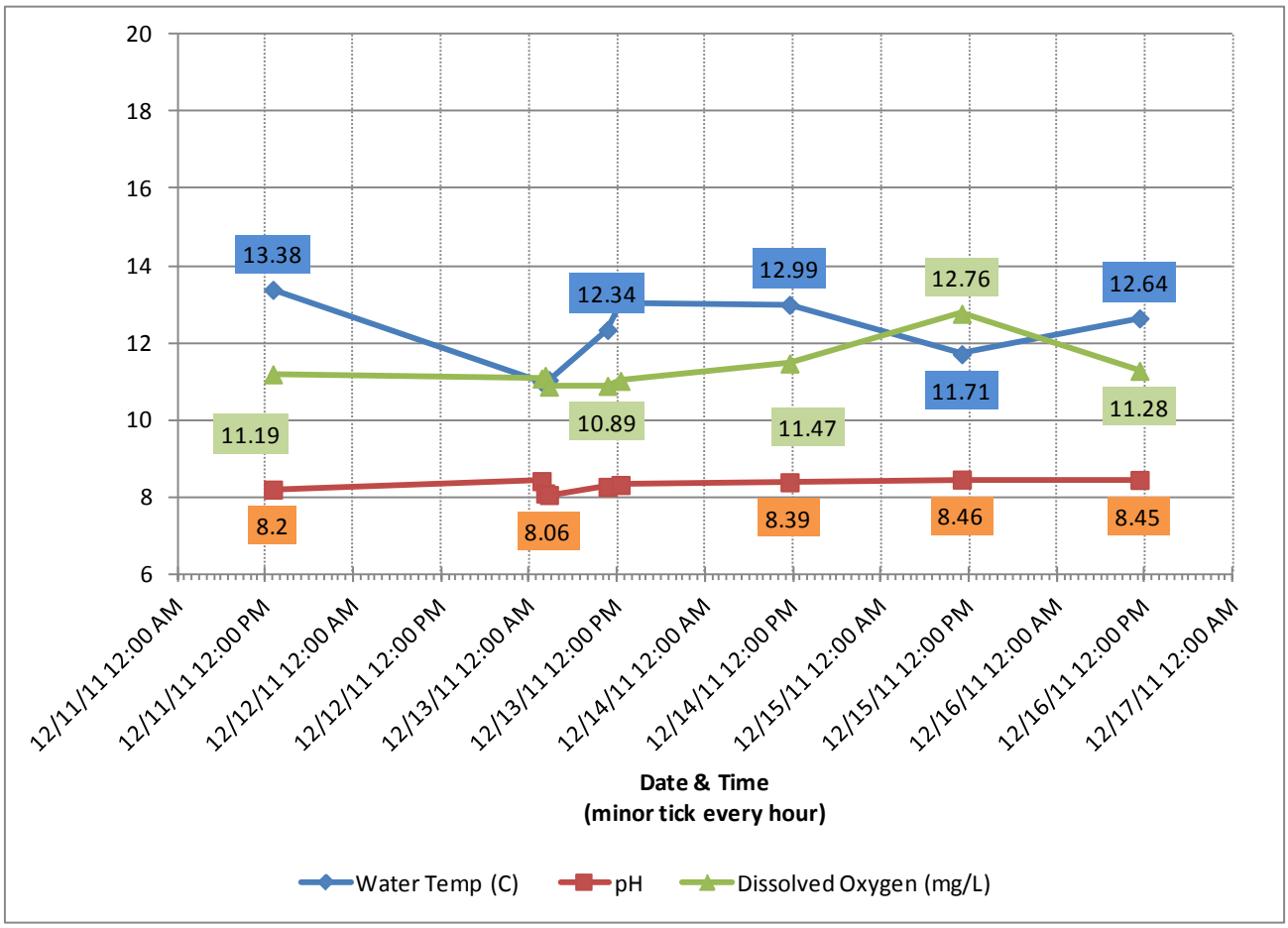

Figure 2-9. Water Temperature, pH and Dissolved Oxygen Concentrations – Couser Canyon, December 11-17, 2011.

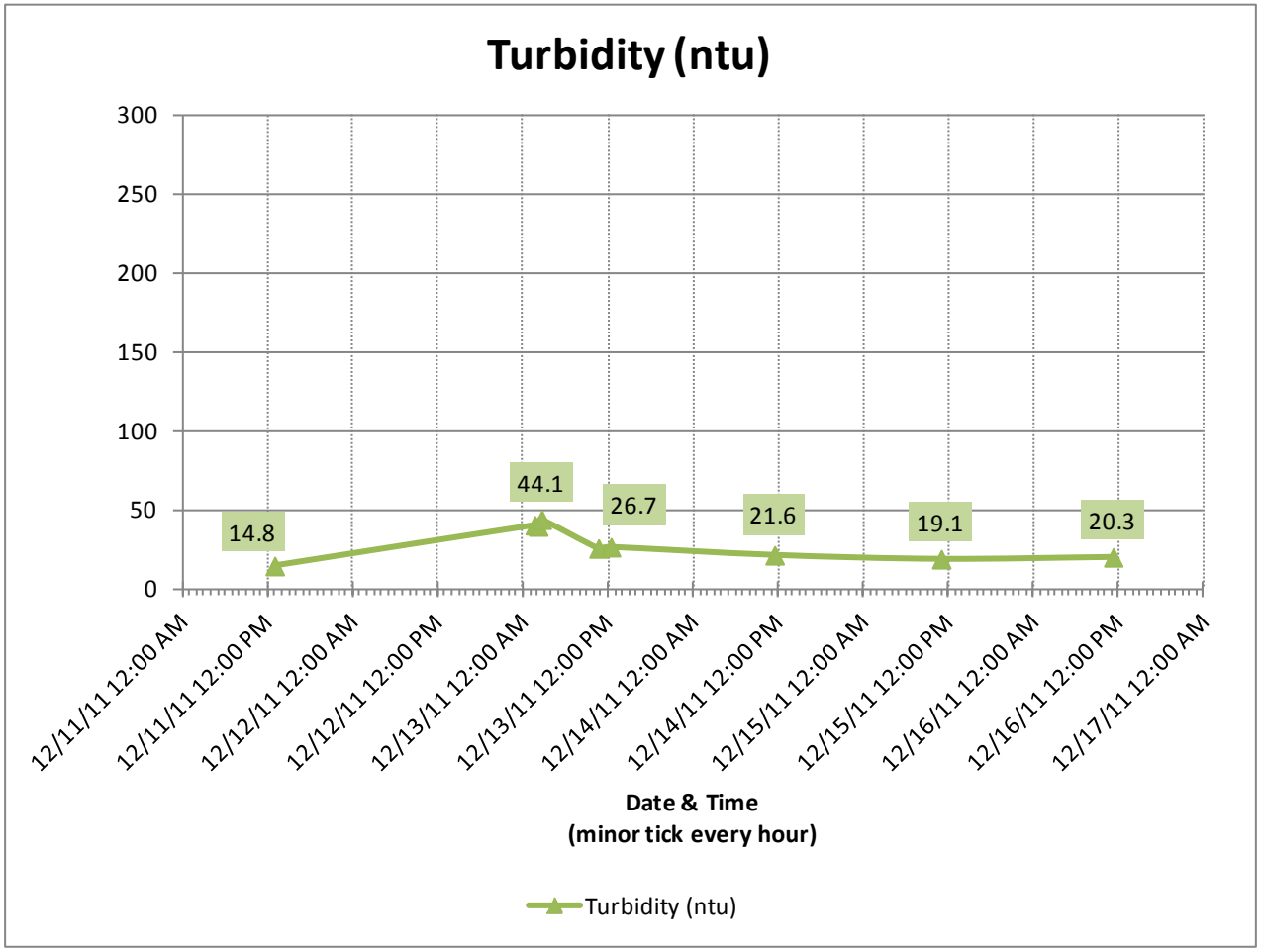

Figure 2-10. Turbidity – Couser Canyon, December 11-17, 2011.

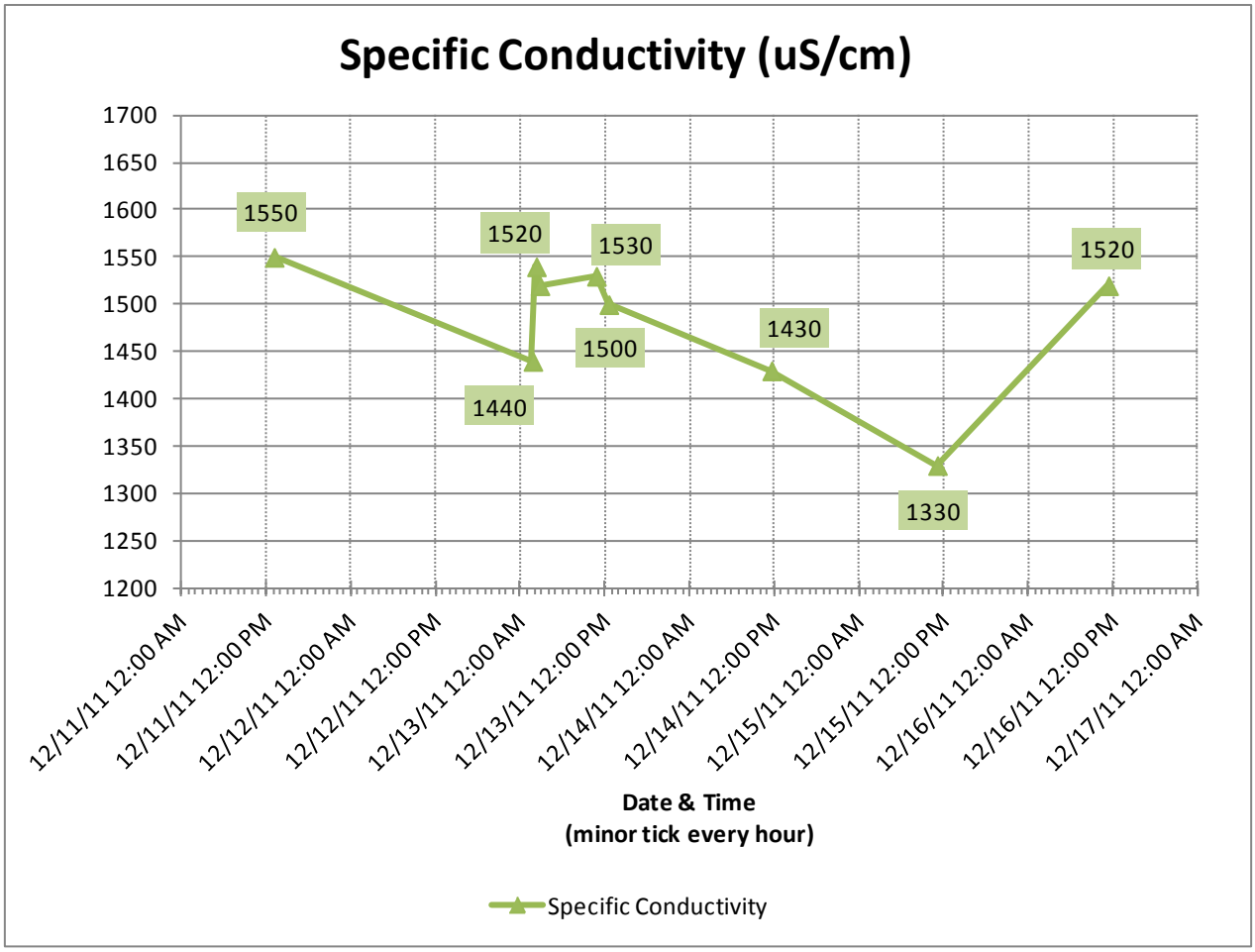

Figure 2-11. Specific Conductivity – Couser Canyon, December 11-17, 2011.

Figure 2-12. Stormwater Flow through both Culverts on December 13, 2011 at 10:14 a.m.

2.1.1.3 Third Storm Event – January 21, 2012

Field crew arrived onsite January 20, 2012 (Friday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations. The mean base flow was 0.790 cfs. A photo of the flow through both culverts is provided in Figure 2-18.

According to the onsite rain gauge, measurable precipitation (0.01 inches) began at 7:59 a.m. January 21, 2012 (Saturday) and ended at 12:36 p.m. the same day for a total of 0.37 inches. The storm event was fairly uniform with no localized intensity peaks (Figures 2-13). After a dry and sunny period on Sunday, a steady and drizzly rain event returned all day Monday with quick intensity moments that observed 0.1 inches over the course of a 10-minute period. The post stormwater sample grabs were taken during this second rain event that totaled 0.56 inches of precipitation. A hydrograph of this second "post-storm" event is provided in Figure 2-14 showing the timing of the "post-storm" grab sample collection. According to the hydrograph, the 24 hour post-storm grab sample was not affected by the second event but the subsequent 48 and 72 hour samples were.

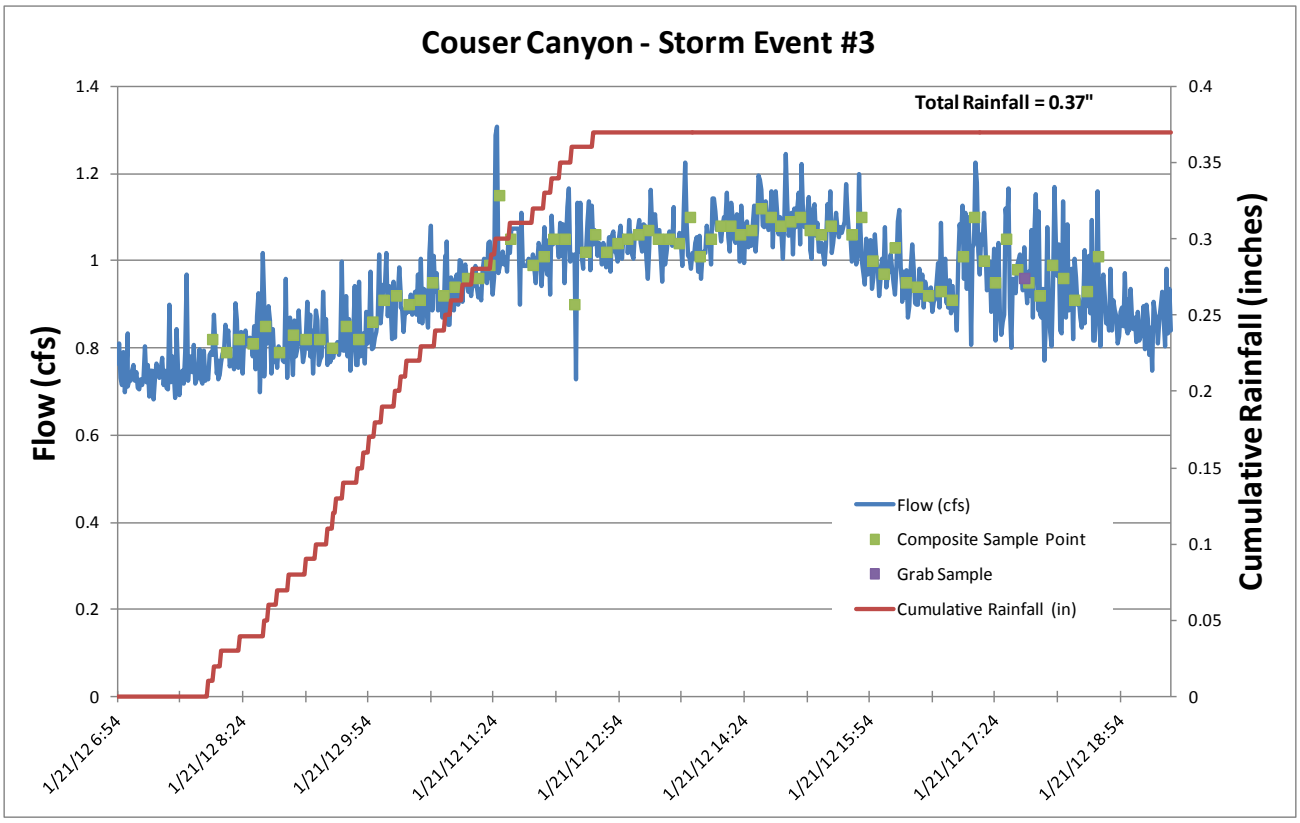

Figure 2-13. Couser Canyon Hydrograph – January 21, 2012 Storm Event

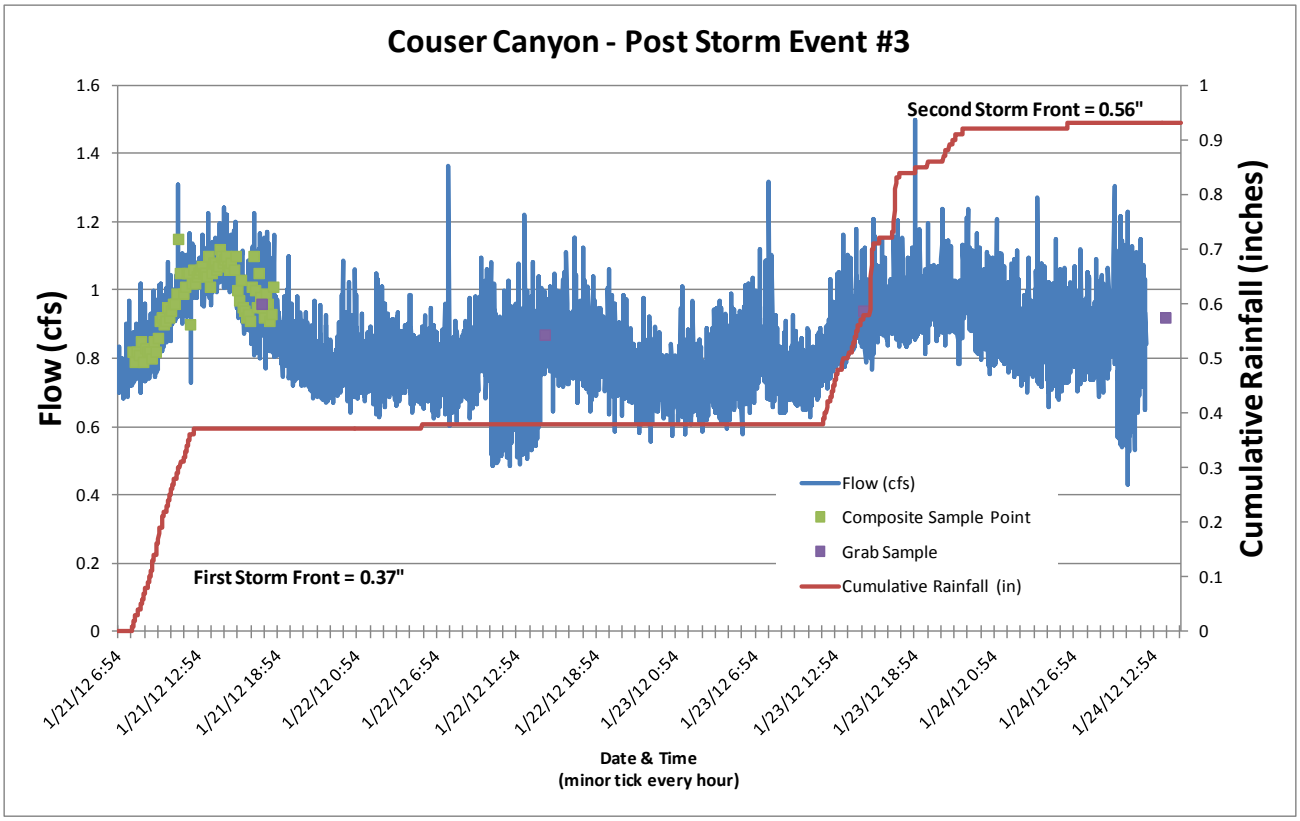

Figure 2-14. Couser Canyon – January 21, 2012 Storm Event and Post-Storm Sampling.

Precipitation wise, the peak of the storm occurred around 9:29 a.m.; flow wise, it occurred at 3:45 p.m. The flow throughout the storm event was steady (Figure 2-11). The storm grab sample (at 3:25 p.m.), subsequent post storm grab samples and the composite sample were collected successfully, resulting in 100-percent capture for this event.

The total discharge for the event was 14,047 cubic feet assuming (1) mean dry weather flow of 0.790 cfs; and (2) equal flow volumes through both pipes.

The results of the in-situ measurements taken during the storm event and every 24 hours for 3 days thereafter (24 hours after and twice during the second storm event) are given in Table 2-3 and illustrated in Figures 2-15 through 2-17. Water temperature, pH, and dissolved oxygen remained fairly constant throughout the storm but a 3-fold increase in turbidity and a 20-fold drop in specific conductance occurred during the initial storm event. This drop in conductance may have been due to an equipment malfunction. A duplicate measurement was not conducted to confirm the reading.

Table 2-3. Results of the *In-Situ* Field Measurements for Third Storm Event at Couser Canyon

	Analytical Constituent	Units	Range	12/13/2012						12/22 2012	12/23 2012	12/24 2012
				06:45	15:25	15:55	16:30	16:50	18:54	12:15	12:07	12:25
Storm Event #3	Water Temperature	°C	0 - 50	11.9	13.75	13.65	13.34	13.29	12.53	13.32	12.15	13.96
	pH	s.u.	0 – 14	8.22	8.01	7.49	7.72	7.33	8.1	7.6	8.08	8.07
	Dissolved Oxygen	mg/L	0 – 19.9	9.27	8.77	9.47	10.07	10.46	10.7	8.68	8.84	8.41
	Specific Conductivity	uS/cm	0 – 10,000	1640	1570	1590	1590	77	1600	1630	1620	1650
	Turbidity	NTU	0 - 999	16.15	136	118	96.4	76	45.6	32	37.6	29.5

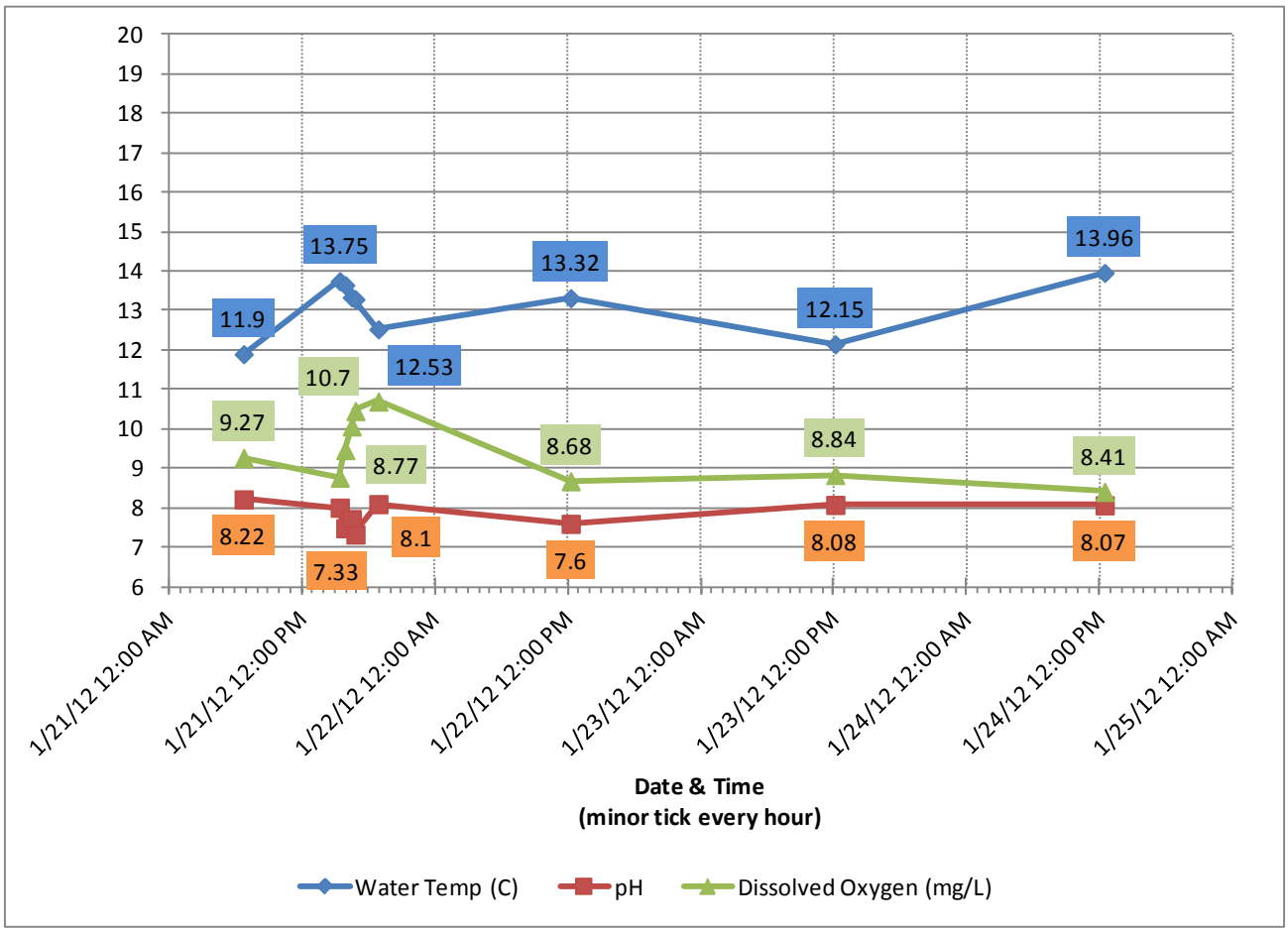

Figure 2-15. Water Temperature, pH and Dissolved Oxygen Concentrations – Couser Canyon, January 21-25, 2012.

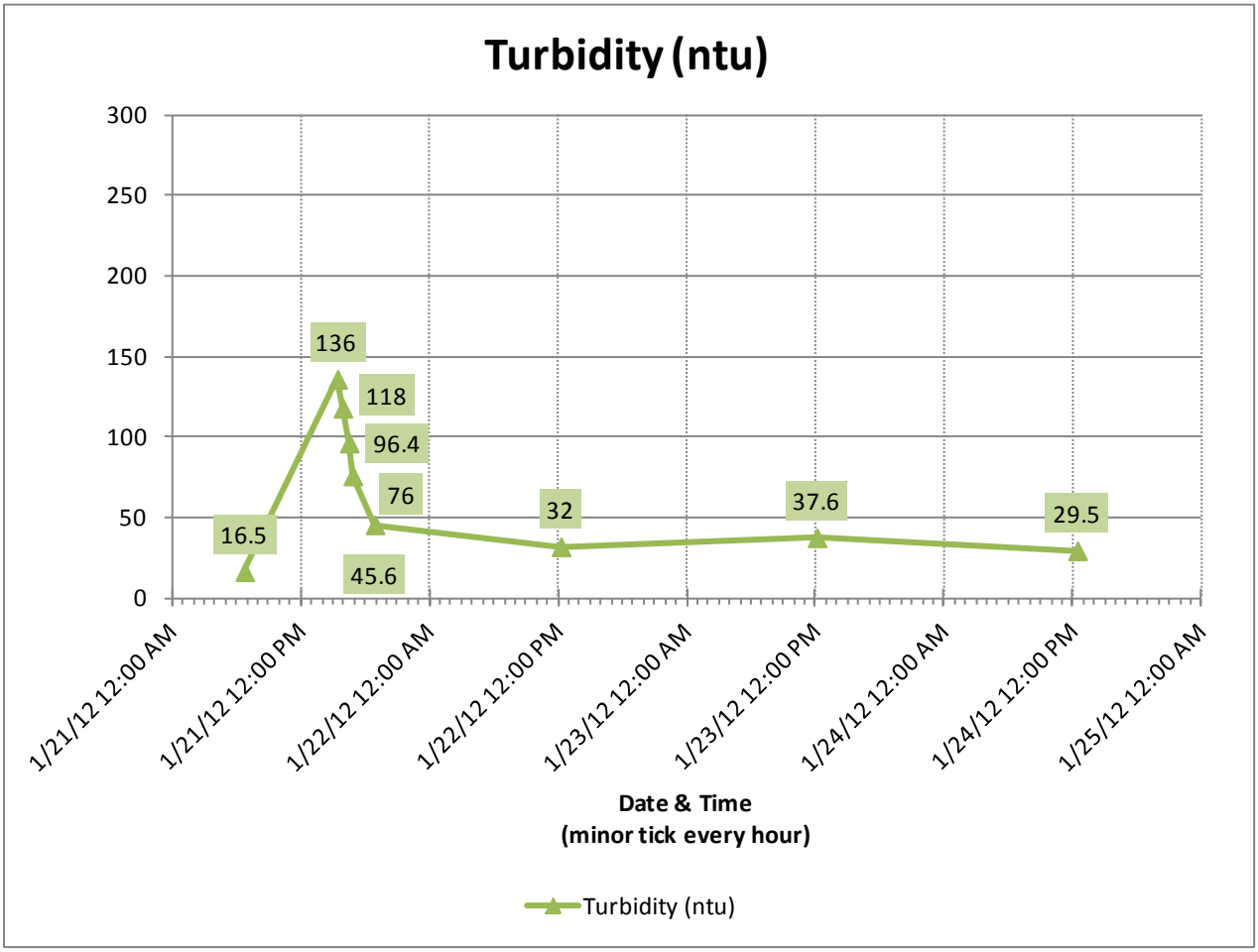

Figure 2-16: Turbidity– Couser Canyon, January 21-25, 2012.

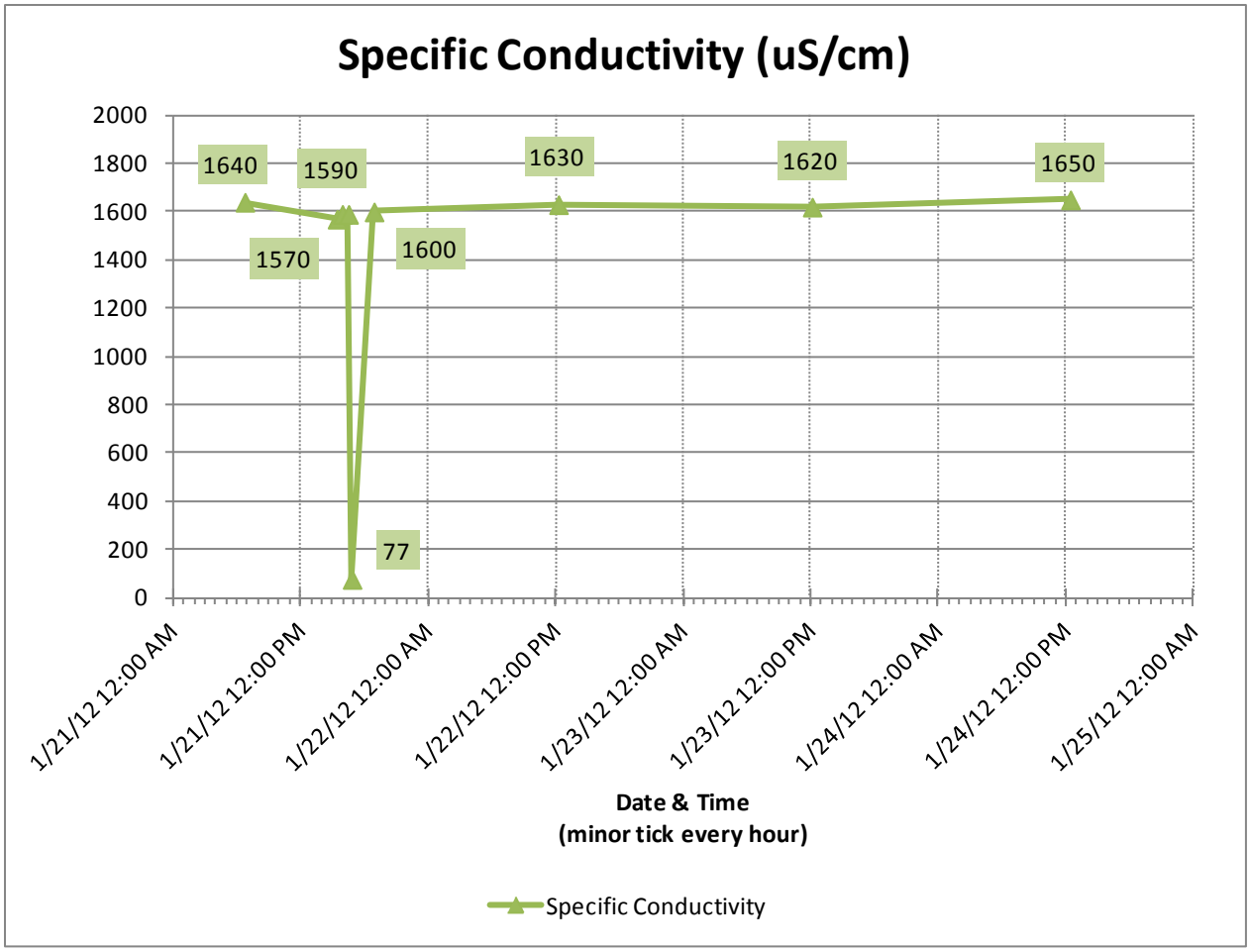

Figure 2-17. Specific Conductivity – Couser Canyon, January 21-25, 2012.

Figure 2-18. Stormwater Flow through both Culverts on January 21, 2011 at 3:11 p.m.

2.1.2 Couser Canyon – Flow Weighted Composite and Grab Sample Analysis Results.

The results of chemical constituent analysis for the flow-weighted composite samples collected at Couser Canyon over the three storm events are summarized in table 2-4. Table 2-5 shows the results of the composite sample microbiology analysis; the grab sample fecal indicator bacteria concentrations together with the corresponding sample times are presented in Table 2-6.

Table 2-4. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Couser Canyon over the Three Storm Events.

Analytical Constituent	Units	Reporting Limit	Method Detection Limit	Storm Event #1 11/13/2011 00:36	DQI	Storm Event #2 12/13/2011 14:15	DQI	Storm Event #3 01/21/12 18:38	DQI
Alkalinity, Bicarbonate	mg CaCO3/L	5	5	130		102		124	
Alkalinity, Carbonate	mg CaCO3/L	5	5	ND	U	ND	U	ND	U
Alkalinity, Hydroxide	mg CaCO3/L	5	5	ND	U	ND	U	ND	U
Boron, Total	mg/L	0.005	0.003	0.21		0.20		0.19	
Chloride	mg/L	0.20	0.05	180		140		180	
Sulfate	mg/L	0.50	10.0/5.0	335		255		264	
Hardness, Total	mg CaCO3/L	5.0	100	510		483		514	
Antimony, Dissolved	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Antimony, Total	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Arsenic, Dissolved	mg/L	0.001	0.0001	0.0004	J	0.0006	J	0.0003	J
Arsenic, Total	mg/L	0.001	0.0001	0.0007	J	0.001		0.001	
Cadmium, Dissolved	mg/L	0.001	0.0002	ND	U	ND	U	ND	U

Table 2-4. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Couser Canyon over the Three Storm Events.

Analytical Constituent	Units	Reporting Limit	Method Detection Limit	Storm Event #1 11/13/2011 00:36	DQI	Storm Event #2 12/13/2011 14:15	DQI	Storm Event #3 01/21/12 18:38	DQI
Cadmium, Total	mg/L	0.001	0.0002	0.0004	J	0.0004	J	0.007	
Chromium, Dissolved	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Chromium, Total	mg/L	0.005	0.0005	0.004	J	0.003	J	0.003	J
Copper, Dissolved	mg/L	0.005	0.0005	0.002	J	0.002	J	0.002	J
Copper, Total	mg/L	0.005	0.0005	0.012		0.007		0.008	
Lead, Dissolved	mg/L	0.002	0.0005	ND	U	ND	U	ND	U
Lead, Total	mg/L	0.002	0.0005	0.005		ND	U	0.002	
Nickel, Dissolved	mg/L	0.002	0.0002	0.0007	J	0.0006	J	0.0008	J
Nickel, Total	mg/L	0.002	0.0002	0.003		0.002		0.003	
Iron, Total	mg/L	0.020	0.035	6.61		4.78		4.32	
Manganese, Dissolved	mg/L	0.001	0.0001	0.003		0.002		0.003	
Manganese, Total	mg/L	0.001	0.0001	0.283		0.184		0.163	
Selenium, Dissolved	mg/L	0.002	0.0006	ND	U	ND	U	ND	U
Selenium, Total	mg/L	0.002	0.0006	0.0007	J	0.0008	J	0.0006	J

Table 2-4. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Couser Canyon over the Three Storm Events.

Analytical Constituent	Units	Reporting Limit	Method Detection Limit	Storm Event #1 11/13/2011 00:36	DQI	Storm Event #2 12/13/2011 14:15	DQI	Storm Event #3 01/21/12 18:38	DQI
Zinc, Dissolved	mg/L	0.005	0.0008	0.012		0.008	J	0.008	
Zinc, Total	mg/L	0.005	0.0008	0.193		0.035		0.034	
Total Dissolved Solids	mg/L	5.0	1.0	1130		835		1060	
Total Suspended Solids	mg/L	5	1.0	277		247		124	
Ammonia as N	mg/L	0.02	0.02	0.22		ND		0.07	J
Nitrate as N	mg/L	0.05	0.22/0.04	19.5		28.0		14.9	J
Nitrite as N	mg/L	0.05	0.007	0.03	J	0.03	J	0.02	
Total Kjeldahl Nitrogen as N	mg/L	0.5	0.3	0.4	J	1.0		0.3	J
Orthophosphate as P	mg/L	0.05	0.007	0.22		0.13		0.14	
Total Phosphorus as P	mg/L	0.05	0.02	0.37		0.25		0.26	
Terbuthylazine	µg/L	0.01	0.01	ND	U	ND	U	ND	U
Secbumeton	µg/L	0.01	0.01	ND	U	3.27		ND	U
Simazine	µg/L	0.01	0.01	0.46		ND	U	2.9	
Atrazine	µg/L	0.01	0.01	ND	U	0.05		ND	U

Table 2-5. Microbiology Analysis Results for the Flow-Weighted Composite Samples Collected at Couser Canyon over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Storm Event #1	Storm Event #2	Storm Event #3
Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	17,000	1,300	300
Coliform, Total	MPN/100 mL	2 to 1,600,000	2	30,000	14,000	11,000
Enterococcus	MPN/100 mL	1 to 2,419,600	1	4,611	1,095	708
E. coli	MPN/100 mL	1 to 2,419,600	1	6,127	1,250	548

Table 2-6. Microbiology Analysis Results for the Grab Samples Collected at Couser Canyon Over the Three Storm Events

	Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Date of Sample	Time of Sample	Concentration Detected
Storm Event #1	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	11/12/2011	19:50	3,000
					11/13/2011	19:15	500
					11/14/2011	18:00	220
					11/15/2011	14:00	170
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	11/12/2011	19:50	240,000
					11/13/2011	19:15	5,000
					11/14/2011	18:00	3,000
					11/15/2011	14:00	3,500
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	11/12/2011	19:50	4,284
					11/13/2011	19:15	269
					11/14/2011	18:00	411
					11/15/2011	14:00	133
	E. coli	MPN/100 mL	1 to 2,419,600	1	11/12/2011	19:50	7,491
					11/13/2011	19:15	201
					11/14/2011	18:00	238
					11/15/2011	14:00	167

Table 2-6. Microbiology Analysis Results for the Grab Samples Collected at Couser Canyon Over the Three Storm Events

	Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Date of Sample	Time of Sample	Concentration Detected
Storm Event #2	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	12/13/2011	02:45	130
					12/14/2011	11:30	80
					12/15/2011	11:00	500
					12/16/2011	11:15	140
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	12/13/2011	02:45	1,100
					12/14/2011	11:30	2,200
					12/15/2011	11:00	13,000
					12/16/2011	11:15	800
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	12/13/2011	02:45	517
					12/14/2011	11:30	387
					12/15/2011	11:00	488
					12/16/2011	11:15	150
	E. coli	MPN/100 mL	1 to 2,419,600	1	12/13/2011	02:45	387
					12/14/2011	11:30	201
					12/15/2011	11:00	435
					12/16/2011	11:15	153
Storm Event #3	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	1/21/2012	17:45	800
					1/22/2012	15:05	900
					1/23/2012	15:05	800
					1/24/2012	13:50	110
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	1/21/2012	17:45	30,000
					1/22/2012	15:05	7,504
					1/23/2012	15:05	3,000
					1/24/2012	13:50	1,300
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	1/21/2012	18:00	689
					1/22/2012	15:05	317
					1/23/2012	15:00	350
					1/24/2012	14:10	387
	E. coli	MPN/100 mL	1 to 2,419,600	1	1/21/2012	18:25	579
					1/22/2012	15:30	461
					1/23/2012	15:05	365
					1/24/2012	14:15	192

2.2 Blossom Valley

2.2.1 – Flow and *In-Situ* Measurement Results

2.2.1.1 First Storm Event – November 12, 2011

Field crew arrived on site November 11, 2011 (Friday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations.

According to the onsite rain gauge, measurable precipitation (0.01 inches) began at 6:49 a.m. November 12, 2011 (Saturday) and ended at 6:55 p.m. the same day for a total of 1.37 inches.

The first storm event was not uniform as it arrived in two main fronts (Figure 2-19). The first front, beginning at 8:26 a.m., lasted an hour and deposited near 0.24 inches of rain. For the next 6 hours, no measurable precipitation was recorded. The second front arrived at 1:21 p.m. and deposited the remaining 1.13 inches over the course of 5 hours. A photo of the flow through the culvert is provided in Figure 2-23.

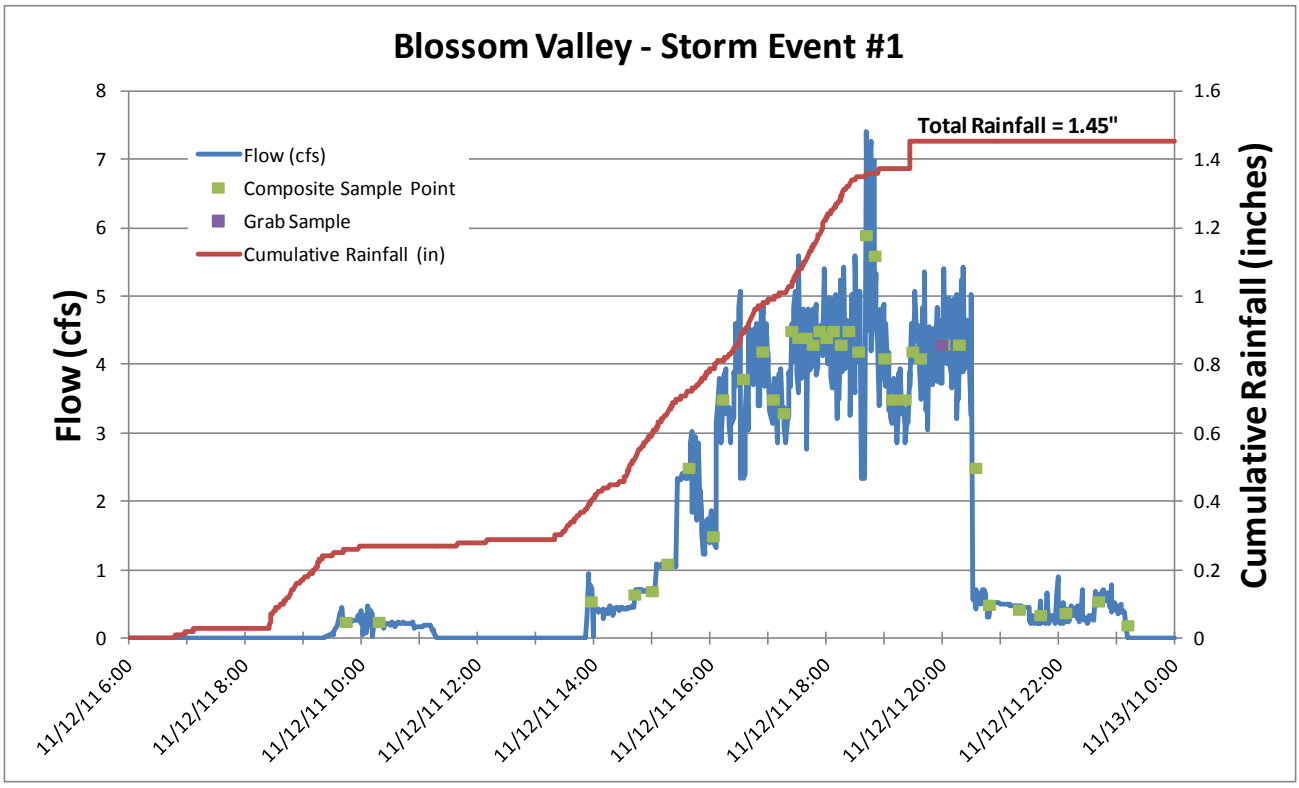

Figure 2-19. Blossom Valley Hydrograph – November 12, 2011.

Precipitation wise, the peak of the storm event occurred around 5:58 p.m. Flow wise, the peak of the storm event occurred at 7:45 p.m.

The storm grab sample (at 6:15 p.m.) and the composite sample were collected during this time period, resulting in 100-percent capture for this event. No post-storm grab samples were collected as detectable flow ceased just before midnight on 11/12/2011.

The results of in-situ measurements are presented Table 2-7 and illustrated in Figures 2-20 through 2-22. Water temperature, pH, and dissolved oxygen remained fairly constant throughout the duration of the storm event. During the second front of the storm, specific conductivity equaled less than half the initial value and turbidity increased to over 1000 NTU. The high turbidity, however, may have been due to the water pooling flow ceasing toward the end of the storm.

Table 2-7. Results of the *In-Situ* Field Measurements for First Storm Event at Blossom Valley

Analytical Constituent		Units	Range	11/12/2011		
				09:20	10:00	18:15
Storm Event #1	Water Temperature	°C	0 - 50	11.9	12.5	12.3
	pH	s.u.	0 – 14	7.65	7.85	8.14
	Dissolved Oxygen	mg/L	0 – 19.9	12.22	14.11	13.06
	Specific Conductivity	uS/cm	0 – 10,000	454	508	213
	Turbidity	NTU	0 - 999	521	427	> 999

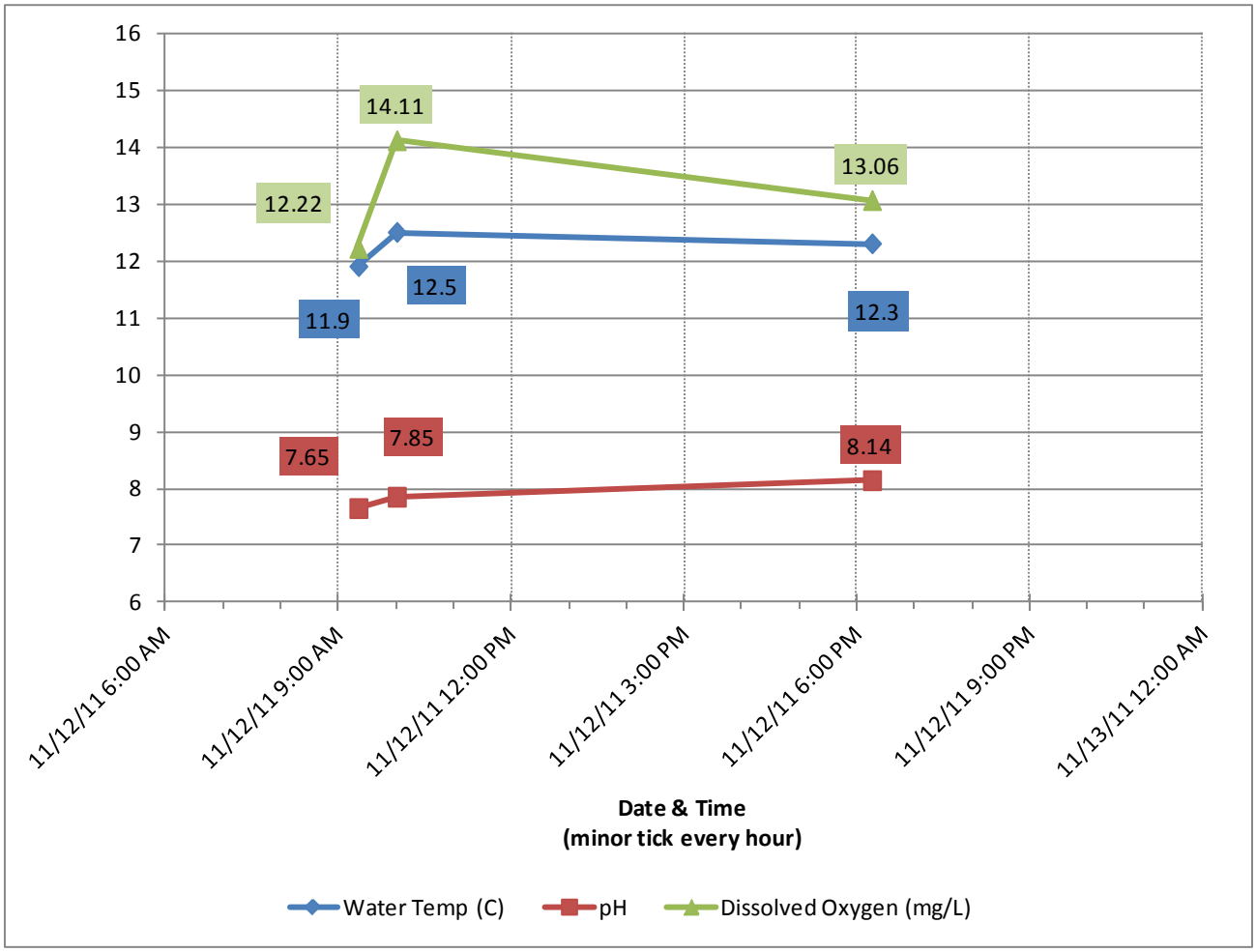

Figure 2-20. Water Temperature, pH and Dissolved Oxygen Concentrations – Blossom Valley, November 12, 2011.

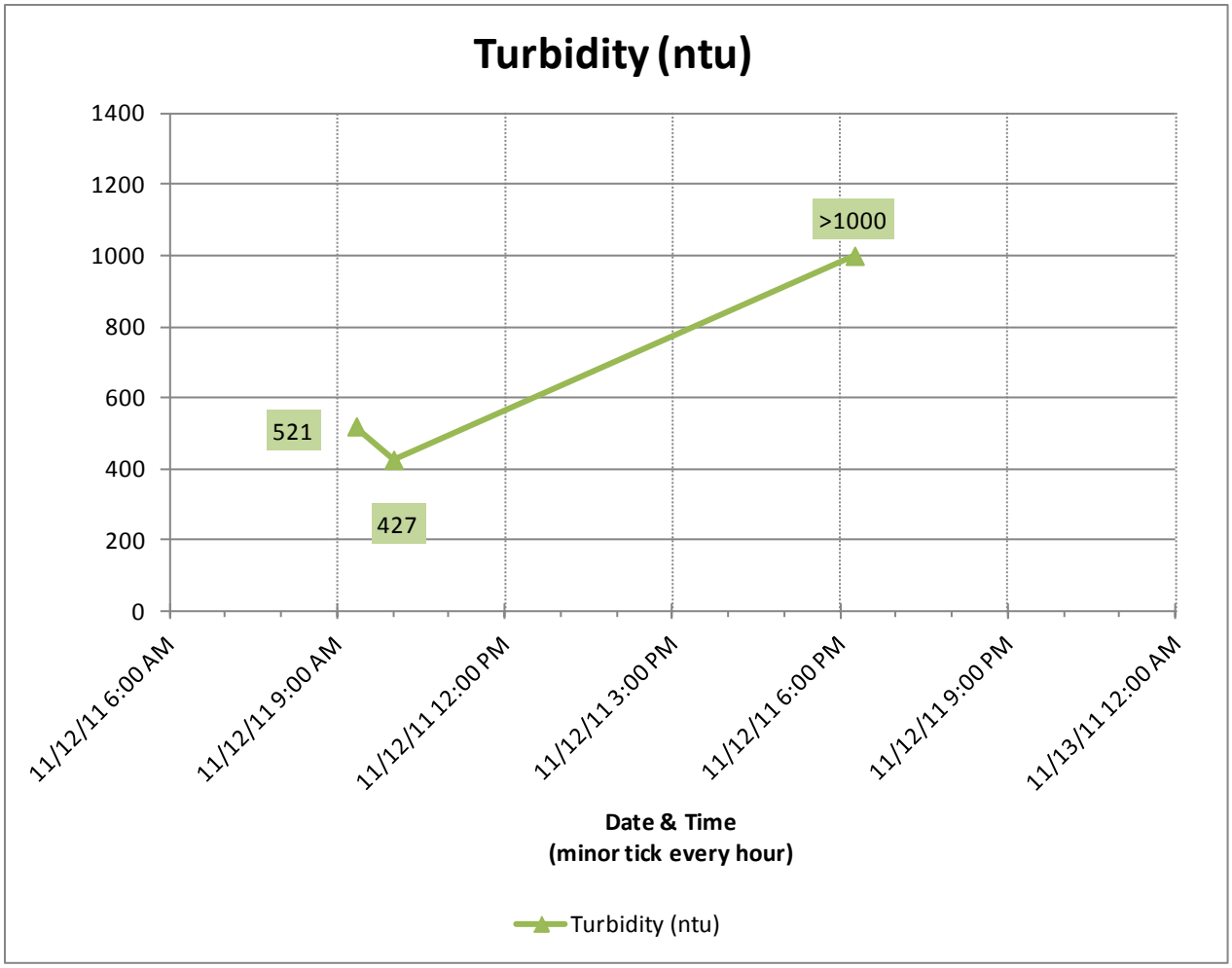

Figure 2-21. Turbidity– Blossom Valley, November 12, 2011.

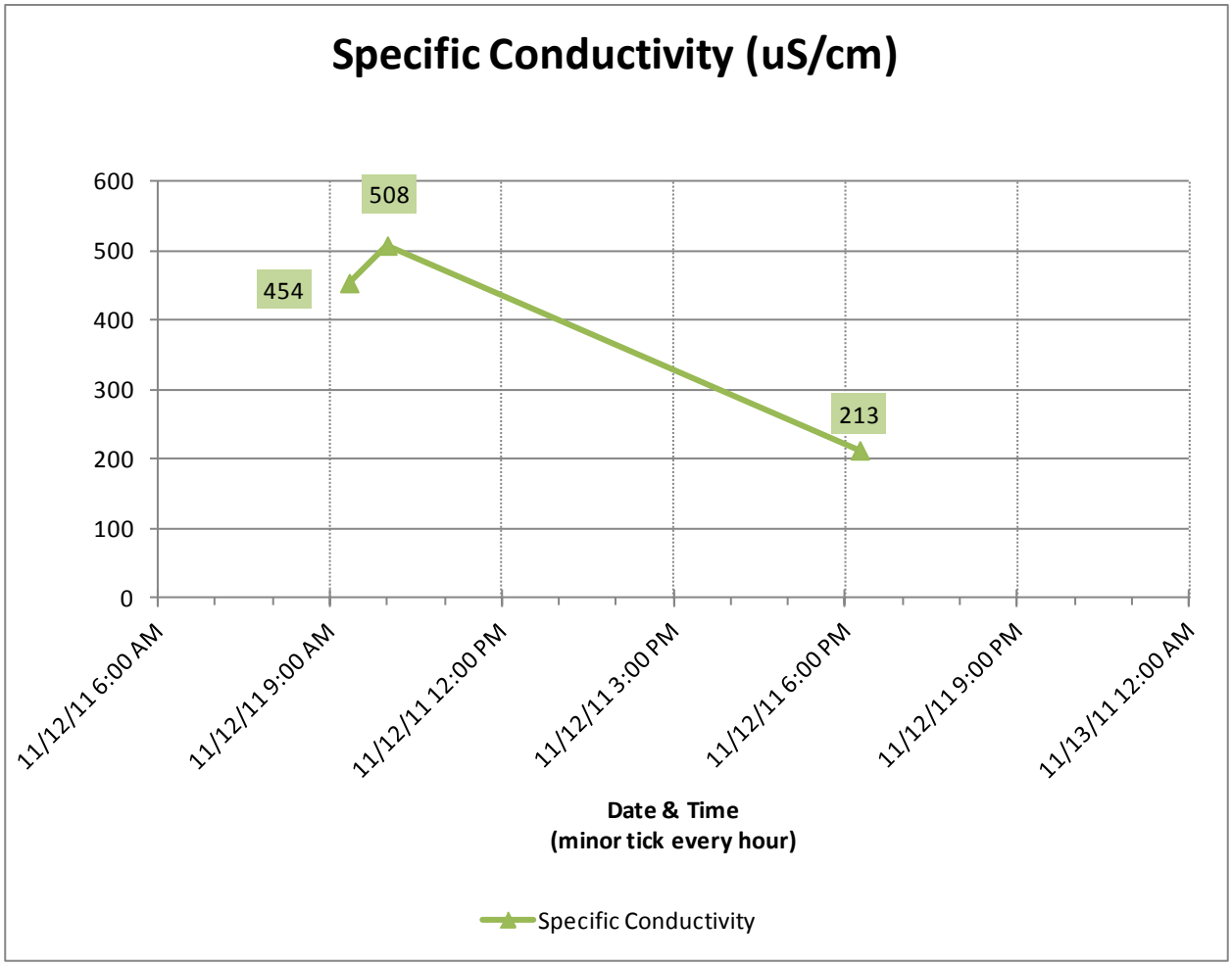

Figure 2-22. Specific Conductivity – Blossom Valley, November 12, 2011.

Figure 2-23. Stormwater Outfall from Culvert Outlet – November 12, 2011 at 7:05 p.m.

2.2.1.2 Second Storm Event – December 12, 2011

Field crew arrived onsite December 11, 2011 (Sunday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations.

According to the onsite rain gauge, measurable precipitation (0.01 inches) began at 8:17 a.m. December 12, 2011 (Monday) and ended at 5:38 p.m. the same day for a total of 0.68 inches. The storm event was fairly uniform with the rain intensity peaking between 11:30 a.m. and 12:30 p.m. During this time, 0.1 inches of rain fell over 10 minutes. An additional 0.04 inches of drizzle continued through December 13, 2011 (Tuesday). The flow rate throughout the storm was steady (Figure 2-24).

A photo of the flow through the culvert is provided in Figure 2-28.

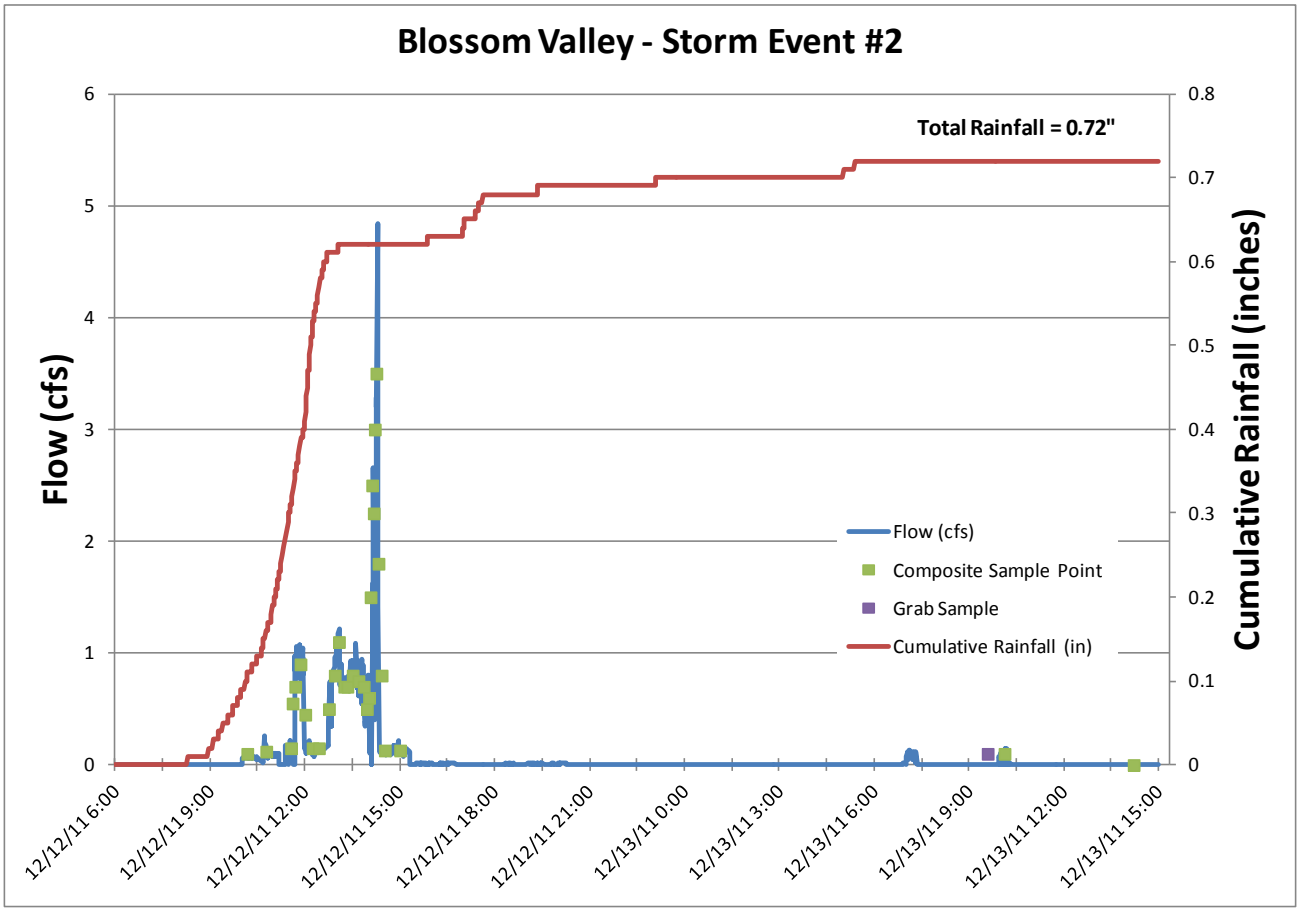

Figure 2-24. Blossom Valley Hydrograph – November 12, 2011.

Precipitation wise, the peak of the storm event occurred around 12:03 p.m. Flow wise, the peak of the storm event occurred at 1:25 p.m.

The composite was collected during this time period resulting in 100-percent capture for the event. The first grab sample (collected on December 13, 2011 at 10:05 a.m.) was taken after the storm event has ended and flow returned to very low level (before it ceased completely in mid afternoon on 12/12/2011). This sample, however, was still collected within the first 24 hours of the storm. Due to no flow, no additional grab samples were taken.

The results of in-situ measurements are presented in Table 2-8 and illustrated in Figures 2-23 through 2-25. Dissolved oxygen concentration and pH remained fairly constant throughout the storm while a marked decrease in water temperature was observed shortly after rainfall begun. During the same time there was also a sharp increase in turbidity and specific conductivity followed by a decrease in specific conductivity.

Table 2-8. Results of the *In-Situ* Field Measurements for Second Storm Event at Blossom Valley

Analytical Constituent		Units	Range	12/12 2011	12/13/2011							
				08:45	03:00	03:40	04:15	10:05	12:01	12:22	13:02	13:35
Storm Event #2	Water Temperature	°C	0 - 50	11.5	11.3	9.8	11.4	10.4	11.1	11.3	11.9	12.2
	pH	s.u.	0 – 14	8.41	8.34	8.09	8.14	8.05	8.15	8.09	8.11	8.11
	Dissolved Oxygen	mg/L	0 – 19.9	10.66	9.75	9.81	10.34	9.49	10.64	10.82	10.55	11.62
	Specific Conductivity	uS/cm	0 – 10,000	232	550	991	120	552	541	561	422	418
	Turbidity	NTU	0 - 999	31	126	728	324	142	170	156	1222	89

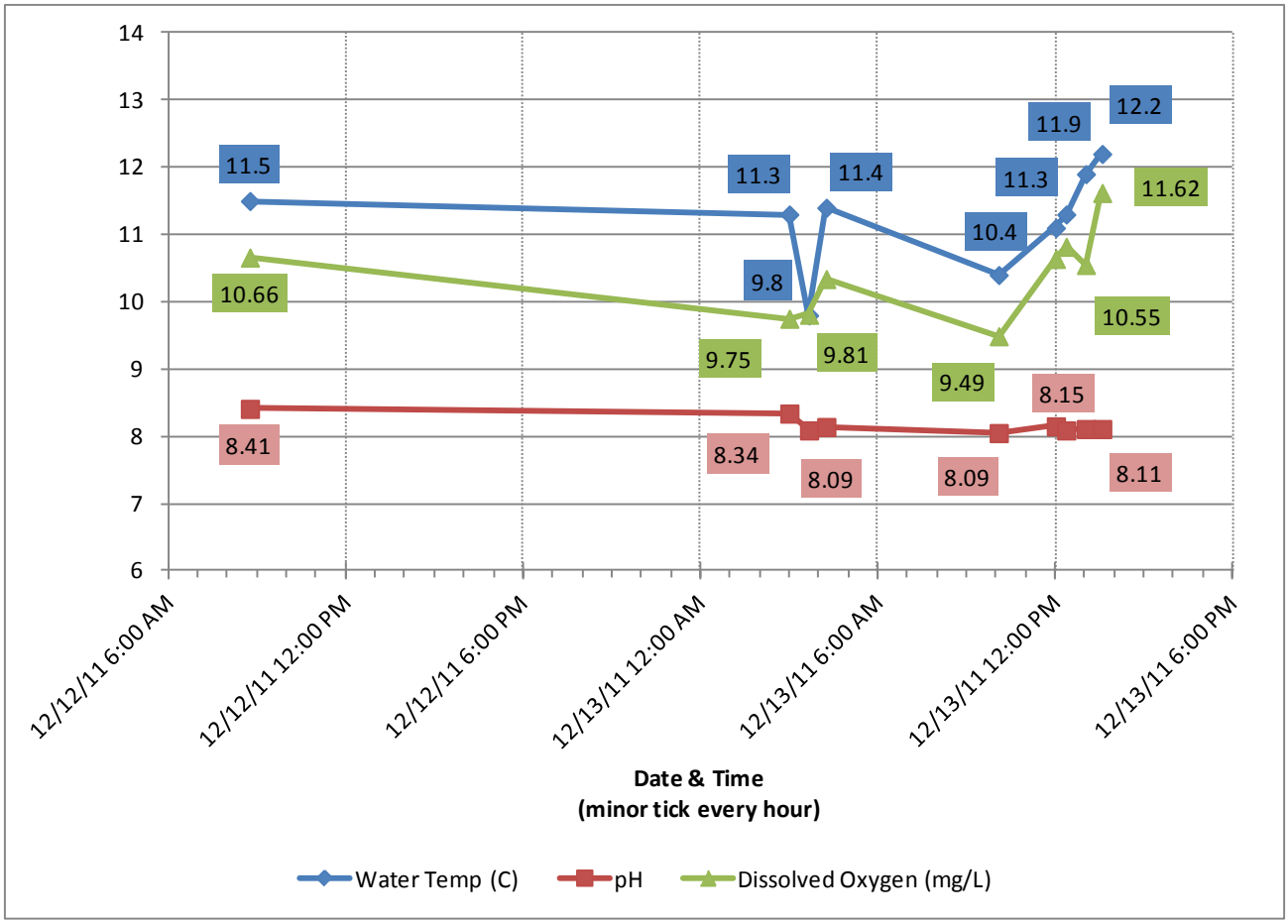

Figure 2-25. Water Temperature, pH and Dissolved Oxygen Concentrations – Blossom Valley, November 12-13, 2011.

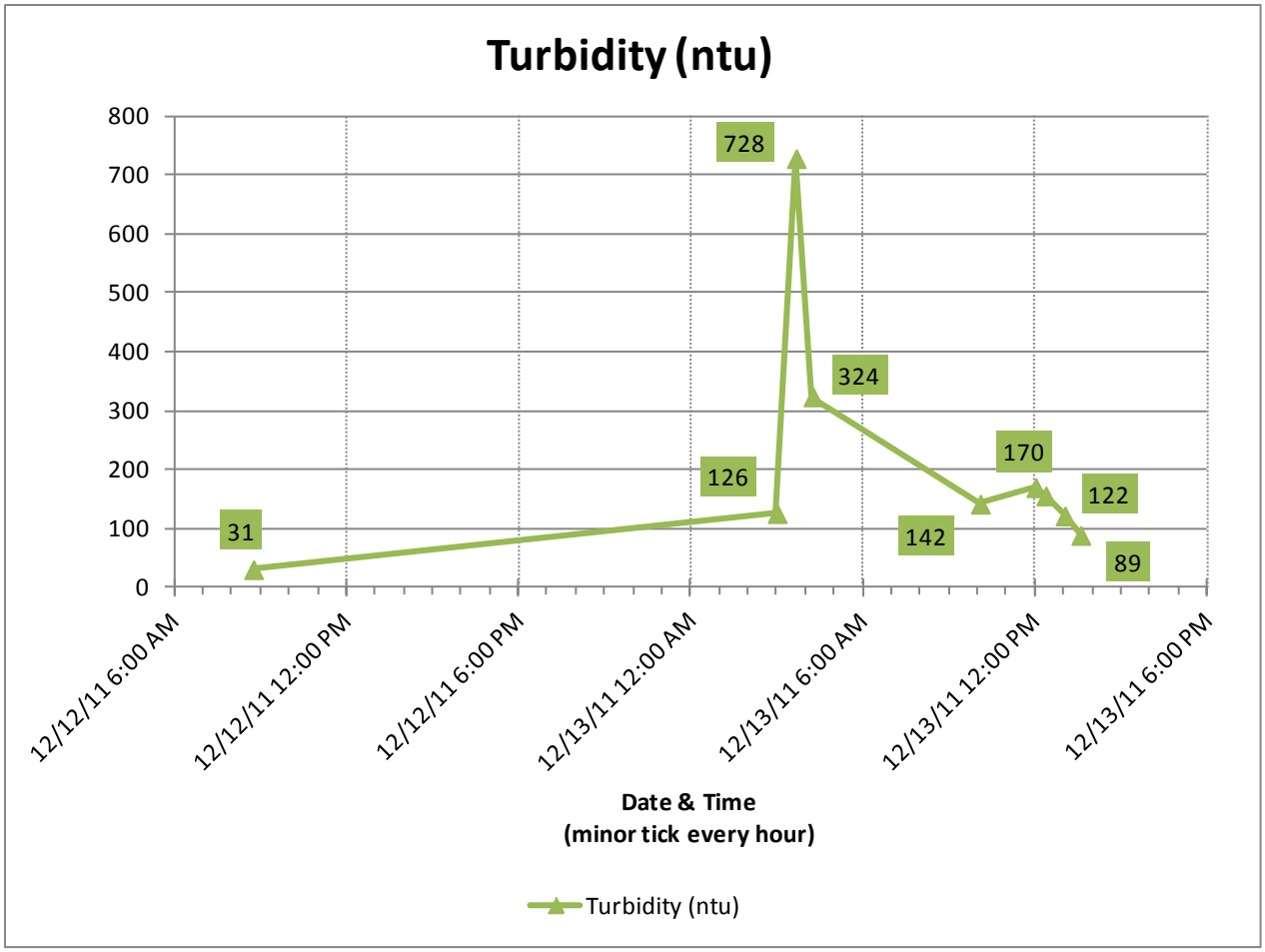

Figure 2-26. Turbidity – Blossom Valley, November 12-13, 2011.

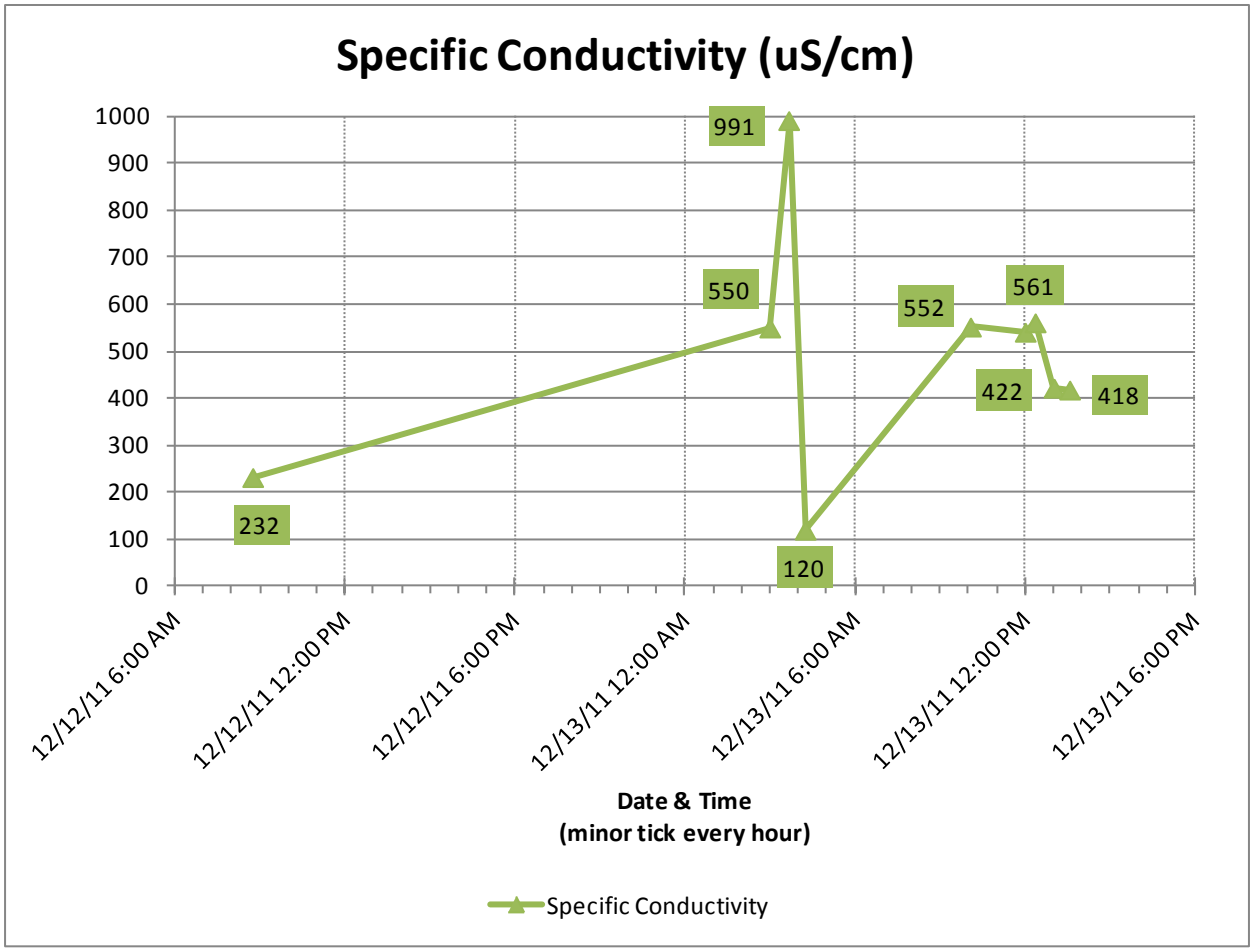

Figure 2-27. Specific Conductivity – Blossom Valley, November 12-13, 2011.

Figure 2-28. Stormwater Outfall from Culvert Inlet – December 12, 2011 at 10:14 a.m.

2.2.1.3 Third Storm Event – January 21, 2012

Field crew arrived onsite January 20, 2012 (Friday) to activate the automatic recording equipment, provide initial sampling programming and conduct initial dry weather observations. The crew discovered that the previous weather event had displaced the flow meter from the interior pipe clamp. Plastic ties were put into place to prevent this from reoccurring (Figure 2-34).

According to the on-site rain gauge, measurable precipitation (0.01 inches) began at 6:40 a.m. January 21, 2012 (Saturday) and ended at 1:11 p.m. the same day for a total of 0.43 inches. The third storm event was fairly uniform with no localized intensity peaks. The flow rate was steady throughout the storm (Figure 2-29) (the sudden drop in flow from noon to about 1 pm as illustrated in the hydrograph, was due to equipment error as flow was too high to measure). Precipitation wise, the peak of the storm event occurred around 9:19 a.m. Flow wise, the peak of the storm event occurred at 3:45 p.m. The composite sample and the storm grab sample were collected successfully (resulting in 100-percent capture for this event).

After a dry and sunny period on Sunday, steady and drizzly rain, totaling 0.34 inches in precipitation, returned all day Monday with quick moments of intensity (Figure 2-30). The collection of the 24-hour "post-storm" grab sample was affected by the second event. No 48 and 72 hour post-storm grab samples were collected as the flow ceased.

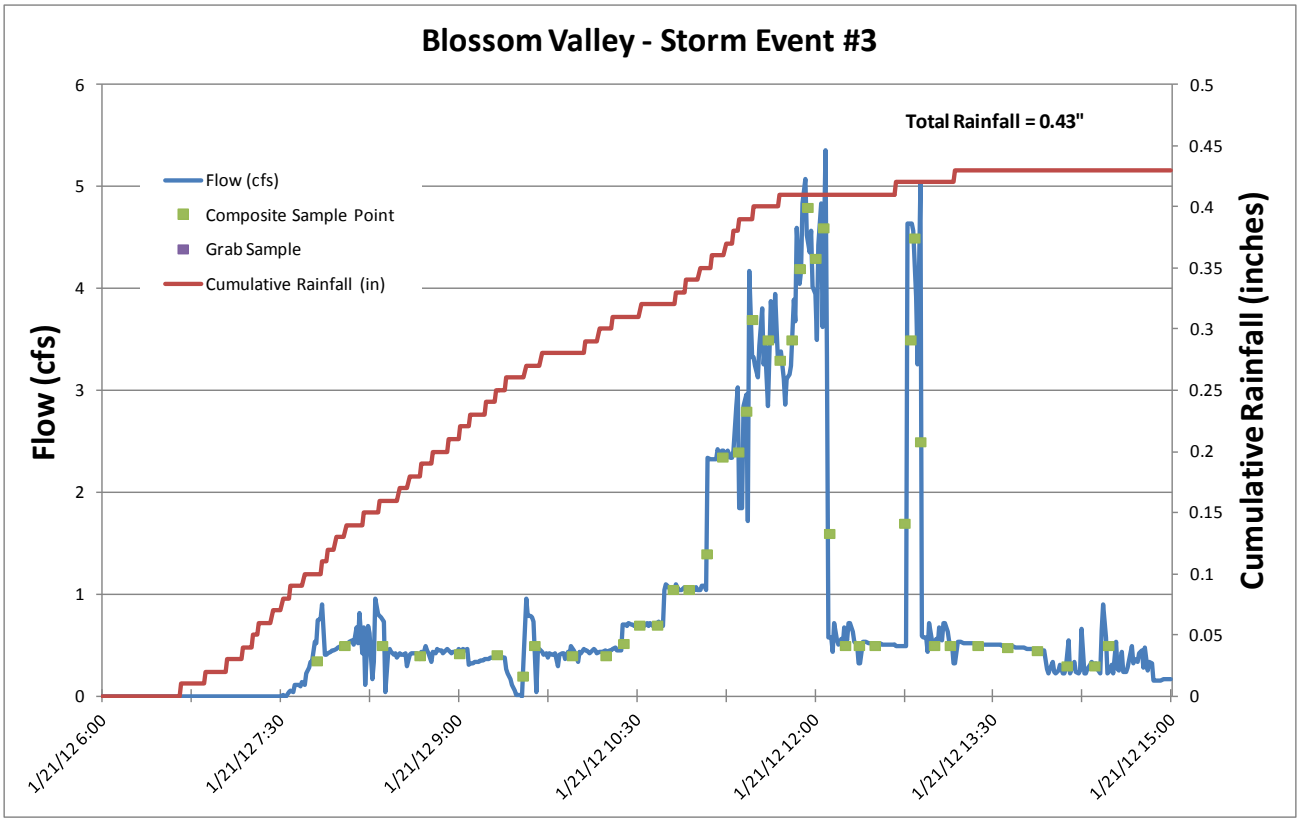

Figure 2-29. Blossom Valley Hydrograph – November 12, 2011. The sudden drop in the flow illustrated in the graph was due to equipment error as flow was too high to measure.

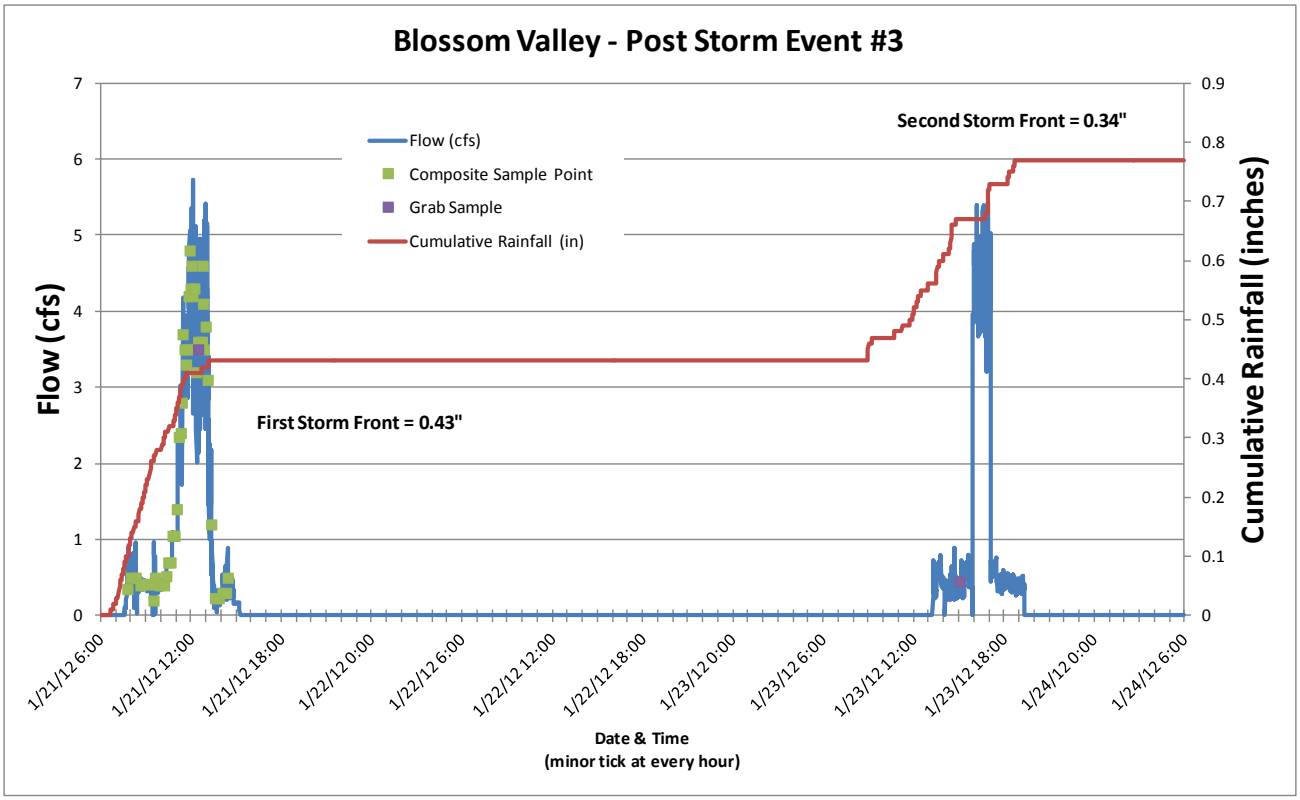

Figure 2-30. Blossom Valley – January 21, 2012 Storm Event and Post Storm Sampling.

The results of in-situ measurements are presented in Table 2-9 and illustrated in Figures 2-21 through 2-33. Dissolved oxygen concentration and pH remained fairly constant throughout the storm while a marked increase in water temperature was observed toward the end of the initial storm event. Turbidity and specific conductivity also increased during peak flow of the event.

Table 2-9. Results of the *In-Situ* Field Measurements for Third Storm Event at Blossom Valley

Analytical Constituent		Units	Range	1/21/2012							1/23/2012
				07:05	08:15	12:30	13:00	13:30	14:00	14:28	13:08
Storm Event #3	Water Temperature	°C	0 - 50	6.9	7.3	7.8	8.2	12.7	12.6	12.7	10.1
	pH	s.u.	0 – 14	7.89	7.93	8.09	8.14	7.95	7.91	7.97	7.46
	Dissolved Oxygen	mg/L	0 – 19.9	10.04	10.32	10.21	10.42	11.08	10.92	11.15	11.21
	Specific Conductivity	uS/cm	0 – 10,000	210	232	446	49*4	378	421	385	421
	Turbidity	NTU	0 - 999	38	44	178	92	88	62	65.4	49

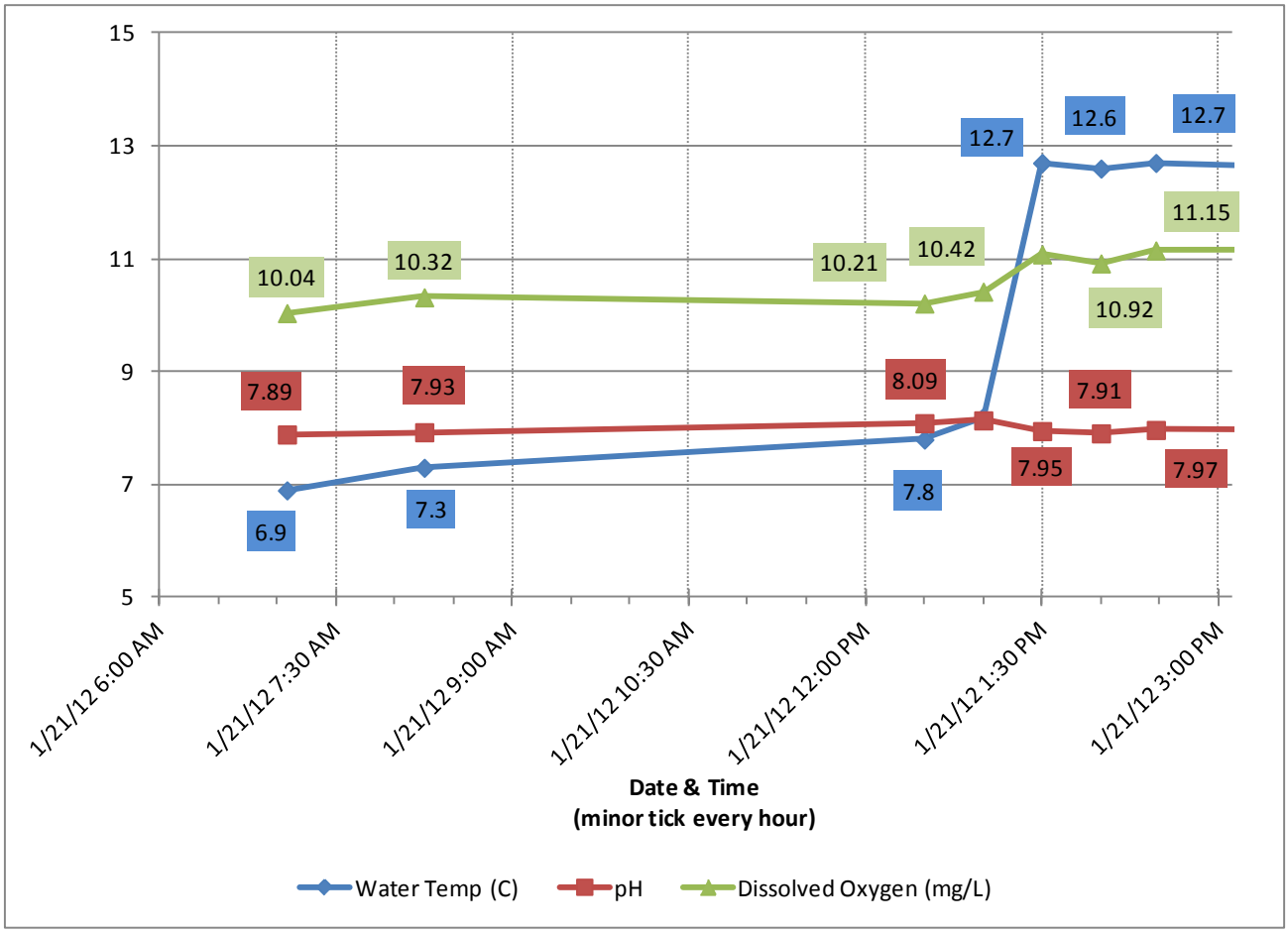

Figure 2-31. Water Temperature, pH and Dissolved Oxygen Concentrations - Blossom Valley, January 21-23, 2012.

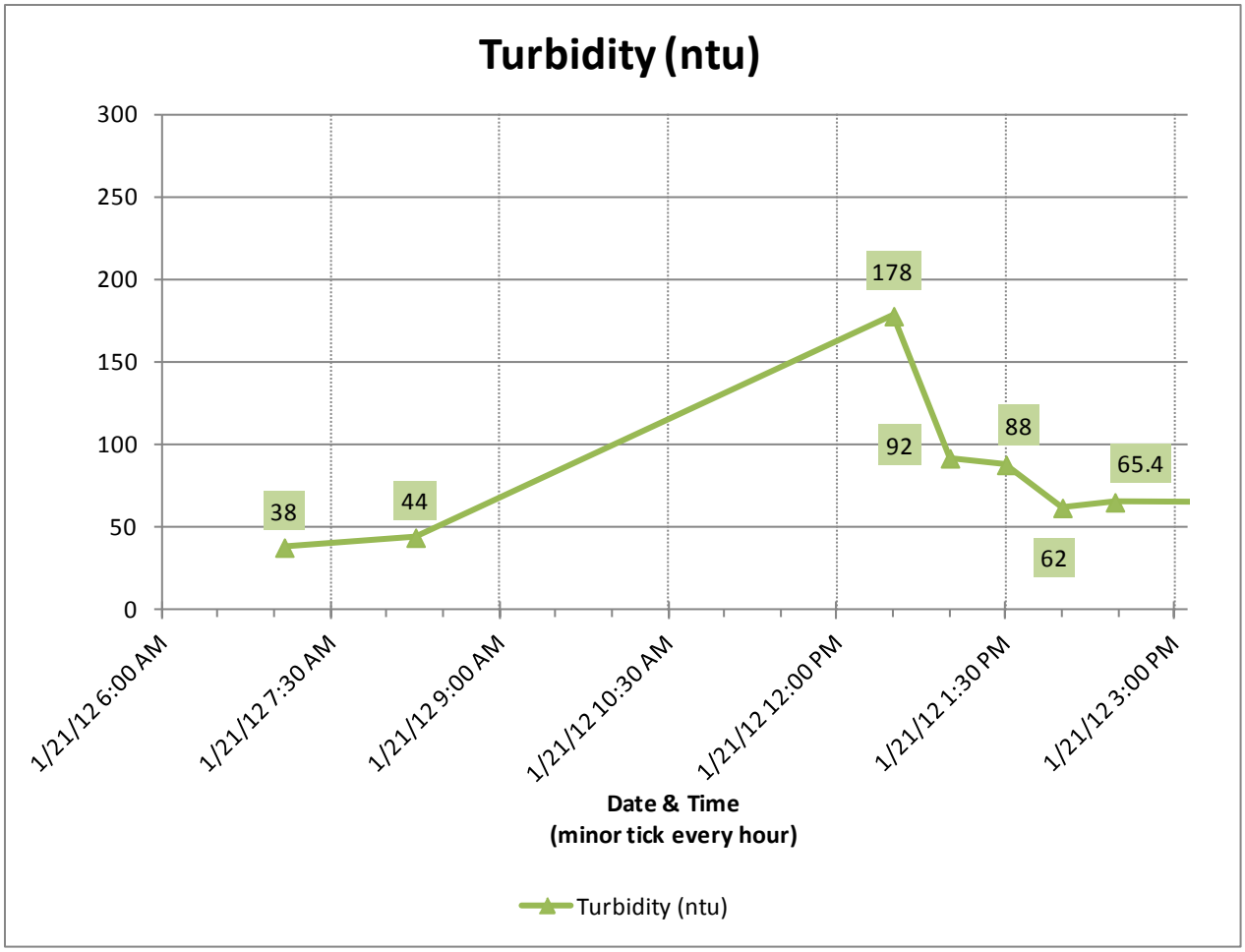

Figure 2-32. Turbidity –Blossom Valley, January 21-23, 2012.

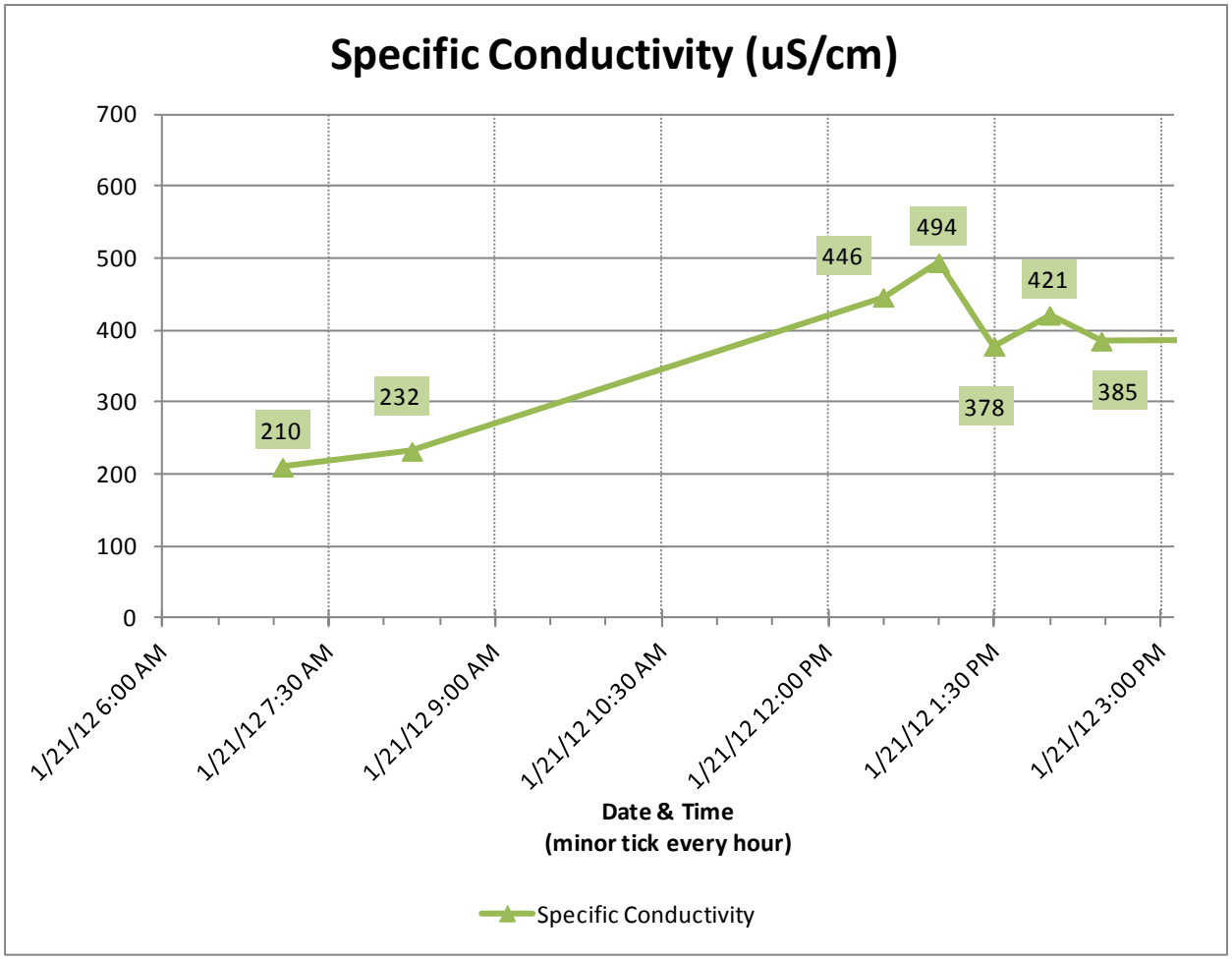

Figure 2-33. Specific Conductivity – Blossom Valley, January 21-23, 2012.

Figure 2-34. Flow Meter – January 20, 2011 at 2:56 p.m.

2.2.2 Blossom Valley – Flow Weighted Composite and Grab Sample Analysis Results.

The results of chemical constituent analysis for the flow-weighted composite samples collected at Blossom Valley over the three storm events are summarized in table 2-10. Table 2-11 shows the results of the composite sample microbiology analysis; the grab sample fecal indicator bacteria concentrations together with the corresponding sample times are presented in Table 2-12.

Table 2-10. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Blossom Valley over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	EnviroMatrix Method Detection Limit	Storm Event #1 11/12/2011 20:00	DQI	Storm Event #2 12/13/2011 14:13	DQI	Storm Event #3 01/21/12 14:28	DQI
Alkalinity, Bicarbonate	mg CaCO3/L	5	5	58		103		48	
Alkalinity, Carbonate	mg CaCO3/L	5	5	ND	U	ND	U	ND	U
Alkalinity, Hydroxide	mg CaCO3/L	5	5	ND	U	ND	U	ND	U
Boron, Total	mg/L	0.005	0.003	0.080		0.100		0.07	
Chloride	mg/L	0.20	0.05	100		110		50.0	
Sulfate	mg/L	0.50	10.0/5.0	38.5		92.2		18.5	
Hardness, Total	mg CaCO3/L	5.0	100	208		239		133	
Antimony, Dissolved	mg/L	0.005	0.0005	ND		0.0005	J	ND	U
Antimony, Total	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Arsenic, Dissolved	mg/L	0.001	0.0001	0.0006	J	0.0007	J	0.0004	J
Arsenic, Total	mg/L	0.001	0.0001	0.001		0.002		0.001	
Cadmium, Dissolved	mg/L	0.001	0.0002	ND	U	ND	U	ND	U

Table 2-10. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Blossom Valley over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	EnviroMatrix Method Detection Limit	Storm Event #1 11/12/2011 20:00	DQI	Storm Event #2 12/13/2011 14:13	DQI	Storm Event #3 01/21/12 14:28	DQI
Cadmium, Total	mg/L	0.001	0.0002	0.0004	J	0.0002	J	0.005	
Chromium, Dissolved	mg/L	0.005	0.0005	ND	U	ND	U	ND	U
Chromium, Total	mg/L	0.005	0.0005	0.010		0.007		0.008	
Copper, Dissolved	mg/L	0.005	0.0005	0.004	J	0.006		0.004	J
Copper, Total	mg/L	0.005	0.0005	0.023		0.040		0.018	
Lead, Dissolved	mg/L	0.002	0.0005	ND	U	ND	U	ND	U
Lead, Total	mg/L	0.002	0.0005	0.006		0.002		0.006	
Nickel, Dissolved	mg/L	0.002	0.0002	0.0009	J	0.001	J	0.0009	J
Nickel, Total	mg/L	0.002	0.0002	0.006		0.005		0.008	
Iron, Total	mg/L	0.020	0.035	18.0		9.28		9.62	
Manganese, Dissolved	mg/L	0.001	0.0001	0.004		0.005		0.006	
Manganese, Total	mg/L	0.001	0.0001	0.292		0.158		0.211	
Selenium, Dissolved	mg/L	0.002	0.0006	ND	U	ND	U	ND	U
Selenium, Total	mg/L	0.002	0.0006	ND	U	ND	U	ND	U

Table 2-10. Chemical Constituent Analysis Results for the Flow-Weighted Composite Samples Collected at Blossom Valley over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	EnviroMatrix Method Detection Limit	Storm Event #1 11/12/2011 20:00	DQI	Storm Event #2 12/13/2011 14:13	DQI	Storm Event #3 01/21/12 14:28	DQI
Zinc, Dissolved	mg/L	0.005	0.0008	0.011		0.009		0.010	
Zinc, Total	mg/L	0.005	0.0008	0.190		0.045		0.057	
Total Dissolved Solids	mg/L	5.0	1.0	339		468		219	
Total Suspended Solids	mg/L	5	1.0	360		204		270	
Ammonia as N	mg/L	0.02	0.02	0.08	J	ND		0.20	
Nitrate as N	mg/L	0.05	0.22/0.04	1.16		4.11		1.17	
Nitrite as N	mg/L	0.05	0.007	0.06		0.05		0.08	
Total Kjeldahl Nitrogen as N	mg/L	0.5	0.3	2.2		1.1		1.9	
Orthophosphate as P	mg/L	0.05	0.007	0.18		0.13		0.25	
Total Phosphorus as P	mg/L	0.05	0.02	0.56		0.26		0.46	
Terbuthylazine	µg/L	0.01	0.01	ND	U	ND	U	ND	U
Secbumeton	µg/L	0.01	0.01	0.01		ND	U	ND	U
Simazine	µg/L	0.01	0.01	ND	U	ND	U	ND	U
Atrazine	µg/L	0.01	0.01	ND	U	ND	U	ND	U

Table 2-11. Microbiology Analysis Results for the Flow-Weighted Composite Samples Collected at Blossom Valley over the Three Storm Events.

Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Storm Event #1	Storm Event #2	Storm Event #3
Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	8,000	8,000	35,000
Coliform, Total	MPN/100 mL	2 to 1,600,000	2	30,000	17,000	240,000
Enterococcus	MPN/100 mL	1 to 2,419,600	1	7,757	3,076	2,613
E. coli	MPN/100 mL	1 to 2,419,600	1	3,255	1,935	11,370

Table 2-12. Microbiology Analysis Results for the Grab Samples Collected at Blossom Valley over the Three Storm Events.

	Analytical Constituent	Units	Client Reporting Limit	Weston Method Detection Limit	Date of Sample	Time of Sample	Concentration Detected
Storm Event #1	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	11/12/2011	20:00	8,000
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	11/12/2011	20:00	30,000
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	11/12/2011	20:00	7,757
	E. coli	MPN/100 mL	1 to 2,419,600	1	11/12/2011	20:00	3,255
Storm Event #2	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	12/13/2011	10:05	17,000
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	12/13/2011	10:05	170,000
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	12/13/2011	10:05	10,394
	E. coli	MPN/100 mL	1 to 2,419,600	1	12/13/2011	10:05	5,172
Storm Event #3	Coliform, Fecal	MPN/100 mL	2 to 1,600,000	2	1/21/2012	16:35	22,000
					1/23/2012	15:05	230
	Coliform, Total	MPN/100 mL	2 to 1,600,000	2	1/21/2012	16:35	220,000
					1/23/2012	15:05	5,000
	Enterococcus	MPN/100 mL	1 to 2,419,600	1	1/21/2012	16:45	3,592
					1/23/2012	15:00	959
	E. coli	MPN/100 mL	1 to 2,419,600	1	1/21/2012	17:00	19,349
					1/23/2012	15:05	756

Appendix A

Additional Photographs from Sampling Events 2011-12

Included as a CD Reference

(Available upon request from County of San Diego)

Appendix B

Monitoring Plan and QAPP for Watershed-Wide Monitoring in 2011-12

(Available upon request from County of San Diego)

Appendix C

Laboratory Analytical Results for Watershed-Wide Monitoring in 2011-12

Excel Data Table as SWAMP format included CD Reference

Chain of Custody Forms included per Laboratory Certificate

(Available upon request from County of San Diego)

Appendix D

Flow and Precipitation Data for Watershed-Wide Monitoring in 2011-12

Excel Data Export from HACH and ISCO Equipment

(Available upon request from County of San Diego)

Appendix E

Field Observation for Watershed-Wide Monitoring in 2011-12

Physical In-Situ Measurements

(Available upon request from County of San Diego)

Table 3-5. Five-Year Strategic Plan

SAN LUIS REY RIVER WATERSHED	HA			Priority Pollutant		Implementation Schedule																	
	903.1	903.2	903.3	Bacteria	Nutrients	FY 2007-08			FY 2008-09			FY 2009-10			FY 2010-11			FY 2011-12			FY 2012-13		
Watershed Activities Implemented in FY 2011-12 and Planned for Implementation in FY 2012-13																							
SLR-001: SLR Watershed Water Quality Monitoring Program	x			x	x	M			M			M			M								
SLR-003: Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	x			x		P			WQ			M			M			M			M		
SLR-004: Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail	x			x		WE			WE			WQ	WE		WQ	WE		WQ	WE		WQ	WE	
SLR-005: Pet Waste Bag Dispenser Program in County Parks	x			x		WQ			WQ			WQ			WQ			WQ			WQ		
SLR-007: Water Quality Runoff Management and Agricultural Waiver Workshop	x	x	x	x	x	WE						WE						P			WE		
SLR-008: Guajome Lake Water Quality Monitoring Program	x			x	x	M			M			M			M			M			M		
SLR-009: Nutrient Source Identification and Abatement: Guajome Lake	x				x	M	S		WQ	M	S	WQ	M	S	WQ	M	S	WQ	M	S	*		
SLR-010: Lower SLR River Bacteria Source Tracking Study	x			x		M	S		M	S		M	S		M	S		A	S				
SLR-012: Land Acquisitions	x			x	x	WQ			WQ			WQ			WQ			WQ			**		
SLR-014: Harbor Boat Wash Coin Operated Water Dispenser	x			x					WQ	P		WQ	P		WQ	P		WQ					
SLR-015: Focused Horse Property Outreach in the SLR River Watershed***	x	x		x	x				WQ	WE	P	WQ	WE		WQ	WE		WQ	WE				
SLR-016: Focused Grove and Nursery Outreach in the SLR River Watershed	x	x			x							WE			WQ	WE		WQ	WE		WQ	WE	
SLR-017: Focused Onsite Wastewater System Outreach in the SLR River Watershed	x	x		x	x							WE			WQ	WE		WQ	WE		WE		
SLR-018: Sports Park Watershed Education Signs	x			x	x							WE	P		WE	P		WE			WE		
SLR-021: Fallbrook Community Center Artificial Turf					x							WQ			WQ			WQ			WQ		
SLR-022: Residential Rain Barrel Subsidies and Distribution				x	x							WQ	WE	P	WQ	WE		A			WQ	WE	
SLR-023: Residential Smart Landscape Evaluation Program	x			x	x										WE			WE			WE		
SLR-024: Water Smart Incentive for Outdoor Water Efficiency	x			x	x										P			WQ	WE		WQ	WE	
SLR-025: Live Turf Replacement Incentive Program	x			x	x													WQ			WQ		
SLR-026: Comprehensive Load Reduction Plan	x	x	x	x	x													P			P		
SLR-027: Bacteria Source Investigation Focused on Exfiltration From Sanitary Sewers	x			x	x																WQ		
SLR-028: Land Use Based Water Quality Monitoring				x	x							M			S			M			M		
Potential Future Activities																							
SLR River Bacteria BMP Implementation	x			x		Contingent upon funding for prioritized BMPs																	

* Future activity will be assessed based upon program results
** Unable to project land acquisitions in advance
*** Activity previously named Community Based Residential Horse Property Pilot Project

WQ = Watershed Water Quality Activity
WE = Watershed Education Activity
WQ = Watershed Water Quality Activity (not in active implementation)
WE = Watershed Education Activity (not in active implementation)
M = Watershed Water Quality Monitoring Activity
S = Source ID/Characterization Activity
P = Activity in Planning Stages
A = Activity Assessment

SAN LUIS REY RIVER WATERSHED

Urban Runoff Management Program
Annual Report for Fiscal Year 2010-11

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside ● City of Vista ● County of San Diego

January 2012

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SAN LUIS REY RIVER WATERSHED
URBAN RUNOFF MANAGEMENT PROGRAM
Annual report for Fiscal Year 2010-11

Prepared for

California Regional Water Quality Control Board
San Diego Region 9

By the

City of Oceanside
City of Vista
County of San Diego

January 2012

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CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

January 27, 2012

Re: STATEMENT OF CERTIFICATION
2010-11 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed

I certify under penalty of law that the 2010-11 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

M. A. Lahsaiezadeh

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

300 NORTH COAST HIGHWAY • OCEANSIDE, CA 92054 • TELEPHONE 760-435-5800 • FAX 760-435-5814

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CITY OF VISTA
CALIFORNIA

January 11, 2012

RE: STATEMENT OF CERTIFICATION

FY 2011 WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM ANNUAL REPORT

SAN LUIS REY WATERSHED MANAGEMENT AREA

I certify under penalty of law that the FY 2011 Watershed Urban Runoff Management Program Annual Report for the San Luis Rey Watershed Management Area was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Patrick Johnson
Patrick Johnson
City Manager

John Conley
John Conley
Director of Engineering

1/18/2012
Date

1/17/12
Date

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County of San Diego
LAND USE AND ENVIRONMENT GROUP

SARAH E. AGHASSI
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STATEMENT OF CERTIFICATION

San Luis Rey River Watershed Urban Runoff Management Program (WURMP) FY 2009-10 Annual Report

I certify, under penalty of law, that the County of San Diego's contributions to this FY 2009-10 San Luis Rey River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer

1/21/11
Date

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EXECUTIVE SUMMARY

Introduction

This San Luis Rey (SLR) Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) is the fourth annual report by the San Luis Rey Watershed Copermittees (SLR Copermittees) addressing Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit). The SLR Copermittees include the City of Oceanside, the City of Vista, and the County of San Diego. The City of Oceanside serves as the Lead Watershed Copermittee for the SLR Watershed Management Area (WMA). The SLR WURMP AR covers the time period July 1, 2010 – June 30, 2011 (FY 2010-11) and describes the SLR Copermittees collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the SLR WMA to the maximum extent practicable.

During this reporting period the SLR Copermittees continued to address the watershed's high priority water quality pollutants identified in the 2008 San Luis Rey WURMP (2008 SLR WURMP) as bacteria and nutrients. This focus is reflected in Section 3.0 - Implementation of Watershed Activities, which enumerates the high-priority-focused watershed water quality and watershed education activities.

The SLR Copermittees will continue to re-evaluate and refine the SLR WURMP by implementing an effectiveness assessment component for the overall program. As more knowledge about pollutant sources and innovative and effective management measures to address those sources become available, the SLR Copermittees will use the Model Watershed Urban Runoff Management strategy to guide selection and implementation of watershed activities. Moreover, the SLR Copermittees will continue to utilize long-term effectiveness assessments to assist in further identifying pollutant sources and focusing program efforts to control those sources.

Program Highlights

During this reporting period the SLR Copermittees made significant progress in developing and implementing watershed water quality and watershed education activities that receive WURMP credit based on the current Municipal Permit. In addition to these activities the SLR Copermittees coordinated other activities that they feel work toward reaching the overall goal of the SLR WURMP.

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.

- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach this goal and the objectives, the SLR Copermittees worked to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

Report Organization

The 2010-11 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed and gives a general overview of the organization and content of the report. It also describes Copermittee collaboration during the reporting period.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the FY 2010-11 reporting period. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic plan that the SLR Copermittees have proposed for the SLR WMA, including one new watershed education activity.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of SLR Copermittee collaboration efforts during the reporting period.
- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the

Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.

- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Conclusions and Recommendations

Lower San Luis Hydrologic Area

Conclusions

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Water quality data collected during previous reporting periods in FY 2007-08, FY 2008-09, and FY 2009-10 provided new information specific to the HA. In addition to the historical MLS, a TWAS installed towards the bottom of the Bonsall HSA collected data during fiscal years 2007-08 and 2010-11. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. Data collected from water quality monitoring activities during FY 2010-11, in addition to the data mentioned above continues to support listing bacteria and nutrients as high priority water quality problems in the Lower San Luis Rey HA.

Watershed Water Quality Activities

During FY 2010-11, nine water quality activities in the HA were in the implementation phase, two designed to address water quality problems related to bacteria, three designed to address nutrients, and four that address both bacteria and nutrients. These activities appear well designed to address high priority water quality problems in the watershed. Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

During the next reporting period FY 2011-12, eight water quality activities are planned to be implemented, with three designed to address water quality problems related to bacteria, three designed to address nutrients, and two that address both bacteria and nutrients.

Watershed Education Activities

During FY 2010-11, the Copermittees implemented seven watershed education activities: one focused on bacteria, two focused on nutrients, and four focused on both bacteria and nutrients. Through these education activities outreach was conducted to a variety of populations including pet owners, nurseries, and residential and horse property owner/operators.

During the next reporting period, FY 2011-12, five education activities are planned with one designed to address water quality problems related to nutrients and four that address both bacteria and nutrients.

Recommendations
Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope.

Some of the hydrologic areas in the SLR Hydrologic Unit (HU) have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs where funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the specific education activities.

Activities in the watershed appear to be properly focused on identified water quality problems in the HU. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected bacteria and nutrient pollution. TWAS data should be examined carefully as it is available to discern between water quality in the upper and lower watersheds. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

Warner and Monserate Hydrologic Areas

Conclusions and Recommendations

With minimal development in both the Warner and Monserate HAs, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for these HAs is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

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1 INTRODUCTION

The San Luis Rey (SLR) River Watershed Urban Runoff Management Program (WURMP) Annual Report (AR) describes the watershed activities conducted by the City of Oceanside, the City of Vista, and the County of San Diego (SLR Copermittees) from July 1, 2010 through June 30, 2011. During this reporting period, the SLR Copermittees worked extensively to develop and implement activities that address water quality issues affecting the SLR River Watershed Management Area (WMA) based on requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit (Municipal Permit) for San Diego County Copermittees, Order No. 2007-0001, NPDES No. CAS0108758.

Organization and Content of the Report

This annual report is organized according to the *Standardized Format for Watershed Urban Runoff Management Program Annual Reports* outline included with the updated Watershed Urban Runoff Management Program (WURMP) documents submitted to the Regional Water Quality Control Board (RWQCB) in March 2008. This report endeavors to adhere to the organizational requirements of the Municipal Permit issued to 21 San Diego County Copermittees (County Copermittees) in January 2007.

The 2010-11 SLR WURMP AR consists of a total of five sections and is organized as follows:

Section 1.0 – Introduction

Section 1 summarizes the program background, program approach (including goals and objectives), and applicable regulatory requirements. It briefly describes the watershed, gives a general overview of the organization and content of the report, and describes Copermittee collaboration during the reporting period.

Section 2.0 – Water Quality and Pollutant Source Assessment

This section provides an updated assessment and analysis of the watershed's current and past applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems during the reporting period. This section also describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed.

Section 3.0 – Implementation of Watershed Activities

This section includes a summary of all watershed water quality and watershed education activities planned for implementation during the reporting period FY 2010-11. The Watershed Activity Implementation Sheets for these activities are presented in Appendix A. This section also discusses public participation mechanisms utilized during the reporting period and the parties that were involved. In addition, this section describes the efforts implemented to encourage collaborative watershed based land-use planning amongst the SLR Copermittees. And, Section 3.5 provides an updated five-year strategic plan that the SLR Copermittees have proposed for the SLR WMA, including new watershed water quality and education activities.

Section 4.0 – Effectiveness Assessment

This section focuses on assessing WURMP effectiveness as a whole with consideration of the following:

- An assessment of SLR Copermittee collaboration efforts during the reporting period.
- An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.
- A comprehensive assessment of the impact of all WURMP activities (considered collectively) on the watershed's high priority problems, with a focus at the Hydrologic Area (HA) level. This section includes any documented changes in pollutant loads, urban runoff and discharge quality, and receiving water quality.
- Measurable targeted outcomes and assessment measures will be used to facilitate assessment whenever possible. Assessment Levels 1-6 will be applied to the watershed as a whole, where applicable and feasible.

Section 5.0 – Conclusions and Recommendations

This section provides conclusions and recommendations as determined by the SLR Copermittees based on the overall Annual Report and assessment.

Regulatory Requirements

In January 2007, Municipal Storm Water Permit Order Number R9-2007-0001 (Municipal Permit) was issued to the San Diego County Copermittees as a renewal permit for Order No. 2001-01. The Permit was issued to 21 jurisdictions and agencies in San Diego County. The Permit addresses the basic federal requirement for a program that reduces pollutants discharged from municipal separate storm sewer systems (MS4s) to the maximum extent practicable (MEP).

Section E of the Municipal Permit requires that the Copermittees within the SLR River Watershed collaborate to develop and implement a watershed-based program that addresses urban runoff and surface water quality. The rationale for this program is simple: urban runoff does not follow jurisdictional boundaries and often travels through multiple jurisdictions while flowing to receiving waters. Therefore, the actions of various municipalities within a watershed regarding urban runoff can have a cumulative impact upon shared receiving waters. The Municipal Permit directs San Diego County Copermittees with land use authority within the watershed to collaborate in developing and implementing the WURMP, the purpose of which is to identify and address the watershed's highest priority water quality problems. In addition, the Municipal Permit requires that the Copermittees develop activities that address education, public participation, and watershed-based land use planning.

Section E of the Municipal Permit defines the Copermittees within the nine regional watersheds, as well as a Lead Copermittee for each watershed. The following Copermittees are included in the SLR River Watershed:

- City of Oceanside
- City of Vista
- County of San Diego

The Municipal Permit designates the City of Oceanside as the default Lead Copermittee for the SLR River Watershed, and the City of Oceanside has agreed to continue to fulfill this role. The Municipal Permit requires that the Lead Watershed Copermittee be responsible for producing and submitting the WURMP and subsequent annual reports. They are also responsible for coordinating meetings among watershed Copermittees to facilitate the development and implementation of watershed activities. During this reporting period the City of Oceanside coordinated meetings at least quarterly to discuss and implement the various watershed activities and coordinate required regulatory submittals.

In accordance with Section E of the Municipal Permit, the Copermittees listed for each watershed must participate in the development and implementation of a WURMP. The requirements for the WURMP are listed in the Municipal Permit and include the following:

- Mapping the watershed and identifying all receiving waters, all impaired receiving waters, land uses, highways, jurisdictional boundaries, and inventoried commercial, industrial, construction, municipal sites, and residential areas.
- Assessing the water quality of all receiving waters in the watershed based on existing data and eventually performing watershed-based water quality monitoring activities.
- Identifying and prioritizing major water quality problems in the watershed caused or contributed to by discharges from MS4s, including potential sources of the problems.
- Developing and implementing a strategy of water quality and educational activities needed to address the highest priority water quality problems.
- Identifying which Copermittees are responsible for implementing each recommended watershed activity.
- Developing and implementing a mechanism for public participation in watershed activities.
- Developing and implementing watershed-based education activities.
- Developing a mechanism to facilitate collaborative watershed-based land use planning with other Copermittees in the watershed.
- Developing a long-term strategy for assessing the effectiveness of the WURMP.
- Submitting annual WURMP reports which shall document the Copermittees' activities during the preceding year. At a minimum, the annual report must include:
    - A comprehensive description of all watershed activities conducted by the Watershed Copermittees for permit compliance.
    - Public participation mechanisms utilized during implementation.
    - Watershed-based land use planning mechanism description.
    - Effectiveness assessment of the WURMP.
    - Summary of watershed-related data not already included in the annual monitoring report.
    - Identification of water quality improvements or degradation.

SLR WURMP Goals and Objectives

The goal of the WURMP is to positively affect the water quality of the SLR WMA while balancing economic, social, and environmental constraints. This goal will be pursued and ultimately achieved through the implementation of the following specific objectives:

- Objective #1: Develop and implement a strategic plan to assess and improve water quality within the SLR WMA, which responds to identifiable problems and reflects the beneficial uses of the watershed.
- Objective #2: Integrate watershed principles into land use planning that affects the SLR WMA.
- Objective #3: Enhance public understanding of watershed issues and pollution prevention within the SLR WMA.
- Objective #4: Encourage and enhance public involvement in activities related to urban runoff management within the SLR WMA.

To help reach this goal and the objectives, the SLR Copermittees work collaboratively to identify, implement, and assess appropriate watershed water quality, education, and public participation activities, as well as watershed-based land use planning mechanisms, to properly target high priority water quality problems and their sources.

San Luis Rey Watershed Description

The SLR River Watershed is located along the northern border of San Diego County. It is bordered to the north by the Santa Margarita River Watershed and to the south by the Carlsbad and San Dieguito River Watersheds. The SLR River originates in the Palomar and Hot Springs Mountains, both over 6,000 feet above mean sea level (MSL), and extends west over 55 miles to form a watershed with an area of approximately 360,000 acres, or 562 square miles (see Figure 1-1). The river ultimately discharges to the Pacific Ocean at the western boundary of the City of Oceanside. Of the nine major watersheds in the San Diego region, the SLR River Watershed is the third largest in terms of land area (SANDAG 1998).

The SLR River Watershed or SLR Hydrologic Unit (HU) (903.00) is comprised of three HAs, which have been delineated by the San Diego Regional Water Quality Control Board (RWQCB) based on drainage patterns: Lower San Luis (HA 903.1), Monserate (HA 903.2), and Warner Valley (HA 903.3) (see Figure 1-1). Over 54% of the land in the watershed is vacant or undeveloped. The next largest land uses in the watershed are residential (15%) and agriculture (14%). The highest concentration of population is located in the Lower San Luis HA. There are six federally recognized Tribal Indian Reservations with land in the watershed. The highest point in the San Luis Rey Watershed (and in San Diego County) is Hot Springs Mountain with an elevation of 6,533 feet (1,991 meters).

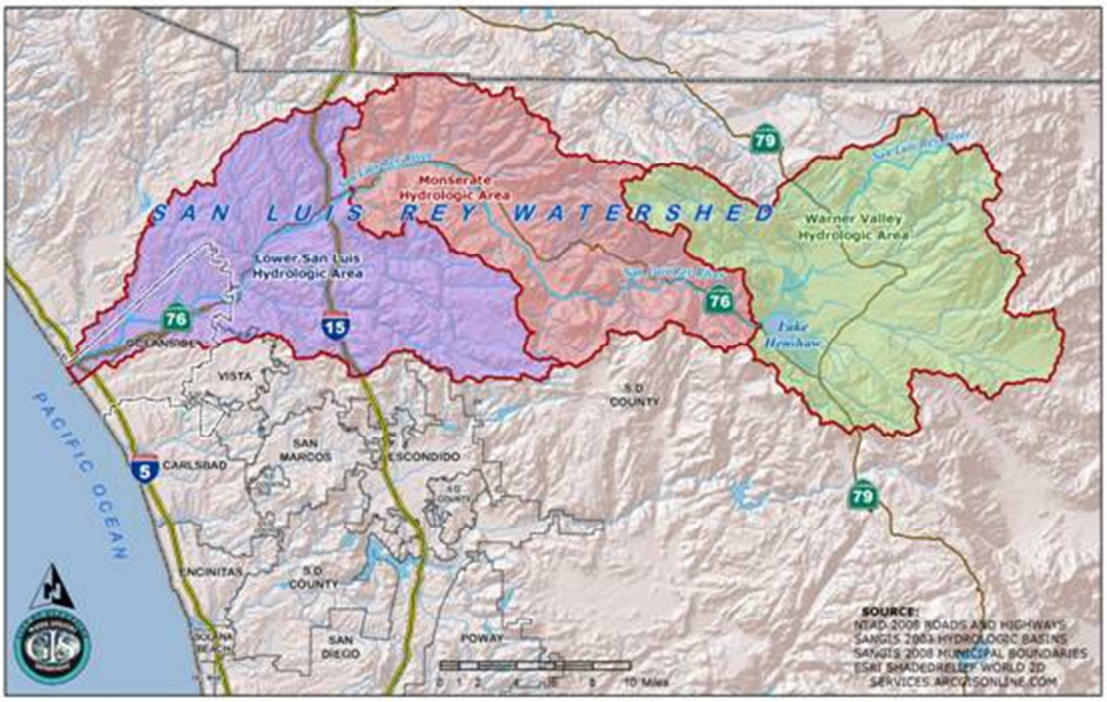

Figure 1-1. San Luis Rey Watershed Hydrologic Areas.

About half (49%) of the land in the watershed is privately owned. Publicly owned land accounts for approximately 37% of the area, and the remaining 14% consists of numerous reservations in the watershed. In the western half of the watershed, private ownership dominates. Moving east through the watershed, public lands increase and dominate in the Warner Valley HA. The Vista Irrigation District (VID) is the single largest landowner in the watershed.

Five jurisdictions have land use authority in the SLR Watershed and include the Cities of Escondido, Oceanside and Vista and the Counties of San Diego and Riverside. A number of other governmental agencies also administer lands within the unincorporated areas of San Diego County. A general breakdown of jurisdictional areas within the watershed is shown in Table 1-1.

Table 1-1. Watershed Acreages by Jurisdiction.

Jurisdiction	Acres	Percentage of Watershed (%)
Escondido	52	0.0
Oceanside	15,883	4.4
Vista	743	0.2
Unincorporated San Diego County	342,566	95.2
Riverside County	649	0.2
Total	**359,893**	**100.0**

Source: SANDAG 1998. (Note: Of the sources reviewed, values for total size of the watershed and the breakdown of the watershed by jurisdictions were similar but often different. Therefore, the values provided in this table are for general purposes only and should be verified if used for other purposes.)

1.1 Copermittee Collaboration

The Cities of Oceanside and Vista and the County of San Diego share the implementation responsibilities for the SLR WURMP. Using the watershed approach, the SLR Copermittees aim to positively affect the water quality of the SLR River Watershed in a cost effective, environmentally sensitive, and collaborative manner.

The San Diego County Copermittees have developed a Model Watershed Urban Runoff Management Strategy (Strategy) to guide the selection and implementation of Watershed Activities that appropriately addresses each watershed Copermittees' contribution to the high priority water quality problems in their WMA. Data analyzed to date for the SLR Watershed suggests that bacteria and nutrients are high priority water quality problems in the Lower San Luis HA.

Having used the watershed strategy as the basis for developing the activities, the SLR Copermittees have focused activity efforts on the potential sources that are most likely to be contributing the pollutants that are causing the high priority water quality problems in the SLR WMA. Where receiving water conditions and pollutant sources were not clearly characterized, monitoring and source identification activities were planned and implemented.

1.1.1 San Luis Rey WURMP Meetings

In order to effectively develop the 2008 SLR WURMP Update required by Municipal Permit Order R9-2007-0001 and to plan and implement the San Luis Rey WURMP in current and subsequent years the SLR Copermittees met six times during FY 2010-11. See Table 1-2 for dates of these meetings and pertinent agenda items discussed at these meetings. The SLR Copermittees developed and prioritized water quality activities that address pollutants of concern in the watershed, exchanged ideas on how to address high priority water quality pollutants in the watershed, evaluated the effectiveness of actions, and collaborated on development of required submittals.

The general watershed meetings of the San Luis Rey WURMP workgroup were led by the City of Oceanside. Activities and tasks developed by the Copermittees were then carried out by the Copermittees within the structure of their jurisdictional organization. Task completion was then tracked and assessed at the workgroup meetings and is being reported in this Annual Report.

Table 1-2. SLR WURMP Meeting Dates and Agenda Items Discussed.

Date	Agenda Item Topics
8/17/10	Copermittee monitoring program updates; Activity updates; SLR Watershed Coordinator proposal.
10/19/10	Regional Monitoring Programs specific to SLR Watershed (Weston Solutions); Copermittee monitoring program updates; Annual report assignments and schedule; Review of FY 10-11 activities.
01/20/11	(Via conference call) WURMP Annual Report section updates; New 303(d) listings; Watershed activity review and updates; 2010-11 activity updates; meeting schedule.
02/15/11	Annual report process and feedback; Report of Waste Discharge (ROWD) update; Discuss San Luis Rey Joint Monitoring Redesign; Lower San Luis Rey Bacteria Tracking project update; Bacteria 1 TMDL; activity updates.

Date	Agenda Item Topics
3/15/11	Bacteria 1 TMDL; Review cost-share and scope of work for CLRP development.
06/27/11	Bacteria 1 TMDL; ROWD and Long-term Effectiveness Assessment updates; Update of SLR Copermittee water quality monitoring efforts; Combining of some regional workgroup working bodies; activity updates.

1.1 Watershed Map Updates

Section J.2. of the Municipal Permit requires that the WURMP provide an accurate map of the watershed that identifies the following: All receiving waters (including the Pacific Ocean); Clean Water Act section 303(d) impaired receiving waters; land uses; MS4s, major highways, jurisdictional boundaries; and inventoried commercial, industrial and municipal sites. In a letter dated September 23, 2008, the Regional Water Quality Control Board requested Copermittees increase the size of the watershed maps to no smaller than 36 inches by 24 inches. See Appendix B of the 2007-08 WURMP AR for a copy of the increased map size.

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2 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section presents a current assessment of surface water quality and potential pollutant sources within the SLR WMA. The SLR Copermittees participate in a regional monitoring program, which rotates between the northern and southern watersheds of San Diego County every other year. During the FY 2010-11 reporting period, regional monitoring efforts were focused in the northern watersheds. A detailed review of all monitoring activities taking place within the SLR watershed over the current reporting period can be found in the *2010-11 Urban Runoff Monitoring Annual Report* (Regional Monitoring Report). The pollutant source assessment is based on land use coverages, facility source inventories, as well as past and present source characterization efforts.

2.1 Watershed Water Quality Assessment

This section provides an updated assessment of applicable water quality data reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problems.

2.1.1 2010-11 WATER QUALITY PROGRAMS AND DATA

Table 2-1 identifies the active water quality monitoring programs within the SLR WMA and briefly summarizes monitoring activity during FY 2010-11.

For further details on the following programs, please refer to the Regional Monitoring Report, which is submitted under separate cover:

- Stormwater Monitoring Coalition (SMC) Program
- Jurisdictional Dry Weather Monitoring (DWM)
- Coastal Storm Drain Monitoring (CSDM)

Jurisdictional DWM Program results are also discussed in individual Jurisdictional Urban Runoff Management Program (JURMP) Annual Reports. CSDM Program results are also included as an attachment to the 2010-11 Regional Monitoring Report.

In addition to jurisdictional and regional efforts, monitoring is conducted by the SLR Copermittees as part of two collaborative WURMP activities. Results from the SLR Watershed Water Quality Monitoring Activity (SLR-001) and the Guajome Lake Water Quality Monitoring Activity (SLR-008) are provided in the appendices to the respective activity sheets located in Appendix A of this document. SLR-001 monitoring is conducted jointly by the City of Oceanside and the County of San Diego. This monitoring specifically addresses total dissolved solids (TDS), chloride, nutrients, and bacteria throughout the lower SLR River and its tributaries. SLR-008 monitoring is conducted by the County of San Diego to characterize the contribution of nutrients to Guajome Lake.

Table 2-1. Water Quality Monitoring Activities in the San Luis Rey River WMA (FY 2010-11).

Program Data Set	Data Assessed	Number of Sites Assessed
Receiving Water Monitoring		**12**
Ambient Monitoring	Water chemistry, toxicity, bacteria, and trash	1 - MLS, 2 - TWAS, 3 - SMC*
SMC Regional Monitoring	Water chemistry, toxicity, bacteria, and rapid stream bioassessment	3 - SMC
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash	1 - MLS and 2 - TWAS
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC	1 - MLS and 2 - TWAS
Third-Party Data (Coastkeeper)	General chemistry and bacteria	6 - Coastkeeper
Urban Runoff Monitoring		**136**
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry	36
Jurisdictional Dry Weather Monitoring –Trash Assessment	Trash	53
MS4 Outfall Random Dry Weather Monitoring	Chemistry and bacteria	6
MS4 Outfall Random Wet Weather Monitoring	Chemistry and bacteria	6
MS4 Outfall Targeted Dry Weather Monitoring	Chemistry, metals, and bacteria	27
MS4 Outfall Targeted Wet Weather Monitoring	Chemistry, metals, pesticides, and bacteria	1
Regional Source Identification Monitoring	General chemistry, metals, bacteria, and pesticides	1
CSDM Program	Coastal Outfall and Receiving Waters	6

MLS – mass loading station
TWAS – temporary watershed assessment station
SMC – Stormwater Monitoring Coalition
TOC – total organic carbon
MS4 - municipal separate storm sewer systems
CSDM – coastal storm drain monitoring
*The SMC Monitoring Program uses a random stratified program design and is one sample from a 425 sample point program to be collected over 5 years (http://socalsmc.org/ProjectThree.aspx).

2.1.2 2010-11 WATER QUALITY MONITORING RESULTS

Figure 2-1 presents a map of the San Luis Rey River WMA, including monitoring sites, jurisdictional boundaries, and drainage areas.

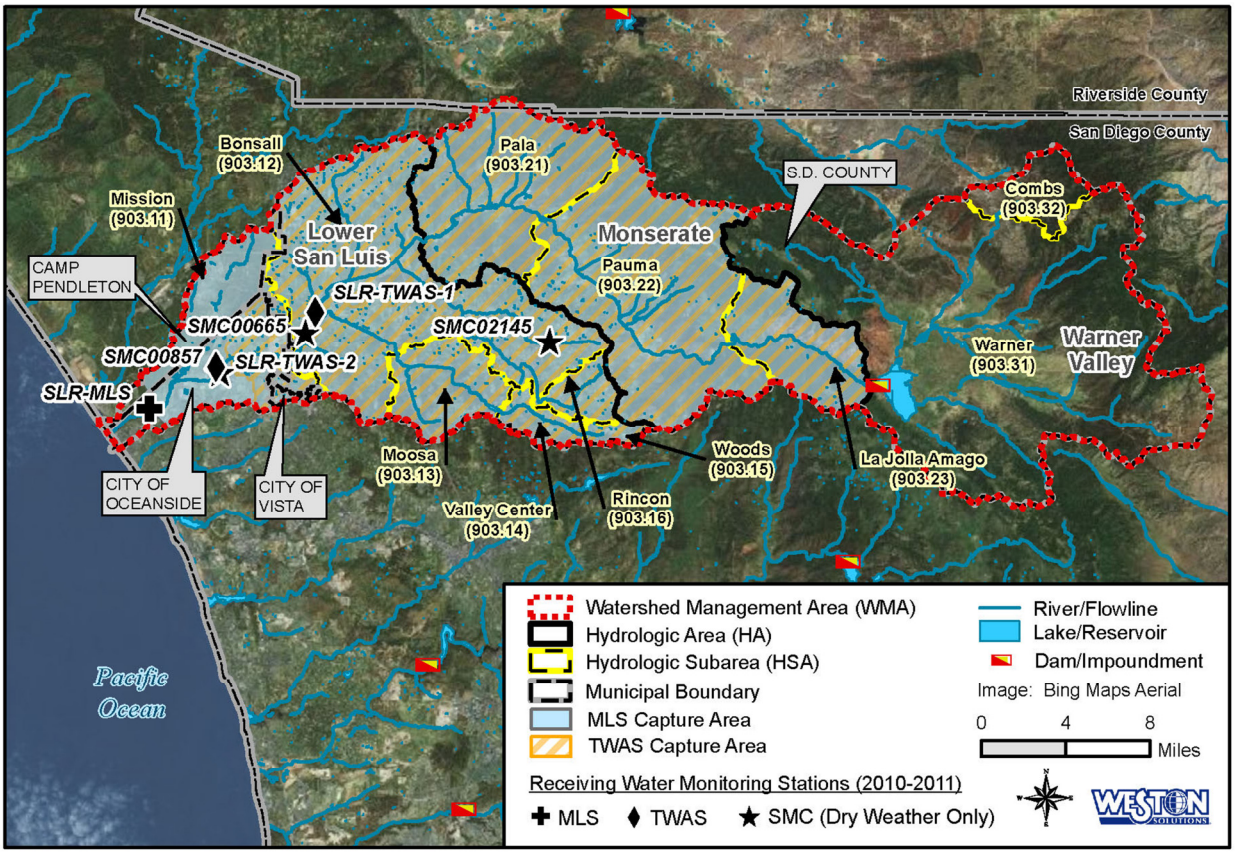

Figure 2-1. San Luis Rey River WMA 2010-11 Monitoring Locations.

Table 2-2, Table 2-3, and Table 2-4 summarize the annual monitoring results and identify relationships between receiving water and municipal separate storm sewer system (MS4) outfall results during both wet and dry weather. Each of the tables describes a specific catchment area:

- Table 2-2: SLR Mass Loading Station (SLR-MLS),
- Table 2-3: SLR Temporary Watershed Assessment Station 2 (SLR-TWAS-2), and
- Table 2-4: SLR Temporary Watershed Assessment Station 1 (SLR-TWAS-1).

The constituents listed in these tables represent medium and high priority constituents based on the *Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas*, Final Draft-Version 1 (SDCRC, 2010).

Key findings from the monitoring data collected at these stations include the following:

- Receiving Water - Wet vs. Dry: Nutrients are identified as priority constituents predominantly during dry weather, with the exception of total phosphorus, which is identified as a medium priority during wet weather at SLR-TWAS-2. Total dissolved solids (TDS) and bacteria are priorities during both wet and dry weather at all MLS and TWAS locations. Toxicity is also a medium priority during both wet and dry conditions at all stations, with the exception of dry weather at SLR-MLS-1. Stormwater Monitoring Coalition (SMC) and third-party data confirm nutrient and bacteria priorities during dry weather. Total suspended solids (TSS) and turbidity are identified as medium priorities during wet weather at both TWAS locations.

- Receiving Water vs. MS4 -Wet Weather: Fecal coliform and TDS are identified as priority constituents in both receiving waters and MS4 results at all MLS and TWAS locations. TSS is also found in both receiving waters and MS4 outfalls results at SLR-TWAS-1 and SLR-TWAS-2, and turbidity is only found in both receiving waters and MS4 outfall results at SLR-TWAS-2.
- Receiving Water vs. MS4 - Dry Weather: *Enterococcus*, nutrients, and TDS are identified as priority constituents in both receiving waters and the MS4 outfalls during dry weather at all monitored locations. Chloride is also found above Basin Plan objectives during dry weather in the SMC data set and in the MS4 upstream of SLR-TWAS-1 and SLR-TWAS-2.
- MS4 - Wet vs. Dry Weather: Bacteria, nutrients, and TDS are identified as priority constituents in the MS4 data set in both dry and wet weather. TSS is identified as a wet weather priority at all monitored locations, and chloride is identified as a priority during dry weather at all monitored locations.
- Bioassessment Monitoring: The Permit-required bioassessment monitoring results indicate Very Poor IBI scores at all MLS and TWAS locations. One of the three SMC bioassessment results shows a finding of no biological impairment (SMC02145), and two results indicate Very Poor IBI. The SMC station with the highest bioassessment score is farthest upstream in the watershed.
- Regional Source Identification: Residential land use runoff data collected within the City of Oceanside indicate that single-family residential land uses may be potential sources of bifenthrin, dissolved copper, and fecal coliform during wet weather. During dry weather, residential areas may be sources of TSS, turbidity, dissolved copper, bacteria, nutrients, and TDS.

Table 2-2. Summary of San Luis Rey River MLS Drainage Area Assessment Findings.

San Luis Rey River MLS San Luis Rey River at Benet Bridge, northwest of Oceanside Municipal Airport			
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**	**Core Management Question(s) Addressed**
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med) • Biology – Very Poor IBI* • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – Total Nitrogen, Dissolved Phosphorus, Total Phosphorus • TDS – TDS SMC Program (Three Stations, SMC02145, SMC00665, SMC00857) • Chemistry – Chloride, Sulfate • Toxicity – No toxicity observed • Biology – Very Poor IBI at SMC00857 and SMC00665 • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorus at SMC00665 and SMC00857, Nitrate at SMC02145 • TDS – TDS Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Chemistry – DO • Bacteria – *Enterococcus*, *E. coli*	NPDES Program • Chemistry – pH (Med) • Toxicity – *C. dubia* reproduction (Med) • Biology- Very Poor IBI[3] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – TDS Synthetic Pyrethroids in Sediment* • No priority constituents identified	1, 2
Urban Runoff Monitoring	MS4 Program • Chemistry – Chloride, Ammonia (Med) • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – Total Nitrogen, Total Phosphorus, Dissolved Phosphorus Nitrate/Nitrite (Med) • TDS – TDS	MS4 Program • Chemistry – BOD*, COD*, Turbidity*, Total Selenium* TSS (Med) • Bacteria – Fecal Coliform • Nutrients – Nitrate (Med), Nitrate/Nitrite (Med) • TDS – TDS	3, 4
Trends[4]			
Increasing[5, 6, 7, 8]		Fecal Coliform, Total Coliform, *Enterococcus*, Dissolved Phosphorus, Ammonia, pH, Turbidity	5
Decreasing[6, 7]		Conductivity, Total Hardness, TDS	
Source Identification Study			

San Luis Rey River MLS San Luis Rey River at Benet Bridge, northwest of Oceanside Municipal Airport			
System Assessed	Dry Weather Priority Constituents[1]	Wet Weather Priority Constituents[1]	Core Management Question(s) Addressed
	• Chemistry – TSS (Med), Turbidity (Med), Dissolved Copper (Med) • Bacteria – *Enterococcus*, Fecal Coliform • Nutrients – Total Nitrogen, Total Phosphorus, Nitrate (Med) • TDS – TDS	• Chemistry – Bifenthrin, Dissolved Copper (Med) • Bacteria – Fecal Coliform	

Note: Results included in this table reflect data collected above the receiving water station and below Lake Henshaw.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity "no observed toxicity" was stated.
[2] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples.
[3] One bioassessment sample is collected each year during ambient conditions and is used for both the dry and wet assessment.
[4] Trends based on wet weather historical data, including data from the 2010-2011 monitoring year.
[5] Fecal coliform and TDS results have consistently been above the WQB.
[6] Ammonia and dissolved phosphorus concentrations have consistently been below the WQB.
[7] Turbidity was below the WQB for the past two years monitored.
[8] pH exceeded the WQB in one sample from the 2010-2011monitoring year; however, it is historically below the WQB.
*One sample used in analysis.

Med - medium priority constituent	MLS - mass loading station
TDS - total dissolved solids	MS4 - municipal separate storm sewer system
TSS – total suspended solids	SMC - Stormwater Monitoring Coalition
IBI – Index of Biotic Integrity	BOD – biochemical oxygen demand
DO – dissolved oxygen	COD – chemical oxygen demand
NPDES - National Pollutant Discharge Elimination System	

Table 2-3. Summary of San Luis Rey River TWAS 2 Drainage Area Assessment Findings.

San Luis Rey River TWAS-2 San Luis Rey River south of North River Rd. (below Melba Bishop Park) and north of College Blvd.			
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**	**Core Management Question(s) Addressed**
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med) • Biology – Very Poor IBI* • Bacteria – *Enterococcus* (Med) • Nutrients – Total Nitrogen, Total Phosphorus Dissolved Phosphorus • TDS – TDS SMC Program (Two Stations SMC02145, SMC00665) • Chemistry – Chloride, Sulfate • Toxicity – No toxicity observed • Biology – Very Poor IBI at SMC00665 • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorus at SMC00665, Nitrate at SMC02145 • TDS – TDS Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Chemistry – DO • Bacteria – *Enterococcus*, *E. coli*	NPDES Program • Chemistry – TSS (Med), Turbidity (Med), Diazinon (Med), Malathion (Med) • Toxicity – *C. dubia* acute (Med), *C. dubia* chronic (Med), *C. dubia* reproduction (Med), *H. azteca* acute (Med) • Biology – Very Poor IBI[3] • Bacteria – Fecal Coliform (Med) • Nutrients – Total Phosphorus (Med) • TDS – TDS Synthetic Pyrethroids in Sediment* • Bifenthrin	1, 2
Urban Runoff Monitoring	MS4 Program • Chemistry – Chloride Ammonia (Med) • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – Total Nitrogen, Total Phosphorus, Dissolved Phosphorus Nitrate/Nitrite (Med) • TDS – TDS	MS4 Program • Chemistry – BOD*, COD*, Turbidity*, Total Selenium* TSS (Med) • Bacteria – Fecal Coliform • Nutrients – Nitrate (Med), Nitrate/Nitrite (Med) • TDS – TDS	3, 4

Note: Results included in this table reflect data collected above the receiving water station and below Lake Henshaw.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.

[2] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples.

[3] One bioassessment sample is collected each year during ambient conditions and is used for both the dry and wet assessment.

*One sample used in analysis.

Med - medium priority constituent	TWAS – temporary watershed assessment station
TDS - total dissolved solids	MS4 - municipal separate storm sewer system
TSS – total suspended solids	SMC - Stormwater Monitoring Coalition
IBI – Index of Biotic Integrity	BOD – biochemical oxygen demand
DO – dissolved oxygen	COD – chemical oxygen demand
NPDES - National Pollutant Discharge Elimination System	

Table 2-4. Summary of San Luis Rey River TWAS 1 Drainage Area Assessment Findings.

San Luis Rey River TWAS-1 San Luis Rey River at Camino Del Rey Bridge, east of CA076 and west of San Luis Rey Downs Golf Resort			
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**	**Core Management Question(s) Addressed**
Receiving Water Monitoring	NPDES Program • Chemistry – No priority constituents identified • Toxicity – No toxicity observed • Biology – Very Poor IBI* • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen, Total Phosphorus • TDS – TDS SMC Program – (One Station, SMC02145)* • Chemistry – Chloride, Sulfate • Toxicity – No toxicity observed • Biology – No priority constituents identified • Bacteria – Not analyzed • Nutrients – Nitrate, Total Nitrogen • TDS – TDS Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Chemistry – DO • Bacteria – *Enterococcus*	NPDES Program • Chemistry – TSS (Med), Turbidity (Med) • Toxicity – *C. dubia* reproduction (Med) • Biology – Very Poor IBI[3] • Bacteria – Fecal Coliform • Nutrients – No priority constituents identified • TDS – TDS Synthetic Pyrethroids in Sediment* • No priority constituents identified	1, 2
Urban Runoff Monitoring	MS4 Program • Chemistry – Chloride • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – Total Nitrogen, Total Phosphorus, Dissolved Phosphorus Nitrate (Med), Nitrate/Nitrite (Med) • TDS – TDS	MS4 Program • Chemistry – TSS (Med) • Bacteria – Fecal Coliform (Med) • Nutrients – Nitrate (Med), Nitrate/Nitrite (Med) • TDS – TDS	3, 4

Note: Results included in this table reflect data collected above the receiving water station and below Lake Henshaw.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.
[2] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples.
[3] One bioassessment sample is collected each year during ambient conditions and is used for both the dry and wet assessment.
*One sample used in analysis.

Med - medium priority constituent
TDS - total dissolved solids
TSS – total suspended solids
DO – dissolved oxygen
NPDES - National Pollutant Discharge Elimination System
TWAS – temporary watershed assessment station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
IBI – Index of Biotic Integrity

Tables 2-5 and 2-6 present the wet and dry weather priority constituents, respectively, for receiving waters and allow a spatial comparison for MS4 data. The wet weather and dry weather priority constituents were identified as such based on 2010-11 Copermittee data. The corresponding ratings for these constituents in each HSA are based on the 2010-11 MS4 program results. These tables summarize the spatial distribution of MS4 data compared to the priority constituents in the receiving water.

Table 2-5. Summary of Spatial Distribution of Priority Wet Weather Constituents Compared to 2010-11 Random Wet MS4 Outfall Data.

Station Type	HA	HSA	Parameter	pH	Total Suspended Solids	Turbidity	Total Dissolved Solids	Phosphorus, Total	Fecal Coliform	Diazinon	Malathion
MS4 by HSA	*Lower San Luis (903.10)*	*Mission (903.11)*	*% > Criteria*	0% (n=2)	50% (n=2)	100% (n=1*)	100% (n=2)	0% (n=2)	100% (n=2)	0% (n=1*)	0% (n=1*)
		Bonsall (903.12)	*% > Criteria*	0% (n=4)	25% (n=4)	NA	100% (n=4)	0% (n=4)	50% (n=4)	NA	NA
		Moosa (903.13)	*% > Criteria*	0% (n=1*)	0% (n=1*)	NA	100% (n=1*)	0% (n=1*)	100% (n=1*)	NA	NA
		Valley Center (903.14)	*NA*	NA	NA	NA	NA	NA	NA	NA	NA
		Woods (903.15)	*NA*	NA	NA	NA	NA	NA	NA	NA	NA
		Rincon (903.16)	*NA*	NA	NA	NA	NA	NA	NA	NA	NA
SLR-MLS Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	0% (n=7)	29% (n=7)	100% (n=1*)	100% (n=7)	0% (n=7)	71% (n=7)	0% (n=1*)	0% (n=1*)
			RW Score	Med	Low	Low	High	Low	High	Low	Low
SLR-TWAS-2 Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	0% (n=6)	33% (n=6)	100% (n=1*)	100% (n=6)	0% (n=6)	67% (n=6)	0% (n=1*)	0% (n=1*)
			RW Score	Low	Med	Med	High	Med	Med	Med	Med
SLR-TWAS-1 Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	0% (n=3)	33% (n=3)	NA	100% (n=3)	0% (n=3)	33% (n=3)	NA	NA
			RW Score	Low	Med	Med	High	Low	High	Low	Low

*One station was used in the summary.

HAs without MS4 data are not listed including Monserate (903.20) and Warner Valley (903.30).

Key

High	> 50% Above benchmark
Medium	> 25% and ≤ 50% Above benchmark
Low	≤ 25% Above benchmark
No Data	

HA – hydrologic area
HSA – hydrologic subarea
MLS – mass loading station
MS4 – municipal separate storm sewer system
n – number of samples

NA – not available
RW – receiving water
SLR – San Luis Rey River
TWAS – temporary watershed assessment station

Table 2-6. Summary of Spatial Distribution of Priority Dry Weather Constituents Compared to 2010-11 Random and Targeted Dry MS4 Outfall Data.

Station Type	HA	HSA	Parameter	Total Nitrogen (calculated)	Total Phosphorus	Total Dissolved Phosphorus	Total Dissolved Solids	Fecal Coliform	Enterococcus
MS4 by HSA	*Lower San Luis (903.10)*	*Mission (903.11)*	*% > Criteria*	100% (n=5)	60% (n=5)	NA	100% (n=5)	80% (n=5)	100% (n=5)
		Bonsall (903.12)	*% > Criteria*	95% (n=19)	84% (n=19)	64% (n=14)	100% (n=19)	37% (n=19)	84% (n=19)
		Moosa (903.13)	*% > Criteria*	83% (n=6)	100% (n=6)	67% (n=6)	100% (n=6)	67% (n=6)	83% (n=6)
		Valley Center (903.14)	*% > Criteria*	100% (n=1*)	100% (n=1*)	100% (n=1*)	100% (n=1*)	100% (n=1*)	100% (n=1*)
		Woods (903.15)	*NA*	NA	NA	NA	NA	NA	NA
		Rincon (903.16)	*% > Criteria*	100% (n=1*)	100% (n=1*)	NA	100% (n=1*)	0% (n=1*)	100% (n=1*)
	Monserate (903.20)	*Pala (903.21)*	*% > Criteria*	100% (n=1*)	100% (n=1*)	0% (n=1*)	100% (n=1*)	100% (n=1*)	100% (n=1*)
		Pauma (903.22)	*NA*	NA	NA	NA	NA	NA	NA
		La Jolla Amago	*NA*	NA	NA	NA	NA	NA	NA
SLR-MLS Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	94% (n=32)	88% (n=32)	64% (n=22)	100% (n=32)	50% (n=32)	88% (n=32)
			RW Score	High	High	High	High	Med	High
SLR-TWAS-2 Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	93% (n=30)	86% (n=30)	64% (n=22)	100% (n=30)	47% (n=30)	87% (n=30)
			RW Score	High	High	High	High	Low	Med
SLR-TWAS-1 Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	94% (n=17)	88% (n=17)	55% (n=11)	100% (n=17)	35% (n=17)	82% (n=17)
			RW Score	High	High	Low	High	Low	High

*One station was used in the summary.
HAs without MS4 data are not listed including Warner Valley (903.3).

Key

High	> 50% Above benchmark
Medium	> 25% and ≤ 50% Above benchmark
Low	≤ 25% Above benchmark
No Data	

HA – hydrologic area
HSA – hydrologic subarea
MLS – mass loading station
MS4 – municipal separate storm sewer system
n – number of samples
NA – not available
RW – receiving water
SLR – San Luis Rey River
TWAS – temporary watershed assessment station

Table 2-7 summarizes the 303(d) listed water bodies and constituents within the San Luis Rey River WMA, and identifies whether available data support the listings. Table 2-7 also identifies where there are no data, and whether total maximum daily loads (TMDLs) have been developed. As identified in the table, there are listed waterbodies where data may be needed to verify impairments.

Table 2-7. San Luis Rey River WMA Assessment Conclusions in Relation to 2008 Section 303(d) Listings.

Waterbody Name	HSA	HSA No.	303(d) Listed Pollutant/ Stressor	Supported by Regional Data	Supported by SMC/ Third-Party Data	TMDL
Pacific Ocean Shoreline	Mission	903.11	Enterococcus and total coliform	✓	✓	✓
Lower San Luis Rey River	Mission	903.11	Chloride, TDS, *Enterococcus*, fecal coliform, phosphorus, nitrogen, and toxicity	✓	✓	
Guajome Lake	Mission	903.11	Eutrophic	No data	No data	
Upper San Luis Rey River	Bonsall	903.12	Nitrogen	No data	✓	
Keys Creek	Bonsall	903.12	Selenium	No data	No data	

Source: SWRCB, 2011.

HSA – hydrologic subarea
SMC – Stormwater Monitoring Coalition
SWRCB – State Water Resources Control Board
TDS – total dissolved solids
TMDL – total maximum daily load

Answers to the five Core Management Questions are provided below.

Core Management Question 1.
Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 aims to link water and habitat quality and species toxicity to the many beneficial uses of the San Luis Rey River Watershed. This question is best addressed using a long-term assessment in addition to a more detailed look at the linkage between priority constituents and specific beneficial uses. The Long-Term Effectiveness Assessment (LTEA) five-year analysis was completed during FY 2010-11. The LTEA analysis offers the opportunity to compare annual water quality conditions with longer term trends in receiving water and habitat quality. This comparison can be made by evaluating the similarities in priority constituent ratings among the FY 2010-11 and the LTEA datasets. Both assessments use a triad approach for receiving water that includes chemistry, toxicity, and benthic community assessments. The triad approach provides a more holistic assessment of the overall health and conditions protective of beneficial uses, rather than just identifying priorities based solely on chemistry results. In addition, bacteria, nutrients, and dissolved minerals monitoring results from WURMP Activity SLR-001 also inform the discussion of the conditions in the San Luis Rey River.

During wet weather, fecal coliforms and TDS have consistently been identified as high priority constituents historically in the LTEA and in the current monitoring year's FY 2010-11 regional data assessments. During the FY 2010-11 monitoring year, TDS was a high priority at the MLS and both upstream TWAS stations. Fecal coliforms were a high priority at the MLS and TWAS-1, but a medium priority at TWAS-2, which is four miles upstream of the MLS and six miles downstream of TWAS-1. TSS, turbidity, and the pesticide, bifenthrin, in addition to fecal coliforms and TDS were a high priority in the LTEA assessment at TWAS-1. These high priority ratings were not replicated during the FY 2010-11 assessment at TWAS-1, however, TSS and turbidity were deemed a medium priority at both TWAS locations. A comparison between the LTEA and TWAS-2 is not possible, as this is the first year of data collection at that site.

Toxicity is not a high priority during wet weather. It is identified as a medium priority at all sites during the FY 2010-11 regional monitoring and at the TWAS-1 station in the LTEA assessment. It was identified as a low priority at the MLS in the LTEA assessment.

During ambient conditions, five constituents stood out as consistent high or medium priority analytes in the LTEA and the FY 2010-11 regional monitoring data assessment at all sites assessed. These five constituents are Enterococcus, dissolved phosphorous, total phosphorous, total nitrogen and TDS.

Toxicity was a low priority at both sites in the LTEA assessment. In the FY 2010-11 regional monitoring assessment, it is a low priority at the MLS and a medium priority at both TWAS stations.
Bioassessment surveys assess the biological indicators within the receiving waters. The surveys are conducted in ambient conditions, but results apply to overall benthic conditions year round.

Biological indicators, as measured by IBI scores, are rated as a high priority in both the LTEA and the FY 2010-11 regional monitoring assessments.

The monitoring conducted jointly between the City of Oceanside and the County of San Diego as WURMP Water Quality Activity SLR-001 provides additional ambient data for bacteria, TDS, and nutrients for eight main stem sites of the San Luis Rey River. The data supports the high-priority designations of indicator bacteria, nutrients, and TDS.

Monthly bacteria sampling conducted year-round during ambient conditions since 2004 indicates that the overall mean concentration (mean of all sites and all events) of total coliform, fecal coliform and Enterococcus indicators remained below their corresponding AB411 single sample standards in the receiving water. Individual site means for four sites in the Mission HSA and one site in the Bonsall HSA were above the AB411 single sample standard for Enterococcus; the remaining site means for Enterococcus and the other indicators were below AB411 single sample standards.

In addition to main stem river stations, beginning in 2006, sampling began at the Pacific Ocean and San Luis Rey River Mouth mixing zone. The relative mean concentrations for all indicator bacteria for the duration of sampling (2006 through 2011) were below the AB411 single samples standards at the shoreline. Eight samples for total coliform, fecal coliform, and Enterococcus were collected in the mixing zone under the SLR-001 program in FY 2010-11. In this reporting year, there were no total coliform exceedances at the shoreline or in the river mouth. There were no exceedances at the shoreline for fecal coliform, but two in the river mouth, and there was one exceedance for Enterococcus at the shoreline and three in the river mouth. The number of exceedances has decreased from the previous year. See Appendix A for more detailed information.

Supporting the priority findings in the LTEA and the FY 2010-11 regional monitoring assessments, WURMP Activity SLR-001 monitoring results indicate that both the mean total nitrogen and total phosphorous concentrations exceeded the Basin Plan water quality objectives of 0.1 mg/L for total phosphorus and 1.0 mg/L for total nitrogen at all monitoring locations. Along the main stem of the River, mean total phosphorous concentrations increased gradually from upstream (east) to downstream (west) but this pattern was not observed for total nitrogen whose highest mean concentration was recorded at the easternmost sampling location within the Bonsall HSA.

TDS concentrations were also collected through WURMP Activity SLR-001. The results support the LTEA and the FY 2010-11 regional monitoring assessments priority findings for TDS, as well. Generally, the mean concentration of TDS in the River increases from east to west and exceeds the surface water Basin Plan objectives at all main stem sites.

In summary, exceedances of bacteria, nutrients, and dissolved mineral Water Quality Objectives (WQOs) and poor rapid stream bioassessment results indicate that conditions in the San Luis Rey River may not be protective of some beneficial uses. The receiving water monitoring results support the selection of bacteria and nutrients as high priority constituents and therefore support the activities in implementation and planned for future implementation within the Watershed.

Core Management Question 2.
What is the extent and magnitude of the current or potential receiving water problems?
As identified through multiple receiving water monitoring programs, the priority constituents during wet weather are TDS and bacteria. The priority constituents during dry weather are bacteria, nutrients, and TDS. Core Management Question 2 was addressed with magnitude of exceedance ratios and spatial analysis of priority constituents using the FY 2010-11 regional monitoring ambient and wet weather assessments in the receiving waters. The joint monitoring conducted by the County of San Diego and the City of Oceanside, detailed in Appendix A, also provides a spatial extent of exceedances for bacteria, TDS and chloride, and nutrients for mean results from 2004 through March 2011 to supplement the regional data.

The magnitude of the receiving water problems can be assessed by reviewing the frequency that the results are above the benchmark, which is how the constituent priorities are determined, and by the ratio of the measured concentration to the appropriate benchmark. The constituent priorities are addressed in Core Management Question 1. During wet weather, the highest median ratio to benchmark for TDS is 2.8 at SLR-TWAS-1 and the highest median ratio to benchmark for fecal coliform was 629 at SLR-MLS. During ambient conditions, the median ratio to benchmark for TDS is 2.9 at all three locations in the watershed. The highest median ratio to benchmark for Enterococcus is 7.28 at the MLS. The highest median ratios to benchmark for nutrients are 3.89 for total nitrogen at the MLS, 1.80 for total phosphorus at TWAS-2, and 1.55 for dissolved phosphorus at the MLS and TWAS-2.

The MLS and TWAS stations are located within the lower 12 miles of the San Luis Rey River. Therefore, the discussion of the extent of the spatial receiving water problems are confined to the discussion presented in Core Management Question 1 and the discussion on magnitude above. Overall, the high priority constituents are uniform throughout the sampling area during wet and dry weather. The SMC Program, which uses a random sample selection method and samples during ambient conditions, includes sites that are within this lower 12 mile area and some that are upstream, depending on the monitoring year's selection. The SMC results have generally supported the priority ratings used in the LTEA and the Regional Monitoring Program assessments. In the FY 2010-11 monitoring year, three SMC sites were sampled in the receiving waters; one site near TWAS-2, one site located one-mile downstream of TWAS-1, and one site approximately 13 miles upstream of TWAS-1, still within the Lower San Luis HU. The two SMC sites near the TWAS stations had similar results and priorities. The only difference was that the SMC Program monitors for chloride and sulfate, while the Regional Monitoring Program does not. These two constituents, which contribute to TDS, as well as TDS itself, were considered a high priority at all sites monitored. At the most upstream site, total phosphorus and the benthic community assessment were low priorities. Bacteria are not monitored through this program and thus indicator bacteria results cannot be compared.

Supporting this, the results of the joint monitoring program, SLR-001, also found that total nitrogen concentrations were consistent, and actually greater, at the most upstream site while total phosphorus concentrations increased gradually from upstream to downstream. The joint monitoring program results show TDS and chloride increasing from east to west, with a slightly lower mean result at Douglas and a larger increase at Benet. All stations exceed the Basin Plan water quality objectives for TDS and all but the most upstream site exceed the Basin Plan water quality objectives for chloride. The joint monitoring program also concluded that indicator

bacteria means are typically lowest at the eastern and western most sampling stations, with a peak at the Douglas sampling location.

Historical stream bioassessment monitoring conducted in the WMA indicates a Very Poor benthic community at both MLS and TWAS locations. The consistent rating of Very Poor at both the MLS and TWAS since 2001 suggests that the extent of the impairment on the benthic community is not isolated only to a single location. The SMC 2010–2011 bioassessment results also indicate a Very Poor benthic community at two of three random sites monitored within the WMA. However, the SMC site located furthest upstream had a Good rating that suggests some variability in biological conditions spatially.

Toxicity results were a medium priority at all MLS and TWAS wet weather sites during the FY 2010-11 monitoring year. However, while slight toxicity to C. dubia reproduction was observed at the MLS and TWAS-1, C. dubia survival and reproduction and toxicity to H. Azteca survival was observed during one monitoring event at TWAS-2. TSS, turbidity, and two banned pesticides, malathion and diazinon, were found in the water chemistry during the same event and are likely linked to the toxicity results. During ambient monitoring, toxicity to C. daphnia reproduction was observed during one event at the MLS and TWAS-2 creating a medium priority. However, the three SMC sites and TWAS-1 did not have any signs of toxicity during ambient conditions.

Residential and agricultural land uses make up the highest percentage in the Lower San Luis HA whereas open space and vacant land make up most of the Monserate and Warner Valley HAs. Thus the extent of the current and potential receiving water problems are likely concentrated in the Lower San Luis HA, and coincide with more intensive monitoring. Bacteria and nutrients have the highest median ratio to benchmark results from the monitoring, which indicate a higher magnitude of exceedance, and are therefore designated as high priority constituents. Lower HA results indicate that total nitrogen concentrations tend to decrease downstream, while bacteria increase. TDS also increases as the River flows towards the ocean.

Core Management Question 3
What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 is partially answered through the MS4 Outfall Monitoring Program. In 2010–2011, the San Luis Rey River WMA MS4 was assessed through the random dry, random wet, and targeted dry components of the MS4 Outfall Monitoring Program. CSDM results and WURMP Activity SLR-001 provide supplemental information to address the relative urban runoff contribution to the receiving water problems.

During wet weather, fecal coliform and TDS were identified as high priority constituents in both the MS4 and the receiving water during the FY 2010-11 regional monitoring in the MLS drainage area and in the downstream TWAS-2 drainage area. Fecal coliforms were a medium priority, while TDS was identified as a high priority in the TWAS-1 drainage area. The MS4 Outfall Monitoring Program data will be more robust following the 5-year planned assessment period, which began as directed in Order R9-2007-01 in 2008.

During dry weather, total nitrogen, total phosphorus, TDS, chloride, and Enterococci were identified as high priority constituents in both the MS4 and the three regional monitoring station drainage areas during FY 2010-11. Dissolved phosphorus was also identified as a high priority in the MS4 and in two of the downstream station drainage areas (MLS and TWAS-2).

The CSDM results indicate that coastal storm drains do not appear to be effecting bacterial concentrations in the coastal receiving waters during dry weather conditions among the sites sampled.

The joint monitoring program (SLR-001) also provides information on both tributary and receiving water quality. For bacteria, the total and fecal coliform relative mean concentration results remain below the AB411 single sample standard at all main stem sites. While there are peaks in the spatial data, none appear to correlate with the tributary results. Five of the nine Enterococcus relative mean concentration results at the main stem sites were above AB411 single sample standards with two peaks, one at Douglas and one upstream at Olive Hill Road. All but one tributary sampled for Enterococcus had results that were equal to or greater than the AB411 single sample standard. The site with the highest mean concentration (Douglas) has no visible tributaries or outfalls between it and the next upstream main stem site (Murray). Four tributaries upstream of Olive Hill Road were sampled and three of the four relative means were above the single-sample mean for Enterococcus.

All of the tributaries sampled in the joint monitoring program have a relative mean concentration greater than the Basin Plan objective for TDS and all but one have relative mean concentrations greater than the objective for chloride. Two tributaries in the Mission HSA (Sleeping Indian and Pilgrim Creek) have also been identified as having the higher TDS concentrations than the other sampling sites. Pilgrim Creek was also identified as having the highest chloride concentration. Both sites downstream of these tributaries do show a slight increase in TDS and chloride levels. However, mineral composition of TDS at Pilgrim Creek renders that tributary characteristically different from the others. The mean concentrations of the main stem samples are very similar to the mean groundwater concentrations, which indicate that groundwater is influencing water quality in the main stem.

Bacteria, nutrients, and dissolved minerals are identified as priority constituents in the receiving water and the MS4 indicating that there is the potential for urban runoff contribution to the receiving water. However, the monitoring programs have not determined the relative contribution.

Core Management Question 4
What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is addressed through the Regional Source Identification Monitoring Program and also from the completion of the Lower San Luis Rey Bacteria Source Identification Project, a State Clean Beaches Initiative Grant.

The 2010-11 Regional Source Identification program was designed to assess dry weather and wet weather runoff from single-family residential areas. The studies were conducted at two

locations, one within the San Luis Rey Watershed (Mission HSA) in the City of Oceanside. Wet weather results from the site within the San Luis Rey Watershed indicate that residential parcels within the study area contributed bacteria, dissolved copper, and pesticides (specifically bifenthrin) above water quality benchmarks during storm events. Dry weather results indicate that residential parcels within the study area contributed nutrients, dissolved and suspended solids (TSS, TDS, and turbidity), bacteria, and dissolved copper above water quality benchmarks during ambient conditions.

During 2010-11, the City of Oceanside, with match funding from the County of San Diego and the City of Vista, completed a three year, grant-funded bacteria source tracking study in the Lower San Luis Rey River. Genetic bacterial analysis focused primarily on identifying if there were bacteria from human and avian sources in the main stem and tributaries of the lower watershed. The results of the project did point to both human and avian sources present during wet and dry weather at the river mouth and human sources (avian sources were not tested) in main stem and tributary locations of the Lower San Luis Rey River. Other sources are likely present (pets, other animals, and/or vegetation), but the quantification or division of percentage of these sources is not available from the project. However, the results indicate and steer recommendations for the City and other Watershed stakeholders to prioritize future management action and studies on activities that may result in human bacteria, such as sewer infrastructure, on-site wastewater systems, and homeless encampments.

The land-use based Regional Source Identification Monitoring Program indicates that single-family residential land uses contribute bacteria, nutrients, dissolved and suspended solids, dissolved copper, and pesticides to receiving waters. Regional studies have not yet addressed other land-use contributions, although more research is being completed, and other sources of priority constituents are expected. The City of Oceanside's grant-funded project, the Lower San Luis Rey Bacteria Source Identification Project, indicated that both human and avian sources contribute to bacteria levels in the River and at the shoreline. However, the project scope was limited to identifying the presence or absence of these two specific sources, while acknowledging that other sources are present in the Watershed.

Core Management Question 5
Are conditions in receiving waters getting better or worse?

Core Management Question 5 is best addressed through trend analysis of constituent concentrations from monitoring over a long period of time. The majority of historical data is from wet weather monitoring at the San Luis Rey MLS (2001 through 2011).

Based on the trend analysis there were ten statistically significant trends. Indicator bacteria (i.e., total coliforms, fecal coliforms, and Enterococcus), ammonia, pH, and turbidity have increased over time at the MLS. However, only fecal coliform has been consistently above water quality benchmarks, and turbidity results have been below water quality benchmarks for the last two years of monitoring. Total coliforms and Enterococcus do not have wet weather water quality benchmarks. In contrast, concentrations of conductivity, dissolved phosphorus, TDS, and total hardness are decreasing over time.

The bioassessment ratings at the San Luis Rey MLS and TWAS have been Very Poor in nearly all assessments conducted between 2001 and 2011 in the Mission HSA and there are no apparent trends in the benthic community.

Toxicity has rarely been observed in samples collected from the San Luis Rey MLS. Between 2001 and 2011, toxicity was observed during just three storm events. There are no significant trends for toxicity in the data set and toxicity is not a persistent issue in the Watershed.

Because assessing data for trends requires a large time-scale, only wet weather data can be used to asses if conditions are getting better or worse. In wet weather, bacteria, ammonia, pH, and turbidity have increased at the MLS. Conductivity, dissolved phosphorus, TDS, and total hardness have decreased.

2.1.3 WATERSHED WATER QUALITY PROBLEMS

Section 3.1.3 of the March 2008 WURMP identifies criteria to be used by the SLR Copermittees to identify priority and high priority water quality problems within the SLR WMA (SLR WURMP 2008). Based on these criteria, Table 2-6 identifies all the watershed water quality problems, including high priorities, and provides a brief explanation of the supporting information used to make each decision.

Table 2-8. Water Quality Problems in the San Luis Rey WMA.

Water Quality Problem	WURMP High Priority?	Explanation
Bacteria	Yes	- TMDL for bacterial indicators at the Pacific Ocean Shoreline, San Luis Rey River mouth - 303(d) listing for Enterococcus and fecal coliform for the Lower San Luis Rey River - Persistent exceedances of bacterial indicators benchmarks at the MLS and TWAS. Also see Appendix A, SLR-001.
Nutrients	Yes	- 303(d) listing for Eutrophication at Guajome Lake - 303(d) listing for Total Nitrogen and Total Phosphorus for the Lower San Luis Rey River. - 303(d) listing for Total Nitrogen for the Upper San Luis Rey River. - Persistent exceedances of nutrient-related constituents at the MLS and TWAS. Also see Appendix A, SLR-001.
Dissolved Minerals (TDS & Chloride)	No	- 303(d) listings for TDS and chloride for Lower San Luis Rey River - Persistent exceedances of TDS benchmarks observed at the MLS and TWAS. Also see Appendix A, SLR-001.
Benthic Alteration	No	- Consistent "Poor" or "Very Poor" IBI scores and O/E ratio results at the MLS and TWAS
Selenium	No	- 303(d) listing for Eutrophication at Keys Creek
Toxicity	No	- 303(d) listing for Lower San Luis Rey River

2.2 Pollutant Source Assessment

This section describes the likely sources, pollutant discharges, and other factors causing the high priority water quality problems within the watershed. Land use and facility source data have been examined and mapped for the entire watershed in order to identify the potential pollutant sources contributing to the watershed's high priority water quality problems presented in Appendix A, Figure 3-4 of the 2008 San Luis Rey WURMP (SLR WURMP 2008). Table 2-9 presents an overview of the land use distribution for major land use categories and potential sources within each HSA. This table supports the Watershed Copermittees' focus on activities in the Lower SLR Hydrologic Area. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. Moreover, there are only a few monitoring stations in these areas and very few exceedances have been observed to date. Figure 3-1 in Appendix A of the SLR WURMP 2008 provides a map of sampling locations in the SLR Watershed (SLR WURMP 2008).

Table 2-9 shows the contrast between the lower and upper watershed. Residential and agriculture land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed.

Table 2-9. Overview of Major Land Uses for San Luis Rey River WMA.

Hydrologic Sub Area	Major Land Use Categories[1]												
	Residential		Commercial / Industrial		Agriculture		OS/Preserve		Vacant		Military		Total Area Accounted for
	acres	%	acres	%	acres	%	acres	%	acres	%	acres	%	%
Lower San Luis HA (903.1)													
Mission HSA (903.11)	7,700	26	1,000	3	3,900	12	2,500	8	2,000	7	9,600	32	88
Bonsall HSA (902.12)	24,000	37	1,800	3	20,900	32	1,100	2	14,000	21	400	<1	96
Moosa HSA (903.13) Valley Center (903.14) Woods HSA (903.15) Rincon HSA (903.16)	8,400	38	600	3	5,400	21	500	2	6,600	28	0	0	92
Monserate HA (903.2)	9,200	9	800	1	18,300	17	14,000	13	64,200	59	0	0	99
Warner Valley HA (903.3)	4,300	3	400	<1	3,600	3	14,200	9	108,600	82	0	0	98
Total Land Area	53,600				52,100		32,300		195,400				

1. Source: County of San Diego based on SANDAG 2006 data, land use categories have been grouped for demonstration purposes.

2.2.1 Potential Bacteria Sources

The Baseline Long Term Effectiveness Assessment (BLTEA) represented the Copermittees' first attempt to identify sources of bacteria in the SLR River Watershed. Table 2-10 presents the BLTEA's list of "Likely" and "Unknown" bacteria sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE 2005). Table 2-11 lists the number of potential bacteria sources by HSA in addition to relevant land uses with the greatest potential to generate bacteria. Potential bacteria sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-5 through 3-10 (SLR WURMP 2008).

Table 2-10. Potential Bacteria Sources for the SLR River Watershed (From BLTEA).

Potential Bacteria Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Eating or drinking establishments	277	Likely
Animal Facilities	47	Likely
POTWs (water and wastewater)	17	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely

Potential Bacteria Sources	Number of Sources	Source Loading Potential
Sites for disposing and treating sewage sludge	-	Likely
Development subject to SUSMPs	115	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Motor Freight	2	Unknown
Auto parking lots and storage facilities	-	Unknown
Pest Control Services	49	Unknown
Flood management projects and flood control devices	-	Unknown
MS4s	-	Unknown
Park and Recreational facilities	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego – 2005

Table 2-11. Potential Bacteria Sources by Hydrologic Sub-Area.

HSA	Potential Bacteria Source	Number of Facilities or % Land Use
Mission HSA 903.11	Food Establishments	198
	Commercial Animal Facilities	66
	Auto Facilities	7
	Nurseries	54
	% Residential	26%
	% Agricultural	12%
Bonsall HSA 903.12	Food Establishments	48
	Commercial Animal Facilities	168
	Auto Facilities	34
	Nurseries	15
	% Residential	37%
	% Agricultural	32%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Food Establishments	20
	Commercial Animal Facilities	47
	Auto Facilities	4
	Nurseries	15
	% Residential	38%
	% Agricultural	21%
Monserate HSA 903.20	Food Establishments	9
	Commercial Animal Facilities	34
	Auto Facilities	1
	Nurseries	4
	% Residential	9%
	% Agricultural	17%
Warner Valley HSA 903.30	Food Establishments	7
	Commercial Animal Facilities	0
	Auto Facilities	1
	Nurseries	2
	% Residential	3%
	% Agricultural	3%

There is currently only one location within the watershed where an adequate source identification study has been performed to characterize the bacterial pollutant source: the Oceanside Harbor Boat Wash outfall. The City of Oceanside performs routine sampling at the

harbor boat wash and recreational vehicle sewage dump area as part of its CSDM Program. This monitoring has revealed high levels of bacteria in samples collected from the boat wash outfall. The outfall drains a short storm drain system where the only influence is from the public boat wash area which borders the sewage dump area for recreation vehicles. Educational signage and the installation of structural BMPs have decreased the exceedances of benchmark values at this site.

To identify other sources of bacteria specifically related to beach closures at the mouth of the SLR River the City of Oceanside was awarded a Proposition 50 Clean Beaches Initiative grant. With grant funding and matching funds from the City of Oceanside, County of San Diego and City of Vista, the bacteria source tracking project focused on identifying the presence or absence of human bacteria sources where human health risks were highest; at the river mouth. Therefore, river mouth specific sampling was prioritized, although additional sampling in the main stem and tributaries was also conducted. In addition, a weight of evidence approach to determining the presence of human bacteria sources was used at all sites, as well as a gull marker utilized at the river mouth.

The results of the project did point to both human and avian sources present during wet and dry weather at the river mouth and human sources (avian sources were not tested) in main stem and tributary locations of the Lower San Luis Rey River. Other sources are likely, but the quantification or division of percentage of these sources is not available from the Project. However, the results indicate and steer recommendations for the City and other Watershed stakeholders to prioritize future management action and studies on activities that may result in human bacteria, such as sewer infrastructure, on-site wastewater systems, and homeless encampments.

2.2.2 Potential Nutrient Sources

The BLTEA represented the Copermittees' first attempt to identify sources of nutrients in the SLR River Watershed. Table 2-12 presents the BLTEA's list of "Likely" and "Unknown" sources that were identified based on the development of source loading potential (SLP) ratings (WESTON, LWA, & MOE, 2005).

Table 2-13 lists the number of potential nutrient sources by HSA in addition to relevant land uses with the greatest potential to generate nutrients. Potential nutrient sources for which facility inventories have been developed are shown on maps in the SLR WURMP 2008, Appendix A, Figures 3-11 through 3-16 (SLR WURMP 2008). Preliminary investigations into land uses in the Guajome Lake drainage area have identified potential sources of nutrients to include residential, agricultural sources, commercial nurseries and agriculture, commercial horse facilities, and residential horse facilities.

Table 2-12. Potential Nutrient Sources for the SLR River Watershed (From BLTEA).

Potential Nutrient Sources	Number of Sources	Source Loading Potential
Botanical or zoological gardens and nurseries/greenhouses	315	Likely
Commercial Animal Facilities	47	Likely
Landscaping - parks, golf courses, cemeteries, etc.	15	Likely
Home automobile associated activities, home and garden care activities, waste disposal	-	Likely
Roads, streets, highways, and parking facilities	-	Likely
Park and Recreational facilities	-	Likely
Eating or drinking establishments	277	Unknown
Development subject to SUSMPs	115	Unknown
Auto mechanical repair, maintenance, fueling, or cleaning	57	Unknown
POTWs (water and wastewater)	17	Unknown
Active or closed municipal landfills	5	Unknown
Automobile wholesale	5	Unknown
Corporate yards (incl. maintenance/storage yards)	4	Unknown
Fabricated metal	4	Unknown
Equipment mechanical repair, maintenance, fueling, or cleaning	3	Unknown
Chemical and allied products	2	Unknown
Airfields	2	Unknown
Motor Freight	2	Unknown
Primary metal	1	Unknown
Auto parking lots and storage facilities	-	Unknown
Mobile carpet, drape, or furniture cleaning	76	Unknown
Pool and Fountain cleaning	60	Unknown
Sites for disposing and treating sewage sludge	-	Unknown

"-" signifies that no inventory information is available
Inventory data provided by the County of San Diego – 2005

Table 2-13. Potential Nutrient Sources by Hydrologic Sub-Area.

HSA	Potential Nutrient Source	Number of Facilities or % Land Use
Mission HSA 903.11	Commercial Animal Facilities	7
	Nurseries	66
	% Residential	26%
	% Agricultural	12%
	% Open Space	8%
	% Industrial/Commercial	3%
Bonsall HSA 903.12	Commercial Animal Facilities	34
	Nurseries	168
	% Residential	37%
	% Agricultural	32%
	% Open Space	2%
	% Industrial/Commercial	3%
Moosa HSA 903.13 Valley Center HSA 903.14 Woods HSA 903.15 Rincon HSA 903.16	Commercial Animal Facilities	4
	Nurseries	47
	% Residential	38%
	% Agricultural	21%
	% Open Space	2%
	% Industrial/Commercial	3%
Monserate HSA 903.20	Commercial Animal Facilities	1
	Nurseries	34
	% Residential	9%
	%Agricultural	17%
	%Open Space	13%
	% Industrial/Commercial	1%
Warner Valley HSA 903.30	Commercial Animal Facilities	1
	Nurseries	0
	% Residential	3%
	%Agricultural	3%
	%Open Space	9%
	% Industrial/Commercial	<1%

2.2.3 Other Potential Pollutant Sources

In addition to the potential pollutant sources discussed in the preceding sections, there are other likely pollutant sources that contribute to water quality degradation in the San Luis Rey River WMA. These sources include natural groundwater, imported water supply, aerial deposition, wildlife impacts, natural erosion, transportation corridors, and military facilities and activities. These potential sources present very unique and difficult challenges in their identification, quantification and assessment of either degradation or improvement. Also noteworthy is the Copermittees' jurisdictional and regulatory inability to control these sources or regulate their impacts and contribution to water quality degradation in the watershed.

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3 IMPLEMENTATION OF WATERSHED ACTIVITIES

Per the requirements of the Municipal Permit, the SLR Copermittees are required to identify and implement Watershed Activities that address the high priority water quality problems in the WMA. Watershed Activities shall include both Watershed Water Quality Activities and Watershed Education Activities. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level.

Activity Selection Process

During the planning process for the SLR WURMP 2008 the SLR Copermittees identified Watershed Activities that address the high priority water quality problems specific to the SLR WMA. Activity planning was conducted using the Collective Watershed Strategy which is a component of the Model Watershed Urban Runoff Management strategy found in the Regional Urban Runoff Management Program (RURMP). This process allows for the San Diego County Copermittees to establish and prioritize activities through the integration of water quality data to the loading potential of sources within the watershed and sub-watershed areas.

The first step in the strategy is to identify water quality problems watershed-wide and in each HA, where sufficient data is available. The second step is to identify the sources that are most likely contributing to the high priority water quality problems. The process used for the selection of potential sources that can contribute particular pollutants to the MS4 is outlined in the BLTEA document created by the San Diego County Copermittees in 2005. Based on the available data and the assessment of the four years of completed activities under the current Municipal Permit, the SLR Copermittees made appropriate management decisions when selecting and designing watershed water quality and watershed education activities. The overall goal of these activities is to reduce the discharge of pollutants causing the high priority water quality problems.

Activity Implementation

WURMP activities may be implemented individually or collectively, but do not need to be implemented watershed wide. WURMP activities can be implemented by one or more jurisdictions in the watershed yet should be a part of an overall watershed strategy collaboratively developed by the watershed Copermittees. Some of the activities the SLR Copermittees conducted or planned during this reporting period were implemented jurisdictionally while others were implemented watershed-wide or regionally. See Section 3.5 below for an updated five-year strategic plan. This plan provides summary information about each of the proposed watershed activities (both water quality and education) including, the watershed priority pollutants targeted by the activity and an implementation schedule for that activity.

The Copermittees have made significant progress in developing and implementing programs aimed at improving stormwater and urban runoff quality in the watershed during this reporting period. See Section 3.1 for information about Watershed Water Quality Activities implemented and Section 3.2 for Watershed Education Activities implemented during this reporting period.

3.1 Watershed Water Quality Activities

The SLR Copermittees are responsible for identifying and implementing Watershed Water Quality Activities that address the high priority water quality problems in the WMA. These activities may be implemented individually or collectively, and may be implemented at the regional, watershed, or jurisdictional level. The activity selection process is briefly described above and more fully in the SLR WURMP 2008.

During this reporting period, the SLR Copermittees implemented nine water quality activities. Table 3-1 lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-004	WQ	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-009	WQ	I	Nutrient Source Identification and Abatement: Guajome Lake
SLR-012	WQ	I	Land Acquisitions
SLR-015	WQ	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WQ	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WQ	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-021	WQ	I	Fallbrook Community Center Artificial Turf
SLR-022	WQ	I	Residential Rain Barrel Subsidies and Distribution

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented

3.2 Watershed Education Activities

This section describes actions planned by the SLR Copermittees during the 2010-11 reporting period to enhance the general public's understanding of basic watershed principles and sources of water pollution. The Copermittees are responsible for identifying and implementing Watershed Education Activities that address the high priority water quality problems in the San Luis Rey WMA.

During the reporting period, the Copermittees implemented seven watershed education activities. Table 3-2 below lists the activities that were in active implementation during the reporting period. Details of the each activity, including the effectiveness assessment for each activity, can be found in Appendix A – Activity Implementation Summary Sheets.

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-015	WE	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WE	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WE	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-020	WE	I	Residential Composting Workshop
SLR-022	WE	I	Residential Rain Barrel Subsidies and Distribution
SLR-023	WE	I	Residential Smart Landscape Evaluation Program

[1] WE = Watershed Education Activity
[2] I = Implemented

3.2.1 Additional Watershed Activities

In addition to the Watershed Water Quality and Watershed Education activities that qualify for WURMP credit, the SLR Copermittees implemented, planned or assessed six activities that they feel are important to implementation of the WURMP and development of future activities but don't receive WURMP credit. Table 3-3 below lists the activities for which tasks were implemented, planned or assessed during this reporting period. Details of each activity can be found in the Activity Implementation Sheets located in Appendix A.

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-001	M, S	SLR Watershed Water Quality Monitoring Program
SLR-003	M	Modular Wetland Installation of Oceanside Harbor Boat Wash Outfall
SLR-008	M, S	Guajome Lake Water Quality Monitoring Program
SLR-010	M, S	Lower SLR River Bacteria Source Tracking Study
SLR-013	P	Harbor Boat Wash Coin Operated Water Dispenser
SLR-018	P	Sports Park Watershed Education Signs

M = Watershed Water Quality Monitoring Activity; S = Source Identification/Characterization Activity
A = Assessment; P = Activity in Planning Stages

In addition to the above activity sheets the SLR Copermittees implemented various public participation and collaborative planning efforts that they feel are notable and should be reported in this WURMP Annual Report. The Copermittees feel that these additional activities are vital to the implementation of the overall WURMP and are complementary to the activities that qualify to receive WURMP credit. Details of each of these additional activities can be found Section 3.3.

3.3 Public Participation Activities

The SLR Copermittees are responsible for implementing a watershed-specific public participation mechanism within the watershed. The mechanism encourages participation from other organizations within the watershed which could include other agencies, private companies, non-governmental organizations, environmental groups, etc. Several opportunities are available

to the public to engage them in the implementation of the WURMP. Below is a summary of these opportunities and information about how they were implemented during this reporting period.

Outreach Events

The SLR Copermittees collaborated to staff informational booths at special events throughout the watershed. During this reporting period SLR Copermittees staffed booths at the following events and disseminated storm water related educational materials.

- July 31 & August 1, 2010 – Vista Rod Run
- September 25, 2010 – Bates Nut Farm Education Day (Valley Center)
- October 2 and 3, 2010 – Oceanside Harbor Days
- December 16, 2010 – Day Without A Bag
- March 12, 2011 – Oceanside Green Fair (Oceanside Amphitheatre)
- February 9, 2011 – San Diego County High Tech Fair
- April 17, 2011 - Fallbrook Avocado Festival
- May 29, 2011 – Strawberry Festival (Vista)
- June 18, 2011 - EnviroFair Day at the San Diego County Fair

Educational Materials Distributed

The SLR Watershed Copermittees collaborated on the dissemination of stormwater education pieces at outreach events. These materials were developed by the Copermittees, the Regional Education and Residential Sources Workgroup (ERS Workgroup) or developed in previous years by the North County Storm Water Program (NCSWP). Below is a summary of the materials distributed by the SLR Copermittees during this reporting period.

- Construction brochure highlighting construction site BMPs
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities
- General BMP brochure for residents
- Door hangers for residents with observed violations
- Click-message pens
- Pencils with Regional Stormwater Hotline
- Integrated Pest Management (IPM) Tip Cards, English and Spanish
- Personal pet waste bag dispensers
- Fats, oil and grease (FOG) education materials
- Regional Think Blue San Diego Stormwater Pollution Calendars

River, Creek, and Beach Cleanup Events

River, creek, and beach cleanup events are an excellent way to get the public involved with water quality programs and to educate them about how pollutants, including trash, reach the waterways through the storm drain system. During this reporting period there were five major cleanup events that had staging sites at several locations throughout the SLR watershed. A total of 1,164 volunteers removed over 5,500 pounds of trash and debris from coastal beaches and inland sites along the San Luis Rey River. Table 3-4 below provides summary information about these cleanup events.

Table 3-4. River, Creek and Beach Cleanup Event Summary.

Date	Name	Location	# of Participants		Total # of Participants	# of Pounds Removed
			Inland Sites	Coastal Sites		
7/05/2010	Morning After Mess	Oceanside Harbor		170	170	275
9/25/2010	Oceanside Beach Cleanup	South side of Pier		307	307	436
11/06/2010	San Luis Rey River Cleanup	Inland River Sites	87		87	4,000
11/06/2010	Oceanside Beach Cleanup	Harbor South Jetty		55	55	190
3/12/2011	Oceanside Beach Cleanup	South side of Pier		315	315	411
4/30/2011	Oceanside Beach Cleanup	South side of Pier		230	230	230
	Totals		**87**	**1,077**	**1,164**	**5,542**

North County Storm Water Program

Since the initiation of the ERS Workgroup in 2007-08 the San Luis Rey Copermittees have been attending bi-monthly meetings of the ERS Workgroup collaborating with all 21 Copermittees on regional stormwater education programs. Therefore the NCSWP group combined efforts with the ERS Workgroup during the FY 08-09 reporting period and has discontinued meeting. Materials developed under this group are still in use by SLR Copermittees including the following:

- Construction brochure highlighting construction site BMPs
- BMP posters specifically for restaurant activities
- BMP posters specifically for automotive repair and auto body repair activities

San Luis Rey Watershed Council

The SLR Watershed Copermittees continued participating in regular meetings of the San Luis Rey Watershed Council (SLRWC) during this reporting period. The SLRWC is a partnership of local landowners, agricultural growers, Native American Tribal bands, community and environmental organizations, government agencies, and special districts with ties to the watershed. The SLRWC's primary goal is to keep stakeholders apprised of issues and projects concerning the SLR Watershed and to develop and implement a comprehensive resource management plan for the SLR watershed. During FY 2009-10 the SLRWC received nonprofit status by the Federal Internal Revenue Service. The SLRWC can now submit grants on behalf of the watershed stakeholders and move toward implementing priority projects identified by the members. Staff from two SLR Copermittees (Oceanside and County of San Diego) fill seats on the Board of Directors of the organization.

Project Clean Water

Project Clean Water (PCW) is a water quality resource for the San Diego County region including Municipal NPDES Copermittees and the public. PCW, initiated in July 2000, established a framework for the broad-based and collaborative development of solutions to local water quality problems. PCW seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. It was formed under the guidance of a Technical Advisory Committee made up of local stormwater-related professionals. For more details on the development of PCW refer to the FY 2007-08 SLR WURMP Annual Report.

One component of PCW is the PCW website which is accessible to the public and is promoted for use by the public to gather information about San Diego County watersheds. There are several web pages that provide information on San Diego's Watersheds, programs and laws related to urban runoff, education information and how to report water pollution. This website provides Best Management Practices information for both residential and industrial/commercial audiences (http://www.projectcleanwater.org/bmp/).

PCW features a page devoted to the SLR WMA, with details on the watershed, major pollutants, and organizations related to water quality. Additionally the webpage also offers links to relevant documents such as the WURMP and WURMP Annual Reports. During FY 2010-11 the hits for the SLR Watershed page totaled 1,789 and there were also 410 hits on the SLR WURMP document.

Regional Education and Residential Sources Workgroup

The Regional Education and Residential Sources Workgroup (ERS Workgroup), was formed during FY 2007-08 under the auspices of the MOU between the 21 San Diego County Copermittees. During FY 2010-11, the ERS Workgroup was co-chaired by the City of Oceanside and City of Imperial Beach with support from the San Diego Regional Airport Authority as Secretary. The ERS Workgroup met six times during FY 2010-11. A list of meeting dates, locations, agenda items and accomplishments are provided in the Regional Urban Runoff Management Program (RURMP) Annual Report scheduled to be submitted to the RWQCB in January 2012.

During FY 2007-08, the ERS Workgroup developed a Regional Residential Education Plan (Plan) which was submitted to the Regional Water Quality Control Board as part of the March 2008 RURMP. During FY 2010-11 the SLR Copermittees, in conjunction with County Copermittees, continued to implement components of this Plan. A brief summary of the accomplishments of the ERS Workgroup are mentioned below. More details on workgroup products will be provided in the (RURMP) Annual Report scheduled to be submitted to the RWQCB in January 2012.

Regional Branding

The ERS workgroup continues to use the approved logo on its work products for unified branding as well as the Think Blue San Diego Region name. Regional Branding helps to unify the region's stormwater outreach messages.

EnviroFair at the San Diego County Fair

During this reporting period Copermittees collectively staffed a table at EnviroFair held on June 20, 2011 during the San Diego County Fair. This event is an excellent opportunity for Copermittees to collect event surveys that gather knowledge and awareness from event attendees related to stormwater related activities. Event survey results will be summarized in the RURMP AR due to the RWQCB in January 2012.

Mass Media

The ERS Workgroup continues to purchase media buys at various outlets. These include radio and television ads, as well as Public Service Announcements shown at movie theatres throughout the county.

Materials Development

The ERS Workgroup developed several outreach materials for distribution to residents in the San Diego County region:

- 2011 Spanish stormwater Calendar
- Pencils with regional stormwater hotline
- Pet waste bag dispensers

Partnership Development

1300 Spanish stormwater calendars distributed via a partnership with Wildcoast an international conservation team that conserves coastal and marine ecosystems and wildlife located in Imperial Beach, California.

Market Research and Development

Assessment of the following work products will be provided in the RURMP AR due to the RWQCB in January 2012

- Second telephone survey implemented within this permit cycle
- English stormwater calendar assessment

3.4 Collaborative Land-Use Planning Efforts

This section describes collaborative land use planning efforts within the San Luis Rey Watershed during FY 201-11. The SLR Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Land Acquisitions (Activity ID# SLR-012)

During this reporting period the County of San Diego acquired 33.85 acres of land within the San Luis Rey Watershed. These land acquisitions will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural runoff characteristics. All SLR Copermittees support the purchase of these lands with this purpose in mind.

3.4.1 Cross-Jurisdictional Communication

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the SLR Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of

Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the SLR Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

3.5 Updated 5-year Strategic Plan

As mentioned at the beginning of this section the SLR Copermittees are responsible for identifying and implementing Watershed Water Quality and Education Activities that address the high priority water quality problems in the SLR WMA. Utilizing the Collective Watershed strategy the SLR Copermittees have identified activities that will address priority pollutants in the SLR WMA. See Table 3-5 for an updated 5-year SLR WURMP Strategic Plan.

3.5.1 New Watershed Activities

One new watershed activity not listed in the FY 2009-10 SLR WURMP Annual Report 5-year strategic plan was implemented during this reporting period:

- SLR-023: Residential Smart Landscape Evaluation Program

This new activity is reflected in the updated 5-year SLR WURMP Strategic Plan. An activity Summary Sheets for this new activity is provided in Appendix A of this annual report.

One additional activity was in the planning stages during this reporting period:

- SLR-024: Guajome County Park Watershed Signs

3.5.2 Updated 5-Year Strategic Plan

Table 3-5 at the end of this section provides an updated 5-year Strategic Plan that reflects the status of watershed activities and includes new activities planned for future reporting periods. The updated 5-year strategic plan supersedes the version presented in the FY 2009-10 SLR WURMP Annual Report.

3.6 TMDL BMP Implementation

On February 10, 2010 the San Diego Water Quality Control Board (San Diego Water Board) adopted Resolution No. R9-2010-0001 amending the Basin Plan to incorporate the revised TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region. This TMDL Basin Plan amendment was subsequently approved by the State Water Resources Control Board on December 14, 2010, the Office of Administrative Law (OAL) on April 4, 2011, and the United States Environmental Protection Agency (USEPA) on June 22, 2011. Under state law, this TMDL Basin Plan Amendment became fully effective on April 4, 2011, the date of OAL approval.

The Pacific Ocean Shoreline at the San Luis Rey River mouth is specifically addressed in this TMDL. The SLR agencies involved in the SLR watershed are as follows:

- County of San Diego
- City of Oceanside
- City of Vista
- California Department of Transportation

During this reporting period the SLR agencies met four times (three meetings and one conference call) to implement the following tasks in preparation of this TMDL:

- Determine the lead agency for development of the load reduction plan.
- Determine if the agencies want to move forward with a Bacteria Load Reduction Plan (BLRP) or a Comprehensive Load Reduction Plan (CLRP).
- Consultant selection for plan development
- Cost-share agreement developed amongst SLR agencies

The followings decisions were made amongst SLR agencies during this reporting period:

- The County of San Diego is serving as the lead agency for the development of the CLRP.
- The SLR agencies agreed to develop a CLRP
- Geosyntec Consultants is consulting firm selected for development of the CLRP
- A cost-share agreement for Fiscal Year 2011-12 was finalized amongst agencies

In preparation for the Bacteria I TMDL, the City of Oceanside, with matching fund support provided by the County of San Diego and the City of Vista, was awarded a Proposition 50 Clean Beaches Initiative grant to conduct a bacteria source tracking study along the lower San Luis Rey River. For more information about this project refer to Appendix A, Activity SLR-010.

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Table 3-5. Five-Year Strategic Plan

SAN LUIS REY RIVER WATERSHED	HA			Priority Pollutant		Implementation Schedule																	
	903.1	903.2	903.3	Bacteria	Nutrients	FY 2007-08			FY 2008-09			FY 2009-10			FY 2010-11			FY 2011-12			FY 2012-13		
Watershed Activities Implemented in FY 2010-11 and Planned for Implementation in FY 2011-12 and FY 2012-13																							
SLR-001: SLR Watershed Water Quality Monitoring Program	x			x	x	M			M			M			M			P			M		
SLR-002: Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall-Signage & Cleaning Frequency	x			x		WQ																	
SLR-003: Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	x			x		P			WQ			M			M			M			M		
SLR-004: Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail	x			x		WE			WE			WQ	WE		WQ	WE		WQ			WQ		
SLR-005: Pet Waste Bag Dispenser Program in County Parks	x			x		WQ			WQ			WQ			WQ			WQ			WQ		
SLR-006: Agricultural and Nursery Operations Runoff Assessment & Monitoring Program	x	x	x	x	x	M																	
SLR-007: Water Quality Runoff Management and Agricultural Waiver Workshop	x	x	x	x	x	WE						WE						P					
SLR-008: Guajome Lake Water Quality Monitoring Program	x			x	x	M			M			M			M			M			M		
SLR-009: Nutrient Source Identification and Abatement: Guajome Lake	x				x	M	S		WQ	M	S	WQ	M	S	WQ	M	S	WQ	M	S	*		
SLR-010: Lower SLR River Bacteria Source Tracking Study	x			x		M	S		M	S		M	S		M	S		A	S				
SLR-011: LID & Watershed Planning Education for Community Planners & Sponsor Groups	x		x	x	x	WE			WE														
SLR-012: Land Acquisitions	x			x	x	WQ			WQ			WQ			WQ			**			**		
SLR-013: Harbor Boat Wash Camera	x			x					WQ			A											
SLR-014: Harbor Boat Wash Coin Operated Water Dispenser	x			x					WQ	P		WQ	P		WQ	P		WQ					
SLR-015: Focused Horse Property Outreach in the SLR River Watershed***	x	x		x	x				WQ	WE	P	WQ	WE		WQ	WE		WQ	WE		WQ	WE	
SLR-016: Focused Grove and Nursery Outreach in the SLR River Watershed	x	x			x							WE			WQ	WE		WQ	WE		WQ	WE	
SLR-017: Focused Onsite Wastewater System Outreach in the SLR River Watershed	x	x		x	x							WE			WQ	WE		WQ	WE		WQ	WE	
SLR-018: Sports Park Watershed Education Signs	x			x	x							WE	P		WE	P		WE					
SLR-019: Hellhole Canyon County Park Educational Signage				x	x							WE											
SLR-020: Residential Composting Workshop					x							WE	P		WE								
SLR-021: Fallbrook Community Center Artificial Turf					x							WQ			WQ			WQ			WQ		
SLR-022: Residential Rain Barrel Subsidies and Distribution				x	x							WQ	WE	P	WQ	WE		P			WQ	WE	
SLR-023: Residential Smart Landscape Evaluation Program	x			x	x										WE			WE					
SLR-024: Guajome County Park Watershed Signs	x			x	x										P								
Potential Future Activities																							
SLR River Bacteria BMP Implementation	x			x		Contingent upon funding for prioritized BMPs																	
Low Impact Development and SUSMP Workshop	x	x	x	x	x																		

* Future activity will be assessed based upon program results
** Unable to project land acquisitions in advance
*** Activity previously named Community Based Residential Horse Property Pilot Project

WQ = Watershed Water Quality Activity
WE = Watershed Education Activity
WQ = Watershed Water Quality Activity (not in active implementation)
WE = Watershed Education Activity (not in active implementation)
M = Watershed Water Quality Monitoring Activity
S = Source ID/Characterization Activity
P = Activity in Planning Stages
A = Activity Assessment

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4 EFFECTIVENESS ASSESSMENT

This section summarizes the effectiveness of all of the WURMP activities conducted during FY 2010-11. In addition, there is an assessment of the effectiveness of the collective WURMP implementation.

Each activity summary sheet in Appendix A of the FY 2010-11 SLR WURMP Annual Report identifies specific targeted outcomes (Levels 1-6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that the implementation of an individual watershed activity would be measureable at levels 5 or 6 which are typically measureable through cumulative assessments. The assessment levels are defined below. Definitions are from the Municipal Permit.

Effectiveness Assessment Outcome Level 1 - Compliance with Activity-based Permit Requirements – Level 1 outcomes are those directly related to the implementation of specific activities prescribed by Order 2007-0001 or established pursuant to it.

Effectiveness Assessment Outcome Level 2 - Changes in Attitudes, Knowledge, and Awareness – Level 2 outcomes are measured as increases in knowledge and awareness among target audiences such as residents, businesses, and municipal employees.

Effectiveness Assessment Outcome Level 3 - Behavioral Change and BMP Implementation – Level 3 outcomes measure the effectiveness of activities in affecting behavioral change and BMP implementation.

Effectiveness Assessment Outcome Level 4 - Load Reductions – Level 4 outcomes measure load reductions which quantify changes in the amounts of pollutants associated with specific sources before and after a BMP or other control measure is employed.

Effectiveness Assessment Outcome Level 5 - Changes in Urban Runoff and Discharge Quality– Level 5 outcomes are measured as changes in one or more specific constituents or stressors in discharges into or from MS4s.

Effectiveness Assessment Outcome Level 6 - Changes in Receiving Water Quality – Level 6 outcomes measure changes to receiving water quality resulting from discharges into and from MS4s, and may be expressed through a variety of means such as compliance with water quality objectives or other regulatory benchmarks, protection of biological integrity, or beneficial use attainment.

The activity summary sheets presented in Appendix A include effectiveness assessment summaries for each water quality and education activity, as required in the Municipal Permit, I.2.a.(1).

4.1 Assessment of Overall WURMP Effectiveness

4.1.1 Permit Compliance (Level 1)

A basic Municipal Permit compliance assessment is presented in Table 4-1. This table describes minimum permit requirements set forth in the Municipal Permit, whether or not compliance was achieved by the SLR Copermittees in FY 2010-11, and where in this report, required compliance points are fulfilled or described. As shown in the table, the Copermittees were in compliance with all WURMP related Municipal Permit requirements during FY 2010-11.

Table 4-1. SLR WURMP Municipal Permit Compliance Assessment.

Targeted Outcome	Measure	Report Section
Update any watershed maps.	Completed during FY 2007-08, no updates necessary this FY.	Section 1.2
Update watershed water quality assessment, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	Section 2.1
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	Section 2.2
Update list of potential Watershed Water Quality Activities.	Completed.	Section 3.5
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.1
Update list of potential Watershed Education Activities.	Completed.	Section 3.5
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Completed.	Section 3.2
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Completed.	Section 3.3
A description of Copermittee collaboration efforts.	Completed.	Section 1.1, Section 3.4
Minimum quarterly meetings of the SLR WURMP Workgroup.	Six (6) meetings	Section 1.1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Completed.	Section 3.4
Describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed.	Not applicable at this time.	Section 3.6

4.1.2 Cumulative Impacts of Activities (Levels 2, 3, and 4)

Activity Assessments

During FY 2010-11, there were 17 activities in various stages of implementation. Four activities focused solely on water quality, two focused solely on education, five focused on water quality and education, five focused on monitoring and/or source identification, and two activities were in planning stages during FY 2010-11 (SLR-014, SLR-018). All activities focused on one or more of the high priority water quality problems in the SLR Watershed (bacteria and nutrients).

Although more water quality data are available after four years of Regional Monitoring under the current Municipal Permit, it is not feasible to link changes in discharge or receiving water directly to most of the watershed activities. At this point, several questions may be helpful in assessing the cumulative impacts of the watershed activities. Table 4-2 summarizes the assessments of the water quality and education activities that were in active implementation phase during this reporting period in an effort to provide a collective picture of the overall effectiveness of the watershed activities. The activities will be related to historical and recent water quality data and will be examined by hydrologic area in subsequent sections.

Table 4-2. Summary of Watershed Water Quality and Education Activities in the SLR WMA.

Activity Number	Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
SLR-001	San Luis Rey Watershed Water Quality Monitoring Program	Bacteria, Nutrients	Not applicable, monitoring activity only	Not applicable, monitoring activity only	All sources have not been identified	Not as part of the monitoring program
SLR-003	Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	Bacteria	No	No	Bacteria generated due to proximity of boat washing and RV sewage dump station to storm drain.	BMPs implemented during FYs 07-08, 08-09, 09-10, 10-11; it appears that loads have been reduced as illustrated through reductions in exceedances of Coastal Storm Drain Monitoring Program Action Levels in the storm drain and exceedances of AB411 standards in the receiving water.
SLR-004	Pet Waste Removal Pilot Project Along San Luis Rey Recreational Trail	Bacteria	Yes, anticipated but not measured.	A reduction in the number of pet waste piles observed on the North Trail was noted after installation of new stations; Approximately 4,000 pet waste bags were used during the FY.	Pet waste in recreational areas.	Cleanup contractor used to remove pet waste from trail prior to installation of BMPs; removed 23.25 pounds of pet waste (229 piles)
SLR-005	Pet Waste Bag Dispenser Program in County Parks	Bacteria	Yes, based on usage of bags and positive examples	In general, more people picking up after their pets; 33,915 bags were used during this FY.	Pet waste in parks.	In total, estimated that 6,783 pounds of pet waste were removed from the watershed.

Activity Number	Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
SLR-008	Guajome Lake Water Quality Monitoring Program	Nutrients, Bacteria	Not applicable, monitoring activity only	Not applicable, monitoring activity only	Attempting to characterize sources; potential sources include residential areas, commercial nurseries, and commercial and residential horse facilities	Not applicable, monitoring activity only
SLR-009	Nutrient Source Identification and Abatement: Guajome Lake	Nutrients	Of those nurseries with multiple scores, five decreased in Stormwater Knowledge Assessment (SKA) Score. All other nurseries have either improved or remained the same.	Of those nurseries with multiple scores, BMP compliance improved or stayed the same at all nurseries except two in FY 2010-11.	Study area included inspection of 12 nurseries in the upstream area during this FY; no nurseries were found to have BMP violations, there were no direct sources of nitrates identified.	Twelve nurseries inspected; BMPs implemented as a result of inspections will likely reduce and abate sources.
SLR-010	Lower San Luis Rey River Bacteria Source Tracking Study	Bacteria	Not applicable, monitoring activity only	Not applicable, monitoring activity only	The results of the Project indicated human and avian sources present during wet and dry weather at the river mouth and human sources (avian sources were not tested) in main stem and tributary locations of the Lower San Luis Rey River. Other sources are likely, but quantification of these sources is not available from the Project.	The results indicate and steer recommendations for the City and other Watershed stakeholders to prioritize future management actions and studies on activities that may result in reductions in human bacteria in the future.

Activity Number	Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
SLR-012	Land Acquisitions	Bacteria, Nutrients	None measured	None measured	Potential development	33.85 acres acquired and preserved by the County of San Diego.
SLR-015	Focused Horse Property Outreach in the San Luis Rey River Watershed	Bacteria, Nutrients	Pre- and post-workshop surveys were administered to the participants of the Equestrian BMP Workshop. Results indicate a positive increase in knowledge among participants able to correctly identify appropriate equestrian-related BMPs.	Results also show that more equestrians were able to identify positive behavioral changes (Level 3 Outcomes) following the workshops.	Residential Equestrian Properties	None measured
SLR-016	Focused Grove and Nursery Outreach	Nutrients	Pre and Post Test show improvements in knowledge of general watershed concepts.	None measured	Groves and Nurseries	None measured
SLR-017	Focused Onsite Wastewater System Outreach	Bacteria, Nutrients	Pre and Post program surveys indicated an increase in knowledge related to stormwater and septic system BMPs.	Thirty pumping vouchers were distributed and utilized by program participants, indicating a behavioral change	Onsite Wastewater Systems	The amount of sewage removed from onsite wastewater systems will be tabulated (pumping volume, estimated percent solids, and location) upon completion of the pilot program in FY 2012-13. From this information, some estimates of load reduction may be possible.

Activity Number	Activity	High Priority Water Quality Problem(s) Addressed	Level 2 – Changes in Knowledge/ Awareness	Level 3 - Change in Behavior	Sources Identified?	Level 4 - Load Reduction
SLR-020	Residential Composting Workshop	Nutrients	Attendees were provided with an evaluation form to provide feedback on the topics covered, instructor quality, and if they owned and/or planned to purchase a compost bin. All evaluations stated that they either owned a compost bin or were planning to purchase one.	All evaluations stated that they either owned a compost bin or were planning to purchase one.	The use of chemical fertilizers has been identified as a potential source of eutrophication in local water bodies.	None measured
SLR-021	Fallbrook Community Center Artificial Turf	Nutrients	None	None	Fertilizer and irrigation associated with natural turf management	Reduction in fertilizer usage by 25% and irrigation by 18% annually.
SLR-022	Residential Rain Barrel Subsidies and Distribution	Bacteria, Nutrients	None	61 residents in purchased rain barrels and signed maintenance agreements, demonstrating improved behavior.	Residential stormwater runoff.	Load reductions are anticipated via rain water capture, however quantification is not feasible at this time.
SLR-023	Residential Smart Landscape Evaluation Program	Bacteria, Nutrients	Ten property owners/managers were educated on appropriate and efficient use of water, specifically focusing on irrigation, thus raising awareness	None measured	Over-irrigation is a prominent transport mechanism and potential source of dry weather residential contributions to water quality issues.	None measured

4.2 High Priority Water Quality Problems

All activities addressed high priority water quality problems as identified in the WURMP. Of the activities in active implementation, bacteria was specifically addressed in 13 activities and nutrients in 12 activities. A combination of water quality, education, source identification and monitoring activities appear effective at addressing identified high priority water quality problems in the San Luis Rey HU.

Level 2 - Changes in Knowledge and Awareness

Changes in knowledge and awareness of water quality problems were measured in six of the water quality and education activities implemented during this reporting period. Additionally, increases in knowledge are assumed in two activities with no mechanism in place to measure the changes.

Six of the watershed education activities conducted during the reporting period implemented specific measures to assess changes in knowledge and awareness.

- SLR-004: The Pet Waste Removal Pilot Project along the San Luis Rey Recreational Trail accounts for changes in knowledge based on changes in behavior. In FY 2010-11, there were 4,000 bags used from the four stations along the trail.
- SLR-005: The Pet Waste Bag Dispenser Program in County Parks accounts for changes in knowledge based on changes in behavior. In FY 2010-11, there were 33,915 bags used from the 11 stations in the SLR Watershed.
- SLR-009: The Nutrient Source Identification and Abatement in the Guajome Lake Drainage Area also quantified changes in knowledge during inspections. Standardized assessment ratings were given to each facility during inspections over the four years of implementation. A comparison of these numbers over time indicates that five sites decreased in knowledge over time while all other nurseries have either improved or remained the same.
- SLR-015: The Focused Horse Property Outreach in the San Luis Rey River Watershed illustrated increases in knowledge by administering pre- and post-workshop surveys at the workshops conducted in June 2011. These surveys showed increases in knowledge related to BMPs designed to address the effects of horse manure on water quality.
- SLR-016: The Focused Grove and Nursery Outreach assessments included pre- and post-workshop surveys to assess knowledge of general watershed principles and changes in awareness of proper irrigation and fertilization practices. An increase was noted in general watershed concepts.
- SLR-017: The Focused Onsite Wastewater System Outreach Activity developed an online web portal offering information on septic tank awareness and proper maintenance procedures for maintaining a healthy septic system. Participants were asked to complete a pre- and post program questionnaire to assess the effectiveness of the outreach. Pre- and post program surveys indicated an increase in knowledge related to stormwater and septic system BMPs.

Certain activities can be assumed to result in increased awareness, although a formal mechanism to measure the change may not be feasible. For example, knowledge was likely increased through the implementation of SLR-023, the Residential Smart Landscape Evaluation Program, but was not quantified. The activities that did not result in increased awareness were designed as monitoring activities or to implement BMPs targeting load reductions. These activities generally focused on public lands and implemented BMPs to reduce the effects of bacteria, nutrients, and other pollutants on receiving waters.

Collectively, the water quality activities are focused efforts leading to localized changes in knowledge and awareness. However, the education activities are broad based, applicable to all hydrologic areas in the watershed and are expected to provide for a general increase in knowledge in the San Luis Rey River Watershed over time.

Level 3 – Changes in Behavior, Implementation of BMPs

A change in behavior was observed and BMPs were implemented in six of the activities implemented during the Fiscal Year. One additional activity also assumed a change in behavior with no mechanism to measure. Each change in behavior is described below.

- SLR-004: In this activity targeting pet waste along a recreational trail on the San Luis Rey River, there was evidence that people continued utilizing the pet waste bags from installed dispensers to pick-up and properly dispose of pet waste. Approximately 4,000 bags were used during FY 10-11.
- SLR-005: In this activity targeting pet waste in County Parks, there was evidence that people continued utilizing the pet waste bags from installed dispensers to pick-up and properly dispose of pet waste. Approximately 33,915 bags were used during FY 10-11.
- SLR-009: In the Nutrient Source Identification and Abatement activity focusing on the Guajome Lake drainage area within the County, changes in behavior were assessed by tracking the number of violations observed during inspections of the nursery facilities. In most cases, BMP compliance (i.e. behavior) has been shown to improve over time.
- SLR-015: The activity focused on Horse Property Outreach, the pre- and post-workshop surveys included a question regarding BMPs to prevent pollution. Survey scores showed that participants were able to identify more positive behavioral changes after the workshops.
- SLR-017: The activity designed around Focused Onsite Wastewater System Outreach illustrated the intent of the participants to positively change their behavior in that 30 vouchers were distributed and utilized that would pay for a portion of the pumping costs for residents' onsite wastewater systems.
- SLR-022: This activity focused on the sale of rain barrels for residential use within the watershed. The sale of rain barrels to 61 residents within the watershed indicates a positive change in behavior in the people purchasing and installing the products.

Sources addressed through these activities included nurseries, pet waste, horse properties, on-site wastewater systems, residential land uses, and recreational areas. The connection of the BMPs to the specific water quality problems are further discussed below.

Level 4 – Load Reductions

In general, water quality and monitoring activities appear effective at identifying and abating sources of high priority water quality problems in the SLR HU.

SLR-003: The Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall included activities designed to reduce bacteria at the outfall. The source of the bacteria has been well characterized. In previous reporting periods the City of Oceanside increased the cleaning frequency at the outfall, provided more educational signage at the boat wash, implemented a new Modular Wetlands BMP, and installed a video surveillance camera to monitor activity at the station. Since the implementation of these activities, exceedances at the outfall do still occur, but flow rates are usually less than one gallon per minute (gpm) and receiving water exceedances rarely occur.

SLR-004: The Pet Waste Project addressing behaviors along the San Luis Rey Trail included cleanup of pet waste along the trail. A cleanup contractor was used to remove pet waste from trail prior to installation of BMPs. In total, 23.25 pounds of pet waste (229 piles) was removed.

SLR-005: The Pet Waste Bag Dispenser Activity in County Parks has caused a direct, measurable reduction in pet waste, estimated at nearly 6,783 pounds of pet waste during FY 2010-11.

SLR-009: The Nutrient Source Identification and Abatement at Guajome Lake consists of inspections which require and enforce BMP implementation at the nursery facilities in the drainage area. Twelve nurseries were inspected this FY. BMPs implemented as a result of these inspections are expected to reduce the negative impacts of nursery activities on water quality through load reductions. At this time, through BMP implementation, load reductions are assumed, although not quantified.

SLR-012: The acquisition of land by public agencies, specifically the County of San Diego, will provide for preservation of the land in the future, reducing the negative effects of development on the watershed. The source has been identified as new development and by acquiring the land for public use, the pollutants associated with this source have been prevented. Although load reductions are not quantifiable, the 33.85 acres acquired by the County this fiscal year will contribute to preservation of existing water quality within the watershed.

SLR-021: In the activity that installed Artificial Turf at the Fallbrook Community Center, estimations of water and fertilizer savings were calculated. The annual use of irrigation water at the facility was reduced by 18% (approximately 170,000 gallons) and the annual amount of fertilizer used decreased by 25% (approximately 120 pounds). The reductions in the amount of fertilizers used and in the transport mechanism both play important roles in reducing dry weather nutrient loads.

SLR-022: In the Residential Rain Barrel Subsidy and Distribution Activity, load reductions are anticipated through capture of rainwater generated on residential sites implementing these BMPs. Through the rainwater capture, runoff and associated pollutants are retained on site. This load reduction is assumed, although quantification is not feasible at this time.

In addition to the nine watershed water quality activities actively implemented during the reporting period, there were five monitoring activities occurring in an attempt to characterize and identify sources. Two of these activities are designed to address bacteria, one addresses nutrients, and two address both high priority water quality problems. Each of the monitoring activities currently supports or will support future watershed activities.

4.2.1 Integrated Assessment: Level 5 (Changes in Discharge Water Quality) and Level 6 (Changes in Receiving Water Quality)

4.2.1.1 Warner Valley and Monserate Hydrologic Areas

As discussed in Section 2.2, residential and agricultural land uses make up the highest percentage in the lower watershed whereas open space and vacant land make up most of the upper watershed. The Monserate and Warner Valley HAs consist of over 70% vacant land, open space, and preserve. Urban pollutant sources and anthropogenic influences appear to be very limited in the upper portions of the watershed. With minimal development in these HAs, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for the HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

4.2.1.2 Lower San Luis Hydrologic Area

Residential and agriculture land uses make up the highest percentage of land use in the lower watershed. Significant industrial and commercial activities are also present. The majority of the monitoring in the watershed has been conducted in the Lower San Luis HA and results indicate that anthropogenic activities are likely having a negative affect on receiving water quality. For these reasons, the watershed activities and monitoring programs focus primarily on the Lower San Luis HA and are discussed below.

4.2.1.2.1 Water Quality

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Recent monitoring efforts provide new information specific to the HA, as there were Temporary Watershed Assessment Stations (TWAS) installed at various locations in the watershed in addition to the historical MLS. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. Due to the rotational nature of monitoring required at these stations in the Permit, monitoring has been performed at the MLS and TWAS for two years. The City of Oceanside and the County of San Diego continued sampling in the receiving water and tributaries of the Lower San Luis HA for WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Additionally, Activity SLR-010, the Lower SLR Bacteria Source Tracking Study was completed during FY 10-11. Monitoring to assess urban runoff contribution in the Lower San Luis HA was completed through the DWM and CSDM programs as well as through several WURMP activities.

Bacteria

Bacteria have been identified as a high priority water quality problem in the SLR WURMP 2008. This decision is further supported by recent water quality data collected during ambient and storm conditions. The SLR Copermittees have implemented many water quality and education activities designed to address identified sources of bacteria in the watershed. There are also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

During this reporting period, six water quality activities focused on the abatement of specific sources of bacteria. These activities are listed in Table 4-3.

Table 4-3. Watershed Water Quality Activities – Bacteria.

Activity Number	Activity Name	Source of Bacteria
SLR-004:	Pet Waste Removal Pilot Project Along SLR Recreation Trail	Pet Waste
SLR-005:	Pet Waste Bag Dispenser Program in County Parks	Pet Waste
SLR-012:	Land Acquisitions	Developed Land
SLR-015:	Focused Horse Property Outreach in the SLR River Watershed	Equestrian
SLR-017:	Focused Onsite Wastewater System Outreach in the SLR River Watershed	Onsite Wastewater Systems (i.e. septic)
SLR-022:	Residential Rain Barrel Subsidies and Distribution	Residential Stormwater Runoff

During this reporting period, five education activities focused on the abatement of specific sources of bacteria. These activities are listed in Table 4-4.

Table 4-4. Watershed Education Activities – Bacteria.

Activity Number	Activity Name	Source of Bacteria
SLR-004:	Pet Waste Removal Pilot Project Along SLR Recreation Trail	Pet Waste
SLR-015:	Focused Horse Property Outreach in the SLR River Watershed	Equestrian
SLR-017:	Focused Onsite Wastewater System Outreach in the SLR River Watershed	Onsite Wastewater Systems (i.e. septic)
SLR-022:	Residential Rain Barrel Subsidies and Distribution	Residential Stormwater Runoff
SLR-023:	Residential Smart Landscape Evaluation Program	Residential Landscaping

In addition to the required water quality and education activities, the watershed Copermittees also invested significant resources in monitoring activities. Four of the monitoring activities

include sample collection and analyses pertaining to bacteria concentrations and sources in the watershed. These are listed in Table 4-5.

Table 4-5. Watershed Monitoring Activities – Bacteria.

Activity Number	Activity Name	Waterbody Focus
SLR-001:	SLR Watershed Water Quality Monitoring Program	SLR River and Tributaries
SLR-003:	Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall	MS4 and Oceanside Harbor
SLR-008:	Guajome Lake Water Quality Monitoring Program	Guajome Lake
SLR-010:	Lower SLR River Bacteria Source Tracking Study	SLR River

Discharge Water Quality

Various amounts of discharge water quality data related to bacteria have been collected as part of several monitoring programs in the watershed. However, the data have not been assessed in relation to trends. Therefore, at this time it is not feasible to link the watershed activities and program to changes in discharge water quality. Because data collected as part of SLR-003 and SLR-008 are indicating improvements in water quality, this data may be further assessed in the future to address changes in discharge water quality (Level 5).

Receiving Water Quality

Long-term trend analysis of receiving water data provides a measurement of changes in water quality. With new data collected at the MLS and TWAS stations during FY 2010-11, trend analyses have been updated over the past year. However, long-term trend analysis is currently limited to wet weather data collected at the MLS.

The long-term trend analysis related to bacteria for the SLR-MLS wet weather data indicates statistically significant trends as follows in Table 4-6:

Table 4-6. Water Quality Trends at MLS – Bacteria.

Constituent	Trend	Sen's Slope[1]
Fecal coliform	Increasing	90
Total coliform	Increasing	692
Enterococcus	Increasing	133

[1]Sen's slope estimator is a non-parametric method that is insensitive to outliers and can be used to infer the magnitude of a trend in the data over time.

Of the constituents significantly increasing, fecal coliform has been consistently above water quality benchmarks. Total coliform and enterococcus do not have wet weather water quality benchmarks. (Weston 2012)

At this time, it is not feasible to link the watershed activities to receiving water data. Changes in water quality trends will take place slowly and will continue to be assessed in future years.

Summary

Through the implementation of a combination of water quality and education activities, complemented by specific monitoring projects, the SLR Copermittees are moving forward in addressing the bacteria problems in the watershed. By implementing practical activities that are targeting identified sources of bacteria, the Copermittees are effectively addressing bacteria problems in the watershed. The combination of activities is having positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality, especially related to bacteria. With many diverse sources of bacteria suspected in the watershed, some identified and others not, the Copermittees are implementing activities to address known sources and conducting monitoring activities to identify or confirm other sources.

Nutrients

Nutrients have also been identified as a high priority water quality problem in the SLR Watershed. The decision to identify nutrients as a high priority problem was initially based on the listing of Guajome Lake as impaired for nutrients on the 2006 303(d) listing. Recent revisions to the 303(d) listings include nutrient impairment on the SLR River as well. Based on these impairment listings, and recently collected water quality data, nutrients remain a high priority water quality problem in the Watershed.

During this reporting period, seven water quality activities focused on the abatement of specific sources of nutrients. These activities are listed in Table 4-7.

Table 4-7. Water Quality Activities – Nutrients.

Activity Number	Activity Name	Source of Nutrients
SLR-009	Nutrient Source Identification and Abatement: Guajome Lake	Nurseries
SLR-012	Land Acquisitions	Developed Land
SLR-015	Focused Horse Property Outreach in the SLR River Watershed	Equestrian
SLR-016	Focused Grove ad Nursery Outreach in the SLR River Watershed	Groves and Nurseries
SLR-017	Focused Onsite Wastewater System Outreach in the SLR River Watershed	Onsite Wastewater Systems (i.e. septic)
SLR-021	Fallbrook Community Center Artificial Turf	Landscaping
SLR-022	Residential Rain Barrel Subsidies and Distribution	Residential Stormwater Runoff

During this reporting period, six education activities focused on the abatement of specific sources of bacteria. These activities are listed in Table 4-8.

Table 4-8. Water Education Activities – Nutrients.

Activity Number	Activity Name	Source of Nutrients
SLR-015	Focused Horse Property Outreach in the SLR River Watershed	Equestrian
SLR-016	Focused Grove ad Nursery Outreach in the SLR River Watershed	Groves and Nurseries
SLR-017	Focused Onsite Wastewater System Outreach in the SLR River Watershed	Onsite Wastewater Systems (i.e. septic)
SLR-020	Residential Composting Workshop	Residential Fertilizers
SLR-022	Residential Rain Barrel Subsidies and Distribution	Residential Stormwater Runoff
SLR-023	Residential Smart Landscape Evaluation Program	Residential Landscaping

Each of these water quality and education activities is designed to address sources of nutrients causing or contributing to water quality problems in the watershed. Results of each activity are presented in Appendix A.

In addition to the required water quality and education activities, the watershed Copermittees also invested significant resources in monitoring activities. Three of the monitoring activities include sample collection and analyses pertaining to nutrient concentrations and sources in the watershed. These are listed in Table 4-9.

Table 4-9. Watershed Monitoring Activities – Nutrients.

Activity Number	Activity Name	Waterbody Focus
SLR-001:	SLR Watershed Water Quality Monitoring Program	SLR River and Tributaries
SLR-008:	Guajome Lake Water Quality Monitoring Program	Guajome Lake
SLR-009:	Nutrient Source Identification and Abatement: Guajome Lake	MS4

MS4 Water Quality

Various amounts of discharge water quality data have been collected as part of several monitoring programs in the watershed. Often, the data related to nutrients has been collected using field test kits. The data have been partially assessed in relation to spatial distribution in the watershed but have not been assessed in relation to trends. Section 2 of this report contains more detailed information on nutrient data collected in the watershed. At this time it is not feasible to link the watershed activities and program to changes in discharge water quality.

Receiving Water Quality

Long-term trend analysis of receiving water data provides a measurement of changes in water quality. With new data collected at the MLS and TWAS stations during FY 2010-11, trend analyses have been updated over the past year. However, long-term trend analysis is currently limited to wet weather data collected at the MLS.

The long-term trend analysis for the SLR-MLS wet weather related to nutrient data indicates statistically significant trends as follows in Table 4-10:

Table 4-10. Water Quality Trends at MLS - Nutrients.

Constituent	Trend	Sen's Slope[1]
Ammonia	Increasing	0
Turbidity	Increasing	0.21
Dissolved phosphorus	Decreasing	-0.0075

[1]Sen's slope estimator is a non-parametric method that is insensitive to outliers and can be used to infer the magnitude of a trend in the data over time.

Ammonia levels are below water quality benchmarks and turbidity results have been below water quality benchmarks for the last 2 years of monitoring. Dissolved phosphorus is showing a decreasing trend and is also currently below water quality benchmarks. (Weston 2012)

At this time, it is not feasible to link the watershed activities to receiving water data. Changes in water quality trends will take place slowly and will continue to be assessed in future years.

Summary

Through the implementation of monitoring, source identification projects, water quality, and education activities, the SLR WURMP group is moving forward in addressing the nutrient problems in the watershed. In the future, it is expected that the combination of activities will have positive impacts on the watershed. However, this does not always translate to changes in discharge and/or receiving water quality. With many diverse sources of nutrients suspected in the watershed, the Copermittees are conducting monitoring activities to identify or confirm sources as a precursor to designing water quality and education activities in the future.

Other Activities

The Land Acquisitions activity (SLR-012) does not reduce existing loads, but is intended to prevent future loading of pollutants related to new development. Loading estimations are difficult to predict based on land use; however acquisition of the land for public use will prevent the development of commercial and residential areas on the land, both of which have been shown to contribute to bacteria loading. Land acquisition also helps maintain the natural conditions of the site, allowing for natural processes such as infiltration and pollutant uptake to continue. When land is developed, these natural processes are often reduced or eliminated by increasing impervious areas and channelizing or undergrounding stream systems. Preservation of the land will provide for less pollutant generation and may provide for continued pollutant removal, depending on the land acquired. This would directly apply to the bacteria and nutrient water quality problems identified in the WURMP.

Conclusions for the Lower San Luis HA

During FY 2010-11, nine water quality activities in the HA were in the implementation phase. These activities appear well designed to address high priority water quality problems in the watershed with six addressing bacteria and seven addressing nutrients (four address both constituents). During FY 2010-11, the seven education activities in the HA addressed both high

priority water quality problems in the HA, with five addressing bacteria and six addressing nutrients (four address both constituents).

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

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5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions for Warner Valley and Monserate HA

With minimal development in this HA, it is expected that anthropogenic impacts to water quality are limited. Although water quality data for this HA is minimal, the available data and amount of development in the lower parts of the watershed support the Copermittees decision to focus efforts elsewhere in the watershed to maximize positive impacts of activities.

5.2 Conclusions for the Lower San Luis HA

The high priority water quality problems in the Lower San Luis HA identified in the SLR WURMP 2008 are bacteria and nutrients. Water quality data collected during previous reporting periods in FY 2007-08, FY 2008-09, and FY 2009-10 provided new information specific to the HA. In addition to the historical MLS, a TWAS installed towards the bottom of the Bonsall HSA collected data during fiscal years 2007-08 and 2010-11. Data was collected during ambient (dry) and storm (wet) conditions at the TWAS and MLS. Data collected from water quality monitoring activities during FY 2010-11, in addition to the data mentioned above continues to support listing bacteria and nutrients as high priority water quality problems in the Lower San Luis Rey HA.

5.2.1 Water Quality Activities

During FY 2010-11, nine water quality activities in the HA were in the implementation phase, two designed to address water quality problems related to bacteria, three designed to address nutrients, and four that address both bacteria and nutrients. These activities appear well designed to address high priority water quality problems in the watershed. Continued monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

During the next reporting period FY 2011-12, eight water quality activities are planned to be implemented, with three designed to address water quality problems related to bacteria, three designed to address nutrients, and two that address both bacteria and nutrients.

Bacteria
The SLR Copermittees have implemented several activities designed to address identified sources of bacteria in the watershed. During this reporting period, six water quality activities focused on the abatement of specific sources of bacteria. There were also several monitoring and source identification activities related to bacteria in the planning or implementation phase.

Nutrients
During this reporting period, seven water quality activities focused on the abatement of specific sources of nutrients. There were also several monitoring and source identification activities related to nutrients in the planning or implementation phase. These were chosen because the sources of the nutrients remain largely uncharacterized in the watershed. Each of these activities

appears to be well designed to assess sources of nutrients causing or contributing to water quality problems in the watershed.

5.2.2 Water Quality Education Activities

During FY 2010-11, the Copermittees implemented seven watershed education activities: one focused only on bacteria, two focused only on nutrients, and four focused on both bacteria and nutrients. Through these education activities outreach was conducted to a variety of populations including pet owners, nurseries, and residential and horse property owner/operators.

During the next reporting period, FY 2011-12, five education activities are planned with one designed to address water quality problems related to nutrients and four that address both bacteria and nutrients.

5.3 Recommendations

Current water quality activities appear to address identified high priority water quality problems. However, sources need to be linked to the high priority pollutants in order to more completely assess the effectiveness of these activities. This may be accomplished via research, current data assessments, and supplemental monitoring specific to these activities. The current monitoring programs under implementation in the watershed are a positive step in establishing this linkage.

Future data collection should focus on MS4 discharges and source characterization. The current Regional Monitoring program focus is largely on receiving water quality characterization and does not provide the watershed groups data to support MS4 investigations and source identification efforts. The development and implementation of the MS4 outfall and Source Identification programs may provide useful information to the WURMPs but will be limited in scope.

Some of the hydrologic areas in the SLR HU have no receiving water data. Collection of receiving water data where limited sets exist may assist WURMP Copermittees in developing water quality assessments and prioritizing HAs.

Water quality activities that have proven effective may be expanded to other HAs when funding is available. Education activities are often broad in nature and reach targeted groups throughout the watershed; however, where this is not occurring, other Copermittees may wish to build on the experience gained in some of the specific education activities.

Activities in the watershed appear to be properly focused on identified water quality problems in the SLR HU. These types of activities should continue as bacteria and nutrients show increasing trends at receiving water monitoring stations. Future monitoring should continue to focus on source identification activities in the watershed, especially related to suspected bacteria and nutrient pollution. Future TWAS data will be examined carefully to discern between water quality in the upper and lower watershed. At this time, it appears that the focusing of activities in the lower watershed is appropriate.

Monitoring programs throughout the watershed will continue to complement Copermittee data collected as part of the Regional and Jurisdictional Monitoring Programs. These additional

programs will likely lead to the implementation of appropriate water quality and education activities targeting identified sources of bacteria and nutrients in the watershed.

Elevated TDS concentrations are persistent throughout the SLR HU and most of San Diego County. Sources of the elevated TDS are suspected to be related to the region's reliance on imported water and its relation to groundwater recharge in San Diego aquifers, as shown in the results of WURMP Activity SLR-001, the SLR Watershed Water Quality Monitoring Program. Because this is a region-wide problem, efforts for source reduction and abatement will likely be addressed on a regional scale rather than by watershed.

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Appendix A

SAN LUIS REY

Watershed Activity Implementation Summary Sheets with Associated Attachments

Annual Report for Fiscal Year 2010-11

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Water Quality Monitoring Activity

TITLE: **San Luis Rey Watershed Water Quality Monitoring Program**
ID NUMBER: **SLR-001**

ACTIVITY DESCRIPTION

A primary component of the San Luis Rey WURMP is to identify and characterize the constituents of concern adversely affecting water quality in the San Luis Rey River Watershed. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program in 2004 consisting of both field observations and field and analytical water quality sampling. This activity was developed collaboratively by the Watershed Copermittees within the San Luis Rey Watershed.

The activity includes the following tasks to be performed by the Watershed Copermittees:

- Update the monitoring plan as needed.
- Implement monitoring plan with field and laboratory analyses of constituents.
- Collect, compile, and analyze data.
- Prepare an annual written report including conclusions and recommendations.

A full description of the monitoring program, including sampling locations, procedures, and analyses is provided in the following attachments to this Activity Implementation Sheet:

- Attachment A: General Program Description
- Attachment B: Bacteria Sampling Description and Analyses
- Attachment C: TDS and Chloride Sampling Description and Analyses
- Attachment D: Nutrient Sampling Description and Analyses

ACTIVITY IMPLEMENTATION FY 2007-08

A description of the FY 2007-08 monitoring program, including sampling locations, procedures, and analyses is included in the FY 2007-08 WURMP Annual Report.

ACTIVITY IMPLEMENTATION FY 2008-09

A description of the FY 2008-09 monitoring program, including sampling locations, procedures, and analyses is included in the FY 2008-09 WURMP Annual Report.

ACTIVITY IMPLEMENTATION FY 2009-10

A description of the FY 2009-10 monitoring program, including sampling locations, procedures, and analyses is included in the FY 2009-10 WURMP Annual Report.

ACTIVITY IMPLEMENTATION FY 2010-11

A description of the FY 2010-11 monitoring program, including sampling locations, procedures, and analyses is included as Attachments A–D to this Activity Implementation Sheet. Sampling efforts continued through March 2011.

The County of San Diego and the City of Oceanside continued to explore how the voluntary sampling program may be refined to increase program efficiencies and provide useful data in light of upcoming regulatory drivers. Regulatory drivers which will impact sampling efforts include the agricultural waiver monitoring program, the Total Maximum Daily Load (TMDL) for Indicator Bacteria in the San Luis Rey watershed, and recent additions to the Clean Water Act Section 303(d) list. In order to assist with assessment efforts, the County of San Diego convened a Technical Advisory Committee (TAC) composed of watershed stakeholders and water quality experts at the close of FY 2009-10. The TAC met twice during FY 2009-10 and collaborative efforts to review TAC work products continued during FY 2010-11. TAC recommendations will inform future modifications to the joint monitoring program.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Monitoring activities will be revised in response to recommendations from the San Luis Rey Joint Water Quality Monitoring TAC in FY 2011-12.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego
- City of Vista

OTHER PARTICIPATING ENTITIES

- San Luis Rey Joint Water Quality Monitoring TAC

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients and bacteria as high priority water quality problems in the Mission HSA (903.11). This monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

The County of San Diego and the City of Oceanside collected periodic samples from San Luis Rey River and its tributaries beginning March 2004, sampling bacteria, TDS, Chloride, Magnesium, Iron, Manganese, Total Phosphorus, Nitrates, and pH samples from the San Luis Rey River and its tributaries.

- Bacterial indicators, total dissolved solids (TDS) and chloride data were compiled and analyzed (Level 1 Outcome).
- Written reports including conclusions and recommendations were prepared (Level 1 Outcome).

An overview of the joint monitoring program is provided in Attachment A. Detailed analysis of bacteria results is provided in Attachment B. Detailed analysis of TDS and chloride results is provided in Attachment C. Detailed analysis of nutrient results is provided in Attachment D.

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ATTACHMENT A TO SLR-001

SAN LUIS REY RIVER WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY
2010-2011 SLR WURMP Annual Report

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1.0 PROGRAM DESCRIPTION

The San Diego Regional Water Quality Control Board reissued the Municipal National Pollutant Discharge Elimination System (NPDES) permit, Order 2007-0001, to all 21 San Diego County Copermittees. Order 2007-0001 continues to require Copermittees to implement Watershed Urban Runoff Management Plans (WURMP) for all watersheds in San Diego County. A primary component of the San Luis Rey WURMP (SLR WURMP) is to identify the constituents of concern adversely affecting the water quality of the River. Therefore, the County of San Diego and the City of Oceanside began a coordinated sampling program of the lower 19 miles of the San Luis Rey River, on March 10, 2004, consisting of both field observations and field and analytical sampling.

From March 2004 through March 2011, 20 locations were sampled: nine by the City of Oceanside and 12 by the County of San Diego. Seven sampling sites were located along the San Luis Rey River and 11 in the mouths of River's tributaries. One location, Pacific Mix Zone, was in the Pacific Ocean 75 ft south of San Luis Rey River outlet. This location was sampled for bacteria only. One site along the River's main stem, Bonsall Bridge (SLR16), was sampled by both agencies for quality control. All sampling locations are described in more detail in the table below.

In addition, in 2007, the City of Oceanside was awarded a State Proposition 50, Clean Beaches Initiative grant to conduct a bacteria source tracking study in the Lower San Luis Rey River. As part of the grant, the City and County agreed to continue the joint monitoring program and updated the bacteria sampling protocols to be compliant with the Surface Water Ambient Monitoring Program (SWAMP) during the duration of the project which began in June of 2008 and was scheduled to end in 2010. The grant was halted during calendar year 2009 due to State budget cuts, but was restarted in the beginning of 2010. Monitoring for the grant was completed in March 2011.

2.0 PROGRAM DESIGN

The County and the City coordinate monitoring to collect samples on the same day when possible. No sampling is conducted if rainfall over 0.1 inches has occurred within 72 hours prior to the sampling date. Rescheduling with the County must occur if the regularly scheduled sampling date has been interrupted.

Sample Locations

The following table shows a list of the City and County monitoring sites:

Jurisdiction	Site Name	Site Description	Latitude (NAD 83 decimal degrees)	Longitude (NAD 83 decimal degrees)
Oceanside	Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Oceanside	Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Oceanside	Benet Benet (Site moved downstream in June 2008 for improved flow monitoring)	San Luis Rey River on the west side of Benet Bridge, north of Hwy 76 and Airport Rd. At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.22037 33.21790	-117.35836 -117.35958
Oceanside	Douglas	San Luis Rey River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Oceanside	Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Oceanside	Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Oceanside	Guajome Lake Outlet (Sampling of this site ended in FY 06/07)	South side of SLR River, where Guajome Lake effluent flows into river. 5030 Tyler Road. Easement Key #A227. Drive North, then walk.	33.25342	-117.28889
Oceanside	Sleeping Indian (Sampling of this site began in FY 06/07)	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Oceanside County	Bonsall (SLR 16)	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833
County	SLR25	San Luis Rey River at Olive Hill Road	33.28838	-117.22335
County	SLR28	San Luis Rey River at Pankey Rd	33.33281	-117.14975

Jurisdiction	Site Name	Site Description	Latitude (NAD 83 decimal degrees)	Longitude (NAD 83 decimal degrees)
County	SLR01	Moosa Canyon Creek at Old River Road	33.2836	-117.218683
County	SLR02	Little Gopher Canyon Creek at Old River Road	33.265683	-117.2332
County	SLR26	Bonsall Creek at Highway 76	33.28959	-117.22525
County	SLR14	Ostrich Farm Creek at Highway 76	33.29335	-117.22396
County	SLR27	Live Oak Creek at Highway 76	33.31514	-117.19418
County	SLR17	Keys Creek at Dulin Rd	33.32363	-117.15744
County	SLR 34 (Sampling begun in June 2008)	Tributary to the San Luis Rey River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931
County	SLR 32 (Sampling begun in June 2008)	Horse Ranch Creek	33.33138	-117.15067
County	SLR31 (Sampling begun in June 2008)	Moulder Ranch Creek	33.30205	-117.21691

Field Screening, Sample Collection and Analysis

For each site visit, the sampler should use the San Luis Rey River Monitoring form. Samples should not be collected until 72 hours after a rainstorm.

Observations

Qualitative field observations are made during each site visit. These observations are intended to provide a general assessment of the site and include the following runoff characteristics: odor, clarity, color, floatables, deposits, vegetation and biology.

Flow

Instantaneous flow measurements are used to estimate pollutant mass loading and identify significant changes in discharge that may be indicative of an illegal release upstream.

Field Analysis

The City of Oceanside and the County of San Diego conduct the following in-situ water quality measurements:

- Water temperature
- pH
- Conductivity
- Turbidity
- Dissolved Oxygen
- Flow

Prior to 2005, field test kits were employed to measure sample concentrations of Nitrate as N, Orthophosphate as P and Ammonia as N by both the County of San Diego and the City of Oceanside. Prior to October 2009, the City used field test kits exclusively while the County supplemented field test kit results with analytical laboratory testing. After October 2008, the County discontinued all field test kit testing in favor of laboratory analysis. The City discontinued the use of field test kits and began laboratory analysis for nutrients in October 2009.

Laboratory Analysis for City of Oceanside
The analytical laboratory analyses conducted by the City include the following constituents:

- Ammonia as N (quarterly)
- Nitrate as N (quarterly)
- Nitrite as N (quarterly)
- Total Kjeldahl Nitrogen (quarterly)
- Orthophosphate as P (quarterly)
- Total Phosphorus (quarterly)
- Total and Fecal Coliforms
- Enterococcus
- Chloride (quarterly)
- Sulfate (quarterly)
- Total Suspended Solids (quarterly)
- Total Dissolved Solids (quarterly)
- Total Hardness (quarterly)
- Bicarbonate Alkalinity (quarterly)
- Carbonate Alkalinity (quarterly)
- Total Alkalinity as CaCO3 (quarterly)
- Dissolved Magnesium (quarterly)
- Total Iron (quarterly)
- Dissolved Manganese (quarterly)
- Dissolved Calcium (quarterly) (quarterly)
- Dissolved Sodium (quarterly)
- Dissolved Potassium (quarterly)

Note: At Pacific and Pacific Mix monitoring locations, only indicator bacteria samples are collected and analyzed due to the saltwater/freshwater influence. At Pacific, general chemistry is also recorded from the in-situ measurements.

Lab Analysis for County of San Diego
The analytical laboratory analyses conducted by the County include the following constituents:

- Ammonia as N
- Nitrate as N
- Nitrite as N
- Total Kjeldahl Nitrogen
- Organic Nitrogen
- Orthophosphate as P

- Total Phosphorus
- Total and Fecal Coliforms
- Enterococcus
- Chloride (quarterly)
- Sulfate (quarterly)
- Total Suspended Solids (quarterly)
- Total Dissolved Solids (quarterly)
- Total Hardness (quarterly)
- Bicarbonate Alkalinity (quarterly)
- Carbonate Alkalinity (quarterly)
- Hydroxide Alkalinity (quarterly)
- Total Alkalinity (quarterly)
- Dissolved Magnesium (quarterly)
- Total Iron (quarterly)
- Dissolved Manganese (quarterly)
- Dissolved Calcium (quarterly)
- Dissolved Sodium (quarterly)
- Dissolved Potassium (quarterly)Boron (quarterly)
- Total Boron (quarterly)
- Fluoride (quarterly)

Bacteria Monitoring Protocols
As detailed in the Lower San Luis Rey River Source Identification Project Quality Assurance Project Plan (QAPP), sample collection for indicator bacteria beginning in June 2008 under the Grant consisted of composite bacterial grab samples and lower detection limits. These samples were collected with equivalent volumes taken from three points perpendicular to stream flow at approximately 10, 50, and 90% stream width away from the stream bank. Detection limits for total and fecal coliform were 2 MPN/100ml and for Enterococcus was 1 MPN/100ml for freshwater samples.

Quality Assurance/Quality Control (QA/QC)
During each sampling event one site is selected (at random or rotating) to conduct field duplicate or blank analyses of all laboratory measured parameters.

Laboratory Parameters
- 1 container – grab sample is collected for bacteria analysis
- 1 container – grab sample, for TDS and Chloride
- 1 container – grab sample, for Fe, Mn, and Mg.
- 1 container – grab sample, for nutrients

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ATTACHMENT B to SLR-001

SAN LUIS REY WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY 2010-11 SLR WURMP Annual Report

Joint Bacteria Monitoring Program

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Introduction

In 2006, the "Pacific Ocean Shoreline, San Luis Rey HU" was listed on the 2006 California Clean Water Act Section 303(d) List of Water Quality Limited Segments (303(d) List) for indicator bacteria. The 2008 303(d) list includes the Lower San Luis Rey River (SLR River) west of Interstate 15 for Fecal Coliform and Enterococcus and the Pacific Ocean Shoreline at the SLR River mouth for Enterococcus and total coliform. In addition, a Total Maximum Daily Load (TMDL) was adopted for indicator bacteria at the Pacific Ocean Shoreline in February 2010. (California Regional Water Quality Control Board San Diego Region Resolution No. R9-2010-0001, February 10, 2010).

The City of Oceanside and the County of San Diego began a joint bacteria monitoring program in the SLR River in March 2004. The goal of this project was to better characterize levels of bacterial indicators in the watershed segment from Interstate 15 to the Pacific Ocean. In 2007, the City of Oceanside was awarded a State Proposition 50, Clean Beaches Initiative grant to conduct a bacteria source tracking study in the Lower San Luis Rey River. As part of the grant, the City and County agreed to continue monthly bacteria monitoring to provide context for the genetic source tracking monitoring events. The bacteria sampling protocols were revised to be compliant with the Surface Water Ambient Monitoring Program (SWAMP) guidelines over the duration of the project: starting in June 2008 and scheduled to end in 2010. The new monitoring protocols included composite sampling and lower detection limits for indicator bacteria analysis and were implemented in June 2008. Monitoring under the Grant was completed in March 2011.

Hydrologic Setting

The San Luis Rey River originates mainly in the Palomar and Hot Springs Mountains. In 1922, Henshaw Dam was built and Lake Henshaw (Lake) was formed at the base of Palomar Mountain. No imported water is released directly into the lake and TDS and chloride concentrations in the lake fall below Basin Plan standards. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a drinking water reservoir. Downstream of Lake Henshaw, water from the main channel of the SLR River is diverted into the man-made Escondido Canal, seven miles below the dam. Nearly all non-storm flows are diverted from that section of SLR River into the canal, typically leaving the SLR River dry below the diversion. The flow in the remainder of SLR River is intermittent through Pauma and Pala. The SLR River is perennial through Oceanside, although it flows underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and Palomar Mountain receives about 45 inches/yr. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The River is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the river bed and form perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

From March 2004 through March 2011, 18 locations (Figure 1) were sampled: seven by the City of Oceanside and 12 by the County of San Diego (Table 1). Both agencies collected samples on the same days or within one or two days of one another. Seven sampling sites were located along the San Luis Rey River and 11 in the mouths of River's tributaries. One site along the River's main stem, Bonsall Bridge (SLR16), was sampled by both agencies for quality control.

During FY 2010-11 samples were collected monthly from all locations. Prior to FY 2008/2009, main stem samples were collected monthly from Bonsall Bridge to the ocean and less frequently at sampling points east of Bonsall Bridge; the tributaries were sampled monthly from March through December 2004 and less frequently thereafter. Since July 2006, sampling at Guajome Lake Outlet, which was frequently dry, was abandoned and replaced by sampling at the Sleeping Indian outlet. Also, beginning in July 2006, additional bacterial samples were collected at the Pacific Ocean shoreline (named "Pacific Mix Zone" in Tables 3 through 5) in order to compare bacterial concentration at the mouth of SLR River to those at the shoreline nearby (75 ft. south of the SLR River mouth). It should be noted that samples collected from the Pacific St. Crossing sampling location at the mouth of the SLR River, are tidally influenced. Conductivity measurements were recorded. (See Table 10 at the end of this attachment).

All samples were collected during dry weather; i.e. at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches. Prior to June 2008, samples were collected as single grab samples from the center of the stream. Thereafter, as detailed in the Lower San Luis Rey River Source Identification Project Quality Assurance Project Plan (QAPP), composite samples were collected with equivalent volumes taken from three points perpendicular to stream flow at approximately 10, 50, and 90% stream width away from the stream bank and placed in sterilized collection bottle supplied with sodium thiosulfate as a preservative. Samples were stored at 4ºC and transported to the laboratory to be analyzed for Total Coliform, Fecal Coliform and *Enterococcus* employing a multi-tube fermentation method to estimate bacterial counts.

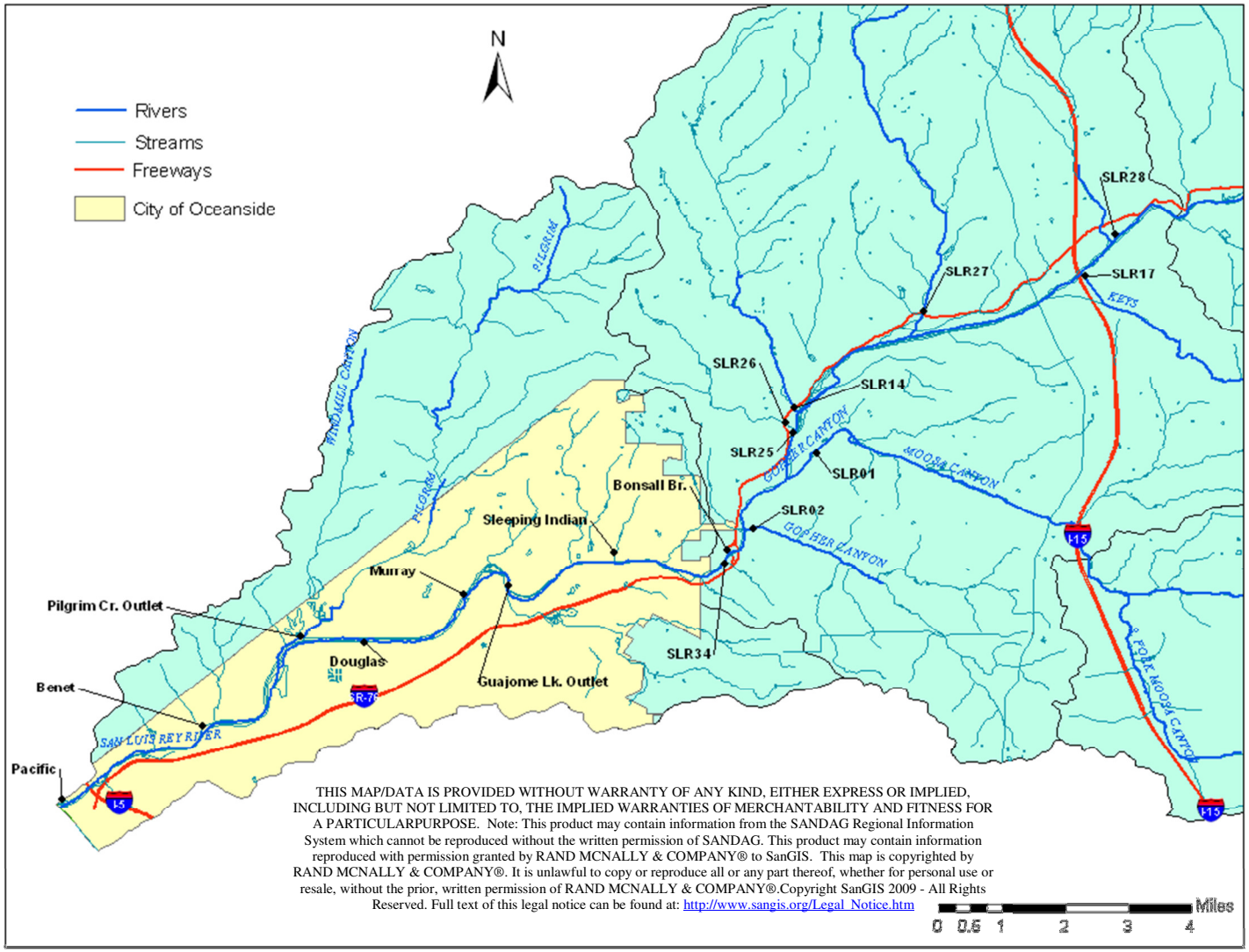

Figure 1. Sampling locations.

Table 1. Sample Site Identification and Locations.

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific Mix	Pacific Ocean 75 ft south of San Luis Rey River outlet.	33.20156	-117.39178
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	At USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	San Luis Rey River on the east side of Douglas Dr. north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	North side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	San Luis Rey River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	North side of San Luis Rey River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall	San Luis Rey River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Bonsall (SLR16)	SLR River under the Bonsall Bridge	33.26042	-117.23833
Olive Hill (SLR25)	SLR River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	SLR River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek tributary at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek tributary at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek tributary at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek tributary at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek tributary at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek tributary at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek tributary	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek tributary	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to SLR River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Rain Event Summary

Rain occurred in trace amounts in June and October 2004, in larger quantities January through March 2005, and again in April of 2005 and 2006 (Table 2). Significant rainfall also took place three and four days prior the December 4, 2007 sampling event and some rain occurred prior to February 7, 2008 sampling. Significant rainfall also occurred in late November 2008 and in mid February 2009. In 2010, several rain events occurred from December through March 2010. A

small amount of rain (0.1 inches or less) also fell a day prior to the November 2010 sampling event.

Table 2. Rain Event Summary

Date	Fallbrook Airport	Oceanside Airport	Oceanside Harbor
3/10/2004	None	None	None
4/14/2004	None	None	None
5/12/2004	None	None	None
6/9/2004	None	Trace on 6/8 and 6/7	None
7/14/2004	None	None	None
8/17/2004	None	None	None
9/13/2004	None	None	None
10/13/2004	None	Trace on 10/12	None
11/17/2004	None	None	None
12/15/2004	None	None	None
1/26/2005	0.25” on 1/26	Trace on 1/26	None
2/9/2005	0.48” on 2/7	0.04” on 2/7	None
3/9/2005	0.01” on 3/9	None	Trace on 3/8
4/6/2005	None	Trace on 4/4	None
5/3/2005	None	None	None
6/8/2005	None	None	None
7/12/05	None	None	None
7/13/05	None	None	None
8/9/05	None	None	None
8/10/05	None	None	None
9/6/05	None	None	None
10/4/05	None	None	None
11/1/05	None	None	None
12/7/05	None	None	None
1/10/06	None	None	None
2/7/06	None	None	None
4/3/06	0.07” on 4/1	0.02” on 3/31, 0.05” on 4/1 & 0.02” on 4/3	0.06” on 4/2
5/17/06	None	None	None
5/30/06	None	None	None
6/20/06	None	None	None
7/11/06	None	None	None
8/1/06	None	None	Trace on 8/1, 7/31 & 7/30
9/12/06	None	None	None
10/3/6	None	None	Trace on 10/2
11/7/06	None	None	None
12/5/06	None	None	None
1/9/07	None	None	None
2/7/07	None	None	None
3/6/07	None	None	None
4/3/07	None	None	None
5/1/07	None	Trace on 5/1	None
6/5/07	None	None	None
7/10/07	None	None	None
8/7/07	None	None	None
9/4/07	None	None	None
10/2/07	None	None	None
11/6/07	None	None	None
12/4/07	Missing Data	0.94” on 12/1/07	1.84” on 11/30 & 1.14” on 12/1/07
1/14/08	None	None	None
2/7/08	2/3-4 Data Missing	0.4” on 2/3 & 0.06” on 2/4	2/3-4 Data Missing
3/4/08	None	None	None
4/8/08	Missing Data	None	None
5/13/08	None	None	None
6/17/08	Missing Data	None	None
7/8/08	None	None	None
8/12/08	None	None	None

Table 2. Rain Event Summary

Date	Fallbrook Airport	Oceanside Airport	Oceanside Harbor
8/13/08	None	None	None
9/9/08	None	None	None
9/10/08	None	None	None
10/13/08	None	None	None
11/17/08	None	None	None
11/18/08	None	None	None
12/9/08	0.75” on 11/26 & 0.80” on 11/27	Trace on 12/8 & 0.82” on11/26 & 0.72” on 11/27	0.87” on 11/26 & 11/27 Data Missing
12/10/08	0.75” on 11/26 & 0.80” on 11/27	Trace on 12/8 & 0.82” on11/26 & 0.72” on 11/27	0.87” on 11/26 & 11/27 Data Missing
1/13/09	0.07” on 1/3	0.25” on 1/3	1/3 Data Missing
1/17/09	None	None	None
2/23/09	0.49” on 2/16 & 0.19 on 2/17	Trace on 2/23 & 0.20” on 2/16 & 0.28 on 2/17	0.30” on 2/16 & 0.21 on 2/17
2/24/09	0.49” on 2/16 & 0.19 on 2/17	Trace on 2/23 & 0.20” on 2/16 & 0.28 on 2/17	0.30” on 2/16 & 0.21 on 2/17
3/10/09	0.01” on 3/5	Trace on 3/5	None
3/11/09	0.01” on 3/5	Trace on 3/5	None
4/14/09	None	None	None
4/15/09	None	None	None
5/12/09	None	None	None
5/13/09	None	None	None
6/9/09	None	None	None
6/11/09	None	Trace on 6/7	None
7/14/09	None	None	None
7/15/09	None	None	None
8/10/09	None	None	None
9/22/09	None	None	None
9/28/09	None	None	None
10/27/09	None	None	None
11/17/09	None	None	None
12/17/09	0.41” on 12/12 & 0.98” on 2/13	Total of 1.08” from 12/11 to 12/14	More than 1.66” from 12/7 to 12/13
1/26/10	More than 5.69” from 1/18 to 1/23	Trace on 1/26 & total of 4.24” from 1/18 to 1/23	More than 2.49” from 1/18 to 1/23
2/17/10	Total of 1.63” from 2/6 to 2/7	Total of 1.19” from 2/5 to 2/10	Missing Data
2/18/10	Total of 1.63” from 2/6 to 2/7	Total of 1.19” from 2/5 to 2/10	Missing Data
3/15/10	More than 0.61” from 3/4 to 3/8	Total of 0.41” from 3/4 to 3/10	Missing Data
3/17/10	More than 0.61” from 3/4 to 3/8	Total of 0.41” from 3/4 to 3/10	Missing Data
5/18/10	Trace on 5/17	Trace on 5/18	Trace on 5/18
5/19/10	Trace on 5/17	Trace on 5/18	Trace on 5/18
6/8/10	None	None	None
6/9/10	None	None	None
7/13/10	None	None	None
7/14/10	None	None	None
8/3/10	None	None	None
9/14/10	None	None	None
10/12/10	0.3” on 10/6	0.08” on 10/6	Missing Data
11/9/10	0.1” On 11/8	0.08” On 11/8	0.02” On 11/8
12/14/10	None	None	None
1/18/11	None	None	None
1/19/11	None	None	None
1/20/11	None	None	None
2/8/11	0.45” on 1/30-31/11	0.25” on 2/1-2/11	None
2/9/11	0.45” on 1/30-31/11	0.25” on 2/1-2/11	None
3/16/11	None	None	None

*Data for this table were obtained from the National Weather Service Forecast Office for San Diego CA (http://www.wrh.noaa.gov/sgx/obs/rtp/rtpmap.php?wfo=sgx)

Analysis of Data

All data beginning in March 2004 through the end of March 2011 are listed in tables 3 through 8 below; sorted by the bacterial indicator type (total coliform, fecal coliform and *Enterococcus*) and sampling location (either along the SLR River's main stem or in the tributaries). In each table, the total number of samples exceeding the corresponding State AB411 single sample standards and the percentage of samples exceeding were calculated for each sampling date and location and for all dates and locations combined. The log mean bacterial counts and 95% confidence intervals were then calculated for each bacterial indicator type and sampling location and the results were represented graphically in Figures 2 through 7.

In order to determine whether bacterial concentrations at the mouth of the SLR River may have had an effect on those at the Pacific Ocean shoreline nearby, a correlation analysis was conducted on bacterial counts from the SLR River mouth (Pacific) and the location 75 feet south of the river mouth along the shoreline (Pacific Mix). In order to normalize the data, the counts were log-transformed. Correlation coefficients (r) and significance (p values) were calculated for each set of the 52 sample pairs analyzed.*

Results

Table 10, at the end of this attachment, provides a full record of all data collected during FY 2010-11.

Total Coliform Bacteria in the Main Stem

The Total Coliform bacteria counts exceeded the State single sample standard of 10,000 MPN/100ml in 66 of 490 (13%) samples analyzed (Table 3). Douglas had the highest percent (24%) of exceedances and the highest mean concentration (Figure 2). During FY 2010-11, only one exceedance was recorded. It occurred on March 16, 2011 at Murray.

The overall mean concentrations of Total Coliform along the SLR River tended to remain below the single sample standard at all sampled locations (Figure 2). The mean Total Coliform concentration at Pacific was lower than that of the sites further upstream but this difference was not statistically significant for Olive Hill Rd (SLR25) Bonsall Bridge (SLR16) COSD locations. The mean Total Coliform concentration in the Pacific Mix Zone was significantly lower than that at any of the SLR River and tributary locations.

* The correlation coefficient (r) gives a measure of the nature and magnitude of each correlation. Positive r values indicate that counts at the two sites increase or decrease together; negative values of r indicate that while counts at one location increase, they decrease at the other; the higher the value of r, the stronger the correlation with a higher percentage of variability in bacterial counts being explained by the sampling location. P-values lower than 0.05 indicate statistically significant correlations.

Table 3. Total Coliform Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	1,700	1,700	3,000	6,500	NS	1,400	23	500	7	0	0%
4/14/04	NS	5,000	13,000	5,800	2,200	NS	1,400	NS	NS	5	1	20%
5/12/04	NS	1,100	22,000	24,000	13,000	NS	3,500	NS	NS	5	3	60%
6/9/04	NS	130	11,000	22,000	13,000	NS	16,000	13,000	dry	6	5	83%
7/14/04	NS	900	1,600	1,600	dry	NS	1,600	NS	NS	4	0	0%
8/17/04	NS	6,500	2,300	dry	dry	NS	7,000	NS	NS	3	0	0%
9/13/04	NS	800	11,000	dry	dry	NS	13,000	9,000	dry	4	2	50%
10/13/04	NS	3,000	1,700	3,000	dry	NS	2,400	47,750	dry	5	1	20%
11/17/04	NS	1,000	1,300	1,300	3,000	NS	NS	5,000	30,000	6	1	17%
12/15/04	NS	20	800	9,000	3,000	NS	300	305	700	7	0	0%
1/26/05	NS	5,000	7,000	2,000	230	NS	11,000	NS	NS	5	1	20%
2/9/05	NS	800	2,300	2,400	1,700	NS	260	NS	NS	5	0	0%
3/9/05	NS	1,700	2,200	5,000	5,000	NS	3,000	NS	NS	5	0	0%
4/6/05	NS	75	8,000	800	3,000	NS	3,000	NS	NS	5	0	0%
5/3/05	NS	17,000	9,500	13,000	11,000	NS	2,800	11,000	NS	6	4	67%
6/8/05	NS	5,000	8,000	5,000	1,300	NS	2,200	NS	NS	5	0	0%
7/12-7/13/05	NS	2,200	4,700	230	1,400	NS	800	NS	NS	5	0	0%
8/9-8/10/05	NS	750	8,000	50,000	11,000	NS	3,000	NS	NS	5	1	20%
9/6/05	NS	10	3,000	5,000	2,400	NS	3,000	NS	NS	5	0	0%
10/4/05	NS	10	5,000	3,000	5,000	NS	3,000	NS	NS	5	0	0%
11/1/05	NS	500	2,200	12,000	3,000	NS	1,300	NS	NS	5	1	20%
12/7/05	NS	520	300	13,000	500	NS	1,700	NS	1,700	6	1	17%
1/10/06	NS	4,900	800	5,000	7,000	NS	1,700	NS	NS	5	0	0%
2/7/06	NS	800	700	5,200	1,700	NS	300	NS	NS	5	0	0%
4/3/06	NS	500	1,700	4,300	2,600	NS	700	5,000	NS	6	0	0%
5/17/06	NS	NS	NS	NS	NS	NS	17,000	8,000	13,000	3	2	67%
5/30/06	NS	800	2,200	6,000	NS	NS	NS	NS	NS	3	0	0%
6/20/06	NS	300	5,000	2,200	5,200	NS	2,200	NS	NS	5	0	0%
7/11/06	20	20	5,000	700	2,200	NS	5,000	NS	NS	5	0	0%
8/1/06	320	1,100	1,700	dry	5,000	NS	2,200	NS	NS	4	0	0%
9/12/06	20	500	8,000	dry	4,000	1,100	1,100	NS	NS	5	0	0%
10/3/06	NS	300	13,000	dry	13,000	NS	8,000	NS	NS	4	2	50%
11/7/06	50	60	3,000	dry	5,000	NS	1,300	NS	NS	4	0	0%
12/5/06	20	80	750	5,000	2,200	170	170	NS	NS	6	0	0%
1/9/07	NS	20	340	1,300	800	NS	220	NS	NS	5	0	0%
2/7/07	300	400	300	1,300	1,900	NS	1,700	NS	NS	5	0	0%
3/6/07	170	850	300	5,000	1,200	230	230	NS	NS	6	0	0%
4/3/07	500	260	260	800	800	NS	210	NS	NS	5	0	0%
5/1/07	220	200	1,100	3,900	1,300	NS	1,300	NS	NS	5	0	0%
6/5/07	170	2,200	2,300	30,000	8,000	500	500	NS	NS	6	1	17%
7/10/07	2	480	13,000	1,100	5,000	800	800	NS	dry	6	1	17%
8/7/07	4	110	1,400	4,300	dry	900	900	NS	dry	5	0	0%
9/4/07	1	70	3,000	30,000	dry	800	800	NS	dry	5	1	20%
10/2/07	800	300	3,000	13,000	dry	6,000	6,000	NS	dry	5	1	20%
11/6/07	1,700	2,600	800	5,000	dry	800	800	NS	NS	5	0	0%
12/4/07	300,000	97,000	22,000	30,000	240,000	500,000	500,000	NS	NS	6	6	100%
1/14/08	1,700	13,000	2,300	2,200	3,000	3,000	3,000	500	NS	7	1	14%
2/7/08	1,700	3,000	13,000	5,000	23,000	800	800	NS	NS	6	2	33%
3/4/08	2,200	5,000	2,300	2,200	3,000	270	270	NS	NS	6	0	0%
4/8/08	500	500	800	2,800	1,300	3,000	3,000	NS	NS	6	0	0%

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
5/13/08	80	130	11,000	7,000	2,300	3,000	3,000	NS	NS	6	1	17%
6/17/08	22	500	30,000	70,000	5,000	2,200	2,200	3,000	dry	7	2	29%
7/8/08	2	4	50,000	13,000	5,000	5,000	1,100	24,000	dry	7	3	43%
8/12-8/13/08	2	50	3,000	350	3,000	5,000	170	340	dry	7	0	0%
9/9-9/10/08	13	30	5,000	500	dry	1,300	700	1,400	dry	6	0	0%
10/13/08	11	220	3,000	700	dry	2,300	500	130	dry	6	0	0%
11/17-11/18/08	130	130	3,000	500	dry	280	230	300	dry	6	0	0%
12/9-12/10/08	500	1,300	800	50,000	11,000	5,000	210	300	dry	7	2	29%
1/13-1/17/09	300	230	800	23,000	3,000	2,300	170	40	1,700	8	1	13%
2/23-2/24/09	5,000	1,100	5,000	5,000	1,300	3,000	230	210	130	8	0	0%
3/10-3/11/09	800	800	3,000	5,000	2,300	1,700	130	230	40	8	0	0%
4/14-/15/09	11	2,200	2,300	5,000	2,300	17,000	130	130	210	8	1	13%
5/12-5/13/09	170	80	23,000	50,000	23,000	17,000	220	300	500	8	4	50%
6/9-6/11/09	30	130	1,600	13,000	30,000	13,000	230	230	3,500	8	3	38%
7/14-7/15/09	13	300	14,000	7,000	23,000	3,000	140	300	dry	7	2	29%
8/10/09	7	2,300	3,000	700	300	1,700	300	220	dry	7	0	0%
9/22-9/28/09	23	220	NS	2,300	11,000	1,300	NM	NM	dry	4	1	25%
10/27/09	<2	400	NS	8,000	5,000	500	700	500	dry	6	0	0%
11/17/09	<2	300	NS	170	1,300	300	500	700	dry	6	0	0%
12/17/09	130	800	2,200	3,000	11,000	2,300	1,700	300	dry	7	1	14%
1/26/10	1,700	2,300	5,000	13,000	13,000	8,000	16,000	1,100	5,000	8	3	38%
2/17-2/18/10	350	1,100	2,300	3,000	1,300	800	900	900	900	8	0	0%
3/15-3/17/10	1,100	900	1,700	2,200	1,700	5,000	9,000	1,100	1,300	8	0	0%
5/18-5/19/10	80	600	23,000	8,000	8,000	1,700	1,700	1,300	2,800	8	1	13%
6/8-6/9/10	30	5,000	13,000	28,000	5,000	3,000	2,300	2,300	3,500	8	2	25%
7/13-14/10	4	800	3,000	8,000	8,000	2,300	2,200	3,000	dry	7	0	0%
8/3/10	NS	NS	NS	NS	NS	NS	500	1,100	dry	2	0	0%
9/14/10	2	3,500	dry	1,400	dry	1,700	1,700	3,000	dry	5	0	0%
10/12/10	<2	2,300	dry	1,100	dry	1,300	700	500	dry	5	0	0%
11/9/10	23	7	dry	1,300	5,000	3,000	2,300	3,000	3500	7	0	0%
12/14/10	8	300	8,000	1,700	1,700	300	280	170	3000	8	0	0%
1/18-19/11	700	780	5,000	3,000	700	5,000	2,300	2,300	1100	8	0	0%
2/8-9/11	4	700	1,300	800	700	220	500	800	500	8	0	0%
3/16/11	2,300	8,000	1,700	3,000	13,000	800	NS	NS	NS	5	1	20%
Total # of Samples	**53**	**82**	**76**	**76**	**68**	**47**	**80**	**41**	**20**	**490**		
# Samples Exceeding AB411	**1**	**3**	**15**	**18**	**14**	**6**	**4**	**4**	**2**		**66**	
% Exceeding AB411	**2%**	**4%**	**20%**	**24%**	**21%**	**13%**	**5%**	**10%**	**10%**			**13%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 10,000 MPN/100 mL.

Non-detected concentrations are assumed to equal 1; NS – Not Sampled; dry – the site was dry (no samples collected)

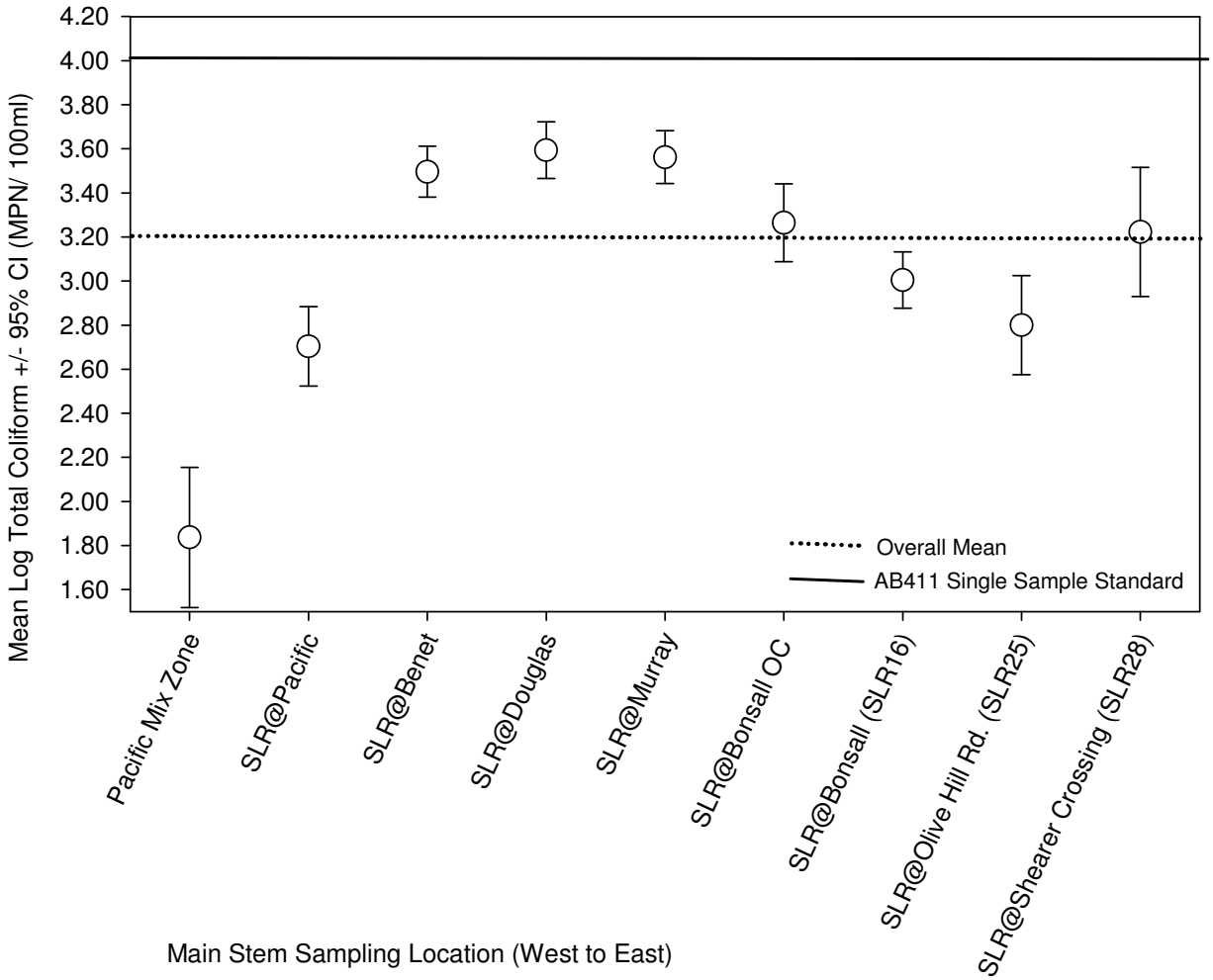

Figure 2. Relative mean concentrations ± 95% confidence intervals of Total Coliform bacteria in San Luis Rey River and in the Pacific Mix Zone.

Fecal Coliform Bacteria in the Main Stem

The Fecal Coliform bacteria counts exceeded the State single sample standard of 400 MPN/100ml in 109 of 486 (22%) samples analyzed (Table 4). During FY 2010/2011, exceedances occurred occasionally; the greatest percentage (40%) was recorded in October 2010. The highest exceedance of 1,300 MPN/100ml was recorded at Murray on November 9, 2010 and at Bonsall Bridge on October 12, 2010 when sampled by the City of Oceanside. Surprisingly, only 500 MPN/100ml was reported by the County of San Diego for the same location on the same day. The highest percentage of exceedances (44%) and the highest mean concentration of Fecal Coliform bacteria (Figure 3) were recorded at Douglas.

With the exception of Douglas, the overall mean concentrations of Fecal Coliform along the main stem of San Luis Rey River remained below the AB411 Single Sample Standard (Figure 3). The lowest mean Fecal Coliform concentrations were observed at Pacific Mix Zone and at Shearer Crossing (SLR28).

Table 4: Fecal Coliform Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	500	130	1,700	60	NS	170	<2	23	7	2	29%
4/14/04	NS	2,300	260	360	300	NS	20	NS	NS	5	1	20%
5/12/04	NS	400	40	170	40	NS	20	NS	NS	5	1	20%
6/9/04	NS	40	500	800	170	NS	80	130	dry	6	2	33%
7/14/04	NS	300	50	50	dry	NS	50	NS	NS	4	0	0%
8/17/04	NS	5,000	80	dry	dry	NS	40	NS	NS	3	1	33%
9/13/04	NS	160	170	dry	dry	NS	20	75	dry	4	0	0%
10/13/04	NS	3,000	20	20	dry	NS	20	188	dry	5	1	20%
11/17/04	NS	700	220	1,300	300	NS	NS	130	20	6	2	33%
12/15/04	NS	20	500	9,000	110	NS	40	50	40	7	2	29%
1/26/05	NS	300	1,400	360	230	NS	3,000	NS	NS	5	2	40%
2/9/05	NS	300	500	500	500	NS	<2	NS	NS	5	3	60%
3/9/05	NS	500	800	1,300	230	NS	140	NS	NS	5	3	60%
4/6/05	NS	<2	70	230	<2	NS	80	NS	NS	5	0	0%
5/3/05	NS	300	270	300	130	NS	130	700	NS	6	1	17%
6/8/05	NS	80	170	80	500	NS	140	NS	NS	5	1	20%
7/12-7/13/05	NS	80	95	230	300	NS	130	NS	NS	5	0	0%
8/9-8/10/05	NS	160	500	500	270	NS	300	NS	NS	5	2	40%
9/6/05	NS	10	300	500	400	NS	800	NS	NS	5	3	60%
10/4/05	NS	10	170	300	1,300	NS	140	NS	NS	5	1	20%
11/1/05	NS	130	1,100	9,500	220	NS	230	NS	NS	5	2	40%
12/7/05	NS	220	230	13,000	30	NS	40	NS	NS	5	1	20%
1/10/06	NS	4,400	500	80	80	NS	90	NS	NS	5	2	40%
2/7/06	NS	500	300	5,200	300	NS	110	NS	NS	5	2	40%
4/3/06	NS	80	40	1,700	160	NS	8,130	40	NS	6	2	33%
5/17/06	NS	NS	NS	NS	NS	NS	NS	50	NS	1	0	0%
5/30/06	NS	170	80	500	NS	NS	NS	NS	NS	3	1	33%
6/20/06	NS	230	800	300	260	NS	500	NS	NS	5	2	40%
7/11/06	20	20	1,300	230	130	NS	20	NS	NS	5	1	20%
8/1/06	220	700	80	dry	300	NS	80	NS	NS	4	1	25%
9/12/06	20	230	800	dry	220	NS	110	NS	NS	4	1	25%
10/3/06	NS	20	300	dry	500	NS	80	NS	NS	4	1	25%
11/7/06	50	60	500	dry	300	NS	130	NS	NS	4	1	25%
12/5/06	20	40	260	3,000	300	130	130	NS	NS	6	1	17%
1/9/07	NS	20	140	1,300	80	NS	130	NS	NS	5	1	20%
2/7/07	300	400	20	800	110	NS	70	NS	NS	5	2	40%
3/6/07	110	700	230	700	300	110	110	NS	NS	6	2	33%
4/3/07	500	260	170	300	300	NS	90	NS	NS	5	0	0%
5/1/07	70	100	230	530	70	NS	80	NS	NS	5	1	20%
6/5/07	170	2,200	2,300	2,300	230	20	20	NS	NS	6	3	50%
7/10/07	<2	170	500	40	170	170	170	NS	dry	6	1	17%
8/7/07	2	110	70	500	dry	40	40	NS	dry	5	1	20%
9/4/07	<2	20	220	700	dry	130	130	NS	dry	5	1	20%
10/2/07	800	230	2,300	40	dry	80	80	NS	dry	5	1	20%
11/6/07	1,700	2,000	110	40	dry	130	130	NS	NS	5	1	20%
12/4/07	2,300	2,200	500	230	23,000	7,000	7,000	NS	NS	6	5	83%
1/14/08	40	500	130	300	40	230	230	300	NS	7	1	14%

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
2/7/08	800	1,300	700	800	260	170	170	NS	NS	6	3	50%
3/4/08	800	300	170	1,300	20	220	220	NS	NS	6	1	17%
4/8/08	40	300	110	900	70	170	170	NS	NS	6	1	17%
5/13/08	<2	80	80	800	300	110	110	NS	NS	6	1	17%
6/17/08	<2	220	70	3,000	500	140	140	130	dry	7	2	29%
7/8/08	2	4	80	1,400	50	500	130	300	dry	7	2	29%
8/12-8/13/08	2	11	50	23	8	50	40	130	dry	7	0	0%
9/9-9/10/08	13	30	30	220	dry	500	130	110	dry	6	1	17%
10/13/08	7	50	30	13	dry	300	300	20	dry	6	0	0%
11/17-11/18/08	80	130	50	8	dry	130	130	110	dry	6	0	0%
12/9-12/10/08	500	170	30	370	300	110	40	130	dry	7	0	0%
1/13-1/17/09	80	80	130	700	50	1,300	110	20	40	8	2	25%
2/23-2/24/09	300	170	600	170	130	67	40	110	80	8	1	13%
3/10-3/11/09	300	300	230	60	50	30	80	20	40	8	0	0%
4/14-/15/09	2	50	230	220	40	90	80	40	1	8	0	0%
5/12-5/13/09	170	80	30	800	300	80	70	40	110	8	1	13%
6/9-6/11/09	13	30	50	230	220	50	40	130	110	8	0	0%
7/14-7/15/09	<2	203	36	613	1,120	79	140	300	Dry	7	2	29%
8/10/09	<2	108	98	140	10	52	40	110	Dry	7	0	0%
9/22-9/28/09	10	<2	NS	320	1,700	340	NS	NS	Dry	4	1	25%
10/27/09	53	95	NS	900	1,760	199	230	500	Dry	6	3	50%
11/17/09	<2	10	NS	180	360	360	300	300	Dry	6	0	0%
12/17/09	134	31	373	414	556	272	300	80	Dry	7	2	29%
1/26/10	1,076	1,376	548	548	205	461	300	230	40	8	4	50%
2/17-2/18/10	211	880	816	129	155	114	130	240	120	8	2	25%
3/15-3/17/10	10	75	236	114	141	60	170	230	130	8	0	0%
5/18-5/19/10	31	20	37	91	143	71	50	70	170	8	0	0%
6/8-6/9/10	<2	512	69	260	272	96	170	50	500	8	2	25%
7/13-14/10	2	230	7	800	300	90	130	700	dry	7	2	29%
8/3/10	NS	NS	NS	NS	NS	NS	130	110	dry	2	0	0%
9/14/10	2	170	Dry	11	Dry	30	110	700	dry	5	1	20%
10/12/10	<2	170	Dry	4	Dry	1,300	500	130	dry	5	2	40%
11/9/10	2	4	Dry	80	1,300	300	230	300	30	7	1	14%
12/14/10	8	50	30	80	130	80	80	70	22	8	0	0%

Date	Pacific Mix	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
1/18-19/11	300	700	800	130	70	80	170	500	50	8	3	38%
2/8-9/11	4	220	800	50	30	80	30	80	30	8	1	13%
3/16/11	130	500	800	170	70	170	NS	NS	NS	5	2	40%
Total # of Samples	**53**	**84**	**77**	**77**	**69**	**47**	**80**	**42**	**19**	**486**		
# Samples Exceeding AB411	**8**	**22**	**23**	**34**	**12**	**6**	**6**	**5**	**1**		**109**	
% Exceeding AB411	**15%**	**26%**	**30%**	**44%**	**17%**	**13%**	**8%**	**12%**	**5%**			**22%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 400 MPN/100 mL.
Non-detected concentrations are assumed to equal 1; NS – Not Sampled; dry – the site was dry (no samples collected)

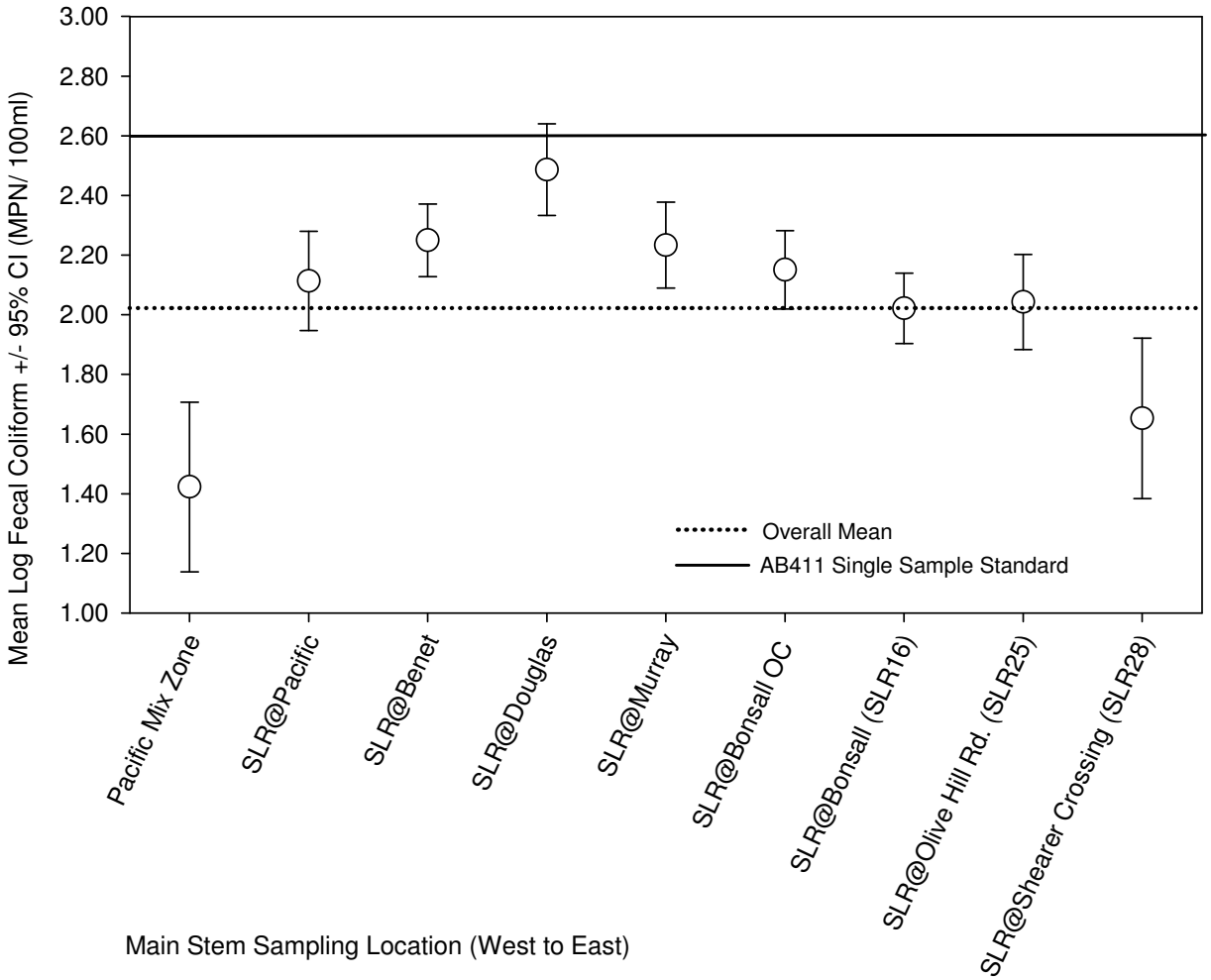

Figure 3. Relative mean concentrations ± 95% confidence intervals of Fecal Coliform bacteria in San Luis Rey River and in the Pacific Mix Zone.

Enterococcus Bacteria in the Main Stem

Enterococcus bacteria counts exceeded the State Single Sample Standard of 104 MPN/100ml in 288 out of 481 (60%) samples analyzed (Table 5). For the FY 2010-11, exceedances occurred throughout the sampling period with the greatest percentage (100%) recorded in August 2010. Olive Hill Rd. had the highest overall percentage of exceedances (71%); Douglas had the highest mean concentration but it was not significantly higher than those measured at Benet, Murray, and Olive Hill Rd. (Figure 4).

The overall mean counts of *Enterococcus* bacteria along the main stem of San Luis Rey River exceeded the AB411 at most of the locations sampled and the combined mean roughly equaled the standard (Figure 4). The lowest *Enterococcus* counts were found at Pacific and at Shearer Crossing.

Table 5: Enterococcus Densities (MPN/100ml) in the Main Stem of San Luis Rey River.

Date	Pacific Mix Zone	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	NS	52	265	2,063	116	NS	285	8	<2	7	4	57%
4/14/04	NS	290	170	310	200	NS	34	NS	NS	5	4	80%
5/12/04	NS	110	63	259	51	NS	10	NS	NS	5	2	40%
6/9/04	NS	10	490	230	292	NS	160	300	NS	6	5	83%
7/14/04	NS	300	130	50	dry	NS	1,100	NS	NS	4	3	75%
8/17/04	NS	400	98	dry	dry	NS	140	NS	NS	3	2	67%
9/13/04	NS	36	470	dry	dry	NS	260	180	dry	4	3	75%
10/13/04	NS	360	170	81	dry	NS	93	970	dry	5	3	60%
11/17/04	NS	96	300	2,240	310	NS	NS	140	170	6	5	83%
12/15/04	NS	10	170	5,470	241	NS	31	140	40	7	4	57%
1/26/05	NS	300	600	330	940	NS	670	NS	NS	5	5	100%
2/9/05	NS	20	850	420	31	NS	20	NS	NS	5	2	40%
3/9/05	NS	93	500	240	170	NS	92	NS	NS	5	3	60%
4/6/05	NS	<2	122	180	52	NS	76	NS	NS	5	2	40%
5/3/05	NS	171	110	180	190	NS	140	24,000	NS	6	6	100%
6/8/05	NS	78	190	280	170	NS	140	NS	NS	5	4	80%
7/12-7/13/05	NS	240	220	100	110	NS	160	NS	NS	5	4	80%
8/9-8/10/05	NS	10	140	250	360	NS	270	NS	NS	5	4	80%
9/6/05	NS	5	120	260	150	NS	175	NS	NS	5	4	80%
10/4/05	NS	5	96	410	226	NS	132	NS	NS	5	3	60%
11/1/05	NS	31	650	4,480	210	NS	140	NS	NS	5	4	80%
12/7/05	NS	540	600	4,760	190	NS	3,040	40	40	7	5	71%
1/10/06	NS	300	1,870	170	170	NS	160	NS	NS	5	5	100%
2/7/06	NS	190	330	4,220	74	NS	82	NS	NS	5	3	60%
4/3/06	NS	31	30	780	84	NS	120	130	NS	6	3	50%
5/17/06	NS	NS	NS	NS	NS	NS	700	NS	NS	1	1	100%
5/30/06	NS	31	190	85	NS	NS	NS	NS	NS	3	1	33%
6/20/06	NS	108	340	87	110	NS	228	NS	NS	5	4	80%
7/11/06	10	<2	540	88	200	NS	190	NS	NS	5	3	60%
8/1/06	10	20	200	NS	260	NS	250	NS	NS	4	3	75%
9/12/06	10	1	290	NS	320	40	40	NS	NS	4	2	50%
10/3/06	NS	20	130	NS	110	NS	80	NS	NS	4	2	50%
11/7/06	10	<2	120	NS	213	NS	52	NS	NS	4	2	50%
12/5/06	10	<2	240	4,510	260	80	80	NS	NS	4	3	75%
1/9/07	NS	10	135	1,290	85	NS	31	NS	NS	5	2	40%
2/7/07	62	110	250	1,180	134	NS	98	NS	NS	5	4	80%
3/6/07	20	190	310	490	88	130	130	NS	NS	6	5	83%
4/3/07	10	58	76	360	76	NS	88	NS	NS	5	1	20%
5/1/07	10	35	120	430	190	NS	200	NS	NS	5	4	80%
6/5/07	60	<2	240	209	180	20	20	NS	NS	5	3	60%
7/10/07	<2	10	160	144	31	230	230	NS	dry	6	4	67%
8/7/07	10	<2	98	200	dry	93	93	NS	dry	4	1	25%
9/4/07	<2	<2	206	301	dry	31	31	NS	dry	4	2	50%
10/2/07	185	93	320	52	dry	30	30	NS	dry	5	1	20%
11/6/07	831	240	85	41	dry	100	100	NS	NS	5	1	20%
12/4/07	380	360	86	210	770	942	942	NS	NS	6	5	83%
1/14/08	62	73	20	98	31	52	52	300	NS	7	1	14%
2/7/08	450	743	677	2,224	158	161	161	NS	NS	6	6	100%
3/4/08	98	213	233	759	41	155	155	NS	NS	6	5	83%
4/8/08	<2	20	<2	1,274	122	148	148	NS	NS	5	4	80%
5/13/08	41	<2	63	1,119	86	187	187	NS	NS	5	3	60%
6/17/08	<2	359	31	488	1,203	84	84	500	dry	7	4	57%

Date	Pacific Mix Zone	Pacific	Benet	Douglas	Murray	Bonsall Bridge OC	Bonsall Bridge SDC	Olive Hill Rd.	Shearer Crossing	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
7/8/08	21	326	70	613	687	64	230	500	dry	7	5	71%
8/12-8/13/08	10	145	32	26	192	35	340	2,800	dry	7	4	57%
9/9-9/10/08	10	10	36	6	dry	16	110	130	dry	6	2	33%
10/13/08	20	63	61	15	dry	32	80	40	dry	6	0	0%
11/17-11/18/08	31	122	2	25	dry	18	170	40	dry	6	2	33%
12/9-12/10/08	146	31	12	2,420	1,414	12	20	130	dry	7	3	43%
1/13-1/17/09	75	75	26	548	126	11	20	220	80	8	3	38%
2/23-2/24/09	228	231	248	147	248	99	80	230	500	8	6	75%
3/10-3/11/09	52	52	42	77	248	53	170	<2	70	8	2	25%
4/14-/15/09	10	10	47	148	142	86	170	<2	230	8	4	50%
5/12-5/13/09	30	41	41	46	64	76	130	110	20	8	2	25%
6/9-6/11/09	10	41	111	225	435	112	170	230	300	8	7	88%
7/14-7/15/09	13	170	110	1,300	700	500	170	170	dry	7	7	100%
8/10/09	2	500	70	40	<2	80	40	140	dry	7	2	29%
9/22-9/28/09	23	80	NS	220	70	300	NS	NS	dry	4	2	50%
10/27/09	5	260	NS	80	500	170	97	213	dry	6	4	67%
11/17/09	5	300	NS	20	230	130	135	275	dry	6	5	83%
12/17/09	130	130	300	130	130	170	85	86	dry	7	5	71%
1/26/10	300	1,300	130	170	70	220	80	80	20	8	4	50%
2/17-2/18/10	50	230	350	50	30	21	55	77	50	8	2	25%
3/15-3/17/10	70	170	300	30	80	130	230	500	50	8	5	63%
5/18-5/19/10	23	80	170	300	170	80	140	110	9	8	5	63%
6/8-6/9/10	8	3,000	170	500	350	170	230	130	130	8	8	100%
7/13-14/10	20	248	21	308	1,553	29	130	130	dry	7	5	71%
8/3/10	NS	NS	NS	NS	NS	NS	230	220	dry	2	2	100%
9/14/10	<2	30	dry	816	dry	3	13	500	dry	5	2	40%
10/12/10	<2	20	dry	30	dry	16	13	17	dry	5	0	0%
11/9/10	<2	30	dry	114	411	12	130	350	1,300	7	5	71%
12/14/10	<2	10	41	361	162	11	30	50	300	8	3	38%
1/18-19/11	<2	<10	687	147	114	146	300	800	22	8	6	75%
2/8-9/11	10	323	488	52	69	59	110	500	6	8	4	50%
3/16/11	241	432	326	99	91	228	NS	NS	NS	5	3	60%
Total # of Samples	**54**	**83**	**77**	**77**	**69**	**48**	**81**	**42**	**20**	**481**		
# Samples Exceeding AB411	**9**	**35**	**51**	**53**	**48**	**18**	**46**	**30**	**7**		**288**	
% Exceeding AB411	**17%**	**42%**	**66%**	**69%**	**70%**	**38%**	**57%**	**71%**	**35%**			**60%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 104 MPN/100 mL.
Non-detected concentrations are assumed to equal 1; NS – Not Sampled; dry – the site was dry (no samples collected)

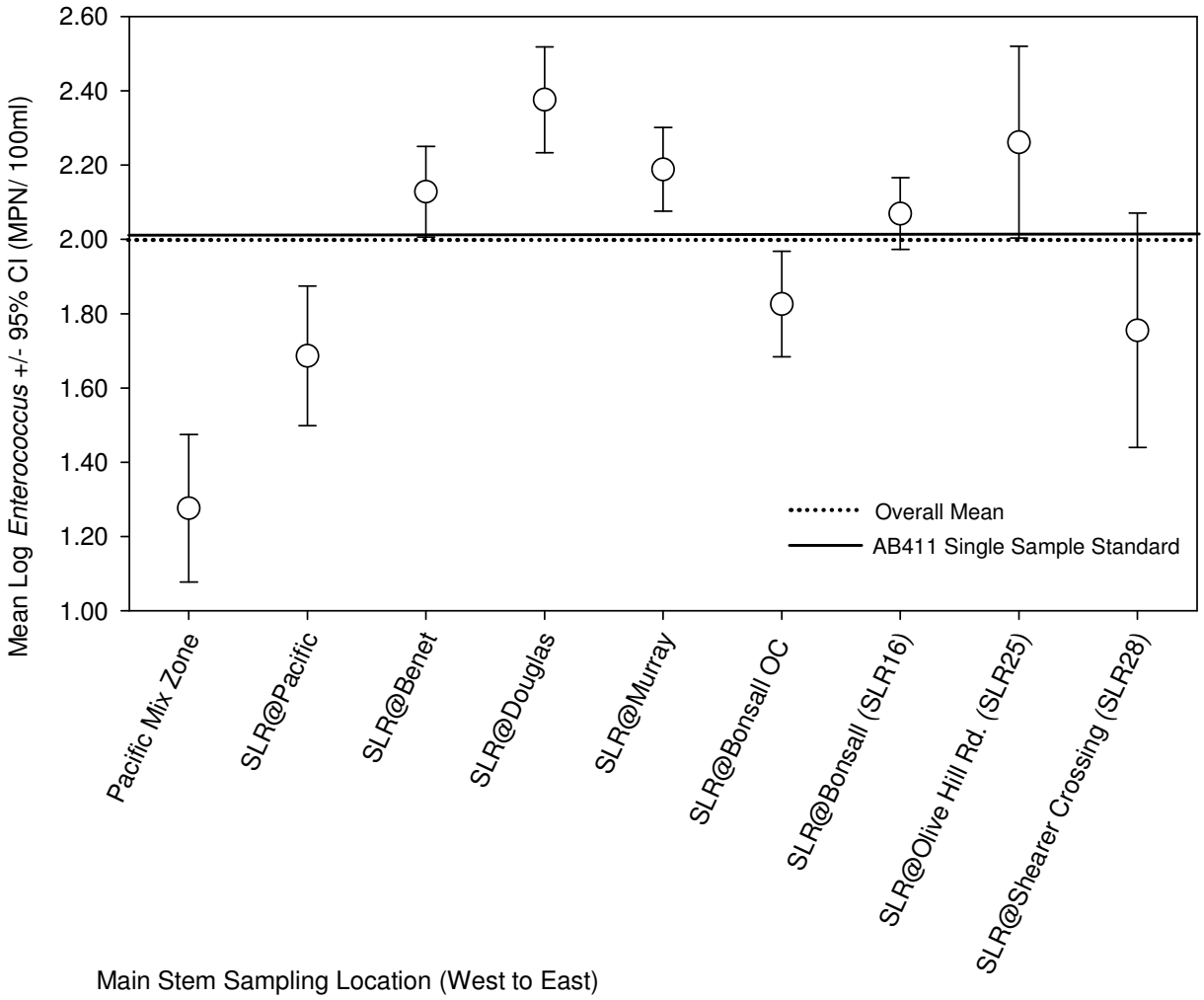

Figure 4. Relative mean concentrations ± 95% confidence intervals of *Enterococcus* bacteria in San Luis Rey River and in the Pacific Mix Zone.

Total Coliform Bacteria in Tributaries

Total Coliform bacteria samples collected from the tributaries to the San Luis Rey River exceeded the State single sample standard of 10,000 MPN/100ml in 67 out of 294 (23%) samples analyzed (Table 6). For FY 2010-11 exceedances occurred occasionally throughout the sampling period with the highest percentage (50%) recorded in July 2010 and March 2011. Sleeping Indian Outlet had the highest percentage of exceedances (88%) and the highest mean concentration (Figure 5).

The overall mean concentrations of Total Coliform in the San Luis Rey River tributaries remained below the AB411 single sample standard (Figure 5). Two sampling locations, Sleeping Indian and Pilgrim Creek Outlet had the mean concentrations that were significantly higher than any of the remaining tributaries. The mean concentration of Total Coliform bacteria at Sleeping Indian was also significantly higher than the AB411 standard.

Table 6. Total Coliform Densities (MPN/100ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	5,000	1,300	NS	NS	80	130	50	23	22	30	8	0	0%
4/14/04	8,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	13,000	5,000	dry	11,000	2,300	30,000	5	3	60%
9/13/04	dry	dry	NS	NS	130,000	23,000	dry	30,000	23,000	dry	4	4	100%
10/13/04	dry	dry	NS	NS	dry	17,000	dry	39,000	23,000	dry	3	3	100%
11/17/04	2,300	1,300	NS	NS	8,000	8,000	8,000	12,000	24,000	24,000	8	3	38%
12/15/04	1,700	1,300	NS	NS	1,700	1,400	1,400	1,700	1,700	1,700	8	0	0%
1/26/05	1,700	3,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	2,300	800	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	7,000	2,300	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	8,000	30,000	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/3/05	5,000	dry	NS	NS	5,000	5,000	NS	NS	NS	NS	3	0	0%
6/8/05	14,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	17,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	3,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	5,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	30,000	dry	NS	NS	NS	NS	NS	NS	NS	1,700	2	0	0%
1/10/06	11,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	13,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	23,000	dry	NS	NS	1,700	NS	5,000	5,000	5,000	5,000	6	0	0%
5/17/06	NS	NS	NS	NS	8,130	8,000	11,000	11,000	11,000	13,000	6	4	67%
5/30/06	11,000	3,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	5,000	5,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/11/06	7,000	1,700	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
8/1/06	8,000	5,000	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
9/12/06	50,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	30,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	5,000	dry	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
12/5/06	22,000	dry	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/9/07	5,000	dry	8,000	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/7/07	8,000	230	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/6/07	30,000	NS	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/3/07	2,800	NS	22,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/1/07	8,000	NS	23,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/5/07	900,000	NS	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/10/07	dry	NS	5,000	NS	NS	NS	NS	NS	NS	dry	1	0	0%
8/7/07	dry	NS	13,000	NS	NS	NS	NS	NS	NS	dry	1	1	100%
9/4/07	dry	NS	130,000	NS	NS	NS	NS	NS	NS	dry	1	1	100%
10/2/07	300,000	NS	17,000	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	17,000	NS	NS	NS	NS	NS	NS	NS	1	1	100%
12/4/07	50,000	NS	13,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/14/08	3,000	NS	80,000	NS	1,100	24,000	NS	800	800	NS	6	2	33%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
2/7/08	8,000	NS	13,000	NS	NS	NS	NS	NS	NS	dry	2	1	50%
3/4/08	2,200	NS	2,200	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/8/08	7,000	NS	80,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/13/08	8,000	NS	50,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/17-18/2008	dry	NS	17,000	1,100	1,100	3,000	2,200	2,200	1,700	dry	7	1	14%
7/8/08	dry	NS	23,000	2,400	340	3,500	dry	1,700	16,000	dry	6	2	33%
8/12-8/13/08	dry	NS	80,000	800	3,000	9,000	dry	500	5,000	dry	6	1	17%
9/9-9/10/08	dry	NS	23,000	1,300	dry	9,000	dry	300	16,000	dry	5	2	40%
10/13/08	dry	NS	23,000	NS	dry	3,000	dry	700	1,700	dry	4	1	25%
11/17-11/18/08	dry	NS	5,000	NS	dry	3,000	dry	800	30,000	dry	4	1	25%
12/9-12/10/08	dry	NS	50,000	NS	5,000	230	5,000	800	1,300	dry	6	1	17%
1/13-1/17/09	5,000	NS	70,000	NS	220	170	1,300	220	300	500	8	1	13%
2/23-2/24/09	13,000	NS	70,000	NS	220	300	500	210	700	220	8	1	13%
3/10-3/11/09	50,000	NS	13,000	NS	1,100	500	500	110	300	500	8	1	13%
4/14-/15/09	5,000	NS	23,000	NS	1,700	500	800	230	700	800	8	1	13%
5/12-5/13/09	30,000	NS	30,000	NS	260	5,000	dry	1,300	230	170	7	1	14%
6/9-6/11/09	dry	NS	23,000	NS	230	1,700	dry	300	340	1,300	6	1	17%
7/14-7/15/09	dry	NS	80,000	NS	dry	9,000	dry	500	9,000	dry	4	1	25%
8/10/09	dry	NS	110,000	NS	dry	1,700	dry	220	5,000	dry	4	1	25%
9/22-9/28/09	dry	NS	NS	NS	dry	NS	dry	NS	NS	dry	0	0	NA
10/27/09	dry	NS	NS	NS	dry	9,000	dry	1,300	5,000	dry	3	0	0%
11/17/09	dry	NS	dry	NS	dry	16,000	dry	800	3,000	dry	3	1	33%
12/17/09	8,000	NS	110,000	NS	dry	1,700	dry	1,300	11,000	dry	5	2	40%
1/26/10	5,000	NS	140,000	NS	9,000	9,000	2,400	9,000	2,800	16,000	8	2	25%
2/17-2/18/10	2,300	NS	23,000	NS	1,600	1,600	1,600	NS	NS	NS	5	1	20%
3/15-3/17/10	3,000	NS	23,000	NS	5,000	3,000	3,000	1,700	1,300	800	8	1	13%
5/18-5/19/10	5,000	NS	23,000	NS	1,300	5,000	160,000	1,300	2,300	1,700	8	2	25%
6/8-6/9/10	13,000	NS	30,000	NS	5,000	3,000	dry	800	2,300	dry	6	1	17%
7/13-14/10	dry	NS	dry	NS	30,000	3,000	dry	1,700	17,000	dry	4	2	50%
8/3/10	NS	NS	NS	NS	dry	3,000	dry	2,300	3,000	dry	3	0	0%
9/14/10	dry	NS	dry	NS	dry	5,000	dry	13,000	5,000	dry	3	1	33%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
10/12/10	dry	NS	dry	NS	dry	24,000	dry	2,800	5,000	dry	3	1	33%
11/9/10	30,000	NS	dry	NS	5,000	1,700	dry	1,300	3,000	dry	5	0	0%
12/14/10	17,000	NS	dry	NS	8,000	1,700	dry	800	1,100	dry	5	0	0%
1/18-19/11	5,000	NS	80,000	NS	5,000	2,300	3,000	8,000	3,500	2,200	8	1	13%
2/8-9/11	3,000	NS	1,500	NS	1,300	1,700	800	1,300	2,800	500	8	0	0%
3/16/11	1,000	NS	70,000	NS	NS	NS	NS	NS	NS	NS	2	1	50%
Total # of Samples	**52**	**11**	**42**	**4**	**26**	**37**	**16**	**36**	**36**	**16**	**294**		
# Samples Exceeding AB411	**20**	**1**	**37**	**0**	**3**	**5**	**2**	**6**	**9**	**4**		**67**	
% Exceeding AB411	**38%**	**9%**	**88%**	**0%**	**12%**	**14%**	**13%**	**17%**	**25%**	**25%**			**23%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 10,000 MPN/100 mL.
Non-detected concentrations are assumed to equal 1; NS – Not Sampled; dry – the site was dry (no samples collected)

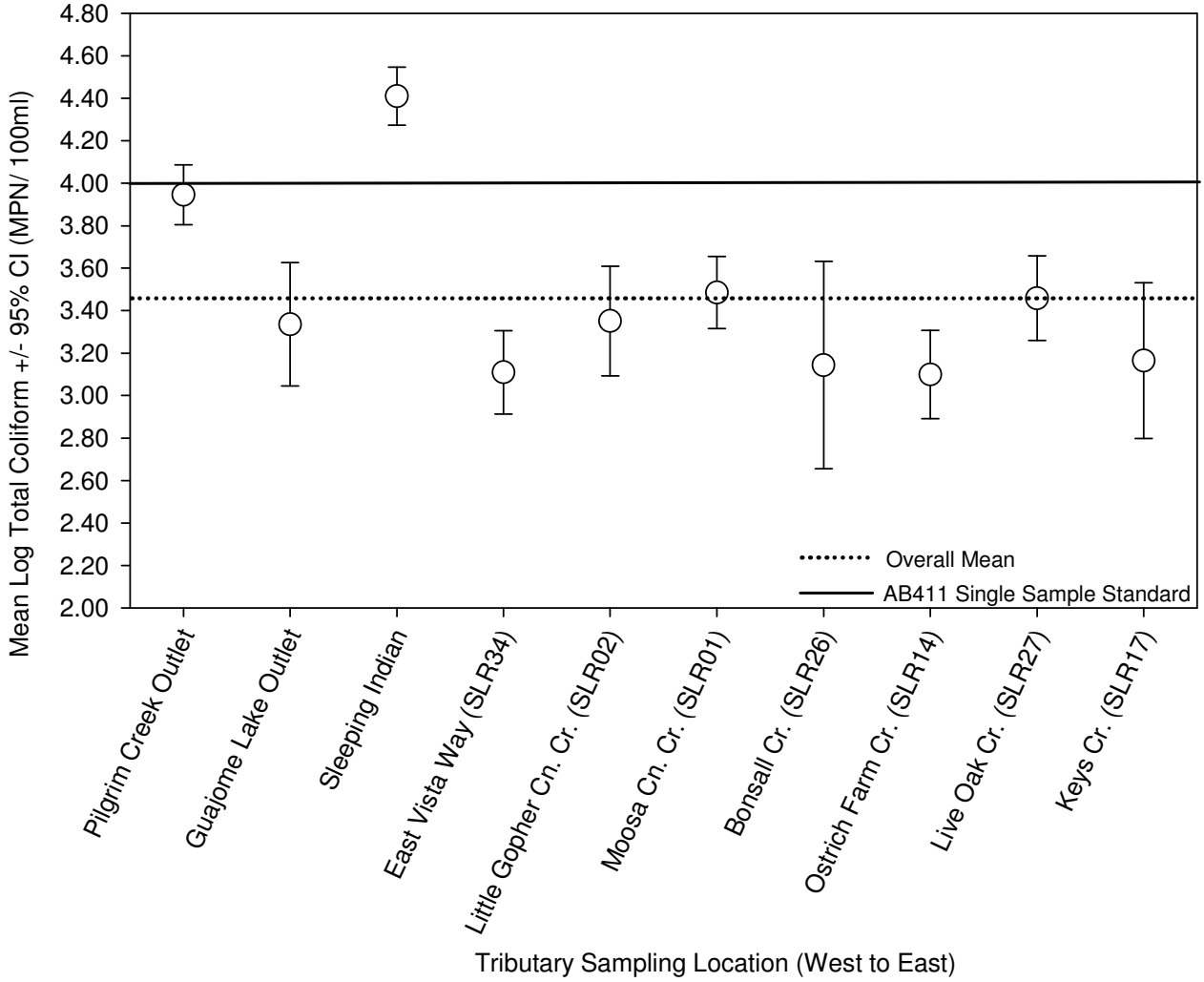

Figure 5. Relative mean concentrations ± 95% confidence intervals of Total Coliform bacteria in San Luis Rey River tributaries.

Fecal Coliform Bacteria in Tributaries

Fecal Coliform bacteria samples collected in tributaries to the San Luis Rey River exceeded the State single sample standard of 400 MPN/100ml in 62 out of 290 (21%) samples analyzed (Table 7). For FY 2010-11 exceedances occurred throughout the sampling period with the highest percentage (67%) recorded in September 2010. The highest percentage of exceedances (69%) and the highest mean concentration occurred at Pilgrim Creek Outlet. With the exception of Pilgrim Creek Outlet, the mean concentrations of Fecal Coliform for all remaining tributaries did not significantly exceed the AB411 Single Sample Standard (Figure 6).

Table 7. Fecal Coliform Densities (MPN/100 ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	500	20	NS	NS	8	4	1	2	4	2	8	0	0%
4/14/04	230	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	800	220	dry	20	220	5,000	5	2	40%
9/13/04	dry	dry	NS	NS	8,000	20	dry	20	170	dry	4	1	25%
10/13/04	dry	dry	NS	NS	NS	110	dry	4,050	500	dry	3	2	67%
11/17/04	220	90	NS	NS	110	130	130	75	230	110	8	0	0%
12/15/04	170	170	NS	NS	170	230	80	20	82	90	8	0	0%
1/26/05	500	70	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	130	70	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	800	20	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	500	40	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/3/05	800	dry	NS	NS	300	40	NS	NS	NS	NS	3	0	0%
6/8/05	7,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	11,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	500	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	1,700	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	1,700	dry	NS	NS	8	NS	NS	NS	224	1,024	4	1	25%
1/10/06	700	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	600	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	900	dry	NS	NS	40	5,040	40	40	170	360	7	1	14%
5/30/06	1,100	130	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	5,000	130	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/11/06	3,000	300	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
8/1/06	1,300	800	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
9/12/06	170	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	5,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	300	dry	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
12/5/06	800	dry	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
1/9/07	1,300	dry	500	NS	NS	NS	NS	NS	NS	NS	2	1	50%
2/7/07	2,200	40	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/6/07	700	NS	40	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/3/07	300	NS	170	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/1/07	300	NS	80	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/5/07	50,000	NS	40	NS	NS	NS	NS	NS	NS	NS	2	0	0%
7/10/07	dry	NS	130	NS	NS	NS	NS	NS	NS	dry	1	0	0%
8/7/07	dry	NS	140	NS	NS	NS	NS	NS	NS	dry	1	0	0%
9/4/07	dry	NS	260	NS	NS	NS	NS	NS	NS	dry	1	0	0%
10/2/07	23,000	NS	2,200	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	20	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/4/07	3,000	NS	300	NS	NS	NS	NS	NS	NS	NS	2	0	0%
1/14/08	300	NS	20	NS	230	330	NS	140	270	NS	6	0	0%
2/7/08	110	NS	70	NS	NS	NS	NS	NS	NS	dry	2	0	0%
3/4/08	210	NS	20	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/8/08	800	NS	230	NS	NS	NS	NS	NS	NS	NS	2	0	0%
5/13/08	2,200	NS	230	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/17-18/2008	dry	NS	1,300	NS	500	2,400	900	80	230	dry	6	4	67%
7/8/08	dry	NS	30	80	40	140	dry	700	9,000	dry	6	2	33%
8/12-8/13/08	dry	NS	80	140	800	600	dry	130	270	dry	6	2	33%
9/9-9/10/08	dry	NS	3,000	300	dry	40	dry	20	1,400	dry	5	2	40%
10/13/08	dry	NS	130	NS	dry	130	dry	130	700	dry	4	1	25%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
11/17-11/18/08	dry	NS	130	NS	dry	500	dry	500	500	dry	4	3	75%
12/9-12/10/08	dry	NS	300	NS	5,000	130	800	110	340	dry	6	2	33%
1/13-1/17/09	300	NS	80	NS	130	-99	1,300	80	170	80	8	1	13%
2/23-2/24/09	800	NS	300	NS	220	130	500	20	500	140	8	2	25%
3/10-3/11/09	17,000	NS	500	NS	1,100	170	230	1	230	40	8	2	25%
4/14-/15/09	230	NS	130	NS	1,100	110	800	20	210	300	8	2	25%
5/12-5/13/09	70	NS	170	NS	40	1,300	dry	340	130	70	7	1	14%
6/9-6/11/09	dry	NS	26	NS	130	1,100	dry	80	220	70	6	1	17%
7/14-7/15/09	dry	NS	402	NS	dry	130	dry	40	1,100	dry	4	2	50%
8/10/09	dry	NS	5,670	NS	dry	130	dry	70	5,000	dry	4	2	50%
9/22-9/28/09	dry	NS	NS	NS	dry	NS	dry	NS	NS	dry	0	0	NA
10/27/09	dry	NS	NS	NS	dry	1,100	dry	800	1,300	dry	3	3	100%
11/17/09	dry	NS	dry	NS	dry	80	dry	80	300	dry	3	0	0%
12/17/09	1,850	NS	1,354	NS	dry	220	dry	110	500	dry	5	2	40%
1/26/10	387	NS	1,733	NS	230	130	40	130	130	300	8	1	13%
2/17-2/18/10	387	NS	980	NS	50	50	300	NS	NS	NS	5	1	20%
3/15-3/17/10	276	NS	1,414	NS	500	23	300	130	500	170	8	3	38%
5/18-5/19/10	1,553	NS	2,420	NS	500	130	21	80	300	500	8	3	38%
6/8-6/9/10	770	NS	12,997	NS	130	500	dry	23	500	dry	6	3	50%
7/13-14/10	dry	NS	dry	NS	24,000	170	dry	220	800	dry	4	2	50%
8/3/10	NS	NS	NS	NS	dry	50	dry	70	300	dry	3	0	0%
9/14/10	dry	NS	dry	NS	dry	23	dry	500	700	dry	3	2	67%
10/12/10	dry	NS	dry	NS	dry	300	dry	300	110	dry	3	0	0%
11/9/10	800	NS	dry	NS	170	110	dry	220	230	dry	5	0	0%
12/14/10	700	NS	dry	NS	300	70	dry	11	230	dry	5	0	0%
1/18-19/11	1,300	NS	300	NS	280	110	80	88	230	1,300	8	1	13%
2/8-9/11	3,000	NS	500	NS	300	50	110	170	30	230	8	1	13%
3/16/11	300	NS	1,300	NS	NS	NS	NS	NS	NS	NS	2	1	50%
Total # of Samples	**52**	**11**	**42**	**3**	**26**	**37**	**15**	**35**	**36**	**15**	**290**		
# Samples Exceeding AB411	**36**	**1**	**15**	**0**	**10**	**8**	**5**	**5**	**14**	**4**		**62**	
% Exceeding AB411	**69%**	**9%**	**36%**	**0%**	**38%**	**22%**	**33%**	**14%**	**39%**	**27%**			**21%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 400 MPN/100 mL.
Non-detected concentrations are assumed to equal 1; NS – Not Sampled; dry – the site was dry (no samples collected)

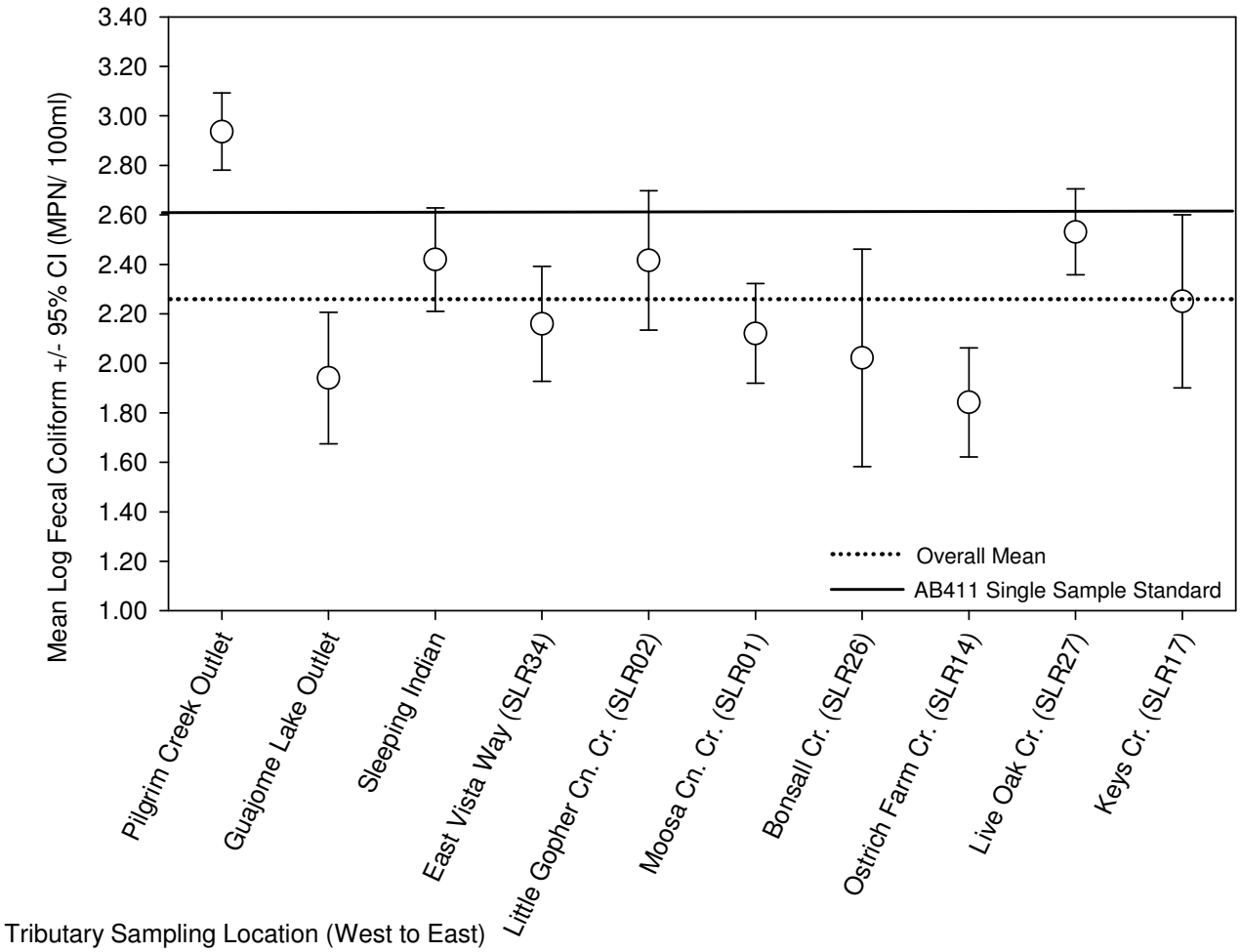

Figure 6. Relative mean concentrations ± 95% confidence intervals of Fecal Coliform bacteria in San Luis Rey River tributaries. Location means with letters in common are not significantly different (α= 0.05).

Enterococcus Bacteria in Tributaries

Enterococcus bacteria samples collected in tributaries to the San Luis Rey River exceeded the State single sample standard of 104 MPN/100ml in 168 out of 294 (57%) samples analyzed (Table 8). During FY 2010-11, exceedances occurred throughout the sampling period with the highest percentage (75%) found in July 2010. Of currently sampled locations, Pilgrim Creek Outlet had the highest percentage of exceedances (93%). The highest bacterial density of 5,794 MPN/100ml (for FY 2010-11) was measured at Sleeping Indian on January 19, 2011.

The mean bacterial counts in most of the tributaries significantly exceeded the AB411 single sample standard for *Enterococcus* bacteria (Fig. 7). The exceptions were the Guajome Lake Outlet (not sampled since February 2007), Moosa Canyon Creek, Bonsall Creek (SLR26), Ostrich Farm Creek (SLR14), and Keys Creek (SLR17).

Table 8. Enterococcus Densities (MPN/100ml) for Tributaries to the San Luis Rey River.

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
3/10/04	336	216	NS	NS	2	4	4	2	2	2	8	1	13%
4/14/04	310	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
6/9/04	dry	dry	NS	NS	700	260	dry	230	80	3,000	5	4	80%
9/13/04	dry	dry	NS	NS	3,500	130	dry	40	800	dry	4	3	75%
10/13/04	dry	dry	NS	NS	dry	110	dry	170	2,300	dry	3	3	100%
11/17/04	160	170	NS	NS	500	170	800	635	110	500	8	7	88%
12/15/04	180	21,100	NS	NS	40	170	230	40	20	40	8	3	38%
1/26/05	350	31	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
2/9/05	410	52	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
3/9/05	10	31	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
4/6/05	200	170	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/3/05	360	dry	NS	NS	500	700	NS	NS	NS	NS	3	2	67%
6/8/05	660	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
7/12/05	760	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
8/9/05	710	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/4/05	390	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/7/05	1,150	dry	NS	NS	NS	NS	44	844	840	40	5	2	40%
1/10/06	1,000	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
2/7/06	410	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
4/3/06	260	dry	NS	NS	3,500	270	360	360	230	NS	6	5	83%
5/17/06	NS	dry	NS	NS	NS	NS	NS	NS	70	NS	1	0	0%
5/30/06	140	73	NS	NS	NS	NS	NS	NS	NS	NS	2	0	0%
6/20/06	200	140	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/11/06	1,060	150	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
8/1/06	1,710	270	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
9/12/06	2,070	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
10/3/06	340	dry	NS	NS	NS	NS	NS	NS	NS	NS	1	0	0%
11/7/06	240	dry	170	NS	NS	NS	NS	NS	NS	NS	2	1	50%
12/5/06	140	dry	830	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/9/07	130	dry	160	NS	NS	NS	NS	NS	NS	NS	2	1	50%
2/7/07	2,550	120	NS	NS	NS	NS	NS	NS	NS	NS	2	1	50%
3/6/07	1,130	NS	340	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/3/07	150	NS	360	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/1/07	1,000	NS	1,400	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/5/07	18,820	NS	465	NS	NS	NS	NS	NS	NS	NS	2	1	50%
7/10/07	dry	NS	119	NS	NS	NS	NS	NS	NS	dry	1	1	100%
8/7/07	dry	NS	490	NS	NS	NS	NS	NS	NS	dry	1	1	100%
9/4/07	dry	NS	191	NS	NS	NS	NS	NS	NS	dry	1	1	100%
10/2/07	18,980	NS	1,200	NS	NS	NS	NS	NS	NS	dry	2	1	50%
11/6/07	dry	NS	63	NS	NS	NS	NS	NS	NS	NS	1	0	0%
12/4/07	720	NS	260	NS	NS	NS	NS	NS	NS	NS	2	1	50%
1/14/08	243	NS	73	NS	220	500	NS	500	220	NS	6	4	67%
2/7/08	305	NS	228	NS	NS	NS	NS	NS	NS	dry	2	1	50%
3/4/08	97	NS	221	NS	NS	NS	NS	NS	NS	NS	2	1	50%
4/8/08	488	NS	2,400	NS	NS	NS	NS	NS	NS	NS	2	1	50%
5/13/08	201	NS	2,187	NS	NS	NS	NS	NS	NS	NS	2	1	50%
6/17-18/2008	dry	NS	985	NS	300	500	170	170	300	dry	6	6	100%
7/8/08	dry	NS	3,654	500	300	170	dry	500	800	dry	6	6	100%
8/12-8/13/08	dry	NS	2,723	500	800	300	dry	270	800	dry	6	6	100%
9/9-9/10/08	dry	NS	1,733	230	dry	1,100	dry	80	220	dry	5	4	80%

Date	Pilgrim Creek Outlet	Guajome Lake Outlet	Sleeping Indian	East Vista Way	Little Gopher Canyon Creek	Moosa Canyon Creek	Bonsall Creek	Ostrich Farm Creek	Live Oak Creek	Keys Creek	Total # of Samples	# Samples Exceeding AB411	% Exceeding AB411
10/13/08	dry	NS	2,282	NS	dry	300	dry	90	270	dry	4	3	75%
11/17-11/18/08	dry	NS	2,420	NS	dry	1,300	dry	80	50,000	dry	4	3	75%
12/9-12/10/08	dry	NS	959	NS	500	800	2,400	130	300	dry	6	6	100%
1/13-1/17/09	687	NS	1,553	NS	300	40	500	220	80	300	8	5	63%
2/23-2/24/09	1,120	NS	1,733	NS	230	220	300	70	130	230	8	6	75%
3/10-3/11/09	2,143	NS	496	NS	2,200	170	230	80	500	210	8	6	75%
4/14-/15/09	1,300	NS	1,986	NS	270	40	300	110	500	170	8	6	75%
5/12-5/13/09	76	NS	250	NS	220	3,000	dry	300	800	70	7	5	71%
6/9-6/11/09	dry	NS	1,733	NS	300	1,300	dry	230	500	300	6	6	100%
7/14-7/15/09	dry	NS	4	NS	dry	500	dry	40	1,700	dry	4	2	50%
8/10/09	dry	NS	40	NS	dry	300	dry	80	5,000	dry	4	2	50%
9/22-9/28/09	dry	NS	NS	NS	dry	NS	dry	NS	NS	dry	0	0	NA
10/27/09	dry	NS	NS	NS	dry	173	dry	96	135	dry	3	2	67%
11/17/09	dry	NS	dry	NS	dry	52	dry	20	520	dry	3	1	33%
12/17/09	800	NS	230	NS	dry	96	dry	74	243	dry	5	2	40%
1/26/10	140	NS	170	NS	170	90	90	170	300	210	8	5	63%
2/17-2/18/10	27	NS	300	NS	387	127	172	80	80	86	8	4	50%
3/15-3/17/10	500	NS	500	NS	130	17	130	110	50	50	8	4	50%
5/18-5/19/10	1,700	NS	80	NS	500	30	1,100	30	50	500	8	3	38%
6/8-6/9/10	500	NS	3,000	NS	500	34	dry	30	130	dry	6	3	50%
7/13-14/10	dry	NS	dry	NS	350	80	dry	500	110	dry	4	3	75%
8/3/10	NS	NS	NS	NS	dry	36	dry	80	300	dry	3	1	33%
9/14/10	dry	NS	dry	NS	dry	33	dry	500	230	dry	3	2	67%
10/12/10	dry	NS	dry	NS	dry	17	dry	80	50	dry	3	0	0%
11/9/10	1,414	NS	dry	NS	500	130	dry	26	70	dry	5	2	40%
12/14/10	4,884	NS	dry	NS	80	17	dry	30	36	dry	5	0	0%
1/18-19/11	308	NS	5,794	NS	130	130	90	90	170	300	8	5	63%
2/8-9/11	1,046	NS	836	NS	5,000	14	20	50	50	500	8	3	38%
3/16/11	326	NS	1,450	NS	NS	NS	NS	NS	NS	NS	2	1	50%
Total # of Samples	**54**	**12**	**42**	**3**	**28**	**40**	**17**	**40**	**41**	**17**	**294**		
# Samples Exceeding AB411	**50**	**8**	**37**	**3**	**25**	**25**	**12**	**18**	**29**	**11**		**168**	
% Exceeding AB411	**93%**	**67%**	**88%**	**100%**	**89%**	**63%**	**71%**	**45%**	**71%**	**65%**			**57%**

Values in Red represent exceedances of the AB411 Single Sample Standard of 104 MPN/100 mL.
Non-detected concentrations are assumed to equal 1; NS – Not Sampled; dry – the site was dry (no samples collected)

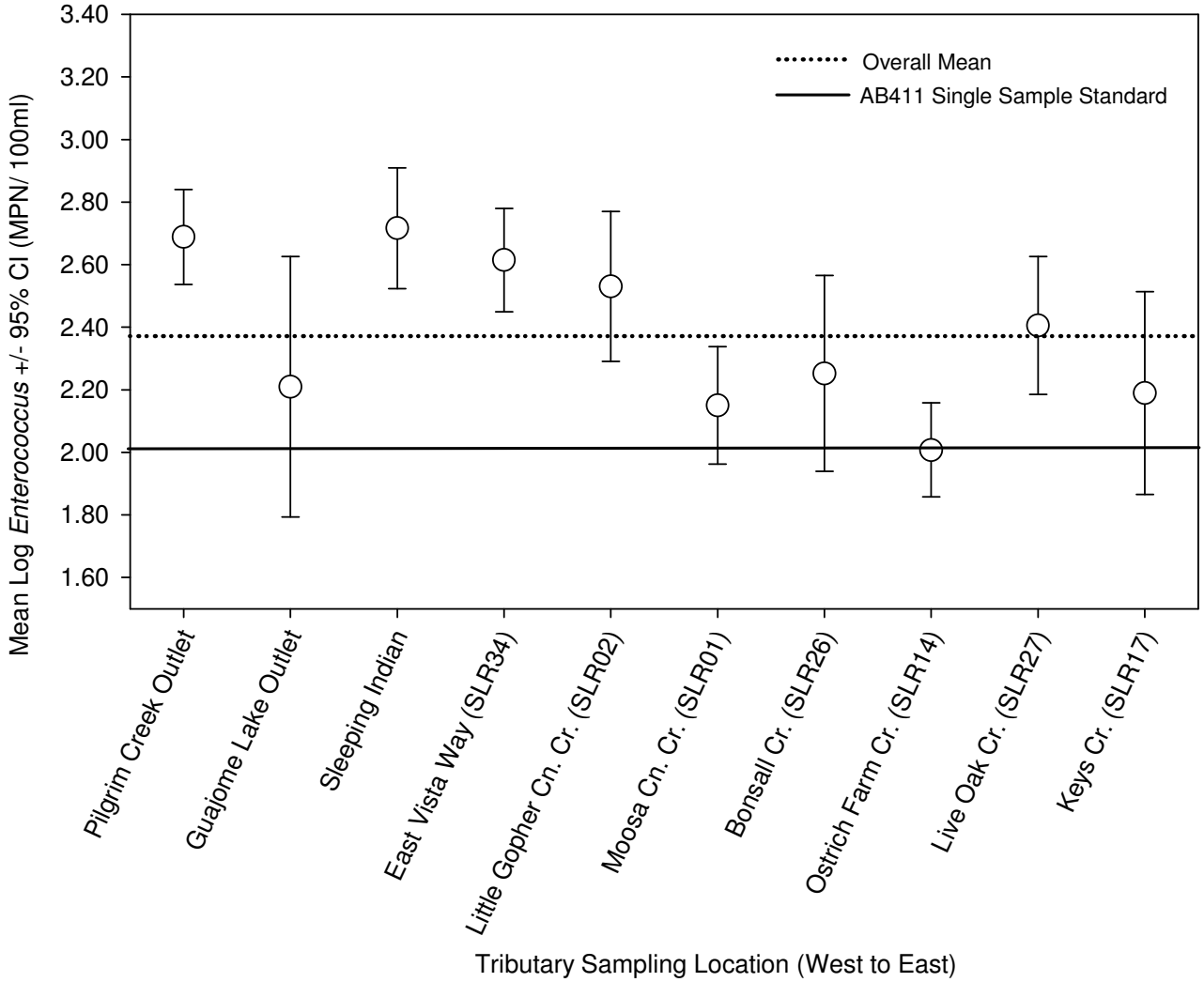

Figure 7. Relative mean concentrations ± 95% confidence intervals of *Enterococcus* bacteria in San Luis Rey River tributaries.

Results of the Correlation Analysis of Bacterial Counts between the River Mouth and the Pacific Shoreline

Tables 3 through 5 list bacterial concentrations as detected in samples collected at Pacific (located at the mouth of the River) and Pacific Mix (located at the shoreline 75 feet south of the river mouth) for Total Coliform (Table 3), Fecal Coliform (Table 4) and *Enterococcus* (Table 5). The results of the correlation analysis between the bacterial concentrations at the mouth of the River and the Pacific shoreline are presented in Table 9 below. As indicated by the r value of 0.52 with $p < 0.001$, the Total Coliform counts were significantly correlated between the two locations. Significant correlations were also found for Fecal Coliform ($r = 0.53$) and *Enterococcus* ($r = 0.36$). Since the mean bacterial counts for all indicator species at Pacific were significantly ($\alpha = 0.01$) higher than those in the Pacific Mix Zone, this indicates that at least some of the bacteria in the Pacific Mix may have originated from the SLR River mouth.

Alternatively, bacteria originating from the Pacific Ocean during incoming tides may have also affected the counts in the SLR River mouth.

Table 9. Results of the correlation analysis of the bacterial concentrations of 53 sample pairs, each collected at the mouth of SLR River and at the Pacific shoreline. The bacterial counts were log-transformed to normalize the data. The correlation coefficients (Pearson's *r*) and their corresponding *p* values are presented.

Total Coliform		Fecal Coliform		*Enterococcus*	
r	***p***	***r***	***p***	***r***	***p***
0.52	**<0.001**	**0.53**	**<0.001**	**0.36**	**0.007**

Summary of Results and Discussion

Generally, sampling locations with the greatest frequency of AB411 single sample standard exceedances also had the highest overall mean bacterial concentrations. Also, in the main stem of the River, two locations, Douglas, had the highest mean concentration and a high frequency of exceedances for all measured bacterial indicator species. In the future, if adequate funds are available, special focus should be placed on Douglas as well as the tributaries with the highest rates of exceedances and the highest mean concentrations of indicator bacteria. These sites should be considered for prioritization in any special investigations of the sources of bacteria.

Throughout the study period (March 2004 through March 2011) *Enterococci* exceeded the State single sample standard more often than Total Coliform and Fecal Coliform in both the SLR River and at tributary mouths (Tables 3 through 8). Similarly, while the mean concentrations of Total Coliform and Fecal Coliform indicators remained below their corresponding AB411 single sample standards (Figures 2, 3, 5 and 6), the overall mean concentration of *Enterococcus* in the San Luis Rey River and tributary locations studied generally exceeded that standard (Figures 4 and 7).

The mean indicator bacteria concentrations as well as percent exceedances varied quite widely between the samples collected from Bonsall Bridge by the County of San Diego and those taken by the City of Oceanside. This variability may be due to patchy distribution of bacteria (microplumes) in the River occurring on both spatial and temporal scales.

The design of the current study did not address, in detail, the confounding factors of differing bacteria decay and regrowth rates or the possible influence of local bird populations on fecal indicator bacteria concentrations in the water. As mentioned above, single grab samples were employed in the current study, the results may have been affected by short-term localized changes in bacterial counts that may not always have been representative.

The significantly lower mean concentrations of *Enterococcus* and Total Coliform bacteria at Pacific as compared to the other main stem river sites may be attributed to the site's location at the mouth of SLR River. The SLR River mouth is an estuarine environment influenced by the Pacific Ocean (as indicated by high chloride concentration and high conductivity – see Table 10 of this attachment) and the survival rates of indicator bacteria are lower in salt water as opposed to fresh water environments (Anderson et.al., 2005 and Lisle et. al., 2004). With respect to the significantly correlated bacterial counts from the River mouth and shoreline nearby, it is possible that at least some of the bacteria in the Pacific Mix Zone may have originated from the SLR

River. Alternatively, bacteria originating from the Pacific Ocean during incoming tides may have also affected the counts at the SLR River mouth.

In general, the source of bacteria at the mouth of the SLR River remains undetermined. This and other questions have been addressed in the Lower San Luis Rey River Source Identification Project.

References

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Table 10. Monitoring results for FY 2010-11.

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L
Benet	7/13/10	0.00	7.75	3.02	68.3	3.32	18.7	NM	NM	NM	NM	NM	NM	NM	NM	3000	7	21	2054
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/14/10	3.15	7.7	2.88	1	7.78	12.1	1.8	<0.01	1.4	1.5	3.3	0.1	0.1	900.0	8000	30	41	2030
	1/18/11	61.29	8.22	2.25	4.5	10.31	13.7	NM	NM	NM	NM	NM	NM	NM	NM	5000	800	687	1530
	2/8/11	62.50	7.91	2.37	2	13.63	13.6	NM	NM	NM	NM	NM	NM	NM	NM	1300	800	488	1612
	3/16/11	0.00	7.9	2.1	7.8	6.97	17.1	3.1	<0.01	1.4	1.4	4.5	0.1	0.1	691.0	1700	800	326	1360
Bonsall	9/14/10	0.13	7.46	2.63	3.1	5.38	16.8	NM	NM	NM	NM	NM	NM	NM	NM	1700	30	3	1788
	10/12/10	0.13	7.53	2.63	4.5	6.39	18.5	NM	NM	NM	NM	NM	NM	NM	NM	1300	1300	16	1788
	11/9/10	7.39	7.95	2.58	3.2	8.2	14.5	NM	NM	NM	NM	NM	NM	NM	NM	3000	300	12	1754
	12/14/10	8.51	7.80	0.91	5.10	8.93	13.0	1.5	<0.01	2.15	2.3	3.8	0.19	0.21	898	300	80	11	1830
	1/18/11	38.25	8.05	2.19	14.5	9.12	13.0	NM	NM	NM	NM	NM	NM	NM	NM	5000	80	146	1489
	2/8/11	42.96	7.86	2.26	5.1	9.31	12.5	NM	NM	NM	NM	NM	NM	NM	NM	220	80	59	1537
	3/16/11	0.00	7.8	2.01	15.2	8.89	13.8	2.3	<0.01	1.35	1.42	3.7	0.16	0.18	684	800	170	228	1310
Douglas	7/13/10	0.32	7.87	2.54	40.4	7.51	20.6	NM	NM	NM	NM	NM	NM	NM	NM	8000	800	308	1727
	8/3/10	0.00	7.29	2.3	NM	1.95	16.5	NM	NM	NM	NM	NM	NM	NM	718.0	NM	NM	NM	1450
	9/14/10	0.07	7.4	1.99	2	2.21	16.9	NM	NM	NM	NM	NM	NM	NM	NM	1400	11	816	1353
	10/12/10	0.00	7.47	1.87	1.00	2.53	17.8	NM	NM	NM	NM	NM	NM	NM	NM	1100	4	30	1272
	11/9/10	0.00	7.76	1.99	1	3.8	15.7	NM	NM	NM	NM	NM	NM	NM	NM	1300	80	114	1353
	12/14/10	6.47	7.95	2.54	1	9.48	11.8	2.6	<0.01	1.6	1.7	4.3	0.1	0.1	885.0	1700	80	361	1940
	1/18/11	88.12	8.3	2.22	19.9	10.17	15.9	NM	NM	NM	NM	NM	NM	NM	NM	3000	130	147	1510
	2/8/11	75.93	7.99	2.31	2.7	10.1	13.7	NM	NM	NM	NM	NM	NM	NM	NM	800	50	52	1571
	3/16/11	0.00	8.03	2.06	11.6	8.26	15.3	4.0	<0.01	1.4	1.5	5.5	0.1	0.1	682.0	3000	170	99	1320
Murray	7/13/10	0.00	7.86	1.74	37	6.52	21.2	NM	NM	NM	NM	NM	NM	NM	NM	8000	300	1553	1183
	8/3/10	0.13	7.54	2.6	NM	4.7	18.9	NM	NM	NM	NM	NM	NM	NM	899.0	NM	NM	NM	1830
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	2.83	8.05	2.68	8.7	8.66	14.2	NM	NM	NM	NM	NM	NM	NM	NM	5000	1300	411	1822
	12/14/10	6.04	7.91	2.72	9.70	9.21	12.6	4.2	0.05	1.45	1.65	5.9	0.29	0.32	895	1700	130	162	1850
	1/18/11	94.19	8.33	2.26	13.8	8.53	14.4	NM	NM	NM	NM	NM	NM	NM	NM	700	70	114	1537
	2/8/11	59.35	7.89	2.33	6.5	9.35	13.3	NM	NM	NM	NM	NM	NM	NM	NM	700	30	69	1584
	3/16/11	0.00	8.05	2.08	18.9	7.32	15.2	5.1	0.042	1.3	1.36	6.5	0.24	0.27	685	13000	70	91	1340
Pacific	7/13/10	0.00	8.22	7.8	36.3	7.91	24.3	NM	NM	NM	NM	NM	NM	NM	NM	800	230	248	5304
	8/3/10	0.00	8.26	9.6	NM	8.14	23.1	NM	NM	NM	NM	NM	NM	NM	NM	3500	170	30	6528
	9/14/10	0.00	8.03	7.54	6.7	11.01	23.4	NM	NM	NM	NM	NM	NM	NM	NM	2300	170	20	5127
	10/12/10	0.00	8.1	6.4	7.9	9.1	21.1	NM	NM	NM	NM	NM	NM	NM	NM	7	4	30	4352
	11/9/10	0.00	8.15	51.7	4.9	10.12	17.0	NM	NM	NM	NM	NM	NM	NM	NM	300	50	10	35156
	12/14/10	0.00	7.88	29	1.7	10.64	14.4	NM	NM	NM	NM	NM	NM	NM	NM	780	700	3	19720
	1/18/11	0.00	8.06	15.3	8	9.46	14.8	NM	NM	NM	NM	NM	NM	NM	NM	700	220	323	10404
	2/8/11	0.00	7.82	38.4	1.4	8.82	15.1	NM	NM	NM	NM	NM	NM	NM	NM	8000	500	432	26112
	3/16/11	0.00	7.89	9.76	9	10.29	17.9	NM	NM	NM	NM	NM	NM	NM	NM	4	2	20	6637

Table 10. Monitoring results for FY 2010-11.

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L
Pacific Mix	9/14/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	2	2	3	NM
	10/12/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	ND	ND	3	NM
	11/9/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	23	2	3	NM
	12/14/10	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	8	8	3	NM
	1/18/11	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	700	300	3	NM
	2/8/11	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	4	4	10	NM
	3/16/11	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	2300	130	241	NM
Pilgrim Creek	11/9/10	0.21	8.54	0.52	5.5	12.47	15.6	NM	NM	NM	NM	NM	NM	NM	NM	30000	800	1414	354
	12/14/10	0.14	8.34	0	5	13.65	13.6	2	0.089	1.7	1.9	4.0	0.09	0.11	799	17000	700	4884	2610
	1/18/11	3.05	8.52	3.6	5.3	19.03	16.2	NM	NM	NM	NM	NM	NM	NM	NM	5000	1300	308	2448
	2/8/11	1.29	8.04	4.05	14.1	14.74	14.0	NM	NM	NM	NM	NM	NM	NM	NM	3000	3000	1046	2754
	3/16/11	0.00	7.91	3.77	3.8	8.37	16.5	1.3	<0.01	1.75	1.88	3.2	0.09	0.11	784	1000	300	326	2260
Sleeping Indian	1/18/11	0.05	8.45	2.55	324	7.63	16.6	NM	NM	NM	NM	NM	NM	NM	NM	80000	300	5794	1734
	2/8/11	0.03	8.36	3.3	4.7	11.25	15.0	NM	NM	NM	NM	NM	NM	NM	NM	1500	500	836	2244
	3/16/11	0.03	8.25	3.92	12	9.27	13.9	25.7	<0.01	2.15	2.26	28.0	0.14	0.15	1220	70000	1300	1450	2680
Moosa Canyon (SLR01)	7/13/10	1.30	8.38	2.36	5	15.35	24.0	3.5	<0.01	0.23	1.1	4.6	0.4	0.44	NM	3000	170	80	1650
	8/3/10	0.88	8.28	2.46	2	18.48	22.7	1.98	<0.01	<0.02		2.0	0.28	0.31	802.0	3000	50	36	1760
	9/14/10	0.41	8.25	2.55	1	16.08	22.5	0.81	0.04	0.11	1.2	2.1	0.37	0.41	NM	5000.0	23.0	33	1734
	10/12/10	1.07	7.87	2.5	8	11.18	21.0	2.13	0.04	1.2	15.4	17.6	0.43	0.7	873	24000	300	17	1740
	11/9/10	2.11	8.31	2.49	8	10.29	18.6	3.2	0.03	0.13	2.3	5.5	0.48	0.52	NM	1700	110	130	1693
	12/14/10	2.18	7.88	2.47	11	8.87	13.0	3.7	0.02	0.14	2.6	NM	0.5	0.53	NM	1700	70	17	1680
	1/19/11	30.65	8.01	2.11	28	NM	16.1	4.51	0.02	0.08	2.6	7.1	0.4	0.47	625	2300	110	130	1340
	2/9/11	17.00	8.06	2.26	18	9.42	16.1	3.88	0.02	0.23	1	4.9	0.31	0.32	NM	1700	50	14	1537
Little Gopher Creek Canyon (SLR02)	7/13/10	0.11	7.93	2.72	1.00	9.23	19.60	6.40	0.08	<0.02	1.30	NM	0.22	0.44	NM	30000	24000	350	1720
	8/3/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	0.20	8.29	2.78	2.00	13.62	13.00	6.90	0.14	0.15	1.40	8.4	0.28	0.31	NM	5000.00	170.00	500	1890
	12/14/10	0.33	7.80	2.62	19.00	9.55	11.00	7.92	0.10	0.09	2.30	10.3	0.25	0.32	NM	8000.00	300.00	80	1782
	1/19/11	5.32	8.13	2.68	3	NM	13.0	6.84	0.04	0.13	1.9	8.8	0.1	0.18	800	5000	280	130	1760
	2/8/11	2.43	8.12	2.77	2	10.61	13.3	6.48	0.03	0.13	1.6	8.1	0.11	0.12	NM	1300	300	5000	1884
Ostrich Farm Creek (SLR14)	7/14/10	0.97	7.84	1.39	1	8.01	18.0	5.92	<0.01	<0.02	0.6	6.5	0.27	0.29	NM	1700	220	500	1390
	8/3/10	0.73	7.88	2.06	1	9.12	18.0	5.26	<0.01	<0.02	NM	NM	0.51	0.62	823.0	2300	70	80	1530
	9/14/10	0.54	7.98	2.1	1	7.98	16.4	3.95	0.03	0.22	0.9	4.9	0.46	0.5	NM	13000.0	500.0	500	1428
	10/12/10	0.41	7.87	2.06	1	7.14	17.6	4.63	0.03	0.15	0.8	5.5	0.45	0.71	807	2800	300	80	1500
	11/9/10	1.61	8.24	2	0	9.4	14.4	6.32	0.03	0.16	1.1	7.5	0.43	0.47	NM	1300	220	26	1360
	12/14/10	1.18	7.94	2.12	0	7.97	11.4	6.01	0.02	0.13	2.2	8.2	0.45	0.48	NM	800	11	30	1442
	1/19/11	7.56	8.07	2.04	5	NM	NM	6.25	0.02	0.05	1.6	7.9	0.58	0.61	783	8000	88	90	1370
	2/8/11	5.38	8.27	2.09	3	10.19	16.9	5.74	0.02	0.06	0.15	5.9	0.44	0.5	NM	1300.0	170.0	50	NM
	7/13/10	6.40	7.52	2.49	4	8.16	17.6	0.36	0.0035	0.2	1.2	1.6	0.41	0.47	NM	2200	130	130	1750

Table 10. Monitoring results for FY 2010-11.

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L
Bonsall Bridge COSI (SLR16)	8/3/10	3.78	7.48	2.55	6	7.54	17.5	0.43	0.0035	<0.02	NM	NM	0.41	0.45	872.0	500	130	230	1730
	9/14/10	2.03	7.38	2.59	6	5.55	16.7	0.37	0.01	0.12	1	1.4	0.29	0.33	NM	1700.0	110.0	13	1761
	10/12/10	3.41	7.47	2.65	6	5.79	17.5	0.24	0.01	0.11	14.4	14.7	0.16	0.22	866	700	500	13	1760
	11/9/10	8.46	7.78	2.62	5	8.8	13.7	1.36	0.01	0.15	1.5	2.9	0.43	0.45	NM	2300	230	130	1782
	12/14/10	11.84	7.47	2.51	3	7.06	11.6	1.06	0.01	0.16	2.8	3.9	0.24	0.26	NM	280	80	30	1707
	1/19/11	185.00	7.91	2.22	24	NM	12.9	3.68	0.02	0.1	2.7	6.4	0.36	0.36	752	2300	170	300	1560
	2/8/11	114.03	7.97	2.29	4	9.93	13.0	3.12	0.01	0.1	0.8	3.9	0.29	0.29	NM	500	30	110	1557
Keys Creek (SLR17)	7/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/3/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	1/20/11	14.10	8.21	2.58	30	8.74	16.6	9.58	0.03	<0.02	2.4	12.0	0.4	0.48	972	2200	1300	300	1880
	2/9/10	7.48	8.19	2.55	21	9.71	17.1	8.9	0.02	0.11	1.5	10.4	0.2	0.2	NM	500.0	230.0	500	1734
Olive Hill Rd. (SLR25)	7/13/10	3.14	7.64	2.23	9	7.53	16.8	0.39	<0.01	0.19	1.4	1.8	0.69	0.88	NM	3000	700	130	4530
	8/3/10	2.87	7.53	2.25	8	7.59	16.5	0.33	<0.01	0.01	NM		0.27	0.3	894	1100	110	220	1620.0
	9/14/10	2.15	7.68	2.44	14	7	16.0	0.2	<0.01	0.11	1	1.2	0.17	0.2	NM	3000.0	700.0	500	1659
	10/12/10	1.36	7.62	2.03	2	5.48	17.3	0.62	0.01	0.6	0.6	1.2	0.29	0.34	884	500	130	17	1550
	11/9/10	5.01	7.95	2.33	50	7.79	13.2	1.35	0.02	0.1	1.9	3.3	0.35	0.6	NM	3000	300	350	1584
	12/14/10	11.98	7.72	2.41	1	6.61	10.9	1.16	0.0035	0.25	3.2	4.4	0.2	0.2	NM	170	70	50	1639
	1/19/11	42.88	7.9	2.16	8	NM	13.0	3.5	0.02	0.27	1.9	5.4	0.16	0.3	774	2300	500	800	1470
	2/8/11	25.11	7.96	2.18	4	10.59	13.3	2.5	0.01	0.11	2.1	4.6	0.23	0.2	NM	800	80	500	1482
Bonsall Creek (SLR26)	7/13/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/3/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	1/19/11	2.40	8.37	2.01	4		13.5	2.98	0.02	0.17	2.3	5.3	0.2	0.23	646	3000	80	90	1390
	2/8/11	1.47	8.07	2.16	3	11.56	13.4	1.22	0.02	0.14	1.2	2.4	0.25	0.25	NM	800	110	20	1469
Live Oak Creek (SLR27)	7/14/10	0.33	8.02	2.33	4	9.06	17.7	5.55	<0.01	0.16	0.15	5.7	0.46	0.5	NM	17000	800	110	1630
	8/3/10	0.33	7.97	2.35	4	9.43	17.5	4.56	<0.01	<0.02	NM	NM	0.44	0.57	954.0	3000	300	300	1720
	9/14/10	0.19	8.15	2.32	2	9.51	15.7	5.17	<0.01	0.15	1.1	6.3	0.2	0.2	NM	5000.0	700.0	230	1578
	10/12/10	0.19	8.06	2.32	2	8.73	17.6	3.7	<0.01	0.08	1.2	4.9	0.35	0.46	916	5000	110	50	1630
	11/9/10	0.91	8.22	2.36	2	10.5	13.6	5.5	<0.01	0.09	1.6	7.1	0.32	0.36	NM	3000	230	70	1605
	12/14/10	0.81	7.97	2.47	1	8.16	12.0	5.57	<0.01	0.14	2.7	8.3	0.4	0.44	NM	1100	230	36	1680
	1/20/11	5.40	8.08	2.41	17	8.69	15.8	9.9	0.03	0.04	1	10.9	0.63	0.66	870	3500	230	170	1620
	2/9/11	5.46	8.05	2.37	7	9.28	16.6	8.9	0.02	0.14	0.8	9.7	0.31	0.3	NM	2800.0	30.0	50	1612
.R28)	7/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/3/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Table 10. Monitoring results for FY 2010-11.

Location	Date	Discharge	pH	Cond	Turb.	DO	Temp	NO3-N	NO2-N	NH4	TKN	TN	PO4-P	P tot	Hard.	TC	FC	EN	TDS
		cfs	Units	mS/cm	NTU	mg/L	oC	mg/L	mg/L	mg/L	mgL	mg/L	mg/L	mg/L	mg/L	MPN/100 mL			mg/L
Shrearer Crossing (SL	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	0.65	8.26	1.94	1.00	14.81	18.50	12.10	0.05	0.12	1.10	13.3	0.17	0.17	NM	3500.00	30.00	1300	1319
	12/14/10	2.84	7.87	2.02	4.00	10.80	15.30	10.80	0.07	0.14	0.80	11.7	0.17	0.17	NM	3000.00	22.00	300	1374
	1/20/11	25.16	8.01	1.39	10	12.84	15.3	8.42	0.06	0.01	1.8	10.3	0.24	0.27	444	1100	50	22	993
	2/9/11	13.44	7.9	1.55	4	10.69	14.9	8.3	0.06	0.15	1.7	10.1	0.1	0.2	NM	500	30	6	1054

Not Measured
ND - Not Detected

Table 10. Monitoring results for FY 2010-11.

Location	Date	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Bicarbonate Alkalinity	Crbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Benet	7/13/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/14/10	<1	98.6	8.0	265.0	198.0	NM	NM	422.0	526.0	NM	NM	382.0	NM	NM	313
	1/18/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/8/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/16/11	6	78.6	5.9	188.0	147.0	NM	NM	287.0	419.0	NM	NM	317.0	NM	NM	260
Bonsall	9/14/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	11/9/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	3	104	6.45	234	188	NM	NM	336	529	NM	NM	375.0	NM	NM	307
	1/18/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/8/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/16/11	13	79.5	5.74	178	143	NM	NM	261	428	NM	NM	305	NM	NM	250
Douglas	7/13/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/3/10	4	81.7	6.0	206.0	153.0	NM	NM	308.0	366.0	NM	NM	375.0	NM	NM	307
	9/14/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	11/9/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	1	101.0	7.3	246.0	188.0	NM	NM	371.0	517.0	NM	NM	390.0	NM	NM	320
	1/18/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/8/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/16/11	9	77.7	6.0	185.0	145.0	NM	NM	275.0	422.0	NM	NM	305.0	NM	NM	250
Murray	7/13/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/3/10	2	103.0	8.1	245.0	190.0	NM	NM	370.0	494.0	NM	NM	384.0	NM	NM	315
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	10	104	6.63	244	187	NM	NM	365	520	NM	NM	390.0	NM	NM	320
	1/18/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/8/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/16/11	16	77.9	5.75	184	146	NM	NM	274	430	NM	NM	311	NM	NM	255
Pacific	7/13/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/3/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/14/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	11/9/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/18/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/8/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/16/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Table 10. Monitoring results for FY 2010-11.

Location	Date	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Bicarbonate Alkalinity	Crbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Pacific Mix	9/14/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	11/9/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/18/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/8/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/16/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Pilgrim Creek	11/9/10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	10	108	10.2	547	142	NM	NM	886	421			375	NM	NM	327
	1/18/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/8/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/16/11	6	103	7.13	513	144	NM	NM	823	415	NM	NM	476	NM	NM	390
Sleeping Indian	1/18/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	2/8/11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/16/11	11	169	4.01	427	208	NM	NM	480	824	NM	NM	445	NM	NM	385
Moosa Canyon (SLR01)	7/13/10	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/3/10	4	91.8	3.6	269.0	146.0	0.3	0.1	370.0	43900.0	<0.25	0.3	270.0	20.0	10.0	290
	9/14/10	6	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	25	75.9	4.91	211	126	0.57	1.13	380	516	1.25	0.398	290	<5	<5	290
	11/9/10	16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	36	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/19/11	53	75	6.51	225	133	0.126	1.98	290	379	<0.25	0.5	220	2.5	<5	220
	2/9/11	28	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Little Gopher Creek Canyon (SLR02)	7/13/10	1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/3/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	7	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/19/11	5	109	5	310	153	0.116	0.166	420	441	<0.25	0.7	350	20	<5	370
	2/8/11	3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Ostrich Farm Creek (SLR14)	7/14/10	2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/3/10	5	91.6	3.2	182.0	145.0	0.0	<0.05	270.0	390.0	<0.25	0.3	290.0	<5	<5	290
	9/14/10	3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	4	76.3	3.53	134	123	0.15	0.25	270	454	1.25	0.4	270	<5	<5	270
	11/9/10	3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/19/11	5	93.3	4.51	174	162	0.11	0.156	250	357	<0.25	0.5	250	20	2.5	270
	2/8/11	4	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
D	7/13/10	1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Table 10. Monitoring results for FY 2010-11.

Location	Date	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Bicarbonate Alkalinity	Crbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Bonsall Bridge COSD (SLR16)	8/3/10	9	102.0	6.6	281.0	184.0	0.5	0.4	360.0	504.0	<0.25	0.4	310.0	<5	<5	310
	9/14/10	6	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	7	80.1	7.03	200	147	0.412	0.694	380	578	1.25	0.4	350	<5	<5	350
	11/9/10	5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/19/11	19	87	6.94	200	156	0.34	0.903	280	371	<0.25	0.5	250	<5	<5	250
	2/8/11	9	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Keys Creek (SLR17)	7/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/3/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	1/20/11	31	111	6.07	259	188	0.082	1.55	380	586	<0.25	0.336	230	<5	<5	230
	2/9/10	23	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Olive Hill Rd. (SLR25)	7/13/10	<1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/3/10	7	94.1	6.6	215.0	174.0	0.5	0.4	330.0	474.0	<0.25	0.3	270.0	<5	<5	270
	9/14/10	5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	6	75.8	6.87	169	142	0.571	0.25	320	551	1.25	0.395	290	<5	<5	290
	11/9/10	21	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/19/11	15	84.6	8.01	194	164	0.337	0.612	270	396	<0.25	0.458	290	<5	<5	290
	2/8/11	11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Bonsall Creek (SLR26)	7/13/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/3/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	12/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	1/19/11	7	80.2	4.62	204	128	0.229	0.224	260	393	0.125	0.5	150	40	2.5	190
	2/8/11	5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Live Oak Creek (SLR27)	7/14/10	11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	8/3/10	11	104.0	1.6	200.0	167.0	0.2	0.3	330.0	511.0	<0.25	0.4	270.0	<5	<5	270
	9/14/10	6	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	10/12/10	5	90	1.92	168	148	0.15	0.25	340	543	1.25	0.5	310	<5	<5	310
	11/9/10	3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	12/14/10	3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/20/11	15	115	3.53	194	169	0.197	0.585	300	535	<0.25	0.329	230	<5	<5	230
	2/9/11	11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
.R28)	7/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	8/3/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry

Table 10. Monitoring results for FY 2010-11.

Location	Date	TSS	Mg	K	Na	Ca	Mn	Fe tot	Cl-	SO4	B tot	Fl	Bicarbonate Alkalinity	Crbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Shrearer Crossing (SL	9/14/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	10/12/10	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/9/10	2														
	12/14/10	10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/20/11	10	49.6	11	125	95.9	0.12	0.294	160	271	0.125	0.23	210	<5	<5	210
	2/9/11	6	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Not Measured
ND - Not Detected

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ATTACHMENT C TO SLR-001

SAN LUIS REY WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY
2010-11 SLR WURMP Annual Report

Total Dissolved Solids and Chloride Study
In the San Luis Rey River and its Tributaries

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Introduction

In 2002, the lower 19 miles of the San Luis Rey River (SLR River) were added to the State Water Resources Control Board (SWRCB) Section 303(d) list of impaired waterbodies for TDS and chloride and they remain on the 2008 303(d) list. The water quality objectives for TDS and chloride are based on the beneficial uses for the San Luis Rey River assigned in the Water Quality Control Plan (Basin Plan, RWQCB, 1994). The Basin Plan objectives for TDS and chloride are 500 mg/L and 250 mg/L, respectively.

The San Luis Rey River WUMRP group initiated a monitoring program in March 2004. The purpose of the program was to better characterize TDS and chloride concentrations along the main stem of the San Luis Rey River and its tributaries. From March 2004 through March 2011, the City of Oceanside and the County of San Diego collected surface water samples in the San Luis Rey River and its tributaries and analyzed them for TDS and chloride as well as several other constituents. The results of the study are presented below.

Total dissolved solids (TDS) are comprised of inorganic salts and small amounts of organic matter that are dissolved in water. The principal constituents are usually the cations calcium, magnesium, sodium, and potassium, and the anions carbonate, bicarbonate, chloride, sulphate, and, particularly in groundwater, nitrates and phosphates (from agricultural use). TDS in water supplies may originate from natural sources such as weathering rocks and soils, leaves, silt and plankton. Other sources of TDS include point sources such as industrial wastewater and sewage as well as the urban and agricultural runoff. Chlorides are a component of TDS; they are salts composed of the chlorine gas and a metal molecule. The common chlorides include sodium chloride and magnesium chloride. While moderate concentrations of chlorides are essential to life, excessive amounts are toxic to plant and animal life. The sources of chlorides can be natural and man-made. The man-made sources include point sources such as industrial wastewater and sewage as well as the urban and agricultural runoff.

Hydrologic Setting

The San Luis Rey River originates mainly in the Palomar and Hot Springs Mountains. In 1922, Henshaw Dam was built and Lake Henshaw (Lake) was formed at the base of Palomar Mountain. No imported water is released directly into the lake and TDS and chloride concentrations in the lake fall below Basin Plan standards. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a drinking water reservoir. Downstream of Lake Henshaw, water from the main channel of the SLR River is diverted into the man-made Escondido Canal, seven miles below the dam. Nearly all non-storm flows are diverted from that section of SLR River into the canal, typically leaving the River dry below the diversion. The flow in the remainder of SLR River is intermittent through Pauma and Pala. The SLR River is perennial through Oceanside, although it flows underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr, 17 inches/yr in the coastal plains and valleys, and Palomar Mountain receives about 45 inches/yr. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The SLT River is

generally dry in the summer months except for locations where groundwater seeps and springs emanate in the SLR River bed and form perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the SLR River that would otherwise be dry during the dry season.

Methods

From March 2004 through March 2011, 18 locations (Figure 1) were sampled: seven by the City of Oceanside and 12 by the County of San Diego (Table 1). Both agencies collected samples on the same days or within one or two days of one another. Seven sampling sites were located along the SLR River and 11 in the SLR River's tributaries. One site along the SLR River's main stem, Bonsall Bridge (SLR16), was sampled by both agencies for quality control.

Both the City of Oceanside and the County of San Diego took in-situ field measurements for pH, temperature, electrical conductivity, dissolved oxygen, and turbidity. A hand-held flow meter or the floating object technique was used to estimate flow. Instantaneous flow rate was also estimated at each sampling location by multiplying averaged results of three instantaneous current velocity measurements by approximate channel width and depth. The County of San Diego personnel conducted flow measurements whenever water quality samples were collected throughout the study period. Throughout the City of Oceanside, flow in the SLR River is intermittent during summer and extensive (unwadable) during winter thus difficult to measure. Due to those difficulties, flow measurements were attempted but not recorded by the City of Oceanside personnel prior to July 2007. The City then began recording tributary flow measurements and continues to work to collect more accurate main stem flow data.

On each sampling occasion a grab sample was also collected at each site and sent to an analytical laboratory to test for total dissolved solids (TDS), total suspended solids (TSS), alkalinity, chloride, magnesium, manganese, total iron, sulfate, potassium, sodium, calcium and hardness. The County also analyzed grab samples for fluoride and boron. The methods used for the in-situ measurements and the laboratory analysis are presented in Table 2. All samples were collected during non-storm flow conditions; i.e. at least 72 hours following any rain event with precipitation greater or equal to 0.10 inches.

For samples where TDS was not measured directly, electrical conductivity was used as an indirect measure for TDS. The average ratio of electrical conductivity to direct measured TDS is 0.68. Therefore, the electrical conductivity measurements were multiplied by 0.68(*1000) to calculate TDS.

Analysis of Data

The means and 95% confidence intervals were calculated for the TDS and chloride concentrations and they were plotted for the tributaries and main stem sites separately (Figure 2). This was done to look for any differences among sites and to compare them to the overall mean concentrations and Basin Plan objectives.

In order to determine which constituents may contribute to the TDS concentrations, and to what extent, the Pearson product-moment correlation coefficient (r) was calculated between all soluble

constituents measured including chloride and TDS (SPSS Inc., 2003). The Pearson product-moment correlation coefficient is a measure of the tendency of two variables to increase or decrease together. The coefficient ranges from −1 to 1. When $r = 1$, the two variables are 100% correlated as one increases together with the other. When $r = -1$, there is a 100% negative correlation where the value of one variable decreases as the value of the other increases. Values of r that fall between 1 and -1 indicate the extent of the positive or negative relationship and $r = 0$ is equivalent to no linear relationship between the two variables. In the present report, the higher the value of r, the greater the association of a given constituent concentration with TDS concentration ($p < 0.05$[1]) (SPSS Inc., 2003). The results of the Pearson product-moment correlation analysis are presented in Table 3.

[1] p value indicates the probability that an observed result (here: correlation coefficient or r) occurred by chance alone. A result is conventionally regarded as 'statistically significant' if the likelihood that it is due to chance alone is less than five times out of 100 ($p < 0.05$).

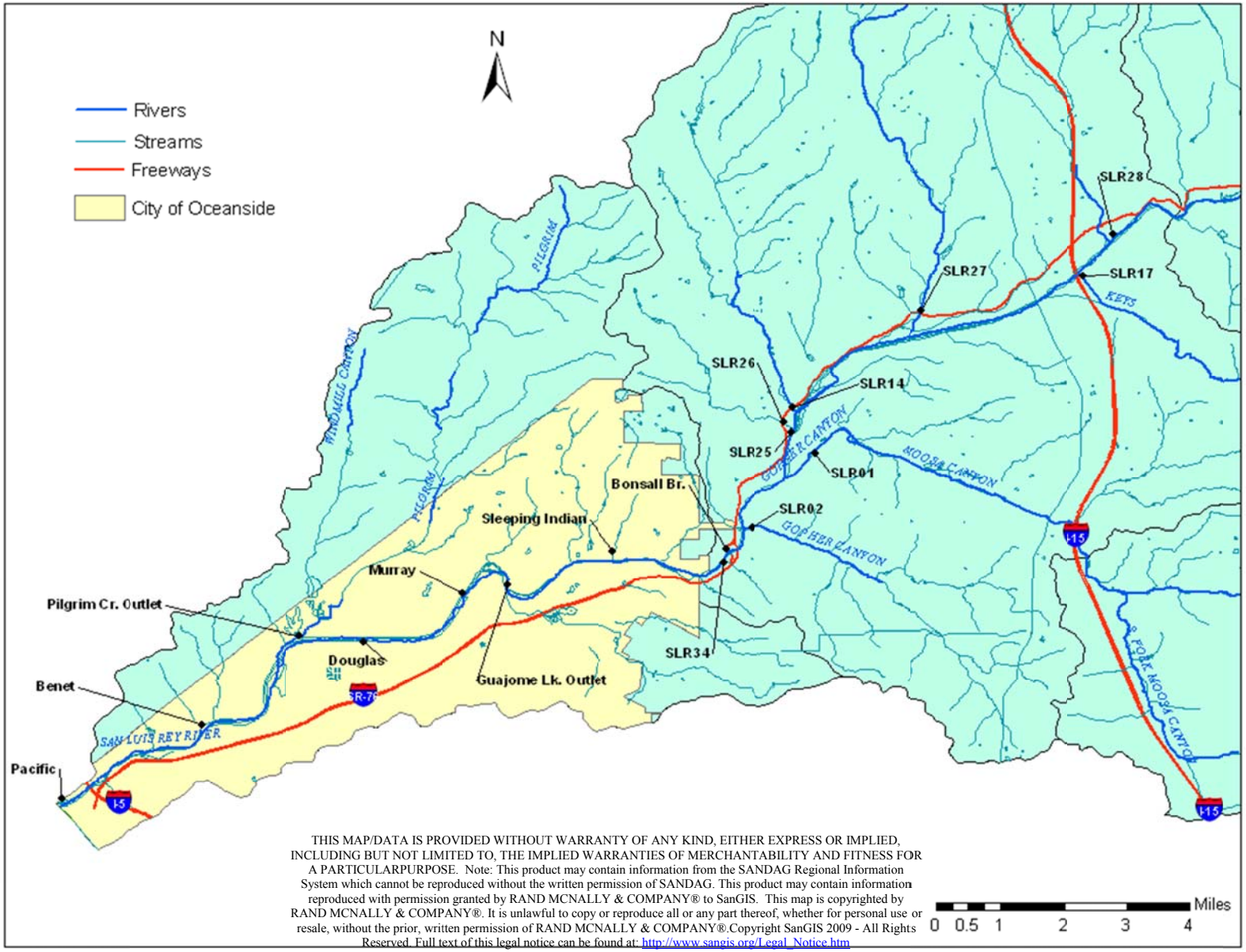

Figure 1. Sample site locations.

Table 1. Sample Site Identification and Locations.

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	SLR River at USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	SLR River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	Tributary to north side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	SLR River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	Tributary to north side of SLR River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall Bridge	SLR River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Bonsall Bridge (SLR16)	SLR River under the Bonsall Bridge	33.26042	-117.23833
Olive Hill (SLR25)	SLR River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	SLR River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek tributary at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek tributary at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek tributary at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek tributary at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek tributary at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek tributary at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek tributary	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek tributary	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to SLR River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Table 2. Water Quality Parameters and Methods for San Luis Rey River

Measured Parameter	*City of Oceanside Methods*	*County of San Diego Methods*
Flow	Estimated, Global Flow Probe	Flow Probe FP101
pH	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Temperature	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Conductivity	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Dissolved Oxygen	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Turbidity	In-situ, Hydrolab Quanta	In-situ, Horiba U-10
Total Dissolved Solids	SM 2540 C	EPA 160.1; SM 2540 C
Total Suspended Solids	SM 2540 D	EPA 160.2; SM 2540 D
Bicarbonate Alkalinity	SM 2320 B	EPA 310.1, SM 2320 B
Carbonate Alkalinity	NM	EPA 310.1, SM 2320 B
Hydroxide, Alkalinity	NM	SM 2320 B
Total Alkalinity	SM 2320 B	SM 2320 B
Chloride	EPA 300.0	EPA 300.0
Magnesium	EPA 200.7	EPA 200.7; EPA 200.8m; EPA 6010
Manganese	EPA 200.7	EPA 200.7; EPA 6010
Iron, Total	EPA 6010	EPA 200.7; EPA 200.8m; EPA 6010
Sulfate	EPA 300.0	EPA 300.0; SM4500 SO4 E
Potassium	EPA 200.7	EPA 200.7; EPA 200.8m; EPA 6010
Sodium	EPA 200.7	EPA 200.7; EPA 200.8m; EPA 6010
Calcium	EPA 200.7	EPA 200.7
Hardness	EPA 130.2	EPA 130.2; SM 2340 B
Boron, Total	NM	EPA 200.8; EPA 200.7
Fluoride	NM	EPA 300.0; SM 4500 F C

NM – Not Measured

Results and Discussion

All data collected during FY 2010-11 are listed in Table 10 of Attachment B. The mean TDS and chloride concentrations +/- 95% confidence intervals as measured along the main stem of and tributaries to the SLR River are presented in Figure 2. Table 3 presents the results (Pearson's *r*) of the correlation analysis between TDS and other mineral constituents including chloride.

Generally, the results of this study were not significantly altered by the addition of FY 2010-11 data. The mean TDS concentrations exceeded the Basin Plan objective of 500 mg/L both along the main stem of SLR River and in its tributaries by approximately three-fold (Figs. 2A and 2C). With the exception of Shearer Crossing and East Vista Way sampling locations, the chloride Basin Plan objective of 250 mg/L was also exceeded (Fig. 2B and 2D).

A.

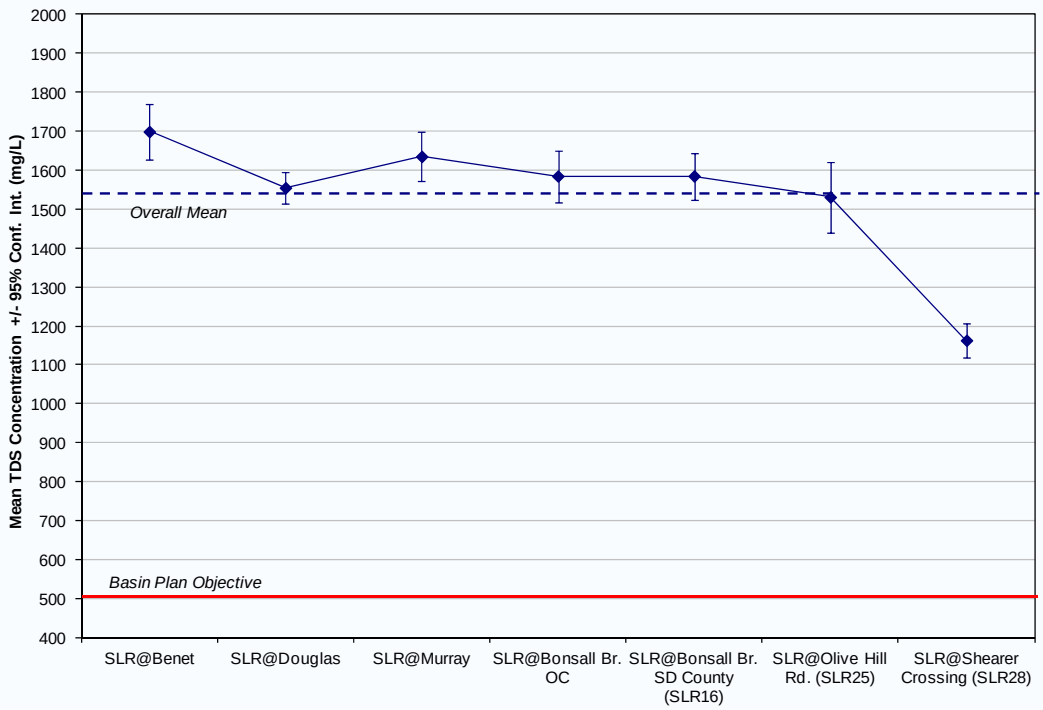
Mean TDS Concentration +/- 95% Conf. Int. (mg/L)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
Overall Mean
Basin Plan Objective
SLR@Benet
SLR@Douglas
SLR@Murray
SLR@Bonsall Br. OC
SLR@Bonsall Br. SD County (SLR16)
SLR@Olive Hill Rd. (SLR25)
SLR@Shearer Crossing (SLR28)

B.

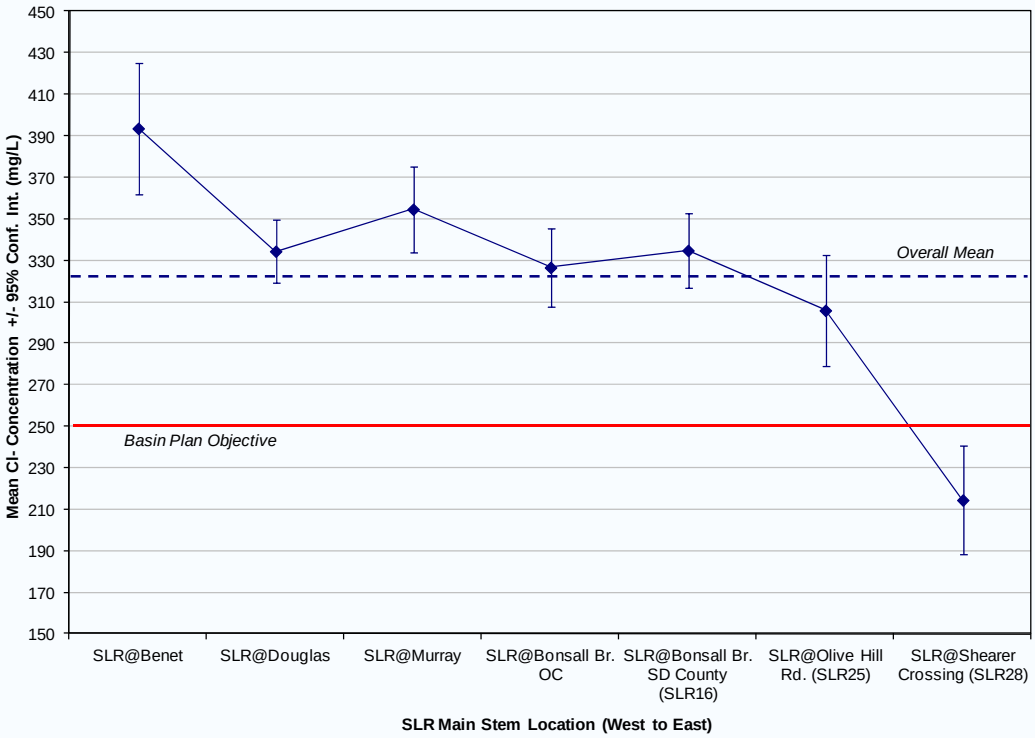
Mean Cl- Concentration +/- 95% Conf. Int. (mg/L)
450
430
410
390
370
350
330
310
290
270
250
230
210
190
170
150
Overall Mean
Basin Plan Objective
SLR@Benet
SLR@Douglas
SLR@Murray
SLR@Bonsall Br. OC
SLR@Bonsall Br. SD County (SLR16)
SLR@Olive Hill Rd. (SLR25)
SLR@Shearer Crossing (SLR28)
SLR Main Stem Location (West to East)

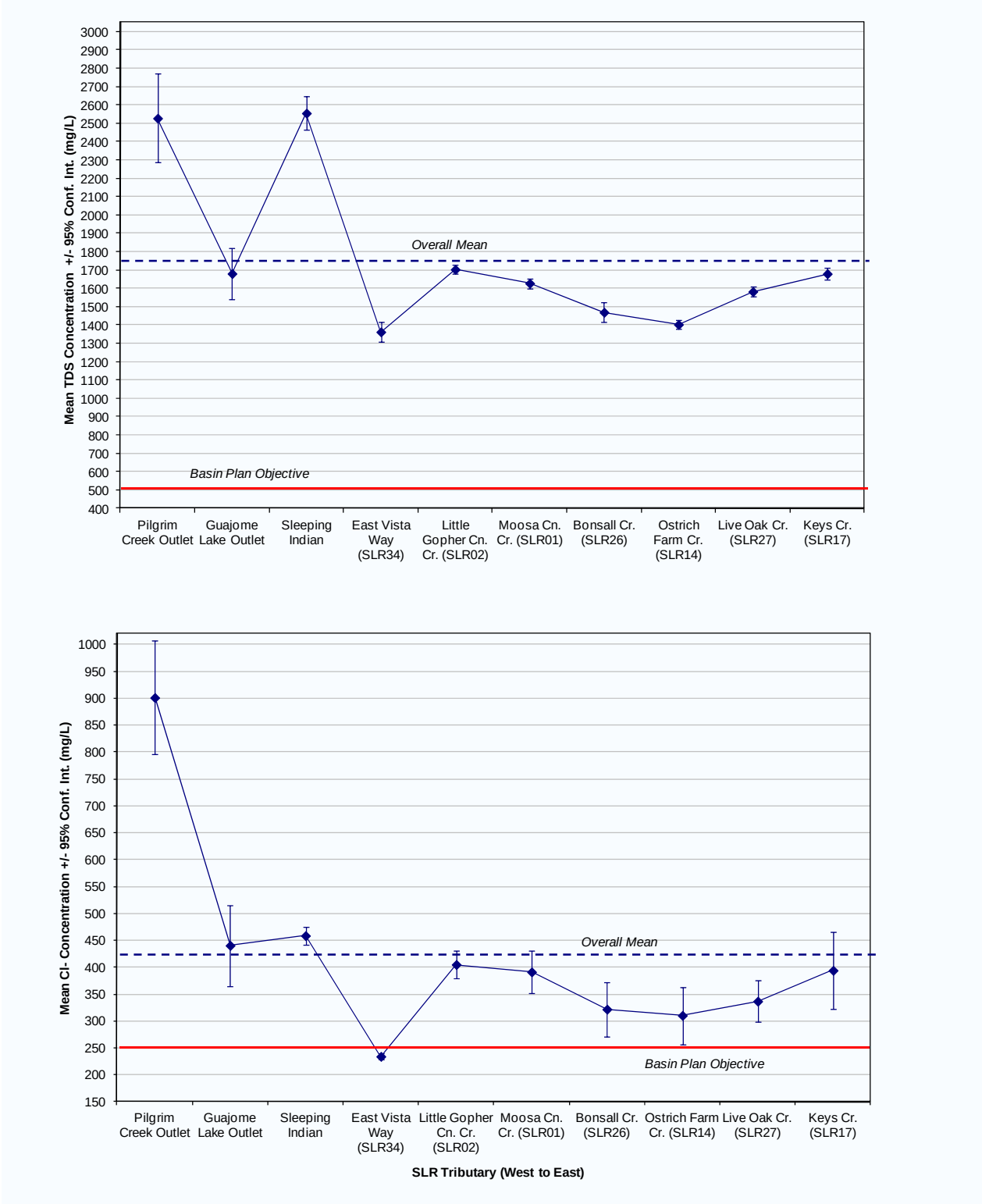

Figure 2. Mean concentrations +/- 95% confidence intervals of TDS (A and C) and chloride (B and D) at sampling sites along the main stem of (A and B) and tributaries (C and D) to the SLR River.

Table 3. Results of the correlation analysis between TDS and other mineral constituents. Pearson's *r* values are presented for each site and mineral constituent as it was correlated to TDS. Statistically significant *r* values are outlined in bold. Results significant at *p*<0.05 are marked with single asterisks (*). Double asterisks (**) indicate results that are significant at *p*<0.01. Tests were not performed when *n*<5. SLR@Pacific Street Crossing was not included in the analysis as the site was influenced by saltwater.

Site	Mg	SO4	K	Na	Ca	Mn	Fe tot	B tot	Fl	Crbonate Alkalinity	Bicarbonate Alkalinity	Nitrate
SLR @ Benet Bridge	**.71(**)**	**.61(**)**	0	**.66(**)**	**.70(**)**	**.62(**)**	-.26	NM	NM	NM	n<5	-.06
SLR @ Douglas Bridge	**.56(**)**	**.52(**)**	-.10	**.65(**)**	**.64(**)**	.01	.07	NM	NM	NM	.87	.17
SLR @ Murray Bridge	**.79(**)**	**.71(**)**	**.76(**)**	**.97(**)**	**.97(**)**	-.15	-.06	NM	NM	NM	**.96(*)**	.01
SLR @ Bonsall Bridge - OC	**.87(**)**	**.47(**)**	.14	**.51(*)**	**.80(**)**	.21	-.24	NM	NM	NM	**.72(*)**	**-.42(**)**
SLR @ Bonsall Bridge (SLR16)	**.29(*)**	**.92(**)**	.02	.39	**.42(*)**	**-.39(*)**	-.29	**-.64(*)**	-.30	.50	.40	**.61(**)**
SLR @ Olive Hill Rd. (SLR25)	**.84(**)**	**.75(**)**	.25	**.45(*)**	**.59(**)**	-.35	**-0.58(**)**	**-.86(**)**	**-.77(**)**	.39	**.60(**)**	-0.03
SLR @ Shearer Crossing (SLR28)	**.74(**)**	0.43	-.19	.21	.45		.05	.10	**.68(*)**	**.79(8)**	.20	**.42(**)**
Pilgrim Creek Outlet	**.90(**)**	**.86(**)**	.50	**.96(**)**	**.59(*)**	-.23	-.42	NM	NM	NM	n<5	**.47(**)**
Guajome Lake Outlet	.54					.37		NM	NM	NM	NM	-.36
Sleeping Indian	**0.44(*)**	**0.43(*)**	**.74(**)**	.36	**.74(**)**	-.18	-.08	NM	NM	NM	n<5	**.37(*)**
Little Gopher Canyon Creek (SLR02)	**0.48(*)**	.27	-.08	.31	.29	-.73	-.08	.29	-.01	-.03	.06	-.10
Moosa Canyon Creek (SLR01)	**0.39(*)**	.25	-.13	.21	.17	-.05	.21	.25	.09	.12	-.08	-.15
Bonsall Creek (SLR26)	**.78(**)**	**0.56(*)**	.13	**.62(*)**	**.70(**)**	**.89(*)**	-.25	-.17	.32	-.07	.40	-.05
Ostrich Farm Creek (SLR14)	0.17	**.54(**)**	-.19	.17	.13	-.04	.32	**.49(*)**	.17	-.21	-.22	-.16
Live Oak Creek (SLR27)	-.06	.17	**.64(**)**	-.08	-.19	-.36	.11	.11	.36	-.22	.06	-.13
Keys Creek (SLR17)	**0.65(**)**	**.67(**)**	-.17	**.73(**)**	**.68(**)**	**.71(*)**	-.07	-.24	-.18	**-.72(*)**	-.25	.09

Along the main stem of the SLT River, the easternmost location, Shearer Crossing had the lowest mean concentration of TDS and chloride and the westernmost location, Benet, had the highest (Fig. 2A and 2B). For the tributaries, Pilgrim Creek Outlet had TDS and chloride concentrations that were significantly higher than the remaining tributaries and the main stem sampling sites (Fig. 2C and 2D). Sleeping Indian, not sampled before FY 2006-07, also had an equally high mean TDS concentration but the mean chloride concentration at the Sleeping Indian tributary was not significantly different from all other tributaries further upstream. This is most likely because TDS concentration at Pilgrim Creek was most highly correlated with sodium, magnesium, sulfide and chloride while TDS at Sleeping Indian was most highly correlated with calcium and potassium (Table 3). The mineral composition of TDS at Pilgrim Creek renders that tributary characteristically different from the remaining ones. This point is further illustrated in Appendix C to SLR-001 of the 2007-2008 WURMP report (WURMP, 2008). The 2007-08 WURMP Activity Appendix also contains an analysis and discussion regarding the relationship of the ionic composition of water samples collected from the different sampling locations to that in the ground water basins directly below.

Generally, it may be concluded that the mean concentrations of both TDS and chloride in the San Luis Rey River tend to increase from east to west and mostly exceed the surface water Basin Plan objectives. Those mean concentrations are very similar to the mean groundwater concentrations which indicate that groundwater is influencing water quality in the main stem of the SLR River and its tributaries (WURMP, 2008). The exceptions are Pilgrim Creek tributary (for TDS and chloride) and Sleeping Indian tributary (for TDS).

The SLR River flows through an alluvial valley that contains unconfined groundwater and there is a considerable interchange between surface flow and groundwater flow within the valley. According to NBS/Lowry (1995), the surface infiltration of river flow can exceed 30 cfs during periods of significant runoff. Conversely, surfacing groundwater can contribute several cfs to surface flows during the dry season. Therefore, the shallow groundwater and surface waters of the alluvial SLR River valley are considered one hydrogeologic system. As shown in Figure 3, groundwater quality in the San Luis Rey River continually degrades from the mountains towards the coastline. The areas that contain TDS concentration below 500 mg/L are restricted to upper reaches of the watershed in areas where there is minimal use of irrigation water. The TDS in shallow aquifers near the coast are typically above 1500 mg/L as a result of saltwater incursion and salt loads due to imported water use. This pattern is mirrored by the results of the present study.

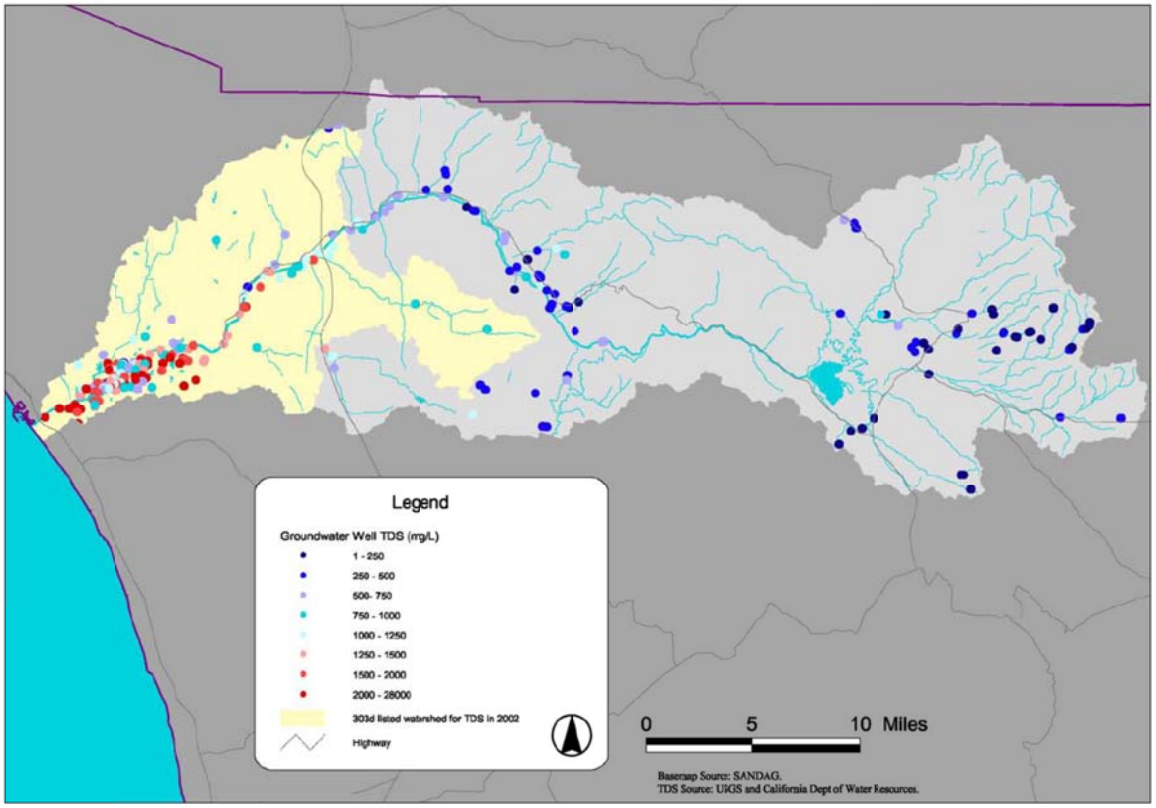

Figure 3. Variation in TDS concentration in shallow groundwater wells throughout the San Luis River watershed (adopted from the 2003 WURMP Report, PBS and J, 2003).

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Watershed Urban Runoff Management Program (WURMP) Report. 2008. Attachment C to the Water Quality Activity SLR-001. Total Dissolved Solids and Chloride Study
In the San Luis Rey River and its Tributaries.

ATTACHMENT D TO SLR-001

SAN LUIS REY WATERSHED WATER QUALITY MONITORING PROGRAM ACTIVITY 2010-11 SLR WURMP Annual Report

Nutrient Joint Monitoring Study In the San Luis Rey River and its Tributaries

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Introduction

The lower 19 miles of the San Luis Rey (SLR) River are listed for total nitrogen and phosphorus on the 2010 California State Water Resources Control Board (SWRCB) Clean Water Act Section 303(d) List of Water Quality Limited Segments. The upper SLR River is also listed for total nitrogen on the 2010 303(d) list. The water quality objectives are narrative and based on the requirement that water bodies shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses. According to the Water Quality Control Plan for the San Diego Region (Basin Plan), a desired goal to prevent plant nuisance in streams and other flowing waters is 0.1 mg/L total P. This value is not to be exceeded more than 10% of the time unless studies of the specific water body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1, on a weight to weight basis shall be used (RWQCB, 1994).

Nitrogen and phosphorus-containing compounds in streams may originate from agricultural sources where the excess of nutrients from fertilizers leach out of the soil and is transported into the river and its tributaries in surface runoff and subsurface discharges. Other sources of nutrients include failed septic tanks, urban runoff and wastewater/ sewage spills. Much of the San Luis Rey River dry weather flow (or base flow) during the summer months originates from groundwater seeps and springs in the river bed. Those seeps and springs may also have elevated nutrient levels.

The San Luis Rey River WUMRP group initiated a monitoring program in March 2004 focusing on bacteria, TDS and chloride. Ammonia-N, nitrate-N and orthophosphate-P were also assessed initially using field test kits. As the accuracy of the field test kits were questioned and nutrients became a high priority pollutant in the watershed, laboratory techniques replaced the field test kit methods. The County of San Diego discontinued the use of test kits for this program in October 2008 and the City of Oceanside discontinued the use of test kits in October 2009. Additional analytes, nitrite-N, total Kjeldahl nitrogen (TKN), and total phosphorus, were added to the list of constituents analyzed through laboratory methods. Sampling continued through March 2011.

Field test kit data from the City of Oceanside are not included in the present report as several concerns have arisen with the data collected by the City. It has been observed that test kit samples with conductivity levels greater than 5 mS/cm resulted in a cloudy sample interfering with colorimetric readings. Analyst errors have also occurred within the City of Oceanside sampling protocol as nitrate-N test kit data collected prior to July 2007 may not have been converted from nitrate to nitrate as N. Because the concentration of nitrogen must be adjusted for the presence of oxygen in the nitrate molecule, the conversion decreases the result by almost four times. A similar oversight occurred with the orthophosphate test kit. The conversion from orthophosphate to orthophosphate as P decreased the result by almost three times. Therefore, City of Oceanside data presented in the previous WURMP Annual Reports may not be accurate. The County of San Diego field test kit data are included in the present report as they were properly converted from nitrate and orthophosphate readings to nitrate as N and orthophosphate

as P throughout the study period. Also, field test kits used by the County were instrumental (not colorimetric) which eliminated the above-described potential for error.

Hydrologic Setting

The San Luis Rey River originates mainly in the Palomar and Hot Springs Mountains. In 1922, Henshaw Dam was built and Lake Henshaw was formed at the base of Palomar Mountain. No imported water is released directly into the lake and TDS and chloride concentrations in the lake fall below Basin Plan standards. The Vista Irrigation District (VID) owns Lake Henshaw and uses the Lake as a source of drinking water. Downstream of Lake Henshaw, water from the main channel of the River is diverted into the man-made Escondido Canal, seven miles below the dam. Nearly all non-storm flows are diverted from that section of SLR River into the canal that discharges to Lake Waldorf, located in the Carlsbad Watershed. The flow in the remainder of SLR River is intermittent through Pauma and Pala. The River is perennial through Oceanside, although it flows underground in several sections during dry weather.

Precipitation in the coastal portion of the watershed is about 11 inches/yr., 17 inches/yr. in the coastal plains and valleys, and Palomar Mountain receives about 45 inches/yr. On an annual basis, there are two distinct climatic periods in the area – a dry (semi-arid) period from late April to mid-October, and a wet period from mid-October to late April. The wet period typically provides 85 to 90 percent of the annual average rainfall in the coastal areas. The River is generally dry in the summer months except for locations where groundwater seeps and springs emanate in the river bed and support perennial riparian habitats. There are three groundwater basins within the lower San Luis Rey Watershed: Bonsall, Mission and Moosa Canyon. The basins provide baseflow surface water to sections of the River that would otherwise be dry during the dry season.

Methods

Water Quality Sampling

From March 2004 through March 2011, 18 locations (Figure 1) were sampled: seven by the City of Oceanside and 12 by the County of San Diego (Table 1). Both agencies collected samples on the same days or within one or two days of one another. Seven sampling sites were located along the San Luis Rey River and 11 in the mouths of River's tributaries. One site along the River's main stem, Bonsall Bridge (SLR16), was sampled by both agencies for quality control.

Both the City of Oceanside and the County of San Diego conducted in-situ testing for pH, temperature, electrical conductivity, dissolved oxygen, and turbidity. A hand-held flow meter or the floating object technique was used to estimate flow. Instantaneous flow rate was also estimated at each sampling location by multiplying averaged results of three instantaneous current velocity measurements by approximate channel width and depth. The County of San Diego personnel conducted the instantaneous flow measurements whenever water quality samples were collected throughout the study period. Throughout the City of Oceanside, flow in the SLR River is intermittent during summer and extensive (un-wadable) during winter thus difficult to measure. Due to those difficulties, flow measurements were attempted but not

recorded by the City of Oceanside personnel prior to July 2007. The City then began recording instantaneous flow rates in the tributaries and continues to work to collect more accurate main stem flow data. The methods used for the in-situ and laboratory nutrient analytes are presented in Table 2. All samples were collected during dry weather defined as at least 72 hours following any rain event with precipitation greater than or equal to 0.10 inches.

Analysis of Data

For the purpose of data analysis, all non-detect values were assigned one half of the method detection limit. To calculate the means and standard deviations, field test kit and analytical data for ammonia-N, nitrate-N and orthophosphate-P were combined for the sites monitored by the County; analytical laboratory data only were used in the calculations for all data collected by the City of Oceanside. The mean nitrate-N, orthophosphate-P and ammonia-N concentrations and their 95% confidence intervals were then compared among the SLR River main stem sites and tributary locations using bar graphs.

Nutrient mean, dry weather, instantaneous loadings (mg/s) and mean, dry weather, instantaneous nutrient flux (mg/s/acre) were also calculated for the tributaries, using tributary drainage areas (in acres) and estimated flows where available. The mean instantaneous loads were calculated by finding each month's instantaneous load and then calculating the mean dry weather load for the entire sampling period (2004 through June March 2011). Flux was calculated by dividing instantaneous loads by the area of the drainage corresponding to each sampling location.

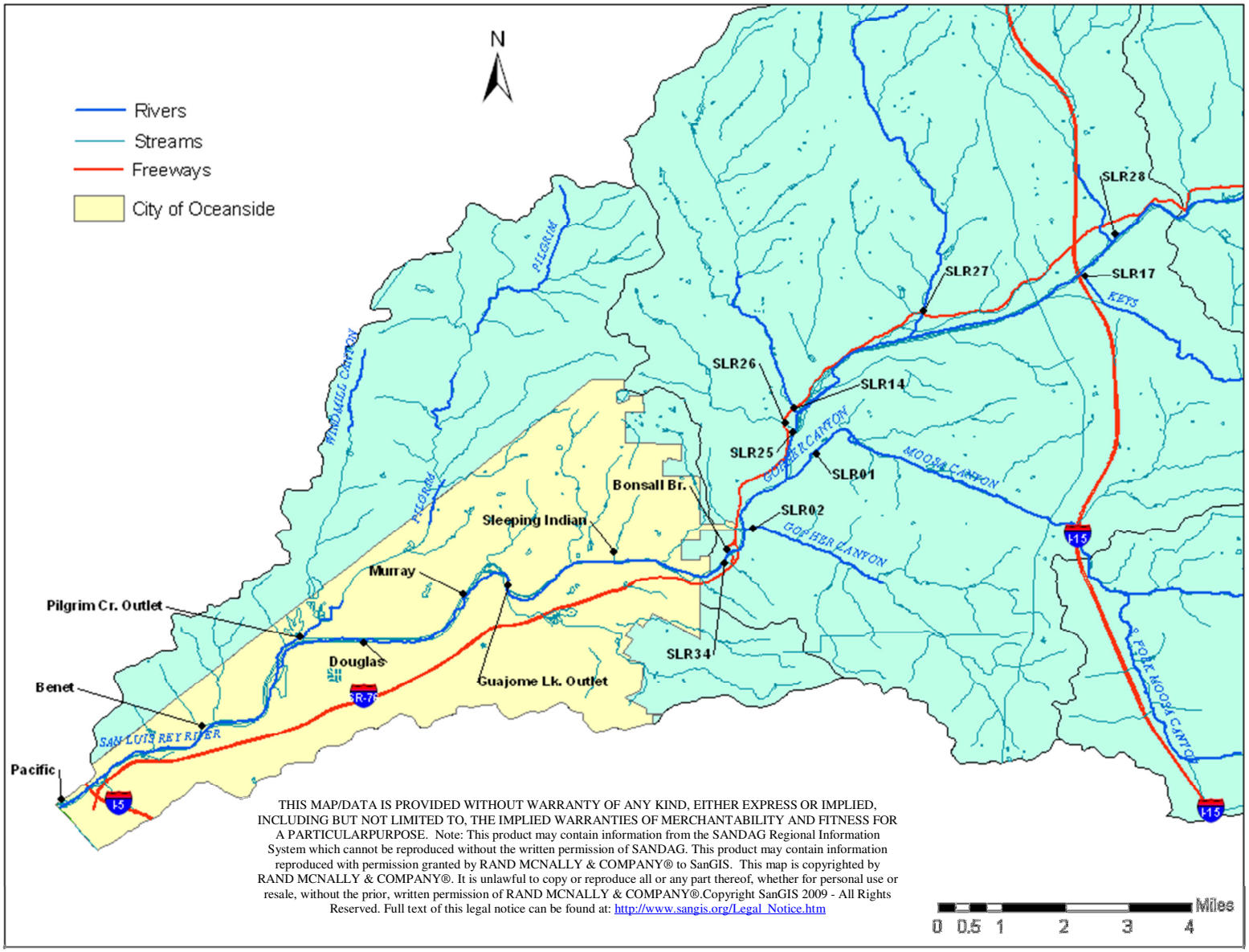

Figure 1. Sample site locations.

Table 1: Sample Site Identification and Locations.

City of Oceanside Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Pacific	San Luis Rey River southeast of Parking Lot #10	33.20303	-117.39117
Benet	SLR River at USGS Station west of Benet Bridge approximately 850ft downstream of bridge	33.21790	-117.35958
Douglas	SLR River on the east side of Douglas Dr, north of Hwy 76/Douglas Dr.	33.24051	-117.32238
Pilgrim Creek Outlet	Tributary to north side of SLR River at end of Flood Control Embankment, entered from Whelan Ranch Road	33.24103	-117.3359
Murray	SLR River on the north side of Murray Bridge at intersection of College Blvd. and Vandergrift Blvd.	33.2505	-117.29866
Sleeping Indian	Tributary to north side of SLR River; South of intersection of Sleeping Indian Rd and North River Rd.	33.25998	-117.26422
Bonsall	SLR River under the Bonsall Bridge	33.26042	-117.23833

County of San Diego Sampling Locations			
Site ID	**Site Description**	**Latitude**	**Longitude**
Bonsall (SLR16)	SLR River under the Bonsall Bridge	33.26042	-117.23833
Olive Hill (SLR25)	SLR River at Olive Hill Road	33.28838	-117.22335
Shearer Crossing (SLR28)	SLR River at Pankey Road	33.33281	-117.14975
Moosa Canyon Creek (SLR01)	Moosa Canyon Creek tributary at Old River Road	33.283600	-117.218683
Little Gopher Canyon Creek (SLR02)	Little Gopher Canyon Creek tributary at Old River Road	33.265683	-117.233200
Bonsall Creek (SLR26)	Bonsall Creek tributary at Highway 76	33.28959	-117.22525
Ostrich Farm Creek (SLR14)	Ostrich Farm Creek tributary at Highway 67	33.29335	-117.22396
Live Oak Creek (SLR27)	Live Oak Creek tributary at Highway 67	33.31514	-117.19418
Keys Creek (SLR17)	Keys Creek tributary at Dunlin Road	33.32363	-117.15744
Moulder Ranch Creek (SLR31)	Moulder Ranch Creek tributary	33.30205	-117.21691
Horse Ranch Creek (SLR 32)	Horse Ranch Creek tributary	33.33138	-117.15067
East Vista Way (SLR 34)	Tributary to SLR River East of East Vista Way and Mission Rd. Intersection	33.25872	-117.23931

Table 2: Water Quality Parameters and Methods for San Luis Rey River.

Measured Parameter	*City of Oceanside*		*County of San Diego*	
	Method	*RL/ MDL*	*Method*	*RL/ MDL*
Flow	Estimated, Global Flow Probe		Flow Probe FP101	0.01 cfs
Dissolved Oxygen	In-situ, Hydrolab Quanta	1 mg/L	In-situ, Horiba U-10	1 mg/L
Ammonia as N	SM 4500 (since Oct. 2009)	0.1/ 0.05 mg/L	CHEMetrics K-1501 (until October 2008) EPA 350.2, SM4500 , EPA 300.0	0.05/0.01 mg/L
Nitrate as N	SM 4500 (since Oct. 2009)	0.05/ 0.01 mg/L	CHEMetrics V-6933 (until October 2008), SM4500, EPA 300.0	0.05/ 0.01 mg/L
Nitrite as N	SM 4500 (since Oct. 2009)	0.05/ 0.01 mg/L	EPA354.1, SM4500, EPA 300.0	0.05/ 0.01 mg/L
Total Kjeldahl Nitrogen	SM 4500 (since Oct. 2009)	0.5 mg/L	EPA351.1, SM4500 (since Nov. 2008)	1.0/ 0.5 mg/L
Total Nitrogen	By Calculation (since Oct. 2009)	NA	By Calculation (since Nov. 2008)	NA
Organic Nitrogen	By Calculation (since Oct. 2009)	NA	By Calculation (since Nov. 2008)	NA
Orthophosphate as P	SM 4500 (since Oct. 2009)	0.05/ mg/L	CHEMetrics V-8513 (until October 2008), EPA 365.2, SM4500, EPA 300.0	0.05/ 0.01 mg/L
Total Phosphorus	SM 4500 (since Oct. 2009)	0.05/ mg/L	EPA 365.3, SM4500 (since Dec. 2005)	0.05/ 0.01 mg/L

NA – Not Applicable

Results

All data collected during FY 2010-11 are listed in Table 10 of Attachment B. For locations upstream of Bonsall Bridge including SLR16 (County of San Diego jurisdiction), the total phosphorus results reflect data collected after August 2006 while total nitrogen measurements were available only after October 2008. Downstream of Bonsall (in the City of Oceanside), total phosphorus and total nitrogen analysis were performed only on samples collected after September 2009. As mentioned above, all nutrient data collected by the City prior to October 2009, were obtained with field test kits and were not included while the County employed an analytical laboratory for nutrient analysis periodically prior to November 2008 and exclusively thereafter.

Table 3 lists the numbers of samples analyzed, means and standard deviations for the sample concentrations of ammonia, nitrate-N, total nitrogen, orthophosphate-P and total phosphorus at each sampling location. The mean nitrate-N, orthophosphate as P and ammonia as N concentrations and corresponding 95% confidence intervals for the River's main stem and the monitored tributaries are plotted in Figures 2, 3 and 4 respectively.

Both the mean total nitrogen and total phosphorus concentrations exceeded the Basin Plan water quality objectives (WQOs) of 0.1 mg/L for total phosphorus and 1.0 mg/L for total nitrogen at all monitored locations (Table 3).

For total nitrogen (Table 3) and nitrate as N (Table 3, Figure 2), the highest mean main stem mean concentrations (10.6 mg/L and 9.28 mg/L respectively) were recorded at Shearer Crossing and the lowest (2.17 mg/L and 1.76 mg/L respectively) were measured at Olive Hill Rd. Of the tributaries, Sleeping Indian had the highest mean total nitrogen and nitrate as N concentrations (79.5 mg/L and 78.4 mg/L respectively). Nitrate as N and total nitrogen concentrations at the mouths of all remaining tributaries sampled were orders of magnitude lower.

The mean main stem total phosphorus (Table 3) and orthophosphate as P concentrations (Table 3, Figure 3) were lowest (0.16 and 0.12 mg/L respectively) at the upstream-most location, Shearer Crossing (SLR28). Murray had the highest mean total phosphorus concentration (0.38 mg/L) but the highest orthophosphate as P concentration (0.41 mg/L) was recorded at Bonsall (SLR16) by the County of San Diego while the City's mean result for that site was only 0.15 mg/L. This discrepancy may be attributed to the fact that the County collected many more total P and orthophosphate as P measurements representing a longer time period (since 2003) (nonetheless many earlier orthophosphate as P measurements were often taken with field test kits). For instance, while 77 orthophosphate as P measurements were conducted at Bonsall by the County, only 5 valid measurements are available from the City for the Bonsall and Murray sampling locations.

For the tributaries, Sleeping Indian had the highest total P concentration (0.49 mg/L) while East Vista Way (SLR34) had the lowest (0.16 mg/L). The highest mean orthophosphate as P concentration (0.32 mg/L) was measured at Moosa Canyon Creek (SLR01) while the mean orthophosphate P concentrations at Little Gopher Canyon Creek (SLR02), Bonsall Creek (SLR14) and Keys Creek (SLR17) were the lowest (0.10 mg/L).

The highest mean ammonia-N concentrations (Table 3, Figure 4) were measured at Bonsall (for main stem sites) and Pilgrim Creek (for the tributaries). However, not enough data were collected to render these results statistically significant. For the County of San Diego locations (the County did collect enough data to show statistically significant differences among sites), Bonsall had the highest main stem ammonia concentration and Shearer Crossing had the lowest; the mean ammonia concentration at the mouth of the East Vista Way tributary was significantly lower than in any of the tributaries located further east.

When the mean, dry weather, instantaneous loadings were calculated for the tributary locations (Table 4), the highest total nitrogen and nitrate as N loads were found at Keys Creek followed by Moosa Canyon Creek. With respect to total phosphorus and orthophosphate as P, Moosa Canyon Creek had the highest mean loadings and Pilgrim Creek had the second highest. It must be noted, that the instantaneous nutrient loads at all locations sampled were highly variable as reflected by the very high values of standard deviations (Table 4). This is most likely due to the large variability in the estimated instantaneous flow measurements as well as to the small sample sizes for the City of Oceanside sampling locations.

As with mean concentrations, the highest nitrate as N and total nitrogen flux values (Table 5) were estimated for the Sleeping Indian tributary with the remaining tributaries showing relative flux values that varied. The highest orthophosphate as P and total phosphorus flux was calculated for Pilgrim Creek Outlet. Similar to instantaneous loading, nutrient flux was highly variable among samples as it was affected by the high variability in the estimated instantaneous discharge rates and the small sample sizes.

Table 3. Number of samples analyzed (N), mean concentrations in mg/L (Avg) and standard deviations (S) of samples collected from locations along the SLR River and its tributaries from 2004 through March, 2011. Main stem locations and tributaries are listed separately downstream to upstream.

Sampling Location	Ammonia-N			Nitrate-N			Total Nitrogen			Orthophosphate-P			Total Phosphorus		
	N	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*
SLR @ Pacific															
SLR @ Benet	4	0.70	0.75	4	2.20	0.61	4	3.67	0.83	4	0.18	0.10	4	0.35	0.40
SLR @ Douglas	5	0.64	0.79	5	2.69	1.57	5	3.71	1.64	5	0.24	0.13	5	0.36	0.27
SLR @ Murray	5	0.56	0.75	5	4.83	0.39	5	6.17	0.50	5	0.31	0.19	5	0.38	0.17
SLR @ Bonsall - OC	5	0.75	0.95	5	2.01	1.59	5	3.33	1.89	5	0.15	0.07	9	0.24	0.12
SLR @ Bonsall (SLR16)	77	0.35	0.59	62	4.13	6.23	28	2.59	2.87	77	0.41	0.84	37	0.23	0.20
SLR @ Olive Hill Rd. (SLR25)	73	0.14	0.13	75	1.76	2.14	28	2.17	1.50	72	0.14	0.10	41	0.22	0.17
SLR @ Shearer Crossing (SLI	53	0.12	0.10	52	9.28	3.00	15	10.58	1.58	50	0.12	0.05	19	0.16	0.12
Pilgrim Creek Outlet	4	0.87	0.99	4	0.89	0.93	4	2.60	1.34	4	0.18	0.10	4	0.32	0.30
Guajome Lake Outlet													1	0.18	
Sleeping Indian	3	0.72	1.24	3	78.40	46.07	3	79.52	45.07	3	0.21	0.08	3	0.49	0.32
East Vista Way (SLR34)	4	0.04	0.01	4	13.58	1.58				4	0.13	0.03	4	0.16	0.04
Little Gopher Cn. Cr. (SLR02)	60	0.14	0.10	61	8.40	7.43	17	7.90	1.89	59	0.10	0.09	27	0.18	0.18
Moosa Cn. Cr. ('SLR01)	72	0.15	0.16	74	3.91	4.28	28	4.12	3.13	71	0.32	0.14	41	0.40	0.14
Bonsall Cr. (SLR26)	43	0.15	0.12	43	2.78	8.17	11	1.76	1.29	42	0.10	0.09	17	0.18	0.17
Ostrich Farm Cr. (SLR14)	73	0.13	0.11	76	5.09	2.01	28	6.16	1.11	73	0.28	0.14	40	0.35	0.16
Live Oak Cr. (SLR27)	76	0.12	0.10	75	6.35	2.42	28	6.78	1.67	73	0.20	0.23	40	0.27	0.19
Keys Cr. (SLR17)	46	0.13	0.11	42	6.91	5.73	12	7.85	2.80	44	0.10	0.07	17	0.17	0.18

Table 4. Mean estimated instantaneous loadings (mg/s) (Avg) with the corresponding numbers of samples analyzed (*N*) and standard deviations (*S*) calculated for tributaries monitored from 2004 through March 2011.

Sampling Location	Ammonia-N			Nitrate-N			Total Nitrogen			Orthophosphate-P			Total Phosphorus		
	N	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*
Pilgrim Creek Outlet	4	3	3	4	23	41	4	215	416	4	21	40	4	66	131
Guajome Lake Outlet													1	6	
Sleeping Indian	3	1	1	3	127	162	3	128	163	3	0	0	3	1	1
East Vista Way (SLR34)	4	0.1	0.1	4	42	30				4	0	0	4	0	0
Little Gopher Cn. Cr. (SLR02)	62	6	11	64	362	606	20	230	328	62	5	8	30	5	8
Moosa Cn. Cr. ('SLR01)	72	28	47	74	913	1,495	28	883	1,544	71	72	123	41	68	148
Bonsall Cr. (SLR26)	48	3	6	50	65	207	17	35	87	48	2	6	23	2	4
Ostrich Farm Cr. (SLR14)	73	10	15	76	360	388	28	333	371	73	21	25	40	18	27
Live Oak Cr. (SLR27)	73	7	13	76	437	625	28	387	498	73	10	16	40	14	29
Keys Cr. (SLR17)	51	21	39	52	1,251	2,425	18	1,241	1,900	50	22	43	23	34	87

Table 5. Mean estimated instantaneous flux (mg/s/acre) (Avg) with the corresponding numbers of samples analyzed (*N*) and standard deviations (*S*) calculated for tributaries monitored from 2004 through March 2011.

Sampling Location	Ammonia-N			Nitrate-N			Total Nitrogen			Orthophosphate-P			Total Phosphorus		
	N	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*	*N*	Avg	*S*
Pilgrim Creek Outlet	4	0.0004	0.0005	4	0.0038	0.0068	4	0.0352	0.0680	4	0.0034	0.0066	4	0.0108	0.0214
Guajome Lake Outlet													1	0.0088	
Sleeping Indian	3	0.0013	0.0023	3	0.25	0.32	3	0.2507	0.3184	3	0.0005	0.0005	3	0.0019	0.0027
East Vista Way (SLR34)	4	0.0003	0.0002	4	0.1344	0.0963				4	0.0012	0.0005	4	0.0014	0.0007
Little Gopher Cn. Cr. (SLR02)	62	0.0009	0.0016	64	0.0513	0.0859	20	0.0326	0.0465	62	0.0007	0.0012	30	0.0007	0.0012
Moosa Cn. Cr. (SLR01)	72	0.0011	0.0018	74	0.0339	0.0555	28	0.0328	0.0573	71	0.0027	0.0046	41	0.0025	0.0055
Bonsall Cr. (SLR26)	48	0.0014	0.0028	50	0.0311	0.0994	17	0.0170	0.0420	48	0.0011	0.0027	23	0.0010	0.0019
Ostrich Farm Cr. (SLR14)	73	0.0014	0.0020	76	0.0501	0.0539	28	0.0462	0.0515	73	0.0029	0.0035	40	0.0025	0.0038
Live Oak Cr. (SLR27)	73	0.0013	0.0023	76	0.0797	0.1141	28	0.0707	0.0909	73	0.0018	0.0030	40	0.0026	0.0053
Keys Cr. (SLR17)	51	0.0009	0.0016	52	0.0527	0.1021	18	0.0523	0.0800	50	0.0009	0.0018	23	0.0014	0.0037

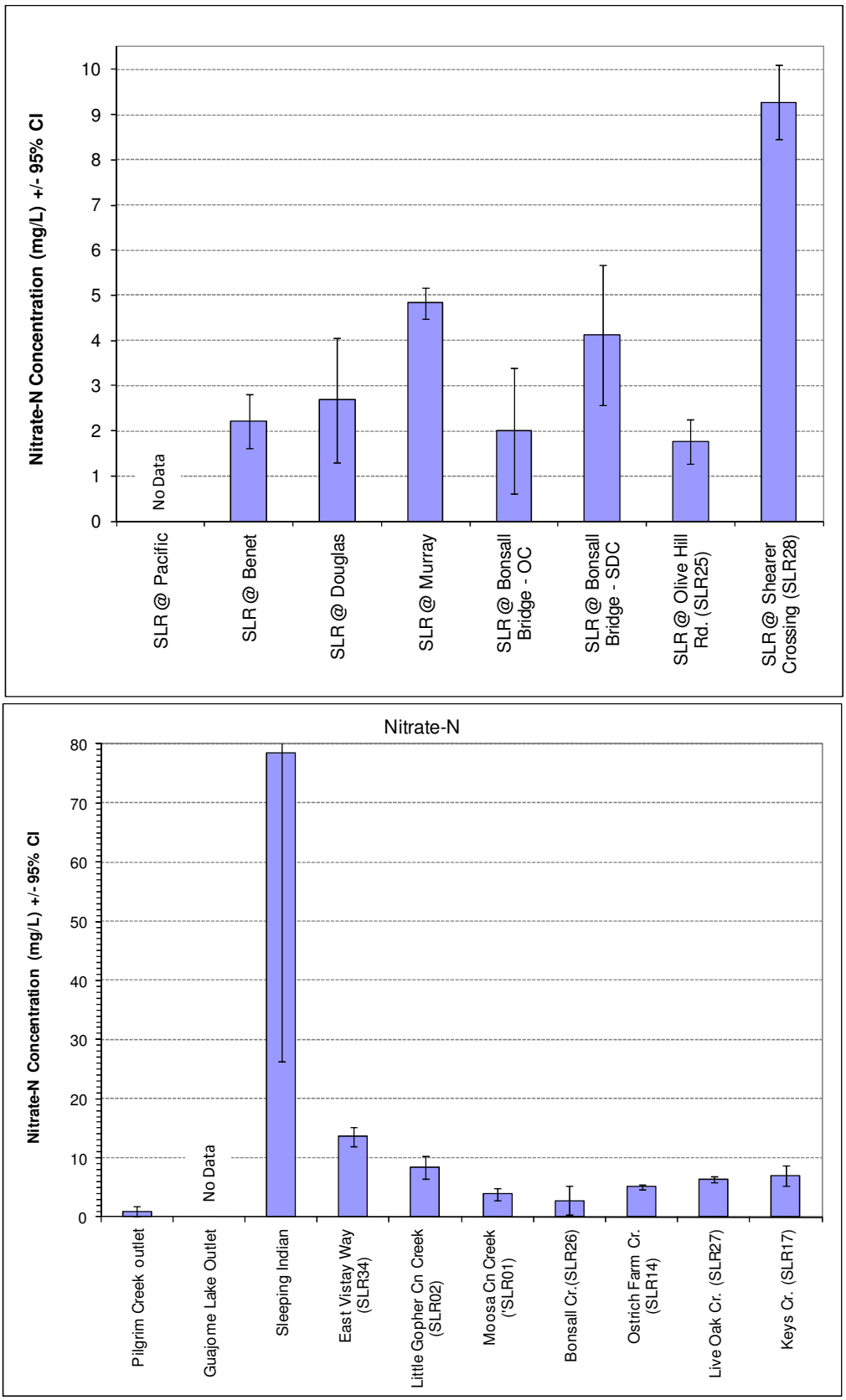

Figure 2. Mean concentrations and 95% Confidence intervals of nitrate-N in the main stem of San Luis Rey River and its tributaries. Station locations are listed along the horizontal axis from West to East.

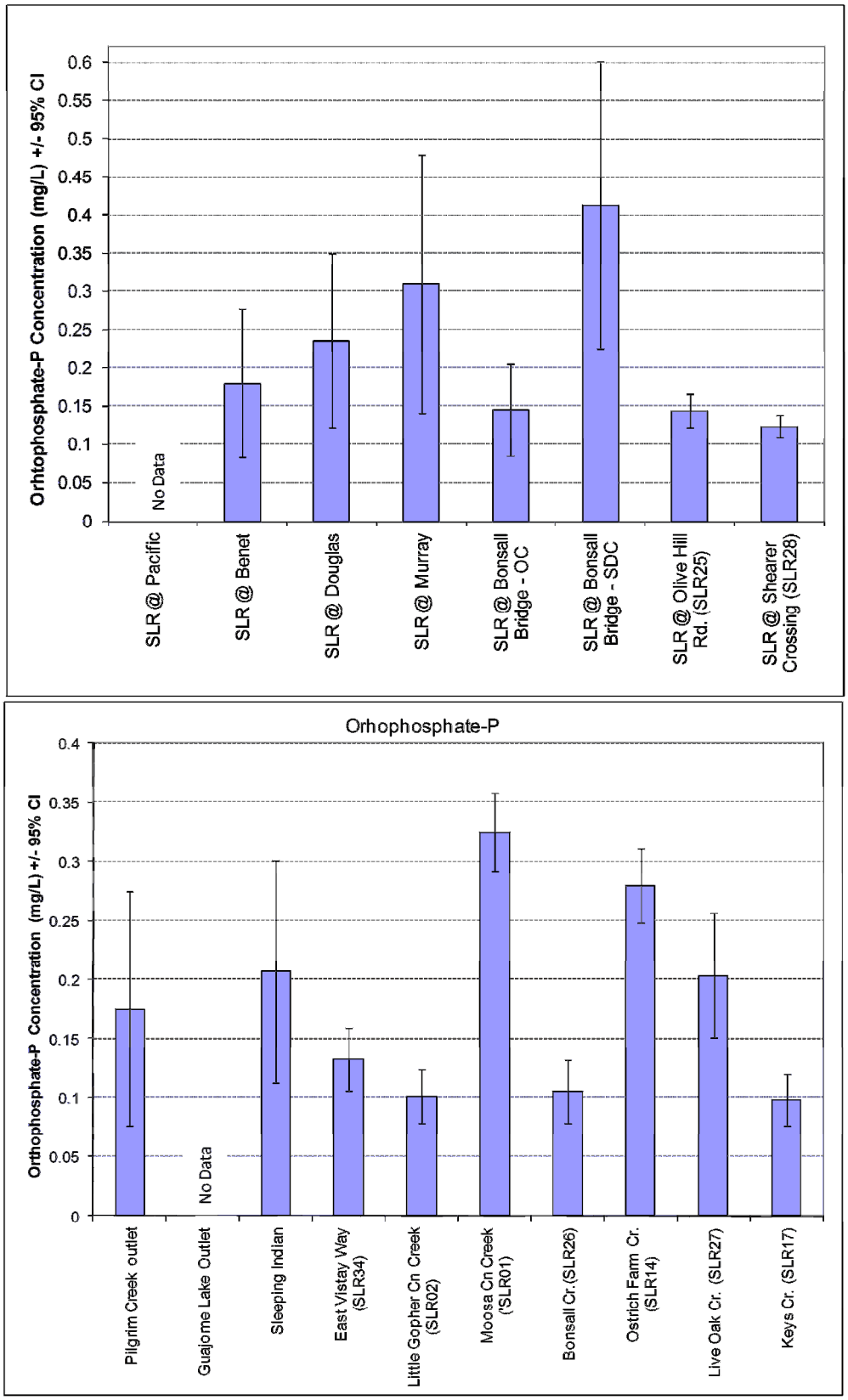

Figure 3. Mean concentrations and 95% Confidence intervals of Orthophosphate-P in the main stem of San Luis Rey River and its tributaries. Station locations are listed along the horizontal axis from West to East.

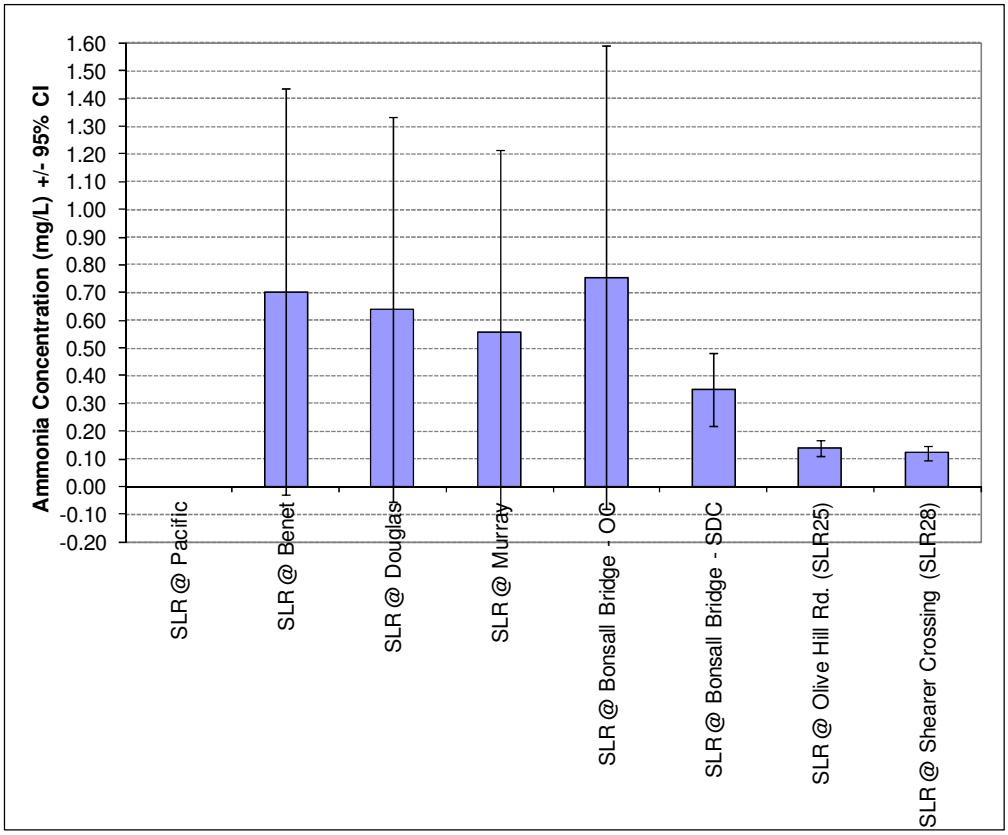

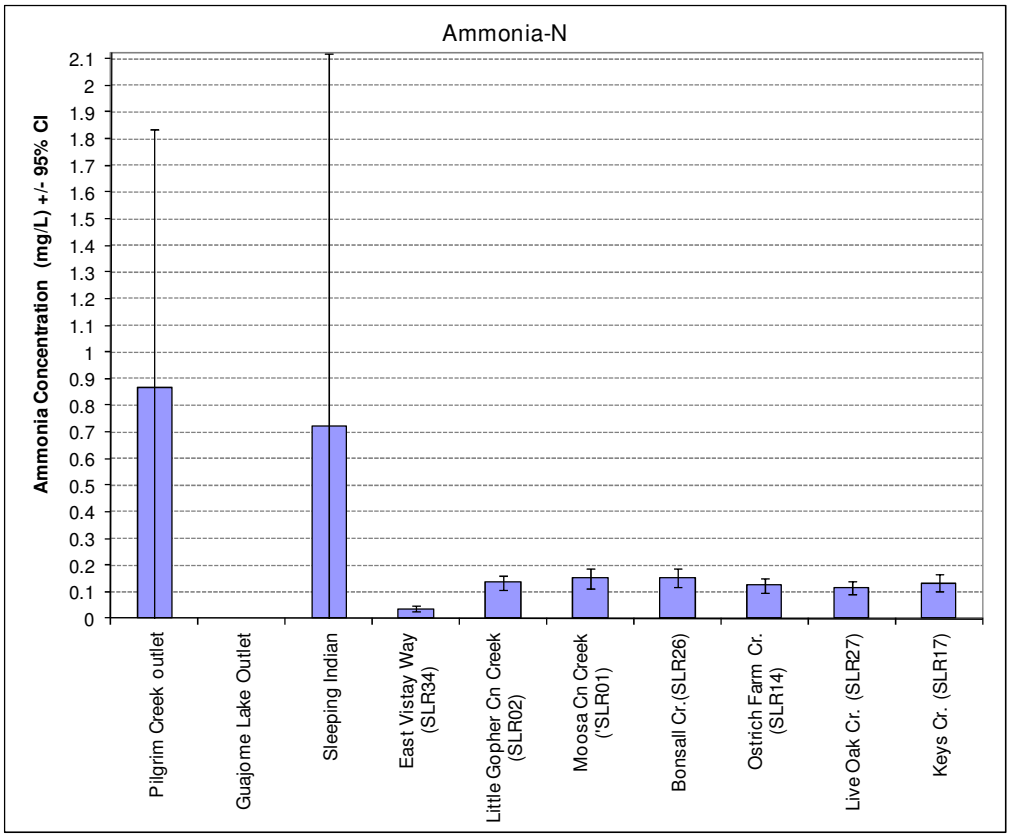

Figure 4. Mean concentrations and 95% Confidence intervals of Ammonia in the main stem of San Luis Rey River and its tributaries. Station locations are listed along the horizontal axis from West to East.

Discussion

The lower 19 miles of the San Luis Rey River was listed for total nitrogen and total phosphorous on the 2010 CWA 303(d) list of impaired waterbodies. This study provides preliminary information on the nutrient concentrations, loading and flux. Presently, the water quality objective employed for nutrients is a narrative objective to prevent biostimulatory growth of algae with a current goal of 0.1 mg/L for total phosphorus and 1 mg/L for total nitrogen. These values are not to be exceeded more than 10% of the time.

Nitrogen and phosphorous loading can result in low DO by increased algal blooms in stream segments. Addressing these adverse effects requires use of appropriate WQOs based on the level of nutrients a waterbody can sustainably assimilate. This level varies greatly due to site-specific factors such as hydrology, shading, and temperature, which modulate biological responses to nutrients. Current N and P WQOs are problematic in part because they do not consider site-specific factors. The Nutrient Numeric Endpoint (NNE) framework, an alternative regulatory approach advocated by SWRCB staff and USEPA Region 9, is currently under development.

Samples collected in the present study were taken during dry weather only and, therefore, represent nutrient concentrations that are characteristic only to non-storm flows. Furthermore, water quality samples were collected in the main stem of the lower SLR River and at the mouths of some of the tributaries thus helping characterize nutrient concentrations at those locations only.

Given these limitations, the results of the study show that both the mean total nitrogen and total phosphorus concentrations exceeded the Basin Plan water quality objectives (WQOs) of 0.1 mg/L for total phosphorus and 1.0 mg/L for total nitrogen at all monitored locations. Along the main stem of the River, mean total phosphorus concentrations increased gradually from upstream (east) to downstream (west) but this pattern was not observed for total nitrogen whose highest mean concentration (10.3 mg/L) was recorded at the easternmost sampling location. Of the tributaries, Sleeping Indian had the highest total nitrogen and total phosphorus concentrations and nutrient concentrations at the mouth of all remaining tributaries sampled were orders of magnitude lower.

Instantaneous nutrient loads were calculated for tributary mouths only using instantaneous discharge estimates and grab sample concentrations. The instantaneous nutrient loads at all locations sampled were highly variable which was likely due to the large variability in the estimated instantaneous flow measurements as well as the small sample size. Given this large variability and the instantaneous nature of the measurements, it is difficult to compare loads among locations and the results (Table 4) are only preliminary.

The instantaneous load estimates were transformed into flux (load per unit area) by dividing the load values by the drainage areas of the corresponding tributaries (Table 5). Similar to instantaneous loading, nutrient flux was highly variable among samples as it

was affected by the high variability in the estimated instantaneous discharge rates and the small sample sizes.

If funds allow, future studies that support site-specific nutrient water quality objectives may be considered. The California State Water Quality Control Board is developing a Nutrient Numerical Endpoint (NNE) Policy. This approach would allow nutrient concentrations to be related to aquatic growth through the examination of algal populations in the watershed.

Reference

Regional Water Quality Control Board. 1994. Water Quality Control Plan for the San Diego Basin (9). http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Water Quality Activity

TITLE: **Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall – Modular Wetland**
ID NUMBER: **SLR-003**

ACTIVITY IMPLEMENTATION
Oceanside Harbor has over 40 storm drains with small drainage areas that carry flow to the harbor. One drain with historic bacterial exceedances receives flow from the harbor boat wash. Located within 15 feet of the drain are two wastewater discharge hook-ups for recreational vehicles (RV). This activity, SLR-003, addresses structural BMP implementation at the boat wash drain.

ACTIVITY IMPLEMENTATION FYs 2006-07 and 2007-08
Two bacteria reduction pilot projects have been implemented in the past: installation of an antimicrobial fabric in FY 2006/07 and increased frequency of storm drain cleaning in FY 2007-08. The antimicrobial fabric did not display long-term effectiveness, possibly the result of added hydrocarbons and sediment in the runoff. The City then implemented monthly cleaning of the storm drain outfall in May 2007 which showed reductions in bacterial counts, though there were still some bacterial level exceedances which may be due to re-growth in the pipe.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor Boat Wash storm drain. This system utilizes a combination of technologies to not only address the high priority pollutant of bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. The wetland consists of a vault 22 feet long, five feet wide, and five feet deep. The peak treatment volume is 4000 cubic feet per second with a bypass for higher flows.

To address bacteria, the Modular Wetland is utilizing BioMediaGreen, a new type of media in lightweight block format that is easy to handle and replace, for primary filtration. The wetland is then using a sub-surface flow wetland for biological remediation. Because the harbor is a harsh, salt-water environment, the system is using a hardy, fast growing plant with large root bundles, called Vetiver grass. It was estimated that it take about six months for the plants to get established in the wetland and the roots to get to the bottom of the vault, and therefore, peak treatment to begin.

ACTIVITY IMPLEMENTATION FY 2008-09
After the installation of the wetland, the separator vault was filled to remove the possibility of growth/regrowth between the wetland and the outfall. For six months (July 2008 – January 2009), the City conducted paired sampling of the wetland outfall and the storm drain outfall and found that there was no evidence of regrowth in the pipe. Monitoring of this outfall pipe continued during FY 2008-09 and has been ongoing since 2004 and will continue through the Coastal Storm Drain Monitoring (CSDM) Program for total coliforms, fecal coliforms, and Enterococcus. Not quantified, but pollutants also being addressed by this BMP are oil and grease and trash.

ACTIVITY IMPLEMENTATION FY 2009-10

During FY 2009-10, bacteria monitoring continued through the Coastal Storm Drain Monitoring program. BioClean Environmental Services, Inc continued to service the wetland.

ACTIVITY IMPLEMENTATION FY 2010-11

During FY 2010-11, bacteria monitoring continued through the Coastal Storm Drain Monitoring program. BioClean Environmental Services, Inc continued to service the wetland.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

The Modular Wetland was installed at the beginning of April 2008. The peak treatment efficiencies were expected to be reached by October 2008 and were dependent on plant growth and media maturity.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- BioClean Environmental Services, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS ASSESSMENT

The Modular Wetland was installed in FY 2007-08 and peak treatment efficiencies were expected in FY 2008-09. A six month regrowth study between the wetland and the outfall pipe was also conducted in FY 2008-09. Outfall monitoring continued this fiscal year through the CSDM program. A comprehensive report of the current and historical data, regrowth study, and bacteria trends are provided in Attachment A.

In the 2010/11 fiscal year, there were fewer sampling days than in the previous years; four in this fiscal year compared to an average of 17 in the previous six years. The outfall was frequently wet, but there was not enough flow to sample. Visual observations found that there was more fine sediment and even large rocks in the storm drain above the outlet. However, following previous trends, total coliform results were the only results to exceed action levels. In addition, there were no receiving water exceedances during the 2010/11 fiscal year.

To reduce the possibility of regrowth in the storm drain, the City will reinstate storm drain outfall cleaning in the 2011-12 fiscal year, along with routine wetland maintenance.

These reductions show a change in Level 5 Effective Assessment Outcomes, changes in urban runoff and discharge quality. Assessment will continue through the next fiscal year.

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ATTACHMENT A TO SLR-003

Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall 2010-11 SLR WURMP Annual Report

Results Summary

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Introduction

The City of Oceanside's Clean Water Program has been monitoring the Oceanside Harbor boat wash outfall, located adjacent to the boat ramp, since 2004 as part of the Coastal Storm Drain Monitoring (CSDM) Program. This outfall drains the boat wash-down area, which includes four fresh water spigots, and two sewage dump stations for recreational vehicles, and is located approximately 150 feet upstream of the outfall. Exceedances of CSDM action levels for total and fecal coliforms have been occurring at the outfall since monitoring began. However, exceedances of REC-1 receiving water standards have rarely occurred at this site. Average flow rates from the outfall are 1gpm or less.

Several BMPs have been attempted to reduce bacteria levels and exceedances at the outfall. Until late 2008, this drainage line did have a separator vault to separate debris, sediment, and hydrocarbons from entering the harbor. It is suspected that while this did assist in sediment and debris separation, the vault may have allowed bacteria growth and/or regrowth which would result in bacteria action level exceedances. Other BMPs included installation of anti-microbial fabric in the vault, increased cleaning frequency of the storm drain line, and additional signage for RV users.

On April 1, 2008, BioClean Environmental Services, Inc. began installation of a Linear Modular Wetland System at the Harbor boat wash storm drain inlet. This system utilizes a combination of technologies to not only address bacteria, but also to capture trash, and filter out hydrocarbons and other potential pollutants. The installation was the first field test for the new technology. It was agreed that the City would continue to sample the outfall for bacteria, under the CSDM program guidelines, and BioClean would complete the product effectiveness testing.

Results

Table 1 provides the indicator bacteria results from the outfall (also known as Coast 08 under the CSDM program). Bacteria samples were processed by Weston Solutions, Inc. or the City of Oceanside's San Luis Rey Wastewater Treatment Plant Laboratory using the multiple tube fermentation (MTF) method. Results in red and bold indicate an exceedance of the CSDM action levels which are presented in Table 2.

After the installation of the wetland, the separator vault was filled in to remove the possibility of growth/regrowth between the wetland and the outfall. For six months, the City conducted paired sampling of the wetland outfall and the storm drain outfall and found that there was no evidence of regrowth in the pipe. These results are presented in Table 3.

Table 1. Oceanside Harbor Boat Wash Outfall Monitoring Results from June 2004 through June 2011.

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
6/22/2004	11800	6500	**160000**
6/30/2004	1730	**80000**	**1600000**
7/13/2004	726	**24000**	**160000**
8/11/2004	**23500**	**160000**	**160000**
9/7/2004	8660	800	9000
11/16/2004	1400	**1600000**	**1600000**
12/14/2004	17100	20	500
1/18/2005	460	5000	130000
2/8/2005	2250	500	**900000**
3/8/2005	3730	8000	**1600000**
4/12/2005	5	400	8000
4/19/2005	580	1100	**300000**
4/26/2005	130	3000	**900000**
5/3/2005	8220	300	80000
5/10/2005	2340	3000	110000
5/24/2005	210	**30000**	50000
6/7/2005	210	**50000**	130000
6/21/2005	290	7000	**300000**
6/21/2005	6520	**50000**	**1600000**
7/19/2005	210	5000	**500000**
8/2/2005	590	**130000**	**220000**
8/16/2005	340	8000	130000
8/30/2005	270	5000	50000
9/13/2005	240	17000	140000
9/27/2005	51	**80000**	80000
10/11/2005	75	17000	50000
10/25/2005	1000	5000	**170000**
11/8/2005	3140	1300	23000
1/17/2006	**98040**	13000	**900000**
2/14/2006	150	300	5000
3/27/2006	5	1300	130000
4/10/2006	230	10000	**400000**
4/10/2006	230	10000	**400000**
5/1/2006	120	230	**1600000**
5/30/2006	20	1600	**160000**
6/12/2006	360	**20000**	**420000**
6/26/2006	430	**900000**	**1600000**
7/10/2006	2970	**30000**	**500000**
7/24/2006	**54800**	**80000**	**1600000**
8/7/2006	1750	**30000**	**900000**
8/21/2006	990	500	23000
9/5/2006	1400	2800	**500000**
9/18/2006	**50000**	**160000**	**1600000**
9/18/2006	11000	**160000**	**900000**
11/20/2006	580	3000	50000

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
12/20/2006	2190	2800	110000
2/26/2007	107	110	11000
3/20/2007	5	1700	110000
5/7/2007	120	1400	80000
5/21/2007	5	40	23000
6/11/2007	100	3000	130000
6/25/2007	1782	**50000**	**900000**
7/3/2007	296	1100	**240000**
7/17/2007	150	13000	80000
7/30/2007	569	**1300000**	**1600000**
8/13/2007	760	800	130000
8/27/2007	130	5000	13000
9/24/2007	190	**23000**	30000
10/17/2007	4,050	**500,000**	**900,000**
10/29/2007	210	1,100	**1,600,000**
11/13/2007	1,935	**23,000**	**1,600,000**
12/18/2007	368	**70,000**	**300,000**
1/17/2008	**24,196**	**30,000**	**1,600,000**
1/31/2008	30	1,100	**900,000**
2/28/2008	213	13,000	**1,600,000**
4/1/2008 – Modular Wetland Installed			
4/14/2008	5	300	50,000
5/12/2008	**24,196**	600	140,000
6/2/2008	14,136	**110,000**	**170,000**
6/10/2008	5	20	40
7/7/2008	622	5,000	**1,600,000**
7/15/2008	41	2,200	17,000
7/21/2008	95	3,000	17,000
8/4/2008	63	1,700	110,000
9/2/2008	670	17,000	**300,000**
9/11/2008	2,062	2,800	13,000
10/7/2008	1,989	17,000	80,000
11/10/2008	15,531	**170,000**	**1,600,000**
11/18/2008	7,270	**30,000**	**1,600,000**
12/8/2008	250	1,300	30,000
1/12/2009	85	700	**900,000**
1/21/2009	73	13,000	**220,000**
2/1/2009 – BioMediaGREEN +AM (Anti-Microbial) Filter Installed in the Discharge Chamber of the Wetland			
2/4/2009	52	300	**500,000**
2/13/2009	134	20	11,000
3/3/2009	1,850	1,400	17,000
4/6/2009	226	1,100	130,000
5/14/2009	471	5,000	50,000
6/1/2009	**24,800**	**80,000**	**1,600,000**
6/9/2009 – Wetland maintenance. Replaced all media components in the wetland chamber.			

Date	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
8/17/2009	790	3,500	70,000
9/8/2009	3,100	17,000	**170,000**
9/15/2009	610	**30,000**	**300,000**
10/21/2009	16,000	**1,600,000**	**>1,600,000**
10/27/2009	3,330	**23,000**	80,000
11/3/2009	170	2,200	80,000
11/9/09	200	1,300	22,000
12/2/09	3,310	2,800	**350,000**
12/17/09	7,270	230	**220,000**
1/11/2010	420	1,100	**900,000**
2/15/10	10,700	**900,000**	**900,000**
2/24/10	1,700	80	28,000
4/15/10	145	2,200	110,000
6/9/10	8,800	3,000	**500,000**
6/14/10	1,090	11,000	**500,000**
01/19/11	690	1,300	17,000
03/14/11	670	2,300	**500,000**
04/05/11	800	3,000	**240,000**
05/10/11	2,940	3,000	**300,000**

Table 2. CSDM Action Levels.

Total Coliform	160,000 MPN/100ml
Fecal Coliform	18,755 MPN/100ml
Enterococcus	17,820 MPN/100ml

Table 3. Test for Regrowth between Wetland Outfall and Storm Drain Outfall.

Date	Location of Sample (WO = Wetland Outfall, OF = Storm Drain Outfall)	Enterococcus (MPN/100ml)	Fecal Coliforms (MPN/100ml)	Total Coliforms (MPN/100ml)
7/7/2008	WO	332	17,000	1,600,000
	OF	622	5,000	1,600,000
8/4/2008	WO	20	2,300	110,000
	OF	63	1,700	110,000
9/2/2008	WO	51	30,000	500,000
	OF	670	17,000	300,000
9/11/2008	WO	1,775	170,000	900,000
	OF	2,062	2,800	13,000
10/7/2008	WO	275	11,000	170,000
	OF	1,989	17,000	80,000
11/10/2008	WO	4,198	110,000	900,000
	OF	15,531	170,000	1,600,000
11/18/2008	WO	15,531	70,000	1,600,000
	OF	7,270	30,000	1,600,000
12/8/2008	WO	121	3,000	110,000
	OF	250	1,300	30,000
1/12/2009	WO	121	300	900,000
	OF	85	700	900,000

Conclusions

While the City has not been conducting the BMP removal efficiency testing, it did appear that the number of exceedance days (as defined by the CSDM program) decreased during the 2008/09 fiscal year, during which the modular wetland has been in place. In fiscal year 2009/10, there were no Enterococcus exceedances. Fecal coliform exceedances were about the same and total coliform exceedances increased slightly. No additional signage or BMPs have been in place during this time. Table 4 and Figure 1 present the exceedance day data for all indicator bacteria.

Table 4. Exceedance Day Results by Fiscal Year for Harbor Boat Wash Outfall.

Fiscal Year	Total Coliforms		Fecal Coliforms		Enterococcus		# Days Sampled
	Frequency of Exceedance	% Exceedance	Frequency of Exceedance	% Exceedance	Frequency of Exceedance	% Exceedance	
2004/05	9	53%	6	35%	1	6%	17
2005/06	10	56%	4	22%	1	6%	18
2006/07	7	47%	6	40%	2	13%	15
2007/08	10	59%	7	41%	2	12%	17
2008/09	8	44%	3	17%	1	6%	18
2009/10	9	60%	4	27%	0	0%	15
2010/11	3	75%	0	0%	0	0%	4

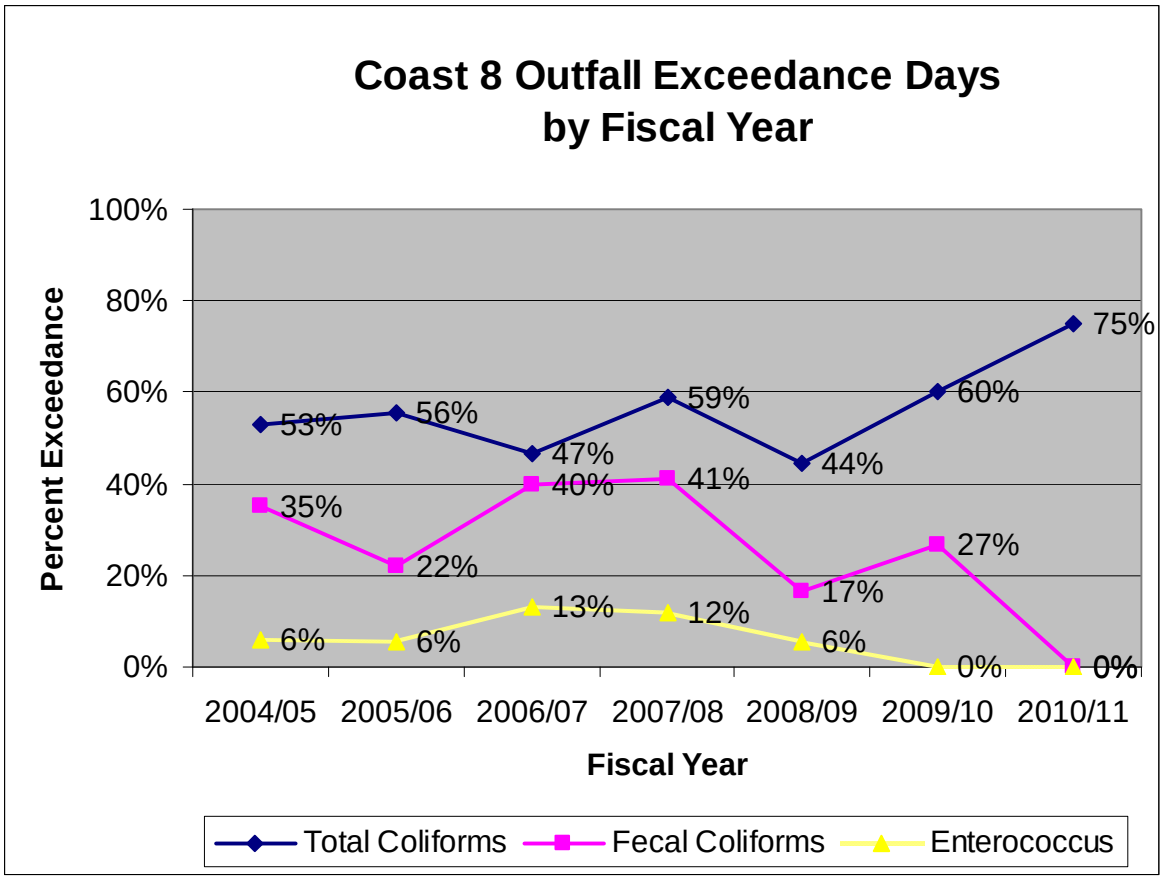

Figure 1. Exceedance Day Results by Fiscal Year for Harbor Boat Wash Outfall.

In the 2010-11 fiscal year, there were fewer sampling days than in the previous years. The outfall was frequently wet, but there was not enough flow to sample. Visual observations found that there was more fine sediment and even large rocks in the storm drain above the outlet. However, following previous trends, total coliform results were the only results to exceed action levels. In addition, there were no receiving water exceedances during the 2010-11 fiscal year.

In summary, monitoring will continue at the Harbor boat wash outfall for indicator bacteria and long term effectiveness will continue to be assessed, through Coastal Storm Drain Monitoring. Although removal amounts of trash and hydrocarbons have not been quantified, visual observations of the absorbent pads and trash collection devices all indicate that the wetland is very successful in the removal of these pollutants. The effectiveness for bacteria pollution seems to be less so, although the number of fecal coliform exceedances seems to have decreased the most compared to historical results.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Water Quality and Education Activity

TITLE: **Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail**
ID NUMBER: **SLR-004**

ACTIVITY DESCRIPTION
The City of Oceanside manages an eight mile recreational walking and biking trail that is adjacent to the San Luis Rey River. This trail has high recreational traffic including bikers and walkers some of who walk and run their dogs along the trail. Since the trail was opened in 2000, city crews have noticed that pet waste, specifically dog waste, is not always picked up and properly disposed in trash cans, but is left on the trail. The City wants to install pet waste bag dispensers, signage, and trash cans along the trail. City crews have expressed concern about potential problems with installing some of these BMPs including the cost for maintenance and probable vandalism to signs and pet waste bag dispensers. The goal of this project is to determine which types of educational BMPs will enact a behavioral change amongst people who do not pick up pet waste and prioritize specific locations for BMP installation.

Pet waste left on grass, sidewalks, and along trails is not only a leading cause of bacterial contamination in waterways, but it also an issue that concerns Oceanside residents. In the spring of 2009, the City of Oceanside Clean Water Program launched a Pick up Your Pet Waste Campaign to encourage dog owners to clean up after their pets. The project focused on the San Luis Rey River Trail (Trail) which is a location where pet waste still accumulates.

ACTIVITY IMPLEMENTATION FY 2007-08
- Different types and designs of pet waste bag dispensers were researched. At least two different dispensers will be installed to determine the type used by the public, ease of maintenance, and vandalism potential.
- Service estimates from pet waste removal companies were received for temporary cleanup services and assessment of waste not picked up along the trail. The company will be asked to provide feedback on sections of the trail that have more waste than other sections. This will help determine the high use areas and where it may be most effective to install the dispensers, signs, and trash cans.
- A local Girl Scout troop “adopted” this pilot program as part of their Bronze Award requirements. They agreed to assist in some of the components of the education outreach program. Their activities may include staffing tables along the trail as part of a kick-off event, to be taped on a local television show encouraging people to pick up dog waste, and assess the data collected from the project. They may provide additional assistance where needed.
- A Community Based Social Marketing component is planned to be implemented as part of the projects education outreach component. Activities proposed to assist with the CBSM may include a visual observation component, identification of experimental and control areas along the trail, a mail survey to residents to identify barriers, an assessment of survey responses, and recommendations for BMP implementation as a result of the survey assessment.

ACTIVITY IMPLEMENTATION FY 2008-09

Girl Scout Troop 1215 of Oceanside began assisting with tasks related to the education outreach component which were also part of an overall a Community Based Social Marketing (CBSM) project. The goal of the overall CBSM project is to decrease the amount of pet waste left along the San Luis Rey Recreation Trail and bike path. The four main tasks of the CBSM project include:

- Task1: Establish a baseline measure of dog waste in pilot and control areas. This is done to establish the overall effectiveness of the CBSM pet waste pilot project. This task began with a series of observations prior to project implementation to establish a baseline of prevalence of pet waste along the trail. The bike path was divided into one experimental and one control area.
- Task 2: Mail survey of residents to identify barriers. The use of a mail survey will identify knowledge, awareness, behavior, and primary barriers with respect to pet waste and pet waste pick-up among residents of the communities surrounding the trail.
- Task 3: Analysis and Recommendations. Based on results of the barrier survey program recommendations that incorporate the use of various CBSM components will be developed.
- Task 4: Program Implementation: Post-test Evaluation: In order to evaluate effectiveness of the CBSM pet waste project, repeating of the behavioral observations conducted at the start of the project are recommended. Observations should be conduced in the experimental section of the path (where program materials are implemented) as well as in one control section of the path (no materials).

During this reporting period Tasks 1 – 3 were completed and are detailed below.

Task1 - Establish a baseline measure of dog waste in pilot and control areas.

As part of the implementation of the CBSM project described above, Girl Scout Troop 1215, located in Oceanside, offered their assistance in implementing components of the CBSM project. Some tasks detailed below were part of the official CBSM project while others were tasks as part of their requirements to earn the Bronze Award which is the highest honor a Girl Scout Junior can achieve:

Skit during Troop meeting

During one of the regular Troop meetings, two of the girls conducted a skit demonstrating the importance of picking up after the dog. See Attachment A to this activity sheet for a picture of the two girls during their skit. This task assisted these two girls in earning their Bronze Award.

Intercept surveys along trail

This task was part of the CBSM project and was implemented by four girls from Troop 1215. The four girls, along with the Troop Leader and one other parent, conducted intercept surveys along the Trail on a Saturday morning, April 4, 2009. Two different intercept surveys were utilized – one for dog walkers and one for bike trial visitors. See Attachment A to this activity sheet for a copy of the two surveys.

The portion of the Trail targeted for this project was divided into three sections: A, B and C. See Attachment A to this activity sheet for a map of the trail and its identified sections. There is a

paved bike trial on the south side of the river and a dirt trail on the north side. The Girl Scout troop divided into two groups. One group walked the north side of the trail and one group walked the south side of the trial to conduct the surveys. Prior to conducting the intercept surveys the girls were given direction on how to properly approach people and conduct the surveys.

Troop members approached people on the trail and asked if they would answer four questions. If the trail user had a dog with them, the Girl Scout asked the questions on the Dog Walker Survey. If the trail user did not have a dog with them, the Girl Scout asked the questions on the Bike Trail Visitor Survey. The Girl Scouts also carried pet waste bags with them and offered them to trail visitors who had dogs if they needed them.

There were four objectives to the intercept surveys:

1. Determine if Trail visitors lived in Oceanside
2. Determine which street they lived on in Oceanside
3. Determine where they accessed the Trail
4. Determine if dog walkers had a pet waste bag in hand already.

As a result of question number two on the surveys, a map was created to identity which streets the trail visitors lived on that accessed the trail that day. Question number three provided information on the most common access points to the trail. These two questions helped target the addresses to which the mail survey would be sent and potentially prioritizing BMP installation locations. Because there are thousands of homes located in the vicinity of the trail it was not feasible to mail surveys to all households due to funding limitations. Thus 300 addresses were selected based on the streets and access points noted from the surveys. See Attachment A to this activity for a map denoting streets where trail visitors lived.

Existing Poop Pile Assessment

While the Girl Scouts were conducting the surveys, they also counted the number of poop piles on both on the north and south side trails. This helped identify the locations on the trail that had higher concentrations of poop piles. It was determined that the unpaved trail on the north side of the river had more poop piles than the south side. But, this may be due to the fact that City crews clean the paved bike trail on a monthly basis, whereas no cleaning services are conducted on the unpaved trail on the north side.

Tasks 2: Mail survey to identify barriers

To inform the public in the development of the campaign, a random sample of 300 Oceanside households located in neighborhoods near the Trail were mailed several pieces of information in April and May 2009. The goal of the survey was to identify the reasons why people do or do not pick up after their pets on the Trail and other public areas. The mail survey included the following items:

- Pre notification letter informing residents that they will soon be receiving a brief one-page survey (dated April 27, 2009).
- Cover letter requesting the resident to complete the enclosed survey (dated May 1, 2009).
- Copy of the survey titled “City of Oceanside Survey of Dog Waste in the Community”.
- Postcard reminding residents that a survey was sent the previous week and requesting them to complete and send the survey if not already done (dated May 7, 2009).

- Self-addressed stamped envelope for respondents to mail their completed survey.
- Follow-up letter to addresses from which survey not received as of yet (dated May 14, 2009).
- See attachment # for a copy of all the correspondence listed above.

Task 3: Analysis and Recommendations

Of the 300 surveys that were mailed 180 surveys were completed and mailed back. This is a 63% completion rate which is higher than the anticipated 50% completion rate. Of those residents who completed the survey, 70% had visited the Trail in the past and 48% reported that they had a dog in their household. See Attachment A to this activity sheet for complete survey results.

The results of the survey provided clear recommendations for the Pick Up Your Pet Waste Campaign at the Trail including the installation of additional trash cans and pet waste bag dispensers as well as modifying signage to emphasize pet owner responsibility. Ninety-three percent of survey respondents agreed that more pet waste dispensers are needed in the community. As a result, the City plans to move forward with installing additional signage, trash cans, and pet waste bag dispensers along the Trail.

ACTIVITY IMPLEMENTATION FY 2009-10

During this reporting period several tasks of the overall project were implemented.

Identification of pilot and control areas along trail

The trail was divided into experimental (pilot) and control sections. See Figure 1 below for a map of the trail that shows these trail sections. These different sections will be used to assess the effectiveness of the program.

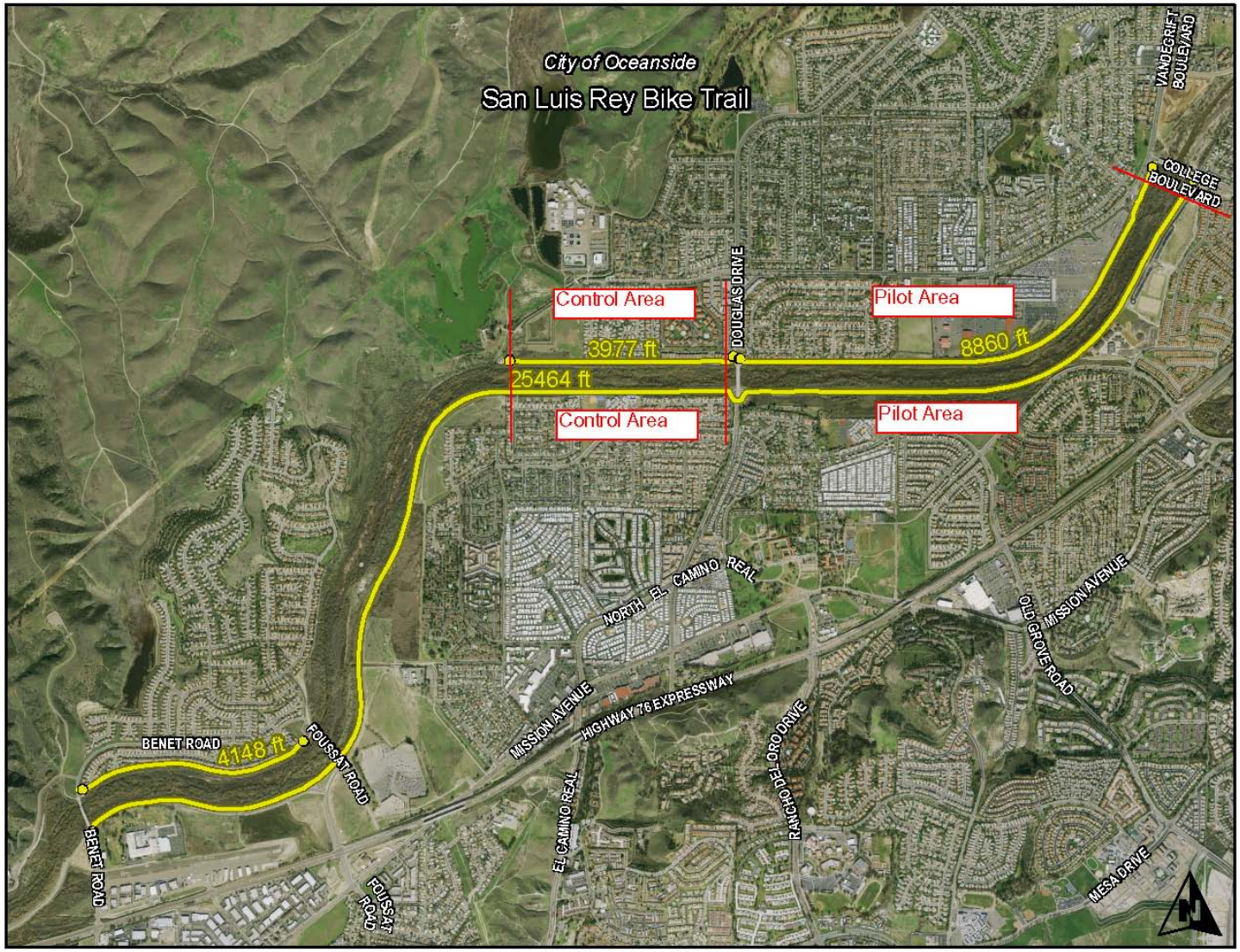

Figure 1: San Luis Rey Recreation Trail Control and Pilot Areas for Pet Waste Campaign

Pet Waste Bag Dispensers
Various pet waste bag dispensers were researched to determine the most appropriate to install in the trail based on aesthetics, vandalism potential and ease of use by the public and City staff to maintain and service. One type of dispenser was selected for installation. Four dispensers are scheduled to be installed during FY 2010-11 at the eastern and western ends of the pilot areas on both the north and south sides of the trail.

Signage
Signage to be installed at the pet waste bag dispenser stations was produced during this reporting period. With recommendations from Action Research, a community based social marketing company, a sign was created that was simple, easy to read and focused on the behavior that is the "right thing to do". It was also recommended that the sign focus on one activity, picking up pet waste, and to leave off any leash law messages. See Figure 2 below for the artwork created during this reporting period. Four of these signs are scheduled to be installed along with the pet waste bag dispensers during FY 2010-11.

Figure 2: Pet waste sign created for placement on Oceanside Recreation Trail

Pet Waste Removal
As part of the project evaluation it was recommended that all waste be removed from both the pilot and control sections of the trail just prior to installation of the pet waste bag dispenser stations. During this reporting period a contractor was hired to count the number of piles in each section of the trail, remove accumulated pet waste from the trail, and obtain an average weight of the waste piles. This task occurred on June 23 and 24, 2010.

Clean Water Program Newsletter Article
During this reporting period an article about the Pick Up Your Pet Waste Campaign was published in the Oceanside Clean Water Program Newsletter. This newsletter was mailed to over 40,000 households. See Attachment A to this activity for a copy of this newsletter that includes this article.

Video presentation on Oceanside Update (KOCT)
The Oceanside Update is produced by Oceanside's local television station, KOCT, and is a thirty minute program providing information to Oceanside citizens about upcoming community events. Speakers are allowed approximately 3 minutes to provide information specific to their division, department or program. Oceanside's Clean Water Program regularly tapes for this program about beach and river cleanup vents, other environmental programs and updates on Clean Water Program projects.

In July 2009 three members of Girl Scout Troop 1215, a local Oceanside troop, were videotaped for the Oceanside Update program providing information about the Pick Up Your Pet Waste campaign along the San Luis Rey Recreation trail. This video was shown during the month of August 2009. The half hour Oceanside Update is shown twice per day. See Attachment B to this activity in DVD format for a copy of the Oceanside update program section showing the Girl Scout taping (Cyberlink Power DVD required to view).

ACTIVITY IMPLEMENTATION FY 2010-11
During this reporting period the City installed four pet waste bag dispensers (Mutt Mitt brand) and four additional trash cans at trail head access points. Modified signage was also installed at the dispenser stations to emphasize pet owner responsibility. See Figure 3 for a photo of one of the installed pet waste bag dispenser stations.

Figure 3. Pet waste bag dispenser station installed along San Luis Rey Recreation Trail.

One week prior to installation and one week after installation a private contractor was hired to count, pick up and weigh pet waste piles on both the north and south sides of the Trail. The south side of the Trail which is paved and heavily used by bicycle riders, walkers and runners, did not have as much waste as the north side of the Trail. This may be due to the fact that the north Trail is not as heavily used as the south trail and the peer pressure to pick after their pets because someone is watching them is not as prevalent as on the south side Trail. Figure 4 provides a chart of the number of pet waste piles found on both the north and south side Trails prior to installation and after installation of the dispensers and trash cans. The south side Trail does not show much change in the number of piles. The north side Trail does show a reduction in the piles. But there is still a significant amount of pet waste left along both sides of the Trail even with resources

provided for pickup and proper disposal. Additional assessment and outreach is needed to address the ongoing problem of pet waste left along these Trails.

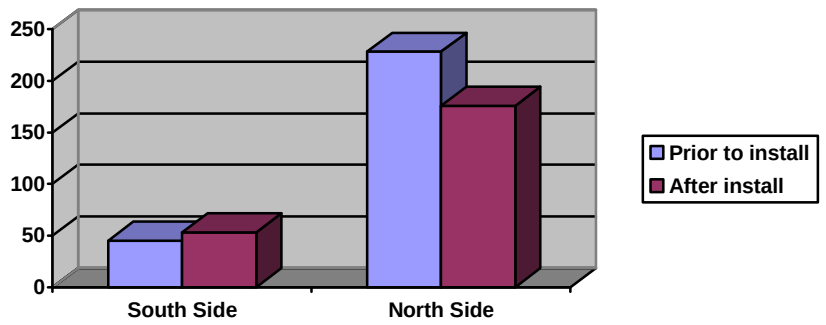

Figure 4. Number of pet waste piles found along Trail prior to and after installation of pet waste bag dispenser stations.

One week after installation of the dispensers and trash cans, a contractor was used to assess the specific types of bags being used to dispose of pet waste. The contractor retrieved all of the bags that had pet waste inside from each of the four trash cans. The bags were then categorized to determine the types of bags used to pickup and dispose of pet waste. The majority of the bags used were from the new dispensers. Other bag types used were plastic grocery bags, newspaper bags, and other miscellaneous bags. Figure 5 provides a graph of the types of bags used one week after installation of the dispenser stations.

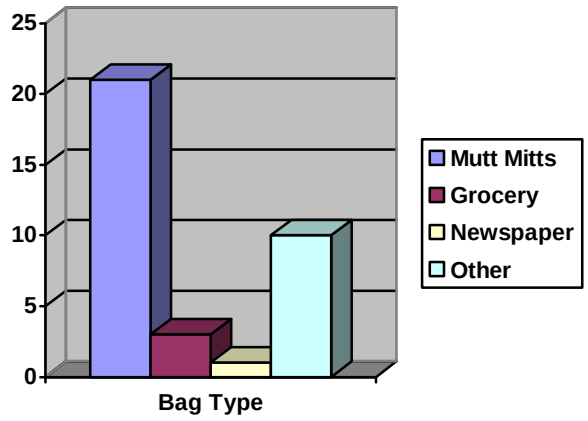

Figure 5. Types of bags used along Trail after dispenser station installation.

Ongoing maintenance and stocking of bags is conducted by public works staff throughout the year. During this reporting period approximately 4000 pet waste bags were used from these four dispensers. The number of dispenser bags found in the trash can and the number of bags being replaced in the dispensers demonstrates that this resource is being used by the public. See Attachment 1 for a copy of the final report for the Pick up your Pet Waste Campaign.

Tasks planned for FY 10-11

This activity will be further assessed during the 2011-12 reporting period.

TMDL APPLICABILITY

On February 10, 2010 the San Diego Water Quality Control Board (San Diego Water Board) adopted Resolution No. R9-2010-0001 amending the Basin Plan to incorporate the revised TMDLs for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region. This TMDL Basin Plan amendment was subsequently approved by the State Water Resources Control Board on December 14, 2010, the Office of Administrative Law (OAL) on April 4, 2011, and the United States Environmental Protection Agency (USEPA) on June 22, 2011. Under state law, this TMDL Basin Plan Amendment became fully effective on April 4, 2011, the date of OAL approval.

This activity will assist TMDL listed agencies in the SLR Watershed to address the bacteria problem at the Pacific Ocean Shoreline at the mouth of the San Luis Rey River which is listed as impaired for indicator bacteria on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments.

TIME SCHEDULE FOR IMPLEMENTATION

Program planning for this activity was completed during the 2007-08 reporting period, with components of the project implemented during fiscal years 2008-09, 2009-10, and 2010-11. Based on the assessment results, pet waste bag dispensers with positive signage were installed along the trail in FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- Girl Scout Troop 1215 (FY 2009-10)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a priority water quality problem in the San Luis Rey River Watershed. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

FY 2009-10

During FY 2009-10 a survey was mailed to households near the trial. Of the 300 surveys that were mailed 63% completed surveys were returned. This demonstrated that the survey protocols were very effective in getting feedback from residents about pet waste in their community. See the FY 2008-09 SLR WURMP Annual Report for the assessment of the survey.

FY 2010-11

During FY 2010-11 the following assessment tasks were conducted:

- Baseline loads of pet waste were tabulated one week prior to dispenser installation and one week after dispenser installation. See the Activity Implementation FY 2010-11 portion of this activity sheet for more details.
- During this reporting period approximately 4000 pet waste bags were used from these four dispensers Demonstrating that this resource is being used by the public.
- The type of dispensers and signs installed in the experimental area appear to be effective for the target area.

FY 2011-12

During FY 2011-12 this activity will be further assessed for any additional problems that may need to be addressed.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID NUMBER: **SLR-005**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained eleven dispenser stations at three parks within the San Luis Rey River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2010-11. During this reporting period the County of San Diego continued to maintain eleven dispenser stations at three parks in the San Luis Rey River Watershed. The parks and the number of dispensers include:

- Live Oak Park (3 dispensers)
- Palomar Park (1 dispenser)
- Guajome Regional Park (7 dispensers)

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey River Watershed. Parks, and pet waste in particular, are potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Table 1. Effectiveness Assessment

Facility Name	FY 10-11		
	# of Stations	# of Bags Used	Dog Waste Removed (pounds)
Live Oak Park	3	8,075	1,615
Palomar Park	1	3,230	646
Guajome Regional Park	7	22,610	4,522
Total	**11**	**33,915**	**6,783**

During the FY 2010-11 reporting period the County maintained 11 stations among three County Parks within the San Luis Rey River Watershed. These stations distributed approximately 33,915 bags, preventing an estimated 6,783 pounds. of pet waste from entering the watershed. Bacteria load reduction estimates are based on the number of bags distributed and the following assumptions obtained from a 2004 County of San Diego study conducted at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 pounds
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Monitoring Activity

TITLE: **Guajome Lake Water Quality Monitoring Program**
ID NUMBER: **SLR-008**

ACTIVITY DESCRIPTION

The County of San Diego is implementing a monitoring program to assess the contribution of urban runoff (specifically nutrients) to the eutrophication of Guajome Lake. On January 7, 2005, a joint reconnaissance of the Guajome Lake area was conducted with the City of Oceanside, the County Department of Agriculture, Weights, & Measures (AWM), the County Department of Parks and Recreation (DPR), and the County Department of Public Works (DPW). All drainages into and out of Guajome Lake were characterized and it was concluded that only the flows from the northern subbasin enter the lake. From February through April 2005, seven locations in the northern subbasin were monitored and two of those were selected as long-term monitoring sites. They included the East Channel Creek at Hutchinson Street and Hidden Lake Lane (GUL02) and the East Channel Creek at Hitching Post Drive (GUL07). GUL02 is located in the middle of the subbasin and is co-located with the County of San Diego's dry weather monitoring site SLR04. GUL07 is located in the East Channel Creek and represents the bottom of the drainage. Preliminary investigations into land uses have identified potential sources to include residential, commercial nurseries, commercial horse facilities, and residential horse facilities.

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting period, reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07).

FY 2010-11 ACTIVITY IMPLEMENTATION

During the FY 2010-11 reporting period, the County of San Diego continued monitoring activities at the two long-term sites at Guajome Lake (GUL02 and GUL07). For additional information, refer to Attachment A of this Watershed Activity Summary Sheet.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Monthly sampling of long-term stations - Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The collective watershed strategy identifies nutrients as a high priority water quality problem in the San Luis Rey WMA. This nutrient monitoring program is therefore consistent with the strategy.

EFFECTIVENESS ASSESSMENT

During the FY 2010-11 reporting period, the County of San Diego conducted sampling at the two long-term locations in Guajome Lake (Level 1 Outcome). For additional information, refer to Attachment A of this Watershed Activity Summary Sheet.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: Nutrient Source Identification and Abatement: Guajome Lake
ID #: SLR-009

ACTIVITY DESCRIPTION

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) continue to collaborate on a project to identify and abate the source(s) of elevated nutrient levels entering Guajome Lake. Nitrate concentrations have been observed to exceed dry weather action levels at the County's SLR 04 dry weather monitoring station (Hutchison Street at Hidden Lake Lane) since 2002. This station is upstream of Guajome Lake. Guajome Lake is listed as impaired for eutrophication on the 2008 Clean Water Act 303(d) List of Water Quality Limited Segments. Phosphorous is another nutrient potentially contributing to the eutrophication problem.

FY 2007-08 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2007-08:

- Performed frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at field site SLR 04.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Compiled an inventory and map of potential nitrate sources in the SLR 04 drainage area. It was determined that there are eight nurseries within the unincorporated area tributary to the SLR 04 monitoring station.
- Compiled baseline information on BMP implementation and compliance history for nurseries within the SLR 04 drainage area. Of the eight nurseries in this drainage area, three have been inspected by the County AWM Department. Two of the three inspected nurseries had one or more violations. Most violations were related to a failure to maintain adequate training records.

FY 2008-09 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2008-09:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on four dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Six nurseries in the SLR 04 drainage area were inspected during FY 2008-09. One cactus/succulent nursery was inspected in late FY 2007-08, but was not inspected in FY 2008-09 because of good compliance history and low threat classification. One nursery went out of business. One additional nursery was identified and inspected in September 2009.
- Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries, the operators were supplied with information and tools to assess and manage fertilizer use at

their site. The UC Cooperative Extension Service document Runoff & Nonpoint Source Pollution Self-Assessment was provided to the nurseries. The Rainbow Creek Nutrient Reduction Management Plan is another source of valuable information for nitrate pollution prevention that will be referenced as a tool for the operators.

- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2008-09, excluding paperwork violations, only one nursery had best management practice non-compliance; see Table 3. No direct sources of nitrates from the nurseries were identified.

FY 2009-10 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2009-10:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on three dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. The contributing area was expanded to include additional upstream sources and 25 nurseries in the expanded SLR 04 drainage area were inspected during FY 2009-10.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.
- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2009-10, excluding paperwork violations, four nurseries had best management practice non-compliances (See Table 3). No direct sources of nitrates from the nurseries were identified.

FY 2010-11 ACTIVITY IMPLEMENTATION

The following tasks were completed during FY 2010-11:

- Performed water quality screenings for nitrate, dissolved oxygen, and other parameters at SLR 04. Field water quality activities were conducted on three dates throughout the year.
- Performed additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conducted targeted inspections to abate potential sources of nitrates. Twelve nurseries in the SLR 04 area were inspected during FY 2010-11. During FY 2009-10, the project area was expanded to include adjacent nurseries. These properties were not included in the FY 2010-11 program as it was determined that inspection results could not be coordinated with monitoring due to distance from the sampling locations. Three nurseries in the area went out of business.
- When appropriate, educational materials were supplied to operators. Education to nursery operations in the activity areas focused on nitrate pollution, nutrient assessment, and fertilizer management. During inspections at identified nurseries in these areas, the operators were supplied with information and tools to assess and manage fertilizer use at their site.

- Notices of Violation were issued and follow up inspections were conducted whenever non-compliance was found at the nurseries. During FY 2010-11, excluding paperwork violations, none of the nurseries had best management practice non-compliances (See Table 3). No direct sources of nitrates from the nurseries were identified.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Table 1. Implementation Schedule

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	Status
Compile (update) an inventory and map of potential nutrient sources in the SLR 04 drainage area.	X	X	X	X	X	Complete
Compile (update) baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	X	X	X	X	X	Complete
Perform water quality screenings for nutrients and other parameters at SLR 04	X	X	X	X	X	Ongoing
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nutrient levels.	X	X	X	X	X	Ongoing
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing
Conduct targeted education activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing
Conduct targeted enforcement activities as necessary to abate identified sources of nutrients.	X	X	X	X	X	Ongoing
Identify field grown agricultural businesses in drainage area						TBD

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the collective watershed strategy in that nutrients are identified as a high priority water quality problem in the Mission HSA (HSA 903.11) and this activity is aimed at identifying and abating nutrient sources in the watershed.

EFFECTIVENESS ASSESSMENT

Table 2. Effectiveness Assessment

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nutrient sources in the SLR 04 drainage area.	1	Completion	Yes
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the SLR 04 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes
Perform frequent water quality screenings for nutrient and other parameters at SLR 04	1	4 field screenings / yr at SLR 04	75% complete, 3 screenings complete
	6	Reduction in exceedances of dry weather action level for nitrates measured at SLR 04 by 2012	To be determined
Conduct targeted inspection activities as necessary to abate identified sources of nutrients.	1	Inspection of 100% of nurseries in the SLR 04 drainage area by June 2009	Yes
	3	Reduction in nursery BMP violations observed during nursery inspections in the SLR 04 drainage area by 2010	Of those nurseries with multiple scores, BMP compliance improved or stayed the same at all nurseries except two in FY 2010-11.
Conduct targeted education activities as necessary to abate identified sources of nutrients	2	Improvement in Stormwater Knowledge Assessments (SKA) scores administered to nursery staff in the SLR 04 drainage area by 2012	Of those nurseries with multiple scores, five decreased in SKA score. All other nurseries have either improved or remained the same.

Table 3. Updated Inventory

Facility Name	Inspection Date	# of BMP* Violations	SKA Score	Reduced # of BMP Violations Over Time	Improved SKA score Over Time	TTWQ
Aloha Tropicals	4/6/2011	0	8	None	Yes	Medium
	9/22/2009	0	6			
Booman Floral #2	4/4/2011	0	9	Yes	Same	Medium
	7/6/2009	0	9			
	1/8/2007	0	N/A			
	10/6/2004	0	N/A			
	4/8/2004	1	N/A			
Booman Floral #3	4/4/2011	0	9	None	Same	Medium
	7/6/2009	0	9			
	1/8/2007	0	N/A			
Busy Beaver Nursery	4/6/2011	0	5	Yes	N/A	Medium
	6/20/2007	0	N/A			
	3/8/2007	5	N/A			
	12/29/2005	5	N/A			
C & J Cactus Nursery #1	8/20/2010	0	8	Yes	No	Medium
	4/18/2008	0	10			
	9/5/2006	1	N/A			
Exotica Rare Fruit	3/22/2011	0	7	None	Same	Medium
	6/10/2010	0	7			
	4/23/2007	0	N/A			
	1/6/2006	0	N/A			
Joanie's Greenhouse	3/29/2011	0	8	Yes	Yes	Low
	9/11/2009	0	6			
	9/3/2008	0	8			
	6/12/2008	1	7			
	10/14/2009	0	8			
Leo Cruz Flowers	4/21/2011	0	8	N/A	N/A	Medium

Pacific Verde Nursery Inc	3/22/2011	0	6		Yes	Yes	Low
	7/13/2009	0	5				
	5/27/2009	1	5				
	1/15/2008	1	N/A				
Plants For Less (Ana E. Ruiz Perez)	3/28/2011	0	6		Yes	Yes	Medium
	6/1/2010	0	5				
	2/23/2009	2	2				
Sphaeroid Institute	3/29/2011	0	8		None	No	Medium
	6/4/2010	0	10				
	8/13/2008	0	7				
Weeks Xeroic Succulent Gardens	3/30/2011	0	9		None	Yes	Medium
	9/25/2009	0	5				

*Does not include paperwork violations.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Monitoring Activity

TITLE: **Lower San Luis Rey Source Identification Project**
ID NUMBER: **SLR-010**

ACTIVITY IMPLEMENTATION

The Lower San Luis Rey River Bacterial Source Identification Project (Project) was designed to attain the following goals:

- Assess what sources and activities have contributed most to the bacterial impairment of the SLR River mouth and from where those sources and activities may have originated.
- Analyze potential bacteria source elimination or reduction practices targeted at the identified source and activities.
- Contribute to future achievement of the Bacteria Total Maximum Daily Load (TMDL) objectives by identifying potential management measures (MMs) and follow-up studies to target sources and activities more effectively.

ACTIVITY IMPLEMENTATION FY 2007-08

Implementation of this project began in FY 2007-08 with the City being awarded a Proposition 50 Clean Beaches Initiative Grant from the State Water Resources Control Board (SWRCB) to identify the potential sources of bacteria in the Lower San Luis Rey River. The City then sought out a diverse group of experts in bacteria source tracking, Copermittees, and non-profit groups to create a Technical Advisory Committee (TAC) to guide the project. The first TAC meeting was held on November 1, 2007 and included representatives from the Cities of Oceanside and Vista, the County's Department of Environmental Health and Watershed Protection Program, the Regional Water Quality Control Board (RWQCB), and CoastKeeper.

A Request for Proposals (RFP) was sent out on November 8, 2007 to solicit proposals from interested and experienced consultants. Proposals were due to the City by December 4th and a subcommittee of the TAC reviewed the proposals on December 7, 2007. MACTEC Engineering and Consulting, Inc. (MACTEC) was awarded the contract. Oceanside City Council approved the contract with MACTEC on February 20, 2008.

A TAC meeting was held on February 4, 2008 where the MACTEC project team presented the proposed project approach. The approach was discussed and the TAC made recommendations to be included in the Monitoring Plan and QAPP. The Monitoring Plan and QAPP were submitted to the SWRCB for approval on April 28, 2008. The SWRCB and the Moss Landing QA Research Group reviewed the Monitoring Plan and QAPP and the final version of the documents were approved by the SWRCB on June 19, 2008.

The first dry season monitoring event took place on June 18 and 19, 2008. Dr. Rachel Noble traveled to San Diego to prepare for the first event with the project team and participate in both days of monitoring. The project team collected bacteria samples and flow measurements at six monitoring locations in the Lower San Luis Rey River. The bacteria samples were analyzed for fecal indicator bacteria and the remaining sample volume was filtered and frozen for molecular

analysis. The river mouth was not sampled, as planned, due to construction of the Pacific Street Bridge.

ACTIVITY IMPLEMENTATION FY 2008-09

The second dry season event took place in FY 2008-09 on July 23 and 24, 2008. The project team collected bacteria samples and flow measurements at five of six monitoring locations in the Lower San Luis Rey River. As part of the Visual Observation Program, observations were conducted July 23 and 24, 2008 within the Lower San Luis Rey River and upstream in the drainage basin to identify possible sources of bacteria. The river mouth was again not sampled, due to construction of the Pacific Street Bridge.

Based on the fecal indicator bacteria (FIB) results of the first two dry weather monitoring events, four of six project sampling sites were selected for additional genetic molecular analysis. Two were river sites and two were tributaries. There were no FIB exceedances of standards during the July 2008 event and, therefore, none of those sites were chosen for additional analysis per the QAPP and Monitoring Plan.

On December 19, 2008, the SWRCB issued a Budget Letter that suspended all projects including the Lower San Luis Rey Source Identification Project. The work completed after this notice was primarily to assess the status of various elements of the project, including laboratory work and the effect of the stop work notice on genetic analysis. The City of Oceanside requested an assessment from MACTEC of the molecular sample holding times for samples not yet analyzed and a summary from our contractors of what and where data that had been analyzed is located. Unfortunately, samples for two of the three types of genetic analyses had expired and were therefore no longer available for use to the program. Samples were analyzed for *Enterovirus A* by Dr. Jed Furman's laboratory at the University of Southern California. *Enterovirus A* was not detected in any of the samples.

The monthly joint monitoring program conducted by the City of Oceanside and the County of San Diego continued as modified for the Grant project until June of 2009.

ACTIVITY IMPLEMENTATION FY 2009-10

Beginning in July 2009, the City brought the laboratory analysis in-house to the San Luis Rey Wastewater Treatment Plan Laboratory. The same field procedures were followed, but the reporting limits changed to above SWAMP recommendations. This change is not expected to effect results, as bacteria levels are usually at or above these reporting limits.

On December 17, 2009, the State Water Resources Control Board gave the City of Oceanside notice that the Lower San Luis Rey Source Identification Project grant had been selected to restart. With an original grant end date of March 31, 2010, the City of Oceanside, on January 4, 2010, submitted a Request for Time Extension in order to complete the remaining two-thirds of the field and laboratory work required.

While the project team was awaiting the Grant Amendment, the Technical Advisory Committee (TAC) met to reassess the status of the project resources and decide on amendments to the project schedule and methods. The TAC agreed that to make the most of the remaining

resources, the Project should focus on identifying the presence or absence of human sources where human health risks were highest, at the river mouth. Therefore, river mouth specific sampling was prioritized, although additional sampling in the main stem and tributaries was continued. In addition, a weight of evidence approach to determining the presence of human bacteria sources was used at all sites, in addition to a gull marker utilized at the river mouth.

On April 14, 2010, the City of Oceanside received the executed amendment to the Grant Agreement and work began immediately to restart the project.

The third dry season monitoring event in the Lower San Luis Rey River/River Mouth was implemented on May 18, 19, and 20, 2010. On May 18, 2010, The City of Oceanside and the County of San Diego conducted the joint monitoring at 17 locations in Lower San Luis Rey River and the grant project team collected composite water samples and sediment samples at five locations in the River Mouth. In addition, the City of Oceanside collected additional samples at each Watershed monitoring location for potential further genetic analysis on upstream sites within the City boundary. On May 19 and 20, 2010, the grant project team collected composite water samples and sediment samples at five locations in the River Mouth and composite water samples at two river locations.

Although the FIB results for the river mouth samples were all below AB411 standards a total of eleven water samples, ten river samples and one river mouth sample, were selected for genetic testing including Bacteriodes and Human Enteroviruses based on steady state standards. In addition, ten paired water and sediment samples from four sites were selected for bacterial community fingerprinting which will compare the bacteria community of the water samples to the bacterial community of the sediment samples.

The Visual Observations Program was implemented on the first day of sampling, May 18, 2010. Two teams of two people, walked a total of four locations adjacent to the river mouth. Teams were looking for urban runoff and wildlife that could be affecting the river mouth. Observations that were recorded included human behavior, maintenance procedures, and wildlife distribution.

ACTIVITY IMPLEMENTATION FY 2010-11

The fourth and final dry season monitoring event was implemented on August 3 and 4, 2010. The grant project team collected composite water samples and paired sediment samples at four locations in the river mouth (eight water and eight sediment samples total). Four of eight of the water samples were selected for additional genetic testing based on the second tier selection criteria. The paired water and sediment samples were selected for bacterial community fingerprinting to compare the two matrices. The Visual Observations Program was implemented on both days by two teams of two in a total of four locations adjacent to the river mouth.

Table 1 provides a summary of the wet season monitoring including base line, storm, and base flow events.

Table 1. Summary of Wet Season Monitoring in FY 2010-11.

Event	Date(s)	Total Rainfall	No. of Sites Exceeding A Minimum of One Single-Sample AB411 Criteria	Visual Observation Date
Baseline Event	12/9/11, 12/15/11	(Cumulative rainfall since 10/1/2010 of 5.04 inches)	4 of 8	12/9/11
Storm Event 1	1/3/11, 1/4/11	1.11 inches	18 of 18	-
Base Flow Event 1	1/20/11	N/A	7 of 9	-
Storm Event 2	2/17/11, 2/18/11	0.35 inches	14 of 18	2/14/11
Base Flow Event 2	2/24/11	N/A	9 of 9	2/24/11

After monitoring was completed, the team continued to compile FIB results, flow data, and visual observation data and began data assessment and analysis for the Project Report during the remaining portion of the fiscal year. With TAC review and comments, the Draft Project Report was submitted to the State Water Board on July 29, 2011 and the Final Project Report submitted on September 1, 2011. In response to additional State Board comments, an Addendum to the Final Report was submitted on September 12, 2011.

TMDL APPLICABILITY

This activity is planned for future implementation of the recently adopted TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region.

TIME SCHEDULE FOR IMPLEMENTATION

Due to the stop work notice issued in December of 2008, the schedule for implementation/completion was amended. In addition, an additional extension was requested and granted in February 2011 due to dry conditions within the main stem and tributaries. The Final Project Report is due to the SWRCB on September 1, 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- MACTEC Engineering and Consulting, Inc.
- Technical Advisory Committee includes representatives from:
- RWQCB
- Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Because the sources of bacterial contamination in the Lower San Luis Rey River are not adequately characterized, characterization in the form of a source identification study is consistence with the collective watershed strategy. Once the sources have been better characterized, the City will move forward with developing and implementing BMPs to reduce and eliminate the bacterial source to the maximum extent practicable.

EFFECTIVENESS ASSESSMENT

The original goal of this project was to the identification of bacterial sources and activities contributing to water quality impairments in addition to the development of a list of potential MMs and future studies for these sources.

The Stop Work Notice had two effects on this Project and the original goals and outcomes. The first is that the samples from the first and second dry weather events that were frozen and awaiting further genetic analysis exceeded holding times and were no longer viable for processing. Therefore, resources needed to be adjusted to make up for the lost samples. Second, a year had passed and in that time new genetic methods were available for use; specifically human source markers. This created an opportunity and need to adjust the projected outcome. The TAC agreed that to make the most of the remaining resources, the Project should focus on identifying the presence or absence of human sources where human health risks were highest, at the river mouth. Therefore, river mouth specific sampling was prioritized, although additional sampling in the main stem and tributaries was continued. In addition, a weight of evidence approach to determining the presence of human bacteria sources was used at all sites, in addition to a gull marker utilized at the river mouth.

The results of the Project did point to both human and avian sources present during wet and dry weather at the river mouth and human sources (avian sources were not tested) in main stem and tributary locations of the Lower San Luis Rey River. Other sources are likely, but the quantification or division of percentage of these sources is not available from the Project. However, the results indicate and steer recommendations for the City and other Watershed stakeholders to prioritize future management action and studies on activities that may result in human bacteria, such as sewer infrastructure, on-site wastewater systems, and homeless encampments.

It is anticipated that the implementation of BMPs, which will be separate, future activities, will lead to Level 4, 5, and 6 effectiveness assessment outcomes.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Land Acquisitions**
ID NUMBER: **SLR-012**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plans have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego purchased 142.9 acres of property located in the San Luis Rey River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY 2008-09 reporting period the County of San Diego purchased 77.73 acres of property located in the San Luis Rey River Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

During the FY 2009-10 reporting period the County of San Diego purchased 167.1 acres of property located in the San Luis Rey River Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

During the FY 2010-11 reporting period the County of San Diego purchased 33.85 acres of property located in the San Luis Rey River Watershed. This year's acquisitions are shown in the Table 1 below.

Table 1. SLR Lands Acquired

Property	Acres	Date	Watershed ID	APN(s)
Hellhole Canyon Preserve - Casparian	33.85	11/05/2010	903.22	191-060-21
TOTAL	**33.85**			

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollution loads in need of reduction.

EFFECTIVENESS ASSESSMENT

During the FY 2010-11 reporting period the County of San Diego acquired 33.85 acres in the San Luis Rey River watershed (Level 1 Outcome). Over the past four fiscal periods the County has acquired a total of 421.61 acres in the San Luis Rey River watershed (Level 1 Outcome). These land acquisitions will provide a significant water quality benefit, preclude development from occurring, and allow land to retain its natural perviousness.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Water Quality Activity

TITLE: **Harbor Boat Wash Coin Operated Water Dispenser**
ID NUMBER: **SLR-014**

ACTIVITY DESCRIPTION
Oceanside Harbor offers the use of a boat launch ramp free of charge, as well as free use of a boat wash area and a recreation vehicle (RV) sewage dump station. Runoff from the boat wash area drains through the storm drain system and flows to the harbor a short distance away. This storm drain has had historical bacterial exceedances possibly due to improper use of the dump station and/or regrowth in the storm drain itself. Several bacteria reduction pilot projects have been implemented in the past four years to reduce not only bacteria, but also oil and grease and sediment from flowing to the harbor. During the most recent pilot project, the installation and operation of a modular wetland to treat boat wash runoff, excessive use of the free water provided at the boat wash was observed. Summer, high-use flows are greater than what the installed BMP can handle to effectively treat the runoff.

To address water quality and water conservation needs, the City of Oceanside's Department of Harbor and Beaches investigated and is preparing to install coin-operated machines that dispense water for use at the wash area. It is anticipated that this will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted. This will, in turn, reduce the amount of water flowing into the harbor which is expected to reduce the bacterial loading at this site.

ACTIVITY IMPLEMENTATION FY 2009-10
During the 2009-10 fiscal year, the Clean Water Program and Harbor Administration staff researched vendor alternatives for coin-operated water dispensers. A vendor with previous work in California state parks was identified. The switch from free water to a pay-per use system must be approved by the Harbor and Beaches Advisory Committee and the City Council. The plan to install coin-operated water dispensers was presented to the Oceanside Harbor and Beaches Advisory Committee in May 2010. The decision was postponed.

ACTIVITY IMPLEMENTATION FY 2010-11
In July and August of 2010, the infrastructure for the coin-operated system was installed with the exception of the coin boxes. The decision to approve the increased fees, including the pay-per-use boat wash water, was approved by the Harbor and Beaches Advisory Committee in January 2011 and later approved by City Council. The coin boxes were installed and use of the system will begin July 2011.

TMDL APPLICABILITY
N/A

TIME SCHEDULE FOR IMPLEMENTATION
In July and August of 2010, the infrastructure for the coin-operated system was installed. In Spring of 2011, the coin boxes were installed and their operation was approved by City Council.

Operation of the system will begin July 2011. The proposed cost of use is $0.25 for five minutes of water.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The source of the bacteria has been clearly characterized. The City is moving forward with implementing pilot programs to determine the BMP, or combination of BMPs, that will be most effective in reducing bacterial exceedances from this outfall.

EFFECTIVENESS MEASUREMENTS

It is anticipated that the installation of coin-operated water dispensers at the Harbor boat wash will encourage users to use the water they are paying for more wisely and reduce the amount of water wasted, resulting in a Level 3 Effectiveness Assessment outcome, behavioral changes. This will, in turn, reduce the amount of water flowing into the Harbor which is expected to reduce the bacterial loading at this site, resulting in a Level 4 Effectiveness Assessment outcome, load reductions.

To track the amount of water being used at the Harbor boat wash area, the water meter for the spigots has been isolated. This will allow a comparison for water use before and after installation. The baseline water use for this meter (#68857273) is provided in Table 1. Water quality monitoring at this site will continue under the Coastal Storm Drain Monitoring Program at the boat wash outfall under the program's requirements. Because high use flows bypass the treatment BMP and are isolated events, exact load reductions will not likely be available. However, depending on the results of the water use, loading estimates may be extrapolated.

Table 1. FY 2009-10 Monthly Water Consumption for Harbor Boat Wash Area.

Month - Year	Monthly Water Consumption (hcf)
Jul-10	82
Aug-10	103
Sep-10	96
Oct-10	91
Nov-10	61
Dec-10	62
Jan-11	43
Feb-11	64
Mar-11	45
Apr-11	49
May-11	65
Jun-11	73

Hundred cubic feet (hcf) is equal to approximately 748 gallons.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Horse Property Outreach in the San Luis Rey River Watershed**[1]

ID NUMBER: **SLR-015**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many properties with commercial or residential horse operations. Horse operations are a potential source of nutrients, bacteria, and sediment. To reduce the likelihood of impacts on beneficial uses in the San Luis Rey Watershed, the County of San Diego and the City of Oceanside will implement a program to educate horse owners and ranch operators regarding proper manure and corral management through focused outreach and implementation of best management practices (BMPs). The program will consist of a variety of activities, including staffing booths at public outreach events, conducting workshops targeting horse owners, and establishing a pilot program that encourages and facilitates BMP implementation on horse properties through BMP demonstrations and peer mentoring.

Workshops will focus on various topics of relevance to owners and operators of horse facilities, including manure composting and management, and property and corral management. Educational materials, including "how-to" information, instructions on the construction of manure composting bins, and facility checklists to assess current practices will be developed and distributed at the workshops. Workshops may also include demonstration sites, where attendees can observe BMPs in action.

The County of San Diego and City of Oceanside will also conduct a pilot program that seeks to convene a group of peer mentors committed to improving horse property management through the implementation of BMPs and horse owner outreach. If this program is successful, it may be expanded to other communities in the region that have significant horse populations.

ACTIVITY IMPLEMENTATION FY 2008-09

- County staff initiated creation of a booth display to share information about proper manure management practices and photographic examples of successful implementation of BMPs. This display will accompany staff at outreach events and presentations.
- County staff initiated creation of a binder of information and resources pertaining to effective manure management practices and photographic examples of BMPs. This folder is displayed at events and outreach presentations.
- County and Oceanside staff initiated contact with interested parties to inquire about participation in the peer mentoring component of this activity and to arrange a coordination meeting.
- County and Oceanside staff developed a timeline and activities for implementation during FY 2009-10.

[1] Activity was previously named *SLR-015: Community-based Social Marketing Residential Horse Property Pilot Project*

ACTIVITY IMPLEMENTATION FY 2009-10

During FY 2009-10, The County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District (MRCD), conducted workshops targeting equestrians throughout the County unincorporated areas. Training provided in these workshops covered a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources

A workshop was conducted in the Fallbrook area on February 3, 2010. Twenty-two participants attended the workshop, which included presentation of BMPs, a manure composting demonstration, and corral management practices. Assessment was conducted in the form of pre- and post-workshop surveys.

County staff also hosted equestrian themed public outreach and education booths at the following events:

1. Bonsall County Festival (10/10/2009)
2. Valley Center Rodeo Days (5/28/2010-5/29/2010)

Staff developed educational materials and outreach tools for use at equestrian event presentations and booth displays. These included:

1. Two “life-size” horse cut outs
2. Development of an Equestrian Resource Sheet
3. Manure composting information materials
4. Coloring sheet
5. Additional materials focused on BMPs for manure management

In order to promote knowledge, awareness, and proper manure management among horse owners in the unincorporated areas, the County contracted Action Research, Inc. to conduct community based social marketing (CBSM) research to: 1) identify the specific manure management actions currently taken by horse owners, and 2) identify the barriers and benefits to proper manure management. Research included in-person interviews with horse owners in the unincorporated communities of Lakeside and Ramona. Intercept interviews were conducted at four retail outlets (feed stores) to reach a diverse set of horse owners. Interviews took place between June 16 and June 27, 2010. A total of 96 horse owners were interviewed. The results of these interviews were summarized in a final report that contains key findings and recommendations for future outreach and program development (Attachment A).

ACTIVITY IMPLEMENTATION FY 2010-11

During FY 2010-11, the County of San Diego, in coordination with the Solana Center for Environmental Innovation (Solana Center) and the Mission Resource Conservation District

(MRCD), conducted workshops targeting equestrians to provide training on a variety of topics including:

- Manure management and composting basics
- Prevention of odors and flies
- Benefits of composting
- Application of compost to gardens and landscapes
- Land use regulations
- Protection of local water sources.

Workshops during FY 2010-11 were held in Bonsall and Rainbow; dates and the number of attendees are listed in Table 1.

Table 1. Equestrian Workshops in the San Luis Rey Watershed Area

Location	Presentation Date	No. of Attendees	Primary Watershed Addressed
Bonsall	6/25/11	22	Santa Margarita, San Luis Rey
Rainbow	6/18/11	14	Santa Margarita, San Luis Rey
TOTAL		**36**	

County staff also hosted equestrian themed public outreach and education booths at the following equestrian related events during FY 2010-11:

1. Horse Heritage Festival (10/10/2010)
2. San Diego County Equestrian Foundation (8/2/2010)
3. Vaquero Days (10/16/2010)

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Additional equestrian workshops are planned in the Fallbrook area during FY 2010-11 and FY 2011-12. In addition, the County is pursuing a partnership with the San Diego County Equestrian Foundation (SDCEF) to disseminate information about manure management and other BMPs to the equestrian community. The County and Oceanside are pursuing the potential involvement of the SDCEF in the pilot peer mentoring program. Development of such a program in the future is contingent upon identifying a reliable source of funding such as grants. County staff will provide outreach at various SDCEF events during FY 2010-11.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Mission Resource Conservation District (MRCD)

- San Diego County Equestrian Foundation (SDCEF)
- Action Research, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Animal facilities have been identified as potential sources of bacteria and nutrients. Since this activity addresses two priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This program seeks to reduce the impacts of nutrients, bacteria, and sediment by practices related to manure management, composting, and other horse-related BMPs. Additionally, the program anticipates formation of a community of knowledgeable horse enthusiasts that will share what they learn with neighbors and friends in the horse community and beyond. The pilot component of this program could be expanded to other communities in the region that have significant horse or animal populations.

EFFECTIVENESS MEASUREMENTS

During the FY 2010-11 reporting period, the following events were assessed using Level 1 Outcomes (Table 2).

Table 2: Effectiveness Measures

Planned Tasks	Assessment	Outcome
San Diego County Manure Management Workshops CBSM Study	Complete	Level 1
Staff Booths at Education and Outreach Events	3 events,	Level 1
Conduct Equestrian Workshops	2 events, (36 participants)	Level 1
Completion of Pre and Post Workshop Survey Questionnaire	Complete, 36 participants.	Level 1

To assess changes in knowledge and awareness (Level 2 Outcomes) among participants in the workshops described above, pre- and post-workshop surveys were administered. At the Rainbow composting workshop survey results indicated a positive change in awareness such as: knowing they live in a watershed, knowing water in the storm drain is not treated, and consideration of how horses and livestock manure can contribute to water pollution.

Results of the pre-workshop surveys are as follows:

- 50% responded that they did not know they lived in a watershed
- 50% responded that water in the storm drain system is not treated
- 12% felt that livestock and horse manure did not contribute to water pollution

- 62% responded that they believe livestock and horses contribute “some” to water pollution
- 12% felt that livestock and horses contribute ”a great deal” to water pollution

Post-workshop survey results found:
- 100% responded correctly that they now know they live in a watershed
- 100% responded that water in the storm drain system is not treated
- 0% responded that they believe livestock and horses contribute “not at all” to water pollution
- 37.5% responded that they believe livestock and horses contribute “some” to water pollution
- 50% felt that livestock and horses contribute “a great deal” to water pollution

Following the workshops all but one of the attendees responded positively that they plan to start composting at least some portion of the manure generated. While one person will continue to give away the manure, all others indicate they will begin composting some portion of the manure generated onsite, but may still continue to use other disposal methods, such as applying to their land or giving some of it away.

Pre- and post-workshop surveys were also administered to the participants of the San Luis Rey Equestrian BMP Workshop. Results indicate a positive increase in knowledge among participants able to correctly identify appropriate equestrian-related BMPs.

Results of the pre-workshop surveys are as follows:
- 37% believe horse manure contributes “a great deal” to water pollution.
- 70% responded correctly by identifying erosion control BMPs.
- 50% correctly identified drainage control BMPs.
- 70% correctly identified manure management BMPs.

Post-workshop survey results found:
- 17% believe horse manure contributes “a great deal” to water pollution.
- 100% responded correctly by identifying erosion control BMPs.
- 92% could correctly identify drainage control BMPs
- 83% correctly identified manure management BMPs.

These survey results indicate a positive increase in knowledge and awareness about how equestrian activities can affect water quality. Results also show that more equestrians were able to identify positive behavioral changes (Level 3 Outcomes) following the workshops.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Focused Grove and Nursery Outreach in the San Luis Rey River Watershed**
ID NUMBER: **SLR-016**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many grove and nursery operations. Groves and nurseries have been shown to be potentially significant sources of nutrients to waterways in surrounding watersheds. To reduce the likelihood of impacts on beneficial uses in the San Luis Rey Watershed, the County of San Diego has contracted with the Mission Resource Conservation District (MRCD) to conduct focused outreach to nurseries and groves in the watershed. These outreach efforts will focus on issues related to water conservation, fertilization techniques, erosion prevention, and best management practices (BMPs) to reduce potential nutrient loads.

Tasks associated with this activity include:

- Conduct focused workshops and disseminate updated educational information.
- Develop pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in behaviors resulting from this activity.
- Develop and distribute informational materials relating to BMPs for various fertilization methods.
- Augment the MRCD's current Agricultural Water Management Program Irrigation System Evaluation to include evaluation of additional practices with the potential to impact water quality.
- Conduct onsite irrigation evaluations and disseminate information about fertilization BMPs and erosion control.

ACTIVITY IMPLEMENTATION FY 2009-10

A workshop targeting agricultural operators was conducted on June 14, 2010 at the Rainbow Grange. Twenty participants attended the workshop. Speakers and presentations featured at the workshop included:

- Valerie Mellano, UC Cooperative Extension's Farm and Home Advisors Office, presented on Rainbow Creek's Total Maximum Daily Load (TMDL) for Nitrogen and Phosphorous, and the Rainbow Creek Nutrient Reduction Management Plan (NRMP).
- Eric Larson, San Diego County Farm Bureau and San Diego Irrigation Lands Group, presented on the Agricultural Discharge Waiver and the formation of agricultural water quality monitoring groups.
- A panel was held after the presentations for a question/answer session with the workshop attendees. The panel consisted of:
    - Pete Peuron, Regional Water Quality Control Board
    - Dave Seymour, Rainbow Municipal Water District
    - Eric Larson, San Diego County Farm Bureau and San Diego Irrigation Lands Group

- Valerie Mellano (Facilitator), UC Cooperative Extension's Farm and Home Advisors Office

A postcard announcing the workshop time, location, and topics to be discussed at the workshop was also developed and distributed during this reporting period. Pre- and post-workshop assessment surveys were administered to assess attendees' knowledge of general watershed principles and changes in behaviors resulting from this activity.

ACTIVITY IMPLEMENTATION FY 2010-11

A workshop targeting agricultural operators was conducted on June 20, 2011 at the Fallbrook Public Utility District Boardroom. Thirty-six participants attended the workshop. Speakers and presentations featured at the workshop included:

- Valerie Mellano, UC Cooperative Extension's Farm and Home Advisors Office, presented on the history, requirements, and impacts of the Agricultural Discharge Waiver. While scheduled for only a twenty minute session, there were so many questions and interest concerning this subject, it continued for over one hour in length. She also gave a second presentation on how to properly maintain records for a wide variety of agriculture-related inventories and practices (e.g.; fertilizers, training records). Dr. Mellano emphasized the importance of properly maintained documents in meeting compliance standards with regulating agencies.
- Alec Mayall, Mission Resource Conservation District's Irrigation System Specialist, spoke about Mission RCD's Irrigation System Evaluation Program that is available for agricultural properties.

A postcard announcing the workshop time, location, and topics to be discussed at the workshop was also developed and distributed during this reporting period. In addition to the mailed post cards, a press release was submitted to three local newspapers. Pre- and post-workshop assessment surveys were administered to assess attendees' knowledge of general watershed principles and changes in behaviors resulting from this activity.

TMDL APPLICABILITY

This activity supports implementation of the Comprehensive Load Reduction Plan (nutrient component) for the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

An additional agricultural workshop is planned in the Fallbrook area during FY 2011-12. Continued development and distribution of informational materials will take place in FY 2011-12. Onsite irrigation evaluations will be scheduled and conducted as needed.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Nutrients and bacteria have been identified as priority water quality problems in the San Luis Rey Watershed. Nursery and grove operations are potentially significant sources of nutrients and bacteria. Since this activity address priority water quality problem, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Groves and nurseries operations have been shown to be potentially significant sources of nutrients and bacteria to waterways in surrounding watersheds. This program seeks to reduce the impacts of nutrients on the San Luis Rey Watershed by educating nursery and grove operators on issues related to water conservation, fertilization techniques, erosion prevention, and BMPs.

EFFECTIVENESS ASSESSMENT

Activity effectiveness measurements include assessment of completion of an annual workshop, the number of participants in attendance, the number of materials distributed, and the number of irrigation evaluations conducted (Level 1 Outcomes). Activity effectiveness measures assessed in the FY 2010-11 reporting period include:

Table 1: Effectiveness Measures

Planned Tasks	Assessment	Outcome
Conduct Workshop for Grove and Nursery Operators	1 event, 36 participants	Level 1
Completion of Pre and Post Workshop Surveys	Complete, 16 Pre-surveys, 25 Post-surveys	Level 1

Pre- and post-workshop surveys were distributed to all attendees to assess knowledge of general watershed principles and changes in awareness of proper irrigation and fertilization practices (Level 2 Outcomes). Sixteen pre-workshop surveys were completed and 25 post-workshop surveys were completed. Prior to the workshop only 25 percent of the surveyed attendees knew they lived in a watershed; while after the workshop 84 percent affirmed they lived in a watershed. This change demonstrates an increase in general watershed knowledge (Level 3 Outcome).

Additionally the surveys measured an increase in knowledge pertaining to agriculture as a potential pollutant source. Before participating in the workshop survey takers indicated that agricultural activities contributed to water pollution: “a little bit” (13 percent of respondents), “some” (56 percent of respondents), and “a great deal” (31 percent of respondents). After the workshop participants indicated that agriculture contributed to water pollution: “not at all” (4 percent of respondents), “a little bit” (20 percent of respondents), “some” (36 percent of respondents), and “a great deal” (40 percent of respondents).

In the future, effectiveness may be assessed by estimating the total amount of nutrients reduction possible through the implementation of irrigation BMPs recommended during irrigation evaluations (Level 4 Outcomes).

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality and Education Activity

TITLE: **Focused Onsite Wastewater System Outreach in the San Luis Rey River Watershed**

ID NUMBER: **SLR-017**

ACTIVITY DESCRIPTION

The San Luis Rey Watershed contains many rural areas in which property owners utilize onsite wastewater treatment (septic systems). In order to promote the proper care and maintenance of onsite wastewater treatment systems, the County has contracted with the Mission Resource Conservation District (MRCD) to implement an onsite wastewater system outreach and rebate program in the San Luis Rey and Santa Margarita River Watersheds. Residents interested in obtaining a rebate to offset the cost of pumping out their system will be required to attend an MRCD-facilitated workshop devoted to the proper care and maintenance of onsite wastewater systems. The rebate program will operate on a first come, first served basis offering 30 pumping rebates annually for three years. The rebates will be in the amount of $100.00 and will only be applicable to pumping by permitted septic waste haulers. The MRCD and County staff will administer pre- and post-workshop survey questions to assess knowledge of general watershed principles and changes in awareness of proper onsite wastewater system maintenance.

ACTIVITY IMPLEMENTATION FY 2009-10

Press Release to local newspapers on Septic Maintenance

A news release announcing the Septic System Workshop and Rebate Program was submitted to three local newspapers: the North County Times, the San Diego Union Tribune, and the Fallbrook/Bonsall Village News. The Fallbrook/Bonsall Village News published the press release in its entirety.

Septic System Workshop and Rebate Program

A public workshop focusing on septic tank awareness and proper maintenance procedures was conducted on May 20, 2010, at the Rainbow Grange. A total of ten residents attended the workshop. Eric Klein, County of San Diego Department of Environmental Health, was the featured presenter. The presentation included a detailed description of the components of a septic system and appropriate preventative maintenance measures for proper septic system functioning. The workshop also featured an open question and answer forum, during which the speaker answered specific questions from the attendees. Participants were asked to complete a pre- and post-workshop questionnaire to assess workshop effectiveness. By completing the workshop, residents were eligible to receive a rebate to offset the cost of pumping out their system. Three rebate certificates were distributed at this workshop.

ACTIVITY IMPLEMENTATION FY 2010-11

Online Septic System Education Pilot Program

The County of San Diego moved forward with the development and implementation of an Online Septic System Education Pilot Program. This online web portal course was implemented in October of 2010 and offers information on septic tank awareness and proper maintenance

procedures for maintaining a healthy septic system. The portal was placed on the County of San Diego website. Participants were asked to complete a pre- and post-workshop questionnaire to assess workshop effectiveness. Residents completing the program and living within the San Luis Rey and Santa Margarita may be eligible to receive a rebate to offset the cost of pumping out their system by a qualified professional. For those participants that do not have access to the internet, paper copies of the education program were sent to them.

Septic System Rebate Program

A total of thirty rebates were offered to participants in the San Luis Rey and Santa Margarita Watersheds. In order to be eligible for the rebate program, participants were required to complete the online training course. All 30 available rebates were granted to participants in FY 2010-11. Of the 30 program participants, 27 lived within the San Luis Rey Watershed. Those participants that were unable to receive rebates in 2010-11 were placed on a waiting list for the FY 2011-12 program.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

The Online Septic System Education Program will continue to operate in FY 2011-12

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Resource Conservation District (MRCD)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Luis Rey Watershed. Onsite wastewater treatment systems have the potential to be significant sources of bacteria and nutrients. Since this activity addresses two priority water quality problems, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This program will provide homeowners with an economic incentive to maintain their onsite wastewater treatment systems, while educating them on the proper care and maintenance protocol. Through incentives and education, this program seeks to decrease the likelihood of onsite wastewater system failure.

EFFECTIVENESS ASSESSMENT

Activity effectiveness is assessed by tracking the completion of the development and implementation of the Online Septic System Education Program, the number of participants, and the number of pumping vouchers distributed (Level 1 Outcomes).

Attendees were required to complete a pre- and post-program survey to assess knowledge of general watershed principles and changes in awareness of proper onsite wastewater system maintenance (Level 2 Outcomes).

Eighty percent of the pre-program participants knew they lived within a watershed, but 100 percent of the post-program participants answered this question correctly. Eighty-seven percent of the pre-program participants indicated that stormwater is not treated before entering waterways, while 97 percent of post-survey participants correctly answered this question. When asked to identify six septic system BMPs, only 70 percent were able to correctly identify all.. However, post program surveys demonstrated that 86 percent were able to correctly identify all six BMPs. Additionally the percentage of participants who were able to correctly identify four or more signs of a failing septic system increased from 80 percent to 96 percent.

Thirty pumping vouchers were distributed and utilized by program participants, indicating a behavioral change (Level 3 Outcomes).

Finally, the amount of sewage removed from onsite wastewater systems will be tabulated (pumping volume, estimated percent solids, and location) upon completion of the pilot program in FY 2012-13. From this information, some estimates of load reduction may be possible (Level 4 Outcome).

Table 1: Effectiveness Measures

Task	Level	Assessment Measures	Effectiveness Measure
Septic System Outreach Program	1	Implementation of Online Septic System Education Program	Implementation Complete
	1	Number of participants	30 program participants
	2	Pre/Post-Workshop Survey Questionnaire	30 pre-workshop surveys completed. 30 post-workshop surveys completed.
Septic System Rebate Program	1	Number of vouchers distributed	30 vouchers distributed; 27 to San Luis Rey Watershed participants.
	3	Number of vouchers used	30 vouchers used; 27 by San Luis Rey Watershed participants.
	4	Volume of sewage removed (percent solids)	N/A

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PROPOSED WATERSHED ACTIVITY SUMMARY SHEET

Watershed Education Activity

TITLE: **Guajome Sports Park Watershed Educational Signage**
ID NUMBER: **SLR-018**

ACTIVITY DESCRIPTION

A Vista City Park was constructed in 2009 that includes sports fields and walking trails. The Park is situated high atop a hillside in the San Luis Rey Hydrologic Unit, providing spectacular views of the San Luis Rey River corridor and watershed. The Park is expected to draw many visitors and will provide a great opportunity for educating the public on the physical features of the watershed and the water quality issues within. This activity will provide for design and installation of watershed educational signage at various locations in the sports park. The signage will address the physical features in the watershed, water quality problems identified in the watershed, and provide tips that the residents can use to improve conditions in the watershed through their daily activities and interactions.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

- FY 2010-11 Sign Design
- FY 2011-12 Sign Installation
- FY 2012-13 Effectiveness Assessment

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- City of Vista
- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey HU collective watershed strategy identifies bacteria and nutrients as high priority water quality pollutants in the watershed. Potential sources of bacteria and nutrients have been identified within the watershed and include industrial/commercial, residential, and open space land uses. This activity addresses both high priority water quality problems and primarily will address potential sources of the problem related to residential activities within the watershed; therefore the activity is consistent with the Carlsbad WMA Strategy.

EXPECTED BENEFITS

It is expected that through the educational information presented on the signage, the residents will improve their knowledge related to stormwater and urban runoff and implement appropriate BMPs in their everyday activities affecting water quality.

EFFECTIVENESS MEASUREMENTS

The effectiveness assessment of the project has not been completely developed at this time. At a minimum level 1 will be assessed via installation of the signs. Additionally, estimates of numbers of visitors may be used to measure the impressions made by the signs. This may allow for some measure of knowledge change (level 2); however measuring of actual changes in behavior related to the signage will be difficult to assess (level 3) and may not be feasible.

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Education Activity

TITLE: **Residential Composting Workshop**
ID NUMBER: **SLR-020**

ACTIVITY IMPLEMENTATION
Residents from the San Luis Rey and Carlsbad watersheds will be invited to attend a free composting workshop to be held during fiscal year 2010-11. This workshop will provide an overview of composting, hands-on demonstrations on how to compost, proper application of compost, and the benefits of compost to soil and water quality.

Topics to be covered during the workshop are as follows:
- Static Composting
- Active Composting
- Vermicomposting (worm composting)
- Compostable materials
- Carbon to Nitrogen ratio
- Composting bins and tools
- Applying compost in landscapes and gardens
- How compost benefits soil and protects water quality
- Reduction of waste being land filled

Potential speakers for the workshop are:
- Cynthia Mallett – City of Oceanside
- Cheryl Broadhead– Solana Center for Environmental Innovation
- Mary Matava – Agri-Service

ACTIVITY IMPLEMENTATION FY 2010-11
The compost workshop was held on March 8, 2011 at the Oceanside El Corazon Senior Center. A total of 53 people were in attendance: 49 north San Diego County residents, two city staff people and two instructors. Residents were from the following jurisdictions:

Carlsbad	6
Oceanside	40
Vista	2
Unknown	1
Total Attendees	**49**
City Staff	2
Instructors	2

Workshop Overview
The workshop began with an introduction by Oceanside City staff about the benefits of composting for waste reduction and soil improvement, which in turn supports healthier and more productive plants. In addition when compost is applied to landscapes it can reduce – if not

eliminate - the use of chemical fertilizers and pesticides. By using compost as a fertilizer and pest control tool you can prevent the potential of chemical pollution (fertilizers and pesticides) from leaving the property and reaching local waterways.

Composting Basics
The second part of the workshop was a hands-on demonstration of how to prepare a compost bin including worm bins and static compost bins. This section was presented by Cheryl Broadhead from Solana Center for Environmental innovation. Two types of bins were available for people to view and touch: Can O' Worms, a user-friendly worm composting system and the Earth Machine which is an easy, passive static compost bin. Attendees learned what types and how much of materials to place in each of the bins. The various composting tools were also shown. Troubleshooting items were discussed including how to address odors, flies and varmints. Also demonstrated was how to harvest compost from the two types of bins.

Compost as a soil amendment
Mary Matava, owner of Agri-Service that operates of the Oceanside El Corazon Compost Facility, presented the third component of the workshop. The El Corazon Compost Facility is located in central Oceanside and processes over 1 million tons of green waste into high quality soil amendments, mulch and potting mixes at location.

The focus of this topic was to teach attendees how to assess their soils to determine nutrient content, composition, and other characteristics such as texture, composition, pH level, salinity and chloride. Various tools analysis tools were used to get the data:

- pH meter to assess acidity level
- Soil jar test – to determine percentage of sand, silt, and clay
- Soil texture triangle: to classify your garden soil as sandy, loamy, or clay.

Agri-Service donated five Can O' Worms vermicomposting bins as a raffle to workshop attendees.

After completion of the workshop attendees were provided with an evaluation form to provide feedback on the workshop components including topics covered, instructor quality, and if they owned and/or planned to purchase a compost bin. . 11 evaluations were returned by workshop participants. Overall comments were good. All evaluations stated that they either owned a compost bin or were planning to purchase one.

TMDL APPLICABILITY
This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION
This workshop may be implemented again in Spring 2011.

PARTICIPATING WATERSHED COPERMITTEES
- City of Oceanside

OTHER PARTICIPATING ENTITIES

- Solana Center for Environmental Innovation
- Agri-Service

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Pesticides
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The San Luis Rey River Watershed strategy identifies nutrients as high priority water quality pollutants in various hydrologic areas throughout the watershed. The use of chemical fertilizers has been identified as a potential source of eutrophication in local water bodies. Using compost as a natural fertilizer will reduce the amount of chemical fertilizer that resident use in their landscapes. It also reduces the need for pesticides. Also, erosion and sedimentation can be reduced through the proper application of compost. This activity addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the San Luis Rey WMA strategy.

EXPECTED BENEFITS

Expected benefits included educating residents about how to compost and providing them with information and tools to incorporate composting into their daily lives. Getting residents to actually compost and utilize the soil in their landscapes will help reduce pollutants from entering our local water bodies.

EFFECTIVENESS ASSESSMENT

After completion of the workshop attendees were provided with an evaluation form to provide feedback on the workshop components including topics covered, instructor quality, and if they owned and/or planned to purchase a compost bin. . 11 evaluations were returned by workshop participants. Overall comments were good. All evaluations stated that they either owned a compost bin or were planning to purchase one. (Level 2).

RECOMMENDATIONS

Due to the number of attendees at the workshop additional workshops are seriously being considered.

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Fallbrook Community Center Artificial Turf**
ID #: **SLR-021**

ACTIVITY DESCRIPTION

The County of San Diego has converted 7,200 square feet of turf planters to artificial turf at the Fallbrook Community Center facility. This project included the capping of existing irrigation lines throughout three planters, with the exception of a single bubbler unit used to irrigate a pine tree. A French drain system and gravel bed system was installed beneath the planters to help protect against the unlikely occurrence of runoff due to over-saturation during large storm events.

The installation of the artificial turf is estimated to reduce the application of fertilizer by as much as 120 pounds per year and annual water consumption by nearly 170,000 gallons annually.

This activity directly benefits the watershed by reducing the need for irrigation of turf planters, increasing storm water filtration, and decreasing the potential of nutrient loading to the watershed.

ACTIVITY IMPLEMENTATION FY 2009-10

During the FY 2009-10 over 7,200 square feet of natural turf was removed and replaced with artificial turf (see attached figure). This activity included excavating to a depth of 3 inches, installing a French drain system below the surface, backfilling with decomposed granite (DG), and compressing the DG to a 90% compaction rate.

ACTIVITY IMPLEMENTATION FY 2010-11

Due to the installation of the artificial turf, community center staff was able to significantly reduce watering and maintenance activities of the planter area. Future installation of additional turf area is being considered at this time.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Future artificial turf installation was planned for FY 2010-11, but has been placed on hold due to budgetary constraints.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity demonstrates reduced pollutant loads and source abatement which benefits the receiving water quality. Since this activity addresses priority water quality problems it is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Irrigation water use at the facility has decreased approximately 18 percent based on comparison of pre- and post-installation assessments. Turf nutrient fertilizer applied to community center landscaping has decreased by 120 pounds, or 25 percent, since the installation of artificial turf. The reduction in irrigation volume and the decrease in the amount of nutrients applied result in a maximum potential load reduction of up to 120 pounds of nutrients from the watershed in FY 2010-11 (Level 4 Outcome).

Natural Turf
N
Heald Ln, Fallbrook, CA 92028
Artificial Turf
Natural Turf
179 ft
© 2009 Tele Atlas
©2008 Google
33°22'39.56" N 117°14'07.27" W
elev 721 ft
Feb 2008
Eye alt 1357 ft

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WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET

Watershed Water Quality Activity

TITLE: **Residential Rain Barrel Subsides and Distribution**
ID NUMBER: **SLR-022**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

FY 2009-10 ACTIVITY IMPLEMENTATION

Activity tasks implemented during FY 2009-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 2010-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

FY 2010-11 ACTIVITY IMPLEMENTATION

During FY 2010-11 the County of San Diego hosted two rain barrel distribution events. At each event informational booths were staffed by water quality experts who educated residents on watershed concepts and distributed outreach materials. In order to participate in the program residents were required to sign a rain barrel maintenance agreement that would ensure continued effective operations of the rain barrels.

The first event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

The Fallbrook Sales event took place at Fallbrook Village Square on September 26, 2010, from 9 a.m. until 1 p.m. Upon completion of the event 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price

A total of 183 residents participated in these events and a total of 240 rain barrels were sold. Sixty-one (61) of the participants were residents of the San Luis Rey Watershed; the highest number of participants from any watershed.

TMDL APPLICABILITY

This activity supports implementation of the Bacteria TMDL for Beaches and Creeks, which became effective in April 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Two distribution and education events took place during FY 2010-11. Additional events are being considered for implementation in FY 2012-13, dependent on available funding.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- San Luis Rey Watershed Council

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS ASSESSMENT

During the FY 2010-11 reporting period 61 residents of the San Luis Rey Watershed purchased a rain barrel and signed a rain barrel maintenance agreement (Level 1 Outcomes).

WATERSHED ACTIVITY IMPLEMENTATION SUMMARY SHEET
Watershed Education Activity

TITLE: **Residential Smart Landscape Evaluation Program**
ID NUMBER: **SLR-023**

ACTIVITY DESCRIPTION

The City of Oceanside offers a free landscape irrigation evaluation service to single-family and multi-family residences within its jurisdiction. The program is in conjunction with the San Diego County Water Authority (SDCWA) irrigation check-up program. The SDCWA and the City of Oceanside provide funding for the Mission Resource Conservation District to send professional technicians to visit the residential property and provide site-specific water-saving recommendations. Participants can expect to have the technician review and evaluate the performance of their site's outside irrigation system. At the end, the participant will receive a list of recommendations and a proposed watering schedule. For multi-family customers, participants will receive a report outlining site specific irrigation and maintenance recommendations as well as plant alternatives designed to reduce water waste and use.

Over-irrigation is the most prominent transport mechanism and potential source of dry weather residential contributions to water quality issues. This one-on-one, site-specific education will help residents and multi-family property managers to reduce and eliminate irrigation runoff from their property. It is also a useful tool for Clean Water Program Inspectors and Code Enforcement Officers when following-up on customer or staff complaints of over-irrigation. The inspector or officer can provide general education on the regulations and suggest this hand's-on evaluation.

ACTIVITY IMPLEMENTATION FY 2010-11

During FY 2010-11, eight single-family and two multi-family residential landscape evaluations were completed within the City of Oceanside in the San Luis Rey Watershed. Table 1 presents a summary of the types and dates of the evaluations completed during this reporting year.

Table 1. Summary of Residential Landscape Evaluations Completed in FY 2011.

Hydrologic Area	Multi-Family	Single-Family	Completed
Lower San Luis		X	7/29/2010
Lower San Luis		X	7/22/2010
Lower San Luis		X	10/5/2010
Lower San Luis		X	10/4/2010
Lower San Luis		X	11/29/2010
Lower San Luis		X	1/18/2011
Lower San Luis	X		3/24/2011
Lower San Luis		X	5/3/2011
Lower San Luis	X		6/1/2011
Lower San Luis		X	6/28/2011

TMDL APPLICABILITY

This activity is anticipated to provide education and assist in the reduction of bacteria loading, as required by TMDL for Indicator Bacteria, Project 1 – Beaches and Creeks in the San Diego Region. The TMDL was approved by the Office of Administrative Law on April 4, 2011. The Comprehensive Load Reduction Plan (CLRP) is currently under development.

TIME SCHEDULE FOR IMPLEMENTATION

Each year, implementation is based on program funding and the number of customers who call to take advantage of the service. During FY 2011-12, staff will identify if an assessment component to the program can be added to characterize the effectiveness of the program. Follow-up surveys could assess if the recommendations were implemented which could then lead to potential load reductions and water quality improvement within the watershed.

PARTICIPATING WATERSHED COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- San Diego County Water Authority
- Mission Resource Conservation District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as a priority water quality problem in the San Luis Rey River Watershed. In addition, residential runoff has been targeted as a high priority through several Copermittee activities. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This program is targeted at Levels 1 and 2 effectiveness assessment outcomes. The program was implemented during the reporting year (Level 1 outcome) and eight single-family and two multi-family residential properties were visited in the San Luis Rey Watershed. The property owners/managers were educated on appropriate and efficient use of water, specifically focusing on irrigation, thus raising awareness (Level 2 outcome).

WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

TIJUANA RIVER WATERSHED

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MARCH 2008

Prepared by

County of San Diego (Lead)
City of Imperial Beach
City of San Diego

Prepared in Partial Fulfillment of the
Requirements of the Regional Water Quality Control Board
Municipal Stormwater Permit Order No. R9-2007-0001

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STATEMENT OF CERTIFICATION
Tijuana River Watershed Urban Runoff Management Program

I certify under penalty of law that the Tijuana River Watershed Urban Runoff Management Program and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

3-21-08
Date

The City of Imperial Beach

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PUBLIC WORKS
825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

March 17, 2008

STATEMENT OF CERTIFICATION
Tijuana River Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to Tijuana River Watershed Urban Runoff Management Program as directed by the California Regional Water Quality Control Board, San Diego Region, Order No. R9-2007-0001, were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

3-17-08
Date

THE CITY OF SAN DIEGO

RE: Tijuana River Watershed Urban Runoff Management Program Statement of Certification

I certify under penalty of law that the City of San Diego participated in the development of the Tijuana River Watershed Urban Runoff Management Program and all attachments. City staff assisting in the preparation of these documents were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Andrew Kleis

3/14/08

Andrew Kleis
Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
City of San Diego

Date

DIVERSITY

Storm Water Pollution Prevention Program
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Hotline (619) 235-1000 Fax (619) 525-8641

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Andrew Kleis

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Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
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3/14/08
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EXECUTIVE SUMMARY

The Tijuana River Watershed Urban Runoff Management Plan (WURMP) has been updated in response to the requirements of Order No. R9-2007-0001, the San Diego Municipal Stormwater Permit. The Permit was issued by the San Diego Regional Water Quality Control Board (RWQCB) on January 24, 2007 to 21 Copermittees, including those with land area in the Tijuana River Watershed Management Area (WMA): the County of San Diego, the City of San Diego, and the City of Imperial Beach. A WURMP was first developed in January 2003 and implementation has been ongoing since that time. The WURMP is intended to address sources of urban runoff that are causing the WMA's high priority water quality problems. It supplements the baseline urban runoff management programs implemented as part of the Regional Copermittees' Regional Urban Runoff Management Program (RURMP) and each Copermittee's Jurisdictional Urban Runoff Management Program (JURMP).

The Tijuana River Watershed encompasses a region of approximately 1,750 square miles (1.12 million acres) on both sides of the international border between California and the state of Baja California in Mexico. In terms of water quality degradation, it is considered the most severely impacted watershed in San Diego County. The portion of the watershed within Baja California is not subject to the Permit, and as such, is not addressed by this plan.

An assessment of receiving water conditions in the Tijuana River WMA reveals various water quality problems that are potentially the result of urban runoff inputs. Nine priority pollutants have been identified in the WMA, including metals, dissolved minerals, organics, oil and grease, sediments, pesticides, nutrients, gross pollutants, and bacteria/pathogens. The Watershed Copermittees have narrowed this list down to those that are considered high priority for the purposes of WURMP implementation. These include metals, dissolved minerals, organics, sediments, pesticides, gross pollutants, and bacteria/pathogens in Hydrologic Area (HA) 911.1, which is the furthest downstream reach of the river that receives the majority of its runoff from Mexico. High priority pollutants identified in the remaining portions of the watershed are largely based on listings of impairment found on the State of California's 303(d) List of Impaired Waterbody Segments and include: dissolved minerals, gross pollutants, and color in HAs 911.3 and 911.5; bacteria, nutrients, and sediments in HA 911.4.

This WURMP makes use of the processes and tools described in the Model Urban Runoff Management Strategy (Model Strategy) developed collaboratively by the Regional Copermittees. The Model Strategy outlines a process for selecting appropriate management actions to address each WMA's high priority water quality problems. There is a wide variety of activities proposed for implementation as part of this plan. Activity types range from Watershed Water Quality Activities that abate pollutant sources or reduce pollutant loads to Watershed Education Activities that seek knowledge and awareness change in targeted audiences. In some cases, the Tijuana River Copermittees have determined that more information (i.e., water quality monitoring data or identification of pollutant sources) is needed in order to select appropriately targeted activities.

The following general principles will guide the selection and implementation of watershed activities as part of the Tijuana River WURMP:

- Prevent the creation of future water quality problems by pursuing land acquisitions for the purposes of conservation and ensuring that appropriate low impact development (LID) techniques and other traditional BMPs are incorporated into new developments. This is a preferred approach to managing pollutant sources once they are established in the watershed.

- Tailor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMPs) and the Regional Copermittees' Regional Urban Runoff Management Program (RURMP) to the extent possible to address the watershed's priority water quality problems.

- Evaluate low-cost BMPs that are effective in abating the sources and reducing the discharge of the watershed's priority water quality problems.

- Characterize water quality conditions throughout the watershed. This may be accomplished by conducting special studies where appropriate or by better managing existing data sources.

- Characterize the threat to water quality (TTWQ) and spatial distribution of likely sources of priority water quality problems throughout the watershed. This may be accomplished by conducting special studies where appropriate or by better managing existing data sources.

On an annual basis, the Tijuana River Copermittees will assess the effectiveness of the WURMP and report on any modifications or changes to the programs, priorities, and activities described in this plan.

SECTION 1.0 - INTRODUCTION

The Tijuana River Watershed Copermittees have been actively implementing a Watershed Urban Runoff Management Program (WURMP) in the Tijuana River Watershed Management Area (WMA)[1] since January 2003. On January 24, 2007, the San Diego Regional Water Quality Control Board (RWQCB) adopted Order No. R9-2007-0001 (also referred to as the "San Diego Municipal Stormwater Permit" or "Permit") which requires the County of San Diego (County), as the lead Copermittee in the Tijuana River WMA, to submit an updated WURMP no later than March 24, 2008. The plan described in this document complies with all Permit requirements.

1.1 PROGRAM FRAMEWORK

This section summarizes Permit requirements applicable to the WURMP and identifies the location of relevant information in this plan.

Identification of Lead Permittee

The Permit requires the identification of a lead watershed agency for each WMA. The County of San Diego serves as the WURMP lead for the Tijuana River WMA. The other Watershed Copermittees include the Cities of San Diego and Imperial Beach.

Watershed Map

The Permit requires the development of, and periodic updates to, a map of the WMA to facilitate planning, assessment, and decision-making. The map is to display receiving waters, Clean Water Act section 303(d) impaired receiving waters, land uses, municipal separate storm sewer systems (MS4s), major highways, jurisdictional boundaries, and inventoried commercial, industrial, and municipal sites. Due to legibility issues the watershed leads determined that three maps would be utilized to depict features of the WMA. Appendix 1 contains the following three maps: 1) Tijuana River WMA Land Use Map, 2) Tijuana River WMA Pollutant Source Map and 3) Tijuana River WMA MS4 Map. The County, in concurrence with the Tijuana River Watershed Copermittees, will update these maps as necessary over the course of the Permit cycle.

Watershed Water Quality & Pollutant Source Assessment

The Permit requires an annual assessment of receiving water quality in the WMA using data from the Copermittees' Receiving Waters Monitoring and Reporting Program as well as applicable information available from other public and private organizations. It also requires annual identification of the WMA's water quality problems that are partially or fully attributable to MS4 discharges. From the list of water quality problems, the Permit requires identification of the high priority water quality problems, which are defined as those that most significantly exceed or impact water quality standards. Finally, the Permit requires annual identification of

[1] The term "Tijuana River Watershed Management Area (WMA)" refers only to the United States portion of the Tijuana River Watershed, whereas the term "Tijuana River Watershed" pertains to the entirety of the Tijuana River Watershed both north and south of the border.

the likely sources of the WMA's high priority water quality problems. Section 3.1 of this document identifies the water quality data, reports, analyses, and other information that were used to assess receiving water quality within the Tijuana River WMA as well as a process for updating this assessment annually. Section 3.2 further describes each data set and summarizes information on the current condition of receiving waters within the Tijuana River WMA. Section 3.3 identifies the WMA's water quality problems that are partially or fully attributable to MS4 discharges, including those that are considered high priority. Section 3.4 identifies the best information currently available regarding the likely sources, pollutants discharges, and other factors causing the watershed's high priority water quality problems.

Watershed-Based Land Use Planning

The Permit requires the development, implementation, and modification, as necessary, of a program for encouraging collaborative, watershed-based, land use planning. Section 4.4 describes some of the ongoing efforts to conduct watershed-based land use planning among the Tijuana River Copermittees.

Watershed Strategy

The Permit requires the development and implementation of a collective watershed strategy to abate the sources and reduce the discharge of pollutants causing the high priority water quality problems of the WMA. The Copermittees have collaborated regionally to develop a Model Watershed Urban Runoff Management Strategy (Model Strategy) that guides Copermittees in the selection of appropriate watershed activities. The Model Strategy is summarized in Section 2.0 of this plan. It is included in its entirety as an attachment to the Regional Urban Runoff Management Plan (RURMP). Section 2.2 of this document describes how the Model Watershed Strategy was applied for the purposes of developing this Tijuana River WURMP.

Watershed Water Quality Activities

The Permit requires Copermittees to identify and implement watershed water quality activities[2] that address the high priority water quality problems in the WMA. For each Permit year, no less than two watershed water quality activities must be in an active implementation phase. A watershed water quality activity is in active implementation phase when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s). Watershed water quality activities that are capital projects are in active implementation for the first year of implementation only. Section 4 presents the watershed water quality activities planned for implementation as part of a Five-Year Strategic Plan for the Tijuana River WMA.

[2] A watershed water quality activity is defined as an activity other than education that addresses the high priority water quality problems in the WMA. Watershed water quality activities implemented on a jurisdictional basis must be organized and implemented to target a watershed's high priority water quality problems or must exceed the baseline jurisdictional requirements of Permit Section D.

Watershed Education Activities

The Permit requires Copermittees to identify and implement watershed education activities[3] that address the high priority water quality problems in the WMA. For each Permit year, no less than two watershed education activities must be in an active implementation phase. A watershed education activity is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can reasonably be established in target audiences. Section 4.2 presents the watershed education activities planned for implementation as part of a Five-Year Strategic Plan for the Tijuana River WMA.

Copermittee Collaboration

The Permit requires the Tijuana River Copermittees to collaborate in the development and implementation of the WURMP through frequent regularly scheduled meetings. The Tijuana River Copermittees meet on a quarterly basis at a minimum to discuss or plan watershed activities.

Public Participation

The Permit requires the implementation of a watershed-specific public participation mechanism within each watershed. Compliance with this requirement is described in Section 4.3 of this document.

WURMP Review & Updates

The Permit requires each WURMP to be reviewed annually to identify needed modifications and improvements. Section 6.0 describes how updates to the Tijuana River WURMP will be documented in the WURMP Annual Reports.

WURMP Effectiveness Assessment

The Permit requires an annual assessment of the effectiveness of WURMP implementation. Section 5.0 describes the Tijuana River Copermittees' approach to fulfilling these assessment requirements on an annual basis.

[3] Watershed education activities are defined as outreach and training activities that address high priority water quality problems in the WMA.

1.2 WATERSHED DESCRIPTION

The Tijuana River Watershed encompasses a region of approximately 1,750 square miles (1.12 million acres) on both sides of the international border between California and the state of Baja California in Mexico. In terms of water quality degradation, it is considered the most severely impacted watershed in San Diego County.[4] The Tijuana River Watershed is classified as a Category I (impaired) watershed by the State Water Resources Control Board due to a wide variety of water quality issues. These problems are largely a result of point and non-point sources on both sides of the border. The Tijuana Estuary, a National Estuarine Sanctuary that supports a variety of threatened and endangered plants and animals, is threatened by inflows from the Tijuana River containing high concentrations of coliform bacteria, sediment, trace metals (copper, lead, zinc, chromium, nickel, and cadmium), polychlorinated biphenyls (PCBs), and other urban, agricultural, and industrial pollutants.[5] Additional information on water quality can be found in Section 3 of this WURMP.

1.2.1 Geographic Setting

Several jurisdictions with land use authority lie within the boundaries of the Tijuana River Watershed, including the Cities of Imperial Beach and San Diego, the County of San Diego, and several Mexican municipalities including the important urban centers of Tijuana and Tecate.

The Tijuana River WMA covers approximately 467 square miles (299,228 acres) of land area within the United States portion of the Tijuana River Watershed. The WMA is bounded on the north by the Otay River Watershed, which drains into San Diego Bay. It is bounded on the south by remainder of the watershed within Baja California. The Pacific Ocean is located to west and the Anza Borrego Watershed of the Colorado River Basin (Region 7) is located to the east. Elevation ranges from sea level at the Tijuana Estuary to about 6,000 feet in the Laguna Mountains (Mount Laguna and Garnet and Monument Peaks). Annual rainfall ranges from 6 inches at the coast up to 30 inches in the Laguna Mountains.

The Tijuana River WMA consists of eight specific hydrologic areas (HAs). Please refer to Table 1-1 and Figure 1-1 below for a breakdown and map of these HAs.

Table 1-1 Tijuana WMA Hydrologic Areas

Hydrologic Area Name	Hydrologic Area Number
Tijuana Valley	911.1
Potrero	911.2
Barrett Lake	911.3
Monument	911.4
Morena	911.5
Cottonwood	911.6
Cameron	911.7
Campo	911.8

[4] Project Clean Water website (www.projectcleanwater.org/html/ws_tijuana.html) 6/26/2007
[5] Project Clean Water

Figure 1-1 Tijuana River Watershed

1.2.2 Surface Water Hydrology

Hydrology in the Tijuana River WMA is characterized by a southwest-trending stream network and is comprised principally of Pine Valley Creek, Cottonwood Creek, and the Campo Creek drainages. Two reservoirs, Barrett and Morena, store water, some of which is conveyed out of the watershed via the Dulzura Conduit into the Otay River Watershed. In Mexico, the drainage consists of two major sub-basins, largely east-to-west drainages reflecting the westward inclination of the terrain. The northernmost portion of the Mexican drainage area includes the Lower Cottonwood Creek – Rio Alomar Drainage. To the south, the main river has several different names including Arroyo Las Calabazas in the southern upper areas of the Juarez Mountains, Rio Las Palmas in the middle section, and the Rio Tijuana in the northern border area. There are also two main water reservoirs in the Mexican portion of the watershed including El Carrizo and Rodriguez Reservoirs.[6]

1.2.3 Land Use

The predominant land uses in the Tijuana River WMA are shown in Table 1-2 below and include: Vacant/Undeveloped land (60%) followed by Open Space/Open Water (26%), Spaced Rural Residential and Residential (6% and 1% respectively), Agriculture (3%) and Transportation (2%).

[6] *Tijuana River Atlas*, 2005 San Diego State University Press Institute for Regional Studies of the Californias, San Diego California

Table 1-2 Land Uses by Hydrologic Area in the Tijuana River WMA[7]

Land Use	Total Acres	911.1	911.2	911.3	911.4	911.5	911.6	911.7	911.8
Vacant/ Undeveloped	180,313	4,048	20,558	34,379	21,058	11,177	26,322	23,592	37,179
Open Space /Open Water	78,138	6,494	26,269	22,463	1,448	2,928	304	3,311	14,921
Spaced Rural	19,191	154	4,683	1,062	455	476	289	1,628	10,444
Agriculture	8,568	2,217	1,162	778	175	72	801	742	2,620
Transportation	6,916	2,727	334	500	375	48	782	709	1,441
Residential	2,714	1,739	260	78	351	156	0	1	123
Industrial	757	722	21	0	0	0	0	0	14
Parks	828	145	293	18	237	18	37	60	20
Military	427	427	0	0	0	0	0	0	0
Education	398	330	6	0	2	0	30	0	30
Commercial	636	466	19	3	14	1	0	5	128
Public Facilities	343	180	12	10	12	2	33	18	76
Total Area	299,228	19,649	53,616	59,290	24,127	14,879	28,598	30,067	69,002

1.2.4 Population

The current population of the entire watershed is approximately 1.4 million people[8]. Within the Tijuana River WMA (north of the international boundary) the population, based on 2000 Census data, was 74,126 (Table 1-3) and is expected to grow to approximately 127,469 by 2030 (Table 1-4). Census data shows that 65,714 people, or 89% of the 2000 population, resided in the Tijuana Valley HA (911.1), the more urbanized portion of the watershed.

Table 1-3 2000 Census Data by HA for Tijuana River WMA

Tijuana Valley (911.1)	Potrero (911.2)	Barrett Lake (911.3)	Monument (911.4)	Morena (911.5)	Cottonwood (911.6)	Cameron (911.7)	Campo (911.8)	Total
65,714	1,714	1,109	1,687	671	50	184	2,911	74,126

Table 1-4 Population Projections in the Tijuana River WMA

	2000	2010	2020	2030
Estimated Population	74,126	85,998	110,864	127,469

[7] 2006 Land Use Data from SANDAG
[8] A Binational Vision For the Tijuana Watershed, 2005 Institute for Regional Studies of the Californias and the Department of Geography at San Diego State

SECTION 2.0 – COLLECTIVE WATERSHED STRATEGY

2.1 MODEL WATERSHED URBAN RUNOFF MANAGEMENT STRATEGY

Pursuant to the Municipal Permit, the Regional Copermittees developed a Model Watershed Urban Runoff Management Strategy (Model Strategy) to guide the selection and implementation of watershed activities. The goal of the Model Strategy is to provide regional consistency to the activity selection process in a manner that appropriately addresses each watershed Copermittee's contribution to the high priority water quality problems in the WMA.[9]

The Model Strategy provides standard definitions for the types of activities that are included as part of the WURMP. It also distinguishes between those activities that can be used toward fulfilling the Permit's WURMP requirements and those that do not receive WURMP credit but are implemented and reported because they provide valuable watershed benefits. By standardizing activity definitions, Copermittees can develop consistent reporting and data tracking practices to further enhance watershed activity and programmatic assessments.

The Model Strategy also defines a standard approach for selecting activities appropriate for implementation within each watershed. This approach includes conducting a baseline analysis, identifying potential management actions, and selecting watershed activities for implementation. Several tools are identified that aid the Watershed Copermittees in completing these steps. Where appropriate, the Model Strategy also discusses the importance of filling existing data gaps. The approach takes into consideration the appropriate scale at which a management action should be implemented and identifies the Watershed Copermittee(s) potentially responsible for undertaking the management action. Finally, the Model Strategy presents a standard format for developing an implementation schedule for all watershed activities.

2.2 TIJUANA RIVER WMA STRATEGY

The Tijuana River Copermittees used the process described in the Model Strategy to conduct a baseline watershed evaluation, identify potential management actions to be conducted at the HA scale, and select watershed activities to address the high priority problems within the Tijuana River WMA. Details on how the Tijuana River Copermittees used the Model Strategy's activity selection process are discussed below.

2.2.1 Baseline Watershed Evaluation

The Tijuana River Copermittees spent several meetings conducting a baseline watershed evaluation of each of the Tijuana River WMA's HAs with respect to: 1) water quality problems identified through monitoring data or other regulatory mechanisms, and 2) the presence of likely pollutant sources. Information from the Regional Copermittees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA) was used as a starting point for this exercise and was supplemented by a review of more recent water quality monitoring data to identify the number of exceedances occurring within each HA and the exceedance rate (percentage) associated with

[9] The Model Strategy is included in its entirety as an attachment to the RURMP.

each pollutant category. Water quality monitoring data for each of the pollutant categories were evaluated to confirm or contradict the BLTEA's water quality priority (WQP) ratings. A count of "Likely" and "Unknown" sources as identified in the BLTEA was then used to assess whether pollutant sources within each HA were present and adequately characterized. The Watershed Copermittees evaluated available information to determine whether monitoring data were indicative of the pollutant sources within each HA. Table 2-1 identifies the high priority water quality problems in the Tijuana River WMA.

Table 2-1 High Priority Water Quality Problems in the Tijuana River WMA

Hydrologic Area	Water Quality Problem
Tijuana Valley (911.1)	Bacteria/Pathogens Sediment (TSS/Turbidity) Pesticides (Diazinon) Gross Pollutants Total Metals Organics
Potrero (911.2)	Undetermined
Barrett Lake (911.3)	Dissolved Minerals (Manganese) Gross Pollutants (pH) Color
Monument (911.4)	Bacteria/Pathogens Sediment (Turbidity) Nutrients (Phosphorus)
Morena (911.5)	Gross Pollutants (pH) Dissolved Minerals (Manganese) Color
Cottonwood (911.6)	Undetermined
Cameron (911.7)	Undetermined
Campo (911.8)	Undetermined

2.2.2 Management Action Identification

Once the baseline watershed evaluation was completed, the Tijuana River Copermittees used the Strategy's Watershed Activity Decision Matrix and followed the guidance provided in the strategy flowchart to identify potential management actions for each pollutant category in each HA. This ensured that the selection of activities was applicable for each management action and that the selected activities addressed the high priority water quality problems (See Sections 3.3 and 3.4). The matrix identifies a potential management action based upon the amount of water quality data available, observed exceedances of water quality benchmarks or action levels, existing BLTEA ratings, and the number of potential pollutant sources identified in the HA.

The following four potential management actions were identified: Water Quality Activities (i.e. Load Reduction/Source Abatement Activities), Watershed Education Activities, Source Identification/Characterization Activities, and Water Quality Monitoring Activities. When

information suggested a gap in either water quality information or known sources information, the matrix identifies the need to consider additional water quality monitoring and/or source characterization and investigation as an initial step prior to initiating load reduction and source abatement activities. When data indicated that the water quality data adequately conveyed the water quality conditions within the HA, and likely pollutant sources were present, load reduction or source abatement management actions were identified as potential management actions. The results of the Tijuana River Copermittees' use of the Watershed Activity Decision Matrix are summarized in Table 2-2.

Table 2-2 Results of the Watershed Activity Decision Matrix in the Tijuana River WMA

High Priority Pollutant	Water Quality Activity	Education Activity	Source ID / Characterization[10]	Monitoring
Metals		All	911.1, 911.2	911.1, 911.2, 911.3, 911.5, 911.7
Dissolved Minerals		All		911.1, 911.2, 911.3, 911.4, 911.5, 911.6, 911.7, 911.8
Organics		All		911.1, 911.2, 911.3, 911.4, 911.5, 911.6, 911.7, 911.8
Oil and Grease		All		911.2, 911.3, 911.5, 911.7, 911.8
Sediment	911.1, 911.8	All		911.2, 911.3, 911.4, 911.5, 911.6, 911.7
Pesticides		All	911.1	911.2, 911.3, 911.4, 911.5, 911.7, 911.8
Nutrients		All	911.1	911.1, 911.2, 911.3, 911.5, 911.7
Gross Pollutants		All	911.1	911.1, 911.2, 911.5, 911.7
Bacteria/Pathogens	911.4		911.1	911.1, 911.2, 911.3, 911.5, 911.7

Notes:

- A hydrologic area with a pollutant identified with Management Action No. 7 ("No Activities Warranted") does not appear in the table for that pollutant.
- A hydrologic area with a pollutant identified with Management Action No. 8 ("Raise Rate and Reevaluate") does not appear in the table for that pollutant.

[10] Note: Many of these sources originate outside of the control of the local jurisdictions.

2.2.3 Activity Selection

Upon identification of potential management actions in each HA, the Tijuana River Copermittees took the following steps to select appropriate activities. First, the Copermittees representing each HA were identified (see Table 2-3). This step was important because it enabled each Copermittee to identify contributions relative to their jurisdictional authority. Next, Copermittees were directed to assess the management actions required for each pollutant in their respective HA(s). Each Copermittee reviewed existing or previously identified activities (as noted in the FY 2006-07 WURMP Annual Report) to determine whether they: 1) were applicable to new Permit requirements, 2) would continue to be implemented, and 3) addressed the respective HA's high priority water quality problem(s).

Tijuana River Copermittees then selected activities feasible to implement within their jurisdictions and appropriate for their relative contribution to the HA's priority water quality problems. In general, the Copermittees consider pollution prevention and source control BMPs as the primary and best defense against water quality degradation, followed by selective implementation of treatment control BMPs where determined necessary. Activities include those that go above and beyond jurisdictional Permit requirements and address watershed high priority water quality problems and may also have included capital improvement projects.

Table 2-3 Hydrologic Area Responsibilities by Jurisdiction

Copermittee	Tijuana River WMA Hydrologic Areas							
	911.1	911.2	911.3	911.4	911.5	911.6	911.7	911.8
County	18%	100%	99.98%	100%	99.99%	100%	100%	100%
San Diego	71%	0%	0.02%	0%	0.01%	0%	0%	0%
Imperial Beach	11%	0%	0%	0%	0%	0%	0%	0%

2.2.4 Collaborative Watershed-Based Activities

The Tijuana River Copermittees considered the concept of "Collaborative Watershed-Based Activities" during activity selection. The concept of "Collaborative Watershed-Based Activities" is based on the fact that the Tijuana River Copermittees coordinate their activities to address the high priority water quality problems in the WMA. At times, this coordination may lead to potential activities that either: 1) cover several HAs when implemented by each jurisdiction or 2) are proposed by multiple jurisdictions separately but implemented in a similar fashion. The concept focuses on the coordination and, if feasible, standardization of watershed activities. It facilitates the identification of watershed-based impacts from coordinated efforts and improves overall watershed assessments based on these efforts. It acknowledges that each Copermittee will be implementing activities jurisdictionally for the most part and that the manner in which efforts occur may vary.

The benefits to using a collaborative concept are that the individual jurisdiction retains control over the implementation details (scale, location, timing etc.), while allowing for enhanced overall watershed assessment. By incorporating as much as possible an element of standardization into

the process, jurisdictionally implemented activities can be compared to one another and an overall load reduction for the collaborative effort(s) can be determined. Additionally, the overall value to the watershed in meeting the required management actions to address the high priority water quality problems is better emphasized.

2.2.5 Activity Summary Sheets

The Tijuana River Copermittees utilized the Model Strategy's Standard Activity Summary Sheet template to describe activities within the WMA. The format includes a comprehensive description of the activity, the proposed implementation timeline, the relationship and benefit of the activity to the WMA's high priority water quality problems, and an assessment mechanism to evaluate the activity's effectiveness. Specific details on how each Copermittee will assess the effectiveness of its watershed-based activity is also included on the Activity Summary Sheet. Additional discussions of the watershed activities are found in Section 4 of the WURMP and individual Activity Sheets are found in Appendix 2.

2.2.6 Five-Year Strategic Plan Development

The final step of the Watershed Strategy was to develop a Five-Year Strategic Plan for the Tijuana River WMA. The Tijuana River Copermittees used the Model Strategy's Five-Year Strategic Plan template to present the information in a manner consistent with other watersheds. The Tijuana River Copermittees worked collaboratively to develop the Tijuana River WMA Five-Year Strategic Plan. This involved reviewing activity templates, ensuring that the activities focused on addressing the high priority water quality problems, that the Copermittees were conducting activities that addressed their contributions to the water quality problems, and that Permit requirements for two water quality and two education activities would be met. The Tijuana River WMA Five-Year Strategic Plan is presented and discussed in detail in Section 4 of this document.

It should be noted that the Tijuana River WMA Five-Year Strategic Plan is subject to change on an annual basis due to factors such as available funding, staffing issues, or new information regarding water quality or likely pollutant sources.

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SECTION 3.0 – WATER QUALITY & POLLUTANT SOURCE ASSESSMENT

3.1 WATER QUALITY ASSESSMENT APPROACH

The Municipal Permit requires annual assessments of receiving water quality by watershed and outlines specific elements and analyses to be included.[11] The water quality assessment approach outlined below is subject to change based on the outcome of ongoing efforts to improve the content, structure, and presentation of the Copermittees' regional monitoring reports.

Data Sets

As shown in Table 3-1, watershed water quality assessments will rely on applicable water quality data, reports, and analysis generated from the Copermittees' Receiving Waters Monitoring and Reporting Program as well as applicable information available from other public and private organizations. Data sets that are applicable to the Tijuana River WMA are described in further detail in Section 3.2.

Table 3-1 Data Sets To Be Considered in Watershed Water Quality Assessment

DATA SET	REFERENCE
RECEIVING WATERS MONITORING PROGRAM	
Mass Loading Station (MLS) Monitoring	3.2.1
Temporary Watershed Assessment Station Monitoring (TWAS)	3.2.2
Bioassessment Monitoring	3.2.3
Ambient Bay and Lagoon Monitoring (ABLM)	3.2.4
Coastal Storm Drain Monitoring	N/A
URBAN RUNOFF MONITORING PROGRAM	
- MS4 Outfall Monitoring	3.2.8
- Source Identification Monitoring	3.2.9
- Dry Weather Field Screening (DWS) and Analytical Monitoring	3.2.4
REGIONAL MONITORING PROGRAM	
- Bight '08	3.2.7
SPECIAL STUDIES	3.2.5, 3.2.6, 3.2.10
THIRD-PARTY DATA	3.2.11

[11] Permit Section E.2.c. and Section III.A.2 of the Permit's *Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001*

Core Management Questions

Watershed water quality assessments will attempt to answer each of the following core management questions:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to receiving water problems?
4. What are the sources of urban runoff that contribute to the receiving water problems?
5. Are conditions in receiving water getting better or worse?

To answer these questions, data will be segregated according to whether they are representative of receiving water conditions or urban runoff inputs. Additional segregation of data by season (i.e., wet weather and dry weather conditions) or sub-watershed will be considered as appropriate. Importantly, the watershed water quality assessment will clearly identify areas of the watershed where data gaps exist.

Identification of Priority Watershed Water Quality Problems

The watershed water quality assessment will also serve as the foundation for identifying priority watershed water quality problems. Building upon minimum Permit requirements[12], the Tijuana River Watershed Copermittees have identified the following criteria for identifying and prioritizing watershed water quality problems in the Tijuana River WMA:

- All Clean Water Act Section 303(d) listings within the Tijuana River WMA will be considered priority watershed water quality problems.

- Watershed data will be analyzed to identify persistent violations of water quality standards, toxicity, impacts to beneficial uses, and other pertinent conditions. All such findings will be considered priority watershed water quality problems. The following steps are generally taken to analyze and evaluate water quality data on an annual basis:
    - Identify the constituents of concern (COCs) that have been found to exceed administrative water quality reference standards and Basin Plan water quality objectives as well as the frequency, magnitude, and duration of such exceedances;
    - Isolate the COCs that are shown to exceed reference values in a persistent and/or recurrent manner;
    - Consider bioassessment rankings and toxicity results;
    - Examine how COCs may contribute to water quality degradation which would negatively impact designated beneficial uses;
    - Compare COCs with third-party data that do not meet the quality control/quality assurance standards of the regional monitoring program and were therefore not included in the steps above;

[12] Permit Section E.2.c

- As a longer historical record is developed over multiple years of monitoring, assess COC data to determine whether there are any increasing or decreasing trends through time applying statistical methods.

- To better identify the scale of watershed water quality problems, the WURMP will make use as necessary of the methodology presented in the Copermittees' 2005 Baseline Long-Term Effectiveness Assessment (BLTEA). The BLTEA methodology assigns water quality priorities at the sub-watershed, or hydrologic area, level. The BLTEA methodology is imperfect and based on limited data, so priority rankings must be interpreted with great care. Nevertheless, since hydrologic areas are smaller and more manageable in size than entire watershed management areas, they facilitate identifying watershed water quality problems and planning watershed management actions.

- From the list of watershed water quality problems, high priority water quality problems will be identified at the discretion of the Tijuana River WMA Copermittees. At a minimum, high priority watershed water quality problems will include those that most significantly exceed or impact water quality standards. Pollutants for which TMDLs have been approved or are under development will also be considered high priority watershed water quality problems.

3.2 RECEIVING WATERS CONDITION

This section describes the data sets that will be utilized to conduct watershed water quality assessments in the Tijuana River WMA WURMP and summarizes available information about the condition of receiving waters. Some of the data sets identified are from existing monitoring programs; others will become available when implementation of new monitoring programs begins during this Permit cycle.

3.2.1 Mass Loading Stations

The Permit requires water quality monitoring at one mass loading station (MLS) in the Tijuana River. The Tijuana River MLS is located in an unimproved channel under the Hollister Street Bridge in San Diego, downstream from the International Boundary and Water Commission's diversion structure and treatment plant (Latitude: 32° 33.078' Longitude: 117° 5.043') (see Figure 3-1). The contributing runoff area consists of more than 1,091,000 acres, which covers over 99% of the Tijuana River Watershed. The major land uses in the WMA are undeveloped (60%), parks (25%), and residential (7%). The Tijuana River at the MLS sampling site is an unimproved channel. The River flows through Tijuana, Mexico and runoff contributions come from both Mexico and the United States.

Beginning in the 2007-08 monitoring year, MLS sampling will be conducted on a rotating-watershed basis. This means that the Tijuana River MLS will be sampled in alternating years. Sampling of two storms and two dry weather events is scheduled to occur during both the 2009-2010 and 2011-12 monitoring years. One storm will be sampled at the MLS during the 2008-09 monitoring year when most of the region's monitoring resources will be directed toward participation in the Southern California Bight Monitoring Program.

In addition to measuring flow rates and volumes, MLS samples are analyzed for the constituents identified in Table 2 of the Permit's *Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001* (Monitoring and Reporting Program). Toxicity testing is also performed on MLS samples to assess the potential impact of complex mixtures of unknown pollutants on aquatic life in receiving waters. If persistent toxicity is detected, specialized toxicity identification evaluations (TIE) may be used to help characterize and identify constituent(s) causing toxicity. Beginning in the 2007-08 monitoring season, trash assessments will also be conducted at the MLS in accordance with the *Monitoring Workplan for the Assessment of Trash in San Diego County*. Finally, sediment samples will be collected within two weeks of the first storm of the season. The sediment samples will be analyzed for synthetic pyrethroids, total organic carbon, and grain-size distribution in accordance with the *Monitoring Workplan for the Assessment of Synthetic Pyrethroids in San Diego County*.

Figure 3-1 MLS and Stream Bioassessment Monitoring Locations

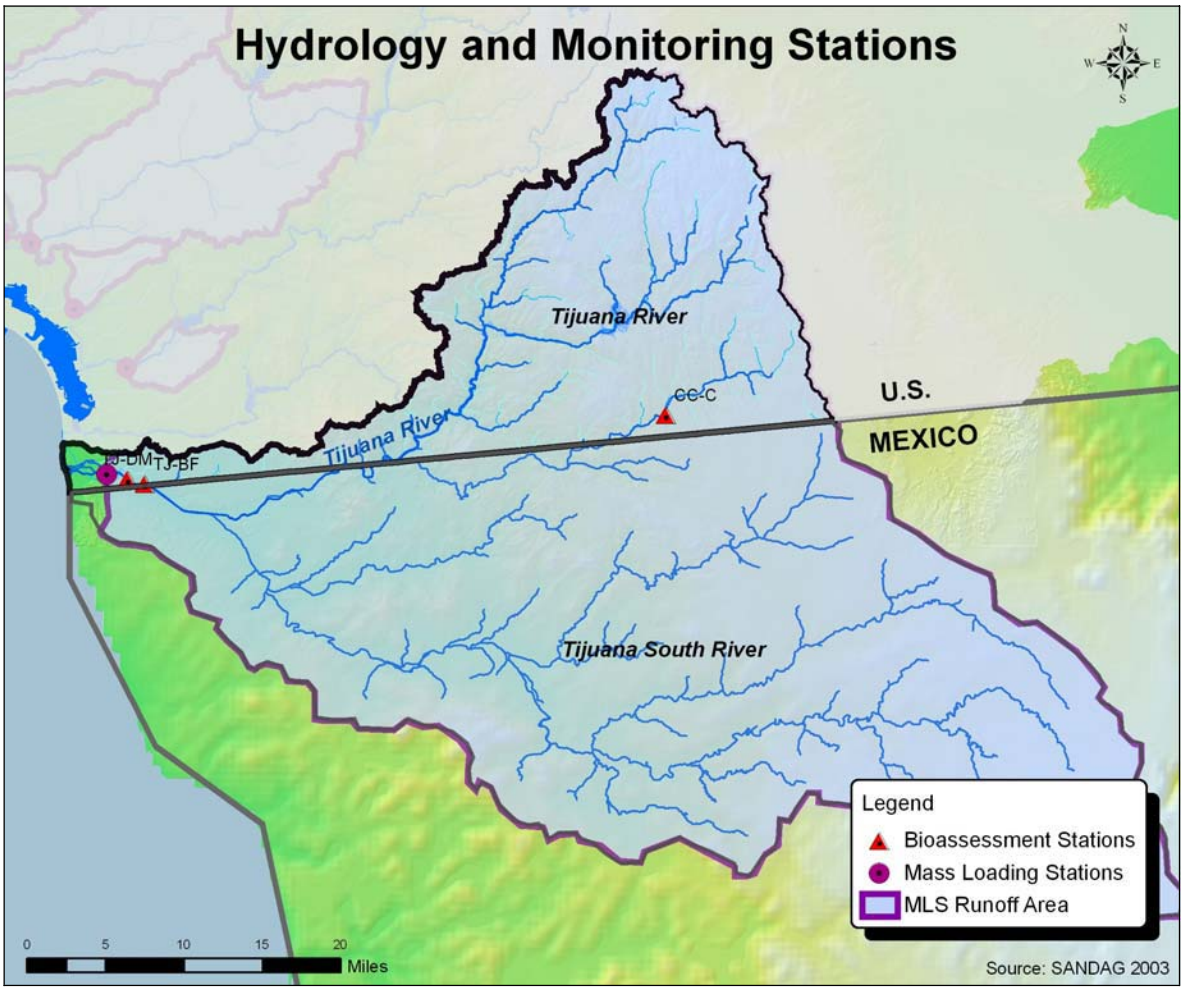

Annual storm water monitoring has occurred at the Tijuana River MLS since the 2001-2002 wet weather monitoring season. Three storm events per year, eighteen (18) total events, were monitored at the MLS on the Tijuana River during the wet weather season. Monitored events for the 2006-2007 wet weather season occurred on October 14, 2006, January 30, 2007, and April 20, 2007.

The following is a summary of MLS results over the period of record (2001-2007):

Conventional constituents that have exceeded their respective WQO during wet weather monitoring include:

- Oil and grease exceeded the WQO only once (6%) since 2001 (1/18).
- Un-ionized ammonia exceeded the WQO 13 times (87%) since 2001 (13/15).
- Biological oxygen demand (BOD) exceeded the WQO 9 times (50%) since 2001 (9/18).
- Chemical oxygen demand (COD) exceeded the WQO 14 times (78%) since 2001 (14/18).
- Total Phosphorus exceeded the WQO 12 times (67%) since 2001 (12/18).
- Dissolved phosphorus exceeded the WQO 5 times (28%) since 2001 (5/18).
- Total suspended solids (TSS) exceeded the WQO 16 times (89%) since 2001 (16/18).
- Turbidity exceeded the WQO 17 times (94%) since 2001 (17/18).

Bacterial indicators: All three indicators (total coliform, fecal coliform, and enterococcus) had very high densities observed during all storm events. Fecal coliform is the only bacterial indicator with a water quality objective for wet weather monitoring. Fecal coliform results were above the REC-1 WQO during 100% of the monitoring events (18/18).

Pesticides: Several pesticides have been detected. Diazinon was above the WQO during 17 out of 18 monitoring events (94%). Malathion exceeded the WQO in eight out of 15 monitoring events (53%). Chlorpyrifos exceeded the WQO in five out of 18 monitoring events (28%), it should be noted that there have been no exceedances since 2004.

Total Metals: A suite of metals has been monitored since the 2001-02 monitoring period, including:

- Antimony has exceeded the WQO only once (6%) since 2001 (1/18). However, this exceedance occurred during the 2006-2007 monitoring period.
- Arsenic has exceeded the WQO only once (6%) since 2001 (1/18). There have been no exceedances of arsenic since the 2003-04 monitoring period.
- Cadmium has never exceeded the WQO since 2001.
- Chromium has never exceeded the WQO since 2001.
- Copper has exceeded the WQO 9 times (50%) since 2001 (9/18).
- Lead has exceeded the WQO 10 times (56%) since 2001 (10/18).
- Nickel has exceeded the WQO only once (6%) since 2001 (1/18).
- Selenium has never exceeded the WQO since 2001.
- Zinc has exceeded the WQO six times (6/18) or 33% of the events since 2001.

Dissolved metals: Each of the metals are also monitored in their dissolved form. Since 2001 the only exceedance of a WQO for dissolved metals occurred during the 2002-03 monitoring season for copper.

Toxicity was observed for the acute (96-hr), chronic (7-day survival), and reproductive (7-day) endpoints for Ceriodaphnia dubia during all eighteen events monitoring since 2001. Toxicity was observed for the acute (96-hr) endpoint for Hyalella azteca during eight out of 18 monitoring

events since 2001 (44%). Toxicity was not observed to the freshwater algae Selenastrum capricornutum at the Tijuana River MLS during any of the 18 monitoring events since 2001.

The average ratio of the water quality result to the WQOs was also determined for each constituent by calculating the ratio of mean water quality results to the WQOs from all storm events from October 2001 through April 2007. The results are shown in Figure 3-2. The mean result for fecal coliform for the past six monitoring seasons is nearly 1,000 times the WQO. These results are indicative that the Tijuana River receives discharges of raw wastewater from Mexico. Other constituents with mean results above the WQO include TSS, turbidity, BOD, COD, ammonia, total phosphorus, Chlorpyrifos, Diazinon, Malathion, total copper, total lead, toxicity to the acute, chronic, and reproductive endpoints for C. dubia.

Figure 3-2 Tijuana River Water Quality Ratios

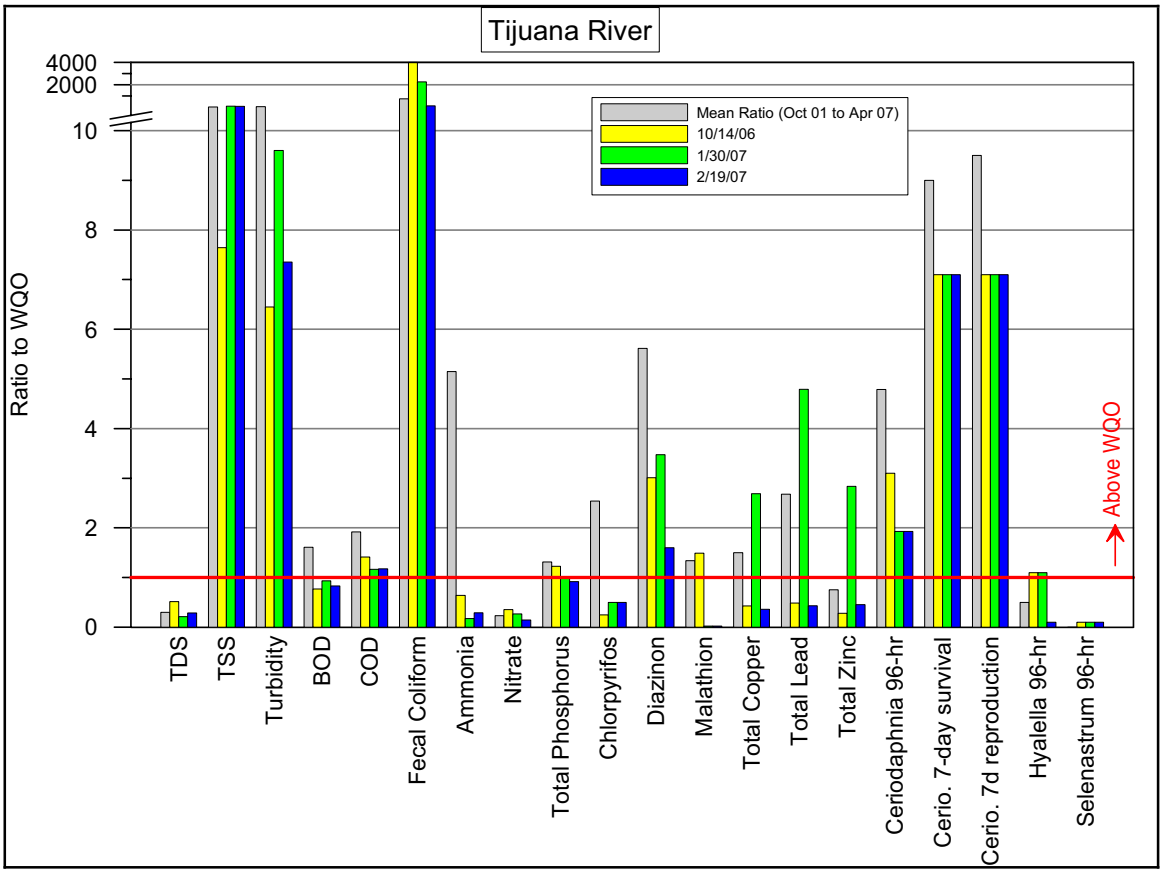

3.2.2 Bioassessment Monitoring

The Permit requires rapid stream bioassessment monitoring at various sites in the Tijuana River WMA. The Copermittees' bioassessment monitoring program utilizes the California Department of Fish and Game's Stream Bioassessment Procedure to sample and analyze populations of benthic macroinvertebrates (BMIs). The program also involves an assessment of the quality and condition of physical habitat at each monitoring location. To assess the quality of the BMI communities at each site, biological metrics are calculated as well as two summary indices. The summary indices include a multi-metric Index of Biotic Integrity (IBI) and an Observed-to-

Expected (O/E) ratio, both of which are specific to Southern California ecological conditions. While the IBI and O/E ratio are useful for broadly identifying impairment, analysis of individual metrics and taxa present (often in low numbers) may provide signals of benthic community quality that are too weak to be represented by summary indices. Stream bioassessment takes place at two sites in Tijuana River WMA (Figure 3-1). Two stream bioassessment monitoring sites were sampled in the Tijuana River WMA. Table 3-2 provides information on the Biologic Metrics sampled at each of the monitoring sites during the most recent surveys.

Campo Creek Monitoring Site: CC-C

One site in Campo Creek (CC-C) was sampled in October 2006 and May 2007. The Index of Biotic Integrity rating for the Campo Creek site was Very Poor for the October 2006 survey and Fair for the May 2007 survey. The results of the O/E analysis show that the Campo Creek monitoring site had observed to expected taxa ratios of 0.37 and 0.62. This implies that the benthic community has lost an estimated 63 to 38 percent of the biodiversity expected to occur at the site. These results indicate that for the May survey, the site was above the impairment threshold according to the IBI, but was below the O/E impairment threshold.

Tijuana River Border Fence Site: TJ-BF

One site in the Tijuana River at the border fence (TJ-BF) was sampled in May 2007. The Border Fence site was rated Poor, but based on an assessment of individual metrics and observations made in the field, the investigators in this study feel that this rating is much higher than indicated by the actual benthic community quality. The sites have been sampled twice annually, once during spring and once during fall, since the 2001-02 monitoring year.

Stream bioassessment is scheduled to occur in the Tijuana River WMA starting in 2009-10 and again in 2011-12. In addition to the procedures required under the 2001 Municipal Permit, Periphyton (algae) monitoring will be conducted in accordance with the EPA's Rapid Bioassessment Protocols for use in Streams and Wadeable Rivers. Ash-free dry mass (AFDM) and chlorophyll-A analysis will also be conducted.

Table 3-2 Biological Metrics and Physical Measures of the Tijuana River WMA

Tijuana River Watershed Management Area	Campo Creek in Campo (CC-C)		Tijuana River at the Border Fence (TJ-BF)
Survey	**Oct-06**	**May-07**	**May-07**
Index of Biotic Integrity/ Qualitative Rating*	**4 Very Poor**	**29 Fair**	**17 Poor**
O/E Ratio**	**0.37**	**0.62**	**0.25**
Metrics			
Taxa Richness	12	20	10
EPT Taxa (mayflies, stoneflies, and caddisflies)	0	5	0
% Intolerant Taxa	0.0%	0.2%	0.0%
% Tolerant Taxa	61.5%	27.8%	43.0%
Average Tolerance Value	6.9	6.5	7.4
% Collector Filterers +Collector Gatherers	89%	79%	73%
Physical Measures			
Elevation	2550		25
Physical Habitat Score	95	125	37
Riffle Velocity (ft/sec)	0.1	0.1	0.6
Substrate Composition			
Silt	30%	7%	83%
Sand	32%	43%	10%
Gravel	3%	2%	7%
Cobble		7%	
Boulder	10%	5%	
Roots	25%	10%	
Bedrock/Solid		26%	
Water Quality			
Temperature ˚C	13.2	12.4	27.5
pH	7.7	8.2	7.8
Specific Conductance (ms/cm)	1.413	1.315	2.495
Dissolved Oxygen (mg/l)	3.34	8.61	0.73

*IBI Score 0-13=Very Poor, 14-26=Poor, 27-40=Fair, 41-55=Good, 56-70=Very Good
**O/E ratio of >0.8 represents unimpacted conditions

3.2.3 Ambient, Bay, and Lagoon Monitoring Program

The Copermittees implemented the Ambient Bay and Lagoon Monitoring (ABLM) program from 2003 through 2005 in compliance with RWQCB Order 2001-01. ABLM monitoring consisted of the collection of sediment samples from the Santa Margarita River Estuary to assess the potential for adverse effects from the watershed and to compare sediment quality with other coastal embayments in San Diego County. In Phase I of each year, a stratified random approach was used to identify the three sites where COCs were most likely to be found (i.e., those with the highest total organic carbon and smallest grain size). These sites are mapped on aerial photos in Figures 3-3. Each site was sampled in Phase II of the assessment and analyzed for sediment chemistry, toxicity, and benthic community structure. It should be noted that the ABLM Program utilized the association between small grain size, high total organic carbon levels, and contaminants to spatially target areas in each embayment where contaminants were most likely to be found. Therefore, it is considered to represent a worst-case scenario.

Implementation of the ABLM Program will be described in the Copermittees' annual monitoring scope of work submitted to the RWQCB by September 1 of each year.

Figure 3-3 ABLM Sample Locations in the Tijuana River Estuary

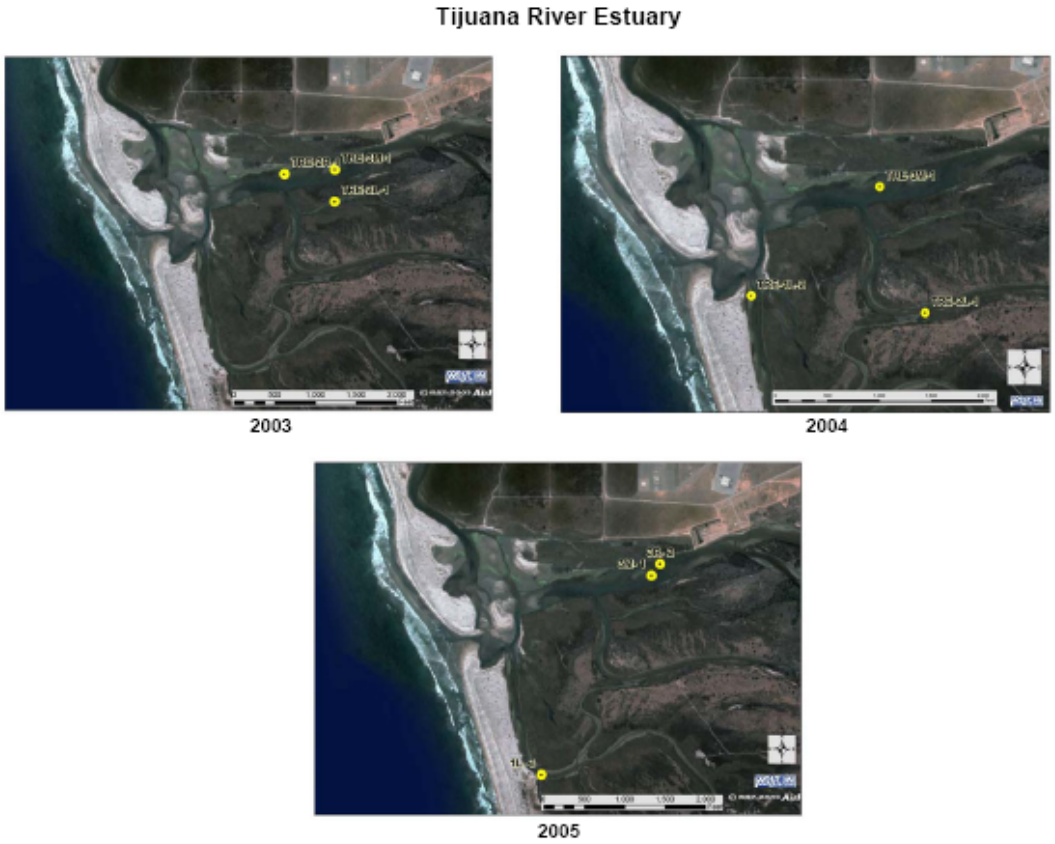

The results of the 2005 ABLM program for chemistry assessment indicated that seven metals common to all embayments were also found in estuary sediments. Concentrations were low and none exceeded their respective Effective Range Low (ERL) and Effective Range Median (ERM) sediment quality values. Test animals did not display a toxic response to the estuary sediment collected. The Simultaneously Extracted Metals/Acid-Volatile Sulfides (SEM/AVS) method is used to determine the potential toxicity of metals in a sediment sample. Correlated with the SEM/AVS Ratio, it was determined that bioavailable metals found in the estuary sediment were not toxic to the amphipod E. estuarius. The infauna community was dominated by a common polychaete worm and a gammarid amphipod.

Relative rankings for chemistry, toxicology, and benthic community structure are summarized in Table 3-3 for the period of record.

Table 3-3 Triad Summary for ABLM Program (2003-2005)

	CHEMISTRY	TOXICOLOGY	BIOLOGY
2005	Good	Good	Fair
2004	Fair	Good	Fair
2003	Good	Good	Fair

3.2.4 Dry Weather Monitoring Program

In addition to the wet weather monitoring discussed above, a separate dry weather monitoring program is carried out by each jurisdiction. Dry weather monitoring reports are provided separately by each jurisdiction in its Jurisdictional Urban Runoff Management Program (JURMP) Annual Report. Dry weather data are also provided in a regional data sharing format which is used for the watershed management area assessments and regional comparisons. Dry weather monitoring sites with field parameter and chemistry results are presented in this section and are shown on Figure 3-4 below. As cited in the Monitoring and Reporting Program, dry weather monitoring samples are screened in the field for the constituents listed in Section II.B.3.c.(4). Additionally a subset of these samples are prepared for laboratory analysis following the parameters listed in Section II.B.3.c.(3).

Dry weather water quality monitoring was performed at 19 locations in the Tijuana River WMA during the 2006 dry weather monitoring program. The total number of samples collected for each analyte may differ from the number of sample locations due to multiple sample analysis at each location. Of these, 11 sites are located upstream of the mass loading station in the Tijuana River. A summary of the 2006 dry weather monitoring results for the Tijuana River WMA is presented below in Table 3-4.

Table 3-4 2006 Dry Weather Monitoring Results for Tijuana River WMA

Analyte	Units	DW Action Level	Number of Samples	RESULTS		
				Minimum	Mean	Maximum
Conductivity*	µS/cm	5,000	29	376	5,420	48,200
Oil & Grease	mg/L	15	14	0.50	2.31	8.90
pH	pH units	6.5-9	26	6.70	7.54	8.69
Enterococcus	MPN/100mL	10,000	14	1	14,184	160,000
Fecal Coliform	MPN/100mL	20,000	14	1	14,095	160,000
Total Coliform	MPN/100mL	50,000	14	1	219,349	1,600,000
Ammonia (NH3-N)	mg/L	1	25	0.01	1.45	10
Orthophosphate (PO4-P)	mg/L	2	25	0.03	1.37	10
Nitrate (NO3-N)	mg/L	10	26	0.04	0.87	3
MBAS	mg/L	1	14	0.03	1.39	16.60
Turbidity**	NTU	20	24	0.01	75.49	1000
Chlorpyrifos	µg/L	0.5	14	0	0.02	0.03
Diazinon	µg/L	0.5	14	0.03	0.03	0.03
Hardness	mg CaCO3/L		15	153	290	445
Cadmium Dissolved	µg/L	(a)	14	1.04	2.18	2.50
Copper Dissolved	µg/L	(a)	14	1.04	21.77	72
Lead Dissolved	µg/L	(a)	14	1.04	2.15	2.50
Zinc Dissolved	µg/L	(a)	14	7.22	39.90	95.50

* Action Levels were adopted by the Dry Weather Working Group (Table 3-8) and are based on best professional judgment (BPJ).

** For Action Level the Basin Plan benchmark WQO was used instead of BPJ when comparing with MLS data.

Mean values are calculated including non-detect results at half the reporting limit. If the mean value was less than the reporting limit, then the mean was not included in the table.

(a) Dry weather action level for dissolved metal fraction based on total hardness and calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. If Total Hardness was greater than 400 mg/L, then 400 mg/L was used to calculate dissolved metals water quality objectives.

Figure 3-4. Tijuana River WMA Dry Weather Exceedance Map

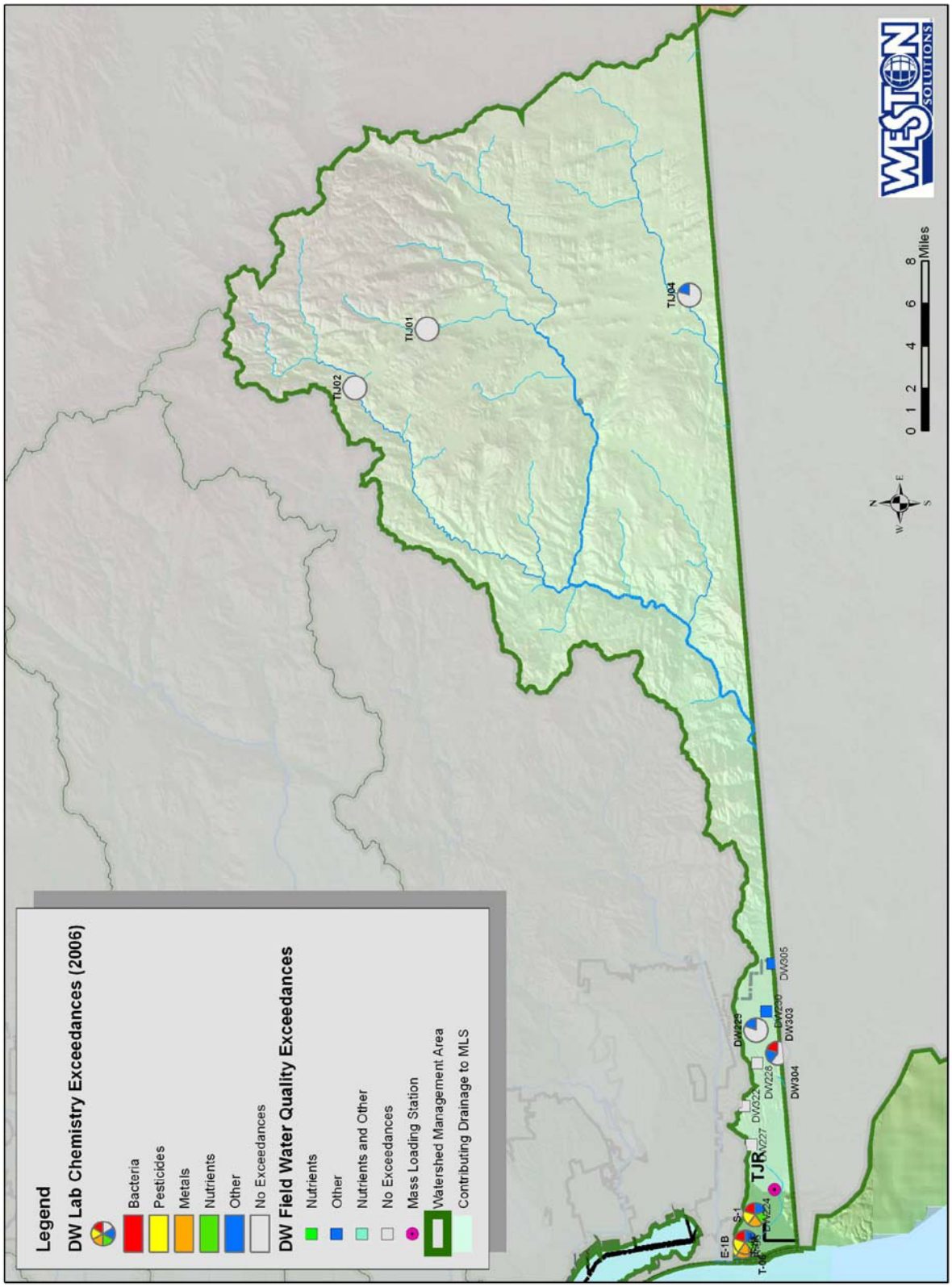

Table 3-5 summarizes the 2006 Dry Weather Program constituent exceedances for the Tijuana River WMA. Constituent results that were above the dry weather action level at the dry weather monitoring sites include conductivity, enterococcus, total and fecal coliform, ammonia, orthophosphate, MBAS, turbidity, and dissolved copper.

Table 3-5 2006 Dry Weather Exceedance Matrix

Analyte	Category	Total	Number of Exceedances	Average Ratio of Exceedance*	St. Dev. Ratio of Exceedance
Conductivity	Other	29	3	1.08	2.54
Enterococcus	Bacteria	14	2	1.42	4.27
Fecal Coliform	Bacteria	14	1	0.70	2.12
Total Coliform	Bacteria	14	4	4.39	9.30
Ammonia (NH3-N)	Other	25	7	1.45	2.73
Orthophosphate (PO4-P)	Nutrients	25	6	0.69	1.07
MBAS	Other	14	1	1.39	4.38
Turbidity	Other	24	10	3.77	10.21
Copper Dissolved	Metals	14	5	0.64	0.81
Tijuana River Total		**309**	**39**	**0.99**	**4.00**

* Average ratio of exceedance is equal to the average concentration for all samples collected divided by the dry weather action level.

Constituents with average ratios of exceedance and standard deviations greater than one indicate more frequent and wider ranges of exceedances. Constituents with average ratios of exceedance and standard deviations less than one indicate exceedances that occur on a more random and infrequent basis. In the Tijuana River WMA, conductivity, enterococcus, total coliform, ammonia, MBAS, and turbidity had average ratios of exceedance greater than one.

3.2.5 Bight '08

The Regional Copermittees will participate in the Bight '08 regional monitoring program being coordinated by the Southern California Coastal Water Monitoring Project (SCCWRP). Bight '08 could potentially provide data useful for assessing the condition of receiving waters as part of this WURMP. The details of the Bight '08 program are still being determined at the time of this writing.

3.2.6 MS4 Outfall Monitoring Program

The Permit requires the development and implementation of a new MS4 Outfall Monitoring Program. At the time of this writing, Copermittees are still in the process of defining the scope of this program. A workplan will be developed by July 2008. The goal of the MS4 Outfall Monitoring Program will be to assess the quality of MS4 discharges countywide and their relative contribution to receiving water conditions within each watershed. Analysis of discharges from MS4 outfalls to receiving waters will address the management question: "What is the relative urban runoff contribution to the receiving water problem(s)?" The MS4 outfall monitoring design will be based on a combination of both random and targeted sampling, during both dry weather and wet weather conditions.

3.2.7 Source Identification Monitoring Program

The Permit requires the development and implementation of a new Source Identification Monitoring Program. At the time of this writing, Copermittees are still in the process of defining the scope of this program. A workplan will be developed by July 2008. The goal of the Source Identification Monitoring Program is to identify and assess pollutant sources that may be impacting receiving water conditions. It will address the management question: "What are the sources of urban runoff that contribute to receiving water problems?" The main purpose of the question is to identify pollutant sources so that appropriate management actions can be applied to eliminate the source from entering receiving waters.

3.2.8 Special Studies

The Tijuana River Watershed Copermittees are currently anticipating one special study to occur within this WMA. This study is being lead by the City of Imperial Beach. Additional studies may be conducted in the future.

Imperial Beach Bacterial Source Identification Study

The City of Imperial Beach has been awarded a grant to identify and quantify the sources of microbial contamination in the Tijuana River that is tributary to the Pacific Ocean at Imperial Beach and causing beach closures at two prominent beaches. The study will also identify potential mitigation projects/best management practices to reduce the bacterial loading in the Tijuana River.

Identifying and quantifying the bacterial sources will be accomplished through a review and compilation of existing information, together with a series of surveys to assess short (daily and sub-daily) and long-term (seasonal) temporal patterns and spatial patterns within the Tijuana River Watershed. Surveys will be coupled with water flow assessments to develop bacterial loadings within the watershed areas.

Prior to initiating the project, a comprehensive review of historical data will be performed, including the current state of microbial source tracking. This review will include a detailed review of storm drain maps, GIS layer topography, and land use information to identify monitoring sites and confirm drainage areas. In addition, a thorough review of existing data and current studies will be conducted. The study will utilize the Storm Water Management Model to determine rainfall conditions that overwhelm the existing stormwater diversion systems. This information will be used to assist in determining cost-benefits in future project feasibility studies. This study will augment and complement other studies conducted by the City of Imperial Beach and in the Tijuana River Watershed.

3.2.9 Third-Party Data

The Tijuana River Copermittees will consider incorporating data obtained from third parties as determined appropriate in its assessment of watershed water quality. Third-party data may be considered if they meet the acceptance criteria outlined in Section 3.1.1 of the Watershed Data Assessment Framework (MEC/Weston, 2004).

Surface Water Ambient Monitoring Program

An example of third-party data that may be used to date is the State's Surface Water Ambient Monitoring Program (SWAMP) conducted in the Tijuana Watershed.

3.3 WATER QUALITY PROBLEMS

Priority Water Quality Problems (Priority WQP) are determined by evaluating the data against the 4 criteria listed in Section 3.1 above, the results are presented below.

Priority Watershed Water Quality Problems

All 303(d) listed waters are considered Priority WQP. The 303(d) listed waters are identified in Table 3-6.

Table 3-6 303(d) Listings in the Tijuana River Watershed

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor
Tijuana River	San Ysidro	911.11	Bacteria Indicators, Eutrophic conditions, Low Dissolved Oxygen, Pesticides, Solids, Synthetic Organics, Trace Elements, Trash
Tijuana River Estuary	San Ysidro	911.11	Bacteria Indicators, Eutrophic conditions, Lead, Low Dissolved Oxygen, Nickel, Pesticides, Thallium, Trash, Turbidity
Pacific Ocean Shoreline, Tijuana HU	San Ysidro	911.11	Bacteria Indicators
Barrett Lake	Barrett Lake	911.30	Color, Manganese, pH
Pine Valley Creek (Upper)	Pine	911.41	Enterococcus, Phosphorus, Turbidity
Morena Reservoir	Morena	911.50	Color, Manganese, pH

Persistent violations of water quality standards, toxicity, impacts to beneficial uses, and other pertinent conditions will be considered priority WQP. The Priority WQ problems that meet these criteria are listed in Table 3-7.

Table 3-7. Frequency of Occurrence for COCs in Tijuana River Watershed

Tijuana River	2007
Bacteria Indicators (Fecal coliform)	♦♦♦
Diazinon (Pesticide)	♦♦♦
Malathion (Pesticide)	♦
TSS (Sediment)	♦♦♦
Turbidity (Sediment)	♦♦
Total Phosphorus (Nutrient)	♦♦
Dissolved Phosphorus (Nutrient)	♦
Toxicity	♦♦♦
Dissolved Copper (Total Metals)	♦
Total Copper (Total Metals)	♦♦
Total Lead (Total Metals)	♦♦
Total Zinc (Total Metals)	♦
Chromium (Total Metals)	Not Tested
Un-ionized Ammonia as N (Dissolved Minerals)	♦♦♦
BOD/COD (Gross Pollutant)	♦♦
MBAS (Gross Pollutant)	♦

♦♦♦- Higher frequency of occurrence
♦♦- Medium frequency of occurrence
♦- Lower frequency of occurrence

The 2005 Baseline Long-Term Effectiveness Assessment will be used as appropriate to identify Priority WQP at the HA scale. BLTEA ratings are listed in Table 3-8.

Table 3-8 BLTEA Ratings for the Tijuana River WMA

Watersheds/Sub-watersheds	Percentage of Total Area	Priority Ratings*										
		Constituent Groups									Stressor Groups	
		Heavy Metals	Dissolved Minerals	Organics	Oil and Grease	Sediments	Pesticides	Nutrients	Gross Pollutants	Bacteria/ Pathogens	Benthic Alterations	Toxicity
Tijuana WMA	**100%**	***B***	***D***	***D***	***D***	***B***	***B***	***C***	***C***	***B***	***B***	***B***
Tijuana Valley HA (911.10)	7%	*A*	*D*	*A*	*D*	*A*	*A*	*A*	*A*	*A*	*A*	*B*
Potrero HA (911.20)	18%	*B*	*D*	*D*	*D*	*B*	*B*	*B*	*B*	*B*	*B*	*B*
Barrett Lake HA (911.30)	20%	*B*	*D*	*D*	*D*	*C*	*B*	*C*	*C*	*B*	*B*	*B*
Monument HA (911.40)	8%	*C*	*D*	*D*	*D*	*A*	*C*	*C*	*C*	*A*	*B*	*B*
Morena HA (911.50)	5%	*B*	*D*	*D*	*D*	*B*	*B*	*B*	*B*	*B*	*B*	*B*
Cottonwood HA (911.60)	10%	*C*	*D*	*D*	*D*	*B*	*C*	*C*	*C*	*C*	*B*	*B*
Cameron HA (911.70)	10%	*B*	*D*	*D*	*D*	*B*	*B*	*B*	*B*	*B*	*B*	*B*
Campo HA (911.80)	23%	*C*	*D*	*D*	*D*	*A*	*C*	*C*	*C*	*C*	*B*	*B*
2006-07 High[1] Frequency of Occurrence Ratings						♦♦♦	♦♦♦		♦♦♦	♦♦♦		
Constituents of Concern						TSS Turbidity	Diazinon		Ammonia	Total Coliform Fecal Coliform Entero-coccus		

1. High frequency of occurrence ratings are derived from the constituent exceedances tables and are provided for comparison purposes.

Notes:

** = Rating Calculated Based on Area Weighted Averages of Score Value from the sub-watershed areas.*

*** = Priority Level (Highest-A to Lowest-D)*

High Priority Level Based on Data

303d listing

High Priority Watershed Water Quality Problems

As indicated in Section 3.1, high priority water quality problems are identified at the discretion of the Tijuana River Watershed Copermittees. At a minimum, high priority watershed water quality problems include those that most significantly exceed or impact water quality standards. Table 3-9 presents a list of all water quality problems in the Tijuana River WMA, identifies the scale for each problem, and provides supporting detail as appropriate.

Table 3-9 High Priority Water Quality Problems in the Tijuana River WMA

Scale (Affected HA)	Water Quality Problem	Explanation
Tijuana Valley - 911.1	Bacteria/Pathogens	303(d) List, Wet/Dry Data
	Sediment (TSS/Turbidity)	303(d) List, Wet/Dry Data
	Pesticides (Diazinon)	303(d) List, Wet/Dry Data
	Gross Pollutants	303(d) List, Wet/Dry Data
	Metals	303(d) List, Wet/Dry Data
	Organics	303(d) List, Wet/Dry Data
Potrero - 911.2	Undetermined	Insufficient Data
Barrett Lake - 911.3	Dissolved Minerals (Manganese)	303(d) List
	Gross Pollutants (pH)	303(d) List
	Color	303(d) List
Monument – 911.4 (Pine Valley Creek)	Bacteria/Pathogens	303(d) List
	Sediment (Turbidity)	303(d) List
	Nutrients (Phosphorus)	303(d) List
Morena – 911.5	Gross Pollutants (pH)	303(d) List
	Dissolved Minerals (Manganese)	303(d) List
	Color	303(d) List
Cottonwood – 911.6	Undetermined	Insufficient Data
Cameron – 911.7	Undetermined	Insufficient Data
Campo – 911.8	Undetermined	Insufficient Data

3.4 LIKELY POLLUTANT SOURCES

This section identifies, based on available information, the likely sources, pollutant discharges, and other factors causing the watershed's high priority water quality problems. It is important to note that the level of pollution from sources located in Mexico is undetermined at this time and has only been generally considered here. Table 3-10 identifies most of the likely sources for the high priority water quality problems in the Tijuana River WMA.

Table 3-10 Likely Sources for High Priority Pollutants

Pollutant	Potential Sources	Pollutant	Potential Sources
Bacterial Indicators	Domestic animals	Trace Metals	Automobiles
	Sewage overflow		Industrial Waste
	Septic systems	Pesticides	Agriculture
	Wildlife		Commercial landscaping
Nutrients & Oxygen	Agriculture		Residential landscaping
	Sewage overflow		Industrial waste
	Septic systems	Gross Pollutants	Commercial
Organic Compounds	Agriculture		Illegal disposal
	Commercial landscaping		Residential
	Residential landscaping	Sediment TSS/Turbidity	Agriculture
	Sewage overflow		Grading/Construction
	Septic systems		Slope Erosion

SECTION 4.0 – FIVE-YEAR STRATEGIC PLAN

The Municipal Permit requires the Tijuana River Copermittees to work together to develop and implement a Watershed Urban Runoff Management Program (WURMP) that will identify watershed activities that address the high priority water quality problems within the WMA. These watershed activities are required to be implemented pursuant to established schedules. In addition, the Order requires the Copermittees to establish a mechanism for encouraging public participation in the development and implementation of the WURMP, as well as a program for encouraging collaborative, watershed-based land use planning in their jurisdictional planning departments.

The Five-Year Strategic Plan for the Tijuana River WURMP was developed using the tools and processes described in the Model Watershed Urban Runoff Management Strategy (Model Strategy). As recommended in the Model Strategy, the Watershed Copermittees conducted a baseline watershed evaluation to help guide the selection of appropriately targeted watershed activities (see Section 2.0). Section 2.2 summarizes results from this baseline evaluation and identifies potential management actions for each of the priority watershed water quality problems identified in Section 3.3. These potential management actions are considered a starting point in the watershed activity selection process. As described in the Model Strategy, best professional judgment plays a significant role as do other factors, including consideration of activities already required in accordance with total maximum daily loads (TMDLs) and other watershed-based regulations and mandates.

As discussed in detail in Section 2, the Tijuana River Copermittees conducted the baseline watershed evaluation to identify high priority water quality problems and identify the actions needed to address the high priority problems within each hydrologic area (HA). Recognition of high priority water quality problems at the HA level enables Copermittees to focus their efforts on the specific types of activities and locations within the Tijuana River WMA that most effectively address water quality problems. Under the Order, a minimum of two water quality activities and two education activities per year must be implemented.

The Five-Year Strategic Plan is included as Table 4-1 at the end of this section and provides a preliminary summary of activities for the Tijuana River WMA. Changes to the Five-Year Strategic Plan may be necessary over the course of the Permit cycle due to unforeseen barriers to implementation, identification of new activities, or other factors. The Tijuana River Copermittees will review the five-year strategic plan annually as a group. When activities are completed, additional activities are identified or timelines are modified, the plan will be updated as applicable. All updates to the Tijuana River WMA five-year strategic plan will be described in the future WURMP Annual Reports.

The following general principles will guide the selection and implementation of watershed activities as part of the Tijuana River WURMP:

- Prevent the creation of future water quality problems by pursuing land acquisitions for the purposes of conservation and ensuring that appropriate low impact development (LID) techniques and other traditional BMPs are incorporated into new developments.

This is a preferred approach to managing pollutant sources once they are established in the watershed.

- Tailor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMP) and the Regional Copermittees' Regional Urban Runoff Management Program (RURMP) to the extent possible to address the watershed's priority water quality problems.

- Characterize water quality conditions throughout the watershed. This may be accomplished by conducting special studies where appropriate or by better managing existing data sources.

- Characterize the threat to water quality (TTWQ) and spatial distribution of likely sources of priority water quality problems throughout the watershed. This may be accomplished by conducting special studies where appropriate or by better managing existing data sources.

It should be noted that Public Participation Activities and Land Use Planning Activities are also required by the Permit. These are not included in the Five-Year Strategic Plan, primarily due to the nature of the activities and the ability to assess and/or report on annual implementation in a manner as the others. The program details and implementation strategy for each of these components are located within sections 4.3 and 4.4 of this section, respectively.

4.1 WATERSHED WATER QUALITY ACTIVITIES

The Municipal Permit section E.2.f.defines Watershed Water Quality Activities as "activities other than education that address the high priority water quality problems in the WMA. A Watershed Water Quality Activity implemented on a jurisdictional basis must be organized and implemented to target a watershed's high priority water quality problems or must exceed the baseline jurisdictional requirements of section D of [the Permit]. […]. For each Permit year, no less than two Watershed Water Quality Activities […] shall be in an active implementation phase. A Watershed Water Quality Activity is in an active implementation phase *when significant pollutant load reductions, source abatement, or other quantifiable benefits to discharge or receiving water quality can reasonably be established in relation to the watershed's high priority water quality problem(s)*. Watershed Water Quality Activities that are capital projects are in active implementation phase for the first year only."

Watershed Water Quality Activities were identified that address the high priority water quality problems within each HA. Each Copermittee has individually decided the activities that are feasible to institute in its jurisdiction and has selected water quality activities for implementation that are appropriate for their relative contribution to the watershed's water quality problems. The Five-Year Strategic Plan identifies each activity, the pollutant(s) it addresses and the anticipated time schedule for implementation

Proposed Activity Summary Sheets have been completed for each Watershed Water Quality Activity planned for implementation and are located in Appendix 2.

The Tijuana River Watershed Copermittees recognize that appropriately selected source abatement and load reduction activities can result in decreases of pollutants both in the receiving waters and the MS4 discharges. As stated earlier, the Tijuana River Copermittees relied heavily on the Model Strategy to guide the selection of water quality activities. Information from the BWE identified the high priority pollutants within each HA and also identified the potential actions (additional Monitoring, source Investigation, or load reduction/source abatement) required to address that pollutant.

4.2 WATERSHED EDUCATION ACTIVITIES

The Municipal Permit section E.2.f. defines Watershed Education Activities as "outreach and training activities that address high priority water quality problems in the WMA. […]. For each Permit year, no less than two […] Watershed Education Activities shall be in an active implementation phase. […]. A Watershed Education Activity is in an active implementation phase when changes in attitudes, knowledge, awareness, or behavior can reasonably be established in target audiences."

Watershed Education Activities planned for implementation in the Tijuana River WMA as part of the Five-Year Strategic Plan are described in detail in Appendix 2. A Watershed Activity Summary Sheet has been completed for each watershed education activity planned for implementation.

The Tijuana River Copermittees recognize that due to the very nature of non-point source pollution, public education is an essential element for a successful watershed protection strategy. Everyone who lives, visits, and conducts business within our watersheds must become informed and involved to help reduce pollution. Making the public aware of the importance of individual actions in protecting our water resources and promoting watershed stewardship are crucial components for the success of this program.

The goals of an education program are to enhance the public's understanding of basic watershed principles and sources of surface water pollution, make notable changes in the public's knowledge and behavior toward pollution generating activities, and address the watershed's high priority water quality problems.

The main objectives needed to meet these goals are to: 1) capture audience attention; 2) impart messages that are understood and retained; and 3) ultimately prompt behavioral changes. Successful communication campaigns begin with key, core messages, which are repeated often, and given time to become "common knowledge" within target audiences. Establishing key messages – or succinct, easily understandable and motivational information – is crucial to program success. As time evolves, these core messages are built upon with new and more detailed information. Generally, educational messages and methods are similar at the jurisdictional, watershed, and regional levels. The overlap between these various program levels is intended to maximize the benefits that can be achieved.

The following target audiences have been identified in the Municipal Permit as having the most significant impact on the high priority water quality problems in the Tijuana River WMA: school children, municipal staff, general public, residents, businesses, and construction-related workers.

Reaching these audiences will enable Tijuana River Copermittees to best address the high priority water quality problems for the Tijuana River WMA. While key/core program messages remain consistent throughout all communication vehicles, where appropriate, they will be tailored for individual target audiences. For example, an overall message to "identify and isolate potential flows to a storm drain" is refined for residents to identify typical flow sources around the home. For the business community, the message is focused on typical commercial and industrial activities that result in potential flows to storm drains. As such, it is essential that appropriate activities be implemented to encourage behavior changes within these groups.

4.3 PUBLIC PARTICIPATION ACTIVITIES

This section describes the mechanisms to be used to encourage public participation in the development, implementation, and assessment of the WURMP. It broadly outlines the public participation strategy that the Tijuana River Copermittees will be pursuing to encourage stakeholder engagement in the WURMP as required by Municipal Permit section E.2.h. Public participation is encouraged to ensure that stakeholder interests and creative solutions are considered. Public participation involves evaluating input from the public as part of the decision-making process. It includes all aspects of identifying problems and opportunities, developing alternatives and making decisions. In this definition, the public is any individual or group of individuals, organization or political entity with an interest in a decision's outcome. They are often referred to collectively as stakeholders.

Broad participation is critical to further development and implementation of the watershed program because watershed programs, by definition, cross jurisdictional and administrative boundaries. Furthermore, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own and that broad partnerships are essential to positively affect the water resources in the watershed. It is only through a collaborative approach that a better understanding of the issues and processes affecting watershed water quality can be achieved. Historically, stakeholders have participated in activity planning and implementation efforts via formal and informal discussions and meetings including but not limited to the Tijuana River WURMP Copermittee meetings. The Copermittees value their relationships with stakeholders and will continue to use this informal participation as the foundation of its participation and implementation efforts in conjunction with the more formal participation mechanisms outlined below. It is only through a collaborative approach that they will develop a better understanding of these issues and processes affecting water quality in their watersheds. Specific public participation activities as conducted will be reported in the annual reports to be appended to this WURMP.

Effective stakeholder public participation processes enhance and encourage appropriate modification of policies and procedures before problems develop, contribute to sustainable decision-making, and provide an early warning system for public concerns and needs. They also present an opportunity for communication between decision makers and the public, promote understanding and acceptance of potentially controversial issues by the public and help to increase public understanding and support for the environmental goals.

Public participation is a critical part of the decision-making process for governmental agencies, because many decisions made on a daily basis have the potential to affect the public on a variety of

levels. US EPA guidelines recommend that the public be included in developing, implementing, and reviewing stormwater management programs, and that the public participation process should make efforts to reach out and engage various socioeconomic groups. Involving the public in watershed-focused events increases knowledge and awareness throughout the watershed's communities.

Opportunities for members of the public to participate in decisions associated with the Tijuana River Watershed Education Program and Land Use Activities include the Project Clean Water – Tijuana River Watershed Website[13], Tijuana River Watershed WURMP meetings, and local planning activities for the development of planning and/or guidance documents. In addition to the specific activities and programs, the Tijuana River Watershed Copermittees' staff also interacts with the public on a regular basis. Municipal employees receive stormwater training on an ongoing basis, as described in each Copermittees' JURMP. Municipal employees interact with the public within their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about stormwater issues and regulations, as well as answer questions and provide guidance.

The Copermittees will continue to engage non-governmental organizations (NGOs) active in the WMA in the development, implementation, and assessment of the Tijuana River WURMP through a variety of means, include working together to implement activities, collaboration of efforts, and partnering with NGOs as appropriate in advocating legislation protective of water quality. In particular, because of the binational nature of the Tijuana River WMA (with 40% of it in the United States and 60% in Mexico), the Tijuana River Copermittees will continue to explore and participate in public participation mechanisms that engage stakeholders from Mexico and encourage binational cooperation and coordination in addressing WMA-wide issues. The Tijuana River Copermittees realize that attempts to improve the water quality of the WMA will only be of minimal success at best without the cooperation of their Mexican counterparts. The Copermittees had been active in the development of the Binational Vision for the Tijuana River Watershed document and have been active in several binational forums, such as the US EPA Border 2012.

An opportunity for assessing public participation is available through the identification of the appropriate level at which to involve stakeholders in decision-making. Levels of public participation are shown below in Table 4-2. Prior to embarking on a public participation opportunity, the Tijuana River Watershed Copermittees will establish an objective defining the level at which the public is invited to be involved. The effectiveness of public participation in decisions affecting the Tijuana River Watershed WMA will be assessed through an update on the status of that objective in annual reports, the numbers of stakeholders reached through each decision-making opportunity (where applicable), and summaries describing how stakeholders participated in each opportunity.

[13] www.projectcleanwater.org

Table 4-2 Levels of Public Participation

Public Participation Objectives				
INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution	To place final decision-making in the hands of the public.

4.4 WATERSHED-BASED LAND USE PLANNING

This section describes the mechanisms to be used to encourage collaborative, watershed-based, land use planning among jurisdictional planning departments as required by Municipal Permit section E.2.d. Land use planning is a jurisdictional activity and land use planning efforts will generally be reported as part of the Jurisdictional Urban Runoff Management Program (JURMP) reporting. Planning efforts will incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the general plans and community plans (if applicable) for each jurisdiction as appropriate. These plans will be updated as feasible to address special concerns identified for the Tijuana River WMA.

Other alternative planning mechanisms used by the Tijuana River Watershed Copermittees will include, as feasible and appropriate, participating in watershed management plans and watershed workgroups, increasing overall awareness of planning staff, and increasing public participation opportunities. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and ensures a balance of land uses when planning future development.

However, it is important to note land use planning to address urban runoff issues has limited applicability to the Tijuana River Watershed since the majority of the watershed is in Mexico and is not subject to the San Diego Municipal Permit. In addition, collaborative land use planning is a particularly difficult undertaking in the Tijuana River Watershed due to the large number of federal, state, local, and special purpose entities within the watershed that need to be engaged and the fact that the watershed spans two cities, reservation lands for five different bands of the Mission Indians, and two countries. Also, unlike many Southern California watersheds, only the southwestern section of the watershed that includes the cities of San Diego and Imperial Beach contains the bulk of the urban development. This geographic separation between significant areas of urban development and the Tijuana River itself creates a physical and jurisdictional separation between the likely sources of contributing pollutants and stressors and the resources being impacted by them. These characteristics mean direct linkages are more difficult to define and manage because the pollutants and stressors being generated are most likely not being generated in one of the jurisdictions managing the resources being impaired. This situation makes inter-jurisdictional coordination and cooperation all the more critical.

Developing a stable, flexible process and structure that allows for and encourages cooperation, coordination, and open communication and collaboration on management activities is essential.

Binational Vision for the Tijuana River Watershed

The Binational Vision for the Tijuana River Watershed was approved by the Regional Water Quality Control Board in March of 2005. The development of this document resulted in the creation of the Binational Watershed Advisory Committee, which met quarterly to discuss watershed based issues. This group currently meets as a part of the lager Border 2012 EPA Program. As feasible and appropriate, the Tijuana River Watershed Copermittees will consider coordination with this group in planning, implementing, and assessing their efforts to benefit the Tijuana River WMA.

Table 4-1. Five-Year Strategic Plan for Tijuana River WMA

TIJUANA RIVER WATERSHED	Heavy Metals	Sediment	Bacteria	Nutrients	Gross Pollutants	Trash	Dissolved Minerals	Pesticides	FY 07-08			FY 08-09			FY 09-10	FY 10-11	FY 11-12
Watershed Activities Planned for FYs 07-08 & 08-09																	
TJ-001 Pet Waste Dispenser Program in County Parks			x	x					WQ			WQ					
TJ-002 Land Acquisitions	x	x	x	x		x	x	x				*			* Unable to project land acquisitions in advance		
TJ-003 ILACSD Trash Cleanup Sponsorship			x			x			WQ			WQ					
TJ-004 SDCK Trash Cleanup Sponsorship			x			x			WQ			WQ					
TJ-005 Alpha Project for the Homeless, Inc. Trash Cleanups			x			x			WQ			PP					
TJ-006 Targeted Restaurant Facility Inspections			x						WQ			WQ					
TJ-007 Targeted Auto-Related Facility Inspections	x								WQ			WQ					
TJ-008 Targeted Auto-Related Facility Inspections Outreach	x								WE			WE					
TJ-009 Municipal Rain Barrel and Downspout Disconnects	x	x	x	x		x		x	WQ			D					
TJ-010 Watershed Cleanup Events			x			x			WQ			WQ					
TJ-011 Large Special Event Inspection and Cleanup			x			x			WQ			WQ					
TJ-012 Smuggler's Gulch Sediment Removal		x							WQ			WQ					
TJ-013 Tijuana River Bacteria Source Identification Study			x						M	S		M	S				
TJ-014 LID Education for Community Planning / Sponsor Groups	x	x	x	x			x	x	WE			WE					
TJ-015 Public Service Announcements (PSAs): *Karma* and *Karma Second Chance*			x			x			WE			WE					
TJ-016 Mobile Advertising		x	x						WE			WE					
TJ-017 Invasive Species Removal Program in Tijuana River Valley Park		x	x					x	WQ			WQ					
Potential Future Watershed Activities																	
Source Identification of Metals and Ammonia	x			x													
Pet Waste Dispenser Program			x	x													
Doggie Bag Dispenser Program			x	x													
Mobile Business Assessment Program	x																
Restaurant Outdoor BMP Implementation and Inspections			x														
Infiltration BMP Retrofit	x		x														
Trash Segregation Device Installation			x			x											
Inlet Bacteria Treatment BMP Installation			x														
Green Mall Infiltration Retrofit Education and Outreach	x		x														
Irrigation Controller and Xeriscaping Incentive Program	x		x	x				x									
Tijuana River Watershed Street Sweeping Effectiveness Study	x					x											
Tijuana River Valley Park Trails and Habitat Enhancement Project		x															

WQ = Watershed Water Quality Activity (Active Implementation)
WQ = Watershed Water Quality Activity (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)
WE = Watershed Education Activity (No WURMP Credit)
LU = Watershed-base Land Use Planning Activity
PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)
D = Watershed Data Assessment/Management Activity
O = Other Watershed Activity (No WURMP Credit)

SECTION 5.0 – PROGRAM EFFECTIVENESS ASSESSMENT

This section describes how the Tijuana River WURMP addresses the requirements of Section I.2. of Order No. R9-2007-0001. WURMP effectiveness assessments will be based on the concepts first identified and described in the San Diego Copermittees' October 2003 document A *Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs* (Framework). The reader is encouraged to become familiar with the concepts described in the Framework to better understand the remainder of this section. To summarize, Table 5-1 below, describes the six outcome levels identified in the Framework along with potential measures and methods for measuring effectiveness.

The Order requires two types of assessment in the WURMP including: 1) an assessment of each watershed activity, and 2) an assessment of overall WURMP effectiveness. The approach for complying with each requirement is described below. In addition an "optional" approach that deals with assessing programmatic efficiency is discussed in Section 5.3 below.

Table 5-1. Targeted Outcomes and Potential Assessment Measures and Methods

Outcome Type	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements.	Verification that required activities were implemented.
Level 2: Changes in Knowledge / Awareness.	Measure of changes in targeted audiences knowledge and awareness potentially through the use of pre- and post-surveys and observations
Level 3: Behavioral Change / BMP Implementation.	Measure of changes in behavior or BMP implementation potentially through the use of observations or inspections
Level 4: Load Reductions.	Measured or calculated load reductions as a result of changes in behavior or BMP Implementation. Measurements may be supported by water quality data and calculations may be supported by information and data related to the pollutant generating activities
Level 5: Changes in Discharge Quality.	Historical and statistically supportive trends in the levels of pollutants in the discharges from the MS4. This will be assessed periodically using the results of regional, WMA and jurisdictional water quality monitoring data
Level 6: Changes in Receiving Water Quality.	Historical and statistically supportive trends in the levels of pollutants in the receiving waters. This will be assessed periodically using the results of regional, WMA and jurisdictional water quality monitoring data.

5.1 WATERSHED ACTIVITY ASSESSMENT

The effectiveness of each Watershed Water Quality and Watershed Education Activity will be assessed on an annual basis. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Each activity summary sheet in Appendix 2 identifies specific targeted outcomes (Levels 1–6) that will be assessed and the measures and methods that will be used to gauge activity effectiveness. Each watershed activity is unique, and its impacts on water quality are equally distinctive. As a result, measurable outcomes do not always follow a linear path (i.e., assessing effectiveness at each of the six outcome levels). For example, a capital project may result in pollutant load reductions (Level 4), but may not have any bearing on changes in the awareness or behavior of a target population (Levels 2 and 3). It is also unlikely that implementation of an individual watershed activity would be measurable at Levels 5 or 6. Level 5 and Level 6 Outcomes are typically measurable through cumulative assessments as described in the following section.

5.2 OVERALL WURMP ASSESSMENT

The assessment of overall WURMP effectiveness will focus on the cumulative impacts of program implementation and will include the following elements: 1) an assessment of how well Tijuana River Copermittees have collectively complied with minimum Permit requirements; 2) an assessment of the cumulative impact of watershed activity implementation; and 3) an integrated assessment of discharge and receiving water quality.

To assess how well the Tijuana River Copermittees have collectively complied with minimum Permit requirements, the following Level 1 Outcomes in Table 5-2 will be tracked on an annual basis. Assessing the cumulative effectiveness of watershed activity implementation is challenging. The results of individual activities are typically difficult to aggregate at the watershed level. Nevertheless, the Tijuana River Copermittees will strive to conduct activity-specific assessments in a way that allows for an assessment of cumulative watershed impacts when possible. This may involve the use of consistent methods to assess similar activity types or the use of consistent units of measure to aggregate the results of disparate activity types.

Finally, the Tijuana River Copermittees will attempt to improve their ability to conduct integrated assessments over the course of this Permit cycle. Integrated assessments aim to identify the relationship between program implementation and resulting effects on discharge and receiving water quality. Integrated assessments, therefore, attempt to draw links between the activity-specific assessments described above and water quality monitoring data collected at the regional, watershed, and jurisdictional levels. The Tijuana River Copermittees will use available data and information to determine what impacts, if any, WURMP implementation is having at Levels 5 and 6. The Tijuana River Copermittees will use available data and information to determine what impacts, if any, WURMP implementation is having at Levels 5 and 6. It must be recognized, however, that urban runoff management takes place at many scales. For example, jurisdictional and regional urban runoff programs also result in watershed benefits, and it is unclear how to isolate the effect of each.

Table 5-2 Level 1 Outcomes to be Tracked

Targeted Outcome	Measure Reference
Update any watershed maps.	Annual Report Sect. 1.2
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Annual Report Sect. 2.0
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Annual Report Sect. 2.2
Update list of potential Watershed Water Quality Activities.	Annual Report Sects. 3.1 & 3.5
Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.	Annual Report Sect. 3.1
Update list of potential Watershed Education Activities.	Annual Report Sects. 3.2 & 3.5
Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.	Annual Report Sect. 3.2
Describe the public participation mechanisms used during the reporting period and the parties that were involved.	Annual Report Sect. 3.3
A description of Copermittee collaboration efforts including meeting as the Tijuana River WMA WURMP Workgroup.	Annual Report Sect. 1.1
Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.	Annual Report Sect. 3.4
When applicable, describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed	Annual Report as appropriate

5.3 PROGRAM EFFICIENCY (OPTIONAL)

This section presents an optional approach that the Tijuana River Copermittees can utilize to further facilitate management decisions.

Effectiveness assessment assists managers in: 1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff; and 2) planning future efforts. Assessment may also investigate the efficiency of activities and program implementation. Knowing the efficiency of individual activities and the overall WURMP program implementation, for example, would provide the Tijuana River Copermittees with data to prioritize resources appropriately and maximize pollutant program effectiveness to achieve the ultimate goal of protection and improvement of water quality in the region's creeks, rivers, beaches, and bays.

Efficiency is defined here as a quantification of load reduction or source abatement divided by implementation cost. The idea is to determine how much a particular activity has reduced loads or abated sources for every dollar spent. Such a ratio would permit the Copermittees to compare activities across the board and see which activities are best in achieving results for every dollar

spent. Once sufficient data and efficiency ratios are compiled, the Copermittees can then use that information to determine the optimum suite of activities to implement in their WMA to address the priority water quality problems most efficiently and institute activity- and program-wide improvements.

Of course, it is not necessary to conduct an efficiency assessment for all of the activities implemented by the Copermittee. It would be at the discretion of each Copermittee to select which, if any, activities to assess for efficiency. Activities identified for efficiency assessment will have to be designed in such a way as to allow for the tracking of load reduction/source abatement so that it can be related to the cost of implementing those activities. Because of the time needed to plan and implement activities and the associated monitoring component to allow for efficiency assessment, sufficient efficiency ratios and data may not be available until some time into the future. Efficiency assessment would be a long-term effort that may benefit the WURMP program in the long run.

Through collaboration with other WURMP programs throughout the County, it would be possible for the Copermittees to collect sufficient data to begin developing efficiency ratings (ratios comparing load reduction or source abatement to cost) for activities, including BMP implementation and outreach and education activities. The ratings could then be used to assist in prioritizing projects and programs to maximize effectiveness measured at Levels 1–4, which would ultimately maximize effectiveness measured at Levels 5 and 6. The Levels 5 and 6 Targeted Outcomes will be measured through the water quality monitoring programs described in Section 3 above. This means that some program activities that are less effective may be deemphasized while other activities that are determined to be more effective will be enhanced or used on a more broad-scale.

SECTION 6.0 – PROGRAM REVIEW AND MODIFICATION

6.1 PROGRAM REVIEW

It is expected that the program objectives and management actions stated earlier in this document will be revised as the program evolves and matures. The objectives outlined in this section represent the continuing effort to establish a feedback loop that addresses both Municipal Permit compliance and evaluation of management actions relating to water quality issues. The Tijuana River Copermittees will submit any amendments and/or revisions to the San Diego RWQCB for review as part of the annual reporting process requirement.

6.2 ANNUAL REPORTS

As required by the Permit, the Annual Monitoring Report is an annual evaluation of historical and current water quality data carried out to identify COC and prioritize pollutants and problem areas within Tijuana River WMA. The Copermittees are dedicated to evaluating water quality and pollutant trends which may occur in each HA and assess if management actions and/or activities are effective or if modifications and improvements are needed.

Consistent with the Municipal Permit, all changes to the WURMP (i.e., modified priorities, implementation schedule changes, map updates) will be described and justified in WURMP Annual Reports. Therefore, over time, the WURMP and all Annual Reports will be considered one unified, living document.

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SECTION 7.0 – CONCLUSIONS AND RECOMMENDATIONS

The Tijuana River Copermittees have taken measures to protect and improve water quality in the Tijuana River WMA since the last Municipal Storm Water Permit was issued in January of 2001. This Tijuana River WURMP outlines and describes those measures and simultaneously meets the requirements set forth in the Municipal Permit[14] As part of the development of this WURMP, the Copermittees throughout the region have collaborated regionally to develop a Model Strategy that guides Copermittees in the selection and prioritization of appropriate watershed activities. Ongoing collaborative efforts will improve the content, structure, and presentation of the Copermittees' reports, and any amendments and/or revisions will be submitted to the San Diego RWQCB for review as part of the annual reporting process requirement. Therefore, over time, the WURMP and all Annual Reports will be considered one unified, living document.

It is expected that the program objectives and management actions stated throughout this document will be revised as the program evolves and matures. The objectives represent the continuing effort to establish a feedback-loop program that addresses both Municipal Permit compliance and evaluation of management actions relating to water quality issues.

[14] Permit Section E.2.c. and Section III.A.2 of the Permit's *Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001*

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APPENDIX 1
WATERSHED MAPS

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TIJUANA RIVER WATERSHED MANAGEMENT AREA

Municipal Separate Storm Sewer System Map (MS4)

Legend

- Watershed Sub-Basins
- (MS4) Point Features
- (MS4) Linear Features
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:

MS4: Various jurisdictions (2007);
MS4 data were provided by individual Copermittees to the County of San Diego. Jurisdictional MS4 layers are in various stages of completion and have been simplified into a simple point and line symbology for the purposes of this map. Some of the MS4 layers shown are still in draft form. Gaps in the MS4 data are most likely a reflection of missing data rather than a true inventory of drainage structures in the watershed. This map is not intended for any use other than to respond to Permit section E.2.b., which requires development of a map of the WMA including MS4 features.

**303(d) Waters / Watersheds: (SWRCB). (2006)
Disclaimer:
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

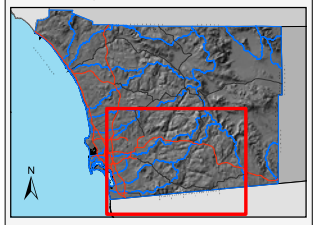

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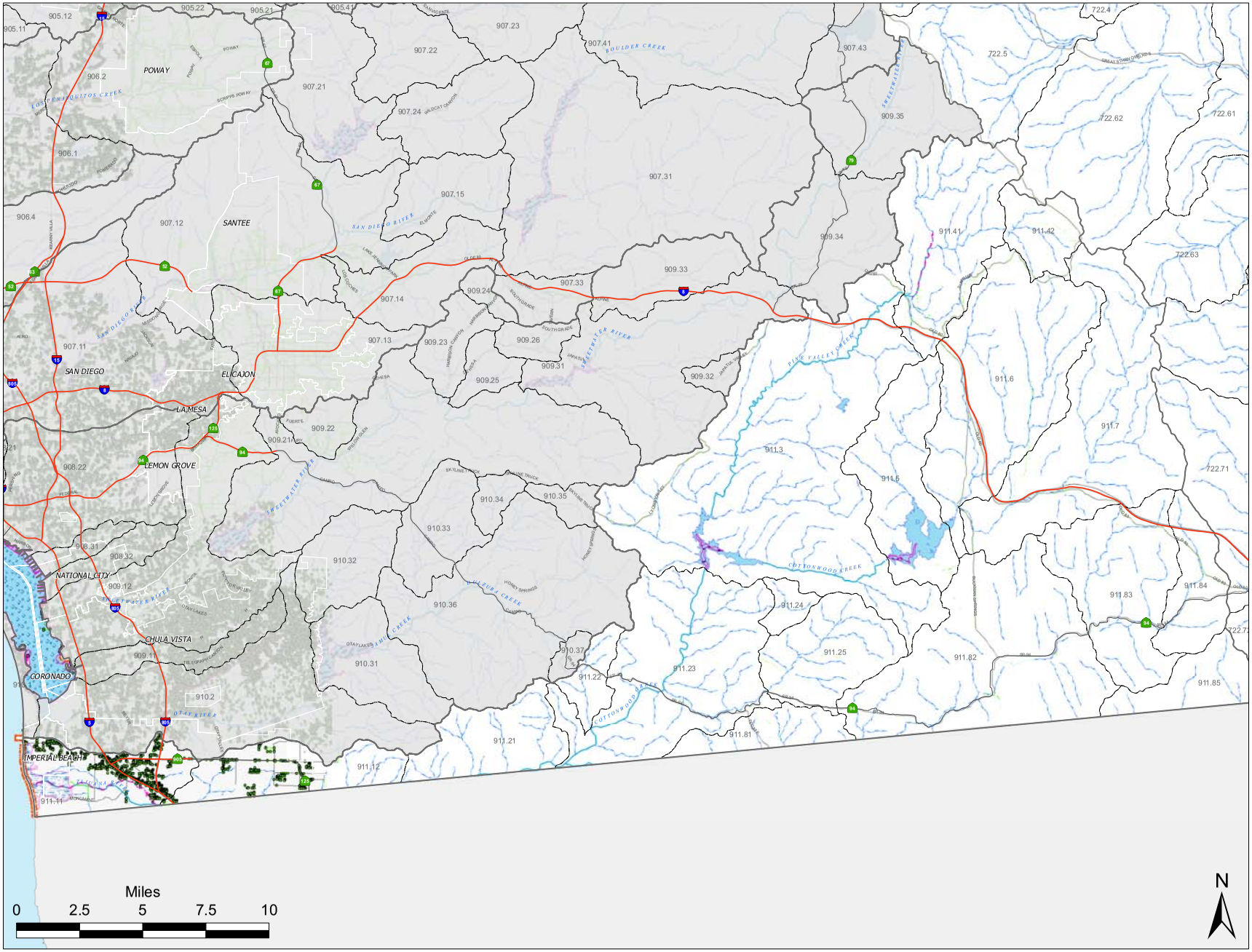

TIJUANA RIVER WATERSHED MANAGEMENT AREA

Land Use Map

Legend

- Watershed Sub-Basins

303(d) Waters (2006)**

Water Body Type

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams

SANDAG Land Use (Comp 06)

Existing Land Use

- Spaced Rural Residential
- Residential
- Institution
- Military
- Commercial and Office
- Industry
- Transportation, Communication, Utilities
- Commercial Recreation
- Parks
- Agriculture
- Undeveloped
- Water
- Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)

Disclaimer
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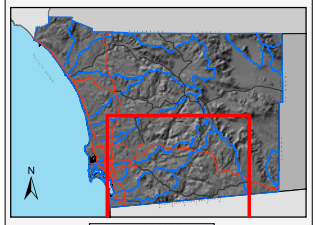

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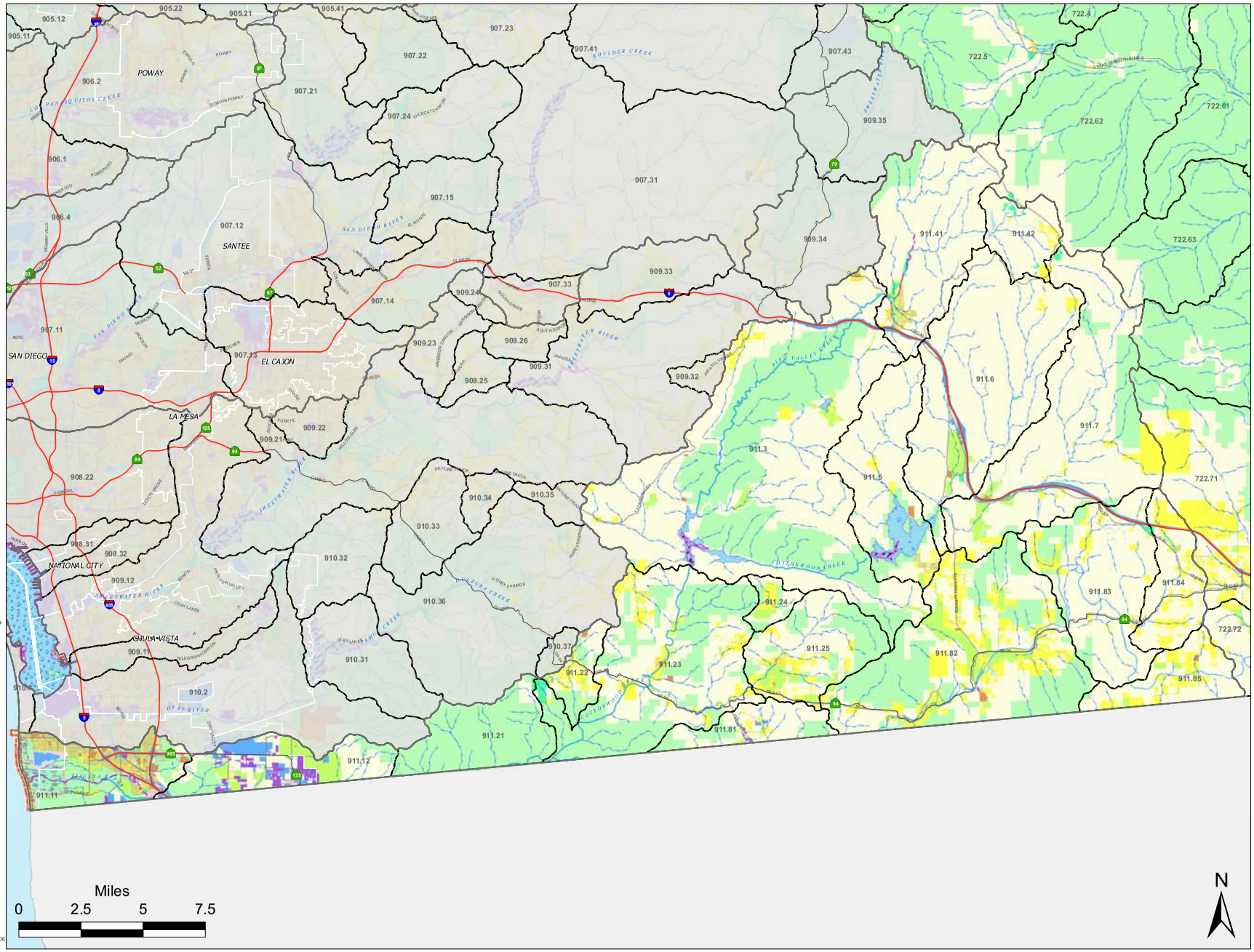

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TIJUANA RIVER WATERSHED MANAGEMENT AREA

Pollutant Source Map

Legend

Watershed Sub-Basins

Potential Pollutant Sources

Baseline Long-Term Effectiveness Assessment (2005)

- Airfield
- AirplaneRepair
- Animal Facilities
- AutoPaint
- AutoRepair
- BoatRepair
- Cemetary
- Food
- Fuel
- GolfCourses
- LandApplication
- Landfill
- MaintenanceYard
- Marina
- Nursery
- POTW
- Paintball
- SolidWasteTransfer
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs

Data Sources:
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego / Ogawa Engineering)
**303(d) Waters / Watersheds: (SWRCB), (2006)

Disclaimer
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

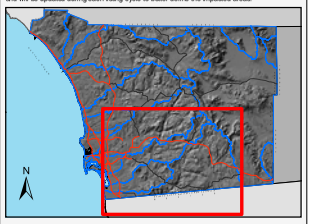

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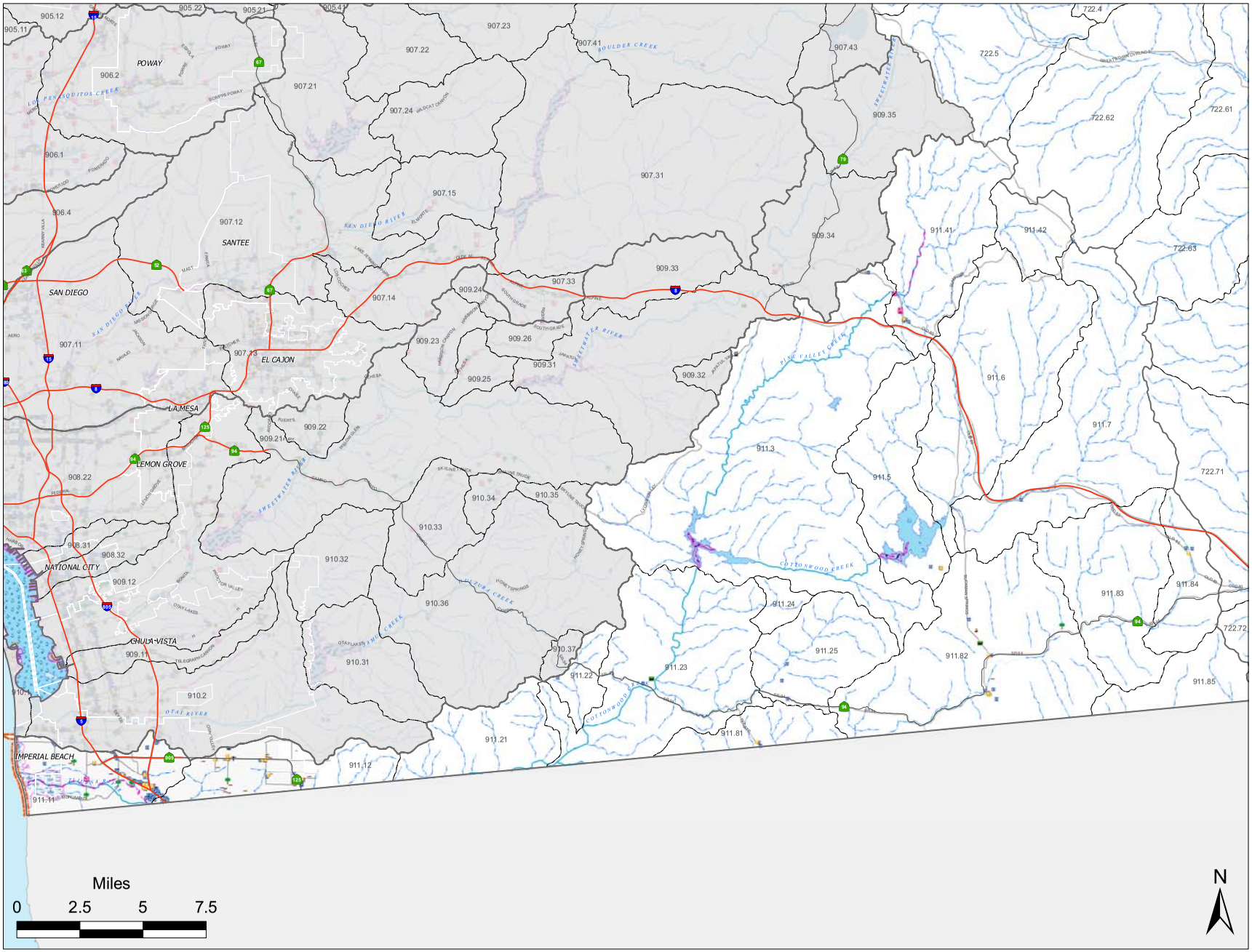

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APPENDIX 2
WATERSHED ACTIVITY SUMMARY SHEETS

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TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID NUMBER: TJ-001

ACTIVITY TYPE

- Watershed Water Quality Activity

ACTIVITY DESCRIPTION

The County of San Diego maintains an inventory of pet waste dispensers in its parks. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. In the Tijuana River Watershed, there are currently 5 dispensers located in 3 County parks:

- Lake Morena Park (2 dispensers)
- Pine Valley Park (1 dispenser)
- Potrero Park (2 dispensers)

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – To be determined

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the San Diego Bay Watershed. Parks have been identified as potential sources of these pollutants. Since this

activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TITLE: **Land Acquisition within Tijuana River WMA**
ID NUMBER: TJ-002

ACTIVITY TYPE

- Watershed Water Quality Activity

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP exists for the southwestern portion of San Diego County. Currently, the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

TITLE: **Land Acquisition within Tijuana River WMA**
ID NUMBER: TJ-002

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **I Love A Clean San Diego Trash Cleanup Sponsorship**
ID NUMBER: TJ-003

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (in particular, Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria and trash as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Creek to Bay Cleanup is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Tijuana River WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **San Diego Coastkeeper Trash Cleanup Sponsorship**
ID NUMBER: TJ-004

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love A Clean San Diego
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (in particular, Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria and trash as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

TITLE: **San Diego Coastkeeper Trash Cleanup Sponsorship**
ID NUMBER: TJ-004

EXPECTED BENEFITS

Although Coastal Cleanup Day is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Tijuana River WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Alpha Project for the Homeless, Inc. Trash Cleanups**
ID NUMBER: TJ-005

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division has partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups and potentially homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2007 and FY 2008.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with Alpha Project to ensure that sites within the Tijuana River WMA are included in the list of sites to target for cleanups in FY 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (in particular, Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria and trash as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Cleanups by Alpha Project will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although the cleanups conducted by Alpha Project focus on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Tijuana River WMA through cleanup events, bacteria loading is reduced.

TITLE: **Alpha Project for the Homeless, Inc. Trash Cleanups**
ID NUMBER: TJ-005

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)
Targeted Measurable Outcome(s)	• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	• Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: **Targeted Restaurant Facility Inspections**
ID NUMBER: TJ-006

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target restaurant facilities within the Tijuana River WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at restaurant metals related industrial facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Tijuana River WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experience gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and potential TMDL requirements.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

TITLE: **Targeted Restaurant Facility Inspections**
ID NUMBER: TJ-006

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)

Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

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TITLE: **Targeted Auto-Related Facility Inspections**
ID NUMBER: TJ-007

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target auto-related facilities within the Tijuana River WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at auto related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Tijuana River WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and potential TMDL requirements.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

TITLE: **Targeted Auto-Related Facility Inspections**
ID NUMBER: TJ-007

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies metals as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with metals.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with metals at auto related facilities. Knowledge and experience gained through this activity will help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	• Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)

Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

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TITLE: **Targeted Auto-Related Facility Inspections Outreach**
ID NUMBER: TJ-008

ACTIVITY DESCRIPTION

The Storm Water Division is developing an education and outreach strategy to target auto-related facilities within the Tijuana River WMA. The goals of this outreach activity are to educate auto-related facilities regarding the potential impacts their businesses have on water quality and provide information regarding increased City monitoring and inspections in the area.

The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities will include recommendations for education and outreach strategies, which may include surveys, public participation, incentives and specific messaging among others.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Inspection planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant by the end of calendar year 2007 to help develop and implement the inspections FY 2008 through FY 2011. Education outreach associated with the inspections will correspond to these schedules.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies metals as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this education and outreach strategy will contribute to addressing discharges, correcting behaviors, and abating sources associated with metals.

EXPECTED BENEFITS

Education and outreach in the area is designed to increase awareness and promote behavior change with the overall goal of reducing discharges, correcting behaviors, and abating sources associated with metals at auto related facilities. Knowledge and experience gained through this activity will help the City optimize its jurisdictional, industrial, and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Auto-related facilities outreach and education effectiveness will be measured via increased monitoring and inspections, while awareness and behavior change will be measured via a Citywide telephone surveys and focus groups comprised of businesses in the Tijuana River WMA.

Management Questions:	• To what extent is there an observable difference in the level of either pollutants or polluting behaviors pre- and post-outreach? • How much change in awareness was achieved? • What changes in levels of behavior was achieved after implementation? • How does the target area compare to other areas (based on surveys, observations and self-report result comparisons) • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of metals and TMDL issues (e.g., reach 50% of the businesses in the target watershed) • Achieve higher incidence of knowledge and attitude in target group when compared to general public • Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable pollution and behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed) • Tabulation (e.g., amount of money spent one education and outreach, number of businesses reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or businesses reached)
Assessment Measures, Assessment Outcome Levels &	• Number of number of stakeholders reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3)

Data:	• Dataset of load contributions for specific activities (Outcome Level 3) • Volume of pollutants removed from study area (Outcome Level 4)

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TITLE: **Municipal Rain Barrel Installation and Downspout Disconnects**
ID NUMBER: TJ-009

ACTIVITY DESCRIPTION

This activity will involve the installation of rain barrels and/or the disconnection of downspouts to direct runoff from municipal facility roofs into pervious areas (such as landscaping) for infiltration. Rain barrels, downspout disconnects, and rainwater harvesting/reuse systems help to capture, store, and divert urban runoff to reduce the volume thereof, thus contributing to reduced flooding, erosion, and the contamination of surface water with sediment, fertilizer, metals, and pesticides. In addition, this activity has the added benefit of water conservation; runoff collected and diverted to landscaping would help reduce the amount of potable water needed for irrigation. Roof runoff solutions can be used both in large scale landscapes, such as municipal buildings, community centers, schools, and commercial sites, as well as in small residential landscapes.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007 and is anticipated to continue until the end of calendar year 2007. Procurement of rain barrels and other items and installation are anticipated to occur from November 2007 through February 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies metals, bacteria, pesticides, and sediment as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing runoff volume via capture, retention, and eventual infiltration.

In addition, implementation of this activity is in accordance with the City's Strategic Plan for Watershed Activity Implementation (November 2007), which calls for the piloting of rain barrels, downspout disconnects, and rainwater harvesting/reuse systems to reduce urban runoff volume and pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of rain barrels and downspout disconnects as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and potential TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	• Reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	• Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data:	• Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

TITLE: **City-wide Cleanup Events**
ID NUMBER: TJ-010

ACTIVITY DESCRIPTION

Anthropogenic activities associated with urbanization contribute to the many common stormwater pollutants that can degrade water quality. BMPs such as City-wide Clean-up Events will reduce the discharge of these pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for bacteria has been proposed for the Tijuana River watershed. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout the Tijuana River watershed with water quality impairments for bacteria. TMDLs are proposed for completion in 2010.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation has begun under the prior stormwater municipal permit 2001-01. City-wide Clean-up Events will continue to be held throughout the City during Years 1 and 2 of the Municipal Permit. This program will be assessed and refined as necessary during Years 3 and 4.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated bacteria was given a Priority B rating in the Tijuana River WMA, and that additional monitoring and source identification would be necessary to properly evaluate this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and trash in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Based on the BLTEA, the effectiveness of this program involves the evaluation and measurement of various types of programmatic and environmental outcomes, or results. Six levels of outcomes from those that are activity-based to include those that are water quality-based may be used to evaluate the effectiveness of this BMP.

Targeted outcomes include implementation of programs and activities to prevent or reduce the discharge of pollutants to the stormwater conveyance system which will result in improved receiving water quality. Assessment measures will include the development of a standardized data set that can compare trends in both urban runoff and receiving water quality with the implementation of BMPs. Assessment methods will include making assumptions as to the amount of waste collected in the City at each event. Another method would be to perform a study which would include collecting waste from a representative event and determining volume collected to get the potential loading estimate per event.

Effectiveness of the activity will be addressed through six levels of outcomes to include: compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and trash in stormwater and ultimately in recreational water.

Activity effectiveness will also be assessed through the Receiving Waters Monitoring Program, which defines the requirements for monitoring including the sampling plan, compliance criteria, laboratory analyses, statistical analyses, and reporting guidelines. Links between source activities/conditions and observed receiving water impacts and recommended future monitoring to address sources of water quality problems will be identified.

TITLE: **Large Special Event Inspection and Cleanup**
ID NUMBER: TJ-011

ACTIVITY DESCRIPTION

This activity involves implementing BMPs such as Large Special Event Inspections and Clean-up to reduce the discharge of pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

Inspections and Clean-up following large special events will continue to be held throughout the City.

PARTICIPATING WATERSHED COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Gross pollutants including trash have been identified as priority water quality problems in the Tijuana River WMA. Large events have been identified as potential sources of these pollutants. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in source abatement or pollutant load reduction through increased knowledge, understanding and implementation of BMPs, thereby avoiding introduction of pollutant-generating activities to the watershed, and minimizing those that are introduced through inspection and cleanup.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of inspections conducted, and the number and type of materials distributed (Level 1).

TITLE: **Smuggler's Gulch Sediment and Debris Removal**
ID NUMBER: TJ-012

ACTIVITY DESCRIPTION

Heavy rains often result in sediment and debris (sand, gravel, cobble, tires, and trash) being transported through Smuggler's Gulch in the Tijuana River Valley (TJRV) and deposited in an unlined earthen channel that connects to the Tijuana River. In addition, this debris often results in flooding of adjacent properties and damages infrastructure within the floodway. The County of San Diego removes excess sediment and debris on an as needed basis. Debris removal is typically triggered by significant rainfall events. The sediment, debris and trash is first separated on site and then taken to a recycling center or to the landfill. The sand is recycled and used for concrete and/or gravel.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

Debris removal is typically triggered by significant rainfall events. It is expected that this activity will occur as needed throughout the life of the current Municipal Permit.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- California Department of Fish and Game
- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment and trash have been identified as high priority water quality problems in the Tijuana River WMA. This activity results in a direct load reduction of these pollutants, and is therefore consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in pollutant load reductions and will help to reduce the threat of flooding.

EFFECTIVENESS MEASUREMENTS

This activity is considered a load reduction that can be measured. On an annual basis or as implementation occurs during the permitting period, the cubic yards of removal will be reported in the Tijuana River WMA WURMP Annual Report.

TITLE: **Tijuana River Bacteria Source Identification Study Project**
ID NUMBER: TJ-013

ACTIVITY DESCRIPTION

The Proposition 50 Clean Beaches Initiative (CBI) Grant Program under the State Water Resources Control Board State Water Resources Control Board has provided a grant to and for the benefit of the City of Imperial Beach for the purpose of conducting a study to identify and quantify the sources of bacteria loading in the Tijuana River Watershed that is tributary to the Pacific Ocean and causing beach closures at two prominent beaches. The objective of this study is to determine the sources of bacterial contamination impacting receiving waters at Imperial Beach and recommend management actions to reduce or eliminate them. Realization of this objective will identify the sources of pollutant loads, particularly bacteria in the portion of the Tijuana River Watershed that is in the United States.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Review and compendium of existing information has begun. A series of surveys to assess short (daily) and long-term (seasonal) temporal patterns and spatial patterns within the Tijuana watershed will begin spring 2008. Surveys will be coupled with water flow assessments to develop bacterial loadings within the watershed areas.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach
- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- State Water Resources Control Board
- National Oceanic and Atmospheric Administration (NOAA)
- Clean Beaches Initiative Task Force
- County of San Diego: Watershed Protection Program; Department of Public Works; and Department of Environmental Health
- City of San Diego: Stormwater Management Division
- Scripps Institute of Oceanography
- Tijuana River National Estuarine Research Reserve (TJNERR)
- San Diego State University
- U.S. Fish and Wildlife Service
- Other interested stakeholders

TITLE: **Tijuana River Bacteria Source Identification Study Project**
ID NUMBER: TJ-013

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria have been identified as a priority water quality problem in the Tijuana River WMA. The Tijuana River has been identified as a potential source of this pollutant. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result identification of sources of bacteria in the Tijuana River watershed within the State of California.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by identifying the following:

1. Sources of bacteria
2. Estimated bacteria pollutant loading at each site and where applicable, each source
3. Origins of each isolate retrieved from those sites
4. Summary of hydrological modeling results for tributary areas
5. Preliminary identification and prioritization of projects to mitigate the identified sources
6. Recommendations for future projects

TITLE: **LID and Watershed Planning Education for Community Planning and Sponsor Groups**

ID NUMBER: TJ-014

ACTIVITY TYPE

- Watershed Education Activity

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the Tijuana River Watershed include:

- Lake Morena/Campo
- Potrero
- Tecate
- Boulevard
- Pine Valley
- Cuyamaca
- Descanso
- Jamul-Dulzura
- Alpine

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

TITLE: **LID and Watershed Planning Education for Community Planning and Sponsor Groups**

ID NUMBER: TJ-014

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1). The County will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2).

TITLE: **Public Service Announcements: Karma and Karma Second Chance**
ID NUMBER: TJ-015

ACTIVITY DESCRIPTION

The City's Storm Water Division has retained a contract with a film production company to create two Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled, Karma and Karma Second Chance, and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. These PSAs were developed in FY 2007 and FY 2008, and will be broadcast on several television and radio stations throughout the Tijuana River WMA in FY 2008. The PSAs will be broadcast in both English and Spanish.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate completion of production in FY 2008, and then will work with various broadcast media outlets to distribute and air the PSAs in FY 2008 and FY 2009.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radio Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria and gross pollutants as high priority water quality problems in the WMA. The Karma and Karma Second Chance PSAs will result in increased knowledge and awareness regarding bacteria, and trash as a vector, and result in future load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

The PSAs address bacteria directly by focusing on pet waste, food waste and organic matter, and indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website states that pathogens are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm

animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured on a variety of levels, to include the number of households (television) or listeners (radio) reached by the program will be tabulated. Second, awareness attitude data will be collected via surveys. Third, once the PSA have aired, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

Management Questions:	• What changes in awareness/attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of listeners (radio) or homes (television) reached (Outcome Level 1) • Change in knowledge or awareness (Outcome Level 2)

TITLE: **Mobile Advertising**
ID NUMBER: TJ-016

ACTIVITY DESCRIPTION

The City's Storm Water Division has retained a mobile advertising company to advertise Think Blue messages on its static billboard trucks in the Tijuana River WMA. The City intends to create advertisements that target behaviors associated with bacteria and/or sediment. The goal of the billboards is to educate the public about causes of these kinds of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the Tijuana River WMA in both English and Spanish.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Printing Services Division in the design of the advertisements and will have them created and placed on static billboard trucks. The trucks will drive pre-determined routes in the Tijuana River WMA in an effort to reach targeted, high priority areas within the WMA to increase awareness and promote behavior change.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing the static billboard trucks will result in increased knowledge and awareness directly and will promote behavior change.

EXPECTED BENEFITS

The billboard advertisements will address bacteria to increase knowledge awareness and promote behavior change.

EFFECTIVENESS MEASUREMENTS

Advertisement effectiveness will be measured via Citywide telephone surveys and focus groups comprised of residents in the Tijuana River WMA.

Management Questions:	• What changes in awareness /attitude regarding trash and bacteria was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of public reached (Outcome Level 1) • Change in knowledge or attitude (Outcome Level 2)

TITLE: **Invasive Species Removal Program in Tijuana River Valley Park**
ID NUMBER: TJ-017

ACTIVITY DESCRIPTION

The Regional Water Quality Control Board has funded a grant to the Southwest Wetlands Interpretive Association (SWIA) to continue the Invasive Plant Control Program begun in 2002 in the Tijuana River Valley. In addition to work in Border Field State Park and the Tijuana River Estuary, this grant will involve invasive species removal (and restoration) in the TJRV Park, which is owned and maintained by the County of San Diego. Three invasive plant species are targeted within TJRV: giant reed (Arundo donax), castor bean (Ricinus communis) and salt cedar (Tamarix ramosissima). These species degrade the habitats they invade by displacing native vegetation, lowering insect food supply for birds, reducing groundwater and increasing flood and fire hazards. County staff provides locations of the invasive plant species for SWIA to address. The invasive removal program included replanting with native species, a project that, coupled with natives returning naturally, will serve to filter pollutants and decrease sedimentation in the long term.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

SWIA works year round (from September 16 to March 14), except during the nesting season.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Southwest Wetlands Interpretive Association,
- U.S. Fish & Wildlife Service,
- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Pesticides
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment, pesticides, and bacteria are high priority water quality problems in the Tijuana River WMA. Therefore, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

The Invasives Removal Program in TJRV Park helps to restore wetlands by planting and encouraging the return of natives. These natives can also help to reduce sedimentation and assist in pesticide and bacteria uptake at and near the mouth of the TJRV.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1). Each invasive plant area will be monitored to determine which control methods would be most effective in the TJRV. Although no water quality monitoring is proposed for this project, water quality improvements may be able to be assessed qualitatively based on results from similar projects.

TITLE: **Source Identification of Metals and Ammonia**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

Metals and ammonia are among stormwater pollutants that can degrade water quality. Assessment of monitoring programs and refining as necessary to include analysis of these constituents will identify sources in dry weather monitoring. If the source is determined to be tidal, a reduction in prioritization may be sought. If the source is not attributed to tidal influence, data must be evaluated to determine the source of the pollutants. Measures may then be taken to reduce or eliminate the discharge of these pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for several metals has been proposed for within the lower Tijuana River watershed. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout the lower Tijuana River watershed with water quality impairments for pollutants including lead, nickel, and thallium. TMDLs are proposed for completion in 2019.

TIME SCHEDULE FOR IMPLEMENTATION

Planning is scheduled during Years 1 and 2 of the Municipal Permit. This program will be assessed during Year 3 for long-range planning as necessary, with long-range implementation to occur during Year 4, and long-range assessment in Year 5.

PARTICIPATING WATERSHED COPERMITTEES

Each watershed Copermittee in the Tijuana River Watershed Management Area (WMA) is responsible for selecting activities within their jurisdictions, including determining mechanisms to target effectiveness of the activity and ensuring that it addresses priority pollutants. This activity may be addressed at all levels up to and including regional.

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Pollutants that have been found in the Tijuana River WMA include gross pollutants, a high priority for monitoring and source identification in the 911.1 watershed HA.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated data for gross pollutants is limited in the Tijuana River WMA, and that additional data collection would be necessary to properly evaluate this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of these pollutants in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Based on the BLTEA, the effectiveness of this program involves the evaluation and measurement of various types of programmatic and environmental outcomes, or results. Six levels of outcomes from those that are activity-based to include those that are water quality-based may be used to evaluate the effectiveness of this BMP.

Targeted outcomes include implementation of programs and activities to prevent or reduce the discharge of pollutants to the stormwater conveyance system which will result in improved receiving water quality. Assessment measures will include the development of a standardized data set that can compare trends in both urban runoff and receiving water quality with the implementation of BMPs. Assessment methods will include additional monitoring to confirm that metals sources are not coming from upstream and BMP implementation upon source identification.

Effectiveness of the activity will be addressed through six levels of outcomes to include: compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of these pollutants in stormwater and ultimately in recreational water.

Activity effectiveness will also be assessed through the Receiving Waters Monitoring Program, which defines the requirements for monitoring including the sampling plan, compliance criteria, laboratory analyses, statistical analyses, and reporting guidelines. Links between source activities/conditions and observed receiving water impacts and recommended future monitoring to address sources of water quality problems will be identified.

TITLE: **Pet Waste Bag Dispenser Program**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

This activity will target municipal parks in the Tijuana River WMA that are suitable for pet waste bag dispensers and in some cases increased numbers of dispensers. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in July 2010. Program launch is anticipated to occur in FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing the amount of pet waste in municipal parks exposed to wash-off and carried into the storm drain system and receiving waters by runoff.

In addition, implementation of this activity is in accordance with the City's Strategic Plan for Watershed Activity Implementation (November 2007), which identifies the installation of pet waste bag dispensers as a potential activity to pilot the combat of urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of pet waste bag dispensers as an urban runoff pollution control

before implementation on a broader scale throughout its jurisdiction. Information gained through the pilot activity will assist the City in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s):	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park • Receiving water quality improvement (less observed bacteria in receiving water downstream)
Assessment Method(s):	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and rainfall information to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Assessment Measures, Assessment Outcome Levels & Data:	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 1)

TITLE: **Doggie Bag Dispenser Program**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

Pet wastes are among the many common stormwater pollutants that can degrade water quality. BMPs such as Doggie Bag Dispensers will prevent or reduce the discharge of pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for bacteria has been proposed for the Tijuana River watershed. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout the Tijuana River watershed with water quality impairments for bacteria. TMDLs are proposed for completion in 2010.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation has begun under the prior stormwater municipal permit 2001-01. Doggie Bag Dispensers will be installed in the remaining parks in the City during Year 1 of Municipal Permit R9 2007-0001, with assessment of program to occur in Years 2 and 3. This program will be assessed and refined as necessary during Year 4.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated bacteria was given a Priority B rating in the Tijuana River WMA, and that additional monitoring and source identification would be necessary to properly evaluate this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions; urban

runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Based on the BLTEA, the effectiveness of this program involves the evaluation and measurement of various types of programmatic and environmental outcomes, or results. Six levels of outcomes from those that are activity-based to include those that are water quality-based may be used to evaluate the effectiveness of this BMP.

Targeted outcomes include implementation of programs and activities to prevent or reduce the discharge of pollutants to the stormwater conveyance system which will result in improved receiving water quality. Assessment measures will include the development of a standardized data set that can compare trends in both urban runoff and receiving water quality with the implementation of BMPs. Assessment methods will include making assumptions as to the amount of pet waste collected in the parks on a daily, weekly, or monthly basis. Another method would be to perform a study which would include collecting pet waste from each park and determining volume collected to get the potential loading estimate (per day, week, or month per park).

Effectiveness of the activity will be addressed through six levels of outcomes to include: compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria in stormwater and ultimately in recreational water.

Activity effectiveness will also be assessed through the Receiving Waters Monitoring Program, which defines the requirements for monitoring including the sampling plan, compliance criteria, laboratory analyses, statistical analyses, and reporting guidelines. Links between source activities/conditions and observed receiving water impacts and recommended future monitoring to address sources of water quality problems will be identified.

TITLE: **Mobile Business Assessment Program**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

Mobile commercial activities contribute to the many common stormwater pollutants that can degrade water quality. Implementation of a Mobile Business Assessment Program will determine the pollutants and work to reduce the discharge of these pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for bacteria has been proposed for the Tijuana River watershed. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout the Tijuana River watershed with water quality impairments for bacteria. TMDLs are proposed for completion in 2010.

TIME SCHEDULE FOR IMPLEMENTATION

Planning including program development is scheduled during Years 1 and 2 of the Municipal Permit. This program will be implemented during Years 3 and 4, and assessed during Year 5.

PARTICIPATING WATERSHED COPERMITTEES

Each watershed Copermittee in the Tijuana River Watershed Management Area (WMA) is responsible for selecting activities within their jurisdictions, including determining mechanisms to target effectiveness of the activity and ensuring that it addresses priority pollutants. This activity may be addressed at all levels up to and including regional, and would be best addressed at a regional level due to its mobility throughout the region.

OTHER PARTICIPATING ENTITIES

- County of San Diego
- City of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria / Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated bacteria and gross pollutants were given a Priority B rating in the Tijuana River WMA, and that additional monitoring and source identification would be necessary to properly evaluate this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Based on the BLTEA, the effectiveness of this program involves the evaluation and measurement of various types of programmatic and environmental outcomes, or results. Six levels of outcomes from those that are activity-based to include those that are water quality-based may be used to evaluate the effectiveness of this BMP.

TITLE: **Restaurant Outdoor BMPs**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

Outdoor activities at restaurants may contribute to the many common stormwater pollutants that can degrade water quality. Increasing BMPs on trash containment areas to include overhead covering, and development of BMPs to prevent washing of floor mats outdoors will reduce the discharge of these pollutants into the stormwater conveyance system.

TMDL APPLICABILITY

A TMDL for bacteria has been proposed for the Tijuana River watershed. The 2006 CWA Section 303d list of impaired water bodies identified multiple locations throughout the Tijuana River watershed with water quality impairments for bacteria. TMDLs are proposed for completion in 2010.

TIME SCHEDULE FOR IMPLEMENTATION

Planning is scheduled during Years 1 and 2 of the Municipal Permit. This program will be implemented during Year 3, and assessed during Years 4 and 5.

PARTICIPATING WATERSHED COPERMITTEES

Each watershed Copermittee in the Tijuana River Watershed Management Area (WMA) is responsible for selecting activities within their jurisdictions, including determining mechanisms to target effectiveness of the activity and ensuring that it addresses priority pollutants. This activity may be addressed at all levels up to and including regional.

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Bacteria and associated pathogens have been rated as high priority pollutants for monitoring and source identification within the 911.1 watershed hydrologic subarea of the Tijuana River WMA.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity is consistent with the process for evaluating jurisdictional and watershed programs as presented in the Baseline Long-Term Effectiveness Assessment (BLTEA) document. The BLTEA indicated bacteria and gross pollutants were given a Priority B rating in the Tijuana River WMA, and that additional monitoring and source identification would be necessary to properly evaluate this watershed (p.2-43, BLTEA, August 2005).

EXPECTED BENEFITS

Expected benefits of implementing the activity include compliance with permit requirements; changes in attitudes, knowledge, and awareness of the community; behavioral change and BMP implementation; changes in urban runoff and discharge quality; pollutant load reductions; urban runoff and discharge quality; and an improvement in receiving water quality due to lowered levels of bacteria and gross pollutants in stormwater and ultimately in recreational water.

EFFECTIVENESS MEASUREMENTS

Based on the BLTEA, the effectiveness of this program involves the evaluation and measurement of various types of programmatic and environmental outcomes, or results. Six levels of outcomes from those that are activity-based to include those that are water quality-based may be used to evaluate the effectiveness of this BMP.

TITLE: **Infiltration BMP Retrofit**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

This activity will involve the implementation of an infiltration project in the Tijuana River WMA to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right of way ("Green Mall"), or a residential right of way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and potential TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies metals and bacteria as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address both high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

TITLE: **Infiltration BMP Retrofit**
ID NUMBER: TBD

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's Strategic Plan for Watershed Activity Implementation (November 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and potential TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Trash Segregation Device Installation**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

This project will involve the installation of devices along certain right of ways in the Tijuana River WMA to prevent trash and debris from entering the MS4. Runoff entering an inlet with such a device will be cleaned of large trash and debris. It is anticipated that accumulation of such pollutants at the mouth of inlets will facilitate their collection by City crews using street sweepers. The City will study the effectiveness (in terms of load reduction) and the efficiency (in terms of load reduction divided by cost) of such devices in improving discharge and water quality impaired by bacteria, both in absolute terms and relative to other potential activities.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Installation is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after installation to assess the effectiveness in bacteria and trash loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (in particular, Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria and gross pollutants as high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EXPECTED BENEFITS

Implementation of this activity will reduce bacteria loading via facilitation of trash and debris removal. Literature published by the United States Environmental Protection Agency on its website states that debris may be contaminated by pathogens that have adverse effects on

humans. By reducing the amount of trash and debris in the Tijuana River WMA, bacteria loading is reduced.

In addition, implementation of this activity is in accordance with the City's Strategic Plan for Watershed Activity Implementation (November 2007), which calls for the piloting of trash segregation devices to reduce bacteria loading via facilitation of trash and debris removal. In addition, knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of trash segregation devices as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and potential TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Which type of trash segregation device facilitates the most efficient removal of trash and debris? • What is the load reduction efficiency of trash segregation devices in facilitating removal of trash? • How effective are trash segregation devices at facilitating reduction of loads of trash?
Targeted Measurable Outcome(s)	• Determination of most efficient and effective trash segregation device • Reduction in trash based on amount removed from areas with devices • Receiving water quality improvement (less observed trash in receiving water downstream)
Assessment Method(s)	• Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Inlet Bacteria Treatment BMP Installation**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

This project will involve the installation of inlet treatment devices along certain right of ways in the Tijuana River WMA in conjunction with trash segregation devices to treat runoff of bacteria entering the MS4. Runoff entering an inlet will be directed through a filter box to be sterilized of bacteria and then discharged. The City will study the effectiveness (in terms of load reduction) and the efficiency (in terms of load reduction divided by cost) of such devices in improving discharge and water quality impaired by bacteria, both in absolute terms and relative to other potential activities. The City hopes to determine the effect of such devices on discharge and water quality in combination with other activities, such as aggressive street sweeping.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Installation is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after installation to assess the project's effectiveness in reducing bacteria loading.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria as a high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this activity will address bacteria via inlet treatment.

EXPECTED BENEFITS

Implementation of this activity will reduce bacteria loading via inlet treatment.

In addition, implementation of this activity is in accordance with the City's Strategic Plan for Watershed Activity Implementation (November 2007), which calls for the piloting of inlet

treatment BMPs to reduce bacteria loading. Knowledge and experience gained through this activity would help the City document the benefits, limitations, and challenges of inlet treatment as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and potential TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Which type of inlet bacteria treatment BMP provides the most efficient removal of trash and debris? • What is the load reduction efficiency of inlet bacterial treatment BMPs in reducing bacteria? • How effective are bacteria treatment BMPs at reducing loads of bacteria?
Targeted Measurable Outcome(s)	• Determination of most efficient and effective inlet bacteria treatment BMP • Reduction in bacteria based on amount removed from hydrodynamic separator • Discharge water quality improvement (less bacteria exceedances per monitoring)
Assessment Method(s)	• Inspections (e.g., ensure the inserts are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: **Green Mall Infiltration Retrofit Education and Outreach**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

The City's Storm Water Division will conduct targeted education and outreach to Tijuana community residents and/or businesses for the implementation of an infiltration project in the Tijuana River WMA to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right of way ("Green Mall"), or a residential right of way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and potential TMDLs in the receiving waters of the WMA. The City intends to target auto-related business areas within the Tijuana River WMA in an effort to reduce the amount of metals impacting the watershed.

The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign associated with the infiltration retrofit. Activities will include recommendations for education and outreach strategies, which may include surveys, public participation, incentives and specific messaging among others.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Infiltration project planning began in July 2007, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading. Outreach associated with this activity will follow a similar time schedule.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Bacteria

TITLE: **Green Mall Infiltration Retrofit Education and Outreach**
ID NUMBER: TBD

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy identifies metals and bacteria a high priority water quality problems in the Tijuana River WMA and recommends implementing load reduction/source abatement activities to address it. Construction of the Green Mall project coupled with education and outreach efforts will result in both load reductions due to structural Best Management Practices as well as increased knowledge and awareness in an effort to promote sustained behavior change.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention. Additionally, increased education and outreach to residents and/or businesses in the Tijuana River WMA regarding metals and/or bacteria will increase knowledge awareness of water quality issues in the area and promote behavior change.

EFFECTIVENESS MEASUREMENTS

Green Mall Retrofit effectiveness will be measured via increased inspections and water monitoring initiatives, while awareness and behavior change will be measured via a Citywide telephone surveys and focus groups comprised of residents in the Tijuana River WMA.

Management Questions:	• What changes in awareness are reported as a result of the targeted outreach? • What changes in behavior are detected as a result of the targeted outreach? • What amount of reduction of trash and debris are observed in the targeted education area? • Can changes be attributed to the changes in awareness and behavior resulting from the education/outreach component of the activity? • How do the survey results change pre and post activity implementation?
Targeted Measurable Outcome(s)	• Achieve increased awareness of bacteria and TMDL issues (e.g., involve 50% of local households during LID development and construction) • Achieve higher incidence of knowledge and attitude in local population (by comparing survey results)
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., count observable behavior of participants in program) • Monitoring (e.g., water quality monitoring at base of targeted watershed)

	• Tabulation (e.g., amount of money spent one education and outreach, number of residents and households reached) • Reporting (e.g., estimates of load reduction based on 3rd party data, number of individuals or households reached)
Assessment Measures, Assessment Outcome Levels & Data:	• Number of stakeholders, residents, and business reached (Outcome Level 1) • Change in knowledge and attitude based on survey data (Outcome Level 2) • Change in behavior based on survey data (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 3) • Volume of trash removed from study area (Outcome Level 4) • Reduction of bacteria and trash entering LID (Outcome Level 4)

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TITLE: **Irrigation Controller and Xeriscaping Incentive Program**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

This activity will involve launching a pilot incentive program to encourage the use of weather based irrigation devices and xeriscaping to reduce over irrigation and the overall need for landscaping irrigation. Specific residential and commercial areas will be targeted and monitored to assess the efficiency of the incentive program in reducing runoff volume and pollutant loads. It is also anticipated that the program will include a component to investigate the challenges to getting residents and businesses to participate in this incentive program to better focus subsequent education and outreach efforts and determine whether broad scale implementation should be pursued.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and coordination is anticipated to begin in July 2010. Program launch is anticipated to occur in FY 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter
- City of San Diego Water Department (to be invited to participate)
- San Diego County Water Authority (to be invited to participate)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Pesticides
- Nutrients
- Heavy Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria, pesticides, nutrients, and heavy metals as high priority water quality problems in the WMA and recommends implementing activities to address them. Implementation of this activity will address the high priority water quality problems by reducing dry weather flows resulting from over irrigation.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing dry weather flows resulting from over irrigation. Reduction of runoff means less pollutants conveyed into the storm drain system and out into receiving waters. Water conservation will also be an added benefit as program participants waste less water on irrigation.

In addition, implementation of this activity is in accordance with the City's Strategic Plan for Watershed Activity Implementation (November 2007), which calls for the piloting and monitoring of an irrigation runoff reduction program to combat urban pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of irrigation runoff reduction programs as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Does increased education help reduce dry weather runoff? • Do incentives and/or rebates increase the rate of low-runoff irrigation device installation? • Do neighborhoods targeted for outreach or incentives exhibit fewer incidence of dry weather runoff? • How does the incidence of dry weather runoff relate to load reduction?
Targeted Measurable Outcome(s):	• Achieve zero dry weather runoff in target neighborhoods
Assessment Method(s):	• Inspections (e.g., track number of target behaviors observed, decrease in observed behavior, number of follow-up inspections) • Quantification (e.g., use frequency of observed behavior to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)

Assessment Measures, Assessment Outcome Levels & Data:	• Number of incentives or rebates distributed (Outcome Level 1) • Change (%) in target behavior pre and post-outreach (Outcome Level 3) • Number of follow-up inspections (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

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TITLE: **Tijuana River Watershed Street Sweeping**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division (Storm Water Division) will coordinate with the City's Street Division to conduct a street sweeping effectiveness study in the Tijuana River WMA. The study will investigate the effectiveness of top tier street sweepers compared to that of the City's current sweepers in reducing the accumulation of metals on City streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study will be to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study will include the purchase of new types of sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency.

The City will use the prioritization process that is outlined in its Strategic Plan for Watershed Activity Implementation (November 2007) to target areas within the Tijuana River WMA.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Project planning is anticipated to begin in July 2009. The City anticipates sweeping to start within FY 2011. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Gross Pollutants (in particular, Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies metals and trash as high priority water quality problems in the WMA and recommends implementing load reduction/source abatement activities to address them. Targeted increased sweeping will target metals and trash City streets.

EXPECTED BENEFITS

The street sweeping effectiveness study will consist of acquiring top-tier street sweepers to operate within the Tijuana River WMA and assessing their effectiveness in reducing the accumulation of metals and trash on area streets through an effectiveness assessment monitoring program. This study will augment the City's current sweeping efforts in order to also determine the optimum frequency of sweeping, starting at the present baseline schedule, towards reducing the loading of metals. The monitoring program is anticipated to include water quality and debris monitoring.

This activity will simultaneously address requirements under the Municipal Permit and potential metals related TMDLs.

EFFECTIVENESS MEASUREMENTS

Management Questions:	• Which street sweeping machine is most effective in removing contaminants of concern (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in stormwater runoff?
Targeted Measurable Outcome(s)	• Load reduction for sediments and metals based on monitoring information • Receiving water quality improvement
Assessment Method(s)	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods)
Assessment Measures, Assessment Outcome Levels & Data:	• Tons of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to tons of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)

TITLE: **Tijuana River Valley Park Trails & Habitat Enhancement Project**
ID NUMBER: TBD

ACTIVITY DESCRIPTION

The County of San Diego's Tijuana River Valley Park (TJRVP) supports areas that have been subjected to human disturbance for decades. These disturbances have resulted in the loss of native habitat, negative impacts to water quality, compaction of native soils, accumulation of trash, erosion and sedimentation. The quality of water in the TJRVP, particularly water from Mexico, is often heavily impacted by sediments, pollution, trash and debris. Poor water quality has resulted in numerous beach closures just west of the TJRVP. The TJRVP Trails and Habitat Enhancement Project will help reduce these disturbances by closing off unnecessary trails, restoring habitat, and educating the public about the importance of open space conservation. The proposed project is intended to create, enhance, and restore natural habitats within the TJRVP while optimizing recreational trail use. Some of the items on the project planning list include creating a trail network, restoring wetland and riparian habitat, installing interpretive signage and constructing a staging area. By consolidating as many as 71 miles of pathways, most cut without permits, to a 21-mile permitted trail system, erosion and sedimentation will decrease and native plants will return. The 60-acre active wetland/riparian restoration project will also help filter pollutants and decrease sedimentation.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

An Environmental Impact Report (EIR) for this project has been approved by the County of San Diego Board of Supervisors in December 2006. Implementation of this project will occur after permits from the City of San Diego have been obtained. The project will be phased over time and funding has not yet been identified.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment has been identified as a high priority water quality problem in the Tijuana River Watershed. Since this project addresses a potentially significant source of sediment in the watershed, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This project will ultimately limit the amount of unauthorized trail use within the TRVP boundaries resulting in a reduction of the amount of sediment sources onsite. Additionally, the enhancement and restoration of native habitat will benefit the natural sediment transport and deposition process. These restored areas may provide additional benefits in uptake and cycling of nutrients and other pollutants that are harmful to the water quality of the Tijuana River Valley.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1 Outcome). Although no monitoring is proposed for this project, water quality improvements may be able to be assessed qualitatively based on results from similar projects.

Watershed Urban Runoff Management Program
Fiscal Year 2007-2008 Annual Report

Tijuana River Watershed

Submitted to the Regional Water Quality Control Board, San Diego Region

on

February 2, 2009

Prepared by the County of San Diego

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ATTACHMENT 1 – WATERSHED ACTIVITY SUMMARY SHEETS

EXECUTIVE SUMMARY

This annual report describes implementation of the Tijuana River Watershed Management Area Watershed Urban Runoff Management Program (WURMP) during FY2007-08. Although much of the Tijuana River Watershed Management Area (WMA) extends into Baja California, only the portion within the County of San Diego is subject to the Municipal Stormwater Permit's WURMP requirements. Therefore, this report only addresses activities within the County of San Diego.

Section 2.0 presents a water quality assessment for the Tijuana River WMA. The assessment is largely based on the regional monitoring program conducted on behalf of the San Diego County Municipal Stormwater Copermittees in compliance with Municipal Permit requirements, but is supplemented by other monitoring programs, including jurisdictional dry weather monitoring and special studies the monitoring report is identified as "The Monitoring Reported (Weston 2008)" throughout this document. It should be noted that the Municipal Permit established a monitoring schedule for the entire county that alternated monitoring between the northern watershed and the southern watersheds. As a result of this schedule only dry weather monitoring occurred during this reporting period.

The Tijuana River WMA WURMP (2008) found that there were nine priority watershed water quality problems have been identified, five of which are considered high priorities for the purposes of WURMP implementation: Sediments, Pesticides, Gross Pollutants Bacteria and Trash.

Section 3.0 and Attachment 1 describe 20 watershed activities that were in various phases of implementation during FY 2007-08. Several activities addressed Bacteria and Trash in the Tijuana Valley HA (911.1) but also included other HAs in the eastern portion of the watershed including Potrero (911.2), Monument (911.4) and Morena (911.5), but there was also a special monitoring study, Imperial Beach Bacteria Source Identification Study, initiated in the Tijuana River WMA. Additionally planning for a Trash and Sediment Characterization Study was initiated.

Section 4 describes the how effective the Tijuana River WMA copermittees collaborated and whether or not overall WURMP activities were appropriate and effective at the Watershed and HA level. It was determined that a lot of headway has been achieved but there is much more to do. It is hoped that the bacteria source id study and trash and sediment characterization study will result in future effective activities at not only the WMA area level but also at the entire watershed level.

STATEMENT OF CERTIFICATION

Tijuana River Watershed Urban Runoff Management Plan (WURMP) FY 2007-2008 Annual Report

I certify, under penalty of law, that this **FY 2007-2008 Tijuana River Watershed Urban Runoff Management Plan (WURMP) Annual Report** and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-21-09
Date

THE CITY OF SAN DIEGO

January 30, 2009

RE: Statement of Certification
Tijuana River Watershed Urban Runoff Management Program
Fiscal Year 2008 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2008 Tijuana River Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

1/30/09
Date

DIVERSITY BRINGS US ALL TOGETHER

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PUBLIC WORKS
825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

January 28, 2009

STATEMENT OF CERTIFICATION
Tijuana River Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to the Tijuana River Watershed Urban Runoff Management Program Annual Report for FY 2007-2008 were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

SECTION 1.0 INTRODUCTION

The NPDES Municipal Stormwater Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Tijuana River Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Tijuana River WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. The Watershed Activity Implementation Summary Sheets for all watershed water quality and education activities implemented during this reporting period will be included in Appendix 1.

This Annual Report is divided into five sections that highlight the efforts of the Tijuana River Watershed Copermittees during the FY 2007-08 reporting period.

Section 1: Provides an overview of the information included in this report, summarizes the ongoing collaboration among Tijuana River Watershed Copermittees. There were not updates to the watershed maps during this reporting period.

Section 2: Provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3: Describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period as well as any public participation or collaborative land use planning that took place.

Section 4: Discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among Watershed Copermittees, 2) determine whether watershed activities are focused on appropriate water quality problems, 3) assess whether targeted outcomes are being achieved, and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.

Section 5: Provides a discussion of conclusions reached during FY 2007-08 as well as recommendations for future reporting periods.

1.1 Watershed Collaboration

WURMP development and implementation is a collaborative effort by all of the following Tijuana River Watershed Copermittees:

- City of Imperial Beach
- City of San Diego
- County of San Diego

The County of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among Watershed Copermittees and liaison between Copermittees and Regional Water Quality Control Board (RWQCB) staff.

The Tijuana River Watershed Copermittees met or participated in conference calls 6 times during this reporting period. Table 1-1 provides a summary of the dates and the general topics of discussion at these meetings. The majority of the meetings were focused on developing the updated Tijuana River WURMP that was submitted to the RWQCB on March 24, 2008.

During this reporting period, the Tijuana River Watershed Copermittees collaborated extensively on the development of a watershed strategy that guides WURMP activity selection. An extensive explanation of the Watershed Strategy was presented in the March 2008 WURMP document. The Watershed Copermittees developed a database of baseline information consisting of land use, water quality monitoring data, and other information on potential pollutant sources. Using this data they identified the High Priority Water Quality Problems on a HA level.

Utilizing the information from the watershed strategy, the Tijuana River Copermittees have identified several water quality activities which they have coordinated and standardized at the HA level. This collaborative approach was utilized because these activities were identified as beneficial to address high priority water quality problems and can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. Collaboration on the watershed strategy enabled the Copermittees to identify data gaps by reviewing existing monitoring and land use data which provided the basis for developing additional water quality monitoring and source identification activities. Section 3 and Appendix 1 provide specific detail on each program that was initiated or completed during the FY 2007-08 reporting period.

Due to the Wildfires in San Diego County in November 2007 the County of San Diego requested and received a 60-day extension for the submittal of the revised WURMP document from January to March 2008. The County did not request extensions for the FY2006-2007 WURMP Annual Report.

Table 1-1: Summary of Meetings

Meeting (or Conference) Date	Main Topics of Discussion
08/13/07	• Status of Action Items. • Review Revised WURMP & Annual Report Formats. • ID High Priority Pollutants. • Review new TWAS locations.
08-21-07	• Review Watershed Data and Determine Priority Pollutants.
09-21-07	• ID High Priority Pollutants. • Schedule of completion discussion for revised WURMP Sections. • Initiate discussions for the FY06-07 Annual Report.
10-15-07	• Discuss Issues regarding Watershed Strategy. • Review Revised WURMP & Annual Report Schedules. • Status review for Revised WURMP and Annual Reports.
12-21-07	• Completed review final draft of the FY06-07 Annual Report
01-29-08	• Obtain Signed Certification Statements

1.2 Tijuana River Watershed Map Updates

There were no Tijuana River Watershed map updates included in the 2007-2008 Annual Report.

SECTION 2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

The Tijuana River WMA Copermittees are working to ensure implementation of water quality assessment strategies that will result in meaningful data and allow determination of long-term water quality changes in the Tijuana River WMA. This section of the report describes information collected by the Tijuana River WMA Copermittees to meet the requirements stated in Section J.3.b.2.c. of the Permit.

The Copermittees, as a regional group, tasked a consultant, Weston Solutions (Weston), with compiling and analyzing water quality data from the San Diego region. In addition to analyzing data on a regional basis, Weston also assimilated information and analyzed data for each of the nine WMAs within San Diego County. The results of these tasks are described in the 2007-2008 San Diego County Municipal Copermittees Urban Runoff Monitoring Report (Monitoring Report WESTON 2007-08) prepared for the San Diego County Municipal Copermittees. The Monitoring Report provides information on monitoring site descriptions and provides results and analyses from the mass loading station (MLS) monitoring during ambient and wet weather periods, stream bioassessment, Dry Weather Monitoring (DWM) Program, Coastal Storm Drain Monitoring (CSDM) Program, and additional studies. The Tijuana River WMA is described in Section 11 of the Monitoring Report. Please refer to the 2007-2008 San Diego County Municipal Copermittees Urban Runoff Monitoring Report for more specific information regarding analytical assessments.

According to the Receiving Waters and Urban Runoff Monitoring and Reporting Program identified in the Municipal Permit, monitoring in each of the watershed management areas will conform to the schedule established in Table 1 Monitoring Rotation (see Municipal Permit R9-2007-0001). Based on the schedule only jurisdictional dry weather monitoring was conducted during the FY2007-08 reporting period for the Tijuana River WMA.

2.1 Water Quality Assessment

The Monitoring Report was designed to answer the five core management questions described in Section I.B of the Receiving Waters and Urban Runoff Monitoring Program:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring programs vary in the number of years applied and the spatial extent in which the collected data applies. Therefore, data support only partially resolution of each core management question. Through continued monitoring and the refinement of the Permit requirements a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments are conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach (Table 2-1). Since only jurisdictional dry weather data was collected for the reporting period the majority of the following discussion is based on the historic monitoring that has occurred in the WMA prior to this reporting period.

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

   Beneficial uses affected by persistent exceedances of physical (TSS, BOD, COD, and turbidity), chemical (Diazinon, Malathion, MBAS, and dissolved phosphorus), and bacteriological (total and fecal coliform, and enterococci) benchmarks may be impacted. Beneficial uses related to the quality of natural habitat supporting benthic community diversity may be similarly impacted. Chemical constituents, specifically Diazinon, were detected at concentrations expected to cause beneficial use impairments related to toxicity. Persistent toxicity was observed to the acute, chronic, and reproductive endpoints using Ceriodaphnia dubia.

2. What is the extent and magnitude of the current or potential receiving water problems?

   Wet weather and ambient weather water quality data were not collected during the 2007–2008 Monitoring Season; therefore, comparisons of the data to the water quality benchmarks were not conducted, and magnitudes of exceedances could not be calculated. Historically, constituents with a mean exceedance of more than five times their benchmarks included TSS, fecal coliform, and turbidity. During the 2009–2010 Monitoring Season, ambient conditions monitoring and two TWAS will be utilized to enhance the spatial and temporal understanding of the receiving water problems in the Tijuana River Watershed. Additionally, the City of Imperial Beach is conducting an extensive bacterial source tracking investigation under a Proposition 50 Clean Beaches Initiative (CBI) Grant primarily in the lower watershed and on the US side. Though the funding for this grant is tentative, the study should provide additional needed information to answer Question 2.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

   Core Management Question 3 is partially answered through the evaluation of urban runoff area assessments. During the 2007–2008 Monitoring Season, only the jurisdictional DWM data were collected. Dry weather action level exceedances were infrequent and limited to turbidity, MBAS, and total coliform. Trash assessments and pyrethroid monitoring assessments were not conducted in the Tijuana WMA during the 2007–2008 Monitoring Season. Trash and synthetic pyrethroids are solely anthropogenic in nature, and their route to receiving waters occurs through urban runoff, direct dumping, or via indirect sources (e.g., wind or animals such as birds, coyotes, and rodents). Diazinon is also solely attributed to anthropogenic sources and is commonly detected in samples collected at the Tijuana River MLS. New monitoring programs will be initiated during the 2008–2009 Monitoring Season that will allow for a better quantification of the contributions of urban runoff to the receiving waters. As mentioned above, the Imperial Beach Microbial Source Tracking Study will also provide some information needed to answer Question 3.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

   Core Management Question 4 is partially answered by examining land use in conjunction with urban runoff area assessments. Land uses in the vicinity of the MLS are primarily residential and agriculture. The residential land use is located primarily in Mexico and is beyond the jurisdiction of the watershed Copermittees. Cross-border issues related to trash and illegal dumping are common problems in the watershed. Trash assessments and pyrethroid monitoring assessments were not conducted in the Tijuana WMA during the 2007–2008 Monitoring Season. The jurisdictional DWM Program has measures to identify sources and eliminate illegal connections and illicit discharges (ICIDs). Future MS4 Outfall Monitoring and Source Identification Monitoring will provide additional data useful in answering this question. Question 4 will also be partially answered via data collected under the Imperial Beach Microbial Source Tracking Study.

5. Are conditions in receiving waters getting better or worse?

   Conditions at the MLS are based on previous monitoring years since there were no data collected from the Tijuana River MLS during the 2007–2008 Monitoring Season. Historically, the conditions of the receiving water have shown ten increasing trends (nitrate, TOC, TSS, turbidity, total coliform, fecal coliform, total arsenic, total lead, total zinc, and acute toxicity to the survival of H. azteca) and five decreasing trends (TDS, Diazinon, dissolved arsenic, dissolved nickel, and conductivity). The bioassessment results over the 2001–2007 monitoring period did not indicate changes in benthic IBI quality ratings; both sites have had historical mean ratings of Poor. However, with the addition of the O/E analysis during the 2006–2007 monitoring season, justification was provided to re-rank the Tijuana River Site as showing signs of benthic impairment. Persistent toxicity to the acute and chronic survival, as well as reproductive endpoints for Ceriodaphnia dubia has been observed in samples from the Tijuana River WMA.

Recommendations

The recommendations for this watershed are to continue monitoring at the MLS to determine long-term trends, to continue monitoring for toxic and benthic impacts, and to identify upstream sources of COCs.

For the next full round of Permit monitoring in southern portion of San Diego County (Permit Year 2009–2010), the location of two new TWAS will help to understand the spatial characteristics of water quality in the watershed. Additionally, ambient monitoring and new monitoring programs will help in assessing the watershed with higher confidence.

One issue to be considered is the contribution of runoff and potential COCs from the portion of the watershed outside US jurisdiction. The addition of a TWAS at the international border in San Ysidro will help to quantify trans-border contributions to water quality degradation.

Future MS4 Outfall Monitoring and Source Identification Monitoring may be best focused in the areas of the Tijuana Valley HA, specifically the San Ysidro (911.11) HSA and Water Tanks (911.12) HSA (the most urbanized sections in the US portion of the watershed). Recent development of commercial, industrial, residential, and transportation land use development in the Otay Mesa area is increasing the potential for greater urban runoff in the Water Tanks HSA.

Table 2-1 Summary of WMA Assessment Findings

Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
Receiving Water monitoring program	Ambient Receiving Water Assessment	No exceedances or data analyzed from this program to date.	1, 2
	Wet Weather Receiving Water Assessment	Constituents of concern (Frequency of Occurrence): • High: TSS, total coliform, fecal coliform, enterococci, and Diazinon. • Medium: BOD, COD, and total phosphorus. • Low: MBAS, dissolved phosphorus, and Malathion. Constituents with a mean magnitude of exceedance by more than five times the benchmark: TSS, fecal coliform, and turbidity. Persistent toxicity was observed to acute, chronic and reproductive endpoints of Ceriodaphnia dubia.	
	Rapid Stream Bioassessments	Altered benthic macroinvertebrate communities (Poor to Very Poor IBI ratings) were observed.	
Urban Runoff Monitoring Program	Ambient Urban Runoff Areas Assessment	Constituents of concern: Low: MBAS, turbidity, and total coliform.	3, 4
	Wet Weather Urban Runoff Areas Assessment	No exceedances or data analyzed from this program to date.	
WMA Assessment	Receiving Water Trend Assessment	Significant increasing trends: nitrate, TOC, TSS, turbidity, total coliform, fecal coliform, total arsenic, total lead, and total zinc. Acute toxicity to the survival of Hyalella azteca has also been significantly increasing. Significant decreasing trends: TDS, Diazinon, dissolved arsenic, and dissolved nickel.	5
	2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	WMA high frequency of occurrence rating for TSS, turbidity, Diazinon, total coliform, fecal coliform, and enterococci were consistent with the 2001–2006 BLTEA ratings.	

As stated in the Tijuana River Watershed WURMP Annual Report (2008), the City of Imperial Beach has been awarded a Proposition 50 CBI Grant to identify and quantify the sources of microbial contamination in the Tijuana River that cause beach closures at two prominent beaches. The study will also identify potential mitigation/BMPs to reduce the bacterial loading in the Tijuana River. Dry weather and wet weather monitoring will occur throughout 2008 and 2009, with a final report completed by 2010. The outcome of this project will greatly enhance the understanding of bacterial sources and transport within the watershed.

2.2 Pollutant Source Assessment

The Permit requires the Tijuana River WMA Copermittees to identify the high priority water quality problems and identify the likely sources within the Tijuana River WMA and implement activities that will address these pollutants. There was little or no change in the existing land use coverages nor have any source id studies been completed within the Tijuana River WMA, therefore, the Tijuana River WMA Copermittees did not complete update its pollutant source assessment. However, the City of Imperial Beach did initiate a Bacterial Source Identification Project. The completion of that project currently on hold due to budget issues and may provide the basis for revisions in future annual reports. Since there have been no new source assessment studies completed for this WMA the reader should refer to the Watershed Urban Runoff Management Program – Tijuana River Watershed March 2008 (WURMP 2008) for specific information related to the likely sources. The discussion below highlights the components of a source assessment analysis, it must be acknowledged that the data presented below only represents information regarding the portion of the watershed that is within the jurisdiction of the Cities of Imperial Beach and San Diego and the County of San Diego.

A key component of identifying pollutants is knowledge of the land uses for each hydrologic area (HA) (Table 1-2 WURMP 2008) and the pollutant-generating activities generally associated with these specific land uses (Table 3-10 WURMP 2008). Of particular note is that the majority (86%) of the Tijuana WMA remains undeveloped or is within protected open space. Most of the developed uses within the watershed occur within the Tijuana River Valley within the 911.1 and 911.2 HA.

During the current reporting period the City of Imperial Beach selected Weston Solutions to conduct a Bacterial Source Identification Study on the U.S. portion of the Tijuana River Watershed. The purpose of the study is to identify sources of bacterial contamination and recommend appropriate actions and activities to reduce the input of those sources to the Tijuana River and adjacent Pacific Ocean. Weston initiated work in November 2007 and is expected to submit a final report February 2010. During this reporting period, project activity focused on developing a stakeholder group, completion of a Quality Assurance Project Plan and Monitoring Plan, literature review, and field reconnaissance to identify sampling locations. Water quality samples will be conducted during the next reporting period.

SECTION 3.0 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 Watershed Water Quality Activities

The Tijuana River Watershed Copermittees have implemented or were actively planning twenty water quality activities, two of which also qualify as watershed education activities, during Fiscal Year 2007-2008 (FY07-08) that address the high priority water quality problems identified in the Tijuana River Watershed WURMP (March 2008). Table 3-1 identifies each of the water quality activities and includes information pertaining to the lead jurisdiction, the hydrological area(s), and the priority pollutants which these activities targeted. For more detail on the specific activities, please refer to Appendix 1 for the Watershed Activity Summary Sheets describing the Copermittees watershed water quality activities and details regarding their anticipated implementation schedule. These activities include projects ranging from pet waste dispensers and trash cleanup events to land acquisition and Low Impact Design (LID) education and outreach focused on specific stakeholder constituencies.

Table 3-1: Water Quality and Education Activities

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	HA	High Priority Water Quality Problems									
							Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-001	Pet Waste Dispenser Program	COSD		X		911.2 911.4 911.5	X									X
TJ-002	Land Acquisition within TJWMA	COSD		X		All	X	X	X	X	X	X	X	X	X	X
TJ-003	ILACSD Trash Clean-Up Sponsorship	SD		X	X	911.1	X	X								
TJ-004	San Diego Coastkeeper Trash Clean-up Sponsorship	SD		X	X	911.1	X	X								
TJ-005	Alpha Project for the Homeless Trash Clean-ups	SD		X	X	911.1 911.2	X	X								
TJ-006	Targeted Restaurant Facility Inspections	SD		X		911.1 911.2	X									
TJ-007	Targeted Auto-Related Facility Inspections	SD		X		911.1 911.2					X					
TJ-008	Targeted Auto-Related Facility Inspections Outreach	SD			X	911.1 911.2					X					
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnects	SD		X		911.1 911.2	X		X	X	X					
TJ-010	City-Wide Clean-Up Events	IB		X	X	911.1	X									
TJ-011	Large Special Events Inspection and Clean-Ups	IB		X	X	911.1	X	X								
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	COSD		X		911.1		X	X					X		
TJ-013	Tijuana River Bacteria Source Identification Study	IB	COSD, SD	X		911.1 911.2	X									
TJ-014	LID and Watershed Planning Education for Com & Sponsor Groups	COSD			X	All	X	X	X	X	X	X	X	X	X	X
TJ-015	Karma and Karma Second Chance PSA	SD			X	911.1 911.2	X	X						X		
TJ-016	Mobile Advertising	SD			X	911.1 911.2	X									
TJ-017	Invasive Species Removal Program in Tijuana River Park	COSD		X		911.1	X		X	X						
TJ-018	Trash and Sediment Characterization Study	COSD	SD	X		911.1		X	X							
TJ-019	City of San Diego Strategic Plan Implementation	SD		X	X	911.1 911.2	X				X			X		
TJ-020	Pet Waste Dispenser Program	SD		X		911.1 911.2	X									

3.2 Watershed Education Activities

The Tijuana River Watershed Copermittees recognize the need for education programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Each of the Copermittees participated in or hosted several activities to promote watershed education including:

- Workshops focusing on LID BMP implementation, preventing urban runoff contamination, and ecological protection of the watershed, and water quality protection activities.
- Trash removal/river cleanup events emphasizing volunteer participation and public awareness, and proper disposal of potential contaminants from entering Tijuana river system.

Table 3-2 identifies each of the Public Participation, Education and Outreach activities that occurred during FY07-08. In addition the County of San Diego continues to sponsor the Project Clean Water Website (www.projectcleanwater.org) this website provides information pertinent to each of the watersheds in San Diego County. During FY07-08 there were total of 4,243 hits on the Tijuana Watershed page and 2,124 hits on the Tijuana WURMP page.

Several watershed water quality activities are also considered education activities and are identified in Table 3-1. Progress on these specific watershed education activities have been described in the standardized template and clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems.

Table 3-2 Public Participation, Education, and Outreach Activities

Date	Event Type	Event Title	Site Name	Lead Copermittee	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media
7/9/07	Day Camp	Biology Day Camp for students: Water Quality Study	TRVR Park	County	Students - HS	12	X		
7/30/07	Day Camp	Biology Day Camp for students: Water Quality Study	TRVR Park	County	Students - HS	12	X		
8/19/07	Talk	Student Environmental Education: Trees & Ecology: Take care of the earth	Pine Valley	County	Students	3	X		
8/23/07	Nature Study	Biology Day Camp: Riparian Habitat Study	TRVR Park	County	Students - HS	11	X		
8/31/07	E-Mail	E-Waste / Universal Waste event	Imperial Beach	IB	Muni Staff	200	X	X	X
9/2/07	Talk	Student Environmental Education: Trees & Ecology	Pine Valley	County	Students	2	X		
9/9/07	Hike	Pollution Prevention/Water Quality: Stormwater Environmental Impact on Wildlife	Potrero	County	Boy/Girl Scouts	17	X		
9/30/07	E-Mail	Proper Disposal of Batteries	Imperial Beach	IB	Muni Staff	200	X	X	X
9/30/07	E-Mail	Tijuana River Bacteria Source Identification Study	Imperial Beach	IB	Muni Staff	200	X	X	X
10/7/07	Community Event	Fiesta Del Rio	Border Field State Park	IB	Gen Public	2,000		X	
10/31/07	E-Mail	Safe Clean-Up Ash	Imperial Beach	IB	Muni Staff	200	X	X	X
12/5/07	Presentation	BMP's for Pest Control: P2 & Water Quality	Potrero	County	Campers	11		X	
1/14/08	Presentation	Post Fire BMP's: Erosion Prevention	Potrero	County	Campers	21		X	
1/27/08	Talk	Habitat & Ecosystems: Trees	Pine Valley	County	Students	1	X		
1/29/08	Talk	Habitat & Ecosystems: Trees	Pine Valley	County	Students	4	X		

Date	Event Type	Event Title	Site Name	Lead Copermittee	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media
1/31/08	E-Mail	Update on the JURMP Annual Report	Imperial Beach	IB	Muni Staff	200	X	X	X
1/31/08	Presentation	Update on the JURMP Annual Report	Imperial Beach	IB	City Council / Gen Public	40	X	X	
2/8/08	Presentation	Imperial Beach Kiwanis Club: Watershed Concepts & Stormwater P2	Imperial Beach	IB	Gen Public	30	X	X	
2/12/08	Talk	Habitat & Ecosystems: Trees	Pine Valley	County	Students	7	X		
2/24/08	Talk	Habitat and ecosystems: Trees	Pine Valley	County	Students	3	X		
3/5/08	Environmental Education	Habitat & Ecosystems: Riparian Habitat Study	TRV Regional Park	County	Students - HS	14	X		
3/31/08	Print Media	EDCO Article: April is Recycling Month	Imperial Beach	IB	Gen Public	28,000		X	X
3/31/08	Print Media	EDCO Article: Creek To Bay Article	Imperial Beach	IB	Gen Public	28,000		X	X
3/31/08	Print Media	EDCO Article: Oil Drop-Off	Imperial Beach	IB	Gen Public	28,000		X	X
3/31/08	Print Media	EDCO Article: Put Toxic Waste in it's Place	Imperial Beach	IB	Gen Public	28,000		X	X
4/15/08	Interpretive Display	Say Yes to Recycling	Pine Valley	County	Children & Students	100	X		
4/20/08	Talk	Habitat & Ecosystems: Tree Ecology	Pine Valley	County	Children & Students	2	X		
4/20/08	Talk	Recycling: Go Green information	Pine Valley	County	Children & Students	1	X		
4/22/08	E-Mail	Earth Day Announcement	Imperial Beach	IB	Muni Staff	200	X	X	X
4/30/08	Hosted Event	Earth Day @ IB Pier	Imperial Beach	IB	Gen Public	500		X	
4/30/08	Presentation	Splash Lab	Portero Elementary	County	Students - Grades 3-6	68	X		
5/1/08	Print Media	IB Beach Eagle & Times Article: Earth Day @ IB Pier	Imperial Beach	IB	Gen Public	28,000		X	X
5/1/08	E-Mail	Update on the IB Pier Earth Day	Imperial Beach	IB	Muni Staff	200		X	X

Date	Event Type	Event Title	Site Name	Lead Copermittee	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media
5/3/08	Clean-Up	IB Home Front Clean-up Day	Imperial Beach	IB	Gen Public	742		X	
5/4/08	Talk	Go Green	Pine Valley	County	Children & Students	2	X		
5/5/08	Presentation	Splash Lab	Clover Flat Elementary	County	Students - Grades 4-6	71	X		
5/15/08	Presentation	Recycling: P2 & Water Quality	Potrero	County	Campers	13		X	
5/23/08	Staffed Booth	Wellness Fair: Stormwater Awareness	Mt. Empire School	County	Students	200	X		
5/25/08	Talk	Pollution Prevention/Water Quality: Waste and Litter Control	Pine Valley	County	Children & Students	25	X		
5/30/08	Presentation	Recycling & HHW Presentation	Clover Flat Elementary	County	Students - Grades 2-6	88	X		
6/3/08	Talk	Pollution Prevention/Water Quality: Waste & Litter	Pine Valley	County	Children & Students	35	X		
6/12/08	County Fair	IPM Booth	Del Mar Fairgrounds	All	Gen Public	1,235,698		X	
6/27/08	Presentation	Post Fire BMP's: P2 & Water Quality	Potrero	County	Campers	22		X	
6/30/08	CTN Network	County Chronicles - Outdoor H20 Conservation: Short program on outdoor water conservation tips to help conserve water & minimize polluted run-off		County		85 Airings			X
6/30/08	CTN Network	Down To Earth: Environmentally Friendly Home Gardening Techniques		County		120 Airings			
6/30/08	CTN Network	How to Manage Manure: Composting for Horse Owners		County		16 Airings			

Date	Event Type	Event Title	Site Name	Lead Copermittee	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media
6/30/08	Presentation	Imperial Beach Senior Center: Watershed Concepts & Stormwater P2	Imperial Beach	IB	Gen Public	20	X	X	
3/31//08	Print Media	EDCO Article: South Bay HHW Facility now open Weds & Sat.	Imperial Beach	IB	Gen Public	28,000		X	X
6/31/08	E-Mail	Effects of Trash & Sediment on Water Quality	Imperial Beach	IB	Muni Staff	200	X		X
6/31/08	Field Trip	Habitat Heroes Restoration Event	SBay National Refuge	IB	Students - Elementary	1,000	X		
6/31/08	E-Mail	Help Reduce Stormwater Pollution	Imperial Beach	IB	Muni Staff	200	X		X
4/26/08	Cleanup Event	ILACSD Creek to Bay Cleanup	San Ysidro	SD	Gen Public	150	X	X	X
9/15/07	Cleanup Event	SDCK Coastal Cleanup Day	San Ysidro	SD	Gen Public	9	X	X	X
FY 2008	Print Media	Admobile	Imperial Beach	SD	Residents	638,480		X	X
FY 2008	PSA	Karma, Karma TV Campaign	County Wide	SD	Res/Com/Ind			X	X
FY 2008	PSA	Karma, Karma Radio Campaign	County Wide	SD	Res/Com/Ind			X	X
FY 2008	Print Media	Poster Distribution	TJ WMA	SD	Dev-Const Community	100		X	X
FY 2008	Print Media	Guidebook Distribution	TJ WMA	SD	Bus Own / Op & Rest Emp	500		X	X
FY 2008	Print Media	Pamphlet Distribution	Barrett Lake	SD	Residents	611		X	X
6/31/08	E-Mail	Water Conservation & Stormwater Pollution	Imperial Beach	IB	Muni Staff	200	X		X

3.3 Public Participation Activities

The Tijuana River Watershed Copermittees continue to actively encourage the participation and input of diverse stakeholders in the development, and implementation, of the Tijuana River watershed activities. Public participation is encouraged to ensure that stakeholder interests and creative solutions are considered. A number of activities, both education and water quality, are crafted to encourage public input and involvement (Table 3-1). For example, the Tijuana River Bacterial Source Identification Study involved the development of a Technical Advisory Committee comprised of several stakeholders including the Tijuana River Copermittees, local and state governmental agencies, local non profits, university researchers, and Tijuana River Valley residents. Additional public participation activities included volunteer clean-up events, outreach to specific groups such as students and residents within the Tijuana Watershed, County wide public service announcements, Project Clean Water website, and the Think Blue campaign.

3.4 Collaborative Land-Use Planning Efforts

To encourage collaborative planning in the watershed and implementation of the Tijuana River WURMP, the Tijuana River Copermittees met formally six times during FY07-08 to discuss watershed principles and develop collaborative efforts to reduce storm water pollution in the watershed, including possibilities for collaboration in land use planning (see Table 1-1). This section describes collaborative land use planning efforts within the watershed during FY07-08. The watershed Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances. A discussion of several collaborative land use planning efforts follows.

Education:

The Tijuana River Watershed Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant re-development. In addition to the education and training that is provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego's development of a LID and Watershed Planning Education Activity. This activity is intended to educate local planning and sponsor groups on LID and watershed planning principles, practices, and requirements. The recommendations of local planning and sponsor groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. This education activity is intended to aid these advisory bodies in making informed recommendations on aspects of development projects that could affect watershed water quality. During the FY07-08 reporting period, County of San Diego staff began conducting presentations to planning and sponsor groups with the first presentation made to the

Hidden Meadows Community Sponsor group in the Carlsbad Watershed on June 26, 2008. Four additional Community Planning Groups and one additional Community Sponsor group are targeted for similar outreach during FY08-09.

Cross-Jurisdictional Communication:

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the Watershed Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the Watershed Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the Copermittees are able to better address watershed needs as a whole.

Tijuana River Bacteria Source Identification Study:

One such activity that involved collaborative planning included the Tijuana River Bacteria Source Identification Study. Collaborative land use planning for the Tijuana River Bacteria Source Identification Study was achieved through the development of a Technical Advisory Stakeholder group. These stakeholder meetings encourage Copermittees to actively plan with community organizations and jointly identify potential sources of bacteria, trash, and sediment (i.e., human activity, storm outfalls), leading to generating pertinent information for field monitoring groups to collect water quality data and make a more informed assessment of pollutant sources along the river. This information is then available to storm water staff that coordinate and periodically make recommendations to jurisdictional planning department staff regarding appropriate storm water-related land use planning regulations and policies.

By pursuing a setting of coordinated dialogue and strong working relationships among each other, the Copermittees are more equipped to develop collaborative land use planning efforts to address the needs of this watershed. The Tijuana River Copermittees will continue its regular meetings to plan and implement the Tijuana River WURMP. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale.

3.5 Updated 5-year Strategic Plan

3.5.1 New Watershed Activities

Development of the 5-Year Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the Tijuana River

WURMP. The Regional Copermittees recognized that there would be a need to revise the 5-year plan as new activities were identified and implemented. During FY07-08, one new activity has been identified. During FY07-08 the Regional Board, the County of San Diego, the City of San Diego and several other Copermittees were approached regarding participation in an effort to identify and abate sources of trash and sediment in the Tijuana River Valley. As a result of this collaboration the County of San Diego was identified as the lead local agency to manage a contract to develop a "Tijuana River Valley Trash and Sediment Characterization Study".

This study is a cooperative effort between the Copermittees and other stakeholder government agencies and community groups to identify trash and sediment sources along the River, and develop alternatives to remove, recycle these high priority pollutant sources in an effort to restore the river and estuary to its natural condition. A more detailed activity description for this activity is included in Appendix 1.

Additionally, in an effort to direct activity selection, implementation, and assessment in a comprehensive framework, the City of San Diego developed a Strategic Plan for its Watershed Activity Implementation. A planning and guidance document, the Strategy Plan uses an integrated, tiered, and phased approach to designing and implementing non-structural to structural projects that target pollutant sources and prevent storm water pollution in the watershed. It should be noted that the City of San Diego considers this an ongoing activity versus a new activity.

3.5.2 Updated 5-Year Strategic Plan

During FY07-08 several projects were modified, updated, completed or deleted from the strategic plan. These include the City of San Diego's Pet Waste Dispenser Program Alpha Project for the Homeless, Inc. Trash Cleanups, Street Sweeping, and Targeted Auto-Related and Restaurant Facility Inspections Project. Table 3-3 represents the Tijuana River WMA Updated 5-year Strategic Plan.

An updated activity, the Pet Waste Project will target areas frequented by pet owners such as municipal parks, street, and sidewalk right of ways. Pet waste dispensers will be built in those targeted areas for the purpose of limiting pet waste.

The Alpha Project was implemented and completed in FY 2008. However, the City of San Diego will not continue this project in FY 2009 due to hazardous waste disposal issues. It was deemed more efficient to sponsor trash cleanup events than to contract specific groups like the Alpha Project for debris removal.

The Targeted Inspections project was combined into one activity summary sheet for the purposes of report consolidation and to preserve the numbering system for this activity type. The project is still in its developing stage. Should more substantive data be collected in future years, this project will then be separated into individual activity summary sheets pursuant to facility type (i.e., auto-related facilities and restaurants).

The Sweeping Route Posting and Enforcement Project was modified with a new approach, which is to determine whether posting routes versus non-posted routes improve the effectiveness of street sweeping activities.

In April 2008, the Regional Board and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego Region. The review focused primarily on the Carlsbad and San Diego Bay watersheds. The final audit report was available for review by the San Diego Regional Copermittees in September 2008. The audit report contents included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The San Diego Regional Copermittees have been working together with Regional Board staff to identify how the WURMPs and WURMP Permit language may be modified to meet the goals of the program more effectively.

One of the key components of the discussions between Copermittees and Regional Board staff involves refocusing the goals of the program is to allow WURMP efforts to increase their focus on watershed activities implementation, rather than be focused on intensive reporting. The Copermittees are committed to continuing their involvement in this process. In response to the WURMP audit comments relating to the Tijuana River Strategic Plan, the City is working to better define the goals of the WURMP. Additionally, the City has addressed each of the Regional Board's comments to each specific activity within the Activity Implementation section of each Activity Summary Sheet.

Table 3-3 Tijuana River Updated Five-Year Strategic Plan

TIJUANA RIVER WATERSHED	Heavy Metals	Sediment	Bacteria	Nutrients	Gross Pollutants	Trash	Dissolved Minerals	Pesticides	FY 07-08			FY 08-09			FY 09-10			FY 10-11	FY 11-12
Watershed Activities Planned for FYs 07-08 & 08-09																			
TJ-001 Pet Waste Dispenser Program in County Parks			x	x					WQ			WQ							
TJ-002 Land Acquisitions	x	x	x	x		x	x	x	WQ			*						* unable to predict acquisitions	
TJ-003 ILACSD Trash Cleanup Sponsorship			x			x			WQ			WQ							
TJ-004 SDCK Trash Cleanup Sponsorship			x			x			WQ			WQ							
TJ-005 Alpha Project for the Homeless, Inc. Trash Cleanups			x			x			WQ			**						**deemed completed in FY08	
TJ-006 Targeted Restaurant Facility Inspections			x						WQ			WQ							
TJ-007 Targeted Auto-Related Facility Inspections	x								WQ			WQ							
TJ-008 Targeted Auto-Related Facility Inspections Outreach	x								WE			WE							
TJ-009 Municipal Rain Barrel and Downspout Disconnects	x	x	x	x		x		x	WQ			WQ							
TJ-010 Watershed Cleanup Events			x			x			WQ			WQ							
TJ-011 Large Special Event Inspection and Cleanup			x			x			WQ			WQ							
TJ-012 Smuggler's Gulch Sediment Removal		x							WQ			WQ							
TJ-013 Tijuana River Bacteria Source Identification Study			x						M	S		M	S						
TJ-014 LID Education for Community Planning / Sponsor Groups	x	x	x	x			x	x	WE			WE							
TJ-015 Public Service Announcements (PSAs): *Karma* and *Karma Second Chance*			x			x			WE			WE							
TJ-016 Mobile Advertising		x	x						WE			WE							
TJ-017 Invasive Species Removal Program in Tijuana River Valley Park		x	x					x	WQ			WQ							
TJ-018 Trash and Sediment Characterization Study		x				x			WQ			WQ							
TJ-019 City of San Diego Strategic Plan Implementation	x		x		x				WQ			WQ							
TJ-020 Pet Waste Dispenser Program			x	x					WQ			WQ							

WQ	= Watershed Water Quality Activity (Active Implementation)	PP	= Watershed Public Participation Activity
WQ	= Watershed Water Quality Activity (No WURMP Credit)	M	= Water Quality Monitoring Activity (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)	S	= Source ID/Characterization Activity (No WURMP Credit)
WE	= Watershed Education Activity (No WURMP Credit)	D	= Watershed Data Assessment/Management Activity

TIJUANA RIVER WATERSHED	Heavy Metals	Sediment	Bacteria	Nutrients	Gross Pollutants	Trash	Dissolved Minerals	Pesticides	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
Potential Future Watershed Activities													
Source Identification of Metals and Ammonia	x			x									
Doggie Bag Dispenser Program			x	x									
Mobile Business Assessment Program	x												
Restaurant Outdoor BMP Implementation and Inspections			x										
Infiltration BMP Retrofit	x		x										
Trash Segregation Device Installation			x			x							
Inlet Bacteria Treatment BMP Installation			x										
Green Mall Infiltration Retrofit Education and Outreach	x		x										
Irrigation Controller and Xeriscaping Incentive Program	x		x	x				x					
Tijuana River Watershed Street Sweeping Effectiveness Study	x					x							
Tijuana River Valley Park Trails and Habitat Enhancement Project		x											

SECTION 4.0 EFFECTIVENESS ASSESSMENT

4.1 Assessment of Overall WURMP Effectiveness

This section of the report will assess the effectiveness of the Copermittees collaboration efforts over the year, the overall effectiveness of targeting specific water quality problems, and the collective impacts made towards reducing pollutant loads and improving receiving water quality. In order to facilitate this assessment the Copermittees agreed upon using the 2003 Framework for Effectiveness Assessment, which uses a six level hierarchical analysis to assess the effectiveness of watershed activities. This section will focus on assessing the WURMP effectiveness as a whole. There are four key components that the Copermittees will consider when assessing the effectiveness including:

1. An assessment of the Copermittees Collaboration Efforts during Reporting Period.

The Tijuana River Watershed Copermittees have collaboratively worked together over the past year to successfully implement a number of watershed and education based activities throughout the WMA. In addition to participating together on shared watershed activities, the Tijuana River Copermittees met 6 times during the year to further develop and implement the Tijuana River WURMP, and participated in a number of Tijuana River Stakeholder groups that are working toward the ultimate restoration of the Tijuana River watershed and estuary. The Copermittees were in compliance with all Level 1 provisions of the WURMP as required by the NPDES permit.

2. An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.

As noted in Section 2 Bacteria and Trash are two of the many high priority pollutants found throughout the watershed. During the current reporting period the Copermittees actively engaged in 15 water quality and education activities as noted in Table 4-1. These activities specifically targeted bacteria and trash as well as a few of the other high priority pollutants. Each activity is evaluated annual basis and the Copermittees will make changes as appropriate in the coming years. Data are typically collected and assessed during or after activity implementation to determine effectiveness in achieving targeted outcomes. Copermittees collaborated and selected activities that would address high level priority pollutants within not only each jurisdiction, but throughout the watershed. In some cases, these activities (i.e., educational) could reach a Regional audience.

In addition to the activities mentioned the Copermittees are collaboratively planning and implementing two programs the Tijuana River and Estuary Trash and Sediment Characterization Study and the Tijuana River Bacteria Source Identification Study, which should result in additional future abatement and source identification activities.

Table 4-1 identifies each of the water quality and water education activities that were in active implementation or planning for FY07-08.

Table 4-1 Water Quality and Education Activities in Tijuana River WMA

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-001	Pet Waste Bag Dispenser Program in County Parks	911.2 911.4 911.5	Water Quality	Bacteria	4	50,388 bags distributed 10,078lbs removed
TJ-002	Land Acquisitions	All	Water Quality	All	4	5.2 acres of acquisition
TJ-003	ILACSD Trash Cleanup Sponsorship	911.1	Water Quality	Bacteria, Trash	1, 4	178 participants 31,660lbs of trash
TJ-004	SDCK Trash Cleanup Sponsorship	911.1	Water Quality	Bacteria, Trash	1, 4	55 participants 400lbs of trash 318lbs recycled
TJ-005	Alpha Project for the Homeless Trash Clean-ups	911.1 911.2	Water Quality	Bacteria	4	4 participants 910lbs of trash
TJ-006	Targeted Restaurant Facility Inspections	911.1 911.2	Water Quality	Bacteria, Nutrients	1, 3, 4	18 inspections Ed materials distributed BMP Implementation
TJ-007	Targeted Auto-Related Facility Inspections	911.1 911.2	Water Quality	Bacteria, Nutrients	1, 3, 4	2 BMP Corrective Actions 17 inspections Ed materials distributed
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnect Project	911.1 911.2	Water Quality	Bacteria, Metals	1, 4	Location selected Barrels procured Installation to commence
TJ-010	City-Wide Clean-Up Events	911.1	Water Quality	Bacteria	1, 4	742 participants 356,000lbs of trash
TJ-011	Large Special Events Inspection and Clean-Ups	911.1	Water Quality	Bacteria	1	Increased Awareness BMP implementation
TJ-013	Tijuana River Bacteria Source Identification Study	911.1 911.2	Water Quality	Bacteria	1	Identify Stakeholders Literature Review QA and Monitoring Plans Establish Sampling Locations
TJ-015	Karma/Karma Second Chance PSA	911.1 911.2	Education	Bacteria	1, 2	646,888 est. audience 207,416 est. radio audience
TJ-016	Mobile Advertising	911.1 911.2	Education	General Bacteria	1, 2	31,924 estimated audience
TJ-017	Invasive Species Removal Program in Tijuana River Park	911.1	Water Quality	Bacteria, Sediment, Pesticides	1	100ac arundo & castor bean 511ac retreated 61ac tamarisk Planted & Maintained native plants Assisted SWIA

3. A comprehensive assessment of the impact of all the WURMP Activities on the watershed's high priority problems, with a focus at the Hydrologic Area Level.

During the past reporting period, there were 14 activities in the active implementation phase, 12of which focused on water quality and 2 focused on education. These activities addressed several of the priority pollutants in the Tijuana River Watershed, including metals, sediment, pesticides, nutrients, gross pollutants, bacteria/pathogens.

There are 8 HAs in the Tijuana WMA. According to Table 4-1 appropriate activities occurred within each HA that had Tijuana WURMP (2008) identified High Priority Water Quality problems. However many of the projects were focused in the HA (911.1) because that is where the issues are the most numerous and significant.

4. Measurable targeted outcomes and assessments measures will be used to facilitate assessment wherever possible. Assessment levels one through six will be applied to the watershed as whole where applicable and feasible.

As a whole, the Copermittees are working to expand the focus of their assessments on demonstrating the watershed-level benefits of program implementation, and will continue to do so under order R9-2007-0001. However, annual watershed assessments do not attempt to address the relationship of WURMP implementation to changes in water quality; this analysis will be confined to the Long-term Effectiveness Assessment process. The Copermittees feel that their efforts demonstrated by Level 1, 2, 3, and 4 likely had positive effects on water quality and will help establish the effectiveness of the Tijuana River watershed program. The bacteria-focused activities implemented a comprehensive method of promoting education and awareness (Level 1, 2, and 3) combined with actual load reduction and source abatement. As can be seen, levels of effectiveness for these activities had wide outcome range, with a majority emphasizing load reduction or source abatement (Level 4). The process also allowed a thorough evaluation of the WURMP and to make improvements, modifications, and changes to the program as needed. As the activities progress and become more developed in its implementation, data will become more available to design measurements that will improve the effectiveness of the activities. This will in turn lead to a better framework of assessing the activities and thereby improve the overall effectiveness of this watershed program.

4.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs currently in effect within the Tijuana River WMA.

SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

During FY07-08 the Municipal Permit was updated in response to Order No. R9-2007-0001, which resulted in several changes in our WURMP annual reporting process. Most notably changes included developing a 5 year Watershed Strategy and development of measurable effectiveness goals. Much of the year was spent collaborating with the other Tijuana River WMA Copermittees to develop the strategy for implementing Water Quality and Education Activities in compliance with the new Regional Board Order.

The Tijuana River WMA Copermittees met six times during the year to develop the strategy as well as to develop new activities to address the High Priority Pollutants. As a result of this the Tijuana River Copermittees completed and submitted a revised WURMP in March of 2008, which lead to the planning or implementing of 20 activities in the watershed. Over the course of this reporting period, the Tijuana River WMA Copermittees further modified 4 of the ongoing activities from previous reporting years, and added 2 new watershed activities.

As noted in the Water Quality section of this report, no watershed specific monitoring efforts, with the exception of jurisdictional dry weather monitoring, were completed during this reporting period in the WMA. Therefore, no monitoring updates were provided. However, Regional Monitoring efforts were modified to provide the basis for answering the 5 Core Management Questions listed in Section 2. The Regional Monitoring Report analyzed previous data against the Core Questions and provided recommendations for the WMA. Regional Monitoring will once again take place in FY08-09 monitoring period. In addition, the City of Imperial Beach initiated a bacterial source identification activity that should provide significant information that will be utilized by the Regional Monitoring group for the next annual Report.

Lastly, the Tijuana River WMA Copermittees achieved effectiveness level outcomes of Levels 1 through 4 with the implementation of the watershed and education/outreach activities during FY07-08. The Copermittees successfully collaborated on activities targeting the high priority pollutants in the watershed, and collaborated on a comprehensive approach to address one specific pollutant of concern, bacteria. During the next fiscal year the Copermittees will continue collaborate and assess the effectiveness of targeted watershed activities, and further develop programs in order to maximize benefits to water quality.

5.2 Recommendations

In April 2008, the RWQCB and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego region. The review focused primarily on the Carlsbad and San Diego Bay Watersheds. The final audit report was delivered to the San Diego Regional Copermittees in September 2008. The audit report included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. It also recommended that a dialogue be initiated between RWQCB staff and Copermittees to amend permit language where necessary to better meet program goals. The San Diego Regional Copermittees, through the Regional WURMP Workgroup, initiated dialogue with RWQCB staff on these issues in November 2008. The Tijuana River Watershed Copermittees are committed to continue their

involvement in this process during the 2008-09 reporting period. It is anticipated that some changes to the Five-Year Strategic Plan may be necessary based on the outcome of the ongoing discussions between the Copermittees and the RWQCB.

SECTION 6.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region. 2007, Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District and the San Diego County Regional Airport Authority

County of San Diego, 2008, Tijuana River Watershed Urban Runoff Management Plan, March 2008.

Weston Solutions, Larry Walker Associates and Mikhail Ogawa Engineering, 2005, Baseline Long-Term Effectiveness Assessment (BLTEA), San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program, August 2005.

Weston Solutions, 2009, San Diego County Municipal Copermittees 2007-2008 Urban Runoff Monitoring Report, Prepared for County of San Diego, January 2009

ATTACHMENT 1

WATERSHED ACTIVITY SUMMARY SHEETS

Watershed Urban Runoff Management Program
Fiscal Year 2008-2009 Annual Report

Tijuana River Watershed

Submitted to the Regional Water Quality Control Board, San Diego Region

on

February 1, 2010

Prepared by the County of San Diego

County of San Diego

LAND USE AND ENVIRONMENT GROUP

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STATEMENT OF CERTIFICATION

Tijuana River Watershed Urban Runoff Management Plan (WURMP) FY 2008-09 Annual Report

I certify, under penalty of law, that this **FY 2008-2009 Tijuana River Watershed Urban Runoff Management Plan (WURMP) Annual Report** and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-27-10
Date

THE CITY OF SAN DIEGO

January 30, 2010

RE: Statement of Certification
Tijuana River Watershed Urban Runoff Management Program
Fiscal Year 2009 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2009 Tijuana River Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

1/21/10
Date

DIVERSITY BRINGS US ALL TOGETHER

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January 12, 2010

STATEMENT OF CERTIFICATION
Tijuana River Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to the Tijuana River Watershed Urban Runoff Management Program Annual Report for FY 2008-2009 were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

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ATTACHEMENT 1: Watershed Activity Summary Sheets

EXECUTIVE SUMMARY

This annual report describes implementation of the Tijuana River Watershed Management Area Watershed Urban Runoff Management Program (WURMP) during Fiscal Year 2008-09 (FY08-09). Although much of the Tijuana River Watershed Management Area (WMA) extends into Baja California, only the portion within the County of San Diego is subject to the Municipal Stormwater Permit's WURMP requirements. Therefore, this report only addresses activities within the County of San Diego.

Section 2.0 presents a water quality assessment for the Tijuana River WMA. The assessment is largely based on the regional monitoring program conducted on behalf of the San Diego County Municipal Stormwater Copermittees in compliance with Municipal Permit requirements, but is supplemented by other monitoring programs, including jurisdictional dry weather monitoring and special studies the monitoring report is identified as "The Monitoring Report (Weston 2010)" throughout this document. It should be noted that the Municipal Permit established a monitoring schedule for the entire county that alternated monitoring between the northern watershed and the southern watersheds.

The Tijuana River WMA WURMP (2008) found that there were nine priority water quality problems in the Tijuana River WMA that are considered high priorities: Sediment (TSS/Turbidity), Pesticides, Gross Pollutants (Organics, pH, Trash), Bacteria and Trace Metals.

Section 3.0 and Attachment 1 describe the 25 watershed activities that were in various phases of implementation during FY08-09. Many of the activities address Bacteria and Trash in the Tijuana Valley Hydrologic Area (HA 911.1). Several activities occurred in the upper HAs including the LID Community Planning Group Training (TJ-014) and the County Pet Waste Bag Dispenser Program (TJ-001). Furthermore, several milestones were reached within the Trash and Sediment Characterization Study (TJ-018) and significant headway was made by Weston Solutions on the Imperial Beach Bacteria Source Study (TJ-013) unfortunately due to the budget issues in the State of California funding for this project was frozen during this reporting period. In FY08-09 due to the flood which occurred in late November 2008 and the perceived threat of additional sediment deposition from the recently constructed Federal Border Fence Infrastructure project, emergency permits (TJ-025) were sought from various resource agencies to remove sediment and trash in the Smuggler's Gulch, Pilot Channel and Northern Channel. Approximately 65,000 cubic yards of sediment will be removed from the channel and as much as 1,000 tons of trash and over 5,000 tires.

Section 4 describes the how effective the Tijuana River WMA copermittees collaborated and whether or not overall WURMP activities were appropriate and effective at the Watershed and HA level. It was determined that a lot of headway has been achieved but there is much more to do. It is hoped that the bacteria source identification study and trash and sediment characterization study will result in future effective activities at not only the WMA area level but also at the entire watershed level.

Section 5 provides a discussion on conclusions and recommendations that were reached during the reporting period.

SECTION 1.0 INTRODUCTION

The NPDES Municipal Stormwater Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Tijuana River Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Tijuana River WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. The Watershed Activity Implementation Summary Sheets for all watershed water quality and education activities implemented during this reporting period will be included in Appendix 1.

This Annual Report is divided into five sections that highlight the efforts of the Tijuana River WMA Copermittees during the FY08-09 reporting period.

Section 1: Provides an overview of the information included in this report, summarizes the ongoing collaboration among Tijuana River WMA Copermittees. There were no updates to the watershed maps during this reporting period.

Section 2: Provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3: Describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period as well as any public participation or collaborative land use planning that took place.

Section 4: Discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among WMA Copermittees, 2) determine whether watershed activities are focused on appropriate water quality problems, 3) assess whether targeted outcomes are being achieved, and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.

Section 5: Provides a discussion of conclusions reached during FY08-09 as well as recommendations for future reporting periods.

1.1 Watershed Collaboration

WURMP development and implementation is a collaborative effort by all of the following Tijuana River WMA Copermittees:

- City of Imperial Beach
- City of San Diego
- County of San Diego

The County of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among Tijuana River WMA Copermittees and liaison between Copermittees and San Diego Regional Water Quality Control Board (RWQCB) staff.

The Tijuana River WMA Copermittees met or participated in conference calls 6 times during this reporting period. Table 1-1 provides a summary of the dates and the general topics of discussion at these meetings. The majority of the meetings were focused on preparing the draft and final FY07-08 Tijuana River WURMP Annual Report that was submitted to the RWQCB on February 1, 2009.

During this reporting period, the Tijuana River WMA Copermittees collaborated extensively on the watershed activities that were developed through the implementation of the Watershed Strategy that was submitted on March 24, 2007 to the RWQCB.

Utilizing the information from the watershed strategy, the Tijuana River WMA Copermittees have identified several water quality activities which they have coordinated at the Hydrologic Area (HA) level. This collaborative approach was utilized because these activities were identified as beneficial to address high priority water quality problems and can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. Collaboration on the watershed strategy enabled the Copermittees to identify data gaps by reviewing existing monitoring and land use data which provided the basis for developing additional water quality monitoring and source identification activities. Section 3 and Appendix 1 provide specific detail on each program that was initiated or completed during the FY08-09 reporting period.

Table 1-1: Summary of Copermittee Meetings

Meeting (or Conference) Date	Main Topics of Discussion
10/21/08	• Potential WURMP Revisions • ID Section responsibilities.
12/09/08	• Discuss and review draft sections • Update on status of WURMP Revisions • Review Schedule
01/06/09	• Conference call to discuss revisions to Sections 3 and 4
01/22/09	• Final Edits to WURMP Annual Report
01/30/09	• Obtain Signed Certification Statements
04/14/09	• Discussed Status of WURMP Revisions • Reviewed Ongoing and New activities

In October 2008 the Tijuana River WMA Copermittee's were asked to participate in a meeting to discuss current issues and the future of the Tijuana River Valley. As a result of that meeting the Tijuana River Valley Recovery Team was formed. The Recovery Team is a collaboration of more than 30 federal, state, and local U.S. and Mexican agencies organized into four action teams and working together to implement a recovery plan for the Tijuana River Valley under the overall guidance of a policy committee.

The overall vision of Recovery Team is:

> "A Tijuana River Valley free of historical trash and sediment, protected from future deposits of trash and sediment, restored to a sustained physical, chemical and biological integrity, and performing its hydrologic functions, while respecting the rights of current and future landowners and users."

And the Mission:

> To bring together the government administrative, regulatory, and funding agencies in tandem with advice from the scientific community, the environmental community, and affected stakeholders to protect the Tijuana River Valley from future accumulations of trash and sediment, identify, remove, recycle or dispose of existing trash and sediment, and restore the Tijuana River floodplain to a balanced wetland ecosystem.

Each action team developed specific missions including:

Border Action Team: To develop and implement solutions in the immediate vicinity of the border that will capture and divert trash and sediment before it reaches the Tijuana River Valley.

Clean Up Action Team: To identify, map, characterize and cleanup trash and manage sediment in the Tijuana River Valley floodplain in an environmentally sensitive way.

Restoration Action Team: To imagine, plan, coordinate and implement the restoration, mitigation, and flood control features of the Tijuana River Valley ecosystem from the border to the ocean.

Binational Action Team: To identify the sources of trash and sediment in the Tijuana River Valley watershed that impact the Tijuana River Valley floodplain and to recommend, establish, and implement a plan to abate and manage these sources in cooperation with Mexican agencies.

The Recovery team has met 8 times during FY08-09. The majority of these meetings were focused on developing strategies to characterize trash and sediment as well as identifying potential mechanisms to reduce the amount of trash and sediment from entering the river valley. Complete agendas and notes can be found on the Recovery Team website at: www/tjriverteam.org.

Specific efforts the Tijuana River WMA Copermittees are in line with the Mission of the Recovery Team; and include 1) cleaning and dredging the clogged channels, 2) characterizing trash and sediment in support of designing BMPs to reduce the volume of sediments and trash transported during storms (3). For details see Activity Summary Sheets TJ-012, TJ-018, TJ-022, and TJ-025 in Appendix 1 of this report.

1.2 Tijuana River Watershed Map Updates

There are no Tijuana River Watershed map updates included in the FY08-09 Annual Report.

SECTION 2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section summarizes the water quality assessment of the Tijuana River Watershed Management Area (WMA) using the results of the 2008–2009 monitoring. Monitoring activities conducted in compliance with RWQCB Permit Order R9 2007 0001 are provided in Table 2-1.

Table 2-1 2008-2009 Monitoring Program Activities

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC.
Bight 08 Estuary Monitoring	Water (bacteria and TSS) and sediment quality (chemistry, toxicity, and benthic macroinvertebrates).
Third Party Data	Fecal indicator bacteria, Bacteroides (PCR) and general chemistry.
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash.
MS4 Outfall Targeted Monitoring	Chemistry, metals, pesticides and bacteria.

Within this watershed, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in Table 2-2 with relevant total maximum daily load (TMDL) status. However, several changes are proposed in the 2008 Draft 303(d) List currently under development.

Table 2-2 Tijuana River WMA SWRCB Section 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Tijuana River	Indicator bacteria, eutrophic conditions, low dissolved oxygen (DO), pesticides, solids, synthetic organics, trace elements, and trash.	Not adopted
Tijuana River Estuary	Indicator bacteria, eutrophic conditions, lead, low DO, nickel, pesticides, thallium, trash, and turbidity.	Not adopted
Pacific Ocean Shoreline, Tijuana HU	Indicator bacteria.	Not adopted
Barrett Lake	Color, manganese, and pH.	Not adopted
Pine Valley Creek (Upper)	Enterococci, phosphorus, and turbidity.	Not adopted
Morena Reservoir	Color, manganese, and pH.	Not adopted

2.1 Water Quality Assessment

Receiving water monitoring at the MLS was conducted during one wet weather event. Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego

County as described in Table 1 of the Permit with the exception of Chollas Creek that is monitored each year. In 2008-2009, the scope of the monitoring program was adjusted due to the Copermittees participation in the Southern California Bight Regional Monitoring Program.

Each element of the Permit required monitoring program was designed to provide scientific data to address five core management questions. The core management questions, as listed in the Permit, are presented as follows:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring program for each WMA vary across spatial and temporal scales. Therefore, data support only partial resolution of each core management question. Through continued monitoring and the refinement of the Permit requirements a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments were conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach. The results for the Tijuana River WMA are summarized in Table 2-3.

Table 2-3 Summary of WMA Assessment Findings

Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
Receiving Water Monitoring Program	Ambient Receiving Water Assessment	No exceedances or data analyzed from this program to date.	1, 2
	Wet Weather Receiving Water Assessment	Constituents of concern[1]: • High frequency of occurrence (TSS, turbidity, total coliform, fecal coliform, enterococci, Diazinon). • Medium frequency of occurrence (BOD, COD, and total phosphorus). • Low frequency of occurrence (MBAS). Constituents with a mean magnitude of exceedance by more than five times the benchmark included TSS, turbidity and fecal coliform, Persistent toxicity was observed to acute, chronic and reproductive endpoints of *Ceriodaphnia dubia*. The pyrethroids[2] Bifenthrin, Cypermethrin, and Permethrin were detected at the MLS in post-storm sediment samples at concentrations likely to cause toxicity.	
	Rapid Stream Bioassessment	Altered benthic macroinvertebrate communities (Poor to Very Poor IBI ratings) were observed based on 2002-2007 data.	
	Bight 08	Water quality results found bacteria indicators and TSS were below the benchmarks in all samples collected in the Tijuana Estuary. Sediment monitoring results identified three sites as likely unimpacted, one site as inconclusive, and one site as possibly impacted. • A toxicity identification evaluation was conducted for the one site identified as possibly impacted and indicated naturally occurring ammonia was the causative agent of toxicity and not toxic chemicals. The overall result of the possibly impacted site was changed to likely unimpacted based on the SQO Guidance.	
	Third Party	Localized discharges containing high concentrations of indicator bacteria, as well as indicators of recent human fecal pollution, were found in the MS4 system.	

[1] Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in Appendix B.

[2] The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.

Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
		During wet weather, high concentrations of indicator bacteria were found in receiving waters, together with widespread presence of indicators of recent human fecal pollution.	
Urban Runoff Monitoring	Ambient Urban Runoff Summary (Jurisdictional, MS4,)	Results above action levels or receiving water benchmarks • Jurisdictional: Conductivity, turbidity, Total coliform, Fecal Coliform, Enterococci. • MS4: pH, Total Nitrogen, Total phosphorus, Fecal Coliform, Enterococci, Total manganese, Total selenium.	3,4
	Wet Weather Urban Runoff Areas Assessment (MS4)	The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions.	
WMA Assessment	Receiving Water Trend Assessment	Significantly increasing trends were observed for total coliforms, fecal coliforms, TSS, turbidity, total copper, total lead, total zinc, total arsenic, and nitrate. Significantly decreasing trends were observed for TDS, dissolved nickel, Diazinon, and conductivity.	5
	2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	WMA high frequency of occurrence rating for TSS, turbidity, Diazinon, total coliform, fecal coliform, and enterococci were consistent with the 2001–2006 BLTEA ratings as it relates to the Tijuana Valley.	

Based on these results, each of the five Core Management Questions are addressed below.

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed with the wet weather data assessments. No ambient monitoring has been conducted as part of the Permit required monitoring program to date. The results of the 2008–2009 monitoring program in the Tijuana River WMA indicate that some of the constituents monitored were identified as high frequency of occurrence COC. In the Tijuana River WMA, these COC included TSS, turbidity, total coliforms, fecal coliforms, enterococci, and Diazinon. This suggests that some beneficial uses may be impaired by these constituents.

Historical stream bioassessment results indicate evidence of benthic community impairment in the Tijuana River WMA, with Poor or Very Poor IBI ratings near the MLS and TWAS since 2001. Additional analysis of the O/E ratio further suggests benthic alteration as well. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat, the presence of pesticides (e.g., the synthetic pyrethroids Bifenthrin and Permethrin, as well as the organophosphate Diazinon were

detected during wet weather monitoring samples), or other constituents not monitored in this program. In addition, the pyrethroids Bifenthrin, Cypermethrin and Permethrin were detected at the MLS in post-storm sediment samples at concentrations likely to cause toxicity. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

There were indications of persistent toxicity during wet weather to C. dubia in each of the three toxicity tests conducted on this test organism at the MLS. Toxicity to C. dubia has been observed in every storm monitored since 2001. Toxicity has been observed in H. azteca nine times since 2001 but not at a rate indicative of persistent toxicity. Pesticides (primarily Diazinon) are also persistently found above benchmarks in the watershed and are likely the major cause of toxicity observed to the freshwater amphipods C. dubia and H. azteca. These toxicity results suggest that the river receiving waters may not be protective of beneficial uses.

Results of the Bight 08 program suggest that the receiving waters of the estuary are protective of beneficial uses in that, none of the sites were identified as likely or clearly impacted based on the SQO Guidance. Sediment quality monitoring results identified three sites as likely unimpacted, one site as inconclusive, and one site as possibly impacted. A toxicity identification evaluation was conducted for the one site identified as possibly impacted and indicated naturally occurring ammonia was the causative agent of toxicity and not toxic chemicals. The overall result of the possibly impacted site was changed to likely unimpacted based on the SQO Guidance. The Bight 08 program also determined that, water quality was good for bacteria and TSS.

2. What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed with magnitude of exceedance ratios during wet weather conditions in the receiving waters; wet weather monitoring was conducted only once at the MLS in 2008–2009 due to participation in the Bight ’08 Program. Exceedance ratios during wet weather at the MLS were greatest for fecal coliforms, followed by turbidity and TSS. The fecal coliform concentration during the 2008 storm event was more than 2,250 times greater than the benchmark, which is greater than the historical mean ratio of 1,187. The turbidity concentration during wet weather in 2008–2009 was approximately 74 times greater than the benchmark (historic ratio of 36). TSS concentrations during the same storm were more than 25 times greater than the benchmark concentration, as compared to the historic ratio of 19 times greater than the benchmark. These three constituents have historically had the largest exceedance ratios at the Tijuana River MLS.

Historical stream bioassessment ratings conducted in the WMA indicate a Poor benthic community at both sampling stations near the MLS and TWAS locations. The consistent rating of Poor or Very Poor at both sites near the MLS and TWAS since 2001 suggests that the extent of the impairment on the benthic community is not isolated to one area. This is also supported by the historic O/E bioassessment results, which indicate an impaired benthic community at all sites monitored within the WMA.

Bight 08 results characterized 4 of 5 sites as likely unimpacted (when considering the corrected result for the TIE as mentioned above) and 1 of 5 sites as inconclusive based on the SQO guidelines. In terms of the magnitude of the potential receiving waters problem, all sediment chemistry line of evidence (LOE) scores were either minimal or low and the sediment toxicity LOE scores were either non-toxic or low. The benthic community LOE scores indicated either low or moderate impacts.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. In 2008–2009, the Tijuana River WMA MS4 was assessed through the random dry, random wet, and targeted dry programs. Eleven sites were visited as part of the random dry program, but no sites were flowing at the time of the survey. Three of the sites had ponded water, which was sampled and analyzed. Results suggest that the MS4 system may be contributing to nutrient and indicator bacteria related issues in the receiving water. However, it is important to note that none of the outfalls monitored were sampled under flowing conditions.

Four sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes, including total nitrogen, total phosphorus, and indicator bacteria, were greater than benchmarks at some sites, suggesting that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents primarily at one site located in the lower region of HSA 911.11 (San Ysidro HSA). The catchment for this site was characterized by primarily residential and public facility land uses.

A total of six sites in the Tijuana River WMA were visited as part of the targeted dry weather program, one of which was flowing and four were ponded at the time of the survey. Thus, 83% of the targeted dry weather sites were ponded or dry, compared to 100% of the random dry weather sites. Drought restrictions implemented in the Summer 2009 may have helped to reduce flows from some areas. However, this is historically a relatively dry watershed during non-storm conditions. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving benchmarks for the following constituents: nitrate, total nitrogen, total phosphorus, dissolved cadmium, dissolved copper, dissolved lead, dissolved nickel, dissolved zinc, Chlorpyrifos, Diazinon, and indicator bacteria (i.e., fecal coliforms and enterococci). Of these, total nitrogen, total phosphorus, fecal coliforms, and enterococci had concentrations that were greater than their respective benchmarks for at least one of the six sites assessed. Concentrations of total nitrogen exceeded the benchmark most frequently followed by total phosphorus. The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey could not be made as flow was only reported at one site in the Monument HA (as all others were either ponded or dry). MS4 runoff from this site may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 Targeted MS4 Monitoring Program was designed to allow for a relative comparison of instantaneous loads among sites in the Tijuana River WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional DWM Program and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources can be found in each Copermittee's Jurisdictional Urban Runoff Monitoring Program Annual Report.

The trash assessment conducted in 2008–2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Tijuana River WMA. A total of 35 sites were assessed for trash in the WMA, including five HSAs. The lower portion of the WMA had the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained the greatest amount of trash in the WMA. This result coincides with the urbanized population centers, which are also found in the lower portion of the WMA. The Tijuana Valley HA (HSA 911.12) had the only site in the Tijuana River WMA that received a Poor (i.e., more than 400 pieces) rating in the trash assessment. Trash at this site consisted primarily of food packaging, and the potential route was listed as littering. All other locations assessed during the Jurisdictional DWM Program received a rating above Submarginal.

It has been observed that trash in the Tijuana River Valley is an issue of concern, and future trash assessments will be beneficial to addressing water quality issues in the Tijuana River WMA.

5. Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the Tijuana River MLS. Based on the trend analysis, concentrations of nine constituents appear to be increasing over time, including indicator bacteria (i.e., total coliforms and fecal coliforms), TSS, turbidity, total copper, total lead, total zinc, total arsenic, and nitrate. In contrast, concentrations of TDS, dissolved nickel, and Diazinon are decreasing over time. Additionally, conductivity values appear to be decreasing over time.

Although nitrate and total arsenic concentrations appear to be increasing over time, the slopes of both are relatively shallow, and most concentrations have been well below the respective benchmark values. At the current observed rate of increase, it does not appear that these constituents will exceed wet weather benchmarks during the current Permit cycle.

A significantly increasing trend has been observed for three constituents that have been found to frequently be well above their respective benchmark values during wet weather, including fecal coliforms, TSS, and turbidity. The trend in fecal coliform concentrations have a magnitude of 106,250 MPN/100 mL/yr. This is an increase of more than 26 times the benchmark value per year, every year since monitoring began in the watershed.

Increasing trends were revealed for five constituents for which wet weather benchmark values have not been established, including total copper, total lead, total zinc, total arsenic, and indicator bacteria (i.e., total coliforms). In the case of total coliforms, the trend analysis has revealed an annual increase of 231,249 MPN/100 mL/yr.

Concentrations of Diazinon, TDS, and dissolved nickel as well as conductivity values appear to be decreasing over time at the Tijuana River MLS. In the case of Diazinon, trend analysis has revealed a

significant decrease in concentration over time however this pesticide has been detected above the benchmark in 18 of the 19 monitored storms. TDS concentrations have been below the benchmark in every monitored storm since monitoring began at the site. Future monitoring will determine if this trend can be sustained. The decreasing trend in dissolved nickel and conductivity is likely inconsequential in terms of benchmarks, since historic concentrations of these constituents have typically been low at this site.

The bioassessment ratings near the Tijuana River MLS and TWAS have been Poor to Very Poor in nearly all assessments conducted from 2001 to 2008, and there are no apparent trends in the benthic community.

Wet weather monitoring in the Tijuana River has shown observed toxicity in each of the three C. dubia tests in every storm monitored since 2001. Toxicity has also been demonstrated in 47% of the 19 monitored storms in the H. azteca 96-hr test. However, toxicity to the algae S. capricornutum has not been observed during any monitored storms. Although the toxicity data suggest evidence of persistent toxicity to C. dubia in wet weather conditions, no trends in the data set are apparent.

Recommendations

The recommendations for this watershed are to continue with the requirements of the Permit, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. The addition of two TWAS locations within the Tijuana River WMA during the 2009–2010 Monitoring Season will provide information regarding conditions in other areas of the WMA. Furthermore, conducting ambient weather monitoring at the Tijuana River MLS and TWAS locations will provide information regarding the conditions in the receiving water during dry weather. Finally, MS4 Outfall Monitoring and Source Identification Monitoring data will augment the data collected during the 2008–2009 Monitoring Season.

Specific recommendations for the Tijuana River WMA are based on the triad assessments listed in the Permit. Based on wet weather conditions, conducting TIEs to identify COCs, based on the TIE metric is recommended. In addition, Diazinon was previously identified as a causative agent and is still detected above the level expected to cause toxicity. Pyrethroids are also a likely source of toxicity to H. azteca based on TIEs conducted in other watersheds and observed chemistry results. Addressing upstream sources as a high priority is also recommended.

2.2 Pollutant Source Assessment

The Permit requires the Tijuana River WMA Copermittees to identify the high priority water quality problems and identify the likely sources within the Tijuana River WMA and implement activities that will address these pollutants.

A key component of identifying sources of pollutants is knowledge of the land uses and the pollutant-generating activities associated with these specific land uses for example urban and agricultural land uses can result in high levels of nutrients in runoff. The Tijuana River WMA straddles the US–Mexico border with only a quarter of its 1.1 million acres lying within San Diego County. Throughout the WMA, the predominant land use is classified as vacant and undeveloped (60% on the US side, 82% on the Mexico side). On both sides of the border, the watershed becomes less populated from west to east. The major population centers in the watershed are the cities of Tijuana and Tecate in Mexico and cities of Imperial

Beach and San Diego in the US. Within the Tijuana River WMA jurisdictional control is divided amongst the County of San Diego, City of San Diego, and the City of Imperial Beach.

The likely sources of pollutants within the Tijuana River WMA are identified in Table 2-4 below. In addition to these sources the Weston Monitoring Report (2009) has identified the likely sources of trash as being the urbanized population centers found in the lower portion of the WMA which had the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor trash ratings.

The results of the 2008-2009 monitoring programs indicate that the high frequency Constituents of Concern for wet weather are TSS, turbidity, total coliforms, fecal coliforms, enterococci, Diazinon and trash. These Constituents of Concern are also high priority water quality problems that are already being addressed by the watershed activities.

Additionally pollutants for all water bodies included on the 2006 303(d) list are considered as high priority and are listed in Table 2-5 below. There are several changes being proposed for the Tijuana WMA 2008 303(d) list. These changes will be discussed in future annual reports.

Table 2-4 Likely Sources for High Priority Pollutants

Pollutant	Potential Sources	Pollutant	Potential Sources
Bacterial Indicators	Domestic animals	Trace Metals	Automobiles
	Sewage overflow		Industrial Waste
	Septic systems	Pesticides	Agriculture
	Wildlife		Commercial landscaping
Nutrients & Oxygen	Agriculture		Residential landscaping
	Sewage overflow		Industrial waste
	Septic systems	Gross Pollutants	Commercial
Organic Compounds	Agriculture		Illegal disposal
	Commercial landscaping		Residential
	Residential landscaping	Sediment TSS/Turbidity	Agriculture
	Sewage overflow		Grading/Construction
	Septic systems		Slope Erosion

Table 2-5 303(d) Listings in the Tijuana River Watershed

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor
Tijuana River	San Ysidro	911.11	Bacteria Indicators, Eutrophic conditions, Low Dissolved Oxygen, Pesticides, Solids, Synthetic Organics, Trace Elements, Trash
Tijuana River Estuary	San Ysidro	911.11	Bacteria Indicators, Eutrophic conditions, Lead, Low Dissolved Oxygen, Nickel, Pesticides, Thallium, Trash, Turbidity
Pacific Ocean Shoreline, Tijuana HU	San Ysidro	911.11	Bacteria Indicators
Barrett Lake	Barrett Lake	911.30	Color, Manganese, pH
Pine Valley Creek (Upper)	Pine	911.41	Enterococcus, Phosphorus, Turbidity
Morena Reservoir	Morena	911.50	Color, Manganese, pH

In addition to the regional monitoring the Tijuana River WMA copermittees conducted several independent monitoring or source identification studies. These projects are discussed below.

County of San Diego Southern Watersheds Monitoring Program Report

The County of San Diego completed a monitoring activity for upper watersheds of the San Diego Bay WMA and the Tijuana River WMA during this monitoring period. The monitoring report was prepared by Brown and Caldwell was completed in March 2009 (Activity Sheet TJ-024 attachment). The project included the installation and monitoring of five mass loading stations (MLS) in the Sweetwater (2), Otay (1) and Tijuana (2) watersheds. The monitoring stations for the Tijuana River WMA were located in Pine Valley Creek where it crosses under Highway 94 and in Campo Creek where it crosses under Highway 94.

The overall purpose of the activity was to acquire more representative data for the southern watersheds which previously included only dry weather grab samples. This monitoring effort utilized two different sampling methods for dry and wet weather events. For dry weather samples, 24 hour continuous sampling was conducted and for wet weather, a flow weighted sampling method was used. Additionally bacteria sampling was accomplished with grab samples. A secondary purpose of the study is to compare water quality data from these upper watershed locations with data collected from Mass Loading Stations which are typically located toward the lower portion of the watershed.

The project was designed to collect both field (5) and laboratory (33) parameters during two storm events and two dry weather events. Field parameters included Temperature, Dissolved Oxygen, pH, Conductivity, and Turbidity. Laboratory measured parameters included: Ammonia-N, Antimony,

Arsenic (total/dissolved) Cadmium (total/dissolved) Chlorpyrifos, Chromium (total/dissolved), Coliform (total/fecal) and Entrococcus, Copper (total/dissolved), Diazinon, Hardness (total), Iron (total), Lead (total/dissolved), Manganese (total) Malathion, Nickel (total/dissolved) Nitrate-N, Nitrite-N, Orthophosphate-P, Selenium (total/dissolved)TDS, Total Kjeldahl Nitrogen, Total Phosphate-P, TSS, and Zinc (total/dissolved). In addition to the above flow measurements were taken at each station to develop discharge rates and to calculate a discharge equation.

The results generally supported that the pollutant loads seen at the lower watershed MLS correlate strongly with industrial, municipal wastewater and urban runoff from the lower watershed and that pollutant loads are higher during the rainy season versus the dry season.

Imperial Beach Bacteria Source ID

During this reporting period, the City with funding from a Proposition 50 Clean Beach Initiative (CBI) Grant, initiated a source identification study to identify sources of bacterial contamination in the U.S. western most portion of the Tijuana River Watershed. The purpose of the study was to identify sources of bacterial contaminates and recommend appropriate actions and activities to reduce the input of those sources to the Tijuana River Watershed. Unfortunately, on December 19, 2008, the City of Imperial Beach received notification that funding for Proposition 50 projects was on hold as a result of California's failure to pass a State budget. The project was subsequently halted having only completed one sanitary survey and one wet weather monitoring event. At the printing of this report, funding had still not been reinstated by the State to complete the project.

Sanitary Survey Dry Weather Monitoring Results

The fist sanitary survey started in October 2008 and investigated a total of 220 monitoring sites in the MS4 system for bacteria (enterococci, fecal coliforms, and Bacteroides), nutrients (ammonia, nitrate, nitrite, and orthophosphate), and general chemistry (conductivity, DO, salinity, temperature, MBAS, and pH). Of those sites, 78 had flowing or ponded water and were sampled. Sites with elevated indicator bacteria concentrations or sites with positive Bacteroides were resampled, and further investigations were made upstream to identify the source. Monitoring results from the sanitary survey found the following:

- Enterococcus concentrations were above the Basin Plan benchmark of 151 MPN/100 mL in 30 of the 78 samples.
- Fecal coliform concentrations were above the Basin Plan benchmark of 4,000 MPN/100 mL in 22 of the 78 samples.
- Methylene blue activated substance (MBAS) concentrations were above the Basin Plan benchmark of 0.5 mg/L in 43 of the 78 samples.
- Turbidity was above the Basin Plan benchmark of 20 NTU in 22 of the 78 samples.
- Ammonia concentrations were above the United States Environmental Protection Agency (USEPA) Water Quality Criteria (freshwater) in 23 of the 78 samples.
- pH was above the Basin Plan criteria in two samples where pH was found to be above 9 pH units.
- Of the 78 sites sampled for Bacteroides, five tested positive for human-specific Bacteroides.

Site specific results from the sanitary survey also identified three locations within the US portion of the watershed that were contributing elevated loads of bacteria. One location identified a storm drain line crossing the border from Mexico and flowing 0.4 miles before crossing the border again back into Mexico. The other two locations were a result of stagnant and ponded water from accumulated debris within the MS4 system. The appropriate jurisdictions were notified of the ponded water and occluded lines and cleaning maintenance resolved the issue.

Wet Weather Monitoring Results

On December 15, 2008, a storm water monitoring event was undertaken with pollutograph sampling at Dairy Mart, Hollister Street, and Saturn Street. Spot samples were also collected at Smuggler's Gulch and Goat Canyon. The duration of the storm lasted four days, and sampling continued though December 18. The total rainfall for the event, recorded at the Hollister Street sampling location, was 2.5 inches; however, the majority of the rainfall occurred south of the US border where rainfall was estimated at 4–6 inches and caused extensive flooding throughout the lower Tijuana River and Tijuana Estuary area. Results showed extremely high concentrations of bacteria throughout the entire storm event. Results also indicated that 7 of the 14 wet weather samples were positive for human-specific Bacteroides, indicating a significant presence of human fecal material during wet weather flows.

SECTION 3.0 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 Watershed Water Quality Activities

The Tijuana River WMA Copermittees have implemented, or were actively planning, a total of twenty-two activities, seventeen are water quality activities, eight of which were in active implementation, seven active but with no WURMP credit, and two water quality monitoring activities with no WURMP credit. Also of the twenty-one activities, there were a total of four Education activities, three in active implementation and one in its planning phase. There was one Land use planning activity. Each of these activities occurred in FY08-09 and addressed some of the high priority water quality problems identified in the Tijuana River WMA WURMP (March 2008). Table 3-1 identifies each of the water quality activities and includes information pertaining to the lead jurisdiction, the hydrological area(s), and the priority pollutants which these activities targeted. For more detail on the specific activities, please refer to Attachment 1 for the Watershed Activity Summary Sheets describing the Copermittees watershed water quality activities and details regarding their anticipated implementation schedule. These activities include projects ranging from pet waste dispenser programs and trash cleanup events to land acquisition and Low Impact Design (LID) education and outreach focused on specific stakeholder constituencies.

Several watershed water quality activities are also considered education activities and are identified in Table 3-1. Progress on these specific watershed education activities have been described in the standardized template and clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems.

Table 3-1: Water Quality, Education and Land Use Activities

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	HA	High Priority Water Quality Problems									
							Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-001	Pet Waste Dispenser Program	COSD		X		911.2 911.4 911.5	X									X
TJ-002	Land Acquisition within TJWMA	COSD		X		All	X	X	X	X	X	X	X	X	X	X
TJ-003	ILACSD Trash Clean-Up Sponsorship	SD		X	X	911	X	X								
TJ-004	San Diego Coastkeeper Trash Clean-up Sponsorship	SD		X	X	911	X	X								
TJ-007	Targeted Auto-Related Facility Inspections	SD		X		911.1 911.2					X					
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnects	SD		X		911.1 911.2	X		X	X	X					
TJ-010	City-Wide Clean-Up Events	IB		X	X	911	X									
TJ-011	Large Special Events Inspection and Clean-Ups	IB		X	X	911	X	X								
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	COSD		X		911		X	X					X		
TJ-013	Tijuana River Bacteria Source Identification Study	IB	COSD, SD	X		911.1 911.2	X									
TJ-014	LID and Watershed Planning Education for Com & Sponsor Groups	COSD			X	All	X	X	X	X	X	X	X	X	X	X
TJ-015	Karma and Karma Second Chance PSA	SD			X	911.1 911.2	X	X						X		
TJ-017	Invasive Species Removal Program in Tijuana River Park	COSD		X		911.1	X		X							
TJ-018	Trash and Sediment Characterization Study	COSD	SD	X		911		X	X							
TJ-019	City of San Diego Strategic Plan Implementation	SD		X	X	911.1 911.2	X				X			X		

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	HA	High Priority Water Quality Problems									
							Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-020	Pet Waste Dispenser Program	SD		X		911.1 911.2	X									
TJ-021	San Ysidro Festival FY08-09	SD			X	911	X	X	X							
TJ-022	Tijuana River Gross Solids BMP & Sediment BMP Design	SD		X		911		X	X							
TJ-023	Tijuana River Watershed Brochure F08-Y09	SD			X	911.1 911.2	X		X	X	X	X		X		
TJ-024	Water Quality Monitoring in the Upper Tijuana Watershed	COSD		X		911.4 911.8	X		X	X	X			X		
TJ-025	Smuggler's Gulch, Pilot Channel 7 Northern Channel Sediment and Debris Removal	SD		X		911		X	X					X		

3.2 Watershed Education Activities

The Tijuana River WMA Copermittees recognize the need for education programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Each of the Copermittees participated in or hosted several activities to promote watershed education including:

- Workshops focusing on LID BMP implementation, preventing urban runoff contamination, and ecological protection of the watershed, and water quality protection activities.
- Trash removal/river cleanup events emphasizing volunteer participation and public awareness, and proper disposal of potential contaminants from entering Tijuana river system.

Table 3-2 identifies each of the Public Participation, Education and Outreach activities that occurred during FY08-09. In addition the County of San Diego continues to sponsor the Project Clean Water Website (www.projectcleanwater.org) this website provides information pertinent to each of the watersheds in San Diego County. During FY08-09 there were total of 5,003 hits on the Tijuana River Watershed page and 3,407 hits on the Tijuana River WURMP page.

Table 3-2 Public Participation, Education, and Outreach Activities

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	08/08/08	Scout Troop: Stormwater & Lake Use	Lake Morena	Children	12	X			No
County	09/15/08	Recycling & HHW	Mountain Empire High School	Students - HS	47	X	X		No
County	10/04/08	Scout Troop: Stormwater & Lake Use	Lake Morena	Children	11	X			No
County	10/09/08	LID and Watershed Planning Education to Community Planning Groups (CPG)	Potrero CPG Meeting	Potrero CPG	13	X	X		Yes - Pre/Post Tests: 10.9% increase in knowledge
County	10/14/08	LID and Watershed Planning Education to Community Planning Groups	Pine Valley CPG	Pine Valley CPG	15	X	X		Yes - Pre/Post Tests: 29.2% increase in knowledge
County	10/21/08	Green Machine	Campo Elementary	Students – Elem	102	X			No
County	10/26/08	Scout Troop: Stormwater & Lake Use	Lake Morena	Children	24	X			No
County	11/14/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	24	X			Yes - Pre/Post Tests
County	11/14/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	24	X			Yes - Pre/Post Tests
County	11/14/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	24	X			Yes - Pre/Post Tests
County	11/24/08	LID and Watershed Planning Education to Community Planning Groups	Community Church on Oak Drive	Campo/Lake Morena CPG	35	X	X		Yes - Pre/Post Tests: 32.5% increase in knowledge

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	12/02/08	Green Machine	Pine Valley Elementary	Students – Elem	69	X			No
County	12/03/08	Littering, Keep Your Park Clean	Pine Valley	Students	4	X			No
County	12/09/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	23	X			Yes - Pre/Post Tests
County	12/10/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	20	X			Yes - Pre/Post Tests
County	02/05/09	LID and Watershed Planning Education to Community Planning Groups	Boulevard Fire Station/Community Center	Boulevard CPG	14	X	X		Yes - Pre/Post Tests: 17.5% increase in knowledge
County	02/25/09	Community Health Fair	Campo Senior Wellness Fair	Campo Senior Residents	~50		X		No
County	04/09/09	Littering, Keep Your Park Clean	Pine Valley	Students	5	X			No
County	04/11/09	Scout Troop: Stormwater & Lake Use	Lake Morena	Children	16	X			No
County	04/20/09	Green Machine	Potrero Elementary	Students - Elem	75	X			No
County	04/28/09	Littering, Keep Your Park Clean	Pine Valley	Students	6	X			No
County	05/16/09	Green Machine	Elem. Science Field Day / Tierra Del Sol Middle	Students	1200	X			No
County	05/20/09	Mt. Empire School District Health Fair	Lake Morena	Students	50	X	X		No
County	05/20/09	Littering, Keep Your Park Clean	Pine Valley	Students	5	X			No

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	05/21/09	Littering, Keep Your Park Clean	Pine Valley	Students	50	X			No
County	05/26/09	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	23	X			Yes - Pre/Post Tests
County	06/03/09	Green Machine	Jacumba Elementary	Students - Elem	52	X			No
County	06/10/09	Green Machine	Clover Flat Elementary	Students - Elem	80	X			No
County	06/30/09	Down to Earth: Environmentally Friendly Home Gardening Video	County-wide	General Public	60 airings	X	X	X	No
County	06/30/09	How to Manage Manure: Composting for Horse Owners	County-wide	General Public	80 airings	X	X	X	No
SD	12/6/2008	SDCK Coastal Cleanup Day	San Ysidro	Gen Public	46	X	X	X	Yes, 1,860 lbs load reduction associated with sponsorship per event with an efficiency of $1.08 per lb.
SD	4/25/2009	ILACSD Creek to Bay Cleanup	San Ysidro	Gen Public	105	X	X	X	Yes, 20,320 lbs load reduction associated with sponsorship per event with an efficiency of $0.25 per lb.
SD	FY08-09	Admobile	Imperial Beach	Residents	N/A		X	X	The City in no longer using mobile advertising as part of its watershed program

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
SD	FY08-09	Karma, Karma TV Campaign	County Wide	Res/Com/Ind	446,835		X	X	Yes, Assessment saw 25% increase in correctly answering questions regarding whether storm water is treated after seeing the public service announcement.
SD	FY08-09	Karma, Karma Radio Campaign	County Wide	Res/Com/Ind	613,459		X	X	Yes, Assessment saw 25% increase in correctly answering questions regarding whether storm water is treated after seeing the public service announcement.
SD	FY08-09	Poster Distribution	TJ WMA	Dev-Const Community	100		X	X	No
SD	FY08-09	Guidebook Distribution	TJ WMA	Bus Own / Op & Rest Emp	500		X	X	No
Imperial Beach	FY 08-09	New Employee Training: Provide training on storm water to each new employee	Public Works	Municipal Staff	4	X	X		No
Imperial Beach	7/3/2008	City Weekly FYI: Education on the RWQCB trash and sediment workshop	City of Imperial Beach	City Council and Municipal Staff	168	X		X	No
Imperial Beach	7/9/2008	Eagle and Times Newspaper: Urban runoff pollution prevention and storm water pollution tips	City of Imperial Beach	Residents	Citywide	X		X	No

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	7/16/2008	US Open Sandcastle Competition: Provided information to venders and public at US Open Sandcastle Competition	City of Imperial Beach	General Public and Commercial Business	300,000	X	X		No
Imperial Beach	7/26/2008	IB Auto Show: Education booth at annual IB Auto Show	City of Imperial Beach	General Public	1,000	X	X		No
Imperial Beach	8/14/2008	City Weekly FYI: Two articles, on e-waste recycling and City recycling program	City of Imperial Beach	City Council and Municipal Staff	168	X		X	N
Imperial Beach	8/25/2008	City Weekly FYI: Waste management of prescriptions and compost	City of Imperial Beach	City Council and Municipal Staff	168	X		X	No
Imperial Beach	9/17/2008	Municipal staff training for Public Works: JURMP components and requirements	Public Works	Municipal Staff	23	X	X		Yes (Survey) Average score of 81% on 16 questions
Imperial Beach	9/23/2008	Municipal staff training for Community Development Department	City Hall	Municipal Staff	12	X	X		Yes (Survey) Average score of 89% on 16 questions
Imperial Beach	10/17/2008	City Weekly FYI: Article on fats, oil, and grease	City of Imperial Beach	City Council and Municipal Staff	168	X		X	No
Imperial Beach	11/1/2008	Eagle and Times Newspaper: Article on fats, oil, and grease and proper disposal during the holiday season	City of Imperial Beach	Residents	Citywide	X		X	No
Imperial Beach	12/1/2008	City Bi-annual Newsletter: Four articles on storm water, FOG, special events, and recycling	City of Imperial Beach	Residents	Citywide	X		X	No

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	12/12/2008	City Weekly FYI, Eagle and Times Newspaper, and San Diego Union Tribune	City of Imperial Beach	City Council, Municipal Staff, and Residents	Citywide	X		X	N
Imperial Beach	1/9/2009	City Weekly FYI: Battery Recycling at County libraries	City of Imperial Beach	City Council and Municipal Staff	168	X		X	N
Imperial Beach	2/4/2009	City Weekly FYI: Advertising e-waste recycling event	City of Imperial Beach	City Council and Municipal Staff	168			X	No
Imperial Beach	3/25/2009	Post Card: Advertising e-waste recycling event	City of Imperial Beach	Residents	27,000			X	No
Imperial Beach	3/25/2009	City Weekly FYI: Battery collection at County libraries	City of Imperial Beach	City Council and Municipal Staff	168			X	No
Imperial Beach	4/1/2009	EDCO Environmental Times: Multiple articles on storm water pollution tips, proper disposal of HHW, advertisement for special events	City of Imperial Beach	Residents	27,000	X		X	No
Imperial Beach	4/25/2009	Coastal Clean Up Day: Sponsored ILACSD for 7th Annual Coastal Clean Up Day	City of Imperial Beach	Residents	4,000	X	X		No
Imperial Beach	5/2/2009	Home Front Clean Up: Annual home front clean up events for residents to properly dispose of waste	Mar Vista High School	Residents	689	X			No

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	5/10/2009	Eagle and Times Newspaper: Advertisement for light bulb exchange	City of Imperial Beach	Residents	Citywide	X		X	No
Imperial Beach	5/14/2009	City Bi-annual news letter: Urban runoff information and pollution prevention tips "After it Rains"	City of Imperial Beach	Residents	Citywide	X		X	No
Imperial Beach	5/20/2009	ILACSD school presentation: Two 5th grade presentation on storm water pollution	Imperial Beach Elementary	School Children	54	X	X		Yes (pre test 75% and post test 87%)
Imperial Beach	6/4/2009	City Weekly FYI: Water conservation and urban runoff pollution info	City of Imperial Beach	City Council and Municipal Staff	168	X		X	N
Imperial Beach	6/16/2009	ILACSD school presentation: 5th and 6th grade presentation on storm water pollution	Central Elementary	School Children	100	X	X		Yes (pre test 73% and post test 83%)

3.3 Public Participation Activities

The Tijuana River WMA Copermittees continue to actively encourage the participation and input of diverse stakeholders in the development, and implementation, of the Tijuana River watershed activities. Public participation is encouraged to ensure that stakeholder interests and creative solutions are considered. A number of activities, both education and water quality, are crafted to encourage public input and involvement (Table 3-1). Public participation activities included volunteer clean-up events, outreach to specific groups such as students and residents within the Tijuana River Watershed, County wide public service announcements and the, Project Clean Water website.

The City of San Diego also completed a proposed Master Stormwater System Maintenance Program which would allow the City to conduct regular maintenance activities in the numerous channels throughout the City, including those in the Tijuana River Valley (most notably the channel in Smuggler's Gulch and the Pilot Channel). In FY08-09, the Master Plan was completed and the City's Development Services Department nearly finalized the Program Environmental Impact Report that will be released for public comment in FY09-10.

3.4 Collaborative Land-Use Planning Efforts

To encourage collaborative planning in the watershed and implementation of the Tijuana River WURMP, the Tijuana River WMA Copermittees met formally six times during FY08-09 to discuss watershed principles and develop collaborative efforts to reduce storm water pollution in the watershed, including possibilities for collaboration in land use planning (see Table 1-1). This section describes collaborative land use planning efforts within the watershed during FY08-09. The Tijuana River WMA Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances. A discussion of several collaborative land use planning efforts follows.

The Tijuana River WMA Copermittees have taken an active role in the formation of the Tijuana River Valley Recovery Team (TJRVT). The TJRVT, whose members include governmental administrative, regulatory, and funding agencies, as well as members of the scientific and environmental communities and affected stakeholders, was formed to facilitate restoration of the Tijuana River floodplain and estuary to a functional wetland ecosystem. The TJRVT met monthly throughout FY 2008-09 and continue to propose initiatives to reduce trash and sediment from reaching the Tijuana River Valley and restore natural hydrology. Additional information can be found on the Tijuana River Recovery Team website (www.tjriverteam.org).

Education:

The Tijuana River WMA Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant re-development. In addition to the education and training that is provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego's development of a LID and Watershed Planning Education Activity. This activity is intended to educate local planning and sponsor groups on LID and watershed planning principles, practices, and requirements. The recommendations of local planning and sponsor groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. This education activity is intended to aid these advisory bodies in making informed recommendations on aspects of development projects that could affect watershed water quality. During the FY08-09 reporting period, County of San Diego staff also conducted other presentations to planning, sponsor groups and students both at the Elementary and High School level as well as Scout Troops on topics like Recycling, Stormwater and Lake Use and Littering.

The City of San Diego Storm Water Department has continued to reach the public in the Tijuana River Watershed through its radio and television public service announcements broadcasted in both English and Spanish. Additionally, the City staffed a booth and handed out educational information to residents during the San Ysidro Days event on May 16, 2009. The City continues to fund the Tijuana River National Estuarine Research Reserve (TRNERR) to conduct field trips for youth groups, implement upgrades to the www.trnerr.org web site, and "Amigo" level sponsorship of the annual Fiesta Del Rio community event. The City plans to continue its relationship with TRNERR in the future.

Cross-Jurisdictional Communication:

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the WMA Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the WMA Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the WMA Copermittees are able to better address watershed needs as a whole.

Tijuana River Bacteria Source Identification Study:

One such activity that involved collaborative planning included the Tijuana River Bacteria Source Identification Study. Collaborative land use planning for the Tijuana River Bacteria Source Identification Study was achieved through the development of a Technical Advisory Stakeholder group. These stakeholder meetings encourage Copermittees to actively plan with community organizations and jointly identify potential sources of bacteria, trash, and sediment (i.e., human activity, storm outfalls), leading to generating pertinent information for field monitoring groups to collect water quality data and make a more informed assessment of pollutant sources along the river. This information is then available to storm water staff that coordinate and periodically make recommendations to jurisdictional planning department staff regarding appropriate storm water-related land use planning regulations and policies.

By pursuing a setting of coordinated dialogue and strong working relationships among each other, the WMA Copermittees are more equipped to develop collaborative land use planning efforts to address the needs of this watershed. The Tijuana River WMA Copermittees will continue its regular meetings to plan and implement the Tijuana River WURMP. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale.

3.5 Updated 5-year Strategic Plan

3.5.1 New Watershed Activities

Development of the 5-Year Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the Tijuana River WURMP. The Regional Copermittees recognized that there would be a need to revise the 5-year plan as new activities were identified and implemented. During FY08-09, five new activities have been identified, two of which are watershed education activities. Descriptions of these new activities are noted below.

During FY08-09 the City of San Diego's Think Blue program participated in the San Ysidro Centennial Celebration, a community festival commemorating the 100th birthday of San Ysidro. Participation provided direct outreach to the attending 7,000 watershed residents, with a focus on water bodies in the Tijuana River Watershed Management Area (WMA).

A new brochure program for the six (6) WMAs was implemented by the City of San Diego and Think Blue. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed.

The Tijuana River Gross Solids and Sediments BMP Design project involves the studies of storm water trash sediment BMP projects in the Tijuana River WMA, to reduce the volume of sediments and gross solids which are transported to the Tijuana River's main channel and the Tijuana River estuary during storm events.

During the FY08-09 reporting period the County of San Diego conducted additional dry and wet weather monitoring in the upper Tijuana Watershed. The two monitoring sites were located in Pine Creek (911.40) and Campo Creek (911.80). The purpose of the study was provide more

representative data for the upper watersheds and to also compare these with historic data collected at the lower MLS station in the Tijuana River Valley.

The City of San Diego is excavating and removing of sediment and trash in Smuggler's Gulch, Pilot Channel, and Northern Channel as part of a flood control maintenance activity. A secondary benefit of sediment and trash removal is improved water quality, due to the fact that the items are disposed of properly after removal.

3.5.2 Updated 5-Year Strategic Plan

During FY08-09 several projects were modified, updated, completed or deleted from the strategic plan. These include the City of San Diego's Pet Waste Dispenser Program, Mobile Advertising, and Tijuana River Watershed Bacterial Source Identification Study. Table 3-3 represents the Tijuana River WMA Updated 5-year Strategic Plan.

The City of San Diego Pet Waste Dispenser Program was updated and was in its planning phase during FY08-09, implementation is scheduled for FY09-10, this project will target municipal and mixed-use locations with high pet use. Pet waste stations will be installed for the purpose of reducing pollutant loading of bacteria present in dog waste. There will be a targeted outreach campaign by the City's Think Blue as it relates to this project.

The use of Mobile Advertising was implemented in FY07-08 but based on results from the 2009 Storm Water Survey in which 17% of participants stated they received Think Blue Messages via Mobile advertising, it was determined the program was not effective in generating sufficient knowledge and awareness of the program or storm water issues. Therefore the City discontinued the activity in FY08-09.

The Tijuana River Watershed Bacterial Source Identification Study is currently on hold until funding from the CBI Grant is made available or additional funding from another source can be secured.

Activity TJ-006 noted in Table 3-3 as the Targeted Restaurant Facility Inspections will be eliminated as this item is covered in the General Project Activity for Targeted Inspections, activity TJ-007.

The Sweeping Route Posting and Enforcement Project was renamed to a more accurate title during its planning phase which occurred in FY08-09. The project is now titled Route Posting and Median Sweeping Pilot Study. Planning is underway for FY09-10 to conduct pilot "median" sweeping routes in the Tijuana River Watershed. Implementation of a posted route is anticipated to occur in FY10-11, with final assessment and conclusions being prepared in the first half of FY11-12.

The activity previously reported under the title Trash Segregation BMP Installation was changed to Beyer Boulevard Trash Segregation Best Management Practice (BMP) Installation due to the selection of Beyer Boulevard as a location for this project.

In April 2008, the Regional Board and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego Region. The review focused primarily on the Carlsbad and San Diego Bay watersheds. The final audit report was available for review by the

San Diego Regional Copermittees in September 2008. The audit report contents included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The San Diego Regional Copermittees have been working together with Regional Board staff to identify how the WURMPs and WURMP Permit language may be modified to meet the goals of the program more effectively.

During the past year the Regional WURMP Workgroup met several times with Regional Board staff to modify WURMP reporting requirements which resulted in a series of proposed revisions to the WURMP Annual Report including content and format. Due to the nature of the proposed changes including requested by interested stakeholders the Regional Board Staff decided that revisions should wait until re-issuance of the permit in 2012.

Table 3-3 Five-Year Strategic Plan for Tijuana River WMA

TIJUANA RIVER WATERSHED	Heavy Metals	Sediment	Bacteria	Nutrients	Gross Pollutants	Trash	Dissolved Minerals	Pesticides	FY 07-08			FY 08-09			FY 09-10			FY 10-11	FY 11-12
Watershed Activities Planned																			
TJ-001 Pet Waste Dispenser Program in County Parks			X	X					WQ			WQ			WQ				
TJ-002 Land Acquisitions	X	X	X	X		X	X	X	WQ			WQ			*			* unable to predict acquisitions	
TJ-003 ILACSD Trash Cleanup Sponsorship			X			X			WQ			WQ			WQ				
TJ-004 SDCK Trash Cleanup Sponsorship			X			X			WQ			WQ			WQ				
TJ-005 Alpha Project for the Homeless, Inc. Trash Cleanups			X			X			WQ									Project Completed in FY07-08	
TJ-006 Tijuana River Targeted Restaurant Facility Inspections			X						WQ									Activity to be covered in TJ-007	
TJ-007 Tijuana River Targeted Facility Inspections	X								WQ			WQ			WQ				
TJ-008 Tijuana River Targeted Facility Inspections Outreach	X								WE						WE			No outreach was conducted in FY 08-09	
TJ-009 Municipal Rain Barrel and Downspout Disconnects	X	X	X	X		X		X	WQ			WQ			WQ				
TJ-010 City of IB Cleanup Events			X			X			WQ			WQ			WQ				
TJ-011 Large Special Event Inspection and Cleanup			X			X			WQ			WQ			WQ				
TJ-012 Smuggler's Gulch Sediment Removal		X							WQ			WQ			WQ			Activity did not occur in FY08-09	
TJ-013 Tijuana River Bacteria Source Identification Study			X						M	S		M	S		M	S		Funding was frozen in FY08-09	
TJ-014 LID Education for Community Planning / Sponsor Groups	X	X	X	X			X	X	WE			WE						Activity completed in FY08-09	
TJ-015 Public Service Announcements (PSAs): *Karma* and *Karma Second Chance*			X			X			WE			WE			WE				
TJ-016 Mobile Advertising		X	X						WE									Project completed in FY07-08	
TJ-017 Invasive Species Removal Program in Tijuana River Valley Park		X	X					X	WQ			WQ			WQ				
TJ-018 Trash and Sediment Characterization Study		X				X			WQ			WQ			WQ				
TJ-019 City of San Diego Strategic Plan Implementation	X		X		X							LU			LU				
TJ-020 Pet Waste Dispenser Program			X	X								WQ			WQ	WE			
TJ-021 San Ysidro Festival FY09		X	X			X						WE	PP		WE	PP		New Activity in FY08-09	
TJ-022 Tijuana River Gross Solids BMP & Sediment BMP Design		X				X						WQ			WQ			New Activity in FY08-09	
TJ-023 Tijuana River Watershed Brochoure FY09	X	X	X	X	X	X	X	X				WE			WE			New Activity in FY08-09	
TJ-024 Water Quality Monitoring in the Upper Tijuana Watershed	X	X	X	X	X		X	X				M						Activity completed FY08-09	
TJ-025 Smuggler's Gulch, Pilot Channel & Northern Channel Sediment and Debris Removal		X			X	X						WQ			WQ			New Activity in FY08-09	
Potential Future Watershed Activities																			
Source Identification of Metals and Ammonia	X			X															
Mobile Business Assessment Program	X																		
Infiltration BMP Retrofit	X		X																
Beyer Avenue Trash Segregation Device Installation			X			X			Project Name Change in FY08-09										
Inlet Bacteria Treatment BMP Installation			X																
Green Mall Infiltration Retrofit Education and Outreach	X		X																
Irrigation Controller and Xeriscaping Incentive Program	X		X	X				X											
Route Posting and Medium Sweeping Pilot Program	X					X			Project Name Change in FY08-09										
Tijuana River Valley Park Trails and Habitat Enhancement Project		X																	

WQ = Watershed Water Quality Activity (Active Implementation)
WQ = Watershed Water Quality Activity (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)
WE = Watershed Education Activity (No WURMP Credit)
LU = Watershed-base Land Use Planning Activity
PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)
D = Watershed Data Assessment/Management Activity
O = Other Watershed Activity (No WURMP Credit)

SECTION 4.0 EFFECTIVENESS ASSESSMENTS

This section of the report will assess the effectiveness of the Copermittees collaboration efforts over the year, the overall effectiveness of targeting specific water quality problems, and the collective impacts made towards reducing pollutant loads and improving receiving water quality. In order to facilitate this assessment the Copermittees agreed upon using the 2003 Framework for Effectiveness Assessment, which uses a six level hierarchical analysis to assess the effectiveness of watershed activities. The following section assesses the effectiveness of the WURMP on a whole in relation to four key program components:

1. Collaboration among Tijuana River WMA Copermittees.
2. Effectiveness of WURMP activities on addressing water quality problems and sources.
3. Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.
4. Assessment of measurable targeted outcomes.

1. An assessment of the Copermittees Collaboration Efforts during Reporting Period.

The Tijuana River WMA Copermittees have collaboratively worked together over the past year to successfully implement a number of watershed and education based activities throughout the WMA. In addition to participating together on shared watershed activities, the Tijuana River WMA Copermittees met 6 times during the year to further develop and implement the Tijuana River WURMP. Copermittees also participated in a number of Tijuana River Stakeholder groups including Border 2012, Tijuana River Valley Recovery Team, and Tijuana River Bacterial Source Identification study group. The Border 2012 group met twice during the year to discuss funding and coordinated activities. The Tijuana River Valley Recovery Team met monthly to develop and implement watershed activities, including coordinating efforts on a number of WURMP activities. The Tijuana Bacterial Source Identification study group also met twice to review the results of the literature review and sanitary survey. The Tijuana River WMA Copermittees have made significant progress towards coordinating watershed activities with each other and in collaboration with the various stakeholders in the watershed. All Level 1 provisions of the WURMP were successfully met as required by the NPDES permit.

2. An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.

Copermittees collaborated and selected watershed activities that address high level priority pollutants within each jurisdiction and throughout the watershed as a whole. As noted in Section 2, bacteria and trash are two of the many high priority pollutants found throughout the watershed and were the pollutants selected as the focus for many of the watershed activities. During the current reporting period the Copermittees actively engaged in 21 water quality and education activities with 9 activities focusing on bacteria, 4 activities focusing on trash, and 7 activities focusing on both trash and bacteria. Many of the activities addressed multiple pollutants or other priority pollutants in the WMA. Table 4-1 identifies each of the water quality and water education activities that were in active implementation during the reporting period. The current distribution of watershed activities, specifically the activities that target the high priority pollutants, adequately address the likely sources of pollutants from the MS4, and in many cases

contributes to the larger effort towards restoring the Tijuana River Valley and managing the effects of cross border pollution.

3. A comprehensive assessment of the impact of all the WURMP Activities on the watershed's high priority problems, with a focus at the Hydrologic Area Level.

The Tijuana River WMA is divided into 8 Hydrologic Areas. The high priority pollutants in the watershed include metals, dissolved minerals (manganese), organics, sediment, pesticides, nutrients, gross pollutants (pH), color, and bacteria/pathogens. By and large, the majority of the priority water quality problems are found in the Tijuana River Valley HA (911.1) where significant amount of pollutants are introduced from cross border sources in Mexico. Although improvements in high priority water quality problems in the watershed are difficult to quantify, the Tijuana River WMA Copermittees feel that local improvements in water quality continue to be made along the U.S. portion of the watershed through the implementation of water quality and education activities. Water quality and education activities were implemented throughout all HAs; however, water quality activities were primarily focused in the Tijuana River Valley HA (911.1), where the water quality problems are most numerous and significant.

During the reporting period, 21 activities were in the active implementation phase with 11 activities focused on water quality, 4 activities focused on education, and 6 activities focused on both education and water quality. These activities addressed several of the priority pollutants in the Tijuana River Watershed including bacteria, trash, sediment, pesticides, metals, organics, nutrients, gross pollutants, and color. Load reductions or source abatements were also achieved in 8 of the watershed activities (TJ-001, TJ-002, TJ-003, TJ-004, TJ-007, TJ-010, TJ-011, and TJ-025). Table 4-1 identifies the HA location for each activity, the priority pollutants addressed, and the results achieved during the reporting period. Detailed information on the implementation and assessment for each watershed activity is provided in the appendix of the report (Activity Summary Sheets).

4. Measurable targeted outcomes and assessments measures will be used to facilitate assessment wherever possible. Assessment levels one through six will be applied to the watershed as whole where applicable and feasible.

As a whole, the Copermittees are working to expand the focus of their assessments on demonstrating the watershed-level benefits of program implementation, and will continue to do so under order R9-2007-0001. However, annual watershed assessments do not attempt to address the relationship of WURMP implementation to changes in water quality; this analysis will be confined to the Long-term Effectiveness Assessment process. The Copermittees feel that their efforts demonstrated by Level 1, 2, 3, and 4 likely had positive effects on water quality and will help establish the effectiveness of the Tijuana River watershed program. The bacteria-focused activities implemented a comprehensive method of promoting education and awareness (Level 1, 2, and 3) combined with actual load reduction and source abatement. As can be seen, levels of effectiveness for these activities had wide outcome range, with a majority emphasizing load reduction or source abatement (Level 4). The process also allowed a thorough evaluation of the WURMP and to make improvements, modifications, and changes to the program as needed. As the activities progress and become more developed in its implementation, data will become more available to design measurements that will improve the effectiveness of the activities. This will in turn lead to a better framework of assessing the activities and thereby improve the overall effectiveness of this watershed program.

Table 4-1 Water Quality and Education Activities in Tijuana River WMA

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-001	Pet Waste Dispenser Program	911.2 911.4 911.5	Water Quality	Bacteria	4	Maintained existing pet waste bags at 3 different County parks.
TJ-002	TJWMA Land Acquisition	All	Water Quality	All	4	113.39 acres of land acquired in the Tijuana River WMA.
TJ-003	ILACSD Trash Clean-Up Sponsorship	911	Water Quality and Education	Bacteria, Trash	1, 4	105 participants, 20,320 pounds of trash and debris
TJ-004	SD Coastkeeper Trash Clean-up Sponsorship	911	Water Quality and Education	Bacteria, Trash	1, 4	46 participants, 1,860 pounds of trash and debris
TJ-007	Targeted Auto-Related Facility Inspections	911.1 911.2	Water Quality	Metals	1, 3, 4	2 BMP corrective actions, 22 inspections with 7 follow-ups, Education materials distributed and knowledge assessed.
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnects	911.1 911.2	Water Quality	Bacteria, Metals, Pesticides	1, 4	Installed two rain barrels. Assessment will be conducted during the 2009-10 rainy season
TJ-010	City-Wide Clean-Up Events	911	Water Quality	Bacteria, Trash	1, 2, 4	732 participants, 154.3 tons of material collected.
TJ-011	Large Special Events Inspection and Clean-Ups	911	Water Quality and Education	Bacteria, Trash	1, 4	12 special events with enhanced BMPs Increased awareness
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	911	Water Quality	Bacteria, Trash, Sediment	1	Program in the planning stage and will be implemented in FY09-10.
TJ-013	Tijuana River Bacteria Source Identification Study	911.1 911.2	Water Quality	Bacteria	1	Completed one sanitary survey and one wet weather monitoring event. Study suspended due to State budget problems.
TJ-014	LID and Watershed Planning Education for Com & Sponsor Groups	All	Education	All	1, 2	Community Planning Group training related to LID and watershed planning principles, practices, and requirements. 8 CPG (143 participants) and, the Manzanita band of Kumeyaay Nation (12 participants). A total of 78 pre- and post- surveys were completed.
TJ-015	Karma and Karma Second Chance PSA	911.1 911.2	Education	Bacteria, Trash	1, 2, 3	446,835 est. TV audience. 613,459 est. Radio audience. 44% expressed change in knowledge or attitude. 29% reported making changes in behavior.
TJ-017	Invasive Species Removal Program in Tijuana River	911	Water Quality	Bacteria, Sediment, Pesticides	1	Participated in the Technical Advisory Group. Finalized a “Declaration of Intent” by all public landowners in the Tijuana

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
	Park					River Valley. Acknowledges commitment to control invasive species.
TJ-018	Trash and Sediment Characterization Study	911	Water Quality	Trash, Sediment	1	Characterize the trash and debris in the main channel of the Tijuana River basin for future removal.
TJ-019	City of San Diego Strategic Plan Implementation	911.1 911.2	Water Quality and Education	All	1	Developed Phase 1 list of activities to address high priority water quality problems
TJ-020	Pet Waste Dispenser Program	911.1 911.2	Water Quality	Bacteria	1, 4	Identified locations for new pet waste bag dispensers to be installed FY09-10.
TJ-021	San Ysidro Festival FY08-09	911	Education	Bacteria, Sediment, Metals	1, 2, 3	7,000 participants and 156 surveys administered. 84% identified actions to prevent pollution. 100% indicated willingness to engage behavior to prevent pollution.
TJ-022	Tijuana River Gross Solids BMP & Sediment BMP Design	911	Water Quality	Bacteria, Trash, Sediment	1	Multi year study and design plan to reduce the volume of sediments and gross solids which are transported into the river valley, estuary and ocean during storm events.
TJ-023	Tijuana River Watershed Brochure FY08-09	911.1 911.2	Education	All	1	Improved residential brochures to educate residents on pollutants and BMPs.
TJ-024	Water Quality Monitoring in the Upper Tijuana Watershed	911.4 911.8	Water Quality and Education	All	1	Two dry weather and one wet weather monitoring events.
TJ-025	Smuggler's Gulch, Pilot Channel & Northern Channel Sediment and Debris Removal	911	Water Quality	Sediment, Trash, Gross Pollutants	1, 4	Approximately 5,900 cubic yards of material was removed during FY08-09

4.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs currently in effect within the Tijuana River WMA.

SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

During FY2008-09 the Tijuana River WMA Copermittees continued to implement and improve the Tijuana River WURMP following the 5-year Watershed Strategy developed and submitted to the regional board in March of 2008. Much of the year was spent collaborating with the other Tijuana River WMA Copermittees to develop and further refine the strategy for implementing Watershed Activities in compliance with the Regional Board Order R9-2007-0001. The collaborative efforts of the Copermittees represent significant steps towards improving the water quality within the Tijuana River WMA for the benefit of residents and wildlife alike.

The condition of the receiving water and relative contribution of pollutants from urban runoff sources were assessed in the Tijuana River WMA during the reporting period through a number of different monitoring programs. Table 5-1 below presents the monitoring programs and assessments that were conducted during the reporting period. Results from the multiple monitoring programs provided some of the assessment tools necessary to answer the 5 core management questions addressed in Section 2.1 Water Quality Assessment.

The Tijuana River WMA Copermittees met six times during the year to develop the strategy as well as to develop new activities to address the High Priority Pollutants in the watershed. Collaboration was made on a number of Watershed Water Quality Activities, Watershed Education Activities, and Public Participation, Education, and Outreach Activities. Table 3-1 and Table 3-2 in Section 3.0 identify the watershed activities and information pertaining to the lead jurisdiction, the hydrologic area(s), and priority pollutants which these activities targeted.

During this reporting period, the Tijuana River WMA Copermittees implemented a total of 21 watershed activities including 11 activities focused on water quality, 4 activities focused on education, and 6 activities focused on both education and water quality. These activities also include 3 new activities from the previous year. The Tijuana River WMA Copermittees also implemented a total of 62 Public Participation, Education, and Outreach Activities that reached an estimated audience of 1,425,000 people.

Lastly, the Tijuana River WMA Copermittees demonstrated effectiveness level outcomes of Levels 1 through 4 with the implementation of the watershed and education/outreach activities during FY2008-09. The Copermittees successfully collaborated on activities targeting the high priority pollutants in the watershed, and collaborated on a comprehensive approach to address two specific pollutants of concern, trash and bacteria. During the next fiscal year the Copermittees will continue collaborate and assess the effectiveness of targeted watershed activities, and further develop programs in order to maximize benefits to water quality.

5.2 Recommendations

During the last reporting period the San Diego Regional Copermittees, through the WURMP Workgroup, initiated dialogue with RWQCB staff to amend permit language where necessary to better achieve watershed program goals. The efforts to amend the WURMP language have been delayed due to the

response from Regional Board staff. The Tijuana River WMA Copermittees are still committed to improving the WURMP and will continue their involvement in this process for future reporting periods.

The Tijuana River WMA Copermittees will also continue their involvement with the Tijuana River Valley Recovery Team to incorporate goals and objectives of the Recovery Team into the evolution and development of the WURMP. The Recovery Team is a good mechanism for collaborative land use planning among the various agencies and stakeholders within the watershed and also provides the necessary forum to present and collaborate on the numerous restoration projects ongoing in the watershed. The Tijuana River Trash and Sediment Characterization study (TJ 018) is one such activity where coordination between the WURMP Copermittees and the Tijuana Recovery Team has resulted in a successful project development and implementation. The continued involvement with the Recovery Team will most likely lead to additional watershed activities being developed and implemented in the watershed.

SECTION 6.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region. 2007, Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District and the San Diego County Regional Airport Authority

County of San Diego, 2008, Tijuana River Watershed Urban Runoff Management Plan, March 2008.

Weston Solutions, Larry Walker Associates and Mikhail Ogawa Engineering, 2005, Baseline Long-Term Effectiveness Assessment (BLTEA), San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program, August 2005.

Weston Solutions, 2009, San Diego County Municipal Copermittees 2008-2009 Urban Runoff Monitoring Report, Prepared for County of San Diego, January 2010.

Brown and Caldwell, 2009, County of San Diego Southern Watersheds Water Monitoring Report, Prepared for the County of San Diego, March 2009.

ATTACHMENT 1

WATERSHED ACTIVITY SUMMARY SHEETS

TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID NUMBER: **TJ-001**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2008-09. During this reporting period the County of San Diego continued to maintain 12 dispenser stations at three parks in the Tijuana River Watershed. The parks and the number of dispensers include:

- Lake Morena Park (4 dispensers)
- Pine Valley Park (2 dispensers)
- Potrero Park (6 dispensers)

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Tijuana River Watershed. Parks have been identified as potential sources of these pollutants. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs

- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

Facility Name	# of Stations	# of Bags Used	Waste Reduction Lbs.
Lake Morena	4	10,760	2,152
Pine Valley	2	6,840	1,368
Potrero	6	18,500	3,700
Total	**12**	**36,100**	**7,220**

TITLE: **LAND ACQUISITIONS FOR TIJUANA RIVER WMA**
ID NUMBER: **TJ-002**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION FY2007-08

During the FY2007-08 reporting period there was 5.52 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2008-09

During the FY2008-09 reporting period there was 113.39 acres of land acquired in the Tijuana River WMA.

Property	Acres	Date	Watershed ID	APN(s)
Potrero-Clarke	19.60	8/20/2008	911.25	653-111-03
Gavin et al Mason Wildlife	80.61	10/31/2008	911.25	653-120-27
Gavin- Mason Wildlife	13.18	1/12/2009	911.25	653-120-28
TOTAL	**113.39**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **I Love a Clean San Diego Trash Cleanup Sponsorship**
ID NUMBER: **TJ-003**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 25, 2009. The City of San Diego (City) sponsored the San Ysidro - Beyer Blvd. site in the Tijuana River Watershed Management Area (WMA). Approximately 105 volunteers removed and recycled 20,320 lbs of trash and debris.

Based on the information above, the effectiveness assessment section, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of the sponsored cleanup? ($/person or $/lb collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
	Total pounds of trash removed and recycled (Outcome Level 4)	20,320 pounds
	Number of participants (Outcome Level 1)	105
	Total money spent on cleanups for all six watersheds (Outcome Level 1)	$30,000
	Estimated amount of money spent on cleanups for Tijuana River watershed (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/Total Pounds Removed)	$0.25/pound

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On April 25, 2009, 105 participants removed and recycled approximately 20,320 pounds of trash and debris from numerous sites in the Tijuana River WMA. The average estimated sponsorship cost for the City of San Diego was $5,000 per watershed ($30,000/6 watersheds with City sponsorship). Thus, there was a 20,320 pound load reduction associated with sponsorship per yearly event, with an efficiency of $0.25 per pound collected. The efficiency was calculated by dividing the estimated sponsorship cost for the Tijuana River WMA by the pounds of trash removed.

Conclusions

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

TITLE: **Coastal Cleanup Day Sponsorship**
ID NUMBER: **TJ-004**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on December 6, 2008. The City of San Diego (City) sponsored the Otay Mesa Open Space site in the Tijuana River Watershed Management Area (WMA). Approximately 46 volunteers removed 1,860 pounds of trash and debris. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

Based on the information above, the effectiveness assessment below, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills credit as a watershed water quality activity for FY 2009.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups, and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDKC's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded		
	Pounds of trash removed (Outcome Level 4)	1,860 pounds
	Number of participants (Outcome Level 1)	46
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$12,000
	Amount of money spent on cleanups for the Los Peñasquitos watershed (Outcome Level 1)	$2,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	$1.08/pound

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

The event's debris removal was tracked using data cards provided by the Ocean Conservancy, a 1,860 pound load reduction was recorded. There was a total of $12,000 estimated for the sponsorship cost for all six WMAs in the City's jurisdiction and 46 participants for this WMA. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the sponsorship cost for the Tijuana River WMA by the pounds of trash removed, was $1.08 per pound.

Conclusions

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2010. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2009.

TITLE: **Tijuana River Targeted Facility Inspections**
ID NUMBER: **TJ-007**

ACTIVITY IMPLEMENTATION

This activity has been modified during the past two reporting periods. Initially the project was a focused inspection activity that included activities in several watersheds to increase the statistical significance of the data collected from such a collective effort. The focus was to be on restaurants, animal, landscaping and automotive facilities. However, in the past two reporting periods, the City determined that it would be more beneficial to specifically target automotive facilities in the Tijuana Watershed. As a result, the previous ID number TJ-006 will be retired and no longer used to identify this activity – it will be identified as TJ-007.

This activity is part of a larger study in the Mission Bay, San Diego Bay and Tijuana River watershed management areas. The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
2) Does type of business ownership change the required inspection frequencies?
3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

The focus of the activity during FY 2009 was to develop the activity and implement the first round of inspections that would establish the baseline data set for comparison after the second and third round of inspections are completed.

The initial findings included problems primarily in outdoor storage and activity areas without proper BMP implementation or good-housekeeping practices. The findings for the FY 2009 activity implementation do not completely answer the management questions, however, by the end of the program, it is anticipated that these questions will be answered.

In FY 2009 a total of 22 full inspections were completed at auto shops in the Tijuana River WMA.

Facilities

During FY 2009, the City conducted the first round of its automotive facility inspections from February through May 2009. 278 inspections were conducted as follows:

- Mission Bay Watershed – 65 inspections
- Chollas Watershed – 191 inspections
- Tijuana Watershed – 22 inspections

Approximately 50% of these businesses (139) are scheduled to receive a second inspection in FY 2010, starting in August 2009. In addition, all 278 businesses will be re-inspected again starting in February 2010 to be able to compare the results of the inspections for a complete annual cycle.

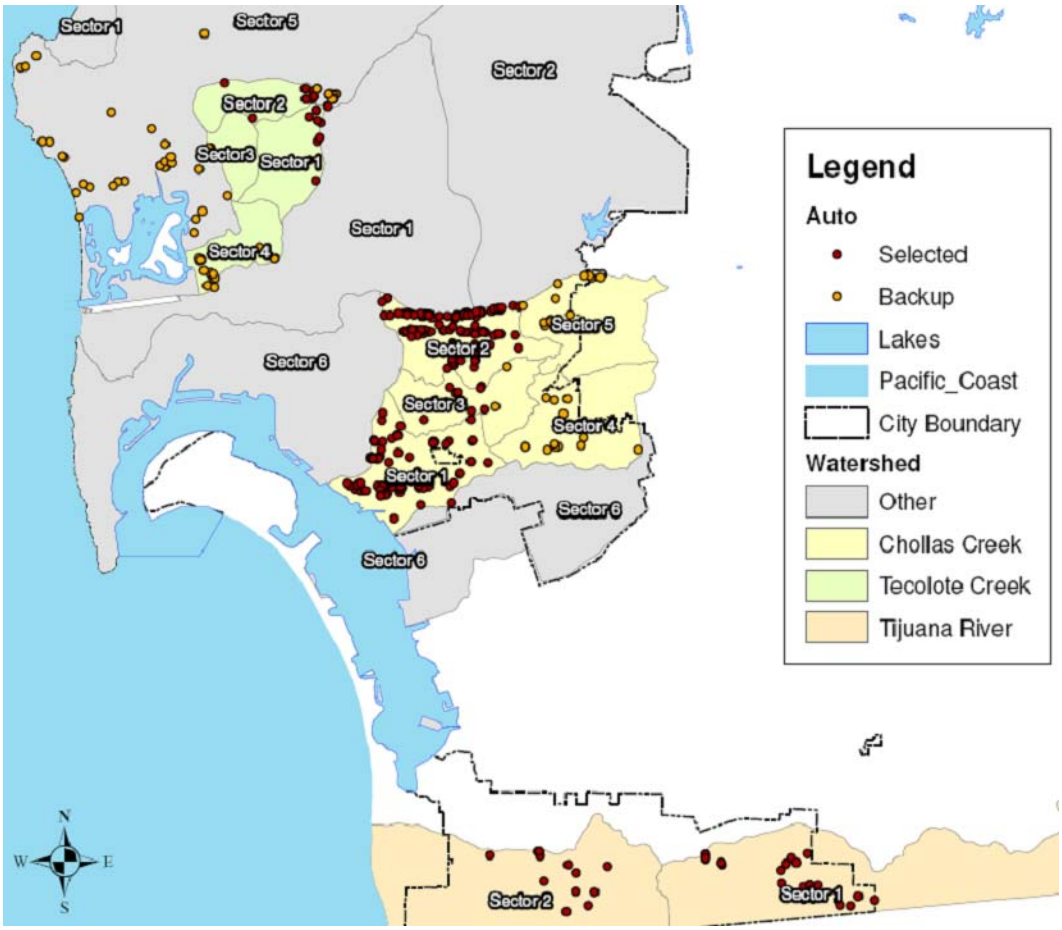

Figure 1 – Mapping of the facilities inspected (all three watershed areas)

During FY 2009, many of the alternative locations were utilized to obtain the 278 inspections due to the lack of primary and secondary sites to be inspected. Many of the businesses were no longer in business or had relocated and were not "inspectable".

Public Outreach

The City sent out a letter to business owners informing them of the inspections. The notice provided basic information about the City's inspection program and informed the recipient that they may be subject to multiple inspections.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The City will conduct its second and third rounds of inspections in August 2009 and February 2010 respectively. Data analysis and activity assessment will occur between April and June 2010 for reporting in the FY 2010 Annual Report.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Tijuana River WMA inspections target sources of heavy metals.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies metals as high priority water quality problems in the Tijuana River WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria and metals.

EFFECTIVENESS ASSESSMENT

Baseline Data

Baseline data collected during FY 2009 will be the basis of comparison for changes in findings when compared to mid-year inspections and annual inspections. Pollutant Discharge Potential Assessment (PDPA), BMP Knowledge and findings of violations will be compared to inspections conducted in FY 2010.

Data Collection Methods – Inspections

The City completed the inspections utilizing existing inspection forms with supplemental questions to capture the information necessary to answer the three management questions.

As with all inspections conducted by the City, during these watershed inspections, if violations were identified, they were noted for follow-up as appropriate. Follow-up inspections will occur as appropriate based on the identified violations. If discharges were identified, the City's inspector immediately reported these incidents to the City's code enforcement group. This enabled the City to take immediate actions to abate sources and have a direct positive impact on load reductions.

Findings

The following represents the primary findings of the activity. Of the 278 inspections conducted:

- One (1) had an illicit discharge identified during the inspections
- 60 had identifiable violations of the City's municipal code/minimum BMPs
- 25 had made at least one correction to violations during the inspections
- 89% (247 sites) implemented BMPs for liquids storage
- 23% (64 sites) performed at least some maintenance outdoors
- 57% (159 sites) have outdoor storage of materials – 29% (46 sites) did not implement any BMPs.

In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues would be resolved if the facilities had structural changes to cover the outdoor operations and activities.

Additionally, the baseline data for the purposes of comparison of the varying inspection frequencies are identified in the table below. These assessment results will be compared to the 6-month inspection results as well as the final annual inspection results to compare and contrast the results based on the frequencies of inspections.

Table 1 – Stormwater Knowledge & BMP Assessments

Inspection Category	Inspections	Average Knowledge*	Average BMP*
FY 2009 WURMP Automotive Inspections	278	1.2	2.8
Automotive inspections – non WURMP	576	2.0	2.8
All Inspections (historic JURMP)	5,082	2.3	3.0

* Scale is from 1 (lowest) to 5 (highest)

Table 2–Effectiveness Assessment for Activity

Watershed: Tijuana River		
TARGETED FACILITY INSPECTIONS **Assess Efficiency and Effectiveness of Facility Inspections**		
Management Questions	• What is the optimal frequency of inspections for Automotive Repair Facilities? • Does type of business ownership change the required inspection frequencies? • Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?	
Targeted Measurable Outcomes	• Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Methods	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from data)	
Data Recorded	Number of full inspections (Outcome Level 1)	22
	Number of facilities recommended for follow-up (Outcome Level 1)	7
	Number of Sites Needing Corrective Action (Outcome Level 1)	22
	Number of Sites that Implemented Some Corrective Action During Inspection (Outcome Level 3)	2
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level 4)	2
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 1)	N/A

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 22 sites. Additionally, the City noted 7 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at 2 locations, corrective actions were immediately taken. This demonstrates both a Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcome was achieved as a direct result of this activity.

The City plans to implement the program in FY2010 to more obtain more data necessary to answer the management questions associated with the program activity.

TITLE: **Municipal Rain Barrel Installation and Downspout Disconnect Project**
ID NUMBER: **TJ-009**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Tijuana River Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities.

Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Tijuana River WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the Tijuana River WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the San Ysidro Library was selected because it is located in one of the highest priority sectors of the Tijuana River WMA for potential pollutant loading. The recreation center is also a publically accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed two rain barrel systems at the library. One 55-gallon rain barrel was installed and connected to an existing downspout directly adjacent to the main entrance of the library. This system utilizes a gravity release mechanism to deliver captured runoff to nearby landscaping. In addition, one 75-gallon

rain box was installed and connected to an existing downspout along the back side of the building. This system will also use a gravity release mechanism to deliver captured water to nearby landscaping.

Rain Barrel at front entrance

Rain Box

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer will be distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer will be posted on the City's *Think Blue* website during the first quarter of FY 2010.

This phase of the pilot project focuses on implementing and assessing the effectiveness of rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the pilot project will be applied to implementation in residential areas.

Based on these findings, the City may modify its municipal rain barrel installation and downspout disconnect project to increase effectiveness and/or seek City Council approval for additional funding to implement future phases (i.e., incentives) and additional rain barrel/downspout disconnect systems.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A

pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring will be preformed from October 2009 to April 2010. Assessment and final reporting for this program will conclude by June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will address both high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

MUNICIPAL RAIN BARREL INSTALLATION PROGRAM **Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff**		
Management Questions	• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?	
Targeted Measurable Outcome(s)	• Load reduction due to rain barrel installation • Runoff reduction due to rain barrel installation	
Data Recorded	Cost of site preparation, installation and start-up for the site	TBD
	Cost of operation and maintenance evaluation for all sites	TBD
	Cost of effectiveness monitoring for all sites	TBD
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Percent capture of the different systems (acres drained) (Outcome Level 4)	

Objectives

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results

The pilot project was not in active implementation during FY 2009. Further analysis will take place after wet-weather monitoring data is collected, which is scheduled for completion by April 2010.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) versus the cost of installing and maintaining the rain barrel system. Conclusions will be made after the effectiveness assessment is completed in June 2010. Any recommendations resulting from this pilot project will be reported in the FY 2010 WURMP Annual Report.

TITLE: City-Wide Clean-Up Events
ID NUMBER: TJ-010

ACTIVITY IMPLEMENTATION

Imperial Beach participates in a number of city-wide sponsored clean-up events including ILACSD Creek-to-Bay clean up, local community group sponsored events, and the annual Home Front Clean-Up event. The largest event in terms of participation is the annual Home Front Clean-Up, which the City has been implementing since the 2001-01 municipal permit. These annual City-wide activities serve both as an encouragement and a means for residents to eliminate waste that could otherwise contribute the release of contaminates into the storm water conveyance system.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

City-wide clean up events will continue to be held throughout the duration of Municipal Permit R9-2007-0001. The City intends to sponsor ILACSD for the annual Creek-to-Bay clean up and continue the highly successful City-wide Home Front Clean Up event for the complete cycle of the current permit. The activity will be assessed and refined as necessary during years 3 and 4.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana WMA. The accumulation of waste by residents such as trash, green waste, and large bulky items are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of implementing City-wide clean-up activities include compliance with permit requirements, changes in attitudes, knowledge, and awareness of the community, and lead to reductions in urban runoff and discharge quality by removing wastes that may have otherwise ended up in the storm drain system. City-wide clean-up events serve both as education and water quality activities. Reducing the amount of trash in the storm drain system also has the co-benefit of reducing bacteria which is identified as a water quality problem in the Tijuana WMA.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, and Level 4 compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2008-09 Imperial Beach sponsored I Love a Clean San Diego for its 7th Annual Creek-to-Bay clean up event on April 25th, 2009. The City also held its annual Home Front clean up event on May 2nd, 2009. The Home Front clean up event had 732 participants and resulted in the proper disposal of 154.3 tons of waste including 19.8 tons of metals and 9.5 tons of green waste that were recycled.

TITLE: Large Special Event Inspection and Clean-Up
ID NUMBER: TJ-011

ACTIVITY IMPLEMENTATION

The City hosts the annual U.S Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food venders, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street venders for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation of the activity has begun under the previous storm water permit 2001-01 and since been reviewed and enhanced for the new R9-2007-0001 permit. The City endeavors to increase recycling and urban runoff education targeted at both street venders and general public at large special events. During the previous two years the activity was in active implementation phase. Starting during year 3 the activity will be assessed and refined as necessary to maximize the effectiveness.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana WMA. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors during large special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of enhancing large special event clean up and inspections include compliance with permit requirements, changes in attitudes, knowledge, and awareness of mobile businesses and local community, and reductions in urban runoff and discharge quality by enhancing recycling efforts and implementing storm water BMPs. This activity serves as both an education

and water quality activity. Enhancing recycling efforts, increasing education on urban runoff, and verifying the implementation of BMPs through inspections may lead to lower levels of bacteria and trash reaching the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, and Level 4 compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2008-09 Imperial Beach required the proper disposal of recycled waste at all large special events and the implementation of storm water BMPs when appropriate. During the year the City held 12 large special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition, which during the weekend of July 12th-13th drew an estimated crowd of over 800,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event, which resulted in 3 Notices of Violations. The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event. The recycling efforts resulted in a total of 1280 pounds of mixed recyclables and 960 pounds of cardboard being recycled.

As a result of the effectiveness assessment of this activity, the City recognizes a deficiency in education opportunities for the general public. Future efforts will continue implementing the existing large special event clean up and inspection activities while continuing to enhance the opportunities for education, especially for the general public. Program effectiveness for targeting water quality is expected to continually improve as special event applicants and vendors become familiar with City storm water and recycling programs.

TITLE: Smuggler's Gulch Sediment and Debris Removal
ID NUMBER: TJ-012

ACTIVITY DESCRIPTION

The County performs routine flood control maintenance activities on improved and unimproved channels pursuant to its Regional General Permit (RGP) 53. This activity is traditionally performed every two to four years depending on annual rainfall. The extent of the project includes the channel from the Mexican border, north approximately 5,400 feet to the confluence of the Tijuana River. Historically as much as 80,000 cubic yards of sediment can be removed from the channel. Trash is separated on site and recycled accordingly.

The sediment removal project is necessary to return the drainage facility to historic conditions and to convey flow properly, which will eliminate the potential for sediment and debris to build up causing future flooding events.

ACTIVITY IMPLEMENTATION 2007-08

There were no sediment and debris removal during the FY2007-08.

ACTIVITY IMPLEMENTATION 2008-09

There were no sediment and debris removal during the FY2008-09.

TMDL APPLICABILITY

N/A.

TIME SCHEDULE FOR IMPLEMENTATION

Typically removal takes place every other year but is based on precipitation patterns and erosion from the south. Dredging is planned for FY2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- California Department of Fish and Game
- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment and trash have been identified as high priority water quality problems in the Tijuana River WMA. This activity results in a direct load reduction of these pollutants, and is therefore consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

This activity is considered a load reduction that can be measured. On an annual basis or as implementation occurs during the permitting period, the cubic yards of removal will be reported in the Tijuana River WMA WURMP Annual Report.

TITLE: TIJUANA RIVER WATERSHED BACTERIAL SOURCE IDENTIFICATION STUDY
ID NUMBER: TJ-013

ACTIVITY IMPLEMENTATION

The City of Imperial Beach initiated a Bacteria Source Identification study in November 2007 to identify and quantify sources of bacterial contamination in the U.S. portion of the Tijuana River Watershed. Unfortunately, the City was notified December 15, 2008 that the funding was on hold due to the state budget crisis. In June 2009 the project still had not received assurance from the state on the restoration of the CBI grant funds and the project was permanently put on hold until additional funding could be secured.

Once funding for the project is made available, work can be resumed and build upon the existing accomplishments of the Bacterial Source Identification Study to date. During this reporting period the Bacterial Source Identification Study accomplished the following tasks:

- Established a stakeholder group and held two meetings
- Completed a literature review and Quality Assurance Project and Monitoring Plans for the project
- Conducted field reconnaissance throughout the watershed and identified appropriate sampling locations
- Collected water quality samples for one sanitary survey and captured one wet weather storm event
- Collected preliminary flow measurement for the hydrologic component of the study

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically applicable as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The project is currently on hold until funding from the CBI Grant is made available or additional funding from another source can be secured. If and when funding for the project is restored, the City may rescind the stop work notice for the project and resume work on the Bacterial Identification Study. At which time the scope and terms of the initial agreement will need to be revisited to account for the work completed to date, the effects from schedule modifications, and start up costs to get the study running again.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of San Diego
- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- State Water Resources Control Board
- Clean Beaches Initiative Task Force
- Regional Water Quality Control Board, San Diego
- U.S. Fish and Wildlife Service
- International Boundary and Water Commission (IBWC)

- California Department of Fish and Game
- Private land owners
- Conservation groups
- NGOs
- National Oceanic and Atmospheric Administration (NOAA)
- Tijuana River National Estuarine Research Reserve (TJNERR)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana River Watershed. Trash, parks, and pet waste are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

There are limited data regarding bacterial loads from sources and activities on the U.S. side of the Tijuana River Watershed (TRW). In addition, detailed information regarding the impact of certain land uses, and the input of pollutants from point and nonpoint sources have not been assessed for the U.S. portion of the TRW. This study aims to quantify bacterial loads from potential sources and propose solutions to reduce the impact of bacterial loads in the TRW and Pacific Ocean. The implementation of successful best management practices will result in a reduction in beach postings and closures.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1 compliance with activity based permit requirements. Information gained from this study will help in developing other programs that will further address changes in knowledge and behavior, load reductions, and improvements to water quality. Funding for the project was cut short before any analysis or conclusions could be drawn on the data collected from the first sanitary survey and wet weather storm event. Further effectiveness assessment is contingent upon funding for the project.

TITLE: **LID and Watershed Planning Education for Community Planning and Sponsor Groups**
ID NUMBER: **TJ-014**

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

During training, members of the planning or sponsor groups are provided with copies of the LID Handbook, including Management Strategies, the Appendices, and the Literary Guide. Advisory groups and audience members who wish to participate are given a pre- and post-survey to assess their general knowledge of watershed planning and LID both before and after the presentation. The training sessions average fifty minutes depending upon the amount and type of questions that are asked during the presentation.

Local planning and sponsor groups that received training within the Tijuana River Watershed during the FY 2008-2009 timeframe include those listed below. One tribe, the Manzanita band of Kumeyaay Nation, also participated at their request. However, because they are not subject to the permit and LID requirements, no pre- and post- survey was given.

- Lake Morena / Campo (11/24/2008)
- Potrero (10/9/2008)
- Boulevard (2/5/2009)
- Descanso (9/18/08)
- Cuyamaca (12/9/08)
- Pine Valley (10/14/2008)
- Alpine (1/22/2009)
- Jamul / Dulzura (3/24/2009)
- Manzanita Tribe (6/11/09)

ACTIVITY IMPLEMENTATION FY 07-08

This education program was successfully developed during the spring of FY 2007-2008, on schedule. The program consists of a PowerPoint presentation with a specific focus on the watershed(s) within which the community lies. Although County staff began conducting presentations to planning and sponsor groups in other watersheds during FY 2007-08, none were conducted in the Tijuana River Watershed.

ACTIVITY IMPLEMENTATION FY 08-09

As documented in the table below, presentations were delivered to eight planning and sponsor groups in the Tijuana River Watershed, which included 143 attendees. A total of 78 pre- and post- surveys were completed by these groups.

TITLE: **LID and Watershed Planning Education for Community Planning and Sponsor Groups**
ID NUMBER: **TJ-014**

Community Group	Presentation Date	No. Of Attendees	Surveys Completed
Alpine	1/22/09	27	15
Boulevard	2/5/09	15	8
Cuyamaca	12/9/08	7	5
Descanso	9/18/08	10	10
Jamul/Dulzura	3/24/09	9	8
Lake Morena / Campo	11/24/08	35	8
Manzanita Tribe	6/11/09	12	0
Pine Valley	10/14/08	15	13
Potrero	10/9/08	13	11
Total		**143**	**78**

TMDL APPLICABILITY
This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION
This activity was completed during FY 2008-09. There is currently no further activity planned for future years.

PARTICIPATING WATERSHED COPERMITTEES
- County of San Diego

OTHER PARTICIPATING ENTITIES
- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED
- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY
New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS
Activity effectiveness was assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcomes). Furthermore, attendees were asked to complete pre- and post- survey forms, which consisted of five multiple choice questions and one open answer section which asks the participant to provide information on drainage within the community planning area. Survey results were calculated to measures changes in attendee knowledge regarding watershed planning and LID principles (Level 2 Outcome).

The table below summarizes results from the 8 surveys administered to groups in the Tijuana River Watershed. Improvements on the post- survey ranged from a 2.67% increase to a 32.5% increase. This represents a demonstrable increase in knowledge among the target audience.

TITLE: **LID and Watershed Planning Education for Community Planning and Sponsor Groups**

ID NUMBER: **TJ-014**

Community Group	Date	Total Attendees	# of Surveys Given	Pre-survey % correct	Post-survey % correct	% Increase
Alpine	1/22/09	27	15	65.33%	68%	2.67%
Boulevard	2/5/09	15	8	60%	77.5%	17.5%
Cuyamaca	12/9/08	7	5	76%	88%	12%
Descanso	9/18/08	10	10	82%	88%	6%
Jamul/Dulzura	3/24/09	9	8	75%	92.5%	17.5%
Lake Morena / Campo	11/24/08	35	8	52.5%	85%	32.5%
Manzanita Tribe	6/11/09	12	0	N/A	N/A	*No Survey*
Pine Valley	10/14/08	15	13	53.85%	83.08%	29.23%
Potrero	10/9/08	13	11	69.09%	80%	10.91%

TITLE: **Public Service Announcement: Karma, Karma Second Chance, Karma Tourist**

ID NUMBER: **TJ-015**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three *Think Blue* Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma*, *Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Tijuana River Watershed Management Area (WMA) during FY 2009 from August 2008 to April 2009. The City will work with various broadcast media outlets to distribute and air the PSAs during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as high priority water quality problems in the Tijuana River WMA. The *Karma*, *Karma Second Chance*, and *Karma Tourist* PSAs will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River		
PUBLIC SERVICE ANNOUNCEMENT: KARMA, KARMA SECOND CHANCE, KARMA TOURIST **Assess the Efficiency and Effectiveness of Public Service Announcements**		
Management Questions	• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?	
Targeted Measurable Outcome(s)	• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results • Increased level of knowledge/attitude based on post-activity surveys	
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge and attitude of participants) • Quantification (e.g., number of residents reached by PSA)	
Data Recorded	Number of impressions made in homes through television in Tijuana River WMA (Outcome Level 1)	446,835
	Number of impressions made to the public through radio announcements in Tijuana River WMA (Outcome Level 1)	613,459
	Change in knowledge or attitude from survey results (Outcome Level 2)	44%
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes**

**29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors. There was also a continued decrease in the percentage of residents who reported hosing down their driveways, as well as using pesticides and weed killers. Other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

Objectives

The goal of this assessment is to determine the effectiveness of the *Karma, Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about the causes of bacteria and trash loading, and to encourage positive behavioral change.

Analysis and Results

The city conducted an effectiveness assessment of *Think Blue* PSAs and storm water messages via field experiment in which 309 individuals were shown eight different *Think Blue* PSAs (including the *Karma, Karma Second Chance* PSAs). Participants were then asked questions to determine storm water knowledge, awareness and possible changes to future behavior as a result of the PSA. The results of the field experiment demonstrate the messages in the PSAs are effective in increasing public knowledge that storm water is not treated. 25% of participants were more likely to answer that storm water is not treated than those who had answered the question prior to watching the PSA. Additionally, awareness that storm water pollution is an important issue in San Diego also increased after watching the PSA. Lastly, the *Karma Second Chance* PSA scored the highest of the PSAs in motivating participants to take specific actions to prevent storm water pollution.

The city also obtained assessment information from its annual random-digit dial 2009 *San Diego Storm Water Survey* of 800 total residents from all WMAs. 55% of residents said they saw a *Think Blue* PSA last year (up from 52%) on television while 8% of residents heard the radio announcements in FY 2009. 51% said they prefer to get information about storm water via

television. This year's survey also noted that while 44% of residents know that storm water was not treated, significant increases in awareness were detected among women (particularly over the age of 50), residents under the age of 35 and over 64, those with no college education, Asians and Hispanics. Additionally, 29% of residents reported making a change in their behavior as a result of seeing information about what polluted water in storm drains does to local rivers, beaches and the ocean. Of those residents that had heard of "Think Blue" 40% reported that they were taking steps to change behaviors as well.

Respondents to the survey were selected randomly in order to fairly and accurately represent the city as a whole. To estimate the number of impressions in the Tijuana River WMA, the total number of estimated city-wide impressions, (11,170,888 for television and 15,336,488 for radio ads) was multiplied by the proportion of residents living in the Tijuana River WMA (4%) of the city's total population.

Conclusions

Based on assessment from both the survey and the field experiment as well as feedback from the public, *Think Blue* PSAs appear to have an impact on the public as it pertains to knowledge and awareness of storm water issues. While some residents have stated they have made changes to their behaviors due in part to the PSAs, the city will continue to monitor public perception and feedback to determine if this is actually occurring. The city will continue to work with appropriate broadcast media outlets to air *Think Blue* television and radio PSAs in FY 2010.

Additionally, the city continued to measure public awareness of the *Think Blue* program via surveys comprised of a random digit dial sample of the residents living in the Tijuana River WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

Furthermore, while the *2009 San Diego Storm Water Survey* indicated that 39% had heard the phrase "Think Blue" during FY 2009, awareness that storm water is not treated increased. These results, coupled with a continued decrease in the percentage of residents hosing down their driveways, and in residents using pesticide or weed killers, demonstrate that the public's knowledge of storm water issues is moving in a positive direction.

It is worth noting that the City's PSAs continue to reach new individuals in the Tijuana River WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

TITLE: **Mobile Advertising**
ID NUMBER: **TJ-016**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a mobile advertising firm, AdTruks, to advertise Think Blue messages on static billboard trucks in the Tijuana River Watershed Management Area (WMA) in FY08. The City created advertisements that targeted behaviors associated with bacteria and trash. The goal of mobile advertising was to educate the public about the impacts litter and pollution have on local waterways and beaches and to encourage positive behavioral change.

Based on results from the 2009 Storm Water Survey in which 17% of participants stated they received Think Blue messages via mobile advertising, it was determined that the program was not as effective in generating sufficient knowledge and awareness of the program or storm water issues. Additionally, the Department received a number of public comments objecting to the use of mobile advertising to convey an anti-pollution message. Therefore, the city did not conduct mobile advertising in the Tijuana River WMA in FY09, and has discontinued this activity.

TITLE: **Invasive Species Removal Project in the Tijuana River Park**
ID NUMBER: **TJ-017**

ACTIVITY DESCRIPTION

The SANDAG Transnet Environmental Mitigation Program (EMP) funded a grant to the Southwest Wetlands Interpretive Association (SWIA) to continue the Tijuana River Valley Invasive Plant Control Program (Phase IV) begun in 2002 in the extreme southwest part of San Diego County within a few miles from the mouth of the river. The program includes work in the County of San Diego's Tijuana River Valley Regional Park (TRVRP), California State Parks' Border Field State Park, and the U.S. Fish and Wildlife Services' Tijuana Estuary. Three invasive plant species are targeted within the Tijuana River Valley: giant reed (Arundo donax), castor bean (Ricinus communis) and salt cedar (Tamarix ramosissima). These species degrade the habitats they invade by displacing native vegetation, lowering insect food supply for birds, reducing groundwater, and increasing flood and fire hazards. The invasive removal program includes replanting with native species, a project that, coupled with natives returning naturally, will serve to filter pollutants and decrease sedimentation in the long term. The County cooperated with the SWIA in seeking grants, by writing letters of support and serving on a technical advisory group (TAG) for the program. In the implementation of the program, the County continues to serve on the TAG and provides SWIA with right-of-entry permits to County property. SWIA is committed to seeking grants for the on-going funding of this project and the County plans to continue its long-term cooperation with the association.

ACTIVITY IMPLEMENTATION FY2007-08

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

- Treated arundo and castor bean on 100 acres;
- Performed follow-up treatment of arundo and castor bean on old 511 acres;
- Treat tamarisk on 61 acres around Dairy Mart ponds;
- Maintained and planted native cuttings.
- Attended TAG meeting and provided right of entry letters to SWIA.

ACTIVITY IMPLEMENTATION FY2008-09

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional:

- The County participated in the annual TAG meeting, held July 20, 2008. The continued success of the program and the information disseminated through the TAG meetings has resulted in the signing of a "Declaration of Intent" by all public landowners in the Tijuana River Valley that acknowledges the problem of invasives and their commitment to support continuing efforts to control these species.

TMDL APPLICABILITY

N/A.

TIME SCHEDULE FOR IMPLEMENTATION

Phase IV, scheduled for Fall 2009 through Spring 2010, will enhance and restore prime riparian and mule fat habitats within 75.5 acres of the County of San Diego Tijuana River Valley

Regional Park. The goals are to improve these valuable sites for visitors, control the spread of invasive plants and restore native habitats. Additional funding provided by USFWS will provide treatment and revegetation to 31 acres within the U.S. Fish and Wildlife Services Tijuana Estuary. Treatment and planting is scheduled to start in October 2009.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Southwest Wetlands Interpretive Association,
- U.S. Fish & Wildlife Service,
- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Pesticides
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment, pesticides, and bacteria are high priority water quality problems in the Tijuana River WMA. Therefore, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1). Each invasive plant area will be monitored to determine which control methods would be most effective in the TJRV. Although no water quality monitoring is proposed for this project, water quality improvements may be able to be assessed qualitatively based on results from similar projects.

TITLE: **Tijuana River and Estuary Trash and Sediment Characterization Study**
ID NUMBER: **TJ-018**

ACTIVITY DESCRIPTION

Trash and sediment deposition in the Tijuana River and Estuary continue to threaten public health, safety, and the environment throughout the Tijuana River Valley. Public contact with trash, waste tires, and other solid wastes, including contaminated soil and sediments, is potentially injurious to human health. Moreover, excessive sedimentation has in recent years contributed to the loss and impairment of valuable estuarine habitat. Past efforts have removed some of the trash and sediment; however, they have been insufficient to address the entire area. The extent of trash and sediment deposition has not been adequately characterized to date and comprehensive alternatives to solve the problem remain elusive.

The objective of this project is to characterize trash and sediment in the Tijuana River and Estuary and to identify comprehensive remediation alternatives for removing existing trash and sediment deposition. The County and City of San Diego are partnering with the San Diego Regional Water Quality Control Board, the California Integrated Waste Management Board (CIWMB), and other stakeholders to complete this study.

As a first step, a consultant was retained to characterize trash and sediment in the Tijuana River and Estuary and to prepare a workplan to identify remediation alternatives for removing existing trash and sediment deposition. The following tasks and deliverables are scheduled to be completed no later than June 15, 2009 at a cost not to exceed $100,000.

Task 1: Inventory of Existing Information and Field Reconnaissance

- Research and review plans and pertinent studies.
- Research topographic maps to determine boundaries of the River and Estuary
- Conduct field investigation and take digital photos of the existing trash and sediment depositions.
- Determine the extent of the existing trash, waste tires, and sediment deposition in the river, estuary, and tributaries.
- Geo-reference location of trash, waste tires, and sediment depositions
- Quantify the depth, width, and length of the trash, waste tires, and sediment deposition.

Task 2: Digitize/Compile Existing Information

- Prepare orthophoto base maps with the existing trash, waste tires, and sediment information.
- Import from the County of San Diego GIS database information such as land use classifications, soil groups, and transfer into project database.

Task 3: Characterization

- Determine the types and quantities of trash in the deposition. Develop a matrix showing the general types of trash and the disposal methods.
- Determine the amount of sediment in the deposition.
- Determine the amount of recyclable materials that can be recovered from the deposition.
- Determine the amount of waste tires in the deposition.
- Determine the viability of recycling sand.
- Plot percentage of trash versus sedimentation on the base map.

Task 4: Analyze Alternatives

- Develop alternatives for removing existing trash, waste tires, and sediment deposition. Consider alternatives that do not require cross-border solutions.
- Consider the following in developing the alternatives:
    - Cost to haul to landfill
    - Temporary or Permanent Transfer Station
    - Segregating recyclables
    - Segregating sand
    - Waste tire recycling and disposal
- Include cost to restore river, tributary, and estuary to natural condition.
- Develop cost estimate for various alternatives.
- Determine the viability of each alternative. Consider unit costs as a factor.

Task 5: Report Submittals

- Submit quarterly progress reports and meet with CIWMB/County/City Staff for review and comments.
- Submit Draft and Final Reports with all text, graphs, and GIS maps in both hard copy and electronic formats.

ACTIVITY IMPLEMENTATION FY08-09

The following activities were implemented in FY08-09:

- Compilation of existing historical aerial photographs for the valley for specific years;
- Review of historical aerial photographs to identify the active channels on the floodplain;
- Completion of a trash survey in the areas east of the plug near Hollister Street, east to the International Border along the main river channel, and along Smuggler's Gulch;
- Preparation of a database with georeferenced information collected during the trash survey;
- Permitting associated with test pits and borings to be completed in the same areas as indicated above;

TMDL APPLICABILITY

There are no TMDLs currently adopted for the Tijuana River or Estuary; however, US EPA has indicated to watershed stakeholders that it is in the initial phases of data gathering for the development of trash and sediment TMDLs.

TIME SCHEDULE FOR IMPLEMENTATION

The test pits and borings described above could not be completed in FY08-09 due to restrictions related to the breeding season of threatened and endangered bird species. These activities could not be conducted until the breeding season ended on September 15, 2009. Activities to be completed in FY09-10 include the following:

- Completion of permitting to excavate test pits and drill borings in the valley;

- Conduct sediment sampling to analyze chemicals of potential concern and evaluate grain-size distribution;
- Conduct trash survey in Goat Canyon and areas west of the plug on the main channel to the beach;
- Additional sediment and trash characterization as needed
- Develop cleanup alternatives for addressing trash, waste tires and anthropogenic sediment

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego (project/consultant management)
- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Regional Water Quality Control Board
- California Integrated Waste Management Board (Funding Source)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The trash and sediment characterization study is consistent with the collective watershed strategy in that it will provide information regarding the location and extent of trash and sediment within the Tijuana River Valley. This will lead to the identification of effective water quality activities to reduce the amount of trash and sediment within the valley.

EXPECTED BENEFITS

This activity is an important step toward the ultimate goal of improving public and environmental health in the Tijuana River Valley. The direct benefits of this activity will be a better understanding of the types, quantities, and locations of trash and sediment in the River Valley. It will also identify and evaluate various alternatives for removing existing waste, preventing future waste transport, and restoring the watershed to a more natural condition.

EFFECTIVENESS ASSESSMENT

Characterization of the location and extent of trash and sediment will provide the basis for load reduction activities. Future activities will be evaluated through the amount of trash and sediment removed from the system.

TITLE: **City of San Diego Strategic Plan Implementation**
ID NUMBER: **TJ-019**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table 1 – Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Irrigation Hardware Giveaway and Cash for Plants Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, Implementation and assessment is anticipated to be completed in FY2013. WMA: TBD.
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash	Pre-planning
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals	Sponsorship of the Brake Pad Partnership is in progress.
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment	Cancelled
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants	Feasibility study in progress.
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive	Downspout Disconnect; Rain Barrel	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Program (2)	Incentives				
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs	Pre-planning
Green Mall Filtration	Green Mall	Water	Structural	TSS, Metals,	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
		Quality		Bacteria, Pesticides & PAHs	
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
					education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management

decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: **Pet Waste Bag Dispenser Program**
ID NUMBER: **TJ-020**

ACTIVITY IMPLEMENTATION

This activity will target areas frequented by pet owners such as municipal parks and/or street and sidewalk right of ways in the Tijuana River Watershed Management Area (WMA). When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones.

This project was in its design and planning stage during FY 2009. Coordination meetings were held between the City of San Diego Education outreach staff and project consultant outlining the strategy associated with educating pet owners about the importance of cleaning up after their pets. Watershed maps were developed and utilized to assist in the selection of potential installation. Criteria used were:

a) High Density Residential areas
b) Routes connecting residential areas to a destination (park, trail, waterbody, commercial area
c) Established Trail locations
d) Destination (Park, Open Space area)
e) Areas draining to a water body impaired for bacteria, phosphorus or nitrogen
f) Potential for Partnership
g) Areas of Complaints/Chronic Pet Waste Observations

Three watershed management areas (WMAs) were selected for implementation in FY 2010: Los Peñasquitos, San Dieguito River and Tijuana River.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2009. Program implementation is anticipated to occur in FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement

activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River	
PET WASTE BAG DISPENSER PROGRAM **Assess the Effectiveness of Pet Waste Bag Dispensers**	
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	• Change (%) in load reduction pre and post implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives
The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results
The pilot project was not in active implementation during FY 2009. Program launch is anticipated to occur in FY 2010.

Conclusions
Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

TITLE: **San Ysidro Centennial Celebration**
ID NUMBER: **TJ-021**

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in the Tijuana River Watershed Management Area (WMA) in FY 2009, the City of San Diego's *Think Blue* program participated in the San Ysidro Centennial Celebration, a community festival commemorating the 100th birthday of San Ysidro. The celebration was held at the San Ysidro Athletic Center in Larsen Field on May 16, 2009.

The celebration targeted key sources of bacteria in the Tijuana River. Participation provided direct outreach to watershed residents dedicated to preserving water quality in San Diego, but primarily focused on water bodies in the Tijuana River WMA. Goals were to increase knowledge and awareness and to encourage everyone to take positive steps in preventing pollution from entering the storm drain.

With more than 7,000 people in attendance, our presence at the event provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

Think Blue provided an outreach booth with *Think Blue* staff and consultants, in order to increase direct public education and interaction. The San Ysidro Festival turned out to be predominantly Spanish speaking citizens and *Think Blue* provided public education materials in both Spanish and English. Public education materials available at the booth included brochures and tip cards, along with Best Management Practice (BMP) giveaways, such as dustpans, pet trash bag containers, and pet trash bag refills. Promotional giveaways included *Think Blue* stickers, eco-friendly pens, pencils, and Frisbees.

Think Blue also set up an interactive watershed model demonstration where children were able to interactively participate and learn about a watershed and specific pollutants affecting the water body they lived closest to. The demonstration was given in both English and Spanish.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue plans to participate in the San Ysidro Centennial Celebration during FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria, sediment, and gross pollutants

as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River							
Assess the effectiveness of direct public outreach to increase awareness about storm drain pollution and prevention.							
Management Questions	• What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?						
Targeted Measurable Outcome(s)	• Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys						
Assessment Method(s)	• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)						
Data Recorded	***Think Blue* FY 2009 San Ysidro Centennial Celebration Survey**						
		Number of Visitors to Outreach Booth	***Gender***	***Heard of Think Blue?***	***How have you heard about Think Blue?***	***Total Materials Distributed***	
	San Ysidro Centennial Celebration, 2009	156	101 Reported 25% Male 75% Female	66% Yes 34% No	78% TV	2585*	
	Estimated total visitors exposed to the *Think Blue* Booth at the San Ysidro Centennial Celebration in FY 2009 (Outcome Level 1)						7,000
	Number of Surveys administered in FY 2009 (Outcome Level 1)						156
	Percentage of individuals surveyed that believed storm water was an extremely important issue (Outcome Level 2)						95%
Data Recorded	Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2)						34%
	Percentage of individuals able to name a concrete action to prevent storm water pollution (Outcome Level 3)						84%
	Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3)						100%

Objectives

The goal of this assessment was to determine community knowledge and awareness about storm water issues and whether or not residents would adopt non-polluting behaviors. The goal was to

create positive behavioral change that will reduce bacteria and gross sediment in water bodies in the Tijuana River WMA.

Analysis and Results

The campaign targeted key areas of concern for pollutants in the Tijuana River WMA. The celebration provided direct outreach to residents living within the San Ysidro area. Based on the assessment, many citizens knew about pollution issues in neighboring waterways (95%). However, many were unaware the sewer system and storm drain system are not connected, and that water in the storm drain system is not treated (34%). Efforts were made to educate attendees on awareness of pollutant sources (specifically bacteria), and pollution prevention methods in order to reduce and prevent pollution.

Conclusions

The San Ysidro Centennial Celebration attracted predominantly Spanish speaking residents living in the local watershed. The event provided Storm Water staff an open venue to interact with the community. *Think blue* provided the booth for continued outreach dedicated in preserving water quality in San Diego. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain system. With approximately 7,000 people in attendance, presence at the event provided a great opportunity to spread the message about storm drain pollution prevention.

TITLE: **Tijuana River Gross Solids and Sediment BMPs Design**
ID NUMBER: **TJ-022**

ACTIVITY IMPLEMENTATION

This activity is the design and construction of trash and sediment storm water Best Management Practices (BMPs) to reduce the volume of sediments and gross solids which are transported to the Tijuana River's main channel and the Tijuana River Estuary during storm events.

Initial efforts for this activity began in February 2009 at which time URS was contracted under a Storm Water As-Needed Engineering Contract. In May 2009, URS was engaged under Task Order 8 to prepare 15% concept designs for these projects which included screening and selection of suitable sites and technologies using exiting hydrology and hydrological studies and gross estimates of loading along with number of basic selection criteria. This exercise which yielded initial estimates of the required scale and sizing of the trash and sediment facilities that would be necessary to handle the anticipated loads. Screening criteria also considered basic constrains such as access, available utilities, operations and maintenance, and community acceptance. A basis of design technical memorandum was prepared summarizing an order-of-magnitude cost estimates and scheduling for the design, permitting and construction of the BMPs.

Follow activities shall will consist of the completion of o an ongoing trash and sediment characterization studies and more specific studies and reports to include hydrology and hydraulic studies, sediment and trash loading of the Tijuana River valley streams will be prepared to be utilized in more advanced design documents as well as provide information for future permitting and environmental documentation.

Next steps consist of further design, permitting and finally construction and operation of these facilities. It is estimated that this effort will continue through 2010 until an estimated project construction completion in mid 2014. Under the current schedule, operation and maintenance of these facilities would commence in winter of the first of these facility would begin in winter of 2014 – 2015.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

At this time schedules as estimated and are based on the availability of funding for these remainder of the project. Schedules developed from the concept design estimated the following implementation schedule:

- 30 % design which will include design specific sizing, siting, hydrology and hydrology studies, stream bed profile and initial design drawings shall be developed by summer of 2012.
- Future design phases of the project including 60% design, 100% design, environmental documentation and permit process are slated to being in summer 2012 until mid 2013.
- Award of construction contracts and construction activities would commence in early 2014 and the initial facilities would be operational by winter of 2014 - 2015.

- Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing storm water volume and trash and sediment loading including trash characterization. This shall include data from ongoing trash characterization studies.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Gross pollutants (Trash)
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify gross pollutants (trash) and sediment as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing the volume of trash and sediment in the stream via siltation basins and trash interceptor devices.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana	
TIJUANA RIVER GROSS SOLIDS AND SEDIMENT BMPs **Assess the Efficiency and Effectiveness Trash & Sediment BMPs**	
Management Questions	• What is the load reduction efficiency due to implementation of these BMPs? • How effective are the Trash BMPs and Siltation basins at reducing loads of priority pollutants? • What are the operation and maintenance costs associated with these facilities? • Does the implementation of the trash sediment result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the infiltration is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, revenues and outlays for reclaiming or reusing materials recovered, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)

Objectives
The goal of the analysis is to determine the load reduction efficiency of the Trash and Sediment Best Management Practice (BMP) facilities.

Analysis and Results
After construction and initiation data shall be collected from the trash and sediment BMP facilities on an ongoing basis as part of operations. These data shall be analyzed to determine BMP facility efficiency and summarized in periodic reports.

Conclusions
Anticipated future monitoring will be conducted to assess pollutant removal efficiencies.

TITLE: **Tijuana River Watershed Brochure**
ID NUMBER: **TJ-023**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2010. Implementation and distribution is expected to occur in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients
- Organic Compounds
- Trace Metals
- Pesticides
- Gross Pollutants
- Sediments, TSS, Turbidity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City plans to continue to implement the brochure program in FY 2010. Effectiveness assessments will be conducted after the watershed brochures are implemented in FY 2010. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: **Water Quality Monitoring at Additional Mass Loading Stations**
ID NUMBER: **TJ-024**

ACTIVITY DESCRIPTION

This activity consists of the installation and monitoring of five mass loading stations (MLS) in the Sweetwater, Otay and Tijuana watersheds. Approximate locations for the Tijuana River Watershed are described below.

Site Designation	Location Description	Lat.	Long.
TIJ02	Pine Valley Creek @ Old Highway 80	33.83776	-116.53725
TIJ04	Campo Creek @ Highway 94	32.60917	-116.47419

The overall purpose of the activity is to acquire more representative data for the southern watersheds which generally only included dry weather grab samples. This will be accomplished through two different sampling methods for dry and wet weather events. For dry weather samples 24 hour continuous sampling will be completed and for wet weather a flow weighted sampling method will be used. Grab samples will be used for all bacteria sampling. A secondary purpose of the study is to compare water quality data from these upper watershed locations with data collected from Mass Loading Stations which are typically located toward the lower portion of the watershed.

The project was designed to collect both field (5) and laboratory (33) parameters during two storm events and two dry weather events. Field parameters included Temperature, Dissolved Oxygen, pH, Conductivity, and Turbidity. Laboratory parameters measured included: Ammonia-N, Antimony, Arsenic (total/dissolved) Cadmium (total/dissolved) Chlorpyrifos, Chromium (total/dissolved), Coliform (total/fecal) and Entrococcus, Copper (total/dissolved), Diazinon, Hardness (total), Iron (total), Lead (total/dissolved), Manganese (total) Malathion, Nickel (total/dissolved) Nitrate-N, Nitrite-N, Orthophosphate-P, Selenium (total/dissolved)TDS, Total Kjeldahl Nitrogen, Total Phosphate-P, TSS, and Zinc (total/dissolved). In addition to these parameters flow measurements will be taken at each station to develop discharge rates and to calculate a discharge equation.

FY 07-08 ACTIVITY IMPLEMENTATION

This activity was planned for the FY07-08 reporting period but due to a large wildfire in October 2007 it was delayed until FY08-09.

July 2007	Agreement between County and Brown and Caldwell signed.
October 2007	Study postponed due to wildfires

FY 08-09 ACTIVITY IMPLEMENTATION

Two dry weather and one wet weather events were monitored during FY08-09. A second wet weather monitoring event did not occur due to a lack of measurable rain.

July 2008	First Dry Weather Monitoring event
February 2009	First Wet Weather Monitoring event
March 2009	Second Dry Weather Monitoring Event

A report describing the methodology, monitoring reporting titled, "County of San Diego Southern Watersheds Water Monitoring Program Report" by Brown and Caldwell is as attached.

This report also included a comparison of the data collected to the Water Quality Objectives established for a numerous constituents. General findings regarding these are listed below:

Metals

All of the metals except Cadmium were detected in at least one sample. Iron was the metal with the highest concentrations. Total Metal concentrations of copper and zinc were lower than at the Tijuana MLS and were lower than the WQO for these constituents.

Nutrients

All dry weather results for nutrients were below WQO's, while one wet weather sample exceeded the WQO for nitrite at the lower MLS site.

Bacteria

In general bacteria indicators are found at higher levels during wet weather events. Bacteria levels in Tijuana Watershed are 3 to 4 orders of magnitude higher at the MLS location than in the other sites which is indicative of raw sewage.

Pesticides

Diazinon was banned for certain uses in the United States since 2003. Most of the monitoring sites of this study seem to indicate this has had a positive effect on this pesticide. Since Mexico still allows the use of this and other pesticides, Diazinon levels in the lower watershed often still exceed the WQO's.

Solids

TSS was lower during dry weather than wet weather samples. And all were below WQO's. However TSS samples at the lower Tijuana River Watershed MLS exceeded the WQO's in 16 of 18 samples tested. Higher TSS could be correlative to sewage and industrial wastes inputs.

TDS on the other hand appeared at higher levels during dry weather events. However, for the Tijuana watershed no exceedances were identified.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This project was completed during FY 2008-09. No further activity is currently planned.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals
- Nutrients
- Bacteria
- Pesticides
- Solids

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

- Characterize water quality conditions throughout the watershed.
- This may be accomplished by conducting special studies where appropriate or by better managing existing data sources.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was be measured by confirming successful completion of all project elements (Level 1). All project elements were completed during FY 2008-09.

COUNTY OF SAN DIEGO SOUTHERN WATERSHEDS WATER MONITORING PROGRAM REPORT

Prepared for

County of San Diego

Department of Public Works, Watershed Protection Program

March 2009

BROWN AND CALDWELL

9665 Chesapeake Drive, Suite 201
San Diego, California 92123

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APPENDIX A A-1
   Copies of Field Forms, Analytical Laboratory Reports and QA/QC Documentation A-1

APPENDIX B B-1
   Copies of Weston Solutions' Wet-Weather Data for Sweetwater River and Tijuana River MLS (from 2006-07 Annual Monitoring Report) B-1

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COUNTY OF SAN DIEGO SOUTHERN WATERSHEDS WATER MONITORING PROGRAM REPORT

1. INTRODUCTION

1.1 Background

The County of San Diego Department of Public Works, Watershed Protection Program (County) desired to collect dry weather and wet-weather samples at five mass loading stations located in creeks in the southern portion of San Diego County. Brown and Caldwell was selected to perform these services, which consisted of verifying the sampling locations, installing automated sampling equipment, collecting the water samples, submitting the samples to an analytical laboratory for analysis, removal of the sampling equipment, and preparation of this report summarizing the activities and findings..

The agreement for this work was signed in July 2007, with the intent that two dry-weather and two wet-weather events be sampled between July 2007 and October 2008. In late October 2007, several major wildfires devastated large portions of the County, including much of the watershed lands draining to the mass loading stations that were to be monitored under this program. Subsequently, the County decided to postpone monitoring activities in these watersheds. The County elected to resume activities under this agreement in February 2008, and monitoring was conducted between July 2008 and March 2009.

1.2 Purpose

The County routinely collects water samples from creeks located throughout San Diego County. However, these samples are generally collected as grab samples that provide data for one point in time only. Also, samples are collected during dry weather only. The monitoring described in this report provides more representative samples because the samples were collected over a longer period of time (24 hours for dry weather samples, and flow-weighted across the duration of storms, with the exception of bacteria which must always be collected as grab samples). The data also provide some information about water quality following a major wildfire.

2. MONITORING PROGRAM DESIGN

This section describes the monitoring program design, including the locations of the monitored sites, equipment used, laboratory analyses conducted, and field procedures implemented to conduct the monitoring.

2.1 Monitoring Locations

The monitoring locations for this project were specified in the Request for Proposals, and included the following sites:

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Table 2-1. Monitoring Site Locations

Site ID	Watershed	Site Location	Latitude	Longitude
SWT21	Sweetwater	North Fork of Sweetwater River @ Tavern Road	32.80879	-116.78036
SWT07	Sweetwater	Drainage Channel @ Quarry Road and Swap Meet Road	32.70114	-117.00927
OTY03	Otay	Dulzura Creek @ Otay Lakes Road	32.63624	-116.88456
TIJ02	Tijuana	Pine Valley Creek @ Old Highway 80	32.83776	-116.53725
TIJ04	Tijuana	Campo Creek @ Highway 94	32.60917	-116.47419

On August 9, 2007, Brown and Caldwell staff conducted a field reconnaissance visit to all 5 sites. The visit was conducted with Steve Di Donna of the County, who was familiar with the specific features of each site. The purpose of the visit was to verify the locations and determine the physical layout of equipment at each of the sites.

Site Descriptions

- **Site SWT21 (North Fork of Sweetwater River at Tavern Road).** This site is located adjacent to the Tavern Road bridge over the river in the unincorporated community of Alpine. The surrounding land use is rural residential, with some equestrian and agricultural uses. At the location of the bridge, the creek is constrained between rock walls and passes through a box culvert beneath the bridge that is divided into two conduits. The monitoring location was sited on the downstream side of the bridge where the creek is not longer constrained by armored banks.

- **Site TIJ02 (Pine Valley Creek @ Old Highway 80).** This site is located beneath the Old Highway 80 bridge spanning Pine Valley Creek in the community of Pine Valley. The area immediately surrounding the site is open space and rural residential. The bridge is approximately 50 feet above the creek, and the valley constraining the creek is several hundred feet across at that point. Due to concerns about the ability of a pump to draw water so far, it was decided that the sampling equipment would be housed on the bank of the creek below the bridge, adjacent to one of the support structures (yet above the level of the creek in wet weather).

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This monitoring site is accessed via a dirt trail from the side of the bridge.

- **Site TIJ04 (Campo Creek at Highway 94).** The site is located adjacent to the Highway 94 crossing of Campo Creek in the community of Campo. At the location of the bridge, the creek is constrained within a box culvert that is divided into three conduits. The area surrounding the creek is heavily vegetated.

Sampling Site TIJ04 (Campo)

- **Site OTY03 (Dulzura Creek @ Otay Lakes Road).** This site is located at the creek crossing of Otay Lakes Rd., northeast of Chula Vista. There is a small box culvert conveying the creek across the road that functions during low flows; however, water flows over the road under high flow conditions. The monitoring equipment was installed along the bank of the creek. This area was severely burned during the Cedar Fire in October 2007, eliminating nearly all vegetation on the surrounding hillsides (except for riparian vegetation along the creek bed).

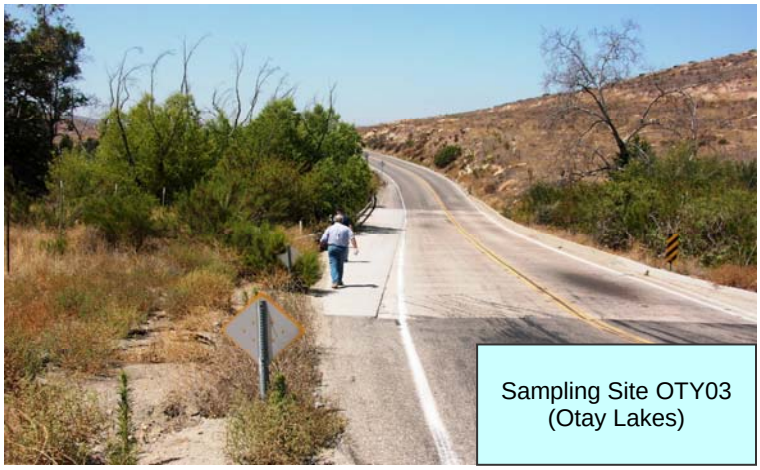

Sampling Site OTY03 (Otay Lakes)

- **Site SWT07 (Drainage Channel @ Quarry Road and Swap Meet Road).** Site SWT07 is located in the community of Spring Valley, adjacent to newly constructed State Highway 125, and near a vacant parcel used to hold weekend swap meets. The surrounding land uses are residential in nature. The equipment was installed on the bank of the creek (right side of photo).

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Sampling Site SWT07
(Spring Valley)

2.2 Analytical Parameters

The field and laboratory analyses for this project were specified in the RFP. The specific field and laboratory parameters to be analyzed are presented in Tables 2-2 and 2-3, along with information regarding field instrument specifications and laboratory methods, sample volume, preservative, holding time, and reporting limit. The analytical laboratories selected for this project included CRG Marine Laboratories (Torrance, CA) for most analyses, and Weston Solutions (Carlsbad, CA) for bacteria analyses (due to short holding times).

Table 2-2 Field Parameters

Parameter	Principle	Units	Range	TRL	Accuracy	Precision	Recovery	Completeness
Temperature	Thermistor	Degrees Celsius (ºC)	0 – 50 oC	N/A	+/- 0.1 ºC	No SWAMP requirement; will use + 0.5 or 5%	N/A	No SWAMP requirement; will use 90%
Dissolved Oxygen	Membrane/ galvanic cell	mg/L	0 – 19.9	0.2	+/- 0.1 mg/L	No SWAMP requirement; will use + 0.5 or 10%	N/A	No SWAMP requirement; will use 90%
pH	Glass Electrode	s.u.	0 – 14.0	N/A	+/-0.1 s.u.	No SWAMP requirement; will use + 0.5 or 5%	N/A	No SWAMP requirement; will use 90%
Conductivity	Alternating four-electrode	uS/cm	0 - 100	2	+/-1 uS/cm	No SWAMP requirement; will use + 5%	N/A	No SWAMP requirement; will use 90%
Turbidity	Scattering/ transmitting light	NTUs	0 - 800	5	+/-1 NTU	No SWAMP requirement; will use + 10% or 0.1, whichever is greater	N/A	No SWAMP requirement; will use 90%

*Equipment is Horiba U-10 or other multi-parameter meter; accuracy verified with the manufacturer.

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Table 2-3. Laboratory Analytical Requirements					
Parameter	Method	Volume	Preservative	Holding Time	Reporting Limit
Ammonia-N	EPA 350.2	250 mL	Acidify to pH<2 with H2SO4	28 days	0.50 mg/L
Antimony (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Antimony (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L
Arsenic (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	1.0 ug/L
Arsenic (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	1.0 ug/L
Cadmium (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	1.0 ug/L
Cadmium (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	1.0 ug/L
Chlorpyrifos	EPA 8081	1000 mL	None	7 days	0.05 ug/L
Chromium (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Chromium (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L
Coliform (Fecal)	SM 9221 C	100 mL	Na2S2O3	6 hours @ 4ºC	20 MPN/100 mL
Coliform (Total)	SM 9221 C	100 mL	Na2S2O3	6 hours @ 4ºC	20 MPN/100 mL
Copper (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Copper (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L
Diazinon	EPA 8081	1000 mL	None	7 days	0.05 ug/L
Enterococcus	SM 9230 B	100 mL	Na2S2O3	6 hours @ 4ºC	20 MPN/100 mL
Hardness (Total)	SM 2340 C	250 mL	None	6 months	2.0 mg CaCO3/mL
Iron (Total)	EPA 200.7/200.8	250 mL	Acidify to pH<2 with HNO3	6 months	20.0 ug/L
Lead (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	2.0 ug/L
Lead (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	2.0 ug/L
Manganese (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	1.0 ug/L
Malathion	EPA 8081	1000 mL	None	7 days	0.05 ug/L
Nickel (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with	2.0 ug/L

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Table 2-3. Laboratory Analytical Requirements					
Parameter	Method	Volume	Preservative	Holding Time	Reporting Limit
				HNO3	
Nickel (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	2.0 ug/L
Nitrate-N	EPA 300.0	250 mL	None	48 hours	0.2 mg/L
Nitrite-N	EPA 354.1	250 mL	None	48 hours	0.005 mg/L
Orthophosphate-P	EPA 365.2	250 mL	None	48 hours	0.02 mg/L
Selenium (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Selenium (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L
Total Dissolved Solids	EPA 160.1	1000 mL	None	7 days	25.0 mg/L
Total Kjeldahl Nitrogen	EPA 351.3	1000 mL	H2SO4	28 days	0.80 mg/L
Total Phosphate-P	EPA 365.3	250 mL	H2SO4	28 days	0.02 mg/L
Total Suspended Solids	EPA 160.2	1000 mL	None	7 days	2.5 mg/L
Zinc (Dissolved)	EPA 200.7/200.8	250 mL	None	6 months after filtration and preservation with HNO3	5.0 ug/L
Zinc (Total)	EPA 200.7/200.8	250 mL	HNO3	6 months	5.0 ug/L

2.3 Field Equipment Installation and Calibration

The monitoring stations were installed at the locations described above during Spring 2008. At each location, a concrete pad measuring approximately 4 feet square was formed and poured in place as a base for the equipment. Knaack utility boxes were then mounted on the pads and bolted from the inside to the concrete pad to provide secure housing for the automated sampling equipment. Flow was monitored at all stations using American Sigma (Hach) autosamplers and flow meters. Field crews measured the flow rate of each stream using a hand held flow meter (Marsh McBirney FloMate). Based on these data, discharge rates were developed for each of the streams at the locations of the monitoring stations. These discharge rates were used to calculate a discharge equation, which was used to program the flow monitoring equipment. Each station was also equipped with a solar panel to recharge the batteries and a rain gauge mounted on a pole to record rainfall at each location. The installations were performed in April, 2008. Most of the installations were straightforward, with the exception of Station TIJ02 (Pine Valley Creek @ Old Highway 80) which required the use of a crane to lower the utility box and equipment down from the bridge to the sampling location.

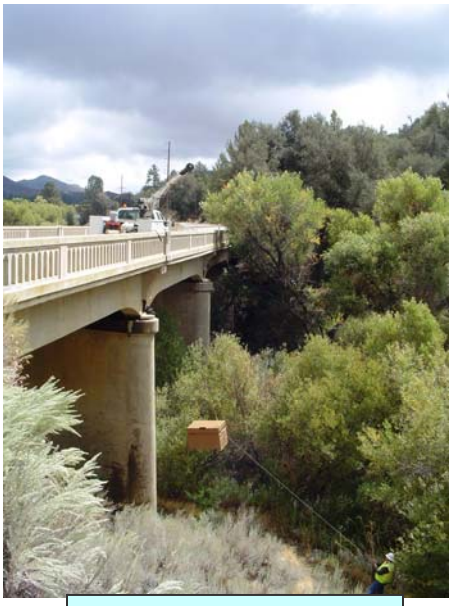

Autosampler installation at Pine Valley site TIJ04

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3. MONITORING ACTIVITIES AND RESULTS

3.1 Sampling Schedule

Monitoring was conducted on the following dates and stations:

Table 3-1: Sampling Schedule

Date of Sampling	Rainfall Amount*	Type of Sampling	Stations Monitored	Comments
July 30-31, 2008	N/A	Dry-weather, 24-hour time weighted composite	SWT07, SWT21, and TIJ02	Stations OTY03 and TIJ04 were dry.
February 6-7, 2009	1.23 in.	Wet-weather, flow-weighted composite	OTY03, SWT07, SWT21, and TIJ04	Insufficient rainfall at Station TIJ02 to capture the storm event.
March 30-31, 2009	N/A	Dry-weather, 24-hour time weighted composite	OTY03, SWT07, SWT21, TIJ02, and TIJ04	All stations captured.

* Rainfall measured at Campo Rain Gauge No. MCMNC1 (Cameron Fire Station).

This project was intended to capture a second storm event; however, a second event was not sampled due to limited rain events that produced adequate runoff in the southeastern part of the County, or because the rain events occurred on holidays.

3.2 Sampling Protocols

Field Data sheets were completed at each sample location, for each event, and are included in Appendix A. Digital photographs were also taken at each site, showing the actual sample collection point, as well as conditions upstream and downstream of the sampling site.

CRG Marine Laboratories and Weston Solutions provided chain of custody (COC) forms for the project. Sampling crews completed these forms while on site in the field. Copies of all COC forms are included in Appendix A.

In the field, all samples were placed on wet ice or frozen ice packs until shipment. Identification information for each sample was recorded on the field data sheets and chain-of-custody forms). Samples were handled, prepared, transported, and stored in a manner so as to minimize loss, misidentification, contamination, and/or degradation. Samples were transported on ice and in insulated containers (e.g., insulated cooler). All caps and lids were checked for tightness prior to shipping. Efforts were taken to minimize the leakage of any melted ice from the sample shipment container. Sample packaging included the following steps:

- Grab samples (for bacteria) were placed in a sealed plastic bag (Ziploc) to prevent leakage. Ice (double bagged in plastic trash bags) was placed in the cooler with the samples to maintain the samples at 4° C during transport to Weston Solutions' Carlsbad facility for analysis.
- Grab samples were delivered to Weston Solutions in time to meet 6-hour holding times for bacteria.
- 19-liter glass bottles were placed in individual trash containers sized small enough to fit them for transport to CRG Marine Laboratories.

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- The Chain-of-Custody (COC) records were placed in a waterproof plastic bag and placed inside the cooler with the grab samples or taped to the outside of the trash containers (for 19-liter samples).
- 19-liter samples were picked up by the CRG Marine Lab courier in time to meet sample holding times.

The collected samples were delivered to the laboratory for analyses as soon as practicable. Any delay in the receipt of the samples by the laboratory could necessitate a re-sampling and analysis effort.

At the end of the sampling activities, each crew will deliver the samples for chemical analyses with the respective COC forms to Babcock, or coordinate with a reliable courier for sample drop off. Table 4-4 provides contact information and driving directions to Babcock Laboratories. In the event that samples need to be dropped off on a weekend or after standard hours of operation, the Brown and Caldwell Project Manager contacted CRG and Weston to make special arrangements for laboratory staff to be available.

The sample receipt personnel at the laboratory will open the container and perform an initial inspection of the contents to check for evidence of breakage and/or leakage. The container will be inspected for COC documents and any other information or instructions. The sample custodian will verify that all information on the sample bottle labels is correct and in accordance with the COC documents and will sign for receipt. If discrepancies are noted between the COC and the sample labels, the project contact will be notified immediately. Contract laboratories will follow the sample custody procedures outlined in their QA plans. These QA plans are on file with each respective laboratory. All samples will be stored in a refrigerated, secure area. Samples will be removed from storage as needed by the analyst; analysts check out samples by signing a logbook maintained in sample control for tracking samples.

3.3 Quality Assurance/Quality Control

Water quality samples were collected in order to ensure the collection of representative water samples. CRG Marine Laboratories and Weston Solutions implemented quality assurance and quality control programs in accordance with guidelines established by the State of California and the U.S. EPA., and are certified under the State Environmental Laboratory Accreditation Program (ELAP). Field duplicates were collected at the rate of 10 percent and analyzed blind by the laboratories.

3.4 Results

The following sections provide a summary and interpretation of the data collected during the three water sampling events that were analyzed. Laboratory analytical results are summarized in Table 3-2.

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Table 3-2. Analytical Results and Comparison to Water Quality Objectives

			Dry Weather Event July 31, 2008			Dry Weather Event March 2009					Wet Weather Event February 6, 2009			
Parameter/Units	WQO	Source	TIJ02 (Pine Valley)	SWT07 (Spr. Valley)	SWT21 (Alpine)	OTY03 (Otay Lakes)	SWT07 (Spr. Valley)	SWT21 (Alpine)	TIJ02 (Pine Valley)	TIJ04 (Campo)	OTY03 (Otay Lakes)	SWT07 (Spr. Valley)	SWT21 (Alpine)	TIJ04 (Campo)
Ammonia-N, mg/L			ND	0.07	0.05	ND	0.1	ND	0.03	ND	0.03	0.12	0.08	0.12
Antimony (Dissolved), ug/L	calculated	40CFR 131	ND	0.4	0.1	0.1	0.5	0.1	ND	0.1	NA	NA	NA	NA
Antimony (Total), ug/L	6	Basin Plan	ND	0.4	0.1	0.1	0.5	0.1	ND	0.1	NA	NA	NA	NA
Arsenic (Dissolved), ug/L	340	40CFR 131	0.3	4.4	2.2	1.3	4.4	1.9	0.3	1.6	1.3	2.7	1	1.9
Arsenic (Total), ug/L	340/50	40CFR131/ Basin Plan	0.5	4.6	2.3	1.2	4.6	1.7	0.5	1.5	1.4	2.8	1.3	2.6
Cadmium (Dissolved), ug/L	calculated	40CFR 131	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium (Total), ug/L	4.3	40 CFR 131	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpyrifos, ng/L	20	CA Dept. of Fish & Game	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (Dissolved), ug/L	calculated	40CFR 131	ND	0.1	3.9	ND	0.1	5.7	ND	ND	0.1	0.4	0.9	ND
Chromium (Total), ug/L	550	40CFR 131	ND	0.2	4	0.1	0.4	5.7	ND	ND	0.3	1.1	1.8	0.5
Coliform (Fecal), MPN/100 mL	400	Basin Plan	40	170	500	<20	220	40	<20	<20	20	3,500	1,100	160,000
Coliform (Total), MPN/100 mL			500	14,000	700	1,100	8,000	3,000	2,200	1,300	3,500	160,000	13,000	160,000
Copper (Dissolved), ug/L	calculated	40CFR 131	ND	1.8	ND	1.7	2.8	0.8	0.4	0.5	1.4	4.3	2.4	1
Copper (Total), ug/L	13	40CFR 131	0.4	2.7	0.8	1.4	3	0.8	ND	0.5	2.4	10.3	4.9	2.5
Diazinon, ng/L	80	CA Dept. of Fish & Game	ND	35.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Enterococcus. MPN/100 mL			80	80	340	<20	800	220	70	300	500	50,000	5,000	17,000
Hardness (Total), mg/L			149.7	795.1	574.3	321.1	757.8	585.6	137	397.6	354.8	93.6	157.8	385.8
Iron (Total), ug/L			68	80	47	97	70	37	64	86	267	704	897	1046
Lead (Dissolved), ug/L	calculated	40CFR 131	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND
Lead (Total), ug/L	65	40CFR 131	ND	0.19	0.06	0.21	0.21	ND	ND	0.06	1.09	7.71	2.22	3.97
Manganese (Total), ug/L			19.8	102.9	47.6	20.9	134.4	18.1	23.3	62.6	92	82.6	91.5	212.3
Malathion, ng/L	430	CA Dept. of Fish & Game	ND	ND	ND	ND	ND	ND	ND	ND	ND	34.8	18.9	ND
Nickel (Dissolved), ug/L	calculated	40CFR 131	0.4	2.1	0.9	0.4	2.2	1	0.4	0.3	0.5	1.2	0.8	0.6
Nickel (Total),ug/L	100	Basin Plan	0.5	2.2	1.1	0.4	2.2	1	0.4	0.3	0.9	2	1.5	1
Nitrate-N, mg/L	10	Basin Plan	0.8	8.1	16.26	0.03	7.21	14.37	0.47	ND	0.68	1.04	2.96	0.09
Nitrite-N, mg/L	1	Basin Plan	ND	0.07	ND	ND	0.14	ND	ND	ND	ND	0.09	0.09	ND
Orthophosphate-P (Dissolved), mg/L			0.0363	0.0812	0.0644	ND	0.1238	0.0505	0.0075	0.0075	ND	0.1411	0.1208	0.0721
Orthophosphate-P (Total), mg/L			ND	0.07	0.05	0.03	0.16	0.06	0.03	0.1	0.03	0.2	0.19	0.15
Selenium (Dissolved), ug/L	20	40 CFR 131	2.4	6	1.3	0.4	4.8	1.8	2.1	0.2	0.5	0.4	0.3	0.2
Selenium (Total), ug/L	20	40 CFR 131	2.2	5.8	1.2	0.3	4.9	1.5	2.3	ND	0.5	0.4	0.3	0.2
Total Dissolved Solids, mg/L	1500	Basin Plan	388	3226	1116	936	3008	1206	332	1086	994	358	410	1114
Total Kjeldahl Nitrogen, mg/L			0.63	1.8	0.98	0.91	1.1	0.84	0.84	0.98	0.84	1.5	1.7	1.1
Total Suspended Solids, mg/L	100	USEPA Multisector General Permit	1.5	4	8	10	2.3	4	2.3	0.7	51.6	93	86	52

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Table 3-2. Analytical Results and Comparison to Water Quality Objectives

			Dry Weather Event July 31, 2008			Dry Weather Event March 2009					Wet Weather Event February 6, 2009			
Parameter/Units	WQO	Source	TIJ02 (Pine Valley)	SWT07 (Spr. Valley)	SWT21 (Alpine)	OTY03 (Otay Lakes)	SWT07 (Spr. Valley)	SWT21 (Alpine)	TIJ02 (Pine Valley)	TIJ04 (Campo)	OTY03 (Otay Lakes)	SWT07 (Spr. Valley)	SWT21 (Alpine)	TIJ04 (Campo)
Zinc (Dissolved), ug/L	calculated	40CFR 131	0.6	3.6	0.5	0.1	7.8	ND	0.2	ND	1.5	10.8	4.8	4
Zinc (Total), ug/L	120	40CFR 131	2.3	6.8	4	0.1	10.6	2.2	3.1	ND	12.5	56.7	23.6	21.6

ND: Non-detect NA: Not analyzed

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3.5 Data Interpretation and Comparison to Data from Mass Loading Stations and Water Quality Objectives

The San Diego Stormwater Copermittees conduct dry and wet-weather monitoring for compliance with their areawide NPDES stormwater permit (RWQCB Order 2007-001). This sampling is conducted at mass loading stations (MLS), typically located toward the lower end of each major watershed, above the zone of tidal influence. Data from the southern watersheds study were compared to data collected at the Sweetwater and Tijuana River mass emissions stations reported in the 2006-07 Annual Monitoring Report, the most recent season these stations were monitored. These MLS stations were selected because 2 of the southern watersheds sites are located in the upstream portions of the Sweetwater River watershed, and 2 are located in the Tijuana River watershed. The fifst station is located in the Otay River watershed, but there is no downstream MLS station on the Otay River to compare to. The report provides a comparison of the southern watersheds data with MLS stormwater data collected over 6 years of monitoring (from 2001-02 through 2006-07).

The data from the southern watersheds study were also compared to the Water Quality Objectives (WQOs) established for a number of constituents. The following section provides a summary and discussion of these comparisons.

Metals

Water samples from the southern watersheds sites were analyzed for a large suite of total and dissolved metals including antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, and zinc. All of the metals except cadmium were detected in at least one sample. The highest metals concentrations were observed for iron. Total iron ranged between 137 ug/L and 795.1 ug/L in dry weather samples and between 93.6 ug/L and 385.8 ug/L in wet weather samples. This is likely due to the presence of iron in solids. Total metals concentrations of copper and zinc which are often used as indicators of heavy metals in urban runoff were similar to those observed at the Sweetwater MLS, but lower than those from the Tijuana River MLS. None of the southern watersheds samples exceeded the WQOs for either constituent. Total copper ranged between ND and 2.7 ug/L in dry weather samples and between 2.4 and 10.3 ug/L in wet weather samples. Total zinc ranged between ND and 10.6 ug/L in dry weather samples and between 12.5 and 56.7 ug/L in wet weather samples. By comparison, stormwater samples collected at the Sweetwater MLS ranges from <5 ug/L to 18 ug/L for total copper and between <20 ug/L to 47 ug/L for total zinc. in Total metals were higher in wet weather, suggesting a likely association with sediments. In contrast, stormwater samples at the Tijuana River MLS exceeded the WQO exceeded the WQO for copper in 9 of the 18 samples collected at this station since 2001-02, ranging in concentration from 8 ug/L to 197 ug/L. Similarly, zinc exceeded the WQO 6 times, with concentrations ranging from <20 ug/L to 1,530 ug/L. The Tijuana River receives significant inputs of industrial waste and municipal wastewater, in addition to urban runoff, which likely explains the elevated levels in the downstream portions of that watershed.

Nutrients

Water samples in this study were analyzed for several nutrient indicators (nitrate-N, nitrite-N, total orthophosphate-N, and dissolved orthophosphate-N). All results were below WQOs except both dry weather samples collected from the SWT21 (Alpine) site, which had concentrations of 16.26 mg/L and 14.37 mg/L, both above the Basin Plan objective of 10 mg/L. A possible source of the nitrate could be septic tank leakage from rural residential parcels in this area (this has not been confirmed). Nitrite was ND in 7 of the 8 dry weather samples and 2 of the 4 wet weather samples. All detections were less than or equal to 0.14 mg/L. Total orthophosphate ranged from ND to 0.16 mg/L in dry weather samples and between 0.03 mg/L and 0.2 mg/L in wet weather samples. In comparison the stormwater samples from the MLS stations, none of the

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samples from the Sweetwater or the Tijuana River MLS exceeded the WQO for nitrate. One sample from the Tijuana River MLS exceeded the WQO of 0.1 mg/L for nitrite. The MLS samples were not analyzed for orthophosphate-P.

Bacteria

Bacterial indicators analyzed in this study included total and fecal coliform and enterococcus. In general, bacterial indicators were present at higher levels in wet weather samples than in dry weather samples. Monitoring indicated exceedance of the Basin Plan WQO for fecal colifom (400 MPN/100 mL0 in one dry weather sample and in 3 of the 4 wet weather samples. The highest level of fecal coliform (160,000 MPN/100 mL) was observed in the wet weather sample from site TIJ04 (Campo). Total coliform counts ranged from 500 MPN/100 mL to 14,000 MPN/100 mL in dry weather samples and between 500 MPN/100 mL and 50,000 MPN/100 mL in wet weather samples. Enterococcus counts ranged between <20 and 800 MPN/100 mL in the dry weather samples, with a median level of 80 MPN/100 mL. In wet-weather, counts were higher, from 500 MPN/100 mL at the Otay Lakes (OTY03) site to 50,000 MPN/100 mL at Spring Valley (SWT07). Similar counts of bacterial indicators were observed in stormwater at the Sweetwater River MLS. At the Tijuana River MLS, bacteria levels in stormwater samples were 3-4 orders of magnitude higher than in the southern watersheds samples (as high as >16,000,000 MPN/100 mL). This is consistent with the fact that portions of the Tijuana River receive inputs of sewage.

Pesticides

Diazinon and chlorpyrifos were generally non-detect (diazinon was observed in one dry weather sample from the Spring Valley SWT07 site at a concentration of 35.1 ng/L). Malathion was ND in the dry weather samples, but was detected twice in wet weather (at concentrations of 34.8 ng/L at Spring Valley site SWT07, and 18.9 ng/L at Alpine site SWT21). All pesticide detections were below their respective WQOs. Compared with the MLS data, the following observations were made. At the Sweetwater MLS site, diazinon and chlorpyrifos were detected at levels in excess of the WQOs in samples collected between 2001-02 and 2003-04. However, both pesticides were ND in samples collected since that time. Diazinon was banned for certain uses in the United States beginning in 2003, and the decreased concentrations in stream waters appear to correlate with this ban. In contrast, levels of diazinon at the Tijuana River MLS continued to exceed the WQO in samples collected through 2006-07. This may be partly because Mexico has not banned the use of diazinon and significant portions of this watershed are in Mexico. Over the six year MLS monitoring period, malathion was occasionally detected in stormwater samples from the Sweetwater River MLS (all below the WQO). Malathion was detected at levels above the WQO in 8 of the 15 samples at the Tijuana River MLS over this period.

Solids

Total suspended solids (TSS) concentrations were lower in dry weather than wet weather events. All TSS measurements were below the WQO of 100 mg/L. Specifically, TSS ranged between 0.7 and 15 mg/L in dry weather and between 51.6 and 93 mg/L in wet weather samples. Over the six years of stormwater monitoring at the Sweetwater River MLS, TSS ranges between <20 mg/L and 102 mg/L, with one exceedance of the WQO. By comparison, samples from the Tijuana River MLS exceeded the WQO in 16 of 18 samples, with concentrations ranging between 48 and 8,140 mg/L. Higher TSS levels may be correlative with sewage and industrial waste inputs.

Total dissolved solids (TDS) levels were high, especially in dry weather, and particularly at the Spring Valley site (SWT07), where concentrations exceeded the WQO of 1,500 mg/L during both dry weather events (3,226 mg/L and 3,008 mg/L, respectively).. Wet-weather TDS concentrations were lower, ranging from 358 mg/L at Spring Valley site SWT07 to 1,114 mg/L at the Campo site (TIJ04). Over six years of stormwater

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monitoring at the Sweetwater River MLS, TDS exceeded the WQO in 13 out of 18 samples. In contrast, TDS in stormwater from the Tijuana River MLS did not exceed the WQO in any of the 18 samples.

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APPENDIX A

Copies of Field Forms, Analytical Laboratory Reports and QA/QC Documentation

APPENDIX B

Copies of Weston Solutions' Wet-Weather Data for Sweetwater River and Tijuana River MLS (from 2006-07 Annual Monitoring Report)

TITLE: **Smuggler's Gulch, Pilot Channel & Northern Channel Sediment and Debris Removal**

ID NUMBER: **TJ-025**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) performs routine flood control maintenance activities on improved and unimproved channels pursuant to the Regional General Permit (RGP) 53 granted to the County of San Diego. In FY 2009, the City expanded the routine maintenance to include excavation and removal of sediment and trash including tires to include the restoration of the Pilot Channel profile under US Army Corp of Engineers Permit: SPL 2009- I 0719-TCD. The expanded channel excavation activity is performed approximately every four to eight years depending on annual rainfall and sediment deposition and assessed flood risk. In FY 2009, re-establishment of the channel profiles to reduce the risk of flooding in these channels was deemed to be more urgent because of the perceived threat of additional sediment deposition from the recently constructed Federal Border Fence Infrastructure project, and because of the flood which occurred in late November 2008. Consequently, emergency permits were sought from various resource agencies. The extent of the project is the portions of the Smuggler's Gulch from Monument Road overpass to the confluence of the pilot channel approximately 1,400 feet; the portion of the pilot from 100 feet east of the Hollister Street Bridge 5,400 feet westward along the Pilot Channel alignment toward the Tijuana River Estuary.

It is expected that approximately as much as 65,000 cubic yards of sediment will be removed from the channel and as much as 1,000 tons of trash and over 5,000 tires. Trash is separated on site and recycled when practicable; the remained or sediment and trash mixes deemed to uneconomical to separate are disposed of at a landfill. Tires are removed and disposed of by a certified tire disposal and recycling contractor. Sediment impacted less by trash deposition shall be stored off site, once operations are completed where it will be screened and reused onsite or used with the Tijuana River Valley for fill material.

The sediment removal project is necessary 1) to return the drainage facility to a condition where adjacent property is not threatened by flooding, 2) storm water flows convey properly to the main channel, and 3) channel profiles and conditions are restored to reduce the potential for sediment and debris to accumulate and thereby increase the potential of flooding.

TMDL APPLICABILITY

N/A.

TIME SCHEDULE FOR IMPLEMENTATION

During the FY2008-09, sediment and debris was removed along the Smuggler's Gulch. Approximately 5,900 cubic yards of material including sediment, tires and trash were removed and disposed at a Class III sanitary landfill. Typically, removal takes place every other year, but based on precipitation, erosion, and observed patterns of deposition of the trash and sediment, excavation and removal of sediment and trash is underway for FY2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- California Department of Fish and Game
- California State Parks
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash
- Gross Pollutants

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify sediment and trash as high priority water quality problems and recommend implementing load reduction/source abatement activities to address them. This activity results in a direct load reduction of these pollutants.

EFFECTIVENESS ASSESSMENT

This activity will be assessed based on the amount and type of sediment and debris removed.

Watershed Urban Runoff Management Program
Fiscal Year 2009-2010 Annual Report

Tijuana River Watershed

Submitted to the Regional Water Quality Control Board, San Diego Region

on

January 31, 20111

Prepared by the County of San Diego

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ATTACHMENT 1 WATERSHED ACTIVITY SUMMARY SHEETS

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EXECUTIVE SUMMARY

This annual report describes implementation of the Tijuana River Watershed Management Area Watershed Urban Runoff Management Program (WURMP) during Fiscal Year 2009-10 (FY09-10). Although much of the Tijuana River Watershed Management Area (WMA) extends into Mexico, only the portion within the United States is subject to the Municipal Stormwater Permit's WURMP requirements. Therefore, this report only addresses activities within the United States.

Section 1.0 provides an overview of the information included in this report and summarizes the ongoing collaboration among Tijuana River WMA Copermittees. There were no updates to the watershed maps during this reporting period.

Section 2.0 presents a water quality assessment for the Tijuana River WMA. The assessment is largely based on results from the regional monitoring program conducted on behalf of the San Diego County Municipal Stormwater Copermittees in compliance with Municipal Permit requirements, but is supplemented by other monitoring programs, including jurisdictional dry weather monitoring and special studies. The regional monitoring report is identified as "The Monitoring Report (Weston 2010)" throughout this document. It should be noted that the Municipal Permit established a monitoring schedule for the entire county that alternates monitoring between the northern and the southern watersheds. The southern watersheds, including the Tijuana River WMA, were monitored during this reporting period.

The Tijuana River WMA WURMP (2008) identified nine high priority water quality problems in the Tijuana River WMA: sediment (TSS/turbidity), pesticides, gross pollutants (organics, pH, trash), bacteria and trace metals. Weston 2010 results for the Tijuana River WMA presented in Section 2.1 confirm that these pollutants should still be considered as high priority. Section 2.2 discusses the potential sources of these problems.

Section 3.0 and Attachment 1 describe the 27 watershed activities that were in various phases of implementation during FY09-10. Many of the activities address sediment, bacteria and trash in the Tijuana Valley Hydrologic Area (HA 911.1).

Section 4.0 describes the collaborative efforts among the Tijuana River WMA Copermittees (County of San Diego, Cities of San Diego and Imperial Beach) and assesses the overall effectiveness of WURMP activities towards reducing pollutant loads and improving receiving water quality. The WURMP water quality activities are making an impact towards raising awareness of the water quality problems in the river valley and reducing the pollutant loads from the Copermittees' jurisdictions. Significant headway is also being made through the collaborative planning efforts from other stakeholder groups such as the Tijuana River Valley Recovery Team, Border 2012, the Tijuana River Estuary Management Authority, and the Tijuana River Bacteria Source Identification Study group; however, there is much more to accomplish before implementing large-scale watershed activities to address cross-border pollution problems. Continued implementation of WURMP watershed activities and participation in other stakeholder groups will result in the development of future activities and lead to incremental improvements in water quality throughout watershed.

Section 5.0 provides a discussion on conclusions and recommendations that were reached during the reporting period.

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County of San Diego
LAND USE AND ENVIRONMENT GROUP

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STATEMENT OF CERTIFICATION

Tijuana River Watershed Urban Runoff Management Program (WURMP) FY 2009-10 Annual Report

I certify, under penalty of law, that this FY 2009-10 Tijuana River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer

1/21/11
Date

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January 30, 2011

RE: Statement of Certification
Tijuana River Watershed Urban Runoff Management Program
Fiscal Year 2010 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2010 Tijuana River Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
Transportation & Storm Water Department
City of San Diego

1/21/11
Date

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The City of Imperial Beach

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January 20, 2011

STATEMENT OF CERTIFICATION
Tijuana River Watershed Urban Runoff Management Program 2009-10 Annual Report

I certify under penalty of law that the Tijuana River Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H.A. Levien
Public Works Director

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SECTION 1.0 INTRODUCTION

The NPDES Municipal Stormwater Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Tijuana River Watershed WMA to collaborate on the development and implementation of a WURMP. The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Tijuana River WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and developing and implementing activities that include Watershed Water Quality Activities (pollutant load reduction and source abatement), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. The Watershed Activity Implementation Summary Sheets for all watershed water quality and education activities implemented during this reporting period are included in Attachment 1.

This Annual Report is divided into five sections that highlight the efforts of the Tijuana River WMA Copermittees during the FY09-10 reporting period.

Section 1: Provides an overview of the information included in this report and summarizes the ongoing collaboration among Tijuana River WMA Copermittees. There were no updates to the watershed maps during this reporting period.

Section 2: Provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3: Describes the Watershed Water Quality and Watershed Education Activities that were implemented during this reporting period as well as any public participation or collaborative land use planning that took place.

Section 4: Discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among WMA Copermittees, 2) determine whether watershed activities are focused on appropriate water quality problems, 3) assess whether targeted outcomes are being achieved, and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.

Section 5: Discusses conclusions reached during FY09-10 as well as recommendations for future reporting periods.

1.1 Watershed Collaboration

WURMP development and implementation is a collaborative effort by all of the following Tijuana River WMA Copermittees:

- City of Imperial Beach
- City of San Diego
- County of San Diego

The County of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among Tijuana River WMA Copermittees and liaison between Copermittees and San Diego Regional Water Quality Control Board (RWQCB) staff.

The Tijuana River WMA Copermittees met or participated in conference calls six times during this reporting period. Table 1-1 provides a summary of the dates and the general topics of discussion at these meetings. Several of the meetings were focused on preparing the draft and final FY08-09 Tijuana River WURMP Annual Report that was submitted to the RWQCB on February 1, 2010.

During this reporting period, the Tijuana River WMA Copermittees collaborated extensively on the watershed activities that were developed through the implementation of the watershed strategy that was submitted on March 24, 2007 to the RWQCB.

Utilizing the information from the watershed strategy, the Tijuana River WMA Copermittees identified several water quality activities which they have coordinated at the Hydrologic Area (HA) level. A collaborative approach was utilized because these activities were identified as beneficial to addressing high priority water quality problems and can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. Collaboration on the watershed strategy enabled the Copermittees to identify data gaps by reviewing existing monitoring and land use data which provided the basis for developing additional water quality monitoring and source identification activities. Section 3 and Attachment 1 provide specific detail on each program that was initiated or completed during the FY09-10 reporting period.

Table 1-1: Summary of Copermittee Meetings

Meeting (or Conference) Date	Main Topics of Discussion
09/22/09	• Reviewed Draft 2008 Revised TMDL List • Identify Section responsibilities • Discuss/Set Schedule for Report completion.
11/05/09	• Update status of response to 2008 TMDL • Update on potential changes to WURMP reports • Provide Status of WURMP Revisions • Review Schedule
12/04/09	• Discuss revisions to draft Report • Review schedule
12/16/09	• Conference Call – Discussion of Final Edits
02/18/10	• Presentation by Weston regarding the FY08-09 Monitoring Results
02/25/10	• Discussed Weston Presentation • Update of WURMP Leads Meeting

In October 2008 the Tijuana River WMA Copermittee's were asked to participate in a meeting to discuss current issues and the future of the Tijuana River Valley. As a result of that meeting the Tijuana River Valley Recovery Team was formed.

The Recovery Team (Action Teams and Steering Committees) has met nine times during FY09-10. In addition, the Recovery Team planned and held one of three planned Visioning Workshops (April 26, 2010) for stakeholders interested in the Tijuana River Valley. The majority of these meetings were focused on developing strategies to characterize trash and sediment as well as identifying potential mechanisms to reduce the amount of trash and sediment from entering the river valley. Complete agendas and notes can be found on the Recovery Team website at: wwwtjriverteam.org.

Specific efforts of the Tijuana River WMA Copermittees are in line with the mission of the Recovery Team. These include 1) cleaning and dredging clogged channels, and 2) characterizing trash and sediment in support of designing BMPs to reduce the volume of sediments and trash transported during storms. For details, see Activity Summary Sheets TJ-012, TJ-018, TJ-022, and TJ-025 in Attachment 1 of this report.

Table 1-2: Summary of Action Team Meetings

Meeting (or Conference) Date	Main Topics of Discussion
09/25/09	• Action Teams Break-out Discussions • Update on Trash, Tire & Sediment (TTS) Characterization Study - URS • Update on Clean-up and Abatement (C&A) Funding • Other Clean-up Activities.
10/30/09	• Update on Sediment Removal Projects • Update on TTS Characterization Study • Update on Future C&A Funding Requests • Develop Potential Project List
12/09/09	• Prioritize and Provide Cost Estimate for Potential Projects.
02/26/10	• Presentation Of the RWQCB to the Recovery Team • Report on Recovery Team Presentation to the California-Mexico Border Relations Council • Discussion regarding letters of support for Recovery Team/other Projects • Establish Visioning Workshop Schedule and Agenda
03/26/10	• Update of 3/24/10 Steering Committee Mtg. • Update on Visioning Workshops • Action Team Breakout Sessions

Table 1-3: Summary of Steering Committee Meetings

Meeting (or Conference) Date	Main Topics of Discussion
08/28/09	• Overall update on grant applications submitted by members of the Recovery Team • Updates provided by each Action Team Chair • Provide Status of WURMP Revisions • Review Schedule
01/13/10	• Structural Discussion: Policy Committee changed to Steering Committee • Annual Meeting Schedule • Coordination, Communications, & Funding • List of Proposed Projects (12/09/09)
03/24/10	• Request for additional Steering Committee Members • Roles of TRVRT as an Interagency Group • Should Formal Agreement (MOU etc.) be considered • Interagency Meetings – Formalities • Engaging other interested parties (NGO's, Non-Profits etc.)
06/21/10	• Introduce Additions to Steering Committee • Brief Updates by Action Committees • Overview of April 26th Visioning Workshop • TRVRT Draft Charter Review • Action Team Direction • ACOE Meeting and Tour • LiDAR Update • Updates on upcoming outreach and speaking engagements

1.2 Tijuana River Watershed Map Updates

There are no Tijuana River Watershed map updates included in the FY09-10 Annual Report.

SECTION 2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

The Tijuana River Watershed Management Area (WMA) is located in the southern portion of San Diego County. In accordance with the Receiving Waters and Urban Runoff Monitoring Program per the San Diego Regional Water Quality Control Board Order R9-2007-0001 (Permit), the Tijuana River WMA was monitored in 2009-2010. The assessment is based on the following data:

Table 2-1 Monitoring Program Activities

Receiving Water	MS4 Outfall	Source Studies and Third-Party Data
MLS and TWAS Monitoring during wet and dry weather: Chemistry, toxicity, and bioassessment.	Random and Targeted: Wet and Dry	No Regional Source Studies performed in this watershed.
MLS - mass loading station MS4 - municipal separate storm sewer system TWAS - temporary watershed assessment station		

2.1 Water Quality Assessment

The results of the annual monitoring are presented in the four quadrants shown in Table 2-2, Table 2-3, and Table 2-4 to summarize the results and to identify constituent relationships between the receiving waters and the municipal separate storm sewer system (MS4) outfalls during both wet and dry weather. The constituents listed in the quadrant table represent medium and high priority detected constituents based on the Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas, Final Draft-Version 1 (SDCRC, 2010).

The key findings for the Tijuana River mass loading station (MLS) at Hollister St drainage area (Table 2-2) include:

- Receiving Water – Wet vs. Dry: Priority constituents identified during wet weather include biochemical oxygen demand (BOD), total suspended solids (TSS), turbidity, total and dissolved phosphorus, oil and grease, chemical oxygen demand (COD), nitrite, methylene blue active substance (MBAS), bifenthrin, L-cyhalothrin, and fecal coliform. During dry weather, priority constituents were ammonia, BOD, MBAS, total nitrogen, total and dissolved phosphorus, COD, turbidity, fecal coliform, and enterococci. Bifenthrin, cypermethrin, and permethrin were detected in post-storm sediment samples, suggesting a possible link between wet weather runoff and dry weather conditions. Increasing trends were noted for total and fecal coliform, enterococci, nitrate, TSS, turbidity, total arsenic, total copper, total lead, and total zinc. Decreasing trends were noted for conductivity, total dissolved solids (TDS), diazinon, dissolved nickel, and dissolved zinc.

  The TJR-MLS and TJR-TWAS-2 are downstream of the International Boundary Water Commission (IBWC) wastewater treatment plant. During ambient conditions, low flows

are diverted from the Tijuana River and nearby tributaries to the treatment plant, which has a 25 million gallon per day flow capacity (IBWC, 2008). When flow capacities are reached due to stormwater runoff and high base flows, the ambient runoff bypasses the plant and flows are sent downstream untreated (IBWC, 2008). The TJR-MLS and TJR-TWAS-2 sites were both influenced from untreated runoff flows during both dry weather monitoring events.

- Receiving Water vs. MS4 – Wet Weather: Priority constituents identified in both MS4 and receiving waters during wet weather were TSS and fecal coliform.
- Receiving Water vs. MS4 – Dry Weather: Priority constituents identified in both MS4 and receiving waters during dry weather were total phosphorus, total nitrogen, and enterococci. This suggests that potential relationships exist between receiving water concentrations of phosphorus and urban runoff.
- MS4 – Wet vs. Dry Weather: The results of the MS4 outfall program indicate that bacteria are common high priority constituents for both wet and dry weather flows at MS4 outfalls. Although total phosphorus and total nitrogen were identified as priority dry weather constituents, storm event flows may also contribute elevated nutrient loads and would need to be assessed with the loading capacity of the receiving water body. Total and dissolved phosphorus were identified as priority constituents in receiving waters during dry weather. Low dissolved oxygen (DO) was also identified as an issue in dry weather urban runoff. However, the receiving waters are primarily influenced from raw wastewater discharges that bypass the IBWC treatment plant.

The key findings for the Tijuana River TWAS-2 Dairy Mart Rd. drainage area (Table 2-3) include:

- Receiving Water - Wet vs. Dry: Receiving waters at TJR-TWAS-2 had similar characteristics as the MLS just downstream. Priority wet weather constituents included BOD, TSS, turbidity, total and dissolved phosphorus, oil and grease, COD, MBAS, bifenthrin, permethrin, and fecal coliform. Dry weather constituents were similar to wet weather with priority constituents identified as ammonia, BOD, COD, MBAS, TSS, turbidity, total nitrogen, total and dissolved phosphorus, fecal coliform, and enterococci. Bifenthrin and cypermethrin were identified in post-storm sediment samples, suggesting a possible link between wet weather runoff and dry weather conditions. Similar to the MLS, the TJR-TWAS-2 site is influenced from raw wastewater discharges that bypass the IBWC treatment plant.
- Receiving Water vs. MS4 -Wet Weather: Similar to the MLS, priority constituents identified in both MS4 and receiving waters during wet weather were TSS and fecal coliform at the TJR-TWAS-2.
- Receiving Water vs. MS4 - Dry Weather: Priority constituents identified in both MS4 and receiving waters during dry weather were total phosphorus, total nitrogen, and enterococci. This suggests that potential relationships exist between receiving water

concentrations of phosphorus and urban runoff. These results are similar to the results at the downstream MLS.

- MS4 - Wet vs. Dry Weather: The results of the MS4 outfall program indicate that bacteria are common high priority constituents for both wet and dry weather flows at MS4 outfalls. Although total phosphorus and total nitrogen were identified as priority dry weather constituents, storm event flows may also contribute elevated nutrient loads and would need to be assessed with the loading capacity of the receiving water body. As mentioned above, the receiving waters are primarily influenced from raw wastewater discharges that bypass the IBWC treatment plant.

Table 2-2 Summary of Tijuana River WMA Assessment Findings MLS at Hollister St.

Tijuana River-MLS Hollister St.			
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**	**Core Questions Addressed**
Receiving Water Monitoring (MLS, TWAS, and SMC)	**Chemistry:** Ammonia, BOD, MBAS, Total Nitrogen, Total Phosphorus, Dissolved Phosphorus, COD (Med), Turbidity (Med) **Bacteria:** Fecal Coliform, Enterococci **Biology:** Very Poor IBI **Toxicity:** *C. dubia* reproduction, *S. capricornutum* growth, *H. azteca* survival (Med) **Synthetic Pyrethroids Assessment:** Bifenthrin, Cypermethrin, Permethrin (sediment)	**Chemistry:** BOD, TSS, Turbidity, Total Phosphorus, Dissolved Phosphorus (Med), oil and grease (O&G) (Med), COD (Med), Nitrite (Med), MBAS (Med) **Bacteria:** Fecal Coliform **Toxicity:** *C. dubia* acute and chronic survival and reproduction, *H. azteca* survival (Med) **Synthetic Pyrethroids:** Bifenthrin (Med), L-Cyhalothrin (Med)	1, 2
Urban Runoff Monitoring (MS4 Outfall)	**Chemistry:** Total Phosphorus, Total Nitrogen **Dissolved Oxygen** **Bacteria:** Enterococci	**Chemistry:** TSS **Bacteria:** Fecal Coliform	3, 4
MLS Trends*			
Increasing		Fecal Coliform, Total Coliform, Enterococci, Nitrate, Total Suspended Solids, Turbidity, Total Arsenic, Total Copper, Total Lead, Total Zinc	5
Decreasing		Conductivity, TDS, Diazinon, Dissolved Nickel, Dissolved Zinc	

*Trends based on available data. Due to the rotational nature of the monitoring program, some years may not have recorded data.
1: High frequency constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

BOD - biochemical oxygen demand
COD - chemical oxygen demand
IBI - Index of Biotic Integrity
MBAS - methylene blue active substance
Med - Medium Priority Constituent
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
TSS - total suspended solids
TWAS - temporary watershed assessment station

Table 2-3 Summary of Tijuana River WMA Assessment Findings TJR-TWAS-2 at Dairy Mart Rd.

Tijuana River-TWAS-2 Dairy Mart Rd.			
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**	**Core Questions Addressed**
Receiving Water Monitoring (MLS, TWAS, and SMC)	**Chemistry:** Ammonia, BOD, COD, MBAS, TSS, Turbidity, Total Nitrogen, Total Phosphorus, Dissolved Phosphorus **Bacteria:** Fecal Coliform, Enterococci **Biology:** Poor IBI **Toxicity:** *C. dubia* acute and chronic survival, *S. capricornutum* growth (Med) **Synthetic Pyrethroids Assessment:** Bifenthrin, Cypermethrin (sediment)	**Chemistry:** BOD, TSS, Turbidity, Total Phosphorus, Dissolved Phosphorus (Med), O&G (Med), COD (Med), MBAS (Med) **Bacteria:** Fecal Coliform **Toxicity:** *C. dubia* acute and chronic survival and reproduction, *H. azteca* survival (Med) Synthetic Pyrethroids: Bifenthrin, Permethrin (Med)	1, 2
Urban Runoff Monitoring (MS4 Outfall)	**Chemistry:** Total Phosphorus, Total Nitrogen, **Dissolved Oxygen** **Bacteria:** Enterococci	**Chemistry:** TSS **Bacteria:** Fecal Coliform	3, 4

1: High frequency constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

BOD - biochemical oxygen demand
COD - chemical oxygen demand
IBI - Index of Biotic Integrity
MBAS - methylene blue active substance
Med - Medium Priority Constituent
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
TSS - total suspended solids
TWAS - temporary watershed assessment station

The key findings for the Tijuana River TWAS-1 Campo drainage area (Table 2-4) include:

- Receiving Water - Wet vs. Dry: The Tijuana River TWAS-1 site in Campo receives runoff only from the U.S. side of the border and is considerably different from the downstream MLS and TWAS-2 locations. Priority constituents identified during wet weather included TSS, turbidity, MBAS, bifenthrin, and fecal coliform. During dry weather, priority constituents were limited to enterococci. Cyfluthrin was above the benchmark in post-storm sediments.
- Receiving Water vs. MS4 -Wet Weather: No MS4 outfall samples were collected in this drainage area during wet weather. Therefore, no comparison is made between the MS4 and receiving water.
- Receiving Water vs. MS4 - Dry Weather: No MS4 outfall samples were collected in this drainage area during dry weather. Therefore, no comparison is made between the MS4 and receiving water.

- MS4 - Wet vs. Dry Weather: No MS4 outfall samples were collected in this drainage area during wet or dry weather.

Table 2-4 Summary of Tijuana River WMA Assessment Findings TJR-TWAS-1 — Campo

Tijuana River TWAS-1 (Campo)			
System Assessed	**Annual Dry Weather Constituents of Concern[1]**	**Annual Wet Weather Constituents of Concern[1]**	**Core Questions Addressed**
Receiving Water Monitoring (MLS, TWAS, and SMC)	**Chemistry:** None **Bacteria:** Enterococci (Med) **Biology:** Poor IBI **Toxicity:** *S. capricornutum* growth (Med) **Synthetic Pyrethroids Assessment:** Cyfluthrin (sediment)	**Chemistry:** TSS, Turbidity, MBAS (Med) **Bacteria:** Fecal Coliform **Toxicity:** None **Synthetic Pyrethroids:** bifenthrin (Med)	1, 2
Urban Runoff Monitoring (MS4 Outfall)	**Chemistry:** No samples in this drainage area **Bacteria:** No samples in this drainage area	**Chemistry:** No samples in this drainage area **Bacteria:** No samples in this drainage area	3, 4

1: High frequency constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.

IBI - Index of Biotic Integrity
MBAS - methylene blue active substance
Med - Medium Priority Constituent
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
TSS - total suspended solids
TWAS - temporary watershed assessment station

Persistent toxicity was observed during both ambient and wet weather monitoring at sites TJR-MLS and TJR-TWAS-2. Toxicity to C. dubia acute and chronic survival, and reproduction was observed during wet weather at TJR-MLS and TJR-TWAS-2. During ambient weather, toxicity to C. dubia reproduction was observed at TJR-MLS and acute and chronic survival at TJR-TWAS-2. Additionally, toxicity to S. capricornutum was also persistent at TJR-MLS. Although the Permit recommendations suggest toxicity identification evaluation (TIEs) may be of use, the documented chemical concentrations indicating raw wastewater discharges did not warrant conducting a TIE. Persistent toxicity was not observed during wet or dry weather at TJR-TWAS-1 in Campo.

Bioassessment results in the Tijuana River WMA indicated either Poor or Very Poor ratings. The TJR-TWAS-1 site in Campo was the highest rated site (Poor) and was only two points lower than a Fair rating. The observed to expected ratio (O/E) score indicated unimpaired conditions at TJR-TWAS-1. The TJR-TWAS-2 site was also rated Poor, but the assessment result was higher than

conditions suggested due to IBI methodology differences. The O/E score indicates that this site is the second most impaired of all sites monitored. The TJR-MLS site was rated Very Poor, and the O/E ratio indicated this site was the most impaired of all sites monitored. Physical habitat scores were high (good) at the TJR-MLS and the TJR-TWAS-1 site in Campo. Physical habitat scores were low (impaired) at TJR-TWAS-2. The two lower site locations had very degraded benthic macroinvertebrate (BMI) and algae communities with very low diversity and a predominance of organisms indicative of organic waste.

The spatial distribution of the identified wet weather priority constituents is summarized in Table 2-5 with the referenced hydrologic subareas (HSAs) presented on Figure 2-1. Table 2-5 presents the wet weather priority constituents identified for the receiving water, and the corresponding ratings for these same constituents in each HSA based on the MS4 program results. Similarly, Table 2-6 presents the identified dry weather priority constituents with the referenced HSAs presented on Figure 2-1. Table 2-6 provides a spatial distribution of dry weather priority constituents within each HSA based on the receiving water results. This table indicates the priority ratings for the constituents identified for the receiving water based on SMC data. The spatial results that identify HSA/drainage areas containing a higher number of priority constituents at MS4 locations with similar priority constituents as the receiving waters should be considered in developing the watershed management actions.

Table 2-7 provides a summary of the §303(d) listed water bodies and constituents within the Tijuana River WMA, and identifies whether the annual regional data or other available data sets support the listings. Table 2-7 also identifies where there are no data, and whether total maximum daily loads (TMDLs) have been developed. As identified in Table 2-7, several of the listings occur in reservoirs that are managed by other agencies such as the City of San Diego Metropolitan Water District or San Diego County Water Authority.

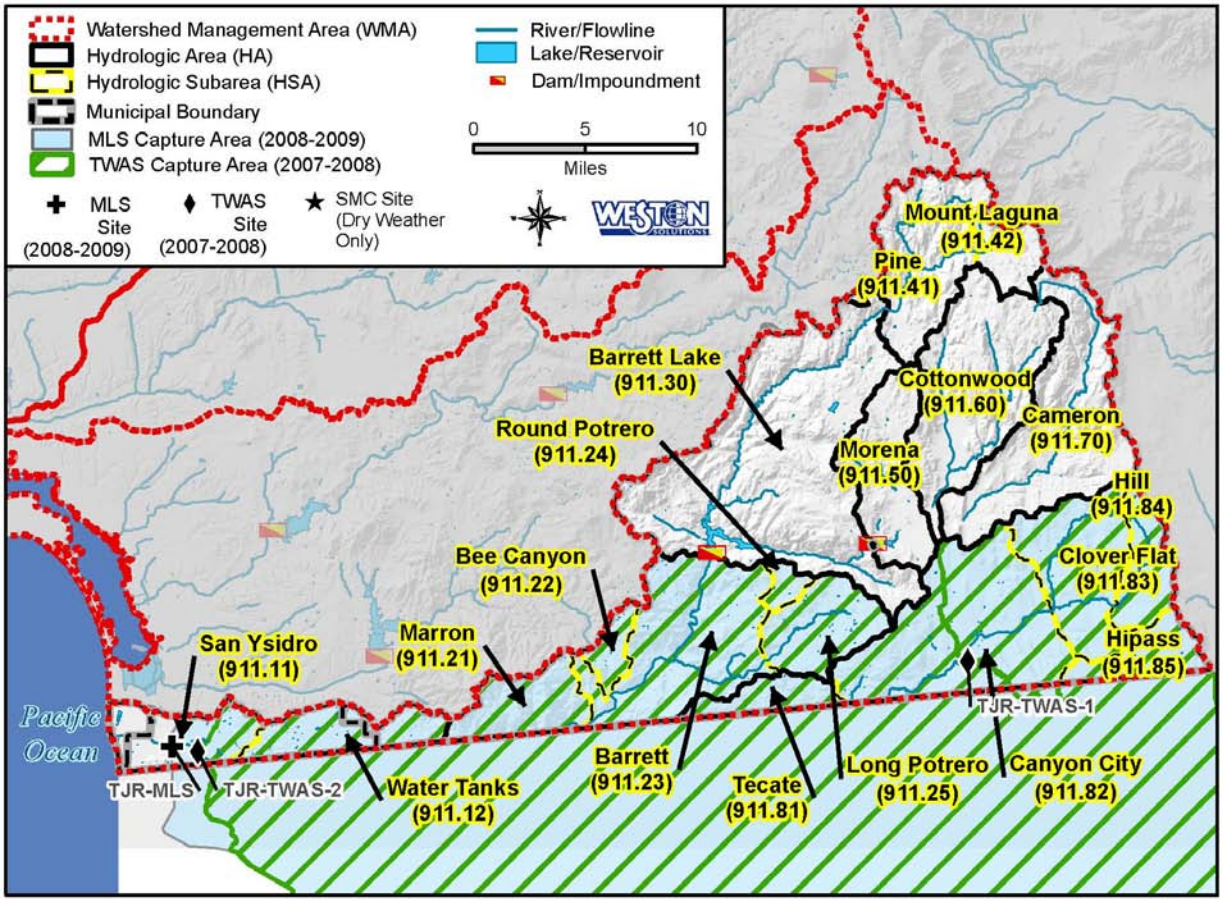

Figure 2-1: Location of MLS, TWAS, and HSA – Tijuana River WMA

Table 2-5: Summary of Spatial Distribution of Priority Wet Weather Constituents

Station Type	HA	HSA	Parameter	Nitrite as N	Dissolved Phosphorus	Total Phosphorus	Total Suspended Solids	Fecal Coliforms	Turbidity	MBAS	Oil & Grease	Bifenthrin	Permethrin	L-cyhalothrin	BOD	COD
MS4 by HSA	*Tijuana Valley (911.10)*	*San Ysidro (911.11)*	*n*	4	0	4	4	4	0	0	0	0	0	0	0	0
			% > Criteria	0%	NA	0%	50%	75%	NA	NA	NA	NA	NA	NA	NA	NA
		Water Tanks (911.12)	*n*	2	0	2	2	2	0	0	0	0	0	0	0	0
			% > Criteria	0%	NA	0%	0%	0%	NA	NA	NA	NA	NA	NA	NA	NA
TJR-MLS Summary (Hollister St.) (MS4 to Receiving Water Comparison)			*MS4 (n)*	0	0	0	0	0	0	0	0	0	0	0	0	0
			MS4 % > Criteria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			RW Score	Low	Low	Low	High	High	High	Med	Low	Med	Low	Low	Low	Low
TJR-TWAS-2 Summary (Dairy Mart Rd.) (MS4 to Receiving Water Comparison)			*MS4 (n)*	3	0	3	3	3	0	0	0	0	0	0	0	0
			MS4 % > Criteria	0%	NA	0%	33%	33%	NA	NA	NA	NA	NA	NA	NA	NA
			RW Score	Med	Med	High	High	High	High	Med	Med	Med	Low	Med	High	Med
TJR-TWAS-1 Summary (Campo) (No MS4 Stations for Comparison)			*MS4 (n)*	3	0	3	3	3	0	0	0	0	0	0	0	0
			MS4 % > Criteria	0%	NA	0%	33%	33%	NA	NA	NA	NA	NA	NA	NA	NA
			RW Score	Low	Med	High	High	High	High	Med	Med	High	Med	Low	High	Med

No MS4 stations within TJR-TWAS-1 Drainage Area.

HAs without MS4 stations are not are shown in table and include Potrero (911.20), Barrett Lake (911.30), Monument (911.40), Moreno (911.50), Cottonwood (911.60), Cameron (911.70), and Campo (911.80).

Key

High	> 50% Above benchmark
Medium	> 25% and ? 50% Above benchmark
Low	? 25% Above benchmark
No Data	

BOD - biochemical oxygen demand
COD - chemical oxygen demand
HA - hydrologic area
HSA- hydrologic subarea
MBAS - methylene blue active substance
MLS - mass loading station
MS4 - municipal separate storm sewer system
NA – not available
RW – receiving water
TWAS – temporary watershed assessment station

Table 2-6: Summary of Spatial Distribution of Priority Dry Weather Constituents

Station Type	HA	HSA	Parameter	Total Nitrogen (calculated)	Dissolved Phosphorus	Total Phosphorus	Total Suspended Solids	Fecal Coliform	Entero-coccus	Ammonia-N	Turbidity	MBAS	BOD	COD
MS4 by HSA	*Tijuana Valley (911.10)*	*San Ysidro (911.11)*	*n*	3	0	3	3	4	4	0	0	1*	0	0
			% > Criteria	67%	NA	100%	0%	25%	75%	NA	NA	100%	NA	NA
		Water Tanks (911.12)	*n*	1*	0	1*	1*	1*	1*	0	0	0	0	0
			% > Criteria	100%	NA	100%	0%	0%	100%	NA	NA	NA	NA	NA
	Barrett Lake (911.30)	*Barrett Lake (911.30)*	*n*	1*	0	1*	1*	1*	1*	0	0	0	0	0
			% > Criteria	0%	NA	100%	0%	0%	100%	NA	NA	NA	NA	NA
TJR-MLS Summary (Hollister St.) (MS4 to Receiving Water Comparison)			*MS4 (n)*	3	0	3	3	3	3	0	0	0	0	0
			MS4 % > Criteria	67%	NA	100%	0%	0%	67%	NA	NA	NA	NA	NA
			RW Score	High	High	High	Low	High	High	High	Med	High	High	Med
TJR-TWAS-2 Summary (Dairy Mart Rd.) (MS4 to Receiving Water Comparison)			*MS4 (n)*	2	0	2	2	2	2	0	0	0	0	0
			MS4 % > Criteria	100%	NA	100%	0%	0%	100%	NA	NA	NA	NA	NA
			RW Score	High	High	High	High	High	High	High	High	High	High	High
TJR-TWAS-1 Summary (Campo) (No MS4 Stations for Comparison)			*MS4 (n)*	0	0	0	0	0	0	0	0	0	0	0
			MS4 % > Criteria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			RW Score	Low	Low	Low	Low	Low	Med	Low	Low	Low	Low	Low

*One station was used in the summary.
No MS4 stations within TJR-TWAS-1 Drainage Area.
HAs without MS4 stations are not are shown in table and include Potrero (911.20), Monument (911.40), Moreno (911.50), Cottonwood (911.60), Cameron (911.70), and Campo (911.80).

Key

High	> 50% Above benchmark
Medium	> 25% and ≤ 50% Above benchmark
Low	≤ 25% Above benchmark
No Data	

BOD - biochemical oxygen demand
COD - chemical oxygen demand
HA - hydrologic area
HSA- hydrologic subarea
MBAS - methylene blue active substance
MLS - mass loading station
MS4 - municipal separate storm sewer system
NA – not available
RW – receiving water
TWAS – temporary watershed assessment station

Table 2-7: Tijuana River WMA Assessment Conclusions in Relation to 2006 Section 303(d) Listings

Waterbody Name	HSA	HSA No.	303(d) Listed Pollutant/Stressor	Supported by Regional Data	Supported by SMC/ Third-Party Data	No Data	TMDL	Runoff Area Managed by Other Agency
Tijuana River	**San Ysidro**	**911.11**	**Indicator bacteria, eutrophic conditions, low DO, pesticides, solids, synthetic organics, trace elements, and trash**	✓				
Tijuana River Estuary	**San Ysidro**	**911.11**	**Indicator bacteria, eutrophic conditions, lead, low DO, nickel, pesticides, thallium, trash, and turbidity**	✓				
Pacific Ocean Shoreline, Tijuana HU	**San Ysidro**	**911.11**	**Indicator bacteria**	✓				
Barrett Lake	**Barrett Lake**	**911.30**	**Color, manganese, and pH**					✓
Pine Valley Creek (upper)	**Pine**	**911.41**	**Enterococci, phosphorus, and turbidity**			✓		
Morena Reservoir	**Morena**	**911.50**	**Color, manganese, and pH**					✓

Listing Source: SWRCB, 2006. The 2010 Section 303(d) List was made available after the development of this report and will be updated in future reports.
DO - dissolved oxygen
HSA - hydrologic subarea
HU - hydrologic unit
SMC - Stormwater Monitoring Coalition
SWRCB - State Water Resources Control Board
TMDL - total maximum daily load

As required by the Permit, the five Core Management Questions are addressed. Responses are based on monitoring of the receiving waters at the MLS, TWAS, and as part of the SMC monitoring. Where applicable, monitoring results are evaluated using a weight of evidence approach that includes the triad assessment of chemistry, biology, and toxicity. Results were assessed using two monitoring sites in the western portion of the WMA (Tijuana Valley HA (911.10)) and one site in the Campo HA (911.80).

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed through wet and dry weather receiving water assessments. The results of monitoring were considerably different between the upstream site in Campo (TJR-TWAS-1) as compared to the two downstream sites (TJR-MLS and TJR-TWAS-2).

The TJR-MLS and TJR-TWAS-2 are downstream of the International Boundary Water Commission (IBWC) wastewater treatment plant. During dry weather, low flows are diverted from the Tijuana River and nearby tributaries to the treatment plant, which has a 25 million gallon per day flow capacity. When flow capacities are reached due to stormwater runoff and high base flows, the runoff bypasses the plant and flows are sent downstream untreated (IBWC, 2008). The lower watershed sites were both influenced from untreated runoff flows during wet weather and winter and spring dry weather monitoring events. The two lower watershed sites were not flowing during the September equipment installation. During winter dry flows at the Lower Tijuana HA (911.10), high priority constituents were identified for ammonia, BOD, COD, MBAS, total nitrogen, total phosphorus, dissolved phosphorus, TSS, turbidity, fecal coliform, and enterococci. In the Campo HA (911.80), there were no high priority constituents identified. Medium priority constituents were identified for only enterococci. During wet weather in the Lower Tijuana HA (911.10), high priority constituents were identified for BOD, TSS, turbidity, total phosphorus, bifenthrin, and fecal coliform. Medium priority constituents were identified for dissolved phosphorus, O&G, COD, nitrite, permethrin, L-cyhalothrin, and MBAS. In the Campo HA (911.80), high priority wet weather constituents were identified for TSS, turbidity, and fecal coliform. Medium priority constituents were identified for MBAS and bifenthrin. These results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Bioassessment results in the Tijuana River WMA were rated either Poor or Very Poor. The site in the Campo HA (911.80) was the highest rated site (Poor) and was only two points lower than a Fair rating. The observed to expected ratio (O/E) score indicated unimpaired conditions. The TJR-TWAS-2 site was also rated Poor, but appears to be artificially higher than conditions suggest. The O/E score was the second most impaired of all sites monitored. The TJR-MLS site was rated Very Poor and the O/E ratio was the most impaired of all sites monitored. Physical habitat scores were high (good) at the TJR-MLS (Lower Tijuana HA) and the TJR-TWAS-1 site in the Campo HA. Physical habitat scores were low (impaired) at TJR-TWAS-2. The two lower sites had very degraded BMI and algae communities with very low diversity and a predominance of organisms indicative of organic waste. The bioassessment results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Toxicity was observed during both ambient and wet weather monitoring in the Lower Tijuana HA (911.10). Toxicity to C. dubia acute and chronic survival, and reproduction was observed during wet weather. During ambient weather, toxicity to C. dubia reproduction was observed. Additionally, toxicity to S. capricornutum was persistent at TJR-MLS during dry weather. Although the triad recommendations suggest TIEs may be of use, the documented chemical concentrations indicating raw wastewater discharges did not warrant conducting a TIE. Persistent toxicity was not observed during wet or dry weather in the Campo HA (911.80). Toxicity was not observed during wet weather monitoring. However, toxicity to S. capricornutum was observed during one dry weather event. This suggests that conditions vary between upstream and downstream in receiving waters may not be protective of all assigned beneficial uses.

2. What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed through spatial analysis of results and the frequency of the results above benchmarks. As mentioned above, conditions are markedly different downstream of the IBWC treatment plant in comparison to conditions at the site in the Campo HA (911.80). Chemistry constituents downstream of the IBWC treatment plant were indicative of raw wastewater effluent with results above benchmarks being considerably higher than those throughout the region. In contrast, the site in the Campo HA had considerably fewer results above benchmarks. TDS concentrations were generally similar amongst all sites monitored.

As mentioned above, bioassessment scores were rated either Poor or Very Poor. The site in the Campo HA (911.80) was the highest rated site (Poor) and was only two points lower than a Fair rating. The two lower watershed sites were rated Poor or Very Poor and the O/E scores were the most impaired of all sites monitored in the region.

Toxicity was most pronounced at the lower watershed sites. Toxicity to C. dubia acute and chronic survival, and reproduction was observed during wet weather. During ambient weather, toxicity to C. dubia reproduction was observed. Additionally, toxicity to S. capricornutum was also persistent at the TJR-MLS. As mentioned above, toxicity was observed during only one dry weather event (S. capricornutum) in the Campo HA (911.80).

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. It is evident that receiving water impairments in the lower watershed are largely a function of untreated wastewater that bypasses the IBWC treatment plant and trash. For the MS4 outfall monitoring, there were relatively few accessible sites in the lower Tijuana River WMA. As such, the limited sample data set may not be reflective of the majority of the outfalls that exist. During wet weather, no high priority constituents were identified in the outfalls monitored. TSS and fecal coliform were identified as medium priority constituents in the TJR-MLS and TJR-TWAS-1 drainage area. No wet weather MS4 Outfall samples were collected in the TJR-TWAS-1 drainage area in Campo. During dry weather, total phosphorus, total nitrogen, dissolved oxygen, and enterococci were identified as high priority constituents in the TJR-MLS and TJR-TWAS-2 drainage areas. No medium priority constituents were identified. All other parameters monitored were low priority. No MS4 outfall samples were collected in the TJR-TWAS-1 drainage area. MS4 outfalls may contribute to receiving water problems. This question may be answered with a higher level of confidence with the five year assessment required by the MS4 Outfall Monitoring Workplan.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional DWM Program, the CSDM Program, and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources can be found in each Copermittee's Jurisdictional Urban Runoff Monitoring Program Annual Report. A wet weather source identification study of single family residences was conducted by the Copermittees during the 2009–2010 Monitoring Season.

Results from this study suggest that fecal coliforms, TSS, turbidity, synthetic pyrethroids, dissolved metals, and Malathion may locally occur in concentrations above wet weather benchmarks. The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.

5. Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the Tijuana River MLS. Increasing trends were observed for fecal coliform, total coliform, enterococci, nitrate, TSS, turbidity, total arsenic, total copper, total lead, and total zinc. Decreasing trends were observed for conductivity, TDS, Diazinon, dissolved nickel, and dissolved zinc.

There are no apparent trends in the benthic community. The bioassessment ratings in the WMA have been Poor or Very Poor in all assessments conducted from 2001 to 2008. The results of the 2010 survey were also Poor or Very Poor at all locations.

Wet weather monitoring in the Tijuana River has shown observed toxicity in each of the three C. dubia tests in every storm monitored since 2001. Toxicity has also been demonstrated in 33% of the 21 monitored storms for the H. azteca acute test. Although toxicity to the algae S. capricornutum has not been observed during any monitored storms, persistent toxicity was observed to this test organism during ambient conditions at the MLS. Although the toxicity data suggest evidence of persistent toxicity to C. dubia in wet weather conditions, no trends in the data set are apparent.

2.2 Pollutant Source Assessment

The Permit requires the Tijuana River WMA Copermittees to identify the high priority water quality problems and identify the likely sources within the Tijuana River WMA and implement activities that will address these pollutants.

A key component of identifying sources of pollutants is knowledge of the land uses and the pollutant-generating activities associated with these specific land uses (e.g., urban and agricultural land uses can result in high levels of nutrients in runoff). The Tijuana River WMA straddles the US–Mexico border with only a quarter of its 1.1 million acres lying within San Diego County. Throughout the WMA, the predominant land use is classified as vacant and undeveloped (60% on the US side, 82% on the Mexico side). On both sides of the border, the watershed becomes less populated from west to east. The major population centers in the watershed are the cities of Tijuana and Tecate in Mexico and cities of Imperial Beach and San Diego in the US. Within the Tijuana River WMA, jurisdictional control is divided amongst the County of San Diego, City of San Diego, and the City of Imperial Beach.

The likely sources of pollutants within the Tijuana River WMA are identified in Table 2-8 below. In addition to these sources, the Weston Monitoring Report (2010) identified the likely sources of trash as being the urbanized population centers found in the lower portion of the WMA which had

the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor trash ratings.

The results of the 2009-2010 monitoring programs indicate that the high frequency Constituents of Concern for wet weather are biochemical oxygen demand (BOD), total suspended solids (TSS), turbidity, total and dissolved phosphorus, oil and grease, chemical oxygen demand (COD), nitrite, methylene blue active substance (MBAS), bifenthrin, L-cyhalothrin, and fecal coliform. During dry weather, priority constituents were ammonia, BOD, MBAS, total nitrogen, total and dissolved phosphorus, COD, turbidity, fecal coliform, and enterococci. Bifenthrin, cypermethrin, and permethrin were detected in post-storm sediment samples, suggesting a possible link between wet weather runoff and dry weather conditions. Based on the Weston Monitoring Report, trash is also considered a Constituent of Concern in the 911.10 HA. These Constituents of Concern are also high priority water quality problems that are currently being addressed by several of the watershed activities.

Additionally, pollutants for all water bodies included on the 2006 303(d) list are considered as high priority and are listed in Table 2-7 above. There are several changes being proposed for the Tijuana WMA 2008 303(d) list, and these changes will be discussed in future annual reports.

Table 2-8 Likely Sources for High Priority Pollutants

Pollutant	Potential Sources	Pollutant	Potential Sources
Bacterial Indicators	Domestic animals	Trace Metals	Automobiles
	Sewage overflow		Industrial Waste
	Septic systems	Pesticides	Agriculture
	Wildlife		Commercial landscaping
Nutrients & Oxygen	Agriculture		Residential landscaping
	Sewage overflow		Industrial waste
	Septic systems	Gross Pollutants	Commercial
Organic Compounds	Agriculture		Illegal disposal
	Commercial landscaping		Residential
	Residential landscaping	Sediment TSS/Turbidity	Agriculture
	Sewage overflow		Grading/Construction
	Septic systems		Slope Erosion

In addition to the regional monitoring, the Tijuana River WMA copermittees continued the source identification studies. These projects are discussed below.

Imperial Beach Bacteria Source ID

Funding for the Proposition 50 Clean Beach Initiative Grant was reinstated in February 2010 for the Tijuana River Bacteria Source Identification Study. The purpose of the study is to identify sources of bacterial contaminates in the U.S. western most portion of the Tijuana River Watershed and recommend BMP activities to reduce the input of those sources to the watershed. The project consists of a number of sanitary surveys and special studies that will assess bacterial sources from the MS4, sediment stock piles, natural sources, ground water, and cross-border loads. Most of the project activity during the reporting period consisted of redeploying monitoring equipment, planning for the second sanitary survey, and collaborating with stakeholders.

Sanitary Survey Dry Weather Monitoring Results

During the reporting period the Copermittees planned for the second of two sanitary surveys to be conducted in July 2010. The survey will revisit the same 220 monitoring sites as the first sanitary survey and conducted analysis for bacteria (enterococci, fecal coliforms, and Bacteroides), nutrients (ammonia, nitrate, nitrite, and orthophosphate), and general chemistry (conductivity, DO, salinity, temperature, MBAS, and pH) whenever water is present. Results will be presented in the next annual report. The results of the first sanitary survey were presented in the FY08-09 Tijuana WURMP Annual Report.

Wet Weather Monitoring Results

Plans were also completed for the second wet weather monitoring event scheduled for the upcoming winter season. This winter one pollutograph sampling event will be performed at Dairy Mart, Hollister Street, Saturn Street, and select locations identified by the sanitary survey. Results will be presented in the next annual report.

SECTION 3.0 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 Watershed Water Quality Activities

This section describes the Watershed Water Quality Activities conducted by the Copermittees in FY09-10 to address the high priority water quality problems identified in the Tijuana River WMA WURMP (March 2008). Table 3-1 identifies each of the water quality activities that occurred during the reporting period and includes information pertaining to the lead jurisdiction, the hydrological area(s) impacted, and the priority pollutants targeted by each activity. Several watershed water quality activities also included an education component and are identified in Table 3-1. Progress on all watershed activities has been described in the standardized template, which clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems. For more detail on the specific activities and anticipated future activities, please refer to Attachment 1 for the Watershed Activity Summary Sheets.

During the reporting period, the Tijuana River WMA Copermittees implemented, or were actively planning, a total of 26 activities. Out of the 26 activities there were 19 Watershed Water Quality Activities, nine of which were in an active implementation phase defined by the Municipal Permit. Watershed Water Quality Activities ranged from pet waste dispenser programs to trash cleanup events. Additionally, there were two monitoring and source characterization studies conducted during FY09-10 (see TJ-013 and TJ-018 in Attachment 1).

Table 3-1: Water Quality, Education and Land Use Activities

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	HA	High Priority Water Quality Problems									
							Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-001	Pet Waste Dispenser Program	COSD		X		911.2 911.4 911.5	X									X
TJ-002	Land Acquisition	COSD		X		All	X	X	X	X	X	X	X	X	X	X
TJ-003	ILACSD Trash Clean-Up Sponsorship	SD		X	X	911	X	X								
TJ-004	Coastal Clean-up Day Sponsorship	SD		X	X	911	X	X								
TJ-007	Targeted Auto-Related Facility Inspections	SD		X	X	911.1 911.2					X					
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnects	SD		X		911.1 911.2	X		X	X	X					
TJ-010	City-Wide Clean-Up Events	IB		X	X	911	X	X								
TJ-011	Large Special Event Clean-up and Inspections	IB		X	X	911	X	X								
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	COSD		X		911.1		X	X					X		
TJ-013	Tijuana River Bacteria Source Identification Study	IB	COSD, SD	X		911.1 911.2	X									
TJ-015	Karma and Karma Second Chance PSA	SD			X	911.1 911.2	X	X						X		
TJ-017	Invasive Species Removal Program in Tijuana River Park	COSD		X		911.1	X		X							
TJ-018	Trash and Sediment Characterization Study	COSD	SD	X	X	911		X	X							
TJ-019	City of San Diego Strategic Plan Implementation	SD		X	X	911.1 911.2	X				X			X		
TJ-020	Pet Waste Dispenser Program	SD		X		911.1 911.2	X									

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	HA	High Priority Water Quality Problems									
							Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-022	Tijuana River Gross Solids and Sediment BMP's Design	SD		X		911		X	X							
TJ-023	Tijuana River Watershed Brochure	SD			X	911.1 911.2	X		X	X	X	X		X		
TJ-025	Smuggler's Gulch, Pilot Channel, and Northern Channel Sediment and Debris Removal	SD		X		911		X	X					X		
TJ-026	WILDCOAST Spring Clean-Up Event; Effie May Trail	COSD	SD	X	X	911		X								
TJ-027	Tijuana River Action Month	COSD	SD, IB	X	X	911		X								
TJ-028	Xeriscaping of Municipal Facilities	IB		X		911	X									X
TJ-029	Fiesta del Rio Event	SD			X	911	X	X	X	X	X	X	X	X	X	X
TJ-030	Beyer Boulevard Trash Segregation BMP Installation	SD		X		911	X	X						X		
TJ-031	Sweeper Speed Efficiency Study	SD		X		911	X									
TJ-032	Residential Rain Barrel Subsidies and Distribution	COSD			X	911	X		X	X	X	X	X		X	X
TJ-033	SB346: Motor Vehicle Brake Friction Materials	SD		X		ALL					X					

3.2 Watershed Education Activities

The Tijuana River WMA Copermittees recognize the need for education programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. In addition to the watershed education activities noted in Table 3-1, each of the Copermittees participated in or hosted several activities to promote watershed education as identified in Table 3-2 during FY09-10.

The County of San Diego also continues to sponsor the Project Clean Water website (www.projectcleanwater.org), which provides information pertinent to each of the watersheds in San Diego County. During FY09-10, there were 3,761 hits on the Tijuana River Watershed page and 2,709 hits on the Tijuana River WURMP page.

3.3 Public Participation Activities

The Tijuana River WMA Copermittees continue to actively encourage the participation and input of diverse stakeholders in the development and implementation of the Tijuana River watershed activities. Public participation is encouraged to ensure that stakeholder interests and creative solutions are considered. A number of activities, both education and water quality, are crafted to encourage public input and involvement (Table 3-1 & Table 3-2). Public participation activities included volunteer clean-up events, outreach to specific groups such as students and residents within the Tijuana River Watershed, County-wide public service announcements, and the Project Clean Water website.

In addition to the above activities during FY09-10 the City of San Diego finalized a Master Stormwater System Maintenance Program and its associated Program Environmental Impact Report (PEIR). The purpose of the Master Stormwater System Management Program will authorize the City to conduct regular maintenance activities in the numerous channels throughout the City, including those in the Tijuana River Valley. The maintenance program and the PEIR included a significant public participation component. It is expected that the maintenance program and the PEIR will be approved by the City and the Regulatory Agencies in FY10-11.

Table 3-2 Public Participation, Education, and Outreach Activities

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	07/11/09	Imperial County Visitors Lake Use	Lake Morena	Park Visitors	90	X	X		N
County	08/9/09	Trash Litter Policy	Lake Morena	Park Visitors	2	X	X		N
County	08/22/09	Grey Water Disposal Policy	Lake Morena	Park Visitors	1	X	X		N
County	09/1/09	Birding Event	Tijuana River Valley Regional Park (TJRVRP)	General Public	100	X	X		N
County	09/5/09	Dog Clean Up Sanitation Bag Location	Pine Valley Park	Park Visitors	2	X	X		N
County	10/4/09	Splash Lab - Fiesta Del Rio	Imperial Beach Pier	Students	2000	X			N
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	23	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students -	24	X			Y

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
				Biology					
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	28	X			Y
County	10/24/09	Coastal Clean Up	Tijuana River Valley Regional Park	General Public	300	X	X		N
County	11/13/09	Clean Up After Your Dog	Lake Morena	Park Visitors	1	X			N
County	11/21/09	Turkey Toss Recycle Aluminum	Pine Valley Park	Children	55	X	X		N
County	12/15/09	Splash Lab	Campo Elementary	Students - Grades 5 - 7	128	X			N
County	01/17/10	Kiosk Display	Pine Valley Park	Park Visitors	100	X	X	X	N
County	01/23/10	Fishing Tournament & Lake Use Policy	Lake Morena	Park Visitors	95		X		N
County	02/1/10	Information Change To Kiosks	Potrero Regional Park	Park Visitors	5		X	X	N
County	03/4/10	Birding Event	TJRVRP	General Public	25		X		N
County	03/5/10	Birding Event	TJRVRP	General Public	26		X		N
County	03/10/10	Community Health Fair - Sharps & HHW	Campo Senior Wellness Fair	Senior Residents in Campo	40	X	X		N
County	04/1/10	Earth Day: Crafts, Hike & Tree Planting	Potrero Regional Park	Park Visitors	13	X	X		N
County	04/4/10	Trash Litter Policy	Lake Morena	Park Visitors	4	X	X		N
County	04/6/10	Interpretive Program	TJRVRP	General Public	8	X	X		N

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	04/13/10	Watershed Education	Mt. Empire HS	Student - Economics	21	X			Y
County	04/13/10	Watershed Education	Mt. Empire HS	Student - Economics	22	X			Y
County	04/13/10	Watershed Education	Mt. Empire HS	Student - Economics	22	X			Y
County	04/13/10	Watershed Education	Mt. Empire HS	Student - Economics	22	X			Y
County	06/5/10	Coastal Clean Up	TJRVRP	General Public	60	X			N
County	06/7/10	Splash Lab	Clover Flat Elementary	Students - Grades 4 - 7	76	X			N
County	06/9/10	Green Machine	Jacumba Elementary	Students - Grades K - 2	55	X			N
County	06/12/10	Trash Litter Policy	Lake Morena	Park Visitors	2	X	X		N
County	06/13/10	Interpretive Program	TJRVRP	General Public	5	X	X		N
City of SD	09/19/09	SDCK Coastal Cleanup Day	San Ysidro	Gen Public	92	X	X	X	Y - 4,080 lbs. trash collected with an efficiency of $1.23per lb.
City of SD	04/24/10	ILACSD Creek to Bay Cleanup	San Ysidro	Gen Public	120	X	X	X	Y - 9,264 lbs. Trash Collected with an efficiency of $0.54 per lb.

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
City of SD	FY09-10	Poster Distribution	TJ WMA	Dev-Const Community	100		X	X	N
City of SD	FY09-10	Guidebook Distribution	TJ WMA	Bus Own / Op & Rest Emp	500		X	X	N
City of SD	FY 09-10	Watershed Brochure	TJ WMA	Res/Com/Ind	100	X	X	X	N
City of SD	FY09-10	Fiesta Del Rio Event	TJ WMA	Res/Com/Ind	4,000	X	X	X	N
Imperial Beach	FY09-10	EDCO Environmental Times (Quarterly Newsletter) Multiple articles on street sweeping, storm water, recycling	City-wide	Residents	28,000	X		X	N
Imperial Beach	FY09-10	Citywide Biannual (Winter and Summer) Newsletter: Multiple articles on storm water, recycling, street sweeping, FOG.	City-wide	Residents	28,000	X		X	N
Imperial Beach	08/1/09	I.B. Auto Show booth and handed out HHW information and oil pans	Seacoast Drive	General Public	1,000	X	X		Y-Survey
Imperial Beach	07/17-19/09	US Open Sandcastle Competition: Provided information to venders and public. Conducted storm water inspections for food booths.	Seacoast Drive	General Public and Commercial Business	300,000	X	X		Y-Survey
Imperial Beach	09/19/09	Coastal Cleanup Day: ILACSD multiple locations	Tijuana River Valley	General Public	--	X	X	X	N
Imperial Beach	10/20-22/09	Make a Difference Day: Job Corps students cleaned up the unimproved alleys and learned about storm water pollution through presentation	Unimproved Alleys	Students	30	X	X	X	Y- Estimated 6 tons of trash, green waste, and large bulky items
Imperial Beach	10/24/09	Wildcoast Dairy Mart bridge cleanup	Dairy Mart Bridge	General Public	300	X	X	X	Y- Estimated 5 tons of trash and 700 tires

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	03/1/10	Fix a Leak Week: Outreach with CalAmerican water for water conservation.	City-wide	General Public	28,000	X			N
Imperial Beach	04/1/10	Mayor Proclamation: April as Environmental Awareness Month in I.B.	City-wide	General Public	28,000			X	N
Imperial Beach	04/21/10	I.B. Sports Park after school environmental activity (County Splash Lab)	Sports Park	Students	45	X	X		N
Imperial Beach	04/24/10	Coastal Clean Up Day: ILACSD sponsorship and multiple clean-up sites	Tijuana River Valley	General Public	--	X	X	X	N
Imperial Beach	04/27-28/10	I.B. Sports Park after school environmental activity	Sports Park	Students	65	X	X		N
Imperial Beach	05/1/10	Annual Home Front Clean up	Mar Vista HS	General Public	822	X	X	X	Y- 175.6 tons of material collected
Imperial Beach	05/27/10	Watershed Model to 3rd and 5th graders	IB Elementary	Students	135	X			N
Imperial Beach	06/5/10	Wildcoast Tijuana River clean up	Sports Park	General Public	60	X	X	X	Y- 1000 lbs. trash and 100 tires

3.4 Collaborative Land-Use Planning Efforts

To encourage collaborative planning in the watershed and implementation of the Tijuana River WURMP, the Tijuana River WMA Copermittees met formally six times during FY09-10. The meetings are a forum to discuss watershed principles and develop collaborative efforts to reduce storm water pollution in the watershed, including possibilities for collaboration in land use planning (see Table 1-1).

The Tijuana River WMA Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Additionally, the Tijuana River WMA Copermittees have taken an active role in the formation and participation on the Tijuana River Valley Recovery Team (Recovery Team). The Recovery Team consists of a Steering Committee and four related subgroups or Action Team(s) made up of representatives from governmental, regulatory, and funding agencies, members of the scientific and environmental communities as well as affected stakeholders. The Recovery Team functions as a coordination and information sharing body to leverage the efforts of each of the responsible agencies, and the overall goal of the Recovery Team is to facilitate the restoration of the Tijuana River floodplain and estuary to a functional wetland ecosystem. The Recovery Team met a total of nine times during the FY09-10 reporting period. Some major milestones during the year included the acceptance by the City of San Diego of a $700,000 Clean-up and Abatement Funding Grant from the State Water Quality Control Board. This grant is to be used to study the hydrology and hydraulics of the lower Tijuana River Valley, study trash and sediment transport as a basis for sediment and trash detention basins planned in the river valley, and plan and implement three Visioning Workshops. The goal of the Visioning Workshops is to provide stakeholder input into the development of a roadmap for the restoration of the river valley. One Visioning Workshop was held during the reporting period and two more are planned for the next reporting period. Additional information can be found on the Tijuana River Recovery Team website (www.tjriverteam.org).

The Tijuana River Bacteria Source Identification Study involves collaborative planning through the development of a Technical Advisory Stakeholder group that meets quarterly to provide updates and to help shape the direction of the project. These stakeholder meetings encourage Copermittees to actively plan with community organizations to jointly identify potential sources of bacteria, trash, and sediment in the watershed. This information is then used to shape the direction of the special study component of the project that will recommend BMPs to address the sources of bacteria in the watershed. These BMP recommendations will allow Copermittees to provide recommendations to jurisdictional planning department staff regarding appropriate storm

water-related land use planning regulations and policies. The Technical Advisory group for the Tijuana River Bacteria Source Identification Study met twice during the past reporting period.

The Tijuana River WMA Copermittees will continue the working relationships and coordination implemented in FY09-10 by continuing regular watershed meetings to plan and implement the Tijuana River WURMP.

3.5 Updated 5-year Strategic Plan

Development of the 5-Year Strategic Plan included the formulation of a list of activities to implement over a five-year period, and the activities were integrated into the Tijuana River WURMP in March 2008. The Regional Copermittees recognized that there would be a need to revise the 5-year plan as new activities were identified and implemented or activities were modified, updated, or completed. Table 3-3 represents the Tijuana River WMA updated 5-Year Strategic Plan and a description of changes is included below.

3.5.1 New Watershed Activities

The Tijuana River WURMP Copermittees define a new WURMP activity as one that has never been listed as a part of the 5-Year Strategic Plan. During FY09-10, a total of eight new activities were added to the Strategic Plan, including six new water quality activities and two new watershed education activities. Brief descriptions of these activities are provided below. Additional information is included in the activity sheets located in Attachment 1.

<u>City of San Diego</u>

During the reporting period, the City of San Diego added four new activities including:

Fiesta Del Rio Event (TJ-029). The City of San Diego's Think Blue program became a sponsor of the annual Fiesta Del Rio Event, a community event designed to raise awareness about the environment of the San Diego/Northern Baja region surrounding the Tijuana River Estuary during the reporting period. The City's sponsorship included staffing a booth to provide the opportunity to educate the public about preserving the local environment, promote stewardship of the Tijuana River Estuary, and encourage proactive steps in preventing pollution from entering the storm drain system.

The Beyer Boulevard Trash Segregation Best Management Practice (TJ-030). Initial planning for this BMP occurred during FY07-08 as part of the City of San Diego's Storm Drain Inlet Inserts Pilot Project. Requests for Proposal were sent to interested vendors during this reporting period with retrofitting of drainage inserts and first phase of monitoring planned for FY10-11. The project involves the installation of catch basin inserts along Beyer Boulevard in the Tijuana River WMA. The catch basin inserts will be directly installed in the existing curb inlets. It is anticipated that the catch basin inserts will assist in load reductions of some pollutants.

Sweeper Speed Efficiency Study (TJ-031). Initial planning began for a sweeper speed efficiency pilot study that is expected to be implemented during FY10-11. This study will focus on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The project will provide information on the effectiveness of street sweeping activities and the relative level of load reduction potential for street sweepers at various speeds.

Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials (TJ-033). During this reporting period, the City of San Diego pursued efforts to achieve true source control of copper. These efforts consisted of the City of San Diego assisting with writing the proposed Senate Bill 346: Motor Vehicle Brake Friction Materials, providing financial resources for technical experts to assist with its development, participating in negotiations with the automobile and brake pad manufacturers, and providing lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. The authorization of the proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

City of Imperial Beach

During the reporting period, the City of Imperial Beach also added one new activity:

Xeriscaping of Municipal Facilities (TJ-028). The City of Imperial Beach with the help of Boy Scout Troop 53 - North Park, was able to replace 6,500 square feet of landscape in front of City Hall with drought tolerant plants. This resulted in a 42% reduction in water use. The City also completed the plans for a second Xeriscaping project for the Marina Vista Center scheduled to be completed during the next reporting period.

County of San Diego

During the reporting period, the County of San Diego added three new activities:

WildCoast Spring Clean-up Event, June 2010 (TJ-026). The County collaborated with the Cities of San Diego and Imperial Beach to sponsor a Spring Clean-up event with WildCoast. The clean-up occurred along the Effie May Trail and was attended by over 60 volunteers and resulted in the removal of over 1,000 pounds of trash and 100 tires.

Residential Rain Barrel Subsidies & Distribution (TJ-032). The County initiated the planning phases of this activity during the reporting period which included conducting research to identify desired rain barrel features and solicited bids for provisions of rain barrels. As part of this project, the County will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, and residents of incorporated cities will also be able to purchase rain barrels at an affordable price. It is anticipated that the rainwater harvesting will

reduce the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion. This activity will be in active implementation in FY10-11.

Tijuana River Action Month (TJ-027). The County submitted and received grant funding of $35,868 from CalRecycle to plan a series of Clean-up events in the Tijuana River Valley Scheduled for the Month of October 2010. Both the Cities of San Diego and Imperial Beach have contributed funding or collaborative support for this effort. Staging of the event was led by WildCoast with the support of the Copermittees.

3.5.2 Updated Watershed Activities

During FY09-10, a total of three watershed activities were modified, updated, or completed from the strategic plan. Brief descriptions of these updates are provided below. Additional information is included in the activity sheets location in Attachment 1.

City of San Diego

During the reporting period, the City of San Diego completed two activities including:

Tijuana River Targeted Facility Inspections (TJ-007). The City of San Diego completed its final inspections (Phase 3), assessment and reporting for this activity during this reporting period.

Municipal Rain Barrel Installation and Downspout Disconnect Project (TJ-009). The City of San Diego completed the Municipal Rain Barrel Installation and Downspout Disconnect Project during FY09-10. During the reporting period, the effectiveness of the systems were assessed at the San Ysidro Library. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

City of Imperial Beach

During the reporting period, the City of Imperial Beach's updated one activity:

Tijuana River Watershed Bacterial Source Identification Study (TJ013). Funding for the Tijuana River Watershed Bacterial Source Identification Study was reinstated in February 2010 and implementation of the study is underway again.

Table 3-3 Five-Year Strategic Plan for Tijuana River WMA

TIJUANA RIVER WATERSHED	Copermittee	Watershed Priorities								Implementation Schedule													
		Total Metals	Sediment	Bacteria	Nutrients	Gross Pollutants	Trash	Dissolved Minerals	Pesticides	FY 07-08			FY 08-09			FY 09-10			FY 10-11			FY 11-12
Watershed Activities Actively Planned, Implemented or Completed through FY09-10																							
TJ-001 Pet Waste Dispenser Program County Parks	COSD			X	X					WQ			WQ			WQ			WQ				
TJ-002 Land Acquisitions	COSD	X	X	X	X		X	X	X	WQ			WQ			WQ			*			* Unable to predict acquisitions
TJ-003 ILCSD Trash Clean-Up Sponsorship	SD			X			X			WQ			WQ			WQ			WQ			
TJ-004 Coastal Clean-Up Day Sponsorship	SD			X			X			WQ			WQ			WQ			WQ			
TJ-005 Alpha Project for the Homeles, Inc Trash Clean-Up	SD			X			X			WQ												Completed FY07-08
TJ-006 Tijuana River Targeted Restaurant Facility Inspections	SD			X						WQ												To be covered by TJ-007
TJ-007 Tijuana Targeted Facility Inspections	SD	X								WQ			WQ			WQ						Project completed in FY09-10
TJ-008 Tijuana Targeted Facility Outreach	SD	X								WE												Not conducted in FY09-10; any future outreach will be included as part of TJ-007
TJ-009 Municipal Rainbarrel and Downspout Disconnects	SD	X	X	X	X			X	X	WQ			WQ			WQ						Completed FY09-10
TJ-010 City of IB Clean-UP Events	IB			X			X			WQ			WQ			WQ						
TJ-011 Large Special Event Inspections And Clean-Ups	IB			X			X			WQ			WQ			WQ						
TJ-012 Smugglers Gulch Sediment Removal	COSD		X							WQ						WQ			WQ			
TJ-013 Tijuana River Bacterial Source Identification	IB			X						M	S		M	S		M	S		M	S		Funding restored in FY09-10
TJ-014 LID and Watershed Planning Education: Com & Sponsor Groups	COSD	X	X	X	X			X	X	WE			WE									Completed FY08-09
TJ-015 Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	SD			X			X			WE			WE			WE						PSAs will continue but after FY09-10 activity sheet will no longer be updated
TJ-016 Mobile Advertising	SD		X	X						WE												Completed FY07-08
TJ-017 Invasive Species Removal Program Tijuana River Park	COSD		X	X					X	WQ						WQ						
TJ-018 Trash and Sediment Characterization Study	COSD		X				X			S			S			S			S			
TJ-019 SD Strategic Plan Implementation	SD	X		X		X							LU			LU			LU			
TJ-020 Pet Waste Dispenser Program	SD			X	X								WQ			WQ	WE					
TJ-021 San Ysidro Centennial Celebration	SD		X	X			X						WE	PP								Not conducted in FY09-10
TJ-022 Tijuana River Gross Solids and Sediment BMP's Design	SD		X			X							WQ			WQ						
TJ-023 Tijuana River Watershed Brochure	SD	X	X	X	X	X	X	X	X				WE			WE						
TJ-024 Water Quality Monitoring in the Upper Tijuana Watershed	COSD	X	X	X	X	X		X	X				M									Completed FY08-09
TJ-025 Smuggler's Gulch, Pilot Channel, & Northern Channel Sediment & Debris Removal	SD		X			X	X									WQ			WQ			
TJ-026 WILDCOAST Spring Clean-Up Event; Effie May Trail	COSD/SD						X									WQ	PP					Completed FY09-10
TJ-027 Tijuana River Action Month	COSD/SD/IB						X									WQ	PP		WQ	PP		Active Planning Phase
TJ-028 Xeriscaping of Municipal Facilities	IB			X	X											WQ	PP		WQ	PP		
TJ-029 Fiesta del Rio Event	SD	X	X	X	X	X	X	X	X							WE			WE	PP		
TJ-030 Beyer Boulevard Trash Segregation BMP Installation	SD			X		X	X									WQ			WQ			
TJ-031 Sweeper Speed Efficiency Study	SD			X												WQ			WQ			
TJ-032 Residential Rain Barrel Subsidies & Distribution	COSD	X	X	X	X			X	X							WE	WQ	PP	WQ	WE		Implementation For FY10-11
TJ-033 Source Control of Copper Water Pollutants, Senate Bill 346	SD	X														WQ			WQ			Source control expected to result in long-term reductions of copper
Potential Future Watershed Activities																							
TJ-00A San Ysidro Boulevard Green Mall Infiltration Retrofit Education and Outreach	SD																						
TJ-00B Infiltration BMP retrofit	SD																						
TJ-00C Inlet Bacteria Treatment BMP	SD																						
TJ-00D Outdoor Water Conservation Rebate Program	SD									Project name change FY09-10													
TJ-00E Tijauna River Valley Park Trails and Habitat Enhancement Project	COSD																						
TJ-00F Source Identification of Metals and Ammonia	IB																						
TJ-00G San Ysidro Boulevard Green Mall	SD																						

WQ = Watershed Water Quality Activity (Active Implementation)
WQ = Watershed Water Quality Activity (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)
WE = Watershed Education Activity (No WURMP Credit)
LU = Watershed-base Land Use Planning Activity
PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)
D = Watershed Data Assessment/Management Activity
O = Other Watershed Activity (No WURMP Credit)

SECTION 4.0 EFFECTIVENESS ASSESSMENTS

This section of the report will assess the effectiveness of the Copermittees collaboration efforts over the year, the overall effectiveness of targeting specific water quality problems, and the collective impacts made towards reducing pollutant loads and improving receiving water quality. In order to facilitate this assessment the Copermittees agreed upon using the 2003 Framework for Effectiveness Assessment, which uses a six level hierarchical analysis to assess the effectiveness of watershed activities. The following section assesses the effectiveness of the WURMP on a whole in relation to four key program components:

1. Collaboration among Tijuana River Watershed Copermittees.
2. Effectiveness of WURMP activities on addressing water quality problems and sources.
3. Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.
4. Assessment of measureable targeted outcomes.

4.1 Assessment of Overall WURMP Effectiveness

The overall WURMP Effectiveness is addressed through responses to components one through four below.

4.1.1 Collaboration among the Tijuana River Watershed Copermittees.

The Tijuana River Watershed Copermittees have continued to collaborate and work together to implement the collective watershed management strategy outlined in the Tijuana River WURMP. These collaborative efforts have led to the successful implementation of a number of watershed and education-based activities in the WMA and contribute to the effective partnership collaboration in other Tijuana River Stakeholder groups.

The Tijuana River Copermittees met six times during the year to collaborate on shared watershed activities and to further develop and implement the Tijuana River WURMP. The Copermittees also met outside of the WURMP group to collaborate on other regional and bi-national coalitions of stakeholders to tackle the multiple water quality needs in the WMA. These additional Tijuana River Stakeholder groups include:

- Border 2012 – Met twice during the reporting period,
- Tijuana River Valley Recovery Team – Met nine times during the reporting period,
- TRNERR Management Authority – Met four times during the reporting period, and
- Tijuana River Bacterial Source Identification Study group – Met two times during the reporting period.

The Tijuana River Copermittees have made significant progress towards coordinating watershed activities with each other and in collaboration with the various stakeholders in the watershed, which cumulatively begin to address the sources of pollution into the WMA. The contribution of local storm water pollution from urban runoff is being met through the coordination of water quality and education activities in the

WURMP. One activity is the collaborative planning efforts for Tijuana River Action Month proposed for October 2010 that will include multiple cleanup, public participation, and education activities for the month of October. The issues of bi-national sources of pollution are being addressed through the development and implementation of activities through Border 2012 and Tijuana River Valley Recovery Team. Significant improvements to water quality continue to be implemented or planned through both organizations. Additional information is available through each organization's website (http://www.epa.gov/Border2012 and http://www.tjriverteam.org). The management and restoration of the ecosystem services provided by the Tijuana Estuary is coordinated through the activities in the TRNERR Management Authority. A greater understanding of the sources and load contributions of bacteria into the river is also being evaluated through the Tijuana River Bacteria Source Identification Study group.

4.1.2 Effectiveness of WURMP Activities on addressing water quality problems and sources.

Watershed activities in the WURMP focus on storm water management of high priority pollutant sources and practices that jurisdictions have the ability to affect and control. The Tijuana River, Estuary, and adjacent coastline are impaired by a multitude of water quality problems and pollutant sources, many of which are outside the control of local jurisdictions. The Copermittees identified trash, bacteria, and sediment as important target pollutants for the WMA and important to jurisdictional storm water programs. Trash and sediment (turbidity and TDS) are of particular importance to the Copermittees because of the current efforts on establishing a TMDL for 2011. These three pollutants present an immediate downstream threat to habitat in the Estuary and public health along the beach and were therefore selected as the focus for many of the watershed activities in the WMA.

During the current reporting period, the Copermittees actively engaged in 26 water quality and education activities, with 25 of the activities focusing on trash, bacteria, or sediment. Many of the activities addressed multiple pollutants or other priority pollutants in the WMA. Table 4-1 identifies each of the water quality and water education activities that were in active planning or implementation during the reporting period. The current distribution of watershed activities, specifically the activities that target the high priority pollutants, adequately address the likely sources of pollutants from the MS4, and in many cases contribute to the larger effort of restoring the Tijuana River Valley and managing the effects of cross-border pollution.

4.1.3 Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.

The Tijuana River WMA is divided into eight Hydrologic Areas. Water quality and education activities are implemented throughout all HAs; however, water quality activities are primarily focused in the Tijuana River Valley HA (911.1), where the water quality problems are most numerous and significant. Table 4-1 identifies the HA location for each activity, the priority pollutants for each activity, and the improvements made to water quality during the reporting period through any source load reductions. Detailed information on the implementation and assessment for each watershed activity is provided in the Attachment 1.

During the reporting period, there were a total of 26 activities in some form of implementation with eight new activities that were not previously presented in the 5-Year Strategic Plan. The water quality and

education activities are identified in Table 4-1. In total, 16 activities focused on water quality, three activities focused on education, and seven activities focused on both education and water quality. These activities addressed several of the priority pollutants in the Tijuana River Watershed, including bacteria, trash, sediment, pesticides, metals, and gross pollutants. Load reductions or source abatements were also achieved in 13 of the watershed activities (TJ-001, TJ-002, TJ-003, TJ-004, TJ-007, TJ-010, TJ-011, TJ-012, TJ-020, TJ-025, TJ-026, TJ-028, and TJ-031). These watershed activities had a positive effect on reducing pollutant loads and urban runoff discharge quality in the WMA, but not on the overall receiving water quality in the Tijuana River Valley HA (911.1) where cross-border pollutant loads appear to be the primary problem.

4.1.4 Assessment of measureable targeted outcomes.

Copermittees have expanded the focus of their assessments on demonstrating the watershed-level benefits of program implementation. This expanded focus has continued to be refined under Order R9-2007-0001. Annual watershed assessments presented in Table 4-1 below and in the activity summary sheets in Attachment 1 provide a means of assessing the relationship of WURMP implementation to changes in water quality; however, this analysis is best carried out through the Long-term Effectiveness Assessment process. The Copermittees feel that their efforts demonstrated by Level 1, 2, 3, and 4 had positive effects on receiving water quality and will help establish the effectiveness of the Tijuana River watershed program.

4.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs within the Tijuana River WMA.

Table 4-1 Water Quality and Education Activities in Tijuana River WMA

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-001	Pet Waste Dispenser Program	911.2 911.4 911.5	Water Quality	Bacteria	4	Maintained 12 existing pet waste bag dispensers at 3 different County parks.
TJ-002	TJWMA Land Acquisition	All	Water Quality	All	4	187 ac. of land acquired for preservation in the WMA.
TJ-003	ILACSD Trash Clean-Up Sponsorship	911.1	Water Quality and Education	Bacteria, Trash	1, 4	120 participants, 9,264 lbs of trash and debris
TJ-004	SD Coastkeeper Trash Clean-up Sponsorship	911.1	Water Quality and Education	Bacteria, Trash	1, 4	92 participants, 4,080 lbs of trash and debris
TJ-007	Targeted Auto-Related Facility Inspections	911.1 911.2	Water Quality	Metals	1, 3, 4	28 inspections with 9 follow-ups
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnects	911.1 911.2	Water Quality	Bacteria, Metals, Pesticides	1, 4	Assessed the effectiveness of six rain barrel systems at two different sites.
TJ-010	City-Wide Clean-Up Events	911.1	Water Quality	Bacteria, Trash	1, 2, 4	822 participants, 175.6 tons of material collected.
TJ-011	Large Special Events Inspection and Clean-Ups	911.1	Water Quality and Education	Bacteria, Trash	1, 3, 4	Enhanced BMPs at 32 special events US Open Sandcastle Event: 69% expressed knowledge on storm water. Recycle: 2,250 pounds Trash: 8.11 tons
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	911.1	Water Quality	Bacteria, Trash, Sediment	1	Removed 18,000 cubic yards of sediment Removed 40 cubic yards of trash Removed 200 tires
TJ-013	Tijuana River Bacteria Source Identification Study	911.1 911.2	Water Quality	Bacteria	1	Funding restored and source identification study is back on schedule
TJ-015	Karma and Karma Second Chance PSA	911.1 911.2	Education	Bacteria, Trash	1, 2, 3	446,835 est. TV audience. 613,459 est. Radio audience. 44% expressed change in knowledge or attitude. 29% reported making changes in behavior.
TJ-017	Invasive Species Removal Program in Tijuana River Park	911.1	Water Quality	Bacteria, Sediment, Pesticides	1	Participated in the Technical Advisory Group. Treated exotic invasive species on 86 acres. Restored 1.5 acres.
TJ-018	Trash and Sediment Characterization Study	911.1	Water Quality	Trash, Sediment	1	Characterized the trash and debris in the main channel of the Tijuana River basin for future removal.
TJ-019	City of San Diego Strategic Plan Implementation	911.1 911.2	Water Quality and Education	All	1	Developed and began implementation of Phase 1 list of activities to address high priority water quality problems

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-020	Pet Waste Dispenser Program	911.1 911.2	Water Quality	Bacteria	1, 4	Installed and assessed the effectiveness of pet waste bag dispensers. Observed a 26%-29% reduction in waste piles at two sites.
TJ-022	Tijuana River Gross Solids & Sediment BMP Design	911	Water Quality	Bacteria, Trash, Sediment	1	Data collected from the trash and sediment BMP facilities shall be analyzed to determine efficiency
TJ-023	Tijuana River Watershed Brochure FY09-10	911.1 911.2	Education	All	1	Improved residential brochures to educate residents on pollutants and BMPs.
TJ-025	Smuggler's Gulch, Pilot Channel & Northern Channel Sediment & Debris Removal	911.1	Water Quality	Sediment, Trash, Gross Pollutants	1, 4	Approximately 30,000 cubic yards of material was removed during FY09-10.
TJ-026	WildCoast Spring Clean-Up	911.1	Water Quality & Education	Trash	1,4	60 people 1,000 lbs trash 100 tires
TJ-027	Tijuana River Action Month	911.1	Water Quality & Education	Trash	1,4	Active Planning
TJ-028	Xeriscaping of Municipal Facilities	911.1	Water Quality	Nutrients, Bacteria	1, 2, 3, 4	Demonstration project that involved the community and replaced 6,500 sq ft of landscape. Reduced irrigation by 42% at City Hall.
TJ-029	Fiesta Del Rio	911.1	Education	Bacteria, Sediment, Metals	1, 2, 3	3,000 participants and 121 surveys administered. 92% identified actions to prevent pollution. 100% indicated willingness to engage in behavior to prevent pollution.
TJ-030	Beyer Boulevard Trash Segregation BMP Installation	911.1	Water Quality	Bacteria, Gross Pollutants	1	Pre and post project monitoring to evaluate the effectiveness of the drainage insert selected in load reduction and effluent quality.
TJ-031	Sweeper Speed Study	911.1	Water Quality	Bacteria	1,4	Effectiveness and efficiency will be determined by comparing load reduction values (determined via debris monitoring efforts) at varying operational speeds.
TJ-032	Residential Rain Barrel Subsidies & Distribution	All	Water Quality & Education	All	1	Active Planning
TJ-033	Source Control of Copper Vehicle Brake Pad	All	Water Quality	Metals	1	SB 346 passed in 2010

SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

During FY09-10, the Tijuana River WMA Copermittees continued to implement and improve the Tijuana River WURMP following the 5-Year Watershed Strategy developed and submitted to the RWQCB in March of 2008. Much of the year was spent collaborating with the other Tijuana River WMA Copermittees to develop and further refine the strategy for implementing watershed activities in compliance with the Municipal Permit. The Copermittees also collaborated on other regional and bi-national stakeholder groups, including Border 2012, Tijuana River Valley Recovery Team, TRNERR Management Authority, and Tijuana River Bacteria Source Identification Study group. These collaborative efforts represent significant steps towards improving the water quality within the Tijuana River WMA for the benefit of residents and wildlife alike.

The condition of the receiving water and relative contribution of pollutants from urban runoff sources were assessed in the Tijuana River WMA during the reporting period through the regional monitoring program. Monitoring programs during the reporting period include targeted MS4, mass loading station (MLS), and temporary watershed assessment stations (TWAS) for both wet and dry weather conditions. The Tijuana River Bacteria Source Identification study also conducted a second sanitary survey for bacteria and nutrients; however, the results from this monitoring program will be assessed during the next reporting period. Results from the multiple monitoring programs provided some of the assessment tools necessary to answer the five core management questions addressed in Section 2.1 Water Quality Assessment.

The Tijuana River WMA Copermittees met six times during the year to implement and further refine the collective watershed strategy as well as to develop new activities to address the high priority pollutants in the watershed. Collaboration on Watershed Water Quality Activities, Watershed Education Activities, and Public Participation, Education, and Outreach Activities are major components of the collective strategy. Tables 3-1 and 3-2 in Section 3.0 identify the watershed activities and information pertaining to the lead jurisdiction, the hydrologic area(s), and priority pollutants. The Copermittees believe these watershed activities are effective at targeting the high priority pollutants originating from the MS4 and contribute to the larger efforts to address other sources of pollutants in the watershed.

During the reporting period, there were a total of 26 activities in some form of implementation with eight new activities that were not previously identified in the 5-Year Strategic Plan. The water quality and education activities are discussed in Section 3. In total, 16 activities focused on water quality, three activities focused on education, and seven activities focused on both education and water quality. These activities addressed several of the priority pollutants in the Tijuana River Watershed including bacteria, trash, sediment, pesticides, metals, and gross pollutants. The Tijuana River Copermittees also implemented a total of 59 Public Participation, Education, and Outreach Activities that reached an estimated audience of 422,800 people. During the next fiscal year, the Copermittees will continue to collaborate and assess the effectiveness of targeted watershed activities, and further develop programs in order to maximize benefits to water quality.

5.2 Recommendations

The Tijuana River Watershed Copermittees will continue their involvement with the Tijuana River Valley Recovery Team to incorporate the goals and objectives of the Recovery Team into the evolution and development of the WURMP. The Recovery Team is a good mechanism for collaborative land use and strategic planning among the various agencies and stakeholders within the watershed and also provides the necessary forum to address future TMDLs, including a trash and sediment TMDL that is currently being developed. As TMDLs are developed for the Tijuana River, it is likely that the Recovery Team will become a larger component of the WURMP and the collective watershed strategy to address high priority pollutants. The trash and sediment characterization study (TJ 018) is one such activity where coordination between the WURMP Copermittees and the Tijuana Recovery Team has resulted in a successful project development and implementation. The continued involvement with the Recovery Team will most likely lead to additional watershed activities being developed and implemented in the watershed. For the next reporting period, the Copermittees will continue to collaborate with the Recovery Team on addressing the issue of trash and sediment and a longer-term vision for restoration of the Tijuana River Valley.

SECTION 6.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region. 2007, Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District and the San Diego County Regional Airport Authority

County of San Diego, 2008, Tijuana River Watershed Urban Runoff Management Plan, March 2008.

Weston Solutions, Larry Walker Associates and Mikhail Ogawa Engineering, 2005, Baseline Long-Term Effectiveness Assessment (BLTEA), San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program, August 2005.

Weston Solutions, 2010, San Diego County Municipal Copermittees 2009-2010 Urban Runoff Monitoring Report, Prepared for County of San Diego, January 2011.

ATTACHMENT 1
WATERSHED ACTIVITY SUMMARY SHEETS

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TITLE: **Pet Waste Bag Dispenser Program in County Parks**
ID NUMBER: **TJ-001**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY09-10 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain 12 dispenser stations at three parks in the Tijuana River Watershed. The parks and the number of dispensers include:

- Lake Morena Park (4 dispensers)
- Pine Valley Park (2 dispensers)
- Potrero Park (6 dispensers)

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Tijuana River Watershed. Parks have been identified as potential sources of these pollutants. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness is measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) are estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs

- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

Facility Name	# of Stations	# of Bags Used	Waste Reduction Lbs.
Lake Morena	4	10,760	2,152
Pine Valley	2	6,840	1,368
Potrero	6	18,500	3,700
Total	**12**	**36,100**	**7,200**

TITLE: **LAND ACQUISITIONS FOR TIJUANA RIVER WMA**
ID NUMBER: **TJ-002**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION FY2007-08

During the FY2007-08 reporting period there was 5.52 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2008-09

During the FY2008-09 reporting period there was 113.39 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2009-10

During the FY2008-09 reporting period there was 187.00 acres of land acquired in the Tijuana River WMA.

Property	Acres	Date	Watershed ID	APN(s)
McCunney/Brown Mason Wildlife	187	7/22/2009	911.25	653-120-06
TOTAL	**187**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **I Love a Clean San Diego Trash Cleanup Sponsorship**
ID #: **TJ-003**

ACTIVITY IMPLEMENTATION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 24, 2010. The City of San Diego (City) sponsored the San Ysidro site in the Tijuana River Watershed Management Area (WMA). Approximately 72 volunteers removed 9,180 lbs of trash and debris and recycled 84 pounds of trash and debris over a two-mile area.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2010 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem throughout the Tijuana River WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/ton collected)	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	9,180 lbs
	Pounds of trash recycled (Outcome Level 4)	84 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	9,264 lbs
	Number of participants (Outcome Level 1)	120
	Amount of money spent on cleanups for all watersheds (Outcome Level 1)	$30,000
	Estimated Amount of money spent on cleanups for the Tijuana River watershed management area (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	$0.54/lb

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

Analysis and Results

On April 24, 2010, 120 participants removed approximately 9,180 pounds of trash and debris and recycled approximately 84 pounds of trash and debris from numerous sites in the Tijuana River WMA. The average estimated sponsorship cost was $5,000 per watershed ($30,000/6 watersheds). Thus, there was a 9,264 pound load reduction associated with sponsorship per yearly event, and an efficiency of $0.54 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Tijuana River WMA by the total pounds of trash removed and recycled.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

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TITLE: **Coastal Cleanup Day Sponsorship**
ID NUMBER: **TJ-004**

ACTIVITY IMPLEMENTATION

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 19, 2009. The City of San Diego (City) sponsored the Tijuana River Valley site in the Tijuana River Watershed Management Area (WMA). Approximately 92 volunteers removed 3,680 pounds of trash and debris and recycled 400 pounds of trash and debris. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

Based on the information above, the effectiveness assessment below, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills credit as a watershed water quality activity for FY 2010.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups, and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem throughout the Tijuana River WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River		
SDCK COASTAL CLEANUP DAY SPONSORSHIP Assess the Efficiency and Effectiveness of Sponsoring SDKC's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	• What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? ($/person or $/pound collected)	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	• Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)	
Data Recorded	Pounds of trash removed (Outcome Level 4)	3,680 lbs
	Pounds of trash recycled (Outcome Level 4)	400 lbs
	Total pounds of trash removed (Outcome Level 4)	4,080 lbs
	Number of participants (Outcome Level 1)	92
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	$30,000
	Estimated Amount of money spent on cleanups for the Tijuana River watershed management area (Outcome Level 1)	$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	$1.23/lbs

*Calculated by dividing total sponsorship cost by six watersheds.

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

Analysis and Results

The event's debris removal was tracked using data cards provided by the Ocean Conservancy; 92 participants removed 3,680 pounds of trash and debris and recycled 400 lbs of trash and debris. The average estimated sponsorship cost was $5,000 per watershed ($30,000/6 watersheds); thus, there was a 4,080 pound load reduction and an efficiency of $1.23 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Tijuana River WMA by the total pounds of trash removed and recycled. It is anticipated that the sponsorship fee at that level would remain the same for subsequent years.

Conclusions

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2010.

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TITLE: **Tijuana River Targeted Facility Inspections**
ID NUMBER: **TJ-007**

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the Mission Bay, San Diego Bay and Tijuana River Watershed Management Areas (WMA). The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
2) Does type of business ownership change the required inspection frequencies?
3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

This activity included three rounds of inspections and spanned both FY 2009 and FY 2010. In FY 2009, this activity was developed and implemented Round 1 inspections to establish the baseline data for future inspections. All automotive facilities selected to be part of this activity were inspected. In FY 2010, Round 2 and Round 3 inspections were performed. Round 2 inspections occurred at approximately half of the sites selected for inspection. The sites inspected in Round 2 were selected via random number generation. These sites received two inspections in FY 2010 (Round 2 and Round 3). Round 3 inspections occurred at all automotive facilities selected to be part of this activity. These sites received one inspection in FY 2010 (Round 3 only). Inspections under this activity were not counted toward the Jurisdictional Urban Runoff Management Program (JURMP) inspection requirements unless inspected facilities were high threat to water quality sites that the Permit requires be inspected annually.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2009 and FY 2010. Assessment and final reporting for this activity concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Tijuana River WMA inspections target sources of heavy metals.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies metals as a high priority water quality problem throughout the Tijuana River WMA, and recommends

implementing load reduction/source abatement activities to address them. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with metals.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River		
TARGETED FACILITY INSPECTIONS **Assess the Efficiency and Effectiveness of Automotive Inspections**		
Management Questions	• What is the optimal frequency of inspections for Automotive Repair Facilities? • Does type of business ownership change the required inspection frequencies? • Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?	
Targeted Measurable Outcome(s)	• Identification of sources of constituents of concern in the Tijuana Watershed • Source abatement due to inspections • Increased BMP implementation due to inspections	
Assessment Method(s)	• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from data)	
Data Recorded	**Automotive Inspections (Round 2)**	
	Number of full inspections (Outcome Level 1)	12
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	2
	Number of sites needing corrective action (Outcome Level 1)	12
	Number of sites that implemented some corrective action during inspection (Outcome Level 3)	0
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	N/A
	Total IC/IDs observed (Outcome Level 1)	0
	Total IC/IDs eliminated during inspection (Outcome Level 4)	N/A
	Automotive Inspections (Round 3)	
	Number of full inspections (Outcome Level 1)	16
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	7
	Number of sites needing corrective action (Outcome Level 1)	16
	Number of sites that implemented some corrective action during inspection (Outcome Level 3)	0
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	N/A
	Total IC/IDs observed (Outcome Level 1)	0
	Total IC/IDs eliminated during inspection (Outcome Level 4)	N/A

Objectives
The goal of this focused inspection activity on automotive facilities was to determine the most efficient frequency to ensure proper BMP implementation and reduce pollutant loads.

Analysis and Results
For all rounds of inspections, facility BMP implementation was evaluated for 27 different BMPs at each inspected facility. Inspected facilities were assigned a rating to reflect the level of BMP implementation at the site, and a separate rating to reflect the facility manager/responsible party's level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility. Table 2 presents a breakdown of the average knowledge and average BMP implementation scores for the inspected facilities during each period of implementation.

Table 2 Breakdown of Average Knowledge and BMP Implementation Scores by Area (Automotive Inspections)

Average Knowledge Round 1	Average BMP Implementation Score Round 1	Average Knowledge Score Round 2	Average BMP Implementation Score Round 2	Average Knowledge Score Round 3	Average BMP Implementation Score Round 3
1.1	2.6	2.4	3.3	1.8	2.6

There was no significant change in BMP implementation rates observed with increased inspections when comparing the facilities that received one inspection to facilities receiving two inspections in one fiscal year, or three inspections from FY 2009 data. In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues would be resolved if the facilities had structural changes to cover the outdoor operations and activities. These changes would likely be economically infeasible for the businesses to implement.

Each inspected facility was evaluated for their potential to discharge specific pollutant types, such as sediment, metals, and trash. Results of the pollutant discharge potential assessment (PDPA) performed during each inspection were also compared; there were no significant differences in any PDPA constituents assessed during this activity.

Conclusions
This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

The increased inspection frequency did not yield improved compliance behavior at the inspected facilities. However, the inspection process is a viable mechanism for identifying non-compliance issues and potential discharge conditions at inspected facilities. Inspections have also proven to be an effective mechanism for identifying and prioritizing follow-up inspections, and contact necessary to further evaluate compliance and non-compliance issues at facilities. Inspections can be enhanced by having enforcement, with an option for an incentive, for achieving change in compliance behavior.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 28 sites. The increased inspections at the facilities increased knowledge and it was determined during a focus group study for automotive businesses that one of their sources of storm water knowledge came through inspections; thus, this activity raised awareness, Level Two. Additionally, the City noted nine sites that needed follow-up to verify that corrective actions/BMPs were implemented. However, no locations required immediate corrective actions to be taken. Also no illicit connections and no illicit discharges were found during the inspections. It can be inferred that the potential for discharges was avoided through this activity. This demonstrates both a Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcome was achieved as a result of this activity.

TITLE: **Municipal Rain Barrel Installation and Downspout Disconnect Project**
ID NUMBER: **TJ-009**

ACTIVITY IMPLEMENTATION

During FY 2010 the City of San Diego (City) completed a municipal rain barrel installation and downspout disconnect project that reduced pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project consisted of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Tijuana River Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events.

The project included site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring, and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Tijuana River WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the Tijuana River WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, the San Ysidro Library was selected because it is located in one of the highest priority sectors of the Tijuana River WMA for potential pollutant loading. The recreation center is also a publically accessible City facility, making education and outreach opportunities easily implementable.

In April 2009, a City-approved contractor installed two rain barrel systems at the library. One 55-gallon rain barrel was installed and connected to an existing downspout directly adjacent to the main entrance of the library. This system utilizes a gravity release mechanism to deliver captured runoff to nearby landscaping. In addition, one 75-gallon rain box was installed and connected to an existing downspout along the back side of the building. This system will also use a gravity release mechanism to deliver captured water to nearby landscaping.

Rain Barrel at front entrance

Rain Box

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer was distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer were posted on the City's *Think Blue* website during the first quarter of FY 2010.

During FY 2010, the City assessed the effectiveness of the rain barrel/rain harvesting systems at the San Ysidro Library. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Project planning, including site selection, began in July 2007 and was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring was preformed from October 2009 to April 2010. Assessment and final reporting for this program concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity addressed both high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River		
MUNICIPAL RAIN BARREL INSTALLATION PROGRAM **Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff**		
Management Questions	• What is the effectiveness of rain barrel/downspout disconnect systems in reducing pollutant loads and storm water runoff volume? • What are the potential pollutant load and volume reductions for the three system configurations tested? • Which system configuration is the most cost-efficient?	
Targeted Measurable Outcome(s)	• Pollutant load reductions due to rain barrel/downspout disconnect installation • Runoff reduction due to rain barrel/downspout disconnect installation	
Data Recorded	Cost of site preparation, installation and start-up	$25,400
	Cost of operation and maintenance evaluation	$1,186
	Cost of effectiveness monitoring	$20,526
Recommended Data	• Number/type of barrels installed (Outcome Level 1) • Volume of storm water captured/attenuated (Outcome Level 4) • Average concentrations of metals in rainwater or runoff (µg/L) (Outcome Level 4) • Pollutant load reductions for metals for each system configuration (grams) (Outcome Level 4)	

Objectives

The goal of the rain barrel and rain harvesting assessment was to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

Analysis and Results

The pilot project was assessed in FY 2010 based on monitoring data from two storm events collected over one wet-weather season.

The two systems at the San Ysidro Library captured and attenuated 53.09 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from the galvanized downspouts were 26 μg/L for copper, 8 μg/L for lead, and 291 μg/L for zinc. Over the two monitored storm events, the 55-gallon capacity gravity-flow system configuration at the San Ysidro Library (SY-1) resulted in load reduction of 0.003 grams of copper and 0.039 grams of zinc. During the same two storm events, the 75-gallon capacity gravity-flow system configuration at the San Ysidro Library (SY-2) resulted in a load reduction of 0.014 grams of copper and 0.212 grams of zinc.

The four systems at the South Bay Wastewater Treatment Plant captured and attenuated 156 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from the copper roof and galvanized downspouts were 5 μg/L for copper, 3 μg/L for lead, and 945 μg/L for zinc. Over the two monitored storm events, the 75-gallon capacity gravity-flow system configuration at the South Bay Wastewater Treatment Plant (SB-1) resulted in load reduction of 0.250 grams of zinc and no measurable reduction in copper. During the same two storm events, the 75-gallon capacity gravity-flow system configuration at the South Bay Wastewater Treatment Plant (SB-2) resulted in load reduction of 0.250 grams of zinc and no measurable reduction in copper. During the same two storm events, the 75-gallon capacity gravity-flow system configuration at the South Bay Wastewater Treatment Plant (SB-3) resulted in load reduction of 0.250 grams of zinc and no measurable reduction in copper. During the same two storm events, the 75-gallon capacity gravity-flow system configuration at the South Bay Wastewater Treatment Plant (SB-4) resulted in load reduction of 0.250 grams of zinc and no measurable reduction in copper.

The total cost of installation, operation, maintenance, and effectiveness assessment for the six systems in the Tijuana River WMA was approximately $47,112.

Assessment data at this site shows that the gravity-flow system configuration, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, is more effective and reducing pollutant loads and attenuating wet weather flows than other systems tested. Overall, the study found that gravity-flow systems can attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Furthermore, this configuration was the least expensive of the three tested, which makes it the most cost-efficient. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively.

Conclusions

Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Although less effective than gravity-flow systems at addressing pollutant loads, rain

barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas. Based on an analysis that demonstrates that the activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

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TITLE: City-Wide Clean-Up Events
ID NUMBER: TJ-010

ACTIVITY IMPLEMENTATION

Imperial Beach participates in a number of city-wide sponsored clean-up events including ILACSD Creek-to-Bay clean up, local community group sponsored events, and the annual Home Front Clean-Up event. The largest event in terms of participation is the annual Home Front Clean-Up, which the City has been implementing since the 2001-01 municipal permit. These annual City-wide activities serve both as an encouragement and a means for residents to eliminate waste that could otherwise contribute the release of contaminates into the storm water conveyance system.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

City-wide clean up events will continue to be held throughout the duration of Municipal Permit R9-2007-0001. The City intends to sponsor ILACSD for the annual Creek-to-Bay clean up and continue the highly successful City-wide Home Front Clean Up event for the complete cycle of the current permit. The activity will be assessed and refined as necessary.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana WMA. The accumulation of waste by residents such as trash, green waste, and large bulky items are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of implementing City-wide clean-up activities include compliance with permit requirements, changes in attitudes, knowledge, and awareness of the community, and lead to reductions in urban runoff and discharge quality by removing wastes that may have otherwise ended up in the storm drain system. City-wide clean-up events serve both as education and water quality activities. Reducing the amount of trash in the storm drain system also has the co-benefit of reducing bacteria which is identified as a water quality problem in the Tijuana WMA.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, and Level 4 compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2009-10 Imperial Beach sponsored I Love a Clean San Diego for its 8th Annual Creek-to-Bay clean up event on April 30th, 2010. The annual Creek-to-Bay cleanup engages the community through public participation and increases awareness on the connectivity of the receiving waters to the urban environment. Assessments are also made across the region on the level of participation and characteristics of the waste collected.

The City also held its annual Home Front clean up event on May 1st, 2010. The Home Front clean up event had 822 participants and resulted in the proper disposal of 175.6 tons of waste including 33.4 tons of metals, 32.4 tons of concrete, and 19.7 tons of green waste that were recycled.

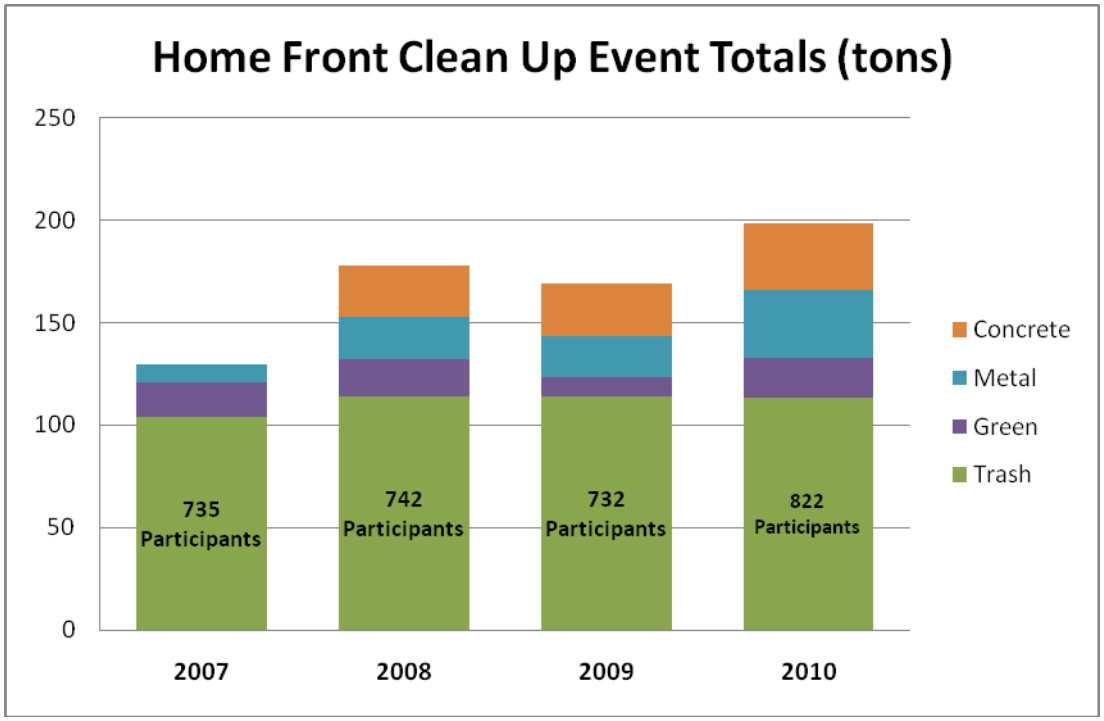

TITLE: Large Special Event Inspection and Clean-Up
ID NUMBER: TJ-011

ACTIVITY IMPLEMENTATION

The City hosts the annual U.S Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food venders, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street venders for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation of the activity has begun under the previous storm water permit 2001-01 and since been reviewed and enhanced for the new R9-2007-0001 permit. The activity was in active implementation over the last three reporting years and has become standard work procedure for managing storm water and recycling at special events. The City annually reviews effectiveness after the U.S. Open Sandcastle competition and makes changes as necessary.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services
- Set Free Baptist Fellowship

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana WMA. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors during large special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of enhancing large special event clean up and inspections include compliance with permit requirements, changes in attitudes, knowledge, and awareness of mobile businesses and local community, and reductions in urban runoff and discharge quality by enhancing recycling and pollution prevention efforts and implementing storm water BMPs. Enhancing recycling efforts, increasing education on urban runoff, and verifying the implementation of BMPs through inspections may lead to lower levels of bacteria and trash reaching the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, Level 3, and Level 4 compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2009-10 Imperial Beach required the proper disposal of recycled waste and implementation of pollution prevention measures at all large special events. During the year the City held 32 large special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition, which during the weekend of July 17th-18th drew an estimated crowd of over 800,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event, which resulted in 1 Notice of Violation. The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event. The recycling efforts resulted in a total of 1320 pounds of mixed recyclables and 930 pounds of cardboard being recycled. The City also provided a storm water education both at the Sandcastle event where knowledge was assessed through a survey. The survey showed that 69% of the individuals surveyed correctly identified the difference between the sanitary sewer and storm drain system.

Sandcastle Event Waste Disposal Totals

	Mixed Recycling	Cardboard	Trash
2009	1320 lbs.	930 lbs.	8.11 tons
2008	1280 lbs.	960 lbs.	7.83 tons
2007	610 lbs.	990 lbs.	14.24 tons

TITLE: Smuggler's Gulch Sediment and Debris Removal
ID NUMBER: TJ-012

ACTIVITY DESCRIPTION

The County performs routine flood control maintenance activities on improved and unimproved channels pursuant to its Regional General Permit (RGP) 53. This activity is traditionally performed every two to four years depending on annual rainfall. The extent of the project includes the channel from the Mexican border, north approximately 5,400 feet to the confluence of the Tijuana River. Historically as much as 80,000 cubic yards of sediment can be removed from the channel. Trash is separated on site and recycled accordingly.

The sediment removal project is necessary to return the drainage facility to historic conditions and to convey flow properly, which will eliminate the potential for sediment and debris to build up causing future flooding events.

ACTIVITY IMPLEMENTATION 2007-08

There were no sediment and debris removal during the FY2007-08.

ACTIVITY IMPLEMENTATION 2008-09

There were no sediment and debris removal during the FY2008-09.

ACTIVITY IMPLEMENTATION 2009-10

During FY09-10 County Parks removed 18,000 cubic yards of sediment, 40 cubic yards of trash, and 200 tires from Smuggler's Gulch. The dredging occurred from Monument Road south to the boundary of Federal property. All sediment was recycled as construction aggregate, while the trash and tires were disposed of as appropriate.

TMDL APPLICABILITY

N/A.

TIME SCHEDULE FOR IMPLEMENTATION

Typically removal takes place every other year but is dependent on precipitation patterns, intensity of precipitation, and funding. Currently, sediment removal is expected to occur in FY10-11. Since the FY09-10 dredging, approximately 12,000 cubic yards of sediment have migrated into the channel.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- California Department of Fish and Game
- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment and trash have been identified as high priority water quality problems in the Tijuana River WMA. This activity results in a direct load reduction of these pollutants, and is therefore consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

This activity is considered a load reduction that can be measured. As reported above, 18,000 cubic yards of sediment, 40 cubic yards of trash, and 200 tires were removed from Smuggler's Gulch during FY 2009-10.

TITLE: TIJUANA RIVER WATERSHED BACTERIAL SOURCE IDENTIFICATION STUDY
ID NUMBER: TJ-013

ACTIVITY IMPLEMENTATION

The City of Imperial Beach initiated a Bacteria Source Identification study in November 2007 to identify and quantify sources of bacterial contamination in the U.S. portion of the Tijuana River Watershed. On December 15, 2008 the project was placed on hold due to budgetary constraints in the State of California. Funding for the project was reinstated in February 2010 and the study is underway again. Work is scheduled to be complete March 2012. The goals of the study include the following:

- Identify anthropogenic sources of bacteria;
- Identify non-anthropogenic sources of bacteria;
- Assess annual bacteria loads into the Tijuana River;
- Identify point sources (PSs) and non-point sources (NPSs) of bacterial pollutants; and
- Better understand mitigation strategies aimed at the reduction of bacteria loads.

The project uses standard culturing of fecal indicator bacteria and molecular tests (including the presence of Bacteroides as an indicator of recent human fecal pollution) to assess the presence of fecal indicator bacteria within the watershed during both dry weather and wet weather to identify PSs and NPSs of elevated bacteria concentrations, which may lead to beach postings at adjacent recreational beaches. Specific assessments focus on areas such as residential, commercial, agricultural and ranches, and groundwater transport as well as sewage flows from Mexico.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

- Information gathering from various stakeholders – Ongoing
- Meet with stakeholders to discuss project goals and objectives – Ongoing
- Review existing literature and data, and conduct field reconnaissance to determine sources of bacterial inputs – Completed
- Conduct sanitary surveys and collect samples from flowing storm drains – Ongoing
- Targeted wet weather monitoring – Ongoing
- Study to be completed – March 2012

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of San Diego
- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- State Water Resources Control Board
- Clean Beaches Initiative Task Force
- Regional Water Quality Control Board, San Diego
- U.S. Fish and Wildlife Service
- International Boundary and Water Commission (IBWC)
- California Department of Fish and Game
- Private land owners
- Conservation groups
- NGOs
- National Oceanic and Atmospheric Administration (NOAA)
- Tijuana River National Estuarine Research Reserve (TJNERR)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana River Watershed. Trash, parks, and pet waste are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Limited data are available regarding bacterial loads from sources and activities on the U.S. side of the Tijuana River Watershed (TRW). In addition, detailed information regarding the impact of certain land uses, and the input of pollutants from point and nonpoint sources have not been assessed for the U.S. portion of the TRW. This study aims to quantify bacterial loads from potential sources and propose solutions to reduce the impact of bacterial loads in the TRW and Pacific Ocean. The implementation of successful best management practices will result in a reduction in beach postings and closures.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1 compliance with activity based permit requirements. Information gained from this study will help in developing other programs or specific BMPs that will further address changes in knowledge and behavior, load reductions, and improvements to water quality.

The project also achieved Level 3 and Level 4 compliance through the implementation of two sanitary surveys. The first sanitary survey in 2008 identified two locations as sources of bacteria from ponding water. Maintenance BMPs cleaned the areas and during a follow up sanitary survey in 2010 water was no longer ponding and samples did not have significant bacteria levels.

TITLE: **Public Service Announcement: Karma, Karma Second Chance, Karma Tourist**
ID NUMBER: **TJ-015**

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma, Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Tijuana River Watershed Management Area (WMA) from August 2008 to April 2009. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

The City will continue to run the *Karma* public service announcements; however, this activity will no longer be included in future reporting updates.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Tijuana River WMA in FY 09 and FY 10.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance,* and *Karma Tourist*

Public Service Announcements will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS ASSESSMENT

The City will continue to run the *Karma* public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program, therefore no assessment was conducted in FY 2010.

TITLE: **Invasive Species Removal Project in the Tijuana River Park**
ID NUMBER: **TJ-017**

ACTIVITY DESCRIPTION

The SANDAG Transnet Environmental Mitigation Program (EMP) funded a grant to the Southwest Wetlands Interpretive Association (SWIA) to continue the Tijuana River Valley Invasive Plant Control Program (Phase IV) begun in 2002 in the extreme southwest part of San Diego County within a few miles from the mouth of the river. The program includes work in the County of San Diego's Tijuana River Valley Regional Park (TRVRP), California State Parks' Border Field State Park, and the U.S. Fish and Wildlife Services' Tijuana Estuary. Three invasive plant species are targeted within the Tijuana River Valley: giant reed (Arundo donax), castor bean (Ricinus communis) and salt cedar (Tamarix ramosissima). These species degrade the habitats they invade by displacing native vegetation, lowering insect food supply for birds, reducing groundwater, and increasing flood and fire hazards. The invasive removal program includes replanting with native species, a project that, coupled with natives returning naturally, will serve to filter pollutants and decrease sedimentation in the long term. The County cooperated with the SWIA in seeking grants, by writing letters of support and serving on a technical advisory group (TAG) for the program. In the implementation of the program, the County continues to serve on the TAG and provides SWIA with right-of-entry permits to County property. SWIA is committed to seeking grants for the on-going funding of this project and the County plans to continue its long-term cooperation with the association.

ACTIVITY IMPLEMENTATION FY2007-08

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

- Treated arundo and castor bean on 100 acres;
- Performed follow-up treatment of arundo and castor bean on old 511 acres;
- Treat tamarisk on 61 acres around Dairy Mart ponds;
- Maintained and planted native cuttings.
- Attended TAG meeting and provided right of entry letters to SWIA.

ACTIVITY IMPLEMENTATION FY2008-09

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

- 07/20/08 TAG Meeting.
- Development and adoption of a "Declaration of Intent".

ACTIVITY IMPLEMENTATION FY2009-10

SANDAG's Transnet Environmental Mitigation Program (EMP) provided funding to SWIA to continue its treatments of the worst invasive plant species at Dairy Mart Ponds and at Hollister Bridge. The targeted invasive plant species included: giant reed (*Arundo donax*), castor bean (*Ricinus communis*) and tamarisk (*Tamarix ramosissima*). These species degrade the habitats they invade by displacing native vegetation, lowering insect food supply for birds, reducing groundwater, and increasing flood and fire hazards. Native recruitment and restoration are included for cleared sites.

During FY09-10 the following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

- Treated giant reed, castor bean and tamarisk within 86 acres in the Dairy Mart Ponds area;
- Restored 1.5 acres in the Hollister Bridge area;
- County representatives attended the annual TAG meeting; and
- County provided right of entry letters to SWIA.

TMDL APPLICABILITY

N/A.

TIME SCHEDULE FOR IMPLEMENTATION

During FY10-11 funding from the US Fish and Wildlife Service's Coastal Programs will be used in the TRVRP to treat invasive plant species within the riparian forests near Hollister Bridge. The following tasks have been (or will be) implemented relating to the invasives program:

- Treat giant reed, castor bean and tamarisk within 27 acres in the Hollister Bridge area;
- County representatives attended the annual TAG meeting; and
- County provided right of entry letters to SWIA.
- Project completion expected during FY10-11

Further treatments are dependent upon new funding.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Southwest Wetlands Interpretive Association,
- U.S. Fish & Wildlife Service,
- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Pesticides
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment, pesticides, and bacteria are high priority water quality problems in the Tijuana River WMA. Therefore, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1). Each invasive plant area will be monitored to determine which control methods would be most effective in the TJRV. Although no water quality monitoring is proposed for this project, water quality improvements may be able to be assessed qualitatively based on results from similar projects.

TITLE: **Tijuana River and Estuary Trash and Sediment Characterization Study**
ID NUMBER: **TJ-018**

ACTIVITY DESCRIPTION

Trash and sediment deposition in the Tijuana River and Estuary continue to threaten public health, safety, and the environment throughout the Tijuana River Valley. Public contact with trash, waste tires, and other solid wastes, including contaminated soil and sediments, is potentially injurious to human health. Moreover, excessive sedimentation has in recent years contributed to the loss and impairment of valuable estuarine habitat. Past efforts have removed some of the trash and sediment; however, they have been insufficient to address the entire area. The extent of trash and sediment deposition has not been adequately characterized to date and comprehensive alternatives to solve the problem remain elusive.

The objective of this project is to characterize trash and sediment in the Tijuana River and Estuary and to identify comprehensive remediation alternatives for removing existing trash and sediment deposition. The County and City of San Diego are partnering with the San Diego Regional Water Quality Control Board, the California Integrated Waste Management Board (CIWMB), and other stakeholders to complete this study.

As a first step, a consultant was retained to characterize trash and sediment in the Tijuana River and Estuary and to prepare a work plan to identify remediation alternatives for removing existing trash and sediment deposition. The following tasks and deliverables are scheduled to be completed no later than June 15, 2009 at a cost not to exceed $100,000.

Task 1: Inventory of Existing Information and Field Reconnaissance

- Research and review plans and pertinent studies.
- Research topographic maps to determine boundaries of the River and Estuary
- Conduct field investigation and take digital photos of the existing trash and sediment depositions.
- Determine the extent of the existing trash, waste tires, and sediment deposition in the river, estuary, and tributaries.
- Geo-reference location of trash, waste tires, and sediment depositions
- Quantify the depth, width, and length of the trash, waste tires, and sediment deposition.

Task 2: Digitize/Compile Existing Information

- Prepare orthophoto base maps with the existing trash, waste tires, and sediment information.
- Import from the County of San Diego GIS database information such as land use classifications, soil groups, and transfer into project database.

Task 3: Characterization

- Determine the types and quantities of trash in the deposition. Develop a matrix showing the general types of trash and the disposal methods.
- Determine the amount of sediment in the deposition.
- Determine the amount of recyclable materials that can be recovered from the deposition.
- Determine the amount of waste tires in the deposition.
- Determine the viability of recycling sand.
- Plot percentage of trash versus sedimentation on the base map.

Task 4: Analyze Alternatives

- Develop alternatives for removing existing trash, waste tires, and sediment deposition. Consider alternatives that do not require cross-border solutions.
- Consider the following in developing the alternatives:
- Cost to haul to landfill
- Temporary or Permanent Transfer Station
- Segregating recyclables
- Segregating sand
- Waste tire recycling and disposal
- Include cost to restore river, tributary, and estuary to natural condition.
- Develop cost estimate for various alternatives.
- Determine the viability of each alternative. Consider unit costs as a factor.

Task 5: Report Submittals

- Submit quarterly progress reports and meet with CIWMB/County/City Staff for review and comments.
- Submit Draft and Final Reports with all text, graphs, and GIS maps in both hard copy and electronic formats.

ACTIVITY IMPLEMENTATION FY08-09

The following activities were implemented in FY08-09:

- Compilation of existing historical aerial photographs for the valley for specific years;
- Review of historical aerial photographs to identify the active channels on the floodplain;
- Completion of a trash survey in the areas east of the plug near Hollister Street, east to the International Border along the main river channel, and along Smuggler's Gulch;
- Preparation of a database with georeferenced information collected during the trash survey;
- Permitting associated with test pits and borings to be completed in the same areas as indicated above;

ACTIVITY IMPLEMENTATION FY09-10

Implementation of the activity continued during the current reporting period. The following activities were completed in FY09-10:

- Completion of the trash survey from the Plug westward to the shoreline, including Goat and Yogurt Canyon areas
- Excavation of test pits and sampling to identify the presence of chemicals of potential concern (COPCs) in sediment and the presence of trash in the subsurface
- Drilling soil borings and conducting grain-size analyses to identify if the sediment may be suitable for beach replenishment
- Preparation of a GIS database with the results of the trash and sediment sampling program using an ArcReader interface
- Draft report summarizing the results of the trash, waste tire and sediment study.

TITLE: **Tijuana River and Estuary Trash and Sediment Characterization Study**
ID NUMBER: **TJ-018**

TMDL APPLICABILITY

There are no TMDLs currently adopted for the Tijuana River or Estuary; however, US EPA has indicated to watershed stakeholders that it is in the initial phases of data gathering for the development of trash and sediment TMDLs. The San Diego Regional Water Control Board (RWQCB) indicates that it will be issuing a draft TMDL for trash for the Tijuana River in early 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Activities to be completed in FY10-11 include the Completed Study Report.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego (project/consultant management)
- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Regional Water Quality Control Board
- California Department of Resources Recovery and Recycling (CalRecycle, formerly the California Integrated Waste Management Board; Funding Source)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The trash and sediment characterization study is consistent with the collective watershed strategy in that it will provide information regarding the location and extent of trash and sediment within the Tijuana River Valley. This will lead to the identification of effective water quality activities to reduce the amount of trash and sediment within the valley.

EXPECTED BENEFITS

This activity is an important step toward the ultimate goal of improving public and environmental health in the Tijuana River Valley. The direct benefits of this activity will be a better understanding of the types, quantities, and locations of trash and sediment in the River Valley. It will also identify and evaluate various alternatives for removing existing waste, preventing future waste transport, and restoring the watershed to a more natural condition.

EFFECTIVENESS ASSESSMENT

Characterization of the location and extent of trash and sediment will provide the basis for load reduction activities. Future activities will be evaluated through the amount of trash and sediment removed from the system.

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TITLE: **City of San Diego Strategic Plan Implementation**
ID NUMBER: **TJ-019**

ACTIVITY IMPLEMENTATION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity monitoring (runoff volume) will be conducted both at the pre and post irrigation modification stage. The rebate program is scheduled to be implemented in FY11.

In addition, the City is of the opinion the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public's support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Table 1 – Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, Implementation and assessment is anticipated to be completed in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
					education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Hydromodification BMP (3)	Hydromod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP Annual Report.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River
CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

TITLE: **Pet Waste Bag Dispenser Program**
ID NUMBER: **TJ-020**

ACTIVITY IMPLEMENTATION

The purpose of the activity is to assess the effectiveness of installing pet waste stations at municipal and mixed-use locations. When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. The assessment focused on evaluating the installation of pet waste stations as a best management practice (BMP) in reducing pollutant loading in correlation with the number of bags deployed. The project includes site evaluations and selections, the installation of pet waste bag dispensers and all-in-one pet stations (dispenser and trash receptacle), pre- and post- site observations for the effectiveness assessments.

Watershed maps were developed and utilized to assist in the selection of appropriate municipal and mixed-use locations. Criteria used to identify the sites included:

a) Canine related activity, e.g. dogs being walked
b) Cleanliness (observed pet waste)
c) Trash receptacles present
d) Pet Waste receptacles present
e) Degree of pet waste observed
f) Potential for vandalism

Additionally, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Tijuana River watershed management area (WMA).

Two sites within the Tijuana River WMA were selected: the Coral Gate Neighborhood Park and the Howard Lane Neighborhood Park. During the initial assessments for site selection, a high degree (more than 20 piles) of pet waste was observed at the Coral Gate Neighborhood Park; a moderate degree (between 10 and 20 piles) of pet waste was observed at the Howard Lane Neighborhood Park.

Two All-in-One Pet Stations (bag dispenser, trash receptacle and sign), were installed at both ends of Coral Gate Neighborhood Park. Three Dogipot pet waste stations (bag dispenser and sign), were installed at the Howard Lane Neighborhood Park: one at the entrance to the park and along the walking trail, another by the gazebos near the walking trail.

All-in-One Pet Waste Station at Coral Gate Community Park

Pet Waste Bag Dispenser and Sign at Howard Lane Community Park

Sign

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2009. Installation of the pet waste bag dispensers and the effectiveness assessment concluded during FY 2010. Dispensers will be maintained by the Park and Recreation Department.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River			
PET WASTE BAG DISPENSER PROGRAM **Assess the Effectiveness of Pet Waste Bag Dispensers**			
Management Questions	• Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?		
Targeted Measurable Outcome(s)	• Number of pet waste bags distributed • Reduction in bacteria in run-off from the park		
Assessment Method(s)	• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)		
Recommended Data	• Change (%) in load reduction pre and post implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)		
Data Recorded		Coral Gate Neighborhood Park	Howard Lane Neighborhood Park
	Weekly average of waste piles observed prior to installation	21.3	15
	Weekly average of waste piles observed after installation	15.7	10.7
	Weekly average number of bags dispensed	62	147
	Average Weekly waste pile reduction	5.6	4.3
	Percent waste reduction	26.6%	29%
	Ratio of bags dispensed to pet waste piles removed	11.1	34.2

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results

Observations and pet waste pile counts were conducted for a total of six weeks. For three weeks prior to the installation of the pet waste bag dispensers, weekly observations and cleaning were conducted to assess the conditions at each site. Prior to the installation of the pet waste bag dispensers a weekly average of 21.3 piles and 15 piles were observed at the Coral Gate Neighborhood Park and Howard Lane Neighborhood Park, respectively. After the installation of the pet waste bag dispensers, a weekly average of 15.7 piles and 10.7 piles were observed at the Coral Gate Neighborhood Park and Howard Lane Neighborhood Park, respectively.

The observations show an average weekly reduction of 5.6 piles and 4.3 piles Coral Gate Neighborhood Park and Howard Lane Neighborhood Park, respectively. The average weekly reduction was calculated by subtracting the pre-installation average count of observed waste and the post-installation average count of observed waste. This translates to 26.6% and a 29% reduction in the amount of pet waste piles observed. Additionally, the weekly average number of bags dispensed was 62 and 147 at the Coral Gate Neighborhood Park and Howard Lane Neighborhood Park, respectively.

Conclusions

A review of the collected data revealed that the installation of the pet waste stations contributed to the reduction of pet waste piles within the study area. The average number of bags dispensed weekly at the Coral Gate Neighborhood Park and Howard Lane Neighborhood Park corresponds to an estimated removal of 12.6 pounds and 29.8 pounds of pet waste per week, respectively[1].

Overall, this activity demonstrated that there are positive, measureable pollutant load reductions due to the installation of pet waste bag dispensers.

[1] Welker, S. 2004. Dog Waste Tracking Project. San Elijo Lagoon Ecological Reserve.

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TITLE: **Tijuana River Gross Solids and Sediment BMPs Design**
ID NUMBER: **TJ-022**

ACTIVITY IMPLEMENTATION

This activity is the design and construction of trash and sediment storm water Best Management Practices (BMPs) to reduce the volume of sediments and gross solids which are transported to the Tijuana River's main channel and the Tijuana River Estuary during storm events.

Initial efforts for this activity began in February 2009 at which time URS was contracted under a Storm Water As-Needed Engineering Contract. URS has been engaged under Task Order 8 to prepare 15% concept designs for these projects. Potential projects types were screened and alternative project cost estimates were developed for suitable sites and technologies using technical literature review; existing available hydrology and hydrological studies and gross estimates of loading. This exercise yielded initial estimates of the required scale and sizing of the trash and sediment facilities that would be necessary to handle the anticipated loads. A basis of design technical memorandum dated October 5, 2009 was prepared summarizing an order-of-magnitude cost estimates and scheduling for the design, permitting and construction of the BMPs.

The City has received a $700,000 State Water Resources Control Board Clean Up and Abatement (CAA) Fund Grant which will fund the completion of the trash and sediment characterization studies which were begun in 2008 by URS. This grant will fund and provide a protocol for more specific studies and reports to include hydrology and hydraulic studies, LiDAR data acquisition, sediment and trash loading studies of the Tijuana River. These studies will also be used as a basis for a planning effort to develop a general land use strategy by the stakeholders and agencies in the lower Tijuana River Valley. Also included in this grant is funding for a trash removal effort during or after the winter of 2010- 2011. It is anticipated that the trash removal effort can be conducted in collaboration with a community-based non-profit organization so as to include an educational and outreach component.

Additionally, URS was contracted to conduct studies of the excavated sediments and gross solids generated maintenance activities in the Pilot Channel and Smugglers Gulch during the winter of 2009 – 2010. This study was conducted concurrently with a Land Use Options study for the Nelson Sloan Quarry in the Tijuana River Valley. Grants are currently being secured to complete studies, plan and permits reviews for the deposition of sediment in the Nelson Sloan Quarry in the Tijuana River Valley. This grant will fund the review of the suitability, and augment where possible, existing permits, documentation and reclamation plans for the deposition of excavated sediments from the channels as a result of maintenance activities in the lower valley. The principal participants in this activity may seek the necessary permits to reclaim the quarry using these sediments after a Substantial Conformance Review by the City of San Diego Development Services is completed.

Funding continues to be sought by the City of San Diego for efforts to develop more specific designs, cost estimates, and environmental studies to support the installation, operations and maintenance of a trash interception infrastructure. It is anticipated that as funding can be secured in FY 2011 then the design of these facilities could begin in FY 2012 with construction in FY 2013. The initial facilities would then be operational by winter of 2014..

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

At this time, schedules are estimated and are based on the availability of funding for the remainder of the project. Schedules developed from the concept design estimated the following implementation schedule:

- 10% design (concepts) alternatives which will include design specific sizing, siting, hydrology and hydrology studies, stream bed profile and initial design drawings shall be developed by summer of 2012.
- 30% design of selected alternative which will include the initial design drawings shall be developed by fall of 2012.
- Future design phases of the project including 60% design, 100% design, environmental documentation and permit process are slated to begin in summer mid 2013.
- Award of construction contracts and construction activities would commence in early 2014; and the initial facilities would be operational by winter of 2014 - 2015.
- Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing storm water volume and trash and sediment loading including trash characterization. This shall include data from ongoing trash characterization studies, lower valley sedimentation and ongoing environmental assessment at the TRNERR.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of San Diego

OTHER PARTICIPATING ENTITIES

- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Gross pollutants (Trash)
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identify gross pollutants (trash) and sediment as high priority water quality problems in the Tijuana River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing the volume of trash and sediment in the stream via siltation basins and trash interceptor devices.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River	
TIJUANA RIVER GROSS SOLIDS AND SEDIMENT BMPs **Assess the Efficiency and Effectiveness Trash & Sediment BMPs**	
Management Questions	• What is the load reduction efficiency due to implementation of these BMPs? • How effective are the Trash BMPs and Siltation basins at reducing loads of priority pollutants? • What are the operation and maintenance costs associated with these facilities? • Does the implementation of the trash sediment result in a detectible receiving water quality improvement? • Where are the most cost effective location and methods to dispose or reuse of trash and sediments
Targeted Measurable Outcome(s)	• Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Receiving water quality improvement • Stream bed and sediment stabilization of improvement • Valley wide stream assessment to ensure that there a no unanticipated adverse effects to sediment reduction or streambed/stream flow alternation. • Cost of operation and maintenance.
Assessment Method(s)	• Inspections (e.g., ensure the infiltration is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of funding required for implementation and maintenance, revenues and outlays for reclaiming or reusing materials recovered, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data) • Costs for operations and maintenance vs. estimated for other load

	reduction alternatives such as source mitigation.

Objectives
The goal of the analysis is to determine the load reduction efficiency of the Trash and Sediment Best Management Practice (BMP) facilities.

Analysis and Results
After construction and initiation, data shall be collected from the trash and sediment BMP facilities on an ongoing basis as part of operations. These data shall be analyzed to determine BMP facility efficiency and summarized in periodic reports.

Conclusions
Anticipated future monitoring will be conducted to assess pollutant removal efficiencies.

TITLE: **Tijuana River Watershed Brochure**
ID NUMBER: **TJ-023**

ACTIVITY IMPLEMENTATION

In FY 2010, the City of San Diego (City) and *Think Blue* will implement a new brochure program in two (2) of the watershed management areas (WMAs) assigned to the City. The Tijuana River Watershed brochure will be used to inform San Diego residents about the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. The brochures will also be used to promote watershed stewardship by making citizens aware of specific pollutants within each watershed, and ways individual action can be used to protect each water body.

The main goals of the brochures are to improve the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate about best management practices (BMPs), and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs had a watershed specific brochure created:

- Tijuana River
- San Diego River

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and continued into FY 2010. Implementation and initial distribution occurred in late FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trace Metals
- Pesticides
- Gross Pollutants
- Sediments, TSS, Turbidity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

Effectiveness Assessment will take place in FY2011. The goal of assessment will be to determine the effectiveness of the watershed brochure in increasing knowledge and awareness, and whether the brochure will encourage positive behavioral changes that will reduce bacteria and gross pollutants in the watershed. The City is planning a feedback assessment activity which will include gathering feedback from target audiences via a feedback card. The card will be available at the Think Blue booth during various community events that take place in or near the watershed. Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. Within 3 months, those that provided contact information will be contacted and asked a series of follow-up questions to determine if the brochure has a lasting impact.

Analysis and Results

Effectiveness assessment results of this activity are not available at this time because the assessment will be occurring in FY2011.

Conclusions

The City plans to continue to implement the brochure program in FY 2011. Effectiveness assessments will be conducted in FY 2011. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: **Smuggler's Gulch, Pilot Channel & Northern Channel Sediment and Debris Removal**

ID NUMBER: **TJ-025**

ACTIVITY IMPLEMENTATION

On September 23, 2009, the City of San Diego Council declared a State of Emergency in the Tijuana River Valley due to the potential for severe flooding pursuant to Resolution Number R-30526. Re-establishment of the channel profiles to reduce the risk of flooding in these flood control facilities was deemed necessary because of the additional sediment deposition from the Tactical Infrastructure Border project, and because of the flood which occurred in late November 2008. In FY 2010, the City excavated and removed sediment and trash, including tires, within two flood control facilities known as Smuggler's Gulch and the Tijuana River Pilot Channel pursuant to Emergency Coastal Development Permit No. 194684, County of San Diego's Regional General Permit 53, US Army Corp of Engineers Permit SPL 2009-00719-TCD, and Regional Water Quality Control Board 401 Water Quality Certification 09C-077.

Permitted maintenance included approximately 1,600 linear feet running north of the Monument Road toward the confluence and approximately 5,400 feet of Tijuana River Pilot Channel west of the Erodible Berm and Hollister Street Bridge toward the Tijuana River Estuary. Approximate excavation depths range from 12 feet in Smuggler's Gulch and five feet in the Pilot Channel. The 5,000 square-foot gabion rock mattress, that was originally constructed in 1998, was exposed approximately 13-feet below the accumulated sediment, trash and debris at the confluence.

Approximately 30,000 cubic yards of sediment was removed from the flood control facilities and as much as 1,000 tons of trash and over 5,000 tires. Vegetation was separated from the sediment and disposed separately from the spoils. Tires have been removed and will be disposed of by a certified tire disposal and recycling contractor. Sediment impacted less by trash deposition shall be temporarily stored within approved staging area locations.

The sediment removal project is necessary 1) to return the drainage facility to a condition where adjacent property is not threatened by flooding, 2) storm water flows convey properly to the main channel, and 3) channel profiles and conditions are restored to reduce the potential for sediment and debris to accumulate and thereby increase the potential of flooding.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

During the FY 2010, sediment and debris was removed along the Smuggler's Gulch. Approximately 30,000 cubic yards of material including sediment, vegetation, tires and trash were removed and is being temporarily stockpiled until an appropriate disposal site can accept the excavated material. Excavation and removal of sediment and trash is underway for FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- California Department of Fish and Game
- California State Parks
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identify sediment and trash as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. This activity results in a direct load reduction of these pollutants.

EFFECTIVENESS ASSESSMENT

This activity will be assessed based on the amount and type of sediment and debris removed.

TITLE: **WILDCOAST Spring Clean-up Event, June 2010**
ID NUMBER: **TJ-026**

ACTIVITY DESCRIPTION

The County of San Diego's Watershed Protection Program (Department of Public Works) sponsored a clean-up event coordinated by WILDCOAST. The event was held in conjunction with the County of San Diego Parks and Recreation Department Trails Day Activities and included picking up trash and debris along the Effie May Trail which is located in the Tijuana River Valley Park. Trash and debris will be weighed to determine total amounts removed. Trash removal services will be donated by Allied Waste Services.

FY 09-10 ACTIVITY IMPLEMENTATION

The event occurred on June 5, 2010. Sixty people attended the event and collected 1,000 pounds of trash. A total of 100 tires were also removed from the river valley.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This project was completed during FY 09-10. No further activity is currently planned.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of San Diego
- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

The following groups provided sponsorships, donated services or participated in the clean-up.

- WILDCOAST
- Allied Waste Services
- Tijuana Citizens Council
- REI
- Surfrider Foundation
- Tijuana – Calidad de Vida
- AlterTERRA
- Lazaro Cardenas High School students (from Tijuana, Mexico)
- San Diego-Imperial council Boy Scout Troop 2001

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

Taylor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMPs), Watershed Urban Runoff Programs (WURMPS) and the Regional Copermittees' Regional Urban Runoff Management Program (RUMP) to the extent possible to address the watershed's priority water quality problems.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was be measured by weighing the amounts of trash collected during the event (Level 4). All project elements were completed during FY 09-10.

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TITLE: **Tijuana River Action Month**
ID NUMBER: **TJ-027**

ACTIVITY DESCRIPTION

The Tijuana River Copermittees, the Cities of San Diego and Imperial Beach and the County of San Diego, will collaborate on a series of clean-up and education events in the Tijuana River Valley during the months of September and October 2010. The September 25th clean-up will be included as one of many events included as part of the International Coastal Clean-up Event hosted by I love a Clean San Diego. The October events are being coordinated by WiLDCOAST and will consist of four clean-ups at different locations within the river valley and one clean-up in an adjacent canyon in Mexico that drains to the valley. Each cleanup will be co-hosted by a different organization along with WiLDCOAST. Trash and debris will be weighed to determine total amounts removed. Trash removal services will be donated by Allied Waste Services and Tire Removal Activities will be funded by the County and City of San Diego through grants awarded through CalRecycle.

FY 09-10 ACTIVITY IMPLEMENTATION

The County's Recycling Section applied for the CalRecycle grant funding for this project in December 2009. CalRecycle informed the County that grant would be funded in April. On June 11, 2010, County staff from the Recycling section and Watershed program met with WildCoast staff to discuss the project. The grant was funded for the full amount of $35,868 in June 2010 with the grant term beginning July 1, 2010. All grant activities must be completed by June 30, 2011.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Grant application: December 2009
- Planning: June 11, 2010, through October 2010.
- Clean-ups: September 2010 through October 2010.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of San Diego
- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

The following groups provided sponsorships, donated services or participated in the clean-up:

- I Love a Clean San Diego
- TRNERR/State Parks
- Allied Waste Services
- REI
- San Diego Surfrider
- Tijuana Calidad de Vida
- San Diego Coastkeeper
- Job Corps
- Outside the Lens
- WiLDCOAST

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

Tailor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMPs), Watershed Urban Runoff Programs (WURMPS) and the Regional Copermittees' Regional Urban Runoff Management Program (RUMP) to the extent possible to address the watershed's priority water quality problems.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by weighing the amounts of trash collected during the individual events (Level 4).

TITLE: Xeriscaping of Municipal Facilities
ID NUMBER: TJ – 028

ACTIVITY IMPLEMENTATION

Imperial Beach partnered with California American Water Company to replace landscaping at municipal facilities with drought tolerant plants. The City identified landscapes at City Hall and at the Marina Vista Center as potential locations for xeriscaping projects. Existing vegetation at these locations consist of grass, shrubs, birds of paradise, and other non-native pants that require significant maintenance and watering. Replacing the existing landscapes with native and drought tolerant plants will result in the reduction of fertilizers and irrigation.

In 2009 the City received a grant from California American Water and moved forward with the first xeriscaping project at City Hall. The City hired an architect for the initial design of the project. The implementation of the project was taken on as an Eagle Scout Project for Boy Scout Troop 53, North Park with preparation work and oversight provided by the Public Works Department. Xeriscaping at City Hall was completed in February 2010.

The successful collaboration and completion of the City Hall site contributed to a second grant from California American Water for the xeriscape project at the Marina Vista Center. This second xeriscape project is scheduled to be complete during next reporting period with help again from Boy Scout Troup 53, North Park.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

Xeriscaping at City Hall was completed in February 2010 and xeriscaping at the Marina Vista is currently being designed and scheduled to be complete for the next reporting period. Additional xeriscape projects may be considered in the future as grant funds become available.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- Boy Scouts of America
- California American Water Company

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients are identified as a priority water quality problem in the Tijuana WMA. Through less watering and less fertilizing, this project will help reduce the amount of nutrients and irrigation runoff in the MS4 and the watershed. Since this activity addresses priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of xeriscaping include compliance with permit requirements, a reduction in irrigation runoff and contribution of nutrients in the watershed. This activity serves as a water quality activity but also indirectly contributes to education because the projects set an example of preferred landscapes in the community. Less runoff from irrigation will reduce pollutants in the watershed and the presence of attractive native plant displays at City facilities will show the public that these displays are a viable and attractive alternative to traditional landscaping.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, and Level 4 compliance with activity based permit requirements. Xeriscaping raises awareness of the connectivity of water saving landscape to urban runoff, storm drain systems, and receiving waters.

Outcome Type	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements.	This project was implemented in February 2010 by Eagle Scouts under the supervision of Public Works Director Hank Levien.
Level 2: Changes in Knowledge / Awareness.	Knowledge of water quality issues and the effects of irrigation were increased as a result of this project. Citizens and staff alike were shown through example that native plants can provide an attractive alternative to similar landscaping and reduce urban runoff.
Level 3: Behavioral Change / BMP Implementation.	The City was able to further reduce irrigation by replacing 6,500 square feet of landscape with drought tolerant plants.
Level 4: Load Reductions.	Dip irrigation was installed and reduced irrigation for City Hall by 42 percent. This will reduce pollutant load to the MS4 by reductions in irrigation and nutrients.

TITLE: **Fiesta Del Rio Event**
ID NUMBER: **TJ-029**

ACTIVITY IMPLEMENTATION

In FY 2009, the City of San Diego (City) and *Think Blue* became a sponsor of the annual Fiesta Del Rio event in the Tijuana River Watershed Management Area (WMA). The Fiesta del Río event is designed to raise awareness about the environment of the San Diego/Northern Baja region surrounding the Tijuana River Estuary, and steps the public (especially families with children) can take to help protect this fragile ecosystem and the surrounding area.

The Think Blue sponsorship included staffing a booth to provide the opportunity to educate the public about preserving the local environment, promote stewardship the Tijuana River Estuary, and encourage proactive steps in preventing pollution from entering the storm drain system. Think Blue staff offered free BMP related giveaway items to the public in exchange for their participation in a survey designed to assess their knowledge and attitudes towards storm water pollution and steps they would be willing to take to help reduce pollution of local waterways in the future.

TMDL APPLICABILITY

Event attendance will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue participation at the Fiesta Del Rio event began in FY 2009. Think Blue attended in FY 2010 and is anticipated to continue subsequent years the event takes place.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Trace Metals
- Pesticides
- Gross Pollutants
- Sediments, TSS, Turbidity

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this activity is increasing knowledge and awareness in the residents and visitors in the Tijuana River Watershed in order create positive behavioral change that will reduce the presence of bacteria and gross pollutants in nearby waterbodies. Effectiveness Assessment will be ongoing as Think Blue gathers more data from the event.

Analysis and Results

Effectiveness assessment results of this activity are scheduled for FY 2011 in order to have a statistically significant sample size and provide an opportunity to note any behavioral changes over a longer period of time.

Conclusions

The City plans to continue to sponsor and staff the Fiesta Del Rio event. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: **Beyer Boulevard Trash Segregation Best Management Practice (BMP) Installation**
ID NUMBER: **TJ-030**

ACTIVITY IMPLEMENTATION

This project will involve the installation of catch basin inserts along Beyer Boulevard (situated East of Highway 5) in the Tijuana River Watershed Management Area (WMA.) The catch basin inserts would be installed directly in the existing curb inlets. The Beyer Boulevard site location will include the implementation of storm drain catch basin inserts as retrofits within the existing storm drain system.

It is anticipated that accumulation of such pollutants at the mouth of inlets will facilitate their collection by the City of San Diego (City) crews using street sweepers. The City will study the effectiveness (in terms of load reduction) and the efficiency (in terms of load reduction divided by cost) of such devices in improving discharge and water quality impaired by bacteria, both in absolute terms and relative to other potential activities.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY 2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets will be retrofitted with the selected drainage inserts within the next month or so and the first phase of monitoring will begin immediately after installation.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria and gross pollutants as high priority water quality problem in the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River	
BEYER BOULEVARD TRASH SEGREGATION BMP INSTALLATION **Assess the Efficiency and Effectiveness of Catch Basin Inserts**	
Management Questions	• What is the load reduction efficiency of the catch basin inserts? • How effective are these catch basin inserts at reducing loads of priority pollutants? • Does the implementation of catch basin inserts result in a detectible receiving water quality improvement?
Targeted Measurable Outcome(s)	• Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	• Inspections (e.g., ensure the catch basin inserts are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	• Number of inspections (Outcome Level 1) • Change (%) in bacteria load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of the catch basin installations along Beyer Boulevard (East of Highway 5) in the curb inlets to remove trash and debris and improve water quality. It is anticipated that the pollutants will be collected at the mouth of inlets by City crews using street sweepers.

Analysis and Results

Once the installation and monitoring are completed, additional assessment will be completed to determine the effectiveness of this activity. The City will conduct pre and post project monitoring to evaluate the effectives of the drainage insert selected in load reduction and effluent quality.

Conclusions

Anticipated future monitoring will be conducted to assess pollutant removal deficiencies.

TITLE: **Sweeper Speed Efficiency Study**
ID NUMBER: **TJ-031**

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) began planning a sweeper speed efficiency pilot study for implementation in FY 2011. The Sweeper Speed Efficiency Study will focus on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The City's typical street sweeper operational speed is between 6-12 miles per hour. Reduced street sweeper speed is defined as 3-6 miles per hour based on manufacturer recommendations. During project planning, a commercial route along Beyer Boulevard in the Tijuana River WMA was selected for this study based on a number of criteria.

The goals of the Sweeper Speed Efficiency Study are to:

- assess the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed;
- assess the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed;
- assess the relative level of load reduction potential for street sweepers at various speeds; and
- determine the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach providing a phased approach. The Sweeper Speed Efficiency Study will be piloted first to determine whether reducing sweeper speeds improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

Project planning took place in FY 2010. Implementation and assessment will commence in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity addresses bacteria by removing trash and debris, which contains bacteria, from City roadways.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River	
SWEEPER SPEED EFICIENCY STUDY **Assess Effectiveness of Reduced Sweeper Speed on Debris and Metals Removal**	
Management Questions	• What is the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed? • What is the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed? • What is the relative level of load reduction potential for street sweepers at various speeds? • What is the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed?
Targeted Measurable Outcome(s)	• Achieve load reduction for metals based on monitoring information
Assessment Methods	• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)
Recommended Data	• Total pounds of debris removed (Outcome Level 4) • Total broom miles swept (Outcome Level 4) • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4)

Objectives

The goal of the assessment will be to determine the optimal speed to operate City mechanical sweepers to maximize debris and metals removal.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time as project planning and coordination will continue into FY 2011. Implementation is anticipated to occur during the first half of FY 2011, with final assessment and conclusion being prepared in the latter half of FY 2011.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via debris monitoring efforts) at varying operational speeds. Conclusions will be made after assessment is complete in FY 2011.

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TITLE: **Residential Rain Barrel Subsidies & Distribution**
ID NUMBER: **TJ-032**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this regional activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY09-10

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY09-10. The events are scheduled to occur during FY10-11. Depending upon the success of the initial events, additional events will be considered for implementation during FY11-12 and FY12-13.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

TITLE: **Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials**
ID #: **TJ-033**

ACTIVITY IMPLEMENTATION

Metals, which includes copper, has been found to be a High Priority Water Quality problem in watersheds in San Diego County. Previous City of San Diego (City) investigations determined copper from automotive brake pads was a major contributor of dissolved copper to our waterbodies. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments, through California Storm Water Quality Association, to achieve true source control by reducing copper at its source. It was determined the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads.

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

SB346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. It is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021. This is a long-term action and other BMPs will need to be implemented to comply with the 80% reduction of by 2018.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- CASQA - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Coalition for Practical Regulation - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Alameda County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.
- Contra Costa County - provided financial resources for experts to assist with the bill's development, and provided lobbyist assistance to obtain political support for the bill's passage.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identifies metals as a high priority water quality problem. and recommend implementing source control activities to address it. This activity's objective is to reduce the amount of copper and restore water quality for our citizens.

EFFECTIVENESS ASSESSMENT

Watershed: Tijuana River	
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials Removal of Copper in Automotive Brake Pads	
Targeted Measurable Outcome(s)	Evidence of reductions of copper starting in 2022.

Objectives
The goal of this legislation is to reduce the amount of copper released into the environment from automotive brake pads.

Analysis and Results/Conclusions
The authorization of this proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

ATTACHMENT 1

FY2010-11

ACTIVITY SHEETS FOR THE

TIJUANA RIVER WMA

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TITLE: **PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS**
ID #: **TJ-001**

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

ACTIVITY IMPLEMENTATION

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY09-10 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain 12 dispenser stations at three parks in the Tijuana River Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2010-11. During this reporting period the County of San Diego continued to maintain 12 dispenser stations at three parks in the Tijuana River Watershed. The parks and the number of dispensers include:

1. Lake Morena Park (4 dispensers)
2. Pine Valley Park (2 dispensers)
3. Potrero Park (6 dispensers)

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – Ongoing

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Tijuana River Watershed. Parks have been identified as potential sources of these pollutants. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness is measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) are estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs

- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

TABLE 1

Facility Name	# of Stations	# of Bags Used	Waste Reduction Lbs.
Lake Morena	4	10,760	2,152
Pine Valley	2	6,840	1,368
Potrero	6	18,500	3,700
Total	**12**	**36,100**	**7,200**

TITLE: **LAND ACQUISITIONS FOR TIJUANA RIVER WMA**
ID #: **TJ-002**

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION FY2007-08

During the FY2007-08 reporting period there was 5.52 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2008-09

During the FY2008-09 reporting period there was 113.39 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2009-10

During the FY2008-09 reporting period there was 187.00 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2010-11

During the FY2010-11 reporting period there were no lands acquired in the Tijuana River WMA.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners

- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

TITLE: **I Love a Clean San Diego Trash Sponsorship**
ID #: **TJ-003**

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 30, 2011. The City of San Diego (City) sponsored the Otay Mesa Street Sweep site in the Tijuana River Watershed Management Area (WMA). Approximately 22 volunteers removed 900 pounds of trash and debris and recycled 600 pounds of trash and debris in a one mile area.

TMDL APPLICABILITY

Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to the event, the City will coordinate with ILACSD staff to ensure that a Tijuana River WMA site is included in the list for cleanup.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River WMA identify trash and bacteria as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)?

Targeted Measurable Outcome(s)

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

- Pounds of trash removed (Outcome Level 4): 900 lbs
- Pounds of trash recycled (Outcome Level 4): 600 lbs
- Total pounds of trash removed and recycled (Outcome Level 4): 1,500 lbs
- Number of participants (Outcome Level 1): 22
- Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
- Estimated amount of money spent on cleanups for the Tijuana River watershed (Outcome Level 1): $5,000
- Efficiency (Total Cost/Total Pounds Removed): $3.33lb

Expected Benefits

Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

Analysis Results

At the event, 22 participants removed 900 pounds of trash and debris and recycled 600 pounds of trash and debris. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 1,500 pound load reduction and an efficiency of $3.33 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Tijuana River WMA by the total pounds of trash removed and recycled.

Conclusions

This trash cleanup activity fulfills a watershed water quality activity for FY 2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 1,500 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE: **Coastal Cleanup Day Sponsorship**
ID #: **TJ-004**

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 25, 2010. The City of San Diego (City) sponsored the Tijuana River Valley site in the Tijuana River Watershed Management Area (WMA). Approximately 32 volunteers removed 1,120 pounds of trash and debris and recycled 5,000 pounds of trash and debris.

TMDL APPLICABILITY

Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK and ILACSD staff to ensure that sites within the Tijuana River WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- San Diego Coastkeeper
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River WMA identify trash as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with the sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome

1) Achieve load reduction due to reduction of trash (any amount) from the trash cleanup sponsorship.

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

- Pounds of trash removed (Outcome Level 4): 1,120 lbs.
- Pounds of trash recycled (Outcome Level 4): 5,000 lbs.
- Total pounds of trash removed (Outcome Level 4): 6,120 lbs.
- Number of participants (Outcome Level 1): 32
- Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $30,000
- Estimated amount of money spent on cleanups for the Tijuana River WMA (Outcome Level 1): $5,000
- Activity Efficiency (Total Cost/Total Pounds of Trash Removed and Recycled): $0.82/lbs.

Expected Benefits

Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

Analysis Results

At the event, 32 participants removed 1,120 pounds of trash and debris and recycled 5,000 pounds of trash and debris, which was tracked using data cards provided by the Ocean Conservancy. The average estimated sponsorship cost was $5,000 per watershed; thus, there was a 6,120 pound load reduction and an efficiency of $0.82 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Tijuana River WMA by the total pounds of trash removed and recycled.

Conclusions

This trash cleanup activity fulfills a watershed water quality activity for FY 2011 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 6,120 pounds of trash removed during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2012.

TITLE:	**Tijuana River Property-Based Inspections**
ID #:	**TJ-007**

ACTIVITY DESCRIPTION

In FY 2010, this activity was formerly called Tijuana River Targeted Facility Inspections.

This activity is part of a larger study in the San Dieguito River, Los Penasquitos, Mission Bay and La Jolla, San Diego River and Tijuana River watershed management areas (WMAs). The City of San Diego (City) performed an inspection program activity specifically focused on properties with multi-businesses. The activity involved inspecting properties and the businesses located on the properties regardless whether they are part of the City's commercial and industrial inventory. Traditionally, the City performs individual business inspections in the City's commercial and industrial inventory.

The City developed and implemented a focused inspection activity designed to evaluate the effectiveness of performing multi-business property-based inspections and answer the following management questions related to the commercial and industrial inspections program:

1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

The areas selected for inspection were shopping centers, industrial parks, and office parks within the five watershed areas.

The inspections occurred over two phases. Property inspections and business investigations were conducted during both phases. During the first phase, inspectors performed a full inspection of each property. Properties were inspected for BMP compliance, general site observations, pollutant discharge potential, and illicit connections/illegal discharges (IC/IDs) similar to an individual business inspection. Site observations and BMP deficiencies were noted on the inspection form. When an issue was noted during the property inspection and could be associated to a particular business, the inspector initiated an investigation of the business, or businesses. These individual business inspections were limited to investigating the significant deficiencies observed. If an issue could not be associated to one or more businesses on the property, the issue was considered to be the responsibility of the property owner or management company, and no business inspections were performed.

The property inspection reports were sent to the property management company, or to the property owner on file. Where applicable, business inspections reports were sent to corporate offices. If a business was not part of a corporation, the report was sent directly to the business at its physical location, or mailing address.

In phase two of the activity, selected properties from phase one that were determined to be high priority follow-ups were inspected. Each property was inspected using the same procedures utilized in the initial inspections. As a part of phase two, business investigations were also performed to those businesses likely responsible for potential storm water issue(s) in the area.

During both phases, if violations were identified, they were recorded for appropriate follow-up. Follow-up inspections occurred based on the severity of the identified violations. If discharges were identified,

they were immediately reported to the City's Storm Water hotline number. Lastly, education material was distributed, as applicable, during phase one and two of the inspection activity.

TMDL APPLICABILITY

Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment took place during FY 2011. This project is complete, and will no longer be included in future reporting updates.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria as high priority water quality problems in the Tijuana River WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of the property inspections contributes to addressing discharges, correcting behaviors, and abating sources associated with bacteria.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) Does focusing inspections and follow-up on property owners/managers increase BMP compliance?
2) Are Property-Based inspections feasible?

Targeted Measurable Outcome(s)

1) Identification of sources of constituents of concern in the Tijuana River Watershed

Assessment Method(s)

1) Inspections
2) Quantification
3) Monitoring
4) Tabulation
5) Reporting

Data Recorded

Phase One Property Inspections

1) Number of property inspections = 36
2) Number of properties recommended for follow-up inspection = 13
3) Total IC/IDs Observed = 1

4) Total IC/IDs Eliminated During Inspection = 0

Phase One Business Investigations

1) Number of business investigations = 7
2) Number of sites recommended for follow-up inspection = 7
3) Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 0
4) Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = N/A
5) Total IC/IDs Observed = 0
6) Total IC/IDs Eliminated During Inspection = N/A

Phase Two Property Inspections

1) Number of property inspections = 13
2) Number of properties recommended for follow-up inspection = 7
3) Total IC/IDs Observed = 0
4) Total IC/IDs Eliminated During Inspection = N/A

Phase Two Business Investigations

1) Number of business investigations = 4
2) Number of sites recommended for follow-up inspection = 4
3) Number of Sites That Implemented Some Corrective Action During Inspection (BMP implemented) (Outcome 3) = 0
4) Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = N/A
5) Total IC/IDs Observed = 0
6) Total IC/IDs Eliminated During Inspection = N/A

Overall

1) Number of Sites That Implemented Some Corrective Action Between the Two Phases (Outcome Level 3) = 7
2) Number of Sites with Assumed Source Abatement (based on corrective actions taken) (Outcome 4) = 7

Expected Benefits

The goal of this assessment is to determine the effectiveness of property-based inspections as a method to conduct inspections, which includes identifying and eliminating potential sources of storm water pollution.

Analysis Results

During phase one, 36 properties received property inspections. A total of 36% of these properties needed follow-up to verify that corrective actions/BMPs were implemented. From the phase one property inspections, seven businesses were investigated. For phase two, 13 properties from phase one received a follow-up property inspection. Seven of the 13 properties were recommended for follow-up to verify that corrective actions/BMPs were implemented. From the 13 properties, there were four business investigations in phase two. Overall between the two phases of inspections, there were seven sites that implemented some corrective action. Lastly, the number of IC/IDs decreased from one to zero between the two phases of the 13 property inspections.

Property inspections are an efficient and effective method to assess shared areas and evaluate visible, outdoor areas for BMP implementation at shopping centers, industrial parks, and office parks. Overall, BMP implementation improved at the properties inspected between the two phases of the inspection and a reduction of IC/IDs. There are some BMPs normally addressed during business inspections that did not apply to property inspections, as they require input from a business representative, or are requirements specific to business operations, such as employee training. In addition, the follow-up inspection priorities improved between the inspection phases. Lastly, common areas that have the highest threat to water quality, such as trash, landscaping, and storm drain areas, can be effectively evaluated during a property inspection.

Conclusions

Overall, property-based commercial and industrial inspections provide efficiency in both cost and coverage, with the ability to inspect a large area with multiple businesses in a short amount of time. Also common areas of high pollutant generating activities are addressed during these inspections, including IC/IDs, trash areas, landscaping and storm drain issues. Only one IC/ID was observed during the first property inspections phase, and called into the City's hotline for response and follow-up for abatement. No IC/ID was found during the second property inspections phase in the Tijuana River WMA. In addition, seven sites implement some corrective action between the two phases of inspections. Although a load reduction was not calculated, abatement of potential sources may be assumed with corrective actions being implemented; therefore, demonstrating both Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcomes being achieved as a result of conducting the property inspection activity. This activity fulfills the requirement of one of the two required watershed water quality activities.

TITLE: **City-Wide Clean-Up Events**
ID #: **TJ-010**

ACTIVITY IMPLEMENTATION

Imperial Beach participates in a number of city-wide sponsored clean-up events including ILACSD Creek-to-Bay clean up, local community group sponsored events, and the annual Home Front Clean-Up event. The largest event in terms of participation is the annual Home Front Clean-Up, which the City has been implementing since the 2001-01 municipal permit. These annual City-wide activities serve both as an encouragement and a means for residents to eliminate waste that could otherwise contribute the release of contaminates into the storm water conveyance system.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

City-wide clean up events will continue to be held throughout the duration of Municipal Permit R9-2007-0001. The City intends to sponsor ILACSD for the annual Creek-to-Bay clean up and continue the highly successful City-wide Home Front Clean Up event for the complete cycle of the current permit. The activity will be assessed and refined as necessary.

PARTICIPATING WATERSHED COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria is identified as a priority water quality problem in the Tijuana WMA. The accumulation of waste by residents such as trash, green waste, and large bulky items are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of implementing City-wide clean-up activities include compliance with permit requirements, changes in attitudes, knowledge, and awareness of the community, and lead to reductions in urban runoff and discharge quality by removing wastes that may have otherwise ended up in the storm drain system. City-wide clean-up events serve both as education and water quality activities. Reducing the amount of trash in the storm drain system also has the co-benefit of reducing bacteria which is identified as a water quality problem in the Tijuana WMA.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, and Level 4 compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters. During the year Imperial Beach sponsored I Love a Clean San Diego for its Annual Creek to-Bay clean up event. The

annual Creek-to-Bay cleanup engages the community through public participation and increases awareness on the connectivity of the receiving waters to the urban environment. Assessments are also made across the region on the level of participation and characteristics of the waste collected.

The City and EDCO also held the annual Home Front clean up event, which allows residents to dispose large trash items, recyclables, and other items that can not be disposed in the trash. The City held its annual Home Front clean up event on May 7th, 2011. The Home Front clean up event had 753 participants and resulted in the proper disposal of 178.83 tons of waste including 23.31 tons of metals, 43.72 tons of concrete, and 20.72 tons of green waste that were recycled.

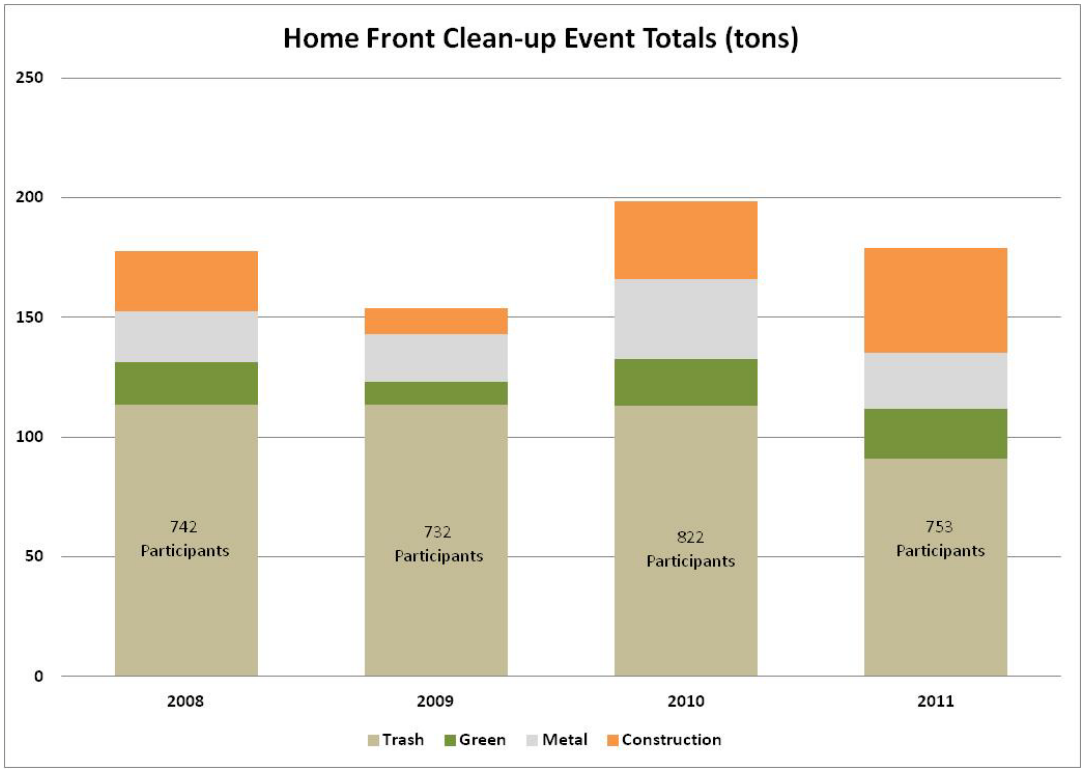

TITLE: **Large Special Event Inspection and Clean-Up**
ID #: **TJ-011**

ACTIVITY IMPLEMENTATION

The City hosts the annual U.S Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food venders, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street venders for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

Implementation of the activity has begun under the previous storm water permit 2001-01 and since been reviewed and enhanced for the new R9-2007-0001 permit. The activity was in active implementation over the last three reporting years and has become standard work procedure for managing storm water and recycling at special events. The City annually reviews effectiveness after the U.S. Open Sandcastle competition and makes changes as necessary.

PARTICIPATING WATERSHED COPERMITTEES

City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- EDCO Waste and Recycling Services
- Set Free Baptist Fellowship

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana WMA. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors during large special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of enhancing large special event clean up and inspections include compliance with permit requirements, changes in attitudes, knowledge, and awareness of mobile businesses and local community, and reductions in urban runoff and discharge quality by enhancing recycling and pollution prevention efforts and implementing storm water BMPs. Enhancing recycling efforts, increasing education on urban runoff, and verifying the implementation of BMPs through inspections may lead to lower levels of bacteria and trash reaching the storm drain system.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level One, Level Two, Level Three, and Level Four compliance with activity based permit requirements. Community wide clean-up events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters.

During FY 2011, the City required the proper disposal of recycled waste at all special events and the implementation of storm water BMPs when appropriate. The City held 12 large special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition, which during the weekend of July 12th-13th drew an estimated crowd of over 800,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event to ensure the implementation of the BMPs. Most street venders were aware of the storm water requirements and were implementing proper storm water BMPs. Vendors not implementing proper BMPs were cited and provided further information to correct behavior. Over the weekend three Notices of Violations (NOVs) were issued.

The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event.

Sandcastle Event Waste Disposal Totals

	Mixed Recycling	Cardboard	Trash
2010	1665 lbs.	920 lbs.	6.93 tons
2009	1320 lbs.	930 lbs.	8.11 tons
2008	1280 lbs.	960 lbs.	7.83 tons
2007	610 lbs.	990 lbs.	14.24 tons

TITLE: **SMUGGLER'S GULCH SEDIMENT AND DEBRIS REMOVAL**
ID #: **TJ-012**

ACTIVITY DESCRIPTION

The County performs routine flood control maintenance activities on improved and unimproved channels pursuant to its Regional General Permit (RGP) 53. This activity is traditionally performed every two to four years depending on annual rainfall. The extent of the project includes the channel from the Mexican border, north approximately 5,400 feet to the confluence of the Tijuana River. Historically as much as 80,000 cubic yards of sediment can be removed from the channel. Trash is separated on site and recycled accordingly.

The sediment removal project is necessary to return the drainage facility to historic conditions and to convey flow properly, which will eliminate the potential for sediment and debris to build up causing future flooding events.

ACTIVITY IMPLEMENTATION 2007-08

There were no sediment and debris removal during the FY2007-08.

ACTIVITY IMPLEMENTATION 2008-09

There were no sediment and debris removal during the FY2008-09.

ACTIVITY IMPLEMENTATION 2009-10

During FY09-10 County Parks removed 18,000 cubic yards of sediment, 40 cubic yards of trash, and 200 tires from Smuggler's Gulch. The dredging occurred from Monument Road south to the boundary of Federal property. All sediment was recycled as construction aggregate, while the trash and tires were disposed of as appropriate.

ACTIVITY IMPLEMENTATION 2010-11

During FY10-11County Parks removed 12,000 cubic yards of sediment, 40 cubic yards of trash, and 250 tires from Smuggler's Gulch. The dredging occurred from Monument Road south to the boundary of Federal property. All sediment was recycled as construction aggregate, while the trash and tires were disposed of as appropriate.

TMDL APPLICABILITY

N/A.

TIME SCHEDULE FOR IMPLEMENTATION

Typically removal takes place every other year but is dependent on precipitation patterns, intensity of precipitation, and funding.

FY10-11: Removal occurred during the period of December 2010 and February 2011
FY11-12: September 15 through October 15 2011
FY12-13: Currently no funding is available beyond the current FY.

PARTICIPATING WATERSHED COPERMITTEES

County of San Diego

OTHER PARTICIPATING ENTITIES

California Department of Fish and Game

California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Sediment
Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment and trash have been identified as high priority water quality problems in the Tijuana River WMA. This activity results in a direct load reduction of these pollutants, and is therefore consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

This activity is considered a load reduction that can be measured. As reported above, 12,000 cubic yards of sediment, 40 cubic yards of trash, and 250 tires were removed from Smuggler's Gulch during FY 2010-11

TITLE:	**TIJUANA RIVER WATERSHED BACTERIAL SOURCE IDENTIFICATION STUDY**
ID #:	**TJ-013**

ACTIVITY IMPLEMENTATION

The City of Imperial Beach initiated a Bacteria Source Identification study in November 2007 to identify and quantify sources of bacterial contamination in the U.S. portion of the Tijuana River Watershed. The project was put on hold between December 15, 2008 and February 1, 2010 due to budgetary constraints in the State of California. Funding for the project was reinstated and the study is scheduled to be complete March 2012. The goals of the study include the following:

- Identify anthropogenic sources of bacteria;
- Identify non-anthropogenic sources of bacteria;
- Assess annual bacteria loads into the Tijuana River;
- Identify point sources (PSs) and non-point sources (NPSs) of bacterial pollutants; and
- Better understand mitigation strategies aimed at the reduction of bacteria loads.

The project uses standard culturing of fecal indicator bacteria and molecular tests (including the presence of Bacteroides as an indicator of recent human fecal pollution) to assess the presence of fecal indicator bacteria within the watershed during both dry weather and wet weather to identify point source and non point sources of elevated bacteria concentrations, which may lead to beach postings at adjacent recreational beaches. Specific assessments focus on areas such as residential, commercial, agricultural and ranches, and groundwater transport as well as sewage flows from Mexico.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically part of a TMDL compliance program. The Tijuana River and Estuary is listed for bacteria and may eventually have a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Information gathering from various stakeholders – Ongoing
- Meet with stakeholders to discuss project goals and objectives – Ongoing
- Review existing literature and data, and conduct field reconnaissance to determine sources of bacterial inputs – Completed
- Conduct sanitary surveys and collect samples from flowing sources – Ongoing
- Targeted wet weather monitoring – Ongoing
- Flow monitoring – Ongoing
- Special Studies – Ongoing
- BMP Concept Designs – Ongoing
- Study to be completed – March 2012

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego
- City of San Diego
- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- State Water Resources Control Board
- Clean Beaches Initiative Task Force
- Regional Water Quality Control Board, San Diego
- U.S. Fish and Wildlife Service
- International Boundary and Water Commission (IBWC)
- California Department of Fish and Game
- Private land owners
- Conservation groups
- NGOs
- National Oceanic and Atmospheric Administration (NOAA)
- Tijuana River National Estuarine Research Reserve (TJNERR)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana River Watershed. Trash, parks, and pet waste are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Limited data are available regarding bacterial loads from sources and activities on the U.S. side of the Tijuana River Watershed (TRW). In addition, detailed information regarding the impact of certain land uses, and the input of pollutants from point and nonpoint sources have not been assessed for the U.S. portion of the TRW. This study aims to quantify bacterial loads from potential sources and propose solutions to reduce the impact of bacterial loads in the TRW and Pacific Ocean. The implementation of successful best management practices will result in a reduction in beach postings and closures.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1 compliance with activity based permit requirements. Information gained from this study will help in developing other programs or specific BMPs that will further address changes in knowledge and behavior, load reductions, and improvements to water quality.

TITLE: **INVASIVE SPECIES REMOVAL PROJECT IN THE TIJUANA RIVER PARK**
ID #: **TJ-017**

ACTIVITY DESCRIPTION

The SANDAG Transnet Environmental Mitigation Program (EMP) funded a grant to the Southwest Wetlands Interpretive Association (SWIA) to continue the Tijuana River Valley Invasive Plant Control Program (Phase IV) begun in 2002 in the extreme southwest part of San Diego County within a few miles from the mouth of the river. The program includes work in the County of San Diego's Tijuana River Valley Regional Park (TRVRP), California State Parks' Border Field State Park, and the U.S. Fish and Wildlife Services' Tijuana Estuary. Three invasive plant species are targeted within the Tijuana River Valley: giant reed (Arundo donax), castor bean (Ricinus communis) and salt cedar (Tamarix ramosissima). These species degrade the habitats they invade by displacing native vegetation, lowering insect food supply for birds, reducing groundwater, and increasing flood and fire hazards. The invasive removal program includes replanting with native species, a project that, coupled with natives returning naturally, will serve to filter pollutants and decrease sedimentation in the long term. The County cooperated with the SWIA in seeking grants, by writing letters of support and serving on a technical advisory group (TAG) for the program. In the implementation of the program, the County continues to serve on the TAG and provides SWIA with right-of-entry permits to County property. SWIA is committed to seeking grants for the on-going funding of this project and the County plans to continue its long-term cooperation with the association.

ACTIVITY IMPLEMENTATION FY2007-08

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

1) Treated arundo and castor bean on 100 acres;
2) Performed follow-up treatment of arundo and castor bean on old 511 acres;
3) Treat tamarisk on 61 acres around Dairy Mart ponds;
4) Maintained and planted native cuttings.
5) Attended TAG meeting and provided right of entry letters to SWIA.

ACTIVITY IMPLEMENTATION FY2008-09

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

1) 07/20/08 TAG Meeting.
2) Development and adoption of a "Declaration of Intent".

ACTIVITY IMPLEMENTATION FY2009-10

During FY09-10 the following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

1) Treated giant reed, castor bean and tamarisk within 86 acres in the Dairy Mart Ponds area;
2) Restored 1.5 acres in the Hollister Bridge area;
3) County representatives attended the annual TAG meeting; and
4) County provided right of entry letters to SWIA.

ACTIVITY IMPLEMENTATION FY2010-11

During FY10-11 the following tasks were implemented as part of invasive plant removal program in the TRVRP:

1) County representatives attended the annual TAG meeting (09/15/10);
2) SWIA treated giant reed, castor bean and tamarisk within 40 acres in the Hollister Bridge area 3) SWIA was able to cover a larger area than had been expected (27 acres); and
4) County provided right of entry letters to SWIA.

In addition County Parks Staff in response to a citizen's complaint removed approximately six dumpsters (40 yard roll-off) of Arundo Donax along the western edge of International Road.

TMDL APPLICABILITY

N/A.

TIME SCHEDULE FOR IMPLEMENTATION

FY10-11: Funding from the US Fish and Wildlife Service's Coastal Programs was acquired by SWIA to fund invasive plant treatments. These funds are expected to be used in the TRVRP near Hollister Bridge. The following tasks are planned to be implemented:

1) Treat giant reed, castor bean and tamarisk within 27 acres in the Hollister Bridge area;
2) County representatives attended the annual TAG meeting; and
3) County provided right of entry letters to SWIA.

Project completion expected during FY10-11

Further treatments are dependent upon new funding.

FY11-12: Currently, SWIA does not have any projects planned for the TRVRP for FY11-12. However, SWIA has applied for a large Federal grant (US Fish and Wildlife Services' National Coastal Wetland Conservation grant) that, if funded, will allow for extensive work on the TRVRP during FY12-15.

PARTICIPATING WATERSHED COPERMITTEES

County of San Diego

OTHER PARTICIPATING ENTITIES

Southwest Wetlands Interpretive Association,
U.S. Fish & Wildlife Service,
California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Sediment
Pesticides
Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment, pesticides, and bacteria are high priority water quality problems in the Tijuana River WMA. Therefore, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS ASSESSMENT

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1). Each invasive plant area will be monitored to determine which control methods would be most effective in the TJRV. Although no water quality monitoring is proposed for this project, water quality improvements may be able to be assessed qualitatively based on results from similar projects.

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TITLE: **TIJUANA RIVER TRASH, TIRE and SEDIMENT CHARACTERIZATION STUDY**
ID #: **TJ-018**

ACTIVITY DESCRIPTION

Trash and sediment deposition in the Tijuana River and Estuary continue to threaten public health, safety, and the environment throughout the Tijuana River Valley. Public contact with trash, waste tires, and other solid wastes, including contaminated soil and sediments, is potentially injurious to human health. Moreover, excessive sedimentation has in recent years contributed to the loss and impairment of valuable estuarine habitat. Past efforts have removed some of the trash and sediment; however, they have been insufficient to address the entire area. The extent of trash and sediment deposition has not been adequately characterized to date and comprehensive alternatives to solve the problem remain elusive.

The objective of this project is to characterize trash and sediment in the Tijuana River and Estuary and to identify comprehensive remediation alternatives for removing existing trash and sediment deposition. The County and City of San Diego are partnering with the San Diego Regional Water Quality Control Board, the California Integrated Waste Management Board (CIWMB), and other stakeholders to complete this study.

As a first step, a consultant was retained to characterize trash and sediment in the Tijuana River and Estuary and to prepare a work plan to identify remediation alternatives for removing existing trash and sediment deposition. The following tasks and deliverables are scheduled to be completed no later than June 15, 2009 at a cost not to exceed $100,000.

Task 1: Inventory of Existing Information and Field Reconnaissance

- Research and review plans and pertinent studies.
- Research topographic maps to determine boundaries of the River and Estuary
- Conduct field investigation and take digital photos of the existing trash and sediment depositions.
- Determine the extent of the existing trash, waste tires, and sediment deposition in the river, estuary, and tributaries.
- Geo-reference location of trash, waste tires, and sediment depositions
- Quantify the depth, width, and length of the trash, waste tires, and sediment deposition.

Task 2: Digitize/Compile Existing Information

- Prepare orthophoto base maps with the existing trash, waste tires, and sediment information.
- Import from the County of San Diego GIS database information such as land use classifications, soil groups, and transfer into project database.

Task 3: Characterization

- Determine the types and quantities of trash in the deposition. Develop a matrix showing the general types of trash and the disposal methods.
- Determine the amount of sediment in the deposition.
- Determine the amount of recyclable materials that can be recovered from the deposition.
- Determine the amount of waste tires in the deposition.
- Determine the viability of recycling sand.
- Plot percentage of trash versus sedimentation on the base map.

Task 4: Analyze Alternatives

- Develop alternatives for removing existing trash, waste tires, and sediment deposition. Consider alternatives that do not require cross-border solutions.
- Consider the following in developing the alternatives:
- Cost to haul to landfill
- Temporary or Permanent Transfer Station
- Segregating recyclables
- Segregating sand
- Waste tire recycling and disposal
- Include cost to restore river, tributary, and estuary to natural condition.
- Develop cost estimate for various alternatives.
- Determine the viability of each alternative. Consider unit costs as a factor.

Task 5: Report Submittals

- Submit quarterly progress reports and meet with CIWMB/County/City Staff for review and comments.
- Submit Draft and Final Reports with all text, graphs, and GIS maps in both hard copy and electronic formats.

ACTIVITY IMPLEMENTATION FY08-09

The following activities were implemented in FY08-09:

- Compilation of existing historical aerial photographs for the valley for specific years;
- Review of historical aerial photographs to identify the active channels on the floodplain;
- Completion of a trash survey in the areas east of the plug near Hollister Street, east to the International Border along the main river channel, and along Smuggler's Gulch;
- Preparation of a database with georeferenced information collected during the trash survey;
- Permitting associated with test pits and borings to be completed in the same areas as indicated above;

ACTIVITY IMPLEMENTATION FY09-10

Implementation of the activity continued during the current reporting period. The following activities were completed in FY09-10:

- Completion of the trash survey from the Plug westward to the shoreline, including Goat and Yogurt Canyon areas
- Excavation of test pits and sampling to identify the presence of chemicals of potential concern (COPCs) in sediment and the presence of trash in the subsurface
- Drilling soil borings and conducting grain-size analyses to identify if the sediment may be suitable for beach replenishment
- Preparation of a GIS database with the results of the trash and sediment sampling program using an ArcReader interface
- Draft report summarizing the results of the trash, waste tire and sediment study.

TMDL APPLICABILITY

There are no TMDLs currently adopted for the Tijuana River or Estuary; however, US EPA has indicated to watershed stakeholders that it is in the initial phases of data gathering for the development of trash and

sediment TMDLs. The San Diego Regional Water Control Board (RWQCB) indicates that it will be issuing a draft TMDL for trash for the Tijuana River in early 2011.

TIME SCHEDULE FOR IMPLEMENTATION

Activities to be completed in FY10-11 include the Completed Study Report.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego (project/consultant management)
- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Regional Water Quality Control Board
- California Department of Resources Recovery and Recycling (CalRecycle, formerly the California Integrated Waste Management Board; Funding Source)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The trash and sediment characterization study is consistent with the collective watershed strategy in that it will provide information regarding the location and extent of trash and sediment within the Tijuana River Valley. This will lead to the identification of effective water quality activities to reduce the amount of trash and sediment within the valley.

EXPECTED BENEFITS

This activity is an important step toward the ultimate goal of improving public and environmental health in the Tijuana River Valley. The direct benefits of this activity will be a better understanding of the types, quantities, and locations of trash and sediment in the River Valley. It will also identify and evaluate various alternatives for removing existing waste, preventing future waste transport, and restoring the watershed to a more natural condition.

EFFECTIVENESS ASSESSMENT

Characterization of the location and extent of trash and sediment will provide the basis for load reduction activities. Future activities will be evaluated through the amount of trash and sediment removed from the system.

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TITLE: **CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**
ID #: **TJ-019**

ACTIVITY DESCRIPTION

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the Strategic Plan for Watershed Activity Implementation (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

The Outdoor Water Conservation Rebate Program conducted by the Public Utilities Department involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. The rebate program was implemented in FY 2011.

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the support of storm water and urban runoff pollution management efforts of the public.

Development of the Strategic Plan included the formulation of a list of activities to implement during Phase I. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target with no specific information. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

Conceptual Projects

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, implementation and assessment completion anticipated in FY 2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Treatment System (1)					
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

TIME SCHEDULE FOR IMPLEMENTATION

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City Strategic Plan and the Copermittees Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP annual report.

EFFECTIVENESS MEASUREMENTS

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

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TITLE: **TIJUANA RIVER GROSS SOLIDS AND SEDIMENT BMPS DESIGN**
ID #: **TJ-022**

ACTIVITY DESCRIPTION

This activity is the design and construction of trash and sediment storm water Best Management Practices (BMPs) to reduce the volume of sediment and gross solids (trash) which are transported through the Tijuana River's main channel and deposited in the Tijuana River Estuary during storm events.

This design and construction activity has been abandoned and no further work on BMP design or construction is planned or funded in future years.

TMDL APPLICABILITY

A TMDL for trash and sediment in the Tijuana River Valley have not been established. On Janueary 20, 2011 Workshop and CEQA Scoping Meeting was held at the RWQCB to initiate the process of developing TMDLs for trash and sediment in the Tijuana River Valley.

TIME SCHEDULE FOR IMPLEMENTATION

This project was suspended indefinitely in November 2010 when request for Federal funding though a special appropriation was not secured through the Federal FY 12 WRDA act.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identify gross pollutants (trash) and sediment as high priority water quality problems in the Tijuana River WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing the volume of trash and sediment in the stream via siltation basins and trash interceptor devices.

EFFECTIVENESS MEASUREMENTS

Due to lack of funding and other resources his project has been abandoned. No effectiveness assessments activities are planned or funded in future fiscal years.

Expected Benefits

None

Analysis Results

No analysis performed.

Conclusions

The implementation of this project will require large amounts of funding and multi-agency coordination and the leadership of entities and agencies with jurisdiction over the sources and conveyance on the pollution. Specific design, siting, scale and detailed feasibility analysis will require detailed hydrologic and hydraulic studies to include surveys and through understanding of flow regimes in the affected channels and floods plains along with sediment and gross solids loads and various sized storm events required to assess the magnitude of the problem and develop potential practical solutions.

Recommendations

Because the majority of the sediment and gross solids have their source on the Mexican side of the US-Mexican border, it is recommended that funding and the involvement Federal and Mexican entities and agencies with jurisdiction over the border region and the waters of the Untied State and State of California secure the funding require to assess the magnitude of the problems and potential solutions. After these issues are defines and appropriate and feasibility solution developed the Federal and State entities should pursue resources, establish process, mechanism and fund implementation, construction and operations for facilities or programs to mitigate these impacts in consultation with local agencies.

TITLE: **TIJUANA RIVER WATERSHED BROCHURE**
ID #: **TJ-023**

ACTIVITY DESCRIPTION

The City of San Diego (City) and Think Blue will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the attention of the audience, enhance the understanding of basic watershed principals of the public, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay
5) San Dieguito River
6) Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2012. Implementation and distribution is expected to occur in early FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?
2) Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

Targeted Measurable Outcome(s)

1) Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.
2) Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.
3) Increased intent to act to prevent storm water pollution after reading the watershed brochure.

Assessment Method(s)

Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Data Recorded

Not applicable

Expected Benefits

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

Analysis Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2012. In FY 2011 it was determined that the watershed brochures for all 6 watersheds within the City of San Diego would need to be revised, including the already completed Tijuana and San Diego River watershed brochures. Watershed brochure revision will be completed in FY 2012. Effectiveness assessments are scheduled to begin in late FY 2012. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

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TITLE:	**SMUGGLER'S GULCH, PILOT CHANNEL & NORTHERN CHANNEL SEDIMENT AND DEBRIS REMOVAL**
ID #:	**TJ-025**

ACTIVITY DESCRIPTION

On September 23, 2009, the City of San Diego Council declared a State of Emergency in the Tijuana River Valley due to the potential for severe flooding pursuant to Resolution Number R-30526. Re-establishment of the channel profiles to reduce the risk of flooding in these flood control facilities was deemed necessary because of the additional sediment deposition from the Tactical Infrastructure Border project, and because of the flood which occurred in late November 2008. In FY 2011, the City excavated and removed sediment and trash, including tires, within two flood control facilities known as Smuggler's Gulch and the Tijuana River Pilot Channel pursuant to Emergency Coastal Development Permit No. 784887, County of San Diego's Regional General Permit 53, US Army Corp of Engineers Permit SPL 2009-00719-TCD, and Regional Water Quality Control Board 401 Water Quality Certification 09C-077.

In FY11, the City excavated and removed 13,000 cubic yards from these flood control facilities.

The sediment removal project is necessary 1) to return the drainage facility to a condition where adjacent property is not threatened by flooding, 2) storm water flows convey properly to the main channel, and 3) channel profiles and conditions are restored to reduce the potential for sediment and debris to accumulate and thereby increase the potential of flooding.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

During FY 2011, excavation and removal of sediment and trash continued.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River WMA identify sediment and trash as high priority water quality problems and recommend implementing load reduction/source abatement activities to address them. This activity results in a direct load reduction of these pollutants.

EFFECTIVENESS MEASUREMENTS

This activity is assessed based on the amount and type of sediment and debris removed. In FY 2011, the City excavated and removed 13,000 cubic yards from these flood control facilities.

TITLE: **WILDCOAST SPRING CLEAN-UP EVENT - MAY, JUNE 2011**
ID #: **TJ-026**

ACTIVITY DESCRIPTION

The County of San Diego's Department of Public Works Recycling Section and Watershed Protection Program sponsored two clean-up events coordinated by WILDCOAST in the Tijuana River Valley. The events were held in conjunction with the County of San Diego Parks and Recreation Department Trails Day Activities and included picking up trash and debris along the Effie May Trail. Trash and debris were weighed to determine total amounts removed. Trash removal services were donated by Allied Waste Services.

FY 10-11 ACTIVITY DESCRIPTION

The Recycling Section also hired work crews to remove tires from the Tijuana River Valley on June 24 and 28.

FY 10-11 ACTIVITY IMPLEMENTATION

The events occurred on May 14, 2011 at Dairy Mart Road and June 4, 2011at Effie May Trail. Thirty-five people attended the May event and collected 1.59 tons of trash and removed 38 tires from the river valley. The June event included 103 people and collected 1.14 tons of Trash and removed 63 Tires (See Table 1 below).

In addition, the County's Recycling section identified areas with large amounts of tires and hired work crews to manually carry the tires out of the main channel at Dairy Mart Road and the sediment basin at Goat Canyon. Two work days were completed in June 2011 resulting in the removal of 912 tires.

Table 1: Trash and Tire Clean-up Data

Date	Number of People	Pounds of Trash	Number of Tires
May 14, 2011 (Volunteer Cleanup Dairy Mart Road, tires removed by County contractor and staff on May 17, 2011)	35	1.59 tons	38
June 4, 2011 (Volunteer Cleanup Effie May, tires removed by County contractor and staff on June 8, 2011)	103	1.14 tons	63
June 24, 2011 (County contractor and staff collected tires from Dairy Mart Road –east of the bridge, tires removed by County contractor and staff on June 29, 2011)	13	6.48 tons	479
June 28, 2011 (County contractor and staff collected tires from Goat Canyon, Smugglers Gulch, and Dairy Mart Road tires removed by County contractor and staff on June 30, 2011)	15	4.96 tons	433

*Pounds of trash does not include weight of tires.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

This project was completed during FY10-11. No further activity is currently planned.

PARTICIPATING WATERSHED COPERMITTEES

County of San Diego

OTHER PARTICIPATING ENTITIES

The following groups provided sponsorships, donated services or participated in the clean-up.

WiLDCOAST
Allied Waste Services
REI
New Ocean Blue
Union of Pan Asian Communities
SDGE

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

Taylor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMPs), Watershed Urban Runoff Programs (WURMPS) and the Regional Copermittees' Regional Urban Runoff Management Program (RUMP) to the extent possible to address the watershed's priority water quality problems.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was be measured by weighing the amounts of trash collected during the event (Level 4). All project elements were completed during FY10-11.

TITLE: **TIJUANA RIVER ACTION MONTH**
ID #: **TJ-027**

ACTIVITY DESCRIPTION

The Tijuana River Copermittees including the Cities of San Diego and Imperial Beach and the County of San Diego collaborated on a series of clean-up and education events in the Tijuana River Valley during the months of September and October. The September 25th clean-up will be included as one of many events included as part of the International Coastal Clean-up Event hosted by I love a Clean San Diego. The October events are being coordinated by WiLDCOAST and will consist of four clean-up at different locations within the river valley and one clean-up in an adjacent canyon in Mexico that drains to the Valley. Each cleanup will be co-hosted by a different organization along with WiLDCOAST. Trash and debris will be weighed to determine total amounts removed. Trash removal services will be donated by Allied Waste Services and Tire Removal Activities will be funded by the County and City of San Diego through grants awarded through CalRecycle.

In addition, the County's Recycling section identified existing tire piles in the area from previous cleanups and arranged for removal.

FY 09-10 ACTIVITY IMPLEMENTATION

The County's Recycling Section applied for the CalRecycle grant funding for this project in December, 2009. CalRecycle informed the County that grant would be funded in April. On June 11, 2010 County staff from the Recycling section and Watershed program met with WildCoast staff to discuss the project. The grant was funded for the full amount of $35,868 in June, 2010 with the grant term beginning July 1, 2010. All grant activities must be completed by June 30, 2011.

FY10-11 ACTIVITY IMPLEMENTATION

In August, 2010 the Recycling section finalized the agreemet with WildCoast for four cleanups in the Tijuana River Valley. The Recycling section also issued a Request for Quotation for a state certified waste tire hauler to transport the tires collected at the cleanups to a state certified tire recycling facility. The low cost bidder was awarded the contract on September 1, 2010. The Watershed Protection Program supplemented the grant funding and contributed $2,500 toward the clean up events. Several clean-up events were planned and implemented during the FY10-11 (See Table 1 Below).

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

December 2009 - Grant application
June 11, 2010 through October 2010 - Planning (additional planning was required once the region received early rains).
September 2010 through October 2010 - Clean-ups.

PARTICIPATING WATERSHED COPERMITTEES

County of San Diego
City of San Diego
City of Imperial Beach

Table 1: Trash and Tire Clean-up Data

Date	Number of People	Pounds of Trash	Number of Tires
September 25, 2010 (Volunteer Cleanup at Dairy Mart)	32	500	25
October 2, 2010 (Volunteer Cleanup at Effie May)	91	1,000	74
October 5, 2010 (Removal of tires from an existing tire pile behind the IWBC facility– the tires originated from a cleanup at Dairy Mart Road, location 1)	7		450
October 5,2010 (Removal of tires from an existing tire pile off Sunset Ave west of 19th St. on a County owned parcel – the tires originated from a cleanup at Effie May Trail, location 2)	7		389
October 7,2010 (Removal of tires from an existing tire pile at Goat Canyon)	7		814
October 9, 2010 (Volunteer Cleanup at Willow Basin)	50	4,175	13
October 9, 2010 (County contractor and staff collected tires from Smugglers Gulch and removed them)	8		47
October 16, 2010 (Volunteer Cleanup at In Mexico)	30	21 tons	20
October 18, 2010 (Volunteer Cleanup at Dairy Mart Road Job Corps effort, tires removed by County contractor and staff on Oct. 25, 2010)	46		758
October 23, 2010	Media Event only	Canceled - Weather	

*Pounds of trash does not include weight of tires.

OTHER PARTICIPATING ENTITIES

The following groups provided sponsorships, donated services or participated in the clean-up:

I Love a Clean San Diego
TRNERR/State Parks
Allied Waste Services
REI
San Diego Surfrider
Tijuana Calidad de Vida
San Diego Coastkeeper
Job Corps
Outside the Lens
WiLDCOAST

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

Taylor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMPs), Watershed Urban Runoff Programs (WURMPS) and the Regional Copermittees' Regional Urban Runoff Management Program (RUMP) to the extent possible to address the watershed's priority water quality problems.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by weighing the amounts of trash collected during the individual events (Level 4).

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TITLE: **XERISCAPING MUNICIPAL FACILITIES**
ID #: **TJ-028**

ACTIVITY IMPLEMENTATION

Imperial Beach partnered with California American Water Company to replace landscaping at municipal facilities with drought tolerant plants. The City identified landscapes at City Hall, Marina Vista Center, and Sewer Pump Station 8 as locations for xeriscaping projects. Existing vegetation at these locations consist of grass, shrubs, birds of paradise, and other non-native pants that require significant maintenance and watering. Replacing the existing landscapes with native and drought tolerant plants will result in the reduction of fertilizers and irrigation.

In 2009 the City received a grant from California American Water and moved forward with the first xeriscaping project at City Hall. The City hired a landscape architect for the initial design of the project. The implementation of the project was taken on as an Eagle Scout Project for Boy Scout Troop 53, North Park with preparation work and oversight provided by the Public Works Department. Xeriscaping at City Hall was completed in February 2010.

During this reporting period the City completed two more xeriscaping projects with the help from Boy Scout Troup 53, North Park. These additional locations include the Marina Vista Center and Sewer Pump Station 8.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

Xeriscaping at City Hall was completed in February 2010, xeriscaping at the Marina Vista was completed in August 2010, xeriscaping at Sewer Pump Station 8 was completed in January 2011. The City will continue to xeriscape existing municipal facilities and/or remove impermeable surfaces as projects are identified. This activity is ongoing.

PARTICIPATING WATERSHED COPERMITTEES

City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- Boy Scouts of America
- California American Water Company

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients are identified as a priority water quality problem in the Tijuana WMA. Through less watering and less fertilizing, this project will help reduce the amount of nutrients and irrigation runoff in the MS4 and the watershed. Since this activity addresses priority water quality problems and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

Expected benefits of xeriscaping include compliance with permit requirements, a reduction in irrigation runoff and contribution of nutrients in the watershed. This activity serves as a water quality activity but also indirectly contributes to education because the projects set an example of preferred landscapes in the community. Less runoff from irrigation will reduce pollutants in the watershed and the presence of attractive native plant displays at City facilities will show the public that these displays are a viable and attractive alternative to traditional landscaping.

EFFECTIVENESS MEASUREMENTS

The effectiveness of the xeriscaping projects at City Hall, Marina Vista Center, and Sewer Pump Station 8 meet the requirements of Outcome Level 1, Level 2, and Level 4. Xeriscaping raises awareness of the connectivity of water saving landscape to urban runoff, storm drain systems, and receiving waters.

Outcome Type	Potential Assessment Measures and Methods
Level 1: Compliance with Activity-based Permit Requirements.	Implementation of 3 xeriscaping projects by Eagle Scouts under the supervision of Public Works Director Hank Levien.
Level 2: Changes in Knowledge / Awareness.	Knowledge of water quality issues and the effects of irrigation were increased as a result of this project. Citizens and staff alike were shown through example that native plants can provide an attractive alternative to similar landscaping and reduce urban runoff. Project was also collaboration among CalAmerican Water, City of Imperial Beach, and Boy Scout Troop 53.
Level 3: Behavioral Change / BMP Implementation.	The City was able to further reduce irrigation by replacing a total of 10,900 square feet of landscape with drought tolerant plants.
Level 4: Load Reductions.	Dip irrigation was installed and reduced irrigation for City Hall by 42 percent. This will reduce pollutant load to the MS4 by reductions in irrigation and nutrients.

TITLE: **FIESTA DEL RIO EVENT**
ID #: **TJ-029**

ACTIVITY DESCRIPTION

In FY 2009, the City of San Diego (City) and Think Blue became a sponsor of the annual Fiesta Del Rio event in the Tijuana River Watershed Management Area (WMA). The Fiesta del Rio event is designed to raise awareness about the environment of the San Diego/Northern Baja region surrounding the Tijuana River Estuary, and steps the public (especially families with children) can take to help protect this fragile ecosystem and the surrounding area.

The Think Blue sponsorship included staffing a booth to provide the opportunity to educate the public about preserving the local environment, promote stewardship the Tijuana River Estuary, and encourage proactive steps in preventing pollution from entering the storm drain system. Think Blue staff offered free BMP related giveaway items to the public in exchange for their participation in a survey designed to assess their knowledge and attitudes towards storm water pollution and steps they would be willing to take to help reduce pollution of local waterways in the future.

TMDL APPLICABILITY

Event attendance will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Planning was completed in 2009. Implementation and assessment were completed in 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Oil & Grease
- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River Watershed Management Area.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What change in awareness /attitude regarding bacteria was achieved after implementation?
2) How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s)

1) Reach pre-set percentage of residents within target watershed
2) Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)

1) Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants)
2) Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

Data Recorded

- Estimated total visitors exposed to the Think Blue Booth at the Fiesta Del Rio in FY 2011 (Outcome Level 1): 5,000
- Number of Surveys administered in FY 2011 (Outcome Level 1): 36
- Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2): 72%
- Percentage of individuals able to name a concrete action to prevent storm water pollution (Outcome Level 3): 83%
- Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3): 96%

Expected Benefits

The goal of this activity is increasing knowledge and awareness in the residents and visitors in the Tijuana River Watershed in order create positive behavioral change that will reduce the presence of bacteria and gross pollutants in nearby waterbodies. Effectiveness Assessment will be ongoing as Think Blue gathers more data from the event.

Analysis Results

Effectiveness assessment results of this activity will be in FY 2012 in order to have a statistically significant sample size and provide an opportunity to note any behavioral changes over a longer period of time.

Conclusions

Based on attendance size and demographics of the Fiesta Del Rio, the City plans to continue to sponsor and staff the Fiesta Del Rio. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE:	**BEYER BOULEVARD TRASH SEGREGATION BEST MANAGEMENT PRACTICE**
ID #:	**TJ-030**

ACTIVITY DESCRIPTION

Stormwater Drain Insert Pilot Study involves the installation of two curb inlet inserts in the Tijuana River Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The inserts will be installed directly in the existing curb inlets along Beyer Blvd. The Beyer Blvd site includes the installation of 2 storm drain curb inlet inserts as retrofits within the existing storm drain system. The curb inlet inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as a Trash Segregation Device Installation in the 2008 Tijuana River WURMP. In June 2008, the site along Beyer Blvd was selected and the conceptual design was released for this project.

TMDL APPLICABILITY

Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY 2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets have been retrofitted with the selected drainage inserts during the month of March in 2011 and the first phase of monitoring started during the month of September in 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River WMA identify trash and bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load reduction/source abatement activities to

address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of the catch basin inserts?
2) How effective are these catch basin inserts at reducing priority pollutant loads?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the catch basin inserts are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

- How much money spent on inspections and maintenance
- Trash Capacity
- Flooding Issues
- Functionality during storm event
- % Trash Bypass

Expected Benefits

Drain inserts are moderately effective at reducing discharge of trash to receiving waters when loadings are compatible with the maintenance frequency. Excessive flow bypasses is the main cause of reduced performance.

Analysis Results

An effectiveness assessment of this activity is currently underway. The City will conduct project monitoring to evaluate the effectives of the drainage insert selected in load reduction and effluent quality.

Conclusions

Effectiveness and efficiency will be determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts.

TITLE: **SWEEPER SPEED EFFICIENCY STUDY**
ID #: **TJ-031**

ACTIVITY DESCRIPTION

During FY 2011, the City of San Diego (City) implemented a sweeper speed efficiency pilot study. The Sweeper Speed Efficiency Study focused on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The City's typical street sweeper operational speed is between 6-12 miles per hour. Reduced street sweeper speed is defined as 3-6 miles per hour based on manufacture recommendations. During project planning, a commercial route along Beyer Boulevard in the Tijuana River WMA was selected for this study based on a number of criteria.

The goals of the Sweeper Speed Efficiency Study were to:

1) Assess the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed;
2) Assess the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed;
3) Assess the relative level of load reduction potential for street sweepers at various speeds; and
4) Determine the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed.

The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conformed to this strategic approach by providing a phased approach. The Sweeper Speed Efficiency Study was piloted first to determine whether reducing sweeper speeds improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

TMDL APPLICABILITY

Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

Project planning took place in FY 2010. Implementation and assessment was completed in FY 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- URS Corp.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy for the Tijuana River WMA identifies bacteria as a high priority water quality problem, and recommends implementing load reduction/source abatement activities to address it. Implementation of this activity addresses bacteria by removing trash and debris, which contains bacteria, from City roadways.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the benefit of maximizing the level of debris removed versus operating the street sweeping equipment at the reduced operating speed?
2) What is the benefit of maximizing the volume of metals removed versus operating the street sweeping equipment at the reduced operating speed?
3) What is the relative level of load reduction potential for street sweepers at various speeds?
4) What is the relative cost efficiency of limiting the speed of street sweepers to reduced operating speed?

Targeted Measurable Outcome(s)

1) Achieve load reduction for metals based on monitoring information

Assessment Method(s)

1) Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff)
2) Tabulation (e.g., amount of money to post additional signage and sweep medians)
3) Quantification (e.g., load estimate comparison pre and post-signage)

Recommended Data

1) Total pounds of debris removed (Outcome Level 4)
2) Total broom miles swept (Outcome Level 4)
3) Cost of sweeper repairs/maintenance (Outcome Level 1)
4) Total pounds of debris removed by land use (Outcome Level 4)
5) Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)
6) Post-sweeping COC concentrations in runoff (Outcome Level 4)

Expected Benefits

The goal of the assessment was to determine the optimal speed to operate City mechanical sweepers to maximize debris and metals removal. By reducing the operational speed of the City's street sweepers, it was anticipated that the sweepers would be able to remove more debris and metals, which may have resulted in increased load reductions for high priority water quality problems.

Analysis Results and Conclusions

Results from the Speed Efficiency study indicated that the operation of mechanical street sweepers at the two monitored operation speeds had little impact on the weight of debris collected in the field and the pollutant removal capability of the sweeping machines. The weight of material collected by the street sweepers was highly variable and did not correlate with operational speed. In addition, chemistry analysis of roadway debris samples collected prior to and after street sweeping activity revealed significant variability in both the pre-sweep and post-sweep sample results. This result is important in that the variability of the pollutant concentration at the scale of the roadway sample collection limited the ability to detect differences between the two operational speeds.

Street sweeping along Beyer Boulevard associated with this pilot study resulted in the additional removal of 3,560 lbs of debris above normal City street sweeping operations. Therefore, this activity resulted in a

measureable pollutant load reduction (Outcome Level 4) during the reporting period and fulfills the requirement of a watershed water quality activity for credit in FY 2011.

Recommendations

The results of the pilot study were inconclusive; therefore, no changes to the City's standard operating sweeper speed are recommended at this time.

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TITLE: **RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTIONS**
ID #: **TJ-032**

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY09-10

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY10-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents took advantage of the opportunity and purchased a total of 102 rain barrels. Unincorporated area residents purchased 69 rain barrels at the subsidized rate of $30 plus tax, and 33 rain barrels were sold at the full price of $60 plus tax.

On September 26, 2010, there was a buzz in Fallbrook as eager residents stood in line before the 9 a.m. start time for the distribution event at Fallbrook Village Square. By the 1 p.m. closing time, 105 residents had purchased a total of 138 rain barrels. Of those, 103 barrels were sold to unincorporated area residents at the subsidized rate and 35 barrels were sold at full price.

A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County.

Table 1 Residents by Watershed

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	San Diego River	San Diego Bay	Tijuana	Unk
Total Residents	2	24	61	6	8	4	27	50	2	1

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Planning for this activity occurred during FY09-10. The events took place on August 28, 2011 (Cuyamaca College) and September 26, 2011 (Fallbrook Village). Additional events are being considered for implementation in FY 12-13.

PARTICIPATING WATERSHED COPERMITTEES

County of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

TITLE:	**SOURCE CONTROL OF COPPER WATER POLLUTANTS, SENATE BILL 346: MOTOR VEHICLE BRAKE FRICTION MATERIALS**
ID #:	**TJ-033**

ACTIVITY DESCRIPTION

Previous City of San Diego (City) investigations determined that copper from automotive brake pads was a major contributor of dissolved copper, a high priority water quality pollutant, to San Diego waterways within City jurisdiction. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments, through California Stormwater Quality Association, to achieve true source control by reducing copper at its source. It was determined that the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads.

The City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. On September 25, 2010, SB346 was passed by both houses, signed into legislation by the governor and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50. Work has concluded on this legislation bill.

TMDL APPLICABILITY

Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

SB346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. It is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- CASQA - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill.
- Coalition for Practical Regulation - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the passage of the bill.
- Alameda County - provided financial resources for experts to assist with the development of the bill, and provided lobbyist assistance to obtain political support for the passage of the bill.

- Contra Costa County - provided financial resources for experts to assist with the development of the bill, and provided lobbyist assistance to obtain political support for the passage of the bill.
- Many San Diego Regional Copermittees provided letters in support of the legislation.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The City Strategic Plan for Watershed Activity Implementation for the Tijuana River WMA identifies metals as a high priority water quality problem throughout the Chollas Creek WMA, and recommends implementing source control activities to address it. The objective of this activity is to reduce the amount of copper that reaches our storm drains and receiving waters to improve and restore water quality for our citizens.

EFFECTIVENESS MEASUREMENTS

Targeted Measurable Outcome(s)

1) Evidence of reductions of copper starting in 2022

Objectives

The goal of this legislation is to reduce the amount of copper released into the environment from automotive brake pads.

Analysis and Results/Conclusions

The authorization of this proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

TITLE: **TARGETED CATCH BASIN CLEANING PILOT STUDY**
ID #: **TJ-034**

ACTIVITY DESCRIPTION

The City of San Diego Storm Water Division began the planning of a catch basin cleaning pilot study in FY 2011. The purpose of the project is to understand the potential water quality improvements and load reduction associated with catch basin cleaning by evaluating the quantity and quality of materials removed from the storm drains from four pilot areas. The areas were selected to be representative of different land uses within the City limits. Additionally two cleaning methods will be evaluated - manual and using vactor equipment. One of the pilot areas is within the Tijuana River WMA in a residential area in San Ysidro.

Composite samples collected from the material removed from the targeted catch basins will be analyzed for metals, nutrients, organics, and bacteria.

TMDL APPLICABILITY

Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment is scheduled for FY 2012.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- Not applicable

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria, metals, organics, nutrients, and sediment as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address these constituents. This project will result in a quantifiable load reduction of sediment and will evaluate the amount of bacteria, metals, organics, and nutrients reduced as part of catch basin cleaning.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) To what extent do changes in catch basin cleaning frequency affect the amount of pollutants collected?
2) What is the annual calculated load reduction based on pilot scale data collection with catch basin cleaning?

3) Which cleaning method, manual versus mechanical is the most cost effective method for removing sediment from catch basins?

Targeted Measurable Outcome(s)

1) Reduction in bacteria exported from the catch basin.
2) Reduction in sediment exported from the catch basin.
3) Reduction in nutrients associated with the catch basin.

Assessment Method(s)

1) Evaluate the volume of material currently removed from each catch basin.
2) Evaluate the correction in cleaning results with land use category, impervious area, watershed size, and surface water impairments.

Data Recorded

- Volume Removed
- Location
- Sediment sample analysis

TITLE: **Rainwater Harvesting Rebate Pilot Program**
ID #: **TJ-035**

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). During this reporting period staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program will be open to the residents of the City of San Diego on a first come first serve basis and will provide a rebate of .50c per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department will administer the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program.

TMDL APPLICABILITY

San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in the last quarter of FY 11 with a tentative implementation start date in FY12.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- City of San Diego Public Utilities Department

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identifies several water quality problems throughout the watershed. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

Data to be recorded

1) Most common water catchment device installed
2) Average size of water catchment device installed

EXPECTED BENEFITS

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping.

ANALYSIS RESULTS

This activity was not in active implementation in FY 2011. Therefore, assessment is not possible at this time.

CONCLUSIONS

The project is currently being planned so there are no conclusions to report.

TITLE: **2011 TRASH ASSESSMENT OF THE UPPER TIJUANA RIVER WATERSHED**
ID #: **TJ-036**

ACTIVITY DESCRIPTION

On January 20, 2010, the San Diego County Regional Water Quality Control Board hosted a public workshop and CEQA scoping meeting for the Tijuana River and Estuary Sedimentation and Trash Total Maximum Daily Load (TMDL) Project. In response to this notice, the County of San Diego will conduct a baseline trash assessment of the upper portions of the Tijuana River Watershed. The purpose of the study is to assess the levels of trash at different sampling locations draining portions of the watershed located in the United States. The assessment will be based on "*The Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams*" (SWAMP 2007).

This method generates site-specific scores from 0 to 120, with higher values indicating cleaner sites. The method also documents the number of pieces of trash per one hundred feet of stream, and the rate of return of trash under different hydrologic conditions. Trash assessment includes a visual survey of the water body (e.g., streambed and banks) and adjacent areas and is designed to represent the range of effects that trash has on the physical, biological, and chemical integrity of water bodies.

ACTIVITY IMPLEMENTATION FY10-11

From January 27 through April 29, 2011, a pilot trash assessment was carried out by the County of San Diego at ten locations within the Tijuana River Watershed. County staff visited each of the sites after two notable rain events between January and April in 2011. Complete methodology and information regarding the assessment can be found in the attached Final Report.

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Trash assessments occurred between January and April 2011. The Final Report was completed in December 2011. No further action is planned on this activity at this time.

PARTICIPATING WATERSHED COPERMITTEES

County of San Diego

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Trash assessments will provide valuable information on the source and extent of the trash problem in the watershed and provide the basis to develop programs to address trash.

EFFECTIVENESS MEASUREMENTS

Completion of trash assessments at the ten locations is considered a Level 1 Outcome.

Watershed Urban Runoff Management Program
Fiscal Year 2010-2011 Annual Report

Tijuana River Watershed

Submitted to the Regional Water Quality Control Board, San Diego Region

On

January 31, 2012

Prepared by the County of San Diego

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EXECUTIVE SUMMARY

This Annual Report describes implementation of the Tijuana River Watershed Urban Runoff Management Program (WURMP) during Fiscal Year 2010-11 (FY10-11). Although much of the Tijuana River Watershed Management Area (WMA) extends into Mexico, only the portion within the United States is subject to the Municipal Stormwater Permit's WURMP requirements. Therefore, this report only addresses activities within the United States.

Section 1.0 provides an overview of the information included in this report and summarizes the ongoing collaboration among Tijuana River WMA Copermittees (County of San Diego, City of San Diego, and City of Imperial Beach).

Section 2.0 presents a water quality assessment for the Tijuana River WMA. The assessment is largely based on results from the regional monitoring program conducted on behalf of the San Diego County Municipal Stormwater Copermittees in compliance with Municipal Permit requirements, but is supplemented by other monitoring programs, including jurisdictional dry weather monitoring and special studies. The regional monitoring report is identified as "The Monitoring Report (Weston 2011)" throughout this document. It should be noted that the Municipal Permit established a monitoring schedule for the entire county that alternates receiving water monitoring between the northern and the southern watersheds. The southern watersheds, including the Tijuana River WMA, were not monitored during this reporting period.

The Tijuana River WURMP (2008) identified nine high priority water quality problems in the Tijuana River WMA: bacteria, sediment, pesticides, gross pollutants, total metals, organics, dissolved minerals, color and nutrients. Weston 2011 results for the Tijuana River WMA presented in Section 2.1 confirm that these pollutants should still be considered high priorities. Section 2.2 discusses the potential sources of these water quality problems.

Section 3.0 and Attachment 1 describe the 26 watershed activities that were in various phases of implementation during FY10-11. Many of the activities address sediment, bacteria, and trash in the Tijuana Valley Hydrologic Area (HA 911.1).

Section 4.0 describes the collaborative efforts among the Tijuana River WMA Copermittees and assesses the overall effectiveness of WURMP activities towards reducing pollutant loads and improving receiving water quality. The WURMP water quality activities are making an impact towards raising awareness of the water quality problems in the river valley and reducing the pollutant loads from the Copermittees' jurisdictions. Significant headway is also being made through the collaborative planning efforts from other stakeholder groups such as the Tijuana River Valley Recovery Team, Border 2012, the Tijuana River Estuary Management Authority, and the Tijuana River Bacteria Source Identification Study group. However, there is much more to accomplish before implementing large-scale watershed activities to address cross-border pollution problems. Continued implementation of WURMP watershed activities and participation in other stakeholder groups will result in the development of future activities and lead to incremental improvements in water quality throughout the watershed.

Section 5.0 presents conclusions and recommendations that were reached during the reporting period.

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County of San Diego

LAND USE AND ENVIRONMENT GROUP

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

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STATEMENT OF CERTIFICATION

Tijuana River Watershed Urban Runoff Management Program (WURMP) Fiscal Year 2010-11 Annual Report

I certify, under penalty of law, that this Fiscal Year 2010-11 Tijuana River Watershed Urban Runoff Management Program (WURMP) Annual Report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Sarah Aghassi

SARAH E. AGHASSI
Deputy Chief Administrative Officer

1/9/12
Date

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THE CITY OF SAN DIEGO

January 30, 2012

RE: Statement of Certification
Tijuana River Watershed Urban Runoff Management Program
Fiscal Year 2011 Annual Report

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2011 Tijuana River Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden

Kris McFadden
Deputy Director
Transportation & Storm Water Department
City of San Diego

1/17/12
Date

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City of Imperial Beach, California
PUBLIC WORKS DEPARTMENT
825 Imperial Beach Blvd., Imperial Beach, CA 91932 Tel: (619) 423-8311 Fax: (619) 429-4861

STATEMENT OF CERTIFICATION

Tijuana River Watershed Urban Runoff Management Program 2010-2011 Annual Report

I certify under penalty of law that the Tijuana River Watershed Urban Runoff Management Program Annual Report for 2010-2011 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

H A Levien Date: 1/24/12

H.A. Levien
Director
Public Works
City of Imperial Beach

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SECTION 1.0 INTRODUCTION

The NPDES Municipal Stormwater Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Tijuana River WMA to collaborate on the development and implementation of a WURMP. The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Tijuana River WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and developing and implementing activities that include Watershed Water Quality Activities (pollutant load reduction and pollutant source abatement), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. The Watershed Activity Implementation Summary Sheets for all watershed water quality and education activities implemented during this reporting period are included in Attachment 1.

The Annual Report is divided into five sections that highlight the efforts of the Tijuana River WMA Copermittees during the FY10-11 reporting period.

Section 1: Provides an overview of the information included in this report and summarizes the ongoing collaboration among Tijuana River WMA Copermittees. There were no updates to the watershed maps during this reporting period.

Section 2: Provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3: Describes the Watershed Water Quality and Watershed Education Activities that were implemented during this reporting period as well as any public participation or collaborative land use planning that took place.

Section 4: Discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among WMA Copermittees, 2) determine whether watershed activities are focused on appropriate water quality problems, 3) assess whether targeted outcomes are being achieved, and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.

Section 5: Discusses conclusions reached during FY10-11 as well as recommendations for future reporting periods.

1.1 Watershed Collaboration

WURMP development and implementation is a collaborative effort by all of the following Tijuana River WMA Copermittees:

- City of Imperial Beach
- City of San Diego
- County of San Diego

The County of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among Tijuana River WMA Copermittees and liaison between Copermittees and San Diego Regional Water Quality Control Board (RWQCB) staff.

The Tijuana River WMA Copermittees conducted five meetings during this reporting period. Table 1-1 provides a summary of the dates and the general topics of discussion at these meetings. Several of the meetings were focused on preparing the draft and final FY09-10 Tijuana River WURMP Annual Report that was submitted to the RWQCB on January 31, 2011.

During this reporting period, the Tijuana River WMA Copermittees collaborated extensively on the watershed activities that were developed through the implementation of the watershed strategy that was submitted on March 24, 2007, to the RWQCB.

Utilizing the information from the watershed strategy, the Tijuana River WMA Copermittees identified several water quality activities which they have coordinated at the Hydrologic Area (HA) level. A collaborative approach was utilized because these activities were identified as beneficial to addressing high priority water quality problems and can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. Collaboration on the watershed strategy enabled the Copermittees to identify data gaps by reviewing existing monitoring and land use data which provided the basis for developing additional water quality monitoring and pollutant source identification activities. Section 3 and Attachment 1 provide specific detail on each activity that was initiated or completed during the FY10-11 reporting period.

Table 1-1: Summary of Tijuana River WMA Copermittee Meetings (FY10-11)

Meeting Date	Main Topics of Discussion
07/06/10	• Update on Regional WURMP Workgroup • Update on Prop 84 • Update on new and ongoing projects • Identify FY09-10 Annual Report section responsibilities
10/07/10	• Update on Regional WURMP Leads Subgroup • Update on IB Bacteria Source ID study • Update on FY09-10 Annual Report revisions • Review FY09-10 Annual Report schedule
11/17/10	• Discuss revisions to draft Report and Schedule • Update on IB Bacteria Source ID re: Four Special Studies • Update on Trans Border Trash Issues
12/06/10	• Discussion regarding FY09-10 Annual Report Sections 3 and 4
05-04-11	• New and Ongoing Projects for FY10-11 • Discussed TWAS Location • Discussed the Long-Term Effectiveness Assessment • Update on the TJ Trash and Sediment TMDL • Update on the TJ Recovery Team

Tijuana River Valley Recovery Team

In October 2008 the Tijuana River WMA Copermittees were asked to participate in a meeting to discuss current issues and the future of the Tijuana River Valley. As a result of that meeting, the Tijuana River Valley Recovery Team was formed.

The Recovery Team (Action Teams and Steering Committees) met nine times during FY10-11 as shown in Table 1-2. The majority of these meetings were focused on developing strategies to characterize trash and sediment as well as identifying potential mechanisms to reduce the amount of trash and sediment from entering the River Valley. Complete agendas and notes can be found on the Recovery Team website at: www.tjriverteam.org.

In addition, the Recovery Team planned and held the second of three planned Visioning Workshops (September 22, 2010) for stakeholders interested in the Tijuana River Valley. The one day workshop was attended by over 50 stakeholders interested in the future of the River Valley, including private land owners, business owners, land use and other resource agencies. The workshop provided the participants an overview of several overlapping management issues, including trash and sediment pollution, stormwater and flood control, and restoration and ecology of the River Valley, which identified several management conflicts but also highlighted the potential for collaboration areas among the agencies. The group reached consensus that it was important that an integrated management strategy be developed to reduce conflicts and to foster collaboration.

Specific efforts of the Tijuana River WMA Copermittees are in line with the mission of the Recovery Team. These include: 1) cleaning and dredging clogged channels, and 2) characterizing trash and sediment in support of designing BMPs to reduce the volume of sediments and trash transported during storms. For details, see Activity Summary Sheets TJ-012, TJ-018, TJ-022, and TJ-025 in Attachment 1 of this report.

1.2 Tijuana River Watershed Map Updates

There are no Tijuana River Watershed map updates included in the FY10-11Annual Report.

Table 1-2: Summary of Recovery Team Meetings

Meeting (or Conference) Date	Main Topics of Discussion
08/24/10	• Member Updates • Update on April Visioning Workshop • Update Navy Land Use Plan • Discussion on current land uses.
09/22/10 (Visioning Workshop #2)	• Workshop Overview • Discussion of Management Overview • Group Discussion • Breakout Session on Management Layers
12/17/10	• Member Updates • Visioning Workshop #2 Update • Clean-up and Abatement Funding Status • Website Updates • Updated Meeting Schedule
01/21/11	• Member Updates • Visioning Workshop #2 Update re Action Items • Navy LU update • Watershed Interview Update • BECC/NADB Meeting Notification
02/18/11	• Member Updates • Visioning Process • Goat Canyon Sediment Removal • Website and BECC Mtg Update • Navy LU Plan Discussion
03/25/11	• Member Updates • Visioning Updates • Conceptual Future LU Presentation • Recovery Team Messaging Presentation
04/29/11	• TRVT Overview • Draft Future Vision • Next Steps
06/03/11	• Member Updates • Road Map Discussion and Framework
06/23/11	• Member Updates • Road Map Update • Missing Elements in the Road Map

SECTION 2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

The Tijuana River WMA is located in the southern portion of San Diego County. In accordance with the Receiving Waters and Urban Runoff Monitoring Program per the San Diego Regional Water Quality Control Board Order R9-2007-0001 (Permit), no receiving water data were collected in the Tijuana River WMA during 2010-2011. However, Copermittees did collect water quality data from MS4 outfalls and as part of routine dry weather monitoring programs by each Tijuana River WMA Copermittee. Water quality data were also collected by third parties. Table 2-1 summarizes data sets used for this annual assessment.

Table 2-1 Monitoring Program Activities

Receiving Water	MS4 Outfall	Source Studies and Third-Party Data
No Regional MLS or TWAS Data SMC –dry weather –chemistry, nutrients, toxicity and bioassessment	Random and Targeted – Wet and Dry	Coastkeeper -.dry weather- 6 stations, monthly monitoring
MLS – mass loading station SMC – Stormwater Monitoring Coalition		MS4 – municipal separate storm sewer system TWAS – temporary watershed assessment station

2.1 Water Quality Assessment

Monitoring locations are presented in Figure 2-1 and the results of the annual monitoring are presented in the four quadrants shown in Table 2-2, Table 2-3, and Table 2-4. These tables summarize the results and identify potential constituent relationships between the receiving waters and MS4 outfalls during both wet and dry weather. Because receiving water data are limited to Stormwater Monitoring Coalition (SMC) and Coastkeeper third-party data, these are the only data shown in the quadrant tables. Third-party data sets are shown for comparison purposes only. The constituents listed in the quadrant table are those identified as medium and high priorities based on the *Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas, Final Draft-Version 1* (SDCRC, 2010).

The key findings for the Tijuana River WMA include the following:

Receiving Water

No mass loading station (MLS) or temporary watershed assessment station (TWAS) receiving water data were collected during 2010-2011 for either dry or wet weather. SMC monitoring was conducted at two locations (Figure 2-1) during dry weather. Monitoring results indicate no toxicity at either station. SMC03510 has a Poor IBI score with nutrients, chloride, sulfate, and total dissolved solids (TDS) above Basin Plan benchmarks. SMC05402 has a Fair IBI score with only nutrients above Basin Plan benchmarks.

MS4

Wet vs. Dry Weather – No dry weather MS4 sampling was conducted upstream of the MLS or TWAS locations (Tables 2-2, 2-3, and 2-4). However, three samples were collected in the Tijuana River WMA in areas not draining to an MLS or TWAS location. Priority constituents from this

monitoring are different at each site. At the San Ysidro site (HSA 911.11), TDS, Enterococcus, and dissolved copper are identified as priority constituents. Only nutrients are identified as a priority constituent at the Barrett Lake site (HSA 911.30). At the Mount Laguna site (HSA 911.42), total nitrogen and Enterococcus are identified as priority constituents. These results are different from wet weather MS4 monitoring, which was conducted at six locations in the Tijuana River WMA. Only one wet weather MS4 station was located upstream of an MLS or TWAS location (Tables 2-2, 2-3, and 2-4). MS4 stations are only included in the quadrant tables if they are located upstream of a receiving water station. Wet weather results identify total suspended solids (TSS) as the most common priority constituent (four of six sites). Two sites do not have any priority constituents identified. Results for one wet weather MS4 site identify fecal coliform as a priority constituent. This result is not located upstream of a receiving water station, and is therefore not presented in Table 2-4.

Figure 2-2 2010-2011 Monitoring Locations – Tijuana River WMA

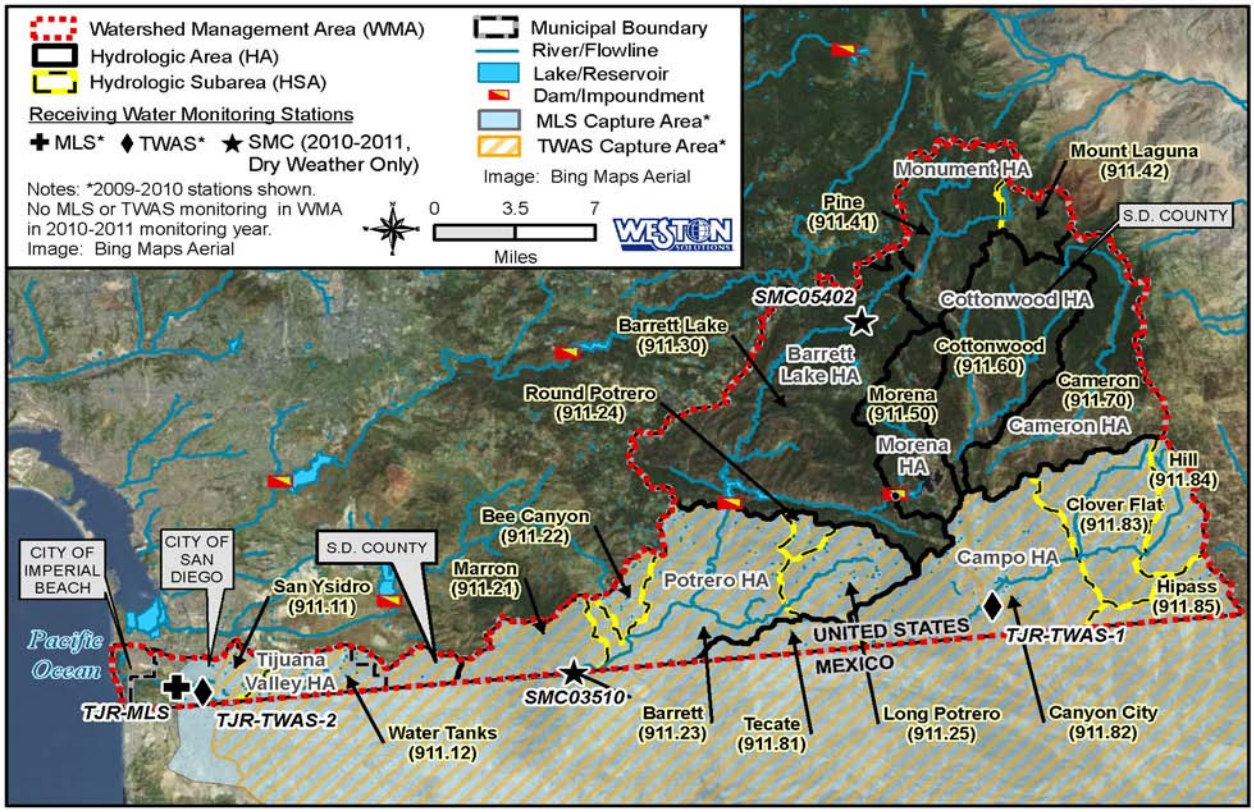

Table 2-2 Summary of Tijuana River MLS Drainage Area Assessment Findings

Tijuana River MLS Tijuana River at Hollister St			
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**	**Core Management Question(s) Addressed**
Receiving Water Monitoring	NPDES Program • No data SMC Program (One Station, SMC03510)* • Chemistry – Chloride, Sulfate • Toxicity – No toxicity observed • Biology – Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorus • TDS – TDS Third-Party Data – (Coastkeeper)[2] The following constituents did not meet Basin Plan benchmarks: • Chemistry – DO • Bacteria – *E. coli*, *Enterococcus*	NPDES Program • No data Synthetic Pyrethroids in Sediment • No data	1, 2
Urban Runoff Monitoring	MS4 Program • No samples collected upstream of TJR-MLS	MS4 Program* • Chemistry – TSS • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – No priority constituents identified	3, 4
Trends[3]			
Increasing[4,5]		Fecal Coliform, Total Coliform, *Enterococcus*, Nitrate, Total Suspended Solids, Turbidity, Total Arsenic, Total Copper, Total Lead, Total Zinc	5
Decreasing[4,5]		Conductivity, TDS, Diazinon, Dissolved Nickel, Dissolved Zinc	
Source Identification Study			
Not Applicable			

Note: Results included in this table reflect data collected above the receiving water station and below Barrett Reservoir.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity "no observed toxicity" was stated.

[2] For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples.

[3] Trends are based on wet weather historical data. Due to rotational nature of the monitoring program, receiving water data for this station is not available for the 2010-2011 monitoring year.

[4] Fecal coliform, TSS, turbidity, and diazinon have consistently exceeded the WQB at this site. There were no diazinon exceedances in the 2009-2010 monitoring year.

[5] Nitrate concentrations, TDS, dissolved zinc, and dissolved nickel are consistently below the WQB at this site.

*One sample used in analysis.

Med - medium priority constituent
IBI - Index of Biotic Integrity
TDS - total dissolved solids
DO - dissolved oxygen
NPDES - National Pollutant Discharge Elimination System
MLS - mass loading station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
TSS - total suspended solids

Table 2-3 Summary of Tijuana River TWAS-2 Drainage Area Assessment Findings

Tijuana River TWAS-2 Tijuana River at Dairy Mart Rd			
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**	**Core Management Question(s) Addressed**
Receiving Water Monitoring	NPDES Program • No data SMC Program (One Station, SMC03510)* • Chemistry – Chloride, Sulfate • Toxicity – No toxicity observed • Biology – Poor IBI • Bacteria – Not analyzed • Nutrients – Total Nitrogen, Total Phosphorus • TDS – TDS Third-Party Data • No samples collected upstream of TJR-TWAS-2	NPDES Program • No data Synthetic Pyrethroids in Sediment • No data	1, 2
Urban Runoff Monitoring	MS4 Program • No samples collected upstream of TJR-TWAS-2	MS4 Program* • Chemistry – TSS • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – No priority constituents identified	3, 4

Note: Results included in this table reflect data collected above the receiving water station and below Barrett Reservoir.

[1] Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity "no observed toxicity" was stated.

*One sample used in analysis.

Med - medium priority constituent
IBI - Index of Biotic Integrity
TDS - total dissolved solids
NPDES - National Pollutant Discharge Elimination System
TWAS - temporary watershed assessment station
MS4 - municipal separate storm sewer system
SMC - Stormwater Monitoring Coalition
TSS - total suspended solids

Table 2-4 Summary of Tijuana River TWAS-1 Drainage Area Assessment Findings

Tijuana River TWAS-1 Campo Creek at Campo Rd			
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**	**Core Management Question(s) Addressed**
Receiving Water Monitoring	NPDES Program • No data SMC Program • No samples collected upstream of TJR-TWAS-1 Third-Party Data • No samples collected upstream of TJR-TWAS-1	NPDES Program • No data Synthetic Pyrethroids in Sediment • No data	1, 2
Urban Runoff Monitoring	MS4 Program • No samples collected upstream of TJR-TWAS-1	MS4 Program* • Chemistry – TSS • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – No priority constituents identified	3, 4

Note: Results included in this table reflect data collected above the receiving water station.

[1]Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity "no observed toxicity" was stated.

*One sample used in analysis.

Med - medium priority constituent
TDS – total dissolved solids
TSS - total suspended solids
NPDES - National Pollutant Discharge Elimination System
TWAS - temporary watershed assessment station
SMC - Stormwater Monitoring Coalition
MS4 - municipal separate storm sewer system

This WMA Monitoring Report is designed to answer the following five core management questions listed in Section I.B of the Receiving Waters and Urban Runoff Monitoring Program:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

Due to the rotational nature of the monitoring program, core management questions 1 and 2 are addressed for the years that receiving water data have been collected. For WMAs that are off-rotation for the 2010-2011 monitoring period, including Tijuana River WMA, monitoring results are evaluated to answer the core management questions 3 and 4 presented above. In addition, historical trend data are presented to address question 5. The trend data are based on the previous years' results. The rotational program allows tracking the constituent trends with a high level of confidence. For the purposes of assessing this Receiving Waters and Urban Runoff Monitoring Program, results are categorized and assessed as follows:

- MS4 data for ambient and wet weather conditions are assessed separately.

- Assessments are conducted to determine the annual high-priority constituents using the MS4 data.
- Conclusions are provided to address the core management questions 3, 4 and 5, and recommendations are provided based on the Permit requirements.

The most recent information answering core monitoring questions 1 and 2 is presented in the LTEA (SDCRC, 2011b). Responses to core monitoring questions 3, 4 and 5 are the focus of this annual report for the Tijuana River WMA due to the rotational nature of the program. Conclusions based on the results of annual monitoring in the watershed to date are as follows:

Question 3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core management question 3 is partially answered through the MS4 Outfall Monitoring Program. For the MS4 outfall monitoring, there were relatively few accessible sites in the lower Tijuana River WMA. Therefore, the limited sample data set may not reflect conditions at the majority of the outfalls. During wet weather, the sampling results indicate TSS as a high-priority constituent in MS4 outfalls upstream of the MLS and both TWAS locations based on one upstream sample. No dry weather MS4 samples were collected in the drainage area to either the MLS or TWAS locations.

As mentioned above, this question is partially answered because NPDES-required receiving water monitoring was not conducted during the 2010-2011 Monitoring Season. This compares to results of the Long-Term Effectiveness Assessment (LTEA) (SDCRC, 2011b) that indicated TSS and fecal coliform as medium-priority constituents in wet weather for outfalls upstream of the MLS and TWAS-2 (no data available for TWAS-3). TSS and fecal coliform were also identified as priority constituents for wet weather flows in receiving waters in the LTEA.

Three dry weather MS4 samples were collected below the MLS or above impoundments that are not represented by drainage areas monitored by the MLS or two TWAS. The results of the three dry weather MS4 samples collected indicate the same priority constituents (nutrients and bacteria) in each HSA. In addition, results from one sample collected in HSA 911.11 (San Ysidro) show dissolved copper as a high-priority constituent in MS4 outfalls. The results of the five random wet weather MS4 samples collected within drainage areas above impoundments and not represented by the MLS or TWAS indicated no priority constituents in two of the samples and TSS as a high-priority constituent in the other four samples. These four samples are located in the upper watershed that is predominantly open space. Fecal coliform was identified as a high-priority constituent in only one sample, located in HSA 911.42 (Mount Laguna) that is also in the upper watershed.

Question 4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core management question 4 will be partially answered through analysis of land use and MS4 outfall monitoring results. This analysis is planned upon completion of the five-year MS4 outfall random monitoring program (2012-13). The results of the regional source characterization monitoring focusing on residential land uses are summarized in Section 12 of the 2011 Weston

Monitoring Report. The Jurisdictional DWM Program and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources is provided in each Copermittee's Jurisdictional Urban Runoff Monitoring Program Annual Report.

Question 5. Are conditions in receiving waters getting better or worse?

Core management question 5 is addressed using the trend results evaluated during the 2009-2010 Annual Monitoring Report (SDCRC, 2011a). Trends are conducted on historical data collected at the MLS during wet weather events. Trend results do not typically change from year to year, and therefore, can be tracked on a less frequent basis in receiving waters. As of 2010, conductivity, TDS, Diazinon, dissolved nickel, and dissolved zinc were significantly decreasing. Of these constituents, all were below the water quality benchmark with the exception of Diazinon. Constituents with statistically significant increasing trends included fecal coliform, total coliform, enterococcus, nitrate, TSS, turbidity, total arsenic, total copper, total lead, and total zinc. Of these constituents, only fecal coliform, TSS, and turbidity have historically been observed at levels above the water quality benchmark.

2.2 Pollutant Source Assessment

The Permit requires the Tijuana River WMA Copermittees to identify the high priority water quality problems and identify the likely sources within the Tijuana River WMA and implement activities that will address these pollutants.

A key component of identifying sources of pollutants is knowledge of the land uses and the pollutant-generating activities associated with these specific land uses (e.g., urban and agricultural land uses can result in high levels of nutrients in runoff). The Tijuana River WMA straddles the US–Mexico border with only a quarter of its 1.1 million acres lying within San Diego County. Throughout the WMA, the predominant land use is classified as vacant and undeveloped (60% on the US side, 82% on the Mexico side). On both sides of the border, the watershed becomes less populated from west to east. The major population centers in the watershed are the cities of Tijuana and Tecate in Mexico and cities of Imperial Beach and San Diego in the US. Within the Tijuana River WMA, jurisdictional control is divided amongst the County of San Diego, City of San Diego, and the City of Imperial Beach.

The likely sources of pollutants within the Tijuana River WMA are identified in Table 2-5 below. In addition to these sources, the Weston Monitoring Report (2010) identified the likely sources of trash as being the urbanized population centers found in the lower portion of the WMA which had the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor trash ratings.

The results of the 2009-2010 monitoring programs indicate that the high frequency Constituents of Concern for wet weather are biochemical oxygen demand (BOD), total suspended solids (TSS), turbidity, total and dissolved phosphorus, oil and grease, chemical oxygen demand (COD), nitrite, methylene blue active substance (MBAS), bifenthrin, L-cyhalothrin, and fecal coliform. During dry weather, priority constituents were ammonia, BOD, MBAS, total nitrogen, total and dissolved phosphorus, COD, turbidity, fecal coliform, and enterococci. Bifenthrin, cypermethrin,

and permethrin were detected in post-storm sediment samples, suggesting a possible link between wet weather runoff and dry weather conditions.

Based on the Weston Monitoring Report, trash is also considered a Constituent of Concern in the 911.10 HA. These Constituents of Concern are also high priority water quality problems that are currently being addressed by several of the watershed activities.

Additionally, pollutants for all water bodies included on the 2010 303(d) list are considered as high priority and are listed in Table 2-6 below.

Table 2-5 Likely Sources for High Priority Pollutants in the Tijuana River WMA

Pollutant	Potential Sources	Pollutant	Potential Sources
Bacterial Indicators	Domestic animals	Trace Metals	Automobiles
	Sewage overflow		Industrial Waste
	Septic systems	Pesticides	Agriculture
	Wildlife		Commercial landscaping
Nutrients & Oxygen	Agriculture		Residential landscaping
	Sewage overflow		Industrial waste
	Septic systems	Gross Pollutants	Commercial
Organic Compounds	Agriculture		Illegal disposal
	Commercial landscaping		Residential
	Residential landscaping	Sediment TSS/Turbidity	Agriculture
	Sewage overflow		Grading/Construction
	Septic systems		Slope Erosion

Table 2-6 Tijuana WMA Waterbodies on the 2010 Section 303(d) List

Waterbody Name	HSA	HSA No.	Pollutant/Stressor
Pacific Ocean Shoreline, ¾ mile N of Tijuana River	San Ysidro	911.11	Enterococcus, total coliform, fecal coliform
Pacific Ocean Shoreline, Monument Road	San Ysidro	911.11	Total coliform
			Fecal coliform
Pacific Ocean Shoreline, Tijuana River mouth	San Ysidro	911.11	Enterococcus, total coliform, fecal coliform
Pacific Ocean Shoreline, Seacoast Drive	San Ysidro	911.11	Total coliform
			Enterococcus and fecal coliform
Pacific Ocean Shoreline, US Border	San Ysidro	911.11	Total coliform
			Enterococcus and fecal coliform
Tijuana River	San Ysidro	911.11	Indicator bacteria
			Eutrophic, low DO, pesticides, solids, synthetic organics, trace elements, trash
			Phosphorus, sedimentation/siltation, selenium, surfactants, MBAS, nitrogen, toxicity
Tijuana River Estuary	San Ysidro	911.11	Indicator bacteria
			Eutrophic, lead, low DO, nickel, pesticides, thallium, trash, turbidity
Tecate Creek	Barrett	911.23	Selenium
Barrett Lake	Barrett Lake	911.30	Color, manganese, perchlorate, nitrogen, pH
Upper Pine Valley Creek	Pine	911.41	Turbidity
Morena Reservoir	Morena	911.50	Ammonia as nitrogen, color, manganese, pH
			Phosphorus
Cottonwood Creek	Cottonwood	911.60	Selenium

Source: SWRCB, 2010.
TMDL – total maximum daily load
DO – dissolved oxygen
MBAS – methylene blue active substances
[1] This due date was published on 2010 303(d) list; more recent public information has yet to be posted.

In addition to the regional monitoring, the Tijuana River WMA Copermittees continued several source identification studies. These projects are discussed below.

County of San Diego Trash Assessment For the Upper Tijuana River WMA

During FY10-11, the County of San Diego completed a trash assessment in the upper Tijuana River WMA. County staff completed assessments at ten locations in the WMA to determine if the upper watershed is a potential source of trash that enters into Mexico and ultimately to the Tijuana Estuary. This assessment was conducted in response to the San Diego RWQCB's notice of Public Workshop and CEQA Scoping meeting that occurred on January 20, 2010. The final report for the trash assessment can be viewed in Attachment 1 of this Annual Report (See Attachment 1 for TJ-036). The final report details the description of the project, the methodology and the results of the assessment.

In summary, the trash assessment followed the methodology of "The Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams" (SWAMP 2007). Each of the ten sites was visited twice after two rain events between January and April of 2011. The assessment included two-man field teams that collected, counted, and characterized trash along a 100-foot reach of the stream. Trash was also identified as being located above or below the high water line for the stream reach. All totals were recorded on tally sheets originally developed for the San Francisco Bay Rapid Assessment. The assessment ranked (0-120) each site based on six character categories including: 1) Level of Trash, 2) Actual Number of Trash Items found, 3) Threat to Aquatic Life, 4) Threat to Human Health, 5) Illegal Dumping and Littering, and 6) Accumulation of Trash. Based on the ranking, sites were identified as to having Optimal, Sub Optimal, Marginal, or Poor Conditions. Overall, there was one site at Marron Valley (120) considered Optimal, seven sites considered Sub Optimal and two sites considered Marginal. None of the sites were considered to be in a Poor condition. However, the two Marginal sites (Tecate Creek and Campo Creek) might be considered as having a potential negative effect in beneficial uses. Due to the limited nature of the assessment, it would be difficult to make any findings regarding how this portion of the watershed contributes to downstream issues related to trash.

Imperial Beach Bacteria Source Identification Study

Since 2008 the City of Imperial Beach and Weston Solutions have been conducting a Bacteria Source Identification Study in the Tijuana River WMA. The purpose of the study is to 1) identify sources and loads of bacterial contaminants in the U.S., western-most portions of the Tijuana River WMA, and 2) recommend BMP activities to reduce the input of those sources to the watershed. The project consists of wet weather assessments, sanitary surveys, dry weather assessments, special studies, and recommended BMP concept designs. Project activity during the reporting period consisted of water quality monitoring during the wet and dry season, flow monitoring, and special studies for groundwater, sediment stock piles, and wastewater infrastructure.

Sanitary Survey and Dry Weather Monitoring Results

During the reporting period, the Copermittees conducted the second of two sanitary surveys and performed numerous dry weather assessments and follow up investigations to identify possible watershed sources of bacteria. The results from the two surveys are presented below in Table 2-7.

The purpose of the sanitary surveys and dry weather assessments was to identify sources of elevated bacterial levels in the western portion of the watershed that may impact the Tijuana River Estuary and adjacent beaches. If a source was identified during the surveys, follow-up assessments were conducted to identify the source or sources of bacteria and whether or not it originated from human origin (e.g., sewage leak, etc.).

Table 2-7 Summary of Sanitary Surveys Results 1 and 2

	Sanitary Survey #1 9/22/08	Sanitary Survey #2 7/19/10
Number of sites visited	127	98
Number of sites sampled	81	92
Number of Human Bacteroides	4	12
Number of enterococci samples > 10,000	9	21
Number of fecal coliform samples > 10,000	16	15

The results of the two surveys are shown graphically in Figure 2-2 and Figure 2-3 below. The thresholds chosen for follow up assessments were based on Illicit Connection and Illicit Discharge (ICID) values used by cities in San Diego County. Any site that had concentrations of enterococci greater than 1,500 MPN/100 mL, fecal coliform concentrations greater than 10,000 MPN/100 mL, or tested positive for human bacteroides was identified for follow up assessments. Follow up consisted of subsequent monitoring of the site and tracking the elevated concentrations "upstream" to identify the potential source. Using this protocol, over 30 different follow up investigations were conducted. The results of each of these follow-ups were documented with maps, photographs, and analytical results, which will be provided in the final grant project report.

The results of the sanitary surveys and dry weather assessments suggested that, within the urbanized area of the watershed that drains directly to the estuary, there are no persistent sources of bacterial contamination that originate from human sources. All but one of the follow-up investigations of sites with bacterial concentrations greater than ICID thresholds or those that tested positive for human bacteroides showed that there was no evidence of leaking sewage infrastructure or other source of human fecal contamination. High concentrations found in an initial survey were typically not present in subsequent investigations and positive human bacteroides results appeared to be ephemeral in the watershed.

Wet Weather Monitoring Results

The purpose of the wet weather assessments was to monitor bacterial concentrations during storm events in the Tijuana River, tributary canyons from Mexico, and drainages within the U.S. side of the border (Figures 2-4 and 2-5). Estimates of bacterial concentrations and loads from these locations were then made based on concentrations and flow rates over the course of the storm event. A total of eight samples were collected over the course of the storm and analyzed separately for indicator bacteria. A total of three storm events were monitored in this way over the course of the study:

- December 15, 2008
- December 20, 2010, and
- November 4, 2011

The monitoring results of the third storm event are presented as an example of a storm event in the Tijuana River Valley in Figure 2-6. It is clear from the results that bacterial concentrations in the Tijuana River mainstem (Dairy Mart and Hollister) and a tributary drainage from Mexico (Smuggler's Gulch) had much higher bacterial concentrations than samples collected from Veteran's Park (a typical urban drainage within the City of Imperial Beach). Concentrations from

drainages entering the U.S. from Mexico were typically two orders of magnitude greater than those from the U.S. drainage at Veteran's Park. Similar results were observed during the previous storm events (December 15, 2008, and December 20, 2010).

Based on the bacterial concentrations highlighted in Figure 2-6, and flows collected from the sites during the storm events, annual bacterial loads were calculated for the Tijuana River mainstem, Smuggler's Gulch (which originates in Mexico), and the entire urbanized area that drains directly to the estuary. The latter estimate was based on the entire urban area that drains directly to the estuary as shown in Figure 2-5. These load estimates were based on flows collected during storm events and the highest fecal coliform and enterococcus concentrations measured during the event. Thus, the loads from the U.S. urbanized area represent a conservative, worst-case estimate of the loads entering the estuary from the U.S. side of the border.

The results of the load estimates are shown in Figure 2-7. Approximately 90% of the bacterial load that enters the Tijuana River Estuary and has the potential to impact area beaches originates from the Tijuana River mainstem. Smuggler's Gulch, which also originates in Mexico, accounts for approximately 11% and 8% of the enterococci and fecal coliform loads, respectively. The contribution from the U.S. urbanized portion of the watershed that flows directly to the estuary accounts for less than 0.2% of the enterococci and fecal coliform loads (shown in green on Figure 2-7).

In addition to the enumeration of indicator bacteria monitored during storm events, samples were also assessed for bacteria originating from human sources, using host-specific human polymerase chain reaction (PCR) techniques. This molecular technique, which uses genetic specificity within the bacteroides genera of bacteria, identifies the presence or absence of bacteria from warm blooded animals (known as general bacteroides) and from human sources (human bacteroides). In nearly all samples collected from drainages originating from Mexico, the human marker was present, suggesting the presence of sewage in the receiving waters. However, there were no samples collected from the U.S. drainages with the human marker.

Figure 2-2 Map of Sanitary Survey 1 Bacteriological Results (September 22, 2008)

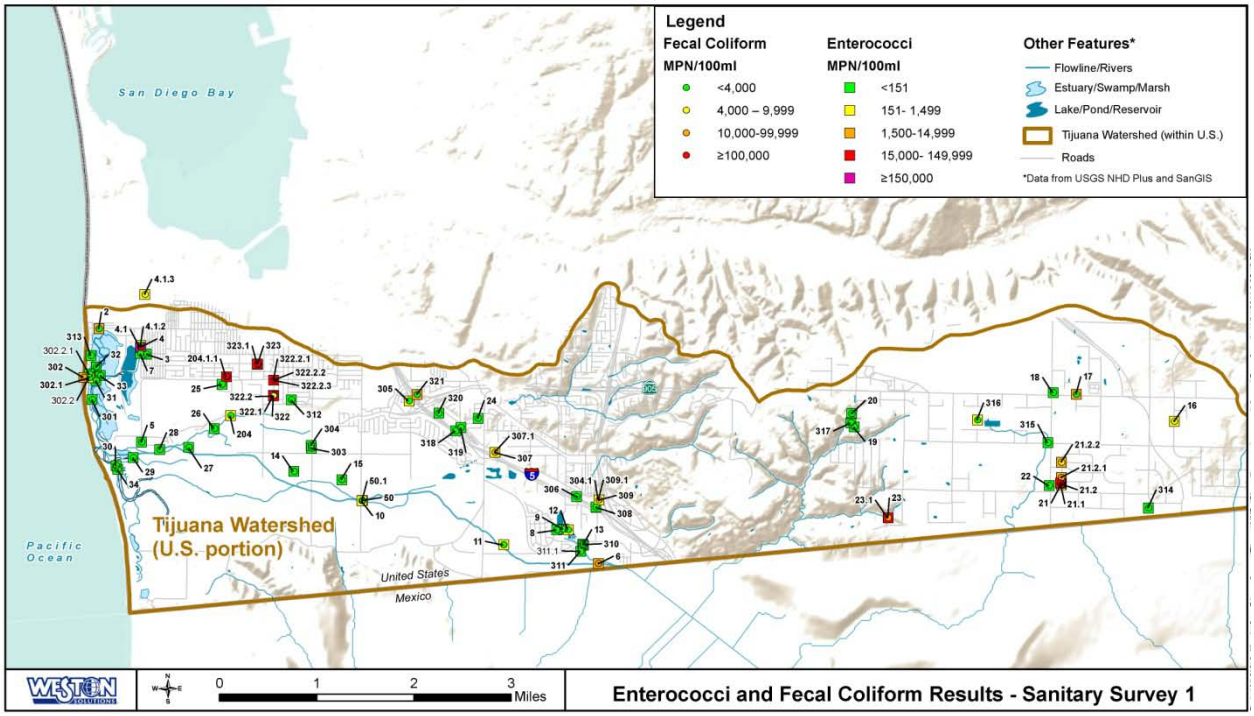

Figure 2-3 Map of Sanitary Survey 2 Bacteriological Results (July 19, 2010)

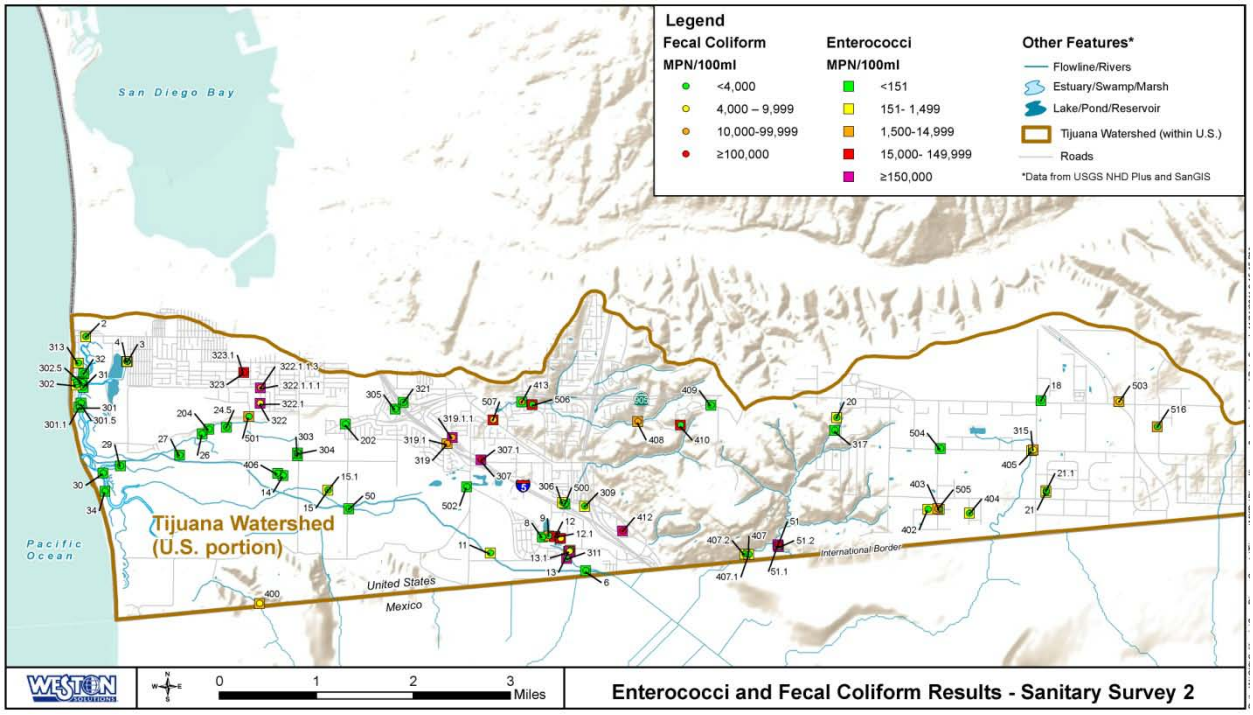

Figure 2-4 Wet Weather Monitoring Sites for Storm Event 3 (November 4, 2011)

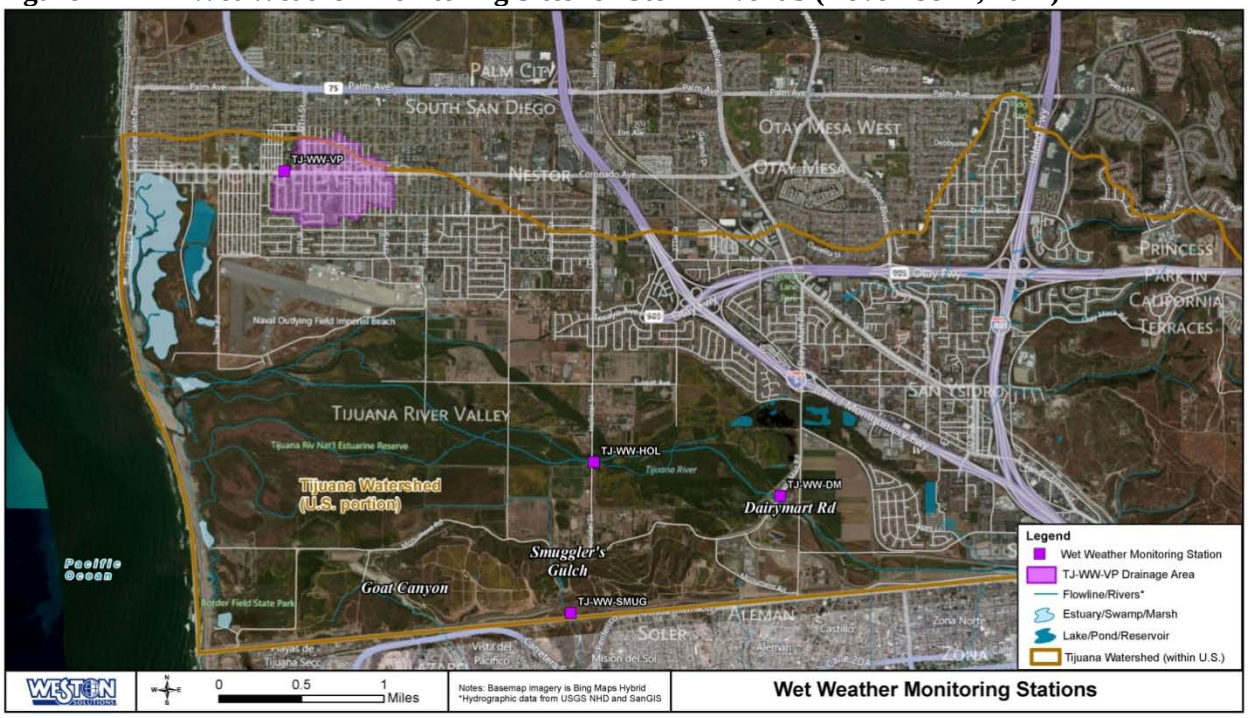

Figure 2-5 United States Urbanized Area that Drains Directly to the Tijuana River Estuary

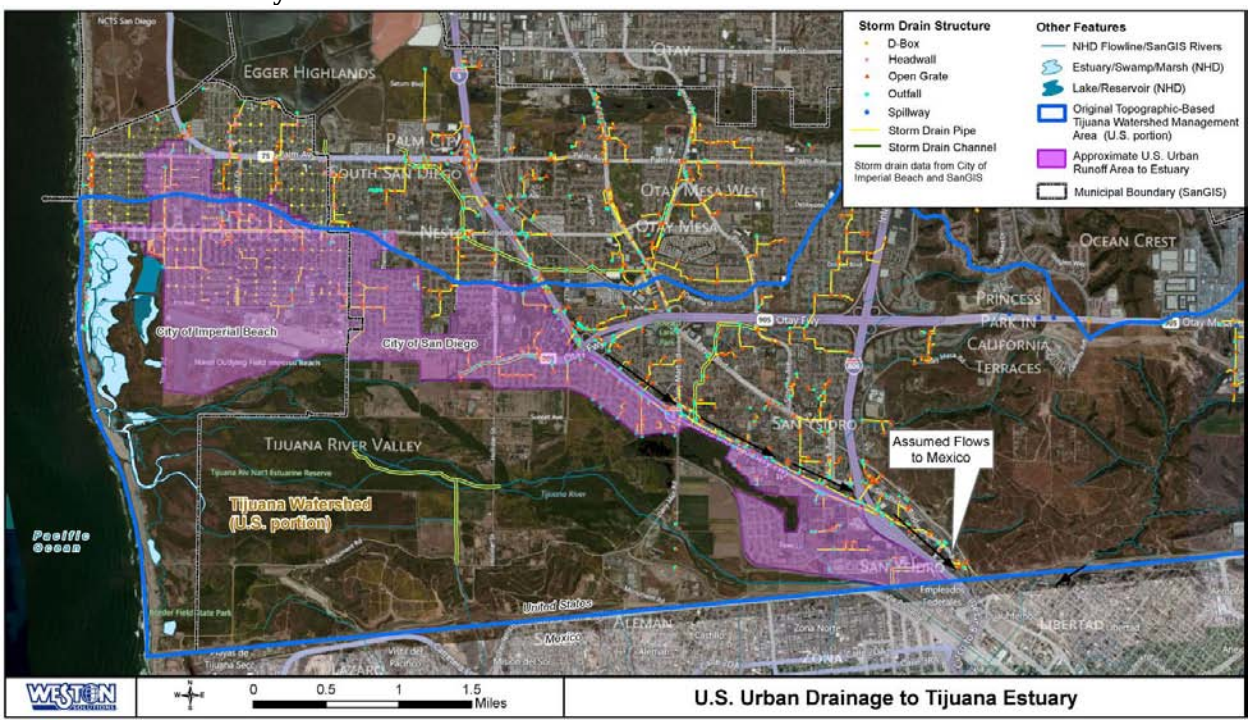

Figure 2-6 Storm Event - 3 Enterococci Concentrations

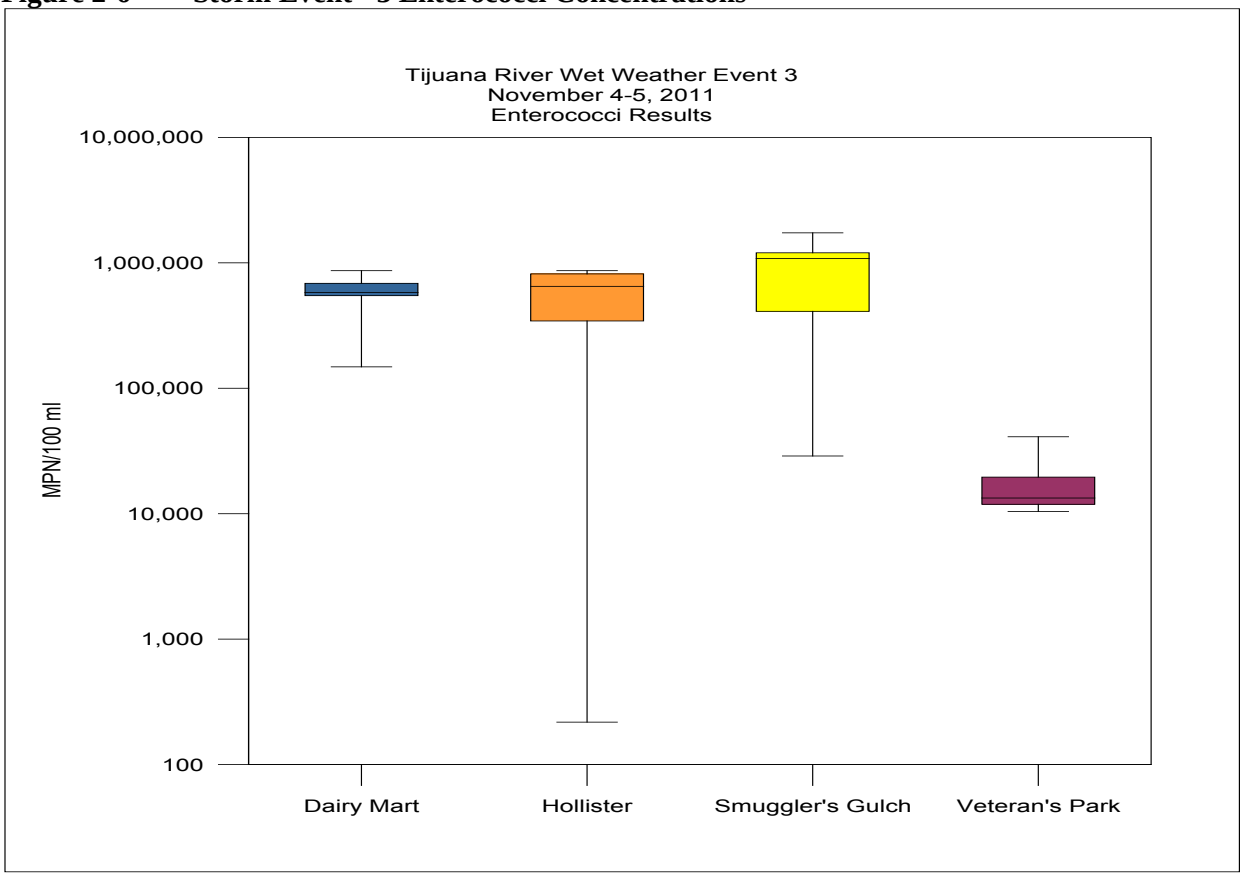

Figure 2-7 Annual Bacterial Loads from the Tijuana River, Smuggler's Gulch, and the U.S. Urbanized Area that Drains Directly to the Estuary

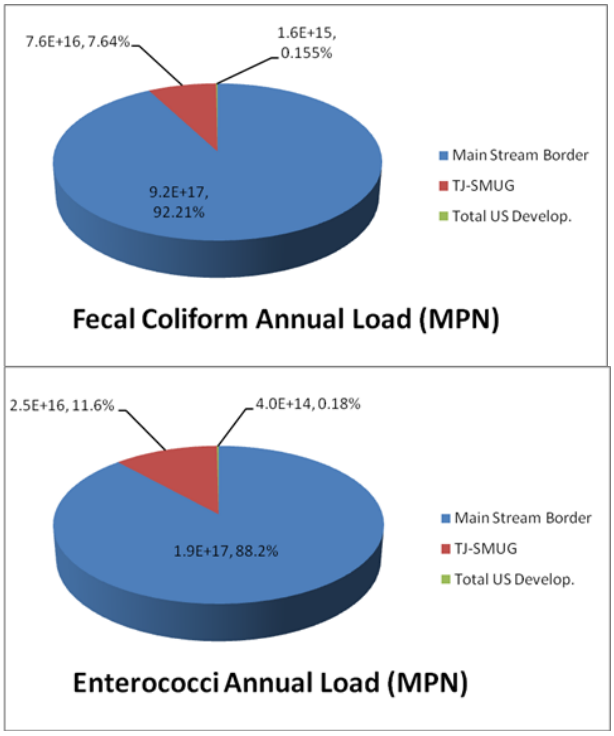

City of San Diego Bacteria Source ID studies

Through four studies performed by the City of San Diego (*City of San Diego, 2010, Tecolote Creek Microbial Source Tracking Summary, Phases I, II, and III; City of San Diego, 2010, San Diego River Source Tracking Investigation – Phase I; and, City of San Diego, 2009, Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek by Weston Solutions Inc.; San Diego County Enterococcus Regrowth Study by Southern California Coastal Water Research Project (SCCWRP)*), it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates regrowth in catch basins is a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff[1], was found to provide both a bacteria transport mechanism and a potential site for environmental growth of bacteria. Bacterial growth and persistence in the environment is disconcerting because it represents a source that is potentially elevated in bacteria but poses little risk to human health (Grant et al., 2001; Ishi et al., 2007; Yamahara et al., 2009).

[1] Estimates of the relative contribution of irrigation runoff to dry weather flows are not known and are dependent on highly variable conditions in each watershed. However, the Copermittees have found through a Watershed Inspection pilot project conducted by the City of San Diego that 94% of commercial and industrial landscape areas showed some evidence of over-watering and over-spraying runoff. In addition, the Copermittees observed evidence of over-irrigation at more than 64% of commercial and industrial landscape areas through a Geographically Based Watershed Inspection pilot project conducted by the City of San Diego.

SECTION 3.0 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 Watershed Water Quality Activities

This section describes the Watershed Water Quality Activities conducted by the Copermittees in FY10-11 to address the high priority water quality problems identified in the Tijuana River WMA WURMP (March 2008). Table 3-1 identifies each of the water quality activities that occurred during the reporting period and includes information pertaining to the lead jurisdiction, the hydrological area(s) impacted, and the priority pollutants targeted by each activity. Several Watershed Water Quality Activities also included an education component and are identified in Table 3-1. Progress on all watershed activities has been described in the standardized template, which clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems. For more detail on the specific activities and anticipated future activities, please refer to Attachment 1 for the Watershed Activity Summary Sheets.

During the reporting period, the Tijuana River WMA Copermittees implemented, or were actively planning, a total of 26 activities. Out of the 26 activities there were 23 Watershed Water Quality Activities, 22 of which were in an active implementation phase defined by the Municipal Permit. Watershed Water Quality Activities ranged from pet waste dispenser programs to trash cleanup events. Additionally, there were three monitoring and source characterization studies conducted during FY10-11 (see TJ-013, TJ-018, and TJ-036 in Attachment 1).

Table 3-1: Water Quality, Education and Land Use Activities

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	Planning (P) or Implementation (I) Phase?	HA	High Priority Water Quality Problems									
								Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-001	Pet Waste Dispenser Program	COSD		X		I	911.2, 911.4, 911.5	X									X
TJ-002	Land Acquisition	COSD		X		P	All	X	X	X	X	X	X	X	X	X	X
TJ-003	ILACSD Trash Clean-Up Sponsorship	SD		X	X	I	911	X	X								
TJ-004	Coastal Clean-up Day Sponsorship	SD		X	X	I	911	X	X								
TJ-007	Targeted Auto-Related Facility Inspections	SD		X	X	I	911.1, 911.2					X					
TJ-010	City-Wide Clean-Up Events	IB		X	X	I	911	X	X								
TJ-011	Large Special Event Clean-up and Inspections	IB		X	X	I	911	X	X								
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	COSD		X		I	911.1		X	X					X		
TJ-013	Tijuana River Bacteria Source Identification Study	IB	COSD, SD	X		I	911.1, 911.2	X									
TJ-017	Invasive Species Removal Program in Tijuana River Park	COSD		X		I	911.1	X		X							
TJ-018	Trash and Sediment Characterization Study	COSD	SD	X	X	I	911		X	X							
TJ-019	City of San Diego Strategic Plan Implementation	SD		X	X	I	911.1, 911.2	X				X			X		
TJ-022	Tijuana River Gross Solids and Sediment BMPs Design	SD		X		I	911		X	X							
TJ-023	Tijuana River Watershed Brochure	SD			X	I	911.1, 911.2	X		X	X	X	X		X		
TJ-025	Smuggler's Gulch, Pilot Channel, and Northern Channel Sediment and Debris Removal	SD		X		I	911		X	X					X		
TJ-026	WILDCOAST Spring Clean-Up Event; FY10-11	COSD		X	X	I	911		X								
TJ-027	Tijuana River Action Month	COSD	SD, IB	X	X	I	911		X								
TJ-028	Xeriscaping of Municipal Facilities	IB		X		I	911	X									X
TJ-029	Fiesta del Rio Event	SD			X	I	911	X	X	X	X	X	X	X	X	X	X
TJ-030	Beyer Boulevard Trash Segregation BMP Installation	SD		X		I	911	X	X						X		
TJ-031	Sweeper Speed Efficiency Study	SD		X		I	911	X									
TJ-032	Residential Rain Barrel Subsidies and Distribution	COSD			X	I	911	X		X	X	X	X	X		X	X

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	Planning (P) or Implementation (I) Phase?	HA	High Priority Water Quality Problems									
								Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-033	SB346: Motor Vehicle Brake Friction Materials	SD		X		P	ALL					X					
TJ-034	Targeted Catch Basin Cleaning Pilot Study	SD		X		P	911	X		X		X					X
TJ-035	Rainwater Harvesting Rebate Pilot Program	SD		X		P	911	X	X	X	X	X	X	X	X	X	X
TJ-036	Trash Assessment for the Upper Tijuana River WMA	COSD		X		I	911.2, 911.4, 911.6, 911.7, 911.8		X								

3.2 Watershed Education Activities

The Tijuana River WMA Copermittees recognize the need for education programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. In addition to the twelve watershed education activities noted in Table 3-1, each of the Copermittees participated in or hosted several activities to promote watershed education as identified in Table 3-2 during FY10-11.

The County of San Diego also continues to maintain the Project Clean Water website (www.projectcleanwater.org) which provides information pertinent to each of the watersheds in San Diego County. During FY10-11, there were 2,145 hits on the Tijuana River Watershed page and 1,459 hits on the Tijuana River WURMP page.

3.3 Public Participation Activities

The Tijuana River WMA Copermittees continue to actively encourage the participation and input of diverse stakeholders in the development and implementation of the Tijuana River watershed activities. Public participation is encouraged to ensure stakeholder interests and creative solutions are considered. A number of activities, both education and water quality, are crafted to encourage public input and involvement (Table 3-1 & Table 3-2). Public participation activities included volunteer clean-up events, outreach to specific groups such as students and residents within the Tijuana River WMA, County-wide public service announcements, and the Project Clean Water website.

In addition to the above activities, during FY10-11 the City of San Diego finalized a Master Stormwater System Maintenance Program and its associated Program Environmental Impact Report (PEIR). The purpose of the Master Stormwater System Management Program will authorize the City to conduct regular maintenance activities in the numerous channels throughout the City, including those in the Tijuana River Valley. The maintenance program and the PEIR included a significant public participation component. It is expected that the maintenance program and the PEIR will be approved by the City and the Regulatory Agencies in FY12-13.

Table 3-2 Public Participation, Education, and Outreach Activities

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	7/14/2010	Imperial City Visitors - Lake Use	Lake Morena	Adult - Youth	60	X	X		N
County	7/31/2010	Pine Valley Days	Pine Valley Community Park	General Public	200	X	X		N
County	8/15/2010	Trash - Littering	Lake Morena	Adult - Youth	2	X	X		N
County	8/16/2010	Stormwater - Leakage from RV	Lake Morena	Adult - Youth	1	X	X		N
County	9/11/2010	Stormwater - Pet Droppings	Lake Morena	Adult - Youth	4	X	X		N
County	9/25/2010	Tire Clean Up in TJRVP	Dairy Mart Road Bridge	General Public	40		X		Y
County	9/25/2010	Tire Clean Up in TJRVP	Dairy Mart Road Bridge	General Public	30		X		Y
County	9/25/2010	California Coastal Clean Up Day		General Public	500		X		Y
County	9/28/2010	Trash - Littering	Lake Morena	Adult - Youth	1	X	X		N
County	9/29/2010	Watershed Education	Mountain Empire High	Biology	21	X			Y
County	9/29/2010	Watershed Education	Mountain Empire High	Chemistry	20	X			Y
County	9/29/2010	Watershed Education	Mountain Empire High	Chemistry	20	X			Y
County	9/29/2010	Watershed Education	Mountain Empire High	Earth Science	24	X			Y
County	9/29/2010	Watershed Education	Mountain Empire High	Earth Science	21	X			Y
County	10/2/2010	Tire Clean Up in TJRVP	Effie May	General Public	79		X		Y
County	10/5/2010	Tire Scoop Up	IBWC	General Public	8		X		Y
County	10/7/2010	Tire Scoop Up	TJRV	General Public	8		X		Y
County	10/9/2010	Tire Scoop Up	TJRV	General Public	8		X		Y
County	10/9/2010	Tire Clean Up in TJRVP	Willow Basin	General Public	37		X		Y
County	10/10/2010	Splash Lab	Fiesta Del Rio	Children	100	X	X		N
County	10/12/2010	Green Machine	Potrero Elementary	Students - Grade 1-4	86	X			Y
County	10/18/2010	Tire Clean Up in TJRVP	TJRV	General Public	46		X		Y

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	10/22/2010	Watershed Education	Mountain Empire High	Biology	20	X			Y
County	10/22/2010	Watershed Education	Mountain Empire High	Biology	25	X			Y
County	10/22/2010	Watershed Education	Mountain Empire High	Biology	23	X			Y
County	10/22/2010	Watershed Education	Mountain Empire High	Biology	25	X			Y
County	10/22/2010	Watershed Education	Mountain Empire High	Biology	23	X			Y
County	10/22/2010	Watershed Education	Mountain Empire High	Biology	19	X			Y
County	10/23/2010	Media Event (Cancelled due to weather)	Dairy Mart Road Bridge	General Public	8		X	X	N
County	10/28/2010	Tire Scoop Up	Dairy Mart Road Bridge	General Public	8		X		Y
County	11/8/2010	Splash Lab	Campo Elementary	Students - Grade 5-6	86	X			Y
County	11/20/2010	Trash - Littering	Lake Morena	Adult - Youth	2	X	X		N
County	12/3/2010	Trash - Littering	Lake Morena	Adult - Youth	1	X	X		N
County	1/27/2011	Trash Clean Up	Pine Valley Park	School Group	45	X	X		Y
County	3/1/2011	Green Machine	Pine Valley Elementary	Students - Grade K-3	83	X			Y
County	3/22/2011	R-1 Earth School Presentation	Potrero Elementary	Students - Grade 3-8	60	X			Y
County	3/22/2011	R-1 Earth School Presentation	Potrero Elementary	Students - Grade 3-8	60	X			Y
County	3/30/2011	R-1 Earth School Presentation	Pine Valley Elementary	Students - Grade K-3	105	X			Y
County	5/2/2011	Watershed Education	Julian Charter School	Biology	21	X			Y
County	5/12/2011	Green Machine	Campo Elementary	Students - Grade K-3	198	X			Y
County	5/14/2011	Tire Clean Up in TJRVP	Dairy Mart Road Bridge	General Public	200	X			Y
County	5/20/2011	Littering - Trash Clean Up	Pine Valley Park	School Group	25	X			Y
County	5/21/2011	Lake Use - Trash Littering	Lake Morena	Children	30	X	X		N
County	6/1/2011	Green Machine	Clover Flat Elementary	Students - Grade 2-5	80	X			Y
County	6/1/2011	Green Machine	Jacumba Elementary	Students - Grade K-1	63	X			Y

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	6/4/2011	Tire Clean Up in TJRVP	Effie May	General Public	250		X		Y
County	6/4/2011	Stormwater - Trash	Lake Morena	Visitors	25		X		N
County	6/7/2011	R-1 Earth School Presentation	Jacumba Elementary	Students - Grade 1-5	55	X			Y
County	6/18/2011	Stormwater - Trash	Lake Morena	Visitors	20		X		N
County	6/24/2011	Tire Clean Up in TJRVP	Dairy Mart Road Bridge	General Public	9	X	X		Y
County	6/28/2011	Tire Clean Up in TJRVP	Goat Canyon, Smuggler's Gulch, Dairy Mart	General Public	10	X	X		Y
County	6/29/2011	Tire Clean Up in TJRVP	Dairy Mart Road Bridge	General Public	4	X	X		Y
County	6/30/2011	Tire Clean Up in TJRVP	Goat Canyon, Smuggler's Gulch, Dairy Mart	General Public	4	X	X		Y
City of SD	FY 10-11	Watershed Brochure	TJ WMA	Res/Com/Ind	100	X	X	X	N
City of SD	FY10-11	Fiesta Del Rio Event	TJ WMA	Res/Com/Ind	4,000	X	X	X	N
Imperial Beach	FY10-11	EDCO Environmental Times (Quarterly Newsletter)	TJ WMA	Residents	28,000	X		X	N
Imperial Beach	FY10-11	Citywide Online Newsletter	TJ WMA	Residents	28,000	X		X	N
Imperial Beach	FY10-11	City Weekly FYI Email	TJ WMA	Municipal	130	X		X	N
Imperial Beach	7/24/10	I.B. Classic Car Show	Seacoast Drive	General Public	1,000	X	X		N
Imperial Beach	08/6-9/10	US Open Sandcastle Competition	Seacoast Drive	General Public and Commercial Business	300,000	X	X		Y-Survey
Imperial Beach	09/25/10	Coastal Cleanup Day: ILACSD	Tijuana River Valley	General Public		X	X	X	N
Imperial Beach	10/1/10	Mayor Proclamation: Tijuana River Action Month	TJ WMA	General Public	28,000			X	N
Imperial Beach	10/10/10	Fiesta Del Rio Booth	TJ WMA	General Public	5,000		X		Y-Survey
Imperial Beach	10/18/10	Tijuana River Action Month Cleanup Job Corps	Tijuana River Valley	General Public	50		X		Y-2,300 tires and 56 tons trash
Imperial Beach	12/7/10	Beach Closure Workshop	Dempsey Center	General Public	60	X	X		N
Imperial Beach	12/16/10	Mayor Proclamation: Day Without a Bag	TJ WMA	General Public	28,000			X	N

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	2/1/11	Street Banners	TJ WMA	General Public	--	X			N
Imperial Beach	04/22/11	Mayor Proclamation: Environmental Awareness Month	TJ WMA	General Public	28,000			X	N
Imperial Beach	5/4/11	I.B. Sports Park After School Activity	Sports Park	Students	25	X	X		N
Imperial Beach	05/7/11	Annual Home Front Clean up	Mar Vista HS	General Public	753	X	X	X	Y- 178.7 tons of material collected
Imperial Beach	05/28/11	Storm Drain Stenciling	City-wide	Students	30		X		N

3.4 Collaborative Land-Use Planning Efforts

To encourage collaborative planning in the watershed and implementation of the Tijuana River WURMP, the Tijuana River WMA Copermittees met formally five times during FY10-11. The meetings are a forum to discuss watershed principles and develop collaborative efforts to reduce storm water pollution in the WMA, including possibilities for collaboration in land use planning (see Table 1-1).

The Tijuana River WMA Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

3.4.1 Tijuana River Valley Recovery Team

The Tijuana River WMA Copermittees have taken an active role in the formation and participation on the Tijuana River Valley Recovery Team (Recovery Team). The Recovery Team consists of a Steering Committee and four related subgroups or Action Team(s) made up of representatives from governmental, regulatory, and funding agencies, members of the scientific and environmental communities as well as affected stakeholders. The Recovery Team functions as a coordination and information sharing body to leverage the efforts of each of the responsible agencies, and the overall goal of the Recovery Team is to facilitate the restoration of the Tijuana River floodplain and estuary to a functional wetland ecosystem. The Recovery Team met eight times during the FY10-11 reporting period. Some major milestones during the year included implementation of the second of three Visioning Workshops in September 2011 for the City of San Diego's Clean-up and Abatement Funding Grant from the State Water Resources Control Board.

This grant is to be used to study the hydrology and hydraulics of the lower Tijuana River Valley, and to study trash and sediment transport as a basis for sediment and trash detention basins planned in the River Valley. The goal of the Visioning Workshop was to provide stakeholder input into the development of a roadmap for the restoration of the River Valley. Additionally, the City of San Diego received a $250,000 grant from the California Coastal Conservancy to prepare a plan and environmental compliance documents for reclamation of the Nelson Sloan Quarry in the Tijuana River Valley to create open space and habitat. The purpose of the project is to both reclaim the former quarry site and to provide a local, low-cost option for disposing sediment collected as part of the management of the Tijuana River Valley Regional Park (TRVRP) and the Tijuana Estuary. Additional information can be found on the Tijuana River Recovery Team website (www.tjriverteam.org).

3.4.2 Tijuana River Bacteria Source Identification Study

The Tijuana River Bacteria Source Identification Study involves collaborative planning through a technical Advisory Stakeholder group that meets quarterly to discuss updates and to help shape the direction of the project. These stakeholder meetings encourage Copermittees to actively plan with community organizations to jointly identify potential sources of bacteria, trash, and sediment in the WMA. This information is then used to shape the direction of the special study component of the project that will recommend BMPs to address the sources of bacteria in the WMA. The results of the study, which are due in the next reporting period, will allow Copermittees to provide recommendations to jurisdictional planning department staff regarding appropriate storm water-related land use planning regulations and policies. The Technical Advisory group for the Tijuana River Bacteria Source Identification Study met four times during the reporting period.

The Tijuana River WMA Copermittees will continue the working relationships and coordination implemented in FY10-11 by continuing regular watershed meetings to plan and implement the Tijuana River WURMP.

3.5 Updated 5-year Strategic Plan

Development of the 5-Year Strategic Plan included the formulation of a list of activities to implement over a five-year period, and the activities were integrated into the Tijuana River WURMP in March 2008. The Regional Copermittees recognized that there would be a need to revise the 5-year plan as new activities were identified and implemented or activities were modified, updated, or completed. Table 3-3 represents the Tijuana River WMA updated 5-Year Strategic Plan and a description of changes is included below.

3.5.1 New Watershed Activities

The Tijuana River WURMP Copermittees define a new WURMP activity as one that has never been listed as a part of the 5-Year Strategic Plan. During FY10-11, there were two new water quality activities and one assessment added to the Strategic Plan. A brief description is provided below and additional information is included in activity sheets TJ-034, TJ-035, and TJ-036 located in Attachment 1.

Targeted Catch Basin Cleaning Pilot Study (TJ-034). The City of San Diego Storm Water Division began the planning of a catch basin cleaning pilot study in FY10-11. The purpose of the project is to understand the potential water quality improvements and load reduction associated with catch basin cleaning by evaluating the quantity and quality of materials removed from the storm drains from four pilot areas. The areas were selected to be representative of different land uses within the City limits, and one pilot area selected is in a residential area of San Ysidro within the Tijuana WMA. Additionally two cleaning methods will be evaluated: manual and using vactor equipment. Composite samples collected from the material removed will be analyzed for metals, nutrients, organics, and bacteria. Implementation and assessment of this project is scheduled for FY11-12.

Rainwater Harvesting Rebate Pilot Program (TJ-035). The City of San Diego Storm Water Division began collaborating with the Public Utilities Department in the planning of this project during the reporting period. The Rebate Pilot Program will be open to the residents of the City of San Diego on a first come first served basis and one of the goals of the project is to assist in reducing the overall amount of wet weather runoff and the demand for portable water for irrigation. Implementation of this project is scheduled for FY11-12.

Trash Assessment for the Upper Tijuana River WMA (TJ-036). The County of San Diego completed a trash assessment of the upper Tijuana River WMA in FY10-11. County staff conducted two trash assessments following two storm events at ten locations. The assessment ranked the sites as Optimal, Sub Optimal, Marginal or Poor. The results of the initial assessment found that one site was considered as Optimal, seven were Sub Optimal, and two that were considered Marginal.

3.5.2 Updated Watershed Activities

During FY10-11, a total of four watershed activities were modified or completed from the strategic plan. Brief descriptions of these updates are provided below. Additional information is included in the activity sheets located in Attachment 1.

City of San Diego

During the reporting period, the City of San Diego completed two activities including:

Tijuana River Targeted Facility Inspections (TJ-007). The City of San Diego completed its assessment and reporting for this activity during this reporting period.

Beyer Boulevard Trash Segregation BMP Installation (TJ-030). The City of San Diego completed the Beyer Boulevard Trash Segregation BMP Installation through the retrofitting of the catch basin inlets in March 2011. While the installation is complete monitoring will be conducted in FY11-12.

During the reporting period, the City of San Diego updated the following activity:

Tijuana River Gross Solids and Sediment BMP Design (TJ-022). The City of San Diego had to indefinitely suspend the Tijuana River Gross Solids and Sediment BMP Design Project during the reporting period. The project was suspended in November 2010 when the request for Federal funding through a special appropriation was not secured through the Federal FY11-12 Water Resources Development Act. Unless a source of funding is identified, this activity will no longer be included in the Tijuana WURMP Annual Reports.

County of San Diego

During the reporting period the County of San Diego completed the following activity:

Tijuana River Trash and Sediment Characterization Study (TJ-018). The Trash and Sediment Characterization Study implemented under a contract with URS Corporation was completed during the reporting period and will no longer be reported in future annual reports.

Table 3-3 Five-Year Strategic Plan for Tijuana River WMA

TIJUANA RIVER WATERSHED	Copermittee	Watershed Priorities							Implementation Schedule					
		Total Metals	Sediment	Bacteria	Nutrients	Gross Pollutants	Trash	Dissolved Minerals	Pesticides	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13
Watershed Activities Actively Planned, Implemented or Completed through FY09-10															
TJ-001 Pet Waste Dispenser Program County Parks	COSD			X	X					WQ	WQ	WQ	WQ	WQ	
TJ-002 Land Acquisitions	COSD	X	X	X	X		X	X	X	WQ	WQ	WQ	WQ	WQ	* Unable to predict acquisitions
TJ-003 ILCSD Trash Clean-Up Sponsorship	SD			X			X			WQ	WQ	WQ	WQ	WQ	
TJ-004 Coastal Clean-Up Day Sponsorship	SD			X			X			WQ	WQ	WQ	WQ	WQ	
TJ-005 Alpha Project for the Homeles, Inc Trash Clean-Up	SD			X			X			WQ					Completed FY07-08
TJ-006 Tijuana River Targeted Restaurant Facility Inspections	SD			X						WQ					To be covered by TJ-007
TJ-007 Tijuana Targeted Facility Inspections	SD	X								WQ	WQ	WQ	WQ		Project completed in FY10-11
TJ-008 Tijuana Targeted Facility Outreach	SD	X								WE					Not conducted in FY10-11; any future outreach will be included as part of TJ-007
TJ-009 Municipal Rainbarrel and Downspout Disconnects	SD	X	X	X	X			X	X	WQ	WQ	WQ			Completed FY09-10
TJ-010 City of IB Clean-UP Events	IB			X			X			WQ	WQ	WQ	WQ	WQ	
TJ-011 Large Special Event Inspections And Clean-Ups	IB			X			X			WQ	WQ	WQ	WQ	WQ	
TJ-012 Smugglers Gulch Sediment Removal	COSD		X							WQ		WQ	WQ	WQ	
TJ-013 Tijuana River Bacterial Source Identification	IB			X						M S	M S	M S	M S	M S	Funding restored in FY09-10
TJ-014 LID and Watershed Planning Education: Com & Sponsor Groups	COSD	X	X	X	X			X	X	WE	WE				Completed FY08-09
TJ-015 Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	SD			X			X			WE	WE	WE			PSAs will continue but after FY09-10 activity sheet will no longer be updated
TJ-016 Mobile Advertising	SD		X	X						WE					Completed FY07-08
TJ-017 Invasive Species Removal Program Tijuana River Park	COSD		X	X					X	WQ		WQ	WQ	WQ	No funding for FY12-13 - applying for funding
TJ-018 Trash and Sediment Characterization Study	COSD		X				X			S	S	S	S		Completed
TJ-019 SD Strategic Plan Implementation	SD	X		X		X					LU	LU	LU	LU	
TJ-020 Pet Waste Dispenser Program	SD			X	X						WQ	WQ WE			
TJ-021 San Ysidro Centennial Celebration	SD		X	X			X				WE PP				Not conducted in FY09-10
TJ-022 Tijuana River Gross Solids and Sediment BMP's Design	SD		X			X					WQ	WQ			Project is suspended
TJ-023 Tijuana River Watershed Brochure	SD	X	X	X	X	X	X	X	X		WE	WE	WE	WE	
TJ-024 Water Quality Monitoring in the Upper Tijuana Watershed	COSD	X	X	X	X	X		X	X		M				Completed FY08-09
TJ-025 Smuggler's Gulch, Pilot Channel, & Northern Channel Sediment & Debris Removal	SD		X			X	X					WQ	WQ		
TJ-026 WILDCOAST Spring Clean-Up Event; Effie May Trail	COSD/SD						X					WQ PP	WQ PP	WQ PP	
TJ-027 Tijuana River Action Month	COSD						X					WQ PP	WQ PP	WQ PP	
TJ-028 Xeriscaping of Municipal Facilities	IB			X	X							WQ PP	WQ PP	WQ	
TJ-029 Fiesta del Rio Event	SD	X	X	X	X	X	X	X	X			WE	WE PP		
TJ-030 Beyer Boulevard Trash Segregation BMP Installation	SD			X		X	X					WQ	WQ		Project completed in FY10-11
TJ-031 Sweeper Speed Efficiency Study	SD			X								WQ	WQ		
TJ-032 Residential Rain Barrel Subsidies & Distribution	COSD	X	X	X	X			X	X			WE WQ PP	WQ WE	WQ WE	
TJ-033 Source Control of Copper Water Pollutants, Senate Bill 346	SD	X										WQ	WQ	WQ	Source control expected to result in long-term reductions of copper
TJ-034 Targeted Catch Basin Cleaning Pilot Study	SD	X	X	X	X								WQ	WQ	to be implemented and assessed
TJ-035 Rainwater Harvesting Rebate Pilot Program	SD	X	X	X	X	X	X	X	X				WQ	WQ	
TJ-036 Pilot Trash Assessment of the Upper Tijuana Watershed	COSD						X						S		
Potential Future Watershed Activities															
TJ-00A San Ysidro Boulevard Green Mall Infiltration Retrofit Education and Outreach	SD														
TJ-00B Infiltration BMP retrofit	SD														
TJ-00C Inlet Bacteria Treatment BMP	SD														
TJ-00D Outdoor Water Conservation Rebate Program	SD									Project name change FY09-10					
TJ-00E Tijuana River Valley Park Trails and Habitat Enhancement Project	COSD														
TJ-00F Source Identification of Metals and Ammonia	IB														
TJ-00G San Ysidro Boulevard Green Mall	SD														

WQ = Watershed Water Quality Activity (Active Implementation)
WQ = Watershed Water Quality Activity (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)
WE = Watershed Education Activity (No WURMP Credit)
LU = Watershed-base Land Use Planning Activity
PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)
D = Watershed Data Assessment/Management Activity
O = Other Watershed Activity (No WURMP Credit)

SECTION 4.0 EFFECTIVENESS ASSESSMENTS

This section of the report assesses the effectiveness of the Copermittees' collaboration efforts over the year, the overall effectiveness of targeting specific water quality problems, and the collective impacts made towards reducing pollutant loads and improving receiving water quality. Table 4-1 provides a complete list and assessment measures for all the water quality and education activities conducted during the reporting period.

4.1 Assessment of Overall WURMP Effectiveness

Conducting effectiveness assessments on water quality and education activities is an integral part of the WURMP implementation process and allows the Copermittees to further plan, adapt, and improve the collective watershed strategy. This section of the report assesses the overall effectiveness of the WURMP in relation to the following four key program components:

1. Collaboration among Tijuana River Watershed Copermittees.
2. Effectiveness of WURMP activities on addressing water quality problems and sources.
3. Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.
4. Assessment of measureable targeted outcomes.

4.1.1 Collaboration among the Tijuana River Watershed Copermittees.

The Tijuana River Watershed Copermittees collaborate and work together to implement the collective watershed management strategy outlined in the Tijuana River WURMP. These collaborative efforts have led to the successful implementation of a number of watershed and education-based activities in the WMA and contribute to effective partnership collaboration in other Tijuana River Stakeholder groups active in the WMA, which include the U.S. EPA Border 2012 Program, Tijuana River Recovery Team, Tijuana River National Estuarine Research Reserve Advisory Council, and City of Imperial Beach's Bacteria Source Identification Study Stakeholder Group.

The Tijuana River Watershed Copermittees collaborate together through the WURMP to collectively plan and implement watershed activities that specifically address the contribution of local storm water pollution from urban runoff. While local runoff from the Copermittees is an important issue to manage, the largest impact on the WMA is the contribution of cross border pollution which affects a much larger group of stakeholders and requires a larger effort outside the scope of the WURMP group. The Copermittees actively participate in multiple stakeholder efforts in the WMA to cleanup and restore the natural environment and improve water quality.

The issues on bi-national sources of pollution are best being addressed by the Copermittees through the development and implementation of activities through the EPA Border 2012 program and Tijuana River Valley Recovery Team. Significant improvements to water quality continue to be implemented or planned through both organizations and the Copermittees actively participate in both organizations. Additional information is available through each organization's website (http://www.epa.gov/Border2012 and http://www.tjriverteam.org).

The cleanup and restoration of the river valley and estuary is another important task for the Copermittees that is overseen by the TRNERR Advisory Council. Each Copermittee's jurisdiction holds a seat at the Advisory Council, which oversees the management and restoration of the ecosystem services within the Tijuana River Valley and Estuary. In addition, the Copermittees participate in the quarterly stakeholder meetings for the City of Imperial Beach's Bacteria Source Identification Study. The results from the study provide a greater understanding of the sources and load contributions of bacteria into the river and will lead to the planning and development of new water quality activities for the WMA.

Collaboration efforts over the reporting period by the Tijuana River Watershed Copermittees represents a significant level of commitment by each jurisdiction and highlights the importance of the collaborative approach to solving the multiple issues present in the WMA. A summary of the collaboration efforts over the reporting period is presented below.

- WURMP Group Meetings – Met five times during the reporting period,
- Border 2012 – Met two times during the reporting period,
- Tijuana River Valley Recovery Team – Met nine times during the reporting period including the second of three visionary workshops,
- TRNERR Advisory Group – Met four times during the reporting period and completed an update to the TRNERR Comprehensive Management Plan, and
- Tijuana River Bacterial Source Identification Study group – Met four times during the reporting period.

4.1.2 Effectiveness of WURMP Activities on addressing water quality problems and sources.

Watershed activities in the WURMP focus on storm water management of high priority pollutant sources and practices that jurisdictions have the ability to affect and control. The Tijuana River, Estuary, and adjacent coastline are impaired by a multitude of water quality problems and pollutant sources, many of which are outside the control of local jurisdictions and require bi-national collaboration in the WMA. The Copermittees identified trash, bacteria, and sediment as important target pollutants for the WMA and important to jurisdictional storm water programs because these pollutants present an immediate downstream threat to habitat in the Estuary and public health along the beach. Trash and sediment are also the target pollutants of the Regional Board-led effort through the Tijuana River Recovery Team.

During the current reporting period, the Copermittees actively engaged in 26 water quality and education activities and conducted a trash survey assessment in the WMA (TJ-036). All of the activities, with the exception of TJ-033, which focused on copper from brake pads, effectively targeted the high priority pollutants of trash, bacteria, or sediment in the WMA. Many of the activities addressed multiple pollutants or other non-priority pollutants in the WMA. Table 4-1 identifies each of the water quality and water education activities that were in an active planning or implementation phase during the reporting period. Though more could always be done with more resources and funding, the current distribution of watershed activities, are effectively addressing the likely sources of pollutants from the MS4, and in many cases contribute to the larger effort of restoring the Tijuana River Valley and managing the effects of cross-border pollution. The volunteer efforts made to clean up and restore the Tijuana River Valley in TJ-003, TJ-004, TJ-017, TJ-026, and TJ-027 highlight the level of community activism motivated to bring about a positive change to the WMA.

4.1.3 Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.

The Tijuana River WMA is divided into eight Hydrologic Areas. Water quality and education activities are implemented throughout all HAs; however, water quality activities are primarily focused in the Tijuana River Valley HA (911.1), where the water quality problems are most numerous and significant. Table 4-1 identifies the HA location for each activity, the priority pollutants for each activity, and the improvements made to water quality during the reporting period through any source load reductions. Detailed information on the implementation and assessment for each watershed activity is provided in Activity Sheets in Attachment 1.

During the reporting period, there were a total of 26 activities in some form of implementation in the WMA. The water quality and education activities are identified in Table 4-1. In total, 16 activities focused on water quality, two activities focused on education, and seven activities focused on both education and water quality. Additionally, the County conducted a Trash Assessment for the Upper Tijuana WMA (TJ-036). These activities addressed several of the priority pollutants in the Tijuana River Watershed, including bacteria, trash, sediment, pesticides, metals, and gross pollutants. Load reductions or source abatements were also achieved in 13 of the watershed activities (TJ-001, TJ-002, TJ-003, TJ-004, TJ-007, TJ-010, TJ-011, TJ-012, TJ-025, TJ-026, TJ-027, TJ-028, and TJ-031) through actions such as community cleanup events and sediment removal. These watershed activities had a positive effect on reducing pollutant loads and urban runoff discharge quality in the WMA, but not on the overall receiving water quality in the Tijuana River Valley HA (911.1), where cross-border pollutant loads continue be the primary problem.

4.1.4 Assessment of measureable targeted outcomes.

The Copermittees used the six levels of targeted outcomes identified in the 2003 *Framework for Effectiveness Assessment* to demonstrate the WMA level benefits from WURMP activity implementation. These outcome levels are used as a tool for linking the relationship of watershed activity implementation to ultimate changes in water quality. The Copermittees have successfully met outcome level 1 (permit-based requirements) for the Tijuana River WURMP and achieved positive outcomes for levels 2, 3, and 4 in the WMA as a result of successfully implementing water quality and education activities. Table 4-1 provides a column that identifies the targeted outcome level achieved by each watershed activity. The targeted outcome for each activity is further described in the Activity Summary Sheets in Attachment 1. While these outcome levels are a useful tool for assessing the individual benefit of each WURMP activity, realizing and reporting actual changes in receiving water quality is best applied through the Long-term Effectiveness Assessment process.

4.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs within the Tijuana River WMA.

Table 4-1 Water Quality and Education Activities in Tijuana River WMA

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-001	Pet Waste Dispenser Program	911.2 911.4 911.5	Water Quality	Bacteria	4	Maintained 12 existing pet waste bag dispensers at 3 different County parks.
TJ-002	TJWMA Land Acquisition	All	Water Quality	All	4	There were no acquisitions in FY10-11.
TJ-003	ILACSD Trash Clean-Up Sponsorship	911.1	Water Quality and Education	Bacteria, Trash	1, 4	22 participants, 900 lbs of trash and debris removed 600 lbs of trash and debris recycled
TJ-004	SD Coastkeeper Trash Clean-up Sponsorship	911.1	Water Quality and Education	Bacteria, Trash	1, 4	32 participants, 1,120lbs of trash and debris removed 5000 lbs of trash and debris recycled
TJ-007	Tijuana River Property-Based Inspections	911.1 911.2	Water Quality	Bacteria, Oil & Grease, Sediment, Trash	3, 4	36 Phase I Property Inspections; 1 IC/ID observed 7 Phase I Business Investigations; No IC/ID observed 13 Phase 2 Property Inspections; No IC/ID observed 4 Phase 2 Business Investigations; No IC/ID observed 7 Sites implemented some corrective action
TJ-010	City-Wide Clean-Up Events	911.1	Water Quality	Bacteria, Trash	1, 2, 4	753 participants, 179 tons of material collected.
TJ-011	Large Special Events Inspection and Clean-Ups	911.1	Water Quality and Education	Bacteria, Trash	1, 4	Enhanced BMPs at 12 special events US Open Sandcastle Event: Recycle: 2,285 pounds Trash: 6.93 tons
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	911	Water Quality	Bacteria, Trash, Sediment	1, 4	Removed 12,000cy sediment Removed 40cy trash Removed 250 tires
TJ-013	Tijuana River Bacteria Source Identification Study	911.1 911.2	Water Quality	Bacteria	1	Conducted significant amount of water quality monitoring and source investigations
TJ-017	Invasive Species Removal Program in Tijuana River Park	911	Water Quality	Bacteria, Sediment, Pesticides	1	Participated in the Technical Advisory Group. Treated exotic invasive species on 40 ac.
TJ-018	Study Trash and Sediment Characterization	911.1	Water Quality	Trash, Sediment	1	Characterized the trash and debris in the main channel of the Tijuana River basin for future removal.
TJ-019	City of San Diego Strategic Plan	911.1 911.2	Water Quality and Education	All	1	Implementation of Phase 1 of the Strategic Plan is anticipated to occur from FY2008 through FY2013
TJ-022	Tijuana River Gross Solids & Sediment BMP Design	911	Water Quality	Bacteria, Trash, Sediment	1	Project was in active planning stage but will be removed next reporting period due to lack of funding and other resources.
TJ-023	Tijuana River Watershed Brochure FY11	911.1 911.2	Education	All	1	Distributed brochures to educate residents about pollutants and BMPs specific to the Tijuana River WMA.
TJ-025	Smuggler's Gulch, Pilot & Northern Channel Sediment & Debris Removal	911.1	Water Quality	Sediment, Trash, Gross Pollutants	1, 4	Approximately 13,000 cubic yards of material was removed during FY10-11.
TJ-026	WildCoast Spring Clean-Up	911.11	Water Quality & Education	Trash	1,4	166 people 14.17 tons trash 1013 tires
TJ-027	Tijuana River Action Month	911.11	Water Quality &	Trash	1,4	278 people 25.53 tons trash

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
			Education			2,590 tires
TJ-028	Xeriscaping of Municipal Facilities	911.1	Water Quality	Nutrients, Bacteria	1, 2, 4	Demonstration projects that involved the community and replaced 10,900 sq ft of landscape. Reduced irrigation by 42% at City Hall.
TJ-029	Fiesta Del Rio	911.1	Education	Bacteria, Sediment, Metals	1, 2, 3	5,000 participants and 121 surveys administered; 69% identified litter has an impact on local waterways; 87% indicated an obligation not to litter
TJ-030	Beyer Boulevard Trash Segregation BMP Installation	911.1	Water Quality	Bacteria, Gross Pollutants	1	Pre and post project monitoring to evaluate the effectiveness of the drainage insert selected in load reduction and effluent quality.
TJ-031	Sweeper Speed Study	911.1	Water Quality	Bacteria, Metals, Sediment, Trash	1,4	The goal of the assessment was to determine the optimal speed to operate City mechanical sweepers to maximize debris and metals removal
TJ-032	Residential Rain Barrel Subsidies & Distribution	All	Water Quality & Education	All	1	Two Residents purchased Barrels
TJ-033	Source Control of Copper Vehicle Brake Pad	All	Water Quality	Metals	1	SB 346 passed in 2010. Evidence of reduction of copper starting in 2022
TJ-034	Targeted Catch Basin Cleaning Pilot Study	911.11	Water Quality	Bacteria, Metals, Nutrients, Sediment	1,4	Active Planning: Sediment volume and characterization to determine constituents in the sediments removed
TJ-035	Rainwater Harvesting Rebate Pilot Program	All	Water Quality	Bacteria	1	Active Planning: Will provide a rebate of $0.50 per gallon, up to $200 for residents to install water capture devices.
TJ-036	Trash Assessment for the Upper Tijuana River WMA	All	Water Quality	Trash	1	Performed an assessment of trash in upper reaches of the WMA.

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SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

During the reporting period, the Tijuana River WMA Copermittees continued to implement and improve the Tijuana River WURMP following the 5-Year Watershed Strategy developed and submitted to the RWQCB in March of 2008. Much of the year was spent collaborating with the other Tijuana River WMA Copermittees to develop and further refine the strategy for implementing watershed activities in compliance with the Municipal Permit. The Copermittees also collaborated on other regional and bi-national stakeholder groups, including Border 2012, Tijuana River Valley Recovery Team, Tijuana River National Estuarine Research Reserve Advisory Council, and Tijuana River Bacteria Source Identification Study Stakeholder Group. These collaborative efforts represent significant steps towards improving the water quality within the Tijuana River WMA for the benefit of residents and wildlife alike.

The Tijuana River WMA is located in the southern portion of San Diego County and in accordance with the Receiving Waters and Urban Runoff Monitoring Program per Order R9-2007-0001, no receiving water data were collected in the Tijuana River during the reporting period. The condition of the receiving water and relative contribution of pollutants from urban runoff sources were primarily assessed over this past year using monitoring results from the City of Imperial Beach's Bacteria Source Identification Study and the Copermittees' MS4 targeted and random outfall monitoring program. The results from these limited monitoring programs continue to indicate the high priority pollutants of trash, sediment and bacteria during the wet season as a significant threat to the WMA. The water quality monitoring results over the past year are further discussed in Section 2.0.

The Tijuana River WMA Copermittees met six times during the year to implement and further refine the collective watershed strategy to address the high priority pollutants in the WMA. Collaboration on Watershed Water Quality Activities, Watershed Education Activities, and Public Participation, Education, and Outreach Activities are major components of the collective strategy. Tables 3-1 and 3-2 in Section 3.0 identify the watershed activities and information pertaining to the lead jurisdiction, the hydrologic area(s), and priority pollutants for each activity. The Copermittees believe these watershed activities are effective at targeting the high priority pollutants originating from the MS4 and contribute to the larger efforts to address other sources of pollutants in the WMA.

During the reporting period, the Copermittees actively engaged in 26 water quality and education activities, with the majority of activities focusing on trash, bacteria, or sediment. Many of the activities addressed multiple pollutants or other lesser priority pollutants in the WMA. The water quality and education activities are discussed in Section 3.0. In total, 16 activities focused on water quality, two activities focused on education, and seven activities focused on both education and water quality. Additionally the County conducted a Trash Assessment for the Upper Tijuana WMA (TJ-036). These activities addressed several of the priority pollutants in the Tijuana River WMA including bacteria, trash, sediment, pesticides, metals, and gross pollutants. The Tijuana River Copermittees also implemented a total of 71 Public Participation, Education, and Outreach Activities that reached an estimated audience of 454,000 people. During the next fiscal year, the Copermittees will continue to collaborate and assess the effectiveness of targeted watershed activities, and further develop programs in order to maximize benefits to water quality.

5.2 Recommendations

The Municipal Permit was adopted in 2007 by the Regional Board with a cycle of five years. With the next permit, and the Report of Waste Discharge process, the Regional Copermittees are moving towards an adaptive management process in all watersheds and also working towards integrating the various regulatory programs into a single program for efficiency. Many programmatic changes are anticipated with the adoption of a new municipal permit but until that time the Tijuana River Watershed Copermittees will continue to implement the Tijuana River WURMP and collaborate with additional watershed groups like the Tijuana River Valley Recovery Team to further evolve and develop the watershed strategy.

The Tijuana River Recovery Team is a good mechanism for collaborative land use and strategic planning among the various agencies and stakeholders within the watershed and also provides the necessary forum to address future TMDLs, including a trash and sediment TMDL that is currently under evaluation. As TMDLs or other regulatory mechanisms are developed for the Tijuana River, it is likely that the Recovery Team will become a larger component of the WURMP and the collective watershed strategy to address high priority water quality pollutants. The trash and sediment characterization study (TJ 018) is one such activity where coordination between the WURMP Copermittees and the Tijuana Recovery Team has resulted in successful project development and implementation. The continued involvement with the Recovery Team will most likely lead to additional watershed activities being developed and implemented in the WMA. For the next reporting period, the Copermittees will continue to collaborate with the Recovery Team on addressing the issue of trash and sediment and a longer-term vision for restoration of the Tijuana River Valley.

SECTION 6.0 REFERENCES

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Watershed Urban Runoff Management Program
Fiscal Year 2011-2012 Annual Report

Tijuana River Watershed

Submitted to the Regional Water Quality Control Board, San Diego Region

On

January 31, 2013

Prepared by the County of San Diego

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THE CITY OF SAN DIEGO

January 14, 2013

RE: STATEMENT OF CERTIFICATION
Tijuana River Watershed Urban Runoff Management Program (WURMP)
Fiscal Year 2012 Annual Report

I certify under penalty of law that the Tijuana River Watershed Urban Runoff Management Program Annual Report for Fiscal Year 2012 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kris McFadden
Deputy Director
City of San Diego

Transportation & Storm Water Department
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STATEMENT OF CERTIFICATION

Tijuana River Watershed Urban Runoff Management Program 2011-2012 Annual Report

I certify under penalty of law that the Tijuana River Watershed Urban Runoff Management Program Annual Report for 2011-2012 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

HA Levien Date: 1-15-13

H.A. Levien
Director
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EXECUTIVE SUMMARY

This Annual Report describes implementation of the Tijuana River Watershed Management Area Watershed Urban Runoff Management Program (WURMP) during Fiscal Year 2011-12 (FY11-12). Although much of the Tijuana River Watershed Management Area (WMA) extends into Mexico, only the portion within the United States is subject to the Municipal Stormwater Permit's WURMP requirements. Therefore, this report only addresses activities within the United States.

Section 1.0 provides an overview of the information included in this report and summarizes the ongoing collaboration among Tijuana River WMA Copermittees including the County of San Diego (Lead), the City of San Diego, and the City of Imperial Beach.

Section 2.0 presents a water quality assessment for the Tijuana River WMA. The assessment is largely based on results from the regional monitoring program conducted on behalf of the San Diego County Municipal Stormwater Copermittees in compliance with Municipal Permit requirements, but is supplemented by other monitoring programs, including jurisdictional dry weather monitoring, special studies, and third party data. The regional monitoring report is identified as "The Monitoring Report (Weston 2012)" throughout this document. It should be noted that the Municipal Permit established a monitoring schedule for the entire county that alternates monitoring between the northern and the southern watersheds. The southern watersheds, including the Tijuana River WMA, were monitored during this reporting period.

The Tijuana River WMA WURMP (2008) identified nine high priority water quality problems in the Tijuana River WMA: bacteria, sediment, pesticides, gross pollutants, total metals, organics, dissolved minerals, color and nutrients. The Monitoring Report (Weston 2012) results for the Tijuana River WMA presented in Section 2.1 confirm that these pollutants continue to be identified as high priority. Section 2.2 discusses the potential sources of these problems.

Section 3.0 and Attachment 1 describe the 20 watershed activities that were in various phases of planning and/or implementation during FY11-12. Many of the activities address sediment, bacteria and trash in the Tijuana Valley Hydrologic Area (HA 911.1).

Section 4.0 describes the collaborative efforts among the Tijuana River WMA Copermittees and assesses the overall effectiveness of WURMP activities towards reducing pollutant loads and improving receiving water quality. The WURMP water quality activities are making an impact towards raising awareness of the water quality problems in the river valley and reducing the pollutant loads from the Copermittees' jurisdictions. Significant headway is also being made through the collaborative planning efforts from other stakeholder groups such as the Tijuana River Valley Recovery Team, Border 2012, the Tijuana River Estuary Management Authority, and the Tijuana River Bacteria Source Identification Study group; however, there is much more to accomplish before implementing large-scale watershed activities to address cross-border pollution problems. Continued implementation of WURMP watershed activities and participation in other stakeholder groups will result in the development of future activities and lead to incremental improvements in water quality throughout the watershed.

Section 5.0 provides a discussion on conclusions and recommendations that were reached during the reporting period.

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SECTION 1.0 INTRODUCTION

The NPDES Municipal Stormwater Permit, Order No. R9-2007-0001, referred to throughout this document as the "Permit" or "Municipal Permit", requires the Copermittees sharing the Tijuana River Watershed WMA to collaborate on the development and implementation of a WURMP. The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Tijuana River WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and developing and implementing activities that include Watershed Water Quality Activities (pollutant load reduction and source abatement), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. The Watershed Activity Implementation Summary Sheets for all watershed water quality and education activities implemented during this reporting period are included in Attachment 1.

This Annual Report is divided into five sections that highlight the efforts of the Tijuana River WMA Copermittees during the FY09-10 reporting period.

Section 1: Provides an overview of the information included in this report and summarizes the ongoing collaboration among Tijuana River WMA Copermittees. There were no updates to the watershed maps during this reporting period.

Section 2: Provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

Section 3: Describes the Watershed Water Quality and Watershed Education Activities that were implemented during this reporting period as well as any public participation or collaborative land use planning that took place.

Section 4: Discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among WMA Copermittees, 2) determine whether watershed activities are focused on appropriate water quality problems, 3) assess whether targeted outcomes are being achieved, and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.

Section 5: Discusses conclusions reached during FY11-12 as well as recommendations for future reporting periods.

1.1 Watershed Collaboration

WURMP development and implementation is a collaborative effort by all of the following Tijuana River WMA Copermittees:

- City of Imperial Beach
- City of San Diego
- County of San Diego

The County of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among Tijuana River WMA Copermittees and liaison between Copermittees and San Diego Regional Water Quality Control Board (RWQCB) staff.

The Tijuana River WMA Copermittees conducted four meetings during the reporting period. Table 1-1 provides a summary of the dates and the general topics of discussion at these meetings. Most of the meetings were focused on preparing the draft and final FY10-11 Tijuana River WURMP Annual Report that was submitted to the RWQCB on January 31, 2012.

During this reporting period, the Tijuana River WMA Copermittees collaborated extensively on the watershed activities that were developed through the implementation of the watershed strategy that was submitted on March 24, 2008 to the RWQCB.

Utilizing the information from the watershed strategy, the Tijuana River WMA Copermittees identified several water quality activities which they have coordinated at the Hydrologic Area (HA) level. A collaborative approach was utilized because these activities were identified as beneficial to addressing high priority water quality problems and can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. Collaboration on the watershed strategy enabled the Copermittees to identify data gaps by reviewing existing monitoring and land use data which provided the basis for developing additional water quality monitoring and source identification activities. Section 3 and Attachment 1 provide specific detail on each program that was initiated or completed during the FY11-12 reporting period.

Table 1-1: Summary of Copermittee Meetings

Meeting Date	Main Topics of Discussion
08/24/11	• Update on new and ongoing projects • Identify Section responsibilities • Update on TJ Sediment TMDL and TJRT Meetings
09/21/11	• Update on Regional WURMP Leads subgroup • Discussed the Regional Activity Database • TJRT Updates • Review Schedule
11/02/11	• WURMP Sections due first week in Dec. • Activity Sheets are due. • New Activity sheet for Recovery Strategy
11/30/11	• Submittal date change for WURMP Draft. o TJRT update

Tijuana River Valley Recovery Team

In October 2008 the Tijuana River WMA Copermittees were asked to participate in a meeting to discuss current issues and the future of the Tijuana River Valley. As a result of that meeting the Tijuana River Valley Recovery Team was formed. The Recovery Team (Steering Committee) met fifteen times during FY11-12. The majority of these meetings were focused on completing the draft Tijuana River Recovery Strategy.

In addition, the Recovery Team participated in three special events including:

1. A watershed tour (within Mexico) during December, and
2. Presentation to the San Diego Regional Board in February, and
3. Participation in a kick-off meeting with our partners in Mexico in April. This was the inaugural meeting of the Recovery Team (Tijuana Faction) with our partners in Mexico.

Specific efforts of the Tijuana River WMA Copermittees are in line with the mission of the Recovery Team. These include 1) cleaning and dredging clogged channels, and 2) characterizing trash and sediment in support of designing BMPs to reduce the volume of sediments and trash transported during storms. For details, see Activity Summary Sheets TJ-012 and TJ-025 in Attachment 1 of this report.

1.2 Tijuana River Watershed Map Updates

There are no Tijuana River Watershed map updates included in the FY09-10 Annual Report.

Table 1-2: Summary of Recovery Team Meetings

Meeting (or Conference) Date	Main Topics of Discussion
07/07/11	• Member Updates • RWQCB Perspective • Commitment to Implement Priority Projects • Roadmap Update • Planning for Next Public Workshop
08/04/11	• URS Hydrology/Hydraulics Study Results • Discussion of Commitment Language
09/08/11	• Member Updates • Review/Revise Commitment Language • Status of Revision to Recovery Strategy
09/15/11 (Recovery Strategy Subgroup)	• Review format of Recovery Strategy o Necessary Text Revisions o Applicable Stakeholder Comments
09/22/11 (Recovery Strategy Subgroup)	• Review Planned/Executed Text Revisions • Discuss Strategy Implementation Presentation
10/06/11	• Member Updates • Comments/Review of Revised Recovery Strategy
10/20/11	• Stakeholder Consensus on projects • Remaining public comments on Strategy • Set date for next Recovery Team Meeting
10/27/11	• Address remaining issues with Project List • Discuss potential RWQCB Update in December • Format/Content of next Recovery Team Meeting • Engaging our Mexican Counterparts
12/2/11 (Canon de los Mataderos Tour)	• Meet with Tijuana Officials • Watershed Tour of Mataderos
01/18/12	• Member Updates • Follow-up on release of Recovery Strategy • Meeting in Tijuana • Discussed present/future Steering Committee

	participants • Prepare for February Region Board Briefing
02/08/12 (Regional Board Update)	• Presentation to the Regional Board
03/05/12	• Member Updates • Composition of Steering Committee/Future Mtg dates • Development of Operation Plan • Coordination w/ Mexican Partners • Augmentation of Recovery Strategy w/Mexican projects
04/13/12 (Meeting in Mexico)	• David Navarro Opening Remarks • Discussion regarding the need for joint meetings • Border 2020 presentation • Information Exchange • Message from Mayor Carlos Bustamante • Discussion regarding cross border cooperation/coordination to address trash/sediment issues
05/10/12	• Member Updates • Discussion of small CAA grant to fund Operational Planning • IBWC-CILA Joint Meeting • Accessibility of Recovery Strategy on the RWQCB website
06/14/12	• Member Updates • Presentation by TRNNER re: micro plastic analysis of sediment within Goat Canyon • Facilitator Presentation • Discussion of upcoming IBWC-CILA meeting • Development of Operation Plan for the Recovery Strategy • Coordination of projects suggested by the City of Tijuana • Finalization of Commitment Language

SECTION 2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

The Tijuana River Watershed Management Area (WMA) is located in the southern portion of San Diego County. In accordance with the Receiving Waters and Urban Runoff Monitoring Program per the San Diego Regional Water Quality Control Board Order R9-2007-0001 (Permit), Tijuana River WMA was monitored in the 2011-12 monitoring season. The table below summarizes data sets used for this annual assessment:

Table 2-1 Monitoring Program Activities

Receiving Water	MS4 Outfall	Source Studies and Third-Party Data
MLS and TWAS monitoring during wet and dry weather – Chemistry, nutrients, bacteria, toxicity, and bioassessment. ABLM – Sediment chemistry, benthic infauna, toxicity	Random and Targeted – Wet and Dry	Coastkeeper - dry weather - 6 stations, monthly monitoring
MLS – Mass loading station ABLM – Ambient Bay and Lagoon Monitoring	MS4 – Municipal separate storm sewer system TWAS – Temporary watershed assessment station	

2.1 Water Quality Assessment

Monitoring locations are presented in Figure 2-1 and the results of the annual monitoring are presented in the four quadrants shown in Table 2-2 and Table 2-3 for each of the drainage areas represented by the mass loading stations (MLS) and temporary watershed assessment stations (TWAS). These tables summarize the results and identify potential constituent relationships between the receiving waters and the MS4 outfalls during both wet and dry weather. Third-party data are provided for informational purposes and are assessed separately from NPDES data using similar assessment methodology. The constituents listed in the quadrant table are those identified as medium and high priorities based on the Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas, Final Draft-Version 1 (SDCRC, 2010a).

TJR-TWAS-1 is located in the eastern portion of the WMA within the Campo Hydrologic Area (HA), upstream from the Tijuana River's passage through Mexico. The MLS is located in the Tijuana Valley HA downstream of the International Boundary Water Commission (IBWC) wastewater treatment plant. This station receives stormwater runoff and high base flows that often exceed the treatment plant capacity.

Based on the available results, the key findings for the Tijuana River WMA include the following:

<u>Receiving Water – Dry Weather</u>

- Nutrients (total and dissolved phosphorus) and indicator bacteria (Enterococcus) at both locations and total nitrogen at the MLS and indicator bacteria (fecal coliform at the TWAS), as medium to high priorities.
- Total dissolved solids (TDS) were identified as a high priority at the TWAS (the TDS benchmark at the TWAS is lower than at TJR-MLS).

- Chemical constituents including ammonia as N, turbidity, methylene blue active substances (MBAS; surfactants), and total suspended solids (TSS) were identified as medium to high priorities at the MLS. Chemical constituents were identified as a low priority at the TWAS location.
- Persistent toxicity to *Ceriodaphnia dubia* reproduction and non-persistent toxicity to C. dubia acute and chronic survival was observed at the MLS. No persistent toxicity was observed at the TWAS, but non-persistent toxicity to C. dubia reproduction and S. capricornutum growth was observed.
- San Diego Coastkeeper samples collected in the MLS drainage area were consistent with NPDES receiving water results, identifying indicator bacteria as a priority. In addition, this data identified dissolved oxygen (DO), which is not analyzed as part of the NPDES Program, as a priority. Coastkeeper does not collect samples in the TWAS drainage area.
- Results generally indicated greater impairment at the base of the watershed in the Tijuana Valley Hydrologic Area (HA) than in the upper watershed in the Campo HA.

Receiving Water – Wet Weather

- Indicator Bacteria (fecal coliform) was priority at both locations medium priority at TWAS and high priority at the MLS.
- Nutrients (total and dissolved phosphorus) were identified as a high priority at the MLS. Nutrients were identified as a low priority at the TWAS.
- Chemical constituents including: Biological oxygen demand (BOD), chemical oxygen demand (COD), TSS, turbidity, diazinon, bifenthrin, permethrin, nitrite as N, and MBAS were identified as medium- or high-priority at the MLS. Turbidity was the only priority at the TWAS.
- Persistent toxicity to C. dubia and H. azteca was observed at the MLS. No toxicity was observed at the TWAS.
- Similar to dry weather, results indicated greater impairment at the MLS compared to the TWAS location.

Receiving Water vs. MS4 - Dry Weather

- The indicator bacteria Enterococcus and nutrients were identified as priorities in urban runoff and in receiving waters in both drainage areas evaluated.
- DO was identified as a common priority constituent in urban runoff and receiving waters (based on third-party Coastkeeper data) in the TJR-MLS drainage area.
- TDS was identified as a common priority constituent in the TJR-TWAS-1 drainage area.

Receiving Water vs. MS4 - Wet Weather

- TSS and turbidity were identified as common priority constituents in the TJR-MLS drainage area.
- No wet weather MS4 samples were collected upstream from TJR-TWAS-1, so direct comparisons between MS4 flows and receiving water cannot be made for this drainage area.

MS4 - Wet vs. Dry Weather

- Wet weather MS4 monitoring was only conducted upstream from TJR-MLS. No priority constituents were identified in both wet and dry MS4 flows within this drainage area.

Bioassessment Monitoring

- Biology, as rated by Index of Biotic Integrity (IBI) scores, was Poor at the TWAS and Very Poor at the MLS. At the TWAS, the observed to expected ratio (O/E) and physical habitat scores were not in agreement. Both scores indicated unimpaired conditions. At the MLS, the O/E and physical habitat scores were in agreement with the depressed IBI score, indicating impaired conditions.

Ambient Bay and Lagoon Monitoring

- ABLM Monitoring results in the Tijuana River Estuary were similar to results from previous monitoring events (Bight '08, and previous 2003-2005 ABLM studies). Final station assessments were not performed because salinity did not meet the requirements of the sediment quality objective (SQO) assessment tool.

Figure 2-2 2011-12 Monitoring Locations – Tijuana River WMA

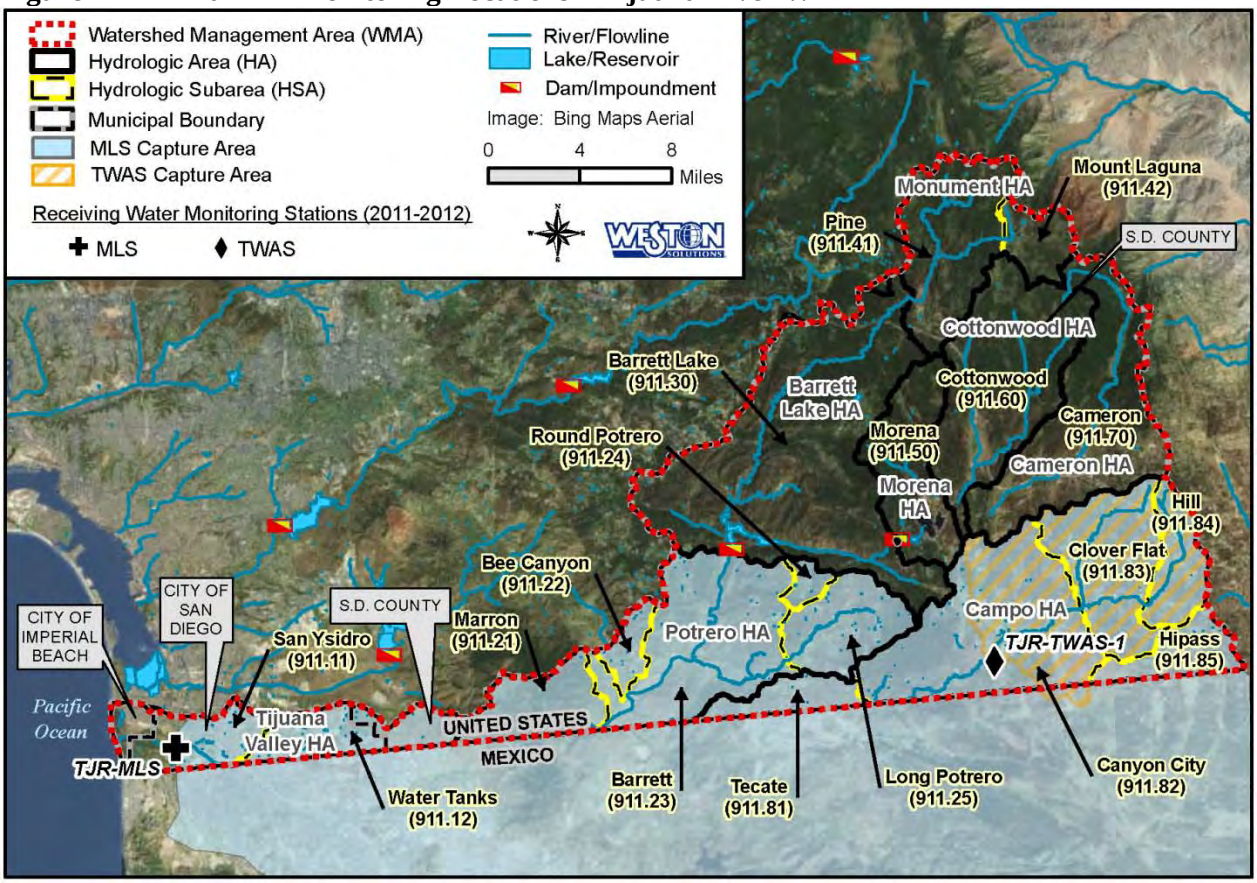

Table 2-2 Summary of Tijuana River MLS Drainage Area Assessment Findings

Tijuana River MLS			
System Assessed	**Dry Weather - Priority Constituents[1]**	**Wet Weather - Priority Constituents[1]**	**Core Question(s) Addressed**
Receiving Water Monitoring	**NPDES Program** • Chemistry – Ammonia as N, Turbidity, MBAS (Med), TSS (Med) • Toxicity – *C. dubia* reproduction, *C. dubia* acute survival (Med), *C. dubia* chronic survival (Med), • Biology – Very Poor IBI[2] • Bacteria – *Enterococcus* • Nutrients – Total Nitrogen, Dissolved Phosphorus, Total Phosphorus • TDS – No priority constituents identified **Third-Party Data – (Coastkeeper)[3]** The following constituents did not meet Basin Plan benchmarks: • Chemistry – Dissolved Oxygen • Bacteria – *E. coli*, *Enterococcus*	**NPDES Program** • Chemistry – BOD, COD, TSS, Turbidity, Diazinon, Bifenthrin, Permethrin, Nitrite as N (Med), MBAS (Med) • Toxicity – *C. dubia* acute-survival, *C. dubia* chronic-survival, *C. dubia*-reproduction, *H. azteca*-acute • Biology – Very Poor IBI[2] • Bacteria – Fecal *Coliform* • Nutrients – Dissolved Phosphorus, Total Phosphorus • TDS – No priority constituents identified **Synthetic Pyrethroids in Sediment*** • Bifenthrin, Cypermethrin	1, 2
Urban Runoff Monitoring	**MS4 Program** • Chemistry – Dissolved Oxygen* • Bacteria – *Enterococcus* • Nutrients – Total Phosphorus, Dissolved Phosphorus*, Total Nitrogen (Med) • TDS – TDS*	**MS4 Program** • Chemistry – Turbidity*, Dissolved Copper*, TSS (Med) • Bacteria – No priority constituents identified • Nutrients – No priority constituents identified • TDS – No data	3, 4
ABLM	**ABLM 2011-2012 (two stations)** • 2 final station assessments not performed; salinity did not meet the requirements of the SQO assessments tool.	Not Applicable	1, 2
Trends[4]			
Increasing[5,6]		*Enterococcus*, Fecal Coliform, Total Coliform, TSS, Turbidity, Nitrate as N, Total Arsenic, Total Copper, Total Lead, Total Zinc, Dissolved Antimony	5
Decreasing[5,6]		Conductivity, TDS, Diazinon, Dissolved Nickel, Dissolved Zinc	

Note: All results included in this table reflect data collected above the receiving water station and below Barrett Reservoir.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.

1. Determined using the WMA Assessment Methodology (SDCRC, 2010a). High and medium constituents are defined for each monitoring program. "No priority constituents identified" and "No observed toxicity" was stated to allow clear and consistent comparisons between assessment tables.
2. One IBI bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.
3. For third-party data, underlined constituents did not meet the Basin Plan water quality benchmark (WQB) for >50% of samples. Constituents that are not underlined did not meet the WQB for >25% to 50% of samples. Constituent list for third-party data is provided in Appendix M. Indicator bacteria analyzed include *E. coli*, *Enterococcus*, and total coliform.
4. Trends based on wet weather historical data, including data from the 2011-2012 monitoring year.
5. Fecal coliform, TSS, turbidity, dissolved antimony, and diazinon have consistently exceeded the WQB at this site.
6. Nitrate as N, TDS, dissolved nickel, and dissolved zinc are consistently below the WQB at this site.

*One sample used in analysis.

Table 2-3 Summary of Tijuana River TWAS Drainage Area Assessment Findings

Tijuana River TWAS-1			
System Assessed	**Dry Weather Priority Constituents[1]**	**Wet Weather Priority Constituents[1]**	**Core Question(s) Addressed**
Receiving Water Monitoring	**NPDES Program** • Chemistry – No priority constituents identified • Toxicity – *C. dubia* reproduction (Med), *S. capricornutum* growth (Med) • Biology – Poor IBI[2] • Bacteria – *Enterococcus* Fecal Coliform (Med) • Nutrients – Dissolved Phosphorus, Total Phosphorus • TDS – TDS **Third-Party Data** • No samples collected upstream of TJR-TWAS-1	**NPDES Program** • Chemistry –Turbidity (Med) • Toxicity – No toxicity observed • Biology – Poor IBI[2] • Bacteria – Fecal Coliform (Med) • Nutrients – No priority constituents identified • TDS – TDS **Synthetic Pyrethroids in Sediment*** • No priority constituents identified	1, 2
Urban Runoff Monitoring	**MS4 Program*** • Chemistry – No priority constituents identified • Bacteria –*Enterococcus* • Nutrients – Total Phosphorus, Dissolved Phosphorus • TDS – TDS	**MS4 Program** • No samples collected upstream of TJR-TWAS-1	3, 4
ABLM	Not Applicable	Not Applicable	1, 2

Note: All results included in this table reflect data collected above the receiving water station.
Priority constituents that are common to both the MS4 outfall monitoring and receiving water results are shown in blue.
1. Priority constituents are determined using the WMA Assessment Methodology (SDCRC, 2010a). High-priority and medium-priority constituents are defined for each monitoring program. When no priority constituents were identified for a constituent group, "no priority constituents identified" was stated to allow clear and consistent comparisons between assessment tables. In the case of toxicity, "no observed toxicity" was stated.
2. One Index of Biotic Integrity (IBI) bioassessment sample is collected each year during ambient (dry) conditions and is used for both the dry and wet assessment.

*One sample used in analysis.

Med – medium priority constituent
MS4 – municipal separate storm sewer system
NPDES – National Pollutant Discharge Elimination System
TDS – total dissolved solids
TWAS – temporary watershed assessment station

The spatial distribution of the identified wet and dry weather priority constituents is summarized in Table 2-4 and Table 2-5, and the referenced hydrologic subareas (HSAs) are presented in Figure 2-1. Table 2-4 presents the wet weather priority constituents identified for the receiving water (based on 2011-2012 NPDES data), and the corresponding ratings for these same constituents in each HSA based on the MS4 program results. Results indicated that indicator bacteria (fecal coliform), was identified as a medium to high priority in wet weather MS4 flows in the Barrett Lake and Monument HAs, TSS was identified as a medium to high priority in MS4 flows in the Tijuana Valley and Monument HAs, and turbidity and

dissolved copper were identified as high priorities in MS4 flows in the Tijuana Valley HA. In the TJR-MLS drainage area, common MS4 and receiving water priorities included TSS and turbidity. No wet weather MS4 data were collected upstream from TJR-TWAS-1, so no corresponding priority constituents were identified in receiving waters and MS4 flows in the TWAS drainage area.

Similarly, Table 2-5 presents the identified dry weather priority constituents with the referenced HSAs presented in Figure 2-1. Results indicated that indicator bacteria (Enterococcus), nutrients, and TDS (where applicable) were high priorities in dry weather MS4 flows in all three HAs assessed (Tijuana Valley, Cottonwood, and Campo). In the TJR-MLS drainage area, common MS4 and receiving water priorities included indicator bacteria (Enterococcus), and nutrients (total nitrogen, total phosphorus, and dissolved phosphorus). In the TJR-TWAS-1 drainage area, common priorities included indicator bacteria (Enterococcus), nutrients (total and dissolved phosphorus), and TDS.

Table 2-4 Tijuana River WMA Summary of Spatial Distribution of Priority Wet Weather Constituents

Station Type	*HA*	*HSA*	Parameter	Fecal Coliform	Biochemical Oxygen Demand	Chemical Oxygen Demand	Nitrite as N	Surfactants (MBAS)	Total Suspended Solids	Turbidity	Dissolved Phosphorus	Total Phosphorus	Total Dissolved Solids	Diazinon	Dissolved Copper	Bifenthrin	Permethrin
MS4 by HSA	*Tijuana Valley (911.10)*	*Water Tanks (911.12)*	*% > Criteria*	0% (n=2)	0% (n=1*)	0% (n=1*)	0% (n=2)	0% (n=1*)	50% (n=2)	100% (n=1*)	0% (n=1*)	0% (n=2)	NA	0% (n=1*)	100% (n=1*)	NA	NA
	Barrett Lake (911.30)	*Barrett Lake (911.30)*	*% > Criteria*	100% (n=1*)	NA	NA	0% (n=1*)	NA	0% (n=1*)	NA	NA	0% (n=1*)	0% (n=1*)	NA	NA	NA	NA
	Monument (911.40)	*Pine (911.41)*	*% > Criteria*	33% (n=3)	NA	NA	0% (n=3)	NA	67% (n=3)	NA	NA	0% (n=3)	0% (n=3)	NA	NA	NA	NA
	Cottonwood (911.60)	*Cottonwood (911.60)*	*% > Criteria*	0% (n=1*)	NA	NA	0% (n=1*)	NA	0% (n=1*)	NA	NA	0% (n=1*)	0% (n=1*)	NA	NA	NA	NA
TJR-MLS Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	0% (n=2)	0% (n=1*)	0% (n=1*)	0% (n=2)	0% (n=1*)	50% (n=2)	100% (n=1*)	0% (n=1*)	0% (n=2)	NA	0% (n=1*)	100% (n=1*)	NA	NA
			RW Score	High	High	High	Med	Med	High	High	High	High	Low	High	Low	High	High
TJR-TWAS-1 Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			RW Score	Med	Low	Low	Low	Low	Low	Med	Low	Low	High	Low	Low	Low	Low

*One station was used in the summary.

Key

High	> 50% Above benchmark
Medium	> 25% and ≤ 50% Above benchmark
Low	≤ 25% Above benchmark
NA	Not Applicable

HA – hydrologic area
HSA – hydrologic subarea
MLS – mass loading station
MS4 – municipal separate storm sewer syster
n – number of samples
RW – receiving water
TJR – Tijuana River
TWAS – temporary watershed assessment station

Table 2-5 Tijuana River WMA Summary of Spatial Distribution of Priority Dry Weather Constituents

Station Type	*HA*	*HSA*	Parameter	Enterococcus	Fecal Coliform	Ammonia as N	Surfactants	Total Suspended Solids	Turbidity	Total Nitrogen (calculated)	Dissolved Phosphorus	Total Phosphorus	Total Dissolved Solids
MS4 by HSA	*Tijuana Valley (911.10)*	*San Ysidro (911.11)*	*% > Criteria*	67% (n=3)	0% (n=3)	NA	NA	0% (n=1*)	NA	100% (n=1*)	NA	100% (n=1*)	NA
	Cottonwood (911.60)	*Cottonwood (911.60)*	*% > Criteria*	100% (n=1*)	0% (n=1*)	NA	NA	0% (n=1*)	NA	100% (n=1*)	NA	0% (n=1*)	100% (n=1*)
	Campo (911.80)	*Canyon City (911.82)*	*% > Criteria*	100% (n=1*)	0% (n=1*)	NA	NA	0% (n=1*)	NA	0% (n=1*)	100% (n=1*)	100% (n=1*)	100% (n=1*)
TJR-MLS Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	100% (n=2)	0% (n=2)	NA	NA	0% (n=2)	NA	50% (n=2)	100% (n=1)	100% (n=2)	100% (n=1)
			RW Score	High	Low	High	Med	Med	High	High	High	High	Low
TJR-TWAS-1 Summary (MS4 vs Receiving Water Comparison)			***MS4 (%) > Criteria***	100% (n=1*)	0% (n=1*)	NA	NA	0% (n=1*)	NA	0% (n=1*)	100% (n=1*)	100% (n=1*)	100% (n=1*)
			RW Score	High	Med	Low	Low	Low	Low	Low	High	High	High

*One station was used in the summary.

Key

High	> 50% Above benchmark
Medium	> 25% and ≤ 50% Above benchmark
Low	≤ 25% Above benchmark
NA	Not Applicable

HA – hydrologic area
HSA – hydrologic subarea
MLS – mass loading station
MS4 – municipal separate storm sewer system
n – number of samples
TWAS - temporary watershed assessment station

This WMA Monitoring Report is designed to answer the following five core management questions listed in Section I.B of the Receiving Waters and Urban Runoff Monitoring Program:

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?
2. What is the extent and magnitude of the current or potential receiving water problems?
3. What is the relative urban runoff contribution to the receiving water problem(s)?
4. What are the sources of urban runoff that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

In order to address the core questions, the results of the Receiving Waters and Urban Runoff Monitoring Program are categorized and assessed as follows:

To address Questions 1 and 2:

- Receiving water quality during dry and wet weather conditions are assessed separately;
- Constituents detected in receiving waters are assessed using the triad annual assessment methodology that prioritizes constituents as low, medium, or high to indicate the potential to affect beneficial uses;
- Loads are estimated to determine dry weather, wet weather, and annual loading as data availability allowed; and
- A triad decision matrix is provided in accordance with Permit requirements.

To address Questions 3 and 4:

- MS4 data for dry and wet weather conditions are assessed separately;
- Assessments summaries are presented to demonstrate common high-priority constituents in receiving water and MS4 outfalls using the annual assessment methodology; and

To address Question 5:

- Trend analyses are conducted for long-term receiving water sites at MLS locations using the annual receiving water data and historical data. Trends at TJR-MLS were analyzed using data collected from January 2002 to February 2012.

As required by the Permit, the five core management questions are addressed. Responses are based on 2011-12 Monitoring Season results. Where applicable, monitoring results are evaluated using a weight of evidence approach that includes the triad assessment of chemistry, biology and toxicity.

1. Are conditions in the receiving waters protective, or likely to be protective, of beneficial uses?

Core management question 1 is addressed using receiving water data with special emphasis placed on the triad approach, which incorporates chemistry, toxicity, and biology.

Results of the 2011–12 dry weather monitoring included the following:

- Nutrients and indicator bacteria were identified as priority constituent groups at the MLS and TWAS locations.
- Toxicity was identified as a priority constituent group at the MLS and TWAS locations. Persistent toxicity was observed at the MLS.
- TDS was identified as a priority at the TWAS location but not at the MLS.
- No chemical constituents were identified as priorities at the TWAS. At the MLS, ammonia as N, turbidity, MBAS, and TSS were identified as medium or high priorities.

- Biology, as rated by IBI scores, was Poor at the TWAS and Very Poor at the MLS.
- Conditions in the lower watershed, Tijuana Valley HA, generally indicate more impairment than in the upper watershed, Campo HA.
- ABLM Monitoring results in the Tijuana River Estuary were similar to results from previous monitoring events (Bight '08, and previous 2003-2005 ABLM studies). Final station assessments were not performed because salinity did not meet the requirements of the SQO assessment tool.

Results of the 2011-2012 wet weather monitoring included the following:

- Chemical constituents were identified as a priority constituent group at the MLS (BOD, COD, TSS, turbidity, diazinon, bifenthrin, permethrin, nitrite as N, and MBAS) and at the TWAS (turbidity).
- Indicator bacteria were identified as a priority constituent group at the MLS and TWAS locations.
- TDS was identified as a priority at the TWAS location but not at the MLS.
- Persistent toxicity was observed at the MLS. No toxicity was observed at TJR-TWAS-1.
- Nutrients were identified as a priority constituent group at the MLS but not at the TWAS.
- Similar to dry weather results, conditions in the lower watershed generally indicate more impairment than in the upper watershed.

These dry and wet weather results suggest that conditions in receiving waters may not be fully protective of applicable beneficial uses.

2. What is the extent and magnitude of the current or potential receiving water problems?

Core management question 2 is addressed through spatial analysis of results and the frequency of the results above benchmarks. The priority constituents are highlighted in response to core management question 1. The magnitude of the receiving water quality problems is assessed by evaluating the frequency of benchmark and by calculating the ratio of the measured concentration to the appropriate benchmark for the priority constituents.

The results of the evaluation for dry conditions were as follows:

- Priority constituents groups included chemical constituents, toxicity, indicator bacteria, nutrients, and TDS in one or both drainage areas within the Tijuana River WMA. Generally, less impairment is observed further upstream.
- The 2011-12 frequencies of results above benchmarks for the priority constituents were generally consistent with results from prior monitoring years, as evidenced by comparison to historical frequencies above benchmarks.
- Median ratios to benchmark (calculated from data collected during both dry weather events) were low during dry weather at the TWAS location. At the MLS, median ratios to benchmark for Enterococcus, total phosphorus, and dissolved phosphorus (36.4, 36.5, and 29.5, respectively) were elevated.
- No historical mean ratios to benchmark are available for dry weather comparisons to the 2011-12 monitoring data because three or more years of data have not been collected.

The results of the evaluation for wet conditions were as follows:

- Priority constituent groups included chemical constituents, toxicity, indicator bacteria, and TDS in one or both drainage areas in the Tijuana River WMA.

- The 2011-12 frequencies of results above benchmarks for the priority constituents were generally consistent with results from prior monitoring years, as evidenced by comparison to historical frequencies above benchmarks.
- Median ratios to benchmark were low during wet weather at the TWAS. At the MLS, median ratios to benchmark were also generally low with the exception of fecal coliform (2625), permethrin (69.0), and turbidity (20.0).
- Wet weather historical mean to benchmark ratios are available only for the MLS, because three or more years of monitoring data are available for this location. The 2011-12 median to benchmark ratios for the priority constituents were generally higher than historical ratios. Exceptions were the median ratios for MBAS, TSS, turbidity, and diazinon, which were lower than historical ratios.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core management question 3 is addressed by qualitatively assessing the relative contributions of urban runoff to the receiving water. This is accomplished by comparing the priority constituents identified at the receiving water sampling sites with those for the MS4 outfalls within the represented drainage areas.

Based on the 2011-12 monitoring season the linkages between the MS4 and receiving waters included the following:

During dry conditions:

- In the MLS and TWAS drainage areas, nutrients (total and dissolved phosphorus in both drainage areas and total nitrogen in the MLS drainage area) and indicator bacteria (Enterococcus) were identified as priorities in both receiving waters and urban runoff. DO at the MLS and TDS at the TWAS were also common priorities between receiving waters and urban runoff.
- Enterococcus, TDS, and nutrients are regional issues during dry weather.

During wet weather, linkages included the following:

- No MS4 samples were collected upstream from the TJR-TWAS location during wet weather, so direct comparisons between urban runoff and receiving waters cannot be made for that location.
- In the MLS drainage area, TSS was identified as a priority in both receiving water and urban runoff.
- The indicator bacteria fecal coliform was identified as a priority in wet weather MS4 flows outside of the MLS and TWAS drainage areas and in receiving waters at the MLS and TWAS.

The results demonstrate that several constituents are priorities in both the MS4 and receiving waters and suggest that the MS4 contributes in part to the frequency of exceedance for these analytes in receiving waters. Receiving waters are also significantly influenced by raw wastewater discharges bypassing the IBWC treatment plant.

The probability-based random monitoring program was developed to assess the data after a 5-year period. Currently, 4 of the 5 years of data for the random wet MS4 program have been collected. Therefore, this question may be answered with a higher level of confidence after completion of the five year assessment as noted in the MS4 Outfall Monitoring Workplan. The relative contribution of urban runoff to wet weather receiving water priority constituents cannot be quantitatively assessed until the remaining random MS4 samples are collected. The relative contribution of urban runoff to receiving water priority constituents for dry weather is not applicable due to the intermittent nature of dry weather flows.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core management question 4 may be partially answered through planned analysis of land use and MS4 outfall monitoring results. This analysis is planned upon completion of the 5-year MS4 outfall random monitoring program. The Jurisdictional DWM Program and trash assessment in the receiving waters during dry weather also provide some information about urban runoff sources. More detailed discussion of urban runoff sources is provided in each Copermittee's Jurisdictional Urban Runoff Monitoring Program Annual Report.

5. Are conditions in receiving waters getting better or worse?

Core management question 5 is addressed using trend analysis of constituent concentrations and toxicity results from historical wet weather monitoring conducted at the MLS.

Based on the trend analysis:

- Decreasing trends are noted for conductivity, TDS, diazinon, dissolved nickel, and dissolved zinc concentrations.
- Increasing trends are noted for Enterococcus, fecal coliform, total coliform, TSS, turbidity, nitrate as N, total arsenic, total copper, total lead, total zinc, and dissolved antimony.

The bioassessment ratings at the Tijuana River MLS and TWAS have been Poor or Very Poor in nearly all assessments conducted to date (although TJR-TWAS-1 has received ratings of Fair or close to Fair and O/E and physical habitat scores that do not indicate impairment). No trends are apparent in the benthic community.

2.2 Pollutant Source Assessment

The Permit requires the Tijuana River WMA Copermittees to identify the high priority water quality problems and identify the likely sources within the Tijuana River WMA and implement activities that will address these pollutants.

A key component of identifying sources of pollutants is knowledge of the land uses and the pollutant-generating activities associated with these specific land uses (e.g., urban and agricultural land uses can result in high levels of nutrients in runoff). The Tijuana River WMA straddles the US–Mexico border with only a quarter of its 1.1 million acres lying within San Diego County. Throughout the WMA, the predominant land use is classified as vacant and undeveloped (60% on the US side, 82% on the Mexico side). On both sides of the border, the watershed becomes less populated from west to east. The major population centers in the watershed are the cities of Tijuana and Tecate in Mexico and cities of Imperial Beach and San Diego in the US. Within the Tijuana River WMA, jurisdictional control is divided amongst the County of San Diego, City of San Diego, and the City of Imperial Beach.

The likely sources of pollutants within the Tijuana River WMA are identified in Table 2-6 below. In addition to these sources, the Weston Monitoring Report (2010) identified the likely sources of trash as being the urbanized population centers found in the lower portion of the WMA which had the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor trash ratings.

The results of the 2009-2010 monitoring programs indicate that the high frequency Constituents of Concern for wet weather are biochemical oxygen demand (BOD), total suspended solids (TSS), turbidity, total and dissolved phosphorus, oil and grease, chemical oxygen demand (COD), nitrite, methylene blue

active substance (MBAS), bifenthrin, L-cyhalothrin, and fecal coliform. During dry weather, priority constituents were ammonia, BOD, MBAS, total nitrogen, total and dissolved phosphorus, COD, turbidity, fecal coliform, and enterococci. Bifenthrin, cypermethrin, and permethrin were detected in post-storm sediment samples, suggesting a possible link between wet weather runoff and dry weather conditions.

Based on the Weston Monitoring Report, trash is also considered a Constituent of Concern in the 911.10 HA. These Constituents of Concern are also high priority water quality problems that are currently being addressed by several of the watershed activities.

Additionally, pollutants for all water bodies included on the 2010 303(d) list are considered as high priority and are listed in Table 2-7 below.

Table 2-6 Likely Sources for High Priority Pollutants

Pollutant	Potential Sources	Pollutant	Potential Sources
Bacterial Indicators	Domestic animals	Trace Metals	Automobiles
	Sewage overflow		Industrial Waste
	Septic systems	Pesticides	Agriculture
	Wildlife		Commercial landscaping
Nutrients & Oxygen	Agriculture		Residential landscaping
	Sewage overflow		Industrial waste
	Septic systems	Gross Pollutants	Commercial
Organic Compounds	Agriculture		Illegal disposal
	Commercial landscaping		Residential
	Residential landscaping	Sediment TSS/Turbidity	Agriculture
	Sewage overflow		Grading/Construction
	Septic systems		Slope Erosion

Table 2-7 Tijuana WMA Waterbodies on the 2010 Section 303(d) List

Waterbody Name	HSA	HSA No.	Pollutant/Stressor
Pacific Ocean Shoreline, ¾ mile N of Tijuana River	San Ysidro	911.11	Enterococcus, total coliform, fecal coliform
Pacific Ocean Shoreline, Monument Road	San Ysidro	911.11	Total coliform
			Fecal coliform
Pacific Ocean Shoreline, Tijuana River mouth	San Ysidro	911.11	Enterococcus, total coliform, fecal coliform
Pacific Ocean Shoreline, Seacoast Drive	San Ysidro	911.11	Total coliform
			Enterococcus and fecal coliform
Pacific Ocean Shoreline, US Border	San Ysidro	911.11	Total coliform
			Enterococcus and fecal coliform
Tijuana River	San Ysidro	911.11	Indicator bacteria
			Eutrophic, low DO, pesticides, solids, synthetic organics, trace elements, trash
			Phosphorus, sedimentation/siltation, selenium, surfactants, MBAS, nitrogen, toxicity
Tijuana River Estuary	San Ysidro	911.11	Indicator bacteria
			Eutrophic, lead, low DO, nickel, pesticides, thallium, trash, turbidity
Tecate Creek	Barrett	911.23	Selenium
Barrett Lake	Barrett Lake	911.30	Color, manganese, perchlorate, nitrogen, pH
Upper Pine Valley Creek	Pine	911.41	Turbidity
Morena Reservoir	Morena	911.50	Ammonia as nitrogen, color, manganese, pH
			Phosphorus
Cottonwood Creek	Cottonwood	911.60	Selenium

Source: SWRCB, 2010.
TMDL – total maximum daily load
DO – dissolved oxygen
MBAS – methylene blue active substances
[1] This due date was published on 2010 303(d) list; more recent public information has yet to be posted.

In addition to the regional monitoring, the Tijuana River WMA Copermittees continued several source identification studies. These projects are discussed below.

<u>County of San Diego Trash Assessment for the Upper Tijuana River WMA</u>

During FY10-11 the County of San Diego completed a trash assessment of the upper Tijuana River WMA. County staff completed assessment at ten locations in the WMA to determine if the upper watershed is a potential source of trash that enters into Mexico and ultimately to the Tijuana Estuary. This assessment was conducted in response to the San Diego RWQCB's notice of Public Workshop and CEQA Scoping meeting that occurred on January 20, 2010. The final report for the trash assessment can be viewed in Attachment 1 of this Annual Report (See Attachment 1 for TJ-036). The final report details the description of the project, the methodology and the results of the assessment.

During FY11-12 the County of San Diego completed an additional trash assessment these occurred in February and March 2012. The data from the assessment were included in an updated report (See Attachment 1 for TJ-036).

In summary the trash assessment followed the methodology of "The Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams" (SWAMP 2007). Each of the ten sites was visited twice after two rain events between January and April of 2011. The assessment included two man field teams that collected, counted and characterized trash along a 100 foot reach of the stream. Trash was also identified as being located above or below the high water line for the stream reach. All totals were recorded on tally sheets developed for the San Francisco Bay Rapid Assessment. The assessment ranked (0-120) each site based on six character categories including: 1) Level of Trash, 2) Actual Number of Trash Items found, 3) Threat to Aquatic Life, 4) Threat to Human Health, 5) Illegal Dumping and Littering, and 6) Accumulation of Trash. Based on the ranking sites were identified as to having Optimal, Sub Optimal, Marginal or Poor Conditions. Overall there was one site at Marron Valley (120) considered as Optimal, seven sites considered as Sub Optimal and two sites considered as marginal. None of the sites were considered to be in a Poor condition. However, the two marginal sites Tecate Creek and Campo Creek might be considered as having a potential negative effect in beneficial uses. Due to the limited nature of the assessment it would be difficult to make any findings regarding how this portion of the watershed contributes to downstream issues related to trash.

Imperial Beach Bacteria Source ID

In April 2008, the City of Imperial Beach was awarded a Clean Beach Initiative (CBI) grant by the State Water Resources Control Board (SWRCB). The Grant would be used to assess the potential sources of bacteria that may be impacting the Tijuana River Estuary and adjacent beaches. The resultant project was named the Tijuana River Bacterial Source Identification Study. The contract timeline for the work identified for the study was as follows:

- The SWRCB Contract for the City of Imperial Beach was awarded in February 28, 2008.
- The Contract was closed by the SWRCB due to the State-wide funding crisis on December 17, 2008.
- The Project was reopened on May 6, 2010.
- The Project end date is October 1, 2012.

The overall goal of the study was to identify sources of indicator bacteria in the Tijuana River Watershed that have the potential to impact the Tijuana River Estuary and adjacent beaches. Within this larger framework, the study had several specific objectives:

1. Identify anthropogenic sources of bacteria,
2. Identify non-anthropogenic sources of bacteria,
3. Assess annual bacteria loads into the Tijuana River,
4. Identify point and non-point sources (NPSs) of bacterial pollutants, and
5. Develop best management practices (BMPs) to reduce bacterial loads originating in from the U.S. side of the border.

To address these objectives, the project had several elements:

- Multiple Sanitary and Dry Weather Surveys,
- Wet Weather Assessments of multiple storm events,
- A Series of Special Studies (Groundwater, Goat Canyon Sediment, and Seacoast Dr. sewer line),
- BMP Concept Designs and Prioritization for urban areas in the US.

There were numerous findings from this multi-year, multi-faceted study. The final report was submitted to the State Water Board in October 2012 and the full report is available on the City of Imperial Beach's website. The major conclusions drawn from the results of the monitoring and special studies are summarized below.

- The pollution sources and their impact on the Tijuana River Estuary vary dramatically by season. During dry weather, the estuary is relatively un-impacted from the watershed, and the estuary is a healthy, vibrant and vital ecosystem. During storm events, flows from Mexico transform the estuary into a severely impacted, polluted and hazardous water body with extremely elevated bacterial concentrations and elevated potential health risk to the environment and the public.
- Extensive dry weather and sanitary surveys revealed several locations in the watershed where indicator bacterial concentrations were high, or there was evidence of human fecal contamination, but the contamination was determined to be ephemeral and not related to a consistent source (such as leaking infrastructure).
- Dry weather surveys also revealed that there is very little hydrologic connection between watershed surface waters and the estuary (with the exception of some small drainages).
- Semi-natural BMPs such as soft-bottom sediments and ponds at the base of the major sub-drainages prevent the large majority of dry weather flows from entering the estuary.
- During wet weather, approximately 99% of the indicator bacterial loads entering the Tijuana River Estuary and Pacific Ocean originate from un-diverted flows from the Tijuana River main stream and tributary channels from Mexico.
- Proactive steps to reline the sewage system along Seacoast Drive by the City of Imperial Beach appear to have eliminated a suspected source of human fecal contamination from entering the northern arm of the estuary.
- Groundwater associated with the main stream of the Tijuana River at the U.S. Mexico Border may have elevated bacterial and nutrient levels compared to relatively clean sites closest to the estuary, suggesting the groundwater may not be a likely source of bacterial contamination to the estuary. However, the presence of enterovirus at sites closest to the estuary suggest that further studies may be needed to better understand surface groundwater interactions and the potential risk to estuary surface waters from groundwater resources.
- Sediments within the Goat Canyon Sediment Basins appear to act as a reservoir for indicator bacteria that has the potential to impact receiving waters for several days if the sediment were used for beach replenishment. Further studies are needed to clarify potential impacts indicated by this initial, small-scale study.
- Based on the findings of these studies, BMPs were designed and prioritized on their ability to reduce bacterial loads and will serve as a tool for managers to reduce potential impacts to the Tijuana River Estuary.

<u>City of San Diego Bacteria Source ID studies</u>

In addition, through four studies performed by the City of San Diego (City of San Diego, 2010, Tecolote Creek Microbial Source Tracking Summary, Phases I, II, and III; City of San Diego, 2010, San Diego River Source Tracking Investigation – Phase I; and, City of San Diego, 2009, Dry Weather Bacterial Source Identification Study in the Mouth of Chollas Creek by Weston Solutions Inc.), 2010, San Diego County Enterococcus Regrowth Study by Southern California Coastal Water Research Project

(SCCWRP)), it was determined that environmental regrowth may be a potential source of bacteria. Specifically, concentrations of enterococci were found to be higher in catch basins than in runoff leading to those catch basins during both dry and wet weather, which indicates a potentially uncontrollable, non-anthropogenic source. Additionally, the presence of water within the MS4 during dry weather, which in part can be caused by irrigation runoff, was found to provide both a bacteria transport mechanism and a potential site for environmental growth of bacteria. Strains of bacteria that readily grow in the environment are typically assumed to be non-pathogenic and low risk to human health.

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SECTION 3.0 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 Watershed Water Quality Activities

This section describes the Watershed Water Quality Activities conducted by the Copermittees in FY11-12 to address the high priority water quality problems identified in the Tijuana River WMA WURMP (March 2008). Table 3-1 identifies each of the water quality activities that occurred during the reporting period and includes information pertaining to the lead jurisdiction, the hydrological area(s) impacted, and the priority pollutants targeted by each activity. Several watershed water quality activities also included an education component and are identified in Table 3-1. Progress on all watershed activities has been described in the standardized template, which clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems. For more detail on the specific activities and anticipated future activities, please refer to Attachment 1 for the Watershed Activity Summary Sheets.

During the reporting period, the Tijuana River WMA Copermittees implemented, or were actively planning, a total of 20 activities. Out of the 20 activities there were 15 Watershed Water Quality Activities, 13 of which were in an active implementation phase defined by the Municipal Permit. Watershed Water Quality Activities ranged from pet waste dispenser programs to trash cleanup events. Additionally, there were two monitoring and source characterization studies conducted during FY11-12 (see TJ-013 and TJ-036 in Attachment 1).

Table 3-1: Water Quality, Education and Land Use Activities

Activity ID	Project Name	Lead Copermittee	Other	Active Implementation (FY 11-12)	WQA	WQE	HA	High Priority Water Quality Problems									
								Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-001	Pet Waste Dispenser Program	COSD		X	X		911.2 911.4 911.5	X									X
TJ-002	Land Acquisition	COSD		X	X		All	X	X	X	X	X	X	X	X	X	X
TJ-003	ILACSD Trash Clean-Up Sponsorship	SD		X	X	X	911	X	X								
TJ-004	Coastal Clean-up Day Sponsorship	SD		X	X	X	911	X	X								
TJ-010	City-Wide Clean-Up Events	IB		X	X	X	911	X	X								
TJ-011	Large Special Event Clean-up and Inspections	IB		X	X	X	911	X	X								
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	COSD		X	X		911.1		X	X					X		
TJ-013	Tijuana River Bacteria Source Identification Study	IB	COSD, SD		X		911.1 911.2	X									
TJ-017	Invasive Species Removal Program in Tijuana River Park	COSD		X	X		911.1	X		X							
TJ-023	Tijuana River Watershed Brochure	SD		X		X	911.1 911.2	X		X	X	X	X		X		
TJ-025	Smuggler's Gulch, Pilot Channel, and Northern Channel Sediment and Debris Removal	SD			X		911		X	X					X		
TJ-026	WILDCOAST Spring Clean-Up Event; FY11-12	COSD		X	X	X	911		X								
TJ-027	Tijuana River Action Month	IB	COSD		X	X	911		X								
TJ-029	Fiesta del Rio Event	SD				X	911	X	X	X	X	X	X	X	X	X	X
TJ-030	Beyer Boulevard Trash Segregation BMP Installation	SD			X		911	X	X						X		
TJ-032	Residential Rain Barrel Subsidies and Distribution	COSD		X		X	911	X		X	X	X	X	X		X	X
TJ-034	Targeted Catch Basin Cleaning Pilot Study	SD		X	X		911	X		X		X					X
TJ-035	Rainwater Harvesting Rebate Pilot Program	SD		X	X			X	X	X	X	X	X	X	X	X	X
TJ-036	2011 Trash Assessment of the Upper Tijuana River Watershed	COSD			X		911		X								
TJ-037	Qualcomm Stadium Drop-Off Community Clean-up and Recycling Event Sponsorship	SD		X	X		911	X	X								

3.2 Watershed Education Activities

The Tijuana River WMA Copermittees recognize the need for education programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. In addition to the watershed education activities noted in Table 3-1, each of the Copermittees participated in or hosted several activities to promote watershed education as identified in Table 3-2 during FY11-12.

The County of San Diego also continues to sponsor the Project Clean Water website (www.projectcleanwater.org), which provides information pertinent to each of the watersheds in San Diego County. The Project Clean Water website was updated and as a result of the update, and there is no longer an ability to track the number of visits to individual watershed pages. During FY11-12, there were 35,299 visitors to the Project Clean Water Website.

3.3 Public Participation Activities

The Tijuana River WMA Copermittees continue to actively encourage the participation and input of diverse stakeholders in the development and implementation of the Tijuana River watershed activities. Public participation is encouraged to ensure stakeholder interests and creative solutions are considered. A number of activities, both education and water quality, are crafted to encourage public input and involvement (Table 3-1 & Table 3-2). Public participation activities included volunteer clean-up events, outreach to specific groups such as students and residents within the Tijuana River Watershed, County-wide public service announcements, and the Project Clean Water website.

In addition to the above activities, the City of San Diego's Master Stormwater System Maintenance Program and its associated Program Environmental Impact Report (PEIR), which were finalized in FY10-11, were both approved by the City and other regulatory agencies in FY12-13. The Master Storm water System Management Program authorizes the City to conduct regular maintenance activities in numerous channels throughout the City, including those in the Tijuana River Valley. The maintenance program and the PEIR included a significant public participation component.

Table 3-2 Public Participation, Education, and Outreach Activities

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
COSD	7/14/2011	Visitors – Lake Use	Lake Morena	Adult and Youth	60		X		N
COSD	7/30/2011	Pine Valley Days	Pine Valley Park	General Public, Families	250		X		N
COSD	8/15/2011	Trash – Littering	Lake Morena	Adult and Youth	2		X		N
COSD	8/16/2011	Stormwater – Fluid Leaking from RV	Lake Morena	Adult	1		X		N
COSD	9/1/2011	R1 Earth Recycling - HHW	Clover Flat Elementary	Grade 6	22	X			N
COSD	9/1/2011	R1 Earth Recycling - HHW	Clover Flat Elementary	Grade 7	22	X			N
COSD	9/1/2011	R1 Earth Recycling - HHW	Clover Flat Elementary	Grade 8	22	X			N
COSD	9/11/2011	Stormwater – Pet Waste	Lake Morena	Family	4		X		N
COSD	9/11/2011	Fiesta Del Rio	Imperial Beach	Youth	2000		X		N
COSD	9/28/2011	Trash – Littering	Lake Morena	Adult	1		X		N
COSD	9/28/2011	Green Machine	Pine Valley Elementary	Grades K-3	113	X			N
COSD	10/6/2011	Watershed Education	Mountain Empire HS	HS Students	20	X			Y
COSD	10/6/2011	Watershed Education	Mountain Empire HS	HS Students	40	X			Y
COSD	10/6/2011	Watershed Education	Mountain Empire HS	HS Students	40	X			Y
COSD	10/25/2011	Green Machine	Potrero Elementary	Grades 2 - 5	76	X			N
COSD	10/26/2011	Green Machine	Campo Elementary	Grades K - 1	102	X			N
COSD	11/10/2011	Tire Collection	TJ River Valley	Adult and Youth	N/A		X		N
COSD	11/11/2011	Tire Scoop Up	TJ River Valley	Adult and Youth	N/A		X		N
COSD	11/20/2011	Trash – Littering	Lake Morena	Adult	2		X		N
COSD	11/23/2011	Use of Dog Waste Bags	Pine Valley Park	Adult	1		X		N
COSD	11/30/2011	Tire Scoop Up	TJ River Valley	Adult and Youth	N/A		X		N
COSD	11/30/2011	R1 Earth Recycling – HHW	Clover Flat Elementary	Elementary Students	22	X			N

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
COSD	12/3/2011	Trash – Littering	Lake Morena	Youth	1	X			N
COSD	1/27/2012	Littering, Trash Clean Up	Pine Valley Park	Park Users	45		X		N
COSD	2/8/2012	Littering, Trash Clean Up	Pine Valley Park	Residents	50		X		N
COSD	2/15/2012	Mail out Letters	TJ Schools	Schools	141	X		X	N
COSD	3/12/2012	Use of Dog Waste Bags	Pine Valley Park	Adult	1		X		N
COSD	4/11/2012	Use of Dog Waste Bags	Pine Valley Park	Adult	2		X		N
COSD	5/20/2012	Littering, Trash Clean Up	Pine Valley Park	Youth	25		X		N
COSD	5/21/2012	Lake Use – Trash Littering	Lake Morena	Youth	30	X			N
COSD	5/27/2012	Littering, Trash Clean Up	Pine Valley Park	Park Users	2		X		N
COSD	6/2/2012	Volunteer Clean Up	TJ River Valley	Residents	45		X		N
COSD	6/4/2012	Use of Dog Waste Bags, Station Location	Pine Valley Park	Adult	1		X		N
COSD	6/4/2012	Stormwater – Trash	Lake Morena	Park Visitors	25		X		N
COSD	6/7/2012	Tire Collection	TJ River Valley	Adult and Youth	N/A		X		N
COSD	6/14/2012	Tire Collection	TJ River Valley	Adult and Youth	N/A		X		N
COSD	6/18/2012	Stormwater – Trash	Lake Morena	Park Visitors	20		X		N
COSD	6/19/2012	Tire Scoop Up	TJ River Valley	Adult and Youth	N/A		X		N
COSD	6/23/2012	Volunteer Clean Up	TJ River Valley	Residents	160		X		N
COSD	6/26/2012	Tire Scoop Up	TJ River Valley	Adult and Youth	N/A		X		N
COSD	6/27/2012	Tire Scoop Up	TJ River Valley	Adult and Youth	N/A		X		N
City of SD	FY 11-12	Watershed Brochure	TJ WMA	Res/Com/Ind	100	X	X	X	N
City of SD	FY11-12	Fiesta Del Rio Event	TJ WMA	Res/Com/Ind	5,000	X	X	X	N

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	10/26/2011	Annual Storm Water Training	Public Works	Public Works Employees	27	X			Y - Survey
Imperial Beach	9/7/2011	FY 2010-11 JURMP AR Public Hearing	City Hall	General Public	Unk		X		N
Imperial Beach	3/21/2012	Mayor proclamation (April as Environmental awareness month)	City Hall	General Public	Unk		X	X	N
Imperial Beach	10/5/2011	Mayor Proclamation Tijuana River Action Month	City Hall	General Public	Unk		X	X	N
Imperial Beach	3/21/2012	EDCO Quarterly Newsletter	City of Imperial Beach	Residents and Commercial Businesses - EDCO trash customers	City			X	N
Imperial Beach	3/23/2012	Environmental education by ILACSD	Mar Vista High School	High School Students	83	X	X		Y; Pre/Post Tests 34% Improvement
Imperial Beach	4/25-26/2012	IB Sports Park Environmental Activities	IB Sports Park	Students	35	X	X		
Imperial Beach	9/17/2011	Coastal Cleanup Day	Tijuana River Watershed	General Public; volunteers	200	X	X		Y 570 lbs. of trash
Imperial Beach	4/28/2012	Creek to Bay Cleanup	Tijuana River Watershed	General Public - volunteers	92	X	X		Y 187 lbs. of trash
Imperial Beach	5/5/2012	Home Front Cleanup	Mar Vista High School	General Public	714		X		Y; 148.95 tons of trash, green waste, construction material, and recyclables
Imperial Beach	4/28/2012	Citywide Garage Sale	Multiple locations	General Public - sellers	118		X		N
Imperial Beach	7/23-24/2011	U.S. Open Sandcastle Competition	Pier Plaza	General Public and street vendors	300,000	X	X		Y Street vendor inspection results (No Violations)

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	4/21, 4/28/12	Storm Drain Stenciling	Citywide	General Public	25	X	X		N
Imperial Beach	1/18/2012	FY 2010-11 WURMP AR Public Hearing	City Hall	General Public, City Council	Unk		X		N
Imperial Beach	7/6/11, 8/17/11, 2/15/12, 4/4/12, 4/18/12, 6/6/12	City Council presentations on Tijuana River (multiple topics)	City Hall	General Public, City Council	Unk	X	X		N
Imperial Beach	10/15/2011	Tijuana River Cleanup	Dairy Mart	General Public	45	X			Y
Imperial Beach	3/17/2012	Tijuana River National Estuarine Research Reserve (TRNERR) Speaker Series	TRNERR	General Public	30	X	X		N
Imperial Beach	7/9/2011	EDCO Shredding Event	Mar Vista	General Public	54	X	X		Y 1.06 tons
Imperial Beach	9/11/12	Fiesta del Rio	Pier Plaza	General Public	1000	X	X	X	N

3.4 Collaborative Land-Use Planning Efforts

To encourage collaborative planning in the watershed and implementation of the Tijuana River WURMP, the Tijuana River WMA Copermittees met formally four times during FY11-12. The meetings are a forum to discuss watershed principles and develop collaborative efforts to reduce storm water pollution in the watershed, including possibilities for collaboration in land use planning (see Table 1-1).

The Tijuana River WMA Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances.

Additionally, a number of the Tijuana River WMA Copermittees have taken an active role in the formation and participation on the Tijuana River Valley Recovery Team (Recovery Team). The Recovery Team consists of a Steering Committee made up of representatives from governmental, regulatory, and funding agencies, members of the scientific and nongovernmental organization (NGO) communities as well as affected stakeholders. The Recovery Team functions as a collaboration and information sharing body to leverage the efforts of each of the responsible agencies in performing their missions and specific projects where they further the share goals of restoring the beneficial uses of the Tijuana River Valley as outlined in the 2012 Tijuana River Valley Recovery Plan . The Recovery Team Steering Committee met a total of 15 times during the FY11-12 reporting period. Representatives of the Steering Committee also attended additional meetings hosted by the International Water Boundary Commission (IWBC), United States Army Corp of Engineers, United States Environmental Protection Agency, and the State and Municipality of Baja California and Tijuana.

Some major Recovery Team milestones during the year included:

- Completion of the Tijuana River Valley Recovery Plan ;
- Coordination of project planning information sharing with Mexican Agency representatives, and;
- Collaboration with the IWBC in preparing a Principal Engineers Report to outline the issues with the cross-border flow of sediment and gross solids and potential solutions actionable by the IBWC.

Work also continued on the State Water Resources Cleanup and Abatement Account Grant during the reporting period. The work included development of reports compiling and summarizing the historical hydrology and hydraulic studies performed within the Tijuana River Valley, LiDAR data, assessments of trash collected during cleanup activities by NGO's, and additional sediment grain size and chemical characteristics analyses. The findings and accomplishments of the grant will be summarized in the final grant report to be completed in April 2013.

The Tijuana River WMA Copermittees will continue the working relationships and coordination implemented in FY11-12 by continuing regular watershed meetings to plan and implement the Tijuana River WURMP.

3.5 Updated 5-year Strategic Plan

Development of the 5-Year Strategic Plan included the formulation of a list of activities to implement over a five-year period, and the activities were integrated into the Tijuana River WURMP in March 2008. The Regional Copermittees recognized that there would be a need to revise the 5-year plan as new activities were identified and implemented or activities were modified, updated, or completed. Table 3-3 represents the Tijuana River WMA updated 5-Year Strategic Plan and a description of changes is included below.

3.5.1 New Watershed Activities

The Tijuana River WURMP Copermittees define a new WURMP activity as one that has never been listed as a part of the 5-Year Strategic Plan. During FY11-12, there were two new water quality activities added to the Strategic Plan. Brief descriptions are provided below and additional information is included in the activity sheets located in Attachment 1.

Rainwater Harvesting Rebate Pilot Program (TJ-035)

The City of San Diego began collaboration of the Rainwater Harvesting Rebate Pilot Program in FY10-11 and started the implementation in FY11-12. The Rebate Pilot Program is open to the residents of the City of San Diego on a first come first serve basis and provides a rebate for water capture devices that are purchased and installed. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

Qualcomm Stadium Community Cleanup & Recycling Event Sponsorship (TJ-037)

The City of San Diego conducted a drop-off clean-up event in March 2012. The event was open to all City residents and targeted items like appliances, metals, junk furniture, mattresses, and tires. With trash and bacteria being high priority water quality issues in the Tijuana River Watershed, the City held the event to assist in the load reduction of trash and debris which has the potential to indirectly influence bacteria load reductions.

3.5.2 Updated Watershed Activities

During FY11-12, a total of two activities were completed from the strategic plan. Brief descriptions of these updates are provided below. Additional information is included in the activity sheets located in Attachment 1.

<u>City of Imperial Beach</u>

Tijuana River Bacterial Source Identification Study (TJ-013)

The City of Imperial Beach completed its monitoring and source identification study activity. The project was initiated in April 2008 and the overall goal of the study was to identify sources of indicator bacteria in the Tijuana River Watershed within the U.S. side of the E.S./Mexico border that have the potential to impact the Tijuana River Estuary and adjacent beaches. The study was completed during the reporting period and the report was finalized in July 2012.

County of San Diego

Pilot Trash Assessment of the Upper Tijuana River Watershed (TJ-36)

The County of San Diego completed its source identification study activity to identify potential sources of trash in the upper Tijuana River Watershed. The County of San Diego made additional site visits and updated assessment of trash during FY11-12. A final report is attached to the Activity Sheet TJ-036. Future assessments may be considered if additional funding is found for this program.

Additionally, there are two activities, summarized below, that will no longer be included in the annual report.

City of San Diego

The City of San Diego will no longer include activity sheets in the annual report for the **San Diego Strategic Plan Implementation (TJ-019)** and **TJ-033 Source Control of Copper Water Pollutants, Senate Bill 346 (TJ-033).** While TJ-019 is being implemented, the reporting of the strategic plan is no longer warranted. Projects that are being implemented in the Tijuana River Watershed based on the strategic plan will be included as their own activity sheets and incorporated in the applicable Tijuana River WURMP Annual Reports. For TJ-033, work concluded on the legislation bill, and it is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021. Therefore, TJ-033 will no longer be included in the annual report until there are applicable updates.

Table 3-3 Five-Year Strategic Plan for Tijuana River WMA

TIJUANA RIVER WATERSHED	Copermittee	Watershed Priorities: Total Metals	Sediment	Bacteria	Nutrients	Gross Pollutants	Trash	Dissolved Minerals	Pesticides	Implementation Schedule: FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14
Watershed Activities Actively Planned, Implemented or Completed through FY 12-13																
TJ-001 Pet Waste Dispenser Program County Parks	COSD			X	X					WQ	WQ	WQ	WQ	WQ	WQ	
TJ-002 Land Acquisitions	COSD	X	X	X	X		X	X	X	WQ	WQ	WQ	WQ	WQ	WQ	* Unable to predict acquisitions
TJ-003 ILCSD Trash Clean-Up Sponsorship	SD			X			X			WQ	WQ	WQ	WQ	WQ	WQ	
TJ-004 Coastal Clean-Up Day Sponsorship (updated activity sheet still pending)	SD			X			X			WQ	WQ	WQ	WQ	WQ	WQ	
TJ-005 Alpha Project for the Homeles, Inc Trash Clean-Up	SD			X			X			WQ						Completed FY07-08
TJ-006 Tijuana River Targeted Restaurant Facility Inspections	SD			X						WQ						To be covered by TJ-007
TJ-007 Tijuana Targeted Facility Inspections	SD	X								WQ	WQ	WQ	WQ			Project completed in FY10-11
TJ-008 Tijuana Targeted Facility Outreach	SD	X								WE						Not conducted in FY10-11; any future outreach will be included as part of TJ-007
TJ-009 Municipal Rainbarrel and Downspout Disconnects	SD	X	X	X	X			X	X	WQ	WQ	WQ				Completed FY09-10
TJ-010 City of IB Clean-UP Events	IB			X			X			WQ	WQ	WQ	WQ	WQ		
TJ-011 Large Special Event Inspections And Clean-Ups	IB			X			X			WQ	WQ	WQ	WQ	WQ		
TJ-012 Smugglers Gulch Sediment Removal	COSD		X							WQ		WQ	WQ	WQ	WQ	Not sure if there is funding for FY12-13
TJ-013 Tijuana River Bacterial Source Identification	IB			X						M S	M S	M S	M S	M S		Completed FY11-12
TJ-014 LID and Watershed Planning Education: Com & Sponsor Groups	COSD	X	X	X	X			X	X	WE	WE					Completed FY08-09
TJ-015 Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	SD			X			X			WE	WE	WE				PSAs will continue but after FY09-10 activity sheet will no longer be updated
TJ-016 Mobile Advertising	SD		X	X						WE						Completed FY07-08
TJ-017 Invasive Species Removal Program Tijuana River Park	COSD		X	X					X	WQ		WQ	WQ	WQ	WQ	No funding for FY12-13 - applying for funding
TJ-018 Trash and Sediment Characterization Study	COSD		X				X			S	S	S	S	S		Completed
TJ-019 SD Strategic Plan Implementation	SD	X		X		X					LU	LU	LU	LU		no longer being reported in Annual Report
TJ-021 San Ysidro Centennial Celebration	SD		X	X			X				WE PP					Not conducted in FY09-10
TJ-023 Tijuana River Watershed Brochure	SD	X	X	X	X	X	X	X	X		WE	WE	WE	WE		
TJ-024 Water Quality Monitoring in the Upper Tijuana Watershed	COSD	X	X	X	X	X		X	X		M					Completed FY08-09
TJ-025 Smuggler's Gulch, Pilot Channel, & Northern Channel Sediment & Debris Removal	SD		X			X	X					WQ	WQ	WQ		
TJ-026 WILDCOAST Spring Clean-Up Event; Effie May Trail	COSD/SD						X					WQ PP	WQ PP	WQ PP	WQ PP	Contingent upon funding
TJ-027 Tijuana River Action Month	COSD						X					WQ PP	WQ PP	WQ PP	WQ PP	Planning Activity only for FY11-12
TJ-028 Xeriscaping of Municipal Facilities	IB			X	X							WQ PP	WQ PP			Completed FY10-11
TJ-029 Fiesta del Rio Event	SD	X	X	X	X	X	X	X	X			WE	WE PP			
TJ-030 Beyer Boulevard Trash Segregation BMP Installation	SD			X		X	X					WQ	WQ			Project completed in FY10-11
TJ-031 Sweeper Speed Efficiency Study	SD			X								WQ	WQ			Completed
TJ-032 Residential Rain Barrel Subsidies & Distribution	COSD	X	X	X	X			X	X			WE WQ PP	WQ WE	WQ WE	WQ WE	Contingent on funding
TJ-033 Source Control of Copper Water Pollutants, Senate Bill 346	SD	X										WQ	WQ			No longer reported in this Annual Report
TJ-034 Targeted Catch Basin Cleaning Pilot Phase I	SD	X	X	X	X								WQ	WQ	WQ	to be implemented and assessed
TJ-035 Rainwater Harvesting Rebate Pilot Program	SD	X	X	X	X	X	X	X	X				WQ	WQ	WQ	
TJ-036 Pilot Trash Assessment of the Upper Tijuana Watershed	COSD						X						S	S		Completed FY11-12
TJ-037 Qualcomm Stadium Community Cleanup & Recycling Event Shonsorship	SD			X			X							WQ	WQ	
TJ-038 Tijuana River Recovery Team - Recovery Strategy Document	SD	X	X	X	X	X	X	X	X					LU		
Potential Future Watershed Activities																
TJ-00A San Ysidro Boulevard Green Mall Infiltration Retrofit Education and Outreach	SD															
TJ-00B Infiltration BMP retrofit	SD															
TJ-00C Inlet Bacteria Treatment BMP	SD															
TJ-00D Outdoor Water Conservation Rebate Program	SD									Project name change FY09-10						
TJ-00E Tijuana River Valley Park Trails and Habitat Enhancement Project	COSD															
TJ-00F Source Identification of Metals and Ammonia	IB															
TJ-00G San Ysidro Boulevard Green Mall	SD															

WQ = Watershed Water Quality Activity (Active Implementation)
WQ = Watershed Water Quality Activity (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)
WE = Watershed Education Activity (No WURMP Credit)
LU = Watershed-base Land Use Planning Activity
PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)
D = Watershed Data Assessment/Management Activity
O = Other Watershed Activity (No WURMP Credit)

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SECTION 4.0 EFFECTIVENESS ASSESSMENTS

This section of the report assess the effectiveness of the Copermittees collaboration efforts over the year, the overall effectiveness of targeting specific water quality problems, and the collective impacts made towards reducing pollutant loads and improving receiving water quality. Table 4-1 provides a complete list and assessment measures for all the water quality and education activities conducted during the reporting period.

4.1 Assessment of Overall WURMP Effectiveness

Conducting effectiveness assessments on water quality and education activities is an integral part of the WURMP implementation process and allows the Copermittees to further plan, adapt, and improve the collective watershed strategy. This section of the report assesses the overall effectiveness of the WURMP in relation to the following four key program components:

1. Collaboration among Tijuana River Watershed Copermittees.
2. Effectiveness of WURMP activities on addressing water quality problems and sources.
3. Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.
4. Assessment of measureable targeted outcomes.

4.1.1 Collaboration among the Tijuana River Watershed Copermittees.

The Tijuana River Watershed Copermittees collaborate and work together to implement the collective watershed management strategy outlined in the Tijuana River WURMP. These collaborative efforts have led to the successful implementation of a number of watershed and education-based activities in the WMA and contribute to effective partnership collaboration in other Tijuana River Stakeholder groups active in the WMA. The Tijuana River Watershed Copermittees collaborate together through the WURMP to collectively plan and implement watershed activities that specifically address the contribution of local storm water pollution from urban runoff. While local runoff from the Copermittees is an important issue to manage, the largest impact on the WMA is the contribution of cross border pollution which affects a much larger group of stakeholders and requires a larger effort outside the scope of the WURMP group. The Copermittees actively participate in multiple stakeholder efforts in the WMA to cleanup and restore the natural environment and improve water quality. These additional efforts by the Copermittees represent a significant level of commitment above and beyond the requirements in the WURMP and include active participation of the Copermittees in the following groups: the U.S. EPA Border 2020 Program, Tijuana River Recovery Team, Tijuana River National Estuarine Research Reserve Advisory Council, Tijuana River Action Network, International Boundary and Water Commission Citizen's Forum, and City of Imperial Beach's Bacteria Source Identification Study Stakeholder Group.

Copermittee collaboration on bi-national sources of pollution are best being addressed by the through the development and implementation of activities in the EPA Border 2020 Program and Tijuana River Valley Recovery Team. Significant improvements to water quality continue to be implemented or planned through both organizations. This year the EPA Border 2012 Program officially launched the Border 2020 Program that continues to build upon the successes and expands the efforts to address many environmental issues along the border region. The Tijuana River Recovery Team also completed a major planning document this past year entitled the RECOVERY STRATEGY Living with the Water (2012),

which is reported as watershed activity TJ-038. Each of the Copermittees and other participating agencies in the river valley are committed to the success of the Recovery Strategy and will continue to collaborate in good faith over the next reporting period to implement projects on the ground. The involvement of Copermittees in the efforts of both the Recovery Team and the Border 2020 Program demonstrates the benefits of collaborative partnerships that go beyond the scope of the WURMP.

The cleanup and restoration of the river valley and estuary is another important task for the Copermittees that is overseen by the TRNERR Advisory Council. Each Copermittee's jurisdiction holds a seat at the Advisory Council, which oversees the management and restoration of the ecosystem services within the Tijuana River Valley and Estuary. In addition, the Copermittees participated in the quarterly stakeholder meetings for the City of Imperial Beach's Bacteria Source Identification Study, which was completed this past year. The results from the Bacteria study have provided a greater understanding of the sources and load contributions of bacteria into the river and should contribute to the planning and development of new water quality activities for the WMA.

Collaboration efforts over the reporting period by the Tijuana River Watershed Copermittees represents a significant level of commitment by each jurisdiction and highlights the importance of the collaborative approach to solving the multiple issues present in this WMA. A summary of the collaboration efforts over the reporting period is presented below.

- WURMP Group Meetings – Met four times during the reporting period,
- Border 2012 – Successful transition to the new Border 2020 Program that specifically identifies the need for projects in the Tijuana River Watershed,
- Tijuana River Valley Recovery Team – The steering committee, which includes the Copermittees, met multiple times in development of the successful release of the 2012 Tijuana River Recovery Strategy.
- TRNERR Advisory Council – Met four times during the reporting period and continue to be a forum for public involvement.
- Tijuana River Bacterial Source Identification Study group – Met three times during the reporting period and successfully completed the project.
- International Boundary and Water Commission Citizen's Form – Met quarterly and provided opportunities to involve the public on issues related to beach closures and border sewage infrastructure.
- Tijuana River Action Network – Provided a forum for discussion with local non-profit groups to discuss and plan cleanup activities in the Tijuana River Valley. The activities for Tijuana River Action Month (TJ-027) are coordinated through this group.

4.1.2 Effectiveness of WURMP Activities on addressing water quality problems and sources.

Watershed activities in the WURMP focus on storm water management of high priority pollutant sources and practices that jurisdictions have the ability to affect and control. The Tijuana River, Estuary, and adjacent coastline are impaired by a multitude of water quality problems and pollutant sources, many of which are outside the control of local jurisdictions and require bi-national collaboration in the WMA as illustrated in the results from the Bacteria Source Identification Study (TJ-013). The Copermittees identified trash, bacteria, and sediment as important target pollutants for the WMA and important to

jurisdictional storm water programs because these pollutants present an immediate downstream threat to habitat in the Estuary and public health along the beach. Trash and sediment are also the target pollutants of the Regional Board lead effort through the Tijuana River Recovery Team while bacteria is a major focus in the EPA Border 2020 Program.

During the current reporting period, the Copermittees actively engaged in 20 water quality and education activities in the WMA. All of the activities this reporting period effectively targeted the high priority pollutants of trash, bacteria, or sediment in the WMA. Many of the activities addressed multiple pollutants or other non-priority pollutants in the WMA. Table 4-1 identifies each of the water quality and water education activities that were in active planning or implementation during the reporting period. Though more could always be done with additional resources and funding, the current distribution of watershed activities, are effectively addressing the likely sources of pollutants from the MS4, and in many cases contribute to the larger effort of restoring the Tijuana River Valley and managing the effects of cross-border pollution. The volunteer efforts made to clean up and restore the Tijuana River Valley highlight the level of community activism motivated to bring about a positive change to the WMA (see Activity Sheets TJ-003, TJ-004, TJ-017, TJ-026, and TJ-027).

4.1.3 Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.

The Tijuana River WMA is divided into eight Hydrologic Areas. Water quality and education activities are implemented throughout all HAs; however, water quality activities are primarily focused in the Tijuana River Valley HA (911.1), where the water quality problems are most numerous and significant. Table 4-1 identifies the HA location for each activity, the priority pollutants for each activity, and the improvements made to water quality during the reporting period through any source load reductions. Detailed information on the implementation and assessment for each watershed activity is provided in Activity Sheets in Attachment 1.

During the reporting period, there were a total of 21 activities in some form of implementation in the WMA. The water quality and education activities are identified in Table 4-1. In total, 12 activities focused on water quality, 2 activities focused on education, and 7 activities focused on both education and water quality. These activities addressed several pollutants in the Tijuana River Watershed, including the priority pollutants of bacteria, trash, and sediment. Load reductions or source abatements were also achieved in 12 of the watershed activities (TJ-001, TJ-002, TJ-003, TJ-004, TJ-010, TJ-011, TJ-012, TJ-025, TJ-026, TJ-027, TJ-034, and TJ-037) through actions such as community cleanup events and sediment removal. Two notable activities (TJ-012 and TJ-025) removed 20,000cy of sediment, 40cy of trash, and 220 tires from Smugglers Gulch. Tijuana River Action Month activities (TJ-027) also had 4,178 participants that removed 31.7 tons of trash, 351 tires from the river valley, planted 1,230 plants, and restored 8.25 acres of habitat. These watershed activities had a positive effect on reducing pollutant loads and urban runoff discharge quality in the WMA and raised public awareness on the issues in the watershed.

4.1.4 Assessment of measureable targeted outcomes.

The Copermittees used the six levels of hierarchical analysis identified in the 2003 Framework for Effectiveness Assessment to demonstrate the WMA level benefits from WURMP activity

implementation. These outcome levels are used as a tool for linking the relationship of watershed activity implementation to ultimate changes in water quality. The Copermittees believe they have successfully met outcome level 1 permit-based requirements for the Tijuana River WURMP and achieved outcome level benefits of 2, 3, and 4 in the WMA from successfully implementing water quality and education activities. Table 4-1 provides a column that identifies the targeted outcome level achieved by each watershed activity. The targeted outcome for each activity is further described in the Activity Summary sheets in Attachment 1. While these outcome levels are a useful tool for assessing the individual benefit of each WURMP activity, realizing and reporting actual changes in receiving water quality is best applied through the Long-term Effectiveness Assessment process.

4.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs within the Tijuana River WMA.

Table 4-1 Water Quality and Education Activities in Tijuana River WMA

Activity		HA	Activity Type	Priority Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-001	Pet Waste Dispenser Program	911.2 911.4 911.5	Water Quality	Bacteria	4	Maintained 12 pet waste bag dispensers at 3 different County parks.
TJ-002	TJWMA Land Acquisition	All	Water Quality	All	4	40.74 acres were acquired.
TJ-003	ILACSD Trash Clean-Up Sponsorship	911.1	Water Quality & Education	Bacteria, Trash	1, 4	175 participants, 4,000 lbs. of trash and debris removed/recycled
TJ-004	SD Coastkeeper Trash Clean-up Sponsorship	911.1	Water Quality & Education	Bacteria, Trash	1, 4	32 participants, 1,120lbs of trash & debris removed 5000 lbs. of trash & debris recycled
TJ-010	City-Wide Clean-Up Events	911.1	Water Quality	Bacteria, Trash	1, 2, 4	753 participants, 148.95 tons of material collected.
TJ-011	Large Special Events Inspection and Clean-Ups	911.1	Water Quality & Education	Bacteria, Trash	1, 4	Enhanced BMPs at 12 special events US Open Sandcastle Event: 5,210 lbs. Recycled 6.39 tons trash
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	911	Water Quality	Bacteria, Trash, Sediment	1, 4	7,000 cy sediment removed 40cy trash removed 220 tires removed
TJ-013	Tijuana River Bacteria Source Identification Study	911.1 911.2	Water Quality	Bacteria	1	Final Report Submitted
TJ-017	Invasive Species Removal Program in Tijuana River Park	911	Water Quality	Bacteria, Sediment, Pesticides	1	Participated in the TAG 5.0 acres of invasive species treated.
TJ-023	Tijuana River Watershed Brochure FY11	911.1 911.2	Education	All	1	Distributed brochures to educate residents about pollutants and BMPs specific to the Tijuana River WMA.
TJ-025	Smuggler's Gulch, Pilot Channel and North Channel Sediment and Debris Removal	911	Water Quality	Sediment, Trash	1, 4	13,000 cy during FY 2011 and proposed work for FY 2012

Activity		HA	Activity Type	Priority Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-026	WildCoast Spring Clean-Up	911.11	Water Quality & Education	Trash	1,4	2 events 205 people 13.28 tons trash 139 tires
TJ-027	Tijuana River Action Month	911.11	Water Quality & Education	Trash	1,4	4,197 people 63,476 pounds of trash 351 tires 1,230 plants 8.25 acres restored
TJ-029	Fiesta Del Rio	911.1	Education	Bacteria, Sediment, Metals	1, 2, 3	5,000 participants 84 surveys administered; 94% litter has an impact on local waterways; 96% obligations not to litter
TJ-030	Beyer Boulevard Trash Segregation BMP Installation	911.1	Water Quality	Bacteria, Gross Pollutants	1	BMP's lacked the capacity needed to quantify the level of maintenance desired by city O&M. Due to large drainage areas, typical of street drainage, the pilot showed maintenance required in excess of 4 times per year. Effectiveness and efficiency, determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts are deemed insufficient to meet city goals.
TJ-032	Residential Rain Barrel Subsidies & Distribution	All	Water Quality & Education	All	1	Surveys completed regarding use and maintenance.

Activity		HA	Activity Type	Priority Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-034	Targeted Catch Basin Cleaning Pilot Study	911.11	Water Quality	Bacteria, Metals, Nutrients, Sediment	1,4	Results of the monitoring efforts for catch basin cleaning in four areas with different land use patterns, catch basin configurations, and cleaning methods show variations in amounts of materials and concentrations of analytes collected in each area and over time. The observations suggest overarching patterns and provide baseline information for ongoing monitoring and analysis. Because the samples were not sufficiently replicated, it is not possible to attribute statistical significance to any of the observed differences among treatments (area, timing, frequency, method, or catch basin configuration).
TJ-035	Rainwater Harvesting Rebate Pilot Program	All	Water Quality	Bacteria	1	The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for potable water to irrigate landscaping. Reduction in runoff can be achieved with the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants
TJ-036	Trash Assessment for the Upper Tijuana River WMA	All	Water Quality	Trash	1	Conducted an additional assessment of trash in upper reaches of the WMA
TJ-037	Qualcomm Stadium Drop-off Community Cleanup and Recycling Event Sponsorship	911	Water Quality	Trash	4	112,000 lbs. of metals, appliances, junk furniture and mattresses. Disposed 68,000 lbs. Recycled 44,000 lbs.
TJ-038	Recovery Strategy	911	Water Quality	Trash, Sediment	1	Completed a Recovery Strategy for the Tijuana River including goals to reduce trash & sediment.

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SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

During the reporting period the Tijuana River WMA Copermittees continued to implement and improve the Tijuana River WURMP following the 5-Year Watershed Strategy developed and submitted to the RWQCB in March of 2008. Much of the year was spent collaborating with the other Tijuana River WMA Copermittees to develop and further refine the strategy for implementing watershed activities in compliance with the Municipal Permit. The Copermittees also collaborated on other local, regional, and bi-national stakeholder groups during the reporting period to more effectively address critical issues in the watershed with other governmental agencies, non-profits, and members of the public. These collaborative efforts represent significant steps towards improving the water quality within the Tijuana River WMA for the benefit of residents and wildlife alike.

The Tijuana River Watershed Management Area (WMA) is monitored in accordance with the Receiving Waters and Urban Runoff Monitoring Program per the San Diego Regional Water Quality Control Board Order R9-2007-0001 (Permit). Water quality samples are also collected through special studies like the Bacteria Source Identification Study (TJ-013) and 3rd party data from groups like Coastkeeper. The results from the 2011-12 monitoring season continue to indicate the high priority pollutants of trash, sediment and bacteria during the wet season as a significant threat to the WMA. The water quality monitoring results over the past year are further discussed in Section 2.0.

The Tijuana River WMA Copermittees met four times during the year to implement and further refine the collective watershed strategy to address the high priority pollutants in the WMA. Collaboration on Watershed Water Quality Activities, Watershed Education Activities, and Public Participation, Education, and Outreach Activities are major components of the collective strategy. Tables 3-1 and 3-2 in Section 3.0 identify the watershed activities and information pertaining to the lead jurisdiction, the hydrologic area(s), and priority pollutants for each activity. The Copermittees believe these watershed activities are effective at targeting the high priority pollutants originating from the MS4 and contribute to the larger efforts to address other sources of pollutants in the WMA.

During the reporting period, the Copermittees actively engaged in 21 water quality and education activities, with the majority of activities focusing on trash, bacteria, or sediment. Many of the activities addressed multiple pollutants or other lesser priority pollutants in the WMA. The water quality and education activities are discussed in Section 3.0. In total, 12 activities focused on water quality, 2 activities focused on education, and 7 activities focused on both education and water quality. These activities addressed several of the priority pollutants in the Tijuana River WMA including bacteria, trash, sediment, pesticides, metals, and gross pollutants. The Tijuana River Copermittees also implemented a total of 68 Public Participation, Education, and Outreach Activities that reached an estimated audience of approximately 311,000 people. During the next fiscal year, the Copermittees will continue to collaborate and plan targeted watershed activities, and further develop programs in order to maximize benefits to water quality.

5.2 Recommendations

The municipal permit was adopted in 2007 by the Regional Board with a cycle of five years. The Regional Copermittees are moving towards an adaptive management process in all watersheds and also working towards integrating the various regulatory programs into a single program for efficiency. This new approach has been supported by the Regional Board and proposed in the new tentative municipal permit through the development of Water Quality Improvement Plans (WQIP). Many programmatic changes are anticipated with the adoption of a new municipal permit but until that time the Tijuana River Watershed Copermittees will continue to implement the Tijuana River WURMP and collaborate with additional watershed groups like the Tijuana River Valley Recovery Team to collectively address the unique challenges in this watershed and further develop Tijuana River WURMP watershed strategy.

SECTION 6.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region. 2007, Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District and the San Diego County Regional Airport Authority

County of San Diego, 2008, Tijuana River Watershed Urban Runoff Management Plan, March 2008.

Weston Solutions, Larry Walker Associates and Mikhail Ogawa Engineering, 2005, Baseline Long-Term Effectiveness Assessment (BLTEA), San Diego Stormwater Copermittees Jurisdictional Urban Runoff Management Program, August 2005.

Weston Solutions, 2011, San Diego County Municipal Copermittees 2011-2012 Urban Runoff Monitoring Report, Prepared for County of San Diego, January 2013.

Tijuana River Valley Recovery Team. 2012. Recovery Strategy: Living with the Water. San Diego, California. November 2011, Revised March 2012.

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ATTACHMENT 1

FY2010-11

ACTIVITY SHEETS FOR THE

TIJUANA RIVER WMA

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TITLE: PET WASTE BAG DISPENSER PROGRAM IN COUNTY PARKS
ID #: TJ-001

ACTIVITY DESCRIPTION

The County of San Diego provides pet waste bag dispensers at County parks. The County installs, maintains, and inventories pet waste dispensers in its parks throughout the year. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to clean up after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients.

The County's jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

FY 2007-08 ACTIVITY IMPLEMENTATION

During the FY 2007-08 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

FY 2008-09 ACTIVITY IMPLEMENTATION

During the FY09-10 reporting period the County of San Diego maintained 12 dispenser stations at three parks within the Tijuana River Watershed.

FY 2009-10 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2009-10. During this reporting period the County of San Diego continued to maintain 12 dispenser stations at three parks in the Tijuana River Watershed.

FY 2010-11 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2010-11. During this reporting period the County of San Diego continued to maintain 12 dispenser stations at three parks in the Tijuana River Watershed.

FY2011-12 ACTIVITY IMPLEMENTATION

No additional stations were added in FY 2010-11. During this reporting period the County of San Diego continued to maintain 12 dispenser stations at three parks in the Tijuana River Watershed. The parks and the number of dispensers include:

1. Lake Morena Park (4 dispensers)
2. Pine Valley Park (2 dispensers)
3. Potrero Park (6 dispensers)

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

Maintenance of existing pet waste dispensers - Ongoing
Addition of new dispensers in County parks - Ongoing

LEAD WATERSHED COPERMITTEE

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Tijuana River Watershed. Parks have been identified as potential sources of these pollutants. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

As described in the table below, activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County's dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

Table 1

Facility Name	# of Stations	# of Bags Used	Waste Reduction Lbs.
Lake Morena	4	10,760	2,152
Pine Valley	2	6,840	1,368
Potrero	6	18,500	3,700
Total	**12**	**36,100**	**7,200**

TITLE: LAND ACQUISITIONS FOR TIJUANA RIVER WMA
ID #: TJ-002

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. The County of San Diego has adopted an MSCP for the southwestern portion of the County. MSCP plans for the Northern and Eastern portion of the County are in the planning stages. It is expected that the Northern Subarea Plan may be approved during the lifetime of the current stormwater permit. While the northern and eastern plan have yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

ACTIVITY IMPLEMENTATION FY2007-08

During the FY2007-08 reporting period there was 5.52 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2008-09

During the FY2008-09 reporting period there was 113.39 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2009-10

During the FY2008-09 reporting period there was 187.00 acres of land acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2010-11

During the FY2010-11 reporting period there were no lands acquired in the Tijuana River WMA.

ACTIVITY IMPLEMENTATION FY2011-12

During the FY2008-09 reporting period there was 187.00 acres of land acquired in the Tijuana River WMA.

Table 1: FY 2011-12 Land Acquisitions for Tijuana River Watershed

Property	Acres	Date	Watershed ID	APN(S)
Pine Valley	17.54	Dec 2012	911.41	410-060-34
Pine Valley	20.70	Dec 2012	911.41	410-120-19
Pine Valley	2.50	Dec 2012	911.41	410-120-39
TOTAL	**40.74**			

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis. It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions. The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

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TITLE: I LOVE A CLEAN SAN DIEGO TRASH SPONSORSHIP
ID #: TJ-003

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The ILACSD Creek to Bay Cleanup occurred on April 28, 2012. The City of San Diego (City) sponsored the San Ysidro – Beyer Blvd. Trolley Station site in the Tijuana River Watershed Management Area (WMA). Approximately 175 volunteers removed 4,000 pounds of trash and debris in a 4.5-mile area.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

The Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Tijuana River WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- Not Applicable

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River WMA identify trash and bacteria as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome(s)

1) Achieve load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

- Pounds of trash removed (Outcome Level 4): 4,000 lbs
- Pounds of trash recycled (Outcome Level 4): 0 lbs
- Total pounds of trash removed and recycled (Outcome Level 4): 4,000 lbs
- Number of participants (Outcome Level 1): 175
- Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $15,000
- Estimated amount of money spent on cleanups for the Tijuana River watershed (Outcome Level 1): $2,500
- Efficiency (Total Cost/Total Pounds Removed): $0.63/lb

Expected Benefits

Sponsorship of the Creek to Bay Cleanup will result in load reduction of trash and debris directly and of bacteria indirectly.

Analysis Results

At the event, 175 participants removed 4,000 pounds of trash and debris. The average estimated sponsorship cost was $2,500 per watershed; thus, there was a 4,000 pound load reduction and an efficiency of $0.63 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Tijuana River WMA by the total pounds of trash removed and recycled

Conclusions

This trash cleanup activity fulfills a watershed water quality activity for FY2012 because this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 4,000 pounds of trash removed and recycled during the reporting period. Implementation and assessment of load reduction and efficiency for the cleanup sponsorship will occur again in FY 2013.

TITLE: COASTAL CLEANUP DAY SPONSORSHIP
ID #: TJ-004

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper (SDCK) and I Love A Clean San Diego (ILACSD) conduct the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. They recruited and organized site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK and ILACSD staff to ensure that sites within the Tijuana River WMA are included in the list of cleanups.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- Not Applicable

OTHER PARTICIPATING ENTITIES

- I Love A Clean San Diego
- San Diego Coastkeeper
- Volunteers from the general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for the Tijuana River WMA identify trash and bacteria as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address it.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with the sponsorship?
2) What is the efficiency of the trash cleanup? ($/pound collected)

Targeted Measurable Outcome

1) Achieve load reduction due to reduction of trash (any amount) from the trash cleanup sponsorship.

Assessment Method(s)

1) Tabulation (e.g., number of participants)
2) Quantification (e.g., pounds of trash collected)

Data Recorded

- Pounds of trash removed (Outcome Level 4): 4,040 lbs.
- Pounds of trash recycled (Outcome Level 4): 2,295 lbs.
- Total pounds of trash removed and recycled (Outcome Level 4): 6,335 lbs.
- Number of participants (Outcome Level 1): 65
- Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $15,000
- Estimated amount of money spent on cleanups for the Tijuana River WMA (Outcome Level 1): $2,500
- Activity Efficiency (Total Cost/Total Pounds of Trash Removed and Recycled): $0.39/lbs.

TITLE: CITYWIDE CLEAN-UP EVENTS
ID #: TJ-010

ACTIVITY DESCRIPTION

Imperial Beach participates in a number of citywide sponsored cleanup events including ILACSD Creek to Bay Cleanup, local community group sponsored events, and the annual Homefront Cleanup event. The largest event in terms of participation is the annual Homefront Cleanup, which the City has been implementing since the 2001-01 municipal permit. These annual citywide activities serve both as an encouragement and a means for residents to eliminate waste that could otherwise contribute the release of contaminates into the storm water conveyance system.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

As funding permits.

LEAD WATERSHED COPERMITTEE

- City of Imperial Beach

OTHER PARTICIPATING COPERMITTEES

- N/A

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria & Pathogens
- Metals
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria is identified as a priority water quality problem in the Tijuana WMA. The accumulation of waste by residents such as trash, green waste, and large bulky items are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1, Level 2, and Level 4 compliance with activity based permit requirements. Community wide cleanup events raise awareness of the connectivity of trash, urban runoff, storm drain systems, and receiving waters. During the year Imperial Beach sponsored I Love a Clean San Diego for its Annual Creek to-Bay clean up event. The annual Creek to Bay cleanup engages the community through public participation and increases awareness on the connectivity of the receiving waters to the urban environment. Assessments are also made across the region on the level of participation and characteristics of the waste collected.

The City and EDCO also held the annual Homefront clean up event, which allows residents to dispose large trash items, recyclables, and other items that can not be disposed in the trash.

Effectiveness for both events can be measured in part by calculating the amount of trash and other pollutants removed.

TITLE: LARGE SPECIAL EVENT INSPECTION AND CLEAN-UP
ID #: TJ-011

ACTIVITY DESCRIPTION

The City hosts the annual U.S Open Sandcastle Competition that draws close to one million visitors to Imperial Beach in the month of July. The City also hosts additional special events during the year that draw a large number of visitors to the City. Along with the visitors are a number of mobile businesses, food venders, and increased volume of trash that can potentially contribute to the problem of urban runoff. Starting in 2008 the City enhanced its special event application process to further target urban runoff and recycling during the planning and implementation stages for the special event. Program enhancements include providing storm water education for street vendors, providing education for the general public whenever possible, and inspections of street venders for storm water violations. The City also enhanced its recycling and trash collection service for the Annual U.S. Open Sandcastle Competition and July 4th fireworks.

TMDL APPLICABILITY

This activity is not specifically targeted for TMDLs in the Tijuana WMA.

TIME SCHEDULE FOR IMPLEMENTATION

N/A

LEAD WATERSHED COPERMITTEE

- City of Imperial Beach

OTHER PARTICIPATING COPERMITTEES

- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria & Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana WMA. The increased number of visitors, larger volumes of waste, and water quality threat from mobile food vendors during large special events are potential sources of bacteria and urban runoff pollution. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

During FY 2012, the City required the proper disposal of recycled waste at all special events and the implementation of storm water BMPs when appropriate. The City held 12 special events requiring conditions for storm water BMPs and recycling from the Public Works Department. The largest of these events was the annual U.S. Open Sandcastle Competition.

The U.S. Open Sandcastle Competition was held during the weekend of July 21st-24th and drew an estimated crowd of 300,000 visitors to the beach. In preparation for the U.S. Open Sandcastle event the City provided additional storm water BMP information to all street vendors before the event and then followed up with storm water inspections during the event to ensure the implementation of the BMPs. Most street venders were aware of the storm water requirements and were implementing proper storm water BMPs. Vendors not implementing proper BMPs were cited and provided further information to correct behavior.

The City also enhanced its recycling efforts at the Sand Castle Competition by sponsoring a local Baptist Church group who worked with the City to enhance its recycling program implementation during the event. The recycling efforts resulted in the collection of 2.13 tons of mixed recyclables, 950 pounds of cardboard, and 6.39 tons of trash.

TITLE: SMUGGLER'S GULCH SEDIMENT AND DEBRIS REMOVAL
ID #: TJ-012

ACTIVITY DESCRIPTION

The County performs routine flood control maintenance activities on improved and unimproved channels pursuant to its Regional General Permit (RGP) 53. This activity is traditionally performed every two to four years depending on annual rainfall. The extent of the project includes the channel from the Mexican border, north approximately 5,400 feet to the confluence of the Tijuana River. Historically as much as 80,000 cubic yards of sediment can be removed from the channel. Trash is separated on site and recycled accordingly.

The sediment removal project is necessary to return the drainage facility to historic conditions and to convey flow properly, which will eliminate the potential for sediment and debris to build up causing future flooding events.

ACTIVITY IMPLEMENTATION 2007-08

There were no sediment and debris removal during the FY2007-08.

ACTIVITY IMPLEMENTATION 2008-09

There were no sediment and debris removal during the FY2008-09.

ACTIVITY IMPLEMENTATION 2009-10

During FY09-10 County Parks removed 18,000 cubic yards of sediment, 40 cubic yards of trash, and 200 tires from Smuggler's Gulch. The dredging occurred from Monument Road south to the boundary of Federal property. All sediment was recycled as construction aggregate, while the trash and tires were disposed of as appropriate.

ACTIVITY IMPLEMENTATION 2010-11

During FY10-11County Parks removed 12,000 cubic yards of sediment, 40 cubic yards of trash, and 250 tires from Smuggler's Gulch. The dredging occurred from Monument Road south to the boundary of Federal property. All sediment was recycled as construction aggregate, while the trash and tires were disposed of as appropriate.

ACTIVITY IMPLEMENTATION 2011-12

During FY11-12 County Parks removed 7,000 cubic yards of sediment, 40 cubic yards of trash, and 220 tires from Smuggler's Gulch. The dredging occurred from Monument Road south to the boundary of Federal property. All sediment was recycled as construction aggregate, while the trash and tires were disposed of as appropriate.

TMDL APPLICABILITY

N/A.

TIME SCHEDULE FOR IMPLEMENTATION

Typically removal takes place every other year but is dependent on precipitation patterns, intensity of precipitation, and funding.

FY10-11: Removal occurred during the period of December 2010 and February 2011
FY11-12: Removal occurred from September 15, 2011 through March 15, 2012
FY12-13: Currently no funding is available beyond the current FY.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- California Department of Fish and Game
- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria & Pathogens
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment and trash have been identified as high priority water quality problems in the Tijuana River WMA. This activity results in a direct load reduction of these pollutants, and is therefore consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

This activity is considered a load reduction that can be measured. As reported above, 7,000 cubic yards of sediment, 40 cubic yards of trash, and 220 tires were removed from Smuggler's Gulch during FY 2011-12.

TITLE: TIJUANA RIVER WATERSHED BACTERIAL SOURCE IDENTIFICATION STUDY

ID #: TJ-013

ACTIVITY DESCRIPTION

The City of Imperial Beach initiated a Bacteria Source Identification study in November 2007 to identify and quantify sources of bacterial contamination in the U.S. portion of the Tijuana River Watershed. The project was put on hold between December 15, 2008 and February 1, 2010 due to budgetary constraints in the State of California. Funding for the project was reinstated and the study was completed in the summer of 2012. The goals of the study include the following:

1) Identify anthropogenic sources of bacteria;
2) Identify non-anthropogenic sources of bacteria;
3) Assess annual bacteria loads into the Tijuana River;
4) Identify point sources (PSs) and non-point sources (NPSs) of bacterial pollutants; and
5) Better understand mitigation strategies aimed at the reduction of bacteria loads and impacts on receiving waters.

The project uses standard culturing of fecal indicator bacteria and molecular tests (including the presence of Bacteroides as an indicator of recent human fecal pollution) to assess the presence of fecal indicator bacteria within the watershed during both dry weather and wet weather to identify point source and nonpoint sources of elevated bacteria concentrations, which may lead to beach postings at adjacent recreational beaches. Specific assessments focus on areas such as residential, commercial, agricultural and ranches, and groundwater transport as well as sewage flows from Mexico.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically part of a TMDL compliance program. The Tijuana River and Estuary is listed for bacteria and may eventually have a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Work on the project completed this reporting period and the final report was submitted to the State Water Board in September 2012. The Executive Summary is included as an attachment to this report (Appendix 1).

LEAD WATERSHED COPERMITTEE

- City of Imperial Beach

OTHER PARTICIPATING COPERMITTEES

- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- State Water Resources Control Board
- Clean Beaches Initiative Task Force
- Regional Water Quality Control Board, San Diego
- U.S. Fish and Wildlife Service

- International Boundary and Water Commission (IBWC)
- California Department of Fish and Game
- Private land owners
- Conservation groups
- NGOs
- National Oceanic and Atmospheric Administration (NOAA)
- Tijuana River National Estuarine Research Reserve (TRNERR)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria are identified as a priority water quality problem in the Tijuana River Watershed. Trash, parks, and pet waste are potential sources of bacteria. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

The effectiveness of this project meets the requirements of Outcome Level 1 compliance with activity based permit requirements. Information gained from this study will help in developing other programs or specific BMPs that will further address changes in knowledge and behavior, load reductions, and improvements to water quality.

Appendix 1

Tijuana River Bacterial Source Identification Study

Executive Summary

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EXECUTIVE SUMMARY

In April 2008, the City of Imperial Beach (City) was awarded a Clean Beach Initiative (CBI) grant by the State Water Resources Control Board (SWRCB) (Grant Program Agreement No. 07-584-550-0) to assess the potential sources of indicator bacteria on the United States (U.S.) side of the Tijuana River Watershed that may be impacting the Tijuana River Estuary and adjacent beaches. The resultant project was named the *Tijuana River Bacterial Source Identification Study*. The contract timeline for the work identified for the study was as follows:

- The SWRCB Contract for the City of Imperial Beach was awarded in February 28, 2008.
- The Contract was closed by the SWRCB due to the State-wide funding crisis on December 17, 2008.
- The Project was reopened on May 6, 2010.
- The Project end date is October 1, 2012.

Study Objectives

The overall goal of the study was to identify sources of indicator bacteria in the Tijuana River Watershed within the U.S. side of the U.S./Mexico border that have the potential to impact the Tijuana River Estuary and adjacent beaches. Within this larger framework, the study had several specific objectives:

1. Identify anthropogenic sources of bacteria,
2. Identify non-anthropogenic sources of bacteria,
3. Assess annual bacteria loads into the Tijuana River,
4. Identify point and non-point sources (NPSs) of bacterial pollutants, and
5. Develop best management practices (BMPs) to reduce bacterial loads originating in from the U.S. side of the border.

To address these objectives, the project had several elements:

- Sanitary and Dry Weather Surveys,
- Wet Weather Assessments,
- A Series of Special Studies, and
- BMP Concept Designs and Prioritization.

Each of these elements is discussed below.

Sanitary and Dry Weather Surveys

The primary objectives of the sanitary surveys were to identify anthropogenic and non-anthropogenic sources of indicator bacteria that could impact receiving waters in the estuary. Three two-week sanitary surveys were conducted over the course of the study, targeting approximately 100 sampling locations per survey, covering the entire urbanized area on the western portion of the U.S. side of the Tijuana River Watershed. Follow-up dry weather surveys were conducted if high bacterial concentrations were found, if the sample tested positive for human-specific Bacteroides (a genetic marker that is specific to human fecal contamination), or if visual observations suggested follow up was necessary.

- The results of the first two sanitary surveys identified several sites where indicator bacterial concentrations were high or tested positive for human-specific Bacteroides. In all cases, follow up dry weather surveys indicated that water at the site was either ponded, had very low trickle flows, and/or the flow could not be traced upstream to any source.
- These results of these extensive surveys suggest that with few exceptions, elevated levels of indicator bacteria or the potential presence of human fecal contamination at numerous sites assessed in the watershed were ephemeral and did not represent a consistent source of bacteria to the estuary.
- Sanitary Survey 3 was a dry weather survey that focused primarily on sites within the estuary itself. Thorough visual observations on all sides of the watershed adjacent to the estuary revealed that with one exception there was no apparent hydrologic connection between surface waters in the watershed and those in the estuary. That is, during dry weather, the vast majority of the flows in the sub-drainages on the U.S. side of the border never reach the estuary.

Further assessments conducted in January, 2012 confirmed that the substantial majority of dry weather from the U.S. side of the border never reaches the estuary because the majority of the sub-drainages discharge to a soft-bottom creek or other semi-natural feature (e.g., ponds) where dry weather flows infiltrate rapidly. The one area of direct, but very small flow to the estuary was the outfalls of the E and F Lines in Imperial Beach that discharge directly to the estuary. Dry weather flows from these outfalls were very low. Thus, one of the major findings of this study was that potential impacts to the estuary from dry weather flows are limited to these small sub-drainages and episodic and infrequent rogue flows from the Mexico side of the border when the diversion structures are bypassed.

E-line storm drain outfalls showing minimal dry weather flow directly to the Tijuana River Estuary. The majority of dry weather flow from other sub-drainages on the U.S. side of the border never

Wet Weather Assessments

The objective of the wet weather monitoring was determine the concentrations and loads of indicator bacteria and other constituents that impact the estuary from the mainstem of the Tijuana River (Dairy Mart Bridge and Hollister Bridge), Smuggler's Gulch (a tributary to the mainstem originating in Mexico), and Veterans Park (a tributary to the estuary originating in the City of Imperial Beach).

- The results of the wet weather assessments were similar among the three storms monitored. Indicator bacteria concentrations were in the 1,000,000 to 10,000,000 MPN/100 mL range over the course of the storm from all three sites originating from Mexico. However, indicator bacteria concentrations from the Veterans Park site (which

originates in the City of Imperial Beach) were one to two orders of magnitude lower than those from sites originating from Mexico.

- When these concentrations were combined with flow data collected during the storm events, it was determined that approximately 90% of the annual bacterial load that enters the Tijuana River Estuary (and has the potential to impact area beaches) originates from the Tijuana River mainstem.
- Smuggler's Gulch, which also originates in Mexico, accounts for approximately 11 and 8% of the enterococci and fecal coliform loads, respectively.
- The contribution from the entire U.S. urbanized portion of the watershed that flows directly to the estuary accounts for less than 1 % of the enterococci and fecal coliform loads entering the estuary.
- In addition, nearly all of the samples originating from Mexico were positive for the human-specific Bacteroides marker (indicating human fecal matter), while none of those from the U.S. drainage were positive for the marker.

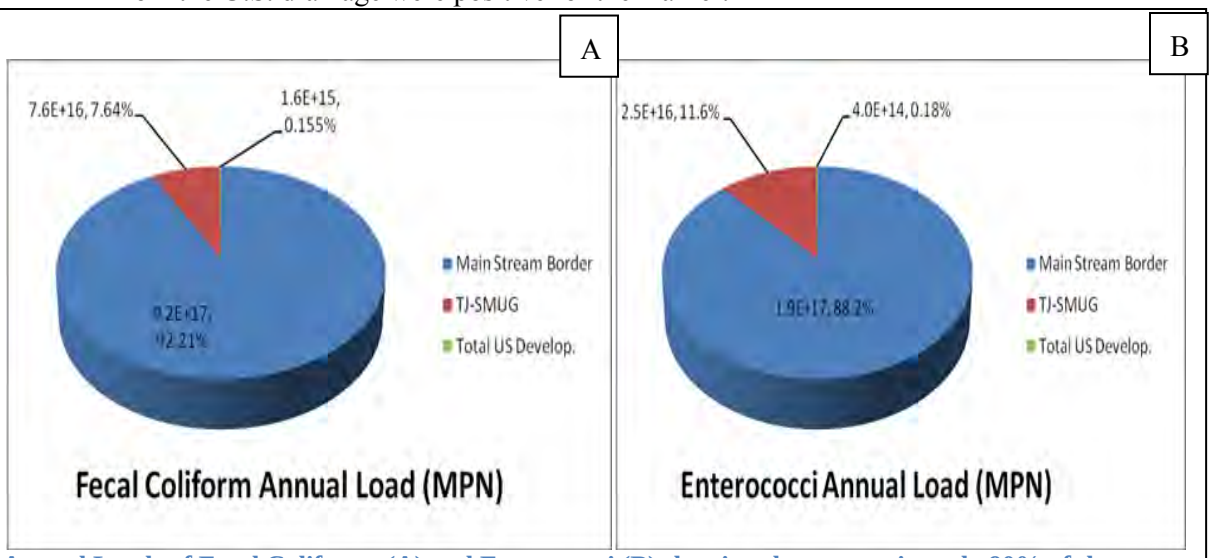

Annual Loads of Fecal Coliforms (A) and Enterococci (B) showing that approximately 90% of the bacterial load that enters the Tijuana River Estuary originates from the Tijuana River mainstem (blue), approximately 10% originates from Smuggler's Gulch in Mexico (red), and less than 1% originates from the entire urbanized portion on the U.S. side of the border (green).

Seacoast Drive Special Study

During the first sanitary survey conducted in July, 2010, human-specific Bacteroides (indicator of the presence of human fecal contamination) and elevated bacterial levels were found in the northern arm of the Tijuana River Estuary adjacent to Seacoast Drive in Imperial Beach. As a result, the Seacoast Drive Special Study was initiated to identify the source or sources of bacteria and the potential for human sewage in this portion of the estuary. Prior to the initiation of the study, leaking sewer infrastructure had been identified by the City as a potential problem along Seacoast Drive in a length of sewer pipe approximately ½ mile long that ended in a pump station on the northern end of Seacoast Drive. As a result, the City took proactive steps and re-sealed the

pump station to eliminate any potential leakage from the sewage infrastructure to the adjacent estuary.

The goal of the Seacoast Drive Special Study was to assess the effectiveness of sewage infrastructure repairs and to determine if there was evidence of human sewage impacting the estuary after the repairs had been made. In February, 2011 rhodamine dye was placed in the sewer pipe on the southern end of Seacoast Drive where it flowed north to the newly sealed pump station. Samples were collected from several sites in the northern arms of the estuary (adjacent to Seacoast Drive) and from the pump station. All samples were analyzed for indicator bacteria and human-specific Bacteroides on the day the dye was injected and for two subsequent days. In addition, filter packs containing absorbent media were anchored in the estuary for the same three day period, then analyzed for the presence of the rhodamine dye.

- The results of the study suggest that sealing the pump station had prevented any potential leakage of sewer water from the Seacoast Drive sewer line and pump station that may have been entering the estuary.
- Over the course of the three day sampling event, none of the more than 60 samples collected were positive for the human-specific Bacteroides marker.
- In addition, none of the absorbent media filter bags anchored in the estuary had even trace amounts of the rhodamine dye.

The results suggest that sealing the sewage infrastructure along Seacoast Drive was effective in preventing sewage from entering the Tijuana River Estuary. These results were confirmed in subsequent monitoring conducted in the estuary in the summer of 2011 as part of a dry weather survey. During this follow-up investigation, all samples collected from the estuary (including several sites in the estuary's northern arm adjacent to Seacoast Drive) were negative for the human-specific Bacteroides marker.

Seacoast Drive Special Study showing insertion of rhodamine dye and collection of dye and bacterial samples in the Tijuana River Estuary adjacent to Seacoast Drive. Evidence of bacteria from human origin was not observed in the estuary after the Seacoast Drive pump station was sealed by the City of Imperial Beach.

Groundwater Special Study

This project element was designed and implemented in order to assess the presence of indicator bacteria as well as human-specific Bacteroides and enterovirus (a marker of potential human pathogens) in groundwater within the western portion of the Tijuana River Watershed and to assess the extent to which groundwater may impact surface waters within the estuary. The objective was to determine if groundwater is a source of microbes to the estuary and to assess the spatial distribution of microbes in groundwater in the western portion of the watershed.

In order to address these objectives, five previously existing groundwater monitoring wells were sampled over a period of 16 months and analyzed for indicator bacteria, human-specific Bacteroides, enterovirus, and a suite of chemical constituents.

- In general, indicator bacteria concentrations were low in most groundwater samples and all samples were negative for the human-specific Bacteroides marker.
- There appeared to be a spatial gradient in bacterial and nutrient concentrations among the groundwater wells monitored, with relatively high concentrations in groundwater closest to the U.S. / Mexico Border and lower concentrations found in groundwater closest to the Tijuana River Estuary.
- The one exception to this pattern was that observed for enterovirus. Among the 35 samples collected over the course of the study, three were identified as positive for enterovirus, all of which were found at sites closest to the estuary (sites b-15 and b-6).

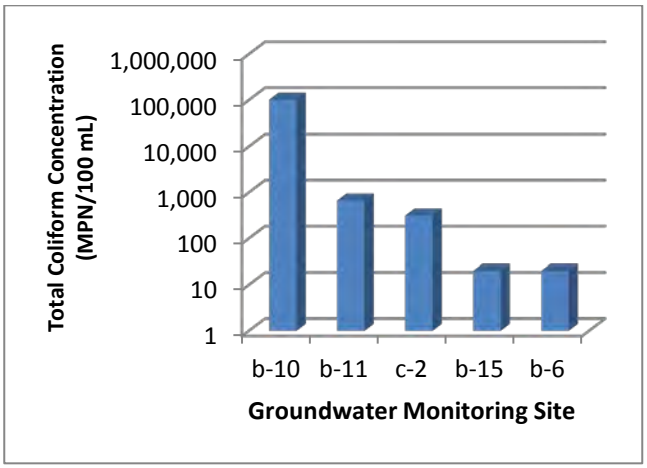

Mean total coliform concentrations in groundwater wells showing higher concentrations at sites closest to the U.S./Mexico Border (Sites b-10 and b-11) compared to sites closest to the Tijuana River Estuary (Sites b-15 and b-6).

The low concentrations of indicator bacteria and nutrients in groundwater closest to the estuary and the absence of human-specific Bacteroides throughout the study suggest that groundwater may not be a likely source of fecal contamination to the receiving waters of the estuary. However, positive results for the enterovirus assay at the two sites closest to the estuary indicate the potential for groundwater contamination and suggest that further investigations may be necessary to determine the potential impact to the estuary from groundwater sources.

Goat Canyon Dredged Sediment Special Study

Goat Canyon is located at the southern end of the Tijuana River National Estuarine Research Reserve in the western portion of the Tijuana River Watershed and spans the U.S. / Mexico Border. Ninety percent of the Canyon's sub-watershed lies in Mexico. In recent decades, human-induced disturbance originating primarily upstream in Mexico has resulted in increased sedimentation in Goat Canyon, which increases sediment loads to the Tijuana River Estuary. Sediment basins have been installed on the U.S. side of the border to trap Goat Canyon sediment before reaching the estuary. The goal of the Goat Canyon Dredged Sediment Special Study was to determine if dredged material removed from the basins is a reservoir for indicator bacteria and to assess the potential for the dredged material to impact surface waters if the sediment were used for beach replenishment purposes.

To address these goals, sediment samples were collected in November, 2010 from sediment that had been dredged from the Goat Canyon sediment basins and stockpiled adjacent to the site. The sediment was suspended in sterile solutions of water of varying salinities (fresh, brackish, and marine). Sub-samples were then drawn from each of the solutions over a period of five days and quantified for indicator bacteria.

- The results indicated that the relatively fine-grained, high nutrient sediment in the Goat Canyon sediment basins do serve as a reservoir for both fecal coliforms and enterococci.
- The inoculation test results suggest that the Goat Canyon dredged sediments can contribute elevated bacterial concentrations to the water columns in fresh, brackish and marine systems, and that the indicator bacteria can survive in these solutions for at least several days.

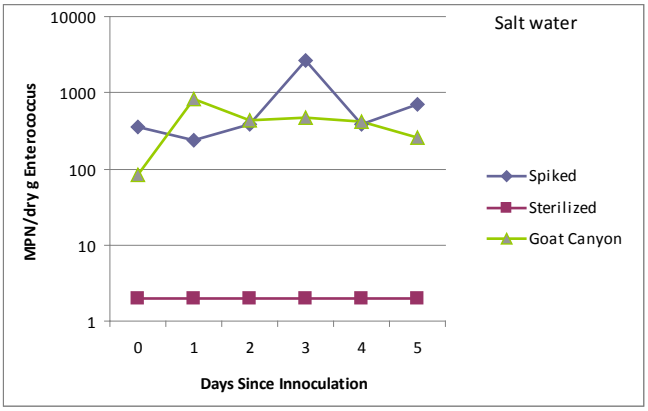

Results of Goat Canyon Sediment Study showing elevated enterococcus concentrations over time in salt water. The results suggest that bacteria (especially enterococci) in basin sediments may persist in seawater if sediments were used for beach replenishment.

The persistence of enterococci, compared to fecal coliforms, in each of the three water treatments is similar to results observed in other studies which have shown that enterococci tend to survive better in the environment than fecal coliforms. It also supports the findings of other studies that suggest that sediments play an important role in the survival of bacteria by providing a favorable, environment for microbes. When taking into account the complex environment of the Pacific Ocean, the results of this special study suggest that if Goat Canyon dredged material was used for beach replenishment, it could cause an initial increase in both enterococcus and fecal coliform concentrations in the receiving waters. However, that increase is most likely to be transitory in nature when sea temperatures, hydrologic flow patterns, and UV radiation are taken into account.

BMP Concept Designs and Prioritization

The purpose of this part of the study was to conduct a hydrologic and water quality analysis to assess and prioritize concept designs to reduce bacterial loads to the Tijuana River Estuary. The best BMPs proposed in the selected concept designs were based on low impact development (LID) features at selected sites with the Tijuana River Watershed. The study was performed to determine and document the water quality flows and volumes (storm water runoff) from the tributary area for each concept design site. The BMPs are proposed to provide water quality improvement of storm water runoff with some attenuation of peak flows, which in itself also provides water quality benefits (less downstream flow equates to less potential for downstream sediment transport). Locations for the BMPs were determined based on the findings of the wet and dry weather studies conducted as part of this project.

Based on the criteria listed above, six concept designs were produced as part of this study using established BMPs to reduce bacterial loading, such as bioretention basins at Imperial Beach Boulevard Parkway and Mar Vista Church, porous concrete on Thorn Street Cul de Sac and Donax Avenue, an eco bike lane and green street BMP on Imperial Beach Boulevard, and bioretention basins on East San Ysidro Boulevard. The tributary drainage areas for these BMPs ranged from 0.46 to 5.3 acres with estimated bacterial load reductions ranging from 62 to 100% removal. Estimated project capital costs to achieve these load reductions ranged from $50,250 to $1,110,750. Based on these costs and the estimated annual load removal, a priority ranking of the BMPs was conducted based on a cost / benefit analysis. Among the six projects for which concept designs were produced, the Donax Avenue project had the lowest cost per annual load removed and the Imperial Beach Boulevard Eco-Bike Lane had the highest cost per annual load removed. Watershed managers may use this cost / benefit analysis as one of many tools to facilitate decisions about future implementation of BMPs to reduce bacterial loading to the Tijuana River Estuary. Other factors should be taken into consideration, such as existing conditions, public perception, and multiple benefits provided by projects.

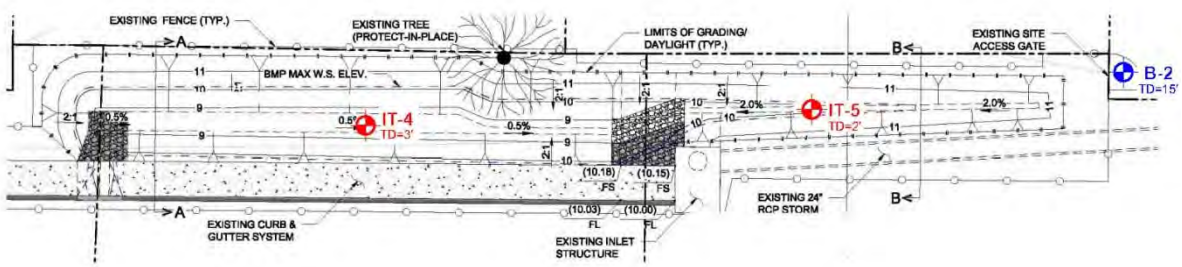

BMP Concept Designs were produced as part of the project to decrease bacterial loads to the Tijuana River Estuary.

Summary of Major Findings

There were numerous findings from this multi-year, multi-faceted study. The major conclusions drawn from the results of the monitoring and special studies are summarized below.

- The pollution sources and their impact on the Tijuana River Estuary vary dramatically by season. During dry weather, the estuary is relatively un-impacted from the watershed, and the estuary is a healthy, vibrant and vital ecosystem. During storm events, flows from Mexico transform the estuary into a severely impacted, polluted and hazardous waterbody with extremely elevated bacterial concentrations and elevated potential health risk to the environment and the public.
- Extensive dry weather and sanitary surveys revealed several locations in the watershed where indicator bacterial concentrations were high, or there was evidence of human fecal contamination, but the contamination was determined to be ephemeral and not related to a consistent source (such as leaking infrastructure).

- Dry weather surveys also revealed that there is very little hydrologic connection between watershed surface waters and the estuary (with the exception of some small drainages).
- Semi-natural BMPs such as soft-bottom sediments and ponds at the base of the major sub-drainages prevent the large majority of dry weather flows from entering the estuary.
- During wet weather, approximately 99% of the indicator bacterial loads entering the Tijuana River Estuary and Pacific Ocean originates from un-diverted flows from the Tijuana River mainstem and tributary channels from Mexico.
- Proactive steps to reline the sewage system along Seacoast Drive by the City of Imperial Beach appear to have eliminated a suspected source of human fecal contamination from entering the northern arm of the estuary.
- Groundwater associated with the mainstem of the Tijuana River at the U.S. Mexico Border may have elevated bacterial and nutrient levels compared to relatively clean sites closest to the estuary, suggesting the groundwater may not be a likely source of bacterial contamination to the estuary. However, the presence of enterovirus at sites closest to the estuary suggest that further studies may be needed to better understand surface groundwater interactions and the potential risk to estuary surface waters from groundwater resources.
- Sediments within the Goat Canyon Sediment Basins appear to act as a reservoir for indicator bacteria that has the potential to impact receiving waters for several days if the sediment were used for beach replenishment. Further studies are needed to clarify potential impacts indicated by this initial, small-scale study.
- Based on the findings of these studies, BMPs were designed and prioritized on their ability to reduce bacterial loads and will serve as a tool for managers to reduce potential impacts to the Tijuana River Estuary.

Recommendations

Based on the major findings of the study, the following recommendations may be considered:

- One of the major goals of this study was to identify sources of indicator bacteria on the U.S. side of the border and produce designs for BMPs that can reduce those loads. The designs for low impact development BMPs produced as part of this study are focused on providing the most efficient and cost-effective means of reducing bacterial loads in areas that flow directly to the Tijuana River Estuary. They should be considered for implementation based on the prioritization assessment provided in the report and additional priorities and constraints of the City of Imperial Beach.
- During the sanitary and dry weather surveys, positive results for human-specific Bacteroides suggested the presence of human fecal matter at some sites. Although specific sources were never identified, the cities of Imperial Beach and San Diego may wish to consider prioritizing and implementing sewer system upgrades to minimize the potential for sewage in the sanitary sewer from contaminating the storm drain system and potentially impacting the estuary.
- The Goat Canyon Special Study demonstrated that elevated bacterial levels exist in sediment dredged from the basins. Understanding the role of beneficial reuse of the dredged sediment is a critical component of effective management of the basins. Further

studies to understand the potential risk factors and fate and transport variables associated with the sediment under various management scenarios (e.g., beach replenishment) should be considered to enhance potential management options.

- This study was focused on understanding the sources of indicator bacteria in the Tijuana River Watershed and the potential impacts it may have on the estuary. However, further study is needed to understand how bacteria (and potential pathogens) associated with the river and the estuary may affect water quality at adjacent beaches. Studies designed to use rapid indicators of fecal contamination combined with an understanding of environmental variables that affect beach water quality (e.g., storm events or rogue flows from Mexico) could provide a more precise assessment of potential human health risks from the river and potentially reduce beach closures in the area.

The Special Study on Groundwater suggested that groundwater quality at sites close to the U.S. / Mexico Border may be impacted by indicator bacteria, but sites closer to the estuary appeared to have better water quality. These results conflicted with the enterovirus results, which showed the presence of enterovirus at sites closest to the estuary. To better understand the fate and transport of bacterial and viral pathogens in groundwater and the potential risk associated with groundwater / surface water interactions, groundwater modeling may be considered to enhance the small scale study conducted as part of this project.

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TITLE: INVASIVE SPECIES REMOVAL PROJECT IN THE TIJUANA RIVER PARK

ID #: TJ-017

ACTIVITY DESCRIPTION

The SANDAG Transnet Environmental Mitigation Program (EMP) funded a grant to the Southwest Wetlands Interpretive Association (SWIA) to continue the Tijuana River Valley Invasive Plant Control Program (Phase IV) begun in 2002 in the extreme southwest part of San Diego County within a few miles from the mouth of the river. The program includes work in the County of San Diego's Tijuana River Valley Regional Park (TRVRP), California State Parks' Border Field State Park, and the U.S. Fish and Wildlife Services' Tijuana Estuary. Three invasive plant species are targeted within the Tijuana River Valley: giant reed (Arundo donax), castor bean (Ricinus communis) and salt cedar (Tamarix ramosissima). These species degrade the habitats they invade by displacing native vegetation, lowering insect food supply for birds, reducing groundwater, and increasing flood and fire hazards. The invasive removal program includes replanting with native species, a project that, coupled with natives returning naturally, will serve to filter pollutants and decrease sedimentation in the long term. The County cooperated with the SWIA in seeking grants, by writing letters of support and serving on a technical advisory group (TAG) for the program. In the implementation of the program, the County continues to serve on the TAG and provides SWIA with right-of-entry permits to County property. SWIA is committed to seeking grants for the on-going funding of this project and the County plans to continue its long-term cooperation with the association.

ACTIVITY IMPLEMENTATION FY2007-08

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

1) Treated arundo and castor bean on 100 acres;
2) Performed follow-up treatment of arundo and castor bean on old 511 acres;
3) Treat tamarisk on 61 acres around Dairy Mart ponds;
4) Maintained and planted native cuttings.
5) Attended TAG meeting and provided right of entry letters to SWIA.

ACTIVITY IMPLEMENTATION FY2008-09

The following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

1) 07/20/08 TAG Meeting.
2) Development and adoption of a "Declaration of Intent".

ACTIVITY IMPLEMENTATION FY2009-10

During FY09-10 the following tasks were implemented as part of invasive plant removal program in the Tijuana River Valley Regional Park:

1) Treated giant reed, castor bean and tamarisk within 86 acres in the Dairy Mart Ponds area;
2) Restored 1.5 acres in the Hollister Bridge area;

3) County representatives attended the annual TAG meeting; and
4) County provided right of entry letters to SWIA.

ACTIVITY IMPLEMENTATION FY2010-11

During FY10-11 the following tasks were implemented as part of invasive plant removal program in the TRVRP:

1) County representatives attended the annual TAG meeting (09/15/10);
2) SWIA treated giant reed, castor bean and tamarisk within 40 acres in the Hollister Bridge area
3) SWIA was able to cover a larger area than had been expected (27 acres); and
4) County provided right of entry letters to SWIA.

In addition County Parks Staff in response to a citizen's complaint removed approximately six dumpsters (40 yard roll-off) of Arundo Donax along the western edge of International Road.

ACTIVITY IMPLEMENTATION FY2011-12

During FY11-12 the following tasks were implemented as part of invasive plant removal program in the TRVRP:

1) County representatives attended the annual TAG meeting (09/15/11);
2) County provided funding totaling $5000.00 to remove invasive species in the river valley
3) County staff removed 55 tons of Arundo and some castor bean from approximately 5 acres along the International Road east of the Am Sod Farm.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

FY10-11: Funding from the US Fish and Wildlife Service's Coastal Programs was acquired by SWIA to fund invasive plant treatments. These funds are expected to be used in the TRVRP near Hollister Bridge. The following tasks are planned to be implemented:

1) Treat giant reed, castor bean and tamarisk within 27 acres in the Hollister Bridge area;
2) County representatives attended the annual TAG meeting; and
3) County provided right of entry letters to SWIA.

FY11-12: SWIA did not receive any grants for FY11-12. County staff funded project.
FY12-13: Future implementation of this activity is dependent on funding.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING ENTITIES

- Southwest Wetlands Interpretive Association,
- U.S. Fish & Wildlife Service,
- California State Parks

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Pesticides
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Sediment, pesticides, and bacteria are high priority water quality problems in the Tijuana River WMA. Therefore, this activity is consistent with the collective watershed strategy.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by ensuring completion of all project elements (Level 1). Each invasive plant area will be monitored to determine which control methods would be most effective in the TJRV. Although no water quality monitoring is proposed for this project, water quality improvements may be able to be assessed qualitatively based on results from similar projects.

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TITLE: TIJUANA WATERSHED BROCHURE
ID #: TJ-023

ACTIVITY DESCRIPTION

The City of San Diego (City) and Think Blue will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience's attention, enhance the public's understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

1) Tijuana River
2) San Diego River
3) San Diego Bay
4) Mission Bay
5) San Dieguito River
6) Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and continued through FY 2012. Implementation and distribution occurred in FY 2012 and will continue through FY 2015. Assessment is proposed in FY 2015.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- Not Applicable

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's Strategic Plan for Watershed Activity Implementation and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) Can we create watershed brochures that increase the public's understanding of basic watershed principals and storm water best management practices (BMPs) and create awareness of the high priority water quality problems in each WMA?
2) Can we create watershed brochures that encourage citizens to take positive steps in preventing pollution from entering the storm drain system?

Targeted Measurable Outcome(s)

1) Increased knowledge of basic watershed principles and storm water BMPs after reading the watershed brochure.
2) Increased awareness of the high priority water quality problems in each WMA after reading the watershed brochure.
3) Increased intent to act to prevent storm water pollution after reading the watershed brochure.

Assessment Method(s)

Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, those who provided contact information will be contacted and asked a series of follow-up questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Data Recorded

N/A

Expected Benefits

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. This activity will address the high priority water quality problems identified for each of the Watershed Management Areas.

Analysis Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochures have not been distributed to enough residents within the Watershed Management Area. Data will be collected throughout FY 2012 - FY 2015.

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TITLE: SMUGGLER'S GULCH, PILOT CHANNEL & NORTHERN CHANNEL SEDIMENT AND DEBRIS REMOVAL

ID #: TJ-025

ACTIVITY DESCRIPTION

On September 23, 2009, the City of San Diego Council declared a State of Emergency in the Tijuana River Valley due to the potential for severe flooding pursuant to Resolution Number R-30526. Re-establishment of the channel profiles to reduce the risk of flooding in these flood control facilities was deemed necessary because of the additional sediment deposition from the Tactical Infrastructure Border project, and because of the flood which occurred in late November 2008. In FY 2011, the City excavated and removed sediment and trash, including tires, within two flood control facilities known as Smuggler's Gulch and the Tijuana River Pilot Channel pursuant to Emergency Coastal Development Permit No. 784887, County of San Diego's Regional General Permit 53, US Army Corp of Engineers Permit SPL 2009-00719-TCD, and Regional Water Quality Control Board 401 Water Quality Certification 09C-077.

This sediment removal project is required to 1) to return the drainage facility to a condition where adjacent property is not threatened by flooding, 2) storm water flows convey properly to the main channel, and 3) channel profiles and conditions are restored to reduce the potential for sediment and debris to accumulate and thereby increase the potential of flooding.

In FY11, the City excavated and removed 13,000 cubic yards from these flood control facilities. Due to the potential for litigation and legal challenges to applicability and validity of grounds under which the permits listed above, and the CEQA Mitigated Negative Declaration under which the work was to be performed, no excavation was performed in FY 12.

TMDL APPLICABILITY

- Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

It is anticipated that this work will resume in FY 14 under the City's Master Storm Water Maintenance program currently under review.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- None

OTHER PARTICIPATING ENTITIES

- 1) California Department of Fish and Game
- 2) California State Parks
- 3) County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identify sediment and trash as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. This activity results in a direct load reduction of these pollutants.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) N/A

Targeted Measurable Outcome(s)

1) Amount of material removed
2) Distance cleared

Assessment Method(s)

1) This activity will be assessed based on the amount and type of sediment and debris removed.

Data Recorded

Not Applicable

Expected Benefits

The project will result in a load reduction of sediment and debris.

Analysis Results

Not Applicable

TITLE: WILDCOAST SPRING CLEAN-UP EVENT - JUNE 2012
ID #: TJ-026

ACTIVITY DESCRIPTION

The County of San Diego's Department of Public Works Recycling Section and Watershed Protection Program sponsored two clean-up events coordinated by WILDCOAST in the Tijuana River Valley. The events were held in conjunction with the County of San Diego Parks and Recreation Department Trails Day Activities and included picking up trash and debris along the Effie May Trail. Trash and debris were weighed to determine total amounts removed. Trash removal services were donated by Allied Waste Services.

FY 10-11 ACTIVITY DESCRIPTION

The Recycling Section also hired work crews to remove tires from the Tijuana River Valley on June 24 and 28.

FY 11-12 ACTIVITY DESCRIPTION

WiLDCOAST and I Love a Clean San Diego (ILACSD) partnered to conduct two cleanups in June 2012 in the Tijuana River Valley (TRV) for the County of San Diego Department of Public Works Recycling Section. The cleanups mobilized 205 volunteers to remove 27,740 pounds of trash and 139 waste tires from the Tijuana River Valley. Cleanups were conducted in accordance with the most recent trash data from the TRV, specifically URS's Trash and Sediment Characterization Study (URS 2010). FY11-12 activities included Community Outreach and an Educational Component in addition to the Clean-ups.

FY 10-11 ACTIVITY IMPLEMENTATION

The events occurred on May 14, 2011 at Dairy Mart Road and June 4, 2011at Effie May Trail. Thirty-five people attended the May event and collected 1.59 tons of trash and removed 38 tires from the river valley. The June event included 103 people and collected 1.14 tons of Trash and removed 63 Tires (See Table 1 below).

In addition, the County's Recycling section identified areas with large amounts of tires and hired work crews to manually carry the tires out of the main channel at Dairy Mart Road and the sediment basin at Goat Canyon. Two work days were completed in June 2011 resulting in the removal of 912 tires.

FY 11-12 ACTIVITY IMPLEMENTATION

The events occurred on June 2, 2012 along the Cathedral Trail and June 23, 2011at east side of Dairy Mart Road. Trail. Forty-five people attended the June 2 event and collected 6,000lbs of trash and removed 2 tires from the river valley. The Tijuana River Valley Equestrian Association provided an addition clean-up on June 9, 2012 which collected 17,740lbs and 7 additional tires. The June 23, 2012 event included 160 people and collected 6,000lbs of Trash and removed 130 Tires (See Table 1 below).

Table 1: Trash and Tire Clean-up Data

Date	Number of People	Pounds of Trash*	Number of Tires
June 2, and 9, 2012 at Cathedral Trail	45	23,740	9
June 23, 2012 East Side of Dairy Mart Road	160	6,000	130

*Does not include weight of tires.

Both events included an outreach component and Education and safety discussions.

Cleanup Volunteer Outreach

Outreach was promoted through the use of social media including Facebook and Twitter. Several of the volunteer groups including WildCoast, I Love a Clean San Diego, Tijuana River Valley Equestrian Association, Ocean Minded and SDGE also provided link via their websites. Additionally email was used to periodically recruit volunteers prior to the scheduled events. The County of San Diego also promoted the events on their Facebook page. WildCoast also developed and distributed an event poster for the cleanup events. These posters included logos of the participating sponsors and volunteers.

Safety and Educational Component

All cleanup events included safety and educational discussions. Volunteers were strongly encouraged to wear appropriate clothing such as long pants, closed-toe shoes and to use sunscreen during the cleanups. Talking points included the importance of using caution when picking up trash; staying in pairs or groups, not over exerting oneself and making sure that heavy duty equipment were handled by adults only and with extreme caution. WiLDCOAST and I Love a Clean San Diego provided volunteers with cleanup supplies such as shovels, gloves, wheelbarrows, trash buckets and provided water, snacks and shade areas.

The educational component included an overview of the Tijuana River Watershed and the need to protect and restore it. Recruitment presentations were made at the Job Corps and the Chula Vista Learning Center. These presentations included a ten-minute WiLDCOAST documentary that stresses the importance of community involvement in the cleanup and restoration efforts in the Tijuana River. Additionally a PowerPoint presentation was provided that highlighted the geographical context of the watershed, sources of pollution, and the bi-national nature of the watershed (U.S. and Mexico).

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

FY10-11: Two Clean-ups were planned and completed.
FY11-12: Funding was approved for two events.
FY12-13: Future events are dependent on funding.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

- The following groups provided sponsorships, donated services or participated in the clean-up for FY11-12:
- WiLDCOAST, ILACSD, Tijuana River Valley Equestrian Association, EDCO, Ocean Minded, Job Corps, Boy Scouts, and SDGE

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

Taylor activities implemented as part of the Tijuana River Copermittees' Jurisdictional Urban Runoff Management Programs (JURMPs), Watershed Urban Runoff Programs (WURMPS) and the Regional Copermittees' Regional Urban Runoff Management Program (RUMP) to the extent possible to address the watershed's priority water quality problems.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness was be measured by weighing the amounts of trash collected during the event (Level 4). All project elements were completed during FY11-12.

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TITLE: TIJUANA RIVER ACTION MONTH
ID #: TJ-027

ACTIVITY DESCRIPTION

The Tijuana River Copermittees including the Cities of San Diego and Imperial Beach and the County of San Diego collaborated on a series of clean-up and education events in the Tijuana River Valley during the months of September and October. The September 25th clean-up will be included as one of many events included as part of the International Coastal Clean-up Event hosted by I love a Clean San Diego. The October events are being coordinated by WiLDCOAST and will consist of four clean-ups at different locations within the river valley and one clean-up in an adjacent canyon in Mexico that drains to the Valley. Each cleanup will be co-hosted by a different organization along with WiLDCOAST. Trash and debris will be weighed to determine total amounts removed. Trash removal services will be donated by Allied Waste Services and Tire Removal Activities will be funded by the County and City of San Diego through grants awarded through CalRecycle. In addition, the County's Recycling section identified existing tire piles in the area from previous cleanups and arranged for removal.

FY 2009-10 ACTIVITY IMPLEMENTATION

The County's Recycling Section applied for the CalRecycle grant funding for this project in December, 2009. CalRecycle informed the County that grant would be funded in April. On June 11, 2010 County staff from the Recycling section and Watershed program met with WildCoast staff to discuss the project. The grant was funded for the full amount of $35,868 in June, 2010 with the grant term beginning July 1, 2010. All grant activities must be completed by June 30, 2011.

FY 2010-11 ACTIVITY IMPLEMENTATION

In August, 2010 the Recycling section finalized the agreement with WildCoast for four cleanups in the Tijuana River Valley. The Recycling section also issued a Request for Quotation for a state certified waste tire hauler to transport the tires collected at the cleanups to a state certified tire recycling facility. The low cost bidder was awarded the contract on September 1, 2010. The Watershed Protection Program supplemented the grant funding and contributed $2,500 toward the clean-up events. Several clean-up events were planned and implemented during the FY10-11.

FY 2011-12 ACTIVITY IMPLEMENTATION

The Copermittees collaborated on the planning and implementation of the 2nd annual Tijuana River Action Month, which took place between September 11th and October 16th during this past reporting period. This year, local NGOs took the primary lead on multiple cleanups and restoration activities that occurred on both sides of the border. Copermittees did not provide any direct financial support for cleanup activities this reporting period but provided significant in kind support.

County of San Diego:

County of San Diego Recycling Section coordinated with WildCoast and sought funding for the FY12-13 River Month Activity. Provided public presentation at a community workshop on water quality. Participated in clean-ups.

City of Imperial Beach:
Provide a public presentation at a community workshop on Water Quality. Provided a Mayor's Proclamation memorializing the event(s). Participated in several clean-ups.

City of San Diego:
The City of San Diego and Think Blue hosted a booth at the Fiesta del Rio event. Participated in clean-ups

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

FY09-10: Grant application and Planning
FY10-11: Implementation of Clean-ups and other events.
FY11-12: Site Sponsor, No implementation, and Planning for future events.
FY12-13: Planning and Implementation of Clean-ups

LEAD WATERSHED COPERMITTEE

- City of Imperial Beach

OTHER PARTICIPATING COPERMITTEES

- City of San Diego
- County of San Diego

OTHER PARTICIPATING ENTITIES

- I Love a Clean San Diego
- TRNERR/State Parks
- Allied Waste Services
- REI
- San Diego Surfrider
- Tijuana Calidad de Vida
- San Diego Coastkeeper
- Job Corps
- Outside the Lens
- WiLDCOAST

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity supports the following principles that have been established to guide the selection and implementation of watershed activities as part of the Tijuana River Watershed WURMP:

- Tailor activities implemented as part of the Tijuana River Copermittees; Jurisdictional Urban Runoff Management Programs (JURMPs), Watershed Urban Runoff Programs (WURMPS) and the Regional Copermittees; Regional Urban Runoff Management Program (RUMP) to the extent possible to address the watershed's priority water quality problems.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by counting the number of participants and weighing the amounts of trash collected during the individual events (Level 4).

FY 2011-12:
Participants: 4,179
Trash: 63,476 pounds
Waste Tires: 351
Plants: 1,230
Restoration: 8.25 acres

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TITLE: FIESTA DEL RIO EVENT
ID #: TJ-029

ACTIVITY DESCRIPTION

In FY 2009, the City of San Diego (City) and *Think Blue* became a sponsor of the annual Fiesta Del Rio event in the Tijuana River Watershed Management Area (WMA). The Fiesta del Río event is designed to raise awareness about the environment of the San Diego/Northern Baja region surrounding the Tijuana River Estuary, and steps the public (especially families with children) can take to help protect this fragile ecosystem and the surrounding area.

The Think Blue sponsorship included staffing a booth to provide the opportunity to educate the public about preserving the local environment, promote stewardship the Tijuana River Estuary, and encourage proactive steps in preventing pollution from entering the storm drain system. Think Blue staff offered free BMP related giveaway items to the public in exchange for their participation in a survey designed to assess their knowledge and attitudes towards storm water pollution and steps they would be willing to take to help reduce pollution of local waterways in the future.

TMDL APPLICABILITY

Event attendance will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Planning was completed in FY 2009. Implementation was conducted in FY 2012 and assessment is anticipated to be completed in FY 2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- Not Applicable

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Oil & Grease
- Pesticides
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What change in awareness /attitude regarding bacteria was achieved after implementation?
    a. How efficient is this education activity based on total cost versus number of people (targeted audience) reached?

Targeted Measurable Outcome(s)

1) Reach pre-set percentage of residents within target watershed
    a. Increased level of knowledge/attitude based on post-activity surveys

Assessment Method(s)

1) Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants)
    a. Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

Data Recorded

- Estimated total visitors exposed to the Think Blue Booth at the Fiesta del Rio in FY 2012 (Outcome Level 1): 5,000
- Number of Surveys administered in FY 2011 (Outcome Level 1): 84
- Percentage of individuals surveyed that knew storm water is not treated (Outcome Level 2): 48%
- Percentage of individuals surveyed who feel that litter contributes to pollution at least a moderate amount (Outcome Level 2): 94%
- Percentage of individuals surveyed who reported that they feel a very strong or strong obligation to not litter (Outcome Level 2): 96%
- Percentage of individuals surveyed who reported that they pick up litter they see in their community and throw it away at least sometimes (Outcome Level 3): 91%

Expected Benefits

The goal of this activity is increasing knowledge and awareness in the residents and visitors in the Tijuana River Watershed in order create positive behavioral change that will reduce the presence of bacteria and gross pollutants in nearby waterbodies. Effectiveness Assessment will be ongoing as Think Blue gathers more data from the event.

Analysis Results

Effectiveness assessment results of this activity will be in FY 13 in order to have a statistically significant sample size and provide an opportunity to note any behavioral changes over a longer period of time.

Conclusions

Based on attendance size and demographics of the Fiesta Del Rio, the City plans to continue to sponsor and staff the Fiesta Del Rio. This activity will be used as a watershed education activity as required by the Municipal Permit for education activities.

TITLE: BEYER BOULEVARD TRASH SEGREGATION BEST MANAGEMENT PRACTICE

ID #: TJ-030

ACTIVITY DESCRIPTION

Stormwater Drain Insert Pilot Study involves the installation of two curb inlet inserts in the Tijuana River Watershed Management Area (WMA) to prevent trash and debris from entering the MS4. The inserts were installed directly in the existing curb inlets along Beyer Blvd. The Beyer Blvd site includes the installation of 2 storm drain curb inlet inserts as retrofits within the existing storm drain system. The curb inlet inserts will be used to reduce the amount of trash, leaves, sediment, and oils and grease that make its way into the storm drain system.

This project was originally identified as "Trash Segregation Device Installation" in the 2008 Tijuana River WURMP. In June 2008, the site along Beyer Blvd was selected and the conceptual design was released for this project.

TMDL APPLICABILITY

Indicator Bacteria - Beaches and Creeks SD Region

TIME SCHEDULE FOR IMPLEMENTATION

This project is part of a Storm Drain Inlet Inserts Pilot Project that initiated planning in FY2008. The City of San Diego issued a Request for Proposals (RFP) from interested vendors and advertised the project as a pilot at no cost to the City. Interested vendors submitted their proposals in July 2010 and the City conducted a selection process to evaluate the submitted proposal. Based on the selection panel recommendation, vendor product(s) that met the performance standards and requirements of the RFP have been awarded. The catch basin inlets have been retrofitted with the selected drainage inserts during the month of March in 2011 and the first phase of monitoring started during the month of September in 2011.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- Not Applicable

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Oil & Grease
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify trash and bacteria as a high priority water quality problem throughout the watershed, and recommend implementing load

reduction/source abatement activities to address it. Implementation of this activity will address bacteria via the facilitation of trash and debris removal.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction efficiency of the catch basin inserts?
2) How effective are these catch basin inserts at reducing priority pollutant loads?

Targeted Measurable Outcome(s)

1) Reduction in priority pollutant loads

Assessment Method(s)

1) Inspections (e.g., ensure the catch basin inserts are working as designed)
2) Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)
3) Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)
4) Tabulation (e.g., amount of money spent on implementation and maintenance)
5) Reporting (e.g., estimates of load reduction from 3rd party data)

Data Recorded

- How much money spent on inspections and maintenance: NA
- Trash Capacity: 100 lbs
- Flooding Issues: No
- Functionality during storm event: Significant Flow Bypass, Resuspension of material from filter into basin.
- % Trash Bypass: Unknown

Expected Benefits

Drain inserts are moderately effective at reducing discharge of trash to receiving waters when loadings are compatible with the maintenance frequency. Excessive flow bypasses is the main cause of reduced performance.

Analysis Results

Results showed that these BMP's lack the capacity needed to quantify the level of maintenance desired by city O&M. Due to large drainage areas, typical of street drainage, the pilot showed maintenance required in excess of 4 times per year.

Conclusions

Effectiveness and efficiency, determined by comparing future load reductions to the cost of installation, maintenance and monitoring efforts are deemed insufficient to meet city goals.

Recommendations

Research BMP's with greater trash retention capacity to ensure less maintenance intervals.

TITLE: RESIDENTIAL RAIN BARREL SUBSIDIES & DISTRIBUTIONS
ID #: TJ-032

ACTIVITY DESCRIPTION

The County of San Diego will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, but residents of incorporated cities will also be able to purchase rain barrels at an affordable price. In addition to distribution of rain barrels, the program will promote outdoor water conservation and runoff reduction through public outreach before and during rain barrel distribution events.

Use of rain barrels can provide many benefits including reduced reliance on potable water through the storage and use of rain water for irrigation. For example, one inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. Retention and use of rain water onsite reduces the overall loading of pollutants leaving properties and entering the stormwater system. By implementing a rain barrel system, residents can:

- Reduce water pollution as a result of rainwater runoff, which carries pesticides, fertilizers, sediment, oil, and trash into local rivers and lakes.
- Reduce soil erosion and improve the ability of water to infiltrate the soil at a reduced intensity.
- Reduce dependency on imported water supplies and realize cost savings as a result of reduced water use.
- Help save energy by reducing demand on our drinking water supply.

In addition to the provision of rain barrels, County staff or contractors will be present at distribution events to provide educational materials and responses to any questions raised by participants. Residents from multiple watersheds are expected to participate in this activity and will be asked to sign a maintenance agreement as a condition of receiving a rain barrel at the subsidized rate.

Follow up surveys will be conducted with participating residents to ensure that rain barrels have been installed and to encourage proper maintenance.

ACTIVITY IMPLEMENTATION FY09-10

Activity during FY09-10 included conducting research to identify desired rain barrel features, including: size, ease of installation, cost, and features to discourage mosquito breeding. The County solicited bids through a formal procurement process in order to obtain the best quotes for provision of rain barrels and for one-year of customer service assistance following distribution. A vendor was selected, a contract awarded, and planning was initiated for two distribution events to be held during FY 10-11. In addition, the County used an existing website to provide more information to the public (www.rethinkwateruse.org).

ACTIVITY IMPLEMENTATION FY10-11

The Rancho San Diego Sales event took place at Cuyamaca College on August 28, 2010, from 8 a.m. until noon. Seventy-eight (78) residents participated and purchased a total of 102 rain barrels. The County of San Diego subsidized the purchase of 69 rain barrels at the rate of $30

plus tax, and additional 33 rain barrels were sold at the full price of $60 plus tax. The Fallbrook event took place on September 26, 2010 at the Fallbrook Village Square. During this event 138 barrels were purchased by105 residents. The County of San Diego subsidized 103 of the barrels which were sold to unincorporated residents. A total of 185 residents participated in these events and a total of 240 rain barrels were sold. Participating residents came from a variety of watersheds throughout the County (Table 1).

Table 1 Residents by Watershed

Watershed	Anza Borrego	Santa Margarita	San Luis Rey	Carlsbad	San Dieguito	Peñasquitos	San Diego River	San Diego Bay	Tijuana	Unk
Total Residents	2	24	61	6	8	4	27	50	2	1

ACTIVITY IMPLEMENTATION FY 2011-12

During FY11-12, 50 customers who purchased rain barrels in 2010 were surveyed for customer satisfaction and to check to be sure the rain barrels had been installed and maintained. Survey results will be summarized in FY12-13. Results of the survey will help to determine how to proceed with a rainwater harvesting program.

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

FY2009-10: Planning for this activity occurred.

FY2010-11: Two events were scheduled: August 28, 2010 (Cuyamaca College) and September 26, 2010 (Fallbrook Village).

FY2011-12: County of San Diego conducted a customer survey of 50 residents who purchased rain barrels.

FY2012-13: Results of the survey will be provided and additional events are being considered.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Rainwater harvesting reduces the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion.

EFFECTIVENESS MEASUREMENTS

Level 1 Outcomes were achieved through the number of rain barrels sold to individuals living in the County and through the signing of rain barrel maintenance agreements.

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TITLE: TARGETED CATCH BASIN CLEANING PILOT STUDY PHASE I
ID #: TJ-034

ACTIVITY DESCRIPTION

The City of San Diego Storm Water Division began the planning of a catch basin cleaning pilot study in FY2011, implementation of Phase I occurred in FY2012. The purpose of the project is to understand the potential water quality improvements and load reduction associated with catch basin cleaning by evaluating the quantity and quality of materials removed from the storm drains from four pilot areas. The areas were selected to be representative of different land uses within the City limits. Additionally two cleaning methods will be evaluated - manual and using vactor equipment. One of the pilot areas is within the Tijuana River WMA in a residential area in San Ysidro. Composite samples collected from the material removed from the targeted catch basins will be analyzed for metals, nutrients, organics, and bacteria.

The City's literature review and draft work plan development project in 2011 (Tetra Tech 2011) highlighted some of the nuances of catch basin cleaning methods and frequencies that can affect pollutant removal and municipal costs. There is evidence from the literature survey that optimizing catch basin cleaning, both by using the most effective and efficient cleaning techniques and by tailoring frequencies to different drainage areas, can maximize the return on investment in terms of both pollutant reduction, and municipal labor and funds. Data collection and GIS analysis, which the City improved substantially in 2011 on a city-wide basis by establishing a unique identifier for each inlet, are vital to this type of optimization.

With the diversity of land use types, neighborhoods, and drainage system ages and conditions found throughout the City of San Diego, developing a more specific or tailored plan for catch basin cleaning frequency and techniques requires some understanding of how accumulation rates and pollutant concentrations in catch basin materials differ among land use types and settings. Identifying land use settings or areas with rapid rates of pollutant accumulation - and potential mobilization - as well as areas with high concentrations of pollutants of concern, may be used to suggest the most efficient and effective timing, frequency, and method of catch basin cleaning. Land use settings or areas where pollutants accumulate slowly, with minimal mobilization, or low concentrations of pollutants of concern for a particular watershed, would suggest different maintenance schedules to achieve the same water quality results.

Catch basin cleaning in San Diego also must be addressed in light of the region's weather pattern, typified by a long dry season from roughly May through October during which catch basin materials are expected to accumulate without mobilization into the MS4, followed by a wet weather season with sporadic but occasionally very significant rain events (i.e. greater than one inch of precipitation in a 24-hour period). While this Pilot Study Phase I did not begin until December 2011, which was after substantial precipitation had fallen, the information base nonetheless will be useful, particularly if and when the City is able to complete an end of season cleaning before rain events begin. Sampling prior to intensive rainfall may have yielded different results, possibly greater concentrations of analytes that accumulate over time and are not easily re-suspended (such as metals). Microbiology samples might also be different during the dry season, especially if incubation is dependent on wet sumps.

TMDL APPLICABILITY

None

TIME SCHEDULE FOR IMPLEMENTATION

Implementation and assessment for Phase I was conducted in FY2012. It was determined a Phase II would be implemented and assessed in FY2013.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- N/A

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Metals
- Nutrients
- Sediment

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify bacteria, metals, organics, nutrients, and sediment as high priority water quality problems in the WMA, and recommend implementing load reduction/source abatement activities to address these constituents. This project will result in a quantifiable load reduction of sediment and will evaluate the amount of bacteria, metals, organics, and nutrients reduced as part of catch basin cleaning.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) To what extent do changes in catch basin cleaning frequency affect the amount of pollutants collected?
2) What is the annual calculated load reduction based on pilot scale data collection with catch basin cleaning?
3) Which cleaning method, manual versus mechanical is the most cost effective method for removing sediment from catch basins?

Targeted Measurable Outcome(s)

1) Reduction in bacteria exported from the catch basin.
2) Reduction in sediment exported from the catch basin.
3) Reduction in nutrients associated with the catch basin.

Assessment Method(s)

1) Evaluate the volume of material currently removed from each catch basin.
2) Evaluate the correction in cleaning results with land use category, impervious area, watershed size, and surface water impairments.

Data Recorded

- Volume Removed: Debris – 894 lbs. The total amounts of nutrients and metals removed during the clean-out process were calculated by multiplying analyte concentrations by the weight of the material removed. The estimates for each analyte in each clean-out event were standardized to a 30-day accumulation period and 10 acre drainage area:
  - Nitrogen – 220g,
  - Phosphorus – 22g,
  - Copper – 1.51g,
  - Lead - .50g,
  - Zinc – 5.83g
- Location: San Ysidro
- Sediment sample analysis: Sediment – 50% of material removed

Expected Benefits

The objectives of the project were to:

- Provide baseline information on the amounts and characteristics of materials removed from catch basins in four study areas.
- Determine patterns in quantity and quality of materials removed, especially in relation to prevalent land uses, sampling methods, clean-out timing, and frequency.
- Recommend potential strategies to optimize efficiency of clean-outs for specific land use categories, pollutants, and catch basin configurations.
- Propose ongoing monitoring protocols to improve on the baseline information and refine clean-out strategies.

Analysis Results

Results of the monitoring efforts for catch basin cleaning in four areas with different land use patterns, catch basin configurations, and cleaning methods show variations in amounts of materials and concentrations of analytes collected in each area and over time. The observations suggest overarching patterns and provide baseline information for ongoing monitoring and analysis. Because the samples were not sufficiently replicated, it is not possible to attribute statistical significance to any of the observed differences among treatments (area, timing, and frequency, method, or catch basin configuration).

Nutrients accumulated quickly between clean-outs and concentrations generally reached a plateau. That suggests that nutrients are commonly available in the contributing storm water runoff (hence the rapid accumulation) and may be easily washed though the drainage system (hence the plateau). Nitrogen was more concentrated in the later sampling periods in the primarily residential San Ysidro study area, which consists of single family homes, parks, and residential streets, suggesting applied fertilizer as a source there. The lowest concentrations of metals (copper, lead, and zinc) overall were consistently in the San Ysidro residential area.

Comparison of vactor and manual clean-out methods.

The vactor method was used in the Downtown and Scripps Poway Parkway areas and the manual method was used in the San Ysidro and Tecolote areas. To the extent an inference about the difference in methods can be drawn from this study, the results from the two mixed-use land use

areas – Scripps Poway Parkway and Tecolote Creek – can be compared. The vactor method produced greater amounts of materials in the Scripps Poway Parkway area than did manual cleaning in the Tecolote area. Because the amounts retrieved by vactor from the Downtown area were not much greater than the amounts retrieved using manual methods, it is suspected that differences in amounts of materials removed are due to factors other than the clean-out method, particularly the capacities of the catch basin sumps. Moreover, observation in the Scripps Poway Parkway area, which has significant topography, suggests that physical and soil conditions may be playing a role in the volume of material observed.

Conclusions

This pilot study demonstrates that there are differences in amounts of materials and pollutants that can be removed from catch basin inlets. Attributing those differences to factors such as removal methods, categorical land uses, timing in relation to rain events, frequency of cleaning, or a number of unmeasured factors is difficult given the small sample size and confounding factors. The costs and benefits associated with methods, schedules, or targeted locations in relation to sediment and pollutant removal would be better quantified with ongoing monitoring. Within the catch basin clean-out program that is ongoing in San Diego, there may be opportunities to collect valuable information with only a little extra effort. Other data collection for specific analyses will require a targeted monitoring program.

Recommendations

A major limitation of the pilot study is that we did not sample before the first significant rain event. Additional data should be collected after a dry season accumulation, clean-out, and sampling. The additional data should then be re-processed to determine clean-out procedures relative to dry season accumulation.

It is assumed that accumulation of sediments and pollutants is greatest during the wet season. The wet season is therefore the time to focus on frequent clean-outs. However, until dry season monitoring and analysis is complete, we cannot discount the importance of also scheduling clean-outs before the first wet season rains wash accumulated materials out of the systems. This may be especially important for metals. In residential areas or areas expected to have applied fertilizers, the middle of the growing season may be a critical time for clean-outs to maximize removal of nutrients.

In FY2013 Dry Weather Clean-Out and Monitoring will be identical to the protocols observed in the FY2012 Pilot Study Phase I so that the City has the benefit of a full year's profile of catch basin materials, characteristics and pollutants removed in each of the four study areas.

TITLE: RAINWATER HARVESTING REBATE PILOT PROGRAM
ID #: TJ-035

ACTIVITY DESCRIPTION

The City of San Diego Transportation & Storm Water Department, Storm Water Division in FY11 collaborated with the Public Utilities Department in the planning of a Rainwater Harvesting Rebate Pilot Program (Rebate Pilot Program). Staff from both departments met to discuss the application process, funding, administration, promotion, and other items related to the Rebate Pilot Program.

This Rebate Pilot Program was implemented in FY12 and was open to the residents of the City of San Diego on a first come first serve basis and provided a rebate of .50c per gallon, up to $200 per address, for water capture devices up to 400 gallons that are purchased and installed. The Public Utilities Department administered the Rebate Pilot Program in conjunction with its ongoing Prop 50 Outdoor Water Conservation Rebate Program.

In addition to Rain Barrels Rebate Program an Outdoor Water Conservation Rebate Program was also offered to the residents of the City of San Diego. The Outdoor Water Conservation Rebate Program involved a rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

Planning started in FY 11, implementation occurred in FY12.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- Not applicable

OTHER PARTICIPATING ENTITIES

- City of San Diego Public Utilities Department

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Conditions
- Dissolved Minerals
- Gross Pollutants
- Metals
- Nutrients
- Oil & Grease
- Organics
- Pesticides
- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identifies several water quality problems throughout the watershed. Rainwater harvesting reduces the overall amount of wet weather runoff and the demand for portable water for irrigation.

EFFECTIVENESS MEASUREMENTS

Data to be recorded

- Amount of Rain Barrels rebated: 98 rain barrels
- Average size of Rain Barrels installed: 60 gallons
- Total Rain Barrel gallons rebated: 17,400 gallons
- Number of Outdoor Water Conservation items rebated:
    - 297 rebates,
        - Smart Controllers -106,
        - Micro Irrigation - 93,
        - Turf Conversion – 98

Expected Benefits

The use of water capture devices (e.g., rain barrels) reduces wet weather runoff to the MS4, and collected water also reduces the demand for portable water to irrigate landscaping. Reduction in runoff can be achieved with the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants.

TITLE: 2011 TRASH ASSESSMENT OF THE UPPER TIJUANA RIVER WATERSHED

ID #: TJ-036

ACTIVITY DESCRIPTION

On January 20, 2010, the San Diego County Regional Water Quality Control Board hosted a public workshop and CEQA scoping meeting for the Tijuana River and Estuary Sedimentation and Trash Total Maximum Daily Load (TMDL) Project. In response to this notice, the County of San Diego will conduct a baseline trash assessment of the upper portions of the Tijuana River Watershed. The purpose of the study is to assess the levels of trash at different sampling locations draining portions of the watershed located in the United States. The assessment will be based on "The Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams" (SWAMP 2007).

This method generates site-specific scores from 0 to 120, with higher values indicating cleaner sites. The method also documents the number of pieces of trash per one hundred feet of stream, and the rate of return of trash under different hydrologic conditions. Trash assessment includes a visual survey of the water body (e.g., streambed and banks) and adjacent areas and is designed to represent the range of effects that trash has on the physical, biological, and chemical integrity of water bodies.

ACTIVITY IMPLEMENTATION FY10-11

From January 27 through April 29, 2011, a pilot trash assessment was carried out by the County of San Diego at ten locations within the Tijuana River Watershed. County staff visited each of the sites after two notable rain events between January and April in 2011. Complete methodology and information regarding the assessment can be found in the attached Final Report.

ACTIVITY IMPLEMENTATION FY11-12

From February 1, 2012 through March 14, 2012, an additional round of trash assessment for the pilot trash assessment was carried out by the County of San Diego at ten locations within the Tijuana River Watershed. County staff visited each of the sites to assess the trash accumulation after the period that included the 2011 dry season and a number of rain events between October 2011 and January 2012. Complete methodology and information regarding the assessment can be found in the attached Final Report.

TMDL APPLICABILITY

This activity was not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

FY10-11: Trash assessments occurred between January and April 2011.

FY11-12: Additional trash assessments were conducted between February and March 2012. The Final Report will be updated to include this data (attached). Currently, no further action is planned on this activity.

LEAD WATERSHED COPERMITTEE

- County of San Diego

OTHER PARTICIPATING COPERMITTEES

N/A

OTHER PARTICIPATING ENTITIES

N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Trash assessments will provide valuable information on the source and extent of the trash problem in the watershed and provide the basis to develop programs to address trash.

EFFECTIVENESS MEASUREMENTS

Completion of trash assessments at the ten locations is considered a Level 1 Outcome.

Appendix 1

2011 TRASH ASSESSMENT OF THE UPPER TIJUANA RIVER WATERSHED

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Pilot Trash Assessment Study at the Tijuana River Watershed

From January 27, 2011 through March 14, 2012 a pilot trash assessment study modeled on the "*The Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams*" (SWAMP 2007) was carried out by the County of San Diego at ten locations within the Tijuana River Watershed. The study was conducted to support the development of the Tijuana River and Estuary Sediment and Trash TMDLs (SDRWQCB, 2011). The purpose of the study was to assess the levels of trash at different sampling locations draining portions of the watershed located in the United States.

This pilot study aimed to assess the trash levels found on the US side of the watershed through the utilization of the trash assessment method developed for the San Francisco Bay Region (SWAMP 2007). This method generates site-specific scores from 0 to 120, with higher values indicating cleaner sites. The method also documents the number of pieces of trash per one hundred feet of stream, and the rate of return of trash under different hydrologic conditions. Trash assessment includes a visual survey of the water body (e.g., streambed and banks) and adjacent areas and is designed to represent the range of effects that trash has on the physical, biological, and chemical integrity of water bodies.

Methods

The study was conducted at ten sampling locations (Table 1).

Table 1. Sampling Location Designations and GIS Coordinates.

Site ID	Description	Latitude	Longitude
TIJ01	Cottonwood Creek at Old Highway 80 (bridge crossing)	32.78844 ° N	-116.49732 ° W
TIJ02	Pine Valley Creek at Old Highway 80 (bridge crossing)	32.83776 ° N	-116.53725 ° W
TIJ04	Campo Creek at Highway 94	32.60939 ° N	-116.47421 ° W
TIJ06	Marron Valley Creek at Marron Valley Road	32.57300 ° N	-116.75824 ° W
TIJ07	Cottonwood Creek at Marron Valley Road	32.57288 ° N	-116.75798 ° W
TIJ08	Potrero Creek at Barrett Smith Road	32.60841 ° N	-116.69587 ° W
TIJ09	Tecate Creek at Mexican Border Fence (panel #304)	32.57737 ° N	-116.61643 ° W
TIJ10	Bell Creek at Highway 94	32.59742 ° N	-116.55625 ° W
TIJ11	La Posta Creek at Old Highway 80	32.71824 ° N	-116.45693 ° W
TIJ12	Kitchen Creek at Old Highway 80	32.73349 ° N	-116.48309 ° W

According to the SWAMP (2007) San Francisco Bay trash assessment protocol, all trash items found within the defined boundaries of a site were picked up and tallied and rapid trash assessments data sheets were filled out upon each sampling occasion (a sample sheet is provided in Appendix A). Each location was assessed three times. Each of the three assessments was conducted after at least one major storm event with precipitation greater than 0.5 inches0.

All surveys were initiated at the downstream end of the selected reach. One team member walked along the bank at the edge of the stream, picking up and tallying trash items on the bank up to the upper bank boundary, above and below the high water line recording the items on the trash assessment worksheet as either above or below the high water line. The other person walked along the streambed and up and down the opposite bank, picking up and calling out trash items found in the water body and on the opposite bank, both above and below the high water line, for the tally person to mark down on the trash assessment sheet.

If it was evident that items have been littered, dumped, or accumulated via downstream transport, notes were made in the designated area of the tally sheet. All worksheets were completed before leaving the site.
The rapid trash assessment included six condition categories as outlined below:

1. *Level of Trash*. - the qualitative "first impression" of the site after observing the entire length of the reach. "Poor" sites were those where trash was foremost noticeable; no trash was obviously visible at "optimal" sites.

2. *Actual Number of Trash Items Found*. Overall number of trash items below and above high water line based on the tally of the 100-foot stream reach. Where more than 100 items have were found, following scores were assigned: 5: 101-200 items; 4: 201-300 items; 3: 301-400 items; 2: 401-500 items; 1: 501-600 items; 0: over 600 items. Similar guidelines were used to assign scores in optimal, sub-optimal and marginal categories.

3. *Threat to Aquatic Life*. Trash items that are persistent in the environment, buoyant, and relatively small that may be transported long distances and mistaken by wildlife as food items. Larger items can cause entanglement.

4. *Threat to Human Health*. Items that are dangerous to people who wade or swim in the water, and with pollutants that could accumulate in fish. The worst conditions have the potential for presence of dangerous bacteria or viruses.

5. *Illegal Dumping and Littering*. Trash items that appear to be a result of dumping or littering based on adjacent land use practices or site accessibility.

6. *Accumulation of Trash*. Trash that accumulates from upstream locations based on age and transport.

Upon each site visit, a rapid trash assessment (RTA) score ranging from 0 to 20 was assigned to each site within each of the six condition categories. For each category, a score of 16-20 reflected optimal condition, 11-15 was sub optimal, 6-10 was marginal, and 0-5 was poor. The overall rapid trash assessment (RTA) score ranging from 0 to 120 was also calculated for each sampling location upon each visit by adding together all condition category scores. According to the SWAMP (2007) protocol, "*sites with scores of 60 +/- 15% can be distinguished in threat to beneficial uses from sites with scores of 80 +/- 15%*." No categorization of the total scores as optimal, sub-optimal, marginal or poor was provided in the protocol.

Results

A total of 30 site visits were conducted at the 10 sampling locations (Table 1, Figure 1) in the Tijuana River Watershed as the visits were carried out over three rounds: one in late January/ early February 2011, the second in late March/ early April 2011, and the third in February and March of 2012. A summary table of all data collected is provided in Appendix B. Copies of completed field sheets are included in Appendix C. Total RTA scores for each sampling date and location and by condition category are provided in Table 2. Overall RTA score ranges are also color coded for each sampling location in Figure 2 below.

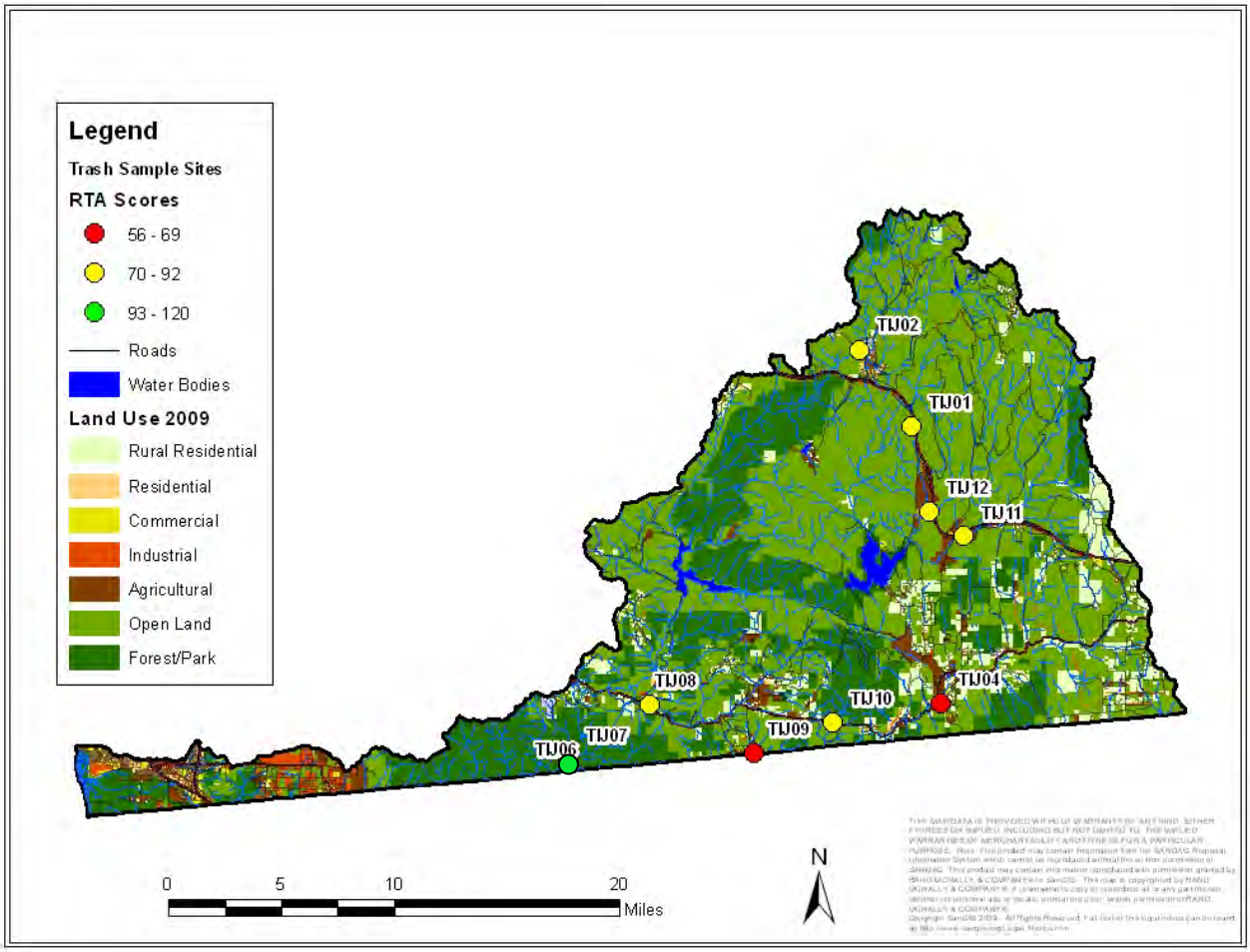

Figure 1. Sampling locations utilized in the pilot study from January through March 2012. Sites are color coded to reflect average Rapid Trash Assessment (RTA) Score ranges (higher scores indicate less impact from trash). The green dot corresponding to TIJ06 is not visible as the site was located very close to TIJ07.

On average, over all sites and sampling rounds, 45 pieces of trash were collected per 100 foot reach of stream. Over 64% of this total, or about 28 pieces per 100 foot reach of stream, was composed of plastic items. Metals (14%), biodegradables (6%), glass (5%), fabric (5%), miscellaneous other items (4%) and a small amount of toxic (1%), construction (1%), and biohazard (< 1%) trash materials were also found (Figure 2). Most sites contained less than 100 pieces of trash; three locations, TIJ04, TIJ09 and TIJ10, exceeded that number during one of the three visits. The sites with most pieces of trash included Tecate Creek (TIJ09), Campo Creek (TIJ04), and Bell Creek (TIJ10). Overall, 58% of all trash items were found below the high-water line, while 42% of items were found above. The average total Rapid Trash Assessment (RTA) score was 81, with a range from 57 to 116 (out of a possible 120). Total RTA scores were strongly related to the number of plastic pieces found at sites (Figure 3); as lower RTA scores reflect higher trash levels, sites with low RTA scores contained higher total numbers of plastic pieces.

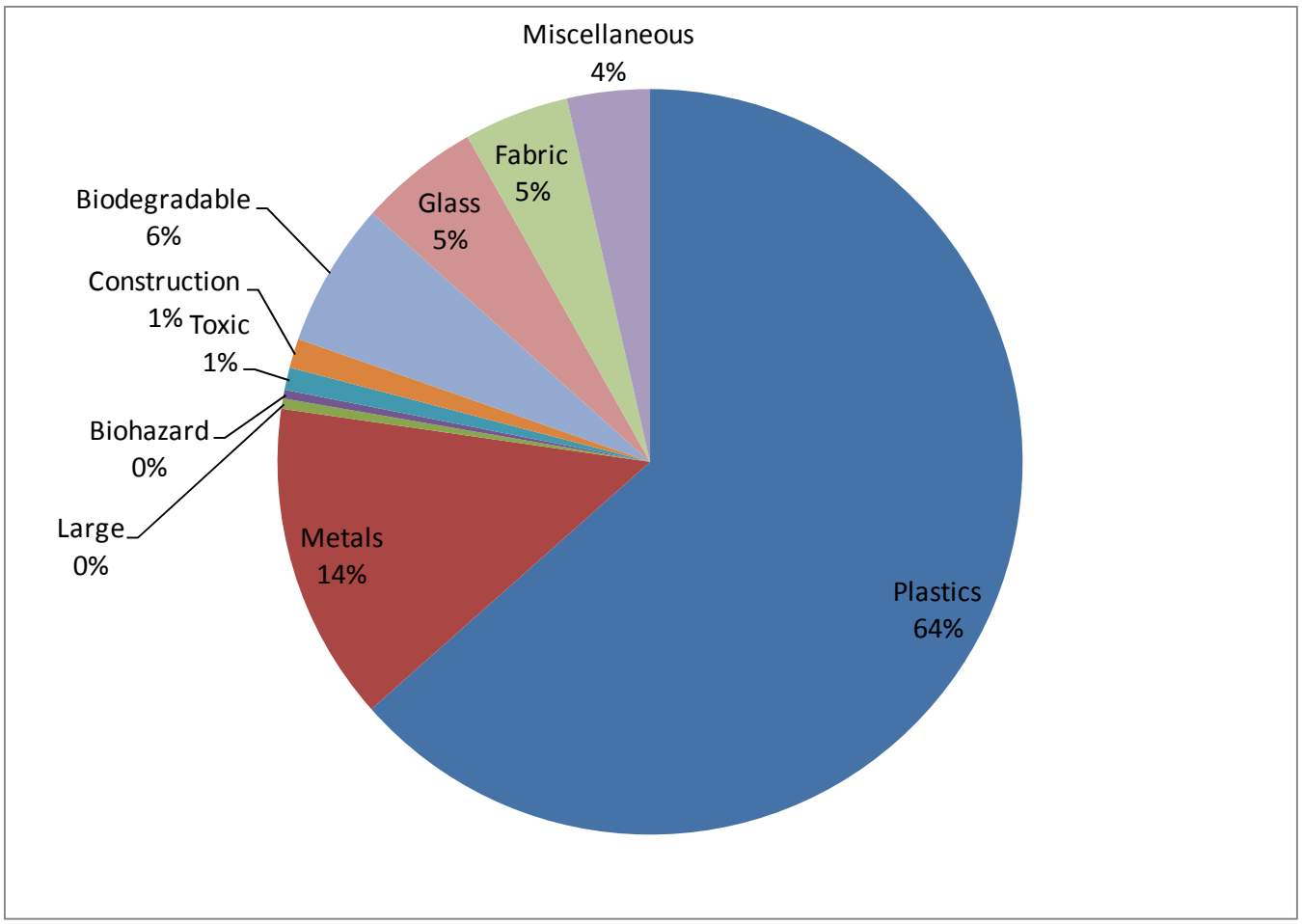

Figure 2. Average percentage of total pieces of trash, by category, per 100 foot reach

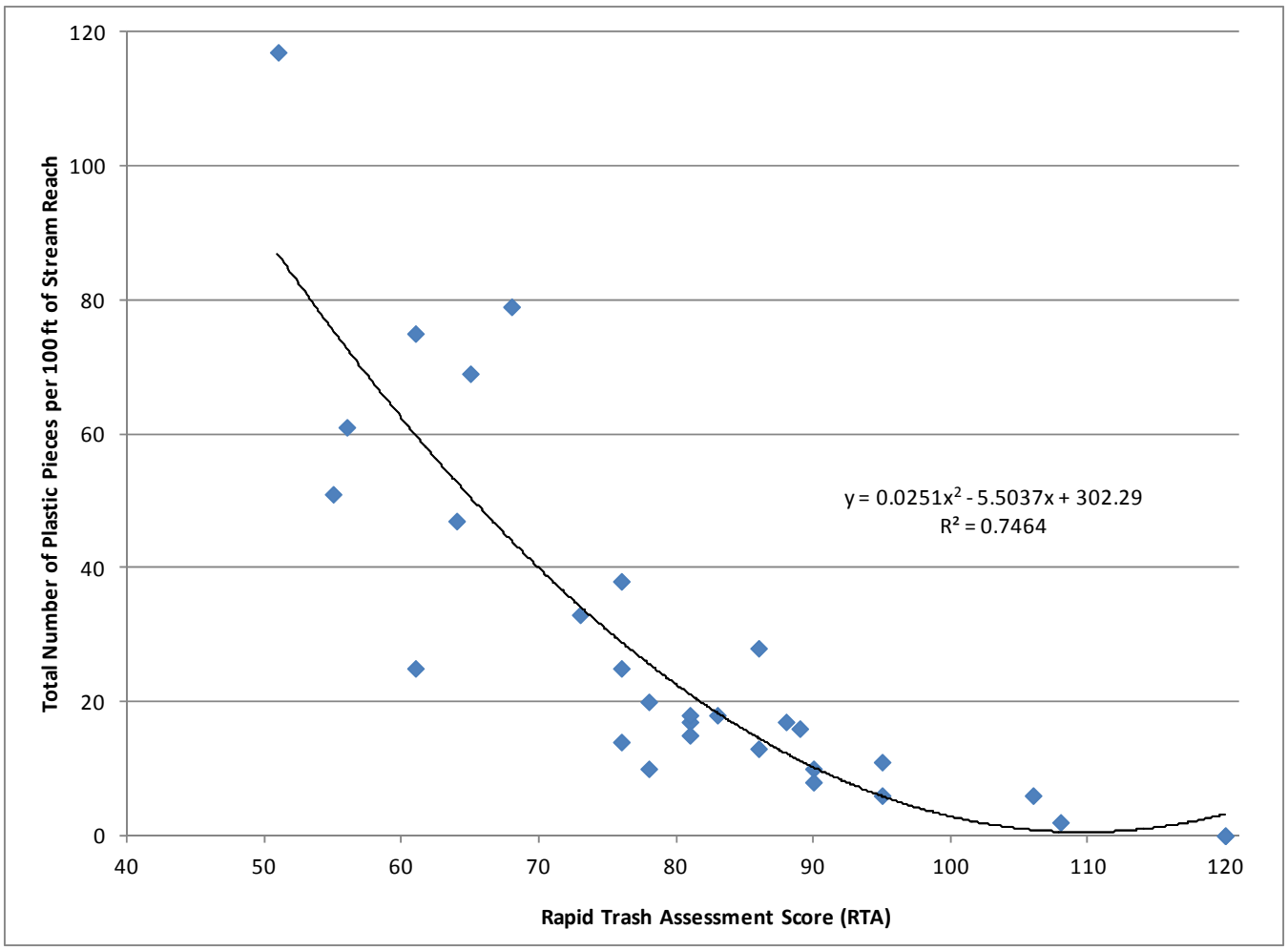

Figure 3. The relationship between the rapid trash assessment score (RTA) and the total number of plastic pieces found per 100 feet reach of stream.

Table 2. Rapid Trash Assessment (RTA) Scores for Each Sampling Location by Condition Category. RTA Scores of 16-20 (green) indicate optimal sites; 11-15 (yellow) = sub-optimal; 6-10 (orange) = marginal; 0-5 (red) = poor.

Site ID	Sample Date	Level of Trash	Actual Number of Trash Items Found	Threat to Aquatic Life	Threat to Human Health	Illigal Litering/ Dumping	Accum-ulation of Trash	Total Score
TIJ01	1/27/11	18	12	8	13	13	19	**83**
TIJ01	4/1/11	18	12	8	10	14	14	**76**
TIJ01	3/14/12	19	13	10	10	15	11	**78**
TIJ02	1/27/11	15	11	8	15	12	15	**76**
TIJ02	4/1/11	19	12	8	15	13	11	**78**
TIJ02	3/14/12	19	13	9	20	14	13	**88**
TIJ04	2/2/11	14	6	7	8	10	10	**55**
TIJ04	3/17/11	17	6	8	5	12	13	**61**
TIJ04	2/15/12	14	5	5	12	12	8	**56**
TIJ06	2/2/11	20	20	20	20	30	10	**120**
TIJ06	3/28/11	20	20	20	20	20	20	**120**
TIJ06	2/10/12	20	19	15	20	20	14	**108**
TIJ07	2/2/11	20	14	10	19	19	9	**81**
TIJ07	4/29/11	19	13	10	15	15	9	**81**
TIJ07	2/10/12	20	15	10	20	20	10	**95**
TIJ08	2/7/11	18	14	9	14	17	9	**81**
TIJ08	4/29/11	20	15	10	15	20	10	**90**
TIJ08	2/27/12	20	14	10	15	17	10	**86**
TIJ09	2/1/11	14	4	5	14	10	4	**51**
TIJ09	3/28/11	16	6	5	15	11	8	**61**
TIJ09	2/27/12	15	7	3	20	12	8	**65**
TIJ10	2/1/11	17	5	10	14	12	10	**68**
TIJ10	3/17/11	19	13	8	19	14	13	**86**
TIJ10	2/15/12	15	9	6	13	12	9	**64**
TIJ11	1/28/11	12	9	9	12	12	19	**73**
TIJ11	3/29/11	19	14	12	15	15	20	**95**
TIJ11	2/1/12	19	17	13	20	17	20	**106**
TIJ12	1/28/11	18	10	8	15	13	12	**76**
TIJ12	3/29/11	19	14	10	19	17	10	**89**
TIJ12	2/1/12	19	14	12	15	15	15	**90**

Based on the three site visits, Marron Valley Creek at Marron Valley Road (TIJ06) had the highest RTA scores that reached the optimum value of 120 for two of the three visits. Campo Creek at Highway 94 (TIJ04) and Tecate Creek at Mexican Border Fence (TIJ09) had the lowest overall RTA scores and, according to the SWAMP (2007) trash assessment protocol, could be considered in threat to beneficial uses. The remaining sites fell within the overall RTA score range (RTA > 69) that is not considered a threat to beneficial uses. For most sites, the RTA

scores did not differ greatly between site visits. As trash was picked up upon each visit, more trash was found upon the subsequent visits due both to deposition of new trash (direct littering and dumping) as well as the appearance of older trash (older trash resurfacing from under the sediment or drifting from upstream locations - downstream transport and accumulation). For TIJ09, TIJ04 and TIJ10, the re-surfacing trash accounted for the majority of the trash pieces found upon the second visit. However, the same was not true for the third visit; most trash found during the third visit most likely was new to the site or drifted from upstream and the banks. Although the SWAMP (2007) protocol allows for removing trash from the sites so that only "new" trash is counted upon subsequent visits, the protocol does not contain the "embedded historical trash" category and, in the field sheets, the "embedded historical trash" was recorded as part of the "littered" category.

Discussion

The purpose of this pilot study was to assess the levels of trash at different sampling locations draining portions of the Tijuana River Watershed located in the United States. The trash assessment method developed for the San Francisco Bay Region (SWAMP 2007) was employed that involves removal of trash upon each site visit so that, upon subsequent visits, only "new" trash that has been dumped, littered and/or has drifted from other locations is enumerated. The study has been carried out at 10 sampling locations over three rounds following storm events in 2011 and 2012.

An average of 45 pieces of trash were collected per 100 foot reach of stream with 64% consisting of plastic items. The sites with most pieces of trash included Tecate Creek (TIJ09), Campo Creek (TIJ04), and Bell Creek (TIJ10). With the exception of two locations, Campo Creek (TIJ04) and Tecate Creek (TIJ09), trash levels in the evaluated portions of the Tijuana River Watershed whose drainage areas are located within the United States, were not considered a threat to beneficial uses. At Campo Creek, Tecate Creek, and Bell Creek, elevated trash levels found upon the second visit were mostly due to the unearthed historical trash as was evident by levels of degradation and imbeddedness of the trash pieces within the creeks' bottoms. This however was not true for the third visit when most of the trash was most likely new and/or has drifted from locations upstream.

Overall, the results of the trash assessment indicate that 8 of the 10 sites could not be considered in threat to beneficial uses. The remaining 2 sites had overall RTA scores of less than 69 (considered in threat to beneficial uses).

References

Surface Water Ambient Monitoring Program (SWAMP). 2007. *The Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurement in Streams* Final Technical Report (April 2007) http://www.swrcb.ca.gov/sanfranciscobay/docs/swampthrashreport.pdf

San Diego Regional Water Quality Control Board (SDRWQCB). 2011. Tijuana River and Estuary Sediment and Trash TMDL.
http://www.swrcb.ca.gov/rwqcb9/water_issues/programs/tmdls/TijuanaRiverValley.shtml

Appendix A
Sample Field Trash Assessment Sheets

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: _____ DATE/TIME: _____
MONITORING GROUP, STAFF: _____ SAMPLE ID: _____
SITE DESCRIPTION (Station Name, Number, etc.): _____

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accum-ulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score _____

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: _____

HIGH WATER LINE: _____

UPPER EXTENT OF BANKS OR SHORE: _____

_____

NOTES:

_____

_____

_____

_____

_____

_____

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above___ # Below___	**METAL** # Above___ # Below___
Plastic Bags	Aluminum Foil
Plastic Bottles	Aluminum or Steel Cans
Plastic Bottle Caps	Bottle Caps
Plastic Cup Lid/Straw	Metal Pipe Segments
Plastic Pipe Segments	Auto Parts (specify below)
Plastic Six-Pack Rings	Wire (barb, chicken wire etc.)
Plastic Wrapper	Metal Object
Soft Plastic Pieces	**LARGE (specify below)** # Above___ # Below___
Hard Plastic Pieces	Appliances
Styrofoam cups pieces	Furniture
Styrofoam Pellets	Garbage Bags of Trash
Fishing Line	Tires
Tarp	Shopping Carts
Other (write-in)	Other (write-in)
BIOHAZARD # Above___ # Below___	**TOXIC** # Above___ # Below___
Human Waste/Diapers	Chemical Containers
Pet Waste	Oil/Surfactant on Water
Syringes or Pipettes	Spray Paint Cans
Dead Animals	Lighters
Other (write-in)	Small Batteries
CONSTRUCTION DEBRIS#Above___ #Below___	Vehicle Batteries
Concrete (not placed)	Other (write-in)
Rebar	**BIODEGRADABLE** # Above___ # Below___
Bricks	Paper
Wood Debris	Cardboard
Other (write-in)	Food Waste
MISCELLANEOUS # Above___ # Below___	Yard Waste (incl. trees)
Synthetic Rubber	Leaf Litter Piles
Foam Rubber	Other (write-in)
Balloons	**GLASS** # Above___ # Below___
Ceramic pots/shards	Glass bottles
Hose Pieces	Glass pieces
Cigarette Butts	**FABRIC AND CLOTH** # Above # Below
Golf Balls	Synthetic Fabric
Tennis Balls	Natural Fabric (cotton, wool)
Other (write-in)	Other (write-in)
Total pieces Above: **Below:**	**Grand total:**
Tally all trash in above rows; make notes below as needed to facilitate scoring.	
Littered:	
Dumped:	
Downstream Accumulation:	

SPECIFIC DESCRIPTION OF ITEMS FOUND:_____

_____

Appendix B
Data Summary Table

Site ID	Date	Level of Trash	Actual Number of Trash Items Found	Threat to Aquatic Life	Threat to Human Health	Illegal Dumping	Illegal Littering	Accumulation of Trash	Total Score
TIJ01	**1/27/11**	18	12	8	13	10	3	19	**83**
TIJ01	**4/1/11**	18	12	8	10	10	4	14	**76**
TIJ01	**3/14/12**	19	13	10	10	10	5	11	**78**
TIJ02	**1/27/11**	15	11	8	15	9	3	15	**76**
TIJ02	**4/1/11**	19	12	8	15	9	4	11	**78**
TIJ02	**3/14/12**	19	13	9	20	10	4	13	**88**
TIJ04	**2/2/11**	14	6	7	8	8	2	10	**55**
TIJ04	**3/17/11**	17	6	8	5	10	2	13	**61**
TIJ04	**2/15/12**	14	5	5	12	10	2	8	**56**
TIJ06	**2/2/11**	20	20	20	20	20	10	10	**120**
TIJ06	**3/28/11**	20	20	20	20	10	10	20	**120**
TIJ06	**2/10/12**	20	19	15	20	10	10	14	**108**
TIJ07	**2/2/11**	20	14	10	19	10	9	9	**81**
TIJ07	**4/29/11**	19	13	10	15	10	5	9	**81**
TIJ07	**2/10/12**	20	15	10	20	10	10	10	**95**
TIJ08	**2/7/11**	18	14	9	14	10	7	9	**81**
TIJ08	**4/29/11**	20	15	10	15	10	10	10	**90**
TIJ08	**2/27/12**	20	14	10	15	10	7	10	**86**
TIJ09	**2/1/11**	14	4	5	14	7	3	4	**51**
TIJ09	**3/28/11**	16	6	5	15	9	2	8	**61**
TIJ09	**2/27/12**	15	7	3	20	10	2	8	**65**
TIJ10	**2/1/11**	17	5	10	14	10	2	10	**68**
TIJ10	**3/17/11**	19	13	8	19	10	4	13	**86**
TIJ10	**2/15/12**	15	9	6	13	10	2	9	**64**
TIJ11	**1/28/11**	12	9	9	12	10	2	19	**73**
TIJ11	**3/29/11**	19	14	12	15	10	5	20	**95**
TIJ11	**2/1/12**	19	17	13	20	10	7	20	**106**
TIJ12	**1/28/11**	18	10	8	15	10	3	12	**76**
TIJ12	**3/29/11**	19	14	10	19	10	7	10	**89**
TIJ12	**2/1/12**	19	14	12	15	10	5	15	**90**

Site ID	Date	Plastics			Metals			Large			Biohazard			Toxic			Construction			Biodegradables			Miscellaneous			Glass			Fabric			Total Score Above	Total Score Below	Overall Score	Littered	Dumped	Downstream Accumulation
		Above	Below	Total	Above	Below	Total	Above	Below	Total	Above	Below	Total	Above	Below	Total	Above	Below	Total	Above	Below	Total	Above	Below	Total	Above	Below	Total	Above	Below	Total						
TIJ01	**1/27/11**	13	5	18	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	3	1	4	3	1	4	3	2	5	7	0	7	**30**	**10**	**40**	40	0	0
TIJ01	**4/1/11**	6	8	14	5	1	6	0	0	0	0	0	0	0	0	0	1	1	2	1	1	2	3	1	4	2	4	6	0	2	2	**18**	**18**	**36**	31	0	5
TIJ01	**3/14/12**	4	6	10	1	4	5	0	0	0	0	1	1	0	0	0	0	0	0	1	4	5	0	1	1	2	3	5	1	1	2	**9**	**20**	**29**	20	0	9
TIJ02	**1/27/11**	20	5	25	3	7	10	0	0	0	0	0	0	1	0	1	3	0	3	5	1	6	0	0	0	3	0	3	2	0	2	**37**	**13**	**50**	45	2	2
TIJ02	**4/1/11**	10	10	20	3	2	5	0	0	0	0	0	0	0	0	0	1	0	1	2	0	2	3	1	4	2	1	3	6	0	6	**27**	**14**	**41**	31	1	9
TIJ02	**3/14/12**	10	7	17	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	0	1	0	0	0	2	0	2	**15**	**10**	**25**	20	0	5
TIJ04	**2/2/11**	31	20	51	2	24	26	0	0	0	0	0	0	0	0	0	0	0	0	2	4	6	3	2	5	3	0	3	0	0	0	**41**	**50**	**91**	59	20	15
TIJ04	**3/17/11**	5	20	25	0	50	50	0	0	0	1	0	1	0	3	3	0	0	0	1	3	4	0	6	6	0	9	9	0	0	0	**7**	**91**	**98**	92	0	6
TIJ04	**2/15/12**	46	15	61	4	6	10	0	0	0	0	0	0	0	5	5	1	0	1	8	2	10	2	7	9	1	5	6	0	0	0	**62**	**40**	**102**	77	0	25
TIJ06	**2/2/11**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	0	0	0
TIJ06	**3/28/11**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**	0	0	0
TIJ06	**2/10/12**	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	**1**	**3**	**4**	1	0	3
TIJ07	**2/2/11**	8	9	17	1	1	2	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1	**10**	**12**	**22**	2	0	20
TIJ07	**4/29/11**	6	12	18	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	1	2	1	3	1	0	1	**13**	**14**	**27**	10	0	17
TIJ07	**2/10/12**	1	10	11	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**11**	**12**	0	0	12
TIJ08	**2/7/11**	5	10	15	0	3	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	**5**	**16**	**21**	6	1	15
TIJ08	**4/29/11**	3	7	10	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	**3**	**10**	**13**	1	0	12
TIJ08	**2/27/12**	3	10	13	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	**6**	**10**	**16**	4	0	12
TIJ09	**2/1/11**	10	107	117	2	7	9	0	5	5	0	0	0	1	0	1	3	3	6	0	3	3	1	0	1	3	2	5	0	8	8	**20**	**135**	**155**	50	58	50
TIJ09	**3/28/11**	12	63	75	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	0	1	1	0	2	2	2	4	6	**16**	**76**	**92**	52	10	30
TIJ09	**2/27/12**	29	40	69	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	7	3	10	0	1	1	0	0	0	0	0	0	**38**	**44**	**82**	60	0	25
TIJ10	**2/1/11**	69	10	79	6	0	6	0	0	0	1	0	1	0	0	0	0	0	0	7	0	7	2	1	3	1	0	1	4	2	6	**90**	**13**	**103**	93	0	10
TIJ10	**3/17/11**	21	7	28	3	1	4	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	2	0	1	1	0	1	1	**26**	**11**	**37**	32	0	5
TIJ10	**2/15/12**	32	15	47	6	1	7	0	0	0	0	0	0	0	0	0	0	1	1	5	2	7	1	0	1	1	2	3	1	1	2	**46**	**22**	**68**	53	0	15
TIJ11	**1/28/11**	7	26	33	2	12	14	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	3	2	5	4	3	7	**17**	**45**	**62**	62	0	0
TIJ11	**3/29/11**	1	5	6	1	0	1	0	0	0	0	0	0	1	1	2	0	0	0	4	0	4	0	0	0	0	1	1	3	1	4	**10**	**8**	**18**	18	0	0
TIJ11	**2/1/12**	5	1	6	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**	**1**	**7**	7	0	0
TIJ12	**1/28/11**	2	36	38	0	5	5	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	2	2	0	5	5	0	0	0	**3**	**49**	**52**	45	0	7
TIJ12	**3/29/11**	1	15	16	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	**1**	**18**	**19**	4	0	16
TIJ12	**2/1/12**	3	5	8	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	2	2	**7**	**9**	**16**	14	0	2

Appendix C
Completed Field Sheets

K2 — 12/7/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ- Pine Valley Creek DATE/TIME: 1/27/11 10:00
MONITORING GROUP, STAFF: S.D. / K.L. SAMPLE ID: 3752
SITE DESCRIPTION (Station Name, Number, etc.): TIJ02

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 76

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: Lower: upstream face of middle bridge abutment of Old Hwy 80

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE: dirt path/base of rocks

NOTES: Upper: 100' upstream of lower boundary marked with a wood stake + pile of stones.

TIJ02 11/27/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 20 # Below 5	**METAL**	# Above 3 # Below 7
Plastic Bags	• |	Aluminum Foil	•
Plastic Bottles	• • • • • • • • |	Aluminum or Steel Cans	• • |||||||
Plastic Bottle Caps	•	Bottle Caps	
Plastic Cup Lid/Straw	•	Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	•	Metal Object	
Soft Plastic Pieces	• • • |	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	| | • •	Appliances	
Styrofoam cups pieces	• • •	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 18 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	•
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 3 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 5 # Below 1
Bricks		Paper	• • • • • |
Wood Debris	highway marker - • •	Cardboard	
Other (write-in)	traffic cone - •	Food Waste	
MISCELLANEOUS	# Above 0 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 3 # Below 0
Ceramic pots/shards		Glass bottles	• •
Hose Pieces		Glass pieces	•
Cigarette Butts		**FABRIC AND CLOTH**	# Above 2 # Below 0
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	• •
Other (write-in)		Other (write-in)	

Total pieces Above: 36 **Below:** 13 **Grand total:** 49

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: ~~47~~ 45 (SD 3/17/11)

Dumped: 2

Downstream Accumulation: 2

SPECIFIC DESCRIPTION OF ITEMS FOUND:

NZ - 12/7/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Cottonwood Creek DATE/TIME: 1/27/11 1200
MONITORING GROUP, STAFF: KL/SD SAMPLE ID: 3753
SITE DESCRIPTION (Station Name, Number, etc.): TIJ01

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: 4/10/11 hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3 +1all	2 1 0
L-SCORE	10 9	8 7 6	5 ~~4~~ 3 5.0	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

drove stake by rock, E. bank

Total Score ~~85~~ 83 (5M)

upper: granite outcropping + waterfall

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: lower: downstream edge of Old Hwy 80 bridge

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE: Level edge of bridge footing

NOTES:

TIJ01 1/27/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 13 # Below 5	**METAL**	# Above 1 # Below 0
Plastic Bags	|	Aluminum Foil	
Plastic Bottles	• • •	Aluminum or Steel Cans	
Plastic Bottle Caps	•	Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	•
Plastic Wrapper	• • • • • •	Metal Object	
Soft Plastic Pieces	• | • |	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	| |	Appliances	
Styrofoam cups pieces	• •	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 1	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 6 3 50 # Below 2 1 50
Bricks		Paper	| • •
Wood Debris	|	Cardboard	•
Other (write-in)	3 50 1 50	Food Waste	
MISCELLANEOUS	# Above 0 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in) clay pigeon	: • • | •
Balloons		**GLASS**	# Above 3 # Below 2
Ceramic pots/shards		Glass bottles	• |
Hose Pieces		Glass pieces	| • •
Cigarette Butts		**FABRIC AND CLOTH**	# Above 7 # Below 0
Golf Balls		Synthetic Fabric	•
Tennis Balls		Natural Fabric (cotton, wool)	• • • • • •
Other (write-in)		Other (write-in)	

More to enter 50 4/01/11

Total pieces Above: 30 **Below:** 10 **Grand total:** 40

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 40

Dumped: 0

Downstream Accumulation: 0

SPECIFIC DESCRIPTION OF ITEMS FOUND:

DQ — 12/7/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / La Posta Creek DATE/TIME: 1/28/11 / 9:40
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3754
SITE DESCRIPTION (Station Name, Number, etc.): TIJ 11

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 73

lower: cluster of boulders at downstream edge of bridge

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper: ≈ 30' upstream of barbed wire fence running across stream under bridge. Marked w/ stake

HIGH WATER LINE: Start of mineral dep.

UPPER EXTENT OF BANKS OR SHORE: upper ~~the~~ edge of mineral deposits.

NOTES: Removed two small coils of barbed wire.

TIJ11 1/28/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above 7 # Below 26		**METAL** # Above 2 # Below 12	
Plastic Bags	|||	Aluminum Foil	
Plastic Bottles	|||| •||•|||•	Aluminum or Steel Cans	||||||•|
Plastic Bottle Caps		Bottle Caps	| •
Plastic Cup Lid/Straw	|	Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	|
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	||
Plastic Wrapper	||||• • •	Metal Object	|
Soft Plastic Pieces	• |||||	**LARGE (specify below)** # Above 0 # Below 0	
Hard Plastic Pieces	|	Appliances	
Styrofoam cups pieces	||||	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD # Above 0 # Below 0		**TOXIC** # Above 0 # Below 0	
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS #Above 0 #Below 0		Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE** # Above 1 # Below 2	
Bricks		Paper	|•|
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS # Above 0 # Below 0		Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS** # Above 3 # Below 2	
Ceramic pots/shards		Glass bottles	|• • •|
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH** # Above 4 # Below 3	
Golf Balls		Synthetic Fabric	|
Tennis Balls		Natural Fabric (cotton, wool)	|• • •|•
Other (write-in)		Other (write-in)	
Total pieces Above: 17	**Below:** 45	**Grand total:** 62	

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 62

Dumped: 0

Downstream Accumulation: 0

SPECIFIC DESCRIPTION OF ITEMS FOUND: car part : lamp

NC2 - 12/7/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ12/Kitchen Creek DATE/TIME: 1/28/11/12:00
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: ~~TIJ12~~ 3755 (SD)
SITE DESCRIPTION (Station Name, Number, etc.): TIJ12

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 (18) 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 (8) 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3 SD	~~2~~ SD 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score ~~75~~ 76 SD 3/17/11

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: 100' upper - upstream edge of bridge lower - barbed wire fence line crossing creek (in disrepair)

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE: dry veg. species/dirt berm under bridge

NOTES:

TIJ12 1/28/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 2 # Below 36	**METAL**	# Above 0 # Below 5
Plastic Bags	//	Aluminum Foil	
Plastic Bottles	| • • |||||	Aluminum or Steel Cans	|||
Plastic Bottle Caps	|||	Bottle Caps	||
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces	||||||||	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	|	Appliances	
Styrofoam cups pieces	||||||||||||||||	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 1 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 0 # Below 1
Bricks		Paper	|
Wood Debris	•	Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 2	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 0 # Below 5
Ceramic pots/shards		Glass bottles	|||
Hose Pieces		Glass pieces	||
Cigarette Butts	|	**FABRIC AND CLOTH**	# Above 0 # Below 0
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in) Gun casing	|	Other (write-in)	

Total pieces Above: 3 **Below:** 49 **Grand total:** 52

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: ~~52~~ 45 (SD 3/17/11)

Dumped: 0

Downstream Accumulation: 7

SPECIFIC DESCRIPTION OF ITEMS FOUND:

DK2 - 12/7/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Tecate Creek DATE/TIME: 02/01/11/9:30
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3756
SITE DESCRIPTION (Station Name, Number, etc.): TIJ09

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 50 51 (SD 3/17/11)

lower - culvert grating near border fence

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - 100' upstream near willow, marked w/ stake, ≈ 20' downstream of large oak

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE: just below level of dirt roads

NOTES: Much of trash removed appears to have accumulated over time!

TIJ 09 2/1/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above 10 # Below 107	**METAL** # Above 2 # Below 7
Plastic Bags •|•|•||||•	Aluminum Foil ||
Plastic Bottles |||||||||||	Aluminum or Steel Cans |•
Plastic Bottle Caps	Bottle Caps |
Plastic Cup Lid/Straw	Metal Pipe Segments* || *2 unmarkable
Plastic Pipe Segments	Auto Parts (specify below)
Plastic Six-Pack Rings	Wire (barb, chicken wire etc.) •|
Plastic Wrapper •	Metal Object
Soft Plastic Pieces ||||||||||\

DK2 — 12/7/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/ Bell Creek DATE/TIME: 2/01/11 /12:10
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3757
SITE DESCRIPTION (Station Name, Number, etc.): TIJ10

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 ~~18~~ 17 16 DK2	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	(10) 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	(2) 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1 0

Total Score 68

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper: 20' upstream from upstream edge of bridge, in line w/ base of apron

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE: base of upland slope

NOTES: lower: 20' downstream from downstream edge of bridge, in line with base of concrete apron.

TIJ10 2/1/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 69 # Below 10	**METAL**	# Above 6 # Below 0
Plastic Bags	•••••••• |	Aluminum Foil	
Plastic Bottles	•••••••••••• |||	Aluminum or Steel Cans	••••••
Plastic Bottle Caps	•	Bottle Caps	
Plastic Cup Lid/Straw	•	Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	•••••••• |	Metal Object	
•••••• Soft Plastic Pieces	•|••••••••••••• |	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	|•••••••	Appliances	
•••• 11 < Styrofoam cups pieces	•|•••••••••••	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 1 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals	• (blue jay)	Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 7 # Below 0
Bricks		Paper	••••••
Wood Debris		Cardboard	•
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 2 # Below 1	Yard Waste (incl. trees)	
Synthetic Rubber	•	Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 1 # Below 0
Ceramic pots/shards		Glass bottles	
Hose Pieces	•	Glass pieces	•
Cigarette Butts		**FABRIC AND CLOTH**	# Above 4 # Below 2
Golf Balls		Synthetic Fabric	•
Tennis Balls	|	Natural Fabric (cotton, wool)	•••• |
Other (write-in)		Other (write-in) flip-flop: 1	
Total pieces Above: 90	**Below:** 13	**Grand total:** 103	

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 103 93 (so 3/17/11)

Dumped: 0

Downstream Accumulation: 10

SPECIFIC DESCRIPTION OF ITEMS FOUND:

KZ – 12/8/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Marron Valley Creek DATE/TIME: 02/02/11 9:40
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3758
SITE DESCRIPTION (Station Name, Number, etc.): TIJ06

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 120

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: lower – edge of road; upper – 100' upstream of road

HIGH WATER LINE: marked with stake

UPPER EXTENT OF BANKS OR SHORE: top of slope

NOTES: Area of ponded water observed; flowing water noted ≈ halfway up transect.

TIJ06 2/2/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 0 # Below 0	**METAL**	# Above 0 # Below 0
Plastic Bags		Aluminum Foil	
Plastic Bottles		Aluminum or Steel Cans	
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces		**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces		Appliances	
Styrofoam cups pieces		Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 0 # Below 0
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 0 # Below 0
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 0 # Below 0
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	
Total pieces Above: 0	**Below:** 0	**Grand total:** 0	

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 0

Dumped: 0

Downstream Accumulation: 0

SPECIFIC DESCRIPTION OF ITEMS FOUND:_____

NZ – 12/8/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Cottonwood Creek DATE/TIME: 02/02/11/10:10
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3759
SITE DESCRIPTION (Station Name, Number, etc.): TIJ07

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16 / NZ	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9 SD	8 7 6	5 SD 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 81 SD 3/17/11

upper - downstream edge of dirt road

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: lower - 100' downstream

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE: base of upland slope

NOTES:

TIJ07 2/2/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 8 # Below 9	**METAL**	# Above 1 # Below 1
Plastic Bags		Aluminum Foil	
Plastic Bottles	| • • | •	Aluminum or Steel Cans	| •
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces	• | • |	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	|||| • | • •	Appliances	
Styrofoam cups pieces		Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 1	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals	1 (gopher)	Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 1 # Below 0
Bricks		Paper	•
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 0 # Below 0
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 0 # Below 1
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	|
Other (write-in)		Other (write-in)	

Total pieces Above: 10 **Below:** 12 **Grand total:** 22

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: ~~22~~ 2 (SP 3/17/11)

Dumped: 0

Downstream Accumulation: ≈90% (19-20 items)

SPECIFIC DESCRIPTION OF ITEMS FOUND:

AQ – 12/8/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Camco Creek DATE/TIME: 02/02/11/12:00
MONITORING GROUP, STAFF: SP/KL SAMPLE ID: 3760
SITE DESCRIPTION (Station Name, Number, etc.): TIJ04

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 (6)	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 (7) 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 (8) 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 55

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: lower - ~~debris line~~ ~~off~~ downstream end of abutment; in line with edge of bridge

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE: toe of slope

NOTES: upper - 100' upstream, marked w/s tree oak

≈6 wood wedges observed, but not counted (fallen bridge structural elements).

TI J04 2/2/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 31 # Below 20	**METAL**	# Above 2 # Below 25
Plastic Bags		Aluminum Foil	
Plastic Bottles		Aluminum or Steel Cans	
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	nails (20)
Soft Plastic Pieces		**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces		Appliances	
Styrofoam cups pieces		Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 2 # Below 4
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 3 # Below 2	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 3 # Below 2
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above ___ # Below 1
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in) Ceramic 11		Other (write-in)	

Total pieces Above: 41 **Below:** 53 **Grand total:** 94

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: ~~74~~ 59 (SW 3/17/11)

Dumped: 20

Downstream Accumulation: 15 out of 94

SPECIFIC DESCRIPTION OF ITEMS FOUND:

NKL - 12/8/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Potrero Creek DATE/TIME: 2/07/11 / 11:10
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3783
SITE DESCRIPTION (Station Name, Number, etc.): TIJ08

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score ~~79~~ ~~82~~ 50 3/17/11 12/8/11

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: Lower reach = center of bridge abutment (angle point) Upper reach = smaller bridge abutment or 100 feet upstream

HIGH WATER LINE: Base of bridge abutment

UPPER EXTENT OF BANKS OR SHORE: one-half way up bank next to road

NOTES:

Concrete slabs from bridge were not considered illegaly dumped.

TIJ 08 2/7/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 2 (•) # Below 6 (•)	**METAL**	# Above 0 # Below 3
Plastic Bags	5 10	Aluminum Foil	
Plastic Bottles	|||| • | | •	Aluminum or Steel Cans	| |
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	|
Plastic Wrapper		Metal Object	
Soft Plastic Pieces	| | |	**LARGE (specify below)**	# Above 0 # Below 1
Hard Plastic Pieces	| •	Appliances	
Styrofoam cups pieces	• •	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	Concrete Slabs From collapsed bridge | (Not removed)
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 0 # Below 0
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 0 # Below 1
Ceramic pots/shards		Glass bottles	|
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 0 # Below 1
Golf Balls		Synthetic Fabric	|
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	

Total pieces Above: 5 **Below:** 17 **Grand total:** 22

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: ~~2~~ 6 (SD 3/17/11)

Dumped: 1

Downstream Accumulation: 15

SPECIFIC DESCRIPTION OF ITEMS FOUND:

DKZ – 12/10/11
9

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Bell Creek DATE/TIME: 3/17/11 10:20
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3837
SITE DESCRIPTION (Station Name, Number, etc.): TIJ10

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 86

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - 20' from upstream edge of bridge; in line with base of apron

HIGH WATER LINE: Debris line

UPPER EXTENT OF BANKS OR SHORE: Base of upland slope

lower - 20' downstream from downstream edge of Bridge, in line with base of concrete apron.

NOTES: 2nd trash assessment conducted.

Recent storms (since 1st assessment) have apparently exposed some items of historical trash. The majority of trash collected appears to have been historically most likely exposed by wind/water erosion.

TIJ10 3/17/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 21 # Below 7	**METAL**	# Above 3 # Below 1
Plastic Bags		Aluminum Foil	•
Plastic Bottles	• •	Aluminum or Steel Cans	• • |
Plastic Bottle Caps	•	Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	| •	Metal Object	
Soft Plastic Pieces	• |||| • • • • • •	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	• • • • • •	Appliances	
Styrofoam cups pieces	| • • • •	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in) traffic cone-1		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 1	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 0 # Below 0
Bricks		Paper	
Wood Debris	|	Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 2 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber	• •	Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 0 # Below 1
Ceramic pots/shards		Glass bottles	|
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 0 # Below 1
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	|
Other (write-in)		Other (write-in)	
Total pieces Above: 26	**Below:** 11	**Grand total:** 37	
Tally all trash in above rows; make notes below as needed to facilitate scoring.			
Littered: 32			
Dumped: 0			
Downstream Accumulation: 5			

SPECIFIC DESCRIPTION OF ITEMS FOUND:

KZ – 12/10/11
9

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ Campo Creek DATE/TIME: 3/17/11 / 11:40
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3838
SITE DESCRIPTION (Station Name, Number, etc.): TIJ04

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 61

lower - edge of downstream end of bridge abutment; in line w/oak tree

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: 100' upstream, marked with a stake

HIGH WATER LINE: Debris line

UPPER EXTENT OF BANKS OR SHORE: toe of slope

NOTES: Evidence of historical trash having been exposed by recent scouring.

Wood wedges fallen from underside of bridge not counted.

TIJ04 3/17/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 5 # Below 20	**METAL**	# Above 0 # Below 50
Plastic Bags	• |	Aluminum Foil	|
Plastic Bottles		Aluminum or Steel Cans	
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw	|	Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	• |||	Metal Object	|||\

KL — 12/11/10
9

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Mayron Valley Creek DATE/TIME: 3/28/11 / 10:20
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3839
SITE DESCRIPTION (Station Name, Number, etc.): TIJ06

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accum-ulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 120

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: lower - edge of road upper - 100' upstream of road, marked with stake

HIGH WATER LINE: top of slope

UPPER EXTENT OF BANKS OR SHORE:

NOTES:

TIJØ6 3/28/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above___	# Below___	**METAL**	# Above___	# Below___
Plastic Bags			Aluminum Foil		
Plastic Bottles			Aluminum or Steel Cans		
Plastic Bottle Caps			Bottle Caps		
Plastic Cup Lid/Straw			Metal Pipe Segments		
Plastic Pipe Segments			Auto Parts (specify below)		
Plastic Six-Pack Rings			Wire (barb, chicken wire etc.)		
Plastic Wrapper			Metal Object		
Soft Plastic Pieces			**LARGE (specify below)**	# Above___	# Below___
Hard Plastic Pieces			Appliances		
Styrofoam cups pieces			Furniture		
Styrofoam Pellets			Garbage Bags of Trash		
Fishing Line			Tires		
Tarp			Shopping Carts		
Other (write-in)			Other (write-in)		
BIOHAZARD	# Above___	# Below___	**TOXIC**	# Above___	# Below___
Human Waste/Diapers			Chemical Containers		
Pet Waste			Oil/Surfactant on Water		
Syringes or Pipettes			Spray Paint Cans		
Dead Animals			Lighters		
Other (write-in)			Small Batteries		
CONSTRUCTION DEBRIS	#Above___	#Below___	Vehicle Batteries		
Concrete (not placed)			Other (write-in)		
Rebar			**BIODEGRADABLE**	# Above___	# Below___
Bricks			Paper		
Wood Debris			Cardboard		
Other (write-in)			Food Waste		
MISCELLANEOUS	# Above___	# Below___	Yard Waste (incl. trees)		
Synthetic Rubber			Leaf Litter Piles		
Foam Rubber			Other (write-in)		
Balloons			**GLASS**	# Above___	# Below___
Ceramic pots/shards			Glass bottles		
Hose Pieces			Glass pieces		
Cigarette Butts			**FABRIC AND CLOTH**	# Above___	# Below___
Golf Balls			Synthetic Fabric		
Tennis Balls			Natural Fabric (cotton, wool)		
Other (write-in)			Other (write-in)		

Total pieces Above: 0 **Below:** 0 **Grand total:** 0

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 0

Dumped: 0

Downstream Accumulation: 0

SPECIFIC DESCRIPTION OF ITEMS FOUND:_____

_____

DZ – 12/10/11
9

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Tecate Creek DATE/TIME: 3/28/11 / 11:50
MONITORING GROUP, STAFF: SD/MZ SAMPLE ID: 3841
SITE DESCRIPTION (Station Name, Number, etc.): TIJ09

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 61

lower - culvert grating near border fence

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - 100' upstream near willow, marked w/ stake, ≈ 20' downstream of large oak just below level of dirt roads.

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE:

NOTES: Majority of trash appears to be historic; excavated by recent storms

TIJ 09 3/28/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 12 # Below 63	**METAL**	# Above 1 # Below 3
Plastic Bags		Aluminum Foil	
Plastic Bottles	• • | •	Aluminum or Steel Cans	||
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	| • •	Metal Object	| •
Soft Plastic Pieces	|| ||| | • || • |||||	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	||||\

KZ – 12/10/11
9

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/La Posta Creek DATE/TIME: 3/29/11 / 10:00
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3842
SITE DESCRIPTION (Station Name, Number, etc.): TIJ 11

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accum-ulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 95

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper: ≈ 30' upstream of barbed wire fence running across stream under bridge; marked with stake. lower: cluster of boulders at downstream edge of bridge

HIGH WATER LINE:

UPPER EXTENT OF BANKS OR SHORE: upper edge of mineral deposits

NOTES:

KZ, 2/28/12 ~~TIJ12~~ TIJ11 3/29/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above 1 # Below 5		**METAL** # Above 1 # Below 0	
Plastic Bags	1	Aluminum Foil	
Plastic Bottles	1	Aluminum or Steel Cans	•
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	•	Metal Object	
Soft Plastic Pieces	1	**LARGE (specify below)** # Above 0 # Below 0	
Hard Plastic Pieces	1	Appliances	
Styrofoam cups pieces	1	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	1 KZ 1
BIOHAZARD # Above 0 # Below 0		**TOXIC** # Above ~~0~~ # Below ~~0~~	
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS #Above 0 #Below 0		Vehicle Batteries	
Concrete (not placed)		Other (write-in)	Paint chips: 1 •
Rebar		**BIODEGRADABLE** # Above 4 # Below 0	
Bricks		Paper	• • • •
Wood Debris	0 KZ 0	Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS # Above X # Below X		Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS** # Above 0 # Below 1	
Ceramic pots/shards		Glass bottles	1
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH** # Above 3 # Below 1	
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	1 • • •
Other (write-in) ~~Paint chip: • 1~~ KZ		Other (write-in)	
Total pieces Above: 10	**Below:** 8	**Grand total:** 18	
Tally all trash in above rows; make notes below as needed to facilitate scoring.			
Littered: 18			
Dumped: 0			
Downstream Accumulation: 0			

SPECIFIC DESCRIPTION OF ITEMS FOUND: _____

MC2 — 12/10/11
9

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Kitchen Creek DATE/TIME: 3/29/11 / 11:20
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3843
SITE DESCRIPTION (Station Name, Number, etc.): TIJ12

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 89

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - upstream edge of bridge. lower: barbed wire fence line crossing creek (in disrepair)

HIGH WATER LINE:

UPPER EXTENT OF BANKS OR SHORE: Dry vegetation species / dirt berm under bridge.

NOTES:

TIJ12 3/29/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above 1 # Below 15		**METAL** # Above 0 # Below 0	
Plastic Bags		Aluminum Foil	
Plastic Bottles	||	Aluminum or Steel Cans	
Plastic Bottle Caps	•	Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
1 D.strm. Soft Plastic Pieces	|||||||	**LARGE (specify below)** # Above 0 # Below 0	
Hard Plastic Pieces	||	Appliances	
Styrofoam cups pieces	||||	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD # Above 0 # Below 1		**TOXIC** # Above 0 # Below 1	
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals	|	Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS #Above 0 #Below 0		Vehicle Batteries	
Concrete (not placed)		Other (write-in) paint chip	1
Rebar		**BIODEGRADABLE** # Above 0 # Below 0	
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS # Above 0 # Below 0		Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS** # Above 0 # Below 1	
Ceramic pots/shards		Glass bottles	|
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH** # Above 0 # Below 0	
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	
Total pieces Above: 2	**Below:** 18	**Grand total:** 20	

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 4

Dumped: 0

Downstream Accumulation: 16

SPECIFIC DESCRIPTION OF ITEMS FOUND:

KZ – 12/10/11
9

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Pine Valley Creek DATE/TIME: 4/01/11 / 9:50
MONITORING GROUP, STAFF: SD/KZ SAMPLE ID: 3844
SITE DESCRIPTION (Station Name, Number, etc.): TIJ02

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 (19) 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 (12) 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 (8) 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 (9)	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 (4) 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 (11)	10 9 8 7 6	5 4 3 2 1 0

Total Score 78

Lower - upstream face of middle bridge abutment of Old Hwy. 80.

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH:

HIGH WATER LINE: Debris line

UPPER EXTENT OF BANKS OR SHORE: Dirt path/base of rocks

NOTES: Some historic trash was observed.

Upper: 100' upstream of lower boundary, marked with a wood stake + pile of stones.

TIJ02 4/1/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

this sheet only - AK 12/10/11

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 10 # Below 10	**METAL**	# Above 3 # Below ~~2~~ 3
Plastic Bags		Aluminum Foil •	
Plastic Bottles	||•	Aluminum or Steel Cans |•|
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw •• ||	Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces |••••|||||	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces •		Appliances	
Styrofoam cups pieces ••		Furniture	
Styrofoam Pellets •		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 1 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 2 # Below 0
Bricks		Paper ||	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 3 # Below 1	Yard Waste (incl. trees)	
Synthetic Rubber ••		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 2 # Below 1
Ceramic pots/shards		Glass bottles ||	
Hose Pieces		Glass pieces •	
Cigarette Butts ||		**FABRIC AND CLOTH**	# Above 6 # Below 0
Golf Balls		Synthetic Fabric ||||	
Tennis Balls		Natural Fabric (cotton, wool) ||	
Other (write-in)		Other (write-in)	

Total pieces Above: ~~26~~ 27 **Below:** ~~15~~ 14 **Grand total:** 41

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 31

Dumped: 1

Downstream Accumulation: 9

SPECIFIC DESCRIPTION OF ITEMS FOUND:

RZ - 12/12/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ01/Cottonwood Creek DATE/TIME: 4/01/11 / 11:20
MONITORING GROUP, STAFF: SD/RL SAMPLE ID: 3845
SITE DESCRIPTION (Station Name, Number, etc.): TIJ01

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accum-ulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 76

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: _____

HIGH WATER LINE: _____

UPPER EXTENT OF BANKS OR SHORE: _____

NOTES: See TIJ01, 1/27/11, for site info.

TIJ01 4/1/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 6 # Below 8	**METAL**	# Above 5 # Below 1
Plastic Bags		Aluminum Foil	1
Plastic Bottles	•	Aluminum or Steel Cans	•
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	• • • •
Soft Plastic Pieces	• / •	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	|||||	Appliances	
Styrofoam cups pieces	• • • 1	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 1 #Below 1	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 1 # Below 1
Bricks		Paper	• 1
Wood Debris		Cardboard	
Other (write-in)	1 (sandbag) •	Food Waste	
MISCELLANEOUS	# Above 3 # Below 1	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 2 # Below 4
Ceramic pots/shards	1 • •	Glass bottles	
Hose Pieces		Glass pieces	||||/ • •
Cigarette Butts	•	**FABRIC AND CLOTH**	# Above 0 # Below 2
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	11
Other (write-in)		Other (write-in)	

broken skeet pigeon pieces

Total pieces Above: 18 **Below:** 18 **Grand total:** 36

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 31

Dumped: 0

Downstream Accumulation: 5

SPECIFIC DESCRIPTION OF ITEMS FOUND:

RL2 - 12/12/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Cottonwood Creek DATE/TIME: 4/29/11 / 10:00
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 3889
SITE DESCRIPTION (Station Name, Number, etc.): TIJ07

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accum-ulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 81

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - downstream edge of dirt road lower - 100' downstream

HIGH WATER LINE: Debris Line

UPPER EXTENT OF BANKS OR SHORE: Base of upland slope

NOTES: Plastic bumper pieces appear to have come from one vehicle - broke apart.

TIJ07 4/29/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 6 # Below 12	**METAL**	# Above 2 # Below 0
Plastic Bags		Aluminum Foil •	
Plastic Bottles •		Aluminum or Steel Cans •	
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper • • •		Metal Object	
Soft Plastic Pieces |||		**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces |||| •		Appliances	
Styrofoam cups pieces |		Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in) car bumper pieces: |||| •		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 2 # Below 0
Bricks		Paper •	
Wood Debris		Cardboard •	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 1	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons |		**GLASS**	# Above 2 # Below 1
Ceramic pots/shards		Glass bottles •	
Hose Pieces		Glass pieces • |	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 1 # Below 0
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool) •	
Other (write-in)		Other (write-in)	

Total pieces Above: 13 **Below:** 14 **Grand total:** 27

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 18

Dumped: 0

Downstream Accumulation: 17

SPECIFIC DESCRIPTION OF ITEMS FOUND:

NK2 – 12/12/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Potrero Creek DATE/TIME: 4/29/11 / 12:00
MONITORING GROUP, STAFF: SO/KL SAMPLE ID: 3890
SITE DESCRIPTION (Station Name, Number, etc.): TIJ08

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 90

Lower - Center of bridge abutment (angle point)

Upper - Smaller bridge abutment ≈ 100' upstream,

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH:

HIGH WATER LINE: Base of bridge abutment

UPPER EXTENT OF BANKS OR SHORE: Halfway up bank next to road

NOTES: Concrete slabs from bridge were not considered illegally dumped.

TIJ 08 4/29/11

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above 3 # Below 7		**METAL** # Above 0 # Below 2	
Plastic Bags		Aluminum Foil	
Plastic Bottles	11	Aluminum or Steel Cans	1
Plastic Bottle Caps		Bottle Caps	1 (Metal Pull tab)
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	1	Metal Object	
Soft Plastic Pieces	111	**LARGE (specify below)** # Above 0 # Below 0	
Hard Plastic Pieces	1•	Appliances	
Styrofoam cups pieces	••	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD # Above 0 # Below 0		**TOXIC** # Above 0 # Below 0	
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS #Above 0 #Below 0		Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE** # Above 0 # Below 0	
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS # Above 0 # Below 0		Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS** # Above 0 # Below 1	
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	1
Cigarette Butts		**FABRIC AND CLOTH** # Above 0 # Below 0	
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	
Total pieces Above: 3	**Below:** 10	**Grand total:** 13	
Tally all trash in above rows; make notes below as needed to facilitate scoring.			
Littered: 1			
Dumped: Ø			
Downstream Accumulation: 12			

SPECIFIC DESCRIPTION OF ITEMS FOUND:

NK2 - 2/6/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Kitchen Creek DATE/TIME: 2/1/12 0930
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 4355
SITE DESCRIPTION (Station Name, Number, etc.): TIJ12

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

TIJ12 2/1/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accum-ulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 90

upper - upstream edge of bridge

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: lower - barbed wire fence line (in disrepair) Crossing Creek

HIGH WATER LINE:

UPPER EXTENT OF BANKS OR SHORE: Dry vegetation species / dirt berm under bridge.

NOTES:

TIJ12 2/1/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 3 # Below 5	**METAL**	# Above 3 # Below 1
Plastic Bags		Aluminum Foil	| • •
Plastic Bottles	|	Aluminum or Steel Cans	
Plastic Bottle Caps		Bottle Caps	•
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	|	Metal Object	
Soft Plastic Pieces	| •	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	• | •	Appliances	
Styrofoam cups pieces		Furniture	
Styrofoam Pellets	|	Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 0 # Below 1
Bricks		Paper	|
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 1 # Below 0
Ceramic pots/shards		Glass bottles	•
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 2 # Below 0
Golf Balls		Synthetic Fabric	|
Tennis Balls		Natural Fabric (cotton, wool)	|
Other (write-in)		Other (write-in)	
Total pieces Above: 9	**Below:** 7	**Grand total:** 16	
Tally all trash in above rows; make notes below as needed to facilitate scoring.			
Littered: 14			
Dumped: 0			
Downstream Accumulation: 2			

SPECIFIC DESCRIPTION OF ITEMS FOUND: 2 to 3 items may be historical trash.

OK2 – 2/6/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/La Posta Creek DATE/TIME: 2/1/12 / 1100
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 4356
SITE DESCRIPTION (Station Name, Number, etc.): TIJ11

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach. OK2 2/11/12	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts;. toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

TIJ11 2/1/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score ~~107~~ 106 lower - cluster of boulders at downstream edge of bridge

KZ 2/1/12

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - ≈ 30' upstream of barbed wire fence running across stream under bridge. Marked with stake.

HIGH WATER LINE: start of mineral deposits

UPPER EXTENT OF BANKS OR SHORE: upper edge of mineral deposits

NOTES:

TIJ11 2/1/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above 5 # Below 1		**METAL** # Above 1 # Below 0	
Plastic Bags	•	Aluminum Foil	
Plastic Bottles	•	Aluminum or Steel Cans	•
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces	•	**LARGE (specify below)** # Above 0 # Below 0	
Hard Plastic Pieces	•	Appliances	
Styrofoam cups pieces	•	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD # Above 0 # Below 0		**TOXIC** # Above 0 # Below 0	
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS #Above 0 #Below 0		Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE** # Above 0 # Below 0	
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS # Above 0 # Below 0		Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS** # Above 0 # Below 0	
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH** # Above 0 # Below 0	
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	
Total pieces Above: 6	**Below:** 1	**Grand total:** ~~6~~ 7	KZ 2/1/12
Tally all trash in above rows; make notes below as needed to facilitate scoring.			
Littered: ~~6~~ 7 KZ, 2/1/12			
Dumped: 0			
Downstream Accumulation: 0			

SPECIFIC DESCRIPTION OF ITEMS FOUND: _____

K2 – 2/14/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Marron Valley Creek DATE/TIME: 2/10/12 1010
MONITORING GROUP, STAFF: KL/SD SAMPLE ID: 4385
SITE DESCRIPTION (Station Name, Number, etc.): TIJ06

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

TIJØ6 2/10/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 108

lower: edge of road
upper: 100' upstream of road; marked with stake

SITE DEFINITION:
UPPER/LOWER BOUNDARIES OF REACH:
HIGH WATER LINE: top of slope
UPPER EXTENT OF BANKS OR SHORE:

NOTES:
3 of 4 pieces were caught in bushes located in creek channel.
1 piece was historical trash.

TIJ06 2/10/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 1 # Below 1	**METAL**	# Above 0 # Below 0
Plastic Bags		Aluminum Foil	
Plastic Bottles	•	Aluminum or Steel Cans	
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces	1	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces		Appliances	
Styrofoam cups pieces		Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 0 # Below 0
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 1	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons	1	**GLASS**	# Above 0 # Below 0
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 0 # Below 1
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	1 (Historical)
Other (write-in)		Other (write-in)	
Total pieces Above: 1	**Below:** 3	**Grand total:** 4	

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 1

Dumped: 0

Downstream Accumulation: 3

SPECIFIC DESCRIPTION OF ITEMS FOUND:

KL - 2/14/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Cottonwood Creek DATE/TIME: 2/10/12 / 10:40
MONITORING GROUP, STAFF: KL/SD SAMPLE ID: 4386
SITE DESCRIPTION (Station Name, Number, etc.): TIJ07

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

TIJ07 2/10/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 95

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - downstream edge of dirt road; lower - 100' downstream

HIGH WATER LINE: Debris line

UPPER EXTENT OF BANKS OR SHORE: Base of upland slope.

NOTES: Majority of items found in debris piles in trees/shrubs

TIJ07 2/10/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 1 # Below 10	**METAL**	# Above 0 # Below 1
Plastic Bags	|	Aluminum Foil	|
Plastic Bottles	|	Aluminum or Steel Cans	
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces	||||| •	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	|||	Appliances	
Styrofoam cups pieces		Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 0 # Below 0
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 0 # Below 0
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 0 # Below 0
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	
Total pieces Above: 1	**Below:** 11	**Grand total:** 12	

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: O

Dumped: O

Downstream Accumulation: 12

SPECIFIC DESCRIPTION OF ITEMS FOUND:

KZ – 2/17/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ / Bell Creek DATE/TIME: 2/15/12 10:20
MONITORING GROUP, STAFF: KL/SD SAMPLE ID: 4395
SITE DESCRIPTION (Station Name, Number, etc.): TIJ10

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

TI J10 2/15/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	(10) 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	(2) 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 (9) 8 7 6	5 4 3 2 1 0

Total Score 64

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - 20' from upstream edge of bridge; in line with base of apron lower - 20' downstream from downstream edge of bridge, in line with base of concrete apron.

HIGH WATER LINE: Debris line

UPPER EXTENT OF BANKS OR SHORE: Base of upland slope

NOTES:

TIS 10 2/15/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above 32 # Below 15	**METAL** # Above 6 # Below 1
Plastic Bags •	Aluminum Foil • • • •
Plastic Bottles | •	Aluminum or Steel Cans
Plastic Bottle Caps •	Bottle Caps •
Plastic Cup Lid/Straw •	Metal Pipe Segments
Plastic Pipe Segments	Auto Parts (specify below)
Plastic Six-Pack Rings	Wire (barb, chicken wire etc.)
Plastic Wrapper • • • • • | | | | | | | |	Metal Object | • (part of tire) Soft
Soft Plastic Pieces • | • • • • • • • • • • • • • • • •	**LARGE (specify below)** # Above 0 # Below 0
Hard Plastic Pieces | • • | |	Appliances
Styrofoam cups pieces • • • • • |	Furniture
Styrofoam Pellets	Garbage Bags of Trash
Fishing Line	Tires
Tarp 1 styrofoam food tray	Shopping Carts
Other (write-in) • reusable shopping bag	Other (write-in)
BIOHAZARD # Above 0 # Below 0	**TOXIC** # Above 0 # Below 0
Human Waste/Diapers	Chemical Containers
Pet Waste	Oil/Surfactant on Water
Syringes or Pipettes	Spray Paint Cans
Dead Animals	Lighters
Other (write-in)	Small Batteries
CONSTRUCTION DEBRIS #Above 0 #Below 1	Vehicle Batteries
Concrete (not placed)	Other (write-in)
Rebar	**BIODEGRADABLE** # Above 5 # Below 2
Bricks	Paper • • • • • |
Wood Debris |	Cardboard |
Other (write-in)	Food Waste
MISCELLANEOUS # Above 1 # Below 0	Yard Waste (incl. trees)
Synthetic Rubber	Leaf Litter Piles
Foam Rubber	Other (write-in)
Balloons •	**GLASS** # Above 1 # Below 2
Ceramic pots/shards	Glass bottles | •
Hose Pieces	Glass pieces |
Cigarette Butts	**FABRIC AND CLOTH** # Above 1 # Below 1
Golf Balls	Synthetic Fabric
Tennis Balls	Natural Fabric (cotton, wool) | (Historic) •
Other (write-in)	Other (write-in)

Some are Historic

Total pieces Above: 46 **Below:** 22 **Grand total:** 68

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 53

Dumped: 0

Downstream Accumulation: 15

SPECIFIC DESCRIPTION OF ITEMS FOUND:

RZ - 2/17/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ-Campo Creek DATE/TIME: 2/15/12 / 1200
MONITORING GROUP, STAFF: KL/SD SAMPLE ID: 4396
SITE DESCRIPTION (Station Name, Number, etc.): TIJ04

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

TIJ04 2/15/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	(10) 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	(2) 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 (8) 7 6	5 4 3 2 1 0

Total Score 56

lower - edge of downstream end of bridge abutment; in line with oak tree.

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - 100' upstream; marked with a stake.

HIGH WATER LINE: Debris line

UPPER EXTENT OF BANKS OR SHORE: toe of slope

NOTES:

TIJ04 2/15/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 46 # Below 15	**METAL**	# Above 4 # Below 6
Plastic Bags	|| •	Aluminum Foil	| • • • |
Plastic Bottles		Aluminum or Steel Cans	|
Plastic Bottle Caps	•	Bottle Caps	•
Plastic Cup Lid/Straw	|	Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	||| •	Metal Object	|||
Soft Plastic Pieces	• ||• • • | • • • • • • • • • ||	**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	• | • • |	Appliances	
Styrofoam cups pieces	• |	Furniture	
Styrofoam Pellets	• • • |	Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)	some possibly historical	Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 5
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above | #Below 0	Vehicle Batteries	
Concrete (not placed)	•	Other (write-in)	paint chips: |||||
Rebar		**BIODEGRADABLE**	# Above 8 # Below 2
Bricks		Paper	• • • | • • • • • |
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 2 # Below 7	Yard Waste (incl. trees)	
Synthetic Rubber	| (glove)	Leaf Litter Piles	
Foam Rubber	|	Other (write-in)	
Balloons		**GLASS**	# Above | # Below 5
Ceramic pots/shards	|||| • (historical)	Glass bottles	||
Hose Pieces		Glass pieces	||| • (Historical)
Cigarette Butts	• |	**FABRIC AND CLOTH**	# Above 0 # Below 0
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	

Total pieces Above: 62 **Below:** 40 **Grand total:** 102

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 77

Dumped: 0

Downstream Accumulation: 25

SPECIFIC DESCRIPTION OF ITEMS FOUND:

paint chips most likely from bridge.
Most of trash appears to be windblown into site.

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Potrero Creek DATE/TIME: 2/27/12 1000
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 4413
SITE DESCRIPTION (Station Name, Number, etc.): TIJ08

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	SD 15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	(10) 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 (7) 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1 0

Total Score 86

Lower: Center of bridge abutment (angle point)

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: Upper: Smaller bridge abutment

HIGH WATER LINE: Base of bridge abutment ≈ 100' upstream.

UPPER EXTENT OF BANKS OR SHORE: Halfway up bank next to road.

NOTES: Concrete slabs from bridge were not considered illegally dumped.

TIJ08 2/27/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 3 # Below 10	**METAL**	# Above 2 # Below 0
Plastic Bags		Aluminum Foil	
Plastic Bottles		Aluminum or Steel Cans	• • (1 Historical)
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces		**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces		Appliances	
Styrofoam cups pieces		Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 0 # Below 0
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 1 # Below 0	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons	•	**GLASS**	# Above 0 # Below 0
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 0 # Below 0
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	
Total pieces Above: 6	**Below:** 10	**Grand total:** 16	

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: 4

Dumped: 0

Downstream Accumulation: 12

SPECIFIC DESCRIPTION OF ITEMS FOUND:

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Tecate Creek DATE/TIME: 2/27/12 1140
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 4414
SITE DESCRIPTION (Station Name, Number, etc.): TIJ09

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6 (SD)	~~5~~ 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 ~~2~~ 1 0 (SD)
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 ~~1~~ 0
L-SCORE	10 9	8 7 6	5 4 3	2 ~~1~~ 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 ~~16~~	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score ~~61~~ 65 SP 3/1/12 lower; Culvert grating near border fence

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH: upper - 100' upstream near willow, marked w/ stake, ≈ 20' downstream of large oak just below level of dirt roads.

HIGH WATER LINE: debris line

UPPER EXTENT OF BANKS OR SHORE:

NOTES:

25 of the hard plastic (below) will be changed to count as just one piece since all 25 pieces are hard blue plastic strands from a street sweeper type brush object. SP 2/28/12

TIJ09 2/27/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 29 # Below ~~64~~ 40	**METAL**	# Above 2 # Below 0
Plastic Bags		Aluminum Foil	
Plastic Bottles		Aluminum or Steel Cans	
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper		Metal Object	
Soft Plastic Pieces		**LARGE (specify below)**	# Above 0 # Below 0
Hard Plastic Pieces	+15 below will count as one piece SD 2/28/12	Appliances	
Styrofoam cups pieces		Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD	# Above 0 # Below 0	**TOXIC**	# Above 0 # Below 0
Human Waste/Diapers		Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS	#Above 0 #Below 0	Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE**	# Above 7 # Below 3
Bricks		Paper	
Wood Debris		Cardboard	
Other (write-in)		Food Waste	
MISCELLANEOUS	# Above 0 # Below 1	Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS**	# Above 3 # Below 0
Ceramic pots/shards		Glass bottles	
Hose Pieces		Glass pieces	
Cigarette Butts		**FABRIC AND CLOTH**	# Above 0 # Below 0
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	
Other (write-in)		Other (write-in)	

Total pieces Above: 41 **Below:** ~~68~~ 44 **Grand total:** ~~109~~ 85 SD

Tally all trash in above rows; make notes below as needed to facilitate scoring.

Littered: ~~84~~ 60 SD

Dumped: 0

Downstream Accumulation: 25

SPECIFIC DESCRIPTION OF ITEMS FOUND:

NX2 – 3/16/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ/Cottonwood Creek DATE/TIME: 3/14/12 0930
MONITORING GROUP, STAFF: KL/SD SAMPLE ID: 4441
SITE DESCRIPTION (Station Name, Number, etc.): TIJ01

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 78

upper - granite outcropping + waterfall (drove stake by rock; east bank) lower - downstream edge of Old Hwy 80 bridge

SITE DEFINITION:
UPPER/LOWER BOUNDARIES OF REACH:
HIGH WATER LINE: Debris line
UPPER EXTENT OF BANKS OR SHORE: level edge of bridge footing.

NOTES: Human feces observed below water line.

TI J01 3/14/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above 4 # Below 6		**METAL** # Above 1 # Below 4	
Plastic Bags		Aluminum Foil	
Plastic Bottles		Aluminum or Steel Cans	|| (historical)
Plastic Bottle Caps		Bottle Caps	
Plastic Cup Lid/Straw	|	Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	|	Metal Object	• | (pull tab: historic) | (bolt)
Soft Plastic Pieces	• • • |	**LARGE (specify below)** # Above 0 # Below 0	
Hard Plastic Pieces	|	Appliances	
Styrofoam cups pieces	|| •	Furniture	
Styrofoam Pellets		Garbage Bags of Trash	
Fishing Line		Tires	
Tarp		Shopping Carts	
Other (write-in)		Other (write-in)	
BIOHAZARD # Above 0 # Below 1		**TOXIC** # Above 0 # Below 0	
Human Waste/Diapers	|	Chemical Containers	
Pet Waste		Oil/Surfactant on Water	
Syringes or Pipettes		Spray Paint Cans	
Dead Animals		Lighters	
Other (write-in)		Small Batteries	
CONSTRUCTION DEBRIS #Above 0 #Below 0		Vehicle Batteries	
Concrete (not placed)		Other (write-in)	
Rebar		**BIODEGRADABLE** # Above 1 # Below 4	
Bricks		Paper	|| •
Wood Debris		Cardboard	|
Other (write-in)		Food Waste	|
MISCELLANEOUS # Above 0 # Below 1		Yard Waste (incl. trees)	
Synthetic Rubber		Leaf Litter Piles	
Foam Rubber		Other (write-in)	
Balloons		**GLASS** # Above ~~2~~ 2 # Below ~~4~~ 3	
Ceramic pots/shards	| (skeet pieces) Historical	Glass bottles	
Hose Pieces		Glass pieces	||| • •
Cigarette Butts		**FABRIC AND CLOTH** # Above 1 # Below 1	
Golf Balls		Synthetic Fabric	
Tennis Balls		Natural Fabric (cotton, wool)	• | (historic footwear) Birds?
Other (write-in)		Other (write-in)	
Total pieces Above: 9	**Below:** 20	**Grand total:** 29	
Tally all trash in above rows; make notes below as needed to facilitate scoring.			
Littered: 20			
Dumped: 0			
Downstream Accumulation: 9			

SPECIFIC DESCRIPTION OF ITEMS FOUND: _____

AK2 – 3/16/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: TIJ- Pine Valley Creek DATE/TIME: 3/14/12 / 1040
MONITORING GROUP, STAFF: SD/KL SAMPLE ID: 4442
SITE DESCRIPTION (Station Name, Number, etc.): TIJØ2

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
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SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
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L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score 88

Lower: upstream face of middle bridge abutment of Old Hwy 80.

SITE DEFINITION:

UPPER/LOWER BOUNDARIES OF REACH:

HIGH WATER LINE: Debris line

UPPER EXTENT OF BANKS OR SHORE: Dirt path/base of rocks

NOTES: Upper - 100' upstream of lower boundary, marked with a wood stake + pile of stones.

TIJ02 3/14/12

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC	# Above 10 # Below 7	**METAL**	# Above 1 # Below 2
Plastic Bags	|	Aluminum Foil	|
Plastic Bottles	• |	Aluminum or Steel Cans	• (Historic)
Plastic Bottle Caps	•	Bottle Caps	
Plastic Cup Lid/Straw		Metal Pipe Segments	
Plastic Pipe Segments		Auto Parts (specify below)	
Plastic Six-Pack Rings		Wire (barb, chicken wire etc.)	
Plastic Wrapper	|||\

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TITLE: QUALCOMM STADIUM DROP OFF COMMUNITY CLEANUP AND RECYCLING EVENT SPONSORSHIP

ID #: TJ-037

ACTIVITY DESCRIPTION

The City of San Diego Environmental Services Department (ESD) conducted a drop off clean up event in March. The event was open to all City residents and targeted items like appliances, metals, junk furniture, mattresses and tires. The Qualcomm Stadium parking lot was the site for the drop off and ESD staff conducted both events. This event was selected based upon citizen requests, pledges of community involvement and previous citizen participation levels.

A total of 112,000 pounds were collected of which 44,000 pounds were recycled. Some of the items collected were, refrigerators, microwaves, stoves, window air conditioners, clothes washers and dryers, dishwashers and tires.

TMDL APPLICABILITY

N/A

TIME SCHEDULE FOR IMPLEMENTATION

This event took place in March and was in the planning stages for approximately 2-3 months. Scheduling and coordinating available dates at Qualcomm stadium, writing traffic control patterns if needed, reserving equipment for use and scheduling drivers, creating a site map of the staging area and traffic flow pattern for ease of use.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- Not Applicable

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria/Pathogens
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River WMA identify trash and bacteria as high priority water quality problems throughout the WMA, and recommend implementing load reduction/source abatement activities to address it. Sponsorship of these Cleanup events will result in load reduction of trash and debris directly and of bacteria indirectly.

EFFECTIVENESS MEASUREMENTS

Management Questions

1) What is the load reduction associated with sponsorship?
2) What is the efficiency of the sponsored cleanup? ($/lb collected)

Targeted Measurable Outcome(s)

1) Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship

Assessment Method(s)

1) Quantification (e.g., pounds of trash collected)

Data Recorded

- Pounds of trash removed (Outcome Level 4): 68,000 lbs
- Pounds of trash recycled (Outcome Level 4): 44,000 lbs
- Total pounds of trash removed and recycled (Outcome Level 4): 112,000 lbs
- Amount of money spent on cleanups for all six watersheds (Outcome Level 1): $2,200
- Total money spent on the cleanup for the Tijuana River watershed (Outcome Level 1): $367
- Efficiency (Total Cost/Total Pounds Removed and Recycled): $0.03/lb

Expected Benefits

The goal of this assessment is to determine the effectiveness and efficiency of free drop off clean up and recycling events. In sponsoring these clean up events, the City is providing a convenient drop off location for the free drop off/disposal of furniture, appliances and tires. These community cleanup events are also intended to deter residents from illegally dumping unwanted items in street and alley rights-of-way, canyons, creeks and riverbeds as well as other locations throughout the City. They also replace a house by house "bulky item" pick up.

Analysis Results

ESD staff collected a total of 112,000 lbs of metals, appliances, junk furniture and mattresses. Disposed 68,000 lbs and recycled 44,000 lbs. The sponsorship from the City of San Diego Transportation and Storm Water Department, Storm Water Division for this event was $2,200. The efficiency was calculated by dividing the sponsorship cost for the Tijuana River WMA by the total pounds of trash removed and recycled.

Conclusions

This activity fulfills a watershed water quality activity for FY2012 as the effectiveness assessment demonstrates this activity resulted in a measurable pollutant load reduction (Outcome Level 4) of 112,000 pounds during the reporting period.

TITLE: TIJUANA RIVER RECOVERY TEAM – RECOVERY STRATEGY DOCUMENT

ID #: TJ-038

ACTIVITY DESCRIPTION

On September 23, 2009, the City of San Diego received a $700,000 Grant from the State Water Resources Control Board (SWRCB), Clean up and Abatement Fund to develop a viable plan of addressing the trash and sediment in the Tijuana River Valley. Included in the Grant Scope of Work (SOW) was a task to analyze alternatives addressing trash and sediment in the lower Tijuana River Watershed (Tijuana River Valley) and develop a "project implementation matrix" through engagement of the stakeholders on the Tijuana River Recovery Team (TRVRT) with support from URS consultants. The TRVRT Steering committee decided that the document would not be a new plan for the Tijuana River Valley; rather it would rely on plans and studies previously adopted by the City, County, State and other regional authorities. The document would define a strategy based on the goals and objectives within the previously adopted plans to affect a "recovery" of the Tijuana River Valley.

The first steps in the process were the consensus agreement amongst the participating agencies and stakeholders on the definition the "recovery" end state. Next a number of key high-level "outline projects" were defined to achieve the "recovery" states and which referred to previously adopted goals and objectives to ensure consistency. Lastly, specific project types were defined along with an implementation schedule, funding requirements, and anticipated outcomes. The intent of this approach is to allow the Recovery Strategy and the Vision of the Tijuana River Valley to be used or referred to by several varied agencies and non-governmental organizations in their project planning and funding efforts within the context of their missions and without conflict to any agency's mandates and limitations. This approach would create a document flexible enough to be referenced by each agency in their specific project plans, budget requests, and long range planning efforts, yet remain general enough to not require adoption, environmental permit review, or obligate an agency to perform a specific project or initiative, which may be inconsistent with its goals or mission.

Efforts on the document began in January 2011 with a number of scoping visioning workshops, focused on identifying and documenting activities, programs and gathering other related data for maps and exhibits. Drafting of the document content began in earnest in summer 2011. After a number of drafts the Draft Final Recovery Strategy was prepared in December 2011. The Final Document was prepared in March 2012 and distributed to all of the participating agencies, stakeholders and a number of interested parties and presented to a number of Agency Groups in Mexico and the United States including the International Boundary Water Commission (IBWC), Citizens Forum and the Tijuana River National Estuarine Research Reserve Advisory Council.

TMDL APPLICABILITY

- Not applicable

TIME SCHEDULE FOR IMPLEMENTATION

It is anticipated that this work will resume in FY 2014 under the City's Master Storm Water Maintenance Program, which was recently approved.

LEAD WATERSHED COPERMITTEE

- City of San Diego

OTHER PARTICIPATING COPERMITTEES

- County of San Diego
- City of Imperial Beach

OTHER PARTICIPATING ENTITIES

- California Department of Fish and Game
- California State Parks
- US EPA
- IBWC
- San Diego Water Authority

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Trash

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Tijuana River Watershed Management Area (WMA) identify sediment and trash as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. This activity results in a direct load reduction of these pollutants.

EFFECTIVENESS MEASUREMENTS

Management Questions

- None

Targeted Measurable Outcome(s)

- None

Assessment Method(s)

- None

Data Recorded

- None

Expected Benefits

It is anticipated that this activity will lead to projects and findings which will result in a reduction of sediment and trash loads in the Tijuana River. This task is completed and the Strategy is currently being implemented, specifically with coordination between State and Federal Agencies and Mexican counterpart agencies. Assessment of the Recovery Strategy document will involve tracking individual activities that will be implemented as a result of the document.

Analysis Results

There are no results available at this time.

FISCAL ANALYSIS COMPONENT **1**

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FISCAL ANALYSIS COMPONENT

1.1. Introduction

This section presents an estimated annual budget for the County's urban runoff management programs for FY 2013-14.

1.2. Fiscal Analysis Methods

This section continues to utilize the methodologies and standards established in *Fiscal Analysis Method* submitted by the Copermittees in January 2009.

1.3. Fiscal Analysis Results

As shown the County estimated its total FY 2013-14 expenditures at $31,006,556. This fiscal analysis addresses each of the County's Urban Runoff Management Program elements (jurisdictional, watershed, and regional activities) for the current reporting period (FY 2013-14). Expenditures are described by department and major program area. They represent an estimate of the expenditures that the County incurred in meeting its compliance obligations for FY 2013-14. They should not be interpreted as either budgeted or actual expenditures. Because stormwater program expenditures are distributed throughout a considerable number of County programs, a single consolidated "budget" does not exist for the program as a whole. As such, these figures should be considered best estimates of stormwater-related expenditures.

1.3.1. Expenditures

1.3.1.1. Jurisdictional

Table 1.1 presents the County's estimated jurisdictional expenditures for FY 2013-14.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2013-14

Jurisdictional Worksheet Component			Explanation/Notes
1	**ADMINISTRATION**	**$4,167,099**	These costs correspond to the DPW WPP development, administrative oversight, and assessment of the County's stormwater programs. The WPP is responsible for the development of new and augmented County stormwater programs, regulatory reporting, and program assessment. Some administrative costs are associated with other specific functions shown below, but are included here because they could not be separated out.
2	**DEVELOPMENT PLANNING**	**$1,729,309**	
A	**Land Use Planning**	$0	Expenditures not reported for FY 2013-14.
B	**Environmental Review**	$0	Expenditures not reported for FY 2013-14.
C	**Development Project Approval and Verification**	**$1,729,309**	
C1	**Public Projects (CIP)**	$1,440,733	
	Project Planning and Engineering	$1,084,483	Costs include: preparing and reviewing plans and specifications for stormwater

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2013-14

Jurisdictional Worksheet Component			Explanation/Notes
	Compliance Inspection and Enforcement	$43,500	BMPs, and SWPPP/WPCP review. These costs apply to DPW, DPR, and DGS.
	BMP Implementation	$312,750	
C2	**Private Projects**	$288,576	
	Permitting and Licensing	$288,756	This cost covers DPW and PDS plan reviews at permitted sites. Total costs are estimated as fixed percentages of annual plan-checking fees.
3	**CONSTRUCTION**	**$3,000,930**	
A	**Public Projects (CIP)**	$1,660.056	Costs include: BMP compliance inspections during construction, and implementation of construction phase BMPs. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$1,133,424	
	BMP Implementation	$526,632	
B	**Private Projects** **Combined totals for DPW PDCI and PDS Building**	$1,340,874	
	Compliance Inspection and Enforcement	$1,340,874	This cost primarily covers DPW and PDS construction inspections at permitted sites. Total costs are estimated as fixed percentages of inspection program fees.
4	**MUNICIPAL**	**$14,763,531**	
A	**Administration**	$182,554	Expenditures associated with the administrative oversight of the stormwater programs, regulatory reporting, and program assessment of municipal facilities by the DPW - Watershed Protection Program.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2013-14

Jurisdictional Worksheet Component			Explanation/Notes
B	**Streets, Roads, and Highways Element**	$2,190,380	
	Administration	$288,680	Founded road operations activities include: culvert inspections and cleaning; increased culvert waste disposal costs, street sweeping, installation and maintenance of BMPs and road structures, and the placement of additional controls. 10% of the Maintenance and Inspections and BMP Implementation is reported as Administration cost.
	Maintenance Inspections	$1,835,741	
	BMP Implementation	$71,959	
	Other	$0	
C	**MS4 Element**	$8,958,000	
	Administration	$8,600,000	The combined costs shown here apply across (1) DPW Flood Control -- conversion of existing concrete lined channels to natural bottom channels, updating flood control master plans, increased maintenance of flood control systems, and construction and maintenance of regional treatment BMPs; and (2) DPW Flood Control MS4 Operation & Maintenance -- maintenance on flood control facilities throughout the unincorporated areas of the County, exclusive of facilities within road rights-of-way (included in 4.B above).
	Maintenance Inspections	$40,000	
	BMP Implementation	$318,000	
	Other	$0	
D	**Solid Waste Facilities Element**	$425,000	
	Administration	$100,000	Costs include Regional Board stormwater permit fees, consultant costs associated with stormwater upgrade and repair projects, and office staff time.
	Maintenance Inspections	$50,000	Costs include staff time to perform site inspections.
	BMP Implementation	$140,000	Costs include stormwater consultant site inspections, sampling/testing and BMP materials.
	Other (construction)	$135,000	Drainage improvement projects and BMP site maintenance projects.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2013-14

	Jurisdictional Worksheet Component		Explanation/Notes
E	**Wastewater Facilities Element**	$284,000	
	Administration	$8,000	This includes costs associated with JURMP report, the sanitary sewer system and facilities including: pump stations, sewage treatment plants and Spring Valley Operations facility. Also includes the cost of BMP design, acquisition, maintenance and monitoring, for wastewater Capital Improvement Projects, and Major maintenance projects, and at various wastewater facilities.
	Maintenance Inspections	$226,000	
	BMP Implementation	$50,000	
	Other	$0	
F	**Road Stations Element**	$893,074	
	Administration	$81,188	This includes DPW road station operations related to Permit compliance. The Administration cost is determined as 10% of the total costs of maintenance and Inspections and BMP Implementation as reported by the DPW Roads Divisions.
	Maintenance Inspections	$776,129	
	BMP Implementation	$35,376	
	Other	$0	
G	**Fleet Maintenance Element**	$119,937	
	Administration	$51,000	This includes costs associated with operation of the County's fleet maintenance and fueling facilities.
	Maintenance Inspections	$62,000	
	BMP Implementation	$6,937	
	Other	$0	
H	**Municipal Airfields Element**	$166,269	These costs involve site inspections, annual reporting, and maintenance of BMPs at airports, including oversight of tenant operations. The BMP implementation item includes Palomar asphalt cap repairs.
	Administration	$5,000	
	Maintenance Inspections	$80,000	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2013-14

	Jurisdictional Worksheet Component		Explanation/Notes
	Compliance Inspection and Enforcement	$20,000	
	BMP Implementation	$81,269	
	Other (sampling and analysis)	$0	
I	**Parks & Recreational Facilities Element**	$1,188,781	
	Administration	$117,828	This includes: coordinating all training requirements, preparing and reviewing reports, and overseeing the overall implementation of the stormwater program for DPR.
	BMP Implementation	$974,212	This includes costs associated with implementation of BMPs at County parks.
	Compliance Inspection and Enforcement	$96,742	Costs are for DPR enforcement of stormwater requirements at County parks.
	Other	$0	
J	**Office Buildings & Other Municipal Facilities Element**	$237,210	
	Administration	$0	DGS conducts a variety of storm water activities including: inspections and clean-up of County-owned, occupied, and leased facilities and vacant lands; maintenance and signage of storm drain inlet inserts and trash dumpsters; placement of inlet filters; maintenance of coverage and containment improvements for on-site supplies and materials; parking lot sweeping and controlled parking lot power washing; and application of erosion and sediment control measures. These costs are exclusive of fleet maintenance and fueling operations.
	Maintenance Inspections	$136,685	
	BMP Implementation	$100,525	
	Other	$0	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2013-14

	Jurisdictional Worksheet Component		Explanation/Notes
	Management of Pesticides, Herbicides, & Fertilizers	$118,326	
	Administration	$118,326	Integrated Pest Control Program within the Department of Agriculture Weights and Measures performs eradication and control of invasive weeds. This program also provides weed control on roadsides, airports, flood control channels, sewage treatment plants and inactive landfills. It also provides structural pest control to facilities owned and operated by the county.
	Maintenance Inspections		
	BMP Implementation		
	Other		
5	**INDUSTRIAL and COMMERCIAL**	**$1,337,886**	
	Administration	$227,880	DPW and AWM conduct inspections of a variety of businesses in the unincorporated County, provide regulatory oversight of mobile businesses, and conduct follow-up and enforcement of stormwater violations.
	Compliance Inspection and Enforcement	$835,947	
	Educational Outreach	$274,059	
	Other expenditures	$0	
6	**RESIDENTIAL**	**$921,191**	
	Compliance Inspection and Enforcement	$462,620	DPW conducts complaint investigations for residential sources in the unincorporated County, and conduct follow-up and enforcement of stormwater violations. DPW also operates a regional hotline.
	Educational Outreach	$458,571	Several County departments coordinate and provide outreach to the residential sector and schoolchildren in support of Permit Section D.5 requirements. Costs reported here correspond to DPW only. Funded activities include developing pollution prevention content and providing direct outreach to various target audiences within the general residential and schoolchildren target audiences.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2013-14

Jurisdictional Worksheet Component			Explanation/Notes
7	**IDDE**	**$243,716**	
		$243,716	DPW conducts monitoring programs, assesses scientific data, and provides technical and scientific support to other County program staff. They also provide support for all technical and scientific aspects of URMP development and implementation. These costs are exclusive of the regional monitoring program which is addressed separately under regional costs.
8	**EDUCATION**	**$0**	Education costs are included in other sections as applicable.
9	**PUBLIC PARTICIPATION**	**$0**	Public participation costs are included in other sections as applicable.
10	**SPECIAL INVESTIGATIONS**	**$0**	Expenditures not reported for FY 2013-14.
11	**NON-EMERGENCY FIREFIGHTING**	**$0**	Expenditures not reported for FY 2013-14.

$26,163,662

1.3.1.2 Watershed

Table 1.2 presents the County's estimated watershed expenditures for FY 2013-14.

Table 1.2 – Estimated Watershed Expenditures for FY 2013-14

	Santa Margarita WMA	San Luis Rey WMA	Carlsbad WMA	San Dieguito WMA	Peñasquitos WMA	San Diego River WMA	San Diego Bay WMA	Tijuana WMA
Administration	$60,000	$60,000	$80,000	$11,000	$11,000	$80,000	$30,000	$58,000
Cost Share Contribution	$0	$0	$46,205	$146,006	$20,162	$0	$7,256	$55,208
Watershed Activities	$173,609	$212,665	$0	$0	$0	$556,613	$92,315	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0
Total Estimated Watershed Costs	**$233,609**	**$272,665**	**$126,205**	**$157,006**	**$31,162**	**$636,613**	**$129,571**	**$113,208**

1.3.1.3 Regional

Table 1.3 presents the County's estimated regional expenditures for FY 2013-14. This includes only those expenditures associated with the Copermittees' adopted Regional Budget and Work Plan. Other costs associated with regional participation (meeting attendance, etc.) are included within the jurisdictional expenditures presented above.

Table 1.3 – Estimated Regional Expenditures for FY 2013-14

Regional Programs	County Costs
Administration	$0
Cost Share Contribution	$0
Regional Activities	$3,142,856
Other	$0
Total Estimated Regional Costs	**$3,142,856**

1.3.1.4 Total Expenditures

Table 1.4 presents the County's total estimated expenditures for FY 2013-14 (jurisdictional, watershed, and regional).

Table 1.4 – Total Estimated County Expenditures for FY 2013-14

Component / Sub-component	Estimated Expenditures
Jurisdictional	
Administration	$4,167,099
Development Planning	$1,729,309
Construction	$3,000,930
Municipal	$14,763,531
Industrial And Commercial	$1,337,886
Residential	$921,191
IDDE	$243,716
Education	$0
Public Participation	$0
Special Investigations	$0
Non-emergency Firefighting	$0
Jurisdictional Total	**$26,163,662**
Watershed	
Santa Margarita WMA	$233,609
San Luis Rey WMA	$272,665
Carlsbad WMA	$126,205
San Dieguito WMA	$157,006
Peñasquitos WMA	$31,162
San Diego River WMA	$636,613
San Diego Bay WMA	$129,571
Tijuana WMA	$113,208
Watershed Total	**$1,700,038**
Regional	**$3,142,856**
Total Estimated County Costs	***$31,006,556***

1.3.2. Funding Sources

Table 1.5 shows the major sources of funding for the County's urban runoff management programs in FY 2013-14, and describes the legal restrictions applicable to the use of each.

Table 1.5 – Legal Restrictions on the Use of Program Funding

Funding Source	Legal Restrictions
General Fund	There are no restrictions on the use of general fund for County water quality programs and activities except that they must be used only for the purposes for which they are budgeted and allocated by the County Board of Supervisors.
Flood Control District Fees	Revenue generated from these fees must be expended for activities related to flood and storm management.
Developer Deposits / Permit Fees	Deposits / fees may be used only to fund activities related to the work for which the permits are issued.
Gas Tax	Gas Tax is collected by the state and allocated to local government for transportation-related work including maintenance of existing transportation systems and construction of new transportation facilities. These funds may not be used for other purposes.
Sanitary District Fees	Sanitary District Fees are used for work related to the maintenance of sewer lines, pump stations, force mains, and several treatment plants that serve the unincorporated areas. They may be used only for such maintenance-related purposes within the respective sewer district for which they are collected.
Other Funding Sources	Other funding sources collectively account for a relatively small portion of ongoing expenditures. However, all funding for the County's stormwater compliance programs is expended within applicable legal restrictions and limitations.

1.4. Conclusions and Recommendations

The figures presented here are an estimate of the expenditures that the County incurred to meet its compliance obligations for FY 2013-14. For the reasons explained above, they should be considered only best estimates of stormwater-related expenditures.

FISCAL ANALYSIS COMPONENT **1**

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FISCAL ANALYSIS COMPONENT

1.1. Introduction

This section presents an estimated annual budget for the County's runoff management programs for FY 2014-15.

1.2. Fiscal Analysis Methods

This section continues to utilize the methodologies and standards established in *Fiscal Analysis Method* submitted by the Copermittees in January 2009.

1.3. Fiscal Analysis Results

As shown the County estimated its total FY 2014-15 expenditures at $28,867,398. This fiscal analysis addresses each of the County's Runoff Management Program elements (jurisdictional, watershed, and regional activities) for the current reporting period (FY 2014-15). Expenditures are described by department and major program area. They represent an estimate of the expenditures that the County incurred in meeting its compliance obligations for FY 2014-15. They should not be interpreted as either budgeted or actual expenditures. Because stormwater program expenditures are distributed throughout a considerable number of County programs, a single consolidated "budget" does not exist for the program as a whole. As such, these figures should be considered best estimates of stormwater-related expenditures.

1.3.1 Expenditures

1.3.1.1. Jurisdictional

Table 1.1 presents the County's estimated jurisdictional expenditures for FY 2014-15.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2014-15

Jurisdictional Worksheet Component			Explanation/Notes
1	**ADMINISTRATION**	**$5,399,660**	These costs correspond to the DPW WPP development, administrative oversight, and assessment of the County's stormwater programs. The WPP is responsible for the development of new and augmented County stormwater programs, regulatory reporting, and program assessment. Some administrative costs are associated with other specific functions shown below, but are included here because they could not be separated out.
2	**DEVELOPMENT PLANNING**	**$1,433,347**	
A	**Land Use Planning**	$0	Expenditures not reported for FY 2014-15; included in other elements.
B	**Environmental Review**	$0	Expenditures not reported for FY 2014-15; included in other elements.
C	**Development Project Approval and Verification**	**$1,433,347**	
C1	**Public Projects (CIP)**	$1,165,341	
	Project Planning and Engineering	$1,115,591	Costs include: preparing and reviewing plans and specifications for stormwater

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2014-15

	Jurisdictional Worksheet Component		Explanation/Notes
	Compliance Inspection and Enforcement	$0	BMPs, and SWPPP/WPCP review. These costs apply to DPW, DPR, and DGS.
	BMP Implementation	$49,750	
C2	**Private Projects**	$268,006	
	Permitting and Licensing	$268,006	This cost covers DPW and PDS plan reviews at permitted sites. Total costs are estimated as fixed percentages of annual plan-checking fees.
3	**CONSTRUCTION**	**$5,032,519**	
A	**Public Projects (CIP)**	$3,405,039	Costs include: BMP compliance inspections during construction, and implementation of construction phase BMPs. These costs apply to DPW, DPR, and DGS.
	Compliance Inspection and Enforcement	$1,944,310	
	BMP Implementation	$1,460,729	
B	**Private Projects** **Combined totals for DPW PDCI and PDS Building**	$1,627,480	
	Compliance Inspection and Enforcement	$1,627,480	This cost primarily covers DPW and PDS construction inspections at permitted sites. Total costs are estimated as fixed percentages of inspection program fees.
4	**MUNICIPAL**	**$8,826,071**	
A	**Administration**	$217,538	Expenditures associated with the administrative oversight of the stormwater programs, regulatory reporting, and program assessment of municipal facilities by the DPW - Watershed Protection Program.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2014-15

Jurisdictional Worksheet Component			Explanation/Notes
B	**Streets, Roads, and Highways Element**	$2,299,899	
	Administration	$296,814	Founded road operations activities include: culvert inspections and cleaning; increased culvert waste disposal costs, street sweeping, installation and maintenance of BMPs and road structures, and the placement of additional controls. 10% of the Maintenance and Inspections and BMP Implementation is reported as Administration cost.
	Maintenance Inspections	$1,927,528	
	BMP Implementation	$75,557	
	Other	$0	
C	**MS4 Element**	$2,800,000	
	Administration	$1,500,000	The combined costs shown here apply across (1) DPW Flood Control -- conversion of existing concrete lined channels to natural bottom channels, updating flood control master plans, increased maintenance of flood control systems, and construction and maintenance of regional treatment BMPs; and (2) DPW Flood Control MS4 Operation & Maintenance -- maintenance on flood control facilities throughout the unincorporated areas of the County, exclusive of facilities within road rights-of-way (included in 4.B above). Other includes the cost of disposal of debris removed from MS4.
	Maintenance Inspections	$750,000	
	BMP Implementation	$500,000	
	Other	$50,000	
D	**Solid Waste Facilities Element**	$325,791	
	Administration	$45,643	Costs include Regional Board stormwater permit fees, consultant costs associated with stormwater upgrade and repair projects, and office staff time.
	Maintenance Inspections	$16,313	Costs include staff time to perform site inspections.
	BMP Implementation	$77,939	Costs include stormwater consultant site inspections, sampling/testing and BMP materials.
	Other (construction)	$185,896	Drainage improvement projects and BMP site maintenance projects.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2014-15

	Jurisdictional Worksheet Component		Explanation/Notes
E	**Wastewater Facilities Element**	$335,000	
	Administration	$10,000	This includes costs associated with JRMP report, the sanitary sewer system and facilities including: pump stations, sewage treatment plants and Spring Valley Operations facility. Also includes the cost of BMP design, acquisition, maintenance and monitoring, for wastewater Capital Improvement Projects, and Major maintenance projects, and at various wastewater facilities.
	Maintenance Inspections	$225,000	
	BMP Implementation	$100,000	
	Other	$0	
F	**Road Stations Element**	$984,613	
	Administration	$89,509	This includes DPW road station operations related to Permit compliance. The Administration cost is determined as 10% of the total costs of maintenance and Inspections and BMP Implementation as reported by the DPW Roads Divisions.
	Maintenance Inspections	$855,683	
	BMP Implementation	$39,421	
	Other	$0	
G	**Fleet Maintenance Element**	$119,937	
	Administration	$51,000	This includes costs associated with operation of the County's fleet maintenance and fueling facilities.
	Maintenance Inspections	$62,000	
	BMP Implementation	$6,937	
	Other	$0	
H	**Municipal Airfields Element**	$166,269	These costs involve site inspections, annual reporting, and maintenance of BMPs at airports, including oversight of tenant operations. The BMP implementation item includes Palomar asphalt cap repairs.
	Administration	$5,000	
	Maintenance Inspections	$80,000	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2014-15

	Jurisdictional Worksheet Component		Explanation/Notes
	Compliance Inspection and Enforcement	$0	
	BMP Implementation	$81,269	
	Other (sampling and analysis)	$0	
I	**Parks & Recreational Facilities Element**	$1,116,026	
	Administration	$117,828	This includes: coordinating all training requirements, preparing and reviewing reports, and overseeing the overall implementation of the stormwater program for DPR.
	BMP Implementation	$901,457	This includes costs associated with implementation of BMPs at County parks.
	Compliance Inspection and Enforcement	$96,742	Costs are for DPR enforcement of stormwater requirements at County parks.
	Other	$0	
J	**Office Buildings & Other Municipal Facilities Element**	$340,830	
	Administration	$0	DGS conducts a variety of storm water activities including: inspections and clean-up of County-owned, occupied, and leased facilities and vacant lands; maintenance and signage of storm drain inlet inserts and trash dumpsters; placement of inlet filters; maintenance of coverage and containment improvements for on-site supplies and materials; parking lot sweeping and controlled parking lot power washing; and application of erosion and sediment control measures. These costs are exclusive of fleet maintenance and fueling operations.
	Maintenance Inspections	$232,490	
	BMP Implementation	$108,340	
	Other	$0	

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2014-15

	Jurisdictional Worksheet Component		Explanation/Notes
	Management of Pesticides, Herbicides, & Fertilizers	$120,168	
	Administration	$120,168	Integrated Pest Control Program within the Department of Agriculture, Weights and Measures (AWM) performs eradication and control of invasive weeds. This program also provides weed control on roadsides, airports, flood control channels, sewage treatment plants and inactive landfills. It also provides structural pest control to facilities owned and operated by the county.
	Maintenance Inspections		
	BMP Implementation		
	Other		
5	**INDUSTRIAL and COMMERCIAL**	**$1,296,798**	
	Administration	$243,631	DPW and AWM conduct inspections of a variety of businesses in the unincorporated County, provide regulatory oversight of mobile businesses, and conduct follow-up and enforcement of stormwater violations.
	Compliance Inspection and Enforcement	$813,816	
	Educational Outreach	$239,351	
	Other expenditures	$0	
6	**RESIDENTIAL**	**$1,191,881**	
	Compliance Inspection and Enforcement	$650,409	DPW conducts complaint investigations for residential sources in the unincorporated County, and conduct follow-up and enforcement of stormwater violations. DPW also operates a regional hotline.
	Educational Outreach	$541,472	Several County departments coordinate and provide outreach to the residential sector and schoolchildren in support of Permit Section D.5 requirements. Costs reported here correspond to DPW only. Funded activities include developing pollution prevention content and providing direct outreach to various target audiences within the general residential and schoolchildren target audiences.

Table 1.1 – Estimated Jurisdictional Expenditures for FY 2014-15

Jurisdictional Worksheet Component			Explanation/Notes
7	**IDDE**	**$304,205**	
		$304,205	DPW conducts monitoring programs, assesses scientific data, and provides technical and scientific support to other County program staff. They also provide support for all technical and scientific aspects of JRMP development and implementation. These costs are exclusive of the regional monitoring program which is addressed separately under regional costs.
8	**EDUCATION**	**$0**	Education costs are included in other sections as applicable.
9	**PUBLIC PARTICIPATION**	**$0**	Public participation costs are included in other sections as applicable.
10	**SPECIAL INVESTIGATIONS**	**$0**	Expenditures not reported for FY 2014-15.
11	**NON-EMERGENCY FIREFIGHTING**	**$0**	Expenditures not reported for FY 2014-15.

$23,484,481

1.3.1.2 Watershed

Table 1.2 presents the County's estimated watershed expenditures for FY 2014-15.

Table 1.2 – Estimated Watershed Expenditures for FY 2014-15

	Santa Margarita WMA	San Luis Rey WMA	Carlsbad WMA	San Dieguito WMA	Peñasquitos WMA	San Diego River WMA	San Diego Bay WMA	Tijuana WMA
Administration	$60,000	$60,000	$80,000	$11,000	$11,000	$80,000	$30,000	$58,000
Cost Share Contribution	$0	$0	$46,205	$146,006	$20,162	$0	$7,256	$55,208
Watershed Activities	$100,569	$200,533	$0	$0	$0	$308,495	$3,590	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0
Total Estimated Watershed Costs	**$160,569**	**$260,533**	**$104,440**	**$157,006**	**$31,162**	**$388,495**	**$132,612**	**$96,511**

1.3.1.3 Regional

Table 1.3 presents the County's estimated regional expenditures for FY 2014-15. This includes only those expenditures associated with the Copermittees' adopted Regional Budget and Work Plan. Other costs associated with regional participation (meeting attendance, etc.) are included within the jurisdictional expenditures presented above.

Table 1.3 – Estimated Regional Expenditures for FY 2014-15

Regional Programs	County Costs
Administration	$0
Cost Share Contribution	$4,051,589
Regional Activities	$0
Other	$0
Total Estimated Regional Costs	**$4,051,589**

1.3.1.4 Total Expenditures

Table 1.4 presents the County's total estimated expenditures for FY 2014-15 (jurisdictional, watershed, and regional).

Table 1.4 – Total Estimated County Expenditures for FY 2014-15

Component / Sub-component	Estimated Expenditures
Jurisdictional	
Administration	$5,339,660
Development Planning	$1,433,347
Construction	$5,032,519
Municipal	$8,826,071
Industrial And Commercial	$1,296,798
Residential	$1,191,881
IDDE	$304,205
Education	$0
Public Participation	$0
Special Investigations	$0
Non-emergency Firefighting	$0
Jurisdictional Total	**$23,484,481**
Watershed	
Santa Margarita WMA	$160.569
San Luis Rey WMA	$260,533
Carlsbad WMA	$104,440
San Dieguito WMA	$157,006
Peñasquitos WMA	$31,162
San Diego River WMA	$388,495
San Diego Bay WMA	$132,612
Tijuana WMA	$96,511
Watershed Total	**$1,331,328**
Regional	**$4,051,589**
Total Estimated County Costs	***$28,867,398***

1.3.2 Funding Source

Table 1.5 shows the major sources of funding for the County's urban runoff management programs in FY 2014-15, and describes the legal restrictions applicable to the use of each.

Table 1.5 – Legal Restrictions on the Use of Program Funding

Funding Source	Legal Restrictions
General Fund	There are no restrictions on the use of general fund for County water quality programs and activities except that they must be used only for the purposes for which they are budgeted and allocated by the County Board of Supervisors.
Flood Control District Fees	Revenue generated from these fees must be expended for activities related to flood and storm management.
Developer Deposits / Permit Fees	Deposits / fees may be used only to fund activities related to the work for which the permits are issued.
Gas Tax	Gas Tax is collected by the state and allocated to local government for transportation-related work including maintenance of existing transportation systems and construction of new transportation facilities. These funds may not be used for other purposes.
Sanitary District Fees	Sanitary District Fees are used for work related to the maintenance of sewer lines, pump stations, force mains, and several treatment plants that serve the unincorporated areas. They may be used only for such maintenance-related purposes within the respective sewer district for which they are collected.
Other Funding Sources	Other funding sources collectively account for a relatively small portion of ongoing expenditures. However, all funding for the County's stormwater compliance programs is expended within applicable legal restrictions and limitations.

1.4. Conclusions and Recommendations

The figures presented here are an estimate of the expenditures that the County incurred to meet its compliance obligations for FY 2014-15. For the reasons explained above, they should be considered only best estimates of stormwater-related expenditures.

National Pollutant Discharge Elimination System

San Diego Regional Stormwater Copermittees

MEMORANDUM OF UNDERSTANDING

December 3, 2001

This Memorandum of Understanding (MOU), entered into by the County of San Diego (herein called County), the San Diego Unified Port District (herein called Port), and the incorporated cities of San Diego, Carlsbad, Chula Vista, Coronado, Escondido, Imperial Beach, La Mesa, San Marcos, Del Mar, El Cajon, Encinitas, Lemon Grove, National City, Oceanside, Poway, Santee, Solana Beach, and Vista (herein called Cities), collectively called Copermittees, establishes the responsibilities of each party with respect to compliance with the National Pollutant Discharge Elimination System (NPDES) storm water permit regulations administered by the United States Environmental Protection Agency (U.S. EPA) under the authority granted by the Federal Water Pollution Control Act (Clean Water Act) 33 USCA 1251 et. seq. as amended.

RECITALS

WHEREAS, in 1987 Congress amended Section 402 of the Federal Water Pollution Control Act (33 USCA 1342p) to require the U.S. EPA to promulgate regulations for applications for permits for storm water discharges; and

WHEREAS, the U.S. EPA adopted final permit regulations on November 16, 1990; and

WHEREAS, these permit regulations require the control of pollutants from storm water discharges by requiring a NPDES permit which would allow the lawful discharge of storm waters into waters of the United States; and

WHEREAS, the County, the Port, and the Cities desire to implement an integrated storm water management program with the objective of improving surface water quality in the County of San Diego; and

WHEREAS, the California State Water Resources Control Board (CSWRCB) as designee of the U.S. EPA has delegated authority to the San Diego Regional Water Quality Control Board (SDRWQCB) for administration of the NPDES storm water permit within the boundaries of its region; and

WHEREAS, on February 21, 2001, the Regional Board issued a NPDES permit and Board Order No. 2001-01 (herein called Permit) governing waste discharge requirements for storm water and urban runoff from the County, the Port, and the Cities, naming these entities as Copermittees; and

WHEREAS, said permit and order require that the Copermittees cooperate in the implementation of a Storm Water Management Plan including the execution of a Memorandum of Understanding;
NOW, THEREFORE, the parties hereto do mutually agree as follows:

I PERMITTEE RESPONSIBILITIES

A. DESIGNATION AND RESPONSIBILITIES OF PRINCIPAL PERMITTEE

1. The County of San Diego ("County") is hereby designated Principal Permittee. As such, the County incurs each of the responsibilities described in Section I.A.2. below. The County also has the responsibilities of all Copermittees described in Section I.B. of this MOU.

2. As necessary to meet the requirements of the Permit, the Principal Permittee shall provide overall program coordination and support, including the following tasks and responsibilities:

   a. Establish, chair, and provide overall Permit coordination and leadership of the Regional Storm Water Management Committee (herein called Management Committee, see Section II).
   b. Submit to the SDRWQCB the formal agreement between the Copermittees that provides a management structure for meeting the requirements of the Permit.
   c. Submit to the SDRWQCB the standardized formats for all reports required by the Permit by February 21, 2002.
   d. Submit the unified Jurisdictional Urban Runoff Management Program (URMP) document, including the Model Standard Urban Stormwater Mitigation Plan (SUSMP), to the SDRWQCB by February 21, 2002.
   e. Provide personnel and resources to facilitate the development and implementation of Regional General Programs (as defined in Section I.B.2.a.i.).
   f. Execute, manage and administer contracts on behalf of the Copermittees as necessary to support the implementation of Regional General Programs. With consent of the Principal Permittee, this may also include Watershed or Other General Programs. The Principal Permittee shall not be obliged to enter into any contract, or continue with a contract, unless the Principal Permittee has received the funds each Copermittee is obliged to contribute to the cost of the contract, or has received adequate assurances that such funds will be received before payments under that contract become due. The Principal Permittee shall have sole discretion to determine whether assurances that required funds will be timely received are adequate.
   g. Collect and assemble the individual and joint program reports, plans, and submit them to the SDRWQCB as required in the Permit. The following individual Copermittee documents and reports shall be integrated into a single unified document and/or report:
      - Jurisdictional Urban Runoff Management Plans (URMPs)
      - Jurisdictional URMP Annual Reports
      - Watershed URMP Documents
      - Watershed URMP Annual Reports
      - Dry Weather Analytical Monitoring Reports
      - Receiving Waters Monitoring and Reporting Program Annual Proposals and Reports
   h. Provide the Management Committee with meeting agendas including topic input from the Copermittees.
   i. Record all Management Committee votes and provide meeting summaries.
   j. Maintain a current mailing list of interested parties.
   k. Coordinate public input process(es) for proposed regional management and implementation plans where applicable.

l. Provide a repository for the centralization of urban runoff data and information.

m. Conduct data management and analysis.

n. Maintain knowledge of and advise the Copermittees regarding current and proposed State and Federal policies, regulations, and other NPDES programs; assist the Copermittees in the development and presentation of positions on these issues before local, State, and Federal agencies.

o. Represent the Copermittees on the California Storm Water Quality Task Force. However, Copermittees do not waive their right to represent themselves individually as they deem appropriate.

p. Formally advise appropriate State and Federal agencies of termination or amendment of this MOU.

q. Formally advise Copermittees in advance of official votes to be taken by the Management Committee.

3. Responsibilities of the Principal Permittee may be amended by a vote of the Management Committee to include additional tasks or responsibilities necessary to meet the requirements of the Permit, or to provide additional water quality benefits as determined appropriate with consent of the Principal Permittee.

B. RESPONSIBILITIES OF ALL COPERMITTEES

1. INDIVIDUAL PROGRAM RESPONSIBILITIES

a. Individual Programs are urban runoff management activities and programs which are required of individual Copermittees as defined in Sections F, G, H, and I of the Permit (excluding the collaborative development of model Standard Urban Storm Water Mitigation Plans (SUSMPs) required in Section F.1.b.(2)).

b. Within their sole jurisdiction, each of the Copermittees shall incur each of the following Individual Program responsibilities:

i. Establish and maintain adequate legal authority to control pollutant discharges from its MS4 as required by Section D (Legal Authority) of Order No. 2001-01 and to ensure compliance with the provisions of Section F of the Permit.

ii. Provide data, information, and reports within the time frames agreed upon by the Management Committee, to the Principal Permittee as necessary for program development, assessment, and reporting purposes.

iii. Cooperate with the SDRWQCB in pursuing enforcement action as necessary to ensure compliance with their URMP.

iv. Enforce local laws, codes, and ordinances as necessary to ensure implementation of plans where it has statutory authority to pursue such enforcement actions.

v. Ensure adequate response to emergency situations such as accidental spills, leaks, and illicit discharges.

vi. Prepare and submit to Principal Permittee an individual jurisdictional URMP document.

vii. Prepare and submit to Principal Permittee individual jurisdictional URMP annual reports.

viii. Abide by the terms of this MOU where it does not conflict with any other statutory requirements.

2. GENERAL PROGRAM RESPONSIBILITIES

General Programs are urban runoff management activities and programs which are required of, or provide a general and collective benefit to, all Copermittees or groups of more than one, but less than all Copermittees. General Programs must be mandated by the Permit, or be necessary to implement activities mandated by the Permit, or otherwise be conducted with the consent of all Copermittees participating or cooperating in the particular activity or program.

a. The following definitions shall apply to General Programs.

i. Regional General Programs are activities and programs that apply to all Copermittees of the Permit.

ii. Watershed General Programs are activities and programs that apply to the Copermittees within any of the Watershed Protection Areas (WPAs) defined by the Permit.

iii. Other General Programs are activities and programs that apply to multiple Copermittees, but which do not apply to Regional or Watershed General Programs as described above.

II REGIONAL STORM WATER MANAGEMENT COMMITTEE

A. ESTABLISHMENT OF THE REGIONAL STORM WATER MANAGEMENT COMMITTEE

A Regional Storm Water Management Committee (Management Committee) is hereby established. The purpose of the Management Committee is to provide regional coordination of urban runoff management activities, to develop and implement Regional General Programs, and to develop a framework for consistency between Watershed or Other General Programs and Individual Programs. The development of urban runoff management activities at the regional, watershed, and individual program levels requires the input and participation of all Copermittees. The Management Committee will provide a forum for the representation of interests, and the development of consensus during the presentation, discussion, and evaluation of proposed activities and program elements.

B. MANAGEMENT COMMITTEE REPRESENTATION

1. The Management Committee shall be chaired by the Principal Permittee who shall record all votes in the meeting summaries.
2. Each of the Copermittees (18 cities, the County and the Port) shall be allocated one vote.
3. Each of the Copermittees shall have one representative as a member of the Management Committee.
4. A quorum of two-thirds rounded up to the next whole person of the Management Committee must be present for a vote to be held.
5. Except as noted elsewhere in this MOU, approval of all Management Committee recommendations shall require a two-thirds affirmative vote of the total number of Copermittees present. In all instances, a majority affirmative

vote of the total Management Committee rounded up to the next whole person shall be required.

6. Meetings of the Management Committee, including any closed sessions with legal counsel, shall be conducted in accordance with the "Brown Act" (Government Code Section 54950 et seq.) The individual Copermittees have differing opinions on whether the Brown Act legally should be interpreted as applying to members of the Management Committee. In executing this Agreement, the Copermittees do not waive their right to take the position that the Brown Act legally does not apply, but voluntarily agree to follow Brown Act procedures for Management Committee meetings. Except for official meetings of the Management Committee, nothing herein shall be interpreted to require meetings between staff members of the individual Copermittees (including designated representatives of the Copermittees) to be subject to the Brown Act, where the Brown Act would not otherwise apply. Each Copermittee is individually responsible for ensuring that it complies with the Brown Act.

C. RESPONSIBILITIES OF THE MANAGEMENT COMMITTEE

The Management Committee shall be responsible for the following:

1. Developing, implementing, and/or arranging for implementation of, Regional General Programs (see Section I.B.2.a.i.).
2. Addressing common issues, promoting consistency among Jurisdictional Urban Runoff Management Programs (Jurisdictional URMPs) and Watershed Urban Runoff Management Programs (Watershed URMPs), and planning and coordinating activities required under the Permit.
3. Jointly developing standardized format(s) for all reports required under the Permit (e.g., annual reports, monitoring reports, fiscal analysis reports, and program effectiveness reports).
4. Approving an annual Budget (see Section IV.A.).
5. Establishing by-laws for the conduct of all meetings.
6. Establishing subcommittees or workgroups to review specific issues and make recommendations.

III WATERSHED ACTIVITIES

For each of the nine watersheds listed in Table 4 of the Permit, each Copermittee shall collaborate with other Copermittees within its watershed and shall develop and implement a Watershed URMP as required by the Permit.

IV FISCAL RESPONSIBILITIES

A. GENERAL RESPONSIBILITIES

1. The Copermittees shall each pay a yearly assessment into a fund established for Program operations for their assigned portion of the Management Committee approved Budget (Budget). The proportionate share of the Budget that each Copermittee shall pay is defined in Section IV.B below.
2. Any individual Copermittee, or group of Copermittees, may enter into separate agreements with other Copermittees, including the Principal Permittee, for services necessary to fulfill Individual Program responsibilities as described in Section I.B.1. above.
3. Each Copermittee shall pay its share of expenses within 60 days of receipt of an invoice from the Principal Permittee. Funds collected and not expended in any fiscal year shall be credited to the Copermittees' share of the next fiscal year's costs in accordance with the Copermittees' defined participation rates.
4. No later than January 1st of each year, a Budget Subcommittee shall prepare and submit for consideration by the Management Committee an estimated budget of costs and expenses for Regional General Programs applicable to the ensuing fiscal year.
5. To ensure that Copermittee governing bodies have sufficient time to consider fiscal impacts, the Management Committee shall prepare a draft Budget by no later than January 31st of each year for those Regional General Programs to be instituted in the ensuing fiscal years. After consideration of comments and discussion, a final Budget will be prepared, approved, and distributed by no later than February 28th of each year. The Budget will be based on the fiscal year beginning July 1st and ending June 30th, and shall include a description of major tasks, schedules, and projected costs for Regional General Programs.
6. Unless amended by a vote of the Management Committee, annually budgeted shared costs for Regional General Programs and activities shall include the following elements. Copermittees shall be responsible for their proportionate share of the amount approved pursuant to this section for each of these elements:

    a. <u>Stormwater Permit Fees</u> ($10,000 per year unless amended by the SWRCB).
    b. <u>Receiving Waters Monitoring and Reporting Program</u>.
    c. <u>Regional Outreach and Education Program</u>. Activities not required for Permit compliance shall be considered Other General Programs rather than Regional General Programs.
    d. <u>Regional Stormwater Hotline</u>. The County agrees to continue operation of a Regional Stormwater Hotline as an in-kind contribution to the Copermittees' Regional Outreach and Education Program subject to the following conditions.

        i. The County's total staffing contribution, including its proportionate share, shall not exceed 1.0 full-time equivalent hotline operator.
        ii. The County's expenses will be limited to those costs necessary to facilitate the receipt of public inquiries and complaints, make referrals for followup and investigation to appropriate Copermittees or other agencies, and provide basic educational information.

iii. The cost of producing and/or distributing written or other materials in response to Hotline requests shall be the sole responsibility of the Copermittee to which those requests apply. With consent of the County, such materials may be provided under separate agreement.

iv. The County may discontinue providing this service at its own discretion, but in such case agrees to provide Copermittees sufficient notice to allow the establishment of other services as necessary to meet their Permit obligations. This period shall be at the discretion of the County, but shall include no less than 60 days written notice.

e. Contribution to the California Stormwater Quality Task Force.

f. Additional elements which have received unanimous consent of the Management Committee.

7. Following the end of each fiscal year, the Principal Permittee shall provide a detailed accounting of the costs and expenses. The Principal Permittee shall also provide the Management Committee quarterly Budget Balance and Expenditure Status Reports.
8. The Principal Permittee agrees to waive administrative or other costs necessary to fulfill the responsibilities described in Section I.A. above.
9. Each Copermittee shall timely submit a budget request, sufficient to fund the Copermittee's assigned share of the approved Management Committee Budget for the ensuing fiscal year, to that Copermittee's governing body for approval. The submission shall reference and provide information on the approved Management Committee Budget, and shall inform that Copermittee's governing body that if the requested funds are not provided the Copermittee will be excluded from further Management Committee participation and will be in violation of RWQCB Order No. 2001-01.
10. Subject to approval by the Copermittees participating in a particular shared General Program, individual Copermittees may provide in-kind rather than monetary contributions toward the cost of that activity.
11. Should a dispute arise among any of the parties regarding any matter related to this MOU, the parties agree to first meet and confer in good faith to attempt to resolve the dispute. If that fails to resolve the dispute, they will submit the matter to mediation. If mediation fails to resolve the dispute, they shall submit it to non-binding arbitration. If they cannot agree on a single arbitrator, they shall each select one arbitrator and the two arbitrators shall select a third arbitrator. The matter shall then be decided by a panel of the three arbitrators by a majority vote.

B. DIVISION OF GENERAL PROGRAM COSTS

The following shall apply to the development and administration of the annual Management Committee Budget described in IV.A. above. Only shared Regional General Program costs described in Section IV.A.6. above are required to be included as part of this Budget. However, for convenience and/or economy, groups of Copermittees may elect to include Watershed and/or Other General Programs within this overall Budget. The cost share basis between the participating Copermittees for Watershed and/or Other General Programs included in the budget may differ from the cost allocation formula described below. The waiver of administrative costs described in Section IV.A.8. shall apply to Watershed and Other General Programs only with consent of the Principal Permittee.

Prior to the allocation of shared costs, each proposed or approved budget element or sub-element shall be identified as either a Regional General Program, a Watershed General Program, or an Other General Program, and the Copermittees sharing that cost shall be identified. The cost of any particular budget element shall be subject to the approval of only the Copermittees to which it applies. For each, costs shall be divided among participating Copermittees. The costs of Regional General Programs shall be allocated according to the following formula:

1. Ten percent (10%) of the cost shall be divided equally among all Copermittees.
2. Forty-five percent (45%) of the cost shall be divided based on population. Population-based costs shall be divided among all Copermittees as follows:

    a. The percentage of Population Share Costs for which each Copermittee is responsible shall be calculated by dividing their total population by the combined total population of all participating Copermittees within the geographic area applicable to the shared program or activitity. These percentages shall be calculated using the "Household" population figures of the San Diego Association of Governments (SANDAG) "Population and Housing Estimates" for the year 2000 or as formally updated or amended by SANDAG.
    b. The County's population for Regional Programs shall be the entire population of the unincorporated County. The County acknowledges that this will be a greater total population than that which would otherwise be included within the geographic area described in Section IV.B.3.c. below.
    c. The Port's population shall be based on the most recent available estimate of the number of persons whose primary place of residence is aboard a vessel within San Diego Bay (e.g., marinas, moorings, etc.). These numbers shall be based on estimates provided by the Harbor Police.

3. Forty-five percent (45%) of the cost shall be based on urbanized land area to be divided among all participating Copermittees as follows.

    a. The percentage of land area costs for which each Copermittee is responsible shall be calculated by dividing their total urbanized land area by the combined total urbanized land area of all participating Copermittees within the geographic area applicable to the shared program or activitity.
    b. These totals shall be calculated using the most recently available San Diego Association of Governments (SANDAG) land use statistics.
    c. The total urbanized land area for the County shall include those urbanized lands in the unincorporated portion of the County that are west of the County Water Authority (CWA) service area boundary as it exists on the

date of this Agreement or as formally amended by the CWA, plus land areas east of this line but draining toward the ocean that are served by a public water supply authority on the date of this Agreement (i.e., parts of Julian, Descanso, and Jamul/Dulzura).

d. The total urbanized land area for the Port shall include those urbanized lands within Port District boundaries. These totals shall be subtracted from the urbanized land areas of each of the respective Port member cities (San Diego, Coronado, National City, Chula Vista, and Imperial Beach).

C. DIVISION OF INDIVIDUAL PROGRAM COSTS

During the life of this MOU, it may be necessary or desirable for Copermittees or groups of Copermittees to enter into agreements for services necessary to fulfill Individual Program responsibilities. Determination of costs for these services is solely the responsibility of participating Copermittees.

V LIFE OF AGREEMENT

A. TERM OF AGREEMENT

The term of this MOU commences on its execution by each and all of the duly authorized representatives in the County, the Port, and the Cities. The life of the MOU shall run with the life of the current Permit plus six months, unless the Copermittees agree to put a revised MOU in place sooner. For purposes of this paragraph, any permit renewal or replacement after January 2006 shall be considered a new permit; any earlier amendment of the Permit increasing the obligations of the Principal Copermittee may at the County's sole option, be declared to be a new permit; and the Management Committee shall determine whether any other earlier amendment to the Permit is of such significance as to effectively be a new Permit.

B. WITHDRAWAL OF COPERMITTEE

1. Participation in this MOU may be withdrawn by any Copermittee for any reason only after the Copermittee complies with all of the following conditions of withdrawal:

   a. The Copermittee shall notify all of the other Copermittees in writing 90 days prior to its intended date of withdrawal.

   b. The withdrawing Copermittee shall have its name deleted as a Copermittee to the Permit.

2. Any expenses associated with withdrawal, including but not limited to, filing and obtaining the withdrawing Copermittee's individual NPDES permit and the amendment of the Permit will be solely the responsibility of the withdrawing Copermittee.
3. The withdrawing Copermittee shall be responsible for their portion of any shared costs incurred according to the conditions of this MOU up to the time that each of the conditions in Section V.B.1. above has been met.
4. Any monies paid by withdrawing Copermittee in excess of the amount due under the terms of the MOU shall be refunded to the Copermittee at the time the withdrawal becomes final as set forth in Section V B.1.a. above.

5. The withdrawing Copermittee shall not be entitled to participate in the division of proceeds in any reserve fund account, if any, if, and when, the MOU is dissolved.

C. NON-COMPLIANCE WITH MOU REQUIREMENTS

Any participant to this MOU found to be in non-compliance with the conditions of this MOU shall be solely liable for any lawfully assessed penalties resulting from such non-compliance. Failure to comply with MOU conditions within specified or agreed upon timelines shall constitute non-compliance with the MOU.

D. AMENDMENTS TO THE MEMORANDUM OF UNDERSTANDING

This MOU may be amended only by consent of all Copermittees. No amendment shall be effective unless it is in writing and signed by the duly authorized representatives of the Copermittees.

E. GOVERNING LAW

This MOU shall be governed and construed in accordance with the laws of the State of California. If any provision or provisions shall be held to be invalid, illegal, or unenforceable, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

The headings used throughout this MOU are for convenience only and do not in any way limit or amplify the terms or provisions of the MOU.

F. CONSENT AND BREACH NOT WAIVER

No term or provision hereof shall be deemed waived and no breach excused, unless such waiver or consent shall be in writing and signed by the Copermittee to have waived or consented. Any consent by any Copermittee to, or waiver of, a breach by the other, whether expressed or implied, shall not constitute a consent to, waiver of, or excuse for any other different or subsequent breach.

G. INDEMNIFICATION

Each party to this MOU (1) shall have the sole responsibility to comply with the Permit, (2) shall pay all fines, penalties, and costs which may arise out of such party's non-compliance with the Permit, and (3) shall enter into agreements with neighboring copermittees as necessary to address cross-boundary pollution.

H. APPLICATION OF PRIOR AGREEMENTS

This MOU constitutes the entire Agreement between the parties with respect to the subject matter; all prior agreements, representations, statements, negotiations, and undertakings are superseded hereby.

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 1/28/02

County of San Diego, Copermittee

APPROVED AS TO FORM AND LEGALITY
COUNTY COUNSEL

BY _____
SENIOR DEPUTY

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 02/08/02

San Diego Unified Port District, Copermittee

APPROVED 12/19/01 ATTORNEY

San Diego Unified Port District, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of San Diego, Copermittee

ATTEST:

City Clerk

Title

Title

APPROVED AS TO FORM:

City Attorney

R-296020

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Carlsbad, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

Shirley Horton

City of Chula Vista Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 12/19/01

City of Coronado, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Escondido, Copermittee

APPROVED AS TO FORM:

Jeffrey R. Epp
City Attorney

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Imperial Beach, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of La Mesa, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows: Pursuant to Resolution 2002-5789, a copy of which is attached.

Date: 1/22/02

City of San Marcos, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 12/19/01

RECEIVED
01 DEC 24 AM 10 54
D. E. H.
MAILROOM

Lauraine Brekke-Espanza
City of Del Mar, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

Bill Garrett, City Manager
City of El Cajon, Copermittee

ATTEST:

Marilynn Linn, City Clerk

COUNCIL DATE: 12-11-01
ITEM#: 1.9

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 12/12/01

City of Encinitas, Copermittee
Kerry Miller, City Manager

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Lemon Grove, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: February 19, 2002

City of National City, Copermittee, by
George H. Waters, Mayor

Approved as to form:

George H. Eiser
City Attorney

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Oceanside, Copermittee
Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:

, Deputy

City Attorney

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: January 15, 2002

City of Poway, Copermittee
James L. Bowersox, City Manager

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

RECEIVED

01 DEC 19 AM 10 18

D. E. H.
MAILROOM

City of Santee, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Solana Beach, Copermittee

10815 SOLANA BEACH 7921782 16:19 PAGE 02

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: December 11, 2001

City of Vista, Copermittee
By: Edwin W. Estes, Jr., Mayor Pro Tempore

National Pollutant Discharge Elimination System

San Diego Regional Stormwater Copermittees

MEMORANDUM OF UNDERSTANDING

November 16, 2007

This Memorandum of Understanding (MOU), entered into by the County of San Diego (County), the San Diego Unified Port District (Port), the San Diego County Regional Airport Authority (Airport), and the incorporated cities of San Diego, Carlsbad, Chula Vista, Coronado, Escondido, Imperial Beach, La Mesa, San Marcos, Del Mar, El Cajon, Encinitas, Lemon Grove, National City, Oceanside, Poway, Santee, Solana Beach, and Vista (Cities), collectively called Copermittees, establishes the shared program responsibilities of each party with respect to compliance with the National Pollutant Discharge Elimination System (NPDES) stormwater permit regulations administered by the United States Environmental Protection Agency (U.S. EPA) under the authority granted by the Federal Water Pollution Control Act (Clean Water Act) 33 USCA 1251 et seq. as amended.

RECITALS

WHEREAS, in 1987 Congress amended Section 402 of the Federal Water Pollution Control Act (33 USCA §1342p) to require the U.S. EPA to promulgate regulations for applications for permits for stormwater discharges; and

WHEREAS, the U.S. EPA adopted final permit regulations on November 16, 1990; and

WHEREAS, these permit regulations require the control of pollutants from stormwater discharges by requiring an NPDES permit, which would allow the lawful discharge of stormwaters into waters of the United States; and

WHEREAS, the County, the Port, the Airport, and the Cities desire to implement an integrated stormwater management program with the objective of improving surface water quality in the County of San Diego; and

WHEREAS, the California State Water Resources Control Board (CSWRCB) as designee of the U.S. EPA has delegated authority to the San Diego Regional Water Quality Control Board (Regional Board) for administration of the NPDES stormwater permit within the boundaries of its region; and

WHEREAS, on, January 24, 2007, the Regional Board issued an NPDES permit as Order No. R9-2007-0001 (Permit) governing waste discharge requirements for stormwater and urban runoff from the County, the Port, the Airport, and the Cities, naming these entities as Copermittees; and

WHEREAS, said Permit requires that the Copermittees cooperate in the implementation of various Urban Runoff Management Plans and execute a Memorandum of Understanding;
NOW, THEREFORE, the parties hereto do mutually agree as follows:

I. DEFINITIONS

Chair means presiding over and providing leadership and direction to a Working Body. This includes serving as a point of contact to external entities such as Regional Board staff, stakeholders, and industry groups, soliciting group input on and developing meeting content, facilitating meetings, and coordinating with the Secretary or Working Body Support staff to finalize work products for distribution to the Working Body. Chair responsibilities may also be divided between Co-Chairs.

Contract Administration means developing, soliciting, awarding, and managing contracts.

Direct Costs mean those costs directly related to the development of a work product, or to the performance of a particular function or service. Direct Costs may include the wages of Copermittee employees engaged in an activity and the cost of materials or supplies needed to support that activity. Depreciation, equipment, and office space are not considered Direct Costs.

Fiscal Year starts on July 1 and ends on June 30 of the following year.

General Programs are collaborative urban runoff management activities which are (1) mandated by or necessary to implement requirements of the Permit, (2) necessary to anticipate the requirements, or prepare for renewal, of the Permit, (3) required to comply with Regional Board Orders or other directives required of Copermittees as dischargers of urban runoff (e.g., 13267 Orders, Total Maximum Daily Loads, etc.), or (4) other urban runoff management activities conducted with the unanimous approval of Copermittees sharing the cost or responsibility.

In-kind Contribution means a non-monetary contribution that can be used to satisfy an equivalent monetary obligation. Examples of In-kind Contributions are equipment or services provided for use.

Other General Programs are activities that apply to a subset of more than one and less than all Copermittees. Other General Programs do not include the activities of the Planning Subcommittee or any Workgroup or Sub-workgroup of the Management Committee. Other General Programs also do not include Watershed URMP Sub-workgroups, but may apply to a subset of any Watershed URMP Sub-workgroup.

Participant means a Copermittee regularly attending meetings, participating in the development, review, and finalization of work products, and carrying out the responsibilities of the Working Body. Participants are a subset of Representatives. Participant implies a higher and more active level of involvement than general representation.

Regional General Programs are activities that apply to all Copermittees.

Representative means a Copermittee providing general representation to a Working Body. This includes serving as a Copermittee point of contact, and, as applicable, receiving, reviewing, and providing input on correspondence, meeting materials, and work products. Representatives are not required to attend meetings, but are expected to maintain a reasonable knowledge of, and involvement in, the activities of the Working Body. To the best of their ability each Copermittee Representative should have expertise and knowledge in the subject matter of each assigned Working Body.

Secretary means a person who takes responsibility for the records, correspondence, minutes or notes of meetings, and related affairs of a Working Body. This includes: maintaining group contact lists;

preparing and sending out meeting notifications and agendas; arranging for meeting rooms and equipment; taking, preparing, and finalizing meeting minutes or notes; and, coordinating with the Chair or Working Body Support staff to organize and distribute work products to the Working Body.

Simple Majority means at least one-half (50%) of applicable Copermittees, rounded up to the nearest integer, or plus one where the number of Copermittees is even. For the purposes of this MOU, a simple majority may never be less than three Copermittees.

Special Formula means any cost share formula that differs from the Default Formula in the selection or weighting of individual factors or in the methodology used to calculate one or more of them.

Three-fourths Majority means at least three-fourths (75%) of applicable Copermittees, rounded up to the nearest integer. For the purposes of this MOU, a Three-fourths Majority may never be less than three Copermittees.

Two-thirds Majority means at least two-thirds (67%) of applicable Copermittees, rounded up to the nearest integer. For the purposes of this MOU, a Two-thirds Majority may never be less than three Copermittees.

Urbanized Land Area means the total of all SANDAG land uses within the geographic area, subject to the cost share, excepting therefrom, the following coded land uses: 1403 Military Barracks; 4102 Military Airports; 6700 Military Use; 6701 Military Use; 6702 Military Training; 6703 Military Weapons; 7209 Casinos; 7603 Open Space Reserves, Preserves; 7609 Undevelopable Natural Areas; 9200 Water; 9201 Bays, Lagoons; 9202 Inland Water; and 9300 Indian Reservations.

Watershed Copermittee means any Copermittee that is a member of a Watershed Management Area as defined in Table 4 of the Permit.

Watershed General Programs are activities that apply to the Copermittees comprising any individual Watershed URMP Sub-workgroup corresponding to a Watershed Management Area (WMA) defined in Table 4 of the Permit.

Working Body means Committees, Subcommittees, Workgroups, Sub-workgroups, or any other group of Copermittees assembled to conduct work required by, for, or in furtherance of, compliance with the Permit (Figure A identifies the Working Bodies established in this MOU).

Working Body Support means those tasks not within the assigned responsibilities of the Chair, Co-chair, or Secretary, or equitably divided amongst the Participants of the Working Body. This includes researching, drafting, modifying, and finalizing work products such as work plans, budgets, and meeting materials, and any other tasks associated with the responsibilities of the Working Body.

II. RESPONSIBILITIES OF ALL COPERMITTEES

The following apply to General Programs.

A. Performance and Reimbursement of Tasks

1. Any individual Copermittee performing tasks necessary to fulfill budgeted General Program responsibilities for a Working Body in which they are a Participant is entitled to reimbursement of the costs incurred in accordance with section II.B.1.
2. Any Copermittee performing contract administration tasks to fulfill budgeted General Program responsibilities for a Working Body in which it is a Participant is entitled to reimbursement of contract management costs at a rate of 5% of the total contract cost or as shown by accounting records and as agreed on by the participating Copermittees.
3. Any Copermittee performing tasks other than contract administration, or serving as a Working Body Chair, Co-chair, or Secretary, is entitled to reimbursement of the Direct Costs of performing those services in accordance with section II.B.1.
4. A Copermittee shall not be obliged to conduct work, enter into any contract, continue with any work or contract, or incur any other cost on behalf of other Copermittees if each Copermittee has not contributed the funds that it is obliged to contribute toward the activity or program, or if the Copermittee has not received adequate assurances that such funds will be received before payments become due. The Copermittee shall have sole discretion to determine whether assurances that require funds will be timely received or adequate.
5. A member of a Working Body providing Working Body Support may terminate those obligations for convenience if another party has been selected to the satisfaction of the other members of the Working Body, agrees to perform the obligations, and the applicable work plan and budget have been modified in accordance with the provisions of this MOU.

B. Fiscal Responsibilities

1. Division of Shared General Program Costs

   a. Prior to the allocation of shared costs, each proposed or approved budget element or sub-element shall be identified as either a Regional General Program cost, a Watershed General Program cost, or an Other General Program cost, and the Copermittees sharing that cost shall be identified. The cost of any particular budget element shall be subject to the approval of only the Copermittees to which it applies. The associated costs shall be divided among participating Copermittees as described below.

      (1) <u>Default Formula</u>. Shared costs shall be divided according to a Default Formula of 45% Urbanized Land Area, 45% Population, and 10% Equal Division unless a Special Formula is approved by the Copermittees to which the cost applies.

         (a) Population costs shall be divided among the Copermittees as follows: Whenever any geographic portion of the Port or Airport jurisdiction(s), respectively, lies(s) within the geographic area to which the shared program or activity is applicable, the Port or Airport, respectively, will each pay a fixed 0.5% of total Population costs. The remaining percentage of the population costs shall be divided among Copermittees by dividing the total population of each Copermittee by the combined total Copermittee population within the geographic area applicable to the shared program or activity. These percentages shall be calculated using the most recently available population data available from the San Diego Association of Governments (SANDAG), unless more recent data are available from an equivalent source such as the U.S. Census Bureau, and are determined to be acceptable by the Copermittees sharing the cost.

(b) Urbanized Land Area costs shall be divided among Copermittees by dividing the total Urbanized Land Area of each Copermittee by the combined total Urbanized Land Area of all participating Copermittees within the geographic area applicable to the shared program or activity. Urbanized Land Area shares shall be calculated using the most recently available San Diego Association of Governments (SANDAG) land use statistics. The Urbanized Land Area share for the County shall include those urbanized lands in the unincorporated portion of the County that are west of the County Water Authority (CWA) service area boundary as it exists on the date of this MOU or as formally amended by the CWA.

(c) Ten Percent (10%) of the total cost to be shared shall be divided equally amongst all of the Copermittees.

(d) Modification of the Default Formula requires the unanimous approval of all Copermittees.

(2) Special Formulas

(a) Special Formulas may be applied to any shared General Program cost, and require the approval of a Three-fourths Majority of the Copermittees participating in the cost.

(b) Special Formula for Hydromodification Management Plan (HMP) development. The Copermittees have initially estimated the total cost of developing an HMP by a professional consultant to be $1,000,000 over a two year period, and on March 15, 2007 approved a Fiscal Year 2007-08 regional shared costs budget that included $600,000 toward such costs, plus an additional 5% for contract management. The remaining estimated costs for completing the HMP, based on the actual consultant contract award amount and associated administrative costs, will be included in the Regional Work Plan and Regional Shared Costs budget for the 2008-09 fiscal year. HMP costs shall be allocated according to the following formula:

i. Ten percent (10%) of the cost shall be divided equally among all Copermittees.

ii. Ninety percent (90%) of the cost shall be divided based on the estimated number of Developable Parcels within each Copermittees' jurisdiction. Developable Parcel-based costs shall be divided among all Copermittees as follows:

[1] The percentage of developable parcel share costs for which each Copermittee is responsible shall be calculated by dividing the Copermittee's total number of developable parcels by the combined total developable parcels of all participating Copermittees. Developable parcels shall be calculated as the number of parcels within each Copermittee's developable land area using the SANDAG 2007 Parcel Layer. Developable lands shall be determined using the SANDAG 2004 developable land layer.

[2] The total developable land area for the County shall include those urbanized lands in the unincorporated portion of the

County that are west of the CWA service area boundary as it exists on the date of this MOU or as formally amended by the CWA.

(3) In-kind Contributions. Subject to approval by the Copermittees participating in a particular shared General Program budget, a Copermittee may provide an in-kind contribution of equal value rather than a monetary contribution toward all or part of the cost of an activity.

2. Annual Shared Cost Budgets and Work Plans

a. No later than October 31st of each year, each Regional Working Body shall prepare and submit to the Planning Subcommittee a Work Plan and estimated Budget of costs and expenses for the upcoming Fiscal Year. These budgets shall describe major tasks, schedules, and projected costs, which Copermittees will provide Working Body Support, Contract Administration, in-kind contributions, and any other information applicable to regional general program costs.

b. To ensure that each Copermittee governing body has sufficient time to consider fiscal impacts, the Planning Subcommittee shall prepare a consolidated draft Regional Work Plan and Regional Shared Costs Budget no later than December 31st of each year for the regional general programs. After consideration of comments and discussion, a final Regional Work Plan and Regional Shared Costs Budget shall be prepared, approved by the Management Committee, and distributed to the Copermittees no later than January 31st of each year. Modifications to any adopted Regional Shared Costs Budget or Regional Work Plan that will result in an overall increase in cost require the approval of the Regional Management Committee.

c. No later than January 31st of each year, each Watershed Urban Runoff Management Plan Sub-workgroup, for which costs will be shared in the ensuing fiscal year, shall prepare, adopt, and distribute to the Watershed Copermittees a Watershed Work Plan and Watershed Shared Costs Budget. These budgets shall include a description of major tasks, schedules, and projected costs, and shall identify the Copermittees that will provide or contract services or incur other costs. Modifications to any adopted Watershed Shared Costs Budget or Watershed Work Plan that will result in an overall increase in cost require the approval of the applicable Watershed URMP Sub-workgroup.

d. Each Copermittee shall submit for approval by its governing body a budget request as necessary to fund its assigned share of any approved Work Plan and Budget for the ensuing fiscal year. The submission shall reference and provide information on the approved Budget, and shall inform the Copermittee's governing body that if the requested funds are not provided the Copermittee will be excluded from further participation and may be in violation of the Permit.

3. Management and Payment of Funds

a. For Regional General Programs, the Copermittees shall each pay a yearly assessment into a Regional General Program operations fund for their assigned portion of any Regional Shared Costs Budget approved pursuant to this MOU. The Regional General Program operations fund shall be managed by the Regional Principal Permittee, or any other Permittee on approval of the Copermittees.

b. For Watershed General Programs, the Watershed Copermittees for each WMA shall each pay a yearly assessment into a Watershed General Program operations fund for their assigned portion of any Watershed Shared Costs Budget approved pursuant to this MOU. Each Watershed General Program operations fund shall be managed by the Watershed Lead Permittee, or any other Watershed Permittee on approval of the Watershed Copermittees.

c. The Copermittee managing each General Program operations fund shall provide Budget Balance and Expenditure Status Reports quarterly and following the end of each fiscal year. This shall include a detailed accounting of all costs and expenses in accordance with the adopted Work Plan and Shared Costs Budget, including those incurred by Copermittees providing Working Body Support, contracting services, in-kind services, or other applicable costs.

d. Each Copermittee shall pay invoices within 60 days of receipt from the Copermittee managing the applicable General Program operations fund.

e. Funds collected and not expended in any fiscal year shall be credited to the Copermittees' share of the next fiscal year's costs in accordance with the Copermittees' defined shared costs.

f. Copermittees providing Working Body Support, Contract Administration, in-kind services, or incurring other budgeted costs on behalf of other Copermittees shall provide documentation of those expenses as requested by the Copermittee managing the applicable General Program operations fund. They shall only receive credit for those expenses if a detailed accounting of all costs and expenses meeting the minimum standards agreed upon by the Copermittees has been provided.

g. Differences in the approved actual cost of expenses from those budgeted shall be either credited or added as appropriate to the amount of the Copermittee's share.

III. REGIONAL GENERAL PROGRAMS

In addition to the requirements of section II, the following apply to Regional General Programs.

A. Regional Principal Permittee

1. The County is hereby designated Regional Principal Permittee (Principal Permittee).

   a. A change in the assignment or responsibilities of the Principal Permittee requires the unanimous approval of all Copermittees.

   b. In addition to the responsibilities of all Copermittees described in Section II, the Principal Permittee shall provide general coordination for the development and implementation of Regional General Programs, including the following tasks and responsibilities:

      (1) Establish, chair, and provide overall coordination and leadership of the Regional Stormwater Management Committee (Management Committee) and the Regional Program Planning Subcommittee (Planning Subcommittee).

      (2) Submit to the Regional Board the formal agreement between the Copermittees that provides a management structure for meeting the requirements of the Permit.

      (3) Collect and assemble individual and joint program reports and plans, and submit them to the Regional Board as required by the Permit.

(4) Maintain a current contact list of Copermittees and interested parties.

(5) Maintain knowledge of and advise the Copermittees regarding current and proposed state and federal policies, regulations, and other NPDES programs; assist the Copermittees in the development and presentation of positions on these issues before local, state, and federal agencies.

(6) Formally advise appropriate state and federal agencies of termination or amendment of this MOU.

B. Regional Stormwater Management Committee

1. The purpose of the Management Committee is to provide a public forum for the development, approval, and coordination of urban runoff management programs, and for the exploration of issues of regional significance.
2. The Management Committee shall consist of one Participant representing each Copermittee. Each Copermittee shall have one vote.
3. The Management Committee shall meet at least four times per year.
4. At a minimum, the Management Committee shall have the following responsibilities:

   a. Address common issues, promote consistency among jurisdictional and watershed programs, and plan and coordinate activities required under the Permit;

   b. Develop, implement, and arrange for implementation of Regional General Programs;

   c. Provide a general forum for informing and receiving input from stakeholders and interested parties;

   d. Provide a forum for public participation in the development and implementation of regional urban runoff management programs and activities;

   e. Establish or modify Working Bodies to review specific issues, make recommendations, or conduct work in support of shared regional priorities or objectives;

   f. Adopt by-laws for the conduct of all Working Body meetings;

   g. Formally approve the recommendations, work products, and deliverables of Working Bodies presented for consideration;

   h. Adopt an Annual Regional Shared Costs Budget;

   i. Approve an Annual Regional Work Plan; and

   j. Approve quarterly and year-end Budget Balance and Expenditure Status Reports.

5. The Management Committee shall be chaired by the Principal Permittee, or may alternatively be chaired or co-chaired by any other Copermittee upon approval of the Management Committee.
6. For a meeting or a vote to be held, a quorum of a Two-thirds Majority of voting representatives of the Management Committee must be present.
7. Management Committee voting shall not be conducted outside of meetings (e.g., by email).
8. For a motion to be approved, an affirmative vote of a Simple Majority of the Management Committee is needed.
9. To approve any shared cost, or any cost-sharing formula or methodology applicable to a shared cost, (1) the affirmative votes must represent greater than fifty percent (50%) of the cost being shared, and (2) any Copermittee that is responsible for 25% or more of the total proposed cost must be present.

10. Meetings of the Management Committee, including any closed sessions with legal counsel, shall be conducted in accordance with the "Brown Act" (Government Code Section 54950 et seq.). Except for official meetings of the Management Committee, nothing herein shall be interpreted to require meetings between staff members of the individual Copermittees (including designated representatives of the Copermittees) to be subject to the Brown Act, where the Brown Act would not otherwise apply.

C. Regional Program Planning Subcommittee

1. The purpose of the Planning Subcommittee shall be to provide regional coordination of urban runoff management activities, to develop and implement Regional General Programs, and to direct and coordinate the activities of Regional, Watershed, or Other General Programs.
2. Unless a different minimum meeting frequency is established through the unanimous approval of all Copermittees, the Planning Subcommittee shall meet at least six times per year.
3. At a minimum, the Planning Subcommittee shall have the following responsibilities:

    a. Serve as an intermediary between the Management Committee and other Copermittee Working Bodies;
    b. Plan and coordinate Management Committee meetings;
    c. Report the activities of the Management Committee to the County and City Managers Association or equivalent;
    d. Prepare and recommend by-laws for Management Committee approval for the conduct of all Working Body meetings;
    e. Schedule, coordinate, and track the progress of Working Bodies in the completion of their assigned responsibilities;
    f. Establish and maintain a calendar of Copermittee meetings and events;
    g. Direct and assign work products and information requests between Working Bodies;
    h. Conduct regional program planning including developing an Annual Regional Work Plan and Regional Shared Costs Budget for Management Committee consideration and approval;
    i. Review and recommend Management Committee approval of work products, recommendations, and requests of Working Bodies for consideration and approval;
    j. Annually receive, review, comment on, and consolidate the recommended Work Plan and Shared Costs Budget of each regional Working Body;
    k. Annually prepare and present for Management Committee approval a final recommended Regional Work Plan and Regional Shared Costs budget;
    l. Monitor and recommend Management Committee approval of budget expenditures of Working Bodies in accordance with the adopted Regional Work Plan and Regional Shared Costs budget;
    m. Provide a Representative to each Regional Workgroup;
    n. Regularly coordinate and liaise with Regional Board staff, stakeholders, regulated parties, and other interested parties to identify and explore key regional issues and concerns.
    o. Provide Representation to the following California Stormwater Quality Association (CASQA) Working Bodies or their equivalent; Executive Program Committee, Board of Directors (if elected), Stormwater Policy and Permitting and Legislation; Phase II Programs;

p. Provide representation or participation for other professional organizations and societies as appropriate and feasible;
q. Provide regular updates to Copermittees and interested parties via Management Committee meetings or other appropriate means (e-mail, etc.); and
r. Provide subject area input as needed for the development, implementation, review, and revision of General Programs, and the development of associated reports and work products.

4. The Planning Subcommittee may not alter the responsibilities of, or impose new fiscal obligations on, any Copermittee or Working Body, except as approved by the Management Committee.
5. Each Watershed Lead Permittee shall provide one Participant to the Planning Subcommittee. Subject to approval of the applicable WURMP Sub-workgroup, a Copermittee other than the Watershed Lead Permittee may also serve as the Planning Subcommittee representative for a WMA. Upon approval of the Management Committee, up to two additional representatives may be appointed to the Planning Subcommittee in any year, so long as the total number of representatives does not exceed ten. The Management Committee shall determine the length of these additional appointments, but they shall be at least one year.
6. The Planning Subcommittee shall be chaired by the Principal Permittee, or may alternatively be chaired or co-chaired by any other Copermittee upon approval of the Management Committee.
7. Voting Requirements for the Planning Subcommittee:

   a. The Planning Subcommittee shall only make advisory recommendations for Management Committee approval.
   b. The Planning Subcommittee may use any voting methodology it deems appropriate to develop advisory recommendations or conduct other business, and, shall present minority or dissenting recommendations for consideration by the Management Committee as applicable.
   c. Except as prohibited by law, the Planning Subcommittee may conduct votes outside of meetings (e.g., by e-mail) as appropriate.

D. General Responsibilities of Regional Workgroups and Sub-Workgroups

1. The purpose of Regional Workgroups and Sub-workgroups is to provide regional coordination of urban runoff management activities within assigned subject areas, to develop and implement recommended Regional General Programs, and to provide coordination of activities with stakeholders and interested parties. Regional Workgroups are advisory to the Management Committee through the Planning Subcommittee. Regional Sub-workgroups are advisory to the Regional Workgroups to which they are subordinate.
2. Unless a different minimum meeting frequency is established through the unanimous approval of all Copermittees, each Regional Workgroup and Sub-workgroup shall meet at least four times per year.
3. At a minimum, each Regional Workgroup and Sub-workgroup shall have the following responsibilities within its assigned subject area:

   a. Nominate for Management Committee approval a Chair or Co-chairs, and a Secretary from among its participants;
   b. Facilitate consistency in the development, implementation, review, and revision of General Programs, and the development of associated reports and work products;

c. Develop, annually review, and update as necessary subject-specific standards for reporting, assessment, and data and information management;

d. Develop and implement Regional General Programs as appropriate and feasible;

e. Provide subject area input to other Working Bodies as requested by the Planning Subcommittee; and

f. Regularly coordinate and liaise with Regional Board staff, stakeholders, regulated parties, and other interested parties to identify and explore key regional issues and concerns.

4. Regional Workgroups shall also have the following responsibilities:

a. By October 31st of each year, prepare and submit to the Planning Subcommittee a recommended Work Plan for the activities of the Workgroup and its Sub-workgroups in the ensuing fiscal year. This shall include a description of major tasks, deliverables, and projected schedules, and the assignment and/or division of responsibilities for task completion.

b. By October 31st of each year, prepare and submit to the Planning Subcommittee a recommended Work Plan and Shared Costs Budget for the ensuing fiscal year.

c. Twice per year, provide Written Status Reports to the Planning Subcommittee describing (1) activities and accomplishments for the previous period, (2) success in completing scheduled tasks, and (3) key issues, activities, and tasks to be addressed in the next period. Written Status Reports shall be submitted as directed by the Planning Subcommittee.

d. Provide Workgroup updates at Management Committee meetings.

5. Voting Requirements for Regional Workgroups and Sub-workgroups

a. Regional Workgroups shall make consensus recommendations to the Planning Subcommittee, who shall in turn make recommendations for formal votes to the Management Committee.

b. Regional Sub-workgroups shall make consensus recommendations to the Regional Workgroup to which they are subordinate.

c. Regional Workgroups and Regional Sub-workgroups may use any voting methodology they deem appropriate to develop consensus, and, as applicable, shall present minority or dissenting recommendations for consideration.

d. Regional Workgroups and Sub-workgroups may conduct votes outside of meetings (e.g., by email) as appropriate.

6. Copermittee Representation and Participation on Regional Workgroups and Regional Sub-workgroups:

a. Each Copermittee shall provide at least one Representative to each Regional Workgroup or Regional Sub-workgroup.

b. Each of the Copermittees represented on the Planning Subcommittee shall serve as a Participant on at least one Regional Workgroup or Regional Sub-workgroup each year. Assignments shall be coordinated through the Planning Subcommittee to ensure adequate participation in each Regional Workgroup and Regional Sub-workgroup.

c. Each of the Copermittees that is not a Participant on the Planning Subcommittee in a given year shall serve as a Participant on at least two Regional Workgroups or Regional Sub-workgroups during that year.

d. Each Copermittee shall serve as a Regional Workgroup or Sub-workgroup Chair, Co-chair, or Secretary each year. The responsibilities of Chairs, Co-chairs, and Secretaries are not reimbursable. Subject to Management Committee approval, Copermittees may voluntarily serve the required assignments of other Copermittees so long as the minimum number of required assignments is filled in each year.

E. Responsibilities Specific to Individual Regional Workgroups and Sub-Workgroups

In addition to the general responsibilities described in section III.D, the following apply to individual Workgroups and Sub-workgroups. Regional Workgroups and Sub-workgroups may be added, deleted, or modified through the unanimous approval of the Management Committee.

1. Fiscal, Reporting, and Assessment Workgroup

The purpose of the Fiscal, Reporting, and Assessment Workgroup is to provide regional standards and consistency in the implementation, assessment, and reporting of Copermittee urban runoff management activities and programs. At a minimum the Fiscal, Reporting, and Assessment Workgroup shall have the following responsibilities:

a. Develop, annually review, and update as necessary regional reporting, assessment, and program data and information management standards;

b. Develop regional fiscal analysis standards and metrics by December 31, 2008;

c. Develop, annually review, and update as necessary standards for tracking and reporting expenditures;

d. Receive and consolidate data for budget preparation and monitoring;

e. Develop the Copermittees' Regional URMP (RURMP);

f. Develop the Copermittees' RURMP Annual Reports;

g. Develop the Copermittees' Long-Term Effectiveness Assessment (LTEA);

h. Develop the Copermittees' Report of Waste Discharge (ROWD); and

i. Provide representation on the CASQA Effectiveness Assessment Subcommittee or equivalent.

2. Education and Residential Sources Workgroup

The purpose of the Education and Residential Sources Workgroup is to provide regional standards and consistency in the development, implementation, assessment, and reporting of Copermittee educational and residential source management activities and programs. At a minimum, this shall include the following responsibilities:

a. Develop, annually review, and update as necessary recommended regional standards and approaches for conducting educational activities;

b. Develop and coordinate the implementation of the Copermittees' Regional Residential Education Plan;

c. Develop, annually review, and update as necessary regional reporting, assessment, program data and information management standards for Copermittee educational activities and programs;

d. Review and comment on the educational content of work products developed by other Working Bodies;

e. Liaise with and assist the Regional WURMP, Land Development, Industrial and Commercial, and Municipal Workgroups in developing training and outreach strategies, materials, and activities;

f. Provide a Representative to the CASQA PIPP, Website, and Workshops subcommittees or their equivalent;

g. As applicable, facilitate the centralized management of educational program data and information;

h. Develop, annually review, and update as necessary regional standards and approaches for the management of residential sources to address at a minimum:

(1) Priority Sources and Inventories,

(2) BMP Requirements and Recommendations, and

(3) Program Implementation Approaches (including education);

i. Develop, annually review, and update as necessary recommended regional reporting, assessment, program data and information management standards for residential urban runoff management activities and programs;

j. As applicable, facilitate the centralized management of regional residential program data and information (sources, BMP inventories, etc.); and

k. Coordinate with the Regional WURMP workgroup to assist in the development of residential content for watershed program strategies.

3. Regional Monitoring Workgroup and Sub-workgroups

The purpose of the Regional Monitoring Workgroup and its Sub-workgroups is to provide regional standards and consistency in the development, implementation, assessment, and reporting of receiving waters and urban runoff monitoring activities and programs. At a minimum, the following responsibilities shall apply to the Regional Monitoring Workgroup, or may be delegated to its Dry Weather and Coastal Monitoring Sub-workgroups as appropriate:

a. Develop, annually review, and update as necessary recommended regional standards and approaches for conducting monitoring activities;

b. Develop and coordinate the implementation of the Copermittees' Regional Receiving Waters Monitoring Program or other specific monitoring program elements;

c. Develop and update as necessary reporting, assessment, program data and information management standards for Copermittee monitoring activities and programs;

d. Develop, review, and recommend approval of work plans, monitoring reports, and other required work products;

e. Provide a Representative to the CASQA Stormwater Monitoring and Science subcommittee or its equivalent;

f. Regularly coordinate and liaise with Regional Board staff, stakeholders, regulated parties, and other interested parties to identify and explore key monitoring issues; and

g. As applicable, facilitate the centralized management of water quality monitoring data.

4. Regional Watershed URMP Workgroup

The purpose of the Regional Watershed URMP Workgroup is to provide regional standards and consistency in the development, implementation, assessment, and reporting of Copermittee watershed management activities and programs. At a minimum, this shall include the following responsibilities:

a. Coordinate Watershed URMP administration and reporting;

b. Develop, annually review, and update as necessary recommended regional standards and approaches for conducting watershed urban runoff management activities and programs;

c. Develop, annually review, and update as necessary regional reporting, assessment, program data and information management standards for watershed urban runoff management activities and programs;

d. As applicable, coordinate the implementation of regionally applied watershed urban runoff management activities and programs;

e. As applicable, facilitate the centralized management of watershed program data and information;

f. Coordinate as necessary with other Copermittee Working Bodies to assist in the development of watershed-related program content;

g. Provide a Representative to the CASQA Watershed Management and Impaired Waters subcommittee or equivalent; and

h. As appropriate, facilitate Total Maximum Daily Load development, implementation, and reporting.

5. Land Development Workgroup

The purpose of the Land Development Workgroup is to provide regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to the construction and post-construction phases of the land development process. At a minimum, this shall include the following responsibilities:

a. Develop, annually review, and update as necessary recommended regional standards and approaches for the management of construction and post-construction sources to address at a minimum:

(1) Priority Sources and Inventories,

(2) BMP Requirements and Recommendations, and

(3) Program Implementation Approaches;

b. Develop the Copermittees' Hydromodification Management Plan (HMP);

c. Update the Model Standard Urban Stormwater Mitigation Plan (SUSMP) in accordance with Permit requirements;

d. Develop, annually review, and update as necessary regional reporting, assessment, program data and information management standards for construction and post-construction sources;

e. As applicable, coordinate the implementation of regional urban runoff management programs and activities for construction and post-construction sources;

f. As applicable, facilitate the centralized management of construction and post-construction program data and information; and

g. Provide a Representative to the CASQA Construction Workgroup or its equivalent.

6. Municipal Activities Workgroup

The purpose of the Municipal Activities Workgroup is to provide regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to municipal activities and sources. At a minimum, this shall include the following responsibilities:

a. Develop, annually review, and update as necessary recommended regional standards and approaches for the management of municipal sources to address at a minimum:

(1) Priority Sources and Inventories,

(2) BMP Requirements and Recommendations, and

(3) Program Implementation Approaches;

b. Develop, annually review, and update as necessary regional reporting, assessment, program data and information management standards for municipal sources;

c. As applicable, coordinate the implementation of regional urban runoff management activities and programs for municipal sources;

d. As applicable, facilitate the centralized management of municipal program data and information.

7. Industrial and Commercial Sources Workgroup

The purpose of the Industrial and Commercial Sources Workgroup is to provide regional standards and consistency in the development, implementation, assessment, and reporting of urban runoff activities and programs related to industrial and commercial activities and sources. At a minimum, this shall include the following responsibilities:

a. Develop, annually review, and update as necessary recommended regional standards and approaches for the management of industrial and commercial sources to address at a minimum:

(1) Priority Sources and Inventories,

(2) BMP Requirements and Recommendations, and

(3) Program Implementation Approaches;

b. As applicable, coordinate the implementation of regional urban runoff management activities and programs for industrial and commercial sources;

c. Develop, annually review, and update as necessary regional reporting, assessment, program data and information management standards for industrial and commercial sources; and

d. As applicable, facilitate the centralized management of industrial and commercial program data and information.

IV. WATERSHED GENERAL PROGRAMS

The following apply to Watershed General Programs.

A. Watershed Lead Permittees

1. The following Copermittees are hereby designated as Watershed Lead Permittees for the Watershed Management Areas listed:

   a. Santa Margarita WMA: County of San Diego
   b. San Luis Rey River WMA: City of Oceanside
   c. Carlsbad WMA: City of Carlsbad
   d. San Dieguito River WMA: City of Escondido
   e. Penasquitos WMA: City of Poway
   f. Mission Bay WMA: City of San Diego
   g. San Diego River WMA: City of El Cajon
   h. San Diego Bay WMA: Port of San Diego
   i. Tijuana WMA: County of San Diego

2. Changes in the assignment or responsibilities of Watershed Lead Permittees require unanimous approval of the applicable Watershed Permittees.
3. In addition to the responsibilities of all Copermittees described in Section II, each Watershed Lead Permittee shall provide general program coordination for Watershed General Programs applicable to their respective WMA, including the following tasks and responsibilities:

   a. Establish, chair, and provide overall coordination and leadership of its respective WURMP Sub-workgroup;
   b. Collect and assemble the individual and joint program reports, plans, and submit them to the Regional Principal Permittee or the Regional Board as required in the Permit; and
   c. Maintain knowledge of and advise the Watershed Copermittees regarding current and proposed watershed-related State and Federal policies, regulations, and other NPDES programs; assist the Copermittees in the development and presentation of positions on these issues before local, State, and Federal agencies.

B. Watershed URMP Sub-workgroups

1. For each WMA listed in section IV.A.1, a Watershed URMP Sub-workgroup is hereby established.

2. Copermittee Participation in Watershed URMP Sub-workgroups

   a. Each of the Watershed Copermittees shall have one Participant as a member of the Watershed URMP Sub-workgroup; and
   b. The Chair of the Watershed URMP Sub-workgroup shall be the Watershed Lead Permittee, or any other Copermittee on approval of the group.

3. Unless a different minimum meeting frequency is established through the unanimous approval of all Copermittees, each Watershed URMP Sub-workgroup shall meet at least four times per year.
4. At a minimum, each Watershed URMP Sub-workgroup shall have the following responsibilities:

   a. Develop and implement a Watershed URMP as required by the Permit;
   b. Develop and implement watershed activities and programs that are consistent with all minimum regional standards established through the Regional WURMP Workgroup and approved by the Management Committee;
   c. Provide data, information, and other input to the Regional WURMP Workgroup and other Copermittee Working Bodies as requested;
   d. Coordinate the development, implementation, and reporting of TMDL activities and programs within the WMA; and
   e. Adopt an annual Watershed Work Plan and Watershed Shared Costs Budget in accordance with section II.B.2.c.

5. Voting Requirements for Watershed URMP Sub-workgroups

   a. The voting membership of each Watershed URMP Sub-workgroup shall consist of one designated voting representative for each Watershed Copermittee;
   b. For a vote to be held, a quorum representing a Three-fourths Majority of the voting representatives of the Watershed URMP Sub-workgroup must be present;
   c. For a vote to pass, an affirmative vote of at least a Simple Majority of voting members of the Watershed URMP Sub-workgroup is needed;
   d. The affirmative votes must represent greater than fifty percent (50%) of any cost being shared;
   e. Any Copermittee that is responsible for 25% or more of the total proposed cost must be present for a vote to be approved; and
   f. Watershed URMP Sub-workgroup voting on matters related to approving shared costs, designating watershed leads, or approving Special Formulas shall not be conducted outside of meetings (e.g., by e-mail).

V. OTHER GENERAL PROGRAMS

The following apply to Other General Programs.

1. For convenience, the Management Committee or any applicable Watershed Sub-workgroup may provide a forum for deliberating and voting on issues and costs applicable to a subset of its membership, and for which a separate Working Body has not been established.
2. For a vote to be held, a Two-thirds Majority of the Copermittees participating in or subject to the activity or cost must be present, and voting shall be limited to those Copermittees.
3. For a vote to be approved:

    a. An affirmative vote of a Simple Majority of the Copermittees participating in or subject to the activity or cost is needed;

    b. The affirmative votes must represent greater than fifty percent (50%) of any cost being shared; and

    c. Any Copermittee that is responsible for 25% or more of the total proposed cost must be present.

VI. DISPUTE RESOLUTION

Should a dispute arise among any of the parties regarding any matter related to this MOU, the parties agree to first meet and confer in good faith to attempt to resolve the dispute. If that fails to resolve the dispute, they shall submit the matter to mediation.

1. Mandatory Non-binding Mediation. If a dispute arises out of, or relates to this MOU, or the breach thereof, and if the dispute cannot be settled through normal contract negotiations, the Parties agree to settle the dispute in an amicable manner, using mandatory mediation under the Mediation Rules of the American Arbitration Association [AAA] or any other neutral organization agreed upon before having recourse in a court of law. The cost of mediation shall be borne by the parties equally.

2. Selection of Mediator. A single Mediator that is acceptable to both Parties shall be used to mediate the dispute. The Mediator may be selected from lists furnished by the AAA or any other agreed upon Mediator. To initiate mediation, the initiating Party shall serve a Request for Mediation on the opposing Party.

3. Conduct of Mediation Sessions. Mediation hearings will be conducted in an informal manner and discovery will not be allowed. All discussions, statements, or admissions will be confidential to the Party's legal position. The Parties may agree to exchange any information they deem necessary.

    a. Both Parties must have an authorized representative attend the mediation. Each representative must have the authority to recommend entering into a settlement. Either Party may have attorney(s) or expert(s) present. Upon reasonable demand, either Party may request and receive a list of witnesses and notification whether attorney(s) will be present.

    b. Any agreements resulting from mediation shall be documented in writing. All mediation results and documentation, by themselves, shall be “non-binding” and inadmissible for any purpose in any legal proceeding, unless such admission is

otherwise agreed upon, in writing, by both Parties. Mediators shall not be subject to any subpoena or liability and their actions shall not be subject to discovery.

VII. GENERAL PROVISIONS

A. Term of Agreement

1. This MOU shall become effective on the date the last party executes the MOU.
2. The life of the MOU shall run with the life of the current Permit plus twelve months. For purposes of this paragraph, any permit renewal or replacement after January 2012 shall be considered a new permit; any earlier amendment of the Permit increasing the obligations of the Regional Principal Permittee or a Watershed Lead Permittee may at that Copermittee's sole option, be declared to be a new permit; and the Management Committee shall determine whether any other earlier amendment to the Permit is of such significance as to effectively be a new Permit.

B. Withdrawal of Copermittee

1. Participation in this MOU may be withdrawn by any Copermittee for any reason only after the Copermittee complies with all of the following conditions of withdrawal:

    a. The Copermittee shall notify all of the other Copermittees in writing 90 days prior to its intended date of withdrawal.

    b. The withdrawing Copermittee shall have its name deleted as a Copermittee to the Permit prior to or on the withdrawal date.
2. Any expenses associated with withdrawal, including but not limited to, filing and obtaining the withdrawing Copermittee's individual NPDES permit and the amendment of the Permit will be solely the responsibility of the withdrawing Copermittee.
3. The withdrawing Copermittee shall be responsible for their portion of any shared costs incurred according to the conditions of this MOU up to the time that each of the conditions in Section VII.B.1. has been met.
4. Any monies paid by withdrawing Copermittee in excess of the amount due under the terms of the MOU shall be refunded to the Copermittee at the time the withdrawal becomes final as set forth in Section VII.B.1.a.
5. The withdrawing Copermittee shall not be entitled to participate in the division of proceeds in any reserve fund account when the MOU is dissolved.

C. Non-Compliance with MOU Requirements

Any participant to this MOU found to be in non-compliance with the conditions of this MOU shall be solely liable for any lawfully assessed penalties resulting from such non-compliance. Failure to comply with MOU conditions within specified or agreed upon timelines shall constitute non-compliance with the MOU.

D. Amendments to the Memorandum of Understanding

This MOU may be amended only by consent of all Copermittees. No amendment shall be effective unless it is in writing and signed by the duly authorized representatives of the Copermittees.

E. Governing Law

This MOU shall be governed and construed in accordance with the laws of the State of California. If any provision or provisions shall be held to be invalid, illegal, or unenforceable, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

The headings used throughout this MOU are for convenience only and do not in any way limit or amplify the terms or provisions of the MOU.

F. Consent and Breach Not Waiver

No term or provision hereof shall be deemed waived and no breach excused, unless such waiver or consent shall be in writing and signed by the Copermittee to have waived or consented. Any consent by any Copermittee to, or waiver of, a breach by the other, whether expressed or implied, shall not constitute a consent to, waiver of, or excuse for any other different or subsequent breach.

G. Indemnification

1. Each Copermittee shall have the sole responsibility to comply with the Permit.
2. Each Copermittee shall pay all fines, penalties, and costs which may arise out of such Copermittees's non-compliance with the Permit.
3. By entering into this MOU, no Copermittee assumes liability for claims or actions arising out of the performance of any work or actions or omissions, by any other Copermittee, its agents, officers, and employees under this MOU.
4. By entering into this MOU, each Copermittee agrees to defend itself from any claim, action or proceeding arising out of the acts or omissions of itself and retain its own legal counsel, and bear its own defense costs.

H. Application of Prior Agreements

This MOU constitutes the entire Agreement between the parties with respect to the subject matter; all prior agreements, representations, statements, negotiations, and undertakings are superseded hereby.

I. Execution of Agreement

This MOU may be executed in counterpart and the signed counterparts shall constitute a single instrument.

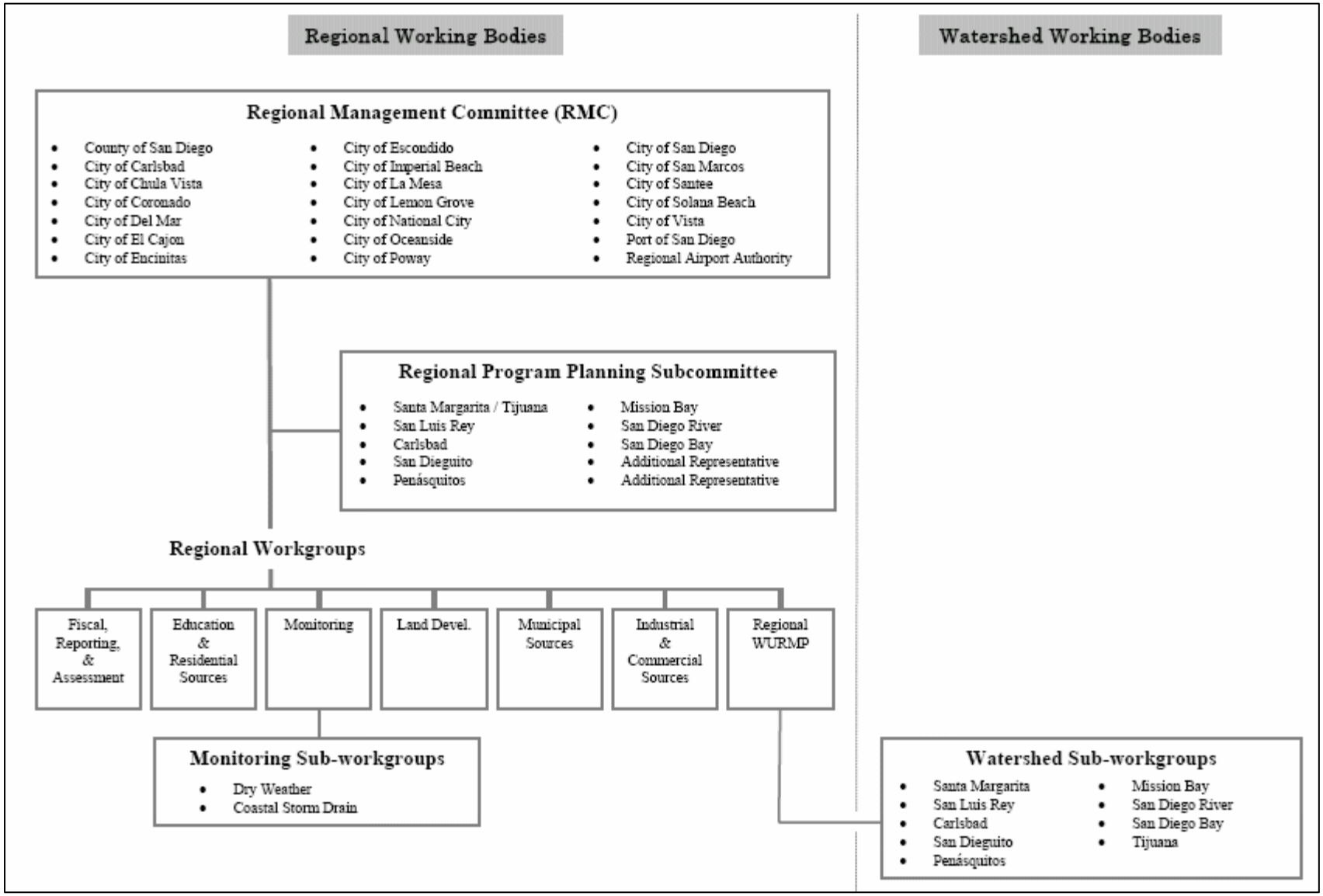

Figure A. Copermittee Regional and Watershed Working Bodies

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IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

County of San Diego, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

San Diego Unified Port District, Copermittee

APPROVED ATTORNEY

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

Thella F. Bowens
President/CEO
San Diego County Regional Airport Authority, Copermittee

APPROVED AS TO FORM

JAN 09 2008

Leo S. Martinez, Assistant General Counsel

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 1/29/08

City of San Diego, Copermittee

ATTEST:

City Clerk

Elizabeth McCarty

Title City Clerk

Title

APPROVED AS TO FORM:

City Attorney

Frederick M. Ortlieb

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 12-18-2007

City of Carlsbad, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Chula Vista, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Coronado, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Escondido, Copermittee
Lori Holt Pfeiler, Mayor

Marsha Whalen, City Clerk
1-15-08

APPROVED AS TO FORM:
OFFICE OF THE CITY ATTORNEY
Jeffrey R. Epp, City Attorney

By _____
Steve Nelson, Assistant City Attorney

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Imperial Beach, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of La Mesa, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 12/12/07

Paul Malone

City of San Marcos, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 12/18/07

City of Del Mar, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: DECEMBER 18, 2007

City of El Cajon, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

1-8-08
Date

Phil Cotton, City Manager
City of Encinitas

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Lemon Grove, Copermittee

IN WITNESS WHEREOF, this Agreement is executed as follows:

Date: December 4, 2007

By: _____
Ron Morrison, Mayor
City of National City

Approved as to form:

_____
George H. Eiser, III
City Attorney

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Oceanside, Copermittee

APPROVED AS TO FORM
OCEANSIDE CITY ATTORNEY

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Poway, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

Keith Till

City of Santee, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date:

City of Solana Beach, Copermittee

IN WITNESS THEREOF, this Agreement is executed as follows:

Date: 12/11/07

City of Vista, Copermittee
Morris B. Vance, Mayor

First Amendment to National Pollutant Discharge Elimination System San Diego Regional Stormwater Copermittees Memorandum of Understanding, Dated November 16, 2007

This First Amendment to National Pollutant Discharge Elimination System San Diego Regional Stormwater Copermittees Memorandum of Understanding (MOU), dated November 16, 2007, is entered into by the County of San Diego (County), the San Diego Unified Port District (Port), the San Diego County Regional Airport Authority (Airport), and the incorporated cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, Santee, San Marcos, Solana Beach, and Vista (Cities), collectively called Copermittees.

RECITALS

WHEREAS, the MOU sets forth procedures for the management of funds contributed by the Copermittees to fund programs implemented in order to facilitate compliance with San Diego Regional Water Quality Control Board Order No. R9-2007-0001 (Permit); and

WHEREAS, the MOU at Section II.B.3 provides for the carry over of unused contributed funds from one fiscal year to another, but does not otherwise provide any direction regarding the refund of excess funds; and

WHEREAS, Copermittees desire to amend Section II.B.3. of the MOU to authorize the refund of funds that would otherwise only be authorized to be carried over from one fiscal year to another as a credit.

FIRST AMENDMENT

NOW THEREFORE, the Copermittees amend the MOU as follows:

1. Section II.B.3 of the MOU entitled "Management and Payment of Funds" is hereby amended and restated to read as follows:

a. For Regional General Programs, the Copermittees shall each pay a yearly assessment into a Regional General Program operations fund for their assigned portion of any Regional Shared Costs Budget approved pursuant to this MOU. The Regional General Program operations fund shall be managed by the Regional Principal Permittee, or any other Permittee on approval of the Copermittees.

b. For Watershed General Programs, the Watershed Copermittees for each WMA shall each pay a yearly assessment into a Watershed General Program operations fund for their assigned portion of any Watershed Shared Costs Budget approved pursuant to this MOU. Each Watershed General Program operations fund shall be managed by the Watershed Lead Permittee, or any other Watershed Permittee on approval of the Watershed Copermittees.

c. The Copermittee managing each General Program operations fund shall provide Budget Balance and Expenditure Status Reports quarterly and following the end of each fiscal year. This shall include a detailed accounting of all costs and expenses in accordance with the adopted Work Plan and Shared Costs Budget, including those incurred by Copermittees providing Working Body Support, contracting services, in-kind services, or other applicable costs.

d. Each Copermittee shall pay invoices within 60 days of receipt from the Copermittee managing the applicable General Program operations fund.

e. Funds collected and not expended in any fiscal year shall be credited to the Copermittees' share of the next fiscal year's costs in accordance with the Copermittees' defined shared costs.

f. Copermittees providing Working Body Support, Contract Administration, in-kind services, or incurring other budgeted costs on behalf of other Copermittees shall provide documentation of those expenses as requested by the Copermittee managing the applicable General Program operations fund. They shall only receive credit for those expenses if a detailed accounting of all costs and expenses meeting the minimum standards agreed upon by the Copermittees has been provided.

g. Differences in the approved actual cost of expenses from those budgeted shall be either credited or added as appropriate to the amount of the Copermittee's share. In the event that any Copermittees' share of the next fiscal year's costs is less than the amount to be credited, the difference shall be refunded to the Copermittee. This provision shall be retroactive to include credits from FY 2008-09. Refunds shall be provided to Copermittees no later than 90 days after final accounting.

h. At its discretion, a Copermittee managing a General Program operations fund may, prior to the completion of a fiscal year, make payment to any Copermittee providing Working Body Support, Contract Administration, in-kind services, or incurring other budgeted expenditures on behalf of other Copermittees so long as all of the conditions of Section II. B.3.f above have been satisfied and there are sufficient funds available to make a payment without requiring additional contributions or jeopardizing program objectives. If for some reason excess payment is made, the Copermittee receiving the payment agrees to return the additional payment without any recourse against the managing Copermittee.

2. Effect of Amendment

2.1 This Amendment to National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall be effective and binding on all parties hereto commencing upon the date the last party executes the First Amendment to MOU.

2.2 This First Amendment to MOU may be executed in counterparts and the signed counterparts shall constitute a single instrument.

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

COUNTY OF SAN DIEGO

Dated: 4/6/2010

By: _____
JOHN L. SNYDER, Director
Department of Public Works

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

SAN DIEGO UNIFIED PORT DISTRICT

Dated: June 11, 2010

By: _____
E. David Merk, Director
Environmental Services Department

APPROVED AS TO FORM AND LEGALITY ATTORNEY

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

Dated: 30 June 2010

By: Thella F. Bowens
President/CEO
San Diego County Regional Airport Authority, Copermittee

APPROVED AS TO FORM:

MAY 25, 2010

Amy S. Gonzalez, Director/Counsel Services

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF CARLSBAD

Dated: May 11, 2010

By: _____
Claude A. "Bud" Lewis, Mayor
City Council

Approved as to form:

_____
Deputy City Attorney

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF CHULA VISTA

Dated: 3/25/10

By: _____
Cheryl Cox, Mayor

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF CORONADO

Dated: April 20, 2010

By: _____
Scott W. Huth, Director
Department of Public Services

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF DEL MAR

Dated: 4/22/10

By: _____
KAREN P. BRUST
City Manager

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF EL CAJON

Dated: 5.5.10

By: Kathi Henry
Kathi Henry, City Manager

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF ENCINITAS

Dated: 5-24-10

By: _____
Phil Cotton, City Manager

First Amendment to National Pollutant Discharge Elimination System San Diego Regional Stormwater Copermittees Memorandum of Understanding, Dated November 16, 2007

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF ESCONDIDO

Dated: 5-25-10 By: Lori Holt Pfeiler
Lori Holt Pfeiler, Mayor

Dated: 5-25-10 By: Marsha Whalen
Marsha Whalen, City Clerk

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF IMPERIAL BEACH

Dated: 5/6/1

By: Gary Brown, City Manager
[Name, Title]
[Department]

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

Dated: 5/3/10

By: Art Madrid

City Of La Mesa, Copermitee

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF LEMON GROVE

Dated: May 11, 2010

By: _____
Graham Mitchell, City Manager

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF NATIONAL CITY

Dated: 6-7-10

By: _____
Maryam Babaki, Director of Development Services/City Engineer

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF OCEANSIDE

Dated:_____

By:_____
Jim Wood, Mayor
City of Oceanside

APPROVED AS TO FORM
OCEANSIDE CITY ATTORNEY
BARBARA L. HAMILTON
Assistant City Attorney

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF POWAY

Dated: 4/12/10

By: _____
Robert J. Manis
Director of Development Services

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF SAN DIEGO

Dated: 6/15/10

By: Hildred Pepper Jr.
Hildred Pepper Jr.
Purchasing & Contracting
Director

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF SANTEE

Dated: 5/3/10

By: _____
[Name, Title]
[Department]

Keith Till
City Manager
City Manager's Office

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF SAN MARCOS

Dated: 4/7/10

By: Paul Malone
Paul Malone, City Manager

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY of SOLANA BEACH,
a municipal corporation

City Manager, David Ott

ATTEST:

City Clerk, Angela Ivey

APPROVED AS TO FORM:

City Attorney, Johanna N. Canlas

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS Thereof, this First Amendment to MOU is executed as follows:

CITY OF VISTA

Dated: May 5, 2010

By: Rita Geldert
Rita Geldert
City Manager

SECOND AMENDMENT TO NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM SAN DIEGO REGIONAL STORMWATER COPERMITTEES MEMORANDUM OF UNDERSTANDING

This Second Amendment to National Pollutant Discharge Elimination System San Diego Regional Stormwater Copermittees Memorandum of Understanding (MOU), dated March 21, 2014, is entered into by the County of San Diego (County), the San Diego Unified Port District (Port), the San Diego County Regional Airport Authority (Airport), and the incorporated cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, Santee, San Marcos, Solana Beach, and Vista (Cities), collectively called Copermittees.

RECITALS

WHEREAS, on May 8, 2013, the San Diego Regional Water Quality Control Board (SDRWQCB) issued NPDES Order No. R9-2013-0001, which includes requirements in addition to those that were imposed on the Copermittees in NPDES Permit No. R9-2007-0001; and

WHEREAS, the Copermittees entered into a National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding (MOU) on November 16, 2007 to comport with the NPDES Permit No. R9-2007-001 requirement that they cooperate in the implementation of activities and programs;

WHEREAS, the Copermittees entered into a First Amendment to National Pollution Discharge Elimination System San Diego Regional Stormwater Copermittees Memorandum of Understanding, dated November 16, 2007, (First Amendment) on June 15, 2010 in order to allow the refund of budgeted but unspent funds to the Parties at the conclusion of each fiscal year; and

WHEREAS, the Copermittees wish to amend the MOU to extend the termination date of the MOU through August 31, 2015, and expressly limit the sharing of Fiscal Year 2014-15 expenditures to those identified in this amendment; and

NOW, THEREFORE, in consideration of the above recitals and the mutual promises contained herein, the parties agree to amend and supplement the MOU as follows:

1. SECOND AMENDMENT TO NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES), SAN DIEGO REGIONAL STORMWATER COPERMITTEES MEMORANDUM OF UNDERSTANDING

1.1 Paragraph four under "RECITALS" is hereby amended and restated to read in its entirety as follows:

WHEREAS, the County, the Port, the Airport, and the Cities desire to implement an integrated stormwater management program with the objective of improving surface water quality in the County of San Diego, but do so without waiving and expressly subject to any and all objections and appeals made by any Copermittee in response to any NPDES Permit; and

1.2 Section II.B.2 of the MOU entitled "Annual Shared Cost Budgets and Work Plans" is hereby amended to add sub-section e, which will read as follows:

e. The regional costs to be shared by the Copermittees during Fiscal Year 2014-15 shall not exceed $4,051,589. These funds may only be used toward expenditures identified in the FY 2014-15 Consolidated Work Plan and Budget included as MOU Attachment 2, or as subsequently modified by unanimous consent of all Copermittees.

1.3 Attachment 1 to this amendment is hereby added as Attachment 2 to the MOU.

1.4 Section VII.A of the MOU, entitled "Term of Agreement", is hereby amended and restated to read in its entirety as follows:

1. This MOU shall become effective on the date the last party executes the MOU.
2. The life of the MOU shall run through August 31, 2015.

1.5 Section VII.C of the MOU, entitled "Non-Compliance with MOU Requirements", is hereby amended and restated to read in its entirety as follows:

1. Any participant to this MOU found to be in non-compliance with the conditions of this MOU shall be solely liable for any lawfully assessed penalties resulting from such non-compliance. Failure to comply with MOU conditions within specified or agreed upon timelines shall constitute non-compliance with the MOU.
2. Federal Limitations on Use of Airport Revenue. Notwithstanding the rights and obligations of the Parties created by this MOU, no Party may be found in breach of this MOU where compliance would require that Party to violate any law or grant assurance, including but not limited to provisions of the Federal Aviation Administration 1999 Policy and Procedure Concerning the Use of Airport Revenue [64 Fed. Reg. 7696, dated Feb. 16, 1999]; the Airport and Airway Improvement Act of 1982 codified at 49 U.S.C. § 47107(b); the Federal Aviation Administration Authorization Act of 1994, P.L. 103-305 (Aug. 23, 1994); the Airport Revenue Protection Act of 1996, Title VIII of the Federal Aviation Administration Act of 1996, P.L. 104-264 (Oct. 9, 1996), 110 Stat. 3269 (Oct. 9, 1996); 49 U.S.C. § 46301(n)(5); and 49 U.S.C. § 47133. The Parties recognize that the Authority has received federal Airport Improvement Project ("AIP") grants containing grant assurance 25, which provides: "All revenues generated by the airport . . . will be expended by it for the capital or operating costs of the airport; the local airport system; or other local facilities which are owned or operated by the owner or operator of the airport and which are directly and substantially related to the actual air transportation of passengers or property; or for noise mitigation purposes on or off the airport."

2. EFFECT OF AMENDMENT

2.1 This Amendment to National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall be effective

and binding on all parties hereto commencing upon the date the last party executes the Second Amendment to MOU.

2.2 This Amendment may be executed in any number of counterparts, each of which shall be an original, but all of which together shall constitute one instrument. In the event that any Copermittee is unable to execute this amendment prior to May 8, 2014, execution of this amendment after that date shall constitute ratification of this amendment, and the MOU and extensions shall be in effect once all signatures are obtained.

[BALANCE OF PAGE INTENTIONALLY LEFT BLANK]

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS WHEREOF, this Second Amendment to MOU is executed as follows:

COUNTY OF SAN DIEGO

Dated: 6/20/14 By: Kill E. Cyster

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date: MAY 6, 2014

Jason H. Giffen

Jason H. Giffen, Director
Environmental & Land Use Management
San Diego Unified Port District, Copermittee

APPROVED AS TO FORM AND LEGALITY. WB ATTORNEY

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

Thella Bowens, President/CEO
San Diego County Regional Airport Authority, Copermittee

APPROVED AS TO FORM:

APPROVED AS TO FORM

MAY 06 2014

Lee S. Kaminetz, Sr. Assist General Counsel

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of San Diego, Copermittee

APPROVED AS TO FORM:

City Attorney

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

April 22, 2014
Date

Mark Packard
City of Carlsbad, Copermittee
Mark Packard, Mayor Pro Tem

Approved as to form:

Deputy City Attorney

10

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

Cheryl Cox, Mayor
City of Chula Vista, Copermittee

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date: May 6, 2014

City of Coronado, City Manager

APPROVED AS TO FORM:

City Attorney

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of Escondido, Copermittee

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

City of Imperial Beach

Date: 5-13-14 By: Andy Hall

Andy Hall, City Manager

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of La Mesa, Copermittee

APPROVED AS TO FORM:

Glenn Sabine
City Attorney
City of La Mesa

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of San Marcos, Copermittee

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of Del Mar, Copermittee
by Scott W. Huth, City Manager

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of El Cajon, Copermittee

APPROVED AS TO FORM:

City Attorney

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

7/9/14

Gus Vina, City Manager
City of Encinitas, Copermittee

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

CITY OF LEMON GROVE

Dated: March 26, 2014 By: _____
Graham Mitchell, City Manager

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of National City, Copermittee

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of Oceanside, Copermittee

APPROVED AS TO FORM
OCEANSIDE CITY ATTORNEY
BARBARA L. HAMILTON
Assistant City Attorney

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of Poway, Copermittee
Robert J. Manis
Director, Development Services Department

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Dated: 4/16/14

Keith Till, City Manager
CITY OF SANTEE

2.3 Except as hereinabove amended, the National Pollutant Discharge Elimination System, San Diego Regional Stormwater Copermittees, Memorandum of Understanding shall remain in full force and effect. In the event of a conflict between the provisions of the MOU and those of this Amendment, this Amendment shall control.

IN WITNESS THEREOF, this Second Amendment to MOU is executed as follows:

Date:

City of Solana Beach, Copermittee

RESOLUTION NO. 2014-111

A RESOLUTION OF THE CITY COUNCIL OF THE CHARTERED CITY OF VISTA, CALIFORNIA, APPROVING A SECOND AMENDMENT TO THE MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF VISTA, THE COUNTY OF SAN DIEGO AND ALL NPDES COPERMITTEES

The City Council of the City of Vista does resolve as follows:

1. **Findings.** The City Council hereby finds and declares the following:

A. The San Diego Regional Water Quality Control Board ("RWQCB") issued Order No. 2001-01 in February 2001, wherein it required the County of San Diego, the San Diego Port District and the municipalities within the County of San Diego (collectively "Co-Permittees") to improve water quality by preventing pollutants from entering receiving waters from stormwater and urban runoff.

B. On January 24, 2007, the RWQCB issued Order No. R9-2007-0001, which replaced Order No. 2001-01 and expanded on that Order's MOU requirements for the NPDES San Diego Regional Co-Permittees. The original requirements included the establishment of a management structure and determining a cost sharing mechanism for complying with the Order. Order No. R9-2007-0001 required that the Co-Permittees address the new additional requirements and that they add the San Diego Regional Airport Authority as a Co-Permittee.

D. On November 16, 2007 the Co-Permittees entered into a new NPDES San Diego Regional Co-Permittee MOU.

E. On June 15, 2010, the Co-Permittees entered into a First Amendment to the Memorandum of Understanding, which updated the cost sharing mechanism.

F. At this time, a Second Amendment is necessary to extend the termination date of the MOU through August 31, 2015, and expressly limit the sharing of Fiscal Year 2014-15 expenditures to those identified in this amendment.

2. **Action.**

A. The Second Amendment to the Memorandum of Understanding between the City of Vista, the County of San Diego and all NPDES Co-Permittees is approved.

B. The Mayor is authorized to execute the Agreement.

[Continued on page 2.]

3. Adoption. PASSED AND ADOPTED at a meeting of the City Council held on June 24, 2014, by the following vote:

AYES: MAYOR RITTER, AGUILERA, COWLES, CAMPBELL, RIGBY

NOES: NONE

ABSTAIN: NONE

JUDY RITTER, MAYOR

APPROVED AS TO FORM:
DAROLD PIEPER, CITY ATTORNEY

By:

APPROVED
Darold Pieper
1455 061114

ATTEST:
MARCI KILIAN, CITY CLERK

By:

Summary of costs and supporting documentation for WURMP Cost-Share Agreements

Watershed	Fiscal Year	CoSD Share	Note	Agreement Location
CAR	FY 06/07	$6,988.00		S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Cost Share\FY 06-07
CAR	FY 07/08	$5,335.00		S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Cost Share\FY 07-08
CAR	FY 08/09	$5,398.00		S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Cost Share\FY 08-09
CAR	FY 09/10	$5,668.00		S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Cost Share\FY 09-10
CAR	FY 10/11	$6,249.00		S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Cost Share\FY 10-11
CAR	FY 11/12	$6,561.00		S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Cost Share\FY 11-12
CAR	FY 12/13	$5,032.47		S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Cost Share\FY 12-13
LP	FY 07/08	$64.09		S:\Watershed Project\Watershed Planning\01 Watersheds\Los Penasquitos\WURMP\WURMP Cost Share\FY07-08
LP	FY 08/09	$648.57		S:\Watershed Project\Watershed Planning\01 Watersheds\Los Penasquitos\WURMP\WURMP Cost Share\FY08-09
LP	FY 09/10	$633.84		S:\Watershed Project\Watershed Planning\01 Watersheds\Los Penasquitos\WURMP\WURMP Cost Share\FY09-10
LP	FY 10/11	$702.06		S:\Watershed Project\Watershed Planning\01 Watersheds\Los Penasquitos\WURMP\WURMP Cost Share\FY10-11\Cost Share Docs
LP	FY 11/12	$710.59		S:\Watershed Project\Watershed Planning\01 Watersheds\Los Penasquitos\WURMP\WURMP Cost Share\FY11-12\Cost Share Documents
LP	FY 12/13	$683.67		S:\Watershed Project\Watershed Planning\01 Watersheds\Los Penasquitos\WURMP\WURMP Cost Share\FY12-13\Legal Documents\FE Agreement and Invoice
Chollas	FY 09/10	$6,703.00	IO R9-2004-0277	S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego Bay\Pueblo San Diego\Chollas Creek TMDLS\MOU\FY09-10 MOU and Cost Share\Final Version
Chollas	FY 10/11	$1,284.00		
Chollas	FY 11/12	$3,337.96	REQ 83173	
SDB	FY 11/12	$3,820.00	542589-1	S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego Bay\z_Archive\03-15 Old SD Bay Docs\Cost-Share Agreements\Cost Share Agreements
SDB	FY 10/11	$3,820.00	PO 469716	
SDB	FY 12/13	$3,820.00	PO 512586	
SDR	FY 07/08	$7,062.00		S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego River\WURMP\WURMP Cost Share\FY 07-08
SDR	FY 08/09	$10,511.00		S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego River\WURMP\WURMP Cost Share\FY 08-09
SDR	FY 09/10	$10,511.00	PO 532225	S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego River\WURMP\WURMP Cost Share\FY 09-10
SDR	FY 10/11	$10,511.00		S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego River\WURMP\WURMP Cost Share\FY 10-11
SDR	FY 11/12	$10,511.00	PO 539023	S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego River\WURMP\WURMP Cost Share\FY 11-12
SDR	FY 12/13	$4,927.00	PO 543591	S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego River\WURMP\WURMP Cost Share\FY 12-13
SDG	FY 07/08	$834.30	INV-AR0000012728	S:\Watershed Project\Watershed Planning\01 Watersheds\San Dieguito River\WURMP\WURMP Cost Share\FY07-08
SDG	FY 08/09	$5,479.12	INV-AR0000016274	S:\Watershed Project\Watershed Planning\01 Watersheds\San Dieguito River\WURMP\WURMP Cost Share\FY08-09
SDG	FY 09/10	$8,616.78	INV-AR0000017187	S:\Watershed Project\Watershed Planning\01 Watersheds\San Dieguito River\WURMP\WURMP Cost Share\FY09-10
SDG	FY 09/10	$1,716.93	INV-AR0000017961	
SDG	FY 10/11	$11,458.10		S:\Watershed Project\Watershed Planning\01 Watersheds\San Dieguito River\WURMP\WURMP Cost Share\FY10-11\Cost Share Documents
SDG	FY 11/12	$3,591.75	INV-AR0000021298	S:\Watershed Project\Watershed Planning\01 Watersheds\San Dieguito River\WURMP\WURMP Cost Share\FY11-12
SDG	FY 11/12	$5,427.57	-AR0000020831/PO 538619	
SDG	FY 12/13	$12,030.08		S:\Watershed Project\Watershed Planning\01 Watersheds\San Dieguito River\WURMP\WURMP Cost Share\FY12-13\CSA Docs
	Total	$147,861.92		

These are the County Only Activities taken from the WURMP Activities Database.

County Only Activity Name	Implementing Department	Watershed Activity ID	UFM Notes	Estimated Cost (contractor)	Activity Description
Pet Waste Dispenser Program	DPR	CHU-WQA10, SDB-001A(SWT/Otay), SDR-A13, SD-WQA19, SLR-005, SMR-021, TJ-001	S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Activities\Pet Waste Bags in County Parks.		San Elijo Lagoon Ecological Reserve (2)
Land Acquisitions	DPR	CHU-WQA11, SDB-046, SDR-A23, SD-WQA2, SLR-012, SMR-017, TJ-002			
Water Quality Monitoring in the Aqua Hendionda Creek Watershed	DPW - WPP	CHU-WQA14	S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Annual Reports\FY 08-09\CHU-WQA Water Quality Monitoring in AH S:\Watershed Project\WATER QUALITY\SCIENCE AND MONITORING\ADMIN\Contracts\F-40 Contracts\Weston-2008-2013\Taskorders\Task3Aquahedionda. Monitoring conducted on Weston Contract # 526933, Task Order 3	$165,154	One dry weather event was monitored on June 23-24, 2009, at the two locations. Wet weather monitoring will be conducted during the 2009-2010 Wet Weather Season (October 1, 2009-April 30, 2010). Cost look to be solely within FY 09/10
Water Quality Treatment Facility at McClellan- Palomar Airport (monitoring done by WPP, facility constructed by FCD)	DPW - WPP	CHU-WQA15	Post-project monitoring conducted by WPP S:\Watershed Project\WATER QUALITY\SCIENCE AND MONITORING\ADMIN\Contracts\F-40 Contracts\Mactec2008-2013\task orders\Task12_PalomarAirport. MACTEC contract 526934, Task Order 2, Addendum #2	$47,000	Cost fall across FY 10/11 and FY 11/12
Residential Rain Barrel Subsidies and Distribution	DPW - WPP	CHU-WQA17, SDB-062, SDR-A71, SLR-022, SMR-025	S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego Bay\z_Archive\03-15 Old SD Bay Docs\Annual Reports\FY 09-10\09-10 Activities\New Activities		
Stormwater Quality Master Plans for SDA Fee Areas	DPW - FCD	CHU-WQA7, SDB-056, SDR-A55, SD-WQA18	Not a WPP cost. This is a Flood Control District activity that was occuring regardless of the 2007 MS4 Permit		a couple of ways we implemented. Truck sales using a third party vendor (probably have data?) Solana Center? Rancho San Diego event held on 8/28/10 and Fallbrook event held on 9/26/10. **Solana Center Supplier ID is 1119172**. Cost would fall into FY 10/11.
Nitrate Source Identification and Abatement: Buena Creek	DPW - WPP	CHU-WQA8	S:\Watershed Project\Watershed Planning\01 Watersheds\Carlsbad\WURMP\WURMP Activities\Nitrate Source ID and Abatement - Buena Creek **Documented as staff time**		WPP and AWM - inventory and map in drainage CAR 05, compile baseline BMPs, WQ monitoring, investigations. FY 07/08 and FY 08-09
LID and Watershed Planning for Community Planning and Sponsor G	DPW - WPP	CHU-WQEA4, LP-WQEA4, SDB-043,SDR-A37, SD-WQEA2, TJ-014	Stephanie conducted this effort. I think I did hit at least 22 of the official CP/CSG's, but not the 'unofficial' ones, such as Palomar Mt. At that time, we had very few KRONOS charges available to us; I believe there were three basic charges we used, including 1019978 for general WPP planning activities. The development of the presentations took a few days, working a bit with Todd on the messaging, then scheduling with the CP/CSG's, travel time and actual presentation with Q&A would probably commit about 4 hours per presentation. If we assume that I met with 24 of the groups (that may be a bit high) then ~96 hours of effort. **Documented as Staff time**		
LID Features in San Elijo Nature Center	DPR/DGS	CHU-WQEA5			
Compost Sock Demonstration Project, Poway Landfill	DPW - WPP	LP-WQEA12	S:\Watershed Project\Watershed Planning\01 Watersheds\Los Penasquitos\WURMP\WURMP Activities\Compost Sox at Poway Landfill; **MACTEC Project Number 5013-09-0005** S:\Watershed Project\WATER QUALITY\SCIENCE AND MONITORING\ADMIN\Contracts\F-40 Contracts\Mactec2008-2013\task orders\task02_compostdemo. **PO 542923**		1) Installation of BMPs at the Poway Landfill was completed August 2009, 2) Educational DVDs were created during FY 2008-09, 3) Wet weather monitoring and reporting will occur during FY 2009-10, 4) Outreach activities will occur during FY 2009-10.
Chollas Creek Runoff Reduction and Groundwater Recharge Project	DGS	SDB-050	IRWM Grant funded project (Prop 50?). Project Implemented by DGS		
Water Quality Monitoring at additional Mass Loading Stations	DPW - WPP	SDB-057. SMR-016	S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego Bay\z_Archive\03-15 Old SD Bay Docs\Annual Reports\FY 08-09\FY08-09 County Activity Sheets Brown and Caldwell?		Brown and Caldwell contract 537276
Focused Outreach to Equestrian Community	DPW - WPP	SDB-066; SDR-A70; SLR-015	S:\Watershed Project\Watershed Planning\01 Watersheds\San Diego Bay\z_Archive\03-15 Old SD Bay Docs\Annual Reports\FY 09-10\09-10 Activities\New Activities		Meant to memic "Livestock to Land" program from Santa Cruz. SDB effort was done in partnership with Solana Center and North County was done by MRCD. Dates include 10/17/09, 10/18/09, 5/16/10, 5/28/10, 5/29/10, 6/19/10

Lakeside Baseball Park	DPR	SDR-A22	
Flinn Springs County Park Porous Paving Project	DPR	SDR-A27	
San Diego River Indicator Bacteria Study	DPW - WPP	SDR-A28	
Woodside Avenue Detention Basin	DPW - FCD	SDR-A32	
Project Clean Water SDR webpage	DPW - WPP	SDR-A46	
San Diego River Invasive Species Removal	?	SDR-A57	
Water Quality Monitoring in the San Diego River	DPW - WPP	SDR-A59	
Santa Maria Creek Protection and Restoration Project	DPR	SD-WQA1	
Ramona County Library Project	DGS?	SD-WQA23	LID BMPs adjacent to Library
Volunteer Clean Up Events	DPW - WPP	SD-WQA24, SDR-A58, SMR-018	Donation from BOS to Coast to Bay Clean ups. WPP got a chance to pick sites, in concert with I Love Clean SD and SLR Watershed Council.
San Luis Rey Watershed Water Quality Monitoring	DPW - WPP	SLR-001	
Guajome Lake Water Quality Monitoring Program	DPW - WPP	SLR-008	
Nutrient Source Identification and Abatement: Guajome Lake	DPW - WPP	SLR-009	
Hellhole Canyon County Park Educational Signage	DPR	SLR-019	
Fallbrook Community Center Artificial Turf	DPR	SLR-021	
Rainbowcreek.org website	DPW - WPP	SMR-005	Rainbow Creek 319(h) grant (1st one)
Focused Onsite Wastewater System Outreach	DPW - WPP	SMG-006	Rainbow Creek 319(h) grant (1st one)
Focused Grove and Nursery Outreach	DPW - WPP	SLR-016, SMG-007	Rainbow Creek 319(h) grant (1st one)
Focused Horse and Small Animal Operator Outreach	DPW - WPP	SMR-008	Rainbow Creek 319(h) grant (1st one)
Focused General Residential Outreach	DPW - WPP	SMR-009	Rainbow Creek 319(h) grant (1st one)
Rainbow Valley Groundwater Level Monitoring Network	DPW - WPP	SMR-010	Rainbow Creek 319(h) grant (1st one)
Rainbow Water Quality Monitoring	DPW - WPP	SMR-011	Rainbow Creek 319(h) grant (1st one)
Santa Margarita Lagoon Investigative Order Monitoring Program	DPW - WPP	SMR-015	
Water Quality Monitoring at additional Mass Loading Stations	DPW - WPP	SMR-016	
Parcel-based Characterization of Nutrient Sources in Rainbow	DPW - WPP	SMR-023	We could recover costs on this one
Fallbrook Library Green Roof	DGS	SMR-024	

San Elijo Pet Waste Study When was this done?

Laboratory Analysis to support the Poway Compost BMP Study
Enviromatrix Analytical, INC.
PO 531748

Invoices #	Date	Amount	Project
0100160	10/8/2010	$936.00	Poway Compost BMP Site
0080382	8/17/2010	$1,336.00	Poway Compost BMP Site
0070199	7/1/2010	$732.50	Calrsbad Special Sampling
0090552	9/29/2010	$165.00	San Diego Storm Drain Study
0090554	9/29/2010	$165.00	San Diego Storm Drain Study
0090555	9/29/2010	$165.00	San Diego Storm Drain Study
0090558	9/29/2010	$165.00	San Diego Storm Drain Study
0090553	9/29/2010	$165.00	San Diego Storm Drain Study
0100087	10/5/2010	$165.00	San Diego Storm Drain Study
0100089	10/5/2010	$165.00	San Diego Storm Drain Study
0100088	10/5/2010	$165.00	San Diego Storm Drain Study
0090534	9/28/2010	$165.00	San Diego Storm Drain Study
0100110	10/6/2010	$165.00	San Diego Storm Drain Study
0100331	10/15/2010	$330.00	San Diego Storm Drain Study

Snapshot of SMR WURMP activities from WURMP Annual Reports that take credit for permit requried water quality and educational activities

FY 07/08

A total of six *WWQAs* were in an active implementation phase during FY 2007-08:

- SMR-003 Avocado Grove BMP Demonstration Project
- SMR-012 Vegetation and Compost Buffer Strip BMP Demonstration Project
- SMR-013 Irrigation and Fertilizer BMP Demonstration Project
- SMR-017 Land Acquisitions
- SMR-018 Cleanup Event Sponsorships
- SMR-021 Pet Waste Bag Dispenser Program in County Parks

A total of two WWQAs were initiated during FY 2007-08, but were not in an active implementation phase:

- SMR-002 Portable Constructed Biofilter BMP Demonstration Project
- SMR-004 Irrigation System Consultation and Monitoring

Additional water quality activities included three special monitoring studies and development of a nutrient reduction management plan for the Rainbow Creek Watershed:

- SMR-011 Rainbow Creek Water Quality Monitoring Program
- SMR-015 Santa Margarita Lagoon Investigative Order Monitoring Program
- SMR-016 Water Quality Monitoring at Additional Mass Loading Stations
- SMR-001 Rainbow Creek Nutrient Reduction Management Plan

A total of seven *WEAs* were in active implementation phase during FY 2007-08:

- SMR-005 Rainbowcreek.org Web Site
- SMR-006 Rainbow Valley Onsite Wastewater System Outreach
- SMR-007 Rainbow Valley Grove and Nursery Outreach
- SMR-008 Rainbow Valley Horse and Small Animal Operator Outreach
- SMR-009 Rainbow Valley General Residential Outreach
- SMR-010 Rainbow Valley Groundwater Monitoring Well Network
- SMR-014 Agricultural Technology Transfer
- SMR-022 Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses

One additional *WEA* was in a planning phase during FY 2007-08:

- SMR-020 LID & Watershed Planning Education for Community Planning/Sponsor Groups

SANTA MARGARITA RIVER WATERSHED	HIGH PRIORITY WQ PROBLEMS		IMPLEMENTATION DURING FY 07-08			PLANNED ACTIVITIES											
	Nutrients	Sediment				FY 08-09			FY 09-10*			FY 10-11*			FY 11-12*		
SMR-001 Rainbow Creek Nutrient Reduction Management Plan	X	X	O	PP		O			O			O			O		
SMR-002 Portable Constructed Biofilter BMP Demonstration Project	X		WQ			WQ											
SMR-003 Avocado Grove BMP Demonstration Project	X		WQ														
SMR-004 Irrigation System Consultation and Monitoring	X		WQ			WQ											
SMR-005 Rainbowcreek.org Web Site	X		WE	PP		WE	PP		WE	PP		WE	PP		WE	PP	
SMR-006 Rainbow Valley Onsite Wastewater System Outreach	X		WE			WE			WE			WE			WE		
SMR-007 Rainbow Valley Grove and Nursery Outreach	X		WE			WE			WE			WE			WE		
SMR-008 Rainbow Valley Horse and Small Animal Operator Outreach	X	X	WE			WE			WE			WE					
SMR-009 Rainbow Valley General Residential Outreach	X	X	WE			WE			WE			WE			WE		
SMR-010 Rainbow Valley Groundwater Monitoring Well Network	X		WE			WE			WE			WE			WE		
SMR-011 Rainbow Creek Water Quality Monitoring Program	X		M			M			M			M			M		
SMR-012 Vegetation and Compost Buffer Strip BMP Demonstration Project	X	X	WQ														
SMR-013 Irrigation and Fertilizer BMP Demonstration Project	X		WQ			WQ			WQ			WQ			WQ		
SMR-014 Agricultural Technology Transfer	X		WE			WE											
SMR-015 Santa Margarita Lagoon Investigative Order Monitoring Program	X	X	M			M											
SMR-016 Water Quality Monitoring at Additional Mass Loading Stations	X		M			M											
SMR-017 Land Acquisitions	X	X	WQ			**			**			**			**		
SMR-018 Cleanup Event Sponsorships			WQ	PP		WQ	PP		WQ	PP		WQ	PP		WQ	PP	
SMR-020 LID & Watershed Planning Education for Community Planning / Sponsor Groups	X	X	WE			WE											
SMR-021 Pet Waste Bag Dispenser Program at County Parks	X		WQ			WQ			WQ			WQ			WQ		
SMR-022 Water Quality Runoff Mgmt & Ag Waiver Workshop for Nurseries and Ag Businesses	X	X	WE														

* Activity planning is ongoing for FYs 2009-10 and beyond at the time of this writing. The list of potential activities presented here will likely be expanded.
** It is not possible to forecast land acquisitions in advance. Most purchases are confidential until they go before the Board of Supervisors for approval.

WQ	= Watershed Water Quality Activity (Active Implementation)
WQ	= Watershed Water Quality Activity (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
WE	= Watershed Education Activity (No WURMP Credit)
LU	= Watershed-base Land Use Planning Activity
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)
D	= Watershed Data Assessment/Management Activity
O	= Other Watershed Activity (No WURMP Credit)

FY 08/09

Six *WWQAs* were in an active implementation phase during FY 2008-09:

- SMR-002 Portable Constructed Biofilter BMP Demonstration Project
- SMR-004 Irrigation System Consultation and Monitoring
- SMR-012 Vegetation and Compost Buffer Strip BMP Demonstration Project
- SMR-013 Irrigation and Fertilizer BMP Demonstration Project
- SMR-018 Cleanup Event Sponsorships
- SMR-021 Pet Waste Bag Dispenser Program in County Parks

Additional water quality activities included three special monitoring studies in the Santa Margarita River watershed:

- SMR-011 Rainbow Creek Water Quality Monitoring Program
- SMR-015 Santa Margarita Lagoon Investigative Order Monitoring Program
- SMR-016 Water Quality Monitoring at Additional Mass Loading Stations

Eight *WEAs* were in an active implementation phase during FY 2008-09:

- SMR-005 Rainbowcreek.org Web Site
- SMR-006 Rainbow Valley Onsite Wastewater System Outreach
- SMR-007 Rainbow Valley Grove and Nursery Outreach
- SMR-008 Rainbow Valley Horse and Small Animal Operator Outreach
- SMR-009 Rainbow Valley General Residential Outreach
- SMR-010 Rainbow Valley Groundwater Monitoring Well Network
- SMR-014 Agricultural Technology Transfer
- SMR-020 LID & Watershed Planning Education for Community Planning/Sponsor Groups

SANTA MARGARITA RIVER WATERSHED	Constituents Addressed			IMPLEMENTATION STATUS															
	Nutrients	Bacteria	Sediment	FY 07-08			FY 08-09			FY 09-10*			FY 10-11*			FY 11-12*			
SMR-001 Rainbow Creek Nutrient Reduction Management Plan	X		X	O	PP														
SMR-002 Portable Constructed Biofilter BMP Demonstration Project	X			WQ			WQ												
SMR-003 Avocado Grove BMP Demonstration Project	X			WQ															
SMR-004 Irrigation System Consultation and Monitoring	X			WQ			WQ												
SMR-005 Rainbowcreek.org Web Site	X			WE	PP		WE	PP		WE	PP		WE	PP		WE	PP		
SMR-006 Rainbow Valley Onsite Wastewater System Outreach	X			WE			WE			WE	WQ		WE			WE			
SMR-007 Rainbow Valley Grove and Nursery Outreach	X			WE			WE			WE			WE			WE			
SMR-008 Rainbow Valley Horse and Small Animal Operator Outreach	X		X	WE			WE			WE			WE	WQ		WE			
SMR-009 Rainbow Valley General Residential Outreach	X		X	WE			WE			WE			WE			WE			
SMR-010 Rainbow Valley Groundwater Monitoring Well Network	X			WE			WE			WE			WE			WE			
SMR-011 Rainbow Creek Water Quality Monitoring Program	X			M	D		M	D		M	D		M	D		M	D		
SMR-012 Vegetation and Compost Buffer Strip BMP Demonstration Project	X		X	WQ			WQ												
SMR-013 Irrigation and Fertilizer BMP Demonstration Project	X		X	WQ			WQ												
SMR-014 Agricultural Technology Transfer	X		X	WE			WE												
SMR-015 Santa Margarita Lagoon Investigative Order Monitoring Program	X		X	M			M	D		M	D								
SMR-016 Water Quality Monitoring at Additional Mass Loading Stations	X			M			M			D									
SMR-017 Land Acquisitions	X		X	WQ			WQ			**			**			**			
SMR-018 Cleanup Event Sponsorships				WQ	PP		WQ	PP		WQ	PP		WQ	PP		WQ	PP		
SMR-020 LID & Watershed Planning Education for Community Planning / Sponsor Groups	X		X	WE			WE												
SMR-021 Pet Waste Bag Dispenser Program at County Parks	X			WQ			WQ			WQ			WQ			WQ			
SMR-022 Water Quality Runoff Mgmt & Ag Waiver Workshop for Nurseries and Ag Businesses	X		X	WE															
SMR-023 Parcel Based Characterization of Nutrient Sources in the Rainbow Creek Watershed	X		X				S			S									
SMR-024 Fallbrook Library Green Roof	X		X				WQ			WQ			WQ			WQ			

* Activity planning is ongoing for FYs 2010-11 and beyond at the time of this writing. The list of potential activities presented here will likely be expanded.
** It is not possible to forecast land acquisitions in advance. Most purchases are confidential until they go before the Board of Supervisors for approval.

WQ	= Watershed Water Quality Activity (Active Implementation)
WQ	= Watershed Water Quality Activity (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)
WE	= Watershed Education Activity (No WURMP Credit)
LU	= Watershed-base Land Use Planning Activity
PP	= Watershed Public Participation Activity
M	= Water Quality Monitoring Activity (No WURMP Credit)
S	= Source ID/Characterization Activity (No WURMP Credit)
D	= Watershed Data Assessment/Management Activity
O	= Other Watershed Activity (No WURMP Credit)
	= No further activity planned

FY 09/10

FY 10/11

Snapshot of SLR WURMP activities from WURMP Annual Reports that take credit for permit requried water quality and educational activities

Additional Activities that were implemented, planned or assessed that were important not for WURMP implemenation and development of future activities but don't recieve WURMP credit (as stated in permit)

FY 07/08

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-002	WQ	I	Bacteria Reduction Pilot Program at Oceanside Harbor Boat Wash Outfall
SLR-003	WQ	P	Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall
SLR-004	WQ	P	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-012	WQ	I	Land Acquisitions

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented; P = Planning

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	P	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail - Oceanside
SLR-007	WE	I	Water Quality Runoff Management and Agricultural Waiver Workshop (Oceanside, Vista and County of San Diego)
SLR-011	WE	I	LID & Watershed Planning Education for Community Planners & Sponsor Groups (County of San Diego)

[1] WE = Watershed Education Activity
[2]I = Implemented; P = Planning

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-001	M	SLR Watershed Water Quality Monitoring Program (Oceanside and County of San Diego)
SLR-006	M	Agricultural and Nursery Operations Runoff Assessment & Monitoring Program (Oceanside)
SLR-008	M	Guajome Lake Water Quality Monitoring Program (County of San Diego)
SLR-009	M, S	Nutrient Source Identification and Abatement: Guajome Lake (County of San Diego)
SLR-010	M, S	Lower SLR River Bacteria Source Tracking Study (Oceanside, Vista, and County of San Diego)

*M = Watershed Water Quality Monitoring Activity; S = Source identification/characterization activity

FY 08/09

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-003	WQ	I	Modular Wetland Installation at Oceanside Harbor Boat Wash Outfall
SLR-004	WQ	P	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-009	WQ	I	Nutrient Source Identification and Abatement: Guajome Lake
SLR-012	WQ	I	Land Acquisitions
SLR-013	WQ	I	Harbor Boat Wash Security Camera

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented; P = Planning

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail - Oceanside
SLR-011	WE	I	LID & Watershed Planning Education for Community Planners & Sponsor Groups (County of San Diego)

[1] WE = Watershed Education Activity
[2]I = Implemented

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-001	M, S	SLR Watershed Water Quality Monitoring Program (Oceanside and County of San Diego)
SLR-008	M, S	Guajome Lake Water Quality Monitoring Program (County of San Diego)
SLR-010	M, S	Lower SLR River Bacteria Source Tracking Study (Oceanside, Vista, and County of San Diego)
SLR-014	P	Harbor Boat Wash Coin Operated Water Dispenser
SLR-015	P	Community Based Residential Horse Property Pilot Project

*M = Watershed Water Quality Monitoring Activity; S = Source Identification/Characterization Activity
P = Activity in Planning Stages

FY 09/10

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-004	WQ	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-009	WQ	I	Nutrient Source Identification and Abatement: Guajome Lake
SLR-012	WQ	I	Land Acquisitions
SLR-015	WQ	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-021	WQ	I	Fallbrook Community Center Artificial Turf

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-007	WE	I	Water Runoff Management and Agricultural Waiver Workshop
SLR-015	WE	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WE	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WE	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-019	WE	I	Hellhole Canyon County Park Educational Signage

[1] WE = Watershed Education Activity
[2]I = Implemented

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-001	M, S	SLR Watershed Water Quality Monitoring Program
SLR-003	M	Modular Wetland Installation of Oceanside Harbor Boat Wash Outfall
SLR-008	M, S	Guajome Lake Water Quality Monitoring Program
SLR-010	M, S	Lower SLR River Bacteria Source Tracking Study
SLR-013	A	Harbor Boat Wash Camera
SLR-014	P	Harbor Boat Wash Coin Operated Water Dispenser
SLR-018	P	Sports Park Watershed Education Signs
SLR-020	P	Residential Composting Workshop
SLR-022	P	Residential Rain Barrel Subsidies and Distribution

M = Watershed Water Quality Monitoring Activity; S = Source Identification/Characterization Activity
A = Assessment; P = Activity in Planning Stages

FY 10/11

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-004	WQ	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-009	WQ	I	Nutrient Source Identification and Abatement: Guajome Lake
SLR-012	WQ	I	Land Acquisitions
SLR-015	WQ	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WQ	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WQ	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-021	WQ	I	Fallbrook Community Center Artificial Turf
SLR-022	WQ	I	Residential Rain Barrel Subsidies and Distribution

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-015	WE	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WE	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WE	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-020	WE	I	Residential Composting Workshop
SLR-022	WE	I	Residential Rain Barrel Subsidies and Distribution
SLR-023	WE	I	Residential Smart Landscape Evaluation Program

[1] WE = Watershed Education Activity
[2]I = Implemented

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-001	M, S	SLR Watershed Water Quality Monitoring Program
SLR-003	M	Modular Wetland Installation of Oceanside Harbor Boat Wash Outfall
SLR-008	M, S	Guajome Lake Water Quality Monitoring Program
SLR-010	M, S	Lower SLR River Bacteria Source Tracking Study
SLR-013	P	Harbor Boat Wash Coin Operated Water Dispenser
SLR-018	P	Sports Park Watershed Education Signs
SLR-024	P	Guajome County Park Watershed Signs

M = Watershed Water Quality Monitoring Activity; S = Source Identification/Characterization Activity
A = Assessment; P = Activity in Planning Stages

FY 11/12

Table 3-1. Watershed Water Quality Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name
SLR-004	WQ	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-005	WQ	I	Pet Waste Bag Dispenser Program in County Parks
SLR-009	WQ	I	Nutrient Source Identification and Abatement: Guajome Lake

Table 3-2. Watershed Education Activities.

ID #	Activity Type[1]	Status[2]	Activity/Project Name/Copermittee(s)
SLR-004	WE	I	Pet Waste Removal Pilot Project Along San Luis Rey Recreation Trail
SLR-015	WE	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WE	I	Focused Grove and Nursery Outreach in the SLR River Watershed

Table 3-3. Additional Watershed Activities.

ID #	Activity Type*	Activity/Project Name/Copermittee(s)
SLR-003	M	Modular Wetland Installation of Oceanside Harbor Boat Wash Outfall
SLR-007	P	Water Quality Runoff Management and Agricultural Waiver Workshop
SLR-008	M, S	Guajome Lake Water Quality Monitoring Program
SLR-010	A, S	Lower SLR River Bacteria Source Tracking Study

SLR-012	WQ	I	Land Acquisitions
SLR-014	WQ	I	Harbor Boat Wash Coin Operated Water Dispenser
SLR-015	WQ	I	Focused Horse Property Outreach in the SLR River Watershed
SLR-016	WQ	I	Focused Grove and Nursery Outreach in the SLR River Watershed
SLR-017	WQ	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-021	WQ	I	Fallbrook Community Center Artificial Turf
SLR-024	WQ	I	Water Smart Incentive for Outdoor Water Efficiency
SLR-025	WQ	I	Live Turf Replacement Incentive Program

[1]WQ = Watershed Water Quality Activity
[2]I = Implemented

			Watershed
SLR-017	WE	I	Focused Onsite Wastewater System Outreach in the SLR River Watershed
SLR-018	WE	I	Sports Park Watershed Educational Signage
SLR-023	WE	I	Residential Smart Landscape Evaluation Program
SLR-024	WE	I	Water Smart Incentive for Outdoor Water Efficiency

[1] WE = Watershed Education Activity
[2]I = Implemented

SLR-022	A	Residential Rain Barrel Subsidies and Distribution
SLR-026	P	Comprehensive Load Reduction Plan
SLR-028	M	Land Use Based Water Quality Monitoring

M = Watershed Water Quality Monitoring Activity; S = Source Identification/Characterization Activity
A = Assessment; P = Activity in Planning Stages

Snapshot of CAR WURMP activities from WURMP Annual Reports that take credit for permit required water quality and educational activities

FY 07/08

Table 3-1. Watershed Water Quality Activities Implemented During FY 2008

ID #	Activity/Project Name
CHU-WQA6	Myers Property Restoration
CHU-WQA8	Escondido Creek Restoration
CHU-WQA9	Nitrate Source Identification and Abatement: Buena Creek
CHU-WQA10	Focused Inspections along San Marcos Creek
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks

Table 3-2. Watershed Education Activities Implemented During FY 2008

ID #	Activity/Project Name
CHU-WQEA2	Pet Restaurant Brochure/CD Distribution
CHU-WQEA3	Water Quality Runoff Management & Agricultural Waiver Workshop for Nurseries and Agriculture Businesses
CHU-WQEA4	Low Impact Development & Watershed Planning for Community Planning/Sponsor Groups

FY 2009 Carlsbad WURMP Annual Report – January 2010

Table 3-5. Updated 5-Year Strategic Plan

Activity/Project Name	Jurisdiction(s)	Watershed Priorities: Bacteria	Nutrients	Sediment	Implementation Schedule: FY 2009	FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
Watershed Water Quality Activities									
CHU-WQA1 Residential Irrigation Runoff Reduction	CARLSBAD	X	X	X	WQ	-	-	-	-
CHU-WQA2 Lower Alta Creek Chloride Radiation Storm Water Treatment Facility	OCEANSIDE	X			WQ	A	-	-	-
CHU-WQA3 Escondido Creek Restoration	ESCONDIDO			X	WQ	A	A	A	A
CHU-WQA4 Stormwater Quality Master Plan for Special Drainage Fee Areas	COUNTY	?	?	?	P	PL			
CHU-WQA5 Nitrate Source Identification and Abatement: Buena Creek	COUNTY		X		WQ	-	-	-	-
CHU-WQA6 Focused Inspections along San Marcos Creek	SAN MARCOS		X		WQ	-	-	-	-
CHU-WQA7 Pet Waste Bag Dispenser Program in County Parks	COUNTY	X	X		WQ	WQ			
CHU-WQA8 Land Acquisitions	COUNTY	X	X	X	WQ	WQ			
CHU-WQA9 Upper San Marcos Creek Nutrient Management Plan	SM/COUNTY/ESC	X	X	X	WQ	WQ	WQ	WQ	
CHU-WQA10 Buena Vista Creek Cleanup and Restoration	VISTA	X	X	X	WQ	-	-	-	-
CHU-WQA11 Water Quality Monitoring in Agua Hedionda Creek Watershed	COUNTY	X	X	X	M	M	-	-	-
CHU-WQA12 Lower Alta Creek Monitoring Program	SM/COUNTY/ESC	X	X	A	A	-	-	-	-
CHU-WQA13 Agua Hedionda Creek Restoration – SR-101	VISTA			X	-	P	P	WQ	
Watershed Education Activities									
CHU-WQEA1 Residential Irrigation Runoff Reduction	CARLSBAD	X	X	X	WE	-	-	-	-
CHU-WQEA2 Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	X	X	X	P	WE			
CHU-WQEA3 Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	COUNTY	X	X	X	WE	-	-	-	-
CHU-WQEA4 LID Features in San Elijo Nature Center	COUNTY	X	X	X	WE	WE	-	-	-
CHU-WQEA5 BUSMAP Workshop Training	ALL	X	X	X	P	-	-	-	-
CHU-WQEA6 Bioassessment Training for High School Students	OCEANSIDE	X	X	X	WE	WE	-	-	-

WQ	= Watershed Water Quality Activity Implementation (Active Implementation)	E	= Watershed Education Activity (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)	PP	= Watershed Public Participation Activity
P	= Watershed Activity Planning (No WURMP Credit)	M	= Water Quality Monitoring Activity (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)	S	= Source ID/Characterization Activity (No WURMP Credit)

FY 08/09

Table 4-1 JURMP and WURMP Activities – 904.1 Loma Alta Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens
Inspections	Animal	0 (0)	X
	Cemetery	0 (0)	X
	Food Establishment	46 (20)	X
	Nursery	4 (1)	X
Street Sweeping (Tons Collected)		47	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		32t	X
CHU-WQA0	Loma Alta Creek Chloride Radiation Storm Water Treatment Facility		X
CHU-WQA1	Myers Property Restoration		X

Table 4-2 JURMP and WURMP Activities – 904.2 Buena Vista Creek Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens
Inspections	Agriculture	0 (0)	X
	Animal	0 (0)	X
	Food Establishment	1,0 (0)	X
	Nursery	4 (0)	X
Street Sweeping (Tons Collected)		0	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,0	X
CHU-WQA2	Buena Vista Creek Cleanup and Restoration		X

Table 4-3 JURMP and WURMP Activities – 904.3 Agua Hedionda Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients	Sediment
Inspections	Construction	High 0(0 /3,0) / Medium 0(0 /0,0) / Low 0(0 /0,0)			X
	agriculture	0 (0)	X	X	X
	animal	0 (0)	X	X	X
	Contractor	0(0 /0,0)	X		
	Food Establishment	0(0 /0,0)			X
	General Retail	0 (0)			X
	Golf	0 (0)	X	X	X
	Health Services	0 (0)		X	X
	Nursery	40 (0)		X	X
Street Sweeping (Tons Collected)		8,0	X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		0,0			
CHU-WQA3	Stream Source Identification and Abatement: Buena Creek			X	
CHU-WQEA1	Focused Equestrian Outreach			X	
CHU-WQEA2	LID and Watershed Planning Education for Community Planning and Sponsor Groups		X	X	X

Table 4-4 JURMP and WURMP Activities – 904.4 Escondido Creek Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High-Priority Water Quality Problem: Bacteria/Pathogens	Nutrients	Sediment
Inspections	Construction	High 0(0 /0,0) / Medium 0(0 /0,0) / Low 0(0 /0,0)			X
	agriculture	0 (0)	X	X	X
	animal	0 (0)	X	X	X
	Contractor	0(0 /0,0)			X
	Food Establishment	0(0 /0,0)			X
	General Retail	0 (0)			X
	Golf	0 (0)	X	X	X
	Health Services	0 (0)			X
	Nursery	0 (0)	X	X	X
Street Sweeping (Tons Collected)		0,0	X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		0,0			
CHU-WQA4	Escondido Creek Restoration				X
CHU-WQA5	Focused Inspections along San Marcos Creek				X
CHU-WQA6	LID Features in San Elijo Nature Center		X	X	X

Table 4-5. Watershed Education Activities Implemented During FY 2008

ID #	Activity/Project Name
CHU-WQEA1	Residential Irrigation Runoff Reduction Education
CHU-WQEA2	Low Impact Development & Watershed Planning for Community Planning Sponsor Groups
CHU-WQEA3	LID Features in San Elijo Nature Center

Watershed Water Quality Activities									
CHU-WQA1	Residential Irrigation Runoff Reduction	CARLSBAD	X	X	X	WQ	-	-	-
CHU-WQA2	Loma Alta Creek Chloride Radiation Storm Water Treatment Facility	OCEANSIDE	X			WQ	A	-	-
CHU-WQA3	Escondido Creek Restoration	ESCONDIDO			X	WQ	A	A	A
CHU-WQA4	Stormwater Quality Master Plan for Special Drainage Fee Areas	COUNTY	?	?	?	P	PL		
CHU-WQA5	Nitrate Source Identification and Abatement: Buena Creek	COUNTY	X			WQ	-	-	-
CHU-WQA6	Focused Inspections along San Marcos Creek	SAN MARCOS	X			WQ	-	-	-
CHU-WQA7	Pet Waste Bag Dispenser Program in County Parks	COUNTY	X	X		WQ	WQ		
CHU-WQA8	Land Acquisitions	COUNTY	X	X	X	WQ	WQ		
CHU-WQA9	Upper San Marcos Creek Nutrient Management Plan	SM/COUNTY/ESC	X	X	X	WQ	WQ	WQ	WQ
CHU-WQA10	Buena Vista Creek Cleanup and Restoration	VISTA	X	X	X	WQ	-	-	-
CHU-WQA11	Water Quality Monitoring in Agua Hedionda Creek Watershed	COUNTY	X	X	X	M	M	-	-
CHU-WQA12	Lower Alta Creek Monitoring Program	SM/COUNTY/ESC	X	X	A	A	-	-	-
CHU-WQA13	Agua Hedionda Creek Restoration – SR-101	VISTA			X	-	P	P	WQ
Watershed Education Activities									
CHU-WQEA1	Residential Irrigation Runoff Reduction	CARLSBAD	X	X	X	WE	-	-	-
CHU-WQEA2	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	X	X	X	P	WE		
CHU-WQEA3	LID Features in San Elijo Nature Center	COUNTY	X	X	X	WE	WE	-	-
CHU-WQEA4	BUSMAP Workshop Training	ALL	X	X	X	P	-	-	-
CHU-WQEA5	Bioassessment Training for High School Students	OCEANSIDE	X	X	X	WE	WE	-	-

WQ	= Watershed Water Quality Activity Implementation (Active Implementation)	E	= Watershed Education Activity (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)	PP	= Watershed Public Participation Activity
P	= Watershed Activity Planning (No WURMP Credit)	M	= Water Quality Monitoring Activity (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)	S	= Source ID/Characterization Activity (No WURMP Credit)

FY 09/10

Table 4-1 JURMP and WURMP Activities – 904.1 Loma Alta Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens
Inspections	Animal	0 (0)	X
	Cemetery	0 (0)	X
	Food Establishment	76 (14)	X
	Nursery	3(0)	X
Street Sweeping (Tons Collected)		24t	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		48t	X
CHU-WQA0	Loma Alta Creek Chloride Radiation Storm Water Treatment Facility		X

Table 4-2 JURMP and WURMP Activities – 904.2 Buena Vista Creek Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens
Inspections	Agriculture	1 (1)	X
	Animal	0 (0)	X
	Food Establishment	235 (40)	X
	Golf	0(0)	X
	Nursery	19 (18)	X
Street Sweeping (Tons Collected)		1-TSS	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		18t	X

Table 4-3 JURMP and WURMP Activities – 904.3 Agua Hedionda Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients	Sediment
Inspections	Construction	High 248(137) / Medium 197(32) / Low 345(78)			X
	Agriculture	5(0)	X	X	X
	Animal	3(0)	X	X	X
	Contractor	18(13)			X
	Food Establishment	116 (140)	X		
	General Retail	34 (40)			X
	Golf	3(3)	X	X	X
	Health Services	7(8)		X	X
	Manufacturing	10(15)	X	X	X
	Nursery	12 (16)	X	X	X
	Stone & Aggregates	7(13)			X
	Storage & Warehousing	16(75)			X
	TCBMPs	300(1,518)	X	X	X
	Municipal	High 32(52) / Non-High 0 (20)			X
Street Sweeping (Tons Removed)		52t.8	X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		6,0-.6	X	X	X
CHU-WQA6	Nitrate Source Identification and Abatement: Buena Creek			X	X
CHU-WQA7	Residential Rain Barrel Subsidies and Distribution		X	X	X
CHU-WQA8	Focused Inspections along San Marcos Creek			X	X
CHU-WQA9	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component			X	X
CHU-WQA10	Upper San Marcos Creek Nutrient Management Plan – Residential Component			X	X
CHU-WQA11	Ocean Friendly Garden Workshop Series			X	X
CHU-WQA12	Focused Equestrian Outreach			X	X
CHU-WQA13	Residential Smart Landscape Evaluation Program			X	X

Table 4-4 JURMP and WURMP Activities – 904.5 San Marcos Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients
Inspections	Animal	0(140)		X
	Cemetery	0(0)		X
	Food Establishment	184(7)(0)	X	
	Golf	0(0)		X
	Health Services	0(0)		X
	Nursery	0(0)(4)	X	X
Street Sweeping (Tons Collected)		1,0(0.5)	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		4,98.6	X	X
CHU-WQA10	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component		X	X
CHU-WQA11	Upper San Marcos Creek Nutrient Management Plan – Residential Component		X	X
CHU-WQA12	Ocean Friendly Garden Workshop Series		X	X
CHU-WQEA11	Focused Equestrian Outreach		X	X
CHU-WQEA12	Cottonwood Creek Watershed Interpretive Signage		X	X

Table 4-5 JURMP and WURMP Activities – 904.6 Escondido Creek Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients	Sediment
Inspections	Construction	High 0(0 /3,0) / Medium 0(0 /0,0) / Low 1,0-0.5 (0/7)			X
	Agriculture	1(13)	X	X	X
	Animal	10(1,0)(1)	X	X	X
	Contractor	18(3)(0)			X
	Food Establishment	18(1,0)(1)	X		
	General Retail	32(1)(1)			X
	Golf	1(14)	X	X	X
	Health Services	13(7)(1)		X	X
	Manufacturing	3(7)(0)			X
	Mining	7(7)			X
	Nursery	3(3)(0)	X	X	X
	Stone & Aggregates	18(3)(0)			X
	Storage & Warehousing	48(18)(1)			X
	TCBMPs	207(3)(0)	X	X	X
	Municipal	High 0(0 /0,0) / Non-High 0(0 /0,0)			X
Street Sweeping (Tons Removed)		1,0-0.1	X	X	X
Basins/Inlets/Ditches/MS4 (Tons Removed)		6,0.1	X	X	X
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks		X	X	X
CHU-WQA11	Residential Rain Barrel Subsidies and Distribution		X	X	X
CHU-WQA12	LID Features in San Elijo Nature Center		X	X	X

Table 4-6. Watershed Education Activities Implemented During FY 2010

ID #	Activity/Project Name
CHU-WQEA1	Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses
CHU-WQEA2	LID Features in San Elijo Nature Center
CHU-WQEA3	Bioassessment Training for High School Students
CHU-WQEA4	Upper San Marcos Creek Nutrient Management Plan – Residential Component

Table 4-9 Updated 5-Year Strategic Plan

Activity/Project Name	Jurisdiction(s)	Watershed Priorities: Bacteria	Nutrients	Sediment	Implementation Schedule: FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
Watershed Water Quality Activities								
CHU-WQA2 Loma Alta Creek Chloride Radiation Storm Water Treatment Facility	OCEANSIDE	X			A	A	A	A
CHU-WQA3 Escondido Creek Restoration	ESCONDIDO				A	A	A	A
CHU-WQA4 Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	?	?	?	P	P	WQ	WQ
CHU-WQA5 Nitrate Source Identification and Abatement: Buena Creek	COUNTY		X		WQ	WQ	WQ	WQ
CHU-WQA6 Pet Waste Bag Dispenser Program in County Parks	COUNTY	X	X		WQ	WQ	WQ	WQ
CHU-WQA8 Land Acquisitions	COUNTY	X	X	X	WQ	WQ	WQ	WQ
CHU-WQA9 Upper San Marcos Creek Nutrient Management Plan	SM/COUNTY/ESC	X	X	X	WQ	WQ	WQ	WQ
CHU-WQA10 Buena Vista Creek Cleanup and Restoration	VISTA	X	X	X	WQ	-	-	-
CHU-WQA11 Water Quality Monitoring in Agua Hedionda Creek Watershed	COUNTY	X	X	X	M	M	-	-
CHU-WQA12 Lower Alta Creek Monitoring Program	SM/COUNTY/ESC	X	X	A	A	-	-	-
CHU-WQA13 Agua Hedionda Creek Restoration – SR-101	VISTA			X	-	P	P	WQ
Watershed Education Activities								
CHU-WQEA1 Residential Irrigation Runoff Reduction	CARLSBAD	X	X	X	WE	-	-	-
CHU-WQEA2 Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	X	X	X	P	WE		
CHU-WQEA3 Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	COUNTY	X	X	X	WE	-	-	-
CHU-WQEA4 LID Features in San Elijo Nature Center	COUNTY	X	X	X	WE	WE	-	-
CHU-WQEA5 BUSMAP Workshop Training	ALL	X	X	X	P	-	-	-
CHU-WQEA6 Bioassessment Training for High School Students	OCEANSIDE	X	X	X	WE	-	-	-

WQ	= Watershed Water Quality Activity Implementation (Active Implementation)	E	= Watershed Education Activity (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)	PP	= Watershed Public Participation Activity
P	= Watershed Activity Planning (No WURMP Credit)	M	= Water Quality Monitoring Activity (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)	S	= Source ID/Characterization Activity (No WURMP Credit)

FY 10/11

Table 4-1 JURMP and WURMP Activities – 904.1 Loma Alta Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients
Inspections	Animal	3(7)(1)	✓	✓
	Cemetery	1 (1)	✓	✓
	Food Establishment	122 (126)	✓	✓
	Nursery	3(2)	✓	✓
	TCBMPs	186(2,94)	✓	✓
Street Sweeping (Tons Removed)		5,0-.4	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		1,0-.4	✓	✓
CHU-WQA0	Loma Alta Creek Chloride Radiation Storm Water Treatment Facility		✓	✓
CHU-WQA11	Residential Rain Barrel Subsidies and Distribution		✓	✓
CHU-WQA12	Loma Alta Water Quality Monitoring Program		✓	✓
CHU-WQA16	Residential Composting Workshop		✓	✓
CHU-WQEA11	Focused Equestrian Outreach		✓	✓
CHU-WQEA12	Residential Smart Landscape Evaluation Program		✓	✓

Table 4-2 JURMP and WURMP Activities – 904.2 Buena Vista Creek Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens
Inspections	Agriculture	1(1)	✓
	Animal	0(0)	✓
	Food Establishment	235 (402)	✓
	Golf	0(1)	✓
	Nursery	19 (18)	✓
Street Sweeping (Tons Collected)		1-TSS	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		18t	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓
CHU-WQA19	Water Smart Incentives for Outdoor Water Efficiency		✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓

Table 4-3 JURMP and WURMP Activities – 904.3 Agua Hedionda Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients	Sediment
Inspections	Agriculture	0(0)	✓	✓	✓
	Animal	1(1)(2)	✓	✓	✓
	Contractor	13(13)(1)		✓	✓
	Food Establishment	108 (185)	✓		✓
	General Retail	44 (33)(1)			✓
	Golf	3(3)	✓	✓	✓
	Health Services	5(8)		✓	✓
	Manufacturing	10(15)(1)	✓	✓	✓
	Nursery	12 (16)	✓	✓	✓
	Stone & Aggregates	7(13)(1)		✓	✓
	Storage & Warehousing	16(75)		✓	✓
	TCBMPs	300(1,518)	✓	✓	✓
	Municipal	High 32(52) / Non-High 0(20)(1)			✓
Street Sweeping (Tons Removed)		7,0-.0	✓	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		6,0-.8	✓	✓	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓	✓
CHU-WQA20	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component		✓	✓	✓
CHU-WQA21	Upper San Marcos Creek Nutrient Management Plan – Residential Component		✓	✓	✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓	✓	✓

Table 4-4 JURMP and WURMP Activities – 904.5 San Marcos Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients
Inspections	Animal Facilities	0(140)	✓	✓
	Eating or Drinking Establishments	186(140)	✓	✓
	Health Services	1(11)		✓
	Mobile Landscaping	3(11)(1)	✓	✓
	Nurseries/Greenhouses	27(18)(1)	✓	✓
	Parks and Rec (incl. Golf Courses)	7(11)		✓
	POTWs	3(1)(1)		✓
	Roads, Streets and Parking	1(11)	✓	✓
	TCBMPs	186(1,98)(1)	✓	✓
Street Sweeping (Tons Removed)		1,0-0.0	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		3,0-.1	✓	✓
CHU-WQA22	Upper San Marcos Creek Watershed/Lake San Marcos Nutrient Management Plan			✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓
CHU-WQA18	Upper San Marcos Creek Nutrient Management Plan – Parks Component			✓
CHU-WQA19	Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component			✓
CHU-WQA20	Upper San Marcos Creek Nutrient Management Plan – agriculture Component			✓
CHU-WQA21	Upper San Marcos Creek Nutrient Management Plan – Monitoring Component			✓
CHU-WQA23	San Diego County Stormwater Responsibility Study			✓
CHU-WQEA6	Upper San Marcos Creek Nutrient Management Plan – Residential Component			✓

Table 4-5 JURMP and WURMP Activities – 904.6 Escondido Creek Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients	Sediment
Inspections	Agriculture	1(13)	✓	✓	✓
	Animal Facilities	0(0)(1)	✓	✓	✓
	Auto Parking Lots or Storage	0(0)(1)			✓
	Nurseries/Greenhouses	1(1)(1)	✓	✓	✓
	Building Materials Retail	0(0)(1)			✓
	Concrete Manufacturing	0(0)(1)			✓
	Eating or Drinking Establishments	1(1)(1)	✓		
	General Contractors	0(1)(1)			✓
	General Retail	0(1)(1)			✓
	Health Services	1(1)(1)	✓	✓	✓
	Mobile Landscaping	1(1)(1)	✓	✓	✓
	Nurseries/Greenhouses	1(1)(1)	✓	✓	✓
	Parks and Rec (incl. Golf Courses)	1(1)(1)			✓
	POTWs	1(1)(1)			✓
	Recycling & Junk Yards	1(1)(1)			✓
	Stone/Glass Manufacturing	1(1)(1)			✓
	Storage/Warehousing	1(1)(1)			✓
	TCBMPs	207(3)(0)	✓	✓	✓
Street Sweeping (Tons Removed)		1,7-0.1	✓	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		5-0.8	✓	✓	✓
CHU-WQA10	Pet Waste Bag Dispenser Program in County Parks		✓	✓	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓	✓
CHU-WQA24	LID Features in San Elijo Nature Center		✓	✓	✓

Table 4-9 Updated 5-Year Strategic Plan

Activity/Project Name	Jurisdiction(s)	Watershed Priorities: Bacteria	Nutrients	Sediment	Implementation Schedule: FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
Watershed Water Quality Activities								
CHU-WQA2 Loma Alta Creek Chloride Radiation Storm Water Treatment Facility	OCEANSIDE	X			A	A	A	A
CHU-WQA3 Escondido Creek Restoration	ESCONDIDO				A	A	A	A
CHU-WQA4 Stormwater Quality Master Plans for Special Drainage Fee Areas	COUNTY	?	?	?	P	P	WQ	WQ
CHU-WQA5 Nitrate Source Identification and Abatement: Buena Creek	COUNTY		X		WQ	WQ	WQ	WQ
CHU-WQA10 Pet Waste Bag Dispenser Program in County Parks	COUNTY	X	X		WQ	WQ	WQ	WQ
CHU-WQA11 Land Acquisitions	COUNTY	X	X	X	WQ	WQ	WQ	WQ
CHU-WQA12 Upper San Marcos Creek Nutrient Management Plan	SM/COUNTY/ESC	X	X	X	WQ	WQ	WQ	WQ
CHU-WQA14 Water Quality Monitoring in Agua Hedionda Creek Watershed	COUNTY	X	X	X	M	M	-	-
CHU-WQA15 Water Quality Treatment Facility at McClellan-Palomar Airport	COUNTY		X	X	M	M	M	
CHU-WQA16 Agua Hedionda Creek Restoration – SR-101	VISTA			X	P	P	WQ	WQ
CHU-WQA17 Residential Rain Barrel Subsidies and Distribution	COUNTY	X	X	X	WQ	P	WQ	-
CHU-WQA18 Upper San Marcos Creek Nutrient Management Plan – Parks Component	SM/COUNTY/ESC			X	-	WQ	WQ	-
CHU-WQA19 Upper San Marcos Creek Nutrient Management Plan – Golf Courses Component	SM/COUNTY/ESC			X	WQ	WQ	WQ	-
CHU-WQA20 Upper San Marcos Creek Nutrient Management Plan – Agriculture Component	SM/COUNTY/ESC			X	WQ	WQ	WQ	-
CHU-WQA21 Upper San Marcos Creek Nutrient Management Plan – Monitoring Component	SM/COUNTY/ESC			X	WQ	WQ	WQ	-
CHU-WQA22 Lower Alta Water Quality Monitoring Program	OCEANSIDE/VISTA	X	X		M	M	M	M

Table 4-9 Updated 5-Year Strategic Plan - Continued

Activity/Project Name	Jurisdiction(s)	Watershed Priorities: Bacteria	Nutrients	Sediment	Implementation Schedule: FY 2010	FY 2011	FY 2012	Future Fiscal Year(s)
Watershed Education Activities								
CHU-WQEA1 Water Quality Runoff Management and Agricultural Waiver Workshop for Nurseries and Agricultural Businesses	ALL	X	X	X	WE	P	WE	-
CHU-WQEA2 LID Features in San Elijo Nature Center	COUNTY	X	X	X	WE	-	-	-
CHU-WQEA3 Upper San Marcos Creek Nutrient Management Plan – Residential Component	SM/COUNTY/ESC			X	WE	WE	WE	
CHU-WQEA4 Residential Composting Workshop	OCEANSIDE/COUNTY/VISTA			X	-	-	-	-
CHU-WQEA5 Ocean Friendly Garden Workshop Series	ENCINITAS			X	Completed – No longer reported			
CHU-WQEA11 Focused Equestrian Outreach	COUNTY			X	Activity on hold			
CHU-WQEA12 Cottonwood Creek Watershed Interpretive Signage	ENCINITAS			X	P	WE	-	
CHU-WQEA13 Residential Smart Landscape Evaluation Program	OCEANSIDE			X	WE	-	-	-
CHU-WQEA17 Residential Rain Barrel Subsidies and Distribution	COUNTY			X	P-A	P-A	WE	
CHU-WQEA19 Rainwater Harvesting Workshop and Rebate Program (PGM)	ENCINITAS			X	P	P	WQ	-

Note 1 – Under the proposed Water Quality Improvement Plan process, these activities may change.

WQ	= Watershed Water Quality Activity Implementation (Active Implementation)	E	= Watershed Education Activity (No WURMP Credit)
A	= Watershed Activity Assessment (No WURMP Credit)	PP	= Watershed Public Participation Activity
P	= Watershed Activity Planning (No WURMP Credit)	M	= Water Quality Monitoring Activity (No WURMP Credit)
WE	= Watershed Education Activity (Active Implementation)	S	= Source ID/Characterization Activity (No WURMP Credit)

FY 11/12

Table 4-1 JURMP and WURMP Activities – 904.1 Loma Alta Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens	Nutrients
Inspections	Animal Facilities	3(7)(1)	✓	✓
	Eating or Drinking Establishments	94 (123)	✓	✓
	Health Services	0(1)(1)	✓	✓
	Mobile Landscaping	0(1)(1)	✓	✓
	Nurseries/Greenhouses	4(1)(1)	✓	✓
	Parks and Rec (Incl. Golf Courses)	0(1)(1)	✓	✓
	TCBMPs	300(1,93)(1)	✓	✓
Street Sweeping (Tons Removed)		4,0-.3	✓	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		17t.6	✓	✓
CHU-WQA	Loma Alta Creek Chloride Radiation Storm Water Treatment Facility		✓	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓	✓
CHU-WQA19	Water Smart Incentives for Outdoor Water Efficiency		✓	✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓	✓

Table 4-2 JURMP and WURMP Activities – 904.2 Buena Vista Creek Hydrologic Area

	Activity	Results # of Inspections (Inventory #)	High Priority Water Quality Problem: Bacteria/Pathogens
Inspections	Agriculture	1(1)	✓
	Animal Facilities	2(1)(1)	✓
	Eating or Drinking Establishments	235 (330)	✓
	Mobile Landscaping	0(0)	✓
	Nurseries/Greenhouses	10(18)(1)	✓
	TCBMPs	276 (3,98)(1)	✓
Street Sweeping (Tons Removed)		6,7-.8	✓
Basins/Inlets/Ditches/MS4 (Tons Removed)		24t.0	✓
CHU-WQA17	Residential Rain Barrel Subsidies and Distribution		✓
CHU-WQA19	Water Smart Incentives for Outdoor Water Efficiency		✓
CHU-WQEA13	Residential Smart Landscape Evaluation Program		✓

**Table

QUARTERLY BUDGET BALANCE AND EXPENDITURE OVERVIEW
(TO BE COMPLETED BY COUNTY OF SAN DIEGO)

Final 03-09-09

Regional Working Body	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
Program Planning Subcommittee (PPS)	$ 42,021	1st	$0	$0	$0	$ 42,021	$ 42,021
		2nd	$0	$0	$0	$ 42,021	$ 42,021
		3rd	$0	$0	$0	$ 42,021	$ 42,021
		4th	$0	$0	$0	$ 42,021	$ 42,021
		Totals	$0		$0		
Fiscal, Reporting, & Assessment Workgroup	$ 70,200	1st	$0	$0	$0	$ 70,200	$ 70,200
		2nd	$0	$0	$0	$ 70,200	$ 70,200
		3rd	$0	$0	$0	$ 70,200	$ 70,200
		4th	$26,601	$0	$0	$ 43,599	$ 70,200
		Totals	$26,601		$0		
Education and Residential Sources Workgroup	$ 337,702	1st	$0	$0	$0	$ 337,702	$ 337,702
		2nd	$0	$0	$0	$ 337,702	$ 337,702
		3rd	$0	$0	$0	$ 337,702	$ 337,702
		4th	$0	$0	$0	$ 337,702	$ 337,702
		Totals	$0		$0		
Monitoring Workgroup	$ 2,074,122	1st	$0	$0	$0	$ 2,074,122	$ 2,074,122
		2nd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		3rd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		4th	$0	$0	$0	$ 2,074,122	$ 2,074,122
		Totals	$0		$0		
Land Development Workgroup	$ 483,804	1st	$0	$0	$0	$ 483,804	$ 483,804
		2nd	$0	$0	$0	$ 483,804	$ 483,804
		3rd	$0	$0	$0	$ 483,804	$ 483,804
		4th	$0	$0	$0	$ 483,804	$ 483,804
		Totals	$0		$0		
Municipal Sources Workgroup	$ 48,421	1st	$0	$0	$0	$ 48,421	$ 48,421
		2nd	$0	$0	$0	$ 48,421	$ 48,421
		3rd	$0	$0	$0	$ 48,421	$ 48,421
		4th	$0	$0	$0	$ 48,421	$ 48,421
		Totals	$0		$0		
Industrial and Commercial Sources Workgroup	$ 105,700	1st	$0	$0	$0	$ 105,700	$ 105,700
		2nd	$0	$0	$0	$ 105,700	$ 105,700
		3rd	$0	$0	$0	$ 105,700	$ 105,700
		4th	$0	$0	$0	$ 105,700	$ 105,700
		Totals	$0		$0		
Regional WURMP Workgroup	$ 87,731	1st	$0	$0	$0	$ 87,731	$ 87,731
		2nd	$0	$0	$0	$ 87,731	$ 87,731
		3rd	$0	$0	$0	$ 87,731	$ 87,731
		4th	$0	$0	$0	$ 87,731	$ 87,731
		Totals	$0		$0		
Other Expenditures	$ 20,500	1st	$0	$0	$0	$ 20,500	$ 20,500
		2nd	$0	$0	$0	$ 20,500	$ 20,500
		3rd	$0	$0	$0	$ 20,500	$ 20,500
		4th	$0	$0	$0	$ 20,500	$ 20,500
		Totals	$0		$0		
Totals	$ 3,270,201	1st	$0	$0	$0	$ 3,270,201	$ 3,270,201
		2nd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		3rd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		4th	$26,601	$0	$0	$ 3,243,600	$ 3,270,201
		Totals	$26,601		$0		

WORKING BODY EXPENDITURES SUMMARY
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Final 03-09-09

Regional Working Body: Industrial and Commercial Sources Workgroup

Period: 4th Quarter FY 2008-09 (April 1- June 30, 2009)

Copermittee	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
Port of San Diego	$ 20,962	1st	$0	$0	$0		
		2nd	$0	$0	$0		
		3rd	$2,578	$0	$0		
		4th	$2,878	$0	$0	$ 15,506	
		Totals	$5,455.50		$0		
City of El Cajon	$ 3,266	1st	$0	$0	$0		
		2nd	$0	$0	$0		
		3rd	$311	$0	$0		
		4th	$565	$0	$0	$ 2,389	
		Totals	$875.75		$0		
City of Vista	$ 6,190	1st	$0	$0	$0		
		2nd	$0	$0	$0		
		3rd	$0	$0	$0		
		4th	$0	$0	$0	$ 6,190	
		Totals	$0		$0		
City of Poway	$ 10,000	1st	$0	$0	$0		
		2nd	$0	$0	$0		
		3rd	$95	$0	$0		
		4th	$568	$0	$0	$ 9,337	
		Totals	$662.34		$0		
Not Assigned	$ 7,500	1st	$0	$0	$0		
		2nd	$0	$0	$0		
		3rd	$0	$0	$0		
		4th	$0	$0	$0	$ 7,500	
		Totals	$0		$0		
Contract (RBF Consulting)	$ 52,500	1st	$0	$0	$0		
		2nd	$0	$0	$0		
		3rd	$0	$0	$0		
		4th	$36,642	$0	$0	$ 15,858	
		Totals	$36,642		$0		
Working Body Totals	**$ 100,418**	1st	$0	#REF!	#REF!		
		2nd	$0	#REF!	#REF!		
		3rd	$2,983	#REF!	#REF!	$ 40,922	
		4th	$40,653	#REF!	#REF!		
		Totals	$43,636		#REF!		

G. Industrial and Commercial Sources Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support. Provide ongoing support for Industrial and Commercial Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	Port/El Cajon			
Copermittee hourly costs	Senior Environmental Specialist	20	$ 69.05	$1,381
	Associate Civil Engineer	20	$ 69.00	$1,380
	Assistant Environmental Specialist	10	$ 49.10	$491
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,252**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Industrial and Commercial Sources Workgroup for the period of July 1 through December 31, 2008.				
Completion date	February 15, 2009			
Party conducting work	Port/El Cajon			
Copermittee hourly costs	Senior Environmental Specialist	10	$ 69.05	$691
	Associate Civil Engineer	10	$ 69.00	$690
		0		$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,381**
Subtask 2.B. FY Work Plans and Budgets. Develop for submittal to the Regional Program Planning Subcommittee the FY 2008-09 and FY 2009-10 work plans and budgets covering the planned activities of the Industrial and Commercial Sources Workgroup.				
Completion date	December 31, 2008			
Party conducting work	Port			
Copermittee hourly costs	Senior Environmental Specialist	20	$ 69.05	$1,381
		0	$ -	$0
		0	$ -	$0
Contract costs				$0

G. Industrial and Commercial Sources Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Contract management costs				$0
Other direct costs				$0
Total				$1,381

Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2007-08 Regional URMP Annual Report.

Completion date	December 30, 2008			
Party conducting work	Port/El Cajon			
Copermittee hourly costs	Senior Environmental Specialist	10	$ 69.05	$691
	Associate Civil Engineer	10	$ 69.00	$690
		0	$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				$1,381

Subtask 2.D. Regional Program Approach. Develop for submittal to the Regional Program Planning Subcommittee a regional program approach for the management of industrial and commercial sources. This approach will include the integration of watershed assessments for inventories, BMPs, and compliance actions. Management questions will be developed during this FY to help guide development of regional work products. A phased approach should be considered with completion of a draft conceptual plan by June 2009. Further development and implementation of the program elements will occur in FY 09-10.

Completion date	Draft conceptual plan complete by 6/30/2009			
Party conducting work	Port/Vista			
Copermittee hourly costs	Senior Environmental Specialist	90	$ 69.05	$6,215
	Stormwater Program Manager	90	$ 68.78	$6,190
				$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				$12,405

Subtask 2.E. Regional Industrial and Commercial Facility Tracking. Develop standard templates for compiling and tracking industrial and commercial facility inventories. Ensure watershed scale interpretation can be accomplished through use of the templates.

Completion date	June 30, 2009
Party conducting work	Port

G. Industrial and Commercial Sources Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Copermittee hourly costs	Senior Environmental Specialist	40	$ 69.05	$2,762
	Assistant Environmental Specialist	80	$ 49.10	$3,928
		0	$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$6,690**

Subtask 2.F. Review Current Inspection Standards. Review Copermittee inspection forms to find common information collected by all. "Provide input to workgroup on how to develop a standard format for reporting inspection information that is commonly collected by Copermittees and/or that Copermittees agree would be useful and feasible to report on regional basis. Provide input to workgroup on how to develop inspection standards that can be implemented by all Copermittees.

Completion date	June 30, 2009			
Party conducting work	TBD - Sub group of the Ind/Comm Workgroup			
Copermittee hourly costs	TBD	80	$ 125.00	$10,000
		0		$0
		0	$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$10,000**

Subtask 2.G. Pilot Program Development and Implementation. Identify potential opportunities for pilot studies pertaining to industrial and commercial facilities. Opportunities could include BMP tests, regional waste collection efforts, facility enhancements or other ideas. Use of outside parties and/or agencies may be considered as part of this effort.

Completion date	Ongoing			
Party conducting work	TBD - based on pilot opportunities			
Copermittee hourly costs	TBD - standard budget placeholder for hrs/costs	60	$ 125.00	$7,500
		0	$ -	$0
		0	$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$7,500**

G. Industrial and Commercial Sources Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.H. Regional Mobile Business Program. Complete the development of a Regional Mobile Business Program to include at a minimum, (1) a regional inventory, and (2) regional minimum BMPs. Investigate feasibility of using a web portal to store mobile business information for the region.				
Completion date	June 30, 2009			
Party conducting work	Consultant (TBD) / Port			
Copermittee hourly costs	Assistant Environmental Specialist	80	$ 49.10	$3,928
		0	$ -	$0
		0	$ -	$0
Contract costs				$50,000
Contract management costs				$2,500
Other direct costs				$0
Total				**$56,428**

G. Industrial and Commercial Sources Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.I. Unallocated.				
Completion date	June 30, 2009			
Party conducting work	Consultant (TBD) / Port			
Copermittee hourly costs	Assistant Environmental Specialist	0	$ -	$0
		0	$ -	$0
		0	$ -	$0
Contract costs	5% of total working body budget generically assigned to contract costs.			$5,032
Contract management costs				$252
Other direct costs				$0
Total				**$5,284**
Total Estimated Cost				**$105,700**

2008-09 Industrial/Commercial Sources Workgroup
Expenditure Summary

G. Industrial/Commercial Sources Workgroup

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Industrial and Commercial Sources Workgroup						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.A. Semi-annual Workgroup Update.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.B. FY 2009-10 Work Plans and Budgets.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.D. Regional Program Approach.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.E. Regional Industrial and Commercial Facility Tracking.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.F. Review Current Inspection Standards.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.G. Pilot Program Development and Implementation.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.H. Regional Mobile Business Program.						
					$0.00	$0.00
					$0.00	$0.00

2008-09 Industrial/Commercial Sources Workgroup
Expenditure Summary

Subtask 2.I Unallocated		
	$0.00	
	Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09	**$0.00**	**$0.00**

2008-09 Industrial/Commercial Sources Workgroup
Expenditure Summary

G. Industrial/Commercial Sources Workgroup

	City of El Cajon	Port of San Diego	City of Poway	Summary of Tasks
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support.	$172.50	$866.95		$1,039.45
Subtask 2.A. Semi-annual Workgroup Update.	$34.50	$379.78		$414.28
Subtask 2.B. FY 2009-10 Work Plans and Budgets.	$103.50	$690.50		$794.00
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input.				$0.00
Subtask 2.D. Regional Program Approach.		$1,847.83		$1,847.83
Subtask 2.E. Regional Industrial and Commercial Facility Tracking.		$611.70		$611.70
Subtask 2.F. Review Current Inspection Standards.			$662.34	$662.34
Subtask 2.G. Pilot Program Development and Implementation.				$0.00
Subtask 2.H. Regional Mobile Business Program.	$565.25	$37,700.75		$38,266.00
Subtask 2.I Unallocated				$0.00
Total IC Expenditures FY 08-09	**$875.75**	**$42,097.50**	**$662.34**	**$43,635.59**

2008-09 Industrial/Commercial Sources Workgroup
Expenditure Summary

G. Industrial/Commercial Sources Workgroup
City of El Cajon

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Industrial and Commercial Sources							
Jamie Campos	Associate Civil Engineer	2.5	$69.00			$172.50	$0.00
						$172.50	**$0.00**
Subtask 2.A. Semi-annual Workgroup Update.							
Jamie Campos	Associate Civil Engineer	0.5	$69.00			$34.50	$0.00
						$34.50	**$0.00**
Subtask 2.B. FY 2009-10 Work Plans and Budgets.							
Jamie Campos	Associate Civil Engineer	1.5	$69.00			$103.50	$0.00
						$103.50	**$0.00**
Subtask 2.H. Regional Mobile Business Program.							
Jamie Campos	Associate Civil Engineer	1	$69.00			$69.00	$0.00
Craig Bonner	Storm Water Code Complaince	12.5	$39.70			$496.25	$0.00
						$565.25	**$0.00**
						Direct Total	**Loaded total**
Total IC Expenditures FY 08-09 - City of El Cajon						**$875.75**	**$0.00**

2008-09 Industrial/Commercial Sources Workgroup
Expenditure Summary

G. Industrial/Commercial Sources Workgroup

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Industrial and Commercial Sources Workgroup							
Karen Holman	Senior Environ. Specialist	9	$69.05			$621.45	$0.00
Damon Lacasella	Assistant Environ. Specialist	5	$49.10			$245.50	$0.00
						$866.95	**$0.00**
Subtask 2.A. Semi-annual Workgroup Update.							
Karen Holman	Senior Environ. Specialist	5.5	$69.05			$379.78	$0.00
						$379.78	**$0.00**
Subtask 2.B. FY 2009-10 Work Plans and Budgets.							
Karen Holman	Senior Environ. Specialist	10	$69.05			$690.50	$0.00
						$690.50	**$0.00**
Subtask 2.D. Regional Program Approach.							
Karen Holman	Senior Environ. Specialist	17.5	$69.05			$1,208.38	$0.00
Karen Holman	Senior Environ. Specialist	3	$70.05			$210.15	$0.00
Karen Holman	Senior Environ. Specialist	3	$71.05			$213.15	$0.00
Karen Holman	Senior Environ. Specialist	3	$72.05			$216.15	$0.00
						$1,847.83	**$0.00**
Subtask 2.E. Regional Industrial and Commercial Facility Tracking.							
Karen Holman	Senior Environ. Specialist	5	$69.05			$345.25	$0.00
Karen Holman	Senior Environ. Specialist	1	$70.05			$70.05	$0.00
Damon Lacasella	Assistant Environ. Specialist	4	$49.10			$196.40	$0.00
						$611.70	**$0.00**
Subtask 2.H. Regional Mobile Business Program.							
Karen Holman	Senior Environ. Specialist	10	$69.05			$690.50	$0.00
Damon Lacasella	Assistant Environ. Specialist	7.5	$49.10			$368.25	$0.00
Consultant contract (RBF 52440)					$36,642.00		
Contract Adminstration Cost							
						$37,700.75	**$36,642.00**
						Direct Total	**Loaded total**
Total IC Expenditures FY 08-09 - Port of San Diego						**$42,097.50**	**$36,642.00**

2008-09 Industrial/Commercial Sources Workgroup
Expenditure Summary

G. Industrial/Commercial Sources Workgroup
City of Poway

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 2.F. Review Current Inspection Standards.							
Taniya Barrows	Engineering Technician II	14	$47.31			$662.34	$0.00
						$662.34	**$0.00**
						Direct Total	**Loaded total**
Total IC Expenditures FY 08-09 - City of Poway						**$662.34**	**$0.00**

QUARTERLY BUDGET BALANCE AND EXPENDITURE OVERVIEW
(TO BE COMPLETED BY COUNTY OF SAN DIEGO)

Final 03-09-09

Regional Working Body	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
Program Planning Subcommittee (PPS)	$ 42,021	1st	$0	$0	$0	$ 42,021	$ 42,021
		2nd	$0	$0	$0	$ 42,021	$ 42,021
		3rd	$0	$0	$0	$ 42,021	$ 42,021
		4th	$0	$0	$0	$ 42,021	$ 42,021
		Totals	$0		$0		
Fiscal, Reporting, & Assessment Workgroup	$ 70,200	1st	$0	$0	$0	$ 70,200	$ 70,200
		2nd	$0	$0	$0	$ 70,200	$ 70,200
		3rd	$0	$0	$0	$ 70,200	$ 70,200
		4th	$26,601	$0	$0	$ 43,599	$ 70,200
		Totals	$26,601		$0		
Education and Residential Sources Workgroup	$ 337,702	1st	$0	$0	$0	$ 337,702	$ 337,702
		2nd	$0	$0	$0	$ 337,702	$ 337,702
		3rd	$0	$0	$0	$ 337,702	$ 337,702
		4th	$0	$0	$0	$ 337,702	$ 337,702
		Totals	$0		$0		
Monitoring Workgroup	$ 2,074,122	1st	$0	$0	$0	$ 2,074,122	$ 2,074,122
		2nd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		3rd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		4th	$0	$0	$0	$ 2,074,122	$ 2,074,122
		Totals	$0		$0		
Land Development Workgroup	$ 483,804	1st	$0	$0	$0	$ 483,804	$ 483,804
		2nd	$0	$0	$0	$ 483,804	$ 483,804
		3rd	$0	$0	$0	$ 483,804	$ 483,804
		4th	$0	$0	$0	$ 483,804	$ 483,804
		Totals	$0		$0		
Municipal Sources Workgroup	$ 48,421	1st	$0	$0	$0	$ 48,421	$ 48,421
		2nd	$0	$0	$0	$ 48,421	$ 48,421
		3rd	$0	$0	$0	$ 48,421	$ 48,421
		4th	$0	$0	$0	$ 48,421	$ 48,421
		Totals	$0		$0		
Industrial and Commercial Sources Workgroup	$ 105,700	1st	$0	$0	$0	$ 105,700	$ 105,700
		2nd	$0	$0	$0	$ 105,700	$ 105,700
		3rd	$0	$0	$0	$ 105,700	$ 105,700
		4th	$0	$0	$0	$ 105,700	$ 105,700
		Totals	$0		$0		
Regional WURMP Workgroup	$ 87,731	1st	$0	$0	$0	$ 87,731	$ 87,731
		2nd	$0	$0	$0	$ 87,731	$ 87,731
		3rd	$0	$0	$0	$ 87,731	$ 87,731
		4th	$0	$0	$0	$ 87,731	$ 87,731
		Totals	$0		$0		
Other Expenditures	$ 20,500	1st	$0	$0	$0	$ 20,500	$ 20,500
		2nd	$0	$0	$0	$ 20,500	$ 20,500
		3rd	$0	$0	$0	$ 20,500	$ 20,500
		4th	$0	$0	$0	$ 20,500	$ 20,500
		Totals	$0		$0		
Totals	$ 3,270,201	1st	$0	$0	$0	$ 3,270,201	$ 3,270,201
		2nd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		3rd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		4th	$26,601	$0	$0	$ 3,243,600	$ 3,270,201
		Totals	$26,601		$0		

WORKING BODY EXPENDITURES SUMMARY **Final 03-09-09**
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Regional Working Body: Land Development Workgroup

Period: 1st Quarter FY 2008-09 (July 1- Sept. 30, 2008)

Copermittee	Budgeted	Quarter	Total Expenditures			Account Balances (YTD Totals)	
			Funding Committed				
			Credit Approved	Payment Approved (Pending)	Payment Issued	Uncommitted	Unspent
County of San Diego	$ 452,758	1st	$0	$0	$0	#REF!	#REF!
		2nd	$0	$0	$0	#REF!	#REF!
		3rd	$0	$0	$0	#REF!	#REF!
		4th	$477,684	$0	$0	#REF!	#REF!
		Totals	$477,684		$0		
City of San Marcos	$ 24,190	1st	$770	$0	$0	#REF!	#REF!
		2nd	$1,100	$0	$0	#REF!	#REF!
		3rd	$935	$0	$0	#REF!	#REF!
		4th	$2,034	$0	$0	#REF!	#REF!
		Totals	$4,839		$0		
Unallocated	$ 6,856	1st	$0	$0	$0	$ 6,856	$ 6,856
		2nd	$0	$0	$0	$ 6,856	$ 6,856
		3rd	$0	$0	$0	$ 6,856	$ 6,856
		4th	$0	$0	$0	$ 6,856	$ 6,856
		Totals	$0		$0		
Working Body Totals	**#REF!**	1st	$770	#REF!	#REF!	#REF!	#REF!
		2nd	$1,100	#REF!	#REF!	#REF!	#REF!
		3rd	$935	#REF!	#REF!	#REF!	#REF!
		4th	$479,718	#REF!	#REF!	#REF!	#REF!
		Totals	$482,523		#REF!		

E. Land Development Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Land Development Workgroup Meeting Support. Provide ongoing support for Land Development Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (est. monthly)			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer	120	76.18	$9,142
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$9,142**
Subtask 1.B. Construction Sub-workgroup Meeting Support. Provide ongoing support for Construction Sub-workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (est. monthly)			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer	120	76.18	$9,142
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$9,142**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Land Development Monitoring Workgroup for the period of July 1 through December 31, 2008.				
Completion date	March 15, 2009			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer	10	76.18	$762
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$762**
Subtask 2.B. FY 2009-10 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2009-10 work plan and budget covering the planned activities of the Land development Workgroup and its sub-workgroups.				
Completion date	November 30, 2008			

E. Land Development Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer	45 0	76.18 0 0	$3,428 $0 $0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,428**

Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2007-08 Regional URMP Annual Report.

Completion date	November 30, 2008			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer	45	76.18 0 0	$3,428 $0 $0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,428**

Subtask 2.D. Regional Program Approach. Develop for submittal to the Regional Program Planning Subcommittee a regional program approach for the management of land development sources.

Completion date	June 30, 2009			
Party conducting work				
Copermittee hourly costs	Senior Civil Engineer	90	76.18 0 0	$6,856 $0 $0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$6,856**

Subtask 2.E. Hydromodification Management Plan (HMP) and Standard Urban Stormwater Management Plan (SUSMP) Development and Updates. Develop for submittal to the RWQCB a Hydromodification Management Plan in accordance with Permit Section D.1.g and an updated SUSMP in accordance with Permit Section D.1.d.

Completion date	1/24/2009 (HMP); 1/21/2009 (SUSMP Update)			
Party conducting work	County / Consultant (Brown and Caldwell)			
Copermittee hourly costs	Senior Civil Engineer	90	76.18 0	$6,856 $0 $0
Contract costs				$400,000
Contract management costs				$20,000

E. Land Development Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Other direct costs				$0
Total				**$426,856**
Subtask 2.F. Unallocated.				
Completion date	Ongoing			
Party conducting work	Various			
Copermittee hourly costs	Senior Civil Engineer	0	76.18	$0
		0	0	$0
		0	0	$0
Contract costs	5% of total working body budget generically assigned to contract costs.			$23,038
Contract management costs				$1,152
Other direct costs				$0
Total				**$24,190**
Total Estimated Cost				**$483,804**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

E. Land Development

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Land Development Workgroup Meeting Support.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 1.B. Construction Sub-workgroup Meeting Support.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.A. Semi-annual Workgroup Update.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.B. FY 2009-10 Work Plan and Budget.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.D. Regional Program Approach.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.E. HMP and SUSMP Development and Updates.						
					$0.00	
Subtask 2.F. Unallocated						
					$0.00	
					Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09					**$0.00**	**$0.00**

2008-09 Land Development Sources Workgroup
Expenditure Summary

E. Land Development

	City of San Marcos	County of SD	Summary of Tasks
Subtask 1.A. Land Development Workgroup Meeting Support.		$1,142.70	$1,142.70
Subtask 1.B. Construction Sub-workgroup Meeting Support.			$0.00
Subtask 2.A. Semi-annual Workgroup Update.			$0.00
Subtask 2.B. FY 2009-10 Work Plan and Budget.		$761.80	$761.80
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input.			$0.00
Subtask 2.D. Regional Program Approach.			$0.00
Subtask 2.E. HMP and SUSMP Development and Updates.		$475,778.94	$475,778.94
Subtask 2.F. Unallocated	$4,839.00		$4,839.00
Total LD Expenditures FY 08-09	**$4,839.00**	**$477,683.44**	**$482,522.44**

2008-09 Land Development Workgroup
Expenditure Summary

E. Land Development
City of San Marcos

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 2.F. Unallocated						
Consultant contract (MOA)				$4,839.00		
Contract Adminstration Cost						
					$4,839.00	**$4,839.00**
					Direct Total	**Loaded total**
Total LD Expenditures FY 08-09 - City of San Marcos					**$4,839.00**	**$4,839.00**

2008-09 Land Development Workgroup
Expenditure Summary

E. Land Development
County of San Diego

	Job Classification	Hours Charged	Direct Hourly Rate	Loaded Hourly Rate	Contracts and Other Direct Costs	Total w/ Direct Rates	Total w/ Loaded Rates
Subtask 1.A. Land Development Workgroup Meeting							
Sata Agahi	Program Manager/Civil Engineer	15	$76.18			$1,142.70	$0.00
						$1,142.70	**$0.00**
Subtask 2.B. FY 2009-10 Work Plan and Budget.							
Sata Agahi	Program Manager/Civil Engineer	10	$76.18			$761.80	$0.00
						$761.80	**$0.00**
Subtask 2.E. HMP and SUSMP Development and Updates.							
Sata Agahi	Program Manager/Civil Engineer	90	$76.18			$6,856.20	$0.00
Consultant contract (Brown and Caldwell 520444)					$446,593.74		
Contract Adminstration Cost					$22,329.00		
						$475,778.94	**$468,922.74**
Total LD Expenditures FY 08-09 - County of San Diego						**$477,683.44**	**$468,922.74**

QUARTERLY BUDGET BALANCE AND EXPENDITURE OVERVIEW
(TO BE COMPLETED BY COUNTY OF SAN DIEGO)

Final 03-09-09

Regional Working Body	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
Program Planning Subcommittee (PPS)	$ 42,021	1st	$0	$0	$0	$ 42,021	$ 42,021
		2nd	$0	$0	$0	$ 42,021	$ 42,021
		3rd	$0	$0	$0	$ 42,021	$ 42,021
		4th	$0	$0	$0	$ 42,021	$ 42,021
		Totals	$0		$0		
Fiscal, Reporting, & Assessment Workgroup	$ 70,200	1st	$0	$0	$0	$ 70,200	$ 70,200
		2nd	$0	$0	$0	$ 70,200	$ 70,200
		3rd	$0	$0	$0	$ 70,200	$ 70,200
		4th	$26,601	$0	$0	$ 43,599	$ 70,200
		Totals	$26,601		$0		
Education and Residential Sources Workgroup	$ 337,702	1st	$0	$0	$0	$ 337,702	$ 337,702
		2nd	$0	$0	$0	$ 337,702	$ 337,702
		3rd	$0	$0	$0	$ 337,702	$ 337,702
		4th	$0	$0	$0	$ 337,702	$ 337,702
		Totals	$0		$0		
Monitoring Workgroup	$ 2,074,122	1st	$0	$0	$0	$ 2,074,122	$ 2,074,122
		2nd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		3rd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		4th	$0	$0	$0	$ 2,074,122	$ 2,074,122
		Totals	$0		$0		
Land Development Workgroup	$ 483,804	1st	$0	$0	$0	$ 483,804	$ 483,804
		2nd	$0	$0	$0	$ 483,804	$ 483,804
		3rd	$0	$0	$0	$ 483,804	$ 483,804
		4th	$0	$0	$0	$ 483,804	$ 483,804
		Totals	$0		$0		
Municipal Sources Workgroup	$ 48,421	1st	$0	$0	$0	$ 48,421	$ 48,421
		2nd	$0	$0	$0	$ 48,421	$ 48,421
		3rd	$0	$0	$0	$ 48,421	$ 48,421
		4th	$0	$0	$0	$ 48,421	$ 48,421
		Totals	$0		$0		
Industrial and Commercial Sources Workgroup	$ 105,700	1st	$0	$0	$0	$ 105,700	$ 105,700
		2nd	$0	$0	$0	$ 105,700	$ 105,700
		3rd	$0	$0	$0	$ 105,700	$ 105,700
		4th	$0	$0	$0	$ 105,700	$ 105,700
		Totals	$0		$0		
Regional WURMP Workgroup	$ 87,731	1st	$0	$0	$0	$ 87,731	$ 87,731
		2nd	$0	$0	$0	$ 87,731	$ 87,731
		3rd	$0	$0	$0	$ 87,731	$ 87,731
		4th	$0	$0	$0	$ 87,731	$ 87,731
		Totals	$0		$0		
Other Expenditures	$ 20,500	1st	$0	$0	$0	$ 20,500	$ 20,500
		2nd	$0	$0	$0	$ 20,500	$ 20,500
		3rd	$0	$0	$0	$ 20,500	$ 20,500
		4th	$0	$0	$0	$ 20,500	$ 20,500
		Totals	$0		$0		
Totals	$ 3,270,201	1st	$0	$0	$0	$ 3,270,201	$ 3,270,201
		2nd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		3rd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		4th	$26,601	$0	$0	$ 3,243,600	$ 3,270,201
		Totals	$26,601		$0		

WORKING BODY EXPENDITURES SUMMARY
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Final 03-09-09

Regional Working Body: Monitoring Workgroup

Period: 1st Quarter FY 2008-09 (July 1- Sept. 30, 2008)

Copermittee	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
County of San Diego	$ 2,059,800	1st	$0	$0	$0	$ 12,600	$ 12,600
		2nd	$0	$0	$0	$ 12,600	$ 12,600
		3rd	$0	$0	$0	$ 12,600	$ 12,600
		4th	**$ 1,820,207.95**	$0	$0	$ (1,807,608)	$ 12,600
		Totals	**$ 1,820,207.95**		$0		
City of Carlsbad	$ 741	1st	$0	$0	$0	$ 12,600	$ 12,600
		2nd	$0	$0	$0	$ 12,600	$ 12,600
		3rd	$0	$0	$0	$ 12,600	$ 12,600
		4th	$3,604	$0	$0	$ 8,996	$ 12,600
		Totals	**$ 3,603.75**		$0		
Regional Airport Authority	$ 741	1st	$0	$0	$0	$ 12,600	$ 12,600
		2nd	$0	$0	$0	$ 12,600	$ 12,600
		3rd	$0	$0	$0	$ 12,600	$ 12,600
		4th	$5,987	$0	$0	$ 6,613	$ 12,600
		Totals	**$ 5,987.30**		$0		
City of La Mesa	$ 12,600	1st	$0	$0	$0	$ 12,600	$ 12,600
		2nd	$0	$0	$0	$ 12,600	$ 12,600
		3rd	$0	$0	$0	$ 12,600	$ 12,600
		4th	$9,891	$0	$0	$ 2,709	$ 12,600
		Totals	**$ 9,891.00**		$0		
City of Santee	$ 237	1st	$0	$0	$0	$ 237	$ 237
		2nd	$0	$0	$0	$ 237	$ 237
		3rd	$0	$0	$0	$ 237	$ 237
		4th	$1,648	$0	$0	$ (1,411)	$ 237
		Totals	**$ 1,647.91**		$0		
Not Assigned		1st	$0	$0	$0	$ 237	$ 237
		2nd	$0	$0	$0	$ 237	$ 237
		3rd	$0	$0	$0	$ 237	$ 237
		4th	$0	$0	$0	$ 237	$ 237
		Totals	$0		$0		
Not Assigned		1st	$0	$0	$0	$ 237	$ 237
		2nd	$0	$0	$0	$ 237	$ 237
		3rd	$0	$0	$0	$ 237	$ 237
		4th	$0	$0	$0	$ 237	$ 237
		Totals	$0		$0		
Not Assigned		1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -
		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		

WORKING BODY EXPENDITURES SUMMARY
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Final 03-09-09

Copermittee	Budgeted	Quarter	Total Expenditures			Account Balances (YTD Totals)	
			Funding Committed				
			Credit Approved	Payment Approved (Pending)	Payment Issued	Uncommitted	Unspent
Unallocated	$ -	1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -
		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		
Working Body Totals	**$ 2,074,119**	1st	$0	$0	$0	$ 2,074,119	$ 2,074,119
		2nd	$0	$0	$0	$ 2,074,119	$ 2,074,119
		3rd	$0	$0	$0	$ 2,074,119	$ 2,074,119
		4th	$1,841,338	$0	$0	$ 232,781	$ 2,074,119
		Totals	$1,841,337.91		$0		

21-Sep-2009
2008-2009 Monitoring Program
Invoices Submitted by Copermittees

D. Monitoirng Workgroup and Sub-workgroups

Task 1 Meeting Support

	Budgeted	Invoiced	Amt Different	Copermit	Balance
Subtask 1.A Regional Monitoirng Workgroup Meeting Support	$1,482.00	$1,481.75	$0.25	County	$0.25
Subtask 1.B Dry Weather Monitoring Meeting Support					
D-Max Engin contract	$12,600.00	$9,891.00	$2,709.00	La Mesa	
H. Perry	$0.00	$1,602.13	($1,602.13)	Santee	
					$1,106.87
Subtask 1.C Coastal Storm Drain Monitoring Support					
Annual Report Prep	$741.00	$5,987.30	($5,246.30)	Port	
Annual Report Prep	741.00	$3,603.75	($2,862.75)	Carlsbad	
					($8,109.05)
Task 2 Development of Miscellaneous Work Products					
Subtask 2.A Semi-annual Workgroup Update	593.00	$0.00	$593.00		593
Subtask 2B. FY2009-10 Work Plan and Budget	1,482.00	$1,481.75	$0.25	County	0.25
Subtask 2.C. FY2007-08 Regional URMP Annual Report	237.00	$45.78	$191.22	Santee	
					$191.22
Subtask 2.D. FY2008-09 Source Identification Work Plan					
Weston	10,000.00	$10,000.00	$0.00		0
5% mark up	500.00	$500.00	$0.00	County	0
Subtask 2.E. FY2009-10 Source Identfication Plan					
Weston	10,000.00	$10,000.00	$0.00		0
includes 5 % mark up	500.00	$500.00		County	0

	Budgeted	Invoiced	Amt Different	Copermit	Balance
Subtask 2.F. Targeted Wet Weather MS4 Program					
Weston	8,000.00	$5,205.00	$2,795.00		$2,795.00
includes 5 %mark up	400.00	$260.25	$139.75	County	$139.75
Task 3. Regional Monitoring Program					
Subtask 3.A Regional Monitoring Program					
Weston	1,566,963.00	$1,536,963.00	$30,000.00		
SCCWRP- wetlands	143,541.00	$143,541.00	$0.00		
SCCWRP- Microbiol	189,823.00	$0.00	$189,823.00		
Consultant mark up 5%	95,016.35	84,025.20	$10,991.15	County	
Total	$1,995,343.35	$1,764,529.20	$230,814.15		$230,814.15
Subtask 3.B. Southern California Stormwater Monitoring Coalition					
SCCWRP/San Bernardino	30,000.00	25,000.00	$5,000.00	County	
Consultant mark up 5%	1,500.00	1,250.00	$250.00	County	
Total	31,500.00	26,250.00	$5,250.00	County	$5,250.00

Total to carry over to 2009-2010	$232,781.44
includes carry over for SCCWRP- Bight 08 Microbiology Study	$189,823.00
with 5% consultant mark up for Bight 08Microbiology Study	$9,491.15
Total of uncommited funds to carry over to 2009-2010	$33,467.29

D. Monitoring Workgroup and Sub-workgroups

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Regional Monitoring Workgroup Meeting Support. Provide ongoing support for Regional Monitoring Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	County			
Copermittee hourly costs	Supervising Environmental Health Specialist	25	59.27	$1,482
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,482**
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting Support. Provide ongoing support for Dry Weather Monitoring Sub-workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	Consultant (D-MAX Engineering)			
Copermittee hourly costs		0	0	$0
		0	0	$0
		0	0	$0
Contract costs	Contract to be administered by the City of La Mesa; The City will be credited for contract-related expenditures in FY 2009-10. Contract will be for the evaluation of historical data to update Dry Weather Action Levels. Exact scope TBD by Dry Weather Workg			$12,000
Contract management costs				$600
Other direct costs				$0
Total				**$12,600**
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup Meeting Support. Provide ongoing support for Coastal Storm Drain Monitoring Sub-workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	Divided amongst sub-workgroup members			
Copermittee hourly costs	Supervising Environmental Health Specialist	25	59.27	$1,482
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0

D. Monitoring Workgroup and Sub-workgroups

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Total				**$1,482**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide as requested by the Program Planning Subcommittee a written update describing the key activities and accomplishments of the Regional Monitoring Workgroup and its sub-workgroups for the period of July 1 through December 31, 2007.				
Completion date	February 15, 2009			
Party conducting work	County			
Copermittee hourly costs	Supervising Environmental Health Specialist	10	59.27	$593
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$593**
Subtask 2.B. FY 2009-10 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2009-10 work plan and budget covering the planned activities of the Regional Monitoring Workgroup and its sub-workgroups.				
Completion date	November 30, 2008			
Party conducting work	County			
Copermittee hourly costs	Supervising Environmental Health Specialist	25	59.27	$1,482
		0	0	$0
			0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,482**
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2007-08 Regional URMP Annual Report.				
Completion date	November 30, 2008			
Party conducting work	County			
Copermittee hourly costs	Supervising Environmental Health Specialist	4	59.27	$237
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0

D. Monitoring Workgroup and Sub-workgroups

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Other direct costs				$0
Total				**$237**

Subtask 2.D. FY 2008-09 Source Identification Work Plan. Consultant will develop the detailed work plan for the residential source identification project identified in the Source Identification Monitoring Program submitted to the RWQCB on July 1, 2008.

Completion date	April 1, 2009			
Party conducting work	County			
Copermittee hourly costs		0	$0	$0
		0	0	$0
		0	0	$0
Contract costs				$10,000
Contract management costs				$500
Other direct costs				$0
Total				**$10,500**

Subtask 2.E. FY 2009-10 Source Identification Work Plan. Consultant will develop a Source Identification Program Project to satisfy Permit requirements for the 2009-2010 monitoring year and will be submitted with the Scope of Work due September 1, 2009

Completion date	August 1, 2009			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs		0	$0	$0
		0	0	$0
		0	0	$0
Contract costs				$10,000
Contract management costs				$500
Other direct costs				$0
Total				**$10,500**

Subtask 2.F. Targeted Wet Weather MS4 Program. In the June 30, 2008 MS4 Monitoring Program submitted to the RWQCB, Coeprmittees committed to providing the details of the targeted weather portion of the program in 2009. This will be included in the Scope of Work to be submitted to the RWQCB on September 1, 2008.

Completion date	August 1, 2009			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs		0	$0	$0
				$0
				$0
Contract costs				$8,000

D. Monitoring Workgroup and Sub-workgroups

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Contract management costs				$400
Other direct costs				$0
Total				**$8,400**
Task 3 Regional Monitoring Program				
Task 3.A. Regional Monitoring Program. As directed, develop and implement regional monitoring programs and activities to satisfy the requirements of Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001 and other regional initiatives.				
Completion date	Ongoing			
Party conducting work	Consultant (Weston Solutions)			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	Consultant contract administered by County (see Contract 514270); Consultant expenses are invoiced and paid approximately monthly.			$1,900,330
Contract management costs				$95,017
Other direct costs				$0
Total				**$1,995,347**
Task 3.B. Southern California Stormwater Monitoring Coalition. As directed by Copermittees, partner with other municipalities and the RWQCBs in Southern California to improve our understanding of stormwater.				
Completion date	Ongoing			
Party conducting work	Consultants (TBD)			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	Memorandum of Agreement and subsequent research implementation agreements are administered by County; Payments are made approximately annually.			$30,000
Contract management costs				$1,500
Other direct costs				$0
Total				**$31,500**
Task 3.C. Unallocated.				
Completion date	Ongoing			
Party conducting work	Consultants (TBD)			
Copermittee hourly costs		0	$0	$0 $0 $0

D. Monitoring Workgroup and Sub-workgroups

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Contract costs	Nothing assigned to "unallocated" because Task 3.A includes "as-needed" in consultant scope.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**
Total Estimated Cost				**$2,074,122**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

D. Monitoring

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Regional Monitoring Workgroup Meeting Support.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting						
					$0.00	$0.00
					$0.00	$0.00
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.A. Semi-annual Workgroup Update.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.B. FY 2009-10 Work Plan and Budget.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.D. FY 2008-09 Source Identification Work Plan.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.E. FY 2009-10 Source Identification Work Plan.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.F. Targeted Wet Weather MS4 Program.						
					$0.00	$0.00
					$0.00	$0.00

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

Task 3.A. Regional Monitoring Program.		
	$0.00	$0.00
	$0.00	$0.00
Task 3.B. Southern California Stormwater Monitoring Coalition.		
	$0.00	$0.00
	$0.00	$0.00
Subtask 3.C Unallocated		
	$0.00	
	Direct Total	**Loaded total**
Total Mon Expenditures FY 08-09	**$0.00**	**$0.00**

2008-09 Monitoring Workgroup
Expenditure Summary

D. Monitoring
Summary of Expenditures by Task (using direct rates)

	City of Carlsbad	City of La Mesa	City of Santee	Port of San Diego	County of SD	Summary of Tasks
Subtask 1.A. Regional Monitoring Workgroup Meeting Support.					$1,481.75	$1,481.75
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting Support.		$9,891.00	$1,602.13			$11,493.13
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup Meeting Support.	$3,603.75			$5,987.30		$9,591.05
Subtask 2.A. Semi-annual Workgroup Update.						$0.00
Subtask 2.B. FY 2009-10 Work Plan and Budget.					$1,481.75	$1,481.75
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input.			$45.78			$45.78
Subtask 2.D. FY 2008-09 Source Identification Work Plan.					$10,500.00	$10,500.00
Subtask 2.E. FY 2009-10 Source Identification Work Plan.					$10,500.00	$10,500.00
Subtask 2.F. Targeted Wet Weather MS4 Program.					$5,465.25	$5,465.25
Task 3.A. Regional Monitoring Program.					$1,764,529.20	$1,764,529.20
Task 3.B. Southern California Stormwater Monitoring Coalition.					$26,250.00	$26,250.00
Subtask 3.C Unallocated						$0.00
Total Mon Expenditures FY 08-09	**$3,603.75**	**$9,891.00**	**$1,647.90**	**$5,987.30**	**$1,820,207.95**	**$1,841,337.90**

2008-09 Monitoring Workgroup
Expenditure Summary

D. Monitoring
City of Carlsbad

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.C. Coastal Storm Drain Monitoring Sub-							
Elaine Lukey	Env. Program Manager	12.5	$80.05			$1,000.63	$0.00
James Wood	Environmental Specialist II	52	$50.06			$2,603.12	$0.00
						$3,603.75	**$0.00**
						Direct Total	**Loaded total**
Total Mon Expenditures FY 08-09 - City of Carlsbad						**$3,603.75**	**$0.00**

2008-09 Monitoring Workgroup
Expenditure Summary

D. Monitoring
City of La Mesa

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting						
Consultant contract (D-Max 4141-6450)				$9,420.00		
Contract Adminstration Cost				$471.00		
					$9,891.00	$9,891.00
					Direct Total	**Loaded total**
Total Mon Expenditures FY 08-09 - City of La Mesa					**$9,891.00**	**$9,891.00**

2008-09 Monitoring Workgroup
Expenditure Summary

D. Monitoring
City of Santee

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting							
Helen Perry	Program Manager	17.5	$91.55			$1,602.13	$0.00
						$1,602.13	$0.00
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input.							
Helen Perry	Program Manager	0.5	$91.55			$45.78	$0.00
						$45.78	$0.00
						Direct Total	**Loaded total**
Total Mon Expenditures FY 08-09 - City of Santee						**$1,647.90**	**$0.00**

2008-09 Monitoring Workgroup
Expenditure Summary

D. Monitoring
Port of San Diego

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup							
Karen Holman	Senior Environmental Specialist	$54.00	$69.05			$3,728.70	$0.00
Phillip Gibbons	Assistant Environ. Specialist	$46.00	$49.10			$2,258.60	$0.00
						$5,987.30	**$0.00**
						Direct Total	**Loaded total**
Total Mon Expenditures FY 08-09 - Port of San Diego						**$5,987.30**	**$0.00**

2008-09 Monitoring Workgroup
Expenditure Summary

D. Monitoring
County of San Diego

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total
Subtask 1.A. Regional Monitoring Workgroup Meeting						
Jo Ann Weber	Supervising Environ. Specialist	25	$59.27			$1,481.75
						$1,481.75
Subtask 2.B. FY 2009-10 Work Plan and Budget.						
Jo Ann Weber	Supervising Environ. Specialist	25	$59.27			$1,481.75
						$1,481.75
Subtask 2.D. FY 2008-09 Source Identification Work Plan.						
Consultant contract (Weston)					$10,000.00	
Contract Adminstration Cost					$500.00	
						$10,500.00
Subtask 2.E. FY 2009-10 Source Identification Work Plan.						
Consultant contract (Weston)					$10,000.00	
Contract Adminstration Cost					$500.00	
						$10,500.00
Subtask 2.F. Targeted Wet Weather MS4 Program.						
Consultant contract (Weston)					$5,205.00	
Contract Adminstration Cost					$260.25	
						$5,465.25
Task 3.A. Regional Monitoring Program.						
Consultant contract (Weston)					$1,536,963.00	$0.00
Consultant contract (SCCWRP)					$143,541.00	
Contract Adminstration Cost					$84,025.20	
						$1,764,529.20
Task 3.B. Southern California Stormwater Monitoring Coalition.						
Consultant contract (SCCWRP/San Bernardino)					$25,000.00	$0.00
Contract Adminstration Cost					$1,250.00	
						$26,250.00
						Direct Total
Total Mon Expenditures FY 08-09						**$1,820,207.95**

2008-09 Monitoring Workgroup
Expenditure Summary

Loaded total
$0.00
$0.00
$0.00
$0.00
$10,500.00
$10,500.00
$5,465.25
$0.00
$1,764,529.20
$0.00
$26,250.00
Loaded total
$1,817,244.45

H. Municipal Sources Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Municipal Sources Workgroup Meeting Support. Provide ongoing support for Municipal Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	TBD			
Copermittee hourly costs	TBD - Standard budget placeholder for hrs/costs	40	$ 125.00	$5,000
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$5,000**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Municipal Sources Workgroup for the period of July 1 through December 31, 2008.				
Completion date	February 15, 2009			
Party conducting work	TBD			
Copermittee hourly costs	TBD - Standard budget placeholder for hrs/costs	16	$ 125.00	$2,000
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,000**
Subtask 2.B. FY Work Plans and Budgets. Develop for submittal to the Regional Program Planning Subcommittee the FY 2008-09 and FY 2009-10 work plans and budgets covering the planned activities of the Municipal Sources Workgroup.				
Completion date	December 31, 2008			
Party conducting work	TBD			
Copermittee hourly costs	TBD - Standard budget placeholder for hrs/costs	16	$ 125.00	$2,000
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,000**

H. Municipal Sources Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2007-08 Regional URMP Annual Report.				
Completion date	December 30, 2008			
Party conducting work	TBD			
Copermittee hourly costs	TBD - Standard budget placeholder for hrs/costs	16	$ 125.00	$2,000
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,000**
Subtask 2.D. Explore Regional Program Approach. The group will seek to identify portions of the municipal program where workgroup members feel some additional guidance from a regional group might be helpful and develop an approach toward creating such guidance where applicable and feasible. The group will explore whether there may be areas where regional data reporting standardization may be beneficial and feasible for elements of the municipal program. The work product for this task will be a written document listing the areas and approaches identified and developed through the process described above. Further development and implementation of areas identified during this process will also likely continue into FY 09-10.				
Completion date	Draft conceptual plan complete by 6/30/2009			
Party conducting work	TBD			
Copermittee hourly costs	TBD - Standard budget placeholder for hrs/costs	130	$ 125.00	$16,250
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$16,250**
Subtask 2.E. Pilot Program Development and Implementation. Identify potential opportunities for pilot studies pertaining to municipal facilities and/or activities. Opportunities could include BMP tests, regional waste collection efforts, facility enhancements, irrigation control projects, or other ideas. Use of outside parties and/or agencies may be considered as part of this effort.				
Completion date	Ongoing			
Party conducting work	TBD - based on pilot opportunities			
Copermittee hourly costs	TBD - standard budget placeholder for hrs/costs	150	$ 125.00	$18,750
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$18,750**

H. Municipal Sources Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.F. Unallocated.				
Completion date	Ongoing			
Party conducting work	TBD			
Copermittee hourly costs	TBD - standard budget placeholder for hrs/costs	0	$ -	$0
Contract costs	5% of total working body budget generically assigned to contract costs.			$2,306
Contract management costs				$115
Other direct costs				$0
Total				**$2,421**
Total Estimated Cost				**$48,421**

2008-09 Municipal Workgroup
Expenditure Summary

F. Municipal Workgroup

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Municipal Sources Workgroup Meeting Support.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.A. Semi-annual Workgroup Update.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.B. FY 2009-10 Work Plans and Budgets.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.D. Explore Regional Program Approach.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.E. Pilot Program Development and Implementation.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.F Unallocated						
					$0.00	
					Direct Total	**Loaded total**
Total Muni Expenditures FY 08-09					**$0.00**	**$0.00**

2008-09 Municipal Workgroup
Expenditure Summary

F. Municipal Workgroup

	City of Escondido	City National City	City of Del Mar	Summary of Tasks
Subtask 1.A. Municipal Sources Workgroup Meeting Support.	$107.00	$173.25	$257.95	$538.20
Subtask 2.A. Semi-annual Workgroup Update.				$0.00
Subtask 2.B. FY 2009-10 Work Plans and Budgets.	$26.75	$288.75	$154.77	$470.27
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Input				$0.00
Subtask 2.D. Explore Regional Program Approach.				$0.00
Subtask 2.E. Pilot Program Development and Implementation.				$0.00
Subtask 2.F Unallocated				$0.00
Total Muni Expenditures FY 08-09	**$133.75**	**$462.00**	**$412.72**	**$1,008.47**

2008-09 Municipal Workgroup
Expenditure Summary

F. Municipal Workgroup
City of Escondido

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Municipal Sources Workgroup Meeting							
Cheryl Filar	Environmental Manager	2	$53.50			$107.00	$0.00
						$107.00	**$0.00**
Subtask 2.B. FY 2009-10 Work Plans and Budgets.							
Cheryl Filar	Environmental Manager	0.5	$53.50			$26.75	$0.00
						$26.75	**$0.00**
						Direct Total	**Loaded total**
Total Muni Expenditures FY 08-09 - City of Escondido						**$133.75**	**$0.00**

2008-09 Municipal Workgroup
Expenditure Summary

F. Municipal Workgroup
City of National City

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Municipal Sources Workgroup Meeting						
Consultant contract (D-Max)				$165.00		
Contract Adminstration Cost				$8.25		
					$173.25	**$173.25**
Subtask 2.B. FY 2009-10 Work Plans and Budgets.						
Consultant contract (D-Max)				$275.00		
Contract Adminstration Cost				$13.75		
					$288.75	**$288.75**
					Direct Total	**Loaded total**
Total Muni Expenditures FY 08-09 - City of National City					**$462.00**	**$462.00**

2008-09 Municipal Workgroup
Expenditure Summary

F. Municipal Workgroup
City of Del Mar

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Municipal Sources Workgroup Meeting Support.							
Joe DeStefano	Clean Water Manager	2.5	$103.18			$257.95	$0.00
						$257.95	**$0.00**
Subtask 2.B. FY 2009-10 Work Plans and Budgets.							
Joe DeStefano	Clean Water Manager	1.5	$103.18			$154.77	$0.00
						$154.77	**$0.00**
						Direct Total	**Loaded total**
Total Muni Expenditures FY 08-09 - City of Del Mar						**$412.72**	**$0.00**

QUARTERLY BUDGET BALANCE AND EXPENDITURE OVERVIEW
(TO BE COMPLETED BY COUNTY OF SAN DIEGO)

Final 03-09-09

Regional Working Body	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
Program Planning Subcommittee (PPS)	$ 42,021	1st	$0	$0	$0	$ 42,021	$ 42,021
		2nd	$0	$0	$0	$ 42,021	$ 42,021
		3rd	$0	$0	$0	$ 42,021	$ 42,021
		4th	$0	$0	$0	$ 42,021	$ 42,021
		Totals	$0		$0		
Fiscal, Reporting, & Assessment Workgroup	$ 70,200	1st	$0	$0	$0	$ 70,200	$ 70,200
		2nd	$0	$0	$0	$ 70,200	$ 70,200
		3rd	$0	$0	$0	$ 70,200	$ 70,200
		4th	$26,601	$0	$0	$ 43,599	$ 70,200
		Totals	$26,601		$0		
Education and Residential Sources Workgroup	$ 337,702	1st	$0	$0	$0	$ 337,702	$ 337,702
		2nd	$0	$0	$0	$ 337,702	$ 337,702
		3rd	$0	$0	$0	$ 337,702	$ 337,702
		4th	$0	$0	$0	$ 337,702	$ 337,702
		Totals	$0		$0		
Monitoring Workgroup	$ 2,074,122	1st	$0	$0	$0	$ 2,074,122	$ 2,074,122
		2nd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		3rd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		4th	$0	$0	$0	$ 2,074,122	$ 2,074,122
		Totals	$0		$0		
Land Development Workgroup	$ 483,804	1st	$0	$0	$0	$ 483,804	$ 483,804
		2nd	$0	$0	$0	$ 483,804	$ 483,804
		3rd	$0	$0	$0	$ 483,804	$ 483,804
		4th	$0	$0	$0	$ 483,804	$ 483,804
		Totals	$0		$0		
Municipal Sources Workgroup	$ 48,421	1st	$0	$0	$0	$ 48,421	$ 48,421
		2nd	$0	$0	$0	$ 48,421	$ 48,421
		3rd	$0	$0	$0	$ 48,421	$ 48,421
		4th	$0	$0	$0	$ 48,421	$ 48,421
		Totals	$0		$0		
Industrial and Commercial Sources Workgroup	$ 105,700	1st	$0	$0	$0	$ 105,700	$ 105,700
		2nd	$0	$0	$0	$ 105,700	$ 105,700
		3rd	$0	$0	$0	$ 105,700	$ 105,700
		4th	$0	$0	$0	$ 105,700	$ 105,700
		Totals	$0		$0		
Regional WURMP Workgroup	$ 87,731	1st	$0	$0	$0	$ 87,731	$ 87,731
		2nd	$0	$0	$0	$ 87,731	$ 87,731
		3rd	$0	$0	$0	$ 87,731	$ 87,731
		4th	$0	$0	$0	$ 87,731	$ 87,731
		Totals	$0		$0		
Other Expenditures	$ 20,500	1st	$0	$0	$0	$ 20,500	$ 20,500
		2nd	$0	$0	$0	$ 20,500	$ 20,500
		3rd	$0	$0	$0	$ 20,500	$ 20,500
		4th	$0	$0	$0	$ 20,500	$ 20,500
		Totals	$0		$0		
Totals	$ 3,270,201	1st	$0	$0	$0	$ 3,270,201	$ 3,270,201
		2nd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		3rd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		4th	$26,601	$0	$0	$ 3,243,600	$ 3,270,201
		Totals	$26,601		$0		

WORKING BODY EXPENDITURES SUMMARY **Final 03-09-09**
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Regional Working Body: Regional Program Planning Subcommittee

Period: 1st Quarter FY 2008-09 (July 1- Sept. 30, 2008)

Copermittee	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
County of San Diego	$ 39,920	1st	$0	$0	$0	$ 39,920	$ -
		2nd	$0	$0	$0	$ 39,920	$ -
		3rd	$0	$0	$0	$ 39,920	$ -
		4th	$10,878	$0	$0	$ 29,042	$ -
		Totals	$10,878		$0		
Not Assigned		1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -
		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		
Not Assigned		1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -
		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		
Not Assigned		1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -
		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		
Not Assigned		1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -
		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		
Not Assigned		1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -
		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		
Not Assigned		1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -
		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		
		1st	$0	$0	$0	$ -	$ -
		2nd	$0	$0	$0	$ -	$ -

WORKING BODY EXPENDITURES SUMMARY **Final 03-09-09**
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Copermittee	Budgeted	Quarter	Total Expenditures			Account Balances (YTD Totals)	
			Funding Committed				
			Credit Approved	Payment Approved (Pending)	Payment Issued	Uncommitted	Unspent
Not Assigned		3rd	$0	$0	$0	$ -	$ -
		4th	$0	$0	$0	$ -	$ -
		Totals	$0		$0		
Unallocated	$ 2,101	1st	$0	$0	$0	$ 2,101	$ 2,101
		2nd	$0	$0	$0	$ 2,101	$ 2,101
		3rd	$0	$0	$0	$ 2,101	$ 2,101
		4th	$0	$0	$0	$ 2,101	$ 2,101
		Totals	$0		$0		
Working Body Totals	**$ 42,021**	1st	$0	$0	$0	$ 42,021	$ 42,021
		2nd	$0	$0	$0	$ 42,021	$ 42,021
		3rd	$0	$0	$0	$ 42,021	$ 42,021
		4th	$10,878	$0	$0	$ 31,143	$ 42,021
		Totals	$10,878		$0		

A. Regional Program Planning Subcommittee

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Program Planning Subcommittee Meeting Support. Provide ongoing support for Program Planning Subcommittee meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (Bi-monthly)			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	120	77.42	$9,290
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$9,290**
Subtask 1.B. Regional Management Committee Meeting Support. Provide ongoing support for Regional Management Committee meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (Bi-monthly)			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	40	77.42	$3,097
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,097**
Subtask 1.C. Coordination with Working Bodies. Coordinate activities as needed with other Copermittee working bodies.				
Completion date	As needed			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	40	77.42	$3,097
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,097**

A. Regional Program Planning Subcommittee

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. FY 2009-10 Work Plan and Budget. Develop a FY 2009-10 work plan and budget covering the planned activities of the Program Planning Subcommittee.				
Completion date	November 30, 2008			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	10	77.42	$774
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$774**
Subtask 2.B. FY 2009-10 Regional Work Plan and Budget. Develop for submittal to the Regional Management Committee a FY 2009-10 consolidated regional work plan and budget covering the planned activities of all Copermittee regional working bodies.				
Completion date	December 31, 2008			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	40	77.42	$3,097
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,097**
Subtask 2.C. Management Committee Updates. Provide regular updates to the Regional Management Committee via email, presentations, or other means.				
Completion date	February 15, 2009			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	40	77.42	$3,097
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0

A. Regional Program Planning Subcommittee

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Total				**$3,097**
Subtask 2.D. By-laws. Develop for submittal to the Regional Management Committee by-laws for the conduct of all working body meetings.				
Completion date	June 30, 2008			
Party conducting work	County with Consultant Support			
Copermittee hourly costs	Water Quality Program Manager	90	77.42	$6,968
		0	0	$0
		0	0	$0
Contract costs				$10,000
Contract management costs				$500
Other direct costs				$0
Total				**$17,468**
Subtask 2.E. Unallocated.				
Completion date	Ongoing			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$0
		0	0	$0
		0	0	$0
Contract costs	5% of total working body budget generically assigned to contract costs.			$2,001
Contract management costs				$100
Other direct costs				$0
Total				**$2,101**
Total Estimated Cost				**$42,021**

2008-09 Program Planning Subcommittee Workgroup
Expenditure Summary

A. Program Planning Subcommittee

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Program Planning Subcommittee Meeting Support.						
					$0.00	$0.00
					$0.00	**$0.00**
Subtask 1.B. Regional Management Committee Meeting Support.						
					$0.00	$0.00
					$0.00	**$0.00**
Subtask 1.C. Coordination with Working Bodies.						
					$0.00	$0.00
					$0.00	**$0.00**
Subtask 2.A. FY 2009-10 Work Plan and Budget.						
					$0.00	$0.00
					$0.00	**$0.00**
Subtask 2.B. FY 2009-10 Regional Work Plan and Budget.						
					$0.00	$0.00
					$0.00	**$0.00**
Subtask 2.C. Management Committee Updates.						
					$0.00	$0.00
					$0.00	**$0.00**
Subtask 2.D. By-laws.						
					$0.00	$0.00
					$0.00	**$0.00**
Subtask 2.E Unallocated						
					$0.00	**$0.00**
					Direct Total	**Loaded total**
Total PPS Expenditures FY 08-09					**$0.00**	**$0.00**

2008-09 Program Planning Subcommittee Workgroup
Expenditure Summary

A. Program Planning Subcommittee
Summary of Expenditures by Task (using direct rate)

	County of San Diego	Summary of Tasks
Subtask 1.A. Program Planning Subcommittee Meeting Support.	$774.20	$774.20
Subtask 1.B. Regional Management Committee Meeting Support.	$2,012.92	$2,012.92
Subtask 1.C. Coordination with Working Bodies.	$270.97	$270.97
Subtask 2.A. FY 2009-10 Work Plan and Budget.	$851.62	$851.62
Subtask 2.B. FY 2009-10 Regional Work Plan and Budget.	$2,322.60	$2,322.60
Subtask 2.C. Management Committee Updates.		$0.00
Subtask 2.D. By-laws.		$0.00
Subtask 2.E Unallocated		$0.00
Total PPS Expenditures FY 08-09	**$6,232.31**	**$6,232.31**

2008-09 Program Planning Subcommittee Workgroup
Expenditure Summary

2008-09 Program Planning Subcommittee Workgroup
Expenditure Summary

A. Program Planning Subcommittee
County of San Diego

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Program Planning Subcommittee Meeting							
Jon Van Rhyn	Water Quality Program Manager	10	$77.42			$774.20	$0.00
						$774.20	**$0.00**
Subtask 1.B. Regional Management Committee Meeting							
Jon Van Rhyn	Water Quality Program Manager	26	$77.42			$2,012.92	$0.00
						$2,012.92	**$0.00**
Subtask 1.C. Coordination with Working Bodies.							
Jon Van Rhyn	Water Quality Program Manager	3.5	$77.42			$270.97	$0.00
						$270.97	**$0.00**
Subtask 2.A. FY 2009-10 Work Plan and Budget.							
Jon Van Rhyn	Water Quality Program Manager	11	$77.42			$851.62	$0.00
						$851.62	**$0.00**
Subtask 2.B. FY 2009-10 Regional Work Plan and Budget.							
Jon Van Rhyn	Water Quality Program Manager	30	$77.42			$2,322.60	$0.00
						$2,322.60	**$0.00**
						Direct Total	**Loaded total**
Total PPS Expenditures FY 08-09						**$6,232.31**	**$0.00**

QUARTERLY BUDGET BALANCE AND EXPENDITURE OVERVIEW
(TO BE COMPLETED BY COUNTY OF SAN DIEGO)

Final 03-09-09

Regional Working Body	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
Program Planning Subcommittee (PPS)	$ 42,021	1st	$0	$0	$0	$ 42,021	$ 42,021
		2nd	$0	$0	$0	$ 42,021	$ 42,021
		3rd	$0	$0	$0	$ 42,021	$ 42,021
		4th	$0	$0	$0	$ 42,021	$ 42,021
		Totals	$0		$0		
Fiscal, Reporting, & Assessment Workgroup	$ 70,200	1st	$0	$0	$0	$ 70,200	$ 70,200
		2nd	$0	$0	$0	$ 70,200	$ 70,200
		3rd	$0	$0	$0	$ 70,200	$ 70,200
		4th	$26,601	$0	$0	$ 43,599	$ 70,200
		Totals	$26,601		$0		
Education and Residential Sources Workgroup	$ 337,702	1st	$0	$0	$0	$ 337,702	$ 337,702
		2nd	$0	$0	$0	$ 337,702	$ 337,702
		3rd	$0	$0	$0	$ 337,702	$ 337,702
		4th	$0	$0	$0	$ 337,702	$ 337,702
		Totals	$0		$0		
Monitoring Workgroup	$ 2,074,122	1st	$0	$0	$0	$ 2,074,122	$ 2,074,122
		2nd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		3rd	$0	$0	$0	$ 2,074,122	$ 2,074,122
		4th	$0	$0	$0	$ 2,074,122	$ 2,074,122
		Totals	$0		$0		
Land Development Workgroup	$ 483,804	1st	$0	$0	$0	$ 483,804	$ 483,804
		2nd	$0	$0	$0	$ 483,804	$ 483,804
		3rd	$0	$0	$0	$ 483,804	$ 483,804
		4th	$0	$0	$0	$ 483,804	$ 483,804
		Totals	$0		$0		
Municipal Sources Workgroup	$ 48,421	1st	$0	$0	$0	$ 48,421	$ 48,421
		2nd	$0	$0	$0	$ 48,421	$ 48,421
		3rd	$0	$0	$0	$ 48,421	$ 48,421
		4th	$0	$0	$0	$ 48,421	$ 48,421
		Totals	$0		$0		
Industrial and Commercial Sources Workgroup	$ 105,700	1st	$0	$0	$0	$ 105,700	$ 105,700
		2nd	$0	$0	$0	$ 105,700	$ 105,700
		3rd	$0	$0	$0	$ 105,700	$ 105,700
		4th	$0	$0	$0	$ 105,700	$ 105,700
		Totals	$0		$0		
Regional WURMP Workgroup	$ 87,731	1st	$0	$0	$0	$ 87,731	$ 87,731
		2nd	$0	$0	$0	$ 87,731	$ 87,731
		3rd	$0	$0	$0	$ 87,731	$ 87,731
		4th	$0	$0	$0	$ 87,731	$ 87,731
		Totals	$0		$0		
Other Expenditures	$ 20,500	1st	$0	$0	$0	$ 20,500	$ 20,500
		2nd	$0	$0	$0	$ 20,500	$ 20,500
		3rd	$0	$0	$0	$ 20,500	$ 20,500
		4th	$0	$0	$0	$ 20,500	$ 20,500
		Totals	$0		$0		
Totals	$ 3,270,201	1st	$0	$0	$0	$ 3,270,201	$ 3,270,201
		2nd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		3rd	$0	$0	$0	$ 3,270,201	$ 3,270,201
		4th	$26,601	$0	$0	$ 3,243,600	$ 3,270,201
		Totals	$26,601		$0		

WORKING BODY EXPENDITURES SUMMARY **Final 03-09-09**
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Regional Working Body: Regional WURMP Workgroup

Period: 4th Quarter FY 2008-09 (April 1- June 30, 2009)

Copermittee	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
County of San Diego	$ 16,171	1st	$169	$0	$0	$ 1,206	$ 1,375
		2nd	$2,739	$0	$0	$ (1,532)	$ 1,375
		3rd	$618	$0	$0	$ (2,150)	$ 1,375
		4th	$0	$0	$0	$ (2,150)	$ 1,375
		Totals	$3,525.19		$0		
City of San Marcos	$ 64,192	1st	$0	$0	$0	$ 1,375	$ 1,375
		2nd	$0	$0	$0	$ 1,375	$ 1,375
		3rd	$588	$0	$0	$ 788	$ 1,375
		4th	$23,773	$0	$0	$ (22,985)	$ 1,375
		Totals	$24,360.00		$0		
City of Carlsbad	$ 1,608	1st	$0	$0	$0	$ 1,375	$ 1,375
		2nd	$0	$0	$0	$ 1,375	$ 1,375
		3rd	$0	$0	$0	$ 1,375	$ 1,375
		4th	$0	$0	$0	$ 1,375	$ 1,375
		Totals	$0.00		$0		
City of Escondido	$ 1,375	1st	$0	$0	$0	$ 1,375	$ 1,375
		2nd	$0	$0	$0	$ 1,375	$ 1,375
		3rd	$0	$0	$0	$ 1,375	$ 1,375
		4th	$0	$0	$0	$ 1,375	$ 1,375
		Totals	$0		$0		
Unallocated	$ 4,387	1st	$0	$0	$0	$ 4,387	$ 4,387
		2nd	$0	$0	$0	$ 4,387	$ 4,387
		3rd	$0	$0	$0	$ 4,387	$ 4,387
		4th	$0	$0	$0	$ 4,387	$ 4,387
		Totals	$0		$0		
Working Body Totals	**$ 87,733**	1st	$169	$0	$0	$9,718	$9,887
		2nd	$2,739	$0	$0	$6,980	$9,887
		3rd	$1,205	$0	$0	$5,774	$9,887
		4th	$23,773	$0	$0	-$17,998	$9,887
		Totals	$27,885		$0		

H. Regional WURMP Workgroup (FY 2008-09)

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Regional WURMP Workgroup Meeting Support. Provide ongoing support for Regional WURMP Workgroup meetings (researching and developing written materials, preparing presentations, etc).				
Completion date	Ongoing			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Environmental Planning Manager	20	$ 72.20	$1,444
	Land Use / Environmental Planner III	20	$ 63.43	$1,269
		0	$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,713**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. FY 2007-08 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2007-08 Regional URMP Annual Report.				
Completion date	December 30, 2008			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Environmental Planning Manager	10	$ 72.20	$722
			$ -	$0
			$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$722**
Subtask 2.B. Semi-annual Workgroup Update. Provide, as requested by the Program Planning Subcommittee, a written update describing the key activities and accomplishments of the Regional WURMP Workgroup for the period of July 1 through December 31, 2008.				
Completion date	February 15, 2009			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Environmental Planning Manager	4	$ 72.20	$289
			$ -	$0
			$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$289**

H. Regional WURMP Workgroup (FY 2008-09)

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. Watershed Activities Database. Develop a database of watershed activities currently being implemented or planned throughout the San Diego region. Develop a template or form to be used to populate the database, which will be used as a tool for sharing information about pilot projects and other relevant watershed activities across watershed groups. The template/form will include information on activity type, pollutants addressed, pollutant sources addressed, effectiveness measurements, costs, staff burden, and other data to be determined.				
Completion date	March 15, 2009			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Environmental Planning Manager	20	$ 72.20	$1,444
	Land Use / Environmental Planner III	120	$ 63.43	$7,612
			$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$9,056**
Subtask 2.D. Development of Watershed Program Approach. Correspondence and coordination with RWQCB staff in response to the comments and recommendations contained in the RWQCB's WURMP correspondence dated September 23, 2008. Activities may include coordination of meetings between RWQCB staff and Copermittees, communication with RWQCB on potential revisions to Permit language and/or WURMP Annual Reporting procedures as determined necessary.				
Completion date	June 30, 2009			
Party conducting work	County of San Diego, City of Carlsbad, and City of Escondido			
Copermittee hourly costs	Land Use / Environmental Planning Manager (County)	25	$ 72.20	$1,805
	Land Use / Environmental Planner III (County)	25	$ 63.43	$1,586
	Environmental Programs Manager (City of Carlsbad)	25	$ 64.31	$1,608
	Environmental Programs Manager (City of Escondido)	25	$ 55.00	$1,375
			$ -	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$6,374**
Subtask 2.E. Consistent Approaches to TMDL Implementation Planning. Develop a regional template or strategy to encourage consistent approaches to TMDL implementation planning across watersheds.				
Completion date	December 1, 2009			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs			$ -	$0
			$ -	$0
			$ -	$0
Contract costs				$61,135
Contract management costs				$3,057
Other direct costs				$0

H. Regional WURMP Workgroup (FY 2008-09)

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Total				**$64,192**
Subtask 2.F. Unallocated.				
Completion date	Ongoing			
Party conducting work	TBD			
Copermittee hourly costs			$ -	$0
			$ -	$0
			$ -	$0
Contract costs	5% of total working body budget generically assigned to contract costs.			$4,178
Contract management costs				$209
Other direct costs	4387			$0
Total				**$4,387**
Total Estimated Cost				**$87,731**

2008-09 Regional WURMP Workgroup
Expenditure Summary

H. Regional WURMP Workgroup

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Regional WURMP Workgroup Meeting Support.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.A. FY 2007-08 Regional URMP Annual Report Input.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.B. Semi-annual Workgroup Update.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.C. Watershed Activities Database.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.D. Development of Watershed Program Approach.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.E. Consistent Approaches to TMDL Implementation Planning.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.F Unallocated						
					$0.00	
					Direct Total	**Loaded total**
Total WURMP Expenditures FY 08-09					**$0.00**	**$0.00**

2008-09 Regional WURMP Workgroup
Expenditure Summary

H. Regional WURMP Workgroup

	City of San Marcos	County of San Diego	Summary of Tasks
Subtask 1.A. Regional WURMP Workgroup Meeting Support.		$337.10	$337.10
Subtask 2.A. FY 2007-08 Regional URMP Annual Report Input.		$134.84	$134.84
Subtask 2.B. Semi-annual Workgroup Update.		$134.84	$134.84
Subtask 2.C. Watershed Activities Database.		$2,737.91	$2,737.91
Subtask 2.D. Development of Watershed Program Approach.		$180.50	$180.50
Subtask 2.E. Consistent Approaches to TMDL Implementation Planning.	$24,360.00		$24,360.00
Subtask 2.F Unallocated			$0.00
Total WURMP Expenditures FY 08-09	**$24,360.00**	**$3,525.19**	**$27,885.19**

2008-09 Regional WURMP Workgroup
Expenditure Summary

H. Regional WURMP Workgroup
City of San Marcos

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 2.E. Consistent Approaches to TMDL Implementation Planning.						
Contract (MOA PO 32745)				$24,360.00		
Contract Adminstration Cost						
					$24,360.00	**$24,360.00**
					Direct Total	**Loaded total**
Total WURMP Expenditures FY 08-09 - City of San Marcos					**$24,360.00**	**$24,360.00**

2008-09 Regional WURMP Workgroup
Expenditure Summary

H. Regional WURMP Workgroup
County of San Diego

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Regional WURMP Workgroup Meeting							
Todd Snyder	Land Use/Evn. Manager	5	$67.42			$337.10	$0.00
						$337.10	**$0.00**
Subtask 2.A. FY 2007-08 Regional URMP Annual Report							
Todd Snyder	Land Use/Evn. Manager	2	$67.42			$134.84	$0.00
						$134.84	**$0.00**
Subtask 2.B. Semi-annual Workgroup Update.							
Todd Snyder	Land Use/Evn. Manager	2	$67.42			$134.84	$0.00
						$134.84	**$0.00**
Subtask 2.C. Watershed Activities Database.							
Todd Snyder	Land Use/Evn. Manager	4.5	$67.42			$303.39	$0.00
Scott Norris	Land Use/Evn. Planner I	60.5	$40.24			$2,434.52	$0.00
						$2,737.91	**$0.00**
Subtask 2.D. Development of Watershed Program							
Todd Snyder	Land Use/Evn. Manager	2.5	$72.20			$180.50	$0.00
						$180.50	**$0.00**
						Direct Total	**Loaded total**
Total WURMP Expenditures FY 08-09 - County of San Diego						**$3,525.19**	**$0.00**

2008-09 Education and Residential Sources Workgroup

Expenditure Summary

C. Education and Residential Sources Workgroup

Summary of Expenditures by Task (using direct rate)

	City of Oceanside	City of SD	County of SD	Port of SD	City of Encinitas	City of Escondido	Summary of Tasks
Task 1 Meeting Support		$232.20					$232.20
Subtask 2.B. FY Work Plans and Budgets	$1,052.47	$232.20	$889.05				$2,173.72
Subtask 2.D. FY2007-08 Regional URMP Annual Report		$464.40					$464.40
Subtask 3.A Materials Development and Distribution	$218.20					$892.50	$1,110.70
Subtask 3.B. Partnership Development			$325.99				$325.99
Subtask 3.C. Regional Brand		$14,979.66					$14,979.66
Subtask 3.D. Market Research and Assessment Tools		$62,943.12					$62,943.12
Subtask 3.E. Regional Website		$4,814.10		$162.30			$4,976.40
Subtask 3.G. Mass Media and Public Relations		$121,940.88					$121,940.88
Subtask 3.H. Regional Events	$38.51	$1,119.78	$118.54		$100.17		$1,377.00
Subtask 3.I Unallocated	$2,606.64		$1,750.00				$4,356.64
Total ERS Expenditures FY 08-09	**$3,915.82**	**$206,726.34**	**$3,083.58**	**$162.30**	**$100.17**	**$892.50**	**$214,880.71**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

C. Education and Residential Source Workgroup
City of Escondido

	Job Clasification	Hours Charged	Direct Rate	Loaded Rate	Direct Costs	Direct Total	Loaded total
Subtask 3.A Materials Development and Distribution							
Debbie Jarden	Program Coordinator	25.5	$35.00			$892.50	$0.00
						$892.50	**$0.00**
						Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09 - City of Escondido						**$892.50**	**$0.00**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

C. Education and Residential Source Workgroup
City of Encinitas

	Job Clasification	Hours Charged	Direct Rate	Loaded Rate	Direct Costs	Direct Total	Loaded total
Subtask 3.H. Regional Events							
Kristy Rygiel	Program Assistant	3.5	$28.62			$100.17	$0.00
						$100.17	**$0.00**
						Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09 - City of Encinitas						**$100.17**	**$0.00**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

C. Education and Residential Source Workgroup
Port of San Diego

	Job Clasification	Hours Charged	Direct Rate	Loaded Rate	Direct Costs	Direct Total	Loaded total
Subtask 3.E. Regional Website							
Kelly Makely	Associate Environ. Specialist	3	$54.10			$162.30	$0.00
						$162.30	**$0.00**
						Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09 - Port of San Diego						**$162.30**	**$0.00**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

C. Education and Residential Source Workgroup
County of San Diego

	Job Clasification	Hours Charged	Direct Rate	Loaded Rate	Direct Costs	Direct Total	Loaded total
Subtask 2.B. FY Work Plans and Budgets							
Rachel Borgatti	Program Coordinator	15	$59.27			$889.05	$0.00
						$889.05	**$0.00**
Subtask 3.B. Partnership Development							
Rachel Borgatti	Program Coordinator	5.5	$59.27			$325.99	$0.00
						$325.99	**$0.00**
Subtask 3.H. Regional Events							
Rachel Borgatti	Program Coordinator	2	$59.27			$118.54	$0.00
						$118.54	**$0.00**
Subtask 3.I Unallocated							
Booth fees - Independence Jam					$750.00		
Sponsorship- movies in the park					$1,000.00		
						$1,750.00	**$1,750.00**
						Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09 - County of San Diego						**$3,083.58**	**$1,750.00**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

C. Education and Residential Source Workgroup
City of San Diego

	Job Clasification	Hours Charged	Direct Rate	Loaded Rate	Direct Costs	Direct Total	Loaded Total
Subtask 1.A Meeting Support							
Jennifer Nichols Kerns	Public Information Officer	5	$46.44			$232.20	$0.00
						$232.20	**$0.00**
Subtask 2.B. FY Work Plans and Budgets							
Jennifer Nichols Kerns	Public Information Officer	5	$46.44			$232.20	$0.00
						$232.20	**$0.00**
Subtask 2.D. FY2007-08 Regional URMP Annual Report							
Jennifer Nichols Kerns	Public Information Officer	10	$46.44			$464.40	$0.00
						$464.40	**$0.00**
Subtask 3.C. Regional Brand							
Jennifer Nichols Kerns	Public Information Officer	55	$46.44			$2,554.20	$0.00
Tim Graham	Public Information Officer	9	$46.44			$417.96	$0.00
Consultant contract (Contract RQ09 9205592)					$12,007.50		
Contract Adminstration Cost							
						$14,979.66	**$12,007.50**
Subtask 3.D. Market Research and Assessment Tools							
Jennifer Nichols Kerns	Public Information Officer	23	$46.44			$1,068.12	$0.00
Consultant contract (Contract GOS 15006349)					$61,875.00		
Contract Adminstration Cost							
						$62,943.12	**$61,875.00**
Subtask 3.E. Regional Website							
Tim Graham	Public Information Officer	2.5	$46.44			$116.10	$0.00
Consultant contract (Contract RQ09 9205592)					$4,698.00		
Contract Adminstration Cost							
						$4,814.10	**$4,698.00**
Subtask 3.G. Mass Media and Public Relations							
Jennifer Nichols Kerns	Public Information Officer	1	$46.44			$46.44	$0.00
Tim Graham	Public Information Officer	8	$46.44			$371.52	$0.00
Contract (media time)					$121,522.92		
Contract Adminstration Cost							
						$121,940.88	**$121,522.92**
Subtask 3.H. Regional Events							
Jennifer Nichols Kerns	Public Information Officer	20	$46.44			$928.80	$0.00
Shannon Johnson	Public Information Officer	4.5	$42.44			$190.98	$0.00
						$1,119.78	**$0.00**
						Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09 - City of San Diego						**$206,726.34**	**$200,103.42**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

C. Education and Residential Source Workgroup
City of Oceanside

	Job Clasification	Hours Charged	Direct Rate	Loaded Rate	Direct Costs	Direct Total	Loaded total
Subtask 2.B. FY Work Plans and Budgets							
Cynthia Mallett	Environmental Specialist 1	20.5	$ 51.34			$ 1,052.47	$ -
						$1,052.47	**$0.00**
Subtask 3.A Materials Development and Distribution							
Cynthia Mallett	Environmental Specialist 1	4.25	$ 51.34			$ 218.20	$ -
						$218.20	**$0.00**
Subtask 3.H. Regional Events							
Cynthia Mallett	Environmental Specialist 1	0.75	$ 51.34			$ 38.51	$ -
						$38.51	**$0.00**
Subtask 3.I Unallocated							
pet waste bags					$1,309.80		
pencils					$1,296.84		
						$2,606.64	**$2,606.64**

	Direct Total	Loaded total
Total ERS Expenditures FY 08-09 - City of Oceanside	**$3,915.81**	**$2,606.64**

C. Education and Residential Sources Workgroup FY 2009-10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support. Provide ongoing support for Education and Residential Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (quarterly)			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist I - Oceanside	20	51.34	$1,027
	Environmental Program Manager - Imperial Beach	20	53.41	$1,068
	Environmental Staff Assistant - Airport Authority	20	40.50	$810
Contract costs	N/A			$0
Contract management costs	N/A			$0
Other direct costs				$0
Total				**$2,905**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Education and Residential Sources Workgroup for the period of January 1 through June 30, 2009 and July 1 through December 31, 200				
Completion date	8/15/2009 and 02/15/2010			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist I - Oceanside	15	51.34	$770
	Environmental Program Manager - Imperial Beach	15	53.41	$801
	Environmental Staff Assistant - Airport Authority	15	40.50	$608
Contract costs	N/A			$0
Contract management costs	N/A			$0
Other direct costs				$0
Total				**$2,179**
Subtask 2.B. Work Plans and Budgets. Develop for submittal to the Regional Program Planning Subcommittee a FY 2010-11 work plan and budget covering the planned activities of the Education and Residential Sources Workgroup.				
Completion date	November 30, 2009			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist I - Oceanside	10	51.34	$513
	Environmental Program Manager - Imperial Beach	10	53.41	$534
	Environmental Staff Assistant - Airport Authority	5	27.00	$135
Contract costs	N/A			$0
Contract management costs	N/A			$0
Other direct costs	N/A			$0
Total				**$1,183**

C. Education and Residential Sources Workgroup FY 2009-10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. Regional Reporting and Assessment Standards. Review and modify as needed general reporting and assessment standards developed by the Fiscal, Reporting, and Assessment Workgroup to facilitate consistency in and integration of educational resu				
Completion date	November 30, 2009			
Party conducting work	County of San Diego and the City of Oceanside			
Copermittee hourly costs	Supervising Environmental Health Specialist	4	59.27	$237
	Environmental Specialist I - Oceanside	4	51.34	$205
				$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$442**
Subtask 2.D. FY Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2008-09 Regional URMP Annual Report.				
Completion date	November 30, 2009			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist I - Oceanside	25	51.34	$1,284
	Environmental Program Manager-Imperial Beach	25	42.99	$1,075
	Environmental Staff Assistant - Airport Authority	10	27.00	$270
Contract costs	City of Oceanside is lead.			$10,000
Contract management costs				$500
Other direct costs				$0
Total				**$13,128**
Subtask 2.E. Regional Program Approach. Revise and update the regional program approach for the management of residential sources for submittal to the Regional Program Planning Subcommittee.				
Completion date	August 1, 2009			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	Environmental Specialist I - Oceanside	30	51.34	$1,540
	Environmental Program Manager-Imperial Beach	30	42.99	$1,290
	Environmental Staff Assistant - Airport Authority	30	27.00	$810
Contract costs	City of Oceanside is lead.			$5,000
Contract management costs				$250
Other direct costs				$0
Total				**$8,890**

C. Education and Residential Sources Workgroup FY 2009-10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 3 Regional Residential Education Program				
Sub-task 3.A. Materials Development and Distribution. Development of regional education outreach materials for dissemination to the public will utilize a regional brand and will target pollutants outlined in the Regional Residential Education Plan (RURMP				
Completion date	June 30, 2010			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	Environmental Specialist I - Oceanside	72	51.34	$3,696
	Program Coordinator - Escondido	50	35.00	$1,750
				$0
Contract costs	City of Oceanside is lead.			$76,500
Contract management costs				$3,825
Other direct costs				$0
Total				**$85,771**
Subtask 3.B. Partnership Development. Continue identifying new partners and support current partners that have a regional influence in the following categories: 1) Other governmental agencies; 2) Corporations; and 3) Non-governmental Agencies (NGOs). Re				
Completion date	June 30, 2010			
Party conducting work	County of San Diego			
Copermittee hourly costs	Supervising Enviro. Health Specialist - County	65	59.27	$3,853
	Environmental Health Specialist III	20	53.78	$1,076
				$0
Contract costs	County is lead.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$4,928**
Subtask 3.C. Regional Branding. Manage Regional Branding Program				
Completion date	Ongoing			
Party conducting work	City of San Diego is lead. Consultant: MJE Marketing			
Copermittee hourly costs	3.C.1. City of SD, Sr. PIO	20	$46.44	$929
				$0
				$0
Contract costs	City of San Diego is lead.			$3,500
Contract management costs				$175
Other direct costs				$0
Total				**$4,604**

C. Education and Residential Sources Workgroup FY 2009-10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 3.D. Market Research and Assessment Tools. 3.D.1. Telephone Survey: Follow up on telephone survey to assess storm water knowledge and program awareness. **3.D.2. Event Survey:** Utilize Year 1 regional outreach event survey data and other input. Rev				
Completion date	June 30, 2010			
Party conducting work	City of San Diego is lead. Consultant: Goodwin Simon Victoria Research			
Copermittee hourly costs	3. D. 1. Sr. Public Info. Officer - City of SD 3.D.2. Sr. Public Info. Officer - City of SD	20 30	$46.44 $46.44	$929 $1,393 $0
Contract costs	City of San Diego is lead. Consultant: Goodwin Simon Victoria Research/Action Research			$51,000
Contract management costs	City of San Diego is lead.			$2,550
Other direct costs				$0
Total				**$55,872**
Subtask 3.E. Regional Website. Ongoing updating and maintenance of regional website.				
Completion date	Ongoing			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	Sr. Public Information Officer-City of SD Associate Environmental Specialist - Port of SD	48 48	46.44 $54.10	$2,229 $2,597 $0
Contract costs	City of San Diego and Port are leads.			$10,000
Contract management costs				$500
Other direct costs				$0
Total				**$15,326**
Subtask 3.F. Underserved Target Audience. Develop and implement outreach strategies and materials to address low socioeconomic communities . 3.F.1. Identify low socioeconomic communities and other underserved target residential audiences, i.e., Spanish-sp				
Completion date	Ongoing			
Party conducting work	Cities of Imperial Beach and El Cajon			
Copermittee hourly costs	Environmental Program Manager - Imperial Beach Code Compliance Officer - El Cajon	58 40	42.99 39.70 0	$2,493 $1,588 $0
Contract costs	City of Imperial Beach is lead.			$7,500
Contract management costs				$375

C. Education and Residential Sources Workgroup FY 2009-10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Other direct costs				$0
Total				**$11,956**
Subtask 3.G. Mass Media Campaign. Develop and implement Mass Media and PR campaign. **3.G.1**. Media Placement: Research and secure media placement for Regional program. **3.G.2.** Public Relations: Advertise, hire and manage consultant firm to initiate press r				
Completion date	Ongoing			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	3.G.1. Sr. Public Information Officer - City of San Diego 3.G.2 Sr. Public Information Officer - City of San Diego	60 75	$46.44 $46.44	$2,786 $3,483 $0
Contract costs	City of San Diego is lead.			$100,000
Contract management costs				$5,000
Other direct costs				$0
Total				**$111,269**
Subtask 3.H. Regional Events. Coordinate community outreach events throughout San Diego County				
Completion date	Ongoing			
Party conducting work	County of San Diego			
Copermittee hourly costs	Supervising Enviro. Health Specialist - County	40	59.27	$2,371 $0 $0
Contract costs				
Contract management costs				$0
Other direct costs				$0
Total				**$2,371**
Subtask 3.G. Unallocated. Coordinate community outreach events throughout San Diego County				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0 0 0	0 0 0	$0 $0 $0
Contract costs				
Contract management costs				$0
Other direct costs				$0
Total				**$0**

C. Education and Residential Sources Workgroup FY 2009-10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Total Estimated Cost				**$320,825**

WORKING BODY EXPENDITURES SUMMARY **Final 03-09-09**
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Regional Working Body: Education and Residential Sources Workgroup

Period: 1st Quarter FY 2008-09 (July 1- Sept. 30, 2008)

Copermittee	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
City of Oceanside	$ 17,431	1st	$0	$0	$0	$ 17,431	$ 6,411
		2nd	$0	$0	$0	$ 17,431	$ 6,411
		3rd	$873	$0	$0	$ 16,558	$ 6,411
		4th	$3,043	$0	$0	$ 13,515	$ 6,411
		Totals	$3,916		$0		
City of Imperial Beach	$ 28,325	1st	$0	$0	$0	$ 28,325	$ 6,411
		2nd	$0	$0	$0	$ 28,325	$ 6,411
		3rd	$0	$0	$0	$ 28,325	$ 6,411
		4th	$0	$0	$0	$ 28,325	$ 6,411
		Totals	$0		$0		
Regional Airport Authority	$ 1,620	1st	$0	$0	$0	$ 1,620	$ 6,411
		2nd	$0	$0	$0	$ 1,620	$ 6,411
		3rd	$0	$0	$0	$ 1,620	$ 6,411
		4th	$0	$0	$0	$ 1,620	$ 6,411
		Totals	$0		$0		
County of San Diego	$ 6,411	1st	$0	$0	$0	$ 6,411	$ 6,411
		2nd	$0	$0	$0	$ 6,411	$ 6,411
		3rd	$326	$0	$0	$ 6,085	$ 6,411
		4th	$2,758	$0	$0	$ 3,327	$ 6,411
		Totals	$3,084		$0		
City of Escondido	$ 12,250	1st	$0	$0	$0	$ 12,250	$ 12,250
		2nd	$0	$0	$0	$ 12,250	$ 12,250
		3rd	$0	$0	$0	$ 12,250	$ 12,250
		4th	$893	$0	$0	$ 11,358	$ 12,250
		Totals	$893		$0		
City of San Diego	$ 225,213	1st	$0	$0	$0	$ 225,213	$ 12,250
		2nd	$0	$0	$0	$ 225,213	$ 12,250
		3rd	$136,298	$0	$0	$ 88,915	$ 12,250
		4th	$70,428	$0	$0	$ 18,487	$ 12,250
		Totals	$206,726		$0		
City of Encinitas	$ 143	1st	$0	$0	$0	$ 143	$ 12,250
		2nd	$0	$0	$0	$ 143	$ 12,250
		3rd	$0	$0	$0	$ 143	$ 12,250
		4th	$100	$0	$0	$ 43	$ 12,250
		Totals	$100		$0		
		1st	$0	$0	$0	$ 2,597	$ 12,250
		2nd	$0	$0	$0	$ 2,597	$ 12,250

WORKING BODY EXPENDITURES SUMMARY **Final 03-09-09**
(TO BE COMPLETED BY WORKING BODY BUDGET MANAGER)

Copermittee	Budgeted	Quarter	Total Expenditures: Funding Committed: Credit Approved	Total Expenditures: Funding Committed: Payment Approved (Pending)	Total Expenditures: Payment Issued	Account Balances (YTD Totals): Uncommitted	Account Balances (YTD Totals): Unspent
Port of San Diego	$ 2,597	3rd	$0	$0	$0	$ 2,597	$ 12,250
		4th	$162	$0	$0	$ 2,435	$ 12,250
		Totals	$162		$0		
City of El Cajon	$ 1,588	1st	$0	$0	$0	$ 1,588	$ 1,588
		2nd	$0	$0	$0	$ 1,588	$ 1,588
		3rd	$0	$0	$0	$ 1,588	$ 1,588
		4th	$0	$0	$0	$ 1,588	$ 1,588
		Totals	$0		$0		
Unallocated	$ 41,075	1st	$0	$0	$0	$ 41,075	$ 41,075
		2nd	$0	$0	$0	$ 41,075	$ 41,075
		3rd	$0	$0	$0	$ 41,075	$ 41,075
		4th	$0	$0	$0	$ 41,075	$ 41,075
		Totals	$0		$0		
Working Body Totals	**$ 336,653**	1st	$0	$0	$0	$ 336,653	$ 336,653
		2nd	$0	$0	$0	$ 336,653	$ 336,653
		3rd	$137,497	$0	$0	$ 199,156	$ 336,653
		4th	$77,384	$0	$0	$ 121,772	$ 336,653
		Totals	$214,881		$0		

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

C. Education and Residential Source Workgroup

	Budgeted	Invoiced	Amt Different	Balance
Task 1 Meeting Support				
Subtask 1.A Meeting Support	**$3,137.00**			
Oceanside	$1,027.00	$0.00	$1,027.00	
Imperial Beach	$1,068.00	$0.00	$1,068.00	
Airport Authority	$810.00	$0.00	$810.00	
City of San Diego	$232.20	$232.20	$0.00	
				$2,904.80
Task 1 Balance				**$2,904.80**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A Semi-annual Workgroup Update	**$1,452.00**	$0.00	$1,452.00	
Oceanside	$513.00	$0.00	$513.00	
Imperial Beach	$534.00	$0.00	$534.00	
Airport Authority	$405.00	$0.00	$405.00	
				$1,452.00
Subtask 2.B. FY Work Plans and Budgets	**$2,785.00**			
Oceanside	$1,027.00	$1,052.47	$25.47	
Imperial Beach	$0.00	$0.00	$0.00	
Airport Authority	$405.00	$0.00	$405.00	
City of San Diego	$464.00	$232.20	$231.80	
County of San Diego	$889.00	$889.05	$0.05	
				$611.28
Subtask 2.C. Regional Reporting and Assessment Standards	**$0.00**			
				$0.00
Subtask 2.D. FY2007-08 Regional URMP Annual Report	**$11,477.00**			
Oceanside	$513.00	$0.00	$513.00	
City of San Diego	$464.00	$464.40	$0.40	
Consultant - Oceanside	$10,000.00	$0.00	$10,000.00	
Consultant mark up 5%	$500.00	$0.00	$500.00	
				$11,012.60
Subtask 2.E. Regional Program Approach	**$0.00**			
				$0.00
Task 2 Balance				**$13,075.88**

2008-09 Education and Residential Sources Workgroup

Expenditure Summary

	Budgeted	Invoiced	Amt Different	Balance
Task 3. Regional Residential Educaiton Program				
Subtask 3.A Materials Development and Distribution	**$15,844.00**			
Oceanside	$3,594.00	$218.20	$3,375.80	
Escondido	$1,750.00	$892.50	$857.50	
Consultant -Escondido	$10,000.00	$0.00	$10,000.00	
Consultant mark up 5%	$500.00	$0.00	$500.00	
				$14,733.30
Subtask 3.B. Partnership Development	**$4,929.00**			
County of San Diego	$4,929.00	$325.99	$4,603.01	
				$4,603.01
Subtask 3.C. Regional Brand	**$12,615.00**			
City of San Diego	$2,787.00	$2,972.16	$185.16	
Consultant - City of SD	$9,360.00	$12,007.50	$2,647.50	
Consultant mark up 5%	$468.00	$0.00	$468.00	
				($2,364.66)
Subtask 3.D. Market Research and Assessment Tools	**$91,572.00**			
City of San Diego	$2,322.00	$1,068.12	$1,253.88	
Consultant - City of SD	$85,000.00	$61,875.00	$23,125.00	
Consultant mark up 5%	$4,250.00	$0.00	$4,250.00	
				$28,628.88
Subtask 3.E. Regional Website	**$15,326.00**			
City of San Diego	$2,229.00	$116.10	$2,112.90	
Port of San Diego	$2,597.00	$162.30	$2,434.70	
Consultant - City of SD	$10,000.00	$4,698.00	$5,302.00	
Consultant mark up 5%	$500.00	$0.00	$500.00	
				$10,349.60
Subtask 3.F. Underserved Target Audience	$28,311.00			
Imperial Beach	$3,098.00	$0.00	$3,098.00	
El Cajon	$1,588.00	$0.00	$1,588.00	
Consultant - City of IB	$22,500.00	$0.00	$22,500.00	
Consultant mark up 5%	$1,125.00	$0.00	$1,125.00	
				$28,311.00
Subtask 3.G. Mass Media and Public Relations	**$106,208.00**			
City of San Diego	$1,208.00	$417.96	$790.04	
Consultant - City of SD	$100,000.00	$121,522.92	$21,522.92	
Consultant mark up 5%	$5,000.00	$0.00	$5,000.00	
				($15,732.88)

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

	Budgeted	Invoiced	Amt Different	Balance
Subtask 3.H. Regional Events	$2,972.00			
County of San Diego	$593.00	$118.54	$474.46	
City of San Diego	$929.00	$1,119.78	$190.78	
Oceanside	$257.00	$38.51	$218.49	
Encinitas	$143.00	$100.17	$42.83	
Consultant	$1,000.00	$0.00	$1,000.00	
Consultant mark up 5%	$50.00	$0.00	$50.00	
				$1,595.00

Subtask 3.I Unallocated	**$41,075.00**			
Unallocated	$39,119.00	$0.00	$39,119.00	
Mark up 5%	$1,956.00	$0.00	$1,956.00	
Oceanside - pet waste bags		$1,309.80		
Oceanside - pencils		$1,296.84		
County - booth fees		$750.00		
County - sponsorship		$1,000.00		
				$36,718.36

Task 3 Balance	**$106,841.61**

Total ERS Expenditures FY 08-09				**$214,880.71**
ERS Workgroup Balance				**$122,822.29**
ERS Workgroup Budget				**$337,703.00**

Copermittee Working Bodies
County of San Diego

Fiscal, Reporting, and Assessment W	**City of Oceanside**		**County of SD**	**Port of SD**
Education and Residential Sources Workgroup				
Monitoring Workgroup				
Dry Weather Monitoring Sub-workgroup				
Coastal Storm Drain Monitoring Sub-workgroup				
Land Development Workgroup				
Municipal Sources Workgroup				
Industrial and Commercial Sources Workgroup				
Regional WURMP Workgroup				
Copermittees				
Total ERS Expenditures FY 08-09				

County of San Diego
City of Carlsbad
City of Chula Vista
City of Coronado
City of Del Mar
City of El Cajon
City of Encinitas
City of Escondido
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of Oceanside
City of Poway
City of San Diego
City of San Marcos
City of Santee
City of Solana Beach
City of Vista
Port of San Diego
Regional Airport Authority

City of Encinita	City of Escond	Direct Rate

Quarterly Dates

1st Quarter FY 2008-09 (July 1- Sept. 30, 2008)
2nd Quarter FY 2008-09 (Oct. 1- Dec. 31, 2008)
3rd Quarter FY 2008-09 (Jan. 1- Mar. 31, 2009)
4th Quarter FY 2008-09 (April 1- June 30, 2009)

Expenditure Type(s)

Copermittee Hourly Expenditures Only
Contract / Other Costs Only
Copermittee Hourly Expenditures Plus Contract / Other

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

C. Education and Residential Source Workgroup
City of Coronado

	City of Oceanside	Direct Rate	County of SD	Port of SD	City of Encinitas
Subtask 1.A Meeting Support					
				$0.00	$0.00
				$0.00	$0.00
Subtask 2.B. FY Work Plans and Budgets					
				$0.00	$0.00
				$0.00	$0.00
Total ERS Expenditures FY 08-09					
				$0.00	$0.00
				$0.00	$0.00
Subtask 3.A Materials Development and Distribution					
				$0.00	$0.00
				$0.00	$0.00
Subtask 3.B. Partnership Development					
				$0.00	$0.00
				$0.00	$0.00
Subtask 3.C. Regional Brand					
				$0.00	$0.00
				$0.00	$0.00
Subtask 3.D. Market Research and Assessment Tools					
				$0.00	$0.00
				$0.00	$0.00
Subtask 3.E. Regional Website					
				$0.00	$0.00

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

				$0.00	$0.00
Subtask 3.G. Mass Media and Public Relations					
				$0.00	$0.00
Consultant					
Consultant mark up 5%					
				$0.00	$0.00
Subtask 3.H. Regional Events					
				$0.00	$0.00
Consultant	$1,000.00	$0.00	$1,000.00		
Consultant mark up 5%	$50.00	$0.00	$50.00		
				$0.00	$0.00
Subtask 3.I Unallocated					
Oceanside - pet waste bags		$1,309.80			
Oceanside - pencils		$1,296.84			
County - booth fees		$750.00			
County - sponsorship		$1,000.00			
				$0.00	
				Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09				**$0.00**	**$0.00**

B. Fiscal, Reporting, and Assessment Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Fiscal, Reporting, and Assessment Workgroup Meeting Support. Provide ongoing support for Fiscal, Reporting, and Assessment Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (monthly)			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	60	77.42	$4,645
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$4,645**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Fiscal, Reporting, and Assessment Workgroup for the period of July 1 through December 31, 2008.				
Completion date	February 15, 2009			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	5	77.42	$387
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$387**
Subtask 2.B. FY 2009-10 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2009-10 work plan and budget covering the planned activities of the Fiscal, Reporting, and Assessment Workgroup.				
Completion date	November 30, 2008			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	15	77.42	$1,161
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0

B. Fiscal, Reporting, and Assessment Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Total				**$1,161**
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Completion. Develop a FY 2007-08 Regional URMP Annual Report.				
Completion date	December 31, 2008			
Party conducting work	County			
Copermittee hourly costs	County			
	Water Quality Program Manager	40	77.42	$3,097
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,097**
Subtask 2.D. Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2007-08 Regional URMP Annual Report.				
Completion date	Ongoing			
Party conducting work	County			
Copermittee hourly costs		5	77.42	$387
		0	55.77	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$387**
Subtask 2.E. Fiscal Reporting Standards. Develop regional standards for conducting fiscal analyses in accordance with Permit Section G.				
Completion date	December 31, 2008			
Party conducting work	Consultant (PBS&J)			
Copermittee hourly costs		0	0	$0
		0	0	$0
		0	0	$0
Contract costs	Standards and Metrics to be completed using support from Coronado as-needed contract. Estimated cost assumes 180 hours of work at $125/hr. City will be credited expenses toward their FY 2009-10 regional obligations.			$22,500
Contract management costs				$1,125
Other direct costs				$0
Total				**$23,625**

B. Fiscal, Reporting, and Assessment Workgroup

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.F. Regional Standards for Reporting and Assessment. Develop for submittal to the Regional Program Planning Subcommittee recommended regional standards for the reporting and assessment of urban runoff management programs.				
Party conducting work	County with consultant support			
Copermittee hourly costs		160	77.42	$12,387
		0	55.77	$0
		0	0	$0
Contract costs	Consultant support will be provided through the County's as-needed contract for FY 2008-09.			$20,000
Contract management costs				$1,000
Other direct costs				$0
Total				**$33,387**
Subtask 2.G. Unallocated.				
Completion date	Ongoing			
Party conducting work	County			
Copermittee hourly costs		0	0	$0
		0	0	$0
		0	0	$0
Contract costs	5% of total working body budget generically assigned to contract costs.			$3,343
Contract management costs				$167
Other direct costs				$0
Total				**$3,510**
Total Estimated Cost				**$70,200**

2008-09 Education and Residential Sources Workgroup
Expenditure Summary

B. Fiscal Reporting and Assessment

Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 1.A. Fiscal, Reporting, and Assessment Workgroup						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.B. FY 2009-10 Work Plan and Budget.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.C. FY 2007-08 Regional URMP Annual Report						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.D. Regional URMP Annual Report Input.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.E. Fiscal Reporting Standards.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 2.F. Regional Standards for Reporting and Assessment.						
					$0.00	$0.00
					$0.00	$0.00
Subtask 3.I Unallocated						
					$0.00	
					Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09					**$0.00**	**$0.00**

2008-09 Fiscal, Reporting, and Assessment Workgroup
Expenditure Summary

B. Fiscal Reporting and Assessment
Summary of Expenditures by Task (using direct rate)

	City of Coronado	County of SD	Summary of Tasks
Subtask 2.B. FY 2009-10 Work Plan and Budget.		$774.20	$774.20
Subtask 2.C. FY 2007-08 Regional URMP Annual Report Completion.		$2,012.92	$2,012.92
Subtask 2.D. Regional URMP Annual Report Input.		$270.97	$270.97
Subtask 2.E. Fiscal Reporting Standards.	$20,518.50		$20,518.50
Subtask 2.F. Regional Standards for Reporting and Assessment.		$851.62	$851.62
Subtask 3.I Unallocated		$2,322.60	$2,322.60
Total FRA Expenditures FY 08-09	**$20,518.50**	**$6,232.31**	**$26,750.81**

2008-09 Fiscal, Reporting, and Assessment Workgroup
Expenditure Summary

B. Fiscal Reporting and Assessment
County of San Diego

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 2.B. FY 2009-10 Work Plan and Budget.							
Jon Van Rhyn	Water Quality Program Manager	10	$77.42			$774.20	$0.00
						$774.20	**$0.00**
Subtask 2.C. FY 2007-08 Regional URMP Annual Report							
Jon Van Rhyn	Water Quality Program Manager	26	$77.42			$2,012.92	$0.00
						$2,012.92	**$0.00**
Subtask 2.D. Regional URMP Annual Report Input.							
Total FRA Expend	Water Quality Program Manager	3.5	$77.42			$270.97	$0.00
						$270.97	**$0.00**
Subtask 2.F. Regional Standards for Reporting and Assessment.							
Jon Van Rhyn	Water Quality Program Manager	11	$77.42			$851.62	$0.00
						$851.62	**$0.00**
Subtask 3.I Unallocated							
Jon Van Rhyn	Water Quality Program Manager	30	$77.42			$2,322.60	$0.00
						$2,322.60	**$0.00**
						Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09						**$6,232.31**	**$0.00**

2008-09 Fiscal, Reporting, and Assessment Workgroup
Expenditure Summary

B. Fiscal Reporting and Assessment
City of Coronado

	Job Classification	Hours Charged	Direct Rate	Loaded Rate	Direct Cost	Direct Total	Loaded total
Subtask 2.E. Fiscal Reporting Standards.							
L. Higginbotham	Management Assistant	2	$30.56			$61.12	$0.00
K. Godby	Supervisor	1	$39.96			$39.96	$0.00
M. Herrera	Accounting Technician	0.75	$23.02			$17.27	$0.00
Scott Huth	Director	0.5	$63.70			$31.85	$0.00
Consultant contract (Project 100000397) Contract Adminstration Cost					$20,368.30		
						$20,518.50	**$20,368.30**
						Direct Total	**Loaded total**
Total ERS Expenditures FY 08-09 - City of Coronado						**$20,518.50**	**$20,368.30**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Escondido
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 140.00
Contract / Other Expenditures Claimed:	$ 828.67

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elisa Marrone
Assistant Planner II
City of Escondido

7·1·10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9/29/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.A Materials Development & Distribution						
6/14/2010	Elisa Marrone	Program Coordinator	2.00	$ 35.00	$ 70.00	collect coloring books from City of San Diego for Envirofair
9-Jun	Elisa Marrone	Program Coordinator	2.00	$ 35.00	$ 70.00	collect chico bags from County of San Diego for Envirofair
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 140.00					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 140.00**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM W	$ -	x/x/2010		
Subtask 3.A Materials Development	$ 529.72	6/14/2010		crayons for coloring books
Subtask 3.E Underserved	$ 213.95	4/29/2010		Spanish translation for 2011 calendar
Subtask 3.A Materials Development	$ 85.00	4/14/2010		All The Way To The Ocean books for survey drawing prizes
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ 828.67				
Total Expenditures (Including contract management cost)	**$ 828.67**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Expenditure Type(s): Hourly AND Contract / Other Expenditures

Hourly Expenditures Claimed: $ 1,500.96

Contract / Other Expenditures Claimed: $ 133,405.25

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

City of San Diego
Deputy Director
Storm Water Department

7/29/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9/29/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.C. Market Research and Assessment						
4/14/2010	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Preparation for Assessment sub-committtee meeting
4/15/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Preparation for Assessment sub-committtee meeting
5/21/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional Events surveys - coordinating printing
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 185.76					
Subtask 3.D. Regional Website						
4/4/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordination of calendar survey links to regional web site
5/20/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating change to Port info on Regional map for web site
6/24/2010	Tim Graham	Sr. Public Information Officer	0.50	$ 46.44	$ 23.22	Changes to regional map on web site.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 116.10					
Subtask 3.F. Mass Media Campaign						
4/5/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating the FY10 and FY11 TV and radio buy for the regional group
4/12/2010	Tim Graham	Sr. Public Information Officer	3.00	$ 46.44	$ 139.32	Continued coordination of theater,outdoor, radio and television buy
5/11/2010	Tim Graham	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Coordinate upload of Regional graphics to CBS outdoor
4/2/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Finalizing the UltraStar regional contract
4/5/2010	Jennifer Nichols Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating the FY10 and FY11 TV and radio buy for the regional group
4/5/2010	Shannon Johnson	Public Information Officer	6.00	$ 42.44	$ 254.64	Coordinating the EnviroFair print buy with regional newspapers. Working with the print shop to size the Envirofair ad.
5/20/2010	Shannon Johnson	Public Information Officer	4.00	$ 42.44	$ 169.76	Coordinating the FY10 and FY11 TV and radio buy for the regional group
6/9/2010	Shannon Johnson	Public Information Officer	2.00	$ 42.44	$ 84.88	Coordinating the FY10 and FY11 TV and radio buy for the regional group
Sub-total	$ 880.80					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.G. Regional Events						
5/21/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Coordinating with the SD County Fair for EnviroDay participation
6/1/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Coordinating with other copermittees for EnviroDay participation
6/15/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Coordinating with the SD County Fair for EnviroDay participation
6/17/2010	Shannon Johnson	Public Information Officer	0.50	$ 42.44	$ 21.22	Coordinating with other copermittees for EnviroDay participation
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 148.54					
Subtask 3.A. Materials Development						
4/30/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Print Shop)
5/11/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Print Shop)
5/20/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Print Shop)
6/1/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Coordinating printing for the regional coloring book
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 169.76					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 1,500.96**	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 3.C. Market Research and Assessment				
Contract : Action Research (4500-009350)	$ -	x/x/2010	$ -	
Action Research Invoice # 10-1038	$ 7,395.00	5/27/2010	$ 369.75	Survey event card and regional calendar assesment
Action Research Invoice #10-1043	$ 2,622.50	6/30/2010	$ 131.13	Regional calendar assessment
Action Research Invoice #10-1046	$ 250.00	6/30/2010	$ 12.50	Regional Calendar assessment - draft report
	$ -			
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ 10,267.50				
Subtaskx.x Management Cost $ 513.38				
Subtask 3.A. Materials Development/ Sub-Task 3.D. Website				
City of San Diego, Publishing Services, Inv #90005476	$ 1,188.79	4/30/2010	$ 59.44	Editing the City of SD coloring book for the regional group
City of San Diego, Publishing Services, Inv #90005477	$ 5,554.32	5/27/2010	$ 277.72	Printing the San Diego Regional coloring book for the regional group
City of San Diego, Publishing Services, Inv #900054-56, 58 thru 63	$ 840.00	5/26/2010	$ 42.00	Edits to the Regional EnviroFair print ad for placement in regional newspapers
Events Online	$ 50.00		$ 2.50	April hosting fee for Regional web site
Events Online	$ 50.00		$ 2.50	May hosting fee for Regional web site
Events Online	$ 50.00		$ 2.50	June hosting fee for Regional web site
	$ -		$ -	
Subtaskx.x Sub-total $ 7,733.11				
Subtaskx.x Management Cost $ 386.66				

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask 3.5. Mass Media				
UltraStar Cinemas - Regional Ad, Summer 2010 Contract	$ 40,000.00	5/30/2010	$ 2,000.00	Contract for Ants in Your Plants PSA - in 6 regional movie theaters
KLQV-FM	$ 4,000.00	6/27/2010	$ 200.00	Ants in Your Plants Radio Buy
KLQV-FM	$ 1,000.00	5/23/2010	$ 50.00	Ants in Your Plants Radio Buy
Clear Channel Radio	$ 5,000.00	6/20/2010	$ 250.00	Ants in Your Plants Radio Buy
XHRM-FM	$ 5,000.00	6/22/2010	$ 250.00	Ants in Your Plants Radio Buy
KIFM-FM	$ 5,000.00	5/19/2010	$ 250.00	Ants in Your Plants Radio Buy
KYXY-FM	$ 5,000.00	6/1/2010	$ 250.00	Ants in Your Plants Radio Buy
XEWT-TV	$ 4,985.00	6/14/2010	$ 249.25	Ants in Your Plants Television Buy
KGTV-TV	$ 5,000.00	6/10/2010	$ 250.00	Ants in Your Plants Television Buy
KNSD-TV	$ 5,001.40	6/16/2010	$ 250.07	Ants in Your Plants Television Buy
KFMB-TV	$ 4,998.00	6/17/2010	$ 249.90	Ants in Your Plants Television Buy
Cox Media	$ 2,220.00	6/10/2020	$ 111.00	Ants in Your Plants Television Buy
Cox Media	$ 2,780.00	6/10/2010	$ 139.00	Ants in Your Plants Television Buy
CBS Outdoor	$ 1,356.00	5/18/2010	$ 67.80	Ants in Your Plants Transit Shelter Buy
CBS Outdoor	$ 8,640.00	5/21/2010	$ 432.00	Ants in Your Plants Transit Shelter Buy
Subtask 3.5. Mass Media - North County Times	$ 3,569.38	6/27/2010	$ 178.47	Regional Ad Buy for County Fair
Subtask 3.5. Mass Media - Pomerado Newspapers/La Jolla Light	$ 1,112.00	6/10/2010	$ 55.60	Regional Ad Buy for County Fair
Subtask 3.5. Mass Media - Pomerado Newspapers/Ramona Sentinal	$ 700.00	6/17/2010	$ 35.00	Regional Ad Buy for County Fair
Subtask 3.5 Mass Media - SD Downtown News	$ 430.00	6/3/2010	$ 21.50	Regional Ad Buy for County Fair
Subtask 3.5. Mass Media - San Diego City Beat	$ 400.00	6/16/2010	$ 20.00	Regional Ad Buy for County Fair
Subtask 3.5. Mass Media - San Diego City Beat	$ 400.00	6/23/2010	$ 20.00	Regional Ad Buy for County Fair
Subtask 3.5. Mass Media - The Star News	$ 348.23	6/11/2010	$ 17.41	Regional Ad Buy for County Fair
Subtask 3.5. Mass Media -The Star News	$ 348.23	6/18/2010	$ 17.41	Regional Ad Buy for County Fair
Subtask 3.5. Mass Media - La Prensa	$ 945.00	6/22/2010	$ 47.25	Regional Ad Buy for County Fair
Subtask 3.5 Mass Media - El Latino	$ 818.77	6/11/2010	$ 40.94	Regional Ad Buy for County Fair
Subtaskx.x Sub-total $ 109,052.01				
Subtaskx.x Management Cost $ 5,452.60				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 133,405.25**			

Final 04-30-09

INVOICE

DATE: May 6, 2010

TO: **Jennifer Nichols Kearns, MS**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

INVOICE #: AR10-1038

PO #: 4500009350

SERVICES: Invoice is for services rendered between 4/1/10 and 4/30/10

AMOUNT DUE: Total costs are shown by task and in total below.

TASK	AMOUNT DUE
Event Card Assessment and reporting	$125.00
Calendar Assessment (current)	$755.00
Calendar Assessment (follow up calls)	$1,435.00
Calendar Assessment (in-depth survey)	$5,080.00
TOTAL DUE	**$7,395.00** OK

Please make check payable to:

Action Research
910 W. San Marcos Blvd, Suite 108
San Marcos, CA, 92078

x 05/12/10

Any questions regarding this invoice should be directed to Jennifer Tabanico at (760) 736-4348 or by email at: tabanico@takeactionresearch.com.

ATTACHMENT A: ACTIVITIES SUMMARY

Event Card Assessment and Reporting

Tasks completed included: Development of enviro-fair survey.

Staff	Hours	Rate	Subtotal
Tabanico	1.00	$125	$125.00
TOTAL			**$125.00**

Calendar Assessment (Current)

Tasks completed included: Post-test data receipt/management, Web survey data management, meeting with regional group, assessment project management.

Staff	Hours	Rate	Subtotal
Tabanico	5.00	$125	$625.00
Bruni	1.00	$90	$90.00
RA I: Research Assistant (Data entry)	1.00	$40	$40.00
TOTAL			**$755.00**

Calendar Assessment (Follow-Up Calls)

Tasks completed included: Protocol development, calls, training and supervision, reporting and tracking, final call disposition report.

Staff	Hours	Rate	Subtotal
Tabanico	4.00	$125	$500.00
Bruni	1.00	$90	$90.00
RA II: Research Associate (Morales)	4.75	$60	$285.00
RA I: Research Assistant (Calls)	14.00	$40	$560.00
TOTAL			**$1,435.00**

Calendar Assessment (In-Depth Survey)

Tasks completed included: survey development, computer-assisted telephone interviewing programming, data cleaning, draft report.

Staff	Hours	Rate	Subtotal
Tabanico	7.00	$125	$875.00
Bruni	37.00	$90	$3,330.00
RA II: Research Associate (Morales)	6.75	$60	$405.00
RA I: Research Assistant (Calls/Data Entry)	11.75	$40	$470.00
TOTAL			**$5,080.00**

INVOICE

DATE: June 3, 2010

TO: **Jennifer Nichols Kearns, MS**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

INVOICE #: AR10-1043

PO #: 4500009350

SERVICES: Invoice is for services rendered between 5/1/10 and 5/31/10

AMOUNT DUE: Total costs are shown by task and in total below.

TASK	AMOUNT DUE
Calendar Assessment (current)	$2,622.50
TOTAL DUE	**$2,622.50**

Please make check payable to:

Action Research
910 W. San Marcos Blvd, Suite 108
San Marcos, CA, 92078

06/30/10

Any questions regarding this invoice should be directed to Jennifer Tabanico at (760) 736-4348 or by email at: tabanico@takeactionresearch.com.

ATTACHMENT A: ACTIVITIES SUMMARY

Calendar Assessment (Current)

Web survey data management; Data coding; Analysis and reporting			
Staff	**Hours**	**Rate**	**Subtotal**
Bruni	19.25	$90	$1,732.50
Tabanico	6.00	$125	$750.00
RA I: Research Assistant (Data entry)	3.50	$40	$140.00
TOTAL			**$2,622.50**

FINAL INVOICE

DATE: June 30, 2010

TO: **Jennifer Nichols Kearns, MS**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

INVOICE #: AR10-1046

PO #: 4500009350

SERVICES: Invoice is for services rendered between 6/1/10 and 6/30/10

AMOUNT DUE: Total costs are shown by task and in total below.

TASK	AMOUNT DUE
Calendar Assessment (current)	$250.00

TOTAL DUE **$250.00** OK

Please make check payable to:

Action Research
910 W. San Marcos Blvd, Suite 108
San Marcos, CA, 92078

Any questions regarding this invoice should be directed to Jennifer Tabanico at (760) 736-4348 or by email at: tabanico@takeactionresearch.com.

ATTACHMENT A: ACTIVITIES SUMMARY

Calendar Assessment (Current)

Final report for calendar assessment			
Staff	**Hours**	**Rate**	**Subtotal**
Tabanico	2.00	$125	$250.00
TOTAL			**$250.00**

PUBLISHING DIVISION INVOICE

Storm Water Coloring Book

Requesting Person : Shannon Johnson
Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice

Invoice Number/Date
90005476 / 04/30/2010
Purchase Order Number/Date
4891 / 04/15/2010
Sales Order Number/Date
3833 / 04/22/2010
Customer Number
147281

Item	Material	Description		Total
000010	CUSTOM-JOB	Custom Job		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Attention		Shannon Johnson	
	Order Quantity		1,000	
	Revision Date		01/01/1900	
	Ink Color		4 Color Process	
	Paper Size		8.5X11	
	Print Option		2-Sides Head to Foot	
	Reprint Option		With Changes	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				1,188.79

Special Instruction:

I need to have the revised Think Blue Environmental Coloring Book reprinted with the changes Pam provide don the last document. This is a Pam job. # # # # # # # # #

Customer Signature

Invoice created by MHUTCHINSON on 06/27/2010 Printed on 06/27/2010 by MHUTCHINSON Page 1 of 1

PUBLISHING DIVISION INVOICE
Storm Water Coloring Book Regional

Requesting Person : Shannon Johnson
Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice

Invoice Number/Date
90005477 / 05/27/2010
Purchase Order Number/Date
5276 / 05/11/2010
Sales Order Number/Date
4184 / 05/14/2010
Customer Number
147281

Item	Material	Description		Total
000010	CUSTOM-JOB	Custom Job		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Attention		shannon johnson	
	Order Quantity		1	
	Revision Date		01/01/1900	
	Ink Color		4 Color Process	
	Paper Size		8.5X11	
	Print Option		2-Sides Head to Foot	
	Reprint Option		With Changes	
	Fold Option		1/2 Fold	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				5,554.32 OK

Special Instruction:

We need to make the attached coloring book into a Think Blue SD REGION coloring book with multiple changes/additions. I would like to request Pam to work on this since she did the 1st one. # # # # # # # # #

Customer Signature

Invoice created by MHUTCHINSON on 06/27/2010 Printed on 06/27/2010 by MHUTCHINSON Page 1 of 1

PUBLISHING DIVISION INVOICE

Storm Water Ad Sub

Requesting Person : Shannon Johnson
Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice

Invoice Number/Date
90005456 / 05/26/2010
Purchase Order Number/Date
5416 / 05/18/2010
Sales Order Number/Date
4281 / 05/21/2010
Customer Number
147281

Item	Material	Description		Total
000010	GRAPHICS	Graphics		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Graphics Customer Supplied		EFILE	
	Graphics Ink Color		Full Color	
	Flat Form Size		5.083X6	
	Bleed		Yes	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				120.00

Special Instruction:

Please resize the ad to the following specs for
San Diego Suburban News##5.083x6 # # # # # # # # #

Customer Signature

PUBLISHING DIVISION INVOICE

Storm Water El Latino Ad

Requesting Person : Shannon Johnson
Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice
Repeat printout
Invoice Number/Date
90005458 / 05/18/2010
Purchase Order Number/Date
5211 / 05/06/2010
Sales Order Number/Date
4057 / 05/07/2010
Customer Number
147281

Item	Material	Description		Total
000010	GRAPHICS	Graphics		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Graphics Customer Supplied		EFILE	
	Graphics Ink Color		Full Color	
	Flat Form Size		4.91 X 6.16¿	
	Bleed		Yes	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				120.00

Special Instruction:

Please re-size attached ad for El Latino newspaper. ##4.91 x 6.16¿, 4C # # # # # # # # #

Customer Signature

PUBLISHING DIVISION INVOICE

Storm Water City Beat Ad

Requesting Person : Shannon Johnson

Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice

Invoice Number/Date
90005459 / 05/18/2010
Purchase Order Number/Date
5199 / 05/06/2010
Sales Order Number/Date
4048 / 05/07/2010
Customer Number
147281

Item	Material	Description		Total
000010	GRAPHICS	Graphics		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Graphics Customer Supplied		EFILE	
	Graphics Ink Color		Full Color	
	Flat Form Size		4.625 X 5.54	
	Bleed		Yes	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				120.00

Special Instruction:

Please resize the attached ad to:##4.625 X 5.54,
full color for San Diego City Beat # # # # # # # # #

Customer Signature

PUBLISHING DIVISION INVOICE

Storm Water La Prensa Ad

Requesting Person : Shannon Johnson
Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice

Invoice Number/Date
90005460 / 05/18/2010
Purchase Order Number/Date
5197 / 05/06/2010
Sales Order Number/Date
4047 / 05/07/2010
Customer Number
147281

Item	Material	Description		Total
000010	GRAPHICS	Graphics		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Graphics Customer Supplied		EFILE	
	Graphics Ink Color		Black-White	
	Flat Form Size		5.75 INCHES X 10.5 INCHES.	
	Bleed		No	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				120.00

Special Instruction:

Please resize attached ad for La Prensa Newspaper. ####specs: 5.75 inches X 10.5 inches.##Black and White # # # # # # # # #

Customer Signature

PUBLISHING DIVISION INVOICE

Storm Water Star Nws Ad

Requesting Person : Shannon Johnson
Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice

Invoice Number/Date
90005461 / 05/18/2010
Purchase Order Number/Date
5161 / 05/04/2010
Sales Order Number/Date
4046 / 05/07/2010
Customer Number
147281

Item	Material	Description		Total
000010	GRAPHICS	Graphics		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Graphics Customer Supplied		EFILE	
	Graphics Ink Color		Full Color	
	Flat Form Size		6.08¿ W X 6.25¿H	
	Bleed		No	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				120.00

Special Instruction:

Please resize this ad to 6.08¿ w x 6.25¿h full color for the Star News. Due date is 8/18/10. # # # # # # # # #

Customer Signature

Invoice created by MHUTCHINSON on 06/27/2010 Printed on 06/27/2010 by MHUTCHINSON Page 1 of 1

PUBLISHING DIVISION INVOICE

Storm Water Ad For County Fair

Requesting Person : Shannon Johnson
Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice

Invoice Number/Date
90005462 / 05/18/2010
Purchase Order Number/Date
5137 / 05/04/2010
Sales Order Number/Date
3980 / 05/04/2010
Customer Number
147281

Item	Material	Description		Total
000010	GRAPHICS	Graphics		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Graphics Customer Supplied		EFILE	
	Graphics Ink Color		Full Color	
	Flat Form Size		4.125" WIDE BY 7.375" DEEP	
	Bleed		Yes	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				120.00

Special Instruction:

Please re-size and make it into a full color ad
for San Diego Downtown News # # # # # # # # #

Customer Signature

PUBLISHING DIVISION INVOICE
Storm Water North County Times Ad

Requesting Person : Shannon Johnson
Telephone : 858-541-4351

Sold To:
Storm Water Department
San Diego

Ship To:
Storm Water Department
San Diego
Attention:

Invoice

Invoice Number/Date
90005463 / 05/18/2010
Purchase Order Number/Date
5140 / 05/04/2010
Sales Order Number/Date
3981 / 05/04/2010
Customer Number
147281

Item	Material	Description		Total
000010	GRAPHICS	Graphics		
	Item 10			
	With the following configuration:			
	Requesting Person		Shannon Johnson	
	Requesting Person's Telephone		858-541-4351	
	Graphics Customer Supplied		EFILE	
	Graphics Ink Color		Full Color	
	Flat Form Size		(3 COL) 4.889" X 10.5"	
	Bleed		Yes	
	Department Cost Center		2114120012	
	Fund		10000	
Total Amount				120.00

Special Instruction:

Please resize the ad and make it a full color for
North County Times. # # # # # # # # #

Customer Signature

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
5/1/2010	5872

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 202 C Street San Diego, CA 92101

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
		Total		$50.00

Events Online

232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

Invoice

DATE	INVOICE #
4/1/2010	5832

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 202 C Street San Diego, CA 92101

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
		Total		$50.00

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
6/1/2010	5923

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 202 C Street San Diego, CA 92101

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
		Total		$50.00

UltraStar Cinemas

1060 Joshua Way
Vista, CA 92081

760-597-5777 Fax (760) 597-5297

Set up by: Wally Schlotter / Karen Peterson
Agreement No. SD50110-5

Date of Invoice. 4/26/2010

Community Service PSA announcement - Terms and Invoice

Name	City Of San Diego - Think Blue	Contact	Tim Graham
Address	9370 Chesapeake Dr. Suite 100		
City	San Diego	State SD	Zip 92123
Phone	858 541 4333	Fax	858-541-4350
		Email	tgraham@sandiego.gov

	Description			Value
	Think Blue visibility program Summer Package			$40,000.00
	Visibility on DLP projectors as part of UltraStar Cinemas Movie Trailer reel			
	Regional PSA			
	Ants in Your Plants (or swap for newly produced compatible PSA)			

THEATER: 5 San Diego Locations
Chula Vista, Oceanside, Poway, Carlsbad & Bonsall

DAY & DATE: May 15th 2010 to Sept 15th 2010

SUB TOTAL	$40,000.00
CREDITS	
TAX	
TOTAL	**$40,000.00** OK

TERMS

X UltraStar Cinemas agrees to exhibit, prior to each theatrical movie that plays trailers, as part of their movie trailer reel, One (1) Think Blue PSA.

X UltraStar Cinemas will run provided PSA's starting on or before May 15th 2010 and ending September 15th 2010.

X The City of San Diego and Think Blue will provide, at their sole expense, one PSA in a Jpeg 2000 DCP that is compatible with UltraStar's DLP cinema projectors.

X The City Of San Diego and Think Blue will hold UltraStar Cinema harmless for unforeseen equipment failure and other acts of god that may prevent PSA from being shown. UltraStar will make its best effort to present PSA on every screen for every show during the agreed period of time.

Please sign that you accept the following terms for your group and that you agree to pay all listed charges.
Your signature will lock in the date of your event.

Renters Name Title Date

Thank you for choosing Ultra Star Cinemas.
Your State of the Art Home Town Theaters

INVOICE

Invoice #:	**IN-SD2-110069552**
Invoice Date:	06/27/2010
Contract #:	103053
Page:	1
Net Amount:	$4,000.00

Advertiser: CITY OF SAN DIEGO STORM WATER
9370 CHESAPEAKE DRIVE, STE 100
SAN DIEGO, CA 92123

Station(s): KLQV-FM

Advertiser: CITY OF SAN DIEGO STORM WATER
Product: THINK BLUE REGIONAL
Estimate #: MAY - JUNE
Agency Client Code:
Buyer Name: TIM GRAHAM

Salesperson(s): Lee DeLay
Terms: 30 NET

Day	Date	Time	Ln	Length	Product	ISCI	Rate
MON	05/31/10	05:47a	1	60		ANTS IN YOUR PLANTS	$15.00
MON	05/31/10	02:27p	3	60		ANTS IN YOUR PLANTS	$140.00
MON	05/31/10	06:41p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
MON	05/31/10	07:46p	7	60		ANTS IN YOUR PLANTS	$5.00
MON	05/31/10	11:45p	8	60		ANTS IN YOUR PLANTS	$0.00
TUE	06/01/10	02:24a	8	60		ANTS IN YOUR PLANTS	$0.00
TUE	06/01/10	06:23a	2	60		ANTS IN YOUR PLANTS	$145.00
TUE	06/01/10	07:20a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	06/01/10	03:41p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	06/01/10	07:46p	4	60		ANTS IN YOUR PLANTS	$150.00
WED	06/02/10	03:42a	8	60		ANTS IN YOUR PLANTS	$0.00
WED	06/02/10	05:44a	1	60		ANTS IN YOUR PLANTS	$15.00
WED	06/02/10	07:30a	2	60		ANTS IN YOUR PLANTS	$145.00
WED	06/02/10	08:20a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
WED	06/02/10	10:44a	3	60		ANTS IN YOUR PLANTS	$140.00
WED	06/02/10	08:47p	5	60		ANTS IN YOUR PLANTS	$40.00
THU	06/03/10	05:25a	7	60		ANTS IN YOUR PLANTS	$5.00
FRI	06/04/10	12:44a	8	60		ANTS IN YOUR PLANTS	$0.00
FRI	06/04/10	04:25a	8	60		ANTS IN YOUR PLANTS	$0.00
FRI	06/04/10	05:46a	1	60		ANTS IN YOUR PLANTS	$15.00
FRI	06/04/10	06:41a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
FRI	06/04/10	11:28p	7	60		ANTS IN YOUR PLANTS	$5.00
SAT	06/05/10	06:28a	7	60		ANTS IN YOUR PLANTS	$5.00
SAT	06/05/10	08:28a	6	60		ANTS IN YOUR PLANTS	$65.00
SAT	06/05/10	07:42p	8	60		ANTS IN YOUR PLANTS	$0.00
SUN	06/06/10	01:45a	8	60		ANTS IN YOUR PLANTS	$0.00
SUN	06/06/10	09:44a	6	60		ANTS IN YOUR PLANTS	$65.00
SUN	06/06/10	01:45p	7	60		ANTS IN YOUR PLANTS	$5.00

INVOICE

Invoice #:	**IN-SD2-110069552**
Invoice Date:	06/27/2010
Contract #:	103053
Page:	2
Net Amount:	$4,000.00

Day	Date	Time	Ln	Length	Product	ISCI	Rate
SUN	06/06/10	07:42p	5	60		ANTS IN YOUR PLANTS	$40.00
MON	06/07/10	08:20a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
MON	06/07/10	09:41a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
MON	06/07/10	10:45a	5	60		ANTS IN YOUR PLANTS	$40.00
MON	06/07/10	01:29p	3	60		ANTS IN YOUR PLANTS	$140.00
MON	06/07/10	04:45p	4	60		ANTS IN YOUR PLANTS	$150.00
MON	06/07/10	08:30p	8	60		ANTS IN YOUR PLANTS	$0.00
MON	06/07/10	11:31p	7	60		ANTS IN YOUR PLANTS	$5.00
TUE	06/08/10	01:45a	8	60		ANTS IN YOUR PLANTS	$0.00
TUE	06/08/10	05:42a	1	60		ANTS IN YOUR PLANTS	$15.00
TUE	06/08/10	06:23a	2	60		ANTS IN YOUR PLANTS	$145.00
TUE	06/08/10	01:27p	3	60		ANTS IN YOUR PLANTS	$140.00
TUE	06/08/10	04:20p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
WED	06/09/10	05:26a	1	60		ANTS IN YOUR PLANTS	$15.00
WED	06/09/10	07:20a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
WED	06/09/10	05:41p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
WED	06/09/10	10:28p	7	60		ANTS IN YOUR PLANTS	$5.00
WED	06/09/10	11:27p	8	60		ANTS IN YOUR PLANTS	$0.00
THU	06/10/10	02:24a	8	60		ANTS IN YOUR PLANTS	$0.00
THU	06/10/10	04:45a	8	60		ANTS IN YOUR PLANTS	$0.00
THU	06/10/10	09:27a	2	60		ANTS IN YOUR PLANTS	$145.00
FRI	06/11/10	05:44a	1	60		ANTS IN YOUR PLANTS	$15.00
SAT	06/12/10	06:46a	6	60		ANTS IN YOUR PLANTS	$65.00
SAT	06/12/10	07:25a	5	60		ANTS IN YOUR PLANTS	$40.00
SAT	06/12/10	08:45a	7	60		ANTS IN YOUR PLANTS	$5.00
SAT	06/12/10	08:43p	8	60		ANTS IN YOUR PLANTS	$0.00
SAT	06/12/10	09:22p	7	60		ANTS IN YOUR PLANTS	$5.00
SUN	06/13/10	07:59a	8	60		ANTS IN YOUR PLANTS	$0.00
SUN	06/13/10	09:44a	7	60		ANTS IN YOUR PLANTS	$5.00
SUN	06/13/10	12:25p	6	60		ANTS IN YOUR PLANTS	$65.00
MON	06/14/10	05:22a	1	60		ANTS IN YOUR PLANTS	$15.00
MON	06/14/10	07:23a	2	60		ANTS IN YOUR PLANTS	$145.00
MON	06/14/10	09:20a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
MON	06/14/10	10:45a	3	60		ANTS IN YOUR PLANTS	$140.00
MON	06/14/10	12:41p	7	60		ANTS IN YOUR PLANTS	$5.00
MON	06/14/10	01:46p	8	60		ANTS IN YOUR PLANTS	$0.00
MON	06/14/10	02:43p	5	60		ANTS IN YOUR PLANTS	$40.00
TUE	06/15/10	07:43a	7	60		ANTS IN YOUR PLANTS	$5.00
TUE	06/15/10	02:21p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	06/15/10	04:41p	9	5		BB	$0.00

INVOICE

Invoice #:	**IN-SD2-110069552**
Invoice Date:	06/27/2010
Contract #:	103053
Page:	3
Net Amount:	$4,000.00

Day	Date	Time	Ln	Length	Product	ISCI	Rate
KLQV TRAFFIC OPEN							
TUE	06/15/10	07:30p	8	60		ANTS IN YOUR PLANTS	$0.00
WED	06/16/10	05:47a	8	60		ANTS IN YOUR PLANTS	$0.00
WED	06/16/10	08:48a	2	60		ANTS IN YOUR PLANTS	$145.00
WED	06/16/10	09:29a	5	60		ANTS IN YOUR PLANTS	$40.00
WED	06/16/10	12:50p	3	60		ANTS IN YOUR PLANTS	$140.00
THU	06/17/10	05:23a	1	60		ANTS IN YOUR PLANTS	$15.00
THU	06/17/10	02:45p	7	60		ANTS IN YOUR PLANTS	$5.00
THU	06/17/10	06:20p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
THU	06/17/10	07:46p	4	60		ANTS IN YOUR PLANTS	$150.00
FRI	06/18/10	03:23a	8	60		ANTS IN YOUR PLANTS	$0.00
FRI	06/18/10	05:45a	1	60		ANTS IN YOUR PLANTS	$15.00
FRI	06/18/10	10:47p	8	60		ANTS IN YOUR PLANTS	$0.00
SAT	06/19/10	07:44a	8	60		ANTS IN YOUR PLANTS	$0.00
SAT	06/19/10	12:41p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
SAT	06/19/10	06:45p	6	60		ANTS IN YOUR PLANTS	$65.00
SAT	06/19/10	08:42p	7	60		ANTS IN YOUR PLANTS	$5.00
SUN	06/20/10	09:25a	8	60		ANTS IN YOUR PLANTS	$0.00
SUN	06/20/10	04:25p	7	60		ANTS IN YOUR PLANTS	$5.00
SUN	06/20/10	05:45p	6	60		ANTS IN YOUR PLANTS	$65.00
MON	06/21/10	05:44a	1	60		ANTS IN YOUR PLANTS	$15.00
MON	06/21/10	07:28a	2	60		ANTS IN YOUR PLANTS	$145.00
MON	06/21/10	01:24p	5	60		ANTS IN YOUR PLANTS	$40.00
MON	06/21/10	02:45p	8	60		ANTS IN YOUR PLANTS	$0.00
MON	06/21/10	03:43p	4	60		ANTS IN YOUR PLANTS	$150.00
MON	06/21/10	04:20p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
MON	06/21/10	09:25p	8	60		ANTS IN YOUR PLANTS	$0.00
TUE	06/22/10	05:46a	1	60		ANTS IN YOUR PLANTS	$15.00
TUE	06/22/10	06:48a	8	60		ANTS IN YOUR PLANTS	$0.00
TUE	06/22/10	08:41a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	06/22/10	01:24p	7	60		ANTS IN YOUR PLANTS	$5.00
TUE	06/22/10	02:24p	3	60		ANTS IN YOUR PLANTS	$140.00
WED	06/23/10	06:49a	2	60		ANTS IN YOUR PLANTS	$145.00
WED	06/23/10	06:45p	5	60		ANTS IN YOUR PLANTS	$40.00
WED	06/23/10	11:42p	7	60		ANTS IN YOUR PLANTS	$5.00
THU	06/24/10	04:44a	8	60		ANTS IN YOUR PLANTS	$0.00
THU	06/24/10	05:25a	1	60		ANTS IN YOUR PLANTS	$15.00
THU	06/24/10	09:41a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
THU	06/24/10	01:48p	3	60		ANTS IN YOUR PLANTS	$140.00
THU	06/24/10	09:29p	7	60		ANTS IN YOUR PLANTS	$5.00
FRI	06/25/10	05:24a	7	60		ANTS IN YOUR PLANTS	$5.00
FRI	06/25/10	05:41p	9	5		BB	$0.00

INVOICE

Invoice #:	**IN-SD2-110069552**
Invoice Date:	06/27/2010
Contract #:	103053
Page:	4
Net Amount:	$4,000.00

Day	Date	Time	Ln	Length	Product	ISCI	Rate
KLQV TRAFFIC OPEN							
FRI	06/25/10	11:41p	8	60		ANTS IN YOUR PLANTS	$0.00
SAT	06/26/10	11:41a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
SAT	06/26/10	06:25p	8	60		ANTS IN YOUR PLANTS	$0.00
SAT	06/26/10	07:25p	6	60		ANTS IN YOUR PLANTS	$65.00
SUN	06/27/10	06:43a	6	60		ANTS IN YOUR PLANTS	$65.00
SUN	06/27/10	07:46p	7	60		ANTS IN YOUR PLANTS	$5.00
SUN	06/27/10	08:21p	8	60		ANTS IN YOUR PLANTS	$0.00

Remit To:
UNIVISION RECEIVABLES CO. LLC
PO BOX 452538
LOS ANGELES, CA 90045

DUE ON RECEIPT

Invoice Totals

Total Spots:	116
Gross Amount:	$4,000.00
Net Amount:	$4,000.00

THIS RADIO STATION WARRANTS THAT THE PROGRAM/ANNOUNCEMENTS INDICATED ABOVE WERE BROADCAST IN ACCORDANCE WITH OFFICIAL STATION LOG. ALL TIMES ARE APPROXIMATE WITHIN 15 MINUTES AND ARE WITHIN THE TIME CLASSIFICATION ORDERED.
TIN: 75-2765167
PLEASE ENCLOSE REMITTANCE ADVICE WITH PAYMENT

INVOICE

RECUERDO 102.9 FM

La Nueva 106.5

Invoice #:	**IN-SD2-110059369**
Invoice Date:	05/30/2010
Contract #:	103053
Page:	1
Net Amount:	$1,000.00

Advertiser: **CITY OF SAN DIEGO STORM WATER**
9370 CHESAPEAKE DRIVE, STE 100
SAN DIEGO, CA 92123

Station(s): **KLQV-FM**

Advertiser: **CITY OF SAN DIEGO STORM WATER**
Product: **THINK BLUE REGIONAL**
Estimate #: **MAY - JUNE**
Agency Client Code:
Buyer Name: TIM GRAHAM

Salesperson(s): Lee DeLay
Terms: 30 NET

Day	Date	Time	Ln	Length	Product	ISCI	Rate
MON	05/24/10	01:24a	8	60		ANTS IN YOUR PLANTS	$0.00
MON	05/24/10	05:44a	1	60		ANTS IN YOUR PLANTS	$15.00
MON	05/24/10	06:50a	2	60		ANTS IN YOUR PLANTS	$145.00
MON	05/24/10	12:48p	3	60		ANTS IN YOUR PLANTS	$140.00
MON	05/24/10	06:30p	4	60		ANTS IN YOUR PLANTS	$150.00
MON	05/24/10	08:46p	7	60		ANTS IN YOUR PLANTS	$5.00
TUE	05/25/10	12:23a	8	60		ANTS IN YOUR PLANTS	$0.00
TUE	05/25/10	05:45a	1	60		ANTS IN YOUR PLANTS	$15.00
TUE	05/25/10	11:47a	3	60		ANTS IN YOUR PLANTS	$140.00
TUE	05/25/10	04:41p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	05/25/10	08:31p	5	60		ANTS IN YOUR PLANTS	$40.00
TUE	05/25/10	10:29p	7	60		ANTS IN YOUR PLANTS	$5.00
WED	05/26/10	04:44a	8	60		ANTS IN YOUR PLANTS	$0.00
WED	05/26/10	05:26a	1	60		ANTS IN YOUR PLANTS	$15.00
WED	05/26/10	08:29a	2	60		ANTS IN YOUR PLANTS	$145.00
WED	05/26/10	09:20a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
THU	05/27/10	02:24a	8	60		ANTS IN YOUR PLANTS	$0.00
THU	05/27/10	05:46a	7	60		ANTS IN YOUR PLANTS	$5.00
THU	05/27/10	09:43p	5	60		ANTS IN YOUR PLANTS	$40.00
FRI	05/28/10	03:41p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
FRI	05/28/10	10:43p	8	60		ANTS IN YOUR PLANTS	$0.00
SAT	05/29/10	07:48a	6	60		ANTS IN YOUR PLANTS	$65.00
SAT	05/29/10	10:41a	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
SAT	05/29/10	01:41p	9	5		BB	$0.00
KLQV TRAFFIC OPEN							
SAT	05/29/10	09:43p	7	60		ANTS IN YOUR PLANTS	$5.00
SUN	05/30/10	06:25a	8	60		ANTS IN YOUR PLANTS	$0.00
SUN	05/30/10	05:41p	7	60		ANTS IN YOUR PLANTS	$5.00
SUN	05/30/10	07:24p	6	60		ANTS IN YOUR PLANTS	$65.00

INVOICE

RECUERDO 102.9 FM

La NUEVA 106.5

Invoice #:	**IN-SD2-110059369**
Invoice Date:	05/30/2010
Contract #:	103053
Page:	2
Net Amount:	$1,000.00

Day	Date	Time	Ln	Length	Product	ISCI	Rate
SUN	05/30/10	09:43p	8	60		ANTS IN YOUR PLANTS	$0.00

Remit To:
UNIVISION RECEIVABLES CO. LLC
PO BOX 452538
LOS ANGELES, CA 90045

DUE ON RECEIPT

Invoice Totals

Total Spots:	29
Gross Amount:	$1,000.00
Net Amount:	$1,000.00

THIS RADIO STATION WARRANTS THAT THE PROGRAM/ANNOUNCEMENTS INDICATED ABOVE WERE BROADCAST IN ACCORDANCE WITH OFFICIAL STATION LOG. ALL TIMES ARE APPROXIMATE WITHIN 15 MINUTES AND ARE WITHIN THE TIME CLASSIFICATION ORDERED.
TIN: 75-2765167
PLEASE ENCLOSE REMITTANCE ADVICE WITH PAYMENT

ok to pay
$1,000.00
po #4500012099
Judy W. Aude
6/15/10

06-24-10P03:40 RCVD

RECEIVED
JUN 25 2010
By: MB

TM

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

CLEARCHANNEL

INVOICE: 125-190583

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

Advertiser No.: 663
City Of San Diego
Order: 111380
Co-op: No

Invoice Date: **06/20/2010**
Payment Due: **07/20/2010**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KGB/City of SD/ThinkBlue/PO #4500012096**
Note 2: **Thank you for your business**
Comments: **PLEASE NOTE INVOICE NUMBER WHEN REMITTING PAYMENT.**

CPE

Invoice Summary:

# of Spots:	75
Gross Spot Billing:	$5,000.00
Agency Commission:	$0.00
Net Spot Billing:	$5,000.00

ok to pay $5,000.00
APPROVED FOR PAYMENT
DATE: 6/26/10
SIGNATURE: [illegible]
PO# 4500012096

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

0

Invoice: **190583** Advertiser: **City Of San Diego**

Market: San Diego Station: KGB-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
1	MTWThF	2	Local-Direct	Commercial	06:00:00-10:00:00				$250.00
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	06/01/10	07:49 AM	60		$250.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/03/10	07:20 AM	60		$250.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/09/10	06:17 AM	60		$250.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/10/10	08:27 AM	60		$250.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/14/10	07:54 AM	60		$250.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/18/10	06:47 AM	60		$250.00
2	MTWThF	1	Local-Direct	Commercial	10:00:00-15:00:00				$190.00
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	05/31/10	01:17 PM	60		$190.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/08/10	12:20 PM	60		$190.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/16/10	02:14 PM	60		$190.00
3	MTWThF	2	Local-Direct	Commercial	15:00:00-19:00:00				$240.00
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	05/31/10	05:44 PM	60		$240.00
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	06/01/10	04:21 PM	60		$240.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/09/10	06:15 PM	60		$240.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/10/10	05:33 PM	60		$240.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/14/10	04:48 PM	60		$240.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/18/10	03:17 PM	60		$240.00
4	MTWThF	5	Local-Direct	Commercial	06:00:00-23:59:59				$40.00
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	05/31/10	06:42 PM	60		$40.00
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	06/01/10	08:46 PM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/02/10	11:41 PM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/03/10	12:10 PM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/04/10	02:38 PM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/07/10	07:15 PM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/08/10	10:20 PM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/09/10	10:15 AM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/10/10	10:14 PM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/11/10	04:16 PM	60		$40.00
5	MTWThF	4	Local-Direct	Commercial	06:00:00-23:59:59				$40.00
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/14/10	05:49 PM	60		$40.00

Market: San Diego Station: KGB-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/15/10	08:33 AM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/15/10	09:19 PM	60		$40.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/17/10	11:59 PM	60		$40.00
6	**S**	**2**	**Local-Direct**	**Commercial**	**06:00:00-19:00:00**				**$95.00**
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/05/10	09:08 AM	60		$95.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/05/10	05:43 PM	60		$95.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/12/10	09:43 AM	60		$95.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/12/10	04:49 PM	60		$95.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/19/10	09:42 AM	60		$95.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/19/10	04:17 PM	60		$95.00
7	**Sn**	**2**	**Local-Direct**	**Commercial**	**06:00:00-19:00:00**				**$60.00**
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/06/10	09:15 AM	60		$60.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/06/10	06:37 PM	60		$60.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/13/10	09:46 AM	60		$60.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/13/10	04:16 PM	60		$60.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/20/10	09:45 AM	60		$60.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/20/10	04:20 PM	60		$60.00
8	**MTWThFSSn**	**8**	**Local-Direct**	**Commercial**	**00:00:00-23:59:59**				**$0.00**
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	05/31/10	04:51 AM	60		$0.00
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	05/31/10	09:20 PM	60		$0.00
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	06/01/10	11:13 PM	60		$0.00
	Karma Tourist / City of SD/Karma Tourist/60			Commercial	06/02/10	01:45 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/03/10	11:41 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/04/10	09:12 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/05/10	01:48 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/06/10	07:33 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/07/10	07:46 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/08/10	10:43 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/08/10	11:17 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/09/10	01:37 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/10/10	04:18 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/11/10	07:15 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/12/10	10:34 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/13/10	06:42 AM	60		$0.00

Invoice: **190583** Advertiser: **City Of San Diego**

Market: San Diego Station: KGB-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/14/10	06:21 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/15/10	06:49 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/16/10	02:48 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/17/10	12:44 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/18/10	01:45 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/19/10	09:14 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/20/10	01:44 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/20/10	05:45 AM	60		$0.00
9	**ThF**	**1**	**Local-Direct**	**Commercial**	**06:00:00-10:00:00**				**$0.00**
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/03/10	08:29 AM	60		$0.00
10	**ThF**	**1**	**Local-Direct**	**Commercial**	**10:00:00-15:00:00**				**$0.00**
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/03/10	01:16 PM	60		$0.00
11	**ThF**	**2**	**Local-Direct**	**Commercial**	**15:00:00-19:00:00**				**$0.00**
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/03/10	03:50 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/04/10	06:16 PM	60		$0.00
12	**ThF**	**2**	**Local-Direct**	**Commercial**	**06:00:00-23:59:59**				**$0.00**
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/03/10	09:41 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/04/10	10:17 PM	60		$0.00
13	**ThFSSn**	**4**	**Local-Direct**	**Commercial**	**00:00:00-23:59:59**				**$0.00**
	ISCI / SPOT TITLE			AIRED	DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/03/10	02:16 PM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/04/10	12:42 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/05/10	05:13 AM	60		$0.00
	Antsinyourpants / City of SD/Ants in your pants/60			Commercial	06/06/10	12:46 PM	60		$0.00

Totals for Station: KGB-FM No. of Spots/Misc: 75/0 Gross Amt: $5,000.00

Totals for Market: San Diego No. of Spots/Misc: 75/0 Gross Amt: $5,000.00

Totals for Invoice: No. of Spots/Misc: 75/0 Gross Amt: $5,000.00

TM

LMA LOCAL MEDIA OF AMERICA

MAGIC 92.5

Memo Bill

Storm Water Pollution Prevention
City of San Diego
9370 Chesapeake Drive, Suite 100
San Diego, CA
92123

Invoice #	MEMO17156
Date:	06/14/10
Contract #	17156
Station	XHRM

Client	Product	Salesperson
Storm Water Pollution	Think Blue Regional	Joe Belshin

Dates	QTY	Description	Rate	Total
05/17/10-06/27/10		Advertising		5,000.00

o/k to pay
$ 5,000.00
po # 4500012097
Judy 6/22/10

Please remit payment to:
Local Media of America LLC
P.O. Box 927057
San Diego, CA 92192

Subtotal:	5,000.00
Agency Commission:	0.00
Total Due	**5,000.00**

Please close P.O.
4500012097

CBS RADIO

Think Blue
9370 Chesapeake Dr Ste 100
San Diego CA 92123-1065

Date: 6/1/10
Invoice# 1452-960

MEMO BILL THINK BLUE FOR
THE MONTH OF JUNE 2010

* (2) Week commercial schedule on KyXy, June 7 to June 20, 2010. * PO# 45000012029	$ 5,000.00
Total Due:	$ 5,000.00

Please Remit to:
KyXy FM
PO Box 100878
Pasadena CA 91189-0878

DUPLICATE

TM

energy
Energy Communications Corp.

MEMO BILL

Energy Communications
637 Third Ave. Suite B
Chula Vista, CA 91910
Phone: 619-585-9398
Fax: 619-585-9463

MEMO BILL #1553

DATE: JUNE 14, 2010

BILL TO:
GS Storm Water Pollution Prevention
Attn: Timothy Graham-Billing Contact
9370 Chesapeake Drive Suite 100
San Diego, CA 92123-1065

CLIENT:
City of San Diego "Think Blue Campaign"
Storm Water Prevention

COMMENTS OR SPECIAL INSTRUCTIONS:

May 14, 2010 – June 18, 2010 Regional Buy

SALESPERSON	P.O. NUMBER	REQUISITIONER			TERMS
Geri Ibarra	4500012119				Due on receipt

QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL
1	:30 second commerical schedule: May Regional Buy 5/14-5/28 2010	$2,270.00	$2,270.00
1	:30 second commerical schedule: June Regional Buy 5/31-6/18 2010	$2,715.00	$2,715.00
		SUBTOTAL	$4,985.00
		TOTAL	$4,985.00
			DUE $4,985

ok to pay
$4985.00
PO # 4500012119
Timothy W Graham
6/14/10

Make all checks payable to : XEWT - 12
If you have any questions concerning this invoice, contact: Geri Ibarra (619) 585-9398 ext 129

Thank you for your business!

TM

INVOICE

Invoice Date	Invoice Month	Invoice Period
6/10/2010	June	Summer 2010

Station	Account Executive	Sales Office	Sales Region
KGTV	Silvia Mendez	San Diego	Local

Advertiser	Product	PO#
City of San Diego: Think Blue	Ants Pants	45000012120

Contract Dates	Invoice #	Alt Oder #
May - June 2010	135234	

Billing Calendar	Billing Type
broadcast	Cash

Special Handling

IDB#	Adv. Code	Product Code

KGTV
4600 Air Way
San Diego, CA 92102
Main: (619) 237-1010
Billing: (619) 237-6253
www.10News.com

Billing Address:

Tim Graham
City of San Diego
9370 Chesapeake Drive Ste 100
San Diego, Ca 92123

ok to pay
$5000.00
PO# 45000012120
Judy U. Dub
6/10/10

Send Payment To:
KGTV
McGraw-Hill Broadcasting
4600 Air Way
San Diego, CA 92102

10News LIVE at 6a

	Weekdays	Spots	Rate	Length	Total Spots	Total Amount
weeks: 6	M-F	9	$220	:30	9	$1,980

10News LIVE at 6a

	Weekdays	Spots	Rate	Length	Total Spots	Total Amount
weeks: 6	M-F	2	$50	:30	2	$100

10News LIVE at 6a

	Weekdays	Spots	Rate	Length	Total Spots	Total Amount
weeks: 6	M-F	3	$200	:30	3	$600

MF, 3-5p

	Weekdays	Spots	Rate	Length	Total Spots	Total Amount
weeks: 6	M-F	6	$50.00	:30	6	$300

MF, 3-5p

	Weekdays	Spots	Rate	Length	Total Spots	Total Amount
weeks: 6	M-F	4	$0.00	:30	4	$0.00

10News LIVE at 11p

	Days	Spots	Rate	Length	Total Spots	Total Amount
weeks: 6	M-Su	3	$500.00	:30	3	$1,500.00

10News LIVE at 11p

	Days	Spots	Rate	Length	Total Spots	Total Amount
weeks: 6	M-Su	2	$450.00	:30	2	$900.00

10News LIVE at 11p

	Days	Spots	Rate	Length	Total Spots	Total Amount
weeks: 6	M-Su	1	$503.00	:30	1	$502.35

Gross Amount	**$5,882.35**
Agency Commission	**$882.35**
Net Amount New Due	**$5,000.00**

NBC 7/39
NBCSANDIEGO.COM

Invoice
 # 4500112118

TO: The City of San Diego
Attn: Tim Graham
9370 Chesapeake Dr.
San Diego, CA 92123

DATE: June 16, 2010

FOR: Television Advertising on NBC 7/39

PERIOD: 05/31/10-06/25/10

THE CITY OF SAN DIEGO/THINK BLUE - JUNE

Gross Cost for 23 commercials	**$5,884.00**
Agency Commission	**- 882.00**
Total Net Due	**$5,001.40**

ok to pay
$5,001.40
PO # 4500112118
Nicky Lindh
6/28/10

NBC 7/39 - KNSD
225 Broadway Suite 300
San Diego, CA 92101

MEMO INVOICE

Midwest Television, Inc.
7677 Engineer Road
San Diego, CA 92111
Main: (858) 571-8888
Billing: (858) 495-8609

www.kfmb.com

Invoice #	Invoice Date	Invoice Month	Invoice Period
48930-M	6/17/2010	Jun-10	5/31-6/27/10

Station	Account Executive	Sales Office	Sales Region
KFMB-TV	Moore	KFMB	Local

Advertiser	Product	Estimate Number
City of San Diego	Ants In Your Pants	

Billing Address:

City of San Diego
9370 Chesapeake Drive, Ste 100-MS
San Diego, CA 92123

Contract Dates	Order #	Alt. Order #
6/14-6/27/10	48930	

Billing Cycle	Billing Calendar	Billing Type
EOM/EOC	Broadcast	Cash

Special Handling
Memo Invoice

Send Payment to:
Midwest Television, Inc.
7677 Engineer Rd.
San Diego, CA 92111
Attn: Financial Services

DATE	DESCRIPTION	GROSS	NET
6/14-6/27/10	21x Commercials on KFMB-TV	$5,880.00	$4,998.00

ok to pay
$4998.00
po # 4500012028
6/26/10

PLEASE RETURN ONE COPY OF INVOICE WITH PAYMENT

TERMS: DUE UPON RECEIPT

GROSS TOTAL	AGENCY COMMISSION	NET DUE
$ 5,880.00	$ (882.00)	$ 4,998.00

final invoice

MEMO INVOICE 450001 2098

TM

Smooth Jazz 98.1

RECEIVED JUN 03 2010 By: MB

TO: THINK BLUE REGIONAL
1970 B STREET
SAN DIEGO, CA 92102-1820

Invoice # 98151910

Federal ID # 561990847

Attn: Tim Graham

Date: May 19, 2010

RE: Ants in Your Plants

AE: Kim Torik

	Advertiser	Balance
	*THINK BLUE ON KIFM • 3 Weeks of :60-sec advertising commercials for the weeks of: 5/10, 5/17, 6/14 Payment due date: Upon Receipt Make check payable to: Lincoln Financial Media Co of CA/KIFM 1615 Murray Canyon Road Suite 710 San Diego, CA 92108	$5,000.00
		Balance Due
	THANK YOU	$5,000 (Net)

OK to pay $5,000.00
APPROVED FOR PAYMENT
DATE: 6/3/10
SIGNATURE:
PO # 450000 12098

TM

COX MEDIA

San Diego Interconnect℠
Operated by
COX Media®

MEMO-BILL

CITY OF SD / STORM WATER
STORM WATER DEPT CITY OF SD
9370 CHESAPEAKE DR STE 100 MS 19
SAN DIEGO, CA 92123
ATTN: TIM GRAHAM

CITY OF SD / STORM WATER

Acct. Exec: Mitchell Sigsworth

Bill Cycle: Jun-10

Invoice ID:	**576512**	**Date:**	**6/16/2010**	**Contract ID:**	**576512**	**Client ID**	**76692**
Campaign ID:	**THINK BLUE**	**PO ID:**	**45000012027**				

Description		Amount
Gross Advertising	JUNE - THINK BLUE SCHEDULE - PO #45000012027	$ 2,611.76
In-House Agency Discount		($391.76)

Net Advertising Fee	**$**	**2,220.00**
Sub Total	**$**	**2,220.00**
Total This Invoice	**$**	**2,220.00**

PLEASE INCLUDE A COPY OF THIS INVOICE WITH REMITTANCE CHECK

Terms: Due Upon Receipt
Checks Payable to: Cox Media
Mail to: Lockbox 50456
Los Angeles, CA 90074

ok to pay $2200.00
APPROVED FOR PAYMENT
DATE: 6/25/10
SIGNATURE: [illegible]

RECEIVED
JUN 25 2010

PO# 45000012027

By:

COX MEDIA

San Diego Interconnect℠
Operated by
COX Media®

INVOICE

CITY OF SD / STORM WATER
STORM WATER DEPT CITY OF SD
9370 CHESAPEAKE DR STE 100 MS 19
SAN DIEGO, CA 92123
ATTN: TIM GRAHAM

CITY OF SD / STORM WATER

Acct. Exec: Mitchell Sigsworth

Bill Cycle: Jun-10

Invoice ID:	**630175**	**Date:**	**6/29/2010**	**Contract ID:**	**630175**	**Client ID**	**76692**
Campaign ID:	**THINK BLUE**	**PO ID:**	**45000012027**				

Description	Amount
Gross Advertising	$ 2,780.00

PO - 45000012027

Net Advertising Fee	**$**	**2,780.00**
Sub Total	**$**	**2,780.00**
Total This Invoice	**$**	**2,780.00**

PLEASE INCLUDE A COPY OF THIS INVOICE WITH REMITTANCE CHECK

Terms: Due Upon Receipt
Checks Payable to: Cox Media
Mail to: Lockbox 50456
Los Angeles, CA 90074

CBS OUTDOOR

INVOICE

Invoice No.: 02222153
Date: 5/18/10

185 US Highway 46, Fairfield, NJ 07004
(973) 575-6900

Account Executive: Henley, Kyle

CONTRACT NUMBER	CUSTOMER P.O./ CONTRACT NUMBER	ACCOUNT NUMBER
0786015		1021381

Term: Due Upon Receipt

CITY OF SAN DIEGO STORM WATER
DEPARTMENT
9370 CHESAPEAKE DR STE 100
SAN DIEGO CA 92123

Ref: Space Contract# 0786004

ADVERTISER: THINK BLUE
City Of Sa

SAN DIEGO

BILLING PERIOD	DESCRIPTION	AMOUNT
5/05/10 To 5/05/10	SAN DIEGO SHELTERS PRODUCTION Design: Think Blue - County Posting/Install Date: 05/24/05 48 Units, Copy Size: Transit Shelters Production of Qty 48 Transit Shelters	1,356.00

TOTAL AMOUNT DUE: 1,356.00 OK

PLEASE REFER TO INVOICE NUMBER IN ANY CORRESPONDENCE AND WHEN REMITTING

Page: 1

Please Detach and Submit with Payment

Invoice No.: 02222153
Date: 5/18/10
Account No.: 1021381
Contract No.: 0786015
Total Amount Due: 1,356.00

Remit Payment to:

CBS OUTDOOR

P.O. Box 33074
Newark, NJ 07188-0074

CITY OF SAN DIEGO STORM WATER
DEPARTMENT
9370 CHESAPEAKE DR STE 100
SAN DIEGO CA 92123

CBS OUTDOOR

INVOICE

Invoice No.: 02223340
Date: 5/21/10

185 US Highway 46, Fairfield, NJ 07004
(973) 575-6900

Account Executive: Henley, Kyle

CONTRACT NUMBER	CUSTOMER P.O./ CONTRACT NUMBER	ACCOUNT NUMBER
0786004		1021381

Term: Due Upon Receipt

CITY OF SAN DIEGO STORM WATER
DEPARTMENT
9370 CHESAPEAKE DR STE 100
SAN DIEGO CA 92123

ADVERTISER: THINK BLUE

COUNTY CAMPAIGN
48 BUS SHELTER (S)
SAN DIEGO BUS SHELTERS

BILLING PERIOD	DESCRIPTION	AMOUNT
5/24/10 To 6/20/10	SAN DIEGO - SHELTERS - BUS SHELTER (S)	8,640.00

TOTAL AMOUNT DUE: 8,640.00 OK

PLEASE REFER TO INVOICE NUMBER IN ANY CORRESPONDENCE AND WHEN REMITTING

Page: 1

Please Detach and Submit with Payment

Invoice No.: 02223340
Date: 5/21/10
Account No.: 1021381
Contract No.: 0786004
Total Amount Due: 8,640.00

Remit Payment to:

CBS OUTDOOR

P.O. Box 33074
Newark, NJ 07188-0074

CITY OF SAN DIEGO STORM WATER
DEPARTMENT
9370 CHESAPEAKE DR STE 100
SAN DIEGO CA 92123

NORTH COUNTY TIMES

with the Californian
PO BOX 499097 EXCONDIDO, CA 92046-9097 (760)740-3540
ADVERTISING MEMO INVOICE & STATEMENT

ACCOUNT NUMBER	INVOICE NUMBER	PAGES
9330	93300610	1

BILLING PERIOD	TERMS OF PAYMENT
05/2010 – 06/2010	NET 30
ADVERTISER NAME	ADVERTISER ACCOUNT NUMBER
Think Blue	9330

DATE	NEWSPAPER REFERENCE	DESCRIPTION	SIZE / BILLED UNITS	TIMES RUN	NET AMOUNT
5/24/2010	INT	50,000 Impressions 300X250	300x250	1	$1050
6/13/2010	MB	CAR ENC ESC FAL O RAN SAN TEM VIST	3x10.5	1	$778.55
6/13/2010	KFC	Color Charge	3x10.5	1	$481.14
6/17/2010	MB	CAR ENC ESC FAL O RAN SAN TEM VIST	3x10.5	1	$519.03
6/17/2010	KFC	Color Charge	3x10.5	1	$320.76
6/18/2010	MB	CAR ENC ESC FAL O RAN SAN TEM VIST	3x10.5	1	$259.52
6/18/2010	KFC	Color Charge	3x10.5	1	$160.38

CURRENT AMT DUE	30 DAYS	60 DAYS	OVER 90 DAYS		TOTAL AMT DUE
$3569.38	0.00	0.00	0.00		3569.38

Questions on your account? Please contact Bonnie Horvitz 760-740-3540

PLEASE DETATCH AND RETURN THIS WITH YOUR REMITTANCE

SIGNATURE: _____

EXPIRATION DATE: ____/_____

_ VISA _ MATERCARD _ DISCOVER _ AMERICAN EXPRESS

|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

ACCOUNT NUMBER	INVOICE NUMBER	BILLING DATE
9330	93300610	6/27/2010

TOTAL AMT DUE
$3569.38
AMT ENCLOSED

THINK BLUE
9370 CHESAPEAKE DR SUITE 100
SAN DIEGO CA 92123

NORTH COUNTY TIMES
207 E PENNSYLVANIA AVE
ESCONDIDO CA 92025

San Diego Suburban News

13475 Danielson Street, Suite 110
Poway, CA 92064
Phone 858-748-2311 Fax 858-513-9478

DATE: June 10, 2010
INVOICE # 10667

Bill To:
Shannon Johnson
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Drive, Ste. 100
San Diego, CA 92123

DESCRIPTION	AMOUNT
Pomerado Newspapers 1/4 Page full color display ad San Diego County Fair	$ 500.00
La Jolla Light 1/4 Page full color display ad San Diego County Fair	612.00
TOTAL	$ 1,112.00

Make all checks payable to **San Diego Suburban News**
If you have any questions concerning this invoice, contact Dana Backstrom, Business Manager. 858-218-7225

THANK YOU FOR YOUR BUSINESS!

San Diego Suburban News

13475 Danielson Street, Suite 110
Poway, CA 92064
Phone 858-748-2311 Fax 858-513-9478

DATE: June 17, 2010
INVOICE # 10785

Bill To:
Shannon Johnson
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Drive, Ste. 100
San Diego, CA 92123

DESCRIPTION	AMOUNT
Pomerado Newspapers 1/4 Page full color display ad San Diego County Fair	$ 450.00
Ramona Sentinel 1/4 Page full color display ad San Diego County Fair	250.00
TOTAL	$ 700.00

Make all checks payable to **San Diego Suburban News**
If you have any questions concerning this invoice, contact Dana Backstrom, Business Manager. 858-218-7225

THANK YOU FOR YOUR BUSINESS!

RECEIVED
JUN 8 2010
By: MB

TM

06-10-10P12:23 RCVD

Mannis Communications, Inc.
dba San Diego Community Newspaper Group
4645 Cass Street, 2nd Floor
San Diego, CA 92109

	Invoice #
6/3/10	10-0603017

Bill To
Think Blue City of San Diego 9370 Chesapeake Dr San diego, Ca 92123 Attn S Johnson

4500009009

I.O Number	Rep	Terms
	KD	Net 30

Qty	Description	Paper	Price Each	Amount
1	1/5th Page	DTN	427.00	427.00
1	Online Service Charge	OSC	3.00	3.00

SD DOWNTOWN NEWS
$430

****Tear Sheet****
To download a copy of your ad go to: SDNEWS.COM Click on Digital Archives

APPROVED FOR PAYMENT
DATE: 6/28/10
SIGNATURE: [illegible]
PO# 4500009009

Online Service Charge (OSC) pays for: posting of your ad online with linking features to your webpage in a newspaper flip page edition, electronic invoicing and tear sheets and on-line business listings- $3 per ad. $5 for 1/2 page or larger. To view and and take advantage of these features, go to www.sdnews.com. For more information call your sales representative.

Phone #	Fax #	E-mail
858-270-3103	858-713-0095	accounting@sdnews.com

Total	$430.00
Balance Due	$430.00

SAN DIEGO CITYBEAT

50 S. De Lacey Ave. Suite 200
Pasadena , CA 91105-3806
619-325-4883 Ext. 129

RECEIVED JUN 30 2010 By: MB

Invoice

Invoice # 213002
Invoice Date: 6/23/2010
Rep: AO

Bill to: Bill to ID: 43514

Shannon Johnson
GS STORM WATER POLLUTION PERVENTION
9370 Chesapeake Dr. Suite 100
San Diego , CA 92123-1065

Sold to: Account ID: 43514

Shannon Johnson
GS STORM WATER POLLUTION PERVENTION
9370 Chesapeake Dr. Suite 100
San Diego , CA 92123-1065

Ad Insertions included in this Invoice

Iss	Date	Type	Description	Charge	Disc	Applied	Total
7.98	6/23/10	Sale	PO: #4500009191 1/4	$400.00			$400.00

Regional Candy Fair Ad

ok to pay $400.00
PO # 4500009191
Judy [illegible] 7/1/10

Items: 1

Total Charges	**$400.00**
Discount	
Payments Applied	**$0.00**
Total Balance Due on Receipt	**$400.00**

Please return this portion with your payment

Advertising

Invoice Date: 6/23/2010
Invoice # 213002
Account # 43514

Amount Enclosed _____

Remit Payment to:
San Diego CityBEAT
50 S. De Lacey Ave. Suite 200
Pasadena, CA 91105-3806

Ad Insertion Charges	
Total Balance Due on Receipt	**$400.00**

APPROVED FOR PAYMENT
DATE: _____
SIGNATURE: _____

06-22-10P12:37 RCVD

SAN DIEGO CITY BEAT

50 S. De Lacey Ave. Suite 200
Pasadena , CA 91105-3806
619-325-4883 Ext. 129

RECEIVED
JUN 25 2010
By: MB

06-24-10P03:39

Invoice

Invoice # 212637
Invoice Date: 6/16/2010
Rep: AO

Bill to: Bill to ID: 43514

Shannon Johnson
GS STORM WATER POLLUTION PERVENTION
9370 Chesapeake Dr. Suite 100
San Diego , CA 92123-1065

Sold to: Account ID: 43514

Shannon Johnson
GS STORM WATER POLLUTION PERVENTION
9370 Chesapeake Dr. Suite 100
San Diego , CA 92123-1065

Ad Insertions included in this Invoice

Iss	Date	Type	Description	Charge	Disc	Applied	Total
7.97	6/16/10	Sale	PO: #4500009191 1/4	$400.00			$400.00

Regional County Fair Ad

Ok to pay
Date 6/25/10
PO# 4500009191

Items: 1

Total Charges	$400.00
Discount	
Payments Applied	$0.00
Total Balance Due on Receipt	$400.00

Please return this portion with your payment

Advertising

Invoice Date: 6/16/2010
Invoice # 212637
Account # 43514

Amount Enclosed _____

Remit Payment to:
San Diego CityBEAT
50 S. De Lacey Ave. Suite 200
Pasadena, CA 91105-3806

Ad Insertion Charges	
Total Balance Due on Receipt	$400.00

APPROVED FOR PAYMENT
DATE: _____
SIGNATURE: _____

06-17-10P03:29 RCVD

SAN DIEGO NEIC ORHOOD NEWSPAPERS
DBA: CHULA VISTA STAR NEWS
296 THIRD AVE
CHULA VISTA, CA 91910

RECEIVED
JUN 18 2010
By: MB

INVOICE

6/11/10

ACCCT # 20100574-000

CITY OF SAN DIEGO-STORM WATER
DEPT * THINK BLUE * S. JOHNSON
9370 CHESAPEAKE DRIVE #100
SAN DIEGO CA 92123

PO#

DESCRIPTION		AMOUNT
6/11/10 REF# 02549835-001 DEL MAR EVENT	18.75"	348.23
	TOTAL	348.23

APPROVED FOR PAYMENT
DATE: 6/25/10
SIGNATURE:
PO# 4500009009

Make all check s out to: SAN DIEGO NEIGHBORHOOD NEWSPAPERS
Payment is due within 30 days.
If you have any questions concerning this invoice, contact
JUTTA VANDERHEYDEN –619-427-3000 EXT 260

Thank you for your business!

Advertising Invoice

SAN DIEGO NEIGHBORHOOD NEWSPAPERS,

THE STAR NEWS, THE ALPINE SUN, THE EAST COUNTY CALIFORNIAN, THE LAKE, SD SENIORS, THE RANCH,

296 THIRD AVE.
CHULA VISTA, CA 91910
PHONE: (619) 427-3000
FAX: (619) 426-6346

4

CV-CITY OF SAN DIEGO-STORM WATER
DEPT - THINK BLUE - S JOHNSON
9370 CHESAPEAKE DR #100
SAN DIEGO, CA 92123

Cust#: 20100574-000
Phone: (858)541-4351
Date: 06/18/10
Due Date: 07/15/10

Ad#	Text	Start	Stop	Days	Amount	Prepaid	Due
02549836-001	DEL MAR EVENT	06/18/10	06/18/10	1	348.23	-348.23	0.00

Total Due 0.00

LA PRENSA SAN DIEGO
651 - C Third Avenue
Chula Vista, CA 91910
619-425-7400

Invoice

Invoice #	23062
Date:	6/22/2010

Bill To

Water Department, City of San Diego
600 "B" St., Ste. 400
San Diego, CA 92101
Attn: Chris Robbins
Supervising Mgmt. Analyst

P.O. No.	Terms	Due Date
	Net 30	7/22/2010

Description	Amount
Display Advertisement - FERIA DE CONDADO SE SAN DIEGO THINK BLUE SAN DIEGO Published: June 11, 2010 Ad Size: 3 columns x 10.5 inches = 31.5 column inches Ad Cost: 31.5 ci @ $15.00 per inch	472.50
Display Advertisement - FERIA DE CONDADO SE SAN DIEGO THINK BLUE SAN DIEGO Published: June 18, 2010 Ad Size: 3 columns x 10.5 iches = 31.5 column inches Ad Cost: 31.5 ci @ $15.00 per inch	472.50
Total	$945.00

el latino
Cubriendo todo el condado de San Diego

P.O. BOX 120550
SAN DIEGO. CA 92112

Invoice

Date	Invoice #
7/2/2010	59591

Bill To

CITY OF S.D. STORM WATER DEPT.
9370 CHESAPEAKE DR., STE-100
SAN DIEGO, CA 92123

P.O. #. OR I.O. #.	Terms	Due Date	Rep
I/O 5403	Due on receipt	7/2/2010	RD

Description	Qty	Rate	Class	Amount
AD DISPLAYED ON VOL. XXII/EDITION: #25,28 INSERTION DATE: JUNE. 11, JULY. 2/2010 AD CAMPAING: THINK BLUE PLACEMENT: ALL ZONES COLOR: FOUR COLOR SIZE: 1/4 PAGE	2	818.77		1,637.54
		COUNTY	AD XI	
(REVISED INVOICE				

Phone #: 619/426.1491 | Fax #: 619/426.3206 | E-mail: Carlos@ellatino.net

Web Site: Ellatinoonline.com | We accept credit cards. Visa & Master Card

Please put invoice # in your payment.
Paid receipts are given upon request. Thank you

Total	$1,637.54
Payments/Credits	$0.00
Balance Due	**$1,637.54**

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HOW ARE WE DOING ?
YOUR OPINION IS IMPORTANT TO US, CALL ME AT 619-426-1491 EXT. 214, FANNY MILLER, PUBLISHER.

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Encinitas
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 111.53
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Erik Steenblock
Program Manager
City of Encinitas Clean Water Program

7/1/2010
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9/29/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Encinitas

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.G. Regional Events						
5/25/2010	Kristy Rygiel	Program Assistant	1.00	$ 29.74	$ 29.74	Created event info email and sent shift schedule grid
6/1/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	Sent 'request for volunteers' email
6/8/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	Sent 'request for volunteers' email
6/14/2010	Kristy Rygiel	Program Assistant	0.50	$ 29.74	$ 14.87	Created and sent volunteer info email
6/14/2010	Kristy Rygiel	Program Assistant	0.50	$ 29.74	$ 14.87	Coordinated and mailed fair entry tickets to volunteers
6/15/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	Sent 'request for volunteers' email
6/16/2010	Kristy Rygiel	Program Assistant	1.00	$ 29.74	$ 29.74	Picked up extra Fair tickets from event coordinator
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 111.53					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 1,267.70**
Contract / Other Expenditures Claimed:	**$ 30,216.39**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Marsha Cook
Land Use Environmental Planner III
County of San Diego

8/16/10
Date

Todd Sylva for M.C.
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Marsha Cook
Land Use Environmental Planner III
County of San Diego

8/16/10
Date

Todd Sylva for M.C.
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Sub-task 3.A. Materials Development and Distribution.						
5/7/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Getting quotes from BPA vendor
5/11/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Arranging for printing and design by vendor
5/13/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Proofs and payment
Sub-total	$ 88.91					
Subtask 3.B. Partnership Development.						
5/17/2010	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	06/08/2010 EdTac venue logistics
5/21/2010	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	Update listserve, create and send out invitation for EdTac
5/19/2010	Ruth de la Rosa	Land Use Planner II	4.00	$ 53.78	$ 215.12	EdTac Catering purchasing process with P&C
6/7/2010	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	Create handouts (agenda, evaluation, sign-in sheet name tags)
6/28/2010	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Summarize EdTac, create handout
4/27/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Meet with CTN and scriptwriter to discuss tourism video
4/30/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Read through script, give initial comments and send on to partnership committee
5/4/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Arrange for Loren Nancarrow to do voiceover
5/18/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Send out requests for bids to facilitate EdTac meeting
5/24/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Discuss agenda with facilitator and solict feedback
6/7/2010	Rachel Borgatti	Program Coordinator	0.25	$ 59.27	$ 14.82	Discuss script with scriptwriter
Sub-total	$ 926.89					
Subtask 3.D. Market Research and Assessment Tools.						
4/14/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Prep for regional assessment meeting/talk with Action Research
5/28/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Discuss survey methodology with Action Research
6/2/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Discuss survey methodology with Action Research
			0.00	$ -	$ -	
Sub-total	$ 88.91					
Subtask 3.F. Mass Media Campaign.						
4/27/2010	Rachel Borgatti	Program Coordinator	0.75	$ 59.27	$ 44.45	Meet with CTN and scriptwriter to discuss PSA shooting possibilities
5/18/2010	Rachel Borgatti	Program Coordinator	2.00	$ 59.27	$ 118.54	Meet with Wildcoast to discuss collaboration and PSA ideas
Sub-total	$ 162.99					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Copermittee Total					$ 1,267.70	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask3.B PARTNERSHIP DEVELOPMENT				
The Gourmet Group Catering / PO 533725	$ 514.95	6/9/2010	$ 25.75	Catering services for EdTac on 06/08/2010
Rose Pfanner Productions/PO 523434-1	$ 3,520.00	6/8/2010	$ 176.00	Scriptwriter for Tourism operator outreach video
Loren Nancarrow/PO 533825-0	$ 1,500.00	6/22/2010	$ 75.00	Voiceover and video services for tourism operator outreach video
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ 5,534.95				
Subtaskx.x Management Cost $ 276.75				
Subtask 3.D. Research and Assessment				
Contract # 529712, CBSM Action Research	$ 20,100.00	7/14/2010	$ 1,005.00	Regional Litter CBSM study
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ 20,100.00				
Subtaskx.x Management Cost $ 1,005.00				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask 3.A. Materials Development		$ 2,499.69	5/13/2010		Recycled Chico Bag purchase for the enviro fair
Subtask 3.B. Partnership Committee		$ 600.00	6/15/2010		CT Consulting facilitating fee for 6/8/10 EdTac
Subtask 3.H. Events		$ 200.00	2/3/2010		High Tech Fair/SD Science Alliance
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
Sub-total Other Expenditures	$ 3,299.69				
Total Expenditures (Including contract management cost)		**$ 30,216.39**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: Copermittee Summary

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Expenditure Type(s): Hourly AND Contract / Other Expenditures

Hourly Expenditures Claimed: $ 3,777.45

Contract / Other Expenditures Claimed: $ 165,605.31

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Marsha Cook
Land Use Environmental Planner III
County of San Diego

8/16/10
Date

Todd S. for M.C.
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Marsha Cook
Land Use Environmental Planner III
County of San Diego

8/16/10
Date

Todd S. for M.C.
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: Copermittee Summary

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Sub-task 3.A. Materials Development and Distribution.						
5/7/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Getting quotes from BPA vendor
5/11/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Arranging for printing and design by vendor
5/13/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Proofs and payment
6/14/2010	Elisa Marrone	Program Coordinator	2.00	$ 35.00	$ 70.00	collect coloring books from City of San Diego Envirofair
6/9/2010	Elisa Marrone	Program Coordinator	2.00	$ 35.00	$ 70.00	collect chico bags from County of San Diego for Envirofair
4/30/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Print Shop
5/11/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Print Shop
5/20/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Print Shop
6/1/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Coordinating printing for the regional coloring book
5/11/2010	Cynthia Mallett	Environmental Specialist II	0.50	$ 51.34	$ 25.67	Discussion with City of SD on transit shelter posters
5/11/2010	Cynthia Mallett	Environmental Specialist II	1.00	$ 51.34	$ 51.34	Discussion with graphic artist/request for estimate for transit shelter poster
5/13/2010	Cynthia Mallett	Environmental Specialist II	0.50	$ 51.34	$ 25.67	Correspond with City of SD and graphic artist to upload artwork for posters
5/18/2010	Cynthia Mallett	Environmental Specialist II	0.25	$ 51.34	$ 12.84	Request from subcommittee leads for any possible rollovers from 09-10 to 10-11
Sub-total	$ 514.18					
Subtask 3.B. Partnership Development.						
5/17/2010	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	06/08/2010 EdTac venue logistics
5/21/2010	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	Update listserve, create and send out invitation for EdTac
5/19/2010	Ruth de la Rosa	Land Use Planner II	4.00	$ 53.78	$ 215.12	EdTac Catering purchasing process with P&C
6/7/2010	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	Create handouts (agenda, evaluation, sign-in sheet name tags)
6/28/2010	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Summarize EdTac, create handout
4/27/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Meet with CTN and scriptwriter to discuss tourism video
4/30/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Read through script, give initial comments and send on to partnership committee
5/4/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Arrange for Loren Nancarrow to do voiceover
5/18/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Send out requests for bids to facilitate EdTac meeting
5/24/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Discuss agenda with facilitator and solicit feedback
6/7/2010	Rachel Borgatti	Program Coordinator	0.25	$ 59.27	$ 14.82	Discuss script with scriptwriter
Sub-total	$ 926.89					
Subtask 3.C. Market Research and Assessment Tools						
4/14/2010	Jennifer N Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Preparation for Assessment sub-committee meeting
4/15/2010	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Preparation for Assessment sub-committee meeting
5/21/2010	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional Events Surveys - coordinating printing

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: copermittee summary

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
4/14/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Prep for regional assessment meeting/talk with Action Research
5/28/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Discuss survey methodology with Action Research
6/2/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Discuss survey methodology with Action Research
Sub-total	$ 274.67					
Subtask 3.D. Regional Website						
4/4/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordination of calendar survey links to regional web site
5/20/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating change to Port info on Regional map for web site
6/24/2010	Tim Graham	Sr. Public Information Officer	0.50	$ 46.44	$ 23.22	Changes to regional map on web site
Sub-total	$ 116.10					
Subtask 3.F. Mass Media Campaign						
4/5/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating the FY10 and FY11 TV and radio buy for the regional group
4/12/2010	Tim Graham	Sr. Public Information Officer	3.00	$ 46.44	$ 139.32	Continued coordination of theater, outdoor, radio and television buy
5/11/2010	Tim Graham	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Coordinate upload of Regional graphics to CBS outdoor
4/2/2010	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Finalize the Ultra Star regional contract
4/5/2010	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating the FY10-11 TV and radio buy for the regional group
4/5/2010	Shannon Johnson	Public Information Officer	6.00	$ 42.44	$ 254.64	to size the EnviroFair ad.
4/5/2010	Shannon Johnson	Public Information Officer	4.00	$ 42.44	$ 169.76	Coordinating the FY 10-11 TV and radio buy for the regional group
5/20/2010	Shannon Johnson	Public Information Officer	2.00	$ 42.44	$ 84.88	Coordinating the FY 10-11 TV and radio buy for the regional group
4/27/2010	Rachel Borgatti	Program Coordinator	0.75	$ 59.27	$ 44.45	Meet with CTN and scriptwriter to discuss PSA shooting possibilities
5/18/2010	Rachel Borgatti	Program Coordinator	2.00	$ 59.27	$ 118.54	Meet with Wildcoast to discuss collaboration and PSA ideas
Sub-total	$ 1,043.79					
Subtask 3.H. Regional Events						
5/25/2010	Kristy Rygiel	Program Assistant	1.00	$ 29.74	$ 29.74	Created event info e-mail and sent shift schedule grid
6/1/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	sent "request for volunteers" e-mail
6/8/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	sent "request for volunteers" e-mail
6/14/2010	Kristy Rygiel	Program Assistant	0.50	$ 29.74	$ 14.87	Created and sent volunteer info e-mail
6/14/2010	Kristy Rygiel	Program Assistant	0.50	$ 29.74	$ 14.87	Coordinated and mailed fair entry tickets to volunteers
6/15/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	sent "request for volunteers" e-mail
6/16/2010	Kristy Rygiel	Program Assistant	1.00	$ 29.74	$ 29.74	Picked up extra Fair tickets from event coordinator
5/21/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Coordinating with the SD County Fair for EnviroDay participation
5/1/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Coordinating with the SD County Fair for EnviroDay participation
6/15/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Coordinating with the SD County Fair for EnviroDay participation
6/17/2010	Shannon Johnson	Public Information Officer	0.50	$ 42.44	$ 21.22	Coordinating with the SD County Fair for EnviroDay participation
Sub-total	$ 423.06					
Subtask 2.B. Work Plans and Budgets						
1/12/2010	Cynthia Mallett	Environmental Specialist II	4.00	$ 51.34	$ 205.36	Attendance at Copermittee Mgmt meeting for Work Plan and Budget discussion
3/18/2010	Cynthia Mallett	Environmental Specialist II	4.00	$ 51.34	$ 205.36	Attendance at Copermittee Mgmt meeting for Work Plan and Budget discussion

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: Copermittee Summary

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
5/17/2010	Cynthia Mallett	Environmental Specialist II	2.00	$ 51.34	$ 102.68	Revising FY 09-10 and 10-11 Work Plan and Budgets
5/18/2010	Cynthia Mallett	Environmental Specialist II	2.00	$ 51.34	$ 102.68	Revising FY 09-10 and 10-11 Work Plan and Budgets
6/17/2010	Cynthia Mallett	Environmental Specialist II	0.50	$ 51.34	$ 25.67	Request from subcommittee leads for any possible roll over from 09-10 to 10-11
Sub-total	$ 641.75					
Copermittee Total					**$ 3,777.45**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: Copermittee Summary

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 3.A. MATERIALS DEVELOPMENT					
City of San Diego, Publishing Services, Inv #90005476		$ 1,188.79	4/30/2010	$ 59.44	Editing the City of SD coloring book for the regional group
City of San Diego, Publishing Services, Inv #90005477		$ 5,554.32	5/27/2010	$ 277.72	Printing the San Diego Regional coloring book for the group
City of San Diego Publishing Services, Inv #900054-56, 58 thru 63		$ 840.00	5/26/2010	$ 42.00	Edits to the regional Envirofair print ad for placement in regional newspapers
Webster Design		$ 1,100.00	4/20/2010	$ 55.00	Bus Shelter Poster Artwork Design
Subtask 3.A Sub-total	$ 8,683.11				
Subtask 3.A Management Cost	$ 434.16				
Subtask 3.B. PARTNERSHIP DEVELOPMENT					
The Gourmet Group Catering / PO 533725		$ 514.95	6/9/2010	$ 25.75	Catering services for EdTac on 06/08/2010
Rose Pfanner Productions/ PO 523434-1		$ 3,520.00	6/8/2010	$ 176.00	Scriptwriter for Tourism operator outreach video
Loren Nancarrow / PO 533825-0		$ 1,500.00	6/22/2010	$ 75.00	Voiceover and video services for tourism operator outreach video
Subtask 3.B. Sub-total	$ 5,534.95				
Subtask 3.B Management Cost	$ 276.75				
Subtask 3.C. MARKET RESEARCH AND ASSESSMENT TOOLS					
Contract # 529712, CBSM Action Research		$ 20,100.00	7/14/2010	$ 1,005.00	Regional Litter CBSM study
Contract: Action Research (4500-009350) Invoice #10-1038		$ 7,395.00	5/27/2010	$ 369.75	Survey event card and regional calendar assessment
Contract: Action Research (4500-009350) Invoice #10-1043		$ 2,622.50	6/30/2010	$ 131.13	Regional Calendar assessment
Contract: Action Research (4500-009350) Invoice #10-1046		$ 250.00	6/20/2010	$ 12.50	Regional Calendar assessment -draft report
Subtask 3.C. Sub-total	$ 30,367.50				
Subtask 3.C. Management Cost	$ 1,518.38				
Subtask 3.D. REGIONAL WEBSITE					
Events online		$ 50.00		$ 2.50	April hosting fee for Regional web site
Events online		$ 50.00		$ 2.50	May hosting fee for Regional web site

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Events online		$ 50.00		$ 2.50	June hosting fee for Regional web site
Subtask 3.D Sub-total	$ 150.00				
Subtask 3.D Management Cost	$ 7.50				
Subtask 3.F. MASS MEDIA CAMPAIGN					
Ultra Star Cinemas- Regional ad, Summer 2010 Contract		$ 40,000.00	5/30/2010	$ 2,000.00	Contract for Ants in Your Plants PSA- in 6 regional movie theaters
KLQV-FM		$ 4,000.00	6/27/2010	$ 200.00	Ants in Your Plants Radio Buy
KLQV-FM		$ 1,000.00	5/23/2010	$ 50.00	Ants in Your Plants Radio Buy
Clear Channel Radio		$ 5,000.00	6/20/2010	$ 250.00	Ants in Your Plants Radio Buy
XHRM-FM		$ 5,000.00	6/22/2010	$ 250.00	Ants in Your Plants Radio Buy
KIFM-FM		$ 5,000.00	5/19/2010	$ 250.00	Ants in Your Plants Radio Buy
KYXY-FM		$ 5,000.00	6/1/2010	$ 250.00	Ants in Your Plants Television Buy
XEWT-TV		$ 4,985.00	6/14/2010	$ 249.25	Ants in Your Plants Television Buy
KGTV-TV		$ 5,000.00	6/10/2010	$ 250.00	Ants in Your Plants Television Buy
KNSD-TV		$ 5,001.40	6/16/2010	$ 250.07	Ants in Your Plants Television Buy
KFMB-TV		$ 4,998.00	6/17/2010	$ 249.90	Ants in Your Plants Television Buy
Cox Media		$ 2,220.00	6/10/2010	$ 111.00	Ants in Your Plants Television Buy
Cox Media		$ 2,780.00	6/10/2010	$ 139.00	Ants in Your Plants Television Buy
CBS Outdoor		$ 1,356.00	5/18/2010	$ 67.80	Calendar Art Transit Shelter Poster Production
CBS Outdoor		$ 8,640.00	5/21/2010	$ 432.00	Calendar Art Transit Shelter Buy
North County Times		$ 3,569.38	6/27/2010	$ 178.47	Regional Ad Buy for County Fair
Pomerado Newspaper/La Jolla Light		$ 1,112.00	6/10/2010	$ 55.60	Regional Ad Buy for County Fair
Pomerado Newspaper/Ramona Sentinel		$ 700.00	6/17/2010	$ 35.00	Regional Ad Buy for County Fair
SD Downtown News		$ 430.00	6/3/2010	$ 21.50	Regional Ad Buy for County Fair
San Diego City Beat		$ 400.00	6/16/2010	$ 20.00	Regional Ad Buy for County Fair
San Diego City Beat		$ 400.00	6/23/2010	$ 20.00	Regional Ad Buy for County Fair
The Star News		$ 348.23	6/11/2010	$ 17.41	Regional Ad Buy for County Fair
The Star News		$ 348.23	6/18/2010	$ 17.41	Regional Ad Buy for County Fair
La Prensa		$ 945.00	6/22/2010	$ 47.25	Regional Ad Buy for County Fair
El Latino		$ 818.77	6/11/2010	$ 40.94	Regional Ad Buy for County Fair
Subtask 3.F Sub-total	$ 109,052.01				
Subtask 3.F Management Cost	$ 5,452.60				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask 3.A. Materials Development		$ 2,499.69	5/13/2010		Recycled Chico Bag purchase for the Envirofair
Subtask 3.A. Materials Development		$ 85.00	4/14/2010		All The Way To The Ocean books for survey drawing prizes
Subtask 3.A. Materials Development		$ 529.72	6/14/2010		Crayons for coloring books
Subtask 3.B. Partnership Committee		$ 600.00	6/15/2010		CT Consulting facilitating fee for 6/8/10 EdTac

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask 3.E. Underserved	$ 213.95	4/29/2010		Spanish translation for 2011 calendar
Subtask 3.H. Events	$ 200.00	2/3/2010		High Tech Fair/SD Science Alliance
Sub-total Other Expenditures $ 4,128.36				
Total Expenditures (Including contract management cost)	**$ 165,605.31**			

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COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 757.27**
Contract / Other Expenditures Claimed:	**$ 1,155.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

7-27-10
Date

M. A. Lahsaie
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9-29-10
Date

M. Cook
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support.						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. Work Plan and Budget						
1/21/2010	Cynthia Mallett	Environmental Specialsit II	4.00	$ 51.34	$ 205.36	Attendance at Copermittee Mgmt meeting for Work Plan and Budget Discussion
3/18/2010	Cynthia Mallett	Environmental Specialsit II	4.00	$ 51.34	$ 205.36	Attendance at Copermittee Mgmt meeting for Work Plan and Budget Discussion
5/17/2010	Cynthia Mallett	Environmental Specialsit II	2.00	$ 51.34	$ 102.68	Revising FY 09-10 and 10-11 Work Plan and Budgets
5/18/2010	Cynthia Mallett	Environmental Specialsit II	2.00	$ 51.34	$ 102.68	Revising FY 09-10 and 10-11 Work Plan and Budgets
6/17/2010	Cynthia Mallett	Environmental Specialsit II	0.50	$ 51.34	$ 25.67	Reqeust from subcommittee leads for any possible roll overs from 09-10 to 10-11
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 641.75					
Sub-task 3.A. Materials Development and Distribution.						
5/11/2010	Cynthia Mallett	Environmental Specialsit II	0.50	$ 51.34	$ 25.67	Discussion with City of SD on transit shelter posters
5/11/2010	Cynthia Mallett	Environmental Specialsit II	1.00	$ 51.34	$ 51.34	Discussion with graphic artist/ request for estimate for transit shelter poster
5/13/2010	Cynthia Mallett	Environmental Specialsit II	0.50	$ 51.35	$ 25.68	Correspond with City of SD and graphic artist to upload artwork for posters
5/18/2010	Cynthia Mallett	Environmental Specialsit II	0.25	$ 51.34	$ 12.84	Coorespond with City of SD regarding Spanish posters
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 115.52					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 757.27**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 3.A. Materials Development and Distribution				
Webster Design	$ 1,100.00	4/20/2010	$ 55.00	Bus Shelter Poster Artwork Design
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtask 3.A. Sub-total $ 1,100.00				
Subtask 3.A. Management Cost $ 55.00				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WOR		$ -	x/x/2010		
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
Sub-total Other Expenditures	$ -				
Total Expenditures (including contract management cost)		**$ 1,155.00**			

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Webster. Design

1357 Fern Place

Vista, Ca 92081

760-945-6576

Fax 760-945-6061

website:

www.websterdesign.net

INVOICE

Number: 8933

Date: 4/20/10

Terms: Net 30 Days

Description:

Art Services for:	City of Oceanside Attn: Cynthia Mallett
Job #3668	Bus Shelter Posters

Design and art for bus shelter poster	$ 950.00
Spanish version	150.00

Subtotal	$ 1,100.00
Tax	
Total Due	$ 1,100.00

Thanks for your business

I hereby certify that all materials specified hereon have been received, checked and are in acceptable condition and or services have been satisfactorily performed and accepted.

Cynthia A. Mallett 06/02/10

Signature Date

I hereby certify that payment is in accord with existing contracts or agreements. The account number and net amount to charge to each account are correct and that the funds are budgeted.

PO# _____

Acct: No 750 762 711 5355

Appr for Pay _____

Signature Date

Remark _____
(Optional)

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 1,742.92**
Contract / Other Expenditures Claimed:	**$ 33,390.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Rachel Borgatti
Program Coordinator
County of San Diego

1/28/2010
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Rachel Borgatti
Program Coordinator
County of San Diego

1/28/2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.B. Work Plan and Budget						
10/30/2009	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Review and compile FY 09-10 1st quarter expenditure claims
11/4/2009	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Correspond with Co-permittees regarding approval of claims
10/1/2009	Rachel Borgatti	Program Coordinator	1.50	$ 59.27	$ 88.91	Write rollover narrative request for FY09-10 budget
10/8/2009	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Revise and review rollover request
10/13/2009	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Create slides and further revise rollover request
10/15/2009	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Present portion of rollover request to Management Committee
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 452.20					
Subtask 3.B. Partnership Development.						
10/26/2009	Ruth de la Rosa	Land Use Planner II	5.00	$ 53.78	$ 268.90	12/03 EdTac venue logistics
11/5/2009	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Complie list of invitees and send out save the date for 12/03 EdTac
11/12/2009	Ruth de la Rosa	Land Use Planner II	5.00	$ 53.78	$ 268.90	12/03 EdTac Catering purchasing process with P&C
11/13/2009	Ruth de la Rosa	Land Use Planner II	1.50	$ 53.78	$ 80.67	Correspond with guest speakers
11/22/2009	Ruth de la Rosa	Land Use Planner II	4.00	$ 53.78	$ 215.12	Create handouts (agenda, partnership worksheet, evaluation)
12/1/2009	Ruth de la Rosa	Land Use Planner II	4.00	$ 53.78	$ 215.12	Correspond with ERS chair regarding regional update to partners, created initial presetation
12/2/2009	Ruth de la Rosa	Land Use Planner II	1.50	$ 53.78	$ 80.67	Print handouts and name tags for EdTac Meeting
				$ -	$ -	
Sub-total	$ 1,290.72					
Copermittee Total					$ 1,742.92	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Expenditure Description / Work Plan Task
A. Contract Expenditures (List by Contract Name and # first, and then Contract Task or Sub-task)			
B. Other Expenditures			
Subtask 3.B. Partnership Development	$ 1,766.00	12/9/2009	EdTAC Catering Services
Subtask 3.A. Material Development and Distribution	$ 30,624.00	1/4/2010	2010 Regional Calendar Printing
Subtask 3.H. La Mesa Movies in the Park payment	$ 1,000.00	9/29/2009	Event outreach movies in the park
	$ -		
Sub-total Other Expenditures $ 33,390.00			
Total Expenditures	**$ 33,390.00**		

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Customer Information

XCS, LLC
SUITE 400
7676 HAZARD CNTR DR
SAN DIEGO, CA
92108

Telephone 800-854-3689
Direct Billing Inquiries To:

709033971 Customer No.	108868755 Invoice No.	12/19/09 Invoice Date
511469 Purchase Order No.	10/26/09 Date	GSA Contract No.
X111875 Xerox Reference No.	11/17/09 Date Processed	Registration No.
PS Special Reference No.	Tax	PAYABLE ON RECPT Terms of Payment

xerox

Ship To
COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To
COUNTY OF SAN DIEGO
XEROX CONVOY COURT
7585 CONVOY CT
SAN DIEGO CA
92111-1113

7026717
Master Order No.

Bill Code

REMARKS
RACHEL BORGATTI/R DE LA ROSA MS: O-326
PUBLIC WORKS, DEPT OF
JOB # 29896
STORMWATER CALENDAR

Invoice

Description	Quantity	Unit Price	Amount
25,000 COLOR CALENDAR	1	28160.0000	28,160.00

	SUB TOTAL	$28,160.00
CALIF STATE & LOCAL	TAX 8.2500%	2,323.20
SAN DIEGO COUNTY	TAX 0.5000%	140.80
	INVOICE TOTAL	$30,624.00

OK to pay - Ruth ouLaRosa
PO # 511469-0 $30,624.00
OK to Pay Rachel Borgatti, Program Coordinator 1/4/10

THANK YOU FOR DOING BUSINESS WITH XEROX BUSINESS SERVICES

Payment

PLEASE INCLUDE THIS STUB WITH YOUR PAYMENT, OR WRITE YOUR INVOICE NUMBER(S) ON YOUR CHECK.

Ship To/Installed At	Bill To	When Paying By Mail Send Payment To:
COUNTY OF SAN DIEGO XEROX CONVOY COURT 7585 CONVOY CT SAN DIEGO CA 92111	COUNTY OF SAN DIEGO XEROX CONVOY COURT 7585 CONVOY CT SAN DIEGO CA 92111-1113	XEROX CORPORATION P.O. BOX 7405 PASADENA, CA. 91109-7405

☐ Please check here if your "Bill To" address or "Ship To/Installed At" location has changed and complete reverse side.

Invoice Amount

00-495-2792 1 709033971 108868755 12/19/09 5166 $30,624.00
026 040732296 D S749 1 VQL01
T000562 32 X X
202100008070060 1088687554 0330624000 270903397136

catering and event planning

Date:	Thursday, December 03, 2009	Time Start/Time End:	**See Below**
Group:		# of Guests/Set For #:	**50 Guests**
Contact:	Ruth De La Rosa	Type/Function:	
Phone:	858-694-2752	Location:	Ruben H. Fleet
Email:	ruth.delarosa@sdcounty.c	Invoice #:	
Address:		Contracted By:	**Jeanna Grant**

the wild thyme company, 7163 construction ct. suite b, san diego, ca 92121

Kitchen Load Out:
Depart Commissary: 7am and 10:30am
Wild Thyme Arrival/Event Start Time: 7:15am and 10:45am

Item	ct.	$	total $
			$ -
Continental Breakfast - Setup at 8am			$ -
Assorted Yogurts			$ -
Freshly baked breakfast breads including muffins,			$ -
danish's and croissants			$ -
Fresh seasonal fruit display			$ -
			$ -
Fresh Fruit Juice: Orange, Apple and Cranberry			$ -
Coffee Set-up with Hot Tea Selection			$ -
			$ -
Breakfast for 50 Guests	50	$ 9.75	$ 487.50
			$ -
Gourmet Sandwich Buffet - Setup at 11:30am			$ -
Roast turkey, apple wood smoked bacon, lettuce,			$ -
and roma tomato			$ -
			$ -
Roast Beef, oven dried tomatoes, arugula			$ -
			$ -
Roma Tomatoes, fresh mozzarella, basil and			$ -
balsamic vinaigrette			$ -
			$ -
Antipasto Salad			$ -
fussili pasta, olives, artichoke hearts, roasted peppers,			$ -
and basil dressing			$ -
			$ -
Kettle Chips			$ -
			$ -
Cookies and Brownies			$ -
			$ -
Menu for 50 Guests	50	$ 13.50	$ 675.00
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
Food Subtotal:			$ 1,162.50

Beverages:

Beverages based on Consumption			$ -
Soft Drinks: Coke, Diet Coke, Sprite	10	$ 1.00	$ 10.00
Bottle Waters	10	$ 1.50	$ 15.00
Iced Tea with sliced lemons and sugars (gallon)	3	$ 12.00	$ 36.00
Coffee Set-up throughout day	4	$ 18.00	$ 72.00
			$ -
Beverage Subtotal:			$ 133.00

In an effort to be more environmentally conscious The Wild Thyme Company is focused on utilizing local eco friendly produce. We strive to support local organic farms and pride ourselves on offering quality fresh produce to our customers. We also utilize biodegradable sugarcane plates and flatware

Setup Instructions/Rentals:

Timeline:

7:15am:	Wild Thyme Arrival
8am:	Breakfast set-up
8:30 - 9:30am:	Registration
10-10:15am:	Break - need to refresh room
10:45am:	Wild thyme arrive for lunch
11:30am:	Lunch set-up
12pm - 12:30:	Lunch
1:30pm:	Wild Thyme return to pick up

Additional Charges:		
China, silver and glassware:	$	-
Florals:	$	-
Linen: Quote	$	-
Misc.:	$	-
Labor Charges:		
Delivery Charge:	$	70.00
Coat Check:	$	-
Chef/Bartender:	$	-
Server:	$	-
Summary of Banquet Charges		
Food Subtotal:	$	1,162.50
Beverage Subtotal:	$	133.00
Labor Charges:	$	70.00
Additional Charges Subtotal:	$	-
Subtotal of all Items:	$	1,365.50
Service Charge:	$	259.10
Total Event Charges:	$	1,624.60
8.75% CA State Sales Tax:	$	142.15
Additional Non-Tax Charges		
Entertainment:	$	-
Event Grand Total	$	1,766.75
Deposit	$	-
Balance of Charges Due:	$	1,766.75

Office 858-527-0226 ~ Fax 858-527-0296

Signature: (date
Jeanna Grant - Director of Events

Signature: Ruth delaRosa
Date: 12/7/09

OK to Pay $1,766.75
PO# 531924

Todd
12/8/09

September 29, 2009

County of San Diego Department of Parks & Recreation
9150 Chesapeake Drive, Suite 200
San Diego, California 92123

Attn: Christine Lafontant
Re: CSD PO# 518977-0

INVOICE

County Agreement #37930, Outdoor Screening Services $1,000.00

CommCinema certifies that it is in compliance with Paragraph 8.15 of County Agreement #37930.

All invoices are due and payable one month after receipt. Invoices more than thirty (30) days past due bear interest at the rate of one percent (1%) per month and are subject to an additional late billing fee of fifteen dollars ($15.00) per month.

Please make check payable to:

Tallal, Inc.
Fed. Tax ID #75-2517055
31510 Anacapa View Drive
Malibu, CA 90265
(310) 924-4212

THANK YOU FOR YOUR BUSINESS!

CommCinema • 31510 Anacapa View Drive
Malibu, CA 90265 • Telephone 310.924.4212 • e-mail david@commcinema.com

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Imperial Beach
Period:	2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 208.70**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Chris Helmer
Environmental Program Manager
City of Imperial Beach

1/18/2010
Date

Chris Helm
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

~~Ruth de la Rosa~~ Rachel Borgatti
~~[Title]~~ Program Coordinator
County of San Diego

1/28/2010
Date

Rachel Borgatti
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Imperial Beach

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.D. Regional URMP Annual Report Input.						
11/12/2009	Chris Helmer	Environmental Program Mng	5.00	$ 41.74	$ 208.70	ERS RURMP Annual Report Update
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 208.70					
Copermittee Total					$ 208.70	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 2,027.93
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo lahsaie
Clean Water Program Coordinator
City of Oceanside

01-15-2010
Date

M.A. Lahsaie
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

~~Ruth de la Rosa~~ Rachel Borgatti
~~[Title]~~ Program Coordinator
County of San Diego

1/28/2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support.						
			0.00	$ 51.34	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. Work Plan and Budget						
10/1/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Draft rollover narrative for FY09-10 budget
10/1/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Correspond with County on FY 09-10 revisions
10/8/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Draft rollover narrative - speak with County staff
10/9/2009	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Draft rollover narrative - speak with County staff
10/12/2009	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Draft rollover narrative - prepare slides; correspond with subcommitee leads
10/13/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Draft rollover narrative - correpsond with copermittees
10/14/2009	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Finalize rollover narrative and slides
10/15/2009	Cynthia Mallett	Environmental Specialist	3.50	$ 51.34	$ 179.69	Present rollover request at Management Committee Meeting
10/15/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Email to copermittees requesting expenditure claims for FY 09-10 Q1
10/27/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Email to copermittees reqeusting expenditure claims for FY 09-10 Q1-2nd request
10/28/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Correspond with County on status of FY 09-10 expenditure claims
10/29/2009	Cynthia Mallett	Environmental Specialist	1.50	$ 51.34	$ 77.01	Review FY 09-10 Q1 Expenditure Claims
10/29/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Begin creating FY 10-11 Work Plan and Budget
11/3/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review FY 09-10 Q1 Expenditure Claims Summary
11/10/2009	Cynthia Mallett	Environmental Specialist	0.25	$ 51.34	$ 12.84	Correspond with County on status of FY 09-10 expenditure claims
11/5/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Discuss revision to summary page of FY 09-10 Claims summary; review summary
11/17/2009	Cynthia Mallett	Environmental Specialist	3.00	$ 51.34	$ 154.02	Compile FY 08-09 Summary, Revise FY 09-10 budget, Draft FY 10-11 budget

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
11/19/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Request text changes from subcommittee leads for FY 10-11 work plan
12/4/2009	Cynthia Mallett	Environmental Specialist	1.50	$ 51.34	$ 77.01	Review/update FY 10-11 Work plan and bduget; send to copermittees for comment
			23.25	$ -	$ -	
Sub-total	$ 1,193.66					
Subtask 2.D. Regional URMP Annual Report Input.						
10/14/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Discuss RURMP with Co-chair
11/16/2009	Cynthia Mallett	Environmental Specialist	0.25	$ 51.34	$ 12.84	Send draft RURMP Annaul Report to County
12/9/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Incorproate comments; send to Copermittees for vote
12/18/2009	Cynthia Mallett	Environmental Specialist	1.50	$ 51.34	$ 77.01	Accept and compile votes for RURMP AR
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			3.25	$ -	$ -	
Sub-total	$ 166.86					
Sub-task 3.A. Materials Development and Distribution.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.B. Partnership Development.						
11/17/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Discuss with County chairing the EdTAC Mtg
11/30/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Discuss agenda for EdTAC meeting
11/30/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Request to ERS Workgroup subcommittee leads to have rep at EdTAC meeting

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
12/1/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Final review/comments on EdTac agenda/discuss number of RSVPs with County
12/1/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review Keynote speaker Bio - Emily Young
12/2/2009	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Create/discuss/review PP slides for EdTac meeting
12/2/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Review/comment on Partnership Worksheet
12/3/2009	Cynthia Mallett	Environmental Specialist	7.50	$ 51.34	$ 385.05	Co-chair Partnership Development/EdTAC Meeting
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			13.00	$ -	$ -	
Sub-total	$ 667.42					
Subtask 3.C. Regional Brand.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.D. Market Research and Assessment Tools.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.G. Mass Media and Public Relations.						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask 3.H. Regional Events.						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 2,027.93	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Escondido
Period:	2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 175.00
Contract / Other Expenditures Claimed:	$ 26,045.63

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elisa Marrone
Program Coordinator/Utilities
City of Escondido

1-13-10
Date

E Marrone
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

~~Ruth de la Rosa~~ Rachel Bongatti
[Title] Program Coordinator
County of San Diego

1/28/2010
Date

Rachel Bongatti
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Sub-task 3.A. Materials Development and Distribution.						
11/17/2009	Debbie Jardin	Program Coordinator	2.50	$ 35.00	$ 87.50	Receive & sort Stormwater Pollution Prevention Calendar
11/17/2009	Elisa Marrone	Program Coordinator	2.50	$ 35.00	$ 87.50	Receive & sort Stormwater Pollution Prevention Calendar
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 175.00					
Copermittee Total					**$ 175.00**	

10/26/09
AP

Webster Design

1357 Fern Place

Vista, Ca 92081

760-945-6576

Fax 760-945-6061

website:

www.websterdesign.net

INVOICE

Number: 8884

Date: 10/24/09

Terms: Net 30 Days

Description:

Art Services for:	City of Escondido Attn: Deborah Jardin, Program Coordinator, Utilities Dept.
Job #8555	2010 San Diego Regional Storm Water Calendar

Design and produce 12 month wall calendar: 24 page, plus 4 page cover, 4-color/2-sides, 11 x 17" flat (8.5 x 11" folded), drilled for hanging

Total Due $26,045.63

Thanks for your business

Consulting Agreement

APPROVED FOR PAYMENT
ACCT # 5131-558-440
CK'D BY: DJ
APRV'D BY:
paid 10/28/09 check #210469

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of San Diego
Period:	2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 1,727.50
Contract / Other Expenditures Claimed:	$ 10,425.84

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Tony Heinrichs
Director
City of San Diego, Storm Water Department

Jan 19, 2010
Date

Tony Heinrichs
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

~~Ruth de la Rosa~~ Rachel Bongatti
[Title] Program Coordinator
County of San Diego

1/28/2010
Date

Rachel Bongatti
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support						
x/x/2009			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. Work Plan and Budget						
				$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.D. Regional URMP Annual Report Input						
11/13/2009	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Edits and re-writes to RURMP write-up
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 92.88					
Sub-task 3.A. Materials Development and Distribution.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.B. Partnership Development.						
12/1/2009	Kearns	Sr. Public Information Officer	3.00	$ 46.44	$ 139.32	Preparing powerpoint and other materials for partnership meeting on 12/03/09
12/2/2009	Kearns	Sr. Public Information Officer	3.00	$ 46.44	$ 139.32	Preparing powerpoint and other materials for partnership meeting on 12/03/10
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 278.64					
Subtask 3.C. Regional Brand.						
10/2/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional logo follow up with City attorneys
11/22/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Meeting with MJE to revise regional logo standards manual
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 92.88					
Subtask 3.D. Market Research and Assessment Tools.						
10/9/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating with consulting on media assessment
11/30/2009	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Calendar assessment
12/2/2009	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Calendar assessment
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 232.20					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.G. Mass Media and Public Relations						
10/8/2009	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Preparing for mass media subcommittee meeting
10/13/2009	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Soliciting media proposals
10/16/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Soliciting media proposals
11/16/2009	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Reviewing media proposals
11/24/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Meeting with UltraStar Cinemas to discuss regional plan
10/11/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Soliciting media proposals
11/20/2009	Tim Graham	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Reviewing media proposals
10/13/2009	Shannon Johnson	Public Information Officer	1.50	$ 42.44	$ 63.66	Soliciting media proposals
11/16/2009	Shannon Johnson	Public Information Officer	2.00	$ 42.44	$ 84.88	Reviewing media proposals
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ 659.38					
Subtask 3.D. Website						
10/29/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Emails/calls - final web edits to site
11/11/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Emails/calls - final web edits to site
11/20/2009	Tim Graham	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Providing additional direction for MJE to work on the web site
11/23/2009	Tim Graham	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Review of site edits
11/24/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	providing additional direction for MJE to work on the web site
12/12/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Final review of site before going live
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ 371.52					
Copermittee Total					$ 1,727.50	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Expenditure Description / Work Plan Task
A. Contract Expenditures (List by Contract Name and # first, and then Contract Task or Sub-task)			
Contract 1. MJE Marketing Services (City of SD RQ09 9205592)			
Contract Task 3.C. Regional Branding	$ -		
MJE Invoice #9692 - Regional Logo Guide	$ 3,297.84	12/30/2009	Consultant fees for draft/finalize of Regional logo guide
MJE Invoice #9694 - Regional website programming	$ 6,003.00	12/30/2009	Fees for additional programming for the Regional website
	$ -		
	$ -		
Contract 2. Goodwin Simon Strategic Research/Action Research (GOS 15006349)			
Contract Task 3.D. Effectiveness Assessment	$ -		
GSSR/Action Research Invoice # 692	$ 125.00		Regional Calendar Assessment
Action Research Invoice #AR10-1021	$ 1,000.00		Tasks completed included: Attendance at regional group planning meeting for storm water calendar, development of pre-post test survey methodology, development of pre-post test protocol.
	$ -		
	$ -		
	$ -		
Sub-total Contract Expenditures $ 10,425.84			
B. Other Expenditures			
[EXPENDITURE]	$ -	x/x/2008	[DESCRIBE EXPENDITURE / IDENTIFY WORK PLAN TASKS ADDRESSED]
	$ -		
	$ -		
	$ -		
Sub-total Other Expenditures $ -			
Total Expenditures	$ 10,425.84		

Final 04-30-09

MJE Marketing Services
3131 Camino del Rio North
Suite 190
San Diego, CA 92108

Invoice

DATE	INVOICE #
12/15/09	9694

BILL TO:

Think Blue, City of San Diego
Attn: Jennifer Nichols Kearns, Sr. PIO
Storm Water Dept.
9370 Chesapeake Drive, Ste. 100, MS 1900
San Diego, CA 921235103989-0

P.O. NUMBER	TERMS	PROJECT
4500 001281 5204102	Due on receipt	TB - 135

QUANTITY	DESCRIPTION	RATE	AMOUNT
	THINK BLUE TB - 135 REGIONAL WEB SITE PROGRAMMING (CALENDAR DOWNLOAD, SURVEY, NEW SECTION, TRAINING)		
24	Programming	120.00	2,880.00T
22	Content, Training Oversight	120.00	2,640.00T
	Sales Tax	8.75%	483.00

x 12/15/09

Thank you for your business. Please call 619.682.3841 with any questions.

TOTAL $6,003.00 OK

$70405 (9/08)

MJE Marketing Services
3131 Camino del Rio North
Suite 150
San Diego, CA 92108

Invoice

DATE	INVOICE #
12/15/09	9692

BILL TO:

Think Blue, City of San Diego
Attn: Jennifer Nichols Kearns, Sr. PIO
Storm Water Dept.
9370 Chesapeake Drive, Ste. 100, MS 1900
San Diego, CA 921235103989-0

P.O. NUMBER	TERMS	PROJECT
5204102	Due on receipt	TB - 122

QUANTITY	DESCRIPTION	RATE	AMOUNT
	THINK BLUE TB - 122 REGIONAL GUIDE PRODUCTION		
	Printing	632.50	632.50T
12	Creative Production	120.00	1,440.00T
8	Creative and Content	120.00	960.00T
	Sales Tax	8.75%	265.34

x 12/15/09

Thank you for your business. Please call 619.682.3841 with any questions.

TOTAL $3,297.84 OK

570405 (9/08)

INVOICE

DATE: January 5, 2010

TO: **Jennifer Nichols Kearns, MS**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

INVOICE #: AR10-1021

PO #: 4500009350

SERVICES: Invoice is for services rendered between 12/1/09 and 12/31/09.

AMOUNT DUE: Total costs are shown by task and in total below.

TASK	AMOUNT DUE
Regional Group Calendar Assessment	$1,000.00
TOTAL DUE	**$1,000.00**

Please make check payable to:

Action Research
910 W. San Marcos Blvd, Suite 108
San Marcos, CA, 92078

Any questions regarding this invoice should be directed to Jennifer Tabanico at (760) 736-4348 or by email at: tabanico@takeactionresearch.com.

ATTACHMENT A: ACTIVITIES SUMMARY

Think Blue San Diego Region Activities

Tasks completed included: Attendance at regional group planning meeting for storm water calendar, development of pre-post test survey methodology, development of pre-post test protocol.

Staff	Hours	Rate	Subtotal
Tabanico	8.00	$125	$1,000
TOTAL			$1,000

Action Research

DATE: December 4, 2009

TO: **Goodwin Simon Strategic Research**
P.O.Box 366
Culver City, CA 90232

INVOICE #: AR09-1040

SERVICES: Costs are shown for regional activites

Consulting hours for J. Tabanico: 1.0 hours @ $125/hour = $ 125.00

TOTAL DUE.....$ 125.00

Please make check payable to **Action Research, 910 W. San Marcos Blvd, Suite 108. San Marcos, CA, 92078.** Any questions regarding this invoice should be directed to Jennifer Tabanico at (760) 736-4348 or by email at: tabanico@takeactionresearch.com.

ATTACHMENT A: SUMMARY OF COSTS by TASK in SCOPE OF WORK

Task 1: Research

Task 1.9: Management of CBSM Research Activities. Activities included regional calendar assessment.			
Staff	**Hours**	**Rate**	**Subtotal**
Tabanico	1.00	$125	$125.00
SUBTOTAL TASK 1.9			**$125.00**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Program Planning Subcommittee
Copermittee:	County of San Diego
Period:	3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 1,027.31**
Contract / Other Expenditures Claimed:	**$ 1,939.47**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Rachel Borgatti
Program Coordinator
County of San Diego

May 11, 2010
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Rachel Borgatti
Program Coordinator
County of San Diego

Aug 3, 2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.B. Partnership Development.						
2/2/2010	Ruth de la Rosa	Land Use Planner II	4.00	$ 53.78	$ 215.12	03/04/10 EdTac venue logistics
2/10/2010	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Update listserve, create and send out invitation for EdTac
2/10/2010	Ruth de la Rosa	Land Use Planner II	5.00	$ 53.78	$ 268.90	EdTac Catering purchasing process with P&C
2/16/2010	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Correspond with guest speaker
3/1/2010	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Create handouts (agenda, evaluation, sign-in sheet name tags)
3/12/2010	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	Write up summary of EdTac
1/26/2010	Rachel Borgatti	Program Coordinator	1.00	$ 59.27	$ 59.27	Meeting with CTN about tourism video
			0.00	$ -	$ -	
Sub-total	$ 1,027.31					

Copermittee Total	**$ 1,027.31**

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Expenditure Description / Work Plan Task
B. Other Expenditures			
Subtask 3.B. Partnership Development	$ 1,939.47	3/4/2010	EdTAC Catering Services
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Other Expenditures $ 1,939.47			
Total Expenditures	**$ 1,939.47**		

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 154.02**
Contract / Other Expenditures Claimed:	**$ 42.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

May 11, 2010
Date

M. A. Lahsaiezadeh
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Rachel Borgatti
Program Coordinator
County of San Diego

Aug. 3, 2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support.						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. Work Plan and Budget						
1/4/2010	Cynthia Mallett	Environmental Specialsit II	0.50	$ 51.34	$ 25.67	Reqeusting 2nd Quarter Expenditures
1/15/2010	Cynthia Mallett	Environmental Specialsit II	0.50	$ 51.34	$ 25.67	Contacting copermittees regarding expenditure claims
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 51.34					
Subtask 2.D. Regional URMP Annual Report Input.						
1/5/2010	Cynthia Mallett	Environmental Specialsit II	0.50	$ 51.34	$ 25.67	Requesting SD County Fair Assessment Report
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 25.67					
Sub-task 3.A. Materials Development and Distribution.						
1/7/2010	Cynthia Mallett	Environmental Specialsit II	0.50	$ 51.34	$ 25.67	Discussion with City of SD on use of calendar art for coloring book
1/7/2010	Cynthia Mallett	Environmental Specialsit II	1.00	$ 51.34	$ 51.34	Burn disks of calendar artwork for City of SD
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 77.01					
Subtask 3.B. Partnership Development.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.C. Regional Brand.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.D. Market Research and Assessment Tools.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.G. Mass Media and Public Relations.						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask 3.H. Regional Events.						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Expenditure Description / Work Plan Task
A. Contract Expenditures (List by Contract Name and # first, and then Contract Task or Sub-task)			
Contract 1. [ENTER CONTRACT TITLE / #]			
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Contract 2. [ENTER CONTRACT TITLE / #]			
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Contract Expenditures $ -			
B. Other Expenditures			
City of Oceanside Information Technologies	$ 42.00	1/11/2010	DVD Burning of Calendar Artwork - 21 Quantity
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		
	$ -		
	$ -		
Sub-total Other Expenditures $ 42.00			
Total Expenditures $ 42.00			

Final 04-30-09

City of Oceanside
Information Technologies

Copy Request Form

Support Center Call Number:	133552	**Date Requested:**	01-11-10
Submitted by:	Cynthia Mellett	**Date Needed:**	01-20-10
Department:	Rotary	**Extension:**	
Approved by:	Cynthia Mellett	**Estimated Amount:**	$ 42.00

Completion time based on 250 copies

Priority:	☐ **Critical 2 hours**	☐ **High Same Day**	☐ **Normal 24 hours**
Type of Request:	☐ Color	☐ Black and White	
	☐ Bound	☐ Left Side	☐ Top
	☐ Duplex	☐ Stapled	
	☐ Collate	☐ Uncollate	
	☐ CD duplication	☒ DVD duplication	

Cost:
Color $0.25 per side
Black & White $0.10
Binding $2.00 per document
CD's and DVD's $2.00 includes paper sleeve

Paper Size: _____

Number of pages in the Document: _____

Number of Copies: 21

Description: _____

Internal Use Only			
Completed by:	Luci Perrillo	**Actual Cost:**	$ 42.00
Account number to charge:	( ) 75076 27115225		
Account number to credit:	(841) 8410.4570.00009 (R&L – Other Info Tech Services)		
Management Approval by:		**Date:**	☐ **Copy to Finance for Journal Entry**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 126.40**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Erik Steenblock
Program Manager
City of Encinitas Clean Water Program

5/6/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Rachel Borgatti
Program Coordinator
County of San Diego

Aug. 3, 2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.H. Regional Events						
1/20/2010	Kristy Rygiel	Program Assistant	1.00	$ 29.74	$ 29.74	Emailed High Tech Fair info to copermittes; created booth staffing grid
1/27/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	Resend email to recruit event staffers
1/27/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	Phone conversation with event coordinator
1/28/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	Phone conversation with event coordinator
1/28/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	Registered for event
2/23/2010	Kristy Rygiel	Program Assistant	1.00	$ 29.74	$ 29.74	Emails to copermittees to discuss details of event
2/24/2010	Kristy Rygiel	Program Assistant	0.25	$ 29.74	$ 7.44	Emails to copermittees and event coordinator to finalize event details
2/25/2010	Kristy Rygiel	Program Assistant	0.50	$ 29.74	$ 14.87	Emails to copermittees and event coordinator to finalize event details
3/3/2010	Kristy Rygiel	Program Assistant	0.50	$ 29.74	$ 14.87	Emails to copermittees to discuss details of event
			0.00	$ -	$ -	
Sub-total	$ 126.40					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of San Diego
Period:	3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 1,149.00**
Contract / Other Expenditures Claimed:	**$ 1,967.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Kris McFadden
Deputy Director
City of San Diego, Storm Water Department

5/4/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
[Title]
County of San Diego

Aug 3, 2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support.						
x/x/2009			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. Work Plan and Budget						
				$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.D. Regional URMP Annual Report Input.						
			0.00	$ 46.44	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Sub-task 3.A. Materials Development and Distribution.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.G. Mass Media and Public Relations.						
1/15/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Meeting with UltraStar Cimenas - Regional in-theater advertising
1/19/2010	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Mass Media Meeting prep
1/20/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Mass Media subcommittee pre-meeting
1/20/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Mass Media subcommittee pre-meeting
1/20/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Mass Media subcommittee pre-meeting
1/20/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Mass Media subcommittee - fianlize regional media buy strategy
1/20/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Mass Media subcommittee - fianlize regional media buy strategy
1/20/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Mass Media subcommittee - fianlize regional media buy strategy
2/26/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Meeting with UltraStar Cimenas - Regional in-theater advertising
3/17/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Mass Media subcommittee - fianlize regional media buy strategy
3/18/2010	Shannon Johnson	Public Information Officer	1.00	$ 42.44	$ 42.44	Mass Media subcommittee - fianlize regional media buy strategy
3/26/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Meeting with UltraStar Cimenas - Regional in-theater advertising
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 591.72					
Subtask 3.D. Website						
1/14/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinate with Action Research and MJE regarding next steps for calendar and survey upload to Regional web site
1/20/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinate upload of submitted photos to web site for MJE
2/1/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional calendar and photo upload coordination
3/3/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional website assessment meeting
3/22/2010	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional calendar upload - troubleshoot google calendar, etc.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 232.20					
Copermittee Total					$ 1,149.00	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.B. Partnership Development.						
			0.00	$ 46.44	$ -	
			0.00	$ 46.44	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.C. Regional Brand.						
2/8/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Phone call with City Attorneys, updating language on Agreement
			0.00	$ 46.44	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 46.44					
Subtask 3.D. Market Research and Assessment Tools.						
1/4/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating calendar assessment
1/12/2010	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Coordinating calendar assessment
3/3/2010	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Calendar and event assessment - meeting with Action Research
3/18/2010	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Regional Assesment coordination - calendar, web survey, reporting
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 278.64					

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Expenditure Description / Work Plan Task
A. Contract Expenditures (List by Contract Name and # first, and then Contract Task or Sub-task)			
Contract 1. MJE Marketing Services (City of SD RQ09 9205592)			
Contract Task 3.C. Regional Branding	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Contract 2. Action Research (			
Contract Task 3.D. Effectiveness Assessment	$ -		
Action Research Invoice # 10-1023	$ 862.00		Calendar assessment: Development of pre- and post-test data file, data codebook, and pre-test data entry
Action Research Invoice #10-1026	$ 245.00		Calendar assessment; Pre-test data entry, post-test data receipt/management, Web prep
Action Research Invoice #10-1027	$ 860.00		Tasks completed included: Pre-test data entry, post-test data receipt/management, Web prep
	$ -		
	$ -		
Sub-total Contract Expenditures $ 1,967.00			
B. Other Expenditures			
[EXPENDITURE]	$ -	x/x/2008	[DESCRIBE EXPENDITURE / IDENTIFY WORK PLAN TASKS ADDRESSED]
	$ -		
	$ -		
	$ -		
Sub-total Other Expenditures $ -			
Total Expenditures $ 1,967.00			

Final 04-30-09

INVOICE

DATE: February 3, 2010

TO: **Jennifer Nichols Kearns, MS**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

INVOICE #: AR10-1023

PO #: 4500009350

SERVICES: Invoice is for services rendered between 1/1/10 and 1/31/10.

AMOUNT DUE: Total costs are shown by task and in total below.

TASK	AMOUNT DUE
Regional Group Calendar Assessment	$862.50

TOTAL DUE **$862.50** OK

02/07/10

Please make check payable to:

Action Research
910 W. San Marcos Blvd, Suite 108
San Marcos, CA, 92078

Any questions regarding this invoice should be directed to Jennifer Tabanico at (760) 736-4348 or by email at: tabanico@takeactionresearch.com.

action research

ATTACHMENT A: ACTIVITIES SUMMARY

Think Blue San Diego Region Activities

Tasks completed included: Development of pre- and post-test data file, data codebook, and pre-test data entry

Staff	Hours	Rate	Subtotal
Tabanico	4.50	$125	$562.50
RA I: Data Entry	7.50	$40	$300.00
TOTAL			**$862.50**

INVOICE

DATE: March 8, 2010

TO: **Jennifer Nichols Kearns, MS**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

INVOICE #: AR10-1026

PO #: 4500009350

SERVICES: Invoice is for services rendered between 2/1/10 and 2/28/10

AMOUNT DUE: Total costs are shown by task and in total below.

TASK	AMOUNT DUE
Regional Group Calendar Assessment	$860.00

TOTAL DUE **$860.00** OK

03/08/10

Please make check payable to:

Action Research
910 W. San Marcos Blvd, Suite 108
San Marcos, CA, 92078

Any questions regarding this invoice should be directed to Jennifer Tabanico at (760) 736-4348 or by email at: tabanico@takeactionresearch.com.

INVOICE

DATE: March 31, 2010

TO: **Jennifer Nichols Kearns, MS**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

INVOICE #: AR10-1032

PO #: 4500009350

SERVICES: Invoice is for services rendered between 3/1/10 and 3/31/10

AMOUNT DUE: Total costs are shown by task and in total below.

TASK	AMOUNT DUE
Regional Group Calendar Assessment	$245.00
TOTAL DUE	**$245.00** OK

Please make check payable to:

Action Research
910 W. San Marcos Blvd, Suite 108
San Marcos, CA, 92078

x 03/31/10

Any questions regarding this invoice should be directed to Jennifer Tabanico at (760) 736-4348 or by email at: tabanico@takeactionresearch.com.

action research

ATTACHMENT A: ACTIVITIES SUMMARY

Think Blue San Diego Region Activities

Tasks completed included: Pre-test data entry, post-test data receipt/management, Web prep			
Staff	**Hours**	**Rate**	**Subtotal**
Bruni	1.50	$90	$135.00
RA I: Data Entry	12.75	$40	$110.00
TOTAL			**$245.00**

action research

ATTACHMENT A: ACTIVITIES SUMMARY

Think Blue San Diego Region Activities

Tasks completed included: Pre-test data entry, post-test data receipt/management, Web prep

Staff	Hours	Rate	Subtotal
Bruni	1.50	$90	$135.00
RA I: Data Entry	12.75	$40	$110.00
TOTAL			**$245.00**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: Copermittee Summary

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Expenditure Type(s): Hourly AND Contract / Other Expenditures

Hourly Expenditures Claimed: $ 3,777.45

Contract / Other Expenditures Claimed: $ 165,605.31

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Marsha Cook
Land Use Environmental Planner III
County of San Diego

8/16/10
Date

Todd for M.C.
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Marsha Cook
Land Use Environmental Planner III
County of San Diego

8/16/10
Date

Todd for M.C.
Signature

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 1,267.70
Contract / Other Expenditures Claimed:	$ 30,216.39

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Marsha Cook
Land Use Environmental Planner III
County of San Diego

8/16/10
Date

Todd Sylva for M.C.
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Marsha Cook
Land Use Environmental Planner III
County of San Diego

8/16/10
Date

Todd Sylva for MC.
Signature

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 757.27**
Contract / Other Expenditures Claimed:	**$ 1,155.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

7-27-10
Date

M. A. Lahsaie
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9-29-10
Date

M. Cook
Signature

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Expenditure Type(s): Hourly AND Contract / Other Expenditures

Hourly Expenditures Claimed: $ 1,500.96

Contract / Other Expenditures Claimed: $ 133,405.25

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

City of San Diego
Deputy Director
Storm Water Department

7/29/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9/29/10
Date

Signature

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Encinitas
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 111.53
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Erik Steenblock
Program Manager
City of Encinitas Clean Water Program

7/1/2010
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9/29/10
Date

Signature

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Escondido
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 140.00
Contract / Other Expenditures Claimed:	$ 828.67

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elisa Marrone
Assistant Planner II
City of Escondido

7·1·10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9/29/10
Date

Signature

SAN DIEGO SCIENCE ALLIANCE

6161 El Cajon Blvd #409
San Diego, CA 92115

Invoice

Date	Invoice #
2/3/10	8

Bill To
Think Blue San Diego Region 505 S. Vulcan Ave. Encinitas, CA 92024

P.O. No.	Terms	Project

Description	Qty	Rate	Amount
Non-Profit Exhibitor Fee 2010 High Tech Fair		200.00	200.00

Total	$200.00
Payments/Credits	$0.00
Balance Due	$200.00

Rose Pfanner Productions

Rose Pfanner
924 Crest Dr.
Encinitas, CA
92024
760-436-3935
760-994-5054
Email: rpfanner@sbcglobal.net

Bill To:
Rachel Borgatti
Dept. of Public Works
County Operations Ct.
5555 Overland Ave.
San Diego, CA 92123

Invoice 012010 PO# 523434-1
Invoice Date: 6/08/10
Customer DPW

Invoice

Date	Your Order #	Our Order #	Sales Rep.	FOB	Ship Via	Terms	
6/098/2010	PO# 523434-1	NA	NA	NA	NA	DUE UPON RECEIPT	

Description	Total
Daily Rate Research/Producing, Writing/Directing $320 per day.	
3 days shooting @$320 per day	$ 960.
2 days logging @$320 per day	$ 640.
5 days research/ scripting@ $320 per day	$1600.
1 day post/editing@ $320 per day	$ 320.

TOTAL.....$ 3520.00

Okay to Pay Rachel Borgatti 6/14/10
Program Coordinator
P 1002993
O 50915
E 52370
T 011.008
A 100416

Loren Nancarrow
Video/Audio Impact

347 Norfolk Drive
Cardiff by the Sea, Ca.
92007
619-889-7892
loren.nancarrow@gmail.com

Loren Nancarrow
Video-Audio-Print

Storm water runoff video project.

Audio recording $1200.00 5/31/2010
Video segment $300.00 5/25/2010
Total $1500.00

P.O. Number-Rev: 533825-0

Okay to Pay Rachel Bazett 6/22/10

P 1002993
050915
E 52370
T 011.006
A 100496

Turning Research Into Action

INVOICE

Invoice # **AR10-1049**

From: **Action Research, Inc.**
910 W. San Marcos Blvd., Suite #108
San Marcos, CA 92078

To: **Rachel Borgatti**
5201 Ruffin Road, Suite P
San Diego, CA 92123
858-495-5413
rachel.borgatti@sdcounty.ca.gov

Date: July 8, 2010

Agreement # 529712

Time Period: Invoices is for tasks completed from May 1, 2010 through June 30, 2010. Costs based on fixed price per completed task.

Task	Description	Cost
Task 7: Barrier research and protocol development	**Litter CBSM project:** Identify sites, develop materials, observational data collection, intercept interviews	$14,480
Task 8: Data analysis and recommendations	**Litter CBSM project:** Written summary report and recommendations for outreach.	$5,620
TOTAL		**$20,100**

TOTAL DUE.....$20,100

Please make check payable to: Action Research, 910 W. San Marcos Blvd., Suite #108; San Marcos, CA 92078. Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-736-4348 or by email at: tabanico@takeactionresearch.com

Okay to pay - Rachel Borgatti, Program Coordinator 7/14/10
P 1002993
O 50915
E 52370
T 011.007
A 100496

INFINITE BUSINESS SOLUTIONS
ASI #231021
10405 S.D. MISSION ROAD STE 102
SAN DIEGO CA
Phone: (619) 516-4271 Fax: (619) 284-0826

INVOICE

003700 Page: 1

INVOICE DATE: 5/13/2010
CLIENT PO: 521305
SHIPPED: UPS Ground
6/4/2010
ORDER#: 3654
CONSULTANT: 20 (S)
AMY CLOUSE

TO:
ATTN: RACHEL BORGATTI
CTY OF SD-EDUCATION & OUTREACH
WATERSHED PROTECTION PROGRAM
5201 RUFFIN RD STE P
SAN DIEGO CA 92123

SHIP TO: 01
ATTN: RACHEL BORGATTI
CTY OF SD-EDUCATION & OUTREACH
WATERSHED PROTECTION PROGRAM
5201 RUFFIN RD STE P
SAN DIEGO CA 92123

ORDERED	SHIPPED	UNIT	ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
314	314	EA/1	6004	CHICO REPET TOTE	7.25	2,276.50

Paid 5/13/2010
Rachel Borgatti

TERMS: NET 15
We now accept MasterCard and Visa

2,276.50

SALES TAX	199.19
FREIGHT	24.00
TOTAL	**2,499.69**

Iliff, Traci

From: service@paypal.com
Sent: Monday, June 14, 2010 1:40 PM
To: Iliff, Traci
Subject: Faciltiator Invoice

PayPal

Jun 14, 2010 13:40:26 PDT

Hello Traci Iliff,

Crystal Trull would like to be paid through PayPal.

Merchant
Crystal Trull
3983 Mt. Blackburn Avenue
San Diego, CA 92111
United States
858-414-6740
crystaltrull@yahoo.com

Note from merchant
For services provided by CT Consulting

Description	Unit price	Qty	Amount
Meeting facilitation Item #	$600.00	1	600.00
		Subtotal	$600.00
		Total	$600.00 USD

Pay with PayPal

Crystal Trull would like you to use PayPal - the safer, easier way to pay and get paid online. Click the **Pay Now** to continue.

Pay Now

VISA MasterCard DISCOVER

Questions? Go to the Help Center at: https://www.paypal.com/us/help

Please do not reply to this email. This mailbox is not monitored and you will not receive a response. For assistance, log in to your PayPal account and click **Help** in the top right corner of any PayPal page.

To receive email notifications in plain text instead of HTML, log in to your PayPal account, go to your Profile, and click **Notifications**.

PayPal Email ID PP1525

The Gourmet Group Catering
7595 Vickers street suite 4
San Diego CA 92111

Tel : 619-200-4205

www.gourmetgroup.biz

GOURMET GROUP CATERING aka LUNCH BOX GOURMET

Invoice

Date	invoice #
8-Jun-10	2525

BILL TO:
Ruth Delarosa
San Diego County
ruth.delarosa@sdcounty.ca.gov

DELIVER TO
Center for sustainable energy
1.30pm to 4.30pm
Tel 858 694 2752

TERMS — MAKE CHECKS TO: GOURMET GROUP 7595 Vickers St. Ste.4 San Diego, CA 92111

QTY	DESCRIPTION	PRICE	COST
25	Assorted Cookies	1.50	37.50
25	Assorted Brownies	1.95	48.75
1	Fruit and cheese tray for 10	49.95	49.95
1	Vegetable tray with 2 dips	35.95	35.95
1	Hummus Babaganoush Tzaziki tray with pita breads	49.95	49.95
50	Coffee service	1.95	97.50
50	Assorted sodas &water	1.50	75.00
			-
	Catering Charge 20%		78.92
			-
	Our quote includes all delivery, set up and breakdown as well as		-
	biodegradable plates tableware napkins and cups		-
	Breakfast and Lunch served on platters		-
			-
			-
			-
			-
			-

Customer CC info/ Signature	Subtotal	$ 473.52
	Sales tax 8.75%	$ 41.43
	Sub -Total	$ 514.95
	Gratuity	
	TOTAL	

Please Note : All open invoices over 30 days will incur a 2% per month additional charge

$514.95 OK TO PAY - Ruth delaRosa LUEP II 6/9/10
PO#533725 Req# 74939
Okay to pay [illegible] Program Coordinator

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: All Copermittees

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Expenditure Type(s): Hourly AND Contract / Other Expenditures

Hourly Expenditures Claimed: $ 1,896.91

Contract / Other Expenditures Claimed: $ 38,569.29

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

All Copermittees

Date _____ Signature _____

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

11/5/09
Date

RdeLaRosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: 0

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support.						
8/14/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Subcommittee reports
8/17/2009	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Draft semi-annual update; correspond with subcommittee leads
8/18/2009	Cynthia Mallett	Environmental Specialist	1.50	$ 51.34	$ 77.01	Draft semi-annual update
8/19/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Finalize and sent update to County
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 256.70					
Subtask 2.B. Work Plan and Budget						
7/1/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review 09/10 Revised Work Plan
7/1/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Review FY 08-09 Quarter 1,2,3 Expenditure Claims
8/17/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Review FY 08-09 Quarter 4 Expenditure Claims
8/31/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Begin revising 09-10 budget
9/1/2009	Cynthia Mallett	Environmental Specialist	2.50	$ 51.34	$ 128.35	Create 08-09 Budget Summary
9/30/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Gather info for rollover narrative
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 333.71					
Subtask 2.D. Regional URMP Annual Report Input.						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: 0

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Sub-task 3.A. Materials Development and Distribution.						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.B. Partnership Development.						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.C. Regional Brand.						
7/2/2009	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Logo- Email Update
7/23/2009	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Logo- Licenseing follow-up with attorneys
8/14/2009	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Logo- Compile responses and updates
9/8/2009	Jennifer N Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Logo- Standards manual preparation
9/17/2009	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Logo- Post meeting follow up and emails
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: 0

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 278.64					
Subtask 3.D. Market Research and Assessment Tools.						
7/20/2009	Jennifer N Kearns	Sr. Public Information Officer	3.00	$ 46.44	$ 139.32	Regional survey- Review final report
7/24/2009	Jennifer N Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Regional survey- Review final report
9/10/2009	Jennifer N Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Regional survey- Email updates
	Jennifer N Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Regional survey- Edit and email draft
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 417.96					
Subtask 3.E. Website.						
8/10/2009	Tim Graham	Sr. Public Information Officer	0.50	$ 46.44	$ 23.22	Regional website- Review aupdated web site copy and emails
9/3/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional website- Finalize copy and programming elements for web site
9/21/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional website- Review multiple jurisdiction issues for zip codes, emails
9/24/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional website- Rewrite, copy, send Spanish translations to MJE
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 162.54					
Subtask 3.G. Mass Media and Public Relations.						
7/2/2009	Tim Graham	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Coordination and placement orders for Ants In Your Plants
9/17/2009	Jennifer N Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Media- Post meeting follow up
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: 0

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 139.32					
Subtask 3.H. Regional Events.						
7/20/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Movies in the Park payment dilemma; Contact La Mesa
7/21/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Movies in the Park payment dilemma; correspond with the City of San Diego
7/22/2009	Cynthia Mallett	Environmental Specialist	1.50	$ 51.34	$ 77.01	Correspond with County and City of SD staff regarding Movies in the Park situation
7/22/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Contact La Mesa to discuss the Movie in the Park payment situation
7/23/2009	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Contact all Copermittees Stormwater Staff scheduled to receive Movies in the Park
7/29/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Correspond with City of San Diego and La Mesa staff regarding Movie in the Park
8/14/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	La Mesa Movies in the Park payment
			0.00	$ 77.42	$ -	
Sub-total	$ 308.04					
Copermittee Total					**$ 1,896.91**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: 0

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Expenditure Description / Work Plan Task
A. Contract Expenditures (List by Contract Name and # first, and then Contract Task or Sub-task)			
Contract 1. MJE Marketing Services (City of SD RQ09 9205592)			
Subtask 3.C. Regional Brand (City of San Diego)	$ -		
MJE Marketing Services Invoice #9600	$ 864.29	9/14/2009	Regional web site photo purchase
MJE Marketing Services Invoice #9624	$ 780.00	10/7/2009	Regional Think Blue Guide
Contract 2. Good Win Simon Victoria/ Action Research (GOS 15006349)			
Subtask 3.D. Effectiveness Assessment (City of San Diego)	$ -		
Goodwin Simon Victoria Research Invoice #AR09-1024	$ 2,350.00	8/8/2009	Fair and Independence Jam in Oceanside
Goodwin Simon Victoria Research Invoice #AR09-1029	$ 2,920.00	9/4/2009	coding for event surveys collected from Movie in the Park
Goodwin Simon Victoria Research Incoice #AR09-1031	$ 1,025.00	10/5/2009	Development of protocol and quote for assessment.
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Contract Expenditures $ 7,939.29			
B. Other Expenditures			
Subtask 3.G. Mass Media (City of San Diego)	$ -		
KNSD Invoice #SE09070042	$ 5,275.00	7/26/2009	"Ants In Your Plants" broadcast
KUSI Invoice #32981-2	$ 3,000.00	8/17/2009	"Ants In Your Plants" broadcast
Smooth Jazz 98.1 Invoice #IN-1090758968	$ 6,150.00	8/17/2009	"Ants In Your Plants" broadcast
Recuerro 102.9 FM La Nueva 106.5 Invoice #IN-SD2-109077446	$ 3,430.00	7/28/2009	"Ants In Your Plants" broadcast
Clear Channel Invoice #125-169428	$ 6,115.00	8/17/2009	"Ants In Your Plants" broadcast

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Clear Channel Invoice #125-171326			$ 5,660.00	9/10/2009	"Ants In Your Plants" broadcast
Subtask 3.H Regional Events (City of San Marcos)			$ -		
Tallal, Inc. Invoice			$ 1,000.00	7/22/2009	Movies in the Park
Sub-total Other Expenditures	$	30,630.00			
		Total Expenditures	**$ 38,569.29**		

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 898.45
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

Oct 28, 2009
Date

M. A. Lahsaiezadeh
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Education Outreach
County of San Diego

11/04/09
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.A. Semi-annual Workgroup Update						
8/14/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	subcommittee reports
8/17/2009	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Drafting semi-annual update; correspond with subcommittee leads
8/18/2009	Cynthia Mallett	Environmental Specialist	1.50	$ 51.34	$ 77.01	Drafting semi-annual update
8/19/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Finalize and email/send udpate to County
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 256.70					
Subtask 2.B. Work Plans and Budgets						
7/1/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review 09/10 Revised Work Plan
7/1/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Review FY 08-09 Quarter 1, 2, 3 Expenditure Claims
8/17/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Review FY 08-09 Quarter 4 Expenditure Claims
8/31/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Begin revising 09-10 budget
9/1/2009	Cynthia Mallett	Environmental Specialist	2.50	$ 51.34	$ 128.35	Create 08/09 Budget Summary
9/30/2009	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Gathering Info for rollover narrative
			0.00	$ -	$ -	
Sub-total	$ 333.71					
Subtask 3.H. Regional Events						
7/20/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Movies in the Park payment dilemma; Contact La Mesa
7/21/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Movies in the Park payment dilemma; correpsond with City of SD
7/22/2009	Cynthia Mallett	Environmental Specialist	1.50	$ 51.34	$ 77.01	Correspond with County and City of SD staff about Movies in the Park situation
7/22/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Contact La Mesa to discuss the Movies in the Park payment situation
7/23/2009	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Contact all Copermittee Stormwater Staff scheduled to receive Movie in the Park
7/29/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Correspond with City of San Diego and La Mesa staff re: Movies in the Park
8/14/2009	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	La Mesa Movies in the Park payment
Sub-total	$ 308.04					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					

Copermittee Total	$ 898.45

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of San Marcos
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 1,000.00

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

[Name]ERICA RYAN
[Title]STORMWATER MANAGER
[Organization]SAN MARCOS

11-1-09
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name] Ruth de la Rosa
[Title] Land Use / Environmental planner II
County of San Diego
Education & outreach

11/04/09
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Marcos

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask x.x: [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
x/x/2009			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x: [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x: [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Marcos

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Marcos

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Marcos

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			Auto-calc'd (5% of amount paid)	
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2009	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2009	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2009	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask 3.5]	$ 1,000.00	7/18/2009		Movies in the Park
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ 1,000.00				
Total Expenditures (Including contract management cost) $ 1,000.00				

Final 04-30-09

FY10
100-37-58 1016
5288
Educat. Programs
(S) Sayce 7-22-09

CommCinema
Movies Under the Stars
Southern California's Premier Provider of outdoor digital cinema events for audiences of 10-10,000

July 22, 2009

City of San Marcos
201 Mata Way
San Marcos, CA 92069

Attn: Stormwater Program Manager

7-22-09

INVOICE

Stormwater Public Education Outreach at Movie in the Park (July 18, 2009) $1,000.00

All invoices are due and payable one month after receipt. Invoices more than thirty (30) days past due bear interest at the rate of one percent (1%) per month and are subject to an additional late billing fee of fifteen dolllars ($15.00) per month.

Please make check payable to:

Tallal, Inc.
Fed. Tax ID #75-2517055
31510 Anacapa View Drive
Malibu, CA 90265
(310) 924-4212

Ryan, Erica

From: Cronin, Cathy
Sent: Wednesday, July 22, 2009 3:27 PM
To: 'Scott Tallal'
Cc: Ryan, Erica
Subject: RE: Emailing: CommCinema Invoice 07-21-09 for San Marcos.pdf

Hi Scott,

I have a favor to ask of you. Would you please split the invoice as follows?

$1000 billed to:

City of San Marcos
Attn: Stormwater Program Manager
201 Mata Way
San Marcos, CA 92069

This bill should be for:
Stormwater Public Education Outreach at Movie in the Park (July 18, 2009)
You can email it to Erica Ryan at eryan@san-marcos.net
Please cc me on this also.

$1100 billed to:

City of San Marcos
(info same as last invoice)

Thanks
Cathy 760-744-9000 Ext. 3504

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	**Education and Residential Sources Workgroup**
Copermittee:	City of San Diego
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 998.46**
Contract / Other Expenditures Claimed:	**$ 37,569.29**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Kris McFadden
Deputy Director
City of San Diego, Storm Water Department

10/29/09
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name] Ruth delaRosa LWEP II
[Title] Education & Outreach
County of San Diego

11/05/09
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: City of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.C. Regional Branding						
7/2/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Logo - Email update
7/23/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Logo - licensing follow-up with attorneys
8/14/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Logo - compile responses & updates
9/8/2009	Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Logo - Standards manual prep
9/17/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Logo - post meeting follow up and emails
			0.00	$ 46.44	$ -	
			0.00	$ 46.44	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -		
Sub-total	$ 278.64					
Subtask 3.D. Effectiveness Assessment						
7/20/2009	Jennifer Nichols Kearns	Sr. Public Information Officer	3.00	$ 46.44	$ 139.32	Reg Survey - Review final report
7/24/2009	Jennifer Nichols Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Reg Survey - Review final report
9/10/2009	Jennifer Nichols Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Reg Survey - Email updates
	Jennifer Nichols Kearns	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Reg Survey - Edit and Email draft
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -		
Sub-total	$ 417.96					
Subtask 3.E. Website						
8/10/2009	Tim Graham	Sr. Public Information Officer	0.50	$ 46.44	$ 23.22	Regional website - Review updated web site copy and emails
9/3/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional website - Finalize copy and programming elements for web site
9/21/200	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional website - Review multiple jurisdiction issues for zip codes, emails
9/24/2009	Tim Graham	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Regional website - Rewrite copy, send spanish translations to MJE

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: City of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -		
Sub-total	$ 162.54					
Subtask 3.G. Mass Media						
7/2/2009	Tim Graham	Sr. Public Information Officer	2.00	$ 46.44	$ 92.88	Coordination and placement orders for Ants In Your Plants spot
9/17/2009	Kearns	Sr. Public Information Officer	1.00	$ 46.44	$ 46.44	Media - post meeting follow up
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -		
Sub-total	$ 139.32					
Subtask 3.H. Community Events						
			0.00	$ 46.44	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -		
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: City of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. (ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN)						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 998.46	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: City of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Expenditure Description / Work Plan Task
A. Contract Expenditures (List by Contract Name and # first, and then Contract Task or Sub-task)			
Contract 1. MJE Marketing Services (City of SD RQ09 9205592)			
Contract Task 3.C. Regional Branding	$ -		
MJE Invoice #9624 - Regional Logo	$ 780.00	10/7/2009	Consultant fees for draft of Regional logo guides.
MJE Invoice #9600 - Regional website photo purchase	$ 864.29	9/9/2009	Fees for purchasing a photo for the Regional website
	$ -		
	$ -		
Contract 2. Goodwin Simon Victoria Research/Action Research (GOS 15006349)			
Contract Task 3.D. Effectiveness Assessment	$ -		
GSVR/Action Research Invoice # 677	$ 2,350.00		Data entry and coding for event surveys collected from the 2009 San Diego County Fair and the Independence Jam in Oceanside
GSVR/Action Research Invoice # 672	$ 2,920.00		Development of report for 2008 San Diego County fair event surveys. Data entry and coding for event surveys collected from Movies in the Park
GSVR/Action Research Invoice # 680	$ 1,025.00		Consultation on development of assessment methods for the regional calendar. Development of protocol and quote for assessment.
Sub-total Contract Expenditures $ 7,939.29			
B. Other Expenditures			
Task 3.G. Mass Media: Tv and Radio	$ 29,630.00	various	Cost for placement and air time to run Regional PSA entitled, "Ants in your Plants" during FY10 Q1. See attached invoices for details.
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Other Expenditures $ 29,630.00			
Total Expenditures $ 37,569.29			

Final 04-30-09

think BLUE
SAN DIEGO

City of SD Regional Expenses FY2010 - 1st Quarter

Consultant: Action Research (sub-consultant under Goodwin Simon Victoria Research)

JULY 2009
(Action Invoice# AR09-1024)
Data entry and coding for event surveys collected from the 2009 San Diego County Fair
Data entry and coding for event surveys collected from the Independence Jam in Oceanside
Jenny (2 hours), Research Assistant (35 hours).
TOTAL COST FOR JULY = $2,350

AUGUST 2009
(Action Invoice# AR09-1029)
Development of report for 2008 San Diego County fair event surveys
Data entry and coding for event surveys collected from Movies in the Park
Jenny (21 hours), Schultz (1 hour), Research Assistant (2 hours).
TOTAL COST FOR AUGUST = $2,920

SEPTEMBER 2009
(Action Invoice# AR09-1031)
Consultation on development of assessment methods for the regional calendar. Development of protocol and quote for assessment.
Jenny (4 hours), Schultz (3 hours).
TOTAL COST FOR SEPTEMBER = $1,025

1ST QUARTER TOTAL COST: $6,295.00

Goodwin Simon Victoria Research

P.O. Box 366
Culver City, CA 90232

Invoice

Date	Invoice #
8/8/2009	672

Bill To
Jennifer Nichols Kearns Storm Water Department 9370 Chesapeake Drive, Ste 100 • MS 1900 San Diego, CA 92123

Terms	Due Date	Project
Net 30 Days	9/7/2009	2911 SD County s...

Item	Description	Amount
	P.O. 52032909-0	
Pass-thru Subcontractor ...	Action Research Task 5-B Research provide strategic counsel on other potential research projects to support public outreach program	1,875.00
Pass-thru Subcontractor ...	Action Research Task 5-C Research -- implement measurement/evaluation tools into outreach programs	5,782.50
Pass-thru Subcontractor ...	Action Research Task 5-E Research -- training session pre-post knowledge survey revisions using item response theory	500.00
Pass-thru Subcontractor ...	Action Research general project administration	500.00
Consulting Services	Goodwin Simon Victoria Research invoicing (1 hour)	200.00
	progress percentage 41% remaining ($185,100.83)	
	$ 2,350 = REGIONAL ; TASK 5.C. (EVENT SURVEYS)	

Thank you for using GSV Research	**Total**	$8,857.50

Federal ID#: 95-4879715

Phone #	E-mail	Web Site
310/558-4761	paulg@gsvresearch.com	www.gsvresearch.com

Goodwin Simon Victoria Research

P.O. Box 366
Culver City, CA 90232

Invoice

Date	Invoice #
9/4/2009	677

Bill To
Jennifer Nichols Kearns Storm Water Department 9370 Chesapeake Drive, Ste 100 • MS 1900 San Diego, CA 92123

Terms	Due Date	Project
Net 30 Days	10/4/2009	2851 08-09 Evalu...

Item	Description	Amount
	PO number 52032909-0	
Pass-thru Subcontractor ...	Action Research Task 5-B Council on other potential research projects	2,200.00
Pass-thru Subcontractor ...	Action Research Task 5-C Work with research consultants to develop and implement measurement/evaluation tools	14,700.00
Pass-thru Subcontractor ...	Action Research Task 5-E Training session pre post knowledge survey revisions	125.00
Pass-thru Subcontractor ...	Action Research General Project Administration	375.00
Paul Goodwin Consulting	Goodwin Simon Victoria Research invoicing (1 hour)	200.00
	Progress percentage: 38% of contract remaining	
	$2,920=REGIONAL TASK 5C (SURVEYS + REPORTING)	
Thank you for using GSV Research	**Total**	$17,600.00

Federal ID#: 95-4879715

Phone #	E-mail	Web Site
310/558-4761	paulg@gsvresearch.com	www.gsvresearch.com

Goodwin Simon Victoria Research

P.O. Box 366
Culver City, CA 90232

Invoice

Date	Invoice #
10/5/2009	680

Bill To
Jennifer Nichols Kearns Storm Water Department 9370 Chesapeake Drive, Ste 100 • MS 1900 San Diego, CA 92123

Terms	Due Date	Project
Net 30 Days	11/4/2009	2851 08-09 Evalu...

Item	Description	Amount
	PO Number 52032909-0	
Pass-thru Subcontract...	Action Research Task 1.9 Management of CBSM Research	3,686.25
Pass-thru Subcontract...	Action Research Task 2.1 Message development	5,902.50
Pass-thru Subcontract...	Action Research Project administration	500.00
Pass-thru Subcontract...	Adi Liberman and Associates Project administration	700.00
Consulting Services	GSVR Project Administration	900.00
	Progress percentage: 35% of contract remaining	
	$1,025 REGIONAL TASK 1.9 (CBSM STYLE ASSESMENT PROTOCOL DEV)	

Thank you for using GSV Research	**Total**	$11,688.75

Federal ID#: 95-4879715

Phone #
310/558-4761

E-mail	Web Site
paulg@gsvresearch.com	www.gsvresearch.com

Invoice

MJE Marketing Services
3131 Camino del Rio North
Suite 150
San Diego, CA 92108

DATE	INVOICE #
9/9/09	9600

09-11-09P04:35 RCVD

BILL TO:

Think Blue, City of San Diego
Attn: Jennifer Nichols Kearns, Sr. PIO
Storm Water Dept.
9370 Chesapeake Drive, Ste. 100, MS 1900
San Diego, CA 921235103989-0

P.O. NUMBER	TERMS	PROJECT
5204102	Due on receipt	TB - 126

QUANTITY	DESCRIPTION	RATE	AMOUNT
	THINK BLUE REGIONAL WEB SITE PHOTO PURCHASE		
	Rights-managed usage of stock photograph	794.75	794.75T
	Sales Tax	8.75%	69.54

09/14/09

Thank you for your business. Please call 619.682.3841 with any questions.

TOTAL $864.29 OK

Think Blue San Diego

Scope of Work Estimate
Reference: Job# TB-126
August 31, 2009

Name/Title:	Think Blue Regional Web Site Photo Purchase
Contact:	Jennifer Nichols Kearns
Phone:	1.858.541.4331
Quantity:	One
Service Category:	Web site design and development

Description

Rights-managed usage of Getty Images "A Girl on Bodyboard" stock photograph (#ICO:A0028-000134) for use on the Think Blue Regional Residential Education Web site portal.

Estimate	Rate	Hours	Cost
MJE Blended Rate	$120.00	0	$0.00
CREATIVE TIME Subtotal:			$0.00
Programming			TBD
Language Translation			TBD
Photography			$794.75
PRODUCTION Subtotal:			$794.75
Subtotal:			$794.75
*8.7500% Sales Tax:			$69.54
TOTAL:			$864.29 OK

Upon payment of the expenses in this estimate all original Works and authorship relating to Think Blue Regional Web Site as defined by Federal Copyright laws, (such as, but not limited to, text, collateral, stationery, design, artwork, layout, etc. hereafter referred to as Works are transferred to the Port of San Diego for full usage into perpetuity. This estimate includes the cost for this ALL-RIGHTS

This estimate is for the rights-managed usage of the Getty Images "A Girl on Bodyboard" stock photograph (#ICO:A0028-000134). This usage is restricted according to the terms of the attached Getty Images License Agreement. By signing this Estimate Think Blue agrees to the terms of Getty Images.

This estimate is based on the most complete job information available at the time the estimate was prepared. In the event of any changes in specifications or additional revisions to creative, the job will be re-estimated. If the project is cancelled, client agrees to pay for work completed up to the time of cancellation. This job may vary up to 10%. Any variance above 10% will be requoted and approved by client. This quote is good for 30 days.

Approval:

Client: Timothy U Zale Date: 9/2/09

Invoice

MJE Marketing Services
3131 Camino del Rio North
Suite 150
San Diego, CA 92108

DATE	INVOICE #
10/7/09	9624

BILL TO:

Think Blue, City of San Diego
Attn: Jennifer Nichols Kearns, Sr. PIO
Storm Water Dept.
9370 Chesapeake Drive, Ste. 100, MS 1900
San Diego, CA 921235103989-0

P.O. NUMBER	TERMS	PROJECT
5204102	Due on receipt	TB - 122

QUANTITY	DESCRIPTION	RATE	AMOUNT
	THINK BLUE TB - 122 REGIONAL GUIDE		
3.25	Susan Smith	120.00	390.00
3.25	Aaron Ishaeik	120.00	390.00

Thank you for your business. Please call 619.682.3841 with any questions.

TOTAL $780.00

S72058 (10/08)

INVOICE

Remit Address:
KNSD
File # 53440
Los Angeles, CA 90074-3440
Main: (619) 231-3939
Billing:

KNSD SAN DIEGO
http://www.nbcsandiego.com

Advertiser	CITY OF SAN DIEGO, THE
Product	City of San Diego
Estimate Number	

Invoice #	SE09070042
Invoice Date	07/26/09
Invoice Month	July 2009
Invoice Period	06/29/09 - 07/26/09

Station	KNSD
Account Executive	Martha Aceves
Sales Office	San Diego Local
Sales Region	Local

Order #	72403
Alt. Order #	11988005
Order Flight	04/02/09 - 09/06/09

Billing Calendar	Broadcast
Billing Type	Cash
Special Handling	

IDB #	
Advertiser Code	
Product Code	

Agency Ref	17053
Advertiser Ref	22988

Billing Address:

CITY OF SAN DIEGO STORM WATER POLLUTION PREV. PR
Attention: Accounts Payable
9370 CHESAPEAKE DRIVE
SUTOE 100
SAN DIEGO, CA 92123

$5275.00

Line	Channel	Description	Time	Day	Date	Length	Air Time	Ad-ID	Rate	Reconciliation	Ref #
2	KNSD	SD-EN CONTEXTO	4:00a-4:30a								
				06/29/09 to 07/05/09		3x	MTWTF--				
	KNSD			Tu	06/30/09	:30	4:29 AM	CONSTRUCTION	$25.00		41
	KNSD			W	07/01/09	:30	4:29 AM	IRRIGATION	$25.00		40
	KNSD			Th	07/02/09	:30	4:29 AM	AUTOMOTIVE	$25.00		42
				07/06/09 to 07/12/09		3x	MTWTF--				
	KNSD			M	07/06/09	:30	4:08 AM	CONSTRUCTION	$25.00		43
	KNSD			Tu	07/07/09	:30	4:25 AM	WWRESIDENTIAL	$25.00		45
	KNSD			Th	07/09/09	:30	4:28 AM	WWBUSINESS	$25.00		44
				07/13/09 to 07/19/09		3x	MTWTF--				
	KNSD			M	07/13/09	:30	4:18 AM	WWRESIDENTIAL	$25.00		48
	KNSD			Tu	07/14/09	:30	4:19 AM	WWBUSINESS	$25.00		47
	KNSD			W	07/15/09	:30	4:10 AM	IRRIGATION	$25.00		46
				07/20/09 to 07/26/09		3x	MTWTF--				
	KNSD			M	07/20/09	:30	4:25 AM	PETWASTE	$25.00		51
	KNSD			Tu	07/21/09	:30	4:16 AM	AUTOMOTIVE	$25.00		50
	KNSD			W	07/22/09	:30	4:29 AM	WWRESIDENTIAL	$25.00		49
3	KNSD	SD-SUNDAY TODAY	7:00a-8:00a								
				06/29/09 to 07/05/09		1x	------S				
	KNSD			*Su*	*07/05/09*	*:00*			*~~$150.00~~*	*See MG 3.27*	*14*
				PREEMPT-PROGRAM CHANGE							
	KNSD			* Su	07/12/09	:30	7:59 AM	ANTSINYOURPLANTS	$150.00	MG for 3.14 07/05	27
				07/06/09 to 07/12/09		1x	------S				
	KNSD	$300.00		* Su	07/12/09	:30	7:28 AM	ANTSINYOURPLANTS	$150.00		15

NBC & TELEMUNDO STATION INVOICES We warrant to the addressee identified above that the actual broadcast information shown on this invoice was taken from station program logs All payments for charges hereunder must be received by station on or before the 30th day after the date of this invoice (or such earlier date as set forth by any special payment terms or as designated in the NBC/Telemundo TV Stations Confirmation Contract Part I issued in connection with this order), as more fully set forth in the NBC/Telemundo TV Stations Confirmation Contract Part II, which has been previously provided under separate cover and/or is available upon request Notwithstanding to whom this invoice is addressed or presented, Advertiser and Agency, jointly and severally, shall remain obligated to pay to Station all amounts due to Station pursuant hereto until payment in full is actually received by Station Payment by Advertiser to Agency shall not constitute payment to Station

FOR NBCE INVOICES

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INVOICE

Remit Address:
KNSD
File # 53440
Los Angeles, CA 90074-3440
Main: (619) 231-3939
Billing:

KNSD SAN DIEGO
http://www.nbcsandiego.com

Billing Address:

CITY OF SAN DIEGO STORM WATER POLLUTION PREV. PR
Attention: Accounts Payable
9370 CHESAPEAKE DRIVE
SUTOE 100
SAN DIEGO, CA 92123

Advertiser	CITY OF SAN DIEGO, THE
Product	City of San Diego
Estimate Number	

Invoice #	SE09070042
Invoice Date	07/26/09
Invoice Month	July 2009
Invoice Period	06/29/09 - 07/26/09

Station	KNSD
Account Executive	Martha Aceves
Sales Office	San Diego Local
Sales Region	Local

Order #	72403
Alt. Order #	11988005
Order Flight	04/02/09 - 09/06/09

Billing Calendar	Broadcast
Billing Type	Cash
Special Handling	

IDB #	
Advertiser Code	
Product Code	

Agency Ref	17053
Advertiser Ref	22988

Line	Channel	Description	Time	Day	Date	Length	Air Time	Ad-ID	Rate	Reconciliation	Ref #
3	KNSD	SD-SUNDAY TODAY	7:00a-8:00a								
				07/13/09 to 07/19/09		1x	------S				
	KNSD			Su	07/19/09	:30	7:28 AM	ANTSINYOURPLANTS	$150.00		16
				07/20/09 to 07/26/09		1x	------S				
	KNSD			Su	07/26/09	:30	7:24 AM	ANTSINYOURPLANTS	$150.00		17
4	KNSD	SD-ELLEN	3:00p-4:00p								
				06/29/09 to 07/05/09		1x	MTWTF--				
	KNSD			M	06/29/09	:30	2:59 PM	ANTSINYOURPLANTS	$275.00		14
				07/06/09 to 07/12/09		1x	MTWTF--				
	KNSD	~~$2125.00~~		M	07/06/09	:30	3:19 PM	ANTSINYOURPLANTS	$275.00		15
				07/13/09 to 07/19/09		1x	MTWTF--				
	KNSD			M	07/13/09	:30	3:55 PM	ANTSINYOURPLANTS	$275.00		16
				07/20/09 to 07/26/09		1x	MTWTF--				
	KNSD			M	07/20/09	:30	3:32 PM	ANTSINYOURPLANTS	$275.00		17
	KNSD	NEWS AT 5	5:00p-5:30p								
				06/29/09 to 07/05/09		1x	MTWTF--				
	KNSD	$1825		M	06/29/09	:30	5:12 PM	ANTSINYOURPLANTS	$300.00		5
				07/20/09 to 07/26/09		1x	MTWTF--				
	KNSD			Tu	07/21/09	:30	5:28 PM	ANTSINYOURPLANTS	$300.00		6
6	KNSD	news @ 6	6:00p-6:30p								
				07/13/09 to 07/19/09		1x	MTWTF--				
	KNSD			Tu	07/14/09	:30	6:21 PM	ANTSINYOURPLANTS	$400.00		5
7	KNSD	SD-WHEEL OF FORTUNE	7:00p-7:30p								

NBC & TELEMUNDO STATION INVOICES We warrant to the addressee identified above that the actual broadcast information shown on this invoice was taken from station program logs All payments for charges hereunder must be received by station on or before the 30th day after the date of this invoice (or such earlier date as set forth by any special payment terms or as designated in the NBC/Telemundo TV Stations Confirmation Contract Part I issued in connection with this order), as more fully set forth in the NBC/Telemundo TV Stations Confirmation Contract Part II, which has been previously provided under separate cover and/or is available upon request Notwithstanding to whom this invoice is addressed or presented, Advertiser and Agency jointly and severally, shall remain obligated to pay to Station, all amounts due to Station pursuant hereto until payment in full is actually received by Station Payment by Advertiser to Agency shall not constitute payment to Station

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INVOICE

KNSD SAN DIEGO
http://www.nbcsandiego.com

Remit Address:
KNSD
File # 53440
Los Angeles, CA 90074-3440
Main: (619) 231-3939
Billing:

Billing Address:

CITY OF SAN DIEGO STORM WATER POLLUTION PREV. PR
Attention: Accounts Payable
9370 CHESAPEAKE DRIVE
SUTOE 100
SAN DIEGO, CA 92123

Advertiser	CITY OF SAN DIEGO, THE
Product	City of San Diego
Estimate Number	

Station	KNSD
Account Executive	Martha Aceves
Sales Office	San Diego Local
Sales Region	Local

Billing Calendar	Broadcast
Billing Type	Cash
Special Handling	

Invoice #	SE09070042
Invoice Date	07/26/09
Invoice Month	July 2009
Invoice Period	06/29/09 - 07/26/09

Order #	72403
Alt. Order #	11988005
Order Flight	04/02/09 - 09/06/09

IDB #	
Advertiser Code	
Product Code	

Agency Ref	17053
Advertiser Ref	22988

Line	Channel	Description	Time	Day	Date	Length	Air Time	Ad-ID	Rate	Reconciliation	Ref #
7	KNSD	SD-WHEEL OF FORTUNE	7:00p-7:30p								
				07/13/09 to 07/19/09		1x	MTWTF--				
	KNSD			M	07/13/09	:30	7:19 PM	ANTSINYOURPLANTS	$350.00		5
8	KNSD	JEOPARDY	7:30p-8:00p								
				06/29/09 to 07/05/09		1x	-----S-				
	KNSD			Sa	07/04/09	:30	7:34 PM	ANTSINYOURPLANTS	$300.00		14
				07/06/09 to 07/12/09		1x	-----S-				
	KNSD			Sa	07/11/09	:30	7:52 PM	ANTSINYOURPLANTS	$300.00		15
		$1,750.00		07/13/09 to 07/19/09		1x	-----S-				
	KNSD			Sa	07/18/09	:30	7:51 PM	ANTSINYOURPLANTS	$300.00		16
				07/20/09 to 07/26/09		1x	-----S-				
	KNSD			Sa	07/25/09	:30	7:50 PM	ANTSINYOURPLANTS	$300.00		17
9	KNSD	EBERT & ROPER	6:30p-7:00p								
				06/29/09 to 07/05/09		1x	------S				
	KNSD			Su	07/05/09	:30	6:29 PM	ANTSINYOURPLANTS	$50.00		14
				07/06/09 to 07/12/09		1x	------S				
	KNSD			Su	07/12/09	:30	6:39 PM	ANTSINYOURPLANTS	$50.00		15
				07/13/09 to 07/19/09		1x	------S				
	KNSD			Su	07/19/09	:30	6:30 PM	ANTSINYOURPLANTS	$50.00		16
				07/20/09 to 07/26/09		1x	------S				
	KNSD			Su	07/26/09	:30	6:54 PM	ANTSINYOURPLANTS	$50 00		17
10	KNSD	SD-NBC 7/39 NEWS AT 11PM	11:00p-11:35p								
				06/29/09 to 07/05/09		1x	MTWTFSS				
	KNSD			Tu	06/30/09	.30	11:24 PM	ANTSINYOURPLANTS	$700.00		5

NBC & TELEMUNDO STATION INVOICES We warrant to the addressee identified above that the actual broadcast information shown on this invoice was taken from station program logs All payments for charges hereunder must be received by station on or before the 30th day after the date of this invoice (or such earlier date as set forth by any special payment terms or as designated in the NBC/Telemundo TV Stations Confirmation Contract Part I issued in connection with this order), as more fully set forth in the NBC/Telemundo TV Stations Confirmation Contract Part II, which has been previously provided under separate cover and/or is available upon request Notwithstanding to whom this invoice is addressed or presented, Advertiser and Agency, jointly and severally, shall remain obligated to pay to Station, all amounts due to Station pursuant hereto until payment in full is actually received by Station Payment by Advertiser to Agency shall not constitute payment to Station

FOR NBCE INVOICES

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INVOICE

KNSD SAN DIEGO
http://www.nbcsandiego.com

Remit Address:
KNSD
File # 53440
Los Angeles, CA 90074-3440
Main: (619) 231-3939
Billing:

Advertiser	CITY OF SAN DIEGO, THE
Product	City of San Diego
Estimate Number	

Invoice #	SE09070042
Invoice Date	07/26/09
Invoice Month	July 2009
Invoice Period	06/29/09 - 07/26/09

Station	KNSD
Account Executive	Martha Aceves
Sales Office	San Diego Local
Sales Region	Local

Order #	72403
Alt. Order #	11988005
Order Flight	04/02/09 - 09/06/09

Billing Address:

CITY OF SAN DIEGO STORM WATER POLLUTION PREV. PR
Attention: Accounts Payable
9370 CHESAPEAKE DRIVE
SUTOE 100
SAN DIEGO, CA 92123

Billing Calendar	Broadcast
Billing Type	Cash
Special Handling	

IDB #	
Advertiser Code	
Product Code	

Agency Ref	17053
Advertiser Ref	22988

Line	Channel	Description	Time	Day	Date	Length	Air Time	Ad-ID	Rate	Reconciliation	Ref #
10	KNSD	SD-NBC 7/39 NEWS AT 11PM	11:00p-11:35p								
				07/06/09 to 07/12/09		1x	MTWTFSS				
	KNSD			Su	07/12/09	:30	11:31 PM	ANTSINYOURPLANTS	$700.00		6
				07/20/09 to 07/26/09		1x	MTWTFSS				
	KNSD			M	07/20/09	:30	11:24 PM	ANTSINYOURPLANTS	$700.00		7
12	KNSD	TONIGHT SHOW	11:35p-12:35a								
				06/29/09 to 07/05/09		2x	MTWTF--				
	KNSD			M	06/29/09	:30	12:48 AM	IRRIGATION	$400.00		9
	KNSD			Tu	06/30/09	:30	12.26 AM	PETWASTE	$400.00		8
		$1,400.00		07/06/09 to 07/12/09		2x	MTWTF--				
	KNSD			M	07/06/09	:30	12:33 AM	PETWASTE	$400.00		10
	KNSD			W	07/08/09	:30	11:53 PM	PETWASTE	$400.00		11
				07/13/09 to 07/19/09		2x	MTWTF--				
	KNSD			M	07/13/09	:30	12:02 AM	CONSTRUCTION	$400.00		12
	KNSD			W	07/15/09	:30	12:10 AM	CONSTRUCTION	$400.00		13
				07/20/09 to 07/26/09		2x	MTWTF--				
	KNSD			M	07/20/09	:30	12:32 AM	AUTOMOTIVE	$400.00		14
	KNSD			Tu	07/21/09	:30	12:30 AM	WWBUSINESS	$400.00		15
13	KNSD	INTERNET	5:00a-5:01a								
				06/29/09 to 07/05/09		1x	--W----				
	KNSD			W	07/01/09	:01			$1,000.00		14
				07/06/09 to 07/12/09		1x	--W----				
	KNSD			W	07/08/09	:01			$1,000.00		15

NBC & TELEMUNDO STATION INVOICES We warrant to the addressee identified above that the actual broadcast information shown on this invoice was taken from station program logs All payments for charges hereunder must be received by station on or before the 30th day after the date of this invoice (or such earlier date as set forth by any special payment terms or as designated in the NBC/Telemundo TV Stations Confirmation Contract Part I issued in connection with this order), as more fully set forth in the NBC/Telemundo TV Stations Confirmation Contract Part II, which has been previously provided under separate cover and/or is available upon request. Notwithstanding to whom this invoice is addressed or presented, Advertiser and Agency, jointly and severally, shall remain obligated to pay to Station, all amounts due to Station pursuant hereto until payment in full is actually received by Station Payment by Advertiser to Agency shall not constitute payment to Station

FOR NBCE INVOICES

NBCU prepared this invoice based on reports received from the Platform Provider identified above NBCU does not independently verify any such reports All payments must be received by NBCU on or before the 30th day after the invoice date (or such earlier date set forth in any special payment terms or designated in Part I), as more fully set forth in the NBC Everywhere Terms and Conditions Part II ("Part II"), which has been previously provided and/or is available upon request Notwithstanding to whom this invoice is addressed or presented, Advertiser and Agency, jointly and severally, shall remain obligated to pay to NBCU all amounts due hereunder until payment in full is actually received by NBCU Payment by Advertiser to Agency shall not constitute payment to NBCU Although this invoice may have been delivered with multiple invoices, each invoice remains a separate obligation of Advertiser and Agency and must be paid in accordance with the terms of the invoice and Part II

INVOICE

KUSI
4575 Viewridge Ave
San Diego, CA 92123
Main: (858)571-5151
Billing: (858)505-5115

07-31-09P01:26 RCVD

Invoice #	Invoice Date	Invoice Month	Invoice Period
32981-2	07/26/09	July 2009	06/29/09 - 07/05/09

Station	Account Executive	Sales Office	Sales Region
KUSI	Wade Nielsen	KUSI Local	Local

Advertiser	Product	Estimate Number
City of San Diego Storm Wa	Think Blue- June/July 09	PO#5204318-0

Flight Dates	Order #	All. Order #
06/22/09 - 07/05/09	32981	

Billing Calendar	Billing Type
Broadcast	Cash

Special Handling

IDB #	Advertiser Code	Product Code

Agency Ref	Advertiser Ref
	CITYSD

Billing Address:

City of San Diego
Attention: Accounts Payable
9370 Chesapeake Drive
Suite 100
Attn: Tim Graham
San Diego, CA 92123

Send Payment To:

KUSI
P.O. Box 719051
San Diego, CA 92171

$3000.00

$1,525.00

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
1	06/22/09	07/05/09	M-F Good Morning San DM-F 6-7am		MTWTF--	:30	2	$225.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
06/29/09	07/05/09	MTWTF--	2	$225.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
3	KUSI	M	06/29/09	6:21 AM	M-F Good Morning San Diego at	M-F 6-7am	:30	ANTS IN PLANTS :30	$225.00	NM
4	KUSI	Th	07/02/09	6:28 AM	M-F Good Morning San Diego at	M-F 6-7am	:30	ANTS IN PLANTS :30	$225.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
2	06/22/09	07/05/09	M-F Good Morning San DM-F 7-9am		MTWTF--	:30	2	$175.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
06/29/09	07/05/09	MTWTF--	3	$175.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
4	KUSI	M	06/29/09	8:28 AM	M-F Good Morning San Diego at	M-F 7-9am	:30	ANTS IN PLANTS :30	$175.00	NM
5	KUSI	Tu	06/30/09	8:48 AM	M-F Good Morning San Diego at	M-F 7-9am	:30	ANTS IN PLANTS :30	$175.00	NM
3	KUSI	F	07/03/09	7:17 AM	M-F Good Morning San Diego at	M-F 7-9am	:30	ANTS IN PLANTS :30	$175.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
3	06/22/09	07/05/09	M-F News at 6pm	M-F 6-7pm	MTWTF--	:30	3	$275.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
06/29/09	07/05/09	MTWTF--	3	$275.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
5	KUSI	M	06/29/09	6:42 PM	M-F News at 6pm	M-F 6-7pm	:30	ANTS IN PLANTS :30	$275.00	NM
4	KUSI	Tu	06/30/09	6:48 PM	M-F News at 6pm	M-F 6-7pm	:30	ANTS IN PLANTS :30	$275.00	NM
6	KUSI	F	07/03/09	6:12 PM	M-F News at 6pm	M-F 6-7pm	:30	ANTS IN PLANTS :30	$275.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
4	06/22/09	07/05/09	Judge Judy	M-F 7-8p	MTWTF--	:30	3	$425.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
06/29/09	07/05/09	MTWTF--	3	$425.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
4	KUSI	Tu	06/30/09	7:09 PM	Judge Judy	M-F 7-8p	:30	ANTS IN PLANTS :30	$425.00	NM
5	KUSI	W	07/01/09	7:25 PM	Judge Judy	M-F 7-8p	:30	ANTS IN PLANTS :30	$425.00	NM
6	KUSI	Th	07/02/09	7:38 PM	Judge Judy	M-F 7-8p	:30	ANTS IN PLANTS :30	$425.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
5	06/22/09	07/05/09	M-F News at 10pm	M-F 10-11pm	MTWTF--	:30	1	$550.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
06/29/09	07/05/09	MTWTF--	1	$550.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
2	KUSI	Tu	06/30/09	10:48 PM	M-F News at 10pm	M-F 10-11pm	:30	ANTS IN PLANTS :30	$550.00	NM

We warrant that the actual broadcast information shown on this invoice was taken from the program log

INVOICE

Send Payment To:
KUSI
P.O. Box 719051
San Diego, CA 92171

Invoice #	Invoice Date	Invoice Month	Invoice Period
32981-2	07/26/09	July 2009	06/29/09 - 07/05/09

Advertiser	Product	Estimate Number
City of San Diego Storm W	Think Blue- June/July 09	PO#5204318-0

$1,475.00

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
6	06/22/09	07/05/09	M-F News at 11pm	M-F 11-11:35pm	MTWTF--	:30	2	$225.00	NM

Weeks: Start Date 06/29/09 | End Date 07/05/09 | MTWTFSS MTWTF-- | Spots/Week 3 | Rate $225.00

Spots. #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
3	KUSI	M	06/29/09	11:20 PM	M-F News at 11pm	M-F 11-11:35pm	:30	ANTS IN PLANTS :30	$225.00	NM
6	KUSI	W	07/01/09	11:21 PM	M-F News at 11pm	M-F 11-11:35pm	:30	ANTS IN PLANTS :30	$225.00	NM
4	KUSI	Th	07/02/09	11:23 PM	M-F News at 11pm	M-F 11-11:35pm	:30	ANTS IN PLANTS :30	$225.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
7	06/22/09	07/05/09	SAT-GMSD 6-10am	SAT-GMSD 6-10am	-----S-	:30	1	$225.00	NM

Weeks: Start Date 06/29/09 | End Date 07/05/09 | MTWTFSS -----S- | Spots/Week 1 | Rate $225.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
2	KUSI	Sa	07/04/09	9:48 AM	SAT-GMSD 6-10am	SAT-GMSD 6-10an	:30	ANTS IN PLANTS :30	$225.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
8	06/22/09	07/05/09	Sat-News at 11pm	Sat-News at 11pm	-----S-	:30	1	$200.00	NM

Weeks: Start Date 06/29/09 | End Date 07/05/09 | MTWTFSS -----S- | Spots/Week 1 | Rate $200.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
2	KUSI	Sa	07/04/09	11:22 PM	Sat-News at 11pm	Sat-News at 11pm	:30	ANTS IN PLANTS :30	$200.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
9	06/22/09	07/05/09	SUN-GMSD 6-10am	SUN-GMSD 6-10an	------S	:30	1	$200.00	NM

Weeks: Start Date 06/29/09 | End Date 07/05/09 | MTWTFSS ------S | Spots/Week 2 | Rate $200.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
2	KUSI	Su	07/05/09	7:15 AM	SUN-GMSD 6-10am	SUN-GMSD 6-10ar	:30	ANTS IN PLANTS :30	$200.00	NM
3	KUSI	Su	07/05/09	8:35 AM	SUN-GMSD 6-10am	SUN-GMSD 6-10ar	:30	ANTS IN PLANTS :30	$200.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
10	06/22/09	07/05/09	Sun-News at 11pm	Sun-News at 11pm	------S	:30	1	$200.00	NM

Weeks: Start Date 06/29/09 | End Date 07/05/09 | MTWTFSS ------S | Spots/Week 1 | Rate $200.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
2	KUSI	Su	07/05/09	11:20 PM	Sun-News at 11pm	Sun-News at 11pm	:30	ANTS IN PLANTS :30	$200.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
11	06/22/09	07/05/09	Mon-Sun ROS	Mon-Sun ROS	MTWTFSS	:30	3	$0.00	NM

Weeks. Start Date 06/29/09 | End Date 07/05/09 | MTWTFSS MTWTFSS | Spots/Week 3 | Rate $0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
6	KUSI	F	07/03/09	11:33 PM	Mon-Sun ROS	Mon-Sun ROS	:30	ANTS IN PLANTS :30	$0.00	NM
5	KUSI	Sa	07/04/09	10:13 AM	Mon-Sun ROS	Mon-Sun ROS	:30	ANTS IN PLANTS :30	$0.00	NM
4	KUSI	Su	07/05/09	7:48 AM	Mon-Sun ROS	Mon-Sun ROS	:30	ANTS IN PLANTS :30	$0.00	NM

Total Spots	23	Gross Total	$5,325.00
		Agency Commission	$798.75
		Net Amount Due	$4,526.25

Payment Terms 30 Days

ok to pay
$4,526.25
PO# 5204318-0
Judy W. Arnold
8/17/09

We warrant that the actual broadcast information shown on this invoice was taken from the program log

INVOICE

Smooth Jazz 98.1

Invoice #:	IN-1090758968
Invoice Date	07/26/2009
Contract #	61221
Page	1

07-31-09P01:25 RCVD

Advertiser: THINK BLUE CAMPAIGN
STORM WATER DEPT, CITY OF S.D.
9370 CHESAPEAKE DR.
SUITE 100 - MS 1900
SAN DIEGO, CA 92123

Station(s): KIFM-FM

Advertiser: THINK BLUE CAMPAIGN
Product: THINK BLUE ON KIFM 2009
Estimate #: PO#5204437-O/EST. "H"
Agency Client Code:
Buyer Name: TIM GRAHAM

$6150.00

Salesperson(s): Kim Torik
Terms: DUE UPON RECEIPT

Day	Date	Time	Ln	Length	Product	ISCI	Rate
MON	06/29/09	06:16a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	06/29/09	12:54p	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	06/29/09	04:24p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200 00
MON	06/29/09	06:26p	7	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$50.00
TUE	06/30/09	07:29a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200 00
TUE	06/30/09	08:48a	7	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$50.00
TUE	06/30/09	10:23a	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
TUE	06/30/09	02:56p	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
TUE	06/30/09	05:52p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
TUE	06/30/09	07:32p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
TUE	06/30/09	10:52p	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
TUE	06/30/09	11:18p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
WED	07/01/09	06:29a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
THU	07/02/09	03:57a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
THU	07/02/09	02:51p	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200 00
THU	07/02/09	04:56p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
SAT	07/04/09	05:27a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
SAT	07/04/09	07:51a	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SAT	07/04/09	09:56a	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SAT	07/04/09	12:22p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SAT	07/04/09	01:53p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SAT	07/04/09	04:24p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SAT	07/04/09	05:52p	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
SUN	07/05/09	06:25a	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SUN	07/05/09	10:27a	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SUN	07/05/09	03:53p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SUN	07/05/09	05:54p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SUN	07/05/09	08:53p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25 00
SUN	07/05/09	09:59p	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
MON	07/13/09	06:15a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	07/13/09	09:52a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	07/13/09	01:21p	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200 00
MON	07/13/09	08:57p	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00

$1,750.00

INVOICE

Smooth Jazz 98.1

Invoice #:	IN-1090758968
Invoice Date	07/26/2009
Contract #	61221
Page	2

Day	Date	Time	Ln	Length	Product	ISCI	Rate
TUE	07/14/09	11 24a	7	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$50.00
TUE	07/14/09	01:54p	7	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$50.00
TUE	07/14/09	05:55p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
TUE	07/14/09	08:26p	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
TUE	07/14/09	10:54p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
TUE	07/14/09	11 42p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
WED	07/15/09	03:01a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
WED	07/15/09	07:58a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
WED	07/15/09	12:54p	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
FRI	07/17/09	01:02a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
FRI	07/17/09	10:23a	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
FRI	07/17/09	03:22p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
FRI	07/17/09	05:25p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
FRI	07/17/09	11:00p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SAT	07/18/09	05:22a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
SAT	07/18/09	06:54a	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SAT	07/18/09	10:22a	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SAT	07/18/09	02:57p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SAT	07/18/09	07:36p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SUN	07/19/09	01:59a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
SUN	07/19/09	09 49a	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SUN	07/19/09	12:55p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SUN	07/19/09	02:25p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SUN	07/19/09	04:54p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SUN	07/19/09	05:56p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
MON	07/20/09	03:47a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
MON	07/20/09	07:01a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	07/20/09	11:46a	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	07/20/09	12:45p	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	07/20/09	04:48p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	07/20/09	05:18p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
MON	07/20/09	06 49p	7	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$50.00
MON	07/20/09	08:17p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
TUE	07/21/09	09:12a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
TUE	07/21/09	01:47p	2	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
TUE	07/21/09	09:46p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
WED	07/22/09	03:19a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
WED	07/22/09	04:48a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
WED	07/22/09	08:14a	1	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
WED	07/22/09	06:45p	3	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$200.00
THU	07/23/09	01:44p	7	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$50.00
THU	07/23/09	10:17p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
FRI	07/24/09	12:21a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
FRI	07/24/09	04:19a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
SAT	07/25/09	01:46a	6	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$0.00
SAT	07/25/09	01:46p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SAT	07/25/09	05 47p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00

$ 3,955.00

INVOICE

Smooth Jazz 98.1

Invoice #: IN-1090758968
Invoice Date: 07/26/2009
Contract #: 61221
Page: 3

Day	Date	Time	Ln	Length	Product	ISCI	Rate
SUN	07/26/09	10:47a	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SUN	07/26/09	11:48a	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SUN	07/26/09	01:48p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SUN	07/26/09	02:45p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00
SUN	07/26/09	05:15p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SUN	07/26/09	06:43p	4	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$85.00
SUN	07/26/09	10:47p	5	60	PO#5094046-0	ANTS IN YOUR PLANTS IPM	$25.00

415.00

THANK YOU FOR YOUR BUSINESS!

Remit To:
Lincoln Fin Media Co of CA
P O Box 889004
San Diego, CA 92168-9004

RETURN ONE COPY OF INVOICE WITH PAYMENT

Invoice Totals

Total Spots:	87
Gross Amount:	~~$7,500.00~~
Net Amount:	$7,500.00

SPOTS AIRED WITHIN 15 MIN. OF TIME SHOWN

ok to pay
$7,500.00
po # 5204437-0
Timothy U Andre
8/17/09

INVOICE

Invoice #: IN-SD2-109077446
Invoice Date: 07/28/2009
Contract #: 101683
Page: 1

Advertiser: CITY OF SAN DIEGO
SSTORM WATER POLLUTION PREVENT
1970 B ST
SAN DIEGO, CA 92102

Station(s): KLQV-FM

Advertiser: CITY OF SAN DIEGO
Product: STORM WATER POL PREVENTIO
Estimate #: P.O. #8204433-0
Agency Client Code:
Buyer Name: TIM GRAHAM

$3430.00

Salesperson(s): Lee DeLay
Terms: 30 NET

Day	Date	Time	Ln	Length	Product	ISCI	Rate
MON	06/29/09	06:47a	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
MON	06/29/09	10:33p	2	60		ANTS IN YOR PLANTS	$50.00
TUE	06/30/09	06:51a	5	60		ANTS IN YOR PLANTS	$0.00
TUE	06/30/09	11:52a	1	60		ANTS IN YOR PLANTS	$220.00
TUE	06/30/09	02:47p	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	06/30/09	09:50p	5	60		ANTS IN YOR PLANTS	$0.00
TUE	06/30/09	11:47p	2	60		ANTS IN YOR PLANTS	$50.00
WED	07/01/09	07:20a	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
WED	07/01/09	02:27p	1	60		ANTS IN YOR PLANTS	$220.00
WED	07/01/09	11:37p	2	60		ANTS IN YOR PLANTS	$50.00
THU	07/02/09	09:47a	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
THU	07/02/09	09:51p	2	60		ANTS IN YOR PLANTS	$50.00
FRI	07/03/09	12:22p	1	60		ANTS IN YOR PLANTS	$220.00
FRI	07/03/09	06:40p	5	60		ANTS IN YOR PLANTS	$0.00
FRI	07/03/09	08:34p	5	60		ANTS IN YOR PLANTS	$0.00
SAT	07/04/09	07:22a	3	60		ANTS IN YOR PLANTS	$100.00
SAT	07/04/09	03:50p	4	60		ANTS IN YOR PLANTS	$190.00
SAT	07/04/09	06:20p	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
SUN	07/05/09	06:30a	3	60		ANTS IN YOR PLANTS	$100.00
SUN	07/05/09	12:51p	5	60		ANTS IN YOR PLANTS	$0.00
MON	07/13/09	04:20p	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	07/14/09	11:51a	1	60		ANTS IN YOR PLANTS	$220.00
TUE	07/14/09	03:20p	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	07/14/09	10:33p	2	60		ANTS IN YOR PLANTS	$50.00
WED	07/15/09	07:20a	6	5		BB	$0.00
KLQV TRAFFIC OPEN							

1,200.00

INVOICE

Invoice #: IN-SD2-109077446
Invoice Date: 07/28/2009
Contract #: 101683
Page: 2

Day	Date	Time	Ln	Length	Product	ISCI	Rate
WED	07/15/09	10:54a	5	60		ANTS IN YOR PLANTS	$0.00
WED	07/15/09	12:31p	1	60		ANTS IN YOR PLANTS	$220.00
WED	07/15/09	03:34p	5	60		ANTS IN YOR PLANTS	$0.00
WED	07/15/09	08:34p	2	60		ANTS IN YOR PLANTS	$50.00
THU	07/16/09	07:54p	2	60		ANTS IN YOR PLANTS	$50.00
FRI	07/17/09	01:33p	1	60		ANTS IN YOR PLANTS	$220.00
FRI	07/17/09	02:35p	5	60		ANTS IN YOR PLANTS	$0.00
FRI	07/17/09	08:35p	2	60		ANTS IN YOR PLANTS	$50.00
SAT	07/18/09	08:28a	3	60		ANTS IN YOR PLANTS	$100.00
SAT	07/18/09	12:20p	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
SAT	07/18/09	01:35p	4	60		ANTS IN YOR PLANTS	$190.00
SAT	07/18/09	05:47p	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
SUN	07/19/09	06:49a	3	60		ANTS IN YOR PLANTS	$100.00
SUN	07/19/09	11:31a	5	60		ANTS IN YOR PLANTS	$0.00
SUN	07/19/09	05:33p	5	60		ANTS IN YOR PLANTS	$0.00
MON	07/20/09	06:47a	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
MON	07/20/09	10:27a	1	60		ANTS IN YOR PLANTS	$220.00
MON	07/20/09	07:34p	5	60		ANTS IN YOR PLANTS	$0.00
MON	07/20/09	09:54p	2	60		ANTS IN YOR PLANTS	$50.00
TUE	07/21/09	07:20a	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	07/21/09	09:20a	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
TUE	07/21/09	10:52p	2	60		ANTS IN YOR PLANTS	$50.00
WED	07/22/09	08:47a	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
WED	07/22/09	02:27p	1	60		ANTS IN YOR PLANTS	$220.00
WED	07/22/09	08:52p	5	60		ANTS IN YOR PLANTS	$0.00
WED	07/22/09	09:57p	5	60		ANTS IN YOR PLANTS	$0.00
WED	07/22/09	11:32p	2	60		ANTS IN YOR PLANTS	$50.00
THU	07/23/09	01:35p	1	60		ANTS IN YOR PLANTS	$220.00
FRI	07/24/09	10:37p	2	60		ANTS IN YOR PLANTS	$50.00
SAT	07/25/09	09:22a	3	60		ANTS IN YOR PLANTS	$100.00
SAT	07/25/09	10:53a	4	60		ANTS IN YOR PLANTS	$190.00
SAT	07/25/09	12:54p	5	60		ANTS IN YOR PLANTS	$0.00
SAT	07/25/09	01:47p	6	5		BB	$0.00
KLQV TRAFFIC OPEN							
SUN	07/26/09	06:48a	3	60		ANTS IN YOR PLANTS	$100.00
SUN	07/26/09	09:48p	5	60		ANTS IN YOR PLANTS	$0.00

$2,230.00

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

CLEARCHANNEL

INVOICE: 125-171326

City Of San Diego

9370 Cheasapeake Dr
Suite 100
San Diego, CA 92123

Advertiser No.: 663
City Of San Diego
Order: 95976
Co-op: No

Invoice Date: **08/30/2009**
Payment Due: **08/30/2009**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/PO No 5204470-0**

CPE

Comments: **PLEASE NOTE INVOICE NUMBER WHEN REMITTING PAYMENT.**

Invoice Summary:

# of Spots:	114
Gross Spot Billing:	$13,230.00
Agency Commission:	$0.00
Net Spot Billing:	$13,230.00

$5,660.00

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

ok to pay
$13,230.00
PO# 5204470-0
9/10/09

Invoice: 171326 Advertiser: City Of San Diego

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
2	MTWThF	5	Local Direct	Commercial 15	06:00:00-10:00:00				$125.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Think Blue 1 / City of SD/Think Blue 1/15				07/27/09	08:29 AM	15		$125.00
	Think Blue 2 / City of SD/Think Blue 2/15				07/28/09	08:44 AM	15		$125.00
	Think Blue 3 / City of SD/Think Blue 3/15				07/29/09	09:18 AM	15		$125.00
	Think Blue 4 / City of SD/Think Blue 4/15				07/30/09	06:56 AM	15		$125.00
$1,875.00	Think Blue 5 / City of SD/Think Blue 5/15				07/31/09	08:00 AM	15		$125.00
	Think Blue 1 / City of SD/Think Blue 1/15				08/03/09	08:54 AM	15		$125.00
	Think Blue 2 / City of SD/Think Blue 2/15				08/04/09	09:37 AM	15		$125.00
	Think Blue 3 / City of SD/Think Blue 3/15				08/05/09	07:09 AM	15		$125.00
	Think Blue 4 / City of SD/Think Blue 4/15				08/06/09	07:04 AM	15		$125.00
	Think Blue 5 / City of SD/Think Blue 5/15				08/07/09	08:46 AM	15		$125.00
	Think Blue 1 / City of SD/Think Blue 1/15				08/24/09	08:30 AM	15		$125.00
	Think Blue 2 / City of SD/Think Blue 2/15				08/25/09	09:49 AM	15		$125.00
	Think Blue 3 / City of SD/Think Blue 3/15				08/26/09	06:25 AM	15		$125.00
	Think Blue 4 / City of SD/Think Blue 4/15				08/27/09	07:56 AM	15		$125.00
	Think Blue 5 / City of SD/Think Blue 5/15				08/28/09	08:32 AM	15		$125.00
9	MTWThF	5	Local Direct	Commercial	06:00:00-10:00:00				$425.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60				07/27/09	06:49 AM	60		$425.00
$2,125.00	Antsinyourpants / City of SD/Ants in your pants/60				07/28/09	07:59 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/29/09	08:27 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/30/09	08:56 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/31/09	09:10 AM	60		$425.00
	Karma / City of SD/Karma/60				08/03/09	08:01 AM	60		$425.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/03/09	09:50 AM	60		$425.00
	Karma / City of SD/Karma/60				08/04/09	07:24 AM	60		$425.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/05/09	09:13 AM	60		$425.00
	Karma / City of SD/Karma/60				08/07/09	06:50 AM	60		$425.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/24/09	07:37 AM	60		$425.00
	Karma / City of SD/Karma/60				08/25/09	07:44 AM	60		$425.00
	Karma / City of SD/Karma/60				08/26/09	09:20 AM	60		$425.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/27/09	06:40 AM	60		$425.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/28/09	07:21 AM	60		$425.00
10	MTWThF	5	Local Direct	Commercial	10:00:00-15:00:00				$200.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
$200.00	Antsinyourpants / City of SD/Ants in your pants/60				07/27/09	02:15 PM	60		$200.00

Invoice: 171326 Advertiser: **City Of San Diego**

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
	* Antsinyourpants / City of SD/Ants in your pants/60				07/28/09	10:50 AM	60		$200.00
	* Antsinyourpants / City of SD/Ants in your pants/60				07/29/09	11:52 AM	60		$200.00
	* Antsinyourpants / City of SD/Ants in your pants/60				07/30/09	12:51 PM	60		$200.00
$800.00	* Antsinyourpants / City of SD/Ants in your pants/60				07/31/09	01:22 PM	60		$200.00
	Karma / City of SD/Karma/60				08/03/09	02:18 PM	60		$200.00
	Karma / City of SD/Karma/60				08/04/09	11:21 AM	60		$200.00
	Karma / City of SD/Karma/60				08/05/09	12:23 PM	60		$200.00
	Karma / City of SD/Karma/60				08/06/09	01:47 PM	60		$200.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/07/09	02:49 PM	60		$200.00
	Karma / City of SD/Karma/60				08/24/09	10:20 AM	60		$200.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/25/09	11:25 AM	60		$200.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/26/09	01:22 PM	60		$200.00
	Karma / City of SD/Karma/60				08/27/09	02:49 PM	60		$200.00
	Karma / City of SD/Karma/60				08/28/09	10:50 AM	60		$200.00
11	MTWThF	3	Local Direct	Commercial	19:00:00-22:00:00				$50.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	* Antsinyourpants / City of SD/Ants in your pants/60				07/29/09	08:22 PM	60		$50.00
$150.00	* Antsinyourpants / City of SD/Ants in your pants/60				07/30/09	09:49 PM	60		$50.00
	* Antsinyourpants / City of SD/Ants in your pants/60				07/31/09	08:24 PM	60		$50.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/03/09	09:21 PM	60		$50.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/04/09	08:49 PM	60		$50.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/05/09	08:52 PM	60		$50.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/24/09	09:47 PM	60		$50.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/27/09	08:21 PM	60		$50.00
	Karma / City of SD/Karma/60				08/28/09	09:22 PM	60		$50.00
12	MTWThFSSn	10	Local Direct	Commercial	00:00:00-23:59:00				$1.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	* Antsinyourpants / City of SD/Ants in your pants/60				07/27/09	12:49 AM	60		$1.00
	* Antsinyourpants / City of SD/Ants in your pants/60				07/27/09	01:57 AM	60		$1.00
$10.00	* Antsinyourpants / City of SD/Ants in your pants/60				07/28/09	12:56 AM	60		$1.00
	* Antsinyourpants / City of SD/Ants in your pants/60				07/29/09	01:21 AM	60		$1.00
	* Antsinyourpants / City of SD/Ants in your pants/60				07/30/09	02:21 AM	60		$1.00
	* Antsinyourpants / City of SD/Ants in your pants/60				07/31/09	01:19 AM	60		$1.00
	* Antsinyourpants / City of SD/Ants in your pants/60				08/01/09	08:40 AM	60		$1.00
	* Antsinyourpants / City of SD/Ants in your pants/60				08/01/09	08:50 PM	60		$1.00
	* Antsinyourpants / City of SD/Ants in your pants/60				08/02/09	07:20 PM	60		$1.00
	* Antsinyourpants / City of SD/Ants in your pants/60				08/02/09	09:46 PM	60		$1.00

Invoice: 171326 Advertiser: City Of San Diego

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/03/09	01:21 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/04/09	03:50 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/05/09	12:48 AM	60		$1.00
	Karma / City of SD/Karma/60				08/05/09	01:54 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/06/09	02:56 AM	60		$1.00
	Karma / City of SD/Karma/60				08/06/09	03:17 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/06/09	04:21 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/07/09	12:23 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/08/09	02:53 AM	60		$1.00
	Karma / City of SD/Karma/60				08/08/09	06:27 PM	60		$1.00
	Karma / City of SD/Karma/60				08/24/09	12:19 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/25/09	12:49 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/26/09	01:19 AM	60		$1.00
	Karma / City of SD/Karma/60				08/27/09	02:49 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/28/09	02:50 AM	60		$1.00
	Karma / City of SD/Karma/60				08/28/09	04:23 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/29/09	12:24 AM	60		$1.00
	Karma / City of SD/Karma/60				08/29/09	01:22 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/30/09	12:26 AM	60		$1.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/30/09	09:49 PM	60		$1.00
13	MTWThFSSn	10	Local Direct	Commercial	06:00:00-23:59:00				$50.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60				07/27/09	10:24 AM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/27/09	08:50 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/29/09	09:24 PM	60		$50.00
$500.00	Antsinyourpants / City of SD/Ants in your pants/60				07/30/09	03:15 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/31/09	05:19 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				08/01/09	10:23 AM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				08/01/09	07:20 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				08/02/09	12:18 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				08/02/09	08:48 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				08/02/09	10:13 PM	60		$50.00
	Karma / City of SD/Karma/60				08/03/09	10:49 PM	60		$50.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/04/09	08:46 AM	60		$50.00
	Karma / City of SD/Karma/60				08/04/09	10:20 PM	60		$50.00
	Karma / City of SD/Karma/60				08/05/09	11:23 PM	60		$50.00
	Karma / City of SD/Karma/60				08/07/09	11:20 PM	60		$50.00
	EngRadio60BMPFinal / City of SD/EngRadio60BMPFinal/60				08/08/09	09:52 PM	60		$50.00

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

CLEARCHANNEL

INVOICE: 125-169428

City Of San Diego

9370 Cheasapeake Dr
Suite 100
San Diego, CA 92123

Advertiser No.: 663
City Of San Diego
Order: 95976
Co-op: No

Invoice Date: **07/26/2009**
Payment Due: **07/26/2009**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/PO No 5204470-0**

CPE

Comments: **PLEASE NOTE INVOICE NUMBER WHEN REMITTING PAYMENT.**

Invoice Summary:

# of Spots:	75
Gross Spot Billing:	$8,819.00
Agency Commission:	~~$0.00~~
Net Spot Billing:	$8,819.00

$ 6,115.00

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

ok to pay
$ 8,819.00
P.O. # 5204470-0
Timothy W. Dick
8/17/09

Invoice: **169428** Advertiser: **City Of San Diego**

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
2	MTWThF	5	Local Direct	Commercial 15	06:00:00-10:00:00				$125.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Think Blue 1 / City of SD/Think Blue 1/15				06/29/09	07:48 AM	15		$125.00
	Think Blue 2 / City of SD/Think Blue 2/15				06/30/09	09:16 AM	15		$125.00
	Think Blue 3 / City of SD/Think Blue 3/15				07/01/09	09:56 AM	15		$125.00
	Think Blue 4 / City of SD/Think Blue 4/15				07/02/09	06:35 AM	15		$125.00
	Think Blue 5 / City of SD/Think Blue 5/15				07/03/09	06:58 AM	15		$125.00
	Think Blue 1 / City of SD/Think Blue 1/15				07/06/09	07:24 AM	15		$125.00
	Think Blue 2 / City of SD/Think Blue 2/15				07/07/09	08:45 AM	15		$125.00
	Think Blue 3 / City of SD/Think Blue 3/15				07/08/09	09:30 AM	15		$125.00
	Think Blue 4 / City of SD/Think Blue 4/15				07/09/09	09:09 AM	15		$125.00
	Think Blue 5 / City of SD/Think Blue 5/15				07/10/09	08:49 AM	15		$125.00
9	MTWThF	5	Local Direct	Commercial	06:00:00-10:00:00				$425.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60				06/29/09	09:50 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/30/09	07:18 AM	60		$425.00
$3400.00	Antsinyourpants / City of SD/Ants in your pants/60				07/01/09	08:23 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/02/09	08:40 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/03/09	08:11 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/06/09	09:57 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/07/09	06:53 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/08/09	09:04 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/09/09	08:32 AM	60		$425.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/10/09	09:27 AM	60		$425.00
10	MTWThF	5	Local Direct	Commercial	10:00:00-15:00:00				$200.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60				06/29/09	01:22 PM	60		$200.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/30/09	10:21 AM	60		$200.00
$1600.00	Antsinyourpants / City of SD/Ants in your pants/60				07/01/09	10:58 AM	60		$200.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/02/09	10:51 AM	60		$200.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/03/09	01:22 PM	60		$200.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/06/09	11:48 AM	60		$200.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/07/09	02:48 PM	60		$200.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/08/09	11:25 AM	60		$200.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/09/09	01:50 PM	60		$200.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/10/09	01:19 PM	60		$200.00

Invoice: 169428 Advertiser: City Of San Diego

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
11	MTWThF	3	Local Direct	Commercial	19:00:00-22:00:00				$50.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60				06/30/09	07:48 PM	60		$50.00
$250.00	Antsinyourpants / City of SD/Ants in your pants/60				07/01/09	08:52 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/02/09	09:23 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/06/09	08:23 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/07/09	09:22 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/10/09	07:22 PM	60		$50.00
12	MTWThFSSn	10	Local Direct	Commercial	00:00:00-23:59:00				$1.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60				06/29/09	12:50 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/29/09	01:51 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/30/09	01:20 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/30/09	02:48 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/01/09	01:53 AM	60		$1.00
615.00	Antsinyourpants / City of SD/Ants in your pants/60				07/02/09	03:46 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/03/09	01:53 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/04/09	12:22 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/04/09	07:41 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/05/09	10:51 PM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/06/09	12:47 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/07/09	01:55 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/08/09	12:56 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/08/09	02:20 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/09/09	12:54 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/09/09	02:23 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/10/09	04:20 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/11/09	02:21 AM	60		$1.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/12/09	04:43 AM	60		$1.00
13	MTWThFSSn	10	Local Direct	Commercial	06:00:00-23:59:00				$50.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Antsinyourpants / City of SD/Ants in your pants/60				06/29/09	12:24 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/29/09	07:17 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				06/30/09	10:50 PM	60		$50.00
6150.00	Antsinyourpants / City of SD/Ants in your pants/60				07/01/09	10:47 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/02/09	12 49 PM	60		$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/02/09	11:23 PM	60		$50.00

Invoice: **169428** Advertiser: **City Of San Diego**

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To			Rate
	Antsinyourpants / City of SD/Ants in your pants/60				07/04/09	08:17 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/05/09	08:48 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/05/09	09:49 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/05/09	11:48 PM	60	$50.00
$700 00	Antsinyourpants / City of SD/Ants in your pants/60				07/07/09	04:45 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/11/09	07:52 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/11/09	09:22 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/11/09	10:22 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/11/09	11:48 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/12/09	08:38 AM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/12/09	09:14 AM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/12/09	08:22 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/12/09	10:50 PM	60	$50.00
	Antsinyourpants / City of SD/Ants in your pants/60				07/12/09	11:47 PM	60	$50.00

Totals for Station:	KMYI-FM	No. of Spots/Misc: 75/0	Gross Amt:	$8,819.00
Totals for Market:	San Diego	No. of Spots/Misc: 75/0	Gross Amt:	$8,819.00
Totals for Invoice:		**No. of Spots/Misc: 75/0**	**Gross Amt:**	**$8,819.00**

RBF CONSULTING

July 31, 2009
Project No: 25-102902.001
Invoice No: 9060865

Ms. Karen Holman
San Diego Unified Port District
P.O. Box 120488
San Diego, CA 92112-0488

Project 25-102902.001 Port Of SD/Stormwater Data Mgmt.

Professional consulting services rendered pursuant to the Agreement dated September 17, 2007 relative to the Port of San Diego/Stormwater Data Management Project.

Work tasks performed during this period included:
* (See attached for description)

I certify under penalty of perjury that the above statement is just and correct according to the terms of Document No. 52440 and that payment has not been received.

Mark Cappos
V.P. Finance

RECEIVED AUG 3 2009 Environmental Services

Professional Services: May 30, 2009 to July 3, 2009

21,042.00

Total this Invoice **$21,042.00**

ok to Pay: PG

Time and Material Fee Breakout

Task 2 - On-Call

Discipline	Hours	Rate		Amount
Project Manager	13	210.00	=	2,730.00
Database Analyst Programmer II	52	133.00	=	6,916.00
GIS Analyst	36	112.00	=	4,032.00
Stormwater Specialist	0	112.00	=	-
		Total Time and Materials Fee:		$ 13,678.00

Amount Previously Invoiced:	$106,988.00
Amount This Task:	$13,678.00
Total Invoiced to Date	$120,666.00
Task 2 Authorized Amount	$45,000.00
Amendment No. 1 Authorized Amount	$10,000.00
Amendment No. 2 Authorized Amount	$25,000.00
Amendment No. 3 Authorized Amount	$30,000.00 (* New Amendment in Process)
Less Amount to Date	$120,666.00
Authorized Remaining	-$10,666.00

Task 3 - SUSMP

Discipline	Hours	Rate		Amount
Project Manager		210.00	=	0.00
Database Analyst Programmer II		133.00	=	0.00
GIS Analyst		112.00	=	0.00
Stormwater Specialist		112.00	=	0.00
		Total Time and Materials Fee:		$0.00

Amount Previously Invoiced:	$322.00
Amount This Task:	$0.00
Total Invoiced to Date	$322.00
Task 3 Authorized Amount	$5,000.00
Less Amount to Date	$322.00
Authorized Remaining	$4,678.00

Time and Material Fee Breakout

Task 6 - Mobile Business Database

Discipline	Hours	Rate		Amount
Project Manager	12.5	210.00	=	2625.00
Database Analyst Programmer II	23	133.00	=	3059.00
GIS Analyst	15	112.00	=	1680.00
Usability Expert	0	150.00	=	0.00
GIS Technician	0	83.00	=	0.00
		Total Time and Materials Fee:		$7,364.00

Amount Previously Invoiced:	$36,642.00	
Amount This Task:	$7,364.00	
Total Invoiced to Date	$44,006.00	
Task 6 Authorized Amount	$40,744.00	
Trasfer of funds from Task 4	$5,000.00	(*Will increase to a total fee of $50k)
Less Amount to Date	$44,006.00	
Authorized Remaining	$1,738.00	

RBF CONSULTING

August 28, 2009
Project No: 25-102902.001
Invoice No: 9070176

Ms. Karen Holman
San Diego Unified Port District
P.O. Box 120488
San Diego, CA 92112-0488

Project 25-102902.001 Port Of SD/Stormwater Data Mgmt.

Professional consulting services rendered pursuant to the Agreement dated September 17, 2007 relative to the Port of San Diego/Stormwater Data Management Project.

Work tasks performed during this period included:
* (See attached for description)

I certify under penalty of perjury that the above statement is just and correct according to the terms of Document No. 52440 and that payment has not been received.

Mark Cappos
V.P. Finance

Professional Services: July 4, 2009 to July 31, 2009

17,962.00

Total this Invoice **$17,962.00**

RECEIVED
SEP 1 1 2009
Environmental Services

Time and Material Fee Breakout

Task 2 - On-Call

Discipline	Hours	Rate		Amount
Project Manager	6.5	210.00	=	1,365.00
Database Analyst Programmer II	74	133.00	=	9,842.00
GIS Analyst	40	112.00	=	4,480.00
Stormwater Specialist	0	112.00	=	-
		Total Time and Materials Fee:		$ 15,687.00

Amount Previously Invoiced:	$120,666.00
Amount This Task:	$15,687.00
Total Invoiced to Date	$136,353.00
Task 2 Authorized Amount	$25,000.00
Amendment No. 1 Authorized Amount	$10,000.00
Amendment No. 2 Authorized Amount	$25,000.00
Amendment No. 3 Authorized Amount	$30,000.00
Amendment No. 4 Authorized Amount	$20,000.00
Amendment No. 5 Authorized Amount	$77,254.00
Less Amount to Date	$136,353.00
Authorized Remaining	$50,901.00

Task 3 - SUSMP

Discipline	Hours	Rate		Amount
Project Manager		210.00	=	0.00
Database Analyst Programmer II		133.00	=	0.00
GIS Analyst		112.00	=	0.00
Stormwater Specialist		112.00	=	0.00
		Total Time and Materials Fee:		$0.00

Amount Previously Invoiced:	$322.00
Amount This Task:	$0.00
Total Invoiced to Date	$322.00
Task 3 Authorized Amount	$5,000.00
Amendment No. 1 Authorized Amount	$20,000.00
Less Amount to Date	$322.00
Authorized Remaining	$24,678.00

Time and Material Fee Breakout

Task 6 - Mobile Business Database

Discipline	Hours	Rate		Amount
Project Manager	3	210.00	=	630.00
Database Analyst Programmer II	1	133.00	=	133.00
GIS Analyst	0	112.00	=	0.00
Usability Expert	0	150.00	=	0.00
GIS Technician	0	83.00	=	0.00
		Total Time and Materials Fee:		$763.00

Amount Previously Invoiced:	$44,006.00
Amount This Task:	$763.00
Total Invoiced to Date	$44,769.00
Task 6 Authorized Amount	$40,744.00
Amendement No. 1 Authorized Amount	$9,102.00
Less Amount to Date	$44,769.00
Authorized Remaining	$5,077.00

Task 7 - ICID

Discipline	Hours	Rate		Amount
Project Manager	4	210.00	=	840.00
Database Analyst Programmer II	0	133.00	=	0.00
GIS Analyst	6	112.00	=	672.00
		Total Time and Materials Fee:		$1,512.00

Amount Previously Invoiced:	$0.00
Amount This Task:	$1,512.00
Total Invoiced to Date	$1,512.00
Task 6 Authorized Amount	$29,000.00
Less Amount to Date	$1,512.00
Authorized Remaining	$27,488.00

RBF CONSULTING

June 25, 2010
Project No: 10-107514.001
Invoice No: 10050900

Ms. Karen Holman
San Diego Unified Port District
P.O. Box 120488
San Diego, CA 92112-0488

Project 10-107514.001 Port of San Diego Mobile Business Inv

Project Manager: Steve Bein 949/855-3642
Project Accountant: Vera Klaich 949/855-5725

Professional consulting services rendered pursuant to the Agreement dated May 13, 2010, relative to the development and maintenace of a Regional Mobile Business Inventory.

I certify under penalty of perjury that the above statement is just and correct according to the terms of **Document No. 56507** and that payment has not been received.

Steve Bein,
V.P. Geographic Information Systems

Professional Services: May 1, 2010 to May 31, 2010

Professional Personnel

	Hours	Rate	Amount	
Project Manager	8.00	210.00	1,680.00	
GIS Analyst	10.00	112.00	1,120.00	
Totals	18.00		2,800.00	
Total Labor				**2,800.00**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	2,800.00	0.00	2,800.00
Limit			20,000.00
Remaining			17,200.00

Total this Invoice **$2,800.00**

OK to pay
301860

65th Anniversary 1944 2009

14725 Alton Parkway, Irvine, CA 92618-2027 ■ P.O. Box 57057, Irvine, CA 92619-7057 ■ 949.472.3505 ■ Fax 949.472.8373
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

Billing Backup

Thursday, June 17, 2010

RBF Consulting **Invoice 10050900 Dated 6/25/10** *4:33:25 PM*

Project 10-107514.001 Port of San Diego Mobile Business Inv

Professional Personnel

			Hours	Rate	Amount	
Project Manager						
003648	Bein, Steven	5/21/10	1.50	210.00	315.00	
003648	Bein, Steven	5/26/10	6.00	210.00	1,260.00	
003648	Bein, Steven	5/28/10	.50	210.00	105.00	
GIS Analyst						
006155	Hendrickson Jr., Rich	5/11/10	4.00	112.00	448.00	
006155	Hendrickson Jr., Rich	5/25/10	3.00	112.00	336.00	
006155	Hendrickson Jr., Rich	5/26/10	3.00	112.00	336.00	
	Totals		18.00		2,800.00	
	Total Labor					**2,800.00**

Total this report **$2,800.00**

RBF CONSULTING

July 22, 2010
Project No: 10-107514.001
Invoice No: 10060879

Ms. Karen Holman
San Diego Unified Port District
P.O. Box 120488
San Diego, CA 92112-0488

Project 10-107514.001 Port of San Diego Mobile Business Inv

Project Manager: Steve Bein 949/855-3642
Project Accountant: Vera Klaich 949/855-5725

Professional consulting services rendered pursuant to the Agreement dated May 13, 2010, relative to the development and maintenace of a Regional Mobile Business Inventory.

I certify under penalty of perjury that the above statement is just and correct according to the terms of **Document No. 56507** and that payment has not been received.

Steve Bein,
V.P. Geographic Information Systems

Professional Services: June 1, 2010 to June 30, 2010

Professional Personnel

	Hours	Rate	Amount	
Project Manager	23.50	210.00	4,935.00	
GIS Analyst	25.25	112.00	2,828.00	
Database Analyst	71.00	133.00	9,443.00	
Totals	119.75		17,206.00	
Total Labor				**17,206.00**

Billing Limits	**Current**	**Prior**	**To-Date**	
Total Billings	17,206.00	2,800.00	20,006.00	
Limit			20,000.00	
Adjustment				**-6.00**
		Total this Invoice		**$17,200.00**

301860 OK to pay

PLANNING ■ DESIGN ■ CONSTRUCTION
14725 Alton Parkway, Irvine, CA 92618-2027 ■ P.O. Box 57057, Irvine, CA 92619-7057 ■ 949.472.3505 ■ FAX 949.472.8373
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

Billing Backup

Thursday, July 22, 2010

RBF Consulting **Invoice 10060879 Dated 7/22/10** *9:46:57 AM*

Project 10-107514.001 Port of San Diego Mobile Business Inv

Professional Personnel

			Hours	Rate	Amount
Project Manager					
003648	Bein, Steven	5/3/10	2.00	210.00	420.00
003648	Bein, Steven	5/12/10	7.00	210.00	1,470.00
003648	Bein, Steven	5/13/10	1.00	210.00	210.00
003648	Bein, Steven	6/16/10	2.00	210.00	420.00
003648	Bein, Steven	6/17/10	2.50	210.00	525.00
003648	Bein, Steven	6/18/10	1.00	210.00	210.00
003648	Bein, Steven	6/22/10	1.00	210.00	210.00
003648	Bein, Steven	6/23/10	7.00	210.00	1,470.00
GIS Analyst					
006155	Hendrickson Jr., Rich	5/10/10	.50	112.00	56.00
006155	Hendrickson Jr., Rich	6/3/10	3.00	112.00	336.00
006155	Hendrickson Jr., Rich	6/7/10	5.00	112.00	560.00
006155	Hendrickson Jr., Rich	6/14/10	1.50	112.00	168.00
006155	Hendrickson Jr., Rich	6/17/10	2.50	112.00	280.00
006155	Hendrickson Jr., Rich	6/18/10	1.75	112.00	196.00
006155	Hendrickson Jr., Rich	6/21/10	6.00	112.00	672.00
006155	Hendrickson Jr., Rich	6/22/10	5.00	112.00	560.00
Database Analyst					
006940	Hu, John	5/26/10	3.00	133.00	399.00
006940	Hu, John	5/27/10	6.00	133.00	798.00
006940	Hu, John	5/28/10	8.00	133.00	1,064.00
006940	Hu, John	6/8/10	1.00	133.00	133.00
006940	Hu, John	6/9/10	2.00	133.00	266.00
006940	Hu, John	6/10/10	1.00	133.00	133.00
006940	Hu, John	6/11/10	6.00	133.00	798.00
006940	Hu, John	6/15/10	1.00	133.00	133.00
006940	Hu, John	6/16/10	6.00	133.00	798.00

RBF CONSULTING

Billing Backup		Invoice 10060879 Dated 7/22/10				Thursday, July 22, 2010 - 9:46:57 AM
006940	Hu, John	6/17/10	5.00	133.00	665.00	
006940	Hu, John	6/18/10	1.00	133.00	133.00	
006940	Hu, John	6/22/10	5.00	133.00	665.00	
006940	Hu, John	6/23/10	6.00	133.00	798.00	
006940	Hu, John	6/24/10	5.00	133.00	665.00	
006940	Hu, John	6/25/10	7.00	133.00	931.00	
006940	Hu, John	6/28/10	6.00	133.00	798.00	
006940	Hu, John	6/30/10	2.00	133.00	266.00	
	Totals		119.75		17,206.00	
	Total Labor					**17,206.00**
				Total this report		**$17,206.00**

PLEASE REMIT TO:
P.O. BOX 79064
City of Industry, CA 91716-9064

INVOICE

(949) 727-9336
FAX (949) 727-7399

RECEIVED
JUN 03 2010
CITY OF EL CAJON
ENGINEERING DIVISION

Jaime Campos
City of El Cajon
200 Civic Center Way
El Cajon, CA 92020
USA

May 28, 2010
Project No: 171052.0000.0000
Invoice No: 13014
Project Manager Jerome Jaminet

Project 171052.0000.0000 San Diego River Watershed Support

Professional Services through: April 30, 2010

Phase TA1000 WURMP Meetings

Professional Personnel

		Hours	Rate	Amount	
PROJECT MANAGER					
Jaminet, Jerome	4/8/10	3.00	141.00	423.00	
WURMP group meeting					
Totals		3.00		423.00	
Total Labor					**423.00**
			Total this Phase		**$423.00**

Phase TA3000 Annual Report

Professional Personnel

		Hours	Rate	Amount	
ADMINISTRATION					
Pauluk, Chrissy	4/7/10	1.50	58.00	87.00	
Copied, tabbed, and bound 5 copies of the El Cajon Runoff Report					
Totals		1.50		87.00	
Total Labor					**87.00**
			Total this Phase		**$87.00**

Phase TA5000 Additional Services to El Cajon ← THIS TASK APPLIES TO THE I/C WORKGROUP

Professional Personnel

		Hours	Rate	Amount
PROJECT MANAGER				
Jaminet, Jerome	4/26/10	2.50	141.00	352.50
meeting with Karen (port) and Jaime (el cajon) re scope of work				

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

Totals	2.50	352.50	
Total Labor			**352.50**

Total this Phase **$352.50**

Total this Invoice **$862.50**

Billings to Date

	Current	Prior	Total
Labor	862.50	27,142.50	28,005.00
Totals	**862.50**	**27,142.50**	**28,005.00**

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

PLEASE REMIT TO:
P.O. BOX 79064
City of Industry, CA 91716-9064

INVOICE

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FAX (949) 727-7399

JUL 09 2010
CITY OF EL CAJON

Jaime Campos
City of El Cajon
200 Civic Center Way
El Cajon, CA 92020
USA

June 25, 2010
Project No: 171052.0000.0000
Invoice No: 13260
Project Manager Jerome Jaminet

Project 171052.0000.0000 San Diego River Watershed Support

Professional Services through: May 28, 2010

Phase TA1000 WURMP Meetings

Professional Personnel

		Hours	Rate	Amount	
PROJECT MANAGER					
Jaminet, Jerome	5/13/10	3.00	141.00	423.00	
WURMP meeting					
Totals		3.00		423.00	
Total Labor					**423.00**
			Total this Phase		**$423.00**

Phase TA5000 Additional Services to El Cajon ← TASK FOR I/C WORKGROUP

Professional Personnel

		Hours	Rate	Amount
PROJECT MANAGER				
Jaminet, Jerome	5/11/10	5.00	141.00	705.00
review I/C inspection data				
Jaminet, Jerome	5/12/10	3.50	141.00	493.50
review I/C inspection data				
Jaminet, Jerome	5/14/10	7.00	141.00	987.00
review I/C inspection data				
Jaminet, Jerome	5/19/10	3.00	141.00	423.00
clean up data sets				
Jaminet, Jerome	5/20/10	6.00	141.00	846.00
clean up and analyze data				
Jaminet, Jerome	5/21/10	7.00	141.00	987.00
evaluate data				
Jaminet, Jerome	5/25/10	6.00	141.00	846.00
evaluate data				
Jaminet, Jerome	5/26/10	5.00	141.00	705.00
evaluate data				

Jaime Campos

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

Project	171052.0000.0000	San Diego River Watershed Support			Invoice 13260	
Jaminet, Jerome		5/28/10	4.00	141.00	564.00	
evaluate data						
Totals			46.50		6,556.50	
Total Labor						**6,556.50**
				Total this Phase		**$6,556.50**
				Total this Invoice		**$6,979.50**

Billings to Date

	Current	Prior	Total
Labor	6,979.50	28,005.00	34,984.50
Totals	**6,979.50**	**28,005.00**	**34,984.50**

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

TRC

PLEASE REMIT TO:
P.O. BOX 79064
City of Industry, CA 91716-9064

INVOICE

(949) 727-9336
FAX (949) 727-7399

SENT ON 9/9/10
CHECK # 597425

AUG 02 2010
CITY OF EL CAJON

Jaime Campos
City of El Cajon
200 Civic Center Way
El Cajon, CA 92020
USA

July 30, 2010
Project No: 171052.0000.0000
Invoice No: 13574
Project Manager Jerome Jaminet

Project 171052.0000.0000 San Diego River Watershed Support

Professional Services through: June 25, 2010

Phase TA1000 WURMP Meetings

Professional Personnel

		Hours	Rate	Amount	
PROJECT MANAGER					
Jaminet, Jerome	6/10/10	2.50	141.00	352.50	
WURMP meeting					
Totals		2.50		352.50	
Total Labor					**352.50**
			Total this Phase		**$352.50**

Phase TA5000 Additional Services to El Cajon

THIS TASK APPLIES TO THE I/C WORK GROUP

Professional Personnel

		Hours	Rate	Amount	
PROJECT MANAGER					
Jaminet, Jerome	6/1/10	4.00	141.00	564.00	
IC evaluation of potential changes					
Jaminet, Jerome	6/9/10	5.00	141.00	705.00	
Ind Comm evaluation					
Jaminet, Jerome	6/10/10	5.50	141.00	775.50	
Ind comm evaluation					
Jaminet, Jerome	6/11/10	7.50	141.00	1,057.50	
Ind Comm evaluation					
Jaminet, Jerome	6/15/10	1.50	141.00	211.50	
meeting with Jaime and Karen to discuss results					
Jaminet, Jerome	6/16/10	4.00	141.00	564.00	
prepare slides for Karen to present re: IC evaluation results					
Jaminet, Jerome	6/22/10	2.00	141.00	282.00	
Ind Com Workgroup meeting					
Totals		29.50		4,159.50	
Total Labor					**4,159.50**

Jaime Campos

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

Total this Phase	**$4,159.50**
Total this Invoice	**$4,512.00**

Billings to Date

	Current	Prior	Total
Labor	4,512.00	34,984.50	39,496.50
Totals	**4,512.00**	**34,984.50**	**39,496.50**

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	City of El Cajon
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 1,104.00**
Contract / Other Expenditures Claimed:	**$ 10,998.23**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jaime Campos
Associate Civil Engineer
City of El Cajon

08/12/10
Date

Jaime Campos
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9-2-10
Date

Signature

Richard Diaz, R.E.H.S.

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of El Cajon

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.A. Workgroup Meeting Support						
10/1/2009	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Planning on upcoming meeting and/or prepared meeting materials
11/24/2009	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Planning on upcoming meeting and/or prepared meeting materials
1/15/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Planning on upcoming meeting and/or prepared meeting materials
1/27/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Planning on upcoming meeting and/or prepared meeting materials
3/29/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Planning on upcoming meeting and/or prepared meeting materials
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 345.00 ✓					
Subtask 2.A. Semi-annual Workgroup Updates						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. FY 2010-11 Work Plan and Budget						
11/10/2009	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Review & provided input on draft budget
12/14/2009	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Review & provided input on draft budget
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of El Cajon

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 138.00 ✓					
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input						
11/20/2009	Jaime Campos	Associate Civil Engineer	2.00	$ 69.00	$ 138.00	Prepared daft report
11/23/2009	Jaime Campos	Associate Civil Engineer	2.00	$ 69.00	$ 138.00	Prepared daft report
11/24/2009	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Prepared daft report
12/1/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Incorporated comments/developed final report
12/8/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Review/edit final report
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 483.00 ✓					
Subtask 2.H. Regional Industrial & Commercial Assessment						
4/26/2010	Jaime Campos	Associate Civil Engineer	2.00	$ 69.00	$ 138.00	Meet with TRC to dicsuss inventory standard assessment
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 138.00 ✓					
Subtask 2.I. Pilot Program Development and Implementation						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of El Cajon

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Copermittee Total					**$ 1,104.00** ✓	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of El Cajon

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Contract TRC Solutions, Inc. - Subtask 2.H.				
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 352.50	4/26/2010	$ 17.63	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 705.00	5/11/2010	$ 35.25	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 493.50	5/12/2010	$ 24.68	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 987.00	5/14/2010	$ 49.35	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 423.00	5/19/2010	$ 21.15	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 846.00	5/20/2010	$ 42.30	
			$ -	
Subtask 2.H Sub-total $ 3,807.00	✓			
Subtask 2.H Management Cost $ 190.35	✓			
Contract TRC Solutions, Inc. - Subtask 2.H.				
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 987.00	5/21/2010	$ 49.35	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 846.00	5/25/2010	$ 42.30	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 705.00	5/26/2010	$ 35.25	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 564.00	6/1/2010	$ 28.20	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 705.00	6/9/2010	$ 35.25	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 775.50	6/10/2010	$ 38.78	
	$ 1,057.50	6/11/2010	$ 52.88	
Subtask 2.H Sub-total $ 5,640.00	✓			
Subtask 2.H Management Cost $ 282.00	✓			
Contract TRC Solutions, Inc. - Subtask 2.H.				
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 211.50	6/15/2010	$ 10.58	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 564.00	6/16/2010	$ 28.20	
Contract Task 2.H. Reional Industrial & Commercial Assessment	$ 252.00	6/22/2010	$ 12.60	
	$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ 1,027.50	✓			
Subtaskx.x Management Cost	$ 51.38	✓			
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO		$ -	x/x/2010		
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
Sub-total Other Expenditures	$ -				
Total Expenditures (Including contract management cost)		**$ 10,998.23** ✓			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	Port of San Diego
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 552.40**
Contract / Other Expenditures Claimed:	**$ 8,127.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

[Name] Karen Holman
[Title] Sr Environmental Specialist
[Organization] Port of San Diego

11/20/09
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

12-17-09
Date

Richard Diaz, R.E.H.S.

Signature

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.A. Workgroup Meeting Support						
7/30/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Preparation for August Workgroup Meeting (develop mtg materials, etc)
8/3/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Preparation for August Workgroup Meeting (develop mtg materials, etc)
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 138.10 ✓					
Subtask 2.A Semi-Annual Workgroup Update						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. FY Workplans & Budget						
8/3/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Edits and review of workplan/budget for Copermittee Mgmt Mtg
8/4/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Edits and review of workplan/budget for Copermittee Mgmt Mtg
8/12/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Edits and review of workplan/budget for Copermittee Mgmt Mtg
			0.00	$ 69.05	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 207.15 ✓					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.D. Regional Program Approach						
7/2/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Responses to comments/edits of conceptual plan
7/31/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Responses to comments/edits of conceptual plan
				$ 69.05	$ -	
				$ 69.05	$ -	
					$ -	
					$ -	
					$ -	
			0.00	$ -	$ -	
Sub-total	$ 138.10 ✓					
Subtask 2.E.Regional IC Facility Tracking						
				$ 69.05	$ -	
					$ -	
					$ -	
					$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.K. Regional Mobile Business Program						
7/2/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Coordination meeting with consultant and database review
				$ 69.05	$ -	
				$ 49.10	$ -	
				$ 49.10	$ -	
				$ 49.10	$ -	
				$ 49.10	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 69.05 ✓					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 552.40	

Final 04-30-09

[Are the 5% Management Costs to be taken here as well?]

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

368.20
38.15
406.35 yes.

Work Plan Task / Sub-task	Amount Paid	Date Paid	Expenditure Description / Work Plan Task
A. Contract Expenditures (List by Contract Name and # first, and then Contract Task or Sub-task)			
Contract 1. RBF Consulting Contract 52440; Sub-Task 2.K			
Contract Task 2.K. Regional Mobile Business Program	$ 7,364.00	7/31/2009	Mobile Business Database Development & Edits
Contract Task 2.K. Regional Mobile Business Program	$ 763.00	8/28/2009	Mobile Business Database Edits
	$ -		
	$ -		
	$ -		
	$ -		
Contract 2. [ENTER CONTRACT TITLE / #]			
Contract Task x.x. [ENTER APPLICABLE TASK OR SUB-TASK]	$ -	x/x/2003	[IDENTIFY WORK PLAN TASK / DESCRIBE WORK CONDUCTED]
	$ -		
	$ -		
Sub-total Contract Expenditures $ 8,127.00			
B. Other Expenditures			
[EXPENDITURE]	$ -	x/x/2008	[DESCRIBE EXPENDITURE / IDENTIFY WORK PLAN TASKS ADDRESSED]
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Other Expenditures $ -			
Total Expenditures	**$ 8,127.00**		

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	Port of San Diego
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 2,796.53**
Contract / Other Expenditures Claimed:	**$ 21,000.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Karen Holman
Senior Environmental Specialist
Port of San Diego

8/4/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9-2-10
Date

Signature

Richard Diaz, R.E.H.S.

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.A. Workgroup Meeting Support						
10/1/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Meeting planning for upcoming meeting
11/6/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare meeting materials for upcoming meeting
11/23/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Meeting planning for upcoming meeting
1/19/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Meeting planning for upcoming meeting
1/27/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare meeting materials for upcoming meeting
2/2/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare meeting materials for upcoming meeting
4/6/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare meeting materials for upcoming meeting
6/10/2010	Karen Holman	Sr Environmental Specialist	1.50	$ 69.05	$ 103.58	Develop meeting material for upcoming meeting and power point for mgmt Comm
6/15/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Develop meeting material for upcoming meeting and power point for mgmt Comm
			0.00	$ -	$ -	
Sub-total	$ 655.98 ✓					
Subtask 2.A. Semi-annual Workgroup Updates						
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
Sub-total	$ -					
Subtask 2.B. FY 2010-11 Work Plan and Budget						
10/1/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare, Review expenditures and Copermittee sheets
10/6/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare, Review expenditures and Copermittee sheets
11/6/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare draft budget
11/24/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare draft budget
12/3/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Prepare draft budget
1/27/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Review budget and recommended cuts
1/29/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Review budget and recommended cuts

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
3/29/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Budget review & adjustment
Sub-total	$ 552.40 ✓					
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input						
11/24/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Drafting of annual RURMP section
12/3/2009	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Review and edit annual RURMP section
12/9/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Final edits to RURMP section
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
Sub-total	$ 276.20 ✓					
Subtask 2.H. Regional Industrial & Commercial Assessment						
4/26/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Meet with TRC to discuss inventory standard assessment
6/2/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Review inventory information that was turned in by Copermittees
6/15/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Review TRC development, power point on assessment for Mgmt Committee
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ -	$ -	
Sub-total	$ 345.25 ✓					
Subtask 2.G. Develop Inspection Standards						
6/4/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Review/edit guidance manual as co-subgroup lead, prep for workgroup discussion
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 138.10 ✓					
Subtask 2.K. Regional Mobile Business Program						
2/2/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Evaluate database reporting functions
3/29/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Database review, phone discussions with RBF on findings
4/8/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Develop/edit notification letter
5/10/2010	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Internal preparation for RBF meeting; database review
5/11/2010	Karen Holman	Sr Environmental Specialist	3.00	$ 69.05	$ 207.15	Meeting w/ RBF to identify upcoming deliverables and implementation
5/27/2010	Karen Holman	Sr Environmental Specialist	4.00	$ 69.05	$ 276.20	Discuss MoB database, wshed rpt development, batch upload, notification letter
			0.00		$ -	
			0.00		$ -	
Sub-total	$ 828.60 ✓					
Copermittee Total					**$ 2,796.53** ✓	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Contract 1. RBF Consulting Contract 56507; Sub-Task 2.K					
Contract task 2.K. Regional Mobile Business Program		$ 2,800.00	6/25/2010	$ 140.00	
Contract task 2.K. Regional Mobile Business Program		$ 17,200.00		$ 860.00	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
				$ -	
Subtask 2.K Sub-total	$ 20,000.00	✓			
Subtask 2.KManagement Cost	$ 1,000.00	✓			
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtask 2.K Sub-total	$ -				
Subtask 2.K Management Cost	$ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 21,000.00**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	Port of San Diego
Period:	2nd, 3rd, 4th Quarter FY 2009-10 (Oct 1, 2009 - June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 834.70** ✓
Contract / Other Expenditures Claimed:	**$** -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

[Name] Damon Lacasella
[Title] Associate Env Specialist
[Organization] Port of San Diego

7-8-2010
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

9-2-10
Date

Signature

Richard Diaz, R.E.H.S.

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 2nd, 3rd, 4th Quarter FY 2009-10 (Oct 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.A. Workgroup Meeting Support						
6/2/2010	Damon Lacasella	Assoc Envl Specialist	2.00	$ 49.10	$ 98.20	Meeting handouts and minutes
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 98.20 ✓		2.00			
Subtask 2.A Semi-Annual Workgroup Update						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. FY Workplans & Budget						
				$ -	$ -	
				$ -	$ -	
				$ -	$ -	
				$ -	$ -	
				$ -	$ -	
				$ -	$ -	
				$ -	$ -	
				$ -	$ -	
Sub-total	$ -		0.00			

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: Port of San Diego

Period: 2nd, 3rd, 4th Quarter FY 2009-10 (Oct 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.C. FY 2008-09 Regional URMP Annual Report						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -		0.00			
Subtask 2.H.Regional IC Assessment						
4/21/2010	Damon Lacasella	Assoc Env Specialist	2.00	$ 49.10	$ 98.20	collect Copermittee inventories
4/28/2010	Damon Lacasella	Assoc Env Specialist	1.00	$ 49.10	$ 49.10	Copermittee inventories (Formatting)
5/20/2010	Damon Lacasella	Assoc Env Specialist	2.00	$ 49.10	$ 98.20	Internal QA on Copermittee inventories
5/26/2010	Damon Lacasella	Assoc Env Specialist	2.00	$ 49.10	$ 98.20	Compile and send Copermittee inventories
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 343.70 ✓		7.00			
Subtask 2.K. Regional Mobile Business Program						
11/19/2009	Damon Lacasella	Assoc Env Specialist	2.00	$ 49.10	$ 98.20	Identify contacts for mobile business database
11/23/2009	Damon Lacasella	Assoc Env Specialist	1.00	$ 49.10	$ 49.10	Develop contact list for mobile business database
				$ -	$ -	
				$ -	$ -	
				$ -	$ -	
				$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 147.30 ✓		3.00			
Subtask 2.G. Develop Inspection Standards						
4/28/2010	Damon Lacasella	Assoc Env Specialist	2.00	$ 49.10	$ 98.20	revise and edit inspection guidance document
5/26/2010	Damon Lacasella	Assoc Env Specialist	3.00	$ 49.10	$ 147.30	revise and edit inspection guidance document
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 245.50 ✓		5.00			
Copermittee Total			**17.00**		**$ 834.70**	

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	City of Poway
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 94.62
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Taniya Barrows
Engineering Technician II
City of Poway

11-18-09
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

12-1-09
Date

Signature

Richard Diaz, R.E.H.S.

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

2.G

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of Poway

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 2.F. Develop Inspection Standards						
7/28/2009	Taniya Barrows	Engineering Technician II	1.00	$ 47.31	$ 47.31	Document prep
8/4/2009	Taniya Barrows	Engineering Technician II	1.00	$ 47.31	$ 47.31	Document prep
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 94.62					

Copermittee Total	$ 94.62

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	City of Poway
Period:	2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 165.59**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Taniya Barrows
Engineering Technician II
City of Poway

2-22-10
Date

Taniya Barrows
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Richard Diaz
Program Coordinator
County of San Diego

9-2-10
Date

Signature

Richard Diaz, R.E.H.S.

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of Poway

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask	**2.F. Develop Inspection Standards**					
10/5/2009	Taniya Barrows	Engineering Technician II	1.50	$ 47.31	$ 70.97	Document Prep
10/16/2009	Taniya Barrows	Engineering Technician II	1.50	$ 47.31	$ 70.97	Document Prep
11/18/2009	Taniya Barrows	Engineering Technician II	0.50	$ 47.31	$ 23.66	Document Prep
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 165.59					

Copermittee Total	**$ 165.59**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	City of Poway
Period:	3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 425.79**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Taniya Barrows
Engineering Technician II
City of Poway

4-1-10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Richard Diaz
Program Coordinator
County of San Diego

9-2-10
Date

Signature

Richard Diaz, R.E.H.S.

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of Poway

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 2.F. Develop Inspection Standards						
1/8/2010	Taniya Barrows	Engineering Technician II	1.00	$ 47.31	$ 47.31	Document & meeting prep
2/19/2010	Taniya Barrows	Engineering Technician II	3.00	$ 47.31	$ 141.93	Document prep
2/22/2010	Taniya Barrows	Engineering Technician II	3.00	$ 47.31	$ 141.93	Document & meeting prep
3/26/2010	Taniya Barrows	Engineering Technician II	2.00	$ 47.31	$ 94.62	Document prep
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 425.79					

Copermittee Total	**$ 425.79**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	County of San Diego
Period:	
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 3,275.74
Contract / Other Expenditures Claimed:	$ 151,919.44

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Sara Agahi
Program Manager/Sr. Civil Engineer
County of San Diego

7-Oct-2009
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Sara Agahi
Program Manager/Sr. Civil Engineer
County of San Diego

15-Oct-2009
Date

Signature

COPE[illegible]TTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st Quarter 2009-2010

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1A: Land Development Workgroup Meeting Support						
7/8/2009	Sara Agahi	Program Manager/Sr. Civil Engineer	3.00	$ 76.18	$ 228.54	preparation of 7/20/09 workgroup meeting
8/25/2009			3.00	$ 76.18	$ 228.54	preparation of 7/20/09 workgroup meeting
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
Sub-total			6.00		$ 457.08	
Subtask 2E: Hydromodification Mangement Plan and SUSMP Development and Updates						
7/6/2009	Sara Agahi	Program Manager/Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	Coordination with consultant team on HMP or SUSMP
7/7/2009			1.50	$ 76.18	$ 114.27	Coordination with consultant team on HMP or SUSMP
7/13/2009			1.50	$ 76.18	$ 114.27	Coordination with consultant team on HMP or SUSMP
7/20/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
7/24/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
7/27/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
7/29/2009			4.00	$ 76.18	$ 304.72	Representing Copermittees on HMP Technical Advisory Committee
7/30/2009			3.00	$ 76.18	$ 228.54	Meeting with Regional Board staff on HMP and/or SUSMP
8/3/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
8/4/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
8/10/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
8/17/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
8/20/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
8/21/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
8/24/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
8/24/2009			1.00	$ 76.18	$ 76.18	Meeting with Regional Board staff on HMP and/or SUSMP
8/25/2009			1.50	$ 76.18	$ 114.27	Coordination with consultant team on HMP or SUSMP
8/28/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
8/31/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
9/3/2009			1.50	$ 76.18	$ 114.27	Meeting with Regional Board staff on HMP and/or SUSMP
9/4/2009			2.00	$ 76.18	$ 152.36	Coordination with consultant team on HMP or SUSMP
9/14/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
9/21/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
9/21/2009			1.00	$ 76.18	$ 76.18	Meeting with Regional Board staff on HMP and/or SUSMP
9/28/2009			1.00	$ 76.18	$ 76.18	Coordination with consultant team on HMP or SUSMP
9/30/2009			3.00	$ 76.18	$ 228.54	Representing Copermittees on HMP Technical Advisory Committee
Sub-total			37.00		$ 2,818.66	
Copermittee Total			43.00		**$ 3,275.74**	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 0

Work Plan Task / Sub-task	Amount Paid	Date Paid	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			
Contract 1. [HMP and SUSMP updates - Brown and Caldwell Contract 520444]			
Subtask 2E: Hydromodification Management Plan and SUSMP	$ 102,053.42	7/28/2009	Invoice 44107676
	$ 42,631.76	9/28/2009	Invoice 44111223
	$ -		
	$ -		
	$ -		
	$ -		
Contract 2. [ENTER CONTRACT TITLE / #]			
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]	$ -	x/x/2003	Monthly payment for wet weather monitoring services (see attached invoice 3)
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Contract Expenditures $ 144,685.18			
B. Other Expenditures (list by Working Body Task or Sub-task)			
Subtask 2E: Hydromodification Management Plan and SUSMP	$ -	x/x/2008	
contract administration for HMP/SUSMP contract	$ -		
Sara Agahi: Program Manager/Sr. Civil Engineer	$ 5,102.67	7/28/2009	5% contract admin of $102,053.42
Sara Agahi: Program Manager/Sr. Civil Engineer	$ 2,131.59	9/28/2009	5% contract admin of $42,631.76
	$ -		
	$ -		

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

		$ -		
		$ -		
		$ -		
Sub-total Other Expenditures	$ 7,234.26			
	Total Expenditures	$ 151,919.44		

Final 0/ -09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	City of San Marcos
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 1,631.44

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

[Name]ERICA RYAN
[Title]STORMWATER MANAGER
[Organization]SAN MARCOS

11-1-09
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

11-18-09
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: City of San Marcos

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
x/x/2009			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: City of San Marcos

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: City of San Marcos

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: City of San Marcos

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				Auto-calc'd (5% of amount paid)	
Subtask 1.A.					
Contract MOE [MOE]		$ 988.75	x/x/2009	$ 49.44	MOE Support - July and September 2009
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ 988.75				
Subtaskx.x Management Cost	$ 49.44				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract MOE		$ 565.00	x/x/2009	$ 28.25	MOE HMP TAC Support July 2009
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ 565.00				
Subtaskx.x Management Cost	$ 28.25				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2009	$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask 3.5]	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost) $ 1,631.44				

Final 04-30-09

100-31 - 32101C

FY10

JB 8/6/09

Stormwater Program

MOE

MIKHAIL OGAWA ENGINEERING

8/2/2009

Ms. Erica Ryan
201 Mata Way
San Marcos, CA 92069-2948

Project No. 003.001
Invoice No. 000609
P.O. Number 32745

General Stormwater Services

Description of Services	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between July 1, 2009 and July 31, 2009			
Land Development Secretary Role Coordination with Agahi re: agenda; prep agenda and email to group; Prep for and attend Land Development Workgroup; notes and follow-up	4.75	113.00	536.75
HMP TAC Support Role HMPT TAC coordination with Sara Agahi; final prep of agendas and materials; email to group; prep for and attend HMP TAC meeting	5	113.00	565.00

EMR 8-5-09

ok

Total this invoice $1,101.75

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

$1,553.75

100-37-521010
5087

MOE
MIKHAIL OGAWA ENGINEERING

10/5/2009

Ms. Erica Ryan
201 Mata Way
San Marcos, CA 92069-2948

Project No. 003.001.001
Invoice No. 000640
P.O. Number 32745

General Stormwater Services

Description of Services	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between September 1, 2009 and September 30, 2009			
LAND DEVELOPMENT WORKGROUP			
Principal Engineer Prep for and attend Land Development Workgroup, follow-up correspondence with the workgroup	4	113.00	452.00

LA

OK

Total this invoice **$452.00**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	County of San Diego
Period:	FY 09-10 2nd - 4th Quarters
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 2,133.04**
Contract / Other Expenditures Claimed:	**$ 316,899.09**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Sara Agahi
Sr. Civil Engineer
County of San Diego

8/11/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Sara Agahi
Sr. Civil Engineer
County of San Diego

8/11/10
Date

Signature

Approved at 8/11/10 Land Development Workgroup meeting

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: FY 09-10 2nd - 4th Quarters

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.A. [Land Development Workgroup meeting support]						
7/16/2009	Sara Agahi	Sr. Civil Engineer	1.00	$ 76.18	$ 76.18	research on NRDC/Coastkeeper petition to State Board
8/24/2009	Sara Agahi	Sr. Civil Engineer	1.00	$ 76.18	$ 76.18	research on Permit Section D.1.d.(1)(b) and monitoring plan
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 152.36					
Subtask 2.A. [Semi-annual Workgroup Updates]						
12/9/2009	Sara Agahi	Sr. Civil Engineer	3.00	$ 76.18	$ 228.54	powerpoint presentation preparation for update to Regional Management Committee
12/11/2009	Sara Agahi	Sr. Civil Engineer	3.00	$ 76.18	$ 228.54	powerpoint presentation preparation for update to Regional Management Committee
12/16/2009	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	powerpoint presentation preparation for update to Regional Management Committee
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 609.44					
Subtask 2.B. [FY 2010-2011 Work Plan and Budget]						
12/2/2009	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	
12/10/2009	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	
12/11/2009	Sara Agahi	Sr. Civil Engineer	1.00	$ 76.18	$ 76.18	
12/14/2009	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	
1/13/2010	Sara Agahi	Sr. Civil Engineer	1.00	$ 76.18	$ 76.18	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: FY 09-10 2nd - 4th Quarters

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
1/28/2010	Sara Agahi	Sr. Civil Engineer	3.00	$ 76.18	$ 228.54	
2/26/2010	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	
3/10/2010	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	
Sub-total	$ 1,142.70					
Subtask 2.D. [FY 08-09 RURMP Annual Report Input]						
12/23/2009	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	preparation of Land Development RURMP section
12/24/2009	Sara Agahi	Sr. Civil Engineer	1.00	$ 76.18	$ 76.18	preparation of Land Development RURMP section
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 228.54					
Subtask 2.E. [HMP/SUSMP development and updates]						
Sub-total	$ -					
Subtask 2.E. [HMP/SUSMP development and updates]						

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: FY 09-10 2nd - 4th Quarters

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
				$ -	$ -	
				$ -	$ -	
Sub-total	$ -					
Subtask 2.E. [HMP/SUSMP development and updates]						
Sub-total	$ -					
Copermittee Total					$ 2,133.04	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: FY 09-10 2nd - 4th Quarters

Work Plan Task / Sub-task	Amount Paid	Date Paid	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			
Contract 1. [HMP and SUSMP updates - Brown and Caldwell contract 520444]			
Subtask 2.E. [HMP and SUSMP]	$ 17,568.42	10/15/2009	Invoice 44112783
	$ 123,636.64	1/12/2010	Invoice 44117861
	$ 60,161.89	6/2/2010	Invoice 44125990
	$ 97,677.75	11/20/2008	Invoice 4492285 (omitted from previous expenditure forms)
	$ 2,763.96	7/8/2010	Invoice 44128169
	$ -		
Contract 2. [ENTER CONTRACT TITLE / #]			
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]	$ -	x/x/2003	Monthly payment for wet weather monitoring services (see attached invoice 3)
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Contract Expenditures $ 301,808.66			
B. Other Expenditures (list by Working Body Task or Sub-task)			
Subtask 2.E. [contract management for HMP/SUSMP contract]	$ -	x/x/2008	
Sara Agahi:Program Manager/Sr. Civil Engineer	$ 878.42		5% contract admin of $17,568.42
Sara Agahi:Program Manager/Sr. Civil Engineer	$ 6,181.83		5% contract admin of $123,636.64
Sara Agahi:Program Manager/Sr. Civil Engineer	$ 3,008.09		5% contract admin of $60,161.89
Sara Agahi:Program Manager/Sr. Civil Engineer	$ 4,883.89		5% contract admin of $97,677.75
Sara Agahi:Program Manager/Sr. Civil Engineer	$ 138.20		5% contract admin of $2,763,96

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		
	$ -		
	$ -		
Sub-total Other Expenditures $ 15,090.43			
Total Expenditures $ 316,899.09			

Final 04-30-09

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: **Sara Agahi, Project Manager**

Subject : SDCo Hydromod Management Plan

Billing Period : September 06, 2008 through October 30, 2009

Progress Billing No : 9

Reference : Authorization Dated : 9/6/2007

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

Contact : Nancy E Gardiner, PM

Invoiced By : Susan E Pantig

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

520444
CONTRACT/P.O. NO.

2
ACTIVITY/WA NO.

12/01/08
DATE

PROJECT MANAGER

1/5/09
DATE

DPW MANAGER

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

Michael Nienberg, Vice President

total amount this invoice: $97,677.75

006 -- Stakeholder Meetings/Coord

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Engineering Scientist			
Anthony M Dubin	6.00	$ 131.56	789.36
Sub-Total Labor	6.00		$ 789.36
Total Labor			$ 789.36

ok

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Subconsultants	
O/S CONSULT-OTHER ALLOW	
PHILIP WILLIAMS & ASSOC. INC	3,458.00
Total Subconsultants	$ 3,458.00
Total Regular Expenses	$ 3,458.00
Total Expenses	$ 3,458.00
Total : 006 -- Stakeholder Meetings/Coord	$ 4,247.36

ok

AYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

ment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: Sara Agahi, Project Manager

011 -- Contingency

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr.Geographic Info. Systems Analyst			
Joshua T Fluty	(10.50)	$ 100.00	(1,050.00)
Sub-Total Labor	(10.50)		$ (1,050.00)
Total Labor			**$ (1,050.00)**
Total : 011 -- Contingency			**$ (1,050.00)**

041 -- Update Model SUSMP - 2

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	32.75	$ 192.40	6,301.10
Senior Technical Expert			
Eric S Mosolgo	3.50	$ 192.40	673.40
Sub-Total Labor	36.25		$ 6,974.50
Total Labor			**$ 6,974.50**

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Subconsultants	
O/S CONSULT-OTHER ALLOW	
DAN CLOAK ENVIRONMENTAL CONSULTING	4,158.00
PHILIP WILLIAMS & ASSOC. INC	6,438.00
Total Subconsultants	**$ 10,596.00**
Other Direct Costs	
AIRFARE	
Michael Flake	58.50
Michael Flake	47.00

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: Sara Agahi, Project Manager

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
AIRFARE	
Michael Flake	94.50
Michael Flake	189.00
MILEAGE	
Michael Flake	15.15
Michael Flake	30.30
PARKING & TOLLS	
Michael Flake	12.99
Michael Flake	12.99
Michael Flake	12.99
Total Other Direct Costs	**$ 473.42**
Total Regular Expenses	**$ 11,069.42**
Total Expenses	**$ 11,069.42**
Total : 041 -- Update Model SUSMP - 2	**$ 18,043.92**

051 -- Flow Threasholds/Eval. Strategy

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Project Manager			
Nancy E Gardiner	26.50	$ 180.96	4,795.44
Senior Technical Expert			
Andrew Baldwin	2.00	$ 192.40	384.80
Senior Technical Expert			
Eric S Mosolgo	5.00	$ 192.40	962.00
Senior Technical Expert			
Cynthia Paulson	0.50	$ 192.40	96.20
Sub-Total Labor	7.50		$ 6,238.44
Total Labor			**$ 6,238.44**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: Sara Agahi, Project Manager

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
O/S CONSULT-OTHER ALLOW	
PHILIP WILLIAMS & ASSOC. INC	13,414.95
Total Subconsultants	**$ 13,414.95**
Total Regular Expenses	**$ 13,414.95**
Total Expenses	**$ 13,414.95**
Total : 051 -- Flow Threasholds/Eval. Strategy	**$ 19,653.39**

052 -- Select HSPF Modeling Parameters

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Brett J Bennetts	7.00	$ 97.76	684.32
Sr.Geographic Info. Systems Analyst			
Joshua T Fluty	6.00	$ 104.00	624.00
Senior Technical Expert			
Nancy E Gardiner	2.00	$ 192.40	384.80
Asst. Engineering Scientist			
Laura E Lindenmayer	11.50	$ 97.76	1,124.24
Senior Technical Expert			
Eric S Mosolgo	17.00	$ 192.40	3,270.80
Sub-Total Labor	43.50		$ 6,088.16
Total Labor			**$ 6,088.16**

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: Sara Agahi, Project Manager

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Other Direct Costs	
PARKING & TOLLS	
Misty A Suposs	4.00
Misty A Suposs	4.00
Total Other Direct Costs	**$ 8.00**
Total Regular Expenses	**$ 8.00**

UNIT PRICING

Vendor / Employee Name	Units	UOM	Rate	Billing Amount
Miles	59.00	Per Mile	0.5850	34.52
Miles	61.00	Per Mile	0.5850	35.69
TOTAL: Miles				$ 70.21
Total Unit Pricing				**$ 70.21**
Total Expenses				**$ 78.21**

Total : 052 -- Select HSPF Modeling Parameters **$ 6,166.37**

053 -- Develop BMP Modeling Appraoch

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Engineering Scientist			
Anthony M Dubin	9.00	$ 131.56	1,184.04
Senior Technical Expert			
Nancy E Gardiner	8.00	$ 192.40	1,539.20
Senior Technical Expert			
Eric S Mosolgo	88.25	$ 192.40	16,979.30

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Engineering Scientist			
Hayes J Twenter	1.00	$ 116.48	116.48
Sub-Total Labor	106.25		$ 19,819.02
Total Labor			**$ 19,819.02**

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Other Direct Costs	
BUSINESS MEALS	
Nancy E Gardiner	155.63
Total Other Direct Costs	**$ 155.63**
Total Regular Expenses	**$ 155.63**
Total Expenses	**$ 155.63**
Total : 053 -- Develop BMP Modeling Appraoch	**$ 19,974.65**

054 -- Add'l Funding for Rain Gauge Task

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Brett J Bennetts	123.25	$ 97.76	12,048.92
Sr.Geographic Info. Systems Analyst			
Joshua T Fluty	48.00	$ 104.00	4,992.00
Joshua T Fluty	10.50	$ 100.00	1,050.00
Senior Technical Expert			
Nancy E Gardiner	15.75	$ 192.40	3,030.30

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Project Assistant			
Janelle L Kaminski	33.75	$ 83.20	2,808.00
Asst. Engineering Scientist			
Laura E Lindenmayer	29.00	$ 97.76	2,835.04
Senior Technical Expert			
Eric S Mosolgo	14.50	$ 192.40	2,789.80
Sub-Total Labor	274.75		$ 29,554.06
Total Labor			**$ 29,554.06**

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Outside Services	
O/S SVS-DATA PROC/INQUIRY (PURCHASE OF RAINFALL DATA)	
Brett J Bennetts	4.00
Brett J Bennetts	404.00
Brett J Bennetts	4.00
Brett J Bennetts	52.00
Brett J Bennetts	14.00
Eric S Mosolgo	70.00
Janelle L Kaminski	48.00
Janelle L Kaminski	16.00
Janelle L Kaminski	4.00
Janelle L Kaminski	64.00
Laura E Lindenmayer	72.00
Laura E Lindenmayer	68.00
Laura E Lindenmayer	104.00
Laura E Lindenmayer	88.00
Laura E Lindenmayer	4.00
Laura E Lindenmayer	12.00

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: Sara Agahi, Project Manager

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
O/S SVS-DATA PROC/INQUIRY (PURCHASE OF RAINFALL DATA)	
Laura E Lindenmayer	8.00
Laura E Lindenmayer	52.00
Total Outside Services	**$ 1,088.00**
Total Regular Expenses	**$ 1,088.00**
Total Expenses	**$ 1,088.00**
Total : 054 -- Add'l Funding for Rain Gauge Task	**$ 30,642.06**
Amount Due this Invoice	**$ 97,677.75**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 4492285

Date : November 20, 2008

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001 --	Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002 --	WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004 --	SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006 --	Stakeholder Meetings/Coord	$ 28,715.26	$ 4,247.36	$ 4,314.02	$ 8,561.38	$ 20,153.88
010 --	Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,732.47	$ 21,732.47	$ (21,732.47)
011 --	Contingency	$ 10,000.00	$ (1,050.00)	$ 6,053.36	$ 5,003.36	$ 4,996.64
041 --	Update Model SUSMP - 2	$ 169,062.28	$ 18,043.92	$ 75,418.09	$ 93,462.01	$ 75,600.27
051 --	Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 19,653.39	$ 75,862.72	$ 95,516.11	$ (3,410.51)
052 --	Select HSPF Modeling Parameters	$ 50,638.00	$ 6,166.37	$ 43,828.69	$ 49,995.06	$ 642.94
053 --	Develop BMP Modeling Appraoch	$ 80,678.00	$ 19,974.65	$ 13,772.65	$ 33,747.30	$ 46,930.70
054 --	Add'l Funding for Rain Gauge Task	$ 48,641.00	$ 30,642.06	$ 0.00	$ 30,642.06	$ 17,998.94
		$ 547,885.34	**$ 97,677.75**	**$ 287,714.72**	**$ 385,392.47**	**$ 162,492.87**

Total Paid To Date : **$ (135,446.14)**

Balance Outstanding : **$ 249,946.33**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Billing Detail - Items through 10/30/2008

Brown and Caldwell

Project : 133904 - SDCo Hydromod Management Plan

Phase : 006 - Stakeholder Meetings/Coord

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr. Engineering Scientist											
Anthony M Dubin			****	1044	113	****	10/13/2008	10/16/2008	2.00	131.56	263.12
preparing for TAC meeting											
			****	1044	113	****	10/14/2008	10/16/2008	4.00	131.56	526.24
attending TAC meeting											
									6.00		789.36
							Total Rate Schedule Labor				***789.36***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
O/S CONSULT-OTHER ALLOW									
PHILIP WILLIAMS & ASSOC. INC	64339	****	1044	1044003616	9/25/2008	9/25/2008	3,458.00	1.00	3,458.00
					Total Regular Expenses				***3,458.00***

Phase : 011 - Contingency

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr.Geographic Info. Systems Analyst											
Joshua T Fluty			****	1044	425	****	6/26/2008	9/25/2008	(10.50)	100.00	(1,050.00)
Charged incorrect phase number on invoice 4482536 for 6/20/08; 6/24/08; 6/25/08											
							Total Rate Schedule Labor				***(1,050.00)***

Phase : 041 -

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	9/16/2008	10/2/2008	1.00	192.40	192.40
Read comments.											
			****	1044	421	****	9/17/2008	10/2/2008	3.00	192.40	577.20
Read comment letters on SUSMP.											
			****	1044	421	****	9/18/2008	10/2/2008	3.00	192.40	577.20
Comment/response table.											
			****	1044	421	****	9/19/2008	10/2/2008	2.50	192.40	481.00
Worked on comment and response table fro Model SUSMP.											
			****	1044	421	****	9/22/2008	10/2/2008	1.50	192.40	288.60
Read comments and worked on response table.											
			****	1044	421	****	9/26/2008	10/2/2008	1.75	192.40	336.70
Meeting with RWQCB - discussion of Model SUSMP Update; work on response to comments.											
			****	1044	421	****	9/29/2008	10/2/2008	2.00	192.40	384.80
Comment and response table.											
			****	1044	421	****	9/30/2008	10/2/2008	5.00	192.40	962.00
Worked on comment and response table and distributed to team.											
			****	1044	421	****	10/15/2008	10/16/2008	1.00	192.40	192.40
Finalized and distributed comment and response table.											
			****	1044	421	****	10/17/2008	10/23/2008	2.00	192.40	384.80
Prepared for Co-permittee meeting.											
			****	1044	421	****	10/20/2008	10/23/2008	0.50	192.40	96.20
Prepared for Co-permittee meeting.											
			****	1044	421	****	10/21/2008	10/23/2008	4.00	192.40	769.60
Preparation for and participation in Co-permittee meeting on Model SUSMP update											
			****	1044	421	****	10/23/2008	10/23/2008	1.00	192.40	192.40
Worked on meeting minutes.											
			****	1044	421	****	10/27/2008	10/30/2008	1.00	192.40	192.40
HMP status meeting.											
			****	1044	421	****	10/29/2008	10/30/2008	1.50	192.40	288.60
Worked on comment and response table, checked some references in SUSMP manual.											
			****	1044	421	****	10/30/2008	10/30/2008	2.00	192.40	384.80
Finalized and transmitted revised comment and response table.											
									32.75		6,301.10

Phase : 041 - Update Model SUSMP - 2

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosdigo			****	1044	112	****	9/26/2008	10/2/2008	0.50	192.40	96.20
Review Model SUSMP comments											
			****	1044	112	****	10/2/2008	10/2/2008	0.50	192.40	96.20
Comment matrix review											
			****	1044	112	****	10/3/2008	10/9/2008	0.50	192.40	96.20
Review SUSMP comments and responses											
			****	1044	112	****	10/8/2008	10/9/2008	0.50	192.40	96.20
Comment response review											
			****	1044	112	****	10/16/2008	10/16/2008	0.50	192.40	96.20
SUSMP review											
			****	1044	112	****	10/17/2008	10/23/2008	0.25	192.40	48.10
SUSMP review in preparation for Monday meeting at County of San Diego											
			****	1044	112	****	10/20/2008	10/23/2008	0.50	192.40	96.20
Review of SUSMP with NRDC, Dan Cloak, Coast keeper at SD County meeting											
			****	1044	112	****	10/28/2008	10/30/2008	0.25	192.40	48.10
Review of updates to response matrix											
									3.50		673.40
							Total Rate Schedule Labor				***6,974.50***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
O/S CONSULT-OTHER ALLOW									
PHILIP WILLIAMS & ASSOC. INC	64339	****	1044	1044003754	11/6/2008	11/6/2008	6,438.00	1.00	6,438.00
DAN CLOAK ENVIRONMENTAL CONSU	36719	****	1044	1044003791	11/13/2008	11/13/2008	4,158.00	1.00	4,158.00
							10,596.00		10,596.00
AIRFARE									
Michael Flake	03591	****	1044	ER00161484	2/20/2008	9/25/2008	58.50	1.00	58.50
	03591	****	1044	ER00161508	3/5/2008	9/25/2008	94.50	1.00	94.50
	03591	****	1044	ER00161508	3/5/2008	9/25/2008	47.00	1.00	47.00
	03591	****	1044	ER00161531	5/12/2008	10/16/2008	189.00	1.00	189.00
							389.00		389.00
MILEAGE									
Michael Flake	03591	****	1044	ER00161484	2/20/2008	9/25/2008	15.15	1.00	15.15
30 miles to airport at 0.505/mile.									
	03591	****	1044	ER00161531	5/12/2008	10/16/2008	30.30	1.00	30.30
Site Visit 60 miles at 0.505/mile.									
							45.45		45.45
PARKING & TOLLS									
Michael Flake	03591	****	1044	ER00161484	2/20/2008	9/25/2008	12.99	1.00	12.99
	03591	****	1044	ER00161508	3/5/2008	9/25/2008	12.99	1.00	12.99
	03591	****	1044	ER00161531	5/12/2008	10/16/2008	12.99	1.00	12.99
							38.97		38.97
							Total Regular Expenses		***11,069.42***

Phase : 051 - Flow Thresholds/Eval. Strategy

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Project Manager											
Nancy E Gardiner			051	1044	421	****	9/11/2008	10/2/2008	3.50	180.96	633.36
Managing contract issues with PWA, rain gauge issues, etc.											
			051	1044	421	****	9/15/2008	10/2/2008	2.00	180.96	361.92
Paw budget review and accounting.											
			051	1044	421	****	9/17/2008	10/2/2008	1.00	180.96	180.96
Staffing											
			051	1044	421	****	9/18/2008	10/2/2008	2.00	180.96	361.92
E-mails to Cid and Sara about new task for remaining rain gauge data. Review of all charges to project.											
			051	1044	421	****	9/22/2008	10/2/2008	1.50	180.96	271.44
Worked on invoicing and paperwork.											
			051	1044	421	****	9/25/2008	10/2/2008	1.00	180.96	180.96
PWA contract and invoicing.											
			051	1044	421	****	9/26/2008	10/2/2008	1.50	180.96	271.44
Project progress meeting with Sara Agahi, Sumer Hasenin and Khosro Aminpour.											
			051	1044	421	****	9/29/2008	10/2/2008	1.50	180.96	271.44
Project management - worked on PWA sub agreement, filing.											
			051	1044	421	****	10/6/2008	10/9/2008	1.00	180.96	180.96
Staff meeting											
			051	1044	421	****	10/7/2008	10/9/2008	1.50	180.96	271.44

Phase : 051 – Flow Thresholds/Eval. Strategy

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Project Manager											
Nancy E Gardiner											
		Worked on meeting minutes from last TAC meeting.									
		051	1044	421		****	10/8/2008	10/9/2008	2.00	180.96	361.92
		Contract with PWA									
		051	1044	421		****	10/9/2008	10/9/2008	1.50	180.96	271.44
		invoice review									
		051	1044	421		****	10/13/2008	10/16/2008	1.00	180.96	180.96
		Invoicing.									
		051	1044	421		****	10/14/2008	10/16/2008	2.00	180.96	361.92
		Meeting with Tony Dubin and Eric in preparation for TAC meeting.									
		051	1044	421		****	10/20/2008	10/23/2008	2.50	180.96	452.40
		HMP contracting and filing									
		051	1044	421		****	10/29/2008	10/30/2008	1.00	180.96	180.96
		Worked on PWA subcontract.									
									26.50		4,795.44
Senior Technical Expert											
Andrew Baldwin		****	1044	691		****	9/16/2008	10/2/2008	1.00	192.40	192.40
		Data management support									
		****	1044	691		****	10/15/2008	10/30/2008	1.00	192.40	192.40
		Discuss tool development approach									
									2.00		384.80
Eric S Mosolgo		****	1044	112		****	9/12/2008	10/2/2008	1.00	192.40	192.40
		Review of SCCWRP literature review in preparation for memo to RWQCB requesting deadline submittal extension									
		****	1044	112		****	9/15/2008	10/2/2008	0.50	192.40	96.20
		Geomorphic research for RWQCB memo									
		****	1044	112		****	9/16/2008	10/2/2008	1.00	192.40	192.40
		Preparation of memo for submittal to RWQCB regarding SCCWRP study									
		****	1044	112		****	9/17/2008	10/2/2008	1.50	192.40	288.60
		RWQCB / SCCWRP memo preparation									
		****	1044	112		****	9/18/2008	10/2/2008	1.00	192.40	192.40
		RWQCB / SCCWRP memo preparation									
									5.00		962.00
Cynthia Paulson		****	1044	106		****	10/3/2008	10/2/2008	0.50	192.40	96.20
		Discussed flow threshold and options to consider, also PWA transitions.									
Total: Senior Technical Expert									7.50		1,443.00
							Total Rate Schedule Labor				***6,238.44***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
O/S CONSULT-OTHER ALLOW									
PHILIP WILLIAMS & ASSOC. INC	64339	****	1044	1044003754	11/6/2008	11/6/2008	13,414.95	1.00	13,414.95
							13,414.95		13,414.95
					Total Regular Expenses				***13,414.95***

Phase : 052 – Select HSPF Modeling Parameters

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Lindenmayer		****	1044	226		****	9/9/2008	10/2/2008	0.75	97.76	73.32
		Discussion of cost estimates for rain gages									
		****	1044	226		****	9/10/2008	10/2/2008	1.50	97.76	146.64
		Preparing costs estimate for next 19 stations; evaluating data									
		****	1044	226		****	9/11/2008	10/2/2008	0.50	97.76	48.88
		Cost estimate follow-up									
		****	1044	226		****	9/12/2008	10/2/2008	1.00	97.76	97.76
		Cost estimate for additional stations									
		****	1044	226		****	9/15/2008	10/2/2008	0.75	97.76	73.32
		Cost estimate for additional stations									
		****	1044	226		****	9/16/2008	10/2/2008	4.00	97.76	391.04
		Downloading historical rainfall record and filling in Lake Wohlford data gaps									
		****	1044	226		****	9/17/2008	10/2/2008	3.00	97.76	293.28
		Filling in Lake Wohlford data gaps									
									11.50		1,124.24
Brett J Bennetts		****	1044	116		****	9/8/2008	10/2/2008	2.00	97.76	195.52
		Assist Josh with Finalizing the rain data									
		****	1044	116		****	9/9/2008	10/2/2008	1.00	97.76	97.76
		Communication and organization of the rain files for future use									
		****	1044	116		****	9/10/2008	10/2/2008	2.00	97.76	195.52
		Estimate future station cost estimate with Josh and Laura									
		****	1044	116		****	9/17/2008	10/2/2008	2.00	97.76	195.52
		Organization of files; printing copies of presentation; communication with ldt for an update									
									7.00		684.32

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	9/10/2008	10/2/2008	2.00	192.40	384.80
Met with Eric regarding rain gauge issues. Reviewed project status.											
Eric S Mosolgo			****	1044	112	****	9/8/2008	10/2/2008	3.00	192.40	577.20
Rainfall parameter evaluation											
			****	1044	112	****	9/10/2008	10/2/2008	4.00	192.40	769.60
Rainfall parameter evaluation											
			****	1044	112	****	9/12/2008	10/2/2008	2.00	192.40	384.80
Weekly progress meeting with Sara Agahi regarding HMP; preparation of rainfall station data											
			****	1044	112	****	9/15/2008	10/2/2008	0.50	192.40	96.20
Discussion of memo to be drafted and sent to RWQCB requesting extension											
			****	1044	112	****	9/16/2008	10/2/2008	2.00	192.40	384.80
Rainfall gauge station assembly											
			****	1044	112	****	9/17/2008	10/2/2008	3.00	192.40	577.20
Coordination of rainfall data assembly efforts by Laura and Brett; finalization of Lake Wohlford gauge (minor edits)											
			****	1044	112	****	9/18/2008	10/2/2008	2.50	192.40	481.00
Provide additional rainfall gauge information to Tory Walker Engineering; coordinate rainfall assembly efforts for Josh, Laura and Brett; request additional rain gauge information from County of San Diego; RWQCB / SCCWRP memo preparation											
									17.00		3,270.80
Sr.Geographic Info. Systems Analyst											
Joshua T Fluty			****	1044	425	****	9/8/2008	10/2/2008	1.50	104.00	156.00
Data processing, meetings, phone calls, etc.											
			****	1044	425	****	9/9/2008	10/2/2008	1.50	104.00	156.00
Data processing, meetings, phone calls, etc.											
			****	1044	425	****	9/10/2008	10/2/2008	2.00	104.00	208.00
Data processing, meetings, phone calls, etc.											
			****	1044	425	****	9/11/2008	10/2/2008	1.00	104.00	104.00
Data processing, meetings, phone calls, etc.											
									6.00		624.00
							Total Rate Schedule Labor				***6,088.16***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
PARKING & TOLLS									
Misty A Suposs	02222	****	1044	ER00161763	8/25/2008	9/25/2008	4.00	1.00	4.00
	02222	****	1044	ER00161763	8/28/2008	9/25/2008	4.00	1.00	4.00
							8.00		8.00
						Total Regular Expenses			***8.00***

Unit Pricing Expenses - Rate Vendor / Employee Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Unit	Qty	Rate	Amount
COMPANY AUTOMOBILE										
MILE										
COMPANY AUTO	AUTO	****	1044	1044003634	9/26/2008	10/30/2008	MILE	59.00	0.585	34.52
	AUTO	****	1044	1044003651	10/3/2008	10/30/2008	MILE	61.00	0.585	35.69
								120.00		70.21

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Engineering Scientist											
Hayes J Twenter			****	1044	114	****	9/11/2008	10/2/2008	1.00	116.48	116.48
Import precipitation data to SDHM											
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	9/12/2008	10/2/2008	3.00	192.40	577.20
Met with Sara Regarding progress on rain gauge data and modeling.											
			****	1044	421	****	9/15/2008	10/2/2008	4.00	192.40	769.60
Preparation for a meeting with County on Hydromod sizing tool.											
			****	1044	421	****	9/25/2008	10/2/2008	1.00	192.40	192.40
Read emails and had various discussions regarding status of rain gauge data,											
									8.00		1,539.20
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	9/9/2008	10/2/2008	2.00	192.40	384.80
BMP/Hydromod Sizing Tool issues											
			****	1044	112	****	9/10/2008	10/2/2008	1.00	192.40	192.40
BMP Sizing Tool											
			****	1044	112	****	9/12/2008	10/2/2008	2.00	192.40	384.80
Weekly progress meeting with Sara Agahi regarding HMP; preparation for sizing tool presentation to County and Co-Permittees											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	9/15/2008	10/2/2008	5.00	192.40	962.00
Preparation and presentation of sizing tool discussion for County and San Diego Co-Permittees											
			****	1044	112	****	9/16/2008	10/2/2008	0.50	192.40	96.20
Follow-up conversations with municipal staff regarding hydromod sizing tool											
			****	1044	112	****	9/19/2008	10/2/2008	0.50	192.40	96.20
Rainfall gauge preparation coordination											
			****	1044	112	****	9/22/2008	10/2/2008	2.00	192.40	384.80
Coordination with Rand Allan and BC team regarding development of Lower Otay gauge; correspondence with Dan Cloak regarding hydromod sizing tool											
			****	1044	112	****	9/23/2008	10/2/2008	2.00	192.40	384.80
Lower Otay gauge preparation; correspondence with Eric Stein of SCCWRP regarding SCCWRP hydromodification study											
			****	1044	112	****	9/24/2008	10/2/2008	2.00	192.40	384.80
Preparation of HMP memo to RWQCB											
			****	1044	112	****	9/25/2008	10/2/2008	4.00	192.40	769.60
Preparation of HMP memo to RWQCB											
			****	1044	112	****	9/26/2008	10/2/2008	3.00	192.40	577.20
Review of charged time to rain gauge efforts by team; send Lower Otay gauge information to County; QC Lower Otay rain gauge data; generate Lake Wohlford rain gauge summary memo; begin work on Fallbrook rain gauge information											
			****	1044	112	****	9/26/2008	10/2/2008	3.00	192.40	577.20
Weekly project status meeting with County of San Diego, City of San Diego and City of Chula Vista; meeting with Regional Water Quality Control Board to discuss submittal requirements for Draft HMP											
			****	1044	112	****	9/29/2008	10/2/2008	1.50	192.40	288.60
Project team meeting to discuss Lower Otay rainfall gauge and upcoming Fallbrook rainfall gauge; preparation of summary memo for Wohlford gauge; QC of Lower Otay data											
			****	1044	112	****	9/29/2008	10/2/2008	2.50	192.40	481.00
Meeting minutes from 2 meetings on 9/26; update to RWQCB memo; coordination with Christie Beeman of PWA											
			****	1044	112	****	9/30/2008	10/2/2008	1.00	192.40	192.40
Coordination of rainfall gauge information with Rand Allan and BC rainfall analysis team											
			****	1044	112	****	9/30/2008	10/2/2008	1.50	192.40	288.60
Updates to continuous simulation memo and rainfall summary memo											
			****	1044	112	****	10/1/2008	10/2/2008	1.50	192.40	288.60
Coordination of rain gauge information with Rand Allan and BC rainfall analysis team											
			****	1044	112	****	10/1/2008	10/2/2008	1.50	192.40	288.60
Review of HSPF modeling results from Tory Walker Engineering to respond to specific question about rainfall data; updates to continuous simulation modeling, RWQCB and rainfall station memos											
			****	1044	112	****	10/2/2008	10/2/2008	1.50	192.40	288.60
Coordination with BC rainfall analysis team; QC of Fallbrook rain gauge data											
			****	1044	112	****	10/2/2008	10/2/2008	3.50	192.40	673.40
RWQCB memo; rainfall station memo; continuous simulation modeling memo update; address developer questions regarding preparation of geomorphic analyses											
			****	1044	112	****	10/3/2008	10/9/2008	4.00	192.40	769.60
Coordination with PWA regarding flow threshold study; attendance at weekly project progress meeting; assembly of memos for TAC distribution											
			****	1044	112	****	10/6/2008	10/9/2008	3.00	192.40	577.20
Preparation of memos and information items to be distributed to TAC; edits to PowerPoint presentation from 8-5-08 TAC meeting; updates to HMP submittal requirement memo detailing RWQCB and SCCWRP coordination; preparation of detailed rainfall gauge summary memo including request and completion dates											
			****	1044	112	****	10/7/2008	10/9/2008	2.50	192.40	481.00
Coordination with PWA regarding flow threshold study; rainfall gauge summary memo											
			****	1044	112	****	10/8/2008	10/9/2008	3.50	192.40	673.40
Coordination of Tony Dubin's visit to San Diego for San Diego HMP modeling; rainfall gauge summary memo; preparation of rainfall station map; review of TAC minutes from 8-5-08 meeting											
			****	1044	112	****	10/9/2008	10/9/2008	4.50	192.40	865.80
Correspondence with stakeholders, engineers, and developers regarding distribution of rain gauge information; preparation of rainfall station summary memo and interim continuous simulation criteria memo											
			****	1044	112	****	10/10/2008	10/16/2008	2.00	192.40	384.80
TAC meeting coordination with Mikhail Ogawa; preparation of (3) memos for forthcoming TAC meeting											
			****	1044	112	****	10/13/2008	10/16/2008	5.00	192.40	962.00
Rainfall Station, Continuous Simulation and HMP Submittal Memo Updates; coordination with Tony Dubin regarding HMP Sizing Tool											
			****	1044	112	****	10/14/2008	10/16/2008	7.00	192.40	1,346.80
Preparation of presentation for TAC Meeting; TAC meeting attendance											
			****	1044	112	****	10/15/2008	10/16/2008	2.00	192.40	384.80
HMP Sizing Tool Discussions											
			****	1044	112	****	10/16/2008	10/16/2008	2.00	192.40	384.80
Follow-up items regarding HMP basin implementation											
			****	1044	112	****	10/17/2008	10/23/2008	1.00	192.40	192.40
Coordination with Tyler of Tory Walker Engineering regarding continuous simulation modeling issues; sizing tool modeling setup; HSPF parameter review											

Phase : 063 - Develop BMP Modeling Approach

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	10/20/2008	10/23/2008	1.25	192.40	240.50
Weekly project meeting; review of site specific example at Orchard Run; coordination with Bob Chase of Fuscoe regarding rainfall data at Merriam Mountains and Borrego area											
			****	1044	112	****	10/21/2008	10/23/2008	1.00	192.40	192.40
Assembly and editing of data to be posted on Project Clean Water web page											
			****	1044	112	****	10/22/2008	10/23/2008	1.50	192.40	288.60
Assembly and editing of information to be posted on Project Clean Water web page; preparation of rainfall station memos											
			****	1044	112	****	10/23/2008	10/23/2008	0.50	192.40	96.20
Coordination with consulting engineers regarding rainfall gauge data; review PWA budget items regarding flow threshold analysis; review of Orchard Run partial duration series results											
			****	1044	112	****	10/27/2008	10/30/2008	4.00	192.40	769.60
Meeting to discuss Orchard Run case study; updates to project memos in preparation of posting to Project Clean Water web site; attend weekly project update meeting											
			****	1044	112	****	10/28/2008	10/30/2008	1.00	192.40	192.40
Coordination with Tony Dubin regarding loss parameters											
			****	1044	112	****	10/30/2008	10/30/2008	1.00	192.40	192.40
Memo and graphics preparation											
									88.25		16,979.30
Sr. Engineering Scientist											
Anthony M Dubin			****	1044	113	****	9/15/2008	10/2/2008	3.00	131.56	394.68
Software tool conference call and prep.											
			****	1044	113	****	10/13/2008	10/16/2008	2.00	131.56	263.12
developing modeling scenarios, coordinating with SD staff											
			****	1044	113	****	10/24/2008	10/30/2008	1.50	131.56	197.34
Reviewing SDHM results											
			****	1044	113	****	10/27/2008	10/30/2008	2.50	131.56	328.90
Reviewing SDHM results											
									9.00		1,184.04
							Total Rate Schedule Labor				***19,819.02***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
BUSINESS MEALS									
Nancy E Gardiner	02341	****	1044	ER00160487	9/15/2008	9/18/2008	155.63	1.00	155.63
Lunch for 17 people attending BMP sizing tool planning meeting for the County of San Diego Hydromodification Management Plan project.									
					Total Regular Expenses				***155.63***

Phase : 064 - Add'l Funding for Rain Gauge Task

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Lindenmayer			****	1044	226	****	9/19/2008	10/2/2008	2.50	97.76	244.40
Downloading BASINS software and WDM utility; reading software manuals and working with Justin T on how to summarize data for verification											
			****	1044	226	****	9/22/2008	10/2/2008	0.25	97.76	24.44
Updating Lower Otay station											
			****	1044	226	****	9/23/2008	10/2/2008	1.00	97.76	97.76
Coordinating for Lower Otay station											
			****	1044	226	****	9/24/2008	10/2/2008	5.00	97.76	488.80
Purchasing and downloading data for Lower Otay station; coordinating team for updates											
			****	1044	226	****	9/25/2008	10/2/2008	1.00	97.76	97.76
Follow-up regarding additional data gaps for Lower Otay											
			****	1044	226	****	9/26/2008	10/2/2008	1.00	97.76	97.76
Station research											
			****	1044	226	****	9/29/2008	10/2/2008	0.75	97.76	73.32
Station research											
			****	1044	226	****	9/30/2008	10/2/2008	1.00	97.76	97.76
Tech memos											
			****	1044	226	****	10/1/2008	10/2/2008	5.50	97.76	537.68
Fallbrook gage and access training; Tech memos											
			****	1044	226	****	10/2/2008	10/2/2008	3.00	97.76	293.28
Finalizing Fallbrook gage; tech memos; reviewing pds											
			****	1044	226	****	10/3/2008	10/9/2008	2.00	97.76	195.52
Historical rainfall - Escondido											
			****	1044	226	****	10/6/2008	10/9/2008	0.50	97.76	48.88
reviewing PDS											
			****	1044	226	****	10/7/2008	10/9/2008	2.50	97.76	244.40
Reviewing Escondido gage; meeting with team; meeting with Rand											
			****	1044	226	****	10/8/2008	10/9/2008	1.00	97.76	97.76
Setting up team for my absence; team meeting											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Lindenmayer			****	1044	426	****	10/28/2008	10/30/2008	0.50	97.76	48.88
Getting caught up on status of stations											
			****	1044	426	****	10/29/2008	10/30/2008	1.00	97.76	97.76
Team meeting and troubleshooting Lower Otay											
			****	1044	426	****	10/30/2008	10/30/2008	0.50	97.76	48.88
Follow-up with Nancy and Tony Dubin on QC process											
									29.00		2,835.04
Asst. Engineering Scientist											
Brett J Bennetts			****	1044	116	****	10/20/2008	10/23/2008	8.00	97.76	782.08
Comparing Escondido and San Vicente Revised data to our ACCESS database. Discovered a large amount of changes within the Escondido data (due to code specification) that will need to be updated. San Vicente had smaller amount of variation. Began entering the changes for both stations.											
			****	1044	116	****	10/21/2008	10/23/2008	7.25	97.76	708.76
Finished updating the Escondido Database using the revised data provided by Rand.											
			****	1044	116	****	10/22/2008	10/23/2008	7.50	97.76	733.20
Finished entering in the revised data for the San Vicente site. Since more than three sources of data were used, a final double check for any overlapping entries.											
			****	1044	116	****	10/24/2008	10/30/2008	7.75	97.76	757.64
Finish revised San Vicente ACCESS database Begin revised Santee ACCESS database											
			****	1044	116	****	9/23/2008	10/2/2008	0.50	97.76	48.88
Quick planning meeting											
			****	1044	116	****	9/24/2008	10/2/2008	5.00	97.76	488.80
Preliminary meeting to discuss how data should be formatted and to divide work between two people. Review and Data enter missing entries of precipitation between 1968 and 2008											
			****	1044	116	****	9/25/2008	10/2/2008	6.50	97.76	635.44
Review and Data enter missing entries of precipitation between 1968 and 2008											
			****	1044	116	****	9/26/2008	10/2/2008	0.75	97.76	73.32
Quick QA/QC of Lower Otay data <1%											
			****	1044	116	****	9/29/2008	10/2/2008	0.75	97.76	73.32
Conference review of hours involved of past stations and what should be expected of the future 18 stations to be delivered.											
			****	1044	116	****	10/1/2008	10/2/2008	5.50	97.76	537.68
Lesson from Josh Fluty of how to create an ACCESS sheet using various scripts. Begin creating a list of data to fill gaps in Fallbrook											
			****	1044	116	****	10/2/2008	10/2/2008	8.00	97.76	782.08
Finish creating a list of data to fill gaps in Fallbrook QA/QC Janelle's list of data Begin work on Bonita ACCESS data											
			****	1044	116	****	10/3/2008	10/9/2008	0.50	97.76	48.88
Began Escondido, but stopped when I found out Janelle had already begun work on the ACCESS database.											
			****	1044	116	****	10/7/2008	10/9/2008	3.00	97.76	293.28
Began Bonita ACCESS database Began Ramona ACCESS database											
			****	1044	116	****	10/8/2008	10/9/2008	8.00	97.76	782.08
10am meeting to discuss data holdups and a plan of action Purchase NOAA hourly data (between 1973 and 1981) for Santee and San Vicente region to fulfill a minimum 35 years of record delivery. Error with data purchase, left message with NOAA to confirm availability Revised San Vicente Data to include precipitation values (inches) instead of just bucket tips. Still missing applicable codes to define an aggregate count. Update and print Figure 1 - Rainfall station map for Eric M.											
			****	1044	116	****	10/9/2008	10/9/2008	8.00	97.76	782.08
Download NOAA hourly data (between 1973 and 1981) for Santee and San Vicente region to fulfill a minimum 35 years of record delivery. Discussion with NOAA to consider a more tabular source of data. Confirmed that the new source is less expensive to buy and already in a tabular form (though it is purchased by station). Purchased NOAA hourly data in tabular form. Begin filling in the 1973-1981 data gap.											
			****	1044	116	****	10/10/2008	10/16/2008	7.00	97.76	684.32
Problem ordering the delineated data from NOAA website. Had to spend time with the customer service department to properly download. Finish converting the El Capitan station data set to our required format for San Vicente and Santee. No other stations need this large sum of supplemental data. Quick check for dataset against separate NOAA paperwork for consistency.											
			****	1044	116	****	10/13/2008	10/16/2008	6.00	97.76	586.56
Insert appropriate ACCESS data for San Vicente and Santee. Setup a revised san Vicente and Santee data set for missing codes/precipitation values. Told to stop and wait for Rand to insert his own codes and comments. Proceeded to focus on setup of the Bonita and Oceanside ACCESS data sets. The failure of the P drive caused a temporary loss of data.											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Brett J Bennetts			****	1044	116	****	10/14/2008	10/16/2008	7.00	97.76	684.32
Update Figure 1 - rain event Setup the Bonita and Oceanside ACCESS data sets Locate known data gaps (not impacted by Rand's updates)											
			****	1044	116	****	10/15/2008	10/16/2008	3.00	97.76	293.28
Received revised Escondido data. Compared/Replaced already data already inserted in the ACCESS data sheet.											
			****	1044	116	****	10/16/2008	10/16/2008	5.00	97.76	488.80
Received compliant about negative values within the Lake wolford data set. Reviewed all completed data sets for any similar errors. Corrected Lake wolford data set. Downloaded BASIN software and attempted to convert ACCESS data to .wdm format.											
			****	1044	116	****	10/27/2008	10/30/2008	8.00	97.76	782.08
Finish revised Santee ACCESS database Calculate Intensity values for 2yr, 5yr and 10yr rainfall events for all completed and near completed gauges. Update Figure 1 for Eric											
			****	1044	116	****	10/29/2008	10/30/2008	3.75	97.76	366.60
Begin revised Ramona ACCESS database											
			****	1044	116	****	10/30/2008	10/30/2008	6.50	97.76	635.44
Finish revised Ramona ACCESS database											
									123.25		12,048.92
Project Assistant											
Janelle L Kaminski			****	1044	641	****	9/16/2008	10/2/2008	1.75	83.20	145.60
Discussed rain data entry information with Laura. Entered rain data into spreadsheet per Laura's request.											
			****	1044	641	****	9/24/2008	10/2/2008	5.00	83.20	416.00
Meeting with Laura and Brett to discuss rain gap data. Updating rainfall gap data per Laura's request for Lower Otay Reservoir.											
			****	1044	641	****	9/25/2008	10/2/2008	3.00	83.20	249.60
Meeting with Josh, Laura and Brett to discuss rain gap data. Updating outstanding rainfall gap data for Lower Otay Reservoir.											
			****	1044	641	****	9/29/2008	10/2/2008	0.25	83.20	20.80
Meeting with Eric, Josh, Laura and Brett to discuss rain gauge data gap process/budget and how to improve for future stations.											
			****	1044	641	****	10/1/2008	10/2/2008	8.00	83.20	665.60
Assisting PM by updating lens with new budgets for phase 054 for Rain Gauge Data Conversion. Training with Josh, Laura and Brett on Rain Gauge Data Conversion. Filling in Fallbrook data gaps.											
			****	1044	641	****	10/2/2008	10/2/2008	0.25	83.20	20.80
Assisting PM by publishing the new lens with the new budgets and routing to ABOM for approval.											
			****	1044	641	****	10/3/2008	10/9/2008	2.00	83.20	166.40
Formatting Escondido data to identify data gaps using Access.											
			****	1044	641	****	10/6/2008	10/9/2008	6.00	83.20	499.20
Formatting Escondido data to identify data gaps using Access.											
			****	1044	641	****	10/7/2008	10/9/2008	6.00	83.20	499.20
Identifying rain data gaps for Escondido station. Discussions with Josh and Laura about Escondido missing data. Meeting with Rand at San Diego County regarding the format of the data.											
			****	1044	641	****	10/8/2008	10/9/2008	0.50	83.20	41.60
Entering data gap information for Escondido gage. Meeting with Eric, Nancy, Laura, Brett and Josh regarding the Escondido gage data and data for future stations. We need codes filled in for all stations.											
			****	1044	641	****	10/24/2008	10/30/2008	0.50	83.20	41.60
Training with Josh on how to convert file to .WDM file using WDMUtil.											
			****	1044	641	****	10/29/2008	10/30/2008	0.50	83.20	41.60
Converting Lower Otay data to WDM file. Conversion is creating more entries than original data. Origin of problem is not known.											
									33.75		2,808.00
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	9/26/2008	10/2/2008	0.75	192.40	144.30
Meeting with RWQCB - discussion of hydromod progress and approach.											
			****	1044	421	****	10/6/2008	10/9/2008	1.00	192.40	192.40
Meeting regarding rain gauges											
			****	1044	421	****	10/8/2008	10/9/2008	1.50	192.40	288.60
Data Issues											
			****	1044	421	****	10/13/2008	10/16/2008	2.50	192.40	481.00
Meeting with Eric and Tony Dubin regarding development of BMP sizing tool.											
			****	1044	421	****	10/14/2008	10/16/2008	4.00	192.40	769.60
TAC Meeting.											
			****	1044	421	****	10/20/2008	10/23/2008	2.00	192.40	384.80
HMP coordination meeting/phone call with NRDC and CONTECH.											
			****	1044	421	****	10/21/2008	10/23/2008	1.00	192.40	192.40
Internal discussions regarding data.											
			****	1044	421	****	10/23/2008	10/23/2008	1.00	192.40	192.40
Worked on meeting minutes.											
			****	1044	421	****	10/27/2008	10/30/2008	1.00	192.40	192.40
HMP status meeting.											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	10/29/2008	10/30/2008	1.00	192.40	192.40
Internal meeting, resolution of data inconsistencies.											
									15.75		3,030.30
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	10/3/2008	10/9/2008	0.50	192.40	96.20
Assembly of rainfall station data											
			****	1044	112	****	10/6/2008	10/9/2008	1.00	192.40	192.40
Rainfall station assembly											
			****	1044	112	****	10/7/2008	10/9/2008	1.00	192.40	192.40
Rainfall station data assembly											
			****	1044	112	****	10/8/2008	10/9/2008	1.00	192.40	192.40
Rainfall station data assembly (Escondido, San Vicente and Santee gauges)											
			****	1044	112	****	10/9/2008	10/9/2008	0.50	192.40	96.20
Rainfall data assembly											
			****	1044	112	****	10/10/2008	10/16/2008	1.50	192.40	288.60
Preparation of Escondido and San Vicente rainfall gauge information											
			****	1044	112	****	10/13/2008	10/16/2008	1.00	192.40	192.40
Distribution of rainfall data for Lake Wohlford, Lower Otay and Fallbrook											
			****	1044	112	****	10/14/2008	10/16/2008	0.50	192.40	96.20
Rainfall data preparation assistance; partial duration series assessment											
			****	1044	112	****	10/15/2008	10/16/2008	1.00	192.40	192.40
Rainfall station repair for Lake Wohlford											
			****	1044	112	****	10/16/2008	10/16/2008	0.50	192.40	96.20
redistribution of Lake Wohlford data											
			****	1044	112	****	10/17/2008	10/23/2008	1.00	192.40	192.40
Coordination of rainfall gauge information with Rand Allan and BC rain gauge team											
			****	1044	112	****	10/20/2008	10/23/2008	1.00	192.40	192.40
Coordination of rainfall gauge information with Brett											
			****	1044	112	****	10/21/2008	10/23/2008	0.50	192.40	96.20
Coordination of rainfall gauge information with Brett											
			****	1044	112	****	10/22/2008	10/23/2008	1.00	192.40	192.40
Coordination of rainfall gauge information with Brett											
			****	1044	112	****	10/27/2008	10/30/2008	0.50	192.40	96.20
Repair to Lower Otay rain gauge information											
			****	1044	112	****	10/28/2008	10/30/2008	0.50	192.40	96.20
Preparation of peak hourly rainfall statistics for various gauges											
			****	1044	112	****	10/29/2008	10/30/2008	1.00	192.40	192.40
Repair to Lower Otay rain gauge information											
			****	1044	112	****	10/30/2008	10/30/2008	0.50	192.40	96.20
Preparation of progress summary for Sara											
									14.50		2,789.80
Sr.Geographic Info. Systems Analyst											
Joshua T Fluty			****	1044	425	****	6/26/2008	9/25/2008	10.50	100.00	1,050.00
Charged incorrect phase number on invoice 4482536 for 6/20/08; 6/24/08; 6/25/08											
			****	1044	425	****	9/15/2008	10/2/2008	1.00	104.00	104.00
Modification of Wohlford Dataset.											
			****	1044	425	****	9/17/2008	10/2/2008	7.00	104.00	728.00
Modification of Wohlford Dataset.											
			****	1044	425	****	9/22/2008	10/2/2008	1.00	104.00	104.00
Lower Otay gauge.											
			****	1044	425	****	9/23/2008	10/2/2008	9.00	104.00	936.00
Lower Otay gauge.											
			****	1044	425	****	9/25/2008	10/2/2008	8.00	104.00	832.00
Lower Otay gauge.											
			****	1044	425	****	9/26/2008	10/2/2008	7.00	104.00	728.00
Lower Otay and Fallbrook Gauges. Training.											
			****	1044	425	****	9/29/2008	10/2/2008	0.50	104.00	52.00
Lower Otay and Fallbrook Gauges. Training.											
			****	1044	425	****	10/1/2008	10/2/2008	6.00	104.00	624.00
Lower Otay and Fallbrook Gauges. Training.											
			****	1044	425	****	10/2/2008	10/2/2008	5.00	104.00	520.00
Lower Otay and Fallbrook Gauges. Training.											
			****	1044	425	****	10/6/2008	10/9/2008	0.50	104.00	52.00
Data formatting, team meetings, discussions.											
			****	1044	425	****	10/8/2008	10/9/2008	0.50	104.00	52.00
Data formatting, team meetings, discussions.											
			****	1044	425	****	10/16/2008	10/16/2008	0.50	104.00	52.00
Wohlford fix.											
			****	1044	425	****	10/22/2008	10/23/2008	1.00	104.00	104.00
Escondido WDM conversion attempts. Issues with the software prevented completion of this task.											
			****	1044	425	****	10/29/2008	10/30/2008	1.00	104.00	104.00
									58.50		6,042.00
							Total Rate Schedule Labor				***29,554.06***

Regular Expenses

Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
O/S SVS-DATA PROC/INQUIRY (PURCHASE OF RAINFALL DATA)									
Laura E Lindenmayer	03616	****	1044	ER00160460	9/16/2008	9/18/2008	72.00	1.00	72.00
	Purchased data to fill in gaps in historic rainfall record for Lake Wohlford station								
	03616	****	1044	ER00161467	9/24/2008	9/25/2008	264.00	1.00	264.00
	Purchased historical rainfall data for data gaps pertaining to Lower Otay station								
	03616	****	1044	ER00162016	10/1/2008	10/9/2008	72.00	1.00	72.00
	Purchasing historical rainfall data for the Fallbrook station								
							408.00		408.00
Brett J Bennetts	03669	****	1044	ER00161703	9/25/2008	9/25/2008	4.00	1.00	4.00
	Single purchase of NOAA data for past California precipitation values.								
	03669	****	1044	ER00162527	10/8/2008	10/16/2008	404.00	1.00	404.00
	One hundred and one (101) hourly precipitation data sheets from 1973 to 1981 for supplemental support of the HydroMod ACCESS log.								
	03669	****	1044	ER00163036	10/21/2008	10/30/2008	4.00	1.00	4.00
	May 1986 Precipitation Hourly Data								
	03669	****	1044	ER00163088	10/22/2008	10/30/2008	52.00	1.00	52.00
	Thirteen (13) requests for Hourly Precipitation Data from NOAA at $4 a request								
	03669	****	1044	ER00163331	10/27/2008	10/30/2008	14.00	1.00	14.00
	Precipitation Data from NOAA for Santee Station								
							478.00		478.00
Janelle L Kaminski	03648	****	1044	ER00162249	10/1/2008	10/9/2008	64.00	1.00	64.00
	Fallbrook data gaps missing data.								
	03648	****	1044	ER00162474	10/7/2008	10/16/2008	68.00	1.00	68.00
	Missing rain gauge data for Escondido station.								
							132.00		132.00
Eric S Mosolgo	04215	****	1044	ER00158393	8/19/2008	9/25/2008	70.00	1.00	70.00
	Rainfall data from Western Regional Climate Center								
Total: O/S SVS-DATA PROC/INQUIRY (PURCHASE OF RAINFALL DATA)									1,088.00
					Total Regular Expenses				***1,088.00***

Invoice

PWA
PHILIP WILLIAMS & ASSOCIATES, LTD
ENVIRONMENTAL HYDROLOGY
550 Kearny Street, Suite 900
San Francisco, California 94108-2522
TEL 415.262.2300 FAX 415.262.2303
www.pwa-ltd.com

June 24, 2008
Invoice No: 001915.00-0000004

Brown and Caldwell
P.O. Box 8045
Walnut Creek CA 94596

Project: 001915.00 San Diego Hydromod
Prism Project # 133904
Professional services from May 3, 2008 to May 30, 2008

Task: 003 Stakeholder meetings

Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	2.00	182.00	364.00	
Collison, Andrew	17.00	182.00	3,094.00	
Totals	19.00		3,458.00	
Total				**3,458.00**
			Total this task	**$3,458.00**

Task: 004 Define modeling parameters

Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	5.00	182.00	910.00	
Collison, Andrew	21.50	182.00	3,913.00	
Asst. Engineering Scientist				
Wickland, Matthew J.	27.50	94.00	2,585.00	
Totals	54.00		7,408.00	
Total				**7,408.00**
			Total this task	**$7,408.00**
			Total this invoice	**$10,866.00**

for
Sandy McFadden
Director of Finance and Adminstration

* $7,408.00 was billed under phase 051 ✓ ok
on invoice 4489670
* Remaining $3458.00 is billed on this invoice under phase 006

Billing Backup

Thursday, September 25, 2008

Philip Williams & Associates, Ltd. **Invoice Dated June 24, 2008** *3:08:57 PM*

001915.00 San Diego Hydromod

Task: 003 Stakeholder meetings

Professional Personnel

	Name		Hours	Rate	Amount
Principal Engineer / Scientist					
00133	Beeman, Christie	5/23/08	2.00	182.00	364.00
team conference call and follow up regarding TAC mtg					
00202	Collison, Andrew	5/23/08	1.00	182.00	182.00
weekly coordiation call					
00202	Collison, Andrew	5/23/08	1.00	182.00	182.00
prep materials on development patterns for TAC meeting					
00202	Collison, Andrew	5/30/08	3.00	182.00	546.00
weekly conferance call/prep for TAG meeting					
00202	Collison, Andrew	5/30/08	8.00	182.00	1,456.00
Presentation to TAG, San Diego					
00202	Collison, Andrew	5/30/08	4.00	182.00	728.00
edits to TAG presentation, meet w/ staff to refine synthetic modeling approach					
	Totals		19.00		3,458.00

Total Labor **3,458.00**

Total this task **$3,458.00**

Task: 004 Define modeling parameters

Professional Personnel

	Name		Hours	Rate	Amount
Principal Engineer / Scientist					
00133	Beeman, Christie	3/28/08	1.00	182.00	182.00
correspondence with N Gardiner re status and scope					
00133	Beeman, Christie	5/2/08	1.00	182.00	182.00
prep/staffing for sample watersheds development					
00133	Beeman, Christie	5/9/08	1.00	182.00	182.00
H&H modeling staffing/work plan					
00133	Beeman, Christie	5/16/08	2.00	182.00	364.00
team conference call and follow-up					
00202	Collison, Andrew	3/7/08	1.00	182.00	182.00
responding to questions from Sara A					
00202	Collison, Andrew	3/21/08	1.00	182.00	182.00
respond to Arsalan comments					
00202	Collison, Andrew	4/4/08	1.50	182.00	273.00
call with Eric Stein to coordinate modeling efforts					
00202	Collison, Andrew	5/9/08	6.00	182.00	1,092.00
Memo on geomorph assessments					
00202	Collison, Andrew	5/16/08	4.00	182.00	728.00
Geo assessment sampling frame					
00202	Collison, Andrew	5/16/08	7.00	182.00	1,274.00
sampling frame for geo assessment					
00202	Collison, Andrew	5/16/08	1.00	182.00	182.00
team conference call					
Asst. Engineering Scientist					
00238	Wickland, Matthew J.	5/9/08	2.50	94.00	235.00
00238	Wickland, Matthew J.	5/9/08	1.00	94.00	94.00
GIS data download / map making					
00238	Wickland, Matthew J.	5/16/08	4.00	94.00	376.00
Figures and data downloads					
00238	Wickland, Matthew J.	5/16/08	4.00	94.00	376.00
00238	Wickland, Matthew J.	5/16/08	4.00	94.00	376.00

GIS data download / Prelim map creation						
00238	Wickland, Matthew J.	5/23/08	2.00	94.00	188.00	
00238	Wickland, Matthew J.	5/23/08	8.00	94.00	752.00	
GIS analysis of land use						
00238	Wickland, Matthew J.	5/30/08	1.00	94.00	94.00	
00238	Wickland, Matthew J.	5/30/08	1.00	94.00	94.00	
GIS investigations						
	Totals		54.00		7,408.00	
	Total Labor					**7,408.00**
					Total this task	**$7,408.00**
					Total this report	**$10,866.00**

Dan Cloak Environmental Consulting

PO No	770	Vendor No	36719		SUB
PO Ln	G/L Code				Amount
		133904 - 041 **		1044	$ 4,158.00
					$
					$
					$
Date 11/11/08		Approved By Nancy E Gardiner		Total $ 4,158.0	

INVOICE 10-08

7 November 2008

Ms. Nancy Gardiner
Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

Re: County of San Diego

Billing Period: August - October 2008

- Reviewed and responded to comments on the 24 July 2008 countywide Model SUSMP submittal to the Regional Water Quality Control Board
- Participated in a conference call with NRDC representatives and other commenters on 20 October.
- Attended a Copermittee meeting in San Diego on 21 October to discuss responses to comments
- Updated the comment/response table per Copermittee discussion and delivered on 28 October

Labor charges:		
Dan Cloak, P.E.	29.0 hours @ $130	$3,770.00
Expenses:		
Airfare	1 @ $303.00	$303.00
Taxi SAN to B/C	1 @ $45.00	45.00
Taxi B/C to SAN	1 @ $40.00	40.00
Total Expenses		$388.00
Total Charges		**$4,158.00**

RECEIVED
NOV 10 2008
BROWN AND CALDWELL
SAN DIEGO

Dan Cloak, P.E.
Principal

Remit to: Dan Cloak Environmental Consulting,
1 Lakeside Drive #807, Oakland, CA 94612

1 Lakeside Drive #807 • Oakland, CA 94612 • 510-419-0699 • Dan@DanCloak.com

Southwest Airlines Purchase Confirmation

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Southwest Airlines Confirmation Number(s)

Passenger Type	Confirmation Number	Passenger	Account Number	Disability Assistance
Adult	2JMLKU	Daniel Cloak	00000366313264	- None Entered -

Air Itinerary

Trip	Date	Day	Stops	Routing	Flight	Routing Details
Depart	Oct 21	Tue	Nonstop	OAK-SAN	1199	Depart Oakland (OAK) at 9:35 AM Arrive in San Diego (SAN) at 11:00 AM
Return	Oct 21	Tue	Nonstop	SAN-OAK	591	Depart San Diego (SAN) at 5:00 PM Arrive in Oakland (OAK) at 6:25 PM

Pricing

Passenger Type	Trip	Routing	Type of Fare	Base Fare	U.S. Taxes	PFC	Security Fee[1]	Passenger(s)	Total
Adult	Depart	OAK-SAN	Anytime	$131.16	$13.34	$4.50	$2.50	1	$151.50
	Return	SAN-OAK	Anytime	$131.16	$13.34	$4.50	$2.50	1	$151.50
			Total	$262.32	$26.68	$9.00	$5.00		$303.00

[1] Security Fee is the government-imposed September 11th Security Fee.

Billing Information

Credit Card Holder Name: Dan Cloak
Billing Address: 1 Lakeside Drive #807
Oakland, CA 94612
Confirmation Number: 2JMLKU
Passenger Type: Adult
Passenger Name(s): Daniel Cloak
Form of Payment: MasterCard: XXXXXXXXXXXX1697

$303.00

Total Air	Base Fare	U.S. Taxes	PFC	Security Fee[1]	Passenger(s)	Total
OAK - SAN SAN - OAK	$262.32	$26.68	$9.00	$5.00	1	$303.00

[1] Security Fee is the government-imposed September 11th Security Fee.

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- Southwest Airlines Ticketless Travel is nontransferable. Government-issued photo identification is required at time of checkin.

ORANGE CAB

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Company: _____

Date: 10/21 Meter $: 40.00 Tip$ _____

Driver: _____ Cab#: 790

From/To: Chesapeake SAN

4250 Pacific Hwy. Ste. 207, San Diego, CA 92110

(619)223-5555

Customer • Verify Cab Number

Welcome to San Diego!

TRIP RECORD

DATE Oct 21, 2008

TAXICAB # 790

DRIVER ID # 5817

PICKUP LOCATION

TERMINAL 1

02-313

TAXICAB RECEIPT

THE SUM OF _____ DATE _____

FROM SAN TO SAN

CITY 9665 Chesapeake

45

For questions, comments or concerns, contact the Ground Transportation Department.
619.400.2685

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11295

Invoice

SUB

Company		Vendor No: 64339	PO No: 2058	
PO Ln	G/L Code	Project / Phase / Task	Org	Amount
2	51089	133904-053	1044	$13414.95
3	51089	133904.041	1044	$6438.00
				$
				$
Date: 10/31/08		Approved by: Nancy E Jones	Total:	

PWA
PHILIP WILLIAMS & ASSOCIATES, LTD
ENVIRONMENTAL HYDROLOGY
550 Kearny Street, Suite 900
San Francisco, California 94108-2522
TEL 415.262.2300 FAX 415.262.2303
www.pwa-ltd.com

Brown and Caldwell
P.O. Box 8045
Walnut Creek CA 94596

September 26, 2008
Invoice No: 001915.00-0808015
19,852.95

Project: 001915.00 San Diego Hydromod

Prism Project # 133904

Professional services from August 1, 2008 to August 31, 2008

Task: 004 Define modeling parameters

Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	8.00	182.00	1,456.00	
Asst. Engineering Scientist				
Wickland, Matthew J.	53.00	94.00	4,982.00	
Totals	61.00		6,438.00	
Total Labor				**6,438.00**

Total this task **$6,438.00**

Task: 005 H&H modeling

Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	8.00	182.00	1,456.00	
Collison, Andrew	24.00	182.00	4,368.00	
Haltiner, Jeffrey	1.00	182.00	182.00	
Asst. Engineering Scientist				
White, Jason	78.50	94.00	7,379.00	
Totals	111.50		13,385.00	
Total Labor				**13,385.00**

Total this task **$13,385.00**

Task: 600 PWA Expenses

Reimbursable Expenses

Reimbursable Expense 29.95

Total Reimbursables	**1.0 times**	**29.95**	**29.95**

Total this task **$29.95**

Total this invoice **$19,852.95**

Sandy McFadden
Director of Finance and Administration

Task: 004 Define modeling parameters

Professional Personnel

Name		Hours	Rate	Amount
Principal Engineer / Scientist				
00133 Beeman, Christie	8/22/08	6.00	182.00	1,092.00
technical oversite on H&H modeling				
00133 Beeman, Christie	8/22/08	2.00	182.00	364.00
review H&M model parameters/results				
Asst. Engineering Scientist				
00238 Wickland, Matthew J.	8/8/08	8.00	94.00	752.00
Results work up and figure creation				
00238 Wickland, Matthew J.	8/8/08	16.00	94.00	1,504.00
Hydrology and sediment transport simulations				
00238 Wickland, Matthew J.	8/15/08	5.00	94.00	470.00
Hydrology and sediment transport modeling				
00238 Wickland, Matthew J.	8/15/08	8.00	94.00	752.00
Hydrologic analysis and modeling				
00238 Wickland, Matthew J.	8/22/08	8.00	94.00	752.00
Hydrology model development / GIS				
00238 Wickland, Matthew J.	8/22/08	4.00	94.00	376.00
Hydrology model development				
00238 Wickland, Matthew J.	8/29/08	4.00	94.00	376.00
Sed trans modeling				
Totals		61.00		6,438.00

Total Labor **6,438.00**

Total this task **$6,438.00**

Task: 005 H&H modeling

Professional Personnel

Name		Hours	Rate	Amount
Principal Engineer / Scientist				
00133 Beeman, Christie	8/8/08	2.00	182.00	364.00
H&H modeling scope adds				
00133 Beeman, Christie	8/8/08	2.00	182.00	364.00
H&H staffing				
00133 Beeman, Christie	8/29/08	2.00	182.00	364.00
review sed xport model results				
00133 Beeman, Christie	8/29/08	2.00	182.00	364.00
scope for east county & H&H modeling				
00202 Collison, Andrew	8/8/08	4.00	182.00	728.00
Prep for TAC meeting				
00202 Collison, Andrew	8/8/08	8.00	182.00	1,456.00
TAC presentation				

00202	Collison, Andrew	8/8/08	2.00	182.00	364.00
channel vulnerability modeling					
00202	Collison, Andrew	8/8/08	2.00	182.00	364.00
00202	Collison, Andrew	8/29/08	4.00	182.00	728.00
chanel vulnerability					
00202	Collison, Andrew	8/29/08	4.00	182.00	728.00
channel vulnerability					
00101	Haltiner, Jeffrey	8/15/08	0.50	182.00	91.00
00101	Haltiner, Jeffrey	8/22/08	0.50	182.00	91.00
Asst. Engineering Scientist					
00265	White, Jason	8/8/08	7.00	94.00	658.00
00265	White, Jason	8/15/08	12.50	94.00	1,175.00
modeling wd20					
00265	White, Jason	8/15/08	5.00	94.00	470.00
modeling wd10					
00265	White, Jason	8/22/08	4.50	94.00	423.00
running HEC-RAS sediment models: wd20 0.5% & 1% 0.5mm					
00265	White, Jason	8/22/08	17.00	94.00	1,598.00
Modeling Bati					
00265	White, Jason	8/22/08	5.00	94.00	470.00
running HEC-RAS sediment models: wd20 0.5% & 1% 2mm					
00265	White, Jason	8/22/08	5.00	94.00	470.00
HEC-RAS Modeling w:d 20, 2.5%, 2mm and 8mm					
00265	White, Jason	8/29/08	11.50	94.00	1,081.00
Bati Modeling					
00265	White, Jason	8/29/08	11.00	94.00	1,034.00
modeling Bati					
	Totals		111.50		13,385.00

Total Labor **13,385.00**

Total this task **$13,385.00**

Task: 600 PWA Expenses

Reimbursable Expenses

Reimbursable Expense

AP 0018051	8/5/08 Brown Rocko / Article			29.95	
	Total Reimbursables		**1.0 times**	**29.95**	**29.95**

Total this task **$29.95**

Total this report **$19,852.95**

EXPENSE REPORT

POSTED

☑ **PROJECT NAME:** sd hmp

*Reimbursable by Client:** ☑ *Yes* ☐ *No*

PROJECT #: 1915 **TASK #:** 2

☐ **PROPOSAL NAME:**

PROPOSAL #: P - **TASK #:**

NAME: ROCKO BROWN

Date of Report: August 4, 2008

OR - SELECT ONE OF THE FOLLOWING OVERHEAD (OH) CATEGORIES:

☐ MARKETING
☐ ADMINISTRATION
☐ PROFESSIONAL DEVELOPMENT
☐ TECHNICAL DEVELOPMENT / R&D
☐ OTHER

IF OH CATEGORY SELECTED TO LEFT, ALSO IDENTIFY PROFIT CENTER:

☐ San Francisco
☐ Sacramento
☐ Boise
☐ Corporate

FOR BUSINESS MEALS:

Name of Person(s):

Representing:

Business Discussed:

TRAVEL:

From: PWA	*From:*	*From:*	*From:*
To: UCD	*To:*	*To:*	*To:*
Date(s): 7/28/2008	*Date(s):*	*Date(s):*	*Date(s):*
Reason: UCD Meeting	*Reason:*	*Reason:*	*Reason:*

DATE:	7/31/08										
Airfare											
Meals B											$ -
Meals L											$ -
Meals D											$ -
Parking											$ -
Ground Transportation:											$ -
Taxi/Bart,etc.(# of rides)											$ -
Car Rental											
No. of Miles											$ -
Mileage @ 50.5 cents	-	-	-	-	-	-	-	-	-	-	
Telephone											$ -
Accommodations											$ -
Other (Specify)**											$ -
Article	29.95										$ -
											$ 29.95
											$ -
											$ -
											$ -
TOTAL	$ 29.95	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
											$ 29.95

Note: To comply with government regulations, receipts for all expenditures should be obtained.

* If trip is reimbursable, check "yes".

** Explain fully.

EXPENSE REPORT SUMMARY:

Amount of Expenditures:	$ 29.95
Amount of Cash Advance: (date)	$ -
Balance Due Employee	$ 29.95
Balance Due PWA - *please attach check*	$ -

- FOR BUSINESS OFFICE USE ONLY -

VENDOR #: PAYMENT DATE:
VCH #: A/P CODE:
VCH DATE: BK CODE:
INV DATE: INV TOTAL:
INV #:

DESC	PROJECT	TASK	G.L. ACCT #	AMT
	1915	6W	529	29.95

29.95

Signed:

Approved:

CORPORATE CARDS

Manage Your Account

CARD ACTIVITY For ROCKO A. BROWN

[+]

Corporate Card - 22000

Card: Corporate Card 22000

Time Period: Recent Activity Jul 14, 2008 to Present

Display: All Transactions

Additional Search Options

Search Transactions: VIEW RESULTS

See More Options (Options currently set: None)

Closing Date: Aug 13, 2008

View Your Billing Statement

Print Options

- Download Card Activity
- Learn About Your Online Features
- Create an Expense Report

TRANSACTION DETAIL

LIST VIEW | GRAPH VIEW

Activity for ROCKO A. BROWN -22000

Show or Hide all details

First | Previous Displaying 1-7 of 7 Transactions Next | Last

Date	Description	Amount
07/30/2008	JWS WILEY PUBLISHERS 800-758-9477 NJ	29.95
[redacted]		[redacted]
07/29/2008	ENTERPRISE RENTACAR SAN FRANCISCO CA	45.87
07/28/2008	CHEVRON CHEVRON STAT SAN FRANCISCO CA	5.75
07/28/2008	CHEVRON CHEVRON STAT SAN FRANCISCO CA	45.33
[redacted]		[redacted]
07/15/2008	ELECTRONIC PAYMENT RECEIVED-THANK 07/15	-50.00

First | Previous Page 1 of 1 Next | Last

Dispute a Charge/Check Dispute Status

Charges: 201.87
Credits: 0.00
Payments: -50.00

PAY BILL

Other Payment Options

SUMMARY

Previous Card Balance	Card Payments / Unbilled Credits	Unbilled Charges	Total Balance
[redacted]			

View Your Billing Statement

Closing Date: Aug 13, 2008 PAY BILL

Other Payment Options

About American Express | Careers @ American Express | Affiliate Program | Fraud Protection Center | American Express Labs
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Brown and Caldwell
Expense Report Detail

Employee: [redacted]
Expense Report: ER00161484, Feb. Expenses
Status: Signed Michael Flake

Date Range: 2/6/2008 - 2/26/2008
Printed: 9/25/2008 08:37 AM

Transactions

Co Pd	Category	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
[redacted]											
[redacted]											
[redacted]											
[redacted]											
[redacted]											
[redacted]											
[redacted]											
[redacted]											
[redacted]											
[redacted]											
[redacted]											

[redacted]

AIRFARE	Airfare	133904	SDCo Hydromod Management Plan	041	****	1044	US		2/20/2008	58.50	58.50
Description: Return flight.								16			
									Line Total	58.50	58.50
MILEAGE	Mileage - Travel	133904	SDCo Hydromod Management Plan	041	****	1044	US		2/20/2008	17.55	~~17.55~~ 15.15
Description: 30 miles to airport at ~~0.585/mile~~. .325											
									Line Total	17.55	17.55
PARKING	Parking & Tolls - Travel	133904	SDCo Hydromod Management Plan	041	****	1044	US		2/20/2008	12.99	12.99
Description: 1 day of the 2 days of parking.								17			
									Line Total	12.99	12.99

[redacted]

Flake, Mike

From: Southwest Airlines [SouthwestAirlines@mail.southwest.com]
Sent: Wednesday, February 13, 2008 4:57 PM
To: Flake, Mike
Subject: Ticketless Confirmation - FLAKE/MICHAEL - KIIKPK

#16

SOUTHWEST.COM

Save up to 25% OFF & [illegible] Triple Rapid Rewards Credit on any two day rental from Alamo. BOOK NOW >> Use Corporate ID/Rate 7013861 Alamo

Receipt and Itinerary as of 02/13/08 6:57 PM

Confirmation Number
KIIKPK

Sit Where You Like

Confirmation Date: 02/13/08
Received: MICHAEL

Passenger Information

Passenger Name	Account Number	Ticket#	Expiration[1]
FLAKE/MICHAEL	00001062962040	526-2363580069-1	02/13/09

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Itinerary

Date	Flight	Routing Details
Wed Feb 20	1443	Depart SAN DIEGO CA (SAN) at 6:10 PM Arrive in OAKLAND CA (OAK) at 7:45 PM

Cost and Payment Summary

Air	$ 44.65
Tax	$ 6.85
PFC Fee	$ 4.50
Security Fee	$ 2.50
Total Payment:	**$58.50**

Current payment(s)
02/13/08 VISA xxxxxxxxxxxx7612 Ref 526-2363580069-1 $58.50

Fare Rule(s)
Valid only on Southwest Airlines. NON REFUNDABLE/STANDBY REQ UPGRADE TO YL All travel involving funds from this Confirmation Number must be completed by the expiration date. Any change to this itinerary may result in a fare increase.

Fare Calculation:

NRF- 1 SANWNOAK M7NTNR 48.00 $48.00 ZPSAN XFSAN4.50 AYSAN2.50 $58.50

Important Checkin Requirement
Passengers who do not obtain a boarding pass and are not present and available for boarding in the departure gate area at least ten minutes prior to scheduled departure time may have their reserved space cancelled and will not be eligible for denied boarding compensation.

9/25/2008

[redacted]

#17

FASTTRACK Airport Parking - Premier Lot
195 98th Avenue
Oakland, CA 94603

User ID		1456
Date		02/20/08 20:36
Ticket #		65529
Open Date		02/19/08 10:07
Close Date		02/20/08 20:37
rking Charges		
ys		
acial Days	2	$ 21.92
pons	0	$ 0.00
count		0.00
total	0%	$ 0.00
		$ 21.92
y Parking Tax	18.50%	$ 4.06
		---
king Total		$ 25.98
/ice Charges		
ons		
total		$ 0.00
		$ 0.00
City Parking Tax	18.50%	$ 0.00

Service Total		$ 0.00
Grand Total		$ 25.98
Payments		
VI _7612 Auth:262924		$ 25.98

X _____

*only expensed $12.99 to project.

Employee: 0[redacted]
Expense Report: ER00161508, March Expenses
Status: Signed

Brown and Caldwell
Expense Report Detail

Date Range: 3/5/2008 - 3/26/2008
Printed: 9/25/2008 09:09 AM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	AIRFARE	Airfare	133904	SDCo Hydromod Management Plan	041	****	1044	US				
	Description: Departing flight from HMP meeting in San Diego.								1	3/5/2008	94.50	94.50
										Line Total	94.50	94.50
	[redacted]											
	[redacted]											
	PARKING	Parking & Tolls - Travel	133904	SDCo Hydromod Management Plan	041	****	1044	US				
									5	3/5/2008	12.99	12.99
										Line Total	12.99	12.99
	AIRFARE	Airfare	133904	SDCo Hydromod Management Plan	041	****	1044	US				
	Description: Additional fare for earlier flight.								3	3/5/2008	47.00	47.00
										Line Total	47.00	47.00
	[redacted]											
	[redacted]											
	Total Transactions										646.46	646.46
										Total		646.46

646.46

Flake, Mike

From: Southwest Airlines [SouthwestAirlines@mail.southwest.com]
Sent: Monday, February 25, 2008 4:30 PM
To: Flake, Mike
Subject: Ticketless Confirmation - FLAKE/MICHAEL - KGCJQ5 - MICHAEL

#1

SOUTHWEST SWABIZ

Receipt and Itinerary as of 02/25/08 6:29 PM

Confirmation Number
KGCJQ5

Sit Where You Like

Confirmation Date: 02/25/08
CID: 99647881
Received: MICHAEL

Passenger Information

Passenger Name	Account Number	Ticket#	Expiration[1]
FLAKE/MICHAEL	00001062962040	526-2365932567-2	02/25/09

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Itinerary

Date	Flight	Routing Details
Wed Mar 05	126	Depart SAN DIEGO CA (SAN) at 6:40 PM Arrive in OAKLAND CA (OAK) at 8:10 PM

Cost and Payment Summary

Air	$ 78.14
Tax	$ 9.36
PFC Fee	$ 4.50
Security Fee	$ 2.50

Total Payment: $94.50

Current payment(s)
02/25/08 VISA xxxxxxxxxxxx7612 Ref 526-2365932567-2 $94.50

Fare Calculation:

ADT- 1 SANWNOAK Q7NR 84.00 $84.00 ZPSAN XFSAN4.50 AYSAN2.50 $94.50

Fare Rule(s)

Valid only on Southwest Airlines. NON REFUNDABLE/ STANDBY REQ UPGRADE TO YL All travel involving funds from this Confirmation Number must be completed by the expiration date. Any change to this itinerary may result in a fare increase.

Important Checkin Requirement

Passengers who do not obtain a boarding pass and are not present and available for boarding in the departure gate area at least ten minutes prior to scheduled departure time may have their

[redacted]

5

[redacted]

FASTTRACK Airport Parking - Premier Lot
195 98th Avenue
Oakland, CA 94603

[illegible] ID		1496
Date		03/05/08 19:25
Ticket #		67159
Open Date		03/05/08 05:41
Close Date		03/05/08 19:25
[illegible]king Charges		
[illegible]s	1	$ 10.96
[illegible]cial Days	0	$ 0.00
[illegible]ons		0.00
[illegible]count	0%	$ 0.00
[illegible]total		$ 10.96
City Parking Tax	18.50%	$ 2.03
[illegible]ing Total		$ 12.99
[illegible]vice Charges		
[illegible]ons		$ 0.00-
[illegible]otal		$ 0.00
Parking Tax	18.50%	$ 0.00
[illegible]ice Total		$ 0.00
Grand Total		$ 12.99
Payments		
VI [illegible]7612 Auth:768440		$ 12.99

X_____

AC-167TH (Rev. 12/07)

Corporate Express Document & Print Management

ISSUED BY AND VALID ONLY ON
SOUTHWEST AIRLINES

TICKETLESS UPGRADE RECEIPT
NOT VALID FOR TRANSPORTATION

AGENT DAWN M
DATE 05Mar08

CUSTOMER NAME
FLAKE/MICHAEL

RECORD LOCATOR
KGCJQ5

NEW FLIGHT DETAILS

from	to	flight	date	fare basis
SAN DIEGO CA	OAKLAND CA	WN3400	05MAR	YL

CREDIT CARD DETAILS

name	card number	exp	auth	ext
FLAKE/MICHAEL	BA **********87612	0509	762792	

AMOUNT OF UPGRADE $ 047.00

3 #

Brown and Caldwell
Expense Report Detail

Employee: 03591 Michael Flake
Expense Report: ER00161531, May Expenses
Status: Posted - Employee must sign (Changed/Signed by Admin)

Date Range: 5/12/2008 - 5/28/2008
Printed: 10/10/2008 05:08 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	AIRFARE	Airfare	133904	SDCo Hydromod Management Plan	041	****	1044	US				
									1	5/12/2008	189.00	189.00
										Line Total	189.00	189.00
	PARKING	Parking & Tolls - Travel	133904	SDCo Hydromod Management Plan	041	****	1044	US				
	Description: No receipt.									5/12/2008	12.99	12.99
										Line Total	12.99	12.99
	MILEAGE	Mileage - Travel	133904	SDCo Hydromod Management Plan	041	****	1044	US				
	Description: Site Visit 60 miles at 0.505/mile.									5/12/2008	30.30	30.30
										Line Total	30.30	30.30
[redacted]								US	[redacted]			
[redacted]									[redacted]			
[redacted]								US	[redacted]			
[redacted]									[redacted]			.30

Flake, Mike

From: Southwest Airlines [SouthwestAirlines@mail.southwest.com]
Sent: Friday, May 02, 2008 3:43 PM
To: Flake, Mike
Subject: Ticketless Confirmation - FLAKE/MICHAEL - KQKUTH - MICHAEL

#1

SOUTHWEST
SWABIZ

Receipt and Itinerary as of 05/02/08 5:43 PM

Confirmation Number
KQKUTH

Sit Where You Like

Confirmation Date: 04/24/08
CID: 99647881
Received: MICHAEL

Passenger Information

Passenger Name	Account Number	Ticket#	Expiration[1]
FLAKE/MICHAEL	00001062962040	526-2301289824-5	03/10/09

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Itinerary

Date	Flight	Routing Details
Mon May 12	2894	Depart OAKLAND CA (OAK) at 6:05 AM Arrive in SAN DIEGO CA (SAN) at 7:35 AM
Mon May 12	2292	Depart SAN DIEGO CA (SAN) at 3:55 PM Arrive in OAKLAND CA (OAK) at 5:20 PM

Cost and Payment Summary

Air	$ 156.28
Tax	$ 18.72
PFC Fee	$ 9.00
Security Fee	$ 5.00

Total Payment: $189.00
Prior payment(s)
Tkls funds applied from Conf#KJRT9T ($80.00 remaining) $189.00

Exchange Detail:
04/24/08 526-23690150205/1, $128.00, Exchanged for 52623793983305
05/02/08 526-23690150205/1, $6.50, Exchanged for 52623012898245
05/02/08 526-23690150205/2, $54.50, Exchanged for 52623012898245
05/02/08 526-23793983305/1, $58.50, Exchanged for 52623012898245
05/02/08 526-23793983305/2, $69.50, Exchanged for 52623012898245

Fare Calculation:

ADT- 1 OAKWNSAN W7NR 84.00 SANWNOAK W7NR 84.00 $168.00 ZP7.00 XFOAK4.50

10/7/2008

Brown and Caldwell
Expense Report Detail

Employee: 04215 Eric S Mosolgo
Expense Report: ER00158393, August/September Expense
Status: Approved by Admin (Changed/Signed by Admin)

Date Range: 8/12/2008 - 9/12/2008
Printed: 9/22/2008 12:33 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	052	****	1044	US				
	Description: Rainfall data from Western Regional Climate Center									8/19/2008	70.00	70.00
										Line Total	70.00	70.00

[redacted]

Total Transactions

Total
Less Company Paid
Total Reimbursement (United States Dollar)

Audit Trail

Date/Time	Employee	Status/Notes
9/22/2008 12:32:22 PM	02420 Debbie W Morgan	Approved by Admin (Changed/Signed by Admin)

Brown and Caldwell
Expense Report Detail

Employee: 02222 Misty A Suposs
Expense Report: ER00161763, San Diego FasTrak Charges (8/1-8/31/08)
Status: Signed

Date Range: 8/1/2008 - 8/31/2008
Printed: 9/26/2008 03:02 PM

Transactions
Co
Pd [redacted]

PARKING	Parking & Tolls - Travel	133904	SDCo Hydromod Management Plan	052	****	1044	US	8/25/2008	4.00	4.00
								8/26/2008	4.00	4.00
								Line Total	8.00	8.00

Total Transactions [redacted]

Total
Less Company Paid
Total Reimbursement (United States Dollar)

Audit Trail

Date/Time	Employee	Status/Notes
9/26/2008 3:02:02 PM	02222 Misty A Suposs	Signed

Date/Time:_____ **Optional Signature:**_____

WESTERN REGIONAL
CLIMATE CENTER
PHONE (775) 674-7010
FAX (775) 674-7016

Desert Research Institute

RECEIPT

TO: Brown & Caldwell
9665 Chesapeake Dr., Suite 201
San Diego, CA 92123
ATTN: Eric Mosolgo

Invoice Date: August 11, 2008

Invoice No: 609CC000043

Tax ID Number: 88-6000024

Data requested: Hourly rainfall for Cuyamaca, Morena Dam, Oceanside, San Diego Airport, Palomar, Temecula & Lake Wohlford, period of record
Data for: Eric Mosolgo
Reference: No reference number provided

Quantity	Description	Amount
1 each	Service charge @ $20.00	$20.00
1 each	Hourly rainfall data @ $20/site	$20.00
6 each	Hourly rainfall data @ $5/site	$30.00
	PAID IN FULL: Eric Mosolgo's Master Card was charged $70.00 on 08-19-08	
	TOTAL	$70.00

Make all checks payable to BOARD OF REGENTS and mail to the address shown below.
Please show invoice number on your remittance or return a copy of this invoice with payment.
Terms: Net 30

Board of Regents
WESTERN REGIONAL CLIMATE CENTER
Desert Research Institute
2215 Raggio Parkway
Reno, Nevada 89512-1095

For DRI Office Use Only
6235-662-6038-7812

Mileage Log

[redacted]

Vehicle Information

Vehicle Number	Office Location/Number	Month/Year	Vehicle Coordinator
F150 #2 - 1FTRX14W26KD28668	San Diego/1044	Sept. 2008	

Instructions

Print a copy of this form to be kept in the vehicle and used to record mileage per trip. Submit at the end of month to the local Accounts Payable (AP) Department. Attach additional forms as needed for the month.

Beg.: 56,322 End: 57593 = 1,271 miles

Business Mileage Detail

Emp No.	Name	Date	Time Out	Beginning Odometer	Time In	Ending Odometer	Total Miles	Purpose	Project	Phase	Task	Org	FasTrak Toll Y/N
[redacted]													
	Everton & Bennett	8/25	0400	56316	1400	56455	59	Hydro mod *	133904	052	xxx	1044	Y
[redacted]													

Submitted By	Employee Name	Date	Phone Number

* 59 Miles @ $0.585 = 34.52

Mileage Log

[redacted]

Vehicle Information

Vehicle Number	Office Location/Number	Month/Year	Vehicle Coordinator
F150 #1 - 1FTRX14W06KD28667	San Diego/1044	Sept. 2008	

Instructions

Print a copy of this form to be kept in the vehicle and used to record mileage per trip. Submit at the end of month to the local Accounts Payable (AP) Department. Attach additional forms as needed for the month.

Beg.: 43,537 End: 45,689

Business Mileage Detail

Emp No.	Name	Date	Time Out	Beginning Odometer	Time In	Ending Odometer	Total Miles	Purpose	Project	Phase	Task	Org	FasTrak Toll Y/N
[redacted]													
3667	B Bennetts	8/28	0800	43960		44021	61	Hydromod survey	133904	052	xxxx	1044	Y
[redacted]													

Submitted By	Employee Name	Date	Phone Number

61 Miles at $0.585 = 35.69

RECEIVED
SEP - 4 2008
BROWN AND CALDWELL
SAN DIEGO

I-15 FASTRAK® CUSTOMER SERVICE CENTER
9353 CLAIREMONT MESA BLVD
SUITE M
SAN DIEGO, CA 92123-1231

STATEMENT

Date	GL Code	Vendor No. / Project	Phase	Task	Org	Amount
						$
						$
						$
						$
Date		Approved By			Total	$

STATEMENT DATE 09/02/2008
ACCOUNT NUMBER 24462
FOR PERIOD:
08/01/2008 TO 08/31/2008

BROWN AND CALDWELL
9665 CHESAPEAKE DR
SUITE #201
SAN DIEGO CA 92123

ACCOUNT ACTIVITY

DATE/TIME	POSTING DATE	DESCRIPTION	LOCATION	AMOUNT
[redacted]				
				-$ [redacted]

VEHICLE ACTIVITY

[redacted] TAG ID

DATE/TIME	POSTING DATE		LOCATION	AMOUNT
08/28/08 09:05:00	08/30/08 17:33:52	133904.052.* 1044	SOUTH BAY EXPRESSWAY LANE 1	2.00
08/28/08 12:03:36	08/30/08 17:33:53		SOUTH BAY EXPRESSWAY LANE 1	2.00
				$ 4.00

LICENSE PLATE	MAKE	MODEL	COLOR	FACILITY CODE	TAG ID
8F73246	FORD	F 150	SILVER	258987	000484

DATE/TIME	POSTING DATE		LOCATION	AMOUNT
08/25/08 10:25:42	08/26/08 17:35:40	133904.052.* 1044.	SOUTH BAY EXPRESSWAY LANE 1	2.00
08/25/08 12:57:02	08/26/08 17:35:40		SOUTH BAY EXPRESSWAY LANE 1	2.00
				$ 4.00
			TOTAL TOLL ACTIVITY	$ 8.00

ACCOUNT SUMMARY

PREVIOUS BALANCE	CHARGES	PAYMENTS	AVAIL BALANCE	TAG DEPOSITS
$ 61.60	-$ 16.50	$ 0.00	$ 45.10	$ 0.00

DO NOT PAY -- THIS IS NOT A BILL

Please remember to display your transponder when you drive solo on the I-15 FasTrak lanes. Your transponder may not work properly if it is not displayed correctly on the windshield, and you may be subject to citation by the California Highway Patrol (California Vehicle Code Article 13, Section B-23302).

PAGE 1

Brown and Caldwell
Expense Report Detail

Employee: 02341 Nancy E Gardiner
Expense Report: ER00160487, HMP Sizing Tool Lunch
Status: Signed

Date Range: 9/15/2008 - 9/15/2008
Printed: 9/16/2008 02:45 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	MEALSBUS	Business Meals	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Lunch for 17 people attending BMP sizing tool planning meeting for the County of San Diego Hydromodification Management Plan project.								1	9/15/2008	155.63	155.63
										Line Total	155.63	155.63
Total Transactions											155.63	155.63

Total	**155.63**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**155.63**

Audit Trail

Date/Time	Employee	Status/Notes
9/16/2008 2:45:08 PM	02341 Nancy E Gardiner	Signed

Date/Time: 9/16/08 **Optional Signature:** Nancy E Gardiner

LIT'L PEPPER GOURMET D
8911-C COMPLEX DR.
SAN DIEGO, CA
92123
(858) 565-6552

C O P Y
09/15/2008 15:29
ale:

nsaction # 5
d Type: UI
:: **********48
. Date: 05
ry: Manu
Amt: 150.6

Amount 5.00

al Amt: 155.63

ponse 4069

Lunch for 17 people who attended BMP sizing tool planning meeting for San Diego County HMP Project

133904 - 053

Brown and Caldwell
Expense Report Detail

Employee: 03669 Brett J Bennetts
Expense Report: ER00161703, Single NOAA Data Purchase
Status: Approved by Admin (Changed/Signed by Admin)

Date Range: 9/25/2008 - 9/25/2008
Printed: 9/26/2008 11:42 AM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Single purchase of NOAA data for past California precipitation values.								1	9/25/2008	4.00	4.00
										Line Total	4.00	4.00
Total Transactions											4.00	4.00

Total	**4.00**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**4.00**

Audit Trail

Date/Time	Employee	Status/Notes
9/26/2008 11:42:06 AM	02420 Debbie W Morgan	Approved by Admin (Changed/Signed by Admin)
9/26/2008 11:41:49 AM	02420 Debbie W Morgan	Changed/Signed by Admin During Review Note: Hi Brett, Please re-sign your expense report on WEDNESDAY. This is to acknowledge that changes were made on your expense report which includes the following: 1. Changed the category on your expense report. Your expense report will still be paid on this Friday. Please let me know if you have any questions. Thanks Debbie
9/26/2008 11:39:01 AM	02222 Misty A Suposs	Approved by Supervisor
9/26/2008 10:22:23 AM	03669 Brett J Bennetts	Signed

Date/Time:_____ **Optional Signature:**_____

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(http://www1.ncdc.noaa.gov/pub/orders/24137577525850010925080746 39.html)

Your Web Order number is W71619.

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Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	1	$4.00
		Subtotal:	$4.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$4.00

Marketing Code:WEB
Customer Number:58504
Bill To:
Brett Bennetts
Brown and Caldwell
5432 adobe falls road
Apt 8
san diego
CA
92120-
US
8585716713
Master Card
Brett Bennetts
**Only the last 4 digits of the credit card number appear on this page for security reasons.
0110

Brown and Caldwell
Expense Report Detail

.nployee: 03669 Brett J Bennetts
Expense Report: ER00162527, NOAA Hourly Data purchase
Status: Signed

Date Range: 10/8/2008 - 10/8/2008
Printed: 10/13/2008 10:14 AM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US	1	10/8/2008	404.00	404.00
	Description: One hundred and one (101) hourly precipation data sheets from 1973 to 1981 for supplemental support of the HydroMod ACCESS log.											
										Line Total	404.00	404.00
Total Transactions											404.00	404.00

Total	404.00
Less Company Paid	(0.00)
Total Reimbursement (United States Dollar)	404.00

Audit Trail

Date/Time	Employee	Status/Notes
10/13/2008 10:13:24 AM	03669 Brett J Bennetts	Signed

Date/Time:_____ Optional Signature:_____

1

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(http://www1.ncdc.noaa.gov/pub/orders/5514195954588066100808013437.html)

Your Web Order number is W72378.

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Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	101	$404.00
		Subtotal:	$404.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$404.00

Marketing Code:WEB
Customer Number:58504
Bill To:
Brett Bennetts
Brown and Caldwell
5432 adobe falls road
Apt 8
SAN DIEGO
CA
92120-
US
8585716713
Master Card
Brett Bennetts
**Only the last 4 digits of the credit card number appear on this page for security reasons.
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Brown and Caldwell
Expense Report Detail

Employee: 03616 Laura E Lindenmayer
Expense Report: ER00160460, Hydromod data - Lake Wohlford
Status: Signed

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	An
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Purchased data to fill in gaps in historic rainfall record for Lake Wohlford station									9/16/2008	72.00	
										Line Total	72.00	

Total Transactions 72.00

Total
Less Company Paid
Total Reimbursement (United States Dollar)

Audit Trail

Date/Time	Employee	Status/Notes
9/16/2008 1:28:56 PM	03616 Laura E Lindenmayer	Signed

Date/Time:_____ **Optional Signature:**

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(http://www1.ncdc.noaa.gov/pub/orders/20134612505823450916080133 35.html)

Your Web Order number is W71018.

We STRONGLY recommend that you print this page for your records. You will not be receiving a hardcopy receipt for this order.
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Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	18	$72.00
		Subtotal:	$72.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$72.00

Marketing Code:
Customer Number:57293
Bill To:
Laura E Lindenmayer
9665 Chesapeake Dr, Suite 201
SAN DIEGO
CA
92123-
US
8585148822
VISA
Laura E Lindenmayer
4147 **Only the last 4 digits of the credit card number appear on this page for security reasons.
1110

Brown and Caldwell
Expense Report Detail

Employee: 03616 Laura E Lindenmayer
Expense Report: ER00161457, Hydromod data - lower otay
Status: Signed

Date Range: 9/24/2008 - 9/24/2008
Printed: 9/24/2008 05:06 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Purchased historical rainfall data for data gaps pertaining to Lower Otay station								1	9/24/2008	88.00	88.00
										Line Total	88.00	88.00
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Purchased historical rainfall data for data gaps pertaining to Lower Otay station								2	9/24/2008	104.00	104.00
										Line Total	104.00	104.00
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Purchased historical rainfall data for data gaps pertaining to Lower Otay station								3	9/24/2008	68.00	68.00
										Line Total	68.00	68.00
Total Transactions											260.00	260.00

Total	**260.00**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**260.00**

Audit Trail

Date/Time	Employee	Status/Notes
9/24/2008 5:06:05 PM	03616 Laura E Lindenmayer	Signed

Date/Time:_____ **Optional Signature:**_____

①

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(http://www1.ncdc.noaa.gov/pub/orders/291370846458451109240812474 6.html)

Your Web Order number is W71492.

We STRONGLY recommend that you print this page for your records. You will not be receiving a hardcopy receipt for this order.
You will be receiving an email message confirming this order. If you have questions regarding this order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov. **Please refer to the above Web Order number with questions about your order.**

Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	22	$88.00
		Subtotal:	$88.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$88.00

Marketing Code: WEB
Customer Number: 57293
Bill To:
Laura E Lindenmayer
9665 Chesapeake Dr, Suite 201
SAN DIEGO
CA
92123-
US
8585148822
VISA
Laura Lindenmayer
2500
**Only the last 4 digits of the credit card number appear on this page for security reasons.
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Your Web Order number is W71502.

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Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	26	$104.00
		Subtotal:	$104.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$104.00

Marketing Code:WEB
Customer Number:57293
Bill To:
Laura E Lindenmayer
9665 Chesapeake Dr, Suite 201
SAN DIEGO
CA
92123-
US
8585148822
VISA
Laura Lindenmayer
2500
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(http://www1.ncdc.noaa.gov/pub/orders/38137148155846190924080425 44.html)

Your Web Order number is W71521.

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Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	17	$68.00
		Subtotal:	$68.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$68.00

Marketing Code:WEB
Customer Number:57293
Bill To:
Laura E Lindenmayer
9665 Chesapeake Dr, Suite 201
SAN DIEGO
CA
92123-
US
8585148822
VISA
Laura Lindenmayer
2500
**Only the last 4 digits of the credit card number appear on this page for security reasons.
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Page generated: Wednesday, 24-Sep-2008 04:57:06 pm ET

Brown and Caldwell
Expense Report Detail

Employee: 03616 Laura E Lindenmayer
Expense Report: ER00161616, Misc project expenses
Status: Signed

Date Range: 9/25/2008 - 9/25/2008
Printed: 9/25/2008 04:19 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
[redacted]												
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
Description: Purchasing historical precipitation data for Lower Otay station									2	9/25/2008	4.00	4.00
										Line Total	4.00	4.00
Total Transactions											11.70	11.70

Total	**11.70**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**11.70**

Audit Trail

Date/Time	Employee	Status/Notes
9/25/2008 4:18:49 PM	03616 Laura E Lindenmayer	Signed

Date/Time:_____ **Optional Signature:**

(2)

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(http://www1.ncdc.noaa.gov/pub/orders/0013756318584991092508070351.html)

Your Web Order number is W71616.

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Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	1	$4.00
		Subtotal:	$4.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$4.00

Marketing Code:WEB
Customer Number:57293
Bill To:
Laura E Lindenmayer
9665 Chesapeake Dr, Suite 201
SAN DIEGO
CA
92123-
US
8585148822
VISA
Laura Lindenmayer
2500 **Only the last 4 digits of the credit card number appear on this page for security reasons.
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Page generated: Thursday, 25-Sep-2008 07:07:23 pm ET

Brown and Caldwell
Expense Report Detail

Employee: 03616 Laura E Lindenmayer
Expense Report: ER00162016, Hydromod - Fallbrook data
Status: Signed

Date Range: 10/1/2008 - 10/1/2008
Printed: 10/1/2008 04:15 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Purchasing historical rainfall data for the Fallbrook station								1	10/1/2008	12.00	12.00
										Line Total	12.00	12.00
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Purchasing historical rainfall data for the Fallbrook station								2	10/1/2008	52.00	52.00
										Line Total	52.00	52.00
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	053	****	1044	US				
	Description: Purchasing historical rainfall data for the Fallbrook station								3	10/1/2008	8.00	8.00
										Line Total	8.00	8.00
Total Transactions											72.00	72.00

Total	**72.00**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**72.00**

Audit Trail

Date/Time	Employee	Status/Notes
10/1/2008 4:14:57 PM	03616 Laura E Lindenmayer	Signed

Date/Time:_____ **Optional Signature:**_____

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(http://www1.ncdc.noaa.gov/pub/orders/1213936417586380100108052102.html)

Your Web Order number is W71934.

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You will be receiving an email message confirming this order. If you have questions regarding this order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov. Please refer to the above Web Order number with questions about your order.

Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	3	$12.00
		Subtotal:	$12.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$12.00

Marketing Code:WEB
Customer Number:57293
Bill To:
Laura E Lindenmayer
9665 Chesapeake Dr, Suite 201
SAN DIEGO
CA
92123-
US
8585148822
VISA
Laura Lindenmayer
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Your Web Order number is W71939.

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You will be receiving an email message confirming this order. If you have questions regarding this order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov. Please refer to the above Web Order number with questions about your order.

Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	13	$52.00
		Subtotal:	$52.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$52.00

Marketing Code: WEB
Customer Number: 57293
Bill To:
Laura E Lindenmayer
9665 Chesapeake Dr, Suite 201
SAN DIEGO
CA
92123-
US
8585148822
VISA
Laura Lindenmayer
2500 **Only the last 4 digits of the credit card number appear on this page for security reasons.
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3

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(http://www1.ncdc.noaa.gov/pub/orders/4713938029586406100108062113.html)

Your Web Order number is W71942.

We STRONGLY recommend that you print this page for your records. You will not be receiving a hardcopy receipt for this order.
You will be receiving an email message confirming this order. If you have questions regarding this order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov. Please refer to the above Web Order number with questions about your order.

Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	2	$8.00
		Subtotal:	$8.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$8.00

Marketing Code: WEB
Customer Number: 57293
Bill To:
Laura E Lindenmayer
9665 Chesapeake Dr, Suite 201
SAN DIEGO
CA
92123-
US
8585148822
VISA
Laura Lindenmayer
2500
**Only the last 4 digits of the credit card number appear on this page for security reasons.
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Page generated: Wednesday, 1-Oct-2008 06:23:14 pm ET

Brown and Caldwell
Expense Report Detail

Employee: 03669 Brett J Bennetts
Expense Report: ER00163036, SNI Delivery and HyrdoMod Data
Status: Approved by Admin (Changed/Signed by Admin)

Date Range: 10/14/2008 - 10/21/2008
Printed: 10/29/2008 08:08 AM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
[redacted]												
DATAPROC	Outside Svc - Data Proc/Inquiry		133904	SDCo Hydromod Management Plan	054	****	1044	US				
Description: May 1986 Precipitation Hourly Data									4	10/21/2008	4.00	4.00
										Line Total	4.00	4.00
Total Transactions											141.92	141.92

Total	**141.92**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**141.92**

Audit Trail

Date/Time	Employee	Status/Notes
10/29/2008 8:07:32 AM	02420 Debbie W Morgan	Approved by Admin (Changed/Signed by Admin)
10/29/2008 8:07:14 AM	02420 Debbie W Morgan	Changed/Signed by Admin During Review Note: Hi Please re-sign your expense report this afternoon. This is to acknowledge that changes were made on your expense report which includes the following: 1. Changed the category on your expense report. Your expense report will still be paid on this Friday. Please let me know if you have any questions. Thanks Debbie
10/28/2008 6:49:47 PM	04215 Eric S Mosolgo	Approved by Supervisor
10/21/2008 4:11:58 PM	03669 Brett J Bennetts	Signed

Date/Time:_____ **Optional Signature:**_____

#4

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(http://www1.ncdc.noaa.gov/pub/orders/28146831105911731021080118 18.html)

Your Web Order number is W73088.

We STRONGLY recommend that you print this page for your records. You will not be receiving a hardcopy receipt for this order.
You will be receiving an email message confirming this order. If you have questions regarding this order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov. Please refer to the above Web Order number with questions about your order.

Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	1	$4.00
		Subtotal:	$4.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$4.00

Marketing Code:
Customer Number:58504
Bill To:
Brett Bennetts
Brown and Caldwell
5432 adobe falls road
Apt 8
SAN DIEGO
CA
92120-
US
6195821372
Master Card
Brett Bennetts
**Only the last 4 digits of the credit card number appear on this page for security reasons.
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Page generated: Tuesday, 21-Oct-2008 01:22:01 pm ET

Brown and Caldwell
Expense Report Detail

Employee: 03669 Brett J Bennetts
Expense Report: ER00163088, NOAA Data Request for San Vicente
Status: Signed

Date Range: 10/22/2008 - 10/22/2008
Printed: 10/22/2008 03:28 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	054	****	1044	US				
	Description: Thirteen (13) requests for Hourly Precipitation Data from NOAA at $4 a request								1	10/22/2008	52.00	52.00
										Line Total	52.00	52.00
Total Transactions											52.00	52.00

Total	**52.00**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**52.00**

Audit Trail

Date/Time	Employee	Status/Notes
10/22/2008 3:28:39 PM	03669 Brett J Bennetts	Signed

Date/Time:_____ **Optional Signature:**_____

#1

NOAA Satellites and Information
National Environmental Satellite, Data, and Information Service

NOAA National Data Centers
U.S. Department of Commerce

NCDC - NGDC - NODC

New Order - Shopping Cart - Order Status | Help - Contacts - Subscriptions

Thank you for using the NNDC Online Store

**** YOUR ONLINE DATAFILE ORDER IS READY.**

PLEASE CLICK HERE **

Please access this data and download to your workstation ASAP as this URL will be deleted from our server in 14 days.

(http://www1.ncdc.noaa.gov/pub/orders/5014752035591539102208021621.html)

Your Web Order number is W73180.

We STRONGLY recommend that you print this page for your records. You will not be receiving a hardcopy receipt for this order.
You will be receiving an email message confirming this order. If you have questions regarding this order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov. Please refer to the above Web Order number with questions about your order.

Product Name	Online Store Price	Quantity	Subtotal
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	13	$52.00
		Subtotal:	$52.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$52.00

Marketing Code:
Customer Number:58504
Bill To:
Brett Bennetts
Brown and Caldwell
5432 adobe falls road
Apt 8
SAN DIEGO
CA
92120-
US
6195821372
Master Card
Brett Bennetts
3336 **Only the last 4 digits of the credit card number appear on this page for security reasons.
0110

Privacy Policy USA.gov Disclaimer

If you have questions or comments, please email our support team, or call 828-271-4800.
Page generated: Wednesday, 22-Oct-2008 02:35:03 pm ET

Brown and Caldwell
Expense Report Detail

Employee: 03669 Brett J Bennetts
Expense Report: ER00163331, Dry weather flow sampling and NOAA data
Status: Signed

Date Range: 10/23/2008 - 10/27/2008
Printed: 10/27/2008 12:50 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	054	****	1044	US				
	Description: Precipitation Data from NOAA for Santee Station								3	10/27/2008	14.00	14.00
										Line Total	14.00	14.00

[redacted]

Total Transactions [redacted]

Total
Less Company Paid
Total Reimbursement (United States Dollar)

Audit Trail

Date/Time	Employee	Status/Notes
10/27/2008 12:40:44 PM	03669 Brett J Bennetts	Signed

Date/Time:_____ **Optional Signature:**_____

#3

NOAA Satellites and Information
National Environmental Satellite, Data, and Information Service

NOAA National Data Centers
U.S. Department of Commerce

NCDC - NGDC - NODC

New Order - Shopping Cart - Order Status | Help - Contacts - Subscriptions

Thank you for using the NNDC Online Store

**** YOUR ONLINE DATAFILE ORDER IS READY.**

PLEASE CLICK HERE **

Please access this data and download to your workstation ASAP as this URL will be deleted from our server in 14 days.

(http://www1.ncdc.noaa.gov/pub/orders/55150312235927831027080213 47.html)

Your Web Order number is W73430.

We STRONGLY recommend that you print this page for your records. You will not be receiving a hardcopy receipt for this order.
You will be receiving an email message confirming this order. If you have questions regarding this order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov. Please refer to the above Web Order number with questions about your order.

Product Name	Online Store Price	Quantity	Subtotal
TD 3240 - Hourly Precipitation Data CDO01536694 10.00	$10.00	1	$10.00
Hourly Precipitation Data -HPD - Online Individual Copy	$4.00	1	$4.00
		Subtotal:	$14.00
		Service Charge:	$0.00
		Shipping Charge:	$0.00
		Total:	$14.00

Marketing Code:A04
Customer Number:58501
Bill To:
Brett Bennetts
Brown and Caldwell
5432 adobe falls road
Apt 8
SAN DIEGO
CA
92120-
US
6195821372
Master Card
Brett Bennetts
3336 **Only the last 4 digits of the credit card number appear on this page for security reasons.
0110

Privacy Policy USA.gov Disclaimer

If you have questions or comments, please email our support team, or call 828-271-4800.
Page generated: Monday, 27-Oct-2008 02:17:22 pm ET

Brown and Caldwell

Expense Report Detail

Employee: 03648 Janelle L Kaminski
Expense Report: ER00162249, SDCo Hydromod Fallbrook Data Gaps
Status: Signed

Date Range: 10/1/2008 - 10/1/2008
Printed: 10/7/2008 08:52 AM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	054	****	1044	US				
	Description: Fallbrook data gaps missing data.								1	10/1/2008	48.00	48.00
										Line Total	48.00	48.00
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	054	****	1044	US				
	Description: Fallbrook data gaps missing data.								2	10/1/2008	16.00	16.00
										Line Total	16.00	16.00
Total Transactions											64.00	64.00

Total	**64.00**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**64.00**

Audit Trail

Date/Time	Employee	Status/Notes
10/7/2008 8:52:09 AM	03648 Janelle L Kaminski	Signed

Date/Time:_____ **Optional Signature:**_____

Kaminski, Janelle

From: NNDC.Weborder@noaa.gov
Sent: Wednesday, October 01, 2008 4:18 PM
To: Kaminski, Janelle
Subject: Your NNDC Web Order: W71946

(1)

Follow Up Flag: Follow up
Flag Status: Red

Thank you for your online order from NOAA National Data Centers.
Please read the summary below of your order information.
If you have questions/problems with your order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov

Hourly Precipitation Data -HPD - Online Individual Copy $4.00 12 $48.00

Subtotal:$ 48.00

Service Charge:$ 0.00
Non-US Handling Charge:$ 0.00
Shipping Charge:$ 0.00
Total:$ 48.00
Shipped via: FTP/Online
****

You have ordered online data and this can be retrieved from the following URL:

http://www1.ncdc.noaa.gov/pub/orders/29139387085864141001080701 49.html

We STRONGLY recommend that you copy/paste this URL to your browser to avoid typing mistakes.

You may also bookmark/Add to Favorites this URL to return to this order in the future, however, please download the data ASAP as this URL will be removed from our server in 14 days.

If you have problems accessing your data, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov.

If you ordered items that need to be shipped such as CD-ROMs, hardcopy publications, slide sets, or posters and these are shipped via standard mail, you can expect to receive these within 10 working days.
You may check the shipping status of your order via the internet by accessing http://ols.nndc.noaa.gov/plolstore/plsql/ols_orderstatus.getordnum

****
Email Address: jkaminski@brwncald.com
Marketing Code:WEB

Bill To:
Janelle L Kaminski
Brown and Caldwell
9665 Chesapeake Drive
Suite 201
San Diego
CA
92123-
US

Ship To (only used for items being shipped such as CD-ROMs, slide sets, etc:)
Janelle L Kaminski
Brown and Caldwell
9665 Chesapeake Drive
Suite 201

San Diego
CA
92123-
US
8585148822

Method of Payment:VISA

Kaminski, Janelle

From: NNDC.Weborder@noaa.gov
Sent: Wednesday, October 01, 2008 6:18 PM
To: Kaminski, Janelle
Subject: Your NNDC Web Order: W71948

(2)

Follow Up Flag: Follow up
Flag Status: Red

Thank you for your online order from NOAA National Data Centers.
Please read the summary below of your order information.
If you have questions/problems with your order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov

Hourly Precipitation Data -HPD - Online Individual Copy $4.00 4 $16.00

Subtotal:$ 16.00

Service Charge:$ 0.00
Non-US Handling Charge:$ 0.00
Shipping Charge:$ 0.00
Total:$ 16.00
Shipped via: FTP/Online
****

You have ordered online data and this can be retrieved from the following URL:

http://www1.ncdc.noaa.gov/pub/orders/46139401055864301001080914 19.html

We STRONGLY recommend that you copy/paste this URL to your browser to avoid typing mistakes.

You may also bookmark/Add to Favorites this URL to return to this order in the future, however, please download the data ASAP as this URL will be removed from our server in 14 days.

If you have problems accessing your data, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov.

If you ordered items that need to be shipped such as CD-ROMs, hardcopy publications, slide sets, or posters and these are shipped via standard mail, you can expect to receive these within 10 working days.
You may check the shipping status of your order via the internet by accessing http://ols.nndc.noaa.gov/plolstore/plsql/ols_orderstatus.getordnum

****
Email Address: jkaminski@brwncald.com
Marketing Code:WEB

Bill To:
Janelle L Kaminski
Brown and Caldwell
9665 Chesapeake Drive
Suite 201
SAN DIEGO
CA
92123-
US

Ship To (only used for items being shipped such as CD-ROMs, slide sets, etc:) Janelle L
Kaminski Brown and Caldwell
9665 Chesapeake Drive
Suite 201

SAN DIEGO
CA
92123-
US
8585148822

Method of Payment:VISA

Brown and Caldwell
Expense Report Detail

Employee: 03648 Janelle L Kaminski
Expense Report: ER00162474, Hydromod Escondido Rain Data
Status: Signed

Date Range: 10/7/2008 - 10/7/2008
Printed: 10/10/2008 02:27 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	054	****	1044	US				
	Description: Missing rain gauge data for Escondido station.								1	10/7/2008	64.00	64.00
										Line Total	64.00	64.00
	DATAPROC	Outside Svc - Data Proc/Inquiry	133904	SDCo Hydromod Management Plan	054	****	1044	US				
	Description: Missing rain gauge data for Escondido station.								2	10/7/2008	4.00	4.00
										Line Total	4.00	4.00
Total Transactions											68.00	68.00

Total	**68.00**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**68.00**

Audit Trail

Date/Time	Employee	Status/Notes
10/10/2008 2:27:48 PM	03648 Janelle L Kaminski	Signed

Date/Time:_____ **Optional Signature:**_____

Kaminski, Janelle

From: NNDC.Weborder@noaa.gov
Sent: Tuesday, October 07, 2008 3:07 PM
To: Kaminski, Janelle
Subject: Your NNDC Web Order: W72288

(2)

Thank you for your online order from NOAA National Data Centers.
Please read the summary below of your order information.
If you have questions/problems with your order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov

Hourly Precipitation Data -HPD - Online Individual Copy $4.00 1 $4.00

Subtotal:$ 4.00

Service Charge:$ 0.00
Non-US Handling Charge:$ 0.00
Shipping Charge:$ 0.00
Total:$ 4.00
Shipped via: FTP/Online
****

You have ordered online data and this can be retrieved from the following URL:

http://www1.ncdc.noaa.gov/pub/orders/08141552775878231007080604 25.html

We STRONGLY recommend that you copy/paste this URL to your browser to avoid typing mistakes.

You may also bookmark/Add to Favorites this URL to return to this order in the future, however, please download the data ASAP as this URL will be removed from our server in 14 days.

If you have problems accessing your data, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov.

If you ordered items that need to be shipped such as CD-ROMs, hardcopy publications, slide sets, or posters and these are shipped via standard mail, you can expect to receive these within 10 working days.
You may check the shipping status of your order via the internet by accessing http://ols.nndc.noaa.gov/plolstore/plsql/ols_orderstatus.getordnum

****
Email Address: jkaminski@brwncald.com
Marketing Code:WEB

Bill To:
Janelle L Kaminski
Brown and Caldwell
9665 Chesapeake Drive
Suite 201
SAN DIEGO
CA
92123-
US

Ship To (only used for items being shipped such as CD-ROMs, slide sets, etc:) Janelle L

Kaminski, Janelle

From: NNDC.Weborder@noaa.gov
Sent: Tuesday, October 07, 2008 9:56 AM
To: Kaminski, Janelle
Subject: Your NNDC Web Order: W72254

1

Thank you for your online order from NOAA National Data Centers.
Please read the summary below of your order information.
If you have questions/problems with your order, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov

Hourly Precipitation Data -HPD - Online Individual Copy $4.00 16 $64.00

Subtotal:$ 64.00

Service Charge:$ 0.00
Non-US Handling Charge:$ 0.00
Shipping Charge:$ 0.00
Total:$ 64.00
Shipped via: FTP/Online
****

You have ordered online data and this can be retrieved from the following URL:

http://www1.ncdc.noaa.gov/pub/orders/32141328455876791007081225 26.html

We STRONGLY recommend that you copy/paste this URL to your browser to avoid typing mistakes.

You may also bookmark/Add to Favorites this URL to return to this order in the future, however, please download the data ASAP as this URL will be removed from our server in 14 days.

If you have problems accessing your data, please call our customer support at (828) 271-4800 or email to nndc.weborder@noaa.gov.

If you ordered items that need to be shipped such as CD-ROMs, hardcopy publications, slide sets, or posters and these are shipped via standard mail, you can expect to receive these within 10 working days.
You may check the shipping status of your order via the internet by accessing http://ols.nndc.noaa.gov/plolstore/plsql/ols_orderstatus.getordnum

****
Email Address: jkaminski@brwncald.com
Marketing Code:WEB

Bill To:
Janelle L Kaminski
Brown and Caldwell
9665 Chesapeake Drive
Suite 201
SAN DIEGO
CA
92123-
US

Ship To (only used for items being shipped such as CD-ROMs, slide sets, etc:) Janelle L

BROWN AND CALDWELL

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44107676

Date : July 28, 2009

Attention: Sara Agahi, Project Manager

Subject : SDCo Hydromod Management Plan

Billing Period : March 27, 2009 through July 09, 2009

Progress Billing No : 13

Reference : Authorization Dated : 9/6/2007

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

Michael Nienberg, Vice President

Contact : Nancy E Gardiner, PM

Invoiced By : Susan E Pantig

pay $102,053.42 see p.5

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

520444
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

08/04/09
DATE

PROJECT MANAGER

8/4/09
DATE

DPW MANAGER

006 -- Stakeholder Meetings/Coord

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Andrew Baldwin	3.00	$ 192.40	577.20
Senior Technical Expert			
Nancy E Gardiner	11.50	$ 192.40	2,212.60
Senior Technical Expert			
Eric S Mosolgo	7.50	$ 192.40	1,443.00
Sub-Total Labor	22.00		$ 4,232.80
Total Labor			**$ 4,232.80**
Total : 006 -- Stakeholder Meetings/Coord			**$ 4,232.80**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Hydromodification Management & SUSMP Updates
Brown & Caldwell Contract 520444

Total Contract Amount: 1,000,000

	DATE	INVOICED TOTAL	Remaining in budget	
NTP, Task Order 1	9/12/2007			
Invoice 4467498	11/20/2007	$12,038.04	$ 987,961.96	
Invoice 4468275	12/4/2007	$15,526.05	$ 972,435.91	
Invoice 4474911	3/13/2008	$20,296.76	$ 952,139.15	
Invoice 4475567	3/27/2008	$19,850.36	$ 932,288.79	
Invoice 4476943	4/15/2008	$7,302.52	$ 924,986.27	
Invoice 4480531	6/3/2008	$25,213.48	$ 899,772.79	
invoice 4482536	7/7/2008	$35,218.93	$ 864,553.86	
invoice 4489670	10/10/2008	$152,268.58	$ 712,285.28	
Invoice 4493379	12/8/2008	$20,786.17	$ 691,499.11	
Invoice 4496775	2/3/2009	$70,727.58	$ 620,771.53	
Invoice 44101086	4/13/2009	$ 167,592.48	$ 453,179.05	pending receipt of PWA deliverables 6/9/09; submitted 6/10
Invoice 44107676	7/28/2009	$ 102,053.42	$ 351,125.63	

TOTAL $ 648,874.37

contract term: 9/6/07 through 6/30/12

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44107676

Date : July 28, 2009

Attention: Sara Agahi, Project Manager

041 -- Update Model SUSMP - 2

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	2.00	$ 192.40	384.80
Asst. Engineering Scientist			
Laura E Carpenter	1.00	$ 97.76	97.76
Technical Writer			
Dorothy A Norton	20.00	$ 91.52	1,830.40
Sub-Total Labor	23.00		$ 2,312.96
Total Labor			**$ 2,312.96**

Total : 041 -- Update Model SUSMP - 2 **$ 2,312.96**

051 -- Flow Threasholds/Eval. Strategy

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Project Manager			
Nancy E Gardiner	9.00	$ 180.96	1,628.64
Sub-Total Labor	9.00		$ 1,628.64
Total Labor			**$ 1,628.64**

Total : 051 -- Flow Threasholds/Eval. Strategy **$ 1,628.64**

053 -- Develop BMP Modeling Appraoch

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Engineering Scientist			
Anthony M Dubin	1.00	$ 131.56	131.56

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44107676

Date : July 28, 2009

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Eric S Mosolgo	38.00	$ 192.40	7,311.20
Sub-Total Labor	39.00		$ 7,442.76
Total Labor			**$ 7,442.76**
Total : 053 -- Develop BMP Modeling Appraoch			**$ 7,442.76**

054 -- Add'l Funding for Rain Gauge Task

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Brett J Bennetts	7.00	$ 97.76	684.32
Project Assistant			
Janelle L Kaminski	0.25	$ 83.20	20.80
Sub-Total Labor	7.25		$ 705.12
Total Labor			**$ 705.12**
Total : 054 -- Add'l Funding for Rain Gauge Task			**$ 705.12**

056 -- Flow Threashold Alt Analysis

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Engineering Scientist			
Anthony M Dubin	29.00	$ 131.56	3,815.24
Project Assistant			
Janelle L Kaminski	1.25	$ 83.20	104.00
Engineering Scientist			
Robin J Lee	1.00	$ 116.48	116.48

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44107676

Date : July 28, 2009

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Eric S Mosolgo	21.00	$ 192.40	4,040.40
Sub-Total Labor	52.25		$ 8,076.12
Total Labor			**$ 8,076.12**

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Subconsultants	
O/S CONSULT-OTHER ALLOW	
PHILIP WILLIAMS & ASSOC. INC	14,229.04
Total Subconsultants	**$ 14,229.04**
Other Direct Costs	
AIRFARE	
Anthony M Dubin	543.80
RENTAL CAR	
Anthony M Dubin	74.32
GASOLINE	
Anthony M Dubin	6.00
TAXI & OTHER TRANSPORTATION	
Anthony M Dubin	55.00
Total Other Direct Costs	**$ 679.12**
Total Regular Expenses	**$ 14,908.16**
Total Expenses	**$ 14,908.16**
Total : 056 -- Flow Threashold Alt Analysis	**$ 22,984.28**

057 -- Draft Final HMP

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44107676

Date : July 28, 2009

Attention: **Sara Agahi, Project Manager**

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Engineering Scientist			
Anthony M Dubin	13.00	$ 131.56	1,710.28
Project Manager			
Nancy E Gardiner	24.00	$ 180.96	4,343.04
Senior Technical Expert			
Nancy E Gardiner	23.00	$ 192.40	4,425.20
Project Assistant			
Janelle L Kaminski	4.25	$ 83.20	353.60
Asst. Engineering Scientist			
Laura E Carpenter	5.00	$ 97.76	488.80
Senior Technical Expert			
Eric S Mosolgo	212.00	$ 192.40	40,788.80
Technical Writer			
Dorothy A Norton	5.75	$ 91.52	526.24
Sub-Total Labor	287.00		$ 52,635.96
Total Labor			**$ 52,635.96**

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Subconsultants	
O/S CONSULT-OTHER ALLOW	
DAN CLOAK ENVIRONMENTAL CONSULTING	10,110.90
Total Subconsultants	**$ 10,110.90**
Total Regular Expenses	**$ 10,110.90**
Total Expenses	**$ 10,110.90**
Total : 057 -- Draft Final HMP	**$ 62,746.86**
Amount Due this Invoice	**$ 102,053.42**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44107676

Date : July 28, 2009

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001	-- Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002	-- WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004	-- SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006	-- Stakeholder Meetings/Coord	$ 38,723.26	$ 4,232.80	$ 29,134.01	$ 33,366.81	$ 5,356.45
010	-- Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,780.57	$ 21,780.57	$ (21,780.57)
011	-- Contingency	$ 10,000.00	$ 0.00	$ 10,003.36	$ 10,003.36	$ (3.36)
041	-- Update Model SUSMP - 2	$ 169,062.28	$ 2,312.96	$ 110,251.29	$ 112,564.25	$ 56,498.03
051	-- Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 1,628.64	$ 104,272.27	$ 105,900.91	$ (13,795.31)
052	-- Select HSPF Modeling Parameters	$ 50,638.00	$ 0.00	$ 50,126.62	$ 50,126.62	$ 511.38
053	-- Develop BMP Modeling Appraoch	$ 80,678.00	$ 7,442.76	$ 98,523.68	$ 105,966.44	$ (25,288.44)
054	-- Add'l Funding for Rain Gauge Task	$ 48,641.00	$ 705.12	$ 93,091.78	$ 93,796.90	$ (45,155.90)
055	-- Watershed Modeling	$ 91,012.00	$ 0.00	$ 80,582.40	$ 80,582.40	$ 10,429.60
056	-- Flow Threashold Alt Analysis	$ 35,817.00	$ 22,984.28	$ 0.00	$ 22,984.28	$ 12,832.72
057	-- Draft Final HMP	$ 66,511.00	$ 62,746.86	$ 0.00	$ 62,746.86	$ 3,764.14
		$ 751,233.34	**$ 102,053.42**	**$ 644,498.70**	**$ 746,552.12**	**$ 4,681.22**

Total Paid To Date : **$ (476,906.22)**

Balance Outstanding : **$ 269,645.90**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Invoice

PO No 2058		Vendor No: 64339			SLB	
PO Ln	G/L Code	Project	Phase	Task	Qty	Amount
7	51089	133904	056	***	1044	$14,229.04
						$
						$
						$
Date 6/9/09		Approved By Wanda Yardi			Total May 19, 2009 $ 14,229.04	

PWA
ENVIRONMENTAL HYDROLOGY

Project No: 001915.00
Invoice No: 409049
$14,229.04

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from March 28, 2009 to May 1, 2009

Total this Project **$0.00**

Project 001915.04 San Diego Hydromod - Authorization 4
Insert client requested information

Task 001 D50 Alternative Threshold
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	7.00	182.00	1,274.00	
Totals	7.00		1,274.00	
Total Labor				**1,274.00**
		Total this Phase		**$1,274.00**

RECEIVED

Task 002 Minimum Flow Alternative Threshold
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	12.00	182.00	2,184.00	
Collison, Andrew	4.00	182.00	728.00	
Asst. Engineering Scientist				
White, Jason	33.50	94.00	3,149.00	
Wickland, Matthew	2.00	94.00	188.00	
Totals	51.50		6,249.00	
Total Labor				**6,249.00**
		Total this Phase		**$6,249.00**

Task 003 Watershed Position Alternative Threshold
Professional Personnel

	Hours	Rate	Amount

Project	001915.00	San Diego Hydromod		Invoice 409049	
Principal Engineer / Scientist					
Beeman, Christie		6.00	182.00	1,092.00	
Asst. Engineering Scientist					
Wickland, Matthew		2.50	94.00	235.00	
Totals		8.50		1,327.00	
Total Labor					**1,327.00**
			Total this Phase		**$1,327.00**

Task	004	TAC and RWQCB meetings			
Professional Personnel					
		Hours	**Rate**	**Amount**	
Principal Engineer / Scientist					
Beeman, Christie		16.00	182.00	2,912.00	
Collison, Andrew		8.00	182.00	1,456.00	
Totals		24.00		4,368.00	
Total Labor					**4,368.00**
			Total this Phase		**$4,368.00**

Task	600	PWA Expenses			
Reimbursable Expenses					
Travel				1,011.04	
Total Reimbursables			**1.0 times**	**1,011.04**	**1,011.04**
			Total this Phase		**$1,011.04**
			Total this Project		**$14,229.04**
			Total this Invoice		**$14,229.04**

Sandy McFadden
Director of Finance and Administration

etailed Expense Report

Wednesday, May 13, 2009

Philip Williams & Associates, Ltd.

11:59:13 AM

Employee 00202 **Collison, Andrew**

POSTED

Submitted

Signed:

Approved

Profit Center: CA

Expense San Diego Hydromod **Report Date:** 5/13/09

Date	Category	Description	Project	Task	Bill	Account	Amount
4/23/09	Travel	Travel to RWQCB meeting	001915.04 San Diego Hydromod - Authorization 4	600	X	521.00	319.20
4/23/09	Travel	Taxi from SD to meeting	001915.04 San Diego Hydromod - Authorization 4	600	X	521.00	50.00
4/23/09	Travel	Oakland airport parking	001915.04 San Diego Hydromod - Authorization 4	600	X	521.00	32.00
4/23/09	Mileage	travel to airport	001915.04 San Diego Hydromod - Authorization 4	600	X	521.00	14.30
Business Reason: travel to RWQCB meeting			Travel From/To: Home to and from Oakland airport		Travel:	26.00 mi @ .550	

Total Expenses	415.50
Amount Advanced	
Total Due	415.50

v5.0.15 (A.COLLISON) -

Andy Collison San Diego AMP

From: Southwest Airlines [SouthwestAirlines@mail.southwest.com]
Sent: Tuesday, April 21, 2009 5:56 PM
To: Andy Collison
Subject: Ticketless Confirmation - COLLISON/ANDREW - JDQOWG

SOUTHWEST.COM

AVIS Save up to 40% off plus double credit on Avis rentals! To redeem, enter K024710 in the Corp/ID field.

Receipt and Itinerary as of 04/21/09 7:56 PM

Confirmation Number
JDQOWG

Sit Where You Like

Confirmation Date: 04/21/09
Received: WN/ANDREW COLLISON BY ICBM

Be prepared when you get there!
Consult Travel Guide for relevant tips from real travelers.

Passenger Information

Passenger Name	Account Number	Ticket#	Expiration[1]
COLLISON/ANDREW	00001050367511	5262125216204	04/21/10

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Itinerary

Date	Flight	Routing Details
Thu Apr 23	1034	Depart OAKLAND CA (OAK) at 7:25 AM Arrive in SAN DIEGO CA (SAN) at 8:50 AM
Thu Apr 23	0131	Depart SAN DIEGO CA (SAN) at 5:30 PM Arrive in OAKLAND CA (OAK) at 7:00 PM

Cost and Payment Summary

Air	$ 277.20
Tax	$ 28.00
PFC Fee	$ 9.00
Security Fee	$ 5.00
Total Payment:	**319.20**

Current payment(s)
04/21/09 Visa XXXXXXXXXXXX0402 $319.20

Fare Rule(s)

All travel involving funds from this Confirmation Number must be completed by the expiration date. Any change to this itinerary may result in a fare increase.

Fare Calculation:

5/13/2009

OaklandInternational

We look forward to serving you again soon.
Enroll online at
to receive information about on-airport parking
including special offers.

A22741

PORT OF OAKLAND

SOUTHLAND PRINTING
SHREVEPORT, LA.

TAXICAB RECEIPT

THE SUM OF 50 DATE _____

FROM SAN TO _____

CITY _____

For questions, comments or concerns, contact the Ground Transportation Department.
619.400.2685

For taxicab dispatch, please call the cab company directly.

Detailed Expense Report

Thursday, April 23, 2009

Philip Williams & Associates, Ltd.

1:04:10 PM

Employee 00133 Beeman, Christie

Signed _____

Approved _____

Submitted

Profit Center: CA

Expense San Diego Hydromod **Report Date:** 4/23/09

Date	Category	Description	Project	Task	Bill	Account	Amount
4/21/09	Travel	air fare for TAC meeting	001915.04 San Diego Hydromod - Authorization 4	600	X	521.00	139.20
Business Reason: San Diego HMP TAC meeting							
4/21/09	Travel	taxi to/from SAN	001915.04 San Diego Hydromod - Authorization 4	600	X	521.00	86.00
Business Reason: San Diego HMP TAC meeting							
4/21/09	Meals	lunch	001915.04 San Diego Hydromod - Authorization 4	600	X	521.01	14.84
Business Reason: San Diego HMP TAC meeting							
4/21/09	Travel	parking at OAK	001915.04 San Diego Hydromod - Authorization 4	600	X	521.00	22.00
Business Reason: San Diego HMP TAC meeting							
4/21/09	Mileage	mileage to/from OAK	001915.04 San Diego Hydromod - Authorization 4	600	X	521.00	14.30
Business Reason: San Diego HMP TAC meeting			Travel From/To: home/OAK/home		Travel:	26.00 mi @ .550	

Total Expenses	276.34
Amount Advanced	
Total Due	276.34

v5.0.15 (C.BEEMAN) -

Christie Beeman

From: Southwest Airlines [SouthwestAirlines@mail.southwest.com]
Sent: Monday, April 13, 2009 3:34 PM
To: Christie Beeman
Subject: Ticketless Confirmation - BEEMAN/CHRISTIE - JX6EH5

SOUTHWEST.COM

AVIS Save up to 40% off plus double credit on Avis rentals! To redeem, enter K024710 in the Corp/ID field.

Receipt and Itinerary as of 04/13/09 5:34 PM

Confirmation Number
JX6EH5

Sit Where You Like

Confirmation Date: 04/13/09
Received: WN/CHRISTIE BEEMAN BY ICBM

Be prepared when you get there!
Consult Travel Guide for relevant tips from real travelers.

Passenger Information

Passenger Name	Account Number	Ticket#	Expiration[1]
BEEMAN/CHRISTIE	00000031448325	5262123470139	04/13/10

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Itinerary

Date	Flight	Routing Details
Tue Apr 21	0692	Depart OAKLAND CA (OAK) at 9:55 AM Arrive in SAN DIEGO CA (SAN) at 11:20 AM
Tue Apr 21	0131	Depart SAN DIEGO CA (SAN) at 5:30 PM Arrive in OAKLAND CA (OAK) at 7:00 PM

Cost and Payment Summary

Air	$ 109.76
Tax	$ 15.44
PFC Fee	$ 9.00
Security Fee	$ 5.00
Total Payment:	**139.20**

Current payment(s)
04/13/09 Mastercard XXXXXXXXXXXX0266 $139.20

Fare Rule(s)

NON REFUNDABLE/ STANDBY REQ UPGRADE TO YL. All travel involving funds from this Confirmation Number must be completed by the expiration date. Any change to this itinerary may result in a fare increase.

Fare Calculation:

4/23/2009

OAKLAND INT'L. AIRPORT

1 Airport Drive
Oakland, CA 94621
Parking Facility
Customer Service Number:
1 510 563 3200

Card Account : XXXXXXXXXXXX7981
Card Type : Master Card
Authorization Code : 095468

Cashier : 0 Seq # 1431
Ent : 08:54 04/21/09 Lane 23
Exit: 18:32 04/21/09 Lane 34
Duration: 0D(s) 9H(s) 38M(s)
Rate Code: 74

FEE	$	22.00
AMOUNT TEND	$	22.00
CASH	$	0.00
CREDIT CARD	$	22.00
CHECK	$	0.00
CHANGE CALC	$	0.00
F		22.00

****
Organic To Go Cafe - San Diego Airport

DATE: 04/21/09 (12:03 PM)
SERVER: 17 - Janette Gonzalez
ORDER: 6693

TAXABLE:	11.24
FOOD TAX:	0.98
TOTAL:	12.22
CASH	15.22
CHANGE DUE:	3.00

****

San Diego Cab Dispatch **Fare Receipt**

Date 4/21 Fare $ 41

Passenger Name _____

From SAN

To City of SD stormwater

Cab No _____ Driver Name _____

THANK YOU FOR CALLING AT (619) 226-TAXI (8294)

HMSHOST
STARBUCKS COFFEE F9
OAKLAND INTERNATIONAL AIRPORT

8401 DEBRA

CHK 4541 APR21'09 9:12AM

1 VNTI HOT TEA V	2.39
SUBTOTAL	2.39
TAX	0.23
AMOUNT	2.62
CASH	20.00
CHANGE	17.38

San Diego Cab Dispatch **(619) 226 Taxi (8294)**
(858) 485- 5544
1- 800-368-2947

Fare Receipt

Date: 4/21/09 Fare $: 45.00

From: City of SD stormwater

To: SAN

Cab No: _____ Driver Name: _____

24 HRS service . Advance Reservations

www.sandiegocab.net Thank you for using our service

Detailed Expense Report

Tuesday, May 19, 2009

Philip Williams & Associates, Ltd.

3:41:26 PM

Employee **00202** **Collison, Andrew**

Signed _____

Posted

Approved _____

Profit Center: **CA**

Expense **Feb marketing and travel** **Report Date: 2/26/09**

Date	Category	Description	Project	Task	Bill	Account	Amount
[redacted]							
[redacted]							
2/12/09	Travel	San Diego HMP TAC meeting	001915.03 San Diego Hydromod	001	X	521.00	319.20
Business Reason: Flight from oakland to San Diego to attend TAC meeting							
[redacted]							
[redacted]							

Total Expenses	448.40
Amount Advanced	
Total Due	448.40

v5.0.15 (C.REYES) -

for #191503
San Diego trip

Andy Collison

From: Southwest Airlines [SouthwestAirlines@mail.southwest.com]
Sent: Wednesday, February 11, 2009 1:19 PM
To: Andy Collison
Subject: Ticketless Confirmation - COLLISON/ANDREW - JFZ4SL

SOUTHWEST.COM

AVIS Save up to 40% off plus double credit on Avis rentals! To redeem, enter K024710 in the CorpID field.

Receipt and Itinerary as of 02/11/09 3:18 PM

Confirmation Number
JFZ4SL

Sit Where You Like

Confirmation Date: 02/09/09
Received: ANDREW C

Passenger Information

Passenger Name	Account Number	Ticket#	Expiration[1]
COLLISON/ANDREW	00001050367511	526-8521924462-6	02/09/10

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Itinerary

Date	Flight	Routing Details
Thu Feb 12	258	Depart OAKLAND CA (OAK) at 9:00 AM Arrive in SAN DIEGO CA (SAN) at 10:30 AM
Thu Feb 12	665	Depart SAN DIEGO CA (SAN) at 5:10 PM Arrive in OAKLAND CA (OAK) at 6:45 PM

Cost and Payment Summary

Air	$ 277.20
Tax	$ 28.00
PFC Fee	$ 9.00
Security Fee	$ 5.00

Total Payment: $319.20
Prior payment(s)
Tkls funds applied from Conf#JTK573 ($0.00 remaining) $319.20

Fare Rule(s)
Valid only on Southwest Airlines. All travel involving funds from this Confirmation Number must be completed by the expiration date. Any change to this itinerary may result in a fare increase.

Fare Calculation:

ADT- 1 OAKWNSAN YL 149.00 SANWNOAK YL 149.00 $298.00 ZPOAK SAN XFOAK4.50 SAN4.50 AYOAK2.50 SAN2.50 $319.20

2/26/2009

Employee: 09181 Anthony M Dubin
Expense Report: ER00175272, CWS and San Diego trip
Status: Signed
Administrative Group: EA012 - EA012 - Hintz - Menicke -McGuire
Supervisor Group: E224 - E224 - Milne - McGuire - McQuarrie

Brown and Caldwell
Expense Report Detail

Date Range: 5/27/2009 - 5/28/2009
Posting Period End Date: 5/28/2009
Printed: 6/2/2009 12:20 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	[redacted]							US				
	[redacted]											
	AIRFARE	Airfare	133904	SDCo Hydromod Management Plan	056	****	1044	US				
	Description: Estimated cost of Portland to San Diego and San Diego to Seattle legs ($490 + tax).								1	5/27/2009	543.80	543.80
										Line Total	543.80	543.80
	[redacted]							US				
	[redacted]											
	[redacted]											
	GAS	Gasoline - Travel	133904	SDCo Hydromod Management Plan	056	****	1044	US	4	5/28/2009	6.00	6.00
										Line Total	6.00	6.00
	RENTALCAR	Rental Car - Travel	133904	SDCo Hydromod Management Plan	056	****	1044	US	5	5/28/2009	74.32	74.32
										Line Total	74.32	74.32
	TAXI	Taxi/Transportation - Travel	133904	SDCo Hydromod Management Plan	056	****	1044	US	6	5/28/2009	55.00	55.00
										Line Total	55.00	55.00

#1

Dubin, Tony

From: Alaska Airlines/Horizon Air [Alaska.IT@alaskaair.com]
Sent: Monday, May 25, 2009 7:15 AM
To: Dubin, Tony
Subject: Confirmation Letter - LAUWKS 05/27/09 - from Alaska Airlines/Horizon Air

If you have trouble viewing this message, click here to request a plain text-only version of this email.

Alaska Airlines / Horizon Air

Home **Reservations** **Deals** **Day of Flight** **Destinations** **Mileage Plan ™** **More...**

Thank You

Confirmation Code: LAUWKS

Below is your booking confirmation. Enjoy your trip.

Flight Information

Flight	Departs	Arrives	Class	Traveler(s)	Seat(s)
Horizon Horizon Air QX2291 Bombardier Q400	Seattle (SEA) Wed, May 27 7:00 am	Portland, OR (PDX) Wed, May 27 7:50 am	Y	Anthony Dubin	13E
Alaska Alaska Airlines AS572 Boeing 737-700	Portland, OR (PDX) Wed, May 27 8:10 pm	San Diego (SAN) Wed, May 27 10:36 pm	B	Anthony Dubin	22B
Alaska Alaska Airlines AS489 Boeing 737-400	San Diego (SAN) Thu, May 28 6:30 pm	Seattle (SEA) Thu, May 28 9:19 pm	B	Anthony Dubin	19E

Fare Summary

Anthony Dubin

Ticket 027-2134127416

Base Fare and Surcharges		$639.06
Taxes and Other Fees		$79.74
	per person total:	$718.80

Total Fare **USD $718.80**

Purchase Information

Mastercard **********3176 held by Anthony M Dubin was charged on 05/25/2009 $718.80

only $543.80 charged to 1339104 County of San Diego

Trip Protection by Access America

Purchase trip protection benefits and travel assistance services for your trip from Access America at 1-800-496-6593. Learn more

Check-In

When traveling on Alaska Airlines or Horizon Air, save time by checking in

Plan Ahead

Special Service Requests

Alaska Airlines and Horizon Air provide a meet and assist service for travelers who need assistance through the airport. Request this service online or over the phone.

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Some of Alaska Airlines flights offer the option to purchase a meal using a credit or debit card.

More Info ›

Reserve your digEplayer now

Baggage

On Alaska Airlines and Horizon

WELCOME

#4

SALES RECEIPT
57 142 736302
SHELL
2521 PACIFIC HIGHW
SAN DIEGO CA 92101
DATE 05 28 09 5:04 PM
INVOICE# 337154
AUTH# 41821P
MASTERCARD
ACCOUNT NUMBER
XXXX XXXX XXXX 3176
DUBIN ANTHONY M

PUMP PRODUCT $ G

PUMP PRODUCT $ G
02 UNLD $2.959
GALLONS FUEL TOTAL

2.027 $ 6.00

THANK YOU
COME BACK SOON

SAN DIEGO-LINDBERGH AP

RR 160074390
ANTHONY
DUBIN

#5

#01

VEHICLE: 01798 / 8199817
08WZA6 LIC: CA 6BRH785
FUEL: 8/8 OUT 8/8 IN
CDP: 15728 -BROWN AND CALDWELL
FF: ZE1
RES: E3923278453 / 000028/ C
COMPLETED BY: 48 / CASDI11
RENTED: SAN DIEGO A/P
RENTAL: 05/27/09 22:00
RETURN: 05/28/09 17:12

PLAN IN: CRL RATE CLASS: C
PLAN OUT: CRL

MILES IN: 25290 TR-X MILES
MILES OUT: 25265 MILES ALLOWED
MILES DRIVEN: 25 MILES CHARGED

DAYS	1 @ $ 50.00 / DAY	$	50.00
SUBTOTAL		T$	50.00
CONCESSION FEE RECOVERY		T$	5.00
CA TOURISM ASSESSMENT		$	1.25
ADDITIONAL CHARGES*		T$	1.30
LDW	INCLUDED IN CRL	RATE	
LIS	DECLINED		
PAI, PEC	DECLINED		
TRANSACTION FEE		$	10.00
ENERGY SURCHARGE		$	1.03
TAX 8.750% ON	57.99	$	5.08
NET DUE		$	74.32
PAID BY	MC	XXXXXXXXXXXXXX3176	

* ADDITIONAL CHARGES
VEHLICFEE $ 1.30 DY

HOW WAS YOUR EXPERIENCE?
WE'D LIKE YOUR FEEDBACK.

1) Call 1-800-278-1595, or
Visit www.HERTZSURVEY.com

2) Enter Access Code: 01170

3) Take Brief 4 Question Survey

THANK YOU FOR RENTING FROM
HERTZ

STITA TAXI
DATE: 26-05-2009
TIME: 22:01
CDT ID: 930
BADGE#: 8383

#6

JOB ID: 0
METER: 1762

DROPOFF: 1009

FARE: 49.00
EXPENSES 1: 1.00 (0)
TIP: 5.00

TOTAL 55.00

FROM SEATAC AIRPORT TO:
Wallingford

STITA TAXI 206.246.9999

Dan Cloak Environmental Consulting

PO No: NONE		Vendor No: 36719		SUB
PO Ln	GL Code	Project / Phase / Task	Org	Amount
	51089	133994 - 057 **	1044	$ 10,110.90
				$
				$
				$
Date 7/16/09		Approved By Nancy E Gardner		Total $ 10,110.90

INVOICE 5-09

2 June 2009

Ms. Nancy Gardiner
Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

Re: County of San Diego

Billing Period: 1 January 2009 – 1 June 2009

- Prepared a 2-page summary of the Model SUSMP
- Compiled and provided MS Word files used in preparation of the Model SUSMP.
- Consulted with PWA staff on flow requirements to include in HMP
- Reviewed NRDC comments on updated Model SUSMP and summarized a possible response in an email
- Provided references to Contra Costa agreements for Operation and Maintenance of Stormwater Facilities
- Prepared for and delivered a presentation at a 28 May workshop
- Prepared for and delivered presentations at a 1 June training session

Labor charges:

Dan Cloak, P.E.	72.75 hours @ $130	$9,457.50

Expenses:

Airfare	1 @ 139.20, 1 @ 306.20	445.40
Taxi	3 @ $40.00	120.00
Mileage	to/from OAK, 2 @ 40 x $0.55	44.00
Parking	at OAK, 2 @ $22.00	44.00
Total Expenses		$653.40
Total Charges		**$10,110.90**

RECEIVED
JUN - 8 2009
BROWN AND CALDWELL

Dan Cloak, P.E.
Principal

Remit to: Dan Cloak Environmental Consulting, 516 Bonnie Drive, El Cerrito, CA 94530

516 Bonnie Drive • El Cerrito, CA 94530 • 510-705-1635 • Dan@DanCloak.com

Dan Cloak

From: Southwest Airlines [SouthwestAirlines@mail.southwest.com]
Sent: Thursday, May 21, 2009 11:53 PM
To: DAN@dancloak.com
Subject: Ticketless Confirmation - CLOAK/DANIEL - JM8NY9

SOUTHWEST.COM

Budget 40% off
To redeem, enter U072732 in the Corp/ID field

Receipt and Itinerary as of 05/22/09 1:53 AM

Confirmation Number
JM8NY9

Confirmation Date: 05/22/09
Received: WN/DAN CLOAK BY ICBM

Be prepared when you get there!
Consult Travel Guide for relevant tips from real travelers.

Passenger Information

Passenger Name	Account Number	Ticket#	Expiration[1]
CLOAK/DANIEL	00000366313264	5262131511609	05/22/10

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Itinerary

Date	Flight	Routing Details
Thu May 28	0980	Depart OAKLAND CA (OAK) at 6:10 AM Arrive in SAN DIEGO CA (SAN) at 7:40 AM
Thu May 28	0275	Depart SAN DIEGO CA (SAN) at 2:25 PM Arrive in OAKLAND CA (OAK) at 3:50 PM

Cost and Payment Summary

Air	$ 109.76
Tax	$ 15.44
PFC Fee	$ 9.00
Security Fee	$ 5.00
Total Payment:	**139.20**

Current payment(s)
05/22/09 Mastercard XXXXXXXXXXXX1697 $139.20

Fare Rules

NON REFUNDABLE/ STANDBY REQ UPGRADE TO YL. All travel involving funds from this Confirmation Number must be completed by the expiration date. Any change to this itinerary may result in a fare increase.

Fare Calculation:

OAK WN SAN54.88T7NR WN OAK54.88T7NR 109.76 END ZPOAKSAN XFOAK4.5SAN4.5 AY5.00$OAK2.50 SAN2.50

Dan Cloak

From: Southwest Airlines [SouthwestAirlines@mail.southwest.com]
Sent: Friday, May 29, 2009 4:50 PM
To: DAN@dancloak.com
Subject: Ticketless Confirmation - CLOAK/DANIEL - JFM38W

SOUTHWEST.COM

Budget 40% off
To redeem, enter U072732 in the Corp/ID field

Receipt and Itinerary as of 05/29/09 6:50 PM

[redacted]

Confirmation Date: 05/29/09
Received: WN/DANIEL CLOAK BY ICBM

Sit Where You Like

Be prepared when you get there!
Consult Travel Guide for relevant tips from real travelers.

Passenger Information

Passenger Name	Account Number	Ticket#	Expiration[1]
CLOAK/DANIEL	00000366313264	5262132922375	05/29/10

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Itinerary

Date	Flight	Routing Details
Mon Jun 01	2273	Depart OAKLAND CA (OAK) at 10:00 AM Arrive in SAN DIEGO CA (SAN) at 11:30 AM
Mon Jun 01	2381	Depart SAN DIEGO CA (SAN) at 5:45 PM Arrive in OAKLAND CA (OAK) at 7:10 PM

Cost and Payment Summary

Air	$ 265.12
Tax	$ 27.08
PFC Fee	$ 9.00
Security Fee	$ 5.00
Total Payment:	**306.20**

Current payment(s)
05/29/09 Mastercard XXXXXXXXXXXX5190 $306.20

Restrictions

NON REFUNDABLE/ STANDBY REQ UPGRADE TO YL. All travel involving funds from this Confirmation Number must be completed by the expiration date. Any change to this itinerary may result in a fare increase.

Fare Calculation:

OAK WN SAN124.65B3NR WN OAK140.47YL 265.12 END ZPOAKSAN XFOAK4.5SAN4.5 AY5.00$OAK2.50 SAN2.50

OAKLAND INT'L AIRPORT

1 Airport Drive
Oakland, CA 94621
Parking Facility
Customer Service Number:
1 510 563 3200

Card Account : XXXXXXXXXXXX1697
Card Type : Master Card
Authorization Code : 028372

Cashier : 142 Seq # 47565
Ent : 05:27 05/28/09 Lane 23
Exit: 15:46 05/28/09 Lane 32
Duration: 0D(s) 10H(s) 19M(s)
Rate Code: 74

FEE	$	22.00
AMOUNT TEND	$	22.00
CASH	$	0.00
CREDIT CARD	$	22.00
CHECK	$	0.00
CHANGE CALC	$	0.00

PAID AT CT $ 22.00
Taxes Included
*** Thank You ***

OAKLAND INT'L AIRPORT

1 Airport Drive
Oakland, CA 94621
Parking Facility
Customer Service Number:
1 510 563 3200

Card Account : XXXXXXXXXXXX5190
Card Type : Master Card
Authorization Code : 104380

Cashier : 0 Seq # 48618
Ent : 09:01 06/01/09 Lane 22
Exit: 19:16 06/01/09 Lane 32
Duration: 0D(s) 10H(s) 15M(s)
Rate Code: 74

FEE	$	22.00
AMOUNT TEND	$	22.00
CASH	$	0.00
CREDIT CARD	$	22.00
CHECK	$	0.00
CHANGE CALC	$	0.00

PAID AT CT $ 22.00
Taxes Included
*** Thank You ***

ORANGE CAB
Radio Service

Company:
Date: Meter $: 36.25 Tip $: 3.75
Driver: Cab #:
From/To: SAN to City of SD MOC
4250 Pacific Hwy., Ste. 207, San Diego, CA 92110
(619) 223-5555
Customer • Verify Cab Number

ORANGE CAB
Radio Service

Company:
Date: 5/3 Meter $: 34.50 Tip $: 5.50
Driver: Cab #:
From/To: SAN to City of SD MOC
4250 Pacific Hwy., Ste. 207, San Diego, CA 92110
(619) 223-5555
Customer • Verify Cab Number

Welcome to San Diego, California, America's Finest

USA CAB LTD

U.S.A 1916
Company Cab#

40.00 6/1/09
Amount Date

Airport claimont mesa
FROM TO

Thank You!

Taxi Cab Dispatch
619.231.1144 RADIO SERVICE

BROWN AND CALDWELL

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44111223

Date : September 21, 2009

Attention: Sara Agahi, Project Manager

Subject : SDCo Hydromod Management Plan

Contact : Nancy E Gardiner, PM

Billing Period : July 10, 2009 through September 05, 2009

Invoiced By : Susan E Pantig

Progress Billing No : 14

Reference : Authorization Dated : 9/6/2007

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

Michael Nienberg, Vice President

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

520444
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

09/28/09
DATE

PROJECT MANAGER

09/30/09
DATE

DPW MANAGER

OK to pay $42,631.76

006 -- Stakeholder Meetings/Coord

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Eric S Mosolgo	34.25	$ 192.40	6,589.70
Sub-Total Labor	34.25		$ 6,589.70
Total Labor			**$ 6,589.70**
Total : 006 -- Stakeholder Meetings/Coord			**$ 6,589.70**

041 -- Update Model SUSMP - 2

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Eric S Mosolgo	0.25	$ 192.40	48.10
Sub-Total Labor	0.25		$ 48.10
Total Labor			**$ 48.10**
Total : 041 -- Update Model SUSMP - 2			**$ 48.10**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44111223

Date : September 21, 2009

Attention: Sara Agahi, Project Manager

054 -- Add'l Funding for Rain Gauge Task

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Brett J Bennetts	15.00	$ 97.76	1,466.40
Sub-Total Labor	15.00		$ 1,466.40
Total Labor			**$ 1,466.40**
Total : 054 -- Add'l Funding for Rain Gauge Task			**$ 1,466.40**

056 -- Flow Threashold Alt Analysis

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Hydrologist			
Anthony M Dubin	9.00	$ 131.56	1,184.04
Sr. Engineering Scientist			
Nathan H Foged	14.50	$ 123.78	1,794.81
Senior Technical Expert			
Eric S Mosolgo	112.00	$ 192.40	21,548.80
Sr. Geographic Info. System Analyst			
Eric A Stiles	4.50	$ 104.00	468.00
Sub-Total Labor	140.00		$ 24,995.65
Total Labor			**$ 24,995.65**
Total : 056 -- Flow Threashold Alt Analysis			**$ 24,995.65**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
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San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44111223

Date : September 21, 2009

Attention: Sara Agahi, Project Manager

057 -- Draft Final HMP

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	7.00	$ 192.40	1,346.80
Project Manager			
Nancy E Gardiner	29.50	$ 180.96	5,338.32
Senior Technical Expert			
Eric S Mosolgo	11.50	$ 192.40	2,212.60
Technical Writer			
Dorothy A Norton	2.75	$ 91.52	251.68
Sr. Engineering Scientist			
Lisa C Skutecki	2.25	$ 123.78	278.51
Project Assistant			
Emma S Surio	1.25	$ 83.20	104.00
Sub-Total Labor	54.25		$ 9,531.91

Total Labor	**$ 9,531.91**
Total : 057 -- Draft Final HMP	**$ 9,531.91**
Amount Due this Invoice	**$ 42,631.76**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44111223

Date : September 21, 2009

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001	-- Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002	-- WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004	-- SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006	-- Stakeholder Meetings/Coord	$ 38,723.26	$ 6,589.70	$ 33,366.81	$ 39,956.51	$ (1,233.25)
010	-- Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,780.57	$ 21,780.57	$ (21,780.57)
011	-- Contingency	$ 10,000.00	$ 0.00	$ 10,003.36	$ 10,003.36	$ (3.36)
041	-- Update Model SUSMP - 2	$ 169,062.28	$ 48.10	$ 112,564.25	$ 112,612.35	$ 56,449.93
051	-- Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 0.00	$ 105,900.91	$ 105,900.91	$ (13,795.31)
052	-- Select HSPF Modeling Parameters	$ 50,638.00	$ 0.00	$ 50,126.62	$ 50,126.62	$ 511.38
053	-- Develop BMP Modeling Appraoch	$ 80,678.00	$ 0.00	$ 105,966.44	$ 105,966.44	$ (25,288.44)
054	-- Add'l Funding for Rain Gauge Task	$ 48,641.00	$ 1,466.40	$ 93,796.90	$ 95,263.30	$ (46,622.30)
055	-- Watershed Modeling	$ 91,012.00	$ 0.00	$ 80,582.40	$ 80,582.40	$ 10,429.60
056	-- Flow Threashold Alt Analysis	$ 35,817.00	$ 24,995.65	$ 22,984.28	$ 47,979.93	$ (12,162.93)
057	-- Draft Final HMP	$ 66,511.00	$ 9,531.91	$ 62,746.86	$ 72,278.77	$ (5,767.77)
058	-- Final HMP	$ 139,414.00	$ 0.00	$ 0.00	$ 0.00	$ 139,414.00
		$ 890,647.34	**$ 42,631.76**	**$ 746,552.12**	**$ 789,183.88**	**$ 101,463.46**

Total Paid To Date : **$ (746,552.12)**

Balance Outstanding : **$ 42,631.76**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Billing Detail - Items through 9/5/2009

Brown and Caldwell

Project : 133904 - SDCo Hydromod Management Plan

Phase : 006 – Stakeholder Meetings/Coord

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	7/13/2009	7/16/2009	1.00	192.40	192.4(
San Diego HMP - weekly coordination meeting											
			****	1044	112	****	7/15/2009	7/16/2009	1.00	192.40	192.4(
Coordination with PWA regarding remaining scope items; preparation of TAC meeting agenda											
			****	1044	112	****	7/16/2009	7/16/2009	2.50	192.40	481.0(
Assembly to agenda items for July 29th TAC meeting											
			****	1044	112	****	7/20/2009	7/23/2009	1.50	192.40	288.6(
Attendance at Land Development Workgroup meeting											
			****	1044	112	****	7/24/2009	7/30/2009	2.00	192.40	384.8(
San Diego HMP - weekly progress meeting at County of San Diego; preparation and delivery of review materials to Mikhail Ogawa in preparation for San Diego HMP TAC meeting											
			****	1044	112	****	7/27/2009	7/30/2009	1.00	192.40	192.4(
san Diego HMP - Prepare response to comments submitted by Contech											
			****	1044	112	****	7/29/2009	7/30/2009	6.00	192.40	1,154.4(
Preparation of presentation for Technical Advisory Committee meeting; deliver presentation at Technical Advisory Committee meeting											
			****	1044	112	****	7/30/2009	7/30/2009	2.00	192.40	384.8(
San Diego HMP - meeting with RWQCB											
			****	1044	112	****	8/4/2009	8/6/2009	1.50	192.40	288.6(
San Diego HMP - weekly project meeting; respond to questions posed by the City of Encinitas regarding HMP implementation; finalization of scope for PWA's remaining items and finalization of revised scope for submittal to County of San Diego											
			****	1044	112	****	8/5/2009	8/6/2009	1.00	192.40	192.4(
Preparation of scope of work, fee estimate and cover letter for remaining work to County of San Diego - preparation of subconsultant scope of work and fee estimates for PWA and Dan Cloak											
			****	1044	112	****	8/7/2009	8/13/2009	0.50	192.40	96.2(
Responses to emails regarding San Diego HMP from Sara Agahi; preparation of Task Order submittal to remainder of project											
			****	1044	112	****	8/10/2009	8/13/2009	1.00	192.40	192.4(
San Diego HMP - weekly progress meeting											
			****	1044	112	****	8/13/2009	8/13/2009	0.50	192.40	96.2(
Correspondence with PWA about finalizing subconsultant scope of work for PWA's remaining involvement in project											
			****	1044	112	****	8/17/2009	8/20/2009	1.00	192.40	192.40
Weekly progress meeting											
			****	1044	112	****	8/21/2009	8/27/2009	1.00	192.40	192.40
San Diego HMP project meeting with Sara Agahi and Nancy Gardiner to prepare for 8-24 meeting with RWQCB											
			****	1044	112	****	8/24/2009	8/27/2009	1.50	192.40	288.60
Preparation for meeting with RWQCB; meeting with Christina Arias, Wayne Chiu, Nancy Gardiner and Sara Agahi to discuss San Diego HMP submittal											
			****	1044	112	****	8/25/2009	8/27/2009	1.25	192.40	240.50
San Diego HMP - follow-up with Eric Stein of SCCWRP regarding forthcoming San Diego HMP TAC meeting; provide information to Mikhail Ogawa for distribution to TAC; recommend items for addition to agenda at next Land Development workgroup meeting; coordination with PWA regarding subconsultant agreement											
			****	1044	112	****	8/26/2009	8/27/2009	1.00	192.40	192.40
Coordination with Eric Stein of SCCWRP and Mikhail Ogawa regarding planning for September 30th HMP TAC meeting											
			****	1044	112	****	8/28/2009	9/3/2009	2.00	192.40	384.80
San Diego HMP - project meeting with Sara Agahi, Mike Nienberg, Nancy Gardiner, and Lisa Skutecki at BC; final processing of Scope of Work and Cost Estimate for remaining work on HMP project (with exception of Sizing Calculator)											
			****	1044	112	****	8/31/2009	9/3/2009	0.50	192.40	96.20
Attendence at weekly San Diego HMP coordination meeting											

Phase : 006 – Stakeholder Meetings/Coord

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	9/1/2009	9/3/2009	1.50	192.40	288.6(
Attendence at Copermittee meeting at the County of San Diego; provided presentation regarding HMP-related items											
			****	1044	112	****	9/2/2009	9/3/2009	0.50	192.40	96.2(
Finalize approval for Task Order covering remaining HMP project tasks (with the exception of the Sizing Calculator tasks)											
			****	1044	112	****	9/3/2009	9/3/2009	1.50	192.40	288.6(
San Diego HMP - meeting with RWQCB staff and Sara Agahi to discuss HMP submittal											
			****	1044	112	****	9/4/2009	9/10/2009	1.00	192.40	192.4(
San Diego HMP - meeting with Sara Agahi to discuss progress and upcoming deadlines for San Diego HMP project											
									34.25		6,589.7(
							Total Rate Schedule Labor				***6,589.70***

Phase : 041 – Update Model SUSMP - 2

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	8/12/2009	8/13/2009	0.25	192.40	48.1(
update to Table 2-3 of the Model SUSMP to include vegetated swales											
							Total Rate Schedule Labor				***48.10***

Phase : 054 – Add'l Funding for Rain Gauge Task

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Asst. Engineering Scientist											
Brett J Bennetts			****	1044	116	****	7/10/2009	7/16/2009	5.00	97.76	488.8(
Station Tech Memos											
			****	1044	116	****	7/13/2009	7/16/2009	6.00	97.76	586.56
Station Tech Memos											
			****	1044	116	****	7/14/2009	7/16/2009	4.00	97.76	391.04
Station Tech Memos											
									15.00		1,466.40
							Total Rate Schedule Labor				***1,466.40***

Phase : 056 – Flow Threashold Alt Analysis

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	7/10/2009	7/16/2009	2.00	192.40	384.80
Review of applicability mapping guidelines from Santa Clara HMP; preliminary development of applicability mapping samples for test watersheds in San Diego County											
			****	1044	112	****	7/13/2009	7/16/2009	0.50	192.40	96.20
Applicability mapping criteria and examples for San Diego County											
			****	1044	112	****	7/14/2009	7/16/2009	1.50	192.40	288.60
San Diego HMP - Assembly of information to test criteria for basin dewatering time technical memo; applicability mapping criteria and creation of example applicability maps											
			****	1044	112	****	7/15/2009	7/16/2009	3.50	192.40	673.40
San Diego HMP - Assembly of information to test criteria for basin dewatering time technical memo; development of exemption criteria based on direct discharge to large receiving river system; development of criteria for sizing calculator development; development of applicability criteria											
			****	1044	112	****	7/16/2009	7/16/2009	4.00	192.40	769.60
San Diego HMP - Assembly of information to test criteria for basin dewatering time technical memo; run drawdown analyses based on example basin information provided by Rick Engineering; development of applicablity mapping criteria and examples											

Phase : 056 – Flow Threashold Alt Analysis

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	7/17/2009	7/23/2009	4.50	192.40	865.8
Analysis of SDHM files and dewatering calculations for the South County Commerce Center; per request of County of San Diego; address applicabliity mapping issues raised by City of San Diego and City of Carlsbad; finalize scope for remainder of the project; review of comments provided by Vaikko Allen; development of HMP decision matrix; update to treatment BMP effectiveness matrix; preparation of technical memo regarding drawdown time											
			****	1044	112	****	7/20/2009	7/23/2009	4.00	192.40	769.6
Analysis of SDHM files and dewatering calculations for the South County Commerce Center; per request of County of San Diego; finalize scope for remainder of the project; review of comments provided by Vaikko Allen; development of HMP decision matrix; update to treatment BMP effectiveness matrix; preparation of technical memo regarding drawdown time											
			****	1044	112	****	7/23/2009	7/23/2009	1.00	192.40	192.4
Analysis of SDHM files and dewatering calculations for the South County Commerce Center; per request of County of San Diego;											
			****	1044	112	****	7/24/2009	7/30/2009	3.00	192.40	577.2
Detailed review of hydromodification management plan prepared for South County Commerce Center - especially with regard to drawdown time calculations											
			****	1044	112	****	7/27/2009	7/30/2009	4.00	192.40	769.6
Development of Decision Matrix / Tree question list for distribution to TAC											
			****	1044	112	****	7/28/2009	7/30/2009	2.50	192.40	481.0
Scoping for Sizing Calculator development; preparation of Decision Matrix / Tree for HMP applicants; clarification regarding hydromod / WQ / detention basin criteria; assessment of rainfall variability across County;											
			****	1044	112	****	7/29/2009	7/30/2009	3.00	192.40	577.2
Revisions to HMP Decision Tree based upon comments obtained at HMP TAC meeting											
			****	1044	112	****	7/30/2009	7/30/2009	3.00	192.40	577.2
Research regarding flow threshold for designation of exempt rivers from HMP criteria; updates to Decision Tree and development of comprehensive graphic of the Decision Tree											
			****	1044	112	****	7/31/2009	8/6/2009	2.50	192.40	481.0
Updates to HMP Decision Tree; clarifications regarding drawdown time criteria; development of criteria for minimum orifice sizing, ponding depths, etc along with backing calculations; provide review of South County Commerce Center site drainage per request of Sara Agahi											
			****	1044	112	****	8/3/2009	8/6/2009	1.50	192.40	288.6
Updates to HMP Decision Tree; backing calculations and clarifications regarding minimum orifice size determination for hydromod facilities											
			****	1044	112	****	8/4/2009	8/6/2009	1.00	192.40	192.4
Obtain 100-year and 10-year peak flow information from FEMA study; review of data for major river / creek systems in San Diego County to determine threshold for HMP exemptions; updates to HMP Decision Tree; determination of exempt water bodies throughout the County											
			****	1044	112	****	8/5/2009	8/6/2009	5.00	192.40	962.0
Obtain 100-year and 10-year peak flow information from FEMA study; review of data for major river / creek systems in San Diego County to determine threshold for HMP exemptions; updates to HMP Decision Tree; determination of exempt water bodies throughout the County; preparation of recommendation for South County Commerce Center site; coordinate running of partial duration statistics for the site; updates to minimum orifice size recommendations and backing calculations; set protocols for applicability mapping requirements											
			****	1044	112	****	8/6/2009	8/6/2009	4.00	192.40	769.60
Obtain 100-year and 10-year peak flow information from FEMA study; review of data for major river / creek systems in San Diego County to determine threshold for HMP exemptions; updates to HMP Decision Tree; determination of exempt water bodies throughout the County; assistance to Andy Collison in drafting of final flow threshold analysis report; determination of exempt water bodies throughout the County; preparation of recommendation for South County Commerce Center site; coordinate running of partial duration statistics for the site; updates to minimum orifice size recommendations and backing calculations; set protocols for applicability mapping requirements											
			****	1044	112	****	8/7/2009	8/13/2009	2.50	192.40	481.00
San Diego HMP - preparation of Technical Memo detailing wide range of technical issues including HMP exemptions, minimum orifice size calculations, monitoring plan requirements, etc.											
			****	1044	112	****	8/10/2009	8/13/2009	2.50	192.40	481.00
San Diego HMP - preparation of Technical Memo detailing wide range of technical issues including HMP exemptions, minimum orifice size calculations, monitoring plan requirements, etc.; follow-up with Eric Stein of SCCWRP regarding Domain of Analysis clarification											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	8/11/2009	8/13/2009	2.00	192.40	384.8(
San Diego HMP - preparation of Technical Memo detailing wide range of technical issues including HMP exemptions, minimum orifice size calculations, monitoring plan requirements, etc.; follow-up with Eric Stein of SCCWRP regarding Domain of Analysis clarification											
			****	1044	112	****	8/12/2009	8/13/2009	2.00	192.40	384.8(
Correspondence with Andy Collison of PWA regarding countywide channel material assessment; San Diego HMP - preparation of Technical Memo detailing wide range of technical issues including HMP exemptions, minimum orifice size calculations, monitoring plan requirements, etc.;											
			****	1044	112	****	8/13/2009	8/13/2009	2.00	192.40	384.8(
Correspondence with Andy Collison of PWA regarding roughness value ranges for typical San Diego area streams; San Diego HMP - preparation of Technical Memo detailing wide range of technical issues including HMP exemptions, minimum orifice size calculations, monitoring plan requirements, etc.; correspondence with Jim Zhu regarding acquisition of GIS shape files to assist with applicability mapping of concrete channels within the County of San Diego											
			****	1044	112	****	8/14/2009	8/20/2009	2.00	192.40	384.8(
Updates to HMP Decision Matrix, updates to SCCWRP lateral and vertical channel susceptibility matrix, preparation of technical memo detailing parital duration series, offsite area and drawdown time calculations											
			****	1044	112	****	8/17/2009	8/20/2009	2.00	192.40	384.8(
Updates to HMP Decision Matrix, updates to SCCWRP lateral and vertical channel susceptibility matrix, preparation of technical memo detailing parital duration series, offsite area and drawdown time calculations											
			****	1044	112	****	8/18/2009	8/20/2009	1.00	192.40	192.4(
Updates to HMP Decision Matrix, updates to SCCWRP lateral and vertical channel susceptibility matrix, preparation of technical memo detailing parital duration series, offsite area and drawdown time calculations											
			****	1044	112	****	8/19/2009	8/20/2009	2.00	192.40	384.8(
Updates to HMP Decision Matrix, updates to SCCWRP lateral and vertical channel susceptibility matrix, preparation of technical memo detailing parital duration series, offsite area and drawdown time calculations											
			****	1044	112	****	8/20/2009	8/20/2009	2.00	192.40	384.8(
Updates to HMP Decision Matrix, updates to SCCWRP lateral and vertical channel susceptibility matrix, preparation of technical memo detailing parital duration series, offsite area and drawdown time calculations											
			****	1044	112	****	8/21/2009	8/27/2009	4.00	192.40	769.60
San Diego HMP - preparation of Technical Memo detailing design standards including partial duration series calculations, offsite area restrictions, drawdown calculations, exemptions for large river systems and exemptions for reservoir systems; review of items for inclusion to HMP project schedule											
			****	1044	112	****	8/23/2009	8/27/2009	1.00	192.40	192.40
San Diego HMP - preparation of Technical Memo detailing design standards including partial duration series calculations, offsite area restrictions, drawdown calculations, exemptions for large river systems and exemptions for reservoir systems											
			****	1044	112	****	8/24/2009	8/27/2009	3.50	192.40	673.40
San Diego HMP - preparation of Technical Memo detailing design standards including partial duration series calculations, offsite area restrictions, drawdown calculations, exemptions for large river systems and exemptions for reservoir systems; update to HMP Decision Matrix; review and edits to SCCWRP decision matrix; review of parameters proposed for inclusion in lower flow calculation spreadsheet											
			****	1044	112	****	8/25/2009	8/27/2009	4.50	192.40	865.80
San Diego HMP - discussion of partial duration calculator (stand-alone version) with Andy Baldwin and Tony Dubin; update to draft HMP Decision Matrix; preparation of summary of items requiring TAC or Copermittee approval; preparation of Technical Memo detailing various components of the HMP Decision Matrix											
			****	1044	112	****	8/26/2009	8/27/2009	4.00	192.40	769.60
Preparation of Technical Memos for HMP Monitoring and Maintenance, Drawdown Time, Partial Duration Series, HMP Exemptions, etc.; correspondence with Andy Baldwin and Tony Dubin regarding requirements for partial duration calculator											
			****	1044	112	****	8/27/2009	8/27/2009	2.50	192.40	481.00
Preparation of Technical Memos for HMP Monitoring and Maintenance, Drawdown Time, Partial Duration Series, HMP Exemptions, etc.; preparation of applicability map of County showing areas exempt from hydromod criteria											
			****	1044	112	****	8/28/2009	9/3/2009	3.00	192.40	577.20
San Diego HMP - development of Scope of Work and preliminary cost estimate for preparation of Sizing Calculator											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amour
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	8/31/2009	9/3/2009	2.50	192.40	481.0
San Diego HMP - preparation of Summary of Outstanding / Placeholder items for final HMP; preparation of Technical Memo detailing recommended exemptions for large river, reservoir and lagoon systems; review of HMP Decision Matrix and Design Standards memo; preparation of slides overviewing monitoring plan requirements; preparation of copies of aforementioned memos to provide at Copermittee meeting;											
			****	1044	112	****	9/1/2009	9/3/2009	3.50	192.40	673.4
San Diego HMP - preparation of Summary of Outstanding / Placeholder items for final HMP; preparation of Technical Memo detailing recommended exemptions for large river, reservoir and lagoon systems; review of HMP Decision Matrix and Design Standards memo; preparation of slides overviewing monitoring plan requirements; preparation of copies of aforementioned memos to provide at Copermittee meeting;											
			****	1044	112	****	9/2/2009	9/3/2009	6.00	192.40	1,154.4
Preparation of Technical Memo detailing use of the HMP Decision Matrix											
			****	1044	112	****	9/3/2009	9/3/2009	5.00	192.40	962.0
San Diego HMP - preparation of information packet to provide to RWQCB staff at meeting; incorporation of Sara Agahi's comments to HMP Decision Matrix Technical Memo; finalize Scope of Work and preliminary cost estimate for development of Sizing Calculator; development of Technical Memo detailing Monitoring requirements											
			****	1044	112	****	9/4/2009	9/10/2009	2.00	192.40	384.8
San Diego HMP - provide Technical Memos regarding Placeholder / Outstanding items for Final HMP, Design Standards Memo, Decision Matrix Memo, and exemption list for engineered channels and large river systems											
									112.00		21,548.8
Sr. Engineering Scientist											
Nathan H Foged			****	1044	113	****	8/4/2009	8/6/2009	2.00	123.78	247.5
Partial Duration Series analysis of SCCC data (Basin A, B, C, D)											
			****	1044	113	****	8/5/2009	8/6/2009	0.50	123.78	61.8
Partial Duration Series analysis of SCCC data (Basin A, B, C, D)											
			****	1044	113	****	8/6/2009	8/6/2009	2.00	123.78	247.5
Partial Duration Series analysis of SCCC data (Basin A, B, C, D)											
			****	1044	113	****	8/13/2009	8/13/2009	2.00	123.78	247.5
Reviewed modeling files and performed a partial-duration-series analysis for the South County Commerce Center.											
			****	1044	113	****	8/14/2009	8/20/2009	3.00	123.78	371.3
Review of modeling files and partial duration series frequency analysis for South County Commerce Center.											
			****	1044	113	****	8/17/2009	8/20/2009	5.00	123.78	618.9
Review of modeling files and partial duration series frequency analysis for South County Commerce Center.											
									14.50		1,794.8
Sr. Geographic Info. System Analyst											
Eric A Stiles			****	1044	331	****	8/3/2009	8/6/2009	3.25	104.00	338.0
Create flow chart called "Draft HMP Decision Tree"											
			****	1044	331	****	8/21/2009	8/27/2009	0.50	104.00	52.0
Create map showing where concrete canals are for Eric M.											
			****	1044	331	****	8/24/2009	8/27/2009	0.75	104.00	78.0
Additions to Flow Chart for Eric											
									4.50		468.0
Sr. Hydrologist											
Anthony M Dubin			****	1044	112	****	7/20/2009	7/23/2009	1.00	131.56	131.5
Researching the Western Washington flow control exclusion criteria											
			****	1044	112	****	7/22/2009	7/23/2009	1.00	131.56	131.5
BMP modeling scope and budget											
			****	1044	112	****	7/23/2009	7/23/2009	2.50	131.56	328.9
BMP modeling scope and budget											
			****	1044	112	****	7/24/2009	7/30/2009	2.00	131.56	263.12
Modeling and sizing calculator work plan development											
			****	1044	112	****	7/28/2009	7/30/2009	1.00	131.56	131.5
TAC meeting preparation											
			****	1044	112	****	8/13/2009	8/13/2009	1.50	131.56	197.34
HMP modeling and software work plan											
									9.00		1,184.04
							Total Rate Schedule Labor				***24,995.65***

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Project Assistant											
Emma S Surio			****	1044	190	****	7/21/2009	7/23/2009	0.50	83.20	41.6
updated the lens (moved Nancy's PM hours and open 009.057)l; Submitted RNT PO to Procurement system (additional money for Dan Cloak Env. Engr.)											
			****	1044	190	****	7/24/2009	7/30/2009	0.75	83.20	62.4
worked on effort at completion; routed lens to Mike for review and approval											
									1.25		104.0
Project Manager											
Nancy E Gardiner			057	1044	421	****	7/13/2009	7/16/2009	4.00	180.96	723.8
Progress meeting, planning, preparing memo, staffing.											
			057	1044	421	****	7/14/2009	7/16/2009	2.00	180.96	361.9
Meetign with Eric, teleconference with PWA.											
			057	1044	421	****	7/16/2009	7/16/2009	0.50	180.96	90.4
Reviewed invoice, e-mails from PWA.											
			057	1044	421	****	7/20/2009	7/23/2009	2.50	180.96	452.4
Progress meeting; subcontract with Dan Cloak; meeting minutes.											
			057	1044	421	****	7/24/2009	7/30/2009	2.00	180.96	361.9
Hydromod status meeting and preparing for TAC meeting.											
			057	1044	421	****	7/29/2009	7/30/2009	4.00	180.96	723.8
Prepared for and participated in Hydromod TAC meeting.											
			057	1044	421	****	8/17/2009	8/20/2009	2.50	180.96	452.4
Catching up on emails; reviewed memo from Eric.											
			057	1044	421	****	8/20/2009	8/20/2009	2.50	180.96	452.4
Project management activities - reviewed scope and schedule; drafted Amendment No. 5 for PWA. Met with Eric to discuss upcoming tasks related to BMP sizing tool development.											
			057	1044	421	****	8/21/2009	8/27/2009	3.00	180.96	542.8
Coordination with Eric and Sara; preparation for meeting with RWQCB.											
			057	1044	421	****	8/24/2009	8/27/2009	3.00	180.96	542.8
Coordination with Eric and Sara and meeting with RWQCB.											
			057	1044	421	****	8/28/2009	9/3/2009	2.00	180.96	361.9
Internal project meetings and meeting with Sara Agahi.											
			057	1044	421	****	9/1/2009	9/3/2009	1.50	180.96	271.44
Setting up next phase of project and PWA subcontract.											
									29.50		5,338.32
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	7/21/2009	7/23/2009	2.00	192.40	384.80
Prepared comment and response matrix.											
			****	1044	421	****	8/31/2009	9/3/2009	1.00	192.40	192.40
Progress meeting and review of Eric's memos.											
			****	1044	421	****	9/1/2009	9/3/2009	1.00	192.40	192.40
Reviewed outstanding items memo.											
			****	1044	421	****	9/2/2009	9/3/2009	0.50	192.40	96.20
Review of Eric's memo on Decision Matrix.											
			****	1044	421	****	9/3/2009	9/3/2009	1.50	192.40	288.60
Reviewed Decision Matrix memo.											
			****	1044	421	****	9/4/2009	9/10/2009	1.00	192.40	192.40
Read and replied to emails.											
									7.00		1,346.80
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	8/31/2009	9/3/2009	0.50	123.78	61.89
reviewed emails and documents from eric and sara											
			****	1044	113	****	9/2/2009	9/3/2009	0.25	123.78	30.95
reviewed emails and documents from eric and sara											
			****	1044	113	****	9/3/2009	9/3/2009	1.50	123.78	185.67
reviewed documents from eric											
									2.25		278.51

Phase : 057 – Draft Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	7/14/2009	7/16/2009	3.00	192.40	577.20
		Preparation of itemized list of items PWA needs to prepare for completion of San Diego HMP project; identify whether items are part of the old scope or new scope; conference call with Andy Collison and Christie Beeman of PWA									
			****	1044	112	****	7/23/2009	7/23/2009	5.00	192.40	962.00
		site visits with SCCWRP and RWQCB to Agua Hedionda and Escondido Creek sites to assess the SCCWRP channel screening tools									
			****	1044	112	****	8/3/2009	8/6/2009	1.50	192.40	288.60
		San Diego HMP - coordination with PWA regarding remaining PWA scope; preparation of amended scope for remainder of project work with the exception of the HMP/LID sizing calculator									
			****	1044	112	****	8/12/2009	8/13/2009	1.00	192.40	192.40
		Preparation of subconsultant agreement, scope of work and cost estimate for PWA's remaining work on the San Diego HMP project; preparation of Scope of Work for remainder of HMP project (excluding Sizing Calculator development)									
			****	1044	112	****	8/27/2009	8/27/2009	1.00	192.40	192.40
		Preparation of Scope of Work for remaining task items; incorporation of edits from Sara Agahi; processing through BC word processing									
									11.50		2,212.60
Technical Writer											
Dorothy A Norton			****	1044	670	****	8/27/2009	8/27/2009	2.00	91.52	183.04
		revised SOW - discuss proper formatting w/Eric & format									
			****	1044	670	****	8/28/2009	9/3/2009	0.75	91.52	68.64
		S01002 - scopeof work/proposal edits/formatting									
									2.75		251.68
							Total Rate Schedule Labor				***9,531.91***

BROWN AND CALDWELL

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44112783

Date : October 15, 2009

Attention: Sara Agahi, Project Manager

Subject : SDCo Hydromod Management Plan

Contact : Nancy E Gardiner, PM

Billing Period : September 06, 2009 through October 08, 2009

Invoiced By : Susan E Pantig

Progress Billing No : 15

Reference : Authorization Dated : 9/6/2007

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

Michael Nienberg, Vice President

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

520444
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

11/06/09
DATE

PROJECT MANAGER

11/6/09
DATE

DPW MANAGER

Ok to pay $17,568.42

006 -- Stakeholder Meetings/Coord

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Eric S Mosolgo	6.75	$ 200.10	1,350.68
Sub-Total Labor	6.75		$ 1,350.68
Total Labor			**$ 1,350.68**
Total : 006 -- Stakeholder Meetings/Coord			**$ 1,350.68**

058 -- Final HMP

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44112783

Date : October 15, 2009

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Eric S Mosolgo	57.75	$ 200.10	11,555.78
Sr. Geographic Info. System Analyst			
Eric A Stiles	0.50	$ 108.16	54.08
Senior Technical Expert			
Nancy E Gardiner	13.50	$ 200.10	2,701.35
Sr. Engineering Scientist			
Lisa C Skutecki	5.25	$ 128.73	675.83
Project Manager			
Nancy E Gardiner	6.00	$ 180.96	1,085.76
Project Assistant			
Janelle L Kaminski	0.50	$ 86.53	43.27
Asst. Engineering Scientist			
Laura E Carpenter	1.00	$ 101.67	101.67
Sub-Total Labor	84.50		$ 16,217.74
Total Labor			**$ 16,217.74**
Total : 058 -- Final HMP			**$ 16,217.74**
Amount Due this Invoice			**$ 17,568.42**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44112783

Date : October 15, 2009

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001	-- Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002	-- WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004	-- SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006	-- Stakeholder Meetings/Coord	$ 38,723.26	$ 1,350.68	$ 39,956.51	$ 41,307.19	$ (2,583.93)
010	-- Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,780.57	$ 21,780.57	$ (21,780.57)
011	-- Contingency	$ 10,000.00	$ 0.00	$ 10,003.36	$ 10,003.36	$ (3.36)
041	-- Update Model SUSMP - 2	$ 169,062.28	$ 0.00	$ 112,612.35	$ 112,612.35	$ 56,449.93
051	-- Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 0.00	$ 105,900.91	$ 105,900.91	$ (13,795.31)
052	-- Select HSPF Modeling Parameters	$ 50,638.00	$ 0.00	$ 50,126.62	$ 50,126.62	$ 511.38
053	-- Develop BMP Modeling Appraoch	$ 80,678.00	$ 0.00	$ 105,966.44	$ 105,966.44	$ (25,288.44)
054	-- Add'l Funding for Rain Gauge Task	$ 48,641.00	$ 0.00	$ 95,263.30	$ 95,263.30	$ (46,622.30)
055	-- Watershed Modeling	$ 91,012.00	$ 0.00	$ 80,582.40	$ 80,582.40	$ 10,429.60
056	-- Flow Threashold Alt Analysis	$ 35,817.00	$ 0.00	$ 47,979.93	$ 47,979.93	$ (12,162.93)
057	-- Draft Final HMP	$ 66,511.00	$ 0.00	$ 72,278.77	$ 72,278.77	$ (5,767.77)
058	-- Final HMP	$ 139,414.00	$ 16,217.74	$ 0.00	$ 16,217.74	$ 123,196.27
		$ 890,647.34	**$ 17,568.42**	**$ 789,183.88**	**$ 806,752.30**	**$ 83,895.04**

Total Paid To Date : **$ (746,552.12)**

Balance Outstanding : **$ 60,200.18**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Billing Detail - Items through 10/08/2009

Brown and Caldwell

Project : 133904 - SDCo Hydromod Management Plan

Phase : 006 – Stakeholder Meetings/Coord

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	9/21/2009	9/24/2009	1.75	200.10	350.18
San Diego HMP - weekly progress meeting; meeting with RWQCB to discuss HMP; preparation of materials for distribution at RWQCB meeting											
			****	1044	112	****	9/24/2009	9/24/2009	1.00	200.10	200.10
Development of agenda for 9/30 TAC meeting; reschedule October TAC meeting; development of comprehensive list of items / questions for discussion with TAC at 9/30 meeting											
			****	1044	112	****	9/28/2009	10/1/2009	1.00	200.10	200.10
San Diego HMP - weekly progress meeting with the County of San Diego											
			****	1044	112	****	10/6/2009	10/8/2009	0.50	200.10	100.05
San Diego HMP - setup and participate in conference call with County of San Diego and PWA											
			****	1044	112	****	10/8/2009	10/8/2009	0.50	200.10	100.05
San Diego HMP - coordination meeting with County of San Diego											
			****	1044	112	****	9/9/2009	9/10/2009	0.50	200.10	100.05
San Diego HMP - coordination with PWA regarding upcoming submittals at FMA conference											
			****	1044	112	****	9/14/2009	9/17/2009	1.00	200.10	200.10
San Diego HMP - weekly progress meeting with County of San Diego; scheduling for future TAC and Copermittee meetings plus coordination of times with PWA											
			****	1044	112	****	9/16/2009	9/17/2009	0.50	200.10	100.05
scheduling for future TAC and Copermittee meetings plus coordination of times with PWA											
									6.75		1,350.68
							Total Rate Schedule Labor				***1,350.68***

Phase : 058 – Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr. Geographic Info. System Analyst											
Eric A Stiles			****	1044	331	****	9/15/2009	9/17/2009	0.50	108.16	54.08
Revise "Draft HMP Decision Matrix" Flow Chart											
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	9/17/2009	9/17/2009	2.00	128.73	257.46
reviewed various documents for Eric and sent email											
			****	1044	113	****	9/19/2009	9/24/2009	0.75	128.73	96.55
reviewed draft HMP Monitoring Plan											
Lisa C Skutecki			****	1044	113	****	9/23/2009	9/24/2009	1.00	128.73	128.73
reviewed Eric's revisions, read document on Cunnane equation, discussion with Eric											
			****	1044	113	****	9/28/2009	10/1/2009	0.50	128.73	64.37
discussion with Eric, reviewed email											
			****	1044	113	****	10/1/2009	10/1/2009	1.00	128.73	128.73
discussion with Eric, review of scope											
									5.25		675.84
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	9/11/2009	9/17/2009	1.00	101.67	101.67
internal meeting re sizing calc											
Project Assistant											
Janelle L Kaminski			****	1044	641	****	9/15/2009	9/17/2009	0.50	86.53	43.27
Updating lens with new Phase and new authorized amount. Submitting lens to Prism and routing to ABOM for approval.											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	9/14/2009	9/17/2009	1.50	200.10	300.1
Meeting with Eric, review of memo, coordination meeting with Sara.											
			****	1044	421	****	9/17/2009	9/17/2009	1.50	200.10	300.1
Reviewed Design Standards Tech Memo.											
			****	1044	421	****	9/29/2009	10/1/2009	1.00	200.10	200.1
Reviewed materials for TAC.											
			****	1044	421	****	9/30/2009	10/1/2009	4.50	200.10	900.4
TAC meeting.											
			****	1044	421	****	10/1/2009	10/1/2009	1.50	200.10	300.1
Reviewed materials prepared by Eric Mosolgo											
			****	1044	421	****	10/2/2009	10/8/2009	2.00	200.10	400.2
Prepared TAC meeting minutes											
			****	1044	421	****	10/5/2009	10/8/2009	1.50	200.10	300.1
Prepared TAC meeting minutes											
									13.50		2,701.3
Project Manager											
Nancy E Gardiner			058	1044	421	****	9/18/2009	9/24/2009	1.00	180.96	180.9
Reviewing documents prepared by Eric.											
			058	1044	421	****	9/21/2009	9/24/2009	1.00	180.96	180.9
Prepared revised project schedule and comment and response document and e-mailed to Eric.											
			058	1044	421	****	9/28/2009	10/1/2009	2.00	180.96	361.9
Weekly status meeting; talked with Eric about TAC meeting.											
			058	1044	421	****	10/1/2009	10/1/2009	2.00	180.96	361.9
TAC meeting minutes.											
									6.00		1,085.7
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	9/8/2009	9/10/2009	4.00	200.10	800.4
San Diego HMP - preparation of Technical Memos regarding HMP Monitoring Plan, Minimum Orifice Size, River Reach Exemption Criteria, and discussions with Dan Cloak and Jill Bicknell regarding cumulative impacts											
			****	1044	112	****	9/9/2009	9/10/2009	1.00	200.10	200.1
San Diego HMP - updates to Technical Memos to incorporate all internal comments											
			****	1044	112	****	9/18/2009	9/24/2009	2.75	200.10	550.2
Coordination with Dan Cloak regarding development of cumulative watershed impact technical memo; provide summary of distribution items to TAC; provided final HMP Decision Matrix, Outstanding Items Memo, and HMP Decision Matrix Guide to Mikhail and Sara											
			****	1044	112	****	9/20/2009	9/24/2009	1.50	200.10	300.15
San Diego HMP - final updates to HMP Design Standards Memo and Monitoring Plan memo											
			****	1044	112	****	9/21/2009	9/24/2009	1.25	200.10	250.13
San Diego HMP - update to HMP Decision Matrix per recommendation from Jim Nabong											
			****	1044	112	****	9/22/2009	9/24/2009	3.00	200.10	600.30
Correspondence with Jill Bicknell and Dan Cloak regarding HMP monitoring plans; revisions and updates to HMP Monitoring Plan document; resend all Technical Memos to Mikhail and Sara; review of PWA deliverables and posting to FTP site; correspondence with Eric Stein regarding updates to SCCWRP channel screening tools and Domain of Analysis determination											
			****	1044	112	****	9/23/2009	9/24/2009	5.50	200.10	1,100.55
San Diego HMP - assist Dan Cloak with preparation of cumulative watershed impact memo; provide Coastkeeper comments; provide RWQCB review comments; detailed review of PWA flow threshold report; review of PWA low flow calculator; preparation of HEC-HMS runs in association with development of minimum orifice size memo											
			****	1044	112	****	9/24/2009	9/24/2009	0.50	200.10	100.05
San Diego HMP - correspondence with Eylon Shamir of HRC regarding partial duration analysis; correspondence with Eric Stein of SCCWRP regarding draft monitoring plan											
			****	1044	112	****	9/25/2009	10/1/2009	0.50	200.10	100.05
Preparation of technical memos in preparation for upcoming TAC memo											
			****	1044	112	****	9/28/2009	10/1/2009	2.00	200.10	400.20
San Diego HMP - review of cumulative watershed impacts technical memo; preparation of agenda for TAC meeting											
			****	1044	112	****	9/29/2009	10/1/2009	4.00	200.10	800.40
San Diego HMP - review of Coastkeeper comments; preparation of initial responses; address partial duration analysis issues raised by Eylon of HRC; finalize Scope of Work for HMP Sizing Calculator task; preparation of HEC-HMS analysis related to minimum orifice size analysis											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Eric S Mosolgo			****	1044	112	****	9/30/2009	10/1/2009	7.00	200.10	1,400.70
San Diego HMP - preparation of PowerPoint presentation for San Diego HMP TAC meeting; attendance and presentation at San Diego HMP TAC meeting; coordination with fellow presenters Eric Stein and Andy Collison prior to TAC meeting; address comments made by Coastkeeper											
			****	1044	112	****	10/1/2009	10/1/2009	4.00	200.10	800.40
San Diego HMP - provide SCCWRP screening tools for distribution to the TAC; coordination with PWA and review of PWA critical shear stress calculator (note problems with the calculator); update to HMP Decision Matrix to describe process for determining lower flow threshold; prepare recommendations for minimum outlet orifice sizing; finalize and submit Scope of Work for HMP Sizing Calculator											
			****	1044	112	****	10/7/2009	10/8/2009	1.75	200.10	350.18
San Diego HMP - updates to Decision Matrix and Minimum Orifice Size technical memos											
			****	1044	112	****	10/8/2009	10/8/2009	1.50	200.10	300.15
San Diego HMP - review meeting minutes from Sept 30th TAC meeting; prepare summary notes from progress meeting with Sara Agahi; develop agenda for October 16th TAC meeting; post flow threshold memo to ftp site; review of flow threshold memo and lower flow calculator											
			****	1044	112	****	9/11/2009	9/17/2009	1.00	200.10	200.10
Meeting with Andy Baldwin to discuss final scoping for San Diego Sizing Calculator											
			****	1044	112	****	9/14/2009	9/17/2009	2.00	200.10	400.20
San Diego HMP - preparation of draft monitoring plan for submittal to the Copermittees and TAC and inclusion into Final HMP											
			****	1044	112	****	9/15/2009	9/17/2009	6.50	200.10	1,300.65
San Diego HMP - provide vegetated swale information related to SUSMP update; consult with Dan Cloak regarding cumulative watershed impact issue and coordinate preparation of 1-page memo detailing issues; provided draft Caltrans HMP decision matrix to Sara for review; updates to draft HMP Decision Matrix; provided draft to Sara, Nancy and Lisa; updates draft San Diego HMP Outstanding Items memo and distributed the draft to Sara, Lisa and Nancy; prepared updates to draft San Diego HMP Decision Matrix Guide technical memo											
			****	1044	112	****	9/16/2009	9/17/2009	4.50	200.10	900.45
Coordination with PWA regarding the submittal of PWA outstanding Technical Reports, responses to RWQCB comments, and lower flow threshold calculator; prepared updates to draft San Diego HMP Decision Matrix Guide technical memo and provided the draft to Sara, Nancy and Lisa; preparation of draft San Diego HMP Design Standards memo and provided draft to Sara, Nancy and Lisa											
			****	1044	112	****	9/17/2009	9/17/2009	3.50	200.10	700.35
Coordination with PWA regarding the submittal of PWA outstanding Technical Reports, responses to RWQCB comments, and lower flow threshold calculator; consult with Dan Cloak regarding cumulative watershed impact issue and coordinate preparation of 1-page memo detailing issues; San Diego HMP - preparation of draft monitoring plan for submittal to the Copermittees and TAC and inclusion into Final HMP; provide draft to Sara, Lisa and Nancy for review											
									57.75		11,555.78
							Total Rate Schedule Labor				***16,217.75***

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

Tan County of (CA)
Depa f Public Works
Wate rotection Program
5201 Road Suite P
San CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Atte Sara Agahi, Project Manager

Subj SDCo Hydromod Management Plan

Billin iod : October 08, 2009 through January 07, 2010

Prog Billing No : 16

Refere : Authorization Dated : 9/6/2007

Contact : Nancy E Gardiner, PM

Invoiced By : Susan E Pantig

total invoice amount : $123,636.64

Coun f San Diego Hydromodification Management Plan - County Contract No. 5 444 - Task Order No. 1 (File Number: 972)

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

Michael Nienberg, Vice President

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

5204444
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

01/15/10
DATE

PROJECT MANAGER

1/15/10
DATE

DPW MANAGER

006 -- Stakeholder Meetings/Coord

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	4.50	$ 200.10	900.45
Senior Technical Expert			
Eric S Mosolgo	2.00	$ 200.10	400.20
Sub-Total Labor	6.50		$ 1,300.65
Total Labor			**$ 1,300.65**

Total : 006 -- Stakeholder Meetings/Coord **$ 1,300.65**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833.

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

041 -- Update Model SUSMP - 2

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Laura E Carpenter	1.00	$ 101.67	101.67
Sub-Total Labor	1.00		$ 101.67
Total Labor			**$ 101.67**
Total : 041 -- Update Model SUSMP - 2			**$ 101.67**

056 -- Flow Threashold Alt Analysis

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Hydrologist			
Anthony M Dubin	2.00	$ 136.82	273.64
Sub-Total Labor	2.00		$ 273.64
Total Labor			**$ 273.64**
Total : 056 -- Flow Threashold Alt Analysis			**$ 273.64**

057 -- Draft Final HMP

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Laura E Carpenter	8.00	$ 101.67	813.36
Technical Writer			
Dorothy A Norton	21.00	$ 95.18	1,998.78

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Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Engineering Scientist			
Lisa C Skutecki	5.75	$ 128.73	740.20
Sub-Total Labor	34.75		$ 3,552.34
Total Labor			**$ 3,552.34**
Total : 057 -- Draft Final HMP			**$ 3,552.34**

058 -- Final HMP

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Engineer			
Matthew H Davis	9.00	$ 196.85	1,771.65
Sr. Hydrologist			
Anthony M Dubin	15.50	$ 136.82	2,120.71
Senior Technical Expert			
Nancy E Gardiner	60.00	$ 200.10	12,006.00
Project Manager			
Nancy E Gardiner	53.50	$ 180.96	9,681.36
Asst. Engineering Scientist			
Laura E Carpenter	14.00	$ 101.67	1,423.38
Senior Technical Expert			
Eric S Mosolgo	203.50	$ 200.10	40,720.35
Technical Writer			
Dorothy A Norton	30.25	$ 95.18	2,879.20
Sr. Engineering Scientist			
Lisa C Skutecki	8.25	$ 128.73	1,062.02
Sr. Geographic Info. System Analyst			
Eric A Stiles	34.25	$ 108.16	3,704.48

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Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Technical Writer			
Lori N Tamai	7.25	$ 95.18	690.06
Sr. Engineering Scientist			
Hayes J Twenter	1.50	$ 128.73	193.10
Sub-Total Labor	437.00		$ 76,252.31
Total Labor			**$ 76,252.31**

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Subconsultants	
O/S CONSULT-OTHER ALLOW	
PHILIP WILLIAMS & ASSOC. INC	3,785.60
PHILIP WILLIAMS & ASSOC. INC	13,848.64
PHILIP WILLIAMS & ASSOC. INC	6,439.32
PHILIP WILLIAMS & ASSOC. INC	4,644.64
Total Subconsultants	**$ 28,718.20**
Total Regular Expenses	**$ 28,718.20**
Total Expenses	**$ 28,718.20**
Total : 058 -- Final HMP	**$ 104,970.51**

059 -- Sizing Calc - Modeling Approach

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Brett J Bennetts	3.00	$ 101.67	305.01

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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INVOICE

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Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Project Assistant			
Janelle L Kaminski	0.25	$ 86.53	21.63
Asst. Engineering Scientist			
Laura E Carpenter	3.75	$ 101.67	381.26
Senior Technical Expert			
Eric S Mosolgo	11.00	$ 200.10	2,201.10
Sub-Total Labor	18.00		$ 2,909.00
Total Labor			**$ 2,909.00**
Total : 059 -- Sizing Calc - Modeling Approach			**$ 2,909.00**

501 -- Additional HSPF Modeling

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Hydrologist			
Anthony M Dubin	43.00	$ 136.82	5,883.26
Project Assistant			
Janelle L Kaminski	0.50	$ 86.53	43.27
Senior Technical Expert			
Eric S Mosolgo	23.00	$ 200.10	4,602.30
Sub-Total Labor	66.50		$ 10,528.83
Total Labor			**$ 10,528.83**
Total : 501 -- Additional HSPF Modeling			**$ 10,528.83**
Amount Due this Invoice			**$ 123,636.64**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001 --	Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002 --	WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004 --	SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006 --	Stakeholder Meetings/Coord	$ 38,723.26	$ 1,300.65	$ 41,307.19	$ 42,607.84	$ (3,884.58)
010 --	Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,780.57	$ 21,780.57	$ (21,780.57)
011 --	Contingency	$ 10,000.00	$ 0.00	$ 10,003.36	$ 10,003.36	$ (3.36)
041 --	Update Model SUSMP - 2	$ 169,062.28	$ 101.67	$ 112,612.35	$ 112,714.02	$ 56,348.26
051 --	Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 0.00	$ 105,900.91	$ 105,900.91	$ (13,795.31)
052 --	Select HSPF Modeling Parameters	$ 50,638.00	$ 0.00	$ 50,126.62	$ 50,126.62	$ 511.38
053 --	Develop BMP Modeling Appraoch	$ 80,678.00	$ 0.00	$ 105,966.44	$ 105,966.44	$ (25,288.44)
054 --	Add'l Funding for Rain Gauge Task	$ 48,641.00	$ 0.00	$ 95,263.30	$ 95,263.30	$ (46,622.30)
055 --	Watershed Modeling	$ 91,012.00	$ 0.00	$ 80,582.40	$ 80,582.40	$ 10,429.60
056 --	Flow Threashold Alt Analysis	$ 35,817.00	$ 273.64	$ 47,979.93	$ 48,253.57	$ (12,436.57)
057 --	Draft Final HMP	$ 66,511.00	$ 3,552.34	$ 72,278.77	$ 75,831.11	$ (9,320.11)
058 --	Final HMP	$ 139,414.00	$ 104,970.51	$ 16,217.74	$ 121,188.25	$ 18,225.76
059 --	Sizing Calc - Modeling Approach	$ 40,000.00	$ 2,909.00	$ 0.00	$ 2,909.00	$ 37,091.00
501 --	Additional HSPF Modeling	$ 18,175.00	$ 10,528.83	$ 0.00	$ 10,528.83	$ 7,646.17
		$ 948,822.34	**$ 123,636.64**	**$ 806,752.30**	**$ 930,388.94**	**$ 18,433.41**

Total Paid To Date : **$ (806,752.30)**

Balance Outstanding : **$ 123,636.64**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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Billing Detail - Items through 1/7/2010

Brown and Caldwell

Project : 133904 - SDCo Hydromod Management Plan

Phase : 006 -- Stakeholder Meetings/Coord

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	10/16/2009	10/22/2009	4.50	200.10	900.45
Preparation for and participation in HMP TAC meeting.											
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	10/10/2009	10/15/2009	1.00	200.10	200.10
San Diego HMP - development of agenda for TAC meeting											
			****	1044	112	****	10/15/2009	10/15/2009	1.00	200.10	200.10
San Diego HMP - weekly progress meeting with County of San Diego											
									2.00		400.20
Total: Senior Technical Expert									6.50		1,300.65
							Total Rate Schedule Labor				***1,300.65***

Phase : 041 -- Update Model SUSMP - 2

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	12/8/2009	12/10/2009	0.75	101.67	76.25
reviewing word document - missing fact sheet											
			****	1044	426	****	12/10/2009	12/10/2009	0.25	101.67	25.42
reviewing word document - missing fact sheet											
									1.00		101.67
							Total Rate Schedule Labor				***101.67***

Phase : 056 -- Flow Threashold Alt Analysis

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr. Hydrologist											
Anthony M Dubin			****	1044	112	****	10/16/2009	10/22/2009	0.50	136.82	68.41
Discussing/editing lower control threshold and PDS statistical method											
			****	1044	112	****	10/19/2009	10/22/2009	1.50	136.82	205.23
Discussing/editing lower control threshold and PDS statistical method											
									2.00		273.64
							Total Rate Schedule Labor				***273.64***
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	11/6/2009	11/12/2009	3.00	101.67	305.01
comment-response document											
			****	1044	426	****	11/9/2009	11/12/2009	2.50	101.67	254.18
comment-response document											
			****	1044	426	****	11/10/2009	11/12/2009	1.00	101.67	101.67
comment-response document											
			****	1044	426	****	11/12/2009	11/12/2009	1.50	101.67	152.51
comment-response document											
									8.00		813.37
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	10/12/2009	10/15/2009	1.00	128.73	128.73
review of materials eric emailed											
			****	1044	113	****	10/19/2009	10/22/2009	0.75	128.73	96.55
review cumulative impacts memo, email to eric											

Phase : 057 - Draft Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	10/20/2009	10/22/2009	1.50	128.73	193.10
		review various sections for Eric									
			****	1044	113	****	10/21/2009	10/22/2009	2.50	128.73	321.83
		readibility review of whole document, provided edits to dorothy									
									5.75		740.21
Technical Writer											
Dorothy A Norton			****	1044	670	****	10/16/2009	10/22/2009	0.25	95.18	23.80
		HMP rpt discuss work for next week									
			****	1044	670	****	10/19/2009	10/22/2009	1.50	95.18	142.77
		HMP rpt formatting&discuss w/eric									
			****	1044	670	****	10/20/2009	10/22/2009	9.00	95.18	856.62
		S01036 - HMP formatting, edits, etc.									
			****	1044	670	****	10/21/2009	10/22/2009	5.75	95.18	547.29
		S01036 - HMP formatting, edits, etc.									
			****	1044	670	****	11/17/2009	11/19/2009	0.25	95.18	23.80
		discuss hydromod with nancy									
			****	1044	670	****	11/23/2009	11/26/2009	0.50	95.18	47.59
		followup eric/nancy									
			****	1044	670	****	11/24/2009	11/26/2009	1.00	95.18	95.18
		mtg nancy/eric/candy acronym list									
			****	1044	670	****	12/1/2009	12/3/2009	1.50	95.18	142.77
		formatting breakout sections meet w/nancy/eric									
			****	1044	670	****	12/9/2009	12/10/2009	0.25	95.18	23.80
		hydromod final									
			****	1044	670	****	12/10/2009	12/10/2009	1.00	95.18	95.18
		meeting w Nancy; formatting									
									21.00		1,998.80
							Total Rate Schedule Labor				***3,552.38***

Phase : 058 - Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Technical Writer											
Lori N Tamai			****	1044	593	****	10/20/2009	10/22/2009	2.75	95.18	261.75
		Word processing for HMP final report									
			****	1044	593	****	12/13/2009	12/31/2009	4.50	95.18	428.31
		Word processing of Final report									
									7.25		690.06
Technical Writer											
Dorothy A Norton			****	1044	670	****	12/11/2009	12/17/2009	5.75	95.18	547.29
		formatting; coordination of document									
			****	1044	670	****	12/12/2009	12/17/2009	6.00	95.18	571.08
		formatting; coordination of document									
			****	1044	670	****	12/14/2009	12/17/2009	6.50	95.18	618.67
		formatting; coordination of document									
			****	1044	670	****	12/15/2009	12/17/2009	0.75	95.18	71.39
		formatting;									
			****	1044	670	****	12/16/2009	12/17/2009	0.50	95.18	47.59
		formatting;									
			****	1044	670	****	12/28/2009	12/31/2009	1.25	95.18	118.98
		final hydromod									
			****	1044	670	****	12/29/2009	12/31/2009	8.00	95.18	761.44
		final edits, etc for hydromod rpt.									
			****	1044	670	****	1/4/2010	1/7/2010	1.00	95.18	95.18
		final hydromod									
			****	1044	670	****	1/5/2010	1/7/2010	0.50	95.18	47.59
		final edits, etc for hydromod rpt.									
									30.25		2,879.21

Phase : 058 – Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	10/20/2009	10/22/2009	6.00	101.67	610.02
assisting with final deliverable											
			****	1044	426	****	10/21/2009	10/22/2009	0.75	101.67	76.25
updating model susmp											
			****	1044	426	****	11/18/2009	11/19/2009	2.25	101.67	228.76
draft final document comment responses											
			****	1044	426	****	11/19/2009	11/19/2009	2.00	101.67	203.34
draft final document comment responses											
			****	1044	426	****	12/11/2009	12/17/2009	3.00	101.67	305.01
assistance with final document											
									14.00		1,423.38
Principal Engineer											
Matthew H Davis			****	1044	113	****	10/23/2009	10/29/2009	3.00	196.85	590.55
Incorporated new features into the integrate management practices software											
			****	1044	113	****	10/26/2009	10/29/2009	6.00	196.85	1,181.10
Incorporated new features into the integrate management practices software											
									9.00		1,771.65
Project Manager											
Nancy E Gardiner			058	1044	421	****	10/13/2009	10/15/2009	0.50	180.96	90.48
Reviewed invoice.											
			058	1044	421	****	10/14/2009	10/15/2009	0.50	180.96	90.48
Updated Microsoft Project schedule.											
			058	1044	421	****	10/22/2009	10/22/2009	2.00	180.96	361.92
Worked on meeting minutes from October 16th TAC meeting.											
			058	1044	421	****	10/26/2009	10/29/2009	1.00	180.96	180.96
Met with Eric; revised project schedule.											
			058	1044	421	****	10/28/2009	10/29/2009	0.50	180.96	90.48
Budget review.											
			058	1044	421	****	10/30/2009	11/5/2009	2.50	180.96	452.40
Worked on meeting notes.											
			058	1044	421	****	11/11/2009	11/12/2009	1.00	180.96	180.96
Worked on meeting notes and filing.											
			058	1044	421	****	11/12/2009	11/12/2009	2.50	180.96	452.40
Worked on minutes from Copermittee meeting.											
			058	1044	421	****	11/13/2009	11/19/2009	2.00	180.96	361.92
Copermittee meeting minutes.											
			058	1044	421	****	11/18/2009	11/19/2009	0.50	180.96	90.48
Project Management											
			058	1044	421	****	11/20/2009	11/26/2009	1.00	180.96	180.96
PM and filing.											
			058	1044	421	****	11/30/2009	12/3/2009	2.00	180.96	361.92
Meeting with Eric, rreview of revised comment and response document, eview of project schedule, phone call with Sara.											
			058	1044	421	****	12/3/2009	12/3/2009	1.00	180.96	180.96
Reviewing PWA memo.											
			058	1044	421	****	12/4/2009	12/10/2009	1.00	180.96	180.96
Reviewed comments on Final HMP.											
			058	1044	421	****	12/10/2009	12/10/2009	3.00	180.96	542.88
Worked on revisions to Sections 4 and 5, inetgrated comments from Comment and Response document.											
			058	1044	421	****	12/11/2009	12/17/2009	4.00	180.96	723.84
Working on Final HMP.											
			058	1044	421	****	12/12/2009	12/17/2009	4.00	180.96	723.84
Working on Final HMP.											
			058	1044	421	****	12/13/2009	12/17/2009	2.00	180.96	361.92
Working on Final HMP.											
			058	1044	421	****	12/14/2009	12/17/2009	7.00	180.96	1,266.72
Working on Final HMP.											
			058	1044	421	****	12/15/2009	12/17/2009	2.00	180.96	361.92
Working on Final HMP.											
			058	1044	421	****	12/16/2009	12/17/2009	5.00	180.96	904.80
Working on Final HMP.											
			058	1044	421	****	12/17/2009	12/17/2009	8.00	180.96	1,447.68
Working on Final HMP.											
			058	1044	421	****	1/5/2010	1/7/2010	0.50	180.96	90.48
Miscellaneous project management (filing, invoicing)											
									53.50		9,681.36

Phase : 058 - Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	10/14/2009	10/15/2009	0.50	200.10	100.05
Reviewed outstanding items Tech Memo.											
			****	1044	421	****	10/15/2009	10/15/2009	2.50	200.10	500.25
Reviewed revised decision matrix prepared by Eric; progress meeting with Sara.											
			****	1044	421	****	10/19/2009	10/22/2009	4.50	200.10	900.45
Preparing Draft Final HMP.											
			****	1044	421	****	10/20/2009	10/22/2009	8.00	200.10	1,600.80
Preparing Draft Final HMP.											
			****	1044	421	****	10/21/2009	10/22/2009	6.50	200.10	1,300.65
Preparing Draft Final HMP.											
			****	1044	421	****	10/23/2009	10/29/2009	2.00	200.10	400.20
HMP meeting minutes.											
			****	1044	421	****	10/28/2009	10/29/2009	5.00	200.10	1,000.50
Meeting with Copermittees.											
			****	1044	421	****	11/6/2009	11/12/2009	2.00	200.10	400.20
Reviewed comments received on Draft Final HMP; worked with Laura to set up comment and response document.											
			****	1044	421	****	11/11/2009	11/12/2009	1.50	200.10	300.15
Reviewed comments received on Draft Final HMP; worked with Laura to set up comment and response document.											
			****	1044	421	****	11/16/2009	11/19/2009	3.50	200.10	700.35
HMP mini-TAC meeting.											
			****	1044	421	****	11/17/2009	11/19/2009	2.00	200.10	400.20
Reading and following up on elements of final HMP.											
			****	1044	421	****	11/18/2009	11/19/2009	0.50	200.10	100.05
HMP acronym list.											
			****	1044	421	****	11/19/2009	11/19/2009	1.00	200.10	200.10
HMP acronym list.											
			****	1044	421	****	11/23/2009	11/26/2009	1.00	200.10	200.10
Prepared for meetings with Eric and Sara.											
			****	1044	421	****	11/24/2009	11/26/2009	2.00	200.10	400.20
Began reviewing Comment and Response document; reviewed project schedule.											
			****	1044	421	****	11/25/2009	11/26/2009	4.00	200.10	800.40
Reviewed Comment and Response document; met with Eric internally; met with Sara.											
			****	1044	421	****	12/18/2009	12/24/2009	4.50	200.10	900.45
Worked on Final HMP submittal											
			****	1044	421	****	12/29/2009	12/31/2009	6.00	200.10	1,200.60
Helping Eric get Final HMP submittal completed and delivered.											
			****	1044	421	****	1/4/2010	1/7/2010	2.00	200.10	400.20
Meeting with Sara, meeting with Eric, budgeting. Scoping with Dan Cloak.											
			****	1044	421	****	1/7/2010	1/7/2010	1.00	200.10	200.10
Discussion with Eric regarding meeting with Luis Parra; review of PWA invoice.											
									60.00		12,006.00
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	10/9/2009	10/15/2009	2.00	200.10	400.20
San Diego HMP - development and revisions to HMP Decision Matrix; updated memos regarding outstanding items, monitoring plan, cumulative watershed impacts, drawdown times and orifice sizing											
			****	1044	112	****	10/10/2009	10/15/2009	2.00	200.10	400.20
San Diego HMP - development and revisions to HMP Decision Matrix; updated memos regarding outstanding items, monitoring plan, cumulative watershed impacts, drawdown times and orifice sizing											
			****	1044	112	****	10/13/2009	10/15/2009	2.00	200.10	400.20
San Diego HMP - development and revisions to HMP Decision Matrix; updated memos regarding outstanding items, monitoring plan, cumulative watershed impacts, drawdown times and orifice sizing											
			****	1044	112	****	10/14/2009	10/15/2009	2.00	200.10	400.20
San Diego HMP - weekly progress meeting with County of San Diego											
			****	1044	112	****	10/15/2009	10/15/2009	7.00	200.10	1,400.70
San Diego HMP - development and revisions to HMP Decision Matrix; updated memos regarding outstanding items, monitoring plan, cumulative watershed impacts, drawdown times and orifice sizing											
			****	1044	112	****	10/16/2009	10/22/2009	6.00	200.10	1,200.60
Presentation preparation and delivery at San Diego HMP TAC Meeting											
			****	1044	112	****	10/19/2009	10/22/2009	4.00	200.10	800.40
Preparation of Draft Final HMP for submittal to Copermittees, TAC and RWQCB on October 21, 2009											
			****	1044	112	****	10/20/2009	10/22/2009	4.00	200.10	800.40
Preparation of Draft Final HMP for submittal to Copermittees, TAC and RWQCB on October 21, 2009											

Phase : 058 -- Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	10/21/2009	10/22/2009	6.00	200.10	1,200.60
Preparation of Draft Final HMP for submittal to Copermittees, TAC and RWQCB on October 21, 2009											
			****	1044	112	****	10/22/2009	10/22/2009	7.00	200.10	1,400.70
Preparation of Draft Final HMP for submittal to Copermittees, TAC and RWQCB on October 21, 2009											
			****	1044	112	****	10/23/2009	10/29/2009	1.00	200.10	200.10
San Diego HMP - review of low flow calculator amendments											
			****	1044	112	****	10/26/2009	10/29/2009	0.50	200.10	100.05
San Diego HMP - review comments received regarding the Draft Final HMP											
			****	1044	112	****	10/27/2009	10/29/2009	1.00	200.10	200.10
San Diego HMP - preparation of presentation for San Diego Copermittees											
			****	1044	112	****	10/28/2009	10/29/2009	5.00	200.10	1,000.50
San Diego HMP - deliver HMP presentation to San Diego Copermittee Land Development work group; preparation of presentation											
			****	1044	112	****	10/29/2009	10/29/2009	1.00	200.10	200.10
San Diego HMP - review and respond to comments received regarding the draft final HMP											
			****	1044	112	****	11/3/2009	11/5/2009	1.00	200.10	200.10
San Diego HMP - updates to Monitoring Plan based upon discussion with experts at CASQA; correspondence with PWA regarding clarifications of the interim flow control criteria and geomorphic / sediment transport protocols											
			****	1044	112	****	11/5/2009	11/5/2009	1.00	200.10	200.10
San Diego HMP - review of HMP comments from various stakeholders; begin preparation of comment response document											
			****	1044	112	****	11/6/2009	11/12/2009	1.00	200.10	200.10
San Diego HMP - prepare and submit cost estimate for San Diego HMP Sizing Calculator											
			****	1044	112	****	11/9/2009	11/12/2009	2.00	200.10	400.20
San Diego HMP - weekly progress meeting; update to the Guide to Decision Matrix memo; review all comments received regarding San Diego HMP Draft Final and begin assembly of responses											
			****	1044	112	****	11/10/2009	11/12/2009	3.00	200.10	600.30
San Diego HMP - responses to specific questions regarding river reach exemptions; preparation of Comment Response document responses											
			****	1044	112	****	11/11/2009	11/12/2009	6.00	200.10	1,200.60
San Diego HMP - preparation of responses for comment response document; refinement to scope for sizing calculator development; coordination of PWA regarding tasks required for comment response document											
			****	1044	112	****	11/12/2009	11/12/2009	6.00	200.10	1,200.60
San Diego HMP - preparation of responses for Comment Response Document; preparation of updates project schedule pursuant to meeting with Sara Agahi earlier in the week; coordination of PWA efforts regarding comment response document											
			****	1044	112	****	11/13/2009	11/19/2009	4.00	200.10	800.40
Discussion of outstanding HMP issues with Tory Walker and Glen Van Peski; note concerns and outline potential updates in Final HMP; coordination with Tony Dubin and PWA regarding flow duration control sizing criteria language for Final HMP; preparation of responses for HMP comment response document											
			****	1044	112	****	11/15/2009	11/19/2009	1.00	200.10	200.10
Preparation of responses for HMP comment response document											
			****	1044	112	****	11/16/2009	11/19/2009	6.00	200.10	1,200.60
Preparation for 11/16 TAC meeting (agenda preparation, etc.); lead discussion at 11/16 TAC meeting; meeting with Andy Baldwin regarding scope for HMP sizing calculator development; review of revised critical flow calculator; preparation of responses for comment response document; coordination with PWA											
			****	1044	112	****	11/17/2009	11/19/2009	2.00	200.10	400.20
Draft responses for HMP comment response document											
			****	1044	112	****	11/18/2009	11/19/2009	4.00	200.10	800.40
Preparation of responses for HMP comment response document; review of PWA's revisions to literature review and Chapter 5 (flow threshold analysis)											
			****	1044	112	****	11/19/2009	11/19/2009	4.00	200.10	800.40
Progress meeting with Sara Agahi of County of San Diego; update to project schedule through Dec 29th RWQCb submittal; revision to Sizing Calculator Scope of Work; preparation of Cost Estimate and Scope of Work for additional HSPF modeling tasks; finalize responses for Comment Response Document											
			****	1044	112	****	11/20/2009	11/26/2009	3.00	200.10	600.30
San Diego HMP - preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											

Phase : 058 - Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	11/22/2009	11/26/2009	1.00	200.10	200.10
San Diego HMP - preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											
			****	1044	112	****	11/23/2009	11/26/2009	3.00	200.10	600.30
San Diego hMP - weekly progress meeting; sizing calculator kickoff meeting; preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											
			****	1044	112	****	11/24/2009	11/26/2009	5.00	200.10	1,000.50
San Diego HMP - preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											
			****	1044	112	****	11/25/2009	11/26/2009	8.00	200.10	1,600.80
San Diego HMP - meeting with County of San Diego to discuss comment response document and project schedule; preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											
			****	1044	112	****	11/30/2009	12/3/2009	1.00	200.10	200.10
Correspondence with County of San Diego regarding funding for sizing calculator and additional HSPF modeling tasks; correpspondence with Eric Stein regarding SCCWRP screening tool and domain of analysis timing											
			****	1044	112	****	12/1/2009	12/3/2009	2.00	200.10	400.20
coordination with Tony Dubin regarding HSPF flow duration curve analysis of the San Diego River; setup boundary conditions for the analysis and review long-term streamflow records for the San Diego River.											
			****	1044	112	****	12/2/2009	12/3/2009	3.00	200.10	600.30
Review of geomorphic design guidelines; review and respond to additional HMP comments submitted by Tory Walker; provide details of HMP monitoring plan to Christina Arias											
			****	1044	112	****	12/3/2009	12/3/2009	1.50	200.10	300.15
Review of revised low flow calculation text											
			****	1044	112	****	12/7/2009	12/10/2009	3.50	200.10	700.35
Meeting with RWQCB to discuss HMP submittal											
			****	1044	112	****	12/8/2009	12/10/2009	5.00	200.10	1,000.50
Coordination with PWA regarding the acquisition of HMP comments											
			****	1044	112	****	12/8/2009	12/10/2009	1.00	200.10	200.10
Update to San Diego HMP; update text for all sections and incorporate all responses to comments											
			****	1044	112	****	12/9/2009	12/10/2009	3.00	200.10	600.30
Update to San Diego HMP; update text for all sections and incorporate all responses to comments											
			****	1044	112	****	12/10/2009	12/10/2009	6.50	200.10	1,300.65
San Diego - provide final edits for San Diego HMP draft to be submitted to the Copermittees											
			****	1044	112	****	12/11/2009	12/17/2009	7.00	200.10	1,400.70
San Diego HMP - conference call with Eric Stein in preparation for presentations to RWQCb and SCCWRP; work on HMP text for Executive Summary, Chapter 1, Chapter 2, Chapter 3, Chapter 6, Chapter 7, Chapter 8, Chapter 9 plus appendices; review of revised SCCWRP screening tool and SCCWRP monitoring plan recommendations; coordination with Andy Collison of PWA regarding comment responses											
			****	1044	112	****	12/12/2009	12/17/2009	2.00	200.10	400.20
San Diego HMP - update to HMP Decision Matrix											
			****	1044	112	****	12/13/2009	12/17/2009	2.00	200.10	400.20
San Diego HMP - finalize text for Executive Summary, Chapter 1, Chapter 2, Chapter 3...work on text for Chapter 6, 7, 8 and 9 plus appendices											
			****	1044	112	****	12/14/2009	12/17/2009	8.00	200.10	1,600.80
San Diego HMP - finalize text for Chapter 6, Chapter 7, Chapter 8, Chapter 9 and appendices...overall coordination with Word Processing regarding finalization of HMP document											
			****	1044	112	****	12/16/2009	12/17/2009	4.50	200.10	900.45
San Diego HMP - address HMP comments; edits to Chapter 5 in preparation of Errata Sheet; preparation of presentation to Copermittees and RWQCB											

Phase : 058 – Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	12/17/2009	12/17/2009	7.00	200.10	1,400.70
San Diego HMP - presentations to San Diego Copermittees and RWQCB regarding San Diego HMP overview											
			****	1044	112	****	12/18/2009	12/24/2009	3.00	200.10	600.30
San Diego HMP - updates to HMP document and errata sheet subsequent to receipt of comments											
			****	1044	112	****	12/21/2009	12/24/2009	1.00	200.10	200.10
Incorporation of comment responses to HMP document and errata sheet											
			****	1044	112	****	12/23/2009	12/24/2009	7.00	200.10	1,400.70
Incorporation of comment responses to HMP document and errata sheet											
			****	1044	112	****	12/26/2009	12/31/2009	2.00	200.10	400.20
Finalize San Diego HMP for Tuesday submittal											
			****	1044	112	****	12/27/2009	12/31/2009	3.00	200.10	600.30
Finalize San Diego HMP for Tuesday submittal											
			****	1044	112	****	12/28/2009	12/31/2009	8.00	200.10	1,600.80
Finalize San Diego HMP for Tuesday submittal; responses to BIA comments											
			****	1044	112	****	12/29/2009	12/31/2009	7.00	200.10	1,400.70
Finalize San Diego HMP for Tuesday submittal											
			****	1044	112	****	12/30/2009	12/31/2009	1.00	200.10	200.10
Discussion regarding lower flow limits with PWA; internal BC month-end financial meeting											
			****	1044	112	****	1/4/2010	1/7/2010	1.50	200.10	300.15
San Diego HMP - prepare agenda for flow threshold report meeting with BIA and County of San Diego; weekly meeting with County of San Diego;											
			****	1044	112	****	1/6/2010	1/7/2010	1.50	200.10	300.15
Conference call with County of San Diego, BIA and PWA to discuss flow threshold analysis											
									203.50		40,720.35
Sr. Engineering Scientist											
Hayes J Twenter			****	1044	114	****	11/23/2009	11/26/2009	1.50	128.73	193.10
Developing BMP sizing calculator											
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	12/7/2009	12/10/2009	0.75	128.73	96.55
discussion with eric and nancy, reviewed email attachments											
			****	1044	113	****	12/8/2009	12/10/2009	0.75	128.73	96.55
reviewed HMP documents/emails from eric											
			****	1044	113	****	12/10/2009	12/10/2009	1.00	128.73	128.73
discussions with team, reviewed plan											
			****	1044	113	****	12/13/2009	12/17/2009	1.75	128.73	225.28
Section 6 and 8 review and mark ups, discussion with team											
			****	1044	113	****	12/28/2009	12/31/2009	0.50	128.73	64.37
review sections from eric											
			****	1044	113	****	12/29/2009	12/31/2009	2.75	128.73	354.01
review HMP sections and figures. strike out edits. emailed and discussed edits with team. met with sara when she visited the office with cover letter.											
			****	1044	113	****	1/5/2010	1/7/2010	0.75	128.73	96.55
meeting; internal filing											
									8.25		1,062.04
Sr. Geographic Info. System Analyst											
Eric A Stiles			****	1044	331	****	10/12/2009	10/15/2009	4.50	108.16	486.72
Revise Draft HMP Decision Matrix flow chart											
			****	1044	331	****	10/13/2009	10/15/2009	4.00	108.16	432.64
Revise Draft HMP Decision Matrix flow chart											
			****	1044	331	****	10/14/2009	10/15/2009	1.50	108.16	162.24
Revise Draft HMP Decision Matrix flow chart											
			****	1044	331	****	10/15/2009	10/15/2009	0.25	108.16	27.04
Revise Draft HMP Decision Matrix flow chart											
			****	1044	331	****	10/16/2009	10/22/2009	1.75	108.16	189.28
Revise Flow chart per Clients request for Eric M.											
			****	1044	331	****	10/20/2009	10/22/2009	1.25	108.16	135.20
Revise Flow chart per Eric M.											
			****	1044	331	****	12/13/2009	12/17/2009	6.50	108.16	703.04
Additions and Revisions to the Decision Matrix Flow Chart.											
			****	1044	331	****	12/28/2009	12/31/2009	8.00	108.16	865.28
Additions and Revisions to Eric M. "Draft HMP Decision Matrix" flow chart.											
			****	1044	331	****	12/29/2009	12/31/2009	6.50	108.16	703.04
Revisions to Eric M. "Draft HMP Decision Matrix" flow chart											
									34.25		3,704.48

Phase : 058 -- Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr. Hydrologist											
Anthony M Dubin			****	1044	112	****	10/21/2009	10/22/2009	2.00	136.82	273.64
		sizing calculator development									
			****	1044	112	****	10/22/2009	10/22/2009	4.50	136.82	615.69
		development of the HMP sizing calculator									
			****	1044	112	****	10/23/2009	10/29/2009	1.50	136.82	205.23
		development of BMP sizing calculator									
			****	1044	112	****	10/26/2009	10/29/2009	3.00	136.82	410.46
		development of BMP sizing calculator									
			****	1044	112	****	10/27/2009	10/29/2009	2.50	136.82	342.05
		development of BMP sizing calculator									
			****	1044	112	****	10/28/2009	10/29/2009	1.00	136.82	136.82
		development of BMP sizing calculator									
			****	1044	112	****	11/13/2009	11/19/2009	1.00	136.82	136.82
		development of BMP sizing calculator									
									15.50		2,120.71
							Total Rate Schedule Labor				***76,252.33***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
O/S CONSULT-OTHER ALLOW									
PHILIP WILLIAMS & ASSOC. INC	64339	****	1044	1044004880	10/28/2009	10/29/2009	3,785.60	1.00	3,785.60
	64339	****	1044	1044004881	10/28/2009	10/29/2009	13,848.64	1.00	13,848.64
	64339	****	1044	1044004991	12/3/2009	12/3/2009	6,439.32	1.00	6,439.32
	64339	****	1044	1044004991	1/6/2010	1/7/2010	4,644.64	1.00	4,644.64
							28,718.20		28,718.20
					Total Regular Expenses				***28,718.20***

Phase : 059 -- Sizing Calc - Modeling Approach

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	11/24/2009	11/26/2009	1.00	101.67	101.67
		call with Eric M, Justin T, and Tony D re sizing calculator									
			****	1044	426	****	11/30/2009	12/3/2009	2.00	101.67	203.34
		revised wdm files									
			****	1044	426	****	12/1/2009	12/3/2009	0.75	101.67	76.25
		wdm file conversion									
									3.75		381.26
Asst. Engineering Scientist											
Brett J Bennetts			****	1044	116	****	12/1/2009	12/3/2009	3.00	101.67	305.01
		Confirm Bonita, Lower Otay, Fashion Valley, Oceanside and Santee csv files against their respective ACCESS database.									
Project Assistant											
Janelle L Kaminski			****	1044	641	****	11/25/2009	11/26/2009	0.25	86.53	21.63
		Setup new task for next phase of work.									
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	11/30/2009	12/3/2009	2.00	200.10	400.20
		San Diego HMP - coordination of rain gage data for San Diego HMP sizing calculator									
			****	1044	112	****	12/4/2009	12/10/2009	1.00	200.10	200.10
		San Diego Sizing Calculator development									
			****	1044	112	****	12/7/2009	12/10/2009	1.00	200.10	200.10
		San Diego Sizing Calculator development									
			****	1044	112	****	12/11/2009	12/17/2009	0.50	200.10	100.05
		Sizing calculator - preliminary scoping for project									
			****	1044	112	****	12/16/2009	12/17/2009	0.50	200.10	100.05
		San Diego Sizing Calculator - preliminary scoping for project									
			****	1044	112	****	12/21/2009	12/24/2009	1.00	200.10	200.10
		San Diego HMP Sizing Calculator - task order setup									

Phase : 059 – Sizing Calc - Modeling Approach

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	112	****	12/30/2009	12/31/2009	2.00	200.10	400.20
San Diego Sizing Calculator - setup methodology and technical approach											
			****	1044	112	****	1/4/2010	1/7/2010	1.00	200.10	200.10
San Diego Sizing Calculator - development of modeling outline and schedule											
			****	1044	112	****	1/5/2010	1/7/2010	1.00	200.10	200.10
San Diego Sizing Calculator - development of modeling outline and schedule											
			****	1044	112	****	1/6/2010	1/7/2010	1.00	200.10	200.10
San Diego Sizing Calculator - development of modeling outline and schedule											
									11.00		2,201.10
							Total Rate Schedule Labor				***2,909.00***

Phase : 501 – Additional HSPF Modeling

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Project Assistant											
Janelle L Kaminski			****	1044	641	****	12/16/2009	12/17/2009	0.50	86.53	43.27
Setting up new phase for additional authorized work and entering budgets to Lens. Submitting to Prism and routing Lens to ABOM for approval.											
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	12/12/2009	12/17/2009	2.00	200.10	400.20
San Diego HMP - provide recommendations and review data analysis regarding river reach, urban infill and 3-inch minimum orifice size flow duration analysis											
			****	1044	112	****	12/13/2009	12/17/2009	2.00	200.10	400.20
San Diego HMP - provide recommendations and review data analysis regarding river reach, urban infill and 3-inch minimum orifice size flow duration analysis											
			****	1044	112	****	12/16/2009	12/17/2009	2.00	200.10	400.20
Review of technical memos regarging flow duration analysis justifying certain exemptions											
			****	1044	112	****	12/1/2009	12/24/2009	2.00	200.10	400.20
Review of additional comment responses; provide details of the HMP sizing calculator and example files to County of San Diego for presentation											
			****	1044	112	****	12/2/2009	12/24/2009	1.50	200.10	300.15
coordination with Tony Dubin regarding additional HSPF modeling tasks											
			****	1044	112	****	12/3/2009	12/24/2009	3.00	200.10	600.30
Review of initial modeling for San Diego River flow duration analysis; provide comments to Tony Dubin											
			****	1044	112	****	12/4/2009	12/24/2009	4.50	200.10	900.45
conference call with Tony Dubin to outline additional modeling tasks; correspondence with Sara Agahi regarding additional HSPF modeling tasks; outline tasks to be completed subsequent to initial model setups; review of geomorphic guidelines preparared by PWA; document all modeling assumptions used in the additional HSPF sensitivity analysis											
			****	1044	112	****	12/9/2009	12/24/2009	6.00	200.10	1,200.60
review of HSPF modeling files prepared for the San Diego river reach exemption, minimum orifice size, and urban infilli exemptions; conference call with Tony Dubin to discuss results; prepare summary memos for distribution to Copermittees; review of design parameters used as part of the analysis											
									23.00		4,602.30
Sr. Hydrologist											
Anthony M Dubin			****	1044	112	****	12/1/2009	12/24/2009	2.00	136.82	273.64
HMP sensitivity analysis: San Diego River, urbanized watershed, minimum orifice threshold											
			****	1044	112	****	12/2/2009	12/24/2009	6.00	136.82	820.92
HMP sensitivity analysis: San Diego River, urbanized watershed, minimum orifice threshold											
			****	1044	112	****	12/3/2009	12/24/2009	8.00	136.82	1,094.56
HMP sensitivity analysis: San Diego River, urbanized watershed, minimum orifice threshold											
			****	1044	112	****	12/4/2009	12/24/2009	4.50	136.82	615.69
San Diego River flow duration analysis											
			****	1044	112	****	12/6/2009	12/24/2009	3.00	136.82	410.46
San Diego River flow duration analysis and Urban infill flow duration sensitivity analysis											
			****	1044	112	****	12/7/2009	12/24/2009	7.00	136.82	957.74
Urban infill flow duration sensitivity analysis and 3-inch orifice flow duration sensitivity analysis											
			****	1044	112	****	12/8/2009	12/24/2009	2.00	136.82	273.64
3-inch orifice flow duration sensitivity analysis											
			****	1044	112	****	12/9/2009	12/24/2009	3.50	136.82	478.87
3-inch orifice flow duration sensitivity analysis and Tech memo preparation											
			****	1044	112	****	12/10/2009	12/24/2009	4.00	136.82	547.28
Tech memo preparation											
			****	1044	112	****	12/16/2009	12/24/2009	3.00	136.82	410.46
Aditional HSPF Anlayses -- preparing tech memo. Transfer to Phase 060 when available.											
									43.00		5,883.26

Invoice

PO #2058 ✓ OK to pay sub
Line 8
Nancy Gardi
12/31/09
51089 133904 - 058.***.1044
$4,644.64

PWA
PHILIP WILLIAMS & ASSOCIATES, LTD.
ENVIRONMENTAL HYDROLOGY
550 Kearny Street, Suite 900
San Francisco, California 94108-2404
ph 415.262.2300 fax 415.262.2303
www.pwa-ltd.com

December 9, 2009
Project No: 001915.00
Invoice No: 1109032

Brown and Caldwell
Nancy Gardiner
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from October 31, 2009 to November 27, 2009

Total this Project **$0.00**

Project 001915.04 San Diego Hydromod - Authorization 4
Prism Project # 133904

Task 002 Minimum Flow Alternative Threshold
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Collison, Andrew	3.00	189.28	567.84	
Totals 64339	3.00		567.84	
Total Labor				567.84

PO No 2058		Vendor No:			SUB	
PO Ln	G/L Code	Project	Phase	Task	Org	Amount
8	51089	133904	058	*	1044	$ 4644.64
						$
						$
						$
Date		Approved By See above			Total $ 4644.64	

Total this Task **$567.84**

Total this Project **$567.84**

Project 001915.05 San Diego Hydromod - Authorization 5
Prism Project # 133904

Task 001 Response to 6/29/09 RWQCB Comments
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Collison, Andrew	8.00	189.28	1,514.24	
Totals	8.00		1,514.24	
Total Labor				1,514.24

Total this Task **$1,514.24**

Task 002 Develop flow threshold calculator

Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Collison, Andrew	8.00	189.28	1,514.24	
Engineering Scientist				
Bozkurt, Setenay	9.00	116.48	1,048.32	
Totals	17.00		2,562.56	
Total Labor				**2,562.56**

Total this Task	**$2,562.56**
Total this Project	**$4,076.80**
Total this Invoice	**$4,644.64**

Elizabeth S. Andrews for

Sandy McFadden
Director of Finance and Administration

Billing Backup

Wednesday, December 09, 2009

Philip Williams & Associates, Ltd. **Invoice 1109032 Dated 12/9/09** *12:37:19 PM*

Project 001915.04 San Diego Hydromod - Authorization 4

Task 002 Minimum Flow Alternative Threshold

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00202	Collison, Andrew	11/18/09	1.00	189.28	189.28	
	refine low flow calculator					
00202	Collison, Andrew	11/19/09	2.00	189.28	378.56	
	refine low flow calculator					
	Totals		3.00		567.84	
	Total Labor					**567.84**
				Total this Task		**$567.84**
				Total this Project		**$567.84**

Project 001915.05 San Diego Hydromod - Authorization 5

Task 001 Response to 6/29/09 RWQCB Comments

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00202	Collison, Andrew	11/16/09	2.00	189.28	378.56	
	Misc projects EPA creek erosion					
00202	Collison, Andrew	11/17/09	2.00	189.28	378.56	
	refine low flow calculator					
00202	Collison, Andrew	11/24/09	2.00	189.28	378.56	
	respond to review comments					
00202	Collison, Andrew	11/25/09	2.00	189.28	378.56	
	respond to review comments					
	Totals		8.00		1,514.24	
	Total Labor					**1,514.24**
				Total this Task		**$1,514.24**

Task 002 Develop flow threshold calculator

Professional Personnel

			Hours	Rate	Amount
Principal Engineer / Scientist					
00202	Collison, Andrew	11/9/09	1.00	189.28	189.28
	respond to RWQCB comments				
00202	Collison, Andrew	11/12/09	3.00	189.28	567.84
	refine low flow calculator				

Billing Backup		Invoice 1109032 Dated 12/9/09				Wednesday, December 09, 2009 -
00202	Collison, Andrew	11/13/09	4.00	189.28	757.12	
	respond to RWQCB comments					
Engineering Scientist						
00174	Bozkurt, Setenay	11/17/09	4.00	116.48	465.92	
	refine low flow calculator					
00174	Bozkurt, Setenay	11/18/09	2.00	116.48	232.96	
	refine low flow calculator					
00174	Bozkurt, Setenay	11/23/09	3.00	116.48	349.44	
	refine low flow calculator					
	Totals		17.00		2,562.56	
	Total Labor					**2,562.56**
				Total this Task		**$2,562.56**
				Total this Project		**$4,076.80**
				Total this report		**$4,644.64**

Invoice

PO No: 2058		Vendor No 64339			SUB	
PO Ln	G/L Code	Project	Phase	Task	Org	Amount
8	51089	133904-	0518		1044	$ 6439.32
						$
						$
						$
Date 11/25/09		Approved By: Nancy E Gardi			Total $ 6439	

6439.32

PWA
ENVIRONMENTAL HYDROLOGY
550 Kearny Street Suite 900
San Francisco, California 94108-2404
415.262.2300 fax 415.262.2303
www.pwa-ltd.com

November 13, 2009
Project No: 001915.00
Invoice No: 1009028

Brown and Caldwell
Nancy Gardjner
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

NOV 30 2009

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from September 26, 2009 to October 30, 2009

Total this Project **$0.00**

Project 001915.05 San Diego Hydromod - Authorization 5
Prism Project # 133904

Task 001 Response to 6/29/09 RWQCB Comments
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	6.00	189.28	1,135.68	
Totals	6.00		1,135.68	
Total Labor				**1,135.68**

Total this Task **$1,135.68**

Task 002 Develop flow threshold calculator
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	11.00	189.28	2,082.08	
Collison, Andrew	9.00	189.28	1,703.52	
Totals	20.00		3,785.60	
Total Labor				**3,785.60**

Total this Task **$3,785.60**

Task 003 Meetings and Telecons
Professional Personnel

	Hours	Rate	Amount
Principal Engineer / Scientist			
Beeman, Christie	1.00	189.28	189.28

Project	001915.00	San Diego Hydromod			Invoice 1009028	
Collison, Andrew			7.00	189.28	1,324.96	
	Totals		8.00		1,514.24	
	Total Labor					**1,514.24**
				Total this Task		**$1,514.24**

Task	600	PWA Expenses				
Unit Billing						
Black & White Copies - Letter		33.0 sheets @ 0.10			3.30	
	Total Units			**1.15 times**	**3.30**	**3.80**
				Total this Task		**$3.80**
				Total this Project		**$6,439.32**
				Total this Invoice		**$6,439.32**

Sandy McFadden
Director of Finance and Administration

Billing Backup

Friday, November 13, 2009

Philip Williams & Associates, Ltd. **Invoice 1009028 Dated 11/13/09** *5:25:25 PM*

Project 001915.05 San Diego Hydromod - Authorization 5

Task 001 Response to 6/29/09 RWQCB Comments

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	9/29/09	1.00	189.28	189.28	
	TAC meeting prep					
00133	Beeman, Christie	10/1/09	1.00	189.28	189.28	
	TAC debrief with AC					
00133	Beeman, Christie	10/20/09	1.00	189.28	189.28	
	Finalize response memo					
00133	Beeman, Christie	10/21/09	3.00	189.28	567.84	
	Finalize response memo					
	Totals		6.00		1,135.68	
	Total Labor					**1,135.68**
				Total this Task		**$1,135.68**

Task 002 Develop flow threshold calculator

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	10/1/09	5.00	189.28	946.40	
	TAC comments follow-up					
00133	Beeman, Christie	10/6/09	2.00	189.28	378.56	
	Comparing calculator &other tools					
00133	Beeman, Christie	10/8/09	4.00	189.28	757.12	
	review decision tree & SCCRP materials					
00202	Collison, Andrew	10/19/09	2.00	189.28	378.56	
	finalize report					
00202	Collison, Andrew	10/20/09	2.00	189.28	378.56	
	finalize report					
00202	Collison, Andrew	10/22/09	1.00	189.28	189.28	
	Finalizing calculator					
00202	Collison, Andrew	10/23/09	4.00	189.28	757.12	
	finalize low flow calculator					
	Totals		20.00		3,785.60	
	Total Labor					**3,785.60**
				Total this Task		**$3,785.60**

00202	Collison, Andrew	9/29/09	3.00	189.28	567.84	
	prep presentation for TAC					
00202	Collison, Andrew	9/30/09	4.00	189.28	757.12	
	TAC meeting					
	Totals		8.00		1,514.24	
	Total Labor					**1,514.24**
				Total this Task		**$1,514.24**

Task 600 PWA Expenses

Unit Billing

Black & White Copies - Letter	33.0 sheets @ 0.10		3.30	
Total Units		**1.15 times**	**3.30**	**3.80**
		Total this Task		**$3.80**
		Total this Project		**$6,439.32**
		Total this report		**$6,439.32**

Unit Posting Log

Wednesday, November 04, 2009

Period: 10/2009 **Posting Sequence:** 219
Posting Date: 11/4/09 12:42:06 PM
Posted by: P.SODHI **Transaction File:** 1915.05 oct09

Philip Williams & Associates, Ltd. **Period ending 10/30/09** *12:42:34 PM*

Unit / Date	Table / Description	Name / Project	Task	Account	Quantity	Cost Amount	Billing Amount	Billing Extension
B&W LTR	**2009 RATES**	**Black & White Copies - Letter**						
10/6/09		001915.05	600	522.00	33.000	3.30	3.30	3.80
			Black & White Copies - Letter Total		**33.000**	**3.30**	**3.30**	**3.80**
				Final Total	**33.000**	**3.30**	**3.30**	**3.80**

General Ledger Posting Summary

		Debits	Credits
CA	San Francisco		
522.00	Reimbursable - Printing & Repro	3.30	
791.00	Recovery - Printing & Reproduction		3.30
	Total for CA	**3.30**	**3.30**
	Totals	**3.30**	**3.30**

Posting Seq: 219
Posting Date: 11/4/09 12:42:06 PM

Invoice

PWA
PHILIP WILLIAMS & ASSOCIATES,
ENVIRONMENTAL HYDROLOGY
550 Kearny Street, Suite 900
San Francisco, California 94108-2404
415.262.2300 fax 415.262.2303
www.pwa-ltd.com

September 3, 2009
Project No: 001915.00
Invoice No: 809007

Brown and Caldwell
Nancy Gardiner
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

SEP 21 2009

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from August 1, 2009 to August 28, 2009

Total this Project **$0.00**

Project 001915.04 San Diego Hydromod - Authorization 4
Prism Project # 133904

Task 002 Minimum Flow Alternative Threshold
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Collison, Andrew	1.50	189.28	283.92	
	1.50		283.92	
				283.92
Total this Task				**$283.92**
Total this Project				**$283.92**

PO No: 2058		Vendor No: Totals 64339			Sub	
PO Ln	G/L Code	Project	Phase	Task	Org	Amount
8	51089	133904	058	K	1044	$13,848.64
						$
						$
						$
Date 10/26/09		Approved By: Nancy E Gardiner			Total $ 13,848.64	

Project 001915.05 San Diego Hydromod - Authorization 5
Prism Project # 133904

Task 001 Response to 6/29/09 RWQCB Comments
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	18.00	189.28	3,407.04	
Collison, Andrew	11.00	189.28	2,082.08	
Asst. Engineering Scientist				
Brown, Rocko	1.00	97.76	97.76	
White, Jason	8.00	97.76	782.08	
Totals	38.00		6,368.96	
Total Labor				**6,368.96**

Total this Task	**$6,368.96**

Task 002 Develop flow threshold calculator

Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	9.00	189.28	1,703.52	
Collison, Andrew	28.50	189.28	5,394.48	
Asst. Engineering Scientist				
White, Jason	1.00	97.76	97.76	
Totals	38.50		7,195.76	
Total Labor				**7,195.76**

Total this Task	**$7,195.76**
Total this Project	**$13,564.72**
Total this Invoice	**$13,848.64**

Sandy McFadden
Director of Finance and Administration

Project 001915.04 San Diego Hydromod - Authorization 4

Task 002 Minimum Flow Alternative Threshold

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00202	Collison, Andrew	6/12/09	1.50	189.28	283.92	
	minimum flow calculations					
	Totals		1.50		283.92	
	Total Labor					**283.92**
				Total this Task		**$283.92**
				Total this Project		**$283.92**

Project 001915.05 San Diego Hydromod - Authorization 5

Task 001 Response to 6/29/09 RWQCB Comments

Professional Personnel

			Hours	Rate	Amount
Principal Engineer / Scientist					
00133	Beeman, Christie	6/12/09	2.00	189.28	378.56
	responding to questions from RWQCB				
00133	Beeman, Christie	7/14/09	2.00	189.28	378.56
	discussion/correspondence with EM re RWQCB comments				
00133	Beeman, Christie	7/29/09	5.00	189.28	946.40
	response to RWQCB				
00133	Beeman, Christie	8/13/09	2.00	189.28	378.56
	low flow calculation review				
00133	Beeman, Christie	8/20/09	4.00	189.28	757.12
	review report sections				
00133	Beeman, Christie	8/25/09	3.00	189.28	567.84
	review report sections				
00202	Collison, Andrew	8/3/09	1.00	189.28	189.28
	review new QCB comments				
00202	Collison, Andrew	8/10/09	3.00	189.28	567.84
	Low flow tool-write up				
00202	Collison, Andrew	8/11/09	1.00	189.28	189.28
	low flow tool-write up				
00202	Collison, Andrew	8/13/09	6.00	189.28	1,135.68
	report writing - RWQCB				
Asst. Engineering Scientist					
00261	Brown, Rocko	8/7/09	1.00	97.76	97.76
	review response for RWQCB				
00265	White, Jason	7/16/09	8.00	97.76	782.08
	Writing Report-RWQCB				

	Totals		38.00	6,368.96	
	Total Labor				**6,368.96**
				Total this Task	**$6,368.96**

Task 002 Develop flow threshold calculator

Professional Personnel

			Hours	Rate	Amount
Principal Engineer / Scientist					
00133	Beeman, Christie	8/4/09	1.00	189.28	189.28
	scoping tasks reqeusted by BC				
00133	Beeman, Christie	8/6/09	1.00	189.28	189.28
	flow control calculator - review w/AC				
00133	Beeman, Christie	8/13/09	2.00	189.28	378.56
	review report sections				
00133	Beeman, Christie	8/20/09	2.00	189.28	378.56
	low flow calculation review				
00133	Beeman, Christie	8/25/09	3.00	189.28	567.84
	review spreadsheet & discuss with A.C.				
00202	Collison, Andrew	6/12/09	2.00	189.28	378.56
	minimum flow calculations				
00202	Collison, Andrew	6/12/09	.50	189.28	94.64
	minimum flow calculations				
00202	Collison, Andrew	6/19/09	.50	189.28	94.64
	minimum flow documentation				
00202	Collison, Andrew	6/19/09	.50	189.28	94.64
	minimum flow documentation				
00202	Collison, Andrew	8/5/09	4.00	189.28	757.12
	Work on flow calculator-research Qcrit				
00202	Collison, Andrew	8/6/09	6.00	189.28	1,135.68
	flow calculator - instructions				
00202	Collison, Andrew	8/17/09	5.00	189.28	946.40
	low flow calculations				
00202	Collison, Andrew	8/18/09	4.00	189.28	757.12
	low flow spreadsheet format				
00202	Collison, Andrew	8/19/09	6.00	189.28	1,135.68
	low flow spreadsheet				
Asst. Engineering Scientist					
00265	White, Jason	8/13/09	1.00	97.76	97.76
	Compiling complete analysis for final report				
	Totals		38.50	7,195.76	
	Total Labor				**7,195.76**
				Total this Task	**$7,195.76**
				Total this Project	**$13,564.72**
				Total this report	**$13,848.64**

Invoice

PWA
PHILIP WILLIAMS & ASSOCIATES, LTD
ENVIRONMENTAL HYDROLOGY
550 Kearny Street, Suite 900
San Francisco, California 94108-2404
T 415.262.2300 F 415.262.2303
www.pwa-ltd.com

October 12, 2009
Project No: 001915.00
Invoice No: 909037

Brown and Caldwell
Nancy Gardiner
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from August 29, 2009 to September 25, 2009

Total this Project **$0.00**

Project 001915.05 San Diego Hydromod - Authorization 5
Prism Project # 133904

Task 001 Response to 6/29/09 RWQCB Comments
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	2.00	189.28	378.56	
Collison, Andrew	12.00	189.28	2,271.36	
Totals	14.00		2,649.92	
Total Labor				**2,649.92**

Total this Task **$2,649.92**

Task 002 Develop flow threshold calculator
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	3.00	189.28	567.84	
Collison, Andrew	2.00	189.28	378.56	
Totals	5.00		946.40	
Total Labor				**946.40**

Total this Task **$946.40**

PO No. 2058 Vendor No: 104339
PO Ln | Gl Code | Project | Phase | Yrs | Org | Amount
8 | 51089 | 133904 | 058 | * | 1044 | $3,785.60
Date 10/26/09 Approved By: Nancy E Gard
Total $ 3,785.60

Task 003 Meetings and Telecons
Professional Personnel

	Hours	Rate	Amount
Principal Engineer / Scientist			

Beeman, Christie	1.00	189.28	189.28	
Totals	1.00		189.28	
Total Labor				**189.28**
		Total this Task		**$189.28**
		Total this Project		**$3,785.60**
		Total this Invoice		**$3,785.60**

Sandy McFadden
Director of Finance and Administration

Billing Backup

Monday, October 12, 2009

Philip Williams & Associates, Ltd. **Invoice 909037 Dated 10/12/09** *2:15:14 PM*

Project 001915.05 San Diego Hydromod - Authorization 5

Task 001 Response to 6/29/09 RWQCB Comments

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	9/17/09	2.00	189.28	378.56	
	review RWQCB comment letter & check response					
00202	Collison, Andrew(draft report)	9/16/09	5.00	189.28	946.40	
00202	Collison, Andrew(draft report)	9/17/09	4.00	189.28	757.12	
00202	Collison, Andrew(draft report)	9/18/09	3.00	189.28	567.84	
	Totals		14.00		2,649.92	
	Total Labor					**2,649.92**
				Total this Task		**$2,649.92**

Task 002 Develop flow threshold calculator

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	9/3/09	1.00	189.28	189.28	
	calculator task oversite					
00133	Beeman, Christie	9/17/09	1.00	189.28	189.28	
	finalize draft submittal					
00133	Beeman, Christie	9/24/09	1.00	189.28	189.28	
	distribute draft calculator					
00202	Collison, Andrew	9/24/09	1.00	189.28	189.28	
	Finalize draft					
00202	Collison, Andrew	9/25/09	1.00	189.28	189.28	
	Distribute drafts					
	Totals		5.00		946.40	
	Total Labor					**946.40**
				Total this Task		**$946.40**

Task 003 Meetings and Telecons

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	9/8/09	1.00	189.28	189.28	
	coordination with BC regarding TO#5					
	Totals		1.00		189.28	
	Total Labor					**189.28**

Total this Task	**$189.28**
Total this Project	**$3,785.60**
Total this report	**$3,785.60**

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

San County of (CA)
Dept of Public Works
Water Protection Program
5201 Road Suite P
San CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attn: Sara Agahi, Project Manager

Subject: SDCo Hydromod Management Plan

Billing Period : October 08, 2009 through January 07, 2010

Progress Billing No : 16

Reference : Authorization Dated : 9/6/2007

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

Contact : Nancy E Gardiner, PM

Invoiced By : Susan E Pantig

total invoice amount : $123,636.64

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

520444
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

01/15/10
DATE

PROJECT MANAGER

1/15/10
DATE

DPW MANAGER

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

Michael Nienberg, Vice President

006 -- Stakeholder Meetings/Coord

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	4.50	$ 200.10	900.45
Senior Technical Expert			
Eric S Mosolgo	2.00	$ 200.10	400.20
Sub-Total Labor	6.50		$ 1,300.65
Total Labor			**$ 1,300.65**

Total : 006 -- Stakeholder Meetings/Coord **$ 1,300.65**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833.

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

041 -- Update Model SUSMP - 2

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Laura E Carpenter	1.00	$ 101.67	101.67
Sub-Total Labor	1.00		$ 101.67
Total Labor			**$ 101.67**
Total : 041 -- Update Model SUSMP - 2			**$ 101.67**

056 -- Flow Threashold Alt Analysis

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Hydrologist			
Anthony M Dubin	2.00	$ 136.82	273.64
Sub-Total Labor	2.00		$ 273.64
Total Labor			**$ 273.64**
Total : 056 -- Flow Threashold Alt Analysis			**$ 273.64**

057 -- Draft Final HMP

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Laura E Carpenter	8.00	$ 101.67	813.36
Technical Writer			
Dorothy A Norton	21.00	$ 95.18	1,998.78

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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Brown and Caldwell
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San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Engineering Scientist			
Lisa C Skutecki	5.75	$ 128.73	740.20
Sub-Total Labor	34.75		$ 3,552.34
Total Labor			**$ 3,552.34**
Total : 057 -- Draft Final HMP			**$ 3,552.34**

058 -- Final HMP

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Engineer			
Matthew H Davis	9.00	$ 196.85	1,771.65
Sr. Hydrologist			
Anthony M Dubin	15.50	$ 136.82	2,120.71
Senior Technical Expert			
Nancy E Gardiner	60.00	$ 200.10	12,006.00
Project Manager			
Nancy E Gardiner	53.50	$ 180.96	9,681.36
Asst. Engineering Scientist			
Laura E Carpenter	14.00	$ 101.67	1,423.38
Senior Technical Expert			
Eric S Mosolgo	203.50	$ 200.10	40,720.35
Technical Writer			
Dorothy A Norton	30.25	$ 95.18	2,879.20
Sr. Engineering Scientist			
Lisa C Skutecki	8.25	$ 128.73	1,062.02
Sr. Geographic Info. System Analyst			
Eric A Stiles	34.25	$ 108.16	3,704.48

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Technical Writer			
Lori N Tamai	7.25	$ 95.18	690.06
Sr. Engineering Scientist			
Hayes J Twenter	1.50	$ 128.73	193.10
Sub-Total Labor	437.00		$ 76,252.31
Total Labor			**$ 76,252.31**

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Subconsultants	
O/S CONSULT-OTHER ALLOW	
PHILIP WILLIAMS & ASSOC. INC	3,785.60
PHILIP WILLIAMS & ASSOC. INC	13,848.64
PHILIP WILLIAMS & ASSOC. INC	6,439.32
PHILIP WILLIAMS & ASSOC. INC	4,644.64
Total Subconsultants	**$ 28,718.20**
Total Regular Expenses	**$ 28,718.20**
Total Expenses	**$ 28,718.20**
Total : 058 -- Final HMP	**$ 104,970.51**

059 -- Sizing Calc - Modeling Approach

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Asst. Engineering Scientist			
Brett J Bennetts	3.00	$ 101.67	305.01

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

Class/ Employee Name	Hours	Rate	Billing Amount
Project Assistant			
Janelle L Kaminski	0.25	$ 86.53	21.63
Asst. Engineering Scientist			
Laura E Carpenter	3.75	$ 101.67	381.26
Senior Technical Expert			
Eric S Mosolgo	11.00	$ 200.10	2,201.10
Sub-Total Labor	18.00		$ 2,909.00
Total Labor			**$ 2,909.00**
Total : 059 -- Sizing Calc - Modeling Approach			**$ 2,909.00**

501 -- Additional HSPF Modeling

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Sr. Hydrologist			
Anthony M Dubin	43.00	$ 136.82	5,883.26
Project Assistant			
Janelle L Kaminski	0.50	$ 86.53	43.27
Senior Technical Expert			
Eric S Mosolgo	23.00	$ 200.10	4,602.30
Sub-Total Labor	66.50		$ 10,528.83
Total Labor			**$ 10,528.83**
Total : 501 -- Additional HSPF Modeling			**$ 10,528.83**
Amount Due this Invoice			**$ 123,636.64**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44117861

Date : January 12, 2010

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001 --	Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002 --	WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004 --	SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006 --	Stakeholder Meetings/Coord	$ 38,723.26	$ 1,300.65	$ 41,307.19	$ 42,607.84	$ (3,884.58)
010 --	Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,780.57	$ 21,780.57	$ (21,780.57)
011 --	Contingency	$ 10,000.00	$ 0.00	$ 10,003.36	$ 10,003.36	$ (3.36)
041 --	Update Model SUSMP - 2	$ 169,062.28	$ 101.67	$ 112,612.35	$ 112,714.02	$ 56,348.26
051 --	Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 0.00	$ 105,900.91	$ 105,900.91	$ (13,795.31)
052 --	Select HSPF Modeling Parameters	$ 50,638.00	$ 0.00	$ 50,126.62	$ 50,126.62	$ 511.38
053 --	Develop BMP Modeling Appraoch	$ 80,678.00	$ 0.00	$ 105,966.44	$ 105,966.44	$ (25,288.44)
054 --	Add'l Funding for Rain Gauge Task	$ 48,641.00	$ 0.00	$ 95,263.30	$ 95,263.30	$ (46,622.30)
055 --	Watershed Modeling	$ 91,012.00	$ 0.00	$ 80,582.40	$ 80,582.40	$ 10,429.60
056 --	Flow Threashold Alt Analysis	$ 35,817.00	$ 273.64	$ 47,979.93	$ 48,253.57	$ (12,436.57)
057 --	Draft Final HMP	$ 66,511.00	$ 3,552.34	$ 72,278.77	$ 75,831.11	$ (9,320.11)
058 --	Final HMP	$ 139,414.00	$ 104,970.51	$ 16,217.74	$ 121,188.25	$ 18,225.76
059 --	Sizing Calc - Modeling Approach	$ 40,000.00	$ 2,909.00	$ 0.00	$ 2,909.00	$ 37,091.00
501 --	Additional HSPF Modeling	$ 18,175.00	$ 10,528.83	$ 0.00	$ 10,528.83	$ 7,646.17
		$ 948,822.34	**$ 123,636.64**	**$ 806,752.30**	**$ 930,388.94**	**$ 18,433.41**

Total Paid To Date : **$ (806,752.30)**

Balance Outstanding : **$ 123,636.64**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Billing Detail - Items through 1/7/2010

Brown and Caldwell

Project : 133904 - SDCo Hydromod Management Plan

Phase : 006 -- Stakeholder Meetings/Coord

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	10/16/2009	10/22/2009	4.50	200.10	900.45
Preparation for and participation in HMP TAC meeting.											
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	10/10/2009	10/15/2009	1.00	200.10	200.10
San Diego HMP - development of agenda for TAC meeting											
			****	1044	112	****	10/15/2009	10/15/2009	1.00	200.10	200.10
San Diego HMP - weekly progress meeting with County of San Diego											
									2.00		400.20
Total: Senior Technical Expert									6.50		1,300.65
							Total Rate Schedule Labor				***1,300.65***

Phase : 041 -- Update Model SUSMP - 2

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	12/8/2009	12/10/2009	0.75	101.67	76.25
reviewing word document - missing fact sheet											
			****	1044	426	****	12/10/2009	12/10/2009	0.25	101.67	25.42
reviewing word document - missing fact sheet											
									1.00		101.67
							Total Rate Schedule Labor				***101.67***

Phase : 056 -- Flow Threashold Alt Analysis

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr. Hydrologist											
Anthony M Dubin			****	1044	112	****	10/16/2009	10/22/2009	0.50	136.82	68.41
Discussing/editing lower control threshold and PDS statistical method											
			****	1044	112	****	10/19/2009	10/22/2009	1.50	136.82	205.23
Discussing/editing lower control threshold and PDS statistical method											
									2.00		273.64
							Total Rate Schedule Labor				***273.64***
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	11/6/2009	11/12/2009	3.00	101.67	305.01
comment-response document											
			****	1044	426	****	11/9/2009	11/12/2009	2.50	101.67	254.18
comment-response document											
			****	1044	426	****	11/10/2009	11/12/2009	1.00	101.67	101.67
comment-response document											
			****	1044	426	****	11/12/2009	11/12/2009	1.50	101.67	152.51
comment-response document											
									8.00		813.37
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	10/12/2009	10/15/2009	1.00	128.73	128.73
review of materials eric emailed											
			****	1044	113	****	10/19/2009	10/22/2009	0.75	128.73	96.55
review cumulative impacts memo, email to eric											

Phase : 057 - Draft Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	10/20/2009	10/22/2009	1.50	128.73	193.10
		review various sections for Eric									
			****	1044	113	****	10/21/2009	10/22/2009	2.50	128.73	321.83
		readibility review of whole document, provided edits to dorothy									
									5.75		740.21
Technical Writer											
Dorothy A Norton			****	1044	670	****	10/16/2009	10/22/2009	0.25	95.18	23.80
		HMP rpt discuss work for next week									
			****	1044	670	****	10/19/2009	10/22/2009	1.50	95.18	142.77
		HMP rpt formatting&discuss w/eric									
			****	1044	670	****	10/20/2009	10/22/2009	9.00	95.18	856.62
		S01036 - HMP formatting, edits, etc.									
			****	1044	670	****	10/21/2009	10/22/2009	5.75	95.18	547.29
		S01036 - HMP formatting, edits, etc.									
			****	1044	670	****	11/17/2009	11/19/2009	0.25	95.18	23.80
		discuss hydromod with nancy									
			****	1044	670	****	11/23/2009	11/26/2009	0.50	95.18	47.59
		followup eric/nancy									
			****	1044	670	****	11/24/2009	11/26/2009	1.00	95.18	95.18
		mtg nancy/eric/candy acronym list									
			****	1044	670	****	12/1/2009	12/3/2009	1.50	95.18	142.77
		formatting breakout sections meet w/nancy/eric									
			****	1044	670	****	12/9/2009	12/10/2009	0.25	95.18	23.80
		hydromod final									
			****	1044	670	****	12/10/2009	12/10/2009	1.00	95.18	95.18
		meeting w Nancy; formatting									
									21.00		1,998.80
							Total Rate Schedule Labor				***3,552.38***

Phase : 058 - Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Technical Writer											
Lori N Tamai			****	1044	593	****	10/20/2009	10/22/2009	2.75	95.18	261.75
		Word processing for HMP final report									
			****	1044	593	****	12/13/2009	12/31/2009	4.50	95.18	428.31
		Word processing of Final report									
									7.25		690.06
Technical Writer											
Dorothy A Norton			****	1044	670	****	12/11/2009	12/17/2009	5.75	95.18	547.29
		formatting; coordination of document									
			****	1044	670	****	12/12/2009	12/17/2009	6.00	95.18	571.08
		formatting; coordination of document									
			****	1044	670	****	12/14/2009	12/17/2009	6.50	95.18	618.67
		formatting; coordination of document									
			****	1044	670	****	12/15/2009	12/17/2009	0.75	95.18	71.39
		formatting;									
			****	1044	670	****	12/16/2009	12/17/2009	0.50	95.18	47.59
		formatting;									
			****	1044	670	****	12/28/2009	12/31/2009	1.25	95.18	118.98
		final hydromod									
			****	1044	670	****	12/29/2009	12/31/2009	8.00	95.18	761.44
		final edits, etc for hydromod rpt.									
			****	1044	670	****	1/4/2010	1/7/2010	1.00	95.18	95.18
		final hydromod									
			****	1044	670	****	1/5/2010	1/7/2010	0.50	95.18	47.59
		final edits, etc for hydromod rpt.									
									30.25		2,879.21

Phase : 058 – Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	10/20/2009	10/22/2009	6.00	101.67	610.02
assisting with final deliverable											
			****	1044	426	****	10/21/2009	10/22/2009	0.75	101.67	76.25
updating model susmp											
			****	1044	426	****	11/18/2009	11/19/2009	2.25	101.67	228.76
draft final document comment responses											
			****	1044	426	****	11/19/2009	11/19/2009	2.00	101.67	203.34
draft final document comment responses											
			****	1044	426	****	12/11/2009	12/17/2009	3.00	101.67	305.01
assistance with final document											
									14.00		1,423.38
Principal Engineer											
Matthew H Davis			****	1044	113	****	10/23/2009	10/29/2009	3.00	196.85	590.55
Incorporated new features into the integrate management practices software											
			****	1044	113	****	10/26/2009	10/29/2009	6.00	196.85	1,181.10
Incorporated new features into the integrate management practices software											
									9.00		1,771.65
Project Manager											
Nancy E Gardiner			058	1044	421	****	10/13/2009	10/15/2009	0.50	180.96	90.48
Reviewed invoice.											
			058	1044	421	****	10/14/2009	10/15/2009	0.50	180.96	90.48
Updated Microsoft Project schedule.											
			058	1044	421	****	10/22/2009	10/22/2009	2.00	180.96	361.92
Worked on meeting minutes from October 16th TAC meeting.											
			058	1044	421	****	10/26/2009	10/29/2009	1.00	180.96	180.96
Met with Eric; revised project schedule.											
			058	1044	421	****	10/28/2009	10/29/2009	0.50	180.96	90.48
Budget review.											
			058	1044	421	****	10/30/2009	11/5/2009	2.50	180.96	452.40
Worked on meeting notes.											
			058	1044	421	****	11/11/2009	11/12/2009	1.00	180.96	180.96
Worked on meeting notes and filing.											
			058	1044	421	****	11/12/2009	11/12/2009	2.50	180.96	452.40
Worked on minutes from Copermittee meeting.											
			058	1044	421	****	11/13/2009	11/19/2009	2.00	180.96	361.92
Copermittee meeting minutes.											
			058	1044	421	****	11/18/2009	11/19/2009	0.50	180.96	90.48
Project Management											
			058	1044	421	****	11/20/2009	11/26/2009	1.00	180.96	180.96
PM and filing.											
			058	1044	421	****	11/30/2009	12/3/2009	2.00	180.96	361.92
Meeting with Eric, rreview of revised comment and response document, eview of project schedule, phone call with Sara.											
			058	1044	421	****	12/3/2009	12/3/2009	1.00	180.96	180.96
Reviewing PWA memo.											
			058	1044	421	****	12/4/2009	12/10/2009	1.00	180.96	180.96
Reviewed comments on Final HMP.											
			058	1044	421	****	12/10/2009	12/10/2009	3.00	180.96	542.88
Worked on revisions to Sections 4 and 5, inetgrated comments from Comment and Response document.											
			058	1044	421	****	12/11/2009	12/17/2009	4.00	180.96	723.84
Working on Final HMP.											
			058	1044	421	****	12/12/2009	12/17/2009	4.00	180.96	723.84
Working on Final HMP.											
			058	1044	421	****	12/13/2009	12/17/2009	2.00	180.96	361.92
Working on Final HMP.											
			058	1044	421	****	12/14/2009	12/17/2009	7.00	180.96	1,266.72
Working on Final HMP.											
			058	1044	421	****	12/15/2009	12/17/2009	2.00	180.96	361.92
Working on Final HMP.											
			058	1044	421	****	12/16/2009	12/17/2009	5.00	180.96	904.80
Working on Final HMP.											
			058	1044	421	****	12/17/2009	12/17/2009	8.00	180.96	1,447.68
Working on Final HMP.											
			058	1044	421	****	1/5/2010	1/7/2010	0.50	180.96	90.48
Miscellaneous project management (filing, invoicing)											
									53.50		9,681.36

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	10/14/2009	10/15/2009	0.50	200.10	100.05
Reviewed outstanding items Tech Memo.											
			****	1044	421	****	10/15/2009	10/15/2009	2.50	200.10	500.25
Reviewed revised decision matrix prepared by Eric; progress meeting with Sara.											
			****	1044	421	****	10/19/2009	10/22/2009	4.50	200.10	900.45
Preparing Draft Final HMP.											
			****	1044	421	****	10/20/2009	10/22/2009	8.00	200.10	1,600.80
Preparing Draft Final HMP.											
			****	1044	421	****	10/21/2009	10/22/2009	6.50	200.10	1,300.65
Preparing Draft Final HMP.											
			****	1044	421	****	10/23/2009	10/29/2009	2.00	200.10	400.20
HMP meeting minutes.											
			****	1044	421	****	10/28/2009	10/29/2009	5.00	200.10	1,000.50
Meeting with Copermittees.											
			****	1044	421	****	11/6/2009	11/12/2009	2.00	200.10	400.20
Reviewed comments received on Draft Final HMP; worked with Laura to set up comment and response document.											
			****	1044	421	****	11/11/2009	11/12/2009	1.50	200.10	300.15
Reviewed comments received on Draft Final HMP; worked with Laura to set up comment and response document.											
			****	1044	421	****	11/16/2009	11/19/2009	3.50	200.10	700.35
HMP mini-TAC meeting.											
			****	1044	421	****	11/17/2009	11/19/2009	2.00	200.10	400.20
Reading and following up on elements of final HMP.											
			****	1044	421	****	11/18/2009	11/19/2009	0.50	200.10	100.05
HMP acronym list.											
			****	1044	421	****	11/19/2009	11/19/2009	1.00	200.10	200.10
HMP acronym list.											
			****	1044	421	****	11/23/2009	11/26/2009	1.00	200.10	200.10
Prepared for meetings with Eric and Sara.											
			****	1044	421	****	11/24/2009	11/26/2009	2.00	200.10	400.20
Began reviewing Comment and Response document; reviewed project schedule.											
			****	1044	421	****	11/25/2009	11/26/2009	4.00	200.10	800.40
Reviewed Comment and Response document; met with Eric internally; met with Sara.											
			****	1044	421	****	12/18/2009	12/24/2009	4.50	200.10	900.45
Worked on Final HMP submittal											
			****	1044	421	****	12/29/2009	12/31/2009	6.00	200.10	1,200.60
Helping Eric get Final HMP submittal completed and delivered.											
			****	1044	421	****	1/4/2010	1/7/2010	2.00	200.10	400.20
Meeting with Sara, meeting with Eric, budgeting. Scoping with Dan Cloak.											
			****	1044	421	****	1/7/2010	1/7/2010	1.00	200.10	200.10
Discussion with Eric regarding meeting with Luis Parra; review of PWA invoice.											
									60.00		12,006.00
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	10/9/2009	10/15/2009	2.00	200.10	400.20
San Diego HMP - development and revisions to HMP Decision Matrix; updated memos regarding outstanding items, monitoring plan, cumulative watershed impacts, drawdown times and orifice sizing											
			****	1044	112	****	10/10/2009	10/15/2009	2.00	200.10	400.20
San Diego HMP - development and revisions to HMP Decision Matrix; updated memos regarding outstanding items, monitoring plan, cumulative watershed impacts, drawdown times and orifice sizing											
			****	1044	112	****	10/13/2009	10/15/2009	2.00	200.10	400.20
San Diego HMP - development and revisions to HMP Decision Matrix; updated memos regarding outstanding items, monitoring plan, cumulative watershed impacts, drawdown times and orifice sizing											
			****	1044	112	****	10/14/2009	10/15/2009	2.00	200.10	400.20
San Diego HMP - weekly progress meeting with County of San Diego											
			****	1044	112	****	10/15/2009	10/15/2009	7.00	200.10	1,400.70
San Diego HMP - development and revisions to HMP Decision Matrix; updated memos regarding outstanding items, monitoring plan, cumulative watershed impacts, drawdown times and orifice sizing											
			****	1044	112	****	10/16/2009	10/22/2009	6.00	200.10	1,200.60
Presentation preparation and delivery at San Diego HMP TAC Meeting											
			****	1044	112	****	10/19/2009	10/22/2009	4.00	200.10	800.40
Preparation of Draft Final HMP for submittal to Copermittees, TAC and RWQCB on October 21, 2009											
			****	1044	112	****	10/20/2009	10/22/2009	4.00	200.10	800.40
Preparation of Draft Final HMP for submittal to Copermittees, TAC and RWQCB on October 21, 2009											

Phase : 058 -- Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	10/21/2009	10/22/2009	6.00	200.10	1,200.60
Preparation of Draft Final HMP for submittal to Copermittees, TAC and RWQCB on October 21, 2009											
			****	1044	112	****	10/22/2009	10/22/2009	7.00	200.10	1,400.70
Preparation of Draft Final HMP for submittal to Copermittees, TAC and RWQCB on October 21, 2009											
			****	1044	112	****	10/23/2009	10/29/2009	1.00	200.10	200.10
San Diego HMP - review of low flow calculator amendments											
			****	1044	112	****	10/26/2009	10/29/2009	0.50	200.10	100.05
San Diego HMP - review comments received regarding the Draft Final HMP											
			****	1044	112	****	10/27/2009	10/29/2009	1.00	200.10	200.10
San Diego HMP - preparation of presentation for San Diego Copermittees											
			****	1044	112	****	10/28/2009	10/29/2009	5.00	200.10	1,000.50
San Diego HMP - deliver HMP presentation to San Diego Copermittee Land Development work group; preparation of presentation											
			****	1044	112	****	10/29/2009	10/29/2009	1.00	200.10	200.10
San Diego HMP - review and respond to comments received regarding the draft final HMP											
			****	1044	112	****	11/3/2009	11/5/2009	1.00	200.10	200.10
San Diego HMP - updates to Monitoring Plan based upon discussion with experts at CASQA; correspondence with PWA regarding clarifications of the interim flow control criteria and geomorphic / sediment transport protocols											
			****	1044	112	****	11/5/2009	11/5/2009	1.00	200.10	200.10
San Diego HMP - review of HMP comments from various stakeholders; begin preparation of comment response document											
			****	1044	112	****	11/6/2009	11/12/2009	1.00	200.10	200.10
San Diego HMP - prepare and submit cost estimate for San Diego HMP Sizing Calculator											
			****	1044	112	****	11/9/2009	11/12/2009	2.00	200.10	400.20
San Diego HMP - weekly progress meeting; update to the Guide to Decision Matrix memo; review all comments received regarding San Diego HMP Draft Final and begin assembly of responses											
			****	1044	112	****	11/10/2009	11/12/2009	3.00	200.10	600.30
San Diego HMP - responses to specific questions regarding river reach exemptions; preparation of Comment Response document responses											
			****	1044	112	****	11/11/2009	11/12/2009	6.00	200.10	1,200.60
San Diego HMP - preparation of responses for comment response document; refinement to scope for sizing calculator development; coordination of PWA regarding tasks required for comment response document											
			****	1044	112	****	11/12/2009	11/12/2009	6.00	200.10	1,200.60
San Diego HMP - preparation of responses for Comment Response Document; preparation of updates project schedule pursuant to meeting with Sara Agahi earlier in the week; coordination of PWA efforts regarding comment response document											
			****	1044	112	****	11/13/2009	11/19/2009	4.00	200.10	800.40
Discussion of outstanding HMP issues with Tory Walker and Glen Van Peski; note concerns and outline potential updates in Final HMP; coordination with Tony Dubin and PWA regarding flow duration control sizing criteria language for Final HMP; preparation of responses for HMP comment response document											
			****	1044	112	****	11/15/2009	11/19/2009	1.00	200.10	200.10
Preparation of responses for HMP comment response document											
			****	1044	112	****	11/16/2009	11/19/2009	6.00	200.10	1,200.60
Preparation for 11/16 TAC meeting (agenda preparation, etc.); lead discussion at 11/16 TAC meeting; meeting with Andy Baldwin regarding scope for HMP sizing calculator development; review of revised critical flow calculator; preparation of responses for comment response document; coordination with PWA											
			****	1044	112	****	11/17/2009	11/19/2009	2.00	200.10	400.20
Draft responses for HMP comment response document											
			****	1044	112	****	11/18/2009	11/19/2009	4.00	200.10	800.40
Preparation of responses for HMP comment response document; review of PWA's revisions to literature review and Chapter 5 (flow threshold analysis)											
			****	1044	112	****	11/19/2009	11/19/2009	4.00	200.10	800.40
Progress meeting with Sara Agahi of County of San Diego; update to project schedule through Dec 29th RWQCb submittal; revision to Sizing Calculator Scope of Work; preparation of Cost Estimate and Scope of Work for additional HSPF modeling tasks; finalize responses for Comment Response Document											
			****	1044	112	****	11/20/2009	11/26/2009	3.00	200.10	600.30
San Diego HMP - preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	11/22/2009	11/26/2009	1.00	200.10	200.10
San Diego HMP - preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											
			****	1044	112	****	11/23/2009	11/26/2009	3.00	200.10	600.30
San Diego hMP - weekly progress meeting; sizing calculator kickoff meeting; preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											
			****	1044	112	****	11/24/2009	11/26/2009	5.00	200.10	1,000.50
San Diego HMP - preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											
			****	1044	112	****	11/25/2009	11/26/2009	8.00	200.10	1,600.80
San Diego HMP - meeting with County of San Diego to discuss comment response document and project schedule; preparation of comment response document; coordination with PWA; preparation of cost estimates related to HMP sizing calculator, additional HSPF modeling tasks (to determine cumulative watershed impacts) and geomorphic guidelines for stream rehabilitation projects; coordination with SCCWRP regarding channel screening tools and domain of analysis											
			****	1044	112	****	11/30/2009	12/3/2009	1.00	200.10	200.10
Correspondence with County of San Diego regarding funding for sizing calculator and additional HSPF modeling tasks; correpspondence with Eric Stein regarding SCCWRP screening tool and domain of analysis timing											
			****	1044	112	****	12/1/2009	12/3/2009	2.00	200.10	400.20
coordination with Tony Dubin regarding HSPF flow duration curve analysis of the San Diego River; setup boundary conditions for the analysis and review long-term streamflow records for the San Diego River.											
			****	1044	112	****	12/2/2009	12/3/2009	3.00	200.10	600.30
Review of geomorphic design guidelines; review and respond to additional HMP comments submitted by Tory Walker; provide details of HMP monitoring plan to Christina Arias											
			****	1044	112	****	12/3/2009	12/3/2009	1.50	200.10	300.15
Review of revised low flow calculation text											
			****	1044	112	****	12/7/2009	12/10/2009	3.50	200.10	700.35
Meeting with RWQCB to discuss HMP submittal											
			****	1044	112	****	12/8/2009	12/10/2009	5.00	200.10	1,000.50
Coordination with PWA regarding the acquisition of HMP comments											
			****	1044	112	****	12/8/2009	12/10/2009	1.00	200.10	200.10
Update to San Diego HMP; update text for all sections and incorporate all responses to comments											
			****	1044	112	****	12/9/2009	12/10/2009	3.00	200.10	600.30
Update to San Diego HMP; update text for all sections and incorporate all responses to comments											
			****	1044	112	****	12/10/2009	12/10/2009	6.50	200.10	1,300.65
San Diego - provide final edits for San Diego HMP draft to be submitted to the Copermittees											
			****	1044	112	****	12/11/2009	12/17/2009	7.00	200.10	1,400.70
San Diego HMP - conference call with Eric Stein in preparation for presentations to RWQCb and SCCWRP; work on HMP text for Executive Summary, Chapter 1, Chapter 2, Chapter 3, Chapter 6, Chapter 7, Chapter 8, Chapter 9 plus appendices; review of revised SCCWRP screening tool and SCCWRP monitoring plan recommendations; coordination with Andy Collison of PWA regarding comment responses											
			****	1044	112	****	12/12/2009	12/17/2009	2.00	200.10	400.20
San Diego HMP - update to HMP Decision Matrix											
			****	1044	112	****	12/13/2009	12/17/2009	2.00	200.10	400.20
San Diego HMP - finalize text for Executive Summary, Chapter 1, Chapter 2, Chapter 3...work on text for Chapter 6, 7, 8 and 9 plus appendices											
			****	1044	112	****	12/14/2009	12/17/2009	8.00	200.10	1,600.80
San Diego HMP - finalize text for Chapter 6, Chapter 7, Chapter 8, Chapter 9 and appendices...overall coordination with Word Processing regarding finalization of HMP document											
			****	1044	112	****	12/16/2009	12/17/2009	4.50	200.10	900.45
San Diego HMP - address HMP comments; edits to Chapter 5 in preparation of Errata Sheet; preparation of presentation to Copermittees and RWQCB											

Phase : 058 – Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	12/17/2009	12/17/2009	7.00	200.10	1,400.70
San Diego HMP - presentations to San Diego Copermittees and RWQCB regarding San Diego HMP overview											
			****	1044	112	****	12/18/2009	12/24/2009	3.00	200.10	600.30
San Diego HMP - updates to HMP document and errata sheet subsequent to receipt of comments											
			****	1044	112	****	12/21/2009	12/24/2009	1.00	200.10	200.10
Incorporation of comment responses to HMP document and errata sheet											
			****	1044	112	****	12/23/2009	12/24/2009	7.00	200.10	1,400.70
Incorporation of comment responses to HMP document and errata sheet											
			****	1044	112	****	12/26/2009	12/31/2009	2.00	200.10	400.20
Finalize San Diego HMP for Tuesday submittal											
			****	1044	112	****	12/27/2009	12/31/2009	3.00	200.10	600.30
Finalize San Diego HMP for Tuesday submittal											
			****	1044	112	****	12/28/2009	12/31/2009	8.00	200.10	1,600.80
Finalize San Diego HMP for Tuesday submittal; responses to BIA comments											
			****	1044	112	****	12/29/2009	12/31/2009	7.00	200.10	1,400.70
Finalize San Diego HMP for Tuesday submittal											
			****	1044	112	****	12/30/2009	12/31/2009	1.00	200.10	200.10
Discussion regarding lower flow limits with PWA; internal BC month-end financial meeting											
			****	1044	112	****	1/4/2010	1/7/2010	1.50	200.10	300.15
San Diego HMP - prepare agenda for flow threshold report meeting with BIA and County of San Diego; weekly meeting with County of San Diego;											
			****	1044	112	****	1/6/2010	1/7/2010	1.50	200.10	300.15
Conference call with County of San Diego, BIA and PWA to discuss flow threshold analysis											
									203.50		40,720.35
Sr. Engineering Scientist											
Hayes J Twenter			****	1044	114	****	11/23/2009	11/26/2009	1.50	128.73	193.10
Developing BMP sizing calculator											
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	12/7/2009	12/10/2009	0.75	128.73	96.55
discussion with eric and nancy, reviewed email attachments											
			****	1044	113	****	12/8/2009	12/10/2009	0.75	128.73	96.55
reviewed HMP documents/emails from eric											
			****	1044	113	****	12/10/2009	12/10/2009	1.00	128.73	128.73
discussions with team, reviewed plan											
			****	1044	113	****	12/13/2009	12/17/2009	1.75	128.73	225.28
Section 6 and 8 review and mark ups, discussion with team											
			****	1044	113	****	12/28/2009	12/31/2009	0.50	128.73	64.37
review sections from eric											
			****	1044	113	****	12/29/2009	12/31/2009	2.75	128.73	354.01
review HMP sections and figures. strike out edits. emailed and discussed edits with team. met with sara when she visited the office with cover letter.											
			****	1044	113	****	1/5/2010	1/7/2010	0.75	128.73	96.55
meeting; internal filing											
									8.25		1,062.04
Sr. Geographic Info. System Analyst											
Eric A Stiles			****	1044	331	****	10/12/2009	10/15/2009	4.50	108.16	486.72
Revise Draft HMP Decision Matrix flow chart											
			****	1044	331	****	10/13/2009	10/15/2009	4.00	108.16	432.64
Revise Draft HMP Decision Matrix flow chart											
			****	1044	331	****	10/14/2009	10/15/2009	1.50	108.16	162.24
Revise Draft HMP Decision Matrix flow chart											
			****	1044	331	****	10/15/2009	10/15/2009	0.25	108.16	27.04
Revise Draft HMP Decision Matrix flow chart											
			****	1044	331	****	10/16/2009	10/22/2009	1.75	108.16	189.28
Revise Flow chart per Clients request for Eric M.											
			****	1044	331	****	10/20/2009	10/22/2009	1.25	108.16	135.20
Revise Flow chart per Eric M.											
			****	1044	331	****	12/13/2009	12/17/2009	6.50	108.16	703.04
Additions and Revisions to the Decision Matrix Flow Chart.											
			****	1044	331	****	12/28/2009	12/31/2009	8.00	108.16	865.28
Additions and Revisions to Eric M. "Draft HMP Decision Matrix" flow chart.											
			****	1044	331	****	12/29/2009	12/31/2009	6.50	108.16	703.04
Revisions to Eric M. "Draft HMP Decision Matrix" flow chart											
									34.25		3,704.48

Phase : 058 -- Final HMP

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Sr. Hydrologist											
Anthony M Dubin			****	1044	112	****	10/21/2009	10/22/2009	2.00	136.82	273.64
		sizing calculator development									
			****	1044	112	****	10/22/2009	10/22/2009	4.50	136.82	615.69
		development of the HMP sizing calculator									
			****	1044	112	****	10/23/2009	10/29/2009	1.50	136.82	205.23
		development of BMP sizing calculator									
			****	1044	112	****	10/26/2009	10/29/2009	3.00	136.82	410.46
		development of BMP sizing calculator									
			****	1044	112	****	10/27/2009	10/29/2009	2.50	136.82	342.05
		development of BMP sizing calculator									
			****	1044	112	****	10/28/2009	10/29/2009	1.00	136.82	136.82
		development of BMP sizing calculator									
			****	1044	112	****	11/13/2009	11/19/2009	1.00	136.82	136.82
		development of BMP sizing calculator									
									15.50		2,120.71
							Total Rate Schedule Labor				***76,252.33***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
O/S CONSULT-OTHER ALLOW									
PHILIP WILLIAMS & ASSOC. INC	64339	****	1044	1044004880	10/28/2009	10/29/2009	3,785.60	1.00	3,785.60
	64339	****	1044	1044004881	10/28/2009	10/29/2009	13,848.64	1.00	13,848.64
	64339	****	1044	1044004991	12/3/2009	12/3/2009	6,439.32	1.00	6,439.32
	64339	****	1044	1044004991	1/6/2010	1/7/2010	4,644.64	1.00	4,644.64
							28,718.20		28,718.20
					Total Regular Expenses				***28,718.20***

Phase : 059 -- Sizing Calc - Modeling Approach

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	426	****	11/24/2009	11/26/2009	1.00	101.67	101.67
		call with Eric M, Justin T, and Tony D re sizing calculator									
			****	1044	426	****	11/30/2009	12/3/2009	2.00	101.67	203.34
		revised wdm files									
			****	1044	426	****	12/1/2009	12/3/2009	0.75	101.67	76.25
		wdm file conversion									
									3.75		381.26
Asst. Engineering Scientist											
Brett J Bennetts			****	1044	116	****	12/1/2009	12/3/2009	3.00	101.67	305.01
		Confirm Bonita, Lower Otay, Fashion Valley, Oceanside and Santee csv files against their respective ACCESS database.									
Project Assistant											
Janelle L Kaminski			****	1044	641	****	11/25/2009	11/26/2009	0.25	86.53	21.63
		Setup new task for next phase of work.									
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	11/30/2009	12/3/2009	2.00	200.10	400.20
		San Diego HMP - coordination of rain gage data for San Diego HMP sizing calculator									
			****	1044	112	****	12/4/2009	12/10/2009	1.00	200.10	200.10
		San Diego Sizing Calculator development									
			****	1044	112	****	12/7/2009	12/10/2009	1.00	200.10	200.10
		San Diego Sizing Calculator development									
			****	1044	112	****	12/11/2009	12/17/2009	0.50	200.10	100.05
		Sizing calculator - preliminary scoping for project									
			****	1044	112	****	12/16/2009	12/17/2009	0.50	200.10	100.05
		San Diego Sizing Calculator - preliminary scoping for project									
			****	1044	112	****	12/21/2009	12/24/2009	1.00	200.10	200.10
		San Diego HMP Sizing Calculator - task order setup									

Phase : 059 – Sizing Calc - Modeling Approach

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Asst. Engineering Scientist											
Laura E Carpenter			****	1044	112	****	12/30/2009	12/31/2009	2.00	200.10	400.20
San Diego Sizing Calculator - setup methodology and technical approach											
			****	1044	112	****	1/4/2010	1/7/2010	1.00	200.10	200.10
San Diego Sizing Calculator - development of modeling outline and schedule											
			****	1044	112	****	1/5/2010	1/7/2010	1.00	200.10	200.10
San Diego Sizing Calculator - development of modeling outline and schedule											
			****	1044	112	****	1/6/2010	1/7/2010	1.00	200.10	200.10
San Diego Sizing Calculator - development of modeling outline and schedule											
									11.00		2,201.10
							Total Rate Schedule Labor				***2,909.00***

Phase : 501 – Additional HSPF Modeling

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Project Assistant											
Janelle L Kaminski			****	1044	641	****	12/16/2009	12/17/2009	0.50	86.53	43.27
Setting up new phase for additional authorized work and entering budgets to Lens. Submitting to Prism and routing Lens to ABOM for approval.											
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	12/12/2009	12/17/2009	2.00	200.10	400.20
San Diego HMP - provide recommendations and review data analysis regarding river reach, urban infill and 3-inch minimum orifice size flow duration analysis											
			****	1044	112	****	12/13/2009	12/17/2009	2.00	200.10	400.20
San Diego HMP - provide recommendations and review data analysis regarding river reach, urban infill and 3-inch minimum orifice size flow duration analysis											
			****	1044	112	****	12/16/2009	12/17/2009	2.00	200.10	400.20
Review of technical memos regarging flow duration analysis justifying certain exemptions											
			****	1044	112	****	12/1/2009	12/24/2009	2.00	200.10	400.20
Review of additional comment responses; provide details of the HMP sizing calculator and example files to County of San Diego for presentation											
			****	1044	112	****	12/2/2009	12/24/2009	1.50	200.10	300.15
coordination with Tony Dubin regarding additional HSPF modeling tasks											
			****	1044	112	****	12/3/2009	12/24/2009	3.00	200.10	600.30
Review of initial modeling for San Diego River flow duration analysis; provide comments to Tony Dubin											
			****	1044	112	****	12/4/2009	12/24/2009	4.50	200.10	900.45
conference call with Tony Dubin to outline additional modeling tasks; correspondence with Sara Agahi regarding additional HSPF modeling tasks; outline tasks to be completed subsequent to initial model setups; review of geomorphic guidelines preparared by PWA; document all modeling assumptions used in the additional HSPF sensitivity analysis											
			****	1044	112	****	12/9/2009	12/24/2009	6.00	200.10	1,200.60
review of HSPF modeling files prepared for the San Diego river reach exemption, minimum orifice size, and urban infilli exemptions; conference call with Tony Dubin to discuss results; prepare summary memos for distribution to Copermittees; review of design parameters used as part of the analysis											
									23.00		4,602.30
Sr. Hydrologist											
Anthony M Dubin			****	1044	112	****	12/1/2009	12/24/2009	2.00	136.82	273.64
HMP sensitivity analysis: San Diego River, urbanized watershed, minimum orifice threshold											
			****	1044	112	****	12/2/2009	12/24/2009	6.00	136.82	820.92
HMP sensitivity analysis: San Diego River, urbanized watershed, minimum orifice threshold											
			****	1044	112	****	12/3/2009	12/24/2009	8.00	136.82	1,094.56
HMP sensitivity analysis: San Diego River, urbanized watershed, minimum orifice threshold											
			****	1044	112	****	12/4/2009	12/24/2009	4.50	136.82	615.69
San Diego River flow duration analysis											
			****	1044	112	****	12/6/2009	12/24/2009	3.00	136.82	410.46
San Diego River flow duration analysis and Urban infill flow duration sensitivity analysis											
			****	1044	112	****	12/7/2009	12/24/2009	7.00	136.82	957.74
Urban infill flow duration sensitivity analysis and 3-inch orifice flow duration sensitivity analysis											
			****	1044	112	****	12/8/2009	12/24/2009	2.00	136.82	273.64
3-inch orifice flow duration sensitivity analysis											
			****	1044	112	****	12/9/2009	12/24/2009	3.50	136.82	478.87
3-inch orifice flow duration sensitivity analysis and Tech memo preparation											
			****	1044	112	****	12/10/2009	12/24/2009	4.00	136.82	547.28
Tech memo preparation											
			****	1044	112	****	12/16/2009	12/24/2009	3.00	136.82	410.46
Aditional HSPF Anlayses -- preparing tech memo. Transfer to Phase 060 when available.											
									43.00		5,883.26

Invoice

PO #2058 ✓ OK to pay sub
Line 8
Nancy Gardi
12/31/09
51089 133904 - 058.***.1044
$4,644.64

PWA
PHILIP WILLIAMS & ASSOCIATES, LTD.
ENVIRONMENTAL HYDROLOGY
550 Kearny Street, Suite 900
San Francisco, California 94108-2404
ph 415.262.2300 fax 415.262.2303
www.pwa-ltd.com

December 9, 2009
Project No: 001915.00
Invoice No: 1109032

Brown and Caldwell
Nancy Gardiner
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from October 31, 2009 to November 27, 2009

Total this Project **$0.00**

Project 001915.04 San Diego Hydromod - Authorization 4
Prism Project # 133904

Task 002 Minimum Flow Alternative Threshold
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Collison, Andrew	3.00	189.28	567.84	
Totals 64339	3.00		567.84	
Total Labor				567.84

PO No 2058		Vendor No:			SUB	
PO Ln	G/L Code	Project	Phase	Task	Org	Amount
8	51089	133904	058	*	1044	$ 4644.64
						$
						$
						$
Date		Approved By See above			Total $ 4644.64	

Total this Task **$567.84**

Total this Project **$567.84**

Project 001915.05 San Diego Hydromod - Authorization 5
Prism Project # 133904

Task 001 Response to 6/29/09 RWQCB Comments
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Collison, Andrew	8.00	189.28	1,514.24	
Totals	8.00		1,514.24	
Total Labor				1,514.24

Total this Task **$1,514.24**

Task 002 Develop flow threshold calculator

Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Collison, Andrew	8.00	189.28	1,514.24	
Engineering Scientist				
Bozkurt, Setenay	9.00	116.48	1,048.32	
Totals	17.00		2,562.56	
Total Labor				**2,562.56**

Total this Task	**$2,562.56**
Total this Project	**$4,076.80**
Total this Invoice	**$4,644.64**

Elizabeth S. Andrews for

Sandy McFadden
Director of Finance and Administration

Billing Backup

Wednesday, December 09, 2009

Philip Williams & Associates, Ltd. **Invoice 1109032 Dated 12/9/09** *12:37:19 PM*

Project 001915.04 San Diego Hydromod - Authorization 4

Task 002 Minimum Flow Alternative Threshold

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00202	Collison, Andrew	11/18/09	1.00	189.28	189.28	
	refine low flow calculator					
00202	Collison, Andrew	11/19/09	2.00	189.28	378.56	
	refine low flow calculator					
	Totals		3.00		567.84	
	Total Labor					**567.84**
				Total this Task		**$567.84**
				Total this Project		**$567.84**

Project 001915.05 San Diego Hydromod - Authorization 5

Task 001 Response to 6/29/09 RWQCB Comments

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00202	Collison, Andrew	11/16/09	2.00	189.28	378.56	
	Misc projects EPA creek erosion					
00202	Collison, Andrew	11/17/09	2.00	189.28	378.56	
	refine low flow calculator					
00202	Collison, Andrew	11/24/09	2.00	189.28	378.56	
	respond to review comments					
00202	Collison, Andrew	11/25/09	2.00	189.28	378.56	
	respond to review comments					
	Totals		8.00		1,514.24	
	Total Labor					**1,514.24**
				Total this Task		**$1,514.24**

Task 002 Develop flow threshold calculator

Professional Personnel

			Hours	Rate	Amount
Principal Engineer / Scientist					
00202	Collison, Andrew	11/9/09	1.00	189.28	189.28
	respond to RWQCB comments				
00202	Collison, Andrew	11/12/09	3.00	189.28	567.84
	refine low flow calculator				

00202	Collison, Andrew	11/13/09	4.00	189.28	757.12	
	respond to RWQCB comments					
Engineering Scientist						
00174	Bozkurt, Setenay	11/17/09	4.00	116.48	465.92	
	refine low flow calculator					
00174	Bozkurt, Setenay	11/18/09	2.00	116.48	232.96	
	refine low flow calculator					
00174	Bozkurt, Setenay	11/23/09	3.00	116.48	349.44	
	refine low flow calculator					
	Totals		17.00		2,562.56	
	Total Labor					**2,562.56**
				Total this Task		**$2,562.56**
				Total this Project		**$4,076.80**
				Total this report		**$4,644.64**

Invoice

PO No: 2058		Vendor No 64339			SUB	
PO Ln	G/L Code	Project	Phase	Task	Org	Amount
8	51089	133904-	0518		1044	$ 6439.32
						$
						$
						$
Date 11/25/09		Approved By: Nancy E Gardi			Total $ 6439	

6439.32

PWA
ENVIRONMENTAL HYDROLOGY
550 Kearny Street Suite 900
San Francisco, California 94108-2404
415.262.2300 x 415.262.2303
www.pwa-ltd.com

November 13, 2009
Project No: 001915.00
Invoice No: 1009028

Brown and Caldwell
Nancy Gardjner
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

NOV 30 2009

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from September 26, 2009 to October 30, 2009

Total this Project **$0.00**

Project 001915.05 San Diego Hydromod - Authorization 5
Prism Project # 133904

Task 001 Response to 6/29/09 RWQCB Comments
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	6.00	189.28	1,135.68	
Totals	6.00		1,135.68	
Total Labor				**1,135.68**

Total this Task **$1,135.68**

Task 002 Develop flow threshold calculator
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	11.00	189.28	2,082.08	
Collison, Andrew	9.00	189.28	1,703.52	
Totals	20.00		3,785.60	
Total Labor				**3,785.60**

Total this Task **$3,785.60**

Task 003 Meetings and Telecons
Professional Personnel

	Hours	Rate	Amount
Principal Engineer / Scientist			
Beeman, Christie	1.00	189.28	189.28

Project	001915.00	San Diego Hydromod		Invoice 1009028	
Collison, Andrew		7.00	189.28	1,324.96	
	Totals	8.00		1,514.24	
	Total Labor				**1,514.24**
			Total this Task		**$1,514.24**

Task	600	PWA Expenses			
Unit Billing					
Black & White Copies - Letter		33.0 sheets @ 0.10		3.30	
	Total Units		**1.15 times**	**3.30**	**3.80**
			Total this Task		**$3.80**
			Total this Project		**$6,439.32**
			Total this Invoice		**$6,439.32**

Sandy McFadden
Director of Finance and Administration

Billing Backup

Friday, November 13, 2009

Philip Williams & Associates, Ltd. **Invoice 1009028 Dated 11/13/09** *5:25:25 PM*

Project 001915.05 San Diego Hydromod - Authorization 5

Task 001 Response to 6/29/09 RWQCB Comments

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	9/29/09	1.00	189.28	189.28	
	TAC meeting prep					
00133	Beeman, Christie	10/1/09	1.00	189.28	189.28	
	TAC debrief with AC					
00133	Beeman, Christie	10/20/09	1.00	189.28	189.28	
	Finalize response memo					
00133	Beeman, Christie	10/21/09	3.00	189.28	567.84	
	Finalize response memo					
	Totals		6.00		1,135.68	
	Total Labor					**1,135.68**
				Total this Task		**$1,135.68**

Task 002 Develop flow threshold calculator

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	10/1/09	5.00	189.28	946.40	
	TAC comments follow-up					
00133	Beeman, Christie	10/6/09	2.00	189.28	378.56	
	Comparing calculator &other tools					
00133	Beeman, Christie	10/8/09	4.00	189.28	757.12	
	review decision tree & SCCRP materials					
00202	Collison, Andrew	10/19/09	2.00	189.28	378.56	
	finalize report					
00202	Collison, Andrew	10/20/09	2.00	189.28	378.56	
	finalize report					
00202	Collison, Andrew	10/22/09	1.00	189.28	189.28	
	Finalizing calculator					
00202	Collison, Andrew	10/23/09	4.00	189.28	757.12	
	finalize low flow calculator					
	Totals		20.00		3,785.60	
	Total Labor					**3,785.60**
				Total this Task		**$3,785.60**

00202	Collison, Andrew	9/29/09	3.00	189.28	567.84	
	prep presentation for TAC					
00202	Collison, Andrew	9/30/09	4.00	189.28	757.12	
	TAC meeting					
	Totals		8.00		1,514.24	
	Total Labor					**1,514.24**
				Total this Task		**$1,514.24**

Task 600 PWA Expenses

Unit Billing

Black & White Copies - Letter	33.0 sheets @ 0.10		3.30	
Total Units		**1.15 times**	**3.30**	**3.80**
		Total this Task		**$3.80**
		Total this Project		**$6,439.32**
		Total this report		**$6,439.32**

Unit Posting Log

Wednesday, November 04, 2009

Period: 10/2009 **Posting Sequence:** 219
Posting Date: 11/4/09 12:42:06 PM
Posted by: P.SODHI **Transaction File:** 1915.05 oct09

Philip Williams & Associates, Ltd. **Period ending 10/30/09** *12:42:34 PM*

Unit / Date	Table / Description	Name / Project	Task	Account	Quantity	Cost Amount	Billing Amount	Billing Extension
B&W LTR	**2009 RATES**	**Black & White Copies - Letter**						
10/6/09		001915.05	600	522.00	33.000	3.30	3.30	3.80
			Black & White Copies - Letter Total		**33.000**	**3.30**	**3.30**	**3.80**
				Final Total	**33.000**	**3.30**	**3.30**	**3.80**

General Ledger Posting Summary

		Debits	Credits
CA	San Francisco		
522.00	Reimbursable - Printing & Repro	3.30	
791.00	Recovery - Printing & Reproduction		3.30
	Total for CA	**3.30**	**3.30**
	Totals	**3.30**	**3.30**

Posting Seq: 219
Posting Date: 11/4/09 12:42:06 PM

Invoice

PWA
PHILIP WILLIAMS & ASSOCIATES,
ENVIRONMENTAL HYDROLOGY
550 Kearny Street, Suite 900
San Francisco, California 94108-2404
415.262.2300 fax 415.262.2303
www.pwa-ltd.com

September 3, 2009
Project No: 001915.00
Invoice No: 809007

Brown and Caldwell
Nancy Gardiner
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

SEP 21 2009

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from August 1, 2009 to August 28, 2009

Total this Project **$0.00**

Project 001915.04 San Diego Hydromod - Authorization 4
Prism Project # 133904

Task 002 Minimum Flow Alternative Threshold
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Collison, Andrew	1.50	189.28	283.92	
	1.50		283.92	
				283.92
Total this Task				**$283.92**
Total this Project				**$283.92**

PO No: 2058		Vendor No: Totals 64339			Sub	
PO Ln	G/L Code	Project	Phase	Task	Org	Amount
8	51089	133904	058	K	1044	$13,848.64
						$
						$
						$
Date 10/26/09		Approved By: Nancy E Gardiner			Total $ 13,848.64	

Project 001915.05 San Diego Hydromod - Authorization 5
Prism Project # 133904

Task 001 Response to 6/29/09 RWQCB Comments
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	18.00	189.28	3,407.04	
Collison, Andrew	11.00	189.28	2,082.08	
Asst. Engineering Scientist				
Brown, Rocko	1.00	97.76	97.76	
White, Jason	8.00	97.76	782.08	
Totals	38.00		6,368.96	
Total Labor				**6,368.96**

Total this Task	**$6,368.96**

Task 002 Develop flow threshold calculator

Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	9.00	189.28	1,703.52	
Collison, Andrew	28.50	189.28	5,394.48	
Asst. Engineering Scientist				
White, Jason	1.00	97.76	97.76	
Totals	38.50		7,195.76	
Total Labor				**7,195.76**

Total this Task	**$7,195.76**
Total this Project	**$13,564.72**
Total this Invoice	**$13,848.64**

Sandy McFadden
Director of Finance and Administration

Project 001915.04 San Diego Hydromod - Authorization 4

Task 002 Minimum Flow Alternative Threshold

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00202	Collison, Andrew	6/12/09	1.50	189.28	283.92	
	minimum flow calculations					
	Totals		1.50		283.92	
	Total Labor					**283.92**
				Total this Task		**$283.92**
				Total this Project		**$283.92**

Project 001915.05 San Diego Hydromod - Authorization 5

Task 001 Response to 6/29/09 RWQCB Comments

Professional Personnel

			Hours	Rate	Amount
Principal Engineer / Scientist					
00133	Beeman, Christie	6/12/09	2.00	189.28	378.56
	responding to questions from RWQCB				
00133	Beeman, Christie	7/14/09	2.00	189.28	378.56
	discussion/correspondence with EM re RWQCB comments				
00133	Beeman, Christie	7/29/09	5.00	189.28	946.40
	response to RWQCB				
00133	Beeman, Christie	8/13/09	2.00	189.28	378.56
	low flow calculation review				
00133	Beeman, Christie	8/20/09	4.00	189.28	757.12
	review report sections				
00133	Beeman, Christie	8/25/09	3.00	189.28	567.84
	review report sections				
00202	Collison, Andrew	8/3/09	1.00	189.28	189.28
	review new QCB comments				
00202	Collison, Andrew	8/10/09	3.00	189.28	567.84
	Low flow tool-write up				
00202	Collison, Andrew	8/11/09	1.00	189.28	189.28
	low flow tool-write up				
00202	Collison, Andrew	8/13/09	6.00	189.28	1,135.68
	report writing - RWQCB				
Asst. Engineering Scientist					
00261	Brown, Rocko	8/7/09	1.00	97.76	97.76
	review response for RWQCB				
00265	White, Jason	7/16/09	8.00	97.76	782.08
	Writing Report-RWQCB				

	Totals		38.00	6,368.96	
	Total Labor				**6,368.96**
				Total this Task	**$6,368.96**

Task 002 Develop flow threshold calculator

Professional Personnel

			Hours	Rate	Amount
Principal Engineer / Scientist					
00133	Beeman, Christie	8/4/09	1.00	189.28	189.28
	scoping tasks reqeusted by BC				
00133	Beeman, Christie	8/6/09	1.00	189.28	189.28
	flow control calculator - review w/AC				
00133	Beeman, Christie	8/13/09	2.00	189.28	378.56
	review report sections				
00133	Beeman, Christie	8/20/09	2.00	189.28	378.56
	low flow calculation review				
00133	Beeman, Christie	8/25/09	3.00	189.28	567.84
	review spreadsheet & discuss with A.C.				
00202	Collison, Andrew	6/12/09	2.00	189.28	378.56
	minimum flow calculations				
00202	Collison, Andrew	6/12/09	.50	189.28	94.64
	minimum flow calculations				
00202	Collison, Andrew	6/19/09	.50	189.28	94.64
	minimum flow documentation				
00202	Collison, Andrew	6/19/09	.50	189.28	94.64
	minimum flow documentation				
00202	Collison, Andrew	8/5/09	4.00	189.28	757.12
	Work on flow calculator-research Qcrit				
00202	Collison, Andrew	8/6/09	6.00	189.28	1,135.68
	flow calculator - instructions				
00202	Collison, Andrew	8/17/09	5.00	189.28	946.40
	low flow calculations				
00202	Collison, Andrew	8/18/09	4.00	189.28	757.12
	low flow spreadsheet format				
00202	Collison, Andrew	8/19/09	6.00	189.28	1,135.68
	low flow spreadsheet				
Asst. Engineering Scientist					
00265	White, Jason	8/13/09	1.00	97.76	97.76
	Compiling complete analysis for final report				
	Totals		38.50	7,195.76	
	Total Labor				**7,195.76**
				Total this Task	**$7,195.76**
				Total this Project	**$13,564.72**
				Total this report	**$13,848.64**

Invoice

PWA
PHILIP WILLIAMS & ASSOCIATES, LTD.
ENVIRONMENTAL HYDROLOGY
550 Kearny Street, Suite 900
San Francisco, California 94108-2404
T 415.262.2300 F 415.262.2303
www.pwa-ltd.com

October 12, 2009
Project No: 001915.00
Invoice No: 909037

Brown and Caldwell
Nancy Gardiner
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123

Project 001915.00 San Diego Hydromod
Prism Project # 133904
Professional Services from August 29, 2009 to September 25, 2009

Total this Project **$0.00**

Project 001915.05 San Diego Hydromod - Authorization 5
Prism Project # 133904

Task 001 Response to 6/29/09 RWQCB Comments
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	2.00	189.28	378.56	
Collison, Andrew	12.00	189.28	2,271.36	
Totals	14.00		2,649.92	
Total Labor				**2,649.92**

Total this Task **$2,649.92**

Task 002 Develop flow threshold calculator
Professional Personnel

	Hours	Rate	Amount	
Principal Engineer / Scientist				
Beeman, Christie	3.00	189.28	567.84	
Collison, Andrew	2.00	189.28	378.56	
Totals	5.00		946.40	
Total Labor				**946.40**

Total this Task **$946.40**

PO No. 2058		Vendor No: 104339				
PO Ln	GL Code	Project	Phase	Task	Org	Amount
8	51089	133904	058	*	1044	$3,785.60
						$
						$
						$
Date 10/26/09		Approved By: Nancy E Gard			Total: $ 3,785.60	

Task 003 Meetings and Telecons
Professional Personnel

	Hours	Rate	Amount
Principal Engineer / Scientist			

Beeman, Christie	1.00	189.28	189.28	
Totals	1.00		189.28	
Total Labor				**189.28**
		Total this Task		**$189.28**
		Total this Project		**$3,785.60**
		Total this Invoice		**$3,785.60**

Sandy McFadden
Director of Finance and Administration

Billing Backup

Monday, October 12, 2009

Philip Williams & Associates, Ltd. **Invoice 909037 Dated 10/12/09** *2:15:14 PM*

Project 001915.05 San Diego Hydromod - Authorization 5

Task 001 Response to 6/29/09 RWQCB Comments

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	9/17/09	2.00	189.28	378.56	
	review RWQCB comment letter & check response					
00202	Collison, Andrew(draft report)	9/16/09	5.00	189.28	946.40	
00202	Collison, Andrew(draft report)	9/17/09	4.00	189.28	757.12	
00202	Collison, Andrew(draft report)	9/18/09	3.00	189.28	567.84	
	Totals		14.00		2,649.92	
	Total Labor					**2,649.92**
				Total this Task		**$2,649.92**

Task 002 Develop flow threshold calculator

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	9/3/09	1.00	189.28	189.28	
	calculator task oversite					
00133	Beeman, Christie	9/17/09	1.00	189.28	189.28	
	finalize draft submittal					
00133	Beeman, Christie	9/24/09	1.00	189.28	189.28	
	distribute draft calculator					
00202	Collison, Andrew	9/24/09	1.00	189.28	189.28	
	Finalize draft					
00202	Collison, Andrew	9/25/09	1.00	189.28	189.28	
	Distribute drafts					
	Totals		5.00		946.40	
	Total Labor					**946.40**
				Total this Task		**$946.40**

Task 003 Meetings and Telecons

Professional Personnel

			Hours	Rate	Amount	
Principal Engineer / Scientist						
00133	Beeman, Christie	9/8/09	1.00	189.28	189.28	
	coordination with BC regarding TO#5					
	Totals		1.00		189.28	
	Total Labor					**189.28**

Total this Task	**$189.28**
Total this Project	**$3,785.60**
Total this report	**$3,785.60**

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44128169

Date : July 07, 2010

POETA
1002993
001.011
100496
52370
50915

Attention: Sara Agahi, Project Manager

Subject : SDCo Hydromod Management Plan

Contact : Nancy E Gardiner, PM

Billing Period : May 28, 2010 through June 30, 2010

Invoiced By : Susan E Pantig

Progress Billing No : 18

Ok to pay $2763.96

Reference : Authorization Dated : 9/6/2007

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

520444
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

7/8/10
DATE

PROJECT MANAGER

Michael Nienberg, Vice President

7/8/10
DATE

DPW MANAGER

059 -- Sizing Calc - Modeling Approach

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	1.50	$ 200.10	300.15
Senior Technical Expert			
Eric S Mosolgo	6.00	$ 200.10	1,200.60
Technical Writer			
Dorothy A Norton	1.75	$ 95.18	166.57
Sr. Engineering Scientist			
Hayes J Twenter	2.00	$ 128.73	257.46
Sub-Total Labor	11.25		$ 1,924.78
Total Labor			**$ 1,924.78**

EXPENSES

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

COPY

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44128169

Date : July 07, 2010

Attention: Sara Agahi, Project Manager

Subject : SDCo Hydromod Management Plan

Billing Period : May 28, 2010 through June 30, 2010

Progress Billing No : 18

Reference : Authorization Dated : 9/6/2007

Contact : Nancy E Gardiner, PM

Invoiced By : Susan E Pantig

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

Michael Nienberg, Vice President

059 -- Sizing Calc - Modeling Approach

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	1.50	$ 200.10	300.15
Senior Technical Expert			
Eric S Mosolgo	6.00	$ 200.10	1,200.60
Technical Writer			
Dorothy A Norton	1.75	$ 95.18	166.57
Sr. Engineering Scientist			
Hayes J Twenter	2.00	$ 128.73	257.46
Sub-Total Labor	11.25		$ 1,924.78
Total Labor			**$ 1,924.78**

EXPENSES

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44128169

Date : July 07, 2010

Attention: Sara Agahi, Project Manager

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Other Direct Costs	
AIRFARE	
Anthony M Dubin	527.40
LODGING	
Anthony M Dubin	156.38
TRAVEL MEALS/SUBSISTENCE	
Anthony M Dubin	8.50
Anthony M Dubin	15.59
RENTAL CAR	
Anthony M Dubin	69.51
GASOLINE	
Anthony M Dubin	6.80
TAXI & OTHER TRANSPORTATION	
Anthony M Dubin	55.00
Total Other Direct Costs	**$ 839.18**
Total Regular Expenses	**$ 839.18**
Total Expenses	**$ 839.18**
Total : 059 -- Sizing Calc - Modeling Approach	**$ 2,763.96**
Amount Due this Invoice	**$ 2,763.96**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44128169

Date : July 07, 2010

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001	-- Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002	-- WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004	-- SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006	-- Stakeholder Meetings/Coord	$ 38,723.26	$ 0.00	$ 42,607.84	$ 42,607.84	$ (3,884.58)
010	-- Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,780.57	$ 21,780.57	$ (21,780.57)
011	-- Contingency	$ 10,000.00	$ 0.00	$ 10,003.36	$ 10,003.36	$ (3.36)
041	-- Update Model SUSMP - 2	$ 169,062.28	$ 0.00	$ 123,810.79	$ 123,810.79	$ 45,251.49
051	-- Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 0.00	$ 105,900.91	$ 105,900.91	$ (13,795.31)
052	-- Select HSPF Modeling Parameter:	$ 50,638.00	$ 0.00	$ 50,126.62	$ 50,126.62	$ 511.38
053	-- Develop BMP Modeling Appraoch	$ 80,678.00	$ 0.00	$ 106,288.27	$ 106,288.27	$ (25,610.27)
054	-- Add'l Funding for Rain Gauge Tas	$ 48,641.00	$ 0.00	$ 95,371.46	$ 95,371.46	$ (46,730.46)
055	-- Watershed Modeling	$ 91,012.00	$ 0.00	$ 80,582.40	$ 80,582.40	$ 10,429.60
056	-- Flow Threashold Alt Analysis	$ 35,817.00	$ 0.00	$ 48,253.57	$ 48,253.57	$ (12,436.57)
057	-- Draft Final HMP	$ 66,511.00	$ 0.00	$ 75,831.11	$ 75,831.11	$ (9,320.11)
058	-- Final HMP	$ 139,414.00	$ 0.00	$ 123,609.34	$ 123,609.34	$ 15,804.66
059	-- Sizing Calc - Modeling Approach	$ 91,177.66	$ 2,763.96	$ 49,046.79	$ 51,810.75	$ 39,366.91
501	-- Additional HSPF Modeling	$ 18,175.00	$ 0.00	$ 10,605.08	$ 10,605.08	$ 7,569.92
		$ 1,000,000.00	**$ 2,763.96**	**$ 990,550.83**	**$ 993,314.79**	**$ 6,685.21**

Total Paid To Date : **$ (930,388.94)**

Balance Outstanding : **$ 62,925.85**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Billing Detail - Items through 6/30/2010

Brown and Caldwell

Project : 133904 - SDCo Hydromod Management Plan

Phase : 059 -- Sizing Calc - Modeling Approach

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	6/9/2010	6/10/2010	0.50	200.10	100.05
		Meeting with Regional Board and stakeholders.									
			****	1044	421	****	6/16/2010	6/17/2010	0.50	200.10	100.05
		Read e-mails and team correspondence regarding HMP sizing calculator development.									
			****	1044	421	****	6/18/2010	6/24/2010	0.50	200.10	100.05
		Discussion with Eric regarding project status and meetings with Co-permittees and RWQCB.									
									1.50		300.15
Eric S Mosolgo			****	1044	112	****	6/25/2010	7/1/2010	3.00	200.10	600.30
		Preparation of HMP Monitoring Plan for submittal to Copermittees and RWQCB for review									
			****	1044	112	****	6/30/2010	7/1/2010	3.00	200.10	600.30
		Incorporate comments from Copermittees and RWQCB and prepare final version of HMP Monitoring Plan Executive Summary for submittal to RWQCB; conference call with Seattle and Portland staffs plus Andy Baldwin regarding Pond Sizer									
									6.00		1,200.60
Total: Senior Technical Expert									7.50		1,500.75
Sr. Engineering Scientist											
Hayes J Twenter			****	1044	114	****	6/28/2010	7/1/2010	2.00	128.73	257.46
		Modeling automation (uci/ftable generator)									
Technical Writer											
Dorothy A Norton			****	1044	670	****	6/16/2010	6/17/2010	0.25	95.18	23.80
		help set up conf. call									
			****	1044	670	****	6/30/2010	7/1/2010	1.50	95.18	142.77
		S01232 Exec Summ TM									
									1.75		166.57
							Total Rate Schedule Labor				***1,924.78***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
AIRFARE									
Anthony M Dubin	09181	****	1044	ER00195608	5/10/2010	6/17/2010	527.40	1.00	527.40
LODGING									
Anthony M Dubin	09181	****	1044	ER00195608	5/10/2010	6/17/2010	156.38	1.00	156.38
TRAVEL MEALS/SUBSISTENCE									
Anthony M Dubin	09181	****	1044	ER00195608	5/10/2010	6/17/2010	8.50	1.00	8.50
	09181	****	1044	ER00195608	5/11/2010	6/17/2010	15.59	1.00	15.59
							24.09		24.09
RENTAL CAR									
Anthony M Dubin	09181	****	1044	ER00195608	5/11/2010	6/17/2010	69.51	1.00	69.51
GASOLINE									
Anthony M Dubin	09181	****	1044	ER00195608	5/11/2010	6/17/2010	6.80	1.00	6.80
TAXI & OTHER TRANSPORTATION									
Anthony M Dubin	09181	****	1044	ER00195608	5/11/2010	6/17/2010	55.00	1.00	55.00
						Total Regular Expenses			***839.18***

Brown and Caldwell
Expense Report Detail

Employee: 09181 Anthony M Dubin
Expense Report: ER00195608, San Diego HMP TAC Meeting
Status: Signed
Administrative Group: EA012 - EA012 - Hintz - Menicke -McGuire
Supervisor Group: E224 - E224 - Milne - McGuire - McQuarrie

Date Range: 5/10/2010 - 5/11/2010
Posting Period End Date: 5/27/2010
Printed: 6/4/2010 01:01 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	MEALSTRAV	Meals - Travel & Other	133904	SDCo Hydromod Management Plan	059	****	1044	US				
	Description: Line items on recept for one meal: $5.06 + $0.44 + $2.76 + $0.24 = $8.50								4	5/10/2010	8.50	8.50
										Line Total	8.50	8.50
	LODGING	Lodging - Travel	133904	SDCo Hydromod Management Plan	059	****	1044	US				
	Description: Line items on recept for hotel room: $139.00 + $14.60 + $2.78 = $156.38								4	5/10/2010	156.38	156.38
										Line Total	156.38	156.38
	MEALSTRAV	Meals - Travel & Other	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									4	5/11/2010	15.59	15.59
										Line Total	15.59	15.59
	AIRFARE	Airfare	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									5	5/10/2010	527.40	527.40
										Line Total	527.40	527.40
	GAS	Gasoline - Travel	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									1	5/11/2010	6.80	6.80
										Line Total	6.80	6.80
	RENTALCAR	Rental Car - Travel	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									2	5/11/2010	69.51	69.51
										Line Total	69.51	69.51
	TAXI	Taxi/Transportation - Travel	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									3	5/11/2010	55.00	55.00
										Line Total	55.00	55.00

Total Transactions	839.18	839.18

Total	**839.18**
Less Company Paid	**(0.00)**
Total Reimbursement (United States Dollar)	**839.18**

Audit Trail

Date/Time	**Employee**	**Status/Notes**
6/4/2010 1:01:03 PM	09181 Anthony M Dubin	Signed

Date/Time:_____ **Signature:**_____

WELCOME
SALES RECEIPT
00 000 000000

1

DATE05/11/10 4:35PM
INVOICE# 185405
AUTH# 595877
AMEX
ACCOUNT NUMBER
XXXX XXXXXX X1005
DUBIN/ANTHONY M

PUMP	PRODUCT	$/G
01	UNLD	$3.359

GALLONS	FUEL TOTAL
2.025	$ 6.80

TOTAL SALE $ 6.80

Apply for the new Shell Drive for FivesH Card today and save 5 cents per gallon.
Apply today! Call 1-877-278-2624.

THANK YOU
COME BACK SOON

SAN DIEGO-LINDBERGH AP

2

RR 168069904 #01
ANTHONY
DUBIN

VEHICLE: 01198 / 1213628
09GCFR LIC: CA 6FBE978
FUEL: 8/8 OUT 8/8 IN
CDP: 15728 -BROWN AND CALDWELL

RES: E74047400C7 /5954A / C
COMPLETED BY: 5867 /CASDI11

RENTED: SAN DIEGO A/P
RENTAL: 05/10/10 22:49
RETURN: 05/11/10 16:44

PLAN IN: 5954A RATE CLASS: C
PLAN OUT: 5954A

MILES IN: 34731 TR-X MILES
MILES OUT: 34704 MILES ALLOWED
MILES DRIVEN: 27 MILES CHARGED

DAYS	1@ $ 45.00 / DAY	$	45.00
SUBTOTAL		T$	45.00
CONCESSION FEE RECOVERY		T$	5.32
CA TOURISM ASSESSMENT		$	1.58
LDW	INCLUDED IN 5954A RATE		
LIS	DECLINED		
PAI, PEC	DECLINED		
TRANSACTION FEE		$	10.00
ENERGY SURCHARGE		T$	1.03
VEH LIC RECOVERY FEE & INC VLRF		T$	1.91
TAX 8.750% ON	53.26	$	4.67
NET DUE		$	69.51

PAID BY MC XXXXXXXXXXXX9615

HOW WAS YOUR EXPERIENCE?
WE'D LIKE YOUR FEEDBACK.

1) Call 1-800-278-1595, or Visit WWW.HERTZSURVEY.COM
2) Enter Access Code: 01120
3) Take Brief 4 Question Survey

THANK YOU FOR RENTING FROM
HERTZ

STITA TAXI
DATE: 11-05-2010
TIME: 22:10
MDT ID: 933
BADGE#: 14017

3

JOB ID: 0
METER: 1145

DROPOFF: 1009

FARE: 55.00

TOTAL 55.00

FROM SEATAC AIRPORT TO:

STITA TAXI 206 246 9999
WWW STITATAXI COM

COURTYARD Marriott

Courtyard by Marriott
San Diego Central

8651 Spectrum Center Blvd
San Diego, Ca 92123
T 858.573.0700

(4)

Anthony Dubin
4232 Latona Ave Ne
Seattle WA 98105-6542
Brown Caldwell

Room: 260
Room Type: GENR
Number of Guests: 1
Rate: $139.00 Clerk: DMD

Arrive: 10May10 Time: 11:18PM Depart: 11May10 Time: 11:16AM Folio Number: 90999

Date	Description	Charges	Credits
10May10	Market Sundries	5.06	
10May10	Restaurant Tax	0.44	
10May10	Market Fresh Food	2.76	
10May10	Restaurant Tax	0.24	
10May10	Room Charge	139.00	
10May10	Room Tax	14.60	
10May10	City Tax	2.78	
11May10	Restaurant Room Charge	15.59	
11May10	American Express		180.47
	Card #: AXXXXXXXXXXXXX1005/XXXX		
	Amount: 180.47 Auth: 554949 Signature on File		
	This card was electronically swiped on 10May10		
	Balance:	**0.00**	

Marriott Rewards Account # XXXXX9378. Your Marriott Rewards points/miles earned on your room rate will be credited to your account. For account activity: 801-468-4000 or MarriottRewards.com.

Latest News From Marriott Rewards

Tell a friend about Marriott Rewards, you'll both get 1,000 points when they stay--up to five friends, five stays each. That's up to 25,000 points for you. Refer Friends, Get Points! See details at MarriottRewards.com/Friend

As requested, a final copy of your bill will be emailed to you at: TDUBIN@BRWNCALD.COM. See "Internet Privacy Statement" on Marriott.com.

Dubin, Tony

5

From: Alaska Airlines/Horizon Air [Alaska.IT@alaskaair.com]
Sent: Wednesday, May 05, 2010 7:13 AM
To: Dubin, Tony
Subject: Confirmation Letter - FSZRBM 05/10/10 - from Alaska Airlines/Horizon Air

If you have trouble viewing this message, click here to request a plain text-only version of this email.

Alaska Airlines / Horizon Air

Home	Reservations	Deals	Day of Flight	Destinations	Mileage Plan ™	More...

Confirmation Code: FSZRBM

Below is your booking confirmation. Thank you and enjoy your trip.
Plans Change? Visit us in advance, online or through reservations.

Flight	Departs	Arrives	Class	Traveler(s)	Seat(s)
Alaska Airlines AS492 Boeing 737-400	Seattle, WA (SEA) Mon, May 10 7:55 pm	San Diego, CA (SAN) Mon, May 10 10:44 pm	Q (Coach)	Anthony Dubin	20D
Alaska Airlines AS489 Boeing 737-400	San Diego, CA (SAN) Tue, May 11 6:30 pm	Seattle, WA (SEA) Tue, May 11 9:27 pm	Q (Coach)	Anthony Dubin	18B

Hotels and Cars - Book Now and Save

Great Deals on San Diego Hotels

Days Hotel - Hotel Circle
★★★rooms $53 per night.

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★★★★rooms $85 per night.

Mission Valley Resort
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▸ Apply

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Sign up ▸

Summary of Airfare Charges

Anthony Dubin

Ticket 027-2150140940

Base Fare and Surcharges		$470.70
Taxes and Other Fees		$56.70
	per person total:	$527.40

Total Fare **USD $527.40**

Total Charges and Credits

Special Service Requests

Alaska Airlines and Horizon Air provide a meet and assist service for travelers who need

$527.40 was charged to American Express **********1005 held by Anthony M Dubin on 05/05/2010

Trip Protection by Access America

Purchase trip protection benefits and travel assistance services for your trip from Access America at 1-800-496-6593. Learn more

Flight Status Alerts

When you create a Flight Status Alert, we notify you in the event of delays, early arrivals, and cancellations of Alaska Airlines or Horizon Air flights (email or text message).

Create Alert

Check-In

When traveling on Alaska Airlines or Horizon Air, save time by checking in online 1 to 24 hours prior to departure. You can also check in at one of our airport kiosks or at the ticket counter.

Web Check-In

For more information about check-in times, required identification, international travel, and traveling with minors, please visit our website.

Manage Your Reservation

Refund, Change and Cancel options are available online for select reservation types. You can save money by changing your reservation online:

Manage Your Reservation

Alaska Airlines 1-800-ALASKAAIR (1-800-252-7522)

Share your thoughts with us, contact us.

assistance through the airport. Request this service online or over the phone.

View Reservation

InFlight Service

Some of Alaska Airlines flights offer the option to purchase a meal using a credit or debit card.

More Info

Reserve your digEplayer now

Baggage

On Alaska Airlines and Horizon Air, each passenger is allowed one carry-on bag and one personal item. For passengers traveling on or after June 16, 2010 who purchased their tickets on or after May 1, 2010, baggage fees are $20 each for the first three checked bags. For all other passengers, baggage fees are $15 for the first checked bag and $25 for the second checked bag. For faster service, use your debit or credit card when checking in online or at an airport kiosk.

More Info

Baggage Service Guarantee information

City Guides

View City Guides for:
San Diego, CA
Seattle, WA

Please do not reply to this email.
Alaska Airlines, PO Box 68900, Seattle, WA 98168-0900. © 2009 Alaska Airlines. All rights reserved.
Please review important information about your consumer rights and the carriers' limitations of liability.
You may also wish to review the Conditions of Carriage applicable to your trip.

This email was sent to tdubin@brwncald.com.
Reference Number PL06455279. Requested at 05/05/2010 07:03 AM

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

RECEIVED
APR 22 2010
By: MB.

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44123199

Date : April 12, 2010

Attention: John Dullaghan

Subject : City of SD HMP Assistance

Contact : Eric S Mosolgo, PM

Billing Period : February 26, 2010 through March 25, 2010

Invoiced By : Susan E Pantig

Progress Billing No : 3

Reference : Authorization Dated : 2/15/2009

As Needed Engineering Services 2008-2011; Task Order 21
City of San Diego Hydromodification Management Plan
(Fund 100000, Cost Center 2114120013, GL 512034)

PO No.: 4500010248

003 -- Copermittee Tasks

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	14.00	$ 196.00	2,744.00
Manager, Info Systems			
Andrew Baldwin	9.00	$ 219.00	1,971.00
Sub-Total Labor	23.00		$ 4,715.00
Total Labor			**$ 4,715.00**

Total : 003 -- Copermittee Tasks **$ 4,715.00**

004 -- Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	1.50	$ 196.00	294.00
Accountant III			
Susan E Pantig	0.50	$ 126.00	63.00
Senior Accounting Clerk			

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

JN TM

BROWN AND CALDWELL

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44123199

Date : April 12, 2010

Attention: John Dullaghan

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Accounting Clerk			
Lindsay B Surio	0.25	$ 91.50	22.88
Project Analyst			
Janelle L Kaminski	1.00	$ 107.00	107.00
Sub-Total Labor	3.25		$ 486.88
Total Labor			**$ 486.88**
Total : 004 -- Project Management			**$ 486.88**
Amount Due this Invoice			**$ 5,201.88**

APPROVED FOR PAYMENT
DATE: 5/12/2010
SIGNATURE: Sumer Hasan

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44123199

Date : April 12, 2010

Attention: John Dullaghan

Summary of Account

BC Phase	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date
001 --	Assessment of HMP Implementation	$ 5,618.00	$ 0.00	$ 1,764.00	$ 1,764.00
002 --	Develop HMP Implemeation Work Plan	$ 6,380.00	$ 0.00	$ 0.00	$ 0.00
003 --	Copermittee Tasks	$ 44,600.00	$ 4,715.00	$ 1,078.00	$ 5,793.00
004 --	Project Management	$ 4,722.00	$ 486.88	$ 522.50	$ 1,009.38
	Total :	**$ 61,320.00**	**$ 5,201.88**	**$ 3,364.50**	**$ 8,566.38**

Total Paid To Date : **$ (1,354.25)**

Balance Outstanding : **$ 7,212.13**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

RECEIVED
JUN 25 2010
By: MB

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44126779

Date : June 10, 2010

Attention: Monika Smoczynski

Subject : City of SD HMP Assistance

Contact : Eric S Mosolgo, PM

Billing Period : April 30, 2010 through May 27, 2010

Invoiced By : Lindsay B Surio

Progress Billing No : 5

Reference : Authorization Dated : 2/15/2010

As Needed Engineering Services 2008-2011; Task Order 21
City of San Diego Hydromodification Management Plan
(Fund 100000, Cost Center 2114120013, GL 512034)

PO No.: 4500010248

001 -- Assessment of HMP Implementation

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	5.00	$ 196.00	980.00
Sub-Total Labor	5.00		$ 980.00
Total Labor			**$ 980.00**

Total : 001 -- Assessment of HMP Implementation **$ 980.00**

003 -- Copermittee Tasks

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	12.00	$ 196.00	2,352.00
Manager, Info Systems ✓			
Andrew Baldwin	6.00	$ 219.00	1,314.00
Sub-Total Labor	18.00		$ 3,666.00
Total Labor			**$ 3,666.00**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44126779

Date : June 10, 2010

Attention: Monika Smoczynski

Total : 003 -- Copermittee Tasks $ **3,666.00**

004 -- Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	0.50	$ 196.00	98.00
Accountant III			
Susan E Pantig	0.25	$ 126.00	31.50
Senior Accounting Clerk ✓			
Lindsay B Surio	0.50	$ 91.50	45.75
Project Analyst ✓			
Janelle L Kaminski	0.75	$ 107.00	80.25
Sub-Total Labor	2.00		$ 255.50
Total Labor			**$ 255.50**

Total : 004 -- Project Management **$ 255.50**

Amount Due this Invoice **$ 4,901.50**

APPROVED FOR PAYMENT
DATE: 6-29-10
SIGNATURE: GM

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44126779

Date : June 10, 2010

Attention: Monika Smoczynski

Summary of Account

BC Phase	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date
001 --	Assessment of HMP Implementation	$ 5,618.00	$ 980.00	$ 1,764.00	$ 2,744.00
002 --	Develop HMP Implemeation Work Plan	$ 6,380.00	$ 0.00	$ 0.00	$ 0.00
003 --	Copermittee Tasks	$ 44,600.00	$ 3,666.00	$ 15,182.00	$ 18,848.00
004 --	Project Management	$ 4,722.00	$ 255.50	$ 1,255.38	$ 1,510.88
	Total :	**$ 61,320.00**	**$ 4,901.50**	**$ 18,201.38**	**$ 23,102.88**

Total Paid To Date : **$ (8,566.38)**

Balance Outstanding : **$ 14,536.50**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

TM

URS

Remittance Page

Invoice Date	03/12/10
Invoice	4249394
Project	27679024
Page	1

Reference: H084440/PO45000010495

For: TO-24 Regional Construction
Storm Water Standards

SH

RECEIVED
MAR 15 2010
By: TM

Professional Services for Invoice Period 01/23/10 - 02/19/10

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Total Due: **$158.13 USD**
Terms: Net 30

* Make checks payable to: URS Corporation
* Please indicate invoice number and/or project number on check
* Please include this stub with payment

Regular Mail (USPS): URS Corporation
P.O. Box 116183
Atlanta GA 30368-6183
US

APPROVED FOR PAYMENT
DATE: 3/16/2010
SIGNATURE: Sumer Hasemi

Overnight Courier: URS Corporation
Lock Box No. 116183
100 South Crest Drive
Stockbridge, GA 30281
Attention: Atlanta Lockbox
(877) 786-3333

Electronic Funds Transfer:

Account:	URS Corporation
Bank:	Wells Fargo Bank
Account No.:	4520-086471
ABA Routing No.:	121-000-248
Swift Code:	WFBIUS6S

Remittance Information can be sent to:

Email:	RemitTo@URSCorp.com
Fax:	(512) 419-6937 Attn: Cash Applications

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	03/12/10
Invoice	4249394
Project	27679024
Page	2

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO-24 Regional Construction
Storm Water Standards

Professional Services for Invoice Period 01/23/10 - 02/19/10

	SERVICES	EXPENSES	TOTAL
Job: 27679024 TO-24 Regional Construction			
Task: 01000 Project Management	158.13	0.00	158.13
Total this job	**158.13**	**0.00**	**158.13**
TOTAL THIS INVOICE	**158.13**	**0.00**	**$158.13 USD**

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	03/12/10
Invoice	4249394
Project	27679024
Page	3

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO-24 Regional Construction
Storm Water Standards

Professional Services for Invoice Period 01/23/10 - 02/19/10

Job: 27679024 TO-24 Regional Construction
Task: 01000 Project Management

LABOR	HOURS	RATE	AMOUNT	
Word Processor/Clerical				
Eary, Christine	1.25	70.28	87.85	
Douglas, John	1.00	70.28	70.28	
Subtotal	2.25		158.13	
Total Labor				**158.13**
		Total due this task		*158.13*
		Total due this job		***158.13***
		TOTAL THIS INVOICE		**$158.13 USD**

CONTRACT LIMITS	CURRENT	PRIOR	TO-DATE
Contract Amount			24,553.00
Totals	158.13	0.00	158.13
Amount Remaining			24,394.87

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS CORPORATION HQ

Employee Timesheet

Employee: Douglas, John
Employee ID: 033149
Class: CA NonExemptFullTimeActTito
Printed: Mar 3, 2010 12:26 PM

Revision: 2
Schedule: Weekly (FRI)WFR
Period Ending: Feb 12, 2010
Page: 2

Line No	Job No./Cost Code / Job Type	Pay Type	Charge Description	Sat 2/6	Sun 2/7	Mon 2/8	Tue 2/9	Wed 2/10	Thu 2/11	Fri 2/12	Line Totals
9	27677021.06000 / ADM2	REG					0.50				0.50
10	27679010.01000 / ADM2	REG						1.00			1.00
11	27679023.01000 / ADM2	REG						1.00			1.00
12	27679023.01000 / ADM2	REG						-1.00			-1.00
13	27679024.01000 / ADM2	REG	TO-24 Regional Construction/Project Management					1.00			1.00
14	27679027.01000 / ADM2	REG						0.50			0.50
15	27679029.01000 / ADM2	REG						0.25			0.25
16	27701000.01000 / ADM2	REG						1.25			1.25

Timesheet lines are continued on the next page.

URS CORPORATION HQ

Employee Timesheet

URS

Employee: Eary, Christine
Employee ID: 032742
Class: 9/80 CA FullTimeNonExemptActiv
Printed: Mar 3, 2010 12:26 PM

Revision: 7
Schedule: Weekly (FRI)WFR
Period Ending: Feb 5, 2010
Page: 4

Line No	Job No./Cost Code / Job Type	Pay Type	Charge Description	Sat 1/30	Sun 1/31	Mon 2/1	Tue 2/2	Wed 2/3	Thu 2/4	Fri 2/5	Line Totals
25	27679029.01000 / ADM3	REG				0.50	0.50				1.00
26	27679024.01000 / ADM3	REG	TO-24 Regional Construction/Project Management				0.50	0.50			1.00
27	27679023.01000 / ADM3	REG					0.50				0.50
28	27679026.01000 / ADM3	REG					0.50				0.50
29	27679027.01000 / ADM3	REG					0.50				0.50
30	27679002.01000 / ADM3	REG					-0.25				-0.25
31	27679017.01000 / ADM3	REG					0.25				0.25
32	27679023.01000 / ADM3	REG					-0.50				-0.50

Timesheet lines are continued on the next page.

URS CORPORATION HQ

Employee Timesheet

Employee: Eary, Christine
Employee ID: 032742
Class: 9/80 CA FullTimeNonExemptActiv
Printed: Mar 3, 2010 12:26 PM

URS

Revision: 6
Schedule: Weekly (FRI)WFR
Period Ending: Feb 12, 2010
Page: 3

Line No	Job No./Cost Code / Job Type	Pay Type	Charge Description	Sat 2/6	Sun 2/7	Mon 2/8	Tue 2/9	Wed 2/10	Thu 2/11	Fri 2/12	Line Totals
17	27677021.06000 / ADM3	O15				0.25					0.25
18	27679001.05000 / ADM3	REG					0.25				0.25
19	27679005.03000 / ADM3	REG									
20	27679016.01000 / ADM3	REG						1.00			1.00
21	27679018.05000 / ADM3	REG					0.25				0.25
22	27679023.01000 / ADM3	REG					0.25				0.25
23	27679024.01000 / ADM3	REG	TO-24 Regional Construction/Project Management				0.25				0.25
24	27679027.01000 / ADM3	REG					0.25				0.25

Timesheet lines are continued on the next page.

TM

URS

Remittance Page

Invoice Date	04/02/10
Invoice	4268309
Project	27679024
Page	1

RECEIVED
APR 08 2010
By: TM

Reference: H084440/PO45000010495

For: TO-24 Regional Construction
Storm Water Standards

Professional Services for Invoice Period 02/20/10 - 03/19/10

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Total Due: **$1,698.95 USD**
Terms: Net 30

* Make checks payable to: URS Corporation
* Please indicate invoice number and/or project number on check
* Please include this stub with payment

Regular Mail (USPS): URS Corporation
P.O. Box 116183
Atlanta GA 30368-6183
US

Overnight Courier: URS Corporation
Lock Box No. 116183
100 South Crest Drive
Stockbridge, GA 30281
Attention: Atlanta Lockbox
(877) 786-3333

SH

APPROVED FOR PAYMENT
DATE: 4/14/2010
SIGNATURE: Sumer Hassen

Electronic Funds Transfer:

Account:	URS Corporation
Bank:	Wells Fargo Bank
Account No.:	4520-086471
ABA Routing No.:	121-000-248
Swift Code:	WFBIUS6S

Remittance Information can be sent to:

Email:	RemitTo@URSCorp.com
Fax:	(512) 419-6937 Attn: Cash Applications

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	04/02/10
Invoice	4268309
Project	27679024
Page	2

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO-24 Regional Construction
Storm Water Standards

Professional Services for Invoice Period 02/20/10 - 03/19/10

	SERVICES	EXPENSES	TOTAL
Job: 27679024 TO-24 Regional Construction			
Task: 01000 Project Management	122.99	0.00	122.99
Task: 02000 Meetings and Coordination	999.22	0.00	999.22
Task: 03000 Develop Standards and Criteria	576.74	0.00	576.74
Total this job	**1,698.95**	**0.00**	**1,698.95**
TOTAL THIS INVOICE	**1,698.95**	**0.00**	**$1,698.95 USD**

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	04/02/10
Invoice	4268309
Project	27679024
Page	3

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO-24 Regional Construction
Storm Water Standards

Professional Services for Invoice Period 02/20/10 - 03/19/10

Job: 27679024 TO-24 Regional Construction

Task: 01000 Project Management

LABOR	HOURS	RATE	AMOUNT	
Word Processor/Clerical				
Aleto, Margaret K	1.75	70.28	122.99	
Subtotal	1.75		122.99	
Total Labor				**122.99**
		Total due this task		*122.99*

Task: 02000 Meetings and Coordination

LABOR	HOURS	RATE	AMOUNT	
Project Engineer/Scientist				
Szczublewski, Constance D	10.75	92.95	999.22	
Subtotal	10.75		999.22	
Total Labor				**999.22**
		Total due this task		*999.22*

Task: 03000 Develop Standards and Criteria

LABOR	HOURS	RATE	AMOUNT
Project Manager			
Othmer Jr, Edward F	2.00	183.80	367.60

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	04/02/10
Invoice	4268309
Project	27679024
Page	4

Reference: H084440/PO45000010495

For: TO-24 Regional Construction
Storm Water Standards

Project Engineer/Scientist				
Szczublewski, Constance D	2.25	92.95	209.14	
Subtotal	4.25		576.74	
Total Labor				**576.74**
		Total due this task		*576.74*
		Total due this job		***1,698.95***
		TOTAL THIS INVOICE		**$1,698.95 USD**

CONTRACT LIMITS	CURRENT	PRIOR	TO-DATE
Contract Amount			24,553.00
Totals	1,698.95	158.13	1,857.08
Amount Remaining			22,695.92

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS CORPORATION HQ

Employee Timesheet

Employee: Aleto, Margaret K.
Employee ID: 451499
Class: CA NonExemptFullTimeActTito
Printed: Apr 2, 2010 11:37 AM

URS

Revision: 7
Schedule: Weekly (FRI)WFR
Period Ending: Mar 5, 2010
Page: 3

Line No	Job No./Cost Code / Job Type	Pay Type	Charge Description	Sat 2/27	Sun 2/28	Mon 3/1	Tue 3/2	Wed 3/3	Thu 3/4	Fri 3/5	Line Totals
17	27679015.01000	REG				0.50		0.25	0.25		1.00
	ADM3										
18	27679016.01000	REG				0.50		0.25	0.25		1.00
	ADM3										
19	27679017.01000	REG				1.00		0.25	0.25		1.50
	ADM3										
20	27679018.01000	REG				0.50	1.00				1.50
	ADM3										
21	27679019.01000	REG				0.50			0.25		0.75
	ADM3										
22	27679020.01000	REG				0.50		0.25			0.75
	ADM3										
23	27679021.01000	REG						0.50		0.25	0.75
	ADM3										
24	27679024.01000	REG	TO-24 Regional Construction/Project Management					0.50	0.25	0.25	1.00
	ADM3										

Timesheet lines are continued on the next page.

URS CORPORATION HQ

Employee Timesheet

Employee: Aleto, Margaret K.
Employee ID: 451499
Class: CA NonExemptFullTimeActTito
Printed: Apr 2, 2010 11:38 AM

URS

Revision: 1
Schedule: Weekly (FRI)WFR
Period Ending: Mar 12, 2010
Page: 2

Line No	Job No./Cost Code / Job Type	Pay Type	Charge Description	Sat 3/6	Sun 3/7	Mon 3/8	Tue 3/9	Wed 3/10	Thu 3/11	Fri 3/12	Line Totals
9	27679010.01000 / ADM3	REG				3.50	0.25	1.00	0.25	1.00	6.00
10	27679005.01000 / ADM3	REG				1.00			0.25		1.25
11	01157700.00000 / ADM3	REG				2.00	3.75	3.75	3.25		12.75
12	17326209.03000 / ADM3	REG				0.50		0.25	0.25		1.00
13	27679011.01000 / ADM3	REG				0.50			0.25		0.75
14	27679014.01000 / ADM3	REG				0.50			0.25		0.75
15	27679024.01000 / ADM3	REG	TO-24 Regional Construction/Project Management				0.25		0.25	0.25	0.75
16	27679023.01000 / ADM3	REG					0.25		0.25	0.25	0.75

Timesheet lines are continued on the next page.

URS CORPORATION HQ

Employee Timesheet

Employee: Othmer Jr, Edward F.
Employee ID: 032013
Class: Regular FullTime Exempt Act
Printed: Apr 2, 2010 11:38 AM

URS

Revision: 1
Schedule: Weekly (FRI)WFR
Period Ending: Mar 19, 2010
Page: 1

Line No	Job No./Cost Code / Job Type	Pay Type	Charge Description	Sat 3/13	Sun 3/14	Mon 3/15	Tue 3/16	Wed 3/17	Thu 3/18	Fri 3/19	Line Totals
1	UNC / EXE1	UNC									
2	VAC / EXE1	VAC									
3	27679011.05000 / EXE1	REG				2.00		2.00		1.00	5.00
4	27679016.02000 / EXE1	REG				2.00		2.00	2.00	2.00	8.00
5	27679024.03000 / EXE1	REG	TO-24 Regional Construction/Develop Standards and Criteria						2.00		2.00
6	27679027.03000 / EXE1	REG					2.00				2.00
7	27677012.05000 / EXE1	REG				1.00	2.00			2.00	5.00
8	27677021.06000 / EXE1	REG					1.00		2.00		3.00

Timesheet lines are continued on the next page.

URS CORPORATION HQ

Employee Timesheet

Employee: Szczublewski, Constance D.
Employee ID: 064945
Class: 9/80 CA FullTimeExemptActive
Printed: Apr 2, 2010 11:37 AM

URS

Revision: 1
Schedule: Weekly (FRI)WFR
Period Ending: Mar 5, 2010
Page: 1

Line No	Job No./Cost Code / Job Type	Pay Type	Charge Description	Sat 2/27	Sun 2/28	Mon 3/1	Tue 3/2	Wed 3/3	Thu 3/4	Fri 3/5	Line Totals
1	27689005.30060 / ENG2	REG				7.00	9.00	4.50	1.00	1.00	22.50
2	27679027.03000 / ENG2	REG				2.00				5.00	7.00
3	01157710.00000 / ENG2	REG						4.50			4.50
4	27679024.02000 / ENG2	REG	TO-24 Regional Construction/Meetings and Coordination						8.00	2.00	10.00
5	27679024.02000 / ENG2	O10	TO-24 Regional Construction/Meetings and Coordination						0.50		0.50
6											
7											
8											
Line #	Comment										
			Regular			9.00	9.00	9.00	9.00	8.00	44.00
			Overtime						0.50		0.50
			Total			9.00	9.00	9.00	9.50	8.00	44.50

Signature: Szczublewski, Constance D. (064945) Date: Mar 5, 2010 11:33 AM	By signing this timesheet you are certifying that hours were incurred on the charge and day specified in accordance with URS Corp. P&P manual.	Approval: Othmer Jr, Edward F. (032013) Date: Mar 5, 2010 1:23 PM

11549

URS CORPORATION HQ

Employee Timesheet

URS

Employee: Szczublewski, Constance D.
Employee ID: 064945
Class: 9/80 CA FullTimeExemptActive
Printed: Apr 2, 2010 11:38 AM

Revision: 1
Schedule: Weekly (FRI)WFR
Period Ending: Mar 12, 2010
Page: 1

Line No	Job No./Cost Code / Job Type	Pay Type	Charge Description	Sat 3/6	Sun 3/7	Mon 3/8	Tue 3/9	Wed 3/10	Thu 3/11	Fri 3/12	Line Totals
1	27689005.30060 / ENG2	O10		8.50							8.50
2	27689005.30060 / ENG2	REG				3.25	0.25				3.50
3	27679027.03000 / ENG2	REG				4.75	8.50	8.50			21.75
4	27678007.04000 / ENG2	REG				1.00					1.00
5	27679027.03000 / ENG2	O10				0.25					0.25
6	27679024.02000 / ENG2	REG	TO-24 Regional Construction/Meetings and Coordination				0.25				0.25
7	27679024.03000 / ENG2	REG	TO-24 Regional Construction/Develop Standards and Criteria					0.50	1.75		2.25
8	27679027.02000 / ENG2	REG							7.25		7.25
Line #	Comment		Regular			9.00	9.00	9.00	9.00		36.00
			Overtime	8.50		0.25					8.75
			Total	8.50		9.25	9.00	9.00	9.00		44.75

Signature: Szczublewski, Constance D. (064945) Date: Mar 11, 2010 7:11 PM	By signing this timesheet you are certifying that hours were incurred on the charge and day specified in accordance with URS Corp. P&P manual.	Approval: Othmer Jr, Edward F. (032013) Date: Mar 12, 2010 1:25 PM

11550

SOT

TM

URS

Remittance Page

Invoice Date	04/29/10
Invoice	4298927
Project	27679024
Page	1

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Professional Services for Invoice Period 03/20/10 - 04/23/10

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Total Due: **$13,164.14 USD**
Terms: Net 30

* Make checks payable to: URS Corporation
* Please indicate invoice number and/or project number on check
* Please include this stub with payment

Regular Mail (USPS): URS Corporation
P.O. Box 116183
Atlanta GA 30368-6183
US

RECEIVED
MAY 10 2010
By:

Overnight Courier: URS Corporation
Lock Box No. 116183
100 South Crest Drive
Stockbridge, GA 30281
Attention: Atlanta Lockbox
(877) 786-3333

Electronic Funds Transfer:

Account:	URS Corporation
Bank:	Wells Fargo Bank
Account No.:	4520-086471
ABA Routing No.:	121-000-248
Swift Code:	WFBIUS6S

APPROVED FOR PAYMENT
DATE: 5/12/2010
SIGNATURE: Susan Hasem

Remittance Information can be sent to:
Email: RemitTo@URSCorp.com
Fax: (512) 419-6937 Attn: Cash Applications

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	04/29/10
Invoice	4298927
Project	27679024
Page	2

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Professional Services for Invoice Period 03/20/10 - 04/23/10

	SERVICES	EXPENSES	TOTAL
Job: 27679024 TO24-Regional Construction			
Task: 01000 Project Management	1,289.74	0.00	1,289.74
Task: 02000 Meetings and Coordination	885.08	682.50	1,567.58
Task: 03000 Develop Standards and Criteria	10,302.03	4.79	10,306.82
Total this job	**12,476.85**	**687.29**	**13,164.14**
TOTAL THIS INVOICE	**12,476.85**	**687.29**	**$13,164.14 USD**

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	04/29/10
Invoice	4298927
Project	27679024
Page	3

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Professional Services for Invoice Period 03/20/10 - 04/23/10

Job: 27679024 TO24-Regional Construction

Task: 01000 Project Management

LABOR	HOURS	RATE	AMOUNT
Word Processor/Clerical			
Eary, Christine	1.00	70.28	70.28
Bates, Lorren R	0.25	70.28	17.57
Aleto, Margaret K	6.00	70.28	421.68
Project Manager			
Othmer Jr, Edward F	3.00	183.80	551.40
Project Engineer/Scientist			
Szczublewski, Constance D	1.25	92.95	116.19
Carroll, Sara E	0.25	92.95	23.24
Principal Engineer/Scientist			
Evans, Bryn	0.50	178.76	89.38
Subtotal	12.25		1,289.74
Total Labor			**1,289.74**
		Total due this task	*1,289.74*

Task: 02000 Meetings and Coordination

LABOR	HOURS	RATE	AMOUNT
Project Manager			
Othmer Jr, Edward F	4.00	183.80	735.20
Project Engineer/Scientist			

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

F27839127

URS

Invoice Date	04/29/10
Invoice	4298927
Project	27679024
Page	4

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Szczublewski, Constance D	0.50	92.95	46.48	
Drafter/Illustrator				
Howard, Robert	1.50	68.93	103.40	
Subtotal	6.00		885.08	
Total Labor				**885.08**

UNITS	AMOUNT	
Reproduction	682.50	
Total Units		**682.50**

Total due this task *1,567.58*

Task: 03000 Develop Standards and Criteria

LABOR	HOURS	RATE	AMOUNT	
Project Manager				
Othmer Jr, Edward F	14.00	183.80	2,573.20	
Project Engineer/Scientist				
Szczublewski, Constance D	27.00	92.95	2,509.65	
Principal Engineer/Scientist				
Gabaldon, Cynthia L	29.00	178.76	5,184.04	
Clerk III				
Lewis, Mari	0.50	70.28	35.14	
Subtotal	70.50		10,302.03	
Total Labor				**10,302.03**

EXPENSES	AMOUNT	
Federal Express	4.79	
Total Expenses		**4.79**

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	04/29/10
Invoice	4298927
Project	27679024
Page	5

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Total due this task	*10,306.82*
Total due this job	***13,164.14***
TOTAL THIS INVOICE	**$13,164.14 USD**

CONTRACT LIMITS	CURRENT	PRIOR	TO-DATE
Contract Amount			24,553.00
Totals	13,164.14	1,857.08	15,021.22
Amount Remaining			9,531.78

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

JM

URS

Remittance Page

Invoice Date	06/09/10
Invoice	4329759
Project	27679024
Page	1

Reference: H084440/PO45000010495

For: TO24-Regional Construction SH
Storm Water Standards

Professional Services for Invoice Period 04/24/10 - 05/21/10

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Total Due: **$4,789.67 USD**
Terms: Net 30

* Make checks payable to: URS Corporation
* Please indicate invoice number and/or project number on check
* Please include this stub with payment

RECEIVED
JUN 10 2010
By:

Regular Mail (USPS): URS Corporation
P.O. Box 116183
Atlanta GA 30368-6183
US

Overnight Courier: URS Corporation
Lock Box No. 116183
100 South Crest Drive
Stockbridge, GA 30281
Attention: Atlanta Lockbox
(877) 786-3333

APPROVED FOR PAYMENT
DATE: 6/14/2010
SIGNATURE: Sumer Hasani

Electronic Funds Transfer:

Account:	URS Corporation
Bank:	Wells Fargo Bank
Account No.:	4520-086471
ABA Routing No.:	121-000-248
Swift Code:	WFBIUS6S

Remittance Information can be sent to:

Email:	RemitTo@URSCorp.com
Fax:	(512) 419-6937 Attn: Cash Applications

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	06/09/10
Invoice	4329759
Project	27679024
Page	2

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Professional Services for Invoice Period 04/24/10 - 05/21/10

	SERVICES	EXPENSES	TOTAL
Job: 27679024 TO24-Regional Construction			
Task: 01000 Project Management	795.35	0.00	795.35
Task: 02000 Meetings and Coordination	183.80	0.00	183.80
Task: 03000 Develop Standards and Criteria	1,665.40	0.00	1,665.40
Task: 04000 Respond to Copermittee Rev Com	1,072.56	0.00	1,072.56
Task: 05000 Training Material	1,072.56	0.00	1,072.56
Total this job	**4,789.67**	**0.00**	**4,789.67**
TOTAL THIS INVOICE	**4,789.67**	**0.00**	**$4,789.67 USD**

This subtask & associated charges of $1,072.56 should be moved to TO #27 in June's invoice, therefore showing as a credit or reduction.

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	06/09/10
Invoice	4329759
Project	27679024
Page	3

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Professional Services for Invoice Period 04/24/10 - 05/21/10

Job: 27679024 TO24-Regional Construction

Task: 01000 Project Management

LABOR	HOURS	RATE	AMOUNT	
Word Processor/Clerical				
Eary, Christine	0.25	70.28	17.57	
Bates, Lorren R	0.50	70.28	35.14	
Aleto, Margaret K	1.75	70.28	122.99	
Project Manager				
Othmer Jr, Edward F	2.00	183.80	367.60	
Project Engineer/Scientist				
Szczublewski, Constance D	1.75	92.95	162.67	
Principal Engineer/Scientist				
Evans, Bryn	0.50	178.76	89.38	
Subtotal	6.75		795.35	
Total Labor				**795.35**
		Total due this task		*795.35*

Task: 02000 Meetings and Coordination

LABOR	HOURS	RATE	AMOUNT
Project Manager			
Othmer Jr, Edward F	1.00	183.80	183.80
Subtotal	1.00		183.80

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	06/09/10
Invoice	4329759
Project	27679024
Page	4

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Total Labor		**183.80**
	Total due this task	*183.80*

Task: 03000 Develop Standards and Criteria

LABOR	HOURS	RATE	AMOUNT	
Project Manager				
Othmer Jr, Edward F	2.00	183.80	367.60	
Project Engineer/Scientist				
Szczublewski, Constance D	0.50	92.95	46.48	
Principal Engineer/Scientist				
Gabaldon, Cynthia L	7.00	178.76	1,251.32	
Subtotal	9.50		1,665.40	
Total Labor				**1,665.40**
		Total due this task		*1,665.40*

Task: 04000 Respond to Copermittee Rev Com

LABOR	HOURS	RATE	AMOUNT	
Principal Engineer/Scientist				
Gabaldon, Cynthia L	6.00	178.76	1,072.56	
Subtotal	6.00		1,072.56	
Total Labor				**1,072.56**
		Total due this task		*1,072.56*

Task: 05000 Training Material

LABOR	HOURS	RATE	AMOUNT
Principal Engineer/Scientist			
Gabaldon, Cynthia L	6.00	178.76	1,072.56

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	06/09/10
Invoice	4329759
Project	27679024
Page	5

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Subtotal	6.00		1,072.56
Total Labor			**1,072.56**
		Total due this task	*1,072.56*
		Total due this job	***4,789.67***
		TOTAL THIS INVOICE	**$4,789.67 USD**

CONTRACT LIMITS	CURRENT	PRIOR	TO-DATE
Contract Amount			24,553.00
Totals	4,789.67	15,021.22	19,810.89
Amount Remaining			4,742.11

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

TM

URS

Remittance Page

Invoice Date	06/30/10
Invoice	4364078
Project	27679024
Page	1

OK DHN

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

JN

Professional Services for Invoice Period 05/22/10 - 06/30/10

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Total Due: **$4,181.28 USD**
Terms: Net 30

* Make checks payable to: URS Corporation
* Please indicate invoice number and/or project number on check
* Please include this stub with payment

Regular Mail (USPS): URS Corporation
P.O. Box 116183
Atlanta GA 30368-6183
US

RECEIVED
JUL 01 2010
By:

Overnight Courier: URS Corporation
Lock Box No. 116183
100 South Crest Drive
Stockbridge, GA 30281
Attention: Atlanta Lockbox
(877) 786-3333

APPROVED FOR PAYMENT
DATE: 7-1-2010
SIGNATURE:

Electronic Funds Transfer:

Account:	URS Corporation
Bank:	Wells Fargo Bank
Account No.:	4520-086471
ABA Routing No.:	121-000-248
Swift Code:	WFBIUS6S

Remittance Information can be sent to:

Email:	RemitTo@URSCorp.com
Fax:	(512) 419-6937 Attn: Cash Applications

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

URS

Invoice Date	06/30/10
Invoice	4364078
Project	27679024
Page	3

City of San Diego
Storm Water Department
9370 Chesapeake Dr.
Suite 100, MSZ 1900
San Diego CA 92123-1024

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Professional Services for Invoice Period 05/22/10 - 06/30/10

Job: 27679024 TO24-Regional Construction

Task: 01000 Project Management

LABOR	HOURS	RATE	AMOUNT
Word Processor/Clerical			
Eary, Christine	1.50	70.28	105.42
Bates, Lorren R	0.25	70.28	17.57
Aleto, Margaret K	4.50	70.28	316.26
Project Engineer/Scientist			
Szczublewski, Constance D	0.75	92.95	69.71
Principal Engineer/Scientist			
Evans, Bryn	2.50	178.76	446.90
Clerk IV			
Derwin, Rachel J	9.00	70.28	632.52
Subtotal	18.50		1,588.38
Total Labor			**1,588.38**
		Total due this task	*1,588.38*

Task: 02000 Meetings and Coordination

LABOR	HOURS	RATE	AMOUNT
Drafter/Illustrator			
Howard, Robert	3.50	68.93	241.26
Clerk III			
Lewis, Mari	1.00	70.28	70.28

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

F28917296

URS

Invoice Date	06/30/10
Invoice	4364078
Project	27679024
Page	5

Reference: H084440/PO45000010495

For: TO24-Regional Construction
Storm Water Standards

Total due this job	***4,181.28***
TOTAL THIS INVOICE	**$4,181.28 USD**

CONTRACT LIMITS	CURRENT	PRIOR	TO-DATE
Contract Amount			24,553.00
Totals	4,181.28	19,810.89	23,992.17
Amount Remaining			560.83

Please contact Edward F Othmer Jr at or via email at Ed_Othmer@urscorp.com
if you have any questions regarding this invoice.

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	City of San Marcos
Period:	FY 09-10 ~~2nd~~ 1st - 4th Quarters
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 593.25

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Erica Ryan
Stormwater Program Manager
City of San Marcos

9/27/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Sara Agahi
Sr. Civil Engineer
County of San Diego

9/27/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: City of San Marcos

Period: FY 09-10 2nd - 4th Quarters

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.A. [Land Development Workgroup meeting support]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.A. [Semi-annual Workgroup Updates]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. [FY 2010-2011 Work Plan and Budget]						

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: City of San Marcos

Period: FY 09-10 ~~2nd~~ 1st - 4th Quarters

Work Plan Task / Sub-task	Amount Paid	Date Paid	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			
Contract 1. [HMP and SUSMP updates - Brown and Caldwell contract 520444]			
Subtask 2.E. [HMP and SUSMP]	$ 565.00	11/9/2010	MOE Invoice 8/2/09 and 10/5/09
	$ -		
Contract 2. [ENTER CONTRACT TITLE / #]			
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]	$ -		Monthly payment for wet weather monitoring services (see attached invoice 3)
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Contract Expenditures $ 565.00			
B. Other Expenditures (list by Working Body Task or Sub-task)			
~~Sara Agahi;Program Manager/Sr. Civil Engineer.~~ Contract management	$ 28.25		5% contract admin ~~[illegible]~~ of $565.00

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

		$ -		
		$ -		
		$ -		
Sub-total Other Expenditures	$ 28.25			
	Total Expenditures	$ 593.25		

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	City of San Diego
Period:	FY 09-10 3rd - 4th Quarters
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ ~~69,793.94~~ 69,044.93

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Sumer Hasenin
Sr. Civil Engineer
City of San Diego

9/10/2010
Date

Sumer Hasenin
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2009-2010 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Sara Agahi
Sr. Civil Engineer
County of San Diego

9/14/10
Date

Sara Agahi
Signature

Approved via e-mail vote 8/19/10
of workgroup

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: City of San Diego

Period: FY 09-10 3Rd - 4th Quarters

Work Plan Task / Sub-task	Amount Paid	Date Paid	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			
Contract 1. [HMP Sensitivity Analysis - Brown and Caldwell As-needed Engineering Services with the City of San Diego]			
Subtask 2.E. [HMP and SUSMP]	$ 294.00	3/3/2010	Invoice 44119779
	$ 748.00	4/19/2010	Invoice 44121460
	$ 4,715.00	5/12/2010	Invoice 44123199
	$ 9,389.00	6/4/2010	Invoice 44124961
	$ 3,666.00	6/29/2010	Invoice 44126779
	$ 23,666.25	7/2/2010	Invoice 44127890
	$ -		
Contract 2. [Regional Construction Guidelines - URS Corporation / Contract #H084440]			
Subtask 1.B [Construction Sub-Workgroup]	$ 158.13	3/16/2010	Invoice 4249394
	$ 1,698.95	4/14/2010	Invoice 4268309
	$ 13,164.14	5/12/2010	Invoice 4298927
	$ 4,789.67	6/14/2010	Invoice 4329759
	$ 4,181.28	7/1/2010	Invoice 4364078
	$ -		
	$ -		
	$ -		
	$ -		
Sub-total Contract Expenditures $ 66,470.42			
B. Other Expenditures (list by Working Body Task or Sub-task)			
Subtask 2.E. [contract management for HMP contract]			
Sumer Hasenin: Sr. Civil Engineer	$ 14.70		5% contract admin of $294.00
Sumer Hasenin: Sr. Civil Engineer	$ 37.40		5% contract admin of $748.00
Sumer Hasenin: Sr. Civil Engineer	$ 235.75		5% contract admin of $4715.00
Sumer Hasenin: Sr. Civil Engineer	$ 469.45		5% contract admin of $9389.00

COPE[illegible]MITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Sumer Hasenin: Sr. Civil Engineer	$ 37.30		5% contract admin of $3666.00 (reduced by 146)
	$ 1,183.31		5% contract admin of $23666.25
Subtask 1.B (Contract Management for Regional Construction Guidelines			
Sumer Hasenin: Sr. Civil Engineer	$ 7.91		5% contract admin of 158.13
Sumer Hasenin: Sr. Civil Engineer	$ 84.95		5% contract admin of 1698.95
Sumer Hasenin: Sr. Civil Engineer	$ 55.20		5% contract admin of 13,164.14 (reduced by 601)
Sumer Hasenin: Sr. Civil Engineer	$ 239.48		5% contract admin of 4,789.67
Sumer Hasenin: Sr. Civil Engineer	$ 209.06		5% contract admin of 4,181.28
Sub-total Other Expenditures $ 2,574.51			
Total Expenditures $ 69,044.93			

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

RECEIVED
MAY 24 2010
By: MB

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44124961

Date : May 10, 2010

Attention: Monika Smoczinski

Subject : City of SD HMP Assistance

Contact : Eric S Mosolgo, PM

Billing Period : March 26, 2010 through April 29, 2010

Invoiced By : Susan E Pantig

Progress Billing No : 4

Reference : Authorization Dated : 2/15/2010

As Needed Engineering Services 2008-2011; Task Order 21
City of San Diego Hydromodification Management Plan
(Fund 100000, Cost Center 2114120013, GL 512034)

PO No.: 4500010248

003 -- Copermittee Tasks

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	15.50	$ 196.00	3,038.00
Manager, Info Systems			
Andrew Baldwin	29.00	$ 219.00	6,351.00
Sub-Total Labor	44.50		$ 9,389.00
Total Labor			**$ 9,389.00**

Total : 003 -- Copermittee Tasks **$ 9,389.00**

004 -- Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	0.50	$ 196.00	98.00
Accountant III			
Susan E Pantig	0.75	$ 126.00	94.50
Project Analyst			

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Summer

TM

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44124961

Date : May 10, 2010

Attention: Monika Smoczinski

Class/ Employee Name	Hours	Rate	Billing Amount
Project Analyst			
Janelle L Kaminski	0.50	$ 107.00	53.50
Sub-Total Labor	1.75		$ 246.00
Total Labor			**$ 246.00**
Total : 004 -- Project Management			**$ 246.00**
Amount Due this Invoice			**$ 9,635.00**

APPROVED FOR PAYMENT
DATE: 6/4/2010
SIGNATURE: Sumer Halbem

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44124961

Date : May 10, 2010

Attention: Monika Smoczinski

Summary of Account

BC Phase	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date
001 --	Assessment of HMP Implementation	$ 5,618.00	$ 0.00	$ 1,764.00	$ 1,764.00
002 --	Develop HMP Implemeation Work Plan	$ 6,380.00	$ 0.00	$ 0.00	$ 0.00
003 --	Copermittee Tasks	$ 44,600.00	$ 9,389.00	$ 5,793.00	$ 15,182.00
004 --	Project Management	$ 4,722.00	$ 246.00	$ 1,009.38	$ 1,255.38
	Total :	**$ 61,320.00**	**$ 9,635.00**	**$ 8,566.38**	**$ 18,201.38**

Total Paid To Date : **$ (1,354.25)**

Balance Outstanding : **$ 16,847.13**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

COPY

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44121460

Date : March 10, 2010

Attention: John Dullaghan

Subject : City of SD HMP Assistance

Contact : Eric S Mosolgo, PM

Billing Period : January 29, 2010 through February 25, 2010

Invoiced By : Susan E Pantig

Progress Billing No : 2

Reference : Authorization Dated : 2/15/2009

As Needed Engineering Services 2008-2011; Task Order 21
City of San Diego Hydromodification Management Plan
(Fund 100000, Cost Center 2114120013, GL 512034)

PO No.: 4500010248

001 -- Assessment of HMP Implementation

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	4.00	$ 196.00	784.00
Sub-Total Labor	4.00		$ 784.00
Total Labor			**$ 784.00**

Total : 001 -- Assessment of HMP Implementation **$ 784.00**

003 -- Copermittee Tasks

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	4.00	$ 196.00	784.00
Sub-Total Labor	4.00		$ 784.00
Total Labor			**$ 784.00**

Total : 003 -- Copermittee Tasks **$ 784.00**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44121460

Date : March 10, 2010

Attention: John Dullaghan

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004 -- Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	1.75	$ 196.00	343.00
Senior Accounting Clerk			
Lindsay B Surio	0.50	$ 91.50	45.75
Project Analyst			
Janelle L Kaminski	0.50	$ 107.00	53.50
Sub-Total Labor	2.75		$ 442.25
Total Labor			**$ 442.25**

Total : 004 -- Project Management	**$ 442.25**
Amount Due this Invoice	**$ 2,010.25**

OK To Pay
$ 2,010.25
SH 4/19/2010

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44121460

Date : March 10, 2010

Attention: John Dullaghan

Summary of Account

BC Phase	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date
001 --	Assessment of HMP Implementation	$ 5,618.00	$ 784.00	$ 980.00	$ 1,764.00
002 --	Develop HMP Implemeation Work Plan	$ 6,380.00	$ 0.00	$ 0.00	$ 0.00
003 --	Copermittee Tasks	$ 44,600.00	$ 784.00	$ 294.00	$ 1,078.00
004 --	Project Management	$ 4,722.00	$ 442.25	$ 80.25	$ 522.50
	Total :	**$ 61,320.00**	**$ 2,010.25**	**$ 1,354.25**	**$ 3,364.50**

Total Paid To Date : **$ 0.00**

Balance Outstanding : **$ 3,364.50**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

COPY

To San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44119779

Date : February 10, 2010

Attention: John Dullaghan

Subject : City of SD HMP Assistance

Contact : Eric S Mosolgo, PM

Billing Period : Inception through January 28, 2010

Invoiced By : Susan E Pantig

Progress Billing No : 1

Reference : Authorization Dated : 2/15/2009

As Needed Engineering Services 2008-2011; Task Order 21
City of San Diego Hydromodification Management Plan
(Fund 100000, Cost Center 2114120013, GL 512034)

PO No.: 4500010248

001 -- Assessment of HMP Implementation

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	5.00	$ 196.00	980.00
Sub-Total Labor	5.00		$ 980.00
Total Labor			**$ 980.00**
Total : 001 -- Assessment of HMP Implementation			**$ 980.00**

003 -- Copermittee Tasks

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	1.50	$ 196.00	294.00
Sub-Total Labor	1.50		$ 294.00
Total Labor			**$ 294.00**
Total : 003 -- Copermittee Tasks			**$ 294.00**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44119779

Date : February 10, 2010

Attention: John Dullaghan

004 -- Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Project Analyst			
Janelle L Kaminski	0.75	$ 107.00	80.25
Sub-Total Labor	0.75		$ 80.25
Total Labor			**$ 80.25**
Total : 004 -- Project Management			**$ 80.25**
Amount Due this Invoice			**$ 1,354.25**

ok to pay
$ 1,354.25
SH
3/3/2010

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44119779

Date : February 10, 2010

Attention: John Dullaghan

Summary of Account

BC Phase	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date
001 --	Assessment of HMP Implementation	$ 5,618.00	$ 980.00	$ 0.00	$ 980.00
002 --	Develop HMP Implemeation Work Plan	$ 6,380.00	$ 0.00	$ 0.00	$ 0.00
003 --	Copermittee Tasks	$ 44,600.00	$ 294.00	$ 0.00	$ 294.00
004 --	Project Management	$ 4,722.00	$ 80.25	$ 0.00	$ 80.25
	Total :	**$ 61,320.00**	**$ 1,354.25**	**$ 0.00**	**$ 1,354.25**

Total Paid To Date : **$ 0.00**

Balance Outstanding : **$ 1,354.25**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

9665 Chesapeake Drive, Suite 201
San Diego, California 92123

Tel: 858-514-8822
Fax: 858-514-8833

www.brownandcaldwell.com

Brown AND Caldwell

July 2, 2010

Monika Smoczynski
City of San Diego
Metropolitan Wastewater Division
9192 Topaz Way, MS 901
San Diego, California 92123

Subject: Progress Billing Report – City of San Diego Metropolitan Wastewater District As Needed Agreement for Engineering Services 2008-2011

Dear Ms. Smoczynski:

Enclosed with this progress report are Brown and Caldwell's most recent progress billings dated July 2, 2010, for services rendered during the period of May 28, 2010 through June 30, 2010 totaling $47,846.38.

Status Report for Active Task Orders Under the City of San Diego 2008-2011 As Needed Wastewater Contract

Task Order Number	Task Order Name	Description of Work Performed	Progress Percent or Deliverables Completed	Description of Potential Cost Over-runs	Invoice Number	Invoice Amount
8	Storm Water Funding Strategy Development	• Worked on BMP Incentives. • Review Merit invoices.	• 88% Complete	None	44127882	$8,937.88
14	Storm Water Standards Update	• Preparation of draft final Storm Water Standards Manual.	• 82% Complete	None	44127889	$6,524.50
21	San Diego Hydromodification Management Plan	• Sizing factor analysis; pond sizer analysis; HMP monitoring plan development.	• 90% Complete	None	44127890	$32,384.00
					Total for Invoices	$47,846.38

If you have any questions regarding the attached invoices or any previous invoices please contact Victor Occiano at (858) 571-6715 or myself at (858) 571-6726.

Very truly yours,

BROWN AND CALDWELL

Misty Suposs
Area Business Operations Manager

Victor Occiano
Program Manager

cc: Accounting Files

Project Files

Enclosure

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44127890

Date : July 02, 2010

Attention: Monika Smoczynski

Subject : City of SD HMP Assistance

Contact : Eric S Mosolgo, PM

Billing Period : May 28, 2010 through June 30, 2010

Invoiced By : Lindsay B Surio

Progress Billing No : 6

Reference : Authorization Dated : 2/15/2010

As Needed Engineering Services 2008-2011; Task Order 21
City of San Diego Hydromodification Management Plan
(Fund 100000, Cost Center 2114120013, GL 512034)

PO No.: 4500010248

001 -- Assessment of HMP Implementation

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	6.50	$ 196.00	1,274.00
Sub-Total Labor	6.50		$ 1,274.00
Total Labor			**$ 1,274.00**

Total : 001 -- Assessment of HMP Implementation **$ 1,274.00**

002 -- Develop HMP Implemeation Work Plan

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	20.00	$ 196.00	3,920.00
Principal Engineer			
Lisa C Skutecki	1.00	$ 189.00	189.00
Senior Accounting Clerk			
Lindsay B Surio	1.00	$ 91.50	91.50
Project Analyst			

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44127890

Date : July 02, 2010

Attention: Monika Smoczynski

Class/ Employee Name	Hours	Rate	Billing Amount
Project Analyst			
Janelle L Kaminski	0.50	$ 107.00	53.50
Sub-Total Labor	22.50		$ 4,254.00
Total Labor			**$ 4,254.00**
Total : 002 -- Develop HMP Implemeation Work Plan			**$ 4,254.00**

003 -- Copermittee Tasks

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Managing Engineer			
Michael Flake	1.25	$ 219.00	273.75
Supervising Engineer			
Anthony M Dubin	8.00	$ 196.00	1,568.00
Eric S Mosolgo	29.50	$ 196.00	5,782.00
Principal Engineer			
Nathan H Foged	2.50	$ 189.00	472.50
Senior Engineer			
Hayes J Twenter	15.00	$ 167.00	2,505.00
Pugazhendhi Thayumanavan	50.00	$ 167.00	8,350.00
Supervising Scientist			
Khalil E Phelan Abusaba	14.00	$ 196.00	2,744.00
Manager, Info Systems			
Andrew Baldwin	9.00	$ 219.00	1,971.00
Sub-Total Labor	129.25		$ 23,666.25
Total Labor			**$ 23,666.25**
Total : 003 -- Copermittee Tasks			**$ 23,666.25**

004 -- Project Management

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44127890

Date : July 02, 2010

Attention: Monika Smoczynski

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Eric S Mosolgo	14.50	$ 196.00	2,842.00
Project Analyst			
Janelle L Kaminski	3.25	$ 107.00	347.75
Sub-Total Labor	17.75		$ 3,189.75
Total Labor			**$ 3,189.75**
Total : 004 -- Project Management			**$ 3,189.75**
Amount Due this Invoice			**$ 32,384.00**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : San Diego, City of, MWWD (CA)
Metropolitan Wastewater Department
9192 Topaz Way, MS 901
San Diego, CA 92123

Project No : 138617

Invoice No : 44127890

Date : July 02, 2010

Attention: Monika Smoczynski

Summary of Account

BC Phase	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date
001 --	Assessment of HMP Implementation	$ 5,618.00	$ 1,274.00	$ 2,744.00	$ 4,018.00
002 --	Develop HMP Implemeation Work Plan	$ 6,380.00	$ 4,254.00	$ 0.00	$ 4,254.00
003 --	Copermittee Tasks	$ 44,600.00	$ 23,666.25	$ 18,848.00	$ 42,514.25
004 --	Project Management	$ 4,722.00	$ 3,189.75	$ 1,510.88	$ 4,700.63
	Total :	**$ 61,320.00**	**$ 32,384.00**	**$ 23,102.88**	**$ 55,486.88**

Total Paid To Date : **$ (18,201.38)**

Balance Outstanding : **$ 37,285.50**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2010-02999

Invoice Date: 06/24/2010

Description: PROFESSIONAL SERVICES RENDERED FOR 2009-2010 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

County Agreement No. 514270

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

	Contract Value
Cost:	33,000.00
Total:	33,000.00
Cumulative Amount Billed:	18,623.19

Project Number: 13245.090.001.0014
Project Name: 09/10 WURMP Workgroup
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/24/2010

Billing Period From: 05/01/2010
To: 05/28/2010

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	18,623.19	18,623.19
Total Expenses	18,623.19	18,623.19
Invoice Total	18,623.19	18,623.19

Page: 17

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254
PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

		Project Number:	13245.090.001.0014	Billing Currency:	USD
Invoice Number:	JUN2010-02999	Project Name:	09/10 WURMP Workgroup	Invoice Date:	06/24/2010

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500376183	2010/5	MIKHAIL OGAWA ENGINEERING	000739	9,694.79
		500378617	2010/5		000756	8,928.40
Total: Subcontractor						18,623.19
Total Expenses						18,623.19

MOE

MIKHAIL OGAWA ENGINEERING

Weston Solutions
Dave Renfrew
2433 Impala Drive
Carlsbad, California 92008

0G900
2010.5.2
Ychr# 500 376183

4/15/2010
Project No. 012.007
Invoice No. 000739
P.O. Number

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided between March 1, 2010 and March 31, 2010			
Engineer I meeting with Jon, Todd, Drew; prep for and attend FRA meeting; PM; review Vista JURMP,complete tbls, solana bch review;Santee JAR, conf call; airport, port, icid; County review; CV review; O'side; Carlsbad; NC; City of SD, vista; drafting report	64	95.01	6,080.64
Scientist II Encinitas, Escondido, La Mesa Reportable Items; IB, Lemon Grove, El Cajon, Del Mar, Coronado, Poway, San Marcos. Inventory/TTWQ Prioritization	43	84.05	3,614.15

Rcvd: 4/22/10
OK to Pay
David S. Renfrew
Proj#: 13245.090.001.0014.10
P.O. #: 0071129

RECEIVED
MAY 05 2010
ACCOUNTS PAYABLE

Total this invoice $9,694.79

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

DG900
2010-5-3
Vchr# 5003786 17

MOE

MIKHAIL OGAWA ENGINEERING

OK to Pay
Proj#: 13245.090.001.0014.10
P.O. #: 0071129

Weston Solutions
Dave Renfrew
2433 Impala Drive
Carlsbad, California 92008

5/10/2010
Project No. 012.007
Invoice No. 000756
P.O. Number

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided between April 1, 2010 and April 30, 2010			
Engineer I report drafting; modifications; corr. with TS; finalizing draft report; meeting with Todd, Drew, Jon, meet with FRA and WURMP group; meet with Jon re: items; coordination with KB and prep of ERS workgroup materials; meeting with ERS group; prep of municipal; meeting with JVR re: municipal; attend Muni workgroup; prep of Land Development; attendance at land development workgroup; prep for and meet with JVR re: workshop worksheets and process; preparation and meeting attendance at WURMP/FRA meeting	30.5	95.01	2,897.81
Scientist II compiling inventory information; reviewing report; preparation for FRA meeting; attendance at pre-meeting to the FRA and WURMP leads meeting; attendance at FRA and WURMP Leads meeting; working with Jon on worksheet as follow-up from meeting; preparation for Education Workgroup meeting; attended Education/Residential workgroup meeting for workshop; attended Municipal workgroup meeting to discuss workshop; prepared materials for municipal meeting; prepared materials for Land Development workgroup meeting; put together municipal materials for meeting with Jon; revising municipal materials; coordination/correspondence with Mikhail regarding material development; meeting with Jon to go over worksheets and materials for workshops; meeting with Mikhail to go over worksheets; attended FRA and WURMP Leads meeting; preparation for the FRA and WURMP leads meeting; working on filling out worksheets	71.75	84.05	6,030.59

RECEIVED
MAY 20 2010
ACCOUNTS PAYABLE

Total this invoice **$8,928.40**

Please reference the invoice number with your payment
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

OG900
2010.6.5
Vchr# 50038759

MOE
MIKHAIL OGAWA ENGINEERING

Weston Solutions
Dave Renfrew
2433 Impala Drive
Carlsbad, California 92008

RECEIVED
JUN 23 2010

6/8/2010
Project No. 012.007
Invoice No. 000770
P.O. Number

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided between May 1, 2010 and May 31, 2010			
Engineer I internal meetings regarding workshop tables; meetings with Jon and Kelly re workshop materials; workshop materials prep; IC Workshop ERS Workshop; prep for and facilitate the Muni workgroup and land development workgroup workshops; set up construction workgroup workshop	33	95.01	3,135.33
Scientist II worked on worksheets; met with Mikhail to go over info for worksheets and presenting materials at workshops; meeting with Jon and Todd; worked on creating table as follow-up from meeting; worked on I/C and mobile tables; email to Karen for IC workshop; Industrial/Commercial Workshop; education and residential workshop; workshop preparation; meetings with Jon; Land Development Workshop; municipal workshop; material preparation for workshops	43.5	84.05	3,656.18

INVOICE APPROVAL
DATE REC: 6/25/10
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0071129
WO # 13245.090.001.0014.10
RETURN TO ANALYN NELSON

Total this invoice **$6,791.51**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:
Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

~~06900~~ OGA00
2010.7.4
rch# 500394377

MOE
MIKHAIL OGAWA ENGINEERING

RECEIVED
JUL 15 2010

Weston Solutions
Dave Renfrew
2433 Impala Drive
Carlsbad, California 92008

7/9/2010
Project No. 012.007
Invoice No. 000786
P.O. Number

San Diego Stormwater Copermittees Watershed
Data, Reporting and Assessment Needs

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided between June 1, 2010 and June 30, 2010			
Engineer I 2nd IC Workshop prep and attendance; construction sub-group workshop prep and attendance; workshop follow-up	12	95.01	1,140.12
Scientist II working on IC tables; ERS table, municipal tables, land development tables; I/C workshop; ~~construction workshop; education/residential~~ workshop; workshop follow-up	22.5	84.05	1,891.13

INVOICE APPROVAL
DATE REC: 7/15/10
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0071129
WO # 13245.090.001.0014.10
RETURN TO ANALYN NELSON

RECEIVED
JUL 26 2010
ACCOUNTS PAYABLE

Total this invoice $3,031.25

Please reference the invoice number with your payment
Payment is due and payable upon receipt of invoice

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Program Planning Subcommittee
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 11,188.14**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego Watershed Protection Program

9/27/2010
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego Watershed Protection Program

9/27/2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Program Planning Subcommittee and Regional Management Committee Meeting Support.						
10/8/2009	Sheri McPherson	Land Use and Environmental Planner III	6.00	$ 58.85	$ 353.10	Verifying expenditures received from working bodies
10/9/2009	Sheri McPherson	Land Use and Environmental Planner III	6.00	$ 58.85	$ 353.10	Tabulating FY 2008-09 expenditures
10/9/2009	Jon Van Rhyn	Water Quality Program Mgr	7.00	$ 77.42	$ 541.94	Preparation of materials / presentations for October 15, 2009 meeting (credits, qualifying expenditures, rollovers)
10/11/2009	Sheri McPherson	Land Use and Environmental Planner III	3.00	$ 58.85	$ 176.55	Tabulating FY 2008-09 expenditures
10/12/2009	Jon Van Rhyn	Water Quality Program Mgr	5.00	$ 77.42	$ 387.10	Preparation of materials / presentations for October 15, 2009 meeting (credits, qualifying expenditures, rollovers)
10/16/2009	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	Modifying FY 2008-09 expenditures and carry overs
11/12/2009	Sheri McPherson	Land Use and Environmental Planner III	0.50	$ 58.85	$ 29.43	Prepared draft meeting agenda and reserved room
1/18/2010	Jon Van Rhyn	Water Quality Program Mgr	7.00	$ 77.42	$ 541.94	Preparation of materials / presentations for January 21, 2010 meeting (MOU modifications, RURMP annual report)
3/4/2010	Sheri McPherson	Land Use and Environmental Planner III	14.50	$ 58.85	$ 853.33	Preparation of initial Draft Copermittee by-laws
3/5/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Preparation of Regional Calendar for March thru June Copermittee meetings
3/15/2010	Jon Van Rhyn	Water Quality Program Mgr	3.00	$ 77.42	$ 232.26	Preparation of materials / presentations for March 18, 2010 meeting (MOU comments, reporting and assessment project)
6/14/2010	Jon Van Rhyn	Water Quality Program Mgr	5.00	$ 77.42	$ 387.10	Preparation of materials / presentations for June 17, 2010 meeting (work plan and budget update, unfunded mandates)
Sub-total	$ 4,444.34		67.00			
Subtask 1.B. Coordination with Working Bodies.						
1/28/2010	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	Sent out budget info and request workgroup to reduce budgets by 2.5% per RMC.
2/24/2010	Sheri McPherson	Land Use and Environmental Planner III	0.50	$ 58.85	$ 29.43	Sent follow-up e-mails to each workgroup Chair requesting updated FY 2010-11 work plans and budgets.
Sub-total	$ 147.13		2.50			
Subtask 2.A. FY 2010-11 Work Plan and Budget.						

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
12/1/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Development of PPS work plan and budget
12/11/2009	Jon Van Rhyn	Water Quality Program Mgr	6.00	$ 77.42	$ 464.52	Distribution, review, and finalization of work plan and budget
Sub-total	$ 774.20		10.00			
Subtask 2.B. FY 2010-11 Regional Work Plan and Budget.						
12/1/2009	Jon Van Rhyn	Water Quality Program Mgr	6.00	$ 77.42	$ 464.52	Prepartion of FY 2010-11 workplan/budget
12/4/2009	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	Assist in the prepartion of FY 2010-11 workplan/budget
12/4/2009	Jon Van Rhyn	Water Quality Program Mgr	6.00	$ 77.42	$ 464.52	Prepartion of FY 2010-11 workplan/budget
12/9/2009	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Prepared consolidated workplan/budget for PPS review
12/18/2009	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Made PPS recommended edits to workplan/budget
1/7/2010	Sheri McPherson	Land Use and Environmental Planner III	6.00	$ 58.85	$ 353.10	Made PPS recommended edits to workplan/budget
1/8/2010	Sheri McPherson	Land Use and Environmental Planner III	5.00	$ 58.85	$ 294.25	Made PPS recommended edits to workplan/budget
Sub-total	$ 2,635.69		41.00			
Subtask 2.C. Management Committee Updates.						
9/1/2009	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	October meeting e-mail annoucement and materials.
10/12/2009	Jon Van Rhyn	Land Use and Environmental Planner III	7.00	$ 77.42	$ 541.94	Preparation of materials for Oct. 15, 2009 Management Committee meeting (working body reponsibilities and assignments; budget overview)
10/30/2009	Sheri McPherson	Land Use and Environmental Planner III	1.00	$ 58.85	$ 58.85	October meeting e-mail distribution of meeting summary and materials
11/16/2009	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	December meeting e-mail annoucement and materials.
11/25/2009	Sheri McPherson	Land Use and Environmental Planner III	1.00	$ 58.85	$ 58.85	Revised December meeting e-mail annoucement and materials.
12/14/2009	Jon Van Rhyn	Land Use and Environmental Planner III	6.00	$ 77.42	$ 464.52	(implementation of Regional Work Plans and Budgets; regional budget update; approval of work products for RWQCB submittal)
1/12/2010	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	January meeting e-mail annoucement and materials.
1/18/2010	Jon Van Rhyn	Land Use and Environmental Planner III	7.00	$ 77.42	$ 541.94	Preparation of materials for Jan. 21, 2010 Management Committee meeting (working body reponsibilities and assignments; budget overview)

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
1/20/2010	Sheri McPherson	Land Use and Environmental Planner III	1.00	$ 58.85	$ 58.85	December meeting e-mail distribution of meeting summary and materials
1/26/2010	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	January meeting e-mail distribution of meeting summary and materials
3/4/2010	Sheri McPherson	Land Use and Environmental Planner III	0.50	$ 58.85	$ 29.43	March meeting e-mail announcement and materials.
3/15/2010	Jon Van Rhyn	Land Use and Environmental Planner III	6.00	$ 77.42	$ 464.52	Preparation of materials for Mar. 18, 2010 Management Committee meeting (implementation of Regional Work Plans and Budgets; regional budget update; approval of work products for RWQCB submittal)
3/22/2010	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	March meeting e-mail distribution of meeting summary and materials
6/4/2010	Sheri McPherson	Land Use and Environmental Planner III	0.50	$ 58.85	$ 29.43	June meeting e-mail annoucement and materials.
6/14/2010	Jon Van Rhyn	Land Use and Environmental Planner III	3.00	$ 77.42	$ 232.26	Preparation of materials for June 17, 2010 Management Committee meeting (FY 2009-10 regional shared cost budget and work plan; regional shared cost expenditures documentation)
6/21/2010	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	June meeting e-mail distribution of meeting summary and materials
Sub-total	$ 3,186.78		45.00			
Copermittee Total					**$ 11,188.14**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Fiscal, Reporting, and Assessment Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 6,370.69**
Contract / Other Expenditures Claimed:	**$ 29,868.25**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego Watershed Protection Program

9/27/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego Watershed Protection Program

9/27/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A.Fiscal, Reporting, and Assessment Workgroup Meeting Support.						
2/26/2010	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	March 3rd meeting: meeting materials (assessment update, task / timeline)
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	1.00	$ 77.42	$ 77.42	March 17th joint meeting: meeting materials (assessment update)
Sub-total	$ 387.10		5.00			
Subtask 2.B. FY 2010-11 Work Plan and Budget.						
12/1/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Development of PPS work plan and budget
12/11/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Distribution, review, and finalization of work plan and budget
Sub-total	$ 619.36		8.00			
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input and Completion.						
10/26/2009	Sheri McPherson	Land Use and Environmental Planner III	1.00	$ 58.85	$ 58.85	Reviewing FY 07-08 RUMRP annual report and contacting Karen Holman
11/1/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Development of RURMP annual report outline
11/2/2009	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	Prepared Regioanl Workgroup RURMP reporting outline
12/28/2009	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	consolidated information received from work groups
12/31/2009	Sheri McPherson	Land Use and Environmental Planner III	6.00	$ 58.85	$ 353.10	formated text and tables, reveiwed and edited document
1/6/2010	Sheri McPherson	Land Use and Environmental Planner III	4.00	$ 58.85	$ 235.40	edits to RURMP annual report, preparation for Management Committee
1/18/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report
1/19/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report
1/26/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
1/27/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Finalization of RURMP annual report, PDF of document and submittal to WURMP workgroup lead for submittal to RWQCB.
Sub-total	$ 3,428.73		57.00			
Subtask 2.D. Regional Standards for Reporting and Assessment						
2/26/2010	Jon Van Rhyn	Water Quality Program Mgr	7.00	$ 77.42	$ 541.94	Developmentof draft regional reporting and assessment standards for use in reporting and assessment consultant project
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	8.00	$ 77.42	$ 619.36	Developmentof draft approach for reporting and assessment consultant project
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Developmentof draft approach for reporting and assessment consultant project
3/16/2010	Jon Van Rhyn	Water Quality Program Mgr	2.50	$ 77.42	$ 193.55	Coordination with CASQA Program Effectiveness Assessment Subcommittee (March 16, 2010 conference call)
4/21/2010	Jon Van Rhyn	Water Quality Program Mgr	1.50	$ 77.42	$ 116.13	Coordination with CASQA Program Effectiveness Assessment Subcommittee (April 21, 2010 conference call)
6/16/2010	Jon Van Rhyn	Water Quality Program Mgr	2.00	$ 77.42	$ 154.84	Coordination with CASQA Program Effectiveness Assessment Subcommittee (June 16, 2010 conference call)
Sub-total	$ 1,935.50		25.00			
Copermittee Total					**$ 6,370.69**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 2.D. Regional Standards for Reporting and Assessment				
Weston (Professional Services for 2009-10 Municipal Stormwater Monitoring)	$ 9,694.79	4/15/2010	$ 484.74	Paid to subcontractor Mikhail Ogawa Engineering for services provided between **March 1 and March 31, 2010** -- reporting and assessment standards project (see invoices for description of services).
Weston (Professional Services for 2009-10 Municipal Stormwater Monitoring)	$ 8,928.40	5/10/2010	$ 446.42	Paid to subcontractor Mikhail Ogawa Engineering for services provided between **April 1 and April 30, 2010** -- reporting and assessment standards project (see invoices for description of services).
Weston (Professional Services for 2009-10 Municipal Stormwater Monitoring)	$ 6,791.51	6/8/2010	$ 339.58	Paid to subcontractor Mikhail Ogawa Engineering for services provided between **May 1 and May 31, 2010** -- reporting and assessment standards project (see invoices for description of services).
Weston (Professional Services for 2009-10 Municipal Stormwater Monitoring)	$ 3,031.25	7/9/2010	$ 151.56	Paid to subcontractor Mikhail Ogawa Engineering for services provided between **June 1 and June 30, 2010** -- reporting and assessment standards project (see invoices for description of services).
Subtask 2.D Sub-total $ 28,445.95				
Subtask 2.D Management Cost $ 1,422.30				
Total Expenditures (Including contract management cost)	**$ 29,868.25**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Fiscal, Reporting, and Assessment Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 6,370.69**
Contract / Other Expenditures Claimed:	**$ 19,554.35**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego Watershed Protection Program

Date _____ Signature _____

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego Watershed Protection Program

Date _____ Signature _____

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A.Fiscal, Reporting, and Assessment Workgroup Meeting Support.						
2/26/2010	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	March 3rd meeting: meeting materials (assessment update, task / timeline)
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	1.00	$ 77.42	$ 77.42	March 17th joint meeting: meeting materials (assessment update)
Sub-total	$ 387.10		5.00			
Subtask 2.B. FY 2010-11 Work Plan and Budget.						
12/1/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Development of PPS work plan and budget
12/11/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Distribution, review, and finalization of work plan and budget
Sub-total	$ 619.36		8.00			
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input and Completion.						
10/26/2009	Sheri McPherson	Land Use and Environmental Planner III	1.00	$ 58.85	$ 58.85	Reviewing FY 07-08 RUMRP annual report and contacting Karen Holman
11/1/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Development of RURMP annual report outline
11/2/2009	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	Prepared Regioanl Workgroup RURMP reporting outline
12/28/2009	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	consolidated information received from work groups
12/31/2009	Sheri McPherson	Land Use and Environmental Planner III	6.00	$ 58.85	$ 353.10	formated text and tables, reveiwed and edited document
1/6/2010	Sheri McPherson	Land Use and Environmental Planner III	4.00	$ 58.85	$ 235.40	edits to RURMP annual report, preparation for Management Committee
1/18/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report
1/19/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report
1/26/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
1/27/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Finalization of RURMP annual report, PDF of document and submittal to WURMP workgroup lead for submittal to RWQCB.
Sub-total	$ 3,428.73		57.00			
Subtask 2.D. Regional Standards for Reporting and Assessment						
2/26/2010	Jon Van Rhyn	Water Quality Program Mgr	7.00	$ 77.42	$ 541.94	Developmentof draft regional reporting and assessment standards for use in reporting and assessment consultant project
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	8.00	$ 77.42	$ 619.36	Developmentof draft approach for reporting and assessment consultant project
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Developmentof draft approach for reporting and assessment consultant project
3/16/2010	Jon Van Rhyn	Water Quality Program Mgr	2.50	$ 77.42	$ 193.55	Coordination with CASQA Program Effectiveness Assessment Subcommittee (March 16, 2010 conference call)
4/21/2010	Jon Van Rhyn	Water Quality Program Mgr	1.50	$ 77.42	$ 116.13	Coordination with CASQA Program Effectiveness Assessment Subcommittee (April 21, 2010 conference call)
6/16/2010	Jon Van Rhyn	Water Quality Program Mgr	2.00	$ 77.42	$ 154.84	Coordination with CASQA Program Effectiveness Assessment Subcommittee (June 16, 2010 conference call)
Sub-total	$ 1,935.50		25.00			
Copermittee Total					**$ 6,370.69**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 2.D. Regional Standards for Reporting and Assessment				
Weston (Professional Services for 2009-10 Municipal Stormwater Monitoring)	$ 18,623.19		$ 931.16	Paid to subcontractor Mikhail Ogawa Engineering for services provided between March 1 and April 30, 2010 -- reporting and assessment standards project (see invoices for description of services).
Subtask 2.D Sub-total $ 18,623.19				
Subtask 2.D Management Cost $ 931.16				
Total Expenditures (Including contract management cost)	**$ 19,554.35**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Fiscal, Reporting, and Assessment Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 6,370.69**
Contract / Other Expenditures Claimed:	**$ 19,554.35**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego Watershed Protection Program

Date _____ Signature _____

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego Watershed Protection Program

Date _____ Signature _____

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A.Fiscal, Reporting, and Assessment Workgroup Meeting Support.						
2/26/2010	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	March 3rd meeting: meeting materials (assessment update, task / timeline)
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	1.00	$ 77.42	$ 77.42	March 17th joint meeting: meeting materials (assessment update)
Sub-total	$ 387.10		5.00			
Subtask 2.B. FY 2010-11 Work Plan and Budget.						
12/1/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Development of PPS work plan and budget
12/11/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Distribution, review, and finalization of work plan and budget
Sub-total	$ 619.36		8.00			
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input and Completion.						
10/26/2009	Sheri McPherson	Land Use and Environmental Planner III	1.00	$ 58.85	$ 58.85	Reviewing FY 07-08 RUMRP annual report and contacting Karen Holman
11/1/2009	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Development of RURMP annual report outline
11/2/2009	Sheri McPherson	Land Use and Environmental Planner III	2.00	$ 58.85	$ 117.70	Prepared Regioanl Workgroup RURMP reporting outline
12/28/2009	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	consolidated information received from work groups
12/31/2009	Sheri McPherson	Land Use and Environmental Planner III	6.00	$ 58.85	$ 353.10	formated text and tables, reveiwed and edited document
1/6/2010	Sheri McPherson	Land Use and Environmental Planner III	4.00	$ 58.85	$ 235.40	edits to RURMP annual report, preparation for Management Committee
1/18/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report
1/19/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report
1/26/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Edits to RURMP annual report

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Quarter FY 2009-10 (July 1, 2009 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
1/27/2010	Sheri McPherson	Land Use and Environmental Planner III	8.00	$ 58.85	$ 470.80	Finalization of RURMP annual report, PDF of document and submittal to WURMP workgroup lead for submittal to RWQCB.
Sub-total	$ 3,428.73		57.00			
Subtask 2.D. Regional Standards for Reporting and Assessment						
2/26/2010	Jon Van Rhyn	Water Quality Program Mgr	7.00	$ 77.42	$ 541.94	Developmentof draft regional reporting and assessment standards for use in reporting and assessment consultant project
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	8.00	$ 77.42	$ 619.36	Developmentof draft approach for reporting and assessment consultant project
3/10/2010	Jon Van Rhyn	Water Quality Program Mgr	4.00	$ 77.42	$ 309.68	Developmentof draft approach for reporting and assessment consultant project
3/16/2010	Jon Van Rhyn	Water Quality Program Mgr	2.50	$ 77.42	$ 193.55	Coordination with CASQA Program Effectiveness Assessment Subcommittee (March 16, 2010 conference call)
4/21/2010	Jon Van Rhyn	Water Quality Program Mgr	1.50	$ 77.42	$ 116.13	Coordination with CASQA Program Effectiveness Assessment Subcommittee (April 21, 2010 conference call)
6/16/2010	Jon Van Rhyn	Water Quality Program Mgr	2.00	$ 77.42	$ 154.84	Coordination with CASQA Program Effectiveness Assessment Subcommittee (June 16, 2010 conference call)
Sub-total	$ 1,935.50		25.00			
Copermittee Total					**$ 6,370.69**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 2.D. Regional Standards for Reporting and Assessment				
Weston (Professional Services for 2009-10 Municipal Stormwater Monitoring)	$ 18,623.19		$ 931.16	Paid to subcontractor Mikhail Ogawa Engineering for services provided between March 1 and April 30, 2010 -- reporting and assessment standards project (see invoices for description of services).
Subtask 2.D Sub-total $ 18,623.19				
Subtask 2.D Management Cost $ 931.16				
Total Expenditures (Including contract management cost)	**$ 19,554.35**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Monitoring Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 3,608.00**
Contract / Other Expenditures Claimed:	**$ 2,219,109.98**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jo Ann Weber
Water Quality Program Coordinator
County of San Diego

9/20/2010
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Water Quality Program Coordinator
County of San Diego

9/20/2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task 1/ Subtask 1.A Meeting Support						
7/20/2010	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	technical meeting with Weston on Prioirty Rating System
8/24/2010	Jo Ann Weber	Program Coordinator	0.50	$ 88.00	$ 44.00	Review recent pyrethroids studies to present at meeting
9/28/2010	Jo Ann Weber	Program Coordinator	0.50	$ 88.00	$ 44.00	Review 303(d) List- prepare comments to present at meeting
9/29/2010	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	Prepare Reg Mon Scope Request for proposal
10/26/2010	Jo Ann Weber	Program Coordinator	1.00	$ 88.00	$ 88.00	Prepare summary of SMC programs to present at meeting
11/13/2010	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	Prepare Reg Rept Scope of Work for RFP
11/14/2010	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	Prepare Reg Rept Scope of Work for RFP
1/22/2010	Jo Ann Weber	Program Coordinator	1.00	$ 88.00	$ 88.00	Prepare presentation on OC Permit & key bacteria TMDL comments
2/19/2010	Jo Ann Weber	Program Coordinator	1.00	$ 88.00	$ 88.00	Review & process letter to EPA on pyrethoids
4/26/2010	Jo Ann Weber	Program Coordinator	1.00	$ 88.00	$ 88.00	Review & Update Priorities Issues for Meeting
Sub-total	$ 1,672.00					
Subtask 2.B. FY 2010-11 Work Plan and Budget						
8/18/2009	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	
8/19/2009	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	
8/20/2009	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	
9/21/2009	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	
10/5/2010	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	
10/19/2010	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	
2/9/2010	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	
			0.00	$ -	$ -	
Sub-total	$ 1,760.00					
Subtask 2.C FY2008-09 Regional URMP Report Input						
12/10/2009	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 176.00					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 3,608.00**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 2.D. Revamping of the Priority Rating System for the LTEA/ROWD				
Weston {contract # 514270- Task 11}	$ 11,907.18	7/31/2009	$ 595.36	monhtly invoice
	$ 8,203.69	8/28/2009	$ 410.18	monhtly invoice
	$ 1,596.98	10/30/2009	$ 79.85	monhtly invoice
	$ 11,830.61	11/27/2009	$ 591.53	monhtly invoice
	$ 1,695.99	1/1/2010	$ 84.80	monhtly invoice
	$ 1,294.84	1/29/2010	$ 64.74	monhtly invoice
	$ 1,986.17		$ 99.31	monhtly invoice
	$ 6,298.29	4/2/2010	$ 314.91	monhtly invoice
	$ 3,853.56	4/30/2010	$ 192.68	monhtly invoice
	$ 30.00	5/28/2010	$ 1.50	monhtly invoice
	$ 1,284.50		$ 64.23	
Subtask2.D Sub-total $ 49,981.81				
Subtask2.D Management Cost $ 2,499.09				
Subtask 2.E.and other tasks FY 2010-11 Source Identification Work Plan				
Weston {contract # 514270- Task 15}	$ 3,732.96	8/26/2010	$ 186.65	
	$ 3,267.04		$ 163.35	to be invoiced
Task- carry over: SCCWRP- Bacteria Regrowth	$ 25,000.00	1/19/2010	$ 1,250.00	quarterly invoice
under Task 3A	$ 30,000.00	6/17/2010	$ 1,500.00	quarterly invoice
	$ -		$ -	
Task 3.B. SMC projects- Regional Bioassessment	$ -		$ -	
	$ -		$ -	
Subtask2.D Sub-total $ 62,000.00				
Subtask2.D Management Cost $ 3,100.00				
Task 3.A. Regional Monitoring Program				

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Weston {contract # 514270- Tasks 1-10}				$ 131,728.99	7/31/2009	$ 6,586.45	monthly invoice
				$ 178,369.62	8/28/2009	$ 8,918.48	monthly invoice
				$ 299,392.62	9/25/2009	$ 14,969.63	monthly invoice
				$ 156,859.45	10/30/2009	$ 7,842.97	monthly invoice
				$ 46,254.35	11/27/2009	$ 2,312.72	monthly invoice
				$ 162,207.89	0101/2010	$ 8,110.39	monthly invoice
				$ 120,934.26	1/29/2010	$ 6,046.71	monthly invoice
				$ 121,134.97	2/26/2010	$ 6,056.75	monthly invoice
				$ 122,652.89	4/2/2010	$ 6,132.64	monthly invoice
				$ 66,302.26	4/30/2010	$ 3,315.11	monthly invoice
				$ 154,000.91	5/28/2010	$ 7,700.05	monthly invoice
				$ 254,915.83	7/2/2010	$ 12,745.79	monthly invoice
				$ 105,865.00	8/30/2010	$ 5,293.25	monthly invoice
				$ 80,837.23		$ 4,041.86	to be invoiced
Task 3.B Sub-total			############	2,001,456.27			
Task 3.B Management Cost			$ 100,072.81				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)							
Task 3.B. Southern California Stormwater Monitoirng Coalition				$ -	x/x/2010		
				$ -			
				$ -			
				$ -			
				$ -			
				$ -			
				$ -			
				$ -			
				$ -			
				$ -			
				$ -			
				$ -			
				$ -			
Sub-total Other Expenditures			$ -				
Total Expenditures (Including contract management cost)				**$ 2,219,109.98**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Dry Weather Monitoring Sub-workgroup
Copermittee:	City of Santee
Period:	2nd Quarter FY 2009 (Oct. 1- Dec. 31, 2009)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 366.20
Contract / Other Expenditures Claimed:	$ —

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Helen M. Perry
Stormwater Program Manager
City of Santee

2/1/10
Date

Helen M Perry
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

JO ANN WEBER
WATER QUALITY PROGRAM COORDINATOR
County of San Diego

8/16/2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 2nd Quarter FY 2008-09 (Oct. 1- Dec. 31, 2008)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task 1.B Dry weather workgroup						
10/12/2009	Helen Perry	Stormwater Program Manager	2.00	$ 91.55	$ 183.10	Preparation of presentation
12/22/2009	Helen Perry	Stormwater Program Manager	1.00	$ 91.55	$ 91.55	Preparation of text for annual RURMP report.
12/23/2009	Helen Perry	Stormwater Program Manager	1.00	$ 91.55	$ 91.55	Preparation of text for annual RURMP report.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 366.20					
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 03-10-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 2nd Quarter FY 2008-09 (Oct. 1- Dec. 31, 2008)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.D. By-laws						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 366.20	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Dry Weather Monitoring Sub-workgroup
Copermittee:	City of Santee
Period:	4th Quarter FY 2009-10 (April 1- June 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 77.42
Contract / Other Expenditures Claimed:	$ ——— -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Helen M. Perry
Stormwater Program Manager
City of Santee

6/14/10
Date

Helen M Perry
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Water Quality Program Coordinator
County of San Diego

8/14/2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN] 1 B. Dry weather						
4/21/2010	Helen Perry	Stormwater Program Manager	0.50	$ 77.42	$ 38.71	Finalizing datasharing format for 2010 per request of group.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 38.71					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN] 1. B Dry weather						
4/30/2010	Helen Perry	Stormwater Program Manager	0.50	$ 77.42	$ 38.71	Follow up regarding new bacteria action levels (scan/send email on changes) per group request.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 38.71					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
				$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 4th Quarter FY 2009-10 (April 1- June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 77.42	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Dry Weather Monitoring Sub-workgroup
Copermittee:	City of Santee
Period:	3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 193.55
Contract / Other Expenditures Claimed:	$ ——— -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Helen M. Perry
Stormwater Program Manager
City of Santee

6/14/10
Date

Helen M Perry
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Water Quality Program Coordinator
County of San Diego

8/16/2010
Date

Jo Ann Weber
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN] I.B. - Dry weather						
2/2/2010	Helen Perry	Stormwater Program Manager	1.00	$ 77.42	$ 77.42	Finalizing datasharing format 2009 and training information with A. Crumpacker.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 77.42					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN] I.B. Dry weather						
2/2/2010	Helen Perry	Stormwater Program Manager	1.00	$ 77.42	$ 77.42	Research request from regional monitoring group to make changes to MS4 monitoring worksheet. Develop an example edited sheet for discussion.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 77.42					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN] I.B. Dry weather						
3/4/2010	Helen Perry	Stormwater Program Manager	0.50	$ 77.42	$ 38.71	Research and prepare item on Orange County Permit for group to review .
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPE...MITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 3rd Quarter FY 2009-10 (Jan. 1- Mar. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 193.55**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Coastal Storm Drain Monitoring Sub-workgroup
Copermittee:	Port of San Diego
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 2,900.10**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Karen Holman
Senior Environmental Specialist
Port of San Diego

8/9/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

8/14/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: Port of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.C. CSDM Sub-workgroup Meeting Support						
11/9/2009	Karen Holman	Sr Environmental Specialist	4.00	$ 69.05	$ 276.20	Develop initial drafts of CSDM Report (sections 1, 2)
11/18/2009	Karen Holman	Sr Environmental Specialist	4.00	$ 69.05	$ 276.20	Develop initial drafts of CSDM Report (sections 1, 2)
11/19/2009	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Develop initial drafts of CSDM Report (sections 1, 2)
12/2/2009	Karen Holman	Sr Environmental Specialist	5.50	$ 69.05	$ 379.78	Draft CSDM Sections 3, 4, 5
12/3/2009	Karen Holman	Sr Environmental Specialist	2.50	$ 69.05	$ 172.63	Draft CSDM Sections 3, 4, 5
12/15/2009	Karen Holman	Sr Environmental Specialist	3.00	$ 69.05	$ 207.15	Edits to CSDM report
12/29/2009	Karen Holman	Sr Environmental Specialist	3.00	$ 69.05	$ 207.15	Edits to CSDM report; develop figures, graphics, scatterplots
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 1,588.15					
Subtask 1.C. CSDM Sub-workgroup Meeting Support						
1/4/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Draft CSDM Sections 3, 4, 5; edits to sections 1, 2
1/5/2010	Karen Holman	Sr Environmental Specialist	3.00	$ 69.05	$ 207.15	Draft CSDM Sections 3, 4, 5; edits to sections 1, 2
1/6/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Draft CSDM Sections 3, 4, 5; edits to sections 1, 2
1/11/2010	Karen Holman	Sr Environmental Specialist	3.50	$ 69.05	$ 241.68	Incorporate Workgroup comments
1/13/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Incorporate Workgroup comments
1/19/2010	Karen Holman	Sr Environmental Specialist	3.00	$ 69.05	$ 207.15	final review and edit of CSDM report
1/20/2010	Karen Holman	Sr Environmental Specialist	1.50	$ 69.05	$ 103.58	final review and edit of CSDM report
1/25/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	final review and edit of CSDM report
Sub-total	$ 1,311.95					
Subtask						
				$ 69.05	$ -	
				$ 69.05	$ -	
				$ 69.05	$ -	
				$ 69.05	$ -	
				$ 69.05	$ -	
				$ 69.05	$ -	
				$ 69.05	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: Port of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
				$ 69.05	$ -	
Sub-total	$ -					
Subtask						
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
Sub-total	$ -					
Subtask						
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ 69.00	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask						
			0.00	$ 69.05	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: Port of San Diego

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.K. Regional Mobile Business Program						
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00	$ 69.05	$ -	
			0.00		$ -	
			0.00		$ -	
Sub-total	$ -					
Copermittee Total					**$ 2,900.10**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Coastal Storm Drain Monitoring Sub-workgroup
Copermittee:	City of Carlsbad
Period:	1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 2,990.53
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elaine Lukey
Environmental Manager
City of Carlsbad

8.5.10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

8/16/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: City of Carlsbad

Period: 1st - 4th Qrt FY 2009-10 (July 1, 2009 - Jun 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.C. CSDM Meeting Support (Q1)						
08/26/2009	James Wood	Sr. Environmental Specialist	1.50	$ 50.06	$ 75.09	Calculate 95% storm drain action levels
08/27/2009	James Wood	Sr. Environmental Specialist	5.00	$ 50.06	$ 250.30	Calculate 95% storm drain action levels
08/28/2009	Hallie Thompson	Environmental Specialist	3.50	$ 36.51	$ 127.79	Calculate 95% storm drain action levels
08/31/2009	James Wood	Sr. Environmental Specialist	3.50	$ 50.06	$ 175.21	Calculate 95% storm drain action levels
08/31/2009	Hallie Thompson	Environmental Specialist	2.00	$ 36.51	$ 73.02	Calculate 95% storm drain action levels
09/01/2009	Hallie Thompson	Environmental Specialist	1.00	$ 36.51	$ 36.51	Calculate 95% storm drain action levels
09/02/2010	James Wood	Sr. Environmental Specialist	1.00	$ 50.06	$ 50.06	Calculate 95% storm drain action levels
Sub-total	$ 787.98					
Subtask 1.C. CSDM Meeting Support (Q2)						
11/16/2009	James Wood	Sr. Environmental Specialist	6.50	$ 50.06	$ 325.39	Annual Report Preparation
11/17/2009	James Wood	Sr. Environmental Specialist	3.00	$ 50.06	$ 150.18	Annual Report Preparation
11/19/2009	James Wood	Sr. Environmental Specialist	4.00	$ 50.06	$ 200.24	Annual Report Preparation
11/23/2009	James Wood	Sr. Environmental Specialist	6.00	$ 50.06	$ 300.36	Annual Report Preparation
11/24/2009	James Wood	Sr. Environmental Specialist	8.50	$ 50.06	$ 425.51	Annual Report Preparation
11/25/2009	James Wood	Sr. Environmental Specialist	7.00	$ 50.06	$ 350.42	Annual Report Preparation
Sub-total	$ 1,752.10					
Subtask 1.C. CSDM Meeting Support (Q3)						
01/06/2010	James Wood	Sr. Environmental Specialist	3.00	$ 50.05	$ 150.15	Annual Report Preparation, edits, formatting
01/07/2010	James Wood	Sr. Environmental Specialist	4.00	$ 50.05	$ 200.20	Annual Report Preparation, edits, formatting
01/11/2010	James Wood	Sr. Environmental Specialist	2.00	$ 50.05	$ 100.10	Annual Report Preparation, edits, formatting
Sub-total	$ 450.45					
Copermittee Total					$ 2,990.53	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	County of San Diego
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 1,591.93**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

10/13/2009
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional WURMP Workgroup for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

10/21/2009
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Regional WURMP Workgroup Meeting Support						
7/14/2009	Todd Snyder	Land Use / Env Planning Mgr	2.50	$ 70.79	$ 176.98	Compile proposed targeted wet weather MS4 locations into summary document
Sub-total	$ 176.98					
Subtask 2.A. FY 2008-09 Regional URMP Annual Report Input						
None						
Subtask 2.B. FY 2010-11 Work Plan and Budget						
None						
Subtask 2.C. Semi-annual Workgroup Update						
None						
Subtask 2.D. Development of Watershed Program Approach						
7/23/2009	Todd Snyder	Land Use / Env Planning Mgr	1.50	$ 70.79	$ 106.19	Meeting with RWQCB staff to discuss proposed WURMP permit changes
7/24/2009	Todd Snyder	Land Use / Env Planning Mgr	3.00	$ 70.79	$ 212.37	Subcommittee mtg regarding Regional WURMP Workgroup comments on proposed WURMP permit changes
7/27/2009	Todd Snyder	Land Use / Env Planning Mgr	2.00	$ 70.79	$ 141.58	Subcommittee mtg regarding Copermittee comments on proposed WURMP permit changes
8/4/2009	Todd Snyder	Land Use / Env Planning Mgr	1.50	$ 70.79	$ 106.19	Meeting with RWQCB staff to discuss proposed WURMP permit changes
9/15/2009	Todd Snyder	Land Use / Env Planning Mgr	1.50	$ 70.79	$ 106.19	Subcommittee mtg (County/City of SD) regarding Regional WURMP Workgroup comments on proposed WURMP permit changes
9/17/2009	Todd Snyder	Land Use / Env Planning Mgr	2.00	$ 70.79	$ 141.58	Subcommittee mtg (County, Carlsbad, Escondido) regarding Regional WURMP Workgroup comments on proposed WURMP permit changes
9/17/2009	Todd Snyder	Land Use / Env Planning Mgr	1.50	$ 70.79	$ 106.19	Preparation of document presenting Regional WURMP Workgroup comments on proposed WURMP permit changes
9/18/2009	Todd Snyder	Land Use / Env Planning Mgr	1.00	$ 70.79	$ 70.79	Preparation of document presenting Regional WURMP Workgroup comments on proposed WURMP permit changes
Sub-total	$ 991.06					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs						
None						
Subtask 2.F. Watershed Activities Database						
7/1/2009	Scott Norris	Land Use / Env Planner II	1.5	$ 44.62	$ 66.93	Revise list of subcategories
8/1/2009	Scott Norris	Land Use / Env Planner II	1	$ 44.62	$ 44.62	Preparation of materials for Leads Meeting
8/12/2009	Scott Norris	Land Use / Env Planner II	2	$ 44.62	$ 89.24	Meet to discuss database
9/9/2009	Scott Norris	Land Use / Env Planner II	2	$ 44.62	$ 89.24	Meet to discuss database
9/11/2009	Scott Norris	Land Use / Env Planner II	2	$ 44.62	$ 89.24	Revise list of subcategories and prep for meeting
9/14/2009	Scott Norris	Land Use / Env Planner II	1	$ 44.62	$ 44.62	Revise list of subcategories and prep for meeting
Sub-total	$ 423.89					
Subtask 2.G. Regional Reporting and Assessment Standards						
None						
Subtask 2.H. Consistent Approaches to TMDL Implementation Planning						
None						
Copermittee Total					**$ 1,591.93**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	City of San Diego
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 252.34**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Andrew Kleis
Program Manager
City of San Diego

10/21/2009
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional WURMP Workgroup for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

10/21/2009
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: City of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.D. Development of Watershed Program Approach						
	Drew Kleis				$ -	
Sub-total	$ -					
Subtask 2.F. Watershed Activities Database						
8/12/2009	Stephanie Bracci	Associate Planner	2	$ 45.88	$ 91.76	Meeting on database development
9/1/2009	Stephanie Bracci	Associate Planner	0.5	$ 45.88	$ 22.94	Revise list of subcategories and coordination for next mtg
9/9/2009	Stephanie Bracci	Associate Planner	2	$ 45.88	$ 91.76	Meeting on database development
9/14/2009	Stephanie Bracci	Associate Planner	1	$ 45.88	$ 45.88	Research and revisions to subcategories
Sub-total	$ 252.34					
Copermittee Total					**$ 252.34**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	Port of San Diego
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 343.70**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Stephanie Bauer
Associate Environmental Specialist
Port of San Diego

10/21/2009
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional WURMP Workgroup for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

10/21/2009
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: Port of San Diego

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.F. Watershed Activities Database						
7/2/2009	Stephanie Bauer	Associate Env. Specialist	1	$ 49.10	$ 49.10	Revisions to list of sub-categories
8/12/2009	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Meeting on database development
9/9/2009	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Meeting on database development
9/10/2009	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Revisions to list of sub-categories
Sub-total	$ 343.70					
Copermittee Total					**$ 343.70**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	City of Carlsbad
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 761.76**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elaine Lukey
Environmental Programs Manager
County of San Diego

10/21/2009
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional WURMP Workgroup for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

10/21/2009
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: City of Carlsbad

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.D. Development of Watershed Program Approach						
7/22/2009	Elaine Lukey	Environmental Programs Mgr	1.00	$ 66.24	$ 66.24	review draft language and edit
7/23/2009	Elaine Lukey	Environmental Programs Mgr	3.00	$ 66.24	$ 198.72	3 hour meeting discussing and editing text
7/24/2009	Elaine Lukey	Environmental Programs Mgr	2.00	$ 66.24	$ 132.48	meeting to edit text
7/27/2009	Elaine Lukey	Environmental Programs Mgr	2.50	$ 66.24	$ 165.60	meeting to continue editing text in track changes
9/17/2009	Elaine Lukey	Environmental Programs Mgr	3.00	$ 66.24	$ 198.72	final consolidation of edits from Watersheds
Sub-total	$ 761.76					
Copermittee Total					**$ 761.76**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	City of Escondido
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 339.90
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Cheryl Filar
Environmental Programs Manager
City of Escondido

11/16/2009
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional WURMP Workgroup for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

11/16/2009
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: City of Escondido

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.D. Development of Watershed Program Approach						
7/23/2009	Cheryl Filar	Environmental Programs Mgr	2.00	$ 56.65	$ 113.30	
7/24/2009	Cheryl Filar	Environmental Programs Mgr	2.00	$ 56.65	$ 113.30	
9/17/2009	Cheryl Filar	Environmental Programs Mgr	2.00	$ 56.65	$ 113.30	
	Cheryl Filar	Environmental Programs Mgr		$ 56.65	$ -	
	Cheryl Filar	Environmental Programs Mgr		$ 56.65	$ -	
	Cheryl Filar	Environmental Programs Mgr		$ 56.65	$ -	
	Cheryl Filar	Environmental Programs Mgr		$ 56.65	$ -	
	Cheryl Filar	Environmental Programs Mgr		$ 56.65	$ -	
Sub-total	$ 339.90					
Copermittee Total					$ 339.90	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	County of San Diego
Period:	2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 283.16**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

1/20/2010
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional WURMP Workgroup for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

1/21/2010
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Regional WURMP Workgroup Meeting Support						
10/20/2010	Todd Snyder	Land Use / Env Planning Mgr	2.00	$ 70.79	$ 141.58	Developed budget planning worksheet for discussion at 10/21/09 meeting
Sub-total	$ 141.58					
Subtask 2.A. FY 2008-09 Regional URMP Annual Report Input						
None						
Subtask 2.B. FY 2010-11 Work Plan and Budget						
11/17/2010	Todd Snyder	Land Use / Env Planning Mgr	2.00	$ 70.79	$ 141.58	Documented workgroup decision's in template format and submitted FY 2010-11 Workplan and Budget to Program Planning Subcommittee Chair
Subtask 2.C. Semi-annual Workgroup Update						
None						
Subtask 2.D. Development of Watershed Program Approach						
None						
Sub-total	$ -					

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COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 2nd Quarter FY 2009-10 (Oct. 1- Dec. 31, 2009)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs						
None						
Subtask 2.F. Watershed Activities Database						
None						
Sub-total	$ -					
Subtask 2.G. Regional Reporting and Assessment Standards						
None						
Subtask 2.H. Consistent Approaches to TMDL Implementation Planning						
None						
Copermittee Total					$ 283.16	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	County of San Diego
Period:	3rd and 4th Qrt. FY 2009-10 (Jan. 1 - June 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 1,311.06**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

8/13/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

9/1/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 3rd and 4th Qrt. FY 2009-10 (Jan. 1 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Workgroup Meeting Support						
1/28/2010	Todd Snyder	Land Use/Env Planning Mgr	1.50	$ 72.70	$ 109.05	Develop scope of work for Sub-task 2.E and prep review documents for mtg
1/29/2010	Todd Snyder	Land Use/Env Planning Mgr	1.00	$ 72.70	$ 72.70	Prep review documents re: Sub-task 2.E for 2/2/10 meeting
2/15 - 2/16	Todd Snyder	Land Use/Env Planning Mgr	1.00	$ 72.70	$ 72.70	Communication with consultants re: proposals for Sub-task 2.E and doc prep.
3/16/2010	Todd Snyder	Land Use/Env Planning Mgr	1.00	$ 72.70	$ 72.70	Develop budget status doc and Bacteria TMDL schedule for 3/17/10 mtg
6/22/2010	Todd Snyder	Land Use/Env Planning Mgr	2.00	$ 72.70	$ 145.40	Develop budget status doc for discussion at 6/23/10 mtg.
Sub-total	$ 363.50					
Subtask 2.A. Regional URMP Annual Report Input						
1/4/2010	Todd Snyder	Land Use/Env Planning Mgr	2.00	$ 72.20	$ 144.40	Summarized Regional WURMP activities for FY 08-09 RURMP Annual Report
Sub-total	$ 144.40					
Subtask 2.B. FY 2010-11 Work Plan and Budget						
None					$ -	
Sub-total	$ -					
Subtask 2.C. Semi-annual Workgroup Update						
None						
Sub-total						
Subtask 2.D. Development of Watershed Program Approach						
None					$ -	
Sub-total	$ -					
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs						
None						
Sub-total	$ -					
Subtask 2.F. Watershed Activities Database						
3/24/2010	Scott Norris	Land Use/Env Planner II	2.00	$ 44.62	$ 89.24	Task 2F subworkgroup meeting - categories
4/2/2010	Scott Norris	Land Use/Env Planner II	2.00	$ 44.62	$ 89.24	Task 2F subworkgroup meeting - categories
4/15/2010	Scott Norris	Land Use/Env Planner II	2.50	$ 44.62	$ 111.55	Task 2F subworkgroup meeting - workplan

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 3rd and 4th Qrt. FY 2009-10 (Jan. 1 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
5/17/2010	Scott Norris	Land Use/Env Planner II	2.00	$ 44.62	$ 89.24	Task 2F subworkgroup meeting - SOW
5/18/2010	Scott Norris	Land Use/Env Planner II	1.00	$ 44.62	$ 44.62	Review and editing of workgroup products
5/28/2010	Scott Norris	Land Use/Env Planner II	2.00	$ 44.62	$ 89.24	Task 2F subworkgroup meetingS - SOW
6/2/2010	Scott Norris	Land Use/Env Planner II	1.50	$ 44.62	$ 66.93	Review SOW and editing
6/7/2010	Scott Norris	Land Use/Env Planner II	1.00	$ 44.62	$ 44.62	Review SOW and editing
6/8/2010	Scott Norris	Land Use/Env Planner II	2.00	$ 44.62	$ 89.24	Task 2F subworkgroup meeting- SOW
6/17/2010	Scott Norris	Land Use/Env Planner II	2.00	$ 44.62	$ 89.24	Task 2F subworkgroup meeting- SOW Final and Mtg Prep
			0.00	$ -	$ -	
Sub-total	$ 803.16					
Subtask 2.G. Unallocated						
None			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 1,311.06**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	City of San Diego
Period:	3rd and 4th Qrt. FY 2009-10 (Jan. 1 - June 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 825.84**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Andrew Kleis
Program Manager
City of San Diego

8/6/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use/Environmental Planning Manager
County of San Diego

9/1/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: City of San Diego

Period: 3rd and 4th Qrt. FY 2009-10 (Jan. 1 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 2.F. Watershed Activities Database						
3/18/-3/25/2	Stephanie Bracci	Associate Planner	0.50	$ 45.88	$ 22.94	e-mail communication
3/24/2010	Stephanie Bracci	Associate Planner	2.00	$ 45.88	$ 91.76	2 hour mtg subcommittee mtg on categories
4/2/2010	Stephanie Bracci	Associate Planner	2.00	$ 45.88	$ 91.76	2 hour mtg subcommittee mtg on categories
4/15/2010	Stephanie Bracci	Associate Planner	2.50	$ 45.88	$ 114.70	2.5 hour mtg developing scope of work
4/16/2010	Stephanie Bracci	Associate Planner	0.50	$ 45.88	$ 22.94	email communication
4/22/2010	Stephanie Bracci	Associate Planner	0.50	$ 45.88	$ 22.94	e-mail communication on scope of work
4/26/2010	Stephanie Bracci	Associate Planner	1.00	$ 45.88	$ 45.88	compiling appendices for scope of work/e-mail communication
4/28/2010	Stephanie Bracci	Associate Planner	0.50	$ 45.88	$ 22.94	printing handouts, mtg with workgroup, prepping for leads mtg
5/17/2010	Stephanie Bracci	Associate Planner	2.00	$ 45.88	$ 91.76	mtg prep and mtg with workgroup
5/28/2010	Stephanie Bracci	Associate Planner	2.50	$ 45.88	$ 114.70	mtg prep and mtg with workgroup
6/8/2010	Stephanie Bracci	Associate Planner	2.00	$ 45.88	$ 91.76	mtg with workgroup, and follow up
6/17/2010	Stephanie Bracci	Associate Planner	2.00	$ 45.88	$ 91.76	mtg with workgroup, and follow up
Sub-total	$ 825.84					
Copermittee Total					**$ 825.84**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	Port of San Diego
Period:	3rd and 4th Qrt. FY 2009-10 (Jan. 1 - June 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 638.30
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Stephanie Bauer
Associate Environmental Planner
Port of San Diego

8/12/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

9/1/10
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: Port of San Diego

Period: 3rd and 4th Qrt. FY 2009-10 (Jan. 1 - June 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.F. Watershed Activities Database						
3/24/2010	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Meeting on database development
4/2/2010	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Meeting on database development
4/15/2010	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Meeting on database development
5/17/2010	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Meeting on database/SOW development
6/17/2010	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Meeting on database/SOW development
5/19/2010	Stephanie Bauer	Associate Env. Specialist	1	$ 49.10	$ 49.10	SOW development
6/7/2010	Stephanie Bauer	Associate Env. Specialist	2	$ 49.10	$ 98.20	Researched database options/background
Sub-total	$ 638.30					

Copermittee Total	**$ 638.30**

A. Regional Program Planning Subcommittee FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Program Planning Subcommittee and Regional Management Committee Meeting Support. Provide ongoing support for Program Planning Subcommittee and Regional Management Committee meetings (research and develop written materials, preparing presentations, etc.)				
Completion date	As-needed (Planning Subcommittee bi-monthly; Management Committee quarterly)			
Party conducting work				
Copermittee hourly costs	Water Quality Program Manager	20	$78.00	$1,560
	Land Use / Environmental Planner III	15	$59.00	$885
		0	$0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,445**
Subtask 1.B. Coordination with Working Bodies. Coordinate activities as needed with other Copermittee working bodies. Includes the development of materials (spreadsheets, instructions, fiscal reporting materials, MOU amendments, etc.) and coordination of their completion, approval, and use.				
Completion date	As-needed			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	20	$78.00	$1,560
	Land Use / Environmental Planner III	40	$59.00	$2,360
		0	$0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,920**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. FY 2011-12 Planning Subcommittee Work Plan and Budget. Develop a FY 2011-12 work plan and budget covering the planned activities of the Program Planning Subcommittee.				
Completion date				
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780
	Land Use / Environmental Planner III	0	$59.00	$0
		0	$0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$780**

A. Regional Program Planning Subcommittee FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.B. FY 2009-10 Regional URMP Annual Report Input and Completion. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report. Develop the consolidated FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010 and December 31, 2010			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780
	Land Use / Environmental Planner III	5	$59.00	$295
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,075**
Subtask 2.C. FY 2011-12 Consolidated Regional Work Plan and Budget. Develop for submittal to the Regional Management Committee a FY 2011-12 consolidated regional work plan and budget covering the planned activities of all Copermittee regional working bodies.				
Completion date				
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	25	$78.00	$1,950
	Land Use / Environmental Planner III	15	$59.00	$885
		0	$0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,835**
Subtask 2.D. Management Committee Updates. Provide regular updates to the Regional Management Committee via email, presentations, or other means.				
Completion date	As-needed			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	3	$78.00	$234
	Land Use / Environmental Planner III	22	$59.00	$1,298
		0	$0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,532**

A. Regional Program Planning Subcommittee FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	Ongoing			
Party conducting work	TBD			
Copermittee hourly costs		0	$0.00	$10
		0	$0.00	$0
		0	$0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$10**
Total Estimated Cost				**$12,597**

Target Estimated Cost (01/21/10)	**$12,597**

A. Regional Program Planning Subcommittee

FY 2010-11 Budget Approved January 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego
Task 1 Meeting Support					
Subtask 1.A. Program Planning Subcommittee and Regional Management Committee Meeting Support. Provide ongoing support for Program Planning Subcommittee and Regional Management Committee meetings (research and develop written materials, preparing presentations, etc.)					
Completion date	As-needed (Planning Subcommittee bi-monthly; Management Committee quarterly)				
Party conducting work					
Copermittee hourly costs	Water Quality Program Manager	20	$78.00	$1,560	$1,560
	Land Use / Environmental Planner III	15	$59.00	$885	$885
		0	$0.00	$0	
Contract costs				$0	
Contract management costs				$0	
Other direct costs				$0	
Total				**$2,445**	
Subtask 1.B. Coordination with Working Bodies. Coordinate activities as needed with other Copermittee working bodies. Includes the development of materials (spreadsheets, instructions, fiscal reporting materials, MOU amendments, etc.) and coordination of their completion,					
Completion date	As-needed				
Party conducting work	County				
Copermittee hourly costs	Water Quality Program Manager	20	$78.00	$1,560	$1,560
	Land Use / Environmental Planner III	40	$59.00	$2,360	$2,360
		0	$0.00	$0	
Contract costs				$0	
Contract management costs				$0	
Other direct costs				$0	
Total				**$3,920**	
Task 2 Development of Miscellaneous Work Products					
Subtask 2.A. FY 2011-12 Planning Subcommittee Work Plan and Budget. Develop a FY 2011-12 work plan and budget covering the planned activities of the Program Planning Subcommittee.					
Completion date					
Party conducting work	County				
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780	$780
	Land Use / Environmental Planner III	0	$59.00	$0	
		0	$0.00	$0	
Contract costs				$0	
Contract management costs				$0	
Other direct costs				$0	
Total				**$780**	
Subtask 2.B. FY 2009-10 Regional URMP Annual Report Input and Completion. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report. Develop the consolidated FY 2009-10 Regional URMP Annual Report.					
Completion date	November 30, 2010 and December 31, 2010				
Party conducting work	County				
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780	$780
	Land Use / Environmental Planner III	5	$59.00	$295	$295
		0	0	$0	
Contract costs				$0	
Contract management costs				$0	
Other direct costs				$0	
Total				**$1,075**	

A. Regional Program Planning Subcommittee

FY 2010-11 Budget Approved January 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego
Subtask 2.C. FY 2011-12 Consolidated Regional Work Plan and Budget. Develop for submittal to the Regional Management Committee a FY 2011-12 consolidated regional work plan and budget covering the planned activities of all Copermittee regional working bodies.					
Completion date					
Party conducting work	County				
Copermittee hourly costs	Water Quality Program Manager	25	$78.00	$1,950	$1,950
	Land Use / Environmental Planner III	15	$59.00	$885	$885
		0	$0.00	$0	
Contract costs				$0	
Contract management costs				$0	
Other direct costs				$0	
Total				**$2,835**	
Subtask 2.D. Management Committee Updates. Provide regular updates to the Regional Management Committee via email, presentations, or other means.					
Completion date	As-needed				
Party conducting work	County				
Copermittee hourly costs	Water Quality Program Manager	3	$78.00	$234	$234
	Land Use / Environmental Planner III	22	$59.00	$1,298	$1,298
		0	$0.00	$0	
Contract costs				$0	
Contract management costs				$0	
Other direct costs				$0	
Total				**$1,532**	
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.					
Completion date	Ongoing				
Party conducting work	TBD				
Copermittee hourly costs		0	$0.00	$10	$10
		0	$0.00	$0	
		0	$0.00	$0	
Contract costs				$0	
Contract management costs				$0	
Other direct costs				$0	
Total				**$10**	
Total Estimated Cost				**$12,597**	**$12,597**

A. Regional Program Planning Subcommittee			County of San Diego				Not Assigned			
Task	Adopted Budget	Incurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support										
Subtask 1.A. Meeting Support.	**$2,445**	**$2,323**								
Hourly	$2,445	$2,323				**$2,323**				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 1.B. Coordination with Working Bodies.	**$3,920**	**$0**								
Hourly	$3,920	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Task 2 Development of Miscellaneous Work Products										
Subtask 2.A. FY 2010-11 Work Plan and Budget.	**$780**	**$465**								
Hourly	$780	$465				$465				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.B. FY 2010-11 Regional Work Plan and Budget.	**$1,075**	**$1,062**								
Hourly	$1,075	$1,062				$1,062				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.C. Management Committee Updates.	**$2,835**	**$2,728**								
Hourly	$2,835	$2,728				**$2,728**				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.D. Management Committee Updates	**$1,532**	**$0**								
Hourly	$1,532	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.E. Unallocated	**$10**	**$0**								
Hourly	$10	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$6,578	$0	$0	$0	$0
Totals	**$12,587**	**$6,578**								

A. Regional Program Planning Subcommittee

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$12,597	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 6,577.52
		Totals	**$ 6,577.52**
	Unspent Balance		**$ 6,019.48**

Not Assigned		1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ -**

B. Fiscal, Reporting, and Assessment Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Fiscal, Reporting, and Assessment Workgroup Meeting Support. Provide ongoing support for Fiscal, Reporting, and Assessment Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	As-needed (est. monthly)			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager [-15.36 hours]	14.64	$78.00	$1,142
	Land Use / Environmental Planner III	10	$59.00	$590
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,732**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Fiscal, Reporting, and Assessment Workgroup.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	5	$78.00	$390
	Land Use / Environmental Planner III	0	$59.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$390**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Fiscal, Reporting, and Assessment Workgroup.				
Completion date				
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780
	Land Use / Environmental Planner III	0	$59.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$780**

B. Fiscal, Reporting, and Assessment Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input and Completion. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report. Develop the consolidated FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010 and December 31, 2010			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780
	Land Use / Environmental Planner III	5	$59.00	$295
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,075**
Subtask 2.D. Regional Standards for Reporting and Assessment. Develop regional standards for the reporting and assessment of urban runoff management programs. Coordinate the development of more specific standards by other Copermittee working bodies.				
Completion date	Initial standards August 30, 2009; additional work TBD			
Party conducting work	County with consultant support			
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780
	Land Use / Environmental Planner III	0	$59.00	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$780**
Subtask 2.E. Report of Waste Discharge. Develop a Report of Waste Discharge (ROWD) to address each of the objectives listed in Permit section J.2.d.				
Completion date	June 30, 2011			
Party conducting work	County with consultant support			
Copermittee hourly costs	Water Quality Program Manager [-28 hours]	52	$78.00	$4,056
	Land Use / Environmental Planner III	40	$59.00	$2,360
		0	0	$0
Contract costs	Contract assistance with ROWD completion.			$40,000
Contract management costs				$2,000
Other direct costs				$0
Total				**$48,416**

B. Fiscal, Reporting, and Assessment Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.F. Long-term Effectiveness Assessment. Develop a Long-term Effectiveness Assessment (LTEA) to address each of the objectives listed in Permit section I.3.a.(6).				
Completion date	June 30, 2011			
Party conducting work	County with consultant support			
Copermittee hourly costs	Water Quality Program Manager [-28 hours]	52	$78.00	$4,056
	Land Use / Environmental Planner III	40	$59.00	$2,360
		0	0	$0
Contract costs	Contract assistance with LTEA completion.			$150,000
Contract management costs				$7,500
Other direct costs				$0
Total				**$163,916**
Subtask 2.G. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	Ongoing			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	0	$78.00	$0
	Land Use / Environmental Planner III	0	$59.00	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**
Total Estimated Cost				**$217,089**

Target Estimated Cost (01/21/10)	**$217,089**

B. Fiscal, Reporting, and Assessment Workgroup

FY 2010-11 Budget Approved January 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Fiscal, Reporting, and Assessment Workgroup Meeting Support. Provide ongoing support for Fiscal, Reporting, and Assessment Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	As-needed (est. monthly)			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager [-15.36 hours]	14.64	$78.00	$1,142
	Land Use / Environmental Planner III	10	$59.00	$590
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,732**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Fiscal, Reporting, and Assessment Workgroup.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	5	$78.00	$390
	Land Use / Environmental Planner III	0	$59.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$390**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Fiscal, Reporting, and Assessment Workgroup.				
Completion date				
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780
	Land Use / Environmental Planner III	0	$59.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$780**
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input and Completion. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report. Develop the consolidated FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010 and December 31, 2010			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780
	Land Use / Environmental Planner III	5	$59.00	$295
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,075**

B. Fiscal, Reporting, and Assessment Workgroup

FY 2010-11 Budget Approved
January 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.D. Regional Standards for Reporting and Assessment. Develop regional standards for the reporting and assessment of urban runoff management programs. Coordinate the development of more specific standards by other Copermittee working bodies.				
Completion date	Initial standards August 30, 2009; additional work TBD			
Party conducting work	County with consultant support			
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780
	Land Use / Environmental Planner III	0	$59.00	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$780**
Subtask 2.E. Report of Waste Discharge. Develop a Report of Waste Discharge (ROWD) to address each of the objectives listed in Permit section J.2.d.				
Completion date	June 30, 2011			
Party conducting work	County with consultant support			
Copermittee hourly costs	Water Quality Program Manager [-28 hours]	52	$78.00	$4,056
	Land Use / Environmental Planner III	40	$59.00	$2,360
		0	0	$0
Contract costs	Contract assistance with ROWD completion.			$40,000
Contract management costs				$2,000
Other direct costs				$0
Total				**$48,416**
Subtask 2.F. Long-term Effectiveness Assessment. Develop a Long-term Effectiveness Assessment (LTEA) to address each of the objectives listed in Permit section I.3.a.(6).				
Completion date	June 30, 2011			
Party conducting work	County with consultant support			
Copermittee hourly costs	Water Quality Program Manager [-28 hours]	52	$78.00	$4,056
	Land Use / Environmental Planner III	40	$59.00	$2,360
		0	0	$0
Contract costs	Contract assistance with LTEA completion.			$150,000
Contract management costs				$7,500
Other direct costs				$0
Total				**$163,916**
Subtask 2.G. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	Ongoing			
Party conducting work	County			
Copermittee hourly costs	Water Quality Program Manager	0	$78.00	$0
	Land Use / Environmental Planner III	0	$59.00	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**
Total Estimated Cost				**$217,089**

B. Fiscal, Reporting, and Assessment Workgroup

January 2010, modified with rollovers Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	Not Assigned
Task 1 Meeting Support						
Subtask 1.A. Fiscal, Reporting, and Assessment Workgroup Meeting Support. Provide ongoing support for Fiscal, Reporting, and Assessment Workgroup meetings (research and develop written materials, preparing presentations, etc).						
Completion date	As-needed (est. monthly)					
Party conducting work	County					
Copermittee hourly costs	Water Quality Program Manager [-15.36 hours]	14.64	$78.00	$1,142	$1,142	
	Land Use / Environmental Planner III	10	$59.00	$590	$590	
Contract costs				$0		
Contract management costs				$0		
Other direct costs				$0		
Total				**$1,732**		
Task 2 Development of Miscellaneous Work Products						
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Fiscal, Reporting, and Assessment Workgroup.						
Completion date	August 15, 2010 and February 15, 2011					
Party conducting work	County					
Copermittee hourly costs	Water Quality Program Manager	5	$78.00	$390	$390	
	Land Use / Environmental Planner III	0	$59.00	$0		
Contract costs				$0		
Contract management costs				$0		
Other direct costs				$0		
Total				**$390**		
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Fiscal, Reporting, and Assessment Workgroup.						
Completion date						
Party conducting work	County					
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780	$780	
	Land Use / Environmental Planner III	0	$59.00	$0		
Contract costs				$0		
Contract management costs				$0		
Other direct costs				$0		
Total				**$780**		
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input and Completion. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report. Develop the consolidated FY 2009-10 Regional URMP Annual Report.						
Completion date	November 30, 2010 and December 31, 2010					
Party conducting work	County					
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780	$780	
	Land Use / Environmental Planner III	5	$59.00	$295	$295	
		0	0	$0		
Contract costs				$0		
Contract management costs				$0		
Other direct costs				$0		
Total				**$1,075**		

B. Fiscal, Reporting, and Assessment Workgroup

January 2010, modified with rollovers Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	Not Assigned
Subtask 2.D. Regional Standards for Reporting and Assessment. Develop regional standards for the reporting and assessment of urban runoff management programs. Coordinate the development of more specific standards by other Copermittee working bodies.						
Completion date	Initial standards August 30, 2009; additional work TBD					
Party conducting work	County with consultant support					
Copermittee hourly costs	Water Quality Program Manager	10	$78.00	$780	$780	
	Land Use / Environmental Planner III	0	$59.00	$0		
		0	0	$0		
Contract costs				$4,605	$4,605	
Contract management costs				$230	$230	
Other direct costs				$0		
Total				**$5,615**		
Subtask 2.E. Report of Waste Discharge. Develop a Report of Waste Discharge (ROWD) to address each of the objectives listed in Permit section J.2.d.						
Completion date	June 30, 2011					
Party conducting work	County with consultant support					
Copermittee hourly costs	Water Quality Program Manager [-28 hours]	52	$78.00	$4,056	$4,056	
	Land Use / Environmental Planner III	40	$59.00	$2,360	$2,360	
		0	0	$0		
Contract costs	Contract assistance with ROWD completion.			$40,000	$40,000	
Contract management costs				$2,000	$2,000	
Other direct costs				$0		
Total				**$48,416**		
Subtask 2.F. Long-term Effectiveness Assessment. Develop a Long-term Effectiveness Assessment (LTEA) to address each of the objectives listed in Permit section I.3.a.(6).						
Completion date	June 30, 2011					
Party conducting work	County with consultant support					
Copermittee hourly costs	Water Quality Program Manager [-28 hours]	52	$78.00	$4,056	$4,056	
	Land Use / Environmental Planner III	40	$59.00	$2,360	$2,360	
		0	0	$0		
Contract costs	Contract assistance with LTEA completion.			$150,000	$150,000	
Contract management costs				$7,500	$7,500	
Other direct costs				$0		
Total				**$163,916**		
Subtask 2.G. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.						
Completion date	Ongoing					
Party conducting work	County					
Copermittee hourly costs	Water Quality Program Manager	0	$78.00	$0		
	Land Use / Environmental Planner III	0	$59.00	$0		
		0	0	$0		
Contract costs				$0		
Contract management costs				$0		
Other direct costs				$0		
Total				**$0**		
Total Estimated Cost				**$221,924**	**$221,924**	

B. Fiscal, Reporting, and Assessment Workgroup			County of San Diego				Not Assigned			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support										
Subtask 1.A. Meeting Support.	**$1,732**	**$0**								
Hourly	$1,732	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Task 2 Development of Miscellaneous Work Products										
Subtask 2.A. Semi-annual Workgroup Updates	**$390**	**$0**								
Hourly	$390	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$780**	**$387**								
Hourly	$780	$387				$387				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input and Completion.	**$1,075**	**$295**								
Hourly	$1,075	$295				$295				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.D. Regional Standards for Reporting and Assessment.	**$5,615**	**$0**								
Hourly	$780	$0								
Contracts	$4,605	$0								
Contract management	$230	$0								
Other direct	$0	$0								
Subtask 2.E. Report of Waste Discharge	**$48,416**	**$72,596**								
Hourly	$6,416	$6,036				$6,036				
Contracts	$40,000	$63,391				$63,391				
Contract management	$2,000	$3,170				$3,170				
Other direct	$0	$0								
Subtask 2.F. Long-term Effectiveness Assessment	**$163,916**	**$132,212**								
Hourly	$6,416	$1,084				$1,084				
Contracts	$150,000	$124,884				$124,884				
Contract management	$7,500	$6,244				$6,244				
Other direct	$0	$0								

B. Fiscal, Reporting, and Assessment Workgroup				County of San Diego				Not Assigned			
Task	Adopted Budget		Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.G. Unallocated.	**$0**		**$0**								
Hourly	$0		$0								
Contracts	$0		$0								
Contract management	$0		$0								
Other direct	$0		$0								
Total Expenditures per Quarter for each Copermittee				$0	$0	$0	$205,491	$0	$0	$0	$0
Totals	**$221,924**		**$205,491**								

B. Fiscal, Reporting, and Assessment Workgroup
FY 2009-10 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$221,924	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 205,490.78
		Totals	**$ 205,490.78**
	Unspent Balance		**$ 16,433.39**

Not Assigned	$0	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ -**

C. Education and Residential Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support. Provide ongoing support for Education and Residential Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (quarterly)			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager - Imperial Beach	10	$41.74	$417
	Environmental Staff Assistant - Airport Authority	10	$40.50	$405
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,336**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Education and Residential Sources Workgroup for the period of January 1 through June 30, 2010 and July 1 through December 31, 2010.				
Completion date	8/15/2010 and 02/15/2011			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	4	$51.34	$205
	Environmental Program Manager - Imperial Beach	4	$41.74	$167
	Environmental Staff Assistant - Airport Authority	2	$40.50	$81
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$453**
Subtask 2.B. FY 2011-12 Work Plans and Budgets. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Education and Residential Sources Workgroup.				
Completion date	November 30, 2010			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager - Imperial Beach	10	$41.74	$417
	Environmental Staff Assistant - Airport Authority	5	$40.50	$203
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,133**

C. Education and Residential Sources Workgroup — FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager-Imperial Beach	10	$41.74	$417
	Environmental Staff Assistant - Airport Authority	5	$40.50	$203
Contract costs	City of Oceanside is lead.			$5,000
Contract management costs				$250
Other direct costs				$0
Total				**$6,383**
Subtask 2.D. Regional Program Approach. Revise and update the regional program approach for the management of residential sources for submittal to the Regional Program Planning Subcommittee.				
Completion date	August 1, 2010			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager-Imperial Beach	10	$41.74	$417
	Environmental Staff Assistant - Airport Authority	10	$27.00	$270
Contract costs	City of Oceanside is lead.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,201**
Task 3 Regional Residential Education Program				
Sub-task 3.A. Materials Development and Distribution. Development of regional education outreach materials for dissemination to the public which will utilize a regional brand and target pollutants outlined in the Regional Residential Education Plan (RURMP Attachment A-2); 3.A.1. Printing of posters; 3.A.2. Development, creation and dissemination of regional education outreach materials based on results from other workgroup subcommittees (FY 08-09 and 09-10 surveys and 2009 SD Regional Stormwater Survey).				
Completion date	June 30, 2011			
Party conducting work	Cities of Oceanside and Escondido			
Copermittee hourly costs	Program Coordinator - Escondido	50	$35.00	$1,750
				$0
				$0
Contract costs	Contractor(s) TBD			$46,800
Contract management costs	City of Escondido is lead.			$2,340
Other direct costs				$0
Total				**$50,890**

C. Education and Residential Sources Workgroup			FY 2010-11	
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Subtask 3.B. Partnership Development. Continue identifying new partners and support current partners that have a regional influence in the following categories: 1) Other governmental agencies; 2) Corporations; and 3) Non-governmental organizations (NGOs). Revise and update the document outlining recommending partnerships and associated activities, if needed.				
Completion date	June 30, 2011			
Party conducting work	County of San Diego			
Copermittee hourly costs	Program Coordinator - County of San Diego Land Use Planner II - County of San Diego			
Contract costs	County is lead.			
Contract management costs				
Other direct costs				
Total				**$17,428**
Subtask 3.C. Market Research and Assessment Tools. Revise and implement survey for Regional Events.				
Completion date	June 30, 2011			
Party conducting work	City of San Diego with consultant support.			
Copermittee hourly costs	3. D. 1. Sr. Public Info. Officer - City of San Diego 3.D.2. Sr. Public Info. Officer - City of San Diego			
Contract costs	Consultant: Goodwin Simon Victoria Research/Action Research			
Contract management costs	City of San Diego is lead.			
Other direct costs				
Total				**$9,822**
Subtask 3.D. Regional Website. Ongoing updating and maintenance of regional website.				
Completion date	Ongoing			
Party conducting work	City of San Diego and Port of San Diego with consultant support			
Copermittee hourly costs	Sr. Public Info. Officer - City of San Diego Assoc. Environmental Specialist - Port of San Diego			
Contract costs	Consultant (TBD)			
Contract management costs	City of San Diego and Port are leads.			
Other direct costs				
Total				**$8,014**

C. Education and Residential Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 3.E. Underserved Target Audience. Develop and implement outreach strategies and materials to address low socioeconomic communities . 3.E.1. Identify low socioeconomic communities and other underserved target residential audiences, i.e., Spanish-speaking community. 3.E.2. Develop outreach strategies to address residential behaviors in pollution prevention and water quality improvement. 3.E.3. Develop outreach materials including prompts such as point of purchase flyers, tags, post cards, cash register receipts, vocal reminders and other ways of reminding people to prevent pollution; incentives; examples of positive behaviors. 3.E.4. Implement outreach strategies and provide examples of materials jurisdictions may use to address residential behaviors in pollution prevention and water quality improvement.				
Completion date	Ongoing			
Party conducting work	Cities of Imperial Beach and El Cajon			
Copermittee hourly costs	Environmental Program Mgr - City of Imperial Beach Code Compliance Officer - City of El Cajon	20 20	$41.74 $39.70	$835 $794
Contract costs	Consultant (TBD)			$7,500
Contract management costs	City of Imperial Beach is lead.			$375
Other direct costs				$0
Total				**$9,504**
Subtask 3.F. Mass Media Campaign. Develop and implement Mass Media and PR campaign. 3.F.1. Media Placement: Research and secure media placement for Regional program. 3.F.2. Public Relations: Advertise, hire and manage consultant firm to initiate press releases, etc.				
Completion date	Ongoing			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	3.G.1. Sr. Public Info. Officer - City of San Diego 3.G.2 Sr. Public Info. Officer - City of San Diego			
Contract costs	Consultant (TBD)			
Contract management costs	City of San Diego is lead.			
Other direct costs				
Total				**$99,862**
Subtask 3.G. Regional Events. Coordinate community outreach events throughout San Diego County				
Completion date	Ongoing			
Party conducting work	City of Encinitas			
Copermittee hourly costs	Program Assistant - Encinitas	20	$29.66	$593 $0 $0
Contract costs				$0
Other direct costs	Booth Fees			$1,000
Total				**$1,593**

C. Education and Residential Sources Workgroup				FY 2010-11
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0 0	0 0	$0 $0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**
Total Estimated Cost				**$207,620**

Target Estimated Cost (01/21/10)	**$207,655**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup

updated 9/15 FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support. Provide ongoing support for Education and Residential Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (quarterly)			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager - Imperial Beach	10	$41.74	$417
	Environmental Staff Assistant - Airport Authority	10	$40.50	$405
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,336**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Education and Residential Sources Workgroup for the period of January 1 through June 30, 2010 and July 1 through December 31, 2010.				
Completion date	8/15/2010 and 02/15/2011			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	4	$51.34	$205
	Environmental Program Manager - Imperial Beach	4	$41.74	$167
	Environmental Staff Assistant - Airport Authority	2	$40.50	$81
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$453**
Subtask 2.B. Work Plans and Budgets. 2.B.1 Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Education and Residential Sources Workgroup. 2.B.2 Review quarterly FY 2010-11submittal claims from copermittees				
Completion date	November 30, 2010			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager - Imperial Beach	10	$41.74	$417
	Environmental Staff Assistant - Airport Authority	5	$40.50	$203
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,133**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup

updated 9/15 FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager-Imperial Beach	10	$41.74	$417
	Environmental Staff Assistant - Airport Authority	5	$40.50	$203
Contract costs	City of Oceanside is lead.			$5,000
Contract management costs				$250
Other direct costs				$0
Total				**$6,383**
Subtask 2.D. Regional Program Approach. Revise and update the regional program approach for the management of residential sources for submittal to the Regional Program Planning Subcommittee.				
Completion date	August 1, 2010			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager-Imperial Beach	10	$41.74	$417
	Environmental Staff Assistant - Airport Authority	10	$27.00	$270
Contract costs	City of Oceanside is lead.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,201**
Task 3 Regional Residential Education Program				
Sub-task 3.A. Materials Development and Distribution. Development of regional education outreach materials for dissemination to the public which will utilize the regional brand and target pollutants outlined in the Regional Residential Education Plan (RURMP Attachment A-2); 3.A.1. Development, creation and dissemination of regional education outreach materials based on results from other workgroup subcommittees (FY 08-09 and 09-10 surveys and 2009 SD Regional Stormwater Survey); 3.A.2. Produce and distribute to copermittees a 2011 calendar in Spanish based on the 2010 calendar; 3.A.3 Print and distribute to copermittees the coloring books developed in FY09-10.				
Completion date	June 30, 2011			
Party conducting work	Cities of Escondido			
Copermittee hourly costs	Program Coordinator - Escondido	50	$35.00	$1,750
				$0
				$0
Contract costs	Contractor(s) TBD			$46,800
Contract management costs	City of Escondido is lead.			$2,340
Other direct costs				$0
Total				**$50,890**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup

updated 9/15 FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 3.B. Partnership Development. Continue identifying new partners and support current partners that have a regional influence in the following categories: 1) Other governmental agencies; 2) Corporations; and 3) Non-governmental organizations (NGOs). Revise and update the document outlining recommending partnerships and associated activities, if needed.				
Completion date	June 30, 2011			
Party conducting work	County of San Diego			
Copermittee hourly costs	Program Coordinator - County of San Diego	65	59.27	$3,853
	Land Use Planner II - County of San Diego	20	53.78	$1,076
Contract costs	County is lead.			$11,900
Contract management costs				$595
Other direct costs				$0
Total				**$17,423**
Subtask 3.C. Market Research and Assessment Tools. 3.D.1. Telephone Survey: Follow up on telephone survey to assess storm water knowledge and program awareness; 3.D.2 Continue implementation of Gen Y CBSM Trash Study; 3.D.3 Revise and implement survey for Regional Events.				
Completion date	June 30, 2011			
Party conducting work	City of San Diego with consultant support.			
Copermittee hourly costs	3. D. 1. Sr. Public Info. Officer - City of San Diego	20	$46.44	$929
	3.D.2. County of San Diego	30	$46.44	$1,393
	3.D.3 Sr. Public Info. Officer - City of San Diego			$0
Contract costs	Consultant: Goodwin Simon Victoria Research/Action Research			$50,000
Contract management costs	City of San Diego is lead.			$2,500
Other direct costs				
Total				**$54,822**
Subtask 3.D. Regional Website. Ongoing updating and maintenance of regional website.				
Completion date	Ongoing			
Party conducting work	City of San Diego and Port of San Diego with consultant support			
Copermittee hourly costs	Sr. Public Info. Officer - City of San Diego	25	46.44	$1,161
	Assoc. Environmental Specialist - Port of San Diego	25	$54.10	$1,353
				$0
Contract costs	Consultant (TBD)			$5,240
Contract management costs	City of San Diego and Port are leads.			$262
Other direct costs				
Total				**$8,016**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup

updated 9/15 FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 3.E. Underserved Target Audience. Develop and implement outreach strategies and materials to address low socioeconomic communities. Ensure representation of the underserved community throughout all work products. 3.E.1. Identify low socioeconomic communities and other underserved target residential audiences, i.e., Spanish-speaking community. 3.E.2. Develop outreach strategies to address residential behaviors in pollution prevention and water quality improvement. 3.E.3. Disseminate Spanish regional calendar for 2011. 3.E.4. Develop and implement outreach strategy targeting the underserved community with a new Trash PSA.				
Completion date	Ongoing			
Party conducting work	Cities of Imperial Beach and El Cajon			
Copermittee hourly costs	Environmental Program Mgr - City of Imperial Beach	20	$41.74	$835
	Code Compliance Officer - City of El Cajon	20	$39.70	$794
Contract costs	Consultant (TBD)			$7,500
Contract management costs	City of Imperial Beach is lead.			$375
Other direct costs				$0
Total				**$9,504**
Subtask 3.F. Mass Media Campaign. Develop and implement Mass Media and PR campaign. 3.F.1. Media Placement: Research and secure media placement for Regional program. 3.F.2. Public Relations: Advertise, hire and manage consultant firm to initiate press releases, etc.; 3.F.3 Develop new Trash PSA.				
Completion date	Ongoing			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	3.G.1. Sr. Public Info. Officer - City of San Diego	60	$46.44	$2,786
	3.G.2 Sr. Public Info. Officer - City of San Diego	75	$46.44	$3,483
				$0
Contract costs	Consultant (TBD)			$89,120
Contract management costs	City of San Diego is lead.			$4,456
Other direct costs				
Total				**$99,845**
Subtask 3.G. Regional Events. Coordinate and sponsor community outreach events throughout San Diego County				
Completion date	Ongoing			
Party conducting work	City of Encinitas			
Copermittee hourly costs	Program Assistant - Encinitas	20	$29.74	$595
	3.G.1. Sr. Public Info. Officer - City of San Diego			$0
				$0
Contract costs				$0
Other direct costs	Booth Fees			$1,000
Total				**$1,595**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup

updated 9/15 FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$35**
Total Estimated Cost				**$252,636**

$44,981

Target Estimated Cost (01/21/10)	**$207,655**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support. Provide ongoing support for Education and Residential Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (quarterly)			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513
	Environmental Program Manager - Imperial Beach	6	$41.74	$250
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,076**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Education and Residential Sources Workgroup for the period of January 1 through June 30, 2010 and July 1 through December 31, 2010.				
Completion date	8/15/2010 and 02/15/2011			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	5	$51.34	$257
	Environmental Program Manager - Imperial Beach	4	$41.74	$167
	Sr. Environmental Specialist - Airport Authority	2	$62.50	$125
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$549**
Subtask 2.B. Work Plans and Budgets. 2.B.1 Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Education and Residential Sources Workgroup. 2.B.2 Coordinate the completion of quarterly and year-end expenditure claims for FY 2010-11.				
Completion date	2.B.1: November 30, 2010; 2.B.2: Quarterly			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	40	$51.34	$2,054
	Land Use Planner II - County of San Diego	40	$53.78	$2,151
	Environmental Program Manager - Imperial Beach	5	$41.74	$209
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs				$0
Total				**$4,726**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority			
Copermittee hourly costs	Environmental Specialist II - Oceanside	5	$51.34	$257
	Environmental Program Manager - Imperial Beach	10	$41.74	$417
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313
Contract costs	City of Oceanside is lead.			$325
Contract management costs				$16
Other direct costs				$0
Total				**$1,328**
Subtask 2.D. Regional Program Approach. Revise and update the regional program approach for the management of residential sources for submittal to the Regional Program Planning Subcommittee.				
Completion date	August 1, 2010			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	Environmental Specialist II - Oceanside	5	$51.34	$257
	Environmental Program Manager - Imperial Beach	5	$41.74	$209
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313
Contract costs	City of Oceanside is lead.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$778**
Task 3 Regional Residential Education Program				
Sub-task 3.A. Materials Development and Distribution. Development of regional education outreach materials for dissemination to the public which will utilize the regional brand and target pollutants outlined in the Regional Residential Education Plan (RURMP Attachment A-2); 3.A.1. Development, creation and dissemination of regional education outreach materials based on results from other workgroup subcommittees (FY 08-09 and 09-10 surveys and 2009 SD Regional Stormwater Survey); 3.A.2. Produce and distribute to copermittees a 2011 calendar in Spanish based on the 2010 calendar; 3.A.3 Print and distribute to copermittees the coloring books developed in FY09-10; 3.A.4 Support regional "Day Without A (Plastic) Bag" by purchasing Chico Bags.				
Completion date	June 30, 2011			
Party conducting work	Cities of Escondido			
Copermittee hourly costs	Assistant Planner - Escondido	50	$42.05	$2,103
	Land Use Planner II - County of San Diego	5	$53.78	$269
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313
	Environmental Specialist II - Oceanside	5	$51.34	$257
Contract costs	Webster Design (Calendar Artwork)			$3,000
Contract costs	Xerox (Calendar Printing)			$14,000
Contract costs	Other Materials and costs			$18,500
Contract management costs	City of Escondido is lead.			$1,775
Other direct costs				$0
Total				**$40,216**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 3.B. Partnership Development. Continue identifying new partners and support current partners that have a regional influence in the following categories: 1) Other governmental agencies; 2) Corporations; and 3) Non-governmental organizations (NGOs). Revise and update the document outlining recommending partnerships and associated activities, if needed.				
Completion date	June 30, 2011			
Party conducting work	City of Imperial Beach, County of San Diego, and Port of San Diego			
Copermittee hourly costs	Environmental Program Manager - Imperial Beach	20	$41.74	$835
	Land Use Planner II - County of San Diego	20	$53.78	$1,076
	Assoc. Environmental Specialist - Port of San Diego	20	$54.10	$1,082
Contract costs	City of Imperial Beach is lead.			$11,900
Contract management costs				$595
Other direct costs				$0
Total				**$15,487**
Subtask 3.C. Market Research and Assessment Tools. 3.C.1. Telephone Survey: Follow up on telephone survey to assess storm water knowledge and program awareness; 3.C.2 Continue implementation of Gen Y CBSM Trash Study; 3.C.3 Revise and implement survey for Regional Events.				
Completion date	June 30, 2011			
Party conducting work	City of San Diego with consultant support.			
Copermittee hourly costs	3.C.1. Sr. Public Info. Officer - City of San Diego	30	$46.44	$1,393
	3.C.2. Program Coordinator - County of San Diego	30	$59.27	$1,778
	3.C.3. Sr. Public Info. Officer - City of San Diego	20	$46.44	$929
Contract costs	Consultant: Action Research (Goodwin Simon Strategic Research)			$58,700
Contract costs	CBSM Litter Study (Action Research)			$20,000
Contract management costs	City of San Diego is lead on Surveys. The County is lead on CBSM study.			$3,935
Other direct costs				
Total				**$86,735**
Subtask 3.D. Regional Website. Ongoing updating and maintenance of regional website.				
Completion date	Ongoing			
Party conducting work	City of San Diego and Port of San Diego with consultant support			
Copermittee hourly costs	Sr. Public Info. Officer - City of San Diego	25	$46.44	$1,161
	Assoc. Environmental Specialist - Port of San Diego	25	$54.10	$1,353
				$0
Contract costs	Consultant: MJE Marketing Services			$5,240
Contract management costs	City of San Diego manages the contract. The Port helps lead the task.			$262
Other direct costs				
Total				**$8,016**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 3.E. Underserved Target Audience. 3.E.1. Identify low socioeconomic communities and other underserved target residential audiences, i.e., Spanish-speaking community; 3.E.2. Develop and disseminate Spanish regional calendar for 2011; 3.E.3. Develop and implement outreach strategy targeting the underserved community with a new Trash PSA; 3.E.4. Ensure representation of the underserved community throughout all work products; 3.E.5 Collaborate with other workgroups to develop and implement outreach strategies and materials to address low socioeconomic and Spanish speaking communities.				
Completion date	Ongoing			
Party conducting work	Cities of Imperial Beach and El Cajon			
Copermittee hourly costs	Environmental Program Mgr - City of Imperial Beach	20	$41.74	$835
	Code Compliance Officer - City of El Cajon	20	$39.70	$794
Contract costs	Consultant (TBD)			$7,500
Contract management costs	City of Imperial Beach is lead.			$375
Other direct costs				$0
Total				**$9,504**
Subtask 3.F. Mass Media Campaign. Develop and implement Mass Media and PR campaign. 3.F.1. Media Placement: Research and secure media placement for Regional program. 3.F.2. Public Relations: Advertise, hire and manage consultant firm to initiate press releases, etc.; 3.F.3 Develop new Trash PSA.				
Completion date	Ongoing			
Party conducting work	Consultant (TBD)			
Copermittee hourly costs	3.F.1. Sr. Public Info. Officer - City of San Diego	30	$46.44	$1,393
	3.F.2. Sr. Public Info. Officer - City of San Diego	40	$46.44	$1,858
	3.F.3. Program Coordinator - County of San Diego	20	$59.27	$1,185
Contract costs	Consultants (Various media outlets - City of SD)			$41,000
Contract costs	Consultant (Trash PSA - County Television Network)			$6,000
Contract management costs	City of San Diego is lead on Mass Media and PR. The County is the lead on the new PSA.			$2,350
Other direct costs				
Total				**$53,786**
Subtask 3.G. Regional Events. Coordinate and sponsor community outreach events throughout San Diego County				
Completion date	Ongoing			
Party conducting work	City of Encinitas			
Copermittee hourly costs	Program Assistant - Encinitas	20	$29.74	$595
	Sr. Public Info. Officer - City of San Diego	10	$46.44	$464
				$0
Contract costs				$0
Other direct costs	Booth Fees			$1,500
Total				**$2,559**

Education and Residential Sources Workgroup Budget

C. Education and Residential Sources Workgroup				FY 2010-11
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Subtask 3.H. Regional Logo. Finalize Regional Think Blue Brand Licensing Agreement				
MOU Sections III.D.3.f – Regularly coordinate and liaise with Regional Board staff, stakeholders, regulated parties, and other interested				
Completion date	March 28, 2010			
Party conducting work	City of San Diego			
Copermittee hourly costs	Sr. Public Info. Officer - City of San Diego	20 0	$46.44 0	$929 $0
Contract costs	Consultant: MJE Marketing Services			$1,800
Contract management costs	City of San Diego is lead			$90
Other direct costs				
Total				**$2,819**
Subtask 3.I. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0 0	0 0	$0 $0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$77**
Total Estimated Cost				**$227,655**

Rollover - CBSM Trash Study	$20,000	
Target Estimated Cost (01/21/10)		**$207,655**

C. Education and Residential Sources Workgroup

Approved January, updated December 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Oceanside	City of IB	Airport Authority	County of San Diego	City of San Diego	City of Escondido	Port of San Diego	City of El Cajon	City of Encinitas	City of San Marcos	Not Assigned
Task 1 Meeting Support															
Subtask 1.A. Education and Residential Sources Workgroup Meeting Support. Provide ongoing support for Education and Residential Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).															
Completion date	Ongoing (quarterly)														
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority														
Copermittee hourly costs	Environmental Specialist II - Oceanside	10	$51.34	$513	$513										
	Environmental Program Manager - Imperial Beach	6	$41.74	$250		$250									
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313			$313								
Contract costs	N/A			$0											
Contract management costs				$0											
Other direct costs				$0											
Total				**$1,076**											
Task 2 Development of Miscellaneous Work Products															
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Education and Residential Sources Workgroup for the period of January 1 through June 30, 2010 and July 1 through December 31, 2010.															
Completion date	8/15/2010 and 02/15/2011														
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority														
Copermittee hourly costs	Environmental Specialist II - Oceanside	5	$51.34	$257	$257										
	Environmental Program Manager - Imperial Beach	4	$41.74	$167		$167									
	Sr. Environmental Specialist - Airport Authority	2	$62.50	$125			$125								
Contract costs	N/A			$0											
Contract management costs				$0											
Other direct costs				$0											
Total				**$549**											
Subtask 2.B. Work Plans and Budgets. 2.B.1 Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Education and Residential Sources Workgroup. 2.B.2 Coordinate the completion of quarterly and year-end expenditure claims for FY 2010-11.															
Completion date	November 30, 2010														
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority														
Copermittee hourly costs	Environmental Specialist II - Oceanside	40	$51.34	$2,054	$2,054										
	Land Use Planner II - County of San Diego	40	$53.78	$2,151				$2,151							
	Environmental Program Manager - Imperial Beach	5	$41.74	$209		$209									
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313			$313								
Contract costs	N/A			$0											
Contract management costs				$0											
Other direct costs				$0											
Total				**$4,726**											

C. Education and Residential Sources Workgroup

Approved January, updated December 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Oceanside	City of IB	Airport Authority	County of San Diego	City of San Diego	City of Escondido	Port of San Diego	City of El Cajon	City of Encinitas	City of San Marcos	Not Assigned
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.															
Completion date	November 30, 2010														
Party conducting work	Cities of Oceanside, Imperial Beach and the SD Regional Airport Authority														
Copermittee hourly costs	Environmental Specialist II - Oceanside	5	$51.34	$257	$257										
	Environmental Program Manager - Imperial Beach	10	$41.74	$417		$417									
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313			$313								
Contract costs	City of Oceanside is lead.			$325	$325										
Contract management costs				$16	$16										
Other direct costs				$0											
Total				**$1,328**											
Subtask 2.D. Regional Program Approach. Revise and update the regional program approach for the management of residential sources for submittal to the Regional Program Planning Subcommittee.															
Completion date	August 1, 2010														
Party conducting work	Consultant (TBD)														
Copermittee hourly costs	Environmental Specialist II - Oceanside	5	$51.34	$257	$257										
	Environmental Program Manager - Imperial Beach	5	$41.74	$209		$209									
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313			$313								
Contract costs	City of Oceanside is lead.			$0											
Contract management costs				$0											
Other direct costs				$0											
Total				**$778**											
Task 3 Regional Residential Education Program															
Sub-task 3.A. Materials Development and Distribution. Development of regional education outreach materials for dissemination to the public which will utilize the regional brand and target pollutants outlined in the Regional Residential Education Plan (RURMP Attachment A-2); 3.A.1. Development, creation and dissemination of regional education outreach materials based on results from other workgroup subcommittees (FY 08-09 and 09-10 surveys and 2009 SD Regional Stormwater Survey); 3.A.2. Produce and distribute to copermittees a 2011 calendar in Spanish based on the 2010 calendar; 3.A.3 Print and distribute to copermittees the coloring books developed in FY09-10; 3.A.4 Support regional "Day Without A (Plastic) Bag" by purchasing Chico Bags.														
Completion date	June 30, 2011														
Party conducting work	Cities of Oceanside and Escondido														
Copermittee hourly costs	Assistant Planner - Escondido	50	$42.05	$2,103						$2,103					
	Land Use Planner II - County of San Diego	5	$53.78	$269				$269							
	Sr. Environmental Specialist - Airport Authority	5	$62.50	$313			$313								
	Environmental Specialist II - Oceanside	5	$51.34	$257	$257										
Contract costs	Webster Design (Calendar Artwork)			$3,000						$3,000					
Contract costs	Xerox (Calendar Printing)			$14,000						$14,000					
Contract costs	Other Materials and costs			$18,500						$18,500					
Contract management costs	City of Escondido is lead.			$1,775						$1,775					
Other direct costs				$0											
Total				**$40,216**											
Subtask 3.B. Partnership Development. Continue identifying new partners and support current partners that have a regional influence in the following categories: 1) Other governmental agencies; 2) Corporations; and 3) Non-governmental organizations (NGOs). Revise and update the document outlining recommending partnerships and associated activities, if needed.															
Completion date	June 30, 2011														
Party conducting work	County of San Diego														
Copermittee hourly costs	Environmental Program Manager - Imperial Beach	20	$41.74	$835		$835									
	Land Use Planner II - County of San Diego	20	$53.78	$1,076				$1,076							
	Assoc. Environmental Specialist - Port of San Diego	20	$54.10	$1,082							$1,082				
Contract costs	City of Imperial Beach is lead.			$11,900				$11,900							
Contract management costs				$595				$595							
Other direct costs				$0											
Total				**$15,487**											

C. Education and Residential Sources Workgroup

Approved January, updated December 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Oceanside	City of IB	Airport Authority	County of San Diego	City of San Diego	City of Escondido	Port of San Diego	City of El Cajon	City of Encinitas	City of San Marcos	Not Assigned
Subtask 3.C. Market Research and Assessment Tools. 3.C.1. Telephone Survey: Follow up on telephone survey to assess storm water knowledge and program awareness; 3.C.2 Continue implementation of Gen Y CBSM Trash Study; 3.C.3 Revise and implement survey for Regional Events.															
Completion date	June 30, 2011														
Party conducting work	City of San Diego with consultant support.														
Copermittee hourly costs	3.C.1. Sr. Public Info. Officer - City of San Diego	30	$46.44	$1,393					$1,393						
	3.C.2. Program Coordinator - County of San Diego	30	$59.27	$1,778				$1,778							
	3.C.3. Sr. Public Info. Officer - City of San Diego	20	$46.44	$929					$929						
Contract costs	Consultant: Action Research (Goodwin Simon Strategic Research)			$58,700					$58,700						
	CBSM Litter Study (Action Research)			$20,000				$20,000							
Contract management costs	City of San Diego is lead on Surveys. The County is lead on CBSM study.			$3,935				$1,000	$2,935						
Other direct costs															
Total				**$86,735**											
Subtask 3.D. Regional Website. Ongoing updating and maintenance of regional website.															
Completion date	Ongoing														
Party conducting work	City of San Diego and Port of San Diego with consultant support														
Copermittee hourly costs	Sr. Public Info. Officer - City of San Diego	25	$46.44	$1,161					$1,161						
	Assoc. Environmental Specialist - Port of San Diego	25	$54.10	$1,353							$1,353				
				$0											
Contract costs	Consultant: MJE Marketing Services			$5,240					$5,240						
Contract management costs	City of San Diego manages the contract. The Port helps lead the task.			$262					$262						
Other direct costs															
Total				**$8,016**											
Subtask 3.E. Underserved Target Audience. 3.E.1. Identify low socioeconomic communities and other underserved target residential audiences, i.e., Spanish-speaking community; 3.E.2. Develop and disseminate Spanish regional calendar for 2011; 3.E.3. Develop and implement outreach strategy targeting the underserved community with a new Trash PSA; 3.E.4. Ensure representation of the underserved community throughout all work products; 3.E.5 Collaborate with other workgroups to develop and implement outreach strategies and materials to address low socioeconomic and Spanish speaking communities.															
Completion date	Ongoing														
Party conducting work	Cities of Imperial Beach and El Cajon														
Copermittee hourly costs	Environmental Program Mgr - City of Imperial Beach	20	$41.74	$835		$835									
	Code Compliance Officer - City of El Cajon	20	$39.70	$794								$794			
Contract costs	Consultant (TBD)			$7,500		$7,500									
Contract management costs	City of Imperial Beach is lead.			$375		$375									
Other direct costs				$0		$0									
Total				**$9,504**											
Subtask 3.F. Mass Media Campaign. Develop and implement Mass Media and PR campaign. 3.F.1. Media Placement: Research and secure media placement for Regional program. 3.F.2. Public Relations: Advertise, hire and manage consultant firm to initiate press releases, etc.; 3.F.3 Develop new Trash PSA.															
Completion date	Ongoing														
Party conducting work	Consultant (TBD)														
Copermittee hourly costs	3.F.1. Sr. Public Info. Officer - City of San Diego	30	$46.44	$1,393					$1,393						
	3.F.2. Sr. Public Info. Officer - City of San Diego	40	$46.44	$1,858					$1,858						
	3.F.3. Program Coordinator - County of San Diego	20	$59.27	$1,185				$1,185							
Contract costs	Consultants (Various media outlets - City of SD)			$41,000					$41,000						
Contract costs	Consultant (Trash PSA - County Television Network)			$6,000				$6,000							
Contract management costs	City of San Diego is lead on Mass Media and PR. The County is the lead on the new PSA.			$2,350				$300	$2,050						
Other direct costs															
Total				**$53,786**											
Subtask 3.G. Regional Events. Coordinate community outreach events throughout San Diego County															
Completion date	Ongoing														
Party conducting work	City of Encinitas														
Copermittee hourly costs	Program Assistant - Encinitas	20	$29.74	$595									$595		
	Sr. Public Info. Officer - City of San Diego	10	$46.44	$464					$464						
				$0											
Contract costs				$0									$0		
Contract management costs															
Other direct costs	Booth Fees			$1,500									$1,500		

C. Education and Residential Sources Workgroup

Approved January, updated December 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Oceanside	City of IB	Airport Authority	County of San Diego	City of San Diego	City of Escondido	Port of San Diego	City of El Cajon	City of Encinitas	City of San Marcos	Not Assigned
Total				**$2,559**											
Subtask 3.H. Regional Logo.	Finalize Regional Think Blue Brand Licensing Agreement														
Completion date	March 28, 2010														
Party conducting work	City of San Diego														
Copermittee hourly costs	Sr. Public Info. Officer - City of San Diego	20	$46.44	$929					$929						
		0	0	$0											
Contract costs	Consultant: MJE Marketing Services			$1,800					$1,800						
Contract management costs	City of San Diego is lead			$90					$90						
Other direct costs															
Total				**$2,819**											

C. Education and Residential Sources Workgroup

Approved January, updated December 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Oceanside	City of IB	Airport Authority	County of San Diego	City of San Diego	City of Escondido	Port of San Diego	City of El Cajon	City of Encinitas	City of San Marcos	Not Assigned
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.															
MOU Sections III.D.5.f – Regularly coordinate and liaise with Regional Board staff, stakeholders, regulated parties, and other interested parties to identify and explore key regional issues and concerns															
Completion date	TBD														
Party conducting work	TBD														
Copermittee hourly costs		0	0	$77											$77
		0	0	$0											
Contract costs				$0											
Contract management costs				$0											
Other direct costs				$0											
Total				**$77**											
Total Estimated Cost				**$227,655**	**$3,935**	**$10,797**	**$1,688**	**$46,254**	**$120,204**	**$39,378**	**$2,435**	**$794**	**$2,095**	**$0**	**$77**

C. Education and Residential Sources Workgroup			City of Oceanside				City of Imperial Beach				Airport Authority				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																		
Subtask 1.A. Meeting Support.	**$1,076**	**$231**																
Hourly	$1,076	$231			$231													
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 2 Development of Miscellaneous Work Products																		
Subtask 2.A. Semi-annual Workgroup Update.	**$549**	**$0**																
Hourly	$549	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.B. FY 2011-12 Work Plans and Budgets	**$4,726**	**$2,929**																
Hourly	$4,726	$2,929	$552	$513	$90	$257									$376	$323		$376
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input	**$1,328**	**$897**																
Hourly	$987	$897		$103	$51			$417										
Contracts	$325	$0																
Contract management	$16	$0																
Other direct	$0	$0																
Subtask 2.D. Regional Program Approach	**$778**	**$0**																
Hourly	$778	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 3 Regional Residential Education Program																		

C. Education and Residential Sources Workgroup			City of Oceanside				City of Imperial Beach				Airport Authority				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sub-task 3.A. Materials Development and Distribution	**$40,216**	**$25,443**																
Hourly	$2,941	$1,311										$164				$161		$134
Contracts	$35,500	$13,983																$10,983
Contract management	$1,775	$150																
Other direct	$0	$9,998										$9,998						
Subtask 3.B. Partnership Development	**$15,487**	**$565**																
Hourly	$2,992	$565													$242	$323		
Contracts	$11,900	$0																
Contract management	$595	$0																
Other direct	$0	$0																

C. Education and Residential Sources Workgroup			City of Oceanside				City of Imperial Beach				Airport Authority				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 3.C. Market Research and Assessment Tools	**$86,735**	**$79,378**																
Hourly	$4,100	$1,788													$253	$188		
Contracts	$78,700	$74,900													$21,105	$10,050		
Contract management	$3,935	$2,690														$503		
Other direct	$0	$0																
Subtask 3.D. Regional Website	**$8,016**	**$2,220**																
Hourly	$2,514	$557																
Contracts	$5,240	$1,591																
Contract management	$262	$72																
Other direct	$0	$0																
Subtask 3.E. Underserved Target Audience	**$9,504**	**$871**																
Hourly	$1,629	$83							$83									
Contracts	$7,500	$750							$750									
Contract management	$375	$38							$38									
Other direct	$0	$0																
Subtask 3.F. Mass Media Campaign	**$53,786**	**$43,674**																
Hourly	$4,436	$2,020																
Contracts	$47,000	$39,671																
Contract management	$2,350	$1,984																
Other direct	$0	$0																
Subtask 3.G. Regional Events	**$2,559**	**$1,354**																
Hourly	$1,059	$1,092		$359														
Contracts	$0	$62																
Contract management	$0	$0																
Other direct	$1,500	$200																
Subtask3.H. Regional Logo	**$2,819**	**$46**																
Hourly	$929	$46																
Contracts	$1,800	$0																
Contract management	$90	$0																
Other direct	$0	$0																

C. Education and Residential Sources Workgroup			City of Oceanside				City of Imperial Beach				Airport Authority				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 3.I. Unallocated	**$77**	**$0**																
Hourly	$77	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Total Expenditures per Quarter for each Copermittee			$552	$975	$372	$257	$0	$417	$871	$0	$0	$10,162	$0	$0	$21,976	$11,547	$0	$11,494
Totals	**$227,655**	**$157,560**																

C. Education and Residential Sources Workgroup			City of San Diego				City of Escondido				Port of San Diego				City of El Cajon			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																		
Subtask 1.A. Meeting Support.	**$1,076**	**$231**																
Hourly	$1,076	$231																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 2 Development of Miscellaneous Work Products																		
Subtask 2.A. Semi-annual Workgroup Update.	**$549**	**$0**																
Hourly	$549	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.B. FY 2011-12 Work Plans and Budgets	**$4,726**	**$2,929**																
Hourly	$4,726	$2,929		$163	$279													
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input	**$1,328**	**$897**																
Hourly	$987	$897		$279	$46													
Contracts	$325	$0																
Contract management	$16	$0																
Other direct	$0	$0																
Subtask 2.D. Regional Program Approach	**$778**	**$0**																
Hourly	$778	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 3 Regional Residential Education Program																		

C. Education and Residential Sources Workgroup			City of San Diego				City of Escondido				Port of San Diego				City of El Cajon			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sub-task 3.A. Materials Development and Distribution	**$40,216**	**$25,443**																
Hourly	$2,941	$1,311					$126	$431	$294									
Contracts	$35,500	$13,983						$3,000										
Contract management	$1,775	$150						$150										
Other direct	$0	$9,998																
Subtask 3.B. Partnership Development	**$15,487**	**$565**																
Hourly	$2,992	$565																
Contracts	$11,900	$0																
Contract management	$595	$0																
Other direct	$0	$0																

C. Education and Residential Sources Workgroup			City of San Diego				City of Escondido				Port of San Diego				City of El Cajon			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 3.C. Market Research and Assessment Tools	**$86,735**	**$79,378**																
Hourly	$4,100	$1,788	$372	$348	$232	$395												
Contracts	$78,700	$74,900		$245	$43,500													
Contract management	$3,935	$2,690		$12	$2,175													
Other direct	$0	$0																
Subtask 3.D. Regional Website	**$8,016**	**$2,220**																
Hourly	$2,514	$557	$186	$139	$163	$70												
Contracts	$5,240	$1,591	$158	$894	$390	$150												
Contract management	$262	$72		$45	$20	$8												
Other direct	$0	$0																
Subtask 3.E. Underserved Target Audience	**$9,504**	**$871**																
Hourly	$1,629	$83																
Contracts	$7,500	$750																
Contract management	$375	$38																
Other direct	$0	$0																
Subtask 3.F. Mass Media Campaign	**$53,786**	**$43,674**																
Hourly	$4,436	$2,020	$464	$557	$720	$279												
Contracts	$47,000	$39,671			$20,000	$19,671												
Contract management	$2,350	$1,984			$1,000	$984												
Other direct	$0	$0																
Subtask 3.G. Regional Events	**$2,559**	**$1,354**																
Hourly	$1,059	$1,092	$93			$139		$168		$147								
Contracts	$0	$62																
Contract management	$0	$0																
Other direct	$1,500	$200																
Subtask3.H. Regional Logo	**$2,819**	**$46**																
Hourly	$929	$46	$46															
Contracts	$1,800	$0																
Contract management	$90	$0																
Other direct	$0	$0																

C. Education and Residential Sources Workgroup			City of San Diego				City of Escondido				Port of San Diego				City of El Cajon			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 3.I. Unallocated	**$77**	**$0**																
Hourly	$77	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Total Expenditures per Quarter for each Copermittee			$1,319	$2,682	$68,524	$21,694	$126	$3,749	$294	$147	$0	$0	$0	$0	$0	$0	$0	$0
Totals	**$227,655**	**$157,560**																

C. Education and Residential Sources Workgroup			City of Encinitas				City of San Marcos				Not Assigned			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support														
Subtask 1.A. Meeting Support.	**$1,076**	**$231**												
Hourly	$1,076	$231												
Contracts	$0	$0												
Contract management	$0	$0												
Other direct	$0	$0												
Task 2 Development of Miscellaneous Work Products														
Subtask 2.A. Semi-annual Workgroup Update.	**$549**	**$0**												
Hourly	$549	$0												
Contracts	$0	$0												
Contract management	$0	$0												
Other direct	$0	$0												
Subtask 2.B. FY 2011-12 Work Plans and Budgets	**$4,726**	**$2,929**												
Hourly	$4,726	$2,929												
Contracts	$0	$0												
Contract management	$0	$0												
Other direct	$0	$0												
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input	**$1,328**	**$897**												
Hourly	$987	$897												
Contracts	$325	$0												
Contract management	$16	$0												
Other direct	$0	$0												
Subtask 2.D. Regional Program Approach	**$778**	**$0**												
Hourly	$778	$0												
Contracts	$0	$0												
Contract management	$0	$0												
Other direct	$0	$0												
Task 3 Regional Residential Education Program														

C. Education and Residential Sources Workgroup			City of Encinitas				City of San Marcos				Not Assigned			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sub-task 3.A. Materials Development and Distribution	**$40,216**	**$25,443**												
Hourly	$2,941	$1,311												
Contracts	$35,500	$13,983												
Contract management	$1,775	$150												
Other direct	$0	$9,998												
Subtask 3.B. Partnership Development	**$15,487**	**$565**												
Hourly	$2,992	$565												
Contracts	$11,900	$0												
Contract management	$595	$0												
Other direct	$0	$0												

C. Education and Residential Sources Workgroup			City of Encinitas				City of San Marcos				Not Assigned			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 3.C. Market Research and Assessment Tools	**$86,735**	**$79,378**												
Hourly	$4,100	$1,788												
Contracts	$78,700	$74,900												
Contract management	$3,935	$2,690												
Other direct	$0	$0												
Subtask 3.D. Regional Website	**$8,016**	**$2,220**												
Hourly	$2,514	$557												
Contracts	$5,240	$1,591												
Contract management	$262	$72												
Other direct	$0	$0												
Subtask 3.E. Underserved Target Audience	**$9,504**	**$871**												
Hourly	$1,629	$83												
Contracts	$7,500	$750												
Contract management	$375	$38												
Other direct	$0	$0												
Subtask 3.F. Mass Media Campaign	**$53,786**	**$43,674**												
Hourly	$4,436	$2,020												
Contracts	$47,000	$39,671												
Contract management	$2,350	$1,984												
Other direct	$0	$0												
Subtask 3.G. Regional Events	**$2,559**	**$1,354**												
Hourly	$1,059	$1,092		$31		$154								
Contracts	$0	$62				$62								
Contract management	$0	$0												
Other direct	$1,500	$200		$200										
Subtask3.H. Regional Logo	**$2,819**	**$46**												
Hourly	$929	$46												
Contracts	$1,800	$0												
Contract management	$90	$0												
Other direct	$0	$0												

C. Education and Residential Sources Workgroup			City of Encinitas				City of San Marcos				Not Assigned			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 3.I. Unallocated	**$77**	**$0**												
Hourly	$77	$0												
Contracts	$0	$0												
Contract management	$0	$0												
Other direct	$0	$0												
Total Expenditures per Quarter for each Copermittee			$0	$231	$0	$216	$0	$0	$0	$0	$0	$0	$0	$0
Totals	**$227,655**	**$157,560**												

C. Education and Residential Sources Workgroup
FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
City of Oceanside	$3,935	1st	$ 551.91
		2nd	$ 975.46
		3rd	$ 372.32
		4th	$ 256.70
		Totals	**$ 2,156.39**
		Unspent Balance	**$ 1,778.66**
City of Imperial Beach	$10,797	1st	$ -
		2nd	$ 417.40
		3rd	$ 870.98
		4th	$ -
		Totals	**$ 1,288.38**
		Unspent Balance	**$ 9,508.42**
Airport Authority	$1,688	1st	$ -
		2nd	$ 10,162.29
		3rd	$ -
		4th	$ -
		Totals	**$ 10,162.29**
		Unspent Balance	**$ (8,474.79)**
County of San Diego	$46,254	1st	$ 21,976.46
		2nd	$ 11,547.43
		3rd	$ -
		4th	$ 11,493.99
		Totals	**$ 45,017.88**
		Unspent Balance	**$ 1,236.32**
City of San Diego	$120,204	1st	$ 1,318.50
		2nd	$ 2,681.77
		3rd	$ 68,524.14
		4th	$ 21,694.07
		Totals	**$ 94,218.48**
		Unspent Balance	**$ 25,985.52**
City of Escondido	$39,378	1st	$ 126.15
		2nd	$ 3,749.22
		3rd	$ 294.35
		4th	$ 147.10
		Totals	**$ 4,316.82**
		Unspent Balance	**$ 35,060.68**

C. Education and Residential Sources Workgroup
FY 2010-11 Budget Summary by Copermittee

Port of San Diego	$2,435	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ 2,434.50**

City of El Cajon	$794	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ 794.00**

City of Encinitas	$2,095	1st	$ -
		2nd	$ 230.85
		3rd	$ -
		4th	$ 215.81
		Totals	**$ 446.66**
		Unspent Balance	**$ 1,648.14**

City of San Marcos	$0	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ -**

Not Assigned	$77	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ 77.00**

D. Monitoring Workgroup and Sub-workgroups				FY 2010-11
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Task 1 Meeting Support				
Subtask 1.A. Regional Monitoring Workgroup Meeting Support. Provide ongoing support for Regional Monitoring Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	County			
Copermittee hourly costs	Program Coordinator	72	59.27	$4,267
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$4,267**
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting Support. Provide ongoing support for Dry Weather Monitoring Sub-workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	Divided amongst sub-workgroup members			
Copermittee hourly costs	Santee	20	59.27	$1,185
	Poway	20	59.27	$1,185
		0	0	$0
Contract costs	Contract to be administered by the City of La Mesa; The City will be credited for contract-related expenditures in FY 2009-10. Contract will be for the evaluation of historical data to update Dry Weather Action Levels. Exact scope TBD by Dry Weather Workgroup			$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,371**
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup Meeting Support. Provide ongoing support for Coastal Storm Drain Monitoring Sub-workgroup meetings (research and develop written materials, preparing presentations, etc). Includes Prepraring annual report.				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	Divided amongst sub-workgroup members			
Copermittee hourly costs	Port of San Diego	15	59.27	$889
	City of Carlsbad	15	59.27	$889
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,778**

D. Monitoring Workgroup and Sub-workgroups FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide as requested by the Program Planning Subcommittee a written update describing the key activities and accomplishments of the Regional Monitoring Workgroup and its sub-workgroups for the period of July 1 through December 31, 2010.				
Completion date	February 15, 2011			
Party conducting work	County			
Copermittee hourly costs	Program Coordinator	10	59.27	$593
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$593**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Regional Monitoring Workgroup and its sub-workgroups.				
Completion date	November 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Program Coordinator	25	59.27	$1,482
		0	0	$0
			0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,482**
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Program Coordinator	30	59.27	$1,778
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,778**

D. Monitoring Workgroup and Sub-workgroups				FY 2010-11
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Subtask 2.D. FY 2011-12 Source Identification Work Plan. Consultant will develop the detailed work plan for the source identification project identified in the Source Identification Monitoring Program submitted to the RWQCB on July 1, 2008.				
Completion date	April 1, 2011			
Party conducting work	Consultant (unassigned)			
Copermittee hourly costs		0 0 0	$0 0 0	$0 $0 $0
Contract costs				$10,000
Contract management costs				$500
Other direct costs				$0
Total				**$10,500**
Task 3 Regional Monitoring Program				
Task 3.A. Regional Monitoring Program. As directed, develop and implement regional monitoring programs and activities to satisfy the requirements of Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001 and other regional initiatives.				
Completion date	Ongoing			
Party conducting work	Consultant (unassigned; contract to be bid in 2009-2010)			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	Consultant contract administered by County; Consultant expenses are invoiced and paid approximately monthly.			$2,145,598
Contract management costs				$107,280
Other direct costs				$0
Total				**$2,252,878**
Task 3.B. Southern California Monitoring Coalition. Support of applied research in stormwater with Southern CA stormwater agencies and regulators developing the projects.				
Completion date	Ongoing			
Party conducting work	Consultants vary by project			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	SMC Agreements administered by County			$30,000
Contract management costs				$1,500
Other direct costs				$0
Total				**$31,500**

D. Monitoring Workgroup and Sub-workgroups			FY 2010-11	
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Task 3.C. 5-Year Regional Monitoirng Program Assessment and Updating for ROWD and LTEA. As directed, evaluate and develop regional monitoring programs to recommend for the 2012 NPDES Permit.				
Completion date	Ongoing			
Party conducting work	Consultant (unassigned)			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	Consultant contract administered by County; Consultant expenses are invoiced and paid approximately monthly.			$95,000
Contract management costs				$4,750
Other direct costs				$0
Total				**$99,750**
Task 3.D. Unallocated.				
Completion date	Ongoing			
Party conducting work	Consultants (TBD)			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	Nothing assigned to "unallocated" because Task 3.A includes "as-needed" in consultant scope.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**
Total Estimated Cost				**$2,406,897**

Target Estimated Cost (01/21/10)	**$2,406,897**

D. Monitoring Workgroup and Sub-workgroups

FY 2010-11, modified with rollovers

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Regional Monitoring Workgroup Meeting Support. Provide ongoing support for Regional Monitoring Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	County			
Copermittee hourly costs	Program Coordinator	72	59.27	$4,267
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$4,267**
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting Support. Provide ongoing support for Dry Weather Monitoring Sub-workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	Divided amongst sub-workgroup members			
Copermittee hourly costs	Santee	20	59.27	$1,185
	Poway	20	59.27	$1,185
		0	0	$0
Contract costs	Contract to be administered by the City of La Mesa; The City will be credited for contract-related expenditures in FY 2009-10. Contract will be for the evaluation of historical data to update Dry Weather Action Levels. Exact scope TBD by Dry Weather Workgroup			$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,371**
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup Meeting Support. Provide ongoing support for Coastal Storm Drain Monitoring Sub-workgroup meetings (research and develop written materials, preparing presentations, etc). Includes Prepraring annual report.				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	Divided amongst sub-workgroup members			
Copermittee hourly costs	Port of San Diego	15	59.27	$889
	City of Carlsbad	15	59.27	$889
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,778**

D. Monitoring Workgroup and Sub-workgroups

FY 2010-11, modified with rollovers

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide as requested by the Program Planning Subcommittee a written update describing the key activities and accomplishments of the Regional Monitoring Workgroup and its sub-workgroups for the period of July 1 through December 31, 2010.				
Completion date	February 15, 2011			
Party conducting work	County			
Copermittee hourly costs	Program Coordinator	10	59.27	$593
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$593**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Regional Monitoring Workgroup and its sub-workgroups.				
Completion date	November 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Program Coordinator	25	59.27	$1,482
		0	0	$0
			0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,482**
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Program Coordinator	30	59.27	$1,778
		0	0	$0
		0	0	$0
Contract costs				
Contract management costs				$0
Other direct costs				$0
Total				**$1,778**

D. Monitoring Workgroup and Sub-workgroups

FY 2010-11, modified with rollovers

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.D. FY 2011-12 Source Identification Work Plan. Consultant will develop the detailed work plan for the source identification project identified in the Source Identification Monitoring Program submitted to the RWQCB on July 1, 2008.				
Completion date	April 1, 2011			
Party conducting work	Consultant (unassigned)			
Copermittee hourly costs		0 0 0	$0 0 0	$0 $0 $0
Contract costs				$10,000
Contract management costs				$500
Other direct costs				$0
Total				**$10,500**
Task 3 Regional Monitoring Program				
Task 3.A. Regional Monitoring Program. As directed, develop and implement regional monitoring programs and activities to satisfy the requirements of Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001 and other regional initiatives.				
Completion date	Ongoing			
Party conducting work	Consultant (unassigned; contract to be bid in 2009-2010)			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	Consultant contract administered by County; Consultant expenses are invoiced and paid approximately monthly. Includes roll-over of $141,564.15 for SCCWRP bacteria regrowth			$2,287,162
Contract management costs				$107,280
Other direct costs				$0
Total				**$2,394,442**
Task 3.B. Southern California Monitoring Coalition. Support of applied research in stormwater with Southern CA stormwater agencies and regulators developing the projects.				
Completion date	Ongoing			
Party conducting work	Consultants vary by project			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	SMC Agreements administered by County, inlcudes roll-over of $36,750			$65,000
Contract management costs				$3,250
Other direct costs				$0
Total				**$68,250**

D. Monitoring Workgroup and Sub-workgroups

FY 2010-11, modified with rollovers

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 3.C. 5-Year Regional Monitoirng Program Assessment and Updating for ROWD and LTEA. As directed, evaluate and develop regional monitoring programs to recommend for the 2012 NPDES Permit.				
Completion date	Ongoing			
Party conducting work	Consultant (unassigned)			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	Consultant contract administered by County; Consultant expenses are invoiced and paid approximately monthly. Includes roll-over of $150,000 for updating ROWD and LTEA			$237,800
Contract management costs				$11,890
Other direct costs				$0
Total				**$249,690**
Task 3.D. Unallocated.				
Completion date	Ongoing			
Party conducting work	Consultants (TBD)			
Copermittee hourly costs		0	$0	$0 $0 $0
Contract costs	Nothing assigned to "unallocated" because Task 3.A includes "as-needed" in consultant scope.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$60**
Total Estimated Cost				**$2,735,211**

D. Monitoring Workgroup and Sub-workgroups FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of Santee	City of San Diego	Port of San Diego	City of Carlsbad
Task 1 Meeting Support									
Subtask 1.A. Regional Monitoring Workgroup Meeting Support. Provide ongoing support for Regional Monitoring Workgroup meetings (research and develop written materials, preparing presentations, etc).									
Completion date	Ongoing (minimum quarterly)								
Party conducting work	County								
Copermittee hourly costs	Program Coordinator	72	59.27	$4,267	$4,267				
		0	0	$0					
		0	0	$0					
Contract costs				$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$4,267**					
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting Support. Provide ongoing support for Dry Weather Monitoring Sub-workgroup meetings (research and develop written materials, preparing presentations, etc).									
Completion date	Ongoing (minimum quarterly)								
Party conducting work	Divided amongst sub-workgroup members								
Copermittee hourly costs	Santee	20	59.27	$1,185		$1,185			
	Poway	20	59.27	$1,185			$1,185		
		0	0	$0					
Contract costs	Contract to be administered by the City of La Mesa. The City will be credited for contract-related expenditures in FY 2009-10. Contract will be for the evaluation of historical data to update Dry Weather Action Levels. Exact scope TBD by Dry Weather Workgroup.			$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$2,371**					
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup Meeting Support. Provide ongoing support for Coastal Storm Drain Monitoring Sub-workgroup meetings (research and develop written materials, preparing presentations, etc). Includes Prepraring annual report.									
Completion date	Ongoing (minimum quarterly)								
Party conducting work	Divided amongst sub-workgroup members								
Copermittee hourly costs	Port of San Diego	15	59.27	$889				$889	
	City of Carlsbad	15	59.27	$889					$889
		0	0	$0					
Contract costs				$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$1,778**					

D. Monitoring Workgroup and Sub-workgroups FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of Santee	City of San Diego	Port of San Diego	City of Carlsbad
Task 2 Development of Miscellaneous Work Products									
Subtask 2.A. Semi-annual Workgroup Update. Provide as requested by the Program Planning Subcommittee a written update describing the key activities and accomplishments of the Regional Monitoring Workgroup and its sub-workgroups for the period of July 1 through December 31, 2010.									
Completion date	February 15, 2011								
Party conducting work	County								
Copermittee hourly costs	Program Coordinator	10	59.27	$593	$593				
		0	0	$0					
		0	0	$0					
Contract costs				$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$593**					
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Regional Monitoring Workgroup and its sub-workgroups.									
Completion date	November 30, 2010								
Party conducting work	County								
Copermittee hourly costs	Program Coordinator	25	59.27	$1,482	$1,482				
		0	0	$0					
			0	$0					
Contract costs				$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$1,482**					
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.									
Completion date	November 30, 2010								
Party conducting work	County								
Copermittee hourly costs	Program Coordinator	30	59.27	$1,778	$1,778				
		0	0	$0					
		0	0	$0					
Contract costs				$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$1,778**					

D. Monitoring Workgroup and Sub-workgroups FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of Santee	City of San Diego	Port of San Diego	City of Carlsbad
Subtask 2.D. FY 2011-12 Source Identification Work Plan. Consultant will develop the detailed work plan for the source identification project identified in the Source Identification Monitoring Program submitted to the RWQCB on July 1, 2008.									
Completion date	April 1, 2011								
Party conducting work	Consultant (unassigned)								
Copermittee hourly costs		0	$0	$0					
		0	0	$0					
		0	0	$0					
Contract costs				$10,000	$10,000				
Contract management costs				$500	$500				
Other direct costs				$0					
Total				**$10,500**					
Task 3 Regional Monitoring Program									
Task 3.A. Regional Monitoring Program. As directed, develop and implement regional monitoring programs and activities to satisfy the requirements of Receiving Waters and Urban Runoff Monitoring and Reporting Program No. R9-2007-0001 and other regional initiatives.									
Completion date	Ongoing								
Party conducting work	Consultant (unassigned; contract to be bid in 2009-2010)								
Copermittee hourly costs		0	$0	$0					
				$0					
				$0					
Contract costs	Consultant contract administered by County; Consultant expenses are invoiced and paid approximately monthly. Includes roll-over of $141,564.15 for SCCWRP bacteria regrowth			$2,287,162	$2,287,162				
Contract management costs				$107,280	$107,280				
Other direct costs				$0					
Total				**$2,394,442**					
Task 3.B. Southern California Monitoring Coalition. Support of applied research in stormwater with Southern CA stormwater agencies and regulators developing the projects.									
Completion date	Ongoing								
Party conducting work	Consultants vary by project								
Copermittee hourly costs		0	$0	$0					
				$0					
				$0					
Contract costs	SMC Agreements administered by County, inlcudes roll-over of $36,750			$65,000	$65,000				
Contract management costs				$3,250	$3,250				
Other direct costs				$0	$0				
Total				**$68,250**					
Task 3.C. 5-Year Regional Monitoirng Program Assessment and Updating for ROWD and LTEA. As directed, evaluate and develop regional monitoring programs to recommend for the 2012 NPDES Permit.									
Completion date	Ongoing								

D. Monitoring Workgroup and Sub-workgroups FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of Santee	City of San Diego	Port of San Diego	City of Carlsbad
Party conducting work	Consultant (unassigned)								
Copermittee hourly costs		0	$0	$0 $0 $0					
Contract costs	Consultant contract administered by County; Consultant expenses are invoiced and paid approximately monthly. Includes roll-over of $150,000 for updating ROWD and LTEA			$237,800	$237,800				
Contract management costs				$11,890	$11,890				
Other direct costs				$0					
Total				**$249,690**					
Task 3.D. Unallocated.									
Completion date	Ongoing								
Party conducting work	Consultants (TBD)								
Copermittee hourly costs		0	$0	$0 $0 $0					
Contract costs	Nothing assigned to "unallocated" because Task 3.A includes "as-needed" in consultant scope.			$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$60**					
Total Estimated Cost				**2,735,210.94**	**$2,731,002**	**$1,185**	**$1,185**	**$889**	**$889**

Not Assigned

$0

$0

Not Assigned

Not Assigned

Not Assigned
$0
$0

D. Monitoring Workgroup and Sub-workgroups			County of San Diego				City of Santee				City of San Diego				Port of San Diego				City of Carlsbad			
Task	**Adopted Budget**	**Accrued Expenditures**	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																						
Subtask 1.A. Meeting Support.	**$4,267**	**$2,948**																				
Hourly	$4,267	$2,948				$2,948																
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting Support.	**$2,371**	**$1,703**																				
Hourly	$2,371	$1,703						$716	$987													
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup Meeting Support.	**$1,778**	**$5,467**																				
Hourly	$1,778	$5,467																$2,670				$2,797
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Task 2 Development of Miscellaneous Work Products																						
Subtask 2.A. Semi-annual Workgroup Updates.	**$593**	**$0**																				
Hourly	$593	$0																				
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$1,482**	**$528**																				
Hourly	$1,482	$528				$528																
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$1,778**	**$0**																				
Hourly	$1,778	$0																				
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				

D. Monitoring Workgroup and Sub-workgroups			County of San Diego				City of Santee				City of San Diego				Port of San Diego				City of Carlsbad			
Task	**Adopted Budget**	**Accrued Expenditures**	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.D. FY 2011-12 Source Identification Work Plan	**$10,500**	**$0**																				
Hourly	$0	$0																				
Contracts	$10,000	$0																				
Contract management	$500	$0																				
Other direct	$0	$0																				
Task 3 Regional Monitoring Program																						
Task 3.A. Regional Monitoring Program.	**$2,394,442**	**$2,358,070**																				
Hourly	$0	$0																				
Contracts	$2,287,162	$2,245,781				$2,235,573								$10,208								
Contract management	$107,280	$112,289				$111,779								$510								
Other direct	$0	$0																				
Task 3.B. Southern California Stormwater Monitoring Coalition.	**$68,250**	**$0**																				
Hourly	$0	$0																				
Contracts	$65,000	$0																				
Contract management	$3,250	$0																				
Other direct	$0	$0																				
Task 3.C. 5-Year Regional Monitoirng Program Assessment and Updating for ROWD and LTEA	**$249,690**	**$212,327**																				
Hourly	$0	$0																				
Contracts	$237,800	$202,216				$202,216																
Contract management	$11,890	$10,111				$10,111																
Other direct	$0	$0																				
Subtask 3.C. Unallocated.	**$0**	**$0**																				
Hourly	$0	$0																				
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$2,563,154	$0	$716	$987	$0	$0	$0	$0	$10,719	$0	$0	$0	$2,670	$0	$0	$0	$2,797
Totals	**$2,735,150.94**	**$2,581,043.21**																				
Difference	**$154,108**																					

D. Monitoring Workgroup and Sub-workgroups
FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$2,731,002	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 2,563,154.14
		Totals	**$ 2,563,154.14**
	Unspent Balance		**$ 167,847.90**
City of Santee	$1,185	1st	$ -
		2nd	$ 716.14
		3rd	$ 987.11
		4th	$ -
		Totals	**$ 1,703.25**
	Unspent Balance		**$ (517.85)**
City of San Diego	$1,185	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 10,718.51
		Totals	**$ 10,718.51**
	Unspent Balance		**$ (9,533.11)**
Port of San Diego	$889	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 2,669.90
		Totals	**$ 2,669.90**
	Unspent Balance		**$ (1,780.85)**
City of Carlsbad	$889	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 2,797.41
		Totals	**$ 2,797.41**
	Unspent Balance		**$ (1,908.36)**

E. Land Development Workgroup				FY 2010-11
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Task 1 Meeting Support				
Subtask 1.A. Land Development Workgroup Meeting Support. Provide ongoing support for Land Development Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	As-needed (est. monthly)			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	35 0	76.18 0	$2,666 $0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,666**
Subtask 1.B. Construction Sub-Workgroup Meeting Support. Provide ongoing support for Construction Sub-Workgroup meetings (research and develop written materials, preparing presentations, etc.)				
Completion date	As-needed (est. monthly)			
Party conducting work	City of San Diego			
Copermittee hourly costs	Senior Civil Engineer - City	55 0	76.18 0	$4,190 $0
Contract costs	Consultant Services to assist in developing regional guidelines on construction related issues, as identified by the copermittees, to comply with the Municipal permit Section D.2 and provide consisitenacy with the State Construction General Permit.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$4,190**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Land Development Workgroup.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	10 0 0	76.18 0 0	$762 $0 $0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$762**

E. Land Development Workgroup				FY 2010-11
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Land development Workgroup and its sub-workgroups.				
Completion date	November 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	5	76.18	$381
		0	0	$0
			0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$381**
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	20	76.18	$1,524
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,524**
Subtask 2.D. Hydromodification Management Plan and Standard Urban Stormwater Mitigation Plan updates, training, and required monitoring.				
Completion date	June 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	44	76.18	$3,352
			0	$0
			0	$0
Contract costs	Brown and Caldwell and/or SCCWRP to assist with training and HMP/SUSMP implementation, required HMP monitoring, and Regional Board required updates to documents.			$75,000
Contract management costs				$3,750
Other direct costs				$0
Total				**$82,102**

E. Land Development Workgroup				FY 2010-11
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$12**
Total Estimated Cost				**$91,636**

E. Land Development Workgroup

FY 2010-11, modified with roll-overs

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Land Development Workgroup Meeting Support. Provide ongoing support for Land Development Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	As-needed (est. monthly)			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	35	76.18	$2,666
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,666**
Subtask 1.B. Construction Sub-Workgroup Meeting Support. Provide ongoing support for Construction Sub-Workgroup meetings (research and develop written materials, preparing presentations, etc.)				
Completion date	As-needed (est. monthly)			
Party conducting work	City of San Diego			
Copermittee hourly costs	Senior Civil Engineer - City	55	76.18	$4,190
		0	0	$0
Contract costs	Consultant Services to assist in developing regional guidelines on construction related issues, as identified by the copermittees, to comply with the Municipal permit Section D.2 and provide consisitenacy with the State Construction General Permit.			$0
Contract management costs				$0
Other direct costs				$0
Total				**$4,190**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Land Development Workgroup.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	10	76.18	$762
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$762**

E. Land Development Workgroup

FY 2010-11, modified with roll-overs

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Land development Workgroup and its sub-workgroups.				
Completion date	November 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	5	76.18	$381
		0	0	$0
			0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$381**
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	20	76.18	$1,524
		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,524**
Subtask 2.D. Hydromodification Management Plan and Standard Urban Stormwater Mitigation Plan updates, training, and required monitoring.				
Completion date	June 30, 2010			
Party conducting work	County			
Copermittee hourly costs	Senior Civil Engineer - County	44	76.18	$3,352
			0	$0
			0	$0
Contract costs	Brown and Caldwell and/or SCCWRP to assist with training and HMP/SUSMP implementation, required HMP monitoring, and Regional Board required updates to documents.			$129,000
Contract management costs				$6,450
Other direct costs				$0
Total				**$138,802**

E. Land Development Workgroup

FY 2010-11, modified with roll-overs

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**($1)**
Total Estimated Cost				**$148,323**

E. Land Development Workgroup

Approved Jan 2010, modified Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of San Diego	Not Assigned
Task 1 Meeting Support							
Subtask 1.A. Land Development Workgroup Meeting Support. Provide ongoing support for Land Development Workgroup meetings (research and develop written materials, preparing presentations, etc).							
Completion date	As-needed (est. monthly)						
Party conducting work	County						
Copermittee hourly costs	Senior Civil Engineer - County	35	76.18	$2,666	$2,666		
		0	0	$0			
Contract costs				$0			
Contract management costs				$0			
Other direct costs				$0			
Total				**$2,666**			
Subtask 1.B. Construction Sub-Workgroup Meeting Support. Provide ongoing support for Construction Sub-Workgroup meetings (research and develop written materials, preparing presentations, etc.)							
Completion date	As-needed (est. monthly)						
Party conducting work	City of San Diego						
Copermittee hourly costs	Senior Civil Engineer - City	55	76.18	$4,190		$4,190	
		0	0	$0			
Contract costs	Consultant Services to assist in developing regional guidelines on construction related issues, as identified by the copermittees, to comply with the Municipal permit Section D.2 and provide consisitenacy with the State Construction General Permit.			$0			
Contract management costs				$0			
Other direct costs				$0			
Total				**$4,190**			
Task 2 Development of Miscellaneous Work Products							
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Land Development Workgroup.							
Completion date	August 15, 2010 and February 15, 2011						
Party conducting work	County						
Copermittee hourly costs	Senior Civil Engineer - County	10	76.18	$762	$762		
		0	0	$0			
		0	0	$0			
Contract costs				$0			
Contract management costs				$0			
Other direct costs				$0			

E. Land Development Workgroup

Approved Jan 2010, modified Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of San Diego	Not Assigned
Total				**$762**			
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Land development Workgroup and its sub-workgroups.							
Completion date	November 30, 2010						
Party conducting work	County						
Copermittee hourly costs	Senior Civil Engineer - County	5	76.18	$381	$381		
		0	0	$0			
			0	$0			
Contract costs				$0			
Contract management costs				$0			
Other direct costs				$0			
Total				**$381**			
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.							
Completion date	November 30, 2010						
Party conducting work	County						
Copermittee hourly costs	Senior Civil Engineer - County	20	76.18	$1,524	$1,524		
		0	0	$0			
		0	0	$0			
Contract costs				$0			
Contract management costs				$0			
Other direct costs				$0			
Total				**$1,524**			
Subtask 2.D. Hydromodification Management Plan and Standard Urban Stormwater Mitigation Plan updates, training, and required monitoring.							
Party conducting work	County						
Copermittee hourly costs	Senior Civil Engineer - County	44	76.18	$3,352	$3,352		
			0	$0			
			0	$0			
Contract costs	Brown and Caldwell and/or SCCWRP to assist with training and HMP/SUSMP implementation, required HMP monitoring, and Regional Board required updates to documents.			$129,000	$129,000		
Contract management costs				$6,450	$6,450		
Other direct costs				$0			
Total				**$138,802**			

E. Land Development Workgroup

Approved Jan 2010, modified Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of San Diego	Not Assigned
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.							
Completion date	TBD						
Party conducting work	TBD						
Copermittee hourly costs		0 0	0 0	$0 $0			
Contract costs				$0			
Contract management costs				$0			
Other direct costs				($1)			
Total				**($1)**			
Total Estimated Cost				**$148,323**	**$144,135**	**$4,190**	**$0**

E. Land Development Workgroup			County of San Diego				City of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support										
Subtask 1.A. Land Development Workgroup Meeting Support.	**$2,666**	**$2,285**								
Hourly	$2,666	$2,285				$2,285				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 1.B. Construction Sub-workgroup Meeting Support.	**$4,190**	**$0**								
Hourly	$4,190	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Task 2 Development of Miscellaneous Work Products										
Subtask 2.A. Semi-annual Workgroup Updates.	**$762**	**$762**								
Hourly	$762	$762				$762				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$381**	**$1,524**								
Hourly	$381	$1,524				$1,524				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								

E. Land Development Workgroup			County of San Diego				City of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input	**$1,524**	**$381**								
Hourly	$1,524	$381				$381				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.D. Hydromodification Management Plan and SUSMP	**$138,802**	**$105,384**								
Hourly	$3,352	$3,352				$3,352				
Contracts	$129,000	$97,173				$97,173				
Contract management	$6,450	$4,859				$4,859				
Other direct	$0	$0								
Subtask 2.E. Unallocated	**($1)**	**$0**								
Hourly	$0	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	($1)	$0								
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$110,335	$0	$0	$0	$0
Totals	**$148,323**	**$110,335**								

E. Land Development Workgroup

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$144,135	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 110,335.49
		Totals	**$ 110,335.49**
	Unspent Balance		**$ 33,799.03**

City of San Diego	$4,190	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 4,189.90**

F. Municipal Sources Workgroup FY 2010-11

Approved by RMC March 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Municipal Sources Workgroup Meeting Support. Provide ongoing support for Municipal Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing (minimum quarterly)			
Party conducting work	Del Mar, Escondido, La Mesa, Other Copermittees (TBD)			
Copermittee hourly costs	Varies by Copermittee	34	$78.00	$2,652
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$2,652**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Municipal Sources Workgroup for the period of July 1 through December 31, 2010.				
Completion date	February 15, 2011			
Party conducting work	Copermittee (TBD)			
Copermittee hourly costs	Varies by Copermittee	5	$78.00	$390
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$390**
Subtask 2.B. FY 2011-12 Work Plans and Budgets. Develop for submittal to the Regional Program Planning Subcommittee the FY 2011-12 work plan and budget covering the planned activities of the Municipal Sources Workgroup.				
Completion date	November 30, 2010			
Party conducting work	Del Mar, Escondido, La Mesa, Other Copermittees (TBD)			
Copermittee hourly costs	Varies by Copermittee	10	$78.00	$780
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$780**

F. Municipal Sources Workgroup FY 2010-11

Approved by RMC March 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	Del Mar, Escondido, La Mesa, Other Copermittees (TBD)			
Copermittee hourly costs	Varies by Copermittee	10	$78.00	$780
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$780**
Subtask 2.D. Pilot Program Development and Implementation. Identify potential opportunities for pilot studies pertaining to municipal facilities and/or activities. Programs currently underway include development of regional training video for municipal staff, and development of standardized template for reporting municipal activities. Other opportunities could include BMP tests, regional waste collection efforts, facility enhancements, irrigation control projects, or other ideas. Use of outside parties and/or agencies may be considered as part of this effort.				
Completion date	Ongoing			
Party conducting work	TBD - based on specific pilot opportunities			
Copermittee hourly costs	TBD	140	$78.00	$10,920
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$10,920**
Subtask 2.E. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	N/A			
Party conducting work	N/A			
Copermittee hourly costs		0 0	0 0	$0 $0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**
Total Estimated Cost				**$15,522**

Target Estimated Cost (01/21/10)	**$15,590**

F. Municipal Sources Workgroup FY 2010-11

Updated by wokrgroup on 08/10/10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Municipal Sources Workgroup Meeting Support. Provide ongoing support for Municipal Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	Ongoing every other month (minimum quarterly)			
Party conducting work	Cities of Del Mar, Escondido, La Mesa, County of San Diego, and Other Copermittees (TBD)			
Copermittee hourly costs	Clean Water Manager - City of Del Mar	2	103.18	$206
	Storm Water Program Manager - City of La Mesa	5	60.14	$301
	Environmental Manager - City of Escondido	2	53.50	$107
	Program Coordinator - County of San Diego	2	59.27	$119
				$0
Contract costs	Consultant: Mikhail Ogawa Engineering. City of Del Mar provides contract management.			$200
Contract management costs				$10
Other direct costs	N/A			$0
Total				**$943**
Task 2 Required Workgroup Work Products				
Subtask 2.A. Semi-annual Workgroup Update. Provide a written update describing the key activities and accomplishments of the Municipal Sources Workgroup for the period of July 1 through December 31, 2010.				
Completion date	February 15, 2011			
Party conducting work	Cities of Del Mar and Escondido Co-Chairs			
Copermittee hourly costs	Clean Water Manager - City of Del Mar	2	$103.18	$206
	Environmental Manager - City of Escondido	2	$53.50	$107
				$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$313**
Subtask 2.B. Work Plans and Budgets. Updates to current Work Plans and Budgets and processing of expenditures for the Copermittees. Develop for submittal to the Regional Program Planning Subcommittee the FY 2011-12 work plan and budget covering the planned activities of the Municipal Sources Workgroup.				
Completion date	November 30, 2010			
Party conducting work	County of San Diego Budget Manager, City of La Mesa Secretary			
Copermittee hourly costs	Program Coordinator - County of San Diego	9	$59.27	$533
	Storm Water Program Manager - City of La Mesa	1	$60.14	$60
				$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$594**

F. Municipal Sources Workgroup FY 2010-11

Updated by wokrgroup on 08/10/10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	Cities of Del Mar, Escondido, and La Mesa			
Copermittee hourly costs	Clean Water Manager - City of Del Mar	0	$103.18	$0
	Environmental Manager - City of Escondido	2	$53.50	$107
	Storm Water Program Manager - City of La Mesa	2	$60.14	$120
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$227**
Task 3 Regional Municipal Sources Program				
Subtask 3.A.. Municipal Inventory. Standardize a municpal inventory template and populate with Region 9 San Diego municipal facilities and properties.				
Completion date	December 17, 2010			
Party conducting work	City of Del Mar with consultant support.			
Copermittee hourly costs	Clean Water Manager - City of Del Mar	1	$103.18	$103
	Environmental Manager - City of Escondido	0	$53.50	$0
	Program Coordinator - County of San Diego	0	$59.27	$0
	Storm Water Program Manager - City of La Mesa	0	$60.14	$0
				$0
Contract costs	Consultant: Mikhail Ogawa Engineering. City of Del Mar provides contract management.			$2,000
Contract management costs				$100
Other direct costs	N/A			$0
Total				**$2,203**

F. Municipal Sources Workgroup FY 2010-11

Updated by wokrgroup on 08/10/10

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 3.B. Municipal Prioritization. Review current jurisdictional prioritization processes and modify for a standardized regional prioritization of municipal facilities and properties.				
Completion date	March 30, 2011			
Party conducting work	City of Del Mar with consultant support, County of San Diego.			
Copermittee hourly costs	Clean Water Manager - City of Del Mar	2	$103.18	$206
	Environmental Manager - City of Escondido	0	$53.50	$0
	Program Coordinator - County of San Diego	4	$59.27	$237
	Storm Water Program Manager - City of La Mesa	0	$60.14	$0
				$0
Contract costs	Consultant: Mikhail Ogawa Engineering. City of Del Mar provides contract management.			$2,000
Contract management costs				$100
Other direct costs	N/A			$0
Total				**$2,543**
Subtask 3.C. Municipal Video. Updates to current Work Plans and Budgets and processing of expenditures for the Copermittees. Develop for submittal to the Regional Program Planning Subcommittee the FY 2011-12 work plan and budget covering the planned activities of the Municipal Sources Workgroup.				
Completion date	June 30, 2011			
Party conducting work	City of Del Mar and City of Escondido with consultant support			
Copermittee hourly costs	Clean Water Manager - City of Del Mar	12	$103.18	$1,238
	Environmental Manager - City of Escondido	10	$53.50	$535
	Program Coordinator - County of San Diego	6	$59.27	$356
	Storm Water Program Manager - City of La Mesa	6	$60.14	$361
				$0
Contract costs	Consultant: **TBD**. City of Escondido provides contract management.			$5,500
Contract management costs				$275
Other direct costs	Video props, signage, DVDs, etc.			$500
Total				**$8,765**
Task 4 Unallocated				
Subtask 4.A. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	N/A			
Party conducting work	N/A			
Copermittee hourly costs		0	$0.00	$2
		0	$0.00	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$2**

F. Municipal Sources Workgroup FY 2010-11			Updated by wokrgroup on 08/10/10	
Task	**Description**	**Estimated Hours**	**Hourly Rate**	**Estimated Cost**
Total Estimated Cost				**$15,590**

F. Municipal Sources Workgroup

Approved Jan 2010, modified Aug 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Del Mar	City of Escondido	City of La Mesa	County of San Diego	Not Assigned
Task 1 Meeting Support									
Subtask 1.A. Municipal Sources Workgroup Meeting Support. Provide ongoing support for Municipal Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).									
Completion date	As-needed (minimum quarterly)								
Party conducting work	Cities of Del Mar, Escondido, La Mesa, County of San Diego, and Other Copermittees (TBD)								
Copermittee hourly costs	Clean Water Manager - City of Del Mar	2	103.18	$206	$206				
	Storm Water Program Manager - City of La Mesa	5	60.14	$301			$301		
	Environmental Manager - City of Escondido	2	53.50	$107		$107			
	Program Coordinator - County of San Diego	2	59.27	$119				$119	
Contract costs	Consultant: Mikhail Ogawa Engineering. City of Del Mar provides contract management.			$200	$200				
Contract management costs				$10	$10				
Other direct costs				$0					
Total				**$943**					
Task 2 Required Workgroup Work Products									
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Municipal Sources Workgroup.									
Completion date	February 15, 2011								
Party conducting work	Cities of Del Mar and Escondido Co-Chairs								
Copermittee hourly costs	Clean Water Manager - City of Del Mar	2	$103.18	$206	$206				
	Environmental Manager - City of Escondido	2	$53.50	$107		$107			
Contract costs				$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$313**					
Subtask 2.B. FY 2010-11 Work Plans and Budgets. Develop for submittal to the Regional Program Planning Subcommittee the FY 2010-11 work plan and budget covering the planned activities of the Municipal Sources Workgroup.									
Completion date	November 30, 2010								
Party conducting work	County of San Diego Budget Manager, City of La Mesa Secretary								
Copermittee hourly costs	Program Coordinator - County of San Diego	9	$59.27	$533				$533	
	Storm Water Program Manager - City of La Mesa	1	$60.14	$60			$60		

F. Municipal Sources Workgroup

Approved Jan 2010, modified Aug 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Del Mar	City of Escondido	City of La Mesa	County of San Diego	Not Assigned
Contract costs				$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$594**					

F. Municipal Sources Workgroup

Approved Jan 2010, modified Aug 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Del Mar	City of Escondido	City of La Mesa	County of San Diego	Not Assigned
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2008-09 Regional URMP Annual Report. This task anticipatees that the reporting may be more complex for the 2008-09									
Completion date	November 30, 2010								
Party conducting work	Cities of Del Mar, Escondido, and La Mesa								
Copermittee hourly costs	Clean Water Manager - City of Del Mar	0	$103.18	$0	$0				
	Environmental Manager - City of Escondido	2	$53.50	$107		$107			
	Storm Water Program Manager - City of La Mesa	2	$60.14	$120			$120		
Contract costs				$0					
Contract management costs				$0					
Other direct costs				$0					
Total				**$227**					
Task 3 Regional Municipal Sources Program									
Subtask 3.A.. Municipal Inventory. Standardize a municpal inventory template and populate with Region 9 San Diego municipal facilities and properties.									
Completion date	December 17, 2010								
Party conducting work	City of Del Mar with consultant support.								
Copermittee hourly costs	Clean Water Manager - City of Del Mar	1	$103.18	$103	$103				
	Environmental Manager - City of Escondido	0	$53.50	$0		$0			
	Program Coordinator - County of San Diego	0	$59.27	$0				$0	
	Storm Water Program Manager - City of La Mesa	0	$60.14	$0			$0		
				$0					
Contract costs	Consultant: Mikhail Ogawa Engineering. City of Del Mar provides contract management.			$2,000	$2,000				
Contract management costs				$100	$100				
Other direct costs				$0					
Total				**$2,203**					
Subtask 3.B. Municipal Prioritization. Review current jurisdictional prioritization processes and modify for a standardized regional prioritization of municipal facilities and properties.									
Completion date	March 30, 2011								
Party conducting work	City of Del Mar with consultant support, County of San Diego.								
Copermittee hourly costs	Clean Water Manager - City of Del Mar	2	$103.18	$206	$206				
	Environmental Manager - City of Escondido	0	$53.50	$0		$0			
	Program Coordinator - County of San Diego	4	$59.27	$237				$237	

F. Municipal Sources Workgroup

Approved Jan 2010, modified Aug 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Del Mar	City of Escondido	City of La Mesa	County of San Diego	Not Assigned
	Storm Water Program Manager - City of La Mesa	0	$60.14	$0			$0		
				$0					
Contract costs	Consultant: Mikhail Ogawa Engineering. City of Del Mar provides contract management.			$2,000	$2,000				
Contract management costs				$100	$100				
Other direct costs				$0					
Total				**$2,543**					

F. Municipal Sources Workgroup

Approved Jan 2010, modified Aug 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	City of Del Mar	City of Escondido	City of La Mesa	County of San Diego	Not Assigned
Subtask 3.C. Municipal Video. Updates to current Work Plans and Budgets and processing of expenditures for the Copermittees. Develop for submittal to the Regional Program Planning Subcommittee the FY 2011-12 work plan and budget covering the planned activities of the Municipal Sources Workgroup.									
Completion date	June 30, 2011								
Party conducting work	City of Del Mar and City of Escondido with consultant support								
Copermittee hourly costs	Clean Water Manager - City of Del Mar	12	$103.18	$1,238	$1,238				
	Environmental Manager - City of Escondido	10	$53.50	$535		$535			
	Program Coordinator - County of San Diego	6	$59.27	$356				$356	
	Storm Water Program Manager - City of La Mesa	6	$60.14	$361			$361		
				$0					
Contract costs	Consultant: **TBD**. City of Escondido provides contract management.			$5,500		$5,500			
Contract management costs				$275		$275			
Other direct costs	Video props, signage, DVDs, etc.			$500					$500
Total				**$8,765**					
Task 4 Unallocated									
Subtask 4.A. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.									
Completion date	N/A								
Party conducting work	N/A								
Copermittee hourly costs		0	$0.00	$2					
		0	$0.00	$0					
Contract costs	N/A			$0					
Contract management costs				$0					
Other direct costs	N/A			$0					
Total				**$2**					
Total Estimated Cost				**$15,590**	$6,370	$6,631	$842	$1,245	$500

F. Municipal Sources Workgroup			City of Del Mar				City of Escondido				City of La Mesa				County of San Diego				
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter
Task 1 Meeting Support																			
Subtask 1.A. Meeting Support.	**$943**	**$0**																	
Hourly	$733	$0																	
Contracts	$200	$0																	
Contract management	$10	$0																	
Other direct	$0	$0																	
Task 2 Development of Miscellaneous Work Products																			
Subtask 2.A. Semi-annual Workgroup Updates.	**$313**	**$0**																	
Hourly	$313	$0																	
Contracts	$0	$0																	
Contract management	$0	$0																	
Other direct	$0	$0																	
Subtask 2.B. FY 2010-11 Work Plans and Budgets.	**$594**	**$0**																	
Hourly	$594	$0																	
Contracts	$0	$0																	
Contract management	$0	$0																	
Other direct	$0	$0																	
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$227**	**$0**																	
Hourly	$227	$0																	
Contracts	$0	$0																	
Contract management	$0	$0																	
Other direct	$0	$0																	
Task 3 Regional Municipal Sources Program																			
Subtask 3.A.. Municipal Inventory	**$2,203**	**$1,387**																	
Hourly	$103	$0																	
Contracts	$2,000	$1,321				$1,321													
Contract management	$100	$66				$66													
Other direct	$0	$0																	
Subtask 3.B. Municipal Prioritization.	**$2,543**	**$0**																	

F. Municipal Sources Workgroup			City of Del Mar				City of Escondido				City of La Mesa				County of San Diego				
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter
Hourly	$443	$0																	
Contracts	$2,000	$0																	
Contract management	$100	$0																	
Other direct	$0	$0																	
Subtask 3.C. Municipal Video	**$8,765**	**$6,092**																	
Hourly	$2,490	$842											$481	$361					
Contracts	$5,500	$5,000								$5,000									
Contract management	$275	$250								$250									
Other direct	$500	$0																	
Task 4 Unallocated																			
Subtask 4.A. Unallocated.	**$2**	**$0**																	
Hourly	$2	$0																	
Contracts	$0	$0																	
Contract management	$0	$0																	
Other direct	$0	$0																	
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$1,387	$0	$0	$0	$5,250	$0	$0	$481	$361	$0	$0	$0	$0	$0
Totals	**$15,590**	**$7,479**																	

F. Municipal Sources Workgroup			Not Assigned		
Task	Adopted Budget	Accurred Expenditures	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support					
Subtask 1.A. Meeting Support.	**$943**	**$0**			
Hourly	$733	$0			
Contracts	$200	$0			
Contract management	$10	$0			
Other direct	$0	$0			
Task 2 Development of Miscellaneous Work Products					
Subtask 2.A. Semi-annual Workgroup Updates.	**$313**	**$0**			
Hourly	$313	$0			
Contracts	$0	$0			
Contract management	$0	$0			
Other direct	$0	$0			
Subtask 2.B. FY 2010-11 Work Plans and Budgets.	**$594**	**$0**			
Hourly	$594	$0			
Contracts	$0	$0			
Contract management	$0	$0			
Other direct	$0	$0			
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$227**	**$0**			
Hourly	$227	$0			
Contracts	$0	$0			
Contract management	$0	$0			
Other direct	$0	$0			
Task 3 Regional Municipal Sources Program					
Subtask 3.A.. Municipal Inventory	**$2,203**	**$1,387**			
Hourly	$103	$0			
Contracts	$2,000	$1,321			
Contract management	$100	$66			
Other direct	$0	$0			
Subtask 3.B. Municipal Prioritization.	**$2,543**	**$0**			

F. Municipal Sources Workgroup			Not Assigned		
Task	Adopted Budget	Accurred Expenditures	2nd Quarter	3rd Quarter	4th Quarter
Hourly	$443	$0			
Contracts	$2,000	$0			
Contract management	$100	$0			
Other direct	$0	$0			
Subtask 3.C. Municipal Video	**$8,765**	**$6,092**			
Hourly	$2,490	$842			
Contracts	$5,500	$5,000			
Contract management	$275	$250			
Other direct	$500	$0			
Task 4 Unallocated					
Subtask 4.A. Unallocated.	**$2**	**$0**			
Hourly	$2	$0			
Contracts	$0	$0			
Contract management	$0	$0			
Other direct	$0	$0			
Total Expenditures per Quarter for each Copermittee			$0	$0	$0
Totals	**$15,590**	**$7,479**			

F. Municipal Sources Workgroup

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
City of Del Mar	$6,370	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 1,386.61
		Totals	**$ 1,386.61**
	Unspent Balance		**$ 4,983.81**
City of Escondido	$6,631	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 5,250.00
		Totals	**$ 5,250.00**
	Unspent Balance		**$ 1,381.00**
City of La Mesa	$842	1st	$ -
		2nd	$ -
		3rd	$ 481.12
		4th	$ 360.84
		Totals	**$ 841.96**
	Unspent Balance		**$ -**
County of San Diego	$1,245	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 1,244.67**
Not Assigned	$500	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 500.00**

G. Industrial and Commercial Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support. Provide ongoing support for Industrial and Commercial Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	As-needed (minimum quarterly)			
Party conducting work	Port of San Diego and City of El Cajon			
Copermittee hourly costs	Senior Environmental Specialist - Port	20	69.05	$1,381
	Associate Civil Engineer - City of El Cajon	20	69.00	$1,380
	Assistant Environmental Specialist - Port	10	49.10	$491
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,252**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Industrial and Commercial Sources Workgroup.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	Port of San Diego and City of El Cajon			
Copermittee hourly costs	Senior Environmental Specialist - Port	2.5	69.05	$173
	Associate Civil Engineer - City of El Cajon	2.5	69.00	$173
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$345**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Industrial and Commercial Sources Workgroup.				
Completion date	November 30, 2010			
Party conducting work	Port of San Diego and City of El Cajon			
Copermittee hourly costs	Senior Environmental Specialist - Port	5	69.05	$345
	Associate Civil Engineer - City of El Cajon	5	69.00	$345
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$690**

G. Industrial and Commercial Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	Port of San Diego and City of El Cajon			
Copermittee hourly costs	Senior Environmental Specialist - Port	5	69.05	$345
	Associate Civil Engineer - City of El Cajon	5	69.00	$345
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$690**
Subtask 2.D. Regional Program Approach - IC Conceptual Plan Review. The conceptual plan was finalized in FY2009-10 and is the guidance document for developing future work plan tasks and budgets. This guidance document will be reviewed and revised as needed annually.				
Completion date	Ongoing			
Party conducting work	Port of San Diego			
Copermittee hourly costs	Senior Environmental Specialist - Port	8	69.05	$552
		0	0.00	$0
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$552**
Subtask 2.E. Regional Reporting and Assessment Standards. Develop regional minimum standards for reporting IC related information in a manner that facilitates watershed and/or regional assessments. Incorporate relevant regional/watershed IC data and findings into annual reports (JURMP, RURMP, WURMP) and other Permit-required documents (ROWD, BLTEA), where applicable.				
Completion date	June 30, 2011			
Party conducting work	Port of San Diego and Consultant TBD			
Copermittee hourly costs	Senior Environmental Specialist - Port	0	69.05	$0
	Assistant Environmental Specialist - Port	0	49.10	$0
		0	0.00	$0
Contract costs				$20,000
Contract management costs				$1,000
Other direct costs				$0
Total				**$21,000**

G. Industrial and Commercial Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.F. Develop Regional Inspection Standards. Identify common pollutant generating activities and BMPs. Develop regional guidance for inspectors to achieve regional consistency during inspections. Standardize information collected during inspections so that facility and/or BMP assessments can occur at regional and/or watershed levels.				
Completion date	June 30, 2011			
Party conducting work	City of Poway (sub-workgroup lead)			
Copermittee hourly costs	Engineering Technician II	40	47.31	$1,892
		0	0.00	$0
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,892**
Subtask 2.G. San Diego River Watershed Core BMP Pilot Program. Collaborate with the San Diego River Watershed to implement the Core IC Regional BMPs at the identified high priority pollutant generating sources. Conduct assessments to determine 1) the appropriateness of BMP guidance standards in achieving regional inspection consistency, 2) the percentage of properly implemented BMPs, and 3) the effectiveness of proper BMP implementation in reducing pollutants. Coordination with SD River consultants may also be included to conduct monitoring to assess BMP effectiveness and pollutant reductions.				
Completion date	Ongoing			
Party conducting work	City of El Cajon			
Copermittee hourly costs	Associate Civil Engineer - City of El Cajon	20	69.00	$1,380
		0	0.00	$0
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,380**
Subtask 2.H. Regional Mobile Business Program. Provide as-needed support and maintenance of the Regional Mobile Businesses Database. Efforts include report enhancements, minor website refinements, and data adjustments, where applicable. Also includes cost for hosting database on external website and providing user reports and staticstics to the workgroup.				
Completion date	Ongoing			
Party conducting work	Port of San Diego with consultant support (TBD)			
Copermittee hourly costs	Assistant Environmental Specialist - Port	16	49.10	$786
	Senior Environmental Specialist - Port	5	69.05	$345
		0	0.00	$0
Contract costs				$7,000
Contract management costs				$350
Other direct costs				$0
Total				**$8,481**

G. Industrial and Commercial Sources Workgroup FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.I. BMP Toolbox Website Improvements. Coordinate with County consultant to improve BMP Toolbox website. Incorporate Regional IC Workgroup BMP information into website where applicable. If needed, provide consultant services to improve website				
Completion date	June 30, 2011			
Party conducting work	TBD			
Copermittee hourly costs	Copermittee TBD - cost estimated	20	70.00	$1,400
		0	0.00	$0
		0	0.00	$0
Contract costs				$9,000
Contract management costs				$450
Other direct costs				$0
Total				**$10,850**
Subtask 2.J. Regional IC Education and Training Events. Conduct regional training events for IC inspectors (and code compliance personnel). Events will be geared at improving consistency of documenting BMP implementation and determining proper BMP implementation. Regional education materials for municipal inspection staff and also for business may also be developed as a part of this task.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs	Copermittee TBD - cost estimated	20	70.00	$1,400
		0	0.00	$0
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,400**
Subtask 2.K. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$273
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$273**
Total Estimated Cost				**$50,806**

G. Industrial and Commercial Sources Workgroup

FY 2010-11, modified Nov 2010 with roll-overs

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support. Provide ongoing support for Industrial and Commercial Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).				
Completion date	As-needed (minimum quarterly)			
Party conducting work	Port of San Diego and City of El Cajon			
Copermittee hourly costs	Senior Environmental Specialist - Port	20	69.05	$1,381
	Associate Civil Engineer - City of El Cajon	20	69.00	$1,380
	Assistant Environmental Specialist - Port	10	49.10	$491
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$3,252**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Industrial and Commercial Sources Workgroup.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	Port of San Diego and City of El Cajon			
Copermittee hourly costs	Senior Environmental Specialist - Port	2.5	69.05	$173
	Associate Civil Engineer - City of El Cajon	2.5	69.00	$173
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$345**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Industrial and Commercial Sources Workgroup.				
Completion date	November 30, 2010			
Party conducting work	Port of San Diego and City of El Cajon			
Copermittee hourly costs	Senior Environmental Specialist - Port	5	69.05	$345
	Associate Civil Engineer - City of El Cajon	5	69.00	$345
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$690**

G. Industrial and Commercial Sources Workgroup

FY 2010-11, modified Nov 2010 with roll-overs

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	Port of San Diego and City of El Cajon			
Copermittee hourly costs	Senior Environmental Specialist - Port	5	69.05	$345
	Associate Civil Engineer - City of El Cajon	5	69.00	$345
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$690**
Subtask 2.D. Regional Program Approach - IC Conceptual Plan Review. The conceptual plan was finalized in FY2009-10 and is the guidance document for developing future work plan tasks and budgets. This guidance document will be reviewed and revised as needed annually.				
Completion date	Ongoing			
Party conducting work	Port of San Diego			
Copermittee hourly costs	Senior Environmental Specialist - Port	8	69.05	$552
		0	0.00	$0
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$552**
Subtask 2.E. Regional Reporting and Assessment Standards. Develop regional minimum standards for reporting IC related information in a manner that facilitates watershed and/or regional assessments. Incorporate relevant regional/watershed IC data and findings into annual reports (JURMP, RURMP, WURMP) and other Permit-required documents (ROWD, BLTEA), where applicable.				
Completion date	June 30, 2011			
Party conducting work	Port of San Diego and Consultant TBD			
Copermittee hourly costs	Senior Environmental Specialist - Port	0	69.05	$0
	Assistant Environmental Specialist - Port	0	49.10	$0
		0	0.00	$0
Contract costs				$20,000
Contract management costs				$1,000
Other direct costs				$0
Total				**$21,000**

G. Industrial and Commercial Sources Workgroup

FY 2010-11, modified Nov 2010 with roll-overs

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.F. Develop Regional Inspection Standards. Identify common pollutant generating activities and BMPs. Develop regional guidance for inspectors to achieve regional consistency during inspections. Standardize information collected during inspections so that facility and/or BMP assessments can occur at regional and/or watershed levels.				
Completion date	June 30, 2011			
Party conducting work	City of Poway (sub-workgroup lead)			
Copermittee hourly costs	Engineering Technician II	40	47.31	$1,892
		0	0.00	$0
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,892**
Subtask 2.G. San Diego River Watershed Core BMP Pilot Program. Collaborate with the San Diego River Watershed to implement the Core IC Regional BMPs at the identified high priority pollutant generating sources. Conduct assessments to determine 1) the appropriateness of BMP guidance standards in achieving regional inspection consistency, 2) the percentage of properly implemented BMPs, and 3) the effectiveness of proper BMP implementation in reducing pollutants. Coordination with SD River consultants may also be included to conduct monitoring to assess BMP effectiveness and pollutant reductions.				
Completion date	Ongoing			
Party conducting work	City of El Cajon			
Copermittee hourly costs	Associate Civil Engineer - City of El Cajon	20	69.00	$1,380
		0	0.00	$0
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,380**
Subtask 2.H. Regional Mobile Business Program. Provide as-needed support and maintenance of the Regional Mobile Businesses Database. Efforts include report enhancements, minor website refinements, and data adjustments, where applicable. Also includes cost for hosting database on external website and providing user reports and staticstics to the workgroup.				
Completion date	Ongoing			
Party conducting work	Port of San Diego with consultant support (TBD)			
Copermittee hourly costs	Assistant Environmental Specialist - Port	16	49.10	$786
	Senior Environmental Specialist - Port	5	69.05	$345
		0	0.00	$0
Contract costs	Includes roll-over from FY 09-10. Put $9,700 inot contract costs.			$16,700
Contract management costs				$835
Other direct costs				$0
Total				**$18,666**

G. Industrial and Commercial Sources Workgroup

FY 2010-11, modified Nov 2010 with roll-overs

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.I. BMP Toolbox Website Improvements. Coordinate with County consultant to improve BMP Toolbox website. Incorporate Regional IC Workgroup BMP information into website where applicable. If needed, provide consultant services to improve website				
Completion date	June 30, 2011			
Party conducting work	TBD			
Copermittee hourly costs	Copermittee TBD - cost estimated	20	70.00	$1,400
		0	0.00	$0
		0	0.00	$0
Contract costs				$9,000
Contract management costs				$450
Other direct costs				$0
Total				**$10,850**
Subtask 2.J. Regional IC Education and Training Events. Conduct regional training events for IC inspectors (and code compliance personnel). Events will be geared at improving consistency of documenting BMP implementation and determining proper BMP implementation. Regional education materials for municipal inspection staff and also for business may also be developed as a part of this task.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs	Copermittee TBD - cost estimated	20	70.00	$1,400
		0	0.00	$0
		0	0.00	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$1,400**
Subtask 2.K. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$88
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$88**
Total Estimated Cost				**$60,806**

G. Industrial and Commercial Sources Workgroup

Approved March 2010, modified Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	Port of San Diego	City of El Cajon	City of Vista	City of Poway	County of San Diego	Not Assigned
Task 1 Meeting Support										
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support. Provide ongoing support for Industrial and Commercial Sources Workgroup meetings (research and develop written materials, preparing presentations, etc).										
Completion date	As-needed (minimum quarterly)									
Party conducting work	Port of San Diego and City of El Cajon									
Copermittee hourly costs	Senior Environmental Specialist - Port	20	69.05	$1,381	$1,381					
	Associate Civil Engineer - City of El Cajon	20	69.00	$1,380		$1,380				
	Assistant Environmental Specialist - Port	10	49.10	$491	$491					
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$3,252**						
Task 2 Development of Miscellaneous Work Products										
Subtask 2.A. Semi-annual Workgroup Updates. Provide written updates describing the key activities and accomplishments of the Industrial and Commercial Sources Workgroup.										
Completion date	August 15, 2010 and February 15, 2011									
Party conducting work	Port of San Diego and City of El Cajon									
Copermittee hourly costs	Senior Environmental Specialist - Port	2.5	69.05	$173	$173					
	Associate Civil Engineer - City of El Cajon	2.5	69.00	$173		$173				
		0	0.00	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$345**						
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Industrial and Commercial Sources Workgroup.										
Completion date	November 30, 2010									
Party conducting work	Port of San Diego and City of El Cajon									
Copermittee hourly costs	Senior Environmental Specialist - Port	5	69.05	$345	$345					
	Associate Civil Engineer - City of El Cajon	5	69.00	$345		$345				
		0	0.00	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$690**						

G. Industrial and Commercial Sources Workgroup

Approved March 2010, modified Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	Port of San Diego	City of El Cajon	City of Vista	City of Poway	County of San Diego	Not Assigned
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.										
Completion date	November 30, 2010									
Party conducting work	Port of San Diego and City of El Cajon									
Copermittee hourly costs	Senior Environmental Specialist - Port	5	69.05	$345	$345					
	Associate Civil Engineer - City of El Cajon	5	69.00	$345		$345				
		0	0.00	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$690**						
Subtask 2.D. Regional Program Approach - IC Conceptual Plan Review. The conceptual plan was finalized in FY2009-10 and is the guidance document for developing future work plan tasks and budgets. This guidance document will be reviewed and revised as needed annually.										
Completion date	Ongoing									
Party conducting work	Port of San Diego									
Copermittee hourly costs	Senior Environmental Specialist - Port	8	69.05	$552	$552					
		0	0.00	$0						
		0	0.00	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$552**						
Subtask 2.E. Regional Reporting and Assessment Standards. Develop regional minimum standards for reporting IC related information in a manner that facilitates watershed and/or regional assessments. Incorporate relevant regional/watershed IC data and findings into annual reports (JURMP, RURMP, WURMP) and other Permit-required documents (ROWD, BLTEA), where applicable.										
Completion date	June 30, 2011									
Party conducting work	Port of San Diego and Consultant TBD									
Copermittee hourly costs	Senior Environmental Specialist - Port	0	69.05	$0						
	Assistant Environmental Specialist - Port	0	49.10	$0						
		0	0.00	$0						
Contract costs				$20,000	$20,000					
Contract management costs				$1,000	$1,000					
Other direct costs				$0						
Total				**$21,000**						

G. Industrial and Commercial Sources Workgroup

Approved March 2010, modified Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	Port of San Diego	City of El Cajon	City of Vista	City of Poway	County of San Diego	Not Assigned
Subtask 2.F. Develop Regional Inspection Standards. Identify common pollutant generating activities and BMPs. Develop regional guidance for inspectors to achieve regional consistency during inspections. Standardize information collected during inspections so that facility and/or BMP assessments can occur at regional and/or watershed levels.										
Completion date	June 30, 2011									
Party conducting work	City of Poway (sub-workgroup lead)									
Copermittee hourly costs	Engineering Technician II	40	47.31	$1,892				$1,892		
		0	0.00	$0						
		0	0.00	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$1,892**						
Subtask 2.G. San Diego River Watershed Core BMP Pilot Program. Collaborate with the San Diego River Watershed to implement the Core IC Regional BMPs at the identified high priority pollutant generating sources. Conduct assessments to determine 1) the appropriateness of BMP guidance standards in achieving regional inspection consistency, 2) the percentage of properly implemented BMPs, and 3) the effectiveness of proper BMP implementation in reducing pollutants. Coordination with SD River consultants may also be included to conduct monitoring to assess BMP effectiveness and pollutant reductions.										
Completion date	Ongoing									
Party conducting work	City of El Cajon									
Copermittee hourly costs	Associate Civil Engineer - City of El Cajon	20	69.00	$1,380		$1,380				
		0	0.00	$0						
		0	0.00	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$1,380**						
Subtask 2.H. Regional Mobile Business Program. Provide as-needed support and maintenance of the Regional Mobile Businesses Database. Efforts include report enhancements, minor website refinements, and data adjustments, where applicable. Also includes cost for hosting database on external website and providing user reports and staticstics to the workgroup.										
Completion date	Ongoing									
Party conducting work	Port of San Diego with consultant support (TBD)									
Copermittee hourly costs	Assistant Environmental Specialist - Port	16	49.10	$786	$786					
	Senior Environmental Specialist - Port	5	69.05	$345	$345					
		0	0.00	$0						
Contract costs				$16,700	$16,700					
Contract management costs				$835	$835					
Other direct costs				$0						
Total				**$18,666**						

G. Industrial and Commercial Sources Workgroup

Approved March 2010, modified Nov 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	Port of San Diego	City of El Cajon	City of Vista	City of Poway	County of San Diego	Not Assigned
Subtask 2.I. BMP Toolbox Website Improvements. Coordinate with County consultant to improve BMP Toolbox website. Incorporate Regional IC Workgroup BMP information into website where applicable. If needed, provide consultant services to improve website										
Completion date	June 30, 2011									
Party conducting work	TBD									
Copermittee hourly costs	Copermittee TBD - cost estimated	20	70.00	$1,400					$1,400	
		0	0.00	$0						
		0	0.00	$0						
Contract costs	County of San Diego Contract with Nonprofit Management Systems			$9,000					$9,000	
Contract management costs				$450					$450	
Other direct costs				$0						
Total				**$10,850**						
Subtask 2.J. Regional IC Education and Training Events. Conduct regional training events for IC inspectors (and code compliance personnel). Events will be geared at improving consistency of documenting BMP implementation and determining proper BMP implementation. Regional education materials for municipal inspection staff and also for business may also be developed as a part of this task.										
Completion date	TBD									
Party conducting work	TBD									
Copermittee hourly costs	Copermittee TBD - cost estimated	20	70.00	$1,400						$1,400
		0	0.00	$0						
		0	0.00	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$1,400**						
Subtask 2.K. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.										
Completion date	TBD									
Party conducting work	TBD									
Copermittee hourly costs		0	0	$88						
		0	0	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$88**						
Total Estimated Cost				**$60,806**	**$42,953**	**$3,623**	**$0**	**$1,892**	**$10,850**	**$1,400**

G. Industrial and Commercial Sources Workgroup			Port of San Diego				City of El Cajon				City of Vista				City of Poway			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																		
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support.	**$3,252**	**$380**																
Hourly	$3,252.00	$379.50					$69.00	$138.00	$34.50	$138.00								
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Task 2 Development of Miscellaneous Work Products																		
Subtask 2.A. Semi-annual Workgroup Updates.	**$345.13**	**$0.00**																
Hourly	$345.13	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$690.25**	**$34.50**																
Hourly	$690.25	$34.50						$34.50										
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$690.25**	**$172.50**																
Hourly	$690.25	$172.50						**$172.50**										
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.D. Regional Program Approach - IC Conceptual Plan Review	**$552.40**	**$0.00**																
Hourly	$552.40	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																

G. Industrial and Commercial Sources Workgroup			Port of San Diego				City of El Cajon				City of Vista				City of Poway			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Other direct	$0.00	$0.00																
Subtask 2.E. Regional Reporting and Assessment Standards	**$21,000.00**	**$10,656.98**																
Hourly	$0.00	$0.00																
Contracts	$20,000.00	$10,149.50						**$1,584.00**	**$5,070.00**	**$3,495.50**								
Contract management	$1,000.00	$507.48						**$79.20**	**$253.50**	**$174.78**								
Other direct	$0.00	$0.00																
Subtask 2.F. Develop Regional Inspection Standards	**$1,892.40**	**$0.00**																
Hourly	$1,892.40	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																

G. Industrial and Commercial Sources Workgroup			Port of San Diego				City of El Cajon				City of Vista				City of Poway			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.G. San Diego River Watershed Core BMP Pilot Program	**$1,380.00**	**$0.00**																
Hourly	$1,380.00	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.H. Regional Mobile Business Program	**$18,665.85**	**$0.00**																
Hourly	$1,130.85	$0.00																
Contracts	$16,700.00	$0.00																
Contract management	$835.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.I. BMP Toolbox Website Improvements	**$10,850.00**	**$9,515.63**																
Hourly	$1,400.00	$0.00																
Contracts	$9,000.00	$9,062.50																
Contract management	$450.00	$453.13																
Other direct	$0.00	$0.00																
Subtask 2.J. Regional IC Education and Training Events	**$1,400.00**	**$0.00**																
Hourly	$1,400.00	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.K. Unallocated.	**$88.00**	**$0.00**																
Hourly	$88.00	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Total Expenditures per Quarter for each Copermittee			$0.00	$0.00	$0.00	$0.00	$69.00	$2,008.20	$5,358.00	$3,808.28	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

G. Industrial and Commercial Sources Workgroup				Port of San Diego				City of El Cajon				City of Vista				City of Poway			
Task	Adopted Budget		Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Totals	**$60,806.28**		**$20,759.11**																

G. Industrial and Commercial Sources Workgroup			County of San Diego				Unassigned			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support										
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support.	**$3,252**	**$380**								
Hourly	$3,252.00	$379.50								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								
Other direct	$0.00	$0.00								
Task 2 Development of Miscellaneous Work Products										
Subtask 2.A. Semi-annual Workgroup Updates.	**$345.13**	**$0.00**								
Hourly	$345.13	$0.00								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								
Other direct	$0.00	$0.00								
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$690.25**	**$34.50**								
Hourly	$690.25	$34.50								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								
Other direct	$0.00	$0.00								
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$690.25**	**$172.50**								
Hourly	$690.25	$172.50								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								
Other direct	$0.00	$0.00								
Subtask 2.D. Regional Program Approach - IC Conceptual Plan Review	**$552.40**	**$0.00**								
Hourly	$552.40	$0.00								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								

G. Industrial and Commercial Sources Workgroup			County of San Diego				Unassigned			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Other direct	$0.00	$0.00								
Subtask 2.E. Regional Reporting and Assessment Standards	**$21,000.00**	**$10,656.98**								
Hourly	$0.00	$0.00								
Contracts	$20,000.00	$10,149.50								
Contract management	$1,000.00	$507.48								
Other direct	$0.00	$0.00								
Subtask 2.F. Develop Regional Inspection Standards	**$1,892.40**	**$0.00**								
Hourly	$1,892.40	$0.00								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								
Other direct	$0.00	$0.00								

G. Industrial and Commercial Sources Workgroup			County of San Diego				Unassigned			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.G. San Diego River Watershed Core BMP Pilot Program	**$1,380.00**	**$0.00**								
Hourly	$1,380.00	$0.00								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								
Other direct	$0.00	$0.00								
Subtask 2.H. Regional Mobile Business Program	**$18,665.85**	**$0.00**								
Hourly	$1,130.85	$0.00								
Contracts	$16,700.00	$0.00								
Contract management	$835.00	$0.00								
Other direct	$0.00	$0.00								
Subtask 2.I. BMP Toolbox Website Improvements	**$10,850.00**	**$9,515.63**								
Hourly	$1,400.00	$0.00								
Contracts	$9,000.00	$9,062.50				**$9,062.50**				
Contract management	$450.00	$453.13				**$453.13**				
Other direct	$0.00	$0.00								
Subtask 2.J. Regional IC Education and Training Events	**$1,400.00**	**$0.00**								
Hourly	$1,400.00	$0.00								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								
Other direct	$0.00	$0.00								
Subtask 2.K. Unallocated.	**$88.00**	**$0.00**								
Hourly	$88.00	$0.00								
Contracts	$0.00	$0.00								
Contract management	$0.00	$0.00								
Other direct	$0.00	$0.00								
Total Expenditures per Quarter for each Copermittee			$0.00	$0.00	$0.00	$9,515.63	$0.00	$0.00	$0.00	$0.00

G. Industrial and Commercial Sources Workgroup				County of San Diego				Unassigned			
Task	Adopted Budget		Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Totals	$60,806.28		$20,759.11								

G. Industrial and Commercial Sources Workgroup
FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
Port of San Diego	$42,953	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 42,953.38**
City of El Cajon	$3,623	1st	$ 69.00
		2nd	$ 2,008.20
		3rd	$ 5,358.00
		4th	$ 3,808.28
		Totals	**$ 11,243.48**
	Unspent Balance		**$ (7,620.98)**
City of Vista	$0	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ -**
City of Poway	$1,892	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 1,892.40**
County of San Diego	$10,850	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 9,515.63
		Totals	**$ 9,515.63**
	Unspent Balance		**$ 1,334.37**
Unassigned	$1,400	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 1,400.00**

H. Regional WURMP Workgroup — FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Regional WURMP Workgroup Meeting Support. Provide ongoing support for Regional WURMP Workgroup meetings (researching and developing written materials, preparing presentations, etc).				
Completion date	As-needed (minimum quarterly)			
Parties conducting work	County of San Diego, City of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	12	$ 72.20	$866
	Program Manager (City of San Diego)	12	$ 67.93	$815
			$ -	$0
Contract costs	N/A			$0
Contract management costs	N/A			$0
Other direct costs	N/A			$0
Total				**$1,682**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	5	$ 72.20	$361
	Land Use / Env Planner III (County)	5	$ 63.44	$317
			$ -	$0
Contract costs	N/A			$0
Contract management costs	N/A			$0
Other direct costs	N/A			$0
Total				**$678**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Regional WURMP Workgroup.				
Completion date	November 30, 2010			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	10	$ 72.20	$722
			$ -	$0
			$ -	$0
Contract costs	N/A			$0
Contract management costs	N/A			$0
Other direct costs	N/A			$0
Total				**$722**

H. Regional WURMP Workgroup — FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.C. Semi-annual Workgroup Update. Provide, as requested by the Program Planning Subcommittee, two written updates describing the key activities and accomplishments of the Regional WURMP Workgroup for the periods of January 1, 2010 through June 30, 2010, and July 1 through December 31, 2010.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	5	$ 72.20	$361
			$ -	$0
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$361**
Subtask 2.D. Development of Watershed Program Approach. Develop a watershed program approach that describes the Copermittees' priorities and preferences for restructuring the watershed components of the Municipal Stormwater Permit. This task may include development of proposed Permit language, coordination with Regional Water Quality Control Board staff regarding Permit requirements, and development of approaches to better coordinate the Permit's watershed requirements with TMDL implementation plans and reports.				
Completion date	June 30, 2011			
Parties conducting work	Consultant (TBD), County of San Diego, City of Carlsbad, City of Escondido, City of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	20	$ 72.20	$1,444
	Land Use / Env Planner III (County)	20	$ 63.44	$1,269
	Environmental Programs Manager (Carlsbad)	20	$ 66.24	$1,325
	Environmental Programs Manager (Escondido)	20	$ 56.65	$1,133
	Program Manager (City of San Diego)	20	$ 67.93	$1,359
Contract costs	Consultant (TBD)			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$6,529**
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs. Develop a white paper or model approach that includes: 1) a prioritized list of the programmatic reporting and assessment measures in need of standardization for watershed-scale interpretation and integration, 2) specific recommendations for standardized measures, and 3) an annotated outline of a recommended annual report format that would integrate existing JURMP, WURMP, RURMP, TMDL, and monitoring reports at the watershed scale as appropriate.				
Completion date	June 30, 2011			
Party conducting work	Consultant (TBD), County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	10	$ 72.20	$722
	Land Use / Env Planner III (County)	10	$ 63.44	$634
			$ -	$0
Contract costs	Consultant (TBD)			$20,000
Contract management costs				$1,000
Other direct costs	N/A			$0
Total				**$22,356**

H. Regional WURMP Workgroup — FY 2010-11

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Subtask 2.F. Watershed Activities Database. Develop a database of watershed activities currently being implemented or planned throughout the San Diego region. Develop a template or form to be used to populate the database, which will be used as a tool for sharing information about pilot projects and other relevant watershed activities across watershed groups. The template/form will include information on activity type, pollutants addressed, pollutant sources addressed, effectiveness measurements, costs, staff burden, and other data to be determined.				
Completion date	June 30, 2011			
Party conducting work	Consultant (TBD), County of San Diego, City of San Diego, Port of San Diego			
Copermittee hourly costs	Land Use / Env Planner III (County)	60	$ 63.44	$3,806
	Associate Planner (City of San Diego)	60	$ 45.88	$2,753
	Associate Environmental Specialist (Port of San Diego)	60	$ 54.10	$3,246
Contract costs	Consultant (TBD)			$10,000
Contract management costs				$500
Other direct costs	N/A			$0
Total				**$20,305**
Subtask 2.G. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.				
Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**
Total Estimated Cost				**$52,634**

H. Regional WURMP Workgroup

FY 2010-11 Modified Oct 2010

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Regional WURMP Workgroup Meeting Support. Provide ongoing support for Regional WURMP Workgroup meetings (researching and developing written materials, preparing presentations, etc).				
Completion date	As-needed (minimum quarterly)			
Parties conducting work	County of San Diego, City of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	12	$ 72.20	$866
	Program Manager (City of San Diego)	12	$ 67.93	$815
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$1,682**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	5	$ 72.20	$361
	Land Use / Env Planner III (County)	5	$ 63.44	$317
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$678**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Regional WURMP Workgroup.				
Completion date	November 30, 2010			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	10	$ 72.20	$722
			$ -	$0
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$722**
Subtask 2.C. Semi-annual Workgroup Update. Provide, as requested by the Program Planning Subcommittee, two written updates describing the key activities and accomplishments of the Regional WURMP Workgroup for the periods of January 1, 2010 through June 30, 2010, and July 1 through December 31, 2010.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	5	$ 72.20	$361
			$ -	$0
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$361**

~~**Subtask 2.D. Development of Watershed Program Approach.** Develop a watershed program approach that describes the Copermittees' priorities and preferences for restructuring the watershed components of the Municipal Stormwater Permit. This task may include development of proposed Permit language, coordination with Regional Water Quality Control Board staff regarding Permit requirements, and development of approaches to better coordinate the Permit's watershed requirements with TMDL implementation plans and reports.~~

~~**Completion date**~~	~~June 30, 2011~~			
~~**Parties conducting work**~~	~~Consultant (TBD), County of San Diego, City of Carlsbad, City of Escondido, City of San Diego~~			
~~**Copermittee hourly costs**~~	~~Land Use / Env Planning Mgr (County)~~	~~20~~	~~$ 72.20~~	~~$1,444~~
	~~Land Use / Env Planner III (County)~~	~~20~~	~~$ 63.44~~	~~$1,269~~
	~~Environmental Programs Manager (Carlsbad)~~	~~20~~	~~$ 66.24~~	~~$1,325~~
	~~Environmental Programs Manager (Escondido)~~	~~20~~	~~$ 56.65~~	~~$1,133~~
	~~Program Manager (City of San Diego)~~	~~20~~	~~$ 67.93~~	~~$1,359~~
~~**Contract costs**~~	~~Consultant (TBD)~~			~~$0~~
~~**Contract management costs**~~				~~$0~~
~~**Other direct costs**~~	~~N/A~~			~~$0~~
~~**Total**~~				~~**$6,529**~~

~~**Subtask 2.E. Watershed Data, Reporting, and Assessment Needs.** Develop a white paper or model approach that includes: 1) a prioritized list of the programmatic reporting and assessment measures in need of standardization for watershed-scale interpretation and integration, 2) specific recommendations for standardized measures, and 3) an annotated outline of a recommended annual report format that would integrate existing JURMP, WURMP, RURMP, TMDL, and monitoring reports at the watershed scale as appropriate.~~

~~**Completion date**~~	~~June 30, 2011~~			
~~**Party conducting work**~~	~~Consultant (TBD), County of San Diego~~			
~~**Copermittee hourly costs**~~	~~Land Use / Env Planning Mgr (County)~~	~~10~~	~~$ 72.20~~	~~$722~~
	~~Land Use / Env Planner III (County)~~	~~10~~	~~$ 63.44~~	~~$634~~
			~~$ -~~	~~$0~~
~~**Contract costs**~~	~~Consultant (TBD)~~			~~$20,000~~
~~**Contract management costs**~~				~~$1,000~~
~~**Other direct costs**~~	~~N/A~~			~~$0~~
~~**Total**~~				~~**$22,356**~~

Subtask 2.F. Watershed Activities Database. Develop a database of watershed activities currently being implemented or planned throughout the San Diego region. Develop a template or form to be used to populate the database, which will be used as a tool for sharing information about pilot projects and other relevant watershed activities across watershed groups. The template/form will include information on activity type, pollutants addressed, pollutant sources addressed, effectiveness measurements, costs, staff burden, and other data to be determined.

Completion date	June 30, 2011			
Party conducting work	Mikhail Ogawa Engineering, County of San Diego, City of San Diego, Port of San Diego			
Copermittee hourly costs	Land Use / Env Planner III (County)	8	$ 63.44	$508
	Associate Planner (City of San Diego)	8	$ 45.88	$367
	Associate Environmental Specialist (Port of San Diego)	8	$ 54.10	$433
Contract costs	Mikhail Ogawa Engineering (County of San Diego will be the contracting entity)			$10,000
Contract management costs				$500
Other direct costs	N/A			$0
Total				**$11,807**

Subtask 2.G. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.

Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**

Subtask 2.H. Regional TMDL Implementation Planning. This task involves creating a regional framework, template, or guidance to facilitate regional consistency in TMDL planning and implementation.

MOU Sections III.D.3.f – Regularly coordinate and liaise with Regional Board staff, stakeholders, regulated parties, and other				
Completion date	June 30, 2011			
Party conducting work	Consultant (TBD), County of San Diego, City of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	12	$ 72.20	$866
	Land Use / Env Planner III (County)	12	$ 63.44	$761
	Program Manager (City of San Diego)	12	$ 67.93	$815
Contract costs				$33,277
Contract management costs				$1,664
Other direct costs				$0
Total				**$37,384**
Total Estimated Cost				**$52,634**

1. The Regional WURMP Workgroup had no expenditure claims for th
2. Attached is a modified FY 10-11 work plan and budget that reflects

- Sub-task 2.D. (Development of Watershed Program
- Sub-task 2.E. (Watershed Data, Reporting, and Asse
- The budget for Sub-task 2.F. (Watershed Activities D
- A new task (Sub-task 2.H – Regional TMDL Impleme
- Finally, the $40,000 requested by the Regional WUR

ıe first quarter of FY 2010-11.

; recommendations from the Regional WURMP Workgroup meeting on 10/27/10. The bullets below summarize r

Approach) will be eliminated. The $6,529 in funds budgeted for this task will be reallocated to Sub-task 2.H. (see
ssment Needs) will be eliminated. The $22,356 in budgeted funds are reallocated to Sub-task 2.H. (see below). Co

Database) has been reduced from $20,305 to $11,807. The $8,498 difference will be reallocated to Sub-task 2.H. (
ntation Planning) will be created. The budget for this new task will be $37,384. In response to the imminent SWR
RMP Workgroup for carryover from our FY 09-10 budget will be allocated to the Fiscal, Reporting, and Assessmen

ecommended changes to the work plan that was adopted by the Management Committee.

below). Sub-task 2.D is no longer needed because RWQCB staff will not be pursuing changes to WURMP languag
ompletion of this task (Regional Reporting and Assessment Standards) will be funded through the Fiscal, Reportin

see below). Copermittee staff time has been cut significantly to reflect the fact that the database chosen by the
CB adoption of the multi-watershed Bacteria TMDL, the Workgroup felt it would be beneficial to create a regiona
t Workgroup, which now has the lead on the task to complete regional standards for reporting and assessment (

e in the MS4 Permit as planned.
g, and Assessment Workgroup.

workgroup has already been substantially developed. Only minimal staff time will be needed to review the datab
al framework for TMDL implementation planning to promote consistency in approaches.
Sub-task 2.E.).

ɔase and provide feedback to the consultant.

H. Regional WURMP Workgroup

FY 2010-11 Modified Jan 2011

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost
Task 1 Meeting Support				
Subtask 1.A. Regional WURMP Workgroup Meeting Support. Provide ongoing support for Regional WURMP Workgroup meetings (researching and developing written materials, preparing presentations, etc).				
Completion date	As-needed (minimum quarterly)			
Parties conducting work	County of San Diego, City of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	12	$ 72.20	$866
	Program Manager (City of San Diego)	12	$ 67.93	$815
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$1,682**
Task 2 Development of Miscellaneous Work Products				
Subtask 2.A. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.				
Completion date	November 30, 2010			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	5	$ 72.20	$361
	Land Use / Env Planner III (County)	5	$ 63.44	$317
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$678**
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Regional WURMP Workgroup.				
Completion date	November 30, 2010			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	10	$ 72.20	$722
			$ -	$0
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$722**
Subtask 2.C. Semi-annual Workgroup Update. Provide, as requested by the Program Planning Subcommittee, two written updates describing the key activities and accomplishments of the Regional WURMP Workgroup for the periods of January 1, 2010 through June 30, 2010, and July 1 through December 31, 2010.				
Completion date	August 15, 2010 and February 15, 2011			
Party conducting work	County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	5	$ 72.20	$361
			$ -	$0
			$ -	$0
Contract costs	N/A			$0
Contract management costs				$0
Other direct costs	N/A			$0
Total				**$361**

Subtask 2.E. Watershed Data, Reporting, and Assessment Needs. Develop a white paper or model approach that includes: 1) a prioritized list of the programmatic reporting and assessment measures in need of standardization for watershed-scale interpretation and integration, 2) specific recommendations for standardized measures, and 3) an annotated outline of a recommended annual report format that would integrate existing JURMP, WURMP, RURMP, TMDL, and monitoring reports at the watershed scale as appropriate.

Completion date	June 30, 2011			
Party conducting work	Consultant (TBD), County of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)		$ 72.20	$0
	Land Use / Env Planner III (County)		$ 63.44	$0
			$ -	$0
Contract costs	Consultant (TBD)			$38,095
Contract management costs				$1,905
Other direct costs	N/A			$0
Total				**$40,000**

Subtask 2.F. Watershed Activities Database. Develop a database of watershed activities currently being implemented or planned throughout the San Diego region. Develop a template or form to be used to populate the database, which will be used as a tool for sharing information about pilot projects and other relevant watershed activities across watershed groups. The template/form will include information on activity type, pollutants addressed, pollutant sources addressed, effectiveness measurements, costs, staff burden, and other data to be determined.

Completion date	June 30, 2011			
Party conducting work	Mikhail Ogawa Engineering, County of San Diego, City of San Diego, Port of San Diego			
Copermittee hourly costs	Land Use / Env Planner III (County)	8	$ 63.44	$508
	Associate Planner (City of San Diego)	8	$ 45.88	$367
	Associate Environmental Specialist (Port of San Diego)	8	$ 54.10	$433
Contract costs	Mikhail Ogawa Engineering (County of San Diego will be the contracting entity)			$10,000
Contract management costs				$500
Other direct costs	N/A			$0
Total				**$11,807**

Subtask 2.G. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.

Completion date	TBD			
Party conducting work	TBD			
Copermittee hourly costs		0	0	$0
		0	0	$0
Contract costs				$0
Contract management costs				$0
Other direct costs				$0
Total				**$0**

Subtask 2.H. Regional TMDL Implementation Planning. This task involves creating a regional framework, template, or guidance to facilitate regional consistency in TMDL planning and implementation.

MOU Sections III.D.3.f – Regularly coordinate and liaise with Regional Board staff, stakeholders, regulated parties, and other

Completion date	June 30, 2011			
Party conducting work	Consultant (TBD), County of San Diego, City of San Diego			
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	12	$ 72.20	$866
	Land Use / Env Planner III (County)	12	$ 63.44	$761
	Program Manager (City of San Diego)	12	$ 67.93	$815
Contract costs				$33,277
Contract management costs				$1,664
Other direct costs				$0
Total				**$37,384**

Total Estimated Cost	**$92,634**

1. Attached is a modified FY 10-11 work plan and budget that reflects

- Sub-task 2.D. (Development of Watershed Program
- Sub-task 2.E. (Watershed Data, Reporting, and Asse
- The budget for Sub-task 2.F. (Watershed Activities D
- A new task (Sub-task 2.H – Regional TMDL Impleme

; recommendations from the Regional WURMP Workgroup meeting on 10/27/10. The bullets below summarize r

Approach) will be eliminated. The $6,529 in funds budgeted for this task will be reallocated to Sub-task 2.H. (see
ssment Needs) will be funded at $40,000 to cover the cost of the Visioning Workshops

Database) has been reduced from $20,305 to $11,807. The $8,498 difference will be reallocated to Sub-task 2.H. (
ntation Planning) will be created. The budget for this new task will be $37,384. In response to the imminent SWR

ecommended changes to the work plan that was adopted by the Management Committee.

below). Sub-task 2.D is no longer needed because RWQCB staff will not be pursuing changes to WURMP languag

(see below). Copermittee staff time has been cut significantly to reflect the fact that the database chosen by the
CB adoption of the multi-watershed Bacteria TMDL, the Workgroup felt it would be beneficial to create a regiona

e in the MS4 Permit as planned.

workgroup has already been substantially developed. Only minimal staff time will be needed to review the datab
al framework for TMDL implementation planning to promote consistency in approaches.

ɔase and provide feedback to the consultant.

H. Regional WURMP Workgroup (FY 2010-11)

Approved on January 2010, amended January 2011

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of Carlsbad	City of Escondido	City of San Diego	Port of San Diego	Not Assigned
Task 1 Meeting Support										
Subtask 1.A. Regional WURMP Workgroup Meeting Support. Provide ongoing support for Regional WURMP Workgroup meetings (researching and developing written materials, preparing presentations, etc).										
Completion date	As-needed (minimum quarterly)									
Parties conducting work	County of San Diego, City of San Diego									
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	12	$ 72.20	$866	$866					
	Program Manager (City of San Diego)	12	$ 67.93	$815				$815		
			$ -	$0						
Contract costs	N/A			$0						
Contract management costs				$0						
Other direct costs	N/A			$0						
Total				**$1,682**						
Task 2 Development of Miscellaneous Work Products										
Subtask 2.A. FY 2009-10 Regional URMP Annual Report Input. Provide subject area content as requested for inclusion in the Copermittees' FY 2009-10 Regional URMP Annual Report.										
Completion date	November 30, 2010									
Party conducting work	County of San Diego									
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	5	$ 72.20	$361	$361					
	Land Use / Env Planner III (County)	5	$ 63.44	$317	$317					
			$ -	$0						
Contract costs	N/A			$0						
Contract management costs				$0						
Other direct costs	N/A			$0						
Total				**$678**						
Subtask 2.B. FY 2011-12 Work Plan and Budget. Develop for submittal to the Regional Program Planning Subcommittee a FY 2011-12 work plan and budget covering the planned activities of the Regional WURMP Workgroup.										
Completion date	November 30, 2010									
Party conducting work	County of San Diego									
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	10	$ 72.20	$722	$722					
			$ -	$0						
			$ -	$0						
Contract costs	N/A			$0						
Contract management costs				$0						
Other direct costs	N/A			$0						
Total				**$722**						

H. Regional WURMP Workgroup (FY 2010-11)

Approved on January 2010, amended January 2011

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of Carlsbad	City of Escondido	City of San Diego	Port of San Diego	Not Assigned
Subtask 2.C. Semi-annual Workgroup Update. Provide, as requested by the Program Planning Subcommittee, two written updates describing the key activities and accomplishments of the Regional WURMP Workgroup for the periods of January 1, 2010 through June 30, 2010, and July 1 through December 31, 2010.										
Completion date	August 15, 2010 and February 15, 2011									
Party conducting work	County of San Diego									
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	5	$ 72.20	$361	$361					
			$ -	$0						
			$ -	$0						
Contract costs	N/A			$0						
Contract management costs				$0						
Other direct costs	N/A			$0						
Total				**$361**						
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs. Develop a white paper or model approach that includes: 1) a prioritized list of the programmatic reporting and assessment measures in need of standardization for watershed-scale interpretation and integration, 2) specific recommendations for standardized measures, and 3) an annotated outline of a recommended annual report format that would integrate existing JURMP, WURMP, RURMP, TMDL, and monitoring reports at the watershed scale as appropriate.										
Completion date	June 30, 2011									
Party conducting work	Consultant (TBD), County of San Diego									
Copermittee hourly costs	Land Use / Env Planning Mgr (County)		$ 72.20	$0	$0					
	Land Use / Env Planner III (County)		$ 63.44	$0	$0					
			$ -	$0						
Contract costs	Consultant (TBD)			$38,095	$38,095					
Contract management costs				$1,905	$1,905					
Other direct costs	N/A			$0						
Total				**$40,000**						

H. Regional WURMP Workgroup (FY 2010-11)

Approved on January 2010, amended January 2011

Task	Description	Estimated Hours	Hourly Rate	Estimated Cost	County of San Diego	City of Carlsbad	City of Escondido	City of San Diego	Port of San Diego	Not Assigned
Subtask 2.F. Watershed Activities Database. Develop a database of watershed activities currently being implemented or planned throughout the San Diego region. Develop a template or form to be used to populate the database, which will be used as a tool for sharing information about pilot projects and other relevant watershed activities across watershed groups. The template/form will include information on activity type, pollutants addressed, pollutant sources addressed, effectiveness measurements, costs, staff burden, and other data to be determined.										
Completion date	June 30, 2011									
Party conducting work	Mikhail Ogawa Engineering, County of San Diego, City of San Diego, Port of San Diego									
Copermittee hourly costs	Land Use / Env Planner III (County)	8	$ 63.44	$508	$508					
	Associate Planner (City of San Diego)	8	$ 45.88	$367				$367		
	Associate Environmental Specialist (Port of San Diego)	8	$ 54.10	$433					$433	
Contract costs	Mikhail Ogawa Engineering (County of San Diego will be the contracting entity)			$10,000	$10,000					
Contract management costs				$500	$500					
Other direct costs	N/A			$0						
Total				**$11,807**						
Subtask 2.H. Regional TMDL Implementation Planning. This task involves creating a regional framework, template, or guidance to facilitate regional consistency in TMDL planning and implementation.										
MOU Sections III.D.3.f – Regularly coordinate and liaise with Regional Board staff, stakeholders, regulated parties, and other										
Completion date	June 30, 2011									
Party conducting work	Consultant (TBD), County of San Diego, City of San Diego									
Copermittee hourly costs	Land Use / Env Planning Mgr (County)	12	$ 72.20	$866	$866					
	Land Use / Env Planner III (County)	12	$ 63.44	$761	$761					
	Program Manager (City of San Diego)	12	$ 67.93	$815				$815		
Contract costs	Consultant work estimated to be split 50/50 between City of SD and County.			$33,277	$16,639			$16,639		
Contract management costs				$1,664	$832			$832		
Other direct costs				$0						
Total				**$37,384**						
Subtask 2.G. Unallocated. Activities or expenditures necessary to support Working Body MOU and Permit obligations, but not otherwise addressed in other Work Plan tasks. This task may not exceed 5% of the total Working Body budget.										
Completion date	TBD									
Party conducting work	TBD									
Copermittee hourly costs		0	0	$0						
		0	0	$0						
Contract costs				$0						
Contract management costs				$0						
Other direct costs				$0						
Total				**$0**						
Total Estimated Cost				**$92,634**	**$ 72,732.98**	**$ -**	**$ -**	**$ 19,467.79**	**$ 432.80**	**$ -**

H. Regional WURMP Workgroup			County of San Diego				City of Carlsbad				City of Escondido				City of San Diego			
Task	Adjusted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																		
Subtask 1.A. Meeting Support.	**$1,682**	**$686**																
Hourly	$1,682	$686				$686												
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 2 Development of Miscellaneous Work Products																		
Subtask 2.A. FY 2009-10 Regional URMP Annual Report Input	**$678**	**$181**																
Hourly	$678	$181				$181												
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.B. FY 2011-12 Work Plan and Budget	**$722**	**$253**																
Hourly	$722	$253				$253												
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.C. Semi-annual Workgroup Update	**$361**	**$0**																
Hourly	$361	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs	**$40,000**	**$42,230**																
Hourly	$0	$0																
Contracts	$38,095	$40,219				$30,878												**$9,341**
Contract management	$1,905	$2,011				$1,544												**$467**
Other direct	$0	$0																
Subtask 2.F. Watershed Activities Database	**$11,807**	**$6,814**																
Hourly	$1,307	$1,236				$507												**$459**
Contracts	$10,000	$5,312				$5,312												
Contract management	$500	$266				$266												
Other direct	$0	$0																

H. Regional WURMP Workgroup			County of San Diego				City of Carlsbad				City of Escondido				City of San Diego			
Task	Adjusted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.H. Regional TMDL Implementation Planning	**$37,384**	**$42,472**																
Hourly	$2,443	$1,314				$1,314												
Contracts	$33,277	$39,198				$19,599												**$19,599**
Contract management	$1,664	$1,960				$980												**$980**
Other direct	$0	$0																
Subtask 2.G. Unallocated	**$0**	**$0**																
Hourly	$0	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$61,518	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30,845
Totals	**$92,634**	**$92,634**																

H. Regional WURMP Workgroup			Port of San Diego				Not Assigned			
Task	Adjusted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support										
Subtask 1.A. Meeting Support.	**$1,682**	**$686**								
Hourly	$1,682	$686								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Task 2 Development of Miscellaneous Work Products										
Subtask 2.A. FY 2009-10 Regional URMP Annual Report Input	**$678**	**$181**								
Hourly	$678	$181								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.B. FY 2011-12 Work Plan and Budget	**$722**	**$253**								
Hourly	$722	$253								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.C. Semi-annual Workgroup Update	**$361**	**$0**								
Hourly	$361	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs	**$40,000**	**$42,230**								
Hourly	$0	$0								
Contracts	$38,095	$40,219								
Contract management	$1,905	$2,011								
Other direct	$0	$0								
Subtask 2.F. Watershed Activities Database	**$11,807**	**$6,814**								
Hourly	$1,307	$1,236				$271				
Contracts	$10,000	$5,312								
Contract management	$500	$266								
Other direct	$0	$0								

H. Regional WURMP Workgroup			Port of San Diego				Not Assigned			
Task	Adjusted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.H. Regional TMDL Implementation Planning	**$37,384**	**$42,472**								
Hourly	$2,443	$1,314								
Contracts	$33,277	$39,198								
Contract management	$1,664	$1,960								
Other direct	$0	$0								
Subtask 2.G. Unallocated	**$0**	**$0**								
Hourly	$0	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$271	$0	$0	$0	$0
Totals	**$92,634**	**$92,634**								

H. Regional WURMP Workgroup

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$ 72,732.98	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 61,518.07
		Totals	**$ 61,518.07**
		Unspent Balance	**$ 11,214.91**
City of Carlsbad	$ -	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ -**
City of Escondido	$ -	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ -**
City of San Diego	$ 19,467.79	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 30,845.43
		Totals	**$ 30,845.43**
		Unspent Balance	**$ (11,377.65)**
Port of San Diego	$ 432.80	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 270.50
		Totals	**$ 270.50**
		Unspent Balance	**$ 162.30**
Not Assigned	$ -	1st	
		2nd	
		3rd	
		4th	
		Totals	**$ -**
		Unspent Balance	**$ -**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	1st Quarter FY 2009-10 (July 1- Sept. 30, 2010)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 551.91
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

12-13-10
Date

M.A. Lahsaiezadeh
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land use Planner II
County of San Diego

1/24/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Meeting Support.						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.B. Work Plan and Budget						
7/22/2010	Cynthia Mallett	Environmental Specialist II	2.00	$ 51.34	$ 102.68	Review FY 09-10 budget expednitures and assess 10-11 budget
8/2/2010	Cynthia Mallett	Environmental Specialist II	2.00	$ 51.34	$ 102.68	Review Expenditure claims submittals
8/2/2010	Cynthia Mallett	Environmental Specialist II	0.50	$ 51.34	$ 25.67	Create and send list of discrepancies to County and City
8/4/2010	Cynthia Mallett	Environmental Specialist II	1.00	$ 51.34	$ 51.34	Review revised City of SD submittal
8/5/2010	Cynthia Mallett	Environmental Specialist II	2.00	$ 51.34	$ 102.68	Compile expenditure claims from copermittees
8/11/2010	Cynthia Mallett	Environmental Specialist II	0.25	$ 51.34	$ 12.84	Request contract invoices from Escondido
8/11/2010	Cynthia Mallett	Environmental Specialist II	1.00	$ 51.34	$ 51.34	Finish compiling organizing expenditure claim.
8/11/2010	Cynthia Mallett	Environmental Specialist II	0.50	$ 51.34	$ 25.67	Discussion with County on Payment of high dollar amount items
8/16/2010	Cynthia Mallett	Environmental Specialist II	0.50	$ 51.34	$ 25.67	Discuss order of summary sheets with County
8/30/2010	Cynthia Mallett	Environmental Specialist II	1.00	$ 51.34	$ 51.34	Final review of claim and send to Secretary.
			0.00	$ -	$ -	
Sub-total	$ 551.91					
Subtask 2.C. Regional URMP Annual Report Input.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Sub-task 3.A. Materials Development and Distribution.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.B. Partnership Development.						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.C. Market Research and Assessment						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.D. Regional Website						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 3.E. Underserved Target Audience						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask 3.F. Mass Media Campaign						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 1st Quarter FY 2009-10 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask 3.G. Regional Events						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask 3.H. Regional Logo						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 551.91**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Escondido
Period:	1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 126.15
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elisa Marrone
Assistant Planner
City of Escondido

12-14-10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2010-11 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth De La Rosa
Land Use/Environmental Planner II
County of San Diego

1/24/11
Date

Ruth delaRosa
Signature

COPE..MITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.A.2. Produce & distribute to copermittees a 2011 calendar in Spanish						
9/30/2010	Elisa Marrone	Assistant Planner	3.00	$ 42.05	$ 126.15	Coordinate artist contract for Spanish calendars
			0.00	$ 42.05	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 126.15					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 126.15**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of San Diego
Period:	1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 1,161.00
Contract / Other Expenditures Claimed:	$ 157.50

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Joan Brackin
OCA Deputy Director
City of San Diego, Storm Water

12/13/10
Date

Joan Brackin
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name] Ruth delaRosa
[Title] Land use Planner II
County of San Diego

1/24/11
Date

Ruth delaRosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.C. Market Research and Assessment Tools.						
7/9/2010	Jennifer Kearns	Sr. PIO	2.00	$ 46.44	$ 92.88	Conference call, finalizing reports
7/19/2010	Jennifer Kearns	Sr. PIO	2.00	$ 46.44	$ 92.88	Reviewing assessment reports, gathering estimates for FY11 assessment needs
7/20/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Reviewing and editing assessment reports
8/5/2010	Jennifer Kearns	Sr. PIO	2.00	$ 46.44	$ 92.88	Conf call; Reviewing and editing assessment reports
9/28/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Conf call, calculating FY 11 assessment needs and budget
			0.00	$ -	$ -	
Sub-total	$ 371.52					
Subtask 3.D. Regional Website						
8/3/2010	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Addressing regional calendar page log-in issues
8/12/2010	Tim Graham	Sr. PIO	2.00	$ 46.44	$ 92.88	Google analytics review meeting for regional website
9/6/2010	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Follow-up on analytics review
			0.00	$ -	$ -	
Sub-total	$ 185.76					
Subtask 3.F. Mass Media						
7/22/2010	Jennifer Kearns	Sr. PIO	2.00	$ 46.44	$ 92.88	Reviewing options for FY11 media buy
8/27/2010	Jennifer Kearns	Sr. PIO	2.00	$ 46.44	$ 92.88	Finalizing recommendations for Regional media
9/30/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Research and emails (with County) regarding new trash PSA
7/6/2010	Tim Graham	Sr. PIO	2.00	$ 46.44	$ 92.88	Contact media partners regarding changes to media buy
8/24/2010	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Prep & call with vendors to discuss FY 11 buy and reporting
9/27/2010	Tim Graham	Sr. PIO	2.00	$ 46.44	$ 92.88	Call/email media partners to update FY 11 regional buy and next steps
			0.00		$ -	
Sub-total	$ 464.40					
Subtask 3.G. Regional Events.						
7/2/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Debriefing plans/logistics from the 2010 EnviroFair
9/27/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Re-cap meeting with SD County Fair staff
			0.00		$ -	
Sub-total	$ 92.88					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.H. Regional Logo.						
9/27/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Following up with consultants and City DCA regarding logo trademark
			0.00		$ -	
Sub-total	$ 46.44					
Copermittee Total					**$ 1,161.00**	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Contract 1. Events Online					
Subtask 3.D. Regional Website		$ 50.00	7/1/2010	$ 2.50	Regional website monthly hosting, FTP services - Inv # 5972, July 2010
		$ 50.00	8/1/2010	$ 2.50	Regional website monthly hosting, FTP services - Inv # 6014, August 2010
		$ 50.00	9/1/2010	$ 2.50	Regional website monthly hosting, FTP services - Inv # 6048, Sept 2010
		$ -		$ -	
Subtaskx.x Sub-total	$ 150.00				
Subtaskx.x Management Cost	$ 7.50				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO		$ -	x/x/2010		
		$ -			
		$ -			
Sub-total Other Expenditures	$ -				
Total Expenditures (Including contract management cost)		**$ 157.50**			

Final 04-30-09

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
7/1/2010	5972

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 202 C Street San Diego, CA 92101

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
			Total	$50.00

ok to pay
$50.00
Judy
7/14/10

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
8/1/2010	6014

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
			Total	$50.00

ok to pay
$ 50.00
Judy U. [illegible]
8/18/10

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
9/1/2010	6048

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
		Total		$50.00

ok to pay
$50.00
Kathy D
9/10/10

COPE[illegible]ITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 990.00**
Contract / Other Expenditures Claimed:	**$ 21,105.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon VanRhyn
Water Quality Manager
County of San Diego

12/13/10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2010-11 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

1/24/11
Date

Ruth de la Rosa
Signature

COPE. .ITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.B. Work Plans and Budgets.						
8/11/2010	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Compile Copermtitee expenditures and summarize
8/16/2010	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Review summary of expenditure claims
8/28/2010	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Final review and approval of Q4 claims
Sub-total	$ 376.46					
Subtask 3.B. Partnership Development.						
7/17/2010	Rachel Borgatti	Program Coordinator	2.00	$ 59.27	$ 118.54	Work with CTN to complete tourism video
7/30/2010	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Receive, review and distribute tourism video to subcommittee
8/6/2010	Ruth de la Rosa	Land Use Planner II	1.50	$ 53.78	$ 80.67	Review video comments from subcommittee
9/6/2010	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	Work on comments from subcommittee
Sub-total	$ 242.01					
Subtask 3.C Market Research and Assessment Tools						
7/7/2010	Rachel Borgatti	Program Coordinator	1.50	$ 59.27	$ 88.91	Review initial observations and recommendations report and send to subcommittee
7/14/2010	Rachel Borgatti	Program Coordinator	0.50	$ 59.27	$ 29.64	Determined intervention sites
8/30/2010	Ruth de la Rosa	Land Use Planner II	2.50	$ 53.78	$ 134.45	Contract and invoice review and payment. Reviewed site updates.
Sub-total	$ 252.99					
Copermittee Total					**$ 990.00**	

COPE...ITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Contract 1. [Action Research / Agreement #529712]				
Contract Task 7& 8: Litter CBSM Project	$ 20,100.00	7/8/2010	$ 1,005.00	research and protocol development, data analysis and recommendations.
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtask 3.C.2 Sub-total $ 20,100.00				
Subtask 3.C.2 Management Cost $ 1,005.00				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 21,105.00**			

Final 04-30-09

Turning Research Into Action

INVOICE

Invoice # **AR10-1049**

From: **Action Research, Inc.**
910 W. San Marcos Blvd., Suite #108
San Marcos, CA 92078

To: **Rachel Borgatti**
5201 Ruffin Road, Suite P
San Diego, CA 92123
858-495-5413
rachel.borgatti@sdcounty.ca.gov

Date: July 8, 2010

Agreement # 529712

Time Period: Invoices is for tasks completed from May 1, 2010 through June 30, 2010. Costs based on fixed price per completed task.

Task	Description	Cost
Task 7: Barrier research and protocol development	**Litter CBSM project:** Identify sites, develop materials, observational data collection, intercept interviews	$14,480
Task 8: Data analysis and recommendations	**Litter CBSM project:** Written summary report and recommendations for outreach.	$5,620
TOTAL		**$20,100**

TOTAL DUE.....$20,100

Please make check payable to: Action Research, 910 W. San Marcos Blvd., Suite #108; San Marcos, CA 92078. Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-736-4348 or by email at: tabanico@takeactionresearch.com

Okay to pay - Rachel Borgatti, Program Coordinator 7/14/10
P 1002993
O 50915
E 52370
T 011.007
A 100496

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Escondido
Period:	2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 599.21**
Contract / Other Expenditures Claimed:	**$ 3,150.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elisa Marrone
Assistant Planner II
City of Escondido

10-Mar-11
Date

E Marrone
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

3/17/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.A.2. Produce & distribute to copermittees a 2011 calendar in Spanish						
10/12/2010	Elisa Marrone	Asst. Planner	1.50	$ 42.05	$ 63.08	coordinate contract with artist
12/22/2010	Elisa Marrone	Asst. Planner	4.00	$ 42.05	$ 168.20	fine-tune translation
12/29/2010	Elisa Marrone	Asst. Planner	2.50	$ 42.05	$ 105.13	corrections with artist, reviewing proofs
12/30/2010	Elisa Marrone	Asst. Planner	0.75	$ 42.05	$ 31.54	authorize printing
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 367.94					
Subtask 3.G. Regional Events						
12/15/2010	Elisa Marrone	Asst. Planner	1.25	$ 42.05	$ 52.56	prepare and present Day without a Bag to City Council
12/16/2010	Elisa Marrone	Asst. Planner	1.75	$ 42.05	$ 73.59	distribute bags to customers
12/14/2010	Elisa Marrone	Asst. Planner	1.00	$ 42.05	$ 42.05	collect bags for distribution
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 168.20					
Subtask 2.B Work Plans & Budgets						
11/10/2010	Elisa Marrone	Asst. Planner	1.50	$ 42.05	$ 63.08	prepare information for FY11-12 Materials Distro subcommittee
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 63.08					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total.	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Copermittee Total					$ 599.21	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 3.A.2 Produce & distribute to copermittees a 2011 calendar in Spanish					
Webster Design		$ 3,000.00	12/7/2010	$ 150.00	Produce 2011 Spanish calendar based on 2010 English version
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ 3,000.00				
Subtaskx.x Management Cost	$ 150.00				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO		$ -	x/x/2010		
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
Sub-total Other Expenditures	$ -				
Total Expenditures (Including contract management cost)		**$ 3,150.00**			

Final 04-30-09

Webster Design

1357 Fern Place

Vista, Ca 92081

760-945-6576

Fax 760-945-6061

website:

www.websterdesign.net

INVOICE

Number: 8976

Date: 12/6/10

Terms: Net 30 Days

Description:

Art Services for:	The City of Escondido Utilities Dept. Attn: Elisa Marrone PO#: 410-11-30
WD Job #8684	Stormwater Calendar 2011/Spanish language version

Revise and update art, deliver to printer electronically ..... $ 3,000.00

Subtotal ..... $ 3,000.00

Tax..... NA

Total Due ..... $ 3,000.00

Thanks for your business

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 975.46
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

March 3, 2011
Date

M.A. Lahsaiesadeh
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

3/17/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 2.B. Work Plans and Budgets						
10/1/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review rollover request format from County
10/8/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review budget manager workbook sent by County
10/11/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review FY 10-11 Budget vs. budget county has in hand
10/21/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Send FY 10-11 Budget to County
10/26/2010	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Conference call with City of SD re: FY 11-12 budget
11/4/2010	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Updating FY 11-12 work plan and budget
11/5/2010	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Write Rollover justification
11/9/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Revisions to FY 11-12 Work Plan and Budget
11/9/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Rollover justification discussion with County
11/10/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Send draft FY 11-12 budget to ERS Workgroup
11/16/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review rollover justification slide from County
11/16/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Revisions to FY 11-12 Work Plan and Budget
12/1/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Revisions to FY 11-12 Work Plan and Budget
12/17/2010	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Review Quarter 1 claims
Sub-total	$ 513.40					
Subtask 2.C. RURMP Annual Report						
10/14/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review RURMP AR Template
11/9/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Review draft RURMP AR
11/17/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Revise RURMP AR
12/1/2010	Cynthia Mallett	Environmental Specialist	0.50	2/20/1900	$ 25.67	Revise RURMP AR
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 102.68					
Subtask 3.G. Regional Events						
10/18/2010	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	DWAB Correspondence with Airport Auth. And Encinitas
10/19/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Discussion with Airport Auth. regarding bag purchase
10/20/2010	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Write confirmation to Airport Auth for bag purchase on behalf of ERS WG for DWAB

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
12/1/2010	Cynthia Mallett	Environmental Specialist	3.00	$ 51.34	$ 154.02	Pick up and deliver DWAB bags to Waste TAC
12/16/2010	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	Attend DWAB Press Event on behalf of ERS WG
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 359.38					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 975.46	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Encinitas
Period:	2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 30.85
Contract / Other Expenditures Claimed:	$ 200.00

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Erik Steenblock
Program Manager
City of Encinitas

2/2/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

3/17/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Encinitas

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.G. Regional Events						
10/26/2010	Kristy Rygiel	Program Assistant	1.00	$ 30.85	$ 30.85	Registered for event and sent email notice to copermittees
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 30.85					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Encinitas

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			Auto-calc'd (5% of amount paid)	
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Encinitas

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 30.85	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask 3.G. Regional Events		$ 200.00	10/26/2010		Booth registration fee for High Tech Fair
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
Sub-total Other Expenditures	$ 200.00				
Total Expenditures (Including contract management cost)		$ 200.00			

Final 04-30-09

Delarosa, Ruth

To: Kristine Rygiel
Subject: RE: Invoice for HTF 2011 Exhibitor Registration - Online Payment - 3255934502

Expires: Saturday, February 27, 2021 12:00 AM

From: Kristine Rygiel [mailto:KRygiel@ci.encinitas.ca.us]
Sent: Wednesday, March 02, 2011 9:35 AM
To: Delarosa, Ruth
Subject: FW: Invoice for HTF 2011 Exhibitor Registration - Online Payment - 3255934502

From: San Diego Science Alliance - HTF [mailto:no-reply@wufoo.com]
Sent: Tuesday, October 26, 2010 9:33 AM
To: Kristine Rygiel
Subject: Invoice for HTF 2011 Exhibitor Registration - Online Payment - 3255934502

Oct 26, 2010
5:33am

Transaction ID
3255934502

Invoice for HTF 2011 Exhibitor Registration - Online Payment - 3255934502

Thank you for registering for the SDSA High Tech Fair 2010.

Billing Address
Peter Cota-Robles
505 S Vulcan Ave
Encinitas,92024 92024
US

Description	Price
Total	**$200.00**
Exhibitor Registration Fee (includes one table, two chairs, and standard 500W electricity): *Non-Profit Organization ($200)*	$200.00

Credit Card : ****1054

Amount Paid : $200.00

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: ~~County of San Diego~~ City of Imperial Beach

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Expenditure Type(s): Hourly Expenditures Only

Hourly Expenditures Claimed: $ 417.40 ✓

Contract / Other Expenditures Claimed: $ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Chris Helmer
Environmental Program Manager
City of Imperial Beach

2/17/2011
Date

Chris Helmer
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

3/17/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: ~~County of San Diego~~ City of Imperial Beach

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 2.C. Regional URMP Annual Report Input						
11/10/2010	Chris Helmer	Env Program Manager	2.00	$ 41.74	$ 83.48	RURMP Annual Report draft
11/12/2010	Chris Helmer	Env Program Manager	2.00	$ 41.74	$ 83.48	RURMP Annual Report draft
11/17/2010	Chris Helmer	Env Program Manager	4.00	$ 41.74	$ 166.96	RURMP Annual Report Final
11/29/2010	Chris Helmer	Env Program Manager	2.00	$ 41.74	$ 83.48	Final Edits on RURMP Annual Report
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 417.40					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPE. .MITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 417.40**	

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	Regional Airport Authority
Period:	2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 163.99**
Contract / Other Expenditures Claimed:	**$ 9,998.30**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Richard Gilb
Manager Environmental Affairs Department
San Diego County Regional Airport Authority

2/11/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

3/17/11
Date

Ruth de la Rosa
Signature

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: Regional Airport Authority

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task 3/Sub-task 3.A. Materials Development and Distribution						
10/7/2010	Annie Martin	Senior Env Specialist	0.25	$ 43.73	$ 10.93	corespondence with Jacy Bolden -regional event cordinator
10/20/2010	Annie Martin	Senior Env Specialist	1.50	$ 43.73	$ 65.60	corespondence with Jacy Bolden, ERS workgroup memebers and Chico Bag company
12/3/2010	Annie Martin	Senior Env Specialist	1.00	$ 43.73	$ 43.73	distribute bags to stores
12/15/2010	Annie Martin	Senior Env Specialist	1.00	$ 43.73	$ 43.73	set up signage for event outside of stores
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 163.99✓					
Copermittee Total					$ 163.99	

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: Regional Airport Authority

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
3. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Sub-task 3.A. Materials Development and Distribution	$ 9,998.30	11/15/2010		cost of the 1,762 chico bags ordered From Chico Bag company for the event
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures	$ 9,998.30			
Total Expenditures (including contract management cost)	$ 9,998.30			

ChicoBag Company
349 Huss Drive
Chico, CA 95928
P (530) 342-4426
F (530) 267-5434

Invoice

S.O. No.	Date	Invoice #
2020204	11/15/2010	29707

Bill To

San Diego Airport Authority
Annie Martin
PO Box 82776
San Diego, CA 92138

Ship To

San Diego Airport Authority
Annie Martin
2417 Winship Lane
San Diego, CA 92101

P.O. Number	Terms	Due Date	Rep	Ship	Via	Broker
	Pay In Advance	11/15/2010	JNR	11/15/2010		

Quantity	Item Code	Description	Price Each	Backordered	Amount
1,762	ROFPB	ChicoBag rePETe Original Pacific Blue Flat x 1,762	4.80	0	8,457.60T
1,762	ScreenprintP1B...	One color logo on bag x 1,762	0.60	0	1,057.20T
	Disc - QT - Orig...	Giving 3000-piece pricing at $5.15 each for CA Day Without a Bag (-$440.50)	-440.50		-440.50
1	FedEx	Shipping:FedEx Per Quoted Price Event Date 11/23/2010	130.00		130.00
	SHPG	Shipped On: 11/15/2010 Tracking #: 551086460636729, 551086460636736, 551086460636743, 551086460636750, 551086460636767, 551086460636774, 551086460636781			
		Sales Tax	8.75%		794.00

Please remit to above address.

Lot #

Total	$9,998.30
Payments/Credits	$-9,998.30
Balance Due	$0.00

Phone #	Fax #	Web Site
530-342-4426	530.267.5434	www.chicobag.com

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Expenditure Type(s): Hourly Expenditures Only

Hourly Expenditures Claimed: $ 1,486.08

Contract / Other Expenditures Claimed: $ 1,195.69

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Kris McFadden
Deputy Director
City of San Diego, Storm Water Division

3/1/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa, MPH
Education & Outreach, Watershed Protection Program
County of San Diego

3/17/11
Date

Signature

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.C. Market Research and Assessment Tools.						
10/12/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Consultant meeting - finalize FY11 contract details
10/21/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Consultant meeting - FY11 Scope of Work for regional activites
11/10/2010	Jennifer Kearns	Sr. PIO	1.50	$ 46.44	$ 69.66	Consultant meeting - FY11 Scope of Work details, timelines, etc.
11/14/2010	Jennifer Kearns	Sr. PIO	2.00	$ 46.44	$ 92.88	Conf calls, emails - gathering data and info for FY10 RURMP
11/16/2010	Jennifer Kearns	Sr. PIO	2.00	$ 46.44	$ 92.88	Conf calls, emails - gathering data and info for FY10 RURMP
			0.00	$ -	$ -	
Sub-total	$ 348.30 ✓					
Subtask 3.D. Regional Website						
11/2/2011	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Discussion and review of regional Google calendar updates and edits
11/9/2010	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Discussion with MJE and Bruce Gresham re: website reports for RURMP
12/17/2010	Tim Graham	Sr. PIO	0.50	$ 46.44	$ 23.22	Answering inqueries re: RURMP reporting for MJE
12/27/2010	Tim Graham	Sr. PIO	0.50	$ 46.44	$ 23.22	Follow-up re: pending removal of Think Blue 2010 calendar on regional website
Sub-total	$ 139.32 ✓					
Subtask 3.F. Mass Media						
11/4/2010	Jennifer Kearns	Sr. PIO	2.50	$ 46.44	$ 116.10	Reviewing options for FY11 media buy and UltraStar mtg
11/24/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Finalizing UltraStar media
12/8/2010	Jennifer Kearns	Sr. PIO	1.50	$ 46.44	$ 69.66	Reviewing options for FY11 media buy (new budget)
11/4/2010	Tim Graham	Sr. PIO	2.50	$ 46.44	$ 116.10	Reviewing options for FY11 media buy and UltraStar mtg
11/24/2010	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Review Ultrastar media
12/8/2010	Tim Graham	Sr. PIO	1.50	$ 46.44	$ 69.66	Reviewing options for FY 11 media buy (new budget)
12/20/2010	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Review CBS Outdoor media proposal
12/28/2010	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Preparation of request for proposals for regional media buy
Sub-total	$ 557.28 ✓					
Subtask 2.B. Work Plans and Budgets						
11/4/2010	Jennifer Kearns	Sr. PIO	1.50	$ 46.44	$ 69.66	Drafting FY11/12 Regional Ed Budget
11/5/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Drafting and revisions to FY11/12 Regional Ed Budget and tasks
11/18/2010	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Drafting and revisions to FY11/12 Regional Ed Budget and tasks
Sub-total	$ 162.54 ✓		3.50			

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 3.D. Regional Website					
Contract 1: Events Online		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6145, Oct 2010
		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6098, Nov 2010
		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6192, Dec 2010
Contract 2: MJE Marketing Services		$ 743.75	12/10/2010	$ 37.19	Provided RURMP report data on the FY2010 results for the Think Blue San Diego Region website. Updated regional Google calendar.
Subtask 3.D. Sub-total	$ 893.75				
Subtask 3.D. Management Cost	$ 44.69				
Subtask 3.C. Market Research and Assessment					
Contract: Action Research		$ 245.00	12/10/2010	$ 12.25	Action Research: compiled data and provided assessment data summaries for the 2010 RURMP report
		$ -		$ -	
Subtask 3.C. Sub-total	$ 245.00				
Subtask 3.C. Management Cost	$ 12.25				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO		$ -	x/x/2010		
		$ -			
Sub-total Other Expenditures	$ -				
Total Expenditures (Including contract management cost)		$ 1,195.69			

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.C. FY 2009-10 Regional URMP Annual Report						
11/15/2010	Jennifer Kearns	Sr. PIO	3.00	$ 46.44	$ 139.32	Compiling data (with consultants), writing FY10 RURMP Report
11/16/2010	Jennifer Kearns	Sr. PIO	3.00	$ 46.44	$ 139.32	Compiling data, writing FY10 RURMP Report
			6.00		$ -	
Sub-total	$ 278.64					
Copermittee Total					$ 1,488.08	

action research
Research · Social Marketing · Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Jennifer Nichols Kearns**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

Date: **December 6, 2010**

Invoice # **AR10-1061**

Time Period: Invoice is for regional tasks completed November 1 – 30, 2010

PO# **4500017804**

TASK 6: RESEARCH (Regional)	**AMOUNT DUE**
Task 6a. Data gathering	$0.00
Task 6b. Develop assessment methods	$0.00
Task 6c. Annual Random Digit Dial Survey	$0.00
Task 6d. Focus Groups	$0.00
Task 6e. Use research to inform development of outreach	$0.00
Task 6f. Account management	$245.00
TOTAL DUE	**$245.00**

OK

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

12/08/10

ATTACHMENT A: MONTHLY NARRATIVES for TASK 6: RESEARCH

Task 6a: Data Gathering – N/A. No activity.

Task 6b: Develop Assessment Methods – N/A. No activity.

Task 6c: Annual Random Digit Dial Survey – N/A. No activity.

Task 6d: Focus Groups – N/A. No activity.

Task 6e: Use Research to Inform Development of Outreach – N/A. No activity.

Task 6f: Account Management

Account Management: Activities RURMP reporting support.			
Staff	**Hours**	**Rate**	**Subtotal**
Tabanico	1.00	$125	$125.00
Research Associate (Durack)	2.00	$60	$120.00
SUBTOTAL			**$245.00**
	TOTAL Task 6f		**$245.00**

MJE MARKETING SERVICES
MARKETING • ADVERTISING • PUBLIC AFFAIRS
MJEMARKETING.COM
3111 Camino del Rio North, Ste 100, San Diego, California 92108
p 619.882.3641 | f 619.882.3644

INVOICE *(copy)*

TO:	Jennifer Nichols Kearns Think Blue San Diego Storm Water Department City of San Diego
FROM:	Marlee Ehrenfeld, MJE Marketing
DATE:	December 10, 2010
RE:	MJE Marketing Services November 2010, Regional Tasks

Think Blue San Diego Region

November 2010 Billed: $743.75

Hours: 4.25 x $175.00 per hour

Work Performed:

Task 3.D. Think Blue San Diego Region website:

- Researched and prepared the RURMP report on the FY2010 results for the Think Blue San Diego Region website, www.thinkbluesdregion.org.
- The report discussed the site's purpose, design and Web traffic.

Total: $743.75 OK 12/10/10

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
10/1/2010	6098

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com ok to pay $50.00 10/4/11	50.00	50.00
		Total		$50.00

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
11/1/2010	6145

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com ok to pay $50.00 11/12/11	50.00	50.00
		Total		$50.00

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(858) 223.2811 fax

DATE	INVOICE #
12/1/2010	6192

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
		Total		$50.00

ok to pay
$50.00
12/6/11

COPE. .ITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 994.93**
Contract / Other Expenditures Claimed:	**$ 10,552.50**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Manager
County of San Diego

3/3/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2010-11 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth De La Rosa
Land Use/Environmental Planner II
County of San Diego

3/17/11
Date

Ruth delaRosa
Signature

COPE. .ITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.B. Work Plans and Budgets.						
12/16/2010	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Review submitted claims
12/27/2010	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	copermittes for review and approval.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 322.68					
Subtask 3.B. Partnership Development.						
10/7/2010	Ruth de la Rosa	Land Use Planner II	1.75	$ 53.78	$ 94.12	Sourced-check statistics & comments from subcommittee.
10/27/2010	Ruth de la Rosa	Land Use Planner II	2.75	$ 53.78	$ 147.90	Met with CTN for final edits.
11/15/2010	Ruth de la Rosa	Land Use Planner II	1.50	$ 53.78	$ 80.67	Correspond with committee for final review of tourism video
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 322.68					
Subtask 3.C. Market Research and Assessment Tools						
10/26/2010	Ruth de la Rosa	Land Use Planner II	1.50	$ 53.78	$ 80.67	Correspond with Action Research and copermittees regarding study sites
11/10/2010	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	subcommitte for comments
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Sub-total	$ 188.23					
Subtask 3.A. Materials Development and Distribution						
10/14/2010	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Provide specs and request quote for 2011 Spanish calendars.
12/21/2010	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	Review proofs and provide feedback.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 161.34					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM						
Copermittee Total					$ 994.93	

COPE...ITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 3.D. Research and Assessment [Action Research / Agreement #529712]				
Contract Task 9: Litter CBSM Project	$ 10,050.00	10/20/2010	$ 502.50	Implementation
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ 10,050.00				
Subtaskx.x Management Cost $ 502.50				
Total Expenditures (Including contract management cost)	**$ 10,552.50**			

Final 04-30-09

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Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

Invoice # **AR10-1056**

From: **Action Research**
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

To: **Marsha Cook**
5201 Ruffin Road, Suite P
San Diego, CA 92123
858-495-5413
marsha.cook@sdcounty.ca.gov

Date: October 20, 2010

Agreement # 529712

Time Period: Invoice is for tasks completed from July 1, 2010 through September 30, 2010. Costs are based on fixed price per completed task.

Completed Task	Description	Cost
Task 9: Program Implementation	**Litter CBSM project:** Organize and implement clean up events, structural interventions, and local partnerships at 4 study sites.	$10,050
TOTAL		**$10,050**

TOTAL DUE.....$10,050

P = 1002993
O = 50915
E = 52370
T = 011.007
A = 100496

Marsha Cook
OK to pay
$10,050.00
(Interim) Program Coordinator

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Escondido
Period:	3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 294.35
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elisa Marrone
Assistant Planner
City of Escondido

5.12.11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

6/16/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.A.2 Produce & distribute to copermittes a 2011 calendar In Spanish						
1/1/2011	Elisa Marrone	Asst. Planner	5.00	$ 42.05	$ 210.25	Oversee delivery & distribution of calendars
30-Jan	Elisa Marrone	Asst. Planner	2.00	$ 42.05	$ 84.10	Manage raffle - winners and prizes for calendar drawing June - Dec 2010
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 294.35					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 294.35**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Imperial Beach
Period:	3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 83.48
Contract / Other Expenditures Claimed:	$ 787.50

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Chris Helmer
Environmental Program Manager
City of Imperial Beach

4/27/11
Date

Chris Helmer
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

6/16/11
Date

Ruth de la Rosa
Signature

COPL .MITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Imperial Beach

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.E. Underserved Target Audience						
1/24/2011	Chris Helmer	Env Program Manager	2.00	$ 41.74	$ 83.48	Scoping meeting with Wildcoast
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 83.48					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Imperial Beach

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPL .ITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Imperial Beach

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 83.48**	

COPE..MITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Imperial Beach

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 3.E. Underserved Target Audience					
Contract. Wildcoast		$ 750.00	2/15/2011	$ 37.50	Underserved target education and calendar distribution
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ 750:00				
Subtaskx.x Management Cost	$ 37.50				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
		$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 787.50**			

Final 04-30-09

WiLDCOAST
COSTASALVAjE

INVOICE

January 26, 2011

BILL TO:

Chris Helmer
Environmental Program Manager
City of Imperial Beach
P (619) 628-1370

DESCRIPTION		QTY	AMT DUE
Underserved Community Storm Water Education and Distribution of Storm Water Pollution 2011 Calendars in Spanish		1300 units	$750.00
		TOTAL AMOUNT DUE	$750.00

PLEASE REMIT PAYMENT TO:

Make all checks payable to: **WiLDCOAST**

925 SEACOAST DRIVE
IMPERIAL BEACH, CA 91932
TEL: 619.423.8665
FAX: 619.423.8488

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 372.22
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

May 11, 2011
Date

M.A. Lahsaie
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

6/16/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1. Meeting Support						
			0.00		$ -	
2/17/2011	Cynthia Mallett	Environmental Specialist II	2.00	$ 51.34	$ 102.68	Revisions to working body format/MOU revisions
2/22/2011	Cynthia Mallett	Environmental Specialist II	1.00	$ 51.34	$ 51.34	Call with City of SD regarding revisions to working body format/MOU
3/7/2011	Cynthia Mallett	Environmental Specialist II	1.50	$ 51.34	$ 77.01	Review Quarter 2 claims
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 231.03					
Subtask 2.B. Work Plans and Budgets						
			0.00	$ -	$ -	
3/7/2011	Cynthia Mallett	Environmental Specialist II	1.50	$ 51.34	$ 77.01	Review Quarter 2 claims
3/7/2011	Cynthia Mallett	Environmental Specialist II	0.25	$ 51.34	$ 12.84	Review Escondido claim
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 89.85					
Subtask 2.C. RURMP Annual Report						
1/12/2011	Cynthia Mallett	Environmental Specialist II	1.00	$ 51.34	$ 51.34	Review final draft of RURMP Annual Report
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 51.34					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 372.22**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of San Diego
Period:	3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 1,439.64
Contract / Other Expenditures Claimed:	$ 67,084.50

05-18-11

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Kris McFadden
Deputy Director
City of San Diego, Storm Water Division

5/18/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa, MPH
Education & Outreach, Watershed Protection Program
County of San Diego

6/16/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.C. Market Research and Assessment Tools. [redacted]						
1/18/201	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Conf call with consultant
1/18/201	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Prepare for meeting, updates, etc.
1/21/2011	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Consultant meeting - FY11 RDD survey prep
2/11/2010	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Consultant meeting - FY11 RDD survey prep
3/15/2011	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Timeline prep, emails w/consultants
			0.00	$ -	$ -	
Sub-total	$ 232.20					
Subtask 3.D. Regional Website						
1/31/2011	Tim Graham	Sr. PIO	1.50	$ 46.44	$ 69.66	Discuss removal of 2010 calendar and create updated events listing for posting on regional web site
2/16/2011	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Planning meeting for improvements/additions to site
2/25/2011	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Conf calls B. Gresham re: domain name conf. coding for site and potential for enhanced functionality
Sub-total	$ 162.54					
Subtask 3.F. Mass Media						
1/21/2011	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Initial Review of Tourism video
1/21/2011	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Emails and concepts regarding trash PSA
1/24/2010	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Finalizing UltraStar media
2/8/2011	Jennifer Keams	Sr. PIO	1.50	$ 46.44	$ 69.66	Finalizing options for FY11 media buy
3/1/2011	Jennifer Keams	Sr. PIO	1.50	$ 46.44	$ 69.66	Extensive Review of Tourism video - sent comments
2/18/2011	Tim Graham	Sr. PIO	0.50	$ 46.44	$ 23.22	Phone call K. Bennett requesting proposal for FY 11 media buy
2/22/2011	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Mtg G. Ibarra re: FY 11 Hispanic Media Buy
3/1/2011	Tim Graham	Sr. PIO	1.50	$ 46.44	$ 69.66	Review tourism video and provide comments
3/2/2011	Tim Graham	Sr. PIO	2.50	$ 46.44	$ 116.10	Review media proposals
3/9/2011	Tim Graham	Sr. PIO	1.50	$ 46.44	$ 69.66	Prepared edits and reviewed updated Clear Channel proposal
3/28/2010	Tim Graham	Sr. PIO	1.00	$ 46.44	$ 46.44	Review updated XEWT proposal
3/31/2010	Tim Graham	Sr. PIO	1.50	$ 46.44	$ 69.66	Enter PO requests into SAP for approval
Sub-total	$ 719.82					
Subtask 2.B. Work Plans and Budgets						
1/18/201	Jennifer Keams	Sr. PIO	2.00	$ 46.44	$ 92.88	Regional Work Plan FY12
2/17/2011	Jennifer Keams	Sr. PIO	3.00	$ 46.44	$ 139.32	Regional Expenditure review, conf call with C. Mallett
3/1/2011	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Regional Expenditure review, subcommittee budgets
Sub-total	$ 278.64		6.00			
Subtask 2.C. FY 2009-10 Regional URMP Annual Report						
1/6/2011	Jennifer Keams	Sr. PIO	1.00	$ 46.44	$ 46.44	Regional Report revisions
Sub-total	$ 46.44					
Copermittee Total	[redacted]				$ 1,439.64	

Fin[illegible]-30-09

1

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 3.D. Regional Website					
Contract 1: Events Online		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6246, Jan 2011
		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6292, Feb 2011
		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6348, Mar 2011
Contract 2: MJE Marketing Services		$ 240.00	4/18/2011	$ 12.00	Remove 2010 Calendar, update Spanish pages, Updated regional Google calendar, replace domain name. Work completed in Feb & March
Subtask 3.D. Sub-total	$ 390.00				
Subtask 3.D. Management Cost	$ 19.50				
Subtask 3.C. Market Research and Assessment					
Contract 1: Action Research				$ -	
Inv# AR11-1015, Regional RDD Survey 2011		$ 43,500.00	3/14/2011	$ 2,175.00	Action Research: GSSR costs for conducting the 2011 Regional RDD Survey
Subtask 3.C. Sub-total	$ 43,500.00				
Subtask 3.C. Management Cost	$ 2,175.00				
Subtask 3.F. Mass Media					
Ultrastar Cinemas Advertising FY 2011 - Inv. # US63011		$ 20,000.00	3/15/2011	$ 1,000.00	Advertising contract with Ultrastar Cinemas
Subtask 3.F. Sub-total	$ 20,000.00				
Subtask 3.F.Management Cost	$ 1,000.00				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO		$ -	x/x/2010		
		$ -			
Sub-total Other Expenditures	$ -				
Total Expenditures (Including contract management cost)		**$ 67,084.50**			

Final 04-30-09

MJE MARKETING SERVICES
MARKETING • ADVERTISING • PUBLIC AFFAIRS
9211 Carmino Del Rio North, Ste. 100, San Diego, California 92108

RECEIVED
MAY 13 2011
By:

Invoice

JM 5/13

DATE	INVOICE #
5/10/11	15349

BILL TO:

Think Blue, City of San Diego
Attn: Jennifer Nichols Kearns, Sr. PIO
Storm Water Dept.
9370 Chesapeake Drive, Ste. 100, MS 1900
San Diego, CA 92123

P.O. NUMBER	TERMS	PROJECT
4500017596	Due on receipt	Website Update

QUANTITY	DESCRIPTION	RATE	AMOUNT
	Think Blue Regional Website Updates (February 2011- ~~April~~ MARCH 2011) ok to pay	240.00	240.00

ok to pay $240.00
Approved For Payment
PO#: 4500017596
Date: 5/17/11
Signature:

Thank you for your business. Please call 619.682.3841 with any questions.

TOTAL $240.00

604846 (11/10)

Selection Criteria

Time.Selection	Include: Aaron; Alex; Dave; Eric; Gerald; Kristen; Marcelo; Marlee; Mike; Nancy; Network; Pearl; Prod. Artist; Robb; Susan; Susanne; Tarsha; Ty; Web Dev
Slip.Transaction Dat	2/1/2011 - 4/30/2011
Job.Selection	Include: Think B - Reg Website Updates

Job Name	Date	Task	Timekeeper	Description	Rate	Time	Total
		Time Spent (optional rounding)			Slip Value		
Timekeeper: Web Dev							
Think B - Reg Website Updates	2/1/2011	Programming	Web Dev	Consult approach to remove calendar pdf from home page and calendar page	$120.00	0.50	$60.00
Think B - Reg Website Updates	2/3/2011	Programming	Web Dev	Change text for Calendar Think Blue region update, Spanish pages	$120.00	1.00	$120.00
Think B - Reg Website Updates	3/1/2011	Programming	Web Dev	Updates to the DNS for refresh to one domain name	$120.00	0.50	$60.00
Total: Web Dev				2.00	$240.00		
Grand Total				2.00	$240.00		

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Jennifer Nichols Kearns**
Senior Public Information Officer
Think Blue, City of San Diego
Storm Water Department
9370 Chesapeake Dr., Suite 100, MS 1900
San Diego, CA 92123

Date: **March 14, 2011**

Invoice # **AR11-1015**

Time Period: Invoice is for regional tasks completed February 1-28, 2011

PO# 4500017804

TASK 6: RESEARCH (Regional)	**AMOUNT DUE**
Task 6a. Data gathering	$43,500.00
Task 6b. Develop assessment methods	$0.00
Task 6c. Annual Random Digit Dial Survey	$0.00
Task 6d. Focus Groups	$0.00
Task 6e. Use research to inform development of outreach	$0.00
Task 6f. Account management	$0.00
TOTAL DUE	**$43,500.00**

OK

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

03/15/11

ATTACHMENT A: MONTHLY NARRATIVES for TASK 6: RESEARCH

Task 6a: Data Gathering

Regional Survey: Goodwin Simon Strategic Research costs for 2011 Regional Survey (costs include survey development, sampling, translation, fielding, analysis and reporting. N=800; 5% Spanish; 17 minutes; RDD landline and wireless 25%)			
Staff	**Hours**	**Rate**	**Subtotal**
Sub: Paul Goodwin (see attached invoice)	n/a	n/a	$43,500.00
SUBTOTAL			

Task 6b: Develop Assessment Methods – N/A. No activity.

Task 6c: Annual Random Digit Dial Survey – N/A. No activity.

Task 6d: Focus Groups – N/A. No activity.

Task 6e: Use Research to Inform Development of Outreach – N/A. No activity.

Task 6f: Account Management

Invoice

Goodwin Simon Strategic Research, Inc.
P.O. Box 368
Culver City, CA 90232
310/558-4761

Bill To:
Jennifer Tabanico Action Research

Date	Invoice No.
03/01/11	525

Terms	Project
Net 30 Days	3112 2011 Re...

Due Date
03/31/11

Item	Description	Amount
Survey	N = 500, 17 minutes, 5% spanish, 25% wireless for Regional Survey	43,500.00
Thank you for choosing Goodwin Simon Strategic Research	Total	$43,500.00

RECEIVED
MAR 15 2011
By: MB

TM 3/15

UltraStar Cinemas

1060 Joshua Way
Vista, CA 92081

760-597-5777 Fax (760) 597-5297

Attetion: Wally Schlotter

Invoice No. US63011

Date of Invoice 3/9/2011

THEATER RENTAL INVOICE & TERMS

Name: GS Storm Water Pollution Prevention Contact: Tim Graham
Address: 9370 Chesapeake Dr. Suite 100
City: San Diego State: CA Zip: 92123-1065
Phone: Fax:
Email Address:

Qty	Description	Unit Price	TOTAL
20000	"Think Blue" advertising iniatives	$1.00	$20,000.00

Please pay by 4/1/11

TOTAL $20,000.00

For GS Storm Water Pollution Prevention

Thank you for choosing UltraStar Cinemas.
Your State of the Art Home Town Theaters

ok to pay $20,000
Approved For Payment
PO#: 4500019683
Date: 3/15/11
Signature:

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
3/1/2011	6348

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com pd via p-card 3/3/11	50.00	50.00
			Total	$50.00

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
2/1/2011	6292

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
		Total		$50.00

Pd $50.00 2/4/11 via B-Card

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-6559
(866) 223.2811 fax

DATE	INVOICE #
1/1/2011	6246

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
		Total		$50.00

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 457.13**
Contract / Other Expenditures Claimed:	**$ 6,892.03**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Program Manager
County of San Diego

5/12/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

6/16/11
Date

Ruth de la Rosa
Signature

COPE..MITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 2.B. Work Plans and Budgets						
3/7/2011	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Review submitted Q2 claims
3/14/2011	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Revise and review Q2 claims
3/17/2011	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Send unoffical draft for approval, sign off on claims, and input into budget worksheets.
Sub-total	$ 376.46					
Subtask 3.A. Materials Development and Distribution						
1/4/2011	Ruth de la Rosa	Land Use Planner II	0.50	$ 53.78	$ 26.89	Finalize details of Spanish calendar purchase
Sub-total	$ 26.89					
Subtask 3.C. Market Research and Assessment Tools						
3/23/2011	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Review previous telephone survey
Sub-total	$ 53.78					
Copermittee Total					**$ 457.13**	

COPE MITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHE

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask 3.A.2. Spanish Calendar reproduction	$ 6,892.03	2/28/2011		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ 6,892.03				
Total Expenditures (Including contract management cost)	**$ 6,892.03**			

Final 04-30-09

0007-305

Customer Information

XEROX CORPORATION
STE 400
7676 HAZARD CTR DR
SAN DIEGO CA
92108

709033971 Customer No.	113633482 Invoice No.	02/22/11 Invoice Date
511469 Purchase Order No.	12/02/10 Date	GSA Contract No.
X141901 Xerox Reference No.	01/20/11 Date Processed	Registration No.
WE Special Reference No.	Tax	PAYABLE ON RECPT Terms of Payment

Telephone 800-854-3689
Direct Billing Inquiries To:

Ship To
COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To
COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA
92123-4310

7026717
Master Order No.

Bill Code

REMARKS
RUTH DE LA ROSA MS 0326
PUBLIC WORKS, DEPT OF
JOB # 41896 LOW ORG 50915
2011 REG STORMWATER CALENDAR SP

Description	Quantity	Unit Price	Amount
4,000 CALENDARS	1	6337.5000	6,337.50

	SUB TOTAL	$6,337.50
CALIF STATE & LOCAL	TAX 8.2500%	522.84
SAN DIEGO COUNTY	TAX 0.5000%	31.69
	INVOICE TOTAL	$6,892.03

Invoice

2/28/11
OK TO PAY - Ruth de la Rosa LUEP II
$6,892.03
P.O. # 511469-0

P: 1002993
O: 50915
E: 52370
T: 011.008
A: 100496

OK to PAY
Jon Van Rhyn Water Quality Program mgr
JVR
2/28/11

THANK YOU FOR DOING BUSINESS WITH XEROX BUSINESS SERVICES

Payment

PLEASE INCLUDE THIS STUB WITH YOUR PAYMENT, OR WRITE YOUR INVOICE NUMBER(S) ON YOUR CHECK.

Ship To/Installed At	Bill To	When Paying By Mail Send Payment To:
COUNTY OF SAN DIEGO XEROX CONVOY COURT 7585 CONVOY CT SAN DIEGO CA 92111	COUNTY OF SAN DIEGO MAIL SERVICES ATTN: BOB WILSON 5201 RUFFIN RD STE O SAN DIEGO CA 92123-4310	XEROX CORPORATION P.O. BOX 7405 PASADENA, CA. 91109-7405

☐ Please check here if your "Bill To" address or "Ship To/Installed At" location has changed and complete reverse side.

Invoice Amount

00-495-2792 1 709033971 113633482 02/22/11 503G $6,892.03

163 040732296 D X505 1 VQL01
T000462 32 X X

202100008070060 1136334825 030[illegible]7 270903397132

P1808

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Oceanside
Period:	4th Quarter FY 2010-11 (April 1- June 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 256.70
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Mo Lahsaie
Clean Water Program Coordinator
City of Oceanside

Aug 18, 2011
Date

M.A. Lahsaiezadeh
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

9/1/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.B. Work Plans and Budgets						
6/21/2011	Cynthia Mallett	Environmental Specialist	0.50	$ 51.34	$ 25.67	Discussion with County re: FY 11-12 Work Plan and Budget
6/22/2011	Cynthia Mallett	Environmental Specialist	1.00	$ 51.34	$ 51.34	Review draft of FY 11-12 Work Plan and Budget
6/23/2011	Cynthia Mallett	Environmental Specialist	2.00	$ 51.34	$ 102.68	FY 11-12 Work Plan and Budget
6/30/2011	Cynthia Mallett	Environmental Specialist	1.50	$ 51.34	$ 77.01	Review final draft of FY 11-12 Work Plan and Budget
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 256.70					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Oceanside

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 256.70	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of San Diego
Period:	4th Quarter FY 2010-11 (April 1- June 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 882.36
Contract / Other Expenditures Claimed:	$ 20,202.05

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Kris McFadden
Deputy Director
City of San Diego, Storm Water Division

07/26/11

7/29/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa, MPH
Education & Outreach, Watershed Protection Program
County of San Diego

9/1/11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.C. Market Research and Assessment Tools.						
4/11/2011	Jennifer Kearns	Sr. PIO	2.00	$ 46.44	$ 92.88	Consultant/copermittee meeting prep
4/12/2011	Jennifer Kearns	Sr. PIO	3.00	$ 46.44	$ 139.32	Prep and conduct meeting
4/20/2011	Jennifer Kearns	Sr. PIO	1.50	$ 46.44	$ 69.66	Emails. Review final draft of survey
4/29/2011	Jennifer Kearns	Sr. PIO	0.50	$ 46.44	$ 23.22	Emails, consultant conf call re:final draft of survey
6/7/2011	Jennifer Kearns	Sr. PIO	0.50	$ 46.44	$ 23.22	Emails. review survey aggregate results
6/8/2011	Jennifer Kearns	Sr. PIO	0.50	$ 46.44	$ 23.22	Emails. review survey aggregate results
6/28/2011	Jennifer Kearns	Sr. PIO	0.50	$ 46.44	$ 23.22	Emails. consultant conf call re:final draft of survey
			0.00	$ -	$ -	
Sub-total	$ 394.74					
Subtask 3.D. Regional Website						
6/1/2011	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Review, draft consultant scope for FY12
5/26/2011	Tim Graham	Sr. PIO	0.50	$ 46.44	$ 23.22	FY 12 SOW discussion with consultant for Regional Web site
Sub-total	$ 69.66					
Subtask 3.F. Mass Media						
5/3/2011	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	Initial Review of Tourism video
5/17/2011	Jennifer Kearns	Sr. PIO	3.00	$ 46.44	$ 139.32	Review, Emails and concepts regarding trash PSA
4/5/2011	Tim Graham	Sr. PIO	0.50	$ 46.44	$ 23.22	Confirm Regional Buy dates, provided updated copies of spots to stations
5/10/2011	Tim Graham	Sr. PIO	0.50	$ 46.44	$ 23.22	Review Tourism PSA
6/6/2011	Tim Graham	Sr. PIO	0.50	$ 46.44	$ 23.22	Review Invoices for spots
6/12/2011	Tim Graham	Sr. PIO	0.50	$ 46.44	$ 23.22	Review Invoices for spots
Sub-total	$ 278.64					
Subtask 2.C. Events						
4/26/2011	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	County Fair Sponsorship - negotiating terms
5/6/2011	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	County Fair Sponsorship - finalizing sponsorship
6/3/2011	Jennifer Kearns	Sr. PIO	1.00	$ 46.44	$ 46.44	County Fair Sponsorship- finalizing sponsorship, copermittee emails
Sub-total	$ 139.32					

Copermittee Total	**$ 882.36**

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 20,202.05**			

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 3.D. Regional Website					
Contract 1: Events Online		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6386, April 2011
		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6437, May 2011
		$ 50.00		$ 2.50	Regional website monthly hosting, FTP services - Inv # 6380, June 2011
Contract 2: MJE Marketing Services					
Subtask 3.D. Sub-total	$ 150.00				
Subtask 3.D. Management Cost	$ 7.50				
Subtask 3.C. Market Research and Assessment					
Contract 1: Action Research				$ -	
Subtask 3.C. Sub-total	$ -				
Subtask 3.C. Management Cost	$ -				
Subtask 3.F. Mass Media					
Clear Channel		$ 1,869.00	4/24/2011	$ 93.45	
Clear Channel		$ 5,607.00	5/29/2011	$ 280.35	
Clear Channel		$ 18.00	5/29/2011	$ 0.90	
KFMB-TV		$ 2,592.50	5/29/2011	$ 129.63	
KFMB-TV		$ 2,044.25	6/26/2011	$ 102.21	
TV De Los Mochis		$ 5,000.00	5/29/2011	$ 250.00	
Univision Radio		$ 1,270.00	5/29/2011	$ 63.50	
Univision Radio		$ 1,270.00	6/26/2011	$ 63.50	
Subtask 3.F. Sub-total	$ 19,670.75				
Subtask 3.F.Management Cost	$ 983.54				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					

Final 04-30-09

INVOICE

KFMB-TV 8

www.kfmb.com

Send Payment To:

Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

Invoice #	Invoice Date	Invoice Month	Invoice Period
57190-2	07/03/11	July 2011	06/27/11 - 07/01/11

Advertiser	Product	Estimate Number
City of San Diego	Think Blue Regional	May/Jun 2011 5000

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
6	05/23/11	07/03/11	M-F 5-7p	5-7p	MTWTF--	:30	2	$600.00	NM

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	06/27/11	07/03/11	MTWTF--	2	$600.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
4	8	M	06/27/11	5:57 PM	M-F 5-7p	5-7p	:30	ANTSINPANTSREV	$600.00	NM
5	8	F	07/01/11	5:57 PM	M-F 5-7p	5-7p	:30	ANTSINPANTSREV	$175.00	NM

Total Spots 10 Gross Total **$2,405.00**

Payment Terms 30 Days

Agency Commission **$360.75**

Net Amount Due **$2,044.25**

ok to pay
$2044.25
PO # 4500015898
Judy
6/29/11

We warrant that the actual broadcast information shown on this invoice was taken from the program log.
Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race of ethnicity. Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any provision in any agreement entered into with Advertiser or Agency whose intent is to discriminate in such manner shall be null and void.

INVOICE

TM 6/6

KFMB-TV 8

www.kfmb.com

Send Payment To:

Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

Invoice #	Invoice Date	Invoice Month	Invoice Period
57190-1	05/29/11	May 2011	04/25/11 - 05/29/11

Advertiser	Product	Estimate Number
City of San Diego	Think Blue Regional	May/Jun 2011 5000

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
6	05/23/11	07/03/11	M-F 5-7p	5-7p	MTWTF--	:30	2	$600.00	NM

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	05/23/11	05/29/11	MTWTF--	3	$600.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
1	8	M	05/23/11	5:56 PM	M-F 5-7p	5-7p	:30	ANTSINPANTSREV	$600.00	NM
2	8	W	05/25/11	6:50 PM	M-F 5-7p	5-7p	:30	ANTSINPANTSREV	$600.00	NM
3	8	Th	05/26/11	6:42 PM	M-F 5-7p	5-7p	:30	ANTSINPANTSREV	$600.00	NM

Total Spots 11 Gross Total $3,050.00

Payment Terms 30 Days

Agency Commission	$457.50
Net Amount Due	$2,592.50

ok to pay $2592.50

Approved for Payment
PO#: 4500015898
Date: 6-7-11
Signature:

We warrant that the actual broadcast information shown on this invoice was taken from the program log.
Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race of ethnicity. Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any provision in any agreement entered into with Advertiser or Agency whose intent is to discriminate in such manner shall be null and void.

1476011

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

06-06-11P01:00 RCVD

RECEIVED
JUN 07 2011
By: MB

CLEARCHANNEL

INVOICE: 125-210876

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

14760

Advertiser No.: 663
City Of San Diego
Order: 122876
Co-op: No

Invoice Date: **05/29/2011**
Payment Due: **06/28/2011**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/PO# Regional Buy Think Blue/PO #4500020450**

CPE

Invoice Summary:

# of Spots:	18
Gross Spot Billing:	$18.00
Agency Commission:	$0.00
Net Spot Billing:	$18.00

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

ok to pay $18.00
Approved For Payment
PO#:
Date: 6/16/11
Signature:

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

1476211

CLEARCHANNEL

RECEIVED
JUN 07 2011
By: MB

06-06-11P01:01 RCVD

INVOICE: 125-210878

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

14762

Advertiser No.: 663
City Of San Diego
Order: 122921
Co-op: No

Invoice Date: **05/29/2011**
Payment Due: **06/28/2011**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/PO#4500020450** **Regl Buy Think Blue**
Note 2: **Regional Buy** **CPE**

Invoice Summary:

# of Spots:	21
Gross Spot Billing:	$5,607.00
Agency Commission:	$0.00
Net Spot Billing:	$5,607.00

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

ok to pay $5,607.00
Approved For Payment
PO#: 4500020450
Date: 6/11/11
Signature: Holly Wardle

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

RECEIVED
MAY 09 2011
By MB

5200141183

CLEARCHANNEL

TM 6/3

INVOICE: 125-209690

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

06963

Advertiser No.: 663
City Of San Diego
Order: 122921
Co-op: No

Invoice Date: **04/24/2011**
Payment Due: **05/24/2011**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/PO#4500020450** **Regl Buy Think Blue**
Note 2: **Regional Buy** **CPE**

Invoice Summary:

# of Spots:	7
Gross Spot Billing:	$1,869.00
Agency Commission:	$0.00
Net Spot Billing:	$1,869.00

Ok to pay $1869.00
Approved For Payment
PO#: 4500020450
Date: 5/6/11
Signature:

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

124

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
4/1/2011	6386

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com Pd 4/12/11 $50.00 p-card	50.00	50.00

Total	$50.00

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
5/1/2011	6437

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00

pd via paypal 5/26/11 $50.00

Total	$50.00

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
6/1/2011	6480

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
			Total	$50.00

INVOICE

RECUERDO 102.9 FM

LA NUEVA 106.5

Invoice #:	**IN-SD2-1110511076**
Invoice Date:	05/29/2011
Contract #:	104177
Page:	1
Net Amount:	$1,270.00

Advertiser: **CITY OF SAN DIEGO STORM WATER**
9370 CHESAPEAKE DRIVE, STE 100
SAN DIEGO, CA 92123

Station(s): **KLQV-FM**

Advertiser: **CITY OF SAN DIEGO STORM WATER**
Product: **Storm Water Pollute Preve**
Estimate #:
Agency Client Code:
Buyer Name:

Salesperson(s): DOUG BUCKLEY2
Terms: 30 NET

Day	Date	Time	Ln	Length	Product	ISCI	Rate
MON	05/23/11	06:47a	5	60		ANTS IN YOUR PLANTS	$40.00
MON	05/23/11	12:26p	7	60		ANTS IN YOUR PLANTS	$5.00
MON	05/23/11	03:48p	7	60		ANTS IN YOUR PLANTS	$5.00
MON	05/23/11	06:24p	4	60		ANTS IN YOUR PLANTS	$140.00
MON	05/23/11	10:30p	8	60		ANTS IN YOUR PLANTS	$0.00
TUE	05/24/11	05:46a	1	60		ANTS IN YOUR PLANTS	$15.00
TUE	05/24/11	08:49a	7	60		ANTS IN YOUR PLANTS	$5.00
TUE	05/24/11	09:47a	2	60		ANTS IN YOUR PLANTS	$140.00
TUE	05/24/11	10:47a	7	60		ANTS IN YOUR PLANTS	$5.00
TUE	05/24/11	11:46a	5	60		ANTS IN YOUR PLANTS	$40.00
TUE	05/24/11	01:49p	5	60		ANTS IN YOUR PLANTS	$40.00
TUE	05/24/11	08:30p	8	60		ANTS IN YOUR PLANTS	$0.00
WED	05/25/11	05:43a	1	60		ANTS IN YOUR PLANTS	$15.00
WED	05/25/11	08:26a	2	60		ANTS IN YOUR PLANTS	$140.00
WED	05/25/11	10:49a	3	60		ANTS IN YOUR PLANTS	$140.00
WED	05/25/11	05:29p	4	60		ANTS IN YOUR PLANTS	$140.00
THU	05/26/11	02:45a	8	60		ANTS IN YOUR PLANTS	$0.00
THU	05/26/11	05:21a	1	60		ANTS IN YOUR PLANTS	$15.00
SAT	05/28/11	12:20a	8	60		ANTS IN YOUR PLANTS	$0.00
SAT	05/28/11	07:48a	6	60		ANTS IN YOUR PLANTS	$75.00
SAT	05/28/11	11:47a	6	60		ANTS IN YOUR PLANTS	$75.00
SAT	05/28/11	08:39p	5	60		ANTS IN YOUR PLANTS	$40.00
SAT	05/28/11	11:32p	7	60		ANTS IN YOUR PLANTS	$5.00
SUN	05/29/11	06:19a	6	60		ANTS IN YOUR PLANTS	$75.00
SUN	05/29/11	09:44a	8	60		ANTS IN YOUR PLANTS	$0.00
SUN	05/29/11	06:27p	5	60		ANTS IN YOUR PLANTS	$40.00
SUN	05/29/11	07:23p	6	60		ANTS IN YOUR PLANTS	$75.00

INVOICE

Invoice #:	**IN-SD2-1110511076**
Invoice Date:	05/29/2011
Contract #:	104177
Page:	2
Net Amount:	$1,270.00

Remit To:
UNIVISION RECEIVABLES CO. LLC
PO BOX 452538
LOS ANGELES, CA 90045

DUE ON RECEIPT

Invoice Totals

Total Spots:	27
Gross Amount:	$1,270.00
Net Amount:	$1,270.00

THIS RADIO STATION WARRANTS THAT THE PROGRAM/ANNOUNCEMENTS INDICATED ABOVE WERE BROADCAST IN ACCORDANCE WITH OFFICIAL STATION LOG. ALL TIMES ARE APPROXIMATE WITHIN 15 MINUTES AND ARE WITHIN THE TIME CLASSIFICATION ORDERED.
TIN: 75-2765167
PLEASE ENCLOSE REMITTANCE ADVICE WITH PAYMENT

Univision and its stations do not discriminate in advertising contracts on the basis of race or ethnicity. Any provision in any order or agreement for advertising that purports to discriminate on the basis of race or ethnicity, even if handwritten, typed or otherwise made part of a particular contract, is hereby rejected.

ok to pay
$1270.00
po# 4500020062
6/29/11

INVOICE

RECUERDO 102.9 FM

LA NUEVA 106.5

Invoice #:	**IN-SD2-1110611347**
Invoice Date:	06/26/2011
Contract #:	104177
Page:	1
Net Amount:	$1,270.00

Advertiser: **CITY OF SAN DIEGO STORM WATER**
9370 CHESAPEAKE DRIVE, STE 100
SAN DIEGO, CA 92123

Station(s): **KLQV-FM**

Advertiser: **CITY OF SAN DIEGO STORM WATER**
Product: **Storm Water Pollute Preve**
Estimate #: **Ants In Plants**
Agency Client Code:
Buyer Name:

Salesperson(s): DOUG BUCKLEY2
Terms: 30 NET

Day	Date	Time	Ln	Length	Product	ISCI	Rate
MON	06/13/11	05:24a	1	60		ANTS IN YOUR PLANTS	$15.00
MON	06/13/11	06:48a	2	60		ANTS IN YOUR PLANTS	$140.00
MON	06/13/11	10:46a	5	60		ANTS IN YOUR PLANTS	$40.00
MON	06/13/11	03:27p	4	60		ANTS IN YOUR PLANTS	$140.00
MON	06/13/11	09:29p	7	60		ANTS IN YOUR PLANTS	$5.00
TUE	06/14/11	12:45p	3	60		ANTS IN YOUR PLANTS	$140.00
TUE	06/14/11	06:48p	4	60		ANTS IN YOUR PLANTS	$140.00
TUE	06/14/11	10:45p	8	60		ANTS IN YOUR PLANTS	$0.00
TUE	06/14/11	11:43p	7	60		ANTS IN YOUR PLANTS	$5.00
WED	06/15/11	01:17a	8	60		ANTS IN YOUR PLANTS	$0.00
WED	06/15/11	07:31a	2	60		ANTS IN YOUR PLANTS	$140.00
WED	06/15/11	09:47p	5	60		ANTS IN YOUR PLANTS	$40.00
WED	06/15/11	11:28p	7	60		ANTS IN YOUR PLANTS	$5.00
THU	06/16/11	04:46a	8	60		ANTS IN YOUR PLANTS	$0.00
THU	06/16/11	05:20a	1	60		ANTS IN YOUR PLANTS	$15.00
THU	06/16/11	11:45p	7	60		ANTS IN YOUR PLANTS	$5.00
FRI	06/17/11	03:21a	8	60		ANTS IN YOUR PLANTS	$0.00
FRI	06/17/11	05:19a	1	60		ANTS IN YOUR PLANTS	$15.00
FRI	06/17/11	07:29p	5	60		ANTS IN YOUR PLANTS	$40.00
FRI	06/17/11	09:32p	5	60		ANTS IN YOUR PLANTS	$40.00
FRI	06/17/11	10:30p	7	60		ANTS IN YOUR PLANTS	$5.00
SAT	06/18/11	09:26a	5	60		ANTS IN YOUR PLANTS	$40.00
SAT	06/18/11	03:25p	6	60		ANTS IN YOUR PLANTS	$75.00
SAT	06/18/11	06:27p	6	60		ANTS IN YOUR PLANTS	$75.00
SUN	06/19/11	02:40a	8	60		ANTS IN YOUR PLANTS	$0.00
SUN	06/19/11	09:41a	6	60		ANTS IN YOUR PLANTS	$75.00
SUN	06/19/11	04:25p	6	60		ANTS IN YOUR PLANTS	$75.00

INVOICE

Invoice #:	**IN-SD2-1110611347**
Invoice Date:	06/26/2011
Contract #:	104177
Page:	2
Net Amount:	$1,270.00

Remit To:
UNIVISION RECEIVABLES CO. LLC
PO BOX 452538
LOS ANGELES, CA 90045

DUE ON RECEIPT

Invoice Totals

Total Spots:	27
Gross Amount:	$1,270.00
Net Amount:	$1,270.00

THIS RADIO STATION WARRANTS THAT THE PROGRAM/ANNOUNCEMENTS INDICATED ABOVE WERE BROADCAST IN ACCORDANCE WITH OFFICIAL STATION LOG. ALL TIMES ARE APPROXIMATE WITHIN 15 MINUTES AND ARE WITHIN THE TIME CLASSIFICATION ORDERED.
TIN: 75-2765167
PLEASE ENCLOSE REMITTANCE ADVICE WITH PAYMENT

Univision and its stations do not discriminate in advertising contracts on the basis of race or ethnicity. Any provision in any order or agreement for advertising that purports to discriminate on the basis of race or ethnicity, even if handwritten, typed or otherwise made part of a particular contract, is hereby rejected.

ok to pay $1270.00
Approved for Payment
PO#: 4500082062
Date: 6/29/11
Signature:
Please close PO.

TV DE LOS MOCHIS, S.A DE C.V.

AV. VASCO DE QUIROGA No. 2000
COL. SANTA FE, DEL. ALVARO OBREGON, MÉXICO, Distrito Federal, C.P. 01210, TEL. 5261-2000
R.F.C. TVM851118SK3

ESTABLECIMIENTO
CALLE CANAL 12 Nº 4400, COL. JUAREZ C.P. 22040, TIJUANA, B.C.
Telefono 01 (664) 6845185

XEWT 12 TIJUANA • SAN DIEGO

Televisa TIJUANA

FACTURA

TM 6128

Lugar de Expedición: Tijuana, B.C.

CONTRATO No. / CONTRACT No.	SERIE / SERIAL	FACTURA No / INVOICE No.	FECHA DE EMISION / EMISSION DATE	REFERENCIA DE CLIENTE / CUSTOMER REFERENCE
	BF	1763	2011-06-08T13:58:37	

No. CLIENTE / CLIENT No.	NUMERO Y AÑO DE APROBACION DE FOLIOS / NUMBER AND YEAR OF FILE APPROVAL	No. DE CERTIFICADO DIGITAL / DIGITAL CERTIFICATE NO.
0704651	572079 2011	00001000000101452247

AGENCIA: / AGENCY:	CITY OF SAN DIEGO	RFC: / TAX ID:	XEXX010101000
DIRECCION: / ADDRESS:	9370 CHESAPEAKE DR. STE. 100 SAN DIEGO,CA 92123 USA EXTRANJEROS		
PAIS: / COUNTRY:	USA	ADVERTISER: / EST.PRODUCT:	CITY OF SAN DIEGO

CANTIDAD / QUANTITY	CONCEPTO / CONCEPT	PRECIO UNIT. / UNIT PRICE	IMPORTE / AMOUNT
1	BROADCAST SCHEDULE MAY	5,000.00	5,000.00

ok to pay
$5000.00
PO # 4500020480
6/30/11

VENDEDOR / SALESPERSON: GERI IBARRA

IMPORTE TOTAL CON LETRA / WRITTEN AMOUNT: Five Thousand 00/100 USD

TOTAL-GROSS	USD	5,000.00
AGENNCY-COMMISSION	USD	0.00
SUB-TOTAL-NET	USD	5 000.00
IVA 0%	USD	0.00
TOTAL NET:	USD	5 000.00

SELLO DIGITAL / DIGITAL STAMP
OSjVRFEZ35LhnkFnqPiKV757lqMwOcDWP2rkS4PYXXObk8hrXsSV/Bhwo4/cBlfVIgvXhaPckRRdcHcVnlZEYD1Qy4tbsyUBpfl
5a3nvqU4pdLvymfw9ds8MvP+qfDn0wIF/QxR4/pjhU24zPl+RLA6RvF3mk5PS3JiMnKfHS8=

CADENA ORIGINAL / DIGITAL CHAIN
2.6|BF|1763|2011-06-08T13:58:37|572079 2011|Ingreso PAGO EN UNA SOLA EXHIBICION|MONEDA: USD, TC: 13.7148 5000.00 5000.00,TVM851118SK3|TV DE LOS MOCHIS, S.A DE C.V.|AV. VASCO DE QUIROGA 2000|SANTA FE|MÉXICO|TEL. 5261-2000|ALVARO OBREGON|Distrito Federal|México|01210|XEXX010101000|CITY OF SAN DIEGO|9370 CHESAPEAKE DR. STE. 100|SAN DIEGO,CA|92123|USA|EXTRANJEROS|USA|1|BROADCAST SCHEDULE MAY|5000.00|5000.00|IVA.0.00|0.00|0.00

PAGO EN UNA SOLA EXHIBICION

Submit Payment to:P.O. Box 434537
San Diego Ca. 92143-4537

ESTE DOCUMENTO ES UNA REPRESENTACIÓN IMPRESA DE UN CFD
THIS DOCUMENT IS AN IMPRESSION OF A FISCAL DIGITAL PROOF

TV De Los Mochis, S.A. de C.V.

energy
Energy Communications Corp.

Contract #56386-62961
Advertiser City of San Diego
Estimate 4500020480
Billing Month May-11

Date	Time scheduled		Air time	Rate	Code	Length
16/05/2011	7:00	8:00	7:20	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
16/05/2011	10:00	14:20	14:18	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
16/05/2011	7:00	23:00	17:27	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
17/05/2011	10:00	14:20	13:49	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
17/05/2011	18:00	19:00	18:35	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
18/05/2011	7:00	8:00	7:42	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
18/05/2011	18:00	19:00	18:12	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
19/05/2011	7:00	23:00	15:44	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
20/05/2011	7:00	8:00	7:56	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
20/05/2011	10:00	14:20	12:52	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
21/05/2011	9:00	12:00	11:33	$100.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
23/05/2011	7:00	8:00	7:42	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLA NTS	0:00:30
23/05/2011	10:00	14:20	14:16	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
23/05/2011	7:00	23:00	21:45	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
24/05/2011	10:00	14:20	12:28	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
24/05/2011	18:00	19:00	18:12	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
25/05/2011	7:00	8:00	7:45	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
25/05/2011	18:00	19:00	18:40	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
26/05/2011	7:00	23:00	17:13	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
27/05/2011	7:00	8:00	7:49	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
27/05/2011	10:00	14:20	13:41	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
28/05/2011	9:00	12:00	9:44	$100.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
30/05/2011	7:00	8:00	7:26	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
31/05/2011	18:00	19:00	18:38	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
1/6/2011	7:00	8:00	7:59	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
1/6/2011	10:00	14:20	14:07	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
1/6/2011	18:00	19:00	18:20	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	00:30
2/6/2011	10:00	14:20	11:36	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	00:30
2/6/2011	7:00	23:00	21:28	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	00:30
3/6/2011	7:00	8:00	7:29	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
3/6/2011	7:00	23:00	11:16	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
3/6/2011	10:00	14:20	11:56	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
6/6/2011	7:00	8:00	7:39	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
6/6/2011	10:00	14:20	14:06	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
6/6/2011	7:00	23:00	17:49	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
7/6/2011	10:00	14:20	14:08	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
7/6/2011	18:00	19:00	18:35	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
8/6/2011	7:00	8:00	7:45	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
8/6/2011	10:00	14:20	14:12	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
9/6/2011	7:00	23:00	15:34	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
9/6/2011	18:00	19:00	16:40	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
10/6/2011	7:00	8:00	7:27	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
13/06/2011	7:00	8:00	7:37	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
13/06/2011	7:00	23:00	13:49	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
14/06/2011	18:00	19:00	18:41	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
14/06/2011	7:00	23:00	21:06	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
15/06/2011	7:00	8:00	7:29	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
15/06/2011	10:00	14:30	14:08	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
16/06/2011	10:00	14:30	13:19	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
16/06/2011	18:00	19:00	18:34	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30

17/06/2011	7:00	8:00	7:46	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
17/06/2011	10:00	14:30	13:01	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
20/06/2011	7:00	8:00	7:00	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
20/06/2011	10:00	14:30	10:00	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
21/06/2011	10:00	14:30	10:00	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
21/06/2011	18:00	19:00	18:00	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
22/06/2011	7:00	8:00	7:00	$85.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
22/06/2011	10:00	14:30	10:00	$90.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
23/06/2011	7:00	23:00	7:00	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
23/06/2011	18:00	19:00	18:00	$145.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
24/06/2011	7:00	23:00	7:00	$0.00	THINK BLUE REGIONAL ANTS IN YOUR PLANTS	0:00:30
				$5,005.00		

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Escondido
Period:	4th Quarter FY 2010-11 (April 1- June 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 147.18
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Elisa Marrone
Assistant Planner
City of Escondido

7.27.11
Date

E Marrone
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

9/1/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.G Regional Events						
6/7/2011	Elisa Marrone	Asst. Planner	1.00	$ 42.05	$ 42.05	Pick up EnviroFair Supplies from Oceanside
6/15/2011	Elisa Marrone	Asst. Planner	2.50	$ 42.05	$ 105.13	Pick up EnviroFair Supplies from County & City
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 147.18					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Escondido

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 147.18**	

COPE. .ITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	4th Quarter FY 2010-11 (April 1- June 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 510.91**
Contract / Other Expenditures Claimed:	**$ 10,983.13**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Manager
County of San Diego

8/31/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

9/1/11
Date

Ruth de la Rosa
Signature

COPE. .ITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.A. Materials Development & Distribution						
5/17/2011	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Quotes fro Reuable & Recycled totes
5/19/2011	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Reusable tote purchase: send logo, review mock up,
6/6/2011	Ruth de la Rosa	Land Use Planner II	0.50	$ 53.78	$ 26.89	Receive reusable totes, arrange for pick up
Sub-total	$ 134.45					
Subtask 2.B Work Plans and Budgets						
6/3/2011	Ruth de la Rosa	Land Use Planner II	3.00	$ 53.78	$ 161.34	Review submitted claims
6/9/2011	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Address concerns re business card expense, re-send Q3 claims for review/approval
6/14/2011	Ruth de la Rosa	Land Use Planner II	1.00	$ 53.78	$ 53.78	Finalize offical claims and input data into spreadsheet
6/27/2011	Ruth de la Rosa	Land Use Planner II	2.00	$ 53.78	$ 107.56	Review/Revise work plan and budget FY11-12
Sub-total	$ 376.46					

Copermittee Total	**$ 510.91**

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask 3.A. Materials Development & Distribution	$ 10,983.13	6/10/2011		Recycled Totes purchase
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ 10,983.13				
Total Expenditures (Including contract management cost)	**$ 10,983.13**			

Final 04-30-09

Infinite Business Solutions
10405 San Diego Mission Road, Suite 102
San Diego, CA 92108
619-516-4271 • Fax 619-284-0826

INVOICE

004025 Page: 1

INVOICE DATE: 6/10/2011
CLIENT PO: 521305
SHIPPED: UPS Ground 6/10/2011
ORDER#: 3964
CONSULTANT: 20 (S) AMY CLOUSE

TO:
ATTN: RUTH DE LA ROSA
CTY OF SD-EDUCATION & OUTREACH
WATERSHED PROTECTION PROGRAM
5201 RUFFIN RD STE P
SAN DIEGO CA 92123

SHIP TO: 01
ATTN: Ruth de la Rosa
CTY OF SD-EDUCATION & OUTREACH
WATERSHED PROTECTION PROGRAM
5201 RUFFIN RD STE P
SAN DIEGO CA 92123

ORDERED	SHIPPED	UNIT	ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
3,000	3,000	EA/1	6004	REPET TOTE	3.25	9,750.00

P: 1002993
O: 50915
E: 52370
T: 011.008
A: 100496
OK to Pay: Ruth dela Rosa, LUEP2 6/15/11
Approved by:

BPA# 521305-5
$10,983.13

JON VAN RHYN, Program Manager
OK to PAY
6/30/11

TERMS: NET 15
We now accept MasterCard and Visa

	9,750.00
SALES TAX	853.13
FREIGHT	380.00
TOTAL	**10,983.13**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of Encinitas
Period:	3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 154.25
Contract / Other Expenditures Claimed:	$ 61.56

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Erik Steenblock
Program Manager
City of Encinitas

4/26/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner II
County of San Diego

9/1/11
Date

Ruth de la Rosa
Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Encinitas

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.G. REGIONAL EVENTS						
1/3/2011	Kristy Rygiel	Program Assistant	1.00	$ 30.85	$ 30.85	Created staffing grid for HTF and sent request for vounteers email to copermittees
1/25/2011	Kristy Rygiel	Program Assistant	2.00	$ 30.85	$ 61.70	Picked up event giveaway items and delivered to HTF booth staffers
1/27 & 2/7	Kristy Rygiel	Program Assistant	1.00	$ 30.85	$ 30.85	Sent confirmation/information emails to HTF booth staffers
2/10/2011	Kristy Rygiel	Program Assistant	1.00	$ 30.85	$ 30.85	Returned event materials to copermittees
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 154.25					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of Encinitas

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			Auto-calc'd (5% of amount paid)	
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask 3.G. REGIONAL EVENTS	$ 61.56	2/8/2011		Printed Think Blue San Diego Region business cards
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ 61.56				
Total Expenditures (Including contract management cost) $ 61.56				

Final 04-30-09

FedEx Office

FedEx Office is your destination
for printing and shipping.

411 Encinitas Blvd
Encinitas, CA 92024-3727
Tel: (760) 634-4500

2/8/2011 2:19:10 PM PST
Team Member: Jacob A.
Customer: Kristy Rygiel

SALE

Business Cards	**Qty 30**	**55.61**
Cutting per Cut	9 @	1.4900 T
0376 Regular Price	1.49	
FS C SS 8.5x11 CS	30 @	1.2400 T
2525 Regular Price	1.24	
Digital File Enhance	1 @	5.0000 T
4373 Regular Price	5.00	
Price per piece	1.85	
Regular Total	55.61	
Discounts	0.00	
Cutting Setup	**Qty 1**	**1.00**
Cutting Setup	1 @	1.0000 T
0377 Regular Price	1.00	
Price per piece	1.00	
Regular Total	1.00	
Discounts	0.00	

Sub-Total	56.61
Tax	4.95
Deposit	0.00
Total	**61.56**
Visa (S)	61.56
Account: 1237	
Auth: 079683 (A)	
Total Tender	61.56
Change Due	0.00
Total Discounts	**0.00**

Approved FY 2011-12 Budget Summary

	Working Body	Proposed Budget	Requested Roll-overs	Adjusted FY 2011-12 Budget
A	Program Planning Subcommittee (PPS)	$190,747	$0	$190,747
B	Education and Residential Sources Workgroup	$168,030	$0	$168,030
C	Monitoring Workgroup	$2,367,080	$123,750	$2,490,830
D	Land Development Workgroup	$199,494	$37,988	$237,482
E	Industrial, Commercial, and Municipal Sources Workgroup	$46,770	$479	$47,250
N/A	County (CASQA Fees)	$20,500	$0	$20,500
		$2,992,621	**$162,217**	**$3,154,838**

	Working Body	Approved FY 2010-11 Budget	FY 2009-10 Roll-overs	Adjusted FY 2010-11 Budget	Approved Expenditures FY 2010-11	Remaining Funds	Approved FY 2010-11 rollovers	Unspent FY 2010-11 Funds
A	Program Planning Subcommittee (PPS)	$12,597	$0	$12,597	$6,578	$6,019	$0	$6,019
B	Fiscal, Reporting, & Assessment Workgroup	$217,089	$4,835	$221,924	$205,491	$16,433	$0	$16,433
C	Education and Residential Sources Workgroup	$207,655	$20,000	$227,655	$157,607	$70,048	$0	$70,048
D	Monitoring Workgroup	$2,406,897	$328,314	$2,735,211	$2,581,043	$154,168	$123,750	$30,418
E	Land Development Workgroup	$91,636	$56,687	$148,323	$110,335	$37,988	$37,988	$0
F	Municipal Sources Workgroup	$15,590	$0	$15,590	$7,479	$8,111	$479	$7,632
G	Industrial and Commercial Sources Workgroup	$50,806	$10,000	$60,806	$20,759	$40,047	$0	$40,047
H	Regional WURMP Workgroup	$52,909	$40,000	$92,909	$92,634	$275	$0	$275
N/A	County (CASQA Fees)	$20,500	$0	$20,500	$20,500	$0	$0	$0
		$3,075,678	**$459,836**	**$3,535,515**	**$3,202,426**	**$333,089**	**$162,217**	**$170,872**

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	Working Body	Approved FY 2010-11 Budget	FY 2009-10 Roll-overs	FY 2009-10 Roll-over Task	Adjusted FY 2010-11 Budget	Spent FY 2009-10 Roll-overs	FY 2009-10 Unspent Roll-over Credit	FY 2010-11 Roll-overs	FY 2010-11 Roll-over Task	Unspent FY 2010-11 Funds
A	Program Planning Subcommittee	$12,597	$0		$12,597	N/A	$0	$0		$6,019
B	Fiscal, Reporting, & Assessment Workgroup	$217,089	$4,835	2.D. Regional Standards	$221,924	$0	$4,835	N/A		$16,433
C	Education and Residential Sources Workgroup	$207,655	$20,000	3.E Market Research and Assessment Tools to complete the CBSM Gen Y Youth litter study	$227,655	$20,000	$0	$0		$70,048
D	Monitoring Workgroup	$2,406,897	$141,564	3.A. Regional Monitoring Program (SCCWRP bacteria regrowth)	$2,735,211	$291,564	$0	$45,000	3.A. Regional Monitoring Program Bateria Source Study	$30,418
			$36,750	3.B. Southern California Monitoring Coalition			$0	$36,750	3.B. Southern California Monitoring Coalition - FY 2009-10	
							$0	$31,500	3.B. Southern California Monitoring Coalition - FY 2010-11	
			$150,000	3.C. 5-Year Regional Monitoirng Program Assessment and Updating for ROWD and LTEA			$0	$10,500	3.A. Targeted MS4 Data Anaylsis	
E	Land Development Workgroup	$91,636	$56,687	2.D. Hydromodification Management Plan and Standard Urban Stormwater Mitigation Plan updates, training, and required monitoring	$148,323	$33,418	$0	$37,988	2.D. Hydromodification Management Plan and Standard Urban Stormwater Mitigation Plan updates, training, and required monitoring	$0
F	Municipal Sources Workgroup	$15,590	$0		$15,590	N/A	$0	N/A		$7,632
G	Industrial and Commercial Sources Workgroup	$50,806	$10,000	2.H. Regional Mobile Business Program	$60,806	$0	$10,000	$479	3.A. Complete work on the municipal inventory and prioritization.	$40,047
H	Regional WURMP Workgroup	$52,909	$40,000	2.E. Watershed Data, Reporting, and Assessment Needs	$92,909	$40,000	$0	N/A		$275
N/A	County (CASQA Fees)	$20,500	$0		$20,500	N/A	N/A	N/A		N/A
		$3,075,678	**$459,836**		**$3,535,515**	**$384,982**	**$14,835**	**$162,217**		**$170,872**

Table 2: Fiscal Year 2010-11 Expenditure Summary

	Program Planning Subcommittee (PPS)	Fiscal, Reporting, & Assessment Workgroup	Education/ Residential Sources Workgroup	Monitoring Workgroup	Land Development Workgroup	Municipal Sources Workgroup	Industrial/ Commercial Sources Workgroup	Regional WURMP Workgroup	Other Expenditures (CASQA)	Totals
1. Adjusted Budget	**$12,597**	**$221,924**	**$227,655**	**$2,735,211**	**$148,323**	**$15,590**	**$60,806**	**$92,909**	**$20,500**	**$3,535,515**
2. Approved Expenditures	**$6,578**	**$205,491**	**$157,607**	**$2,581,043**	**$110,335**	**$7,479**	**$20,759**	**$92,634**	**$20,500**	**$3,202,426**
City of Carlsbad	---	---	---	$2,797	---	---	---	---	---	**$2,797**
City of Chula Vista	---	---	---	---	---	---	---	---	---	**$0**
City of Coronado	---	---	---	---	---	---	---	---	---	**$0**
City of Del Mar	---	---	---	---	---	$1,387	---	---	---	**$1,387**
City of El Cajon	---	---	---	---	---	---	$11,243	---	---	**$11,243**
City of Encinitas	---	---	$447	---	---	---	---	---	---	**$447**
City of Escondido	---	---	$4,317	---	---	$5,250	---	---	---	**$9,567**
City of Imperial Beach	---	---	$1,288	---	---	---	---	---	---	**$1,288**
City of La Mesa	---	---	---	---	---	$842	---	---	---	**$842**
City of Lemon Grove	---	---	---	---	---	---	---	---	---	**$0**
City of National City	---	---	---	---	---	---	---	---	---	**$0**
City of Oceanside	---	---	$2,156	---	---	---	---	---	---	**$2,156**
City of Poway	---		---	---	---	---	---	---	---	**$0**
City of San Diego	---	---	$94,218	$10,719	---	---	---	$30,845	---	**$135,782**
City of San Marcos	---	---	---	---	---	---	---	---	---	**$0**
City of Santee	---	---	---	$1,703	---	---	---	---	---	**$1,703**
City of Solana Beach	---	---	---	---	---	---	---	---	---	**$0**
City of Vista	---	---	---	---	---	---	---	---	---	**$0**
County of San Diego	$6,578	$205,491	$45,018	$2,563,154	$110,335	---	$9,516	$61,518	$20,500	**$3,022,110**
Regional Airport Authority	---	---	$10,162	---	---	---	---	---	---	**$10,162**
Port of San Diego	---	---	---	$2,670	---	---	---	$271	---	**$2,940**
3. Remaining Funds	**$6,019**	**$16,433**	**$70,048**	**$154,168**	**$37,988**	**$8,111**	**$40,047**	**$275**	**$0**	**$333,089**

A. Regional Program Planning Subcommittee			County of San Diego			
Task	**Adopted Budget**	**Incurred Expenditures**	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support						
Subtask 1.A. Meeting Support.	**$2,445**	**$2,323**				
Hourly	$2,445	$2,323				**$2,323**
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 1.B. Coordination with Working Bodies.	**$3,920**	**$0**				
Hourly	$3,920	$0				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Task 2 Development of Miscellaneous Work Products						
Subtask 2.A. FY 2010-11 Work Plan and Budget.	**$780**	**$465**				
Hourly	$780	$465				$465
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.B. FY 2010-11 Regional Work Plan and Budget.	**$1,075**	**$1,062**				
Hourly	$1,075	$1,062				$1,062
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.C. Management Committee Updates.	**$2,835**	**$2,728**				
Hourly	$2,835	$2,728				**$2,728**
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.D. Management Committee Updates	**$1,532**	**$0**				
Hourly	$1,532	$0				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.E. Unallocated	**$10**	**$0**				
Hourly	$10	$0				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$6,578
Totals	**$12,587**	**$6,578**				

B. Fiscal, Reporting, and Assessment Workgroup			County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support						
Subtask 1.A. Meeting Support.	**$1,732**	**$0**				
Hourly	$1,732	$0				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Task 2 Development of Miscellaneous Work Products						
Subtask 2.A. Semi-annual Workgroup Updates	**$390**	**$0**				
Hourly	$390	$0				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$780**	**$387**				
Hourly	$780	$387				$387
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input and Completion.	**$1,075**	**$295**				
Hourly	$1,075	$295				$295
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.D. Regional Standards for Reporting and Assessment.	**$5,615**	**$0**				
Hourly	$780	$0				
Contracts	$4,605	$0				
Contract management	$230	$0				
Other direct	$0	$0				
Subtask 2.E. Report of Waste Discharge	**$48,416**	**$72,596**				
Hourly	$6,416	$6,036				$6,036
Contracts	$40,000	$63,391				$63,391
Contract management	$2,000	$3,170				$3,170
Other direct	$0	$0				
Subtask 2.F. Long-term Effectiveness Assessment	**$163,916**	**$132,212**				
Hourly	$6,416	$1,084				$1,084
Contracts	$150,000	$124,884				$124,884
Contract management	$7,500	$6,244				$6,244
Other direct	$0	$0				

B. Fiscal, Reporting, and Assessment Workgroup			County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.G. Unallocated.	**$0**	**$0**				
Hourly	$0	$0				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$205,491

Totals	**$221,924**	**$205,491**

C. Education and Residential Sources Workgroup			City of Oceanside				City of Imperial Beach				Airport Authority				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																		
Subtask 1.A. Meeting Support.	**$1,076**	**$231**																
Hourly	$1,076	$231			$231													
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 2 Development of Miscellaneous Work Products																		
Subtask 2.A. Semi-annual Workgroup Update.	**$549**	**$0**																
Hourly	$549	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.B. FY 2011-12 Work Plans and Budgets	**$4,726**	**$2,929**																
Hourly	$4,726	$2,929	$552	$513	$90	$257									$376	$323		$376
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input	**$1,328**	**$897**																
Hourly	$987	$897		$103	$51			$417										
Contracts	$325	$0																
Contract management	$16	$0																
Other direct	$0	$0																
Subtask 2.D. Regional Program Approach	**$778**	**$0**																
Hourly	$778	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 3 Regional Residential Education Program																		

C. Education and Residential Sources Workgroup			City of Oceanside				City of Imperial Beach				Airport Authority				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Sub-task 3.A. Materials Development and Distribution	**$40,216**	**$25,443**																
Hourly	$2,941	$1,311										$164				$161		$134
Contracts	$35,500	$13,983																$10,983
Contract management	$1,775	$150																
Other direct	$0	$9,998										$9,998						
Subtask 3.B. Partnership Development	**$15,487**	**$565**																
Hourly	$2,992	$565													$242	$323		
Contracts	$11,900	$0																
Contract management	$595	$0																
Other direct	$0	$0																

C. Education and Residential Sources Workgroup			City of Oceanside				City of Imperial Beach				Airport Authority				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 3.C. Market Research and Assessment Tools	**$86,735**	**$79,378**																
Hourly	$4,100	$1,788													$253	$188		
Contracts	$78,700	$74,900													$21,105	$10,050		
Contract management	$3,935	$2,690														$503		
Other direct	$0	$0																
Subtask 3.D. Regional Website	**$8,016**	**$2,220**																
Hourly	$2,514	$557																
Contracts	$5,240	$1,591																
Contract management	$262	$72																
Other direct	$0	$0																
Subtask 3.E. Underserved Target Audience	**$9,504**	**$871**																
Hourly	$1,629	$83							$83									
Contracts	$7,500	$750							$750									
Contract management	$375	$38							$38									
Other direct	$0	$0																
Subtask 3.F. Mass Media Campaign	**$53,786**	**$43,674**																
Hourly	$4,436	$2,020																
Contracts	$47,000	$39,671																
Contract management	$2,350	$1,984																
Other direct	$0	$0																
Subtask 3.G. Regional Events	**$2,559**	**$1,354**																
Hourly	$1,059	$1,092		$359														
Contracts	$0	$62																
Contract management	$0	$0																
Other direct	$1,500	$200																
Subtask3.H. Regional Logo	**$2,819**	**$46**																
Hourly	$929	$46																
Contracts	$1,800	$0																
Contract management	$90	$0																
Other direct	$0	$0																

C. Education and Residential Sources Workgroup			City of Oceanside				City of Imperial Beach				Airport Authority				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 3.I. Unallocated	**$77**	**$0**																
Hourly	$77	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Total Expenditures per Quarter for each Copermittee			$552	$975	$372	$257	$0	$417	$871	$0	$0	$10,162	$0	$0	$21,976	$11,547	$0	$11,494
Totals	**$227,655**	**$157,560**																

City of San Diego				City of Escondido				Port of San Diego				City of El Cajon				City of Encinitas				City of Sa	
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter

City of San Diego				City of Escondido				Port of San Diego				City of El Cajon				City of Encinitas				City of Sa	
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
				$126	$431	$294															
					$3,000																
					$150																

City of San Diego				City of Escondido				Port of San Diego				City of El Cajon				City of Encinitas				City of Sa	
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
$372	$348	$232	$395																		
	$245	$43,500																			
	$12	$2,175																			
$186	$139	$163	$70																		
$158	$894	$390	$150																		
	$45	$20	$8																		
$464	$557	$720	$279																		
		$20,000	$19,671																		
		$1,000	$984																		
$93			$139		$168		$147										$31		$154		
																			$62		
																	$200				
$46																					

City of San Diego				City of Escondido				Port of San Diego				City of El Cajon				City of Encinitas				City of Sa	
1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
$1,319	$2,682	$68,524	$21,694	$126	$3,749	$294	$147	$0	$0	$0	$0	$0	$0	$0	$0	$0	$231	$0	$216	$0	$0

n Marcos	
3rd Quarter	4th Quarter

n Marcos	
3rd Quarter	4th Quarter

n Marcos	
3rd Quarter	4th Quarter

n Marcos	
3rd Quarter	4th Quarter
$0	$0

D. Monitoring Workgroup and Sub-workgroups			County of San Diego				City of Santee				City of San Diego				Port of San Diego				City of Carlsbad			
Task	Adopted Budget	Accrued Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																						
Subtask 1.A. Meeting Support.	**$4,267**	**$2,948**																				
Hourly	$4,267	$2,948				$2,948																
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Subtask 1.B. Dry Weather Monitoring Sub-workgroup Meeting Support.	**$2,371**	**$1,703**																				
Hourly	$2,371	$1,703						$716	$987													
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Subtask 1.C. Coastal Storm Drain Monitoring Sub-workgroup Meeting Support.	**$1,778**	**$5,467**																				
Hourly	$1,778	$5,467																$2,670				$2,797
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Task 2 Development of Miscellaneous Work Products																						
Subtask 2.A. Semi-annual Workgroup Updates.	**$593**	**$0**																				
Hourly	$593	$0																				
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$1,482**	**$528**																				
Hourly	$1,482	$528				$528																
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$1,778**	**$0**																				
Hourly	$1,778	$0																				
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				

D. Monitoring Workgroup and Sub-workgroups			County of San Diego				City of Santee				City of San Diego				Port of San Diego				City of Carlsbad			
Task	**Adopted Budget**	**Accrued Expenditures**	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.D. FY 2011-12 Source Identification Work Plan	**$10,500**	**$0**																				
Hourly	$0	$0																				
Contracts	$10,000	$0																				
Contract management	$500	$0																				
Other direct	$0	$0																				
Task 3 Regional Monitoring Program																						
Task 3.A. Regional Monitoring Program.	**$2,394,442**	**$2,358,070**																				
Hourly	$0	$0																				
Contracts	$2,287,162	$2,245,781				$2,235,573								$10,208								
Contract management	$107,280	$112,289				$111,779								$510								
Other direct	$0	$0																				
Task 3.B. Southern California Stormwater Monitoring Coalition.	**$68,250**	**$0**																				
Hourly	$0	$0																				
Contracts	$65,000	$0																				
Contract management	$3,250	$0																				
Other direct	$0	$0																				
Task 3.C. 5-Year Regional Monitoirng Program Assessment and Updating for ROWD and LTEA	**$249,690**	**$212,327**																				
Hourly	$0	$0																				
Contracts	$237,800	$202,216				$202,216																
Contract management	$11,890	$10,111				$10,111																
Other direct	$0	$0																				
Subtask 3.C. Unallocated.	**$0**	**$0**																				
Hourly	$0	$0																				
Contracts	$0	$0																				
Contract management	$0	$0																				
Other direct	$0	$0																				
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$2,563,154	$0	$716	$987	$0	$0	$0	$0	$10,719	$0	$0	$0	$2,670	$0	$0	$0	$2,797
Totals	**$2,735,150.94**	**$2,581,043.21**																				
Difference	**$154,108**																					

E. Land Development Workgroup			County of San Diego				City of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support										
Subtask 1.A. Land Development Workgroup Meeting Support.	**$2,666**	**$2,285**								
Hourly	$2,666	$2,285				$2,285				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 1.B. Construction Sub-workgroup Meeting Support.	**$4,190**	**$0**								
Hourly	$4,190	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Task 2 Development of Miscellaneous Work Products										
Subtask 2.A. Semi-annual Workgroup Updates.	**$762**	**$762**								
Hourly	$762	$762				$762				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$381**	**$1,524**								
Hourly	$381	$1,524				$1,524				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								

E. Land Development Workgroup			County of San Diego				City of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input	**$1,524**	**$381**								
Hourly	$1,524	$381				$381				
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	$0	$0								
Subtask 2.D. Hydromodification Management Plan and SUSMP	**$138,802**	**$105,384**								
Hourly	$3,352	$3,352				$3,352				
Contracts	$129,000	$97,173				$97,173				
Contract management	$6,450	$4,859				$4,859				
Other direct	$0	$0								
Subtask 2.E. Unallocated	**($1)**	**$0**								
Hourly	$0	$0								
Contracts	$0	$0								
Contract management	$0	$0								
Other direct	($1)	$0								
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$110,335	$0	$0	$0	$0
Totals	**$148,323**	**$110,335**								

F. Municipal Sources Workgroup			City of Del Mar				City of Escondido				City of La Mesa				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																		
Subtask 1.A. Meeting Support.	**$943**	**$0**																
Hourly	$733	$0																
Contracts	$200	$0																
Contract management	$10	$0																
Other direct	$0	$0																
Task 2 Development of Miscellaneous Work Products																		
Subtask 2.A. Semi-annual Workgroup Updates.	**$313**	**$0**																
Hourly	$313	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.B. FY 2010-11 Work Plans and Budgets.	**$594**	**$0**																
Hourly	$594	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$227**	**$0**																
Hourly	$227	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 3 Regional Municipal Sources Program																		
Subtask 3.A.. Municipal Inventory	**$2,203**	**$1,387**																
Hourly	$103	$0																
Contracts	$2,000	$1,321				$1,321												
Contract management	$100	$66				$66												
Other direct	$0	$0																
Subtask 3.B. Municipal Prioritization.	**$2,543**	**$0**																
Hourly	$443	$0																

F. Municipal Sources Workgroup			City of Del Mar				City of Escondido				City of La Mesa				County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Contracts	$2,000	$0																
Contract management	$100	$0																
Other direct	$0	$0																
Subtask 3.C. Municipal Video	**$8,765**	**$6,092**																
Hourly	$2,490	$842											$481	$361				
Contracts	$5,500	$5,000								$5,000								
Contract management	$275	$250								$250								
Other direct	$500	$0																
Task 4 Unallocated																		
Subtask 4.A. Unallocated.	**$2**	**$0**																
Hourly	$2	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$1,387	$0	$0	$0	$5,250	$0	$0	$481	$361	$0	$0	$0	$0
Totals	**$15,590**	**$7,479**																

G. Industrial and Commercial Sources Workgroup			Port of San Diego				City of El Cajon				City of Vista				City of Poway			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																		
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support.	**$3,252**	**$380**																
Hourly	$3,252.00	$379.50					$69.00	$138.00	$34.50	$138.00								
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Task 2 Development of Miscellaneous Work Products																		
Subtask 2.A. Semi-annual Workgroup Updates.	**$345.13**	**$0.00**																
Hourly	$345.13	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$690.25**	**$34.50**																
Hourly	$690.25	$34.50						$34.50										
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$690.25**	**$172.50**																
Hourly	$690.25	$172.50						**$172.50**										
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.D. Regional Program Approach - IC Conceptual Plan Review	**$552.40**	**$0.00**																
Hourly	$552.40	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																

G. Industrial and Commercial Sources Workgroup			Port of San Diego				City of El Cajon				City of Vista				City of Poway			
Task	**Adopted Budget**	**Accurred Expenditures**	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.E. Regional Reporting and Assessment Standards	**$21,000.00**	**$10,656.98**																
Hourly	$0.00	$0.00																
Contracts	$20,000.00	$10,149.50						**$1,584.00**	**$5,070.00**	**$3,495.50**								
Contract management	$1,000.00	$507.48						**$79.20**	**$253.50**	**$174.78**								
Other direct	$0.00	$0.00																
Subtask 2.F. Develop Regional Inspection Standards	**$1,892.40**	**$0.00**																
Hourly	$1,892.40	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																

G. Industrial and Commercial Sources Workgroup			Port of San Diego				City of El Cajon				City of Vista				City of Poway			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.G. San Diego River Watershed Core BMP Pilot Program	**$1,380.00**	**$0.00**																
Hourly	$1,380.00	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.H. Regional Mobile Business Program	**$18,665.85**	**$0.00**																
Hourly	$1,130.85	$0.00																
Contracts	$16,700.00	$0.00																
Contract management	$835.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.I. BMP Toolbox Website Improvements	**$10,850.00**	**$9,515.63**																
Hourly	$1,400.00	$0.00																
Contracts	$9,000.00	$9,062.50																
Contract management	$450.00	$453.13																
Other direct	$0.00	$0.00																
Subtask 2.J. Regional IC Education and Training Events	**$1,400.00**	**$0.00**																
Hourly	$1,400.00	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Subtask 2.K. Unallocated.	**$88.00**	**$0.00**																
Hourly	$88.00	$0.00																
Contracts	$0.00	$0.00																
Contract management	$0.00	$0.00																
Other direct	$0.00	$0.00																
Total Expenditures per Quarter for each Copermittee			$0.00	$0.00	$0.00	$0.00	$69.00	$2,008.20	$5,358.00	$3,808.28	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Totals	**$60,806.28**	**$20,759.11**																

G. Industrial and Commercial Sources Workgroup			County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support						
Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support.	**$3,252**	**$380**				
Hourly	$3,252.00	$379.50				
Contracts	$0.00	$0.00				
Contract management	$0.00	$0.00				
Other direct	$0.00	$0.00				
Task 2 Development of Miscellaneous Work Products						
Subtask 2.A. Semi-annual Workgroup Updates.	**$345.13**	**$0.00**				
Hourly	$345.13	$0.00				
Contracts	$0.00	$0.00				
Contract management	$0.00	$0.00				
Other direct	$0.00	$0.00				
Subtask 2.B. FY 2010-11 Work Plan and Budget.	**$690.25**	**$34.50**				
Hourly	$690.25	$34.50				
Contracts	$0.00	$0.00				
Contract management	$0.00	$0.00				
Other direct	$0.00	$0.00				
Subtask 2.C. FY 2008-09 Regional URMP Annual Report Input.	**$690.25**	**$172.50**				
Hourly	$690.25	$172.50				
Contracts	$0.00	$0.00				
Contract management	$0.00	$0.00				
Other direct	$0.00	$0.00				
Subtask 2.D. Regional Program Approach - IC Conceptual Plan Review	**$552.40**	**$0.00**				
Hourly	$552.40	$0.00				
Contracts	$0.00	$0.00				
Contract management	$0.00	$0.00				
Other direct	$0.00	$0.00				

G. Industrial and Commercial Sources Workgroup			County of San Diego			
Task	Adopted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.E. Regional Reporting and Assessment Standards	**$21,000.00**	**$10,656.98**				
Hourly	$0.00	$0.00				
Contracts	$20,000.00	$10,149.50				
Contract management	$1,000.00	$507.48				
Other direct	$0.00	$0.00				
Subtask 2.F. Develop Regional Inspection Standards	**$1,892.40**	**$0.00**				
Hourly	$1,892.40	$0.00				
Contracts	$0.00	$0.00				
Contract management	$0.00	$0.00				
Other direct	$0.00	$0.00				

G. Industrial and Commercial Sources Workgroup				County of San Diego			
Task	Adopted Budget		Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.G. San Diego River Watershed Core BMP Pilot Program	**$1,380.00**		**$0.00**				
Hourly	$1,380.00		$0.00				
Contracts	$0.00		$0.00				
Contract management	$0.00		$0.00				
Other direct	$0.00		$0.00				
Subtask 2.H. Regional Mobile Business Program	**$18,665.85**		**$0.00**				
Hourly	$1,130.85		$0.00				
Contracts	$16,700.00		$0.00				
Contract management	$835.00		$0.00				
Other direct	$0.00		$0.00				
Subtask 2.I. BMP Toolbox Website Improvements	**$10,850.00**		**$9,515.63**				
Hourly	$1,400.00		$0.00				
Contracts	$9,000.00		$9,062.50				**$9,062.50**
Contract management	$450.00		$453.13				**$453.13**
Other direct	$0.00		$0.00				
Subtask 2.J. Regional IC Education and Training Events	**$1,400.00**		**$0.00**				
Hourly	$1,400.00		$0.00				
Contracts	$0.00		$0.00				
Contract management	$0.00		$0.00				
Other direct	$0.00		$0.00				
Subtask 2.K. Unallocated.	**$88.00**		**$0.00**				
Hourly	$88.00		$0.00				
Contracts	$0.00		$0.00				
Contract management	$0.00		$0.00				
Other direct	$0.00		$0.00				
Total Expenditures per Quarter for each Copermittee				$0.00	$0.00	$0.00	$9,515.63
Totals	**$60,806.28**		**$20,759.11**				

H. Regional WURMP Workgroup			County of San Diego				City of Carlsbad				City of Escondido				City of San Diego			
Task	Adjusted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support																		
Subtask 1.A. Meeting Support.	**$1,682**	**$686**																
Hourly	$1,682	$686				$686												
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Task 2 Development of Miscellaneous Work Products																		
Subtask 2.A. FY 2009-10 Regional URMP Annual Report Input	**$678**	**$181**																
Hourly	$678	$181				$181												
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.B. FY 2011-12 Work Plan and Budget	**$722**	**$253**																
Hourly	$722	$253				$253												
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.C. Semi-annual Workgroup Update	**$361**	**$0**																
Hourly	$361	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs	**$40,000**	**$42,230**																
Hourly	$0	$0																
Contracts	$38,095	$40,219				$30,878												**$9,341**
Contract management	$1,905	$2,011				$1,544												**$467**
Other direct	$0	$0																
Subtask 2.F. Watershed Activities Database	**$11,807**	**$6,814**																
Hourly	$1,307	$1,236				$507												**$459**
Contracts	$10,000	$5,312				$5,312												
Contract management	$500	$266				$266												
Other direct	$0	$0																

H. Regional WURMP Workgroup			County of San Diego				City of Carlsbad				City of Escondido				City of San Diego			
Task	Adjusted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.H. Regional TMDL Implementation Planning	**$37,384**	**$42,472**																
Hourly	$2,443	$1,314				$1,314												
Contracts	$33,277	$39,198				$19,599												**$19,599**
Contract management	$1,664	$1,960				$980												**$980**
Other direct	$0	$0																
Subtask 2.G. Unallocated	**$0**	**$0**																
Hourly	$0	$0																
Contracts	$0	$0																
Contract management	$0	$0																
Other direct	$0	$0																
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$61,518	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30,845
Totals	**$92,634**	**$92,634**																

H. Regional WURMP Workgroup			Port of San Diego			
Task	Adjusted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Task 1 Meeting Support						
Subtask 1.A. Meeting Support.	**$1,682**	**$686**				
Hourly	$1,682	$686				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Task 2 Development of Miscellaneous Work Products						
Subtask 2.A. FY 2009-10 Regional URMP Annual Report Input	**$678**	**$181**				
Hourly	$678	$181				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.B. FY 2011-12 Work Plan and Budget	**$722**	**$253**				
Hourly	$722	$253				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.C. Semi-annual Workgroup Update	**$361**	**$0**				
Hourly	$361	$0				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Subtask 2.E. Watershed Data, Reporting, and Assessment Needs	**$40,000**	**$42,230**				
Hourly	$0	$0				
Contracts	$38,095	$40,219				
Contract management	$1,905	$2,011				
Other direct	$0	$0				
Subtask 2.F. Watershed Activities Database	**$11,807**	**$6,814**				
Hourly	$1,307	$1,236				$271
Contracts	$10,000	$5,312				
Contract management	$500	$266				
Other direct	$0	$0				

H. Regional WURMP Workgroup			Port of San Diego			
Task	Adjusted Budget	Accurred Expenditures	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Subtask 2.H. Regional TMDL Implementation Planning	~~$37,384~~	~~$42,472~~				
Hourly	$2,443	$1,314				
Contracts	$33,277	$39,198				
Contract management	$1,664	$1,960				
Other direct	$0	$0				
Subtask 2.G. Unallocated	**$0**	**$0**				
Hourly	$0	$0				
Contracts	$0	$0				
Contract management	$0	$0				
Other direct	$0	$0				
Total Expenditures per Quarter for each Copermittee			$0	$0	$0	$271
Totals	**$92,634**	**$92,634**				

A. Regional Program Planning Subcommittee

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$12,597	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 6,577.52
		Totals	**$ 6,577.52**
	Unspent Balance		**$ 6,019.48**

B. Fiscal, Reporting, and Assessment Workgroup
FY 2009-10 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$221,924	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 205,490.78
		Totals	**$ 205,490.78**
	Unspent Balance		**$ 16,433.39**

C. Education and Residential Sources Workgroup
FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
City of Oceanside	$3,935	1st	$ 551.91
		2nd	$ 975.46
		3rd	$ 372.32
		4th	$ 256.70
		Totals	**$ 2,156.39**
		Unspent Balance	**$ 1,778.66**
City of Imperial Beach	$10,797	1st	$ -
		2nd	$ 417.40
		3rd	$ 870.98
		4th	$ -
		Totals	**$ 1,288.38**
		Unspent Balance	**$ 9,508.42**
Airport Authority	$1,688	1st	$ -
		2nd	$ 10,162.29
		3rd	$ -
		4th	$ -
		Totals	**$ 10,162.29**
		Unspent Balance	**$ (8,474.79)**
County of San Diego	$46,254	1st	$ 21,976.46
		2nd	$ 11,547.43
		3rd	$ -
		4th	$ 11,493.99
		Totals	**$ 45,017.88**
		Unspent Balance	**$ 1,236.32**
City of San Diego	$120,204	1st	$ 1,318.50
		2nd	$ 2,681.77
		3rd	$ 68,524.14
		4th	$ 21,694.07
		Totals	**$ 94,218.48**
		Unspent Balance	**$ 25,985.52**
City of Escondido	$39,378	1st	$ 126.15
		2nd	$ 3,749.22
		3rd	$ 294.35
		4th	$ 147.10
		Totals	**$ 4,316.82**
		Unspent Balance	**$ 35,060.68**

Copermittee	Budgeted	Quarter	Approved Expenditures
Port of San Diego	$2,435	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 2,434.50**
City of El Cajon	$794	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 794.00**
City of Encinitas	$2,095	1st	$ -
		2nd	$ 230.85
		3rd	$ -
		4th	$ 215.81
		Totals	**$ 446.66**
	Unspent Balance		**$ 1,648.14**
City of San Marcos	$0	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ -**

D. Monitoring Workgroup and Sub-workgroups

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$2,731,002	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 2,563,154.14
		Totals	**$ 2,563,154.14**
	Unspent Balance		**$ 167,847.90**
City of Santee	$1,185	1st	$ -
		2nd	$ 716.14
		3rd	$ 987.11
		4th	$ -
		Totals	**$ 1,703.25**
	Unspent Balance		**$ (517.85)**
City of San Diego	$1,185	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 10,718.51
		Totals	**$ 10,718.51**
	Unspent Balance		**$ (9,533.11)**
Port of San Diego	$889	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 2,669.90
		Totals	**$ 2,669.90**
	Unspent Balance		**$ (1,780.85)**
City of Carlsbad	$889	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 2,797.41
		Totals	**$ 2,797.41**
	Unspent Balance		**$ (1,908.36)**

E. Land Development Workgroup

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$144,135	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 110,335.49
		Totals	**$ 110,335.49**
	Unspent Balance		**$ 33,799.03**

City of San Diego	$4,190	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 4,189.90**

F. Municipal Sources Workgroup

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
City of Del Mar	$6,370	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 1,386.61
		Totals	**$ 1,386.61**
	Unspent Balance		**$ 4,983.81**
City of Escondido	$6,631	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 5,250.00
		Totals	**$ 5,250.00**
	Unspent Balance		**$ 1,381.00**
City of La Mesa	$842	1st	$ -
		2nd	$ -
		3rd	$ 481.12
		4th	$ 360.84
		Totals	**$ 841.96**
	Unspent Balance		**$ -**
County of San Diego	$1,245	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
	Unspent Balance		**$ 1,244.67**

G. Industrial and Commercial Sources Workgroup
FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
Port of San Diego	$42,953	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ 42,953.38**
City of El Cajon	$3,623	1st	$ 69.00
		2nd	$ 2,008.20
		3rd	$ 5,358.00
		4th	$ 3,808.28
		Totals	**$ 11,243.48**
		Unspent Balance	**$ (7,620.98)**
City of Vista	$0	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ -**
City of Poway	$1,892	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ 1,892.40**
County of San Diego	$10,850	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 9,515.63
		Totals	**$ 9,515.63**
		Unspent Balance	**$ 1,334.37**
Unassigned	$1,400	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ 1,400.00**

H. Regional WURMP Workgroup

FY 2010-11 Budget Summary by Copermittee

Copermittee	Budgeted	Quarter	Approved Expenditures
County of San Diego	$ 72,732.98	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 61,518.07
		Totals	**$ 61,518.07**
		Unspent Balance	**$ 11,214.91**
City of Carlsbad	$ -	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ -**
City of Escondido	$ -	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ -
		Totals	**$ -**
		Unspent Balance	**$ -**
City of San Diego	$ 19,467.79	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 30,845.43
		Totals	**$ 30,845.43**
		Unspent Balance	**$ (11,377.65)**
Port of San Diego	$ 432.80	1st	$ -
		2nd	$ -
		3rd	$ -
		4th	$ 270.50
		Totals	**$ 270.50**
		Unspent Balance	**$ 162.30**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Fiscal, Reporting, and Assessment Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 7,801.69**
Contract / Other Expenditures Claimed:	**$ 197,689.09**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Manager
Watershed Protection Program, County of San Diego

9/9/2011
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jon Van Rhyn
Water Quality Manager
Watershed Protection Program, County of San Diego

9/26/11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.B. FY 2011-12 Work Plan and Budget						
10-123-10	Jon Van Rhyn	Water Quality Program Manager	5.00	$ 77.42	$ 387.10	Preparation of FRA work plan and budget
Sub-total	$ 387.10					
Subtask 2.C. Regional URMP Annual Report						
1/20/2011	Sheri McPherson	LUEP III	5.00	$ 59.00	$ 295.00	Prepararion of FRA RURMP Annual Report content
Sub-total	$ 295.00					
Subtask 2.E. Report of Waste Discharge						
6/20/2011	Jon Van Rhyn	Water Quality Program Manager	37.50	$ 77.42	$ 2,903.25	Development of Permit Re-issuance WG meeting materials (15 meetings from 12-07-10 through 6-20-11 @ 2.5 hrs each)
6/22/2011	Todd Snyder	Land Use Planning Manager	8.00	$ 72.20	$ 577.60	Drafting materials for ROWD section 1.0 (Introduction)
6/22/2011	Jon Van Rhyn	Water Quality Program Manager	8.00	$ 77.42	$ 619.36	Drafting materials for ROWD section 1.0 (Introduction)
6/23/2011			16.00	$ 77.42	$ 1,238.72	Drafting materials for ROWD section 2.0 (Recommended Modifications ...) (multiple days)
6/22/2011			4.00	$ 77.42	$ 309.68	Drafting ROWD Introduction
6/24/2011			5.00	$ 77.42	$ 387.10	Drafting materials for ROWD section 4.0 (Conclusions)
Sub-total	$ 6,035.71					
Subtask 2.F. Long-term Effectiveness Assessment						
8/27/2010	Jon Van Rhyn	Water Quality Program Manager	6.00	$ 77.42	$ 464.52	Development of draft LTEA TTWQ Rating System
6/22/2011			5.00	$ 77.42	$ 387.10	6-22-11 drafting LTEA executive summary
6/23/2011			3.00	$ 77.42	$ 232.26	Drafting LTEA Conclusions
Sub-total	$ 1,083.88					
Copermittee Total					**$ 7,801.69**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Fiscal, Reporting, and Assessment Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 2.E. Report of Waste Discharge					
Weston 2010-11 Regional Copermittee Water Qualtiy Reporting Contract #534965		$ 13,637.75	3/10/2011	$ 681.89	Larry Walker Associates as subcontractor, Feb 2011
		$ 4,360.50	4/12/2011	$ 218.03	Larry Walker Associates as subcontractor, March 2011
		$ 6,010.50	5/11/2011	$ 300.53	Larry Walker Associates as subcontractor, April 2011
		$ 20,085.90	6/14/2011	$ 1,004.30	Larry Walker Associates as subcontractor, May 2011
		$ 19,296.55	7/11/2011	$ 964.83	Larry Walker Associates as subcontractor, June 2011
Subtask 2.E Sub-total	$ 63,391.20				
Subtask 2.E Management Cost	$ 3,169.56				
Subtask 2.F. Long-Term Effectiveness Assessment					
Weston 2010-11 Regional Copermittee Water Qualtiy Reporting Contract #534965		$ 1,405.00	3/10/2011	$ 70.25	Larry Walker Associates as subcontractor, Feb 2011
		$ 7,673.00	4/12/2011	$ 383.65	Larry Walker Associates as subcontractor, March 2011
		$ 11,854.50	5/11/2011	$ 592.73	Larry Walker Associates as subcontractor,April 2011
		$ 10,918.25	6/14/2011	$ 545.91	Larry Walker Associates as subcontractor, May 2011
		$ 4,371.25	3/31/2011	$ 218.56	MOE as subcontractor, Feb 2011
		$ 8,232.50	4/10/2011	$ 411.63	MOE as subcontractor, Mar 2011
		$ 12,454.25	5/10/2011	$ 622.71	MOE as subcontractor, April 2011
		$ 40,173.12	6/8/2011	$ 2,008.66	MOE as subcontractor, May 2011
		$ 14,997.25	7/18/2011	$ 749.86	MOE as subcontractor, June 2011
		$ 12,805.00	7/7/2011	$ 640.25	Weston, May-June 2011
Subtask 2.F Sub-total	$ 124,884.12				
Subtask 2.F Management Cost	$ 6,244.21				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
		$ -			
Sub-total Other Expenditures	$ -				

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Total Expenditures (Including contract management cost)	**$ 197,689.09**

Final 04-30-09

WESTON SOLUTIONS.

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

PROFESSIONAL SERVICES RENDERED FOR 2010-2011 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 08/11/2011
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.110
INVOICE NUMBER: AUG2011-02649
BILLING PERIOD: 09/15/2010 TO 07/06/2011

SUMMARY

TASK		DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	001	ANNUAL MONITORING REPORT	290,536.00	0.00	290,472.60	100.00%	63.40
0001		WATERSHED/MONITORING WORKGROUP MEETINGS/PREPARATIONS		0.00	24,093.75		
0002		TRASH ASSESSMENT AND MS4 TARGETED DRY TABLES		0.00	2,545.00		
0003		INTERACTIVE MAPPING, INTEGRATED TABLES & FIGURES FOR RECEIVING WATERS		0.00	54,575.50		
0004		INTERACTIVE MAPPING, INTEGRATED TABLES & FIGURES FOR MS4 OUTFALLS		0.00	33,681.50		
0005		WRITING WMA ASSESSMENTS AND DRAFT REPORT		0.00	134,367.60		
0006		RESPONSE TO COMMENTS AND FINAL REPORT		0.00	41,209.25		
	002	LONG TERM EFFECTIVENESS ASSESSMENT	219,978.00	14,937.25	219,621.25	100.00%	356.75
0001		PROJECT MANAGEMENT AND MEETINGS		0.00	12,204.00		
0002		REPORT PREPARATION		0.00	29,401.50		
0003		RECEIVING WATERS AND MS4 MAPS		0.00	23,801.00		
0004		RECEIVING WATER DATA NALYSIS/BENCHMARK TABLES		0.00	16,931.00		
0005		MS4 DATA ANALYSIS/BENCHMARK TABLES		0.00	6,400.00		
0006		POWER ANALYSIS		0.00	6,000.00		
0007		WESTON - LTEA ADDITIONAL MS4 REPORT		(50.00)	12,805.00		
0008		MOE - LTEA ADDITIONAL MS4 REPORT		14,997.25	80,228.00		
0009		LWA - LTEA ADDITIONAL MS4 REPORT		0.00	31,850.75		
	003	ROWD AS-NEEDED SUPPORT	111,578.00	19,296.55	94,049.16	84.29%	17,528.84
0001		LWA PROJECT PLANNING MEETINGS		0.00	0.00		
0002		LWA WORKSHOPS		19,296.55	91,854.16		
0003		LWA VISION DOCUMENT		0.00	0.00		
0004		TRASH ANALYSIS		0.00	2,195.00		
	004	ROWD WESTON SUPPORT	48,540.00	0.00	48,522.00	99.96%	18.00
0001		MLS/TWAS ROTATIONAL DESIGN AND LEVERAGE SMC		0.00	27,276.00		
0002		MS4 OUTFALL MONITORING		0.00	11,769.00		
0003		AMBIENT BAY & LAGOON MONTIORING		0.00	5,390.00		
0004		COASTAL STORM DRAIN MONITORING PROGRAM		0.00	4,087.00		
TOTAL			670,632.00	34,233.80	652,665.01	97.32%	17,966.99

FRA subtask 2.F.
$124,884.12 * minor math error in this summary

FRA subtask 2.E.
$63,391.20
remaining costs incurred by Reg. WQMP

CURRENT AMOUNT DUE 34,233.80

WS 04-03-011/A-03/09
05P0606

INVOICE

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: JUL2011-01772

Invoice Date: 07/07/2011

Description: PROFESSIONAL SERVICES RENDERED FOR 2010-2011 REGIONAL WATER QUALITY REPORTING.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: 219,978.00

Customer PO Number: 534965
Total: 219,978.00
Project Number: 13245.110.002
Cumulative Amount Billed: 204,684.00
Project Name: WQ Long Term Effectiveness Assessment
Project Manager: Pohl, David H
Terms: NET 30
Billing Period From: 04/30/2011 To: 06/30/2011
Billing Currency: USD
Due Date: 08/06/2011

	Current Hours	Rate	Current Amount	Cumulative Amount
Environmental Analyst				
Patzius, Michelle	0.00	84.0000	0.00	126.00
GIS Analyst				
Tydlaska, Monica M	0.00	75.0000	0.00	8,385.00
GIS Specialist				
Dister, Sheri	0.00	130.0000	0.00	14,716.00
Junior Engineer				
Huber, Sara S	0.00	90.0000	0.00	7,317.00
Project Control				
Ventures, Ameedylyn	2.00	70.0000	140.00	140.00
Project Manager				
Pohl, David H	4.00	160.0000	640.00	6,160.00
	0.00	160.0000	0.00	-560.00
Project Manager				
Renfrew, David S	0.00	160.0000	0.00	-560.00
Renfrew, David S	6.00	160.0000	960.00	1,520.00
Scientist III				
Price, Corinne A	0.00	110.0000	0.00	1,430.00
Yonemasu, Satomi	0.00	110.0000	0.00	15,675.00
Senior Scientist				
Engelhorn, Garth	19.00	130.0000	2,470.00	2,470.00
Holt, Sheila	0.00	130.0000	0.00	6,266.00
McCoy, Daniel L	0.00	130.0000	0.00	780.00
Senior Technician				
Mattson, Michelle M	0.00	75.0000	0.00	5,497.50
Smith, Robert J	0.00	75.0000	0.00	5,925.00
Task Leader				
Crumpacker, Andrea L	25.50	150.0000	3,825.00	17,250.00
Dister, Sheri	31.20	150.0000	4,680.00	4,680.00
Gruber, Stephen	0.00	150.0000	0.00	2,025.00
Mastin, Brian J	0.00	150.0000	0.00	3,225.00
Renfrew, David S	1.00	150.0000	150.00	2,175.00
Silyn - Roberts, Gretel	0.00	150.0000	0.00	2,400.00
Labor	88.70		12,865.00	107,602.50
Subcontractor			75,399.75	97,081.50
Total Expenses			75,399.75	97,081.50
Invoice Total			88,264.75	204,684.00

WS 04-03-011/A-03/09
05P0606

INVOICE

Page: 5

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number:	JUL2011-01772	Project Number:	13245.110.002	Billing Currency	USD
		Project Name:	WQ Long Term Effectiveness Assessment	Invoice Date:	07/07/2011

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Engineering, Drafting & Design	500461576	2011/5	MIKHAIL OGAWA ENGINEERING	000956	12,454.25
		500470146	2011/6		000968	40,172.75
	Consulting Services	500465548	2011/6	LARRY WALKER ASSOCIATES	00427017	11,854.50
		500473529	2011/6		00427018	10,918.25
Total: Subcontractor						75,399.75
Total Expenses						75,399.75

WS 04-03-011/A-03/09
05P.0606

INVOICE

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610 701 3000/Fax 610 701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: AUG2011-02649

Invoice Date: 08/11/2011

Description: PROFESSIONAL SERVICES RENDERED FOR 2010-2011 REGIONAL WATER QUALITY REPORTING.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: 219,978.00

Customer PO Number: 534965
Total: 219,978.00
Project Number: 13245.110.002
Cumulative Amount Billed: 219,621.25
Project Name: WQ Long Term Effectiveness Assessment
Project Manager: Pohl, David H
Terms: NET 30
Billing Period From: 09/15/2010 To: 07/06/2011
Billing Currency: USD
Due Date: 09/10/2011

	Current Hours	Rate	Current Amount	Cumulative Amount
Environmental Analyst				
Patzius, Michelle	0.00	84.0000	0.00	126.00
GIS Analyst				
Tydlaska, Monica M	0.00	75.0000	0.00	8,385.00
GIS Specialist				
Dister, Sheri	0.00	130.0000	0.00	14,716.00
Junior Engineer				
Huber, Sara S	0.00	90.0000	0.00	7,317.00
Project Control				
Ventures, Ameedylyn	0.00	70.0000	0.00	140.00
Project Manager				
Pohl, David H	0.00	160.0000	0.00	6,160.00
Project Manager				
Renfrew, David S	-6.00	160.0000	-960.00	-1,520.00
Renfrew, David S	0.00	160.0000	0.00	1,520.00
Scientist III				
Price, Corinne A	0.00	110.0000	0.00	1,430.00
Yonemasu, Satomi	0.00	110.0000	0.00	15,675.00
Senior Scientist				
Engelhorn, Garth	0.00	130.0000	0.00	2,470.00
Holt, Sheila	0.00	130.0000	0.00	6,266.00
McCoy, Daniel L	0.00	130.0000	0.00	780.00
Senior Technician				
Mattson, Michelle M	0.00	75.0000	0.00	5,497.50
Smith, Robert J	0.00	75.0000	0.00	5,925.00
Task Leader				
Crumpacker, Andrea L	0.00	150.0000	0.00	17,250.00
Dister, Sheri	0.00	150.0000	0.00	4,680.00
Gruber, Stephen	0.00	150.0000	0.00	2,025.00
Mastin, Brian J	0.00	150.0000	0.00	3,225.00
Renfrew, David S	6.00	150.0000	900.00	3,075.00
Silyn - Roberts, Gretel	0.00	150.0000	0.00	2,400.00
Labor	0.00		-60.00	107,542.50
Subcontractor			14,997.25	112,078.75
Total Expenses			14,997.25	112,078.75
Invoice Total			14,937.25	219,621.25

WS 04-03-011/A-03/09
DSP 0606

INVOICE

Page: 5

F.E.I.N. 23-1501990

MOE - Invoice tracking for LTEA Development
February - June 2011

Invoice ID	Amount	TASK
931	$ 1,052.50	1-3
931	$ 2,783.25	6
931	$ 535.50	7
944	$ 2,912.75	1-3
944	$ 3,270.25	6
944	$ 1,392.50	7
944	$ 357.00	8
944	$ 300.00	9
956	$ 1,058.00	1-3
956	$ 46.50	6
956	$ 1,342.50	7
956	$ 3,272.50	8
956	$ 4,473.75	9
956	$ 2,261.00	10
968	$ 4,224.50	1-3
968	$ 1,785.50	4-5
968	$ 3,798.50	6
968	$ 4,444.00	7
968	$ 6,553.75	8
968	$ 12,218.50	9
968	$ 7,148.50	10
987	$ 1,803.75	1-3
987	$ 75.00	6
987	$ 2,350.00	7
987	$ 1,445.75	8
987	$ 12,173.25	9
987	$ 100.00	10

Task 1 - Project Management	
Task 2 - Kickoff Meeting	$ 11,051.50
Task 3 - Coordination Meetings	
Task 4 - Water Quality Assessment	
Task 5 - HMP Incorporation	$ 1,785.50
Task 6 - Source Management Priorities	$ 9,973.50
Task 7 - Management Actions	$ 10,064.50
Task 8 - TTWQ	$ 11,629.00
Task 9 - Effectiveness of Programs	$ 29,165.50
Task 10- Report	$ 9,509.50
Task 11 - Presenation	
Total	$ 83,179.00
MOE Discount	$ (2,951.00)
Claim Total	**$ 80,228.00**

UGUOU
2011.4.2
rchr#500 453471

MOE
MIKHAIL OGAWA ENGINEERING

Weston Solutions
David Pohl
2433 Impala Drive
Carlsbad, California 92008

RECEIVED
MAR 31 2011
BY: am

3/31/2011
Project No. 012.009
Invoice No. 000931
P.O. Number 0073025

San Diego Stormwater Copermittees: ~~Long Term~~
Effectiveness Assessment

Description	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between February 1, 2011 and February 28, 2011			
Tasks 001-003 - Project Management/Meetings			
Principal Engineer	6.5	119.00 ✓	773.50
Team kickoff and conference calls; process development			
Associate Scientist	3	93.00 ✓	279.00
Team conference calls			
Task 006 - Sources			
Principal Engineer	6	119.00 ✓	714.00
start prep of process; source characterizations and JURMP reviews			
Associate Scientist	22.25	93.00 ✓	2,069.25
LTEA Source prioritization & characterization; JURMP reviews			
Task 007 - PMPs			
Principal Engineer	4.5	119.00 ✓	535.50
start prep of process; PMP evaluation of process; examples			

INVOICE APPROVAL
DATE REC: 3/31/11
APPROVED BY: David Pohl
SIGNATURE:
PO # 0073025
WO # 13245.110.002.0008 ✓
RETURN TO ANALYN NELSON

Total this invoice $4,371.25 12

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

MOE

MIKHAIL OGAWA ENGINEERING

13245.110.002 0008

Weston Solutions
David Pohl
2433 Impala Drive
Carlsbad, California 92008

06900
2011.4.4
vch# 500456851

4/10/2011
Project No. 012.009
Invoice No. 000944
P.O. Number 0073025

San Diego Stormwater Copermittees - Long Term Effectiveness Assessment

Description	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between March 1, 2011 and March 31, 2011			
Tasks 001-003 - Project Management/Meetings			
Principal Engineer meet with JVR, process development; conference calls with team; project management; conf call with JVR & team; prep for mtg with Copermittees; prep for and attend Program Planning sub-group LTEA	23.5	119.00 ✓	2,796.50
Associate Scientist LTEA Conf call, review mtg minutes.	1.25	93.00 ✓	116.25
Task 006 - Sources			
Principal Engineer process development; process development and refinement; coor with LWA; source list; find activities tables from 2005 effort; source profile template; coordination with Brett G	14	119.00 ✓	1,666.00
Associate Scientist LTEA prioritization and characterization; PSA prioritization table; Prioritization and characterization write-up	17.25	93.00 ✓	1,604.25
Task 007 - PMPs			
Principal Engineer process development and refinement; coordination with Kelly B	7.5	119.00 ✓	892.50
Senior Scientist reviewing PMP information; conference call; worked on PMP information (table, profile sheets); internal discussions; reviewing CASQA information for PMP; reviewing PMP information with Mikhail	5	100.00 ✓	500.00

Total this invoice

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

3525 Del Mar Heights Road #429 • San Diego, California 92130 • (619) 994-7074 • Fax (858) 255-0531

MOE

MIKHAIL OGAWA ENGINEERING

Weston Solutions
David Pohl
2433 Impala Drive
Carlsbad, California 92008

San Diego Stormwater Copermittees - Long Term Effectiveness Assessment

4/10/2011
Project No. 012.009
Invoice No. 000944
P.O. Number 0073025

Description	Hours/Qty	Rate	Amount
Professional Services			
Task 008 - TTWQ Principal Engineer process development and refinement	3	119.00 ✓	357.00
Task 009 - Effectiveness Assessment Senior Scientist process development and refinement	3	100.00 ✓	300.00

Charge to
13245.110.002.000B ✓

Total this invoice **$8,232.50** L3

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

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3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

3525 Del Mar Heights Road #429 • San Diego, California 92130 • (619) 994-7074 • Fax (858) 255-0531

707 4th Street, Suite 200
Davis, CA 95616
530.753.6400
530.753.7030 fax

LARRY WALKER ASSOCIATES

WALZT
2011-4-2
Ychk# 500453537

March 10, 2011

Project No. - Invoice No: 00427.01-5

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

RECEIVED
MAR 13 2011
BY: am

CO. OF SAN DIEGO PROFESSIONAL SERVICES
Project: 00427.01
For Services Rendered Through 2/28/2011
PO Number: 0074156
PSA: SDC534965-2010-2
Task Order: 001

Task: 0710 Planning Meetings (Weston P.O. Item #3)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	.25	183.00	$45.75
Total Labor			**$45.75**
Total This Task			**$45.75**

/13245·110·003·0002.01 - L3

Task: 0710 Project Kickoff Meetings (Weston P.O. Item 1)

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	2.00	225.00	$450.00
Total Labor			**$450.00**
Total This Task			**$450.00**

/13245.110.001.0001 - L1

Task: 0650 0910 Annual Report (Weston P.O. Item 2 Invoice Deliverable)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	3.75	183.00	$686.25
Total Labor			**$686.25**
Total This Task			**$686.25**

/13245·110.001.0006 - L2

INVOICE APPROVAL
DATE REC: 3/13/11
APPROVED BY: David Pahl
SIGNATURE:
PO # 00 T3156
WO #
RETURN TO

$16,224.75

VG900
2011.5.3
Ychr/# 500461576

MOE
MIKHAIL OGAWA ENGINEERING

RECEIVED
MAY 10 2011
BY: amw

Weston Solutions
Andrea Crumpacker
2433 Impala Drive
Carlsbad, California 92008

San Diego Stormwater Copermittees - Long Term Effectiveness Assessment

5/10/2011
Project No. 012.009
Invoice No. 000956
P.O. Number 0073025

Description	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between February 1, 2011 and April 30, 2011			
Tasks 001-003 - Project Management/Meetings			
Principal Engineer	8.5	119.00	1,011.50
prep for and hold conf call; calls with Mack re: SLP TTWQ and PM; conference calls; correspondence with JVR; team coordination			
Associate Scientist	0.5	93.00	46.50
LTEA conf call			
Task 006 - Sources			
Associate Scientist	0.5	93.00	46.50
Sources write-up			
Task 007 - PMPs			
Senior Scientist	4.5	100.00	450.00
coordinating on receiving special studies; email correspondence with copermittees on special studies information; reviewing annual reports			
Principal Engineer	7.5	119.00	892.50
PMP review of process; coord with team; review of documents			
Task 008 - TTWQ			
Principal Engineer	27.5	119.00	3,272.50
TTWQ strategy; development of TTWQ process and examples			

INVOICE APPROVAL
DATE REC: 05/10/11
APPROVED BY: Andrea Crumpacker
SIGNATURE:
PO # 0073025
WO # 13245.110.002.0008 ✓
RETURN TO ANALYN NELSON

Total this invoice

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Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax (858) 225-0531

Page 1

L3 - 12,454.25 - see next page

MOE
MIKHAIL OGAWA ENGINEERING

Weston Solutions
Andrea Crumpacker
2433 Impala Drive
Carlsbad, California 92008

San Diego Stormwater Copermittees - Long Term Effectiveness Assessment

5/10/2011
Project No. 012.009
Invoice No. 000956
P.O. Number 0073025

Description	Hours/Qty	Rate	Amount
Professional Services			
Task 009 - Effectiveness Assessment			
Associate Scientist LTEA effectiveness assessment - JURMP AR Review FY08-10; LTEA effectiveness JURMP annual reports.	32.75	93.00	3,045.75
Principal Engineer pulling info for EA section of report; review of ARs to support EA	12	119.00	1,428.00
Task 010 - Report			
Principal Engineer report pre-drafting sections; report prep	19	119.00	2,261.00

Total this invoice $12,454.25 - L3

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Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

MOE
MIKHAIL OGAWA ENGINEERING

Weston Solutions
Andrea Crumpacker
2433 Impala Drive
Carlsbad, California 92008

San Diego Stormwater Copermittees - Long Term
Effectiveness Assessment

6/8/2011
Project No. 012.009
Invoice No. 000968
P.O. Number 0073025

Description	Hours/Qty	Rate	Amount
Professional Services			
Associate Scientist Source and prioritization review; review of SPSs	4.5	93.00	418.50
Task 007 - PMPs			
Principal Engineer meet with BG and KB re: annual reports; pull info from annual reports; incorporate into document; PMP profiles	26	119.00	3,094.00
Senior Scientist PMP profiles -research; review of special studies	13.5	100.00	1,350.00
Task 008 - TTWQ			
Principal Engineer process development; share with team; revise; examples	45.5	119.00	5,414.50
Associate Scientist Example of TTWQ process	12.25	93.00	1,139.25
Task 009 - Effectiveness Assessment			
Principal Engineer coordination with BG and KB; annual report data mining; effectiveness assessment process and approach; data and information consolidation	28	119.00	3,332.00
Senior Scientist data mining; coordination with team; data and information consolidation	18	100.00	1,800.00
Associate Scientist URMP Annual Reports review and data collection	75.5	93.00	7,021.50

Total this invoice See Page 3

Please reference the invoice number with your payment.
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Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

0G900
2011.6.4
Vchr# 50047014G

MOE
MIKHAIL OGAWA ENGINEERING

Weston Solutions
Andrea Crumpacker
2433 Impala Drive
Carlsbad, California 92008

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JUN 16 2011
BY: amr

San Diego Stormwater Copermittees - Long Term Effectiveness Assessment

6/8/2011
Project No. 012.009
Invoice No. 000968
P.O. Number 0073025

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided between May 1, 2011 and May 31, 2011			
Tasks 001-003 - Project Management/Meetings Principal Engineer PM- conf calls -comments on doc; PM; jvr re: process/report/etc; meet with ROWD/LTEA workgroup; prep for mtgs;	27	119.00	3,213.00
Senior Scientist Team meetings	5	100.00	500.00
Associate Scientist LTEA Conf Call, mtg with MOE, Team Meetings	5.5	93.00	511.50
Task 004-005 - Water Quality/HMP Principal Engineer Coordination and review of Water Quality Analysis and data, synthesize into overall document	15	119.00	1,785.00
Task 006 - Sources Principal Engineer review of source documents; drafting text and incorporation into process and documents	20	119.00	2,380.00
Senior Scientist CDs with info from City of San Diego for report review and incorporation into process and documents	10	100.00	1,000.00

INVOICE APPROVAL
DATE REC: 6/16/11
APPROVED BY: Andrea Crumpacker
SIGNATURE:
PO # 0073025 0073025
WO # 13245.110.002.0008
RETURN TO ANALYN NELSON

Total this invoice See Page 3

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

L3- $40,172.75

Page 1

MOE
MIKHAIL OGAWA ENGINEERING

Weston Solutions
Andrea Crumpacker
2433 Impala Drive
Carlsbad, California 92008

San Diego Stormwater Copermittees - Long Term Effectiveness Assessment

6/8/2011
Project No. 012.009
Invoice No. 000968
P.O. Number 0073025

Description	Hours/Qty	Rate	Amount
Professional Services			
Engineering Student tabulation support	1	65.00	65.00
Task 010 - Report			
Principal Engineer Report writing; consolidation; synthesizing materials; coordination for graphics	31.5	119.00	3,748.50
Senior Scientist report writing and review	5.5	100.00	550.00
Senior Graphics cover materials, diagrams, figures	28.5	100.00	2,850.00

Total this invoice 3- **$40,172.75**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

3525 Del Mar Heights Road #429 • San Diego, California 92130 • (619) 994-7074 • Fax (858) 255-0531

OG900
2011.8.1
Ychr# 500479808

MOE
MIKHAIL OGAWA ENGINEERING

RECEIVED
JUL 20 2011
BY: Amr

Weston Solutions
Andrea Crumpacker
2433 Impala Drive
Carlsbad, California 92008

San Diego Stormwater Copermittees - Long Term Effectiveness Assessment

7/18/2011
Project No. 012.009
Invoice No. 000987
P.O. Number 0073025

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided June 1, 2011 through July 7, 2011			
Tasks 001-003 - Project Management/Meetings			
Principal Engineer conf call with ROWD/LTEA sub-group; project management & coordination; Copermittee workshop; prep and attend; prep for and attend Copermittee MC meeting	11.25	119.00	1,338.75
Associate Scientist LTEA Mtg for comments	5	93.00	465.00
Task 006 - Sources			
Senior Scientist revising SLP table	0.75	100.00	75.00
Task 007 - Program Management Practices			
Senior Scientist PMP profiles; incentives pmp profile sheet; worked on finalizing PMPs and PMP table	23.5	100.00	2,350.00
Task 008 - TTWQ			
Associate Scientist TTWQ examples; Review and edit TTWQ appendix	12.75	93.00	1,185.75
Engineering Student Combined data from wet and dry LTEA MS4 excel documents, transferred tables to word and formatted	4	65.00	260.00
Total this invoice			

INVOICE APPROVAL
DATE REC: 7/20/11
APPROVED BY: Andrea Crumpacker
SIGNATURE:
PO # 0073025
WO # 13245.110.002.0008
RETURN TO ANALYN NELSON

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

Page 1

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$ 14,997.25 - L3

MOE

MIKHAIL OGAWA ENGINEERING

Weston Solutions
Andrea Crumpacker
2433 Impala Drive
Carlsbad, California 92008

San Diego Stormwater Copermittees - Long Term Effectiveness Assessment

7/18/2011
Project No. 012.009
Invoice No. 000987
P.O. Number 0073025

Description	Hours/Qty	Rate	Amount
Professional Services			
Task 009 - Report Principal Engineer internal draft and continued revisions and responses to comments from team and sub-group; PMPs - TTWQ appendix, changes to tables; revised tables; PMPs; TTWQ examples; finalize report; coord of final report	43.5	119.00	5,176.50
Senior Scientiet review and comment draft of report; email out additional appendices and tables; finalize report	17.75	100.00	1,775.00
Senior Graphics graphics for report; LTEA report diagrams; CD labels	14.25	100.00	1,425.00
Associate Scientist review comments and enter into table, review and edit LTEA	8.5	93.00	790.50
Engineering Student Bibliography, reproduction of reports, new data to the watershed's water sources (e.g. Tijuana bacteria, nutrients...); comments table for tracking Copermittee comments; final reproduction of reports and CDs	46.25	65.00	3,006.25
Task 010 - Presentation Senior Scientist reviewing LTEA presentation for workshop	1	100.00	100.00
Mark down		-2,950.50	-2,950.50

Total this invoice L3 **$14,997.25**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

3525 Del Mar Heights Road #429 • San Diego, California 92130 • (619) 994-7074 • Fax (858) 255-0531

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

Walzy
2010.11.3
ychr# 500421906

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

RECEIVED
OCT 29 2010
BY: am

October 20, 2010

Project No. - Invoice No: 427.01-1

County of San Diego Professional Services Agreement

Project: 427.01

For Services Rendered Through 9/30/2010

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

INVOICE APPROVAL
DATE REC: 10/29/10
APPROVED BY: David Poole
SIGNATURE:
PO # 0073156 Item #4
WO #
RETURN TO ANALYN NELSON

Task: 1.0 Planning Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	12.75	183.00 ✓	$2,333.25
Walker, Malcolm	11.50	225.00 ✓	$2,587.50
Total Labor			$4,920.75

13245.110.007.0002.01 #3

Reimbursable Expenses

Payee		Cost	Markup	Amount
Parking				
9/23/2010 Ashby, Karen	Sacramento	15.00		$15.00
9/23/2010 Walker, Malcolm	Sacramento Int. Airport	15.00		$15.00
Mileage				
9/23/2010 Ashby, Karen	Sacramento Int. Airport			$15.00
9/23/2010 Walker, Malcolm	Sacramento Int. Airport			$20.00
Meals				
9/23/2010 Ashby, Karen	San Diego	8.57		$8.57
Airfare				
9/23/2010 Ashby, Karen	San Diego	~~391.40~~		~~$391.40~~
9/23/2010 Walker, Malcolm	San Diego	297.40		$297.40

next page

Taxi/Limo/Bus/Auto Rental

9/23/2010 Walker, Malcolm	San Diego	84.00	$84.00
Total Reimbursables		454.97	~~$846.37~~
Total This Task	13245.110.003-0002.01 -		~~$5,767.12~~ #3 5375.72

Task: 2.0: Workshops Attendance/Participation

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	10.00	183.00	$1,830.00
Walker, Malcolm	10.50	225.00	$2,362.50
Total Labor			**$4,192.50**

Reimbursable Expenses

Payee		Cost	Markup	Amount
Taxi/Limo/Bus/Auto Rental				
9/2/2010 Ashby, Karen	San Diego	30.97		$30.97
9/14/2010 Walker, Malcolm	San Diego	~~50.00~~		~~$50.00~~
Airfare				
9/2/2010 Ashby, Karen	San Diego	270.40		$270.40
9/24/2010 Ashby, Karen	San Diego	~~280.40~~ 84.70		~~$280.40~~ 84.70
9/14/2010 Walker, Malcolm	San Diego	79.70		$79.70
9/2/2010 Walker, Malcolm	San Diego	285.40		$285.40
Parking				
9/2/2010 Ashby, Karen	Sacramento Int. Airport	15.00		$15.00
9/2/2010 Walker, Malcolm	Sacramento Int. Airport	15.00		$15.00
9/14/2010 Walker, Malcolm	Sacramento Int. Airport	15.00		$15.00
Mileage				
9/2/2010 Ashby, Karen	Sacramento Int. Airport			$15.00
9/2/2010 Walker, Malcolm	Sacramento Int. Airport			$20.00
9/14/2010 Walker, Malcolm	Sacramento Int. Airport			$20.00
Meals				
9/2/2010 Ashby, Karen	San Diego	8.91		$8.91
Total Reimbursables				~~$1,105.78~~ 860.08
Total This Task	13245.110.003.0002.02 -			~~$5,298.28~~ #4 5,052.58
Invoice Amount				~~$11,065.40~~ #4 $10,428.30

LARRY WALKER ASSOCIATES
707 4th Street, Suite 200
Davis, CA 95616
530.753.6400
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NOV 15 2010
BY: arnelson

APPROVAL
DATE: 11/15/10
APPROVED BY: David Pohl
SIGNATURE:

WAL27
2010.12.2
vchr# 500426162

November 09, 2010

Project No. - Invoice No: 00427.01-2

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

PO # 0073156
L3 - 13245.110.003.0002.01 - $2,644.50
L4 PO # 13245.110.003.0002.02 - $4,780.27
L1 - 13245.110.001.0001 - $3,701.1

RETURN TO: ANALYN NELSON

County of San Diego Professional Services Agreement

Project: 00427.01

For Services Rendered Through 10/31/2010

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 1.0 Planning Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	4.00	183.00	$732.00
Walker, Malcolm	8.50	225.00	$1,912.50
Total Labor			$2,644.50
Total This Task			$2,644.50

PO 0073156 Item # 3
13245.110.003.0002.01

Task: 2.0 Workshops Attendance/Participation

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	16.00	183.00	$2,928.00
Walker, Malcolm	5.00	225.00	$1,125.00
Total Labor			$4,053.00

Reimbursable Expenses

Payee		Cost	Markup	Amount
Meals				
10/14/2010 Ashby, Karen	San Diego	7.78		$7.78
10/4/2010 Ashby, Karen	San Diego	9.95		$9.95

$11,125.77

Airfare			
10/14/2010 Ashby, Karen	San Diego	280.40	$280.40
10/14/2010 Walker, Malcolm	San Diego	265.40	$265.40
Parking			
10/4/2010 Ashby, Karen	Sacramento Airport	15.00	$15.00
10/14/2010 Ashby, Karen	Sacramento Airport	15.00	$15.00
10/14/2010 Walker, Malcolm	San Diego	15.00	$15.00
Mileage			
10/4/2010 Ashby, Karen	Sacramento Airport		$15.00
10/14/2010 Ashby, Karen	Sacramento Airport		$15.00
10/14/2010 Walker, Malcolm	Sacramento Airport		$20.00
Taxi/Limo/Bus/Auto Rental			
10/4/2010 Ashby, Karen	San Diego	68.74	$68.74
Total Reimbursables			**$727.27**
Total This Task			**$4,780.27**

PO 13245·110·007 0002.02
0073156 Item # 4

Task: 4.0 Project Kickoff Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Cowan, Karen	14.00	192.00	$2,688.00
Mathews, Sandy	3.00	192.00	$576.00
Walker, Malcolm	1.50	225.00	$337.50
Total Labor			**$3,601.50**

Reimbursable Expenses

Payee	Cost	Markup	Amount
Mileage			
10/19/2010 Cowan, Karen — City of Vista and City of Carlsbad			$99.50
Total Reimbursables			**$99.50**
Total This Task			**$3,701.00**

13245·110·001·0001
PO 0073156 Item 1

Invoice Amount	**$11,125.77**

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	11,125.77	11,065.40	22,191.17
Limit			49,576.00
Remaining			27,384.83

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

LARRY WALKER ASSOCIATES

WAL27
2011.3.1
rchk# 500 444 261

February 22, 2011

Project No. - Invoice No: 00427.01-3

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

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CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 11/30/2010

PO Number: 0073156
~~PSA: SDC534965-2010-2~~
Task Order: 001

Task: 1.0 Planning Meetings (Weston P.O. Item #3)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	2.75	183.00	$503.25
Loux, Brian	3.50	130.00	[illegible]
Walker, Malcolm	16.50	225.00	$3,712.50
Total Labor			$4,670.75
Total This Task			13245-110-003-0002.01 $4,670.75 - L3

INVOICE APPROVAL

DATE REC: 2/23/11

APPROVED BY: David Pohe

SIGNATURE: next page

PO # 0073156

WO #

RECEIVED TO ANALYN NELSON

Task: 2.0 Workshops Attendance/Participation (Weston P.O. Item #4)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	6.50	183.00	$1,189.50
Walker, Malcolm	5.00	225.00	$1,125.00
Total Labor			$2,314.50

13245-110-003-0002.02 - L4

Reimbursable Expenses

Payee		Cost	Markup	Amount
Airfare				
11/30/2010 Ashby, Karen	Workshop #5	380.40		$380.40 ✓
11/30/2010 Walker, Malcolm	San Diego	301.40		$301.40 ✓

$18,539.80

Total Reimbursables		**$681.80**
Total This Task	13245.110.003.0002.02 -	**$2,996.30** - L4

Task: 3.0 Watershed Mgmt. Vision Document (Weston P.O. Item #5)

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	1.50	225.00	$337.50
Total Labor			**$337.50**
Total This Task	13245.110.003.0002.03 -		**$337.50** - L5

Task: 4.0 Project Kickoff Meetings (Weston P.O. Item 1)

Professional Personnel

Employee	Hours	Rate	Amount
Cowan, Karen	13.75	177.00	$2,433.75
Total Labor			**$2,433.75**
Total This Task	13246.110.001.0001 -		**$2,433.75** - L1

Task: 5.0 09/10 Annual Report (Weston P.O. Item #2)(Partial Request)

Professional Personnel

Employee	Hours	Rate	Amount
Laurenson, Brian	6.00	183.00	$1,098.00
Mathews, Sandy	20.50	177.00	$3,628.50
Walker, Malcolm	15.00	225.00	$3,375.00
Total Labor			**$8,101.50**
Total This Task	13245.110.001.0006 -		**$8,101.50** - L2

Invoice Amount	**$18,539.80**

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	18,539.80	22,191.17	40,730.97
Limit			49,576.00
Remaining			8,845.03

Approved for payment
2/23/11
Approval

WALZT
2011.3.2

rch# 500445740

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

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FEB 23 2011
BY:

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

February 22, 2011

Project No. - Invoice No: 00427.01-4

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 12/31/2010

Partial Request for Task 5-Weston Line Item #2
PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 1.0 Planning Meetings (Weston P.O. Item #3)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	2.50	183.00	$457.50
Total Labor			$457.50

Reimbursable Expenses

Payee		Cost	Markup	Amount
Communication				
12/1/2010 AT&T Teleconference Services	Inv.# 12/1/10	17.09		$17.09
Total Reimbursables				$17.09
Total This Task				$474.59

13245.110.003.0002.01 - L3

Task: 3.0 Watershed Mgmt. Vision Document (Weston P.O. Item #5)

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	4.00	225.00	$900.00
Total Labor			$900.00
Total This Task			$900.00

13245.110.003.0002.03 - $900.00 - L5

INVOICE APPROVAL
DATE REC: 2/23/11
APPROVED BY: David Poole
SIGNATURE: next page
PO # M 73156
WO #
RETURN TO ANALYN NELSON

Task: 5.0 09/10 Annual Report (Weston P.O. Item #2)(Partial Request)

Professional Personnel

Employee	Hours	Rate	Amount
Cowan, Karen	8.40	177.00	$1,486.80
Mathews, Sandy	4.50	177.00	$796.50
Walker, Malcolm	7.00	225.00	$1,575.00
Total Labor			$3,858.30
Total This Task			$3,858.30
Invoice Amount			$5,232.89

See e-mail dated 1/26/11 deduct.

- LT HOLD

3,858.30

1,374.59

OK to Pay

Billing Limits	Current	Prior	To-date
Total Billings	5,232.89	40,730.97	45,963.86
Limit			49,576.00
Remaining			3,612.14

Approved for Payment

2/23/11

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

WALZT
2011-4-2
Vchr# 50045353 7

March 10, 2011

Project No. - Invoice No: 00427.01-5

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

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MAR 13 2011
BY: am

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 2/28/2011

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 01.0 : Planning Meetings (Weston P.O. Item #3)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	.25	183.00	$45.75
Total Labor			**$45.75**
Total This Task			**$45.75**

/13245.110.003.0002.01 - L3

Task: 04.0 : Project Kickoff Meetings (Weston P.O. Item 1)

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	2.00	225.00	$450.00
Total Labor			**$450.00**
Total This Task			**$450.00**

13245.110.001.0001 - L1

INVOICE APPROVAL

DATE REC: 3/13/11

APPROVED BY: David Pahl

SIGNATURE:

PO # 00 73156

WO #

RETURN TO

Task: 05.0 : 09/10 Annual Report (Weston P.O. Item #2) (Partial Request)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	3.75	183.00	$686.25
Total Labor			**$686.25**
Total This Task			**$686.25**

/13245.110.001.0006 - L2

$16,224.75

Task 06.0 Permit Strategy Summary

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	3.25	183.00	$594.75
Warren, Rachel	40.00	130.00	$5,200.00
Total Labor			**$5,794.75**
Total This Task			**$5,794.75**

/13245·110·003·0002.03

Task 07.0 San Diego Permits Summary Tables

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	6.00	183.00	$1,098.00
Walker, Malcolm	20.00	225.00	$4,500.00
Warren, Rachel	3.25	130.00	$422.50
Wong, Patrick	9.00	90.00	$810.00
Total Labor			**$6,830.50**
Total This Task			**$6,830.50**

/13245·110·003·0002·04 L7

Task 08.0 Pre-ROWD Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	4.50	225.00	$1,012.50
Total Labor			**$1,012.50**
Total This Task			**$1,012.50**

/13245·110·003·0002.04 L8

Task 10.0 LTEA Report

Professional Personnel

Employee	Hours	Rate	Amount
Lundberg, Kathryn	4.75	130.00	$617.50
Walker, Malcolm	3.50	225.00	$787.50
Total Labor			**$1,405.00**
Total This Task			**$1,405.00**

/13245.110·002.0009 L10

Invoice Amount **$16,224.75**

Billing Limits	Current	Prior	To-date
Total Billings	16,224.75	45,708.86	61,933.61
Limit			107,286.81
Remaining			45,353.20

LARRY WALKER

[redacted] ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

WA L27
2011.4.4
rchv# 500456858

RECEIVED
APR 19 2011
BY: [illegible]

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

April 12, 2011

Project No. - Invoice No: 00427.01-6

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 3/31/2011

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 08.0 Pre-ROWD Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	6.00	183.00	$1,098.00
Walker, Malcolm	14.50	225.00	$3,262.50
Total Labor			**$4,360.50**
Total This Task			**$4,360.50** -L8

Task: 10.0 LTEA Report

Professional Personnel

Employee	Hours	Rate	Amount
Lundberg, Kathryn	26.00	148.00	$3,848.00
Walker, Malcolm	17.00	225.00	$3,825.00
Total Labor			**$7,673.00**
Total This Task			**$7,673.00** -L11

Invoice Amount **$12,033.50**

INVOICE APPROVAL
DATE REC: 4/19/11
APPROVED BY: David Pohl
SIGNATURE: [illegible]
PO # 0073156
WO # 13245.110.003.0002 04 Tasks
13245.110.002.0009
RETURN TO ANALYN NELSON

Billing Limits	Current	Prior	To-date
Total Billings	12,033.50	61,933.61	73,967.11
Limit			107,286.81

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

LARRY WALKER ASSOCIATES

LWa27
2011.6.2
rchk# 500465548

May 11, 2011

Project No. - Invoice No: 00427.01-7

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

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MAY 17 2011
BY: am

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 4/30/2011

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 08.0 Pre-ROWD Meetings

Professional Personnel

13245.110.003.0007.04

Employee	Hours	Rate	Amount
Walker, Malcolm	16.00	225.00	$3,600.00
Total Labor			$3,600.00
Total This Task			$3,600.00

L8-

INVOICE APPROVAL
DATE REC: 5/17/11
APPROVED BY: David Pahl
SIGNATURE:
PO # 0073156
WO # see below
RETURN TO ANALYN NELSON

Task: 09.0 ROWD Annotated Outline

Professional Personnel

13245.110.003.0007.04

Employee	Hours	Rate	Amount
Ashby, Karen	1.00	183.00	$183.00
Fishel, Susan	1.00	90.00	$90.00
Walker, Malcolm	9.50	225.00	$2,137.50
Total Labor			$2,410.50
Total This Task			$2,410.50

L9-

Task: 10.0 LTEA Report

Professional Personnel

Employee	Hours	Rate	Amount
Fishel, Susan	3.00	90.00	$270.00
Lundberg, Kathryn	57.75	148.00	$8,547.00

$ 17,865.1

Walker, Malcolm	13.50	225.00	$3,037.50
Total Labor			$11,854.50
Total This Task			$11,854.50
Invoice Amount			$17,865.00

✓13245.110.002.-4/0009

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	17,865.00	73,967.11	91,832.11
Limit			107,286.81
Remaining			15,454.70

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

WAL 27
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voucher # 500473529

June 14, 2011

Project No. - Invoice No: 00427.01-8

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

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BY: amv

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 5/31/2011

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

INVOICE APPROVAL
DATE REC: 06/23/11
APPROVED BY: Andrea Cruzgaker
SIGNATURE:
PO # 073156
WO #
RETURN TO ANALYN NELSON

Task: 09.0 ROWD Annotated Outline

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	.50	225.00 ✓	$112.50
Total Labor			$112.50
Total This Task			$112.50

✓13245 · 110 · 002 · 0002 04 - L9 -

Task: 10.0 LTEA Report

Professional Personnel

Employee	Hours	Rate	Amount
Lundberg, Kathryn	62.75	148.00 ✓	$9,287.00
Walker, Malcolm	7.25	225.00 ✓	$1,631.25
Total Labor			$10,918.25
Total This Task			$10,918.25

✓13245 · 110 · 002.0009 - L10 -

Task: 11.0 ROWD Preparation

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	16.25	183.00 ✓	$2,973.75
Fishel, Susan	4.00	90.00 ✓	$360.00
Walker, Malcolm	53.25	225.00 ✓	$11,981.25

Winer-Skonovd, Rebecca	•	•	•	24.00	177.00 ✓ $4,248.00 ✓
Total Labor					$19,563.00 - L11

13245.110.003.00208

Reimbursable Expenses

Payee		Cost	Markup	Amount
Airfare				
5/31/2011 Ashby, Karen	San Diego	410.40		$410.40
Total Reimbursables				$410.40 ← L11
Total This Task				$19,973.40

13245.110.003.00202.08

Invoice Amount			$31,004.15 ✓

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	31,004.15	91,832.11	122,836.26
Limit			147,865.81
Remaining			25,049.55

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

WQ L2T
2011.8.1
Ychr# 500479807

RECEIVED
JUL 20 2011
BY: am

July 11, 2011

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

Project No. - Invoice No: 00427.01-9

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 6/30/2011

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 11.0 ROWD Preparation

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	6.00	183.00 ✓	$1,098.00
Fishel, Susan	4.00	90.00 ✓	$360.00
Lundberg, Kathryn	6.75	148.00 ✓	$999.00
Walker, Malcolm	59.50	225.00 ✓	$13,387.50
Winer-Skonovd, Rebecca	15.25	177.00 ✓	$2,699.25
Total Labor			**$18,543.75**

Reimbursable Expenses

Payee	Cost	Markup	Amount
Airfare			
6/13/2011 Walker, Malcolm	293.40		$293.40
6/23/2011 Walker, Malcolm	459.40		$459.40
Total Reimbursables			**$752.80**
Total This Task			**$19,296.55**

INVOICE APPROVAL

DATE REC: 7/20/11

APPROVED BY: Andrea Crumpacker

SIGNATURE: [signature]

PO # 0073156

WO # 13245.110.003.0002.08

RETURN TO ANALYN NELSON

Invoice Amount L11- **$19,296.55**

Billing Limits	Current	Prior	To-date
Total Billings	19,296.55	122,836.26	142,132.81
Limit			147,885.81
Remaining			5,753.00

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	City of El Cajon
Period:	1st and 2nd Qrt. FY 2010-11 (July 1- Dec. 31 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 414.00**
Contract / Other Expenditures Claimed:	**$ 1,663.20**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jaime Campos
Associate Civil Engineer
City of El Cajon

10/10/11
Date

Jaime Campos
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Richard Diaz
Program Coordinator
County of San Diego

10-10-11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: County of San Diego

Period: 1st and 2nd Qrt. FY 2010-11 (July 1- Dec. 31 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task 1 Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support						
7/30/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Prepared materials for meeting support
10/6/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Prepared materials for meeting support
12/3/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Prepared materials for meeting support
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 207.00					
Task 2 Subtask 2.A. Semi-annual Workgroup Updates						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Task 2 Subtask 2.B. FY 2011-12 Work Plan and Budget						
1/5/2011	Jaime Campos	Associate Civil Engineer	0.50	$ 69.00	$ 34.50	Reviewed Work Plan and Budget for FY2011-12
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: County of San Diego

Period: 1st and 2nd Qrt. FY 2010-11 (July 1- Dec. 31 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 34.50					
Task 2 Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input						
12/1/2010	Jaime Campos	Associate Civil Engineer	1.50	$ 69.00	$ 103.50	Worked on RURMP
12/6/2010	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Reviewed RURMP for IC Section
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 172.50					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: County of San Diego

Period: 1st and 2nd Qrt. FY 2010-11 (July 1- Dec. 31 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Copermittee Total					**$ 414.00**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: County of San Diego

Period: 1st and 2nd Qrt. FY 2010-11 (July 1- Dec. 31 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 2.E. Regional Reporting and Assessment Standards				
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 288.00	10/12/2010	$ 14.40	I/C Workgroup meeting
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 144.00	11/1/2010	$ 7.20	Review I/C inventories from Damon
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 72.00	11/3/2010	$ 3.60	Review I/C inventories from Damon
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 144.00	11/11/2010	$ 7.20	Review I/C submittals from Port
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 288.00	11/29/2010	$ 14.40	IC Workgroup - review inventories
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 288.00	12/1/2010	$ 14.40	IC Workgroup - review inventories
	$ -		$ -	
Subtask 2.E Sub-total $ 1,224.00				
Subtask 2.E Management Cost $ 61.20				
Subtask 2.E. Regional Reporting and Assessment Standards				
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 360.00	12/7/2010	$ 18.00	IC Workgroup meeting
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtask 2.E Sub-total $ 360.00				
Subtask 2.E Management Cost $ 18.00				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 1,663.20**			

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ENGINEERING DIVISION

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P.O. BOX 79064
City of Industry, CA 91716-9064

INVOICE

(949) 727-9336
FAX (949) 727-7399

Jaime Campos
City of El Cajon
200 Civic Center Way
El Cajon, CA 92020
USA

December 23, 2010
Project No: 179715.0000.0000
Invoice No: 15142
Project Manager Jerome Jaminet

Project 179715.0000.0000 San Diego River Watershed Support 2010-11

PO 90272

Professional Services through: November 26, 2010

Phase TA3000 Annual Report

Professional Personnel

		Hours	Rate	Amount	
Project Manager					
Jaminet, Jerome	11/2/10	2.00	144.00	288.00	
send previous year activity sheets and respond to emails					
Jaminet, Jerome	11/11/10	2.00	144.00	288.00	
activity sheets					
Jaminet, Jerome	11/12/10	5.00	144.00	720.00	
activity sheets and drasft report					
Jaminet, Jerome	11/16/10	4.00	144.00	576.00	
Activity Sheets and annual report					
Jaminet, Jerome	11/17/10	3.00	144.00	432.00	
Activity Sheets and annual report					
Jaminet, Jerome	11/19/10	1.00	144.00	144.00	
Activity Sheets and annual report					
Totals		17.00		2,448.00	
Total Labor					**2,448.00**
			Total this Phase		**$2,448.00**

Phase TA5000 Additional Services El Cajon

Professional Personnel

		Hours	Rate	Amount
Project Manager				
Jaminet, Jerome	11/1/10	1.00	144.00	144.00
review ind/com inventories from Damon				
Jaminet, Jerome	11/3/10	.50	144.00	72.00
review ind/com inventories from Damon				
Jaminet, Jerome	11/9/10	2.00	144.00	288.00
SANDAG Quality of Life Water Quality working group				

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

Jaime Campos 01/05/11

Project 179715.0000.0000 San Diego River Watershed Support 2010-11 Invoice 14802

Project Manager					
Jaminet, Jerome	10/25/10	2.00	144.00	288.00	
Weston training on new regional monitoring report watershed section					
Totals		2.00		288.00	
Total Labor					**288.00**
			Total this Phase		**$288.00**

Phase TA5000 Additional Services El Cajon

Professional Personnel

		Hours	Rate	Amount	
Project Manager					
Jaminet, Jerome	10/12/10	2.00	144.00	288.00	
Ind Commercial Workgroup meeting					
Jaminet, Jerome	10/27/10	2.50	144.00	360.00	12/7/10?
WURMP leads meeting					
Totals		4.50		648.00	
Total Labor					**648.00**
			Total this Phase		**$648.00**
			Total this Invoice		**$1,884.50**

Billings to Date

	Current	Prior	Total
Labor	1,872.00	468.00	2,340.00
Expense	12.50	0.00	12.50
Totals	**1,884.50**	**468.00**	**2,352.50**

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

Project 179715.0000.0000 San Diego River Watershed Support 2010-11 Invoice 15299

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Project Manager					
Jaminet, Jerome	11/30/10	2.00	144.00	288.00	
Jaminet, Jerome	12/2/10	4.00	144.00	576.00	
Jaminet, Jerome	12/3/10	4.00	144.00	576.00	
Jaminet, Jerome	12/8/10	3.00	144.00	432.00	
annual report					
Jaminet, Jerome	12/10/10	3.00	144.00	432.00	
annual report					
Jaminet, Jerome	12/13/10	3.00	144.00	432.00	
annual report					
Jaminet, Jerome	12/16/10	3.00	144.00	432.00	
annual report					
Jaminet, Jerome	12/17/10	4.00	144.00	576.00	
annual report					
Totals		26.00		3,744.00	
Total Labor					**3,744.00**
			Total this Phase		**$3,744.00**

Phase TA4000 Additional Services Copermittees

Professional Personnel

		Hours	Rate	Amount	
Project Manager					
Jaminet, Jerome	12/1/10	3.50	144.00	504.00	
SDR watershed monitoring coordination meeting by RWQCB					
Totals		3.50		504.00	
Total Labor					**504.00**
			Total this Phase		**$504.00**

Phase TA5000 Additional Services El Cajon

Professional Personnel

		Hours	Rate	Amount
Project Manager				
Jaminet, Jerome	11/29/10	2.00	144.00	288.00
IC workgroup - review inventories				
Jaminet, Jerome	12/1/10	2.00	144.00	288.00
IC workgroup - review inventories				
Jaminet, Jerome	12/7/10	2.50	144.00	360.00
Ind Comm Workgroup meeting				
Jaminet, Jerome	12/16/10	.25	144.00	36.00
client communication				

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

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CITY OF EL CAJON
ENGINEERING DIVISION

Totals		6.75	972.00	
Total Labor				**972.00**

Reimbursable Expenses

Reimb/Non-Sub-Mileage

10/12/10	Jaminet, Jerome	Industrial Commercial Workgroup meeting	1.00	
Total Reimbursables		**1.0 times**	**1.00**	**1.00**

Total this Phase **$973.00**

Total this Invoice **$6,877.00**

Billings to Date

	Current	Prior	Total
Labor	6,876.00	5,436.00	12,312.00
Expense	1.00	12.50	13.50
Totals	**6,877.00**	**5,448.50**	**12,325.50**

Date_____
P.O. #_____
Vendor #_____
Acct #_____

Transfer in_____ Project #_____ 6910
Transfer out_____ Project #_____ 9910

Signature_____

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	City of El Cajon
Period:	3rd and 4th Qrt. FY 2010-11 (Jan. 1 - June 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 172.50**
Contract / Other Expenditures Claimed:	**$ 8,963.00**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jaime Campos
Associate Civil Engineer
City of El Cajon

10/10/11
Date

Jaime Campos
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Richard Diaz
Program Coordinator
County of San Diego

10/10/11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of El Cajon

Period: 3rd and 4th Qrt. FY 2010-11 (Jan. 1 - June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task 1 Subtask 1.A. Industrial and Commercial Sources Workgroup Meeting Support						
2/7/2011	Jaime Campos	Associate Civil Engineer	0.50	$ 69.00	$ 34.50	Planning on upcoming meeting and/or prepared materials for meeting support
4/1/2011	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Planning on upcoming meeting and/or prepared materials for meeting support
6/7/2011	Jaime Campos	Associate Civil Engineer	1.00	$ 69.00	$ 69.00	Planning on upcoming meeting and/or prepared materials for meeting support
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 172.50					
Task 2 Subtask 2.A. Semi-annual Workgroup Updates						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Task 2 Subtask 2.B. FY 2011-12 Work Plan and Budget						
			0.00	$ 69.00	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of El Cajon

Period: 3rd and 4th Qrt. FY 2010-11 (Jan. 1 - June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Task 2 Subtask 2.C. FY 2009-10 Regional URMP Annual Report Input						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of El Cajon

Period: 3rd and 4th Qrt. FY 2010-11 (Jan. 1 - June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Copermittee Total					**$ 172.50**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: City of El Cajon

Period: 3rd and 4th Qrt. FY 2010-11 (Jan. 1 - June 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 2.E. Regional Reporting and Assessment Standards				
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 288.00	2/2/2011	$ 14.40	Compile IC inventories
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 720.00	2/4/2011	$ 36.00	Compile master inventories
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 360.00	2/8/2011	$ 18.00	IC workgroup meeting
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 174.00	2/7/2011	$ 8.70	Edit IC table
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 288.00	3/2/2011	$ 14.40	IC spreadsheets
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 144.00	3/3/2011	$ 7.20	IC spreadsheets
	$ -		$ -	
Subtask 2.E Sub-total $ 1,974.00				
Subtask 2.E Management Cost $ 98.70				
Subtask 2.E. Regional Reporting and Assessment Standards				
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 576.00	3/4/2011	$ 28.80	IC spreadsheets
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 36.00	3/10/2011	$ 1.80	Edit IC table
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 504.00	3/11/2011	$ 25.20	Edit spreadsheets
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 576.00	3/16/2011	$ 28.80	IC workgroup spreadsheet
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 432.00	3/22/2011	$ 21.60	IC workgroup spreadsheet
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 396.00	3/25/2011	$ 19.80	IC workgroup spreadsheet
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 576.00	3/31/2011	$ 28.80	(IC) spreadsheets
Subtask 2.E Sub-total $ 3,096.00				
Subtask 2.E Management Cost $ 154.80				
Subtask 2.E. Regional Reporting and Assessment Standards				
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 432.00	4/1/2011	$ 21.60	Edit (IC) spreadsheets
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 288.00	4/5/2011	$ 14.40	IC workgroup meeting
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 432.00	6/1/2011	$ 21.60	IC analysis

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Contract Task 2.E. Regional Reporting and Assessment Stds	$ 648.00	6/2/2011	$ 32.40	IC analysis
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 576.00	6/6/2011	$ 28.80	Prepare presentation for meeting
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 288.00	6/7/2011	$ 14.40	IC workgroup meeting
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 216.00	6/17/2011	$ 10.80	ftp site and standardization table
Subtaskx.x Sub-total $ 2,880.00				
Subtaskx.x Management Cost $ 144.00				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 106.25	6/3/2011	$ 5.31	Prepare table with SIC codes to NAICS codes
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 233.75	6/6/2011	$ 11.69	Prepare tables
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 145.00	6/6/2011	$ 7.25	Work on industrial commercial excel files
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 58.00	6/16/2011	$ 2.90	upload data onto ftp site for client
Contract Task 2.E. Regional Reporting and Assessment Stds	$ 72.50	6/21/2011	$ 3.63	Update the Source Inventory Standardization list
	$ -		$ -	
	$ -		$ 30.78	
	$ -		$ -	
	$ -		$ -	
Sub-total Other Expenditures $ 615.50 + 30.78				
Total Expenditures (Including contract management cost)	**$ 8,963.00**			

Final 04-30-09

PLEASE REMIT TO:
P.O. BOX 79064
City of Industry, CA 91716-9064

INVOICE

(949) 727-9336
FAX (949) 727-7399

P.O. #
Vendor #
Acct #

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MAR 28 2011
CITY OF EL CAJON
ENGINEERING DIVISION

Jaime Campos
City of El Cajon
200 Civic Center Way
El Cajon, CA 92020
USA

Transfer In
Transfer out
Signature

Project # 6210
Project # 9210

March 23, 2011
Project No: 179715.0000.0000
Invoice No: 15985
Project Manager Jerome Jaminet

Project 179715.0000.0000 San Diego River Watershed Support 2010-11
PO 90272

Professional Services through: February 25, 2011

Phase TA1000 WURMP Meetings

Professional Personnel

		Hours	Rate	Amount	
Project Manager					
Jaminet, Jerome	2/10/11	4.00	144.00	576.00	
WURMP meeting					
Totals		4.00		576.00	
Total Labor					**576.00**
			Total this Phase		**$576.00**

Phase TA5000 Additional Services El Cajon

Professional Personnel

		Hours	Rate	Amount	
Project Manager					
Jaminet, Jerome	2/2/11	2.00	144.00	288.00	
compile inventories; communication with Damon Lacassela and Jaime Campos					
Jaminet, Jerome	2/4/11	5.00	144.00	720.00	
compile master inventory					
Jaminet, Jerome	2/8/11	2.50	144.00	360.00	
Ind Commercial Workgroup meeting					
Clerical/Administration					
Pauluk, Chrissy	2/7/11	3.00	58.00	174.00	
Edit industrial commercial table					
Totals		12.50		1,542.00	
Total Labor					**1,542.00**
			Total this Phase		**$1,542.00**

OK

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

Professional Personnel

		Hours	Rate	Amount
Project Manager				
Jaminet, Jerome	3/2/11	2.00	144.00	288.00
Ind Comm spreadsheets				
Jaminet, Jerome	3/3/11	1.00	144.00	144.00
Ind Comm spreadsheets				
Jaminet, Jerome	3/4/11	4.00	144.00	576.00
Ind Comm spreadsheets				
Jaminet, Jerome	3/10/11	.25	144.00	36.00
Jaminet, Jerome	3/11/11	3.50	144.00	504.00
edit spreadsheets				
Jaminet, Jerome	3/16/11	4.00	144.00	576.00
Ind Comm workgroup spreadsheets				
Jaminet, Jerome	3/22/11	3.00	144.00	432.00
Ind Comm workgroup spreadsheets				
Jaminet, Jerome	3/25/11	2.75	144.00	396.00
Ind Comm workgroup spreadsheets				
Totals		20.50		2,952.00
Total Labor				**2,952.00**

Total this Phase **$2,95200**

Total this Invoice **$5,184.00**

Billings to Date

	Current	Prior	Total
Labor	5,184.00	27,894.00	33,078.00
Expense	0.00	13.50	13.50
Totals	**5,184.00**	**27,907.50**	**33,091.50**

Jaime Campos 06/21/11

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

PLEASE REMIT TO:
P.O. BOX 79064
City of Industry, CA 91716-9064

INVOICE

RECEIVED
MAY 31 2011
CITY OF EL CAJON
ENGINEERING DIVISION

(949) 727-9336
FAX (949) 727-7399

5/31
90272
Vendor # 11237
Acct # 650750 8395

Jaime Campos
City of El Cajon
200 Civic Center Way
El Cajon, CA 92020
USA

Transfer in ____ ject # ____
Transfer out ____ ject # ____
Signature Jaime Campos 06/14/11

May 19, 2011
Project No: 179715.0000.0000
Invoice No: 16514
Project Manager Jerome Jaminet

Project 179715.0000.0000 San Diego River Watershed Support 2010-11

PO 90272

Professional Services through: April 29, 2011

Phase TA1000 WURMP Meetings

Reimbursable Expenses

Reimb/Non-Sub-Mileage

2/10/11 Jaminet, Jerome			15.30	
Total Reimbursables		**1.0 times**	**15.30**	**15.30**
		Total this Phase		**$15.30**

Phase TA4000 Additional Services Copermittees

Professional Personnel

		Hours	Rate	Amount	
Project Manager					
Jaminet, Jerome	4/7/11	3.00	144.00	432.00	
Ind Comm analysis					
Jaminet, Jerome	4/8/11	2.50	144.00	360.00	
Ind Comm analysis					
Totals		5.50		792.00	
Total Labor					**792.00**
			Total this Phase		**$792.00**

Phase TA5000 Additional Services El Cajon

Professional Personnel

		Hours	Rate	Amount
Project Manager				
Jaminet, Jerome	3/31/11	4.00	144.00	576.00
spreadsheets				
Jaminet, Jerome	4/1/11	3.00	144.00	432.00
edit spreadsheets				
Jaminet, Jerome	4/5/11	2.00	144.00	288.00
Ind Comm workgroup meeting				

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

Totals	9.00	1,296.00	
Total Labor			**1,296.00**
		Total this Phase	**$1,296.00**
		Total this Invoice	**$2,103.30**

Billings to Date

	Current	Prior	Total
Labor	2,088.00	33,078.00	35,166.00
Expense	15.30	13.50	28.80
Totals	**2,103.30**	**33,091.50**	**35,194.80**

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

PLEASE REMIT TO:
P.O. BOX 79064
City of Industry, CA 91716-9064

INVOICE

(949) 727-9336
FAX (949) 727-7399

RECEIVED
AUG 2 2011
CITY OF EL CAJON
ENGINEERING DIVISION

Jaime Campos
City of El Cajon
200 Civic Center Way
El Cajon, CA 92020
USA

July 28, 2011
Project No: 179715.0000.0000
Invoice No: 17245
Project Manager Jerome Jaminet

Project 179715.0000.0000 San Diego River Watershed Support 2010-11
PO 90272
Professional Services through: June 24, 2011

Phase TA1000 WURMP Meetings
Professional Personnel

		Hours	Rate	Amount	
Project Manager					
Jaminet, Jerome	5/5/11	2.75	144.00	396.00	
WURMP meeting					
Totals		2.75		396.00	
Total Labor					**396.00**
			Total this Phase		**$396.00**

Phase TA5000 Additional Services El Cajon
Professional Personnel

		Hours	Rate	Amount
Project Manager				
Jaminet, Jerome	6/1/11	3.00	144.00	432.00
Ind Comm analysis				
Jaminet, Jerome	6/2/11	4.50	144.00	648.00
Ind Comm analysis				
Jaminet, Jerome	6/6/11	4.00	144.00	576.00
prepare presentation for meeting				
Jaminet, Jerome	6/7/11	2.00	144.00	288.00
Ind Comm Workgroup meeting				
Jaminet, Jerome	6/17/11	1.50	144.00	216.00
ftp site and standardization table				
Jaminet, Jerome	6/22/11	2.00	144.00	288.00
WURMP leads workgroup meeting				
Planner				
Kerper, Danielle	6/3/11	1.25	85.00	106.25
Prepare table with SIC codes to NAICS codes.				
Kerper, Danielle	6/6/11	2.75	85.00	233.75
Prepare tables.				

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

Jaime Campos

Clerical/Administration					
Pauluk, Chrissy	6/6/11	2.50	58.00	145.00	
Work on industrial commercial excel files					
Pauluk, Chrissy	6/16/11	1.00	58.00	58.00	
Upload data onto our ftp site for our client					
Pauluk, Chrissy	6/21/11	1.25	58.00	72.50	
update the Source Inventory Standardization list					
Totals		25.75		3,063.50	
Total Labor					**3,063.50**
			Total this Phase		**$3,063.50**
			Total this Invoice		**$3,459.50**

Billings to Date

	Current	Prior	Total
Labor	3,459.50	35,166.00	38,625.50
Expense	0.00	28.80	28.80
Totals	**3,459.50**	**35,194.80**	**38,654.30**

Jaime Cayon

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

ject	179715.0000.0000	San Diego River Watershed Support 2010-11		Invoice 15142	
Jaminet, Jerome	11/11/10	1.00	144.00	144.00	
review ind-com submittals from Port					
Totals		4.50		648.00	
Total Labor					**648.00**
			Total this Phase		**$648.00**
			Total this Invoice		**$3,096.00**

Billings to Date

	Current	Prior	Total
Labor	3,096.00	2,340.00	5,436.00
Expense	0.00	12.50	12.50
Totals	**3,096.00**	**2,352.50**	**5,448.50**

Date_____
P.O. #_____
Vendor #_____
Acct #_____

Transfer in_____ Project #_____ 6910
Transfer out_____ Project #_____ 9910

Signature_____

Please reference Project # and Invoice # on payment. Payment Terms – Net 30

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 9,515.63

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Sheri McPherson
Land Use and Environmental Planner III
County of San Diego

8/23/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Richard Diaz
Program Coordinator
County of San Diego

10-10-11
Date

Signature

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 2.I. BMP Toolbox Website Improvements				
Contract Nonprofit Management Solutions Contract # 533177	$ 1,562.50	7/1/2010	$ 78.13	Invoice # 5941 - proposal and assessment of current toolbox
	$ 3,750.00	11/30/2010	$ 187.50	Invoice # 6032 - demonstration, fixes and redesign of toolbox
	$ 3,750.00	6/30/2011	$ 187.50	Invoice # 6125 - completion of toolbox revision
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ 9,062.50				
Subtaskx.x Management Cost $ 453.13				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 9,515.63**			

Final 04-30-09

8265 Vickers Str., Ste. C
San Diego, CA 92111
858.292.5702
858.292.9943 FAX
npsolutions.org

Invoice

6/29/10

County of San Diego
Rachel Borgatti, Program Coordinator.
5201 Ruffin Rd. Ste. P
San Diego, CA 92123

INVOICE #	TERMS
5941	net 30

DESCRIPTION		RATE	AMOUNT
June 2010 - Contract #533177			
Task 1a: Needs Assessment - Mary Gross Includes meetings with staff on-site and via phone, research on best practices, site planning, navigation development, etc.	40	125.00	5,000.00
Task 1c: Branding & Design Plan - Ty Webb Branding & design plan for Project Clean Water, Healthy Gardens & Equestrian Websites	36	125.00	4,500.00
Task 1d: BMP Toolbox Proposal - Michael Ross & Mary Gross Preliminary evaluation; Review elements with staff, programmer, etc. to define changes/additions to database. Verified site admin login and Web hosting admin login; downloaded key website files; got main site and BMP subsite partially working on local Web server. Contacted Jumpline.com technical support regarding how to access cPanel and phpMyAdmin; created test database; verified ability to connect to database; reported my assessment of existing code and client's requested changes.	12.5	125.00	1,562.50
Task 1e: Revision & Development Plan - Mary Gross Review of content for new system including photography, graphic design etc.	10	125.00	1,250.00
TASK 1i: Social Media Plan - Christianne Penunuri READERS: * Review Facebook accounts for industry peers; * Review reader articles/links; * Phone call with Erica re: LA Stormwater. CALENDARING: * Meeting with Watershed team; * Content overview/analysis; * Peer content analysis; * Best practices conversation with BeWaterWise, SDCWA; * Draft and edit report	14.5	125.00	1,812.50
Total Due			

Your prompt attention to this invoice will be appreciated. Please make your check payable to Nonprofit Management Solutions and return it with a copy of this invoice. Thank you for the opportunity to assist your organization.

Okay to Pay - Rachel Borgatti, (Page 1 of 2)
7/6/2010

8265 Vickers Str., Ste. C
San Diego, CA 92111
858.292.5702
858.292.9943 FAX
npsolutions.org

Invoice

6/29/10

County of San Diego
Rachel Borgatti, Program Coordinator
5201 Ruffin Rd. Ste. P
San Diego, CA 92123

INVOICE #	TERMS
5941	net 30

DESCRIPTION		RATE	AMOUNT
Task 2a - Installation of Content Mgmt System - Israel Farrer Joomla and components install	40	125.00	5,000.00
Task 2c: Development of Visual Products - Ty Webb Development of Visual Products for Project Clean Water, Healthy Gardens & Equestrian Websites	44	125.00	5,500.00

Contract # S33177
Okay to Pay Rachel Borgatti, Program Coordinator
7/6/10
P: 1002993
O: 50915
E: 52370
T: 011.006
A: 100496

Your prompt attention to this invoice will be appreciated. Please make your check payable to Nonprofit Management Solutions and return it with a copy of this invoice. Thank you for the opportunity to assist your organization.

Page 2

Total Due	$24,625.00

Nonprofit Management Solutions
8265 Vickers St., Suite C
San Diego, CA 92111
Phone: (858) 292-5702 - Fax: (858) 292-9943

Invoice

Invoice Date	Invoice No.
11/30/2010	6032

Sheri McPherson
County of San Diego - Watershed
5201 Ruffin Rd Ste A
San Diego, CA 92123-1699

Project 3760
Website

Date	Activity	Units	Rate	Amount
11/30/2010	Contract #533177	34.00	$125.00	$4,250.00
	Watershed Website Technician(s): Mary Gross, Task 2 - Installation of Website Redesign 2a - Content Management System - Meeting w/staff to review project update, Content updates (4.0 hrs. - Mary Gross) 2b - Completion of BMP toolbox revision (MR) 1st phase of fixes and redesign. Demonstration ready for meeting on 12/7/10. (30.0hrs.)		= 3750	
11/30/2010	Software Purchase	1.00	$75.00	$75.00
	JMS Multisite for joomla! Version 1.2			
		Total		$4,325.00

recd 12/3/10

PO# 533177
P 1002993
O 50915
E 52370
T 011.006
A 100496

OK to PAY
Jon Van Rhyn
12/13/10

Nonprofit Management Solutions
8265 Vickers St., Suite C
San Diego, CA 92111
Phone: (858) 292-5702 - Fax: (858) 292-9943

Invoice

Invoice Date	Invoice No.
7/31/2011	6125

Sheri McPherson
County of San Diego - Watershed
5201 Ruffin Rd Ste A
San Diego, CA 92123-1699

Project 3827
Website Development

Date	Activity	Unit(s)	Unit Rate	Amount
7/31/2011	Website Development	52.00	$125.00	$6,500.00
	June/July 2011 Contract #533177			
	Task 2b: Completion of BMP Toolbox Revision - Israel Farrer & Lenore Lowe	30hrs	=	$3,750.00
	BMP Toolbox revision and implementation. Includes fixing bugs & troubleshooting, project clean up and launch.			
7/31/2011	Reverse Charges	1.00	-$147.47	($147.47)
	PO 533177			
	Reverse charges for Zoomla Software $147.47			
			Total	**$6,352.53**

Rec'd 8/10/11

P.O. # 533177

P 1002993
O 50915
E 52370
T 011.006
A 100496

JON VAN RHYN, Program Manager

OK to pay
8/17/11

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 8,303.62**
Contract / Other Expenditures Claimed:	**$ 102,031.87**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Sara Agahi
Sr. Civil Engineer
County of San Diego

8/25/2011
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Sara Agahi
Sr. Civil Engineer
County of San Diego

9/14/11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. [Land Development Workgroup Meeting Support]						
8/1/2010	Sara Agahi	Sr. Civil Engineer	5.00	$ 76.18	$ 380.90	preparations for 8/11/10 meeting
Sep-10			5.00	$ 76.18	$ 380.90	preparations for 9/22/10 meeting
Dec-10			5.00	$ 76.18	$ 380.90	preparations for 12/15/10 meeting
Jan-11			5.00	$ 76.18	$ 380.90	preparations for 1/31/11 meeting
Apr-11			5.00	$ 76.18	$ 380.90	preparations for 4/19/11 meeting
5/1/2011			5.00	$ 76.18	$ 380.90	preparations for 5/4/11 meeting
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 2,285.40					
Subtask 2.A. [Semi-Annual Workgroup Updates]						
11/15/2010	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	preparation for 11/18/10 RMC - presentation
11/17/2010			3.00	$ 76.18	$ 228.54	preparation for 11/18/10 RMC - presentation
4/8/2011			3.00	$ 76.18	$ 228.54	preparation for 4/21/11 RMC meeting - HMP presentation
4/19/2011			2.00	$ 76.18	$ 152.36	preparation for 4/21/11 RMC meeting - HMP presentation
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 761.80					
Subtask 2.B. [2011-12 Work Plan and Budget]						
7/28/2010	Sara Agahi	Sr. Civil Engineer	3.00	$ 76.18	$ 228.54	wrap up of 09-10 budget expenditures
7/29/2010			2.00	$ 76.18	$ 152.36	wrap up of 09-10 budget expenditures
9/13/2010			2.00	$ 76.18	$ 152.36	finalization of 10-11 budget
10/11/2010			2.00	$ 76.18	$ 152.36	finalization of 10-11 budget
10/13/2010			2.00	$ 76.18	$ 152.36	finalization of 10-11 budget
11/16/2010			3.00	$ 76.18	$ 228.54	finalization of 10-11 budget
3/29/2011			3.00	$ 76.18	$ 228.54	preparation of FY 11-12 budget
4/1/2011			3.00	$ 76.18	$ 228.54	preparation of FY 11-12 budget
Sub-total	$ 1,523.60					
Subtask 2.C. [FY 2009-10 RURMP Annual Report Input]						
12/3/2010	Sara Agahi	Sr. Civil Engineer	2.50	$ 76.18	$ 190.45	preparation of LD RURMP section
12/10/2010			2.50	$ 76.18	$ 190.45	preparation of LD RURMP section
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 380.90					
Subtask 2.D. [HMP/SUSMP updates, training, monitoring]						
7/8/2010	Sara Agahi	Sr. Civil Engineer	3.00	$ 76.18	$ 228.54	HMP monitoring/geomorphic assessments
9/3/2010			2.00	$ 76.18	$ 152.36	B&C sizing tool finalization
9/17/2010			3.00	$ 76.18	$ 228.54	B&C sizing tool finalization
9/21/2010			2.00	$ 76.18	$ 152.36	HMP monitoring/geomorphic assessments
10/11/2010			2.00	$ 76.18	$ 152.36	B&C sizing tool finalization
10/13/2010			2.00	$ 76.18	$ 152.36	B&C sizing tool finalization
10/14/2010			3.00	$ 76.18	$ 228.54	HMP monitoring/geomorphic assessments
11/30/2010			2.00	$ 76.18	$ 152.36	regional sizing tool training preparation
Sub-total	$ 1,447.42					
Subtask 2.D. [HMP/SUSMP updates, training, monitoring]						
12/4/2010	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	regional sizing tool training preparation
12/13/2010			2.00	$ 76.18	$ 152.36	HMP monitoring/geomorphic assessments
12/16/2010			3.00	$ 76.18	$ 228.54	regional sizing tool training preparation
1/11/2011			3.00	$ 76.18	$ 228.54	B&C sizing tool finalization
1/21/2011			2.00	$ 76.18	$ 152.36	HMP monitoring/geomorphic assessments
1/25/2011			2.00	$ 76.18	$ 152.36	regional sizing tool training preparation
3/7/2011			2.00	$ 76.18	$ 152.36	3rd party independent review of sizing calculator and SDHM 2011
5/5/2011			2.00	$ 76.18	$ 152.36	3rd party independent review of sizing calculator and SDHM 2011
Sub-total	$ 1,371.24					
Subtask 2.D. [HMP/SUSMP updates, training, monitoring]						
5/26/2011	Sara Agahi	Sr. Civil Engineer	2.00	$ 76.18	$ 152.36	3rd party independent review of sizing calculator and SDHM 2011
6/17/2011			3.00	$ 76.18	$ 228.54	HMP monitoring/geomorphic assessments
6/29/2011			2.00	$ 76.18	$ 152.36	HMP monitoring/geomorphic assessments
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
			0.00	$ 76.18	$ -	
Sub-total	$ 533.26					
Copermittee Total					**$ 8,303.62**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 2.D. [HMP and SUSMP updates, training, and required monitoring]					
Brown and Caldwell [CONTRACT #520444]		$ 2,763.96	7/8/2010	$ 138.20	MHP/SUSMP/monitoring
Brown and Caldwell [CONTRACT #520444]		$ 6,685.21	12/9/2010	$ 334.26	MHP/SUSMP/monitoring
Weston/B&C [CONTRACT #514270]		$ 43,320.02	3/2/2011	$ 2,166.00	MHP/SUSMP/monitoring
Weston/B&C [CONTRACT #514270]		$ 18,264.08	6/10/2011	$ 913.20	MHP/SUSMP/monitoring
Weston/B&C [CONTRACT #514270]		$ 5,290.96	7/7/2011	$ 264.55	MHP/SUSMP/monitoring
MACTEC/PWA [CONTRACT #526934]		$ 6,864.64	6/30/2011	$ 343.23	HMP monitoring
MACTEC/TetraTech [CONTRACT #536213]		$ 13,984.34	6/30/2011	$ 699.22	3rd Party review of B&C Sizing Calculator and SDHM2011
Subtaskx.x Sub-total	$ 97,173.21				
Subtaskx.x Management Cost	$ 4,858.66				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]					
Contract X [ENTER CONTRACT TITLE / #]		$ -	x/x/2010	$ -	
		$ -		$ -	
		$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 102,031.87**			

Final 04-29-09

Contract 526934

MACTEC engineering and constructing a better tomorrow

APPENDIX U

P6 1002993
O: 50915
E: 52370
T: 010.001
A: 100496

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Sara Agahi
5201 Ruffin Road, Suite P
Mailstop O326
San Diego, CA 92123

File: 985-A

Invoice Date: 06/30/2011
Task Order Number: 18
Invoice Number: 8433550

County Contract Number: 526934
Oracle Project Number: 5013-11-0008

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 05/23/11 through 06/30/11

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. Sub Monitoring	$66,153.37	10.38%	$6,864.64	$00.00	$6,864.64
TOTALS:	$66,153.37	10.38%	$6,864.64	$00.00	$6,864.64

AMOUNT DUE THIS BILLING: **$6,864.64**

Ok to pay → 6/30/11

I hereby certify that (MACTEC ENGINEERING & CONSULTING) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Nathan Schaedler 6/30/2011

NATHAN SCHAEDLER DATE
PROJECT MANAGER

MACTEC engineering and constructing a better tomorrow

Project Name : COUNTY OF SD HMP MONITORING
Project Number: 5013110008

Invoice Date : 06/30/2011
Invoice Number: 8433550

Due Date: On Receipt
Terms : IMMEDIATE

Task Number 01 - SUB MONITORING
SUB MONITORING

Date	Other	Cost	Markup	Amount
06/30/11	OTHER - SUBCONTRACTOR ESA PWA INV # 94025	6,864.64		6,864.64
				6,864.64
	Other Subtotal			6,864.64
	TASK 01 SUBTOTAL			6,864.64
	INVOICE TOTAL			6,864.64

Project Summary

Previously Billed	0.00
Current Invoice	6,864.64
Total Billed To Date	6,864.64
Authorized Budget	66,153.37
Total Billed To Date	6,864.64
Remaining Authorized Budget	59,288.73

Direct invoice questions to:

Nathan Schaedler, Project Manager

MACTEC Engineering and Consulting, Inc.
9177 Sky Park Court • San Diego, CA 92123-4341
Phone: 858.278.3600 • Fax: 858.278.5300
www.mactec.com

Printed with Environmentally Responsible Products

ESA PWA

550 Kearny Street
Suite 900
San Francisco, CA 94108
(415) 896-5900

INVOICE

Nathan Schaedler
Project Manager
MACTEC Inc.
Attn: Accounts Payable
1105 Lakewood Parkway, Suite 300
Alpharetta, GA 30009

June 30, 2011
Invoice No: 94025
Project Manager: Christie Beeman

Project D211485.00 San Diego Hydromod Monitoring

PO **#201107020**

Professional Services from May 23, 2011 to June 24, 2011

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Program Manager				
Collison, Andrew	7.50	165.00	1,237.50	
Project Manager				
Beeman, Christie	18.00	142.81	2,570.58	
Civil Engineer				
Haines, Brian	26.00	117.56	3,056.56	
Totals	51.50		6,864.64	
Total Labor				**6,864.64**

Total this Task **$6,864.64**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	6,864.64	0.00	6,864.64
Limit			66,153.37
Remaining			59,288.73

TOTAL INVOICE AMOUNT: **$6,864.64**

	Current	**Prior**	**Total**
Billings to Date	**6,864.64**	**0.00**	**6,864.64**

PAYMENT DUE UPON RECEIPT

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Thursday, June 30, 2011

Environmental Science Associates **Invoice 94025 Dated 6/30/11** *3:25:45 PM*

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
Program Manager						
10312	Collison, Andrew	6/2/11	1.00	165.00	165.00	
	billable - site selection					
10312	Collison, Andrew	6/3/11	1.00	165.00	165.00	
	billable - site selection					
10312	Collison, Andrew	6/7/11	1.00	165.00	165.00	
10312	Collison, Andrew	6/9/11	1.00	165.00	165.00	
10312	Collison, Andrew	6/13/11	1.00	165.00	165.00	
10312	Collison, Andrew	6/14/11	2.00	165.00	330.00	
10312	Collison, Andrew	6/17/11	.50	165.00	82.50	
Project Manager						
10314	Beeman, Christie	5/23/11	1.00	142.81	142.81	
10314	Beeman, Christie	5/24/11	1.00	142.81	142.81	
10314	Beeman, Christie	5/26/11	2.00	142.81	285.62	
10314	Beeman, Christie	5/31/11	4.00	142.81	571.24	
10314	Beeman, Christie	6/2/11	4.00	142.81	571.24	
10314	Beeman, Christie	6/7/11	2.00	142.81	285.62	
10314	Beeman, Christie	6/9/11	4.00	142.81	571.24	
	MOVE TO PROJECT # IF AVAILABLE					
Civil Engineer						
10349	Haines, Brian	6/3/11	1.00	117.56	117.56	
	screening site research					
10349	Haines, Brian	6/8/11	4.00	117.56	470.24	
	project folder setup, site selection					
10349	Haines, Brian	6/14/11	.50	117.56	58.78	
	printouts/small meeting					
10349	Haines, Brian	6/15/11	2.50	117.56	293.90	
	proposed sites analysis (shapefile from Dennis)					
10349	Haines, Brian	6/16/11	2.00	117.56	235.12	
	site selection					
10349	Haines, Brian	6/17/11	4.00	117.56	470.24	
	site selection					
10349	Haines, Brian	6/20/11	5.00	117.56	587.80	
10349	Haines, Brian	6/21/11	6.00	117.56	705.36	
	site selection, review with Andy					
10349	Haines, Brian	6/22/11	1.00	117.56	117.56	
	site selection, scheduling, project management					
	Totals		51.50		6,864.64	
	Total Labor					**6,864.64**

Total this Task	**$6,864.64**
Total this report	**$6,864.64**

OK to pay $5290.96 7/7/11
P: 100 2993
O: 50915
E: 52370
T: 004.004
A: 100496

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254
PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR 2010-2011 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 07/05/2011
CONTRACT NUMBER: 514270
PROJECT NUMBER: 13245.100
INVOICE NUMBER: JUL2011-00689

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	2010-2011 MONITORING	594,402.00	0.00	594,401.62	100.00%	0.38
0001	1.01 PROJECT MANAGEMENT & MEETINGS		0.00	10,065.27		
0002	1.02 TEAM PLANNING, ORIENTATION & SAFETY		0.00	13,263.38		
0003	1.03 MLS/TWAS MOBILIZATION & DEMOBILIZATION		0.00	207,653.15		
0004	1.04 COORDINATION WITH SUBS/LABS		0.00	7,489.10		
0005	1.05 STREAM RATINGS		0.00	20,710.97		
0006	1.06 DRY EVENT MOB/DEMOB		0.00	6,338.64		
0007	1.07 DRY WEATHER EVENT FIELD MONITORING		0.00	19,964.14		
0008	1.08 DRY EVENT CHEMISTRY ANALYSIS		0.00	12,190.50		
0009	1.09 DRY EVENT MICROBIOLOGY ANALYSES		0.00	3,914.72		
0010	1.10 DRY EVENT TOXICITY ANALYSES		0.00	47,111.30		
0011	1.11 WET EVENT MOB/DEMOB & MAINTENANCE		0.00	22,323.86		
0012	1.12 WET WEATHER EVENT FIELD MONITORING		0.00	54,774.39		
0013	1.13 WET WEATHER CHEMISTRY ANALYSIS		0.00	6,884.35		
0014	1.14 WET EVENT MICROBIOLOGY ANALYSES		0.00	6,876.23		
0015	1.15 WET EVENT TOXICITY ANALYSES		0.00	72,864.81		
0016	1.16 EVENT DATA MANAGEMENT & QA OF ANNUAL FLOW		0.00	6,113.91		
0017	1.17 POST STORM SYNTHETIC PYRETHROID MONITORING		0.00	17,339.63		
0018	1.18 MS4 OUTFALL MONITORING RANDOM WET PROGRAM		0.00	17,708.99		
0019	1.19 ANNUAL SCOPE OF WORK UPDATE		0.00	1,982.46		
0020	1.20 MS4 OUTFALL MONITORING RANDOM WET PROGRAM		0.00	23,196.30		
0021	1.21 SOURCE ID PROGRAM		0.00	15,635.52		
002	2010-2011 REPORTING	62,978.00	0.00	62,977.98	100.00%	0.02
0001	2.01 METHODS SECTION		0.00	9,565.68		
0002	2.02 COMPILE & QA MLS & TWAS DATA TABLES		0.00	9,164.76		
0003	2.03 COMPILE & QA BIOASSESSMENT DATA TABLES		0.00	3,555.41		
0004	2.04 BENTHIC IBI AND O/E ANALYSIS		0.00	3,535.62		
0005	2.05 COMPILE ANNUAL & EVENT FLOW HYDROGRAPHS		0.00	5,295.55		
0006	2.06 PREPARE LOAD TABLES FOR MLS AND TWAS		0.00	1,505.61		
0007	2.07 COMPILE & QA MS4 RANDOM WET & DRY DATA TABLES		0.00	2,726.84		
0008	2.08 COMPILE & QA MS4 TARGETED WET DATA TABLES & EVENT HYDROGRAPHS		0.00	2,704.25		
0009	2.09 COMPILE & QA SOURCE ID DATA TABLES & EVENT HYDROGRAPHS		0.00	1,176.71		
0010	2.10 COMPILE & QA DRY WEATHER DATA TABLES FOR EACH WMA		0.00	5,292.18		
0013	2.13 PERFORM TREND ANALYSIS AND PREPARE SCATTERPLOTS		0.00	2,373.88		
0014	2.14 DELINEATE DRAINAGE AREAS FOR MS4 RANDOM WET SITES		0.00	5,163.95		
0015	2.15 MS4 WET SITES VOLUME ON RAINFALL		0.00	338.03		
0016	2.16 PREPARE PYRETHROID SEDIMENT & WATER TABLES FOR WMA		0.00	1,374.50		
0017	2.17 COMPILE AND Q/A ABLM DATA TABLES		0.00	185.67		
0018	2.18 RUN SQO ANALYSIS		0.00	705.74		
0019	2.19 PREPARE SQO RESULTS FIGURES		0.00	697.50		
0020	2.20 INTERACTIVE MAPPING, INTEGRATED TABLES AND FIGURES		0.00	7,616.10		
003	2011 HMP IMPLEMENTATION	74,954.00	5,290.96	66,875.06	89.22%	8,078.94
0001	3.01 LID SIZING FACTOR ANALYSIS		0.00	16,255.00		
0002	3.02 POND SIZING ANALYSIS		221.25	4,429.21		
0003	3.03 RAINFALL VARIABILITY REGRESSION EQUATION		3,851.68	5,929.18		
0004	3.04 NON-STRUCTURAL BMP CONTROLS		116.63	599.00		
0005	3.05 WEB-BASED BMP SIZING CALCULATOR DEVELOPMENT		0.00	18,783.20		
0006	3.06 SIZING CALCULATOR TRAINING WORKSHOP		0.00	4,911.00		
0007	3.07 HMP REPORT UPDATE		224.35	3,442.00		
0008	3.08 MODEL SUSMP UPDATE		0.00	3,612.79		
0009	3.09 HMP MONITORING PLAN - QAPP DEVELOPMENT		0.00	2,710.60		
0010	3.10 HMP SUPPORT & MONITORING PLAN SITE SELECTION		526.23	2,669.51		
0011	3.11 PROJECT MANAGEMENT		350.82	3,533.57		
TOTAL FOR MONITORING, REPORTING & HMP IMPLEMENTATION		732,334.00	5,290.96	724,254.66	98.90%	8,079.34

CURRENT AMOUNT DUE 5,290.96

WS 04-03-011/A-03/09
05P-0606

INVOICE

F.E.I.N. 23-1501990

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUL2011-00689

Invoice Date: 07/05/2011

Description: PROFESSIONAL SERVICES RENDERED FOR 2010-2011 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

County Agreement No. 514270

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: 1,052,614.00

Total: 1,052,614.00
Cumulative Amount Billed: 724,254.66

Project Number: 13245.100
Project Name: FY10/11 Regional Monitoring/Reporting/HMP
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 08/04/2011

Billing Period From: 02/18/2011 To: 06/30/2011

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Assistant Task Leader				
Crumpacker, Andrea L	0.00	135.2100	0.00	6,152.09
Dister, Sheri	0.00	135.2100	0.00	12,087.82
Schollee, Jennifer	0.00	135.2100	0.00	12,844.97
Engineer I				
Huber, Sara S	0.00	95.0100	0.00	3,439.38
Engineer II				
Pohl, David H	0.00	160.7900	0.00	1,929.48
Environmental Analyst				
Cropper, Scott J	0.00	65.7800	0.00	18,832.81
Patzius, Michelle	0.00	65.7800	0.00	197.34
Poon, Yat-Long	0.00	65.7800	0.00	3,802.08
Project Manager				
Renfrew, David S	0.00	155.0000	0.00	42,702.50
Silyn - Roberts, Gretel	0.00	155.0000	0.00	2,092.50
Scientist I				
Batliner, Elizabeth	0.00	73.0900	0.00	5,218.64
Jeane, Grover	0.00	73.0900	0.00	511.63
Skrivseth, Kasey	0.00	73.0900	0.00	12,366.86
Trinh, Anthony	0.00	73.0900	0.00	9,881.82
Scientist II				
Benson, Brad K	0.00	84.0500	0.00	1,092.65
Craft, Lin L	0.00	84.0500	0.00	12,851.30
Dias, Rosabel	0.00	84.0500	0.00	14,002.81
Sowersby, Daniel E	0.00	84.0500	0.00	11,968.76
Tydlaska, Monica M	0.00	84.0500	0.00	8,472.27
Weaver, Olga	0.00	84.0500	0.00	1,664.20
Scientist III				
Campagna, Laurence	0.00	91.3600	0.00	34,826.44
Clark, Christopher	0.00	91.3600	0.00	3,106.24
Margolis, Amy	0.00	91.3600	0.00	6,979.90
Price, Corinne A	0.00	91.3600	0.00	1,690.16
Yonemasu, Satomi	0.00	91.3600	0.00	19,139.92
Senior Scientist				
Engelhorn, Garth	0.00	116.9400	0.00	68,561.92

Continued on next page

WS 04-03-011/A-03/09
05P-0606

INVOICE

F.E.I.N. 23-1501990

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384 5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254
PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: JUL2011-00689

Project Number: 13245.100
Project Name: FY10/11 Regional Monitoring/Reporting/HMP

Billing Currency USD
Invoice Date: 07/05/2011

	Current Hours	Rate	Current Amount	Cumulative Amount
Holt, Sheila	0.00	116.9400	0.00	4,654.21
Mansec, Carlsbad	0.00	116.9400	0.00	935.52
McCoy, Daniel L	0.00	116.9400	0.00	526.23
Owen, Damon	0.00	116.9400	0.00	11,074.22
Stefanosky, Susan L	0.00	116.9400	0.00	4,969.95
Stuart, Michael S	0.00	116.9400	0.00	1,052.46
Senior Technician				
Hansen, Jessica	0.00	60.3000	0.00	13,995.63
Mathis, Melissa E	0.00	60.3000	0.00	24,240.60
Mattson, Michelle M	0.00	60.3000	0.00	180.90
Smith, Robert J	0.00	60.3000	0.00	1,025.10
Task Leader				
Cotts, Anthony M	0.00	149.8300	0.00	5,543.73
Gruber, Stephen	0.00	149.8300	0.00	1,648.14
Isham, William H	0.00	149.8300	0.00	2,172.54
Williams, Garret D	0.00	149.8300	0.00	6,442.69
Technician I				
Patzius, Ian	0.00	43.8500	0.00	219.25
Technician II				
Moore, Kirsten C	0.00	51.1600	0.00	480.91
Technician III				
Curry, Kevin M	0.00	54.8200	0.00	13,239.03
Dios, Tanya	0.00	54.8200	0.00	383.74
Hasan, Sean M	0.00	54.8200	0.00	17,553.36
Kelly, Matthew S	0.00	54.8200	0.00	1,704.90
Kushman, Mark	0.00	54.8200	0.00	3,513.97
Leone, Jay	0.00	54.8200	0.00	592.06
Mansec, CCA	0.00	54.8200	0.00	356.33
Newman, Natalie	0.00	54.8200	0.00	1,315.68
Patterson, Kevin	0.00	54.8200	0.00	12,356.43
Pippen, Ross P	0.00	54.8200	0.00	19,504.98
Seedorf, Gavin C	0.00	54.8200	0.00	438.56
Shoemaker-Jimenez, Byron	0.00	54.8200	0.00	438.56
Labor	0.00		0.00	466,976.17
Subcontractor			5,290.96	88,970.03
Sub Lab Analysis			0.00	23,043.00
Telephone			0.00	2,606.54
Shipping & Freight			0.00	494.19
Materials & Supplies			0.00	15,928.13
Sampling & Monitor			0.00	8,756.45
Trav-Mileage Expense			0.00	528.00
Field Eq Usage			0.00	115,800.00
Total Expenses			5,290.96	256,126.34
Fee on Sub Lab Analysis 5%			0.00	1,152.15
Fee			0.00	1,152.15
Invoice Total			5,290.96	724,254.66

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

WS 04-03-011/A-03/09
OSP 0606

INVOICE

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: JUL2011-00689

Invoice Date: 07/05/2011

Description: PROFESSIONAL SERVICES RENDERED FOR 2010-2011 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

County Agreement No. 514270

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: 74,954.00

Total: 74,954.00
Cumulative Amount Billed: 66,875.06

Project Number: 13245.100.003
Project Name: 2011 HMP Implementation
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 08/04/2011

Billing Period From: 02/18/2011
To: 06/30/2011

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	5,290.96	66,875.06
Total Expenses	5,290.96	66,875.06
Invoice Total	5,290.96	66,875.06

WS 04-03-011/A-03/09
05P-0606

INVOICE

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number:	JUL2011-00689	Project Number:	13245.100.003	Billing Currency	USD
		Project Name:	2011 HMP Implementation	Invoice Date:	07/05/2011

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services		2011/6	BROWN & CALDWELL	44149687	221.25
			2011/6		44149687	3,851.68
			2011/6		44149687	116.63
			2011/6		44149687	224.35
			2011/6		44149687	526.23
			2011/6		44149687	350.82
Total: Subcontractor						5,290.96
Total Expenses						5,290.96

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44149687

Date : June 30, 2011

Attention: Analyn Nelson

Subject : HMP Implementation Assistance 2011

Contact : Lisa C Skutecki, PM

Billing Period : February 18, 2011 through June 30, 2011

Invoiced By : Lindsay B Surio

Progress Billing No : 3

Reference : Authorization Dated : 9/10/2010

Purchase Order Number: 0072705

002 -- Pond Sizing Analysis

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Eric S Mosolgo	1.50	$ 160.79	241.19
Sub-Total Labor	1.50		$ 241.19
Total Labor			$ 241.19
Less Amount Over Contract Ceiling			$ (19.94)
Total : 002 -- Pond Sizing Analysis			$ 221.25

13245.110.003.0002

003 -- Rainfall Variability Regression Eq

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Task Leader			
Anthony M Dubin	8.00	$ 149.83	1,198.64
Principal Investigator			
Eric S Mosolgo	16.50	$ 160.79	2,653.04
Sub-Total Labor	24.50		$ 3,851.68
Total Labor			$ 3,851.68
Total : 003 -- Rainfall Variability Regression Eq			$ 3,851.68

13245.110.003.0003

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice. interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44149687

Date : June 30, 2011

Attention: Analyn Nelson

004 – Non-Structural BMP Controls

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Eric S Mosolgo	0.75	$ 160.79	120.59
Sub-Total Labor	0.75		$ 120.59
Total Labor			$ 120.59
Less Amount Over Contract Ceiling			$ (3.96)
Total : 004 – Non-Structural BMP Controls		13245.110.003.0004	$ 116.63

007 – HMP Updates and Executive Summary

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Tech			
Renee C Ennis	0.75	$ 60.30	45.23
Principal Investigator			
Eric S Mosolgo	0.75	$ 160.79	120.59
Assistant Task Leader			
Lisa C Skutecki	0.50	$ 135.21	67.61
Sub-Total Labor	2.00		$ 233.43
Total Labor			$ 233.43
Less Amount Over Contract Ceiling			$ (9.08)
Total : 007 – HMP Updates and Executive Summary		13245.110.003.0007	$ 224.35

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law whichever is lesser

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44149687

Date : June 30, 2011

Attention: Analyn Nelson

010 -- Transitional HMP Support & Meetings

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Task Leader			
Anthony M Dubin	1.00	$ 149.83	149.83
Principal Investigator			
Eric S Mosolgo	1.50	$ 160.79	241.19
Assistant Task Leader			
Lisa C Skutecki	1.00	$ 135.21	135.21
Sub-Total Labor	3.50		$ 526.23
Total Labor			**$ 526.23**

Total : 010 -- Transitional HMP Support & Meetings 13245.110.003.0010 **$ 526.23**

011 – Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Technician III			
Janelle L Kaminski	1.00	$ 54.82	54.82
Principal Investigator			
Eric S Mosolgo	1.00	$ 160.79	160.79
Assistant Task Leader			
Lisa C Skutecki	1.00	$ 135.21	135.21
Sub-Total Labor	3.00		$ 350.82
Total Labor			**$ 350.82**

Total : 011 – Project Management 13245.110.003.0011 **$ 350.82**

Amount Due this Invoice **$ 5,290.96**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law whichever is lesser

Billing Detail - Items through 6/30/2011

Brown and Caldwell

Project : 139942 - HMP Implementation Assistance 2011

Phase : 002 – Pond Sizing Analysis

Rate Schedule Labor Employee Name	OT	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Principal Investigator											
Eric S Mosolgo			****	1044	112	****	2/2/2011	2/3/2011	1 50	160 79	241 19
detailing criteria for pond drawdown vault drawdown, and channel flow calculation methods											
									1 50		241 19
							Total Rate Schedule Labor				***241.19***

Phase : 003 – Rainfall Variability Regression Eq

Rate Schedule Labor Employee Name	OT	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Principal Investigator											
Eric S Mosolgo			****	1044	112	****	5/27/2011	6/30/2011	4 00	160 79	643 16
Technical Memo "Brain Dump"											
			****	1044	112	****	6/7/2011	6/30/2011	0 50	160.79	80 40
Answer questions fro the County of San Diego regarding the BMP sizing calculator											
			****	1044	112	****	6/8/2011	6/30/2011	3 00	160 79	482 37
Discussion of BMP sizing calculator completion issues; respond to specific questions conveyed by the County of San Diego; respond to questions/comments made by users of the sizing calculator											
			****	1044	112	****	6/9/2011	6/30/2011	0 50	160 79	80 40
Discussion of BMP sizing calculator completion issues; respond to specific questions conveyed by the County of San Diego, respond to questions/comments made by users of the sizing calculator											
			****	1044	112	****	6/10/2011	6/30/2011	2 00	160 79	321 58
Technical Memo "Brain Dump"											
			****	1044	112	****	6/13/2011	6/30/2011	1 00	160 79	160 79
Technical Memo "Brain Dump"											
			****	1044	112	****	6/20/2011	6/30/2011	2 00	160 79	321 58
Review calculator to-do list, prepare responses to BMP sizing calculator report comments											
			****	1044	112	****	6/20/2011	6/30/2011	0 50	160 79	80 40
Answer questions from users of the BMP sizing calculator											
			****	1044	112	****	6/21/2011	6/30/2011	2 00	160 79	321 58
prepare responses to BMP sizing calculator report comments											
			****	1044	112	****	6/21/2011	6/30/2011	0 50	160 79	80 40
Answer questions from users of the BMP sizing calculator											
			****	1044	112	****	6/22/2011	6/30/2011	0 50	160 79	80.40
Answer questions from users of the BMP sizing calculator											
									18 50		2,653.06
Task Leader											
Anthony M Dubin			****	1044	112	****	1/11/2011	6/30/2011	2 50	149 83	374.58
Working on calculator, responding to County & TAC questions											
			****	1044	112	****	1/12/2011	6/30/2011	2 00	149 83	299 66
Working on calculator, responding to County & TAC questions											
			****	1044	112	****	1/14/2011	6/30/2011	2 50	149 83	374 58
Working on calculator, responding to County & TAC questions											
			****	1044	112	****	1/17/2011	6/30/2011	1 00	149 83	149 83
Working on calculator, responding to County & TAC questions											
									8 00		1,198 65
							Total Rate Schedule Labor				***3,851.71***

Phase : 004 – Non-Structural BMP Controls

Rate Schedule Labor Employee Name	OT	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Principal Investigator											
Eric S Mosolgo			****	1044	112	****	6/14/2011	6/30/2011	0 75	160.79	120 59
Technical Memo "Brain Dump"											
							Total Rate Schedule Labor				***120.59***

Phase : 007 – HMP Updates and Executive Summar

Rate Schedule Labor Employee Name	OT	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Assistant Task Leader											
Lisa C Skutecki			****	1044	112	****	3/25/2011	3/31/2011	0.25	135 21	33 80
		Coordinating edits, emails									
			****	1044	112	****	3/31/2011	3/31/2011	0 25	135.21	33 80
		Coordinating with WP									
									0 50		67 60
Principal Investigator											
Eric S Mosolgo			****	1044	112	****	1/18/2011	1/20/2011	0 50	160 79	80 40
		Update to HMP text (chapters 5 and 6)									
			****	1044	112	****	1/25/2011	1/27/2011	0 25	160 79	40 20
		Adjust updates to HMP sections 5 and 6 per County comments									
									0 75		120 60
Senior Tech											
Renee C Ennis			****	1044	658	****	1/12/2011	1/13/2011	0 25	60.30	15 08
		I04720 _final_San Diego HMP_Jan2011 docx: process edits in trk chgs/pdf, accept trk chgs, correct pagination, pdf & compile w/appendices									
			****	1044	658	****	1/19/2011	1/20/2011	0 50	60 30	30 15
		WP I04720 final HMP; PDF compilation									
									0 75		45 23
							Total Rate Schedule Labor				***233.43***

Phase : 010 – Transitional HMP Support & Meetings

Rate Schedule Labor Employee Name	OT	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Assistant Task Leader											
Lisa C Skutecki			****	1044	112	****	3/16/2011	6/30/2011	1.00	135 21	135 21
		HMP coordination meeting									
Principal Investigator											
Eric S Mosolgo			****	1044	112	****	5/23/2011	5/28/2011	1 00	160.79	160 79
		Provide a detailed summary of monitoring plan site selection requirements									
			****	1044	112	****	5/24/2011	5/28/2011	0 50	160 79	80.40
		Update to monitoring plan site selection requirements (address questions from Copermittees)									
									1 50		241 19
Task Leader											
Anthony M Dubin			****	1044	112	****	6/10/2011	6/16/2011	0 50	149 83	74 92
		Technical Memo "Brain Dump", telecons									
			****	1044	112	****	6/13/2011	6/18/2011	0 50	149 83	74 92
		Technical Memo "Brain Dump", telecons									
									1 00		149 84
							Total Rate Schedule Labor				***526.24***

Phase : 011 – Project Management

Rate Schedule Labor Employee Name	OT	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Assistant Task Leader											
Lisa C Skutecki			****	1044	112	****	1/13/2011	1/13/2011	0 25	135 21	33 80
		various hydromod related discussions									
			****	1044	112	****	3/16/2011	3/24/2011	0 00	135.21	0 00
		HMP coordination meeting									
			****	1044	112	****	3/25/2011	3/31/2011	0 25	135 21	33 80
		month end, finalize docs									
			****	1044	112	****	4/7/2011	4/7/2011	0 25	135 21	33 80
		telecon with Sara									
			****	1044	112	****	4/8/2011	4/14/2011	0 25	135 21	33 80
		discussion with tony dubin read memo									
									1 00		135 20

Phase : 011 -- Project Management

Rate Schedule Labor Employee Name	OT	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Principal Investigator											
Eric S Mosolgo			****	1044	112	****	3/18/2011	3/24/2011	1 00	160 79	160.79
		Attend HMP progress meeting									
									1.00		160 79
Technician III											
Janelle L Kaminski			****	1044	641	****	2/23/2011	2/24/2011	0.50	54 82	27.41
		Draft PWA task order.									
			****	1044	641	****	2/25/2011	3/3/2011	0 50	54 82	27 41
		Check timecards for descriptions; review prebill, send task order to PWA									
									1 00		54 82
							Total Rate Schedule Labor				***350.91***

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFER NET THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: JUN2011-01740

Invoice Date: 06/03/2011

Description: PROFESSIONAL SERVICES RENDERED FOR 2010-2011 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

County Agreement No. 514270

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: 74,954.00

Total: 74,954.00
Cumulative Amount Billed: 61,584.10

Project Number: 13245.100.003
Project Name: 2011 HMP Implementation
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/03/2011

Billing Period From: 10/22/2010
To: 02/17/2011

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	18,264.08	61,584.10
Total Expenses	18,264.08	61,584.10
Invoice Total	18,264.08	61,584.10

P: 1002993
O: 50915
E: 52370
T: 004.004
A: 100496

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

514270
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

6/10/11
DATE

PROJECT MANAGER

6/14/11
DATE

DPW MANAGER

please pay $18,264.08

Page: 5

WS 04-03-011/A-03/09
OSP-0806

INVOICE

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2011-01740

Project Number: 13245.100.003
Project Name: 2011 HMP Implementation

Billing Currency USD
Invoice Date: 06/03/2011

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500452599	2011/4	BROWN AND CALDWELL	139942	6,884.74
		500452599	2011/4		139942	4,107.05
		500452599	2011/4		139942	1,007.50
		500452599	2011/4		139942	740.33
		500452599	2011/4		139942	2,077.50
		500452599	2011/4		139942	1,477.26
		500452599	2011/4		139942	67.61
		500452599	2011/4		139942	1,419.72
		500452599	2011/4		139942	482.37
Total: Subcontractor						18,264.08
Total Expenses						18,264.08

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

RECEIVED
MAR 31 2011
BY:

BR032
2011.4.1
Vch# 500452599

To Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942
Invoice No : 44143656
Date : March 23, 2011

Attention: Analyn Nelson

Subject : HMP Implementation Assistance 2011
Contact : Nancy E Gardiner, PM
Billing Period : October 22, 2010 through February 17, 2011
Invoiced By : Lindsay B Surio
Progress Billing No : 2
Reference : Authorization Dated : 9/10/2010

Purchase Order Number: 0072705

INVOICE APPROVAL
DATE REC: 3/31/11
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0072705
WO # 13245.100.003. per each Task
RETURN TO ANALYN NELSON

001 -- LID Sizing Factor Analysis

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Task Leader			
Anthony M Dubin	1.00	$ 149.83	149.83
Senior Scientist			
Angela Dwyer	3.00	$ 116.94	350.82
Principal Investigator			
Eric S Mosolgo	1.50	$ 160.79	241.19
Sub-Total Labor	5.50		$ 741.84
Total Labor			$ **741.84**
Less Over Phase Ceiling			$ **(1.51)**
Total : 001 -- LID Sizing Factor Analysis			$ **740.33** ✓ L

003 -- Rainfall Variability Regression Eq

13245.100.003.0001 -

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Technician III			
Janelle L Kaminski	0.25	$ 54.82	13.71
Principal Investigator			
Eric S Mosolgo	9.00	$ 160.79	1,447.11
Scientist III			

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

$18,264.08

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser

Brown and Caldwell
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San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44143656

Date : March 23, 2011

Attention: Analyn Nelson

Class/ Employee Name	Hours	Rate	Billing Amount
Scientist III			
Eric A Stiles	6.75	$ 91.36	616.68
Sub-Total Labor	16.00		$ 2,077.50
Total Labor			**$ 2,077.50**
Total : 003 -- Rainfall Variability Regression Eq			**$ 2,077.50**

13245.100.003.0003 - ✓L3

004 -- Non-Structural BMP Controls

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Eric S Mosolgo	3.00	$ 160.79	482.37
Sub-Total Labor	3.00		$ 482.37
Total Labor			**$ 482.37**
Total : 004 -- Non-Structural BMP Controls			**$ 482.37**

13245.100.003.0004 - ✓L4

005 -- Web-Based Sizing Calc Development

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Andrew Baldwin	30.00	$ 160.79	4,823.70
Senior Scientist			
Zsuzsanna Kocsis	2.50	$ 116.94	292.35
Principal Investigator			
Eric S Mosolgo	11.00	$ 160.79	1,768.69
Sub-Total Labor	43.50		$ 6,884.74
Total Labor			**$ 6,884.74** ✓

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser

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San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44143656

Date : March 23, 2011

Attention: Analyn Nelson

Total : 005 -- Web-Based Sizing Calc Development 13245.100.003.0005 - $ 6,884.74 - LS

006 -- Sizing Calculator Training Workshop

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Task Leader			
Anthony M Dubin	21.50	$ 149.83	3,221.35
Principal Investigator			
Eric S Mosolgo	3.75	$ 160.79	602.96
Sub-Total Labor	25.25		$ 3,824.31
Total Labor			**$ 3,824.31** ✓

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Other Direct Costs	
LODGING	
Anthony M Dubin	156.38 ✓
TRAVEL MEALS/SUBSISTENCE	
Anthony M Dubin	23.76 ✓
Anthony M Dubin	9.78 ✓
Anthony M Dubin	6.60 ✓
Anthony M Dubin	17.91 ✓
RENTAL CAR	
Anthony M Dubin	64.15 ✓
GASOLINE	
Anthony M Dubin	7.71 ✓
Total Other Direct Costs	**$ 286.29**
Total Regular Expenses	**$ 286.29**
Total Expenses	**$ 286.29**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

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Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44143656

Date : March 23, 2011

Attention: Analyn Nelson

Less Over Phase Ceiling $ (3.55)

Total : 006 -- Sizing Calculator Training Workshop 13245.100.003.006 - $ 4,107.05 ✓ L6

008 -- Model SUSMP Update

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Tech			
Renee C Ennis	0.50	$ 60.30	30.15
Principal Investigator			
Eric S Mosolgo	9.00	$ 160.79	1,447.11
Sub-Total Labor	9.50		$ 1,477.26
Total Labor			$ 1,477.26

Total : 008 -- Model SUSMP Update 13245.100.003.008 - $ 1,477.26 ✓ L8

009 -- HMP Monitoring Plan QAPP Dev

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Assistant Task Leader			
Lisa C Skutecki	0.50	$ 135.21	67.61
Sub-Total Labor	0.50		$ 67.61
Total Labor			$ 67.61

Total : 009 -- HMP Monitoring Plan QAPP Dev 13245.100.003.009 - $ 67.61 ✓ L9

010 -- Transitional HMP Support & Meetings

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Task Leader			
Anthony M Dubin	2.50	$ 149.83	374.58

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser

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INVOICE

To Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44143656

Date : March 23, 2011

Attention: Analyn Nelson

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Eric S Mosolgo	6.50	$ 160.79	1,045.14
Sub-Total Labor	9.00		$ 1,419.72
Total Labor			**$ 1,419.72**
Total : 010 -- Transitional HMP Support & Meetings		13745. 10.03.010 -	**$ 1,419.72** ✓ L10

011 -- Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Project Manager			
Nancy E Gardiner	6.50	$ 155.00	1,007.50
Sub-Total Labor	6.50		$ 1,007.50
Total Labor			**$ 1,007.50** ✓
Total : 011 -- Project Management		13745. 10.03.011 -	**$ 1,007.50** - L11
Amount Due this Invoice			**$ 18,264.08**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1 5 percent per month or the maximum interest permitted by law, whichever is lesser

Brown and Caldwell
Expense Report Detail

Employee: 09181 Anthony M Dubin
Expense Report: ER00207960, SDHMP Workshop
Status: Signed
Administrative Group: EA012 - EA012 - Hintz - Foy -Lynch
Supervisor Group: E224 - E224 - Milne - McGuire - McQuarrie

Date Range: 12/13/2010 - 12/15/2010
Posting Period End Date: 12/16/2010
Printed: 1/5/2011 04:59 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	[redacted]								[redacted]			
	LODGING	Lodging - Travel	139942	HMP Implementation Assistance 2011	006	****	1044	US				
									2	12/14/2010	156.38	156.38
										Line Total	156.38	156.38
	MEALSTRAV	Meals - Travel & Other	139942	HMP Implementation Assistance 2011	006	****	1044	US				
									2	12/14/2010	23.76	23.76
										Line Total	23.76	23.76
	MEALSTRAV	Meals - Travel & Other	139942	HMP Implementation Assistance 2011	006	****	1044	US				
									3	12/15/2010	17.91	17.91
										Line Total	17.91	17.91
	MEALSTRAV	Meals - Travel & Other	139942	HMP Implementation Assistance 2011	006	****	1044	US				
									4	12/15/2010	6.60	6.60
										Line Total	6.60	6.60
	MEALSTRAV	Meals - Travel & Other	139942	HMP Implementation Assistance 2011	006	****	1044	US				
									6	12/15/2010	9.78	9.78
										Line Total	9.78	9.78
	GAS	Gasoline - Travel	139942	HMP Implementation Assistance 2011	006	****	1044	US				
									5	12/15/2010	7.71	7.71

									Line Total	7.71	7.71
	RENTALCAR	Rental Car - Travel	139942	HMP Implementation Assistance 2011	006	****	1044	US			
									7 12/15/2010	64.15	64.15
									Line Total	64.15	64.15

Total Transactions	402.29	402.29
Total		402.29
Less Company Paid		(0.00)
Total Reimbursement (United States Dollar)		402.29

Audit Trail

Date/Time	Employee	Status/Notes
1/5/2011 4:59:25 PM	09181 Anthony M Dubin	Signed

Date/Time:_____ Signature:_____

(2)

COURTYARD Marriott

Courtyard by Marriott
San Diego Central

8651 Spectrum Center Blvd
San Diego, Ca 92123
T 858.573.0700

A. Dubin

Room: 378
Room Type: QNQN
Number of Guests: 1
Rate: $139.00 Clerk:

Arrive: 13Dec10 Time: 09:35PM Depart: 15Dec10 Time: [illegible] Folio Number: [illegible]

Date	Description	Charges	Credits
13Dec10	Room Charge	139.00	
13Dec10	Room Tax	14.60	
13Dec10	City Tax	2.78	
14Dec10	Restaurant Room Charge	47.52	
14Dec10	Room Charge	139.00	
14Dec10	Room Tax	14.60	
14Dec10	City Tax	2.78	
15Dec10	American Express		360.28
	Card #: AXXXXXXXXXXXXX1005/XXXX		
	Amount: 360.28 Auth: 500466 Signature on File		
	This card was electronically swiped on 13Dec10		
	Balance:	**0.00**	

APWA

SD County.

business meal for two

Tony's charge = $23.76

* 04/ly #156.38

Charged to Preston 139942 + $23.76 for meal

Rewards Account # XXXXX9378. Your Rewards points/miles earned on your eligible earnings will be credited to your account. Check your Rewards Account Statement or your online Statement for updated activity.

Get all your hotel bills by email by updating your Rewards Preferences Or, ask the Front Desk to email your bill for this stay. See "Internet Privacy Statement" on Marriott.com.

nightly lodging = $156.38 per night incl. tax

$23.76 for meal

RA-MEN SANTOKA
San Diego Store
4240 Kearny Mesa Rd.92111
(858)974-1101

REG 12-15-2010 14:52
000085

3

SHIO	T1	$6.99
MISO	T1	$6.99
CHA GOHAN	T1	$2.49
TAX-AMT 1		$16.47
TAX 1		$1.44
TOTAL		$17.91
CASH		$20.00
CHANGE		$2.09

THANK YOU!
COME AGAIN
7days OPEN(11am~7:30pm)
SANTOKA

4

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263
1576562 Andy

CHK 703987
12/15/2010 08:56AM

Ham Cheddar Ciabat	3.25
Tl Brewed Coffee	1.50
Choc Croissnt Ntl	1.85
AMEX	6.60
Subtotal	6.60
Total	6.60
Change Due	$0.00

---------- Check Closed ----------
12/15/2010 08:57:23AM

WELCOME
SALES RECEIPT
57 442 736302

5

SHELL
2521 PACIFIC HIGHWAY
SAN DIEGO
CA 92101

DATE12/15/10 6:12PM
INVOICE# 888933
AUTH# 522960
AMEX
ACCOUNT NUMBER
XXXX XXXXXX X1005
DUBIN/ANTHONY M

PUMP	PRODUCT	$/G
03	UNLD	$3.499

GALLONS	FUEL TOTAL
2.203	$ 7.71
TOTAL SALE	$ 7.71

NOW earn DOUBLE
POINTS at a
participating Ralphs
with this receipt
thru 01-31-11
Take this receipt to
Ralphs for Double
Points & faster fuel

savings. Code 6988

6

HMSHOST
BRIOCHE DOREE
SAN DIEGO AIRPORT

1152 Angelita

4194 DEC15'10 6:44PM GST 1

1 SAND TURK BRIE	8.99
CASH	20.00
SUBTOTAL	8.99
TAX	0.79
AMOUNT	9.78
CHANGE	10.22

HOW DID WE DO?
JOE NIKNAM
619-231-5100 EXT:157
Joe.Niknam@hmshost.com

SAN DIEGO-LINDBERGH AP

RR 111507233 #01
ANTHONY
DUBIN

half to APWA
half to SDCO.

7

VEHICLE: 01298 / 1590470
10MZD5 LIC: CA 6LBJ298
FUEL: 8/8 OUT 8/8 IN
COP: 15:46 - BROWN AND CALDWELL
FF. AA82H93B8
RES: E95739463D8 /5954A / C
COMPLETED BY: 2873 /CASDI11

RENTED: SAN DIEGO A/P
RENTAL: 12/13 / 10 21:03
RETURN: 12/15 / 10 18:19
RETURNED: SAN DIEGO-LINDBERGH AP

PLAN IN: 5954A RATE CLASS: C
PLAN OUT: 5954A

MILES IN: 28477 TR-X MILES
MILES OUT: 28413 MILES ALLOWED
MILES DRIVEN: 64 MILES CHARGED

DAYS	2 @ $ 45.00 / DAY	$	90.00
SUBTOTAL		FFT$	90.00
CONCESSION FEE RECOVERY		T$	10.56
CA TOURISM ASSESSMENT		$	3.15
FF SURCHARGE		T$	.11
LDW	INCLUDED IN 5954A RATE		
LIS	DECLINED		
PAI, PEC	DECLINED		
CUSTOMER FACILITY CHARGE		$	10.00
ENERGY SURCHARGE		T$	1.03
VEH LIC RECOVERY FEE & INC VLRF		T$	4.18
TAX 1 8.750% ON $	105.88	$	9.27
TAX 2 2.750% ON $	.00	$	.00
NET DUE		$	128.30
PAID BY AMX	XXXXXXXXXXX1005		

128.30 / 2 =
64.15

*only $64.15 Charged to West 12/15/12

FF: AA 82H93B8
90 MILES AWARDED ON CHARGES IDENTIFIED WITH ff

HOW WAS YOUR EXPERIENCE?
WE'D LIKE YOUR FEEDBACK.

1) Call 1-800-278-1595, or
Visit WWW.HERTZSURVEY.COM

2) Enter Access Code: 01120

3) Take Brief 4 Question Survey

daily rate = $64.15 incl. tax

THANK YOU FOR RENTING FROM
HERTZ

Not Expensive
new

Yellow Cab
425-455-4999
So. King County
425-455-4999
Eastside
DRIVER'S NAME
DATE 12/15/2010
RECEIVED FROM
AMOUNT
FROM Seattle
TO Wallingford
OTER DISPATCH/CORPORATE ACCOUNTS WELCOME

billed to APWA

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JAN2011-01682

Invoice Date: 01/04/2011

Description: PROFESSIONAL SERVICES RENDERED FOR 2010-2011 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

County Agreement No. 514270

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

	Contract Value
Cost:	74,954.00
Total:	74,954.00
Cumulative Amount Billed:	43,320.02

~~Project Number:~~ 13245.100.003
Project Name: 2011 HMP Implementation
~~Project Manager:~~ ~~Renfrew, David S~~
Terms: NET 30
Due Date: 02/03/2011

Billing Period From: 11/27/2010
To: 12/17/2010

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	43,320.02	43,320.02
Total Expenses	43,320.02	43,320.02
Invoice Total	43,320.02	43,320.02

P: 1002993
O: 50915
E: 52370
T: 004.004
A: 100496

please pay $43,320.02

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

514270
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

3/2/11
DATE

PROJECT MANAGER

3/2/11
DATE

DPW MANAGER

WS 04-03-011/A-03/09
05P-0606

INVOICE
12078

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number:	JAN2011-01682	Project Number:	13245.100.003	Billing Currency	USD
		Project Name:	2011 HMP Implementation	Invoice Date:	01/04/2011

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500427853	2010/12	BROWN AND CALDWELL	44136428	15,514.67
		500427853	2010/12		44136428	4,207.96
		500427853	2010/12		44136428	11,898.46
		500427853	2010/12		44136428	803.95
		500427853	2010/12		44136428	3,217.65
		500427853	2010/12		44136428	2,135.53
		500427853	2010/12		44136428	2,642.99
		500427853	2010/12		44136428	723.56
		500427853	2010/12		44136428	2,175.25
Total: Subcontractor						43,320.02
Total Expenses						43,320.02

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

BR032
2010. 12. 3
vchr # 500427853

INVOICE

RECEIVED
DEC 03 2010
BY amy

INVOICE APPROVAL
DATE REC: 12/03/10
APPROVED BY: Dave Renfrew
SIGNATURE:

To: Weston Solutions Inc
~~2433 Impala Drive~~
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44136428

Date : November 29, 2010

Attention: Analyn Nelson

Subject : PO # 0072705 ~~HMP Implementation Assistance 2011~~

Billing Period : Inception through October 21, 2010

Progress Billing No : WO # 13245.100.003

Reference : Authorization Dated : 9/10/2010

RETURN TO ANALYN NELSON

Purchase Order Number: 0072705

Contact : Nancy Gardiner

Invoiced By : Lindsay B Surio

001 -- LID Sizing Factor Analysis

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Task Leader			
Anthony M Dubin	59.50	$ 149.83	8,914.89
Senior Scientist			
Angela Dwyer	40.25	$ 116.94	4,706.84
Assistant Task Leader			
Hayes J Twenter	14.00	$ 135.21	1,892.94
Sub-Total Labor	113.75		$ 15,514.67
Total Labor			**$ 15,514.67**

Total : 001 -- LID Sizing Factor Analysis **$ 15,514.67**

L1- 13245.100.003.0001

002 -- Pond Sizing Analysis

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Assistant Task Leader			
Nathan H Foged	11.50	$ 135.21	1,554.92
Principal Investigator			
Eric S Mosolgo	16.50	$ 160.79	2,653.04
Sub-Total Labor	28.00		$ 4,207.96
Total Labor			**$ 4,207.96**

L2- 13245.100.003.0002

AYMENT REMIT ADDRESS: **Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208**

yment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser

$43,333.22

Page: 1

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44136428

Date : November 29, 2010

Attention: Analyn Nelson

Total : 002 -- Pond Sizing Analysis $ 4,207.96

005 -- Web-Based Sizing Calc Development

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Andrew Baldwin	60.00	$ 160.79	9,647.40
Principal Investigator			
Eric S Mosolgo	14.00	$ 160.79	2,251.06
Sub-Total Labor	74.00		$ 11,898.46
Total Labor			$ 11,898.46

otal : 005 -- Web-Based Sizing Calc Development $ 11,898.46

L5 - 13245.100.003.0005

06 -- Sizing Calculator Training Workshop

ABOR

Class/ Employee Name	Hours	Rate	Billing Amount
rincipal Investigator			
Eric S Mosolgo	5.00	$ 160.79	803.95
ub-Total Labor	5.00		$ 803.95
otal Labor			$ 803.95

tal : 006 -- Sizing Calculator Training Workshop $ 803.95

L6 - 13245.100.003.0006

7 -- HMP Updates and Executive Summary

ABOR

ass/ Employee Name	Hours	Rate	Billing Amount
enior Tech			
Renee C Ennis	5.00	$ 60.30	301.50

ENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44136428

Date : November 29, 2010

Attention: Analyn Nelson

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Eric S Mosolgo	17.00	$ 160.79	2,733.43
Scientist III			
Eric A Stiles	2.00	$ 91.36	182.72
Sub-Total Labor	24.00		$ 3,217.65
Total Labor			**$ 3,217.65**

Total : 007 -- HMP Updates and Executive Summary **$ 3,217.65**

L7- 13245.100.003.0007

008 -- Model SUSMP Update

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Tech			
Renee C Ennis	6.50	$ 60.30	391.95
Principal Investigator			
Eric S Mosolgo	10.00	$ 160.79	1,607.90
Senior Tech			
Lori N Tamai	2.25	$ 60.30	135.68
Sub-Total Labor	18.75		$ 2,135.53
Total Labor			**$ 2,135.53**

Total : 008 -- Model SUSMP Update **$ 2,135.53**

L8- 13245.100.003.0008

009 -- HMP Monitoring Plan QAPP Dev

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Eric S Mosolgo	0.50	$ 160.79	80.40
Principal Investigator			
Gary N Skipper	9.00	$ 160.79	1,447.11

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To : Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44136428

Date : November 29, 2010

Attention: Analyn Nelson

Class/ Employee Name	Hours	Rate	Billing Amount
Assistant Task Leader			
Lisa C Skutecki	8.25	$ 135.21	1,115.48
Sub-Total Labor	17.75		$ 2,642.99
Total Labor			$ **2,642.99**

Total : 009 -- HMP Monitoring Plan QAPP Dev $ **2,642.99**

L9- 13245.100.003.0009

010 -- Transitional HMP Support & Meetings

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Principal Investigator			
Eric S Mosolgo	4.50	$ 160.79	723.56
Sub-Total Labor	4.50		$ 723.56
Total Labor			$ **723.56**

Total : 010 -- Transitional HMP Support & Meetings $ **723.56**

L10- 13245.100.003.0010

011 -- Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Technician III			
Janelle L Kaminski	1.25	$ 54.82	68.53
Principal Investigator			
Eric S Mosolgo	11.00	$ 160.79	1,768.69
Assistant Task Leader			
Lisa C Skutecki	2.50	$ 135.21	338.03
Sub-Total Labor	14.75		$ 2,175.25
Total Labor			$ **2,175.25**

L11 13245.100.003.0011 - 13.80

2,188.45

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

o : Weston Solutions Inc
2433 Impala Drive
Carlsbad, CA 92008

Project No : 139942

Invoice No : 44136428

Date : November 29, 2010

Attention: Analyn Nelson

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Outside Services	
O/S SVS-TEMPORARY AGENCY	
APPLE ONE EMPLOYMENT SERVICE	13.20
Total Outside Services	$ 13.20
Total Regular Expenses	$ 13.20
Total Expenses	$ 13.20
Total : 011 -- Project Management	$ 2,188.45
ıount Due this Invoice	$ ~~43,333.22~~

L11-

$43,320.02

AYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

ment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the t day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

POETA
1002993
001.011
100496
52370
50915

Project No : 133904

Invoice No : 44136409

Date : November 29, 2010

ok to pay $6685.21

Attention: Sara Agahi, Project Manager

Subject : SDCo Hydromod Management Plan

Contact : Nancy E Gardiner, PM

Billing Period : July 01, 2010 through November 04, 2010

Invoiced By : Susan E Pantig

Progress Billing No : 19

Reference : Authorization Dated : 9/6/2007

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

Michael Nienberg, Vice President

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

520444
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

12/09/10
DATE

PROJECT MANAGER

12/9/10
DATE

DPW MANAGER

059 -- Sizing Calc - Modeling Approach

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	6.00	$ 200.10	1,200.60
Senior Technical Expert			
Eric S Mosolgo	25.00	$ 200.10	5,002.50
Technical Writer			
Dorothy A Norton	2.75	$ 95.18	261.75
Sr. Engineering Scientist			
Lisa C Skutecki	0.75	$ 128.73	96.55
Sr. Engineering Scientist			
Hayes J Twenter	1.00	$ 128.73	128.73
Sub-Total Labor	35.50		$ 6,690.13
Total Labor			**$ 6,690.13**
Total : 059 -- Sizing Calc - Modeling Approach			**$ 6,690.13**
Less Amount Over Contract Ceiling			**$ (4.92)**
Amount Due this Invoice			**$ 6,685.21**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44136409

Date : November 29, 2010

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001	-- Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002	-- WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004	-- SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006	-- Stakeholder Meetings/Coord	$ 38,723.26	$ 0.00	$ 42,607.84	$ 42,607.84	$ (3,884.58)
010	-- Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,780.57	$ 21,780.57	$ (21,780.57)
011	-- Contingency	$ 10,000.00	$ 0.00	$ 10,003.36	$ 10,003.36	$ (3.36)
041	-- Update Model SUSMP - 2	$ 169,062.28	$ 0.00	$ 123,810.79	$ 123,810.79	$ 45,251.49
051	-- Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 0.00	$ 105,900.91	$ 105,900.91	$ (13,795.31)
052	-- Select HSPF Modeling Parameters	$ 50,638.00	$ 0.00	$ 50,126.62	$ 50,126.62	$ 511.38
053	-- Develop BMP Modeling Appraoch	$ 80,678.00	$ 0.00	$ 106,288.27	$ 106,288.27	$ (25,610.27)
054	-- Add'l Funding for Rain Gauge Task	$ 48,641.00	$ 0.00	$ 95,371.46	$ 95,371.46	$ (46,730.46)
055	-- Watershed Modeling	$ 91,012.00	$ 0.00	$ 80,582.40	$ 80,582.40	$ 10,429.60
056	-- Flow Threashold Alt Analysis	$ 35,817.00	$ 0.00	$ 48,253.57	$ 48,253.57	$ (12,436.57)
057	-- Draft Final HMP	$ 66,511.00	$ 0.00	$ 75,831.11	$ 75,831.11	$ (9,320.11)
058	-- Final HMP	$ 139,414.00	$ 0.00	$ 123,609.34	$ 123,609.34	$ 15,804.66
059	-- Sizing Calc - Modeling Approach	$ 91,177.66	$ 6,685.21	$ 51,810.75	$ 58,495.96	$ 32,681.70
501	-- Additional HSPF Modeling	$ 18,175.00	$ 0.00	$ 10,605.08	$ 10,605.08	$ 7,569.92
		$ 1,000,000.00	**$ 6,685.21**	**$ 993,314.79**	**$ 1,000,000.00**	**$ 0.00**

Total Paid To Date : **$ (993,314.79)**

Balance Outstanding : **$ 6,685.21**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is less.

Billing Detail - Items through 11/4/2010

Brown and Caldwell

Project : 133904 - SDCo Hydromod Management Plan

Phase : 059 – Sizing Calc - Modeling Approach

Rate Schedule Labor Employee Name	OT	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	9/20/2010	9/23/2010	1.50	200.10	300.15
Meeting with Eric, Gary, Lisa, and Sara Agahi to discuss HMP monitoring plan.											
			****	1044	421	****	9/22/2010	9/23/2010	3.00	200.10	600.30
File organization and project closeout activities.											
			****	1044	421	****	10/6/2010	10/7/2010	1.00	200.10	200.10
Project status meeting with Eric and Sara. Discussions with Eric and Andy Baldwin re: sizing calculator.											
			****	1044	421	****	10/11/2010	10/14/2010	0.50	200.10	100.05
Project closeout.											
									6.00		1,200.60
Senior Technical Expert											
Eric S Mosolgo			****	1044	112	****	7/2/2010	7/8/2010	2.00	200.10	400.20
Meeting with the County of San Diego and the City of San Diego regarding the San Diego HMP Monitoring Plan; review of comments provided by Coastkeeper											
			****	1044	112	****	7/6/2010	7/8/2010	1.00	200.10	200.10
Coordination with County and RWQCB in minor updates to Monitoring Plan; review City of San Diego comments regarding Coastkeeper letter											
			****	1044	112	****	7/7/2010	7/8/2010	2.00	200.10	400.20
Revision of HMP Decision Matrix to update urban infill exemption criteria; update to HMP Monitoring Plan for re-submittal to the Copermittees											
			****	1044	112	****	7/8/2010	7/8/2010	4.00	200.10	800.40
Update to San Diego HMP Monitoring Plan to include responses to comments from the County of San Diego, RWQCB staff, and Coastkeeper; update to overall San Diego HMP to incorporate RWQCB comments; coordination with Dorothy Norton in preparation of the HMP Monitoring Plan document											
			****	1044	112	****	7/12/2010	7/15/2010	1.00	200.10	200.10
Review of RWQCB Errata sheet provisions											
			****	1044	112	****	7/13/2010	7/15/2010	2.00	200.10	400.20
Preparation for presentation at RWQCB hearing to approve HMP											
			****	1044	112	****	7/14/2010	7/15/2010	5.00	200.10	1,000.50
Participation at RWQCB hearing at which HMP was approved; answer questions from Copermittees, Coastkeeper and RWQCB staff and board; delivered presentation regarding urban infill exemption											
			****	1044	112	****	7/15/2010	7/15/2010	2.00	200.10	400.20
Revisions to HMP text to reflects final conclusions from RWQCB approval hearing											
			****	1044	112	****	7/20/2010	7/22/2010	3.00	200.10	600.30
Updates to Monitoring Plan; review of BMP Sizing Calculator progress and preparation of summary to be provided to County of San Diego											
			****	1044	112	****	7/21/2010	7/22/2010	1.50	200.10	300.15
Progress meeting with Sara Agahi of the County of San Diego											
			****	1044	112	****	7/22/2010	7/22/2010	1.50	200.10	300.15
Updates to HMP document to incorporate agreements from 7-14 RWQCB hearing;											
									25.00		5,002.50
Sr. Engineering Scientist											
Hayes J Twenter			****	1044	114	****	7/1/2010	7/1/2010	1.00	128.73	128.73
automated uci/ftable generator											
Sr. Engineering Scientist											
Lisa C Skutecki			****	1044	113	****	7/2/2010	11/4/2010	0.75	128.73	96.55
reviewing scope/letter for Eric											
Technical Writer											
Dorothy A Norton			****	1044	670	****	7/8/2010	7/8/2010	2.75	95.18	261.75
S01236 - hmp rpt & section 8 edits and formatting											
							Total Rate Schedule Labor				***6,690.12***
			Total Project : 133904 - SDCo Hydromod Management Plan								**6,690.12**

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44128169

Date : July 07, 2010

POETA
1002993
001.011
100496
52370
50915

Attention: Sara Agahi, Project Manager

Subject : SDCo Hydromod Management Plan

Contact : Nancy E Gardiner, PM

Billing Period : May 28, 2010 through June 30, 2010

Invoiced By : Susan E Pantig

Progress Billing No : 18

Ok to pay $2763.96

Reference : Authorization Dated : 9/6/2007

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

County of San Diego Hydromodification Management Plan - County Contract No. 520444 - Task Order No. 1 (File Number: 972)

520444
CONTRACT/P.O. NO.

ACTIVITY/WA NO.

I certify that this invoice is in compliance with Section 8.9 "Debarment and Suspension" of the Contract and all charges are true and just.

7/8/10
DATE

PROJECT MANAGER

Michael Nienberg, Vice President

7/8/10
DATE

DPW MANAGER

059 -- Sizing Calc - Modeling Approach

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Nancy E Gardiner	1.50	$ 200.10	300.15
Senior Technical Expert			
Eric S Mosolgo	6.00	$ 200.10	1,200.60
Technical Writer			
Dorothy A Norton	1.75	$ 95.18	166.57
Sr. Engineering Scientist			
Hayes J Twenter	2.00	$ 128.73	257.46
Sub-Total Labor	11.25		$ 1,924.78
Total Labor			**$ 1,924.78**

EXPENSES

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44128169

Date : July 07, 2010

Attention: Sara Agahi, Project Manager

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Other Direct Costs	
AIRFARE	
Anthony M Dubin	527.40
LODGING	
Anthony M Dubin	156.38
TRAVEL MEALS/SUBSISTENCE	
Anthony M Dubin	8.50
Anthony M Dubin	15.59
RENTAL CAR	
Anthony M Dubin	69.51
GASOLINE	
Anthony M Dubin	6.80
TAXI & OTHER TRANSPORTATION	
Anthony M Dubin	55.00
Total Other Direct Costs	**$ 839.18**
Total Regular Expenses	**$ 839.18**
Total Expenses	**$ 839.18**
Total : 059 -- Sizing Calc - Modeling Approach	**$ 2,763.96**
Amount Due this Invoice	**$ 2,763.96**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego, County of (CA)
Department of Public Works
Watershed Protection Program
5201 Ruffin Road Suite P
San Diego, CA 92123

Project No : 133904

Invoice No : 44128169

Date : July 07, 2010

Attention: Sara Agahi, Project Manager

Summary of Account

Task	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001	-- Research Summary	$ 21,312.48	$ 0.00	$ 0.00	$ 0.00	$ 21,312.48
002	-- WorkPlan/Interim HMP	$ 39,436.72	$ 0.00	$ 39,436.72	$ 39,436.72	$ 0.00
004	-- SUSMP Update	$ 7,296.00	$ 0.00	$ 7,296.00	$ 7,296.00	$ 0.00
006	-- Stakeholder Meetings/Coord	$ 38,723.26	$ 0.00	$ 42,607.84	$ 42,607.84	$ (3,884.58)
010	-- Add'l Tasks as Directed by County	$ 0.00	$ 0.00	$ 21,780.57	$ 21,780.57	$ (21,780.57)
011	-- Contingency	$ 10,000.00	$ 0.00	$ 10,003.36	$ 10,003.36	$ (3.36)
041	-- Update Model SUSMP - 2	$ 169,062.28	$ 0.00	$ 123,810.79	$ 123,810.79	$ 45,251.49
051	-- Flow Threasholds/Eval. Strategy	$ 92,105.60	$ 0.00	$ 105,900.91	$ 105,900.91	$ (13,795.31)
052	-- Select HSPF Modeling Parameter:	$ 50,638.00	$ 0.00	$ 50,126.62	$ 50,126.62	$ 511.38
053	-- Develop BMP Modeling Appraoch	$ 80,678.00	$ 0.00	$ 106,288.27	$ 106,288.27	$ (25,610.27)
054	-- Add'l Funding for Rain Gauge Tas	$ 48,641.00	$ 0.00	$ 95,371.46	$ 95,371.46	$ (46,730.46)
055	-- Watershed Modeling	$ 91,012.00	$ 0.00	$ 80,582.40	$ 80,582.40	$ 10,429.60
056	-- Flow Threashold Alt Analysis	$ 35,817.00	$ 0.00	$ 48,253.57	$ 48,253.57	$ (12,436.57)
057	-- Draft Final HMP	$ 66,511.00	$ 0.00	$ 75,831.11	$ 75,831.11	$ (9,320.11)
058	-- Final HMP	$ 139,414.00	$ 0.00	$ 123,609.34	$ 123,609.34	$ 15,804.66
059	-- Sizing Calc - Modeling Approach	$ 91,177.66	$ 2,763.96	$ 49,046.79	$ 51,810.75	$ 39,366.91
501	-- Additional HSPF Modeling	$ 18,175.00	$ 0.00	$ 10,605.08	$ 10,605.08	$ 7,569.92
		$ 1,000,000.00	**$ 2,763.96**	**$ 990,550.83**	**$ 993,314.79**	**$ 6,685.21**

Total Paid To Date : **$ (930,388.94)**

Balance Outstanding : **$ 62,925.85**

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Billing Detail - Items through 6/30/2010

Brown and Caldwell

Project : 133904 - SDCo Hydromod Management Plan

Phase : 059 – Sizing Calc - Modeling Approach

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amoun
Senior Technical Expert											
Nancy E Gardiner			****	1044	421	****	6/9/2010	6/10/2010	0.50	200.10	100.05
Meeting with Regional Board and stakeholders.											
			****	1044	421	****	6/16/2010	6/17/2010	0.50	200.10	100.05
Read e-mails and team correspondence regarding HMP sizing calculator development.											
			****	1044	421	****	6/18/2010	6/24/2010	0.50	200.10	100.05
Discussion with Eric regarding project status and meetings with Co-permittees and RWQCB.											
									1.50		300.15
Eric S Mosolgo			****	1044	112	****	6/25/2010	7/1/2010	3.00	200.10	600.30
Preparation of HMP Monitoring Plan for submittal to Copermittees and RWQCB for review											
			****	1044	112	****	6/30/2010	7/1/2010	3.00	200.10	600.30
Incorporate comments from Copermittees and RWQCB and prepare final version of HMP Monitoring Plan Executive Summary for submittal to RWQCB; conference call with Seattle and Portland staffs plus Andy Baldwin regarding Pond Sizer											
									6.00		1,200.60
Total: Senior Technical Expert									7.50		1,500.75
Sr. Engineering Scientist											
Hayes J Twenter			****	1044	114	****	6/28/2010	7/1/2010	2.00	128.73	257.46
Modeling automation (uci/ftable generator)											
Technical Writer											
Dorothy A Norton			****	1044	670	****	6/16/2010	6/17/2010	0.25	95.18	23.80
help set up conf. call											
			****	1044	670	****	6/30/2010	7/1/2010	1.50	95.18	142.77
S01232 Exec Summ TM											
									1.75		166.57
							Total Rate Schedule Labor				***1,924.78***

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
AIRFARE									
Anthony M Dubin	09181	****	1044	ER00195608	5/10/2010	6/17/2010	527.40	1.00	527.40
LODGING									
Anthony M Dubin	09181	****	1044	ER00195608	5/10/2010	6/17/2010	156.38	1.00	156.38
TRAVEL MEALS/SUBSISTENCE									
Anthony M Dubin	09181	****	1044	ER00195608	5/10/2010	6/17/2010	8.50	1.00	8.50
	09181	****	1044	ER00195608	5/11/2010	6/17/2010	15.59	1.00	15.59
							24.09		24.09
RENTAL CAR									
Anthony M Dubin	09181	****	1044	ER00195608	5/11/2010	6/17/2010	69.51	1.00	69.51
GASOLINE									
Anthony M Dubin	09181	****	1044	ER00195608	5/11/2010	6/17/2010	6.80	1.00	6.80
TAXI & OTHER TRANSPORTATION									
Anthony M Dubin	09181	****	1044	ER00195608	5/11/2010	6/17/2010	55.00	1.00	55.00
						Total Regular Expenses			***839.18***

Brown and Caldwell
Expense Report Detail

Employee: 09181 Anthony M Dubin
Expense Report: ER00195608, San Diego HMP TAC Meeting
Status: Signed
Administrative Group: EA012 - EA012 - Hintz - Menicke -McGuire
Supervisor Group: E224 - E224 - Milne - McGuire - McQuarrie

Date Range: 5/10/2010 - 5/11/2010
Posting Period End Date: 5/27/2010
Printed: 6/4/2010 01:01 PM

Transactions

Co Pd	Category	Name	Project	Name	Phase	Task	Org	Curr	Rcpt	Date	Total Amount	US Amount
	MEALSTRAV	Meals - Travel & Other	133904	SDCo Hydromod Management Plan	059	****	1044	US				
	Description: Line items on recept for one meal: $5.06 + $0.44 + $2.76 + $0.24 = $8.50								4	5/10/2010	8.50	8.50
										Line Total	8.50	8.50
	LODGING	Lodging - Travel	133904	SDCo Hydromod Management Plan	059	****	1044	US				
	Description: Line items on recept for hotel room: $139.00 + $14.60 + $2.78 = $156.38								4	5/10/2010	156.38	156.38
										Line Total	156.38	156.38
	MEALSTRAV	Meals - Travel & Other	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									4	5/11/2010	15.59	15.59
										Line Total	15.59	15.59
	AIRFARE	Airfare	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									5	5/10/2010	527.40	527.40
										Line Total	527.40	527.40
	GAS	Gasoline - Travel	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									1	5/11/2010	6.80	6.80
										Line Total	6.80	6.80
	RENTALCAR	Rental Car - Travel	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									2	5/11/2010	69.51	69.51
										Line Total	69.51	69.51
	TAXI	Taxi/Transportation - Travel	133904	SDCo Hydromod Management Plan	059	****	1044	US				
									3	5/11/2010	55.00	55.00
										Line Total	55.00	55.00

Total Transactions		839.18	839.18
	Total		**839.18**
	Less Company Paid		**(0.00)**
	Total Reimbursement (United States Dollar)		**839.18**

Audit Trail

Date/Time	**Employee**	**Status/Notes**
6/4/2010 1:01:03 PM	09181 Anthony M Dubin	Signed

Date/Time:_____ **Signature:**_____

WELCOME
SALES RECEIPT
00 000 000000

1

DATE05/11/10 4:35PM
INVOICE# 185405
AUTH# 595877
AMEX
ACCOUNT NUMBER
XXXX XXXXXX X1005
DUBIN/ANTHONY M

PUMP	PRODUCT	$/G
01	UNLD	$3.359

GALLONS	FUEL TOTAL
2.025	$ 6.80

TOTAL SALE $ 6.80

Apply for the new Shell Drive for FiveSH Card today and save 5 cents per gallon.
Apply today! Call 1-877-278-2624.

THANK YOU
COME BACK SOON

SAN DIEGO-LINDBERGH AP

2

RR 168069904 #01
ANTHONY
DUBIN

VEHICLE: 01198/1213628
09GCFR LIC: CA 6FBE978
FUEL: 8/8 OUT 8/8 IN
CDP: 15728 -BROWN AND CALDWELL

RES: E74047400C7 /5954A / C
COMPLETED BY: 5867 /CASDI11

RENTED: SAN DIEGO A/P
RENTAL: 05/10/10 22:49
RETURN: 05/11/10 16:44

PLAN IN: 5954A RATE CLASS: C
PLAN OUT: 5954A

MILES IN: 34731 TR-X MILES
MILES OUT: 34704 MILES ALLOWED
MILES DRIVEN: 27 MILES CHARGED

DAYS	1@ $ 45.00 / DAY	$	45.00
SUBTOTAL		T$	45.00
CONCESSION FEE RECOVERY		T$	5.32
CA TOURISM ASSESSMENT		$	1.58
LDW	INCLUDED IN 5954A RATE		
LIS	DECLINED		
PAI, PEC	DECLINED		
TRANSACTION FEE		$	10.00
ENERGY SURCHARGE		T$	1.03
VEH LIC RECOVERY FEE & INC VLRF		T$	1.91
TAX 8.750% ON	53.26	$	4.67
NET DUE		$	69.51

PAID BY MC XXXXXXXXXXXX9615

HOW WAS YOUR EXPERIENCE?
WE'D LIKE YOUR FEEDBACK.

1) Call 1-800-278-1595, or Visit WWW.HERTZSURVEY.COM
2) Enter Access Code: 01120
3) Take Brief 4 Question Survey

THANK YOU FOR RENTING FROM
HERTZ

STITA TAXI
DATE: 11-05-2010
TIME: 22:10
MDT ID: 933
BADGE#: 14017

3

JOB ID: 0
METER: 1145

DROPOFF: 1009

FARE: 55.00

TOTAL 55.00

FROM SEATAC AIRPORT TO:

STITA TAXI 206 246 9999
WWW STITATAXI COM

COURTYARD Marriott

Courtyard by Marriott
San Diego Central

8651 Spectrum Center Blvd
San Diego, Ca 92123
T 858.573.0700

(4)

Anthony Dubin
4232 Latona Ave Ne
Seattle WA 98105-6542
Brown Caldwell

Room: 260
Room Type: GENR
Number of Guests: 1
Rate: $139.00 Clerk: DMD

Arrive: 10May10 Time: 11:18PM Depart: 11May10 Time: 11:16AM Folio Number: 90999

Date	Description	Charges	Credits
10May10	Market Sundries	5.06	
10May10	Restaurant Tax	0.44	
10May10	Market Fresh Food	2.76	
10May10	Restaurant Tax	0.24	
10May10	Room Charge	139.00	
10May10	Room Tax	14.60	
10May10	City Tax	2.78	
11May10	Restaurant Room Charge	15.59	
11May10	American Express		180.47
	Card #: AXXXXXXXXXXXXX1005/XXXX		
	Amount: 180.47 Auth: 554949 Signature on File		
	This card was electronically swiped on 10May10		
	Balance:	**0.00**	

Marriott Rewards Account # XXXXX9378. Your Marriott Rewards points/miles earned on your room rate will be credited to your account. For account activity: 801-468-4000 or MarriottRewards.com.

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As requested, a final copy of your bill will be emailed to you at: TDUBIN@BRWNCALD.COM. See "Internet Privacy Statement" on Marriott.com.

Dubin, Tony

(5)

From: Alaska Airlines/Horizon Air [Alaska.IT@alaskaair.com]
Sent: Wednesday, May 05, 2010 7:13 AM
To: Dubin, Tony
Subject: Confirmation Letter - FSZRBM 05/10/10 - from Alaska Airlines/Horizon Air

If you have trouble viewing this message, click here to request a plain text-only version of this email.

Alaska Airlines / Horizon Air

Home	Reservations	Deals	Day of Flight	Destinations	Mileage Plan ™	More...

Confirmation Code: FSZRBM

Below is your booking confirmation. Thank you and enjoy your trip.
Plans Change? Visit us in advance, online or through reservations.

Flight	Departs	Arrives	Class	Traveler(s)	Seat(s)
Alaska Airlines AS492 Boeing 737-400	Seattle, WA (SEA) Mon, May 10 7:55 pm	San Diego, CA (SAN) Mon, May 10 10:44 pm	Q (Coach)	Anthony Dubin	20D
Alaska Airlines AS489 Boeing 737-400	San Diego, CA (SAN) Tue, May 11 6:30 pm	Seattle, WA (SEA) Tue, May 11 9:27 pm	Q (Coach)	Anthony Dubin	18B

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Summary of Airfare Charges

Anthony Dubin

Ticket 027-2150140940

Base Fare and Surcharges		$470.70
Taxes and Other Fees		$56.70
	per person total:	$527.40

Total Fare **USD $527.40**

Total Charges and Credits

Special Service Requests

Alaska Airlines and Horizon Air provide a meet and assist service for travelers who need

$527.40 was charged to American Express **********1005 held by Anthony M Dubin on 05/05/2010

Trip Protection by Access America

Purchase trip protection benefits and travel assistance services for your trip from Access America at 1-800-496-6593. Learn more

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Create Alert

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Alaska Airlines 1-800-ALASKAAIR (1-800-252-7522)

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On Alaska Airlines and Horizon Air, each passenger is allowed one carry-on bag and one personal item. For passengers traveling on or after June 16, 2010 who purchased their tickets on or after May 1, 2010, baggage fees are $20 each for the first three checked bags. For all other passengers, baggage fees are $15 for the first checked bag and $25 for the second checked bag. For faster service, use your debit or credit card when checking in online or at an airport kiosk.

More Info

Baggage Service Guarantee information

City Guides

View City Guides for:
San Diego, CA
Seattle, WA

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This email was sent to tdubin@brwncald.com.
Reference Number PL06455279. Requested at 05/05/2010 07:03 AM

MACTEC engineering and constructing a better tomorrow

APPENDIX U

OK to pay $13,984.34
Christine A. Sloan
1002993
50915
52370
010.001
100496

RIV
July 1

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Jo Ann Weber
5201 Ruffin Road, Suite P
Mailstop O326
San Diego, CA 92123

File: 985-A

County Contract Number: 536213
Oracle Project Number: 5013-11-0006

Invoice Date: 06/30/2011
Task Order Number: '02
Invoice Number: 8433379

HYDROMODIFICATION SOFTWARE THIRD PARTY REVIEW

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 04/18/11 through 06/30/11

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. Sub Tetra Tech	$25,055.00	56.37%	$14,122.58	$00.00	$14,122.58
TOTALS:	$25,055.00	56.37%	$14,122.58	$00.00	$14,122.58

AMOUNT DUE THIS BILLING:

Contract terms does not allow computer usage charge of $138.24.

$14,122.58
− 138.24
$13,984.34

I hereby certify that (MACTEC ENGINEERING & CONSULTING) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

NATHAN SCHAEDLER
PROJECT MANAGER

6/30/2011
DATE

MACTEC engineering and constructing a better tomorrow

Project Name : CO OF SD TT- HYDRO MOD REV
Project Number: 5013110006

Invoice Date : 06/30/2011
Invoice Number: 8433379

Due Date: On Receipt
Terms : IMMEDIATE

Task Number 01 - SUB TETRA TECH

Date	Other		Cost	Markup	Amount
06/29/11	OTHER - SUBCONTRACTOR TETRA TECH INC.	INV# 50465079	14,122.58		14,122.58
					14,122.58
	Other Subtotal				14,122.58
		TASK 01 SUBTOTAL			14,122.58
			INVOICE TOTAL		14,122.58
					- 138.24
					$ 13,984.34

Project Summary

Previously Billed	0.00
Current Invoice	14,122.58
Total Billed To Date	14,122.58
Authorized Budget	25,055.00
Total Billed To Date	14,122.58
Remaining Authorized Budget	10,932.42

Direct invoice questions to:

Nathan Schaedler, Project Manager

MACTEC Engineering and Consulting, Inc.
9177 Sky Park Court • San Diego, CA 92123-4341
Phone: 858.278.3600 • Fax: 858.278.5300
www.mactec.com

Printed with Environmentally Responsible Products

Tetra Tech Divisions
A Division of Tetra Tech, Inc.
3475 E. Foothill Blvd.
Pasadena, CA 91107
(626) 351-4664

Bill To: MACTEC, INC
ATTN: ACCOUNTS PAYABLE
1105 LAKEWOOD PARKWAY,
SUITE 300
ALPHARETTA, GA 30009

INVOICE NUMBER:	50465079
INVOICE DATE:	06/29/2011
REFERENCE:	
FEDERAL TAX ID#:	95-4148514
PROJECT:	100-FFX-T27743
BILLING PERIOD FROM:	INCEPTION
BILLING PERIOD TO:	06/24/2011

CONTRACT#: DATED MARCH 23, 2011; MACTEC PROJECT#: 5013-11-0006; PO#: 201105649
PROFESSIONAL SERVICES:
HYDROMODIFICATION SOFTWARE

Direct Labor	Billing Title	Dept	Rate/ Hours	Current Hours	Current Amount
Project Manager	Ackerman, Andrew C.	100 RTP	145.67	48	$6,992.16
Project Manager	Butcher, Jonathan B	100 RTP	145.67	15	$2,185.07
Project Manager	Job, Scott C	100 RTP	145.67	33	$4,807.11
			Subtotal		$13,984.34

Other Direct Charges		Current Amount
Computer Usage Time		$138.24
	Subtotal ODCs	~~$138.24~~
	Subtotal	$138.24

don't pay

Contract terms does not allow this charge.

TOTAL AMOUNT DUE THIS INVOICE: **$14,122.58**

-138.24

$13,984.34

Net Contract Summary	
Contract Amount	$25,055.00
Previously Billed	$0.00
Current Billing	$14,122.58
Total Billed to Date	$14,122.58
Contract Balance Remaining	$10,932.42

I here by certify that the amount due is correct and just and that payment therefore has not been received.

REMIT PAYMENT TO:

Wells Fargo Bank
ROUTING TRANSIT #121000248
TETRA TECH ACCOUNT #41331-60325

OR
Tetra Tech Divisions
DEPT 1654
DENVER, CO 80291-1654

To ensure accurate posting, please note the invoice number on your check.

MACTEC

Work Order & PO NO. 201105649
MACTEC Project Name: County of SD #02
MACTEC Project No.: 5013-11-000-01
Date Issued: May 6, 2011

Period of Performance: Inception – 06/24/11

Activities To-Date:

- Requested model files and background information from Clear Creek Solutions (CC) and Brown and Caldwell (BC)
- Coordinated with CC and BC to ensure software packages were functional
- Began review of model performance
- Began comparison of model performance
- Provided Determination of Acceptability via email to client
- Began conceptualizing guidance documentation needs for CC tool
- Scheduled deliverable dates for draft document to the client

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Monitoring Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 3,476.00**
Contract / Other Expenditures Claimed:	**$ 2,559,677.83**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jo Ann Weber
Regional Monitoring Workgroup Co-chair
[Organization]

9/13/2011
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Regional Monitoring Workgroup Co-chair
County of San Diego

9/13/2011
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 3.A. Regional Monitoring Program					
WESTON (contract No. 534965-rpt, Task 1)		$ 37,772.00	10/27/2010	$ 1,888.60	monthly invoice
		$ 110,299.00	11/18/2010	$ 5,514.95	monthly invoice
		$ 73,843.50	12/17/2010	$ 3,692.18	monthly invoice
		$ (4,775.00)	4/8/2011	$ (238.75)	monthly invoice
		$ 73,333.10	4/13/2011	$ 3,666.66	monthly invoice
WESTON (contract No. 514270)		$ 273,067.97	8/27/2010	$ 13,653.40	includes 212,464.89 9/29/10 invoice
		$ 228,963.60	10/25/2010	$ 11,448.18	includes $123,852.76 11/16/10 invoice
		$ 69,914.05	12/14/2010	$ 3,495.70	includes $33,312.73 1/4/11 invoice
WESTON (contract No. 514270)		$ 85,433.98	6/3/2011	$ 4,271.70	
		$ -		$ -	
Subtaskx.x Sub-total	$ 947,852.20				
Subtaskx.x Management Cost	$ 47,392.61				
Subtask 3.A. Contd- Regional Monitoring Program					
WESTON (contract No. 535693-mon)		$ 201,961.30	4/26/2011	$ 10,098.07	monthly invoice
		$ 134,627.38	5/9/2011	$ 6,731.37	monthly invoice
		$ 201,210.95	6/27/2011	$ 10,060.55	monthly invoice
		$ 615,097.37		$ 30,754.87	to be invoiced
SCCWRP (contract No. 530522 - Bight 08 bacti Regrowth)		$ 57,500.00	10/15/2010	$ 2,875.00	includes 1/17/11 invoice of 10 k
		$ 77,323.00	4/17/2011	$ 3,866.15	includes 6/7/11 invoice of $27,367
		$ -		$ -	
Subtaskx.x Sub-total	############				
Subtaskx.x Management Cost	$ 64,386.00				
Subtask 3.C. 5-Year Regional Monitoring Program Assessment and updating for ROWD and LTEA					

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

WESTON (contract No. 534965-rpt, Tasks 2 and 3)		$ 6,035.00	11/18/2010	$ 301.75	monthly invoice
		$ 49,174.50	12/17/2010	$ 2,458.73	monthly invoice
		$ (1,001.00)	4/8/2011	$ (50.05)	monthly invoice
		$ 40,529.00	4/13/2011	$ 2,026.45	monthly invoice
		$ 42,825.00	6/7/2011	$ 2,141.25	monthly invoice
		$ 7,892.00	7/7/2011	$ 394.60	monthly invoice
		$ -		$ -	
Subtaskx.x Sub-total	$ 145,454.50				
Subtaskx.x Management Cost	$ 7,272.73				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask 3.C. contd: 5-Year Reg Mon- LTEA/ROWD		$ 22,320.82	5/6/2011		
MACTEC (Contract No. 536213, Task 1)- Armand Ruby		$ 34,440.88	7/1/2011		
5 % contracting Fee		$ 2,838.09			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
Sub-total Other Expenditures	$ 59,599.79				
Total Expenditures (Including contract management cost)	**$ 2,559,677.83**				

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.A. Regional Monitoring Workgroup Meeting Support						
1/21/2011	Jo Ann Weber	Program Coordinator	5.00	$ 88.00	$ 440.00	Research Permit reissuance issues and prepare presentation
3/8/2011	Jo Ann Weber	Program Coordinator	1.50	$ 88.00	$ 132.00	Revised Annual Monitoirng Data presentation
3/28/2011	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	Prepare presentation for Copermitees Wkshp # 1- ROWD/LTEA
4/25/2011	Jo Ann Weber	Program Coordinator	3.00	$ 88.00	$ 264.00	Prepare presentation for Copermitees Wkshp #2 - ROWD/LTEA
5/20/2011	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	Revise CSDM and Dry Weather Attachments to ROWD
5/23/2011	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	Revise CSDM Attachment to ROWD
5/24/2011	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	Revise Draft Monitoirng sections of ROWD Attachments
6/10/2011	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	Revise preliminary sections of ROWD/LTEA power analysis
6/15/2011	Jo Ann Weber	Program Coordinator	6.00	$ 88.00	$ 528.00	Revise monitoring sections of ROWD.LTEA
6/16/2011	Jo Ann Weber	Program Coordinator	6.00	$ 88.00	$ 528.00	Revise monitoring sections and prepare response to comments
Sub-total	$ 2,948.00					
Subtask 2.B. FY2011-12 Work Plan and Budget						
8/15/2010	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	prepare budget for 2011-12
10/15/2010	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	update budget and work plan for 2011-12
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 528.00					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 3,476.00**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Dry Weather Monitoring Sub-workgroup
Copermittee:	City of Santee
Period:	2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 716.14
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Helen M Perry
Stormwater Program Manager
City of Santee

9/7/11
Date

Helen M. Perry
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Water Quality Program Coordinator
County of San Diego

9/7/11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask x.x. [RURMP Preparation]						
11/5/2010	H Perry	SWPM	1.50	$ 77.42	$ 116.13	Preparation of material for RURMP report per S. McPherson request.
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 116.13					
Subtask x.x. [Collection of Data for LTEA]						
11/15/2010	H Perry	SWPM	2.00	$ 77.42	$ 154.84	
11/29/2010	H Perry	SWPM	0.25	$ 77.42	$ 19.36	
11/30/2010	H Perry	SWPM	0.50	$ 77.42	$ 38.71	
12/1/2010	H Perry	SWPM	1.00	$ 77.42	$ 77.42	
12/2/2010	H Perry	SWPM	0.50	$ 77.42	$ 38.71	
12/6/2010	H Perry	SWPM	0.50	$ 77.42	$ 38.71	
12/8/2010	H Perry	SWPM	0.50	$ 77.42	$ 38.71	
12/9/2010	H Perry	SWPM	0.50	$ 77.42	$ 38.71	
Sub-total	$ 445.17					
Subtask x.x. [Collection of Data for LTEA continued]						
12/13/2010	H Perry	SWPM	1.00	$ 77.42	$ 77.42	
12/17/2010	H Perry	SWPM	1.00	$ 77.42	$ 77.42	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 154.84					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 2nd Quarter FY 2010-11 (Oct. 1- Dec. 31, 2010)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 716.14	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Dry Weather Monitoring Sub-workgroup
Copermittee:	City of Santee
Period:	3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 987.11
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Helen M Perry
Stormwater Program Manager
City of Santee

9/7/11
Date

Helen M Perry
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Water Quality Program Coordinator
County of San Diego

9/7/11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask x.x. [Collection and Analysis of Data for LTEA]						
1/19/2011	H Perry	SWPM	5.00	$ 77.42	$ 387.10	
1/21/2011	H Perry	SWPM	1.50	$ 77.42	$ 116.13	
1/28/2011	H Perry	SWPM	0.50	$ 77.42	$ 38.71	
1/31/2011	H Perry	SWPM	3.00	$ 77.42	$ 232.26	
2/1/2011	H Perry	SWPM	1.50	$ 77.42	$ 116.13	
2/2/2011	H Perry	SWPM	0.50	$ 77.42	$ 38.71	
2/23/2011	H Perry	SWPM	0.25	$ 77.42	$ 19.36	
3/3/2011	H Perry	SWPM	0.50	$ 77.42	$ 38.71	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 987.11					
Subtask x.x. [Collection of Data for LTEA]						
				$ 77.42	$ -	
				$ 77.42	$ -	
				$ 77.42	$ -	
				$ 77.42	$ -	
				$ 77.42	$ -	
				$ 77.42	$ -	
				$ 77.42	$ -	
				$ 77.42	$ -	
Sub-total	$ -					
Subtask x.x. []						
				$ 77.42	$ -	
				$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Dry Weather Monitoring Sub-workgroup

Copermittee: City of Santee

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ 987.11	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Coastal Storm Drain Monitoring Sub-workgroup
Copermittee:	City of Carlsbad
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 2,797.41**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Craddock Stropes
Management Analyst
City of Carlsbad

8/15/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

County of San Diego

Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: City of Carlsbad

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.C. CSDM Meeting Support (Q2)						
10/19/2010	James Wood	Sr. Environmental Specialist	1.00	$ 57.09	$ 57.09	Calculate 95% storm drain action levels
10/26/2010	James Wood	Sr. Environmental Specialist	4.50	$ 57.09	$ 256.91	Calculate 95% storm drain action levels
10/27/2010	James Wood	Sr. Environmental Specialist	3.00	$ 57.09	$ 171.27	Calculate 95% storm drain action levels
10/28/2010	James Wood	Sr. Environmental Specialist	5.50	$ 57.09	$ 314.00	Calculate 95% storm drain action levels
10/29/2010	James Wood	Sr. Environmental Specialist	2.50	$ 57.09	$ 142.73	Calculate 95% storm drain action levels
11/15/2010	James Wood	Sr. Environmental Specialist	3.50	$ 57.09	$ 199.82	Annual Report Preparation
11/16//2010	James Wood	Sr. Environmental Specialist	4.50	$ 57.09	$ 256.91	Annual Report Preparation
11/17/2010	James Wood	Sr. Environmental Specialist	6.00	$ 57.09	$ 342.54	Annual Report Preparation
11/22/2010	James Wood	Sr. Environmental Specialist	7.50	$ 57.09	$ 428.18	Annual Report Preparation
11/24/2010	James Wood	Sr. Environmental Specialist	4.00	$ 57.09	$ 228.36	Annual Report Preparation
Sub-total	$ 2,397.78					
Subtask 1.C. CSDM Meeting Support (Q3)						
01/11/2011	James Wood	Sr. Environmental Specialist	3.00	$ 57.09	$ 171.27	Annual Report Preparation, edits, formatting
01/12/2011	James Wood	Sr. Environmental Specialist	2.00	$ 57.09	$ 114.18	Annual Report Preparation, edits, formatting
01/13/2011	James Wood	Sr. Environmental Specialist	2.00	$ 57.09	$ 114.18	Annual Report Preparation, edits, formatting
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 399.63					
Copermittee Total					**$ 2,797.41**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: Port of San Diego

Period: 2nd and 3rd Qrt. FY 2010-11 (Oct. 1 2010 - Mar. 31, 2011)

Expenditure Type(s): Hourly Expenditures Only

Hourly Expenditures Claimed: $ 2,669.90

Contract / Other Expenditures Claimed: $ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

[Name] Karen Holman
[Title] Senior Environmental Specialist
[Organization] Port of San Diego

8/29/2011
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

Date

Signature

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: Port of San Diego

Period: 2nd and 3rd Qrt. FY 2010-11 (Oct. 1 2010 - Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.C CSDM Meeting Support (Q2)						
12/3/2010	Karen Holman	Sr Environmental Specialist	3.00	$ 69.05	$ 207.15	Annual Report Preparation
12/6/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Annual Report Preparation
12/8/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Annual Report Preparation
12/13/2010	Karen Holman	Sr Environmental Specialist	3.00	$ 69.05	$ 207.15	Annual Report Preparation
12/14/2010	Karen Holman	Sr Environmental Specialist	3.00	$ 69.05	$ 207.15	Annual Report Preparation
12/28/2010	Karen Holman	Sr Environmental Specialist	4.00	$ 69.05	$ 276.20	Annual Report Preparation
12/29/2010	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Annual Report Preparation
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 1,311.95					
Subtask 1.C CSDM Meeting Support (Q3)						
1/6/2011	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Annual Report Preparation, edits, formatting
1/10/2011	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Annual Report Preparation, edits, formatting
1/12/2011	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Annual Report Preparation, edits, formatting
1/13/2011	Karen Holman	Sr Environmental Specialist	1.00	$ 69.05	$ 69.05	Annual Report Preparation, edits, formatting
1/19/2011	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Annual Report Preparation, edits, formatting
1/20/2011	Karen Holman	Sr Environmental Specialist	2.00	$ 69.05	$ 138.10	Annual Report Preparation, edits, formatting
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 621.45					
Subtask1.C CSDM Meeting Support (Q3)						
1/6/2011	Philip Gibbons	Asst. Env Specialist	4.00	$ 49.10	$ 196.40	Develop GIS figures; Annual Report preparation
1/11/2011	Philip Gibbons	Asst. Env Specialist	5.00	$ 49.10	$ 245.50	Develop GIS figures; Annual Report preparation
1/20/2011	Philip Gibbons	Asst. Env Specialist	6.00	$ 49.10	$ 294.60	Develop GIS figures; Annual Report preparation
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: Port of San Diego

Period: 2nd and 3rd Qrt. FY 2010-11 (Oct. 1 2010 - Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ 736.50					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 49.10	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: Port of San Diego

Period: 2nd and 3rd Qrt. FY 2010-11 (Oct. 1 2010 - Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 2,669.90**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Monitoring Workgroup
Copermittee:	City of San Diego
Period:	1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 10,718.51

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Andre L. Sonksen
Biologist III
City of San Diego Storm Water Division

8-24-10
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: City of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Bight 08 Bacteria Study, Lab analyses costs.				
Public Utilities Marine Mircobiology Lab	$ 10,208.10	8/31/2010	$ 510.41	Bacteria lab analysis in support of Bight 08/SIPP study
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ 10,208.10				
Subtaskx.x Management Cost $ 510.41				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 10,718.51**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Monitoring Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 3,476.00**
Contract / Other Expenditures Claimed:	**$ 2,552,336.23**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jo Ann Weber
Regional Monitoring Workgroup Co-chair
[Organization]

~~8/24~~ 31/2011
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Regional Monitoring Workgroup Co-chair
County of San Diego

8/31/2011
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.A. Regional Monitoring Workgroup Meeting Support						
1/21/2011	Jo Ann Weber	Program Coordinator	5.00	$ 88.00	$ 440.00	Research Permit reissuance issues and prepare presentation
3/8/2011	Jo Ann Weber	Program Coordinator	1.50	$ 88.00	$ 132.00	Revised Annual Monitoirng Data presentation
3/28/2011	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	Prepare presentation for Copermitees Wkshp # 1- ROWD/LTEA
4/25/2011	Jo Ann Weber	Program Coordinator	3.00	$ 88.00	$ 264.00	Prepare presentation for Copermitees Wkshp #2 - ROWD/LTEA
5/20/2011	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	Revise CSDM and Dry Weather Attachments to ROWD
5/23/2011	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	Revise CSDM Attachment to ROWD
5/24/2011	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	Revise Draft Monitoirng sections of ROWD Attachments
6/10/2011	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	Revise preliminary sections of ROWD/LTEA power analysis
6/15/2011	Jo Ann Weber	Program Coordinator	6.00	$ 88.00	$ 528.00	Revise monitoring sections of ROWD.LTEA
6/16/2011	Jo Ann Weber	Program Coordinator	6.00	$ 88.00	$ 528.00	Revise monitoring sections and prepare response to comments
Sub-total	$ 2,948.00					
Subtask 2.B. FY2011-12 Work Plan and Budget						
8/15/2010	Jo Ann Weber	Program Coordinator	4.00	$ 88.00	$ 352.00	prepare budget for 2011-12
10/15/2010	Jo Ann Weber	Program Coordinator	2.00	$ 88.00	$ 176.00	update budget and work plan for 2011-12
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 528.00					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ 3,476.00**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 3.A. Regional Monitoring Program				
WESTON (contract No. 534965-rpt, Task 1)	$ 37,772.00	10/27/2010	$ 1,888.60	monthly invoice
	$ 110,299.00	11/18/2010	$ 5,514.95	monthly invoice
	$ 73,843.50	12/17/2010	$ 3,692.18	monthly invoice
	$ (4,775.00)	4/8/2011	$ (238.75)	monthly invoice
	$ 73,333.10	4/13/2011	$ 3,666.66	monthly invoice
WESTON (contract No. 514270)	$ 273,067.97	8/27/2010	$ 13,653.40	includes 212,464.89 9/29/10 invoice
	$ 228,963.60	10/25/2010	$ 11,448.18	includes $123,852.76 11/16/10 invoice
	$ 69,914.05	12/14/2010	$ 3,495.70	includes $33,312.73 1/4/11 invoice
WESTON (contract No. 514270)	$ 85,433.98	6/3/2011	$ 4,271.70	
	$ -		$ -	
Subtaskx.x Sub-total $ 947,852.20				
Subtaskx.x Management Cost $ 47,392.61				
Subtask 3.A. Contd- Regional Monitoring Program				
WESTON (contract No. 535693-mon)	$ 201,961.30	4/26/2011	$ 10,098.07	monthly invoice
	$ 134,627.38	5/9/2011	$ 6,731.37	monthly invoice
	$ 201,210.95	6/27/2011	$ 10,060.55	monthly invoice
	$ 615,097.37		$ 30,754.87	to be invoiced
SCCWRP (contract No. 530522 - Bight 08 bacti Regrowth)	$ 57,500.00	10/15/2010	$ 2,875.00	includes 1/17/11 invoice of 10 k
	$ 77,323.00	4/17/2011	$ 3,866.15	includes 6/7/11 invoice of $27,367
	$ -		$ -	
Subtaskx.x Sub-total ###########				
Subtaskx.x Management Cost $ 64,386.00				
Subtask 3.C. 5-Year Regional Monitoring Program Assessment and updating for ROWD and LTEA				

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

WESTON (contract No. 534965-rpt, Tasks 2 and 3)		$ 6,035.00	11/18/2010	$ 301.75	monthly invoice
		$ 49,174.50	12/17/2010	$ 2,458.73	monthly invoice
		$ (1,001.00)	4/8/2011	$ (50.05)	monthly invoice
		$ 40,529.00	4/13/2011	$ 2,026.45	monthly invoice
		$ 42,825.00	6/7/2011	$ 2,141.25	monthly invoice
		$ 900.00	7/7/2011	$ 45.00	monthly invoice
		$ -		$ -	
Subtaskx.x Sub-total	$ 138,462.50				
Subtaskx.x Management Cost	$ 6,923.13				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask 3.C. contd: 5-Year Reg Mon- LTEA/ROWD		$ 22,320.82	5/6/2011		
MACTEC (Contract No. 536213, Task 1)- Armand Ruby		$ 34,440.88	7/1/2011		
5 % contracting Fee		$ 2,838.09			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
Sub-total Other Expenditures	$ 59,599.79				
Total Expenditures (Including contract management cost)		**$ 2,552,336.23**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Municipal Sources Workgroup
Copermittee:	City of La Mesa
Period:	3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 481.12**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Joe Kuhn
Storm Water Program Manager
City of La Mesa

5/12/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name] Chris Hanger
[Title] Land Use Environmental Planner III
County of San Diego

6/7/11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Municipal Sources Workgroup

Copermittee: City of La Mesa

Period: 3rd Quarter FY 2010-11 (Jan. 1- Mar. 31, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.C. [MUNICIPAL VIDEO]						
01/25/2011	Joe Kuhn	Storm Water Pgm Mgr.	3.00	$ 60.14	$ 180.42	Script Development
02/07/2011	Joe Kuhn	Storm Water Pgm Mgr.	3.00	$ 60.14	$ 180.42	Script Development
03/16/2011	Joe Kuhn	Storm Water Pgm Mgr.	2.00	$ 60.14	$ 120.28	Script Development
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 481.12					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Municipal Sources Workgroup
Copermittee:	City of La Mesa
Period:	4th Quarter FY 2010-11 (April 1- June 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 360.84**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Joe Kuhn
Storm Water Program Manager
City of La Mesa

8/22/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name]
[Title]
County of San Diego

Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Municipal Sources Workgroup

Copermittee: City of La Mesa

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 3.C. Municipal Video						
05/23/2011	Joe Kuhn	Storm Water Program Mgr.	2.00	$ 60.14	$ 120.28	Scheduling- Shoot Coordination- Scene Review
06/15/2011	Joe Kuhn	Storm Water Program Mgr.	2.00	$ 60.14	$ 120.28	Video Shoot Location
06/30/2011	Joe Kuhn	Storm Water Program Mgr.	2.00	$ 60.14	$ 120.28	Video Review, Comment Solicitaion/Consolidation
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 360.84					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Municipal Sources Workgroup
Copermittee:	City of Del Mar
Period:	4th Quarter FY 2010-11 (April 1- June 30, 2011)
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 1,386.61

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Kathleen Garcia
Community Development and Planning Director
City of Del Mar

Sept 12, 2011
Date

Kathleen Garcia
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name] Christopher Hanger
[Title] LUEP III
County of San Diego

Sept. 12, 2011
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Municipal Sources Workgroup

Copermittee: City of Del Mar

Period: 4th Quarter FY 2010-11 (April 1- June 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 3.A. and 3.B. [Municipal Inventory and Municipal Prioritization]				
As-Needed Services Agreement (MOE)	$ 189.88	5/16/2011	$ 9.49	see attached invoice
As-Needed Services Agreement (MOE)	$ 1,130.70	7/19/2011	$ 56.54	see attached invoice
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ 1,320.58				
Subtaskx.x Management Cost $ 66.03				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost) $ 1,386.61				

Final 04-30-09

MOE
MIKHAIL OGAWA ENGINEERING

5/9/2011

City of Del Mar
Kathleen Garcia
1050 Camino del Mar
Del Mar, California 92014

Project No. 002.006.007
Invoice No. 000950
P.O. Number -

TO 2011-01 - Program Support Services

Description of Services	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between April 1, 2011 and April 30, 2011			
Principal Engineer coordination and project management	0.75	110.09	82.57
Associate Scientist Municipal inventory questions for Copermittees; Municipal inventory fields, per ind/comm inventory	1.25	85.85	107.31

DATE REC'D
VENDOR I.D.
ACCOUNT AMOUNT
55 5539 3200 189.88
INVOICE TOTAL
APPROVAL Kgarcia 5/16/11

will be submitting for reimbursement

Total this invoice $189.88

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

MOE

MIKHAIL OGAWA ENGINEERING

7/18/2011

City of Del Mar
Kathleen Garcia
1050 Camino del Mar
Del Mar, California 92014

Project No. 002.006
Invoice No. 000983
P.O. Number -

TO 2011-01 - Program Support Services

Description of Services	Hours/Qty	Rate	Amount
Professional Services			
Services Provided June 1, 2011 through June 30, 2011 - Reimbursable from Municipal Workgroup			
Principal Engineer coordination for completing draft muni inventory	0.5	110.09	55.05
Engineering Student municipal inventory: combining all municipal inventories	17.75	60.60	1,075.65

DATE REC'D FY11
VENDOR I.D.
ACCOUNT AMOUNT
55 5529.3280 1130.70
INVOICE TOTAL
APPROVAL Kgarcia

RECEIVED
JUL 19 2011
City of Del Mar
Planning Department

Total this invoice **$1,130.70**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

invoice
2 of 3

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: ~~County of San Diego~~ City of Escondido

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Expenditure Type(s): Hourly Expenditures Only

Hourly Expenditures Claimed: $ -

Contract / Other Expenditures Claimed: $ 5,250.00

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

[Name] Cheryl Filar
[Title] Environmental Programs Manager
[Organization] City of Escondido

31-Aug-11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name] Christopher Hanger
[Title] LUEP III
County of San Diego

Sept. 12, 2011
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: County of San Diego

Period: 1st Quarter FY 2010-11 (July 1- Sept. 30, 2010)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			Auto-calc'd (5% of amount paid)	
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ 5,000.00	6/26/2011	$ 250.00	Municipal Regional Training Video
Municipal Storm Water Training Video--"Preventing Storm	$ -		$ -	
Water Pollution, What We Can Do, San Diego Regional			$ -	
Training Video"	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ 5,000.00				
Subtaskx.x Management Cost $ 250.00				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]				
Contract X [ENTER CONTRACT TITLE / #]	$ -	x/x/2010	$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtaskx.x Sub-total $ -				
Subtaskx.x Management Cost $ -				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO	$ -	x/x/2010		
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost) $ 5,250.00				

Final 04-30-09

INVOICE

Impact Media

Mark Hartenau
2222 Guy Street
San Diego, CA 92103
Phone (858) 395-2016

TO:
City of Escondido
Utilities Administration Division
Attn: Cheryl Filar
Environmental Programs Manager
201 N. Broadway
Escondido CA, 92025

FOR:
Municipal Storm Water Training Video
Title: "Preventing Storm Water Pollution. What We Can Do. San Diego Regional Training Video."

DATE:
6-10-11

DESCRIPTION	TIME	RATE	AMOUNT
Video shoots			2,400.00
Equipment Rental (HD camera, voice-over microphone, lights)			
Vehicle gasoline reimbursement			
Staff meetings			1,500.00
Video editing (post production) & Spanish language over-dub & subtitles.			1,000.00
DVD-R Duplication (black print on silver discs with clear, plastic cases)			100.00
		TOTAL AMOUNT DUE	$5,000.00

5131-558-440

Thank you for your business!

Fund	Acct	Acct Description	Prog	Proj	Expended Amount	Date	Type	ID	Vendor Short Name	Expenditure Description
558	5131	Professional Services			4,739.00	02/07/2011	Voucher	00541000	CITY CARLS-0	Watershed Cost Share
558	5131	Professional Services			78,481.00	02/07/2011	Voucher	00541011	COUNTY OF-0	STORMWATER PROGRAM
558	5131	Professional Services			540.00	03/14/2011	Voucher	00544005	MIKHAIL OG-0	SRVCS Feb 2011
558	5131	Professional Services			3,785.00	03/14/2011	Voucher	00544006	MIKHAIL OG-0	SRVCS Jan 2011
558	5131	Professional Services			905.55	03/15/2011	Voucher	00544142	AECOM-001	SUPPLIES
558	5131	Professional Services			2,406.84	03/15/2011	Voucher	00544141	AECOM-001	SUPPLIES
558	5131	Professional Services			3,832.89	03/22/2011	Voucher	00544662	AECOM-001	services
558	5131	Professional Services			268.55	04/12/2011	Voucher	00546356	AECOM-001	SERVICES THRU 2/25/11
558	5131	Professional Services			2,172.51	04/12/2011	Voucher	00546357	AECOM-001	SERVICES THRU 2/25/11
558	5131	Professional Services			639.23	05/10/2011	Voucher	00548665	AECOM-001	11280120.01 SVC THRU 4/1/11
558	5131	Professional Services			762.94	05/10/2011	Voucher	00548671	AECOM-001	10280281.01 SVC THRU 4/1/11
558	5131	Professional Services			405.00	05/19/2011	Voucher	00549478	MIKHAIL OG-0	SRVCS-March 2011
558	5131	Professional Services			500.00	05/19/2011	Voucher	00549477	ILACSD-001	2011 Creek to Bay Cleanup
558	5131	Professional Services			765.00	05/19/2011	Voucher	00549480	MIKHAIL OG-0	SRVCS-April 2011
558	5131	Professional Services			2,404.43	05/23/2011	Voucher	00549554	AECOM-001	SERVICES 10280281.01
558	5131	Professional Services			816.00	06/14/2011	Voucher	00551222	LOUNSBERY-0	SRVCS-March 2011
558	5131	Professional Services	60067		110.12	06/26/2011	Voucher	00553007	PLUMBERS-00	Estimated Labor
558	5131	Professional Services	60067		750.19	06/26/2011	Voucher	00553007	PLUMBERS-00	Estimated Freight for Parts
558	5131	Professional Services			5,000.00	06/26/2011	Voucher	00552618	HARTENAU M-	SERVICE
558	5131	Professional Services			5,496.10	06/26/2011	Voucher	00552882	AECOM-001	SERVICES THRU 12/31/11
558	5131	Professional Services	60067		15,973.75	06/26/2011	Voucher	00553007	PLUMBERS-00	Miscellaneous parts required t
558	5131	Professional Services			55,000.00	06/26/2011	Voucher	00553867	CITY SAN M-00	SVCS; JULY 2010-JUNE 30, 2011
558	5131	Professional Services			1,268.42	06/28/2011	Voucher	00552476	AECOM-001	SVCS JURMP SUPPORT FY 2011
558	5131	Professional Services			1,746.66	06/28/2011	Voucher	00552475	AECOM-001	SVCS REG CHANNEL MAINT
558	5131	Professional Services			4,332.43	06/28/2011	Voucher	00552477	AECOM-001	SVCE JURMP SUPPORT FY 2011

Expended For Account 5131 - Professional Services 368,751.94 (29.26%)
Budgeted For Account 5131 - Professional Services 1,260,400.00

Remaining For Account 5131 - Professional Services 891,648.06

558	5160	Training & Meetings			157.18	08/27/2010	Journal	PR08271001		PS PAYROLL GENERATED LEDGER
558	5160	Training & Meetings			215.18	09/10/2010	Journal	PR09101001		PS PAYROLL GENERATED LEDGER
558	5160	Training & Meetings			329.40	09/22/2010	Voucher	00530458	US BANK-001	424644555649486 BKCRD CHG
558	5160	Training & Meetings			391.40	09/22/2010	Voucher	00530461	US BANK-001	424644555649486 BKCRD CHG
558	5160	Training & Meetings			1,761.45	12/03/2010	Journal	PR12031001		PS PAYROLL GENERATED LEDGER
558	5160	Training & Meetings			7.05	04/25/2011	Voucher	00547338	PETTY CASH-0	PETTY CASH

Expended For Account 5160 - Training & Meetings 2,861.66 (114.47%)
Budgeted For Account 5160 - Training & Meetings 2,500.00

Remaining For Account 5160 - Training & Meetings -361.66

558	5161	Mileage Reimbursement			24.00	07/30/2010	Journal	PR07301001		PS PAYROLL GENERATED LEDGER
558	5161	Mileage Reimbursement			210.50	08/13/2010	Journal	PR08131001		PS PAYROLL GENERATED LEDGER
558	5161	Mileage Reimbursement			-130.50	11/05/2010	Journal	PR11051001		PS PAYROLL GENERATED LEDGER
558	5161	Mileage Reimbursement			130.50	11/05/2010	Journal	PR11051001		PS PAYROLL GENERATED LEDGER

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Program Planning Subcommittee
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 6,577.52**
Contract / Other Expenditures Claimed:	**$ -**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego

9/9/2011
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2009-10 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego

9/26/11
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 1.A. Program Planning Subcommittee and Regional Management Committee Meeting Support						
10/4/2010	Jon Van Rhyn	Water Quality Program Manager	3.00	$ 77.42	$ 232.26	Materials preparation for 10/7/10 PPS meeting
1/3/2010	Jon Van Rhyn		3.00	$ 77.42	$ 232.26	Materials preparation for 1/6/11 PPS meeting
11/15/2010	Jon Van Rhyn		6.00	$ 77.42	$ 464.52	Materials preparation for 11/18/10 RMC meeting
1/17/2011	Jon Van Rhyn		6.00	$ 77.42	$ 464.52	Materials preparation for 1/20/11 RMC meeting
4/19/2010	Jon Van Rhyn		6.00	$ 77.42	$ 464.52	Materials preparation for 4/21/11 RMC meeting
6/20/2010	Jon Van Rhyn		6.00	$ 77.42	$ 464.52	Materials preparation for 6/23/11 RMC meeting
Sub-total	$ 2,322.60					
Subtask 2.A. FY 2011-12 Planning Subcommittee Work Plan and Budget						
10/15/2010	Jon Van Rhyn	Water Quality Program Manager	6.00	$ 77.42	$ 464.52	Drafting PPS budget; circulating for review; preparing explanatory materials for discussion.
Sub-total	$ 464.52					
Subtask 2.B. FY 2009-10 Regional URMP Annual Report Input and Completion						
1/20/2011	Sheri McPherson	LUEP III	18.00	$ 59.00	$ 1,062.00	Preparation of RURMP Annual Report (drafting materials; soliciting input from working bodies; collating materials; distributing for review) (charges are from 12/15/10 through 1/20/11)
Sub-total	$ 1,062.00					
Subtask 2.C. FY 2011-12 Consolidated Regional Work Plan and Budget						
4/20/2011	Jon Van Rhyn	Water Quality Program Manager	20.00	$ 77.42	$ 1,548.40	Drafting proposed alternative workgroup structure; distributing for Copermittee comment and consideration (charges are from 1/10/11 through 4/20/11)
4/20/2011	Sheri McPherson	LUEP III	20.00	$ 59.00	$ 1,180.00	Distributing work pland and budget materials for review and comment; preparing materials for RMC consideration; collating materials from working bodies (charges are from 1/10/11 through 4/20/11)
Sub-total	$ 2,728.40					
Copermittee Total					**$ 6,577.52**	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	City of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 458.80
Contract / Other Expenditures Claimed:	$ 30,386.63

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Drew Kleis
Program Manager
City of San Diego

9/26/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2011-12 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

6/22/11
Date

Signature

~~Final 04-30-09~~

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional WURMP Workgroup

Copermittee: City of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures			**Auto-calc'd (5% of amount paid)**	
Subtask 2.E. [Watershed Data, Reporting, and Assessment Needs] - VISIONING				
Tetra Tech TC#: 100-FFX-26393-01, Katz & Assoc. Subcontractor	$ 499.50	8/31/2010	$ 24.98	Support for Vision workshops August 2010
Tetra Tech TC#: 100-FFX-26393-01, Katz & Assoc. Subcontractor	$ 3,296.70	9/30/2010	$ 164.84	Support for Vision workshops September 2010
Tetra Tech TC#: 100-FFX-26393-01, Katz & Assoc. Subcontractor	$ 2,597.40	12/31/2010	$ 129.87	Support for Vision workshops October 2010
Tetra Tech TC#: 100-FFX-26393-01, Katz & Assoc. Subcontractor	$ 2,347.65	12/31/2010	$ 117.38	Support for Vision workshops November 2010
Tetra Tech TC#: 100-FFX-26393-01, Katz & Assoc. Subcontractor	$ 599.40	12/31/2010	$ 29.97	Support for Vision workshops December 2010
	$ -		$ -	
	$ -		$ -	
Subtask 2.E. Sub-total $ 9,340.65				
Subtask 2.E. Management Cost $ 467.03				
Subtask 2.H. [Regional TMDL Implementation Planning]				
Tetra Tech TC#: 100-FFX-26393-01, Task Order #34	$ 1,677.00	Various	$83.85	Project mgmt. and reporting to support CLRP Framework Development
Tetra Tech TC#: 100-FFX-26393-01, Task Order #34	$ 1,784.00	Various	$89.20	Meetings to support CLRP Framework Development
Tetra Tech TC#: 100-FFX-26393-01, Task Order #34	$ 24,658.00	Various	$1,232.90	Development of CLRP Framework
	$ -			
	$ -			
Subtask 2.H. Sub-total $28,119.00				
Subtask 2.H. Management Cost $1,405.95				
Total Expenditures (Including contract management cost)	**$ 37,926.68**			

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: City of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task 1 [Regional WURMP Workgroup Meeting Support]						
None					$ -	
Sub-total	$ -					
Subtask 2.F. [Watershed Activities Database]						
2/16/2011	Stephanie Bracci	Associate Planner	2.00	$ 45.88	$ 91.76	database training/testing
2/22/2011	Stephanie Bracci	Associate Planner	1.00	$ 45.88	$ 45.88	database testing
3/7/2011	Stephanie Bracci	Associate Planner	1.00	$ 45.88	$ 45.88	database testing and review of comments
3/10/2011	Stephanie Bracci	Associate Planner	2.50	$ 45.88	$ 114.70	mtg with workgroup and mtg room set up
3/14/2011	Stephanie Bracci	Associate Planner	0.50	$ 45.88	$ 22.94	follow up from last mtg, arranging next mtg time, booking conf room, logistics
3/15/2011	Stephanie Bracci	Associate Planner	0.50	$ 45.88	$ 22.94	editing the WURMP AR text guidelines
3/28/2010	Stephanie Bracci	Associate Planner	2.50	$ 45.88	$ 114.70	database training meeting with copermittees
Sub-total	$ 458.80					
Subtask 2.H. [Regional TMDL Implementation Planning]						
None						
Sub-total	$ -					
Copermittee Total					**$ 458.80**	

City of San Diego

FY 2010-11 Expenditures Documentation

Sub-task 2E

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
December 31, 2010

INVOICE

Invoice Number
406741

Accounts Payable
Tetra Tech
10306 Eaton Place Suite 340
Fairfax, VA 22030-2201

Katz Project ID: LJ3305L

Prime Contract TC#: 100-FFX-26393-01
Not to Exceed Amount: $13,525.00
Completion Date: June 30, 2011

Billing Period from 10/1/2010 through 10/31/2010

Storm Water Facilitation

SUMMARY OF JOB CHARGES	Hours	Labor	Costs	Total
01-00 Facilitation	13.00	$ 2,597.40	$ 0.00	2,597.40
03-00 County Co-permittee Facilitation	13.00	$ 2,597.40	$ 0.00	2,597.40
GRAND TOTAL	26.00	$ 5,194.80	$ 0.00	5,194.80

Invoice Total **$ 5,194.80**

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
December 31, 2010

INVOICE

Invoice Number
406742

Accounts Payable
Tetra Tech
10306 Eaton Place Suite 340
Fairfax, VA 22030-2201

Katz Project ID: LJ3305L

Prime Contract TC#: 100-FFX-26393-01
Not to Exceed Amount: $13,525.00
Completion Date: June 30, 2011

Billing Period from 11/1/2010 through 11/30/2010

Storm Water Facilitation

SUMMARY OF JOB CHARGES		Hours		Labor		Costs	Total
01-00 Facilitation		4.75	$	949.05	$	0.00	949.05
03-00 County Co-permittee Facilitation		11.75	$	2,347.65	$	0.00	2,347.65
	GRAND TOTAL	16.50	$	3,296.70	$	0.00	3,296.70

Invoice Total **$ 3,296.70**

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
December 31, 2010

INVOICE

Invoice Number
406743

Accounts Payable
Tetra Tech
10306 Eaton Place Suite 340
Fairfax, VA 22030-2201

Katz Project ID: LJ3305L

Prime Contract TC#: 100-FFX-26393-01
Not to Exceed Amount: $13,525.00
Completion Date: June 30, 2011

Billing Period from 12/1/2010 through 12/31/2010

Storm Water Facilitation

SUMMARY OF JOB CHARGES	Hours	Labor	Costs	Total
01-00 Facilitation	4.00	$ 799.20	$ 0.00	799.20
03-00 County Co-permittee Facilitation	3.00	$ 599.40	$ 0.00	599.40
GRAND TOTAL	7.00	$ 1,398.60	$ 0.00	1,398.60

Invoice Total **$ 1,398.60**

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
August 31, 2010

INVOICE

Invoice Number
406485

Accounts Payable
Tetra Tech
10306 Eaton Place Suite 340
Fairfax, VA 22030-2201

Katz Project ID: LJ3305L

Prime Contract TC#: 100-FFX-26393-01
Not to Exceed Amount: $13,525.00
Completion Date: June 30, 2011

Billing Period from 8/1/2010 through 8/31/2010

01-00 Facilitation

	Current Hours	Rate	Current Amount
Professional Services			
Lewis Michaelson - Vice President	9.25	199.80	1,848.15
Patricia Tennyson - Senior Outreach Specialist	8.75	199.80	1,748.25
Total for Professional Services:	18.00		3,596.40

Direct Costs

08/05/10	Patricia Tennyson	Mileage: Prep meeting for TAC 2	6.75
08/18/10	Patricia Tennyson	Mileage: Review presentation	6.75
08/24/10	Patricia Tennyson	Mileage: Facilitate TAC 2	10.00
08/24/10	Patricia Tennyson	Parking: Facilitate TAC 2	3.00
08/26/10	Patricia Tennyson	Mileage: Debrief TAC 2/plan	6.75
		Total for Direct Costs:	33.25

Total Billings for 01-00 Facilitation this invoice **3,629.65**

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
August 31, 2010

INVOICE

Invoice Number
406485

Accounts Payable
Tetra Tech
10306 Eaton Place Suite 340
Fairfax, VA 22030-2201

Katz Project ID: LJ3305L

Prime Contract TC#: 100-FFX-26393-01
Not to Exceed Amount: $13,525.00
Completion Date: June 30, 2011

Billing Period from 8/1/2010 through 8/31/2010

03-00 County Co-permittee Facilitation

	Current Hours	Rate	Current Amount
Professional Services			
Lewis Michaelson - Vice President	2.50	199.80	499.50
Total for Professional Services:	2.50		499.50
Total Billings for 03-00 County Co-permittee Facilitation			**499.50**

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
August 31, 2010

INVOICE

Invoice Number
406485

REVISED

Accounts Payable
Tetra Tech
10306 Eaton Place Suite 340
Fairfax, VA 22030-2201

PAID

Katz Project ID: LJ3305L

Prime Contract TC#: 100-FFX-26393-01
Not to Exceed Amount: $13,525.00
Completion Date: June 30, 2011

Billing Period from 8/1/2010 through 8/31/2010

Storm Water Facilitation

SUMMARY OF JOB CHARGES	Hour	Labor	Costs	Total
01-00 Facilitation	18.00	$ 3,596.40	$ 33.25	3,629.65
03-00 County Co-permittee Facilitation	2.50	$ 499.50	$ 0.00	499.50
GRAND TOTAL	20.50	$ 4,095.90	$ 33.25	4,129.15

Invoice Total **$ 4,129.15**

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
September 30, 2010

INVOICE

Invoice Number
406543

REVISED

Accounts Payable
Tetra Tech
10306 Eaton Place Suite 340
Fairfax, VA 22030-2201

$ PAID

Katz Project ID: LJ3305L

Prime Contract TC#: 100-FFX-26393-01
Not to Exceed Amount: $13,525.00
Completion Date: June 30, 2011

Billing Period from 9/1/2010 through 9/30/2010

Storm Water Facilitation

SUMMARY OF JOB CHARGES	Hour	Labor	Costs	Total
01-00 Facilitation	10.25	$ 2,047.95	$ 0.00	2,047.95
03-00 County Co-permittee Facilitation	16.50	$ 3,296.70	$ 0.00	3,296.70
GRAND TOTAL	26.75	$ 5,344.65	$ 0.00	5,344.65

Invoice Total **$ 5,344.65**

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
September 30, 2010

INVOICE

Invoice Number
406543

Accounts Payable
Tetra Tech
10306 Eaton Place Suite 340
Fairfax, VA 22030-2201

Katz Project ID: LJ3305L

Prime Contract TC#: 100-FFX-26393-01
Not to Exceed Amount: $13,525.00
Completion Date: June 30, 2011

Billing Period from 9/1/2010 through 9/30/2010

01-00 Facilitation

	Current Hours	Rate	Current Amount
Professional Services			
Lewis Michaelson - Vice President	10.25	199.80	2,047.95
Total for Professional Services:	10.25		2,047.95
Total Billings for 01-00 Facilitation this invoice			**2,047.95**

03-00 County Co-permittee Facilitation

	Current Hours	Rate	Current Amount
Professional Services			
Lewis Michaelson - Vice President	16.50	199.80	3,296.70
Total for Professional Services:	16.50		3,296.70
Total Billings for 03-00 County Co-permittee Facilitation			**3,296.70**

Sub-task 2H

TM
2/7

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2740

INVOICE NO.: 50427977
DATE: February 4, 2011
TC#: 100-FFX-T26923
Contract#: RR-304456/H084445
PO#: 4500018000
Task#: Task Order 34
Invoice Seq#: 1

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II

SB

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: Inception through January 21, 2011

OK with changes and work complete for Bact TMDL
Clm

Total Amount Now Due: $ 4,019.48

RECEIVED
FEB 07 2011
by: TM

APPROVED FOR PAYMENT
DATE: 2-8-2011
SIGNATURE: Stephanie Bucci

FOR FURTHER INFORMATION, PLEASE CONTACT THE UNDERSIGNED.
I certify that all payments requested are for appropriate purposes and in accordance with the agreements set forth in the contract. The services set forth herein were performed during the period stated.

Aleah P. Lazo
Aleah Lazo
A/R Manager
AL:sl

Remit To:
Tetra Tech Divisions
Dept. 1654
Denver, CO 80291-1654

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2743

INVOICE NO.:	50427977
DATE:	February 4, 2011
TC#:	100-FFX-T26923
Contract#:	RR-304456/H084445
PO#:	4500018000
Task#:	Task Order 34
Invoice Seq#:	1

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II

Total Budget **$ 45,000.00**

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: **Inception through January 21, 2011**

2010 RATES

Direct Labor Costs		Current	Cumulative	Current	Cumulative
Project Manager - Clint Boschen	$174.76	21.00	21.00	$3,669.96	$3,669.96
Project Manager - Juli Hinds	$174.76	1.50	1.50	$262.14	$262.14
Contract Administrator - Angie Marciano	$87.38	1.00	1.00	$87.38	$87.38
Subtotal Labor		23.50	23.50	$4,019.48	$4,019.48

Other Direct Charges		
Freight	$0.00	$0.00
Reproduction	$0.00	$0.00
Travel - Airfare	$0.00	$0.00
Travel - Meals	$0.00	$0.00
Travel - Car Rental	$0.00	$0.00
Travel - Lodging	$0.00	$0.00
Travel - Parking	$0.00	$0.00
Travel - Mileage	$0.00	$0.00
Travel - Miscellaneous	$0.00	$0.00
Telephone Charges	$0.00	$0.00
Vehicle Rental	$0.00	$0.00
Total Travel	$0.00	$0.00
Total Due this Invoice	**$4,019.48**	**$4,019.48**

Monthly Progress Report for
Bacteria TMDL Implementation Plan Framework and Project Reduction Objectives
Inception through January 21, 2011

Contract H084445, Task Order No. 34
Purchase Order Number: 4500018000

ACTIVITIES THIS PERIOD

- Continued developing B/CLRP Framework and Reduction Objectives Matrix
- Submitted revised SOW for Subtask 3 (Development of B/CLRP Framework)
- Submitted white paper on possible approaches for developing watershed-specific CLRPs based on discussion with City managers. Included cost comparison table for watersheds affected by Beaches and Creeks Bacteria TMDLs

DELIVERABLES

- Submitted revised SOW for Subtask 3 (Development of B/CLRP Framework)
- Submitted white paper on possible approaches for developing watershed-specific CLRPs based on discussion with City managers. Included cost comparison table for watersheds affected by Beaches and Creeks Bacteria TMDLs

ACTIVITIES PLANNED FOR NEXT PERIOD

- Submit final white paper on possible approaches for developing watershed-specific CLRPs based on discussions with City managers. Include cost comparison table for watersheds affected by Beaches and Creeks Bacteria TMDLs
- Submit final revised SOW for Subtask 3 (Development of B/CLRP Framework)
- Submit draft Reduction Objectives Matrix outline for review. Schedule meeting with City to discuss

Task Order 34

Bacteria TMDL Implementation Plan Framework and Project Reduction Objectives

Inception through January 21, 2011

Project Costs

Task #	Task Description	Budgeted Cost	ITD Expenditures	Balance	% Expended
1	Project Management and Reporting	$ 45,000	$ 4,019	$ 40,981	9%
2	Meeting Support				
3	Bacteria Load Reduction Plan Framework Development				
4	Development of Reduction Objectives				
	Project Totals	**$ 45,000**	**$ 4,019**	**$ 40,981**	**9%**

Deliverable Schedule

Task #	Deliverable Title	Due Date	Status	Notes	Due Date
1	Monthly Status Reports	Monthly	On Sched.	Project kickoff meeting held on 12/8	
2	Subtask 3 & 4 meetings	Monthly	On Sched.		
3	Subtask 3 Draft BLRP Framework	30-Mar-11	On Sched.	Submitted revised SOW for Subtask 3 (Development of B/CLRP Framework). Also submitted watershed-specific CLRP approaches	
3	Subtask 3 Draft Final BLRP Framework	2 weeks of comments from City TOM	On Sched.		
3	Subtask 3 Final BLRP Framework	2 weeks of comments from City staff	On Sched.		
4	Subtask 4 Draft Reduction Objectives Matrix	31-Jan-11	On Sched.	* corrected due date	
4	Subtask 4 Final Reduction Objectives Matrix	2 weeks of comments from City staff	On Sched.		
4	Subtask 4 Completed Reduction Objectives Matrix	31-May-11	On Sched.		

TM
3/7

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2740

INVOICE NO.: 50434212
DATE: March 2, 2011
TC#: 100-FFX-T26923
Contract#: RR-304456/H084445
PO#: 4500018000
Task#: Task Order 34
Invoice Seq#: 2

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II CB

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: January 22, 2011 through February 18, 2011

Total Amount Now Due: $ 5,085.51

RECEIVED
MAR 07 2011
By: TM

Approved For Payment
PO#: 4500018000
Date: 3/14/2011
Signature:

FOR FURTHER INFORMATION, PLEASE CONTACT THE UNDERSIGNED.
I certify that all payments requested are for appropriate purposes and in accordance with the agreements set forth in the contract. The services set forth herein were performed during the period stated.

Alean Lazo
A/R Manager
AL:sl

Remit To:
Tetra Tech Divisions
Dept. 1654
Denver, CO 80291-1654

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2743

INVOICE NO.:	50434212
DATE:	March 2, 2011
TC#:	100-FFX-T26923
Contract#:	RR-304456/H084445
PO#:	4500018000
Task#:	Task Order 34
Invoice Seq#:	2

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II

Total Budget **$ 45,000.00**

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: **January 22, 2011 through February 18, 2011**

2010 RATES

Direct Labor Costs		Current	Cumulative	Current	Cumulative
Project Manager - Clint Boschen	$174.76	17.00	38.00	$2,970.92	$6,640.88
Project Manager - Juli Hinds	$174.76	10.00	11.50	$1,747.60	$2,009.74
Associate Civil Engineer - Jason Wright	$122.33	3.00	3.00	$366.99	$366.99
Contract Administrator - Angie Marciano	$87.38	0.00	1.00	$0.00	$87.38
Subtotal Labor		30.00	53.50	$5,085.51	$9,104.99

Other Direct Charges		
Freight	$0.00	$0.00
Reproduction	$0.00	$0.00
Travel - Airfare	$0.00	$0.00
Travel - Meals	$0.00	$0.00
Travel - Car Rental	$0.00	$0.00
Travel - Lodging	$0.00	$0.00
Travel - Parking	$0.00	$0.00
Travel - Mileage	$0.00	$0.00
Travel - Miscellaneous	$0.00	$0.00
Telephone Charges	$0.00	$0.00
Vehicle Rental	$0.00	$0.00
Total Travel	$0.00	$0.00
Total Due this Invoice	**$5,085.51**	**$9,104.99**

Monthly Progress Report for
Bacteria TMDL Implementation Plan Framework and Project Reduction Objectives
January 22 through February 18, 2011

Contract H084445, Task Order No. 34
Purchase Order Number: 4500018000

ACTIVITIES THIS PERIOD

- Continued developing B/CLRP Framework and Reduction Objectives Matrix. Submitted draft Reduction Objectives Matrix spreadsheet for review ✓ 1/27/11
- Submitted final SOW for Subtask 3 (Development of B/CLRP Framework)
- Submitted final white paper on possible approaches for developing watershed-specific CLRPs based on discussion with City managers. Included cost comparison table for watersheds affected by Beaches and Creeks Bacteria TMDLs

DELIVERABLES

- Submitted draft Reduction Objectives Matrix spreadsheet for review ✓1/27/11
- Submitted final SOW for Subtask 3 (Development of B/CLRP Framework)
- Submitted final white paper on possible approaches for developing watershed-specific CLRPs based on discussion with City managers. Included cost comparison table for watersheds affected by Beaches and Creeks Bacteria TMDLs

ACTIVITIES PLANNED FOR NEXT PERIOD

- Continue developing Reduction Objectives Matrix based on comments received. 2nd draft 2/24/11 Identify data gaps based on available information on City stormwater project locations
- Begin development of B/CLRP Framework based on final SOW for Subtask 3
- Participate in Regional Leads meetings with the City and co-permittees

Task Order 34

Bacteria TMDL Implementation Plan Framework and Project Reduction Objectives

January 22, through February 18, 2011

Project Costs

Task #	Task Description	Budgeted Cost	ITD Expenditures	Balance	% Expended
1	Project Management and Reporting	$ 45,000	$ 9,105	$ 35,895	20%
2	Meeting Support				
3	Bacteria Load Reduction Plan Framework Development				
4	Development of Reduction Objectives				
	Project Totals	$ 45,000	$ 9,105	$ 35,895	20%

why is nothing billed for Red Obj ??

Deliverable Schedule

Task #	Deliverable Title	Due Date	Status	Notes
1	Monthly Status Reports	Monthly	On Sched.	Project kickoff meeting held on 12/8
2	Subtask 3 & 4 meetings	Monthly	On Sched.	
3	Subtask 3 Draft BLRP Framework	30-Mar-11	On Sched.	Submitted final SOW for Subtask 3 (Development of B/CLRP Framework). Also submitted final white paper on watershed-specific CLRP approaches
3	Subtask 3 Draft Final BLRP Framework	2 weeks of comments from City TOM	On Sched.	
3	Subtask 3 Final BLRP Framework	2 weeks of comments from City staff	On Sched.	
4	Subtask 4 Draft Reduction Objectives Matrix	31-Jan-11	Submitted	
4	Subtask 4 Final Reduction Objectives Matrix	2 weeks of comments from City staff	On Sched.	
4	Subtask 4 Completed Reduction Objectives Matrix	31-May-11	On Sched.	

RECEIVED
2011
By: MB

TM
4/11

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2740

INVOICE NO.: 50441970
DATE: April 3, 2011
TC#: 100-FFX-T26923
Contract#: RR-304456/H084445
PO#: 4500018000
Task#: Task Order 34
Invoice Seq#: 3

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: February 19, 2011 through March 25, 2011

Total Amount Now Due: $ 14,918.63

FOR FURTHER INFORMATION, PLEASE CONTACT THE UNDERSIGNED.
I certify that all payments requested are for appropriate purposes and in accordance with the agreements set forth in the contract. The services set forth herein were performed during the period stated.

Alean Lazo
A/R Manager
AL:sl

Remit To:
Tetra Tech Divisions
Dept. 1654
Denver, CO 80291-1654

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2743

INVOICE NO.:	50441970
DATE:	April 3, 2011
TC#:	100-FFX-T26923
Contract#:	RR-304456/H084445
PO#:	4500018000
Task#:	Task Order 34
Invoice Seq#:	3
Total Budget	**$ 45,000.00**

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: **February 19, 2011 through March 25, 2011**

2010 RATES

Direct Labor Costs		Current	Cumulative	Current	Cumulative
Principal - John Craig	$203.87	1.00	1.00	$203.87	$203.87
Project Manager - Kimberly Brewer	$174.76	31.00	31.00	$5,417.56	$5,417.56
Project Manager - Clint Boschen	$174.76	26.00	64.00	$4,543.76	$11,184.64
Project Manager - Juli Hinds	$174.76	20.00	31.50	$3,495.20	$5,504.94
Associate Civil Engineer - Jason Wright	$122.33	0.00	3.00	$0.00	$366.99
Contract Administrator - Angie Marciano	$87.38	0.00	1.00	$0.00	$87.38
Junior Water Resources Specialist- Edith Moreno	$78.64	16.00	16.00	$1,258.24	$1,258.24
Subtotal Labor		94.00	147.50	$14,918.63	$24,023.62

Other Direct Charges		
Freight	$0.00	$0.00
Reproduction	$0.00	$0.00
Travel - Airfare	$0.00	$0.00
Travel - Meals	$0.00	$0.00
Travel - Car Rental	$0.00	$0.00
Travel - Lodging	$0.00	$0.00
Travel - Parking	$0.00	$0.00
Travel - Mileage	$0.00	$0.00
Travel - Miscellaneous	$0.00	$0.00
Telephone Charges	$0.00	$0.00
Vehicle Rental	$0.00	$0.00
Total Travel	$0.00	$0.00
Total Due this Invoice	**$14,918.63**	**$24,023.62**

Approved For Payment
PO#: 4500018000
Date: 4/13/2011
Signature:

Monthly Progress Report for
Bacteria TMDL Implementation Plan Framework and Project Reduction Objectives
February 19 through March 25, 2011

Contract H084445, Task Order No. 34
Purchase Order Number: 4500018000

ACTIVITIES THIS PERIOD

- Submitted Draft CLRP Framework document. Presented at the WURP Regional Leads meeting on March 23. Comments from copermittees due April 6
- Submitted revised version of the Reduction Objectives Matrix spreadsheet for review. Provided list of questions to help finalize the design

DELIVERABLES

- Submitted Draft CLRP Framework document. Presented at the WURP Regional Leads meeting on March 23. Comments due April 6
- Submitted revised version of the Reduction Objectives Matrix spreadsheet for review

ACTIVITIES PLANNED FOR NEXT PERIOD

- Develop Draft Final CLRP Framework document based on comments received from the copermittees
- Continue developing the Reduction Objectives Matrix spreadsheet based on comments received
- Participate in Regional Leads meetings with the City and copermittees

Task Order 34

Bacteria TMDL Implementation Plan Framework and Project Reduction Objectives

February 19 through March 25, 2011

Project Costs

Task #	Task Description	Budgeted Cost	ITD Expenditures	Balance	% Expended
1	Project Management and Reporting	$ 45,000	$ 24,024	$ 20,976	53%
2	Meeting Support				
3	Bacteria Load Reduction Plan Framework Development				
4	Development of Reduction Objectives				
	Project Totals	**$ 45,000**	**$ 24,024**	**$ 20,976**	**53%**

Deliverable Schedule

Task #	Deliverable Title	Due Date	Status	Notes
1	Monthly Status Reports	Monthly	On Sched.	Project kickoff meeting held on 12/8
2	Subtask 3 & 4 meetings	Monthly	On Sched.	
3	Subtask 3 Draft BLRP Framework	30-Mar-11	Submitted	
3	Subtask 3 Draft Final BLRP Framework	2 weeks of comments from City TOM	On Sched.	
3	Subtask 3 Final BLRP Framework	2 weeks of comments from City staff	On Sched.	
4	Subtask 4 Draft Reduction Objectives Matrix	31-Jan-11	Submitted	
4	Subtask 4 Final Reduction Objectives Matrix	2 weeks of comments from City staff	On Sched.	
4	Subtask 4 Completed Reduction Objectives Matrix	31-May-11	On Sched.	

RECEIVED
MAY 06 2011
By: NB

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2740

INVOICE NO.: 50449925
DATE: May 1, 2011
TC#: 100-FFX-T26923
Contract#: RR-304456/H084445
PO#: 4500018000
Task#: Task Order 34
Invoice Seq#: 4

tm 5/9

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II SB

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: March 26, 2011 through April 22, 2011

Total Amount Now Due: $ 12,696.30

Approved For Payment
PO#: 4500018000
Date: 5/10/2011
Signature:

FOR FURTHER INFORMATION, PLEASE CONTACT THE UNDERSIGNED.
I certify that all payments requested are for appropriate purposes and in accordance with the agreements set forth in the contract. The services set forth herein were performed during the period stated.

Alean Lazo
A/R Manager
AL:sl

Remit To:
Tetra Tech Divisions
Dept. 1654
Denver, CO 80291-1654

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2743

INVOICE NO.:	50449925
DATE:	May 1, 2011
TC#:	100-FFX-T26923
Contract#:	RR-304456/H084445
PO#:	4500018000
Task#:	Task Order 34
Invoice Seq#:	4
Total Budget	**$ 45,000.00**

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: **March 26, 2011 through April 22, 2011**

2010 RATES

Direct Labor Costs		Current	Cumulative	Current	Cumulative
Principal - John Craig	$203.87	0.00	1.00	$0.00	$203.87
Project Manager - Kimberly Brewer	$174.76	22.00	53.00	$3,844.72	$9,262.28
Project Manager - Clint Boschen	$174.76	25.00	89.00	$4,369.00	$15,553.64
Project Manager - Juli Hinds	$174.76	21.50	53.00	$3,757.34	$9,262.28
Associate Civil Engineer - Jason Wright	$122.33	4.00	7.00	$489.32	$856.31
Contract Administrator - Angie Marciano	$87.38	0.00	1.00	$0.00	$87.38
Junior Water Resources Specialist- Edith Moreno	$78.64	3.00	19.00	$235.92	$1,494.16
Subtotal Labor		75.50	223.00	$12,696.30	$36,719.92

Other Direct Charges		
Freight	$0.00	$0.00
Reproduction	$0.00	$0.00
Travel - Airfare	$0.00	$0.00
Travel - Meals	$0.00	$0.00
Travel - Car Rental	$0.00	$0.00
Travel - Lodging	$0.00	$0.00
Travel - Parking	$0.00	$0.00
Travel - Mileage	$0.00	$0.00
Travel - Miscellaneous	$0.00	$0.00
Telephone Charges	$0.00	$0.00
Vehicle Rental	$0.00	$0.00
Total Travel	$0.00	$0.00
Total Due this Invoice	**$12,696.30**	**$36,719.92**

TETRA TECH
3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2740

TM 6/6

INVOICE NO.: 50458251
DATE: June 3, 2011
TC#: 100-FFX-T26923
Contract#: RR-304456/H084445
PO#: 4500018000
Task#: Task Order 34
Invoice Seq#: 5

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II RK

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: April 23, 2011 through May 20, 2011

Total Amount Now Due: $ 5,496.19

Received WSB 6/7/2011

Approved For Payment
PO#: 4500018000
Date: 6/7/2011
Signature: Stephanie Bianco

RECEIVED
JUN 07 2011
By TM

FOR FURTHER INFORMATION, PLEASE CONTACT THE UNDERSIGNED.
I certify that all payments requested are for appropriate purposes and in accordance with the agreements set forth in the contract. The services set forth herein were performed during the period stated.

Aleah Lazo
A/R Manager
AL:sl

Remit To:
Tetra Tech Divisions
Dept. 1654
Denver, CO 80291-1654

TETRA TECH

3475 E. FOOTHILL BL. SUITE 300
PASADENA, CA 91107-2190
TELEPHONE (626) 351-4664
FAX (626) 470-2743

INVOICE NO.:	50458251
DATE:	June 3, 2011
TC#:	100-FFX-T26923
Contract#:	RR-304456/H084445
PO#:	4500018000
Task#:	Task Order 34
Invoice Seq#:	5

City of San Diego - Storm Water Dept.
9370 Chesapeake Drive, Suite 100, MS 1900
San Diego, CA 92123-1024

Attn: David Wells, Project Officer II

Total Budget **$ 45,000.00**

SERVICES RENDERED: As Needed Services Agreement - Task Order 34
BACTERIA TMDL IMPLEMENTATION PLAN FRAMEWORK & AMP; PROJECT REDUCTION OBJECTIVES

BILLING PERIOD: **April 23, 2011 through May 20, 2011**

2010 RATES

Direct Labor Costs		Current	Cumulative	Current	Cumulative
Principal - John Craig	$203.87	0.00	1.00	$0.00	$203.87
Project Manager - Dustin Barnbic	$174.76	2.50	2.50	$436.90	$436.90
Project Manager - Kimberly Brewer	$174.76	3.00	56.00	$524.28	$9,786.56
Project Manager - Clint Boschen	$174.76	18.00	107.00	$3,145.68	$18,699.32
Project Manager - Juli Hinds	$174.76	4.50	57.50	$786.42	$10,048.70
Associate Civil Engineer - Jason Wright	$122.33	0.00	7.00	$0.00	$856.31
Contract Administrator - Angie Marciano	$87.38	0.00	1.00	$0.00	$87.38
Junior Water Resources Specialist- Edith Moreno	$78.64	7.00	26.00	$550.48	$2,044.64
Clerical - Diana Hodge	$52.43	1.00	1.00	$52.43	$52.43
Subtotal Labor		36.00	259.00	$5,496.19	$42,216.11

Other Direct Charges		
Freight	$0.00	$0.00
Reproduction	$0.00	$0.00
Travel - Airfare	$0.00	$0.00
Travel - Meals	$0.00	$0.00
Travel - Car Rental	$0.00	$0.00
Travel - Lodging	$0.00	$0.00
Travel - Parking	$0.00	$0.00
Travel - Mileage	$0.00	$0.00
Travel - Miscellaneous	$0.00	$0.00
Telephone Charges	$0.00	$0.00
Vehicle Rental	$0.00	$0.00
Total Travel	$0.00	$0.00
Total Due this Invoice	**$5,496.19**	**$42,216.11**

Monthly Progress Report for
Bacteria TMDL Implementation Plan Framework and Project Reduction Objectives
April 23 through May 20, 2011

Contract H084445, Task Order No. 34
Purchase Order Number: 4500018000

ACTIVITIES THIS PERIOD

- Submitted Final CLRP Framework document based on comments received from the copermittees
- Submitted completed Reduction Objectives Matrix spreadsheet

DELIVERABLES

- Submitted Final CLRP Framework document based on comments received from the copermittees
- Submitted completed Reduction Objectives Matrix spreadsheet

ACTIVITIES PLANNED FOR NEXT PERIOD

- Meet with the City and copermittees to answer questions on framework document and CLRP SOW
- Make final edits to Reduction Objectives Matrix as needed
- Participate in Regional Leads meetings with the City and copermittees

Task Order 34

Bacteria TMDL Implementation Plan Framework and Project Reduction Objectives

April 23 through May 20, 2011

Project Costs

Task #	Task Description	Budgeted Cost	ITD Expenditures	Balance	% Expended
1	Project Management and Reporting	$ 45,000	$ 42,216	$ 2,784	94%
2	Meeting Support				
3	Bacteria Load Reduction Plan Framework Development				
4	Development of Reduction Objectives				
	Project Totals	$ 45,000	$ 42,216	$ 2,784	94%

Deliverable Schedule

Task #	Deliverable Title	Due Date	Status	Notes
1	Monthly Status Reports	Monthly	On Sched.	Project kickoff meeting held on 12/8
2	Subtask 3 & 4 meetings	Monthly	On Sched.	
3	Subtask 3 Draft BLRP Framework	30-Mar-11	Submitted	
3	Subtask 3 Draft Final BLRP Framework	2 weeks of comments from City TOM	Submitted	
3	Subtask 3 Final BLRP Framework	2 weeks of comments from City staff	Submitted	Meet with the City and copermittees to answer questions on framework document and CLRP SOW
4	Subtask 4 Draft Reduction Objectives Matrix	31-Jan-11	Submitted	
4	Subtask 4 Final Reduction Objectives Matrix	2 weeks of comments from City staff	Submitted	
4	Subtask 4 Completed Reduction Objectives Matrix	31-May-11	Submitted	Make final edits as needed

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 2,939.66**
Contract / Other Expenditures Claimed:	**$ 58,578.41**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

6/22/11
Date

Todd Snyder
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY ~~2010-11~~ 2011-12 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

6/22/11
Date

Todd Snyder
Signature

~~Final 04-30-09~~

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task 1 [Regional WURMP Workgroup Meeting Support]						
7/27/2010	Todd Snyder	LUEP Mgr.	1.50	$ 72.20	$ 108.30	Drafted "Proposal to Conduct Visioning Workshops" for workgroup review
10/26/2010	Todd Snyder	LUEP Mgr.	1.50	$ 72.20	$ 108.30	Prepared FY 10-11 workgroup budget doc for workgroup discussion on 10/27
5/3/2011	Todd Snyder	LUEP Mgr.	2.00	$ 72.20	$ 144.40	Prepare expenditure reports for Quarters 1-3.
5/4/2011	Todd Snyder	LUEP Mgr.	2.50	$ 72.20	$ 180.50	Prepare expenditure reports for Quarters 1-3.
6/22/2011	Todd Snyder	LUEP Mgr.	2.00	$ 72.20	$ 144.40	Prepare expenditure reports for Quarters 1-4.
Sub-total	$ 685.90					
Subtask 2.A [Regional URMP Annual Report Input]						
12/10/2010	Todd Snyder	LUEP Mgr.	2.50	$ 72.20	$ 180.50	Prepared Regional WURMP WG activity summary for FY 09-10 RURMP report
Sub-total	$ 180.50					
Subtask 2.B. [FY 2011-12 Workplan & Budget]						
10/22/2010	Todd Snyder	LUEP Mgr.	2.00	$ 72.20	$ 144.40	Prepared draft FY 11-12 budget/workplan for workgroup discussion
10/26/2010	Todd Snyder	LUEP Mgr.	0.50	$ 72.20	$ 36.10	Prepared FY 11-12 budget document summary for WG discussion on 10/27
12/15/2010	Todd Snyder	LUEP Mgr.	1.00	$ 72.20	$ 72.20	Refine FY 11-12 budget/workplan for discussion at Dec. Copermittee Mgmt. mtg.
Sub-total	$ 252.70					
Subtask 2.C. [Semi-annual Workgroup Update]						
NONE			0.00	$ -	$ -	
Sub-total	$ -					
Subtask 2.F. [Watershed Activities Database]						
2/16/2011	Scott Norris	LUEP II	2.50	$ 50.19	$ 125.48	Subworkgroup meeting
2/18/2011	Scott Norris	LUEP II	2.00	$ 50.19	$ 100.38	Coordination of Regional Database Workshop
2/25/2011	Scott Norris	LUEP II	4.00	$ 50.19	$ 200.76	Comment and review of Database
3/7/2011	Scott Norris	LUEP II	1.60	$ 50.19	$ 80.30	Review and testing of database
Sub-total	$ 506.92					

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.H. [Regional TMDL Implementation Planning]						
10/26/2010	Todd Snyder	LUEP Mgr.	1.00	$ 72.20	$ 72.20	Prepared Bact TMDL Schedules & Milestones doc for 10/27 WG discussion
12/8/2010	Todd Snyder	LUEP Mgr.	3.50	$ 72.20	$ 252.70	Prepared Bact TMDL Framework Outline and Bact watershed summary doc
2/2/2011	Stephanie Gaines	LUEP II	2.00	$ 55.32	$ 110.64	Prepared template Bact TMDL cost sharing agreement language
2/3/2011	Stephanie Gaines	LUEP II	4.00	$ 55.32	$ 221.28	Prepared template Bact TMDL cost sharing agreement language
2/4/2011	Stephanie Gaines	LUEP II	3.00	$ 55.32	$ 165.96	Prepared template Bact TMDL cost sharing agreement language
2/7/2011	Stephanie Gaines	LUEP II	3.00	$ 55.32	$ 165.96	Prepared template Bact TMDL cost sharing agreement language
2/15/2011	Todd Snyder	LUEP Mgr.	2.50	$ 72.20	$ 180.50	Reviewed and finalized draft template Bact TMDL cost sharing agreement
2/22/2011	Todd Snyder	LUEP Mgr.	2.00	$ 72.20	$ 144.40	Prepared watershed cost sharing spreadsheets for Bact TMDL watersheds
Sub-total	$ 1,313.64					

Copermittee Total	**$ 2,939.66**

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional WURMP Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 2.E. [Watershed Data, Reporting, and Assessment Needs] --- VISIONING				
RBF Contract #534079, Task Order #1 - LWA Subcontractor	$ 3,600.00	10/29/2010	$ 180.00	Planning for Vision workshops July 31 to August 27, 2010
Contract #534965: Weston Regional WQ Reporting - LWA Subcontractor	$ 10,428.30	10/20/2010	$ 521.42	Visioning support September 1 to September 30, 2010
Contract #534965: Weston Regional WQ Reporting - LWA Subcontractor	$ 7,424.77	11/9/2010	$ 371.24	Visioning support October 1 to October 30, 2010
Contract #534965: Weston Regional WQ Reporting - LWA Subcontractor	$ 8,004.55	2/22/2011	$ 400.23	Visioning support November 1 to November 30, 2010
Contract #534965: Weston Regional WQ Reporting - LWA Subcontractor	$ 1,374.59	2/22/2011	$ 68.73	Visioning support December 1 to December 30, 2010
Contract #534965: Weston Regional WQ Reporting - LWA Subcontractor	$ 45.75	3/10/2011	$ 2.29	Visioning support February 1 to February 28, 2011
	$ -		$ -	
Subtask 2.E. Sub-total $ 30,877.96				
Subtask 2.E. Management Cost $ 1,543.90				
Subtask 2.F. [Watershed Activities Database]				
RBF Contract #534079, Task Order #2 - Mikhail Ogawa Engineering, Subcontractor	$ 1,350.00	2/25/2011	$ 67.50	Database work January 1 to January 28, 2011
RBF Contract #534079, Task Order #2 - Mikhail Ogawa Engineering, Subcontractor	$ 2,426.00	3/25/2011	$ 121.30	Database work January 29 to February 25, 2011
RBF Contract #534079, Task Order #2 - Mikhail Ogawa Engineering, Subcontractor	$ 1,536.00	5/27/2011	$ 76.80	Database work April 2 to April 30, 2011
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtask 2.F. Sub-total $ 5,312.00				
Subtask 2.F. Management Cost $ 265.60				

~~Final 04-30-09~~

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask 2.H. [Regional TMDL Implementation Planning]				
RBF Contract #534079, Task Order #3 (TMDL Load Reduction Plan Framework) - Larry Walker Assoc., Subcontractor	$ 494.83	3/25/2011	$ 24.74	Work on Compliance Assessment Monitoring Framework Jan 29 - Feb 25
RBF Contract #534079, Task Order #3 (TMDL Load Reduction Plan Framework) - Larry Walker Assoc., Subcontractor	$ 9,787.52	4/29/2011	$ 489.38	Work on Compliance Assessment Monitoring Framework Feb 26 - April 1
RBF Contract #534079, Task Order #3 (TMDL Load Reduction Plan Framework) - Larry Walker Assoc., Subcontractor	$ 9,316.65	5/27/2011	$ 465.83	Work on Compliance Assessment Monitoring Framework Apr 2 to Apr 30
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
	$ -		$ -	
Subtask 2.H. Sub-total $ 19,599.00				
Subtask 2.H. Management Cost $ 979.95				
B. Other Direct Expenditures				
NONE	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
	$ -			
Sub-total Other Expenditures $ -				
Total Expenditures (Including contract management cost)	**$ 58,578.41**			

Final 04-30-09

County of San Diego

FY 2010-11 Expenditures Documentation

Sub-task 2E

10/29/10
OK to pay
Todd Snyder

P: 1002993 T: 012.009
O: 50915 A: 100496
E: 52370

RBF CONSULTING

September 24, 2010
Project No: 55-100684.001
Invoice No: 10080162

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
MS O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619
Attn: Accounts Receivable

Project 55-100684.001 Stormwater Consulting/Engineering Svcs
CONTRACT NO. 534079
TASK ORDER NO. 1

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Professional consulting services rendered pursuant to the Agreement dated August 12, 2010 relative to the Development of Watershed Management Vision Document in Support of Report of Waste Discharge.

Work Performed During This Period Included:
Task 1 - Planning meeting summary and a scope and schedule for the stakeholder workshops
- Subconsultant – Larry Walker and Associates $3,318.00
- Scott Taylor 1.25hrs @ $234.00/hr = $292.50

Professional Services: July 31, 2010 to August 27, 2010

Task	Fee	Percent Complete	Billed to Date	Current
Task 1 Submittal	3,600.00	100.00	3,600.00	3,600.00
Task 2 Submittal	15,500.00	0.00	0.00	0.00
Task 3 Submittal	13,600.00	0.00	0.00	0.00
Reproduction/Direct Costs	0.00	0.00	0.00	0.00
Total Fee	32,700.00		3,600.00	3,600.00
	Previous Fee Billing		0.00	
	Total Fee			**3,600.00**

Total this Invoice **$3,600.00**

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200 | 530.753.6400
Davis, CA 95616 | 530.753.7030 fax

RECEIVED
SEP 16 2010
RBF CONSULTING
CARLSBAD OFFICE

September 8, 2010
Project No: 00425.01
Invoice No: 0000001

RBF Consulting, Inc.
Attn: Scott Taylor
5050 Avenida Encinas, Suite 260
Carlsbad CA 92008-4386

Project: 00425.01 VISION WORKSHOPS
Contract# 534079, Task Order 1
Professional Services: August 1, 2010 through August 31, 2010

Task: 00001 Planning Meeting

Fee

Total Fee	3,318.00			
		Total Earned	3,318.00	
		Previous Fee Billing	0.00	
		Current Fee Billing	3,318.00	
		Total Fee		**3,318.00**
			Total this task	**$3,318.00**

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	3,318.00	0.00	3,318.00
Limit			29,850.00
Remaining			26,532.00

Total this invoice **$3,318.00**

ACCOUNT NO. 06ST
VENDOR NO. 85-100604
APPROVED
ACCOUNTING
JOB NO.
AMOUNT $3,318.00

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000 Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc
Account: 009429223574
Bank of America, ABA 011900254

Invoice Date: 12/17/2010
Invoice Number: DEC2010-04634

Description: PROFESSIONAL SERVICES RENDERED FOR 2010-2011 REGIONAL WATER QUALITY REPORTING.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

Customer PO Number: 534965
Project Number: 13245.110.003
Project Name: Watershed Management Vision Document
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 01/16/2011

	Contract Value
Cost:	33,200.00
Total:	33,200.00
Cumulative Amount Billed:	10,428.30

Billing Period From: 10/30/2010
To: 11/26/2010

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	10,428.30	10,428.30
Total Expenses	10,428.30	10,428.30
Invoice Total	10,428.30	10,428.30

WS 04-03-011/A 03/09
05P 0606

INVOICE

F.E.I.N. 23 1501990

REMIT TO: [illegible]

ACH PAYMENTS: [illegible]

Invoice Number:	DEC2010-04634	Project Number:	13245.110.003	Billing Currency	USD
		Project Name:	Watershed Management Vision Document	Invoice Date:	12/17/2010

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500421906	2010/11	LARRY WALKER ASSOCIATES	427011	5,375.72
		500421906	2010/11		427011	5,052.58
Total: Subcontractor						10,428.30
Total Expenses						10,428.30

WS 04 03 01 / A-03/09

INVOICE

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

Wal27
2010.11.3
rchv# 500421906

October 20, 2010

Project No. - Invoice No: 427.01-1

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

RECEIVED
OCT 29 2010
BY: am

County of San Diego Professional Services Agreement

Project: 427.01

For Services Rendered Through 9/30/2010

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

INVOICE APPROVAL
DATE REC: 10/29/10
APPROVED BY: David Poke
SIGNATURE:
PO # 0073156 Item #4
WU #
RETURN TO ANALYN NELSON

Task: 1.0 Planning Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	12.75	183.00 ✓	$2,333.25
Walker, Malcolm	11.50	225.00 ✓	$2,587.50
Total Labor			$4,920.75

13245.110.003.0002.01 #3

Reimbursable Expenses

Payee		Cost	Markup	Amount
Parking				
9/23/2010 Ashby, Karen	Sacramento Int. Airport	15.00		$15.00
9/23/2010 Walker, Malcolm	Sacramento Int. Airport	15.00		$15.00
Mileage				
9/23/2010 Ashby, Karen	Sacramento Int. Airport			$15.00
9/23/2010 Walker, Malcolm	Sacramento Int. Airport			$20.00
Meals				
9/23/2010 Ashby, Karen	San Diego	8.57		$8.57
Airfare				
9/23/2010 Ashby, Karen	San Diego	~~391.40~~		~~$391.40~~
9/23/2010 Walker, Malcolm	San Diego	297.40		$297.40

next page

Taxi/Limo/Bus/Auto Rental			
9/23/2010 Walker, Malcolm	San Diego	84.00	$84.00
Total Reimbursables		454.97	~~$840.37~~
Total This Task		13245·110·003-0002.01 -	~~$5,767.12~~ #3 5375.72

Task: 2.0 Workshops Attendance/Participation

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	10.00	183.00	$1,830.00
Walker, Malcolm	10.50	225.00	$2,362.50
Total Labor			**$4,192.50**

Reimbursable Expenses

Payee		Cost	Markup	Amount
Taxi/Limo/Bus/Auto Rental				
9/2/2010 Ashby, Karen	San Diego	30.97		$30.97
9/14/2010 Walker, Malcolm	San Diego	~~50.00~~		~~$50.00~~
Airfare				
9/2/2010 Ashby, Karen	San Diego	270.40		$270.40
9/24/2010 Ashby, Karen	San Diego	~~280.40~~ 84.70		~~$280.40~~ 84.70
9/14/2010 Walker, Malcolm	San Diego	79.70		$79.70
9/2/2010 Walker, Malcolm	San Diego	285.40		$285.40
Parking				
9/2/2010 Ashby, Karen	Sacramento Int. Airport	15.00		$15.00
9/2/2010 Walker, Malcolm	Sacramento Int. Airport	15.00		$15.00
9/14/2010 Walker, Malcolm	Sacramento Int. Airport	15.00		$15.00
Mileage				
9/2/2010 Ashby, Karen	Sacramento Int. Airport			$15.00
9/2/2010 Walker, Malcolm	Sacramento Int. Airport			$20.00
9/14/2010 Walker, Malcolm	Sacramento Int. Airport			$20.00
Meals				
9/2/2010 Ashby, Karen	San Diego	8.91		$8.91
Total Reimbursables				~~$1,185.78~~ 860.08
Total This Task		13245·110·003·0002.02 -		~~$5,298.28~~ #4 5,052.58
Invoice Amount				~~$11,065.40~~ #4 $10,428.30

LARRY WALKER ASSOCIATES - Monthly Expense Sheet

EMPLOYEE NAME: Karen Ashby PERIOD ENDED: 9/30/10

DESCRIPTION	DATE	PROJECT NO.	TASK NO.	ACCOUNT NO.	AMOUNT		
Sacramento Int. Airport Parking	09/02/10	427.01	2.0	544.00	$15.00 ✓	EXPENSE CODES	
Mileage to Sacramento Int. Airport (rt) 30 mi @ .5	09/02/10	427.01	2.0	547.00	$15.00 ✓	500—REIMBURSABLE (T&M)	
Meal	09/02/10	427.01	2.0	546.00	$8.91 ✓	600—DIRECT (Lump Sum)	
Airfare to San Diego	09/02/10	427.01	2.0	542.00	$270.40 ✓	700—INDIRECT (Overhead)	
Taxi/Limo/Bus/Auto Rental	09/02/10	427.01	2.0	543.00	$30.97 ✓		
Sacramento Int. Airport Parking	09/23/10	427.01	1.0	544.00	$15.00 ✓	*41.00	**Mileage (0.50/mi)**
Mileage to Sacramento Int. Airport (rt) 30 mi @ .5	09/23/10	427.01	1.0	547.00	$15.00 ✓	*42.00	Airfare
Meal	09/23/10	427.01	1.0	546.00	$8.57 ✓	*43.00	Transportation
Airfare to San Diego	09/23/10	427.01	1.0	542.00	$391.40	*44.00	Parking
Airfare to San Diego	09/24/10	427.01	2.0	542.00	~~$280.40~~	*45.00	Lodging
					D $4.70 ✓	*46.00	Meals
						*47.00	Subsistence
						*51.00	Printing & Reproduction
						*52.00	Postage/Freight/Delivery
						*53.00	Supplies & Materials
						754.00	Equipment Rental
						755.00	Software
						756.00	Publications/Data/Info
						757.00	Education/Registration/Dues
						758.00	Retreat
						793.00	Entertainment
						794.00	Contributions
		TOTAL AMOUNT DUE EMPLOYEE					
						*use 500, 600, or 700	

HMS HOST STARBUCKS
SACRAMENTO INTERNAITONAL AIRPORT
WELCOME TO SACRAMENTO!!

5213 CAREE

CHK 8945 SEP02'10 5:22AM

1 ODWALLA JUICE	3.69
1 MOCHA	4.50
NO CHOICE	
Subtotal	8.19
Tax	0.72
Amt Paid	8.91
Cash	20.00
Change Due	11.09

Sacramento Int'l
Airport

Cashier : 63 Seq # 22608
License Plate : XX NOPLATE
Ent : 05:03 09/02/10 Lane 39
Exit: 16:45 09/02/10 Lane 56

FEE $	15.00
AMOUNT TEND $	20.00
CASH $	15.00
CREDIT CARD $	0.00
CHECK $	0.00
CHANGE CALC $	5.00

PAID AT CT $ 15.00
Taxes Included

*** Start Calculation Details ***

Sacramento Int'l
Airport

Cashier : 35 Seq # 31779
License Plate : XX NOPLATE
Ent : 10:21 09/23/10 Lane 37
Exit: 19:52 09/23/10 Lane 56

FEE $	15.00
AMOUNT TEND $	20.00
CASH $	15.00
CREDIT CARD $	0.00
CHECK $	0.00
CHANGE CALC $	5.00

PAID AT CT $ 15.00
Taxes Included

*** Start Calculation Details ***

+121 850 7378 6402
04/22
KAREN ASHBY

SIGN HERE
X

The issuer of the card identified on this form is authorized to pay the amount shown as TOTAL upon proper presentation. I promise to pay such TOTAL, together with any other charges due thereon, subject to and in accordance with the agreement governing the use of such card.

QTY.	CLASS	DESCRIPTION	PRICE	AMOUNT
		TAXI		
DATE		AUTHORIZATION	SUB TOTAL	26.77
REFERENCE NO.		SERVER	TAX	
ID-FOLIO/CHECK NO./I.C. NO. STATE	REG./DEPT.	CLERK	TIP / MISC.	
552985			TOTAL	$30.97

SALES SLIP
CUSTOMER COPY

CUSTOMER: RETAIN THIS COPY FOR YOUR RECORDS

Thank you!
Your Confirmation is DSMZSL

- Automatic Advanced Check-In
- Improved Seat Selection
- Earlier Access to Overhead Storage

Get it Now
Learn More

Book a Car
Book a Hotel
Book a Flight

Air

Adult 1: KAREN ASHBY — Acct#: 00001017654702 — Confirmation # DSMZSL

AIR ITINERARY

DEPART SEP 2	**Sacramento, CA to San Diego, CA** Thursday, September 2, 2010 Travel Time 1 h 25 m (Nonstop) Add EarlyBird Check-In	#228	Depart **Sacramento, CA (SMF)** Arrive in **San Diego, CA (SAN)**	**6:00 AM** **7:25 AM**
RETURN SEP 2	**San Diego, CA to Sacramento, CA** Thursday, September 2, 2010 Travel Time 1 h 25 m (Nonstop) Add EarlyBird Check-In	#163	Depart **San Diego, CA (SAN)** Arrive in **Sacramento, CA (SMF)**	**4:45 PM** **6:10 PM**

YOU JUST SAVED UP TO $120 ROUNDTRIP!

BAG FEES = $0.00
Bags Fly Free on Southwest.

BILLING

Purchaser Name	Billing Address	City, State & Zip
Karen Ashby	825 CHRISTIE CT	DAVIS, CA 95616-4961

Form of Payment	Number	Amount Applied	Remaining Balance
Visa	XXXXXXXXXXXX-6402	$270.40	N/A

AIR PRICING

Passenger Type	Trip	Routing	Fare Type	Base Fare	Govt. Taxes and Fees	Quantity	Total
Adult	Depart	SMF-SAN	Wanna Get Away	$73.49	$16.21	1	$89.70
Adult	Return	SAN-SMF	Anytime	$158.14	$22.56	1	$180.70
Please read the fare rules associated with this purchase.							
Effective January 28, 2011, unused travel funds may only be applied toward the purchase of future travel for the individual named on the ticket.				$231.63	$38.77	1	$270.40

TRIP GRAND TOTAL: $270.40

earlier
2:45
1:55

Search All Cars Search All Hotels Earn Rapid Rewards

****
Baja Fresh Express - San Diego Airport

Tel.

Order 8043

09/23/10 5:07 PM

Server 102 Abel Armenta

****

1 Baja Taco	2.49
Carnitas	
Hot Salsa	
Taxable:	2.49
Sub-total:	2.49
Taxes:	0.22
Total Due:	2.71
Cash:	5.00
CHANGE DUE:	2.29

Thank You,
Please Come Again Soon.

YOU ARE ORDER 8043

NEWS CONNECTION EAST
SAN DIEGO AIRPORT
(619) 231-5100 ext 141

2038 Cecilia

TRN 1760 SEP23'10 12:51PM

049000040869	
1 COKE ZERO 200Z1	3.19
028400046060	
1 FRITO LSS ROLD G	2.39
Subtotal	5.58
Tax	0.28
Amt Paid	5.86
CASH	20.00
Change Due	14.14

THANK YOU
NEWS CONNECTION EAST
SAN DIEGO AIRPORT
SAN DIEGO, CALIFORNIA

Total = $8.57

SOUTHWEST.COM

Thank you for your purchase!

Air Confirmation: XV6WXL

Paid

Air View details **Conf # XV6WXL**

Sacramento, CA to San Diego, CA
Monday, October 4, 2010

352.02 San Diego Meeting airfare -

Book another flight

Air Total	$280.40
Total Paid Now	$280.40
Trip Total	**$280.40**

Air

Passenger Type	Name	Confirmation Number	Rapid Rewards Number
ADULT	KAREN ASHBY	XV6WXL	00001017654702

ITINERARY

DEPART OCT 4	Sacramento, CA to San Diego, CA Monday, October 4, 2010 Travel Time 1 h 25 m (Nonstop) Add EarlyBird Check-In	#228	Depart Sacramento, CA (SMF) Arrive in San Diego, CA (SAN)	6:00 AM 7:25 AM
RETURN OCT 4	San Diego, CA to Sacramento, CA Monday, October 4, 2010 Travel Time 1 h 30 m (Nonstop) Add EarlyBird Check-In	#898	Depart San Diego, CA (SAN) Arrive in Sacramento, CA (SMF)	2:55 PM 4:25 PM

PRICE

Passenger Type	Trip	Routing	Fare Type	Base Fare	Govt. Taxes and Fees	Quantity	Total
Adult	Depart	SMF-SAN	Wanna Get Away	$68.84	$15.86	1	$84.70
Adult	Return	SAN-SMF	Business Select	$172.09	$23.61	1	$195.70
				$240.93	$39.47	1	~~$280.40~~

Please read the fare rules associated with this purchase.

Effective January 28, 2011, unused travel funds may only be applied toward the purchase of future travel for the individual named on the ticket.

Total ~~$280.40~~

Billing

LARRY WALKER ASSOCIATES - Monthly Expense Sheet

EMPLOYEE NAME: Mack Walker **PERIOD ENDED:** 9/30/10

DESCRIPTION	DATE	PROJECT NO.	TASK NO.	ACCOUNT NO.	AMOUNT		
Sacramento Int. Airport Parking	09/02/10	427.01	2.0	544.00	$15.00	EXPENSE CODES	
Mileage to Sacramento Int. Airport (rt) 40 miles .50/mi	09/02/10	427.01	2.0	547.00	$20.00	500—REIMBURSABLE (T&M)	
Airfare to San Diego	09/02/10	427.01	2.0	542.00	$285.40	600—DIRECT (Lump Sum)	
Airfare to San Diego	09/14/10	427.01	2.0	542.00	$79.70	700—INDIRECT (Overhead)	
Mileage to Sacramento Int. Airport (rt) Hamilton .50/mi	09/14/10	427.01	2.0	543.00	$20.00		
Sacramento Int. Airport Parking	09/14/10	427.01	2.0	543.00	$15.00	*41.00	Mileage (0.50/mi)
Taxi/Limo/Bus/Auto Rental no receipt	09/14/10	427.01	2.0	543.00	$50.00	*42.00	Airfare
Sacramento Int. Airport Parking	09/23/10	427.01	1.0	544.00	$15.00	*43.00	Transportation
Mileage to Sacramento Int. Airport (rt) Hamilton .50/mi	09/23/10	427.01	1.0	547.00	$20.00	*44.00	Parking
Airfare to San Diego	09/23/10	427.01	1.0	542.00	$297.40	*45.00	Lodging
Taxi/Limo/Bus/Auto Rental	09/23/10	427.01	1.0	543.00	$84.00	*46.00	Meals
						*47.00	Subsistence
						*51.00	Printing & Reproduction
						*52.00	Postage/Freight/Delivery
						*53.00	Supplies & Materials
						754.00	Equipment Rental
						755.00	Software
						756.00	Publications/Data/Info
						757.00	Education/Registration/Dues
						758.00	Retreat
						793.00	Entertainment
						794.00	Contributions
		TOTAL AMOUNT DUE EMPLOYEE					
						*use 500, 600, or 700	

427.01

Sacramento Int'l
Airport

Card Account : XXXXXXXXXXXX1691
Card Type : Visa
Authorization Code : 01648D

Cashier : 25 Seq # 45472
License Plate : XX NOPLATE
Ent : 04:55 09/02/10 Lane 39
Exit: 16:47 09/02/10 Lane 50

FEE	$	15.00
AMOUNT TEND	$	15.00
CASH	$	0.00
CREDIT CARD	$	15.00
CHECK	$	0.00
CHANGE CALC	$	0.00

PAID AT CT $ 15.00
Taxes Included

427.01

Sacramento Int'l
Airport

Cashier : 35 Seq # 31780
License Plate : XX NOPLATE
Ent : 10:23 09/23/10 Lane 39
Exit: 19:53 09/23/10 Lane 56

FEE	$	15.00
AMOUNT TEND	$	15.00
CASH	$	15.00
CREDIT CARD	$	0.00
CHECK	$	0.00
CHANGE CALC	$	0.00

PAID AT CT $ 15.00
Taxes Included

*** Start Calculation Details ***

427.01 $15.00

Sacramento Int'l
Airport

Card Account : XXXXXXXXXXXX1691
Card Type : Visa
Authorization Code : 09749D

Cashier : 34 Seq # 4227
License Plate : XX NOPLATE
Ent : 05:25 09/14/10 Lane 39
Exit: 20:46 09/16/10 Lane 54

FEE	$	45.00
AMOUNT TEND	$	45.00
CASH	$	0.00
CREDIT CARD	$	45.00
CHECK	$	0.00
CHANGE CALC	$	0.00

$15.00

45.00

AVIS we try harder

Thank you for renting from Avis.

RENTAL NUMBER	CAR NUMBER	CAR GROUP
186813222	51415534	F

WALKER,MALCOLM
WIZ = HJ852V AWD = D722200
CV - CXXXXXXXXXXXXX1691
FTN WN/0000002117642D 3A

OUT SAN 23SEP10/1257 MI = 7063
IN SAN 23SEP10/1651 MI = 7089

26 MI@	.40 =	
4 HR@	34.61 =	
DY@	46.00 =	46.00
MINIMUM CHARGE	=	6.26
**11.11% FEE	=	13.99
FUEL SERVICE	=	1.00
FTP SR$ 1.00DY	=	.32
$ 0.32 /DY VLF	=	66.57
TAXABLE SUBTOT	=	5.82
TAX 8.750%	=	1.61
3.5% TAF	=	10.00
$ 10.00 /RNTL CF	=	

* Please check your car for personal effects. *

TOTAL CHARGES = 84.00
**CONCESSION RECOVERY FEE
3.5% TOURISM ASSMNT FEE
CUST FACILITY CHG
VEH LICENSE RECOUP FEE
FF MLS/PNTS EARNED 1

427.01

* Please check your car for personal effects. *

Receive rental receipts by email every time you rent.
And get access to special offers & more. See reverse.

SOUTHWEST AIRLINES' EXCHANGE / RECEIPT

DATE: 02SEP10 CONFIRMATION NUMBER: DY7ZTL AGENT: e76915 EXPIRATION DATE: 19AUG11

Customer Name	Paid Fare Change	Total
WALKER/MALCOLM RAY	85.00	85.00 (2)

NONTRANSFERABLE
VI XXXXXXXXXXXX1691 0511 WALKER/MALCOLM $85.00
FP *ETKT $110.70 VI AUTH: 04869D $85.00

Corporate Express Document & Print Management

EXCHANGE TOTAL 85.00

WALKER/MALCOLM RAY

Confirmation Date: 08/19/10

Confirmation Number: DY7ZTL

Passenger(s)	Account Number	Ticket #	Expiration[1]
WALKER/MALCOLM RAY	00000021175420	5262120073379	08/19/11

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Depart: SACRAMENTO CA to SAN DIEGO CA (Travel Time: 1 hrs 25 mins.)

Date	Flight	Flight Information
Thu Sep 02	0228	Depart SACRAMENTO CA (SMF) at 6:00 AM Arrive in SAN DIEGO CA (SAN) at 7:25 AM

Return: SAN DIEGO CA to SACRAMENTO CA (Travel Time: 1 hrs 25 mins.)

Date	Flight	Flight Information
Thu Sep 02	0163	Depart SAN DIEGO CA (SAN) at 4:45 PM Arrive in SACRAMENTO CA (SMF) at 6:10 PM

Base Fare	$166.51
+ Excise Taxes	$12.49
Advertised Fare	$179.00
+ Segment Fee	$7.40
+ Passenger Facility Charge	$9.00
+ Security Fee[2]	$5.00
Total Payment	$200.40 (1)

Current payment(s)
08/19/10 Visa XXXXXXXXXXXX1691 $200.40

[2] Security Fee is the government-imposed September 11th Security Fee.

Travel Tips
Boarding School

1

(1) $200.40
(2) 85.00
(Total 285.40)

Mack Walker

From: Southwest Airlines [SouthwestAirlines@luv.southwest.com]
Sent: Tuesday, September 07, 2010 2:30 PM
To: Mack Walker
Subject: Ticketless Confirmation - WALKER/MALCOLM RAY - Q24SYH

WALKER/MALCOLM RAY

Confirmation Date: 09/07/10

Confirmation Number: Q24SYH

Passenger(s)	Account Number	Ticket #	Expiration[1]
WALKER/MALCOLM RAY	0000002117S420	5262123510443	09/07/11

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Depart: SAN DIEGO CA to SACRAMENTO CA *(Travel Time:) hrs 35 mins)*

Date	Flight	Flight Information
Tue Sep 14	0119	Depart SAN DIEGO CA (SAN) at 6:40 AM Arrive in SACRAMENTO CA (SMF) at 8:15 AM

Base Fare	$64.19
+ Excise Taxes	$4.81
Advertised Fare	$69.00
+ Segment Fee	$3.70
+ Passenger Facility Charge	$4.50
+ Security Fee[2]	$2.50
Total Payment	**$79.70**

Current payment(s)
09/07/10 Visa XXXXXXXXXXXX1691 $79.70

[2] Security Fee is the government-imposed September 11th Security Fee.

1

Mack Walker

From: Southwest Airlines [SouthwestAirlines@luv.southwest.com]
Sent: Wednesday, September 15, 2010 11:04 AM
To: Mack Walker
Subject: Ticketless Confirmation - WALKER/MALCOLM RAY - XYWMJI

WALKER/MALCOLM RAY

Confirmation Date: 09/15/10

Confirmation Number: XYWMJI

Passenger(s)	Account Number	Ticket #	Expiration[1]
WALKER/MALCOLM RAY	00000021175420	5262125206157	09/15/11

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date

Depart: SACRAMENTO CA to SAN DIEGO CA *(Travel Time: 1 hrs 25 mins)*

Date	Flight	Flight Information
Thu Sep 23	0229	Depart SACRAMENTO CA (SMF) at 11:20 AM Arrive in SAN DIEGO CA (SAN) at 12:45 PM

Return: SAN DIEGO CA to SACRAMENTO CA *(Travel Time: 1 hrs 25 mins)*

Date	Flight	Flight Information
Thu Sep 23	0401	Depart SAN DIEGO CA (SAN) at 6:10 PM Arrive in SACRAMENTO CA (SMF) at 7:35 PM

Base Fare	$256.74
+ Excise Taxes	$19.26
Advertised Fare	$276.00
+ Segment Fee	$7.40
+ Passenger Facility Charge	$9.00
+ Security Fee[2]	$5.00
Total Payment	**$297.40**

Current payment(s)
09/15/10 Visa XXXXXXXXXXXX1691 $297.40

[2] Security Fee is the government-imposed September 11th Security Fee.

1

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON ALL PAYMENTS

Invoice Number: APR2011-02182

Invoice Date: 04/14/2011

Description: PROFESSIONAL SERVICES RENDERED FOR 2010-2011 REGIONAL WATER QUALITY REPORTING.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: 63,578.00

Total: 63,578.00

Customer PO Number: 534965
Project Number: 13245.110.003
Project Name: ROWD SUPPORT
Project Manager: Pohl, David H
Terms: NET 30
Due Date: 05/14/2011

Cumulative Amount Billed: 40,915.71

Billing Period From: 11/27/2010
To: 02/28/2011

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	30,487.41	40,915.71
Total Expenses	30,487.41	40,915.71
Invoice Total	30,487.41	40,915.71

WS 04-03-011/A 03/09
05PG606

INVOICE

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610 701 3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number:	APR2011-02182	Project Number:	13245.110.003	Billing Currency:	USD
		Project Name:	ROWD Support	Invoice Date:	04/14/2011

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500426162	2010/12	LARRY WALKER ASSOCIATES	00427012	2,644.50
		500426162	2010/12		00427012	4,780.27
		500444261	2011/3		00427013	4,670.75
		500444261	2011/3		00427013	2,996.30
		500444261	2011/3		00427013	337.50
		500445740	2011/3		00427014	474.59
		500445740	2011/3		00427014	900.00
		500453537	2011/4		00427015	45.75
		500453537	2011/4		00427015	5,794.75
		500453537	2011/4		00427015	6,830.50
		500453537	2011/4		00427015	1,012.50
Total: Subcontractor						30,487.41
Total Expenses						30,487.41

RECEIVED
NOV 15 2010
BY: amwilson

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616
530.753.6400
530.753.7030 fax

WAL27
2010.12.2
vch# 500426162

INVOICE APPROVAL
DATE REC: 11/15/10
APPROVED BY: David Pohl
SIGNATURE:
PO # 0073156
L3 - 13245.110.003.0002.01 - $2,644.50
L4 PO # - 13245.110.003.0002.02 - $4,780.27
L1 - 13245.110.001.0001 - $3,701.
RETURN TO ANALYN NELSON

November 09, 2010

Project No. - Invoice No: 00427.01-2

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

County of San Diego Professional Services Agreement

Project: 00427.01

For Services Rendered Through 10/31/2010

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 1.0 Planning Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	4.00	183.00	$732.00
Walker, Malcolm	8.50	225.00	$1,912.50
Total Labor			**$2,644.50**
Total This Task			**$2,644.50**

PO 0073156 Item # 3
13245.110.003.0002.01

Task: 2.0 Workshops Attendance/Participation

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	16.00	183.00	$2,928.00
Walker, Malcolm	5.00	225.00	$1,125.00
Total Labor			**$4,053.00**

Reimbursable Expenses

Payee		Cost	Markup	Amount
Meals				
10/14/2010 Ashby, Karen	San Diego	7.78		$7.78
10/4/2010 Ashby, Karen	San Diego	9.95		$9.95

$ 11,125.77

Airfare			
10/14/2010 Ashby, Karen	San Diego	280.40	$280.40
10/14/2010 Walker, Malcolm	San Diego	265.40	$265.40
Parking			
10/4/2010 Ashby, Karen	Sacramento Airport	15.00	$15.00
10/14/2010 Ashby, Karen	Sacramento Airport	15.00	$15.00
10/14/2010 Walker, Malcolm	San Diego	15.00	$15.00
Mileage			
10/4/2010 Ashby, Karen	Sacramento Airport		$15.00
10/14/2010 Ashby, Karen	Sacramento Airport		$15.00
10/14/2010 Walker, Malcolm	Sacramento Airport		$20.00
Taxi/Limo/Bus/Auto Rental			
10/4/2010 Ashby, Karen	San Diego	68.74	$68.74
Total Reimbursables	PO 13245·110·003 0002.02		$727.27
Total This Task	0073156 Item # 4		$4,780.27

Task: 4.0 Project Kickoff Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Cowan, Karen	14.00	192.00	$2,688.00
Mathews, Sandy	3.00	192.00	$576.00
Walker, Malcolm	1.50	225.00	$337.50
Total Labor			**$3,601.50**

Reimbursable Expenses

Payee		Cost	Markup	Amount
Mileage				
10/19/2010 Cowan, Karen	City of Vista and City of Carlsbad			$99.50
Total Reimbursables	13245·110·001·0001			$99.50
Total This Task	PO 0073156 Item 1			$3,701.00
Invoice Amount				**$11,125.77**

Billing Limits	Current	Prior	To-date
Total Billings	11,125.77	11,065.40	22,191.17
Limit			49,576.00
Remaining			27,384.83

LARRY WALKER ASSOCIATES - Monthly Expense Sheet

EMPLOYEE NAME: Karen Ashby

PERIOD ENDED: 10/31/10

DESCRIPTION	DATE	PROJECT NO.	TASK NO.	ACCOUNT NO.	AMOUNT		
Meals	10/04/10	427.01	2.0	546.00	$9.95	EXPENSE CODES	
Sacramento Int. Airport Parking	10/04/10	427.01	2.0	544.00	$15.00	500—REIMBURSABLE (T&M)	
Mileage to Sacramento Int. Airport (rt)	10/04/10	427.01	2.0	547.00	$15.00	600—DIRECT (Lump Sum)	
Taxi / Limo / Bus / Auto Rental	10/04/10	427.01	2.0	543.00	$68.74	700—INDIRECT (Overhead)	
Meals	10/14/10	427.01	2.0	546.00	$7.78		
Sacramento Int. Airport Parking	10/14/10	427.01	2.0	544.00	$15.00	*41.00	Mileage (0.50/mi)
Mileage to Sacramento Int. Airport (rt)	10/14/10	427.01	2.0	547.00	$15.00	*42.00	Airfare
Airfare to San Diego	10/14/10	427.01	2.0	542.00	$280.40	*43.00	Transportation
						*44.00	Parking
						*45.00	Lodging
						*46.00	Meals
						*47.00	Subsistence
						*51.00	Printing & Reproduction
						*52.00	Postage/Freight/Delivery
						*53.00	Supplies & Materials
						754.00	Equipment Rental
						755.00	Software
						756.00	Publications/Data/Info
						757.00	Education/Registration/Dues
						758.00	Retreat
						793.00	Entertainment
						794.00	Contributions
		TOTAL AMOUNT DUE EMPLOYEE					
						*use 500, 600, or 700	

SOUTHWEST.COM

Thank you for your purchase!

Air Confirmation: XOHZ6K

Air View details **Conf # XOHZ6K**

Sacramento, CA to San Diego, CA
Thursday, October 14, 2010

Book another flight

Air Total	**$280.40**
Total Paid Now	**$280.40**
Trip Total	**$280.40**

Sacramento Int'l
Airport

Card Account : XXXXXXXXXXXX6402
Card Type : Visa
Authorization Code : 00416A

Cashier : 8 Seq # 25139
License Plate : XX NOPLATE
Ent : 04:57 10/04/10 Lane 37
Exit: 15:58 10/04/10 Lane 52

FEE	$	15.00
AMOUNT TEND	$	15.00
CASH	$	0.00
CREDIT CARD	$	15.00
CHECK	$	0.00
CHANGE CALC	$	0.00

PAID AT CT $ 15.00
Taxes Included

*** Start Calculation Details ***
1 Day(s) @$15.00 = $15.00

Air

Passenger Type	Name	Confirmation Number	Rapid Rewards Number
ADULT	KAREN ASHBY	XOHZ6K	00001017654702

ITINERARY

DEPART OCT 14	**Sacramento, CA to San Diego, CA** Thursday, October 14, 2010 Travel Time 1 h 25 m (Nonstop) Add EarlyBird Check-In	#1604	Depart Sacramento, CA (SMF) Arrive in San Diego, CA (SAN)	6:35 AM 8:00 AM
RETURN OCT 14	**San Diego, CA to Sacramento, CA** Thursday, October 14, 2010 Travel Time 1 h 30 m (Nonstop) Add EarlyBird Check-In	#898	Depart San Diego, CA (SAN) Arrive in Sacramento, CA (SMF)	2:55 PM 4:25 PM

PRICE

Passenger Type	Trip	Routing	Fare Type	Base Fare	Govt. Taxes and Fees	Quantity	Total
Adult	Depart	SMF-SAN	Wanna Get Away	$68.84	$15.86	1	$84.70
Adult	Return	SAN-SMF	Business Select	$172.09	$23.61	1	$195.70
				$240.93	$39.47	1	$280.40

Please read the fare rules associated with this purchase.

Effective January 28, 2011, unused travel funds may only be applied toward the purchase of future travel for the individual named on the ticket.

Total $280.40

Billing

HMS HOST STARBUCKS
SACRAMENTO INTERNAITONAL AIRPORT
WELCOME TO SACRAMENTO!!

5345 MELISSA

CHK 3180 OCT04'10 5:11AM

1 MOCHA	4.50
NO CHOICE	
Subtotal	4.50
Tax	0.39
Amt Paid	4.89
Cash	5.00
Change Due	0.11

HMS HOST STARBUCKS
SACRAMENTO INTERNAITONAL AIRPORT

Help put Starbucks in the
New Sacramento Airport Terminal!
Go to the
Sacramento Restaurant Group's
Facebook page and vote "LIKE"!

HMSHOST
STARBUCKS COFFEE NORTH EAST
SAN DIEGO AIRPORT

4605 Mariadel

CHK 4294 OCT04'10 1:15PM GST 1

1 VNTI MOCHA V	4.65
SUBTOTAL	4.65
TAX	0.41
AMOUNT PAID	5.06
CASH	5.06

5.06
4.89
$9.95

HMSHOST
STARBUCKS COFFEE EAST
SAN DIEGO AIRPORT

1135 ARCEO

CHK 1913 OCT14'10 8:15AM GST 2

1 BAN WLNUT BREAD	2.90
1 GRND MOCHA G	4.25
SUBTOTAL	7.15
TAX	0.63
AMOUNT PAID	7.78
Stbk Card	7.78

Amount 7.78
TerminalID Z0008151
RefrNbr 87069293
Redemption Approved for $7.78
Card Balance 4.58
Gift Card Charge 7.78

Sacramento Int'l
Airport

Cashier : 63 Seq # 16279
License Plate : XX NOPLATE
Ent : 05:31 10/14/10 Lane 37
Exit: 15:42 10/14/10 Lane 54

	FEE $
AMOUNT TEND $	15.00
CASH $	15.00
CREDIT CARD $	15.00
CHECK $	0.00
CHANGE CALC $	0.00
PAID AT CT $	15.00

Taxes Included

*** Start Calculation Details ***

1 Day(s) @$15.00 = $15.00

*** End Calculation Details ***

*** Thank You ***

ENTERPRISE RENT-A-CAR COMPANY OF LOS ANGELES
1691 HANCOCK STREET
SAN DIEGO,CA 921011117
(619) 294-3313
Branch: 1003115
Ticket: 364257 Ref#: B90HZS

KAREN ASHBY
Out: 10/04/2010 8:00 AM
In: 10/04/2010 12:44 PM
Vehicle: 2010 CHEV COBA 42LT
Vehicle License: 6H0H698

TIME & DISTANCE	1@$39.00/DAY =	$39.00
DN		
REFUELING CHARGE	1@$8.99/DAY =	$8.99
CUSTOMER FACILITY CHARG	=	$0.00
LA TOURISM FEE	=	$10.00
AIRPORT CONCESSION FEE 3.5000%	=	$1.36
VLF RECOVERY 11.1100%	=	$5.34
SALES TAX 1@$0.17/DAY	=	$0.17
8.7500%	=	$3.00
Total Charges:		$68.74

LARRY WALKER ASSOCIATES - Monthly Expense Sheet

EMPLOYEE NAME: Mack Walker

PERIOD ENDED: 10/31/10

DESCRIPTION	DATE	PROJECT NO.	TASK NO.	ACCOUNT NO.	AMOUNT		
Sacramento Int. Airport Parking	10/14/10	427.01	2.0	544.00	$15.00	EXPENSE CODES	
Mileage to Sacramento Int. Airport (rt) 40 miles @ .50	10/14/10	427.01	2.0	547.00	$20.00	500—REIMBURSABLE (T&M)	
Airfare to San Diego	10/14/10	427.01	2.0	542.00	$265.40	600—DIRECT (Lump Sum)	
						700—INDIRECT (Overhead)	
						*41.00	Mileage (0.50/mi)
						*42.00	Airfare
						*43.00	Transportation
						*44.00	Parking
						*45.00	Lodging
						*46.00	Meals
						*47.00	Subsistence
						*51.00	Printing & Reproduction
						*52.00	Postage/Freight/Delivery
						*53.00	Supplies & Materials
						754.00	Equipment Rental
						755.00	Software
						756.00	Publications/Data/Info
						757.00	Education/Registration/Dues
						758.00	Retreat
						793.00	Entertainment
						794.00	Contributions

Mack Walker

From: Southwest Airlines [SouthwestAirlines@luv.southwest.com]
Sent: Monday, October 11, 2010 1:16 PM
To: Mack Walker
Subject: Ticketless Confirmation - WALKER/MALCOLM RAY - XHDILZ

AVIS 3070 6836 036

WALKER/MALCOLM RAY

Confirmation Date: 09/21/10

Confirmation Number: XHDILZ

Passenger(s)	Account Number	Ticket #	Expiration[1]
WALKER/MALCOLM RAY	00000021175420	5262130548421	06/12/11

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Depart: SACRAMENTO CA to SAN DIEGO CA *(Travel Time: 1 hrs 25 mins)*

Date	Flight	Flight Information
Wed Oct 13	1604	Depart SACRAMENTO CA (SMF) at 6:35 AM Arrive in SAN DIEGO CA (SAN) at 8:00 AM

urn: SAN DIEGO CA to SACRAMENTO CA *(Travel Time: 1 hrs 30 mins)*

Date	Flight	Flight Information
Thu Oct 14	0898	Depart SAN DIEGO CA (SAN) at 2:55 PM Arrive in SACRAMENTO CA (SMF) at 4:25 PM

Base Fare	$226.98
+ Excise Taxes	$17.02
Advertised Fare	$244.00
+ Segment Fee	$7.40
+ Passenger Facility Charge	$9.00
+ Security Fee[3]	$5.00
Total Payment	$265.40

Current payment(s)
10/11/10 Visa XXXXXXXXXXXX1691 $121.00
10/11/10 Ticket Exchange 5262126346324 $144.40

1

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

WAL27
2011.3.1
rchk# 500 444 261

February 22, 2011

Project No. - Invoice No: 00427.01-3

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

RECEIVED
FEB 28 2011
BY:

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 11/30/2010

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 1.0 Planning Meetings (Weston P.O. Item #3)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	2.75	183.00	$503.25
Loux, Brian	3.50	130.00	[illegible]
Walker, Malcolm	16.50	225.00	$3,712.50
Total Labor			**$4,670.75**
Total This Task			$4,670.75

13245.110.003.0002.01 - L3

INVOICE APPROVAL

DATE REC: 2/23/11

APPROVED BY: David Pohe

SIGNATURE: next page

PO # 0073156

WO #

RETURN TO ANALYN NELSON

Task: 2.0 Workshops Attendance/Participation (Weston P.O. Item #4)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	6.50	183.00	$1,189.50
Walker, Malcolm	5.00	225.00	$1,125.00
Total Labor			$2,314.50

13245.110.003.0002.02 - L4

Reimbursable Expenses

Payee		Cost	Markup	Amount
Airfare				
11/30/2010 Ashby, Karen	Workshop #5	380.40		$380.40 ✓
11/30/2010 Walker, Malcolm	San Diego	301.40		$301.40 ✓

$18,539.80

Total Reimbursables		**$681.80**
Total This Task	13245.110.003.0002.02 -	**$2,996.30** - L4

Task: 3.0 Watershed Mgmt. Vision Document (Weston P.O. Item #5)

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	1.50	225.00	$337.50
Total Labor			**$337.50**
Total This Task	13245.110.003.0002.03 -		**$337.50** - L5

Task: 4.0 Project Kickoff Meetings (Weston P.O. Item 1)

Professional Personnel

Employee	Hours	Rate	Amount
Cowan, Karen	13.75	177.00	$2,433.75
Total Labor			**$2,433.75**
Total This Task	13245.110.001.0001 -		**$2,433.75** - L1

Task: 5.0 09/10 Annual Report (Weston P.O. Item #2)(Partial Request)

Professional Personnel

Employee	Hours	Rate	Amount
Laurenson, Brian	6.00	183.00	$1,098.00
Mathews, Sandy	20.50	177.00	$3,628.50
Walker, Malcolm	15.00	225.00	$3,375.00
Total Labor			**$8,101.50**
Total This Task	13245.110.001.0006 -		**$8,101.50** - L2

Invoice Amount **$18,539.80**

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	18,539.80	22,191.17	40,730.97
Limit			49,576.00
Remaining			8,845.03

Approved for payment
2/23/11
Approval

SOUTHWEST.COM

Thank you for your purchase!

427.01

Paid

Air Confirmation: XHCNAI

Sacramento, CA to San Diego, CA (11/30/2010)

Air	Car	Hotel
Conf # XHCNAI	Choose from 14 different rental companies.	Shop over 40,000 hotels
Air Total $380.40	Browse cars	Browse hotels

Total Paid Now	$380.40
Trip Total	$380.40

Air

Passenger Type	Name	Confirmation Number	Rapid Rewards Number
ADULT	KAREN ASHBY	XHCNAI	00001017654702

ITINERARY

DEPART NOV 30	Sacramento, CA to San Diego, CA Tuesday, November 30, 2010 Travel Time 1 h 25 m (Nonstop) Add EarlyBird Check-In	#694	Depart Sacramento, CA (SMF) Arrive in San Diego, CA (SAN)	6:55 AM 8:20 AM
RETURN NOV 30	San Diego, CA to Sacramento, CA Tuesday, November 30, 2010 Travel Time 1 h 35 m (Nonstop) Add EarlyBird Check-In	#770	Depart San Diego, CA (SAN) Arrive in Sacramento, CA (SMF)	3:50 PM 5:25 PM

PRICE

Passenger Type	Trip	Routing	Fare Type	Base Fare	Govt. Taxes and Fees	Quantity	Total
Adult	Depart	SMF-SAN	Anytime	$160.00	$22.70	1	$182.70
Adult	Return	SAN-SMF	Business Select	$173.95	$23.75	1	$197.70
				$333.95	$46.45	1	$380.40

Please read the fare rules associated with this purchase.

Effective January 28, 2011, unused travel funds may only be applied toward the purchase of future travel for the individual named on the ticket.

Total $380.40

Billing

Purchaser Name	Billing Address
Karen Ashby	825 Christie Court

alker

Southwest Airlines [SouthwestAirlines@luv.southwest.com]
Wednesday, November 17, 2010 9:50 AM
Mack Walker
ubject: Air Confirmation WALKER/MALCOLM RAY - X4QD3J

WALKER/MALCOLM RAY

Confirmation Date: November 17, 2010

Confirmation Number: X4QD3J

Passenger(s)	Account Number	Ticket #	Expiration[1]
WALKER/MALCOLM RAY	00030021175420	5262138200858	Nov 17, 2011

[1] All travel involving funds from this Confirmation Number must be completed by the expiration date.

Depart: SACRAMENTO CA TO SAN DIEGO CA *(Travel Time: 1 hrs 25 mins)*

Date	Flight	Flight Information
Tue Nov 30	694	Depart SACRAMENTO CA (SMF) at 06:55 AM Arrive in SAN DIEGO CA (SAN) at 08:20 AM

Return: SAN DIEGO CA TO SACRAMENTO CA *(Travel Time: 1 hrs 35 mins)*

Date	Flight	Flight Information
Tue Nov 30	770	Depart SAN DIEGO CA (SAN) at 3:50 PM Arrive in SACRAMENTO CA (SMF) at 5:25 PM

Base Fare	$260.46
+Excise Taxes	$19.54
Advertised Fare	$280.00
+ Segment Fee	$2.40
+ Passenger Facility Charge	$9.00
+ Security Fee[1]	$5.00
Total Payment	**$301.40**

Current Payment(s):

Nov 17, 2010 Visa XXXXXXXXXXXX1691 $301.40

[1] Security Fee is the government-imposed September 11th Security Fee.

Valid only on Southwest Airlines. All travel involving funds from this Confirmation Number must be completed by the expiration date. Effective January 28, 2011, unused travel funds may only be applied toward the purchase of future travel for the individual named on the ticket. Any change to this itinerary may result in a fare increase.

1

WGL 2J
2011-3-2

rch# 500445740

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

RECEIVED
FEB 23 2011
BY:

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

February 22, 2011

Project No. - Invoice No: 00427.01-4

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 12/31/2010

Partial Request for Task 5-Weston Line Item #2
PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 1.0 Planning Meetings (Weston P.O. Item #3)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	2.50	183.00	$457.50
Total Labor			$457.50

Reimbursable Expenses

Payee		Cost	Markup	Amount
Communication				
12/1/2010 AT&T Teleconference Services	Inv.# 12/1/10	17.09		$17.09
Total Reimbursables				$17.09
Total This Task				$474.59

13245.110.003.0002.01 - L3

Task: 3.0 Watershed Mgmt. Vision Document (Weston P.O. Item #5)

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	4.00	225.00	$900.00
Total Labor			$900.00
Total This Task			$900.00

13245.110.003.0002.03 - $900.00 - L5

INVOICE APPROVAL
DATE REC: 2/23/11
APPROVED BY: David Poole
SIGNATURE: next page
PO # M 73156
WO #
RETURN TO ANALYN NELSON

Task:. 5.0 09/10 Annual Report (Weston P.O. Item #2)(Partial Request)

Professional Personnel

Employee	Hours	Rate	Amount
Cowan, Karen	8.40	177.00	$1,486.80
Malhews, Sandy	4.50	177.00	$796.50
Walker, Malcolm	7.00	225.00	$1,575.00
Total Labor			$3,858.30
Total This Task			$3,858.30

Invoice Amount $5,232.89

See e-mail dated 1/26/11 Deduct. 3,858.30

HOLD

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	5,232.89	40,730.97	45,963.86
Limit			49,576.00
Remaining			3,612.14

1,374.59

OK to Pay

Approved for Payment

2/23/11

ACCOUNT ID: 18644787-00001
CUSTOMER: ATTN: MICHELLE BOECKX
LARRY WALKER ASSOCIATES

BILL DATE: DEC 01 2010

DETAIL OF SERVICE USAGE

ITEM	QTY	TYPE	DATE	TIME	MINUTES	TOTAL

AUDIO DIAL-IN TELECONFERENCES

CONFERENCE: [redacted]
DESCRIPTION: [redacted]
HOST NAME: SANTA MONICA LINE
HOST NUMBER: 530-753-6400

RESERVED MINUTES: 90
RESERVED CONNECTIONS: 10 DIAL-IN

1. CONFEREE	RSVLDIUSA	11/17/2010	09:00am	19	1.41
2. CONFEREE	RSVLDIUSA	11/17/2010	09:00am	19	1.41
3. CONFEREE	RSVLDIUSA	11/17/2010	09:00am	19	1.41
4. CONFEREE	RSVLDIUSA	11/17/2010	09:01am	18	1.33
5. CONFEREE	RSVLDIUSA	11/17/2010	09:02am	17	1.26
6. CONFEREE	RSVLDIUSA	11/17/2010	09:02am	17	1.26
7. CONFEREE	RSVLDIUSA	11/17/2010	09:04am	15	1.11
SUBTOTAL				124	9.19
TAXES					0.00
TOTAL FOR CONFERENCE ID: BXX2407				124	[redacted]

CONFERENCE: BOL7015
DESCRIPTION: [redacted]
HOST NAME: OAKLAND LINE
HOST NUMBER: 530-753-6400

427.01

RESERVED MINUTES: 90
RESERVED CONNECTIONS: 10 DIAL-IN

1. CONFEREE	RSVLDIUSA	11/17/2010	09:58am	83	6.14
2. CONFEREE	RSVLDIUSA	11/17/2010	10:01am	80	5.92
3. CONFEREE	RSVLDIUSA	11/17/2010	10:13am	68	5.03
SUBTOTAL				231	17.09
TAXES					0.00
TOTAL FOR CONFERENCE ID: BOL7015				231	$17.09 ✓

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

LARRY WALKER ASSOCIATES

WALZT
2011-4-2
Ychr# 500453537

March 10, 2011

Project No. - Invoice No: 00427.01-5

Weston Solutions, Inc.
Attn: Analyn Nelson
2433 Impala Drive
Carlsbad, CA 92008

RECEIVED
MAR 13 2011
BY: am

CO. OF SAN DIEGO PROFESSIONAL SERVICES

Project: 00427.01

For Services Rendered Through 2/28/2011

PO Number: 0073156
PSA: SDC534965-2010-2
Task Order: 001

Task: 01.0 Planning Meetings (Weston P.O. Item #3)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	.25	183.00	$45.75
Total Labor			**$45.75**
Total This Task			**$45.75**

13245.110.003.0002.01 - L3

Task: 04.0 Project Kickoff Meetings (Weston P.O. Item 1)

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	2.00	225.00	$450.00
Total Labor			$450.00
Total This Task			**$450.00**

13245.110.001.0001 - L1

Task: 05.0 09/10 Annual Report (Weston P.O. Item #2)(Partial Request)

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	3.75	183.00	$686.25
Total Labor			**$686.25**
Total This Task			**$686.25**

13245.110.001.0006 - L2

INVOICE APPROVAL

DATE REC: 3/13/11

APPROVED BY: David Pahl

SIGNATURE:

PO # 00 73156

WO #

RETURN TO

$16,224.75

Task: 06.0 Permit Strategy Summary

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	3.25	183.00	$594.75
Warren, Rachel	40.00	130.00	$5,200.00
Total Labor			**$5,794.75**
Total This Task			**$5,794.75**

/13245.110.003.0002.03

Task: 07.0 San Diego Permits Summary Table

Professional Personnel

Employee	Hours	Rate	Amount
Ashby, Karen	6.00	183.00	$1,098.00
Walker, Malcolm	20.00	225.00	$4,500.00
Warren, Rachel	3.25	130.00	$422.50
Wong, Patrick	9.00	90.00	$810.00
Total Labor			**$6,830.50**
Total This Task			**$6,830.50**

/13245.110.003.0002.04 L7

Task: 08.0 Pre-ROWD Meetings

Professional Personnel

Employee	Hours	Rate	Amount
Walker, Malcolm	4.50	225.00	$1,012.50
Total Labor			**$1,012.50**
Total This Task			**$1,012.50**

/13245.110.003.0002.04 L8

Task: 10.0 LTEA Report

Professional Personnel

Employee	Hours	Rate	Amount
Lundberg, Kathryn	4.75	130.00	$617.50
Walker, Malcolm	3.50	225.00	$787.50
Total Labor			**$1,405.00**
Total This Task			**$1,405.00**

/13245.110.002.0009 L10

Invoice Amount **$16,224.75**

Billing Limits	Current	Prior	To-date
Total Billings	16,224.75	45,708.86	61,933.61
Limit			107,286.81
Remaining			45,353.20

Sub-task 2F

RBF CONSULTING

February 25, 2011
Project No: 55-100684.001
Invoice No: 11010065

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
MS O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100684.001 Stormwater Consulting/Engineering Svc
CONTRACT NO. 534079
TASK ORDER NO. 2

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

ok to pay
Todd Snyder
3/2/11

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

Professional consulting services rendered pursuant to the Agreement dated November 22, 2010 relative to the Development of Watershed Activities Database in Support of Report of Waste Discharge.

Professional Services: January 1, 2011 to January 28, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Project Management	1,000.00	0.00	0.00	0.00
Kick-Off Meeting	1,000.00	100.00	1,000.00	1,000.00
Expansion of Fields	1,000.00	35.00	350.00	350.00
Additional Search Functionality	800.00	0.00	0.00	0.00
Addition of Security Features	800.00	0.00	0.00	0.00
Prep Guidelines for Microsoft Word	690.00	0.00	0.00	0.00
Database Training and Rollout	1,400.00	0.00	0.00	0.00
1 Yr Database Hosting/Backups	690.00	0.00	0.00	0.00
Data Entry for Exist WURMP Activities	1,000.00	0.00	0.00	0.00
1 Yr Database Support	1,620.00	0.00	0.00	0.00
Total Fee	10,000.00		1,350.00	1,350.00
		Previous Fee Billing	0.00	
		Total Fee		**1,350.00**

Total this Invoice **$1,350.00**

65th Anniversary 1944 2009

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1324 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

MOE
MIKHAIL OGAWA ENGINEERING

RBF
Scott Taylor
5050 Avenida Encinas # 260
Carlsbad, CA 92008-4386

1/9/2011
Project No. 023.001
Invoice No. 000898
P.O. Number 6881

Regional Watershed Activity Database

P.O. 6881

Description of Services	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between December 1, 2010 and December 31, 2010			
Associate Scientist Caspio database, database kickoff meeting	9.25	100.00	925.00
Principal Engineer prep for and attend kickoff mtg for database	2.5	128.00	320.00

ENTERED
JAN 19 2011

RECEIVED
JAN 12 2011
RBF CONSULTING
CARLSBAD OFFICE

RECEIVED
JAN 19 2011
A/P IRVINE

ACCRUED

ACCT. NO. 611
VENDOR NO. 80858
APPROVED ✓
ACCTG.
JOB NO. 55-100684.001 dCST
JN 55-100684.00

Total this invoice **$1,245.00**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

CONSULTANT PAYMENT REQUEST

COUNTY OF SAN DIEGO
DEPARTMENT OF GENERAL SERVICES
PROJECT MANAGEMENT DIVISION
5560 Overland Avenue, Suite 410, (MS O-368)
San Diego, CA 92123

PROJECT:	Stormwater Consulting/Engineering	CONSULTANT:	RBF Consulting, Inc.
PROJECT NO.:	55-100684.001	CONTRACT NO:	534079
TASK ORDER:	02	CONTRACT DATE:	11/22/10
REQUEST NO.:	1	REQUEST DATE:	2/25/11

	SCHEDULED FEE	FEE EARNED TO DATE	PREVIOUS REQUESTS	CURRENT AMOUNT DUE
Basic Services	$ 10,000.00	$ 1,350.00	$ -	$ 1,350.00
Reimbursables	$ -	$ -	$ -	$ -
Authorized Additional Services:	$ -	$ -	$ -	$ -
Amendments	$ -	$ -	$ -	$ -
TOTAL	$ 10,000.00	$1,350.00	$0.00	$ 1,350.00
Less Withholds, if any:				$ -

NOTE: Consultant invoice is required as part of this payment request submittal

CONSULTANT'S CERTIFICATION:

The undersigned Consultant hereby certifies that the percentages complete represented by this Payment Request are true and accurate representations of Consultant's progress to date, and that notwithstanding such percentages or the payment thereof, Consultant remains responsible for satisfactorily completing all Services called for in the Agreement.

By: Mark A Capps Title: V. P Date: 2/25/11

FISCAL Check
(POETA Verification, DGS Admin. Analyst/Fiscal)

By: _____ Date: _____

OWNER'S APPROVAL:
Project Manager, Project Management Division

By: _____

Date: _____

DISTRIBUTION: € Proj. Control € Fiscal *(Original)* € Consultant € Project Manager

PM-58, Updated 10/2010

RBF CONSULTING

March 25, 2011
Project No: 55-100684.001
Invoice No: 11020591

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
MS O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100684.001 Stormwater Consulting/Engineering Svc
CONTRACT NO. 534079
TASK ORDER NO. 2

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Professional consulting services rendered pursuant to the Agreement dated November 22, 2010 relative to the Development of Watershed Activities Database in Support of Report of Waste Discharge.

Professional Services: January 29, 2011 to February 25, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Project Management	1,000.00	43.225	432.25	342.00
Kick-Off Meeting	1,000.00	100.00	1,000.00	681.75
Expansion of Fields	1,000.00	100.00	1,000.00	441.75
Additional Search Functionality	800.00	100.00	800.00	416.75
Addition of Security Features	800.00	67.9688	543.75	543.75
Prep Guidelines for Microsoft Word	690.00	0.00	0.00	0.00
Database Training and Rollout	1,400.00	0.00	0.00	0.00
1 Yr Database Hosting/Backups	690.00	0.00	0.00	0.00
Data Entry for Exist WURMP Activities	1,000.00	0.00	0.00	0.00
1 Yr Database Support	1,620.00	0.00	0.00	0.00
Total Fee	10,000.00		3,776.00	2,426.00
		Previous Fee Billing	1,350.00	
		Total Fee		**2,426.00**

ok to pay 4/8/11
$2426.00
Todd

P: 1002993
O: 50915

Total this Invoice **$2,426.00**

E: 52370 T: 012.009
A: 100496

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1324 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

printed on recycled paper

Outstanding Invoices

Number	Date	Balance
11010065	2/25/11	1,350.00
Total		1,350.00

Total Now Due **$3,776.00**

CONSULTANT PAYMENT REQUEST

COUNTY OF SAN DIEGO
DEPARTMENT OF GENERAL SERVICES
PROJECT MANAGEMENT DIVISION
5560 Overland Avenue, Suite 410, (MS O-368)
San Diego, CA 92123

PROJECT:	Stormwater Consulting/Engineering	CONSULTANT:	RBF Consulting, Inc.
PROJECT NO.:	55-100684.001	CONTRACT NO:	534079
TASK ORDER:	02	CONTRACT DATE:	11/22/10
REQUEST NO.:	2	REQUEST DATE:	3/25/11

	SCHEDULED FEE	FEE EARNED TO DATE	PREVIOUS REQUESTS	CURRENT AMOUNT DUE
Basic Services	$ 10,000.00	$ 3,776.00	$ 1,350.00	$ 2,426.00
Reimbursables	$ -	$ -	$ -	$ -
Authorized Additional Services:	$ -	$ -	$ -	$ -
Amendments	$ -	$ -	$ -	$ -
TOTAL	$ 10,000.00	$3,776.00	$1,350.00	$ 2,426.00
Less Withholds, if any:				$ -

NOTE: Consultant invoice is required as part of this payment request submittal

CONSULTANT'S CERTIFICATION:

The undersigned Consultant hereby certifies that the percentages complete represented by this Payment Request are true and accurate representations of Consultant's progress to date, and that notwithstanding such percentages or the payment thereof, Consultant remains responsible for satisfactorily completing all Services called for in the Agreement.

By: Mark A Cuppos Title: V.P. Finance Date: 3/25/11

FISCAL Check
(POETA Verification, DGS Admin. Analyst/Fiscal)

By: _____ Date: _____

OWNER'S APPROVAL:
Project Manager, Project Management Division

By: _____

Date: _____

DISTRIBUTION: € Proj. Control € Fiscal *(Original)* € Consultant € Project Manager

PM-58, Updated 10/2010

MOE

MIKHAIL OGAWA ENGINEERING

RBF
Scott Taylor
5050 Avenida Encinas # 260
Carlsbad, CA 92008-4386

2/13/2011
Project No. 023.001
Invoice No. 000907
P.O. Number

Regional Watershed Activity Database

Description of Services	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between January 1, 2011 and January 31, 2011			
Task A - Project Management			
Principal Engineer	1.5	128.00	192.00
Associate Scientist	1.5	100.00	150.00
Task C - Expansion of Fields			
Principal Engineer	1.5	128.00	192.00
Associate Scientist	6	100.00	600.00
Task D - Additional Search Functionality			
Principal Engineer	1	128.00	128.00
Associate Scientist	6	100.00	600.00
Task E - Additional Security Features			
Principal Engineer	0.5	128.00	64.00
Associate Scientist	5	100.00	500.00

Total this invoice **$2,426.00**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

RBF CONSULTING

ok to pay
6/1/11 Todd Snyder
P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

May 27, 2011
Project No: 55-100684.001
Invoice No: 11040242

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
MS O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100684.001 Stormwater Consulting/Engineering Svc

CONTRACT NO. 534079
TASK ORDER NO. 2

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Professional consulting services rendered pursuant to the Agreement dated November 22, 2010 relative to the Development of Watershed Activities Database in Support of Report of Waste Discharge.

Professional Services: April 2, 2011 to April 30, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Project Management	1,000.00	56.825	568.25	136.00
Kick-Off Meeting	1,000.00	100.00	1,000.00	0.00
Expansion of Fields	1,000.00	100.00	1,000.00	0.00
Additional Search Functionality	800.00	100.00	800.00	0.00
Addition of Security Features	800.00	67.9688	543.75	0.00
Prep Guidelines for Microsoft Word	690.00	0.00	0.00	0.00
Database Training and Rollout	1,400.00	100.00	1,400.00	1,400.00
1 Yr Database Hosting/Backups	690.00	0.00	0.00	0.00
Data Entry for Exist WURMP Activities	1,000.00	0.00	0.00	0.00
1 Yr Database Support	1,620.00	0.00	0.00	0.00
Total Fee	10,000.00		5,312.00	1,536.00
		Previous Fee Billing	3,776.00	
		Total Fee		**1,536.00**

Total this Invoice **$1,536.00**

Outstanding Invoices

Number	Date	Balance
11020591	3/25/11	2,426.00
Total		2,426.00

Total Now Due **$3,962.00**

CONSULTANT PAYMENT REQUEST

COUNTY OF SAN DIEGO
DEPARTMENT OF GENERAL SERVICES
PROJECT MANAGEMENT DIVISION
5560 Overland Avenue, Suite 410, (MS O-368)
San Diego, CA 92123

PROJECT:	Stormwater Consulting/Engineering	CONSULTANT:	RBF Consulting, Inc.
PROJECT NO.:	55-100684.001	CONTRACT NO:	534079
TASK ORDER:	02	CONTRACT DATE:	11/22/10
REQUEST NO.:	3	REQUEST DATE:	5/27/11

	SCHEDULED FEE	FEE EARNED TO DATE	PREVIOUS REQUESTS	CURRENT AMOUNT DUE
Basic Services	$ 10,000.00	$ 5,312.00	$ 3,776.00	$ 1,536.00
Reimbursables	$ -	$ -	$ -	$ -
Authorized Additional Services:	$ -	$ -	$ -	$ -
Amendments	$ -	$ -	$ -	$ -
TOTAL	$ 10,000.00	$5,312.00	$3,776.00	$ 1,536.00
Less Withholds, if any:				$ -

NOTE: Consultant invoice is required as part of this payment request submittal

CONSULTANT'S CERTIFICATION:

The undersigned Consultant hereby certifies that the percentages complete represented by this Payment Request are true and accurate representations of Consultant's progress to date, and that notwithstanding such percentages or the payment thereof, Consultant remains responsible for satisfactorily completing all Services called for in the Agreement.

By: Mark A Capps Title: V.P. Date: 5/27/11

FISCAL Check
(POETA Verification, DGS Admin. Analyst/Fiscal)

By: _____ Date: _____

OWNER'S APPROVAL:
Project Manager, Project Management Division

By: _____

Date: _____

DISTRIBUTION: € Proj. Control € Fiscal *(Original)* € Consultant € Project Manager

PM-58, Updated 10/2010

MOE

MIKHAIL OGAWA ENGINEERING

RBF
Scott Taylor
5050 Avenida Encinas # 260
Carlsbad, CA 92008-4386

4/10/2011
Project No. 023.001
Invoice No. 000947
P.O. Number

Regional Watershed Activity Database

Description of Services	Hours/Qty	Rate	Amount
Professional Services			
Services Provided between March 1, 2011 and March 31, 2011			
Task G - Database Training and Rollout			
Principal Engineer final prep for training of regional DB; training copermittees; guidelines	12	128.00	1,536.00

RECEIVED
APR 13 2011
RBF CONSULTING
CARLSBAD OFFICE

ACCOUNT NO. 55-100681
VENDOR NO.
APPROVED 4-19-11 Mark Cappas
ACCOUNTING
JOB NO.
AMOUNT $1,536.00

Total this invoice **$1,536.00**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

Sub-task 2H

RBF CONSULTING

March 25, 2011
Project No: 55-100684.002
Invoice No: 11020186

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
MS O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100684.002 TMDL Load Reduction Plan Framework TO3
CONTRACT NO. 534079
TASK ORDER NO. 3

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Professional consulting services rendered pursuant to the Agreement dated February 3, 2011 relative to the TMDL Load Reduction Plan Framework services.

3/30/11
OK to pay
Todd S
P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

Time and Materials Fee Description This Period:

Glen Villareal 2.0hrs @ $136.04/hr = $272.08
Scott Taylor 1.0hrs @ $222.75/hr = $222.75

Total Fee This Period: $494.83

Professional Services: January 29, 2011 to February 25, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Compliance Assess Monitoring Framewk	22,506.00	2.1987	494.84	494.84
Meetings	3,587.00	0.00	0.00	0.00
Peer Review	3,564.00	0.00	0.00	0.00
Total Fee	29,657.00		494.84	494.84
	Previous Fee Billing		0.00	
	Total Fee			**494.84**

Total this Invoice **$494.84**

CONSULTANT PAYMENT REQUEST

COUNTY OF SAN DIEGO
DEPARTMENT OF GENERAL SERVICES
PROJECT MANAGEMENT DIVISION
5560 Overland Avenue, Suite 410, (MS O-368)
San Diego, CA 92123

PROJECT:	TMDL Load Reduction Plan Framework	CONSULTANT:	RBF Consulting, Inc.
PROJECT NO.:	55-100684.002	CONTRACT NO:	534079
TASK ORDER:	03	CONTRACT DATE:	11/22/10
REQUEST NO.:	1	REQUEST DATE:	3/25/11

	SCHEDULED FEE	FEE EARNED TO DATE	PREVIOUS REQUESTS	CURRENT AMOUNT DUE
Basic Services	$ 29,657.00	$ 494.84	$ -	$ 494.84
Reimbursables	$ -	$ -	$ -	$ -
Authorized Additional Services:	$ -	$ -	$ -	$ -
Amendments	$ -	$ -	$ -	$ -
TOTAL	$ 29,657.00	$494.84	$0.00	$ 494.84
Less Withholds, if any:				$ -

NOTE: Consultant invoice is required as part of this payment request submittal

CONSULTANT'S CERTIFICATION:

The undersigned Consultant hereby certifies that the percentages complete represented by this Payment Request are true and accurate representations of Consultant's progress to date, and that notwithstanding such percentages or the payment thereof, Consultant remains responsible for satisfactorily completing all Services called for in the Agreement.

By: Mark A Cupps Title: V.P. Finance Date: 3/25/11

FISCAL Check
(POETA Verification, DGS Admin. Analyst/Fiscal)

By: _____ Date: _____

OWNER'S APPROVAL:
Project Manager, Project Management Division

By: _____

Date: _____

DISTRIBUTION: € Proj. Control € Fiscal *(Original)* € Consultant € Project Manager

PM-58, Updated 10/2010

RBF CONSULTING

April 29, 2011
Project No: 55-100684.002
Invoice No: 11030171

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
MS O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100684.002 TMDL Load Reduction Plan Framework TO3
CONTRACT NO. 534079
TASK ORDER NO. 3

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Professional consulting services rendered pursuant to the Agreement dated February 3, 2011 relative to the TMDL Load Reduction Plan Framework services.

Time and Materials Fee Description This Period:

Nora Jons	8.5hrs @ $113.27/hr =	$962.80
Glen Villareal	51.75hrs @ $136.04/hr =	$7,040.07
Scott Taylor	1.0hrs @ $222.75/hr =	$222.75
Terrence Chen	4.0hrs @ $136.04/hr =	$544.16
Larry Walker Associates		$1,017.75

Total Fee This Period: $9,787.53

Contract # 534079 ok to pay 5/3/11 Todd

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

Professional Services: February 26, 2011 to April 1, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Compliance Assess Monitoring Framewk	22,506.00	45.6872	10,282.36	9,787.52
Meetings	3,587.00	0.00	0.00	0.00
Peer Review	3,564.00	0.00	0.00	0.00
Total Fee	29,657.00		10,282.36	9,787.52
		Previous Fee Billing	494.84	
		Total Fee		**9,787.52**

Total this Invoice	**$9,787.52**

Outstanding Invoices

Number	Date	Balance
11020186	3/25/11	494.84
Total		**494.84**

Total Now Due	**$10,282.36**

RBF
CARLSBAD
received
3-15-11

LARRY WALKER ASSOCIATES

707 4th Street, Suite 200
Davis, CA 95616

530.753.6400
530.753.7030 fax

March 09, 2011

Project No. - Invoice No: 00425.02-1

RBF Consulting, Inc.
Attn: Scott Taylor
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92008-4386

BACTERIA ACTION PLAN

Project: 00425.02

For Services Rendered Through 2/28/2011

Master Contract # 534079

Professional Services

	Hours	Rate	Amount
Cooper Desai, Ashli	4.25	223.00	$947.75
Fishel, Susan	.50	140.00	$70.00
Total Professional Services	**4.75**		**$1,017.75**

Invoice Amount **$1,017.75**

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	1,017.75	.00	1,017.75
Limit			14,250.00
Remaining			13,232.25

ACCOUNT NO. OCC 5T
VENDOR NO.
APPROVED JN 55-100684
ACCOUNTING 3/18/11
JOB NO.
AMOUNT

CONSULTANT PAYMENT REQUEST

COUNTY OF SAN DIEGO
DEPARTMENT OF GENERAL SERVICES
PROJECT MANAGEMENT DIVISION
5560 Overland Avenue, Suite 410, (MS O-368)
San Diego, CA 92123

PROJECT:	TMDL Load Reduction Plan Framework	CONSULTANT:	RBF Consulting, Inc.
PROJECT NO.:	55-100684.002	CONTRACT NO:	534079
TASK ORDER:	03	CONTRACT DATE:	11/22/10
REQUEST NO.:	2	REQUEST DATE:	4/29/11

	SCHEDULED FEE	FEE EARNED TO DATE	PREVIOUS REQUESTS	CURRENT AMOUNT DUE
Basic Services	$ 29,657.00	$ 10,282.36	$ 494.84	$ 9,787.52
Reimbursables	$ -	$ -	$ -	$ -
Authorized Additional Services:	$ -	$ -	$ -	$ -
Amendments	$ -	$ -	$ -	$ -
TOTAL	$ 29,657.00	$10,282.36	$494.84	$ 9,787.52
Less Withholds, if any:				$ -

NOTE: Consultant invoice is required as part of this payment request submittal

CONSULTANT'S CERTIFICATION:

The undersigned Consultant hereby certifies that the percentages complete represented by this Payment Request are true and accurate representations of Consultant's progress to date, and that notwithstanding such percentages or the payment thereof, Consultant remains responsible for satisfactorily completing all Services called for in the Agreement.

By: Mark A Capps Title: V.P. Date: 4/29/11

FISCAL Check
(POETA Verification, DGS Admin. Analyst/Fiscal)

By: _____ Date: _____

OWNER'S APPROVAL:
Project Manager, Project Management Division

By: _____

Date: _____

DISTRIBUTION: € Proj. Control € Fiscal *(Original)* € Consultant € Project Manager

PM-58, Updated 10/2010

RBF CONSULTING

May 27, 2011
Project No: 55-100684.002
Invoice No: 11040244

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
MS O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100684.002 TMDL Load Reduction Plan Framework TO3
CONTRACT NO. 534079
TASK ORDER NO. 3

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Professional consulting services rendered pursuant to the Agreement dated February 3, 2011 relative to the TMDL Load Reduction Plan Framework services.

Time and Materials Fee Description This Period:

Nora Jons	0.0hrs @ $113.27/hr =	$0.00
Gian Villareal	22.0hrs @ $136.04/hr =	$2,992.88
Scott Taylor	1.0hrs @ $222.75/hr =	$222.75
Terrence Chen	0.0hrs @ $136.04/hr =	$0.00
Larry Walker Associates		$9,112.27

Total Fee This Period: $12,327.90

ok to pay 6/1/11 Todd J3

P 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

Professional Services: April 2, 2011 to April 30, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Compliance Assess Monitoring Framewk	22,506.00	100.00	22,506.00	12,223.64
Meetings	3,587.00	2.9066	104.26	104.26
Peer Review	3,564.00	0.00	0.00	0.00
Total Fee	29,657.00		22,610.26	12,327.90
		Previous Fee Billing	10,282.36	
		Total Fee		**12,327.90**

Total this Invoice	**$12,327.90**

Outstanding Invoices

Number	Date	Balance
11020186	3/25/11	494.84
11030171	4/29/11	9,787.52
Total		**10,282.36**

Total Now Due	**$22,610.26**

CONSULTANT PAYMENT REQUEST

COUNTY OF SAN DIEGO
DEPARTMENT OF GENERAL SERVICES
PROJECT MANAGEMENT DIVISION
5560 Overland Avenue, Suite 410, (MS O-368)
San Diego, CA 92123

PROJECT:	TMDL Load Reduction Plan Framework	CONSULTANT:	RBF Consulting, Inc.
PROJECT NO.:	55-100684.002	CONTRACT NO:	534079
TASK ORDER:	03	CONTRACT DATE:	11/22/10
REQUEST NO.:	3	REQUEST DATE:	5/27/11

	SCHEDULED FEE	FEE EARNED TO DATE	PREVIOUS REQUESTS	CURRENT AMOUNT DUE
Basic Services	$ 29,657.00	$ 22,610.26	$ 10,282.36	$ 12,327.90
Reimbursables	$ -	$ -	$ -	$ -
Authorized Additional Services:	$ -	$ -	$ -	$ -
Amendments	$ -	$ -	$ -	$ -
TOTAL	$ 29,657.00	$22,610.26	$10,282.36	$ 12,327.90
Less Withholds, if any:				$ -

NOTE: Consultant invoice is required as part of this payment request submittal

CONSULTANT'S CERTIFICATION:

The undersigned Consultant hereby certifies that the percentages complete represented by this Payment Request are true and accurate representations of Consultant's progress to date, and that notwithstanding such percentages or the payment thereof, Consultant remains responsible for satisfactorily completing all Services called for in the Agreement.

By: Mark Cappon Title: V.P. Date: 5/27/11

FISCAL Check
(POETA Verification, DGS Admin. Analyst/Fiscal)

By: _____ Date: _____

OWNER'S APPROVAL:
Project Manager, Project Management Division

By: _____

Date: _____

DISTRIBUTION: € Proj. Control € Fiscal *(Original)* € Consultant € Project Manager

PM-58, Updated 10/2010

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional WURMP Workgroup
Copermittee:	Port of San Diego
Period:	1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 270.50
Contract / Other Expenditures Claimed:	-

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Stephanie Bauer
Associate Environmental Specialist
Port of San Diego

4/29/11
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2010-11 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use / Environmental Planning Manager
County of San Diego

6/22/11
Date

Signature

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional WURMP Workgroup

Copermittee: Port of San Diego

Period: 1st - 4th Qrt FY 2010-11 (July 1, 2010 - Jun 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 2.F. [Watershed Activities Database]						
2/16/2011	Stephanie Bauer	Assoc. Env. Specialist	2.00	$ 54.10	$ 108.20	Meeting
2/23/2011	Stephanie Bauer	Assoc. Env. Specialist	1.00	$ 54.10	$ 54.10	Review of on-line database, provided feedback
3/15/2011	Stephanie Bauer	Assoc. Env. Specialist	2.00	$ 54.10	$ 108.20	Review of materials
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 270.50					
Copermittee Total					$ 270.50	

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	City of San Diego
Period:	FY 2011-12
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 63,962.06

O.K.

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Kris McFadden
Deputy Director
Transportation and Storm Water Department

7/12/12
Date

Kris McFadden
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2011-12 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa, MPH
Education & Outreach, Watershed Protection Program
County of San Diego

Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: 4th Quarter FY 2011-12 (April 1- June 30, 2012)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
x/x/2010			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: City of San Diego

Period: FY11-12

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				Auto-calc'd (5% of amount paid)	
Subtask 3.D. Regional Website					
Contract : Events Online		$ 300.00	7/1/2011	$ 15.00	Regional Website (thinkbluesdregion.org) FTP services: hosting/domain
Contract: MJE Marketing		$ 225.00	12/8/2011	$ 11.25	Regional Website updates
Contract : Events Online		$ 300.00	1/1/2012	$ 15.00	Regional Website (thinkbluesdregion.org) FTP services: hosting/domain
Subtaskx.x Sub-total	$ 825.00				
Subtaskx.x Management Cost	$ 41.25				
Subtask 3.f. Mass Media					
UltraStar Cinema - Regional PSA		$ 30,000.00	11/11/2011	$ 1,500.00	UltraStar In-theater media buy - airing regional PSA (Ants in Your Plants)
XEWT TV		$ 2,250.00	5/4/2012	$ 112.50	SD Region Hispanic Media Buy - Television
XEWT TV		$ 750.00	3/12/2012	$ 37.50	SD Region Hispanic Media Buy - Television
KFMB TV		$ 42.50	4/29/2012	$ 2.13	SD Region Media Buy - Online
KFMB TV		$ 93.50	3/25/2012	$ 4.68	SD Region Media Buy - Online
KFMB TV		$ 5,865.00	4/22/2012	$ 293.25	SD Region Media Buy - Television
KFMB TV		$ 3,995.00	3/25/2012	$ 199.75	SD Region Media Buy - Television
Univision Radio		$ 2,000.00	3/25/2012	$ 200.00	SD Region Hispanic Media Buy - Radio
Clear Channel		$ 2,506.00	5/13/2012	$ 125.30	SD Region Media Buy - Radio
Clear Channel		$ 1,425.00	4/29/2012	$ 71.25	SD Region Media Buy - Radio
Clear Channel		$ 2,334.00	3/25/2012	$ 116.70	SD Region Media Buy - Radio
Clear Channel		$ 1,235.00	2/26/2012	$ 61.75	SD Region Media Buy - Radio
KBZT - 94.9		$ 7,500.00	3/20/2012	$ 375.00	SD Region Media Buy - Radio
Subtaskx.x Sub-total	$ 59,996.00				
Subtaskx.x Management Cost	$ 3,099.81				
Total Expenditures (Including contract management cost)		**$ 63,962.06**			

Events Online

232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

Invoice

DATE	INVOICE #
1/1/2012	6802

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
6	Web Hosting	Semi Annual Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	300.00
			Total	$300.00

Events Online

232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

Invoice

DATE	INVOICE #
7/1/2011	6536

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
1	Web Hosting	Monthly Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	50.00
		Total		$50.00

MJE MARKETING SERVICES
MARKETING • ADVERTISING • PUBLIC AFFAIRS

3111 Camino del Rio North, Ste. 100, San Diego, California 92108

Invoice

DATE	INVOICE #
12/8/11	15723

BILL TO:

Think Blue, City of San Diego
Attn: Jennifer Nichols Kearns, Sr. PIO
Storm Water Dept.
9370 Chesapeake Drive, Ste. 100, MS 1900
San Diego, CA 92123

P.O. NUMBER	TERMS	PROJECT
4500017596	Due on receipt	

QUANTITY	DESCRIPTION	RATE	AMOUNT
	THINK BLUE (November 1 - November 30, 2011)		
	Branding 1b Design	1,845.00	1,845.00
	Branding 1d Management	1,001.25	1,001.25
*	Reg Website Updates	225.00	225.00 OK
	Social 3a Strategies	67.50	67.50
	Social 3b Promotion	836.25	836.25
	Social 3e Management	67.50	67.50

Thank you for your business. Please call 619.682.3841 with any questions.

TOTAL $4,042.50

604846 (11/10)

UltraStar Cinemas

1060 Joshua Way
Vista, CA 92081

760-597-5777 Fax (760) 597-5297

Set up by: Wally Schlotter / Karen Peterson

Date of Invoice. 11/1/2011

Community Service PSA announcement - Terms and Invoice

Name	City Of San Diego - Think Blue	Contact	Tim Graham/Jennifer Nichols Kearns
Address	9370 Chesapeake Dr. Suite 100		
City	San Diego State CA	Zip	92123
Phone	858 541 4333	Fax	858-541-4350
		Email	tgraham@sandiego.gov

Description	Value
Think Blue **REGION** visibility program - Winter/Spring FY 2012 package	$30,000.00
Visibility on DLP projectors as part of UltraStar Cinemas Movie Trailer reel	
Think Blue San Diego Regional (Regional Education Co-permittees)	
Ants in Your Plants (other PSA TBD)	

THEATER: Poway, Oceanside, Chula Vista, Bonsall

DAY & DATE: Nov 25th, 2011 to May 31st, 2012

SUB TOTAL	$30,000.00
CREDITS	
TAX	
TOTAL	**$30,000.00**

11/02/11

OK to pay

TERMS

X UltraStar Cinemas agrees to exhibit, prior to each theatrical movie that plays trailers, as part of their movie trailer reel, One Think Blue Regiona PSA.

X UltraStar Cinemas will run provided PSA's starting on or before Nov 2011 and ending May 2012.

X Think Blue Region will provide, at their sole expense, PSA's in a Jpeg 2000 DCP that is compatible with UltraStar's DLP cinema projectors.

X Think Blue Region will hold UltraStar Cinema harmless for unforeseen equipment failure and other acts of god that may prevent PSA from being shown. UltraStar will make its best effort to present PSA on every screen for every show during the agreed period of time.

Thank you for choosing Ultra Star Cinemas.
Your State of the Art Home Town Theaters

5/11/12
MB

MAY 1 2012

BY: MB

TV DE LOS MOCHIS, S.A DE C.V.

AV. VASCO DE QUIROGA No. 2000
COL. SANTA FE, DEL. ALVARO OBREGON, MÉXICO, Distrito Federal, C.P. 01210, TEL. 5261-2000
R.F.C. TVM851118SK3
ESTABLECIMIENTO
CALLE CANAL 12 Nº 4400, COL. JUAREZ TIJUANA C.P. 22040, TIJUANA, B.C.
Telefono 01 (664) 6845185

XEWT 12 TIJUANA • SAN DIEGO

Televisa TIJUANA

FACTURA

FAVOR DE INDICAR EN SU DEPOSITO LA REFERENCIA 0704651

Lugar de Expedición: Tijuana, B.C.

CONTRATO No. CONTRACT No.	SERIE SERIAL	FACTURA No INVOICE No.	FECHA DE EMISION EMISSION DATE	REFERENCIA DE CLIENTE CUSTOMER REFERENCE
	BF	3113	2012-05-04T16:38:07	

No. CLIENTE CLIENT No.	NUMERO Y AÑO DE APROBACION DE FOLIOS NUMBER AND YEAR OF FILE APPROVAL	No. DE CERTIFICADO DIGITAL DIGITAL CERTIFICATE NO.
0704651	572079 2011	00001000000200705650

AGENCIA: AGENCY:	CITY OF SAN DIEGO	RFC: TAX ID:	XEXX010101000
DIRECCION: ADDRESS:	9370 CHESAPEAKE DR. STE. 100 SAN DIEGO,CA 92123 USA EXTRANJEROS		
PAIS: COUNTRY:	USA	ADVERTISER: EST.PRODUCT:	CITY OF SAN DIEGO

CANTIDAD QUANTITY	CONCEPTO CONCEPT	PRECIO UNIT. UNIT PRICE	IMPORTE AMOUNT
1	BROADCAST SCHEDULE APRIL	2,250.00	2,250.00

ok to pay $ 2250.00
Approved For Payment
PO#: 4500028757
Date: 5/11/12
Signature: [illegible]
* Please Close P.O.

VENDEDOR SALESPERSON	GERI IBARRA	TOTAL-GROSS	USD 2,250.00
IMPORTE TOTAL CON LETRA WRITTEN AMOUNT	Two Thousand Two Hundred Fifty 00/100 USD FAVOR DE INDICAR EN SU DEPOSITO LA REFERENCIA 0704651	AGENNCY-COMMISSION	USD 0.00
		SUB-TOTAL-NET	USD 2,250.00
		IVA 0%	USD 0.00
		TOTAL NET:	USD 2,250.00

SELLO DIGITAL
DIGITAL STAMP

rZFpGOxWVc3368l/fN+oq0S4ckPsu1MqHASu+LUbyzkUYdopuRO72LYaiq/4pHPEL1Y2cjRrLSNM+6Ax6EOmGWP9admiBPPZEf8P
PzvQZDPzUkuiAxmKwFSyKgtoAuKFpioERoLbzvrub5AIX3e1Q6edGqVcyC4teuuxVkz6vbQ=

CADENA ORIGINAL
DIGITAL CHAIN

||2.0|BF|3113|2012-05-04T16:38:07|572079|2011|ingreso|PAGO EN UNA SOLA EXHIBICION|2250.00|2250.00|TVM851118SK3|TV DE LOS MOCHIS, S.A DE C.V.|AV. VASCO DE QUIROGA|2000|SANTA FE|MÉXICO|TEL. 5261-2000|ALVARO OBREGON|Distrito Federal|México|01210|XEXX010101000|CITY OF SAN DIEGO|9370 CHESAPEAKE DR. STE. 100|SAN DIEGO,CA|92123|USA|EXTRANJEROS|USA|1|BROADCAST SCHEDULE APRIL|2250.00|2250.00|IVA|0.00|0.00|0.00||

PAGO EN UNA SOLA EXHIBICION

Submit Payment to:P.O. Box 434537
San Diego Ca. 92143-4537

ESTE DOCUMENTO ES UNA REPRESENTACIÓN IMPRESA DE UN CFD
THIS DOCUMENT IS AN IMPRESSION OF A FISCAL DIGITAL PROOF

4/9/12 MB

TV DE LOS MOCHIS, S.A DE C.V.

AV. VASCO DE QUIROGA No. 2000
COL. SANTA FE, DEL. ALVARO OBREGON, MÉXICO, Distrito Federal, C.P. 01210, TEL. 5261-2000
R.F.C. TVM851118SK3

ESTABLECIMIENTO
CALLE CANAL 12 Nº 4400, COL. JUAREZ TIJUANA C.P. 22040, TIJUANA, B.C.
Telefono 01 (664) 6845185

XEWT 12 TIJUANA • SAN DIEGO

Televisa TIJUANA

FACTURA

Lugar de Expedición: Tijuana, B.C.

CONTRATO No. CONTRACT No.	SERIE SERIAL	FACTURA No INVOICE No.	FECHA DE EMISION EMISSION DATE	REFERENCIA DE CLIENTE CUSTOMER REFERENCE
	BF	2958	2012-03-28T11:52:03	

No. CLIENTE CLIENT No.	NUMERO Y AÑO DE APROBACION DE FOLIOS NUMBER AND YEAR OF FILE APPROVAL	No. DE CERTIFICADO DIGITAL DIGITAL CERTIFICATE NO.
0704651	572079 2011	00001000000101452247

AGENCIA: AGENCY:	CITY OF SAN DIEGO	RFC: TAX ID:	XEXX010101000
DIRECCION: ADDRESS:	9370 CHESAPEAKE DR. STE. 100 SAN DIEGO,CA 92123 USA EXTRANJEROS		
PAIS: COUNTRY:	USA	ADVERTISER: EST.PRODUCT:	CITY OF SAN DIEGO

CANTIDAD QUANTITY	CONCEPTO CONCEPT	PRECIO UNIT. UNIT PRICE	IMPORTE AMOUNT
1	BROADCAST SCHEDULE MARCH	750.00	750.00

RECEIVED
APR 09 2012
BY: MB

VENDEDOR SALESPERSON	GERI IBARRA	TOTAL-GROSS	USD 750.00
IMPORTE TOTAL CON LETRA WRITTEN AMOUNT	Seven Hundred Fifty 00/100 USD	AGENNCY-COMMISSION	USD 0.00
		SUB-TOTAL-NET	USD 750.00
		IVA 0%	USD 0.00
		TOTAL NET:	USD 750.00

SELLO DIGITAL
DIGITAL STAMP

QCuvfUjfmTjG5e8/aDO6y7IeH1B44LjmWqwaJAZjRjfmfAYIZU7SrSlozoEm28iio+UFf2n3IU003fr5w67ElgQ++K8yOvDiuRjz
I1kivDmbeqAFQt82O9LWE3qLhDgvGT3JyP67N4hlgwNZLJ1tbmG4wgLixCCQGlLocLIB49A=

CADENA ORIGINAL
DIGITAL CHAIN

||2.0|BF|2958|2012-03-28T11:52:03|572079|2011|ingreso|PAGO EN UNA SOLA EXHIBICION|750.00|750.00|TVM851118SK3|TV DE LOS MOCHIS, S.A DE C.V.|AV. VASCO DE QUIROGA 2000|SANTA FE|MEXICO|TEL. 5261-2000|ALVARO OBREGON|Distrito Federal|México|01210|XEXX010101000|CITY OF SAN DIEGO|9370 CHESAPEAKE DR. STE. 100|SAN DIEGO,CA|92123|USA|EXTRANJEROS|BROADCAST SCHEDULE MARCH|750.00|750.00|IVA|0.00|0.00|0.00||

o/c to pay $750.00
Approved For Payment
1/30/38157
Date: 4/9/12
Signature:

PAGO EN UNA SOLA EXHIBICION

Submit Payment to:P.O. Box 434537
San Diego Ca. 92143-4537

ESTE DOCUMENTO ES UNA REPRESENTACIÓN IMPRESA DE UN CFD
THIS DOCUMENT IS AN IMPRESSION OF A FISCAL DIGITAL PROOF

13/12 MB

INVOICE

KFMB8.2
7677 Engineer Road
San Diego, CA 92111
Main: (858)571-8888
Billing:

Invoice #	Invoice Date	Invoice Month	Invoice Period
63674-1	03/25/12	March 2012	02/27/12 - 03/25/12

Station	Account Executive	Sales Office	Sales Region
MFMB	Jill Moore	KFMB	Local

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Billing Address:

City Of San Diego
Attention: Accounts Payable
9370 Chesapeake Drive, Ste 100-MS 1900
San Diego, CA 92123

RECEIVED
APR 03 2012
BY: MB

Flight Dates	Order #	Alt Order #
03/05/12 - 04/22/12	63674	

Billing Calendar	Billing Type
Broadcast	Cash

Special Handling

IDB #	Advertiser Code	Product Code

Agency Ref	Advertiser Ref

Send Payment To:
KFMB8.2
7677 Engineer Rd
San Diego, CA 92111

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
1	03/05/12	04/08/12	Mon-Sun	3p-11p	MTWTFSS	:30	5	$10.00	NM

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	03/05/12	03/11/12	MTWTFSS	6	$10.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
4	MFMB	M	03/05/12	8:59 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
2	MFMB	Tu	03/06/12	4:00 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
1	MFMB	Th	03/08/12	4:00 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
6	MFMB	F	03/09/12	9:18 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
5	MFMB	Sa	03/10/12	9:44 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
3	MFMB	Su	03/11/12	8:52 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	03/12/12	03/18/12	MTWTFSS	5	$10.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
9	MFMB	Tu	03/13/12	8:17 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
7	MFMB	W	03/14/12	10:14 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
11	MFMB	F	03/16/12	8:18 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
8	MFMB	Sa	03/17/12	10:21 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
10	MFMB	Su	03/18/12	9:14 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM

Total Spots 11 Gross Total $110.00

Payment Terms 30 Days

Agency Commission $16.50

Net Amount Due $93.50

ok to pay $93.50
Approved For Payment
PO#: 4500028756
Date: 4/9/12
Signature: [illegible]

We warrant that the actual broadcast information shown on this invoice was taken from the program log.
Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race or ethnicity. Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any provision in any agreement entered into with Advertiser or Agency whose intent is to discriminate in such manner shall be null and void.

INVOICE

KFMB8.2
7677 Engineer Road
San Diego, CA 92111
Main: (858)571-8888
Billing:

Invoice #	Invoice Date	Invoice Month	Invoice Period
63674-2	04/29/12	April 2012	03/26/12 - 04/22/12

Station	Account Executive	Sales Office	Sales Region
MFMB	Jill Moore	KFMB	Local

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Billing Address:

City Of San Diego
Attention: Accounts Payable
9370 Chesapeake Drive, Ste 100-MS 1900
San Diego, CA 92123

Flight Dates	Order #	Alt Order #
03/05/12 - 04/22/12	63674	

Billing Calendar	Billing Type
Broadcast	Cash

Special Handling

IDB #	Advertiser Code	Product Code

Agency Ref	Advertiser Ref

Send Payment To:
KFMB8.2
7677 Engineer Rd
San Diego, CA 92111

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
1	03/05/12	04/08/12	Mon-Sun	3p-11p	MTWTFSS	:30	5	$10.00	NM

Weeks: Start Date 04/02/12, End Date 04/08/12, MTWTFSS MTWTFSS, Spots/Week 5, Rate $10.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
13	MFMB	M	04/02/12	10:00 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
15	MFMB	Tu	04/03/12	10:00 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
12	MFMB	W	04/04/12	9:01 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
14	MFMB	Th	04/05/12	11:00 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM
16	MFMB	F	04/06/12	9:14 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$10.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
2	04/09/12	04/22/12	Mon-Sun	3p-11p	MTWTFSS	:30	5	$0.00	NM

Weeks: Start Date 04/09/12, End Date 04/15/12, MTWTFSS MTWTFSS, Spots/Week 5, Rate $0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
1	MFMB	M	04/09/12	10:00 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM
2	MFMB	Tu	04/10/12	9:00 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM
3	MFMB	W	04/11/12	10:49 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM
4	MFMB	Th	04/12/12	8:17 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM
5	MFMB	Sa	04/14/12	8:00 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM

Weeks: Start Date 04/16/12, End Date 04/22/12, MTWTFSS MTWTFSS, Spots/Week 5, Rate $0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
9	MFMB	M	04/16/12	11:02 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM
10	MFMB	W	04/18/12	8:18 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM
7	MFMB	F	04/20/12	8:17 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM
8	MFMB	Sa	04/21/12	7:49 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM
6	MFMB	Su	04/22/12	9:21 PM	Mon-Sun	3p-11p	:30	ANTSINPANTSREV	$0.00	NM

Total Spots 15 Gross Total $50.00

We warrant that the actual broadcast information shown on this invoice was taken from the program log.

Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race of ethnicity. Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any provision in any agreement entered into with Advertiser or Agency whose intent is to discriminate in such manner shall be null and void.

INVOICE

Send Payment To:
KFMB8.2
7677 Engineer Rd
San Diego, CA 92111

Invoice #	Invoice Date	Invoice Month	Invoice Period
63674-2	04/29/12	April 2012	03/26/12 - 04/22/12

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Payment Terms 30 Days

RECEIVED
MAY 08 2012
BY: MB

Agency Commission	$7.50
Net Amount Due	$42.50

ok to pay $42.50
Approved For Payment
PO#: 4500028756
Date: 5/9/12
Signature:

Please close this P.O.

TG

We warrant that the actual broadcast information shown on this invoice was taken from the program log.
Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race of ethnicity. Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any provision in any agreement entered into with Advertiser or Agency whose intent is to discriminate in such manner shall be null and void.

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

RECEIVED
MAY 22 2012
BY: MB

CLEARCHANNEL

05-22-12 A07:14 IN

INVOICE: 125-231005

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

01925

Advertiser No.: 663
City Of San Diego
Order: 133950
Co-op: No

Invoice Date: **05/13/2012**
Payment Due: **06/12/2012**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/Regional Buy PO#4500028755**

CPE

Invoice Summary:

No. of Spots/Misc:	28/0
Gross Spot Billing:	$2,506.00
Agency Commission:	$0.00
Net Spot Billing:	$2,506.00

ok to pay $2506.00
Approved For Payment
PO#: 4500028755
Date: 5/31/12
Signature: [illegible]

Please close this P.O. Thanks!

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To	Rate
1	MTWThF	7	Local-Direct	Commercial 30	10:00:00-15:00:00	$172.00

ISCI / SPOT TITLE	DATE	TIME	LEN	MG	RATE
Regional Messaging / City of SD/Regional Messaging/30	05/01/12	10:15 AM	30		$172.00
Litter / City of SD/Litter/30	05/01/12	11:10 AM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	05/01/12	01:44 PM	30		$172.00
Litter / City of SD/Litter/30	05/02/12	02:43 PM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	05/03/12	01:17 PM	30		$172.00
Litter / City of SD/Litter/30	05/04/12	01:15 PM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	05/07/12	02:40 PM	30		$172.00
Litter / City of SD/Litter/30	05/08/12	11:14 AM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	05/09/12	10:16 AM	30		$172.00
Litter / City of SD/Litter/30	05/09/12	11:14 AM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	05/10/12	12:11 PM	30		$172.00
Litter / City of SD/Litter/30	05/11/12	10:15 AM	30	MG	$172.00
Litter / City of SD/Litter/30	05/11/12	12:42 PM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	05/11/12	02:13 PM	30		$172.00

Totals for Station: KMYI-FM No. of Spots/Misc: 14/0 Gross Amt: $2,408.00

Market: San Diego Station: RMYI

Order Line	Days	By Week	Revenue Type	Ordered	Bind To	Rate
2	MTWThF	7	Local Direct-Streaming	Commercial 30	05:00:00-20:00:00	$7.00

ISCI / SPOT TITLE	DATE	TIME	LEN	MG	RATE
Litter / City of SD/Litter/30	04/30/12	06:41 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	05/01/12	05:34 AM	30		$7.00
Litter / City of SD/Litter/30	05/01/12	07:15 AM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	05/03/12	05:13 AM	30		$7.00
Litter / City of SD/Litter/30	05/03/12	12:40 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	05/04/12	07:29 AM	30		$7.00
Litter / City of SD/Litter/30	05/04/12	05:16 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	05/07/12	11:42 AM	30		$7.00
Litter / City of SD/Litter/30	05/07/12	05:48 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	05/08/12	05:46 AM	30		$7.00
Litter / City of SD/Litter/30	05/08/12	01:43 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	05/09/12	01:17 PM	30		$7.00
Litter / City of SD/Litter/30	05/10/12	11:45 AM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	05/11/12	01:44 PM	30		$7.00

Totals for Station: RMYI No. of Spots/Misc: 14/0 Gross Amt: $98.00

Totals for Market:	San Diego	No. of Spots/Misc: 28/0	Gross Amt:	$2,506.00
Totals for Invoice:		**No. of Spots/Misc: 28/0**	**Gross Amt:**	**$2,506.00**

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

04-03-12P03:40 RCVD

CLEARCHANNEL

INVOICE: 125-228330

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

18750

Advertiser No.: 663
City Of San Diego
Order: 133950
Co-op: No

Invoice Date: **03/25/2012**
Payment Due: **04/24/2012**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/Regional Buy PO#4500028755**

RECEIVED
APR 05 2012
BY: MB

CPE

Invoice Summary:

No. of Spots/Misc:	27/0
Gross Spot Billing:	$2,334.00
Agency Commission:	$0.00
Net Spot Billing:	$2,334.00

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

ok to pay $2,334.00
Approved For Payment
PO#: 4500028755
Date: 4/9/12
Signature: [illegible]

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To	Rate
1	MTWThF	7	Local-Direct	Commercial 30	10:00:00-15:00:00	$172.00

ISCI / SPOT TITLE	DATE	TIME	LEN	MG	RATE
Regional Messaging / City of SD/Regional Messaging/30	02/27/12	10:38 AM	30		$172.00
Litter / City of SD/Litter/30	02/27/12	11:43 AM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	02/28/12	12:11 PM	30		$172.00
Litter / City of SD/Litter/30	02/28/12	01:42 PM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	02/29/12	01:15 PM	30		$172.00
Litter / City of SD/Litter/30	03/02/12	10:42 AM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	03/02/12	01:39 PM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	03/19/12	01:16 PM	30		$172.00
Litter / City of SD/Litter/30	03/19/12	02:16 PM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	03/20/12	10:43 AM	30		$172.00
Litter / City of SD/Litter/30	03/23/12	10:14 AM	30		$172.00
Litter / City of SD/Litter/30	03/23/12	12:39 PM	30		$172.00
Regional Messaging / City of SD/Regional Messaging/30	03/23/12	02:41 PM	30		$172.00

Totals for Station: KMYI-FM No. of Spots/Misc: 13/0 Gross Amt: $2,236.00

Market: San Diego Station: RMYI

Order Line	Days	By Week	Revenue Type	Ordered	Bind To	Rate
2	MTWThF	7	Local Direct-Streaming	Commercial 30	05:00:00-20:00:00	$7.00

ISCI / SPOT TITLE	DATE	TIME	LEN	MG	RATE
Regional Messaging / City of SD/Regional Messaging/30	02/27/12	11:16 AM	30		$7.00
Litter / City of SD/Litter/30	02/28/12	11:17 AM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	02/29/12	05:11 AM	30		$7.00
Litter / City of SD/Litter/30	02/29/12	01:42 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	03/01/12	12:13 PM	30		$7.00
Litter / City of SD/Litter/30	03/01/12	05:45 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	03/02/12	07:16 PM	30		$7.00
Litter / City of SD/Litter/30	03/19/12	12:18 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	03/19/12	05:44 PM	30		$7.00
Litter / City of SD/Litter/30	03/20/12	11:41 AM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	03/21/12	12:15 PM	30		$7.00
Litter / City of SD/Litter/30	03/22/12	05:19 PM	30		$7.00
Regional Messaging / City of SD/Regional Messaging/30	03/23/12	11:43 AM	30		$7.00
Litter / City of SD/Litter/30	03/23/12	05:18 PM	30		$7.00

Totals for Station: RMYI No. of Spots/Misc: 14/0 Gross Amt: $98.00

Totals for Market:	San Diego	No. of Spots/Misc: 27/0	Gross Amt:	$2,334.00
Totals for Invoice:		**No. of Spots/Misc: 27/0**	**Gross Amt:**	**$2,334.00**

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

RECEIVED
03-07-12P03:23 RCVD

MAR 08 2012

BY: MB

CLEARCHANNEL

INVOICE: 125-226750

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

13639

Advertiser No.: 663
City Of San Diego
Order: 133950
Co-op: No

Invoice Date: **02/26/2012**
Payment Due: **03/27/2012**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/Regional Buy PO#4500028755**

CPE

Invoice Summary:

No. of Spots/Misc:	14/0
Gross Spot Billing:	$1,235.00
Agency Commission:	$0.00
Net Spot Billing:	$1,235.00

ok to pay $1235.00
Approved For Payment
PO#: 4500028755
Date: 3/12/12
Signature: [illegible]

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
3	MTWThF	1	Local-Direct	Commercial 30	10:00:00-15:00:00				$154.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Regional Messaging / City of SD/Regional Messaging/30				02/20/12	01:18 PM	30		$154.00
4	MTWThF	6	Local-Direct	Commercial 30	10:00:00-15:00:00				$172.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Litter / City of SD/Litter/30				02/20/12	11:42 AM	30		$172.00
	Litter / City of SD/Litter/30				02/20/12	02:43 PM	30		$172.00
	Regional Messaging / City of SD/Regional Messaging/30				02/21/12	12:14 PM	30		$172.00
	Litter / City of SD/Litter/30				02/22/12	01:18 PM	30		$172.00
	Regional Messaging / City of SD/Regional Messaging/30				02/23/12	02:44 PM	30		$172.00
	Litter / City of SD/Litter/30				02/24/12	02:14 PM	30		$172.00

Totals for Station: KMYI-FM No. of Spots/Misc: 7/0 Gross Amt: $1,186.00

Market: San Diego Station: RMYI

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
2	MTWThF	7	Local Direct-Streaming	Commercial 30	05:00:00-20:00:00				$7.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Litter / City of SD/Litter/30				02/20/12	01:18 PM	30		$7.00
	Regional Messaging / City of SD/Regional Messaging/30				02/20/12	06:15 PM	30		$7.00
	Litter / City of SD/Litter/30				02/21/12	06:29 AM	30		$7.00
	Regional Messaging / City of SD/Regional Messaging/30				02/21/12	12:16 PM	30		$7.00
	Litter / City of SD/Litter/30				02/22/12	07:28 AM	30		$7.00
	Regional Messaging / City of SD/Regional Messaging/30				02/23/12	01:19 PM	30		$7.00
	Litter / City of SD/Litter/30				02/24/12	12:41 PM	30		$7.00

Totals for Station: RMYI No. of Spots/Misc: 7/0 Gross Amt: $49.00

Totals for Market: San Diego No. of Spots/Misc: 14/0 Gross Amt: $1,235.00

Totals for Invoice: No. of Spots/Misc: 14/0 Gross Amt: $1,235.00

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

RECEIVED
MAY 08 2012
BY: KWB

05-07-12 P01:31 IN

CLEARCHANNEL

INVOICE: 125-230198

City Of San Diego
Attn; Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

20367

Advertiser No.: 663
City Of San Diego
Order: 133950
Co-op: No

Invoice Date: **04/29/2012**
Payment Due: **05/29/2012**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/Regional Buy PO#4500028755**

CPE

Invoice Summary:

No. of Spots/Misc:	15/0
Gross Spot Billing:	$1,425.00
Agency Commission:	$0.00
Net Spot Billing:	$1,425.00

ok to pay $1425.00
Approved for Payment
PO#: 4500028755
Date: 5/9/12
Signature: Cindy U Hale

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
1	MTWThF	7	Local-Direct	Commercial 30	10:00:00-15:00:00				$172.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Litter / City of SD/Litter/30				03/26/12	10:43 AM	30		$172.00
	Regional Messaging / City of SD/Regional Messaging/30				03/26/12	01:13 PM	30		$172.00
	Litter / City of SD/Litter/30				03/27/12	11:43 AM	30		$172.00
	Regional Messaging / City of SD/Regional Messaging/30				03/27/12	02:14 PM	30	MG	$172.00
	Litter / City of SD/Litter/30				03/28/12	12:41 PM	30		$172.00
	Regional Messaging / City of SD/Regional Messaging/30				03/29/12	02:46 PM	30		$172.00
	Litter / City of SD/Litter/30				03/30/12	11:37 AM	30		$172.00
	Regional Messaging / City of SD/Regional Messaging/30				03/30/12	02:13 PM	30		$172.00

Totals for Station: KMYI-FM No. of Spots/Misc: 8/0 Gross Amt: $1,376.00

Market: San Diego Station: RMYI

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
2	MTWThF	7	Local Direct-Streaming	Commercial 30	05:00:00-20:00:00				$7.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Regional Messaging / City of SD/Regional Messaging/30				03/26/12	07:42 PM	30		$7.00
	Litter / City of SD/Litter/30				03/27/12	11:17 AM	30		$7.00
	Regional Messaging / City of SD/Regional Messaging/30				03/27/12	05:19 PM	30		$7.00
	Litter / City of SD/Litter/30				03/28/12	05:30 AM	30		$7.00
	Regional Messaging / City of SD/Regional Messaging/30				03/28/12	11:16 AM	30		$7.00
	Litter / City of SD/Litter/30				03/29/12	01:39 PM	30		$7.00
	Regional Messaging / City of SD/Regional Messaging/30				03/30/12	05:15 PM	30		$7.00

Totals for Station: RMYI No. of Spots/Misc: 7/0 Gross Amt: $49.00

Totals for Market: San Diego No. of Spots/Misc: 15/0 Gross Amt: $1,425.00

Totals for Invoice: No. of Spots/Misc: 15/0 Gross Amt: $1,425.00

INVOICE

Invoice #:	MC-SD0-112031410
Invoice Date:	03/25/2012
Contract #:	994309
Page:	1
Net Amount:	$2,000.00

04-04-12P03:55 RCVD

Advertiser: CITY OF SAN DIEGO STORM WATER
9370 CHESAPEAKE DRIVE, STE 100
SAN DIEGO, CA 92123

Station(s): KLNV-FM
KLQV-FM

Advertiser: CITY OF SAN DIEGO STORM WATER
Product: Think Blue Regional
Estimate #:
Agency Client Code: SM
Buyer Name: Tim Graham

Salesperson(s): Doug Buckley2
Terms: 30 NET

Day	Date	Time	Ln	Length	Product	ISCI	Rate
KLNV-FM							
MON	03/05/12	05:50a	1	30		LITTER	$10.00
MON	03/05/12	08:20a	2	30		HOW THE REGION	$130.00
MON	03/05/12	05:30p	4	30		LITTER	$1.00
MON	03/05/12	11:56p	3	30		HOW THE REGION	$5.00
TUE	03/06/12	05:16a	1	30		LITTER	$10.00
TUE	03/06/12	07:19a	3	30		HOW THE REGION	$5.00
TUE	03/06/12	08:54a	4	30		LITTER	$1.00
TUE	03/06/12	12:24p	2	30		HOW THE REGION	$130.00
TUE	03/06/12	01:56p	2	30		LITTER	$130.00
WED	03/07/12	05:21a	1	30		HOW THE REGION	$10.00
WED	03/07/12	07:57a	4	30		LITTER	$1.00
WED	03/07/12	04:28p	2	30		HOW THE REGION	$130.00
WED	03/07/12	10:28p	3	30		LITTER	$5.00
THU	03/08/12	05:46a	1	30		HOW THE REGION	$10.00
THU	03/08/12	10:54a	3	30		LITTER	$5.00
THU	03/08/12	02:30p	2	30		HOW THE REGION	$130.00
THU	03/08/12	05:56p	2	30		LITTER	$130.00
FRI	03/09/12	05:49a	4	30		HOW THE REGION	$1.00
SAT	03/10/12	08:18a	5	30		HOW THE REGION	$50.00
SAT	03/10/12	05:55p	5	30		LITTER	$50.00
SUN	03/11/12	03:28a	4	30		HOW THE REGION	$1.00
SUN	03/11/12	06:29a	5	30		LITTER	$50.00
SUN	03/11/12	05:54p	3	30		HOW THE REGION	$5.00
KLQV-FM							
MON	03/12/12	05:22a	1	30		LITTER	$10.00
MON	03/12/12	07:35a	2	30		HOW THE REGION	$130.00
MON	03/12/12	10:47a	3	30		LITTER	$5.00
MON	03/12/12	02:29p	2	30		HOW THE REGION	$130.00
MON	03/12/12	09:27p	4	30		LITTER	$1.00
TUE	03/13/12	03:15a	4	30		LITTER	$1.00
TUE	03/13/12	05:21a	1	30		HOW THE REGION	$10.00

INVOICE

RECEIVED

APR 05 2012

BY: MB

Invoice #:	MC-SD0-112031410
Invoice Date:	03/25/2012
Contract #:	994309
Page:	2
Net Amount:	$2,000.00

Day	Date	Time	Ln	Length	Product	ISCI	Rate
TUE	03/13/12	06:48a	2	30		LITTER	$130.00
TUE	03/13/12	12:29p	2	30		HOW THE REGION	$130.00
TUE	03/13/12	01:24p	3	30		LITTER	$5.00
WED	03/14/12	04:23a	4	30		HOW THE REGION	$1.00
WED	03/14/12	08:46a	2	30		LITTER	$130.00
THU	03/15/12	02:44a	4	30		HOW THE REGION	$1.00
THU	03/15/12	05:44a	1	30		LITTER	$10.00
THU	03/15/12	08:47a	3	30		HOW THE REGION	$5.00
THU	03/15/12	10:44a	2	30		LITTER	$130.00
FRI	03/16/12	05:22a	1	30		HOW THE REGION	$10.00
FRI	03/16/12	11:43a	3	30		LITTER	$5.00
FRI	03/16/12	08:26p	4	30		HOW THE REGION	$1.00
SAT	03/17/12	06:44a	5	30		LITTER	$50.00
SAT	03/17/12	03:47p	5	30		HOW THE REGION	$50.00
SUN	03/18/12	05:24p	3	30		LITTER	$5.00
SUN	03/18/12	06:25p	5	30		HOW THE REGION	$50.00

KLNV-FM

Total Spots:	23
Gross Amount:	$1,000.00
Agency Commission:	$0.00
Net Amount:	$1,000.00

KLQV-FM

Total Spots:	23
Gross Amount:	$1,000.00
Agency Commission:	$0.00
Net Amount:	$1,000.00

Remit To:
UNIVISION RECEIVABLES CO. LLC
PO BOX 452538
LOS ANGELES, CA 90045

DUE ON RECEIPT

Invoice Totals

Total Spots:	46
Gross Amount:	$2,000.00
Agency Commission:	$0.00
Net Amount:	$2,000.00

THIS RADIO STATION WARRANTS THAT THE PROGRAM/ANNOUNCEMENTS INDICATED ABOVE WERE BROADCAST IN ACCORDANCE WITH OFFICIAL STATION LOG. ALL TIMES ARE APPROXIMATE WITHIN 15 MINUTES AND ARE WITHIN THE TIME CLASSIFICATION ORDERED.
TIN: 75-2765167
PLEASE ENCLOSE REMITTANCE ADVICE WITH PAYMENT

Univision and its stations do not discriminate in advertising contracts on the basis of race or ethnicity. Any provision in any order or agreement for advertising that purports to discriminate on the basis of race or ethnicity, even if handwritten, typed or otherwise made part of a particular contract, is hereby rejected.

ok to pay $2,000.00
Approved For Payment
PO#: 4500022874
Date: 4/9/2012
Signature: Kathy D. Abalos

* please close PO

5/11/12 DOB

INVOICE

Send Payment

Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

www.kfmb.com

Invoice #	Invoice Date	Invoice Month	Invoice Period
63671-2	04/22/12	April 2012	03/26/12 - 04/20/12

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
9	04/02/12	04/08/12	M-F 5-6pm News/1 Hour	5-7p	MTWTF--	:30	1	$700.00	NM

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	04/02/12	04/08/12	MTWTF--	1	$700.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
1	8	F	04/06/12	5:20 PM	M-F 5-6pm News/1 Hour	5-7p	:30	ANTSINPANTSREV	$700.00	NM

Total Spots 40 Gross Total $6,900.00

Payment Terms 30 Days

Agency Commission $1,035.00

Net Amount Due $5,865.00

ok to pay $5865.00

Approved For Payment
PO#: 4500028756
Date: 5/9/12
Signature:

We warrant that the actual broadcast information shown on this invoice was taken from the program log.

Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race of ethnicity. Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any provision in any agreement entered into with Advertiser or Agency whose intent is to discriminate in such manner shall be null and void.

INVOICE

KFMB-TV 8
www.kfmb.com

Midwest Television, Inc.
7677 Engineer Road
San Diego, CA 92111
Main: (858)571-8888
Billing:

04-27-12 P03:48

Invoice #	Invoice Date	Invoice Month	Invoice Period
63671-2	04/22/12	April 2012	03/26/12 - 04/20/12

Station	Account Executive	Sales Office	Sales Region
KFMB	Jill Moore	KFMB	Local

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Billing Address:

City Of San Diego
Attention: Accounts Payable
9370 Chesapeake Drive, Ste 100-MS 1900
San Diego, CA 92123

RECEIVED
MAY 01 2012
BY: MD

Flight Dates	Order #	Alt Order #
03/05/12 - 04/22/12	63671	

Billing Calendar	Billing Type
Broadcast	Cash

Special Handling

IDB #	Advertiser Code	Product Code

Agency Ref	Advertiser Ref

Send Payment To:
Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
1	03/05/12	04/22/12	M-F 5am	5-6am	MTWTF--	:05	2	$0.00	BB

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	04/02/12	04/08/12	MTWTF--	2	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
9	8	M	04/02/12	5:09 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB
10	8	Th	04/05/12	5:09 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	04/09/12	04/15/12	MTWTF--	2	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
11	8	M	04/09/12	5:23 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB
12	8	W	04/11/12	5:54 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	04/16/12	04/22/12	MTWTF--	2	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
13	8	Tu	04/17/12	5:11 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB
14	8	F	04/20/12	5:14 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

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INVOICE

Send Payment
Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

www.kfmb.com

Invoice #	Invoice Date	Invoice Month	Invoice Period
63671-2	04/22/12	April 2012	03/26/12 - 04/20/12

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
2	03/05/12	04/22/12	M-F 5am	5-6am	MTWTF--	:30	5	$150.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/12/12	03/18/12	MTWTF--	5	$150.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
34	8	M	03/26/12	6:49 AM	M-F 6-7a MG for 2.10 03/16	6-7am	:30	ANTSINPANTSREV	$150.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
04/02/12	04/08/12	MTWTF--	5	$150.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
23	8	M	04/02/12	5:10 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
22	8	Tu	04/03/12	5:23 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
21	8	W	04/04/12	5:11 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
24	8	Th	04/05/12	5:09 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
25	8	F	04/06/12	5:18 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
04/09/12	04/15/12	MTWTF--	5	$150.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
27	8	M	04/09/12	5:17 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
26	8	Tu	04/10/12	5:40 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
29	8	W	04/11/12	5:41 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
28	8	Th	04/12/12	5:39 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
30	8	F	04/13/12	5:47 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
04/16/12	04/22/12	MTWTF--	3	$150.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
33	8	M	04/16/12	5:11 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
32	8	Tu	04/17/12	5:11 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
31	8	W	04/18/12	5:27 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
3	03/05/12	04/08/12	M-F 6-7a	6-7am	MTWTF--	:05	1	$0.00	BB

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
04/02/12	04/08/12	MTWTF--	1	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
4	8	M	04/02/12	6:41 AM	M-F 6-7a	6-7am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
4	03/05/12	04/15/12	M-F 6-7a	6-7am	MTWTF--	:30	1	$275.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
04/02/12	04/08/12	MTWTF--	1	$275.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
5	8	M	04/02/12	6:48 AM	M-F 6-7a	6-7am	:30	ANTSINPANTSREV	$275.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
04/09/12	04/15/12	MTWTF--	1	$275.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
6	8	F	04/13/12	6:54 AM	M-F 6-7a	6-7am	:30	ANTSINPANTSREV	$275.00	NM

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INVOICE

KFMB-TV 8

www.kfmb.com

Send Payment To:

Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

Invoice #	Invoice Date	Invoice Month	Invoice Period
63671-2	04/22/12	April 2012	03/26/12 - 04/20/12

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
5	03/05/12	04/22/12	Eff 8/22-News8@11am	11-1130am	MTWTF--	:05	1	$0.00	BB

Weeks: Start Date 04/02/12, End Date 04/08/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
5	8	W	04/04/12	11:21 AM	Eff 8/22-News8@11am	11-1130am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Weeks: Start Date 04/09/12, End Date 04/15/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
6	8	W	04/11/12	11:16 AM	Eff 8/22-News8@11am	11-1130am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Weeks: Start Date 04/16/12, End Date 04/22/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
7	8	M	04/16/12	11:11 AM	Eff 8/22-News8@11am	11-1130am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
6	03/05/12	04/22/12	Eff 8/22-News8@11am	11-1130am	MTWTF--	:30	3	$250.00	NM

Weeks: Start Date 04/02/12, End Date 04/08/12, MTWTFSS MTWTF--, Spots/Week 3, Rate $250.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
14	8	M	04/02/12	11:24 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
15	8	W	04/04/12	11:21 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
13	8	F	04/06/12	11:10 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM

Weeks: Start Date 04/09/12, End Date 04/15/12, MTWTFSS MTWTF--, Spots/Week 3, Rate $250.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
16	8	M	04/09/12	11:29 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
18	8	W	04/11/12	11:16 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
17	8	F	04/13/12	11:23 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM

Weeks: Start Date 04/16/12, End Date 04/22/12, MTWTFSS MTWTF--, Spots/Week 3, Rate $250.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
20	8	M	04/16/12	11:11 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
19	8	Tu	04/17/12	11:23 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
21	8	W	04/18/12	11:23 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
7	03/05/12	04/15/12	M-F 5-6pm News/1 Hour	5-7p	MTWTF--	:05	1	$0.00	BB

Weeks: Start Date 04/02/12, End Date 04/08/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
3	8	F	04/06/12	5:20 PM	M-F 5-6pm News/1 Hour	5-7p	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Weeks: Start Date 04/09/12, End Date 04/15/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
4	8	M	04/09/12	5:40 PM	M-F 5-6pm News/1 Hour	5-7p	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
8	03/05/12	04/22/12	M-F 5-6pm News/1 Hour	5-7p	MTWTF--	:30	1	$650.00	NM

Weeks: Start Date 04/09/12, End Date 04/15/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $650.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
3	8	M	04/09/12	5:41 PM	M-F 5-6pm News/1 Hour	5-7p	:30	ANTSINPANTSREV	$650.00	NM

Weeks: Start Date 04/16/12, End Date 04/22/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $650.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
4	8	F	04/20/12	5:49 PM	M-F 5-6pm News/1 Hour	5-7p	:30	ANTSINPANTSREV	$650.00	NM

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INVOICE

KFMB-TV 8
www.kfmb.com

Midwest Television, Inc.
7677 Engineer Road
San Diego, CA 92111
Main: (858)571-8888
Billing:

Invoice #	Invoice Date	Invoice Month	Invoice Period
63671-1	03/25/12	March 2012	02/27/12 - 03/25/12

Station	Account Executive	Sales Office	Sales Region
KFMB	Jill Moore	KFMB	Local

04-02-12P01:52

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Billing Address:

City Of San Diego
Attention: Accounts Payable
9370 Chesapeake Drive, Ste 100-MS 1900
San Diego, CA 92123

Flight Dates	Order #	Alt Order #
03/05/12 - 04/22/12	63671	

Billing Calendar	Billing Type
Broadcast	Cash

Special Handling

IDB #	Advertiser Code	Product Code

Agency Ref	Advertiser Ref

Send Payment To:

Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
1	03/05/12	04/22/12	M-F 5am	5-6am	MTWTF--	:05	2	$0.00	BB

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	03/05/12	03/11/12	MTWTF--	2	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
1	8	Tu	03/06/12	5:42 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB
2	8	F	03/09/12	5:09 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	03/12/12	03/18/12	MTWTF--	2	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
3	8	M	03/12/12	5:23 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB
4	8	Tu	03/13/12	5:16 AM	M-F 5am	5-6am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
2	03/05/12	04/22/12	M-F 5am	5-6am	MTWTF--	:30	5	$150.00	NM

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	03/05/12	03/11/12	MTWTF--	5	$150.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
3	8	M	03/05/12	5:07 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
1	8	Tu	03/06/12	5:42 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
5	8	W	03/07/12	5:42 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
4	8	Th	03/08/12	5:37 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM
2	8	F	03/09/12	5:09 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NM

Weeks:	Start Date	End Date	MTWTFSS	Spots/Week	Rate
	03/12/12	03/18/12	MTWTF--	5	$150.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Typ
9	8	M	03/12/12	5:24 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NI
6	8	Tu	03/13/12	5:17 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NI
7	8	W	03/14/12	5:24 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NI
8	8	Th	03/15/12	5:28 AM	M-F 5am	5-6am	:30	ANTSINPANTSREV	$150.00	NI
10	*8*	*F*	*03/16/12*	*M-F 5am*		*5-6am*	*:00*		*~~$150.00~~*	*N.*

See MG 2.34

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Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race of ethnici
Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any

INVOICE

KFMB-TV 8

www.kfmb.com

Send Payment To:

Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

Invoice #	Invoice Date	Invoice Month	Invoice Period
63671-1	03/25/12	March 2012	02/27/12 - 03/25/12

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
3	03/05/12	04/08/12	M-F 6-7a	6-7am	MTWTF--	:05	1	$0.00	BB

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/05/12	03/11/12	MTWTF--	1	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
1	8	W	03/07/12	6:28 AM	M-F 6-7a	6-7am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/12/12	03/18/12	MTWTF--	1	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
2	8	M	03/12/12	6:15 AM	M-F 6-7a	6-7am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
4	03/05/12	04/15/12	M-F 6-7a	6-7am	MTWTF--	:30	1	$275.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/05/12	03/11/12	MTWTF--	1	$275.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
1	8	W	03/07/12	6:29 AM	M-F 6-7a	6-7am	:30	ANTSINPANTSREV	$275.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/12/12	03/18/12	MTWTF--	1	$275.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
2	8	M	03/12/12	6:16 AM	M-F 6-7a	6-7am	:30	ANTSINPANTSREV	$275.00	NM

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
5	03/05/12	04/22/12	Eff 8/22-News8@11am	11-1130am	MTWTF--	:05	1	$0.00	BB

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/05/12	03/11/12	MTWTF--	1	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
1	8	F	03/09/12	11:22 AM	Eff 8/22-News8@11am	11-1130am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/12/12	03/18/12	MTWTF--	1	$0.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
2	8	M	03/12/12	11:15 AM	Eff 8/22-News8@11am	11-1130am	:05	CITYOFSD/HDBB-7/08	$0.00	BB

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
6	03/05/12	04/22/12	Eff 8/22-News8@11am	11-1130am	MTWTF--	:30	3	$250.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/05/12	03/11/12	MTWTF--	3	$250.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
3	8	M	03/05/12	11:29 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
2	8	Tu	03/06/12	11:27 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
1	8	F	03/09/12	11:22 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM

Weeks: Start Date	End Date	MTWTFSS	Spots/Week	Rate
03/12/12	03/18/12	MTWTF--	3	$250.00

Spots: #	Ch	Day	Air Date	Air Time	Description	Start/End Time	Length	Ad-ID	Rate	Type
6	8	M	03/12/12	11:15 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
5	8	Tu	03/13/12	11:11 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM
4	8	W	03/14/12	11:28 AM	Eff 8/22-News8@11am	11-1130am	:30	ANTSINPANTSREV	$250.00	NM

We warrant that the actual broadcast information shown on this invoice was taken from the program log.
Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race of ethnicity. Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any provision in any agreement entered into with Advertiser or Agency whose intent is to discriminate in such manner shall be null and void.

INVOICE

KFMB-TV 8

www.kfmb.com

Send Payment To:
Midwest Television, Inc.
7677 Engineer Rd
San Diego, CA 92111

RECEIVED
APR 03 2012
BY: MB

4/3/12 MB

Invoice #	Invoice Date	Invoice Month	Invoice Period
63671-1	03/25/12	March 2012	02/27/12 - 03/25/12

Advertiser	Product	Estimate Number
City of San Diego	THINK BLUE REGIONAL 2	PO 4500028756

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
7	03/05/12	04/15/12	M-F 5-6pm News/1 Hour 5-7p		MTWTF--	:05	1	$0.00	BB

Weeks: Start Date 03/05/12, End Date 03/11/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $0.00
Spots: # Ch 1 8, Day Th, Air Date 03/08/12, Air Time 5:31 PM, Description M-F 5-6pm News/1 Hour, Start/End Time 5-7p, Length :05, Ad-ID CITYOFSD/HDBB-7/08, Rate $0.00, Type BB

Weeks: Start Date 03/12/12, End Date 03/18/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $0.00
Spots: # Ch 2 8, Day W, Air Date 03/14/12, Air Time 6:39 PM, Description M-F 5-6pm News/1 Hour, Start/End Time 5-7p, Length :05, Ad-ID CITYOFSD/HDBB-7/08, Rate $0.00, Type BB

Line	Start Date	End Date	Description	Start/End Time	MTWTFSS	Length	Spots/ Week	Rate	Type
8	03/05/12	04/22/12	M-F 5-6pm News/1 Hour 5-7p		MTWTF--	:30	1	$650.00	NM

Weeks: Start Date 03/05/12, End Date 03/11/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $650.00
Spots: # Ch 1 8, Day Th, Air Date 03/08/12, Air Time 5:31 PM, Description M-F 5-6pm News/1 Hour, Start/End Time 5-7p, Length :30, Ad-ID ANTSINPANTSREV, Rate $650.00, Type NM

Weeks: Start Date 03/12/12, End Date 03/18/12, MTWTFSS MTWTF--, Spots/Week 1, Rate $650.00
Spots: # Ch 2 8, Day Tu, Air Date 03/13/12, Air Time 6:41 PM, Description M-F 5-6pm News/1 Hour, Start/End Time 5-7p, Length :30, Ad-ID ANTSINPANTSREV, Rate $650.00, Type NM

Total Spots 29 Gross Total **$4,700.00**

Payment Terms 30 Days

Agency Commission **$705.00**

Net Amount Due **$3,995.00**

ok to pay $3995.00
Approved For Payment
PO#: 4500028756
Date: 4/9/12
Signature: [illegible]

We warrant that the actual broadcast information shown on this invoice was taken from the program log.
Nondiscrimination Policy: Station does not discriminate in advertising contracts on the basis of race or ethnicity and will not accept any advertising which is intended to discriminate on the basis of race of ethnicity. Any Advertiser and Agency both represent and warrant that they are not purchasing time from the Station for the purpose of placing advertising that is intended to discriminate on the basis of race or ethnicity. Any provision in any agreement entered into with Advertiser or Agency whose intent is to discriminate in such manner shall be null and void.

1113
MB

RECEIVED

APR 09 2012

BY: MB

FM94/9
IT'S ABOUT THE MUSIC

MEMO INVOICE

TO: STORM WATER POLLUTION PREVENTION
THINK BLUE
9370 Chesapeake Drive, Suite 100
San Diego, CA 92123

Invoice # 949031911

Federal ID # 561990847

Date: March 20, 2012

Attn: Tim Graham

RE: 94@9 SPONSORSHIP ON KBZT
REGIONAL BUY

AE: Kim Torik

Advertiser	Balance
❖ THINK BLUE "94@9 SPONSORSHIP" • 144x Sponsor Name Mentions within "94@9 Promos to run throughout the week, Monday – Sunday 6a – 12m. (12x per week for 12 weeks) • 120x Sponsor Name Mentions at the opening kickoff at 9am and the closing (2x per day, 10x per week for 12 weeks) • 20x :30 commercials per week to be the last commercial before the feature and the first commercial after the 94 minute music sweep (2x per day, 10x per week for 12 weeks) • 12 weeks of Banner ad exposure on the FM94/9 website identifying you as sponsor of the 94@9. Banner Ad to be Run-of-site. • 12 weeks of Home Page, Masthead Rotating Banner Logo exposure as part of the "94@9" promotion.	$7,500
Make check payable to: Lincoln Financial Media Co of CA/KBZT 1615 Murray Canyon Road, Suite 710 San Diego, CA 92108	
	Balance Due
THANK YOU!	$7,500 (Net)

ok to pay $7500.00
Approved For Payment
PO#: 4500028556
Date: 4/9/12
Signature:

Please close P.O.

COPE ITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	3rd Quarter FY 2011-12 (Jan. 1- Mar. 31, 2012)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ 457.13**
Contract / Other Expenditures Claimed:	**$ 19,431.59**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Watershed Planning Manager
County of San Diego

4/20/12
Date

Todd Snyder
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use Environmental Planner 2
County of San Diego

Date

Signature

COPE...ITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 3rd Quarter FY 2011-12 (Jan. 1- Mar. 31, 2012)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.B.1 Materials development and distribution						
2/10/2012	Ruth de la Rosa	LUEP 2	1.00	$ 53.78	$ 53.78	Coordinate bilingual coloring book graphics transfer to printer
2/16/2012	Ruth de la Rosa	LUEP 2	1.50	$ 53.78	$ 80.67	Request 3 quotes for pet waste bags, pet waste survey reproduction
2/28/2012	Ruth de la Rosa	LUEP 2	1.00	$ 53.78	$ 53.78	Coordinate coloring book revisions with designer and printer
3/8/2012	Ruth de la Rosa	LUEP 2	1.50	$ 53.78	$ 80.67	Pet waste bag order, provided artwork, review proof
3/30/2012	Ruth de la Rosa	LUEP 2	2.00	$ 53.78	$ 107.56	Receive coloring books and coordinate pick-up/delivery to copermittees
Sub-total	$ 376.46					
Subtask 3.B.4 Regional events						
3/12/2012	Ruth de la Rosa	LUEP 2	1.50	$ 53.78	$ 80.67	Coordinate payment for booth at EnviroFair, San Diego County Fair
Sub-total	$ 80.67					
Copermittee Total					**$ 457.13**	

COPE. .ITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER,

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 3rd Quarter FY 2011-12 (Jan. 1- Mar. 31, 2012)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 1.A ERS Workgroup Meeting Support, Subtask 2.A Workgroup MOU Obligation Support					
RBF TO 8		$ 346.16	1/5/2012	$ 17.31	11/16 meeting support
RBF TO 8		$ 1,167.87	2/6/2012	$ 58.39	11/16 meeting support, RURMP AR coodination/support, 2012 work plan/budget
RBF TO 8		$ 173.08	3/1/2012	$ 8.65	RURMP updates
RBF TO 8		$ 837.99	3/28/2012	$ 41.90	2/5 meeting support
Subtask 1.A & 2.A Sub-total	$ 2,525.10				
Subtask 1.A & 2.A Management Cost	$ 126.26				
Subtask 3.B.1 Materials Development and Distribution					
RBF TO 13		$ 840.00	2/6/2012	$ 42.00	Bilingual coloring book
RBF TO 13		$ 664.91	3/28/2012	$ 33.25	Bilingual coloring books edits, regional events options
Subtask 3.B.1 Sub-total	$ 1,504.91				
Subtask 3.B.1 Management Cost	$ 75.25				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask 3.B.1 Materials development and distribution		$ 6,224.50	3/29/2012		Bilingual coloring book reproduction
Subtask 3.B.1 Materials development and distribution		$ 8,975.58	3/29/2012		Pet Waste Bag purchase
Sub-total Other Expenditures	$ 15,200.08				
Total Expenditures (Including contract management cost)		**$ 19,431.59**			

Final 04-30-09

RBF CONSULTING

December 23, 2011
Project No: 25-105066.001
Invoice No: 11110684

County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105066.001 Education/Residential Sources Workgroup
CONTRACT NO: 534079 TO 8

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Education/Residential Sources Workgroup Project located in the County of San Diego, CA.

Task 1:
* Meeting notes & attendance at 11/16 meeting
Land Use Environmental Planner I - 4.00 hrs @ $86.54/hr = $346.16

Subtask 1.A.

Professional Services: November 1, 2011 to November 30, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Education & Residential Sources	4,200.00	46.0343	1,933.44	346.16
Task 2: Standard Work Products	23,175.00	0.00	0.00	0.00
Total Fee	27,375.00		1,933.44	346.16
	Previous Fee Billing		1,587.28	
	Total Fee			**346.16**

Total this Invoice **$346.16**

P: 1002993
O: 50915
E: 52370
T: 011.001
A: 100496
OK to Pay: Ruth Delarosa 12/26/11
Approved by: Todd Synder 1/5/12

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

January 27, 2012
Project No: 25-105066.001
Invoice No: 11120644

County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105066.001 Education/Residential Sources Workgroup

CONTRACT NO: 534079 TO 8

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Education/Residential Sources Workgroup Project located in the County of San Diego, CA.

Task 1:

Meeting notes for 11/16 meeting
Land Use Environmental Planner I - 3.00 hrs @ $86.54/hr = $259.62

Subtask 1.A

Task 2:

Create printable calendar for Web Site
RURMP annual report coordination/support
2012 work plan & budget support
Land Use Environmental Planner I - 10.50 hrs @ $86.54/hr = $908.25

Subtask 2.A

Professional Services: December 1, 2011 to December 31, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Education & Residential Sources	4,200.00	52.2157	2,193.06	259.62
Task 2: Standard Work Products	23,175.00	3.9191	908.25	908.25
Total Fee	27,375.00		3,101.31	1,167.87
		Previous Fee Billing	1,933.44	
		Total Fee		**1,167.87**

Total this Invoice **$1,167.87**

P: 1002993
O: 50915
E: 52370
T: 011.001
A: 100496
OK to Pay: Ruth dela Rosa 2/3/12
Approved by: Todd Snyder LHEP2 2/6/12

$1,167.87

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

January 27, 2012
Project No: 25-105152.001
Invoice No: 11120781

County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

~~Project 25-106152.001~~ Education/Residential Sources TO 13
CONTRACT NO: 534079
TASK ORDER NO: 13

Professional consulting services rendered pursuant to the Agreement dated August 19, 2011 relative to the Regional Education & Residential Sources Workgroup Outreach Support Project located in the County of San Diego, CA.

TASK 2: Meeting Presentation 11/16

* Coloring Book
Project Manager, Public Works - 1.00 hr @ $145.67/hr = $147.67
Land Use Environmental Planner I - 5.00 hrs @ $86.54/hr = $432.70

TASK 2: 12/14/2011

* Graphic Support for Coloring Book
Land Use Environmental Planner I - 3.00 hrs @ $86.54/hr = $259.62

Subtask 3.B.1

Professional Services: December 1, 2011 to December 31, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Regional Program Approach	2,600.00	99.2969	2,581.72	0.00
Task 2: Materials Development & Dist.	5,000.00	29.781	1,489.05	840.00
Task 3: Regional Events	700.00	0.00	0.00	0.00
Total Fee	8,300.00		4,070.77	840.00
		Previous Fee Billing	3,230.77	
		Total Fee		**840.00**

Total this Invoice **$840.00**

P: 1002943
O: 50115
E: 52370
T: 011.001
A: 100496
$840.00
2/3/12
OK to Pay: Ruth Quarrosa, REP2
Approved by: Todd 2/6/12

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

February 24, 2012
Project No: 25-105066.001
Invoice No: 12010574

County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105066.001 Education/Residential Sources Workgroup
CONTRACT NO: 534079 TO 8

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Education/Residential Sources Workgroup Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: January 1, 2012 to January 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Education & Residential Sources	4,200.00	52.2157	2,193.06	0.00
Task 2: Standard Work Products	23,175.00	4.6659	1,081.32	173.08
Total Fee	27,375.00		3,274.38	173.08
		Previous Fee Billing	3,101.31	
		Total Fee		**173.08**

subtask 2.A

Total this Invoice **$173.08**

P: 1002993
O: 50415
E: 52370
T: 011.001
A: 1002446
2/29/12 $173.08
OK to Pay: Ruth Alcaraz, MEP2
Approved by: Todd Synder 3/1/12

County of San Diego
Regional Education and Residential Sources Workgroup Support - TO 8
RBF JN 25-105066

	Hours	Rate	Current Fee:
Task 2 - Standard Work Products			
*Updates to RURMP Annual Report section			
Land Use Environmental Planner I	2	$86.54	$173.08
Total			**$173.08**
Grand Total	2		**$173.08**

RBF CONSULTING

March 23, 2012
Project No: 25-105066.001
Invoice No: 12020366

County San Diego
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105066.001 Education/Residential Sources Workgroup

CONTRACT NO: 534079 TO 8

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Education/Residential Sources Workgroup Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: January 28, 2012 to February 24, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Education & Residential Sources	4,200.00	72.1679	3,031.05	837.99
Task 2: Standard Work Products	23,175.00	4.6659	1,081.32	0.00
Total Fee	27,375.00		4,112.37	837.99
		Previous Fee Billing	3,274.38	
		Total Fee		**837.99**

subtask 1.A

Total this Invoice **$837.99**

P: 1002993
O: 50915
E: 52370
T: 011,001
A: 1001996
3/28/12 $ 837.99
OK to Pay: Ruth Alcaraza, MEP2
Approved by: Todd 3/28/12

RBF CONSULTING

March 23, 2012
Project No: 25-105152.001
Invoice No: 12020370

Mr. Todd Snyder
County San Diego
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105152.001 Education/Residential Sources TO 13

CONTRACT NO: 534079
TASK ORDER NO: 13

Professional consulting services rendered pursuant to the Agreement dated August 19, 2011 relative to the Regional Education & Residential Sources Workgroup Outreach Support Project located in the County of San Diego, CA.

Professional Services: January 28, 2012 to February 24, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Regional Program Approach	2,600.00	99.2969	2,581.72	0.00
Task 2: Materials Development & Dist.	5,000.00	33.2426	1,662.13	173.08
Task 3: Regional Events	700.00	70.2614	491.83	491.83
Total Fee	8,300.00		4,735.68	664.91
	Previous Fee Billing		4,070.77	
	Total Fee			**664.91**

otal this Invoice **$664.91**

P: 1002993
O: 50915
E: 52370
T: 611.001
A: 1004916

3/28/12 $664.91

OK to Pay: Ruth Villarosa, LUEP2
Approved by: Todd Snyder 3/28/12

County of San Diego
ERS General Support - TO 13
RBF JN 25-105152

	Hours	Rate	Current Fee:	
Task 2 - Materials Development and Distribution				
*Bilingual Coloring Book edits				
*Coordination and upload Coloring Book				
Land Use Environmental Planner I	2	$86.54	$173.08	subtask 3.B.1
Total			**$173.08**	
Task 3 - Regional Events				
*Finalize draft event sponsorship list				
Project Manager, Public Works	1	$145.67	$145.67	subtask
Land Use Environmental Planner I	4	$86.54	$346.16	3.B.4
Total			**$491.83**	
Grand Total	7		**$664.91**	

0013-039

XEROX CORPORATION
SUITE 400
7676 HAZARD CTR DR
SAN DIEGO, CA
92108

Telephone 800-854-3689
Direct Billing Inquiries To:

709033971 Customer No.	118570132 Invoice No.	03/22/12 Invoice Date
511469 Purchase Order No.	12/23/11 Date	GSA Contract No.
X413652 Xerox Reference No.	03/07/12 Date Processed	Registration No.
SL Special Reference No.	Tax	PAYABLE ON RECPT Terms of Payment

Ship To
COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To
COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA
92123-4310

7026717
Master Order No.

Bill Code

REMARKS
RUTH DE LA ROSA MS: 0326
PUBLIC WORKS, DEPT OF
JOB # 52323
BILINGUAL STORMWATER COLORING BK

Description	Quantity	Unit Price	Amount
15,000 CUSTOM	1	5776.8000	5,776.80

	SUB TOTAL	$5,776.80
CALIF STATE & LOCAL	TAX 7.2500%	418.82
SAN DIEGO COUNTY	TAX 0.5000%	28.88
	INVOICE TOTAL	$6,224.50

P: 10029913
O: 50915
E: 52550
T: 011.008
A: 100446

BPA# 511469-0
3/29/12 $6224.50

OK to Pay: Ruth de la Rosa, WEP2
Approved by: Todd Sh 3/29/12

ERS workgroup
subtask 3.B.1 materials development & distribution

THANK YOU FOR DOING BUSINESS WITH XEROX BUSINESS SERVICES

PLEASE INCLUDE THIS STUB WITH YOUR PAYMENT, OR WRITE YOUR INVOICE NUMBER(S) ON YOUR CHECK.

Ship To/Installed At	Bill To	When Paying By Mail Send Payment To:
COUNTY OF SAN DIEGO XEROX CONVOY COURT 7585 CONVOY CT SAN DIEGO CA 92111	COUNTY OF SAN DIEGO MAIL SERVICES ATTN: BOB WILSON 5201 RUFFIN RD STE O SAN DIEGO CA 92123-4310	XEROX CORPORATION P.O. BOX 7405 PASADENA, CA. 91109-7405

☐ Please check here if your "Bill To" address or "Ship To/Installed At" location has changed and complete reverse side.

Invoice Amount

00-495-2792 1 709033971 118570132 03/22/12 528B $6,224.50

038 040732296 D S256 1 VQL01
T000129 32 X X

202100008070060 1185701322 0306224508 270903397136

Emerge Industries, Inc. dba
Bullseye Custom
PO BOX 3227
La Mesa, CA 91944

BULLSEYE CUSTOM™
Promotional Products • Advertising Specialties

CALIFORNIA SMALL BUSINESS 38844

Invoice

Date	Invoice #
3/20/2012	2363

Bill To	Ship To
San Diego County WPP 5201 Ruffin Road, Suite P, MS 0326 San Diego, CA 92123 Attn: Ruth Delarosa	San Diego County WPP 5201 Ruffin Road, Suite P, MS 0326 San Diego, CA 92123 Attn: Ruth Delarosa

S.O. No.	P.O. No.	Terms	Project
030812-1			

Item	Description	Ordered	Prev. Inv...	Invoiced	Rate	Amount
Pet Waste Bag ...	Item#S141904 Pet Waste Bag Dispensers Waste bag dispensers are used widely in your daily life, when you go outside with you pet, it is indispensable. 1 19/20" Diameter x 3 7/20" L Bulk Packed Product Color: Royal Imprint Color: White Pricing includes FREE FREIGHT!	7,000	0	7,000	1.19	8,330.00T

P: 1002993
O: 50915
E: 52550
T: 011.008
A: 100496
OK to Pay: Ruth delaRosa
Approved by: Todd Sylva

BPA # 513333-18
3/29/12 $8975.58
LUEP2
3/29/12

Thank you for your business!

Subtotal	$8,330.00
Sales Tax (7.75%)	$645.58
Total	$8,975.58
Payments/Credits	$0.00
Balance Due	$8,975.58

ERS Workgroup
Subtask 3.B1.
materials

COPE. .ITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	4th Quarter FY 2011-12 (April 1- June 30, 2012)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	**$ 483.48**
Contract / Other Expenditures Claimed:	**$ 34,478.87**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use/Environmental Planning Manager
County of San Diego

7/13/12
Date

Todd Snyder
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environemntal Planner II
County of San Diego

Date

Signature

Final 04-30-09

COPE. .ITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 4th Quarter FY 2011-12 (April 1- June 30, 2012)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.B.1. Materials Deveopment and Distribution						
5/25/2012	Ruth de la Rosa	LUEP 2	1.00	$ 53.72	$ 53.72	Obtain a quote for duplication, coordinate electronic file
5/25/2012	Ruth de la Rosa	LUEP 2	2.50	$ 53.72	$ 134.30	proofs
6/1/2012	Ruth de la Rosa	LUEP 2	2.50	$ 53.72	$ 134.30	proofs
Sub-total	$ 322.32					
Subtask 3.B.4 Events						
6/18/2012	Ruth de la Rosa	LUEP 2	2.00	$ 53.72	$ 107.44	Coordinate, prepare and deliver supplies for EnviroFair, County Fair
6/26/2012	Ruth de la Rosa	LUEP 2	1.00	$ 53.72	$ 53.72	Pick up supplies from County Fair
Sub-total	$ 161.16					
Copermittee Total					**$ 483.48**	

Final 04-30-09

COPE. .ITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER,

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 4th Quarter FY 2011-12 (April 1- June 30, 2012)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 1.A. ERS Workgroup Meeting Support					
Contract # 534079 RBF TO 8		$ 778.86	6/6/2012	$ 38.94	4/18 meeting support
Subtask 1.A. Sub-total	$ 778.86				
Subtask 1.A. Management Cost	$ 38.94				
Subtask 2.A. Workgroup MOU Obligation Support, 3.B.1 Materials Development and Distribution					
Contract # 534079 RBF TO 13		$ 1,821.65	5/23/2012	$ 91.08	Regional Program Approach Assessment Memo
Contract # 534079 RBF TO 13		$ 173.08	6/6/2012	$ 8.65	Banner slogan coordination
Contract # 534079 RBF TO 13		$ 672.56	7/2/2012	$ 33.63	Banner design/coordination
Subtask 2.A. Sub-total	$ 2,667.29				
Subtask 2.A. Management Cost	$ 133.36				
Subtask 3.C. Market Research and Assessment Tools					
Contract # 541266 Action Research		$ 11,875.00	7/2/2012	$ 593.75	surveys
Subtask 3.C. Sub-total	$ 11,875.00				
Subtask 3.C. Management Cost	$ 593.75				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask 3.B.4. Events		$ 1,000.00	4/18/2012		2012 Del Mar Fair participation
Subtask 3.B.1. Materials Development and Distribution		$ 16,447.50	6/11/2012		Reuseable tote purchase
Subtask 3.B.1. Materials Development and Distribution		$ 307.74	6/5/2012		Pet waste survey duplication
Subtask 3.B.1. Materials Development and Distribution		$ 283.43	6/14/2012		Banner purchase
Subtask 3.B.1. Materials Development and Distribution		$ 352.99	6/14/2012		Tablecloth purchase
Sub-total Other Expenditures	$ 18,391.66				
Total Expenditures (Including contract management cost)		**$ 34,478.87**			

Final 04-30-09

RBF CONSULTING

May 25, 2012
Project No: 25-105066.001
Invoice No: 12040346

Mr. Todd Snyder
County San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

~~Project 25-105066.001~~ Education/Residential Sources Workgroup
CONTRACT NO: 534079 TO 8

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Education/Residential Sources Workgroup Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: April 1, 2012 to April 30, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Education & Residential Sources	4,200.00	90.7122	3,809.91	778.86
Task 2: Standard Work Products	23,175.00	4.6659	1,081.32	0.00
Total Fee	27,375.00		4,891.23	778.86
	Previous Fee Billing		4,112.37	
	Total Fee			**778.86**
	Total this Invoice			**$778.86**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Scott Taylor
ERS workgroup
Subtask 1.A.

P: 1002993
O: 50915
E: 52370
T: 811.001
A: 100446
OK to Pay: Ruth delaRosa, MEP2
Approved by: Todd Snyder, COTR

$778.86
6/6/12

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

November 25, 2011
Project No: 25-105152.001
Invoice No: 11100533

Mr Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105152.001 Education/Residential Sources TO 13

CONTRACT NO: 534079
TASK ORDER NO: 13

Professional consulting services rendered pursuant to the Agreement dated August 19, 2011 relative to the Regional Education & Residential Sources Workgroup Outreach Support Project located in the County of San Diego, CA.

P: 1002993
O: 50915
E: 52370
T: 011.001
A: 1004916
OK to Pay: Ruth delarosa
Approved by: Todd S
5/23/12
$1,821.65
5/23/12

TASK 1:

*10/7 Conference call
*Regional Program Approach Assessment Memo
Project Engineer 3.00 hrs @ $145.67/hr = $437.01
Land Use Environmental Planner I 8.50 hrs @ $86.54/hr = $735.59

TASK 2:

*Update Calendar Graphics
Land Use Environmental Planner I - 7.50 hrs @ $86.54/hr = $649.05

Professional Services: October 1, 2011 to October 31, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Regional Program Approach	2,600.00	99.2969	2,581.72	1,172.60
Task 2: Materials Development & Dist.	5,000.00	12.981	649.05	649.05
Task 3: Regional Events	700.00	0.00	0.00	0.00
Total Fee	8,300.00		3,230.77	1,821.65
	Previous Fee Billing		1,409.12	
	Total Fee			**1,821.65**
	Total this Invoice			**$1,821.65**

ERS workgroup subtask 2.A.

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment of Suspension' of County Agreement Number 534079.

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ▪ 858.614.5000 ▪ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ▪ www.RBF.com

ERS Workgroup
subtask 3.B.1

RBF CONSULTING

May 25, 2012
Project No: 25-105152.001
Invoice No: 12040349

Mr. Todd Snyder
County San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105152.001 Education/Residential Sources TO 13
CONTRACT NO: 534079
TASK ORDER NO: 13

Professional consulting services rendered pursuant to the Agreement dated August 19, 2011 relative to the Regional Education & Residential Sources Workgroup Outreach Support Project located in the County of San Diego, CA.
Professional Services: April 1, 2012 to April 30, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Regional Program Approach	2,600.00	99.2969	2,581.72	0.00
Task 2: Materials Development & Dist.	5,000.00	36.7042	1,835.21	173.08
Task 3: Regional Events	700.00	70.2614	491.83	0.00
Total Fee	8,300.00		4,908.76	173.08
	Previous Fee Billing		4,735.68	
	Total Fee			**173.08**
	Total this Invoice			**$173.08**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

P: 1002993
O: 50915
E: 52370
T: 011.001
A: 100496
OK to Pay: Ruth Alarcon, LUEP2
Approved by: Todd Snyder, COTR

$173.08
6/6/12

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

ERS workgroup
subtask 3.B.1.

RBF CONSULTING

June 29, 2012
Project No: 25-105152.001
Invoice No: 12050311

Mr. Todd Snyder
County San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105152.001 Education/Residential Sources TO 13

CONTRACT NO: 534079
TASK ORDER NO: 13

Professional consulting services rendered pursuant to the Agreement dated August 19, 2011 relative to the Regional Education & Residential Sources Workgroup Outreach Support Project located in the County of San Diego, CA.

Professional Services: May 1, 2012 to May 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Regional Program Approach	2,600.00	99.2969	2,581.72	0.00
Task 2: Materials Development & Dist.	5,000.00	50.1554	2,507.77	672.56
Task 3: Regional Events	700.00	70.2614	491.83	0.00
Total Fee	8,300.00		5,581.32	672.56
	Previous Fee Billing		4,908.76	
	Total Fee			**672.56**

Total this Invoice **$672.56**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

P: 1002993
O: 50915
E: 52370
T: 011.001
A: 100496
OK to Pay: $672.56
Approved by: Marsha Cook
LUEP III
7/2/12

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

ERS workgroup
Subtask 3.B.4 events

✓

INVOICE

DATE: March 13, 2012

TO: County of san Diego
Department of Public Works
Watershed Protection Program
Attn: Ruth de la Rosa
5201 Ruffin Road, Suite P
San Diego, CA 92123

RE: 2012 Del Mar Fairgrounds participation

NUMBER: 12-59-S

AMOUNT DUE: **$1,000.00**

DATE DUE: May 1, 2012

paid # 3570915
4/18/12 MEP2
Ruth dela Rosa
on behalf of
Think Blue SD
Region

Please make checks payable to:

22nd District Agricultural Association
Tax ID # 95-6003191

Please send check to:

22nd District Agricultural Association
2260 Jimmy Durante Blvd.
Del Mar, CA 92014
Attn: Van Miller

Del Mar Fairgrounds
2260 Jimmy Durante Blvd., Del Mar, CA 92014

COPY

ERS workgroup
Subtask 3.C.

✓

action

Research · Social Marketing · Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5201 Ruffin Road, Suite P
San Diego, CA 92123

Date: **June 29, 2012**

Invoice # **AR12-1056**

Time Period: Invoice is for tasks completed June 1 – June 30, 2012

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$0.00
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$0.00
Task 5. High School Outreach	$0.00
Task 6. Splash Lab Outreach	$0.00
Task 7. Manure Management Outreach	$0.00
Task 8. Assessment Support for Regional RS Workgroup	$11,875.00
Task 9. Administration	$150.00
TOTAL DUE	**$11,875.00**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

P: 1002 993
O: 50915
E: 52370
T: 011.008
A: 100496
OK to Pay: $11,875.00
Approved by: Marsha Cook
LUEP III
7/2/12

Infinite Business Solutions
10405 San Diego Mission Rd Ste 102
San Diego, CA 92108
619-516-4271 • 619-284-0826

INVOICE

004358 Page: 1

INVOICE DATE: 6/7/2012

CLIENT NO: 2752

CONSULTANT 20 (S)
AMY CLOUSE

TO:
ATTN: RUTH DE LA ROSA
CTY OF SD-EDUCATION & OUTREACH
WATERSHED PROTECTION PROGRAM
5201 RUFFIN RD STE P
SAN DIEGO CA 92123

SHIP TO: 01
ATTN: Ruth de la Rosa
CTY OF SD-EDUCATION & OUTREACH
WATERSHED PROTECTION PROGRAM
5201 RUFFIN RD STE P
SAN DIEGO CA 92123

ORDERED	SHIPPED	UNIT	ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
2,500	2,500	EA/1	6004	REPET TOTE	6.00	15,000.00

Customer PO: 521305 Dist. PO# 4317
Shipped: UPS Ground 6/7/2012

ERS workgroup
subtask 3.B.1
materials

BPA #521305-7

P: 1002993
O: 50915
E: 52550
T: 011.008
A: 100496

6/11/12
$16,447.50

OK to Pay: Ruth delaRosa, LUSP2
Approved by: Todd Fisle, LHEP Mgr

TERMS: NET 15
We now accept MasterCard and Visa

15,000.00

SALES TAX 1,162.50
FREIGHT 285.00
TOTAL 16,447.50

INFINITE BUSINESS SOLUTIONS
10405 SD MISSION RD NUM 102
SAN DIEGO, CA 92108
619-516-4271

INFINITE BUSINESS SOLUTIONS
0010540008012596881000

Date: 06/11/2012 01:13:20 PM

CREDIT CARD SALE

CARD NUMBER: **********6237 K
TRAN AMOUNT: $2,500.00
APPROVAL CD: 096728
RECORD #: 001
CLERK ID: 501875
CUST CODE: 0
SALES TAX: $0.00

THANK YOU.

Customer Copy

INFINITE BUSINESS SOLUTIONS
10405 SD MISSION RD NUM 102
SAN DIEGO, CA 92108
619-516-4271

INFINITE BUSINESS SOLUTIONS
0010540008012596881000

Date: 06/11/2012 01:16:47 PM

CREDIT CARD SALE

CARD NUMBER: **********6237 K
TRAN AMOUNT: $2,500.00
APPROVAL CD: 094708
RECORD #: 002
CLERK ID: 501875
CUST CODE: 0
SALES TAX: $0.00

THANK YOU.

Customer Copy

INFINITE BUSINESS SOLUTIONS
10405 SD MISSION RD NUM 102
SAN DIEGO, CA 92108
619-516-4271

INFINITE BUSINESS SOLUTIONS
0010540008012596881000

Date: 06/11/2012 01:18:23 PM

CREDIT CARD SALE

CARD NUMBER: **********6237 K
TRAN AMOUNT: $2,500.00
APPROVAL CD: 047517
RECORD #: 003
CLERK ID: 501875
CUST CODE: 0
SALES TAX: $0.00

THANK YOU.

Customer Copy

INFINITE BUSINESS SOLUTIONS
10405 SD MISSION RD NUM 102
SAN DIEGO, CA 92108
619-516-4271

INFINITE BUSINESS SOLUTIONS
0010540008012596881000

Date: 06/11/2012 01:19:46 PM

CREDIT CARD SALE

CARD NUMBER: **********1672 K
TRAN AMOUNT: $2,500.00
APPROVAL CD: 084453
RECORD #: 004
CLERK ID: 501875
CUST CODE: 0
SALES TAX: $0.00

THANK YOU.

Customer Copy

INFINITE BUSINESS SOLUTIONS
10405 SD MISSION RD NUM 102
SAN DIEGO, CA 92108
619-516-4271

INFINITE BUSINESS SOLUTIONS
0010540008012596881000

Date: 06/11/2012 01:20:59 PM

CREDIT CARD SALE

CARD NUMBER: **********1672 K
TRAN AMOUNT: $2,500.00
APPROVAL CD: 030428
RECORD #: 005
CLERK ID: 501875
CUST CODE: 0
SALES TAX: $0.00

THANK YOU.

Customer Copy

INFINITE BUSINESS SOLUTIONS
10405 SD MISSION RD NUM 102
SAN DIEGO, CA 92108
619-516-4271

INFINITE BUSINESS SOLUTIONS
0010540008012596881000

Date: 06/11/2012 01:22:16 PM

CREDIT CARD SALE

CARD NUMBER: **********9030 K
TRAN AMOUNT: $2,500.00
APPROVAL CD: 065405
RECORD #: 006
CLERK ID: 501875
CUST CODE: 0
SALES TAX: $0.00

THANK YOU.

Customer Copy

INFINITE BUSINESS SOLUTIONS
10405 SD MISSION RD NUM 102
SAN DIEGO, CA 92108
619-516-4271

INFINITE BUSINESS SOLUTIONS
0010540008012596881000

Date: 06/11/2012 01:24:41 PM

CREDIT CARD SALE
R-E-P-R-I-N-T

CARD NUMBER: **********9030 K
TRAN AMOUNT: $1,447.50
APPROVAL CD: 032950
RECORD #: 007
CLERK ID: 501875
CUST CODE: 0
SALES TAX: $0.00

THANK YOU.

Customer Copy

https://www.myvirtualmerchant.com/VirtualMerchant/transa

0011-052

Customer Information

XEROX CORPORATION
SUITE 400
7676 HAZARD CTR DR
SAN DIEGO, CA
92108

Telephone 800-854-3689
Direct Billing Inquiries To:

709033971 Customer No.	119445367 Invoice No.	05/24/12 Invoice Date
511469 Purchase Order No.	04/12/12 Date	GSA Contract No.
X195177 Xerox Reference No.	04/19/12 Date Processed	Registration No.
SL Special Reference No.	Tax	PAYABLE ON RECPT Terms of Payment

xerox

Ship To
COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To
COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA
92123-4310

7026717
Master Order No.

Bill Code

REMARKS
RUTH DE LA ROSA MS 0326
PUBLIC WORKS, DEPT OF
JOB # 54992 LOW ORG 50915
PET WASTE SURVEY

Invoice

Description	Quantity	Unit Price	Amount
1,000 1/S COLOR	1	285.6000	285.60

	SUB TOTAL	$285.60
CALIF STATE & LOCAL	TAX 7.2500%	20.71
SAN DIEGO COUNTY	TAX 0.5000%	~~1.43~~
	INVOICE TOTAL	$307.74

P: 1002993
O: 50915
E: 52550
T: 011.008
A: 100496

BPA# 511469-0
6/5/12 $307.74

OK to Pay: Ruth delaRosa, LWEP
Approved by: Todd S[illegible], LWEP Mgr

ERS workgroup
Subtask 3.B.1 materials

THANK YOU FOR DOING BUSINESS WITH XEROX BUSINESS SERVICES

Payment

PLEASE INCLUDE THIS STUB WITH YOUR PAYMENT, OR WRITE YOUR INVOICE NUMBER(S) ON YOUR CHECK.

Ship To/Installed At	Bill To	When Paying By Mail Send Payment To:
COUNTY OF SAN DIEGO XEROX CONVOY COURT 7585 CONVOY CT SAN DIEGO CA 92111	COUNTY OF SAN DIEGO MAIL SERVICES ATTN: BOB WILSON 5201 RUFFIN RD STE O SAN DIEGO CA 92123-4310	XEROX CORPORATION P.O. BOX 7405 PASADENA, CA. 91109-7405

☐ Please check here if your "Bill To" address or "Ship To/Installed At" location has changed and complete reverse side.

Invoice Amount

00-495-2792 1 709033971 119445367 05/24/12 528B $307.74

055 040732296 D S256 1 VQL01
T000264 32 X X

202100008070060 1194453678 0300307744 270903397134

Customer Information

Invoice

Payment

Please Direct Inquiries To:

XEROX CORPORATION
SUITE 400
7676 HAZARD CTR DR
SAN DIEGO, CA 92108
Telephone: 800-854-3689

xerox

Invoice Date: 6/12/2012
Customer Reference: SL
Purchase Order Number: 511469
Due Date: 7/2/2012
Contract Number: 7026717
Invoice Number: 119653775
Customer Number: 709033971
Xerox Order Number: X334313

Ship To:

COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To:

COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA 92123-4310

TO ORDER SUPPLIES CALL 1-800-822-2200 OR LOGON TO WWW.XEROX.COM/SUPPLIES

INVOICE DETAIL

Reorder #	Description	Qty Ordered	Qty Shipped	Unit Price	Amount
XRC854630	2 36X96 BANNERS	1	1	$ 263.0400	$ 263.04

Remarks:
RUTH DE LA ROSA MS O-326
JOB #: 56111 LOW ORG 50915
PUBLIC WORKS, DEPT OF
TBSDR BANNER

BPA # 511469-0

P: 1002993
O: 50915
E: 52550
T: 011.008
A: 100496

6/14/12
$283.43

OK to Pay: Ruth de la Rosa, LUEP2
Approved by: Todd S., LUEP Mgr.

ERS workgroup
subtask 3.B.1

Subtotal:	$ 263.04
CALIF STATE & LOCAL TAX 7.2500%	$ 19.07
SAN DIEGO COUNTY TAX 0.5000%	$ 1.32
Invoice Total:	$ 283.43
Payments Made:	$ 0.00
Total Amount Due:	$ 283.43

XEROX FEDERAL IDENTIFICATION #16-0468020

PLEASE INCLUDE THIS STUB WITH YOUR PAYMENT, OR WRITE YOUR INVOICE NUMBER(S) ON YOUR CHECK

Ship To / Installed At:
COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To:
COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA
92123-4310

When paying by mail send payment to:
XEROX CORPORATION
P.O. BOX 7405
PASADENA, CA. 91109-7405

☐ Please check here if your "Bill To" address or "Ship To / Installed At" location has changed and provide updates on reverse side.

CN: 709033971 INV #: 119653775 INV DATE: 6/12/2012 EIPP

Invoice Amount
$ 283.43

202100008070060 1196537750 0300283437 270903397138

Customer Information

Please Direct Inquiries To:

XEROX CORPORATION
SUITE 400
7676 HAZARD CTR DR
SAN DIEGO, CA 92108
Telephone: 800-854-3689

xerox

Invoice Date: 6/12/2012
Customer Reference: SL
Purchase Order Number: 511469
Due Date: 7/2/2012
Contract Number: 7026717
Invoice Number: 119653774
Customer Number: 709033971
Xerox Order Number: X334312

Ship To:

COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To:

COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA 92123-4310

TO ORDER SUPPLIES CALL 1-800-822-2200 OR LOGON TO WWW.XEROX.COM/SUPPLIES

INVOICE DETAIL

Reorder #	Description	Qty Ordered	Qty Shipped	Unit Price	Amount
XRC854630	1 8FT TABLE CLOTH	1	1	$ 327.6000	$ 327.60

Remarks:
RUTH DE LA ROSA MS O-326
JOB #: 55532 LOW ORG 50915
PUBLIC WORKS, DEPT OF
THINK BLUE TABLE CLOTH

BPA#511469-0

Invoi

P: 1002993
O: 50915
E: 52550
T: 011.008
A: 100496

6/14/12
$352.99

Subtotal:	$ 327.60
CALIF STATE & LOCAL TAX 7.2500%	$ 23.75
SAN DIEGO COUNTY TAX 0.5000%	$ 1.64
Invoice Total:	$ 352.99
Payments Made:	$ 0.00
Total Amount Due:	$ 352.99

OK to Pay: Ruth de la Rosa, LUEP2
Approved by: Todd S, LUEP Mgr
ERS Work Group
Subtask 3.B1

XEROX FEDERAL IDENTIFICATION #16-0468020

PLEASE INCLUDE THIS STUB WITH YOUR PAYMENT, OR WRITE YOUR INVOICE NUMBER(S) ON YOUR CHECK

Ship To / Installed At:
COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To:
COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA
92123-4310

When paying by mail send payment to:
XEROX CORPORATION
P.O. BOX 7405
PASADENA, CA. 91109-7405

Payment

☐ Please check here if your "Bill To" address or "Ship To / Installed At" location has changed and provide updates on reverse side.

CN: 709033971 INV #: 119653774 INV DATE: 6/12/2012 EIPP

Invoice Amount
$ 352.99

202100008070060 1196537741 0300352995 270903397130

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Coastal Storm Drain Monitoring Sub-workgroup
Copermittee:	Port of San Diego
Period:	1st - 3rd Qrt. FY 2011-12 (July 1 2011- Mar. 31 2012)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ 3,732.00
Contract / Other Expenditures Claimed:	$ -

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

[Name] Philip Gibbons
[Title] Associate Environmental Specialist
[Organization] Port of San Diego

8/30/2012
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

[Name] Jo Ann weber
[Title] co-chair of the Regional monitoring workgroup
County of San Diego

9/21/2012
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Coastal Storm Drain Monitoring Sub-workgroup

Copermittee: Port of San Diego

Period: 1st - 3rd Qrt. FY 2011-12 (July 1 2011- Mar. 31 2012)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 1.C CSDM Meeting Support (Q2)						
10/27/2011	Philip Gibbons	Specialist	3.00	$ 49.76	$ 149.28	Coastal Storm Drain Monitoirng Meeting
10/31/2011	Philip Gibbons	Specialist	2.00	$ 49.76	$ 99.52	CSDM Annual Report Preparation
11/7/2011	Philip Gibbons	Specialist	1.00	$ 49.76	$ 49.76	CSDM Annual Report Preparation
11/14/2011	Philip Gibbons	Specialist	1.00	$ 49.76	$ 49.76	CSDM Annual Report Preparation
12/12/2011	Philip Gibbons	Specialist	6.00	$ 49.76	$ 298.56	CSDM Annual Report Preparation
12/13/2011	Philip Gibbons	Specialist	6.00	$ 49.76	$ 298.56	CSDM Annual Report Preparation
12/19/2011	Philip Gibbons	Specialist	5.00	$ 49.76	$ 248.80	CSDM Annual Report Preparation
12/20/2011	Philip Gibbons	Specialist	6.00	$ 49.76	$ 298.56	CSDM Annual Report Preparation
12/21/2011	Philip Gibbons	Specialist	4.00	$ 49.76	$ 199.04	CSDM Annual Report Preparation
			0.00	$ 49.76	$ -	
Sub-total	$ 1,691.84					
Task / Subtask 1.C CSDM Meeting Support (Q3)						
1/3/2012	Philip Gibbons	Associate Environmental Specialist	7.00	$ 49.76	$ 348.32	CSDM Annual Report Preparation
1/4/2012	Philip Gibbons	Associate Environmental Specialist	7.00	$ 49.76	$ 348.32	CSDM Annual Report Preparation
1/11/2012	Philip Gibbons	Associate Environmental Specialist	3.00	$ 49.76	$ 149.28	Coastal Storm Drain Monitoirng Meeting
1/12/2012	Philip Gibbons	Associate Environmental Specialist	4.00	$ 49.76	$ 199.04	CSDM Annual Report Preparation
1/17/2012	Philip Gibbons	Associate Environmental Specialist	4.00	$ 49.76	$ 199.04	CSDM Annual Report Preparation
1/18/2012	Philip Gibbons	Associate Environmental Specialist	6.00	$ 49.76	$ 298.56	CSDM Annual Report Preparation
1/19/2012	Philip Gibbons	Associate Environmental Specialist	7.00	$ 49.76	$ 348.32	CSDM Annual Report Preparation
3/15/2012	Philip Gibbons	Associate Environmental Specialist	3.00	$ 49.76	$ 149.28	Coastal Storm Drain Monitoirng Meeting
Sub-total	$ 2,040.16					
Task / Subtask 1.C CSDM Meeting Support (Q3)						
			0.00	$ -	$ -	

FY 2011-12 Expenditure Summary

	RMC Approved Budget (05/21/11)	Adjusted Budget (Includes FY 2010-11 rollovers)	Approved Expenditures	Committed Funds	Carry Over Task Descriptions	Uncommitted Funds
Program Planning Subcommittee (PPS)	$190,747	$190,747	$91,377	$82,334	Focused Meeting Facilitation - $17,062 Monitoring Focused Meeting - $33,845 Monitoring support thru 9/15 - $27,300 LD Workgroup support - $4,128	$17,036
Education/ Residential Sources Workgroup	$168,030	$168,030	$147,299	$0	No Carryover Request	$20,731
Monitoring Workgroup	$2,367,080	$2,490,830	$2,098,822	$173,250	SCCWRP SIPP Project - $105,000 SMC - $68,250	$218,758
Land Development Workgroup	$199,494	$237,482	$197,654	$39,828	HMP Monitoring - $3,260 HMP Technical Support - $12,505 HMP Monitoring Data Analysis - $24,064	$0
Industrial/ Commercial/ Municipal Sources Workgroup	$46,770	$47,250	$8,033	$0	No Carryover Request	$39,216
Other Expenditures (CASQA)	$20,500	$20,500	$20,500	$0		$0
Totals	**$2,992,621**	**$3,154,838**	**$2,563,685**	**$295,412**		**$295,741**

FY 2011-12 Program Planning Subcommittee	Approved Budget (05/21/11)	Modified Budget (08/11)	Spent through 6/30/12	Committed Funds	Uncommitted Funds
1 PPS Meeting Support	$8,820	$8,820	$9,662		($842)
2 MOU Obligations	$11,598	$11,598	$7,947.30		$3,651
3.A Permit Reissuance	$63,000				
Monitoring Estimation Exercise		$16,129	$16,109.10		$20
Focused Meeting Facilitation		$18,321	$1,259.87	$17,062	
Land Dev Workgroup Support		$15,750	$6,312.98	$4,127.70	$5,309
Untasked		$3,578	$0.00		$3,578
3.B Standards for Reporting & Assessment	$63,000				
Monitoring Focused Meeting Support (approved 6/21)		$33,845	$0.00	$33,845	
Monitoring support thru 9/15 (approved 6/28)		$27,300	$0.00	$27,300	
Untasked		$1,855	$0.00		$1,855
3.C Watershed Program Approach	$6,529	$0	$0.00		$0
3.D Framework/Guidance for TMDL Implementation Planning	$34,650	$50,400	$50,085.00		$315
3.E Watershed Activities Database	$3,150	$3,150	$0.00		$3,150
TOTAL	**$190,747**	**$190,747**	**$91,377**	**$82,334**	**$17,036**

FY 2011-12 Education and Residential Sources Workgroup	Approved Budget (05/21/11)	Modified Budget (08/11)	Spent through 6/30/12	Committed Funds	Uncommitted Funds
1 ERS Meeting Support	$4,410	$2,709	$2,849		($140)
2 MOU Obligations	$24,334	$2,709	$2,651		$58
3 Regional Residential Education					
3A Regional Program Approach	$941	$2,258	$1,479		$779
3B Regional Outreach	$60,645				
3B1 Materials Development and Distribution		$73,665	$57,298		$16,367
3B2 Partnership Development		$1,806	$0		$1,806
3B3 Underserved Target Audience		$1,108	$0		$1,108
3B4 Regional Events		$7,580	$6,591		$989
3C Market Research and Assessment Tools	$12,600	$12,600	$12,469		$131
3D Website	$3,675	$2,170	$866		$1,304
3E Mass Media Campaign	$61,425	$61,425	$63,096		($1,671)
Total	**$168,030**	**$168,030**	**$147,299**	**$0**	**$20,731**

FY 2011-12 Regional Monitoring Workgroup	Approved Budget (05/21/11)	Modified Budget (08/11)	Spent through 6/30/12	Committed Funds	Uncommitted Funds
1 MON Meeting Support	$11,025	$10,500	$7,450		$3,050
2 MOU Obligations	$5,884	$5,884	$3,732		$2,152
3.A Source ID Work Plan	$10,500	$10,500			$10,500
3.B Regional Monitoring Program	$1,852,720	$1,748,245	$1,694,943		$53,302
3.B.1 Bacti source ID Study - carryover FY 2010-11		$45,000	$41,716		$3,284
3.B.2 SCCWRP SIPP Project - carryover FY 2010-11		$105,000		$105,000	
3.B.3 MS4 Evaluation - carryover FY 2010-11		$10,500			$10,500
3.C Regional Reporting Program	$371,451	$371,451	$350,981		$20,470
3.D Southern California Monitoring Coalition	$36,750	$105,000		$68,250	$36,750
3.E Permit Riessuance	$78,750	$78,750			$78,750
Total	**$2,367,080**	**$2,490,830**	**$2,098,822**	**$173,250**	**$218,758**

FY 2011-12 Land Development Workgroup	Approved Budget (05/21/11)	Modified Budget (08/11)	Spent through 6/30/12	Committed Funds	Uncommitted Funds
1 LDW Meeting Support	$4,410	$4,410	$4,309		
2 MOU Obligations	$7,134	$7,134	$1,098	$3,217	
3.A Development of Miscellaneous Work Product	$187,950	$225,938			
3.A.1 3rd Party Review of BMP Sizing Tool			$11,395		
3.A.2 HMP Monitoring Technical Support			$71,478	$12,505	
3.A.3 HMP Site Surveying			$24,119		
3.A.4 HMP implementation			$4,186		
3.A.5 HMP Phase 1 Monitoring			$75,513	$43	
3.A.6 Sizing Calculator Methodology Development			$5,556		
3.A.7 HMP Phase 1 Monitoring Data Analysis				$24,064	
TOTAL	**$199,494**	**$237,482**	**$197,654**	**$39,828**	**$0**

FY 2011-12 Industrial, Commercial and Municipal Workgroup	Approved Budget (05/21/11)	Modified Budget (08/11)	Spent through 6/30/12	Committed Funds	Uncommitted Funds
1 ERS Meeting Support	$4,410	$4,410	$3,399		$1,011
2 MOU Obligations	$10,910	$10,910	$4,634		$6,276
3 Regional Industrial, Commercial and Municipal Sources					
3A Municipal Inventory	$1,050	$1,529			$1,529
3B Municipal Program Standards	$8,400	$8,400			$8,400
3C Development of Regional Inspection Standards	$10,500	$10,500			$10,500
3D Regional Mobile Business Program	$5,250	$5,250			$5,250
3E BMP Toolbox Website Improvements	$1,000	$1,000			$1,000
3F Regional IC Education and Training Events	$5,250	$5,250			$5,250
Total	**$46,770**	**$47,250**	**$8,033**	**$0**	**$39,216**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2011-12 (July 1, 2011 - Jun 30, 2012)
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 197,653.76

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Deborah Mosley
Land Use Environmental Planner
County of San Diego, Department of Public Works

9/26/2012
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2011-12 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Chrsitine Sloan
Program Coordinator
County of San Diego, Department of Public Works

9/26/12
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2011-12 (July 1, 2011 - Jun 30, 2012)

Work Plan Task / Sub-task			Amount Paid	Date Paid	Management Cost
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)					**Auto-calc'd (5% of amount paid)**
Subtask 1.A.Meeting Support					
Contract 534079 TO 9 [RBF As-Needed Contract] Aug 2011			$ 419.75	9/30/2011	$ 20.99
Contract 534079 TO 9 [RBF As-Needed Contract] Sept 2011			$ 599.65	10/28/2011	$ 29.98
Contract 534079 TO 9 [RBF As-Needed Contract] Oct 2011			$ 1,319.23	11/25/2011	$ 65.96
Contract 534079 TO 9 [RBF As-Needed Contract] Nov 2011			$ 599.65	12/23/2011	$ 29.98
Contract 534079 TO 9 [RBF As-Needed Contract] Jan 2012			$ 686.19	2/24/2012	$ 34.31
Contract 534079 TO 9 [RBF As-Needed Contract] Feb 2012			$ 479.72	3/23/2012	$ 23.99
Subtask1.A. Sub-total	$	4,104.19			
Subtask1.A. Management Cost	$	205.21			
Subtask 2.A. LDW MOU Obligations					
Contract 534079 TO 9 [RBF As-Needed Contract] Jan 2012			$ 359.79	2/24/2012	$ 17.99
Contract 534079 TO 9 [RBF As-Needed Contract] March 2012			$ 686.19	4/27/2012	$ 34.31
Subtask2.A. Sub-total	$	1,045.98			
Subtask2.A. Management Cost	$	52.30			
Subtask 3.A.1 HMP Software 3rd Party Review					
Contract 536213 TO 2 [AMEC As-Needed Contract] July - Oct 2011			$ 10,852.42	11/4/2011	$ 542.62
Subtask3.A.1 Sub-total	$	10,852.42			
Subtask3.A.1 Management Cost	$	542.62			
Subtask 3.A.2 HMP Monitoring technical Support					
Contract 526934 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Sept - Nov 2011			$ 20,260.83	12/2/2011	$ 1,013.04
Contract 526934 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Nov - Dec 2011			$ 10,136.40	12/30/2011	$ 506.82
Contract 526934 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Dec 2011 - June 2012			$ 37,676.79	6/25/2012	$ 1,883.84
Subtask3.A.2 Sub-total	$	68,074.02			
Subtask3.A.2 Management Cost	$	3,403.70			
Subtask 3.A.3 HMP Surveying					
Contract 537276 TO 4 [Brown and Caldwell As-Needed Contract] Aug - Nov 2011			$ 2,093.01	10/18/2011	$ 104.65
Contract 537276 TO 4 [Brown and Caldwell As-Needed Contract] Oct 2011			$ 19,690.71	11/16/2011	$ 984.54
Contract 537276 TO 4 [Brown and Caldwell As-Needed Contract] Nov 2011 - Dec 2011			$ 1,186.53	1/4/2012	$ 59.33
Subtask3.A.3 Sub-total	$	22,970.25			
Subtask3.A.3 Management Cost	$	1,148.51			
Subtask 3.A.4 HMP Implementation Assistance					
Contract 537276 TO 2 [Brown and Caldwell As-Needed Contract] Aug - Nov 2011			$ 3,820.70	11/16/2011	$ 191.04
Contract 537276 TO 2 [Brown and Caldwell As-Needed Contract] Nov 2011 - Feb 2012			$ 165.88	4/30/2012	$ 8.29
Subtask3.A.4 Sub-total	$	3,986.58			
Subtask3.A.4 Management Cost	$	199.33			
Subtask 3.A.5 HMP Phase 1 Monitoring					
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] Feb 2012			$ 261.10	3/23/2012	$ 13.06
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] Mar 2012			$ 454.42	4/27/2012	$ 22.72
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] April 2012			$ 54,314.30	6/4/2012	$ 2,715.72
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] May 2012			$ 12,493.67	6/13/2012	$ 624.68
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] June 2012			$ 4,393.79	6/29/2012	$ 219.69
Subtask3.A.5 Sub-total	$	71,917.28			
Subtask3.A.5 Management Cost	$	3,595.86			
Subtask 3.A.6 Sizing Calculator Methodology					
Contract 514270 TO 3 [Brown and Caldwell Sub under Weston Contract] Feb - June 2011			$ 5,290.96	7/5/2011	$ 264.55
Subtask3.A.6 Sub-total	$	5,290.96			
Subtask3.A.6 Management Cost	$	264.55			
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]			$ -	x/x/2010	
Sub-total Other Expenditures	$	-			
Total Expenditures (Including contract management cost)			**$ 197,653.76**		

LAND DEVELOPMENT WORKGROUP
FY 11-12 EXPENDITURE SUMMARY

FY 11-12 Expenditures	Modified Budget - August 2011			Spent through 6/30/12			Remaining Budget	Task Closed	Task On-Going	Request Carry over to same Task	Request Carry over Task 3.A.
	Consultant	Contract Mgmt	Total Budget	Consultant	Contract Mgmt	Total Spent					
Task 1 - LDW Meeting Support	$4,200	$210	$4,410	$4,104.19	$205.21	$4,309.40	$101		X		X
Task 2 - MOU Obligations	$6,794	$340	$7,134	$1,045.98	$52.30	$1,098.28	$6,035		X		X
Task 3.A. -Miscellaneous Work Product	$179,000	$8,950	$187,950								
Rollover funds From FY 10-11 used for 3.A	*$37,988*	--	*$37,988*								
3.A.1. AMEC 3rd party Review*	$11,071	$554	$11,624	$10,852.42	$542.62	$11,395.04	$229	X			X
3.A.2. ESA PWA HMP Monitoring Site Selection*	$79,983	$3,999	$83,983	$68,074.02	$3,403.70	$71,477.72	$12,505		X	X	
3.A.3. B&C HMP Surveying*	$27,530	$3,598	$31,128	$22,970.25	$1,148.51	$24,118.76	$7,009	X			X
3.A.4. B&C HMP implementation*	$8,066	$403	$8,469	$3,986.58	$199.33	$4,185.91	$4,283	X			X
3.A.5. Weston HMP Phase 1 Monitoring*	$71,958	$3,598	$75,556	$71,917.28	$3,595.86	$75,513.14	$43		X	X	
3.A.6. B&C Sizing Calculator Methodology*	$13,370	$668	$14,038	$5,290.96	$264.55	$5,555.51	$8,483	X			X
3.A.7. ESA PWA HMP Phase 1 data analysis*	$22,918	$1,146	$24,064	$0.00	$0.00	$0.00	$0		X		
UNTASKED	$1,086	$54	$1,140	$0.00	$0.00	$0.00	$1,140				X
TOTAL	$227,982	$9,500	$237,482	$188,241.68	$9,412.08	$197,653.76	**$39,828**	Request carry over of $39,828 to FY 12-13 budget.			

* No subtasks for 3.A. were put into the FY 11-12 workplan. These numbers represent the amount allocated in the Consultant Task Order

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Program Planning Subcommittee
Copermittee:	County of San Diego
Period:	1st Quarter FY 2011-12 (July 1- Sept. 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ -**
Contract / Other Expenditures Claimed:	**$ 91,376.75**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use and Environmental Planning Manager
Department of Public Works

Date _____ Signature _____

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2011-12 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use and Environmental Planning Manager
Department of Public Works

Date _____ Signature _____

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st Quarter FY 2011-12 (July 1- Sept. 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
x/x/2010			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st Quarter FY 2011-12 (July 1- Sept. 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st Quarter FY 2011-12 (July 1- Sept. 30, 2011)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
			0.00	$ -	$ -	
Sub-total	$ -					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]						
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
			0.00	$ 77.42	$ -	
Sub-total	$ -					
Copermittee Total					**$ -**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st Quarter FY 2011-12 (July 1- Sept. 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 1.A. Meeting Support				
Contract 534079 TO 6 [RBF As-Needed Contract] July 2011	$ 159.37	11/31/2011	$ 7.97	
Contract 534079 TO 6 [RBF As-Needed Contract] Aug. 2011	$ 1,038.48	5/13/2012	$ 51.92	
Contract 534079 TO 6 [RBF As-Needed Contract] Sept 2011	$ 549.87	5/13/2012	$ 27.49	
Contract 534079 TO 6 [RBF As-Needed Contract] Oct 2011	$ 519.24	11/30/2011	$ 25.96	
Contract 534079 TO 6 [RBF As-Needed Contract] Nov 2011	$ 735.59	12/23/2011	$ 36.78	
Contract 534079 TO 6 [RBF As-Needed Contract] Dec 2012	$ 259.62	1/31/2012	$ 12.98	
Contract 534079 TO 6 [RBF As-Needed Contract] Jan 2012	$ 519.24	2/28/2012	$ 25.96	
Contract 534079 TO 6 [RBF As-Needed Contract] Feb 2012	$ 945.41	3/27/2012	$ 47.27	
Contract 534079 TO 6 [RBF As-Needed Contract] Mar 2012	$ 239.86	5/10/2012	$ 11.99	
Contract 534079 TO 6 [RBF As-Needed Contract] May 2012	$ 2,477.64	5/29/2012	$ 123.88	
Contract 534079 TO 6 [RBF As-Needed Contract] Jun 2012	$ 1,758.06	7/2/2012	$ 87.90	
Subtask1.A Sub-total $ 9,202.38				
Subtask1.A Management Cost $ 460.12				
Subtask 2.A. PPS MOU Obligations				
Contract 534079 TO 6 [RBF As-Needed Contract] Nov 2011	$ 519.24	12/23/2011	$ 25.96	
Contract 534079 TO 6 [RBF As-Needed Contract] Dec 2012	$ 605.78	1/31/2012	$ 30.29	
Contract 534079 TO 6 [RBF As-Needed Contract] Jan 2012	$ 302.89	2/28/2012	$ 15.14	
Contract 534079 TO 6 [RBF As-Needed Contract] May 2012	$ 2,131.48	5/29/2012	$ 106.57	
Contract 534079 TO 6 [RBF As-Needed Contract] Jun 2012	$ 4,009.47	7/2/2012	$ 200.47	
Subtask2.A Sub-total $ 7,568.86				
Subtask2.A Management Cost $ 378.44				
Subtask 3.A.1 Weston Monitoring Estimation Exercise				
Contract 535693 [Weston Task 011] May 2012	$ 15,342.00	6/5/2012	$ 767.10	
Subtask3.A.1 Sub-total $ 15,342.00				

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask3.A.1 Management Cost	$ 767.10				
Subtask 3.A.2. Katz and Associated Focused Mtg Facilitation					
Contract 537276 TO 6 [Brown and Caldwell As-needed Contract]		$ 1,199.88	7/2/2012	$ 59.99	
Subtask3.A.2 Sub-total	$ 1,199.88				
Subtask3.A.2 Management Cost	$ 59.99				
Subtask 3.A.3 [Land Development Workgroup Support]					
Contract 534079 TO 20 [RBF As-needed] May 2012		$ 582.16	6/29/2012	$ 29.11	
Contract 534079 TO 20 [RBF As-needed] June 2012		$ 5,430.20	6/29/2012	$ 271.51	
Subtask3.A.3 Sub-total	$ 6,012.36				
Subtask3.A.3 Management Cost	$ 300.62				
Subtask 3.D [Frame Work/TMDL Guidance]					
Contract 534079 TO 11 [RBF As-needed Contract] Aug 2011		$ 1,321.08	9/28/2011	$ 66.05	
Contract 534079 TO 11 [RBF As-needed Contract] Sep 2011		$ 5,139.81	1/9/2012	$ 256.99	
Contract 534079 TO 11 [RBF As-needed Contract] Oct 2011		$ 15,866.40	1/9/2012	$ 793.32	
Contract 534079 TO 11 [RBF As-needed Contract] Nov 2011		$ 16,375.30	1/4/2012	$ 818.77	
Contract 534079 TO 11 [RBF As-needed Contract] Dec 2011		$ 8,997.41		$ 449.87	
Subtask3.D Sub-total	$ 47,700.00				
Subtask3.D Management Cost	$ 2,385.00				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO		$ -	x/x/2010		
Sub-total Other Expenditures	$ -				
Total Expenditures (Including contract management cost)		**$ 91,376.75**			

Final 04-30-09

Copermittee Working Bodies
Regional Program Planning Subcommittee
Fiscal, Reporting, and Assessment Workgroup
Education and Residential Sources Workgroup
Regional Monitoring Workgroup
Dry Weather Monitoring Sub-workgroup
Coastal Storm Drain Monitoring Sub-workgroup
Land Development Workgroup
Municipal Sources Workgroup
Industrial and Commercial Sources Workgroup
Regional WURMP Workgroup

Copermittees
County of San Diego
City of Carlsbad
City of Chula Vista
City of Coronado
City of Del Mar
City of El Cajon
City of Encinitas
City of Escondido
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of Oceanside
City of Poway
City of San Diego
City of San Marcos
City of Santee
City of Solana Beach
City of Vista
Port of San Diego
Regional Airport Authority

Quarterly Dates

1st Quarter FY 2011-12 (July 1- Sept. 30, 2011)
2nd Quarter FY 2011-12 (Oct. 1- Dec. 31, 2011)
3rd Quarter FY 2011-12 (Jan. 1- Mar. 31, 2012)
4th Quarter FY 2011-12 (April 1- June 30, 2012)
1st and 2nd Qrt. FY 2011-12 (July 1- Dec. 31 2011)
1st - 3rd Qrt. FY 2011-12 (July 1 2011- Mar. 31 2012)
2nd and 3rd Qrt. FY 2011-12 (Oct. 1 2011 - Mar. 31, 2012)
3rd and 4th Qrt. FY 2011-12 (Jan. 1 - June 30, 2012)
1st - 4th Qrt FY 2011-12 (July 1, 2011 - Jun 30, 2012)

Expenditure Type(s)

Hourly Expenditures Only
Contract / Other Expenditures Only
Hourly AND Contract / Other Expenditures

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Program Planning Subcommittee
Copermittee:	County of San Diego
Period:	1st Quarter FY 2011-12 (July 1- Sept. 30, 2011)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ -**
Contract / Other Expenditures Claimed:	**$ 91,376.75**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use and Environmental Planning Manager
Department of Public Works

10/1/12
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2011-12 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use and Environmental Planning Manager
Department of Public Works

10/11/12
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st Quarter FY 2011-12 (July 1- Sept. 30, 2011)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 1.A. Meeting Support				
Contract 534079 TO 6 [RBF As-Needed Contract] July 2011	$ 159.37	11/31/2011	$ 7.97	
Contract 534079 TO 6 [RBF As-Needed Contract] Aug. 2011	$ 1,038.48	5/13/2012	$ 51.92	
Contract 534079 TO 6 [RBF As-Needed Contract] Sept 2011	$ 549.87	5/13/2012	$ 27.49	
Contract 534079 TO 6 [RBF As-Needed Contract] Oct 2011	$ 519.24	11/30/2011	$ 25.96	
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Contract 534079 TO 6 [RBF As-Needed Contract] Dec 2012	$ 259.62	1/31/2012	$ 12.98	
Contract 534079 TO 6 [RBF As-Needed Contract] Jan 2012	$ 519.24	2/28/2012	$ 25.96	
Contract 534079 TO 6 [RBF As-Needed Contract] Feb 2012	$ 945.41	3/27/2012	$ 47.27	
Contract 534079 TO 6 [RBF As-Needed Contract] Mar 2012	$ 239.86	5/10/2012	$ 11.99	
Contract 534079 TO 6 [RBF As-Needed Contract] May 2012	$ 2,477.64	5/29/2012	$ 123.88	
Contract 534079 TO 6 [RBF As-Needed Contract] Jun 2012	$ 1,758.06	7/2/2012	$ 87.90	
Subtask1.A Sub-total $ 9,202.38				
Subtask1.A Management Cost $ 460.12				
Subtask 2.A. PPS MOU Obligations				
Contract 534079 TO 6 [RBF As-Needed Contract] Nov 2011	$ 519.24	12/23/2011	$ 25.96	
Contract 534079 TO 6 [RBF As-Needed Contract] Dec 2012	$ 605.78	1/31/2012	$ 30.29	
Contract 534079 TO 6 [RBF As-Needed Contract] Jan 2012	$ 302.89	2/28/2012	$ 15.14	
Contract 534079 TO 6 [RBF As-Needed Contract] May 2012	$ 2,131.48	5/29/2012	$ 106.57	
Contract 534079 TO 6 [RBF As-Needed Contract] Jun 2012	$ 4,009.47	7/2/2012	$ 200.47	
Subtask2.A Sub-total $ 7,568.86				
Subtask2.A Management Cost $ 378.44				
Subtask 3.A.1 Weston Monitoring Estimation Exercise				
Contract 535693 [Weston Task 011] May 2012	$ 15,342.00	6/5/2012	$ 767.10	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask3.A.1 Sub-total	$ 15,342.00				
Subtask3.A.1 Management Cost	$ 767.10				
Subtask 3.A.2. Katz and Associated Focused Mtg Facilitation					
Contract 537276 TO 6 [Brown and Caldwell As-needed Contract]		$ 1,199.88	7/2/2012	$ 59.99	
Subtask3.A.2 Sub-total	$ 1,199.88				
Subtask3.A.2 Management Cost	$ 59.99				
Subtask 3.A.3 [Land Development Workgroup Support]					
Contract 534079 TO 20 [RBF As-needed] May 2012		$ 582.16	6/29/2012	$ 29.11	
Contract 534079 TO 20 [RBF As-needed] June 2012		$ 5,430.20	6/29/2012	$ 271.51	
Subtask3.A.3 Sub-total	$ 6,012.36				
Subtask3.A.3 Management Cost	$ 300.62				
Subtask 3.D [Frame Work/TMDL Guidance]					
Contract 534079 TO 11 [RBF As-needed Contract] Aug 2011		$ 1,321.08	9/28/2011	$ 66.05	
Contract 534079 TO 11 [RBF As-needed Contract] Sep 2011		$ 5,139.81	1/9/2012	$ 256.99	
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Contract 534079 TO 11 [RBF As-needed Contract] Dec 2011		$ 8,997.41		$ 449.87	
Subtask3.D Sub-total	$ 47,700.00				
Subtask3.D Management Cost	$ 2,385.00				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WO		$ -	x/x/2010		
Sub-total Other Expenditures	$ -				
Total Expenditures (Including contract management cost)	**$ 91,376.75**				

Final 04-30-09

Task 1.A Meeting Support
And
Task 2.A PPS MOU Support

RBF Contract 534079,
Task Order 6

FY 11-12 PPS

Task 1.A & 2.A.

RBF CONSULTING

August 26, 2011
Project No: 25-105065.001
Invoice No: 11070732

Todd Snyder
County of San Diego
Department of Public Works
~~6555 Overland Avenue, Suite 6101~~ 5201 Ruffin Rd Ste P (MS 0650)
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommitte
CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

FORMAT FOR STANDARD MEETING NOTES
Project Manager - 0.5 hrs @ $145.67/hr = $72.83
LAND USE ENVIRONMENTAL
Planner I - 1.00 hrs @ $86.54/hr = $86.54

Professional Services: July 1, 2011 to July 31, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	1.8973	159.37	159.37
Task 2: Standard Work Products	11,046.00	0.00	0.00	0.00
Total Fee	19,446.00		159.37	159.37
	Previous Fee Billing		0.00	
	Total Fee			**159.37**
	Total this Invoice			**$159.37**

ok to pay
11/30/11 Todd S

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

September 30, 2011
Project No: 25-105065.001
Invoice No: 11080547

Mr. Todd Snyder
County of San Diego
5201 Rufin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommitte

CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

Task 1:
* Meeting notes
* Attendance at 08/24 meeting

Land Use Environmental Planner I - 12 hrs @ $86.54/hr = $1,038.48

Professional Services: August 1, 2011 to August 31, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	14.2601	1,197.85	1,038.48
Task 2: Standard Work Products	11,046.00	0.00	0.00	0.00
Total Fee	19,446.00		1,197.85	1,038.48
		Previous Fee Billing	159.37	
		Total Fee		**1,038.48**
		Total this Invoice		**$1,038.48**

ok to pay
5/23/12 Todd Snyder
P. 1002993 T: 012.009
O: 50915 E: 52370 A: 100496

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

PLANNING ■ DESIGN ■ CONSTRUCTION

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RBF CONSULTING

October 28, 2011
Project No: 25-105065.001
Invoice No: 11090555

Jon Van Rhyn
San Diego, County of
5201 Ruffin Road
Suite D
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee
CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

Task 1:
* Meeting notes 9/28

Project Manager 1.25 hrs @ $145.67/hr = $182.08
Land Use Environmental Planner I 4.25 hrs @ $86.54/hr = $367.79

Professional Services: September 1, 2011 to September 30, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	20.8062	1,747.72	549.87
Task 2: Standard Work Products	11,046.00	0.00	0.00	0.00
Total Fee	19,446.00		1,747.72	549.87
	Previous Fee Billing		1,197.85	
	Total Fee			**549.87**
		Total this Invoice		**$549.87**

ok to pay
11/30/11 Todd

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

PLANNING ■ DESIGN ■ CONSTRUCTION

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Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

November 25, 2011
Project No: 25-105065.001
Invoice No: 11100510

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee
CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

Task 1:
* Meeting notes 9/28
* Meeting notes & attendance at 10/26 meeting

Land Use Environmental Planner I 6.00 hrs @ $86.54/hr = $519.24

Professional Services: October 1, 2011 to October 31, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	26.9876	2,266.96	519.24
Task 2: Standard Work Products	11,046.00	0.00	0.00	0.00
Total Fee	19,446.00		2,266.96	519.24
	Previous Fee Billing		1,747.72	
	Total Fee			**519.24**
		Total this Invoice		**$519.24**

ok to pay Todd S
5/23/12
T: 012.009
P: 1002993
A: 100496
O: 50915
E: 52370

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

PLANNING DESIGN CONSTRUCTION

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Offices located throughout California, Arizona & Nevada ▪ www.RBF.com

RBF CONSULTING

December 23, 2011
Project No: 25-105065.001
Invoice No: 11110685

County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee
CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

Task 1:
* Meeting notes & attendance at 11/16 meeting
Land Use Environmental Planner I - 8.50 hrs @ $86.54/hr = $735.59

Task 2:
* Combine & format workplans/budgeted for FY 12-13 for all workgroups
Land Use Environmental Planner I - 6.00 hrs @ $86.54/hr = $519.24

Professional Services: November 1, 2011 to November 30, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	35.7446	3,002.55	735.59
Task 2: Standard Work Products	11,046.00	4.7007	519.24	519.24
Total Fee	19,446.00		3,521.79	1,254.83
		Previous Fee Billing	2,266.96	
		Total Fee		**1,254.83**
		Total this Invoice		**$1,254.83**

ok to pay 12/23/11
Todd

CONTRACT # 534079

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

January 27, 2012
Project No: 25-105065.001
Invoice No: 11120582

County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee

CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

Task 1:
* Meeting notes & attendance at 11/29 meeting
  Land Use Environmental Planner I - 3.00 hrs @ $86.54/hr = $259.62

Task 2:
* Combine & format workplans/budgeted for FY 12-13 for all workgroups
  Land Use Environmental Planner I - 7.00 hrs @ $86.54/hr = $605.78

Professional Services: December 1, 2011 to December 31, 2011

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	38.8354	3,262.17	259.62
Task 2: Standard Work Products	11,046.00	10.1849	1,125.02	605.78
Total Fee	19,446.00		4,387.19	865.40
	Previous Fee Billing		3,521.79	
	Total Fee			**865.40**
	Total this Invoice			**$865.40**

ok to pay 1/31/12
Todd Synder

CONTRACT # 534079

P: 1002993 T: 012.009
O: 50915 A: 100496
E: 52370

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ▪ 858.614.5000 ▪ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ▪ www.RBF.com

RBF CONSULTING

February 24, 2012
Project No: 25-105065.001
Invoice No: 12010577

County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee

CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: January 1, 2012 to January 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	45.0168	3,781.41	519.24
Task 2: Standard Work Products	11,046.00	12.9269	1,427.91	302.89
Total Fee	19,446.00		5,209.32	822.13
	Previous Fee Billing		4,387.19	
	Total Fee			**822.13**
	Total this Invoice			**$822.13**

ok to pay
Todd Synder 2/28/12

P: 1002993 A: 100496
O: 50915
E: 52370
T: 002.006

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

CONSULTANT PAYMENT REQUEST

COUNTY OF SAN DIEGO
DEPARTMENT OF GENERAL SERVICES
PROJECT MANAGEMENT DIVISION
5560 Overland Avenue, Suite 410, (MS O-368)
San Diego, CA 92123

PROJECT:	Program Planning Subcommittee	CONSULTANT:	RBF Consulting, Inc.
PROJECT NO.:	25-105065.001	CONTRACT NO:	534079
TASK ORDER:	06	CONTRACT DATE:	7/13/2011
REQUEST NO.:	2	REQUEST DATE:	02/24/12

SCHEDULED FEE	FEE EARNED TO DATE	PREVIOUS REQUESTS	CURRENT AMOUNT DUE
$ 19,446.00	$ 5,209.32	$ 4,387.19	$ 822.13
$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -
$ 19,446.00	$5,209.32	$4,387.19	$ 822.13
			$ -

NOTE: Consultant invoice is required as part of this payment request submittal

CONSULTANT'S CERTIFICATION:

The undersigned Consultant hereby certifies that the percentages complete represented by this Payment Request are true and accurate representations of Consultant's progress to date, and that notwithstanding such percentages or the payment thereof, Consultant remains responsible for satisfactorily completing all Services called for in the Agreement.

By: Mark A Capps Title: V. P. Date: 2/21/12

FISCAL Check
(POETA Verification, DGS Admin. Analyst/Fiscal)

By: _____ Date: _____

OWNER'S APPROVAL:
Project Manager, Project Management Division

By: _____

Date: _____

DISTRIBUTION: € Proj. Control € Fiscal *(Original)* € Consultant € Project Manager

PM-58, Updated 10/2010

County of San Diego
Regional Program Planning Subcommittee Support - TO 6
RBF JN 25-105065

	Hours	Rate	Current Fee:
Task 1 - Subcommittee Meeting Support			
*Draft meeting notes and attendance at 1/19 meeting			
*Upload documents to PCW			
Land Use Environmental Planner I	6	$86.54	$519.24
Total			**$519.24**
Task 2 - Standard Work Products			
*Updates to workplans/budgets for FY 12-13 for all workgroups			
Land Use Environmental Planner I	3.5	$86.54	$302.89
Total			**$302.89**
Grand Total	9.5		**$822.13**

H:PDATA/25105065/ADMIN/BILLING

RBF CONSULTING

March 23, 2012
Project No: 25-105065.001
Invoice No: 12020367

County San Diego
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee
CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: January 28, 2012 to February 24, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	56.2717	4,726.82	945.41
Task 2: Standard Work Products	11,046.00	12.9269	1,427.91	0.00
Total Fee	19,446.00		6,154.73	945.41
		Previous Fee Billing	5,209.32	
		Total Fee		**945.41**

Total this Invoice **$945.41**

ok to pay
3/27/12 Todd Sz

Supplier #
1184538

P. 1002993
O: 50915
E. 52370
T. 012.009
A. 100496

County of San Diego
Regional Program Planning Subcommittee Support - TO 6
RBF JN 25-105065

	Hours	Rate	Current Fee:
Task 1 - Subcommittee Meeting Support			
*Draft meeting notes and attendance at 2/22 PPS meeting			
*Upload documents to PCW			
*Reproduction for January RMC meeting			
Civil Engineer	6	$119.93	$719.58
Reimbursables (reproduction)			$225.83
Total			**$945.41**
Grand Total	6		**$945.41**

H:Pdata/25105065/Admin/Invoices

CONSULTANT PAYMENT REQUEST

COUNTY OF SAN DIEGO
DEPARTMENT OF GENERAL SERVICES
PROJECT MANAGEMENT DIVISION
5560 Overland Avenue, Suite 410, (MS O-368)
San Diego, CA 92123

PROJECT:	Program Planning Subcommittee	CONSULTANT:	RBF Consulting, Inc.
PROJECT NO.:	25-105065.001	CONTRACT NO:	534079
TASK ORDER:	06	CONTRACT DATE:	7/13/2011
REQUEST NO.:	3	REQUEST DATE:	3/23/12

SCHEDULED FEE	FEE EARNED TO DATE	PREVIOUS REQUESTS	CURRENT AMOUNT DUE
$ 19,446.00	$ 6,154.73	$ 5,209.32	$ 945.41
$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -
$ 19,446.00	$6,154.73	$5,209.32	$ 945.41
			$ -

NOTE: Consultant invoice is required as part of this payment request submittal

CONSULTANT'S CERTIFICATION:

The undersigned Consultant hereby certifies that the percentages complete represented by this Payment Request are true and accurate representations of Consultant's progress to date, and that notwithstanding such percentages or the payment thereof, Consultant remains responsible for satisfactorily completing all Services called for in the Agreement.

By: Mark Capper Title: V.P. Finance Date: 3/12/12

FISCAL Check
(POETA Verification, DGS Admin. Analyst/Fiscal)

By: _____ Date: _____

OWNER'S APPROVAL:
Project Manager, Project Management Division

By: _____

Date: _____

DISTRIBUTION: € Proj. Control € Fiscal *(Original)* € Consultant € Project Manager

PM-58, Updated 10/2010

RBF CONSULTING

April 27, 2012
Project No: 25-105065.001
Invoice No: 12030434

Mr. Todd Snyder
County San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee
CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: February 25, 2012 to March 30, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	59.1271	4,966.68	239.86
Task 2: Standard Work Products	11,046.00	12.9269	1,427.91	0.00
Total Fee	19,446.00		6,394.59	239.86
	Previous Fee Billing		6,154.73	
	Total Fee			**239.86**

Total this Invoice **$239.86**

OK to pay
5/10/12 Todd S

Supplier #
1184538

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

County of San Diego
Regional Program Planning Subcommittee Support - TO 6
RBF JN 25-105065

	Hours	Rate	Current Fee:
Task 1 - Subcommittee Meeting Support			
*Meeting notes for 2/22 PPS meeting			
Civil Engineer	2	$119.93	$239.86
Total			**$239.86**
Grand Total	2		**$239.86**

RBF CONSULTING

June 29, 2012
Project No: 25-105065.001
Invoice No: 12050309

Mr. Todd Snyder
County San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee
CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: May 1, 2012 to May 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	8,400.00	88.6229	7,444.32	2,477.64
Task 2: Standard Work Products	11,046.00	32.2233	3,559.39	2,131.48
Total Fee	19,446.00		11,003.71	4,609.12
	Previous Fee Billing		6,394.59	
	Total Fee			**4,609.12**
		Total this Invoice		**$4,609.12**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to pay
6/29/12 Todd

Supplier # 1184538

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

County of San Diego
Regional Program Planning Subcommittee Support - TO 6
RBF JN 25-105065

	Hours	Rate	Current Fee:
Task 1 - Subcommittee Meeting Support			
*5/2 PPS meeting attendance and notes			
*5/16 PPS meeting attendance and notes			
*5/23 PPS meeting attendance and notes			
*PCW uploads			
Civil Engineer	12	$119.93	$1,439.16
Land Use Environmental Planner I	12	$86.54	$1,038.48
Total			**$2,477.64**
Task 2 - Standard Work Products			
*5/9 LD Workgroup meeting attendance and notes			
*5/29 LD Workgroup meeting attendance and notes			
*PCW uploads			
*Prep for 5/9 LD workgroup meeting			
Civil Engineer	12	$119.93	$1,439.16
Land Use Environmental Planner I	8	$86.54	$692.32
Total			**$2,131.48**
Grand Total	44		**$4,609.12**

RBF CONSULTING

June 29, 2012
Project No: 25-105065.001
Invoice No: 12060019

Mr. Todd Snyder
County San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105065.001 Program Planning Subcommittee
CONTRACT NO: 534079 TO 6

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Program Planning Subcommittee Project located in the County of San Diego, CA.

SEE ATTACHED FOR T&M BREAKDOWN
Professional Services: June 1, 2012 to June 29, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Program Subcommittee Meeting	9,202.38	100.00	9,202.38	1,758.06
Task 2: Standard Work Products	10,243.62	73.8885	7,568.86	4,009.47
Total Fee	19,446.00		16,771.24	5,767.53
	Previous Fee Billing		11,003.71	
	Total Fee			**5,767.53**

Total this Invoice **$5,767.53**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to pay LUEPII
7/2/2012 P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

County of San Diego
Regional Program Planning Subcommittee Support - TO 6
RBF JN 25-105065

	Hours	Rate	Current Fee:
Task 1 - Subcommittee Meeting Support			
*6/6 PPS meeting attendance and notes			
*6/21 PPS meeting attendance and notes			
*6/28 PPS meeting attendance and notes			
*PCW uploads			
Civil Engineer	6	$119.93	$719.58
Land Use Environmental Planner I	12	$86.54	$1,038.48
Total			**$1,758.06**
Task 2 - Standard Work Products			
*6/12 LD Workgroup meeting attendance and notes			
*6/26 LD Workgroup meeting attendance and notes			
*6/27 Focused Meeting attendance and notes			
Civil Engineer	19	$119.93	$2,278.67
Land Use Environmental Planner I	20	$86.54	$1,730.80
Total			**$4,009.47**
Grand Total	57		**$5,767.53**

Task 3.A.1
Monitoring Estimation Exercise

Weston Contract 535693
Task Order 11

FY 11-12 PPS
Task 3.A.1

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR 2011-2012 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 05/25/2012
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.211
INVOICE NUMBER: MAY2012-04182
BILLING PERIOD: 03/31/2012 TO 05/04/2012

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,027,706.00	68,155.15	784,268.79	76.31%	243,437.21
0002	SMC BIOASSESSMENT MONITORING	221,926.00	6,334.00	16,605.20	7.48%	205,320.80
0003	TOXICITY IDENTIFICATION EVALUATION	33,167.00	0.00	8,120.93	24.48%	25,046.07
0004	AMBIENT BAY & LAGOON MONITORING	178,146.00	1,392.00	2,597.00	1.46%	175,549.00
0006	PYRETHROID MONITORING	17,830.00	0.00	16,598.62	100.00%	1,231.38
0007	MS4 OUTFALL MONITORING	183,720.00	1,987.50	127,484.42	69.39%	56,235.58
0008	MEETING SUPPORT	10,500.00	0.00	1,200.00	11.43%	9,300.00
0010	ANNUAL SCOPE OF WORK	2,000.00	0.00	1,985.00	100.00%	15.00
0011	PERMIT SUPPORT	15,361.00	15,342.00	15,342.00	99.88%	19.00
TOTALS		**1,690,356.00**	**93,210.65**	**974,201.96**	**57.63%**	**716,154.04**

CURRENT AMOUNT DUE **93,210.65**

ok to pay, [illegible] 6/6/12
P = 1002993
O = 50915
E = 52370
T = 004.004
# = 100496

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: MAY2012-04182

Invoice Date: 05/25/2012

Description: PROFESSIONAL SERVICES RENDERED FOR 2011-2012 REGIONAL WATER QUALITY MONITORING.

County Agreement No. 535693

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5201 Ruffin Road, Suite P
San Diego, CA 92123

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 13245

	Contract Value
Cost:	15,361.00
Total:	15,361.00
Cumulative Amount Billed:	15,342.00

Project Number: 13245.211.011
Project Name: FY11-12 Permit Support
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 06/24/2012

Billing Period From: 03/31/2012
To: 05/04/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
GIS Specialist				
Dister, Sheri	27.20	130.0000	3,536.00	3,536.00
Project Manager				
Renfrew, David S	49.50	160.0000	7,920.00	7,920.00
Senior Engineer				
Pohl, David H	2.00	188.0000	376.00	376.00
Senior Scientist				
Engelhorn, Garth	27.00	130.0000	3,510.00	3,510.00
Labor	105.70		15,342.00	15,342.00
Invoice Total			15,342.00	15,342.00

INVOICE 12345

Printed on 30% Post-Consumer Recycled Paper

Task 3.A.2
Focused Meeting Facilitation

Katz and Associated
Brown and Caldwell Contract 537276
Task Order 6

FY 11-12 PPS Task 3.A.2

Brown and Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego County PWD Watershed Div
5201 Ruffin Road
Suite P, MS0326
San Diego, CA 92123

Project No : 142891

Invoice No : 44171961

Date : June 26, 2012

Attention: Todd Snyder

Subject : TO - 6 Neutral Facilitation Service

Contact : Lisa C Skutecki, PM

Billing Period : Inception through June 21, 2012

Invoiced By : Lindsay B Surio

Progress Billing No : 1

Reference : Authorization Dated : 5/17/2012

Support on WQWG Meeting Facilitation - Agreement Number 537276 - Task Order. No. 1

I hereby certify that Brown and Caldwell is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed is true.

Nicolas Kanetis, Vice President

001 – Katz & Associates

EXPENSES

REGULAR EXPENSES

Account / Vendor Name	Billing Amount
Subconsultants	
O/S CONSULT-OTHER ALLOW	
KATZ & ASSOCIATES, INC.	1,199.88
Total Subconsultants	$ 1,199.88
Total Regular Expenses	$ 1,199.88
Total Expenses	$ 1,199.88
Total : 001 – Katz & Associates	$ 1,199.88
Amount Due this Invoice	$ 1,199.88

OK to pay
7/21/2012
P = 1002943
O = 50915
E = 52370
T = 004.004
A = 100446

copy to other

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice. Interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser

Brown and Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego County PWD Watershed Div
5201 Ruffin Road
Suite P, MS0326
San Diego, CA 92123

Project No : 142891

Invoice No : 44171961

Date : June 26, 2012

Attention: Todd Snyder

Summary of Account

BC	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date	Remaining Budget
001	-- Katz & Associates	$ 17,448.28	$ 1,199.88	$ 0.00	$ 1,199.88	$ 16,248.40
		$ 17,448.28	$ 1,199.88	$ 0.00	$ 1,199.88	$ 16,248.40

Total Paid To Date : $ 0.00

Balance Outstanding : $ 1,199.88

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser

Billing Detail - Items through 6/21/2012

Brown and Caldwell

Project : 142891 - TO - 6 Neutral Facilitation Service

Phase : 001 – Katz & Associates

Regular Expenses Vendor Name	EVC Code	Task	Org	Doc Nbr	Transaction Date	Period End Date	Cost	Multiplier	Amount
O/S CONSULT-OTHER ALLOW									
KATZ & ASSOCIATES, INC.	50794	****	1044	1044007834	6/26/2012	6/28/2012	1,199.88	1.00	1,199.88
	001.*** - Katz and Associates, Inc. - 142891								
					Total Regular Expenses				***1,199.88***

Total Project : 142891 - TO - 6 Neutral Facilitation Service **1,199.88**

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
June 25, 2012

INVOICE

Invoice Number
407887

Lisa Skutecki
Brown & Caldwell
9665 Chesapeake Drive Ste 201
San Diego, CA 92123-1383

PO Number: 537276

Katz Project ID: LI3389L

Billing Period from 5/17/2012 through 6/25/2012

Neutral Facilitation Services

SUMMARY OF JOB CHARGES		Hours	Labor	Costs	Total
01-00 Pre-Meeting Preparation		6.00	$ 1,199.88	$ 0.00	1,199.88
	GRAND TOTAL	6.00	$ 1,199.88	$ 0.00	1,199.88

Invoice Total **$ 1,199.88**

Company:		Vendor No. 50794	PO No: 13367	
PO Ln	G/L Code	Project / Phase / Task	Org	Amount
1	51089	142891-001-*	1044	$ 1199.88
				$
				$
				$
Date: 6/26/12		Approved by:	Total:	$ 1199.88

KATZ & Associates

Public Affairs
Community Relations
Issue Management

Katz & Associates, Inc.
4250 Executive Square, Suite 670
La Jolla, CA 92037-9105
(858) 452-0031
(858) 552-8437 fax
www.katzandassociates.com

Invoice Date
June 25, 2012

INVOICE

Invoice Attachment
407887

Lisa Skutecki
Brown & Caldwell
9665 Chesapeake Drive Ste 201
San Diego, CA 92123-1383

PO Number: 537276

Katz Project ID: LJ3389L

Billing Period from 5/17/2012 through 6/25/2012

01-00 Pre-Meeting Preparation

		Current Hours	Rate	Current Amount
Professional Services				
05/29/12	**Lewis Michaelson - Facilitator** Coordinated with Todd Snyder and Eric Becker in setting up initial meetings to clarify purpose and stakeholder roles of NPDES permit focused meetings.	**0.25**	**199.98**	**50.00**
05/30/12	**Lewis Michaelson - Facilitator** Met with RWQCB staff to discuss format, roles, schedule, purpose, ground rules, administration and other aspects of the proposed focused meetings on the draft NPDES permit.	**2.25**	**199.98**	**449.96**
06/08/12	**Lewis Michaelson - Facilitator** Reviewed revised meeting protocols and ground rules; participated in conference call with RWQCB staff to discuss and finalize meeting protocols and ground rules and discuss agenda setting processes and preliminary agenda for first focused meeting.	**1.50**	**199.98**	**299.97**
06/25/12	**Lewis Michaelson - Facilitator** Traveled to RWQCB office and participated in dry run to prepare for first NPDES permit focused meeting with stakeholders.	**2.00**	**199.98**	**399.96**
	Total for Professional Services:	6.00		1,199.88

Total Billings for 01-00 Pre-Meeting Preparation this invoice **1,199.88**

Task 3.A.3
Land Development Workgroup Support

RBF Contract 534079
Task Order 20

FY 11-12 PPS
Task 3.A.3

RBF CONSULTING

June 29, 2012
Project No: 25-105569.001
Invoice No: 12050316

Mr. Todd Snyder
County of San Diego
5201 Ruffin Road, Ste P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105569.001 TO 20 - Permit Reissurance

CONTRACT NO: 534079
TASK ORDER NO: 20

Professional consulting services rendered pursuant to the Agreement dated August 19, 2011 relative to the Permit Reissuance 2012 Planning and Construction Project located in the County of San Diego, CA.

Professional Services: May 1, 2012 to May 31, 2012

Total Fee	582.16			
		Total Earned	582.16	
		Previous Fee Billing	0.00	
		Current Fee Billing	582.16	
		Total Fee		**582.16**

Billing Limits	**Current**	**Prior**	**To-Date**
Fees	582.16	0.00	582.16
Limit			15,000.00
Remaining			14,417.84

Total this Invoice **$582.16**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to pay $582.16

P: 1002993
O: 50915
E: 52370
: 012.009
A: 100496

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

T.O.#20
ACTIVITY/WA NO.

7/2/12
DATE

PROJECT MANAGER

7/2/12
DATE

DPW MANAGER

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

County of San Diego
Permit Reissuance 2012 Planning and Construction - TO 20
RBF JN 25-105569

	Hours	Rate	Current Fee:
Task 1 - Changes to SUSMP and HMP			
*Kickoff meeting and draft workplan			
Project Manager, Public Works	4	$145.67	$582.68
Total			**$582.68**
Grand Total	4		**$582.68**

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

T.O. #20
ACTIVITY/WA NO.

7/2/12
DATE

PROJECT MANAGER

7/2/12
DATE

DPW MANAGER

RBF CONSULTING

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

ok to pay
$5,430.20

June 29, 2012
Project No: 25-105569.001
Invoice No: 12060020

Mr. Todd Snyder
County San Diego
5201 Ruffin Road, Suite P
Mail Stop O-326
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105569.001 TO 20 - Permit Reissurance

CONTRACT NO: 534079
TASK ORDER NO: 20

Professional consulting services rendered pursuant to the Agreement dated August 19, 2011 relative to the Permit Reissuance 2012 Planning and Construction Project located in the County of San Diego, CA.

SEE ATTACHED FOR T&M BREAKDOWN
Professional Services: June 1, 2012 to June 29, 2012

Total Fee	5,430.20			
		Total Earned	5,430.20	
		Previous Fee Billing	0.00	
		Current Fee Billing	5,430.20	
		Total Fee		**5,430.20**

Billing Limits	**Current**	**Prior**	**To-Date**
Fees	5,430.20	582.16	6,012.36
Limit			15,000.00
Remaining			8,987.64

Total this Invoice **$5,430.20**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

County of San Diego
Permit Reissuance 2012 Planning and Construction - TO 20
RBF JN 25-105569

	Hours	Rate	Current Fee:
Task 1 - Changes to SUSMP and HMP			
*6/7 meeting with County to discuss draft work plan			
*Update work plan based on meeting with County			
*Attend LD workgroup meeting on 6/12			
*Review draft revisions to Permit language			
*Attend LD Workgroup meeting on 6/26			
* Regional RSP analysis			
Project Manager, Public Works	8	$145.67	$1,165.36
Civil Engineer	2	$119.93	$239.86
Lane Use Environmental Planner II	6	$100.76	$604.56
Total			**$2,009.78**
Task 2 - Retention Requirements			
*Review draft revisions to Permit language			
*Regional hydrology analysis for San Dieguito watershed			
*Technical Study for retention/re-use requirements			
Project Manager, Public Works	3	$145.67	$437.01
Lane Use Environmental Planner II	12	$100.76	$1,209.12
Total			**$1,646.13**
Task 3 - Technical Infeasibility and Mitigation			
*Review draft revisions to Permit language			
*Comments and reference document for Technical Infeasibility			
*Technical Study for feasibility of off-site mitigation			
Project Manager, Public Works	3	$145.67	$437.01
Civil Engineer	2	$119.93	$239.86
Lane Use Environmental Planner II	8	$100.76	$806.08
Total			**$1,482.95**
Task 4 - Priority Development Projects			
*Review draft revisions to Permit language			
Project Manager, Public Works	2	$145.67	$291.34
Total			**$291.34**
Grand Total	46		**$5,430.20**

+ rake

Task 3.D
Framework/TMDL Guidance

RBF Contract 534079
Task Order 11

FY 11-12 PPS

Task 3.D.

RBF CONSULTING

September 23, 2011
Project No: 55-100787.001
Invoice No: 11080136

Mr. Todd Snyder
County of San Diego
Department of Public Works
~~5555 Overland Avenue, Suite 6101~~
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100787.001 Non-Structural BMP Framework - TO 11

COUNTY CONTRACT NO. 534079
TASK ORDER NO. 11

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Professional consulting services rendered pursuant to the Agreement dated August 3, 2011 relative to the Non-Structural BMP Framework Project located in the County of San Diego, California.

Description of Services Performed This Period:
Task 1 - Research
4.0hrs Gian Villarreal @ $121.22 = $484.88

Task 4 - Attend Kick off meeting 8/22
3.0hrs Scott Taylor @ $229.65 = $688.95
1.0hrs Rich Lucera @ $147.24 = $147.24

TOTAL FEE THIS PERIOD: 1321.07
Professional Services: July 30, 2011 to August 26, 2011

ok to pay 9/28 Todd

P: 1002993 T: 012.009
O: 50915 A: 100496
E: 52370

Task	Fee	Percent Complete	Billed to Date	Current
1. BMP Assessment	30,000.00	1.6163	484.89	484.89
2. BMP Abstracts	10,000.00	0.00	0.00	0.00
3. Special Study Framework	5,000.00	0.00	0.00	0.00
4. Meetings	3,200.00	26.1309	836.19	836.19
Total Fee	48,200.00		1,321.08	1,321.08
		Previous Fee Billing	0.00	
		Total Fee		**1,321.08**

Total this Invoice **$1,321.08**

RBF CONSULTING

October 28, 2011
Project No: 55-100787.001
Invoice No: 11090236

Mr. Todd Snyder
County of San Diego
Department of Public Works
5555 Overland Avenue, Suite 6101
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100787.001 Non-Structural BMP Framework - TO 11

COUNTY CONTRACT NO. 534079
TASK ORDER NO. 11

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Contract # 534079

Professional consulting services rendered pursuant to the Agreement dated August 3, 2011 relative to the Non-Structural BMP Framework Project located in the County of San Diego, California.

ok to Pay 1/9/12
Todd S

Description of Services Performed This Period:
Task 1 - Research
27.0hrs Gian Villarreal @ $121.22 = $3,272.94
7.0hrs Rich Lucera @ $147.24 = $1,030.68
4.0hrs Laura Larsen @ $147.24 = $147.24
3.0hrs Scott Taylor @ $229.65 = $688.95

P: 1002993 T: 012.009
O: 50915 A: 100496
E: 52370

TOTAL FEE THIS PERIOD: $5,139.81
Professional Services: August 27, 2011 to September 30, 2011

Task	Fee	Percent Complete	Billed to Date	Current
1. BMP Assessment	30,000.00	18.749	5,624.70	5,139.81
2. BMP Abstracts	10,000.00	0.00	0.00	0.00
3. Special Study Framework	5,000.00	0.00	0.00	0.00
4. Meetings	3,200.00	26.1309	836.19	0.00
Total Fee	48,200.00		6,460.89	5,139.81
		Previous Fee Billing	1,321.08	
		Total Fee		**5,139.81**

Total this Invoice **$5,139.81**

RBF CONSULTING

November 25, 2011
Project No: 55-100787.001
Invoice No: 11100474

Mr. Todd Snyder
County of San Diego
Department of Public Works
5555 Overland Avenue, Suite 6101
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100787.001 Non-Structural BMP Framework - TO 11

COUNTY CONTRACT NO. 534079
TASK ORDER NO. 11

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Contract # 534079

Professional consulting services rendered pursuant to the Agreement dated August 3, 2011 relative to the Non-Structural BMP Framework Project located in the County of San Diego, California.

OK to pay 1/9/12
Todd Snyder

Description of Services Performed This Period:
Task 1 - BMP Assessment
44.5hrs Gian Villarreal @ $121.22 = $5,394.29
20.0hrs Rich Lucera @ $147.24 = $2,944.80
3.0hrs Scott Cartwright @ $121.22 = $363.66
25.0hrs Scott Taylor @ $229.65 = $5,741.25

P: 1002993 T: 012.009
O: 50915 A: 100496
E: 52370

Mikhail Ogawa Engineering $1,422.39

TOTAL FEE THIS PERIOD: $15,866.39
Professional Services: October 1, 2011 to October 28, 2011

Task	Fee	Percent Complete	Billed to Date	Current
1. BMP Assessment	30,000.00	71.637	21,491.10	15,866.40
2. BMP Abstracts	10,000.00	0.00	0.00	0.00
3. Special Study Framework	5,000.00	0.00	0.00	0.00
4. Meetings	3,200.00	26.1309	836.19	0.00
Total Fee	48,200.00		22,327.29	15,866.40
		Previous Fee Billing	6,460.89	
		Total Fee		**15,866.40**

PLANNING ■ DESIGN ■ CONSTRUCTION
9755 Clairemont Mesa Blvd., Suite 100 ■ San Diego, California 92124-1324 ■ 858.614.5000 ■ FAX 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

Total this Invoice	**$15,866.40**

Outstanding Invoices

Number	Date	Balance
11090236	10/28/11	5,139.81
Total		**5,139.81**

Total Now Due	**$21,006.21**

MOE
MIKHAIL OGAWA ENGINEERING

RBF
Scott Taylor
5050 Avenida Encinas # 260
Carlsbad, CA 92008-4386

ACCRUED

9/14/2011
Project No.
Invoice No. 001007
P.O. Number

Non-Structural BMP Evaluations

P.O.7176

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided August 1, 2011 through August 31, 2011			
Principal Engineer conf call with team; project setup; review of agenda; prep for and attend kick-off mtg; prep of template abstract; PC with Gian; conf call	10.25	138.77	1,422.39

ENTERED
OCT 03 2011

RECEIVED
SEP 26 2011
A/P IRVINE

RECEIVED
SEP 15 2011
RBF CONSULTING
CARLSBAD OFFICE

ACCT. NO. 611
VENDOR NO. 80858
APPROVED
ACCTG.
JOB NO. 55-100787

VN-55-100787
9-23-11

OK 8T

Total this invoice **$1,422.39**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

RBF CONSULTING

December 24, 2011
Project No: 55-100787.001
Invoice No: 11110113

Mr. Todd Snyder
County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100787.001 Non-Structural BMP Framework - TO 11
COUNTY CONTRACT NO. 534079
TASK ORDER NO. 11

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Contract 534079

Professional consulting services rendered pursuant to the Agreement dated August 3, 2011 relative to the Non-Structural BMP Framework Project located in the County of San Diego, California.

Description of Services Performed This Period:
Task 2 - BMP Abstracts
2.0hrs Rich Lucera @ $145.24 = $290.48
22.0hrs Scott Taylor @ $229.65 = $4,998.62

Mikhail Ogawa Engineering $4,460.40
Dr. M. Barrett $6,625.80

ok to pay 1/4/12
Todd Sn
P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496

TOTAL FEE THIS PERIOD: $16,375.30
Professional Services: October 29, 2011 to November 25, 2011

Task	Fee	Percent Complete	Billed to Date	Current
1. BMP Assessment	30,000.00	100.00	30,000.00	8,508.90
2. BMP Abstracts	10,000.00	50.00	5,000.00	5,000.00
3. Special Study Framework	5,000.00	50.00	2,500.00	2,500.00
4. Meetings	3,200.00	37.5809	1,202.59	366.40
Total Fee	48,200.00		38,702.59	16,375.30
		Previous Fee Billing	22,327.29	
		Total Fee		**16,375.30**

Total this Invoice **$16,375.30**

Outstanding Invoices

Number	Date	Balance
11090236	10/28/11	5,139.81
11100474	11/25/11	15,866.40
Total		**21,006.21**

Total Now Due **$37,381.51**

.ichael E. Barrett, Ph.D., P.E.
5104 Beverly Skyline, Austin, Texas 78731

P.O. No. 7150

Date: November 1, 2011

Invoice No. 1

Contract No. 534079

Task Order No. 11

Consultant's Project No. 55-100787.001

Task Description: Non-Structural BMP Review

Invoice for the period: September 9 - November 1, 2011

DIRECT LABOR

Name	Function	Rate	Hours	Total
Michael Barrett	Senior Engineer	147.24	45	$6,625.80
				$0.00

Subtotal Direct Labor $6,625.80

OTHER COSTS

Travel (attach receipts as appropriate; copies of expense claims)	$0.00
Equipment and Supplies (itemize; attach receipts)	
Other Direct Costs (itemize; attach receipts)	

Subtotal Direct Costs $0.00

SUBCONTRACTOR COSTS

List total for each subcontractor.
Attach detailed invoice in this format for each subcontractor..

Subtotal Subcontractor Costs $0.00

Total Previous Billings	$0.00
Total This Invoice	$6,625.80
Total Billings to Date	$6,625.80

TOTAL FOR THIS INVOICE $6,625.80

ACCOUNT NO.
VENDOR NO.
APPROVED
ACCOUNTING
JOB NO. 55-100787.001
AMOUNT $6625.80

MOE
MIKHAIL OGAWA ENGINEERING

RBF
Scott Taylor
5050 Avenida Encinas # 260
Carlsbad, CA 92008-4386

10/13/2011
Project No. 023.003
Invoice No. 001020
P.O. Number

Non-Structural BMP Evaluations

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided September 1, 2011 through September 30, 2011			
Sr. Civil Engineer (3270) revisions to abstract template; corr with team and County; conf call; research, complete the draft inspections abstract; draft inspections abstract; conf call with TS; coordination with RBF; prep for and attend conf call; follow-up; lit research; development of questionnaire; revised abstracts; coordination with county; new template; coordination of matrix "mapping" the abstracts	31	138.77	4,301.87
Land-Use Environmental Planner III (3550) nonstructural information and what is needed for abstracts	0.5	115.53	57.77
Land Use Environmental Planner II (3508) Meeting and scheduling for non-struc BMPs	1	100.76	100.76

88-100787

Total this invoice **$4,460.40**

Please reference the invoice number with your payment
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

ACCOUNT NO. _____
VENDOR NO. _____
APPROVED _____
ACCOUNTING _____
JOB NO. _____
AMOUNT _____

10/25/11

RBF CONSULTING

January 27, 2012
Project No: 55-100787.001
Invoice No: 11120248

Mr. Todd Snyder
County San Diego
Attn: Todd Synder
5201 Ruffin Road, Suite P
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100787.001 Non-Structural BMP Framework - TO 11

COUNTY CONTRACT NO. 534079
TASK ORDER NO. 11

Project Manager: Scott Taylor (760) 603-6242
Project Accountant: Erin Hunter (858) 614-5061

Professional consulting services rendered pursuant to the Agreement dated August 3, 2011 relative to the Non-Structural BMP Framework Project located in the County of San Diego, California.

Description of Services Performed This Period:

ok to pay 1/31/12
Todd S

0.0hrs Rich Lucera @ $145.24 = $0.00
0.0hrs Scott Taylor @ $229.65 = $0.00

Mikhail Ogawa Engineering $13,034.92

P: 1002993 T: 012.009
O: 50915 A: 100496
E: 52370

TOTAL FEE THIS PERIOD: $8,997.41
Professional Services: December 1, 2011 to December 31, 2011

Task	Fee	Percent Complete	Billed to Date	Current
1. BMP Assessment	30,000.00	100.00	30,000.00	0.00
2. BMP Abstracts	10,000.00	100.00	10,000.00	5,000.00
3. Special Study Framework	5,000.00	90.00	4,500.00	2,000.00
4. Meetings	3,200.00	100.00	3,200.00	1,997.41
Total Fee	48,200.00		47,700.00	8,997.41
		Previous Fee Billing	38,702.59	
		Total Fee		**8,997.41**
		Total this Invoice		**$8,997.41**

Outstanding Invoices

Number	Date	Balance
11090236	10/28/11	5,139.81
11100474	11/25/11	15,866.40
11110113	12/24/11	16,375.30
Total		37,381.51

Total Now Due **$46,378.92**

MOE
MIKHAIL OGAWA ENGINEERING

12/9/2011

RBF
Scott Taylor
5050 Avenida Encinas # 260
Carlsbad, CA 92008-4386

Project No. 023.003
Invoice No. 001053
P.O. Number

Non-Structural BMP Evaluations

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided November 1, 2011 through November 30, 2011			
Sr. Civil Engineer finalize draft abstracts; draft special study guidance; framework; comments on abstracts; prep presentation for PPS meeting; attend PPS meeting	31.5	138.77	4,371.26
GIS Tech Abstract edits - incorporating comments	6.5	62.59	406.84

ACCOUNT NO.
VENDOR NO.
APPROVED SL Mark Cappon
ACCOUNTING
JOB NO. 55-100987.001
AMOUNT $4778.10

Total this invoice **$4,778.10**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

MOE

MIKHAIL OGAWA ENGINEERING

RBF
Scott Taylor
5050 Avenida Encinas # 260
Carlsbad, CA 92008-4386

12/2/2011
Project No. 023.003
Invoice No. 001039
P.O. Number

Non-Structural BMP Evaluations

Description	Hours/Qty	Rate	Amount
Professional Services Services Provided October 1, 2011 through October 31, 2011			
Sr. Civil Engineer (3270) wrap up of abstract templates; questionnaire and revised scope, abstracts; PM; conf call with TT, draft abstracts; prep for PPS meeting; attend PPS meeting; project management; draft special studies guidance, finalize draft abstracts; draft special study guidance	59.5	138.77	8,256.82

55-100 787
ACCOUNT NO.
VENDOR NO.
APPROVED Mark Cappon
ACCOUNTING
JOB NO. dc to pay ST
AMOUNT 12/5/11

Total this invoice **$8,256.82**

Please reference the invoice number with your payment.
Payment is due and payable upon receipt of invoice.

Please Remit Payment to:

Mikhail Ogawa Engineering
3525 Del Mar Heights Road #429
San Diego, CA 92130
Telephone: (619) 994-7074 Fax: (858) 225-0531

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial and Commercial Sources Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2011-12 (July 1, 2011 - Jun 30, 2012)
Expenditure Type(s):	~~Hourly Expenditures Only~~ Contract only.
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 8,033.08

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use and Environmental Planning Manager
Department of Public Works

7/17/12
Date

Todd Snyder
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Nick del Valle
Land Use and Environmental Planner III
County of San Diego

7/27/12
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial and Commercial Sources Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2011-12 (July 1, 2011 - Jun 30, 2012)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
Contract 534079 [Industrial/Commercial/Municipal Workgroup /534079-TO 10]				**Auto-calc'd (5% of amount paid)**	
Subtask 1.A. [Industrial, Commercial, Municipal Workgroup Meeting Support]					
534079 RBF TO - 10		$ -		$ -	
Invoice #11070761 - August 26, 2011		$ 792.41		$ 39.62	Meeting support for the ICM Workgroup meeting on 7/19/11.
Invoice #11080536- September 30, 2011		$ 359.79		$ 17.99	Distribution of meeting notes and updated the ICM e-mail distribution list.
Invoice #11090558- October 28, 2011		$ 119.93		$ 6.00	Meeting preparation for the 10/4/11 ICM Workgroup meeting.
Invoice #11100535- November 25, 2011		$ 626.22		$ 31.31	Meeting support for the ICM Workgroup meeting on 10/4/11.
Invoice #11120660- January 27, 2012		$ 379.55		$ 18.98	Meeting support for the ICM Workgroup meeting on 12/6/11.
Invoice #12020369- March 23, 2012		$ 839.51		$ 41.98	Meeting support for the ICM Workgroup meeting on 2/7/12.
Invoice #12030436- April 27, 2012		$ 119.93		$ 6.00	Updated the ICM Workgroup e-mail distribution list.
Subtask1.A Sub-total	$ 3,237.34				
Subtask1.A Management Cost	$ 161.87				
Subtask 2.A. [Workgroup MOU Obligations/534079-TO 10]					
534079 RBF TO - 10		$ -		$ -	
Invoice #11120660- January 27, 2012		$ 705.95		$ 35.30	ICM Workgroup support and RURMP Annual Report.
Invoice #12010572- February 24, 2012		$ 705.95		$ 35.30	Assistance with the RURMP Annual Report for the I/C/M sections.
Invoice#12030436- April 27, 2012		$ 119.92		$ 6.00	Updated the Regional Hotline Contact List.
Invoice#12040348- May 25, 2012		$ 179.90		$ 9.00	Finalized the Regional Hotline Contact List.
Invoice#12050310- June 29, 2012		$ 1,502.19		$ 75.11	Preparation for the May 10, 2012 ICM meeting and assistance with voting.
Invoice#12060018- June 29, 2012		$ 1,199.30		$ 59.97	Preparation for the June 14, 2012 ICM meeting and note distribution.
Subtask2.A Sub-total	$ 4,413.21				
Subtask2.A Management Cost	$ 220.66				
Total Expenditures (Including contract management cost)		**$ 8,033.08**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)
Expenditure Type(s):	Hourly AND Contract / Other Expenditures
Hourly Expenditures Claimed:	$ 1,452.06
Contract / Other Expenditures Claimed:	$ 74,532.94

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Todd Snyder
Land Use/Environmental Planning Manager
County of San Diego

7/29/13
Date

Todd Snyder
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2012-13 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth de la Rosa
Land Use/Environmental Planner 2
County of San Diego

Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Subtask 3.B.1. Materials Development and Distribution						
10/8/2012	Ruth de la Rosa	LUEP2	2.50	$ 53.78	$ 134.45	Prep/Call with calendar graphic artisit
11/6/2012	Ruth de la Rosa	LUEP2	2.50	$ 53.78	$ 134.45	Prep/Call with calendar graphic artisit
11/8/2012	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	Coordination for art work and calendar template
10/15/2012	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	Calendar reproduction quote/order
11/20/2013	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	Organize calendars for distibtion to copermittees
4/26/2013	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	Coordination for coloring book files, review proofs, revisions, and printing
4/24/2013	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	"All the Way to the Ocean" coordination and purchase
5/8/2013	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	Chico Bag purchase, quotes, proofs, delivery
6/20/2013	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	Coordinate book insert
Sub-total	$ 1,021.82					
Subtask 3.B. Regional Events						
12/12/2012	Ruth de la Rosa	LUEP2	1.00	$ 53.78	$ 53.78	Coordinate distribution of bags for A Day Without a Bag
1/24/2013	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	Coordinate "A Day Without a Bag" sponsorship payment
3/21/2013	Ruth de la Rosa	LUEP2	2.00	$ 53.78	$ 107.56	Coordinate Movies in the Park Sponsorship
4/16/2013	Ruth de la Rosa	LUEP2	3.00	$ 53.78	$ 161.34	Coordinate SD County Fair payment, registration, credientials, parking, scheduling.
Sub-total	$ 430.24					
Copermittee Total					**$ 1,452.06**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 1.A. ERS Workgroup Meeting Support					
Contract 534079 TO 22		$ 302.89	9/12/2012	$ 15.14	Prep and attend 7/18 meeting
Contract 534079 TO 22		$ 519.24	10/4/2012	$ 25.96	7/18 meeting notes, email coordiation with PCW uploads
Contract 534079 TO 22		$ 346.16	1/7/2013	$ 17.31	Prep and attend 10/17 meeting and notes
Contract 534079 TO 22		$ 670.69	3/22/2013	$ 33.53	Prep and attend 2/20 meeting
Contract 53079 TO 22		$ 43.27	3/22/2013	$ 2.16	expenditure tracking spreadsheet update
Contract 534079 TO 22		$ 324.53	5/29/2013	$ 16.23	Prep and attend 4/17 meeting
Subtask 1.A. Sub-total	$ 2,206.78				
Subtask 1.A. Management Cost	$ 110.34				
Subtask 2.A. Workgroup MOU Obligation / 3.B.1 Materials Development and Distribution					
Contract 53079 TO 22		$ 1,514.45	1/72013	$ 75.72	RURMP AR, Calendar graphics
Contract 53079 TO 22		$ 735.59	1/7/2013	$ 36.78	calendar graphics revisions
Contract 53079 TO 22		$ 86.54	3/22/2013	$ 4.33	Events research
Contract 53079 TO 22		$ 129.81	5/29/2013	$ 6.49	coloring book graphics
Contract 53079 TO 22		$ 396.80	7/3/2013	$ 19.84	Book insert, image purchase, EnviroFair Coodination
Subtask 3.B.1. Sub-total	$ 2,863.19				
Subtask 3.B.1 Management Cost	$ 143.16				
Subtask 3.C Market Research and Assessment Tools					
Contract 541266 Action Research		$ 450.00	8/15/2012	$ 22.50	Prepare results presentation and present to ERS Workgroup
Contract 541266 Action Research		$ 180.00	12/18/2012	$ 9.00	Assessment plan and discuss calendar survey revisions
Contract 541266 Action Research		$ 3,965.00	12/18/2012	$ 198.25	copermittees, web survey programming
Contract 541266 Action Research		$ 2,190.00	1/9/2013	$ 109.50	up/trouble shooting with copermittees
Contract 541266 Action Research		$ 165.00	2/14/2013	$ 8.25	Data recipt and management. Follow up with Copermittees
Contract 541266 Action Research		$ 225.00	4/11/2013	$ 11.25	prep and call with C.Malletregarding regional acitivites
Contract 541266 Action Research		$ 660.00	5/29/2013	$ 33.00	Tourism video assessment strategy and planning; meeting prep

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Contract 541266 Action Research		$ 6,637.00	6/14/2013	$ 331.85	assessmend and recommndations for edits; Develop script for distribution list of
Contract 541266 Action Research		$ 540.00	7/2/2013	$ 27.00	Data code and final report for envent surveys and calendar
Subtask 3.C. Sub-total	$ 15,012.00				
Subtask 3.C. Management Cost	$ 750.60				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask 3.B.1.Materials Development and Distribution		$ 2,500.00	11/14/2012		Artwork revisions for 2013 calendar
Subtask 3.B.1.Materials Development and Distribution		$ 22,220.82	1/30/2013		Xerox BPA; English/Spanish Calendar reproduction
Subtask 3.B.1.Materials Development and Distribution		$ 8,283.60	6/3/2013		Xerox BPA; Coloing book reproduction
Subtask 3.B.1.Materials Development and Distribution		$ 1,080.00	4/22/2013		Coloring book files from artist
Subtask 3.B.1.Materials Development and Distribution		$ 2,498.45	5/2/2013		"All The Way to the Ocean" Book purchase
Subtask 3.B.1.Materials Development and Distribution		$ 8,364.00	5/31/2013		Chico Bag purchase
Subtask 3.B.4 Regional Events		$ 1,000.00	4/15/2013		EnviroFair registration
Subtask 3.B.4 Regional Events		$ 5,000.00	4/3/2013		Movies in the Park sponsorship
Subtask 3.B.4 Regional Events		$ 2,500.00	2/1/2013		A Day Without a Bag Sponsorship
Sub-total Other Expenditures	$ 53,446.87				
Total Expenditures (Including contract management cost)		**$ 74,532.94**			

Final 04-30-09

RBF CONSULTING

August 24, 2012
Project No: 25-105629.001
Invoice No: 12070252

Mr. Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105629.001 TO 22 - ERS Workgroup Support FY 12-13

CONTRACT NO: 534079
TASK ORDER: 22

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Education/Residential Sources Workgroup Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: July 1, 2012 to July 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: ERS Workgroup Meeting Support	2,600.00	11.6496	302.89	302.89
Task 2: Standard Work Products	9,100.00	0.00	0.00	0.00
Task 3: Materials Devel. & Distribution	2,600.00	0.00	0.00	0.00
Task 4: Regional Events	450.00	0.00	0.00	0.00
Total Fee	14,750.00		302.89	302.89
		Previous Fee Billing	0.00	
		Total Fee		**302.89**
		Total this Task		**$302.89**
		Total this Invoice		**$302.89**

P: 1002933
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Ruth Villarosa, LUEP2 9/12/12
Approved by: Todd Snyder, LUEP Mgr 9/12/12

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Scott Taylor

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING

September 28, 2012
Project No: 25-105629.001
Invoice No: 12080424

Mr. Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105629.001 TO 22 - ERS Workgroup Support FY 12-13
CONTRACT NO: 534079
TASK ORDER: 22

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Education/Residential Sources Workgroup Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: August 1, 2012 to August 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: ERS Workgroup Meeting Support	2,600.00	31.6203	822.13	519.24
Task 2: Standard Work Products	9,100.00	0.00	0.00	0.00
Task 3: Materials Devel. & Distribution	2,600.00	0.00	0.00	0.00
Task 4: Regional Events	450.00	0.00	0.00	0.00
Total Fee	14,750.00		822.13	519.24
	Previous Fee Billing		302.89	
	Total Fee			**519.24**

Total this Invoice **$519.24**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Mark A Cappon V.P.

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 1004996
OK to Pay: Ruthdeara 10/4/12 LUEP2
Approved by: Todd 10/4/12

PLANNING ■ DESIGN ■ CONSTRUCTION

9755 Clairemont Mesa Boulevard, San Diego, CA 92124-1333 ■ 858.614.5000 ■ Fax 858.614.5001
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

RBF CONSULTING
A Baker Company

Invoice Date: December 19, 2012
Project No.: 130864/25-105629.001
Invoice No.: 836639

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

~~Project No.: 130864/25-105629.001~~
CONTRACT NO.: 534079
TASK ORDER: 22

Professional consulting services rendered in pursuit to the Agreement dated July 13, 2011 relative to theEducation/Residential Sources Workgroup Support Project FY 12-13 located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services to October 28, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: ERS Workgroup Meeting Spport	$2,600.00	24.96%	$649.05	$346.16
Task 2: Standard Work Products	$9,100.00	8.08%	$735.59	$735.59
Task 3: Materials Devel. & Distribution	$2,600.00	0.00000%	$0.00	$0.00
Task 4: Regional Events	$450.00	0.00000%	$0.00	$0.00
Total Fee	**$14,750.00**		**$1,384.64**	**$1,081.75**
		Previous Fee Billing	$302.89	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Ruth Clarson
Approved by: Todd Sahr, COTR 1/7/13

$1081.75
1/2/12

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

action
Research Social Marketing Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

contract# 541266

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5201 Ruffin Road, Suite P
San Diego, CA 92123

Date: **August 6, 2012**

Invoice # **AR12-1059**

Time Period: Invoice is for tasks completed July 1 – July 31, 2012

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$450.00
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$0.00
Task 5. High School Outreach	$9,506.40
Task 6. Splash Lab Outreach	$1,465.00
Task 7. Manure Management Outreach	$0.00
Task 8. Assessment Support for Regional RS Workgroup	$450.00
Task 9. Administration	$340.00
TOTAL DUE	**$12,211.40**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496
$11,761.40
8/15/12
OK to Pay: Ruth de la Rosa
Approved by: Todd Sal

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
$450.00
8/15/12
OK to Pay: Ruth de la Rosa
Approved by: Todd Sal

RBF CONSULTING
A Baker Company

Invoice Date: December 19, 2012
Project No.: 130864/25-105629.001
Invoice No.: 836640

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

~~Project No.: 130864/25-105~~629.001
CONTRACT NO.: 534079
TASK ORDER: 22

Professional consulting services rendered in pursuit to the Agreement dated July 13, 2011 relative to theEducation/Residential Sources Workgroup Support Project FY 12-13 located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services to December 2, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: ERS Workgroup Meeting Spport	$2,600.00	24.96%	$649.05	$0.00
Task 2: Standard Work Products	$9,100.00	24.73%	$2,250.04	$1,514.45
Task 3: Materials Devel. & Distribution	$2,600.00	0.00000%	$0.00	$0.00
Task 4: Regional Events	$450.00	0.00000%	$0.00	$0.00
Total Fee	**$14,750.00**		**$2,899.09**	**$1,514.45**
		Previous Fee Billing	$1,384.64	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
$1,514.45
1/2/12
OK to Pay: Ruth Allgaron
Approved by: Todd Snyder, COTR 1/7/13

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

RBF CONSULTING
A Baker Company

Invoice Date: March 20, 2013
Project No.: 130864/25-105629.001
Invoice No.: 843431

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 130864/25-105629.001
CONTRACT NO.: 534079
TASK ORDER: 22

Professional consulting services rendered in pursuit to the Agreement dated July 13, 2011 relative to theEducation/Residential Sources Workgroup Support Project FY 12-13 located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services to March 3, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: ERS Workgroup Meeting Spport	$2,600.00	50.76%	$1,319.74	$670.69
Task 2: Standard Work Products	$9,100.00	25.20%	$2,293.31	$43.27
Task 3: Materials Devel. & Distribution	$2,600.00	3.33%	$86.54	$86.54
Task 4: Regional Events	$450.00	0.00%	$0.00	$0.00
Total Fee	**$14,750.00**		**$3,699.59**	**$800.50**
		Previous Fee Billing	$2,899.09	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Ruth delaRosa MEP 2
Approved by: RUTH delaROSA

$800.50
3/22/13

Todd Snyder TODD SNYDER
3/22/13

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

RBF CONSULTING
A Baker Company

Invoice Date: May 20, 2013
Project No.: 130864/25-105629.001
Invoice No.: 848493

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 130864/25-105629.001
CONTRACT NO.: 534079
TASK ORDER: 22

Professional consulting services rendered in pursuit to the Agreement dated July 13, 2011 relative to theEducation/Residential Sources Workgroup Support Project FY 12-13 located in the County of San Diego, CA.

SEE ATTACHED T&M BREAKDOWN
Professional Services to April 28, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: ERS Workgroup Meeting Spport	$2,600.00	63.24%	$1,644.27	$324.53
Task 2: Standard Work Products	$9,100.00	26.63%	$2,423.12	$129.81
Task 3: Materials Devel. & Distribution	$2,600.00	3.33%	$86.54	$0.00
Task 4: Regional Events	$450.00	0.00%	$0.00	$0.00
Total Fee	**$14,750.00**		**$4,153.93**	**$454.34**
		Previous Fee Billing	$3,699.59	

Consultant certifies that it, Its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100406

5/29/13
$454.34

OK to Pay: Ruth delaRosa
RUTH DELAROSA
Approved by:
Todd S, COTR 5/29/13
TODD SNYDER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

RBF CONSULTING
A Baker Company

Invoice Date: June 28, 2013
Project No.: 130864/25-105629.001
Invoice No.: 852124

Todd Snyder
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

RBF Project No.: 130864/25-105629.001 ERS Workgroup Support FY 2012-13
Contract No.: 534079
Task Order No.: 22

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the Education/Residential Sources Workgroup Support Project FY 12-13 located in the County of San Diego, CA

See Attached for Time and Materials Breakdown

Professional Services to June 28, 2013

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	ERS Workgroup Meeting Spport	$2,600.00	63.24%	$1,644.27	$0.00
2.	Standard Work Products	$9,100.00	26.63%	$2,423.12	$0.00
3.	Materials Devel. & Distribution	$2,600.00	15.26%	$396.80	$310.26
4.	Regional Events	$450.00	19.23%	$86.54	$86.54
	Total Fee	$14,750.00		$4,550.73	$396.80
			Previous Fee Billing	$4,153.93	
			Total This Invoice		$396.80

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D "Debarment and Suspension' of County Agreement Number 534079

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100446
OK to Pay: Ruth delaRosa
Approved by: RUTH DELAROSA
Todd Snyder 7/3/13
TODD SNYDER

7/3/13

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

action
Research Social Marketing Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

contract # 541266

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5201 Ruffin Road, Suite P
San Diego, CA 92123

Date: **August 6, 2012**

Invoice # **AR12-1059**

Time Period: Invoice is for tasks completed July 1 – July 31, 2012

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$450.00
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$0.00
Task 5. High School Outreach	$9,506.40
Task 6. Splash Lab Outreach	$1,465.00
Task 7. Manure Management Outreach	$0.00
Task 8. Assessment Support for Regional RS Workgroup	$450.00
Task 9. Administration	$340.00
TOTAL DUE	**$12,211.40**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496
$11,761.40
8/15/12
OK to Pay: Ruth de la Rosa
Approved by: Todd Sal

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
$450.00
8/15/12
OK to Pay: Ruth de la Rosa
Approved by: Todd Sal

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5201 Ruffin Road, Suite P
San Diego, CA 92123

Date: **November 8, 2012**

Invoice # **AR12-1077**

Time Period: Invoice is for tasks completed Oct 1 – 31, 2012

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$0.00
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$0.00
Task 5. High School Outreach	$0.00
Task 6. Splash Lab Outreach	$940.00
Task 7. Manure Management Outreach	$0.00
Task 8. Assessment Support for Regional RS Workgroup	$180.00
Task 9. Administration	$895.00
TOTAL DUE	**$2,015.00**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

P: 1002993 $180.00
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Ruth de la Rosa 12/18/12
Approved by: Todd [illegible] 12/18/12

P: 1002993 $1835
O: 50915
E: 52370
T: 012.009
A: 100496
OK to Pay: Ruth de la Rosa 12/18/12
Approved by: Todd [illegible] 12/18/12

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **December 11, 2012**

Invoice # **AR12-1081**

Time Period: Invoice is for tasks completed Nov 1 – 30, 2012

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$0.00
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$0.00
Task 5. High School Outreach	$830.00
Task 6. Splash Lab Outreach	$220.00
Task 7. Manure Management Outreach	$0.00
Task 8. Assessment Support for Regional RS Workgroup	$3,965.00
Task 9. Administration	$1,647.50
TOTAL DUE	**$6,662.50**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

P: 1002993 $3965.00
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Ruth de la Rosa
Approved by: 12/18/12
Tedd 12/18/12

P: 1002993 $2697.50
O: 50915
E: 52370
T: 012.009
A: 100496
OK to Pay: Ruth de la Rosa
Approved by: 12/18/12
Tedd 12/18/12

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **January 8, 2013**

Invoice # **AR13-1002**

Time Period: Invoice is for tasks completed December 1 - 31, 2012

Contract # **#541266,** Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$0.00
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$0.00
Task 5. High School Outreach	$760.00
Task 6. Splash Lab Outreach	$640.00
Task 7. Manure Management Outreach	$0.00
Task 8. Assessment Support for Regional RS Workgroup	$2,190.00
Task 9. Administration	$600.00
TOTAL DUE	**$4,190.00**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

1/9/13

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
$2190.00
OK to Pay: Ruth de la Rosa, LHEP2
Approved by: Todd Sala 1/10/13

1/9/13
$2,000

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496
OK to Pay: Ruth de la Rosa LHEP2
Approved by: Todd Sala 1/10/13

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **February 13, 2013**

Invoice # **AR13-1030**

Time Period: Invoice is for tasks completed January 1 - 31, 2013

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$6,437.50
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$2,267.50
Task 5. High School Outreach	$2,115.00
Task 6. Splash Lab Outreach	$200.00
Task 7. Manure Management Outreach	$0.00
Task 8. Assessment Support for Regional RS Workgroup	$165.00
Task 9. Administration	$150.00
TOTAL DUE	**$11,355.00**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 1002496
2/14/13
$165.00
LUEP2
OK to Pay: Ruth de la Rosa
Approved by: Todd S 2/19/13

2/14/13
$11,190
P: 1002993
O: 50915
E: 52370
T: 012.009
A: 1002496
LUEP2
OK to Pay: Ruth de la Rosa
Approved by: Todd S 2/19/13

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **April 11, 2013**

Invoice # **AR13-1039**

Time Period: Invoice is for tasks completed March 1 – 31, 2013

Contract # #541266 Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$12,106.34
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$7,798.35
Task 5. High School Outreach	$2,910.00
Task 6. Splash Lab Outreach	$262.50
Task 7. Manure Management Outreach	$577.50
Task 8. Assessment Support for Regional RS Workgroup	$225.00
Task 9. Administration	$450.00
TOTAL DUE	**$24,329.69**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

$225.00
P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Ruth de la Rosa 4/11/13
Approved by: RUTH DELAROSA
Todd 4/15/13

$24,104.69
P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496
OK to Pay: Ruth de la Rosa 4/11/13
Approved by: RUTH DELAROSA
Todd 4/15/13

action research
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3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **May 28, 2013**

Invoice # **AR13-1041**

Time Period: Invoice is for tasks completed April 1-30, 2013

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	AMOUNT DUE
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$11,384.30
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$7,352.60
Task 5. High School Outreach	$2,765.00
Task 6. Splash Lab Outreach	$0.00
Task 7. Manure Management Outreach	$0.00
Task 8. Assessment Support for Regional RS Workgroup	$660.00
Task 9. Administration	$300.00
TOTAL DUE	**$22,461.90**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

P: 1002993
O: 50915
E: 52370
T: 012.009
A: 100496
OK to Pay: Ruth de la Rosa
Approved by: RUTH DELAROSA
Todd Snyder TODD SNYDER 5/29/13
5/29/13 $8,934.90

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Ruth de la Rosa
Approved by: RUTH DELAROSA 5/29/13
Todd Snyder TODD SNYDER
5/29/13 $660.00

P: 1013595
O: 50855
E: 52370
T: 003.001
A: 100496
OK to Pay: Ruth de la Rosa
Approved by: RUTH DELAROSA
Todd Snyder TODD SNYDER 5/31/13
5/31/13 $12,867.

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **June 13, 2013**

Invoice # **AR13-1046**

Time Period: Invoice is for tasks completed May 1 – 31, 2013

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. Residential Program Assessment	$0.00
Task 2. Pet Waste Management	$0.00
Task 3. Outreach to Commercial Prop Owners, HOAs, etc.	$0.00
Task 4. As-Needed CBSM Projects & Special Assessment	$30,119.44
Task 5. High School Outreach	$0.00
Task 6. Splash Lab Outreach	$2,170.00
Task 7. Manure Management Outreach	$2,430.00
Task 8. Assessment Support for Regional RS Workgroup	$6,637.50
Task 9. Administration	$292.50
TOTAL DUE	**$41,649.44**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

Thank you!

P: 1013959
O: 50855
E: 52370
T: 008.001
A: 100496
$35,011.94
OK to Pay: Ruth dela Rosa
Approved by: RUTH DELAROSA
Todd Snyder TODD SNYDER 6/17/13

P: 1002993
O: 50915
E: 52370
T: 001, 006
A: 100496
$6,637.50
6/14/13
RUTH DELAROSA
OK to Pay: Ruth dela Rosa
Approved by:
Todd Snyder TODD SNYDER 6/17/13

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Ruth de la Rosa**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **July 2, 2013**

Invoice # **AR13-1048**

Time Period: Invoice is for tasks completed June 1 – 30, 2013

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1. As-Needed CBSM	$9,246.25
Task 2. High School Outreach	$885.00
Task 3. Splash Lab Outreach	$585.00
Task 4. Manure Management Outreach	$1,930.00
Task 5. Pet Waste Management	$480.00
Task 6. Assessment Support for Regional RS Workgroup	$540.00
Task 7. Administration	$670.00
TOTAL DUE	**$14,336.25**

Please make check payable to:
Action Research
3630 Ocean Ranch Blvd.
Oceanside, CA 92056

Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001 or by email at: tabanico@action3630.com

$540.00

Thank you!

$13,796.25
P: 1013959
O: 50855
E: 52370
T: 008.001
A: 100496
OK to Pay: Ruth de la Rosa
Approved by: RUTH DE LA ROSA
Todd Snyder 7/2/13
TODD SNYDER

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Ruth de la Rosa
Approved by: RUTH DE LA ROSA
Todd Snyder 7/2/13
TODD SNYDER

7/2/13

PAID 11/20/12

Webster Design

1357 Fern Place

Vista, CA 92081

760-945-6576

Fax 760-945-6061

websterdesign.net

ESTIMATE

Number: 8910

Date: 10/3/12

Terms: Net 30 Days

Estimate for: **San Diego County**
Attn: Ruth de la Rosa
Land Use/Environmental Planner
County of San Diego, Dept. of Public Works
Watershed Protection Program

Stormwater calendar for Think Blue SD Region

Update/refine 10 cartoon visuals to clarify message and refresh look.

Upon payment of delivered art the purchaser (San Diego County) will own all rights to the art produced for this calendar and may reproduce and edit as they may deem fit.

Rough Sketches - 2.25 hours ($80/hr)	$ 180.00
Final inking, scan and coloring - 24 hours ($80/hr)	1,920.00
Composite CMYK tif files delivered via FTP - 5 hours ($80/hr)	400.00

Subtotal	$ 2,500.00
Tax	NA
Total Due	$ 2,500.00

ERS workgroup
Subtask 3.B.11

P: 1002993
O: 50915
E: 52370
T: 011.006
A: 1004916

Changes and revisions will incur additional charges.

OK to Pay: Ruth de la Rosa 11/14/12
Approved by: Todd [illegible] 11/15/12

okay to pay

CID TESORO, Manager

0016-082

Customer Information

XEROX CORPORATION
SUITE 400
7676 HAZARD CTR DR
SAN DIEGO, CA
92108

Telephone 800-854-3689
Direct Billing Inquiries To:

709033971 Customer No.	122929944 Invoice No.	01/24/13 Invoice Date
511469 Purchase Order No.	10/18/12 Date	GSA Contract No.
X737262 Xerox Reference No.	11/19/12 Date Processed	Registration No.
SL Special Reference No.	Tax	PAYABLE ON RECPT Terms of Payment

xerox

Ship To
COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To
COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA
92123-4310

7026717
Master Order No.

Bill Code

REMARKS
RUTH DE LA ROSA MS: 0326
PUBLIC WORKS, DEPT OF
JOB # 58958 LOW ORG 50915
2013 STORMWATER CALENDAR ENG/SPAN

Description	Quantity	Unit Price	Amount
20,000 CALENDAR	1	20622.5700	20,622.57

	SUB TOTAL	$20,622.57
CALIF STATE & LOCAL	TAX 7.2500%	1,495.14
SAN DIEGO COUNTY	TAX 0.5000%	103.11
	INVOICE TOTAL	$22,220.82

Invoice

ERS WORKGROUP
SUBTASK 3.B.1
BPA
PO. 511469-6
$22,220.82

P: 1002993
O: 50915
E: 52550
T: 001.006
A: 100496

OK to Pay: Ruth de la Rosa, LUEP2 1/30/13
Approved by: Todd [illegible], LUEP Mgr 1/30/13

THANK YOU FOR DOING BUSINESS WITH XEROX BUSINESS SERVICES

Payment

PLEASE INCLUDE THIS STUB WITH YOUR PAYMENT, OR WRITE YOUR INVOICE NUMBER(S) ON YOUR CHECK.

Ship To/Installed At	Bill To	When Paying By Mail Send Payment To:
COUNTY OF SAN DIEGO XEROX CONVOY COURT 7585 CONVOY CT SAN DIEGO CA 92111	COUNTY OF SAN DIEGO MAIL SERVICES ATTN: BOB WILSON 5201 RUFFIN RD STE O SAN DIEGO CA 92123-4310	XEROX CORPORATION PO BOX 101235 PASADENA, CA 91189-0005

☐ Please check here if your "Bill To" address or "Ship To/Installed At" location has changed and complete reverse side.

Invoice Amount

00-495-2792 1 709033971 122929944 01/24/13 528B $22,220.82

075 040732296 J S256 1 VQL01
T000277 32 X X

20210000807006O 1229299442 0322220827 270903397138

0014-053

Customer Information

XEROX CORPORATION
SUITE 400
7676 HAZARD CTR DR
SAN DIEGO, CA
92108

Telephone 800-854-3689
Direct Billing Inquiries To:

709033971 Customer No.	124789087 Invoice No.	05/23/13 Invoice Date
511469 Purchase Order No.	04/19/13 Date	GSA Contract No.
X152952 Xerox Reference No.	05/08/13 Date Processed	Registration No.
SL Special Reference No.	Tax	PAYABLE ON RECPT Terms of Payment

xerox

Ship To
COUNTY OF SAN DIEGO
XEROX CONVOY COURT

7585 CONVOY CT
SAN DIEGO CA
92111

Bill To
COUNTY OF SAN DIEGO
MAIL SERVICES
ATTN: BOB WILSON
5201 RUFFIN RD STE O
SAN DIEGO CA
92123-4310

7134695
Master Order No.

Bill Code

REMARKS
RUTH DE LA ROSA/R DE LA ROSA MS 0326
WATERSHED PROTECTION PROGRAM
JOB# 62937 LOW ORG 50915
STORMWATER COLORING BOOK

Description	Quantity	Unit Price	Amount
20,000 2/S COLOR FOLDED	1	7670.0000	7,670.00

	SUB TOTAL	$7,670.00
CALIF STATE & LOCAL	TAX 7.5000%	575.25
SAN DIEGO COUNTY	TAX 0.5000%	38.35
	INVOICE TOTAL	$8,283.60

Invoice

P: 1002993
O: 50915
E: 52550
T: 001.006
A: 100496

6/3/13 P.O.
BPA 511469-6
$8,283.60

OK to Pay: Ruthdelarosa
Approved by: RUTH DELAROSA
Todd Sn 6/3/13
TODD SNYDER

THANK YOU FOR DOING BUSINESS WITH XEROX BUSINESS SERVICES

PLEASE INCLUDE THIS STUB WITH YOUR PAYMENT, OR WRITE YOUR INVOICE NUMBER(S) ON YOUR CHECK.

Ship To/Installed At	Bill To	When Paying By Mail Send Payment To:
COUNTY OF SAN DIEGO XEROX CONVOY COURT 7585 CONVOY CT SAN DIEGO CA 92111	COUNTY OF SAN DIEGO MAIL SERVICES ATTN: BOB WILSON 5201 RUFFIN RD STE O SAN DIEGO CA 92123-4310	XEROX CORPORATION PO BOX 101235 PASADENA, CA 91189-0005

Payment

☐ Please check here if your "Bill To" address or "Ship To/Installed At" location has changed and complete reverse side.

Invoice Amount

00-495-2792 1 709033971 124789087 05/23/13 528B $8,283.60

130 040732296 J S256 1 VQL01
T000242 32 X X

20210000807006O 1247890870 0308283602 270903397132

Mary

Freedom Three Publishing
310 North Indian Hill Blvd, #442
Claremont, CA 91711
(909) 447 5320

PAID 5/1/13

info@freedomthree.com

All The Way To The Ocean

INVOICE

Customer

Name *Ruth de la Rosa*
Org. Name *County of San Diego , Dept. of Public Works*
Org. Type *Watershed Protectio* Tax ID#
Address *5510 Overland ave suite 410*
City *San Diego* State Ca ZIP 92123
Phone *1 858 334-3805* Fax
E-mail Ruth.Delarosa@sdcounty.ca.gov

Date *April 23, 2013*

Qty	Description	Unit Price	TOTAL
250	All the Way to the Ocean Children's book	$9.75	
	Shipping $60.95/price includes sales tax		
		TOTAL	$2,498.45

P: 1002993
O: 50415
E: 52370
T: 001.006
A: 100496

4/24/13

OK to Pay: Ruth de la Rosa, LWEP2
RUTH DELAROSA

Approved by: Todd Snyder TODD SNYDER 4/24/13

Payment Details

Credit Card	Card #	
	Expiration Date	

If you wish to pay by check or you would like to establish credit with Brigham Distributing, please contact Barry Reeder at the numbers listed above.

okay to pay via p-card

For CID TESORO, Manager (AO)

Thank You For your Business

Emerge Industries, Inc.
dba Bullseye Custom
PO BOX 3227
La Mesa, CA 91944

BULLSEYE CUSTOM™
Promotional Products • Advertising Specialties

Invoice

Date	Invoice #
5/2/2013	2739

PAID 05/31/2013

Bill To	Ship To
San Diego County WPP 5201 Ruffin Road, Suite P, MS 0326 San Diego, CA 92123 Attn: Ruth de la Rosa Land Use/Environmental Planner	San Diego County Watershed Protection Progam 5515 Overland Avenue, Unit #8 San Diego, CA 92123 Attn: Ruth de la Rosa

S.O. No.	P.O. No.	Terms	Project
020613-1	513333		

Item	Description	Ordered	Invoiced	Rate	Amount
Chico Bags	ChicoBag Original Bags The Original is the compact reusable bag that started it all! A reusable bag is only valuable if it is easy to remember and the Original design makes it easy to stow by featuring an integrated stuff pouch, which allows the entire bag to fit easily in your pocket. Product Color: Blue Product Imprint: White Pricing includes a one color imprint on bag and pouch	2000	2,000	3.75	7,500.00T
Promotional ...	Shipping - UPS GROUND	1	1	264.00	264.00

Thank you for your business!

Subtotal	$7,764.00
Sales Tax (8.0%)	$600.00
Total	$8,364.00
Payments/Credits	$-8,364.00
Balance Due	$0.00

Phone #
619.668.9043

INVOICE

DATE: April 4, 2013 Inv # 13-59-S

TO: Think Blue San Diego Region
Watershed Protection Program
Attn: Ruth de la Rosa
5510 Overland Ave, Suite 410
San Diego, CA 92123

RE: 2013 Del Mar Fairgrounds participation
Agreement/Invoice
NUMBER: 13-59-S ✓

AMOUNT DUE: **$1,000.00**

DATE DUE: June 1, 2013

CHECK Request.
4/11/13
OK to Pay: Ruth de la Rosa
Approved by: RUTH DELA ROSA
Todd Snyder
4/15/13
TODD SNYDER

Please make checks payable to:

22nd District Agricultural Association
Tax ID # 95-6003191

Please send check to:

22nd District Agricultural Association
2260 Jimmy Durante Blvd.
Del Mar, CA 92014
Attn: Van Miller

Del Mar Fairgrounds
2260 Jimmy Durante Blvd., Del Mar, CA 92014

Delarosa, Ruth

To: Taglioretti, Ed
Subject: RE: Hi Tess-Dana: MTB for ERS Workgroup Movies in the Park sponsorship

Expires: Saturday, April 29, 2023 12:00 AM

From: Taglioretti, Ed
Sent: Friday, April 19, 2013 10:57 AM
To: Delarosa, Ruth
Subject: RE: Hi Tess-Dana: MTB for ERS Workgroup Movies in the Park sponsorship

Hi Ruth: Transaction was "approved and is complete". Money has been transferred. ET

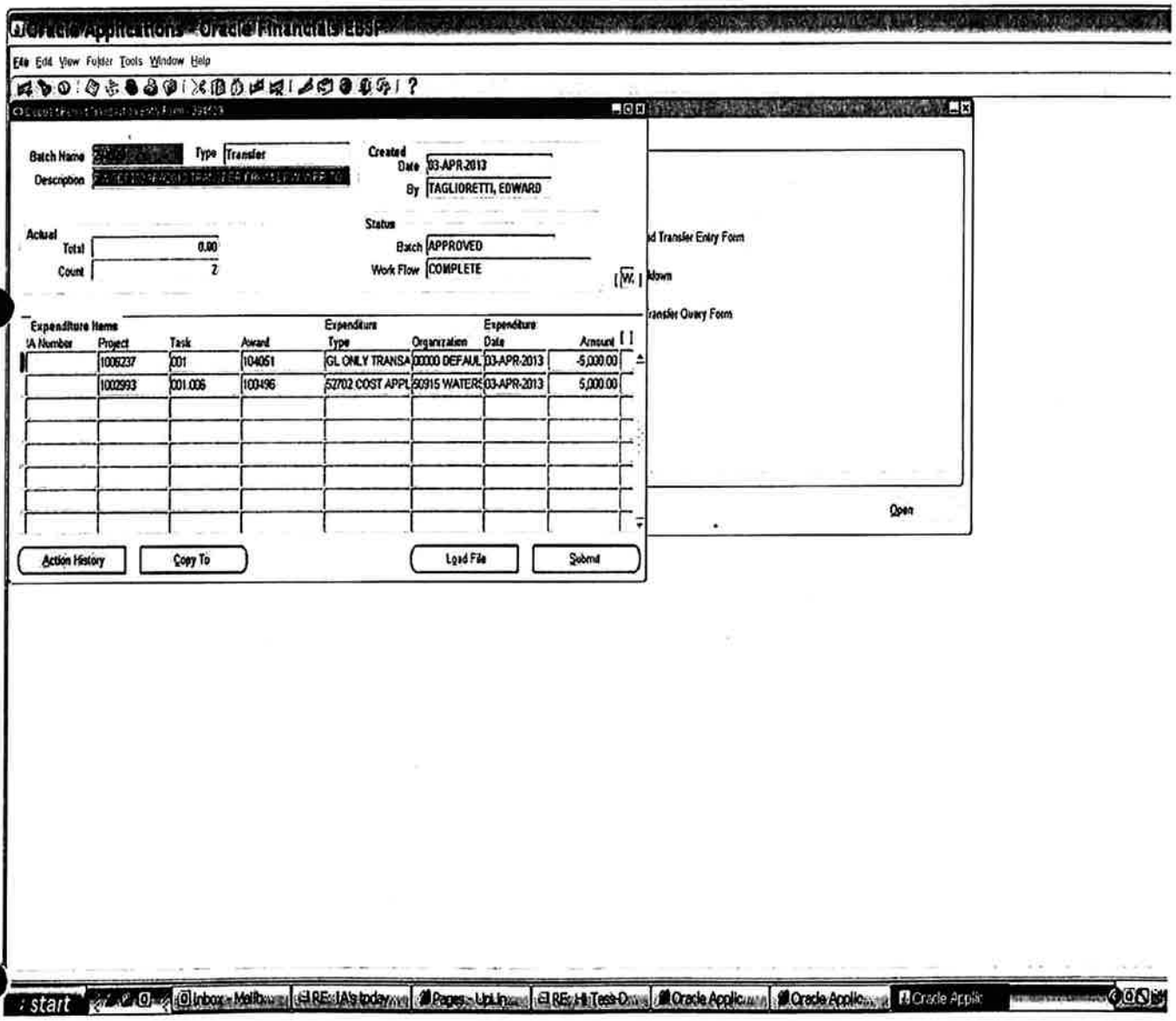

1

Solana Center

137 N. El Camino Real
Encinitas, CA 92024
(760) 436-7986

Invoice

Date	Invoice #
1/24/2013	DWAB 012013

Bill To
Think Blue San Diego Region County of San Diego Attn: Ruth de la Rosa 5510 Overland Ave, Suite 410 San Diego, CA 92123

PAID 2/19/13

P.O. No.	Terms	Project
	Due on receipt	

Quantity	Description	Rate	Amount
1	Partial Contribution to cover: event promotion and advertising (Union Tribune 'U-T Note' 12/19/12); website updating and maintenance, minor office supplies; shipping/postage	2,500.00	2,500.00
	Non-Taxable	0.00%	0.00

ERS workgroup, Subtask 3.B3 Regional events

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 1004916

2/1/13
$2500.00

OK to Pay: Ruth delaRosa, LUEP2
Approved by: Todd [illegible], LUEP Mgr 2/1/13

Okay to pay
CID TESORO, Manager
2/11/13

	Total	$2,500.00

usbank.

U.S BANCORP SERVICE CENTER
P. O. Box 6343
Fargo, ND 58125-6343

COUNTY OF SAN DIEGO

ACCOUNT NUMBER

STATEMENT DATE 05-22-13

TOTAL ACTIVITY

000012110 1 SP 106481136861618 S
JOHANNA M SALOMON

"MEMO STATEMENT ONLY"
DO NOT REMIT PAYMENT

The below cardholder and approving official signatures certify all purchases are authorized to support official county business and all items have been properly accounted for.

CH Signaure: Johanna Salomon AO Signature:

NEW ACCOUNT ACTIVITY

POST DATE	TRAN DATE	TRANSACTION DESCRIPTION	REFERENCE NUMBER	MCC	AMOUNT
* 04-23	04-22	SQ *JOHN WEBSTER CARLSBAD CA PUR ID: 72057594059376471 TAX: 0.00	24692163112000382357451	8999	1,080.00 *
04-26	04-24	THE HOME DEPOT 6679 SAN DIEGO CA PUR ID: COSD TAX: 0.40	24610433115010183763875	5200	5.46
05-02	05-01	OFFICEMAX CT*IN#548111 800-472-6473 IL PUR ID: 00000000000000000 TAX: 22.78	24445003122000170838098	5943	307.55
05-02	05-01	OFFICEMAX CT*IN#548380 NAPERVILLE IL PUR ID: 00000000000000000 TAX: 3.03	24445003122000170838171	5943	40.83
05-02	05-01	PAYPAL *INFO 402-935-7733 CA PUR ID: 8988345450 TAX: 0.00	24492153121849883455400	8999	2,498.45
05-03	05-02	CALIFORNIA STORMWATER QU 650-366-1042 CA PUR ID: 0000111929 TAX: 0.00	24493983122286701200122	7299	265.00
05-06	05-03	OFFICEMAX CT*IN#586134 800-472-6473 IL PUR ID: 00000000000000000 TAX: 4.18	24445003124000204990756	5943	56.48
05-06	05-03	OFFICEMAX CT*IN#591565 800-472-6473 IL PUR ID: 00000000000000000 TAX: 2.50	24445003124000204990830	5943	33.78
05-09	05-07	ENVIROCERT INTERNATION 828-6551600 NC PUR ID: 1314 33385 TAX: 0.00	24254773128462643250354	8398	125.00

Default Accounting Code:

CUSTOMER SERVICE CALL	ACCOUNT NUMBER		ACCOUNT SUMMARY	
800-344-5696	STATEMENT DATE 05-22-13	DISPUTED AMOUNT $ .00	PREVIOUS BALANCE	$.00
			PURCHASES & OTHER CHARGES	
SEND BILLING INQUIRIES TO:	AMOUNT DUE		CASH ADVANCES	$.00
C/O U.S. BANCORP SERVICE CENTER, INC U.S. BANK NATIONAL ASSOCIATION ND P.O. BOX 6335 FARGO, ND 58125-6335	$ 0.00 DO NOT REMIT		CASH ADVANCE FEE	$.00
			CREDITS	$.00
			TOTAL ACTIVITY	$

COPYRIGHT 2005 U.S. BANK NATIONAL ASSOCIATION ND

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body: Education and Residential Sources Workgroup
Copermittee: City of San Diego
Period: 1-4 Qrt FY 2012-3 (July 1 2012 - Jun 30, 2013)
Expenditure Type(s): Hourly Expenditures Only
Hourly Expenditures Claimed: $ -
Contract / Other Expenditures Claimed: $ 62,055.00

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Kris McFadden
Deputy Director - Transportation & Storm Water
City of San Diego

7/19/13
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2012-13 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Ruth delaRosa
LWQP 2
County of San Diego

Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st Quarter

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				Auto-calc'd (5% of amount paid)	
Subtask 3.D. Regional Website					
Contract: Events Online		$ 300.00	9/6/2012	$ 15.00	Regional Webstire (thinkbluesdregion.org) FTP Services: (hosting/domain)
Contract: Events Online		$ 300.00	1/22/2013	$ 15.00	Regional Webstire (thinkbluesdregion.org) FTP Services: (hosting/domain)
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ 600.00				
Subtaskx.x Management Cost	$ 30.00				
Subtask 3.F. Mass Media					
Ultrastar Cinema - Regional PSA		$ 38,500.00	12/27/2012	$ 1,925.00	In theater media buy - airing PSA on behalf of Regional Workgroup
Lincoln Financial Media - KBZT/94.9		$ 9,000.00	6/26/2013	$ 450.00	SD Region Media Buy - Radio
Univision Radio - KLNV FM		$ 2,000.00	6/26/2013	$ 100.00	SD Region Hispanic Media Buy - Radio
Clear Channel Radio - KMYI FM		$ 2,250.00	5/13/2013	$ 112.50	SD Region Media Buy - Radio
Clear Channel Radio - KMYI FM		$ 6,750.00	6/12/2013	$ 337.50	SD Region Media Buy - Radio
		$ -		$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ 58,500.00				
Subtaskx.x Management Cost	$ 2,925.00				
Total Expenditures (Including contract management cost)		$ 62,055.00			

Final 04-30-09

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
1/1/2013	7307

PAID 01/22/2013

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
6	Web Hosting	Semi Annual Web site hosting, FTP services Jan - June 2013 All domains expire Sept 1, 2013 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	300.00
		Total		$300.00

Invoice

Events Online
232 Pacific Ave
Solana Beach, CA 92075
(858) 481-8553
(866) 223.2811 fax

DATE	INVOICE #
7/1/2012	7028

PAID 09/06/2012

PROJECT
Web Hosting

P.O. NUMBER	TERMS
	Net 10

BILL TO
Tim Graham Think Blue 9370 Chesapeake Drive, Suite 100 San Diego, CA 92123

Hours	Service	Description	Rate	Amount
6	Web Hosting	Semi Annual Web site hosting, FTP services All domains expire Sept 1, 2011 The main domain is: http://www.thinkbluesdregion.org/ These are "parked" on the same web space. ThinkBlueSDRegion.org ThinkBlueSDRegion.com ThinkBlueSanDiegoRegion.org ThinkBlueSanDiegoRegion.com ThinkBlueRegion.org ThinkBlueRegion.com	50.00	300.00
			Total	$300.00

UltraStar Cinemas
1060 Joshua Way
Vista, CA 92081

760-597-5777 Fax (760) 597-5297

Set up by: Wally Schlotter / Karen Peterson

Date of Invoice. 12/18/2012

Community Service PSA announcement - Terms and Invoice

Name	City of San Diego - Think Blue	Contact	Tim Graham / Jennifer Nichols Kearns
Address	9370 Chesapeake Dr. Suite 100		
City	San Diego State CA	Zip	92123
Phone	858 541 4333	Fax	858-541-4350
		Email	tgraham@sandiego.gov

	Description			Value
	Think Blue **REGION** visibility program -Winter/Spring FY 2013 package			$38,500.00
	Visibility on DLP projectors as part of UltraStar Cinemas Movie Trailer reel			
	Think Blue San Diego Regional (Regional Education Co-permittees)			
	Karma Business Man / Second Chance (other new PSA TBD)			

THEATER	4 San Diego Locations	SUB TOTAL	$38,500.00
	Poway, Oceanside, Chula Vista and Bonsall		
		CREDITS	
DAY & DATE	Nov 25th, 2012 to May 31st, 2013	TAX	
		TOTAL	**$38,500.00**

TERMS

X UltraStar Cinemas agrees to exhibit, prior to each theatrical movie that plays trailers, as part of their movie trailer reel, One (1) Think Blue PSA.

X UltraStar Cinemas will run provided PSA starting on or before November 25th 2012 and ending May 31st 2013.

X The City of San Diego and Think Blue will provide, at their sole expense, one PSA in a Jpeg 2000 DCP that is compatible with UltraStar's DLP cinema projectors.

X Think Blue Region will hold UltraStar Cinema harmless for unforeseen equipment failure and other acts of god that may prevent PSA from being shown. UltraStar will make its best effort to present PSA on every screen for every show during the agreed period of time.

Thank you for choosing Ultra Star Cinemas.
Your State of the Art Home Town Theaters

ok to pay $38,500

Approved For Payment
PO#: 4500038631
Date: 12/27/13
Signature: [illegible]

* please close P.O. thanks!

RECEIVED

JUN 25 2013

BY: MB

FM 94/9 IT'S ABOUT THE MUSIC

MEMO INVOICE

TO: STORM WATER POLLUTION PREVENTION
THINK BLUE
9370 Chesapeake Drive, Suite 100
San Diego, CA 92123

Invoice # 9490210620

Federal ID #561990847
Vendor ID#10007181

Attn: Tim Graham

Date: June 17, 2013

RE: COMMERCIAL FREE MONDAY
REGIONAL BUY

AE: Kim Torik

Advertiser	Balance
Think Blue received the following: • 696x Sponsor Name Mentions • 80x :30 commercials per week to be the last commercial before the feature and the first commercial after the 94 minute music sweep (2x per day, 10x per week for 12 weeks) • Web inclusion on Flash Rotator with Think Blue logo and ID on Home Page • One email blast • Social Media posts every Monday with name mention	$9,000
Make check payable to: **Lincoln Financial Media Co. Of CA/ KIFM** **1615 Murray Canyon Road** **Suite 710** **San Diego, CA 92108**	ok to pay $9,000.00 Approved For Payment PO#: 450-0040534 Date: 6/26/13 Signature:
	Balance Due
THANK YOU!	$9,000 (Net)

INVOICE

RECUERDO 102.9 FM

LA NUEVA 106.5

Invoice #:	CC-SD1-1130619295
Invoice Date:	06/25/2013
Contract #:	27970
Page:	1
Net Amount:	$2,000.00

Advertiser: CITY OF SAN DIEGO STORM WATER
9370 CHESAPEAKE DRIVE, STE 100
SAN DIEGO, CA 92123

Station(s): KLNV-FM

Advertiser: CITY OF SAN DIEGO STORM WATER
Product: June Campaign
Estimate #:
Agency Client Code: SM
Buyer Name: Leslie Valdez

Salesperson(s): Meaghan Clark
Terms:

Day	Date	Time	Ln	Length	Product	ISCI	Rate
MON	06/17/13	02:59a	8	60	June Campaign	ANTS IN YOUR PLANTS	$0.00
MON	06/17/13	05:17a	1	60	June Campaign	ANTS IN YOUR PLANTS	$15.00
MON	06/17/13	08:17a	2	60	June Campaign	ANTS IN YOUR PLANTS	$200.00
MON	06/17/13	12:59p	3	60	June Campaign	ANTS IN YOUR PLANTS	$200.00
MON	06/17/13	05:02p	4	60	June Campaign	ANTS IN YOUR PLANTS	$200.00
MON	06/17/13	08:16p	6	60	June Campaign	ANTS IN YOUR PLANTS	$45.00
MON	06/17/13	09:14p	9	60	June Campaign	ANTS IN YOUR PLANTS	$0.00
MON	06/17/13	10:00p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
MON	06/17/13	11:02p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
TUE	06/18/13	12:58a	8	60	June Campaign	ANTS IN YOUR PLANTS	$0.00
TUE	06/18/13	06:52a	2	60	June Campaign	ANTS IN YOUR PLANTS	$200.00
TUE	06/18/13	07:13p	9	60	June Campaign	ANTS IN YOUR PLANTS	$0.00
TUE	06/18/13	08:03p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
TUE	06/18/13	09:02p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
WED	06/19/13	01:58a	8	60	June Campaign	ANTS IN YOUR PLANTS	$0.00
WED	06/19/13	11:57a	3	60	June Campaign	ANTS IN YOUR PLANTS	$200.00
WED	06/19/13	10:02p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
WED	06/19/13	11:12p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
THU	06/20/13	03:56a	8	60	June Campaign	ANTS IN YOUR PLANTS	$0.00
THU	06/20/13	05:53a	1	60	June Campaign	ANTS IN YOUR PLANTS	$15.00
THU	06/20/13	07:56a	2	60	June Campaign	ANTS IN YOUR PLANTS	$200.00
THU	06/20/13	05:59p	4	60	June Campaign	ANTS IN YOUR PLANTS	$200.00
THU	06/20/13	10:02p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
THU	06/20/13	11:53p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
FRI	06/21/13	05:16a	1	60	June Campaign	ANTS IN YOUR PLANTS	$15.00
FRI	06/21/13	09:18a	2	60	June Campaign	ANTS IN YOUR PLANTS	$200.00
FRI	06/21/13	07:11p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
FRI	06/21/13	08:17p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
FRI	06/21/13	09:02p	6	60	June Campaign	ANTS IN YOUR PLANTS	$45.00
SAT	06/22/13	05:47a	8	60	June Campaign	ANTS IN YOUR PLANTS	$0.00
SAT	06/22/13	07:19a	6	60	June Campaign	ANTS IN YOUR PLANTS	$45.00
SAT	06/22/13	06:14p	5	60	June Campaign	ANTS IN YOUR PLANTS	$80.00
SAT	06/22/13	07:25p	9	60	June Campaign	ANTS IN YOUR PLANTS	$0.00

6/26/13
MB

INVOICE

RECUERDO 102.9 FM

LA NUEVA 106.5

RECEIVED

JUN 26 2013

BY: MB

Invoice #:	CC-SD1-1130619295
Invoice Date:	06/25/2013
Contract #:	27970
Page:	2
Net Amount:	$2,000.00

Day	Date	Time	Ln	Length	Product	ISCI	Rate
SAT	06/22/13	08:28p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
SAT	06/22/13	09:26p	7	60	June Campaign	ANTS IN YOUR PLANTS	$5.00
SUN	06/23/13	04:59a	8	60	June Campaign	ANTS IN YOUR PLANTS	$0.00
SUN	06/23/13	09:59a	5	60	June Campaign	ANTS IN YOUR PLANTS	$80.00

Date	Ln	Ordered Ln Dates	Quantity	Rate	Amount	Line Remark
06/23/13	1	06/17/13 - 06/23/13	37 @	$0.00	$0.00	Audio Streaming (desktop/app)

Inventory Type: SPOTS-AUDIO(:60)

Spot Totals

Total Spots:	37
Gross Amount:	$2,000.00
Agency Commission:	$0.00
Net Amount:	$2,000.00

Alt Revenue Totals

Gross Amount:	$0.00
Agency Commission:	$0.00
Net Amount:	$0.00

Remit To:
UNIVISION RECEIVABLES CO. LLC
PO BOX 452538
LOS ANGELES, CA 90045

DUE ON RECEIPT

Invoice Totals

Total Spots:	37
Gross Amount:	$2,000.00
Agency Commission:	$0.00
Net Amount:	$2,000.00

THIS RADIO STATION WARRANTS THAT THE PROGRAM/ANNOUNCEMENTS INDICATED ABOVE WERE BROADCAST IN ACCORDANCE WITH OFFICIAL STATION LOG. ALL TIMES ARE APPROXIMATE WITHIN 15 MINUTES AND ARE WITHIN THE TIME CLASSIFICATION ORDERED.
TIN: 75-2765167

Univision and its stations do not discriminate in advertising contracts on the basis of race or ethnicity. Any provision in any order or agreement for advertising that purports to discriminate on the basis of race or ethnicity, even if handwritten, typed or otherwise made part of a particular contract, is hereby rejected.

Univision is committed to protecting our natural resources. To subscribe to electronic invoicing please email umendez@univisionradio.com.

ok to pay $2,000.00

Approved For Payment
PO#: 4500038631
Date: 6/26/13
Signature:

Please close PO.

15713 C306024

15/13 MB

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

05-07-13P12:32 RCVD

Invoice No: 125-252169

RECEIVED
MAY 07 2013
BY: UB

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

15713

Advertiser No.: 663
City Of San Diego
Order: 148153
Co-op: No

Invoice Date: **04/28/2013**
Payment Due: **05/28/2013**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/Regional Program**
Note 2: **PO#4500040532**

CPE

Invoice Summary:

No. of Spots/Misc:	18/0
Gross Spot Billing:	$2,250.00
Agency Commission:	~~$0.00~~
Net Spot Billing:	$2,250.00

ok to pay $2250.00
Approved For Payment
PO#: 4500040532
Date: 5/13/13
Signature: [illegible]

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
1	MTWThF	5	Local-Direct	Commercial 30	06:00:00-10:00:00				$140.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	RegionalMessaging / City of SD/Regional Messaging/30				04/22/13	08:32 AM	30		$140.00
	Litter / City of SD/Litter/30				04/22/13	09:15 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				04/23/13	07:26 AM	30		$140.00
	Litter / City of SD/Litter/30				04/23/13	08:32 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				04/24/13	08:01 AM	30		$140.00
2	MTWThF	4	Local-Direct	Commercial 30	10:00:00-15:00:00				$140.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	RegionalMessaging / City of SD/Regional Messaging/30				04/22/13	02:41 PM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				04/23/13	11:47 AM	30		$140.00
	Litter / City of SD/Litter/30				04/23/13	12:44 PM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				04/25/13	10:46 AM	30		$140.00
3	MTWThF	5	Local-Direct	Commercial 30	15:00:00-19:00:00				$150.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	Litter / City of SD/Litter/30				04/22/13	04:13 PM	30		$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				04/23/13	04:48 PM	30		$150.00
	Litter / City of SD/Litter/30				04/23/13	06:16 PM	30		$150.00
	Litter / City of SD/Litter/30				04/24/13	06:46 PM	30		$150.00
	Litter / City of SD/Litter/30				04/26/13	03:17 PM	30		$150.00
4	SSn	4	Local-Direct	Commercial 30	06:00:00-19:00:00				$60.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	RegionalMessaging / City of SD/Regional Messaging/30				04/27/13	06:15 AM	30		$60.00
	Litter / City of SD/Litter/30				04/27/13	01:42 PM	30		$60.00
	RegionalMessaging / City of SD/Regional Messaging/30				04/28/13	11:13 AM	30		$60.00
	Litter / City of SD/Litter/30				04/28/13	05:42 PM	30		$60.00

Totals for Station:	KMYI-FM	No. of Spots/Misc: 18/0	Gross Amt:	$2,250.00
Totals for Market:	San Diego	No. of Spots/Misc: 18/0	Gross Amt:	$2,250.00
Totals for Invoice:		**No. of Spots/Misc: 18/0**	**Gross Amt:**	**$2,250.00**

Clear Channel
San Diego Market
File 56492
Los Angeles, CA 90074-6492
Phone: (858) 292-2000

025171 C2108425

Invoice No: 125-253545

05-28-13A05:55 RCVD

City Of San Diego
Attn: Water Dept/Tim Graham
9370 Chesapeake Dr
Suite 100
San Diego, CA 92123-1065

02517

Advertiser No.: 663
City Of San Diego
Order: 148153
Co-op: No

Invoice Date: **05/19/2013**
Payment Due: **06/18/2013**
AE: Bennett, Katy

Billing Type: Broadcast

Note 1: **KMYI/Regional Program**
Note 2: **PO#4500040532**

CPE

Invoice Summary:

No. of Spots/Misc:	54/0
Gross Spot Billing:	$6,750.00
Agency Commission:	$0.00
Net Spot Billing:	$6,750.00

This invoice is in accordance with the official log and the announcements/programs indicated below were aired on the dates and the times shown. Per your advertising agreement, the actual times may have run within 10 minutes of the scheduled time.

ok to pay $6,750.00
po# 4500040532
6/12/13
Kathy U. Zab

Please Close P.O. Thanks!

Invoice: 253545 Advertiser: City Of San Diego

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To				Rate
1	MTWThF	5	Local-Direct	Commercial 30	06:00:00-10:00:00				$140.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	RegionalMessaging / City of SD/Regional Messaging/30				04/29/13	07:12 AM	30		$140.00
	Litter / City of SD/Litter/30				04/29/13	09:30 AM	30		$140.00
	Litter / City of SD/Litter/30				04/30/13	08:15 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				04/30/13	09:27 AM	30		$140.00
	Litter / City of SD/Litter/30				05/01/13	06:30 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/06/13	06:30 AM	30		$140.00
	Litter / City of SD/Litter/30				05/06/13	09:27 AM	30		$140.00
	Litter / City of SD/Litter/30				05/07/13	08:11 AM	30		$140.00
	Litter / City of SD/Litter/30				05/08/13	08:57 AM	30		$140.00
	Litter / City of SD/Litter/30				05/10/13	06:30 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/13/13	07:28 AM	30		$140.00
	Litter / City of SD/Litter/30				05/14/13	07:15 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/14/13	08:17 AM	30		$140.00
	Litter / City of SD/Litter/30				05/15/13	09:14 AM	30		$140.00
	Litter / City of SD/Litter/30				05/16/13	07:12 AM	30		$140.00
2	MTWThF	4	Local-Direct	Commercial 30	10:00:00-15:00:00				$140.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	RegionalMessaging / City of SD/Regional Messaging/30				04/29/13	10:44 AM	30		$140.00
	Litter / City of SD/Litter/30				04/29/13	12:15 PM	30		$140.00
	Litter / City of SD/Litter/30				04/30/13	12:46 PM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/03/13	10:43 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/06/13	10:21 AM	30		$140.00
	Litter / City of SD/Litter/30				05/06/13	11:48 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/06/13	01:47 PM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/10/13	10:48 AM	30		$140.00
	Litter / City of SD/Litter/30				05/13/13	12:43 PM	30		$140.00
	Litter / City of SD/Litter/30				05/14/13	12:47 PM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/16/13	10:44 AM	30		$140.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/17/13	12:14 PM	30		$140.00
3	MTWThF	5	Local-Direct	Commercial 30	15:00:00-19:00:00				$150.00
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	RegionalMessaging / City of SD/Regional Messaging/30				04/29/13	05:16 PM	30		$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				04/30/13	05:17 PM	30		$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/01/13	03:43 PM	30		$150.00
	Litter / City of SD/Litter/30				05/02/13	03:42 PM	30		$150.00

Invoice: **253545** Advertiser: **City Of San Diego** 02517

Market: San Diego Station: KMYI-FM

Order Line	Days	By Week	Revenue Type	Ordered	Bind To			Rate
	Litter / City of SD/Litter/30				05/03/13	06:17 PM	30	$150.00
	Litter / City of SD/Litter/30				05/06/13	05:16 PM	30	$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/06/13	06:42 PM	30	$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/07/13	03:48 PM	30	$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/08/13	05:46 PM	30	$150.00
	Litter / City of SD/Litter/30				05/10/13	04:20 PM	30	$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/13/13	05:14 PM	30	$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/14/13	05:41 PM	30	$150.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/15/13	06:43 PM	30	$150.00
	Litter / City of SD/Litter/30				05/16/13	04:44 PM	30	$150.00
	Litter / City of SD/Litter/30				05/17/13	06:12 PM	30	$150.00
4	**SSn**	**4**	**Local-Direct**	**Commercial 30**	**06:00:00-19:00:00**			**$60.00**
	ISCI / SPOT TITLE				DATE	TIME	LEN	MG	RATE
	RegionalMessaging / City of SD/Regional Messaging/30				05/04/13	09:15 AM	30	$60.00
	Litter / City of SD/Litter/30				05/04/13	03:42 PM	30	$60.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/05/13	09:23 AM	30	$60.00
	Litter / City of SD/Litter/30				05/05/13	03:40 PM	30	$60.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/11/13	06:17 AM	30	$60.00
	Litter / City of SD/Litter/30				05/11/13	02:45 PM	30	$60.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/12/13	11:40 AM	30	$60.00
	Litter / City of SD/Litter/30				05/12/13	05:39 PM	30	$60.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/18/13	11:40 AM	30	$60.00
	Litter / City of SD/Litter/30				05/18/13	05:41 PM	30	$60.00
	RegionalMessaging / City of SD/Regional Messaging/30				05/19/13	09:13 AM	30	$60.00
	Litter / City of SD/Litter/30				05/19/13	03:41 PM	30	$60.00

Totals for Station: KMYI-FM No. of Spots/Misc: 54/0 Gross Amt: $6,750.00

Totals for Market: San Diego No. of Spots/Misc: 54/0 Gross Amt: $6,750.00

Totals for Invoice: No. of Spots/Misc: 54/0 Gross Amt: $6,750.00

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Program Planning Subcommittee
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 307,670.98

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Sheri McPherson
Land Use and Environmental Planner III
County of San Diego

8/22/13
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use and Environment Manager
County of San Diego

8/22/13
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 1 &2. [meeting and MOU obligation support]				
Contract 534079 [RBF, Task Order 24], 12070254	$ 6,552.52	8/24/2012	$ 327.63	Hilary Potters support of the PPS workgroup
Contract 534079 [RBF, Task Order 24], 12080429	$ 6,584.53	9/28/2012	$ 329.23	
Contract 534079 [RBF, Task Order 24], 12090371	$ 2,460.26	10/19/2012	$ 123.01	
Contract 534079 [RBF, Task Order 24], 1837451	$ 5,052.71	1/4/2013	$ 252.64	
Contract 534079 [RBF, Task Order 24], 837454	$ 562.50	1/4/2013	$ 28.13	
Contract 534079 [RBF, Task Order 24], 839185	$ 2,796.54	1/29/2013	$ 139.83	
Contract 534079 [RBF, Task Order 24], 839847	$ 1,390.27	2/7/2013	$ 69.51	
Contract 534079 [RBF, Task Order 24], 843145	$ 173.08	3/15/2013	$ 8.65	
Contract 534079 [RBF, Task Order 24], 848491	$ 1,211.56	5/20/2013	$ 60.58	
Contract 534079 [RBF, Task Order 24], 852126	$ 540.88	6/28/2013	$ 27.04	
Subtask 1&2 Sub-total $ 27,324.85				
Subtask 1&2 Management Cost $ 1,366.24				
Subtask 3.A. Permit Reissuance Support -Facilitation Services				
Contract 537276 [Facilitation Services [B&C TO06] 44179470	$ 5,799.44	10/23/2012	$ 289.97	
Contract 537276 [Facilitation Services [B&C TO06] 44180394	$ 1,499.87	11/7/2012	$ 74.99	
Contract 537276 [Facilitation Services [B&C TO06] 44181906	$ 1,549.86	11/30/2012	$ 77.49	
Contract 537276 [Facilitation Services [B&C TO06] 44186000	$ 1,599.84	2/5/2013	$ 79.99	
Subtask 3.A Sub-total $ 10,449.01				
Subtask 3.A Management Cost $ 522.45				
Subtask 3.A. Permit Reissuance Support - support for Monitoring				
Contract 534079 [RBF Task Order 21] 12070278	$ 908.84	8/24/2012	$ 45.44	
Contract 534079 [RBF Task Order 21] 12080229	$ 16,359.83	9/28/2012	$ 817.99	
Contract 534079 [RBF Task Order 21] 12090378	$ 2,596.59	10/19/2012	$ 129.83	
Contract 534079 [RBF Task Order 21] 840863	$ 2,333.25	2/20/2013	$ 116.66	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask 3.A Sub-total	$ 22,198.51				
Subtask 3.A Management Cost	$ 1,109.93				
Subtask 3.A. Permit Reissuance Support -Supoprt and Integration					
Contract 536213 [AMEC Task Order 17] S17670476		$ 11,741.47	8/31/2012	$ 587.07	
Contract 536213 [AMEC Task Order 17] S17670550		$ 18,443.64	9/1/2812	$ 922.18	
Contract 536213 [AMEC Task Order 17] S17670607		$ 22,841.46	10/26/2012	$ 1,142.07	
Contract 536213 [AMEC Task Order 17] S17671004		$ 5,544.00	3/29/2013	$ 277.20	
Contract 536213 [AMEC Task Order 17] S17670705		$ 17,809.26	11/30/2012	$ 890.46	
Subtask 3.A Sub-total	$ 76,379.83				
Subtask 3.A Management Cost	$ 3,818.99				
Subtask 3.A. Permit Reissuance Support -Monitoring					
Contract 536213 [AMEC Task Order 20] S17670581		$ 10,218.43	9/28/2012	$ 510.92	
Contract 536213 [AMEC Task Order 20] S17670609		$ 15,465.16	10/26/2013	$ 773.26	
Contract 536213 [AMEC Task Order 20] S17670838		$ 25,471.80	1/25/2013	$ 1,273.59	
Contract 536213 [AMEC Task Order 20] S17670916		$ 3,384.48	2/22/2013	$ 169.22	
Contract 536213 [AMEC Task Order 20] S22720000		$ 2,467.85	4/26/2013	$ 123.39	
Subtask 3.A Sub-total	$ 57,007.72				
Subtask 3.A Management Cost	$ 2,850.39				
Subtask 3.A. Permit Reissuance Support -Round 2 Permit Support					
Contract 542922 [AMEC Task Order 21] S17670837		$ 28,645.22	1/25/2013	$ 1,432.26	
Contract 542922 [AMEC Task Order 21] S17670913		$ 12,554.26	2/22/2013	$ 627.71	
Contract 542922 [AMEC Task Order 21] S17671006		$ 2,070.75	3/29/2013	$ 103.54	
Contract 542922 [AMEC Task Order 21] S22720020		$ 10,396.31	4/26/2013	$ 519.82	
Contract 542922 [AMEC Task Order 21] S22720044		$ 1,373.23	5/31/2013	$ 68.66	
Contract 542922 [AMEC Task Order 21] S22720080		$ 28,620.29	6/21/2013	$ 1,431.01	
Subtask 3.A Sub-total	$ 83,660.06				
Subtask 3.A Management Cost	$ 4,183.00				
Subtask 3.A. Permit Reissuance Support -Update Monitorign Cost Estimates					
Contract 534965 [Weston Task Order 08] NOV112-03257		$ 3,245.00	11/12/2012	$ 162.25	
Contract 534965 [Weston Task Order 08] DEC2012-02339		$ 4,944.30	11/7/2012	$ 247.22	
Contract 534965 [Weston Task Order 08] FEB2013-02501		$ 1,256.25	2/7/2013	$ 62.81	
Contract 534965 [Weston Task Order 08] JUL2013-01933		$ 6,554.45	11/30/2012	$ 327.72	
Subtask 3.A Sub-total	$ 16,000.00				
Subtask 3.A Management Cost	$ 800.00				
Total Expenditures (Including contract management cost)		**$ 307,670.98**			

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Industrial, Commercial and Municipal Sources Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	**$ -**
Contract / Other Expenditures Claimed:	**$ 1,035.32**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Jon Van Rhyn
Water Quality Program Manager
County of San Diego, Department of Public Works

8/26/13
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Nick del Valle
Land Use and Environmental Planner III
County of San Diego, Department of Public Works

8/29/13
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Industrial, Commercial and Municipal Sources Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract 534079 [Industrial/Commercial/Municipal Workgroup/534079-TO 23]				**Auto-calc'd (5% of amount paid)**	
Subtask 1 &2. [ICM Workgroup support and standard work products]					
Invoice #12080426 - September 28, 2012		$ 719.58	10/4/2012	$ 35.98	ICM Workgroup meeting support
Invoice #836631 - December 19, 2012		$ 266.44	12/27/2012	$ 13.32	ICM Section of the RURMP Annual Report
Subtask 1&2 Sub-total	$ 986.02				
Subtask 1&2 Management Cost	$ 49.30				
Total Expenditures (Including contract management cost)		**$ 1,035.32**			

Final 04-30-09

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O.K. to Pay
10/4/12

RBF CONSULTING

Contr Todd S
10/4/12
supplier # 1184538

September 28, 2012
Project No: 25-105630.001
Invoice No: 12080426

Mr. Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 25-105630.001 TO 23 - ICM Workgroup Support FY 12-13

CONTRACT NO: 534079
TASK ORDER: 23

Professional consulting services rendered pursuant to the Agreement dated July 13, 2011 relative to the ICM Workgroup Support FY 12-13 Project located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services: August 1, 2012 to August 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Indust, Comm, Mun Wkgp Mtg Sppt	3,778.00	19.0465	719.58	719.58
Task 2: Standard Work Products	3,778.00	0.00	0.00	0.00
Total Fee	7,556.00		719.58	719.58
	Previous Fee Billing		0.00	
	Total Fee			**719.58**

Total this Invoice **$719.58**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Mark A Cappos V.P.

County of San Diego
Regional Industrial, Commercial, and Municipal Workgroup Support FY 12-13 - TO 23
RBF JN 25-105630

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*8/20 meeting prep, attendance, and notes			
Civil Engineer	6	$119.93	$719.58
Total			**$719.58**
Grand Total	6		**$719.58**

RBF CONSULTING
A Baker Company

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OK to pay.
12/27/12

12/27/12

COTR X Todd Snyder

Invoice Date: December 19, 2012
Project No.: 130865/25-105630.001
Invoice No.: 836631

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Supplier #1184538

Project No.: 130865/25-105630.001
CONTRACT NO.: 534079
TASK ORDER: 23

Professional consulting services rendered in pursuit to the Agreement dated July 13, 2011 relative to the ICM Workgroup Support Project FY 12-13 located in the County of San Diego, CA.

SEE ATTACHED FOR SCOPE
Professional Services to December 2, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Indust, Comm, Mun Wkgp Mtg Support	$3,778.00	19.05%	$719.58	$0.00
Task 2: Standard Work Products	$3,778.00	7.05%	$266.44	$266.44
Total Fee	**$7,556.00**		**$986.02**	**$266.44** ✓
		Previous Fee Billing	$719.58	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Scott Taylor

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Industrial, Commercial, and Municipal Workgroup Support FY 12-13 - TO 23
RBF Project Number 130865

	Hours	Rate	Current Fee:
Task 2 - Standard Work Products			
*ICM Section of RURMP AR			
Civil Engineer	1.5	$119.93	$179.90 ✓
Land Use Environmental Planner I	1	$86.54	$86.54 ✓
Total			**$266.44**
Grand Total	2.5		**$266.44** ✓

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T: 12.009
A: 100496

Supplier ID# 1184538

RBF CONSULTING
A Baker Company

Invoice Date: January 25, 2013
Project No.: 132533
Invoice No.: 839049

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 132533
CONTRACT NO.: 534079
TASK ORDER: 28

Professional consulting services related to Copermittee Land Development Workgroup Support FY 2012 - 2013

SEE ATTACHED FOR T&M BREAKDOWN

Professional Services to October 28, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Land Development Workgroup Meeting Support	$9,800.00	26.92%	$2,638.46	$2,638.46 ✓
Task 2: Standard Work Products	$6,794.00	7.06%	$479.72	$479.72 ✓
Total Fee	**$16,594.00**		**$3,118.18**	**$3,118.18** ✓
		Previous Fee Billing	$0.00	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to Pay $3,118.18

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079 — CONTRACT/P.O. NO.
28 — ACTIVITY/WA NO.
2/8/2013 — DATE
PROJECT MANAGER
2/8/13 — DATE
DPW MANAGER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
Project Number 132533

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*10/3 HMP Monitoring meeting prep, attendance, and notes			
*10/15 HMP Monitoring meeting prep, attendance, and notes (2 meetings)			
*10/17 LD Workgroup meeting prep, attendance, and notes			
*PCW Uploads			
Civil Engineer	22	$119.93	$2,638.46
Total			**$2,638.46** ✓
Task 2 - Standard Work Products			
*Draft and revisions to FY13-14 Land Development workplan and budget			
*Expenditure tracking			
*Email distribution list coordination			
Civil Engineer	4	$119.93	$479.72
Total			**$479.72** ✓
Grand Total	26		**$3,118.18** ✓

P: 1002993
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E: 52370
T: 12.009
A: 100496

Supplier ID # 1184538

RBF CONSULTING
A Baker Company

Invoice Date: January 25, 2013
Project No.: 132533
Invoice No.: 839050

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 132533
CONTRACT NO.: 534079
TASK ORDER: 28

Professional consulting services related to Copermittee Land Development Workgroup Support FY 2012 - 2013

SEE ATTACHED FOR T&M BREAKDOWN

Professional Services to December 2, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Land Development Workgroup Meeting Support	$9,800.00	31.82%	$3,118.18	$479.72 ✓
Task 2: Standard Work Products	$6,794.00	15.00%	$1,019.41	$539.69 ✓
Total Fee	**$16,594.00**		**$4,137.59**	**$1,019.41** ✓
		Previous Fee Billing	$3,118.18	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to Pay $1,019.41

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT PO NO

28
ACTIVITY/TA NO

2/8/2013
DATE

Deborah Mercky
PROJECT MANAGER

2/8/13
DATE

Todd S
DPW MANAGER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
RBF Project Number 132533

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*11/8 LD Workgroup meeting prep, attendance, and notes			
*PCW Uploads			
Civil Engineer	4	$119.93	$479.72
Total			**$479.72** ✓
Task 2 - Standard Work Products			
*LD Section of RURMP AR			
*Expenditure tracking			
*Email distribution list coordination			
Civil Engineer	4.5	$119.93	$539.69
Total			**$539.69** ✓
Grand Total	8.5		**$1,019.41** ✓

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Supplier ID # 1184538

RBF CONSULTING
A Baker Company

Invoice Date: January 25, 2013
Project No.: 132533
Invoice No.: 839053

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 132533
CONTRACT NO.: 534079
TASK ORDER: 28

Professional consulting services related to Copermittee Land Development Workgroup Support FY 2012 - 2013

SEE ATTACHED FOR T&M BREAKDOWN

Professional Services to December 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Land Development Workgroup Meeting Support	$9,800.00	41.00%	$4,017.66	$899.48 ✓
Task 2: Standard Work Products	$6,794.00	16.77%	$1,139.34	$119.93 ✓
Total Fee	**$16,594.00**		**$5,157.00**	**$1,019.41** ✓
		Previous Fee Billing	$4,137.59	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to Pay $1,019.41

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079 — CONTRACT/P.O. NO.
28 — ACTIVITY/WA NO.
2/8/2013 — DATE
PROJECT MANAGER
2/13/13 — DATE
DPW MANAGER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
RBF Project Number 132533

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*12/13 LD Workgroup meeting prep, attendance, and notes			
*PCW Uploads			
Civil Engineer	7.5	$119.93	$899.48
Total			**$899.48** ✓
Task 2 - Standard Work Products			
*Review and edits of LD workgroup email list			
Civil Engineer	1	$119.93	$119.93
Total			**$119.93** ✓
Grand Total	8.5		**$1,019.41** ✓

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Supplier ID #
1184538

RBF CONSULTING
A Baker Company

Invoice Date: February 7, 2013
Project No.: 132533
Invoice No.: 839824

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 132533
CONTRACT NO.: 534079
TASK ORDER: 28

Professional consulting services related to Copermittee Land Development Workgroup Support FY 2012 - 2013

SEE ATTACHED FOR T&M BREAKDOWN

Professional Services to February 3, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Land Development Workgroup Meeting Support	$9,800.00	41.00%	$4,017.66	$0.00
Task 2: Standard Work Products	$6,794.00	18.54%	$1,259.27	$119.93
Total Fee	**$16,594.00**		**$5,276.93**	**$119.93**
		Previous Fee Billing	$5,157.00	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to PAY $119.93

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079 — CONTRACT/P.O. NO.
28 — ACTIVITY/WA NO.
2/21/2013 — DATE
PROJECT MANAGER
2/21/13 — DATE
DPW MANAGER
COTR

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
RBF Project Number 132533

	Hours	Rate	Current Fee:
Task 2 - Standard Work Products			
*Update email distibution list			
*Expenditure tracking			
Civil Engineer	1	$119.93	$119.93
Total			**$119.93**
Grand Total	1		**$119.93** ✓

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T: 12.009
A: 100496

SUPPLIER ID # 1184538

RBF CONSULTING
A Baker Company

Invoice Date: March 15, 2013
Project No.: 132533
Invoice No.: 843143

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 132533
CONTRACT NO.: 534079
TASK ORDER: 28

Professional consulting services related to Copermittee Land Development Workgroup Support FY 2012 - 2013

SEE ATTACHED FOR T&M BREAKDOWN

Professional Services to March 13, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Land Development Workgroup Meeting Support	$9,800.00	41.00%	$4,017.66	$0.00
Task 2: Standard Work Products	$6,794.00	22.95%	$1,559.09	$299.82
Total Fee	**$16,594.00**		**$5,576.75**	**$299.82**
		Previous Fee Billing	$5,276.93	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to PAY $299.82

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079 — CONTRACT/P.O. NO.
28 — ACTIVITY/WA NO.
3/21/2013 — DATE
Deborah Mosley — PROJECT MANAGER
3/21/2013 — DATE
TODD SNYDER — DEPT. HEAD

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
RBF Project Number 132533

	Hours	Rate	Current Fee:
Task 2 - Standard Work Products			
*Update email distibution list			
*Expenditure tracking			
*PCW Uploads			
Civil Engineer	2.5	$119.93	$299.82
Total			**$299.82**
Grand Total	2.5		**$299.82** ✓

RBF CONSULTING
A Baker Company

P: 1002993
O: 50915
E: 52370
T: 12.009
A: 100496

Supplier ID # 1184538

Invoice Date: April 10, 2013
Project No.: 132533
Invoice No.: 845192

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 132533
CONTRACT NO.: 534079
TASK ORDER: 28

Professional consulting services related to Copermittee Land Development Workgroup Support FY 2012 - 2013

SEE ATTACHED FOR T&M BREAKDOWN

Professional Services to March 31, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Land Development Workgroup Meeting Support	$9,800.00	48.34%	$4,737.24	$719.58
Task 2: Standard Work Products	$6,794.00	23.83%	$1,619.06	$59.97
Total Fee	**$16,594.00**		**$6,356.30** ✓	**$779.55** ✓
		Previous Fee Billing	$5,576.75	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to Pay $779.55

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

28
ACTIVITY/WA NO.

Deborah Mosley

4/24/2013
DATE

Deborah Mosley
PROJECT MANAGER

4/25/13
DATE

Todd Snyder
DPW MANAGER
TODD SNYDER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
RBF Project Number 132533

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*3/7 LD Workgroup meeting prep, attendance, and notes			
*PCW Uploads			
Civil Engineer	6	$119.93	$719.58
Total			**$719.58**
Task 2 - Standard Work Products			
*Expenditure tracking			
Civil Engineer	0.5	$119.93	$59.97
Total			**$59.97**
Grand Total	6.5		**$779.55** ✓

P: 1002993
O: 50915
E: 52370
T: 12.009
A: 100496

SUPPLIER ID #
1184538

RBF CONSULTING
A Baker Company

Invoice Date: May 20, 2013
Project No.: 132533
Invoice No.: 848489

Mr Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting, a company of Michael Baker Corporation
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 132533
CONTRACT NO.: 534079
TASK ORDER: 28

Professional consulting services related to Copermittee Land Development Workgroup Support FY 2012 - 2013

SEE ATTACHED FOR T&M BREAKDOWN

Professional Services to April 28, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Land Development Workgroup Meeting Support	$9,800.00	56.29%	$5,516.79	$779.55
Task 2: Standard Work Products	$6,794.00	29.13%	$1,978.85	$359.79
Total Fee	**$16,594.00**		**$7,495.64**	**$1,139.34**
		Previous Fee Billing	$6,356.30	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to PAY $1,139.34

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079 — CONTRACT/P.O. NO.
28 — ACTIVITY/WA NO.
5/31/2013 — DATE
(Deborah Mosby) — PROJECT MANAGER
5/31/13 — DATE
DPW MANAGER
TODD SNYDER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
RBF Project Number 132533

	Hours	Rate	Current Fee:	
Task 1 - Workgroup Meeting Support				
*4/22 HMP TAC Kickoff Meeting prep, attendance, and notes				
Civil Engineer	6.5	$119.93	$779.55	✓
Total			**$779.55**	
Task 2 - Standard Work Products				
*SharePoint Site Setup and Coordination				
Civil Engineer	3	$119.93	$359.79	✓
Total			**$359.79**	
Grand Total	9.5		**$1,139.34**	✓

RBF CONSULTING
A Baker Company

Invoice Date: June 11, 2013
Project No.: 132533
Invoice No.: 850899

Mr. Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

RBF Consulting,
(a company of Michael Baker Corporation)
9755 Clairemont Mesa Boulevard
Suite 100
San Diego, CA 92124-1333

Project No.: 132533
CONTRACT NO.: 534079
TASK ORDER: 28

LD Workgroup Support FY12-13

Professional consulting services related to Copermittee Land Development Workgroup Support FY 2012 - 2013

SEE ATTACHED FOR T&M BREAKDOWN

Professional Services through June 2, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Task 1: Land Development Workgroup Meeting S	$9,800.00	64.25%	$6,296.34	$779.55 ✓
Task 2: Standard Work Products	$6,794.00	47.53%	$3,229.43	$1,250.58 ✓
Total Fee	**$16,594.00**		**$9,525.77** ✓	**$2,030.12** ✓
		Previous Fee Billing	$7,495.65	
			Total This Invoice	**$2,030.12** ✓

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

OK to PAY $2,030.12

P: 1002993
O: 50915
E: 52370
T: 12.009
A: 100496

Supplier ID#
1184538

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

28
ACTIVITY/WA NO.

6/24/2013
DATE

PROJECT MANAGER

6/24/13
DATE

TODD SNYDER
DPW MANAGER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

RBF CONSULTING
A Baker Company

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
RBF Project Number 132533

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*5/30 HMP TAC Kickoff Meeting prep, attendance, and notes			
Civil Engineer	6.5	$119.93	$779.55
Total			**$779.55** ✓
Task 2 - Standard Work Products			
*Update workgroup contact list			
*Create new contact list for active workgroup members			
*SharePoint Coordination			
- Finalized directory structure			
- Upload initial batch of documents			
- Reduced image file sizes			
- Coordination with new users			
Civil Engineer	7	$119.93	$839.51
Land Use Environmental Planner I	4.75	$86.54	$411.07
Total			**$1,250.58** ✓
Grand Total	18.25		**$2,030.12** ✓

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

RBF CONSULTING
A Baker Company

Invoice Date: June 28, 2013
Project No.: 132533
Invoice No.: 852116

Todd Snyder
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

RBF Project No.: 132533 Copermittee Land Development Workgroup Support FY 12-13
DPW Project Manager: Deborah Mosley
Contract No.: 534079
Task Order No.: 28

Professional services rendered pursuant to Contract No. 534079, Task Order No. 28, Notice to Proceed, effective October 2, 2012

See Attached For Time and Materials Breakdown

Professional Services through June 28, 2013

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Land Development Workgroup Meeting Support	$9,800.00	64.25%	$6,296.34	$0.00
2.	Standard Work Products	$6,794.00	103.58%	$7,037.15	$3,807.72
	Total Fee	**$16,594.00**		**$13,333.49**	**$3,807.72**
			Previous Fee Billing	$9,525.77	
				Total This Invoice	**$3,807.72**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Ok to Pay $ 3,807.72

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

TO#28
ACTIVITY/WA NO.

7/3/2013
DATE

Deb Mosley
PROJECT MANAGER

7/3/13
DATE

Todd Snyder
DPW MANAGER / TODD SNYDER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Regional Land Development Workgroup Support FY 12-13 - TO 28
RBF Project Number 132533

	Hours	Rate	Current Fee:
Task 2 - Standard Work Products			
*SharePoint Coordination and Invitations			
*Review SDSU Scope of Work			
*HMP BMP Sizing Spreadsheet			
*HMP BMP Sizing PowerPoint			
*Review ESA PWA Summary Memo			
*Review Draft Scope for Changes to HMP Monitoring Plan			
Project Manager, Public Works	7	$145.67	$1,019.69
Civil Engineer	20	$119.93	$2,398.60
Land Use Environmental Planner I	4.5	$86.54	$389.43
Total			**$3,807.72**
Grand Total	31.5		**$3,807.72**

RBF CONSULTING
A Baker Company

P: 1002993
O: 50915
E: 52370
T: 12.009
A: 100496

Supplier ID # 1184538

Invoice Date February 1, 2013
Project No.: 132261
Invoice No.: 839497

Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave, Ste 410
San Diego, CA 92123

PROJECT No. - 132261 Phase 2 Hydromodification Monitor TO 27

CONTRACT NO. - 534079
TASK ORDER: 27

Professional consulting services for the Phase 2 Hydromodification Monitoring FY 2012-2013

Professional Services through December 31, 2012

Task	Fee	Percent Complete	Billed to Date	Current
Project Management	$9,045.00	60.15%	$5,440.78	$5,440.78
Monitoring Plan and QAPP Support	$2,188.00	0.00%	$0.00	$0.00
Cross Sectional Surveys	$22,995.00	17.46%	$4,014.89	$4,014.89
Monitoring Subtask 4a, 4b, 4c	$115,771.00	13.13%	$15,203.78	$15,203.78
Data QA/QC, Data Compilation, and Data Submittal (not	$0.00	0.00%	$0.00	$0.00
Expenses			$4,914.25	$4,914.25
Total Fee	**$149,999.00**		**$29,573.69**	**$29,573.69**
		Previous Fee Billing	$0.00	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079".

OK to PAY $29,573.70

Total This Invoice $29,573.70 ✓

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

TO# 27
ACTIVITY/WA NO.

2/13/2013
DATE

PROJECT MANAGER

2/19/13
DATE

Todd S., COTR
DPW MANAGER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
HMP Monitoring - TO 27
RBF JN 132261

	Hours	Rate	Current Fee:
Task 1 - Project Management			
Water Quality Project Manager	26.5	$141.02	$3,737.03
Land Use Env. Planner III	12.5	$115.53	$1,444.13
Land Use Env. Planner I	3	$86.54	$259.62
Total	**42**		**$5,440.78**
Task 2 - QAPP and Monitoring Plan			
Total			**$0.00**
Task 3 - Cross Section Surveys			
Water Quality Project Manager	3	$141.02	$423.06
Senior Civil Engineer	11.5	$138.77	$1,595.86
Land Use Env. Planning Mngr	2	$131.51	$263.02
Land Use Env. Planner III	15	$115.53	$1,732.95
Total	**31.5**		**$4,014.89**
Task 4 - Monitoring			
Water Quality Project Manager	8	$141.02	$1,128.16
	1	$138.77	$138.77
Land Use Env. Planning Mngr	1	$131.51	$131.51
Civil Engineer	1.5	$119.93	$179.90
Land Use Env. Planner III	38.5	$115.53	$4,447.91
Land Use Env. Planner II	47	$100.76	$4,735.72
Land Use Env. Planner I	36.5	$86.54	$3,158.71
GIS Technician	20.5	$62.59	$1,283.10
Total	**154**		**$15,203.78**
Task 5 - Data QA/QC, Data Compilation, and Data Submittal			
Total			**$0.00**
Expenses			
Total			**$4,914.25**
Grand Total	**227.5**		**$29,573.70** ✓

H:PDATA/55100823/ADMIN/BILLING

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE II HYDROMODIFICATION MONITORING (PART 1)- TASK ORDER NO. 27

INVOICE DATE: 11/12/2012
PROJECT NUMBER: 14974.212.002
INVOICE NUMBER: NOV2012-02700
BILLING PERIOD: Inception thru 11/02/2012

SUMMARY

001	PHASE 2 - HYDROMODIFICATION MONITORING	147,272.00	19,097.63	19,097.63	12.97%	128,174.37
0001	PROJECT MANAGEMENT		5,264.93	5,264.93 ✓		
0002	MONITORING PLAN AND QAPP SUPPORT		0.00	0.00		
0003	CROSS-SECTIONAL SURVEYS		2,002.11	2,002.11 ✓		
0004	WET WEATHER MONITORING		11,830.59	11,830.59 ✓		
TOTAL		147,272.00	19,097.63	19,097.63	12.97%	128,174.37

CURRENT AMOUNT DUE 19,097.63 ✓

RECEIVED
NOV 20 2012
RBF CONSULTING
CARLSBAD OFFICE

Date 11-20-12
Project 132261
Organization R62.24.CB
Expenditure
X Task
X Approval
Cost $19,097.63

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: NOV2012-02700

Invoice Date: 11/12/2012

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

INVOICE SUMMARY

			Contract Value
Customer Number:	14974	Cost:	147,272.00
Prime Contract Number:	RBF Contract 534079		
		Total:	147,272.00
Customer PO Number:	Task Order 27	Cumulative Amount Billed:	19,097.63
Project Number:	14974.212.002		
Project Name:	Phase II – Hydromodification Monitoring Part I		

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 12/12/2012

Billing Period From: 09/25/2012
To: 11/02/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist I			
Cropper, Scott J	10.00	86.5400	865.40
Mathis, Melissa E	25.00	86.5400	2,163.50
Environmental Scientist II			
Campagna, Laurence	45.00	100.7600	4,534.20
Environmental Scientist III			
Engelhorn, Garth	50.00	115.5300	5,776.52
Owen, Damon	1.00	115.5300	115.53
Senior Technician			
Pippen, Ross P	17.50	62.5900	1,095.33
Sr. Civil Engineer			
Colts, Anthony M	3.00	138.7700	416.31
Water Quality Project Manager			
Renfrew, David S	25.00	141.0200	3,525.50
Labor	176.50		18,492.29
Materials & Supplies			255.34
Permit Fees			350.00
Expenses			605.34
Invoice Total			19,097.63 ✓

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

Page: 1

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP MONITORING PHASE II

Weston Project No.
14974.212.002

Weston Invoice No.
NOV2012-02700

Project Desription
County of SD - Phase II HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0001 - RBF-SD HMPII Project Management								
019372	Engelhorn, Garth	9/28/2012	9/28/2012	2.0		LT	1533	R
		10/5/2012	10/2/2012	1.0		8	1533	R
		10/5/2012	10/3/2012	3.0		8	1533	R
		10/19/2012	10/15/2012	4.0		2	1533	R
		10/19/2012	10/19/2012	1.0		2	1533	R
	Total: Engelhorn, Garth			**11.0**				
019581	Mathis, Melissa	10/19/2012	10/19/2012	3.0		6	1533	R
	Total: Mathis, Melissa			**3.0**				
018565	Renfrew, David	9/28/2012	9/25/2012	2.0		LT	1533	R
		9/28/2012	9/26/2012	0.5		LT	1533	R
		9/28/2012	9/27/2012	2.5		LT	1533	R
		9/28/2012	9/28/2012	1.0		LT	1533	R
		10/5/2012	10/2/2012	2.0	KICKOFF MEETING/CORD	7	1533	R
		10/5/2012	10/3/2012	4.0	KICKOFF MEETING/CORD	7	1533	R
		10/5/2012	10/4/2012	1.0	KICKOFF MEETING/CORD	7	1533	R
		10/5/2012	10/5/2012	1.0	KICKOFF MEETING/CORD	7	1533	R
		10/19/2012	10/15/2012	4.0		4	1533	R
		10/19/2012	10/16/2012	0.5		4	1533	R
		10/19/2012	10/17/2012	0.5		4	1533	R
		10/19/2012	10/19/2012	2.0		4	1533	R
		10/26/2012	10/22/2012	0.5		7	1533	R
		10/26/2012	10/23/2012	0.5		7	1533	R
		11/2/2012	10/29/2012	1.0		5	1533	R
		11/2/2012	10/30/2012	0.5		5	1533	R
		11/2/2012	10/31/2012	0.5		5	1533	R
	Total: Renfrew, David			**24.0**				
Total: 14974.212.002.0001				**38.0**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0003 - RBF-SD HMPII Cross-Sectional Surveys								
019890	Cotts, Anthony	11/2/2012	11/2/2012	3.0	Processing survey data into cross section and channel slope data	15	1533	R
	Total: Cotts, Anthony			**3.0**				
019372	Engelhorn, Garth	10/19/2012	10/16/2012	2.0		3	1533	R
		10/19/2012	10/17/2012	2.0		3	1533	R
		10/19/2012	10/18/2012	2.0		3	1533	R
		10/26/2012	10/23/2012	2.5		7	1533	R
		10/26/2012	10/26/2012	2.0		7	1533	R
		11/2/2012	10/29/2012	1.0		7	1533	R
	Total: Engelhorn, Garth			**11.5**				
018565	Renfrew, David	10/5/2012	10/2/2012	0.5		9	1533	R
		10/5/2012	10/4/2012	0.5		9	1533	R
	Total: Renfrew, David			**1.0**				
Total: 14974.212.002.0003				**15.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0004 - RBF-SD HMPII Mob/Installs; Wet Weather Monitoring and Analyses								
017996	Campagna, Laurence	10/12/2012	10/8/2012	8.0		1	1533	R
		10/19/2012	10/16/2012	5.0		3	1533	R
		10/19/2012	10/17/2012	8.0		3	1533	R
		10/19/2012	10/18/2012	8.0		3	1533	R
		10/19/2012	10/19/2012	8.0		3	1533	R
		10/26/2012	10/23/2012	8.0		3	1533	R
	Total: Campagna, Laurence			**45.0**				
019077	Cropper, Scott	10/12/2012	10/8/2012	4.0		2	1533	R
		10/19/2012	10/15/2012	0.5		3	1533	R
		10/19/2012	10/16/2012	0.5		3	1533	R
		10/19/2012	10/17/2012	1.0		3	1533	R
		10/19/2012	10/19/2012	4.0		3	1533	R
	Total: Cropper, Scott			**10.0**				
019372	Engelhorn, Garth	9/28/2012	9/26/2012	1.0		LT	1533	R
		9/28/2012	9/27/2012	2.5		LT	1533	R
		10/5/2012	10/4/2012	1.5		13	1533	R
		10/5/2012	10/5/2012	1.0		13	1533	R
		10/12/2012	10/8/2012	1.0		10	1533	R
		10/12/2012	10/10/2012	1.0		10	1533	R
		10/19/2012	10/16/2012	3.0		4	1533	R
		10/19/2012	10/17/2012	3.0		4	1533	R
		10/19/2012	10/18/2012	3.5		4	1533	R
		10/19/2012	10/19/2012	3.0		4	1533	R
		10/26/2012	10/23/2012	3.0		8	1533	R
		10/26/2012	10/24/2012	2.0		8	1533	R
		10/26/2012	10/25/2012	2.0		8	1533	R
	Total: Engelhorn, Garth			**27.5**				

019581	Mathis, Melissa	10/5/2012	10/5/2012	2.0		8	1533	R
		10/12/2012	10/8/2012	8.0		1	1533	R
		10/26/2012	10/23/2012	2.0		4	1533	R
		10/26/2012	10/25/2012	2.0		4	1533	R
		10/26/2012	10/26/2012	2.5		4	1533	R
		11/2/2012	10/29/2012	4.0		1	1533	R
		11/2/2012	11/1/2012	1.5		1	1533	R
	Total: Mathis, Melissa			**22.0**				
018253	Owen, Damon	10/26/2012	10/23/2012	1.0		3	1533	R
	Total: Owen, Damon			**1.0**				
020012	Pippen, Ross	9/28/2012	9/28/2012	1.5		1	1533	R
		10/12/2012	10/8/2012	8.0		1	1533	R
		10/19/2012	10/19/2012	8.0		4	1533	R
	Total: Pippen, Ross			**17.5**				
Total: 14974.212.002.0004				**123.0**				

Total: 14974.212.002 COUNTY OF SD - Phase II HMP Monitoring	**176.5**

Approved by: Dave Renfrew

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: NOV2012-02700

Invoice Date: 11/12/2012

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 12/12/2012

Billing Period From: 09/25/2012
To: 11/02/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist I			
Mathis, Melissa E	3.00	86.5400	259.62
Environmental Scientist III			
Engelhorn, Garth	11.00	115.5300	1,270.83
Water Quality Project Manager			
Renfrew, David S	24.00	141.0200	3,384.48
Labor	38.00		4,914.93
Miscellaneous			350.00
Expenses			350.00
Task Total			5,264.93

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: NOV2012-02700

Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management

Billing Currency USD
Invoice Date: 11/12/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Permit Fees					
Permit Fees	Clearance Application	500588919	2012/10	MATHIS MELISSA E	560853	250.00
	Permit Fees	500588996	2012/10	ENGELHORN GARTH	560205	100.00
Total: Permit Fees						350.00
Expenses						350.00

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Melissa E. Mathis

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

OCT 26 2012

Header Information

Exp#:	560853	Status:	Submitted on 10/25/2012
Employee:	Mathis, Melissa E. (019581)	Entered By:	Mathis, Melissa E.
Approver:	Renfrew, David S.	Total Amount:	$250.00
		Total Out of Pocket:	$0.00
Purpose:			

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
10/19/2012	~~Miscellaneous~~ Permit fees	Live Scan	HMP Live Scan finger prints for permitting for 5 people.	14974.212.002.0001	$250.00

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0001		
	Miscellaneous	$250.00
Totals	14974.212.002.0001	$250.00

Verification amwelson - 10/25/12

560853

10/000 Fingerprint Cards, Live Scan,
Notary, 2x2 Photo, Mobile Service
8400 Miramar Road, 222A
San Diego, CA 92126
www.FingerprintImpressions.com
Since 2004

Mailing Fee	18.00
Bill Fee	32.00
Mailing Fee	18.00
Bill Fee	32.00
Mailing Fee	18.00
Bill Fee	32.00
Mailing Fee	18.00
Bill Fee	32.00
Mailing Fee	18.00
Bill Fee	32.00
SUBTOTAL	250.00
TAX	0.00
TOTAL	250.00
Visa	250.00

Customer: None selected

10/19/2017
#12[illegible] 10:03 AM

****
MOBILE Live Scan Always Available
Cell: 619.572.7703
Toll 24-Hr Automated Srvc: 1.916.[illegible]
Following after 7 to 10 working days.
****

Status:	Approved
Transaction ID:	87364408
Auth Code:	090625
Date:	2012-Oct-19 10:03:17
Amount:	$ 250.00
Tip:	$ 0.00
Tax:	$ 0.00
Total:	$ 250.00
Name:	MATHIS/MELISSA E
Card #	**********0026
Exp. Date:	**/**
Location:	+0.000000 +0.000000

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Garth Engelhorn

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

OCT 23 2012

Header Information

Exp#:	560205	Status:	Submitted on 10/19/2012
Employee:	Engelhorn, Garth (019372)	Entered By:	Engelhorn, Garth
Approver:	Renfrew, David S.	Total Amount:	$102.00
		Total Out of Pocket:	$100.00
Purpose:	HMP Contractor Clearance application		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
10/19/2012	~~Miscellaneous~~ Permit Fees	Garth E.	$20 per 5 staff for County Contractor Clearance application	14974.212.002.~~0004.01~~ 0001	$100.00
10/19/2012	Check Fee	US Bank	Check fee	99067.400.008	$2.00

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.01		
	Miscellaneous	$100.00
Totals	14974.212.002.0004.01	$100.00
99067.400.008		
	Check Fee	$2.00
Totals	99067.400.008	$2.00

Verification Amwelford - 10/26/12

560205

k of America **Cashier's Check** No. **433788356**

Purchaser - In the event this check is lost, misplaced or stolen, a sworn and 90-day waiting period will be required prior to replacement. This hold be negotiated within 90 days.

Date OCTOBER 19, 2012

11-35/1210
NCA

nking nter SCRIPPS-MIRAMAR

0002467 00906 0001795366

GARTH RICHARD ENGELHORN
Remitter (Purchased By)

$**100.00**

y ONE HUNDRED DOLLARS AND 00 CENTS**

ie rder f **SHERIFF'S DEPARTMENT** ***

Non-Negotiable

Authorized Signature

f America, N.A. ncisco, CA

VOID AFTER 90 DAYS

Customer Copy
Retain For Your Records

1397085076

County Sheriff
5560 Overland Ave Suite 210
San Diego, CA 92123

RECEIPT DATE 10/19/12 No. 965349

RECEIVED FROM Weston Solutions Inc $ 100—

One Hundred —— 00/00 DOLLARS

FOR RENT
FOR Background Fee For 5 employees

ACCOUNT	
PAYMENT	100—
BAL. DUE	

CASH
CHECK #4337883
MONEY ORDER
CREDIT CARD

FROM TO

BY Erica Pabb

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: NOV2012-02700

Invoice Date: 11/12/2012

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Subcontractor Number:
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 12/12/2012

Billing Period From: 09/25/2012
To: 11/02/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	11.50	115.5300	1,328.60
Sr. Civil Engineer			
Cotts, Anthony M	3.00	138.7700	416.31
Water Quality Project Manager			
Renfrew, David S	1.00	141.0200	141.02
Labor	15.50		1,885.93
Materials & Supplies			116.18
Expenses			116.18
Task Total			2,002.11 ✓

Page: 3

05P-0606 2/12

INVOICE

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WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: NOV2012-02700

Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey

Billing Currency USD
Invoice Date: 11/12/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500587090	2012/10	ENGELHORN GARTH	559742	116.18
						116.18
Total: Materials & Supplies						
						116.18
Expenses						

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Garth Engelhorn

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

OCT 19 2012

am

Header Information			
Exp#:	559742	Status:	Submitted on 10/17/2012
Employee:	Engelhorn, Garth (019372)	Entered By:	Engelhorn, Garth
Approver:	Renfrew, David S.	Total Amount:	$116.18
		Total Out of Pocket:	$0.00
Purpose:	Rebar, T-Posts and misc materials for HMP Surveys		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
10/16/2012	Supplies - Field	Home Depot	Rebar, T-Posts and misc materials for HMP Surveys	14974.212.002.0003	*$116.18

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
14974.212.002.0003		
	Supplies - Field	$116.18
Totals	14974.212.002.0003	$116.18

Verification DMWilson - 10/19/12

559742

More saving.
More doing.

2430 S MELROSE DRIVE
VISTA, CA 92081 (760)599-4080

1074 00002 29781 10/16/12 07:43 AM
CASHIER MARTAOLGA - MJC1784

099713911765 6FT T POST <A>	
6' GALV STEEL TPOST 1.25	
2@5.38	10.76
099713911543 4 FT U POST <A>	
4' 14GA GRN STEEL U-POST MEDIUM DUTY	
4@4.11	16.44
099713911581 5FT U-POST <A>	
5' 14GA GLV STL U-POST MED DUTY	
4@5.24	20.96
000346313734 BOSCH BIT <A>	15.97
BOSCH 1/4"X4"HAMMER DRILL BIT-5PK	
728845 6X2X16CAPBLK <A>	
6"X2"X16" TOP CAP BLOCK	
4@0.87	3.48
274356 1/2X4 REBAR <A>	
1/2IN X 4FT REBAR	
8@3.27	26.16
783112 3/8X4 REBAR <A>	
3/8IN X 4 FT REBAR	
6@2.26	13.56
SUBTOTAL	107.33
SALES TAX	8.85
TOTAL	$116.18
XXXXXXXXXXXX1235 VISA	116.18
AUTH CODE 063864/0023621	TA
P.O.#/JOB NAME: 0	

1074 02 29781 10/16/2012 0371

RETURN POLICY DEFINITIONS

	POLICY ID	DAYS	POLICY EXPIRES ON
A	1	90	01/14/2013

THE HOME DEPOT RESERVES THE RIGHT TO LIMIT / DENY RETURNS. PLEASE SEE THE RETURN POLICY SIGN IN STORES FOR DETAILS.

BUY ONLINE PICK-UP IN STORE
AVAILABLE NOW ON HOMEDEPOT.COM
CONVENIENT, EASY AND MORE ORDERS
READY IN LESS THAN 2 HOURS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: NOV2012-02700

Invoice Date: 11/12/2012

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event Monitoring
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 12/12/2012

Billing Period From: 09/25/2012
To: 11/02/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist I			
Cropper, Scott J	10.00	86.5400	865.40
Mathis, Melissa E	22.00	86.5400	1,903.88
Environmental Scientist II			
Campagna, Laurence	45.00	100.7600	4,534.20
Environmental Scientist III			
Engelhorn, Garth	27.50	115.5300	3,177.09
Owen, Damon	1.00	115.5300	115.53
Senior Technician			
Pippen, Ross P	17.50	62.5900	1,095.33
Labor	123.00		11,691.43
Materials & Supplies			139.16
Expenses			139.16
Task Total			11,830.59 ✓

05F-060B 2/12

INVOICE

F.E.I.N. 23-1601990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: NOV2012-02700

Task Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event Monitoring

Billing Currency USD
Invoice Date: 11/12/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500586574	2012/10	MATHIS MELISSA E	559227	139.16
Total: Materials & Supplies						139.16
Expenses						139.16

INVOICE

F.E.I.N. 23-1501990
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OSP-0806 2/12

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Melissa E. Mathis

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

OCT 17 2012

Header Information

Exp#:	559227	Status:	Submitted on 10/15/2012
Employee:	Mathis, Melissa E. (019581)	Entered By:	Mathis, Melissa E.
Approver:	Renfrew, David S.	Total Amount:	$160.96
		Total Out of Pocket:	$0.00
Purpose:			

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
10/5/2012	Supplies - Field	Target	Zip lock bags for samples	14974.212.002.0004.01	*$18.80
10/5/2012	Supplies - Field	Amazon.com	Rain Gauges	14974.212.002.0004.01	*$120.36
10/11/2012	Supplies - Field	Shell	Ice for samples	13245.212.001.3001	*$10.95
10/11/2012	Incidentals	Taco Bell	lunch	13245.212.001.8888	*$10.85

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
13245.212.001.3001		
	Supplies - Field	$10.95
Totals	13245.212.001.3001	$10.95
13245.212.001.8888		
	Incidentals	$10.85
Totals	13245.212.001.8888	$10.85
14974.212.002.0004.01		
	Supplies - Field	$139.16
Totals	14974.212.002.0004.01	$139.16

Verification AMWelson - 10/17/12

559227

13245.212.001.3001

WELCOME TO OCEAN BEACH SHELL

[illegible] 57 442 73500/
[illegible] VOLTAIRE S1K0871
[illegible] DIEGO CA 92107

Descr.	qty	amount
STOMER COPY>		
AG OF ICE	5	10.95

Subtotal 10.95
Tax 0.00
TOTAL 10.95
CREDIT $ 10.95

XX XXXX XXXX 0026 VISA

INVOICE: 123158 AUTH #:002711

THANKS, COME AGAIN

[illegible] AB123 TILL XXXX DR# 1 TRAN# 10113[illegible]
[illegible] 10/11/12 08:38:4[illegible]

14974.212.002.0004.01

TARGET
EXPECT MORE PAY LESS!

VISTA SOUTH - 760-208-6111
10/05/2012 10:18 AM EXPIRES 01/0[illegible]

HOME

255010237	ZIPLOC 2 @ $5.19 ea	T	$12.38
255010302	UP FO STRG	T	$4.99

SUBTOTAL $17.37
T = CA TAX 8.2500% on $17.37 $1.43
TOTAL $18.80

*0026 VISA CHARGE $18.80
18.80

[illegible]-3279-2185-0078 2503-4 VCD#752-252-742

13245.202.001.8888

For a Chance to Win a Free Tablet PC go to www.TellTheBell.com (Digamos en Espanol)

Taco Bell 025497
1502 Encinitas Blvd
Encinitas , CA 92024
(760)436-1033

10/11/2012 12:30:31 PM
[illegible] 209074 Cashier: MARNIE F

1 Combo #6	5.69
2 Chalupa Spr Bf	0.00
2 No Tomato	0.00
Sft Taco Bf	0.00
Lrg Drink	0.00
1 Bean Burrito	1.19
Sub RED 2 GRN	0.00
1 Dbl Dkr Taco Spr	2.19

SubTotal 10.07
Tax 0.78
Total 10.85
Visa 10.85
Acct:XXXXXXXXXXXX0026

Approval 007796

TO GO

Thank you for visiting!
Your Order Number is
274

Customer Copy

TABLET PC GIVEAWAY ON BACK | TABLET PC GIVEAWAY ON BACK | TABLET PC GIVEAWAY ON BACK | TABLET PC GIVEAWAY ON BACK | TABLET PC GIVEAWAY ON BACK | TABLET PC GIVEAWAY ON BACK | TABLET PC GIVEAWAY ON BACK | TA

Collected:

Order Total: **$120.36**

Delivery estimate: Oct. 12, 2012

2 "Stratus RG202 Long Term Professional Rain and Snow Gauge"
Lawn & Patio; $34.99
In Stock
Sold by: Focus Corp.

2 "P3 P0320 Rain Gauge"
Kitchen; $18.99
In Stock
Sold by: Amazon.com

Amazon.com Gift Cards
Designs for any occasion

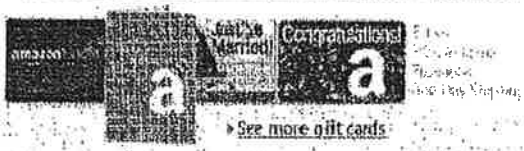

Need to print an invoice?
Visit www.amazon.com/your-account and click to view your orders. Click "View order" next to the appropriate order. You'll find a button to print an invoice on the next page.

Where can I get help with reviewing or changing my orders?
To learn more about managing your orders on Amazon.com, please visit our Help pages at www.amazon.com/help/orders/.

Please be aware that items in this order may be subject to California's Electronic Waste Recycling Act. If any items in this order are subject to that Act, the seller of that item has elected to pay any fees due on your behalf.
Please note: This e-mail message was sent from a notification-only address that cannot accept incoming e-mail. Please do not reply to this message.
If you ever need to return an order, visit our Online Returns Center: www.amazon.com/returns
Thanks again for shopping with us.
Amazon.com
Earth's Biggest Selection
Prefer not to receive HTML mail? Click here

14974.212.002.0004.01

Mathis, Melissa

From: melissa mathis [me_mathis@hotmail.com]
Sent: Friday, October 05, 2012 10:55 AM
To: Mathis, Melissa
Subject: FW: Your Order with Amazon.com

Date: Fri, 5 Oct 2012 17:54:08 +0000
From: auto-confirm@amazon.com
To: me_mathis@hotmail.com
Subject: Your Order with Amazon.com

amazon.com

VIEW CART | WISH LIST | YOUR ACCOUNT | HELP

Thanks for your order, melissa mathis!
Want to manage your order online?
If you need to check the status of your order or make changes, please visit our home page at Amazon.com and click on Your Account at the top of any page.

Purchasing Information:

E-mail Address: me_mathis@hotmail.com

Billing Address:
Melissa Mathis
5817 DRYDEN PL STE 101
CARLSBAD, CA 92008-5576
United States

Shipping Address:
Melissa Mathis
5817 DRYDEN PL STE 101
CARLSBAD, CA 92008-5576
United States

Order Grand Total: $120.36

Get the **Amazon.com Rewards Visa Card** and get **$30 instantly** as an Amazon.com Gift Card.

Order Summary:

Shipping Details : (order will arrive in 1 shipment)

Order #: 105-4520024-8110635

Shipping Method:	Standard Shipping
Items:	$107.96
Shipping & Handling:	$9.20

Total Before Tax:	$117.16
Estimated Tax To Be	$3.20

1

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE II HYDROMODIFICATION MONITORING (PART 1)- TASK ORDER NO. 27

INVOICE DATE: 12/27/2012
PROJECT NUMBER: 14974.212.002
INVOICE NUMBER: DEC2012-03456
BILLING PERIOD: 11/03/2012 TO 11/30/2012

RECEIVED
JAN - 2 2013
RBF CONSULTING
CARLSBAD OFFICE

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE INVOICE BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	**PHASE 2 - HYDROMODIFICATION MONITORING**	**147,272.00**	**10,476.10**	**29,573.73**	**20.08%**	**117,698.27**
0001	PROJECT MANAGEMENT		674.22 ✓	5,939.15		
0002	MONITORING PLAN AND QAPP SUPPORT		0.00	0.00		
0003	CROSS-SECTIONAL SURVEYS		6,128.97 ✓	8,131.08		
0004	WET WEATHER MONITORING		3,672.91 ✓	15,503.50		
TOTAL		**147,272.00**	**10,476.10**	**29,573.73**	**20.08%**	**117,698.27**

CURRENT AMOUNT DUE 10,476.10 ✓

Date 1-2-13
Project 132261
Organization
Expenditure
Task
Approval
Cost

Subconsultant Inv. Trans. form needed
29790

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: DEC2012-03456

Invoice Date: 12/27/2012

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

INVOICE SUMMARY

			Contract Value
		Cost:	147,000.00
Customer Number:	14974		
Prime Contract Number:	RBF Contract 534079	Total:	147,000.00
Customer PO Number:	Task Order 27	Cumulative Amount Billed:	29,573.73
Project Number:	14974.212.002		
Project Name:	Phase II – Hydromodification Monitoring Part I		

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 01/26/2013

Billing Period From: 11/03/2012
To: 11/30/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	1.50	119.9300	179.90
Environmental Scientist I			
Cropper, Scott J	1.00	86.5400	86.54
Mathis, Melissa E	3.50	86.5400	302.89
Environmental Scientist II			
Campagna, Laurence	1.00	100.7600	100.76
Margolis, Amy	1.00	100.7600	100.76
Environmental Scientist III			
Engelhorn, Garth	14.00	115.5300	1,617.44
Owen, Damon	1.00	115.5300	115.53
Environmental Senior Scientist			
Isham, William H	1.00	131.5100	131.51
GIS Specialist			
Dister, Sheri	2.00	131.5100	263.02
Senior Technician			
Batliner, Elizabeth	1.00	62.5900	62.59
Pippen, Ross P	1.00	62.5900	62.59
Teague, Lydia C	1.00	62.5900	62.59
Sr. Civil Engineer			
Cotts, Anthony M	9.50	138.7700	1,318.32
Water Quality Project Manager			
Renfrew, David S	12.50	141.0200	1,762.75
Labor	51.00		6,167.19
Subcontractor			4,000.00
Materials & Supplies			160.54
Trav-Mileage Expense			74.37
Permit Fees			74.00
Expenses			4,308.91
Invoice Total			10,476.10

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP MONITORING PHASE II

Weston Project No.
14974.212.002

Weston Invoice No.
DEC2012-03456

Project Desription
County of SD - Phase II HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0001 - RBF-SD HMPII Project Management								
019372	Engelhorn, Garth	11/16/2012	11/16/2012	1.0		14	1533	UOT
		11/30/2012	11/30/2012	0.5		10	1533	R
	Total: Engelhorn, Garth			**1.5**				
018565	Renfrew, David	11/23/2012	11/23/2012	2.5		LT	1533	R
	Total: Renfrew, David			**2.5**				
Total: 14974.212.002.0001				**4.0**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0003 - RBF-SD HMPII Cross-Sectional Surveys								
019890	Cotts, Anthony	11/9/2012	11/8/2012	6.5	Cross Section Exhibits for selected HMP Sites	10	1533	R
		11/9/2012	11/9/2012	0.5	Cross Section Exhibits for selected HMP Sites	10	1533	R
		11/16/2012	11/15/2012	1.5	Cross Sections for HMP Monitoring	16	1533	R
	Total: Cotts, Anthony			**8.5**				
019437	Dister, Sheri	11/9/2012	11/5/2012	1.0		6	1533	R
		11/23/2012	11/23/2012	1.0		LT	1533	R
	Total: Dister, Sheri			**2.0**				
019372	Engelhorn, Garth	11/16/2012	11/15/2012	1.5		11	1533	R
		11/16/2012	11/16/2012	2.0		11	1533	R
	Total: Engelhorn, Garth			**3.5**				
018565	Renfrew, David	11/16/2012	11/13/2012	1.0		6	1533	R
		11/16/2012	11/16/2012	1.0		6	1533	R
	Total: Renfrew, David			**2.0**				
Total: 14974.212.002.0003				**16.0**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0004.01 - RBF-SD HMPII Wet Event Monitoring								
018396	Batliner, Elizabeth	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	6	1533	R
	Total: Batliner, Elizabeth			**1.0**				
017996	Campagna, Laurence	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	7	1533	R
	Total: Campagna, Laurence			**1.0**				
019077	Cropper, Scott	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	1	1533	R
	Total: Cropper, Scott			**1.0**				
019890	Cotts, Anthony	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	19	1533	R
	Total: Cotts, Anthony			**1.0**				
019372	Engelhorn, Garth	11/16/2012	11/14/2012	1.0		10	1533	R
		11/16/2012	11/16/2012	1.5		12	1533	R
		11/23/2012	11/19/2012	1.0		9	1533	R
		11/23/2012	11/20/2012	1.0		9	1533	R
		11/30/2012	11/27/2012	1.0		6	1533	R
		11/30/2012	11/29/2012	3.5		6	1533	R
	Total: Engelhorn, Garth			**9.0**				
019363	Huber, Sara	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	7	1533	R
		11/16/2012	11/16/2012	0.5		SUPP	1533	R
	Total: Huber, Sara			**1.5**				
018016	Isham, William	11/23/2012	11/19/2012	1.0	Kickoff Meeting / Safety Brief	1	1533	R
	Total: Isham, William			**1.0**				
018022	Margolis, Amy	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	11	1533	R
	Total: Margolis, Amy			**1.0**				
019581	Mathis, Melissa	11/16/2012	11/15/2012	1.5		8	1533	R
		11/16/2012	11/16/2012	2.0		8	1533	R
	Total: Mathis, Melissa			**3.5**				
018253	Owen, Damon	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	6	1533	R
	Total: Owen, Damon			**1.0**				
020012	Pippen, Ross	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	9	1533	R
	Total: Pippen, Ross			**1.0**				
018565	Renfrew, David	11/9/2012	11/8/2012	2.0		8	1533	R
		11/23/2012	11/19/2012	1.5		5	1533	R
		11/30/2012	11/29/2012	3.0	MOB TRIGGER EST	10	1533	R
		11/30/2012	11/30/2012	1.5	MOB TRIGGER EST	10	1533	R
	Total: Renfrew, David			**8.0**				
020783	Teague, Lydia	11/16/2012	11/16/2012	1.0	Kickoff Meeting / Safety Brief	2	1533	R
	Total: Teague, Lydia			**1.0**				
Total: 14974.212.002.0004				**31.0**				

Total: 14974.212.002 COUNTY OF SD - Phase II HMP Monitoring	**51.0**

Approved by: Dave Renfrew

12471

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: DEC2012-03456

Invoice Date: 12/27/2012

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 01/26/2013

Billing Period From: 11/03/2012
To: 11/30/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	1.50	115.5300	173.30
Water Quality Project Manager			
Renfrew, David S	2.50	141.0200	352.55
Labor	4.00		525.85
Trav-Mileage Expense			74.37
Permit Fees			74.00
Expenses			148.37
Invoice Total			674.22

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number:	DEC2012-03456	Task Number:	14974.212.002.0001	Billing Currency	USD
		Task Name:	RBF-SD HMPII Project Management	Invoice Date:	12/27/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Trav-Mileage Expense					
Travel-Mileage Expen	Travel-Mileage Expense	500590936	2012/11	RENFREW DAVID	560211	66.60
		500593919	2012/11		563124	7.77
Total: Trav-Mileage Expense						74.37
Line Description:	Permit Fees					
Permit Fees	Permit Fees	500593919	2012/11	RENFREW DAVID	563124	74.00
Total: Permit Fees						74.00
Expenses						148.37

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

ExpenseTrack

P-Card Expense Confirm

P-Card Report -- Step 4. Confirm P-Card

Welcome, David S. Renfrew

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

OCT 23 2012

Header Information

Exp#:	560211	Status:	Submitted on 10/19/2012
Employee:	Renfrew, David S. (018565)	Entered By:	Renfrew, David S.
Approver:	Shaeffer, Michael R.	Total Amount:	$561.67
		Total Out of Pocket:	$102.68
Purpose:	October Expenses		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
10/3/2012	Mileage	Mileage	Personal Vehicle Mileage to HMP Kickoff meeting.	14974.212.002.0001	*$33.30
10/15/2012	Mileage	Mileage	Personal Vehicle Mileage to HMP Monitoring Meeting.	14974.212.002.0001	*$33.30
10/18/2012	Mileage	Mileage	Personal Vehicle Mileage to Copermittee DraftPermit Support Meeting.	13245.081.010.0001	$33.30
10/12/2012	Mileage	Mileage	Personal Vehicle Mileage for lunch and dinner runs during storm.	13245.212.001.8888	$2.78
10/11/2012	Lunch	Croutons	Lunch for Dave Renfrew, Garth Engelhorn, and Damon Owen during storm event.	13245.212.001.8888	*$30.55
10/11/2012	Dinner	Subway	Dinner for Dave Renfrew and Olga Hernandez during storm event.	13245.212.001.8888	*$10.25
10/11/2012	Supplies - Field	7-Eleven	Snacks for monitoring crew during late night storm event.	13245.212.001.8888	*$6.19
10/5/2012	Conference Fees	CASQA	Conference Fees	00834.197.007	*$410.00
10/19/2012	Check Fee	US Bank	Check Fee for #1099	91533	$2.00

0.555/mi

60 miles

60 miles

60 miles

5 miles

Asterisks (*) denote expenses requiring receipts.

* Travel mileage $66.60

Summary Totals

Totals		Amount
00834.197.007		
	Conference Fees	$410.00
Totals	00834.197.007	$410.00
13245.081.010.0001		
	Mileage	$33.30
Totals	13245.081.010.0001	$33.30
13245.212.001.8888		

AMWelson - 10/25/12

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, David S. Renfrew

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

NOV 1 3 2012

Header Information			
Exp#:	563124	Status:	Submitted on 11/9/2012
Employee:	Renfrew, David S. (018565)	Entered By:	Renfrew, David S.
Approver:	Shaeffer, Michael R.	Total Amount:	$328.97
		Total Out of Pocket:	$160.97
Purpose:	Nov Expenses		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount	
11/5/2012	Mileage	Mileage	Mileage to conference	00834.197.007	$33.30	60 miles
11/6/2012	Mileage	Mileage	Mileage to conference	00834.197.007	$33.30	60 miles
11/7/2012	Mileage	Mileage	Mileage to conference	00834.197.007	$33.30	60 miles
11/8/2012	Mileage	Mileage	Mileage to County for Permitting Application	13245.212.008.1002	$33.30	60 miles
11/8/2012	Mileage	Mileage	Mileage to Poway for Livescan. (0.555 mi)	14974.212.002.0001	$7.77	14 miles
11/8/2012	Miscellaneous	Poway Livescan	Livescan fingerprinting for County ID Badge.	14974.212.002.0001	*$54.00	
11/8/2012	Miscellaneous	County of San Diego	Background Check Fee for County ID Badge.	14974.212.002.0001	*$20.00	
11/8/2012	Miscellaneous	County of San Diego	Encroachment Permit Application Fee	13245.212.008.1002	*$110.00	
11/8/2012	Check Fee	US Bank	Check Fee for #1101 for Encroachment Permit	13245.212.008.1002	$2.00	
11/9/2012	Check Fee	US Bank	Check Fee for #1102	91533	$2.00	

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
00834.197.007		
	Mileage	$99.90
Totals	00834.197.007	$99.90
13245.212.008.1002		
	Check Fee	$2.00
	Mileage	$33.30
	Miscellaneous	$110.00
Totals	13245.212.008.1002	$145.30

amWelson - 11/15/12

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, David S. Renfrew

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

NOV 13 2012 am

Header Information			
Exp#:	563124	Status:	Submitted on 11/9/2012
Employee:	Renfrew, David S. (018565)	Entered By:	Renfrew, David S.
Approver:	Shaeffer, Michael R.	Total Amount:	$328.97
		Total Out of Pocket:	$160.97
Purpose:	Nov Expenses		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount	
11/5/2012	Mileage	Mileage	Mileage to conference	00834.197.007	$33.30	60 miles
11/6/2012	Mileage	Mileage	Mileage to conference	00834.197.007	$33.30	60 miles
11/7/2012	Mileage	Mileage	Mileage to conference	00834.197.007	$33.30	60 miles
11/8/2012	Mileage	Mileage	Mileage to County for Permitting Application	13245.212.008.1002	$33.30	60 miles
11/8/2012	Mileage	Mileage	Mileage to Poway for Livescan.	14974.212.002.0001	$7.77	14 miles
11/8/2012	~~Miscellaneous~~ Permit Fee	Poway Livescan	Livescan fingerprinting for County ID Badge.	14974.212.002.0001	*$54.00	
11/8/2012	~~Miscellaneous~~ Permit Fee	County of San Diego	Background Check Fee for County ID Badge.	14974.212.002.0001	*$20.00	
11/8/2012	Miscellaneous	County of San Diego	Encroachment Permit Application Fee	13245.212.008.1002	*$110.00	
11/8/2012	Check Fee	US Bank	Check Fee for #1101 for Encroachment Permit	13245.212.008.1002	$2.00	
11/9/2012	Check Fee	US Bank	Check Fee for #1102	91533	$2.00	

Asterisks (*) denote expenses requiring receipts.

Permit Fee $74.00

Summary Totals		
Totals		Amount
00834.197.007		
	Mileage	$99.90
Totals	00834.197.007	$99.90
13245.212.008.1002		
	Check Fee	$2.00
	Mileage	$33.30
	Miscellaneous	$110.00
Totals	13245.212.008.1002	$145.30

am Nelson - 11/15/12

County Security Services
5560 Overland Ave Suite 210
San Diego, CA 92123

RECEIPT DATE 11/8/12 No. 961802

RECEIVED FROM DAVID Renfrew $ 20-

Twenty 00/100 DOLLARS

FOR RENT
FOR Background Fee Weston Solutions

ACCOUNT	
PAYMENT	20
BAL. DUE	

CASH
CHECK #2394
MONEY ORDER
CREDIT CARD

FROM _____ TO _____

BY Enrique Pollo

RECEIPT

DATE 11/8/2012 No. 656339

FROM Poway LiveScan $ 54/00

DOLLARS

FOR RENT
FOR

ACCT.	
PAID	
DUE	

CASH
MONEY ORDER
CHECK
CREDIT CARD

FROM _____ TO _____

BY _____

POWAY LIVESCAN
12937 POMERADO RD. HF
POWAY, CA 92064

TERMINAL ID: 000507451
MERCHANT #: 267074567089

VISA
#xxxxxxxxxxxxxx4988

SALE
BATCH: 000158 INVOICE: 058358
DATE: NOV 08, 12 TIME: 10:36
SQ: 001 AUTH NO: 085439

TOTAL $54.00

CUSTOMER COPY

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: DEC2012-03456

Invoice Date: 12/27/2012

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 01/26/2013

Billing Period From: 11/03/2012
To: 11/30/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	3.50	115.5300	404.36
GIS Specialist			
Dister, Sheri	2.00	131.5100	263.02
Sr. Civil Engineer			
Cotts, Anthony M	8.50	138.7700	1,179.55
Water Quality Project Manager			
Renfrew, David S	2.00	141.0200	282.04
Labor	16.00		2,128.97
Subcontractor			4,000.00
Expenses			4,000.00
Task Total			6,128.97

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: DEC2012-03456

Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey

Billing Currency USD
Invoice Date: 12/27/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500590576	2012/11	BRISENDINE LAND SERVICES	1911	1,000.00
		500590577	2012/11		1910	1,000.00
		500590578	2012/11		1909	1,000.00
		500590579	2012/11		1908	1,000.00
Total: Subcontractor						4,000.00
Expenses						4,000.00

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

BLS03
2012.11.2
rdr#
500590576

Brisendine Land Services, Inc.
Land Surveying, Mapping, Civil Engineering &
Storm Water Management
1808 Main Street, Suite 205, Ramona, CA 92065
Ph 760-788-8027 Fx 760-788-8005
Info@BLSsd.net www.BLSSD.net
Edward O. Brisendine, CA LS 8027, AZ LS 48500

Invoice

Date	Invoice #
10/29/2012	1911

Terms	Due Date
Net 15	11/13/2012

Bill To

Dave Renfrew
Weston Solutions
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

RECEIVED
NOV 01 2012
am

Amount Due	Enclosed
$1,000.00	

Please detach top portion and return with your payment

Date	Activity	Quantity	Rate	Amount
10/29/2012	Provide field survey services for an unnamed creek in Sycamore Canyon in Poway. The field work includes one cross section of the creek from bank to bank and a survey of approximately 260 feet upstream downstream along the thread of the creek. In addition to the data collection, set two survey monuments (3/8" rebar) as reference/control points for future use. Tie data to the NAVD 88 vertical datum and NAD 83 for horizontal control. Provide horizontal and vertical locations to 0.01' in an excel worksheet.	1	1,000.00	1,000.00

INVOICE APPROVAL

DATE REC: 10/29/12

APPROVED BY: David Renfrew

SIGNATURE: [signature]

PO # 0081066

WO # 1497.4.212.002.0003 ✓

RETURN TO ANALYN NELSON

Payment is due in 15 days. Late fees of .7% per month (unless otherwise outlined in the contract) will be assessed on any unpaid balance after 30 days.

Total	$1,000.00

Brisendine Land Services, Inc.
Land Surveying, Mapping, Civil Engineering &
Storm Water Management
1308 Main Street, Suite 205, Ramona, CA 92065
Ph 760-788-8027 Fx 760-788-8005
Info@BLSsd.net www.BLSSD.net
Edward O. Brisendine, CA LS 8027, AZ LS 48500

Invoice

Date	Invoice #
10/29/2012	1910
Terms	**Due Date**
Net 15	11/13/2012

Bill To

Dave Renfrew
Weston Solutions
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

BLS03
2012.11.2
rch#500590577

NOV 01 2012
AM

Amount Due	Enclosed
$1,000.00	

Please detach top portion and return with your payment

Date	Activity	Quantity	Rate	Amount
10/29/2012	Provide field survey services for an unnamed creek near Bear Valley Parkway and Idaho Avenue in Escondido. The field work includes one cross section of the creek from bank to bank and a survey of approximately 240 feet upstream (due to private property issues, we only took shots near the cross section, and approximately 240 feet upstream) and approximately 200 feet downstream along the thread of the creek. In addition to the data collection, set two survey monuments (3/8" rebar) as reference/control points for future use. Tie data to the NAVD 88 vertical datum and NAD 83 for horizontal control. Provide horizontal and vertical locations to 0.01' in an excel worksheet.	1	1,000.00	1,000.00

INVOICE APPROVAL

DATE REC: 10/29/12

APPROVED BY: David Renfrew

SIGNATURE:

PO # 081066

WO # 14974.212.002.0003

RETURN TO ANALYN NELSON

Payment is due in 15 days. Late fees of 7% per month (unless otherwise outlined in the contract) will be assessed on any unpaid balance after 30 days.

Total	$1,000.00

Brisendine Land Services, Inc.
Land Surveying, Mapping, Civil Engineering &
Storm Water Management
1808 Main Street, Suite 205, Ramona, CA 92065
Ph 760-788-8027 Fx 760-788-8005
Info@BLSsd.net www.BLSSD.net
Edward O. Brisendine, CA LS 8027, AZ LS 48500

Invoice

Date	Invoice #
10/29/2012	1909
Terms	**Due Date**
Net 15	11/13/2012

Bill To

Dave Renfrew
Weston Solutions
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

BLS03
2012.11.2
rchv# 500590578

NOV 01 2012
am

Amount Due	Enclosed
$1,000.00	

Please detach top portion and return with your payment

Date	Activity	Quantity	Rate	Amount
10/29/2012	Provide field survey services for an unnamed creek in Otay Village, west of Otay Lakes Road and east of Lower Otay Lake. The field work includes one cross section of the creek from bank to bank and a survey of approximately 120 feet upstream and downstream along the thread of the creek. In addition to the data collection, set two survey monuments (3/8" rebar) as reference/control points for future use. Tie data to the NAVD 88 vertical datum and NAD 83 for horizontal control. Provide horizontal and vertical locations to 0.01' in an excel worksheet.	1	1,000.00	1,000.00

INVOICE APPROVAL

DATE REC: 10/29/12

APPROVED BY: David Renfrew

SIGNATURE:

PO # 008066

WO # 14994.212.002.0003

RETURN TO ANALYN NELSON

Payment is due in 15 days. Late fees of .7% per month (unless otherwise outlined in the contract) will be assessed on any unpaid balance after 30 days.

Total	$1,000.00

Brisendine Land Services, Inc.
Land Surveying, Mapping, Civil Engineering &
Storm Water Management
1308 Main Street, Suite 205, Ramona, CA 92065
Ph 760-788-8027 Fx 760-788-8005
Info@BLSsd.net www.BLSSD.net
Edward O. Brisendine, CA LS 8027, AZ LS 48500

Invoice

Date	Invoice #
10/29/2012	1908

Terms	Due Date
Due on receipt	10/29/2012

Bill To

Dave Renfrew
Westin Solutions
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

BLS03
2012.11.2
YCHV# 500590579

NOV 01 2012
am

Amount Due	Enclosed
$1,000.00	

Please detach top portion and return with your payment.

Date	Activity	Quantity	Rate	Amount
10/29/2012	Provide field survey services for an unnamed creek in Schoolhouse Canyon, southeast of San Pasqual Academy. The field work includes one cross section of the creek from bank to bank and a survey of approximately 240 feet upstream and downstream along the thread of the creek. In addition to the data collection, set two survey monuments (3/8" rebar) as reference/control points for future use. Tie data to the NAVD 88 vertical datum and NAD 83 for horizontal control. Provide horizontal and vertical locations to 0.01' in an excel worksheet.	1	1,000.00	1,000.00

INVOICE APPROVAL

DATE REC: 10/29/12

APPROVED BY: David Renfrew

SIGNATURE:

PO # 0081006

WO # 14974.212.002.0003

RETURN TO ANALYN NELSON

Payment is due in 15 days. Late fees of .7% per month (unless otherwise outlined in the contract) will be assessed on any unpaid balance after 30 days.

Total	$1,000.00

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: DEC2012-03456

Invoice Date: 12/27/2012

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Contract Value

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event Monitoring
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 01/26/2013

Billing Period From: 11/03/2012
To: 11/30/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	1.50	119.9300	179.90
Environmental Scientist I			
Cropper, Scott J	1.00	86.5400	86.54
Mathis, Melissa E	3.50	86.5400	302.89
Environmental Scientist II			
Campagna, Laurence	1.00	100.7600	100.76
Margolis, Amy	1.00	100.7600	100.76
Environmental Scientist III			
Engelhorn, Garth	9.00	115.5300	1,039.78
Owen, Damon	1.00	115.5300	115.53
Environmental Senior Scientist			
Isham, William H	1.00	131.5100	131.51
Senior Technician			
Batliner, Elizabeth	1.00	62.5900	62.59
Pippen, Ross P	1.00	62.5900	62.59
Teague, Lydia C	1.00	62.5900	62.59
Sr. Civil Engineer			
Cotts, Anthony M	1.00	138.7700	138.77
Water Quality Project Manager			
Renfrew, David S	8.00	141.0200	1,128.16
Labor	31.00		3,512.37
Materials & Supplies			160.54
Expenses			160.54

Task Total 3,672.91

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number:	DEC2012-03456	Task Number:	14974.212.002.0004	Billing Currency	USD
		Task Name:	RBF-SD HMPII Wet Event Monitoring	Invoice Date:	12/27/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500589748	2012/11	MATHIS MELISSA E	561442	10.80
		500593224	2012/11	CAMPAGNA LAURENCE	563603	105.68
		500593643	2012/11	MATHIS MELISSA E	563869	44.06
Total: Materials & Supplies						160.54
Expenses						160.54

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4: Confirm P-Card

Welcome, Melissa E. Mathis

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

OCT 29 2012

Header Information

Exp#:	561442	Status:	Submitted on 10/29/2012
Employee:	Mathis, Melissa E. (019581)	Entered By:	Mathis, Melissa E.
Approver:	Renfrew, David S.	Total Amount:	$10.80
		Total Out of Pocket:	$0.00
Purpose:			

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
10/23/2012	Supplies - Field	Target	Zip lock bags for sampling	14974.212.002.0004.01	$10.80

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.01		
	Supplies - Field	$10.80
Totals	14974.212.002.0004.01	$10.80

Verification MMQcnf - 10/31/12

561442

TARGET
EXPECT MORE. PAY LESS.

VISTA SOUTH - 760-208-6111
10/23/2012 01:12 PM EXPIRES 01/21/13

HOME
253010237 ZIPLOC T $9.98 ↓
2 @ $4.99 ea
Saved $2.40 off $12.38

SUBTOTAL $9.98
T = CA TAX 8.2500% on $9.98 $0.82
TOTAL $10.80

*0026 VISA CHARGE $10.80

↓ INDICATES SAVINGS

TOTAL SAVINGS THIS TRIP
$2.40

REC#2-2297-2165-0080-4294-6 VCD#752-250-548

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Laurence Campagna

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

NOV 20 2012

Header Information			
Exp#:	563603	Status:	Submitted on 11/14/2012
Employee:	Campagna, Laurence (017996)	Entered By:	Campagna, Laurence
Approver:	Renfrew, David S.	Total Amount:	$105.68
		Total Out of Pocket:	$0.00
Purpose:	field work		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
10/18/2012	Supplies - Field	Home Depot	supplies for construction of YSI sonde enclosures for HMP	14974.212.002.0004.01	*$101.24
10/23/2012	Supplies - Field	Home Depot	concrete pad and rebar for construction for level loggers in stream bed	14974.212.002.0004.01	*$4.44

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
14974.212.002.0004.01		
	Supplies - Field	$105.68
Totals	14974.212.002.0004.01	$105.68

Verification _____ - 11/20/12

563603

More saving.
More doing.™

2430 S MELROSE DRIVE
VISTA, CA 92081 (760)599-4080

1074 00059 03620 10/18/12 12:39 PM
CASHIER SELF CHECK OUT - SCOT59

071649395604 LOCK, <A>
2" SET-YOUR-OWN-COMBO
2@13.96 27.92
039923199126 ABS PLUG <A>
4" ABS CLEANOUT PLUG MPT
2@4.44 8.88
039923194602 ABS ADPTR <A>
4" ABS FEMALE ADAPTER HXFPT
2@8.97 17.94
079340242005 THREADLOCKER <A> 6.47
LOCTITE 242 BLUE THREADLOCKER
030699151286 HINGE HASP <A>
3" FIXED STAPLE DBL HINGE HASP ZINC
2@3.73 7.46
071514002361 EYEBOLT/NUT <A> 2.27
1/4 IN. X 2-5/8 IN. EYEBOLT W/ NUT
093552034104 ABS PIPE <A> 22.58
4 IN X 10 FT ABS-DWV PIPE

SUBTOTAL 93.52
SALES TAX 7.72
TOTAL $101.24
XXXXXXXXXXXX1031 VISA 101.24
AUTH CODE 032967/8597746 TA
P.O.#/JOB NAME: 0

1074 59 03620 10/18/2012 8067

RETURN POLICY DEFINITIONS
POLICY ID DAYS POLICY EXPIRES ON
A 1 90 01/16/2013
THE HOME DEPOT RESERVES THE RIGHT TO LIMIT / DENY RETURNS. PLEASE SEE THE RETURN POLICY SIGN IN STORES FOR DETAILS.

BUY ONLINE PICK UP IN STORE
AVAILABLE [illegible] HOMEDEPOT.COM.
AND MOST ORDERS [illegible] 2 HOURS!

More saving.
More doing.™

2430 S MELROSE DRIVE
VISTA, CA 92081 (760)599-4080

1074 00017 64323 10/23/12 08:29 AM
CASHIER MARGARET - MBF99D

962945 1FT REBAR3/8 <A>
3/8"X12" REBAR
3@0.78 2.34
384313 2X8X16SLDCAP <A>
2"X8"X16" CONCRETE SOLID CAP BLOCK
2@0.88 1.76

SUBTOTAL 4.10
SALES TAX 0.34
TOTAL $4.44
XXXXXXXXXXXX1031 VISA 4.44
AUTH CODE 064315/3172330 TA
P.O.#/JOB NAME: NONE

1074 17 64323 10/23/2012 9996

RETURN POLICY DEFINITIONS
POLICY ID DAYS POLICY EXPIRES ON
A 1 90 01/21/2013
THE HOME DEPOT RESERVES THE RIGHT TO LIMIT / DENY RETURNS. PLEASE SEE THE RETURN POLICY SIGN IN STORES FOR DETAILS.

IN STORE
COM.

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Melissa E. Mathis

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

NOV 15 2012

Header Information

Exp#:	563869	Status:	Submitted on 11/15/2012
Employee:	Mathis, Melissa E. (019581)	Entered By:	Mathis, Melissa E.
Approver:	Renfrew, David S.	Total Amount:	$44.06
		Total Out of Pocket:	$0.00
Purpose:			

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
10/26/2012	Supplies - Field	General Laboratory Supply	Squirt/rinse bottles for HMP Sediment sampling	14974.212.002.0004.01	$44.06

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.01		
	Supplies - Field	$44.06
Totals	14974.212.002.0004.01	$44.06

Verification _____ 11/15/12

563869

Mathis, Melissa

From: websales@gogenlab.com
Sent: Friday, October 26, 2012 10:46 AM
To: Mathis, Melissa
Subject: General Laboratory Supply Order Confirmation #R327068480

Thanks for your order, melissa mathis!

We will send you a stock status acknowledgement shortly. You can always check on the disposition of your order by contacting us by email at websales@gogenlab.com.

Order Summary:

Cat. No.	Description	Qty	Subtotal
B7477-7C	500ml Wide Mouth Safety Labeled Wash Bottles. C... Mfg #: F116460638	1 Pack	$33.56

Subtotal: $33.56
Shipping: $10.50
Order Total: $44.06

Billing & Shipping Address:

melissa mathis
weston solutions
5817 Dryden Place
Suite 101
carlsbad, California 92008
7607956904

Shipping Method: Standard Shipping

Thank you for your business.

General Laboratory Supply
(800) 777-7120

P: 1002993
O: 50915
E: 52370
T: 12.009
A: 100496

Supplier ID # 1184538

RBF CONSULTING
A Baker Company

Invoice Date March 4, 2013
Project No.: 132261
Invoice No.: 841911

Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave, Ste 410
San Diego, CA 92123

PROJECT No. - 132261 Phase 2 Hydromodification Monitor TO 27

CONTRACT NO. - 534079
TASK ORDER: 27

Professional consulting services for the Phase 2 Hydromodification Monitoring FY 2012-2013

Professional Services through January 31, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Project Management	$9,045.00	71.33%	$6,451.59	$101.97
Monitoring Plan and QAPP Support	$2,188.00	0.00%	$0.00	$0.00
Cross Sectional Surveys	$22,995.00	19.91%	$4,578.97	$564.08
Monitoring Subtask 4a, 4b, 4c	$115,771.00	24.89%	$28,815.39	$13,611.61
Data QA/QC, Data Compilation,	$0.00	0.00%	$0.00	$0.00
Total Fee	**$149,999.00**		**$39,845.95**	**$14,277.67**
		Previous Fee Billing	$25,568.28	
Sampling and Monitoring Expenses				**$1,014.00**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079".

OK to PAY $15,291.66

Total This Invoice $15,291.66 ✓

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

27
ACTIVITY/WA NO.

3/11/2013
DATE

PROJECT MANAGER

3/11/2013
DATE

DPW MANAGER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Phase 2 HMP Monitoring - TO 27
RBF JN 132261

	Hours	Rate	Current Fee:
Task 1 - Project Management			
Sr. Geographic Info. Systems Analyst	1	$101.97	$101.97
Total			**$101.97** ✓
Task 3 - Cross-sectional Surveys			
Water Quality Project Manager	4	$141.02	$564.08
Total			**$564.08** ✓
Task 4 - Wet Weather Monitoring			
Water Quality Project Manager	5	$141.02	$705.10
Sr. Civil Engineer	15	$138.77	$2,081.55
Land Use Environmental Planning Mngr.	14	$131.51	$1,841.14
Land Use Environmental Planner III	10.5	$115.53	$1,213.07
Lane Use Environmental Planner II	13.5	$100.76	$1,360.26
Land Use Environmental Planner I	48.4	$86.54	$4,188.54
Geographic Info. Systems Technician	35.5	$62.59	$2,221.95
Total			**$13,611.61** ✓
Sampling and Monitoring Expenses			**$1,014.00** ✓
Grand Total	146.9		**$15,291.66** ✓

WESTON SOLUTIONS

RECEIVED
JAN 28 2013
RBF CONSULTING
CARLSBAD OFFICE

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE II HYDROMODIFICATION MONITORING (PART 1)- TASK ORDER NO. 27

INVOICE DATE: 01/25/2013
PROJECT NUMBER: 14974.212.002
INVOICE NUMBER: JAN2013-07885
BILLING PERIOD: 12/01/2012 TO 12/28/2012

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	PHASE 2 - HYDROMODIFICATION MONITORING	147,272.00	15,291.66	44,865.39	30.46%	102,406.61
0001	PROJECT MANAGEMENT		101.97	6,041.12		
0002	MONITORING PLAN AND QAPP SUPPORT		0.00	0.00		
0003	CROSS-SECTIONAL SURVEYS		564.08	8,695.16		
0004	WET WEATHER MONITORING		14,625.61	30,129.11		
TOTAL		147,272.00	15,291.66	44,865.39	30.46%	102,406.61

CURRENT AMOUNT DUE 15,291.66

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JAN2013-07885

Invoice Date: 01/25/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

INVOICE SUMMARY

	Contract Value
Cost:	147,000.00
Total:	147,000.00
Cumulative Amount Billed:	44,865.39

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Project Number: 14974.212.002
Project Name: Phase II – Hydromodification Monitoring Part I

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 02/24/2013

Billing Period From: 12/01/2012
To: 12/28/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist I			
Cropper, Scott J	37.40	86.5400	3,236.60
Mathis, Melissa E	11.00	86.5400	951.94
Environmental Scientist II			
Campagna, Laurence	13.50	100.7600	1,360.26
Environmental Scientist III			
Engelhorn, Garth	8.00	115.5300	924.24
Owen, Damon	2.50	115.5300	288.83
Environmental Senior Scientist			
Isham, William H	14.00	131.5100	1,841.14
Project Control			
Ventures, Ameedylyn	1.00	101.9700	101.97
Senior Technician			
Batliner, Elizabeth	15.50	62.5900	970.15
Pippen, Ross P	20.00	62.5900	1,251.80
Sr. Civil Engineer			
Cotts, Anthony M	15.00	138.7700	2,081.55
Water Quality Project Manager			
Renfrew, David S	9.00	141.0200	1,269.18
Labor	146.90		14,277.66
Materials & Supplies			1,014.00
Expenses			1,014.00 ✓
Invoice Total			15,291.66 ✓

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

Page: 1

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP MONITORING PHASE II

Weston Project No.
14974.212.002

Weston Invoice No.
JAN2013-07885

Project Desription
County of SD - Phase II HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0001 - RBF-SD HMPII Project Management								
018233	Ventures, Ameedylyn	12/21/2012	12/17/2012	1.0		8	1533	R
	Total: Ventures, Ameedylyn			**1.0**				
Total: 14974.212.002.0001				**1.0**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0003 - RBF-SD HMPII Cross-Sectional Surveys								
018565	Renfrew, David	12/21/2012	12/17/2012	4.0		3	1533	R
	Total: Renfrew, David			**4.0**				
Total: 14974.212.002.0003				**4.0**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0004 - RBF-SD HMPII Wet Event Monitoring								
018396	Batliner, Elizabeth	12/14/2012	12/12/2012	1.5		4	1533	R
		12/14/2012	12/13/2012	13.5		4	1533	R
		12/14/2012	12/14/2012	0.5		4	1533	R
	Total: Batliner, Elizabeth			**15.5**				
017996	Campagna, Laurence	12/7/2012	12/4/2012	8.0		2	1533	R
		12/14/2012	12/13/2012	3.0		5	1533	R
		12/21/2012	12/17/2012	1.5		2	1533	R
		12/21/2012	12/18/2012	1.0		2	1533	R
	Total: Campagna, Laurence			**13.5**				
019890	Cotts, Anthony	12/14/2012	12/12/2012	1.0	Saratoga Site HMP monitoring	16	1533	R
		12/14/2012	12/13/2012	14.0	Saratoga Site HMP monitoring	16	1533	R
	Total: Cotts, Anthony			**15.0**				
019077	Cropper, Scott	12/14/2012	12/12/2012	3.0		4	1533	R
		12/14/2012	12/13/2012	8.0		4	1533	R
		12/14/2012	12/13/2012	4.0		5	1533	O1
		12/14/2012	12/14/2012	2.0		5	1533	O1
		12/14/2012	12/13/2012	2.0		6	1533	OTD

019077	Cropper, Scott	12/21/2012	12/17/2012	8.0		1	1533	R
		12/21/2012	12/18/2012	5.4		1	1533	R
		12/21/2012	12/17/2012	4.0		2	1533	O1
		12/21/2012	12/18/2012	1.0		2	1533	O1
	Total: Cropper, Scott			**37.4**				
019372	Engelhorn, Garth	12/21/2012	12/17/2012	2.0		10	1533	R
		12/21/2012	12/18/2012	1.0		10	1533	R
		12/21/2012	12/20/2012	1.0		10	1533	R
		12/21/2012	12/21/2012	2.0		10	1533	R
		12/28/2012	12/27/2012	2.0		9	1533	R
	Total: Engelhorn, Garth			**8.0**				
018016	Isham, William	12/14/2012	12/12/2012	2.0		7	1533	R
		12/14/2012	12/13/2012	12.0		7	1533	R
	Total: Isham, William			**14.0**				
019581	Mathis, Melissa	12/14/2012	12/11/2012	1.0		6	1533	R
		12/21/2012	12/17/2012	2.0		5	1533	R
		12/21/2012	12/18/2012	5.0		5	1533	R
		12/21/2012	12/17/2012	3.0		6	1533	O1
	Total: Mathis, Melissa			**11.0**				
018253	Owen, Damon	12/21/2012	12/17/2012	1.5		2	1533	R
		12/21/2012	12/18/2012	1.0		2	1533	R
	Total: Owen, Damon			**2.5**				
020012	Pippen, Ross	12/7/2012	12/4/2012	8.0		4	1533	R
		12/21/2012	12/17/2012	8.0		1	1533	R
		12/21/2012	12/18/2012	1.0		1	1533	R
		12/21/2012	12/17/2012	3.0		2	1533	O1
	Total: Pippen, Ross			**20.0**				
018565	Renfrew, David	12/14/2012	12/13/2012	3.0		8	1533	UOT
		12/14/2012	12/14/2012	1.0		8	1533	UOT
		12/28/2012	12/27/2012	1.0		7	1533	R
	Total: Renfrew, David			**5.0**				
Total: 14974.212.002.0004.02				**141.9**				

Total: 14974.212.002 COUNTY OF SD - Phase II HMP Monitoring	**146.9**

Approved by: Dave Renfrew

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JAN2013-07885

Invoice Date: 01/25/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 02/24/2013

Billing Period From: 12/01/2012
To: 12/28/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Project Control Ventures, Ameedylyn	1.00	101.9700	101.97
Labor	1.00		101.97
Task Total			101.97 ✓

OSP-0606 2/12

INVOICE

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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JAN2013-07885

Invoice Date: 01/25/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0003
Taskt Name: RBF-SD HMPII Cross-Sectional Survey
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 02/24/2013

Billing Period From: 12/01/2012
To: 12/28/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Water Quality Project Manager			
Renfrew, David S	4.00	141.0200	564.08
Labor	4.00		564.08
Task Total			564.08 ✓

05P-0606 2/12

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Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JAN2013-07885

Invoice Date: 01/25/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event Monitoring
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 02/24/2013

Billing Period From: 12/01/2012
To: 12/28/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist I			
Cropper, Scott J	37.40	86.5400	3,236.60
Mathis, Melissa E	11.00	86.5400	951.94
Environmental Scientist II			
Campagna, Laurence	13.50	100.7600	1,360.26
Environmental Scientist III			
Engelhorn, Garth	8.00	115.5300	924.24
Owen, Damon	2.50	115.5300	288.83
Environmental Senior Scientist			
Isham, William H	14.00	131.5100	1,841.14
Senior Technician			
Batliner, Elizabeth	15.50	62.5900	970.15
Pippen, Ross P	20.00	62.5900	1,251.80
Sr. Civil Engineer			
Cotts, Anthony M	15.00	138.7700	2,081.55
Water Quality Project Manager			
Renfrew, David S	5.00	141.0200	705.10
Labor	141.90		13,611.61 ✓
Materials & Supplies			1,014.00
Expenses			1,014.00 ✓
Task Total			14,625.61 ✓

05P-0605 2/12

INVOICE

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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

		Task Number:	14974.212.002.0004	Billing Currency	USD
Invoice Number:	JAN2013-07885	Task Name:	RBF-SD HMPII Wet Event Monitoring	Invoice Date:	01/25/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500596579	2012/12	ENGELHORN GARTH	565805	1,014.00
Total: Materials & Supplies						1,014.00
Expenses						1,014.00 ✓

ExpenseTrack

P-Card Report --- Step 4. Confirm P-Card

P-Card Expense Confirm

Welcome, Garth Engelhorn

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

DEC 3 1 2012

am

Header Information

Exp#:	565805	Status:	Submitted on 11/30/2012
Employee:	Engelhorn, Garth (019372)	Entered By:	Engelhorn, Garth
Approver:	Renfrew, David S.	Total Amount:	$1,309.24
		Total Out of Pocket:	$0.00
Purpose:	Bedload samplers/bags for HMP and communication cables for MLS/TWAS Monitoring		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
11/20/2012	Supplies - Field	Rickly Hydrological	Bedload Samplers and sediment bags for samplers	14974.212.002.0004.01	*$1,014.00
11/28/2012	Supplies - Field	Hach Company	2 communication cables for flowmeter/sampler	13245.212.001.8888	*$295.24

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
13245.212.001.8888		
	Supplies - Field	$295.24
Totals	13245.212.001.8888	$295.24
14974.212.002.0004.01		
	Supplies - Field	$1,014.00
Totals	14974.212.002.0004.01	$1,014.00

Verification AmWelsom - 12/03/12

565805

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

SUPPLIER ID#
1184538

RBF CONSULTING
A Baker Company

Invoice Date April 23, 2013
Project No. 132261
Invoice No. 846354

Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave, Ste 410
San Diego, CA 92123

PROJECT No. - 132261 Phase 2 Hydromodification Monitor TO 27

CONTRACT NO. - 534079
TASK ORDER: 27

Professional consulting services for the Phase 2 Hydromodification Monitoring FY 2012-2013

Professional Services through March 31, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Project Management	$9,045.00	76.64%	$6,931.88	$480.29
Monitoring Plan and QAPP Support	$2,188.00	0.00%	$0.00	$0.00
Cross Sectional Surveys	$22,995.00	19.91%	$4,578.97	$0.00
Monitoring Subtask 4a, 4b, 4c	$115,771.00	55.25%	$63,967.53	$35,152.14
Data QA/QC, Data Compilation, and Data Submittal (not part of phase 1)	$0.00	0.00%	$0.00	$0.00
Total Fee	**$149,999.00**		**$75,478.38**	**$35,632.43** ✓
		Previous Fee Billing	$39,845.95 ✓	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079".

OK to PAY $35,632.43

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

Total This Invoice $35,632.43 ✓

534079
CONTRACT/P.O. NO.

27
ACTIVITY/WA NO.

5/22/2013
DATE

Deborah Mosley
PROJECT MANAGER

5/24/13
DATE

TODD SNYDER
DPW MANAGER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Phase 2 HMP Monitoring - TO 27
RBF JN 132261

	Hours	Rate	Current Fee:
Task 1 - Project Management			
Land Use Environmental Planner I	2.5	$86.54	$216.35
Sr. Geographic Info. Systems Analyst	2	$101.97	$203.94
County Badge Fees			$60.00
Total			**$480.29**
Task 4 - Wet Weather Monitoring			
Water Quality Project Manager	17.5	$141.02	$2,467.85
Sr. Civil Engineer	15.5	$138.77	$2,150.94
Civil Engineer	13.5	$119.93	$1,619.06
Land Use Environmental Planning Mngr.	35	$131.51	$4,602.85
Land Use Environmental Planner III	32	$115.53	$3,696.99
Lane Use Environmental Planner II	28.5	$100.76	$2,871.66
Land Use Environmental Planner I	75	$86.54	$6,490.50
Geographic Info. Systems Technician	76.4	$62.59	$4,781.90
Sampling and Monitoring Expenses			**$6,470.39** ✓
Total			**$35,152.14** ✓
Grand Total	297.9		**$35,632.43** ✓

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE II HYDROMODIFICATION MONITORING (PART 1)- TASK ORDER NO. 27

INVOICE DATE: 3/18/2013
PROJECT NUMBER: 14974.212.002
INVOICE NUMBER: MAR2013-02927
BILLING PERIOD: 12/29/2012 TO 02/22/2013

RECEIVED
MAR 21 2013
RBF CONSULTING
CARLSBAD OFFICE

SUMMARY

001	**PHASE 2 - HYDROMODIFICATION MONITORING**	**147,272.00**	**35,632.43**	**80,497.82**	**54.66%**	**66,774.18**
0001	PROJECT MANAGEMENT		480.29 ✓	6,521.41		
0002	MONITORING PLAN AND QAPP SUPPORT		0.00	0.00		
0003	CROSS-SECTIONAL SURVEYS		0.00	8,695.16		
0004	WET WEATHER MONITORING		35,152.14 ✓	65,281.25		
TOTAL		**147,272.00**	**35,632.43**	**80,497.82**	**54.66%**	**66,774.18**

CURRENT AMOUNT DUE 35,632.43 ✓

05P-0606 2/12

INVOICE

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WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: MAR2013-02927

Invoice Date: 03/18/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

INVOICE SUMMARY

	Contract Value
Cost:	147,000.00
Total:	147,000.00
Cumulative Amount Billed:	80,497.82

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Project Number: 14974.212.002
Project Name: Phase II – Hydromodification Monitoring Part I

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 04/17/2013

Billing Period From: 12/29/2012
To: 02/22/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	13.50	119.9300	1,619.06
Environmental Scientist I			
Cropper, Scott J	59.00	86.5400	5,105.86
Mathis, Melissa E	18.50	86.5400	1,600.99
Environmental Scientist II			
Campagna, Laurence	14.50	100.7600	1,461.02
Margolis, Amy	14.00	100.7600	1,410.64
Environmental Scientist III			
Engelhorn, Garth	32.00	115.5300	3,696.99
Environmental Senior Scientist			
Isham, William H	34.00	131.5100	4,471.34
Stefanosky, Susan L	1.00	131.5100	131.51
Project Control			
Ventures, Ameedylyn	2.00	101.9700	203.94
Senior Technician			
Burgess, Torrey	10.50	62.5900	657.20
Ebentier, Darcy	12.50	62.5900	782.38
Nguyen, Tien	12.40	62.5900	776.12
Pippen, Ross P	11.00	62.5900	688.49
Teague, Lydia C	30.00	62.5900	1,877.71
Sr. Civil Engineer			
Cotts, Anthony M	15.50	138.7700	2,150.94
Water Quality Project Manager			
Renfrew, David S	17.50	141.0200	2,467.85
Labor	297.90		29,102.04

Sub Lab Analysis	980.00
Materials & Supplies	198.74
Trav-Mileage Expense	109.53
Trav-Car Rental	322.12
Fees	60.00
Field Eq Usage	3,780.00
Weston Laboratory Analysis	1,080.00
Expenses	6,530.39
Invoice Total	35,632.43 ✓

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

INVOICE
12506

F.E.I.N. 23-1501990
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Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP MONITORING PHASE II

Weston Project No.
14974.212.002

Weston Invoice No.
MAR2013-02927

Project Desription
County of SD - Phase II HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0001 - RBF-SD HMPII Project Management								
019077	Cropper, Scott	1/11/2013	1/8/2013	2.5		3	1533	R
	Total: Cropper, Scott			**2.5**				
018233	Ventures, Ameedylyn	1/25/2013	1/23/2013	0.5		13	1533	R
		1/25/2013	1/24/2013	1.5		13	1533	R
	Total: Ventures, Ameedylyn			**2.0**				
Total: 14974.212.002.0001				**4.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0004 - RBF-SD HMPII Wet Event Monitoring								
080187	Burgess, Torrey	12/14/2012	12/13/2012	8.0		SUPP	1533	R
		12/14/2012	12/13/2012	2.5		SUPP	1533	O1
	Total: Burgess, Torrey			**10.5**				
017996	Campagna, Laurence	1/11/2013	1/8/2013	4.0		2	1533	R
		1/11/2013	1/11/2013	8.0		2	1533	R
		2/8/2013	2/5/2013	1.5		3	1533	R
		2/15/2013	2/12/2013	1.0		5	1533	R
	Total: Campagna, Laurence			**14.5**				
019890	Cotts, Anthony	1/25/2013	1/25/2013	6.0		LT	1533	R
		1/25/2013	1/25/2013	2.0		LT	1533	R
		1/25/2013	1/25/2013	6.0		SUPP	1533	UOT
		2/1/2013	1/28/2013	1.0		13	1533	R
		2/1/2013	1/29/2013	0.5		13	1533	R
	Total: Cotts, Anthony			**15.5**				

019077	Cropper, Scott	1/11/2013	1/10/2013	4.0		4	1533	R
		1/11/2013	1/11/2013	8.0		4	1533	R
		1/18/2013	1/14/2013	2.0		1	1533	R
		1/25/2013	1/22/2013	3.0		5	1533	R
		1/25/2013	1/24/2013	8.0		5	1533	R
		1/25/2013	1/24/2013	1.0		12	1533	O1
		2/1/2013	1/28/2013	3.0		2	1533	R
		2/1/2013	1/30/2013	1.0		2	1533	R
		2/8/2013	2/4/2013	0.5		5	1533	R
		2/8/2013	2/8/2013	8.0		5	1533	R
		2/8/2013	2/8/2013	4.0		SUPP	1533	O1
		2/8/2013	2/8/2013	5.0		SUPP	1533	OTD
		2/22/2013	2/19/2013	4.0		8	1533	R
		2/22/2013	2/19/2013	4.0		9	1533	O1
		2/22/2013	2/19/2013	1.0		11	1533	OTD
	Total: Cropper, Scott			**56.5**				
080482	Ebentier, Darcy	12/14/2012	12/13/2012	8.0		SUPP	1533	R
		12/14/2012	12/13/2012	4.0		SUPP	1533	O1
		12/14/2012	12/13/2012	0.5		SUPP	1533	OTD
	Total: Ebentier, Darcy			**12.5**				
019372	Engelhorn, Garth	1/4/2013	1/3/2013	1.0		12	1533	R
		1/4/2013	1/4/2013	0.5		12	1533	R
		1/11/2013	1/9/2013	1.0		7	1533	R
		1/11/2013	1/10/2013	1.5		7	1533	R
		1/11/2013	1/7/2013	3.0		9	1533	R
		1/11/2013	1/8/2013	1.5		9	1533	R
		1/11/2013	1/9/2013	2.0		9	1533	R
		1/11/2013	1/11/2013	4.0		9	1533	R
		1/18/2013	1/14/2013	3.0		7	1533	R
		1/18/2013	1/15/2013	1.0		7	1533	R
		1/25/2013	1/24/2013	1.0		13	1533	R
		1/25/2013	1/24/2013	1.0		14	1533	R
		1/25/2013	1/25/2013	2.0		15	1533	UOT
		2/1/2013	1/26/2013	0.5		6	1533	R
		2/1/2013	1/28/2013	0.5		6	1533	R
		2/1/2013	1/29/2013	1.5		6	1533	R
		2/8/2013	2/8/2013	2.5		6	1533	R
		2/15/2013	2/9/2013	0.5		7	1533	R
		2/15/2013	2/12/2013	0.5		7	1533	R
		2/22/2013	2/18/2013	1.0		7	1533	R
		2/22/2013	2/19/2013	2.0		7	1533	R
		2/22/2013	2/20/2013	0.5		7	1533	R
	Total: Engelhorn, Garth			**32.0**				

19363	Huber, Sara	2/15/2013	2/15/2013	8.0		LT	1533	R
		2/15/2013	2/15/2013	5.5		SUPP	1533	UOT
	Total: Huber, Sara			**13.5**				
018016	Isham, William	1/25/2013	1/24/2013	1.0		8	1533	R
		1/25/2013	1/25/2013	8.0		LT	1533	R
		1/25/2013	1/25/2013	2.0		SUPP	1533	UOT
		1/25/2013	1/25/2013	4.0		SUPP	1533	UOT
		2/1/2013	1/26/2013	4.0		1	1533	R
		2/1/2013	1/28/2013	1.0		1	1533	R
		2/22/2013	2/19/2013	7.0		2	1533	R
		2/22/2013	2/20/2013	7.0		2	1533	R
	Total: Isham, William			**34.0**				
018022	Margolis, Amy	1/25/2013	1/25/2013	8.0		11	1533	R
		1/25/2013	1/25/2013	6.0		SUPP	1533	R
	Total: Margolis, Amy			**14.0**				
019581	Mathis, Melissa	1/4/2013	1/4/2013	2.0		6	1533	R
		1/18/2013	1/14/2013	4.0		3	1533	R
		2/1/2013	1/28/2013	1.0		3	1533	R
		2/1/2013	1/30/2013	1.0		3	1533	R
		2/1/2013	1/31/2013	1.0		3	1533	R
		2/1/2013	2/1/2013	3.0		11	1533	O1
		2/8/2013	2/5/2013	2.0		4	1533	R
		2/15/2013	2/12/2013	1.0		4	1533	R
		2/15/2013	2/13/2013	1.5		4	1533	R
		2/22/2013	2/18/2013	1.0		5	1533	R
		2/22/2013	2/21/2013	1.0		5	1533	R
	Total: Mathis, Melissa			**18.5**				
080373	Nguyen, Tien	1/25/2013	1/25/2013	8.0		SUPP	1533	R
		1/25/2013	1/25/2013	4.0		SUPP	1533	O1
		1/25/2013	1/25/2013	0.4		SUPP	1533	OTD
	Total: Nguyen, Tien			**12.4**				
020012	Pippen, Ross	1/18/2013	1/15/2013	3.0		1	1533	R
		1/25/2013	1/24/2013	8.0		5	1533	R
	Total: Pippen, Ross			**11.0**				

018565	Renfrew, David	1/4/2013	1/2/2013	0.5		7	1533
		1/4/2013	1/4/2013	0.5		7	1533
		1/11/2013	1/7/2013	3.0		4	1533
		1/11/2013	1/8/2013	0.5		4	1533
		1/11/2013	1/9/2013	3.0		4	1533
		1/11/2013	1/10/2013	0.5		4	1533
		1/25/2013	1/24/2013	1.0		13	1533
		1/25/2013	1/25/2013	0.5		13	1533
		1/25/2013	1/25/2013	2.0		14	1533
		2/1/2013	1/26/2013	0.5		4	1533
		2/1/2013	1/28/2013	0.5		4	1533
		2/1/2013	1/29/2013	1.5		4	1533
		2/1/2013	1/31/2013	0.5		4	1533
		2/8/2013	2/6/2013	0.5		9	1533
		2/8/2013	2/7/2013	0.5		9	1533
		2/8/2013	2/8/2013	1.0		9	1533
		2/22/2013	2/18/2013	0.5		8	1533
		2/22/2013	2/19/2013	0.5		8	1533
	Total: Renfrew, David			**17.5**			
004512	Stefanosky, Susan	1/25/2013	1/24/2013	1.0		9	1533
	Total: Stefanosky, Susan			**1.0**			
020783	Teague, Lydia	1/11/2013	1/11/2013	5.0		3	1533
		1/18/2013	1/16/2013	3.0		1	1533
		1/18/2013	1/18/2013	5.0		1	1533
		2/1/2013	1/28/2013	5.0		1	1533
		2/1/2013	1/30/2013	1.0		1	1533
		2/8/2013	2/4/2013	2.0		1	1533
		2/8/2013	2/6/2013	2.0		1	1533
		2/15/2013	2/11/2013	1.0		2	1533
		2/15/2013	2/13/2013	0.5		2	1533
		2/15/2013	2/15/2013	2.0		2	1533
		2/22/2013	2/18/2013	1.5		1	1533
		2/22/2013	2/22/2013	2.0		1	1533
	Total: Teague, Lydia			**30.0**			
Total: 14974.212.002.0004				**293.4**			

Total: 14974.212.002 COUNTY OF SD - Phase II HMP Monitoring	**297.9**

Approved by: Dave Renfrew

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: MAR2013-02927

Invoice Date: 03/18/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 04/17/2013

Billing Period From: 12/29/2012
To: 02/22/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist I			
Cropper, Scott J	2.50	86.5400	216.35
Project Control			
Ventures, Ameedylyn	2.00	101.9700	203.94
Labor	4.50		420.29
Fees			60.00
Expenses			60.00
Task Total			480.29 ✓

05P-0606 2/12

INVOICE
12511

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: MAR2013-02927

Project Number: 14974.212.002.0001
Project Name: RBF-SD HMPII Project Management

Billing Currency USD
Invoice Date: 03/18/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Fees					
Fees	Fees	500608066	2013/1	RENFREW DAVID	573255	30.00
		500608946	2013/2	CROPPER SCOTT J	571433	30.00
						60.00
Total: Fees						60.00 ✓
Expenses						

05P-0606 2/12

INVOICE
12512

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

ExpenseTrack

P-Card Report --- Step 4. Confirm P-Card

P-Card Expense Confirm

Welcome, David S. Renfrew

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

JAN 24 2013

amw

Header Information

Exp#:	573255	Status:	Submitted on 1/24/2013
Employee:	Renfrew, David S. (018565)	Entered By:	Renfrew, David S.
Approver:	Crumpacker, Andrea L.	Total Amount:	$263.61
		Total Out of Pocket:	$86.61
Purpose:	Jan Expenses		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
1/10/2013	Mileage	Mileage	Personal vehicle use for SLR-TWAS-2 Site Visit	13245.212.001.3001	$19.98
1/9/2013	Gas	Palomar Mobile	Gas for Company Truck	99067.600.006	*$100.00
1/7/2013	~~Miscellaneous~~ Pus	County of San Diego	Fee for County Badges for Dave Renfrew and Garth Engelhorn	14974.212.002.0001	*$30.00
1/22/2013	Mileage	Mileage	Personal vehicle use to/from Copermittee Monitoring Meeting	13245.212.001.3001	$33.30
1/24/2013	Mileage	Mileage	Personal vehicle use to/from Copermittee Management Meeting	13245.212.001.3001	$3.33
1/4/2013	Conference Fees	CASQA	CASQA Annual Regulatory Updates Meeting Webcast	00834.851.901	*$75.00
1/24/2013	Check Fee	US Bank	Cehck Fee for #1106	91533	$2.00

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
00834.851.901		
	Conference Fees	$75.00
Totals	00834.851.901	$75.00
13245.212.001.3001		
	Mileage	$56.61
Totals	13245.212.001.3001	$56.61
14974.212.002.0001		
	Miscellaneous	$30.00
Totals	14974.212.002.0001	$30.00
91533		
	Check Fee	$2.00

Amwelsard - 1/24/13

PALOMAR MOBIL
899 PALOMAR AIRPORT
CARLSBAD, CA 92009

Sale
#VISA XXXXXXXX8603
Auth. # 013605
Inv. # GQY3249
9761164
Date 01/09/13 16:44
ATR MANAGEMENT
CARLSBAD CA
Pump # 5 Regular
Gallons 25.005
Price/Gal ..$ 3.999
Fuel Sale ..$ 100.00

THANK YOU FOR
CHOOSING MOBIL

RECEIPT DATE 1-7-13 No. 961924

RECEIVED FROM David Renfrew & Garth Engelhorn $ 30.00

DOLLARS

○ FOR RENT
○ FOR badge fee

ACCOUNT		
PAYMENT	30	00
BAL DUE		

☒ CASH
○ CHECK
○ MONEY ORDER
○ CREDIT CARD

FROM _____ TO _____

BY KLA

ExpenseTrack [redacted]

Confirmation Page

Welcome, Scott J. Cropper

Home Reports Help Exit

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

JAN 29 2013

Header Information

Exp#:	571433	Status:	Approved on 1/28/2013
Employee:	Cropper, Scott J. (019077)	Entered By:	Cropper, Scott J.
Approver:	Renfrew, David S.	Total Amount:	$78.28
		Total Out of Pocket:	$0.00
Purpose:	Badge fee for HMP project, snacks for storm event, and gas for auto rental.		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
1/8/2013	~~Miscellaneous~~ Fees	County Security Services	2 - Badge fee ($15.00each).	14974.212.002.0001	*$30.00
1/25/2013	Lunch	7-Eleven	Snacks for County SID storm event.	13245.212.008.8888	*$10.27
1/26/2013	Gas - Auto Rental	G&M Foodmart	Snacks for County SID storm event.	13245.212.001.3001	*$38.01

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
13245.212.001.3001		
	Gas - Auto Rental	$38.01
Totals	13245.212.001.3001	$38.01
13245.212.008.8888		
	Lunch	$10.27
Totals	13245.212.008.8888	$10.27
14974.212.002.0001		
	Miscellaneous	$30.00
Totals	14974.212.002.0001	$30.00

Verification _____ 1/29/2013

571433

County Security Services
5560 Overland Ave Suite 210
San Diego, CA 92123

(1)

RECEIPT DATE 1/8/13 No. 961926

RECEIVED FROM Scott Cropper $30

Thirty 00/100 DOLLARS

FOR RENT
X FOR Badge Fee Laurence Campagna

ACCOUNT	
PAYMENT	30
BAL DUE	

CASH
CHECK #1054
MONEY ORDER
CREDIT CARD

FROM TO

BY Eric Schell

Westcorp Solutions

7-ELEVEN (2)
1118 S. EL CAMINO REA
SAN CLEMENTE CA 926724203
9494983120
STORE#: 13789
THANKS FOR SHOPPING
AT 7-ELEVEN

1	7SmartCmboClubBrnBrd	3.99F
1	TunaSldSwch	3.99F
1	SJ KpprdTrykt2z	2.29F

SUBTOTAL 10.27
TOTAL DUE 10.27
VISA 10.27
CROPPER/SCOTT J
ACCT#: **********0604
APPROVAL#: 020215 AUTH CODE: 0
APPROVAL TIME: 212358
STORE#: 13789
TERM# :00071378921 08
REF# : 95000 58 006 1
APPROVED

CUSTOMER AGREES TO PAY THE ABOVE
TOTAL AMOUNT ACCORDING TO THE CARD
HOLDERS AGREEMENT

OH THANK HEAVEN
FOR 7-ELEVEN
T#01 OP14 TRN5542 01/25/2013 09:23 pm

G&M FOODMART #46
850 PALOMAR AIRP.
STN 00202434 (3)

01/26/13 11:30:56

E/VISA
xxxxxxxxxxxx0604
Invoice# 3474872
Auth# 030032

Pump#: 7
9.272G @ $ 4.099/G
1 Un/Self $ 38.01

Total $ 38.01

Learn how to
EARN REWARDS
with a Chevron
or Texaco
Credit Card
See application
for details

THANK YOU
PLEASE COME AGAIN

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Date: 03/18/2013

Invoice Number: MAR2013-02927

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event Monitoring
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 04/17/2013

Billing Period From: 12/29/2012
To: 02/22/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	13.50	119.9300	1,619.06
Environmental Scientist I			
Cropper, Scott J	56.50	86.5400	4,889.51
Mathis, Melissa E	18.50	86.5400	1,600.99
Environmental Scientist II			
Campagna, Laurence	14.50	100.7600	1,461.02
Margolis, Amy	14.00	100.7600	1,410.64
Environmental Scientist III			
Engelhorn, Garth	32.00	115.5300	3,696.99
Environmental Senior Scientist			
Isham, William H	34.00	131.5100	4,471.34
Stefanosky, Susan L	1.00	131.5100	131.51
Senior Technician			
Burgess, Torrey	10.50	62.5900	657.20
Ebentier, Darcy	12.50	62.5900	782.38
Nguyen, Tien	12.40	62.5900	776.12
Pippen, Ross P	11.00	62.5900	688.49
Teague, Lydia C	30.00	62.5900	1,877.71
Sr. Civil Engineer			
Cotts, Anthony M	15.50	138.7700	2,150.94
Water Quality Project Manager			
Renfrew, David S	17.50	141.0200	2,467.85
Labor	293.40		28,681.75

Sub Lab Analysis	980.00
Materials & Supplies	198.74
Trav-Mileage Expense	109.53
Trav-Car Rental	322.12
Field Eq Usage	3,780.00
Weston Laboratory Analysis	1,080.00
Expenses	6,470.39

Task Total 35,152.14 ✓

05P-0606 2/12

INVOICE
12517

F.E.I.N. 23-1501990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: MAR2013-02927

Project Number: 14974.212.002.0004
Project Name: RBF-SD HMPII Wet Event Monitoring

Billing Currency USD
Invoice Date: 03/18/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Sub Lab Analysis					
Subcontracted Lab An	Laboratory Analytical Services	500605369	2013/1	ENVIRO MATRIX ANALYTICAL	3010376	350.00
		500605370	2013/1		3010374	280.00
		500605371	2013/1		3010375	350.00
Total: Sub Lab Analysis						980.00
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500603389	2013/1	COTTS ANTHONY M	568291	4.07
		500603398	2013/1	MATHIS MELISSA E	568809	29.61
		500603417	2013/1	CAMPAGNA LAURENCE	569337	57.79
		500603427	2013/1	CROPPER SCOTT J	568342	12.67
		500603439	2013/1	CAMPAGNA LAURENCE	566270	70.89
		500606163	2013/1	ISHAM WILLIAM	570649	5.38
		500609067	2013/2		573871	7.78
		500609084	2013/2	COTTS ANTHONY M	573699	4.08
		500612527	2013/2	CROPPER SCOTT J	575307	6.47
Total: Materials & Supplies						198.74
Line Description:	Trav-Mileage Expense					
Travel-Mileage Expen	Travel-Mileage Expense	500606163	2013/1	ISHAM WILLIAM	570649	36.08
		500608909	2013/2		573556	73.45
Total: Trav-Mileage Expense						109.53
Line Description:	Trav-Car Rental					
Travel-Car Rental	Travel-Car Rental	500603417	2013/1	CAMPAGNA LAURENCE	569337	290.92
		500603427	2013/1	CROPPER SCOTT J	568342	31.20
Total: Trav-Car Rental						322.12
Line Description:	Field Eq Usage					
Field Eq Usage	Waterproof Digital Camera					490.00
	Field Equipment Tool Box					140.00
	Portable Rain Guage					40.00
	Sondtec Flow Tracker					2,400.00
	Top Setting Wading Rod					600.00
	Waders					110.00
Total: Field Eq Usage						3,780.00
Line Description:	Weston Laboratory Analysis					
Weston Lab Analysis	Sediment Mass Analyses		2012/2			1,080.00
Total: Weston Laboratory Analysis						1,080.00
Expenses						6,470.39 ✓

EM902
2012.13

EnviroMatrix Analytical, Inc.

rcl# 5006053369

JAN 08 2013
cm

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
3010376

Invoiced On:
01/03/13

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
12/14/12

Project
Phase I HMP Monitoring

PO Number

Terms
NET 30

Project Number
COUNTY OF SAN DIEGO

Project Manager
Jennifer Beyer

Work Order(s)
12L0478

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
10	Turbidity-Liquid [Normal TAT]	Water	$14.00	$140.00
10	Solids, SSC [Normal TAT]	Water	$21.00	$210.00

Invoice Total: $350.00

INVOICE APPROVAL

DATE REC: 1/08/13

APPROVED BY: Dave Renfrew

SIGNATURE:

PO # 0081053

WO # 14974.212.002.0004.03

RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

E77902
2013.1.3
JCh# 500605370

EnviroMatrix Analytical, Inc.

INVOICE

JAN 08 2013
Arm

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
3010374

Invoiced On:
01/03/13

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
12/14/12

Project
Phase I HMP Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.~~001.0005~~
002.0004.03

Project Manager
Jennifer Beyer

Work Order(s)
12L0475

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
8	Turbidity-Liquid [Normal TAT]	Water	$14.00	$112.00
8	Solids, SSC [Normal TAT]	Water	$21.00	$168.00

Invoice Total: $280.00 L1

INVOICE APPROVAL
DATE REC: 1/10/13
APPROVED BY: Dave Renfrew
SIGNATURE: [signature]
PO # 008/053
WO # 14974.212.002.0004.03 ✓
RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

EM902
2013.1.3
rchk# 5006053 71

EnviroMatrix Analytical, Inc.

JAN 08 2013
amw

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
3010375

Invoiced On:
01/03/13

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
12/14/12

Project
Phase I HMP Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.~~001.0005~~ 002.0004.03

Project Manager
Jennifer Beyer

Work Order(s)
12L0477

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
10	Turbidity-Liquid [Normal TAT]	Water	$14.00	$140.00
10	Solids, SSC [Normal TAT]	Water	$21.00	$210.00

Invoice Total: $350.00

INVOICE APPROVAL

DATE REC: 1/10/13
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 008/053
WO # 14974.212.002.0004.03

RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

ExpenseTrack

Travel & Expense Report

Welcome, Anthony Michael Cotts

Enter Expense Report --- Step 4. Confirm Expense Report

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JAN 07 2013

AM

Header Information

Exp#:	568291	Status:	Submitted on 12/14/2012
Employee:	Cotts, Anthony Michael (019890)	Begin Date:	12/13/2012
Entered By:	Cotts, Anthony Michael	End Date:	12/13/2012
Approver:	Renfrew, David S.	Time Departed:	2:00 AM
Travel Method:	Automobile	Time Returned:	4:00 PM
Purpose:	Expenses while working on HMP monitoring.		
Total Amount:	$31.46 Total Out of Pocket:		$12.60

Detailed Information

Date	Category	City	Description	Project	Amount
12/13/2012	Supplies - Field	San Diego County	Ice for preserving samples.	14974.212.002.0004.02	$4.07
12/13/2012	Breakfast	San Diego County	Escondido	14974.212.002.8888	$14.79
12/13/2012	Lunch	San Diego County	Escondido	14974.212.002.8888	$12.60

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Supplies - Field	$4.07
Totals	14974.212.002.0004.02	$4.07
14974.212.002.8888		
	Breakfast	$14.79
	Lunch	$12.60
Totals	14974.212.002.8888	$27.39

Verification AMWilson - 1/07/2013

568291

CHITO'S TACO SHOP
3440 DEL LAGO BLVD. ESCONDIDO, CA
FOR FASTER SERVICE, PHONE IN YOUR ORDER!
(760)745-0397

12/13/2012 THU

CARNE ASADA BURR T1	$4.65
BREAK BURR HAM T1	$3.80
NO CARNE T1	
BOTTLE WATER T1	$1.25
JUGO T1	$1.99
*** PARA LLEVAR ***	
SUBTOTAL	$11.69
TAX1 AMT	$0.91
TOTAL	$12.60
CASH	$20.00
CHANGE	$7.40

* ORDER# 0092 *
NO.000092 REG 01 EMPL 1 TIME 13:18

Lunch

WELCOME TO
DEL LAGO SHELL
SHELL 57 442 709903
) DEL LAGO BLVD S1H0244
NDIDO, CA.

Descr.	qty	amount
<CUSTOMER COPY>		
ICE (BAG) 8 LB	2	3.78

Sub Total 3.78
Tax 0.29
TOTAL 4.07
CREDIT $ 4.07

XXXX XXXX XXXX 3575 VISA
INVOICE: 990705 AUTH #: 005061

THANKS, COME AGAIN
REG# 0002 CSH# 010 DR# 01 TRAN# 23209
12/13/12 ST# 68529

Ice

DEC 17 2012

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Melissa E. Mathis

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

Header Information			
Exp#:	568809	Status:	Submitted on 12/17/2012
Employee:	Mathis, Melissa E. (019581)	Entered By:	Mathis, Melissa E.
Approver:	Renfrew, David S.	Total Amount:	$29.61
		Total Out of Pocket:	$0.00
Purpose:			

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
11/26/2012	Supplies - Field	Target	Zip lock bags for HMP sampling	14974.212.002.0004.01	*$29.61

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
14974.212.002.0004.01		
	Supplies - Field	$29.61
Totals	14974.212.002.0004.01	$29.61

Verification

568809

~~Colonial 13340.100.008.0002~~

HMP
14974.212
002.0004.01

TARGET
EXPECT MORE PAY LESS.

VISTA SOUTH - 760-208-6111
11/26/2012 01:53 PM EXPIRES 02/24/13

HOME

25301C199	ZIPLOC	T	$3.99
25301C237	ZIPLOC 2 @ $6.19 ea	T	$12.38
25301C271	ZIPLOC	T	$5.99
25301C302	UP FD STRG	T	$4.99

T = CA TAX 8.2500% on	SUBTOTAL	$27.35
$27.35		$2.26
	TOTAL	$29.61
	*0026 VISA CHARGE	$29.61

REC#2-2331-2165-0075-7266-8 VCD#751-252-343

ExpenseTrack

P-Card Expense Confirm

P-Card Report — Step 4. Confirm P-Card

Welcome, Laurence Campagna

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JAN 07 2013

Header Information			
Exp#:	569337	Status:	Submitted on 12/19/2012
Employee:	Campagna, Laurence (017996)	Entered By:	Campagna, Laurence
Approver:	Renfrew, David S.	Total Amount:	$481.19
		Total Out of Pocket:	$0.00
Purpose:	field supplies		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
12/11/2012	Supplies - Field	Home Depot	3 head lamps and batteries for ysi sondes	14974.212.002.0004.01	*$57.79
12/6/2012	Supplies - Field	Carquest Auto	new battery for mis box at SDC-TWAS-1	13245.212.001.3001	*$132.48
12/12/2012	Auto Rental	Enterprise car rental	autos rental for HMP event	14974.212.002.0004.01	*$290.92

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
13245.212.001.3001		
	Supplies - Field	$132.48
Totals	13245.212.001.3001	$132.48
14974.212.002.0004.01		
	Auto Rental	$290.92
	Supplies - Field	$57.79
Totals	14974.212.002.0004.01	$348.71

Verification _____ - 1/07/2013

569337

XIM

More saving.
More doing.™

2430 S MELROSE DRIVE
VISTA, CA 92081 (760)599-4080

1074 00057 87221 12/11/12 12:06 PM
CASHIER SELF CHECK OUT - SCO'57

039953530593 BR5LED3HL <A> 15.98
DEFIANT 3PK 5 LED HEADLIGHTS
039800087379 ENR MAX C8 <A>
ENERGIZER MAX C 8
3@12.47 37.41

SUBTOTAL 53.39
SALES TAX 4.40
TOTAL $57.79
XXXXXXXXXXXX1031 VISA 57.79
AUTH CODE 096592/4572747 TA
P.O.#/JOB NAME: P

1074 57 87221 12/11/2012 8401

RETURN POLICY/DEFINITIONS

	POLICY ID	DAYS	POLICY EXPIRES ON
A	1	90	03/11/2013

THE HOME DEPOT RESERVES THE RIGHT TO LIMIT / DENY RETURNS. PLEASE SEE THE RETURN POLICY SIGN IN STORES FOR DETAILS.

BUY ONLINE PICK-UP IN STORE
AVAILAB[redacted]HOMEDEPOT.COM.
CONVENIE[redacted]T ORDERS
READY[redacted]HOURS!

****

ExpenseTrack

Confirmation Page

Home Reports Help Exit

Welcome, Scott J. Cropper

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

JAN 07 2013

AM

Header Information

Exp#:	568342	Status:	Processed on 12/31/2012
Employee:	Cropper, Scott J. (019077)	Entered By:	Cropper, Scott J.
Approver:	Renfrew, David S.	Total Amount:	$107.23
		Total Out of Pocket:	$0.00
Purpose:	Ice for County of SD(SID, HMP, & MLS/TWAS) samples and gas for auto rental(HMP).		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
12/14/2012	Gas - Auto Rental	G&M Foodmart	8gal. of gas for auto rental for HMP monitoring.	14974.212.002.0004.02	*$31.20
12/14/2012	Supplies - Field	Vons	2 - 20lb. bags of ice.	14974.212.002.0004.02	*$12.67
12/14/2012	Supplies - Field	Vons	2 - 20lb. bags of ice.	13245.212.008.3001	*$12.67
12/14/2012	Supplies - Field	Vons	8 - 20lb. bags of ice.	13245.212.001.3001	*$50.69

76.03

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
13245.212.001.3001		
	Supplies - Field	$50.69
Totals	13245.212.001.3001	$50.69
13245.212.008.3001		
	Supplies - Field	$12.67
Totals	13245.212.008.3001	$12.67
14974.212.002.0004.02		
	Gas - Auto Rental	$31.20
	Supplies - Field	$12.67
Totals	14974.212.002.0004.02	$43.87

Verification AMWelsm - 1/07/2013

568342

VONS

STORE MGR CLAUDINE FERRE 760-729-2771
THANK YOU FOR SHOPPING WITH US

REFRIG/FROZEN

12 QTY PARTY ICE LRG 70.56 B
**** TAX 5.47 BAL 76.03
VF VS XXXXXXXXXXXX0604 76.03
00

CHANGE
NUMBER OF ITEMS = 12
12/14/12 06 00 2142 07 0067 6020

JOIN VONSCLUB AND START SAVING!
Membership is Free and Instant

YOUR CASHIER TODAY WAS DANNI

LET US HEAR FROM YOU!
1 877-723 3929 or visit VONS.COM

VONS STORE #2142
2560 EL CAMINO REAL
CARLSBAD, CA 92008
760 729-2771

BFT CREDIT SALE 2/ 4/ 2 06:59
CARD # XXXXXXXXXXXX0604
REF # 2140 AUTH 00085669

PAYMENT AMOUNT 76.03

1 bag (2016 ice) $5.88
Sales tax (7.75%) .4557
$6.3357 (bag with sales tax)

split to 3 projects:

WO# 14994.212.002.0004.02 (2 bags @ $6.33 = $12.67)
WO# 13245.212.008.3001 (2 bags @ $6.33 = $12.67)
WO# 13245.212.001 3001 (8 bags @ $6.3357 = $50.69)

ExpenseTrack [redacted] P-Card Expense Confirm

P-Card Report -- Step 4. Confirm P-Card [redacted] Welcome, Laurence Campagna

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JAN 07 2013

Header Information			
Exp#:	566270	Status:	Submitted on 12/3/2012
Employee:	Campagna, Laurence (017996)	Entered By:	Campagna, Laurence
Approver:	Renfrew, David S.	Total Amount:	$101.70
		Total Out of Pocket:	$0.00
Purpose:	field work		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
11/1/2012	Supplies - Field	Home Depot	3 locks, and equipment to build YSI enclosures. - split receipt	14974.212.002.0004.01	*~~$70.91~~ 70.89
10/30/2012	Supplies - Field	Home Depot	pvc conduit for sampler put in at BVC city of vista	13332.112.003.0002	*$30.79

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
13332.112.003.0002		
	Supplies - Field	$30.79
Totals	13332.112.003.0002	$30.79
14974.212.002.0004.01		
	Supplies - Field	$70.91
Totals	14974.212.002.0004.01	$70.91

Verification _____ - 1/07/2013

Split Receipt

More saving. More doing.

2430 S MELROSE DRIVE
VISTA CA 92081 (760)599-4080

1074 00059 15632 10/30/12 02:31 PM
CASHIER SELF CHECK OUT - SC0159

071649395604 LOCK. <A>
2" SET-YOUR-OWN COMBO 41.88
3@13.96
030699151240 SAFETY HASP <A>
4.5" ADJ STAPLE SAFETY HASP ZINC 14.91
3@4.97
018576000056 FLEX CPLG <A>
2" CI/PLS/CU FLEX COUPLING 8.70
[illegible] HATTER <A>
ENERGIZER [illegible] BATT SPRING TOP 125.76
[illegible]

Hasp

$65.49
+ 5.40 (sales tax 8.25%)
$70.89 supplies

General

SUBTOTAL 191.25
SALES TAX 15.78
TOTAL $207.03
[illegible] 207.03
XXXXXXXXXXXXXXXX1631 VISA TA
AUTH CODE 005308 [illegible]
P.O.#/JOB NAME: P

1074 50 15632 10/30/2012 2568

RETURN POLICY DEFINITIONS
POLICY ID DAYS POLICY EXPIRES ON
A 1 90 01/28/2013
THE HOME DEPOT RESERVES THE RIGHT TO LIMIT / [illegible] RETURNS. PLEASE SEE THE RETURN [illegible] IN STORES FOR.

ExpenseTrack [redacted] Travel & Expense Report

Enter Expense Report --- Step 4. Confirm Expense Report [redacted] Welcome, William H. Isham

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

JAN 07 2013

AMV

Header Information			
Exp#:	570649	Status:	Submitted on 1/2/2013
Employee:	Isham, William H. (018016)	Begin Date:	12/13/2012
Entered By:	Isham, William H.	End Date:	12/13/2012
Approver:	Renfrew, David S.	Time Departed:	5:00 AM
Travel Method:	Automobile	Time Returned:	5:00 PM
Purpose:	HMP stormwater monitoring		
Total Amount:	$41.46 Total Out of Pocket:		$41.46

Detailed Information

Date	Category	City	Description	Project	Amount
12/13/2012	Mileage	San Diego	personal vehicle use 65 miles	14974.212.002.0004.02	$36.08
12/13/2012	Supplies - Field	San Diego	ice	14974.212.002.0004.02	$5.38

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Mileage	$36.08
	Supplies - Field	$5.38
Totals	14974.212.002.0004.02	$41.46

Verification AMWelsh - 1/07/13

570649

7-ELEVEN
901 PALOMAR AIRPORT R
CARLSBAD CA 92009(110
7609319723
STORE#: 2710
CH THANK HEAVEN
FOR 7-11

Liberty 2010 4.99B

A# ON 4.93 4.99
0.33
6.00
0.62

PIZZA SLICES ON/ $1.00
GLAZED DONUTS 3 FOR $2.00

ExpenseTrack

Travel & Expense Report

Enter Expense Report --- Step 4. Confirm Expense Report

Welcome, William H. Isham

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JAN 29 2013

Header Information			
Exp#:	573871	Status:	Submitted on 1/29/2013
Employee:	Isham, William H. (018016)	Begin Date:	1/25/2013
Entered By:	Isham, William H.	End Date:	1/25/2013
Approver:	Renfrew, David S.	Time Departed:	8:00 PM
Travel Method:	Automobile	Time Returned:	5:00 PM
Purpose:	HMP--forgot to enter charge for ice		
Total Amount:	$7.78	Total Out of Pocket:	$7.78

Detailed Information

Date	Category	City	Description	Project	Amount
1/25/2013	Supplies - Field	San Diego County	sample ice	14974.212.002.0004.02	$7.78

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Supplies - Field	$7.78
Totals	14974.212.002.0004.02	$7.78

Verification _____ 1/29/2013

573871

WELCOME TO CHEVRON

ron, 299
MIRA MESA BLVD
DIEGO, CA 92121

01/25/2013 6:09:08 AM
Register: 1 Trans #: 9127 Op ID: 13
Your cashier: MARTIN

	$3.89
E	$3.89
Subtotal =	$7.78
Tax =	$0.00
Total =	$7.78
Change Due =	$-0.22
sh	$8.00

THANK YOU FOR SHOPPING AT CHEVRON

ExpenseTrack

Travel & Expense Report

Enter Expense Report --- Step 4. Confirm Expense Report

Welcome, Anthony Michael Cotts

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JAN 29 2013

Header Information			
Exp#:	573699	Status:	Submitted on 1/28/2013
Employee:	Cotts, Anthony Michael (019890)	Begin Date:	1/25/2013
Entered By:	Cotts, Anthony Michael	End Date:	1/25/2013
Approver:	Renfrew, David S.	Time Departed:	8:00 AM
Travel Method:	Automobile	Time Returned:	5:00 PM
Purpose:	HMP Monitoring at Saratoga Site (UH-1).		
Total Amount:	$18.86	Total Out of Pocket:	$11.83

Detailed Information

Date	Category	City	Description	Project	Amount
1/25/2013	Supplies - Field	San Diego County	Ice to preserve samples.	14974.212.002.0004.02	$4.08
1/25/2013	Lunch	San Diego County	3440 Del Lago, Escondido, CA	14974.212.002.8888	$11.83
1/25/2013	Incidentals	San Diego County	3440 Del Lago, Escondido, CA	14974.212.002.8888	$2.95

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Supplies - Field	$4.08
Totals	14974.212.002.0004.02	$4.08
14974.212.002.8888		
	Incidentals	$2.95
	Lunch	$11.83
Totals	14974.212.002.8888	$14.78

Verification AMWelsm - 1/29/13

573699

ICE

WELCOME TO
DEL LAGO SHELL
SHELL 57 442 709903
3480 DEL LAGO BLVD S1H0244
ESCONDIDO, CA.

Descr.	qty	amount
<CUSTOMER COPY>		
T ICE (BAG) 8 LB	2	3.78
Sub Total		3.78
Tax		0.30
TOTAL		4.08
CREDIT	$	4.08

XXXX XXXX XXXX 7276 VISA
INVOICE: 532788 AUTH #: 020444

THANKS,COME AGAIN
REG# 0003 CSH# 010 DR# 01 TRAN# 37584
01/25/13 10:37:32 ST# 68529

INC.

STARBUCKS Store #6661
3440 Del Lago Blvd.
Escondido, CA (760) 489-6550

CHK 719774
01/25/2013 10:32 AM
1798893 Drawer: 2 Reg: 1

Tr Icd Grt Shk	2.95
Visa	2.95
XXXXXXXXXXXX7276	
Subtotal	2.95
Total	2.95
Change Due	$0.00

---------- Check Closed ----------
01/25/2013 10:32:52AM

Have you discovered our easy-drinking Blonde roast coffee? So mellow, you'll be surprised it's Starbucks.

CHITO'S TACO SHOP
3440 DEL LAGO BLVD. ESCONDIDO, CA
FOR FASTER SERVICE, PHONE IN YOUR ORDER!
(760)745-0397

DATE	01/25/2013	FRI
CARNE ASADA BURR T1		$4.65
CARNE ASADA FRIES T1		$4.70
MED COKE T1		$1.60
*** PARA LLEVAR ***		
SUBTOTAL		$10.95
TAX1 AMT		$0.88
TOTAL		$11.83
CASH		$11.83
* ORDER# 0039 *		
NO.000038 REG 01 EMPL 1	TIME 10:22	

LUNCH

ExpenseTrack

P-Card Expense Confirm

P-Card Report — Step 4. Confirm P-Card

Welcome, Scott J. Cropper

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FEB 25 2013

Header Information			
Exp#:	575307	Status:	Submitted on 2/15/2013
Employee:	Cropper, Scott J. (019077)	Entered By:	Cropper, Scott J.
Approver:	Renfrew, David S.	Total Amount:	$187.70
		Total Out of Pocket:	$75.12
Purpose:	Expenses for SD County stormwater project.		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
2/5/2013	Supplies - Field	Denaults	12-10 gauge connectors.	13245.212.007.3001	*$9.07
2/9/2013	Supplies - Field	Vons	14- 20lb bags of ice.	13245.212.007.3001	*$90.57
2/9/2013	Supplies - Field	Vons	1 - 20lb bags of ice.	13332.112.003.0004	*$6.47
2/9/2013	Supplies - Field	Vons	1 - 20lb bags of ice.	14974.212.002.0004.02	*$6.47
2/9/2013	Mileage	Self	44 miles used on SD County MLS/TWAS stormwater project.	13245.212.007.3001	$24.86
2/9/2013	Dinner	Chito's Taco Shop	Dinner for field crew for HMP monitoring.	14974.212.002.8888	*$11.12
2/9/2013	Supplies - Field	AMPM ARCO	8 - 20lb bags of ice.	13245.212.007.3001	*$39.14

103.51

44 miles

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
13245.212.007.3001		
	Mileage	$24.86
	Supplies - Field	$138.78
Totals	13245.212.007.3001	$163.64
13332.112.003.0004		
	Supplies - Field	$6.47
Totals	13332.112.003.0004	$6.47
14974.212.002.0004.02		
	Supplies - Field	$6.47

Anderson - 2/25/2013

VONS (2,3,4)

STORE MGR CLAUDINE FERRI 760-729-2471
THANK YOU FOR SHOPPING WITH US!

REFRIG/FROZEN 95.84

16 QTY PARTY ICE LRG 95.84 B ÷16 bags = $5.99 ea
*** TAX 7.67 BAL 103.51
VF VS XXXXXXXXXXXX0604 103.51

CHANGE .00
NUMBER OF ITEMS 16
2/09/13 09:58 2142 07 0185 6280

1 bag (20lb ice) $5.99
sales tax (8%) .4792
$6.4692 / bag with sales tax

split to 3 projects:

WO# 13245.212.007.3001 (14 bags @ $6.4692 = $90.57)
WO# 13332.112.003.0004 (1 bag @ $6.47 = $6.47)
WO# 14974.212.002.0004.02 (1 bag @ $6.47 = $6.47)

ExpenseTrack [redacted] Travel & Expense Report

Enter Expense Report --- Step 4. Confirm Expense Report

Welcome, William H. Isham

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

JAN 07 2013

Header Information			
Exp#:	570649	Status:	Submitted on 1/2/2013
Employee:	Isham, William H. (018016)	Begin Date:	12/13/2012
Entered By:	Isham, William H.	End Date:	12/13/2012
Approver:	Renfrew, David S.	Time Departed:	5:00 AM
Travel Method:	Automobile	Time Returned:	5:00 PM
Purpose:	HMP stormwater monitoring		
Total Amount:	$41.46	Total Out of Pocket:	$41.46

Detailed Information

Date	Category	City	Description	Project	Amount
12/13/2012	Mileage	San Diego	personal vehicle use 65 miles @.555/mi	14974.212.002.0004.02	$36.08
12/13/2012	Supplies - Field	San Diego	ice	14974.212.002.0004.02	$5.38

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Mileage	$36.08
	Supplies - Field	$5.38
Totals	14974.212.002.0004.02	$41.46

Verification _____ - 1/07/13

570649

ExpenseTrack [redacted] Travel & Expense Report

Enter Expense Report -- Step 4. Confirm Expense Report

Welcome, William H. Isham

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

JAN 29 2013

Header Information

Exp#:	573556	Status:	Submitted on 1/28/2013
Employee:	Isham, William H. (018018)	Begin Date:	1/25/2013
Entered By:	Isham, William H.	End Date:	1/25/2013
Approver:	Renfrew, David S.	Time Departed:	6:00 AM
Travel Method:	Automobile	Time Returned:	6:00 PM
Purpose:	HMP wet weather event		
Total Amount:	$89.22	Total Out of Pocket:	$87.22

Detailed Information

Date	Category	City	Description	Project	Amount
1/25/2013	Lunch	San Diego County	mira mesa	14974.212.002.0004.02	$13.77
1/25/2013	Mileage	San Diego County	personal vehicle 70 mile .565/mi	14974.212.002.0004.02	$73.45
1/25/2013	Check Fee	San Diego County	check fee for OOP expenses'	99067.600.006	$2.00

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Lunch	$13.77
	Mileage	$73.45
Totals	14974.212.002.0004.02	$87.22
99067.600.006		
	Check Fee	$2.00
Totals	99067.600.006	$2.00

Verification _____ 1/28/13

ExpenseTrack

P-Card Expense Confirm

P-Card Report — Step 4. Confirm P-Card

Welcome, Laurence Campagna

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

JAN 07 2013

Header Information			
Expt#:	569337	Status:	Submitted on 12/19/2012
Employee:	Campagna, Laurence (017996)	Entered By:	Campagna, Laurence
Approver:	Renfrew, David S.	Total Amount:	$481.19
		Total Out of Pocket:	$0.00
Purpose:	field supplies		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
12/11/2012	Supplies - Field	Home Depot	3 head lamps and batteries for ysi sondes	14974.212.002.0004.01	*$57.79
12/6/2012	Supplies - Field	Carquest Auto	new battery for mis box at SDC-TWAS-1	13245.212.001.3001	*$132.48
12/12/2012	Auto Rental	Enterprise car rental	autos rental for HMP event	14974.212.002.0004.01	*$290.92

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
13245.212.001.3001		
	Supplies - Field	$132.48
Totals	13245.212.001.3001	$132.48
14974.212.002.0004.01		
	Auto Rental	$290.92
	Supplies - Field	$57.79
Totals	14974.212.002.0004.01	$348.71

Verification _____ - 1/07/2013

ENTERPRISE RENT-A-CAR COMPANY OF LOS ANGELES, 1060 AUTO CENTER CT STE M, CARLSBAD, CA 920084321 (760) 931-1111

RENTAL AGREEMENT 122601
REF# 45NL4Z

RENTER
CAMPAGNA, LAURENCE

ADDITIONAL DRIVER
CROPPER, SCOTT

DATE & TIME OUT
12/12/2012 10:07 AM
DATE & TIME IN
12/14/2012 02:54 PM

BILLING CYCLE
24-HOUR

VEH #1 2013 CHEV TAHO B1T2
VIN# 1GNSCBE04DR160038
LIC# 6XRW660
MILES DRIVEN 79

SUMMARY OF CHARGES

Charge Description	Date	Quantity	Per	Rate	Total
TIME & DISTANCE	12/12 - 12/14	3	DAY	$90.00	$270.00
REFUELING CHARGE	12/12 - 12/14				$0.00
				Subtotal:	$270.00
Taxes & Surcharges					
SALES TAX	12/12 - 12/14			7.75%	$20.92
				Total Charges:	$290.92
Total Amount Due					$0.00

PAYMENT INFORMATION

AMOUNT PAID	TYPE	CREDIT CARD NUMBER
$290.92	Visa	xxxxxxxxxxxx1031 PENDING

12/14/2012

ExpenseTrack

Confirmation Page

Home Reports Help Exit

Welcome, Scott J. Cropper

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

JAN 07 2013

AM

Header Information			
Exp#:	568342	Status:	Processed on 12/31/2012
Employee:	Cropper, Scott J. (019077)	Entered By:	Cropper, Scott J.
Approver:	Renfrew, David S.	Total Amount:	$107.23
		Total Out of Pocket:	$0.00
Purpose:	Ice for County of SD(SID, HMP, & MLS/TWAS) samples and gas for auto rental(HMP).		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
12/14/2012	Gas - Auto Rental	G&M Foodmart	8gal. of gas for auto rental for HMP monitoring.	14974.212.002.0004.02	*$31.20
12/14/2012	Supplies - Field	Vons	2 - 20lb. bags of ice.	14974.212.002.0004.02	*$12.67
12/14/2012	Supplies - Field	Vons	2 - 20lb. bags of ice.	13245.212.008.3001	*$12.67
12/14/2012	Supplies - Field	Vons	8 - 20lb. bags of ice.	13245.212.001.3001	*$50.69

76.03

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
13245.212.001.3001		
	Supplies - Field	$50.69
Totals	13245.212.001.3001	$50.69
13245.212.008.3001		
	Supplies - Field	$12.67
Totals	13245.212.008.3001	$12.67
14974.212.002.0004.02		
	Gas - Auto Rental	$31.20
	Supplies - Field	$12.67
Totals	14974.212.002.0004.02	$43.87

Verification AMWelcom - 1/07/2013

568342

1

B&M FOODMART #46
850 PALOMAR AIRP RD
CARLSBAD, CA. 92008

*** FUEL ONLY RECEIPT ***

Date/Time 12/14/12 14:43:02

Pump #10 1 Unleaded
Gallons 8.001
Price/Gal .. $3.949
Fuel Sale .. $31.20

Thank You
Call Again

EQUIPMENT COST RECOVERY

Project Name: RBF/County of SD - HMP Monitoring Phase II (Part I)
Work Order Number: 14974.212.002.0004.01 & 0004.07
Field Dates: 10/8-10/23; 12/13; 1/25; 2/8; 2/19
Field Leader: Garth Engelhorn

EQUIPMENTS	# Units or # Days	Rate per Day	Cost
VESSELS/VEHICLES			
RADON			
MATADORA (19 ft. boat) (including fuel, w/o operator)			
Osprey			
Avon (12 ft. Inflatable boat)			
Achilles (10 ft. Inflatable boat)			
Inflatable Boat + Motor			
SeaBird (SBE-25)			
Pre- and Post Calibration			
SeaTech Transmissometer			
SeaBird Field Computer			
Outboard Motor			
Vehicle (Company Car/Personal Use)			
Vibracore Equipments			
P5 Vibracore			
P3 Vibracore			
Piston Core			
Surficial Sediment Sampling & Associated Equipment			
Double Van Veen			
Van Veen			
Box Corer			
*Teflon Coating Available (Van Veen or Box Corer)			
Benthic Box			
Benthic Infauna Wash Table and Sieve			
Eckman Grab			
Ponar Grab			
Other Field Equipments			
Portable Generator (small)			
Portable Generator (large)			
GPS			
GPS-NAV w/Differential Correction (+2m accuracy)			
Binoculars			
Field Phone			
Digital Camera			
Waterproof Digital Camera	14	$35	$490 ✓
Dive Tanks			
Dive Scooters			
Field Equipment Tool Box	14	$10	$140 ✓
Rain Gauge	8	$5	$40 ✓
Knack Box			
Power Tools			
Rigid Cordless Hammer Drill			
Dewalt Cordless Hammer Drill			
Makita Cordless Hammer Drill			
Corded Hammer Drill			
Saws All			
Circular Saw			
Gill Net			
Otter Trawl Net			
Seine Net			
Beam Trawl Net			
Auriga Net & Flow Meter			
Bongo Net & Flow Meter			
All Other Nets			
Trawl Box			
Rosette Water Sampler w/Bottles			
Water Bottles (Van Dorn or Niskin)			
Sub-Total			$670
		Accounting Use Only	

EQUIPMENTS	# Units or # Days	Rate per Day	Cost
SAMPLERS/FLOW METERS			
Sigma 900MAX Auto Sampler			
Sigma 920/950 Flow Meter w/ Sensor			
Knack Box			
Oakton pH/EC/Temp Meter			
Horriba pH/EC/Temp/Sal/DO/Turbo Meter			
YSI 6600 Series Sonde			
Hach Turbidity Meter			
Sondtec 3D Flow Tracker	8	$300	$2,400 ✓
Marsh McBirney Flo-Mate			
Teledyne RDI Stream Pro ADCP			
Entry RAE O2, CO, H2S, LEL, PID meter			
Portable Peristaltic Sampler			
Whirlpack Bridge Sampler			
Confined Space Equipment			
Tripod and Wrench w/ Harness			
Ventilator			
Conveyance Trolley			
Water Sample Equipment			
Extendable Grab Pole			
Bacteria Grab Pole			
Sampling Bucket			
Survey Equipment			
Dewalt Tripod, Scope and Stadia Rod			
Traffic Control Equipment			
Traffic Cones			
Traffic Barriers			
Traffic Flashing Lights			
Fall Protection			
Y Lanyard w/ Harness			
Climbing Rated Rope			
Field Computers			
Field Computer - Dell Laptop			
Field Computer - Panasonic Tough Book			
Field Computer - Modem			
Power Invertor			
Expendable Supplies			
Teflon and Stainless Steel Strainer			
Stainless Steel Bubbler End			
Expendable Hardware			
Stainless Steel Pipe Mounting Band			
Analytical Field Kits			
Nitrate			
Phosphate			
Reactive Phosphorus			
Ammonia			
Batteries (AAA; AA; C; D; 9 Volt)			
Triple A			
Double A			
C			
D			
9 volt			
6 Volt Lantern			
12 Volt Lantern			
Top Setting Wading Rod	8	$75	$600 ✓
Waders	11	$10	$110 ✓
Sub-total			$3,110
		Accounting Use Only	

TOTAL COST RECOVERED $3,780

Enter the number of days or number of units each equipment was used, Accounting or Project Manager will take care of the Accounting Use Only portion

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Bill to: RBF Consulting
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Invoice Number: MAR2013-02927
County Agreement No: RBF-534079
Task Order No: 27

Project Number: 14974.212.002.0004.03
Project Name: County of SD - Phase II Hydromodofication Monitoring (Part I)
Project Manager: Renfrew, David S

Quantity	Description	Matrix	Price	Subtotal
	SEDIMENT MASS ANALYSES			
54	Sediment Mass Analyses	Sediment	$20.00	$1,080.00

INVOICE TOTAL: $1,080.00

Amount Due: $1,080.00

05P-0606 2/12

INVOICE

12547

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

RBF CONSULTING
A Baker Company

Invoice Date: June 10, 2013
Project No.: 132261
Invoice No.: 850454

Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave, Ste 410
San Diego, CA 92123

RBF Consulting
(A Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Project No.: 132261
Contract No.: 534079
TASK ORDER: 27

Phase 2 Hydromodification Monitor TO 27

Professional consulting services for the Phase 2 Hydromodification Monitoring FY 2012-2013

Professional Services through May 5, 2013

Task	Fee	Percent Complete	Billed to Date	Current
Project Management	$18,090.00	48.79%	$8,825.47	$2,304.06
Monitoring Plan and QAPP Support	$6,465.00	10.72%	$693.18	$693.18
Cross Sectional Surveys	$22,995.00	41.96%	$9,649.73	$954.57
Monitoring Subtask 4a, 4b, 4c	$203,878.00	52.62%	$107,273.71	$41,992.49
Data QA/QC, Data Compilation, and Data Submittal	$18,064.00	0.00%	$0.00	$0.00
Total Fee	**$269,492.00**		**$126,442.09**	**$45,944.30**
		Previous Fee Billing	$80,497.79	

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079".

Total This Invoice **$45,944.30**

OK to PAY $45,994.30

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

Supplier ID # 1184538

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

27
ACTIVITY/WA NO.

6/20/13
DATE

PROJECT MANAGER
Deborah Mosley

6/24/13
DATE

DEPARTMENT MANAGER
TODD SNYDER

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610 701 3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE II HYDROMODIFICATION MONITORING (PART 1)- TASK ORDER NO. 27

INVOICE DATE: 4/22/2013
PROJECT NUMBER: 14974.212.002
INVOICE NUMBER: APR2013-07442
BILLING PERIOD: 02/23/2013 TO 03/29/2013

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	PHASE 2 - HYDROMODIFICATION MONITORING	147,272.00	31,137.26	111,635.08	75.80%	35,636.92
0001	PROJECT MANAGEMENT		407.88	6,929.29		
0002	MONITORING PLAN AND QAPP SUPPORT		0.00	0.00		
0003	CROSS-SECTIONAL SURVEYS		0.00	8,695.16		
0004	WET WEATHER MONITORING		30,729.38	96,010.63		
TOTAL		147,272.00	31,137.26	111,635.08	75.80%	35,636.92

CURRENT AMOUNT DUE 31,137.26

RECEIVED
APR 30 2013
RBF CONSULTING
CARLSBAD OFFICE

— REVISED —

INVOICE

05P.0606 2/12

F.E.I.N. 23 1501990
Printed on 100% Recycled Paper

County of San Diego
Phase 2 HMP Monitoring - TO 27
RBF JN 132261

	Hours	Rate	Current Fee:
Task 1 - Project Management			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	0	$131.51	$0.00
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	4	$101.97	$407.88
Landscape Architect	0	$103.57	$0.00
Total			**$407.88** ✓
Task 2 - Monitoring Plans and QAPP Support			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	0	$131.51	$0.00
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Total			**$0.00** ✓

H:PDATA/132261/ADMIN/BILLING

Task 3 - Cross-sectional Surveys			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	0	$131.51	$0.00
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Total			**$0.00** ✓
Task 4 - Wet Weather Monitoring			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	24.5	$141.02	$3,454.99
Sr. Civil Engineer	13.5	$138.77	$1,873.40
Civil Engineer	14.5	$119.93	$1,738.99
Land Use Environmental Planning Mngr.	14.5	$131.51	$1,906.90
Land Use Environmental Planner I	86	$86.54	$7,442.44
Lane Use Environmental Planner II	14.6	$100.76	$1,471.10
Land Use Environmental Planner III	51	$115.53	$5,892.05
Geographic Info. Systems Technician	49.5	$62.59	$3,098.22
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$3,851.29 ✓
Total			**$30,729.38** ✓
Grand Total	272.1		**$31,137.26** ✓

H:PDATA/132261/ADMIN/BILLING

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: APR2013-07442

Invoice Date: 04/22/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

INVOICE SUMMARY

			Contract Value
Customer Number:	14974	Cost:	147,000.00
Prime Contract Number:	RBF Contract 534079		
		Total:	147,000.00
Customer PO Number:	Task Order 27	Cumulative Amount Billed:	111,635.08
Project Number:	14974.212.002		
Project Name:	Phase II – Hydromodification Monitoring Part I		

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 05/22/2013

Billing Period From: 02/23/2013
To: 03/29/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	14.50	119.9300	1,738.99
Environmental Scientist I			
Cropper, Scott J	59.00	86.5400	5,105.86
Mathis, Melissa E	27.00	86.5400	2,336.58
Environmental Scientist II			
Campagna, Laurence	14.60	100.7600	1,471.10
Environmental Scientist III			
Engelhorn, Garth	51.00	115.5300	5,892.05
Environmental Senior Scientist			
Isham, William H	14.50	131.5100	1,906.90
Project Control			
Ventures, Ameedylyn	4.00	101.9700	407.88
Senior Technician			
Effner, Emily	7.00	62.5900	438.13
Hand, Daniel	5.50	62.5900	344.25
Pippen, Ross P	11.00	62.5900	688.49
Teague, Lydia C	26.00	62.5900	1,627.35
Sr. Civil Engineer			
Cotts, Anthony M	13.50	138.7700	1,873.40
Water Quality Project Manager			
Renfrew, David S	24.50	141.0200	3,454.99
Labor	272.10		27,285.97

Sub Lab Analysis	875.00
Materials & Supplies	29.22
Trav-Mileage Expense	131.09
Trav-Car Rental	275.98
Field Eq Usage	1,740.00
Weston Laboratory Analysis	800.00
Expenses	3,851.29

Invoice Total 31,137.26 ✓

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP MONITORING PHASE II

Weston Project No.	Weston Invoice No.	Project Desription
14974.212.002	APR2013-07442	County of SD - Phase II HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0001 - RBF-SD HMPII Project Management								
018233	Ventures, Ameedylyn	3/22/2013	3/18/2013	4.0	PROJECT ADMIN	5	1533	R
	Total: Ventures, Ameedylyn			**4.0**				
Total: 14974.212.002.0001				**4.0**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0004 - RBF-SD HMPII Wet Event Monitoring								
017996	Campagna, Laurence	3/1/2013	2/27/2013	1.6		5	1533	R
		3/1/2013	2/28/2013	8.0		6	1533	R
		3/15/2013	3/11/2013	3.0		5	1533	R
		3/15/2013	3/13/2013	2.0		5	1533	R
	Total: Campagna, Laurence			**14.6**				
019890	Cotts, Anthony	3/8/2013	3/7/2013	2.0	HMP Monitoring	17	1533	R
		3/8/2013	3/8/2013	8.0	HMP Monitoring	17	1533	R
		3/8/2013	3/8/2013	3.0	HMP Monitoring	SUPP	1533	UOT
		3/15/2013	3/11/2013	0.5	Post storm admin	18	1533	R
	Total: Cotts, Anthony			**13.5**				
019077	Cropper, Scott	3/1/2013	2/28/2013	7.0		6	1533	R
		3/1/2013	3/1/2013	6.5		6	1533	R
		3/8/2013	3/5/2013	1.0		8	1533	R
		3/8/2013	3/7/2013	3.0		8	1533	R
		3/8/2013	3/7/2013	2.5		9	1533	O1
		3/8/2013	3/8/2013	8.0		10	1533	R
		3/8/2013	3/8/2013	4.0		SUPP	1533	O1
		3/8/2013	3/8/2013	3.0		SUPP	1533	OTD
		3/15/2013	3/11/2013	2.0		1	1533	R
		3/15/2013	3/13/2013	8.0		1	1533	R
		3/15/2013	3/15/2013	2.0		1	1533	R
		3/22/2013	3/20/2013	8.0		5	1533	R
		3/22/2013	3/21/2013	2.0		5	1533	R
		3/22/2013	3/22/2013	1.0		5	1533	R
		3/29/2013	3/27/2013	1.0		6	1533	R
	Total: Cropper, Scott			**59.0**				

080648	Effner, Emily	2/22/2013	2/19/2013	7.0		SUPP	1533	R
	Total: Effner, Emily			**7.0**				
019372	Engelhorn, Garth	3/1/2013	2/25/2013	0.5		8	1533	R
		3/1/2013	2/26/2013	1.0		8	1533	R
		3/1/2013	2/27/2013	1.5		8	1533	R
		3/1/2013	2/28/2013	4.0		8	1533	R
		3/1/2013	2/28/2013	1.0		14	1533	R
		3/1/2013	3/1/2013	5.0		14	1533	R
		3/8/2013	3/4/2013	1.0		10	1533	R
		3/8/2013	3/5/2013	1.5		6	1533	R
		3/8/2013	3/6/2013	1.0		6	1533	R
		3/8/2013	3/7/2013	2.0		6	1533	R
		3/8/2013	3/8/2013	4.0		16	1533	UOT
		3/15/2013	3/11/2013	1.5		8	1533	R
		3/15/2013	3/15/2013	5.5		9	1533	R
		3/15/2013	3/15/2013	1.5		17	1533	UOT
		3/22/2013	3/18/2013	0.5		3	1533	R
		3/22/2013	3/19/2013	1.5		3	1533	R
		3/22/2013	3/19/2013	1.0		8	1533	R
		3/22/2013	3/20/2013	5.5		8	1533	R
		3/22/2013	3/21/2013	4.5		8	1533	R
		3/22/2013	3/22/2013	2.0		8	1533	R
		3/29/2013	3/25/2013	1.0		3	1533	R
		3/29/2013	3/27/2013	1.5		3	1533	R
		3/29/2013	3/28/2013	2.5		3	1533	R
	Total: Engelhorn, Garth			**51.0**				
080922	Hand, Daniel	2/22/2013	2/19/2013	5.5		SUPP	1533	R
	Total: Hand, Daniel			**5.5**				
019363	Huber, Sara	3/8/2013	3/8/2013	8.0		LT	1533	R
		3/8/2013	3/8/2013	2.0		SUPP	1533	UOT
		3/22/2013	3/18/2013	4.5	Flow Data Analysis for HMP sites - QC and vlookup tables	2	1533	R
	Total: Huber, Sara			**14.5**				
018016	Isham, William	3/8/2013	3/6/2013	0.5		4	1533	R
		3/8/2013	3/7/2013	6.0		4	1533	R
		3/8/2013	3/8/2013	8.0		4	1533	R
	Total: Isham, William			**14.5**				
019581	Mathis, Melissa	3/1/2013	2/27/2013	1.5		13	1533	R
		3/1/2013	2/28/2013	3.0		13	1533	R
		3/1/2013	3/1/2013	2.0		13	1533	R
		3/8/2013	3/5/2013	2.0		6	1533	R
		3/8/2013	3/6/2013	3.0		6	1533	R
		3/15/2013	3/11/2013	1.0		3	1533	R
		3/15/2013	3/14/2013	1.5		3	1533	R
		3/15/2013	3/15/2013	6.0		3	1533	R
		3/22/2013	3/18/2013	2.0		1	1533	R
		3/29/2013	3/27/2013	1.0		4	1533	R
		3/29/2013	3/28/2013	4.0		4	1533	R
	Total: Mathis, Melissa			**27.0**				

020012	Pippen, Ross	3/8/2013	3/5/2013	2.0		1	1533	R
		3/15/2013	3/13/2013	8.0		5	1533	R
		3/15/2013	3/15/2013	1.0		5	1533	R
	Total: Pippen, Ross			**11.0**				
018565	Renfrew, David	3/1/2013	2/25/2013	0.5		8	1533	R
		3/1/2013	2/28/2013	5.0		8	1533	R
		3/8/2013	3/5/2013	1.0		7	1533	R
		3/8/2013	3/6/2013	1.0		7	1533	R
		3/8/2013	3/7/2013	2.0		7	1533	R
		3/8/2013	3/8/2013	3.0		13	1533	UOT
		3/15/2013	3/11/2013	2.0		3	1533	R
		3/15/2013	3/13/2013	0.5		3	1533	R
		3/15/2013	3/14/2013	0.5		3	1533	R
		3/15/2013	3/15/2013	5.0		3	1533	R
		3/22/2013	3/18/2013	0.5		5	1533	R
		3/22/2013	3/20/2013	0.5		5	1533	R
		3/22/2013	3/21/2013	0.5		5	1533	R
		3/22/2013	3/22/2013	0.5		5	1533	R
		3/29/2013	3/25/2013	1.0		4	1533	R
		3/29/2013	3/29/2013	1.0		4	1533	R
	Total: Renfrew, David			**24.5**				
020783	Teague, Lydia	3/1/2013	2/25/2013	2.0		1	1533	R
		3/15/2013	3/11/2013	5.0		1	1533	R
		3/15/2013	3/13/2013	2.5		1	1533	R
		3/15/2013	3/15/2013	4.0		1	1533	R
		3/29/2013	3/25/2013	2.0		1	1533	R
		3/29/2013	3/27/2013	5.5		1	1533	R
		3/29/2013	3/28/2013	5.0		1	1533	R
	Total: Teague, Lydia			**26.0**				
Total: 14974.212.002.0004				**268.1**				

Total: 14974.212.002 COUNTY OF SD - Phase II HMP Monitoring	**272.1**

Approved by: Dave Renfrew

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: APR2013-07442

Invoice Date: 04/22/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 05/22/2013

Billing Period From: 02/23/2013
To: 03/29/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Project Control Ventures, Ameedylyn	4.00	101.9700	407.88
Labor	4.00		407.88
Task Total			407.88 ✓

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: APR2013-07442

Invoice Date: 04/22/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079
Customer PO Number: Task Order 27
Task Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 05/22/2013

Billing Period From: 02/23/2013
To: 03/29/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	14.50	119.9300	1,738.99
Environmental Scientist I			
Cropper, Scott J	59.00	86.5400	5,105.86
Mathis, Melissa E	27.00	86.5400	2,336.58
Environmental Scientist II			
Campagna, Laurence	14.60	100.7600	1,471.10
Environmental Scientist III			
Engelhorn, Garth	51.00	115.5300	5,892.05
Environmental Senior Scientist			
Isham, William H	14.50	131.5100	1,906.90
Senior Technician			
Effner, Emily	7.00	62.5900	438.13
Hand, Daniel	5.50	62.5900	344.25
Pippen, Ross P	11.00	62.5900	688.49
Teague, Lydia C	26.00	62.5900	1,627.35
Sr. Civil Engineer			
Cotts, Anthony M	13.50	138.7700	1,873.40
Water Quality Project Manager			
Renfrew, David S	24.50	141.0200	3,454.99
Labor	268.10		26,878.09
Sub Lab Analysis			875.00
Materials & Supplies			29.22
Trav-Mileage Expense			131.09
Trav-Car Rental			275.98
Field Eq Usage			1,740.00
Lab Analysis			800.00
Expenses			3,851.29
Task Total			30,729.38

5P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number:	APR2013-07442	Project Number:	14974.212.002.0004	Billing Currency	USD
		Project Name:	RBF-SD HMPII Wet Event Monitoring	Invoice Date:	04/22/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Sub Lab Analysis					
Subcontracted Lab An	Laboratory Analytical Services	500613891	2013/3	ENVIRO MATRIX ANALYTICAL	3020453	210.00
Subcontracted Lab An	Laboratory Analytical Services	500613892	2013/3	ENVIRO MATRIX ANALYTICAL	3020454	350.00
		500616056	2013/3		3020821	105.00
		500616065	2013/3		3030244	210.00
Total: Sub Lab Analysis						875.00
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500616681	2013/3	COTTS ANTHONY M	578884	2.04
		500617008	2013/3	ISHAM WILLIAM	578301	3.99
		500617070	2013/3	CROPPER SCOTT J	578730	23.19
Total: Materials & Supplies						29.22
Line Description:	Trav-Mileage Expense					
Travel-Mileage Expen	Travel-Mileage Expense	500615210	2013/3	RENFREW DAVID	577585	32.21
		500617008	2013/3	ISHAM WILLIAM	578301	98.88
Total: Trav-Mileage Expense						131.09
Line Description:	Trav-Car Rental					
Travel-Car Rental	Travel-Car Rental	500615104	2013/3	CROPPER SCOTT J	576634	20.00
		500617070	2013/3		578730	35.00
		500618516	2013/3	HUBER SARA S	578987	220.98
Total: Trav-Car Rental						275.98
Line Description:	Field Eq Usage					
Field Eq Usage	Waterproof Digital Camera		2013/3			140.00
	Field Equipment Tool Box		2013/3			40.00
	Portable Rain Gauge		2013/3			20.00
	Sondtec Flow Tracker		2013/3			1,200.00
	Top Setting Wading Rod		2013/3			300.00
	Waders		2013/3			40.00
Total: Field Eq Usage						1,740.00
Line Description:	Weston Laboratory Analysis					
Weston Lab Analysis	Sediment Mass Analyses		2013/3			800.00
Total: Weston Laboratory Analysis						800.00
Expenses						3,851.29

EMA02
2013.3.1
Vchr# 500613891

EnviroMatrix Analytical, Inc.

INVOICE

RECEIVED
FEB 19 2013
Am

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Client Project Manager
Dave Renfrew

PO Number

Invoice Number
3020453

Invoiced On:
02/07/13

Received
01/26/13

Terms
NET 30

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Project
Phase I HMP Monitoring

Project Number
14974.212.~~001.0005~~ 002.0004.03

Project Manager
Jennifer Beyer

Work Order(s)
13A0718

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
6	Turbidity-Liquid [Normal TAT]	Water	$14.00	$84.00
6	Solids, SSC [Normal TAT]	Water	$21.00	$126.00

Invoice Total: $210.00

INVOICE APPROVAL

DATE REC: 2/19/2013

APPROVED BY: Dave Renfrew

SIGNATURE:

PO # ~~0080~~ 0081053

WO # 14974.212.002.0004.03

RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

EMA02
2013.3.1
rcbk# 500613892

EnviroMatrix Analytical, Inc.

FEB 19 2013

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
3020454

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Invoiced On:
02/07/13

Client Project Manager
Dave Renfrew

Received
01/26/13

Project
Phase I HMP Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.~~001.0005~~ 002.0004.03

Project Manager
Jennifer Beyer

Work Order(s)
13A0719

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
10	Turbidity-Liquid [Normal TAT]	Water	$14.00	$140.00
10	Solids, SSC [Normal TAT]	Water	$21.00	$210.00

Invoice Total: L1 - $350.00

INVOICE APPROVAL
DATE REC: 2/19/2013
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0081053
WO # 14974.212.002.0004.03 ✓
RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

EM962
2013.3.3
Check # 500616056

EnviroMatrix Analytical, Inc.

INVOICE

FEB 26 2013

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
[redacted]

Invoiced On:
[redacted]

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
02/09/13

Project
Phase II HMP Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.~~001.0005~~ ~~.005.0005~~
002.0004.03

Project Manager
Jennifer Beyer

Work Order(s)
13B0286

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
3	Turbidity-Liquid [Normal TAT]	Water	$14.00	$42.00
3	Solids, SSC [Normal TAT]	Water	$21.00	$63.00

Invoice Total: [redacted]

INVOICE APPROVAL

DATE REC: 2/26/2013

APPROVED BY: Dave Renfrew

SIGNATURE:

PO # [redacted]

WO # 943 14974.212.002.0004.03

RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

EM902
2013.3.3
YCW# 500616066

EnviroMatrix Analytical, Inc.

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
[redacted]

Invoiced On:
03/04/13

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
02/20/13

Project
Phase I HMP Monitoring

PO Number

MAR 05 2013
am

Terms
NET 30

Project Number
14974.212.~~001.0005~~ 002.0004.03

MAR 05 2013
am

Project Manager
Jennifer Beyer

Work Order(s)
13B0560

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
6	Turbidity-Liquid [Normal TAT]	Water	$14.00	$84.00
6	Solids, SSC [Normal TAT]	Water	$21.00	$126.00

Invoice Total: L1 [redacted]

INVOICE APPROVAL

DATE REC: 03/05/2013

APPROVED BY: Dave Renfrew

SIGNATURE:

PO # [redacted]

WO # 14974.212.002.0004.03 ✓

RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

ExpenseTrack [redacted] Travel & Expense Report

Enter Expense Report — Step 4. Confirm Expense Report

Welcome, Anthony Michael Cotts

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

MAR 12 2013

Header Information			
Exp#:	578884	Status:	Submitted on 3/11/2013
Employee:	Cotts, Anthony Michael (019890)	Begin Date:	3/8/2013
Entered By:	Cotts, Anthony Michael	End Date:	3/11/2013
Approver:	Renfrew, David S.	Time Departed:	12:00 Midnight
Travel Method:	Automobile	Time Returned:	12:00 Noon
Purpose:	HMP Phase II Wet Monitoring - Bear Valley and Saratoga Sites		
Total Amount:	$17.66 Total Out of Pocket:		$0.00

Detailed Information

Date	Category	City	Description	Project	Amount
3/8/2013	Supplies - Field	San Diego County	Ice to preserve samples collected.	14974.212.002.0004.02	$2.04
3/8/2013	Breakfast	San Diego County	3410 Del Lago Blvd., Escondido, CA	14974.212.002.8888	$13.57
3/8/2013	Incidentals	San Diego County	3410 Del Lago Blvd., Escondido, CA	14974.212.002.8888	$2.05

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Supplies - Field	$2.04
Totals	14974.212.002.0004.02	$2.04
14974.212.002.8888		
	Breakfast	$13.57
	Incidentals	$2.05
Totals	14974.212.002.8888	$15.62

Verification AMWelsh - 3/12/13

578884

WELCOME TO
DEL LAGO SHELL
SHELL 57 442 709903
3480 DEL LAGO BLVD S1H0244
ESCONDIDO, CA.

Descr.	qty	amount
<CUSTOMER COPY>		
T ICE (BAG) 8 LB	1	1.89

Sub Total 1.89
Tax 0.15
TOTAL 2.04
CREDIT $ 2.04

XXXX XXXX XXXX 7276 VISA
INVOICE: 053512 AUTH #: 083317

THANKS, COME AGAIN
REG# 0002 CSH# 015 DR# 01 TRAN# 23395
03/08/13 09:56:10 ST# 68529

Ice

ExpenseTrack [redacted] Travel & Expense Report

Enter Expense Report — Step 4. Confirm Expense Report

Welcome, William H. Isham

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

MAR 07 2013
amw

Header Information			
Exp#:	578301	Status:	Submitted on 3/6/2013
Employee:	Isham, William H. (018016)	Begin Date:	2/19/2013
Entered By:	Isham, William H.	End Date:	2/19/2013
Approver:	Renfrew, David S.	Time Departed:	8:00 PM
Travel Method:	Automobile	Time Returned:	12:00 Midnight
Purpose:	HMP wet weather		
Total Amount:	$102.87	Total Out of Pocket:	$102.87

Detailed Information

Date	Category	City	Description	Project	Amount
2/19/2013	Mileage	San Diego County	personal vehicle - 175 miles	14974.212.002.0004.02	$98.88
2/19/2013	Supplies - Field	San Diego County	sample ice	14974.212.002.0004.02	$3.99

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Mileage	$98.88
	Supplies - Field	$3.99
Totals	14974.212.002.0004.02	$102.87

Verification amwelcrd 3/07/2013

578301

WELCOME TO CHEVRON

Chevron, 299
6795 MIRA MESA BLVD
SAN DIEGO, CA 92121

ICE

02/19/2013 8:38:08 PM
Register: 1 Trans #: 1206 Op ID: 14
Your cashier: TONY

ICE		$3.99	99
	Subtotal =	$3.99	
	Tax =	$0.00	
	Total =	$3.99	
	Change Due =	$-1.01	
Cash		$5.00	

THANK YOU FOR SHOPPING AT CHEVRON
PLEASE COME AGAIN

ExpenseTrack [redacted]

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

[redacted] Welcome, Scott J. Cropper

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

MAR 12 2013
BY: DM

Header Information			
Exp#:	578730	Status:	Submitted on 3/12/2013
Employee:	Cropper, Scott J. (019077)	Entered By:	Cropper, Scott J.
Approver:	Renfrew, David S.	Total Amount:	$72.83
		Total Out of Pocket:	$0.00
Purpose:	supplies for HMP monitoring		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
3/7/2013	Supplies - Field	Rite Aid	1 - 8pk of C batteries	14974.212.002.0004.02	*$17.27
3/8/2013	Gas - Auto Rental	G&M Foodmart	7.611 gal. of gas for auto rental.	14974.212.002.0004.02	*$35.00
3/8/2013	Supplies - Field	Target	2 - 9lb bags of ice.	14974.212.002.0004.02	*$5.92
3/8/2013	Breakfast	IHOP	Coffee and breakfast for HMP monitoring.	14974.212.002.8888	*$14.64

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
14974.212.002.0004.02		
	Gas - Auto Rental	$35.00
	Supplies - Field	$23.19
Totals	14974.212.002.0004.02	$58.19
14974.212.002.8888		
	Breakfast	$14.64
Totals	14974.212.002.8888	$14.64

Verification amrdcm - 3/12/13

578730

RITE AID

With us, it's personal.

Store #05622
7100 AVENIDA ENCINA
CARLSBAD CA 92011
(760) 431-7360

Register #3 Transaction #560375
Cashier #58222582 3/07/13 5:17PM

WELLNESS+ SAVINGS
Dscnt Card#: 95XXXXX3429
1 DURACELL C 8PK 15.99 T

1 Items Subtotal 15.99
Tax 1.28
Total 17.27
*VISA * 17.27
VISA card * 0000000000000604

TARGET

CHULA VISTA EAST - 619-213-1010
03/08/2013 12:00 PM EXPIRES 06/06/13

GROCERY
266040034 SPARKLETTS FT $5.48
2 @ $2.74

SUBTOTAL $5.48
T = CA TAX 8.0000% on $5.48 $0.44
TOTAL $5.92
*0604 VISA CHARGE $5.92

REC#2-1067-1015-0076-1695-2-[illegible]-265-951

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, David S. Renfrew

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

FEB 28 2013

Header Information			
Exp#:	577585	Status:	Submitted on 2/28/2013
Employee:	Renfrew, David S. (018565)	Entered By:	Renfrew, David S.
Approver:	Crumpacker, Andrea L.	Total Amount:	$671.14
		Total Out of Pocket:	$73.46
Purpose:	Feb Expenses		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
2/12/2013	Supplies - Field	Raymar Telenetics	High gain antennas for remote MLS/TWAS with poor cell reception.	13245.212.001.1005	*$536.38
2/19/2013	Dinner	Luna Grill	Dinner for Garth Engelhorn and Dave Renfrew during late night storm event.	13245.212.001.8888	*$24.30
2/19/2013	Mileage	Mileage	Mileage to Oceanside SID Site for data download.	13245.212.008.3001	$9.04
2/26/2013	Mileage	Mileage	Mileage to Copermittee Meeting and back	13245.212.001.1003	$32.21
2/26/2013	Mileage	Mileage	Mileage to HMP Meeting and back.	14974.212.002.0004.02	$32.21
2/22/2013	Conference Fees	SDEP	Registration fee for March SDEP Meeting	00834.851.925	*$35.00
2/28/2013	Check Fee	US Bank	Check Fee for #1110	91533	$2.00

16 miles
57 miles
57 miles @.505/mi

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
00834.851.925		
	Conference Fees	$35.00
Totals	00834.851.925	$35.00
13245.212.001.1003		
	Mileage	$32.21
Totals	13245.212.001.1003	$32.21
13245.212.001.1005		
	Supplies - Field	$536.38
Totals	13245.212.001.1005	$536.38
13245.212.001.8888		
	Dinner	$24.30

Amk/Kam - 2/28/2013

ExpenseTrack [redacted] Travel & Expense Report

Enter Expense Report — Step 4. Confirm Expense Report

Welcome, William H. Isham

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

MAR 07 2013

Header Information

Exp#:	578301	Status:	Submitted on 3/6/2013
Employee:	Isham, William H. (018016)	Begin Date:	2/19/2013
Entered By:	Isham, William H.	End Date:	2/19/2013
Approver:	Renfrew, David S.	Time Departed:	8:00 PM
Travel Method:	Automobile	Time Returned:	12:00 Midnight
Purpose:	HMP wet weather		
Total Amount:	$102.87	Total Out of Pocket:	$102.87

Detailed Information

Date	Category	City	Description	Project	Amount
2/19/2013	Mileage	San Diego County	personal vehicle - 175 miles @ .565/mi	14974.212.002.0004.02	$98.88
2/19/2013	Supplies - Field	San Diego County	sample ice	14974.212.002.0004.02	$3.99

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0004.02		
	Mileage	$98.88
	Supplies - Field	$3.99
Totals	14974.212.002.0004.02	$102.87

Verification _____ 3/07/2013

578301

ExpenseTrack [redacted] P-Card Expense Confirm

P-Card Report — Step 4. Confirm P-Card [redacted] Welcome, Scott J. Cropper

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

FEB 25 2013

Header Information			
Exp#:	576634	Status:	Submitted on 2/25/2013
Employee:	Cropper, Scott J. (019077)	Entered By:	Cropper, Scott J.
Approver:	Renfrew, David S.	Total Amount:	$93.71
		Total Out of Pocket:	$0.00
Purpose:	Gas for auto rental for SD County HMP and MLS/TWAS projects.		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
2/20/2013	Gas - Auto Rental	G&M Foodmart	Gas for auto rental for HMP project.	14974.212.002.0004.02	*$20.00
2/20/2013	Gas - Auto Rental	G&M Foodmart	Gas for auto rental for SD County MLS/TWAS project.	13245.212.001.3001	*$26.27
2/20/2013	Supplies - Field	7-Eleven	2 - 20lbs of ice.	13245.212.001.3001	*$11.86
2/20/2013	Supplies - Field	7-Eleven	6 - 20lbs of ice.	13245.212.001.3001	*$35.58

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
13245.212.001.3001		
	Gas - Auto Rental	$26.27
	Supplies - Field	$47.44
Totals	13245.212.001.3001	$73.71
14974.212.002.0004.02		
	Gas - Auto Rental	$20.00
Totals	14974.212.002.0004.02	$20.00

Verification Anderson - 2/25/13

G&M FOODMART #46
850 PALOMAR AIRP.
STN 00202434

(1) County of SD HMP 14934.212.002.0004.02 = $20.00 (43%)
(2) County of SD MLS 13245.212.001.3001 = $26.27 (57%)

02/20/13 01:31:02

E/VISA
xxxxxxxxxxxx0604
Invoice# 3487709
Auth# 032354

Pump#: 1
10.060G @ $ 4.599/G
1 Un/Self $ 46.27

Total $ 46.27

Learn how to
EARN REWARDS
with a Chevron
or Texaco
Credit Card
See application
for details

THANK YOU
PLEASE COME AGAIN

ExpenseTrack [redacted]

P-Card Expense Confirm

P-Card Report — Step 4. Confirm P-Card

[redacted] Welcome, Scott J. Cropper

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

MAR 12 2013
BY: DM

Header Information			
Exp#:	578730	Status:	Submitted on 3/12/2013
Employee:	Cropper, Scott J. (019077)	Entered By:	Cropper, Scott J.
Approver:	Renfrew, David S.	Total Amount:	$72.83
		Total Out of Pocket:	$0.00
Purpose:	supplies for HMP monitoring		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
3/7/2013	Supplies - Field	Rite Aid	1 - 8pk of C batteries	14974.212.002.0004.02	*$17.27
3/8/2013	Gas - Auto Rental	G&M Foodmart	7.611 gal. of gas for auto rental.	14974.212.002.0004.02	*$35.00
3/8/2013	Supplies - Field	Target	2 - 9lb bags of ice.	14974.212.002.0004.02	*$5.92
3/8/2013	Breakfast	IHOP	Coffee and breakfast for HMP monitoring.	14974.212.002.8888	*$14.64

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
14974.212.002.0004.02		
	Gas - Auto Rental	$35.00
	Supplies - Field	$23.19
Totals	14974.212.002.0004.02	$58.19
14974.212.002.8888		
	Breakfast	$14.64
Totals	14974.212.002.8888	$14.64

Verification AW/DM - 3/12/13

578730

G&M FOODMART #46
850 PALOMAR AIRP.
STN 00202434

03/08/13 01:57:19

E/VISA
xxxxxxxxxxxx0604
Invoice# 3495913
Auth# 016734

Pump#: 9
7.611G @ $ 4.599/G
1 Un/Self $ 35.00

Total $ 35.00

Learn how to

ExpenseTrack [redacted] P-Card Expense Confirm

P-Card Report — Step 4. Confirm P-Card [redacted] Welcome, Sara S. Huber

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

MAR 12 2013
Amy

Header Information			
Exp#:	578987	Status:	Submitted on 3/12/2013
Employee:	Huber, Sara S. (019363)	Entered By:	Huber, Sara S.
Approver:	Renfrew, David S.	Total Amount:	$220.98
		Total Out of Pocket:	$0.00
Purpose:	Storm 3/7-8/2013 Rental Vehicles		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
3/8/2013	Auto Rental	Enterprise	Bear Valley Rental Vehicle - Huber	14974.212.002.0004.02	*$129.45
3/8/2013	Auto Rental	Enterprise	Auto Rental - White TC(M. Matson)	14974.212.002.0004.02	*$91.53

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
14974.212.002.0004.02		
	Auto Rental	$220.98
Totals	14974.212.002.0004.02	$220.98

Verification AMelson - 3/12/13

578987

HMP- Bear Valley

IN 09:11AM 3/08/13
OUT 09:00AM 3/07/13
24-HOUR DAY

ENTERPRISE RENT-A-CAR COMPANY OF LOS ANGELES, LLC
1060 AUTO CENTER CT STE M 760-931-1111
CARLSBAD CA 92008-4321 3246
RENTAL TYPE R SOURCE 32B8924- 999

RENTAL AGREEMENT
D126820
PAGE 1 OF 1

UNIT 1
UNIT # 7G5XC9
LIC# 6WPP810
MODEL EXPL
COLOR GRAY MED
IN 12459
OUT 12376

RENTER
SARA HUBER
6407 EL PATO CT
CARLSBAD CA 92009-4309
LOCAL:
(H) 760-274-7695 (W) 760-274-7695

SUMMARY OF CHARGES
DAY - 24 HOUR PERIOD
MILES
NO CHARGE

1 DAYS	@	64.40	64.40

DR. LICENSE XXXX5211
STATE CA EXPIRE 4/13/18
DOB 4/13/84 HT WT
EYES HAIR
S.S.#
EMPLOYER
WESTON

BILL TO N CUST #

DAMAGE WAIVER	030713/030813	1 DAYS DW @	14.99	14.99
PERSONAL ACC.INS.	030713/030813	1 DAYS PAI @	3.00	3.00
ADDITIONAL DRIVER		RDSDE ASST		3.99
NO OTHER DRIVER PERMITTED		MVF S TAX	2.75	1.01
		SALES TAX	8.00	5.16
		FUEL		36.90

CLAIM INFO
POL/CLAIM/PO#

PERMISSION TO LEAVE STATE
YES NO X

TOTAL CHARGES 129.45

INSURED

CUSTOMER SIGNATURE ON FILE

DEPOSITS 129.45
REFUND

PAYMENT INFORMATION

AMOUNT	PD.BY	TYPE	DATE	AUTH
129.45	VISA	SALE	3/08/13	080850

LOSS DATE
THEFT ACCIDENT

TYPE CAR

SHOP
PHONE
NAME

OPENED BY #662EH SHAWNA L MUCKEY
CLOSED BY #421KS LAUREN J LAMPE

CLOSED TICKET PAYMENT INFO
CLOSED TICKET PAYMENT INFO

County of SanDiego
~~MSH Pearson~~ HMD

IN 09:08AM 3/08/13
OUT 09:00AM 3/07/13
24-HOUR DAY

ENTERPRISE RENT-A-CAR COMPANY OF LOS ANGELES, LLC
1060 AUTO CENTER CT STE M 760-931-1111
CARLSBAD CA 92008-4321 3246
RENTAL TYPE R SOURCE 3288924- 999

RENTAL AGREEMENT
D126821
PAGE 1 OF 1

UNIT 1
UNIT # 7GXCJG
LIC# 6WZP525
MODEL TC
COLOR WHITE
IN 13712
OUT 13564

RENTER
SARA HUBER
6407 EL PATO CT
CARLSBAD CA 92009-4309
LOCAL:
(H) 760-274-7695 (W) 760-274-7695

SUMMARY OF CHARGES
DAY = 24 HOUR PERIOD
MILES
NO CHARGE

1 DAYS	@	64.40	64.40

DR. LICENSE XXXX5211
STATE CA EXPIRE 4/13/18
DOB 4/13/84 HT WT
EYES HAIR
S.S.#
EMPLOYER
WESTON

BILL TO N CUST #

DAMAGE WAIVER 030713/030813	1 DAYS DW @	14.99	14.99
PERSONAL ACC.INS. 030713/030813	1 DAYS PAI @	3.00	3.00
	RDSDE ASST		3.99
	SALES TAX	8.00	5.15

ADDITIONAL DRIVER
MATTSON* MICHELLE*
LICENSE # XXXX3950
STATE CA EXPIRES 11/28/15 AGE 38

CLAIM INFO
POL/CLAIM/PO#

PERMISSION TO LEAVE STATE
YES NO X

TOTAL CHARGES 91.53

INSURED

CUSTOMER SIGNATURE ON FILE

DEPOSITS 91.53
REFUND

LOSS DATE
THEFT ACCIDENT

PAYMENT INFORMATION

AMOUNT	PD.BY	TYPE	DATE	AUTH
91.53	VISA	SALE	3/08/13	031170

TYPE CAR

SHOP
PHONE
NAME

OPENED BY #421KS LAUREN J LAMPE
CLOSED BY #421KS LAUREN J LAMPE

CLOSED TICKET PAYMENT INFO
CLOSED TICKET PAYMENT INFO

EQUIPMENT COST RECOVERY

Project Name: RBF/County of SD- Phase II (Part I) HMP Monitoring
Work Order Number: 14974-212-002-0004.02
Field Dates: 3/7/13 - 3/8/13
Field Leader: Gabe Engelhorn

EQUIPMENTS	# Units or # Days	Rate per Day	Cost
VESSELS/VEHICLES			
RADON			
MATADORA (19 fL boat) (including fuel, w/o operator)			
Osprey			
Avon (12 ft. Inflatable boat)			
Achilles (10 ft. Inflatable boat)			
Inflatable Boat + Motor			
SeaBird (SBE-25)			
Pre- and Post Calibration			
SeaTech Transmissometer			
SeaBird Field Computer			
Outboard Motor			
Vehicle (Company Car/Personal Use)			
Vibracore Equipments			
P5 Vibracore			
P3 Vibracore			
Piston Core			
Surficial Sediment Sampling & Associated Equipment			
Double Van Veen			
Van Veen			
Box Corer			
*Teflon Coating Available (Van Veen or Box Corer)			
Benthic Box			
Benthic Infauna Wash Table and Sieve			
Eckman Grab			
Ponar Grab			
Other Field Equipments			
Portable Generator (small)			
Portable Generator (large)			
GPS			
GPS-NAV w/Differential Correction (+2m accuracy)			
Binoculars			
Field Phone			
Digital Camera			
Waterproof Digital Camera	4	$35	$140-
Dive Tanks			
Dive Scooters			
Field Equipment Tool Box	4	$10	$40-
Rain Gauge	4	$5	$20-
Knack Box			
Power Tools			
Rigid Cordless Hammer Drill			
Dewalt Cordless Hammer Drill			
Makita Cordless Hammer Drill			
Corded Hammer Drill			
Saws All			
Circular Saw			
Gill Net			
Otter Trawl Net			
Seine Net			
Beam Trawl Net			
Auriga Net & Flow Meter			
Bongo Net & Flow Meter			
All Other Nets			
Trawl Box			
Rosette Water Sampler w/Bottles			
Water Bottles (Van Dorn or Niskin)			
Sub-Total			$200-
		Accounting Use Only	

EQUIPMENTS	# Units or # Days	Rate per Day	Cost
SAMPLERS/FLOW METERS			
Sigma 900MAX Auto Sampler			
Sigma 920/950 Flow Meter w/ Sensor			
Knack Box			
Oakton pH/EC/Temp Meter			
Horriba pH/EC/Temp/Sal/DO/Turbo Meter			
YSI 6600 Series Sonde			
Hach Turbidity Meter			
Sondtec 3D Flow Tracker	4	$300	$1,200-
Marsh McBirney Flo-Mate			
Teledyne RDI Stream Pro ADCP			
Entry RAE O2, CO, H2S, LEL, PID meter			
Portable Peristaltic Sampler			
Whirlpack Bridge Sampler			
Confined Space Equipment			
Tripod and Wrench w/ Harness			
Ventilator			
Conveyance Trolley			
Water Sample Equipment			
Extendable Grab Pole			
Bacteria Grab Pole			
Sampling Bucket			
Survey Equipment			
Dewalt Tripod, Scope and Stadia Rod			
Traffic Control Equipment			
Traffic Cones			
Traffic Barriers			
Traffic Flashing Lights			
Fall Protection			
Y Lanyard w/ Harness			
Climbing Rated Rope			
Field Computers			
Field Computer - Dell Laptop			
Field Computer - Panasonic Tough Book			
Field Computer - Modem			
Power Invertor			
Expendable Supplies			
Teflon and Stainless Steel Strainer			
Stainless Steel Bubbler End			
Expendable Hardware			
Stainless Steel Pipe Mounting Band			
Analytical Field Kits			
Nitrate			
Phosphate			
Reactive Phosphorus			
Ammonia			
Batteries (AAA; AA; C; D; 9 Volt)			
Triple A			
Double A			
C			
D			
9 volt			
6 Volt Lantern			
12 Volt Lantern			
Top Setting Winding Rod	4	$75	$300-
Waders	4	$10	$40-
Sub-total			$1540-
		Accounting Use Only	

TOTAL COST RECOVERED $1,740

Enter the number of days or number of units each equipment was used, Accounting or Project Manager will take care of the Accounting Use Only portion

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Bill to: RBF Consulting
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Invoice Number: APR2013-07442
County Agreement No: RBF-534079
Task Order No: 27

Project Number: 14974.212.002.0004.03
Project Name: County of SD - Phase II Hydromodofication Monitoring (Part I)
Project Manager: Renfrew, David S

Quantity	Description	Matrix	Price	Subtotal
	SEDIMENT MASS ANALYSES			
40	Sediment Mass Analyses	Sediment	$20.00	$800.00

INVOICE TOTAL: $800.00

Amount Due: $800.00

EP-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3630

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PROFESSIONAL SERVICES RENDERED FOR PHASE II HYDROMODIFICATION MONITORING (PART 1)- TASK ORDER NO. 27

INVOICE DATE: 5/21/2013
PROJECT NUMBER: 14974.212.002
INVOICE NUMBER: MAY2013-08063
BILLING PERIOD: 03/30/2013 TO 05/03/2013

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	PHASE 2 - HYDROMODIFICATION MONITORING	266,765.00	14,807.04	126,442.12	47.40%	140,322.88
0001	PROJECT MANAGEMENT		1,896.18	8,825.47		
0002	MONITORING PLAN AND QAPP SUPPORT		693.18	693.18		
0003	CROSS-SECTIONAL SURVEYS		954.57	9,649.73		
0004	WET WEATHER MONITORING		11,263.11	107,273.74		
0005	DATA QA/QC, DATA COMPILATION & DATA SUBMITTAL		0.00	0.00		
TOTAL		266,765.00	14,807.04	126,442.12	47.40%	140,322.88

CURRENT AMOUNT DUE 14,807.04

Reviewed
5/30/13
& sent to
A/P

COPY

INVOICE

County of San Diego
Phase 2 HMP Monitoring - TO 27
RBF JN 132261

	Hours	Rate	Current Fee:	
Task 1 - Project Management				
Water Quality Project Manager	12	$141.02	$1,692.24	
Sr. Geographic Info. Systems Analyst	2	$101.97	$203.94	
Total			**$1,896.18**	✓
Task 2 - Monitoring Plans and QAPP Support				
Land Use Environmental Planner III	6	$115.53	$693.18	
Total			**$693.18**	✓
Task 3 - Cross-sectional Surveys				
Water Quality Project Manager	2	$141.02	$282.04	
Land Use Environmental Planner III	5.5	$115.53	$635.42	
Materials and Supplies			$37.11	
Total			**$954.57**	✓
Task 4 - Wet Weather Monitoring				
Water Quality Project Manager	4.5	$141.02	$634.59	
Sr. Civil Engineer	4	$138.77	$555.08	
Civil Engineer	6	$119.93	$719.58	
Land Use Environmental Planning Mngr.	2.5	$131.51	$328.78	
Land Use Environmental Planner III	42.5	$115.53	$4,910.03	
Lane Use Environmental Planner II	0	$100.76	$0.00	
Land Use Environmental Planner I	0	$86.54	$0.00	
Geographic Info. Systems Technician	26.6	$62.59	$1,664.90	
Sampling and Monitoring Expenses			**$2,450.15**	✓
Total			**$11,263.11**	✓
Grand Total	113.6		**$14,807.04**	✓

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3600

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America ABA: 011900254

Invoice Number: MAY2013-08063

Invoice Date: 05/21/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

INVOICE SUMMARY

			Contract Value
Customer Number:	14974	Cost:	266,765.00
Prime Contract Number:	RBF Contract 534079		
		Total:	266,765.00
Customer PO Number:	Task Order 27	Cumulative Amount Billed:	126,442.12
Project Number:	14974.212.002		
Project Name:	Phase II – Hydromodification Monitoring		

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 06/20/2013

Billing Period From: 03/30/2013
To: 05/03/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	6.00	119.9300	719.58
Environmental Scientist III			
Engelhorn, Garth	48.00	115.5300	5,545.45
Yonemasu, Satomi	6.00	115.5300	693.18
Environmental Senior Scientist			
Stefanosky, Susan L	2.50	131.5100	328.78
Project Control			
Ventures, Ameedylyn	2.00	101.9700	203.94
Senior Technician			
Batliner, Elizabeth	0.20	62.5900	12.52
Hand, Daniel	7.80	62.5900	488.20
Lee, Raymond	9.30	62.5900	582.09
Nguyen, Tien	9.30	62.5900	582.09
Sr. Civil Engineer			
Cotts, Anthony M	4.00	138.7700	555.08
Water Quality Project Manager			
Renfrew, David S	18.50	141.0200	2,608.87
Labor	113.60		12,319.78

Sub Lab Analysis	1,400.00
Materials & Supplies	380.54
Trav-Mileage Expense	53.11
Trav-Car Rental	653.61
Expenses	2,487.26

Invoice Total 14,807.04 ✓

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

INVOICE

Page: 1

Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP MONITORING PHASE II

Weston Project No.
14974.212.002

Weston Invoice No.
MAY2013-08063

Project Desription
County of SD - Phase II HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0001 - RBF-SD HMPII Proj Mgmt								
018565	Renfrew, David	4/19/2013	4/16/2013	1.0		8	1533	R
		4/19/2013	4/18/2013	1.0		8	1533	R
		4/19/2013	4/19/2013	2.0		8	1533	R
		4/26/2013	4/22/2013	5.0	TAC MEETING	1	1533	R
		4/26/2013	4/25/2013	0.5	TAC MEETING	1	1533	R
		4/26/2013	4/26/2013	1.0	TAC MEETING	1	1533	R
		5/3/2013	4/29/2013	1.0		12	1533	R
		5/3/2013	5/1/2013	0.5		12	1533	R
	Total: Renfrew, David			**12.0**				
018233	Ventures, Ameedylyn	4/19/2013	4/19/2013	2.0	PROJECT ADMIN	14	1533	OS1
	Total: Ventures, Ameedylyn			**2.0**				
Total: 14974.212.002.0001				**14.0**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0002 - RBF-SD HMPII QAPP/MonPlan								
019372	Engelhorn, Garth	4/19/2013	4/16/2013	2.5		8	1533	R
		4/19/2013	4/17/2013	1.5		8	1533	R
		4/19/2013	4/18/2013	1.0		8	1533	R
		4/19/2013	4/19/2013	1.0		8	1533	R
	Total: Engelhorn, Garth			**6.0**				
Total: 14974.212.002.0002				**6.0**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0003 - RBF-SD HMPII								
019372	Engelhorn, Garth	4/5/2013	4/3/2013	1.0		9	1533	R
		4/5/2013	4/4/2013	4.5		9	1533	R
	Total: Engelhorn, Garth			**5.5**				

018565	Renfrew, David	4/5/2013	4/2/2013	0.5		3	1533	R
		4/5/2013	4/3/2013	1.0		3	1533	R
		4/5/2013	4/4/2013	0.5		3	1533	R
	Total: Renfrew, David			**2.0**				
Total: 14974.212.002.0003				**7.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0004 - RBF-SD HMPII Wet Event Monitoring								
018396	Batliner, Elizabeth	4/12/2013	4/10/2013	0.2		9	1533	R
	Total: Batliner, Elizabeth			**0.2**				
019890	Cotts, Anthony	4/19/2013	4/16/2013	1.0	Flow Data QA	17	1533	R
		4/19/2013	4/18/2013	2.5	Flow Data QA	17	1533	R
		4/19/2013	4/19/2013	0.5	Flow Data QA	17	1533	R
	Total: Cotts, Anthony			**4.0**				
019372	Engelhorn, Garth	4/5/2013	4/2/2013	2.0		7	1533	R
		4/5/2013	4/4/2013	1.0		13	1533	R
		4/12/2013	4/8/2013	2.0		6	1533	R
		4/12/2013	4/11/2013	3.0		6	1533	R
		4/12/2013	4/12/2013	1.0		6	1533	R
		4/19/2013	4/15/2013	2.0		6	1533	R
		4/19/2013	4/16/2013	2.0		6	1533	R
		4/19/2013	4/17/2013	3.0		6	1533	R
		4/19/2013	4/18/2013	3.0		6	1533	R
		4/19/2013	4/19/2013	3.5		6	1533	R
		4/26/2013	4/22/2013	6.0		2	1533	R
		4/26/2013	4/23/2013	1.0		2	1533	R
		4/26/2013	4/24/2013	2.0		2	1533	R
		4/26/2013	4/26/2013	2.0		2	1533	R
		5/3/2013	4/29/2013	1.0		9	1533	R
		5/3/2013	4/30/2013	2.0		9	1533	R
	Total: Engelhorn, Garth			**36.5**				
080922	Hand, Daniel	3/8/2013	3/8/2013	7.8		SUPP	1533	R
	Total: Hand, Daniel			**7.8**				
019363	Huber, Sara	4/12/2013	4/12/2013	2.0		9	1533	R
		4/19/2013	4/15/2013	4.0		4	1533	R
	Total: Huber, Sara			**6.0**				
080920	Lee, Raymond	3/8/2013	3/8/2013	8.0		SUPP	1533	R
		3/8/2013	3/8/2013	1.3		SUPP	1533	OS1
	Total: Lee, Raymond			**9.3**				
080373	Nguyen, Tien	3/8/2013	3/8/2013	8.0		SUPP	1533	R
		3/8/2013	3/8/2013	1.3		SUPP	1533	OS1
	Total: Lee, Raymond			**9.3**				

018565	Renfrew, David	4/5/2013	4/4/2013	1.0		9	1533	R
		4/5/2013	4/5/2013	0.5		9	1533	R
		4/12/2013	4/8/2013	1.0		5	1533	R
		4/12/2013	4/9/2013	1.0		5	1533	R
		4/19/2013	4/15/2013	1.0		4	1533	R
	Total: Renfrew, David			**4.5**				
004512	Stefanosky, Susan	4/5/2013	4/3/2013	2.5		4	1533	R
	Total: Stefanosky, Susan			**2.5**				
018045	Yonemasu, Satomi	4/5/2013	4/3/2013	1.0		7	1533	R
		4/5/2013	4/4/2013	5.0		7	1533	R
	Total: Yonemasu, Satomi			**6.0**				
Total: 14974.212.002.0004				**86.1**				

Total: 14974.212.002 COUNTY OF SD - Phase II HMP Monitoring	**113.6**

Approved by: Dave Renfrew

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000 Fax 610-701-3000

ACH PAYMENTS: Weston Solutions, Inc
Account: 009429233571
Bank of America, ABA: 011900454

Invoice Number: MAY2013-08063

Invoice Date: 05/21/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 06/20/2013

Billing Period From: 03/30/2013
To: 05/03/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Project Control Ventures, Ameedylyn	2.00	101.9700	203.94
Water Quality Project Manager Renfrew, David S	12.00	141.0200	1,692.24
Labor	14.00		1,896.18
Task Total			1,896.18

INVOICE

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3600

ACH PAYMENTS: Weston Solutions, Inc
Account: 009429223574
Bank of America, ABA: 011900254

Invoice Number: MAY2013-08063

Invoice Date: 05/21/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0002
Task Name: RBF-SD HMPII QAPP/Monitoring Plan
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 06/20/2013

Billing Period From: 03/30/2013
To: 05/03/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	6.00	115.5300	693.18
Labor	6.00		693.18
Task Total			693.18

INVOICE

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3507

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America ABA: 011900254

Invoice Number: MAY2013-08063

Invoice Date: 05/21/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 06/20/2013

Billing Period From: 03/30/2013
To: 05/03/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	5.50	115.5300	635.42
Water Quality Project Manager			
Renfrew, David S	2.00	141.0200	282.04
Labor	7.50		917.46
Materials & Supplies			37.11
Expenses			37.11

Invoice Total 954.57

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3[illegible]

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429323574
Bank of America, ABA: 011900254

Please [illegible] REMITTANCE DETAIL FOR PAYMENT

Invoice Number:	MAY2013-08063	Project Number:	14974.212.002.0003	Billing Currency	USD
		Project Name:	RBF-SD HMPII Cross-Sectional Survey	Invoice Date:	05/21/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500622203	2013/4	ENGELHORN GARTH	582105	37.11
Total: Materials & Supplies						37.11
Expenses						37.11

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Garth Engelhorn

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

APR 0 8 2013

amw

Header Information

Exp#:	582105	Status:	Submitted on 4/4/2013
Employee:	Engelhorn, Garth (019372)	Entered By:	Engelhorn, Garth
Approver:	Renfrew, David S.	Total Amount:	$37.11
		Total Out of Pocket:	$0.00
Purpose:	Rebar and Fence Posts for HMP Surveys		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
4/4/2013	Supplies - Field	Lowe's	Rebar and Fence Posts for Surveys	14974.212.002.0003	*$37.11

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.002.0003		
	Supplies - Field	$37.11
Totals	14974.212.002.0003	$37.11

Verification amwelson - 4/08/13

582105

LOWE'S

NEVER STOP IMPROVING

LOWE'S HIW, INC.
555 GRAND AVENUE
SAN MARCOS, CA 92069 (760)891-3700

- SALE -

SALES#: S1697BR1 1436823 TRANS#: 20063567 04-04-13

32083 L-POST STEEL LIGHT DUTY 4	16.44
4 @ 4.11	
5885 1/2 IN X 24-IN STEEL REBA	3.95
2 @ 1.98	
83830 1/2 IN X 48-IN #4 REBAR P	5.95
2 @ 2.98	
8137 1/2-IN X 3-FT STEEL REBAR	8.00
4 @ 2.00	

SUBTOTAL:	34.36
TAX:	2.75
INVOICE 20614 TOTAL:	37.11
VISA:	37.11

VISA:XXXXXXXXXXXX7474 AMOUNT:37.11 AUTHCD:066993
SWIPED METHOD:0935601697206 04/04/13 09:39:53
CUSTOMER CODE: 0

STORE: 1697 TERMINAL: 20 04/04/13 09:40:10

OF ITEMS PURCHASED: 12

EXCLUDES FEES, SERVICES AND SPECIAL ORDER ITEMS

THANK YOU FOR SHOPPING LOWE'S.
SEE REVERSE SIDE FOR RETURN POLICY.
STORE MANAGER: MARC STEIN

WE HAVE THE LOWEST PRICES, GUARANTEED!
IF YOU FIND A LOWER PRICE, WE WILL BEAT IT BY 10%.
SEE STORE FOR DETAILS

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000 Fax 610-701-3600

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223524
Bank of America, ABA: 011900254

Invoice Number: MAY2013-08063

Invoice Date: 05/21/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring (Part I) - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event Monitoring
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 06/20/2013

Billing Period From: 03/30/2013
To: 05/03/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	6.00	119.9300	719.58
Environmental Scientist III			
Engelhorn, Garth	36.50	115.5300	4,216.85
Yonemasu, Satomi	6.00	115.5300	693.18
Environmental Senior Scientist			
Stefanosky, Susan L	2.50	131.5100	328.78
Senior Technician			
Batliner, Elizabeth	0.20	62.5900	12.52
Hand, Daniel	7.80	62.5900	488.20
Lee, Raymond	9.30	62.5900	582.09
Nguyen, Tien	9.30	62.5900	582.09
Sr. Civil Engineer			
Cotts, Anthony M	4.00	138.7700	555.08
Water Quality Project Manager			
Renfrew, David S	4.50	141.0200	634.59
Labor	86.10		8,812.96

Sub Lab Analysis	1,400.00
Materials & Supplies	343.43
Trav-Mileage Expense	53.11
Trav-Car Rental	653.61
Expenses	2,450.15

Task Total 11,263.11 ✓

05P-0606 2/12

INVOICE

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 0094292243574
Bank of America, ABA: 011900254

Invoice Number:	MAY2013-08063	Project Number:	14974.212.002.0004	Billing Currency	USD
		Project Name:	RBF-SD HMPII Wet Event Monitoring	Invoice Date:	05/21/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Sub Lab Analysis					
Subcontracted Lab An	Laboratory Analytical Services	500621815	2013/4	ENVIRO MATRIX ANALYTICAL	3030729	490.00
		500621816	2013/4		3030732	350.00
		500621817	2013/4		3030730	280.00
		500621818	2013/4		3030731	280.00
Total: Sub Lab Analysis						1,400.00
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500622252	2013/4	ISHAM WILLIAM	579994	3.99
		500622550	2013/4	CAMPAGNA LAURENCE	579189	339.44
Total: Materials & Supplies						343.43
Line Description:	Trav-Mileage Expense					
Travel-Mileage Expen	Travel-Mileage Expense	500622252	2013/4	ISHAM WILLIAM	579994	53.11
Total: Trav-Mileage Expense						53.11
Line Description:	Trav-Car Rental					
Travel-Car Rental	Travel-Car Rental	500622550	2013/4	CAMPAGNA LAURENCE	579189	210.11
		500623903	2013/4	BATLINER ELIZABETH	582779	294.94
		500623964	2013/4		582772	148.56
Total: Trav-Car Rental						653.61
Expenses						2,450.15

tmg02
2013.4.2

EnviroMatrix Analytical, Inc.

MAR 28 2013

Ck# 5062815

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
3030729

Invoiced On:
03/21/13

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
03/08/13

Project
County of San Diego HMP Phase II Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.~~001.0005~~ 002.0004.03

Project Manager
Jennifer Beyer

Work Order(s)
13C0261

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
14	Turbidity-Liquid [Normal TAT]	Water	$14.00	$196.00
14	Solids, SSC [Normal TAT]	Water	$21.00	$294.00

Invoice Total: $490.00 L1

INVOICE APPROVAL

DATE REC: 4/03/13
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0081053
WO # 14974.212.002.0004.03 ✓

RETURN TO ANALYN NELSON

EM902
2013.4.2
Vchr# 506721816

EnviroMatrix Analytical, Inc.

MAR 28 2013

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
3030732

Invoiced On:
03/21/13

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
03/08/13

Project
County of San Diego HMP Phase II Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.~~001.0005~~ 002.0004.03

Project Manager
Jennifer Beyer

Work Order(s)
13C0262

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
10	Turbidity-Liquid [Normal TAT]	Water	$14.00	$140.00
10	Solids, SSC [Normal TAT]	Water	$21.00	$210.00

Invoice Total: $350.00

INVOICE APPROVAL

DATE REC: 4/03/13
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0081053
WO # 14974.212.002.0004.03 ✓

RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

EMA902
2013.4.2
vchr#500621817

EnviroMatrix Analytical, Inc.

MAR 28 2013
amN

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
3030730

Invoiced On:
03/21/13

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
03/08/13

Project
County of San Diego HMP Phase II Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.~~001.0005~~ 002.0004.03

Project Manager
Jennifer Beyer

Work Order(s)
13C0263

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
8	Turbidity-Liquid [Normal TAT]	Water	$14.00	$112.00
8	Solids, SSC [Normal TAT]	Water	$21.00	$168.00

Invoice Total: $280.00

INVOICE APPROVAL

DATE REC: 4/03/13
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 008/053
WO # 14974.212.002.0004.03 ✓

RETURN TO ANALYN NELSON

EM902
2013.4.2
vchr# 50062 1818

EnviroMatrix Analytical, Inc.

MAR 28 2013
am

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

Invoice Number
3030731

Invoiced On:
03/21/13

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
03/08/13

Project
County of San Diego HMP Phase II Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.~~001.0005~~
002, 0004.03

Project Manager
Jennifer Beyer

Work Order(s)
13C0268

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
8	Turbidity-Liquid [Normal TAT]	Water	$14.00	$112.00
8	Solids, SSC [Normal TAT]	Water	$21.00	$168.00

Invoice Total: $280.00

INVOICE APPROVAL

DATE REC: 4/03/13

APPROVED BY: Dave Renfrew

SIGNATURE:

PO # 008/053

WO # 14974.212.002.0004.03

RETURN TO ANALYN NELSON

ExpenseTrack

Travel & Expense Report

Enter Expense Report --- Step 4. Confirm Expense Report

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

Header Information			
Exp#:	579994	Status:	Submitted on 3/19/2013
Employee:	Isham, William H (018016)	Begin Date:	3/5/2013
Entered By:	Isham, William H.	End Date:	3/8/2013
Approver:	Renfrew, David S.	Time Departed:	8:00 AM
Travel Method:	Automobile	Time Returned:	5:00 PM
Purpose:	POLB interview and HMP wet event		
Total Amount:	$63.35	Total Out of Pocket:	$63.35

Detailed Information

Date	Category	City	Description	Project	Amount
3/5/2013	Parking & Tolls	Orange County	Toll	00934.851.943	$6.25
3/8/2013	Mileage	San Diego	personal vehicle	14974.212.002.0004.02	$53.11
3/8/2013	Supplies - Field	San Diego	sample ice	14974.212.002.0004.02	$3.99

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
00934.851.943		
	Parking & Tolls	$6.25
Totals	00934.851.943	$6.25
14974.212.002.0004.02		
	Mileage	$53.11
	Supplies - Field	$3.99
Totals	14974.212.002.0004.02	$57.10

Verification _____ 3/20/13

579994

WELCOME TO CHEVRON

Chevron, 299
6795 MIRA MESA BLVD
SAN DIEGO, CA 92121

03/08/2013 6:04:48 AM
Register: 1 Trans #: 9191 Op ID: 14
Your cashier: TONY

IC8	$3.99	99
Subtotal =	$3.99	
Tax =	$0.00	
Total =	$3.99	
Change Due =	$-0.01	
Cash	$4.00	

THANK YOU FOR SHOPPING AT CHEVRON
PLEASE COME AGAIN

ExpenseTrack

P-Card Report — Step 4. Confirm P-Card

P-Card Expense Confirm

Welcome, Laurence Campagna

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt(s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

Header Information

Exp#:	579189	Status:	Submitted on 3/13/2013
Employee:	Campagna, Laurence (017996)	Entered By:	Campagna, Laurence
Approver:	Renfrew, David S.	Total Amount:	$711.54
		Total Out of Pocket:	$0.00
Purpose:	field work		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
3/5/2013	Supplies - Field	Home Depot	zip ties, 2 100' field measure tapes, 4 scissors, 4 wire cutters, 3 sledge hammers for HMP	14974.212.002.0004.01	*$253.48
3/5/2013	Supplies - Field	Sports Authority	3 stop watches for HMP	14974.212.002.0004.01	*$38.85
3/5/2013	Supplies - Field	Ralph's Supermarket	assorted bags, zip locks for HMP	14974.212.002.0004.01	*$47.11
3/4/2013	Supplies - Field	Sears	new marine battery for BVC-TWAS-1 Solar stolen, bold battery died	13245.212.001.2001	*$161.99
12/12/2012	Auto Rental	Enterprise Rental Car		14974.212.002.0004.01	*$210.11

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
13245.212.001.2001		
	Supplies - Field	$161.99
Totals	13245.212.001.2001	$161.99
14974.212.002.0004.01		
	Auto Rental	$210.11
	Supplies - Field	$339.44
Totals	14974.212.002.0004.01	$549.55

Verification _____

579189

Home

More saving.
More doing.™

7430 S MELROSE DRIVE
VISTA, CA 92081 (760)599-4080

1074 00000[illegible]02542 03/05/13 11:15 AM
CASHIER SAREY - 5949ZR

4718[illegible]071500190 11' TIE DOWN <A> 25.97
11' NATURAL CABLE TIE 50CPK
0761[illegible]4347630 100'GRNFGLPE <A>
FATMAX 100' FIBERGLASS TAPE MEASURE
2016LS7 33.94
0784[illegible]4071735 SCISSORS <A>
FISKARS 8" TI NONSTICK STRGHT SCISSOR
4810.97 43.86
0256[illegible]2139274 7"DIAGPLIER <A>
CHANNELLOCK 7" CROSS CUT DIAG PLIER
4815.98 63.92
0341[illegible]9928214 HAMMER <A>
ESTWING CLB ENGINEER FIBERGLASS HNR
3021.97 65.91

SUBTOTAL 333.62
SALES TAX 19.86
TOTAL $253.48
[illegible]7680 VISA 253.48
AUTH CODE [illegible]392/[illegible]5414[illegible]2 TA
P.O.#/JOB NAME: NO

1074 05 02542 03/05/2013 4342

RETURN POLICY [illegible] DAYS
POLICY ID DAYS POLICY EXPIRES
1 90 [illegible]/2013
HOME DEPOT RE[illegible] RIGHT TO
[illegible] RETURNS PLEASE SEE THE
[illegible]

4MP

Sports Authority # 782
1050 North El Camino Real
Encinitas, CA 92024
760 634.6690

SAL

240 ECONO STOPWATCH BLACK
19056951 11.99 A
240 ECONO STOPWATCH BLACK
19056951 11.99 A
240 ECONO STOPWATCH BLACK
19056951 11.99 A

SUBTOTAL $35.97
A 8.000% Sales Tax ~~$2.88~~
TOTAL ~~$38.85~~ $38.85
Visa
**********7080
PURCHASE
EXPIRY **/** SWIPED
NAME CAMPAGNA/LAURENCE X
AUTH# 033172
03-05-2013 12:54:42
REFERENCE #: 573130

* GET 5% BACK WHEN YOU USE YOUR SPORTS AUTHORITY CARD *

Ilno

get real
{low prices}
@ Ralphs

7140 Avenida Encinas
(760) 431-1060
YOUR CASHIER WAS SELF CHECKOUT

AHMR BKPWDSD	3 99
AHMR BKPWDSD	3 99
AHMR BKPWDSD	3 99
GLAD KIT BAG	8 49
ZPLC STOR BG	5 [illegible]
ZPLC STOR BG	5 [illegible]
SCT-BRT SPNG	4 49
SCT-BRT SPNG	4 [illegible]
SCT-BRT SPNG	[illegible]
TAX	2 60
**** BALANCE	47 11

703 Ralphs #175
7140 Avenida Encinas
Carlsbad CA 92013
VISA Purchase
**********7680
TOTAL: 47.11
REF#: 041103

VISA	47 11
CHANGE	0 00

TOTAL NUMBER OF ITEMS SOLD = [illegible]
03/05/13 12:17PM [illegible] 999

ExpenseTrack

Travel & Expense Report

Enter Expense Report — Step 4. Confirm Expense Report

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

Header Information			
Exp#:	579994	Status:	Submitted on 3/19/2013
Employee:	Isham, William H. (018016)	Begin Date:	3/5/2013
Entered By:	Isham, William H.	End Date:	3/8/2013
Approver:	Renfrew, David S.	Time Departed:	8:00 AM
Travel Method:	Automobile	Time Returned:	5:00 PM
Purpose:	POLB interview and HMP wet event		
Total Amount:	$63.35	Total Out of Pocket:	$63.35

Detailed Information

Date	Category	City	Description	Project	Amount
3/5/2013	Parking & Tolls	Orange County	Toll	00934.851.943	$6.25
3/8/2013	Mileage	San Diego	personal vehicle [illegible]	14974.212.002.0004.02	$53.11
3/8/2013	Supplies - Field	San Diego	sample ice	14974.212.002.0004.02	$3.99

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
00934.851.943		
	Parking & Tolls	$6.25
Totals	00934.851.943	$6.25
14974.212.002.0004.02		
	Mileage	$53.11
	Supplies - Field	$3.99
Totals	14974.212.002.0004.02	$57.10

Verification [illegible] - 3/20/13

579994

ExpenseTrack

P-Card Report — Step 4. Confirm P-Card

P-Card Expense Confirm

Welcome, Laurence Campagna

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt(s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

AMW

Header Information

Exp#:	579189	Status:	Submitted on 3/13/2013
Employee:	Campagna, Laurence (017996)	Entered By:	Campagna, Laurence
Approver:	Renfrew, David S	Total Amount:	$711.54
		Total Out of Pocket:	$0.00
Purpose:	field work		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
3/5/2013	Supplies - Field	Home Depot	zip ties 2 100' field measure tapes, 4 scissors, 4 wire cutters, 3 sledge hammers for HMP	14974.212.002.0004.01	*$253.48
3/5/2013	Supplies - Field	Sports Authority	3 stop watches for HMP	14974.212.002.0004.01	*$38.85
3/5/2013	Supplies - Field	Ralph's Supermarket	assorted bags, zip locks for HMP	14974.212.002.0004.01	*$47.11
3/4/2013	Supplies - Field	Sears	new marine battery for BVC-TWAS-1 Solar stolen, bold battery died	13245.212.001.2001	*$161.99
12/12/2012	Auto Rental	Enterprise Rental Car		14974.212.002.0004.01	*$210.11

Asterisks (*) denote expenses requiring receipts

Summary Totals

Totals		Amount
13245.212.001.2001		
	Supplies - Field	$161.99
Totals	13245.212.001.2001	$161.99
14974.212.002.0004.01		
	Auto Rental	$210.11
	Supplies - Field	$339.44
Totals	14974.212.002.0004.01	$549.55

Verification AMW&Cont - 3-20-13

579189

ENTERPRISE RENT-A-CAR COMPANY OF LOS ANGELES, 1060 AUTO CENTER CT STE M, CARLSBAD, CA 92008-4321 (760) 931-1111

RENTAL AGREEMENT
122600

REP#
45NPY9

RENTER
CAMPAGNA, LAURENCE

ADDITIONAL DRIVER
PIPPEN, ROSS

DATE & TIME OUT
12/12/2012 10:02 AM

DATE & TIME IN
12/14/2012 02:51 PM

BILLING CYCLE
24-HOUR

VEH #1 2012 DODG B15Q SLT2
VIN# 1D6RD6GP9CS291809
LIC# 02278C1
MILES DRIVEN 116

SUMMARY OF CHARGES

Charge Description	Date	Quantity	Per	Rate	Total
TIME & DISTANCE	12/12 - 12/14	3	DAY	$65.00	$195.00
REFUELING CHARGE	12/12 - 12/14				$0.00
			Subtotal:		$195.00
Taxes & Surcharges					
SALES TAX	12/12 - 12/14			7.75%	$15.11
			Total Charges:		$210.11

Total Amount Due $0.00

PAYMENT INFORMATION

AMOUNT PAID	TYPE	CREDIT CARD NUMBER
$210.11	Visa	xxxxxxxxxxxx1031 PENDING

12/14/2012

ExpenseTrack

P-Card Report --- Step 4. Confirm P-Card

P-Card Expense Confirm

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APR 12

am

Exp#:	582779	Status:	Submitted on 4/11/2013
Employee:	Batliner, Elizabeth (018396)	Entered By:	Batliner, Elizabeth
Approver:	Renfrew, David S.	Total Amount:	$755.46
		Total Out of Pocket:	$0.00
Purpose:	Storm water expenses - fuel, ice, and four rental vehicles		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
2/19/2013	Gas - Auto Rental	USA Gasoline	fuel for rental truck	13245.212.008.3001	*$24.08
2/19/2013	Supplies - Field	CVS	ice for Source ID samples	13245.212.008.3001	*$13.35
2/19/2013	Auto Rental	Enterprise	Rental vehicle 1 of 4 (4th charged to Malibu project) rented 2/18/13 - 2/21/13.	14974.212.002.0004.02	*$294.94
2/19/2013	Auto Rental	Enterprise	Rental vehicle 2 of 4 (4th charged to Malibu project) rented 2/18/13 - 2/20/13.	13245.212.008.3001	*$203.41
2/19/2013	Auto Rental	Enterprise	Rental vehicle 3 of 4 (4th charged to Malibu project) rented 2/18/13 - 2/20/13.	13245.212.008.3001	*$219.68

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
13245.212.008.3001		
	Auto Rental	$423.09
	Gas - Auto Rental	$24.08
	Supplies - Field	$13.35
Totals	13245.212.008.3001	$460.52
14974.212.002.0004.02		
	Auto Rental	$294.94
Totals	14974.212.002.0004.02	$294.94

Verification AMWelson - 4/12/13

582779

enterprise

Elizabeth Batliner
Points Balance: 1369
My Account | Redeem Points | Logout

Plus

Rental Receipt - Thank you for your business

ELIZABETH BATLINER

Contract Number: **4KQP2B**
Receipt Date: **Feb 21, 2013**

Enterprise Location: 1060 AUTO CENTER CT STE M
CARLSBAD, CA 92008-4321
US
Tel.: (760) 931-1111

Driver: ELIZABETH BATLINER
Additional Driver: ENGELHORN, GARTH

Start Date:	End Date:	Make/Model	Start Miles	End Miles	Miles Driven
Feb 18, 2013 @ 3:50 pm	Feb 18, 2013 @ 3:51 pm	DODG B15Q	19,853	19,855	2
Feb 18, 2013 @ 3:51 pm	Feb 21, 2013 @ 10:34 am	CHEV S15E	2,585	2,779	194
Total Miles					196

Charge Description	Quantity	Per	Rate	Total
Rate	3	Day	64.40	193.20
CDW	3	Day	14.99	44.97
PAI	3	Day	3.00	9.00
FUEL				19.80
RAP				11.97
			Subtotal:	USD 278.94

DUPLICATE

Taxes and Surcharges

MOTOR VEHICLE FUEL SALES TAX	0.54
SALES TAX	15.46
Subtotal:	USD 294.94
Total Charges:	USD 294.94

Payment Information

CREDIT CARD CCARD	294.94
Subtotal:	USD 294.94
Total Payment Amount:	USD 294.94

If you have any questions about this receipt please contact our support staff at (760) 931-1111 or Email us

ExpenseTrack

P-Card Report --- Step 4. Confirm P-Card

P-Card Expense Confirm

Welcome, Elizabeth Batliner

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt(s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

APR 11 2013

Header Information

Exp#:	582772	Status:	Submitted on 4/10/2013
Employee:	Batliner, Elizabeth (018396)	Entered By:	Batliner, Elizabeth
Approver:	Renfrew, David S.	Total Amount:	$851.27
		Total Out of Pocket:	$0.00
Purpose:	Storm water expenses - two rental vehicles (2/7/13 - 2/11/13)		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
2/7/2013	Auto Rental	Enterprise	Rental vehicle #1 total charge of $445.69 including tax, evenly split 3 ways among projects: HMP, MLS, and MS4 Random (Item 1, 2, and 3 respectively). Rental period was from 2/7-2/11/13.	14974.212.002.0004.02	*$148.56
2/7/2013	Auto Rental	Enterprise	Rental vehicle #1 total charge of $445.69 including tax, evenly split 3 ways among projects: HMP, MLS, and MS4 Random (Item 1, 2, and 3 respectively). Rental period was from 2/7-2/11/13.	13245.212.001.3001	*$148.56
2/7/2013	Auto Rental	Enterprise	Rental vehicle #1 total charge of $445.69 including tax, evenly split 3 ways among projects: HMP, MLS, and MS4 Random (Item 1, 2, and 3 respectively). Rental period was from 2/7-2/11/13.	13245.212.007.3001	*$148.57
2/7/2013	Auto Rental	Enterprise	Rental vehicle #2 total charge of $405.58 including tax, evenly split 3 ways among projects: BVC, MS4 Target, and Source ID (Item 4, 5, and 6 respectively). Rental period was from 2/7-2/11/13.	13332.112.003.0004	*$135.19
2/7/2013	Auto Rental	Enterprise	Rental vehicle #2 total charge of $405.58 including tax, evenly split 3 ways among projects: BVC, MS4 Target, and Source ID (Item 4, 5, and 6 respectively). Rental period was from 2/7-2/11/13.	13245.212.007.4001	*$135.19
2/7/2013	Auto Rental	Enterprise	Rental vehicle #2 total charge of $405.58 including tax, evenly split 3 ways among projects: BVC, MS4 Target, and Source ID (Item 4, 5, and 6 respectively). Rental period was from 2/7-2/11/13.	13245.212.008.3001	*$135.20

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
13245.212.001.3001		
	Auto Rental	$148.56
Totals	13245.212.001.3001	$148.56
13245.212.007.3001		
	Auto Rental	$148.57
Totals	13245.212.007.3001	$148.57

AmVefson - 4/12/13.

http://prdnet/ExpenseTrack/expense/pcard/PCardConfirm.aspx

ENTERPRISE RENT-A-CAR COMPANY OF LOS ANGELES, 1060 AUTO CENTER CT STE M, CARLSBAD, CA 920084321 (760) 931-1111

RENTAL AGREEMENT 125312
REF# 4HNSFM

RENTER
BATLINER, ELIZABETH

ADDITIONAL DRIVER
MCCOY, MICHAEL

DATE & TIME OUT
02/07/2013 05:45 PM
DATE & TIME IN
02/11/2013 10:20 AM

BILLING CYCLE
24-HOUR

VEH #1 2013 CHEV SUB1 1LT2
VIN# 1GNSCJE08DR249332
LIC# AAT9883
MILES DRIVEN 196

SUMMARY OF CHARGES

Charge Description	Date	Quantity	Per	Rate	Total
TIME & DISTANCE	02/07 - 02/11	4	DAY	$64.40	$257.60
DW	02/07 - 02/11	4	DAY	$26.99	$107.96
PAI	02/07 - 02/11	4	DAY	$3.00	$12.00
FUEL SERVICE OPTION	02/07 - 02/11				$30.72
ROADSIDE ASSISTANCE PROTECTION	02/07 - 02/11	4	DAY	$3.99	$15.96
			Subtotal:		**$424.24**
Taxes & Surcharges					
MOTOR VEHICLE FUEL SALES TAX	02/07 - 02/11			2.75%	$0.84
SALES TAX	02/07 - 02/11			8%	$20.61
			Total Charges:	(*)	**$445.69**
Total Amount Due					**$0.00**

PAYMENT INFORMATION

AMOUNT PAID	TYPE	CREDIT CARD NUMBER
$445.69	Visa	xxxxxxxxxxxx2363 PENDING

(*) split into 3 projects:
WO# 14974.212.002.0004.62 — $148.56
WO# 13245.212.001.3001 — $148.56
WO# 13245.212.007.3001 — $148.57

2/11/2013

P : 1002993
O : 50915
E : 52370
T : 001-006
A : 100496

RBF CONSULTING
A Baker Company

Invoice Date: June 27, 2013
Project No.: 132261
Invoice No.: 852131

Todd Snyder
Watershed Protection Program
Department of Public Works
County of San Diego
5510 Overland Ave, Ste 410
San Diego, CA 92123

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Project No.: 132261 Phase 2 Hydromodification Monitor
Agreement No.: 534079
Task Order No.: 27

Professional consulting services for the Phase 2 Hydromodification Monitoring FY 2012-2013

Professional Services through June 2, 2013

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Project Management	$18,090.00	62.71%	$11,343.50	$2,518.03
2.	Monitoring Plans and QAPP Support	$6,465.00	99.64%	$6,442.01	$5,748.83
3.	Cross-sectional Surveys	$22,995.00	53.24%	$12,241.53	$2,591.80
4.	Wet Weather Monitoring and Report	$203,878.00	56.94%	$116,095.99	$8,822.28
5.	Data QA/QC, Compilation and Submittal	$18,064.00	48.21%	$8,708.25	$8,708.25
	Total Fee	**$269,492.00**		**$154,831.28**	**$28,389.19**
			Previous Fee Billing	$126,442.09	
			Total This Invoice	**$28,389.19**	

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

TO #27
ACTIVITY/WA NO.

7/3/2013
DATE

Deb Mosley
PROJECT MANAGER

Deb Mosley

7/3/13
DATE

Todd Snyder
DPW MANAGER

TODD SNYDER

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079".

Payment Remit Address:
RBF Consulting, DEPT LA 24031, Pasadena, CA 91185-4031

County of San Diego
Phase 2 HMP Monitoring - TO 27
RBF JN 132261

	Hours	Rate	Current Fee:
Task 1 - Project Management			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	7.5	$141.02	$1,057.65
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	0	$131.51	$0.00
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	4	$101.97	$407.88
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$33.90
Total			**$1,499.43**
Task 2 - Monitoring Plans and QAPP Support			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	31.5	$131.51	$4,142.57
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Landscape Architect	0	$103.57	$0.00
Total			**$4,142.57**

Task 3 - Cross-sectional Surveys			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	4.5	$131.51	$591.80
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$1,000.00
Total			**$1,591.80**
Task 4 - Wet Weather Monitoring and Report			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	1	$138.77	$138.77
Civil Engineer	28.9	$119.93	$3,465.98
Land Use Environmental Planning Mngr.	12.5	$131.51	$1,643.88
Land Use Environmental Planner I	9	$86.54	$778.86
Lane Use Environmental Planner II	8	$100.76	$806.08
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$0.00
Total			**$6,833.57**
Task 5 - Data QA/QC, Compilation and Submittal			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	13	$131.51	$1,709.63
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$0.00
Total			**$1,709.63**
Grand Total	119.9		**$15,777.00**

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE II HYDROMODIFICATION MONITORING- TASK ORDER NO. 27

INVOICE DATE: 6/12/2013
PROJECT NUMBER: 14974.212.002
INVOICE NUMBER: JUN2013-02786
BILLING PERIOD: 05/04/2013 TO 05/31/2013

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	PHASE 2 - HYDROMODIFICATION MONITORING	266,765.00	15,777.00	142,219.12	53.31%	124,545.88
0001	PROJECT MANAGEMENT		1,499.43	10,324.90		
0002	MONITORING PLAN AND QAPP SUPPORT		4,142.57	4,835.75		
0003	CROSS-SECTIONAL SURVEYS		1,591.80	11,241.53		
0004	WET WEATHER MONITORING		6,833.57	114,107.31		
0005	DATA QA/QC, COMPILATION & SUBMITTAL		1,709.63	1,709.63		
TOTAL		266,765.00	15,777.00	142,219.12	53.31%	124,545.88

CURRENT AMOUNT DUE 15,777.00

05P-0506 2/12

INVOICE

F.E.I.N. 23-1501990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02786

Invoice Date: 06/12/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

INVOICE SUMMARY

			Contract Value
Customer Number:	14974	Cost:	266,765.00
Prime Contract Number:	RBF Contract 534079		
		Total:	266,765.00
Customer PO Number:	Task Order 27	Cumulative Amount Billed:	142,219.12
Project Number:	14974.212.002		
Project Name:	Phase II – Hydromodification Monitoring		

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/12/2013

Billing Period From: 05/04/2013
To: 05/31/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	28.90	119.9300	3,465.98
Environmental Scientist I			
Cropper, Scott J	1.00	86.5400	86.54
Mathis, Melissa E	8.00	86.5400	692.32
Environmental Scientist II			
Campagna, Laurence	8.00	100.7600	806.08
Environmental Senior Scientist			
Engelhorn, Garth	56.50	131.5100	7,430.33
Owen, Damon	2.00	131.5100	263.02
GIS Specialist			
Dister, Sheri	3.00	131.5100	394.53
Project Control			
Ventures, Ameedylyn	4.00	101.9700	407.88
Sr. Civil Engineer			
Cotts, Anthony M	1.00	138.7700	138.77
Water Quality Project Manager			
Renfrew, David S	7.50	141.0200	1,057.65
Labor	119.90		14,743.10
Subcontractor			1,000.00
Trav-Mileage Expense			33.90
Expenses			1,033.90
Invoice Total			15,777.00

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

Page: 1

05P-0808 2/12

INVOICE

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Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP MONITORING PHASE II

Weston Project No.
14974.212.002

Weston Invoice No.
JUN2013-02786

Project Desription
County of SD - Phase II HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0001 - RBF-SD HMPII Proj Mgmt								
018565	Renfrew, David	5/10/2013	5/6/2013	0.5		2	1533	R
		5/10/2013	5/7/2013	1.0		2	1533	R
		5/10/2013	5/10/2013	0.5		2	1533	R
		5/17/2013	5/13/2013	1.0		3	1533	R
		5/17/2013	5/16/2013	0.5		3	1533	R
		5/24/2013	5/20/2013	1.0		2	1533	R
		5/24/2013	5/24/2013	1.0		2	1533	R
		5/31/2013	5/29/2013	0.5		2	1533	R
		5/31/2013	5/30/2013	0.5		2	1533	R
		5/31/2013	5/31/2013	1.0		2	1533	R
	Total: Renfrew, David			**7.5**				
018233	Ventures, Ameedylyn	5/17/2013	5/17/2013	2.0	PROJECT ADMIN	15	1616	OS1
		5/24/2013	5/22/2013	2.0	PROJECT ADMIN	17	1616	R
	Total: Ventures, Ameedylyn			**4.0**				
Total: 14974.212.002.0001				**11.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0002 - RBF-SD HMPII QAPP/MonPlan								
019372	Engelhorn, Garth	5/10/2013	5/7/2013	2.0		11	1533	R
		5/10/2013	5/8/2013	3.5		11	1533	R
		5/10/2013	5/9/2013	2.0		11	1533	R
		5/17/2013	5/13/2013	2.0		10	1533	R
		5/17/2013	5/16/2013	2.0		10	1533	R
		5/17/2013	5/17/2013	1.0		10	1533	R
		5/17/2013	5/17/2013	2.0		13	1533	UOT
		5/24/2013	5/20/2013	2.0		4	1533	R
		5/24/2013	5/21/2013	3.0		4	1533	R
		5/24/2013	5/22/2013	1.0		4	1533	R
		5/24/2013	5/23/2013	4.0		4	1533	R
		5/24/2013	5/24/2013	2.0		4	1533	R
		5/31/2013	5/28/2013	1.0		5	1533	R
		5/31/2013	5/29/2013	2.0		5	1533	R
		5/31/2013	5/30/2013	2.0		5	1533	R
	Total: Engelhorn, Garth			**31.5**				
Total: 14974.212.002.0002				**31.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0003 - RBF-SD HMPII CrossSection								
019372	Engelhorn, Garth	5/10/2013	5/7/2013	0.5		10	1533	R
		5/10/2013	5/10/2013	2.5		10	1533	R
		5/10/2013	5/10/2013	1.5		14	1533	UOT
	Total: Engelhorn, Garth			4.5				
Total: 14974.212.002.0003				4.5				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0004 - RBF-SD HMPII Wet Event Monitoring								
017996	Campagna, Laurence	5/10/2013	5/10/2013	8.0		6	1533	R
	Total: Campagna, Laurence			8.0				
019890	Cotts, Anthony	5/10/2013	5/6/2013	1.0	Flow data QA and calculations	15	1533	R
	Total: Cotts, Anthony			1.0				
019077	Cropper, Scott	5/31/2013	5/29/2013	1.0		4	1533	R
	Total: Cropper, Scott			1.0				
019437	Dister, Sheri	5/31/2013	5/29/2013	2.3		8	1533	R
		5/31/2013	5/30/2013	0.7		8	1533	R
	Total: Dister, Sheri			3.0				
019372	Engelhorn, Garth	5/10/2013	5/6/2013	1.5		5	1533	R
		5/10/2013	5/7/2013	1.0		5	1533	R
		5/10/2013	5/8/2013	1.0		5	1533	R
		5/10/2013	5/10/2013	3.0		5	1533	R
		5/17/2013	5/13/2013	1.0		9	1533	R
	Total: Engelhorn, Garth			7.5				
019363	Huber, Sara	5/17/2013	5/13/2013	5.5	Draft Report Intro and Methods	10	1533	R
		5/17/2013	5/14/2013	2.5	Draft Report, Tables	10	1533	R
		5/17/2013	5/15/2013	1.0	Events language	10	1533	R
		5/17/2013	5/16/2013	1.7	Events language and bedload figures	10	1533	R
		5/17/2013	5/17/2013	1.5		10	1533	R
		5/24/2013	5/20/2013	3.5		4	1533	R
		5/24/2013	5/21/2013	3.5		4	1533	R
		5/24/2013	5/22/2013	3.0		4	1533	R
		5/24/2013	5/24/2013	1.0		4	1533	R
		5/31/2013	5/28/2013	5.7	Tables for report - runoff, rainfall and bedload details for each site and event	3	1533	R
	Total: Huber, Sara			28.9				
019581	Mathis, Melissa	5/10/2013	5/10/2013	8.0		6	1533	R
	Total: Mathis, Melissa			8.0				

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018253	Owen, Damon	5/10/2013	5/8/2013	1.0		5	1533	R
		5/10/2013	5/10/2013	1.0		5	1533	R
	Total: Owen, Damon			2.0				
Total: 14974.212.002.0004				59.4				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0005 - RBF-SDHMPII DataQA/Submittal								
019372	Engelhorn, Garth	5/24/2013	5/20/2013	2.0		7	1533	R
		5/24/2013	5/21/2013	1.0		7	1533	R
		5/24/2013	5/22/2013	2.0		7	1533	R
		5/24/2013	5/24/2013	1.0		7	1533	R
		5/31/2013	5/28/2013	2.0		6	1533	R
		5/31/2013	5/29/2013	2.0		6	1533	R
		5/31/2013	5/30/2013	3.0		6	1533	R
	Total: Engelhorn, Garth			13.0				
Total: 14974.212.002.0005				13.0				

Total: 14974.212.002 COUNTY OF SD - Phase II HMP Monitoring	119.9

Approved by: Dave Renfrew

12618

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02786

Invoice Date: 06/12/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/12/2013

Billing Period From: 05/04/2013
To: 05/31/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Project Control Ventures, Ameedylyn	4.00	101.9700	407.88
Water Quality Project Manager Renfrew, David S	7.50	141.0200	1,057.65
Labor	11.50		1,465.53
Trav-Mileage Expense			33.90
Expenses			33.90
Task Total			1,499.43

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02786

Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management

Billing Currency USD
Invoice Date: 06/12/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Trav-Mileage Expense					
Travel-Mileage Expen	Travel-Mileage Expense	500629831	2013/5	RENFREW DAVID	585910	33.90
Total: Trav-Mileage Expense						33.90
Expenses						33.90

ExpenseTrack

P-Card Expense Confirm

P-Card Report -- Step 4. Confirm P-Card

Welcome, David S. Renfrew

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

MAY 09 2013
BY: amr

Header Information			
Exp#:	585910	Status:	Submitted on 5/8/2013
Employee:	Renfrew, David S. (018565)	Entered By:	Renfrew, David S.
Approver:	Crumpacker, Andrea L.	Total Amount:	$604.15
		Total Out of Pocket:	$190.97
Purpose:	April-May Expenses		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount
4/17/2013	Mileage	Mileage	Mileage to and from SSFL for Job Walk	00934.460.008	$144.64
4/22/2013	Mileage	Mileage	Mileage to and from County for HMP TAC Meeting	14974.212.002.0061	$33.90
4/30/2013	Mileage	Mileage		00834.851.900	$12.43
4/30/2013	Employee Morale/Welfare	7-Eleven		13245.212.001.8888	*$109.90
4/30/2013	Employee Morale/Welfare	Beachside Bar & Grill		13245.212.001.8888	*$226.28
5/8/2013	Conference Fees	CASQA	CASQA Quarterly Meeting Fee	00834.851.925	*$75.00
5/8/2013	Check Fee	US Bank	Check Fee for #1113	91533	$2.00

256 miles
60 miles @ .565/mi
22 miles

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
00834.851.900		
	Mileage	$12.43
Totals	00834.851.900	$12.43
00834.851.925		
	Conference Fees	$75.00
Totals	00834.851.925	$75.00
00934.460.008		
	Mileage	$144.64
Totals	00934.460.008	$144.64
13245.212.001.8888		
	Employee Morale/Welfare	$336.18

amr/cm - 5/09/13

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02786

Invoice Date: 06/12/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0002
Task Name: RBF-SD HMPII QAPP/Monitoring Plan
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/12/2013

Billing Period From: 05/04/2013
To: 05/31/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Senior Scientist			
Engelhorn, Garth	31.50	131.5100	4,142.57
Labor	31.50		4,142.57
Task Total			4,142.57

05P-0808 2/12

INVOICE

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Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/12/2013

Billing Period From: 05/04/2013
To: 05/31/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Senior Scientist			
Engelhorn, Garth	4.50	131.5100	591.80
Labor	4.50		591.80
Subcontractor			1,000.00
Expenses			1,000.00
Task Total			1,591.80

06R-0606 2/12

INVOICE

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Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02786

Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey

Billing Currency USD
Invoice Date: 06/12/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description: Subcontractor	Subcontractor					
Subcontractor	Consulting Services	500626919	2013/5	BRISENDINE LAND SERVICES	1958	1,000.00
Total: Subcontractor						1,000.00
Expenses						1,000.00

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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Brisendine Land Services, Inc.
Land Surveying, Mapping, Civil Engineering &
Storm Water Management
1308 Main Street, Suite 205, Ramona, CA 92065
Ph 760-788-8027 Fx 760-788-8005
Info@BLSsd.net www.BLSSD.net
Edward O. Brisendine, CA LS 8027, AZ LS 48500

Invoice

Date	Invoice#
04/11/2013	1956
Terms	**Due Date**
Due on receipt	04/11/2013

Bill To
Black Canyon
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

RECEIVED
MAY 02 2013
BY: CAW

BLS03
2013.5.2
rch# 500626919

Amount Due	Enclosed
$1,000.00	

Please detach top portion and return with your payment

Date	Activity	Quantity	Rate	Amount
04/04/2013	Provide field survey services for an unnamed creek off of Black Canyon Rd., east of the northerly terminus of Lapis Lane in Ramona. The field work includes one cross section of the creek from bank to bank and a survey of approximately 240 feet upstream and downstream along the thread of the creek. In addition to the data collection, set two survey monuments (3/8"-rebar) as reference/control points for future use. Tie data to the NAVD 88 vertical datum and NAD 83 for horizontal control. Provide horizontal and vertical locations to 0.01' in an excel worksheet.	1	1,000.00	1,000.00

INVOICE APPROVAL
DATE REC: 4/20/13
APPROVED BY: David Renfrew
SIGNATURE:
PO # 0081066
WO # 14974.212.002.0003
RETURN TO ANALYN NELSON

Payment is due in 15 days. Late fees of .7% per month (unless otherwise outlined in the contract) will be assessed on any unpaid balance after 30 days.

Total	$1,000.00

L1

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
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Invoice Date: 06/12/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

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Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Project Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event Monitoring and Report
Task Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/12/2013

Billing Period From: 05/04/2013
To: 05/31/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	28.90	119.9300	3,465.98
Environmental Scientist I			
Cropper, Scott J	1.00	86.5400	86.54
Mathis, Melissa E	8.00	86.5400	692.32
Environmental Scientist II			
Campagna, Laurence	8.00	100.7600	806.08
Environmental Senior Scientist			
Engelhorn, Garth	7.50	131.5100	986.33
Owen, Damon	2.00	131.5100	263.02
GIS Specialist			
Dister, Sherl	3.00	131.5100	394.53
Sr. Civil Engineer			
Cotts, Anthony M	1.00	138.7700	138.77
Labor	59.40		6,833.57
Task Total			6,833.57

OSP-0606 2/12

INVOICE

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Phone 610-701-3000/Fax 610-701-3607

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PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02786

Invoice Date: 06/12/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

Bill To:
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Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0005
Task Name: RBF-SDHMPII Data QA/QC, Compilation and Submittal
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/12/2013

Billing Period From: 05/04/2013
To: 05/31/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Senior Scientist			
Engelhorn, Garth	13.00	131.5100	1,709.63
Labor	13.00		1,709.63
Task Total			1,709.63

INVOICE

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County of San Diego
Phase 2 HMP Monitoring - TO 27
RBF JN 132261

	Hours	Rate	Current Fee:
Task 1 - Project Management			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	6.5	$141.02	$916.63
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	0	$131.51	$0.00
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	1	$101.97	$101.97
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$0.00
Total			**$1,018.60**
Task 2 - Monitoring Plans and QAPP Support			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	8	$131.51	$1,052.08
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	5.5	$100.76	$554.18
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Landscape Architect	0	$103.57	$0.00
Total			**$1,606.26**

Task 3 - Cross-sectional Surveys			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	0	$131.51	$0.00
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$1,000.00
Total			**$1,000.00**
Task 4 - Wet Weather Monitoring and Report			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	0	$141.02	$0.00
Sr. Civil Engineer	0	$138.77	$0.00
Civil Engineer	4	$119.93	$479.72
Land Use Environmental Planning Mngr.	8	$131.51	$1,052.08
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	0	$100.76	$0.00
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	7.3	$62.59	$456.91
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$0.00
Total			**$1,988.71**
Task 5 - Data QA/QC, Compilation and Submittal			
LUEG Program Manager	0	$227.21	$0.00
Project Manager, Public Works	0	$145.67	$0.00
Water Quality Project Manager	18.5	$141.02	$2,608.87
Sr. Civil Engineer	3	$138.77	$416.31
Civil Engineer	0	$119.93	$0.00
Land Use Environmental Planning Mngr.	26	$131.51	$3,419.26
Land Use Environmental Planner I	0	$86.54	$0.00
Lane Use Environmental Planner II	5.5	$100.76	$554.18
Land Use Environmental Planner III	0	$115.53	$0.00
Geographic Info. Systems Technician	0	$62.59	$0.00
Sr. Geographic Info. Systems Analyst	0	$101.97	$0.00
Landscape Architect	0	$103.57	$0.00
Reimbursable Expenses			$0.00
Total			**$6,998.62**
Grand Total	93.3		**$12,612.19**

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE II HYDROMODIFICATION MONITORING - TASK ORDER NO. 27

INVOICE DATE: 6/18/2013
PROJECT NUMBER: 14974.212.002
INVOICE NUMBER: JUN2013-02815
BILLING PERIOD: 06/01/2013 TO 06/14/2013

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	PHASE 2 - HYDROMODIFICATION MONITORING	266,765.00	12,612.19	154,831.31	58.04%	111,933.69
0001	PROJECT MANAGEMENT		1,018.60	11,343.50		
0002	MONITORING PLAN AND QAPP SUPPORT		1,606.26	6,442.01		
0003	CROSS-SECTIONAL SURVEYS		1,000.00	12,241.53		
0004	WET WEATHER MONITORING		1,988.71	116,096.02		
0005	DATA QA/QC, COMPILATION & SUBMITTAL		6,998.62	8,708.25		
TOTAL		266,765.00	12,612.19	154,831.31	58.04%	111,933.69

CURRENT AMOUNT DUE 12,612.19

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02815

Invoice Date: 06/18/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

INVOICE SUMMARY

			Contract Value
Customer Number:	14974	Cost:	266,765.00
Prime Contract Number:	RBF Contract 534079		
Subcontractor Number:		Total:	266,765.00
Customer PO Number:	Task Order 27	Cumulative Amount Billed:	154,831.31
Project Number:	14974.212.002		
Project Name:	Phase II – Hydromodification Monitoring		

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/18/2013

Billing Period From: 06/01/2013
To: 06/14/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	4.00	119.9300	479.72
Environmental Scientist II			
Margolis, Amy	11.00	100.7600	1,108.36
Environmental Senior Scientist			
Engelhorn, Garth	34.00	131.5100	4,471.34
GIS Specialist			
Dister, Sheri	8.00	131.5100	1,052.08
Project Control			
Ventures, Ameedylyn	1.00	101.9700	101.97
Senior Technician			
Cochran, Nicolas B	7.30	62.5900	456.91
Sr. Civil Engineer			
Cotts, Anthony M	3.00	138.7700	416.31
Water Quality Project Manager			
Renfrew, David S	25.00	141.0200	3,525.50
Labor	93.30		11,612.20
Subcontractor			1,000.00
Expenses			1,000.00
Invoice Total			12,612.19

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

Page: 1

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INVOICE

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Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP MONITORING PHASE II

Weston Project No.
14974.212.002

Weston Invoice No.
JUN2013-02815

Project Desription
County of SD - Phase II HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0001 - RBF-SD HMPII Proj Mgmt								
018565	Renfrew, David	6/7/2013	6/3/2013	1.0		2	1533	R
		6/7/2013	6/4/2013	1.0		2	1533	R
		6/7/2013	6/5/2013	0.5		2	1533	R
		6/7/2013	6/6/2013	0.5		2	1533	R
		6/14/2013	6/10/2013	1.0		15	1533	R
		6/14/2013	6/11/2013	0.5		15	1533	R
		6/14/2013	6/12/2013	1.0		15	1533	R
		6/14/2013	6/13/2013	1.0		15	1533	R
	Total: Renfrew, David			**6.5**				
018233	Ventures, Ameedylyn	6/14/2013	6/12/2013	1.0	PROJECT ADMIN	11	1616	R
	Total: Ventures, Ameedylyn			**1.0**				
Total: 14974.212.002.0001				**7.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0002 - RBF-SD HMPII QAPP/MonPlan								
019372	Engelhorn, Garth	6/14/2013	6/10/2013	1.0		3	1533	R
		6/14/2013	6/11/2013	2.0		3	1533	R
		6/14/2013	6/12/2013	1.0		3	1533	R
		6/14/2013	6/13/2013	2.0		3	1533	R
		6/14/2013	6/14/2013	2.0		3	1533	R
	Total: Engelhorn, Garth			**8.0**				
018022	Margolis, Amy	6/14/2013	6/13/2013	3.5		11	1533	R
		6/14/2013	6/14/2013	0.8		11	1533	R
		6/14/2013	6/14/2013	1.2		13	1533	UOT
	Total: Margolis, Amy			**5.5**				
Total: 14974.212.002.0002				**13.5**				

12632

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0004 - RBF-SD HMPII Wet Event Monitoring								
020894	Cochran, Nicolas	6/14/2013	6/12/2013	2.0		5	1533	R
		6/14/2013	6/13/2013	2.0		5	1533	R
		6/14/2013	6/14/2013	2.0		5	1533	R
		6/14/2013	6/12/2013	1.3		6	1533	O1
	Total: Cochran, Nicolas			**7.3**				
019437	Dister, Sheri	6/14/2013	6/10/2013	3.0		5	1533	R
		6/14/2013	6/11/2013	4.0		5	1533	R
		6/14/2013	6/12/2013	1.0		5	1533	R
	Total: Dister, Sheri			**8.0**				
019363	Huber, Sara	6/14/2013	6/13/2013	4.0	Hydrology appendicies; rainfall intensity data corrections; report coordination	11	1533	R
	Total: Huber, Sara			**4.0**				
Total: 14974.212.002.0004				**19.3**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.002.0005 - RBF-SDHMPII DataQA/Submittal								
019890	Cotts, Anthony	6/14/2013	6/13/2013	3.0	HMP monitoring deliverable	21	1533	R
	Total: Cotts, Anthony			**3.0**				
019372	Engelhorn, Garth	6/14/2013	6/10/2013	4.0		4	1533	R
		6/14/2013	6/11/2013	4.0		4	1533	R
		6/14/2013	6/12/2013	5.0		4	1533	R
		6/14/2013	6/13/2013	7.0		4	1533	R
		6/14/2013	6/14/2013	4.5		4	1533	R
		6/14/2013	6/14/2013	1.5		6	1533	UOT
	Total: Engelhorn, Garth			**26.0**				
018022	Margolis, Amy	6/14/2013	6/13/2013	3.5		7	1533	R
		6/14/2013	6/14/2013	0.7		7	1533	R
		6/14/2013	6/14/2013	1.3		12	1533	UOT
	Total: Margolis, Amy			**5.5**				
018565	Renfrew, David	6/14/2013	6/10/2013	0.5		5	1533	R
		6/14/2013	6/11/2013	2.0		5	1533	R
		6/14/2013	6/12/2013	8.0		5	1533	R
		6/14/2013	6/13/2013	8.0		5	1533	R
	Total: Renfrew, David			**18.5**				
Total: 14974.212.002.0005				**53.0**				

Total: 14974.212.002 COUNTY OF SD - Phase II HMP Monitoring	**93.3**

Approved by: Dave Renfrew

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02815

Invoice Date: 06/18/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0001
Task Name: RBF-SD HMPII Project Management
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/18/2013

Billing Period From: 06/01/2013
To: 06/14/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Project Control Ventures, Ameedylyn Water Quality Project Manager Renfrew, David S	1.00	101.9700	101.97
	6.50	141.0200	916.63
Labor	7.50		1,018.60
Task Total			1,018.60

05P0606 2/12

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Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0002
Task Name: RBF-SD HMPII QAPP/Monitoring Plan
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/18/2013

Billing Period From: 06/01/2013
To: 06/14/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist II			
Margolis, Amy	5.50	100.7600	554.18
Environmental Senior Scientist			
Engelhorn, Garth	8.00	131.5100	1,052.08
Labor	13.50		1,606.26
Task Total			1,606.26

05P0806 2/12

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Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/18/2013

Billing Period From: 06/01/2013
To: 06/14/2013

Billing Currency: USD

	Current Amount
Subcontractor	1,000.00
Expenses	1,000.00
Task Total	1,000.00

05P0506 2/12

INVOICE

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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2013-02815

Task Number: 14974.212.002.0003
Task Name: RBF-SD HMPII Cross-Sectional Survey

Billing Currency USD
Invoice Date: 06/18/2013

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description: Subcontractor	Subcontractor Consulting Services	500632740	2013/6	BRISENDINE LAND SERVICES	1965	1,000.00
Total: Subcontractor						1,000.00
Expenses						1,000.00

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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Brisendine Land Services, Inc.
Land Surveying, Mapping, Civil Engineering &
Storm Water Management
1308 Main Street, Suite 205, Ramona, CA 92065
Ph 760-788-8027 Fx 760-788-8005
Info@BLSsd.net www.BLSSD.net
Edward O. Brisendine, CA LS 8027, AZ LS 48500

Invoice

Date	Invoice #
05/16/2013	1965
Terms	**Due Date**
Net 15	05/31/2013

Bill To

Weston Solutions
5817 Dryden Place, Suite 101
Carlsbad, CA 92008
Re: Calle Albara

BLS63
2013-6.3
vchr# 500632740

RECEIVED
JUN 05 2013
BY:

Amount Due	Enclosed
$1,000.00	

Please detach top portion and return with your payment

Date	Activity	Quantity	Rate	Amount
05/10/2013	Provide field survey services for an unnamed creek off of the west end of Calle Albara, in Rancho San Diego. The field work includes one cross section of the creek from bank to bank and a survey of approximately 120 feet upstream and 160 feet downstream along the thread of the creek. In addition to the data collection, set two survey monuments (3/8"-rebar) as reference/control points for future use. Tie data to the NAVD 88 vertical datum and NAD 83 for horizontal control. Provide horizontal and vertical locations to 0.01' in an excel worksheet.	1	1,000.00	1,000.00

INVOICE APPROVAL
DATE REC: 6/07/13
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 008066
WO # 14974.212.002.0003 V
RETURN TO ANALYN NELSON

Payment is due in 15 days. Late fees of .7% per month (unless otherwise outlined in the contract) will be assessed on any unpaid balance after 30 days.

Total $1,000.00

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

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Invoice Date: 06/18/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0004
Task Name: RBF-SD HMPII Wet Event Monitoring and Report
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/18/2013

Billing Period From: 06/01/2013
To: 06/14/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Civil Engineer			
Huber, Sara S	4.00	119.9300	479.72
GIS Specialist			
Dister, Sherl	8.00	131.5100	1,052.08
Senior Technician			
Cochran, Nicolas B	7.30	62.5900	456.91
Labor	19.30		1,988.71
Task Total			1,988.71

05P-0606 2/12

INVOICE

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Invoice Number: JUN2013-02815

Invoice Date: 06/18/2013

Description: Professional Services Rendered for Phase II Hydromodification Monitoring - Task Order 27.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

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PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 27
Task Number: 14974.212.002.0005
Task Name: RBF-SDHMPII Data QA/QC, Compilation and Submittal
Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/18/2013

Billing Period From: 06/01/2013
To: 06/14/2013

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist II Margolis, Amy	5.50	100.7600	554.18
Environmental Senior Scientist Engelhorn, Garth	26.00	131.5100	3,419.26
Sr. Civil Engineer Cotts, Anthony M	3.00	138.7700	416.31
Water Quality Project Manager Renfrew, David S	18.50	141.0200	2,608.87
Labor	53.00		6,998.63
Task Total			6,998.62

05P-0608 2/12

INVOICE

F.E.I.N. 23-1501990
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ARC™
345 Clinton St, Costa Mesa, CA 92626
Federal Tax ID: 95-4657871

INVOICE NO. 6956107
INVOICE DATE 05/23/13
WORK ORDER# 297236

SOLD TO:
Cust# 20219
RBF CONSULTING/IRVINE - FM
14725 ALTON PARKWAY
IRVINE, CA 92618

SHIP TO:
Cust# 20219
RBF CONSULTING/IRVINE - FM
14725 ALTON PARKWAY
IRVINE, CA 92618

DUE: 05/22/13 at 12:00AM

CONTACT	PHONE	PURCHASE ORDER#	SALES REP
		130205-00001	KRISTEN STEVENS

JOB#	JOB NAME	BILLER	LOC
130205-00001	Southern California Design, LLC: 5/22/2013 to 5/22/2013	Lauren McGowen	051

OP CODE	DESCRIPTION	TAX	LOC	NO. OF ORIGINALS	COPIES	SIZE	TOTAL QTY	UM	UNIT PRICE	AMOUNT
3064	BOND PRINTS RECYCLED PAPER	T	051	42	1	12X12	42	SF	0.0900	3.78
3064.1	REYCLED PLOTS	T	051	21	1	12X12	21	SF	0.6100	12.81
	ARC facilities will be closed Thursday, July 4th in observance of Independence Day.									

For Billing Inquiries, please contact your local branch at
For Account Inquiries and Payment Information, please call Lisa Brown at 949-660-7874

SUB TOTAL	DISCOUNT	SALES TAX	TOTAL	DEPOSIT	BALANCE DUE
16.59		1.33	17.92		17.92

Invoices undisputed for 45 days are final.

TERMS: Net 35 Days
Please Remit To: ARC 345 Clinton St Costa Mesa, CA 92626
LB

ARC™
345 Clinton St, Costa Mesa, CA 92626
Federal Tax ID: 95-4657871

INVOICE NO. 6722548
INVOICE DATE 12/20/12
WORK ORDER# 293696

SOLD TO:
Cust# 20219
RBF CONSULTING/IRVINE - FM
14725 ALTON PARKWAY
IRVINE, CA 92618

SHIP TO:
Cust# 20219
RBF CONSULTING/IRVINE - FM
14725 ALTON PARKWAY
IRVINE, CA 92618

DUE: 12/19/12 at 12:00AM

CONTACT	PHONE	PURCHASE ORDER#	SALES REP
		130205-00001	KRISTEN STEVENS

JOB#	JOB NAME	BILLER	LOC
130205-00001	SOUTHERN CALIFORNIA DESIGN, LLC: 12/6/2012 to 12/6/2012	Lauren McGowen	051

OP CODE	DESCRIPTION	TAX	LOC	NO. OF ORIGINALS	COPIES	SIZE	TOTAL QTY	UM	UNIT PRICE	AMOUNT
3064.1	REYCLED PLOTS	T	051	6	1	12X12	6	SF	0.6100	3.66
	ARC facilities will be closed Thursday, July 4th in observance of Independence Day.									

For Billing Inquiries, please contact your local branch at
For Account Inquiries and Payment Information, please call Lisa Brown at 949-660-7874

SUB TOTAL	DISCOUNT	SALES TAX	TOTAL	DEPOSIT	BALANCE DUE
3.66		0.28	3.94		3.94

Invoices undisputed for 45 days are final.

TERMS: Net 35 Days
Please Remit To: ARC 345 Clinton St Costa Mesa, CA 92626
LB

P: 1002933
O: 50915
E: 52370
T: 012.009
A: 100496

RBF CONSULTING

on LDW budget

August 24, 2012
Project No: 55-100823.001
Invoice No: 12070257

Mr. Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100823.001 PH 1 Hydromod Monitoring - T.O. 18 Weston

CONTRACT NO. 534079
TASK ORDER NO. 18

Project Manager: Scott Taylor 760-603-6242

Professional consulting services rendered pursuant to the Agreement dated January 30, 2012 relative to the PH. 1 Hydromodification Monitoring Project located in the County of San Diego, California.

Scott Taylor - Program Manager - 1 hr. @ $227.21

Weston Solutions: $ 3,041.43
Professional Services: July 1, 2012 to July 31, 2012

3,268.64

Total this Invoice **$3,268.64**

Outstanding Invoices

Number	Date	Balance
12040234	5/25/12	54,314.30
Total		**54,314.30**

Total Now Due **$57,582.94**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Ok to Pay $3268.64

Scott Taylor

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED
534079 CONTRACT/PO NO.
TO #18 ACTIVITY/WA NO.
10/8/2012 DATE
TO #18 PROJECT MANAGER
10/8/12 DATE
Todd B. PROJECT MANAGER

DMM

WESTON SOLUTIONS

RECEIVED
JUN 25 2012
RBF CONSULTING
CARLSBAD OFFICE

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE I HYDROMODIFICATION MONITORING - TASK ORDER NO. 18

INVOICE DATE: 6/19/2012
PROJECT NUMBER: 14974.212.001
INVOICE NUMBER: JUN2012-05729
BILLING PERIOD: 05/05/2012 TO 06/01/2012

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	**PHASE I - HYDROMODIFICATION MONITORING**	**74,249.00**	**3,041.43**	**69,849.40**	**94.07%**	**4,399.60**
0001	PROJECT MANAGEMENT		0.00	1,867.02		
0002	QAPP AND FIELD METHODOLOGY RECOMMENDATIONS		0.00	2,212.95		
0003	MOBILIZATION AND EQUIPMENT INSTALLATION, MAINTENANCE & REMOVAL		0.00	21,731.08		
0004	WET WEATHER MONITORING		1,416.60	35,486.53		
0005	CHEMISTRY ANALYSIS		598.63	1,754.65		
0006	DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		1,026.20	4,737.32		
0007	CROSS-SECTIONAL SURVEYS		0.00	2,059.85		
TOTAL		**74,249.00**	**3,041.43**	**69,849.40**	**94.07%**	**4,399.60**

CURRENT AMOUNT DUE 3,041.43

ok to pay
JN 55-10083

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2012-05729

Invoice Date: 06/19/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 18
Project Number: 14974.212.001
Project Name: Phase I – Hydromodification Monitoring

	Contract Value
Cost:	74,249.00
Total:	74,249.00
Cumulative Amount Billed:	69,849.40

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/19/2012

Billing Period From: 05/05/2012
To: 06/01/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III Engelhorn, Garth	9.00	115.5300	1,039.77
Project Control Ventures, Ameedylyn	2.50	101.9700	254.93
Senior Technician Mattson, Michelle M	1.00	62.5900	62.59
Sr. Civil Engineer Cotts, Anthony M	5.00	138.7700	693.85
Water Quality Project Manager Renfrew, David S	4.50	141.0200	634.59
Labor	22.00		2,685.73
Sub Lab Analysis			350.00
Materials & Supplies			5.70
Expenses			355.70
Invoice Total			3,041.43

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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Web TimeTrack

PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP

Weston Project No.
14974.212.001

Weston Invoice No.
JUN2012-05729

Project Desription
County of SD - Phase I HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.001.0004 - RBF-SD HMP Wet Event								
019372	Engelhorn, Garth	5/11/2012	5/10/2012	2.0	Wet Event	8	1533	R
		5/11/2012	5/11/2012	2.0	Wet Event	8	1533	R
	Total: Engelhorn, Garth			**4.0**				
018233	Ventures, Ameedylyn	5/11/2012	5/8/2012	1.5	PROJECT ADMIN	10	1533	R
		5/18/2012	5/18/2012	1.0	PROJECT ADMIN	22	1533	R
	Total: Ventures, Ameedylyn			**2.5**				
019890	Cotts, Anthony	5/18/2012	5/16/2012	5.0	Compiling Wet Flow, Bedload, Data.	16	1533	R
	Total: Cotts, Anthony			**5.0**				
Total: 14974.212.001.0004				**11.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.001.0005 - RBF-SD HMP GS/Chemistry								
019372	Engelhorn, Garth	5/18/2012	5/14/2012	1.0	Chemistry Data	5	1533	R
	Total: Engelhorn, Garth			**1.0**				
020081	Mattson, Michelle	5/18/2012	5/14/2012	1.0	Chemistry Data	6	1533	R
	Total: Mattson, Michelle			**1.0**				
018565	Renfrew, David	5/11/2012	5/7/2012	0.5	Chemistry Data	3	1533	R
	Total: Renfrew, David			**0.5**				
Total: 14974.212.001.0005				**2.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.001.0006 - RBF-SD HMP Data & QA/QC								
019372	Engelhorn, Garth	5/18/2012	5/14/2012	2.0	Data & QA/QC	6	1533	R
		5/18/2012	5/17/2012	0.5	Data & QA/QC	6	1533	R
		5/18/2012	5/18/2012	1.5	Data & QA/QC	6	1533	R
	Total: Engelhorn, Garth			**4.0**				
018565	Renfrew, David	5/18/2012	5/18/2012	2.5	Data & QA/QC	SUPP	1533	R
		5/25/2012	5/21/2012	0.5	Data & QA/QC	5	1533	R
		5/25/2012	5/22/2012	0.5	Data & QA/QC	5	1533	R
		5/25/2012	5/24/2012	0.5	Data & QA/QC	5	1533	R
	Total: Renfrew, David			**4.0**				
Total: 14974.212.001.0006				**8.0**				

Total: 14974.212.001 COUNTY OF SD - Phase I HMP Monitoring	**22.0**

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2012-05729

Invoice Date: 06/19/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 18
Task Number: 14974.212.001.0004
Task Name: RBF-SD HMP Wet Weather Event Monitoring

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/19/2012

Billing Period From: 05/05/2012
To: 06/01/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III Engelhorn, Garth	4.00	115.5300	462.12
Project Control Ventures, Ameedylyn	2.50	101.9700	254.93
Sr. Civil Engineer Cotts, Anthony M	5.00	138.7700	693.85
Labor	11.50		1,410.90
Materials & Supplies			5.70
Expenses			5.70
Task Total			1,416.60

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2012-05729

Project Number: 14974.212.001.0004
Project Name: RBF-SD HMP Wet Weather Event Monitoring

Billing Currency USD
Invoice Date: 06/19/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Materials & Supplies					
Materials & Supplies	Materials & Supplies	500549664	2012/5	CAMPAGNA LAURENCE	534356	5.70
Total: Materials & Supplies						5.70
Expenses						5.70

ExpenseTrack

Travel & Expense Report

Enter Expense Report --- Step 4. Confirm Expense Report

Welcome, Laurence Campagna

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

MAY 1 8 2012

Header Information

Exp#:	534356	Status:	Submitted on 4/30/2012
Employee:	Campagna, Laurence (017996)	Begin Date:	4/2/2012
Entered By:	Campagna, Laurence	End Date:	4/2/2012
Approver:	Renfrew, David S.	Time Departed:	8:00 AM
Travel Method:	Automobile	Time Returned:	5:00 PM
Purpose:	field supply		
Total Amount:	$5.70	Total Out of Pocket:	$0.00

Detailed Information

Date	Category	City	Description	Project	Amount
4/2/2012	Supplies - Field	San Diego County	spray paint to color cobble in stream bed	14974.212.001.0004	*$5.70

Asterisks (*) denote expenses requiring receipts.

Summary Totals

Totals		Amount
14974.212.001.0004		
	Supplies - Field	$5.70
Totals	14974.212.001.0004	$5.70

Verification _____ - 5/18/12

534356

WESTON SOLUTIONS.

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2012-05729

Invoice Date: 06/19/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 18
Task Number: 14974.212.001.0005
Task Name: RBF-SD HMP Chemistry Analysis

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/19/2012

Billing Period From: 05/05/2012
To: 06/01/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	1.00	115.5300	115.53
Senior Technician			
Mattson, Michelle M	1.00	62.5900	62.59
Water Quality Project Manager			
Renfrew, David S	0.50	141.0200	70.51
Labor	2.50		248.63
Sub Lab Analysis			350.00
Expenses			350.00
Task Total			598.63

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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12651

EM902
2012.5.2
rch# 50054654 6

EnviroMatrix Analytical, Inc.

INVOICE

APR 3 1 2012
amd

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
2433 Impala Drive
Carlsbad, CA 92010

Invoice Number
2040540

Invoiced On:
04/23/12

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Client Project Manager
Dave Renfrew

Received
04/14/12

Project
Phase I HMP Monitoring

PO Number

Terms
NET 30

Project Number
14974.212.001.0005

Project Manager
Jennifer Beyer

Work Order(s)
12D0370

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
10	Turbidity-Liquid [Normal TAT]	Water	$14.00	$140.00
10	Solids, SSC [Normal TAT]	Water	$21.00	$210.00

Invoice Total: $350.00

INVOICE APPROVAL
DATE REC: 4-31-2012
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0078593
WO # 14974.212.001.0005
RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2012-05729

Invoice Date: 06/19/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 18
Task Number: 14974.212.001.0006
Task Name: RBF-SD HMP Data QA/QC, Data Compilation and Data Submittal

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 07/19/2012

Billing Period From: 05/05/2012
To: 06/01/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	4.00	115.5300	462.12
Water Quality Project Manager			
Renfrew, David S	4.00	141.0200	564.08
Labor	8.00		1,026.20
Task Total			1,026.20

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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P: 1002933
O: 50915
E: 52370
T: 012-009
A: 100496

OnLDW budget

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079
CONTRACT/P.O. NO.

18
ACTIVITY/WA NO.

10/4/2012
DATE

PROJECT MANAGER

10/8/12
DATE

DPW MANAGER

RBF CONSULTING

September 28, 2012
Project No: 55-100823.001
Invoice No: 12080226

Mr. Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

Ok to pay
$3,314.99

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Weston

Project 55-100823.001 PH 1 Hydromod Monitoring - T.O. 18

CONTRACT NO. 534079
TASK ORDER NO. 18

Project Manager: Scott Taylor 760-603-6242

Professional consulting services rendered pursuant to the Agreement dated January 30, 2012 relative to the PH. 1 Hydromodification Monitoring Project located in the County of San Diego, California.

Weston Solutions: $ 3,314.99

Professional Services: August 1, 2012 to August 31, 2012

3,314.99

Total this Invoice **$3,314.99**

Outstanding Invoices

Number	Date	Balance
12040234	5/25/12	54,314.30
12070257	8/24/12	3,268.64
Total		**57,582.94**

Total Now Due **$60,897.93**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Scott Taylor

WESTON SOLUTIONS

RECEIVED
AUG 21 2012
RBF CONSULTING
CARLSBAD OFFICE

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE I HYDROMODIFICATION MONITORING - TASK ORDER NO. 18

INVOICE DATE: 8/17/2012
PROJECT NUMBER: 14974.212.001
INVOICE NUMBER: AUG2012-02760
BILLING PERIOD: 06/23/2012 TO 08/03/2012

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	PHASE I - HYDROMODIFICATION MONITORING	79,105.00	3,314.99	77,558.18	98.04%	1,546.82
0001	PROJECT MANAGEMENT		2,788.95	4,757.94		
0002	QAPP, FIELD METHODOLOGY AND BIOASSESSMENT RECOMMENDATIONS		526.04	7,030.81		
0003	MOBILIZATION AND EQUIPMENT INSTALLATION, MAINTENANCE & REMOVAL		0.00	21,731.08		
0004	WET WEATHER MONITORING		0.00	35,486.53		
0005	CHEMISTRY ANALYSIS		0.00	1,754.65		
0006	DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		0.00	4,737.32		
0007	CROSS-SECTIONAL SURVEYS		0.00	2,059.85		
TOTAL		79,105.00	3,314.99	77,558.18	98.04%	1,546.82

CURRENT AMOUNT DUE 3,314.99

ACCOUNT NO.
VENDOR NO.
APPROVED
ACCOUNTING
JOB NO. 55-100823
AMOUNT $ 3,314.99

Mark Capp

⇒ Please send to Rich for review
OK TO PAY
55-100823

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: AUG2012-02760

Invoice Date: 08/17/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

INVOICE SUMMARY

			Contract Value
Customer Number:	14974	Cost:	79,105.00
Prime Contract Number:	RBF Contract 534079		
		Total:	79,105.00
Customer PO Number:	Task Order 18	Cumulative Amount Billed:	77,558.18
Project Number:	14974.212.001		
Project Name:	Phase I – Hydromodification Monitoring		

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 09/16/2012

Billing Period From: 06/23/2012
To: 08/03/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	4.00	115.5300	462.12
Environmental Senior Scientist			
Isham, William H	4.00	131.5100	526.04
Water Quality Project Manager			
Renfrew, David S	16.50	141.0200	2,326.83
Labor	24.50		3,314.99
Invoice Total			3,314.99

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

Web TimeTrack
PM Weekly Project Time Charges - COUNTY OF SAN DIEGO HMP

Weston Project No.
14974.212.001

Weston Invoice No.
AUG2012-02760

Project Desription
County of SD - Phase I HMP Monitoring

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.001.0001 - RBF-SD HMP Project Mgmt								
019372	Engelhorn, Garth	7/27/2012	7/27/2012	4.0	Add'l Project Mgmt Support	10	1533	R
	Total: Engelhorn, Garth			**4.0**				
018565	Renfrew, David	7/27/2012	7/26/2012	1.0	Add'l Project Mgmt Support	8	1533	R
		7/27/2012	7/27/2012	1.0	Add'l Project Mgmt Support	8	1533	R
		8/3/2012	7/30/2012	2.0	Add'l Project Mgmt Support	4	1533	R
		8/3/2012	7/31/2012	8.0	Add'l Project Mgmt Support	4	1533	R
		8/3/2012	8/1/2012	4.0	Add'l Project Mgmt Support	4	1533	R
		8/3/2012	8/2/2012	0.5	Add'l Project Mgmt Support	4	1533	R
	Total: Renfrew, David			**16.5**				
Total: 14974.212.001.0001				**20.5**				

Empl Id	Empl Name	Wk End	Charge Date	Entered Hrs	Activity	Line	Org	Type
14974.212.001.0002 - RBF-SD HMP QAPP/Field/Biossessment Recommendations								
018016	Isham, William	6/15/2012	6/14/2012	4.0	MONITORING PLAN/BIO	LT	1533	R
	Total: Isham, William			**4.0**				
Total: 14974.212.001.0002				**4.0**				

Total: 14974.212.001 COUNTY OF SD - Phase I HMP Monitoring	**24.5**

Approved by: Dave Renfrew

12657

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: AUG2012-02760

Invoice Date: 08/17/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 18
Task Number: 14974.212.001.0001
Task Name: RBF-SD HMP Project Management

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 09/16/2012

Billing Period From: 06/23/2012
To: 08/03/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Scientist III			
Engelhorn, Garth	4.00	115.5300	462.12
Water Quality Project Manager			
Renfrew, David S	16.50	141.0200	2,326.83
Labor	20.50		2,788.95
Task Total			2,788.95

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: AUG2012-02760

Invoice Date: 08/17/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163

Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 18
Task Number: 14974.212.001.0002
Task Name: RBF-SD HMP QAPP/Field Methodology/Bioassessment Recommendations

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 09/16/2012

Billing Period From: 06/23/2012
To: 08/03/2012

Billing Currency: USD

	Current Hours	Rate	Current Amount
Environmental Senior Scientist			
Isham, William H	4.00	131.5100	526.04
Labor	4.00		526.04
Task Total			526.04

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 30% Post-Consumer Recycled Paper

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

Supplier # 1184538

RBF CONSULTING

October 19, 2012
Project No: 55-100823.001
Invoice No: 12090387

Mr. Todd Snyder
County of San Diego DPW
Watershed Protection Program
5510 Overland Ave. Ste. 410
San Diego, CA 92123

Payment Remit Address:
RBF Consulting
P.O. Box 57057
Irvine, CA 92619-7057
Attn: Accounts Receivable

Project 55-100823.001 PH 1 Hydromod Monitoring - T.O. 18 Weston

CONTRACT NO. 534079
TASK ORDER NO. 18

Project Manager: Scott Taylor 760-603-6242

Professional consulting services rendered pursuant to the Agreement dated January 30, 2012 relative to the PH. 1 Hydromodification Monitoring Project located in the County of San Diego, California.

Scott Taylor - Program Manager - 3 hrs. @ $227.21/hr. =	$	681.63
Weston Solutions:	$	696.60
TOTAL	$	1,378.23

Professional Services: September 1, 2012 to September 30, 2012

1,378.23

Total this Invoice **$1,378.23**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Ok to pay $1,378.23

Scott Taylor

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534079 — CONTRACT/P.O. NO.
TO # 18 — ACTIVITY/WA NO.
11/26/12 — DATE
Deborah Mesko — PROJECT MANAGER
11/26/12 — DATE
Todd — DPW MANAGER

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR PHASE I HYDROMODIFICATION MONITORING - TASK ORDER NO. 18

INVOICE DATE: 9/10/2012
PROJECT NUMBER: 14974.212.001
INVOICE NUMBER: SEP2012-02507 FINAL INVOICE
BILLING PERIOD: 02/13/2012 TO 08/31/2012

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	**PHASE I - HYDROMODIFICATION MONITORING**	**79,105.00**	**696.60**	**78,254.78**	**98.93%**	**850.22**
0001	**PROJECT MANAGEMENT**		**66.60**	**4,824.54**		
0002	QAPP, FIELD METHODOLOGY AND BIOASSESSMENT RECOMMENDATIONS		0.00	7,030.81		
0003	MOBILIZATION AND EQUIPMENT INSTALLATION, MAINTENANCE & REMOVAL		0.00	21,731.08		
0004	WET WEATHER MONITORING		0.00	35,486.53		
0005	**CHEMISTRY ANALYSIS**		**630.00**	**2,384.65**		
0006	DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		0.00	4,737.32		
0007	CROSS-SECTIONAL SURVEYS		0.00	2,059.85		
TOTAL		**79,105.00**	**696.60**	**78,254.78**	**98.93%**	**850.22**

CURRENT AMOUNT DUE 696.60

COPY

WESTON SOLUTIONS

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: SEP2012-02507

Invoice Date: 09/10/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

INVOICE SUMMARY

			Contract Value
Customer Number:	14974	Cost:	79,104.58
Prime Contract Number:	RBF Contract 534079		
		Total:	79,104.58
Customer PO Number:	Task Order 18	Cumulative Amount Billed:	78,254.78
Project Number:	14974.212.001		
Project Name:	Phase I – Hydromodification Monitoring		

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 10/10/2012

Billing Period From: 02/13/2012
To: 08/31/2012

Billing Currency: USD

	Current Amount
Sub Lab Analysis	630.00
Trav-Mileage Expense	66.60
Expenses	696.60

Invoice Total 696.60

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

Page: 1

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: SEP2012-02507

Invoice Date: 09/10/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 18
Task Number: 14974.212.001.0001
Task Name: RBF-SD HMP Project Management

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 10/10/2012

Billing Period From: 02/13/2012
To: 08/31/2012

Billing Currency: USD

	Current Amount
Trav-Mileage Expense	66.60
Expenses	66.60

Task Total 66.60

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: SEP2012-02507

Project Number: 14974.212.001.0001
Project Name: RBF-SD HMP Project Management

Billing Currency USD
Invoice Date: 09/10/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Trav-Mileage Expense				
Travel-Mileage Expense	Travel-Mileage Expense	2012/9	ENGELHORN GARTH	553849	22.20
		2012/8	RENFREW DAVID	548770	44.40
Total: Trav-Mileage Expense					66.60
Expenses					66.60

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, Garth Engelhorn

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

Header Information			
Exp#:	553849	Status:	Submitted on 9/10/2012
Employee:	Engelhorn, Garth (019372)	Entered By:	Engelhorn, Garth
Approver:	Renfrew, David S.	Total Amount:	$24.20
		Total Out of Pocket:	$22.20
Purpose:	Personal Mileage for HMP meeting		

Detailed Information					
Date	Category	Vendor	Comments	Project	Amount
6/21/2012	Mileage	Garth E.	40 Miles for HMP Meeting @ .555/mi	14974.212.001.0001	$22.20
9/10/2012	Check Fee	US Bank	Check fee	99067.400.008	$2.00

Asterisks (*) denote expenses requiring receipts.

Summary Totals		
Totals		Amount
14974.212.001.0001		
	Mileage	$22.20
Totals	14974.212.001.0001	$22.20
99067.400.008		
	Check Fee	$2.00
Totals	99067.400.008	$2.00

Verification _____

553849

ExpenseTrack

P-Card Expense Confirm

P-Card Report --- Step 4. Confirm P-Card

Welcome, David S. Renfrew

This Confirmation Page must be printed and the original receipt(s) must be attached and submitted through your PC, Division or office verifier and forwarded to the Employee Expense Department 9-1-S. The Employee Expense Department uses ExpenseTrack to manage the online receipts process. If confirmation page and receipt (s) are not received within 1 week from approval, the Employee Expense Department will contact you for immediate submittal. Timely submittal of required documentation will ensure prompt payments on your behalf and eliminate potential suspension of credit card rights.

AUG 03 2012

Header Information

Exp#:	548770	Status:	Submitted on 8/3/2012
Employee:	Renfrew, David S. (018565)	Entered By:	Renfrew, David S.
Approver:	Shaeffer, Michael R.	Total Amount:	$91.91
		Total Out of Pocket:	$89.91
Purpose:	July/Aug Expenses		

Detailed Information

Date	Category	Vendor	Comments	Project	Amount	
7/17/2012	Mileage	Mileage	Mileage to City of San Marcos for Lake San Marcos TMDL Meeting.	00834.851.931	$9.99	18 miles
7/24/2012	Mileage	Mileage	Mileage to County of SD for Copermittee Meeting	13245.212.001.1003	$33.30	60 miles
7/25/2012	Mileage	Mileage	Mileage to City of Carlsbad for RWQCB Permit Workshop	00834.851.901	$2.22	4 miles
7/31/2012	Mileage	Mileage	Mileage to City of San Diego for HMP Meeting with RWQCB and SWRCB. @ .555/mi	14974.212.001.0001	$33.30	60 miles
8/1/2012	Mileage	Mileage	Mileage to Bobiere and Adobe Sites and back for meeting with Copermittees and SWRCB Staff. @ .555/mi	14974.212.001.0001	$11.10	20 miles
8/3/2012	Check Fee	US Bank	Check Fee for #1095	91533	$2.00	

Asterisks (*) denote expenses requiring receipts.

Travel mileage expense $44.40

Summary Totals

Totals		Amount
00834.851.901		
	Mileage	$2.22
Totals	00834.851.901	$2.22
00834.851.931		
	Mileage	$9.99
Totals	00834.851.931	$9.99
13245.212.001.1003		
	Mileage	$33.30
Totals	13245.212.001.1003	$33.30
14974.212.001.0001		
	Mileage	$44.40
Totals	14974.212.001.0001	$44.40

8/03/12

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: SEP2012-02507

Invoice Date: 09/10/2012

Description: Professional Services Rendered for Phase I Hydromodification Monitoring - Task Order 18.

Bill To:
RBF CONSULTING
Attn: Mr. Scott Taylor
Sr. Vice President
5050 Avenida Encinas, Suite 260
Carlsbad, CA 92081

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 14974
Prime Contract Number: RBF Contract 534079

Customer PO Number: Task Order 18
Task Number: 14974.212.001.0005
Task Name: RBF-SD HMP GS/Chemistry

Project Manager: Renfrew, David S
Terms: NET 30
Due Date: 10/10/2012

Billing Period From: 02/13/2012
To: 08/31/2012

Billing Currency: USD

	Current Amount
Sub Lab Analysis	630.00
Expenses	630.00
Task Total	630.00

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: SEP2012-02507

Project Number: 14974.212.001.0005
Project Name: RBF-SD HMP GS/Chemistry

Billing Currency USD
Invoice Date: 09/10/2012

Non-Labor Supporting Schedule

Group Description: Expenses

Description	Transaction	JE No./ Vchr No.	FY/PD	Vendor	Invoice ID	Current Amount
Line Description:	Sub Lab Analysis					
Subcontracted Lab An	Laboratory Services	500577287	2012/9	ENVIROMATRIX ANALYTICAL	2030542	350.00
		500577288	2012/9		2030541	280.00
Total: Sub Lab Analysis						630.00
Expenses						630.00

EMA02
2012.9.3
Ychk# 500577288

EnviroMatrix Analytical, Inc.

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
2433 Impala Drive
Carlsbad, CA 92010

Client Project Manager
Dave Renfrew

PO Number

RECEIVED
SEP 05 2012
am

Project Manager
Jennifer Beyer

Comments

Invoice Number
2030541

Invoiced On:
03/28/12

Received
03/18/12

Terms
NET 30

Work Order(s)
12C0411

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Project
Phase I HMP Monitoring

Project Number
14974.212.001.0005

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
8	Turbidity-Liquid [Normal TAT]	Water	$14.00	$112.00
8	Solids, SSC [Normal TAT]	Water	$21.00	$168.00
			Invoice Total:	**$280.00**

INVOICE APPROVAL
DATE REC: 9/5/12
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0078573
WO # 14974.212.001.0005
RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

EM902
2012 · 9.3
ychk# 500577287

EnviroMatrix Analytical, Inc.

INVOICE

Invoice To:
Dave Renfrew
Weston Solutions, Inc. - Carlsbad
2433 Impala Drive
Carlsbad, CA 92010

Client Project Manager
Dave Renfrew

PO Number

RECEIVED
SEP 05 2012
AM

Invoice Number
2030542

Invoiced On:
03/28/12

Received
03/18/12

Terms
NET 30

Remit To:
Accounts Receivable
EnviroMatrix Analytical, Inc.
4340 Viewridge Ave., Ste. A
San Diego, CA 92123

Project
Phase I HMP Monitoring

Project Number
14974.212.001.0005

Project Manager
Jennifer Beyer

Work Order(s)
12C0413

Comments

Quantity	Analysis/Description	Matrix	Unit Cost	Extended Cost
EnviroMatrix Analytical, Inc.				
10	Turbidity-Liquid [Normal TAT]	Water	$14.00	$140.00
10	Solids, SSC [Normal TAT]	Water	$21.00	$210.00

Invoice Total: $350.00 L,

INVOICE APPROVAL
DATE REC: 9/5/12
APPROVED BY: Dave Renfrew
SIGNATURE:
PO # 0078513
WO # 14974.212.001.0005
RETURN TO ANALYN NELSON

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

P: 1002933
O: 50915
E: 52370
T: 012.009
A: 100496

amec

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Sara Agahi
5201 Ruffin Road, Suite P
Mailstop O326
San Diego, CA 92123

File: 985-A

County Contract Number: 526934
Oracle Project Number: 5013-11-0008

Invoice Date: 8/31/2012
Task Order Number: 18
Invoice Number: S17670483

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 6/23/11 through 8/17/12

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$116,848.00	69.11%	$80,753.96	$74,938.66	$5,815.30
TOTALS:	$116,848.00	69.11%	$80,753.96	$74,938.66	$5,815.30

AMOUNT DUE THIS BILLING: **$5,815.30**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Ok to Pay $5815.30

8/30/12

NATHAN SCHAEDLER
PROJECT MANAGER

DATE

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

526934
CONTRACT/P.O. NO.

TO 18
ACTIVITY/WA NO.

10/8/2012
DATE

PROJECT MANAGER

10/8/2012
DATE

DPW MANAGER

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123 USA
Tel: +1 858. 278.3600 • Fax: +1 858. 278.5300

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amec

Project : 5013110008 -- COUNTY OF SD HMP MONITORING **Invoice # : S17670483**

Phase : 01 -- SUB MONITORING

Task : 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor			
ESA PWA	5,815.30	1.000	5,815.30
Total : Subcontractor	**5,815.30**		**5,815.30**
Total Reimbursable Expenses			***5,815.30***
Total Expenses			***5,815.30***
Total Task : 01 - SUB MONITORING			**5,815.30**
Total Phase : 01 -- SUB MONITORING		**Fees :**	**0.00**
		Expenses :	**5,815.30**
		Total :	**5,815.30**

Total Project: 5013110008 -- COUNTY OF SD HMP MONITORING **5,815.30**

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123 USA
Tel: +1 858. 278.3600 • Fax: +1 858. 278.5300

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ESA PWA

550 Kearny Street
Suite 900
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

July 10, 2012
Invoice No: 98666

Project Manager: Brian Haines

Project # 5013-11-0008
Phase # 01
GL code # 5720-00
Vendor code # 884165
PO Line 03

Project D211485.00 San Diego Hydromod Monitoring

PO #201107020

DPW Contract File 985
Addendum No. 1 (dated 05/01/12) ; Task Order No. 18
Contract No. 526934

Professional Services from June 23, 2012 to June 29, 2012

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Civil Engineer				
Haines, Brian	40.00	117.56	4,702.40	
Totals	40.00		4,702.40	
Total Labor				**4,702.40**
		Total this Task		**$4,702.40**

Task 0000600 PWA Expenses

Reimbursable Expenses

Travel - Transportation		581.75	
Travel - Lodging		412.40	
Travel - Meals		118.75	
Total Reimbursables	**1.0 times**	**1,112.90**	**1,112.90**
		Total this Task	**$1,112.90**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	5,815.30	74,938.66	80,753.96
Limit			116,848.00
Remaining			36,094.04

TOTAL INVOICE AMOUNT: $5,815.30

Remit to:
E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

PAYMENT DUE UPON RECEIPT

Billing Backup

Tuesday, July 10, 2012

Environmental Science Associates Invoice 98666 Dated 7/10/2012 10:13:55 AM

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
Civil Engineer						
10349	Haines, Brian	6/25/2012	8.00	117.56	940.48	
	Desk study/geomorphic assessments with County of SD.					
10349	Haines, Brian	6/26/2012	8.00	117.56	940.48	
	Geomorphic assessments with County/City of SD.					
10349	Haines, Brian	6/27/2012	8.00	117.56	940.48	
	Geomorphic assessments with County/City of SD.					
10349	Haines, Brian	6/28/2012	8.00	117.56	940.48	
	Geomorphic assessments with County/City of SD.					
10349	Haines, Brian	6/29/2012	8.00	117.56	940.48	
	Geomorphic assessments with County/City of SD.					
	Totals		40.00		4,702.40	
	Total Labor					**4,702.40**
				Total this Task		**$4,702.40**

Task 0000600 PWA Expenses

Reimbursable Expenses

Travel - Transportation					
EX	000000013395	6/17/2012	Haines, Brian / Southwest Airlines	364.60	
EX	000000013395	6/24/2012	Haines, Brian / Luxor Cab	55.66	
EX	000000013395	6/29/2012	Haines, Brian / Enterprise	132.61	
EX	000000013395	6/29/2012	Haines, Brian / Chevron	28.89	
Travel - Lodging					
EX	000000013395	6/17/2012	Haines, Brian / Ramada Inn	412.40	
Travel - Meals					
EX	000000013395	6/25/2012	Haines, Brian / Rubio's	10.70	
EX	000000013395	6/25/2012	Haines, Brian / Starbucks	4.90	
EX	000000013395	6/25/2012	Haines, Brian / Souplantation	11.09	
EX	000000013395	6/26/2012	Haines, Brian / Rubio's	9.68	
EX	000000013395	6/26/2012	Haines, Brian / Souplantation	11.09	
EX	000000013395	6/26/2012	Haines, Brian / Starbucks	5.20	
EX	000000013395	6/27/2012	Haines, Brian / BJ's Restaurant	22.21	
EX	000000013395	6/27/2012	Haines, Brian / Starbucks	4.90	
EX	000000013395	6/27/2012	Haines, Brian / Yakyudori	11.16	
EX	000000013395	6/28/2012	Haines, Brian / Long Island Mike's	6.89	
EX	000000013395	6/28/2012	Haines, Brian / McDonald's	5.38	
EX	000000013395	6/28/2012	Haines, Brian / Rubio's	10.65	
EX	000000013395	6/29/2012	Haines, Brian / Starbucks	4.90	
	Total Reimbursables			**1.0 times** 1,112.90	**1,112.90**
				Total this Task	**$1,112.90**
				Total this Project	**$5,815.30**

PAYMENT DUE UPON RECEIPT

13395

Detailed Expense Report

Tuesday, July 03, 2012
10:46:51 AM

Environmental Science Associates

RECEIVED
JUL 06 2012
ACCOUNTING
Submitted

Employee 10349 Haines, Brian E

Signed Haines,Brian E

Approved

Organization PW01:07

Expense Report: San Diego, June 24-29 Report Date: 7/2/2012

Date	Category	Description	Project	Task	Subtask	Bill	Account	Amount
6/17/2012	Airfare	Southwest Airlines	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-01	364.60
Business Reason: Roundtrip to SD for field work								
6/17/2012	Lodging	Ramada Inn	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-02	412.40
Business Reason: lodging during trip to San Diego								
6/24/2012	Parking/Toll/Cab/Rail (Ferry)	Luxor Cab	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-05	55.65
Business Reason: transport to airport								
6/25/2012	Employee Meals	Rubio's	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	10.70
Business Reason: lunch								
6/25/2012	Employee Meals	Starbucks	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	4.90
Business Reason: breakfast								
6/25/2012	Employee Meals	Souplantation	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	11.09
Business Reason: dinner - missing receipt, AMEX transaction detail as backup.								
6/26/2012	Employee Meals	Rubio's	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	9.68
6/26/2012	Employee Meals	Souplantation	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	~~10.29~~ 11.09
Business Reason: dinner								
6/26/2012	Employee Meals	Starbucks	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	5.20

v6.1.600 (BHAINES) -

Detailed Expense Report

Tuesday, July 03, 2012
10:46:51 AM

Environmental Science Associates

Employee 10349 Haines, Brian E

Signed Haines,Brian E

Approved

Submitted

Organization PW01:07

Expense Report: San Diego, June 24-29 Report Date: 7/2/2012

Date	Category	Description	Project	Task	Subtask	Bill	Account	Amount
Business Reason: breakfast								
6/27/2012	Employee Meals	BJ's Restaurant	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	22.21
Business Reason: lunch w/ Deb, Greg, and Jim								
6/27/2012	Employee Meals	Starbucks	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	4.90
6/27/2012	Employee Meals	Yakyudori	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	11.16
Business Reason: dinner								
6/28/2012	Employee Meals	Long Island Mike's	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	6.89
Business Reason: dinner								
6/28/2012	Employee Meals	McDonald's	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	5.38
Business Reason: breakfast								
6/28/2012	Employee Meals	Rubio's	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	10.66
Business Reason: lunch								
6/29/2012	Auto Rental (including rental gasoline)	Enterprise	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-04	132.61
Business Reason: rental car for travel								
6/29/2012	Auto Rental (including rental gasoline)	Chevron	D211485.00 San Diego Hydromod Monitoring	0000600		[X]	5600-04	28.89
Business Reason: gasoline								

Detailed Expense Report

Tuesday, July 03, 2012
10:46:51 AM

Environmental Science Associates

Employee 10349 Haines, Brian E

Signed Haines,Brian E

Submitted

Approved

Organization PW01:07

Expense Report: San Diego, June 24-29 Report Date: 7/2/2012

Date	Category	Description	Project	Task	Subtask	Bill	Account	Amount
6/29/2012	Employee Meals	Starbucks	D211488.00 San Diego Hydromod Monitoring	0000600		[X]	5600-10	4.90
Business Reason: breakfast								
6/29/2012	Parking/Toll/Cab/Rail (Ferry)	Irvine Company	XMKTGEN.00 General Marketing	0PW0107		[ ]	7600-05	8.75
Business Reason: parking at ESA San Diego for brown bag presentation, didn't know about parking validation								

Total Expenses 1,120.85
Total Due 1,120.85

1121.05

OK

Brian Haines <bhainesworld@gmail.com>

Southwest Airlines Confirmation-HAINES/BRIAN ELLIOTT-Confirmation: 4KCMEA

1 message

Southwest Airlines <SouthwestAirlines@luv.southwest.com> Sun, Jun 17, 2012 at 11:53 AM
Reply-To: Southwest Airlines <no-reply@luv.southwest.com>
To: HAINESACCOUNTS@gmail.com

You're all set for your trip!

My Account | View My Itinerary Online

Check In Online | Check Flight Status | Change Flight | Special Offers | Hotel Deals | Car Deals

Ready for takeoff!

Thanks for choosing Southwest for your trip! You'll find everything you need to know about your reservation below. Happy travels!

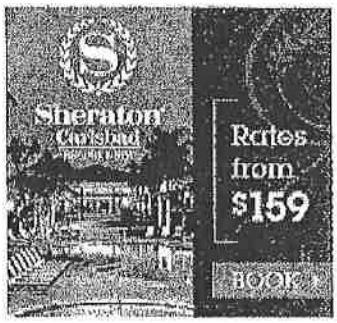

Upcoming Trip: 06/24/12 - San Diego

AIR Itinerary

AIR Confirmation: 4KCMEA Confirmation Date: 06/17/2012

Passenger(s)	Rapid Rewards #	Ticket #	Expiration	Est. Points Earned
HAINES/BRIAN ELLIOTT	00000636526192	5262448546399	Jun 17, 2013	2887

Rapid Rewards points earned are only estimates. Visit your (My Southwest, Southwest.com or Rapid Rewards) account for the most accurate totals - including A-List & A-List Preferred bonus points.

Date	Flight	Departure/Arrival
Sun Jun 24	2626	Depart **SAN FRANCISCO CA** (SFO) at **09:15 AM** Arrive in **SAN DIEGO CA** (SAN) at **10:45 AM** Travel Time 1 hrs 30 mins Wanna Get Away
Fri Jun 29	24	Depart **SAN DIEGO CA** (SAN) at **4:05 PM** Arrive in **SAN FRANCISCO CA** (SFO) at **5:30 PM** Travel Time 1 hrs 25 mins Anytime

Air Cost: 364.60

Find a Hotel
See ratings, photos and rates for over 40,000 hotels.

Book a Hotel

Carry-on items: 1 Bag + small personal item are free see full details. Checked items: First and second bags are free, size and weight limits apply.

Fare Rule(s): 5262448546399: NONREF/NONTRANSFERABLE/STANDBY REQ UPGRADE TO YL. Valid only on Southwest Airlines. All travel involving funds from this Confirmation Number must be completed by the expiration date. Unused travel funds may only be applied toward the purchase

of future travel for the individual named on the ticket. Any changes to this itinerary may result in a fare increase.

SFO WN SAN135.81OLN7PNR WN SFO183.26YL 319.07 END ZPSFOSAN XFSFO4.5SAN4.5 AY5.00$SFO2.50 SAN2.50

Important Check-In Reminder

Be sure to arrive at the departure gate with your boarding pass at least 10 minutes before your scheduled departure time. Otherwise, your reserved space may be cancelled and you won't be eligible for denied boarding compensation.

Go to Boarding School »

Get EarlyBird Check-In™ Details »

HOTEL Itinerary

HOTEL Confirmation: 4VNW31

Guest Name: Brian Haines
Questions regarding your reservation?
Call 1-800-545-4489

Rapid Rewards #: 00000636526192

Ramada Inn & Conference Center San Diego
5550 Kearny Mesa Road, San Diego, CA 92111 US
San Diego , CA 92111
Tel. 1-858-278-0800

Check-In Sun Jun 24 , 2012
Check-Out Fri Jun 29 , 2012

Room Request: 1BA - Standard Room - 1 king bed

Number of Rooms: 1

Cancellation: Southwest Airlines does not charge cancellation or change fees for any hotel booked on southwest.com. However, we are required to pass on the following fees that are imposed by the property. Cancellations or changes made within 1 day prior to 3:00 PM local hotel time on the day of arrival are subject to a $100.52 charge. Cancellations or changes made after 3:00 PM local hotel time on the day of arrival are subject to a 100% charge. We are sorry but refunds are not available for early check-out.
Southwest Airlines Limit of Liability: Hotel is solely responsible for fulfilling all reservations. Your preferences will be submitted with your reservation and subject to hotel availability.

Hotel Cost: $ 412.40

CAR Itinerary

CAR Confirmation: 673780703COUNT

Driver Name: Brian Haines

Pick-Up Location
Enterprise
San Diego, CA - SAN

Drop Off Location
Enterprise
San Diego, CA - SAN

Pick-Up Date
Sun June 24 , 2012

Drop Off Date
Fri June 29 , 2012

Vehicle Description: Mid-size , COROLLA 4DR S OR SIMILAR

Details: The minimum rental age is 21 years old on most rentals.
All drivers must have a major credit card and valid driver's license in the driver's name.

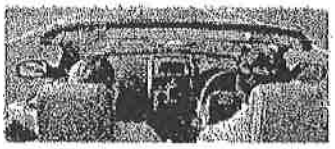

Rent Some Wheels -
Explore your destination on the perfect set of wheels.

Rent a Car »

CLICK 'N SAVE

Get the best travel deals straight to your inbox.

Transaction Details

Prepared for
BRIAN HAINES
Account Number
XXXX-XXXXXX-81001

Corporate Card / May 29, 2012 to June 28, 2012

Date	Description	Amount $
06/26/2012 Mon	SOUPLANTATION 73 Q02 SAN DIEGO CA REF# 000149 FAST FOOD RESTAU 06/26/12 Doing Business As: SOUPLANTATION 73 Merchant Address: 7095 CLAIREMONT MESA BLVD SAN DIEGO CA 92111-1002 UNITED STATES Reference Number: 000000014900000 Category: Restaurant-Bar & Cafe	11.09
06/25/2012 Mon	STARBUCKS CORP067488 SAN DIEGO CA REF# 094444018 800-7827282 06/25/12 Doing Business As: STARBUCKS 6748 Merchant Address: 9211 CLAIREMONT MESA BLVD STE 101 SAN DIEGO CA 92123-1243 UNITED STATES Reference Number: 000009444401800 Category: Restaurant-Bar & Cafe	4.00
06/24/2012 Sun	SFR TAXI MED 0800 09 LONG ISLAND C NY REF# 063264269 718-9374444 06/24/12 Doing Business As: CREATIVE MOBILE TECHNOLOG Merchant Address: 4250 24TH ST LONG ISLAND CITY NY 11101-4608 UNITED STATES Reference Number: 000008326425800 Category: Transportation-Taxis & Coach	56.65
06/24/2012 Sun	YAKYUDORI 00-0801652 SAN DIEGO CA REF# 31017392177 RESTAURANT 06/24/12 Doing Business As: YAKYUDORI Merchant Address: 4698 CONVOY ST STE 101 SAN DIEGO CA 92111 UNITED STATES Reference Number: 000031017392177 Category: Restaurant-Restaurant	17.01
06/17/2012 Sun	SOUTHWEST CHICAGO IL 166362002 SW *HOTELS4VNW31 06/17/12 Doing Business As: SOUTHWEST AIRLINES Merchant Address: 500 W MADISON ST STE 1000 CHICAGO IL 60661-2559 UNITED STATES Reference Number: 000000166362002 Category: Travel-Airline	461.40
06/17/2012 Sun	SOUTHWEST AIRLINES (DALLAS TX TKT# 5262448546399 AIRLINE/AIR C 06/17/12 Doing Business As: SOUTHWEST AIRLINES Merchant Address: PO BOX 36611 DALLAS TX 75235 UNITED STATES Reference Number: 005262448546399 Category: Travel-Airline	364.80

Guest: BRIAN

********** Eat In **********

Rubio's

620 Hacienda Dr #101
Vista, CA 92081
Tel:(760) 305-1233

1	SALMON-B	8.29
1	REG DRNK	1.59

Sub. Total:	9.88
Tax:	0.82
Total:	10.70
Discount Total:	0.00
American Express:	-10.70
Change	0.00

Cashier: ELLI Register:2
6/25/2012 2:18:50 PM ORDER# 252372

Let us cater your next party or meeting
See Manager for details

THANK YOU!

American Express
Card Num : XXXXXXXXXXX1001
Terminal : KA06858455001
Approval : 527165
Sequence : 022269

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 707962
06/25/2012 08:01 AM
1656979 Drawer: 2 Reg: 1

Sausg Clsc Brkfst	2.95
Warming Pastry	
Gr Pike Place	1.95
Amex	4.90
XXXXXXXXXXXX1001	
Subtotal	4.90
Total	4.90
Change Due	$0.00

---------- Check Closed ----------
06/25/2012 08:01:15AM

0137
Server: GARRETT 22 C (#225) Rec: 73
06/27/12 13:50, Swiped T: 631 Term: 1

BJ's RESTAURANT BREWHOUSE
204 E. Via Rancho Parkway
Escondido, CA 92025
(760)466-0700
MERCHANT #:

CARD TYPE	ACCOUNT NUMBER
AMERICAN EXPRES	XXXXXXXXXXXX1001

Name: B HAINES
00 TRANSACTION APPROVED
AUTHORIZATION #: 572035
Reference: 0627010000137
TRANS TYPE: Credit Card SALE

CHECK: 18.21
TIP: 4.00
TOTAL: 22.21

X

Duplicate Copy

Souplantation
salads • soups • bakery

TTID#: 3035924, 06/26/2012 19:15

1 Adult Dinner	10.29
Subtotal	10.29
Sales Tax	0.80
Total	11.09
AMEX(Completed)(X1001)	-11.09
Balance	0.00

Store 073 Kearny Mesa
Comments or Suggestions?
Call 888-374-8360

CUSTOMER COPY

***

LONG ISLAND MIKES PIZZ
5250 MURPHY CANYON RD
SAN DIEGO, CA 92123

06/28/2012 20:05:29
Merchant ID: 000000002698303
Terminal ID: 03999939
1047194709

CREDIT CARD

AMEX SALE

CARD #	XXXXXXXXXXX1001
INVOICE	0054
Batch #:	000022
Approval Code:	588772
Entry Method:	Swiped
Mode:	Online
PRE-TIP AMT	$5.89
TIP	1.00
TOTAL AMOUNT	6.89

CUSTOMER COPY

GUEST: BRIAN

********** Eat In **********

Rubio's
13504 Poway Rd.
Poway, Ca, 92074
Tel:(858) 486 7833

1	SALMON-B	8.29
1	REG DRNK	1.59
	Sub. Total:	9.88
	Tax:	0.77
	Total:	10.65
	Discount Total:	0.00
	American Express:	-10.65
	Change	0.00

Cashier: Dianne Register:3
8/28/2012 1:06:39 PM ORDER# 1717369

Let us cater your next party or meeting
See Manager for details

Order #: 1717369

THANK YOU!

VAKYUDORI
4890 CONVOY ST STE 1
SAN DIEGO, CA. 92111
858-268-2888

TERMINAL I.D.: 00754200000165206970001
MERCHANT #: 000165206970

AMEX
**********1001
SALE
RECORD #: 55 INV: 000056
DATE: JUN.27, 12 TIME: 21:02
BATCH: 002
AUTH: 584400

BASE	$9.16
TIP	2.00
TOTAL	11.16
CARD BALANCE:	$0.00

D HAINES

I AGREE TO PAY ABOVE TOTAL AMOUNT
ACCORDING TO CARD ISSUER AGREEMENT
(MERCHANT AGREEMENT IF CREDIT VOUCHER)

CUSTOMER COPY

THANK YOU [illegible] MCDONALD'S
8925 CLAIREMONT MESA BLVD
SAN DIEGO , CA
92123
! ! ! THANK YOU ! ! !
TEL# 858 569 8386 Store# 5458

American Express
Card Num : XXXXXXXXXXX1001
Terminal : KA13085529002
Approval : 546205
Sequence : 042622

KS# 3 Jun.28'12 (Thu) 08:23

MFY SIDE 1 KVS Order 78

QTY ITEM	TOTAL
1 MCSKL BURRITO SAU ML	4.49
1 SML ORANGE JUICE CC	0.50
<Drink Upcharge>	
Subtotal	4.99
Tax	0.39
Eat-In Total	5.38
Cashless	5.38
Change	0.00

MER# 50421702
CARD ISSUER ACCOUNT#
Amex SALE **********1001
AUTHORIZATION CODE - 580752 SEQ# 245875

CHANGE TO MONEY

$ SEE BACK $

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 814-0283

CHK 716905
06/27/2012 08:05 AM
1810528 Drawer: 1 Reg: 1

Sausg Clsc Brkfst	2.95
Warming Pastry	
Gr Pike Place	1.95
Amex	4.90
XXXXXXXXXXXX1001	
Subtotal	4.90
Total	4.90
Change Due	$0.00

Check Closed
06/27/2012 08:05:45AM

--COPY--
Luxor Cab
MED# 0800
DRVR# 761315
CUSTOMER COPY
06/24/12 TR 2309
START END MILES
07:44 08:04 9.5
Regular Fare
RATE 1:$ 46.40
SURCH: $ 0.00
TIP: $ 9.25
TOTAL: $ 55.65

CARD TYPE: AMEX
XXXXXXXXXXX1001
AUTH: 562148

THANKS
www.sfmta.com

Enterprise

RA 126358686 Inv 0
Rental 24-JUN-2012 11:26 AM
SAN DIEGO INTL ARPT
Return 29-JUN-2012 02:09 PM
SAN DIEGO INTL ARPT

BRIAN HAINES
Vehicle # CC780666
Model COROLLA
Class Driven ICAR Class Charged ICAR
License# 6UUG356 State/Province CA
M/Kms Driven 207
M/Kms Out 8837
M/Kms In 9044

Charges	No Unit	Price	Amount
T & M	1 Week	99.95	99.95*
UNLIM M/KM	0 M/Kms		0.00*
CUSTOMER FACILITY CHG			10.00
CONCESSION RECOUP FEE			11.10*
TOURISM			2.85
SALES TAX 07.750 %			8.61

Total Charges USD 132.61

Deposit AMEX 1001

Amount Due USD 132.61

* Taxable Items
Subject to Audit
For Reservatons: 1-800-RENT-A-CAR

G&K CHEVRON #106
1832 WASHINGTON ST
STN 00090519

06/29/12 13:58:01

E/AMEX
XXXXXXXXXXX1001
Invoice# 1926590
Auth# 541224

Pump#: 5
7.409G @ $ 3.899/G
IDL-/Self $ 28.89

Total $ 28.89

Learn how to
EARN REWARDS
with a Chevron
or Texaco
Credit Card
See application
for details

THANK YOU
PLEASE COME AGAIN

IRVINE COMPANY
Since 1864

Full Statement

P/S #01 A Payment No.00000654
T/D #08 Ticket No.036080
Entry Time 06/29/2012 (Fri) 11:30
Exit Time 06/29/2012 (Fri) 13:39
Parking Time 2:09
Parking Fee Rate A $8.75

AMEX
Account # ********1001
Slip # 18681
Auth Code 554952
Credit Card Amount $8.75
Cash Amount $0.00

Total $8.75
Thank You for Your Visit.
Please Come Again !

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 703811
06/29/2012 07:23 AM
1796245 Drawer: 1 Reg: 1

Gr Pike Place	1.85
Sausg Clsc Brkfst	2.95
Amex	4.90
XXXXXXXXXXXX1001	
Subtotal	4.90
Total	4.90
Change Due	$0.00

Check Closed
06/29/2012 07:23:00AM

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

Supplier# 1529750

amec

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Sara Agahi
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123

File: 985-A

County Contract Number: 526934
Oracle Project Number: 5013-11-0008

Invoice Date: 9/28/2012
Task Order Number: 18
Invoice Number: S17670553

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 8/1//11 through 9/14/12.

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$116,848.00	72.03%	$84,163.20	$80,753.96	$3,409.24
TOTALS:	$116,848.00	72.03%	$84,163.20	$80,753.93	$3,409.24

AMOUNT DUE THIS BILLING: **$3,409.24**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to pay $3,409.24

Nathan Schaedler 10-4-12
NATHAN SCHAEDLER DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

526934
CONTRACT/P.O. NO.

T.O. #18
ACTIVITY/WA NO.

11/19/2012
DATE

Deborah McKay
PROJECT MANAGER

11/19/2012
DATE

DPW MANAGER

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123 USA
Tel: +1 858. 278.3600 • Fax: +1 858. 278.5300

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Project : 5013110008 -- COUNTY OF SD HMP MONITORING

Invoice # : S17670553

Phase : 01 -- SUB MONITORING

Task : 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor-intercompany			
ESA PWA	3,409.24	1.000	3,409.24
Total : Subcontractor-intercompany	3,409.24		3,409.24
Total Reimbursable Expenses			*3,409.24*
Total Expenses			*3,409.24*
Total Task : 01 - SUB MONITORING			3,409.24
Total Phase : 01 -- SUB MONITORING		Fees :	0.00
		Expenses :	3,409.24
		Total :	3,409.24

Total Project: 5013110008 -- COUNTY OF SD HMP MONITORING 3,409.24

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123 USA
Tel: +1 858. 278.3600 • Fax: +1 858. 278.5300

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ESA PWA

550 Kearny Street
Suite 900
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

August 15, 2012
Invoice No: 99140
Project Manager: Brian Haines

Project D211485.00 San Diego Hydromod Monitoring

PO #201107020

DPW Contract File 985

Addendum No. 2 - TO 18, Support of HMP Monitoring Services / **Contract #526934**
(through 06/30/2012)

Professional Services from June 30, 2012 to July 27, 2012

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Civil Engineer				
Haines, Brian	26.50	117.56	3,115.34	
Totals	26.50		3,115.34	
Total Labor				**3,115.34**
		Total this Task		**$3,115.34**

Task 0000600 PWA Expenses

Professional Personnel

	Hours	Rate	Amount	
Civil Engineer				
Haines, Brian	2.50	117.56	293.90	
Totals	2.50		293.90	
Total Labor				**293.90**
		Total this Task		**$293.90**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	3,409.24	80,753.96	84,163.20
Limit			116,848.00
Remaining			32,684.80

TOTAL INVOICE AMOUNT: $3,409.24

Project # 5013-11-0008
Phase # 01
GL Code # 5720-04
Vendor # 884165
PO Line # 03

PAYMENT DUE UPON RECEIPT

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Thursday, August 16, 2012

Environmental Science Associates Invoice 99140 Dated 8/15/2012 2:17:22 PM

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
Civil Engineer						
10349	Haines, Brian	7/5/2012	4.00	117.56	470.24	
	Site visit summary and site specific materials for County/subworkgroup.					
10349	Haines, Brian	7/9/2012	7.00	117.56	822.92	
	Invoicing, contract modification, project update.					
10349	Haines, Brian	7/10/2012	7.00	117.56	822.92	
	Project update and site summary to County					
10349	Haines, Brian	7/11/2012	8.00	117.56	940.48	
	Project update and site summary to County.					
10349	Haines, Brian	7/12/2012	.50	117.56	58.78	
	Data cleanup, correspondence.					
	Totals		26.50		3,115.34	
	Total Labor					**3,115.34**
				Total this Task		**$3,115.34**

Task 0000600 PWA Expenses

Professional Personnel

			Hours	Rate	Amount	
Civil Engineer						
10349	Haines, Brian	7/2/2012	2.00	117.56	235.12	
	Expense reporting					
10349	Haines, Brian	7/3/2012	.50	117.56	58.78	
	Field gear, note scanning, photo filing.					
	Totals		2.50		293.90	
	Total Labor					**293.90**
				Total this Task		**$293.90**
				Total this Project		**$3,409.24**
				Total this Report		**$3,409.24**

COUNTY OF SAN DIEGO
County of San Diego/DPW/Watershed Protection
ATTN: Sara Agahi
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Development & Construction

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Deborah Mosley
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123

File: 985-A

Invoice Date: 10/26/2012
Task Order Number: 18
Invoice Number: S17670601

County Contract Number: 542923 (Old Contract #526934)
Oracle Project Number: 5013-11-0008

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 9/15/12 through 10/12/12

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$116,848.00	78.57%	$91,804.30	$84,163.20	$7,641.10
TOTALS:	$116,848.00	78.57%	$91,804.30	$84,163.20	$7,641.10

AMOUNT DUE THIS BILLING: **$7,641.10** ✓

P = 1002993
O = 50915
E = 52370
T = 001.006
A = 100496

Supplier ID# 1529750

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to Pay $7,641.10

Nathan Schaedler 1/9/13
NATHAN SCHAEDLER DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542923 — CONTRACT/P.O. NO.
18 — ACTIVITY/WA NO.
2/8/2013 — DATE
Deborah Mosley — PROJECT MANAGER
2/8/2013 — DATE
DPW MANAGER

amec

Project : 5013110008 -- COUNTY OF SD HMP MONITORING

Invoice # : S17670601

Phase : 01 -- SUB MONITORING

Task : 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor			
ESA PWA	7,641.40	1.000	7,641.40
Total : Subcontractor	7,641.40		7,641.40
Total Reimbursable Expenses			*7,641.40*
Total Expenses			*7,641.40*
Total Task : 01 - SUB MONITORING			7,641.40
Total Phase : 01 -- SUB MONITORING		Fees :	0.00
		Expenses :	7,641.40
		Total :	7,641.40

Total Project: 5013110008 -- COUNTY OF SD HMP MONITORING 7,641.40 ✓

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

September 14, 2012
Invoice No: 99509
Project Manager Brian Haines

Project D211485.00 San Diego Hydromod Monitoring

PO #M01107020 5013-11-0008.01.01

DPW Contract File 985

Addendum No. 2 - TO 18, Support of HMP Monitoring Services / Contract #526934
(through 06/30/2012)

Professional Services through August 24, 2012

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Civil Engineer				
Deng, Shinuo	2.00	117.56	235.12	
Haines, Brian	63.00	117.56	7,406.28	
Totals	65.00		7,641.40	
Total Labor				7,641.40
		Total this Task		$7,641.40 ✓

Billing Limits	Current	Prior	To-Date	
Total Billings	7,641.40	84,163.20	91,804.60	
Limit			116,848.00	
Remaining			25,043.40	
		Total this Invoice		$7,641.40 ✓

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

PO Line 03 = $ 2,667.80
PO Line 04 = $ 4,973.60

PO # M20110702O
Vendor # 884165
GL = 5720-00

PAYMENT DUE UPON RECEIPT

Billing Backup

Friday, September 14, 2012
10:27:54 AM

Environmental Science Associates Invoice 99509 Dated 9/14/2012

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
Civil Engineer						
10448	Deng, Shinuo	7/31/2012	2.00	117.56	235.12	
	Site analysis					
10349	Haines, Brian	1/11/2012	1.00	117.56	117.56	
	December project review. Communication with Mr. Wick's liaison for the Johnson Creek monitoring site.					
10349	Haines, Brian	1/12/2012	3.00	117.56	352.68	
	Site Selection - Suggested sites from County - Bell Creek, Santa Ysabel.					
10349	Haines, Brian	1/17/2012	1.00	117.56	117.56	
	Site selection - Review of suggested County reference sites.					
10349	Haines, Brian	1/18/2012	5.00	117.56	587.80	
	Site selection - Review of suggested County reference sites.					
10349	Haines, Brian	1/19/2012	3.00	117.56	352.68	
	Site selection - Rancho Jamul Ecological Reserve.					
10349	Haines, Brian	1/20/2012	2.00	117.56	235.12	
	Site selection - Review of suggested County reference sites.					
10349	Haines, Brian	2/7/2012	.50	117.56	58.78	
	February project review.					
10349	Haines, Brian	4/18/2012	4.00	117.56	470.24	
	Review of potential monitoring sites, desk study revisions.					
10349	Haines, Brian	4/19/2012	6.00	117.56	705.36	
	Review of potential monitoring sites, desk study revisions.					
10349	Haines, Brian	7/30/2012	7.00	117.56	822.92	
	Prepared and submitted updated site list/map, memo, and presentation.					
10349	Haines, Brian	7/31/2012	8.00	117.56	940.48	
	Preparation/attendance of regional/state board meetings.					
10349	Haines, Brian	8/1/2012	2.50	117.56	293.90	
	Preparation/attendance of regional/state board meetings.					
10349	Haines, Brian	8/6/2012	1.00	117.56	117.56	
	Correspondence with County. Advice on Candelight.					
10349	Haines, Brian	8/14/2012	.50	117.56	58.78	
	Project invoicing, AMEC/accounting follow up.					
10349	Haines, Brian	8/15/2012	2.00	117.56	235.12	
	Internal project budget setup, clearing invoicing issues with AMEC.					
10349	Haines, Brian	8/17/2012	3.00	117.56	352.68	
	Additional review/comment on Candlelight. Phone discussion and notes with Deb M.					
10349	Haines, Brian	8/20/2012	1.50	117.56	176.34	
	Flanders/Carroll canyon sediment transport from AMEC. Phone field applications to Deb M. Monitoring site review - Heritage, Bobier, Sycamore.					
10349	Haines, Brian	8/23/2012	4.50	117.56	529.02	
	Revisit of Heritage and Bobier.					
10349	Haines, Brian	8/24/2012	7.50	117.56	881.70	
	Revisit of Heritage, Bobier, Sycamore. Comments on site selection criteria. Memo summarizing.					
	Totals		65.00		7,641.40	
	Total Labor					**7,641.40**

Project	D211485.00		Invoice	99509
			Total this Task	**$7,641.40** ✓
			Total this Project	**$7,641.40** ✓
			Total this Report	**$7,641.40** ✓

APPENDIX U

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

Supplier # 1529750

File: 985-A

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Deborah Mosley
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123

Invoice Date: 11/30/2012
Task Order Number: 18
Invoice Number: S17670702

County Contract Number: 542923 (Old Contract #526934)
Oracle Project Number: 5013-11-0008

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 10/13/12 through 11/16/12

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$116,848.00	90.95%	$106,273.59	$91,804.60	$14,468.99
TOTALS:	$116,848.00	90.95%	$106,273.59	$91,804.60	$14,468.99

AMOUNT DUE THIS BILLING: **$14,468.99**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to PAY $14,468.99

NATHAN SCHAEDLER
PROJECT MANAGER

12/7/12
DATE

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542923
CONTRACT/P.O. NO.

18
ACTIVITY/WA NO.

1/7/2013
DATE

PROJECT MANAGER

1/7/2013
DATE

DPW MANAGER

amec

Project : 5013110008 -- COUNTY OF SD HMP MONITORING | Invoice # : S17670702

Phase : 01 -- SUB MONITORING

Task : 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor			
ESA PWA	14,468.99	1.000	14,468.99
Total : Subcontractor	14,468.99		14,468.99
Total Reimbursable Expenses			*14,468.99*
Total Expenses			*14,468.99*
Total Task : 01 - SUB MONITORING			14,468.99
Total Phase : 01 -- SUB MONITORING		Fees :	0.00
		Expenses :	14,468.99
		Total :	14,468.99

Total Project: 5013110008 -- COUNTY OF SD HMP MONITORING 14,468.99

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

October 10, 2012
Invoice No: 99889
Project Manager: Brian Haines

Project D211485.00 San Diego Hydromod Monitoring

PO ~~#M01107020~~ M201107020

DPW Contract File 985

Addendum No. 2 - TO 18, Support of HMP Monitoring Services / Contract ~~#520934~~ 54293
(through 06/30/2012)

Professional Services from August 25, 2012 to September 28, 2012

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Civil Engineer				
Haines, Brian	112.50	117.56	13,225.50	
Totals	112.50 ✓		13,225.50	
Total Labor				**13,225.50**
		Total this Task		**$13,225.50** ✓

Task 0000600 PWA Expenses

Reimbursable Expenses

Travel - Transportation			678.63	
Travel - Lodging			414.96	
Travel - Meals			149.90	
Total Reimbursables		**1.0 times**	**1,243.49**	**1,243.49**
		Total this Task		**$1,243.49** ✓

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	14,468.99	91,804.60	106,273.59
Limit			116,848.00
Remaining			10,574.41

TOTAL INVOICE AMOUNT: $14,468.99 ✓

PO Line = 04
Project #: 5013-11-0008
Phase # 01.01
Vendor # 884165

PAYMENT DUE UPON RECEIPT

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Environmental Science Associates Invoice 99889 Dated 10/10/2012 Wednesday, October 10, 2012 12:00:28 PM

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
Civil Engineer						
10349	Haines, Brian	8/29/2012	3.00	117.56	352.68	
	Desk study revisions - Heritage, Sycamore. Field planning with Deb Mosley.					
10349	Haines, Brian	8/30/2012	3.00	117.56	352.68	
	Review of prior assessments, field work planning.					
10349	Haines, Brian	8/31/2012	3.00	117.56	352.68	
	Phone discussion with Deb Mosley - field work, HMP meeting, next visit. Field work planning. Sumarry of desk study process and tools for Deb.					
10349	Haines, Brian	9/5/2012	2.00	117.56	235.12	
	Star Ranch initial review.					
10349	Haines, Brian	9/7/2012	5.50	117.56	646.58	
	Desk study preparation for field visits.					
10349	Haines, Brian	9/10/2012	8.00	117.56	940.48	
	Monitoring site recon and assessment - Heritage and Sycamore					
10349	Haines, Brian	9/11/2012	8.00	117.56	940.48	
	Monitoring site recon and assessment - San Marcos and Lilac					
10349	Haines, Brian	9/12/2012	8.00	117.56	940.48	
	Monitoring site recon and assessment - Wildcat. Subworkgroup meeting.					
10349	Haines, Brian	9/13/2012	8.00	117.56	940.48	
	Monitoring site recon and assessment - Hoist, Riverview, and Hidden Valley.					
10349	Haines, Brian	9/14/2012	8.00	117.56	940.48	
	Monitoring site recon and assessment - Candlelight. Return trip to San Fran.					
10349	Haines, Brian	9/17/2012	5.50	117.56	646.58	
	Field data workup.					
10349	Haines, Brian	9/18/2012	8.00	117.56	940.48	
	Field data workup - Hoist summary					
10349	Haines, Brian	9/19/2012	2.50	117.56	293.90	
	Field data workup.					
10349	Haines, Brian	9/20/2012	5.00	117.56	587.80	
	Field data workup. Monitoring site setup information to County.					
10349	Haines, Brian	9/21/2012	5.00	117.56	587.80	
	Site monitoring setup. Survey/assessment task setup per D. Mosley request.					
10349	Haines, Brian	9/24/2012	8.00	117.56	940.48	
	Field visit post-processing.					
10349	Haines, Brian	9/25/2012	7.50	117.56	881.70	
	Annual survey planning. Backup reference sites summary sheets.					
10349	Haines, Brian	9/26/2012	5.50	117.56	646.58	
	Annual survey planning. Backup reference sites summary sheets.					
10349	Haines, Brian	9/27/2012	3.00	117.56	352.68	
	Field visit post-processing. Review of SDSU research projects/proposals.					
10349	Haines, Brian	9/28/2012	6.00	117.56	705.36	
	Field visit post-processing. Site summary memo to County.					
	Totals		112.50		13,225.50	
	Total Labor					**13,225.50**

Project	D211485.00				Invoice	99889
				Total this Task		**$13,225.50**

Task 0000600 PWA Expenses

Reimbursable Expenses

Travel - Transportation						
EX	000000014293	9/3/2012	Haines, Brian / Southwest Airlines		370.60	
EX	000000014293	9/9/2012	Haines, Brian / Luxor Cab		55.00	
EX	000000014293	9/14/2012	Haines, Brian / Dollar Rental		142.39	
EX	000000014293	9/14/2012	Haines, Brian / Luxor Cab		60.00	
EX	000000014293	9/14/2012	Haines, Brian / Shell		50.64	
Travel - Lodging						
EX	000000014293	9/3/2012	Haines, Brian / Ramada Inn		414.96	
Travel - Meals						
EX	000000014293	9/9/2012	Haines, Brian / Subway		6.89	
EX	000000014293	9/10/2012	Haines, Brian / Yakyudori		17.55	
EX	000000014293	9/10/2012	Haines, Brian / Starbucks		6.55	
EX	000000014293	9/10/2012	Haines, Brian / Rubio's		10.76	
EX	000000014293	9/11/2012	Haines, Brian / Tina's Deli		4.99	
EX	000000014293	9/11/2012	Haines, Brian / Souplantation		11.09	
EX	000000014293	9/11/2012	Haines, Brian / McDonalds		5.59	
EX	000000014293	9/12/2012	Haines, Brian / Starbucks		4.60	
EX	000000014293	9/12/2012	Haines, Brian / Karl Strauss		18.95	
EX	000000014293	9/12/2012	Haines, Brian / Rubio's		10.76	
EX	000000014293	9/12/2012	Haines, Brian / SD COC (CulinArt)		2.96	
EX	000000014293	9/13/2012	Haines, Brian / Souplantation		11.09	
EX	000000014293	9/13/2012	Haines, Brian / Sprouts		8.36	
EX	000000014293	9/13/2012	Haines, Brian / SD COC (CulinArt)		11.96	
EX	000000014293	9/14/2012	Haines, Brian / Rubio's		10.21	
EX	000000014293	9/14/2012	Haines, Brian / Starbucks		4.90	
EX	000000014293	9/14/2012	Haines, Brian / SD COC (CulinArt)		2.69	
		Total Reimbursables		**1.0 times**	**1,243.49**	**1,243.49**
				Total this Task		**$1,243.49**
				Total this Project		**$14,468.99**
				Total this Report		**$14,468.99**

Summarized Expense Report

Wednesday, October 17, 2012
11:40:17 AM

Environmental Science Associates

Employee 10349 Haines, Brian E

Signed _____
Devlin,Tara L.

Posted

Approved _____

Organization PW01:07

Expense Report: San Diego, 9/9-9/14 **Report Date:** 9/17/2012

Date	Category	Description	Project	Task	Subtask	Bill	Paid	Account	Amount
9/14/2012	Travel Meals	SD COC (CulinArt)	D211485.00	0000600		X		5600-03	2.69
9/14/2012	Auto Rental (Including rental gasoline)	Dollar Rental	D211485.00	0000600		X		5600-04	142.39
9/14/2012	Parking/Toll/Cab/Rail (Ferry)	Luxor Cab	D211485.00	0000600		X		5600-05	60.00
9/14/2012	Travel Meals	Starbucks	D211485.00	0000600		X		5600-03	4.90
9/14/2012	Auto Rental (Including rental gasoline)	Shell	D211485.00	0000600		X		5600-04	50.64
9/14/2012	Travel Meals	Rubio's	D211485.00	0000600		X		5600-03	10.21
9/13/2012	Travel Meals	Souplantation	D211485.00	0000600		X		5600-03	11.09
9/13/2012	Travel Meals	Sprouts	D211485.00	0000600		X		5600-03	8.36
9/13/2012	Travel Meals	SD COC (CulinArt)	D211485.00	0000600		X		5600-03	11.96
9/12/2012	Travel Meals	Starbucks	D211485.00	0000600		X		5600-03	4.60
9/12/2012	Travel Meals	Karl Strauss	D211485.00	0000600		X		5600-03	18.95
9/12/2012	Travel Meals	Rubio's	D211485.00	0000600		X		5600-03	10.76
9/12/2012	Travel Meals	SD COC (CulinArt)	D211485.00	0000600		X		5600-03	2.96
9/11/2012	Travel Meals	Tina's Deli	D211485.00	0000600		X		5600-03	4.99
9/11/2012	Travel Meals	Souplantation	D211485.00	0000600		X		5600-03	11.09
9/11/2012	Travel Meals	McDonalds	D211485.00	0000600		X		5600-03	5.59
9/10/2012	Travel Meals	Yakyudori	D211485.00	0000600		X		5600-03	17.55
9/10/2012	Travel Meals	Starbucks	D211485.00	0000600		X		5600-03	6.55
9/10/2012	Travel Meals	Rubio's	D211485.00	0000600		X		5600-03	10.76

v6.1.600 (CDU) -

Summarized Expense Report

Wednesday, October 17, 2012
11:40:17 AM

Environmental Science Associates

Employee 10349 Haines, Brian E

Signed _____
Devlin,Tara L.

Posted

Approved _____

Organization PW01:07
Expense Report: San Diego, 9/9-9/14 **Report Date:** 9/17/2012

Date	Category	Description	Project	Task	Subtask	Bill	Paid	Account	Amount
9/9/2012	Parking/Toll/Cab/Rail (Ferry)	Luxor Cab	D211485.00	0000600		☒	☐	5600-05	55.00
9/9/2012	Travel Meals	Subway	D211485.00	0000600		☒	☐	5600-03	6.89
9/3/2012	Airfare	Southwest Airlines	D211485.00	0000600		☒	☐	5600-01	370.60
9/3/2012	Lodging	Ramada Inn	D211485.00	0000600		☒	☐	5600-02	414.96
					Total Expenses				1,243.49
					Total Due				1,243.49

Gmail by Google

Brian Haines <haineworld@gmail.com>

Southwest Airlines Confirmation-HAINES/BRIAN ELLIOTT-Confirmation: 42ZOX7

1 message

Southwest Airlines <SouthwestAirlines@luv.southwest.com>
Reply-To: Southwest Airlines <no-reply@luv.southwest.com>
To: HAINESACCOUNTS@gmail.com

Mon, Sep 3, 2012 at 2:52 PM

You're all set for your trip!

SOUTHWEST

My Account | View My Itinerary Online

Check In Online | Check Flight Status | Change Flight | Special Offers | Hotel Deals | Car Deals

Ready for takeoff!

Thanks for choosing Southwest for your trip! You'll find everything you need to know about your reservation below. Happy travels!

Upcoming Trip: 09/09/12 - San Diego

AIR Itinerary

AIR Confirmation: 42ZOX7

Confirmation Date: 09/3/2012

Passenger(s)	Rapid Rewards #	Ticket #	Expiration	Est. Points Earned
HAINES/BRIAN ELLIOTT	00000636626192	5262465571034	Sep 3, 2013	2943

Rapid Rewards points earned are only estimates. Visit your (My Southwest, Southwest.com or Rapid Rewards) account for the most accurate totals - including A-List & A-List Preferred bonus points.

Date	Flight	Departure/Arrival
Sun Sep 9	984	Depart **SAN FRANCISCO CA (SFO)** at **08:25 AM** Arrive in **SAN DIEGO CA (SAN)** at **09:50 AM** Travel Time 1 hrs 25 mins Wanna Get Away
Fri Sep 14	2707	Depart **SAN DIEGO CA (SAN)** at **6:00 PM** Arrive in **SAN FRANCISCO CA (SFO)** at **7:25 PM** Travel Time 1 hrs 25 mins Anytime

Air Cost: 370.60

Carry-on items: 1 Bag + small personal item are free see full details. Checked items: First and second bags are free, size and weight limits apply.

Fare Rule(s): 5262465571034: NONREF/NONTRANSFERABLE/STANDBY REQ UPGRADE TO Y. Valid only on Southwest Airlines. All travel involving funds from this Confirmation Number must be completed by the expiration date. Unused travel funds may only be applied toward the purchase

AVIS UP TO 30% OFF

EARLYBIRD CHECK-IN Get It Now

Find a Hotel
See ratings, photos and rates for over 40,000 hotels.
Book a Hotel

of future travel for the individual named on the ticket. Any changes to this itinerary may result in a fare increase.

SFO WN SAN136.74OLN0FNR WN SFO187.91YL 324.65 END ZPSFOSAN XFSFO4.5SAN4.5 AY5.00$SFO2.50 SAN2.50

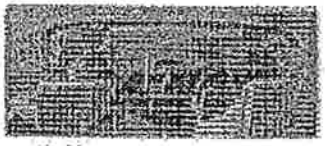

Rent Some Wheels
Explore your destination on the perfect set of wheels.

Rent a Car

Important Check-In Reminder

Be sure to arrive at the departure gate with your boarding pass at least 10 minutes before your scheduled departure time. Otherwise, your reserved space may be cancelled and you won't be eligible for denied boking compensation.

Go to Boarding School

Get EarlyBird Check-In™ Details

HOTEL Itinerary

HOTEL Confirmation: FRSDRW

Guest Name: Brian Haines
Questions regarding your reservation?
Call 1-800-545-4489

Rapid Rewards #: 000006366526192

Ramada Inn & Conference Center San Diego
5550 Kearny Mesa Road
San Diego , CA 92111
Tel. 1-858-278-0800

Check-In
Sun Sep 9 , 2012

Check-Out
Fri Sep 14 , 2012

Room Request: 1BA - Standard Room - 1 king bed

Number of Rooms: 1

Cancellation: Southwest Airlines does not charge cancellation or change fees for any hotel booked on southwest.com. However, we are required to pass on the following fees that are imposed by the property. Cancellations or changes made within 1 day prior to 3:00 PM local hotel time on the day of arrival are subject to a $65.81 charge. Cancellations or changes made after 3:00 PM local hotel time on the day of arrival are subject to a 100% charge. We are sorry but refunds are not available for early check-out.
Southwest Airlines Limit of Liability: Hotel is solely responsible for fulfilling all reservations. Your preferences will be submitted with your reservation and subject to hotel availability.

Hotel Cost: $ 370.95

Final was $414.96 ?

CAR Itinerary

CAR Confirmation: QP695453

Driver Name: Brian Haines

Rapid Rewards#: 000006366526192

Pick-Up Location
Dollar - Rental Counter is located outside of the Airport Terminal. Shuttle is provided.
San Diego, CA - SAN

Drop Off Location
Dollar - Rental Counter is located outside of the Airport Terminal. Shuttle is provided.
San Diego, CA - SAN

Pick-Up Date
Sun September 9 , 2012

Drop Off Date
Fri September 14 , 2012

Vehicle Description: Compact , Ford Focus or similar

Details: The minimum rental age is 25 years old on most rentals.

All drivers must have a major credit card and valid driver's license in the driver's name.
Remember to show your Rapid Rewards card at checkout.

Estimated Car Cost: $ 132.83

Cost and Payment Summary

AIR - 42ZOK7

Base Fare	$ 324.65	**Payment Information**
Excise Taxes	$ 24.35	Payment Type: Amer Express XXXXXXXXXXXX1001
Segment Fee	$ 7.60	Date: Sep 3, 2012
Passenger Facility Charge	$ 9.00	Payment Amount: $370.60
September 11th Security Fee	$ 5.00	
Total Air Cost	$ 370.60	

HOTEL - FRSDIW

Rooms: 1		**Payment Information**
Additional Taxes & Fees		Payment Type: AX XXXXXXXXXXXX1001
Taxes & Fees	$ 44.01	Payment Amount: $ 414.96
Total Hotel Cost:	$ 414.96	→ this is OK

CAR - 09695453

Mileage Charge:	Unlimited Free	**Payment Information**
Drop Charge:	No Charge	Payment Type: AX XXXXXXXXXXXX1001
Estimated Car Cost:	$ 132.83	Payment Amount: $ 132.83

→ $142.39 see final receipt

Flight Status Alerts

Stay on your way with flight departure or arrival status via text message or email.

Subscribe Now

DING

Get exclusive travel deals straight to your desktop or iPhone.

Download DING!

Useful Tools

- Check-In Online
- Early Bird Check-In
- View/Share Itinerary
- Change Air Reservation
- Cancel Air Reservation
- Check Flight Status
- Flight Status Notification
- Book a Car
- Book a Hotel

Know Before You Go

- In the Airport
- Baggage Policies
- Suggested Airport Arrival Times
- Security Procedures
- Customers of Size
- In the Air
- Purchasing and Refunds

Special Travel Needs

- Traveling with Children
- Traveling with Pets
- Unaccompanied Minors
- Baby on Board
- Customers with Disabilities

Legal Policies & Helpful Information

Brian Haines

From:	hainesworld@gmail.com on behalf of Brian Haines [hainesaccounts@gmail.com]
Sent:	Friday, September 14, 2012 8:17 PM
To:	Brian Haines
Subject:	Fwd: Receipt from TAXI SERVICES - LUXOR CAB for $60.00
Follow Up Flag:	Follow up
Flag Status:	Flagged

---------- Forwarded message ----------
From: **Square** <noreply@messaging.squareup.com>
Date: Fri, Sep 14, 2012 at 6:30 PM
Subject: Receipt from TAXI SERVICES - LUXOR CAB for $60.00
To: hainesaccounts@gmail.com

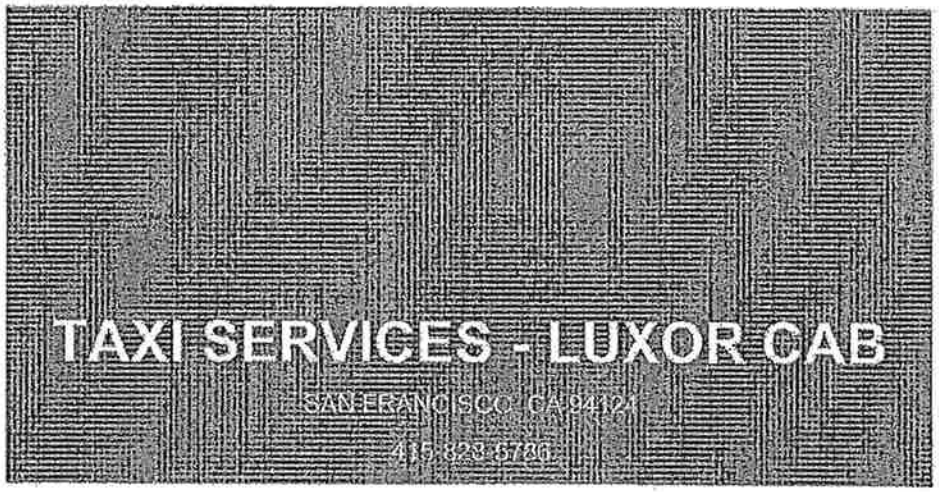

Sep 14, 2012 at 6:29pm

Receipt #vTqK

Item	$60.00
Total	**$60.00**
...1001	$60.00

1

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 814-0263

CHK 658440
09/12/2012 08:24 AM
1629893 Drawer: 2 Reg: 2

T1 Pike Place	1.65
Saueg Cisc Brkfst Warming Pastry	2.95
Amex XXXXXXXXXXXX1001	4.60
Subtotal	4.60
Total	4.60
Change Due	$0.00

Check Closed
09/12/2012 08:24:11AM

Complimentation
www.tastetheworldcontest.com

TTID#: 2239009, 09/11/2012 20:21

1 Adult Dinner	10.29
1 Water Only	0.00
Subtotal	10.29
Sales Tax	0.80
Total	11.09
AMEX(Completed)(X1001)	-11.09
Cash	-0.00
Balance	0.00

Store 078 Kearny Mesa
Comments or Suggestions?
Call 888-374-8360

[redacted]
760 N. TWIN OAKS VALLEY RD
SAN MARCOS, CA 92069
(760) 471-4808
www.ppegg.com

80 Alexxa 48 Thomas

Check: 1584 Guests: 1
ryan
09/11/2012 12:56PM

TO GO

1	VEGGIE DELTE	4.99
	Cash	4.99
	SUBTOTAL	4.99
	Tax	0.00
	PAYMENT	4.99
	Change Due	$0.00

Check Closed
09/11/2012 12:58:02PM

THANK YOU FOR VISITING
SEE YOU SOON

YAKYUDORI
4898 CONVOY ST STE 1
SAN DIEGO, CA, 92111
858-268-2888

TERMINAL I.D.: 00754200000192069700 1
MERCHANT #: 8016520697
AMEX
**********1001
SALE
RECORD #: 80 INV: 000039
DATE: SEP 10, 12 TIME: 20:37
BATCH: 856
AUTH: 586339

BASE $14.55
TIP 3.00
TOTAL 17.55
CARD BALANCE: $0.00

8 GATHES

I AGREE TO PAY ABOVE TOTAL AMOUNT
ACCORDING TO CARD ISSUER AGREEMENT
(MERCHANT AGREEMENT IF CREDIT VOUCHER)

CUSTOMER COPY

Luxor Cab
MED# 1125
DRV# 38948
CUSTOMER COPY
[illegible] TR 8372
START 6.00 MILES
06:56 [illegible] 9.6
Regular Fare
RATE 1# 45.85
EXTRA: $ 0.00
CURSOR $ 0.00
TIP: $ 9.15
TOTAL: $ 55.00

CARD TYPE: AMEX
**********1001
AUTH: 531920

THANKS
www.afmla.com

THANK YOU
9323 CLAIREMONT MESA BLVD
SAN DIEGO, CA
92123
THANK YOU
TEL#:858 569 6306 Store# 8450

KS# 2 Sep 11,12 (Tue) 09:38

KVS Order 07

QTY	ITEM	TOTAL
1	MGSKL-BURRITO SALI ML	4.49
1	MED ORANGE JUICE-CG	0.70
	(Drink Upcharge)	

Subtotal 5.19
Tax 0.40
Eat-In Total 5.59
Cashless 5.59
Change 0.00
MERH 50421702
CARD ISSUER ACCOUNT#
AMEX SALE ********1001
AUTHORIZATION CODE 569704 SEQ# 284209

CHANGE TO AMT
SEE BACK FOR DETAILS

MESEBRIAN'S

********** Eat In **********
Rubio's
13604 Poway Rd.
Poway, Ca, 92074
Tel:(858) 486 7833

1	BLKSLMN-B PLT Chips/Pinto REG DRNK	9.99

Sub. Total:	9.99
Tax:	0.77
Total:	10.76
Discount Total:	0.00
American Express:	-10.76
Change	0.00

Cashier: Carla Register:1
9/10/2012 1:11:41 PM ORDER# 1745453

Let us cater your next party or meeting
See Manager for details

Order #: 1745453

THANK YOU!

American Express
Card Num : XXXXXXXXXXX1001
Terminal : KA13085529002
Approval : 540266
Sequence : 063289

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 716185
09/10/2012 08:53 AM
1783742 Drawer: 2 Reg: 1

Tl Pike Place	1.85
Saueg Clsc Brkfst	2.85
Warming Pastry	
Kind Bar/Blueberry	1.95
Amex	8.55
XXXXXXXXXXXX1001	
Subtotal	8.55
Total	8.55
Change Due	$0.00

Check Closed
09/10/2012 08:53:23AM

SUBWAY

Qty	Item	Price
1	12" Turkey Breast	$8.00
1	$5FTFavDs	$0.00
1	DRK-20oz	$1.75

Memo:$5FTFav
SUBTOTAL $6.75
Sales Tx $0.14
TAKE-OUT **TOTAL $6.89
CredCardAMT TEND $6.89
CHANGE DUE $0.00
Approval No: 571093
Reference No: 225402403805
Acquired: Swipe
Account No: **********1001
Card Issuer: Amex
Amount: $6.89
Host Id: 621-29-797638

9675 Scranton Road
San Diego, CA 92126
858-587-2739

Server: Felicia 09/12/2012
Cashier: Megan
Table 98/2 8:45 PM
Guests: 0

#20071

GLASS BEER 0.00
Flashlamp Gold(S) 6.00
GLASS BEER 8.00
Big Barrel Double IPA (S)
Special Sandwich 12.95

Subtotal 24.95
Tax 1.93

Total 26.88

$18.75 ✓

Balance Due 26.88

9675 Scranton Road
San Diego, CA 92126
858-587-2739

Server: Felicia DOB: 09/12/2012
08:51 PM 09/12/2012
Table 98/2 2/20071

Amex 2097194
Card #XXXXXXXXXXX1001
Magnetic card present: HAINES B
Approval: 649873

Amount: $ 26.88
+ Tip: 5.00
= Total: 31.88

X

$12.95 X 1.077 =
$13.95
+ 5.00 tip
$18.95 TOTAL
reimbursable

GUEST: BRIAN

********** Eat In **********
Rubio's
130 Town Center Pkwy. Ste D
Santee, CA 92071
Tel:(619) 562-1275

1 BLKSLMN-B PLT 9.99
Chips/Pinto
REG DRNK

Sub. Total: 9.99
Tax: 0.77
Total: 10.76 ✓
Discount Total: 0.00

American Express: -10.76
Change 0.00

Cashier: Meagan Register:1
9/12/2012 1:34:18 PM ORDER# 471564

Let us cater your next party or meeting
See Manager for details

THANK YOU!

American Express
Card Num : XXXXXXXXXXX1001
Terminal : KA13800367001
Approval : 502060
Sequence : 009404

Office Complex
CulinArt Cafe

ORDER# 164
Stacy #202
9/12/2012 9:26:24 AM GUESTS 1

1 GONALLA BAR 1.75
1 WHOLE FRUIT 1.00
SUBTOTAL: 2.75
TAX: 0.21
Terminal 2
TOTAL: $2.96 ✓

Cash 5.00
Change 2.04

Food-Net 2.75

CLOSED 9/12/2012 9:26:34 AM

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 814-0263

CHK 730462
09/14/2012 08:01 AM
1656979 Drawer: 1 Reg: 2

Gr Pike Place	1.85
Sausg Ctsc Brkfst Warming Pastry	2.95
Amex XXXXXXXXXXXX1001	4.80
Subtotal	4.80
Total	4.80
Change Due	$0.00

Check Closed
09/14/2012 08:01:40AM

Complimentation
www.tastetheworldcontest.com

TTID#: 4250239, 09/13/2012 20:19

1 Adult Dinner	10.29
1 Water Only	0.00
Subtotal	10.29
Sales Tax	0.80
Total	11.09
AMEX(Completed)(X1001)	-11.09
Balance	0.00

Store 073-Kearny Mesa
Comments or Suggestions?
Call 888-374-8360

SPROUTS FARMERS MARKET
13035 Poway Road
Poway, CA 92064
(858)486-7881
Store Hours MON-SUN 7AM-10PM

Purchase $ 8.36

American Express#SXXXXXXXXXXX1001
Auth # 520883
Lane # 03 Cashier # 217
09/13/12 14:46 Ref/Seq # 034959
Mrch=019835 Term=001 TC=CC
EPS Sequence # 034959

DELI
VEGETARIAN SANDWICH $3.99 F

GROCERY
ARTESIAN WATER $1.69 F
CRV FS 10 $0.10 F
ORG CANND YERBA MATE $1.99 F
CRV FS 05 $0.05 F

PRODUCE
PINK LADY APPLES
0.36 lb @ $3.00/ 2 lb $0.54 F

6 BALANCE DUE $8.36
American Express $8.36
Auth Code # 520883

CHANGE $0.00

San Diego County
Office Complex
OullnArt Cafe

ORDER# 112
Stacy # 202
9/13/2012 8:58:16 AM GUESTS 1

1	BRKFST BURRITO N	4.00
1	SM COFFEE	1.85
2 @ 1.25	1/2 LTR ARNOHEA	2.50
1	WHOLE FRUIT	1.00
1	ODWALLA BAR	1.75
SUBTOTAL:		11.10
TAX:		0.86
Terminal 2	TH0000095	
TOTAL:		$11.96
AMEX [1001]		11.96
Food-Net		8.75
Beverage-Net		4.35

CLOSED 9/13/2012 8:59:39 AM

DOLLAR RENT A CAR
SAN DIEGO INTL APO
RENTAL RECORD: XC3554515
HAINES,BRIAN
COMPLETED BY: EDAWSO
RENTED: SAN DIEGO INTL APO
RENTAL: 09-09-12 1118
RETURN: 09-14-12 1316
VEH NUMBER: W246560
MILES IN: 47734 OUT:47476
MILES DRIVEN: 258
CHECK IN FUEL LEVEL: 8 OUT:8
PLAN IN/OUT: RX155
CLS: CDAR

1 WEEK @	$98.86	$98.86
SUBTOT		$98.86
TAXABLE TOT:		$98.86
TIME		$98.86
CFC		$10.00
VLF		
6 DAYS @	$0.23	$1.38
FF600		
6 DAYS @	$1.50	$9.00
TOURSM SRG		$2.82
APCONRGFEE		$12.01
STATE TAX		$9.32
TOTAL CHARGE		$142.39
NET DUE		$0.00
PAYMENTS		-$142.39

PAID BY: AX
CREDIT CARD#: **********001
FI # WN 0000036626192

WELCOME TO
BOB STIVERS SHELL

SHELL 57 442 736302
2521 PACIFIC HIGHWAY S1K0970
SAN DIEGO CA 92101

< DUPLICATE RECEIPT >

DATE08/14/12 1:04PM
INVOICE# 221911
AUTH# 535370
AMEX
ACCOUNT NUMBER
XXXX XXXXXX X1001
HAINES/B

PUMP	PRODUCT	$/G
04	UNLD	$4.499

GALLONS	FUEL TOTAL
11.256	$ 50.64

TOTAL SALE $ 50.64

RUBIO'S

********** Eat In **********
Rubio's
7420 Clairemont Mesa #111
San Diego, CA 92111
Tel:(858) 268-5770

1	MAHI-B	7.79
1	REG DRNK	1.69

Sub. Total:	9.48
Tax:	0.73
Total:	10.21
Discount Total:	0.00
American Express:	-10.21
Change	0.00

Cashier: ESME Register:2
9/14/12 12:20:57 PM ORDER# 1989095

Let us cater your next party or meeting
See Manager for details

Order #: 1989095

THANK YOU!

American Express
Card Num : XXXXXXXXXXX1001
Terminal : KA19104744002
Approval : 501444
Sequence : 004908

San Diego County
Office Complex
CulinArt Cafe

ORDER# 85
Stacy # 202
9/14/2012 8:18:21 AM GUESTS 1

2 @	1.25 1/2 LTR ARROWHEA	2.50
SUBTOTAL:		2.50
TAX:		0.19
Terminal 2	T#0000085	
TOTAL:		$2.69
Amex [1001]		2.69
Beverage-Net		2.50
CLOSED	9/14/2012 8:18:30 AM	

P: 1002993
O: 50915
E: 52370
T: 001,006
A: 100496

SUPPLIER ID # 1529750

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Deborah Mosley
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 985-A

County Contract Number: 542923 (Old contract # 526934)
AMEC Project Number: 5013-11-0008

Invoice Date: 12/21/2012
Task Order Number: 18
Invoice Number: S17670782

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 11/17/2012 - 12/7/2012

Tasks:	Contract Amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$116,848.00	94.16%	$110,027.27	$106,273.59	$3,753.68
TOTALS:	$116,848.00	94.16%	$110,027.27	$106,273.59	$3,753.68
AMOUNT DUE THIS BILLING:					**$3,753.68** ✓

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Nathan Schaedler 1/3/13
NATHAN SCHAEDLER DATE
PROJECT MANAGER

OK to PAY $3,753.68
APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542923 18
CONTRACT/P.O. NO. ACTIVITY/WA NO.
2/6/2013 Deborah Mosley
DATE PROJECT MANAGER
2/8/2013
DATE DPW MANAGER

Environment & Infrastructure
9177 Sky Park Court
San Diego, CA 92123 USA
Tel: +1 858.278.3600 Fax: +1 858.278.5300

Project : 5013110008 -- COUNTY OF SD HMP MONITORING Invoice # : S17670782

Phase : 01 -- SUB MONITORING

Task : 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor			
ESA PWA	3,753.68	1.000	3,753.68
Total : Subcontractor	**3,753.68**		**3,753.68**
Total Reimbursable Expenses			*3,753.68*
Total Expenses			*3,753.68*
Total Task : 01 - SUB MONITORING			3,753.68
Total Phase : 01 -- SUB MONITORING		Fees :	0.00
		Expenses :	3,753.68
		Total :	3,753.68

Total Project: 5013110008 -- COUNTY OF SD HMP MONITORING 3,753.68

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

November 12, 2012
Invoice No: 100280
Project Manager: Brian Haines

Project D211485.00 San Diego Hydromod Monitoring

PO #M01107020

DPW Contract File 985

Addendum No. 2 - TO 18, Support of HMP Monitoring Services / **Contract #~~526934~~** 542923
(through 06/30/2012)

Professional Services from September 29, 2012 to October 26, 2012

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Civil Engineer				
Haines, Brian	31.50	117.56	3,703.14	
Totals	31.50		3,703.14	
Total Labor				3,703.14
		Total this Task		**$3,703.14** ✓

Task 0000600 PWA Expenses

Reimbursable Expenses

Travel - Meals			50.54	
Total Reimbursables		**1.0 times**	**50.54**	**50.54**
		Total this Task		**$50.54** ✓

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	3,753.68	106,273.59	110,027.27
Limit			116,848.00
Remaining			6,820.73

TOTAL INVOICE AMOUNT: $3,753.68 ✓

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Project # 5013-11-D008.
Phase # 01, NB
PO # M20110702O
PO Line # 02 = $17.00
PO Line # 04 = $3,736.68
Vendor # ESA PWA
Subcontractor

PAYMENT DUE UPON RECEIPT

Billing Backup

Wednesday, November 14, 2012

Environmental Science Associates Invoice 100280 Dated 11/12/2012 2:40:06 PM

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
Civil Engineer						
10349	Haines, Brian	10/1/2012	8.00	117.56	940.48	
	September field visit summary memo to the County of SD.					
10349	Haines, Brian	10/3/2012	2.00	117.56	235.12	
	Supporting data compiliation for September field visits.					
10349	Haines, Brian	10/4/2012	3.50	117.56	411.46	
	Supporting data compiliation for September field visits.					
10349	Haines, Brian	10/5/2012	4.00	117.56	470.24	
	Supporting data compiliation for September field visits.					
10349	Haines, Brian	10/8/2012	4.00	117.56	470.24	
	Field visit to Wildcat - Heartland Ranch tributary.					
10349	Haines, Brian	10/10/2012	3.00	117.56	352.68	
	Travel arrangements, field gear collection, site visit planning.					
10349	Haines, Brian	10/16/2012	4.00	117.56	470.24	
	Travel to Schoolhouse Canyon for follow up assessment. Partial travel time back to San Francisco.					
10349	Haines, Brian	10/17/2012	3.00	117.56	352.68	
	Post trip follow-up and correspondence. Review of Hoist plans and next steps.					
	Totals		31.50		3,703.14	
	Total Labor					**3,703.14**
				Total this Task		**$3,703.14** ✓

Task 0000600 PWA Expenses

Reimbursable Expenses

Travel - Meals

EX	000000014469	10/14/2012	Haines, Brian / Starbucks	5.50 ✓	
EX	000000014469	10/14/2012	Haines, Brian / Yakyudori	14.93 ✓	
EX	000000014469	10/15/2012	Haines, Brian / San Diego COC	10.24 ✓	
EX	000000014469	10/15/2012	Haines, Brian / San Diego COC	6.30 ✓	
EX	000000014469	10/15/2012	Haines, Brian / Subway	5.00 ✓	
EX	000000014469	10/15/2012	Haines, Brian / Palominos	8.57 ✓	
	Total Reimbursables			**1.0 times** 50.54	**50.54**
				Total this Task	**$50.54** ✓
				Total this Project	**$3,753.68**
				Total this Report	**$3,753.68** ✓

Summarized Expense Report

Wednesday, November 14, 2012
2:13:45 PM

Environmental Science Associates

Employee 10349 Haines, Brian E

Signed _____
Devlin,Tara L.

Posted

Approved _____

Organization PW01:07
Expense Report: San Diego, Oct 11-16 **Report Date:** 10/17/2012

Date	Category	Description	Project	Task	Subtask	Bill	Paid	Account	Amount
9/21/2012	Airfare	Southwest	D211485.02	0000600		X		5600-01	157.60
9/21/2012	Lodging	Southwest/Ramada	D211485.02	0000600		X		5600-02	465.58
10/10/2012	Parking/Toll/Cab/Rail (Ferry)	Taxi Cab	D211485.02	0000600		X		5600-05	34.00
10/11/2012	Travel Meals	Yakyudori	D211485.02	0000600		X		5600-03	18.09
10/11/2012	Travel Meals	Subway	D211485.02	0000600		X		5600-03	10.72
10/11/2012	Parking/Toll/Cab/Rail (Ferry)	CMT (Luxor)	D211485.02	0000600		X		5600-05	58.30
10/11/2012	Travel Meals	Peet's	D211485.02	0000600		X		5600-03	8.26
10/11/2012	Airfare	Southwest	D211485.02	0000600		X		5600-01	50.00
10/12/2012	Travel Meals	Rubio's	D211485.02	0000600		X		5600-03	11.36
10/12/2012	Travel Meals	Starbucks	D211485.02	0000600		X		5600-03	6.85
10/12/2012	Travel Meals	Souplantation	D211485.02	0000600		X		5600-03	11.09
10/13/2012	Travel Meals	Sprouts	D211485.02	0000600		X		5600-03	10.74
10/13/2012	Travel Meals	Starbucks	D211485.02	0000600		X		5600-03	9.10
10/14/2012	Travel Meals	Starbucks	D211485.00	0000600		X		5600-03	5.50
10/14/2012	Travel Meals	Yakyudori	D211485.00	0000600		X		5600-03	14.93
10/15/2012	Travel Meals	San Diego COC	D211485.00	0000600		X		5600-03	10.24
10/15/2012	Travel Meals	San Diego COC	D211485.00	0000600		X		5600-03	6.30
10/15/2012	Travel Meals	Subway	D211485.00	0000600		X		5600-03	5.00
10/15/2012	Travel Meals	Palominos	D211485.00	0000600		X		5600-03	8.57

HUGS & BRIAN

********** Eat In **********

Rubio's
1684 Main Street, #A
Ramona, CA 92065
Tel:(760) 788-8004

1 BLKSCHW-A BLT	8.99
Chips/Pinto	
REG DRNK	
Sub. Total:	8.99
Tax:	0.77
Total:	10.76
Discount Total:	0.00
American Express:	-10.76
Change	0.00

Cashier: ROXANA Register:1
10/16/12 12:08:31 PM ORDER# 1095425

Order #: 1095425

THANK YOU!

American Express
Card Num : XXXXXXXXXXX1001
Terminal : ka181104980002
Approval : 513261
Sequence : 008807

BNSHOST
QUIZNOS SUBS
SAN DIEGO AIRPORT

1083 Gwendoly

8282 OCT16'12 6:53PM

1 VEGGIE	8	8.99
WHEAT BREAD		
SUBTOTAL		8.99
TAX		0.70
AMOUNT		9.69
XXXXXXXXXXXXXXX		XXXXX
AMEX	A9	9.69

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 057551
10/16/2012 08:16 AM
1783742 Drawer: 1 Reg: 2

Ethos Water 700ML	1.85
Bottle Dep/Crv	0.05
Spnch Brkfst Wrap	3.25
Warming Pastry	
T1 Pike Place	1.85
Fruit/Nut Mix1.50z	1.75
Amex	8.65
XXXXXXXXXXXX1001	
Subtotal	8.65
Total	8.65
Change Due	$0.00

PALOMINOS #2
CHICKEN ROASTED & SALADS
9353 CLAIREMONT MESA BLVD. #1
SAN DIEGO, CA. 92111
858 292-8470

DATE 10/16/2012	MON
COMB #17 T1	$7.49
chkn fajita	
w corn	
CO FEE	$0.50
*** HERE ***	
SUBTOTAL	$7.99
TAX1 ANT	$0.58
TOTAL	$8.57
CREDIT CARD	$8.57
SALE	$8.57

**********4752
APP: 368232
REF: 00000102
REC: 102
* ORDER# 0052 *
NO.000055 REG 02 ALEX TIME 19:47

10

San Diego County
Office Complex
CulinArt Cafe

ORDER# 358
ALICIA # 210
10/15/2012 12:22:25 PM GUESTS 1

1 VITAMIN WATER	2.25
1 DINNER ROLL	0.50
1 SPINNING SALAD	6.75
SUBTOTAL:	9.50
TAX:	0.74
Terminal 1 T#0000096	
TOTAL:	$10.24
Amex [1001]	10.24
Food-Net	7.25
Beverage-Net	2.25

CLOSED 10/15/2012 12:22:38 PM

SUBWAY

Qty	Item	Price
1	12" Veggie Delite	$5.00
	SUBTOTAL	$5.00
	Sales TX	$0.00
	TAKE-OUT **TOTAL	$5.00
	Credit AMT TEND	$5.00
	CHANGE DUE	$0.00

Approval No: 541091
Reference No: 228901090370
Acquired: Swipe
Account No: **********1001
Card Issuer: Amex
Amount: $5.00
Host Id: 688-51-573232

10

San Diego County
Office Complex
CulinArt Cafe

ORDER# 109
PATRICIA # 206
10/15/2012 9:08:49 AM GUESTS 1

1 BRKFST SPEC	4.00
1 MD COFFEE	1.85
SUBTOTAL:	5.85
TAX:	0.48
Terminal 2 T#0000108	
TOTAL:	$6.30
Amex [1001]	6.30
Food-Net	4.00
Beverage-Net	1.85

CLOSED 10/15/2012 9:09:08 AM

YANKYDOODLE
4898 CONVOY ST STE 1
SAN DIEGO, CA. 92111
858-268-2880

TERMINAL I.D.: 0075420000016520497001
MERCHANT #: 0016520497

AMEX
**********1001
SALE
RECORD # 16 INV: 000016
DATE: OCT 15, 12 TIME: 12:56
BATCH: 996
AUTH: 548451

BASE $12.93
TIP 2.
TOTAL 14.93
CARD BALANCE: $0.00

0 MEALS

I AGREE TO PAY ABOVE TOTAL AMOUNT ACCORDING TO CARD ISSUER AGREEMENT (MERCHANT AGREEMENT IF CREDIT VOUCHER)

CUSTOMER COPY

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 707040
10/14/2012 09:19 AM
1783742 Drawer: 2 Reg: 1

Gr Americano	2.55
Sausg Ciao Brkfst	2.95
Warming Pastry	
Amex	5.50
XXXXXXXXXXXX1001	
Subtotal	5.50
Total	5.50
Change Due	$0.00

Check Closed
10/14/2012 09:19:58AM

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 732285
10/13/2012 08:36 AM
1810629 Drawer: 2 Reg: 2

Fruit/Nut Mix1.50z	1.79
Kind Bar/Blueberry	1.95
Gr Pike Place	1.95
Ham Art Brkfst	3.45
Warming Pastry	
Amex	9.10
XXXXXXXXXXXX1001	
Subtotal	9.10
Total	9.10
Change Due	$0.00

SPROUTS FARMERS MARKET
13598 Poway Road
Poway, CA 92064
(888)486-7651
Store Hours MON-SUN 7AM-10PM

Purchase $ 10.74

American Express#XXXXXXXXXXXX1001
Auth # 669798
Lane # 05 Cashier # 235
10/13/12 12:50 Ref/Seq # 058524
Mrch=019835 Term=001 IC=CC
EPS Sequence # 058524

DELI		
TURKEY SANDWICH	$3.99	F
VEGETARIAN SANDWICH	$3.99	F
GROCERY		
ORG CANND YERBA MATE	$1.79	F
CRV FS 05	$0.05	F
PRODUCE		
PINK LADY APPLES		
0.52 lb @ $1.49/ lb	$0.93	F
5 BALANCE DUE	$10.74	
American Express	$10.74	
Auth Code = 669798		
CHANGE	$0.00	

Souplantation
salads · soups · bakery

TIION: 4258575, 10/12/2012 19:42

1 Adult Dinner	10.29
Subtotal	10.29
Sales Tax	0.80
Total	11.09
AMEX(Completed)(X1001)	-11.09
Balance	0.00

Store 073 Kearny Mesa
Comments or Suggestions?
Call 888-[illegible]

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

Supplier ID # 1529750

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Deborah Mosley
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 985-A

County Contract Number: 542923 (Old contract # 526934)
AMEC Project Number: 5013-11-0008

Invoice Date: 1/25/2013
Task Order Number: 18
Invoice Number: S17670853

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 12/8/2012 - 1/11/2013

Tasks:	Contract Amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$116,848.00	94.36%	$110,262.39	$110,027.27	$235.12
TOTALS:	$116,848.00	94.36%	$110,262.39	$110,027.27	$235.12
AMOUNT DUE THIS BILLING:					**$235.12**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to PAY $235.12

1/28/13
NATHAN SCHAEDLER — DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542923 — CONTRACT/P.O. NO.
TO# 18 — ACTIVITY/WA NO.
2/13/2013 — DATE
PROJECT MANAGER
2/14/2013 — DATE
DPW MANAGER

Environment & Infrastructure
9177 Sky Park Court
San Diego, CA 92123 USA
Tel: +1 858.278.3600 Fax: +1 858.278.5300

Project : 5013110008 -- COUNTY OF SD HMP MONITORING Invoice # : S17670853

Phase : 01 -- SUB MONITORING

Task : 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor			
ESA PWA	235.12	1.000	235.12
Total : Subcontractor	**235.12**		**235.12**
Total Reimbursable Expenses			***235.12***
Total Expenses			***235.12***
Total Task : 01 - SUB MONITORING			**235.12**
Total Phase : 01 -- SUB MONITORING		**Fees :**	**0.00**
		Expenses :	**235.12**
		Total :	**235.12**

Total Project: 5013110008 -- COUNTY OF SD HMP MONITORING **235.12** ✓

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

December 05, 2012
Invoice No: 100663
Project Manager: Brian Haines

Project D211485.00 San Diego Hydromod Monitoring

PO #M01107020

DPW Contract File 985

Addendum No. 2 - TO 18, Support of HMP Monitoring Services / Contract ~~#526934~~ 542923
(through 06/30/2012)

Professional Services from October 27, 2012 to November 23, 2012

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Haines, Brian	2.00	117.56	235.12	
Totals	2.00		235.12	
Total Labor				**235.12**
		Total this Task		**$235.12**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	235.12	110,027.27	110,262.39
Limit			116,848.00
Remaining			6,585.61

TOTAL INVOICE AMOUNT: $235.12 ✓

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

PO # M201107020
Project # 5013-11-0008
Phase # 01
PO Line # 04
Vendor # 884165

PAYMENT DUE UPON RECEIPT

Billing Backup

Wednesday, December 05, 2012
5:48:11 PM

Environmental Science Associates Invoice 100663 Dated 12/5/2012

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
10349	Haines, Brian	11/9/2012	2.00	117.56	235.12	
	Review of campus park plan and initial desk study.					
	Totals		2.00		235.12	
	Total Labor					**235.12**
				Total this Task		**$235.12** ✓
				Total this Project		**$235.12**
				Total this Report		**$235.12** ✓

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

Supplier ID# 1529750

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Deborah Mosley
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 985-A

County Contract Number: 542923 (Old contract # 526934)
AMEC Project Number: 5013-11-0008

Invoice Date: 2/22/2013
Task Order Number: 18
Invoice Number: S17670936

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 1/12/2013 - 2/8/2013

Tasks:	Contract Amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$116,848.00	95.52%	$111,614.33	$110,262.39	$1,351.94
TOTALS:	$116,848.00	95.52%	$111,614.33	$110,262.39	$1,351.94
AMOUNT DUE THIS BILLING:					**$1,351.94** ✓

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to PAY $1,351.94

Nathan Schaedler 2/27/13
NATHAN SCHAEDLER DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542923 18
CONTRACT/P.O. NO. ACTIVITY/WA NO.

3/11/2013 Deborah Mosley
DATE PROJECT MANAGER

3/11/2013 Jack Tilk
DATE DPW MANAGER

Environment & Infrastructure
9177 Sky Park Court
San Diego, CA 92123 USA
Tel: +1 858.278.3600 Fax: +1 858.278.5300

amec

Project : 5013110008 -- COUNTY OF SD HMP MONITORING | Invoice # : S17670936

Phase : 01 -- SUB MONITORING

Task : 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor			
ESA PWA	1,351.94	1.000 ✓	1,351.94
Total : Subcontractor	**1,351.94**		**1,351.94**
Total Reimbursable Expenses			***1,351.94***
Total Expenses			***1,351.94***
Total Task : 01 - SUB MONITORING			**1,351.94**
Total Phase : 01 -- SUB MONITORING		**Fees :**	**0.00**
		Expenses :	**1,351.94**
		Total :	**1,351.94**

Total Project: 5013110008 -- COUNTY OF SD HMP MONITORING **1,351.94** ✓

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

January 17, 2013
Invoice No: 101242
Project Manager Brian Haines

Project D211485.00 San Diego Hydromod Monitoring

PO #M01107020

DPW Contract File 985

Addendum No. 2 - TO 18, Support of HMP Monitoring Services / **Contract #542923** *(formerly #526934)* *(through 06/30/2012)*

Professional Services through December 28, 2012

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Civil Engineer				
Haines, Brian	11.50	117.56	1,351.94	
Totals	11.50		1,351.94	
Total Labor				**1,351.94**
		Total this Task		**$1,351.94**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	1,351.94	110,262.39	111,614.33
Limit			116,848.00
Remaining			5,233.67

Total this Invoice **$1,351.94** ✓ MW

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Project # 5013-11-0008
Phase # 01.01
PO# M201107020
PO Line # 04
V-# 884165
GL# 5720-00

1/23/13 MW

PAYMENT DUE UPON RECEIPT

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496

Supplier ID#

amec

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Deborah Mosley
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 985-A

County Contract Number: 542923 (Old contract # 526934)
AMEC Project Number: 5013-11-0008

Invoice Date: 3/29/2013
Task Order Number: 18
Invoice Number: S17671003

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 2/9/2013 - 3/15/2013

Tasks:	Contract Amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. SUB MONITORING	$116,848.00	97.63%	$114,083.09	$111,614.33	$2,468.76
TOTALS:	$116,848.00	97.63%	$114,083.09	$111,614.33	$2,468.76
AMOUNT DUE THIS BILLING:					**$2,468.76**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

NATHAN SCHAEDLER
PROJECT MANAGER

4/3/13
DATE

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

CONTRACT/P.O. NO.

ACTIVITY/WA NO.

Deborah Mosley

4/24/13
DATE

Deborah A Mosley
PROJECT MANAGER

4/29/13
DATE

DPW MANAGER
Jo Ann T. Weber

Environment & Infrastructure
9177 Sky Park Court
San Diego, CA 92123 USA
Tel: +1 858.278.3600 Fax: +1 858.278.5300

amec

Project : 5013110008 – COUNTY OF SD HMP MONITORING **Invoice # : S17671003**

Phase : 01 – SUB MONITORING

Task : 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor			
ESA PWA	2,468.76	1.000	2,468.76
Total : Subcontractor	**2,468.76**		**2,468.76**
Total Reimbursable Expenses			***2,468.76***
Total Expenses			***2,468.76***
Total Task : 01 - SUB MONITORING			**2,468.76**
Total Phase : 01 – SUB MONITORING		**Fees :**	**0.00**
		Expenses :	**2,468.76**
		Total :	**2,468.76**

Total Project: 5013110008 – COUNTY OF SD HMP MONITORING **2,468.76** ✓

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

February 14, 2013
Invoice No: 101611
Project Manager: Brian Haines

Project D211485.00 San Diego Hydromod Monitoring

PO #M01107020

DPW Contract File 985

Addendum No. 2 - TO 18, Support of HMP Monitoring Services / **Contract #542923** *(formerly #526934)* *(through 06/30/2012)*

Professional Services from December 29, 2012 to January 25, 2013

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Haines, Brian	21.00	117.56	2,468.76	
Totals	21.00		2,468.76	
Total Labor				**2,468.76**
		Total this Task		**$2,468.76**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	2,468.76	111,614.33	114,083.09
Limit			116,848.00
Remaining			2,764.91

TOTAL INVOICE AMOUNT: **$2,468.76**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Project # 503-11-0008
Phase # 01.01
PO Line # 04
Vendor # 884165

PAYMENT DUE UPON RECEIPT

Billing Backup

Thursday, February 14, 2013
12:57:01 PM

Environmental Science Associates Invoice 101611 Dated 2/14/2013

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
10349	Haines, Brian	1/2/2013	1.00	117.56	117.56	
	Hoskings Ranch review					
10349	Haines, Brian	1/3/2013	4.00	117.56	470.24	
	Hoskings Ranch review					
10349	Haines, Brian	1/4/2013	3.00	117.56	352.68	
	Meeting with Deb Mosley. SDSU scope review/suggsetions.					
10349	Haines, Brian	1/7/2013	2.00	117.56	235.12	
	Brief memo outlining alternative compliance options to County of SD.					
10349	Haines, Brian	1/8/2013	1.00	117.56	117.56	
	Correspondence with the County regarding remaining tasks, and additional end of fiscal year needs.					
10349	Haines, Brian	1/16/2013	1.00	117.56	117.56	
	Hosking desk study wrap up.					
10349	Haines, Brian	1/17/2013	2.00	117.56	235.12	
	Revised monitoring conversation with County and City.					
10349	Haines, Brian	1/18/2013	5.00	117.56	587.80	
	San Vicente and MDS site review and desk study.					
10349	Haines, Brian	1/25/2013	2.00	117.56	235.12	
	Desk study summary to Deb.					
	Totals		21.00		2,468.76	
	Total Labor					**2,468.76**

Total this Task	**$2,468.76**
Total this Project	**$2,468.76**
Total this Report	**$2,468.76** ✓

P : 1002993
O : 50915
E : 52370
T : 001.006
A : 100496

Supplier ID#
1529750

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Deborah Mosley
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 985-A

County Contract Number: 542923 (Old contract # 526934)
AMEC Project Number: 5013-11-0008

Invoice Date: 4/26/2013
Task Order Number: 18
Invoice Number: S22720004

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 3/16/2013 - 4/12/2013

Tasks:	Contract Amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. SUB MONITORING	$116,848.00	100.00%	$116,845.75	$114,083.09	$2,762.66
TOTALS:	$116,848.00	100.00%	$116,845.75	$114,083.09	$2,762.66
AMOUNT DUE THIS BILLING:					**$2,762.66**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to pay $2,762.66

5/17/13
NATHAN SCHAEDLER — DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542923 — CONTRACT/P.O. NO.
18 — ACTIVITY/WA NO.
6/4/2013 — DATE
(Deb Mosley) — PROJECT MANAGER
6/7/2013 — DATE
DPW MANAGER
Jo Ann T. Weber

Environment & Infrastructure
9177 Sky Park Court
San Diego, CA 92123 USA
Tel: +1 858.278.3600 Fax: +1 858.278.5300

amec

Project: 5013110008 -- COUNTY OF SD HMP MONITORING | Invoice #: S22720004

Phase: 01 -- SUB MONITORING

Task: 01 - SUB MONITORING

Reimbursable Expenses

Vendor Name	Cost	Multiplier	Amount
Subcontractor			
ESA PWA	2,762.66	1.000 ✓	2,762.66
Total : Subcontractor	2,762.66		2,762.66
Total Reimbursable Expenses			2,762.66
Total Expenses			2,762.66
Total Task : 01 - SUB MONITORING			2,762.66
Total Phase : 01 -- SUB MONITORING		Fees :	0.00
		Expenses :	2,762.66
		Total :	2,762.66

Total Project: 5013110008 -- COUNTY OF SD HMP MONITORING 2,762.66 ✓

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123-4341
Tel: +1 858.278.3600 • Fax: +1 858.278.5300

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5013110008

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

March 12, 2013
Invoice No: 101944
Project Manager: Brian Haines

Project D211485.00 San Diego Hydromod Monitoring

PO #M01107020

DPW Contract File 985

Addendum No. 2 - TO 18, Support of HMP Monitoring Services / **Contract #542923** *(formerly #526934)* *(through 06/30/2012)*

Professional Services from January 26, 2013 to February 22, 2013

Task 0000001 Project Coordination/Site Selection

Professional Personnel

	Hours	Rate	Amount	
Civil Engineer				
Haines, Brian	23.50	117.56	2,762.66	
Totals	23.50		2,762.66	
Total Labor				**2,762.66**
			Total this Task	**$2,762.66**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	2,762.66	114,083.09	116,845.75
Limit			116,848.00
Remaining			2.25

TOTAL INVOICE AMOUNT: **$2,762.66**

mf 3/25/13

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Project # 5013-11-0008
Phase # 01.NB
PO # M201107020
PO-Line # 04
GL: 5720-00
V: 884165

PAYMENT DUE UPON RECEIPT

Billing Backup

Tuesday, March 12, 2013
6:07:41 PM

Environmental Science Associates Invoice 101944 Dated 3/12/2013

Project D211485.00 San Diego Hydromod Monitoring

Task 0000001 Project Coordination/Site Selection

Professional Personnel

			Hours	Rate	Amount	
Civil Engineer						
10349	Haines, Brian	1/31/2013	2.00	117.56	235.12	
	Metro airpark review/desk study.					
10349	Haines, Brian	2/4/2013	7.00	117.56	822.92	
	Desk study summaries and Google Earth layers to County.					
10349	Haines, Brian	2/5/2013	4.00	117.56	470.24	
	Desk study summaries and Google Earth layers to County.					
10349	Haines, Brian	2/7/2013	.50	117.56	58.78	
	Discussion of monitoring activities with Deb Mosley.					
10349	Haines, Brian	2/14/2013	4.50	117.56	529.02	
	Desk study on new sites.					
10349	Haines, Brian	2/20/2013	2.00	117.56	235.12	
	Desk studies					
10349	Haines, Brian	2/21/2013	3.50	117.56	411.46	
	Desk studies					
	Totals		23.50		2,762.66	
	Total Labor					**2,762.66**

Total this Task **$2,762.66**

Total this Project **$2,762.66**

Total this Report **$2,762.66** ✓

amec

P : 1002993
O : 50915
E : 52370
T : ~~12.009~~ 001.006
A : 100496

Supplier ID # 1529750

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
Attention: Deborah Mosley
5510 Overland Avenue, Suite 410
Mailstop O326
San Diego, CA 92123-1239

File: 999-B

County Contract Number: 542922 (Old contract # 536213)
AMEC Project Number: 5025-13-0008

Invoice Date: 6/28/2013
Task Order Number: 25
Invoice Number: S22720118

TASK ORDER NO. 25 PHASE II HMP MONITORING

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 2/21/2013 - 6/21/2013

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. Monitoring Site Selection	$34,883.00	44.09%	$15,378.88	$0.00	$15,378.88
2. Revised Monitoring Study	$11,190.00	20.49%	$2,293.16	$0.00	$2,293.16
3. Annual Monitoring Data Analysis Optional	$8,354.00	48.24%	$4,030.22	$0.00	$4,030.22
TOTALS:	$54,427.00	39.87%	$21,702.26	$0.00	$21,702.26
AMOUNT DUE THIS BILLING:					**$21,702.26**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to PAY $21,702.26

6/28/13

NATHAN SCHAEDLER
PROJECT MANAGER

DATE

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542922
CONTRACT/P.O. NO.

25
ACTIVITY/WA NO.

7/3/2013
DATE

Deb Mosley
PROJECT MANAGER

7/3/2013
DATE

DPW MANAGER
JONATHAN WEBER

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123-4341
Tel: +1 858.278.3600 • Fax: +1 858.278.5300

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amec

Project : 5025130008 -- CO of SD TO 25 HMP Monit. Phase II **Invoice # : S22720118**

Phase : 01 -- Monitoring Site Selection

Task : ** - ******

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	102881	05/21/2013	2,775.40	1.000	2,775.40
ESA PWA	102341REV	06/03/2013	12,603.48	1.000	12,603.48
					15,378.88
Total : Subcontractor			**15,378.88**		**15,378.88**
Total Reimbursable Expenses					***15,378.88***
Total Expenses					***15,378.88***
Total Task : ** - ******					**15,378.88**

Total Phase : 01 -- Monitoring Site Selection

Fees :	**0.00**
Expenses :	**15,378.88**
Total :	**15,378.88**

Phase : 02 -- Revised Monitoring Study

Task : ** - ******

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	102881	05/21/2013	555.08	1.000	555.08
ESA PWA	102341REV	06/03/2013	905.46	1.000	905.46
ESA PWA	103175	06/11/2013	832.62	1.000	832.62
			2,293.16		2,293.16
Total : Subcontractor			**2,293.16**		**2,293.16**
Total Reimbursable Expenses					***2,293.16***
Total Expenses					***2,293.16***
Total Task : ** - ******					**2,293.16**

Total Phase : 02 -- Revised Monitoring Study

Fees :	**0.00**
Expenses :	**2,293.16**
Total :	**2,293.16**

Phase : 03 -- Annual Monit Data Analysis Optional

Task : ** - ******

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	102881	05/21/2013	72.84	1.000	72.84

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Please Recycle!

amec

Project: 5025130008 -- CO of SD TO 25 HMP Monit. Phase II **Invoice # :** S22720118

Phase : 03 -- Annual Monit Data Analysis Optional

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	103175	06/11/2013	3,957.38	1.000	3,957.38
			4,030.22		4,030.22
Total : Subcontractor			**4,030.22**		**4,030.22**
	Total Reimbursable Expenses				***4,030.22***
	Total Expenses				***4,030.22***
Total Task : ** - ******					**4,030.22**

Total Phase : 03 -- Annual Monit Data Analysis Optional

Fees :	**0.00**
Expenses :	**4,030.22**
Total :	**4,030.22**

Total Project: **5025130008 -- CO of SD TO 25 HMP Monit. Phase II** **21,702.26**

Needs PO#

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mariamawit Yirsaign
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

May 21, 2013
Invoice No: 102881
Project Manager: Brian Haines

Project D211485.03 San Diego HMP - Revised Monitoring Plan

Project # 5025-13-0008
PO # C0131008 47

DPW Contract File 999-B

TO 25, PHASE 2 HMP MONITORING PROJECT ASSISTANCE / **Contract #542922**
(through 06/30/2013)

Professional Services from March 30, 2013 to April 26, 2013

Task 0000001 Monitoring Site Selection

Phase 01

Professional Personnel

	Hours	Rate	Amount	
Senior Engineer				
Haines, Brian	20.00	138.77	2,775.40	
Totals	20.00		2,775.40	
Total Labor				2,775.40
		Total this Task		$2,775.40

Task 0000002 Revised Monitoring Study

Phase 01

Professional Personnel

	Hours	Rate	Amount	
Senior Engineer				
Haines, Brian	4.00	138.77	555.08	
Totals	4.00		555.08	
Total Labor				555.08
		Total this Task		$555.08

Task 0000003 Annual Monitoring Data Analysis

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Collison, Andrew	.50	145.67	72.84	
Totals	.50		72.84	
Total Labor				72.84
		Total this Task		$72.84

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	3,403.32	13,703.00	17,106.32
Limit			54,427.00
Remaining			37,320.68

PAYMENT DUE UPON RECEIPT

Project	D211485.03	Invoice	102881

TOTAL INVOICE AMOUNT: **$3,403.32**

Outstanding Invoices

Number	Date	Balance
102341	4/15/2013	13,703.00
Total		**13,703.00**

	Current	Prior	Total
Billings to Date	**3,403.32**	**13,703.00**	**17,106.32**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Tuesday, May 21, 2013
1:32:15 PM

Environmental Science Associates Invoice 102881 Dated 5/21/2013

Project D211485.03 San Diego HMP - Revised Monitoring Plan

Task 0000001 Monitoring Site Selection

Professional Personnel

			Hours	Rate	Amount	
Senior Engineer						
10349	Haines, Brian	4/16/2013	3.00	138.77	416.31	
	Presentation prep					
10349	Haines, Brian	4/19/2013	4.00	138.77	555.08	
	TAC meeting preperation / presentation					
10349	Haines, Brian	4/22/2013	8.00	138.77	1,110.16	
	Preparation and presentation of the monitoring TAC kickoff meeting.					
10349	Haines, Brian	4/25/2013	1.00	138.77	138.77	
	SDSU hydologic modeling proposal review, and coordination w. Deb Mosley on TAC meeting comments.					
10349	Haines, Brian	4/26/2013	4.00	138.77	555.08	
	TAC meeting summary and discussion for minutes.					
	Totals		20.00		2,775.40	
	Total Labor					**2,775.40**
				Total this Task		**$2,775.40**

Task 0000002 Revised Monitoring Study

Professional Personnel

			Hours	Rate	Amount	
Senior Engineer						
10349	Haines, Brian	4/11/2013	4.00	138.77	555.08	
	Lit review for revised mon plan.					
	Totals		4.00		555.08	
	Total Labor					**555.08**
				Total this Task		**$555.08**

Task 0000003 Annual Monitoring Data Analysis

Professional Personnel

			Hours	Rate	Amount	
Project Manager						
10312	Collison, Andrew	4/1/2013	.50	145.67	72.84	
	Review of new monitoring data					
	Totals		.50		72.84	
	Total Labor					**72.84**
				Total this Task		**$72.84**
				Total this Project		**$3,403.32**
				Total this Report		**$3,403.32**

ESA PWA

550 Kearny Street, Suite 600
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mariamawit Yirsaign
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

April 15, 2013 (updated: 06/03/2013)
Invoice No: 102341 (Revised)
Project Manager: Brian Haines

Project D211485.03 San Diego HMP - Revised Monitoring Plan Project# 5025-13-0008

PO #C013100847 PO # C013100847

D2W.Contract.File.999-B

Project# 5025-13-0008

TO 25, PHASE 2 HMP MONITORING PROJECT ASSISTANCE / Contract #542922
(through 06/30/2013)

Professional Services from February 23, 2013 to March 29, 2013

Task 0000001 Monitoring Site Selection — Phase 01

Professional Personnel

	Hours	Rate	Amount	
Senior Engineer				
Haines, Brian	81.50	138.77	11,309.76	
Totals	81.50		11,309.76	
Total Labor				11,309.76
		Total this Task		$11,309.76

Task 0000002 Revised Monitoring Study — Phase 02

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Collison, Andrew	.50	145.67	72.84	
Senior Engineer				
Haines, Brian	6.00	138.77	832.62	
Totals	6.50		905.46	
Total Labor				905.46
		Total this Task		$905.46

Task 0000600 ESA PWA Expenses — Phase 01

Reimbursable Expenses

Travel Expense			1,293.72	
Total Reimbursables		1.0 times	1,293.72	1,293.72
		Total this Task		$1,293.72

Billing Limits	Current	Prior	To-Date
Total Billings	13,508.94	3,403.32	16,912.26
Limit			54,427.00

PAYMENT DUE UPON RECEIPT

Phase 01 = $12,603.48
phase 02 = $905.46

Total next page ⇒

Project	D211485.03	Invoice	102341 (Revised)
Remaining		37,514.74	

TOTAL INVOICE AMOUNT: **$13,508.94**

MY 06/03/13

Outstanding Invoices

Number	Date	Balance
102881	5/21/2013	3,403.32
Total		**3,403.32**

	Current	Prior	Total
Billings to Date	**13,508.94**	**3,403.32**	**16,912.26**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Monday, June 03, 2013
12:10:01 PM

Environmental Science Associates Invoice 102341 Dated 4/15/2013

Project D211485.03 San Diego HMP - Revised Monitoring Plan

Task 0000001 Monitoring Site Selection

Professional Personnel

			Hours	Rate	Amount	
Senior Engineer						
10349	Haines, Brian	2/21/2013	.50	138.77	69.39	
	Desk studies					
10349	Haines, Brian	2/22/2013	4.00	138.77	555.08	
	Desk studies					
10349	Haines, Brian	2/25/2013	8.00	138.77	1,110.15	
	Travel to San Diego. Site visits and geomorphic assessments.					
10349	Haines, Brian	2/26/2013	8.00	138.77	1,110.16	
	Site visits and geomorphic assessments.					
10349	Haines, Brian	2/27/2013	8.00	138.77	1,110.16	
	Site visits and geomorphic assessments.					
10349	Haines, Brian	2/28/2013	8.00	138.77	1,110.16	
	Meetings with the subworkgroup and Deb Mosley. Field data workup.					
10349	Haines, Brian	3/1/2013	8.00	138.77	1,110.16	
	Site visits and geomorphic assessments. Travel back to San Francisco.					
10349	Haines, Brian	3/5/2013	8.00	138.77	1,110.16	
	Field data workup.					
10349	Haines, Brian	3/12/2013	6.00	138.77	832.62	
	Post-field work desk studies (metro airpark, MDS, san vicente, fuerte ranch).					
10349	Haines, Brian	3/13/2013	7.00	138.77	971.39	
	Post-field work desk studies (metro airpark, MDS, san vicente, fuerte ranch).					
10349	Haines, Brian	3/14/2013	1.00	138.77	138.77	
	Desk studies, reference site consideration (large site, Oak Canyon discussion).					
10349	Haines, Brian	3/15/2013	2.00	138.77	277.54	
	Updating master site list.					
10349	Haines, Brian	3/19/2013	.50	138.77	69.39	
	Monitoring suggestions for MDS and Metro.					
10349	Haines, Brian	3/21/2013	1.00	138.77	138.77	
	Selected monitoring site updates with Deb M.					
10349	Haines, Brian	3/26/2013	2.00	138.77	277.54	
	Meeting w. Deb.					
10349	Haines, Brian	3/27/2013	.50	138.77	69.39	
	Started on final desk studies.					
10349	Haines, Brian	3/28/2013	8.00	138.77	1,110.16	
	Completed last round of desk study/field assessment processing.					
10349	Haines, Brian	3/29/2013	1.00	138.77	138.77	
	Submitted site selection materials to Deb/County of SD.					
	Totals		81.50		11,309.76	
	Total Labor					**11,309.76**
				Total this Task		**$11,309.76**

Task 0000002 Revised Monitoring Study

Professional Personnel

			Hours	Rate	Amount

Project	D211485.03				Invoice	102341 (Revised)
Project Manager						
10312	Collison, Andrew	3/29/2013	.50	145.67	72.84	
	Review of proposed timeline from County and internal discussion					
Senior Engineer						
10349	Haines, Brian	3/13/2013	1.00	138.77	138.77	
	Review of SCCWRP monitoring suggestions.					
10349	Haines, Brian	3/14/2013	1.00	138.77	138.77	
	Review of SCCWRP monitoring suggestions.					
10349	Haines, Brian	3/15/2013	2.00	138.77	277.54	
	Review of SCCWRP monitoring suggestions. Finish Sacramento HMP review.					
10349	Haines, Brian	3/27/2013	2.00	138.77	277.54	
	SCCWRP readings for revised monitoring plan.					
	Totals		6.50		905.46	
	Total Labor					**905.46**
					Total this Task	**$905.46**

Task 0000600 ESA PWA Expenses

Reimbursable Expenses

Travel Expense

EX	000000015746	2/20/2013	Haines, Brian / Southwest Airlines		390.80	
EX	000000015746	2/20/2013	Haines, Brian / Enterprise		225.26	
EX	000000015746	2/24/2013	Haines, Brian / Souplantation		11.33	
EX	000000015746	2/24/2013	Haines, Brian / Berkeley Taxi Cab		49.80	
EX	000000015746	2/25/2013	Haines, Brian / Yakyudori		24.30	
EX	000000015746	2/25/2013	Haines, Brian / Asada Mexican		10.98	
EX	000000015746	2/26/2013	Haines, Brian / Yelow Deli		12.55	
EX	000000015746	2/26/2013	Haines, Brian / Proud Mary's		20.51	
EX	000000015746	2/27/2013	Haines, Brian / Mobil		4.78	
EX	000000015746	2/27/2013	Haines, Brian / Amici Pizza		6.42	
EX	000000015746	2/27/2013	Haines, Brian / Starbucks		4.90	
EX	000000015746	2/27/2013	Haines, Brian / Proud Mary's		14.03	
EX	000000015746	2/28/2013	Haines, Brian / Proud Mary's		21.59	
EX	000000015746	2/28/2013	Haines, Brian / Yakyudori		8.10	
EX	000000015746	2/28/2013	Haines, Brian / Starbucks		5.60	
EX	000000015746	3/1/2013	Haines, Brian / Ramada Inn		388.35	
EX	000000015746	3/1/2013	Haines, Brian / Monarch Limo		46.00	
EX	000000015746	3/1/2013	Haines, Brian / Artisan Cafe		10.75	
EX	000000015746	3/1/2013	Haines, Brian / Subway		6.21	
EX	000000015746	3/1/2013	Haines, Brian / Chevron		31.46	
		Total Reimbursables		**1.0 times**	**1,293.72**	**1,293.72**
					Total this Task	**$1,293.72**
					Total this Project	**$13,508.94**
					Total this Report	**$13,508.94**

Summarized Expense Report

Tuesday, April 16, 2013
11:11:26 AM

Environmental Science Associates

Employee 10349 Haines, Brian E

Signed _____
Devlin,Tara L.

Posted

Approved _____

Organization BA01:07
Expense Report: San Diego HMP Field Work, 2/25-3/1 **Report Date:** 3/12/2013

Date	Category	Description	Project	Task	Subtask	Bill	Paid	Account	Amount
2/20/2013	Airfare	Southwest Airlines	D211485.03	0000600		X		5600-01	390.80
2/20/2013	Auto Rental (including rental gasoline)	Enterprise	D211485.03	0000600		X		5600-04	225.26
2/24/2013	Travel Meals	Soupiantation	D211485.03	0000600		X		5600-03	11.33
2/24/2013	Parking/Toll/Cab/Rail (Ferry)	Berkeley Taxi Cab	D211485.03	0000600		X		5600-05	49.80
2/25/2013	Travel Meals	Yakyudori	D211485.03	0000600		X		5600-03	24.30
2/25/2013	Travel Meals	Asada Mexican	D211485.03	0000600		X		5600-03	10.98
2/26/2013	Travel Meals	Yelow Deli	D211485.03	0000600		X		5600-03	12.55
2/26/2013	Travel Meals	Proud Mary's	D211485.03	0000600		X		5600-03	20.51
2/27/2013	Travel Meals	Mobil	D211485.03	0000600		X		5600-03	4.78
2/27/2013	Travel Meals	Amici Pizza	D211485.03	0000600		X		5600-03	6.42
2/27/2013	Travel Meals	Starbucks	D211485.03	0000600		X		5600-03	4.90
2/27/2013	Travel Meals	Proud Mary's	D211485.03	0000600		X		5600-03	14.03
2/28/2013	Travel Meals	Proud Mary's	D211485.03	0000600		X		5600-03	21.59
2/28/2013	Travel Meals	Yakyudori	D211485.03	0000600		X		5600-03	8.10
2/28/2013	Travel Meals	Starbucks	D211485.03	0000600		X		5600-03	5.60
3/1/2013	Lodging	Ramada Inn	D211485.03	0000600		X		5600-02	388.35
3/1/2013	Parking/Toll/Cab/Rail (Ferry)	Monarch Limo	D211485.03	0000600		X		5600-05	46.00
3/1/2013	Travel Meals	Artisan Cafe	D211485.03	0000600		X		5600-03	10.75
3/1/2013	Travel Meals	Subway	D211485.03	0000600		X		5600-03	6.21

Summarized Expense Report

Tuesday, April 16, 2013
11:11:26 AM

Environmental Science Associates

Employee 10349 Haines, Brian E

Signed _____
Devlin,Tara L.

Posted

Approved _____

Organization BA01:07
Expense Report: San Diego HMP Field Work, 2/25-3/1 **Report Date:** 3/12/2013

Date	Category	Description	Project	Task	Subtask	Bill	Paid	Account	Amount
3/1/2013	Auto Rental (Including rental gasoline)	Chevron	D211485.03	0000600		☒	☐	5600-04	31.46
					Total Expenses				1,293.72
					Total Due				1,293.72

Gmail by Google

Brian Haines <hainesworld@gmail.com>

Southwest Airlines Confirmation-HAINES/BRIAN ELLIOTT-Confirmation: G78YF9

1 message

Southwest Airlines <SouthwestAirlines@luv.southwest.com> Wed, Feb 20, 2013 at 9:45 AM
Reply-To: Southwest Airlines <no-reply@luv.southwest.com>
To: HAINESACCOUNTS@gmail.com

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SOUTHWEST

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Check In Online | Check Flight Status | Change Flight | Special Offers | Hotel Deals | Car Deals

Ready for takeoff!

Thanks for choosing Southwest for your trip! You'll find everything you need to know about your reservation below. Happy travels!

Upcoming Trip: 02/24/13 - San Diego

AIR Itinerary

AIR Confirmation: G78YF9 Confirmation Date: 02/20/2013

Passenger(s)	Rapid Rewards #	Ticket #	Expiration	Est. Points Earned
HAINES/BRIAN ELLIOTT	0000063652619 2	5262109229491	Feb 20, 2014	3113

Rapid Rewards points earned are only estimates. Visit your (My Southwest, Southwest.com or Rapid Rewards) account for the most accurate totals - including A-List & A-List Preferred bonus points.

Date	Flight	Departure/Arrival
Sun Feb 24	1376	Depart OAKLAND CA (OAK) on Southwest Airlines at 10:45 AM Arrive in SAN DIEGO CA (SAN) at 12:15 PM Travel Time 1 hrs 30 mins Anytime
Fri Mar 1	2440	Depart SAN DIEGO CA (SAN) on Southwest Airlines at 5:30 PM Arrive in OAKLAND CA (OAK) at 7:00 PM Travel Time 1 hrs 30 mins Wanna Get Away

What you need to know to travel:

- Don't forget to check in for your flight(s) 24 hours before your trip on southwest.com or your mobile device. This will secure your boarding position on your flights.
- Southwest Airlines does not have assigned seats, so you can choose your seat when you board the plane. You will be assigned a boarding position based on your checkin time. The earlier you check in, within 24 hours of your flight, the earlier you get to board.

AVIS
UP TO 35% OFF
Plus, earn up to 1,000 Rapid Rewards® points
.com

EARLYBIRD CHECK-IN
Let us take care of the check-in for you
Get it Now

Find a Hotel
See ratings, photos and rates for over 40,000 hotels.
Book a Hotel

Air Cost: 390.80

RAMADA

Ramada San Diego
5550 Kearny Mesa Rd
San Diego, CA 92111
Phone: 858-278-0800
Fax: 858-277-6585
Email: 956@hotel.candant.com

Date	03/01/2013 08:04:30
Folio number	0000140720
Arrival date	02/24/2013
Departure date	03/01/2013
Room type	WIFI/MICROWAVE/FRIDGE
Room number	108

ENVIRONMENTAL SCIENCE ASSOCIATES
BRIAN HAINES
550 KEARNY ST SUITE 800
SAN FRANCISCO CA 94108

Ramada San Diego, San Diego

Date	Description	Supplement	Qty.	Price	Amount
02/24/2013	Corp rate w/breakfast		1	69.00	69.00
	10.5% Occupancy Tax				7.25
	SDTMD				1.38
	CATMD				0.04
02/25/2013	Corp rate w/breakfast		1	69.00	69.00
	10.5% Occupancy Tax				7.25
	SDTMD				1.38
	CATMD				0.04
02/26/2013	Corp rate w/breakfast		1	69.00	69.00
	10.5% Occupancy Tax				7.25
	SDTMD				1.38
	CATMD				0.04
02/27/2013	Corp rate w/breakfast		1	69.00	69.00
	10.5% Occupancy Tax				7.25
	SDTMD				1.38
	CATMD				0.04
02/28/2013	Corp rate w/breakfast		1	69.00	69.00
	10.5% Occupancy Tax				7.25
	SDTMD				1.38
	CATMD				0.04
03/01/2013	American Express	XXXXXXXXXXXX1001 / XX-XX			-388.35
	Transaction: 20130301 08:04				
	Authorisation: 547658				
	Merchant: 67274320001				

This Facility Is Independently Owned And Operated Under A License Agreement With Ramada Franchise Systems, Inc.

Brian Haines

From: hainesworld@gmail.com on behalf of Brian Haines [hainesaccounts@gmail.com]
Sent: Friday, March 01, 2013 6:56 AM
To: Brian Haines
Subject: Fwd: Receipt from Berkeley TaxiCab for $49.80

Follow Up Flag: Follow up
Flag Status: Flagged

---------- Forwarded message ----------
From: **Square** <noreply@messaging.squareup.com>
Date: Sun, Feb 24, 2013 at 9:22 AM
Subject: Receipt from Berkeley TaxiCab for $49.80
To: hainesaccounts@gmail.com

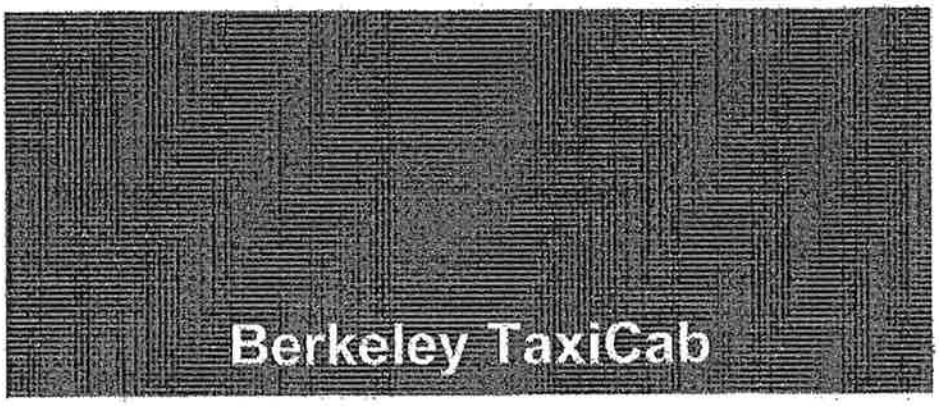

Feb 24, 2013 at 9:21 am	Receipt #ZCRr
Custom Amount	$41.50
Tip	$8.30
Total	**$49.80**
1001	$49.80

1

Gmail by Google

Brian Haines <hainesworld@gmail.com>

Receipt from Monarca Limo for $46.00

1 message

Square <noreply@messaging.squareup.com> Fri, Mar 1, 2013 at 7:50 PM
To: hainesaccounts@gmail.com

Monarca Limo

892 Davis St., 103, San Leandro, CA 94577

415-285-3629

Mar 1, 2013 at 7:50pm Receipt #RJCS

Custom Amount	$46.00
Total	**$46.00**
1001	$46.00

B.H.

Enterprise

RA 132260249 Bill 0
Rental 24-FEB-2013 12:54 PM
SAN DIEGO INTL ARPT
Return 01-MAR-2013 03:19 PM
SAN DIEGO INTL ARPT

DRIAN HAINES
Vehicle # C5663347
Model FORTE EX
Class Driven ICAR Class Charged CCAR
License# 6HCD969 State/Province CA
M/Kms Driven 190
M/Kms Out 20650
M/Kms In 20840

Charges	No Unit	Price	Amount
UNLIM M/KM	0 M/Kms	144.64	0.00*
CONCESSION RECOUP FEE			17.66*
TOURISM			4.33
CUSTOMER FACILITY CHG			30.00
SALES TAX 8.000 %			14.13

Total Charges USD 226.26

Deposit: AMEX 1001

Amount Due USD 226.26

* Taxable Items
Subject to Audit
For Reservations: 1-800-RENT-A-CAR

858-2[illegible]

TERMINAL I.D.: 00754244000165208697601
MERCHANT #: 8016528697

AMEX
**********1001
SALE
RECORD #: 79 TRU: 000071
DATE: FEB 25, 13 TIME: 22:01
BATCH: 124 AUTH: 570911

BASE $24.30
TIP _____
TOTAL _____
CARD BALANCE: $0.00

B HAINES

I AGREE TO PAY ABOVE TOTAL AMOUNT
ACCORDING TO CARD ISSUER AGREEMENT
(MERCHANT AGREEMENT IF CREDIT VOUCHER)

CUSTOMER COPY

Soupplantation
salads • soups • bakery

TTID#: 4296585, 02/24/2013 19:07
trans#: 4296515

Manual	
1 Adult Dinner	10.49
Guest Subtotal	10.49
Subtotal	10.49
Sales Tax	0.84
Total	11.33
AMEX(Completed)(X1001)	-11.33
Balance	0.00

Store 073 Kearny Mesa
Comments or Suggestions?
Call 888-374-8360

ASADA
MEXICAN RESTAURANT
4340 MAIN ST.
CHULA VISTA, CA. 91911
619-422-2211

DATE 02/25/2013 MON

#5	$5.99
chkn enchi	
COKE	$1.49
#3	$5.99
chkn	
cheese	
FISH TACO	$2.69
ORANGE	$1.49
*** AQUI ***	
SUBTOTAL	$19.06
TAX1 AMT	$1.41
TOTAL	$19.06
CASH	$20.00
CHANGE	$0.94

* ORDER# 0209 *
NO.000109 REG 02 TURNO 1 TIME 13:25

#5, Jim Hanks (Grey & SD)

#3, Brian Haines

sub = $10.12
x 1.08
$10.93

The Yellow Deli

Server Table H-D4

Receiver	20.00
CDR	7.75 / 9.75
$10.55	
Tax	1.00
Total	10.55

THE YELLOW DELI
315 EAST BROADWAY ST
VISTA, CA 92084
DRINK-BAR

Merchant ID: 000000002787741
Term ID: 04152606
1049817040

Sale

AMEX
XXXXXXXXXXX1001
Entry Method: Swiped
Apprvd: Online Batch#: 000135
02/26/13 12:55:37

Inv #: 000012 Appr Code: 593292

Amount: $ 10.55
Tip: 2 -
Total: 12.55

Proud Mary's Southern Bar & Grill
5550 Kearny Mesa Rd.
San Diego, CA 92111
800-447-2637

2004 TRACI B

Tbl M/1 Chk 5119 Gst 1
Feb26'13 07:14PM

Dining

1 SEARED-TUNA	18.99
1 *Crown Royal	7.25
1 GREEN FLASH	9.75
SUBTOTAL	35.99
TAX 8%	2.88
08:05PM TOTAL DUE	38.87

THANK YOU FOR VISITING!
HAPPY HOUR DAILY 4PM-7PM
KARAOKE FRIDAY & SATURDAYS 9PM

TIP 8.00
TOTAL 46.87
SIGNATURE

18.99
x 1.08
$20.51

KEARNY MESA MOBIL
8380 CLAIRMONT MESA
SAN DIEGO 92111

FAST PUMPER 01
SAN DIEG CA
DEALER: 9264069
02/27/13 07:37

ACCT/CARD #: AMEX XXXXXX1001
AUTH. #: 651104
INVOICE #: J460193

CREDIT TOTAL $4.78

CASHIER: 13

ITEM	QTY	PRICE	AMOUNT
ARRHEAD 16OL			2.69
LrgCRWnt.TO			0.10
CLIF C CHIP			1.99
Items: 3	Subtotal		4.78
	Sales Tax		0.00
	Total		4.78

SHIFT 000225

THANK YOU
HAVE A NICE DAY

AMICI PIZZA PASTA SOC
1429 MAIN ST
RAMONA, CA 92065

02/27/2013 [illegible]
Merchant ID: 00[illegible]
Terminal ID: 04221153
362524929896

CREDIT CARD
VISA SALE

CARD # XXXXXXXXXXXX5864
INVOICE 0027
Batch #: 000149
Approval Code: 598605
Entry Method: Swiped
Mode: Online

PRE-TIP AMT $6.42

TIP

TOTAL AMOUNT

CUSTOMER COPY

Gr111

San Diego, CA 92111
800-447-2637

2004 TRACI B

Tbl N/1 Chk 5173 Gst 1
Feb27'13 06:48PM

Dining

1 BBQ CHICK SAND	12.99	12.99
SLUSHEE		x1.08
1 Open Liquor	3.00	$14.03
SLUSHEE		
1 Open Liquor	3.00	
SUBTOTAL	18.99	
TAX	1.52	
07:27PM TOTAL DUE	20.51	

THANK YOU FOR VISITING!
HAPPY HOUR DAILY 4PM-7PM
KARAOKE FRIDAY & SATURDAYS 9PM

TIP 4.00

TOTAL 24.51

SIGNATURE

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 727658
02/27/2013 07:47 AM
1629893 Drawer: 1 Reg: 2

Gr Pike Place	1.95
Sausg Clac Brkfst	2.95
Warming Pastry	
Amex	4.90
XXXXXXXXXXXX1001	
Subtotal	$4.90
Total	$4.90
Change Due	$0.00

Check Closed
2/27/2013 7:47 AM

Proud Mary's Southen Bar & Grill
5550 Kearny Mesa Rd.
San Diego, CA 92111
800-447-2637

2005 DIANA H

Tbl N/1 Chk 5237 Gst 2
Feb28'13 07:49PM

Dining

1 FRIED CHICKEN	16.99
1 SNAPPER	19.99
2 SLUSHEE	13.98
1 BP PALE ALE	5.75
SUBTOTAL	56.71
TAX 8%	4.54
08:39PM TOTAL DUE	61.25

THANK YOU FOR VISITING!
HAPPY HOUR DAILY 4PM-7PM
KARAOKE FRIDAY & SATURDAYS 9PM

TIP _____
TOTAL _____
SIGNATURE _____

19.99
* 1.08
= ~~$21.47~~ $21.59

- Jim Hook's Dinner & drinks removed from expense report

Yakyudori Cash Receipt

Date 2/28/2013

Acct. Name: C7

Acct. Number

0*	C	
0*	C	
7*50	4	
7*50	4	
8*10	8	
8*60	8	
8*10	8	

92

Tax
Total

Your account stated to date - If error is found return at once.

9211 Clairemont Mesa Drive
San Diego, CA (858) 614-0263

CHK 663197
03/01/2013 08:22 AM
1827010 Drawer: 2 Reg: 2

T1 Dark Roast	1.65
Saueg Clsc Brkfst	2.95
Warming Pastry	
Banana Whole Fruit	1.00
Amex	5.60
XXXXXXXXXXXX1001	
Subtotal	$5.60
Total	$5.60
Change Due	$0.00

Check Closed
3/1/2013 8:22 AM

Transaction Date:	03/01/2013 Fri
Transaction Description:	CHEVRON G&M OIL CO., SAN DIEGO CA REF# 1965666 6192992482
Amount $:	31.46
Doing Business As:	CHEVRON USA
Merchant Address:	2003 DIAMOND BLVD CONCORD CA 94520-5738 UNITED STATES
Reference Number:	09371212013030 2
Category:	Transportation - Fuel

Artisan Cafe
San Diego Airport

Date: Mar01'13 04:41PM
Card Type: AMEX
Acct #: XXXXXXXXXXX1001
Card Entry: SWIPED
Trans Type: PURCHASE
Trans Key: AIA008610813852
Auth Code: 529664
Check: 4263
Server: 1003 Thela C

Total 10.75
Thank You.

SUBWAY

Qty	Item	Price
1	6" Turkey & Ham	$4.25
1	6" Spicy Italian	$3.75
1	Fountain Drink - 21oz	$1.50

K. Target

SUBTOTAL $9.50
Sales Tx $0.76
EAT-IN **TOTAL $10.26
CredCardAMT_TEND $10.26
CHANGE DUE $0.00

Approval No: 503092
Reference No: 306020173857
Acquired: Swipe
Account No: **********1001
Card Issuer: Amex
Amount: $10.26
Host Id: 624-76-289322

Get a FREE Cookie
Take our 1 minute survey at
www.tellsubway.com
and receive your reward.

Store #33339 | 619-409-9005
263 E. Orange Ave, Chula Vista, CA 91911
03/01/13 12:02:57 Trans #47
Clerk: Carmen Clerk #52

5.75
x 1.08
$6.21

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mariamawit Yirsaligh
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

June 11, 2013
Invoice No: 103175
Project Manager: Brian Haines

Project D211485.03 San Diego HMP - Revised Monitoring Plan

PO #C013100847 URGENT

DPW Contract File 999-B

Project# 5025-13-0008

TO 25, PHASE 2 HMP MONITORING PROJECT ASSISTANCE / **Contract #542922**
(through 06/30/2013)

Professional Services from April 27, 2013 to May 24, 2013

Task 0000002 Revised Monitoring Study Phase 02

Professional Personnel

	Hours	Rate	Amount	
Senior Engineer				
Haines, Brian	6.00	138.77	832.62	
Totals	6.00		832.62	
Total Labor				832.62
		Total this Task		$832.62

Task 0000003 Annual Monitoring Data Analysis Phase 03

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Collison, Andrew	3.00	145.67	437.01	
Senior Engineer				
Haines, Brian	18.50	138.77	2,567.25	
Senior Scientist				
Jackson, James	8.25	115.53	953.12	
Totals	29.75		3,957.38	
Total Labor				3,957.38
		Total this Task		$3,957.38

Billing Limits	Current	Prior	To-Date
Total Billings	4,790.00	16,912.26	21,702.26
Limit			54,427.00
Remaining			32,724.74

TOTAL INVOICE AMOUNT: $4,790.00

MY 06/12/13

Outstanding Invoices

Number	Date	Balance

PAYMENT DUE UPON RECEIPT

Project	D211485.03				Invoice	103175
	102341	4/15/2013	13,508.94			
	102881	5/21/2013	3,403.32			
	Total		**16,912.26**			

	Current	Prior	Total
Billings to Date	**4,790.00**	**16,912.26**	**21,702.26**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Tuesday, June 11, 2013
6:44:06 PM

Environmental Science Associates Invoice 103175 Dated 6/11/2013

Project D211485.03 San Diego HMP - Revised Monitoring Plan

Task 0000002 Revised Monitoring Study

Professional Personnel

			Hours	Rate	Amount	
Senior Engineer						
10349	Haines, Brian	5/17/2013	4.00	138.77	555.08	
	Research and recommendations list.					
10349	Haines, Brian	5/24/2013	2.00	138.77	277.54	
	List of suggested monitoring revisions.					
	Totals		6.00		832.62	
	Total Labor					**832.62**
				Total this Task		**$832.62**

Task 0000003 Annual Monitoring Data Analysis

Professional Personnel

			Hours	Rate	Amount	
Project Manager						
10312	Collison, Andrew	5/6/2013	3.00	145.67	437.01	
	review of data, analysis of event sediment					
Senior Engineer						
10349	Haines, Brian	4/29/2013	2.00	138.77	277.54	
	Setup for 2013 data analysis					
10349	Haines, Brian	4/30/2013	.50	138.77	69.39	
	Setup for 2013 data analysis					
10349	Haines, Brian	5/1/2013	4.00	138.77	555.08	
	QC of sediment discharge analysis.					
10349	Haines, Brian	5/3/2013	4.00	138.77	555.08	
	Data QC and memo revisions.					
10349	Haines, Brian	5/6/2013	4.00	138.77	555.08	
	In-stream data analysis, and results.					
10349	Haines, Brian	5/7/2013	2.00	138.77	277.54	
	In-stream data analysis, and results.					
10349	Haines, Brian	5/21/2013	2.00	138.77	277.54	
	Review of Andy's analysis, and survey/in-stream data comparisons.					
Senior Scientist						
10516	Jackson, James	4/29/2013	1.00	115.53	115.52	
	coordination and document review					
10516	Jackson, James	4/30/2013	4.75	115.53	548.77	
	criteria tables/figures and memo update					
10516	Jackson, James	5/1/2013	2.50	115.53	288.83	
	criteria tables/figures and memo update					
	Totals		29.75		3,957.38	
	Total Labor					**3,957.38**
				Total this Task		**$3,957.38**
				Total this Project		**$4,790.00**
				Total this Report		**$4,790.00**

amec

P : 1002993
O : 50915
E : 52370
T : ~~12.009~~ 001.006
A : 100496

Supplier ID # 1529750

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Deborah Mosely
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 999-B

County Contract Number: 542922 (Old contract # 536213)
AMEC Project Number: 5025-13-0004

Invoice Date: 6/28/2013
Task Order Number: 22
Invoice Number: S22720117

REGIONAL HYDROMODIFICATION WATERSHED STUDIES
TASK ORDER 22

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 12/17/2012 - 6/21/2013

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. SCCWRP HYDRO MOD STUDY	$2,490.00	100.00%	$2,490.00	$0.00	$2,490.00
TOTALS:	$2,490.00	100.00%	$2,490.00	$0.00	$2,490.00
AMOUNT DUE THIS BILLING:					**$2,490.00**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to PAY $2,490.00

6/28/13
NATHAN SCHAEDLER — DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542922 — CONTRACT/P.O. NO.
22 — ACTIVITY/WA NO.
7/3/2013 — DATE
Deb Mosley — PROJECT MANAGER
7/3/2013 — DATE
Jo Ann Weber — DPW MANAGER

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123-4341
Tel: +1 858.278.3600 • Fax: +1 858.278.5300

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Please Recycle!

amec

Project : 5025130004 -- CO of SD TO 22 SCCWRP Hydro Mod **Invoice # : S22720117**

Phase : 01 -- SCCWRP Hydro Modification Study

Task : ** - ******

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
So.cal. Coastal Water	2471	06/11/2013	2,490.00	1.000	2,490.00
Total : Subcontractor			**2,490.00**		**2,490.00**
	Total Reimbursable Expenses				***2,490.00***
	Total Expenses				***2,490.00***
Total Task : ** - ******					**2,490.00**

Total Phase : 01 -- SCCWRP Hydro Modification Study

Fees :	**0.00**
Expenses :	**2,490.00**
Total :	**2,490.00**

Total Project: 5025130004 -- CO of SD TO 22 SCCWRP Hydro Mod **2,490.00**

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SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT

A Public Agency for Environmental Research

INVOICE

June 11, 2013

Invoice #: 2471

AMEC Environmental & Infrastructure, Inc.
Attn: Mariamawit Yirsalign
9177 Sky Park Court, Suite A
San Diego, CA 92123

Billing #: 1
SCCWRP #: W3392

AMEC PO: C013100262
AMEC Project: 5025130004
Project: County of San Diego Regional Hydromodification Watershed Study
PI: Dr. Eric Stein
Period: 12/17/12 to 06/30/13

Description	Rate	Hours	Amount	Total
Personnel:				
Laboratory Assistant - Kris Tanaguchi	$50.82	49.0	2,490.18	
Total Personnel		49.0		2,490.18
Operating Expenses				0.00
				0.00
Over Contract Limit				-0.18
			~~Total Amount Due:~~	~~$2,490.00~~

Summary:	
Contract Amount	2,490.00
Cumulative Expenditures to Date	2,490.00
Unexpended Balance of Contract Funds	0.00

Bryan Nece
Administrative Officer
bryann@sccwrp.org
(714) 755-3201

Project # 5025-13-0004
Phase # 01
PO # 01
V # 886815

3535 Harbor Blvd. Suite 110, Costa Mesa, CA 92626-1437
(714) 755-3200 *fax* (714) 755-3299

P : 1002993
O : 50915
E : 52370
T : 12.009
A : 100496

Supplier ID#
1529750

amec

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN:Deborah Mosley
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 985-A

County Contract Number: 542922 (Old contract # 536213)
AMEC Project Number: 5025-12-0024

Invoice Date: 1/25/2013
Task Order Number: 16
Invoice Number: S17670849

HMP GEOMORPHIC ASSESSMENTS FY 2012-2013

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 10/10/2012 - 1/11/2013

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
11 Annual Assessment	$4,454.00	100.00%	$4,454.00	$0.00	$4,454.00 ✓
12 Follow-up Screening	$2,576.00	100.00%	$2,576.00	$0.00	$2,576.00 ✓
13 Optional: Survey Assistance	$1,919.00	77.43%	$1,485.82	$0.00	$1,485.82 ✓
TOTALS:	$8,949.00	95.16%	$8,515.82	$0.00	$8,515.82
AMOUNT DUE THIS BILLING:					**$8,515.82** ✓

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to PAY $8,515.82

Nathan Schaedler 1/28/13
NATHAN SCHAEDLER DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542922 16
CONTRACT/P.O. NO. ACTIVITY/WA NO.

2/8/2013 Deborah Mosley
DATE PROJECT MANAGER

2/8/2013 John T. Wilson
DATE DPW MANAGER

Environment & Infrastructure
9177 Sky Park Court
San Diego, CA 92123 USA
Tel: +1 858.278.3600 Fax: +1 858.278.5300

Project : 5025120024 -- Co of SD TO 16 HMP Geomorphic Invoice # : S17670849

Phase : 11 -- Annual Assessment

Task : **** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	100282	12/06/2012	3,677.41	1.000	3,677.41
ESA PWA	100665	12/13/2012	776.59	1.000	776.59
			4,454.00		4,454.00
Total : Subcontractor			**4,454.00**		**4,454.00**
Total Reimbursable Expenses					***4,454.00***
Total Expenses					***4,454.00***
Total Task : ** - ******					**4,454.00**

Total Phase : 11 -- Annual Assessment

Fees :	**0.00**
Expenses :	**4,454.00**
Total :	**4,454.00** ✓

Phase : 12 -- Follow-up Screening

Task : **** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	100282	12/06/2012	1,362.26	1.000	1,362.26
ESA PWA	100665	12/13/2012	1,213.74	1.000	1,213.74
			2,576.00		2,576.00
Total : Subcontractor			**2,576.00**		**2,576.00**
Total Reimbursable Expenses					***2,576.00***
Total Expenses					***2,576.00***
Total Task : ** - ******					**2,576.00**

Total Phase : 12 -- Follow-up Screening

Fees :	**0.00**
Expenses :	**2,576.00**
Total :	**2,576.00** ✓

Phase : 13 -- Optional: Survey Assistance

Task : **** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	100282	12/06/2012	1,123.03	1.000	1,123.03
ESA PWA	100665	12/13/2012	362.79	1.000	362.79
			1,485.82		1,485.82 ✓

Project: 5025120024 -- Co of SD TO 16 HMP Geomorphic Invoice # : S17670849

Phase : 13 -- Optional: Survey Assistance

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Total : Subcontractor			1,485.82		1,485.82
Total Reimbursable Expenses					*1,485.82*
Total Expenses					*1,485.82*
Total Task : **** - ****					1,485.82

Total Phase : 13 -- Optional: Survey Assistance	Fees :	0.00
	Expenses :	1,485.82
	Total :	1,485.82

Total Project: 5025120024 -- Co of SD TO 16 HMP Geomorphic 8,515.82 ✓

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mariamawit Yirsalign
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

December 13, 2012
Invoice No: 100665
Project Manager: Brian Haines

Project D211485.02 San Diego HMP Monitoring - Phase 2

PO #C013100096

DPW Contract File 999-B

Addendum No. 1 - TO 16, HMP GEOMORPHIC ASSESSMENTS / **Contract #542922** *(formerly #536213)* ✓
(through 12/31/2012)

Professional Services from October 11, 2012 to December 30, 2012

Task 0000001 1.1 - Annual Assessment

Professional Personnel

	Hours	Rate	Amount	
Senior Engineer				
Haines, Brian	13.50	138.77	1,873.40	
Project Engineer				
Deng, Shinuo	4.00	119.93	479.72	
Totals	17.50		2,353.12	
Total Labor				**2,353.12**
		Total this Task		**$2,353.12**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	2,353.12	6,162.70	8,515.82
Limit			8,949.00
Remaining			433.18

TOTAL INVOICE AMOUNT: $2,353.12 ✓

Outstanding Invoices

Number	Date	Balance
100282	11/12/2012	6,162.70
Total		**6,162.70**

	Current	Prior	Total
Billings to Date	2,353.12	6,162.70	8,515.82 ✓

Project #5025-12-0024
PO Line 1 = $776.59 = Phase 1
Line 2 = $1,213.74 = 2
Line 3 = $362.79 = 3

PO # C013100096
V# 884165

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

PAYMENT DUE UPON RECEIPT

Billing Backup

Environmental Science Associates — Invoice 100665 Dated 12/13/2012 — Thursday, December 13, 2012 3:33:51 PM

Project D211485.02 San Diego HMP Monitoring - Phase 2

Task 0000001 1.1 - Annual Assessment

Professional Personnel

			Hours	Rate	Amount	
Senior Engineer						
10349	Haines, Brian	10/29/2012	.50	138.77	69.39	
	Overview of field data with Snow Deng.					
10349	Haines, Brian	11/8/2012	6.00	138.77	832.62	
	QC and submittal of field data					
10349	Haines, Brian	11/9/2012	4.00	138.77	555.08	
	QC and submittal of field data. Narrative on first year comparisons.					
10349	Haines, Brian	12/6/2012	3.00	138.77	416.31	
	Task revisions and project close out.					
Project Engineer						
10448	Deng, Shinuo	10/29/2012	2.00	119.93	239.86	
	survey comparisons					
10448	Deng, Shinuo	10/30/2012	2.00	119.93	239.86	
	survey comparisons					
	Totals		17.50		2,353.12	
	Total Labor					**2,353.12**

Total this Task	**$2,353.12**
Total this Project	**$2,353.12**
Total this Report	**$2,353.12** ✓

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mariamawit Yirsaign
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

November 12, 2012 (re-issue date: December 06, 2012)
Invoice No: 100282 (RE-ISSUE)
Project Manager: Brian Haines

Project D211485.02 San Diego HMP Monitoring - Phase 2 PO# C013100096

DPW Contract File 999-B

Project # 5025-12-0024

Addendum No. 1 - TO 16, HMP GEOMORPHIC ASSESSMENTS / Contract ~~#536218~~ 542922 ✓ Vendor # 884165
(through 12/31/2012)

Professional Services from September 29, 2012 to October 26, 2012

Task 0000001 1.1 - Annual Assessment

Professional Personnel

	Hours	Rate	Amount		
Senior Engineer					
Haines, Brian	26.50	138.77	3,677.41		
Totals	26.50		3,677.41		
Total Labor				3,677.41	Phase 1
		Total this Task		$3,677.41	PO Line 1

Task 0000002 1.2 - Follow-up Screening

Reimbursable Expenses

Travel Expense			1,184.57		
Total Reimbursables		1.15 times	1,184.57	1,362.26	Phase 2
		Total this Task		$1,362.26	PO Line 2

Task 0000003 1.3 - Survey Assistance

Professional Personnel

	Hours	Rate	Amount		
Senior Engineer					
Haines, Brian	5.50	138.77	763.24		
Project Engineer					
Sheehan, Lindsey	3.00	119.93	359.79		
Totals	8.50		1,123.03		
Total Labor				1,123.03	Phase 3
		Total this Task		$1,123.03	PO Line 3

Billing Limits	Current	Prior	To-Date
Total Billings	6,162.70	0.00	6,162.70
Limit			8,949.00
Remaining			2,786.30

TOTAL INVOICE AMOUNT: $6,162.70 ✓

PAYMENT DUE UPON RECEIPT

	Current	Prior	Total
Billings to Date	**6,162.70**	**0.00**	**6,162.70**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Environmental Science Associates — Invoice 100282 Dated 11/12/2012 — Thursday, December 06, 2012 2:52:51 PM

Project D211485.02 San Diego HMP Monitoring - Phase 2

Task 0000001 1.1 - Annual Assessment

Professional Personnel

			Hours	Rate	Amount	
Senior Engineer						
10349	Haines, Brian	10/9/2012	4.00	138.77	555.08	
	Workup of survey data.					
10349	Haines, Brian	10/10/2012	.50	138.77	69.39	
	Review of 2011 survey data.					
10349	Haines, Brian	10/11/2012	8.00	138.77	1,110.16	
	Travel to San Diego. Survey of Flanders Canyon.					
10349	Haines, Brian	10/12/2012	8.00	138.77	1,110.16	
	Survey of Ramona and Deer Valley.					
10349	Haines, Brian	10/16/2012	4.00	138.77	555.08	
	Revised cross section survey on Ramona reference site. Partial travel time back to San Francisco.					
10349	Haines, Brian	10/25/2012	2.00	138.77	277.54	
	Setup field survey comparison sheets for Snow.					
	Totals		26.50		3,677.41	
	Total Labor					**3,677.41**
				Total this Task		**$3,677.41**

Task 0000002 1.2 - Follow-up Screening

Reimbursable Expenses

Travel Expense

EX	000000014469	9/21/2012	Haines, Brian / Southwest	157.60	
EX	000000014469	9/21/2012	Haines, Brian / Southwest/Ramada	465.58	
EX	000000014469	10/10/2012	Haines, Brian / Taxi Cab	34.00	
EX	000000014469	10/11/2012	Haines, Brian / Yakyudori	18.09	
EX	000000014469	10/11/2012	Haines, Brian / Subway	10.72	
EX	000000014469	10/11/2012	Haines, Brian / CMT (Luxor)	58.30	
EX	000000014469	10/11/2012	Haines, Brian / Peet's	8.26	
EX	000000014469	10/11/2012	Haines, Brian / Southwest	50.00	
EX	000000014469	10/12/2012	Haines, Brian / Rubio's	11.36	
EX	000000014469	10/12/2012	Haines, Brian / Starbucks	6.85	
EX	000000014469	10/12/2012	Haines, Brian / Souplantation	11.09	
EX	000000014469	10/13/2012	Haines, Brian / Sprouts	10.74	
EX	000000014469	10/13/2012	Haines, Brian / Starbucks	9.10	
EX	000000014469	10/16/2012	Haines, Brian / Rubio's	10.76	
EX	000000014469	10/16/2012	Haines, Brian / Starbucks	8.65	
EX	000000014469	10/16/2012	Haines, Brian / Quiznos	9.69	
EX	000000014469	10/16/2012	Haines, Brian / Washington Mobil	70.99	
EX	000000014469	10/16/2012	Haines, Brian / Enterprise	136.63	
EX	000000014469	10/16/2012	Haines, Brian / Desoto Cab	57.66	
EX	000000014469	10/17/2012	Haines, Brian / Luxor Cab	38.50	
	Total Reimbursables			**1.15 times** 1,184.57	**1,362.26**
				Total this Task	**$1,362.26**

Task 0000003 1.3 - Survey Assistance

Project	D211485.02				Invoice	100282

Professional Personnel

			Hours	Rate	Amount	
Senior Engineer						
10349	Haines, Brian	10/8/2012	4.00	138.77	555.08	
	Survey of Saratoga with field assistance from SDSU grad student, K. Taniguchi.					
10349	Haines, Brian	10/10/2012	1.50	138.77	208.16	
	Field gear collection, survey planning/setup.					
Project Engineer						
10337	Sheehan, Lindsey	10/16/2012	3.00	119.93	359.79	
	Survey assistance on Ramona					
	Totals		8.50		1,123.03	
	Total Labor					**1,123.03**
					Total this Task	**$1,123.03**
					Total this Project	**$6,162.70**
					Total this Report	**$6,162.70** ✓

Summarized Expense Report

Wednesday, November 14, 2012
2:30:07 PM

Environmental Science Associates

Employee 10349 Haines, Brian E

Signed _____
Devlin,Tara L.

Posted

Approved _____

Organization PW01:07
Expense Report: San Diego, Oct 11-16 **Report Date:** 10/17/2012

Date	Category	Description	Project	Task	Subtask	Bill	Paid	Account	Amount
9/21/2012	Airfare	Southwest	D211485.02	0000600		X		5600-01	157.60
9/21/2012	Lodging	Southwest/Ramada	D211485.02	0000600		X		5600-02	465.68
10/10/2012	Parking/Toll/Cab/Rail (Ferry)	Taxi Cab	D211485.02	0000600		X		5600-05	34.00
10/11/2012	Travel Meals.	Yakyudori	D211485.02	0000600		X		5600-03	18.09
10/11/2012	Travel Meals	Subway	D211485.02	0000600		X		5600-03	10.72
10/11/2012	Parking/Toll/Cab/Rail (Ferry)	CMT (Luxor)	D211485.02	0000600		X		5600-05	58.30
10/11/2012	Travel Meals	Peet's	D211485.02	0000600		X		5600-03	8.26
10/11/2012	Airfare	Southwest	D211485.02	0000600		X		5600-01	50.00
10/12/2012	Travel Meals	Rubio's	D211485.02	0000600		X		5600-03	11.36
10/12/2012	Travel Meals	Starbucks	D211485.02	0000600		X		5600-03	6.85
10/12/2012	Travel Meals	Souplantation	D211485.02	0000600		X		5600-03	11.09
10/13/2012	Travel Meals	Sprouts	D211485.02	0000600		X		5600-03	10.74
10/13/2012	Travel Meals	Starbucks	D211485.02	0000600		X		5600-03	9.10
10/14/2012	Travel Meals	Starbucks	D211485.00	0000600		X		5600-03	6.50
10/14/2012	Travel Meals	Yakyudori	D211485.00	0000600		X		5600-03	14.93
10/15/2012	Travel Meals	San Diego COC	D211485.00	0000600		X		5600-03	10.24
10/15/2012	Travel Meals	San Diego COC	D211485.00	0000600		X		5600-03	6.30
10/15/2012	Travel Meals	Subway	D211485.00	0000600		X		5600-03	5.00
10/15/2012	Travel Meals	Palominos	D211485.00	0000600		X		5600-03	8.57

v6.1.600 (CDU) -

Summarized Expense Report

Environmental Science Associates

Wednesday, November 14, 2012
2:30:07 PM

Employee 10349 Haines, Brian E

Signed _____

Devlin,Tara L.

Posted

Approved _____

Organization PW01:07

Expense Report: San Diego, Oct 11-16 **Report Date:** 10/17/2012

Date	Category	Description	Project	Task	Subtask	Bill	Paid	Account	Amount
10/16/2012	Travel Meals	Rubio's	D211485.02	0000600		X		5600-03	10.76
10/16/2012	Travel Meals	Starbucks	D211485.02	0000600		X		5600-03	8.65
10/16/2012	Travel Meals	Quiznos	D211485.02	0000600		X		5600-03	9.69
10/16/2012	Auto Rental (Including rental gasoline)	Washington Mobil	D211485.02	0000600		X		5600-04	70.99
10/16/2012	Auto Rental (Including rental gasoline)	Enterprise	D211485.02	0000600		X		5600-04	136.63
10/16/2012	Parking/Toll/Cab/Rail (Ferry)	Desoto Cab	D211485.02	0000600		X		5600-05	57.66
10/17/2012	Parking/Toll/Cab/Rail (Ferry)	Luxor Cab	D211485.02	0000600		X		5600-05	38.50

Total Expenses 1,235.11

Total Due 1,235.11

Gmail by Google

Brian Haines <bhaines@gmail.com>

Southwest Airlines Confirmation-HAINES/BRIAN ELLIOTT-Confirmation: GMM4BT

1 message

Southwest Airlines <SouthwestAirlines@luv.southwest.com>
Reply-To: Southwest Airlines <no-reply@luv.southwest.com>
To: HAINESACCOUNTS@gmail.com

Fri, Sep 21, 2012 at 11:06 AM

You're all set for your trip!

SOUTHWEST

My Account | View My Itinerary Online

Check In Online | Check Flight Status | Change Flight | Special Offers | Hotel Deals | Car Deals

Ready for takeoff!

Thanks for choosing Southwest for your trip! You'll find everything you need to know about your reservation below. Happy travels!

Upcoming Trip: 10/11/12 - San Diego

AIR Itinerary

AIR Confirmation: GMM4BT

Confirmation Date: 09/21/2012

Passenger(s)	Rapid Rewards #	Ticket #	Expiration	Est. Points Earned
HAINES/BRIAN ELLIOTT	0000063652 6182	5262460933204	Sep 21, 2013	817

Rapid Rewards points earned are only estimates. Visit your (My Southwest, southwest.com or Rapid Rewards) account for the most accurate totals - including A-List & A-List Preferred bonus points.

Date	Flight	Departure/Arrival
Thu Oct 11	1827	Depart SAN FRANCISCO CA (SFO) at 08:30 AM Arrive in SAN DIEGO CA (SAN) at 10:00 AM Travel Time 1 hrs 30 mins Wanna Get Away
Tue Oct 16	584	Depart SAN DIEGO CA (SAN) at 5:50 PM Arrive in SAN FRANCISCO CA (SFO) at 7:15 PM Travel Time 1 hrs 25 mins Wanna Get Away

Air Cost: 157.00

Carry-on Items: 1 Bag + small personal item are free see full details. Checked Items: First and second bags are free, size and weight limits apply.

Fare Rule(s): 5262460933204: NONREF/NONTRANSFERABLE/STANDBY REQ UPGRADE TO Y.

All drivers must have a major credit card and valid driver's license in the driver's name.

Estimated Car Cost: $ 136.63

Cost and Payment Summary

AIR - GMM4ST

Base Fare	$ 126.52	Payment Information
Excise Taxes	$ 9.48	Payment Type: Amer Express XXXXXXXXXXX1001
Segment Fee	$ 7.00	Date: Sep 21, 2012
Passenger Facility Charge	$ 9.00	Payment Amount: $157.60
September 11th Security Fee	$ 5.00	
Total Air Cost	$ 157.60	

HOTEL - [illegible]

Rooms: 1		Payment Information
Additional Taxes & Fees		Payment Type: AX XXXXXXXXXXXX1001
Taxes & Fees	$ 49.43	Payment Amount: $ 465.58
Total Hotel Costs	$ 465.58 ✓	

CAR - [illegible]

Mileage Charge:	Unlimited Free	Payment Information
Drop Charge:	No Charge	Payment Type: AX XXXXXXXXXXXX1001
Estimated Car Cost:	$ 136.63	Payment Amount: $ 136.63 ✓

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- Security Procedures
- Guidelines of Size
- In the Air
- Purchasing and Refunds

Special Travel Needs

- Traveling with Children
- Traveling with Pets
- Unaccompanied Minors
- Baby on Board
- Customers with Disabilities

Legal Policies & Helpful Information

San Francisco Intl Air
port
San Francisco, CA 94128
(650) 821-0608

164 ANALYN T

Chk 9944 Oct11'12 07:44AM Dst 2

TO GO

1 MED COFFEE	2.30
1 OATMEAL	5.25
XXXXXXXXXXX1001 XX/XX	
AMEX	8.26
FOOD	5.25
BEVERAGE	2.30
TAX	0.63
EE Surcharge	0.08
TENDER	8.26

Thank You.

Passenger Receipt

ISSUED BY AND VALID ONLY ON SOUTHWEST AIRLINES

X _____ SIGNATURE OF CARDHOLDER

NAME OF PASSENGER: HANESBRAM ELLIOTT
FROM SAN FRANCSCO CA
TO SAN FRANCSCO CA

DATE OCCURRED: 11OCT12
NOT VALID FOR TRAVEL

DATE ISSUED: 05
SFOUAX
GMMGT / WR
104
SFOSWAN1827
SARSFORN584

NAME OF PASSENGER: HANESBRAM ELLIOTT
T11OCT
T16OCT

Staples® Print Solutions

Excess Bag (3-3 items)(1)
FP AX AUTH: $8.26/$8.26 $0.00 FC

TAX	$0.00
TOTAL	$0.00
TOTAL	$0.00
TOTAL	$0.00
TOTAL	$0.00

0
5262902011105
PAX

NOT VALID FOR TRAVEL
0
5262902011105
0

AC-1677H (Rev.9/13)
69-015630

Washington Mobil
1803 W. Washington
San Diego, CA

Sale
AMEX XXXXXXXX1001
Auth. # 645673
Inv. # KAN22138
1140128
Date 10/16/12 15:49
WASHINGTON MOB
SAN DIEGO CA
Pump # 5 Regular
Gallons 15.048
Price/Gal $ 4.719
Fuel Sale $ 70.98

THANK YOU FOR
CHOOSING MOBIL

---

enterprise

RA 129146040 Bill 0
Rental 11-OCT-2012 10:35 AM
SAN DIEGO INTL ARPT
Return 16-OCT-2012 03:00 PM
SAN DIEGO INTL ARPT

BRIAN HAINES
Vehicle # D1149107
Model 1LT IMPALA
Class Driven FCAR Class Charged ICAR
License# 6XX8864 State/Province CA
M/Kms Driven 201
M/Kms Out 651
M/Kms In 852

Charges	No. Unit	Price	Amount
T & M	1 Week	103.31	103.31*
UNLIM M/KM	0 M/Kms		0.00*
CUSTOMER FACILITY CHG			10.00
CONCESSION RECOUP FEE			11.40*
TOURISM			2.94
SALES TAX 07.750 %			8.00

Total Charges USD 136.63

Deposit AMER 1001

Amount Due USD 136.63

* Taxable Items
Subject to Audit
For Reservations: 1-800-RENT-A-CAR

Luxor Cab
MEDA# 1066
DRIVER# 916326
CUSTOMER COPY
10/11/12 TR 3957
START END MILES
00:25 09:05 4.5
Regular Fare
RATE 1:$ 32.19
EXTRA: $ 0.00
SURCH: $ 0.00
TIP: $ 6.40
TOTAL: $ 38.59

CARD TYPE: AMEX
XXXXXXXXXXXX1001
AUTH:580956

THANKS
www.sfmta.com

RIDE RECEIPT
- DESOTO CAB -
CAB # 4710
D-ID # N****000
TRIP # 2479
DATE 10/16/12
RATE USED: 1
PASSENGERS: 1
START END MILES
21:00 21:31 16.2
FARE: $ 48.05
EXTRA: $ 0.00
TOLLS: $ 0.00
TIP: $ 9.61
TOTAL: $ 57.66

CARD #: 1001
AP #: 011907
CC CARD RECEIPT

SIGNATURE

- DESOTO CAB -
- SAN FRANCISCO
(415) 970-1300

PASSENGER'S RECEIPT, TAXICAB FARE

Date 10/11/12

Amount of Fare $ 34.00

Other Charges $ —

Total $ 34.00

Driver's Name Adolfo

Cab number 1342

--ORIGINAL--
CUT
MEDA# 0232
DRVR# 642682
CUSTOMER COPY
10/11/12 TR 4438
START END MILES
06:46 07:19 9.6
Regular Fare
RATE 1:$ 48.60
EXTRA: $ 0.00
SURCH: $ 0.00
TIP: $ 9.70
TOTAL: $ 58.30

CARD TYPE: AMEX
XXXXXXXXXXXX1001
AUTH:677750

THANKS
www.sfmta.com

PANERA BREAD

********** Eat In **********

Rubio's
1664 Main Street, #A
Ramona, CA 92065
Tel:(760) 788-9004

1 BLRSEMN-B PLT 9.99
Chips/Pinto
REG DRNK

Sub. Total: 9.99
Tax: 0.77
Total: 10.76
Discount Total: 0.00

American Express: -10.76
Change 0.00

Cashier: ROXANA Register:1
10/16/12 12:06:31 PM ORDER# 1093425

Order #: 1093425

THANK YOU!

American Express
Card Num : XXXXXXXXXXX1001
Terminal : ka1311049002
Approval : 513261
Sequence : 008807

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 657551
10/16/2012 08:16 AM
1788742 Drawer: 1 Reg: 2

Ethos Water 700Ml	1.95
Bottle Dep/Crv	0.05
Spnch Brkfst Wrap	3.25
Warming Pastry	
T1 Pike Place	1.65
Fruit/Nut Mix1.50z	1.75
Amex	8.65
XXXXXXXXXXXX1001	
Subtotal	8.65
Total	8.65
Change Due	$0.00

PALOMINOS #2
CHICKEN ROASTED & SALADS
8353 CLAIREMONT MESA BLVD. #1
SAN DIEGO, CA. 92111
858 292-0470

DATE 10/15/2012 MON

COMB #17 T1	$7.49
chkn fajita	
w corn	
CS FEE	$0.50
*** HERE ***	
SUBTOTAL	$7.99
TAX1 AMT	$0.58
TOTAL	$8.57
CREDIT CARD	$8.57
SALE	$8.57

**********4752
APP: 368232
REF: 00000102
REC: 102
* ORDER# 0052 *
NO.000055 REG 02 ALEX TIME 19:47

UNSHORT
QUIZNOS SUBS
SAN DIEGO AIRPORT

1063 Guendely

8282 06/16/12 8:58PM

1 VEGGIE @ 8.99
WHEAT BREAD

SUBTOTAL	8.99
TAX	0.70
AMOUNT	9.69
XXXXXXXXXXXXXXX	XX/XX
AMEX 03	9.69

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 707046
10/14/2012 09:19 AM
1788742 Drawer: 2 Reg: 1

Gr Americano	2.55
Sausg Clso Brkfst	2.95
Warming Pastry	
Amex	5.50
XXXXXXXXXXXX1001	
Subtotal	5.50
Total	5.50
Change Due	$0.00

Check Closed
10/14/2012 09:19:58AM

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 614-0263

CHK 782295
10/13/2012 08:36 AM
1810528 Drawer: 2 Reg: 2

Fruit/Nut Mix1.5Oz	1.75
Kind Bar/Blueberry	1.95
Gr Pike Place	1.85
Ham Art Brkfst	3.45
Warming Pastry	
Amex	9.10
XXXXXXXXXXXX1001	
Subtotal	9.10
Total	9.10
Change Due	$0.00

SPROUTS FARMERS MARKET
13536 Poway Road
Poway, CA 92064
(858)486-7851
Store Hours MON-SUN 7AM-10PM

Purchase $ 10.74

American Express#XXXXXXXXXXXX1001
Auth # 569798
Lane # 05 Cashier # 295
10/13/12 12:30 Ref/Seq # 058524
Mrch=919385 Term=001 IC=CC
EPS Sequence # 058524

DELI		
TURKEY SANDWICH	$3.99	F
VEGETARIAN SANDWICH	$3.99	F
GROCERY		
ORG CANND YERBA MATE	$1.79	F
CRV FS 09	$0.05	F
PRODUCE		
PINK LADY APPLES		
0.52 lb @ $1.49/ lb	$0.92	F
5 BALANCE DUE	$10.74	
American Express	$10.74	
Auth Code = 569798		
CHANGE	$0.00	

Souplantation
salads · soups · bakery

TTID#: 4258515, 10/12/2012 19:42

1 Adult Dinner	10.29
Subtotal	10.29
Sales Tax	0.80
Total	11.09
AMEX(Completed)(X1001)	-11.09
Balance	0.00

Store 073 Kearny Mesa
Comments or Suggestions?
Call 888-[illegible]

JUST BRIAN 4

********** Eat In **********

Rubio's
13504 Poway Rd.
Poway, Ca. 92074
Tel:(858) 486 7533

1 SALMON-B PLT 10.54
Chips/Pinto
REG DRINK

Sub. Total: 10.54
Tax: 0.82
Total: 11.36
Discount Total: 0.00

American Express: -11.36
Change 0.00

Cashier: Carla Register: 1
10/12/2012 12:39:33 PM ORDER# 1757569

Let us cater your next party or meeting
See Manager for details

Order #: 1757569

YOKYODORX
4098 CONVOY ST STE 1
SAN DIEGO, CA. 92111
858-268-2888

TERMINAL I.D.: 0079420000016520697001
MERCHANT ID: 0016720697

AMEX
**********1001
SALE
RECORD #: 57 INV: 000057
DATE: OCT 11, 12 TIME: 19:58
BATCH: 987
AUTH: 530560

BASE $15.09
TIP 3.00
TOTAL 18.09
CARD BALANCE: $0.00

B MENES

I AGREE TO PAY ABOVE TOTAL AMOUNT
ACCORDING TO CARD ISSUER AGREEMENT
(MERCHANT AGREEMENT IF CREDIT VOUCHER)

CUSTOMER COPY

STARBUCKS Store #6748
9211 Clairmont Mesa Blvd.
San Diego, CA (858) 674-0263

CHK 720098
10/12/2012 08:27 AM
1656879 Drawer: 1 Reg: 2

Gr Pike Place 1.95
Sausg Clas Brkfst 2.95
Kind Bar/Blueberry 1.95
Amex 6.85
XXXXXXXXXXXX1001

Subtotal 6.85
Total 6.85
Change Due $0.00

Check Closed

SUBWAY

Qty Item Price
[redacted]
1 Grdaughter Fr 37.75
[redacted]
1 Fountain Drink - 21oz $1.50
[redacted]
1 Chips $0.75
[redacted]
Memo:#2COLDM
SUBTOTAL $10.00
Sales Tx $0.72
TAKE-OUT **TOTAL $10.72
CredCardAMT TEND $10.72
CHANGE DUE $0.00
Approval No: 550154
Reference No: 228519444170
Acquired: Swipe
Account No: **********1001
Card Issuer: Amex
Amount: $10.72
Host Id: 62[illegible]

P : 1002993
O : 50915
E : 52370
T : 001.006
A : 100496

Supplier# 1529750

amec

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Christine Sloan
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123

File: 985-A

County Contract Number: 536213
Oracle Project Number: 5025-12-0003

Invoice Date: 9/28/2012
Task Order Number: 13
Invoice Number: S17670552

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 2/10/12 through 9/14/12

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$22,918.00	9.70%	$2,223.10	$00.00	$2,223.10
TOTALS:	$22,918.00	9.70%	$2,223.10	$00.00	$2,223.10

AMOUNT DUE THIS BILLING: $2,223.10

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Ok to pay $2,223.10

Nathan Schaedler 10-4-12
NATHAN SCHAEDLER DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

536213 TO#13
CONTRACT/P.O. NO. ACTIVITY/WA NO.
11/19/2012 PROJECT MANAGER
DATE
11/19/2012 DPW MANAGER
DATE

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123 USA
Tel: +1 858. 278.3600 • Fax: +1 858. 278.5300

Printed with Environmentally-Responsible Products
Please Recycle!

Project : 5025120003 -- County of SD TO#13 HMP Monit FY12 Invoice # : S17670552

Phase : 01 -- HMP Monitoring

Task : **** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	97830	05/14/2012	2,223.10	1.000	2,223.10
Total : Subcontractor			2,223.10		2,223.10
Total Reimbursable Expenses					*2,223.10*
Total Expenses					*2,223.10*
Total Task : **** - ****					2,223.10

Total Phase : 01 -- HMP Monitoring

Fees :	0.00
Expenses :	2,223.10
Total :	2,223.10

Total Project: 5025120003 -- County of SD TO#13 HMP Monit FY12 2,223.10

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123 USA
Tel: +1 858. 278.3600 • Fax: +1 858. 278.5300

Printed with Environmentally-Responsible Products
Please Recycle

ESA PWA

550 Kearny Street
Suite 900
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

May 14, 2012
Invoice No: 97830
Project Manager: Brian Haines

Project D211485.01 San Diego HMP Phase 1 Monitoring

DPW Contract File 999-B

Task Order No. 13
Contract No. 536213

Professional Services through April 27, 2012

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Beeman, Christie	1.00	145.67	145.67	
Collison, Andrew	1.50	145.67	218.51	
Project Engineer				
Haines, Brian	15.50	119.93	1,858.92	
Totals	18.00		2,223.10	
Total Labor				2,223.10
		Total this Task		**$2,223.10**

Billing Limits	Current	Prior	To-Date
Total Billings	2,223.10	0.00	2,223.10
Limit			22,918.00
Remaining			20,694.90

TOTAL INVOICE AMOUNT: $2,223.10

	Current	Prior	Total
Billings to Date	2,223.10	0.00	2,223.10

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Project # 5025-12-0803
Phase # 01.****
GL Code # 5720-00
Vendor # 884165
code
PO # C012200961

PAYMENT DUE UPON RECEIPT

PO Line # 01

Billing Backup

Monday, May 14, 2012
3:57:39 PM

Environmental Science Associates Invoice 97830 Dated 5/14/2012

Project D211485.01 San Diego HMP Phase 1 Monitoring

Task 0000001 Technical Assistance

Professional Personnel

			Hours	Rate	Amount	
Project Manager						
10314	Beeman, Christie review QAPP	3/16/2012	1.00	145.67	145.67	
10312	Collison, Andrew review QAPP	3/12/2012	1.50	145.67	218.51	
Project Engineer						
10349	Haines, Brian Project setup, folder organization.	2/28/2012	.50	119.93	59.97	
10349	Haines, Brian Initial review of QAPP documents from Weston.	3/2/2012	2.00	119.93	239.86	
10349	Haines, Brian Review of draft QAPP. Comments to Andy/Christie.	3/5/2012	2.00	119.93	239.85	
10349	Haines, Brian Review of QAPP, handoff to Andy Collison.	3/6/2012	3.00	119.93	359.79	
10349	Haines, Brian Meeting with County of SD and Weston to discuss QAPP and initial monitoring results.	3/9/2012	2.00	119.93	239.86	
10349	Haines, Brian Compiled comments for the QAPP to San Diego County.	3/12/2012	2.00	119.93	239.86	
10349	Haines, Brian Compiled comments for the QAPP to San Diego County.	3/13/2012	1.00	119.93	119.93	
10349	Haines, Brian Conversation with Lindsay Arobone regarding the Johnson monitoring site.	3/26/2012	.50	119.93	59.97	
10349	Haines, Brian Discussion with Deb Mosley regarding next steps with current TO/site selection details. Internal project updates.	3/28/2012	1.00	119.93	119.93	
10349	Haines, Brian Project management/staffing projections.	3/29/2012	.50	119.93	59.97	
10349	Haines, Brian Preperation for and attedance of SDHMP monitoring sub-group meeting.	4/4/2012	1.00	119.93	119.93	
	Totals		18.00		2,223.10	
	Total Labor					**2,223.10**
				Total this Task		**$2,223.10**
				Total this Project		**$2,223.10**
				Total this Report		**$2,223.10**

COUNTY OF SAN DIEGO
County of San Diego/DPW/Watershed Protection
ATTN: Christine Sloan
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

P: 1002993
O: 50915
E: 52370
T: 001-006
A: 100496

Supplier # 1529750

amec APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Christine Sloan
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123

File: 985-A

Invoice Date: 10/26/2012
Task Order Number: 13
Invoice Number: S17670602

County Contract Number: 536213
Oracle Project Number: 5025-12-0003

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 9/15/12 through 10/12/12

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$22,918.00	54.29%	$12,443.04	$2,223.10	$10,219.94
TOTALS:	$22,918.00	54.29%	$12,443.04	$2,223.10	$10,219.94

AMOUNT DUE THIS BILLING: **$10,219.94**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

ok to pay $10,219.94

Nathan Schaedler 11/2/12
NATHAN SCHAEDLER DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

536213 T.O. #13
CONTRACT/PO. NO. ACTIVITY/WA NO.

11/19/2012 Deborah Mosley
DATE PROJECT MANAGER

11/19/2012
DATE DPW MANAGER

amec

Project : 5025120003 -- County of SD TO#13 HMP Monit FY12 Invoice # : S17670602

Phase : 01 -- HMP Monitoring

Task : **** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	99141	08/15/2012	9,350.30	1.000	9,350.30
ESA PWA	99511	09/14/2012	869.64	1.000	869.64
			10,219.94		10,219.94
Total : Subcontractor			10,219.94		10,219.94
Total Reimbursable Expenses					*10,219.94*
Total Expenses					*10,219.94*
Total Task : **** - ****					10,219.94

Total Phase : 01 -- HMP Monitoring

Fees :	0.00
Expenses :	10,219.94
Total :	10,219.94

Total Project: 5025120003 -- County of SD TO#13 HMP Monit FY12 10,219.94

ESA PWA

550 Kearny Street
Suite 900
San Francisco, CA 94108
(415) 896-5900

INVOICE

PO# C0122 00961

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

August 15, 2012
Invoice No. 99141
Project Manager: Brian Haines

Project # 5025-12-0003
Phase # 01
G.Code # 5720-00
V. code # 884165

Project D211485.01 San Diego HMP Phase 1 Monitoring

DPW Contract File 999-5

Addendum No. 1 - TO 13, PHASE 1 HMP Monitoring Assistances / **Contract #536213**
(through 12/31/2012)

Professional Services from June 30, 2012 to July 27, 2012

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Collison, Andrew	1.00	145.67	145.67	
Totals	1.00		145.67	
Total Labor				**145.67**
		Total this Task		**$145.67**

Task 0000002 Project Reporting

Professional Personnel

	Hours	Rate	Amount	
Project Engineer				
Deng, Shinuo	3.00	119.93	359.79	
Haines, Brian	73.75	119.93	8,844.84	
Totals	76.75		9,204.63	
Total Labor				**9,204.63**
		Total this Task		**$9,204.63**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	9,350.30	2,223.10	11,573.40
Limit			22,918.00
Remaining			11,344.60

TOTAL INVOICE AMOUNT: $9,350.30

Outstanding Invoices

Number	**Date**	**Balance**
97830	5/14/2012	2,223.10
Total		**2,223.10**

PAYMENT DUE UPON RECEIPT

	Current	Prior	Total
Billings to Date	**9,350.30**	**2,223.10**	**11,573.40**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Thursday, August 16, 2012
2:15:42 PM

Environmental Science Associates Invoice 99141 Dated 8/15/2012

Project D211485.01 San Diego HMP Phase 1 Monitoring

Task 0000001 Technical Assistance

Professional Personnel

			Hours	Rate	Amount	
Project Manager						
10312	Collison, Andrew	7/9/2012	.50	145.67	72.84	
	review year 1 data					
10312	Collison, Andrew	7/25/2012	.50	145.67	72.83	
	review board presentation					
	Totals		1.00		145.67	
	Total Labor					**145.67**
				Total this Task		**$145.67**

Task 0000002 Project Reporting

Professional Personnel

			Hours	Rate	Amount
Project Engineer					
10448	Deng, Shinuo	7/17/2012	3.00	119.93	359.79
	Stream gauge analysis for 2-year flow comparisons				
10349	Haines, Brian	7/6/2012	4.00	119.93	479.72
	Initial review of the 2011/2012 monitoring data.				
10349	Haines, Brian	7/9/2012	1.00	119.93	119.93
	Discussion with Andy about initial findings, next steps, and results presentation.				
10349	Haines, Brian	7/10/2012	1.00	119.93	119.93
	Discussion with Andy about initial findings, next steps, and results presentation.				
10349	Haines, Brian	7/12/2012	7.50	119.93	899.48
	Critical flow and other HMP research, SDHM hydrology model setup.				
10349	Haines, Brian	7/13/2012	8.00	119.93	959.44
	SCCWRP peak flow analysis for Q2 and Q10, proportion of Q2 summary.				
10349	Haines, Brian	7/16/2012	3.50	119.93	419.76
	Regional gage records for Q2 flow identification. Task setup with Snow Deng. Input file setup for SDHM hydrology modeling.				
10349	Haines, Brian	7/17/2012	2.00	119.93	239.86
	Summary of monitoring results for upcoming regional board meeting.				
10349	Haines, Brian	7/18/2012	2.00	119.93	239.86
	Summary of monitoring results for upcoming regional board meeting.				
10349	Haines, Brian	7/19/2012	1.75	119.93	209.88
	Tech memo outline, intro, and conclusions strawman.				
10349	Haines, Brian	7/20/2012	6.00	119.93	719.58
	Tech memo outline, intro, and conclusions strawman.				
10349	Haines, Brian	7/23/2012	8.00	119.93	959.44
	Phase 1 monitoring - analysis and tech memo writeup.				
10349	Haines, Brian	7/24/2012	8.00	119.93	959.44
	Phase 1 monitoring - analysis and tech memo writeup.				
10349	Haines, Brian	7/25/2012	6.00	119.93	719.57
	Phase 1 monitoring - analysis and tech memo writeup				
10349	Haines, Brian	7/26/2012	7.00	119.93	839.51
	Phase 1 monitoring - analysis and tech memo writeup.				
10349	Haines, Brian	7/27/2012	8.00	119.93	959.44

Phase 1 monitoring - tech memo writeup. Presentation slides for State Board meeting.

Totals	76.75	9,204.63	
Total Labor			**9,204.63**
		Total this Task	**$9,204.63**
		Total this Project	**$9,350.30**
		Total this Report	**$9,350.30**

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

September 14, 2012
Invoice No: 99511
Project Manager Brian Haines

Project D211485.01 San Diego HMP Phase 1 Monitoring

PO #C012200961 - 5025-12-0003.01.* PO Line 01

DPW Contract File 999-5

Vendor code = 884165

Addendum No. 1 - TO 13, PHASE 1 HMP Monitoring Assistances / **Contract #536213** GL code: 5720-00
(through 12/31/2012)

Professional Services through August 24, 2012

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Collison, Andrew	3.50	145.67	509.85	
Totals	3.50		509.85	
Total Labor				**509.85**
		Total this Task		**$509.85**

Task 0000002 Project Reporting

Professional Personnel

	Hours	Rate	Amount	
Project Engineer				
Deng, Shinuo	3.00	119.93	359.79	
Totals	3.00		359.79	
Total Labor				**359.79**
		Total this Task		**$359.79**

Billing Limits	**Current**	**Prior**	**To-Date**	
Total Billings	869.64	11,573.40	12,443.04	
Limit			22,918.00	
Remaining			10,474.96	
		Total this Invoice		**$869.64**

Outstanding Invoices

Number	**Date**	**Balance**
97830	5/14/2012	2,223.10
99141	8/15/2012	9,350.30
Total		**11,573.40**

PAYMENT DUE UPON RECEIPT

	Current	Prior	Total
Billings to Date	**869.64**	**11,573.40**	**12,443.04**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Friday, September 14, 2012
10:29:38 AM

Environmental Science Associates Invoice 99511 Dated 9/14/2012

Project D211485.01 San Diego HMP Phase 1 Monitoring

Task 0000001 Technical Assistance

Professional Personnel

			Hours	Rate	Amount	
Project Manager						
10312	Collison, Andrew	7/31/2012	1.00	145.67	145.67	
	prep for state board presentation					
10312	Collison, Andrew	8/1/2012	2.00	145.67	291.34	
	conf call with State board, prep					
10312	Collison, Andrew	8/14/2012	.50	145.67	72.84	
	Totals		3.50		509.85	
	Total Labor					**509.85**
				Total this Task		**$509.85**

Task 0000002 Project Reporting

Professional Personnel

			Hours	Rate	Amount	
Project Engineer						
10448	Deng, Shinuo	7/17/2012	3.00	119.93	359.79	
	Brief regional gauge analysis for urban monitoring site low flow thresholds					
	Totals		3.00		359.79	
	Total Labor					**359.79**
				Total this Task		**$359.79**
				Total this Project		**$869.64**
				Total this Report		**$869.64**

COUNTY OF SAN DIEGO
County of San Diego/DPW/Watershed Protection
ATTN: Christine Sloan
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

Final Invoice

amec APPENDIX U

P: 1002993
O 50915
E: 52370
T: 1.006
A: 100496

Supplier ID# 1529750

File: 985-A

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Christine Sloan
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123

County Contract Number: 542922 (Old contract # 536213)
Oracle Project Number: 5025-12-0003

Invoice Date: 11/30/2012
Task Order Number: 13
Invoice Number: S17670701

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 10/13/12 through 11/16/12

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$22,918.00	54.55%	$12,503.01	$12,443.04	$59.97 ✓
TOTALS:	$22,918.00	54.55%	$12,503.01	$12,443.04	$59.97

AMOUNT DUE THIS BILLING: **$59.97** ✓

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

OK to PAY $59.97

Nath Schaedl 12/7/12
NATHAN SCHAEDLER DATE
PROJECT MANAGER

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

542922 13
CONTRACT/P.O. NO. ACTIVITY/WA NO.
1/7/2013 Deborah Mosby
DATE PROJECT MANAGER
1/7/2013
DATE DPW MANAGER

Project : 5025120003 -- County of SD TO#13 HMP Monit FY12 Invoice # : S17670701

Phase : 01 -- HMP Monitoring

Task : **** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	99890	10/10/2012	59.97	1.000	59.97
Total : Subcontractor			59.97		59.97
Total Reimbursable Expenses					*59.97*
Total Expenses					*59.97*
Total Task : **** - ****					59.97

Total Phase : 01 -- HMP Monitoring

Fees :	0.00
Expenses :	59.97
Total :	59.97

Total Project: 5025120003 -- County of SD TO#13 HMP Monit FY12 59.97

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

October 10, 2012
Invoice No: 99890
Project Manager: Brian Haines

Project D211485.01 San Diego HMP Phase 1 Monitoring

PO #C012200961

DPW Contract File 999-5

Addendum No. 1 - TO 13, PHASE 1 HMP Monitoring Assistances / **Contract** ~~#536213~~ 542922
(through 12/31/2012)

Professional Services from August 25, 2012 to September 28, 2012

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Engineer				
Haines, Brian	.50	119.93	59.97	
Totals	.50		59.97	
Total Labor				**59.97**
		Total this Task		**$59.97**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	59.97	12,443.04	12,503.01
Limit			22,918.00
Remaining			10,414.99

TOTAL INVOICE AMOUNT: $59.97 ✓

Outstanding Invoices

Number	Date	Balance
97830	5/14/2012	2,223.10
99141	8/15/2012	9,350.30
99511	9/14/2012	869.64
Total		**12,443.04**

	Current	Prior	Total
Billings to Date	59.97	12,443.04	12,503.01 ✓

Project # 5025-12-0003.01. ***
PO Line # 01
Vendor # 884165

PAYMENT DUE UPON RECEIPT

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Wednesday, October 10, 2012

Environmental Science Associates Invoice 99890 Dated 10/10/2012 12:04:14 PM

Project D211485.01 San Diego HMP Phase 1 Monitoring

Task 0000001 Technical Assistance

Professional Personnel

			Hours	Rate	Amount	
Project Engineer						
10349	Haines, Brian	9/5/2012	.50	119.93	59.97	
	Monitoring draft memo review. Close out discussion with Deb Mosley.					
	Totals		.50		59.97	
	Total Labor					**59.97**
				Total this Task		**$59.97**
				Total this Project		**$59.97**
				Total this Report		**$59.97** ✓

COUNTY OF SAN DIEGO
County of San Diego/DPW/Watershed Protection
ATTN: Christine Sloan
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

APPENDIX U

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Christine Sloan
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 985-A

County Contract Number: 542922 (Old contract # 536213)
AMEC Project Number: 5025-12-0003

Invoice Date: 4/26/2013
Task Order Number: 13
Invoice Number: S22720037

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 11/17/2012 - 1/11/2013

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$22,918.00	78.10%	$17,899.87	$5,396.86	($5,396.86)
TOTALS:	$22,918.00	78.10%	$17,899.87	$5,396.86	($5,396.86)
AMOUNT DUE THIS BILLING:					**($5,396.86)**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Nathan Schaedler 5/16/13

NATHAN SCHAEDLER DATE
PROJECT MANAGER

Environment & Infrastructure
9177 Sky Park Court
San Diego, CA 92123 USA
Tel: +1 858.278.3600 Fax: +1 858.278.5300

amec

Project : 5025120003 -- County of SD TO#13 HMP Monit FY12 **Invoice # : S22720037**

Phase : 01 -- HMP Monitoring

Task : ** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	100281CR	04/18/2013	-2,458.57	1.000	-2,458.57
	100664CR	04/18/2013	-2,938.29	1.000	-2,938.29
			-5,396.86		-5,396.86
Total : Subcontractor			**-5,396.86**		**-5,396.86**
Total Reimbursable Expenses					***-5,396.86***
Total Expenses					***-5,396.86***
Total Task : ** - ******					**-5,396.86**

Total Phase : 01 -- HMP Monitoring

Fees	:	**0.00**
Expenses	:	**-5,396.86**
Total	:	**-5,396.86**

Total Project: 5025120003 -- County of SD TO#13 HMP Monit FY12 **-5,396.86**

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123-4341
Tel: +1 858.278.3600 • Fax: +1 858.278.5300

Printed with Environmentally-Responsible Products
Please Recycle

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

November 12, 2012 (updated: 04/18/2013)
Invoice No: 100281 (Credit)
Project Manager: Brian Haines

Project D211485.01 San Diego HMP Phase 1 Monitoring

PO #C012200961

DPW Contract File 999-5

Addendum No. 1 - TO 13, PHASE 1 HMP Monitoring Assistances / **Contract #~~536213~~.** 542922
(through 12/31/2012)

Professional Services from September 29, 2012 to October 26, 2012

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Engineer				
Haines, Brian	(20.50)	119.93	(2,458.57)	
Totals	(20.50)		(2,458.57)	
Total Labor				**(2,458.57)**
		Total this Task		**($2,458.57)**

TOTAL INVOICE AMOUNT: **($2,458.57)**

5025-12-0003 : Phase 01
PO line 01
vendor # 884165

04/18/13

PAYMENT DUE UPON RECEIPT

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Monday, November 12, 2012

Environmental Science Associates Invoice 100281 Dated 11/12/2012 2:17:26 PM

Project D211485.01 San Diego HMP Phase 1 Monitoring

Task 0000001 Technical Assistance

Professional Personnel

			Hours	Rate	Amount	
Project Engineer						
10349	Haines, Brian	10/9/2012	(4.00)	119.93	479.72	
	Preperation for meetings with subworkgroup and SDSU. Initial outline of CASQA presentation.					
10349	Haines, Brian	10/15/2012	(8.00)	119.93	959.44	
	Scheduled meetings w/ SDSU, subworkgroup, and Weston.					
10349	Haines, Brian	10/25/2012	(1.00)	119.93	119.93	
	CASQA presentation review, initial figures/flowcharts					
10349	Haines, Brian	10/26/2012	(7.50)	119.93	899.48	
	CASQA presentation preparation.					
	Totals		(20.50)		2,458.57	
	Total Labor					**(2,458.57)**
				Total this Task		**($2,458.57)**
				Total this Project		**($2,458.57)**
				Total this Report		**($2,458.57)**

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

December 05, 2012 (updated: 04/18/2013)
Invoice No: 100664 (Credit)
Project Manager: Brian Haines

Project D211485.01 San Diego HMP Phase 1 Monitoring

PO #C012200961 ✓

DPW Contract File 999-5

Addendum No. 1 - TO 13, PHASE 1 HMP Monitoring Assistances / **Contract #~~538213~~** 542922
(through 12/31/2012)

Professional Services from October 27, 2012 to November 23, 2012

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Engineer				
Haines, Brian	(24.50)	119.93	(2,938.29)	
Totals	(24.50)		(2,938.29)	
Total Labor				**(2,938.29)**
		Total this Task		**($2,938.29)**

TOTAL INVOICE AMOUNT: **($2,938.29)**

04/18/13

9029-12-0003 Phase 01
PO Line 01
Vendor # 884165

PAYMENT DUE UPON RECEIPT

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698360

Billing Backup

Wednesday, December 05, 2012

Environmental Science Associates Invoice 100664 Dated 12/5/2012 5:51:01 PM

Project D211485.01 San Diego HMP Phase 1 Monitoring

Task 0000001 Technical Assistance

Professional Personnel

			Hours	Rate	Amount	
Project Engineer						
10349	Haines, Brian	10/29/2012	(7.00)	119.93	839.51	
	CASQA presentation.					
10349	Haines, Brian	10/30/2012	(4.50)	119.93	539.69	
	CASQA presentation.					
10349	Haines, Brian	11/1/2012	(7.00)	119.93	839.51	
	Second version of the CASQA presentation.					
10349	Haines, Brian	11/2/2012	(5.50)	119.93	659.62	
	Final revision of CASQA presentation and submittal.					
10349	Haines, Brian	11/20/2012	(.50)	119.93	59.96	
	Hydrologic modeling questions from Deb. Review of stations, comments to subworkgroup.					
	Totals		(24.50)		2,938.29	
	Total Labor					**(2,938.29)**

Total this Task **($2,938.29)**

Total this Project **($2,938.29)**

Total this Report **($2,938.29)**

amec

APPENDIX U

Invoice Denied
Per conversation
with Brian Haines
1/7/2013
D.B. Mosley 2/8/13

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Christina Sloan
5510 Overland Avenue, Ste. 410
Mailstop O326
San Diego, CA 92123-1239

File: 985-A

County Contract Number: 542922 (Old contract # 536213)
AMEC Project Number: 5025-12-0003

Invoice Date: 1/25/2013
Task Order Number: 13
Invoice Number: S17670848

SUPPORT OF HMP MONITORING SERVICES WITH SUBCONTRACTOR ESA PWA

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 11/17/2012 - 1/11/2013

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. HMP MONITORING	$22,918.00	78.10%	$17,899.87	$12,503.01	$5,396.86
TOTALS:	$22,918.00	78.10%	$17,899.87	$12,503.01	$5,396.86
AMOUNT DUE THIS BILLING:					**$5,396.86**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

1/28/13

NATHAN SCHAEDLER — DATE
PROJECT MANAGER

Environment & Infrastructure
9177 Sky Park Court
San Diego, CA 92123 USA
Tel: +1 858.278.3600 Fax: +1 858.278.5300

Project : 5025120003 -- County of SD TO#13 HMP Monit FY12 Invoice # : S17670848

Phase : 01 -- HMP Monitoring

Task : **** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	100281	11/12/2012	2,458.57	1.000	2,458.57
ESA PWA	100664	12/05/2012	2,938.29	1.000	2,938.29
			5,396.86		5,396.86
Total : Subcontractor			5,396.86		5,396.86
Total Reimbursable Expenses					*5,396.86*
Total Expenses					*5,396.86*
Total Task : **** - ****					5,396.86

Total Phase : 01 -- HMP Monitoring

Fees :	0.00
Expenses :	5,396.86
Total :	5,396.86

Total Project: 5025120003 -- County of SD TO#13 HMP Monit FY12 5,396.86

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

November 12, 2012
Invoice No: 100281
Project Manager: Brian Haines

Project # 5025-12-0003
Phase = 01
PO Line = 1
Vendor # 884165

Project D211485.01 San Diego HMP Phase 1 Monitoring

PO #C012200961

DPW Contract File 999-5

Addendum No. 1 - TO 13, PHASE 1 HMP Monitoring Assistances / Contract #~~536213~~ 542922
(through 12/31/2012)

Professional Services from September 29, 2012 to October 26, 2012

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Engineer				
Haines, Brian	20.50	119.93	2,458.57	
Totals	20.50		2,458.57	
Total Labor				**2,458.57**
		Total this Task		**$2,458.57**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	2,458.57	12,503.01	14,961.58
Limit			22,918.00
Remaining			7,956.42

TOTAL INVOICE AMOUNT: $2,458.57

MY
DIC
12/05/12

Outstanding Invoices

Number	Date	Balance
99141	8/15/2012	9,350.30
99511	9/14/2012	869.84
99890	10/10/2012	59.97
Total		**10,279.91**

	Current	Prior	Total
Billings to Date	**2,458.57**	**12,503.01**	**14,961.58**

PAYMENT DUE UPON RECEIPT

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Monday, November 12, 2012

Environmental Science Associates Invoice 100281 Dated 11/12/2012 2:17:26 PM

Project D211485.01 San Diego HMP Phase 1 Monitoring

Task 0000001 Technical Assistance

Writeoff 1 hr.

Professional Personnel

			Hours	Rate	Amount
Project Engineer					
10349	Haines, Brian	10/9/2012	4.00	119.93	479.72
	Preperation for meetings with subworkgroup and SDSU. ~~Initial outline of CASQA presentation~~.				
10349	Haines, Brian	10/15/2012	8.00	119.93	959.44
	Scheduled meetings w/ SDSU, subworkgroup, and Weston.				
10349	Haines, Brian	10/25/2012	1.00	119.93	119.93
	CASQA presentation review, initial figures/flowcharts				
10349	Haines, Brian	10/26/2012	7.50	119.93	899.48
	CASQA presentation preparation.				
	Totals		20.50		2,458.57
	Total Labor				**2,458.57**

Move to 211485.00 task 1

Write off.

Total this Task	**$2,458.57**
Total this Project	**$2,458.57**
Total this Report	**$2,458.57**

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Mr. Nathan Schaedler
Business Unit Leader/Senior Principal Engineer
AMEC Environmental & Infrastructure
9177 Sky Park Court
San Diego, CA 92123-4341

December 05, 2012
Invoice No: 100664
Project Manager: Brian Haines

Project # 5025-12-0003
Phase = 01
PO Line = 1
Vendor # 884165

Project D211485.01 San Diego HMP Phase 1 Monitoring

PO #C012200961

DPW Contract File 999-5

Addendum No. 1 - TO 13, PHASE 1 HMP Monitoring Assistances / Contract ~~#536213~~ 542922
(through 12/31/2012)

Professional Services from October 27, 2012 to November 23, 2012

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Engineer				
Haines, Brian	24.50	119.93	2,938.29	
Totals	24.50		2,938.29	
Total Labor				2,938.29
		Total this Task		$2,938.29

Billing Limits	Current	Prior	To-Date
Total Billings	2,938.29	14,961.58	17,899.87
Limit			22,918.00
Remaining			5,018.13

TOTAL INVOICE AMOUNT: $2,938.29

MY OK 12/05/12

Outstanding Invoices

Number	Date	Balance
99511	9/14/2012	869.64
99890	10/10/2012	59.97
100281	11/12/2012	2,458.57
Total		**3,388.18**

	Current	Prior	Total
Billings to Date	2,938.29	14,961.58	17,899.87

PAYMENT DUE UPON RECEIPT

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Wednesday, December 05, 2012
5:51:01 PM

Environmental Science Associates Invoice 100664 Dated 12/5/2012

Project D211485.01 San Diego HMP Phase 1 Monitoring

Task 0000001 Technical Assistance

Write off.

Professional Personnel

			Hours	Rate	Amount
Project Engineer					
10349	Haines, Brian	10/29/2012	7.00	119.93	839.51
	CASQA presentation.				
10349	Haines, Brian	10/30/2012	4.50	119.93	539.69
	CASQA presentation.				
10349	Haines, Brian	11/1/2012	7.00	119.93	839.51
	Second version of the CASQA presentation.				
10349	Haines, Brian	11/2/2012	5.50	119.93	659.62
	Final revision of CASQA presentation and submittal.				
10349	Haines, Brian	11/20/2012	.50	119.93	59.96
	Hydrologic modeling questions from Deb. Review of statiions, comments to subworkgroup.				
	Totals		24.50		2,938.29
	Total Labor				**2,938.29**

Total this Task **$2,938.29**

Total this Project **$2,938.29**

Total this Report **$2,938.29**

Move to 211485.00 task 1

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

537276
CONTRACT/P.O. NO.

Task 7
ACTIVITY/WA NO.

7/3/13
DATE

Christine A. Sloan
PROJECT MANAGER Christine A. Sloan

7/3/13
DATE

DPW MANAGER
Jo Ann T. Weber

Brown AND Caldwell

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego County PWD Watershed Div
5510 Overland Avenue
Suite 410, Mail Stop O-326
San Diego, CA 92123

Project No : 144473

Invoice No : 44195301

Date : July 02, 2013

Attention: Christine A. Sloan

Subject : BMP Sizing Calculator

Billing Period : Inception through June 30, 2013

Progress Billing No : 1

Reference : Authorization Dated : 5/14/2013

Contact : Lisa C Skutecki, PM

Invoiced By : Lindsay B Surlo

BMP Sizing Calculator - Agreement No. 537276 - Task Order 7

I hereby certify that Brown and Caldwell is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed is true.

Victor Y. Occiano Jr., Vice President

P 1002993
O 50915
E 52370
T 001.007
A 100496

OK to pay
$1,518.83

001 -- Hosting and Maintenance

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Lisa C Skutecki	1.50	$ 165.88	248.82
Sr. Geographic Info Systems Analyst			
Noah Wexo	5.50	$ 111.61	613.86
Sub-Total Labor	7.00		$ 862.68
Total Labor			$ 862.68
Total : 001 -- Hosting and Maintenance			$ 862.68

002 -- As-needed Assistance

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Lisa C Skutecki	1.00	$ 165.88	165.88

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego County PWD Watershed Div
5510 Overland Avenue
Suite 410, Mail Stop O-326
San Diego, CA 92123

Project No : 144473

Invoice No : 44195301

Date : July 02, 2013

Attention: Christine A. Sloan

Class/ Employee Name	Hours	Rate	Billing Amount
Senior Technical Expert			
Anthony M Dubin	1.00	$ 199.98	199.98
Sub-Total Labor	2.00		$ 365.86
Total Labor			$ 365.86
Total : 002 -- As-needed Assistance			$ 365.86

003 -- Project Management

LABOR

Class/ Employee Name	Hours	Rate	Billing Amount
Supervising Engineer			
Lisa C Skutecki	1.75	$ 165.88	290.29
Sub-Total Labor	1.75		$ 290.29
Total Labor			$ 290.29
Total : 003 -- Project Management			$ 290.29
Amount Due this Invoice			$ 1,518.83

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Brown and Caldwell
9665 Chesapeake Drive, Suite 201
San Diego, CA 92123
Tel: 858-514-8822, Fax: 858-514-8833

INVOICE

To San Diego County PWD Watershed Div
5510 Overland Avenue
Suite 410, Mail Stop O-326
San Diego, CA 92123

Project No : 144473

Invoice No : 44195301

Date : July 02, 2013

Attention: Christine A. Sloan

Summary of Account

BC Phase	Title	Budget	Total This Invoice	Prior Invoice To Date	Total Invoiced To Date
001 --	Hosting and Maintenance	$ 2,075.00	$ 862.68	$ 0.00	$ 862.68
002 --	As-needed Assistance	$ 1,701.00	$ 365.86	$ 0.00	$ 365.86
003 --	Project Management	$ 1,029.00	$ 290.29	$ 0.00	$ 290.29
	Total :	$ 4,805.00	$ 1,518.83	$ 0.00	$ 1,518.83

Total Paid To Date : $ 0.00

Balance Outstanding : $ 1,518.83

PAYMENT REMIT ADDRESS: Brown and Caldwell, P.O. Box 45208, San Francisco, CA 94145-0208

Payment is due within 30 days of receipt of invoice, interest on the unpaid balance will accrue beginning with the 31st day at the rate of 1.5 percent per month or the maximum interest permitted by law, whichever is lesser.

Billing Detail - Items through 6/30/2013

Brown and Caldwell

Project : 144473 - BMP Sizing Calculator

Bill Cycle 1 Invoice Rpt : INBC15

Phase : 001 -- Hosting and Maintenance

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Supervising Engineer											
Lisa C Slutecki			****	1044	112	****	5/23/2013	5/23/2013	0.25	165.88	41.47
		discussion with allan									
			****	1044	112	****	5/31/2013	6/6/2013	0.25	165.88	41.47
		discussion with Alan									
			****	1044	112	****	6/28/2013	6/30/2013	1.00	165.88	165.88
		Hosting and maintenance teleconference to discuss options and actions. Follow up with Noah and Allan on actions									
									1.50		248.82
Sr. Geographic Info Systems Analyst											
Noah Wexo			****	1044	112	****	6/28/2013	6/30/2013	5.50	111.61	613.86
		meeting, check that the site was operational and being backed up, and set up the internal VM instance for support									
							Total Rate Schedule Labor				*862.68*

Phase : 002 -- As-needed Assistance

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Lisa C Slutecki			****	1044	112	****	6/28/2013	6/30/2013	1.00	165.88	165.88
		Debrief from Tony Dubin on as-needed assistance task. Wrote description in log									
Senior Technical Expert											
Anthony M Dubin			****	1044	111	****	6/14/2013	6/20/2013	1.00	199.98	199.98
		Assisted Jose Gomez of Fiorentina Engineering and Design Studio									
							Total Rate Schedule Labor				*365.86*

Phase : 003 -- Project Management

Rate Schedule Labor Employee Name	OT Ind	EVC	Task	Org	Class	Activity	Transaction Date	Period End Date	Hours	Rate	Amount
Supervising Engineer											
Lisa C Slutecki			****	1044	112	****	5/21/2013	5/23/2013	0.25	165.88	41.47
		open projects									
Lisa C Slutecki			****	1044	112	****	6/28/2013	6/30/2013	1.50	165.88	248.82
		Project management -- emails with client and invoicing									
									1.75		290.29
							Total Rate Schedule Labor				*290.29*

Total Project : 144473 - BMP Sizing Calculator 1,518.83

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**
Subtask 1.A.Meeting Support / 2.A. MOU Obligations				
Contract 534079 TO 9 [RBF As-Needed Contract] April 2012		$ 239.86	11/26/2012	$ 11.99
Contract 534079 TO 28 [RBF As-Needed Contract] October 2012		$ 3,118.18	2/13/2013	$ 155.91
Contract 534079 TO 28 [RBF As-Needed Contract] November 2012		$ 1,019.41	2/13/2013	$ 50.97
Contract 534079 TO 28 [RBF As-Needed Contract] December 2012		$ 1,019.41	2/13/2013	$ 50.97
Contract 534079 TO 28 [RBF As-Needed Contract] January 2013		$ 119.93	2/26/2013	$ 6.00
Contract 534079 TO 28 [RBF As-Needed Contract] February 2013		$ 299.82	3/22/2013	$ 14.99
Contract 534079 TO 28 [RBF As-Needed Contract] March 2013		$ 779.55	4/25/2013	$ 38.98
Contract 534079 TO 28 [RBF As-Needed Contract] April 2013		$ 1,139.34	5/31/2013	$ 56.97
Contract 534079 TO 28 [RBF As-Needed Contract] May 2013		$ 2,030.12	6/24/2013	$ 101.51
Contract 534079 TO 28 [RBF As-Needed Contract] June 2013		$ 3,807.72	8/12/2013	$ 190.39
Contract 534079 TO 20 [RBF As-Needed Contract] July 2012		$ 2,962.93	2/7/2013	$ 148.15
Contract 534079 TO 20 [RBF As-Needed Contract] August 2012		$ 968.21	2/7/2013	$ 48.41
Subtask1.A./2.A. Sub-total	$ 17,504.48			
Subtask1.A./2.A. Management Cost	$ 875.22			
Subtask 3.A Weston Monitoring				
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] August 2012		$ 3,314.99	10/10/2012	$ 165.75
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] July 2012		$ 3,268.64	10/10/2012	$ 163.43
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] September 2012		$ 1,378.23	11/26/2012	$ 68.91
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] December 2013		$ 29,573.70	2/19/2013	$ 1,478.69
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] January 2013		$ 15,291.66	3/12/2013	$ 764.58
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] March 2013		$ 35,632.43	5/24/2013	$ 1,781.62
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] April 2013		$ 45,944.30	6/24/2013	$ 2,297.22
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] May 2013		$ 28,389.19	8/12/2013	$ 1,419.46
Subtask 3.A Weston Monitoring Sub-total	$ 162,793.14			
Subtask 3.A Weston Monitoring Management Cost	$ 8,139.66			
Subtask 3.A ESA PWA Assistance and Surveys				
Contract 526934 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] July - August 2012		$ 5,815.30	10/8/2012	$ 290.77
Contract 526934 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Aug - Sep 2012		$ 3,409.24	11/19/2012	$ 170.46
Contract 536213 TO 13 [ESA PWA Sub under AMEC As-Needed Contract] Feb - Oct 2012		$ 2,223.10	11/19/2012	$ 111.16
Contract 536213 TO 13 [ESA PWA Sub under AMEC As-Needed Contract] Sept - Oct 2012		$ 10,219.94	11/19/2012	$ 511.00
Contract 542922 TO 13 [ESA PWA Sub under AMEC As-Needed Contract] Oct - Nov 2012		$ 59.97	1/7/2013	$ 3.00
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Oct - Nov 2012		$ 14,468.99	1/7/2013	$ 723.45
Contract 542922 TO 16 [ESA PWA Sub under AMEC As-Needed Contract] Oct - Nov 2012		$ 8,515.82	2/8/2013	$ 425.79
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Nov - Dec 2012		$ 3,753.68	2/8/2013	$ 187.68
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Sep - Oct 2012		$ 7,641.10	2/8/2013	$ 382.06
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Dec '12 - Jan '13		$ 235.12	2/14/2013	$ 11.76
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Jan '13 - Feb '13		$ 1,351.94	3/12/2013	$ 67.60
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Mar - Apr 2013		$ 2,762.66	6/7/2013	$ 138.13
Contract 542922 TO 25 [ESA PWA Sub under AMEC As-Needed Contract] Feb - June 2013		$ 21,702.26	8/12/2013	$ 1,085.11
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Feb - Mar 2013		$ 2,468.76	8/12/2013	$ 123.44
Subtask 3.A ESA PWA Assistance and Surveys Su	$ 84,627.88			
Subtask 3.A ESA PWA Assistance and Surveys Ma	$ 4,231.39			
Subtask 3.A SCCWRP/SDSU Study				
Contract 542922 TO 22 [SCCWRP Sub under AMEC As-Needed Contract] Jan - June 2013		$ 2,490.00	8/12/2013	$ 124.50
Subtask 3.A SCCWRP/SDSU Study Sub-total	$ 2,490.00			
Subtask 3.A SCCWRP/SDSU Study Management C	$ 124.50			
Subtask 3.B HMP&SUSMP Training				
				$ -
				$ -
Subtask3.B Sub-total	$ -			
Subtask3.B Management Cost	$ -			
Subtask 3.C BMP Sizing Calculator Updates				
Contract 537276 TO 7 [Brown and Caldwell As-Needed Contract] May - June 2013		$ 1,518.83	8/12/2013	$ 75.94
				$ -
Subtask3.C Sub-total	$ 1,518.83			
Subtask3.C Management Cost	$ 75.94			
Subtask 3.D Improved HMP Guidance				
				$ -
				$ -
Subtask3.D Sub-total	$ -			
Subtask3.D Management Cost	$ -			
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]		$ -	x/x/2010	
Sub-total Other Expenditures	$ -			
Total Expenditures (Including contract management cost)		**$ 282,381.05**		

LDW Meeting 8/28/13

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ **282,381.05**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Deborah Mosley
Land Use Environmental Planner
County of San Diego, Department of Public Works

9/3/2013
Date

Deborah Mosley
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2012-13 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Chrsitine Sloan
Program Coordinator
County of San Diego, Department of Public Works

9/3/2013
Date

Christine A. Sloan
Signature

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COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Program Planning Subcommittee
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	**$ -**
Contract / Other Expenditures Claimed:	**$ 307,670.98**

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Sheri McPherson
Land Use and Environmental Planner III
County of San Diego

Date _____ Signature _____

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Todd Snyder
Land Use and Environment Manager
County of San Diego

Date _____ Signature _____

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 1 &2. [meeting and MOU obligation support]				
Contract 534079 [RBF, Task Order 24], 12070254	$ 6,552.52	8/24/2012	$ 327.63	Hilary Potters support of the PPS workgroup
Contract 534079 [RBF, Task Order 24], 12080429	$ 6,584.53	9/28/2012	$ 329.23	
Contract 534079 [RBF, Task Order 24], 12090371	$ 2,460.26	10/19/2012	$ 123.01	
Contract 534079 [RBF, Task Order 24], 1837451	$ 5,052.71	1/4/2013	$ 252.64	
Contract 534079 [RBF, Task Order 24], 837454	$ 562.50	1/4/2013	$ 28.13	
Contract 534079 [RBF, Task Order 24], 839185	$ 2,796.54	1/29/2013	$ 139.83	
Contract 534079 [RBF, Task Order 24], 839847	$ 1,390.27	2/7/2013	$ 69.51	
Contract 534079 [RBF, Task Order 24], 843145	$ 173.08	3/15/2013	$ 8.65	
Contract 534079 [RBF, Task Order 24], 848491	$ 1,211.56	5/20/2013	$ 60.58	
Contract 534079 [RBF, Task Order 24], 852126	$ 540.88	6/28/2013	$ 27.04	
Subtask 1&2 Sub-total $ 27,324.85				
Subtask 1&2 Management Cost $ 1,366.24				
Subtask 3.A. Permit Reissuance Support -Facilitation Services				
Contract 537276 [Facilitation Services [B&C TO06] 44179470	$ 5,799.44	10/23/2012	$ 289.97	
Contract 537276 [Facilitation Services [B&C TO06] 44180394	$ 1,499.87	11/7/2012	$ 74.99	
Contract 537276 [Facilitation Services [B&C TO06] 44181906	$ 1,549.86	11/30/2012	$ 77.49	
Contract 537276 [Facilitation Services [B&C TO06] 44186000	$ 1,599.84	2/5/2013	$ 79.99	
Subtask 3.A Sub-total $ 10,449.01				
Subtask 3.A Management Cost $ 522.45				
Subtask 3.A. Permit Reissuance Support - support for Monitoring				
Contract 534079 [RBF Task Order 21] 12070278	$ 908.84	8/24/2012	$ 45.44	
Contract 534079 [RBF Task Order 21] 12080229	$ 16,359.83	9/28/2012	$ 817.99	
Contract 534079 [RBF Task Order 21] 12090378	$ 2,596.59	10/19/2012	$ 129.83	
Contract 534079 [RBF Task Order 21] 840863	$ 2,333.25	2/20/2013	$ 116.66	

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COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask 3.A Sub-total	$ 22,198.51			
Subtask 3.A Management Cost	$ 1,109.93			
Subtask 3.A. Permit Reissuance Support -Supoprt and Integration				
Contract 536213 [AMEC Task Order 17] S17670476	$ 11,741.47	8/31/2012	$ 587.07	
Contract 536213 [AMEC Task Order 17] S17670550	$ 18,443.64	9/1/2812	$ 922.18	
Contract 536213 [AMEC Task Order 17] S17670607	$ 22,841.46	10/26/2012	$ 1,142.07	
Contract 536213 [AMEC Task Order 17] S17671004	$ 5,544.00	3/29/2013	$ 277.20	
Contract 536213 [AMEC Task Order 17] S17670705	$ 17,809.26	11/30/2012	$ 890.46	
Subtask 3.A Sub-total	$ 76,379.83			
Subtask 3.A Management Cost	$ 3,818.99			
Subtask 3.A. Permit Reissuance Support -Monitoring				
Contract 536213 [AMEC Task Order 20] S17670581	$ 10,218.43	9/28/2012	$ 510.92	
Contract 536213 [AMEC Task Order 20] S17670609	$ 15,465.16	10/26/2013	$ 773.26	
Contract 536213 [AMEC Task Order 20] S17670838	$ 25,471.80	1/25/2013	$ 1,273.59	
Contract 536213 [AMEC Task Order 20] S17670916	$ 3,384.48	2/22/2013	$ 169.22	
Contract 536213 [AMEC Task Order 20] S22720000	$ 2,467.85	4/26/2013	$ 123.39	
Subtask 3.A Sub-total	$ 57,007.72			
Subtask 3.A Management Cost	$ 2,850.39			
Subtask 3.A. Permit Reissuance Support -Round 2 Permit Support				
Contract 542922 [AMEC Task Order 21] S17670837	$ 28,645.22	1/25/2013	$ 1,432.26	
Contract 542922 [AMEC Task Order 21] S17670913	$ 12,554.26	2/22/2013	$ 627.71	
Contract 542922 [AMEC Task Order 21] S17671006	$ 2,070.75	3/29/2013	$ 103.54	
Contract 542922 [AMEC Task Order 21] S22720020	$ 10,396.31	4/26/2013	$ 519.82	
Contract 542922 [AMEC Task Order 21] S22720044	$ 1,373.23	5/31/2013	$ 68.66	
Contract 542922 [AMEC Task Order 21] S22720080	$ 28,620.29	6/21/2013	$ 1,431.01	
Subtask 3.A Sub-total	$ 83,660.06			
Subtask 3.A Management Cost	$ 4,183.00			
Subtask 3.A. Permit Reissuance Support -Update Monitorign Cost Estimates				
Contract 534965 [Weston Task Order 08] NOV112-03257	$ 3,245.00	11/12/2012	$ 162.25	
Contract 534965 [Weston Task Order 08] DEC2012-02339	$ 4,944.30	11/7/2012	$ 247.22	
Contract 534965 [Weston Task Order 08] FEB2013-02501	$ 1,256.25	2/7/2013	$ 62.81	
Contract 534965 [Weston Task Order 08] JUL2013-01933	$ 6,554.45	11/30/2012	$ 327.72	
Subtask 3.A Sub-total	$ 16,000.00			
Subtask 3.A Management Cost	$ 800.00			
Total Expenditures (Including contract management cost)	**$ 307,670.98**			

Final 04-30-09

Year-end Accounting Summary for FY 2012-13 Regional Shared Costs

FY 2012-13 Expenditure Summary	FY 12-13 Budget	Summary of Expenditures	Unspent Budget	Carryover Request
Program Planning Subcommittee (PPS)	$ 465,988	$ 307,671	$ 158,317	$ -
Education/ Residential Sources Workgroup	$ 138,040	$ 138,040		$ -
Monitoring Workgroup	$ 2,507,440	$ 2,024,588	$ 482,852	$ 298,279
Land Development Workgroup	$ 438,161	$ 282,381	$ 155,780	$ 511,280
Industrial/ Commercial Sources Workgroup	$ 13,645	$ 1,035	$ 12,610	$ -
Other Expenditures (CASQA)	$ 20,500	$ 20,500		$ -
Totals	**$ 3,583,774**	**$ 2,774,215**	**$ 809,559**	**$ 809,559**

Summary of Requested Carryover Tasks	Carryover Request	Carryover Tasks
Monitoring Workgroup	$ 298,279	Task 2.2.B Regional Monitoring Program: $272,169
		Task 2.2.E Bacteria Soure Tracking Study: $26,110
Land Development Workgroup	$ 511,280	Task 3.A HMP Monitoring: $152,125
		Task 3.B HMP Sizing Calculator: $3,655
		Task 3.D Alternative Compliance Framework: $355,500*

* Please note that once all the expenditures were finalized by the workgroups the final unspent budget was higher than estimated during our discussions at the Program Planning Subcommittee meeting.

FY 2012-13 Expenditure Summary as of 09/06/13

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2012-13 (July 1, 2012 - Jun 30, 2013)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**
Subtask 1.A.Meeting Support / 2.A. MOU Obligations				
Contract 534079 TO 9 [RBF As-Needed Contract] April 2012		$ 239.86	11/26/2012	$ 11.99
Contract 534079 TO 28 [RBF As-Needed Contract] October 2012		$ 3,118.18	2/13/2013	$ 155.91
Contract 534079 TO 28 [RBF As-Needed Contract] November 2012		$ 1,019.41	2/13/2013	$ 50.97
Contract 534079 TO 28 [RBF As-Needed Contract] December 2012		$ 1,019.41	2/13/2013	$ 50.97
Contract 534079 TO 28 [RBF As-Needed Contract] January 2013		$ 119.93	2/26/2013	$ 6.00
Contract 534079 TO 28 [RBF As-Needed Contract] February 2013		$ 299.82	3/22/2013	$ 14.99
Contract 534079 TO 28 [RBF As-Needed Contract] March 2013		$ 779.55	4/25/2013	$ 38.98
Contract 534079 TO 28 [RBF As-Needed Contract] April 2013		$ 1,139.34	5/31/2013	$ 56.97
Contract 534079 TO 28 [RBF As-Needed Contract] May 2013		$ 2,030.12	6/24/2013	$ 101.51
Contract 534079 TO 28 [RBF As-Needed Contract] June 2013		$ 3,807.72	8/12/2013	$ 190.39
Contract 534079 TO 20 [RBF As-Needed Contract] July 2012		$ 2,962.93	2/7/2013	$ 148.15
Contract 534079 TO 20 [RBF As-Needed Contract] August 2012		$ 968.21	2/7/2013	$ 48.41
Subtask1.A./2.A. Sub-total	$ 17,504.48			
Subtask1.A./2.A. Management Cost	$ 875.22			
Subtask 3.A Weston Monitoring				
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] August 2012		$ 3,314.99	10/10/2012	$ 165.75
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] July 2012		$ 3,268.64	10/10/2012	$ 163.43
Contract 534079 TO 18 [Weston Sub under RBF As-Needed Contract] September 2012		$ 1,378.23	11/26/2012	$ 68.91
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] December 2013		$ 29,573.70	2/19/2013	$ 1,478.69
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] January 2013		$ 15,291.66	3/12/2013	$ 764.58
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] March 2013		$ 35,632.43	5/24/2013	$ 1,781.62
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] April 2013		$ 45,944.30	6/24/2013	$ 2,297.22
Contract 534079 TO 27 [Weston Sub under RBF As-Needed Contract] May 2013		$ 28,389.19	8/12/2013	$ 1,419.46
Subtask 3.A Weston Monitoring Sub-total	$ 162,793.14			
Subtask 3.A Weston Monitoring Management Cost	$ 8,139.66			
Subtask 3.A ESA PWA Assistance and Surveys				
Contract 526934 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] July - August 2012		$ 5,815.30	10/8/2012	$ 290.77
Contract 526934 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Aug - Sep 2012		$ 3,409.24	11/19/2012	$ 170.46
Contract 536213 TO 13 [ESA PWA Sub under AMEC As-Needed Contract] Feb - Oct 2012		$ 2,223.10	11/19/2012	$ 111.16
Contract 536213 TO 13 [ESA PWA Sub under AMEC As-Needed Contract] Sept - Oct 2012		$ 10,219.94	11/19/2012	$ 511.00
Contract 542922 TO 13 [ESA PWA Sub under AMEC As-Needed Contract] Oct - Nov 2012		$ 59.97	1/7/2013	$ 3.00
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Oct - Nov 2012		$ 14,468.99	1/7/2013	$ 723.45
Contract 542922 TO 16 [ESA PWA Sub under AMEC As-Needed Contract] Oct - Nov 2012		$ 8,515.82	2/8/2013	$ 425.79
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Nov - Dec 2012		$ 3,753.68	2/8/2013	$ 187.68
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Sep - Oct 2012		$ 7,641.10	2/8/2013	$ 382.06
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Dec '12 - Jan '13		$ 235.12	2/14/2013	$ 11.76
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Jan '13 - Feb '13		$ 1,351.94	3/12/2013	$ 67.60
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Mar - Apr 2013		$ 2,762.66	6/7/2013	$ 138.13
Contract 542922 TO 25 [ESA PWA Sub under AMEC As-Needed Contract] Feb - June 2013		$ 21,702.26	8/12/2013	$ 1,085.11
Contract 542923 TO 18 [ESA PWA Sub under AMEC As-Needed Contract] Feb - Mar 2013		$ 2,468.76	8/12/2013	$ 123.44
Subtask 3.A ESA PWA Assistance and Surveys Su	$ 84,627.88			
Subtask 3.A ESA PWA Assistance and Surveys Ma	$ 4,231.39			
Subtask 3.A SCCWRP/SDSU Study				
Contract 542922 TO 22 [SCCWRP Sub under AMEC As-Needed Contract] Jan - June 2013		$ 2,490.00	8/12/2013	$ 124.50
Subtask 3.A SCCWRP/SDSU Study Sub-total	$ 2,490.00			
Subtask 3.A SCCWRP/SDSU Study Management C	$ 124.50			
Subtask 3.B HMP&SUSMP Training				
				$ -
				$ -
Subtask3.B Sub-total	$ -			
Subtask3.B Management Cost	$ -			
Subtask 3.C BMP Sizing Calculator Updates				
Contract 537276 TO 7 [Brown and Caldwell As-Needed Contract] May - June 2013		$ 1,518.83	8/12/2013	$ 75.94
				$ -
Subtask3.C Sub-total	$ 1,518.83			
Subtask3.C Management Cost	$ 75.94			
Subtask 3.D Improved HMP Guidance				
				$ -
				$ -
Subtask3.D Sub-total	$ -			
Subtask3.D Management Cost	$ -			
B. Other Direct Expenditures (list by Working Body Task or Sub-task)				
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]		$ -	x/x/2010	
Sub-total Other Expenditures	$ -			
Total Expenditures (Including contract management cost)		**$ 282,381.05**		

LDW Meeting 8/28/13

WESTON SOLUTIONS, INC.
CONSULTANT BUDGET FOR MONITORING FY2012-2013
CONTRACT No. 535693
Regional Monitoring Budget for 2012-2013

TASK	Task Description	Budgets	Invoiced Amount thru 6/30/2013	O/S Invoices from Subs thru 6/30/2013	Total Invoiced through 6/30/2013	Estimated Effort to be invoiced after 7/1/13	Estimated Effort at Project Completion	Remaining Budget at Completion (Overall, funds to be reimbursed)	COMMENTS
1	Mass Loading Stations	$1,121,404.00	$1,066,878.75	$15,926.70	$1,082,805.45	$10,000.00	$1,092,805.45	$28,598.55	Estimate of unused funds due to dry site at SDC-TWAS-2 during the entire year. Accounts for approximately 2 wet and 2 dry events for 1 site for chemistry, toxicity, and bacteria analytical tests.
2	Stream Bioassessment	$223,874.00	$76,596.68	$0.00	$76,596.68	$147,277.32	$223,874.00	$0.00	
3	Toxicity Identification Analyses	$33,167.00	$8,707.00	$0.00	$8,707.00	$0.00	$8,707.00	$24,460.00	Only one TIE was required during the 2012-13 PY.
4	Ambient Bay & Lagoon Monitoring	$128,970.00	$32,039.58	$0.00	$32,039.58	$96,930.42	$128,970.00	$0.00	
6	Pyrethroids Monitoring	$19,662.00	$18,309.75	$0.00	$18,309.75	$0.00	$18,309.75	$1,352.25	Unused funds due to dry conditions at SDC-TWAS-2
7	MS4 Outfall Monitoring	$183,436.00	$183,426.53	$0.00	$183,426.53	$0.00	$183,426.53	$9.47	
8	Source ID Monitoring	$100,000.00	$81,774.66	$0.00	$81,774.66	$5,000.00	$86,774.66	$13,225.34	Estimated funds remaining due to efficiencies gained from coordinated monitoring events.
10	Annual Scope of Work to RWQCB	$2,000.00	$1,900.00	$0.00	$1,900.00	$0.00	$1,900.00	$100.00	Task Complete
Total		**$1,812,513.00**	**$1,469,632.95**	**$15,926.70**	**$1,485,559.65**	**$259,207.74**	**$1,744,767.39**	**$67,745.61**	

Carry Over to 13-14 Reimburse or Redirect

WESTON SOLUTIONS
Reporting Contract # 526933

TASK	Task Description	Budgets	Invoiced Amount thru 6/30/2013	O/S Invoices from Subs thru 6/30/2013	Total Invoiced through 6/30/2013	Estimated Effort to be invoiced after 7/1/13	Estimated Effort at Project Completion	Remaining Budget at Completion (Overall, funds to be reimbursed or redirected)
1	Meetings/Presentations	$36,030.00	$28,530.45	$0.00	$28,530.45	$0.00	$28,530.45	$7,499.55
2	Rcv Waters Maps/Tabs	$61,320.00	$57,584.60	$0.00	$57,584.60	$0.00	$57,584.60	$3,735.40
3	3rd Party Data Review	$15,800.00	$12,840.00	$0.00	$12,840.00	$0.00	$12,840.00	$2,960.00
4	MS4 Maps/Tables	$72,160.00	$66,916.60	$0.00	$66,916.60	$0.00	$66,916.60	$5,243.40
5	WMA Assess/Draft	$131,853.00	$94,067.00	$0.00	$94,067.00	$0.00	$94,067.00	$37,786.00
6	Comments/Final Rpt	$36,600.00	$35,587.50	$0.00	$35,587.50	$0.00	$35,587.50	$1,012.50
7	Coastal Drain Rpt	$12,000.00	$11,960.80	$0.00	$11,960.80	$0.00	$11,960.80	$39.20
Total	Permit Reissuance							$0.00
		$365,763.00	**$307,486.95**	**$0.00**	**$307,486.95**	**$0.00**	**$307,486.95**	**$58,276.05**

Carry Over to 13-14 Reimburse or redirect

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Monitoring Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 201~~3~~4-1~~4~~5 (July 1, 201~~3~~4 - Jun 30, 201~~4~~5)
Expenditure Type(s):	Hourly Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 2,612,528.05

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Joanna Wisniewska
Land Use Environmental Planner III
County of San Diego Dept. of Public Works WPP

11/3/2015
Date

Signature

12835

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2014-15 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Land Use Environmental Planning Manaber
County of San Diego Dept. of Public Works WPP

11/3/2015
Date

Signature

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Monitoring Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2013-14 (July 1, 2013 - Jun 30, 2014)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 1.A Regional Monitoring Workgroup Meeting Support				
Weston Solutions SD Municipal Copermittees Regional Water Quality Reporting / 534965		x/x/2010	$ -	
Invoice AUG2014-02284	$ 2,266.00		$ 113.30	
Invoice SEP2014-02810	$ 3,145.00		$ 157.25	
Invoice OCT2014-02877	$ 3,805.00		$ 190.25	
Invoice NOV2014-02513	$ 1,652.50		$ 82.63	
Invoice DEC2014-02207	$ 6,511.36		$ 325.57	
Invoice FEB2015-02877	$ 4,409.50		$ 220.48	
Invoice MAY2015-02044	$ 1,433.50		$ 71.68	
Invoice JUN2015-03286	$ 80.00		$ 4.00	
	$ -		$ -	
Subtask 1.A Sub-total $ 23,302.86				
Subtask 1.A Management Cost $ 1,165.14				
Subtask 2.A Regional Monitoring Program				
Weston Solutions SD Municipal Stormwater Copermittees Regional Monitoring Services / 535693		x/x/2010	$ -	
Invoice NOV2014-03647	$ 65,635.66		$ 3,281.78	FY 13-14 Copermittee Budget
Invoice AUG2014-02971	$ 38,545.95		$ 1,927.30	
Invoice SEP2014-02843	$ 70,815.01		$ 3,540.75	
Invoice OCT2014-03020	$ 219,798.28		$ 10,989.91	
Invoice NOV2014-03640	$ 80,909.81		$ 4,045.49	
Invoice DEC2014-03616	$ 175,592.82		$ 8,779.64	
Invoice JAN2015-03553	$ 185,135.61		$ 9,256.78	
InvoiceFEB2015-03114	$ 116,017.98		$ 5,800.90	
InvoiceMAR2015-03523	$ 162,577.35		$ 8,128.87	
InvoiceAPR2015-01670	$ 104,903.91		$ 5,245.20	
InvoiceMAY2015-04522	$ 190,768.17		$ 9,538.41	
InvoiceJUN2015-01716	$ 41,926.53		$ 2,096.33	
InvoiceJUL2015-01957	$ 368,177.62		$ 18,408.88	
Subtask 2.A Sub-total $ 1,820,804.70				
Subtask 2.A Management Cost $ 91,040.24				
Subtask 2.B Regional Reporting Program				
Weston Solutions SD Municipal Copermittees Regional Water Quality Reporting / 534965		x/x/2010	$ -	
Invoice AUG2014-02284	$ 62,221.00		$ 3,111.05	
Invoice SEP2014-02810	$ 69,263.50		$ 3,463.18	
Invoice OCT2014-02877	$ 88,767.00		$ 4,438.35	
Invoice NOV2014-02513	$ 118,498.86		$ 5,924.94	
Invoice DEC2014-02207	$ 93,100.25		$ 4,655.01	
Invoice FEB2015-02877	$ 102,948.48		$ 5,147.42	
Invoice MAY2015-02044	$ 4,580.00		$ 229.00	
Invoice JUN2015-03286	$ 110.00		$ 5.50	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

		$ -		$ -	
		$ -		$ -	
Subtask 2.B Sub-total	$ 539,489.09				
Subtask 2.B Management Cost	$ 26,974.45				
Subtask 2.C Reference Study					
Southern California Coastal Water Research Project / Agreement 543771			x/x/2010	$ -	
Invoice 2884		$ 39,366.48		$ 1,968.32	
Invoice 2796		$ 65,158.82		$ 3,257.94	
		$ -		$ -	
Subtask 2.B Sub-total	$ 104,525.30				
Subtask 2.B Management Cost	$ 5,226.27				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK		$ -	x/x/2010		
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
		$ -			
Sub-total Other Expenditures	$ -				
Total Expenditures (including contract management cost)		**$ 2,612,528.05**			

WTC 8/15

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AUG 13 2014

SIGNATURE Cheryl Newell
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Rel 30

PROFESSIONAL SERVICES RENDERED FOR FY2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 08/06/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.114
INVOICE NUMBER: AUG2014-02284
BILLING PERIOD: 07/01/2014 TO 08/01/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	FY 2014-2015 REPORTING					
0001	WATERSHED MONITORING WORKGROUP MEETINGS/PRESENTATION	23,240.00	2,266.00	2,266.00		
0002	RECEIVING WATER DATA ANALYSIS, TABLES, TRENDS AND MAPPING	77,100.00	24,388.00	24,388.00		
0003	THIRD PARTY DATA PROCESSING	13,240.00	0.00	0.00		
0004	MS4 DATA ANALYSIS, TABLES AND MAPPING	70,020.00	9,320.00	9,320.00		
0005	TRANISTIONAL WET WEATHER MS4 OUTFALL MODELING	57,640.00	4,349.00	4,349.00		
0006	WRITING, WMA ASSESSMENTS AND DRAFT REPORT	116,520.00	8,062.00	8,062.00		
0007	RESPONSE TO COMMENTS, FINAL EDITING AND FINAL REPORT	43,750.00	0.00	0.00		
0008	RECEIVING WATER AND MS4 DATA UPLOAD TO CEDEN	14,000.00	0.00	0.00		
0009	BIOASSESSMENT REPORTING	16,232.00	0.00	0.00		
0010	BIGHT '13 REPORTING	66,508.00	8,415.00	8,415.00		
0011	MS4 PROGRAM 5-YEAR ASSESSMENT	26,104.00	0.00	0.00		
0012	SEDIMENT MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN	34,340.00	7,687.00	7,687.00		
TOTAL		**558,694.00**	**64,487.00**	**64,487.00**	**11.54%**	**494,207.00**

CURRENT AMOUNT DUE 64,487.00

P: 1003993
O: 50915
E: 52370
T: 001.017
A: 100496
OK to Pay
Approved by: Jo Ann Weber
Approved by: Jo Ann Weber
August 13, 2014 Jo Ann Weber PWR. PWG. (PB/5Aug2014.1

05P-0606 2/12

INVOICE

12839

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SEP 18 2014

SIGNATURE Cheryl Nemel
PRINT Cheryl Nemel

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 09/12/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.114
INVOICE NUMBER: SEP2014-02810
BILLING PERIOD: 08/02/2014 TO 08/29/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	FY 2014-2015 REPORTING					
0001	WATERSHED MONITORING WORKGROUP MEETINGS/PRESENTATION	23,240.00	3,145.00	5,411.00		
0002	RECEIVING WATER DATA ANALYSIS, TABLES, TRENDS AND MAPPING	77,100.00	18,003.00	42,391.00		
0003	THIRD PARTY DATA PROCESSING	13,240.00	0.00	0.00		
0004	MS4 DATA ANALYSIS, TABLES AND MAPPING	70,020.00	15,001.50	24,321.50		
0005	TRANISTIONAL WET WEATHER MS4 OUTFALL MODELING	57,640.00	11,345.00	15,694.00		
0006	WRITING, WMA ASSESSMENTS AND DRAFT REPORT	116,520.00	15,528.00	23,590.00		
0007	RESPONSE TO COMMENTS, FINAL EDITING AND FINAL REPORT	43,750.00	0.00	0.00		
0008	RECEIVING WATER AND MS4 DATA UPLOAD TO CEDEN	14,000.00	0.00	0.00		
0009	BIOASSESSMENT REPORTING	16,232.00	0.00	0.00		
0010	BIGHT '13 REPORTING	66,508.00	272.00	8,687.00		
0011	MS4 PROGRAM 5-YEAR ASSESSMENT	26,104.00	0.00	0.00		
0012	SEDIMENT MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN	34,340.00	9,114.00	16,801.00		
TOTAL		**558,694.00**	**72,408.50**	**136,895.50**	**24.50%**	**421,798.50**

CURRENT AMOUNT DUE 72,408.50

OK to pay
JoAnn T. Webster
JoAnn T. Webster
9/25/14

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by:

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OCT 17 2014

SIGNATURE Cheryl Newell
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 10/10/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.114
INVOICE NUMBER: OCT2014-02877
BILLING PERIOD: 08/30/2014 TO 10/03/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	FY 2014-2015 REPORTING					
0001	WATERSHED MONITORING WORKGROUP MEETINGS/PRESENTATION	23,240.00	3,805.00	9,216.00		
0002	RECEIVING WATER DATA ANALYSIS, TABLES, TRENDS AND MAPPING	77,100.00	23,467.00	65,858.00		
0003	THIRD PARTY DATA PROCESSING	13,240.00	80.00	80.00		
0004	MS4 DATA ANALYSIS, TABLES AND MAPPING	70,020.00	21,805.00	46,126.50		
0005	TRANISTIONAL WET WEATHER MS4 OUTFALL MODELING	57,640.00	11,217.50	26,911.50		
0006	WRITING, WMA ASSESSMENTS AND DRAFT REPORT	116,520.00	16,814.50	40,404.50		
0007	RESPONSE TO COMMENTS, FINAL EDITING AND FINAL REPORT	43,750.00	0.00	0.00		
0008	RECEIVING WATER AND MS4 DATA UPLOAD TO CEDEN	14,000.00	0.00	0.00		
0009	BIOASSESSMENT REPORTING	16,232.00	0.00	0.00		
0010	BIGHT '13 REPORTING	66,508.00	0.00	8,687.00		
0011	MS4 PROGRAM 5-YEAR ASSESSMENT	26,104.00	2,200.00	2,200.00		
0012	SEDIMENT MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN	34,340.00	13,183.00	29,984.00		
TOTAL		**558,694.00**	**92,572.00**	**229,467.50**	**41.07%**	**329,226.50**

CURRENT AMOUNT DUE 92,572.00

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Joanna Wisniewska 10/23/2014
Approved by: Jo Ann Weber 10/24/14

05P-0606 2/12

INVOICE 12841

WESTON SOLUTIONS

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NOV 20 2014

SIGNATURE
PRINT Joanna Wiśniewska

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 11/14/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.114
INVOICE NUMBER: NOV2014-02513
BILLING PERIOD: 10/04/2014 TO 10/31/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	FY 2014-2015 REPORTING					
0001	WATERSHED MONITORING WORKGROUP MEETINGS/PRESENTATION	23,240.00	1,652.50	10,868.50		
0002	RECEIVING WATER DATA ANALYSIS, TABLES, TRENDS AND MAPPING	77,100.00	11,225.50	77,083.50		
0003	THIRD PARTY DATA PROCESSING	13,240.00	2,305.00	2,385.00		
0004	MS4 DATA ANALYSIS, TABLES AND MAPPING	70,020.00	23,843.00	69,969.50		
0005	TRANISTIONAL WET WEATHER MS4 OUTFALL MODELING	57,640.00	20,229.50	47,141.00		
0006	WRITING, WMA ASSESSMENTS AND DRAFT REPORT	116,520.00	51,279.86	91,684.36		
0007	RESPONSE TO COMMENTS, FINAL EDITING AND FINAL REPORT	43,750.00	0.00	0.00		
0008	RECEIVING WATER AND MS4 DATA UPLOAD TO CEDEN	14,000.00	0.00	0.00		
0009	BIOASSESSMENT REPORTING	16,232.00	560.00	560.00		
0010	BIGHT '13 REPORTING	66,508.00	2,230.00	10,917.00		
0011	MS4 PROGRAM 5-YEAR ASSESSMENT	26,104.00	2,920.00	5,120.00		
0012	SEDIMENT MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN	34,340.00	3,906.00	33,890.00		
TOTAL		**558,694.00**	**120,151.36**	**349,618.86**	**62.58%**	**209,075.14**

CURRENT AMOUNT DUE 120,151.36

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: J. Weber, JoAnn T. Weber 12/1/2014
Joanna Wiśniewska 11/26/2014

WESTON SOLUTIONS

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DPW - WPP
DEC 05 2014
SIGNATURE
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 12/2/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.114
INVOICE NUMBER: DEC2014-02207
BILLING PERIOD: 11/01/2014 TO 11/28/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	FY 2014-2015 REPORTING					
0001	WATERSHED MONITORING WORKGROUP MEETINGS/PRESENTATION	23,240.00	6,511.36	17,379.86		
0002	RECEIVING WATER DATA ANALYSIS, TABLES, TRENDS AND MAPPING	77,100.00	0.00	77,083.50		
0003	THIRD PARTY DATA PROCESSING	13,240.00	8,182.00	10,567.00		
0004	MS4 DATA ANALYSIS, TABLES AND MAPPING	70,020.00	0.00	69,969.50		
0005	TRANISTIONAL WET WEATHER MS4 OUTFALL MODELING	57,640.00	10,487.00	57,628.00		
0006	WRITING, WMA ASSESSMENTS AND DRAFT REPORT	116,520.00	24,817.25	116,501.61		
0007	RESPONSE TO COMMENTS, FINAL EDITING AND FINAL REPORT	43,750.00	1,710.00	1,710.00		
0008	RECEIVING WATER AND MS4 DATA UPLOAD TO CEDEN	14,000.00	1,540.00	1,540.00		
0009	BIOASSESSMENT REPORTING	16,232.00	15,560.00	16,120.00		
0010	BIGHT '13 REPORTING	66,508.00	29,482.00	40,399.00		
0011	MS4 PROGRAM 5-YEAR ASSESSMENT	26,104.00	1,322.00	6,442.00		
0012	SEDIMENT MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN	34,340.00	0.00	33,890.00		
TOTAL		**558,694.00**	**99,611.61**	**449,230.47**	**80.41%**	**109,463.53**

CURRENT AMOUNT DUE 99,611.61

P: 1002993
O: 50915
E: 523370
T: 001.006
A: 100496
OK to Pay:
Approved by: JoAnn Weber 12/17/2014
Joanna Wdzieczko 12/16/2014

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501899
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WESTON SOLUTIONS

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FEB 27 2015

SIGNATURE
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 02/20/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.114
INVOICE NUMBER: FEB2015-02877
BILLING PERIOD: 11/29/2015 TO 01/30/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	FY 2014-2015 REPORTING					
0001	WATERSHED MONITORING WORKGROUP MEETINGS/PRESENTATION	23,240.00	4,409.50	21,789.36		
0002	RECEIVING WATER DATA ANALYSIS, TABLES, TRENDS AND MAPPING	77,100.00	0.00	77,083.50		
0003	THIRD PARTY DATA PROCESSING	13,240.00	2,420.00	12,987.00		
0004	MS4 DATA ANALYSIS, TABLES AND MAPPING	70,020.00	0.00	69,969.50		
0005	TRANISTIONAL WET WEATHER MS4 OUTFALL MODELING	57,640.00	0.00	57,628.00		
0006	WRITING, WMA ASSESSMENTS AND DRAFT REPORT	116,520.00	0.00	116,501.61		
0007	RESPONSE TO COMMENTS, FINAL EDITING AND FINAL REPORT	43,750.00	42,025.48	43,735.48		
0008	RECEIVING WATER AND MS4 DATA UPLOAD TO CEDEN	14,000.00	8,160.00	9,700.00		
0009	BIOASSESSMENT REPORTING	16,232.00	112.00	16,232.00		
0010	BIGHT '13 REPORTING	66,508.00	25,153.00	65,552.00		
0011	MS4 PROGRAM 5-YEAR ASSESSMENT	26,104.00	19,643.00	26,085.00		
0012	SEDIMENT MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN	34,340.00	0.00	33,890.00		
0013	DEVELOPMENT OF TIE/TRE WORK PLAN	7,080.00	5,435.00	5,435.00		
TOTAL		**565,774.00**	**107,357.98**	**556,588.45**	**98.38%**	**9,185.55**

CURRENT AMOUNT DUE 107,357.98

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: JoAnn Weber 3/9/2015
Joanna Wiśniewska 3/9/2015

RECEIVED BY
DPW - WPP

MAY 14 2015

SIGNATURE
PRINT Cheryl Rewett

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 05/05/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.114
INVOICE NUMBER: MAY2015-02044
BILLING PERIOD: 01/31/2015 TO 04/24/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	FY 2014-2015 REPORTING					
0001	WATERSHED MONITORING WORKGROUP MEETINGS/PRESENTATION	23,240.00	1,433.50	23,222.86		
0002	RECEIVING WATER DATA ANALYSIS, TABLES, TRENDS AND MAPPING	77,100.00	0.00	77,083.50		
0003	THIRD PARTY DATA PROCESSING	13,240.00	0.00	12,987.00		
0004	MS4 DATA ANALYSIS, TABLES AND MAPPING	70,020.00	0.00	69,969.50		
0005	TRANISTIONAL WET WEATHER MS4 OUTFALL MODELING	57,640.00	0.00	57,628.00		
0006	WRITING, WMA ASSESSMENTS AND DRAFT REPORT	116,520.00	0.00	116,501.61		
0007	RESPONSE TO COMMENTS, FINAL EDITING AND FINAL REPORT	43,750.00	0.00	43,735.48		
0008	RECEIVING WATER AND MS4 DATA UPLOAD TO CEDEN	14,000.00	4,190.00	13,890.00		
0009	BIOASSESSMENT REPORTING	16,232.00	0.00	16,232.00		
0010	BIGHT '13 REPORTING	66,508.00	390.00	65,942.00		
0011	MS4 PROGRAM 5-YEAR ASSESSMENT	26,104.00	0.00	26,085.00		
0012	SEDIMENT MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN	34,340.00	0.00	33,890.00		
0013	DEVELOPMENT OF TIE/TRE WORK PLAN	7,080.00	0.00	5,435.00		
TOTAL		**565,774.00**	**6,013.50**	**562,601.95**	**99.44%**	**3,172.05**

CURRENT AMOUNT DUE 6,013.50

P: 1002493
O: 50915
E: 52370
T: 001-006
A: 100496
OK to Pay:
Approved by:

Joanne Wisniewska
5/14/2015

OK to PAY
John T. Weber, JoAnn T. Weber
5/14/2015

05P0606 2/12

INVOICE
12845

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JUN 2 6 2015

SIGNATURE Rdelarosa
PRINT RUTH DELAROSA

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL WATER QUALITY REPORTING

INVOICE DATE: 06/23/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.114
INVOICE NUMBER: JUN2015-03286
BILLING PERIOD: 05/30/2015 TO 06/19/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	FY 2014-2015 REPORTING					
0001	WATERSHED MONITORING WORKGROUP MEETINGS/PRESENTATION	23,240.00	80.00	23,302.86		
0002	RECEIVING WATER DATA ANALYSIS, TABLES, TRENDS AND MAPPING	77,100.00	0.00	77,083.50		
0003	THIRD PARTY DATA PROCESSING	13,240.00	0.00	12,987.00		
0004	MS4 DATA ANALYSIS, TABLES AND MAPPING	70,020.00	0.00	69,969.50		
0005	TRANISTIONAL WET WEATHER MS4 OUTFALL MODELING	57,640.00	0.00	57,628.00		
0006	WRITING, WMA ASSESSMENTS AND DRAFT REPORT	116,520.00	0.00	116,501.61		
0007	RESPONSE TO COMMENTS, FINAL EDITING AND FINAL REPORT	43,750.00	0.00	43,735.48		
0008	RECEIVING WATER AND MS4 DATA UPLOAD TO CEDEN	14,000.00	110.00	14,000.00		
0009	BIOASSESSMENT REPORTING	16,232.00	0.00	16,232.00		
0010	BIGHT '13 REPORTING	66,508.00	0.00	65,942.00		
0011	MS4 PROGRAM 5-YEAR ASSESSMENT	26,104.00	0.00	26,085.00		
0012	SEDIMENT MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN	34,340.00	0.00	33,890.00		
0013	DEVELOPMENT OF TIE/TRE WORK PLAN	7,080.00	0.00	5,435.00		
Subtotal		565,774.00	190.00	562,791.95	99.47%	2,982.05
	FY 2014-2015 Desktop Based Inventory and Urban Runoff Pollutant Assessment					
0014	Desktop Based Inventory and Urban Runoff Pollutant Assessment	5,000.00	0.00	4,990.00		
Subtotal		5,000.00	0.00	4,990.00	99.80%	10.00
TOTAL		**570,774.00**	**190.00**	**567,781.95**	**99.48%**	**2,992.05**

CURRENT AMOUNT DUE 190.00

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Rdelarosa 6/26/15
Approved by: RUTH DELAROSA

OK to pay
Jo Ann T. Weber
6/26/15

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ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

Rel 37 Rec 1737211 $

INVOICE DATE: 08/15/2014
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: AUG2014-02971
BILLING PERIOD: 07/07/2014 TO 08/01/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	34,144.95	34,144.95	2.57%	1,292,401.05
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	4,401.00	4,401.00	2.57%	166,629.00
TOTALS		**1,497,576.00**	**38,545.95**	**38,545.95**	**2.57%**	**1,459,030.05**

CURRENT AMOUNT DUE 38,545.95

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: JoAnn Tweber 8/25/14

PWR. PWG. CPB 08Sept 2014.CAZ

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MAY 18 2015

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ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

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PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 05/13/2015
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: MAY2015-04522
BILLING PERIOD: 04/04/2015 TO 05/08/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	121,326.32	824,061.27	62.12%	502,484.73
0002	RAPID STREAM BIOASSESSMENT	226,017.00	20,441.90	29,966.90	13.26%	196,050.10
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	33.00	1,491.00	4.46%	31,950.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	0.00	170,977.66	99.97%	52.34
0005	PYRETHROID MONITORING	20,167.00	0.00	11,947.70	59.24%	8,219.30
0006	MS4 OUTFALL MONITORING	411,402.00	48,966.95	306,620.36	74.53%	104,781.64
TOTALS		**2,188,603.00**	**190,768.17**	**1,345,064.89**	**61.46%**	**843,538.11**

CURRENT AMOUNT DUE 190,768.17

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by:

Joanna Wisniewska
6/2/2015
JoAnn T. Weber
JoAnn T. Weber
6/3/2015

05P-0606 2/12

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JUN 04 2015

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Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 5/28/2015
CONTRACT NUMBER: 535693
PROJECT NUMBER: 15245.214
CREDIT INVOICE: JUN2015-01716
BILLING PERIOD: 05/09/2015 TO 05/22/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	29,866.97	853,928.24	64.37%	472,617.76
0002	RAPID STREAM BIOASSESSMENT	226,017.00	1,916.18	31,883.08	14.11%	194,133.92
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	0.00	1,491.00	4.46%	31,950.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	0.00	170,977.66	99.97%	52.34
0005	PYRETHROID MONITORING	20,167.00	0.00	11,947.70	59.24%	8,219.30
0006	MS4 OUTFALL MONITORING	411,402.00	10,143.38	316,763.74	77.00%	94,638.26
TOTALS		**2,188,603.00**	**41,926.53**	**1,386,991.42**	**63.37%**	**801,611.58**

CURRENT AMOUNT DUE 41,926.53

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: RDelarosa
RUTH DELAROSA
6/22/15

Jo Ann T. Weber
JO ANN T. WEBER
6/22/15

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Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

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PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 6/30/2015
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: JUL2015-01957
BILLING PERIOD: 05/23/2015 TO 06/24/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	196,250.32	1,050,178.56	79.17%	276,367.44
0002	RAPID STREAM BIOASSESSMENT	226,017.00	66,793.80	98,676.88	43.66%	127,340.12
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	1,194.00	2,685.00	8.03%	30,756.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	0.00	170,977.66	99.97%	52.34
0005	PYRETHROID MONITORING	20,167.00	0.00	11,947.70	59.24%	8,219.30
0006	MS4 OUTFALL MONITORING	411,402.00	103,939.50	420,703.24	102.26%	-9,301.24
TOTALS		**2,188,603.00**	**368,177.62**	**1,755,169.04**	**80.20%**	**433,433.96**

CURRENT AMOUNT DUE **368,177.62**

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by:

7/2/2015
Joanna Wiśniewska
ok to pay,
JO Ann T. Weber
7/2/2015

05P-0606 2/12

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Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

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PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 09/15/2014
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: SEP2014-02843
BILLING PERIOD: 08/02/2014 TO 08/29/2014

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SEP 19 2014
SIGNATURE
PRINT Jaunna Wilkerson

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	41,283.70	75,428.65	5.69%	1,251,117.35
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	29,531.31	33,932.31	19.84%	137,097.69
TOTALS		**1,497,576.00**	**70,815.01**	**109,360.96**	**7.30%**	**1,388,215.04**

CURRENT AMOUNT DUE 70,815.01

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: ok to pay,
Jo Ann T. Weber
Jo Ann T. Weber
9/25/14

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NOV 25 2014

SIGNATURE
PRINT Cheryl Newell

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Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

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PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 11/21/2014
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: NOV2014-03640
BILLING PERIOD: 10/04/2014 TO 10/31/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	28,601.62	284,300.64	21.43%	1,042,245.36
0002	RAPID STREAM BIOASSESSMENT	226,017.00	0.00	0.00	0.00%	226,017.00
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	0.00	0.00	0.00%	33,441.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	36,422.76	101,364.98	59.27%	69,665.02
0005	PYRETHROID MONITORING	20,167.00	320.00	320.00	1.59%	19,847.00
0006	MS4 OUTFALL MONITORING	411,402.00	15,565.43	24,083.43	5.85%	387,318.57
TOTALS		**2,188,603.00**	**80,909.81**	**410,069.05**	**18.74%**	**1,778,533.95**

CURRENT AMOUNT DUE 80,909.81

P: 1002993
O: 50915
E: 52370
T: 001-006
A: 100496
OK to Pay:
Approved by: 12/1/14

Joanna Dimeslar
~~11/26/2014~~
12/1/2014

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OCT 22 2014

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ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 10/16/2014
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: OCT2014-03020
BILLING PERIOD: 08/30/2014 TO 10/03/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	180,270.37	255,699.02	19.28%	1,070,846.98
0002	RAPID STREAM BIOASSESSMENT	226,017.00	0.00	0.00	0.00%	226,017.00
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	0.00	0.00	0.00%	33,441.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	31,009.91	64,942.22	37.97%	106,087.78
0005	PYRETHROID MONITORING	20,167.00	0.00	0.00	0.00%	20,167.00
0006	MS4 OUTFALL MONITORING	411,402.00	8,518.00	8,518.00	2.07%	402,884.00
TOTALS		**2,188,603.00**	**219,798.28**	**329,159.24**	**15.04%**	**1,859,443.76**

CURRENT AMOUNT DUE **219,798.28**

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Joanna Wisniewska - 10/23/2014
Approved by:

JoAnn Weber
10/24/14

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DEC 30 2014

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ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 12/22/2014
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: DEC2014-03616
BILLING PERIOD: 11/01/2014 TO 11/28/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	98,269.94	382,570.58	28.84%	943,975.42
0002	RAPID STREAM BIOASSESSMENT	226,017.00	0.00	0.00	0.00%	226,017.00
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	0.00	0.00	0.00%	33,441.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	44,655.95	146,020.93	85.38%	25,009.07
0005	PYRETHROID MONITORING	20,167.00	5,063.00	5,383.00	26.69%	14,784.00
0006	MS4 OUTFALL MONITORING	411,402.00	27,603.93	51,687.36	12.56%	359,714.64
TOTALS		**2,188,603.00**	**175,592.82**	**585,661.87**	**26.76%**	**1,602,941.13**

CURRENT AMOUNT DUE 175,592.82

P: 1002993
O: 50915
E: 52370
T: 001, 006
A: 100496
OK to Pay:
Approved by: Jo Ann T. Weber
1/5/2015

Joanna Wisniewska 1/5/2015

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Account: 009429223574
Bank of America, ABA: 011900254

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PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 01/23/2015
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: JAN2015-03553
BILLING PERIOD: 11/29/2015 TO 01/02/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	101,521.96	484,092.54	36.49%	842,453.46
0002	RAPID STREAM BIOASSESSMENT	226,017.00	0.00	0.00	0.00%	226,017.00
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	0.00	0.00	0.00%	33,441.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	24,956.73	170,977.66	99.97%	52.34
0005	PYRETHROID MONITORING	20,167.00	0.00	5,383.00	26.69%	14,784.00
0006	MS4 OUTFALL MONITORING	411,402.00	58,656.92	110,344.28	26.82%	301,057.72
TOTALS		**2,188,603.00**	**185,135.61**	**770,797.48**	**35.22%**	**1,417,805.52**

CURRENT AMOUNT DUE **185,135.61**

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: Jo Ann Weber 2/9/2015
Joanna Wisniewska 2/9/2015

WESTON SOLUTIONS

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MAR 02 2015

SIGNATURE Cheryl Newell
PRINT Cheryl Newell

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Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

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PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 2/20/2015
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: FEB2015-03114
BILLING PERIOD: 1/3/2015 TO 01/30/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	70,824.46	554,917.00	41.83%	771,629.00
0002	RAPID STREAM BIOASSESSMENT	226,017.00	0.00	0.00	0.00%	226,017.00
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	0.00	0.00	0.00%	33,441.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	0.00	170,977.66	99.97%	52.34
0005	PYRETHROID MONITORING	20,167.00	0.00	5,383.00	26.69%	14,784.00
0006	MS4 OUTFALL MONITORING	411,402.00	45,193.52	155,537.80	37.81%	255,864.20
TOTALS		**2,188,603.00**	**116,017.98**	**886,815.46**	**40.52%**	**1,301,787.54**

CURRENT AMOUNT DUE **116,017.98**

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by:

Joanna Wisniewska
3/9/2015
John Weber
Jo Ann Weber 3/9/2015

INVOICE

F.E.I.N. 231501990
Printed on 100% Recycled Paper

WESTON SOLUTIONS

RECEIVED BY
DPW - WPP

APR 0 6 2015

SIGNATURE
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 03/26/2015
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: MAR2015-03523
BILLING PERIOD: 01/31/2015 TO 02/27/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	84,167.46	639,084.46	48.18%	687,461.54
0002	RAPID STREAM BIOASSESSMENT	226,017.00	4,260.00	4,260.00	1.88%	221,757.00
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	1,298.00	1,298.00	3.88%	32,143.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	0.00	170,977.66	99.97%	52.34
0005	PYRETHROID MONITORING	20,167.00	6,184.70	11,567.70	57.36%	8,599.30
0006	MS4 OUTFALL MONITORING	411,402.00	66,667.19	222,204.99	54.01%	189,197.01
TOTALS		**2,188,603.00**	**162,577.35**	**1,049,392.81**	**47.95%**	**1,139,210.19**

CURRENT AMOUNT DUE 162,577.35

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: JoAnn T Weber 4/21/2015
Joanna Wisniewska 4/21/2015

WESTON SOLUTIONS

RECEIVED BY
DPW - WPP

MAY 08 2015

SIGNATURE
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY 2014-2015 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 04/29/2015
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.214
CREDIT INVOICE: MAY2015-01670
BILLING PERIOD: 02/28/2015 TO 04/03/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS	1,326,546.00	63,650.49	702,734.95	52.97%	623,811.05
0002	RAPID STREAM BIOASSESSMENT	226,017.00	5,265.00	9,525.00	4.21%	216,492.00
0003	TOXICITY IDENTIFICATION ANALYSES	33,441.00	160.00	1,458.00	4.36%	31,983.00
0004	AMBIENT BAY & LAGOON MONITORING	171,030.00	0.00	170,977.66	99.97%	52.34
0005	PYRETHROID MONITORING	20,167.00	380.00	11,947.70	59.24%	8,219.30
0006	MS4 OUTFALL MONITORING	411,402.00	35,448.42	257,653.41	62.63%	153,748.59
TOTALS		**2,188,603.00**	**104,903.91**	**1,154,296.72**	**52.74%**	**1,034,306.28**

CURRENT AMOUNT DUE **104,903.91**

P: 1002443
O: 50915
E: 52370
T: 001.006
A: 100 496
OK to Pay:
Approved by: Ju Ann Weber, 5/21/2015
Joanna Wiśniewska 6/20/2015

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
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DPW - WPP

NOV 25 2014

SIGNATURE Cheryl Newell
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FY 2013-2014 SAN DIEGO MUNICIPAL STORMWATER COPERMITTEES REGIONAL MONITORING SERVICES.

INVOICE DATE: 11/21/2014
CONTRACT NUMBER: 535693
PROJECT NUMBER: 13245.213
CREDIT INVOICE: NOV2014-03647
BILLING PERIOD: 08/30/2014 TO 11/07/2014

SUMMARY

TASK	DESCRIPTION		FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	WQ MASS LOADING STATIONS		955,858.00	0.00	955,841.77	100.00%	16.23
0002	RAPID STREAM BIOASSESSMENT		221,926.00	65,635.66	221,899.83	99.99%	26.17
0003	TOXICITY IDENTIFICATION ANALYSES		33,441.00	0.00	30,365.70	90.80%	3,075.30
0004	AMBIENT BAY & LAGOON MONITORING	*	158,930.00	0.00	143,409.96	90.23%	15,520.04
0005	PYRETHROID MONITORING		18,577.00	0.00	18,466.83	99.41%	110.17
0006	MS4 OUTFALL MONITORING	*	423,502.00	0.00	423,489.26	100.00%	12.74
TOTALS			**1,812,234.00**	**65,635.66**	**1,793,473.35**	**98.96%**	**18,760.65**

CURRENT AMOUNT DUE 65,635.66

**Note: Budget approved to transfer from ABLM Task to MS4 Task as of June 27, 2014*

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100486
OK to Pay:
Approved by: Jo Ann Weber 12/1/14

Joanna Wisniewska 12/1/2014

INVOICE 12859

F.E.I.N. 23-1501990

SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT

A Public Agency for Environmental Research

FINAL INVOICE

Jo Ann Weber
County of San Diego
Department of Public Works
Watershed Protection Program
5510 Overland Ave., Suite 410
San Diego, CA 92123

Invoice #: 2884
Date: 04/27/15
SCCWRP #: W3329

RECEIVED BY
DPW - WPP

APR 29 2015

SIGNATURE Jo Ann T. Weber
PRINT Jo Ann T Weber

Agreement: 543771
Project: San Diego Reference Study
PI: Martha Sutula, Ph.D.
Period: 12/01/14 to 03/31/15

Description	Rate	Hours	Amount	Total
Personnel Costs				
Principal Scientist - Martha Sutula, Ph.D.	$160.38	204.0	32,717.52	
Senior Research Technician - Liesl Tiefenthaler	94.34	72.0	6,792.48	
Total Personnel				39,510.00
Direct Project Expenses				0.00
Subcontracts				0.00
Credit				-143.52

Amount Due: $39,366.48

Summary:	
Contract Amount	669,447.00
Cumulative Expenditures to Date	669,447.00
Unexpended Balance of Contract Funds	0.00

I hereby certify that Southern California Coastal Water Research Project, its principals, its employees and its subcontractors are in compliance with section 8.7 of contract number 543771 regarding Debarment and Suspension.

Bryan Vecsi
Administrative Officer
bryann@sccwrp.org
(714) 755-3201

OK to Pay

P: 1002993
O: 50915
E: 53370
T: 001.006
A: 100496
OK to Pay:
Approved by: Jo Ann T. Weber
April 30, 2015

3535 Harbor Blvd. Suite 110, Costa Mesa, CA 92626-1437
(714) 755-3200 *fax* (714) 755-3299

Use a total of $65,158.82 of this invoice

SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT

A Public Agency for Environmental Research

RECEIVED BY
DPW - WPP
DEC 18 2014
SIGNATURE
PRINT Jo Ann T. Weber

INVOICE

December 17, 2014

Invoice #: 2796

SCCWRP #: W3329

Jo Ann Weber
County of San Diego
Department of Public Works
Watershed Protection Program
5510 Overland Ave., Suite 410
San Diego, CA 92123

P: 1002993
O: 50915
E: 523370
T: 001,006
A: 100496
OK to Pay:
Approved by: 12/18/2014
Jo Ann T. Weber

Agreement: 543771
Project: San Diego Reference Study
PI: Martha Sutula, Ph.D.
Period: 04/01/14 to 11/30/14

Description	Rate	Hours	Amount	Total
Personnel Costs				
Principal Scientist - Martha Sutula, Ph.D.	$160.38	69.0	11,066.22	
Senior Scientist - Meredith Howard, Ph.D.	$132.08	7.0	924.56	
Senior Research Technician - Liesl Tiefenthaler	94.34	185.5	17,500.07	
Senior Research Technician - Meredith Arakelyan	94.34	64.0	6,037.76	
Senior Research Technician - Marlene Hanken	94.34	10.0	943.40	
Research Technician - Mark Engeln	75.46	8.0	603.68	
Research Technician - Abel Santana	75.46	5.0	377.30	
Laboratory Assistants	50.82	452.0	22,970.64	
Total Personnel				60,423.63
Direct Project Expenses				5,231.19
Subcontracts				16,375.04

use 4,735 of this amount

Total Amount Due: $82,029.86

Summary:	
Contract Amount	669,447.00
Cumulative Expenditures to Date	630,080.52
Unexpended Balance of Contract Funds	39,366.48

I hereby certify that Southern California Coastal Water Research Project, its principals, its employees and its subcontractors are in compliance with section 8.7 of contract number 543771 regarding Debarment and Suspension.

Bryan Nece
Administrative Officer
bryann@sccwrp.org
(714) 755-3201

3535 Harbor Blvd. Suite 110, Costa Mesa, CA 92626-1437
(714) 755-3200 *fax* (714) 755-3299

County of San Diego Agreement #543771
Direct Project Expense Detail

Subcontractors:

05/30/14	Subcontractors	AMEC Earth & Environmental	4,461.00
06/24/14	Subcontractors	UC Santa Barbara	1,373.12
06/24/14	Subcontractors	UC Santa Barbara	1,559.12
06/30/14	Subcontractors	Chesapeake Biological Laboratory	516.50
07/02/14	Subcontractors	Chesapeake Biological Laboratory	723.10
07/28/14	Subcontractors	Chesapeake Biological Laboratory	413.20
09/26/14	Subcontractors	AMEC Earth & Environmental	11,790.00
			16,375.04

Direct Project Expenses:

05/02/14	Project Supplies	NorthEast Labs - PK MFC Plates P6045	170.60
07/02/14	Project Supplies	GeneRite, LLC - EACH S2101-100 LYSIS BUFFER	200.00
07/02/14	Project Supplies	GeneRite, LLC - EACH S2201-100 BENDING BUFFER	200.00
07/02/14	Project Supplies	GeneRite, LLC - EACH S2301-100 WASH BUFFER	100.00
07/02/14	Project Supplies	GeneRite, LLC - PK S1001-500 COLLECTION TUBES	175.00
07/02/14	Project Supplies	GeneRite, LLC - PK S5111-300-50 COLUMS	170.00
07/02/14	Project Supplies	GeneRite, LLC - Sales Tax	60.21
09/04/14	Project Supplies	GeneRite, LLC - PK 55111-300-50	175.00
09/04/14	Project Supplies	GeneRite, LLC - PK COLLECTION TUBES	17.00
09/04/14	Project Supplies	GeneRite, LLC - EACH EMM	627.00
09/04/14	Project Supplies	GeneRite, LLC - Shipping	80.83
11/11/14	Project Supplies	Bank of America - rapid gate	179.00
11/11/14	Project Supplies	Bank of America - rapid gate	199.00
04/24/14	Project Supplies	241-Praxair Distribution Inc. - LC160	415.19
04/15/14	Shipping Expense	Federal Express	138.09
04/18/14	Shipping Expense	Federal Express	82.76
04/18/14	Shipping Expense	Federal Express	26.89
04/25/14	Shipping Expense	Federal Express	160.04
04/25/14	Shipping Expense	Federal Express	35.39
05/23/14	Shipping Expense	Federal Express	177.97
05/30/14	Shipping Expense	Federal Express	35.39
06/06/14	Shipping Expense	Federal Express	136.50
06/06/14	Shipping Expense	Federal Express	82.76
06/13/14	Shipping Expense	Federal Express	87.76
07/11/14	Shipping Expense	Federal Express	136.50
07/11/14	Shipping Expense	Federal Express	60.04
08/01/14	Shipping Expense	Federal Express	14.99
10/17/14	Shipping Expense	Federal Express	11.41
10/24/14	Shipping Expense	Federal Express	94.16
11/07/14	Shipping Expense	Federal Express	87.37
05/30/14	Shipping Expense	Federal Express	8.47
04/16/14	Travel Expense	Exxon Mobil - gas for agency truck to sample	92.52
04/28/14	Travel Expense	Fernando Vargas - reimbursement for 115 miles	64.40
05/02/14	Travel Expense	Elena Trevino - reimbursement for 129 miles	72.24
06/03/14	Travel Expense	ALEXANDRA SHAFFER - reimbursement for 139 miles	77.84
06/08/14	Travel Expense	Exxon Mobil - gas for agency truck to sample	108.20
06/08/14	Travel Expense	Exxon Mobil - gas for agency truck to sample	44.89
06/17/14	Travel Expense	ALEXANDRA SHAFFER - reimbursement for 16 miles	8.96
06/26/14	Travel Expense	Fernando Vargas - reimbursement for 125 miles	70.00
07/09/14	Travel Expense	Exxon Mobil - gas for agency truck to sample	98.83
07/09/14	Travel Expense	Exxon Mobil - gas for agency truck to sample	89.91
08/08/14	Travel Expense	Exxon Mobil - gas for agency truck to sample	80.59
08/08/14	Travel Expense	Exxon Mobil - gas for agency truck to sample	122.92
09/08/14	Travel Expense	Exxon Mobil - gas for agency truck to sample	92.97
10/02/14	Travel Expense	Martha Sutula - reimbursement for 110 miles	61.60
			5,231.19

BMP DM Isopluvial Map and 85% rainfall

Item Date	Hours	Notes	Request ID	Created By	Request ID:Work Authorization
5/20/2015	3.0	Converting raster to polygon for 85th %ile precip; creating AGOL service/map	4557	Chadwick, Karen	PWG-00324 DPW WATERSHED PROTECTION
5/21/2015	0.6	Editing 85th pct precip service/map	4557	Chadwick, Karen	PWG-00324 DPW WATERSHED PROTECTION
3/2/2015	2.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
3/11/2015	4.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
3/12/2015	4.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
4/21/2015	1.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
5/1/2015	6.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
5/5/2015	3.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
5/14/2015	3.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
5/19/2015	2.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
5/20/2015	1.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
5/21/2015	1.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
5/22/2015	3.0	PCT 85 ISO PLUVIAL REVISITED	4557	McCamic, Frederick W	PWG-00324 DPW WATERSHED PROTECTION
2/24/2015	0.5	85th Percentile budget	4557	Ross, Gary	PWG-00324 DPW WATERSHED PROTECTION
3/2/2015	1.0	Meeting with J. Fantaroni, N. Richardson	4557	Ross, Gary	PWG-00324 DPW WATERSHED PROTECTION

Hourly Rate	
$67	Chadwick, Karen
$84	McCamic, Frederick W
$98	Ross, Gary

RBF
A Baker Company
MICHAEL BAKER INTERNATIONAL

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DPW - WPP
OCT 23 2014
SIGNATURE Cheryl Newell
PRINT Cheryl Newell

Rel 109
Rec 1737307

Invoice Date: October 16, 2014
Project No.: 142719
Invoice No.: 890456

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services through September 28, 2014 2014

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$0.00	$1,159.50	$1,159.50
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$0.00	$61.17	$61.17
	Total Fee	**$24,034.00**	**$0.00**	**$1,220.67**	**$1,220.67**
			Previous Fee Billing	$0.00	
				Total This Invoice	**$1,220.67**

Release 109

ok to pay

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Jeremy Fontaron 11/10/14
Approved by: Tracy Cline LWET III OK to pay
TRACY CLINE

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 42
RBF Project Number 142719

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*8/20 HMP Monitoring Subworkgroup Meeting prep, attendance, and notes			
*9/10 HMP Monitoring Subworkgroup Meeting prep, attendance, and notes			
*9/24 HMP Monitoring Subworkgroup Meeting prep, attendance, and notes			
*9/29 LDW Meeting prep			
Civil Engineer	1	$122.33	$122.33
Land Use Environmental Planner I	11.75	$88.27	$1,037.17
Total			**$1,159.50**
Task 2 - Standard Work Products			
*BMP Sizing Spreadsheet Coordination			
Civil Engineer	0.5	$122.33	$61.17
Land Use Environmental Planner I	0	$88.27	$0.00
Total			**$61.17**
Grand Total	13.25		**$1,220.67**

Kel # 104

Rec 1737357

RBF

A Baker Company

MICHAEL BAKER INTERNATIONAL

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DPW - WPP

DEC 01 2014

SIGNATURE Cheryl Kenell
PRINT Cheryl Kenell

Invoice Date: November 21, 2014
Project No.: 142719
Invoice No.: 893415

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from September 29, 2014 through November 02, 2014

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$1,159.50	$2,353.48	$1,193.98
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$61.17	$1,182.29	$1,121.12
	Total Fee	**$24,034.00**	**$1,220.67**	**$3,535.77**	**$2,315.10**
			Previous Fee Billing	$1,220.67	
			Total This Invoice		**$2,315.10**

P: 1002993
O: 50915
E: 53370
T: 001, 006
A: 1004916
OK to Pay: Jenny Fontanez 12/3/14
Approved by: Tracy Cline LUEPTT
Tracy Cline

ok to pay

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

PUR. PUG. UPB 17 DEC 2014-CA1

RBF

A Baker Company

MICHAEL BAKER INTERNATIONAL

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 42
RBF Project Number 142719

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*9/29 LDW Meeting prep, attendance, and notes			
*LWD Expenditure Coordination			
Civil Engineer	8.5	$122.33	$1,039.81
Lane Use Environmental Planner II	1.5	$102.78	$154.17
Total			**$1,193.98**
Task 2 - Standard Work Products			
*BMP Sizing Spreadsheet Coordination and Updates			
*BMP Sizing Seminar Presentation Coordination			
Civil Engineer	5.5	$122.33	$672.82
Lane Use Environmental Planner II	2	$102.78	$205.56
Land Use Environmental Planner I	2.75	$88.27	$242.74
Total			**$1,121.12**
Grand Total	20.25		**$2,315.10**

Rec 109 Rec 1737377

RBF

A Baker Company

MICHAEL BAKER INTERNATIONAL

RECEIVED BY
DPW - WPR

DEC 16 2014

SIGNATURE Cheryl Newell
PRINT Cheryl Newell

Invoice Date: December 4, 2014
Project No.: 142719
Invoice No.: 894366

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from November 02, 2014 through November 30, 2014

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$2,353.48	$3,238.10	$884.62
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$1,182.29	$1,182.29	$0.00
	Total Fee	**$24,034.00**	**$3,535.77**	**$4,420.39**	**$884.62**
			Previous Fee Billing	$3,535.77	
				Total This Invoice	**$884.62**

P: 1002993
O: 56915
E: 52370
T: 001.006
A: 100496
OK to Pay: $884.62
Approved by:

12/16/14
STUART KUHN - P.M. DATE

TRACY CLINE - C.O.R. LUEP III
DATE 12/16/14

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

PWR. PWG. LPB 30 DEC 2014

RBF

A Baker Company

MICHAEL BAKER INTERNATIONAL

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 42
RBF Project Number 142719

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*11/12 and 11/19 HMP Monitoring Subgroup Meeting prep, attendance, and notes			
*Assistance with PowerPoint for APWA Seminar			
Civil Engineer	2	$122.33	$244.66
Lane Use Environmental Planner II	0	$102.78	$0.00
Land Use Environmental Planner I	7.25	$88.27	$639.96
Total			**$884.62**
Grand Total	9.25		**$884.62**

RBF

A Baker Company

MICHAEL BAKER INTERNATIONAL

RECEIVED BY
DPW - WPP

JAN 13 2015

SIGNATURE
PRINT Cheryl Nenci

REL #104/09
Rec 1727399

Invoice Date: January 9, 2015
Project No.: 142719
Invoice No.: 896975

Stuart Kuhn
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Stuart.Kuhn @sdcounty.ca.gov

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4385

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from December 01, 2014 through December 31, 2014

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$3,238.10	$3,647.31	$409.21
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$1,182.29	$1,182.29	$0.00
	Total Fee	**$24,034.00**	**$4,420.39**	**$4,829.60**	**$409.21**
			Previous Fee Billing	$4,420.39	
				Total This Invoice	**$409.21**

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $409.21
Approved by: 1/18/2015 Date Stuart Kuhn

1/13/15 Date TRACY CLINE

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

PWR. PWG. MMP 27JAN 2015 CA

RBF

A Baker Company

MICHAEL BAKER INTERNATIONAL

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 42
RBF Project Number 142719

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*12/3 HMP Monitoring Subworkgroup meeting prep, attendance, and notes			
*12/17 HMP Monitoring Subworkgroup meeting prep (meeting ultimately cancelled)			
*Prep for 1/13 LDW Meeting			
Civil Engineer	1	$122.33	$122.33
Land Use Environmental Planner I	3.25	$88.27	$286.88
Total			**$409.21**
Grand Total	**4.25**		**$409.21**

RBF

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MICHAEL BAKER INTERNATIONAL

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FEB 12 2015

SIGNATURE
PRINT STUART KUHN

Invoice Date : February 12, 2015
Project No. : 142719
Invoice No. : 899762

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Stuart.Kuhn @sdcounty.ca.gov

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from January 01, 2015 through January 31, 2015

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$3,647.31	$5,378.16	$1,730.85
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$1,182.29	$1,182.29	$0.00
	Total Fee	$24,034.00	$4,829.60	$6,560.45	$1,730.85
			Previous Fee Billing	$4,829.60	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 1004916
OK to Pay: $1,730.85
Approved by:

STUART KUHN 2/15/15 DATE

Nancy S for TRACY CLINE 2-18-15 DATE
Nancy Stalnaker

Total This Invoice $1,730.85

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

PWR PWG MMMRR MAR2015 GA

A Baker Company
MICHAEL BAKER INTERNATIONAL

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 42
RBF Project Number 142719

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*1/9 HMP Monitoring Subworkgroup meeting prep, attendance, notes, and contact list update			
*1/13 LDW meeting prep, attendance, notes, and contact list update			
Civil Engineer	10	$122.33	$1,223.30
Lane Use Environmental Planner II	0	$102.78	$0.00
Land Use Environmental Planner I	5.75	$88.27	$507.55
Total			**$1,730.85**
Grand Total	15.75		**$1,730.85**

Rec 109 Rec 1737501

RBF CONSULTING
A [redacted] Company

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $ 903.57
Approved by:

3/25/15
STUART KUHN DATE

Invoice Date : March 3, 2015
Project No. : 142719
Invoice No. : 901236

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Stuart.Kuhn@sdcounty.ca.gov

3/25/15
TRACY CLINE LUEP III DATE

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from February 01, 2015 through March 01, 2015

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$5,378.16	$6,281.73	$903.57
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$1,182.29	$1,182.29	$0.00
	Total Fee	**$24,034.00**	**$6,560.45**	**$7,464.02**	**$903.57**
			Previous Fee Billing	$6,560.45	

Total This Invoice	$903.57

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

RECEIVED BY
DPW
MAR 23 2015
SIGNATURE
PRINT Cheryl Newell

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

PWR.PWG.MMB16APR2015.CA1

RBF CONSULTING
A Baker Company

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 42
RBF Project Number 142719

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*2/11 and 2/25 HMP Monitoring Subworkgroup meeting prep, attendance, and notes.			
Civil Engineer	4.5	$122.33	$550.49
Land Use Environmental Planner I	4	$88.27	$353.08
Total			**$903.57**
Grand Total	8.5		**$903.57**

RECEIVED 4/29/15 By Stuart Kuhn

Rec 115

RBF

A Baker Company

MICHAEL BAKER INTERNATIONAL

Invoice Date : April 1, 2015
Project No. : 142719
Invoice No. : 903540

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Stuart.Kuhn @sdcounty.ca.gov

RBF Consulting,
a Michael Baker International Company
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from March 02, 2015 through March 29, 2015

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$6,281.73	$7,903.48	$1,621.75
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$1,182.29	$1,182.29	$0.00
	Total Fee	$24,034.00	$7,464.02	$9,085.77	$1,621.75
			Previous Fee Billing	$7,464.02	

Receipt 1737542
Supp 1184538

P: 1002993
O: 50915
E: 52370
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A: 100496
OK to Pay: $1,621.75
Approved by:

Total This Invoice $1,621.75

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

4/30/15
STUART KUHN DATE

TRACY CLINE 4/30/15 DATE

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

PWB-PWB. CMM 09 May 2015. CA1

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DPW - WPP
MAY 11 2015
SIGNATURE
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Rel to Receipt

Support 1184536

A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date : May 4, 2015
Project No. : 142719
Invoice No. : 906025

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Stuart.Kuhn @sdcounty.ca.gov

RBF Consulting,
a Michael Baker International Company
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from March 30, 2015 through April 26, 2015

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$7,903.48	$10,557.35	$2,653.87
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$1,182.29	$1,182.29	$0.00
	Total Fee	$24,034.00	$9,085.77	$11,739.64	$2,653.87
			Previous Fee Billing	$9,085.77	

P: 1002993.
O: 50915
E: 52370
T: 001.006
A: 100496.
OK to Pay: $2653.87
Approved by:

STUART KUHN 5/15/15 DATE

TRACY CLINE 5/15/15 DATE

Total This Invoice $2,653.87

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

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JUN 09 2015

SIGNATURE
PRINT Cheryl Newell

A Baker Company
MICHAEL BAKER INTERNATIONAL

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $1,043.27.
Approved by:

Invoice Date : June 3, 2015
Project No. : 142719
Invoice No. : 908232

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Stuart.Kuhn @sdcounty.ca.gov

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

SK 6/15/15
STUART KUHN DATE

Tracy Cline 6/15/15
TRACY CLINE DATE

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from April 27, 2015 through May 31, 2015

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$10,557.35	$11,600.62	$1,043.27
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$1,182.29	$1,182.29	$0.00
	Total Fee	**$24,034.00**	**$11,739.64**	**$12,782.91**	**$1,043.27**
			Previous Fee Billing	$11,739.64	

Total This Invoice $1,043.27

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 42
RBF Project Number 142719

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*4/22 LDW meeting notes.			
*5/13 HMP Monitoring Subworkgroup meeting prep, attendance, and notes.			
Project Manager	1	$148.58	$148.58
Civil Engineer	1	$122.33	$122.33
Land Use Environmental Planner I	8.75	$88.27	$772.36
Total			**$1,043.27**
Grand Total	10.75		**$1,043.27**

RECEIVED 7/6/15 STUART KUHN

RBF
A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date : July 6, 2015
Project No. : 142719
[redacted] 911548

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Stuart.Kuhn @sdcounty.ca.gov

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Copermittee Land Development Workgroup Support FY 14-15

RBF Project No.: 142719
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 42

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 42, Notice to Proceed effective July 15, 2014, pursuant to the assistance with Copermittee Land Development Workgroup Support for Fiscal Year 2014-2015

Professional Consulting Services from June 01, 2015 through June 28, 2015

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	Land Development Workgroup Meeting Support (Work Plan Subtask 1.A)	$14,700.00	$11,600.62	$13,512.34	$1,911.72
2.	Standard Work Products (Work Plan Subtask 2.A)	$9,334.00	$1,182.29	$1,182.29	$0.00
	Total Fee	**$24,034.00**	**$12,782.91**	**$14,694.63**	**$1,911.72**
			Previous Fee Billing	$12,782.91	

P: 1002993
O: 50915
E: 52570
T: 001.0006
A: 100496
OK to Pay: $1,911.72
Approved by:

Total This Invoice	$1,911.72

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

TRACY CLINE 7/7/15 DATE

STUART KUHN 7/7/2015 DATE

WESTON SOLUTIONS

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DPW - WPP

OCT 24 2014

SIGNATURE Cheryl Newell
PRINT Cheryl Newell

Needed additional time to validate contract charges. JMF 1/12/15

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2013-2014 HMP PHASE 2 DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 10/21/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.123
INVOICE NUMBER: OCT2014-03328
BILLING PERIOD: 07/01/2014 TO 09/26/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	HMP PH2 DATA MANAGEMENT & REPORTING	43,084.00	0.00	41,941.39	97.35%	1,142.61
0001	PROJECT MANAGEMENT		0.00	16,356.39		
0002	MONITORING PLAN AND QAPP SUPPORT		0.00	4,565.00		
0003	DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		0.00	16,477.50		
0004	2012-2013 FINAL REPORT		0.00	4,542.50		
002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	125,432.00	26,457.50	121,647.10	96.98%	3,784.90
TOTAL		168,516.00	26,457.50	163,588.49	97.08%	4,927.51

CURRENT AMOUNT DUE 26,457.50 ok to pay

Project 5
4602.5 (INV July)
+ 7295 (INV Aug.)
4295 (INV Sept.)
16192.50

Project 6
4900 (INV July)
+ 4175 (INV Aug.)
1190 (INV Sept.)
10265

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Jeremy Fanteroni 11/6/14
Approved by: John T. Weber
JoAnn Weber
12/1/2014

WESTON SOLUTIONS

RECEIVED BY
DPW - WCS
JAN 07 2015
SIGNATURE
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2013-2014 HMP PHASE 2 DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 12/29/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.123
INVOICE NUMBER: DEC2014-00654
BILLING PERIOD: 09/27/2014 TO 10/10/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
001	HMP PH2 DATA MANAGEMENT & REPORTING	43,084.00	0.00	41,941.39	97.35%	1,142.61
0001	PROJECT MANAGEMENT		0.00	16,356.39		
0002	MONITORING PLAN AND QAPP SUPPORT		0.00	4,565.00		
0003	DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		0.00	16,477.50		
0004	2012-2013 FINAL REPORT		0.00	4,542.50		
002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	125,432.00	3,705.00	125,352.10	99.94%	79.90
TOTAL		168,516.00	3,705.00	167,293.49	99.27%	1,222.51

CURRENT AMOUNT DUE 3,705.00

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $3705.00
Approved by:

1/8/15
Date

Stuart Kuhn

1/9/15
Date

Jo Ann Weber

05P-0606 2/12

INVOICE
12883

F.E.I.N. 23-1501990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: DEC2014-00654 Invoice Date: 12/29/14

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2013-2014 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN.
County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163
USA

INVOICE SUMMARY

			Contract Value
Customer Number:	13245	Cost:	$168,516.00
		Total:	$168,516.00
Project Number:	13245.123	Cumulative Amount Billed:	$167,293.49
Project Name:	FY13-14 HMP Ph2 Data Management/Report & HMP Management Plan		
Project Manager:	Engelhorn, Garth		
Terms:	NET 30	Billing Period From: 9/27/2014	Billing Currency: USD
Due Date:	01/28/15	To: 10/10/14	

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	0.00	145.0000	$0.00	$3,480.00
Environmental Analyst				
Patzius, Michelle	0.00	84.0000	0.00	252.00
Junior Engineer				
Patel, Ritesh G	0.00	90.0000	0.00	3,600.00
Project Control				
Ventures, Ameedylyn	0.00	70.0000	0.00	840.00
Project Manager				
Renfrew, David S	0.00	160.0000	0.00	12,880.00
Scientist III				
Campagna, Laurence	0.00	110.0000	0.00	220.00
Senior Scientist				
Engelhorn, Garth	0.00	130.0000	0.00	19,955.00
Task Leader				
Dister, Sheri	0.00	150.0000	0.00	120.00
Labor	0.00		$0.00	$41,347.00
Subcontractor			$3,705.00	$125,352.10
Trav-Mileage Expense			0.00	125.39
Editing/WP			0.00	469.00
Total Expenses			$3,705.00	$125,946.49
Invoice Total			$3,705.00	$167,293.49

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: DEC2014-00654

Invoice Date: 12/29/14

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2013-2014 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN.
County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

USA

Customer Number: 13245

	Contract Value
Cost:	$125,432.00
Total:	$125,432.00
Cumulative Amount Billed:	$125,352.10

Project Number: 13245.123.002
Project Name: 2012-2014 ESA-PWA Hydromodification Management Plan
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 01/28/15

Billing Period From: 9/27/2014
To: 10/10/14

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	$3,705.00	$125,352.10
Total Expenses	$3,705.00	$125,352.10
Invoice Total	$3,705.00	$125,352.10

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

		Project Number:	13245.123.002	Billing Currency: USD
Invoice Number:	DEC2014-00654	Project Name:	2012-2014 ESA-PWA Hydromodification	Invoice Date: 12/29/14

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	Current FY/Pd	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500722120	2014/11	ESA PWA	110700	$3,705.00
Total: Subcontractor						$3,705.00
Total Expenses						$3,705.00

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

ESA02
2014.11.2
Vchr# 500722120

INVOICE

Analyn Nelson
Weston Solutions
ATTN: Accounts Payable
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

OCT 24 2014

October 22, 2014
Invoice No: 110700
Project Manager: Brian Haines

Project D211485.07 San Diego HMP - FY 13-14 Desk Work

PO# 0083978
(Agreement Terms: August 23, 2013 through June 30, 2015)

Professional Services from September 27, 2014 to October 10, 2014

Task 0000001 Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	26.25	130.00	3,412.50	
Totals	26.25		3,412.50	
Total Labor				3,412.50
			Total this Task	**$3,412.50**

13245.123.002.0001 ✓ L1

INVOICE APPROVAL
DATE REC: 10/24/14
APPROVED BY: Joseph Angelhom
SIGNATURE:
PO # 0083978
WO #

Task 0000003 Analysis and Reporting

Subtask ~~0000038~~ ~~2014 Data Analysis~~ and Reporting

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	.50	130.00	65.00	
Totals	.50		65.00	
Total Labor				65.00
			Total this Subtask	**$65.00**
			Total this Task	**$65.00**

13245.123.002.0003 ✓ L3

Task 0000004 Remote Sensing

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	1.25	130.00	162.50	
Totals	1.25		162.50	
Total Labor				162.50
			Total this Task	**$162.50**

13245.123.002.1001 ✓ L5

Task 0000006 Sub-basin Scaling

PAYMENT DUE UPON RECEIPT

$3,705.-

Project	D211485.07	San Diego HMP - FY 13-14 Desk Work	Invoice	110700

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	.50	130.00	65.00	
Totals	.50		65.00	
Total Labor				**65.00**

13245.123.002.1003 ✓ **Total this Task** **$65.00** - L 7

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	3,705.00	121,647.10	125,352.10
Limit			125,432.00
Remaining			79.90

TOTAL INVOICE AMOUNT: **$3,705.00**

Outstanding Invoices

Number	Date	Balance
109716	8/21/2014	9,502.50
109912	9/8/2014	11,470.00
110486	10/13/2014	5,485.00
Total		**26,457.50**

	Current	Prior	Total
Billings to Date	**3,705.00**	**121,647.10**	**125,352.10**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

ESA PWA
San Diego HMP - FY 13-14 Desk Work
through 10/10/2014 Budget and Invoice Summary

TASK	NAME / DESCRIPTION	Budget	Current Invoice	Prior Invoices	Spent to Date	Remaining Budget
San Diego HMP - FY 13-14 Desk Work						
1	Technical Assistance	$35,667.40	$3,412.50	$32,235.00	$35,647.50	$19.90
2	Revised Monitoring Study	$25,312.50		$25,312.50	$25,312.50	$0.00
3	Analysis and Reporting					
3A	2013 Data Analysis and Reporting	$9,345.00		$9,345.00	$9,345.00	$0.00
3B	2014 Data Analysis and Reporting	$23,595.00	$65.00	$23,527.50	$23,592.50	$2.50
4	Remote Sensing	$12,400.00	$162.50	$12,235.00	$12,397.50	$2.50
5	PCSWMM Modeling	$11,920.00		$11,892.50	$11,892.50	$27.50
6	Sub-basin Scaling	$6,280.00	$65.00	$6,187.50	$6,252.50	$27.50
600	ESA PWA Expenses	$912.10		$912.10	$912.10	$0.00
San Diego HMP - FY 13-14 Desk Work SUBTOTAL		**$125,432.00**	**$3,705.00**	**$121,647.10**	**$125,352.10**	**$79.90**
	GRAND TOTAL	**$125,432.00**	**$3,705.00**	**$121,647.10**	**$125,352.10**	**$79.90**

ESA PWA
San Diego HMP - FY 13-14 Desk Work
through 10/10/2014 Budget and Invoice Summary

TASK	NAME / DESCRIPTION	Budget	Current Invoice	Prior Invoices	Spent to Date	Remaining Budget
San Diego HMP - FY 13-14 Desk Work						
1	Technical Assistance	$35,667.40	$3,412.50	$32,235.00	$35,647.50	$19.90
2	Revised Monitoring Study	$25,312.50		$25,312.50	$25,312.50	$0.00
3	Analysis and Reporting					
3A	2013 Data Analysis and Reporting	$9,345.00		$9,345.00	$9,345.00	$0.00
3B	2014 Data Analysis and Reporting	$23,595.00	$65.00	$23,527.50	$23,592.50	$2.50
4	Remote Sensing	$12,400.00	$162.50	$12,235.00	$12,397.50	$2.50
5	PCSWMM Modeling	$11,920.00		$11,892.50	$11,892.50	$27.50
6	Sub-basin Scaling	$6,280.00	$65.00	$6,187.50	$6,252.50	$27.50
600	ESA PWA Expenses	$912.10		$912.10	$912.10	$0.00
San Diego HMP - FY 13-14 Desk Work SUBTOTAL		$125,432.00	$3,705.00	$121,647.10	$125,352.10	$79.90
	GRAND TOTAL	$125,432.00	$3,705.00	$121,647.10	$125,352.10	$79.90

Ref# 17
Rec 1737390

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Cheryl Reucci

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 12/29/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.124
INVOICE NUMBER: DEC2014-03158
BILLING PERIOD: 10/13/2014 TO 11/28/2014

SUMMARY

TASK		DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	001	HMP DATA MANAGEMENT & REPORTING	45,614.00	560.00	560.00	1.23%	45,054.00
0001		PROJECT MANAGEMENT		560.00	560.00		
0002		MONITORING PLAN AND QAPP SUPPORT		0.00	0.00		
0003		DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		0.00	0.00		
0004		2014-2015 FINAL REPORT		0.00	0.00		
	002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	112,840.00	1,430.00	1,430.00	1.27%	111,410.00
TOTAL			158,454.00	1,990.00	1,990.00	1.26%	156,464.00

CURRENT AMOUNT DUE 1,990.00

P: 1002993
O: 52915
E: 52370
T: 001 006
A: 100496
OK to Pay $1990.00
Approved by:
1/8/15 Date — Stuart Rubin
1/9/15 Date — Jo Ann Weber

PWR. PWG. MMP 14 JAN 2015. CA

08P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

Rel 34

Receipt 1737590

WESTON SOLUTIONS

RECEIVED 6/2/2015
BY: STUART KUHN

REMIT TO: Weston Solutions, Inc
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3600/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc
Account 0094242235,74
Bank of America, ABA 011900254

PLEASE REFERENCE D-F INVOICE NUMBER ON THE PAYMENT

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 01/29/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13243.124
INVOICE NUMBER: JAN2015-03317 N
BILLING PERIOD: 11/29/2014 TO 01/02/2015

SUMMARY

TASK		DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	001	HMP DATA MANAGEMENT & REPORTING	45,614.00	960.00	1,520.00	3.33%	44,094.00
0001		PROJECT MANAGEMENT		960.00	1,520.00		
0002		MONITORING PLAN AND QAPP SUPPORT		0.00	0.00		
0003		DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		0.00	0.00		
0004		2014-2015 FINAL REPORT		0.00	0.00		
	002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	112,840.00	5,725.00	7,155.00	6.34%	105,685.00
TOTAL			158,454.00	6,685.00	8,675.00	5.47%	149,779.00

CURRENT AMOUNT DUE 6,685.00 N

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 1004916
OK to Pay: $6,685.00
Approved by:

STUART KUHN 6-2-15 DATE

6-2-15 DATE

ORIGINAL WAS LOST IN TRANSIT
REPLACEMENT SENT 6-2-2015

08P0808 2/12

INVOICE

PWA-PWG-CMM04JUN2015.CA

Rel 34

Recept 1737591

RECEIVED BY
DPW - APP

APR 30 2015

SIGNATURE
PRINT Cheryl Vencil

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 4/22/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.124
INVOICE NUMBER: APR2015-03303 N
BILLING PERIOD: 01/03/2015 TO 03/27/2015

SUMMARY

	001	HMP DATA MANAGEMENT & REPORTING	45,614.00	14,422.27	15,942.27	34.95%	29,671.73
0001		PROJECT MANAGEMENT		7,907.27	9,427.27		
0002		MONITORING PLAN AND QAPP SUPPORT		600.00	600.00		
0003		DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		5,915.00	5,915.00		
0004		2014-2015 FINAL REPORT		0.00	0.00		
	002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	112,840.00	14,117.50	21,272.50	18.85%	91,567.50
TOTAL			158,454.00	28,539.77	37,214.77	23.49%	121,239.23

CURRENT AMOUNT DUE 28,539.77

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $28,539.77
Approved by:

STUART KUHN 5/5/2015 DATE

4-2-15

05P-0608 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

PWB-PWG.CMM04JUN2015.CA

12893

Kel 34

Receipt 1737592

WESTON SOLUTIONS

RECEIVED BY

MAY 01 2015

SIGNATURE: Cheryl Newell

PRINT: Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 5/1/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.124
INVOICE NUMBER: MAY2015-01782
BILLING PERIOD: 03/28/2015 TO 05/01/2015

SUMMARY

TASK						
001	HMP DATA MANAGEMENT & REPORTING	45,614.00	2,980.00	18,922.27	41.48%	26,691.73
0001	PROJECT MANAGEMENT		2,740.00	12,167.27		
0002	MONITORING PLAN AND QAPP SUPPORT		0.00	600.00		
0003	DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		240.00	6,155.00		
0004	2014-2015 FINAL REPORT		0.00	0.00		
002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	112,840.00	20,603.99	41,876.49	37.11%	70,963.51
TOTAL		158,454.00	23,583.99	60,798.76	38.37%	97,655.24

CURRENT AMOUNT DUE 23,583.99

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $ 23,583.99
Approved by:

STUART KUHN 5/5/2015 DATE

John T. Weber 6-2-15

05P-0606 2/12

INVOICE

PWA PWG.CMM 04 JUN 2015.CA

F.E.I.N. 23 1501990

Printed on 100% Recycled Paper

WESTON SOLUTIONS

RECEIVED BY
DPW -
JUN 05 2015
SIGNATURE
PRINT Cheryl Bennett

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 6/2/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.124
INVOICE NUMBER: JUN2015-01937
BILLING PERIOD: 05/01/2015 TO 05/29/2015

SUMMARY

TASK		DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	001	HMP DATA MANAGEMENT & REPORTING	45,614.00	5,247.50	24,169.77	52.99%	21,444.23
0001		PROJECT MANAGEMENT		870.00	13,037.27		
0002		MONITORING PLAN AND QAPP SUPPORT		0.00	600.00		
0003		DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		4,377.50	10,532.50		
0004		2014-2015 FINAL REPORT		0.00	0.00		
	002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	112,840.00	8,550.18	50,426.67	44.69%	62,413.33
TOTAL			158,454.00	13,797.68	74,596.44	47.08%	83,857.56

CURRENT AMOUNT DUE 13,797.68

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $ 13,797.68
Approved by:

JOANNE T. WEBB 6/8/15 DATE

STUART KUAN 6/8/15 DATE

05P-0606 2/12

INVOICE
12895

F.E.I.N. 23-1501990
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REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-01937 Invoice Date: 06/02/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

	Contract Value
Cost:	$158,454.00
Total:	$158,454.00

Project Number: 13245.124
Project Name: FY14-15 HMP Ph2 Data Management/Report & HMP Management Plan
Project Manager: Cotts, Anthony M
Terms: NET 30
Due Date: 07/02/2015

Cumulative Amount Billed: $74,596.44

Billing Period From:05/02/2015 To:05/29/2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	33.50	145.0000	$4,857.50	$5,437.50
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	15,120.00
Scientist II				
Mathis, Melissa E	0.00	100.0000	0.00	1,900.00
Mattson, Michelle M	0.00	100.0000	0.00	100.00
Scientist III				
Huber, Sara S	0.00	110.0000	0.00	825.00
Stefanosky, Susan L	0.00	110.0000	0.00	330.00
Senior Scientist				
Yonemasu, Satomi	3.00	130.0000	390.00	390.00
Labor	36.50		$5,247.50	$24,102.50
Subcontractor			$8,550.18	$50,426.67
Trav-Mileage Expense			0.00	67.27
Total Expenses			$8,550.18	$50,493.94
Invoice Total			$13,797.68	$74,596.44

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Anthony Cotts
Signature

05P-0606 2/12

INVOICE
12896

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-01937 Invoice Date: 06/02/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

			Contract Value
Customer Number:	13245	Cost:	$ 45,614.00
		Total:	$ 45,614.00
Project Number:	13245.124.001	Cumulative Amount Billed:	$24,169.77
Project Name:	FY2014-2015 HMP Data Management & Reporting		
Project Manager:	Engelhorn, Garth		
Terms:	NET 30	Billing Period From:05/02/2015	Billing Currency: USD
Due Date:	07/02/2015	To:05/29/2015	

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	33.50	145.0000	$4,857.50	$5,437.50
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	15,120.00
Scientist II				
Mathis, Melissa E	0.00	100.0000	0.00	1,900.00
Mattson, Michelle M	0.00	100.0000	0.00	100.00
Scientist III				
Huber, Sara S	0.00	110.0000	0.00	825.00
Stefanosky, Susan L	0.00	110.0000	0.00	330.00
Senior Scientist				
Yonemasu, Satomi	3.00	130.0000	390.00	390.00
Labor	36.50		$5,247.50	$24,102.50
Trav-Mileage Expense			$0.00	$67.27
Total Expenses			$0.00	$67.27
Invoice Total			$5,247.50	$24,169.77

05P-0606 2/12

INVOICE
12897

F.E.I.N. 23-1501990

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VOL. 13 Page 12898

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-01937

Invoice Date: 06/02/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Project Number: 13245.124.001.0001
Project Name: HMP Project Management
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07/02/2015

Cumulative Amount Billed: $13,037.27

Billing Period From:05/02/2015
To:05/29/2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	6.00	145.0000	$870.00	$1,450.00
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	11,520.00
Labor	6.00		$870.00	$12,970.00
Trav-Mileage Expense			$0.00	$67.27
Total Expenses			$0.00	$67.27
Invoice Total			$870.00	$13,037.27

05P-0606 2/12

INVOICE
12898

F.E.I.N. 23-1501990

Printed on Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-01937

Invoice Date: 06/02/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Project Number: 13245.124.001.0003
Project Name: HMP QAQC/Data Compilation & Submittal
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07/02/2015

Cumulative Amount Billed: $10,532.50

Billing Period From:05/02/2015 To:05/29/2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	27.50	145.0000	$3,987.50	$3,987.50
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	3,600.00
Scientist II				
Mathis, Melissa E	0.00	100.0000	0.00	1,300.00
Mattson, Michelle M	0.00	100.0000	0.00	100.00
Scientist III				
Huber, Sara S	0.00	110.0000	0.00	825.00
Stefanosky, Susan L	0.00	110.0000	0.00	330.00
Senior Scientist				
Yonemasu, Satomi	3.00	130.0000	390.00	390.00
Labor	30.50		$4,377.50	$10,532.50
Invoice Total			$4,377.50	$10,532.50

05P-0606 2/12

INVOICE
12899

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-01937

Invoice Date: 06/02/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

	Contract Value
Cost:	$ 112,840.00
Total:	$ 112,840.00

Project Number: 13245.124.002
Project Name: 2014-2015 ESA-PWA Hydromodification Management Plan
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07/02/2015

Cumulative Amount Billed: $50,426.67

Billing Period From:05/02/2015 To:05/29/2015

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	$8,550.18	$50,426.67
Total Expenses	$8,550.18	$50,426.67
Invoice Total	$8,550.18	$50,426.67

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number:	JUN2015-01937	Project Number:	13245.124.002	Billing Currency:	USD
		Project Name:	2014-2015 ESA-PWA Hydromodification	Invoice Date:	06/02/2015

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	Current FY/Pd	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500749036	2015/6	ESA PWA	114223	$8,550.18
Total: Subcontractor						$8,550.18
Total Expenses						$8,550.18

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

ESA 02
2015.6.1

INVOICE

TCW# 500749036

Analyn Nelson
Weston Solutions
ATTN: Accounts Payable
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

MAY 2 3 2015
AM

May 18, 2015 (Revised: May 22, 2015)
Invoice No: 114223 (Revised)
Project Manager: Brian Haines

Project D211485.08 San Diego HMP - FY 14-15 Analysis & Reporting

PO# 0087281
(Agreement Terms: October 13, 2014 through June 30, 2015)

Professional Services from March 28, 2015 to April 24, 2015

Task 0000001 BMP Site Selection

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	5.00	130.00	650.00	
Scientist III				
Kunz, Damien	5.00	110.00	550.00	
Totals	10.00		1,200.00	
Total Labor				**1,200.00**
		TOTAL THIS TASK:		**$1,200.00**

Task 0000002 Monitoring Data Anlaysis & Reporting

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	5.00	130.00	650.00	
Totals	5.00		650.00	
Total Labor				**650.00**
		TOTAL THIS TASK:		**$650.00**

Task 0000003 Project Coordination & Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Collison, Andrew	2.00	160.00	320.00	
Senior Scientist				
Haines, Brian	26.00	130.00	3,380.00	
Totals	28.00		3,700.00	
Total Labor				**3,700.00**
		TOTAL THIS TASK:		**$3,700.00**

INVOICE APPROVAL
DATE REC: 5/22/2015
APPROVED BY: Anthony Catts
SIGNATURE: Anthony Catts
0087281

Task PO # 0000600 Expenses

WO # 13245.124.002.0001

PAYMENT DUE UPON RECEIPT

RETURN TO ANALYN NELSON

$ 8,550.18 - 1

Reimbursable Expenses

Travel Expense		1,587.99	
Project Materials		1,412.19	
Total Reimbursables	**1.0 times**	**3,000.18**	**3,000.18**
	TOTAL THIS TASK:		**$3,000.18**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	8,550.18	41,876.49	50,426.67
Limit			102,840.00
Remaining			52,413.33

TOTAL INVOICE AMOUNT: **$8,550.18**

Outstanding Invoices

Number	**Date**	**Balance**
113062	3/12/2015	6,582.50
113749	4/22/2015	20,603.99
Total		**27,186.49**

	Current	**Prior**	**Total**
Billings to Date	**8,550.18**	**41,876.49**	**50,426.67**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

ESA PWA
San Diego HMP - FY 14-15 Analysis and Reporting
April 2015 (Revised) Budget and Invoice Summary

TASK	NAME / DESCRIPTION	Budget	Current Invoice	Prior Invoices	Spent to Date	Remaining Budget
San Diego HMP - FY 14-15 Analysis & Reporting						
1	BMP Site Selection	$15,000.00	$1,200.00	$11,832.50	$13,032.50	$1,967.50
2	Monitoring Data Anlaysis & Reporting	$36,420.00	$650.00	$2,015.00	$2,665.00	$33,755.00
3	Project Coordination & Technical Assistance	$25,120.00	$3,700.00	$15,305.00	$19,005.00	$6,115.00
600	Expenses	$26,300.00	$3,000.18	$12,723.99	$15,724.17	$10,575.83
San Diego HMP - FY 14-15 Analysis & Reporting SUBT		**$102,840.00**	**$8,550.18**	**$41,876.49**	**$50,426.67**	**$52,413.33**
	GRAND TOTAL	**$102,840.00**	**$8,550.18**	**$41,876.49**	**$50,426.67**	**$52,413.33**

RECEIVED BY
DPW - WPP

JUN 18 2015

SIGNATURE
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 6/15/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.124
INVOICE NUMBER: JUN2015-02908
BILLING PERIOD: 05/30/2015 TO 06/12/2015

SUMMARY

TASK		DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	001	HMP DATA MANAGEMENT & REPORTING	45,614.00	3,552.50	27,722.27	60.78%	17,891.73
0001		PROJECT MANAGEMENT		290.00	13,327.27		
0002		MONITORING PLAN AND QAPP SUPPORT		0.00	600.00		
0003		DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		3,262.50	10,532.50		
0004		2014-2015 FINAL REPORT		0.00	3,262.50		
	002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	112,840.00	16,310.00	66,736.67	59.14%	46,103.33
TOTAL			158,454.00	19,862.50	94,458.94	59.61%	63,995.06

CURRENT AMOUNT DUE 19,862.50

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $19,862.50
Approved by:

Jo Ann Webb 6/19/15
JO ANN WEBB

STUART KUHN 6/19/15
DATE

05P-0606 2/12

INVOICE
12905

F.E.I.N. 23-1501990
Printed on Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-02908

Invoice Date: 06/15/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: $158,454.00
Total: $158,454.00

Project Number: 13245.124
Project Name: FY14-15 HMP Ph2 Data Management/ Report & HMP Management Plan
Project Manager: Cotts, Anthony M
Terms: NET 30
Due Date: 07/15/2015

Cumulative Amount Billed: $94,458.94

Billing Period From:05/30/2015 To:06/12/2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	24.50	145.0000	$3,552.50	$8,990.00
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	15,120.00
Scientist II				
Mathis, Melissa E	0.00	100.0000	0.00	1,900.00
Mattson, Michelle M	0.00	100.0000	0.00	100.00
Scientist III				
Huber, Sara S	0.00	110.0000	0.00	825.00
Stefanosky, Susan L	0.00	110.0000	0.00	330.00
Senior Scientist				
Yonemasu, Satomi	0.00	130.0000	0.00	390.00
Labor	24.50		$3,552.50	$27,655.00
Subcontractor			$16,310.00	$66,736.67
Trav-Mileage Expense			0.00	67.27
Total Expenses			$16,310.00	$66,803.94
Invoice Total			$19,862.50	$94,458.94

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Anthony Cotts
Signature

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-02908

Invoice Date: 06/15/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: $45,614.00
Total: $45,614.00

Project Number: 13245.124.001
Project Name: 2013-2015 HMPDataMgmt/Rpt
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07/15/2015

Cumulative Amount Billed: $27,722.27

Billing Period From:05/30/2015
To:06/12/2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	24.50	145.0000	$3,552.50	$8,990.00
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	15,120.00
Scientist II				
Mathis, Melissa E	0.00	100.0000	0.00	1,900.00
Mattson, Michelle M	0.00	100.0000	0.00	100.00
Scientist III				
Huber, Sara S	0.00	110.0000	0.00	825.00
Stefanosky, Susan L	0.00	110.0000	0.00	330.00
Senior Scientist				
Yonemasu, Satomi	0.00	130.0000	0.00	390.00
Labor	24.50		$3,552.50	$27,655.00
Trav-Mileage Expense			$0.00	$67.27
Total Expenses			$0.00	$67.27
Invoice Total			$3,552.50	$27,722.27

05P-0606 2/12

INVOICE
12907

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-02908

Invoice Date: 06/15/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Project Number: 13245.124.001.0001
Project Name: HMP Project Management
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07/15/2015

Cumulative Amount Billed: $13,327.27

Billing Period From:05/30/2015
To:06/12/2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	2.00	145.0000	$290.00	$1,740.00
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	11,520.00
Labor	2.00		$290.00	$13,260.00
Trav-Mileage Expense			$0.00	$67.27
Total Expenses			$0.00	$67.27
Invoice Total			$290.00	$13,327.27

05P-0606 2/12

INVOICE
12908

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-02908

Invoice Date: 06/15/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Project Number: 13245.124.001.0004
Project Name: HMP Draft/Final Report
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07/15/2015

Cumulative Amount Billed: $3,262.50

Billing Period From:05/30/2015
To:06/12/2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	22.50	145.0000	$3,262.50	$3,262.50
Labor	22.50		$3,262.50	$3,262.50
Invoice Total			$3,262.50	$3,262.50

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUN2015-02908

Invoice Date: 06/15/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Cost: $112,840.00

Total: $112,840.00

Project Number: 13245.124.002
Project Name: 2014-2015 ESA HMP
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07/15/2015

Cumulative Amount Billed: $66,736.67

Billing Period From:05/30/2015
To:06/12/2015

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	$16,310.00	$66,736.67
Total Expenses	$16,310.00	$66,736.67
Invoice Total	$16,310.00	$66,736.67

05P-0606 2/12

INVOICE
12910

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number:	JUN2015-02908	Project Number:	13245.124.002	Billing Currency:	USD
		Project Name:	2014-2015 ESA HMP	Invoice Date:	06/15/2015

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No./ Vchr No.	Current FY/Pd	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500751460	2015/5	ESA PWA	114494	$16,310.00
Total: Subcontractor						$16,310.00
Total Expenses						$16,310.00

ESA PWA

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

ESA02
2015.6.4
rcbrff
500751460

Analyn Nelson
Weston Solutions
ATTN: Accounts Payable
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

JUN 10 2015
AN

June 10, 2015
Invoice No: 114494
Project Manager: Brian Haines

Project D211485.08 San Diego HMP - FY 14-15 Analysis & Reporting
PO# 0087281
(Agreement Terms: October 13, 2014 through June 30, 2015)

Approval - next page :

Professional Services from April 25, 2015 to June 12, 2015

Task 0000001 BMP Site Selection

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	8.00	130.00	1,040.00	
Scientist III				
Kunz, Damien	3.00	110.00	330.00	
Totals	11.00		1,370.00	
Total Labor				**1,370.00**
		TOTAL THIS TASK:		**$1,370.00**

Task 0000002 Monitoring Data Anlaysis & Reporting

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Brown, Rocko	23.00	130.00	2,990.00	
Haines, Brian	48.50	130.00	6,305.00	
Scientist III				
Kunz, Damien	.50	110.00	55.00	
Totals	72.00		9,350.00	
Total Labor				**9,350.00**
		TOTAL THIS TASK:		**$9,350.00**

Task 0000003 Project Coordination & Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	43.00	130.00	5,590.00	
Totals	43.00		5,590.00	
Total Labor				**5,590.00**
		TOTAL THIS TASK:		**$5,590.00**

PAYMENT DUE UPON RECEIPT

$16,310 - L1

Project	D211485.08	San Diego HMP - FY 14-15 Analysis & Repo	Invoice	114494

Billing Limits	Current	Prior	To-Date
Total Billings	16,310.00	50,426.67	66,736.67
Limit			102,840.00
Remaining			36,103.33

TOTAL INVOICE AMOUNT: $16,310.00

Outstanding Invoices

Number	Date	Balance
113062	3/12/2015	6,582.50
113749	4/22/2015	20,603.99
114223	5/18/2015	8,550.18
Total		**35,736.67**

	Current	Prior	Total
Billings to Date	**16,310.00**	**50,426.67**	**66,736.67**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL60009

TIN #:94-1698350

PAYMENT DUE UPON RECEIPT

ESA PWA
San Diego HMP - FY 14-15 Analysis and Reporting
through June 12, 2015 Budget and Invoice Summary

TASK	NAME / DESCRIPTION	Budget	Current Invoice	Prior Invoices	Spent to Date	Remaining Budget
San Diego HMP - FY 14-15 Analysis & Reporting						
1	BMP Site Selection	$15,000.00	$1,370.00	$13,032.50	$14,402.50	$597.50
2	Monitoring Data Anlaysis & Reporting	$36,420.00	$9,350.00	$2,665.00	$12,015.00	$24,405.00
3	Project Coordination & Technical Assistance	$25,120.00	$5,590.00	$19,005.00	$24,595.00	$525.00
600	Expenses	$26,300.00		$15,724.17	$15,724.17	$10,575.83
San Diego HMP - FY 14-15 Analysis & Reporting SUBT		**$102,840.00**	**$16,310.00**	**$50,426.67**	**$66,736.67**	**$36,103.33**
	GRAND TOTAL	**$102,840.00**	**$16,310.00**	**$50,426.67**	**$66,736.67**	**$36,103.33**

ESA02
2015.6.4
rcb# 50075/460

Inv# 114494
Invoice Date: 6/10/15
Invoice Amount $16,310.- L1

INVOICE APPROVAL

DATE REC: 6/10/15

APPROVED BY: Anthony Cotts

SIGNATURE: Anthony Cotts

PO # 0087281

WO # 13245.124.002.0001

RETURN TO ANALYN NELSON

Billing Backup

	Regular Hours	Billing
Project Number: D211485.08 San Diego HMP - FY 14-15 Analysis & Repo		
Task Number: 0000001 BMP Site Selection		
10349 Haines, Brian 6/12/2015	8.00	1,040.00
Draf t of the BMP site selection memo.		
10340 Kunz, Damien 4/28/2015	1.00	110.00
Ordering of flumes, approaches, and enclosures for monitoring sites.		
10340 Kunz, Damien 4/29/2015	2.00	220.00
Ordering of flumes, approaches, and enclosures for monitoring sites.		
Total for 10340	**3.00**	**330.00**
Total for 0000001	**11.00**	**1,370.00**
Task Number: 0000002 Monitoring Data Anlaysis & Reporting		
10327 Brown, Rocko 6/8/2015	3.00	390.00
Analysis of HMP in-stream monitoring data and drafting of HMP data analysis update report.		
10327 Brown, Rocko 6/9/2015	8.00	1,040.00
Analysis of HMP in-stream monitoring data and drafting of HMP data analysis update report.		
10327 Brown, Rocko 6/10/2015	4.00	520.00
Analysis of HMP in-stream monitoring data and drafting of HMP data analysis update report.		
10327 Brown, Rocko 6/11/2015	8.00	1,040.00
Analysis of HMP in-stream monitoring data and drafting of HMP data analysis update report.		
Total for 10327	**23.00**	**2,990.00**
10349 Haines, Brian 6/8/2015	.50	65.00
Review of event-based stream data with Rocko.		
10349 Haines, Brian 6/9/2015	2.00	260.00
Review of event-based stream data with Rocko.		
10349 Haines, Brian 6/11/2015	8.00	1,040.00
Review of detrended low flow thresholds, and drafting of data analysis update.		
10349 Haines, Brian 4/27/2015	1.00	130.00
Review of channel dimensions matrix for the San Diego WQE and applicability to the HMP monitoring data analysis.		
10349 Haines, Brian 4/28/2015	3.00	390.00
Review of channel dimensions matrix for the San Diego WQE and applicability to the HMP monitoring data analysis.		
10349 Haines, Brian 5/12/2015	2.00	260.00
Initial analyis of 2015 survey data, and survey measurement error study.		
10349 Haines, Brian 5/14/2015	3.50	455.00
Revision of channel data, and preperation of sediment load tables for annual report.		
10349 Haines, Brian 5/18/2015	1.00	130.00
Annual data analysis report coordination with Rocko Brown and Anthony Cotts (Weston).		
10349 Haines, Brian 5/20/2015	4.00	520.00
Annual report updates and review of internal monitoring plan for additional needs.		
10349 Haines, Brian 5/21/2015	8.00	1,040.00
Annual report updates and review of internal monitoring plan for additional needs.		
10349 Haines, Brian 5/27/2015	1.00	130.00
Review of in-stream monitoring data from Weston.		
10349 Haines, Brian 5/28/2015	6.50	845.00
Initial workup of in-stream data. Report tables setup. Task coordination with Rocko and James. Transfer or previous event-based work curve data.		
10349 Haines, Brian 6/1/2015	4.00	520.00
QC and revision of field data		
10349 Haines, Brian 6/2/2015	2.00	260.00
QC and revision of field data		
10349 Haines, Brian 6/4/2015	2.00	260.00
QC of field data		

Total for 10349	**48.50**	**6,305.00**
10340 Kunz, Damien 5/26/2015	.50	55.00
check in on flumes		
Total for 0000002	**72.00**	**9,350.00**
Task Number: 0000003 Project Coordination & Technical Assista		
10349 Haines, Brian 4/30/2015	1.50	195.00
Discussing FY 15-16 priorities with Dave Renfrew and Garth Engelhorn of Alta Environmental.		
10349 Haines, Brian 5/11/2015	4.00	520.00
Phone calls and emails with Stuart Kuhn regarding hosting SDHM and Aqua Terra support, County Parks access for HMP monitoring, and action items		
10349 Haines, Brian 5/12/2015	6.00	780.00
Revised shedule and scope for end of FY work to Stuart. Setup task for hosting SDHM and SDSU modeling support. Coordination with Weston and Alta		
10349 Haines, Brian 5/13/2015	6.00	780.00
Continued scoping for next fiscal year and attendace of subworkgroup meeting.		
10349 Haines, Brian 5/14/2015	1.50	195.00
Continued scoping for next fiscal year.		
10349 Haines, Brian 5/15/2015	2.00	260.00
Consulting with Aqua Terra on continuous simulation modeling data update.		
10349 Haines, Brian 5/18/2015	.50	65.00
Rates dicussion with Bobette from the ESA SD office.		
10349 Haines, Brian 5/22/2015	1.50	195.00
Project and contract updates with the ESA San Diego staff. Final contract setup for Rick Engineering.		
10349 Haines, Brian 5/26/2015	6.50	845.00
Project update to Stuart Kuhn. Communication with subs on next fiscal year work. Follow up with Damien on BMP instrumentation status.		
10349 Haines, Brian 5/28/2015	.50	65.00
Coordination with Aqua Terra on next fiscal year tasks - continuous simulation modeling parameter updates.		
10349 Haines, Brian 6/2/2015	4.00	520.00
Developed slides for an LDW meeting as requested by Stuart Kuhn and Joanna.		
10349 Haines, Brian 6/3/2015	3.00	390.00
Preparation and attendance of subworkgroup meeting. Follow up with subs on upcoming tasks/scopes of work.		
10349 Haines, Brian 6/4/2015	2.00	260.00
Revised budget for FY 15-16.		
10349 Haines, Brian 6/10/2015	4.00	520.00
Review of SDSU model calibration report, and remote attendance of presentation on the model by Trent Biggs.		
Total for 0000003	**43.00**	**5,590.00**
Total for D211485.08	**126.00**	**16,310.00**

xylem
Let's Solve Water

O+Analytical | Global Water | WTW | SI Analytics | -ebro- | ROYCE TECHNOLOGIES | Bellingham + Stanley

151 Graham Road • P.O. Box 9010 • College Station, TX 77842-9010 • Fax: 979-690-0440
Telephone: OI Analytical: 800-653-1711 / 979-690-1711
Global Water/WTW/SI/ebro : 800-876-1172 / 979-690-5560 | Royce: 800-347-3505 / 979-690-5556 | B + S: 800-678-8573 / 678-804-5730

Customer Number: 3446
HFM 3230
Invoice Number: 178844

Bill To:
ESA - San Francisco
550 Kerny Street
Suite 800
San Francisco CA 94108
UNITED STATES

Ship To: 4
ESA San Francisco
550 West C Street
Suite 750
San Diego CA 92101
UNITED STATES

Page: 1 of 1
Date: 4/1/2015
Salesperson: Rene Cruz
Regular Invoice
Currency: USD US Dollar
Customer Type: 7260

Fax:

Order	Purchase Order	Packages	Prepaid	Weight	Ship Via	Terms
C000079372	MC/DKunz0401	1		5.00	FEDX 2DAY ADD	CREDIT CARD

Line/Rel	Qty Ordered	Qty Shipped	Back Order	Unit Price	Extended Price
1	1.000	1.000	0.000	1,171.00000	1,171.00

CI:
Item: ARJ000
Description: FL16U-003 Flow Logger,0-3',25' cable,USB
U/M: EA
Date Shipped: 04/01/2015

2	1.000	1.000	0.000	0.00000	0.00

CI:
Item: ARJ050
Description: Software Kit-FL16U-ACM, Cable, & Manual
U/M: EA
Date Shipped: 04/01/2015

Credit Card Payment that has [Amount: 1322.34 USD] was created.
Card Type: MASTERCARcard_# ********6781 Authorization # 05402Z

Sales Amount	1,171.00
Misc Charges	0.00
Freight	57.65
Sales Tax	93.69
Prepaid Amount	1,322.34
Total	0.00

This order for equipment, parts, or services is expressly limited to acceptance of our Terms and Conditions of Sale (available at www.oico.com <http://www.oico.com>) By accepting these items, you indicate your acceptance of those terms in their entirety. Any different or additional terms are expressly rejected unless agreed to in writing

Remit To:
OI Corporation
P.O. Box 9010
College Station, Texas 77842-9010

Wire Payments:
JP Morgan Chase Bank, N.A.

Account Number: 754269991
ABA for ACH (Domestic): 111000614
ABA for Wires (International): 021000021
Swift Code:CHASUS33

RECEIVED 7/1/15 STUART KUHN

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HYDROMODIFICATION MANAGEMENT PLAN

INVOICE DATE: 7/1/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.124
INVOICE NUMBER: JUL2015-02008
BILLING PERIOD: 06/13/2015 TO 06/30/2015

SUMMARY

TASK		DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
	001	HMP DATA MANAGEMENT & REPORTING	45,614.00	1,160.00	28,882.27	63.32%	16,731.73
0001		PROJECT MANAGEMENT		942.50	14,269.77		
0002		MONITORING PLAN AND QAPP SUPPORT		0.00	600.00		
0003		DATA QA/QC, DATA COMPILATION AND DATA SUBMITTAL		0.00	10,532.50		
0004		2014-2015 FINAL REPORT		217.50	3,480.00		
	002	ESA PWA - HYDROMODIFICATION MANAGEMENT PLAN	112,840.00	13,965.30	80,701.97	71.52%	32,138.03
TOTAL			158,454.00	15,125.30	109,584.24	69.16%	48,869.76

CURRENT AMOUNT DUE 15,125.30

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $ 15,125.30
Approved by:

STUART KUHN 7/1/15 DATE

JO ANN WEBER 7/1/15 DATE

05P-0608 2/12

INVOICE

F.E.I.N. 23 1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUL2015-02008

Invoice Date: 07 01 2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT

County Agreement No 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Contract Value
Cost: $158,454 00
Total: $158,454 00

Project Number: 13245 124
Project Name: FY14-15 HMP REPORTING
Project Manager: Cotts, Anthony M
Terms: NET 30
Due Date: 07 31 2015

Cumulative Amount Billed: $109,584.24

Billing Period From:06 13 2015
To:06 30 2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	8 00	145.0000	$1,160.00	$10,150.00
Project Manager				
Engelhorn, Garth	0 00	160.0000	0.00	15,120.00
Scientist II				
Mathis, Melissa E	0 00	100.0000	0.00	1,900.00
Mattson, Michelle M	0.00	100.0000	0.00	100.00
Scientist III				
Huber, Sam S	0 00	110.0000	0.00	825.00
Stefanosky, Susan L	0.00	110.0000	0.00	330.00
Senior Scientist				
Yonemasu, Satomi	0.00	130.0000	0.00	390.00
Labor	8 00		$1,160.00	$28,815.00
Subcontractor			$13,965.30	$80,701.97
Trav-Mileage Expense			0.00	67.27
Total Expenses			$13,965 30	$80,769.24
Invoice Total			$15,125.30	$109,584.24

I hereby certify that Weston Solutions, Inc is in compliance with Article 8 9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true

Anthony Cotts
Signature

Page 1

05P-0608 2/12

INVOICE

F.E.I.N. 23 1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUL2015-02008

Invoice Date: 07/01/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

	Contract Value
Cost	$45,614.00
Total:	$45,614.00

Project Number: 13245.124.001
Project Name: 2013-2015 HMPDataMgmt Rpt
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07/31/2015

Cumulative Amount Billed: $28,882.27

Billing Period From: 06/13/2015 To: 06/30/2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	8.00	145.0000	$1,160.00	$10,150.00
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	15,120.00
Scientist II				
Mathis, Melissa E	0.00	100.0000	0.00	1,900.00
Mattson, Michelle M	0.00	100.0000	0.00	100.00
Scientist III				
Huber, Sara S	0.00	110.0000	0.00	825.00
Stefanosky, Susan L	0.00	110.0000	0.00	330.00
Senior Scientist				
Yonemasu, Satomi	0.00	130.0000	0.00	390.00
Labor	8.00		$1,160.00	$28,815.00
Trav-Mileage Expense			$0.00	$67.27
Total Expenses			$0.00	$67.27
Invoice Total			$1,160.00	$28,882.27

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUL2015-02008

Invoice Date: 07 01 2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Project Number: 13245.124 001 0001
Project Name: HMP Project Management
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07 31 2015

Cumulative Amount Billed: $14,269.77

Billing Period From:06 13 2015
To:06 30 2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	6 50	145.0000	$942.50	$2,682 50
Project Manager				
Engelhorn, Garth	0.00	160.0000	0.00	11,520.00
Labor	6 50		$942.50	$14,202 50
Trav-Mileage Expense			$0.00	$67.27
Total Expenses			$0.00	$67.27
Invoice Total			$942.50	$14,269.77

05P-0808 2/12

INVOICE

F.E.I.N. 23 1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: JUL2015-02008

Invoice Date: 07 01 2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Project Number: 13245.124.001.0004
Project Name: HMP Draft/Final Report
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07 31 2015

Cumulative Amount Billed: $3,480.00

Billing Period From: 06 13 2015
To: 06 30 2015

Billing Currency: USD

	Current Hours	Rate	Current Amount	Cumulative Amount
Engineer				
Cotts, Anthony M	1.50	145.0000	$217.50	$3,480.00
Labor	1.50		$217.50	$3,480.00
Invoice Total			$217.50	$3,480.00

05P-0606 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: JUL2015-02008

Invoice Date: 07 01 2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 HMP DATA MANAGEMENT & REPORTING AND HMP EFFECTIVENESS ASSESSMENT

County Agreement No 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163

Customer Number: 13245

Cost: $112,840.00

Total: $112,840.00

Project Number: 13245.124.002
Project Name: 2014-2015 ESA HMP
Project Manager: Engelhorn, Garth
Terms: NET 30
Due Date: 07 31 2015

Cumulative Amount Billed: $80,701 97

Billing Period From: 06 13 2015
To: 06 30 2015

Billing Currency: USD

	Current Amount	Cumulative Amount
Subcontractor	$13,965.30	$80,701.97
Total Expenses	$13,965.30	$80,701.97
Invoice Total	$13,965.30	$80,701.97

05P-0806 2/12

INVOICE

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number:	JUL2015-02008	Project Number:	13245.124.002	Billing Currency:	USD
		Project Name:	2014-2015 ESA HMP	Invoice Date:	07/01/2015

Non-Labor Supporting Schedule

Group Description: Total Expenses

Description	Transaction	JE No. Vchr No.	Current FY/Pd	Vendor	Invoice ID	Current Amount
Line Description:	Subcontractor					
Subcontractor	Consulting Services	500754181	2015 6	ESA PWA	115039	$13,965.30
Total: Subcontractor						$13,965.30
Total Expenses						$13,965.30

ESA PWA
San Diego HMP - FY 14-15 Analysis and Reporting
through June 30, 2015 Budget and Invoice Summary

TASK	NAME / DESCRIPTION	Budget	Current Invoice	Prior Invoices	Spent to Date	Remaining Budget
San Diego HMP - FY 14-15 Analysis & Reporting						
1	BMP Site Selection	$15,000.00		$14,402.50	$14,402.50	$597.50
2	Monitoring Data Anlaysis & Reporting	$36,420.00	$13,410.00	$12,015.00	$25,425.00	$10,995.00
3	Project Coordination & Technical Assistance	$25,120.00	$520.00	$24,595.00	$25,115.00	$5.00
600	Expenses	$26,300.00	$35.30	$15,724.17	$15,759.47	$10,540.53
San Diego HMP - FY 14-15 Analysis & Reporting SUBT		$102,840.00	$13,965.30	$66,736.67	$80,701.97	$22,138.03
	GRAND TOTAL	$102,840.00	$13,965.30	$66,736.67	$80,701.97	$22,138.03

INVOICE APPROVAL

DATE REC: 6/30/2015

APPROVED BY: Anthony Cotts

SIGNATURE: Anthony Cotts

PO # 0097281

WO # 13245.124.002.0001

RETURN TO ANALYN NELSON

ESA PV

550 Kearny Street, Suite 800
San Francisco, CA 94108
(415) 896-5900

INVOICE

Analyn Nelson
Weston Solutions
ATTN: Accounts Payable
5817 Dryden Place, Suite 101
Carlsbad, CA 92008

June 30, 2015
Invoice No: 115039
Project Manager: Brian Haines

Project D211485.08 San Diego HMP - FY 14-15 Analysis & Reporting

PO# 0087281
(Agreement Terms: October 13, 2014 through June 30, 2015)

Professional Services from June 13, 2015 to June 30, 2015

Task 0000002 Monitoring Data Anlaysis & Reporting

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Collison, Andrew	4.00	160.00	640.00	
Pohl, David	1.00	160.00	160.00	
Senior Scientist				
Brown, Rocko	8.00	130.00	1,040.00	
Haines, Brian	89.00	130.00	11,570.00	
Totals	102.00		13,410.00	
Total Labor				**13,410.00**
		TOTAL THIS TASK:		**$13,410.00**

Task 0000003 Project Coordination & Technical Assistance

Professional Personnel

	Hours	Rate	Amount	
Senior Scientist				
Haines, Brian	4.00	130.00	520.00	
Totals	4.00		520.00	
Total Labor				**520.00**
		TOTAL THIS TASK:		**$520.00**

Task 0000600 Expenses

Reimbursable Expenses

Courier			35.30	
Total Reimbursables		**1.0 times**	**35.30**	**35.30**
		TOTAL THIS TASK:		**$35.30**

PAYMENT DUE UPON RECEIPT

Billing Limits	Current	Prior	To-Date
Total Billings	13,965.30	66,736.67	80,701.97
Limit			102,840.00
Remaining			22,138.03

TOTAL INVOICE AMOUNT: **$13,965.30**

Outstanding Invoices

Number	Date	Balance
113749	4/22/2015	20,603.99
114223	5/18/2015	8,550.18
114494	6/10/2015	16,310.00
Total		**45,464.17**

	Current	Prior	Total
Billings to Date	**$13,965.30**	**66,736.67**	**80,701.97**

Remit to:

E S A
P.O. Box 92170
Elk Grove, IL 60009

TIN #: 94-1698350

Billing Backup

Environmental Science Associates

Project D211485.08 San Diego HMP - FY 14-15 Analysis & Reporting

Task 0000002 Monitoring Data Anlaysis & Reporting

Professional Personnel

			Hours	Rate	Amount
Project Manager					
10527	Collison, Andrew	6/29/2015	1.00	160.00	160.00
	Review results of 2015 data analysis and presentation.				
10527	Pohl, David	6/24/2015	1.00	160.00	160.00
	Project Coordination				
Senior Scientist					
10327	Brown, Rocko	6/17/2015	4.00	130.00	520.00
	data analysis				
10327	Brown, Rocko	6/18/2015	4.00	130.00	520.00
	data analysis				
10349	Haines, Brian	6/14/2015	.50	130.00	65.00
	Review of event-based work curve methodology.				
10349	Haines, Brian	6/15/2015	8.00	130.00	1,040.00
	Final QC of channel survey data				
10349	Haines, Brian	6/16/2015	5.50	130.00	715.00
	Final QC of channel survey data. Limits of detection analysis. Task review with Rocko.				
10349	Haines, Brian	6/17/2015	8.00	130.00	1,040.00
	Analysis of sediment transport data. Developed presentation to the subworkgroup.				
10349	Haines, Brian	6/18/2015	6.00	130.00	780.00
	Workup and sediment data and presentation development.				
10349	Haines, Brian	6/19/2015	8.00	130.00	1,040.00
	Workup and sediment data and presentation development.				
10349	Haines, Brian	6/22/2015	6.00	130.00	780.00
	Monitoring data analysis and reporting.				
10349	Haines, Brian	6/23/2015	8.50	130.00	1,105.00
	Monitoring data analysis and reporting.				
10349	Haines, Brian	6/24/2015	8.00	130.00	1,040.00
	Monitoring data analysis and reporting.				
10349	Haines, Brian	6/26/2015	4.00	130.00	520.00
	Finishing touches on draft report - overview figure, revised cross-sections, and revised narrative/conclusions.				

10349	Haines, Brian	6/27/2015	8.00	130.00	1,040.00	
	Finishing touches on draft report - overview figure, revised cross-sections, and revised narrative/conclusions. Partial production of report.					
10349	Haines, Brian	6/29/2015	8.00	130.00	1,040.00	
	Finishing touches on draft report - overview figure, revised cross-sections, and revised narrative/conclusions. Partial production of report.					
10349	Haines, Brian	6/30/2015	8.00	130.00	1,040.00	
	End of fiscal year closeout. Submit data analysis report to Subworkgroup.					
	Totals		102.00		13,410.00	
	Total Labor					**13,410.00**
				TOTAL THIS TASK:		**$13,410.00**

Task 0000003 Project Coordination & Technical Assistance

Professional Personnel

			Hours	Rate	Amount	
Senior Scientist						
10349	Haines, Brian	6/14/2015	2.00	130.00	260.00	
	Final budget revisions, schedule, and scope of services.					
10349	Haines, Brian	6/16/2015	2.00	130.00	260.00	
	Final budget revisions, schedule, and scope of services.					
	Totals		4.00		520.00	
	Total Labor					**520.00**
				TOTAL THIS TASK:		**$520.00**

Task 0000600 Expenses

Reimbursable Expenses

Courier						
AP	104836	4/27/2015	FEDEX / COURIER / Invoice: 5-003-96420, 04/17/2015 Exchange of flow logger for the Fairbrook Park bioswale outlet		35.30	
	Total Reimbursables			**1.0 times**	**35.30**	**35.30**
				TOTAL THIS TASK:		**$35.30**
				Total this Project		**$13,965.30**
				Total this Report		**$13,965.30**

Invoice Number	Invoice Date	Account Number
5-003-96420	Apr 17, 2015	3663-6766-8

Approved by Melissa Gross on 4/24/2015 5:46 PM

FedEx Express Shipment Detail By Payor Type (Original)

Picked up: Apr 07, 2015
Payor: Shipper
Cust. Ref.: Damien-SD HMP-Desk Work
Ref.#2:
Ref.#3:

- Fuel Surcharge - FedEx has applied a fuel surcharge of 3 50% to this shipment
- Distance Based Pricing, Zone 6
- FedEx has audited this shipment for correct packages, weight, and service Any changes made are reflected in the invoice amount
- We calculated your charges based on a dimensional weight of 11.0 lbs, 14" x 14" x 9", using a dimensional factor of 166

Automation	INET
Tracking ID	773314698900
Service Type	FedEx Express Saver
Package Type	Customer Packaging
Zone	06
Packages	1
Actual Weight	4.0 lbs, 1 8 kgs
Rated Weight	11.0 lbs, 5.0 kgs
Delivered	Apr 10, 2015 13:44
Svc Area	A1
Signed by	T.TINSELY
FedEx Use	000000000/0007175/_

Sender
Christine Dullaghan
ESA
550 West C Street
SAN DIEGO CA 92101 US

Recipient
S000018334
Global Water , Xylem, Inc
151 Graham Road
COLLEGE STATION TX 77845 US

Transportation Charge		41.10
Discount		-6.99
Fuel Surcharge		1.19
Total Charge	**USD**	**$35.30**

1106-01-00-0024495-0002-006399-

Rec 72

RECEIVED BY
CP

MAY 05 2015
SIGNATURE
PRINT Cheryl Krevitt

amec

INVOICE

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Stuart Kuhn
5510 Overland Avenue, Ste. 410
Mailstop O332
San Diego, CA 92123-1237

APPENDIX U

File: 999-B

County Contract Number: 542922 (Old contract # 536213)
AMEC Project Number: 5025-15-4052

Invoice Date: 4/27/2015
Task Order Number: 52
Invoice Number: S24740746

COUNTY OF SAN DIEGO FIELD SERVICES HMP FY14-15 TASK ORDER 52

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 2/11/2015 - 4/10/2015

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. ESA Field Services	$24,957.00	18.08%	$4,512.27	$0.00	$4,512.27
TOTALS:	$24,957.00	18.08%	$4,512.27	$0.00	$4,512.27
AMOUNT DUE THIS BILLING:					**$4,512.27**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

4/27/15
NATHAN SCHAEDLER — DATE
PROJECT MANAGER

P: 1002953
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $ 4,512.27
Approved by:

Receipt 1737547

5/5/15
TRACY CLINE — DATE

5/5/15
STUART KUHN — DATE

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123-4341
Tel: +1 858.278.3600 • Fax: +1 858.278.5300

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Please Recycle!

PWR.PNG.GHM.08 MAY 2015.CA

amec

RECEIVED 7/1/15 STUART KUHN

FINAL INVOICE

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Stuart Kuhn
5510 Overland Avenue, Ste. 410
Mailstop O332
San Diego, CA 92123-1237

APPENDIX U

File: 999-B

County Contract Number: 542922 (Old contract # 536213)
AMEC Project Number: 5025-15-4052

Invoice Date: 6/26/2015
Task Order Number: 52
Invoice Number: S24740922

COUNTY OF SAN DIEGO FIELD SERVICES HMP FY14-15 TASK ORDER 52

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 4/11/2015 - 6/26/2015

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. ESA Field Services	$24,957.00	60.63%	$15,130.57	$4,512.27	$10,618.30
TOTALS:	$24,957.00	60.63%	$15,130.57	$4,512.27	$10,618.30
AMOUNT DUE THIS BILLING:					**$10,618.30**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

P: 1002993
O: 50915
E: 52370
T: 001.0006
A: 1004966
OK to Pay $10,618.30
Approved by:

Nathan Schaedler 6/26/15
NATHAN SCHAEDLER DATE
PROJECT MANAGER

7/2/15
STUART KUHN DATE

7/2/15
JO ANN WEBER DATE

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123-4341
Tel: +1 858.278.3600 • Fax: +1 858.278.5300

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amec

Project : 5025154052 -- Co of SD TO 52 ESA Field Services **Invoice # : S24740922**

Phase : 01 -- ESA Field Services

Task : ** - ****

Reimbursable Expenses

Vendor Name	Doc Nbr	Doc Date	Cost	Multiplier	Amount
Subcontractor					
ESA PWA	114227	05/18/2015	2,895.13	1.000	2,895.13
ESA PWA	114495	06/03/2015	7,723.17	1.000	7,723.17
			10,618.30		10,618.30
Total : Subcontractor			**10,618.30**		**10,618.30**
Total Reimbursable Expenses					***10,618.30***
Total Expenses					***10,618.30***
Total Task : ** - ******					**10,618.30**

Total Phase : 01 -- ESA Field Services

Fees	:	**0.00**
Expenses	:	**10,618.30**
Total	:	**10,618.30**

Total Project: 5025154052 -- Co of SD TO 52 ESA Field Services **10,618.30**

RECEIVED 7/1/15
STUART KUHN

amec

FINAL INVOICE

COUNTY OF SAN DIEGO
Department of Public Works
ATTN: Stuart Kuhn
5510 Overland Avenue, Ste. 410
Mailstop O-332
San Diego, CA 92123-1237

APPENDIX U

File: 999-B

County Contract Number: 542922 (Old contract # 536213)
AMEC Project Number: 5025-15-4053

Invoice Date: 6/26/2015
Task Order Number: 53
Invoice Number: S24740923

COUNTY OF SAN DIEGO SDSU WPP SERVICES TASK ORDER 53

WATER QUALITY/QUANTITY PROJECT SERVICES
PERIOD 2/11/2015 - 6/26/2015

Tasks:	Contract amount:	Percent complete:	Complete to date:	Previously invoiced:	Total this invoice:
1. SDSU WPP Services	$15,000.00	100.00%	$15,000.00	$0.00	$15,000.00
TOTALS:	$15,000.00	100.00%	$15,000.00	$0.00	$15,000.00
AMOUNT DUE THIS BILLING:					**$15,000.00**

I hereby certify that (MACTEC ENGINEERING & CONSULTING, INC. DBA AMEC ENVIRONMENT & INFRASTRUCTURE, INC.) is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

P: 1002993
O: 50915
E: 52370
T: 001.0006
A: 100496
OK to Pay $15,000
Approved

Nath Schaedl 6/26/15
NATHAN SCHAEDLER — DATE
PROJECT MANAGER

JoAnn T. Weber 7-2-15
JOANN WEBER — DATE

STUART KUHN — 7-2-15
DATE

Environment & Infrastructure
9177 Sky Park Court • San Diego, CA 92123-4341
Tel: +1 858.278.3600 • Fax: +1 858.278.5300

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Please Recycle!

RBF CONSULTING
A Baker Company

P: 1002995
O: 50915
E: 52570
T: 001.0006
A: 100496
OK to Pay: $44,729.16
Approved by:

Recept 1737530
Supp: 1184533

RECEIVED BY
MAR 27 2015
Cheryl Kewell

TRACY CLINE 4/20/15 DATE

Invoice Date: March 19, 2015
Project No. : 136733
Invoice No. : 902565

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123-1237

STUART KUHN 4/16/15 DATE

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Task Order 36 - Phase II Hydromodification Monitoring FY 2013-2014

Project No. : 136733
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 36

Professional Consulting Services rendered pursuant to the Notice to Proceed, dated July 24, 2013, pursuant to Contract No. 534079 and subsequent Addendum No. 1, dated August 4, 2014, relative to the Phase 2 Hydromodification Monitoring FY 2013-2014 project.

Professional Consulting Services from August 04, 2014 to January 23, 2015

Time and Materials Fee Description for This Period:

Weston Solutions Invoice # Oct2014-03416	$ 5,361.84
Weston Solutions Invoice # Dec2014-03156	$ 6,654.43
Weston Solutions Invoice # Jan2015-02523	$ 32,712.89
Total	$ 44,729.16

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Cross-Sectional Surveys	$0.00	0.00%	$0.00	$0.00
2.	Wet Weather Monitoring (mobilization, monitoring and analyses)	$115,415.00	100.00%	$115,414.80	$0.00
3.	Rain Gauge Installation	$19,670.00	100.00%	$19,669.88	$0.00
4.	Optional Wet Weather Monitoring Events (per site per event)	TBD	0.00%	$0.00	$0.00
5.	FY 14-15 Wet Weather Monitoring	$104,815.00	42.67%	$44,729.16	$44,729.16
	Total Fee	**$239,900.00**		**$179,813.84**	**$44,729.16**
			Previous Fee Billing	$135,084.68	

Total This Invoice $44,729.16

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

PWR. PWG-CHMAI MAY 2015. CA

RECEIVED BY
DPW - WPP

JUN 09 2015

SIGNATURE
PRINT Cheryl Newell

A Baker Company
MICHAEL BAKER INTERNATIONAL

P: 1002993
O: 50715
E: 52370
T: 001.006
A: 100496
OK to Pay: $ 36,866.87
Approved by:

Invoice Date: June 3, 2015
Project No. : 136733
Invoice No. : 908210

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123-1237

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Task Order 36 - Phase II Hydromodification Monitoring FY 2013-2014

Project No. : 136733
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 36

STUART KUHN 6/15/2015 DATE

TRACY CLINE 6/15/15 DATE

Professional Consulting Services rendered pursuant to the Notice to Proceed, dated July 24, 2013, pursuant to Contract No. 534079 and subsequent Addendum No. 1, dated August 4, 2014, relative to the Phase 2 Hydromodification Monitoring FY 2013-2014 project.

Professional Consulting Services from January 24, 2015 to April 26, 2015

Time and Materials Fee Description for This Period:

Weston Solutions Invoice # May2015-04090	$ 36,866.87
Total	$ 36,866.87

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Cross-Sectional Surveys	$0.00	0.00%	$0.00	$0.00
2.	Wet Weather Monitoring (mobilization, monitoring and analyses)	$115,415.00	100.00%	$115,414.80	$0.00
3.	Rain Gauge Installation	$19,670.00	100.00%	$19,669.88	$0.00
4.	Optional Wet Weather Monitoring Events (per site per event)	TBD	0.00%	$0.00	$0.00
5.	FY 14-15 Wet Weather Monitoring	$104,815.00	77.85%	$81,596.03	$36,866.87
	Total Fee	**$239,900.00**		**$216,680.71**	**$36,866.87**
			Previous Fee Billing	$179,813.84	

Total This Invoice $36,866.87

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

RECEIVED 7/6/15 STUART KUHN

RBF
A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date : July 6, 2015
Project No. : 136733
FINAL INVOICE: 911568

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123-1237

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Task Order 36 - Phase II Hydromodification Monitoring FY 2013-2014

Project No. : 136733
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 36

Professional Consulting Services rendered pursuant to the Notice to Proceed, dated July 24, 2013, pursuant to Contract No. 534079 and subsequent Addendum No. 1, dated August 4, 2014, relative to the Phase 2 Hydromodification Monitoring FY 2013-2014 project.

Professional Consulting Services from April ~~27~~ 25, 2015 to June 28, 2015

Time and Materials Fee Description for This Period:

Weston Solutions Invoice # June2015-00875	$	7,261.77
Weston Solutions Invoice # June2015-03149	$	6,839.70
Total	$	14,101.47

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Cross-Sectional Surveys	$0.00	0.00%	$0.00	$0.00
2.	Wet Weather Monitoring (mobilization, monitoring and analyses)	$115,415.00	100.00%	$115,414.80	$0.00
3.	Rain Gauge Installation	$19,670.00	100.00%	$19,669.88	$0.00
4.	Optional Wet Weather Monitoring Events (per site per event)	TBD	0.00%	$0.00	$0.00
5.	FY 14-15 Wet Weather Monitoring	$104,815.00	91.30%	$95,697.50	$14,101.47
	Total Fee	**$239,900.00**		**$230,782.18**	**$14,101.47**
			Previous Fee Billing	$216,680.71	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $14,101.47
Approved by:

Total This Invoice **$14,101.47**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

TRACY CLINE — DATE 7/7/15

STUART KUHN — DATE 7/7/15

RECEIVED 7/6/15 STUART KUHN

RBF
A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date : July 6, 2015
Project No. : 136733
FINAL INVOICE: 911568

Tracy Cline
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123-1237

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Task Order 36 - Phase II Hydromodification Monitoring FY 2013-2014

Project No. : 136733
DPW Project Manager: Stuart Kuhn
Contract No.: 534079
Task Order No.: 36

Professional Consulting Services rendered pursuant to the Notice to Proceed, dated July 24, 2013, pursuant to Contract No. 534079 and subsequent Addendum No. 1, dated August 4, 2014, relative to the Phase 2 Hydromodification Monitoring FY 2013-2014 project.

Professional Consulting Services from April ~~27~~ 25, 2015 to June 28, 2015

Time and Materials Fee Description for This Period:

Weston Solutions Invoice # June2015-00875	$	7,261.77
Weston Solutions Invoice # June2015-03149	$	6,839.70
Total	$	14,101.47

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Cross-Sectional Surveys	$0.00	0.00%	$0.00	$0.00
2.	Wet Weather Monitoring (mobilization, monitoring and analyses)	$115,415.00	100.00%	$115,414.80	$0.00
3.	Rain Gauge Installation	$19,670.00	100.00%	$19,669.88	$0.00
4.	Optional Wet Weather Monitoring Events (per site per event)	TBD	0.00%	$0.00	$0.00
5.	FY 14-15 Wet Weather Monitoring	$104,815.00	91.30%	$95,697.50	$14,101.47
	Total Fee	**$239,900.00**		**$230,782.18**	**$14,101.47**
			Previous Fee Billing	$216,680.71	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $14,101.47
Approved by:

Total This Invoice **$14,101.47**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

TRACY CLINE — DATE 7/7/15

STUART KUHN — DATE 7/7/15

RECEIVED 7/1/15
STUART KUHN

ESA

550 Kearny Street, Suite 800
San Francisco, CA
94108
(619) 791-4190 or
jroth@esassoc.com (Project Accountant)

FINAL

INVOICE

Reynaldo Pellos
Land Use Environmental Planner II
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

June 30, 2015
Invoice No: 115033
Project Manager Brian Haines

Project D140075.02 SDHM Aquisition and Model Calibration Support
Contract 550238
Task Order No. 2
Email to: Reynaldo.Pellos@sdcounty.ca.gov

Professional Services from June 2, 2015 to June 28, 2015

Task 0000001 SDHM Aquisition and Model Calibration Su

Professional Personnel

	Hours	Rate	Amount	
Water Quality Program Manager				
Haines, Brian	12.00	144.21	1,730.52	
Totals	12.00		1,730.52	
Total Labor				**1,730.52**
Consultants				
AQUA TERRA CONSULTANTS			1,514.00	
Total Consultants		**1.0 times**	**1,514.00**	**1,514.00**
Reimbursable Expenses				
Equipment Related			18,000.00	
Total Reimbursables		**1.0 times**	**18,000.00**	**18,000.00**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	21,244.52	0.00	21,244.52
Limit			21,245.00
Remaining			.48

Total this Task **$21,244.52**

Total this Invoice **$21,244.52**

I hereby certify that ESA is in compliance with Article8.8 "Hazardous Materials" of the agreement, and the work completed, as shown above is true.

Authorized By: _____ Date: 6/30/2015
Brian Haines

P: 1002993
O: 50915
E: 52370
T: 001,006
A: 100496
OK to Pay: $ 21,244.52
Approved by:

Remit to:
E S A
P.O. Box 92170
Elk Grove, IL60009
TIN #:94-1698350

PAYMENT DUE UPON RECEIPT

STUART KUHN 7/1/15 DATE

REYNALDO PELLOS 7/1/15 DATE

RECEIVED 7/1/15 STUART KUHN

ESA

Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108
(619) 791-4190 or
jspurgeon@esassoc.com (Project Accountant)

FINAL

INVOICE

Reynaldo Pellos
Land Use Environmental Planner II
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

June 30, 2015
Invoice No: 115034
Project Manager: Brian Haines

Project D140075.03 SWMM Training
Contract 550238
Task Order No. 3

Email to: Reynaldo.Pellos@sdcounty.ca.gov

Professional Services from May 30, 2015 to June 26, 2015

Task 0000001 Training

Consultants

GLENN A. RICK ENGINEERING & DEVELOPMENT		9,891.84	
Total Consultants	**1.0 times**	**9,891.84**	**9,891.84**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	9,891.84	0.00	9,891.84
Limit			9,996.00
Remaining			104.16

Total this Task **$9,891.84**

TOTAL INVOICE AMOUNT: **$9,891.84**

I hereby certify that ESA is in compliance with Article8.8 "Hazardous Materials" of the agreement, and the work completed, as shown above is true.

Authorized By: _____ Date: 6/30/2015
Brian Haines

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $9891.84
Approved by:

Remit to: E S A
P.O. Box 92170
Elk Grove, IL60009
TIN #:94-1698350

STUART KUHN 7/1/15 DATE

REYNALDO PELLOS 7/1/15 DATE

PAYMENT DUE UPON RECEIPT

Rel 57
Rec 1743789

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

RECEIVED BY
DPW - WPP
AUG 20 2014
SIGNATURE Cheryl Newell
PRINT Cheryl Newell

Release # 57.

August 15, 2014
Invoice No: 0038754
P: 1002993
O: 50915
E: 52378
T: 001.006
A: 100496.
OK to Pay 16,996.43
Approved by: N Richardson
Nancy Richards
Aug 26, 2014
GITANJALI SHINDE
9/3/14

County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081
BMP Design Manual Update
Contract No. 537081
Task Order No. 34

Professional Services from June 28, 2014 to July 25, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	0.00	0.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	0.00	0.00	0.00
Task 6.c Fianl BMP Design Manual	5,836.00	0.00	0.00	0.00
Task 6.d Responses to Comments	6,293.00	41.5269	0.00	2,613.29
Task 7 Sub-Workgroup Meetings	5,873.00	38.2212	0.00	2,244.73
Task 8.a Submittal Application Template	15,203.00	0.00	0.00	0.00
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	0.00	0.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	0.00	0.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	0.00	0.00	0.00
Task 8.f Spreadsheet Tool	9,274.00	0.00	0.00	0.00
Total Fee	62,416.00		0.00	4,858.02
	Fixed Fee Sub-Total			**4,858.02**
			Sub-Total this Phase	**$4,858.02**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

7/25/2014	Geosyntec Consultants, Inc.	12,138.41	
	Sub-Total Reimbursables	**12,138.41**	**12,138.41**

Billing Limits	**Current**	**Prior**	**To-Date**
Expenses	12,138.41	0.00	12,138.41
Limit			152,829.00
Remaining			140,690.59

Sub-Total this Phase **$12,138.41**

Total this Invoice **$16,996.43**

PWR. PWG. LPB08SEP2014.CB3

Rel 56
Rec 174402

1418

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

RECEIVED BY
DPW - WPP
SEP 29 2014
SIGNATURE
PRINT Cheryl Newell

September 23, 2014
Invoice No: 0039064
Rs loan # 56

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

P: 1002993
O: 50915
E: 52379
T: 001.006
A: 100496
OK to Pay: N Richardson
Approved by: N Richardson
9911.76.
9/29/14
Gitanjali Shinde 9/29/14

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081
BMP Design Manual Update
Contract No. 537081
Task Order No. 34

Professional Services from July 26, 2014 to August 29, 2014

Phase 0000.00 Fee

Fixed Fee Phases	**Contract Amount**	**Percent Complete**	**Previously Billed**	**Current Billing**
Task 6.a Draft BMP Design Manual	12,176.00	0.00	0.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	0.00	0.00	0.00
Task 6.c Final BMP Design Manual	5,836.00	0.00	0.00	0.00
Task 6.d Responses to Comments	6,293.00	41.5269	2,613.29	0.00
Task 7 Sub-Workgroup Meetings	5,873.00	50.9118	2,244.73	745.32
Task 8.a Submittal Application Template	15,203.00	0.00	0.00	0.00
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	0.00	0.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	0.00	0.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	0.00	0.00	0.00
Task 8.f Spreadsheet Tool	9,274.00	0.00	0.00	0.00
Total Fee	62,416.00		4,658.02	745.32
	Fixed Fee Sub-Total			**745.32**
		Sub-Total this Phase		**$745.32**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

8/29/2014	Geosyntec Consultants, Inc.	9,166.44	
	Sub-Total Reimbursables	**9,166.44**	**9,166.44**

Billing Limits	**Current**	**Prior**	**To-Date**
Expenses	9,166.44	12,138.41	21,304.85
Limit			152,829.00
Remaining			131,524.15

Sub-Total this Phase **$9,166.44**

→ This invoice has not been paid.
→ Short staff to process Receipt.
LBarnes

PWR PWG. LPB 22 OCT 2014.cp

Total this Invoice **$9,911.76**

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

INVOICE HOURLY SUBMITTAL FOR CONTRACT NO. 537081 – Task Order 36
TECHNICAL ASSISTANCE FOR LAND DEVELOPMENT WATER QUALITY

Item #	DATE	ITEM DESCRIPTION	Hours worked per task							Total Hours and Cost
		Title of person performing task (See Notes for full title)	PM PW (2)	Sr TA / Sr CE	CE	Asst Engr	Engr Tech III	GIS Coord/Mgr	Draft Tech	
		Loaded Billing Rates per contract	$ 145.67	$ 138.77	$ 119.93	$ 99.77	$ 90.70	$ 125.92	$ 66.03	
		Technical Assistance to County of San Diego Watershed Protection Program Staff	0	0	80	0	0	0	0	80
1	July 26, 2014 through August 29, 2014	7/30 - HMP Minimum Requirements Checklist & Minor SWMP Review (Lamar Park) 8/1 - Discuss options for a bioretention with a small orifice opening 8/6 - Intra Memo (#1, #2 & #3) and ET/Evaporation Data Research 8/8 - Intra Memo (#1, #2 & #3), Options for a small orifice restrictor 8/13 - Review HMP exemption for Taco Bell Restaurant project, Meeting to discuss PDP exemption for Pump Station project with CIP, Update Intra Memo (#1, #2 & #3) 8/15 - Review Green Street technical paper by RV, Review Oceanside rain gauge supporting document from Project Clean Water 8/20 - Review Minor SWMP and PSE for Inland Rail Trail 8/22 - Prepare Example Project summary using BMP Sizing Spreadsheet (Conventional Bioretention vs. Bioretention with Pump, Review SDSU HSPF/SDHM Calibration Study 8/26 - Finalize Example Project Summary, Update Intra Memo #1 per SK's comments, Research Bioretention soil characteristics 8/27 - Review Technical Memo: Design Review for Biofiltration Systems in Otay Village 3, 8 East and 10, Review Minor SWMP and PSE for Inland Rail Trail This is 1 of 1 bills	$ -	$ -	$ 9,594.40	$ -	$ -	$ -	$ -	$ 9,594.40
									Total cost =	$ 9,594.40

Notes
PM PW (2) = Project Manager - Public Works (Step 2)
Sr TA = Senior Technical Advisor
Sr CE = Senior Civil Engineer
CE = Civil Engineer
Asst Engr = Assistant Engineer
Engr Tech III = Engineering Technician III
GIS Coord/Mgr = GIS Coordinator (Step 2) / GIS Manager
Draft Tech = Drafting Technician

Rick Engineering Company
Job Number 16484-QA

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Page 1 of 1

Rel. 66
Rec 1744348

RECEIVED BY
DPW - WPP

OCT 23 2014
SIGNATURE Cheryl Newell
PRINT Cheryl Newell

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

October 20, 2014
Invoice No: 0039523
P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay 20860.15 ✓
Approved by
Oct 23/14 Richardson N Richardson
Date
10/23/14 Chitanjali Shinde
Date
CHITANJALI SHINDE

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081
BMP Design Manual Update
Contract No. 537081
Task Order No. 34
537081

Professional Services from August 30, 2014 to September 26, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	71.7995	0.00	8,742.31
Task 6.b Draft Final BMP Design Manual	3,866.00	0.00	0.00	0.00
Task 6.c Final BMP Design Manual	5,836.00	0.00	0.00	0.00
Task 6.d Responses to Comments	6,293.00	41.5269	2,613.29	0.00
Task 7 Sub-Workgroup Meetings	5,873.00	50.9118	2,990.05	0.00
Task 8.a Submittal Application Template	15,203.00	0.00	0.00	0.00
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	0.00	0.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	0.00	0.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	0.00	0.00	0.00
Task 8.f Spreadsheet Tool	9,274.00	0.00	0.00	0.00
Total Fee	62,416.00		5,603.34	8,742.31
	Fixed Fee Sub-Total			**8,742.31**
		Sub-Total this Phase		**$8,742.31**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

9/26/2014	Geosyntec Consultants, Inc.	12,117.84	
	Sub-Total Reimbursables	**12,117.84**	**12,117.84**

Billing Limits	Current	Prior	To-Date
Expenses	12,117.84	21,304.85	33,422.69
Limit			152,829.00
Remaining			119,406.31

Sub-Total this Phase **$12,117.84**

PWR. PWG. LPB 21 NOV 2014. CA

Project	C16484-MB0	Invoice	0039523
		Total this Invoice	**$20,860.15**

PAY This Amount

Outstanding Invoices

Number	Date	Balance
0039064	9/23/2014	9,911.76
Total		**9,911.76**

Total Now Due [redacted]

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

KUL 36

Rick 1744579

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

NOV 25 2014
Cheryl Newell

November 19, 2014
Invoice No: 0040009

P: 1002993
O: 50915
E: 52370
T: 001-006
A: 100136
OK to Pay 4538.80
Approved by N Richardson
N Richardson
Dec 12, 2014

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081
BMP Design Manual Update
Contract No. 537081
Task Order No. 34

COR-Gitanjali Shinde
GITANJALI SHINDE
12/12/14

Professional Services from September 27, 2014 to October 31, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	100.00	8,742.31	3,433.69
Task 6.b Draft Final BMP Design Manual	3,866.00	0.00	0.00	0.00
Task 6.c Final BMP Design Manual	5,836.00	0.00	0.00	0.00
Task 6.d Responses to Comments	6,293.00	41.5269	2,613.29	0.00
Task 7 Sub-Workgroup Meetings	5,873.00	50.9118	2,990.05	0.00
Task 8.a Submittal Application Template	15,203.00	7.269	0.00	1,105.11
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	0.00	0.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	0.00	0.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	0.00	0.00	0.00
Task 8.f Spreadsheet Tool	9,274.00	0.00	0.00	0.00
Total Fee	62,416.00		14,345.65	4,538.80
	Fixed Fee Sub-Total			**4,538.80**
		Sub-Total this Phase		**$4,538.80**
		Total this Invoice		**$4,538.80**

Outstanding Invoices

Number	Date	Balance
0039064	9/23/2014	9,911.76
0039523	10/20/2014	20,860.15
Total		**30,771.91**

Total Now Due **$35,310.71**

PWR. PWG. UPB 19DEC2014. CR

CONTRACT NO. 537081
TASK ORDER NO. 34
BMP DESIGN MANUAL UPDATE - FISCAL YEAR 2
Rick Engineering Company Job Number 16484-MB

BACKUP OF STAFF HOURS AND RATES
From September 27, 2014
To October 31, 2014

Task 6: Compile BMP Design Manual

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0315)	Dennis Bowling	Task 6 a Draft BMP Design Manual	2	$228.25	$456.50
Associate	Project Manager (3706)	Jayne Janda-Timba	Task 6 a Draft BMP Design Manual	1	$145.67	$145.67
Assistant Project Engineer	Civil Engineer (3635)	Laura Henry	Task 6 a Draft BMP Design Manual	24	$119.93	$2,878.32
			Total:	27	Total:	$3,480.49
					Fixed Fee Labor Adjustment:	$46.80
					Adjusted Total:	$3,433.69

Task 8.a: Submittal Application Template

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0315)	Dennis Bowling	Task 8 a Submittal Application Template	0	$228.25	$0.00
Associate	Project Manager (3706)	Jayne Janda-Timba	Task 8 a Submittal Application Template	1	$145.67	$145.67
Assistant Project Engineer	Civil Engineer (3635)	Laura Henry	Task 8 a Submittal Application Template	8	$119.93	$959.44
			Total:	9	Total:	$1,105.11

Total:	$4,538.80

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CONTRACT NO. 537081
TASK ORDER NO 34
BMP DESIGN MANUAL UPDATE
Rick Engineering Company Job No. 16484-MB

SUMMARY OF BILLING THROUGH OCTOBER, 2014

Task	Rick Contract Amount	Geosyntec Contract Amount	Total Contract Amount	Rick Prior Billing	Geosyntec Prior Billing	Total Previously Billed	Rick Current Billing	Geosyntec Current Billing	Total Current Billing	Rick Percent Complete	Geosyntec Percent Complete	Total Percent Complete
Task 6 a	$12,179	$30,243	$42,418	$8,747.31	$12,225.40	$20,967.71	$3,433.69	$0.00	$3,433.69	100%	40%	59%
Task 6 b	$3,686	$5,926	$12,922	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	0%	0%	0%
Task 6 c	$5,836	$14,465	$20,301	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	0%	0%	0%
Task 6 d	$6,791	$9,508	$15,799	$2,613.28	$4,630.78	$7,244.07	$0.00	$0.00	$0.00	42%	49%	46%
Task 7 Sub-Workgroup Meetings	$5,973	$7,099	$12,972	$2,890.05	$4,622.21	$7,512.26	$0.00	$0.00	$0.00	53%	65%	58%
Task 8 a Submittal Application Template	$15,203	$0	$15,203	$0.00	$0.00	$0.00	$1,105.11	$0.00	$1,105.11	7%	n/a	7%
Task 8 b Enhanced LID Fact Sheets FY-2*	$3,987	$25,076	$29,075	$0.00	$5,863.19	$5,863.19	$0.00	$0.00	$0.00	0%	0%	23%
Task 8 c Guidance Continuous Sim Model**	$0	$0	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	n/a	n/a	n/a
Task 8 d Geotechnical Guidance Exhibits	$3,896	$3,096	$7,992	$0.00	$2,031.82	$2,031.82	$0.00	$0.00	$0.00	0%	39%	28%
Task 8 e Groundwater Quality and Water Balance Est	$5,084	$9,092	$10,186	$0.00	$4,049.40	$4,049.40	$0.00	$0.00	$0.00	0%	45%	40%
Task 8 f Spreadsheet Tool	$5,376	$42,335	$51,999	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	0%	0%	0%
Total	$62,416	$157,629	$215,245	$14,145.65	$33,422.70	$47,768.35	$4,538.80	$0.00	$4,538.80	93%	22%	34%

*1/3 of this Task was completed under T.O. 24. In FY-1, the contract amount shown in the remaining 2/3 authorized in FY-2 under T.O. 34
**Task initiated under FY-1 under T.O. 24; authorized carry-over from FY-1 to FY-2 will be billed separately, therefore shown as 0 for T.O. 34

REL 56 + 57

REC 1744864 - 98.05
1744865 - 53,358.68

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay 53,456.73
Approved by:
5/2015 Nancy Richardson
December 23, 2014 GITANJALI SHINDE
Invoice No: 0040550 1/7/15

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081
BMP Design Manual Update
Contract No. 537081
Task Order No. 34

Professional Services from November 01, 2014 to November 28, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	100.00	12,176.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	0.00	0.00	0.00
Task 6.c Final BMP Design Manual	5,836.00	0.00	0.00	0.00
Task 6.d Responses to Comments	6,293.00	41.5269	2,613.29	0.00
Task 7 Sub-Workgroup Meetings	5,873.00	50.9118	2,990.05	0.00
Task 8.a Submittal Application Template	15,203.00	17.8628	1,105.11	1,610.57
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	0.00	0.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	0.00	0.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	0.00	0.00	0.00
Task 8.f Spreadsheet Tool	9,274.00	36.7202	0.00	3,405.43
Total Fee	62,416.00		18,884.45	5,016.00
	Fixed Fee Sub-Total			**5,016.00**
		Sub-Total this Phase		**$5,016.00**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

11/28/2014	Geosyntec Consultants, Inc.	42,727.62	
11/28/2014	Geosyntec Consultants, Inc.	5,713.11	
	Sub-Total Reimbursables	**48,440.73**	**48,440.73**

Billing Limits	Current	Prior	To-Date
Expenses	48,440.73	33,422.69	81,863.42
Limit			152,829.00
Remaining			70,965.58

Sub-Total this Phase **$48,440.73**

RECEIVED BY
JAN 05 2015
Cheryl Newell

PWR. PWG. MMB 14 Am 2015. CA

Project	C16484-MB0			Invoice	0040550
			Total this Invoice		**$53,456.73**

Outstanding Invoices

Number	Date	Balance
0040009	11/19/2014	4,538.80
Total		4,538.80

Total Now Due **$57,995.53**

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

CONTRACT NO. 537081
TASK ORDER NO. 34
BMP DESIGN MANUAL UPDATE - FISCAL YEAR 2
Rick Engineering Company Job Number 16484-MB

BACKUP OF STAFF HOURS AND RATES
From November 1, 2014
To November 28, 2014

Task 8.e: Submittal Application Template

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	DEG Manager (0315)	Dennis Bowling	Task 8.e Submittal Application Template	0	$228.35	$0.00
Associate	Project Manager (3706)	Wayne Tenda-Timbo	Task 8.e Submittal Application Template	2	$145.67	$291.34
Assistant Project Engineer	Civil Engineer (3635)	Laura Henry	Task 8.e Submittal Application Template	11	$119.93	$1,319.23
			Total:	13	Total:	$1,610.57

Task 8.f: Spreadsheet Tool

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	DEG Manager (0315)	Dennis Bowling	Task 8.f Spreadsheet Tool	0	$228.35	$0.00
Associate	Project Manager (3706)	Wayne Tenda-Timbo	Task 8.f Spreadsheet Tool	6.5	$145.67	$946.86
Assistant Project Engineer	Civil Engineer (3635)	Laura Henry	Task 8.f Spreadsheet Tool	20.4	$119.93	$2,458.57
			Total:	27	Total:	$3,405.43

Total:	$5,015.99

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Rec 56
Rec 1745213

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

P: 1002993
O: 59915
E: 52370
T: 001.006
A: 100496
OK to Pay: 17,886.01
Approved by: Nancy Richardson. January 29, 2015

original.
RECEIVED Feb 3 '15 DPW-WPP
NANCY RICHARDSON

January 26, 2015
Invoice No: 0040881

car - Gitanjali Shinde
2/2/15

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081

BMP Design Manual Update
Contract No. 537081
Task Order No. 34

E-mail: Nancy.Richardson@sdcounty.ca.gov

Professional Services from November 29, 2014 to December 31, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	100.00	12,176.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	99.4964	0.00	3,846.53
Task 6.c Final BMP Design Manual	5,836.00	0.00	0.00	0.00
Task 6.d Responses to Comments	6,293.00	69.1651	2,613.29	1,739.27
Task 7 Sub-Workgroup Meetings	5,873.00	50.9118	2,990.05	0.00
Task 8.a Submittal Application Template	15,203.00	17.8628	2,715.68	0.00
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	100.00	0.00	1,947.00
Task 8.d Geotechnical Guidance Exhibits	854.00	100.00	0.00	854.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	100.00	0.00	1,094.00
Task 8.f Spreadsheet Tool	9,274.00	36.7202	3,405.43	0.00
Total Fee	62,416.00		23,900.45	9,480.80
	Fixed Fee Sub-Total			**9,480.80**
		Sub-Total this Phase		**$9,480.80**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

12/31/2014	Geosyntec Consultants, Inc.	8,405.21	
	Sub-Total Reimbursables	**8,405.21**	**8,405.21**

Billing Limits	Current	Prior	To-Date
Expenses	8,405.21	81,863.42	90,268.63
Limit			152,829.00
Remaining			62,560.37

PWR. PWG. MMB 20 FEB 2015. CA1

Project	C16484-MB0		Invoice	0040681
			Sub-Total this Phase	**$8,405.21**
			Total this Invoice	**$17,886.01**

Outstanding Invoices

Number	Date	Balance
0040550	12/23/2014	53,456.73
Total		**53,456.73**

Total Now Due	**$71,342.74**

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

Rec to
Rec 1745732

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

RECEIVED BY
DPW - WPP

MAR 05 2015
SIGNATURE
PRINT Cheryl Newell

1092993 NR
P: ~~1001359~~
O: ~~50855~~ 50915 NR
E: 52370
T: ~~010309~~ 001006 NR
A: 100496
OK to Pay: ~~27,139,607.75~~ NR
Approved by: Nancy Richardson
Nancy Richardson
Mar 6/2015.

February 23, 2015
Invoice No: 0041447
Cor - G. Shinde.
GITANJALI SHINDE
3/6/15

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081

BMP Design Manual Update
Contract No. 537081
Task Order No. 34
***Needs Labor Schedule Attached.**

E-mail: Nancy.Richardson@sdcounty.ca.gov

Professional Services from January 01, 2015 to January 30, 2015

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	100.00	12,176.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	99.4964	3,846.53	0.00
Task 6.c Final BMP Design Manual	5,836.00	0.00	0.00	0.00
Task 6.d Responses to Comments	6,293.00	69.1651	4,352.56	0.00
Task 7 Sub-Workgroup Meetings	5,873.00	50.9118	2,990.05	0.00
Task 8.a Submittal Application Template	15,203.00	30.6538	2,715.68	1,944.62
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	100.00	1,947.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	100.00	854.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	100.00	1,094.00	0.00
Task 8.f Spreadsheet Tool	9,274.00	36.7202	3,405.43	0.00
Total Fee	62,416.00		33,381.25	1,944.62
	Fixed Fee Sub-Total			**1,944.62**
		Sub-Total this Phase		**$1,944.62**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

1/30/2015	Geosyntec Consultants, Inc.	7,662.66	
	Sub-Total Reimbursables	**7,662.66**	**7,662.66**

Billing Limits	Current	Prior	To-Date
Expenses	7,662.66	90,268.63	97,931.29
Limit			152,829.00

PWR.PWG. MMB 22APR 2015.CA

Project	C16484-MB0		Invoice	0041447
Remaining			54,897.71	
		Sub-Total this Phase		**$7,662.66**
		Total this Invoice		**$9,607.28**

Outstanding Invoices

Number	Date	Balance
0040881	1/26/2015	17,886.01
Total		**17,886.01**

Total Now Due	**$27,493.29**

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

RK 1745647

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

RECEIVED BY
DPW - WPP
MAR 30 2015
SIGNATURE
PRINT Cheryl Wescell

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

March 18, 2015
Invoice No: 0041835

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: 30 276.11
Approved by: Nancy Richardson
March 30, 2015

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081

BMP Design Manual Update
Contract No. 537081
Task Order No. 34
***Needs Labor Schedule Attached.**

E-mail: Nancy.Richardson@sdcounty.ca.gov

Professional Services from January 31, 2015 to February 27, 2015

Cor – Catherine Shinde
3/30/15

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	100.00	12,176.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	99.4964	3,846.53	0.00
Task 6.c Final BMP Design Manual	5,836.00	0.00	0.00	0.00
Task 6.d Responses to Comments	6,293.00	90.6073	4,352.56	1,349.36
Task 7 Sub-Workgroup Meetings	5,873.00	50.9118	2,990.05	0.00
Task 8.a Submittal Application Template	15,203.00	42.8811	4,660.30	1,858.91
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	100.00	1,947.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	100.00	854.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	100.00	1,094.00	0.00
Task 8.f Spreadsheet Tool	9,274.00	36.7202	3,405.43	0.00
Total Fee	62,416.00		35,325.87	3,208.27
	Fixed Fee Sub-Total			**3,208.27**
		Sub-Total this Phase		**$3,208.27**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

2/27/2015	Geosyntec Consultants, Inc.	17,067.84	
	Sub-Total Reimbursables	**17,067.84**	**17,067.84**

Billing Limits	**Current**	**Prior**	**To-Date**
Expenses	17,067.84	97,931.29	114,999.13
Limit			152,829.00

PWR-PWG-MMD/CAPR 2015-CAV

Project	C16484-MB0			Invoice	0041835
Remaining				37,829.87	
			Sub-Total this Phase		**$17,067.84**
			Total this Invoice		**$20,276.11**

Outstanding Invoices

Number	Date	Balance
0041447	2/23/2015	9,607.28
Total		**9,607.28**

Total Now Due	**$29,883.39**

RECEIVED BY
DPW - WPP

MAY 04 2015

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

Chryl Newell

Rec 1737549, 1737551, 1745949

Supp# 1117106

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

April 28, 2015
Invoice No: 0042581

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: 26,695.81.
Approved by: Nancy Richardson
SEP III - PM
Nancy Richardson
May 4, 2015

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081

BMP Design Manual Update
Contract No. 537081
Task Order No. 34
***Needs Labor Schedule Attached.**

E-mail: Nancy.Richardson@sdcounty.ca.gov

Aranjali Shinde, C.O.R.
5/4/15

Professional Services from February 28, 2015 to March 27, 2015

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	100.00	12,176.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	99.4964	3,846.53	0.00
Task 6.c Final BMP Design Manual	5,836.00	19.9685	0.00	1,165.36
Task 6.d Responses to Comments	6,293.00	98.2304	5,701.92	479.72
Task 7 Sub-Workgroup Meetings	5,873.00	100.00	2,990.05	2,882.95
Task 8.a Submittal Application Template	15,203.00	63.1104	6,519.21	3,075.46
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	100.00	1,947.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	100.00	854.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	100.00	1,094.00	0.00
Task 8.f Spreadsheet Tool	9,274.00	36.7202	3,405.43	0.00
Total Fee	62,416.00		38,534.14	7,603.49
	Fixed Fee Sub-Total			**7,603.49**
		Sub-Total this Phase		**$7,603.49**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

3/27/2015	Geosyntec Consultants, Inc.	19,092.32	
	Sub-Total Reimbursables	**19,092.32**	**19,092.32**

Billing Limits	Current	Prior	To-Date
Expenses	19,092.32	114,999.13	134,091.45
Limit			152,829.00

PWR. PWG. CMM 12 May 2015 CA

Project	C16484-MB0				Invoice	0042551
Remaining					18,737.55	
				Sub-Total this Phase		**$19,092.32**
				Total this Invoice		**$26,695.81**

okay to pay

Outstanding Invoices

Number	Date	Balance
0041447	2/23/2015	9,607.28
0041835	3/18/2015	20,276.11
Total		**29,883.39**

Total Now Due	**$56,579.20**

RECEIVED June 4/15

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

May 20, 2015
Invoice No: 0043021

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

P: 1002993
O: 59915
E: 52370
T: 001.006
A: 100496
OK to Pay: 10,782.42
Approved by: N Richardson June 4/15

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081

BMP Design Manual Update
Contract No. 537081
Task Order No. 34
***Needs Labor Schedule Attached.**

E-mail: Nancy.Richardson@sdcounty.ca.gov

Gitanjali Shinde 6/4/15
GITANJALI SHINDE

Professional Services from March 28, 2015 to April 24, 2015

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	100.00	12,176.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	99.4964	3,846 53	0.00
Task 6.c Final BMP Design Manual	5,836.00	100.00	1,165.36	4,670 64
Task 6.d Responses to Comments	6,293.00	100.00	6,181.64	111.36
Task 7 Sub-Workgroup Meetings	5,873.00	100 00	5,873 00	0.00
Task 8.a Submittal Application Template	15,203.00	72.7459	9,594.67	1,464.89
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	100.00	1,947.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	100.00	854.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	100.00	1,094 00	0.00
Task 8.f Spreadsheet Tool	9,274.00	36.7202	3,405.43	0.00
Total Fee	62,416.00		46,137.63	6,246.89
	Fixed Fee Sub-Total			**6,246.89**
		Sub-Total this Phase		**$6,246.89**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

4/24/2015	Geosyntec Consultants, Inc.	4,535.53	
	Sub-Total Reimbursables	**4,535.53**	**4,535.53**

Billing Limits	**Current**	**Prior**	**To-Date**
Expenses	4,535.53	134,091.45	138,626.98
Limit			152,829.00

Project	C16484-MB0		Invoice	0043021
Remaining			14,202.02	
			Sub-Total this Phase	**$4,535.53**
			Total this Invoice	**$10,782.42**

Outstanding Invoices

Number	Date	Balance
0042551	4/28/2015	26,695.81
Total		**26,695.81**

Total Now Due	**$37,478.23**

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

RECEIVED 6/29/15

June 29, 2015
Invoice No: 0043590

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: 24,114.21
Approved by: Nancy Richardson LUEP III 6/29/15.
GITANJALI SHINDE 6/29/15

Nancy Richardson
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Project C16484-MB0 T.O. 34 County of SD Contract No. 537081

BMP Design Manual Update
Contract No. 537081
Task Order No. 34
***Needs Labor Schedule Attached.**

E-mail: Nancy.Richardson@sdcounty.ca.gov

Professional Services from May 30, 2015 to June 26, 2015

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 6.a Draft BMP Design Manual	12,176.00	100.00	12,176.00	0.00
Task 6.b Draft Final BMP Design Manual	3,866.00	99.4964	3,846.53	0.00
Task 6.c Final BMP Design Manual	5,836.00	100.00	5,836.00	0.00
Task 6.d Responses to Comments	6,293.00	100.00	6,293.00	0.00
Task 7 Sub-Workgroup Meetings	5,873.00	100.00	5,873.00	0.00
Task 8.a Submittal Application Template	15,203.00	100.00	11,059.56	4,143.44
Task 8.b Enhanced LID Fact Sheets FY-2	1,947.00	100.00	1,947.00	0.00
Task 8.d Geotechnical Guidance Exhibits	854.00	100.00	854.00	0.00
Task 8.e GW Quality & Water Bal Exhibits	1,094.00	100.00	1,094.00	0.00
Task 8.f Spreadsheet Tool	4,453.49	100.00	3,405.43	1,048.06
Total Fee	57,595.49		52,384.52	5,191.50
	Fixed Fee Sub-Total			**5,191.50**
			Sub-Total this Phase	**$5,191.50**

Phase 0299.00 Geosyntec Subconsultant Billing

Reimbursable Expenses

Consultants

6/26/2015	Geosyntec Consultants, Inc.	18,922.71	
	Sub-Total Reimbursables	**18,922.71**	**18,922.71**

Billing Limits	**Current**	**Prior**	**To-Date**
Expenses	18,922.71	138,626.98	157,549.69
Limit			157,649.51

Project	C16484-MB0	Invoice	0043590
Remaining		99.82	

Sub-Total this Phase	**$18,922.71**
Total this Invoice	**$24,114.21**

Geosyntec consultants

P:
O:
E:
T:
A:
OK to Pay:
Approved by:

Nancy Richardson
RECEIVED July 3/15

PLEASE REMIT PAYMENT TO:
Geosyntec Consultants
900 Broken Sound Parkway NW, Suite 200
Boca Raton, Florida 33487-2775 USA
Tel (561) 995-0900 Fax (561) 995-0925

COUNTY OF SAN DIEGO
DPW-WATERSHED PROTECTION PROGRAM
5510 OVERLAND ROAD
SUITE 410
SAN DIEGO, CA 92123
Attention: NANCY RICHARDSON

Invoice #: 2815138
Invoice Date: 6/24/2015
Project: LA022832
Project Name: MODEL BMP DESIGN MANUAL

For Professional Services Rendered through transaction date: 6/21/2015

IF YOU HAVE QUESTIONS ABOUT THIS INVOICE, PLEASE CONTACT TREVOR ALSOP AT 619-810-4020

Lump Sum Phases	$47,331.01
Professional Services	$10,649.69
Reimbursable Expenses	$11,975.54
Current Invoice	**$69,956.24**
****Amount Due This Invoice ****	**$69,956.24**

Statement

Prior Billings	$0.00	Project Budget	$69,970.00
Current Invoice	$69,956.24	Expended to Date	$69,956.24
Billed To Date	$69,956.24	Contract Balance	$13.76
Paid To Date	$0.00	****Amount Due This Invoice ****	**$69,956.24**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with section 8.9 "Debarment and Suspension" of County Agreement Number 534080.

T.O. 32.

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $69,956.24
Approved by: Nancy Richardson. LUEP III
July 6/15.

LUEP III
TRACY Chino 7/6/15

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

RECEIVED 7/1/15

July 01, 2015
Invoice No: 0043595

Gitanjali Shinde
County of San Diego
5510 Overland Avenue, Suite 410
San Diego, CA 92123

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100490
OK to Pay: 3734.27
Approved by: N. Richardson LUEP III July 1/15

Project C16484-MD0 T.O. 45 County of SD Contract No. 537081

BMP Design Manual Update to add Trash and Nutrients Guidance
Contract No. 537081 - Task Order No. 45

email invoices to: Sumer Hasenin: SYHasenin@sandiego.gov
and Nancy Richardson: Nancy.Richardson@sdcounty.ca.gov

Professional Services from May 30, 2015 to June 26, 2015

Phase 0399.00 Geosyntec Subconsultant Billing

Gitanjali Shinde 7/1/15

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Geosyntec Subconsultant Billing	3,743.00	99.7667	0.00	3,734.27
Total Fee	3,743.00		0.00	3,734.27
	Fixed Fee Sub-Total			**3,734.27**
		Sub-Total this Phase		**$3,734.27**
		Total this Invoice		**$3,734.27**

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

Rel 32 Rec 1737245

WESTON SOLUTIONS

RECEIVED BY
DPW - WPP

SEP 18 2014

SIGNATURE
PRINT Jeanne W. Sarnoski

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS

INVOICE DATE: 09/15/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.134
INVOICE NUMBER: SEP2014-02946
BILLING PERIOD: 07/01/2014 TO 07/31/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	GEOSYNTEC - WATERSHED MANAGEMENT AREA ANALYSIS	43,500.00	26,095.56	26,095.56	~~59.99%~~ 60	17,404.44
0002	WESTON - WATERSHED MANAGEMENT AREA ANALYSIS	2,000.00	0.00	0.00	0.00%	2,000.00
TOTAL		45,500.00	26,095.56	26,095.56	57.35% ✓	19,404.44

CURRENT AMOUNT DUE 26,095.56 OK FOR PAYMENT

correct % Complete

P 1002993
C 50915
E 52370
T 001.006
A 100490

OK TO PAY $ 26,095.56

APPROVED FOR PAYMENT
SERVICES HAVE BEEN SATISFACTORILY PROVIDED

534965
CONTRACT/P.O. NO.

WMAA
ACTIVITY/WA NO.

9/22/14
DATE

Christine A. Sloan
PROJECT MANAGER

9/22/14
DATE

Joann Weber
DPW MANAGER

PWR. PWG.LPB26SEP2014.cn

05P-0606 2/12

INVOICE
12967

F.E.I.N. 23-1501990

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: SEP2014-02946 Invoice Date: 09/15/14

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS.

County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163
USA

INVOICE SUMMARY

			Contract Value
Customer Number:	13245	Cost:	$45,500.00
		Total:	$45,500.00
Project Number:	13245.134	Cumulative Amount Billed:	$26,095.56
Project Name:	WatershedMgmtAreaAnalysis		
Project Manager:	Dister, Sheri		
Terms:	NET 30	Billing Period From:07/01/14 To:07/31/14	Billing Currency: USD
Due Date:	10/15/14		

	Current Amount	Cumulative Amount
Subcontractor	$26,095.56	$26,095.56
Total Expenses	$26,095.56	$26,095.56
Invoice Total	$26,095.56	$26,095.56

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

WESTON SOLUTIONS

RECEIVED BY
DPW - WPP

OCT 28 2014

SIGNATURE
PRINT Cheryl Newell

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS

INVOICE DATE: 10/24/2014
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.134
INVOICE NUMBER: OCT2014-03408
BILLING PERIOD: 08/01/2014 TO 09/30/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	GEOSYNTEC - WATERSHED MANAGEMENT AREA ANALYSIS	43,500.00	13,805.00	39,900.56	91.73%	3,599.44
0002	WESTON - WATERSHED MANAGEMENT AREA ANALYSIS	2,000.00	2,000.00	2,000.00	100.00%	0.00
TOTAL		**45,500.00**	**15,805.00**	**41,900.56**	**92.09%**	**3,599.44**

CURRENT AMOUNT DUE 15,805.00 OK TO PAYMENT

OK TO PAY 15,805.00

P: 10034143
O: 504115
E: 52370
T: 553-0646
A: 100408

REL #17
Rec 1737284

OK to Pay: Christine A. Sloan
Approved by: Christine A. Sloan
10/31/14

COR: OK to pay.
Jo Ann T Webster
10/31/14

PWR.PWG. UPB17 NOV2014.CN

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: OCT2014-03408 Invoice Date: 10/24/14

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS.
County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163
USA

			Contract Value
Customer Number:	13245	Cost:	$45,500.00
		Total:	$45,500.00
Project Number:	13245.134	Cumulative Amount Billed:	$41,900.56
Project Name:	WatershedMgmtAreaAnalysis		
Project Manager:	Dister, Sheri		
Terms:	NET 30	Billing Period From: 08/01/14	Billing Currency: USD
Due Date:	11/23/14	To: 09/30/14	

	Current Hours	Rate	Current Amount	Cumulative Amount
Task Leader				
Isham, William H	2.50	150.0000	375.00	375.00
Senior Scientist				
Engelhorn, Garth	11.00	130.0000	$1,430.00	$1,430.00
Yonemasu, Satomi	1.50	130.0000	195.00	195.00
Labor	15.00		$2,000.00	$2,000.00
Subcontractor			$13,805.00	$39,900.56
Total Expenses			$13,805.00	$39,900.56
Invoice Total			$15,805.00	$41,900.56

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

WESTON SOLUTIONS

RECEIVED BY
DPW - WPP

MAR 12 2015

SIGNATURE
PRINT Cheryl Newell

Rec 74
Rec 177781

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS

INVOICE DATE: 3/10/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.134
INVOICE NUMBER: DEC2014-03160REV
BILLING PERIOD: 10/01/2014 TO 10/31/2014

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	GEOSYNTEC - WATERSHED MANAGEMENT AREA ANALYSIS	43,500.00	1,830.00	41,730.56	95.93%	1,769.44
0002	WESTON - WATERSHED MANAGEMENT AREA ANALYSIS	2,000.00	0.00	2,000.00	100.00%	0.00
TOTAL		45,500.00	1,830.00	43,730.56	96.11%	1,769.44

CURRENT AMOUNT DUE 1,830.00

OK TO PAY

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100446
OK to Pay:
Approved by: JuAnn T. Webb
3/17/2015

GLADYS GONZALEZ
Gladys Gonzalez

OK TO PAY
$ 1,830

PICK-UP G. MURDY: MAIL DCE.CA

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

Invoice Number: DEC2014-03160REV

Invoice Date: 3/10/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS.
County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163
USA

INVOICE SUMMARY

			Contract Value
Customer Number:	13245	Cost:	$45,500.00
		Total:	$45,500.00
Project Number:	13245.134	Cumulative Amount Billed:	$43,730.56
Project Name:	WatershedMgmtAreaAnalysis		
Project Manager:	Dister, Sheri		
Terms:	NET 30	Billing Period From: 10/01/14 To: 10/31/14	Billing Currency:

	Current Hours	Rate	Current Amount	Cumulative Amount
Senior Scientist				
Engelhorn, Garth	0.00	130.0000	$0.00	$1,430.00
Yonemasu, Satomi	0.00	130.0000	0.00	195.00
Task Leader				
Isham, William H	0.00	150.0000	0.00	375.00
Labor	0.00		$0.00	$2,000.00
Subcontractor			$1,830.00	$41,730.56
Total Expenses			$1,830.00	$41,730.56
Invoice Total			$1,830.00	$43,730.56

I hereby certify that Weston Solutions, Inc. is in compliance with Article 8.9 "Debarment and Suspension" of the Agreement, and the work completed, as shown above, is true.

Signature

05P-0806 2/12

INVOICE
12972

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

Invoice Number: DEC2014-03160REV

Invoice Date: 3/10/2015

Description: PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS.
County Agreement No. 534965

Bill To:
COUNTY OF SAN DIEGO
Attn: Jo Ann Weber (MS 0326)
Watershed Protection Program
5510 Overland Avenue, Ste. 410
San Diego, CA 92123-1239

Remit To:
Weston Solutions, Inc.
PO Box 405163
Atlanta, GA 30384-5163
USA

Customer Number: 13245

	Contract Value
Cost:	$43,500.00
Total:	$43,500.00
Cumulative Amount Billed:	$41,730.56

Project Number: 13245.134.001.0001
Project Name: FY14-15 Geosyntec WMAA
Project Manager: Dister, Sheri
Terms: NET 30

Billing Period From: 10/01/14
To: 10/31/14

Billing Currency:

	Current Amount	Cumulative Amount
Subcontractor	$1,830.00	$41,730.56
Total Expenses	$1,830.00	$41,730.56
Invoice Total	$1,830.00 ✓	$41,730.56

05P-0808 2/12

INVOICE

12973

F.E.I.N. 23-1501990
Printed on 100% Recycled Paper

Rec B4

RECEIVED BY
DPW - WPP

MAR 18 2015

SIGNATURE
PRINT Cheryl Newell

Receipt # 1737532
Supp #

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS

INVOICE DATE: 03/13/2015
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.134
INVOICE NUMBER: MAR2015-00604
BILLING PERIOD: 11/01/2014 TO 12/31/2014

NOTE: INVOICE LOST IN TRANSIT (FOR SOME WEEKS)
RECOVERED BY WPP (04/21/2015)
OK. JoAnn T. Weber
JoAnn T. Weber
4/22/15

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	GEOSYNTEC - WATERSHED MANAGEMENT AREA ANALYSIS	43,500.00	720.00	42,450.56	97.59%	1,049.44
0002	WESTON - WATERSHED MANAGEMENT AREA ANALYSIS	2,000.00	0.00	2,000.00	100.00%	0.00
TOTAL		45,500.00	720.00	44,450.56	97.69%	1,049.44

CURRENT AMOUNT DUE 720.00 OK TO PAY

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: JoAnn T. Weber
4/22/15

OK TO PAY $ 720
Gladys Gonzalez
04/22/2015

PWR.PWG.CMM01 May2015 CA1

08P-0806 2/12

INVOICE

F.E.I.N. 23-1501990

WESTON SOLUTIONS

RECEIVED BY
DPW - WPP

JUN 08 2015

SIGNATURE
PRINT

REMIT TO: Weston Solutions, Inc.
P.O. Box 405163
Atlanta, GA 30384-5163
Phone 610-701-3000/Fax 610-701-3607

ACH PAYMENTS: Weston Solutions, Inc.
Account: 009429223574
Bank of America, ABA: 011900254

PLEASE REFERENCE THE INVOICE NUMBER ON THE PAYMENT.

PROFESSIONAL SERVICES RENDERED FOR FISCAL YEAR 2014-2015 REGIONAL WATER QUALITY REPORTING - WATERSHED MANAGEMENT AREA ANALYSIS

INVOICE DATE: 6/03/15
CONTRACT NUMBER: 534965
PROJECT NUMBER: 13245.134
INVOICE NUMBER: JUN2015-02335
BILLING PERIOD: 01/01/2015 TO 05/31/2015

SUMMARY

TASK	DESCRIPTION	FUNDED VALUE	CURRENT INVOICE	CUMULATIVE AMOUNT BILLED	% COMPLETE	REMAINING FUNDED VALUE
0001	GEOSYNTEC - WATERSHED MANAGEMENT AREA ANALYSIS	43,500.00	1,025.00	43,475.56	99.94%	24.44
0002	WESTON - WATERSHED MANAGEMENT AREA ANALYSIS	2,000.00	0.00	2,000.00	100.00%	0.00
TOTAL		**45,500.00**	**1,025.00**	**45,475.56**	**99.95%**	**24.44**

CURRENT AMOUNT DUE 1,025.00 OK FOR PAYMENT

OK FOR PAYMENT
$ 1,025.00

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by:

Gladys Gonzalez
GLADYS GONZALEZ
06/10/2015

Jo Ann T. Weber
JO ANN T. WEBER
6/10/2015

Rel 57
Rec 1743789

RECEIVED BY
DPW - WPP

AUG 18 2014

SIGNATURE Cheryl Newell
PRINT Cheryl Newell

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

August 13, 2014
Invoice No: 0038532

County of San Diego
5510 Overland Avenue, Suite 410 MSO326
San Diego, CA 92123

Project C16453-CA0 T.O. 37 County of SD Contract No. 537081

Regional Elements of the Watershed Management Area Analysis

E-mail: Gladys Gonzalez (Gladys.Gonzalez@sdcounty.ca.gov)
Gitanjali Shinde (Gitanjali.Shinde@sdcounty.ca.gov)

Professional Services from June 28, 2014 to July 25, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
2.a Prepare Presentation and CP Material	8,088.00	100.00	0.00	8,088.00
2.b Presentation and Compile Comments	5,163.00	0.00	0.00	0.00
3.a Project Management	1,748.00	33.3341	0.00	582.68
4 Additional Services	11,342.00	0.00	0.00	0.00
5 Professional Facilitation Services	3,159.00	0.00	0.00	0.00
Total Fee	29,500.00		0.00	8,670.68
	Fixed Fee Sub-Total			**8,670.68**
		Sub-Total this Phase		**$8,670.68**
		Total this Invoice		**$8,670.68**

OK to PAY

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

Christine A. Sloan
Christine A. Sloan
8/18/14

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $8,670.68
Approved by:

Gitanjali Shinde
GITANJALI SHINDE
8/18/14
Christine A. Sloan

PWR. PWG. LPB 08SEP2014. CA3

CONTRACT NO. 537081
TASK ORDER NO. 37
REGIONAL ELEMENTS OF THE WATERSHED MANAGEMENT AREA ANALYSIS
Rick Engineering Company Job Number 16453-CA

BACKUP OF STAFF HOURS AND RATES
From July 1, 2014
To July 25, 2014

Task 2 Prepare and Present the Regional WMAA at a Public Meeting

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0815)	Dennis Bowling	Task 2.a Prepare presentation and CP material	4	$228.25	$913.00
Associate	Project Manager (3706)	Jayne Janda-Timba	Task 2.a Prepare presentation and CP material	16	$145.67	$2,330.72
Assistant Project Engineer	Civil Engineer (3685)	Laura Henry	Task 2.a Prepare presentation and CP material	30	$119.93	$3,597.90
Principal GIS Analyst	GIS Coordinator (3502)	Mario Terrazas	Task 2.a Prepare presentation and CP material	10	$129.92	$1,299.20
			Total:	60	Total:	$8,100.82
					Fixed fee Labor Adjustment:	-$12.82
					Adjusted Total:	$8,088.00

Task 3 Project Management

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0815)	Dennis Bowling	Task 3 Project Management	0	$228.25	$0.00
Associate	Project Manager (3706)	Jayne Janda-Timba	Task 3 Project Management	4	$145.67	$582.68
Assistant Project Engineer	Civil Engineer (3685)	Laura Henry	Task 3 Project Management	0	$119.93	$0.00
			Total:	4	Total:	$582.68

Total	$8,670.68

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Rel 57 10/24
Rec 1744206

RECEIVED BY
DPW - WPP
SEP 29 2014
SIGNATURE
PRINT Cheryl Newell

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

September 24, 2014
Invoice No: 0039210

County of San Diego
5510 Overland Avenue, Suite 410 MSO326
San Diego, CA 92123

Project C16453-CA0 T.O. 37 County of SD Contract No. 537081

Regional Elements of the Watershed Management Area Analysis

E-mail: Gladys Gonzalez (Gladys.Gonzalez@sdcounty.ca.gov)
Gitanjali Shinde (Gitanjali.Shinde@sdcounty.ca.gov)

Professional Services from July 26, 2014 to August 29, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
2.a Prepare Presentation and CP Material	8,088.00	100.00	8,088.00	0.00
2.b Presentation and Compile Comments	5,163.00	100.00	0.00	5,163.00
3.a Project Management	1,748.00	66.6682	582.68	582.68
4 Additional Services	11,342.00	48.1038	0.00	5,455.93
5 Professional Facilitation Services	3,159.00	86.8946	0.00	2,745.00
Total Fee	29,500.00		8,670.68	13,946.61
	Fixed Fee Sub-Total			**13,946.61**
		Sub-Total this Phase		**$13,946.61**
		Total this Invoice		**$13,946.61**

REL #57

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

P: 1002993
O: 50915
E: 523170
T: 001.006
A: 100496
OK to Pay: Christine A. Sloan
Approved by: Christine A. Sloan
9/30/14

OK FOR PAYMENT,
Gitanjali Shinde
Gitanjali Shinde
10/14/14

PWR-PWG LRB 14 NOV 2014-CA

Date	Job #	Initial	BW / Quantity			Color / Quantity			Total
			8.5x11	11x17	12x18	8.5x11	11x17	12x18	Billed
			0.10	0.20	0.40	1.00	2.00	3.50	
08/26/14	16453-CA	ST				4			4.00
08/27/14	16453-CA	ST	2						0.20

Rel 6 f
Rel 1744291

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

October 20, 2014
Invoice No: 0039486

County of San Diego
5510 Overland Avenue, Suite 410 MSO326
San Diego, CA 92123

RECEIVED BY
DPW - WPP
OCT 27 2014
SIGNATURE Christina
PRINT Cheryl Newell

Project C16453-CA0 T.O. 37 County of SD Contract No. 537081

Regional Elements of the Watershed Management Area Analysis

E-mail: Gladys Gonzalez (Gladys.Gonzalez@sdcounty.ca.gov)
Gitanjali Shinde (Gitanjali.Shinde@sdcounty.ca.gov)

Professional Services from August 30, 2014 to September 26, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
2.a Prepare Presentation and CP Material	8,088.00	100.00	8,088.00	0.00
2.b Presentation and Compile Comments	5,163.00	100.00	5,163.00	0.00
3.a Project Management	1,748.00	100.00	1,165.36	582.64
4 Additional Services	11,342.00	57.9357	5,455.93	1,115.14
5 Professional Facilitation Services	3,159.00	100.00	2,745.00	414.00
Total Fee	29,500.00		22,617.29	2,111.78
	Fixed Fee Sub-Total			**2,111.78**
			Sub-Total this Phase	**$2,111.78**
			Total this Invoice	**$2,111.78**

Outstanding Invoices

Number	Date	Balance
0039210	9/24/2014	13,946.61
Total		**13,946.61**

Total Now Due [redacted]

Release # 54

P: 1002993
O: 509115
E: 523170
T: 004.006
A: 100496
OK to Pay: Christine A. Sloan
Approved by: Christine A. Sloan 10/29/14

Rel 1744291
Gitanjali Shinde
GITANJALI SHINDE
10/31/14

PWR. PWTZ. UPB 14 NOV 2014. CDJ

J-16453-CA ph. 205

Invoice No.	1059838
Invoice Date	10/02/2014
Account No.	000009722
Payment Terms	Net 30
Due Date	**11/01/2014**
Total Amount Due	**$414.00**

Bill To Rick Enginerring Company
Attn: Laura Henry
5620 Frairs Road
San Diego CA 92110

Questions regarding this invoice can be directed to Student Financial Services Center at 916.278.6434

Line No.	Description	Identifier	Amount
	Note: *RE: SAN DIEGO GEOSYNTEC WATERSHED MANAGEMENT AREA ANALYSIS WORKSHOP*		
	537081	*TASK 37*	*CSUS PO # CP14001*
1			414.00

IN ACCORDANCE WITH THE ABOVE REFERENCED CONTRACT, OUR BILLING IS SUBMITTED FOR YOUR REVIEW AND AUTHORIZATION FOR PAYMENT AS FOLLOWS:

TOTAL AMOUNT OF CONTRACT: $ 3,159.00
TOTAL INVOICED TO DATE: $ 3,159.00

AMOUNT REMAINING: $ 0.00
AMOUNT PAID TO DATE: $ 0.00
CURRENT INVOICE: $ 414.00

PROFESSIONAL SERVICES FOR AUGUST 2014

(SEE ATTACHED FOR DETAILS)

**** FOR QUESTIONS REGARDING THIS INVOICE, PLEASE CONTACT TERESA PAL AT (916) 445-2079 ****

---------- Please return this portion of invoice with payment ----------

Total Amount Due: $414.00
Please include the following on the check:
Account No. 000009722
Invoice No. 1059838

Make Check Payable to:
California State University, Sacramento
Lassen Hall, Rm 1003
6000 J. Street
Sacramento, CA 95819-6010

Rec 1743789
RECEIVED BY
DPW - WPP

AUG 18 2014
SIGNATURE
PRINT Cheryl Hewell

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

August 13, 2014
Invoice No: 0038533

Christine Sloan
County of San Diego
5510 Overland Avenue, Suite 410 MSO326
San Diego, CA 92123

Project C16453-C00 T.O. 23 County of SD Contract No. 537081
Regional Elements of the Watershed Management Area Analysis

E-mail: Christine Sloan: Christine.Sloan@sdcounty.ca.gov
Gitanjali Shinde: Gitanjali.Shinde@sdcounty.ca.gov

Professional Services from June 28, 2014 to July 25, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 1 WMAA (B.3.(4).(a))	70,356.00	90.7613	63,856.02	0.00
Task 3 Hydromod Exemptions (B.3.(4).(c))	30,509.00	100.00	30,509.00	0.00
Task 4 WMAA Deliverables	30,041.00	79.0566	16,786.99	6,982.40
Task 5 CoP Workgroup Mtgs. and PM	13,679.00	100.00	13,679.00	0.00
Additional Services	10,000.00	0.00	0.00	0.00
Total Fee	154,585.00		124,811.01	6,982.40
	Fixed Fee Sub-Total			6,982.40
		Sub-Total this Phase		$6,982.40
		Total this Invoice		$6,982.40

Outstanding Invoices

Number	Date	Balance
0037884	6/26/2014	16,594.85
Total		16,594.85

$ 6982.40

Total Now Due $23,577.25

Christine A. Sloan
8/18/14

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $6982.40
Approved by:

GITANJALI SHINDE
8/18/14

Christine A. Sloan
CHRISTINE SLOAN

PWR-PWG.1 08SEP2014.CD3

CONTRACT NO. 537081
TASK ORDER NO. 23
REGIONAL ELEMENTS OF THE WATERSHED MANAGEMENT AREA ANALYSIS
Rick Engineering Company Job Number 16453-C

BACKUP OF STAFF HOURS AND RATES
From July 1, 2014
To July 25, 2014

Task 4 WMAA Deliverables

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0915)	Dennis Bowling	Task 4.b WMAA Memo; Task 4.c packaging	1	$228.25	$228.25
Associate	Project Manager (3706)	Jayne Janda-Tinoba	Task 4.b WMAA Memo; Task 4.c packaging	10	$145.67	$1,456.70
Assistant Project Engineer	Civil Engineer (3655)	Laura Henry	Task 4.b WMAA Memo; Task 4.c packaging	30	$119.99	$3,597.90
Principal GIS Analyst	GIS Coordinator (3502)	Mario Terrazas	4.b and 4.c, WMAA Maps and Geodatabase for WMAA Memo and packaging	15	$125.92	$1,888.86
Assistant GIS Analyst	GIS Coordinator (3502)	Ben Alonzo	4.b and 4.c, WMAA Maps and Geodatabase for WMAA Memo and packaging	1	$82.58	$82.58
			Total:	56	Total:	$6,952.40

OK TO PAY

W:\16453\16453-C\Administration\Contracts\Billing_Backup_Files\TO23_16453-C\16453-C_Billing_Backup_2014-07.xlsx

REL 57 174426 10/14/14

RECEIVED BY
DPW - WPP

SEP 29 2014

SIGNATURE
PRINT Cheryl Lewis

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

September 23, 2014
Invoice No: 0039022

Christine Sloan
County of San Diego
5510 Overland Avenue, Suite 410 MSO326
San Diego, CA 92123

Project C16453-C00 T.O. 23 County of SD Contract No. 537081
Regional Elements of the Watershed Management Area Analysis

E-mail: Christine Sloan: Christine.Sloan@sdcounty.ca.gov
Gitanjali Shinde: Gitanjali.Shinde@sdcounty.ca.gov

Professional Services from July 26, 2014 to August 29, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 1 WMAA (B.3.(4).(a))	70,356.00	93.8652	63,856.02	2,183.78
Task 3 Hydromod Exemptions (B.3.(4).(c))	30,509.00	100.00	30,509.00	0.00
Task 4 WMAA Deliverables	30,041.00	98.1163	23,749.39	5,725.73
Task 5 CoP Workgroup Mtgs. and PM	13,679.00	100.00	13,679.00	0.00
Additional Services	10,000.00	0.00	0.00	0.00
Total Fee	154,585.00		131,793.41	7,909.51
	Fixed Fee Sub-Total			**7,909.51**
		Sub-Total this Phase		**$7,909.51**
		Total this Invoice		**$7,909.51**

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

REL # 57

OK FOR PAYMENT
Gitanjali Shinde
10/14/14

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Christine A. Sloan
Approved by: Christine A. Sloan
9/30/14

PWR.PWG.LPB 14NOV2014.CB

CONTRACT NO. 537081
TASK ORDER NO. 23
REGIONAL ELEMENTS OF THE WATERSHED MANAGEMENT AREA ANALYSIS
Rick Engineering Company Job Number 16453-C

BACKUP OF STAFF HOURS AND RATES
From July 26, 2014
To August 29, 2014

Task 1 WMAA (B.3.(4).(a))

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0315)	Dennis Bowling	Task 1.j packaging	0	$228.25	$0.00
Associate	Project Manager (3706)	Jayne Janda-Timba	Task 1.j packaging	0	$145.67	$0.00
Associate	Project Manager (3706)	Roberta Cronquist	Task 1.j packaging	0	$145.67	$0.00
Assistant Project Engineer	Civil Engineer (3635)	Laura Henry	Task 1.j packaging	3	$119.93	$359.79
Principal Water Resources Designer	Assistant Engineer (3615)	Jon Van Ryn	Task 1.j packaging	0	$119.93	$0.00
GIS Manager	GIS Coordinator (3502)	Brian Laird	Task 1.j packaging	0	$125.92	$0.00
Principal GIS Analyst	GIS Coordinator (3502)	Mario Terrazas	Task 1.j packaging	12	$125.92	$1,511.04
Assistant GIS Analyst	GIS Coordinator (3502)	Ben Alonzo	Task 1.j packaging	5	$62.59	$312.95
Associate Water Resources Designer	Assistant Engineer (3615)	Silvana Tasev	Task 1.j packaging	0	$99.77	$0.00
			Total:	20	Total:	$2,183.78

Task 4 WMAA Deliverables

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0315)	Dennis Bowling	Task 4.c packaging	0	$228.25	$0.00
Associate	Project Manager (3706)	Jayne Janda-Timba	Task 4.c packaging	3	$145.67	$437.01
Assistant Project Engineer	Civil Engineer (3635)	Laura Henry	Task 4.c packaging	11	$119.93	$1,319.23
Associate Water Resources Designer	Assistant Engineer (3615)	Silvana Tasev	Task 4.c packaging	36	$99.77	$3,591.72
Principal GIS Analyst	GIS Coordinator (3502)	Mario Terrazas	Task 4.c packaging	3	$125.92	$377.76
Assistant GIS Analyst	GIS Coordinator (3502)	Ben Alonzo	Task 4.c packaging	0	$62.59	$0.00
			Total:	53	Total:	$5,725.72

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Rel 57

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com
Rec 1744325

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

October 20, 2014
Invoice No: 0039487

Christine Sloan
County of San Diego
5510 Overland Avenue, Suite 410 MSO326
San Diego, CA 92123

RECEIVED BY
DPW - WPP
OCT 27 2014
SIGNATURE
PRINT Cheryl Newell

Project C16453-C00 T.O. 23 County of SD Contract No. 537081
Regional Elements of the Watershed Management Area Analysis

E-mail: Christine Sloan: Christine.Sloan@sdcounty.ca.gov
Gitanjali Shinde: Gitanjali.Shinde@sdcounty.ca.gov

Professional Services from August 30, 2014 to September 26, 2014

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 1 WMAA (B.3.(4).(a))	70,356.00	100.00	66,039.80	4,316.20
Task 3 Hydromod Exemptions (B.3.(4).(c))	30,509.00	100.00	30,509.00	0.00
Task 4 WMAA Deliverables	30,041.00	100.00	29,475.12	565.88
Task 5 CoP Workgroup Mtgs. and PM	13,679.00	100.00	13,679.00	0.00
Additional Services	10,000.00	0.00	0.00	0.00
Total Fee	154,585.00		139,702.92	4,882.08
	Fixed Fee Sub-Total			**4,882.08**
			Sub-Total this Phase	**$4,882.08**
			Total this Invoice	**$4,882.08**

OK TO PAY

Outstanding Invoices

Number	Date	Balance
0039022	9/23/2014	7,909.51
Total		**7,909.51**

RELEASE #57

Total Now Due [redacted]

P: 10029933
O: 50415
E: 523.70
T: 001.006
A: 100496

OK to Pay: Christine A. Sloan
Approved by: Christine A. Sloan 10/29/14

Gitanjali Shinde
GITANJALI SHINDE
10/31/14

PWR. PWG. 1PB20 NOV 2014. CA1

CONTRACT NO. 537081
TASK ORDER NO. 23
REGIONAL ELEMENTS OF THE WATERSHED MANAGEMENT AREA ANALYSIS
Rick Engineering Company Job Number 16453-C

BACKUP OF STAFF HOURS AND RATES
From August 30, 2014
To September 26, 2014

Task 1 WMAA (B.3.(4).(a))

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0315)	Dennis Bowling	Task 1.j packaging	0	$228.25	$0.00
Associate	Project Manager (3706)	Jayne Janda-Timba	Task 1.j packaging	0	$145.67	$0.00
Associate	Project Manager (3706)	Roberta Cronquist	Task 1.j packaging	0	$145.67	$0.00
Assistant Project Engineer	Civil Engineer (3635)	Laura Henry	Task 1.j packaging	16	$119.93	$1,918.88
Principal Water Resources Designer	Assistant Engineer (3615)	Jon Van Ryn	Task 1.j packaging	0	$119.93	$0.00
GIS Manager	GIS Coordinator (3502)	Brian Laird	Task 1.j packaging	0	$125.92	$0.00
Principal GIS Analyst	GIS Coordinator (3502)	Mario Terrazas	Task 1.j packaging	17.5	$125.92	$2,203.60
Assistant GIS Analyst	GIS Coordinator (3502)	Ben Alonzo	Task 1.j packaging	6.5	$62.59	$406.84
Associate Water Resources Designer	Assistant Engineer (3615)	Silvana Tasev	Task 1.j packaging	0	$99.77	$0.00
			Total:	40	Total:	$4,529.32
					Fixed Fee Labor Adjustment:	-$213.12
					Adjusted Total:	$4,316.20

Task 4 WMAA Deliverables

RICK ENGINEERING COMPANY STAFF CLASSIFICATION	COUNTY OF SAN DIEGO STAFF CLASSIFICATION	NAME	DESCRIPTION OF TASK	NUMBER OF HOURS	HOURLY RATE	COST
Principal	LUEG Manager (0315)	Dennis Bowling	Task 4.c packaging	1	$228.25	$228.25
Associate	Project Manager (3706)	Jayne Janda-Timba	Task 4.c packaging	4	$145.67	$582.68
Assistant Project Engineer	Civil Engineer (3635)	Laura Henry	Task 4.c packaging	0	$119.93	$0.00
Associate Water Resources Designer	Assistant Engineer (3615)	Silvana Tasev	Task 4.c packaging	0	$99.77	$0.00
Principal GIS Analyst	GIS Coordinator (3502)	Mario Terrazas	Task 4.c packaging	0	$125.92	$0.00
Assistant GIS Analyst	GIS Coordinator (3502)	Ben Alonzo	Task 4.c packaging	0	$62.59	$0.00
			Total:	5	Total:	$810.93
					Fixed Fee Labor Adjustment:	-$245.05
					Adjusted Total:	$565.88

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

June 19, 2015
Invoice No: 0043370

Christine Sloan
County of San Diego
5510 Overland Avenue, Suite 410 MSO326
San Diego, CA 92123

RECEIVED BY
DPW - WPP
JUN 24 2015
SIGNATURE
PRINT Cheryl Newell

Project C16453-C00 T.O. 23 County of SD Contract No. 537081
Regional Elements of the Watershed Management Area Analysis

E-mail: Christine Sloan: Christine.Sloan@sdcounty.ca.gov
Gitanjali Shinde: Gitanjali.Shinde@sdcounty.ca.gov

Professional Services from April 25, 2015 to May 29, 2015

Phase 0000.00 Fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Task 1 WMAA (B.3.(4).(a))	70,356.00	100.00	70,356.00	0.00
Task 3 Hydromod Exemptions (B.3.(4).(c))	30,509.00	100.00	30,509.00	0.00
Task 4 WMAA Deliverables	30,041.00	100.00	30,041.00	0.00
Task 5 CoP Workgroup Mtgs. and PM	13,679.00	100.00	13,679.00	0.00
Additional Services	10,000.00	29.6717	0.00	2,967.17
Total Fee	154,585.00		144,585.00	2,967.17
	Fixed Fee Sub-Total			**2,967.17**
		Sub-Total this Phase		**$2,967.17**

Phase 0106.00 Additional Services OK TO PAY

Reimbursable Expenses

OK TO PAY
$ 2,967.17
Gladys Gonzalez
GLADYS GONZALEZ

Consultants

5/29/2015	Geosyntec Consultants, Inc.	1,488.14	
	Sub-Total Reimbursables	**1,488.14**	**1,488.14**
		Sub-Total this Phase	**$1,488.14**
		Total this Invoice	**$4,455.31**

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Greg Carlton
Approved by:
on behalf of Gitanjali Shinde
6/24/15

Rel 52
Rec 1745771

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

RECEIVED BY
DPW - WPP
MAR 30 2015
SIGNATURE
PRINT Cheryl Newell

March 18, 2015
Invoice No: 0041831

Gladys Gonzalez
County of San Diego
5510 Overland Avenue, Suite 410, MS0332
San Diego, CA 92123

Project C16484-SB0 Offsite Alt Compliance Water Equivalency

San Diego County Watershed Protection
Water Quality Equivalency Guidance Phase 2 (FY 14-15)
Contract No. 537081
Task Order No. 44

E-mail: Gitanjali.Shinde@sdcounty.ca.gov and (Gladys.Gonzalez2@sdcounty.ca.gov)

Professional Services from January 31, 2015 to February 27, 2015

Phase 0000.00 fixed fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Manage SAG/TAC	12,555.49	43.8212	0.00	5,501.97
GIS - Land Use Analysis	3,864.94	0.00	0.00	0.00
WQE Guidance Manual - Draft #2	34,020.15	5.6632	0.00	1,926.63
Project Management	582.68	50.00	0.00	291.34
HDR - SAG/TAC and Draft #2	13,902.78	0.00	0.00	0.00
Total Fee	64,926.04		0.00	7,719.94
	Fixed Fee Sub-Total			**7,719.94**
		Sub-Total this Phase	OK TO PAY	**$7,719.94**
		Total this Invoice		**$7,719.94**

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

OK TO PAY $ 7,719.94
Gladys Gonzalez
Gladys Gonzalez

P: 1002993
O: 50915
E: 52370
T: 001, 006
A: 100496
OK to Pay:
Approved by: Gitanjali Shinde
4/7/15
Gitanjali Shinde

PWR. PWG. MMB 22 APR 2015. CA

Rec 56

Receipt 1745882
Supp# 1117106

RECEIVED BY
DPW - WPP
APR 30 2015
SIGNATURE
PRINT Cheryl Newell

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

April 23, 2015
Invoice No: 0042529

Gladys Gonzalez
County of San Diego
5510 Overland Avenue, Suite 410, MS0332
San Diego, CA 92123

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

Project C16484-SB0 Offsite Alt Compliance Water Equivalency

San Diego County Watershed Protection
Water Quality Equivalency Guidance Phase 2 (FY 14-15)
***Needs Labor Schedule Attached**
Contract No. 537081
Task Order No. 44

E-mail: Gitanjali.Shinde@sdcounty.ca.gov and (Gladys.Gonzalez2@sdcounty.ca.gov)

Professional Services from February 28, 2015 to March 27, 2015

Phase 0000.00 fixed fee

Gladys Gonzalez 04/30/15
OK TO PAY $ 17,391.61

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Manage SAG/TAC	12,555.49	43.8212	5,501.97	0.00
GIS - Land Use Analysis	3,864.94	14.01	0.00	541.48
WQE Guidance Manual - Draft #2	34,020.15	43.7362	1,926.63	12,952.49
Project Management	582.68	50.00	291.34	0.00
HDR - SAG/TAC and Draft #2 1002993	13,902.78	28.035	0.00	3,897.64
Total Fee	64,926.04		7,719.94	17,391.61
Fixed Fee Sub-Total				**17,391.61**
Sub-Total this Phase				**$17,391.61**
Total this Invoice				**$17,391.61**

P:
C: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Gitanjali Shinde
Approved by: GITANJALI SHINDE 5/1/15

OK TO PAY

Outstanding Invoices

Number	Date	Balance
0041831	3/18/2015	7,719.94
0042154	4/17/2015	13,493.97
Total		**21,213.91**

Total Now Due **$38,605.52**

PWR.PWG.CMM05MAY2015.CA

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DPW - WPP

MAY 28 2015
SIGNATURE
PRINT Cheryl Dewell

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

May 18, 2015
Invoice No: 0042748

Gladys Gonzalez
County of San Diego
5510 Overland Avenue, Suite 410, MS0332
San Diego, CA 92123

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by:
Gitanjali Shinde
GITANJALI SHINDE
6/11/15

Project C16484-SB0 Offsite Alt Compliance Water Equivalency

San Diego County Watershed Protection
Water Quality Equivalency Guidance Phase 2 (FY 14-15)
*Needs Labor Schedule Attached
Contract No. 537081
Task Order No. 44

OK FOR PAYMENT
$21,996.49
GLADYS GONZALEZ
Gladys Gonzalez

E-mail: Gitanjali.Shinde@sdcounty.ca.gov and (Gladys.Gonzalez2@sdcounty.ca.gov)

Professional Services from March 28, 2015 to April 24, 2015

Phase 0000.00 fixed fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Manage SAG/TAC	12,555.49	86.0667	5,501.97	5,304.13
GIS - Land Use Analysis	3,864.94	98.4939	541.48	3,285.25
WQE Guidance Manual - Draft #2	34,020.15	62.0306	14,879.12	6,223.78
Project Management	582.68	100.00	291.34	291.34
HDR - SAG/TAC and Draft #2	13,902.78	77.7516	3,897.64	6,911.99
Total Fee	64,926.04		25,111.55	21,996.49
	Fixed Fee Sub-Total			21,996.49

Sub-Total this Phase $21,996.49

Total this Invoice $21,996.49

OK FOR PAYMENT

Outstanding Invoices

Number	Date	Balance
0042529	4/23/2015	17,391.61
Total		17,391.61

Total Now Due $39,388.10

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

RECEIVED BY
DPW - WPP
JUL 02 2015
SIGNATURE Gladys Gonzalez
PRINT GLADYS GONZALEZ

I hereby certify that Rick Engineering Company is in compliance with Article 8.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

June 16, 2015
Invoice No: 0043132

OK FOR PAYMENT
$ 5,495.48
Gladys Gonzalez
07/02/15

LOST IN TRANSIT

Gladys Gonzalez
County of San Diego
5510 Overland Avenue, Suite 410, MS0332
San Diego, CA 92123

Project C16484-SB0 Offsite Alt Compliance Water Equivalency

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: 7/2/15 Sara Agahi

San Diego County Watershed Protection
Water Quality Equivalency Guidance Phase 2 (FY 14-15)
***Needs Labor Schedule Attached**
Contract No. 537081
Task Order No. 44

E-mail: Gitanjali.Shinde@sdcounty.ca.gov and (Gladys.Gonzalez2@sdcounty.ca.gov)

Professional Services from April 25, 2015 to May 29, 2015

Phase 0000.00 fixed fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Manage SAG/TAC	12,555.49	98.3187	10,806.10	1,538.29
GIS - Land Use Analysis	3,864.94	98.4939	3,806.73	0.00
WQE Guidance Manual - Draft #2	28,520.15	85.4628	21,102.90	3,271.22
Project Management	582.68	100.00	582.68	0.00
HDR - SAG/TAC and Draft #2	13,902.78	82.6856	10,809.63	685.97
Pi Environmental Graphic Artist	5,500.00	0.00	0.00	0.00
Total Fee	64,926.04		47,108.04	5,495.48
	Fixed Fee Sub-Total			5,495.48

Sub-Total this Phase $5,495.48

OK TO PAY

Total this Invoice $5,495.48

Outstanding Invoices

Number	Date	Balance
0042748	5/18/2015	21,996.49
Total		21,996.49

Total Now Due $27,491.97

Invoice

RICK ENGINEERING COMPANY

Rick Engineering Company - California
5620 Friars Road
San Diego, CA 92110
619.291.0707
www.rickengineering.com

RECEIVED BY
DPW - WPP

JUL 02 2015

SIGNATURE Gladys Gonzalez
PRINT GLADYS GONZALEZ

I hereby certify that Rick Engineering Company is in compliance with Article 6.9 "Debarment and Suspension" of the agreement, and the work completed, as shown above is true.

Derek D Woolly

July 02, 2015
Invoice No: 0043598

Gladys Gonzalez
County of San Diego
5510 Overland Avenue, Suite 410, MS0332
San Diego, CA 92123

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $6,105.16
Approved by: Sara Agahi 7/9/15
Gladys Gonzalez
GLADYS GONZALEZ
07/02/2015

Project C16484-SB0 Offsite Alt Compliance Water Equivalency

San Diego County Watershed Protection
Water Quality Equivalency Guidance Phase 2 (FY 14-15)
***Needs Labor Schedule Attached**
Contract No. 537081
Task Order No. 44

E-mail: Gitanjali.Shinde@sdcounty.ca.gov and (Gladys.Gonzalez2@sdcounty.ca.gov)

Professional Services from May 30, 2015 to June 26, 2015

Phase 0000.00 fixed fee

Fixed Fee Phases	Contract Amount	Percent Complete	Previously Billed	Current Billing
Manage SAG/TAC	12,555.49	98.3187	12,344.39	0.00
GIS - Land Use Analysis	3,864.94	98.4939	3,806.73	0.00
WQE Guidance Manual - Draft #2	28,520.15	98.4291	24,374.12	3,698.01
Project Management	582.68	100.00	582.68	0.00
HDR - SAG/TAC and Draft #2	13,902.78	99.9998	11,495.60	2,407.15
Pi Environmental Graphic Artist	5,500.00	0.00	0.00	0.00
Total Fee	64,926.04		52,603.52	6,105.16
	Fixed Fee Sub-Total			**6,105.16**

Sub-Total this Phase **$6,105.16**

OK TO PAY

Total this Invoice **$6,105.16**

Outstanding Invoices

Number	Date	Balance
0042748	5/18/2015	21,996.49
0043132	6/16/2015	5,495.48
Total		**27,491.97**

Total Now Due **$33,597.13**

HDR

RECEIVED BY
DPW - WPP
JUN 24 2015
SIGNATURE
PRINT Cheryl Newell

Invoice

HDR Engineering, Inc.
8690 Balboa Ave, Suite 200
San Diego, CA 92123 - 858-712-8304

HDR Invoice No.	219146-B
Invoice Date:	06/19/15
Invoice Amount Due:	$22,867.45
Payment | Terms:	Net 30

Bill To
County of San Diego - Department of Public Work
Attn: Gladys Gonzalez
5510 Overland Ave, Suite 410
San Diego, CA 92123
Gladys.Gonzalez2@sdcounty.ca.gov

HDR Project Number:	256769
HDR Contract Number:	CON0098636
Purchase Order Number:	1
Client Project Number:	549956

Professional services for period: May 03, 2015 to June 13, 2015

Water Quality Equivalency Guidance (Phase 3)

Direct Labor	Classification	Hours	2015 Rates	Amount
Haimann, Richard	LUEG Program Manager	23.00	$ 173.25	$ 3,984.75
Shamblin Gray, Stephanie	Project Manager	40.00	$ 148.97	$ 5,958.80
Neptune, Tiffany	Technician	4.75	$ 108.27	$ 514.28
Gauthier, Curtis	Civil Engineer	2.00	$ 110.55	$ 221.10
	Labor Hours	69.75	Labor Total	$ 10,678.93

Reimbursable Expenses	Cost	Units	Amount
N/A	$ -	1	$ -
Total Expenses			$ -

Subconsultants	Cost	Units	Amount
Rick Engineering	$12,188.52	1	$ 12,188.52
Total Expenses			$ 12,188.52

OK

Invoice Total	$ 22,867.45

OK TO PAY

Summary

Purchase Order:	1
Fee:	$70,275.00
Previously Billed:	$0.00
Billed to Date:	$22,867.45
Fee Remaining:	$47,407.55
Percent Spent:	32.5%

Please send remittance with copy of invoice to

Remit to: P.O. Box 3480, Omaha, NE 68103-0480
Wire Transfer to: US Bank - ABA # 104000029 - Account# 1487 0427 2449

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Greg Carlton
Approved by: GK
on behalf of Gitanjali Shinde
6/24/15

OK TO PAY
$ 22,867.45
Gladys Gonzalez
GLADYS GONZALEZ
06/24/2015

Invoice

RECEIVED BY
DPW - WPP

JUL 02 2015

SIGNATURE Gladys Gonzalez
PRINT GLADYS GONZALEZ

HDR Engineering, Inc.
8690 Balboa Ave, Suite 200
San Diego, CA 92123 - 858-712-8304

HDR Invoice No.	**222704-B**
Invoice Date:	07/02/15
Invoice Amount Due:	**$8,251.59**
Payment | Terms:	Net 30
HDR Project Number:	256769
HDR Contract Number:	CON0098636
Purchase Order Number:	1
Client Project Number:	549956

Bill To
County of San Diego - Department of Public Work
Attn: Gladys Gonzalez
5510 Overland Ave, Suite 410
San Diego, CA 92123
Gladys.Gonzalez2@sdcounty.ca.gov

Professional services for period: June 14, 2015 to June 30, 2015

Water Quality Equivalency Guidance (Phase 3)

Direct Labor	Classification	Hours	2015 Rates	Amount
Haimann, Richard	LUEG Program Manager	14.00	$ 173.25	$ 2,425.50
Shamblin Gray, Stephanie	Project Manager	14.50	$ 148.97	$ 2,160.07
Paquette, Laura	Technician	1.00	$ 108.27	$ 108.27
Neptune, Tiffany	Technician	0.75	$ 108.27	$ 81.20
	Labor Hours	**30.25**	**Labor Total**	**$ 4,775.04**

Reimbursable Expenses	Cost	Units	Amount
N/A	$ -	1	$ -
	Total Expenses		**$ -**

Subconsultants	Cost	Units	Amount
California State University - Center of Collabortive Policy	$ 3,476.55	1	$ 3,476.55
	Total Expenses		**$ 3,476.55**

Invoice Total	**$ 8,251.59**

OK TO PAY

Summary

Purchase Order:	1
Fee:	$70,275.00
Previously Billed:	$22,867.45
Billed to Date:	$31,119.04
Fee Remaining:	$39,155.96
Percent Spent:	44.3%

Please send remittance with copy of invoice to

Remit to: P.O. Box 3480, Omaha, NE 68103-0480
Wire Transfer to: US Bank - ABA # 104000029 - Account# 1487 0427 2449

OK TO PAY
$ 8,251.59

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by:

Gladys Gonzalez
GLADYS GONZALEZ
07/02/15

7/2/15
Sara Agahi

Payments by Check:
ICF Jones & Stokes, Inc, c/o ICF Consulting Group, Inc.
P.O. Box 536259
Pittsburgh, PA 15253-5904

ICF Jones & Stokes
an ICF International Company

Payments by EFT/ACH should be addressed to:
ICF Jones & Stokes, Inc., c/o ICF Consulting Group, Inc. Citizens Bank of Pennsylvania, 1 Citizens Drive, Riverside, RI 02915
ABA No: 036076150 • Swift: CTZIUS33
Account Name: ICF Consulting Group, Inc.
Account No: 6203219502

Shp 1 $9,134.10

Release #72

Shp 2 $29,068.75

COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS
Room 430, Mail Stop O-385
5510 Overland Ave., Suite 410
San Diego, CA 92123
Attn: Melissa Balino

Contract # 536321
Project #1002993

ESU - POETA	
P	1019367
O	50915
E	52370
T	001.001
A	100496

ESU - POETA	
P	1002993
O	50915
E	52370
T	001.006
A	100496

Project No: 00616.14
Invoice No: 0107527
Invoice Date: 05/12/15

Receipt # 1746059
TO FS 5.21.15

TASK ORDER NO. 72 - WATER QUALITY CREDIT SYSTEM & NATURAL BMP PROGRAM DEVELOPMENT

PROFESSIONAL ENVIRONMENTAL SERVICES FEBRUARY 01, 2014 THROUGH APRIL 24, 2015

	Task	Orig. Contract	Approved Augments	Total Contract Amount	Percent Complete	Completed To Date	Previously Invoiced	Total This Invoice
001	Creation of Natural BMPs Program	$ 30,000.02	$ -	$ 30,000.02	44.385%	$ 13,315.41	$ -	$ 13,315.41
002	Review Existing Credit Systems	$ 26,732.80	$ -	$ 26,732.80	70.729%	$ 18,907.82	$ 3,154.48	$ 15,753.34
003	Framework of Credit System Progra	$ 41,051.54	$ -	$ 41,051.54	21.695%	$ 8,906.26	$ -	$ 8,906.26
004	Project Management	$ 8,624.88	$ -	$ 8,624.88	40.123%	$ 3,460.58	$ 3,232.74	$ 227.84
005	Additional Support	$ 3,590.76	$ -	$ 3,590.76	0.000%	$ -	$ -	$ -
	TOTALS	**$ 110,000.00**	**$ -**	**$ 110,000.00**		**$44,590.07**	**$6,387.22**	**$38,202.85**

TOTAL AMOUNT DUE THIS BILLING PERIOD **$ 38,202.85**

I hereby certify that the percentage of completion of work as shown above is true.

Jill Shook / for
Michelle Mattson

05.12.15
Date

RECEIVED
MAY 18 2015
County of San Diego
ENVIRONMENTAL SERVICES

MELISSA BALINO
Melissa Balino

OK to PAY
Shari A. McPherson 5/19/15

OK to pay
Tom Duff 5/20/15

BILLING BACKUP

SUMMARY OF WORK:
Meetings Attended:
- 3/3/2015 Meeting with County to discuss Credit System SOW and status
- 4/1/2015 Meeting with RWQCB and County – (pre-meeting with County to discuss program and deliverables) presented what has been completed so far and brainstorming of how to move forward with upland and stream restoration crediting.
- 4/2/2015 Meeting with County and City of SD – Purpose of meeting was to coordinate City and County task order efforts with regards to crediting stream restoration.
- 4/15/2015 TAC Meeting – Presented what we have completed so far and pathways proposed for water quality credits for stream restoration.
- 4/21/2015 Co-Permittee Meeting – Presented how the Program is expected to look, discussion of the pathways proposed for water quality credits for stream restoration.

Conference Calls:
- 3/16/2015 Call with Geosyntec on WMAA data provided.
- 3/25/2015 Call with SCCRWP to discuss Monitoring efforts (including SWAMP) to monitor water quality.

Deliverables submitted:
- Program Framework Outline – Sent 4/1/2015
- ICF Program Recommendations – Sent 4/1/2015
- Literature review Summary Matrix – Sent 4/1/2015
- Stream restoration opportunities GIS Model Memo – Sent 4/15/2015
- Prepared summary memos for 1. Upland Buffer Literature Review and 2. Stream Monitoring Requirements for our 4/1/2015 meeting.
- For the 4/15/2015 meeting, prepared Summary Notes (talking points) for audience to follow.
- For the 4/21/2015 meeting, prepared a power point presentation.

Other Tasks:
- Upland buffer benefits to water quality literature review
- Initial evaluation of existing water quality monitoring requirements within stream systems.
- Initial evaluation of existing databases and how the Credit System may be incorporated into these databases

Personnel	Title	Hours	Rate*	Total Cost
ICF				
Patrick Atchison	Project Director	16.00	227.84	3,645.44
Michelle Mattson	Managing Consultant	83.00	186.57	15,485.31
John Markham	Sr. Consultant II	11.50	160.94	1,850.81
Jeffrey Peters	Sr. Consultant II	5.50	149.91	824.51
John Howe	Sr. Consultant II	0.75	130.4	97.80
Debra Turner	Sr. Consultant II	28.50	125.53	3,577.61
Lanika Cervantes	Sr. Consultant I	107.00	112.66	12,054.62
David Duncan	Assoc. Consultant III	2.25	90.36	203.31
Marissa Maggio	Tech. Trainee	8.00	57.93	463.44
TOTAL		**262.50**		**38,202.85** OK FOR PAYMENT

Reimbursable Expenses

TOTAL **$ -**

TOTAL THIS BILLING PERIOD **38,202.85**

*** 2014 Rates used for all tasks**

Payments by Check:
ICF Jones & Stokes, Inc, c/o ICF Consulting Group, Inc.
ox 536259
urgh, PA 15253-5904

ICF Jones & Stokes

Payments by EFT/ACH should be addressed to:
ICF Jones & Stokes, Inc., c/o ICF Consulting Group, Inc. Citizens Bank of Pennsylvania, 1 Citizens Drive, Riverside, RI 02915
ABA No: 036076150 • Swift: CTZIUS33
Account Name: ICF Consulting Group, Inc.
Account No: 6203219502

Release # 72 Shp # 2

— CO-PER HITTE —

ESU - POETA	
P	1002993
O	50915
E	52370
T	001.006
A	100496

Receipt # 1746444
TO Fs 6.19.15

COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS
Room 430, Mail Stop O-385
5510 Overland Ave., Suite 410
San Diego, CA 92123
Attn: Melissa Balino

Contract # 536321
Project #1002993

Project No: 00616.14
Invoice No: 0108094
Invoice Date: 06/12/15

TASK ORDER NO. 72 - WATER QUALITY CREDIT SYSTEM & NATURAL BMP PROGRAM DEVELOPMENT

PROFESSIONAL ENVIRONMENTAL SERVICES APRIL 25, 2014 THROUGH MAY 29, 2015

	Task	Orig. Contract	Approved Augments	Total Contract Amount	Percent Complete	Completed To Date	Previously Invoiced	Total This Invoice
001	Creation of Natural BMPs Program	$ 30,000.02	$ -	$ 30,000.02	47.723%	$ 14,316.94	$ 13,315.41	$ 1,001.53
002	Review Existing Credit Systems	$ 26,732.80	$ -	$ 26,732.80	100% ~~79.729%~~	$ 18,907.82	$ 18,907.82	$
003	Framework of Credit System Progra	$ 41,051.54	$ -	$ 41,051.54	63.627%	$ 26,119.81	$ 8,906.26	$ 17,213.55
004	Project Management	$ 8,624.88	$ -	$ 8,624.88	55.973%	$ 4,827.62	$ 3,460.58	$ 1,367.04
005	Additional Support	$ 3,590.76	$ -	$ 3,590.76	0.000%	$ -	$ -	$ -
	TOTALS	**$ 110,000.00**	**$ -**	**$ 110,000.00**		**$64,172.19**	**$44,590.07**	**$19,582.12** OK

TOTAL AMOUNT DUE THIS BILLING PERIOD **$ 19,582.12**

OK TO PAY

OK to Pay
Sheri A. McPherson, Project Manager

I hereby certify that the percentage of completion of work as shown above is true.

Michelle Mattson

06.12.15
Date

Tom Duffy 6/18/2015
OK to pay Tom Duffy

RECEIVED
JUN 15 2015
County of San Diego
ENVIRONMENTAL SERVICES
MELISSA BALINO

BILLING BACKUP

SUMMARY OF WORK:
Meetings Attended:
- 5/8/2015 WQE - Stream Rehabilitation Equivalency Subworkgroup Meeting for the City of San Diego's approach.
- 5/19/2015 Water Quality Equivalency TAC/SAG Workshop #4 – County requested we attend to keep up-to-date on the City's progress and the progress of the WQE.
- 5/20/2015 Meeting with the County on their comments on Outline and Stream GIS Memo and discussion of next steps.

Conference Calls:
- 5/29/2015 – Internal call on draft memo on monitoring methods for stream restoration – for the development of a monitoring program for stream restoration.
- 5/12/2015 – Internal call to discuss developing a GIS model to identify upland buffers.
- 5-26/2015 – Call with Gladys to discuss comments on the GIS model memo and the need to revise the stream restoration definitions

Deliverables submitted:
- 5/29/2015 - Submitted the draft version of the updated stream restoration definitions.

Ongoing Tasks:
- 5/20/2015 - Received County comments on the Program Framework Outline and GIS Memo
- Started revising the Program Framework Outline to address the County's comments and provide more details in areas, as well as, started developing graphics to illustrate the process better.
- Revised the Stream GIS model to address County comments (currently under final review)
- Started drafting the Upland Buffer GIS model
- Started drafting an Upland Buffer Literature Review Memo to justify buffer widths proposed.
- Started drafting a summary of bioassessment tools available and potential development of an indicator system to determine water quality crediting – all to be incorporated into a single memo for a potential pathway for crediting stream restoration.

Personnel ICF	Title	Hours	Rate*	Total Cost
Patrick Atchison	Project Director	7.00	227.84	1,594.88
Michelle Mattson	Managing Consultant	26.00	186.57	4,850.82
John Markham	Sr. Consultant II	-	160.94	-
Jeffrey Peters	Sr. Consultant II	22.50	149.91	3,372.98
John Howe	Sr. Consultant II	8.25	130.4	1,075.80
Debra Turner	Sr. Consultant II	9.00	125.53	1,129.77
Lanika Cervantes	Consultant I	57.00	112.66	6,421.62
David Duncan	Assoc. Consultant III	-	90.36	-
Marissa Maggio	Tech. Trainee	-	57.93	-
Michael Vondergeest	Sr. Consultant II	7.00	151.56	1,060.92
TOTAL		**136.75**		**19,506.79**

OK TO PAY

Reimbursable Expenses
Mileage 131 miles X 0.575 mile 75.33

TOTAL $ **75.33**

TOTAL THIS BILLING PERIOD **19,582.12**
*** 2014 Rates used for all tasks**

Payments by Check:
ICF Jones & Stokes, Inc, c/o ICF Consulting Group, Inc.
P.O. Box 536259
Pittsburgh, PA 15253-5904

Jones & Stokes

Payments by EFT/ACH should be addressed to:
ICF Jones & Stokes, Inc., c/o ICF Consulting Group, Inc. Citizens Bank of Pennsylvania, 1 Citizens Drive, Riverside, RI 02915
ABA No: 036076150 • Swift: CTZIUS33
Account Name: ICF Consulting Group, Inc.
Account No: 6203219502

Release # 72

- COUNTY ONLY -
Shp 1 $15,609.11

COPERMITTEE
Shp 2 $8,082.13

COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS
Room 430, Mail Stop O-385
5510 Overland Ave., Suite 410
San Diego, CA 92123
Attn: Melissa Balino

Contract # 536321
Project #1002993

	ESU - POETA	ESU - POETA
P	1019367	1002993
O	50915	50915
E	52370	52370
T	001.001	001.006
A	100496	100496

Project No: 00616.14
Invoice No: 0108480
Invoice Date: ~~07/01/15~~ 6/30/15

FY14/15
Receipt # 1746654
TO FS 7.6.15

TASK ORDER NO. 72 - WATER QUALITY CREDIT SYSTEM & NATURAL BMP PROGRAM DEVELOPMENT

PROFESSIONAL ENVIRONMENTAL SERVICES MAY 30, 2014 THROUGH JUNE 30, 2015

	Task	Orig. Contract	Approved Augments	Total Contract Amount	Percent Complete	Completed To Date	Previously Invoiced	Total This Invoice
001	Creation of Natural BMPs Program	$ 30,000.02	$ -	$ 30,000.02	71.402%	$ 21,420.72	$ 14,316.94	$ 7,103.78
002	Review Existing Credit Systems	$ 26,732.80	$ -	$ 26,732.80	99.927%	$ 26,713.39	$ 18,907.82	$ 7,805.57
003	Framework of Credit System Progra	$ 41,051.54	$ -	$ 41,051.54	78.254%	$ 32,124.64	$ 26,119.81	$ 6,004.83
004	Project Management	$ 8,624.88	$ -	$ 8,624.88	88.171%	$ 7,604.68	$ 4,827.62	$ 2,777.06
005	Additional Support	$ 3,590.76	$ -	$ 3,590.76	0.000%	$ -	$ -	$ -
	TOTALS	$ 110,000.00	$ -	$ 110,000.00		$87,863.43	$64,172.19	$23,691.24

TOTAL AMOUNT DUE THIS BILLING PERIOD $ 23,691.24

OK TO PAY

Project Manager: Sheri McPherson
7/2/15

I hereby certify that the percentage of completion of work as shown above is true.

Jill Shook for
Michelle Mattson
7/2/15

07.02.15
Date

OK to pay Tom Duffy
Tom Duffy

RECEIVED
JUL - 2 2015
County of San Diego
ENVIRONMENTAL SERVICES
MELISSA BALINO

Rel 29
Rec 173751A

Gladys Gonzalez
County of San Diego, Department of Public Works
5510 Overland Ave, Suite 410, Mail Stop O326
San Diego, CA 92123

Invoice No.: 585029
Invoice Seq. No.: 1
Contract No.: 545089
File No.:
Task No.: 23
PB Project No.: 12089P

CSD - Water Quality 14-15

Period of Performance: Inception to March 27, 2015

Tasks:	Contract Amount:	Percent Complete:	Complete to Date:	Previously Invoiced:	Total this Invoice:
1. TO 23 FY14-15	$ 70,000.00	29%	$ 20,260.42	$ -	$ 20,260.42
TOTAL	$ 70,000.00	29%	$ 20,260.42	$ -	$ 20,260.42

AMOUNT DUE THIS BILLING: $ 20,260.42

OK TO PAY

I hearby certify that Parsons Brinckerhoff, Inc. is in compliance with Article 8.9 "Debarment and Suspension of the Agreement, and the work completed, as shown above, is true.

Matthew C. Moore
Project Manager

OK TO PAY:
29,260.42
Gladys Gonzalez

P: 1002993
O: 50915
E: 52370
T: 001, 006
A: 100496
OK to Pay:
Approved by:
Gitanjali Shinde
Gitanjali Shinde
4/7/15

PWR-PWG MMB22APR2015.CA2

Parsons Brinckerhoff, Inc.
401 B Street, Ste 1650
San Diego, CA 92101

DATE: March 31, 2015
PROJECT NO.: 12069P
INVOICE SEQ. NO.: 1
A/R #: 565029

Invoice Detail - Labor

Employee	Task	Classification	Rate	Current Invoice Hours	Current Invoice Amount Billed	Cumulative Invoice Hours	Cumulative Invoice Amount Billed
REGULAR HOURS							
Mohrlock, Charles	1.0	Sr. Engineer	$ 138.77	146.00	$ 20,260.42	146.00	$ 20,260.42
				146.00	$ 20,260.42	146.00	$ 20,260.42
TOTAL LABOR				146.00	20,260.42	146.00	20,260.42

GRAND TOTAL	146.00	$ 20,260.42	$ 20,260.42

OK TO PAY

Receipt
Rel 29
Supp 169858

RECEIVED BY
DPW - WPP
MAY 19 2015
SIGNATURE
PRINT Cheryl Newell

Gladys Gonzalez
County of San Diego, Department of Public Works
5510 Overland Ave, Suite 410, Mail Stop O332
San Diego, CA 92123

Invoice No.: 589372
Invoice Seq. No.: 2
Contract No.: 545089
File No.:
Task No.: 23
PB Project No.: 12089P

CSD - Water Quality 14-15

Period of Performance: March 28 to May 1, 2015

Tasks:	Contract Amount:	Percent Complete:	Complete to Date:	Previously Invoiced:	Total this Invoice:
1. TO 23 FY14-15	$ 70,000.00	63%	$ 44,059.49	$ 20,260.42	$ 23,799.07
TOTAL	$ 70,000.00	63%	$ 44,059.49	$ 20,260.42	$ 23,799.07

AMOUNT DUE THIS BILLING: $ 23,799.07

OK FOR PAYMENT

I hearby certify that Parsons Brinckerhoff, Inc. is in compliance with Article 8.9 "Debarment and Suspension of the Agreement, and the work completed, as shown above, is true.

Matthew C. Moore
Project Manager

OK FOR PAYMENT
$ 23,799.07
Gladys Gonzalez
05/21/2015

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: Gitanjali Shinde
GITANJALI SHINDE
5/22/15

PWR-PWG.CMM28 MAY2015.CA

RECEIVED BY
DPW - WPP

JUN 09 2015

SIGNATURE
PRINT

Gladys Gonzalez
County of San Diego, Department of Public Works
5510 Overland Ave, Suite 410, Mail Stop O332
San Diego, CA 92123

Invoice No.: 592515
Invoice Seq. No.: 3
Contract No.: 545089
File No.:
Task No.: 23
PB Project No.: 12089P

CSD - Water Quality 14-15

Period of Performance: May 2 to May 29, 2015

Tasks:	Contract Amount:	Percent Complete:	Complete to Date:	Previously Invoiced:	Total this invoice:
1. TO 23 FY14-15	$ 70,000.00	90%	$ 63,070.99	$ 44,059.49	$ 19,011.50
TOTAL	$ 70,000.00	90%	$ 63,070.99	$ 44,059.49	$ 19,011.50

AMOUNT DUE THIS BILLING: **$ 19,011.50**

OK FOR PAYMENT

I hearby certify that Parsons Brinckerhoff, Inc. is in compliance with Article 8.9 "Debarment and Suspension of the Agreement, and the work completed, as shown above, is true.

Matthew C. Moore
Project Manager

OK FOR PAYMENT
$ 19,011.50

GLADYS GONZALEZ
Gladys Gonzalez
06/10/2015

GITANJALI SHINDE
6/11/15

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by:

Parsons Brinckerhoff, Inc.
401 B Street, Ste 1650
San Diego, CA 92101

DATE: June 3, 2015
PROJECT NO.: 12089P
INVOICE SEQ. NO.: 3
A/R #: 592515

Invoice Detail - Labor

Employee	Task	Classification	Rate	Current Invoice Hours	Current Invoice Amount Billed	Cumulative Invoice Hours	Cumulative Invoice Amount Billed
REGULAR HOURS							
Mohrlock, Charles	1.0	Sr. Engineer	$ 138.77	137.00	$ 19,011.50	454.50	$ 63,070.99
				137.00	**$ 19,011.50**	454.50	**$ 63,070.99**
TOTAL LABOR				**137.00**	**19,011.50**	**454.50**	**63,070.99**

	GRAND TOTAL	137.00	**$ 19,011.50**		**$**	**63,070.99**

RECEIVED BY
DPW - WPP

JUN 30 2015

SIGNATURE Gladys Gonzalez
PRINT GLADYS GONZALEZ

Gladys Gonzalez
County of San Diego, Department of Public Works
5510 Overland Ave, Suite 410, Mail Stop O332
San Diego, CA 92123

Invoice No.: 595542
Invoice Seq. No.: 4
Contract No.: 545089
File No.:
Task No.: 23
PB Project No.: 12089P

CSD - Water Quality 14-15

Period of Performance: May 30 to June 26, 2015

Tasks:	Contract Amount:	Percent Complete:	Complete to Date:	Previously Invoiced:	Total this Invoice:
1. TO 23 FY14-15	$ 70,000.00	100%	$ 69,732.17	$ 63,070.99	$ 6,661.18
TOTAL	$ 70,000.00	100%	$ 69,732.17	$ 63,070.99	$ 6,661.18

AMOUNT DUE THIS BILLING: **$ 6,661.18**

OK FOR PAYMENT

I hearby certify that Parsons Brinckerhoff, Inc. is in compliance with Article 8.9 "Debarment and Suspension of the Agreement, and the work completed, as shown above, is true.

Matthew C. Moore
Project Manager

OK TO PAY $ 6,661.18
Gladys Gonzalez 06/30/15
GLADYS GONZALEZ

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay:
Approved by: Gitanjali Shinde
GITANJALI SHINDE
6/30/15

Parsons Brinckerhoff, Inc.
401 B Street, Ste 1650
San Diego, CA 92101

DATE: June 29, 2015
PROJECT NO.: 12089P
INVOICE SEQ. NO.: 4
A/R #: 595542

Invoice Detail - Labor

Employee	Task	Classification	Rate	Current Invoice Hours	Current Invoice Amount Billed	Cumulative Invoice Hours	Cumulative Invoice Amount Billed
REGULAR HOURS							
Mohrlock, Charles	1.0	Sr. Engineer	$ 138.77	48.00	$ 6,660.96	502.50	$ 69,731.95
				48.00	**$ 6,660.96**	502.50	**$ 69,731.95**
TOTAL LABOR				**48.00**	**6,660.96**	**502.50**	**69,731.95**

Invoice Detail - Direct Expenses

Description	Unit	Rate/Inv #	Current Invoice Qty	Current Invoice Amount Billed	Cumulative Invoice Qty	Cumulative Invoice Amount Billed
ODC						
American Reproduction	Reproduction			$ 0.22		$ 0.22
			-	$ 0.22	-	$ 0.22
TOTAL DIRECT EXPENSES			-	$ 0.22	-	$ 0.22

GRAND TOTAL	48.00	**$ 6,661.18**		**$**	**69,732.17**

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Land Development Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2014-15 (July 1, 2014 - Jun 30, 2015)
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ 3,656.64
Contract / Other Expenditures Claimed:	$ 954,932.97

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Sheri McPherson
Project Manager
County of San Diego

08/19/15
Date

Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2014-15 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jon Van Rhyn
~~LUEG Program Manager~~ Water Resources Manager
County of San Diego

9/8/15
Date

Signature

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (HOURLY COSTS)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2014-15 (July 1, 2014 - Jun 30, 2015)

Date	Name	Job Classification	Hours	Rate	Total	Description of Work Conducted
Task / Subtask 2.B. BMP DM, Isopluvial maps and 85% rainfall						
5/1/2015	Rand Allen		4.50	$ 166.32	$ 748.44	
5/1/2015	Chadwick, Karen		3.60	$ 67.00	$ 241.20	
5/1/2015	McCamic, Frederick W		30.00	$ 84.00	$ 2,520.00	Updated data for 85 percentile rain event maps
5/1/2015	Ross, Gary		1.50	$ 98.00	$ 147.00	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
			0.00	$ -	$ -	
Sub-total	$ 3,656.64					
Copermittee Total					**$ 3,656.64**	

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Land Development Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2014-15 (July 1, 2014 - Jun 30, 2015)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	
Subtask 1. Meeting Support					
RBF Contract 534079, TO#42, Invoice # 890456		$ 1,220.67	9/28/2014	$ 61.03	workgroup
Invoice # 893415		$ 2,315.10	11/2/2014	$ 115.76	
Invoice # 894366		$ 884.62	12/4/2014	$ 44.23	
Invoice # 896975		$ 409.21	1/9/2015	$ 20.46	
Invoice # 899762		$ 1,730.85	2/12/2015	$ 86.54	
Invoice # 901236		$ 903.57	3/3/2015	$ 45.18	
Invoice # 903540		$ 1,621.75	4/1/2015	$ 81.09	
Invoice # 906025		$ 2,653.87	5/4/2015	$ 132.69	
Invoice # 908232		$ 1,043.27	6/3/2015	$ 52.16	
Invoice # 911548		$ 1,911.72	7/6/2015	$ 95.59	
Subtask 1 Sub-total	$ 14,694.63				
Subtask 1 Management Cost	$ 734.73				
Subtask 2.A. HMP Monitoring Project - Monitoring Costs (Weston)					
Weston 534965, Task 5				$ -	
Invoice OCT2014-03328		$ 16,192.50	10/21/2014	$ 809.63	
Invoice DEC2014-00654		$ 3,477.50	12/29/2014	$ 173.88	
Subtask2.A Sub-total	$ 19,670.00				
Subtaskx.x Management Cost	$ 983.50				
Subtask 2.A. HMP Monitoring Project - Monitoring Costs (Weston)					
Weston 534965, Task 6, Invoice OCT2014-03328		$ 10,265.00	10/21/2014	$ 513.25	
Invoice DEC2014-00654		$ 227.50	12/29/2014	$ 11.38	
Subtask2.A Sub-total	$ 10,492.50				
Subtaskx.x Management Cost	$ 524.63				
Subtask 2.A. HMP Monitoring Project - Monitoring Costs (Weston)					
Weston 534965, Task 13, Invoice #DEC2014-03158		$ 1,990.00	12/29/2014	$ 99.50	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Invoice JAN2015-03317			$ 6,685.00	1/29/2015	$ 334.25	
Invoice APR2015-03303			$ 28,539.77	4/22/2015	$ 1,426.99	
Invoice MAY2015-01782			$ 23,583.99	5/1/2015	$ 1,179.20	
Invoice JUN2015-01937			$ 13,797.68	6/2/2015	$ 689.88	
Invoice JUN2015-02908			$ 19,862.50	6/15/2015	$ 993.13	
Invoice JUL2015-02008			$ 15,125.30	7/1/2015	$ 756.27	
Subtask2.A Sub-total	$	109,584.24				
Subtaskx.x Management Cost	$	5,479.21				
Subtask 2.A. HMP Monitoring - HMP surveys and Assessments						
AMEC Contract 542922, TO# 52. Invoice S24740746			$ 4,512.27	4/27/2015	$ 225.61	
Invoice S24740922			$ 10,618.30	6/26/2015	$ 530.92	
Subtaskx.x Sub-total	$	15,130.57				
Subtaskx.x Management Cost	$	756.53				
Subtask 2.A. HMP Monitoring - SCCWRP/SDSU Research						
AMEC Contract 542922, TO# 53, Invoice S24740923			$ 15,000.00	6/26/2015	$ 750.00	
Subtaskx.x Sub-total	$	15,000.00				
Subtaskx.x Management Cost	$	750.00				
Subtask 2.A. HMP Monitoring - Weston under RBF						
RBF Contract 534079, TO#36, Invoice # 902565			$ 44,729.16	3/19/2015	$ 2,236.46	
Invoice # 908210			$ 36,866.87	6/15/2015	$ 1,843.34	
Invoice # 911568			$ 14,101.47	7/6/2015	$ 705.07	
Subtaskx.x Sub-total	$	95,697.50				
Subtaskx.x Management Cost	$	4,784.88				
Subtask 2.A. HMP Monitoring - Aqua Terra Technical Support and Model Review						
ESA Contract 550238, TO 2, Invoice # 115033			$ 21,244.52	7/1/2015	$ 1,062.23	
Subtaskx.x Sub-total	$	21,244.52				
Subtaskx.x Management Cost	$	1,062.23				
Subtask 2.B.MODEL BMP DESIGN MANUAL - SWMM TRAINING						
ESA Contract 550238, TO# 3, Invoice # 115034			$ 9,891.84	6/30/2015	$ 494.59	
Subtaskx.x Sub-total	$	9,891.84				
Subtaskx.x Management Cost	$	494.59				
Subtask 2.B.MODEL BMP DESIGN MANUAL						
Rick Contract 537081, TO# 34, Invoice # 0038754			$ 16,996.43	7/25/2014	$ 849.82	
Invoice # 0039064			$ 9,911.76	8/29/2014	$ 495.59	
Invoice # 0039523			$ 20,860.15	9/26/2014	$ 1,043.01	
Invoice # 0040009			$ 4,538.80	10/31/2014	$ 226.94	
Invoice # 0040550			$ 53,456.73	11/28/2014	$ 2,672.84	
Invoice # 0040881			$ 17,886.01	1/29/2015	$ 894.30	

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Invoice # 0041447			$ 9,607.28	3/7/2015	$ 480.36	
Invoice # 0041835			$ 20,276.11	3/30/2015	$ 1,013.81	
Invoice # 0042551			$ 26,695.81	5/4/2015	$ 1,334.79	
Invoice # 0043021			$ 10,782.42	6/4/2015	$ 539.12	
Invoice # 0043590			$ 24,114.21	6/29/2015	$ 1,205.71	
Subtaskx.x Sub-total	$	215,125.71				
Subtaskx.x Management Cost	$	10,756.29				
SUBTASK 2B. BMP DESIGN MANUAL						
GEOSYNTEC 537080 TO 32 Invoice # 2815138			$ 69,956.24	6/24/2015	$3,497.81	approved TO for extra expenses 69970.24
Subtaskx.x Sub-total	$	69,956.24				
Subtaskx.x Management Cost	$	3,497.81				
SUBTASK 2B. BMP DESIGN MANUAL						
RICK Contract 537081, TO# 45, Invoice # 0043595			$ 3,734.27	7/1/2015	$186.71	TO FOR TRASH AND NUTRIENT GUIDANCE IN MANUAL FOR $3734.27
Subtaskx.x Sub-total	$	3,734.27				
Subtaskx.x Management Cost	$	186.71				
Subtask 2.C. Watershed Management Area Anlysis, Phase 1						
Contract 534965 [WMAA Geosyntec / Project 11]			$ -		$ -	
Invoice Geosyntec SEP2014-2946			$ 26,095.56	10/13/2014	$ 1,304.78	
Invoice Geosyntec OCT2014-03408			$ 15,805.00	12/2/2014	$ 790.25	
Invoice Geosyntec DEC2014-03160REV			$ 1,830.00	4/15/2015	$ 91.50	
Invoice Geosyntec MARCH2015-00604			$ 720.00	4/22/2015	$ 36.00	
Invoice Geosyntec JUN2015-02335			$ 1,025.00	6/3/2015	$ 51.25	
Subtaskx.x Sub-total	$	45,475.56				
Subtaskx.x Management Cost	$	2,273.78				
Subtask 2.C. Watershed Management Area Anlysis, Phase 2						
Contract 537081 [WMAA Rick Engineering/ TO 37]					$ -	
Invoice Rick Engineering 38532			$ 8,670.68	8/18/2014	$ 433.53	
Invoice Rick Engineering 39210			$ 13,946.61	10/14/2014	$ 697.33	
Invoice Rick Engineering 39486			$ 2,111.78	10/31/2014	$ 105.59	
Subtaskx.x Sub-total	$	24,729.07				
Subtaskx.x Management Cost	$	1,236.45				
Subtask 2.C. Watershed Management Area Anlysis, Phase 3						
Contract 537081 [WMAA Rick Engineering / TO 23]					$ -	
Invoice Rick Engineering 38533			$ 6,982.40	9/12/2014	$ 349.12	
Invoice Rick Engineering 39022			$ 7,909.51	9/23/2014	$ 395.48	
Invoice Rick Engineering 39487			$ 4,882.08	10/28/2014	$ 244.10	
Invoice Rick Engineering 43370			$ 2,967.17	6/24/2015	$ 148.36	
Subtaskx.x Sub-total	$	22,741.16				
Subtaskx.x Management Cost	$	1,137.06				

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Subtask 2.D. Development of Water Quality Equivalency, Phase 2					
Contract 537081 [WQE Phase 2 Rick Engineering / TO 44]		$ -		$ -	
Invoice Rick Engineering 41831		$ 7,719.94	4/7/2015	$ 386.00	
Invoice Rick Engineering 42529		$ 17,391.00	4/27/2015	$ 869.55	
Invoice Rick Engineering 42748		$ 21,996.49	6/10/2015	$ 1,099.82	
Invoice Rick Engineering 43132		$ 5,495.48	7/2/2015	$ 274.77	
Invoice Rick Engineering 43598		$ 6,105.16	7/9/2015	$ 305.26	
Subtaskx.x Sub-total	$ 58,708.07				
Subtaskx.x Management Cost	$ 2,935.40				
Subtask 2.D. Development of Water Quality Equivalency, Phase 3					
Contract 549956 [WQE Phase 3 HDR / TO 1]				$ -	
Invoice HDR 219146-B		$ 22,867.45	6/19/2015	$ 1,143.37	
Invoice HDR 222704-B		$ 8,251.59	7/2/2015	$ 412.58	
Subtaskx.x Sub-total	$ 31,119.04				
Subtaskx.x Management Cost	$ 1,555.95				
Subtask 2.D. Development of Water Quality Equivalency, Credit System Framework					
Contract 536321 [Credit System ICF/ TO 72]				$ -	
Invoice ICF # 0107527		$ 29,068.75	5/20/2015	$ 1,453.44	
Invoice ICF # 108094		$ 19,582.00	6/16/2015	$ 979.10	
Invoice ICF # 108480		$ 8,082.13	7/2/2015	$ 404.11	
Subtaskx.x Sub-total	$ 56,732.88				
Subtaskx.x Management Cost	$ 2,836.64				
Subtask 2.D. Development of Water Quality Equivalency, In-house Consultant Engineer Support					
Contract 545089 [Technical Assistance WQE Parsons/ TO 23]				$ -	
Invoice PB #585029		$ 20,260.42	4/7/2015	$ 1,013.02	
Invoice PB #589372		$ 23,799.07	5/22/2015	$ 1,189.95	
Invoice PB # 592515		$ 19,011.50	6/12/2015	$ 950.58	
Invoice PB # 595542		$ 6,661.18	6/30/2015	$ 333.06	
Subtaskx.x Sub-total	$ 69,732.17				
Subtaskx.x Management Cost	$ 3,486.61				
B. Other Direct Expenditures (list by Working Body Task or Sub-task)					
Subtask x.x. [ENTER APPLICABLE TASK OR SUB-TASK FROM WORK PLAN]		$ -	x/x/2010		
Sub-total Other Expenditures	$ -				
Total Expenditures (Including contract management cost)		**$ 954,932.97**			
	$ 909,459.97			$ 45,473.00	

Final 04-30-09

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Regional Program Planning Subcommittee
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2014-15 (July 1, 2014 - Jun 30, 2015)
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 3,962.25

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

Ruth de la Rosa
Land Use and Environmental Planner III
County of San Diego

7/9/15
Date

R de la Rosa
Signature

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

Jo Ann Weber
Land Use and Environment Manager
County of San Diego

7/9/15
Date

Signature

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Regional Program Planning Subcommittee

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2014-15 (July 1, 2014 - Jun 30, 2015)

Work Plan Task / Sub-task	Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)			**Auto-calc'd (5% of amount paid)**	
Subtask 1A. PPS Support				
RBF Contract 534079 Invoice 894936	$ 728.23	12/17/2014	$ 36.41	Secretarial support
RBF Contract 534079 Invoice 899816	$ 286.88	2/25/2015	$ 14.34	Secretarial support
RBF Contract 534079 Invoice 894936	$ 507.56	4/9/2015	$ 25.38	Secretarial support
RBF Contract 534079 Invoice 906031	$ 529.63	5/4/2015	$ 26.48	Secretarial support
RBF Contract 534079 Invoice 908224	$ 948.91	6/3/2015	$ 47.45	Secretarial support
RBF Contract 534079 Invoice 911871	$ 772.36	7/8/2015	$ 38.62	Secretarial support
Subtask 1 Sub-total $ 3,773.57				
Subtask 1 Management Cost $ 188.68				
Total Expenditures (including contract management cost)	**$ 3,962.25**			

RECEIVED BY
DPW - WRP

JUL 09 2015
SIGNATURE RCullam
PRINT RUTH DELAROSA

RBF
A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date: July 8, 2015
Project No. : 143723
Invoice No. : 911871

Tracy Cline
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-332

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Regional Program Planning Subcommittee Support FY 2014-15

RBF Project No.: 143723
DPW Project Manager: Ruth de la Rosa
Contract No.: 534079
Task Order No.: 47

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 47, Notice to Proceed effective October 10, 2014, pursuant to provide secretarial and working body support services for the Copermittees' Regional Program Planning Subcommittee for Fiscal Year 2014-2015

Professional Services from June 01, 2015 through June 30, 2015

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Program Planning Subcommittee Meeting Support (Work Plan Subtask 1.A)	$7,000.00	28.69%	$3,729.43	$772.36
2.	Standard Work Products (Work Plan Subtask 1.A)	$7,000.00	0.63%	$44.14	$0.00
	Total Fee	**$14,000.00**		**$3,773.57**	**$772.36**
			Previous Fee Billing	$3,001.21	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: RCullam 7/9/15
Approved by: RUTH DELAROSA

Total This Invoice $772.36

Tracy Scott Cline LWEP III 7/9/15

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

TRACY Cline

Scott Taylor

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

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DPW - WPP

JUN 09 2015

SIGNATURE Cheryl Newell
PRINT Cheryl Newell

A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date: June 3, 2015
Project No. : 143723
Invoice No. : 908224

Tracy Cline
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-332

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Regional Program Planning Subcommittee Support FY 2014-15

RBF Project No.: 143723
DPW Project Manager: Ruth de la Rosa
Contract No.: 534079
Task Order No.: 47

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 47, Notice to Proceed effective October 10, 2014, pursuant to provide secretarial and working body support services for the Copermittees' Regional Program Planning Subcommittee for Fiscal Year 2014-2015

Professional Services from April 27, 2015 through May 31, 2015

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Program Planning Subcommittee Meeting Support (Work Plan Subtask 1.A)	$7,000.00	28.69%	$2,957.07	$948.91
2.	Standard Work Products (Work Plan Subtask 1.A)	$7,000.00	0.63%	$44.14	$0.00
	Total Fee	**$14,000.00**		**$3,001.21**	**$948.91**
			Previous Fee Billing	$2,052.30	

P: 1002993
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A: 100496
OK to Pay: RdLRosa 6/10/15
Approved by: RUTH DELA ROSA
Tracy Cline 6/10/15 LUERTO
TRACY CLINE

Total This Invoice $948.91

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

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MAY 11 2015

SIGNATURE
PRINT Cheryl Newell

A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date: May 4, 2015
Project No.: 143723
Invoice No.: 906031

Tracy Cline
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-332

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Regional Program Planning Subcommittee Support FY 2014-15

RBF Project No.: 143723
DPW Project Manager: Ruth de la Rosa
Contract No.: 534079
Task Order No.: 47

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 47, Notice to Proceed effective October 10, 2014, pursuant to provide secretarial and working body support services for the Copermittees' Regional Program Planning Subcommittee for Fiscal Year 2014-2015

Professional Services from March 01, 2015 through April 26, 2015

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Program Planning Subcommittee Meeting Support (Work Plan Subtask 1.A)	$7,000.00	28.69%	$2,008.16	$529.63
2.	Standard Work Products (Work Plan Subtask 1.A)	$7,000.00	0.63%	$44.14	$0.00
	Total Fee	**$14,000.00**		**$2,052.30**	**$529.63**
			Previous Fee Billing	$1,522.67	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: 5/13/15
Approved by: RUTH DELAROSA

Total This Invoice **$529.63**

TRACY CLINE 5/13/14

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

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MAY 11 2015

SIGNATURE
PRINT Cheryl Newell

A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date: May 4, 2015
Project No.: 143723
Invoice No.: 906031

Tracy Cline
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-332

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Regional Program Planning Subcommittee Support FY 2014-15

RBF Project No.: 143723
DPW Project Manager: Ruth de la Rosa
Contract No.: 534079
Task Order No.: 47

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 47, Notice to Proceed effective October 10, 2014, pursuant to provide secretarial and working body support services for the Copermittees' Regional Program Planning Subcommittee for Fiscal Year 2014-2015

Professional Services from March 01, 2015 through April 26, 2015

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Program Planning Subcommittee Meeting Support (Work Plan Subtask 1.A)	$7,000.00	28.69%	$2,008.16	$529.63
2.	Standard Work Products (Work Plan Subtask 1.A)	$7,000.00	0.63%	$44.14	$0.00
	Total Fee	**$14,000.00**		**$2,052.30**	**$529.63**
			Previous Fee Billing	$1,522.67	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: 5/13/15
Approved by: RUTH DELAROSA

Total This Invoice **$529.63**

Tracy Cline 5/13/14

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

RBF CONSULTING
A Baker Company

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DPW - WPP
MAR 27 2015
SIGNATURE
PRINT Cheryl Newell

Invoice Date: March 16, 2015
Project No.: 143723
Invoice No.: 902292

Tracy Cline
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-326

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Regional Program Planning Subcommittee Support FY 2014-15

RBF Project No.: 143723
DPW Project Manager: Ruth de la Rosa
Contract No.: 534079
Task Order No.: 47

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 47, Notice to Proceed effective October 10, 2014, pursuant to provide secretarial and working body support services for the Copermittees' Regional Program Planning Subcommittee for Fiscal Year 2014-2015

Professional Services from February 01, 2015 through February 28, 2015

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Program Planning Subcommittee Meeting Support (Work Plan Subtask 1.A)	$7,000.00	21.12%	$1,478.53	$507.56
2.	Standard Work Products (Work Plan Subtask 1.A)	$7,000.00	0.63%	$44.14	$0.00
	Total Fee	**$14,000.00**		**$1,522.67**	**$507.56**
			Previous Fee Billing	$1,015.11	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: 4/9/15
Approved by: RUTH DELA ROSA MSP3
TRACY CLINE LUEP III 4/9/15

Total This Invoice **$507.56**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

RBF
A Baker Company
MICHAEL BAKER INTERNATIONAL

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DPW - WPP
FEB 23 2015
SIGNATURE Jerry Scott Cline
PRINT Tracy Cline

Invoice Date: February 12, 2015
Project No.: 143723
Invoice No.: 899816

Tracy Cline
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-326

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Regional Program Planning Subcommittee Support FY 2014-15

RBF Project No.: 143723
DPW Project Manager: Ruth de la Rosa
Contract No.: 534079
Task Order No.: 47

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 47, Notice to Proceed effective October 10, 2014, pursuant to provide secretarial and working body support services for the Copermittees' Regional Program Planning Subcommittee for Fiscal Year 2014-2015

Professional Services from November 03, 2014 through January 31, 2015

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Program Planning Subcommittee Meeting Support (Work Plan Subtask 1.A)	$7,000.00	13.87%	$970.97	$286.88
2.	Standard Work Products (Work Plan Subtask 1.A)	$7,000.00	0.63%	$44.14	$0.00
	Total Fee	**$14,000.00**		**$1,015.11**	**$286.88**
			Previous Fee Billing	$728.23	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: R. Allam 2/25/15
Approved by: RUTH DELAROSA
Jerry Scott Cline WEP III 2/25/15
TRACY CLINE

Total This Invoice **$286.88**

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Scott Taylor

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date: December 10, 2014
Project No.: 143723
Invoice No.: 894936

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DPW - WPP
DEC 16 2014
SIGNATURE
PRINT Cheryl Reeves

Ms. Ruth de la Rosa
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-326

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Regional Program Planning Subcommittee Support FY 2014-15

RBF Project No.: 143723
DPW Project Manager: Todd Snyder
Contract No.: 534079
Task Order No.: 47

Professional Consulting Services rendered pursuant to Contract No. 534079, Task Order No. 47, Notice to Proceed effective October 10, 2014, pursuant to provide secretarial and working body support services for the Copermittees' Regional Program Planning Subcommittee for Fiscal Year 2014-2015

Professional Services through November 02, 2014

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Program Planning Subcommittee Meeting Support (Work Plan Subtask 1.A)	$7,000.00	9.77%	$684.09	$684.09
2.	Standard Work Products (Work Plan Subtask 1.A)	$7,000.00	0.63%	$44.14	$44.14
	Total Fee	**$14,000.00**		**$728.23**	**$728.23**
			Previous Fee Billing	$0.00	
				Total This Invoice	**$728.23**

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: 12/17/14
Approved by: RUTH DELAROSA LUEP3

OK to Pay
Jerry Scott Cline LUEP III
TRACY Cline 12/17/14

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

COPERMITTEE EXPENDITURES COVER AND CERTIFICATION SHEET

Regional Working Body:	Education and Residential Sources Workgroup
Copermittee:	County of San Diego
Period:	1st - 4th Qrt FY 2014-15 (July 1, 2014 - Jun 30, 2015)
Expenditure Type(s):	Contract / Other Expenditures Only
Hourly Expenditures Claimed:	$ -
Contract / Other Expenditures Claimed:	$ 105,133.57

Copermittee Certification Statement

I certify that all documents submitted for this claim were prepared under my direction or supervision in accordance with a system designed to assure that expenditures were properly documented and submitted. It is to the best of my knowledge and belief, true, accurate, and complete. I am aware that additional documentation of expenditures may be required prior to the approval of reimbursement.

MARSHA COOK
Land Use and Environmental Planner III
County of San Diego

8/26/15
Date

Marsha Cook
Signature

13023

Working Body Budget Manager Review

Each of the expenditures claimed by this Copermittee has been authorized in accordance with the Copermittees' FY 2008-09 Regional Work Plan and Budget, has been satisfactorily documented, and has been approved in full by the Regional Program Planning Subcommittee for reimbursement or payment.

MIKE WATT
Land Use and Environment Manager
County of San Diego

8/26/15
Date

M. Watt
Signature

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

Regional Working Body: Education and Residential Sources Workgroup

Copermittee: County of San Diego

Period: 1st - 4th Qrt FY 2014-15 (July 1, 2014 - Jun 30, 2015)

Work Plan Task / Sub-task		Amount Paid	Date Paid	Management Cost	Description of Expenditure
A. Contract Expenditures (list by contract first and then Working Body Task or Sub-task)				**Auto-calc'd (5% of amount paid)**	**Tasked $3,000 in contractor support ($3,150 total)**
Subtask 1.A MEETING SUPPORT					
ERS Support Workgroup RBF Contract No: 534079 TO45		$ 331.01		$ 16.55	RBF Invoice No: 893763 November 25, 2014
RBF Contract No: 534079 TO45		$ 551.69		$ 27.58	RBF Invoice No: 897481 January 14, 2015
RBF Contract No: 534079 TO45		$ 816.51		$ 40.83	RBF Invoice No: 903547 April 1, 2015
RBF Contract No: 534079 TO45		$ 573.76		$ 28.69	RBF Invoice No: 911872 July 8, 2015
Subtask 1&2 Sub-total	$2,272.97				
Subtask 1&2 Management Cost	$ 113.65				
Subtask 3.A. REGIONAL PROGRAM APPROACH					
			x/x/2012	$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
Subtask 3.C Market Research and Assessment	**Action Research Contract No: 541266**				**Tasked $46,000 for contractor support ($48,300 total)**
Action Research Invoice AR15-1002		$ 450.00		$ 22.50	
Action Research Invoice AR15-1010		$ 857.50		$ 42.88	
Action Research Invoice AR15-1014		$ 225.00		$ 11.25	
Action Research Invoice AR15-1029		$ 1,477.50		$ 73.88	
Action Research Invoice AR15-1034		$ 14,084.00		$ 704.20	
Action Research Invoice AR15-1046		$ 14,977.50		$ 748.88	
Action Research Invoice AR15-1054		$ 11,425.00		$ 571.25	
Subtaskx.x Sub-total	$ 43,496.50				
Subtaskx.x Management Cost	$ 2,174.83				
Subtask 3.A. Regional Outreach					
			x/x/2010	$ -	
		$ -		$ -	
Subtaskx.x Sub-total	$ -				
Subtaskx.x Management Cost	$ -				
Subtask 4. RESIDENTIAL MODEL PROGRAM					**Tasked $60,000 for contractor support ($62,500 total)**
RBF Contract No: 534079 TO51		$ 331.01		$ 16.55	RBF Invoice 893763 November 25, 2014
RBF Contract No: 534079 TO51		$ 551.69		$ 27.58	RBF Invoice 897481 January 14, 2015
RBF Contract No: 534079 TO51		$ 816.51		$ 40.83	RBF Invoice 903547 April 1, 2015

Final 04-30-09

COPERMITTEE EXPENDITURES CLAIM SHEET (CONTRACTS / OTHER)

RBF Contract No: 534079 TO51				$ 5,927.38		$ 296.37	RBF Invoice 908677 June 9, 2015
RBF Contract No: 534079 TO51				$ 25,157.53		$ 1,257.88	RBF Invoice 911745 July 7, 2015
Subtaskx.x Sub-total			$ 32,784.12				
Subtaskx.x Management Cost			$ 1,639.21				
Subtask 3.B. Regional Outreach - Other Direct Expenditures (list by Working Body Task or Sub-task)							
Subtask 3.B. 1 Materials Development and Distribution				$ -			
P-card purchase Freedom Three Publishing				$ 2,401.00			"All the Way to the Ocean" Children's reading books 3/26/15 Invoice
Infinite Business Solutions Promo items: BPO 521305				$ 4,515.80			Invoice No: 005285 6/25/15 Scraper
Infinite Business Solutions Promo items: BPO 521305				$ 568.00			Invoice No: 005286 6/25/15 Poppy Seeds
Infinite Business Solutions Promo items: BPO 521305				$ 802.50			Invoice No: 005287 6/25/15 Carabiner
Infinite Business Solutions Promo items: BPO 521305				$ 5,954.00			Invoice No: 005288 6/25/15 Poop bags
Infinite Business Solutions Promo items: BPO 521305				$ 3,411.00			Invoice No: 5236 6/25/15 Alum Water Bottles
Subtask 3.B.3 Movies in the Park				$ -			
DPW-WPP Transfer to County Parks through IA				$ 5,000.00			Regional "Movies in the Park" Sponsorship TBSDR
				$ -			
Sub-total Other Expenditures			$ 22,652.30				
Total Expenditures (including contract management cost)				**$ 105,133.57**			

13025

Final 04-30-09

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INVOICE

RECEIVED BY
DPW - WPP
JAN 08 2015
SIGNATURE
PRINT Nick del Valle

To: **Nick del Valle**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **January 7, 2015**

Invoice # **AR15-1002**

Time Period: Invoice is for tasks completed December 1-31, 2014

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1: Residential Program Assessment	$0.00
Task 2: Pet Waste Management	$1,187.00 ✓
Task 3: Outreach to Commercial Prop Owners	$360.00 ✓
Task 4: As Needed CBSM and Special Assessment	$3,590.99 ✓
Task 5: High School Outreach	$3,875.00 ✓
Task 6: Splash Lab Outreach	$0.00
Task 7: Manure Management Outreach	$0.00
Task 8: Assessment Support for Regional RS Workgroup	$450.00 ✓
Task 9: Administration	$487.50 ✓
TOTAL DUE	**$9,950.49** ✓

Please make check payable to: Action Research; 3630 Ocean Ranch Blvd.; Oceanside, CA 92056; Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001; or by email at: tabanico@action3630.com. **Thank you!**

Contract#: 541266
Total : $9,950.49

P: 1019367
O: 50915
E: 52370
T: 001.001
A: 100496
OK to Pay:
Approved by: Nick del Valle 1/8/15

ATTACHMENT A: DESCRIPTION OF SERVICES

Task 1: Residential Program Assessment – No Activity

Task 2: Pet Waste Management

Correspondence with Scout Leaders for Meeting Scheduling; Data Entry from Event Commitments. Deliver Materials to New Businesses for Retail/Vet Outreach after Lakeside OI interviews. ***See Attachment D for Outreach Totals.***			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	2.25	$150	$337.50
Project Director (Large)	1.50	$125	$187.50
Research Associate (Ballard/Schmitt)	7.00	$60	$420.00
Research Assistant (de la Cruz/Schneider)	5.00	$40	$200.00
Mileage to Alpine pet stores from Lakeside on 12/6	75.00 miles	$0.56 Rate/ml	$42.00
	TOTAL Task 2		**$1,187.00**

Task 3: Outreach to Commercial Prop Owners – No Activity

Review business outreach materials from other agencies; Draft research plan (in progress)			
Staff	**Hours**	**Rate**	**Subtotal**
Research Associate (Schmitt)	6.00	$60	$360.00
	TOTAL Task 3		**$360.00**

Task 4: As Needed CBSM and Special Assessment

4b. FY2015 Over-Irrigation Roll Out Complete interviews with homeowners; Participant incentives; Draft report (in progress)			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	5.00	$150	$750.00
Project Director (Large)	0.25	$125	$31.25
Research Associate (Ballard/Schmitt)	24.00	$60	$1,440.00
Research Assistant (de la Cruz/Schneider)	11.00	$40	$440.00
Direct Costs: Plants and Water devices (Receipts attached)			$438.58
Mileage to Lakeside (4 trips: 11/15, 11/21, 11/22, 12/6)	368.14 miles	$0.56 Rate/ml	$206.16
SUBTOTAL Task 4b			**$3,305.99**
4d. Residential Outreach Review 6 flyers; Revisions			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	0.50	$150	$75.00
Research Associate (Ballard/Schmitt)	3.50	$60	$210.00
SUBTOTAL Task 4c			**$285.00**
	TOTAL Task 4		**$3,590.99**

Task 5: High School Outreach

FY2015 Data Matching and Data Entry			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	2.50	$150	$375.00
Research Associate (Ballard)	32.00	$60	$1,920.00
Research Assistant (de la Cruz/Schneider)	39.50	$40	$1,580.00
	TOTAL Task 5		**$3,875.00**

Task 6: Splash Lab Outreach – No Activity

Task 7: Manure Management Outreach – No Activity

Task 8: Assessment Support for Regional RS Workgroup

Regional Survey: ERS Meeting on December 17th; Prep and Meeting Time			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	3.00	$150	$450.00
	TOTAL Task 8		**$450.00**

Task 9: Administration

Administration: Update meetings with project staff; Outreach tracking by zip; Invoicing and budgeting			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	3.25	$150	$487.50
	TOTAL Task 9		**$487.50**

ATTACHMENT B: BUDGET TRACKING

To date spending

TASK	BUDGET	SPENT	BALANCE	%SPENT
TASK 1: Residential Program Assessment	$0	$0.00	$0.00	
TASK 2: Pet Waste Management	$30,750	$14,356.90	$16,393.10	47%
TASK 3: Outreach to Commercial Prop Owners	$31,124	$1,681.25	$29,442.75	5%
TASK 4: As Needed CBSM and Special Assessment	$43,329	$32,163.89	$11,165.11	74%
TASK 5: High School Outreach	$11,870	$6,255.00	$5,615.00	53%
TASK 6: Splash Lab Outreach	$9,570	$870.00	$8,700.00	9%
TASK 7: Manure Management Outreach	$5,000	$0.00	$5,000.00	0%
TASK 8: Assessment Support for Regional RS Workgroup	$47,710	$450.00	$47,260.00	1%
TASK 9: Administration	$6,155	$4,387.50	$1,767.50	71%
	$185,508	$60,164.54	$125,343.46	
	BUDGET	INVOICED	BALANCE	

Total Contract Amount	*$185,508*
June 2015 Invoice	**-$12,748.50**
July 2015 Invoice	**-$0.00**
August 2015 Invoice	**-$0.00**
September 2015 Invoice	**-$12,927.21**
October 2015 Invoice	**-$6,841.50**
November 2015 Invoice	**-$17,696.84**
December 2015 Invoice	**-$9,950.49**
January 2016 Invoice	
February 2016 Invoice	
March 2016 Invoice	
April 2016 Invoice	
May 2016 Invoice	
Balance Remaining	**$125,343.46**

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INVOICE

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FEB 17 2015
SIGNATURE
PRINT Nick del Valle

To: **Nick del Valle**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **February 15, 2015**

Invoice # **AR15-1010**

Time Period: Invoice is for tasks completed January 1 – 31, 2015

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1: Residential Program Assessment	$0.00
Task 2: Pet Waste Management	$3,798.94
Task 3: Outreach to Commercial Prop Owners	$1,065.00
Task 4: As Needed CBSM and Special Assessment	$5,901.00
Task 5: High School Outreach	$2,310.00
Task 6: Splash Lab Outreach	$1,192.50
Task 7: Manure Management Outreach	$0.00
Task 8: Assessment Support for Regional RS Workgroup	$857.50
Task 9: Administration	$450.00
TOTAL DUE	**$15,574.94**

Please make check payable to: Action Research; 3630 Ocean Ranch Blvd.; Oceanside, CA 92056; Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001; or by email at: tabanico@action3630.com. **Thank you!**

P: 1019367
O: 50915
E: 52370
T: 001.001
A: 100496
OK to Pay: Nick del Valle 2/17/15
Approved by: Teresa Brownyard

Tasks 1-7, 9
Total: $ 14,717.44
1/7/15: $ 450.00-
$ 14,267.44

Regional Survey
P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Nick del Valle 2/17/15
Approved by: Teresa Brownyard

Task 8
Total: $857.50
1/7/15: $450.00-
$ 1307.50

ATTACHMENT A: DESCRIPTION OF SERVICES

Task 1: Residential Program Assessment – No Activity

Task 2: Pet Waste Management

Correspondence with Scout Leaders for Meeting Scheduling; Data Entry from Event Commitments. Deliver Materials to New Businesses for Retail/Vet Outreach. January presentation Lakeside 4-H & Ramona. ***See Attachment D for Outreach Totals.***			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.75	$150	$262.50
Project Director (Large)	4.00	$125	$500.00
Research Associate (Ballard/Schmitt)	33.00	$60	$1,980.00
Research Assistant (de la Cruz/Schneider)	24.00	$40	$960.00
Mileage Oceanside-Lakeside to drop off vet materials	107.09 miles	$0.56 rate/mi	$59.97
Direct Costs: Stamps for Poo Points Packets (receipts attached)	--	--	$22.68
Direct Costs: 10x13 Envelopes for Packets (receipts attached)	--	--	$13.79
	TOTAL Task 2		**$3,798.94**

Task 3: Outreach to Commercial Prop Owners – No Activity

Literature review – best practices; Review current guidebook; Quote/proposal for guidebook revisions			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	2.50	$150	$375.00
Research Associate (Schmitt)	11.50	$60	$690.00
	TOTAL Task 3		**$1,065.00**

Task 4: As Needed CBSM and Special Assessment

4b. FY2015 Over-Irrigation Roll Out Data analysis and report (PPT deck)			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	3.00	$150	$450.00
Research Associate (Ballard/Schmitt/Olson)	23.50	$60	$1,410.00
SUBTOTAL Task 4b			**$1,860.00**
4d. Residential Outreach Final design changes and printing (1000 each)			
Staff	**Hours**	**Rate**	**Subtotal**
Research Associate (Schmitt)	0.50	$60	$30.00
Direct Costs: Final Design, Add Flyer, Photos (receipt attached)	--	--	$2,153.00
Direct Costs: Printing (1000 each times 6 flyers)	--	--	$1,858.00
SUBTOTAL Task 4d			**$4,041.00**
	TOTAL Task 4		**$5,901.00**

Task 5: High School Outreach

FY2015 Data Matching and Data Entry			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.00	$150	$150.00
Research Associate (Ballard)	7.00	$60	$420.00
Research Assistant (de la Cruz/Schneider)	43.50	$40	$1,740.00
	TOTAL Task 5		**$2,310.00**

Task 6: Splash Lab Outreach

Database and codebook set up; Data matching; Data management; Data entry			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.75	$150	$262.50
Research Associate (Ballard)	15.50	$60	$930.00
	TOTAL Task 6		**$1,192.50**

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MAR 11 2015
SIGNATURE
PRINT Nick del Valle

To: **Nick del Valle**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **March 9, 2015**

Invoice # **AR15-1014**

Time Period: Invoice is for tasks completed February 1 – 28, 2015

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1: Residential Program Assessment	$0.00
Task 2: Pet Waste Management	$1,190.63 ✓
Task 3: Outreach to Commercial Prop Owners	$1,440.00 ✓
Task 4: As Needed CBSM and Special Assessment	$360.00 ✓
Task 5: High School Outreach	$1,315.00 ✓
Task 6: Splash Lab Outreach	$457.50 ✓
Task 7: Manure Management Outreach	$0.00
Task 8: Assessment Support for Regional RS Workgroup	$225.00 ✓
Task 9: Administration	$750.00 ✓
TOTAL DUE	**$5,738.13** ✓

Please make check payable to: Action Research; 3630 Ocean Ranch Blvd.; Oceanside, CA 92056; Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001; or by email at: tabanico@action3630.com. **Thank you!**

Tasks 1-7, 9
Total: $5513.13

P: 1019367
O: 50915
E: 52370
T: 001.001
A: 100496
OK to Pay: Nick del Valle 3/11/15
Approved by: 3/11/15
Teresa Brownyard

Task 8
Total $225.00

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Nick del Valle 3/11/15
Approved by: 3/11/15
Teresa Brownyard

ATTACHMENT A: DESCRIPTION OF SERVICES

Task 1: Residential Program Assessment – No Activity

Task 2: Pet Waste Management

Correspondence with Scout Leaders for Meeting Scheduling; Deliver Materials to New 17 new Businesses for Retail/Vet Outreach. ***See Attachment D for Outreach Totals.***			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.00	$150	$150.00
Research Associate (Ballard/Schmitt)	15.50	$60	$930.00
Mileage Oceanside-multiple vet/retail sites to drop off vet materials (Feb 5)	192.40 miles	$0.575	$110.63
	TOTAL Task 2		**$1,190.63**

Task 3: Outreach to Commercial Prop Owners – No Activity

Work with graphic designer on new layout; review content; finalize literature review; develop draft protocols and schedule for commercial outreach research.			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	3.00	$150	$450.00
Research Associate (Schmitt)	16.50	$60	$990.00
	TOTAL Task 3		**$1,440.00**

Task 4: As Needed CBSM and Special Assessment

4b. FY2015 Over-Irrigation Roll Out Report Revisions (PPT deck); Develop protocols for outreach delivery			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.00	$150	$150.00
Research Associate (Ballard/Schmitt)	3.50	$60	$210.00
	TOTAL Task 4		**$360.00**

Task 5: High School Outreach

FY2015 Data Matching and Data Entry			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	0.50	$150	$75.00
Research Associate (Ballard)	4.00	$60	$240.00
Research Assistant (de la Cruz/Schneider)	25.00	$40	$1,000.00
	TOTAL Task 5		**$1,315.00**

Task 6: Splash Lab Outreach

Data matching; Data management; Data entry			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	0.25	$150	$37.50
Research Associate (Ballard)	7.00	$60	$420.00
	TOTAL Task 6		**$457.50**

Task 7: Manure Management Outreach – No Activity

Task 8: Assessment Support for Regional RS Workgroup

Regional Survey: Preliminary draft of 2015 survey; Correspondence with Marsha re: feedback, internal set up for data management			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.50	$150	$225.00
	TOTAL Task 8		**$225.00**

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APR 13 2015
SIGNATURE
PRINT Nick del Valle

To: **Nick del Valle**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **April 9, 2015**

Invoice # **AR15-1029**

Time Period: Invoice is for tasks completed March 1 – 31, 2015

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1: Residential Program Assessment	$0.00
Task 2: Pet Waste Management	$3,902.50 ✓
Task 3: Outreach to Commercial Prop Owners	$1,860.00 ✓
Task 4: As Needed CBSM and Special Assessment	$3,127.50 ✓
Task 5: High School Outreach	$1,160.00 ✓
Task 6: Splash Lab Outreach	$270.00 ✓
Task 7: Manure Management Outreach	$0.00
Task 8: Assessment Support for Regional RS Workgroup	$1,477.50 ✓
Task 9: Administration	$210.00 ✓
TOTAL DUE	**$12,007.50** ✓

Please make check payable to: Action Research; 3630 Ocean Ranch Blvd.; Oceanside, CA 92056; Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001; or by email at: tabanico@action3630.com. **Thank you!**

Tasks 1-7, 9
Total: $10,530.00

P: 1019367
O: 50915
E: 52370
T: 001.001
A: 100496
OK to Pay: Nick del Valle 4/13/15
Approved by: Todd Snyder 4/13/15
TODD SNYDER

Task 8
Total: $1,477.50

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Nick del Valle 4/13/15
Approved by: Todd Snyder 4/13/15
TODD SNYDER

ATTACHMENT A: DESCRIPTION OF SERVICES

Task 1: Residential Program Assessment – No Activity

Task 2: Pet Waste Management

Correspondence with Scout Leaders for Meeting Scheduling; Presentation at Scout Leader Roundtable Meeting (adults) on March 12; Girl Scout Poo Point Presentation in Unincorporated Escondido on 3/15, Send completion patches to participants. ***See Attachment D for Outreach Totals.***			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	0.50	$150	$75.00
Project Director (Large)	6.50	$125	$812.50
Research Associate (Ballard/Schmitt)	39.25	$60	$2,355.00
Research Assistant (de la Cruz/Schneider)	16.50	$40	$660.00
	TOTAL Task 2		**$3,902.50**

Task 3: Outreach to Commercial Prop Owners

Draft and final design layouts; Guidebook content edits.			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	5.00	$150	$750.00
Research Associate (Schmitt)	18.50	$60	$1,110.00
	TOTAL Task 3		**$1,860.00**

Task 4: As Needed CBSM and Special Assessment

4b. FY2015 Over-Irrigation Roll Out. Protocol development; scheduling; Materials delivered to target neighborhood (58 out of 88 homes received materials).			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	2.25	$150	$337.50
Research Associate (Ballard/Schmitt)	28.50	$60	$1,710.00
Research Assistant (de la Cruz/Schneider)	27.00	$40	$1,080.00
	TOTAL Task 4		**$3,127.50**

Task 5: High School Outreach

FY2015 Data Matching and Data Entry for data received March 10th			
Staff	**Hours**	**Rate**	**Subtotal**
Research Associate (Ballard)	13.00	$60	$780.00
Research Assistant (de la Cruz/Schneider)	9.50	$40	$380.00
	TOTAL Task 5		**$1,160.00**

Task 6: Splash Lab Outreach

Data receipt and matching.			
Staff	**Hours**	**Rate**	**Subtotal**
Research Associate (Ballard)	4.50	$60	$270.00
	TOTAL Task 6		**$270.00**

Task 7: Manure Management Outreach – No Activity

Task 8: Assessment-Support for Regional RS Workgroup

Regional Survey: Incorporate comments into draft survey; Correspondence with Marsha re: feedback			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	4.25	$150	$637.50
Research Associate (Ballard)	14.00	$60	$840.00
	TOTAL Task 8		**$1,477.50**

Task 9: Administration

Administration: Update meetings with project staff; Outreach tracking by zip; Invoicing and budgeting			
Staff	Hours	Rate	Subtotal
Principal (Tabanico)	1.00	$150	$150.00
Research Associate (Schmitt)	1.00	$60	$60.00
	TOTAL Task 9		$210.00

ATTACHMENT B: BUDGET TRACKING

To date spending

TASK	BUDGET	SPENT	BALANCE	%SPENT
TASK 1: Residential Program Assessment	$0	$0.00	$0.00	
TASK 2: Pet Waste Management	$30,750	$23,248.97	$7,501.03	76%
TASK 3: Outreach to Commercial Prop Owners	$31,124	$6,046.25	$25,077.75	19%
TASK 4: As Needed CBSM and Special Assessment	$43,329	$41,552.39	$1,776.61	96%
TASK 5: High School Outreach	$11,870	$11,040.00	$830.00	93%
TASK 6: Splash Lab Outreach	$9,570	$2,790.00	$6,780.00	29%
TASK 7: Manure Management Outreach	$5,000	$0.00	$5,000.00	0%
TASK 8: Assessment Support for Regional RS Workgroup	$44,000	$3,010.00	$40,990.00	7%
TASK 9: Administration	$6,155	$5,797.50	$357.50	94%
	$181,798	$93,485.11	$88,312.89	
	BUDGET	INVOICED	BALANCE	

Total Contract Amount	*$181,798.00*
June 2014 Invoice	-$12,748.50
July 2014 Invoice	-$0.00
August 2014 Invoice	-$0.00
September 2014 Invoice	-$12,927.21
October 2014 Invoice	-$6,841.50
November 2014 Invoice	-$17,696.84
December 2014 Invoice	-$9,950.49
January 2015 Invoice	-$15,574.94
February 2015 Invoice	-$5,738.13
March 2015 Invoice	-$12,007.50
April 2015 Invoice	
May 2015 Invoice	
Balance Remaining	$88,312.89

ATTACHMENT C: DIRECT COSTS

None to Report

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Oceanside, CA 92056
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www. action3630.com

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DPW - WPP
MAY 18 2015
SIGNATURE
PRINT Nick del Valle

To: **Nick del Valle**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

Date: **May 18, 2015**

Invoice # **AR15-1034**

Time Period: Invoice is for tasks completed April 1 – 30, 2015

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1: Residential Program Assessment	$0.00
Task 2: Pet Waste Management	$551.59
Task 3: Outreach to Commercial Prop Owners	$3,412.50
Task 4: As Needed CBSM and Special Assessment	$275.01
Task 5: High School Outreach	$1,690.00
Task 6: Splash Lab Outreach	$1,405.00
Task 7: Manure Management Outreach	$0.00
Task 8: Assessment Support for Regional RS Workgroup	$14,084.00
Task 9: Administration	$150.00
TOTAL DUE	**$21,568.10**

Please make check payable to: Action Research; 3630 Ocean Ranch Blvd.; Oceanside, CA 92056; Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001; or by email at: tabanico@action3630.com. **Thank you!**

Tasks 1-7, 9
Total: $7484.10

P: 1019367
O: 50915
E: 52370
T: 001.001
A: 100496
OK to Pay: Nick del Valle 5/18/15
Approved by: Todd Snyder 5/18/15
TODD SNYDER

Task 8
Total: $14,084.00

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Nick del Valle 5/18/15
Approved by: Todd Snyder 5/18/15
TODD SNYDER

Task 8: Assessment Support for Regional RS Workgroup

Regional Survey: Mileage for regional meeting attendance at County on 3/18; Final revisions; Data collection set up; Deposit for Data Collection by ISA.			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	4.00	$150	$600.00
Project Director (Large)	3.75	$125	$468.75
Research Associate (Ballard)	16.25	$60	$975.00
Mileage Oceanside-Kearny Mesa (Mar 18)	70.00 miles	$0.575	$40.25
Deposit for Data Collection (Invoice Attached)			$12,000.00
	TOTAL Task 8		**$14,084.00**

Task 9: Administration

Administration: Update meetings with project staff; Outreach tracking by zip; Invoicing and budgeting			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.00	$150	$150.00
	TOTAL Task 9		**$150.00**

ATTACHMENT B: BUDGET TRACKING

To date spending

TASK	BUDGET	SPENT	BALANCE	%SPENT
TASK 1: Residential Program Assessment	$0	$0.00	$0.00	
TASK 2: Pet Waste Management	$30,750	$23,053.06	$7,696.94	75%
TASK 3: Outreach to Commercial Prop Owners	$31,124	$9,458.75	$21,665.25	30%
TASK 4: As Needed CBSM and Special Assessment	$43,329	$31,468.90	$11,860.10	73%
TASK 5: High School Outreach	$11,870	$11,870.00	$0.00	100%
TASK 6: Splash Lab Outreach	$9,570	$3,625.00	$5,945.00	38%
TASK 7: Manure Management Outreach	$5,000	$0.00	$5,000.00	0%
TASK 8: Assessment Support for Regional RS Workgroup	$44,000	$17,094.00	$26,906.00	39%
TASK 9: Administration	$6,155	$5,735.00	$420.00	93%
	$181,798	$102,304.71	$79,493.29	
	BUDGET	INVOICED	BALANCE	

Total Contract Amount	*$181,798.00*
July 2014 Invoice	**-$0.00**
August 2014 Invoice	-$0.00
September 2014 Invoice	**-$12,927.21**
October 2014 Invoice	-$6,841.50
November 2014 Invoice	**-$17,696.84**
December 2014 Invoice	-$9,950.49
January 2015 Invoice	**-$15,574.94**
February 2015 Invoice	-$5,738.13
March 2015 Invoice	**-$12,007.50**
April 2015 Invoice	-$21,568.10
May 2015 Invoice	
June 2015 Invoice	
Balance Remaining	**$79,493.29**

action research
Research • Social Marketing • Results

3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Nick del Valle**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

RECEIVED BY
DPW - WPP
JUN 12 2015
SIGNATURE
PRINT Nick del Valle

Date: **June 11, 2015**

Invoice # **AR15-1046**

Time Period: Invoice is for tasks completed May 1 – 31, 2015

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1: Residential Program Assessment	$0.00
Task 2: Pet Waste Management	$2,413.18 ✓
Task 3: Outreach to Commercial Prop Owners	$4,955.00 ✓
Task 4: As Needed CBSM and Special Assessment	$1,408.10 ✓
Task 5: High School Outreach	$0.00
Task 6: Splash Lab Outreach	$2,310.00 ✓
Task 7: Manure Management Outreach	$0.00 ✓
Task 8: Assessment Support for Regional RS Workgroup	$14,977.50 ✓
Task 9: Administration	$210.00 ✓
TOTAL DUE	**$26,273.78** ✓

Please make check payable to: Action Research; 3630 Ocean Ranch Blvd.; Oceanside, CA 92056; Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001; or by email at: tabanico@action3630.com. **Thank you!**

Tasks 1-7, 9
Total: $11,296.28

P: 1019367
O: 50915
E: 52370
T: 001.001
A: 100496
OK to Pay: Nick del Valle 6/12/15
Approved by: Todd Snyder
TODD SNYDER, 6/12/15

Task 8
Total: $14,977.50

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Nick del Valle 6/12/15
Approved by: Todd Snyder
TODD SNYDER, 6/12/15

ATTACHMENT A: DESCRIPTION OF SERVICES

Task 1: Residential Program Assessment – No Activity

Task 2: Pet Waste Management

Follow-up with Scout/4-H leaders and Humane Society; Presentation for Oceanside troop (for delivery in Fallbrook/Bonsall); Data entry from ILACSD events; Email follow up surveys sent to ILACSD event participants; Outreach materials delivered to two vets. ***See Attachment D for Outreach Totals.***			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	2.25	$150	$337.50
Project Director (Large)	2.50	$125	$312.50
Research Associate (Ballard/Schmitt)	11.00	$60	$660.00
Research Assistant (de la Cruz/Schneider)	26.50	$40	$1,060.00
Direct: Envelopes for PooPoint packets (receipt attached)			$43.18
	TOTAL Task 2		**$2,413.18**

Task 3: Outreach to Commercial Prop Owners

Finalize content and layout for Guidebook; Consolidate language from existing materials; Draft new language for commercial flyers (14); Draft designs for commercial flyers			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	8.00	$150	$1,200.00
Research Associate (Schmitt)	41.00	$60	$2,460.00
Direct: Design & Illustration for Guidebook (invoice attached)			$1,295.00
	TOTAL Task 3		**$4,955.00**

Task 4: As Needed CBSM and Special Assessment

4b. FY2015 Over-Irrigation Roll Out. Deliver outreach to control neighborhood in lakeside; Identify additional neighborhoods for materials delivery; Prepare outreach materials for delivery to additional neighborhoods .			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.00	$150	$150.00
Research Associate (Ballard/Schmitt)	11.50	$60	$690.00
Research Assistant (de la Cruz/Schneider)	11.50	$40	$460.00
Mileage Oceanside-Lakeside (May 8)	94.02 miles	$0.575	$54.06
Mileage Oceanside-Lakeside (May 9)	93.98 miles	$0.575	$54.04
	TOTAL Task 4		**$1,408.10**

Task 5: High School Outreach– No Activity

Task 6: Splash Lab Outreach

Data receipt and matching; Data entry			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.00	$150	$150.00
Research Associate (Ballard)	18.00	$60	$1,080.00
Research Assistant (de la Cruz/Schneider)	27.00	$40	$1,080.00
	TOTAL Task 6		**$2,310.00**

Task 7: Manure Management Outreach – No Activity

Task 8: Assessment Support for Regional RS Workgroup

Regional Survey: Data collection monitoring; Report and analysis syntax set up; Balance Due for Data Collection by ISA.			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	7.00	$150	$1,050.00
Research Associate (Ballard)	19.25	$60	$1,155.00
Balance for Data Collection (Invoice Attached)			$12,772.50
	TOTAL Task 8		**$14,977.50**

Task 9: Administration

Administration: Update meetings with project staff; Outreach tracking by zip; Invoicing and budgeting			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.00	$150	$150.00
Research Associate (Schmitt)	1.00	$60	$60.00
	TOTAL Task 9		**$210.00**

ATTACHMENT B: BUDGET TRACKING

To date spending

TASK	BUDGET	SPENT	BALANCE	%SPENT
TASK 1: Residential Program Assessment	$0	$0.00	$0.00	
TASK 2: Pet Waste Management	$30,750	$25,466.24	$5,283.76	83%
TASK 3: Outreach to Commercial Prop Owners	$31,124	$14,413.75	$16,710.25	46%
TASK 4: As Needed CBSM and Special Assessment	$43,329	$32,877.00	$10,452.00	76%
TASK 5: High School Outreach	$11,870	$11,870.00	$0.00	100%
TASK 6: Splash Lab Outreach	$9,570	$5,935.00	$3,635.00	62%
TASK 7: Manure Management Outreach	$5,000	$0.00	$5,000.00	0%
TASK 8: Assessment Support for Regional RS Workgroup	$44,000	$32,071.50	$11,928.50	73%
TASK 9: Administration	$6,155	$5,945.00	$210.00	97%
	$181,798	$128,578.49	$53,219.51	
	BUDGET	INVOICED	BALANCE	

Total Contract Amount	*$181,798.00*
July 2014 Invoice	**-$0.00**
August 2014 Invoice	-$0.00
September 2014 Invoice	**-$12,927.21**
October 2014 Invoice	-$6,841.50
November 2014 Invoice	**-$17,696.84**
December 2014 Invoice	-$9,950.49
January 2015 Invoice	**-$15,574.94**
February 2015 Invoice	-$5,738.13
March 2015 Invoice	**-$12,007.50**
April 2015 Invoice	-$21,568.10
May 2015 Invoice	**-$26,273.78**
June 2015 Invoice	
Balance Remaining	**$53,219.51**

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3630 Ocean Ranch Blvd.
Oceanside, CA 92056
p.760.722.4000/f. 760.722.4005
www. action3630.com

INVOICE

To: **Nick del Valle**
County of San Diego
Department of Public Works, Watershed Protection
5510 Overland Avenue, Suite 410
San Diego, CA 92123-1239

RECEIVED BY DPW - WPP
JUN 30 2015
SIGNATURE
PRINT Nick del Valle

Date: **June 30, 2015**

Invoice # **AR15-1054**

Time Period: Invoice is for tasks completed June 1 – 30, 2015

Contract # #541266, Community Based Social Marketing Services

Section 8.9 Compliance: Consultant certifies that it, its principals, its employees and its subcontractors are in compliance with the terms of Section 8.9 of the subject contract regarding Debarment and Suspension.

Community Based Social Marketing Services	**AMOUNT DUE**
Task 1: Residential Program Assessment	$0.00
Task 2: Pet Waste Management	$3,284.35
Task 3: Outreach to Commercial Prop Owners	$21,083.87
Task 4: As Needed CBSM and Special Assessment	$5,823.74
Task 5: High School Outreach	$0.00
Task 6: Splash Lab Outreach	$3,550.00
Task 7: Manure Management Outreach	$0.00
Task 8: Assessment Support for Regional RS Workgroup	$11,425.00
Task 9: Administration	$187.50
TOTAL DUE	**$45,354.46**

Please make check payable to: Action Research; 3630 Ocean Ranch Blvd.; Oceanside, CA 92056; Any questions regarding this invoice should be directed to Jennifer Tabanico at 760-722-4001; or by email at: tabanico@action3630.com. **Thank you!**

Tasks 1-7, 9
Total: $33,929.46

P: 1019367
O: 50915
E: 52370
T: 001.001
A: 100496
OK to Pay: Nick del Valle 6/30/15
Approved by: M. Watt MIKE WATT 6/30/15

Task 8
Total: $11,425.00

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: Nick del Valle 6/30/15
Approved by: M. Watt MIKE WATT 6/30/15

Task 7: Manure Management Outreach – No Activity

Task 8: Assessment Support for Regional RS Workgroup

Regional Survey: Data analysis; Geo-coding by watershed; Code open-ended responses into discrete categories; Ballard/Tabanico attendance and presentation at ERS workgroup meeting on June 17; Final Report			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	45.00	$150	$6,750.00
Research Associate (Ballard)	51.25	$60	$3,075.00
Research Assistant (de la Cruz/Schneider)	40.00	$40	$1,600.00
	TOTAL Task 8		**$11,425.00**

Task 9: Administration

Administration: Update meetings with project staff; Outreach tracking by zip; Invoicing and budgeting			
Staff	**Hours**	**Rate**	**Subtotal**
Principal (Tabanico)	1.25	$150	$187.50
	TOTAL Task 9		**$187.50**

ATTACHMENT B: BUDGET TRACKING

To date spending

TASK	BUDGET	SPENT	BALANCE	%SPENT
TASK 1: Residential Program Assessment	$0	$0.00	$0.00	
TASK 2: Pet Waste Management	$30,750	$28,750.59	$1,999.41	93%
TASK 3: Outreach to Commercial Prop Owners	$31,124	$35,497.62	-$4,373.62	114%
TASK 4: As Needed CBSM and Special Assessment	$43,329	$38,700.74	$4,628.26	89%
TASK 5: High School Outreach	$11,870	$11,870.00	$0.00	100%
TASK 6: Splash Lab Outreach	$9,570	$9,485.00	$85.00	99%
TASK 7: Manure Management Outreach	$5,000	$0.00	$5,000.00	0%
TASK 8: Assessment Support for Regional RS Workgroup	$44,000	$43,496.50	$503.50	99%
TASK 9: Administration	$6,155	$6,132.50	$22.50	100%
	$181,798	$173,932.95	$7,865.05	
	BUDGET	INVOICED	BALANCE	

Total Contract Amount	*$181,798.00*
July 2014 Invoice	**-$0.00**
August 2014 Invoice	-$0.00
September 2014 Invoice	**-$12,927.21**
October 2014 Invoice	-$6,841.50
November 2014 Invoice	**-$17,696.84**
December 2014 Invoice	-$9,950.49
January 2015 Invoice	**-$15,574.94**
February 2015 Invoice	-$5,738.13
March 2015 Invoice	**-$12,007.50**
April 2015 Invoice	-$21,568.10
May 2015 Invoice	**-$26,273.78**
June 2015 Invoice	-$45,354.46
Balance Remaining	**$7,865.05**

Freedom Three Publishing
310 North Indian Hill Blvd, #442
Claremont, CA 91711
(909) 447 5320

RECEIVED 4-1-15 Marsha Cook MARSHA COOK

All The Way To The Ocean

INVOICE

Customer

Name *Marsha Cook*
Org. Name *DPW-Watershed Protection Program—MS O332*
Org. Type *Watershed Protectic* Tax ID#
Address *5510 Overland ave suite 410*
City *San Diego* State Ca ZIP 92123
Phone *1 858 694 2794* Fax
E-mail Marsha.Cook@sdcounty.ca.gov

Date *March 26th, 2015*

Qty	Description	Unit Price	TOTAL
322	"All the Way to the Ocean" Kids book spe	$6.50	
	ship cost $120/Tax $188.37		

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $2401.00
Approved by: Marsha Cook 4/2/15
Marsha Cook, WEP III
Todd 4/2/15

TOTAL **$2,401.00**

Payment Details

Credit Card	Card #	
	Expiration Date	

If you wish to pay by check or you would like to establish credit with Brigham Distributing, please contact Barry Reeder at the numbers listed above.

Thank You For your Business

ONLINE ONLY

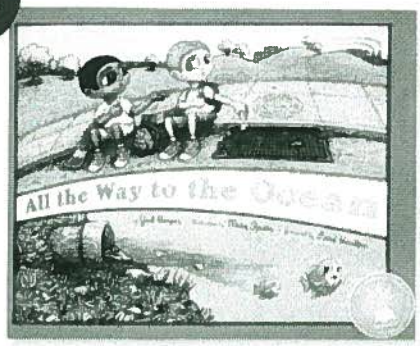

All the Way to the Ocean

This is an uplifting story about two best friends, Isaac and James, and their discovery of a timeless life lesson.

* limited # available

$6.93 ~~**$14.95***~~

4/2/15 Mac

REDUCED PRICE You Save: 53%

(0)

Item # 760549

NONE

Orders of $50 or more ship for free. Learn more

DETAILS SPECS REVIEWS Q & A

- Author: Joel Harper; illustrated by Marq Spusta
- Hardcover; 32 pages; full-color illustrations
- Freedom Three Publishing; copyright 2006
- Isaac and James discover the cause and effect relationship between our cities' storm drains and the world's oceans, lakes and rivers
- It is sure to inspire both young and adult readers alike—if we all do our part, a cleaner, safer environment is indeed within our reach
- Made from 10% hemp/flax, 40% post-consumer waste, 20% pre-consumer waste and 30% sustainable harvested wood

Made in USA.

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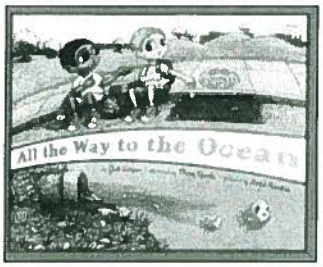

All the Way to the Ocean

byJoel Harper

(1) Add to List + Pin it g+1 0 Like Share

Overview - On our walk home from school we discover the importance of keeping trash out of our storm drains. Two kids read this very poignant story accompanied by music and sound effects. An inspirational and uplifting story about two best friends and their discovery of the cause and effect relationship between our cities' trash filled storm drains and the world's oceans, lakes and rivers. Listen and read along with the narration given by two kids. Enjoy the music and sound effects that ...See more details below

* Limited # available
4/2/15
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All the Water in the World
George Ella Lyon
Hardcover**$14.85**

Make a Splash!: A Kid's Guide...
Cathryn Berger Kaye M.A.
Paperback**$11.70**

The Down-to-Earth Guide to...
Laurie David
Paperback**$12.07**

More About This Book

Overview **Product Details** **Related Subjects**

Overview

On our walk home from school we discover the importance of keeping trash out of our storm drains. Two kids read this very poignant story accompanied by music and sound effects.

An inspirational and uplifting story about two best friends and their discovery of the cause and effect relationship between our cities' trash filled storm drains and the world's oceans, lakes and rivers. Listen and read along with the narration given by two kids. Enjoy the music and sound effects that place you right in the story with them, while looking at the vibrant illustrations.

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Children's Books
through Freedom Three Publi
MCook

County of San Diego
P-Card Purchase Log

Period Ending: 04/22/15 Cardholder name: CHERYL NEWELL

Item #	Date of Purchase	Supplier Name	Item Description	Intended Purpose	Name & Location of Requestor	Project	Task	Award	Exp Type	Org.	Dollar Amount	BPA #	Receipt/ Invoice #	Name & Location of Recipient	Dispute/ Comments
1	03/25/15	Canon Financial	Copier contract charge	Copier	LD COC	1012669	001.001	100503	52186	53625	234.58	501790	072829	LD COC	Paid by phone
2	03/25/15	Canon Financial	Copier contract charge	Copier	LD COC	1012669	001.001	100503	52186	53625	318.61	501790	000984	LD COC	Paid by phone
3	03/27/15	Office Max	Office supplies	Supplies	WPP COC	1002993	001.012	100496	52330	50915	131.51	538296	994016	WPP COC	Online payment
4	03/30/15	Office Max	Office supplies	Supplies	WPP COC	1002993	001.012	100496	52330	50915	106.97	538296	005871	WPP COC	Online payment
5	03/30/15	Office Max	Office supplies	Supplies	Gaines COC	1002993	001.012	100496	52330	50915	12.50	538296	084646	Gaines COC	Online payment
6	03/30/15	Office Max	Office supplies	Supplies	Gaines COC	1002993	001.012	100496	52330	50915	14.13	538296	106359	Gaines COC	Online payment
7	04/06/15	Office Max	Office supplies	Supplies	WPP COC	1002993	001.012	100496	52330	50915	(106.97)	538296		WPP COC	Credit
8	04/03/15	FMA	FMA Training/Luncheon	Flood Control Training	FC COC	1002567	007	100207	52370	95800	90.00		100225580906	FC COC	Paid by phone
9	04/06/15	Freedom Three Publishing	All the Way to the Ocean" Children's books	ERS workgroup request	Cook COC	1002993	001.006	100496	52370	50915	2,401.00		0002	Cook COC	Paid by phone
10	04/06/15	Office Max	Office supplies	Supplies	WPP COC	1002993	001.012	100496	52330	50915	105.95	538296	076497	WPP COC	Online payment
										Subtotal Page	3,308.28				

Certification Statement: The below Cardholder and Approving Official signatures certify all purchases listed above are authorized expenditures to support official County business requirements, and all above items have been properly accounted for and received into the County for their intended use.

Cardholder Signature — Date: 4/24/15

Approving Official Signature — Date: 4/30/15

REGINALDO PELLWS

8

PAID 4/2/15

Freedom Three Publishing
310 North Indian Hill Blvd, #442
Claremont, CA 91711
(909) 447 5320

RECEIVED 4-1-15 Marsha Cook MARSHA COOK

All The Way To The Ocean

INVOICE

Customer

Name *Marsha Cook*
Org. Name *DPW-Watershed Protection Program—MS O332*
Org. Type *Watershed Protectic* Tax ID#
Address *5510 Overland ave suite 410*
City *San Diego* State Ca ZIP 92123
Phone *1 858 694 2794* Fax
E-mail Marsha.Cook@sdcounty.ca.gov

Date *March 26th, 2015*

Qty	Description	Unit Price	TOTAL
322	"All the Way to the Ocean" Kids book spe	$6.50	
	ship cost $120/Tax $188.37		

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $2401.00
Approved by: Marsha Cook 4/2/15
Marsha Cook, WEPIII
Todd Sale 4/2/15

TOTAL **$2,401.00**

Payment Details

Credit Card	Card #	
	Expiration Date	

If you wish to pay by check or you would like to establish credit with Brigham Distributing, please contact Barry Reeder at the numbers listed above.

Thank You For your Business

Newell, Cheryl

: joel harper
Subject: RE: Credit card receipt

From: joel harper [mailto:info@freedomthree.com]
Sent: Monday, April 06, 2015 3:00 PM
To: Newell, Cheryl
Subject: Credit card receipt

04 06 2015 14:55:59
MID [illegible] TID [illegible]
CREDIT CARD
VISA SALE
CARD # TOKEN XXXXXXXXXXXX2946
INVOICE 0002
SEQ #: 0001
Batch #: 001203
Approval Code: 067187
Entry Method: Manual
Mode: Online
Tax Amount: $0.00
Cust Code: 876
Avs Code: YYY
SALE AMOUNT $2401.00

I agree to pay above total amount according to card issue agreement (Merchant agreement if Credit Voucher)

X_____

MERCHANT COPY

On Apr 6, 2015, at 12:45 PM, Newell, Cheryl <Cheryl.Newell@sdcounty.ca.gov> wrote:

Hi Joel,

Please let me know when is a good time to take the payment. I will be on lunch from 1:10-1:40 pm today. Any time before or after that works for me.

Thank you and I hope you are feeling better.

Cheryl Newell
COUNTY OF SAN DIEGO | DPW, WPP
Administrative Secretary
(858) 495-5318 | MS O-332

INFINITE BUSINESS SOLUTIONS

10405 San Diego Mission Rd
Suite 201
San Diego CA 92108
Phone: (619) 516-4271 Fax: (619) 284-0826

RECEIVED BY
DPW - WPP
JUN 26 2015
SIGNATURE Marsha Cook
PRINT MarshaCook - WPP

INVOICE

005285 Page: 1

INVOICE DATE: 6/25/2015

CLIENT NO: 5236

CONSULTANT 20 (S)
CATHY LYNCH

TO:
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

SHIP TO:01
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

ORDERED	SHIPPED	UNIT	ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
4,000	4,000	EA/1	1003	SCRAPER	0.99	3,960.00
				setup		50.00

Dist. PO# 5221

Shipped: UPS Ground 6/25/2015

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $4,515.80
Approved by: Marsha Cook
Marsha Cook, LWEP III
7/6/15
Todd Snyder
TODD SNYDER, 7/7/15

TERMS: NET 15 4,010.00

BLANKET PURCHASE ORDER 521305

SALES TAX	320.80
FREIGHT	185.00
TOTAL	**4,515.80**

INFINITE BUSINESS SOLUTIONS
10405 San Diego Mission Rd
Suite 201
San Diego CA 92108
Phone: (619) 516-4271 Fax: (619) 284-0826

RECEIVED BY
DPW - WPP
JUN 26 2015
SIGNATURE Marsha Cook
PRINT MarshaCook WPP

INVOICE

005286 Page: 1
INVOICE DATE: 6/25/2015

CLIENT NO: 5236

CONSULTANT 20 (S)
CATHY LYNCH

TO:
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

SHIP TO:01
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

ORDERED	SHIPPED	UNIT	ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
1,000	1,000	EA/1	1001.	POPPY SEEDS	0.45	450.00

Customer PO: 521305-2 **Dist. PO#** 5219
Shipped: 6/29/2015

OK TO PAY ON Blanket Purchase Order 521305-12

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $568.00
Approved by:
Marsha Cook
Marsha Cook, LWEP III
7-2-15

ok to pay,
Jo Ann T. Weber
Jo Ann T. Weber
7/2/15

TERMS: NET 15 450.00

BLANKET PURCHASE ORDER 521305

SALES TAX	36.00
FREIGHT	82.00
TOTAL	**568.00**

INFINITE BUSINESS SOLUTIONS

10405 San Diego Mission Rd
Suite 201
San Diego CA 92108
Phone: (619) 516-4271 Fax: (619) 284-0826

RECEIVED BY
DPW - WPP
JUN 26 2015
SIGNATURE Marsha Cook
PRINT MarshaCook - WPP

INVOICE

005287 Page: 1

INVOICE DATE: 6/25/2015

CLIENT NO: 5236

CONSULTANT 20 (S)
CATHY LYNCH

TO:
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

SHIP TO:01
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

ORDERED	SHIPPED	UNIT	ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
1,000	1,000	EA/1	1002	CARBINER	0.70	700.00

Customer PO: 521305-2 **Dist. PO#** 5220
Shipped: UPS Ground 6/25/2015

ok to pay on BPA: 521305-2

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
$802.50 OK to Pay: Marsha Cook
Approved by: Marsha Cook
LUEP III, 6/30/15

Jo Ann Wever
for Todd Snyder

TERMS: NET 15 700.00

BLANKET PURCHASE ORDER 521305

SALES TAX	56.00
FREIGHT	46.50
TOTAL	**802.50**

INFINITE BUSINESS SOLUTIONS

10405 San Diego Mission Rd
Suite 201
San Diego CA 92108
Phone: (619) 516-4271 Fax: (619) 284-0826

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DPW - WPP
JUN 26 2015
SIGNATURE Marsha Cook
PRINT Marsha Cook-WPP

INVOICE

005288 Page: 1

INVOICE DATE: 6/25/2015

CLIENT NO: 5236

CONSULTANT 20 (S)
CATHY LYNCH

TO:
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

SHIP TO:01
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

ORDERED	SHIPPED	UNIT	ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
5,000	5,000	EA/1	1005	BONE POOP BAGS	1.05	5,250.00
				setup		50.00

Dist. PO# 5223

Shipped: BEST AVAILABLE 6/25/2015

OK to pay on BPA: 521305-12

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $5,954.00
Approved by: Marsha Cook
Marsha Cook, LUEP III
6/30/15

John Weber
Jo Ann Weber
for Todd Snyder
6/30/15

TERMS: NET 15 5,300.00

BLANKET PURCHASE ORDER 521305

SALES TAX	424.00
FREIGHT	230.00
TOTAL	**5,954.00**

INFINITE BUSINESS SOLUTIONS

10405 San Diego Mission Rd
Suite 201
San Diego CA 92108
Phone: (619) 516-4271 Fax: (619) 284-0826

RECEIVED BY
DPW - WPP
JUN 26 2015
SIGNATURE Marsha Cook
PRINT MarshaCook -WPP

INVOICE

005289 Page: 1

INVOICE DATE: 6/25/2015

CLIENT NO: 5236

CONSULTANT 20 (S)
CATHY LYNCH

TO:
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

SHIP TO:01
ATTN: MARSHA COOK
CTY OF SD - WATERSHED PROTECTION
5510 OVERLAND DRIVE
SUITE 410
SAN DIEGO CA 92123

ORDERED	SHIPPED	UNIT	ITEM	DESCRIPTION	UNIT PRICE	AMOUNT
1,000	1,000	EA/1	1004	ALUMINUM BOTTLE BLUE	2.85	2,850.00
				SETUP		50.00

Customer PO: 521305-2 **Dist. PO#** 5222
Shipped: UPS Ground 6/24/2015

OK to pay on BPA: 521305-12
P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $3,411.00
Approved by:
Marsha Cook
MarshaCook, LWEP III
6/30/15

ok, JoAnn Weber
JoAnn Weber
for todd synder
6/30/15

TERMS: NET 15 2,900.00

BLANKET PURCHASE ORDER 521305

SALES TAX	232.00
FREIGHT	279.00
TOTAL	**3,411.00**

Movies in the Park
Sponsorship
* TBSDR.
MCook

Standard Header

Batch Number	370079
Batch Category	TRANSFER
Batch Type	TRANSFER
Batch Name	PWOMMB08APR2015 TRANSFER TO PARKS FROM DPW WPP PROGRAM FOR MOVIES IN THE PARK SPONSORSHIP
Preparer Organization	50915 WATERSHED PROGRAM MGMT
Preparer HOFI	PWO PUBLIC WORKS,DEPT OF, GENER
Preparer Name	BAWALAN, MARIA FE
Created Date	08-APR-2015
Line Total Amount	0.00
Batch Status	APPROVED
Line Total Count	2
Workflow Status	COMPLETE
Reverse Date	
Batch #	

Context Header

Sub Batch Type	TRANSFER
Forward Approval HOFI	

GL Lines | PNO Lines

Line Number	Fund	Org	Account	Project	Funding Source	TBD	Debit Amount	Credit Amount	Line Description	Calculated Amount
1	10100	52806	55111	0000000	000000	00000		5,000.00	WPP MOVIES IN THE PARK SPONS(	-5,000.00

Row Count 1

Block Totals -5,000.00

DRAFT Transfer 370079

Standard Header

Batch Number: 370079

Batch Category: TRANSFER

Batch Type: TRANSFER

Batch Name: PWGMMB08APR2015 TRANSFER TO PARKS FROM DPW WPP PROGRAM FOR MOVIES IN THE PARK SPONSORSHIP

Preparer Organization: 50915 WATERSHED PROGRAM MGMT

Preparer HOFI: PWG PUBLIC WORKS,DEPT OF, GENER

Preparer Name: BAWALAN, MARIA FE

Created Date: 08-APR-2015

Line Total Amount: 0.00

Batch Status: APPROVED

Line Total Count: 2

Workflow Status: COMPLETE

Reverse Date:

Batch #:

Context Header

Sub Batch Type: TRANSFER

Forward Approval HOFI:

GL Lines | PNG Lines

Line Number	IA Number	Project	Task	Award	Expenditure Type	Expenditure Organization	Expenditure Item Date	Debit Amount	Credit Amount	Line Descriptic
1		[redacted]	001.006	100498	52702 COST APPL	50915 WATERSHED P	13-APR-2015	5,000.00		WPP MOVIES IN THE PARK S

Row Count: 1

Block Totals: 5,000.00

Bawalan, Maria 370079

From: Lomibao, Jovita
Sent: Thursday, April 02, 2015 9:38 AM
To: Bawalan, Maria
Cc: Lafontant, Christine; Cook, Marsha; Pellos, Reynaldo
Subject: RE: Movies in the Park Sponsorship by Think Blue San Diego Region

Hi Maria....yes it should be the same. 52806/55111 cost applied. Please forward me the DART# when processed.

Thank you!

Jovy Lomibao
Principal Accountant
County of San Diego
Department of Parks & Recreation
858-966-1314
Jovita.Lomibao@sdcounty.ca.gov

From: Bawalan, Maria
Sent: Thursday, April 02, 2015 9:30 AM
To: Lomibao, Jovita
Cc: Lafontant, Christine; Cook, Marsha; Pellos, Reynaldo
Subject: RE: Movies in the Park Sponsorship by Think Blue San Diego Region

Hi Jovy,

Good morning. A similar transaction was processed last fiscal year where a DART transfer was prepared instead of an IA to pay for "Movies in the Park".

GL DART Transfer - 339933

Standard Header

Batch Number	339933		
Batch Category	TRANSFER	Batch Type	TRANSFER
Batch Name	PWGEFT12MAY2014 TRANSFER TO PARKS FROM DPW WPP PROGRAM FOR MOVIES IN THE PARK		
Preparer Organization	50915 WATERSHED PROGRAM MGMT	Preparer HOFI	PWG PUBLIC WORKS,DEPT OF, GENER
Preparer Name	TAOLIORETTI, EDWARD	Created Date	12-MAY-2014
Line Total Amount	0.00	Batch Status	APPROVED
Line Total Count	2	Workflow Status	COMPLETE
		Reverse Date	
		Batch #	

Context I

8

For

GL Lines

Line Number	IA Number	Project	Task	Award	Expenditure Type	Expenditure Organization	Expenditure Item Date	Debit Amount	Credit Amount
1		[redacted]	001.006	100496	52702 COST APPL	50915 WATERSHED F	13-MAY-2014	5,000.00	

How would you like to process the payment to your department this fiscal year?

Thanks

Fe

From: Pellos, Reynaldo
Sent: Thursday, April 02, 2015 7:31 AM
To: Bawalan, Maria
Cc: Lomibao, Jovita; Lafontant, Christine; Cook, Marsha
Subject: FW: Movies in the Park Sponsorship by Think Blue San Diego Region

Morning Fe!

We need to set up an IA for Dept. of Parks and Recreation for the amount of $5,000 to assist with the "Movies in the Park". This is being paid by the Copermittees with the POETA:
P= 1002993
O= 50915
E= ~~52374~~ 52702
T= 001.006
A= 100496

The fiscal contact at DPR is Jovy Lomibao.

Please let us know if you need any more information.

Thanks,

Reynaldo Pellos
Environmental Specialist
DPW - Watershed Protection Program
5510 Overland Ave., 4th floor, MS-0332
San Diego, CA 92123

D: (858) 694-2806
M: (619) 857-6151

From: Cook, Marsha
Sent: Wednesday, April 01, 2015 2:35 PM
To: Pellos, Reynaldo
Cc: Lafontant, Christine
Subject: FW: Movies in the Park Sponsorship by Think Blue San Diego Region

Hi Rey,

The Regional Copermittees ERS Workgroup would like to sponsor Movies in the Park.

The application is attached and we would like to start process for making the payment. We need to complete the transaction before June 30, 2015. I don't think that is a problem if we start right now.

Do you know how to start the process to do a payment transfer to County Department of Parks And Recreation to sponsor "Movies in the Park", on behalf of the Regional Copermittees. I am not sure how to start the process, but have necessary approval and would like to proceed by using the POETA below.

Please let me know if we need to do something else that I am not aware of.

The Copermittees agreed to sponsor in the amount of $5,000, with POETA below.
P= 1002993
O= 50915
E= 52374 (IA with Parks)
T= 001.006
A= 100496

Christine Lafontant is the manager with DPR, who is in charge of Movies in the Park. She can possibly assist us with the necessary contacts in Parks to work with our fiscal staff on the transfer.

Thanks,
Marsha

From: Brownyard, Teresa
Sent: Wednesday, March 25, 2015 5:46 PM
To: Cook, Marsha
Cc: Pellos, Reynaldo; Diaz, Richard
Subject: Re: Movies in the Park Sponsorship by Think Blue San Diego Region

Approved. Thx!

Sent from my iPhone

On Mar 25, 2015, at 7:26 AM, "Cook, Marsha" <Marsha.Cook@sdcounty.ca.gov> wrote:

> Hi Teresa,
>
> For your approval, the ERS Workgroup will sponsor Movies in the Park once again this year in the amount of $5,000.

The POETA for this is under the Regional Copermittees and I believe this is the correct POETA for payment to another internal department.
P= 1002993
O= 50915
E= 52374 (IA with Parks) or if not, ?
T= 001.006
A= 100496

Do you approve of this spending?

Once we receive your approval, I'll have Rey work with Parks about who to set up the transfer with.

Thanks,
Marsha

Marsha Cook
Environmental Specialist
DPW-Watershed Protection Program—**MS O332 (new)**
County of San Diego
5510 Overland Drive, Suite 410
San Diego, CA 92123
(858) 694-2794
Marsha.cook@sdcounty.ca.gov

<image001.jpg>
http://www.sdcounty.ca.gov/dpw/watersheds.html

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DEC 02 2014

SIGNATURE
PRINT Cheryl Newell

Invoice Date: November 25, 2014
Project No.: 142852
Invoice No.: 893763

Tracy Cline
County of San Diego
Department of Public Works
5510 Overland Avenue
Suite 410
San Diego, CA 92123-1237
Mail Stop O-326

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Education and Residential Sources Workgroup Support FY 2014-15

Project No.: 142852
DPW Project Manager: Marsha Cook
Contract No.: 534079
Task Order No.: 45

Professional Consulting Services rendered pursuant to the Notice to Proceed, dated August 28, 2014, pursuant to Contract No. 534079, Task Order No. 45, relative to the "Regional Education and Residential Sources Workgroup Support for FY 2014-15" project

Professional Consulting Services through November 02, 2014

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	ERS Workgroup Meeting Support	$1,300.00	$0.00	$264.81	$264.81
2.	Standard Work Products	$1,523.00	$0.00	$66.20	$66.20
3.	Regional Events	$327.00	$0.00	$0.00	$0.00
	Total Fee	**$3,150.00**		**$331.01**	**$331.01**
			Previous Fee Billing	$0.00	
				Total This Invoice	**$331.01**

P: 100293
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $331.01 12-2-14
Approved by: Marsha Cook, LUEP III
Marsha Cook
Teresa Brownyard
WPP Manager 12-2-14

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

A Baker Company
MICHAEL BAKER INTERNATIONAL

County of San Diego
Regional Education and Residential Sources Workgroup Support FY 14-15 - TO 45
RBF JN 142852

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*Meeting notes			
Land Use Environmental Planner I	3	$88.27	$264.81
Total			**$264.81**
Task 2 - Standard Work Products			
*PCW Updates and Uploads			
*Contact List Update			
Land Use Environmental Planner I	0.75	$88.27	$66.20
Total			**$66.20**
Grand Total	3.75		**$331.01**

RBF CONSULTING
A Baker Company

Important Notice: Change of Remittance Information

Dear Valued Client:

Our financial institution, Citizens Bank of Pennsylvania, is transferring its current lockbox operations to a new processor. This transfer necessitates updating our address for check remittance via lockbox.

Beginning September 17, 2014, please send the remittance to RBF Consulting as noted below. *We would prefer payment via electronic transfer if at all possible.*

Electronic Transfer:
MICHAEL BAKER CORPORATION
Citizens Bank
ABA: 036-076-150
Account: 6101710975
SWIFT: CTZIUS33

Payment via Lockbox:
RBF Consulting
PO Box 515714
Los Angeles, CA 90051-5195

Payment via Overnight Delivery:
RBF Consulting
Attn: Lockbox Operations #515714
1200 West 7th St., Suite L2-200
Los Angeles, CA 90017

Thank you for the continued opportunity to engage with you and provide the services you need in delivering your projects successfully.

Sincerely,

Jim

James M. Kempton
Vice President and Corporate Controller
Michael Baker International, LLC

Questions concerning remittance information can be directed to:

Jill G. Bell
Senior Corporate Treasury Manager
jbell@mbakerintl.com
412-269-6425

Questions concerning invoicing can be directed to:

David J. Mastalski
Billing Manager
dmastalski@mbakerintl.com
724-495-4142

RBF
A Baker Company
MICHAEL BAKER INTERNATIONAL

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DPW - WPP
JAN 26 2015
SIGNATURE
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Invoice Date: January 14, 2015
Project No.: 142852
Invoice No.: 897481

Tracy Cline
County of San Diego
Department of Public Works
5510 Overland Avenue
Suite 410
San Diego, CA 92123-1237
Mail Stop O-326

RBF Consulting,
(a Company of Michael Baker Corporation)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Education and Residential Sources Workgroup Support FY 2014-15

Project No.: 142852
DPW Project Manager: Marsha Cook
Contract No.: 534079
Task Order No.: 45

Professional Consulting Services rendered pursuant to the Notice to Proceed, dated August 28, 2014, pursuant to Contract No. 534079, Task Order No. 45, relative to the "Regional Education and Residential Sources Workgroup Support for FY 2014-15" project

Professional Consulting Services from November 03, 2014 through December 31, 2014

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	ERS Workgroup Meeting Support	$1,300.00	$264.81	$816.50	$551.69
2.	Standard Work Products	$1,523.00	$66.20	$66.20	$0.00
3.	Regional Events	$327.00	$0.00	$0.00	$0.00
	Total Fee	**$3,150.00**		**$882.70**	**$551.69**
			Previous Fee Billing	$331.01	
				Total This Invoice	**$551.69**

P: 1002993
O: 50915
E: 52370
T: 001. 006
A: ~~1000~~ 100496
OK to Pay: $551.49
Approved by: Marsha Cook
Marsha Cook, LUEP III
1-27-15

Tracy Cline LUEP III
TRACY CLINE 1/27/15

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliar
'Debarment and Suspension' of County Agreement Number 534079.

Marsha –
Please Review for my signature
Also please let RBF Project mgr that address is wrong
Thank you

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

A Baker Company
MICHAEL BAKER INTERNATIONAL

County of San Diego
Regional Education and Residential Sources Workgroup Support FY 14-15 - TO 45
RBF JN 142852

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*12/17 meeting prep, attendance, and notes			
Land Use Environmental Planner I	6.25	$88.27	$551.69
Total			**$551.69**
Grand Total	6.25		**$551.69**

RBF
A Baker Company
MICHAEL BAKER INTERNATIONAL

DPW-WPP
RECEIVED
4/30/15
Marsha Cook

29 T.S.C

Invoice Date: April 1, 2015
Project No. : 142852
Invoice No. : 903547

Tracy Cline
County of San Diego
Department of Public Works
5510 Overland Avenue
Suite 410
San Diego, CA 92123-1237
Mail Stop O-332

RBF Consulting,
a Michael Baker International Company
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Education and Residential Sources Workgroup Support FY 2014-15

Project No. : 142852
DPW Project Manager: Marsha Cook
Contract No.: 534079
Task Order No.: 45

Professional Consulting Services rendered pursuant to the Notice to Proceed, dated August 28, 2014, pursuant to Contract No. 534079, Task Order No. 45, relative to the "Regional Education and Residential Sources Workgroup Support for FY 2014-15" project

Professional Consulting Services from January 01, 2015 through March 29, 2015

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	ERS Workgroup Meeting Support	$1,300.00	$816.50	$1,633.01	$816.51
2.	Standard Work Products	$1,523.00	$66.20	$66.20	$0.00
3.	Regional Events	$327.00	$0.00	$0.00	$0.00
	Total Fee	**$3,150.00**		**$1,699.21**	**$816.51**
			Previous Fee Billing	$882.70	
			Total This Invoice		**$816.51**

P: 1002993
O: 5191 5
E: 52370
T: 001.006
A: 100496
OK to Pay: $ 816.51
Approved by:

*Invoice resubmitted on an RBF Letterhead. Previous was rejected by P&C for Michael Baker Letterhead. Thank You!

OK to pay!
Marsha Cook 4/29/15
Marsha Cook, LWEPIII
Tracy Cline LWEPIII 4/29/15
TRACY CLINE

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

A Baker Company
MICHAEL BAKER INTERNATIONAL

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 45
RBF Project Number 142852

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*3/18 ERS meeting prep, attendance, and notes.			
Land Use Environmental Planner I	9.25	$88.27	$816.51
Total			**$816.51**
Grand Total	9.25		**$816.51**

RECEIVED BY
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APR 16 2015

SIGNATURE
PRINT Cheryl Newell

Michael Baker
INTERNATIONAL

Invoice Date: April 1, 2015
Project No. : 142852
Invoice No. : 903547

Tracy Cline
County of San Diego
Department of Public Works
5510 Overland Avenue
Suite 410
San Diego, CA 92123-1237
Mail Stop O-332

RBF Consulting,
a Michael Baker International Company
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

Education and Residential Sources Workgroup Support FY 2014-15

Project No. : 142852
DPW Project Manager: Marsha Cook
Contract No.: 534079
Task Order No.: 45

Professional Consulting Services rendered pursuant to the Notice to Proceed, dated August 28, 2014, pursuant to Contract No. 534079, Task Order No. 45, relative to the "Regional Education and Residential Sources Workgroup Support for FY 2014-15" project

Professional Consulting Services from January 01, 2015 through March 29, 2015

Task	Description	Fee	Previous to Date	Billed to Date	Current
1.	ERS Workgroup Meeting Support	$1,300.00	$816.50	$1,633.01	$816.51
2.	Standard Work Products	$1,523.00	$66.20	$66.20	$0.00
3.	Regional Events	$327.00	$0.00	$0.00	$0.00
	Total Fee	**$3,150.00**		**$1,699.21**	**$816.51**
			Previous Fee Billing	$882.70	
				Total This Invoice	**$816.51**

P: 1002993
O: 50915
E: ~~001.00~~ 52370
T: 001.006
A: 100496
OK to Pay: $816.51
Approved by: Marsha Cook
Marsha Cook, LUEP III
4/20/15

Nancy S 4-20-15
Program Coordinator, Nancy Stalnaker

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079.

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

Michael Baker
INTERNATIONAL

County of San Diego
Regional Land Development Workgroup Support FY 14-15 - TO 45
RBF Project Number 142852

	Hours	Rate	Current Fee:
Task 1 - Workgroup Meeting Support			
*3/18 ERS meeting prep, attendance, and notes.			
Land Use Environmental Planner I	9.25	$88.27	$816.51
Total			**$816.51**
Grand Total	9.25		**$816.51**

RECEIVED BY
DPW - WPD

JUN 12 2015

SIGNATURE
PRINT Cheryl Newell

A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date: June 9, 2015
Project No. : 145901
Invoice No. : 908677

Tracy Cline
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-332

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

TO - 51 ERS Outreach FY 14-15

RBF Project No.: 145901
DPW Project Manager: Marsha Cook
Contract No.: 534079
Task Order No.: 51

Professional Consulting Services rendered pursuant to the Agreement, dated March 5th, 2015, relative to the Copermittee Program Education and Residential Sources Workgroup Model Outreach Plan project.

Professional Consulting Services from May 1, 2015 through May 31, 2015

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Five Year Outreach Plan	$10,000.00	29.83%	$2,982.81	$2,982.81
2.	Guidance Manual for Resident Neighborhood Assessment	$10,000.00	27.68%	$2,768.03	$2,768.03
3.	Outreach Booth Display	$20,000.00	0.88%	$176.54	$176.54
4	Outreach Materials and Promotional Items	$20,000.00	0.00%	$0.00	$0.00
	Total Fee	**$60,000.00**		**$5,927.38**	**$5,927.38**
			Previous Fee Billing	$0.00	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $5927.38
Approved by: Marsha Cook LUEP III
Marsha Cook 6-15-15

Total This Invoice $5,927.38

Tracy Cline LUEP III
6/15/15

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Scott Taylor

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

County of San Diego
ERS Outreach FY 14-15 - TO 51
RBF Project Number 145901

	Hours	Rate	Current Fee:
Task 1 - Five Year Outreach Plan			
*5/6 ERS Outreach Kickoff meeting prep, attendance, pdf annotation and notes.			
*Draft 5 Year Outreach Plan			
Project Manager	1	$148.58	$148.58
Civil Engineer	10	$122.33	$1,223.30
Land Use Environmental Planner I	18.25	$88.27	$1,610.93
Total			**$2,982.81**
Task 2 - Guidance Manual for Resident Neighborhood Assessment			
*Draft Residential Guidance			
Civil Engineer	10	$122.33	$1,223.30
Land Use Environmental Planner I	17.5	$88.27	$1,544.73
Total			**$2,768.03**
Task 3 - Outreach Booth Display			
*Begin booth display design			
Land Use Environmental Planner I	2	$88.27	$176.54
Total			**$176.54**
Grand Total	58.75		**$5,927.38**

A Baker Company
MICHAEL BAKER INTERNATIONAL

Invoice Date: July 7, 2015
Project No. : 145901
Invoice No. : 911745

Tracy Cline
Department of Public Works
County of San Diego
5510 Overland Avenue
Suite 410
San Diego, CA 92123
Mail Stop O-332

RBF Consulting,
(a Company of Michael Baker International)
5050 Avenida Encinas
Suite 260
Carlsbad, CA 92008-4386

TO - 51 ERS Outreach FY 14-15

RBF Project No.: 145901
DPW Project Manager: Marsha Cook
Contract No.: 534079
Task Order No.: 51

Professional Consulting Services rendered pursuant to the Agreement, dated March 5th, 2015, relative to the Copermittee Program Education and Residential Sources Workgroup Model Outreach Plan project.

Professional Consulting Services from June 1, 2015 through June 28, 2015

Task	Description	Fee	Percent Complete	Billed to Date	Current
1.	Five Year Outreach Plan	$10,000.00	69.48%	$6,948.44	$3,965.63
2.	Guidance Manual for Resident Neighborhood Assessment	$10,000.00	59.45%	$5,945.47	$3,177.44
3.	Outreach Booth Display	$20,000.00	81.46%	$16,291.07	$16,114.53
4	Outreach Materials and Promotional Items	$20,000.00	9.50%	$1,899.93	$1,899.93
	Total Fee	**$60,000.00**		**$31,084.91**	**$25,157.53**
			Previous Fee Billing	$5,927.38	

P: 1002993
O: 50915
E: 52370
T: 001.006
A: 100496
OK to Pay: $25,157.13
Approved by: Marsha Cook
MarshaCook LWEP III
7/8/15

M. Wah
MIKE WAH, 6PM
7/8/15

Total This Invoice $25,157.53

Consultant certifies that it, its principals, its employees, and its subcontractors are in compliance with Section 8.9D 'Debarment and Suspension' of County Agreement Number 534079

Tracy Cline LWEP III
TRACY Cline 7/8/15

Payment Remit Address:
RBF Consulting, PO Box 515714, Los Angeles, CA 90051-5195

County of San Diego
ERS Outreach FY 14-15 - TO 51
RBF Project Number 145901

	Hours	Rate	Current Fee:
Task 1 - Five Year Outreach Plan			
*Revised 5 Year Outreach Plan			
Project Manager	2	$148.58	$297.16
Civil Engineer	17	$122.33	$2,079.61
Land Use Environmental Planner I	18	$88.27	$1,588.86
Total			**$3,965.63**
Task 2 - Guidance Manual for Resident Neighborhood Assessment			
*Revised Residential Guidance			
Project Manager	2	$148.58	$297.16
Civil Engineer	12	$122.33	$1,467.96
Land Use Environmental Planner I	16	$88.27	$1,412.32
Total			**$3,177.44**
Task 3 - Outreach Booth Display			
Project Manager	2	$148.58	$297.16
Civil Engineer	1	$122.33	$122.33
Land Use Environmental Planner I	8	$88.27	$706.16
Webster Design			$8,003.44
Banners and Table Cloths			$3,583.44
Additional Banners			$3,402.00
Total			**$16,114.53**
Task 4 - Outreach Materials and Promotional Items			
*Electronic Newsletter			
*PowerPoint Presentation			
*Letter to Residents			
Project Manager	2	$148.58	$297.16
Civil Engineer	3	$122.33	$366.99
Land Use Environmental Planner I	14	$88.27	$1,235.78
Total			**$1,899.93**
Grand Total	97		**$25,157.53**

Webster Design

1357 Fern Place

Vista, Ca 92081

760-716-9989

websterdesign.net

Number: 9352

Date:6/23/15

Terms: Net 30 Days

Description:

Art Services for: RBF Consulting
Attn: Scott Cartwright

WD Job #9153 San Diego County Stormwater Education Illustrations
Develop 10 new illustrations depicting residential stormwater pollution problems and modified behavior solutions

B&W Concept Sketches (19.6 hrs @ $80.93/hr)	$1,586.23
Revisions to Sketches (2.75 hrs @ $80.93/hr)	222.56
Final B&W Line Art and scans (29.75 hrs @ $80.93/hr)	2,407.67
Final Color Renderings (46.8 hrs @ $80.93/hr)	3,787.52

Subtotal	$ 8,003.98
Tax	NA
Total	$ 8,003.98

Thanks for your business

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Graphics Printing

Your One Stop Full Color Printer

969 Paseo La Cresta I Chula Vista, CA 91911
619-730-6190 Fax 619.-320-9138

GRAPHIC DESIGN · WEB DESIGN · PRINT SERVICES · SIGNS

Invoice No. 3018

email:info@ cvgraphicsandprinting.com

INVOICE

Customer

Name	Michael Baker International - Hilary Potter
Address	9755 Clairemont Mesa Blvd Suite 100
City	San Diego, CA. 92124-1324
Phone	858.810.1404

Date	6/12/16
PO No.	
Rep	Sergio
FOB	

Description		TOTAL
TABLE CLOTHS		
(21) Standard 6-ft full color rectangle tablecloth	$102.60 each	$2154.60
BANNERS		
(21) 3'-0" x 6'-0" full color banners with grommets	$68.04 each	$1428.84

Sub Total	$3583.44
Delivery	
Taxes	included
Total Balance Due (Upon Completion)	$3583.44
DEPOSIT DUE	
BALANCE DUE	

Please make check payable to CV Graphics and Printing

Credit Cards accepted VISA DISCOVER

Accounts not paid within 15 days are subject to late fees and a finance charge of 1.5% per month, or the maximum rate permitted by law.

CHULA VISTA GRAPHICS & PRINTING
Image is Everything

Invoice No. 3044

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619-730-6190 Fax 619-320-9138
email: info@ cvgraphicsandprinting.com

GRAPHIC DESIGN · WEB DESIGN · PRINT SERVICES · SIGNS

INVOICE

Customer

Name	Michael Baker International - Madison Roberts
Address	9755 Clairemont Mesa Blvd Suite 100
City	San Diego, CA. 92124-1324
Phone	858.810.1404

Date	6/30/15
PO No.	
Rep	Sergio
FOB	

Description		TOTAL
BANNERS		
(50) 3'-0" x 6'-0" full color banners with grommets	$68.04 each	$3402.00

Sub Total	$3402.00
Delivery	
Taxes	included
Total Balance Due (Upon Completion)	$3402.00
Deposit DUE	$1701.00
Balance DUE (upon completion)	$1701.00

Please make check payable to CV Graphics and Printing

Credit Cards accepted VISA DISCOVER

Accounts not paid within 15 days are subject to late fees and a finance charge of 1.5% per month, or the maximum rate permitted by law.

DECLARATION OF SERVICE BY EMAIL

I, the undersigned, declare as follows:

I am a resident of the County of Sacramento and I am over the age of 18 years, and not a party to the within action. My place of employment is 980 Ninth Street, Suite 300, Sacramento, California 95814.

On March 29, 2024, I served the:

- **Current Mailing List dated March 28, 2024**
- **Notice of Waiver of Procedural Requirements, Extension Request Approval, and Postponement of Hearing issued March 29, 2024**
- **Claimants' Comments on the Draft Proposed Decision and Parameters and Guidelines (Volumes 1-14) filed February 20, 2024**

  San Diego Regional Water Quality Control Board Order No. R9-2007-0001, Permit CAS0108758, Parts D.3.a.(3)(b)(iii), D.5.a.(1), D.5.a.(2), D.5.b.(1)(a), D.5.b.(1)(b)(iii-vi), D.5.b.(1)(c), D.5.b.(1)(d), D.5.b.(2), D.5.b.(3), E.2.f., E.2.g., F.1., F.2., F.3., I.1., I.2., I.5., J.3.a.(3)(c)(iv)-(viii), (x)-(xv), the first sentence of L.1. as it applies to the newly mandated activities, and L.1.a.(3)-(6), 07-TC-09-R County of San Diego, Cites of Carlsbad, Del Mar, Imperial Beach, Lemon Grove, Poway, San Marcos, Santee, Solana Beach, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, San Diego, and Vista, Claimants

by making it available on the Commission's website and providing notice of how to locate it to the email addresses provided on the attached mailing list.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration was executed on March 29, 2024 at Sacramento, California.

Jill Magee

Jill Magee
Commission on State Mandates
980 Ninth Street, Suite 300
Sacramento, CA 95814
(916) 323-3562

COMMISSION ON STATE MANDATES

Mailing List

Last Updated: 3/28/24

Claim Number: 07-TC-09-R

Matter: San Diego Regional Water Quality Control Board Order No. R9-2007-0001 Permit CAS0108758 Parts D.1.d.(7)-(8), D.1.g., D.3.a.(3), D.3.a.(5), D.5, E.2.f, E.2.g, F.1, F.2, F.3, I.1, I.2, I.5, J.3.a.(3)(c)iv-viii & x-xv, and L.

Claimants: City of Carlsbad
City of Chula Vista
City of Del Mar
City of Encinitas
City of Escondido
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of Oceanside
City of Poway
City of San Diego
City of San Marcos
City of Santee
City of Solana Beach
City of Vista

TO ALL PARTIES, INTERESTED PARTIES, AND INTERESTED PERSONS:

Each commission mailing list is continuously updated as requests are received to include or remove any party or person on the mailing list. A current mailing list is provided with commission correspondence, and a copy of the current mailing list is available upon request at any time. Except as provided otherwise by commission rule, when a party or interested party files any written material with the commission concerning a claim, it shall simultaneously serve a copy of the written material on the parties and interested parties to the claim identified on the mailing list provided by the commission. (Cal. Code Regs., tit. 2, § 1181.3.)

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RECEIVED
February 20, 2024
Commission on
State Mandates

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John Quenzer

MS, CPSWQ, QSD/QSP

Professional Experience

D-MAX Engineering, Inc., 2004 to present

City of San Diego, Environmental Services Division, 2001-2002

Education

Johns Hopkins University, M.S., Environmental Engineering and Science, 2014

University of California, San Diego, B.S., Environmental Chemistry, 2002

Certifications/Registrations

Certified Professional in Storm Water Quality (CPSWQ) #693, 2011

Qualified SWPPP Developer

(QSD)/Qualified SWPPP Practitioner (QSP) #24039, 2015

Profile Summary

John Quenzer is a Principal Scientist who has been involved in a variety of water quality projects in San Diego County with over 16 years of experience to a similar scope of services. Mr. Quenzer possesses extensive experience in dry weather source investigations and Water Quality Improvement Plan (WQIP) development, implementation, and reporting. He has also prepared Jurisdictional Runoff Management Plans (JRMPs) for over half of the San Diego Copermittees.

Relevant Experience

City of Escondido, Storm Water Services, Escondido, CA, Project Manager. Manages dry weather outfall monitoring and follow-up investigations, including isotope analysis to assess groundwater contribution. Is working on an MS4 outfall inventory update for the City. Technical advisor for Trash Amendments planning for the City, including selecting locations for full capture systems. Helped the City update its JRMP in response to the most recent MS4 Permit.

City of Escondido, Trash Order Implementation Planning and Mapping, Escondido, CA, Project Manager. Oversaw the preparation of comparison of the Track 1 and Track 2 compliance pathways. Once the City selected Track 1, assisted with criteria for Full Capture System location selection, cost estimations for the 10-year compliance timeframe, submittals to the Regional Board, and alternative land use swapping methodology. Currently, he is overseeing the development of a pilot monitoring study for large Connector Pipe Screens that treat multiple upstream storm drains that drain Priority Land Uses.

City of El Cajon, Storm Water Services, El Cajon, CA, Project Manager. Manages dry weather outfall monitoring and follow-up investigations, including major ion analyses to assess groundwater contribution and HF183 analyses to assess potential contributions from homeless activity. Prepared Trash Amendments compliance approach and the City's JRMP.

City of Santee, Storm Water Services, Santee, CA, Project Manager. Manages dry weather outfall monitoring and follow-up investigations, including isotope and major ion analyses to assess groundwater contribution. Prepared QAPPs and completed water quality monitoring for Forester Creek, Magnolia Channel, and Mast Park projects.

City of Encinitas, Storm Water Program Support, Encinitas, CA, Project Manager. Prepared JRMP update, Trash Amendments compliance track analysis study, and Trash Amendments Implementation Plan. Prepared a revised MS4 outfall inventory and MS4 outfall monitoring procedures for JRMP update. Also prepared responses to Regional Board requests or notices related to equestrian facilities and irrigation runoff.

City of Chula Vista, Storm Water Services, Chula Vista, CA, Project Manager. Manages dry weather outfall monitoring and follow-up investigations, including isotope analysis and major ion analyses to assess groundwater contribution. Technical advisor for Trash Amendments planning for the City, including preparing the City's Implementation Plan. Helped the City update its JRMP in response to the most recent Regional MS4 Permit.

County of San Diego, As-Needed Consulting and Inspection Services, San Diego, CA, Project Manager. Managed task orders including dry weather HF183 source investigation follow-ups, WQIP and JRMP annual reporting, industrial and commercial business source prioritization and inspections, septic rebate and education program to address human sources of bacteria, and other education/outreach efforts to target key pollutants of concern.

City of National City, Storm Water Program, National City, CA, Project Manager. Mr. Quenzer has managed the National City Storm Water Services project since 2006. The project includes developing and implementing all types of jurisdictional and watershed storm water programs. Notable activities have included a City-wide trash assessment pilot project, residential inspection pilot projects, JRMP development and annual reporting, giving presentations to the Regional Board representing the City in audits, and developing and implementing watershed activities. He also manages the City's water quality monitoring programs, including wet weather monitoring for grant effectiveness assessment. Mr. Quenzer has represented the City in the San Diego Bay WURMP workgroup since 2004, including helping 2008 San Diego Bay WURMP development, activity implementation, reporting, and meeting representation. He also represents the City of National City in permit reissuance proceedings, the Paleta Creek TMDL development process, the San Diego Bay WURMP workgroup, and the regional monitoring workgroup.

City of Lemon Grove, Storm Water Services, Lemon Grove, CA, Project Manager. Manages dry weather outfall monitoring and follow-up investigations, including isotope analysis to assess groundwater contribution. Developed WQIP strategies and prepares summary of strategy implementation and progress to goals for WQIP annual reports. Supervised inspections of industrial and commercial businesses, including targeting businesses likely to be sources of WQIP highest priority pollutants.

County of San Diego, Storm Water Monitoring and Reporting, San Diego, CA, Task Leader. Prepared progress to goals, strategy implementation, and dry weather flow source analysis components of San Luis Rey, San Diego River, and Santa Margarita WQIP annual reports.

Worked with City of Santee and San Diego River Consultation Committee to update Santee's WQIP goals to make them more achievable. Currently working with San Diego River group on compliance approach for dry weather bacteria TMDL goals.

City of Poway, Poway Storm Water Services, Poway, CA, Project Manager. Oversees annual MS4 outfall monitoring and source investigations. Recent source investigations have included major ion analyses and isotope analyses to assess groundwater contribution to flow at outfalls. Oversees WQIP annual reporting and is working with the City to develop goals and strategies related to adding nutrients in Lake Hodges as a highest priority for the San Dieguito WMA. Managed annual effectiveness monitoring for five regional detention basins consisting of wet weather composite samples, outflow samples, and statistical analysis of collected data.

City of Imperial Beach. San Diego Bay and Tijuana River WQIP Monitoring and Reporting, Imperial Beach, CA, Watershed Coordinator. Watershed coordinator for the San Diego Bay and Tijuana River WQIP groups. Coordinates annual reporting and regularly communicates with the Regional Board staff on behalf of the watershed groups. Has represented the groups in several Consultation Panel meetings, including for WQIP updates to change the highest priority and numeric goals for the County of San Diego and to add a new hydromodification exemption.

City of San Diego, As-Needed Storm Water Services, San Diego, CA, Task Leader. Contributed to water quality and flood control modeling for the Los Peñasquitos Watershed Master Plan. Prepared SWMM models to evaluate feasibility of storm water capture at several sites in the City. Oversees HEC-RAS hydraulic modeling to support channel maintenance planning. Prepares strategy reporting and assessment of progress to goals for Water Quality Improvement Plan (WQIP) annual reports. Is developing strategies and goals for San Dieguito WQIP update that will add nutrients in Lake Hodges as a new highest priority. Prepared City's JRMP and JRMP annual reports.

City of Oceanside, Storm Water Services, Oceanside, CA, Project Manager. Helped the City negotiate the terms of a TMDL alternative approach to eutrophication in the Loma Alta Slough, including goals and strategies, along with our sub, Larry Walker Associates. Oversaw dry weather outfall monitoring for the City, including flow source investigations. Is working with the City to plan for Trash Amendments compliance, including identifying locations to install full capture systems. Developed the City's JRMP.

City of Menifee Storm Water Services. Has assisted with developing strategies to control nutrients for the City of Menifee since nutrients are the proposed highest priority water quality condition in the Santa Margarita Watershed Management Area.

San Diego Bay Watershed Group Coordinator. Following the adoption of the Municipal Permit in 2013, the cities of National City, Chula Vista, and Lemon Grove took on the role of co-leads for the San Diego Bay Watershed during the development of the Water Quality Improvement Plan. Mr. Quenzer served as the watershed co-coordinator on behalf of National City from 2013-2015, along with the representatives from the cities of Chula Vista and Lemon Grove. Currently, he serves as the San Diego Bay Watershed group coordinator, but does not represent National City. Work completed as part of the watershed co-coordinator role has included preparing meeting agendas, facilitating discussion during meetings, communicating

with the Regional Board, representing the watershed group in public meetings, working with the contract manager and other Copermittees to outside meetings to achieve consensus on Water Quality Improvement Plan content and overall group direction, and coordinating submittal of Permit-required deliverables.

City of Lemon Grove Storm Water Services, Lemon Grove, CA. Prepared updated JRMP, including construction BMP requirements and plan review procedures. Supervised inspections of industrial, commercial, and municipal facilities and construction sites. Preparing updated industrial and commercial inventory management and prioritization procedures and inspection and enforcement procedures for the JRMP update. Also developed WQIP strategies for the City. Has completed water quality monitoring for the City, including monitoring of storm water discharges from construction sites.

City of San Diego, JRMP Update, San Diego, CA. Update program procedures to comply with 2013 Permit requirements and integrate strategies from the City's six WQIPs. Prepare and document jurisdictional monitoring procedures; revise BMP requirements to address key sources of pollutants; and develop inventory and prioritization procedures for construction, residential, industrial, commercial, and municipal sources.

City of El Centro Storm Water Services, El Centro, CA. Prepared jurisdictional Storm Water Management Plan, MS4 outfall inventory, construction BMP requirements, and post-construction BMP requirements manual and submittal template. Trained City staff on erosion control plan review, post-construction BMP plan review, and construction inspections. Prepared grading and storm water ordinances. Prepares annual workplan describing tasks necessary to comply with requirements and provides direction to City staff during regular meetings. Also performing BMP and flood control basin sizing calculations and conceptual design for new aquatic center.

City of Oceanside, Storm Water Services, Oceanside, CA, Project Manager. JRMP updates in 2008 and 2015 to comply with new Permit requirements and integrate strategies from watershed plans. Prepare and document jurisdictional monitoring procedures; revise BMP requirements to address key sources of pollutants; and develop source inventories and prioritization procedures. Attended meetings with Regional Board staff for program audits and during Loma Alta resolution development process. Has also managed MS4 outfall monitoring for the City.

City of Poway, Storm Water Services Poway, CA, Project Manager. Managed annual effective monitoring for 5 regional detention basins consisting of wet weather composite samples, outflow samples, and statistical analysis of collected data. Oversee annual MS4 outfall monitoring and source investigations and wet weather sampling, including additional sampling to identify sources of key pollutants, at the City's public works maintenance yard. Has represented the City in audits with Regional Board staff and prepared technical reports on behalf of the City. Has prepared jurisdcitional annual reports since 2004 and the 2002, 2008, and 2014-2015 JRMPs.

Upper San Marcos Creek Nutrient Investigation Study, Project Manager. Prepared QAPP and monitoring plan and oversaw field sampling and reporting. Study was targeted at

identifying spatial and temporal patterns in nutrient loadings among the City's major drainage basins and at identifying contributions from Phase II jurisdictions. The study included both wet and dry weather sampling.

City of National City, Storm Water Program, National City, CA, Project Manager. Mr. Quenzer has managed the National City Storm Water Services project since 2006. The project includes developing and implementing all types of jurisdictional and watershed storm water programs. Notable activities have included a City-wide trash assessment pilot project, residential inspection pilot projects, JURMP development and annual reporting, giving presentations to the RWQCB, representing the City in audits, and developing and implementing watershed activities. He also manages the City's water quality monitoring programs, including wet weather monitoring for grant effectiveness assessment. Mr. Quenzer has represented the City in the San Diego Bay WURMP workgroup since 2004, including helping 2008 San Diego Bay WURMP development, activity implementation, reporting, and meeting representation. He also represents the City of National City in permit reissuance proceedings, the Paleta Creek TMDL development process, the San Diego Bay WURMP workgroup, and the regional monitoring workgroup.

Storm Water Program Development and Annual Reporting. Project manager for the JURMP updates for the cities of Chula Vista, National City, El Cajon, Santee, La Mesa, Poway, and Oceanside to meet the requirements of Municipal Permit Order No. 2007-0001. Responsibilities included project coordination, preparing and reviewing JURMP sections, and overall quality control for the projects. These projects included developing inspection forms and procedures, inventory prioritization protocols, BMP requirements, maintenance verification forms and protocols, and effectiveness assessment metrics. Mr. Quenzer has also prepared annual storm water program reports for the cities of National City, La Mesa, Poway, and Santee. Duties included coordinating with various City departments to gather information, organizing collected data, and developing program effectiveness assessments.

SUSMP (WQTR) Technical Reviews. Reviewing SUSMP project submittals for several jurisdictions in San Diego County, including the cities of Poway, National City, and La Mesa. Technical reviews include consideration of hydrology, hydromodification modeling, water quality impacts, thorough analyses of proposed low impact development, source control best management practices (BMP), and treatment control BMPs designs, in light of the anticipated pollutants generated and any downstream impairments to receiving waters. Recommendations and conclusions are provided to the jurisdiction at the conclusion of the review. In addition to formal reviews for development submittals, Mr. Quenzer has also completed special SUSMP-related project research to investigate discrepancies between plans and sites as constructed for the cities of San Diego, National City, and Poway.

Water Quality Monitoring. Conducting and supervising data analysis, data quality assurance, and report preparation and review. He has worked on the Dry Weather Monitoring Programs for the County of San Diego, and cities of Chula Vista, Carlsbad, El Cajon, San Marcos, Santee, Poway, National City, La Mesa, Lemon Grove, Oceanside, and Vista. . He is currently managing a special study to identify and evaluate nutrient sources and loading trends in the Upper Lake San Marcos Watershed for the City of San Marcos. He has also coordinated effectiveness monitoring

for the City of Santee Forester Creek Improvement Project as part of a State grant. The project included water quality monitoring, including a sampling plan, a Quality Assurance Project Plan, a Project Assessment and Evaluation Plan, and three Annual Monitoring Reports. These included sampling program design and quality assurance/quality control procedures, as well as analyses of collected data. Mr. Quenzer also helped design and evaluate the results of special studies in the cities of Poway, La Mesa, Vista, and El Cajon.

City of La Mesa and National City, 2009 Model SUSMP Adaptation, Project Coordinator. For the cities of La Mesa and National City, he coordinated the revision of ordinance and BMP manual language to be consistent with the new Countywide Model SUSMP, approved by the RWQCB in 2009. The adaptation included meetings with city storm water and legal staff regarding jurisdiction-specifc requirements and preferences.

SUSMP Technical Reviews, Project Coordinator. Reviewing SUSMP project submittals for several jurisdictions in San Diego County. Technical reviews include consideration of hydrology, hydromodification modeling, water quality impacts, thorough analyses of proposed low impact development, source control BMP, and treatment control BMPs designs, in light of the anticipated pollutants generated and any downstream impairments to receiving waters. Recommendations and conclusions are provided to the jurisdiction at the conclusion of the review.

Construction SWPPP Technical Reviews, Project Coordinator. Reviewing SWPPPs for the cities of National City and Poway. Technical reviews of plans for private and public projects include assessments of site-specific activities, materials, and proposed erosion control, sediment control, and non-storm water BMPs. Recommendations and conclusions are provided to the jurisdiction at the conclusion of the review.

Data Management. Designing databases and managing tasks for seven jurisdictions in San Diego County. He conducts quality control and quality assurance on water quality monitoring and compliance inspection data, including managing relevant databases. Mr. Quenzer redesigned industrial and commercial inspection databases to facilitate annual reporting. He developed and prioritized inventories of facilities based on business license listings submitted by municipalities. Mr. Quenzer has created databases tracking the receipt of inspection forms, inspection results, and most pertinent findings at each inspection. Has also developed data management systems for field sampling data, such as that collected in support of the Forester Creek Improvement Project in Santee, and developed the City of National City's SUSMP inspection database.

Preparation of WURMPs. Active participant in San Diego Bay Watershed Urban Runoff Management Program (WURMP) workgroup; participated in reviewing and providing comments for RWQCB Municipal Permit Order No. 2007-0001. Mr. Quenzer has been one of the primary authors of San Diego Bay WURMP Annual Reports since 2004.

Preparation of JURMPs and Annual Reporting. Project manager for the JURMP updates for the cities of Chula Vista, National City, El Cajon, Santee, La Mesa, Poway, Oceanside to meet the requirements of Municipal Permit Order No. 2007-0001. Responsibilities included project coordination, preparing and reviewing JURMP sections, and overall quality control for the

projects. Mr. Quenzer has also prepared annual storm water program reports for the cities of La Habra, National City, La Mesa, and Santee. Duties included coordinating with various City departments to gather information, organizing collected data, and developing program effectiveness assessments. He has also prepared sections of the City of Poway JURMP Annual Report, including the Effectiveness Assessment.

Dry Weather Monitoring Programs. Conducting and supervising data analysis, data quality assurance, and report preparation and review. He has worked on the Dry Weather Monitoring Programs for the cities of Chula Vista, Carlsbad, El Cajon, San Marcos, Santee, Poway, National City, La Mesa, Lemon Grove, Vista, and County of San Diego. He is an active member of the Regional Monitoring Workgroup.

Additional Monitoring Programs and Special Studies. Preparing several reports for the City of Santee Forester Creek Improvement Project water quality monitoring, including a sampling plan, a Quality Assurance Project Plan, a Project Assessment and Evaluation Plan, and three Annual Monitoring Reports. These included sampling program design and QA/QC procedures, as well as analyses of collected data. Mr. Quenzer also helped design and evaluate results from special studies in the cities of Poway, La Mesa, and El Cajon.

Storm Water Quality Inspections. Coordinating and conducting industrial, commercial, construction, watershed, and treatment control BMP inspection programs for various jurisdictions throughout San Diego and Orange Counties. Currently oversees the City of San Diego's industrial and commercial, watershed-focused, and treatment control BMP inspection programs. Also designed and supervised treatment control BMP inspection programs for the cities of Poway, La Mesa, and National City, and the Fats, Oils, and Grease inspections for the City of La Mesa. Duties include quality control, report preparation, assessing BMPs, interacting with and providing education to business owners, and developing recommendations for further action. Mr. Quenzer is an active member of the regional Copermittee Industrial/Commercial Workgroup.

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

September 5, 2007
Project No. 200726W-1

Mr. Malik Tamimi
City of La Mesa
8130 Allison Avenue
P.O. Box 937
La Mesa, CA 91944-0937

Re: Proposal to Prepare FY 2006/2007 JURMP Annual Report for the City of La Mesa

Dear Malik:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of La Mesa in the preparation of the fiscal year 2006/2007JURMP Annual Report. The scope of services associated with this project includes the following tasks:

Task 1: Review of RWQCB Comments on FY 2005/2006 JURMP Annual Report
Once they become available, we will review the Regional Water Quality Control Board's (RWQCB) comments on the last JURMP Annual Report to identify areas of concern to the RWQCB. We will structure the 2006/2007JURMP Annual Report to address comments on last year's report where applicable.

Task 2: Coordinate Information Transfer with City Personnel
We will contact several City departments to acquire information regarding the program implementation and special activities carried out during 2005/2006. Assistance from City storm water staff may be necessary in determining who should be contacted and facilitating information transfer. We will stay in contact with the City's departments after the initial questions are supplied to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3.

Task 3: Prepare JURMP Annual Report
This task includes the preparation of the JURMP Annual Report in accordance with the San Diego Municipal Storm Water Permit (Order 2001-01) Section I. Although the new Municipal Permit (Order No. R9-2007-0001) has been adopted by the RWQCB, the activities in FY 2006/2007 were conducted in accordance with Order 2001-01 requirements, and Order 2001-01 also determines the reporting requirements for that time period. The JURMP Annual Report preparation includes addressing the following:

- ***Description of Activities for the Following Program Components:***
  - Municipal
  - Industrial
  - Commercial
  - Residential
  - Land-use planning for New Development and Redevelopment
  - Construction
  - Illicit Discharge Detection and Elimination
  - Education
  - Public Participation

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

- ***Documentation/Accounting of Activities***
  - Illicit Discharges Report
  - Inspections Conducted
  - Enforcement Actions
  - Education Efforts
- ***Fiscal Analysis***
- ***Analysis of Program Effectiveness***
  - Discussion of Outcome Levels 1-6, as applicable
  - Preparation of associated figures
  - Completion of associated tables
- ***JURMP Revisions***
- ***Special Investigations***
- ***Preparation of Appendices, including conversion of relevant records to electronic format***

We will first prepare a draft JURMP Annual Report for City review. After receiving City comments, we will incorporate them into a final report. Two (2) hard copies and four (4) electronic copies of the final report will be delivered to the City.

Project Schedule and Costs for Services
Based on our previous experience with the City, we estimate that a draft of the JURMP Annual Report can be provided to the City by December 7, 2007. This should provide ample time for City review and incorporation of comments prior to the mid January 2008 deadline for submittal to the County of San Diego. We propose completing the aforementioned tasks on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $18,000. This cost incorporates some savings in the information collection phase due to preparing both the JURMP and the JURMP Annual Report.

If you have any questions regarding this proposal, please contact me at (858) 586-6600 x22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

La Mesa 2006/2007 JURMP Annual Report

	Project Manager	Project Scientist	Staff Scientist	Clerk	ODC	Total
		Rates ($/hr)				
TASKS	$ 130.00	$ 105.00	$ 85.00	$ 55.00		
		HOURS				
1) Respond to RWQCB 2005/06 AR Comments						
Review information, write response		6				$630
					Subtotal	**$630**
2) Coordinate Information Transfer with City*						
Planning/Develop List of Questions		2	4			$550
Call and meet with City Personnel		2	10			$1,060
Organize information, follow-up as needed		2	4			$550
					Subtotal	**$2,160**
					Task 1+ Task	**$2,790**
3) Prepare JURMP Annual Report						
Exec Summary & Intro		4				$420
Municipal		3	13			$1,420
Industrial		4	10			$1,270
Commercial		4	10			$1,270
Residential		1	8			$785
New Development/Redevelopment		4	10			$1,270
Construction		3	10			$1,165
IC/ID		3	12			$1,335
Education		2	10			$1,060
Public Participation		1	6			$615
Analysis of Program Effectiveness	1	10	8	4		$2,080
Fiscal Analysis		0.5	1			$138
Special Investigations		1.5	3			$413
Conclusions			0.5			$43
Overall Review	4					$520
Address Comments from City		4				$420
Report Reproduction and Delivery		1	1	12	$150	$1,000
					Subtotal	**$15,223**
Totals	5	58	120.5		**Grand Total**	**$18,013**

*Totals are lower than normal because information for the Annual Report will be collected concurrently with information for the JURMP.

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

May 13, 2008
Project No. 200826W

Mr. Malik Tamimi
Environmental Specialist
City of La Mesa
8130 Allison Avenue
La Mesa, CA 91941

Re: Proposal to Prepare FY 2007/2008 JURMP Annual Report for the City of La Mesa

Dear Malik:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of La Mesa in the preparation of the fiscal year 2007/2008 JURMP Annual Report. The scope of services associated with this project includes the following tasks:

Task 1: Review and Respond to RWQCB Comments on FY 2006/2007 JURMP Annual Report
Once they become available, we will review the Regional Water Quality Control Board's (RWQCB) comments on the last JURMP Annual Report to identify areas of concern to the RWQCB. We will assist the City in preparing a response to the comments and will structure the 2007/2008 JURMP Annual Report to address the comments where applicable. We assume that the level of comments received will be similar to that received last year and that any comments received will not result in major restructuring of the report or additional analysis beyond the scope of what is described in Task 3 below.

Task 2: Coordinate Information Transfer with City Personnel
We will contact several City departments to acquire information regarding the program implementation and special activities carried out during 2007/2008. Assistance from City storm water staff may be necessary in determining who should be contacted and facilitating information transfer. We will need to update our lists of questions based on new Municipal Permit (RWQCB Order No. R9-2007-0001) requirements. We also anticipate that gathering information for this report will be somewhat more difficult than in previous years due to the changes in questions and the earlier deadline for receiving information. We will stay in contact with the applicable City staff after the initial questions are supplied to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3. We assume that this task will mainly be conducted over the phone and through email, but eight hours, including travel time, are also allocated for meeting in person.

Task 3: Prepare JURMP Annual Report
This task includes the preparation of the JURMP Annual Report in accordance with both the previous and current versions of the San Diego Municipal Storm Water Permit (Order 2001-01 and Order No. R9-2007-0001, respectively). The City was required to begin implementing the requirements of Order No. R9-2007-0001 no later than March 24, 2008, but some program elements or portions of program elements may have begun operating under the new program designs earlier. Determining the dates when the new programs were implemented will be part of the information collection process in Task 2.

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Because the reporting requirements for the two different orders are different, most sections of the Annual Report will need to discuss how the program element met the requirements of each permit and when the Order No. R9-2007-0001 program was fully implemented. The following components and tasks will be included in the JURMP Annual Report.

- **Global changes**
  - Update order, titles, and content of sections and subsections to match the regionally standardized JURMP Annual Report format submitted to the RWQCB in July 2007 and the JURMP update completed in March 2008.
  - Include discussions of how each program element met the applicable requirements of both Order 2001-01 and Order No. R9-2007-0001.
- **Sections**
  - Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.
  - Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, a reference to any RWQCB comments on the City's 2006/2007 JURMP Annual Report (if applicable, the response will be included as an attachment), and a summary list of key achievements.
  - Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's Standard Urban Storm Water Mitigation Plan (SUSMP); treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
    - An updated treatment control BMP inventory.
    - The number of treatment control BMPs inspected, including a summary of inspection results and findings.
    - A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.
    - Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
    - A listing of any projects which received a SUSMP waiver.
    - A description of implementation of any SUSMP waiver mitigation program.
    - A description of Hydromodification Management Plan (HMP) development collaboration and participation.
    - A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
    - A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.

- A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.
- The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.

- Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.
  - Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
  - A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.
- Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Order No. 2007-0001 includes a number of changes in requirements for municipal programs, many of which require significantly more detailed data than has been available in the past. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.
  - Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
  - Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
  - Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
  - Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.

- Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2007/2008.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.

- Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
  - A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
- Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - A description of collaborative efforts taken to develop and implement the Regional Residential Education Program.
  - A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
- Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Note that we plan to reference the Dry Weather Monitoring Program report rather than including a summary of the data as has been done in past years. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.
  - A summary of changes to the Dry Weather Monitoring Program, including the addition of trash assessment and follow-up of laboratory exceedances within two business days.

- Education: will include descriptions of various educational efforts by the City. The new Municipal Permit emphasizes presenting educational efforts categorized by type of target audience. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - A description of education efforts conducted for each target community
    - Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges
- Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. The requirements of this section are not substantially different from what was required under RWQCB Order 2001-01.
- Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. This section should have the same format as the fiscal analysis sections for previous annual reports have had; new fiscal analysis reporting requirements are being developed but are not likely to be available before January 2009.
- Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared. Order No. R9-2007-0001 requires a significantly more detailed assessment of program effectiveness than what had previously been required.
- Special Investigations: will include a description of the City's additional monitoring program and of the City's additional source investigation efforts in the University Drainage Basin. The description of the additional monitoring efforts will involve presenting graphs, tables, and/or maps that have previously been prepared for the City along with a brief text summary to explain how the results were obtained and when monitoring was conducted. We anticipate that the City's additional inspections in the light industrial area in the Alvarado Drainage Basin will be described in the industrial/commercial section, but they can be described here instead if the City prefers.
- Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.
- Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.

- **Report Preparation: Draft**
    - We will prepare one (1) hard copy of a draft JURMP Annual Report for City review. An electronic copy of the report text may also be provided if desired.
    - We will also prepare one volume of attachments for the draft JURMP Annual Report. In past years the amount of attachments has been substantial enough that a separate volume is required. Attachments generally include items such as educational materials, inspection forms, and Dry Weather Monitoring Program reports.
- **Responding to City Comments on the Draft Report**
    - We anticipate receiving one round of technical comments on the draft report from the City. We anticipate that these comments will be sent as written

comments on the hard copy of the report and will be sufficiently detailed that additional rounds of comments will not be necessary. Additional rounds of comments and/or comments on writing style in which the specific alternative wording requested is not provided in the comments may be incorporated on an additional, as-needed basis.

- **Report Preparation: Final**
  - We will prepare and deliver two (2) hard copies and four (4) electronic copies of the final JURMP Annual Report and attachments. Our understanding is that all electronic files, including attachments and the certification statement, must be converted to pdf format and merged into a single pdf document in order to meet RWQCB paperless office requirements.

Project Schedule and Costs for Services

We understand that the City would prefer to receive the final report by September 10, 2008. This is well in advance of the final deadline for submittal to the County (end of September), so we suggest beginning work before July 1, 2008. While not all necessary data will be available before July 1, we will be able to do initial preparation of questions and start collecting the information that is available at that point. We propose the following schedule.

- Notice to Proceed: June 16, 2008
- Deliver Draft Report to City: August 20, 2008 (9.5 weeks)
- Receive Review Comments from City: September 1, 2008 (1.5 weeks)
- Deliver Final Report to City: September 10, 2008 (1.5 weeks)

We propose completing the aforementioned tasks on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $27,620. Please see the attached spreadsheet for a detailed breakdown of our estimated costs.

If you have any questions regarding this proposal, please contact me at (858) 586-6600 x22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

La Mesa 2007/2008 JURMP Annual Report

TASKS	Project Manager	Project Scientist	Asst Project Scientist	Clerk	ODC	Total
		Rates ($/hr)				
	$ 140.00	$ 110.00	$ 95.00	$ 55.00		
		HOURS				
1) Respond to RWQCB 2006/07 AR Comments						
Review Information, Write Response		6				$660
					Subtotal	**$660**
2) Coordinate Information Transfer with City						
Planning/Develop List of Questions	1	4	3			$865
Call and Email City Personnel		6	8			$1,420
Meet with City Personnel		8			$41	$921
Organize Information, Follow-up as Needed	1	7	16			$2,430
					Subtotal	**$5,636**
3) Prepare JURMP Annual Report						
Executive Summary	1	3				$470
Introduction		2				$220
New Development/Redevelopment	2	4	12			$1,860
Construction	1	3	14			$1,800
Municipal	2	4	18			$2,430
Industrial/Commercial	1	4	14			$1,910
Residential		2	8			$980
IDDE	1	3	10			$1,420
Education		2	12			$1,360
Public Participation		2	6			$790
Fiscal Analysis		0.5	1			$150
Analysis of Program Effectiveness	4	10	6			$2,230
Special Investigations		2	4			$600
Conclusions			0.5			$48
Overall Review	8					$1,120
Address Comments from City	2	14	4			$2,200
Report Reproduction and Delivery (Draft & Final)		4	4	14	$147	$1,737
					Subtotal	**$21,325**
Totals	24	90.5	140.5	14	**Grand Total**	**$27,620**

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

March 9, 2009
Project No. 200920W

Mr. Malik Tamimi
Environmental Specialist
City of La Mesa
8130 Allison Avenue
La Mesa, CA 91941

Re: Proposal to Prepare FY 2008/2009 JURMP Annual Report for the City of La Mesa

Dear Malik:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of La Mesa in the preparation of the fiscal year 2008/2009 JURMP Annual Report. Work will be conducted in accordance with the requirements of RWQCB Order No. R9-2007-0001 (Municipal Permit). The scope of services associated with this project includes the following tasks:

Task 1: Review and Respond to RWQCB Comments on FY 2007/2008 JURMP Annual Report
Once they become available, we will review the Regional Water Quality Control Board's (RWQCB) comments on the last JURMP Annual Report to identify areas of concern to the RWQCB. We will assist the City in preparing a response to the comments and will structure the 2008/2009 JURMP Annual Report to address the comments where applicable. We assume that the level of comments received will be similar to that received last year and that any comments received will not result in major restructuring of the report or additional analysis beyond the scope of what is described in Task 3 below.

Task 2: Coordinate Information Transfer with City Personnel
We will contact several City departments to acquire information regarding the program implementation and special activities carried out during 2008/2009. Assistance from City storm water staff may be necessary in determining who should be contacted and facilitating information transfer. We will stay in contact with the applicable City staff after the initial questions are supplied to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3. We assume that this task will mainly be conducted over the phone and through email, but eight hours, including travel time, are also allocated for meeting in person.

Task 3: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

- **Sections**
  - Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.
  - Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, a reference to any RWQCB comments on the

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City's 2007/2008 JURMP Annual Report (if applicable, the response will be included as an attachment), and a summary list of key achievements.

- Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's Standard Urban Storm Water Mitigation Plan (SUSMP); treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.
    - A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
    - An updated treatment control BMP inventory.
    - The number of treatment control BMPs inspected, including a summary of inspection results and findings.
    - A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.
    - Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
    - A listing of any projects which received a SUSMP waiver.
    - A description of implementation of any SUSMP waiver mitigation program.
    - A description of Hydromodification Management Plan (HMP) development collaboration and participation.
    - A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
    - A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.
    - A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.
    - The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.
- Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.
    - For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.

- Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
- A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.

- Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.
  - A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.
  - Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
  - Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
  - Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
  - Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.
  - Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2008/2009.
  - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
  - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
  - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.

- A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
- A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
- A list of inspections conducted during the fiscal year, including inspection findings.
- The City's current inventories of industrial and commercial businesses.

- Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.
  - A description of collaborative efforts taken to develop and implement the Regional Residential Education Program.
  - A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
  - Identification of high priority residential areas and BMPs or other actions taken to mitigate potential pollutant discharges from those areas in particular.
- Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Note that we plan to reference the Dry Weather Monitoring Program report rather than including a summary of the data as has been done in past years. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.
  - A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
  - A list of complaints and hotline calls received and how they were resolved.
  - A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.
- Education: will include descriptions of various educational efforts by the City. The Municipal Permit emphasizes presenting educational efforts categorized by type of target audience. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.
  - A description of education efforts conducted for each target community.
  - Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.
  - A list of educational materials distributed, including numbers as available.
- Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. This section will include descriptions of public participation activities the City has sponsored or participated in, such as cleanup events and partnerships with local environmental groups.

- Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. This section should have the same format as the fiscal analysis sections for previous annual reports have had. A new fiscal analysis framework has been developed by the Copermittees, but it is not likely to be implemented until at least 2009-2010.
- Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared.
- Special Investigations: will include a description of the City's additional monitoring program and of the City's additional source investigation efforts in the University Drainage Basin. The description of the additional monitoring efforts will involve presenting graphs, tables, and/or maps that have previously been prepared for the City along with a brief text summary to explain how the results were obtained and when monitoring was conducted. The City's participation in the regional Source Identification Monitoring Program will also be described in this section.
- Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.

- **Report Preparation: Draft**
  - We will prepare one (1) hard copy of a draft JURMP Annual Report for City review. An electronic copy of the report text may also be provided if desired.
  - We will also prepare one volume of attachments for the draft JURMP Annual Report. In past years the amount of attachments has been substantial enough that a separate volume is required. Attachments generally include items such as educational materials, inspection forms, and Dry Weather Monitoring Program reports.

- **Responding to City Comments on the Draft Report**
  - We anticipate receiving one round of technical comments on the draft report from the City. We anticipate that these comments will be sent as written comments on the hard copy of the report and will be sufficiently detailed that additional rounds of comments will not be necessary. Additional rounds of comments and/or comments on writing style in which the specific alternative wording requested is not provided in the comments may be incorporated on an additional, as-needed basis.

- **Report Preparation: Final**
  - We will prepare and deliver two (2) hard copies and four (4) electronic copies of the final JURMP Annual Report and attachments. Our understanding is that all electronic files, including attachments and the certification statement, must be converted to pdf format and merged into a single pdf document in order to meet RWQCB paperless office requirements.

Project Schedule and Costs for Services
We propose the following schedule for preparing the 2008/2009 City of La Mesa JURMP Annual Report.

- Notice to Proceed: June 22, 2009
- Deliver Draft Report to City: September 1, 2009 (10 weeks)
- Receive Review Comments from City: September 15, 2009 (2 weeks)
- Deliver Final Report to City: September 25, 2009 (1.5 weeks)

We propose completing the aforementioned tasks on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $25,667. Please see the attached spreadsheet for a detailed breakdown of our estimated costs.

If you have any questions regarding this proposal, please contact me at (858) 586-6600 x22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

La Mesa 2008/2009 JURMP Annual Report

TASKS	Project Manager	Project Scientist	Asst Project Scientist	Clerk	ODC	Total
		Rates ($/hr)				
	$ 140.00	$ 110.00	$ 95.00	$ 55.00		
		HOURS				
1) Respond to RWQCB 2007/08 AR Comments						
Review Information, Write Response		6				$660
					Subtotal	**$660**
2) Coordinate Information Transfer with City						
Planning/Develop List of Questions	1	1	4			$630
Call and Email City Personnel		4	8			$1,200
Meet with City Personnel		8			$43	$923
Organize Information, Follow-up as Needed	2	6	16			$2,460
					Subtotal	**$5,213**
3) Prepare JURMP Annual Report						
Executive Summary	1	3				$470
Introduction		1.5				$165
New Development/Redevelopment	1	2	12			$1,500
Construction	1	2	14			$1,690
Municipal	1	2	16			$1,880
Industrial/Commercial	1	2	14			$1,690
Residential		2	8			$980
IDDE	1	2	10			$1,310
Education		2	11			$1,265
Public Participation		2	6			$790
Fiscal Analysis		0.5	1			$150
Analysis of Program Effectiveness	2	10	4			$1,760
Special Investigations		3	6			$900
Conclusions			0.5			$48
Overall Review	8					$1,120
Address Comments from City	3	14	4			$2,340
Report Reproduction and Delivery (Draft & Final)		4	4	14	$147	$1,737
					Subtotal	**$19,795**
Totals	22	77	138.5	14	**Grand Total**	**$25,667**

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

April 6, 2010
Project No. 201026W

Mr. Joe Kuhn
Stormwater Program Manager
City of La Mesa
8130 Allison Avenue
La Mesa, CA 91941

Re: Proposal to Prepare FY 2009/2010 JURMP Annual Report for the City of La Mesa

Dear Malik:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of La Mesa in the preparation of the fiscal year 2009/2010 JURMP Annual Report. Work will be conducted in accordance with the requirements of RWQCB Order No. R9-2007-0001 (Municipal Permit). The scope of services associated with this project includes the following tasks:

Task 1: Review and Respond to RWQCB Comments on FY 2008/2009 JURMP Annual Report
Our understanding is that the Regional Water Quality Control Board (RWQCB) only planned to look at the development planning component of the City's 2008/2009 JURMP Annual Report, and that this evaluation was done through a meeting with City staff rather than through written comments. We further understand that the City has not received any comments related to the meeting that was held to discuss the development planning component and that the City does not expect to receive comments on that component of its program or other components of its program. If some comments are received later in the year, however, or if the RWQCB issues a broad set of comments to the Copermittees as a group, we will structure the 2009/2010 JURMP Annual Report to address those comments.

Task 2: Coordinate Information Transfer with City Personnel
We will contact several City departments to acquire information regarding the program implementation and special activities carried out during 2009/2010. Assistance from City storm water staff may be necessary in determining who should be contacted and facilitating information transfer. We will stay in contact with the applicable City staff after the initial questions are supplied to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3. We assume that this task will mainly be conducted over the phone and through email, but eight hours, including travel time, are also allocated for meeting in person.

Task 3: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

- **Sections**
  - Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.

- Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, and a summary list of key achievements.
- Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's Standard Urban Storm Water Mitigation Plan (SUSMP); treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key items to be included in the 2009/2010 JURMP Annual Report are listed below.
    - A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
    - An updated treatment control BMP inventory.
    - The number of treatment control BMPs inspected, including a summary of inspection results and findings.
    - A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.
    - Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
    - A listing of any projects which received a SUSMP waiver.
    - A description of implementation of any SUSMP waiver mitigation program.
    - A description of Hydromodification Management Plan (HMP) development collaboration and participation.
    - A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
    - A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.
    - A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.
    - The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.
- Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key items to be included in the 2009/2010 JURMP Annual Report are listed below.
    - For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.

- Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
- A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.

- Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Some key items to be included in the 2009/2010 JURMP Annual Report are listed below.
  - A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.
  - Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
  - Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
  - Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
  - Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.
  - Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2009/2010.
  - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
  - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
  - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key items to be included in the 2009/2010 JURMP Annual Report are listed below.

- A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
- A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
- A list of inspections conducted during the fiscal year, including inspection findings.
- The City's current inventories of industrial and commercial businesses.

- Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. Some key items to be included in the 2009/2010 JURMP Annual Report are listed below.
  - A description of collaborative efforts taken to develop and implement the Regional Residential Education Program.
  - A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
  - Identification of high priority residential areas and BMPs or other actions taken to mitigate potential pollutant discharges from those areas in particular.
- Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Note that we plan to reference the Dry Weather Monitoring Program report rather than including a summary of the data as has been done in past years. Some key items to be included in the 2009/2010 JURMP Annual Report are listed below.
  - A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
  - A list of complaints and hotline calls received and how they were resolved.
  - A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.
- Education: will include descriptions of various educational efforts by the City. The Municipal Permit emphasizes presenting educational efforts categorized by type of target audience. Some key items to be included in the 2009/2010 JURMP Annual Report are listed below.
  - A description of education efforts conducted for each target community.
  - Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.
  - A list of educational materials distributed, including numbers as available.
- Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. This section will include descriptions of public participation activities the City has sponsored or participated in, such as cleanup events and partnerships with local environmental groups.

- Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. A new fiscal analysis framework has been developed by the Copermittees, and it will need to be implemented for the 2009/2010 JURMP Annual Report. Adapting the City's financial information to the new format will require developing a different structure for the section and working with the City to match financial data to the standard categories provided in the new fiscal analysis framework adopted by the Copermittees.
- Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared. It is also possible, although not exceptionally likely, that some regional effectiveness assessment measures and/or guidance will be developed by the time that preparation of the 2009/2010 JURMP Annual Report begins. If so, we will incorporate those measures and approaches as applicable.
- Special Investigations: will include descriptions of special studies and additional actions taken by the City during the reporting period.
- Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.

- **Report Preparation: Draft**
  - We will prepare one (1) hard copy of a draft JURMP Annual Report for City review. An electronic copy of the report text may also be provided if desired.
  - We will also prepare one volume of attachments for the draft JURMP Annual Report. In past years the amount of attachments has been substantial enough that a separate volume is required. Attachments generally include items such as educational materials, inspection forms, and Dry Weather Monitoring Program reports.

- **Responding to City Comments on the Draft Report**
  - We anticipate receiving one round of technical comments on the draft report from the City. We anticipate that these comments will be sent as written comments on the hard copy of the report and will be sufficiently detailed that additional rounds of comments will not be necessary. Additional rounds of comments and/or comments on writing style in which the specific alternative wording requested is not provided in the comments may be incorporated on an additional, as-needed basis.

- **Report Preparation: Final**
  - We will prepare and deliver two (2) hard copies and four (4) electronic copies of the final JURMP Annual Report and attachments. Our understanding is that all electronic files, including attachments and the certification statement, must be converted to pdf format and merged into a single pdf document in order to meet RWQCB paperless office requirements.

Project Schedule and Costs for Services
We propose the following schedule for preparing the 2009/2010 City of La Mesa JURMP Annual Report.

- Notice to Proceed: June 21, 2010
- Deliver Draft Report to City: August 31, 2010 (10 weeks)
- Receive Review Comments from City: September 14, 2010 (2 weeks)
- Deliver Final Report to City: September 24, 2010 (1.5 weeks)

We propose completing the aforementioned tasks on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $25,407. Please see the attached spreadsheet for a detailed breakdown of our estimated costs.

If you have any questions regarding this proposal, please contact me at (858) 586-6600 x22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

La Mesa 2009/2010 JURMP Annual Report

TASKS	Project Manager	Project Scientist	Asst Project Scientist	Clerk	ODC	Total
		Rates ($/hr)				
	$ 140.00	$ 110.00	$ 95.00	$ 55.00		
		HOURS				
1) Respond to RWQCB 2008/09 AR Comments						
Review Information, Write Response		1				$110
					Subtotal	**$110**
2) Coordinate Information Transfer with City						
Planning/Develop List of Questions	1	1	4			$630
Call and Email City Personnel		4	8			$1,200
Meet with City Personnel		8			$43	$923
Organize Information, Follow-up as Needed	2	6	16			$2,460
					Subtotal	**$5,213**
3) Prepare JURMP Annual Report						
Executive Summary	1	3				$470
Introduction		1.5				$165
New Development/Redevelopment	1	2	12			$1,500
Construction	1	2	14			$1,690
Municipal	1	2	16			$1,880
Industrial/Commercial	1	2	14			$1,690
Residential		2	8			$980
IDDE	1	2	10			$1,310
Education		2	11			$1,265
Public Participation		2	6			$790
Fiscal Analysis		4	3			$725
Analysis of Program Effectiveness	2	10	4			$1,760
Special Investigations		3	3			$615
Conclusions			0.5			$48
Overall Review	8					$1,120
Address Comments from City	3	14	4			$2,340
Report Reproduction and Delivery (Draft & Final)		4	4	14	$147	$1,737
					Subtotal	**$20,085**
Totals	22	75.5	137.5	14	**Grand Total**	**$25,407**

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

April 4, 2011
Project No. 201115W

Mr. Joe Kuhn
Stormwater Program Manager
City of La Mesa
8130 Allison Avenue
La Mesa, CA 91941

Re: Proposal to Prepare FY 2010/2011 JURMP Annual Report for the City of La Mesa

Dear Mr. Kuhn:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of La Mesa in the preparation of the fiscal year 2010/2011 JURMP Annual Report. Work will be conducted in accordance with the requirements of Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit). The scope of services associated with this project includes the following tasks:

Task 1: Review and Respond to RWQCB Comments on FY 2009/2010 JURMP Annual Report
Our understanding is that the City is unlikely to receive any comments on its JURMP Annual Report. If some comments are received later in the year, however, or if the RWQCB issues a broad set of comments to the Copermittees as a group, we will structure the 2010/2011 JURMP Annual Report to address those comments.

Task 2: Coordinate Information Transfer with City Personnel
We will contact several City departments to acquire information regarding the program implementation and special activities carried out during 2010/2011. Assistance from City storm water staff may be necessary in determining who should be contacted and facilitating information transfer. We will stay in contact with the applicable City staff after the initial questions are supplied to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3. We assume that this task will mainly be conducted over the phone and through email, but eight hours, including travel time, are also allocated for meeting in person.

Task 3: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

- **Sections**
  - Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.
  - Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, and a summary list of key achievements.
  - Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's Standard Urban Storm Water Mitigation Plan (SUSMP);

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.

- A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
- An updated treatment control BMP inventory.
- The number of treatment control BMPs inspected, including a summary of inspection results and findings.
- A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.
- Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
- A listing of any projects which received a SUSMP waiver.
- A description of implementation of any SUSMP waiver mitigation program.
- A description of Hydromodification Management Plan (HMP) development collaboration and participation.
- A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
- A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.
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- The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.

- <u>Construction</u>: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.
  - For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the

rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.

- Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
- A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.

- Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.
  - A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.
  - Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
  - Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
  - Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
  - Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.
  - Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2010/2011.
  - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
  - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.

- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.

- Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.
  - A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
  - A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
  - A list of inspections conducted during the fiscal year, including inspection findings.
  - The City's current inventories of industrial and commercial businesses.
- Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.
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  - A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
  - Identification of high priority residential areas and BMPs or other actions taken to mitigate potential pollutant discharges from those areas in particular.
- Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Note that we plan to reference the Dry Weather Monitoring Program report rather than including a summary of the data as has been done in past years. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.
  - A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
  - A list of complaints and hotline calls received and how they were resolved.
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- Education: will include descriptions of various educational efforts by the City. The Municipal Permit emphasizes presenting educational efforts categorized by type of target audience. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.
    - A description of education efforts conducted for each target community.
    - Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.
    - A list of educational materials distributed, including numbers as available.
- Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. This section will include descriptions of public participation activities the City has sponsored or participated in, such as cleanup events and partnerships with local environmental groups.
- Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. A new fiscal analysis framework has been developed by the Copermittees, and it will need to be implemented for the 2010/2011 JURMP Annual Report. Adapting the City's financial information to the new format will require developing a different structure for the section and working with the City to match financial data to the standard categories provided in the new fiscal analysis framework adopted by the Copermittees.
- Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared. It is also possible, although not exceptionally likely, that some regional effectiveness assessment measures and/or guidance will be developed by the time that preparation of the 2010/2011 JURMP Annual Report begins. If so, we will incorporate those measures and approaches as applicable.
- Special Investigations: will include descriptions of special studies and additional actions taken by the City during the reporting period.
- Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.

- **Report Preparation: Draft**
    - We will prepare one (1) hard copy of a draft JURMP Annual Report for City review. An electronic copy of the report text may also be provided if desired.
    - We will also prepare one volume of attachments for the draft JURMP Annual Report. In past years the amount of attachments has been substantial enough that a separate volume is required. Attachments generally include items such

as educational materials, inspection forms, and Dry Weather Monitoring Program reports.

- **Responding to City Comments on the Draft Report**
  - We anticipate receiving one round of technical comments on the draft report from the City. We anticipate that these comments will be sent as written comments on the hard copy of the report or as tracked changes in the electronic copy of the report.

- **Report Preparation: Final**
  - We will prepare and deliver two (2) hard copies and four (4) electronic copies of the final JURMP Annual Report and attachments. Our understanding is that all electronic files, including attachments and the certification statement, must be converted to pdf format and merged into a single pdf document in order to meet RWQCB paperless office requirements.

Project Schedule and Costs for Services
We propose the following schedule for preparing the 2010/2011 City of La Mesa JURMP Annual Report.

- Notice to Proceed: June 20, 2011
- Deliver Draft Report to City: August 31, 2011 (10 weeks)
- Receive Review Comments from City: September 14, 2011 (2 weeks)
- Deliver Final Report to City: September 23, 2011 (1.5 weeks)

We propose completing the aforementioned tasks on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $25,407. This is the same cost as last year. Please see the attached spreadsheet for a detailed breakdown of our estimated costs.

Please feel free to contact us if you have any questions regarding this proposal.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

La Mesa 2010/2011 JURMP Annual Report

	Project Manager	Senior Scientist	Asst Project Scientist	Staff Scientist II	Word Processor	ODC	Total
			Rates ($/hr)				
TASKS	**$ 140.00**	**$ 120.00**	**$ 100.00**	**$ 92.00**	**$ 55.00**		
			HOURS				
1) Respond to RWQCB 2009/2010 AR Comments							
Review Information, Write Response		1					$120
						Subtotal	**$120**
2) Coordinate Information Transfer with City							
Planning/Develop List of Questions		1	4				$520
Call and Email City Personnel		2	6	6			$1,392
Meet with City Personnel		4	4			$43	$923
Organize Information, Follow-up as Needed		2	8	12			$2,144
						Subtotal	**$4,979**
3) Prepare JURMP Annual Report							
Executive Summary	1	3					$500
Introduction		1.5					$180
New Development/Redevelopment	1	2	12				$1,580
Construction	1	2	14				$1,780
Municipal	1	2	16				$1,980
Industrial/Commercial	1	2	14				$1,780
Residential			2	8			$936
IDDE		1	2	10			$1,240
Education			2	11			$1,212
Public Participation			2	6			$752
Fiscal Analysis		4	3				$780
Analysis of Program Effectiveness	2	4	10				$1,760
Special Investigations		3	3				$660
Conclusions			1				$100
Overall Review	8						$1,120
Address Comments from City	3	6	12				$2,340
Report Reproduction and Delivery (Draft & Final)		1	2	5	14	$58	$1,608
						Subtotal	**$20,308**
Totals	18	41.5	117	58	14	**Grand Total**	**$25,407**

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

August 31, 2006
Project No. 200620W

Mr. Din Daneshfar
City of National City
Engineering Department
1243 National City Boulevard
National City, CA 91950

Re: Proposal for Implementation of the NPDES Program, Fiscal Year 06-07
City of National City, California

Dear Mr. Daneshfar:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of National City in the implementation of the Federal National Pollutant Discharge Elimination System (NPDES) Program during the 2006-2007 reporting period. This work will be conducted in accordance with the NPDES requirements, the State of California General Industrial and Construction permits, and the San Diego Regional Water Quality Control Board (RWQCB) Municipal NPDES Permit. Note that it is anticipated that a new, reissued Municipal NPDES Permit will be issued during the 2006-2007 reporting period; this new permit is expected to result in increased storm water requirements for the City.

The scope of our services and estimated costs are attached to this proposal.

We look forward to working with you on this project. Please give me a call at (858) 586-6600 ext. 22 if you have any questions or would like to further discuss this proposal.

Sincerely,

D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager/Principal

7200 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

EXHIBIT A

SCOPE OF SERVICES

The scope of services for this project will include but are not limited to the following tasks.

Project Coordination. Provide all project coordination necessary to perform the work for the City's National Pollutant Discharge Elimination System (NPDES) program implementation. Project coordination will include monthly project status meetings with the City of National City and other related agencies for the duration of this contract. Also included in the program coordination are

- Management of the program kick-off meeting and all necessary meetings with other concerned and involved agencies and community groups.
- Management of all project-related meetings, including agenda and meeting minute preparation and distributions.
- Assisting the City with coordination and correspondence with the RWQCB regarding National City's storm water program.

Data Management and GIS. In order to facilitate annual reporting, and to manage the JURMP inspection program on a day-to-day basis, data must be tracked and stored in a reliable, easy-to-use manner. This includes data from the City's construction, industrial, commercial, and municipal programs. D-MAX has created three separate Microsoft Access databases for the City: one each for construction inspections, industrial/commercial inspections, and a variety of municipal activities.

As the City Engineering Department has recently created a tracking database including information about a variety of permits, D-MAX will also work with the City to determine how that tracking database can best be integrated with the databases that D-MAX has created for the City. D-MAX will also assist the City in designing solutions for relating the data from various databases, including the use of geographic information systems (GIS). Additional tracking capabilities for the City's education and SUSMP programs may be added as well. The new Municipal Permit will likely require the development of a database to track location and maintenance of SUSMP treatment control BMPs. D-MAX will also regularly provide the City with copies of the databases it maintains.

In addition to database management, D-MAX will also assist the City in analyzing business license listings to determine JURMP prioritizations for new industrial and commercial businesses in the City. Those businesses will then be flagged for inspection in accordance with the procedure listed in the JURMP. We will further assist the City in designing and implementing revised procedures for prioritizing facilities in the City, in accordance with new Municipal Permit guidelines for facility prioritization.

Assist in Compliance Inspection Program. We will assist the City's compliance inspection team with the following services:

- Conducting construction field inspections

- Conducting industrial and commercial field inspections
- Conducting follow-up, complaint, or other special inspections
- Data entry into databases for these inspections

SUSMP Implementation and Document Preparation. We will assist the City in with implementation of the Standard Urban Storm Water Mitigation Plan (SUSMP) program as follows. Note that review of SUSMP and Storm Water Pollution Prevention Plan (SWPPP) documents are included under a different contract.

- Assist with required revisions to the City's SUSMP Ordinance and related ordinances, including developing a SUSMP manual
- Assist in complying with requirements of the SUSMP
- Conduct coordination meetings with various City departments and assist in refinement of the SUSMP process
- Review erosion and sediment control plans
- Assist in selecting and implementing BMPs
- Conduct educational presentations as required in Section 9 of the City's JURMP and/or the Municipal Permit
- Prepare SUSMPs and construction SWPPPs for City Capital Improvement Projects

Dry Weather Analytical Monitoring and Field Screening. This task will include conducting one round of field screening in accordance with the requirements of the RWQCB Municipal Permit. The objective of this program is to detect and eliminate illicit connections and illegal discharges (IC/IDs) in order to minimize the negative impacts of human activities on receiving water bodies. The City of National City has identified 15 primary monitoring stations where data will be collected during the dry weather analytical and field screening monitoring program. This task will include the following:

Visual Observations: Visual observations include looking for evidence of dry weather flows such as staining, corrosion, sediment, surrounding vegetation, algae, mosquito larvae, insects, rodents and other animals in the vicinity of the outfall. .

Field Analysis: At each site the flow and its temperature will be measured, and a sample will be taken for field analyses of the following parameters:

- Specific conductance
- Temperature
- Turbidity
- pH
- Reactive Phosphorus
- Nitrate Nitrogen
- Ammonia Nitrogen
- Surfactants (MBAS)

Analytical Monitoring: Water samples from 25 percent of the sites where ponded or flowing water is observed, will be collected and submitted to a California Department of Health Services certified laboratory for analysis of the following constituents:

- Total hardness
- Surfactants (MBAS)
- Oil and grease
- Diazinon and Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Enterococcus bacteria
- Total Coliform bacteria
- Fecal Coliform bacteria

Preparation of a Summary Report: At the conclusion of the field screening program, a report will be prepared to summarize the observations and the results of the study. The report will include our interpretation of the field data and test results as to the possible presence of IC/IDs.

Notes: If the dry weather monitoring program is conducted after the adoption of the new Municipal Permit, monitoring for trash will also be required. Additionally, it is possible that dissolved copper will be monitored during field screening, not analytical monitoring.

Follow-Up Investigations. During the dry weather field screening program if field investigations do not reveal a specific source of contamination, or if the results of the laboratory analysis indicate presence of pollutants in excess of action levels, further investigation will be conducted which may include the following steps:

- Tracing flows or discharges upstream
- Conducting field screening sampling
- Contacting dischargers
- Sampling for laboratory analysis
- Documenting source investigations

At the conclusion of the follow-up investigations, a summary report will be prepared summarizing the findings, conclusions and recommendations. Note that if this program is conducted after the adoption of the new Municipal Permit, follow-up investigations based on laboratory analytical results will likely be required within two business days of receiving the lab results. That change is likely to result in additional costs due to increased difficulty with coordinating field crew logistics on short notice.

Preparation of JURMP Annual Report / NPDES Program Effectiveness Assessment. As a requirement of the Municipal Permit, the City must produce an annual report to the RWQCB detailing the activities that have been conducted during the previous reporting period to reduce pollutants in urban runoff. The JURMP Annual Report serves to document the activities that the City has conducted during the past reporting period of July 1, 2003 through June 30, 2004. In order to prepare the required report we will conduct the following:

Coordinate Information Transfer with City personnel
Contacting several City departments to acquire information on the program implementation and special activities carried out through the year. We will have initial meetings with responsible personnel at each department to prepare a plan for receiving information regarding the implementation of the City's JURMP. We will stay in contact with the City's departments thereafter. Pertinent information will be acquired under this task to be used in the report.

Prepare Annual JURMP Report
This task includes the preparation of the Annual JURMP Report in accordance with the Municipal Permit Section I. This includes addressing the following:

- ***Comprehensive Description of Activities***
  - Land-Use Planning
  - Construction
  - Existing Development
  - Education
  - Illicit Discharge Detection and Elimination
  - Public Participation
  - Assessment of JURMP Effectiveness
  - Fiscal Analysis
- ***Documentation/Accounting of Activities***
  - Illicit Discharges Report
  - Inspections Conducted
  - Enforcement Actions
  - Education Efforts
- ***Public Participation Mechanism***
- ***JURMP Revisions***
- ***Special Investigations***
- ***Fiscal Analysis***
- ***Ineffective Management Measures***
- ***Identification of Water Quality Improvements***
- ***Assessment of Program Effectiveness.***
  - The County of San Diego in association with assessment work group has developed some methodologies for assessing the effectiveness of the storm water program. These methodologies require gathering

and presenting all the information of the Copermittee's activities including BMPs and identifying expected effects on the storm water pollution prevention. We will assist the City to evaluate the effectiveness of the City's program in accordance with the County and work group proposed methodologies.

Document Revisions for New Permit Requirements. The new Municipal Permit will require revisions to the City's JURMP. D-MAX will assist the City with identifying which areas of the JURMP need revision and developing new programs or revising existing programs to meet the new requirements. This process will require considerable coordination and discussion with City staff to ensure that program modifications are as practical, efficient, and effective as possible. We will also assist the City with making required revisions to the SUSMP Ordinance and related City codes necessitated by the reissuance of the Municipal Permit.

The new Municipal Permit will likely also require significant revisions to the WURMP document, including development of new watershed strategies. We will assist the City by working with the other watershed Copermittees to select and develop watershed activities that will meet the new Municipal Permit requirements. We will also help the City integrate overall, watershed wide approaches into the City's existing programs.

Training and Education. D-MAX will conduct educational workshops at the City's request to target audiences identified in Section 9 of the JURMP document. Educational content will cover a variety of topics related to storm water quality and watershed concepts listed in Section 9.2 of the JURMP and be tailored to each specific audience. Suggested workshops and target audiences include the following:

<u>Planning and Public Works/Engineering Departments</u>
The goal of this workshop will be to inform the Planning and Engineering Departments of general concepts listed in Section 9.2 and to address new Permit requirements relevant to each department. The Permit requires changes in land-use planning and engineering aspects of new development and redevelopment projects within the City, including the implementation of the City's SUSMP.

The workshop will be targeted towards public works employees and will also cover the general concepts of Section 9.2, and further address changes in public works operations required by the Municipal Permit. Such changes include construction site management requirements and implementation and maintenance of best management practices.

<u>Construction Inspectors</u>
The educational workshop for construction inspectors will include general concepts listed in Section 9.2 and additionally cover such topics as BMP implementation and maintenance, good housekeeping measures, site inspections and inspection frequency.

<u>School Students</u>
We will assist the City in providing training workshops for school students. The topics for these workshops include the source of pollutants, the impact

of pollutants on the receiving water bodies and BMPs to prevent the pollutions.

Educational Materials

We will assist the City in developing educational materials such as pamphlets, calendars, articles for newsletter or websites, or fact sheets. These materials may to be targeted at the development community, City residents, industrial and commercial businesses, City staff, or other audiences. The new Municipal Permit is anticipated to require additional education related to watershed concepts and watershed pollutants of concern.

Watershed Urban Runoff Management Program. City of National City is located within the San Diego Bay watershed. The Municipal Permit requires each Copermittee to collaborate with other Copermittees within its watershed to identify and mitigate the highest priority water quality issues/pollutants in the watershed.

D-MAX will coordinate with the watershed Copermittees on behalf of the City of National City and fulfill the group requirements per the City instructions. In each of the last three years, we have assisted the City by helping write the San Diego Bay WURMP Annual Reports, and the City has been listed as among the primary authors of those annual reports.

Representing the City in Various Meetings. D-MAX will represent the City of National City in various meetings including those with other Copermittees, the Regional Board, and/or Regional Workgroups.

Other Storm Water Services. It has been our experience with other local municipalities and with the City of National City that storm water related situations arise from time to time that require immediate or expert action. For example, additional services related to the Paleta Creek/7th Street Channel TMDL, which is currently under development, may be required. D-MAX will be pleased to provide any other as-needed, on-call services to the City of National City that have not been identified above.

EXHIBIT B

COST SUMMARY & FEE SCHEDULE

We propose to complete the aforementioned services on a time and materials basis (not to exceed $200,000 total) in accordance with the attached schedule of fees. Our estimated costs are listed below

Task Description	**Estimated Cost**
Project Coordination	$15,000
Data Management and GIS	$18,000
Assist in Compliance Inspection Program	$20,000
SUSMP Implementation and Document Preparation	$15,000
Dry Weather Analytical Monitoring and Field Screening	$15,000
Follow-Up Investigations	$8,000
Preparation of JURMP Annual Report / NPDES Program Effectiveness Assessment	$20,000
Document Revisions for New Permit Requirements	$25,000
Training and Education	$25,000
Watershed Urban Runoff Management Programs	$15,000
Representing The City in Various Meeting	$6,000
Other Storm Water Services	$18,000
TOTAL	**$200,000**

SCHEDULE OF FEES

January 1, 2006

This Schedule of Fees will be adjusted periodically. The new fee schedule will apply to all existing and new work.

LABOR

Classification	Hourly Rate
Clerk*	$ 45
Word Processor*	55
Drafter*	60
Technician*	55
Senior Technician*	70
Staff Scientist/Engineer	85
Assitant Project Scientist/Engineer	95
Project Scientist/Engineer	105
Senior Scientist/Engineer	115
Principal Scientist/Engineer	130

* Overtime (in excess of 8 hours per day) and weekend hours will be charged at 1.5 times the above rates for non-exempt personnel.

Field and hourly services will be charged portal to portal from our office, with a two-hour minimum.

Appearance as expert witnesses at court trials, mediation, arbitration hearings and depositions will be charged at $200/hour. Time spent preparing for such appearances will be charged at the above standard hourly rates.

OTHER CHARGES

Subcontracted services, such as subconsultants, outside testing, drilling, and surveyors, will be charged at cost plus 15%. Other project-specific costs, such as rentals, expendable or special supplies, special project insurance, permits and licenses, shipping, subsistence, tolls and parking, outside copying/printing, etc., will be charged at cost plus 15%.

Client will be responsible for any applicable taxes in addition to the fees due for Services.

The mileage charge for personal vehicles used on projects will be the current rate as established by the Internal Revenue Service. Company-owned vehicles will be charged at a rate of $0.52 per mile.

EXHIBIT C
PROJECT SCHEDULE

Tasks	*SEP 2006*	*OCT 2006*	*NOV 2006*	*DEC 2006*	*JAN 2007*	*FEB 2007*	*MAR 2007*	*APR 2007*	*MAY 2007*	*JUN 2007*	*JUL 2007*	*AUG 2007*
Project Coordination												
Data Management												
Assist in Compliance Inspection Program												
Dry Weather Analytical Monitoring and Field Screening												
Follow-Up Investigations												
Preparation of JURMP Annual Report / NPDES Program Effectiveness Assessment												
Document Revisions for New Permit Requirements												
Training and Education												
Watershed Urban Runoff Management Programs												
Representing the City in Various Meetings												
Other Storm Water Services												

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

August 13, 2007
Project No. 200720W

Mr. Din Daneshfar
City of National City
Engineering Department
1243 National City Boulevard
National City, CA 91950

Re: Proposal for Implementation of the NPDES Program, Fiscal Year 07-08
City of National City, California

Dear Mr. Daneshfar:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of National City in the implementation of the Federal National Pollutant Discharge Elimination System (NPDES) Program during the 2007-2008 reporting period. This work will be conducted in accordance with the NPDES requirements, the State of California General Industrial and Construction permits, and the San Diego Regional Water Quality Control Board (RWQCB) newly issued Municipal NPDES Permit Order No. R9-2007-0001.

The scope of our services and estimated costs are attached to this proposal.

We look forward to working with you on this project. Please give me a call at (858) 586-6600 ext. 22 if you have any questions or would like to further discuss this proposal.

Sincerely,

D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager/Principal

7200 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

EXHIBIT A

SCOPE OF SERVICES

D-MAX will provide storm water services to assist the City of National City in complying with the National Pollutant Discharge Elimination System (NPDES) permits and enhance the water quality of runoff generated within the City. The following is a list of tasks anticipated to be necessary during the fiscal year. However, there may be unanticipated tasks that are necessary to complete but are not addressed herein. The tasks will be conducted in an order of priority as set by the City.

Project Coordination. Provide all project coordination necessary to perform the work for the City's NPDES program implementation. Project coordination will include monthly project status meetings with the City of National City and other related agencies for the duration of this contract. Also included in the program coordination are

- Management of the program kick-off meeting and all necessary meetings with other concerned and involved agencies and community groups.
- Management of all project-related meetings, including agenda and meeting minute preparation and distributions.
- Assisting the City with coordination and correspondence with the RWQCB regarding National City's storm water program.

Data Management and GIS. To facilitate annual reporting and to manage various JURMP programs on a day-to-day basis, data must be tracked and stored in a reliable, easy-to-use manner. This includes data from the City's construction, industrial, commercial, development, and municipal programs. D-MAX has created four separate Microsoft Access databases for the City: one each for construction inspections, industrial/commercial inspections, standard urban storm water mitigation plan (SUSMP) post-construction best management practice (BMP) tracking and inspections, and a variety of municipal activities.

As the City Engineering Department has recently created a tracking database including information about a variety of permits, D-MAX may also work with the City to determine how that tracking database can best be integrated with the databases that D-MAX has created for the City. D-MAX will also assist the City in designing solutions for relating the data from various databases, including the use of geographic information systems (GIS). Additional tracking capabilities for the City's education program may be added as well, and a database to record and manage information from the City's water quality monitoring programs may be developed. D-MAX will regularly provide the City with copies of the databases it maintains.

In addition to database management, D-MAX will also assist the City in analyzing business license listings to determine JURMP prioritizations for new industrial and commercial businesses in the City. Those businesses will then be flagged for inspection in accordance with the procedure listed in the JURMP. We will further assist the City in designing and implementing revised procedures for prioritizing facilities in the City, in accordance with new Municipal Permit guidelines for facility prioritization.

Assist in Compliance Inspection Program. We will assist the City's compliance inspection team with the following services:

- Conducting construction field inspections
- Conducting industrial and commercial field inspections
- Conducting SUSMP post-construction BMP inspections
- Conducting follow-up, complaint, or other special inspections
- Data entry into databases for these inspections

SUSMP Implementation and Document Preparation. We will continue to assist the City with implementation of the Standard Urban Storm Water Mitigation Plan (SUSMP) program as follows. Note that review of SUSMP and Storm Water Pollution Prevention Plan (SWPPP) documents are included under a different contract.

- Assist with required revisions to the City's SUSMP Ordinance and related ordinances, including developing a SUSMP manual per the new Municipal Permit requirements
- Assist in complying with requirements of the SUSMP
- Conduct coordination meetings with various City departments and assist in refinement of the SUSMP process
- Review erosion and sediment control plans
- Assist in selecting and implementing BMPs
- Conduct educational presentations as required in the City's JURMP and Section D.5.b.(b) of the new Municipal Permit
- Prepare SUSMPs and construction storm water pollution prevention plans (SWPPP) for City Capital Improvement Projects

Dry Weather Field Screening and Analytical Monitoring. This task will include conducting one round of field screening in accordance with the requirements of the RWQCB Municipal Permit. The objective of this program is to detect and eliminate illicit connections and illegal discharges (IC/IDs) in order to minimize the negative impacts of human activities on receiving water bodies. The City of National City has identified 15 primary monitoring stations where data will be collected during the dry weather analytical and field screening monitoring program. This task will include the following:

Visual Observations: Visual observations include looking for evidence of dry weather flows such as staining, corrosion, sediment, surrounding vegetation, algae, mosquito larvae, insects, rodents and other animals in the vicinity of the outfall. .

Field Analysis: At each site the flow and its temperature will be measured, and a sample will be taken for field analyses of the following parameters:

- Specific conductance
- Temperature
- Turbidity

- pH
- Reactive Phosphorus
- Nitrate Nitrogen
- Ammonia Nitrogen
- Surfactants (MBAS)

Analytical Monitoring: Water samples from 25 percent of the sites where ponded or flowing water is observed, will be collected and submitted to a California Department of Health Services certified laboratory for analysis of the following constituents:

- Total hardness
- Surfactants (MBAS)
- Oil and grease
- Diazinon and Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Enterococcus bacteria
- Total Coliform bacteria
- Fecal Coliform bacteria

Preparation of a Summary Report: At the conclusion of the field screening program, a report will be prepared to summarize the observations and the results of the study. The report will include our interpretation of the field data and test results as to the possible presence of IC/IDs.

Notes: This task will be completed during the summer of 2007. Per the requirements of the new Municipal Permit, dry weather monitoring during the summer of 2007 will be conducted according to the same procedure established under the previous Municipal Permit (Order 2001-01). The new dry weather requirements of the new Municipal Permit will go into effect in the summer of 2008.

Follow-Up Investigations. During the dry weather field screening program if field investigations do not reveal a specific source of contamination, or if the results of the laboratory analysis indicate presence of pollutants in excess of action levels, further investigation will be conducted which may include the following steps:

- Tracing flows or discharges upstream
- Conducting field screening sampling
- Contacting dischargers
- Sampling for laboratory analysis
- Documenting source investigations

At the conclusion of the follow-up investigations, a summary report will be prepared summarizing the findings, conclusions and recommendations. Note that this program will be conducted according to the same procedure used in 2006; the new follow-up requirements of the new Municipal Permit will need to be implemented in the 2008 dry weather season.

Preparation of JURMP Annual Report / NPDES Program Effectiveness Assessment. As a requirement of the Municipal Permit, the City must produce an annual report to the RWQCB detailing the activities that have been conducted during the previous reporting period to reduce pollutants in urban runoff. The JURMP Annual Report serves to document the activities that the City has conducted during the past reporting period of July 1, 2006 through June 30, 2007. In order to prepare the required report we will conduct the following:

Coordinate Information Transfer with City personnel
Contacting several City departments to acquire information on the program implementation and special activities carried out through the year. We will have initial meetings with responsible personnel at each department to prepare a plan for receiving information regarding the implementation of the City's JURMP. We will stay in contact with the City's departments thereafter. Pertinent information will be acquired under this task to be used in the report.

Prepare Annual JURMP Report
This task includes the preparation of the Annual JURMP Report in accordance with Section I of the previous Municipal Permit. Because the new Municipal Permit was not in effect in 2006-2007, the Annual Report prepared this year will report on compliance with the previous Municipal Permit in the format required by the previous Municipal Permit. This includes addressing the following:

- ***Comprehensive Description of Activities***
  - Land-Use Planning
  - Construction
  - Existing Development
  - Education
  - Illicit Discharge Detection and Elimination
  - Public Participation
  - Assessment of JURMP Effectiveness
  - Fiscal Analysis
- ***Documentation/Accounting of Activities***
  - Illicit Discharges Report
  - Inspections Conducted
  - Enforcement Actions
  - Education Efforts
- ***Public Participation Mechanism***
- ***JURMP Revisions***

- ***Special Investigations***
- ***Fiscal Analysis***
- ***Ineffective Management Measures***
- ***Identification of Water Quality Improvements***
- ***Assessment of Program Effectiveness.***
    - The County of San Diego in association with assessment work group has developed some methodologies for assessing the effectiveness of the storm water program. These methodologies require gathering and presenting all the information of the Copermittee's activities including BMPs and identifying expected effects on the storm water pollution prevention. We will assist the City to evaluate the effectiveness of the City's program in accordance with the County and work group proposed methodologies.

Document Revisions for New Permit Requirements. The new Municipal Permit requires revisions to the City's JURMP. D-MAX will continue to assist the City with revising its JURMP to meet the new requirements. This process requires considerable coordination and discussion with City staff to ensure that program modifications are as practical, efficient, and effective as possible.

We will also assist the City with making required revisions to the SUSMP Ordinance and related City codes necessitated by the reissuance of the Municipal Permit. Further, we anticipate that documents related to the new MS4 monitoring and source identification monitoring programs required by the new Municipal Permit will need to be prepared. This work will likely include research to select sites in the City and preparation of monitoring plans. Permits to allow the City to resume channel maintenance activities will also likely need to be acquired in 2007-2008. That process is anticipated to involve coordinating with the RWQCB, the Army Corps of Engineers, and the California Department of Fish and Game.

The new Municipal Permit will likely also require significant revisions to the WURMP document, including development of new watershed strategies. We will assist the City by working with the other watershed Copermittees to select and develop watershed activities that will meet the new Municipal Permit requirements. We will also help the City integrate overall, watershed wide approaches into the City's existing programs.

Training and Education. D-MAX will conduct educational workshops at the City's request to target audiences identified in the JURMP document. Educational content will cover a variety of topics related to storm water quality and watershed concepts listed in the JURMP and be tailored to each specific audience. Suggested workshops and target audiences include the following:

<u>Planning and Engineering Departments</u>
The goal of this workshop will be to inform the Planning and Engineering Departments of general concepts listed in the JURMP and to address new Permit requirements relevant to each department. The Permit requires changes in land-use planning and engineering aspects of new development and redevelopment projects within the City, including the implementation of

the City's SUSMP. Among the new requirements is the implementation of Low Impact Development (LID) measures for all development projects.

Public Works Staff
The workshop will be targeted towards public works employees and will focus mainly on the practical aspects of BMP implementation. It will also address changes in public works operations required by the Municipal Permit, such as effects on channel maintenance and storm drain cleanout frequency. In the event that the City's NPDES Storm Water Compliance Inspector conducts this training, D-MAX will not provide a training for this audience.

Construction Inspectors
The educational workshop for construction inspectors will include general concepts listed in the JURMP and additionally cover such topics as BMP implementation and maintenance, good housekeeping measures, site inspections and inspection frequency.

School Students
We will assist the City in providing training workshops for school students. The topics for these workshops include the source of pollutants, the impact of pollutants on the receiving water bodies and BMPs to prevent the pollutions.

Workshops
At the request of the City, we will provide targeted educational workshops for various industry or stakeholder groups. D-MAX has recently conducted workshops for industrial businesses, automotive businesses, the development and construction industry, and City residents.

Educational Materials
We will assist the City in developing educational materials such as pamphlets, calendars, articles for newsletter or websites, or fact sheets. These materials may to be targeted at the development community, City residents, industrial and commercial businesses, City staff, or other audiences. The new Municipal Permit requires additional education related to watershed concepts and watershed pollutants of concern.

Watershed Urban Runoff Management Program. City of National City is located within the San Diego Bay watershed. The Municipal Permit requires each Copermittee to collaborate with other Copermittees within its watershed to identify and mitigate the highest priority water quality issues/pollutants in the watershed.

D-MAX will coordinate with the watershed Copermittees on behalf of the City of National City and fulfill the group requirements per the City instructions. In each of the last three years, we have assisted the City by helping write the San Diego Bay WURMP Annual Reports, and the City has been listed as among the primary authors of those annual reports.

Representing the City in Various Meetings. D-MAX will represent the City of National City in various meetings including those with other Copermittees, the Regional Board, and/or Regional Workgroups.

Other Storm Water Services. It has been our experience with other local municipalities and with the City of National City that storm water related situations arise from time to time that require immediate or expert action. For example, additional services related to the Paleta Creek/7th Street Channel TMDL, which is currently under development, may be required. D-MAX will be pleased to provide any other as-needed, on-call services to the City of National City that have not been identified above.

EXHIBIT B

COST SUMMARY & FEE SCHEDULE

We propose to complete the aforementioned services on a time and materials basis (not to exceed $200,000 total) in accordance with the attached schedule of fees. Our estimated costs are listed below

Task Description	**Estimated Cost**
Project Coordination	$15,000
Data Management and GIS	$13,000
Assist in Compliance Inspection Program	$25,000
SUSMP Implementation and Document Preparation	$15,000
Dry Weather Analytical Monitoring and Field Screening	$15,000
Follow-Up Investigations	$8,000
Preparation of JURMP Annual Report / NPDES Program Effectiveness Assessment	$20,000
Document Revisions for New Permit Requirements	$30,000
Training and Education	$25,000
Watershed Urban Runoff Management Programs	$15,000
Representing the City in Various Meetings	$10,000
Other Storm Water Services	$9,000
TOTAL	**$200,000**

SCHEDULE OF FEES

January 1, 2007

This Schedule of Fees will be adjusted periodically. The new fee schedule will apply to all existing and new work.

LABOR

Classification	Hourly Rate
Clerk*	$ 45
Word Processor*	55
Drafter*	60
Technician*	55
Senior Technician*	70
Staff Scientist/Engineer	85
Assitant Project Scientist/Engineer	95
Project Scientist/Engineer	105
Senior Scientist/Engineer	115
Principal Scientist/Engineer	130

* Overtime (in excess of 8 hours per day) and weekend hours will be charged at 1.5 times the above rates for non-exempt personnel.

Field and hourly services will be charged portal to portal from our office, with a two-hour minimum.

Appearance as expert witnesses at court trials, mediation, arbitration hearings and depositions will be charged at $200/hour. Time spent preparing for such appearances will be charged at the above standard hourly rates.

OTHER CHARGES

Subcontracted services, such as subconsultants, outside testing, drilling, and surveyors, will be charged at cost plus 15%. Other project-specific costs, such as rentals, expendable or special supplies, special project insurance, permits and licenses, shipping, subsistence, tolls and parking, outside copying/printing, etc., will be charged at cost plus 15%.

Client will be responsible for any applicable taxes in addition to the fees due for Services.

The mileage charge for personal vehicles used on projects will be the current rate as established by the Internal Revenue Service. Company-owned vehicles will be charged at a rate of $0.60 per mile.

C 2007	JAN 2008	FEB 2008	MAR 2008	APR 2008	MAY 2008	JUN 2008	JUL 2008	AUG 2008

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

May 29, 2008
Project No. 200826W

Mr. Din Daneshfar
Engineering Department
City of National City
1243 National City Boulevard
National City, CA 91950

Re: Proposal to Prepare FY 2007/2008 JURMP Annual Report for the City of National City

Dear Din:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of National City (City) in the preparation of the fiscal year 2007/2008 Jurisdictional Urban Runoff Management Program (JURMP) Annual Report. In previous years, the JURMP Annual Report was due to the Regional Water Quality Control Board (RWQCB) at the end of January, allowing seven months after the end of the fiscal year for the preparation and delivery of the report. Based on recent changes to the City's storm water permit, however, the 2007/2008 JURMP Annual Report is due to the RWQCB by the end of September 2008. In order to meet this permit-mandated deadline, work will need to be completed in July and August 2008. Usually our contracts with the City extend from August in one year to August the next year, with the current agreement running from August 2007 to August 2008. The current contract includes budget for completing only one JURMP Annual Report, and we have already completed the 2006/2007 JURMP Annual Report. In order to complete a second JURMP Annual Report, additional budget is necessary.

The scope of services associated with preparing the 2007/2008 JURMP Annual Report includes the following tasks:

Task 1: Review and Respond to RWQCB Comments on FY 2006/2007 JURMP Annual Report
Once they become available, we will review the Regional Water Quality Control Board's (RWQCB) comments on the last JURMP Annual Report to identify areas of concern to the RWQCB. We will assist the City in preparing a response to the comments and will structure the 2007/2008 JURMP Annual Report to address the comments where applicable. We assume that the level of comments received will be similar to that received last year and that any comments received will not result in major restructuring of the report or additional analysis beyond the scope of what is described in Task 3 below.

Task 2: Coordinate Information Transfer with City Personnel
We will coordinate with the City to acquire information regarding the program implementation and special activities carried out during 2007/2008. We assume that, as in previous years, City storm water staff will coordinate obtaining information from other departments in the City. We anticipate that gathering information for this report will be somewhat more difficult than in previous years due to the changes in questions and the earlier deadline for receiving information. We will stay in contact with the applicable City staff after the initial questions are supplied to clarify questions if necessary and ask further

7200 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3.

Task 3: Prepare JURMP Annual Report
This task includes the preparation of the JURMP Annual Report in accordance with both the previous and current versions of the San Diego Municipal Storm Water Permit (Order 2001-01 and Order No. R9-2007-0001, respectively). The City was required to begin implementing the requirements of Order No. R9-2007-0001 no later than March 24, 2008, but some program elements or portions of program elements may have begun operating under the new program designs earlier. Determining the dates when the new programs were implemented will be part of the information collection process in Task 2.

Because the reporting requirements for the two different orders are different, most sections of the Annual Report will need to discuss how the program element met the requirements of each permit and when the Order No. R9-2007-0001 program was fully implemented. The following components and tasks will be included in the JURMP Annual Report.

- **Global changes**
  - Update order, titles, and content of sections and subsections to match the regionally standardized JURMP Annual Report format submitted to the RWQCB in July 2007 and the JURMP update completed in March 2008.
  - Include discussions of how each program element met the applicable requirements of both Order 2001-01 and Order No. R9-2007-0001.
- **Sections**
  - Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.
  - Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, a reference to any RWQCB comments on the City's 2006/2007 JURMP Annual Report (if applicable, the response will be included as an attachment), and a summary list of key achievements.
  - Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's Standard Urban Storm Water Mitigation Plan (SUSMP); treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
    - An updated treatment control BMP inventory.
    - The number of treatment control BMPs inspected, including a summary of inspection results and findings.
    - A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.

- Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
- A listing of any projects which received a SUSMP waiver.
- A description of implementation of any SUSMP waiver mitigation program.
- A description of Hydromodification Management Plan (HMP) development collaboration and participation.
- A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
- A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.
- A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.
- The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.

- Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.
  - Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
  - A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.
- Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Order No. 2007-0001 includes a number of changes in requirements for municipal programs, many of which require significantly more detailed data than has been available in the past. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.

- Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
- Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
- Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
- Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.
- Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2007/2008.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.

- Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
  - A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
- Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - A description of collaborative efforts taken to develop and implement the Regional Residential Education Program.
  - A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
- Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to

recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Note that we plan to reference the Dry Weather Monitoring Program report rather than including a summary of the data as has been done in past years. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.

- Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.
- A summary of changes to the Dry Weather Monitoring Program, including the addition of trash assessment and follow-up of laboratory exceedances within two business days.

- Education: will include descriptions of various educational efforts by the City. The new Municipal Permit emphasizes presenting educational efforts categorized by type of target audience. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
  - A description of education efforts conducted for each target community
  - Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges
- Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. The requirements of this section are not substantially different from what was required under RWQCB Order 2001-01.
- Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. This section should have the same format as the fiscal analysis sections for previous annual reports have had; new fiscal analysis reporting requirements are being developed but are not likely to be available before January 2009.
- Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared. Order No. R9-2007-0001 requires a significantly more detailed assessment of program effectiveness than what had previously been required.
- Special Investigations: will include a summary of any additional progress on the clean community program and any other relevant special studies completed during 2007-2008.
- Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.
- Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.

- **Report Preparation: Draft**
  - We will prepare two (2) hard copies of a draft JURMP Annual Report for City review. An electronic copy of the report text may also be provided if desired.
  - We will also prepare one volume of attachments for the draft JURMP Annual Report. In past years the amount of attachments has been substantial enough

that a separate volume is required. Attachments generally include items such as educational materials, inspection forms, and Dry Weather Monitoring Program reports. We will also convert hard copies of attachments supplied by the City to electronic format where necessary.

- **Responding to City Comments on the Draft Report**
  - We anticipate receiving and incorporating one round of technical comments on the draft report from the City.
- **Report Preparation: Final**
  - We will prepare and deliver two (2) hard copies and four (4) electronic copies of the final JURMP Annual Report and attachments. We will also provide one additional copy of the text of the JURMP Annual Report, not including attachments. Our understanding is that all electronic files, including attachments and the certification statement, must be converted to pdf format and merged into a single pdf document in order to meet RWQCB paperless office requirements.

Project Schedule and Costs for Services

We understand that the County of San Diego will need to receive the final report close to the end of September 2008. Because the reporting deadline is significantly earlier this year than it has been in previous years, we suggest beginning work before July 1, 2008. While not all necessary data will be available before July 1, we will be able to do initial preparation of questions and start collecting the information that is available at that point. We propose the following schedule.

- Notice to Proceed: June 16, 2008
- Deliver Draft Report to City: September 12, 2008
- Receive Review Comments from City: September 19, 2008
- Deliver Final Report to City: September 28, 2008.

We propose completing the services described in this proposal on a time and materials basis in accordance with the Schedule of Fees previously provided with our existing agreement with the City, not to exceed $24,903. Please see the attached spreadsheet for a detailed breakdown of our estimated costs.

If you have any questions regarding this proposal, please contact me at (858) 586-6600 x22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

National City 2007/2008 JURMP Annual Report

TASKS	Project Manager	Project Scientist	Asst Project Scientist	Word Processor	ODC	Total
			Rates ($/hr)			
	$ 130.00	$ 105.00	$ 95.00	$ 55.00		
			HOURS			
1) Respond to RWQCB 2006/07 AR Comments						
Review Information, Write Response		6				$630
					Subtotal	**$630**
2) Coordinate Information Transfer with City						
Planning/Develop List of Questions	1	4	3			$835
Call and Email City Personnel		4	8			$1,180
Organize Information, Follow-up as Needed	1	4	8			$1,310
					Subtotal	**$3,325**
3) Prepare JURMP Annual Report						
Executive Summary	1	3				$445
Introduction		2				$210
New Development/Redevelopment	2	4	12			$1,820
Construction	1	3	14			$1,775
Municipal	2	4	18			$2,390
Industrial/Commercial	1	4	14			$1,880
Residential		2	8			$970
IDDE	1	3	10			$1,395
Education		2	12			$1,350
Public Participation		2	6			$780
Fiscal Analysis		1	1			$200
Analysis of Program Effectiveness	4	12	8			$2,540
Special Investigations		2	4			$590
Conclusions			0.5			$48
Overall Review	8	4				$1,460
Address Comments from City	1	8	3			$1,255
Report Reproduction and Delivery (Draft & Final)		4	4	16	$160	$1,840
					Subtotal	**$20,948**
Totals	23	78	133.5	16	**Grand Total**	**$24,903**

City of National City
JURMP Cost Breakdown

	Princpal Engineer	Project Scientist	Staff Scientist	Drafter	Word Processor	Clerk	ODC	Total
Rate	$130	$105	$85	$60	$55	$45		
Task								
Introduction	4	12		4				$2,020
Municipal	4	16	24					$4,240
Industrial/Commercial	6	18	24					$4,710
Residential	2	8	16					$2,460
Development Planning	4	20	20					$4,320
Construction	4	18	12					$3,430
Illicit Discharge Detection/Elimination	6	8	24	8				$4,140
Education	2	4	12					$1,700
Public Participation	2	2	8					$1,150
Program Effectivness Assessment	8	24	9					$4,325
Fiscal Analysis	1	2.5						$393
JUMRP Modification	2	4	20					$2,380
Coordination Meetings with City	4	8	6					$1,870
Report Preparation (Draft)	6	16	8	4	16	4	$200	$4,640
Report Preparation (Final)	2	4	4		8	4	$400	$2,040
Total	**57**	**164.5**	**187**	**16**	**24**	**8**	**$600**	**$ 43,818**

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

August 8, 2008
Project No. 200840W

Mr. Din Daneshfar
City of National City
Engineering Department
1243 National City Boulevard
National City, CA 91950

Re: Proposal for Implementation of the NPDES Program, Fiscal Year 08-09
City of National City, California

Dear Mr. Daneshfar:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of National City in the implementation of the Federal National Pollutant Discharge Elimination System (NPDES) Program during the 2008-2009 reporting period. This work will be conducted in accordance with the NPDES requirements, the State of California General Industrial and Construction permits, and the San Diego Regional Water Quality Control Board (RWQCB) recently issued Municipal NPDES Permit, Order No. R9-2007-0001.

The scope of our services and estimated costs are attached to this proposal.

We look forward to working with you on this project. Please give me a call at (858) 586-6600 ext. 22 if you have any questions or would like to further discuss this proposal.

Sincerely,

D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager/Principal

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EXHIBIT A

SCOPE OF SERVICES

D-MAX will provide storm water services to assist the City of National City in complying with the National Pollutant Discharge Elimination System (NPDES) permits and enhance the water quality of runoff generated within the City. The following is a list of tasks anticipated to be necessary during the fiscal year. However, there may be unanticipated tasks that are necessary to complete but are not addressed herein. The tasks will be conducted in an order of priority as set by the City.

Project Coordination. Provide all project coordination necessary to perform the work for the City's NPDES program implementation. Project coordination will include monthly project status meetings with the City of National City and other related agencies for the duration of this contract. Also included in the program coordination are

- Management of the program kick-off meeting and all necessary meetings with other concerned and involved agencies and community groups.
- Management of all project-related meetings, including agenda and meeting minute preparation and distributions.
- Assisting the City with coordination and correspondence with the RWQCB regarding National City's storm water program.

Data Management and GIS. To facilitate annual reporting and to manage various JURMP programs on a day-to-day basis, data must be tracked and stored in a reliable, easy-to-use manner. This includes data from the City's construction, industrial, commercial, development, and municipal programs. D-MAX has created four separate Microsoft Access databases for the City: one each for construction inspections, industrial/commercial inspections, standard urban storm water mitigation plan (SUSMP) post-construction best management practice (BMP) tracking and inspections, and a variety of municipal activities. The City's SUSMP database should be updated to include the capacity to enter results from inspections and from maintenance verification letters sent out, and the linkage between inspection databases and the complaint database should be improved.

D-MAX will also assist the City in designing solutions for relating the data from various databases, including the use of geographic information systems (GIS). Additional tracking capabilities for the City's education program may be added as well, and a database to record and manage information from the City's water quality monitoring programs may be developed. Now that newly modified programs based on the City's recently updated JURMP have been implemented, updates to the City's databases will likely be necessary. D-MAX will regularly provide the City with copies of the databases it maintains.

In addition to database management, D-MAX will also assist the City in analyzing business license listings to determine JURMP prioritizations for new industrial and commercial businesses in the City. Those businesses will then be flagged for inspection in accordance with the procedure listed in the JURMP. We will further assist the City in

designing and implementing revised procedures for prioritizing facilities in the City, in accordance with new Municipal Permit guidelines for facility prioritization.

Assist in Compliance Inspection Program. We will assist the City's compliance inspection team with the following services:

- Conducting construction field inspections
- Conducting industrial and commercial field inspections
- Conducting SUSMP post-construction BMP inspections
- Conducting follow-up, complaint, or other special inspections
- Data entry into databases for these inspections

SUSMP Implementation and Document Preparation. We will continue to assist the City with implementation of the Standard Urban Storm Water Mitigation Plan (SUSMP) program as follows. This task also includes assisting the City in implementing tasks related to the new Hydromodification Management Plan (HMP) that is currently under development by the Copermittees and assisting the City with the new advanced treatment standards for construction projects. Note that review of SUSMP and Storm Water Pollution Prevention Plan (SWPPP) documents are included under a different contract.

- Assist with required revisions to the City's SUSMP Ordinance and related ordinances, including developing a SUSMP manual per the new Municipal Permit requirements
- Assist in complying with requirements of the SUSMP
- Conduct coordination meetings with various City departments and assist in refinement of the SUSMP process
- Review erosion and sediment control plans
- Assist in selecting and implementing BMPs
- Conduct educational presentations as required in the City's JURMP and Section D.5.b.(b) of the new Municipal Permit
- Prepare SUSMPs and construction storm water pollution prevention plans (SWPPP) for City Capital Improvement Projects

Dry Weather Field Screening and Analytical Monitoring. This task will include conducting one round of field screening in accordance with the requirements of the RWQCB Municipal Permit. The objective of this program is to detect and eliminate illicit connections and illegal discharges (IC/IDs) in order to minimize the negative impacts of human activities on receiving water bodies. The City of National City has identified 15 primary monitoring stations where data will be collected during the dry weather analytical and field screening monitoring program. This task will include the following:

> Visual Observations: Visual observations include looking for evidence of dry weather flows such as staining, corrosion, sediment, surrounding vegetation, algae, mosquito larvae, insects, and animals in the vicinity of the outfall. .

Field Analysis: At each site the flow and its temperature will be measured, and a sample will be taken for field analyses of the following parameters:

- Specific conductance
- Temperature
- Turbidity
- pH
- Reactive Phosphorus
- Nitrate Nitrogen
- Ammonia Nitrogen
- Surfactants (MBAS)

Analytical Monitoring: Water samples from 25 percent of the sites where ponded or flowing water is observed, will be collected and submitted to a California Department of Health Services certified laboratory for analysis of the following constituents:

- Total hardness
- Oil and grease
- Diazinon and Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Enterococcus bacteria
- Total Coliform bacteria
- Fecal Coliform bacteria

Trash Monitoring: The new Municipal Permit requires that the City implement a trash monitoring program during dry weather monitoring. The Copermittee Dry Weather Monitoring Sub-Workgroup developed a trash assessment form and procedures for trash monitoring. We will complete a trash assessment form at each routine site visit.

Preparation of a Summary Report: At the conclusion of the field screening program, a report will be prepared to summarize the observations and the results of the study, including trash monitoring. The report will include our interpretation of the field data and test results as to the possible presence of IC/IDs.

Follow-Up Investigations. During the dry weather field screening program if field investigations do not reveal a specific source of contamination, or if the results of the laboratory analysis indicate presence of pollutants in excess of action levels, further investigation will be conducted which may include the following steps:

- Tracing flows or discharges upstream
- Conducting field screening sampling

- Contacting dischargers
- Sampling for laboratory analysis
- Documenting source investigations

At the conclusion of the follow-up investigations, a summary report will be prepared summarizing the findings, conclusions and recommendations. Per new Municipal Permit requirements, all laboratory analytical exceedances will be followed up within two business days of receiving the results from the lab. This is a more aggressive timeframe than previously required. Also, upstream investigations for bacteria will utilize Colilert and Enterolert methods for bacterial analyses. These newer methods are more accurate than the methods used in the past.

Additional Monitoring and Special Studies. The new Municipal Permit requires that the City conduct MS4 monitoring and source identification monitoring programs. The MS4 monitoring will likely be conducted concurrently with the dry weather monitoring program and will include additional laboratory analytical work. Additional monitoring studies may also be necessary for source investigation purposes. In some portions of the City exceedances have been noted for several consecutive years in the dry weather monitoring program, and it may be necessary to perform additional monitoring beyond the typical dry weather follow-up investigations to evaluate the effectiveness of measures taken to address the sources of the exceedances. The new Municipal Permit also includes stricter requirements for effectiveness assessment, including outcome levels 4, 5, and 6 (load reduction, change in quality of discharge, and change in receiving water quality). Additional monitoring may be required to evaluate the effectiveness of City activities in accordance with these requirements.

Document Revisions for New Permit Requirements. The new Municipal Permit required revisions to the City's JURMP, which were completed in 2007-2008. During 2008-2009, no major revisions to the JURMP are anticipated, but several changes in response to new Municipal Permit requirements are anticipated. A new Model SUSMP was recently prepared, and we will assist the City with making required revisions to the SUSMP Ordinance and related City codes. Further, we anticipate that documents related to the new MS4 monitoring and source identification monitoring programs required by the new Municipal Permit will need to be prepared. Permits to allow the City to resume channel maintenance activities will also likely need to be acquired. That process is anticipated to involve coordinating with the RWQCB, the Army Corps of Engineers, and the California Department of Fish and Game.

Training and Education. D-MAX will conduct educational workshops and/or prepare education materials at the City's request to target audiences identified in the JURMP document. An educational calendar has been prepared in each of the last several years, and another calendar incorporating artwork from school children in the City is planned for 2009. Educational content for other programs may cover a variety of topics related to storm water quality and watershed concepts listed in the JURMP and be tailored to each specific audience. Suggested workshops and target audiences include the topics listed on the following page:

Planning and Engineering Departments
The goal of this workshop will be to inform the Planning and Engineering Departments of general concepts listed in the JURMP and to address new Permit requirements relevant to each department. The Permit requires changes in land-use planning and engineering aspects of new development and redevelopment projects within the City, including the implementation of the City's SUSMP. Among the new requirements is the implementation of Low Impact Development (LID) measures for all development projects.

Public Works Staff
The workshop will be targeted towards public works employees and will focus mainly on the practical aspects of BMP implementation. It will also address changes in public works operations required by the Municipal Permit, such as effects on channel maintenance and storm drain cleanout frequency. In the event that the City's NPDES Storm Water Compliance Inspector conducts this training, D-MAX will not provide a training for this audience.

Construction Inspectors
The educational workshop for construction inspectors will include general concepts listed in the JURMP and additionally cover such topics as BMP implementation and maintenance, good housekeeping measures, site inspections and inspection frequency.

School Students
We will assist the City in providing training workshops for school students. The topics for these workshops include the source of pollutants, the impact of pollutants on the receiving water bodies and BMPs to prevent the pollutions.

Workshops
At the request of the City, we will provide targeted educational workshops for various industry or stakeholder groups. D-MAX has recently conducted workshops for industrial businesses, automotive businesses, the development and construction industry, and City residents.

Educational Materials
We will assist the City in developing educational materials such as pamphlets, calendars, articles for newsletter or websites, or fact sheets. These materials may to be targeted at the development community, City residents, industrial and commercial businesses, City staff, or other audiences. The new Municipal Permit requires additional education related to watershed concepts and watershed pollutants of concern.

Watershed Urban Runoff Management Program. The City of National City is located within the San Diego Bay Watershed. The Municipal Permit requires each Copermittee to collaborate with other Copermittees within its watershed to identify and mitigate the highest priority water quality issues/pollutants in the watershed.

D-MAX will coordinate with the watershed Copermittees on behalf of the City of National City and fulfill the group requirements per the City instructions. In each of the last three years, we have assisted the City by helping write the San Diego Bay WURMP Annual

Reports, and the City has been listed as among the primary authors of those annual reports. The RWQCB has recently completed an evaluation of various WURMP programs in the San Diego region, including the San Diego Bay WURMP. A report with findings and more specific direction for future watershed activities is anticipated in the fall of 2008. It is expected that some additional activities and modification of existing activities will be required by the RWQCB's report.

Representing the City in Various Meetings. D-MAX will represent the City of National City in various meetings including those with other Copermittees, the Regional Board, and/or Regional Workgroups. The City has taken on the responsibility of serving as the secretary for the Municipal Workgroup, and we will assist the City in fulfilling that responsibility.

Other Storm Water Services. It has been our experience with other local municipalities and with the City of National City that storm water related situations arise from time to time that require immediate or expert action. For example, additional services related to the Paleta Creek/7th Street Channel TMDL, which is currently under development, may be required. D-MAX will be pleased to provide any other as-needed, on-call services to the City of National City that have not been identified above.

EXHIBIT B

COST SUMMARY & FEE SCHEDULE

We propose to complete the aforementioned services on a time and materials basis (not to exceed $200,000 total) in accordance with the attached schedule of fees. Our estimated costs are listed below.

	Principal Engineer	Project Scientist	Asst Proj Scientist	Staff Scientist	Drafter	Word Processor	Clerk	ODC*	Calculated Total	Rounded Total
Rate	$140	$110	$95	$85	$65	$55	$50			
Task Description										
Project Coordination	60	50	20					$400	$16,200	$16,000
Data Management and GIS	12	60	68	20		45			$18,915	$19,000
Assist in Compliance Inspection Program	8	16	40	206		18		$1,800	$26,980	$27,000
SUSMP Implementation and Document Preparation	40	78	40					$100	$18,080	$18,000
Dry Weather Analytical Monitoring and Field Screening	12	16		104	4	8		$3,000	$15,980	$16,000
Follow-up Investigations	8	8		76	4	4		$3,000	$11,940	$12,000
Additional Monitoring and Special Studies	12	14		60	2	2		$1,500	$10,060	$10,000
Document Revisions for New Permit Requirements	20	45	40	30		12		$200	$14,960	$15,000
Training and Education	40	54	60	20		20		$5,000	$25,040	$25,000
Watershed Urban Runoff Management Programs	16	70	54	30		12		$800	$19,080	$19,000
Representing the City in Various Meetings	30	50	16					$800	$12,020	$12,000
Other Storm Water Services	12	16	16	64		8		$200	$11,040	$11,000
Total	**270**	**477**	**354**	**610**	**10**	**129**	**0**	**$16,800**	**$200,295**	**$200,000**

*ODC for Dry Weather Monitoring includes laboratory analytical costs, and ODC for Training and Education includes outside printing of materials (e.g., calendars).

EXHIBIT B
COST SUMMARY & FEE SCHEDULE

SCHEDULE OF FEES

July 1, 2008

This Schedule of Fees will be adjusted periodically. The new fee schedule will apply to all existing and new work.

LABOR

Classification	Hourly Rate
Clerk*	$ 50
Word Processor*	55
Drafter*	65
Technician*	65
Senior Technician*	75
Staff Scientist/Engineer	85
Assistant Project Scientist/Engineer	95
Project Scientist/Engineer	110
Senior Scientist/Engineer	120
Principal Scientist/Engineer	140

* Overtime (in excess of 8 hours per day) and weekend hours will be charged at 1.5 times the above rates for non-exempt personnel.

Field and hourly services will be charged portal to portal from our office, with a two-hour minimum.

Appearance as expert witnesses at court trials, mediation, arbitration hearings and depositions will be charged at $200/hour. Time spent preparing for such appearances will be charged at the above standard hourly rates.

OTHER CHARGES

Subcontracted services, such as sub consultants, outside testing, drilling, and surveyors, will be charged at cost plus 15%. Other project-specific costs, such as rentals, expendable or special supplies, special project insurance, permits and licenses, shipping, subsistence, tolls and parking, outside copying/printing, etc., will be charged at cost plus 15%. Mileage will be charged at a rate of $0.67 per mile.

Client will be responsible for any applicable taxes in addition to the fees due for Services.

EXHIBIT C
PROJECT SCHEDULE

Tasks	*SEP 2008*	*OCT 2008*	*NOV 2008*	*DEC 2008*	*JAN 2009*	*FEB 2009*	*MAR 2009*	*APR 2009*	*MAY 2009*	*JUN 2009*
Project Coordination										
Data Management										
Assist in Compliance Inspection Program										
Dry Weather Analytical Monitoring and Field Screening										
Follow-Up Investigations										
Additional Monitoring and Special Studies										
Document Revisions for New Permit Requirements										
Training and Education										
Watershed Urban Runoff Management Program										
Representing the City in Various Meetings										
Other Storm Water Services										

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

May 4, 2009
Project No. 200927W

Mr. Din Daneshfar
City of National City
Engineering Department
1243 National City Boulevard
National City, CA 91950

Re: Proposal for Implementation of the NPDES Program, Fiscal Year 09-10
City of National City, California

Dear Mr. Daneshfar:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of National City in the implementation of the Federal National Pollutant Discharge Elimination System (NPDES) Program during the 2009-2010 reporting period. This work will be conducted in accordance with the NPDES requirements, the State of California General Industrial and Construction permits, and the San Diego Regional Water Quality Control Board (RWQCB) issued Municipal NPDES Permit, Order No. R9-2007-0001.

Our scope of services, estimated costs, and project schedule are attached to this proposal.

We look forward to working with you on this project. Please give me a call at (858) 586-6600 ext. 22 if you have any questions or would like to further discuss this proposal.

Sincerely,

D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager/Principal

7200 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

EXHIBIT A

SCOPE OF SERVICES

D-MAX will provide storm water services to assist the City of National City in complying with the National Pollutant Discharge Elimination System (NPDES) permits and enhance the water quality of runoff generated within the City. The following is a list of tasks anticipated to be necessary during the fiscal year. However, there may be unanticipated tasks that are necessary to complete but are not addressed herein. The tasks will be conducted in an order of priority as set by the City.

Project Coordination. Provide all project coordination necessary to perform the work for the City's NPDES program implementation. Project coordination will include monthly project status meetings with the City of National City and other related agencies for the duration of this contract. Also included in the program coordination are

- Management of the program kick-off meeting and all necessary meetings with other concerned and involved agencies and community groups.
- Management of all project-related meetings, including agenda and meeting minute preparation and distributions.
- Assisting the City with coordination and correspondence with the RWQCB regarding National City's storm water program.

Data Management and GIS. To facilitate annual reporting and to manage various JURMP programs on a day-to-day basis, data must be tracked and stored in a reliable, easy-to-use manner. This includes data from the City's construction, industrial, commercial, development, and municipal programs. D-MAX has created four separate Microsoft Access databases for the City: one each for construction inspections, industrial/commercial inspections, standard urban storm water mitigation plan (SUSMP) post-construction best management practice (BMP) tracking and inspections, and a variety of municipal activities.

D-MAX will also assist the City in designing solutions for relating the data from various databases, including the use of geographic information systems (GIS). Additional tracking capabilities for the City's education program may be added as well, and a database to record and manage information from the City's water quality monitoring programs may be developed. D-MAX will regularly provide the City with copies of the databases it maintains.

In addition to database management, D-MAX will also assist the City in analyzing business license listings to determine JURMP prioritizations for new industrial and commercial businesses in the City. Those businesses will then be flagged for inspection in accordance with the procedure listed in the JURMP. We will further assist the City in designing and implementing revised procedures for prioritizing facilities in the City, in accordance with new Municipal Permit guidelines for facility prioritization.

Assist in Compliance Inspection Program. We will assist the City's compliance inspection team with the following services:

- Conducting construction field inspections
- Conducting industrial and commercial field inspections
- Conducting SUSMP post-construction BMP inspections
- Conducting municipal facilities and activities inspections
- Conducting follow-up, complaint, or other special inspections
- Data entry into databases for these inspections

SUSMP Implementation and Document Preparation. We will continue to assist the City with implementation of the Standard Urban Storm Water Mitigation Plan (SUSMP) program as follows. This task also includes assisting the City in implementing tasks related to the new Hydromodification Management Plan (HMP) that is currently under review by the RWQCB. Note that review of SUSMP and Storm Water Pollution Prevention Plan (SWPPP) documents are included under a different contract.

- Assist with required revisions to the City's SUSMP Ordinance and related ordinances in accordance with the new Model SUSMP and the HMP
- Assist in complying with requirements of the SUSMP
- Conduct coordination meetings with various City departments and assist in refinement of the SUSMP process
- Review erosion and sediment control plans
- Assist in selecting and implementing BMPs
- Conduct educational presentations as required in the City's JURMP and Section D.5.b.(b) of the new Municipal Permit
- Prepare SUSMPs and construction storm water pollution prevention plans (SWPPP) for City Capital Improvement Projects

Dry Weather Field Screening and Analytical Monitoring. This task will include conducting one round of field screening in accordance with the requirements of the RWQCB Municipal Permit. The objective of this program is to detect and eliminate illicit connections and illegal discharges (IC/IDs) in order to minimize the negative impacts of human activities on receiving water bodies. The City of National City has identified 15 primary monitoring stations where data will be collected during the dry weather analytical and field screening monitoring program. This task will include the following:

Visual Observations: Visual observations include looking for evidence of dry weather flows such as staining, corrosion, sediment, surrounding vegetation, algae, mosquito larvae, insects, and animals in the vicinity of the outfall. .

Field Analysis: At each site the flow and its temperature will be measured, and a sample will be taken for field analyses of the following parameters:

- Specific conductance
- Temperature

- Turbidity
- pH
- Reactive Phosphorus
- Nitrate Nitrogen
- Ammonia Nitrogen
- Surfactants (MBAS)

Analytical Monitoring: Water samples from 25 percent of the sites where ponded or flowing water is observed, will be collected and submitted to a California Department of Health Services certified laboratory for analysis of the following constituents:

- Total hardness
- Oil and grease
- Diazinon and Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Enterococcus bacteria
- Total Coliform bacteria
- Fecal Coliform bacteria

Trash Monitoring: The new Municipal Permit requires that the City implement a trash monitoring program during dry weather monitoring. The Copermittee Dry Weather Monitoring Sub-Workgroup developed a trash assessment form and procedures for trash monitoring. We will complete a trash assessment form at each routine site visit.

Preparation of a Summary Report: At the conclusion of the field screening program, a report will be prepared to summarize the observations and the results of the study, including trash monitoring. The report will include our interpretation of the field data and test results as to the possible presence of IC/IDs. Reporting also includes preparing a spreadsheet of the collected data in the regionally standardized format and submitting it to the County of San Diego.

Follow-Up Investigations. During the dry weather field screening program if field investigations do not reveal a specific source of contamination, or if the results of the laboratory analysis indicate presence of pollutants in excess of action levels, further investigation will be conducted which may include the following steps:

- Tracing flows or discharges upstream
- Conducting field screening sampling
- Contacting dischargers
- Sampling for laboratory analysis
- Documenting source investigations

At the conclusion of the follow-up investigations, a summary report will be prepared summarizing the findings, conclusions and recommendations. Per new Municipal Permit requirements, all laboratory analytical exceedances will be followed up within two business days of receiving the results from the lab. This is a more aggressive timeframe than previously required. Also, upstream investigations for bacteria will utilize Colilert and Enterolert methods for bacterial analyses. These newer methods are more accurate than the methods used in the past.

MS4 Monitoring and Special Studies. The new Municipal Permit requires that the City conduct MS4 monitoring and source identification monitoring programs. The MS4 monitoring will be conducted concurrently with the dry weather monitoring program and will include additional laboratory analytical work. Additional monitoring studies may also be necessary for source investigation purposes. In some portions of the City exceedances have been noted for several consecutive years in the dry weather monitoring program, and it may be necessary to perform additional monitoring beyond the typical dry weather follow-up investigations to evaluate the effectiveness of measures taken to address the sources of the exceedances. The new Municipal Permit also includes stricter requirements for effectiveness assessment, including outcome levels 4, 5, and 6 (load reduction, change in quality of discharge, and change in receiving water quality). Additional monitoring may be required to evaluate the effectiveness of City activities in accordance with these requirements.

JURMP Annual Report. As a requirement of the Municipal Permit, the City must produce an annual report to the RWQCB detailing the activities that have been conducted during the previous reporting period to reduce pollutants in urban runoff. The JURMP Annual Report serves to document the activities that the City has conducted during the past reporting period of July 1, 2008 through June 30, 2009. Report preparation includes the following:

<u>Coordinate Information Transfer with City personnel</u>
Contacting several City departments to acquire information on the program implementation and special activities carried out through the year. We will have initial meetings with responsible personnel at each department to prepare a plan for receiving information regarding the implementation of the City's JURMP. We will stay in contact with the City's departments thereafter. Pertinent information will be acquired under this task to be used in the report.

<u>Review and Respond to RWQCB Comments</u>
The RWQCB made some comments on the City's 2007-2008 JURMP Annual Report and the March 2008 JURMP update that must be addressed in the 2008-2009 JURMP Annual Report. We will prepare a response to those comments and include it as an attachment to the JURMP Annual Report.

<u>Prepare Annual JURMP Report</u>
This task includes the preparation of the Annual JURMP Report in accordance with Section I of the Municipal Permit. A draft report will be prepared and submitted to the City for comments, after which a final report will be prepared. Two hard copies and four electronic copies of the final report will be prepared and delivered to the City. The following sections will be included in the report:

- Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.
- Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, and a summary list of key achievements.
- Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's Standard Urban Storm Water Mitigation Plan (SUSMP); treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications.
- Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement.
- Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included.
- Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses.
- Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas.
- Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved.
- Education: will include descriptions of various educational efforts by the City. The new Municipal Permit emphasizes presenting educational efforts categorized by type of target audience.
- Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program.
- Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. This section should have the same format as the fiscal analysis sections in previous annual reports.
- Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2007-2008 JURMP Annual Report will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared.
- Special Investigations: will include a summary of any additional progress on the clean community program and any other relevant special studies completed during 2008-2009.
- Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

Training and Education. D-MAX will conduct educational workshops and/or prepare education materials at the City's request to target audiences identified in the JURMP document. An educational calendar has been prepared in each of the last several years, and another calendar incorporating artwork from school children in the City, similar to the one prepared for 2009, is planned for 2010. Educational content for other programs may cover a variety of topics related to storm water quality and watershed concepts listed in the JURMP and be tailored to each specific audience. Suggested workshops and target audiences include the topics listed below:

Planning and Engineering Departments
The goal of this workshop will be to inform the Planning and Engineering Departments of general concepts listed in the JURMP and to address new Permit requirements relevant to each department. The Permit requires changes in land-use planning and engineering aspects of new development and redevelopment projects within the City, including the implementation of the City's SUSMP. Among the new requirements is the implementation of Low Impact Development (LID) measures for all development projects.

Public Works Staff
The workshop will be targeted towards public works employees and will focus mainly on the practical aspects of BMP implementation. It will also address changes in public works operations required by the Municipal Permit, such as effects on channel maintenance and storm drain cleanout frequency. In the event that the City's NPDES Storm Water Compliance Inspector conducts this training, D-MAX will not provide a training session for this audience.

Construction Inspectors
The educational workshop for construction inspectors will include general concepts listed in the JURMP and additionally cover such topics as BMP implementation and maintenance, good housekeeping measures, site inspections and inspection frequency.

School Students
We will assist the City in providing training workshops for school students. The topics for these workshops include the source of pollutants, the impact of pollutants on the receiving water bodies and BMPs to prevent the pollutions.

Workshops
At the request of the City, we will provide targeted educational workshops for various industry or stakeholder groups. D-MAX has recently conducted workshops for industrial businesses, automotive businesses, the development and construction industry, and City residents.

Educational Materials
We will assist the City in developing educational materials such as pamphlets, calendars, articles for newsletter or websites, or fact sheets. These materials may to be targeted at the development community, City residents, industrial and commercial businesses, City staff, or other audiences. The new Municipal Permit requires additional education related to watershed concepts and watershed pollutants of concern.

Watershed Urban Runoff Management Program. The City of National City is located within the San Diego Bay Watershed. The Municipal Permit requires each Copermittee to collaborate with other Copermittees within its watershed to identify and mitigate the highest priority water quality issues/pollutants in the watershed.

D-MAX will coordinate with the watershed Copermittees on behalf of the City of National City and fulfill the group requirements per the City instructions. In each of the last three years, we have assisted the City by helping write the San Diego Bay WURMP Annual Reports, and the City has been listed as among the primary authors of those annual reports. The City is also required to implement activities that measurably change knowledge, awareness, or behavior or target audiences and activities that result in significant pollutant load reductions or source abatement each year. We will assist the City with implementing these activities to meet WURMP requirements.

Representing the City in Various Meetings. D-MAX will represent the City of National City in various meetings including those with other Copermittees, the Regional Board, and/or Regional Workgroups. The City has taken on the responsibility of serving as the secretary for the Municipal Workgroup, and we will assist the City in fulfilling that responsibility.

Other Storm Water Services. It has been our experience with other local municipalities and with the City of National City that storm water related situations arise from time to time that require immediate or expert action. For example, additional services related to the Paleta Creek/7th Street Channel TMDL, which is currently under development, may be required. The process of obtaining permits to allow the City to resume channel maintenance activities was initiated in 2008-2009, but we anticipate that some work to finalize the process will also be necessary in 2009-2010. That process is anticipated to involve coordinating with the RWQCB, the Army Corps of Engineers, and the California Department of Fish and Game. D-MAX will be pleased to provide any other as-needed, on-call services to the City of National City that have not been identified above.

EXHIBIT B

COST SUMMARY & FEE SCHEDULE

We propose to complete the aforementioned services on a time and materials basis (not to exceed $200,000 total) in accordance with the attached schedule of fees. Our estimated costs are listed below.

	Principal Engineer	Project Scientist	Asst Proj Scientist	Staff Scientist	Drafter	Word Processor	Clerk	ODC*	Calculated Total	Rounded Total
Rate	$140	$110	$95	$85	$65	$55	$50			
Task Description										
Project Coordination	40	40	20					$400	$12,300	$12,300
Data Management and GIS	12	60	60	20		45			$18,155	$18,150
Assist in Compliance Inspection Program	8	16	40	206		18		$1,800	$26,980	$27,000
SUSMP Implementation and Document Preparation	40	50	40					$100	$15,000	$15,000
Dry Weather Analytical Monitoring and Field Screening	12	16		104	4	8		$3,000	$15,980	$16,000
Follow-up Investigations	8	8		76	4	4		$3,000	$11,940	$11,950
MS4 Monitoring and Special Studies	12	10		60	2	2		$1,500	$9,620	$9,600
JURMP Annual Report	20	50	120	30		12		$200	$23,110	$23,100
Training and Education	40	40	60	20		20		$5,000	$23,500	$23,500
Watershed Urban Runoff Management Program	16	70	54	30		12		$800	$19,080	$19,100
Representing the City in Various Meetings	30	50	16					$800	$12,020	$12,000
Other Storm Water Services	12	12	27	72		8		$200	$12,325	$12,300
Total	**250**	**422**	**437**	**618**	**10**	**129**	**0**	**$16,800**	**$200,010**	**$200,000**

*ODC for Dry Weather Monitoring includes laboratory analytical costs, and ODC for Training and Education includes outside printing of materials (e.g., calendars).

EXHIBIT B
COST SUMMARY & FEE SCHEDULE

SCHEDULE OF FEES

January 1, 2009

This Schedule of Fees will be adjusted periodically. The new fee schedule will apply to all existing and new work.

LABOR

Classification	Hourly Rate
Clerk*	$ 50
Word Processor*	55
Drafter*	65
Technician*	65
Senior Technician*	75
Staff Scientist/Engineer	85
Assistant Project Scientist/Engineer	95
Project Scientist/Engineer	110
Senior Scientist/Engineer	120
Principal Scientist/Engineer	140

* Overtime (in excess of 8 hours per day) and weekend hours will be charged at 1.5 times the above rates for non-exempt personnel.

Field and hourly services will be charged portal to portal from our office, with a two-hour minimum.

Appearance as expert witnesses at court trials, mediation, arbitration hearings and depositions will be charged at $200/hour. Time spent preparing for such appearances will be charged at the above standard hourly rates.

OTHER CHARGES

Subcontracted services, such as sub consultants, outside testing, drilling, and surveyors, will be charged at cost plus 15%. Other project-specific costs, such as rentals, expendable or special supplies, special project insurance, permits and licenses, shipping, subsistence, tolls and parking, outside copying/printing, etc., will be charged at cost plus 15%. Mileage will be charged at a rate of $0.63 per mile.

Client will be responsible for any applicable taxes in addition to the fees due for Services.

EXHIBIT C
PROJECT SCHEDULE

Tasks	*JULY 2009*	*AUG 2009*	*SEP 2009*	*OCT 2009*	*NOV 2009*	*DEC 2009*	*JAN 2010*	*FEB 2010*	*MAR 2010*	*APR 2010*	*MAY 2010*	*JUN 2010*
Project Coordination												
Data Management												
Assist in Compliance Inspection Program												
Dry Weather Analytical Monitoring and Field Screening												
Follow-Up Investigations												
MS4 Monitoring and Special Studies												
JURMP Annual Report												
Training and Education												
Watershed Urban Runoff Management Program												
Representing the City in Various Meetings												
Other Storm Water Services												

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

June 2, 2010
Project No. 201029P

Mr. Din Daneshfar
City of National City
Engineering Department
1243 National City Boulevard
National City, CA 91950

Re: Proposal for Implementation of the NPDES Program, Fiscal Year 2010-11
City of National City, California

Dear Mr. Daneshfar:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of National City in the implementation of the Federal National Pollutant Discharge Elimination System (NPDES) Program during the 2010-2011 reporting period. This work will be conducted in accordance with the NPDES requirements, the State of California General Industrial and Construction permits, and the San Diego Regional Water Quality Control Board (RWQCB) issued Municipal NPDES Permit, Order No. R9-2007-0001.

Our scope of services, estimated costs, and project schedule are attached to this proposal.

We look forward to working with you on this project. Please give me a call at (858) 586-6600 ext. 22 if you have any questions or would like to further discuss this proposal.

Sincerely,

D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Principal

7200 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

EXHIBIT A

D-MAX will provide storm water services to assist the City of National City in complying with NPDES permits and enhance the water quality of runoff generated within the City. The tasks anticipated to be necessary during the fiscal year are categorized into two groups. Group I tasks are similar to those completed during 2009-2010. Group II tasks are related to new regulatory requirements. Since Group I tasks are most critical for permit compliance, we propose giving these tasks first priority. The relative priorities to be assigned to different tasks will be discussed at the annual program kick-off meeting and revisited periodically at the monthly coordination meetings to ensure the City's needs are being met.

Group I Tasks

- **Project Coordination**. Provide all project coordination necessary to perform the work for the City's NPDES program implementation. Project coordination will include monthly project status meetings with the City of National City and other related agencies for the duration of this contract. Also included in the program coordination are:
  - Management of the program kick-off meeting and all necessary meetings with other concerned and involved agencies and community groups.
  - Management of all project-related meetings, including agenda and meeting minute preparation and distribution.
  - Assisting the City with coordination and correspondence with the RWQCB regarding National City's storm water program.
- **Data Management and GIS.** To facilitate annual reporting and to manage various JURMP programs on a day-to-day basis, data must be tracked and stored in a reliable, easy-to-use manner. This includes data from the City's construction, industrial, commercial, development, and municipal programs. D-MAX has created four separate Microsoft Access databases for the City: one each for construction inspections, industrial/commercial inspections, SUSMP post-construction best management practice (BMP) tracking and inspections, and a variety of municipal activities. D-MAX will also assist the City with GIS analysis where necessary for the NPDES program. D-MAX will enter data provided by the City and regularly provide the City with copies of the databases it maintains.
- **Assist in Compliance Inspection Program.** We will assist the City's compliance inspection team with the following services:
  - Conducting construction field inspections
  - Conducting industrial and commercial field inspections
  - Conducting SUSMP post-construction BMP inspections
  - Conducting municipal facilities and activities inspections
  - Conducting follow-up, complaint, and/or other special inspections, as applicable
  - Data entry into databases for these inspections
- **SUSMP Implementation and Document Preparation.** We will continue to assist the City with implementation of the SUSMP program as follows. This task also

includes assisting the City in implementing tasks related to the new Hydromodification Management Plan (HMP) that is currently under review by the RWQCB. It is anticipated that the HMP will be approved by the RWQCB in June 2010. The City will then have 180 days to adopt the HMP requirements into the City's SUSMP Manual and/or related ordinances. Note that review of SUSMP report and Storm Water Pollution Prevention Plan (SWPPP) documents are included under a different contract.

- Assist with required revisions to the City's SUSMP Manual and related ordinances in accordance with the new HMP.
- Assist in complying with requirements of the SUSMP
- Conduct coordination meetings with various City departments and assist in refinement of the SUSMP process
- Review erosion and sediment control plans
- Assist in selecting and implementing BMPs
- Conduct educational presentations as required in the City's JURMP and Section D.5.b.(b) of the new Municipal Permit
- Prepare SUSMPs and construction SWPPPs for City Capital Improvement Projects

- **Dry Weather Field Screening and Analytical Monitoring.** This task will include conducting one round of field screening in accordance with the requirements of the Municipal Permit. The objective of this program is to detect and eliminate illicit connections and illegal discharges (IC/IDs) in order to minimize the negative impacts of human activities on receiving water bodies. The City of National City has identified 15 primary monitoring stations where data will be collected during the dry weather analytical and field screening monitoring program. In the event that a site is dry, visual observations will be recorded and an alternate site will be selected. This task will include the following:

  Visual Observations: Visual observations include looking for evidence of dry weather flows such as staining, corrosion, sediment, surrounding vegetation, algae, mosquito larvae, insects, and animals in the vicinity of the outfall.

  Field Analysis: At each site the flow and its temperature will be measured, and a sample will be taken for field analyses of the following parameters:

  - Specific conductance
  - Temperature
  - Turbidity
  - pH
  - Reactive Phosphorus
  - Nitrate Nitrogen
  - Ammonia Nitrogen
  - Surfactants (MBAS)

  Analytical Monitoring: Water samples from 25 percent of the sites where ponded or flowing water is observed, will be collected and submitted to a California

Department of Health Services certified laboratory for analysis of the following constituents:

- Total hardness
- Oil and grease
- Diazinon and Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Enterococcus bacteria
- Total Coliform bacteria
- Fecal Coliform bacteria

Trash Monitoring: The Municipal Permit requires that the City implement a trash monitoring program during dry weather monitoring. The Copermittee Dry Weather Monitoring Sub-Workgroup developed a trash assessment form and procedures for trash monitoring. We will complete a trash assessment form at each routine site visit.

Dry Weather Data Conversion: The County of San Diego maintains a regional database of dry weather monitoring data collected by the Copermittees. The County requires that each City convert its dry weather monitoring data into a standard format so that it can be easily uploaded into the regional database. The process involves converting the data from tables designed for ease of reading and reference to more duplicative tables that are designed to allow for more efficient data analysis using the regional database. D-MAX will assist the City by performing this conversion process.

Preparation of a Summary Report: At the conclusion of the field screening program, a report will be prepared to summarize the observations and the results of the study, including trash monitoring. The report will include our interpretation of the field data and test results as to the possible presence of IC/IDs. Reporting also includes preparing a spreadsheet of the collected data in the regionally standardized format and submitting it to the County of San Diego.

- **Follow-Up Investigations.** During the dry weather field screening program if field investigations do not reveal a specific source of contamination, or if the results of the laboratory analysis indicate presence of pollutants in excess of action levels, further investigation will be conducted which may include the following steps:

  - Tracing flows or discharges upstream
  - Conducting field screening sampling
  - Contacting dischargers
  - Sampling for laboratory analysis
  - Documenting source investigations

  At the conclusion of the follow-up investigations, a summary report will be prepared summarizing the findings, conclusions and recommendations. Per Municipal Permit requirements, all laboratory analytical exceedances will be followed up within two business days of receiving the results from the lab. Also, upstream investigations for bacteria will utilize Colilert and Enterolert methods for bacterial analyses. These

newer methods have a faster turnaround time than standard analysis methods, which is an advantage during upstream source tracking investigations.

- **MS4 Monitoring.** The new Municipal Permit requires that the City conduct MS4 outfall monitoring. The MS4 monitoring will be conducted prior to August 1 and will include additional laboratory analytical work. The goal of the MS4 outfall monitoring program is to provide additional assessment of the potential for outfalls that discharge directly to receiving water bodies to discharge pollutants of concern associated with the applicable receiving water body. D-MAX will conduct MS4 outfall monitoring as described in the Copermittees' MS4 outfall monitoring workplan. We will also provide a spreadsheet of the MS4 outfall monitoring data in the regionally standardized format in advance of the regionally established deadline for targeted dry weather MS4 outfall monitoring data submittal.

- **JURMP Annual Report**. As a requirement of the Municipal Permit, the City must produce an annual report to the RWQCB detailing the activities that have been conducted during the previous reporting period to reduce pollutants in urban runoff. The JURMP Annual Report to be submitted by September 30, 2010, will document the activities that the City has conducted during the past reporting period of July 1, 2009 through June 30, 2010. Report preparation includes the following:

  Coordinate Information Transfer with City personnel
  Contacting several City departments to acquire information on the program implementation and special activities carried out through the year. We will have initial meetings with responsible personnel at each department to prepare a plan for receiving information regarding the implementation of the City's JURMP. We will stay in contact with the City's departments thereafter. Pertinent information will be acquired under this task to be used in the report.

  Review and Respond to RWQCB Comments
  If any comments on the 2008-2009 JURMP Annual Report are received, we will prepare a response to those comments and include it as an attachment to the 2009-2010 JURMP Annual Report.

  Prepare JURMP Annual Report
  This task includes the preparation of the JURMP Annual Report in accordance with Section I of the Municipal Permit. A draft report will be prepared and submitted to the City for comments, after which a final report will be prepared. Two hard copies and four electronic copies of the final report will be prepared and delivered to the City. The following sections will be included in the report:

  - Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.
  - Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, and a summary list of key achievements.
  - Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's SUSMP; treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications.

- Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement.
- Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, MS4 maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included.
- Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses.
- Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas.
- Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved.
- Education: will include descriptions of various educational efforts by the City. The new Municipal Permit emphasizes presenting educational efforts categorized by type of target audience.
- Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program.
- Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. A new fiscal analysis framework has been developed by the Copermittees, and it will need to be implemented for the 2009/2010 JURMP Annual Report. Adapting the City's financial information to the new format will require developing a different structure for the section and working with the City to match financial data to the standard categories provided in the new fiscal analysis framework adopted by the Copermittees.
- Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008-2009 JURMP Annual Report will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared.
- Special Investigations: will include a summary of any additional progress on the clean community program and any other relevant special studies completed during 2009-2010.
- Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

- **Training and Education.** D-MAX will conduct educational workshops and/or prepare education materials at the City's request to target audiences identified in the JURMP document. An educational calendar has been prepared in each of the last several years. We will coordinate with the City to determine if a similar approach should be used in 2010-2011 or whether a different approach will be more beneficial. Educational content for other programs may cover a variety of topics related to storm water quality and watershed concepts listed in the JURMP and be tailored to each specific audience. Most likely the City will focus its outreach efforts on one or two target audiences or topics; workshops and target audiences could include those listed below:

  Planning and Engineering Departments
  The goal of this workshop will be to inform the Planning and Engineering Departments of general concepts listed in the JURMP and to address new Permit requirements relevant to each department. The Permit requires changes in land-use planning and engineering aspects of new development and redevelopment projects within the City, including the implementation of the City's SUSMP. Among the new requirements is the implementation of Low Impact Development (LID) measures for all development projects and hydromodification management measures for Priority Development Projects Subject to SUSMP.

  Public Works Staff
  The workshop will be targeted towards public works employees and will focus mainly on the practical aspects of BMP implementation. It will also address changes in public works operations required by the Municipal Permit, such as effects on channel maintenance and storm drain cleanout frequency. In the event that the City's NPDES Storm Water Compliance Inspector conducts this training, D-MAX will not provide a training session for this audience.

  Construction Inspectors
  The educational workshop for construction inspectors will include general concepts listed in the JURMP and additionally cover such topics as BMP implementation and maintenance, good housekeeping measures, site inspections and inspection frequency.

  School Students
  We will assist the City in providing training workshops for school students. The topics for these workshops include the source of pollutants, the impact of pollutants on the receiving water bodies and BMPs to prevent the pollutions.

  Workshops
  At the request of the City, we will provide targeted educational workshops for various industry or stakeholder groups. D-MAX has recently conducted workshops for industrial businesses, automotive businesses, the development and construction industry, and City residents.

  Educational Materials
  We will assist the City in developing educational materials such as pamphlets, calendars, articles for newsletter or websites, or fact sheets. These materials may to be targeted at the development community, City residents, industrial and commercial businesses, City staff, or other audiences. The Municipal Permit

requires additional education related to watershed concepts and watershed pollutants of concern.

- **Watershed Urban Runoff Management Program.** The City of National City is located within the San Diego Bay Watershed. The Municipal Permit requires each Copermittee to collaborate with other Copermittees within its watershed to identify and mitigate the highest priority water quality issues/pollutants in the watershed.

  D-MAX will coordinate with the watershed Copermittees on behalf of the City of National City and fulfill the group requirements per the City instructions. Since 2004 we have assisted the City by helping write the San Diego Bay WURMP Annual Reports, and the City has been listed as among the primary authors of those annual reports. The City is also required to implement activities that measurably change knowledge, awareness, or behavior or target audiences and activities that result in significant pollutant load reductions or source abatement each year. We will assist the City with implementing these activities to meet WURMP requirements.

- **Representing the City in Various Meetings.** D-MAX will represent the City of National City in various meetings including those with other Copermittees, the Regional Board, and/or Regional Workgroups. The City has taken on the responsibility of serving as the secretary for the Regional WURMP Workgroup, and we will assist the City in fulfilling that responsibility.

- **Other Storm Water Services.** It has been our experience with other local municipalities and with the City of National City that storm water related situations arise from time to time that require immediate or expert action. D-MAX will be pleased to provide any other as-needed, on-call services to the City of National City that have not been identified above.

Group II Tasks

- **Source Identification Special Studies**. Additional monitoring studies may be necessary for source investigation purposes, including for efforts linked to WURMP activity implementation to address watershed pollutants of concern or to TMDLs. In some portions of the City exceedances have been noted for several consecutive years in the dry weather monitoring program, and it may be necessary to perform additional monitoring beyond the typical dry weather follow-up investigations to evaluate the effectiveness of measures taken to address the sources of the exceedances. The new Municipal Permit also includes stricter requirements for effectiveness assessment, including outcome levels 4, 5, and 6 (load reduction, change in quality of discharge, and change in receiving water quality). Additional monitoring may be required to evaluate the effectiveness of City activities in accordance with these requirements.

- **Web-Based Database Development**. The City's current NPDES program databases are in MS Access format. D-MAX maintains the databases and periodically sends updated versions to the City. We propose to develop web-based data management systems that can be used to track the data that most regularly changes, such as industrial and commercial inspections. Using a web-based database will allow for both City and D-MAX users to access up to date data without the process of transferring MS Access files back and forth. This will help the City better comply with Municipal Permit requirements through more effective information transfer and a clearer understanding of where enforcement actions are needed. D-MAX will provide hosting for the data, but the City will retain ownership of all data. Access to the site will through a password-protected login.

- **TMDL Planning**. The Paleta Creek/7th Street Channel TMDL is currently under development, and TMDLs related to 303(d) listed impairments in the City of National City are proposed in the future. We will use monitoring data, inspection data, land use information, and other relevant data to prepare a strategic framework for taking actions with respect to TMDL regulations. The framework will include an assessment of sources within the watershed for each impaired water body, an assessment of potential BMPs or related management measures to address the identified sources, and methods that can be used to assess the effectiveness of implementing the BMPs. A draft framework document will be prepared and provided to the City for review. Review comments will be incorporated, after which the document will be finalized and delivered to the City.

EXHIBIT B

COST SUMMARY & FEE SCHEDULE

We propose to complete the aforementioned services on a time and materials basis (not to exceed $250,000 total) in accordance with the attached schedule of fees. Our estimated costs are listed below.

	Principal Engineer	Project Scientist	Asst Proj Scientist	Staff Scientist	Drafter	Word Processor	Clerk	ODC*	Total
Rate	$140	$110	$95	$85	$65	$55	$50		
Group I Tasks									
Project Coordination	40	40	20					$400	$12,300
Data Management and GIS	4	20	12	20		45			$8,075
Assist in Compliance Inspection Program	12	24	60	440		60		$1,800	$52,520
SUSMP Implementation and Document Preparation	40	50	48			8		$100	$16,200
Dry Weather Analytical Monitoring and Field Screening	12	16	24	84	4	8		$3,275	$16,835
Follow-up Investigations	8	8	16	60	4	4		$2,900	$12,000
MS4 Monitoring	2	2	6	24	2	2		$1,500	$4,850
JURMP Annual Report	20	50	130	30		12		$200	$24,060
Training and Education	20	20	60	20		20		$5,000	$18,500
Watershed Urban Runoff Management Program	16	50	54	30		12		$700	$16,780
Representing the City in Various Meetings	30	50	16					$800	$12,020
Other Storm Water Services	8	8	16	20		8		$200	$5,860
Total	**212**	**338**	**462**	**728**	**10**	**179**	**0**	**$16,875**	**$200,000**
Group II Tasks									
Source Identification and Special Studies	12	32	40	180	8	16		$3,120	$28,820
Web-Based Database Development	6	32	16	100					$14,380
TMDL Planning	12	12	40						$6,800
Total	**30**	**76**	**96**	**280**	**8**	**16**	**0**	**$3,120**	**$ 50,000**

EXHIBIT B
COST SUMMARY & FEE SCHEDULE

SCHEDULE OF FEES

January 1, 2010

This Schedule of Fees will be adjusted periodically. The new fee schedule will apply to all existing and new work.

LABOR

Classification	Hourly Rate
Clerk*	$ 50
Word Processor*	55
Drafter*	65
Technician*	65
Senior Technician*	75
Staff Scientist/Engineer	85
Assistant Project Scientist/Engineer	95
Project Scientist/Engineer	110
Senior Scientist/Engineer	120
Principal Scientist/Engineer	140

* Overtime (in excess of 8 hours per day) and weekend hours will be charged at 1.5 times the above rates for non-exempt personnel.

Field and hourly services will be charged portal to portal from our office, with a two-hour minimum.

Appearance as expert witnesses at court trials, mediation, arbitration hearings and depositions will be charged at $200/hour. Time spent preparing for such appearances will be charged at the above standard hourly rates.

OTHER CHARGES

Subcontracted services, such as sub consultants, outside testing, drilling, and surveyors, will be charged at cost plus 15%. Other project-specific costs, such as rentals, expendable or special supplies, special project insurance, permits and licenses, shipping, subsistence, tolls and parking, outside copying/printing, etc., will be charged at cost plus 15%. Mileage will be charged at a rate of $0.57 per mile.

Client will be responsible for any applicable taxes in addition to the fees due for Services.

EXHIBIT C
PROJECT SCHEDULE

Tasks	JULY 2010	AUG 2010	SEP 2010	OCT 2010	NOV 2010	DEC 2010	JAN 2011	FEB 2011	MAR 2011	APR 2011	MAY 2011	JUN 2011
Project Coordination												
Data Management												
Assist in Compliance Inspection Program												
Dry Weather Analytical Monitoring and Field Screening												
Follow-Up Investigations												
MS4 Monitoring												
JURMP Annual Report												
Training and Education												
Watershed Urban Runoff Management Program												
Representing the City in Various Meetings												
Other Storm Water Services												
Source Identification and Special Studies												
Web-Based Database Development												
TMDL Planning												

EXHIBIT A

SCOPE OF SERVICES

D-MAX will provide storm water services to assist the City of National City in complying with NPDES permits and enhance the water quality of runoff generated within the City. The tasks anticipated to be necessary during the 2011-2012 fiscal year are categorized into two groups. Group I tasks are similar to those completed during previous fiscal years. Group II tasks are related to new regulatory requirements. Since Group I tasks are most critical for permit compliance, we propose giving these tasks first priority. The relative priorities to be assigned to different tasks will be discussed at the annual program kick-off meeting and revisited periodically at the monthly coordination meetings to ensure the City's needs are being met.

Group I Tasks

- **Project Coordination**. We will provide all project coordination necessary to perform the work for the City's NPDES program implementation. Project coordination will include monthly project status meetings with the City of National City and other related agencies for the duration of this contract. Also included in the program coordination are:
  - Management of the program kick-off meeting and all necessary meetings with other concerned and involved agencies and community groups.
  - Management of all project-related meetings, including agenda and meeting minute preparation and distribution.
  - Assisting the City with coordination and correspondence with the RWQCB regarding National City's storm water program.
- **Data Management and GIS.** To facilitate annual reporting and to manage various JURMP programs on a day-to-day basis, data must be tracked and stored in a reliable, easy-to-use manner. This includes data from the City's construction, industrial, commercial, development, and municipal programs. D-MAX has created five separate Microsoft Access databases for the City: one each for construction inspections, industrial/commercial inspections, SUSMP post-construction best management practice (BMP) tracking and inspections, municipal facilities and activities inspections, and one for tracking complaint investigations and MS4 maintenance. D-MAX will also assist the City with GIS analysis where necessary for the NPDES program. D-MAX will enter data provided by the City and regularly provide the City with copies of the databases it maintains.
- **Assist in Compliance Inspection Program.** We will assist the City's compliance inspection team with the following services:
  - Conducting construction field inspections
  - Conducting industrial and commercial field inspections
  - Conducting SUSMP post-construction BMP inspections
  - Conducting municipal facilities and activities inspections
  - Conducting complaint and/or other special inspections, as applicable

- Data entry into databases and generating letters to be mailed for these inspections

Follow-up inspections will be conducted at construction, industrial, commercial, and SUSMP sites to encourage compliance with the City's minimum BMP requirements, reduce City staff workload related to evaluating the resolution of BMP violations, or document evidence of continued non-compliance for necessary enforcement action, as is necessary.

- **SUSMP Implementation and Document Preparation.** We will continue to assist the City with implementation of the SUSMP program as follows. Note that review of SUSMP report and Storm Water Pollution Prevention Plan (SWPPP) documents are included under a different contract.
  - Assist in complying with requirements of the SUSMP
  - Conducting the annual Operation and Maintenance Verification and keeping up-to-date contact information for projects with permanent post-construction BMPs
  - Conduct coordination meetings with various City departments and assist in refinement of the SUSMP process
  - Review erosion and sediment control plans
  - Assist in selecting and implementing BMPs
  - Conduct educational presentations as required in the City's JURMP and Section D.5.b.(b) of the new Municipal Permit
  - Prepare SUSMPs and construction SWPPPs for City Capital Improvement Projects

- **Dry Weather Field Screening and Analytical Monitoring.** This task will include conducting one round of field screening in accordance with the requirements of the Municipal Permit. The objective of this program is to detect and eliminate illicit connections and illegal discharges (IC/IDs) in order to minimize the negative impacts of human activities on receiving water bodies. The City of National City has identified 15 primary monitoring stations where data will be collected during the dry weather analytical and field screening monitoring program. In the event that a site is dry, visual observations will be recorded and an alternate site will be selected. This task will include the following:

  Visual Observations: Visual observations include looking for evidence of dry weather flows such as staining, corrosion, sediment, surrounding vegetation, algae, mosquito larvae, insects, and animals in the vicinity of the outfall.

  Field Analysis: At each site the flow and its temperature will be measured, and a sample will be taken for field analyses of the following parameters:

  - Specific conductance
  - Temperature
  - Turbidity
  - pH
  - Reactive Phosphorus
  - Nitrate Nitrogen

- Ammonia Nitrogen
- Surfactants (MBAS)

Analytical Monitoring: Water samples from 25 percent of the sites where ponded or flowing water is observed, will be collected and submitted to a California Department of Health Services certified laboratory for analysis of the following constituents:

- Total hardness
- Oil and grease
- Diazinon and Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- Enterococcus bacteria
- Total Coliform bacteria
- Fecal Coliform bacteria

Trash Monitoring: The Municipal Permit requires that the City implement a trash monitoring program during dry weather monitoring. The Copermittee Dry Weather Monitoring Sub-Workgroup developed a trash assessment form and procedures for trash monitoring. We will complete a trash assessment form at each routine site visit.

Dry Weather Data Conversion: The County of San Diego maintains a regional database of dry weather monitoring data collected by the Copermittees. The County requires that each City convert its dry weather monitoring data into a standard format so that it can be easily uploaded into the regional database. The process involves converting the data from tables designed for ease of reading and reference to more duplicative tables that are designed to allow for more efficient data analysis using the regional database. D-MAX will assist the City by performing this conversion process.

Preparation of a Summary Report: At the conclusion of the field screening program, a report will be prepared to summarize the observations and the results of the study, including trash monitoring. The report will include our interpretation of the field data and test results as to the possible presence of IC/IDs. Reporting also includes preparing a spreadsheet of the collected data in the regionally standardized format and submitting it to the County of San Diego.

- **Follow-Up Investigations.** During the dry weather field screening program if field investigations do not reveal a specific source of contamination, or if the results of the laboratory analysis indicate presence of pollutants in excess of action levels, further investigation will be conducted which may include the following steps:

  - Tracing flows or discharges upstream
  - Conducting field screening sampling
  - Contacting dischargers
  - Sampling for laboratory analysis
  - Documenting source investigations

At the conclusion of the follow-up investigations, a summary report will be prepared summarizing the findings, conclusions, and recommendations. Per Municipal Permit requirements, all laboratory analytical exceedances will be followed up within two business days of receiving the results from the lab. Also, upstream investigations for bacteria will utilize Colilert and Enterolert methods for bacterial analyses. These newer methods have a faster turnaround time than standard analysis methods, which is an advantage during upstream source tracking investigations.

- **MS4 Monitoring.** The new Municipal Permit requires that the City conduct MS4 outfall monitoring. The MS4 monitoring will be conducted prior to August 1 and will include additional laboratory analytical work. The goal of the MS4 outfall monitoring program is to provide additional assessment of the potential for outfalls that discharge directly to receiving water bodies to discharge pollutants of concern associated with the applicable receiving water body. D-MAX will conduct MS4 outfall monitoring as described in the Copermittees' MS4 outfall monitoring workplan. We will also provide a spreadsheet of the MS4 outfall monitoring data in the regionally standardized format in advance of the regionally established deadline for targeted dry weather MS4 outfall monitoring data submittal.

- **JURMP Annual Report**. As a requirement of the Municipal Permit, the City must produce an annual report to the RWQCB detailing the activities that have been conducted during the previous reporting period to reduce pollutants in urban runoff. The JURMP Annual Report to be submitted by September 30 of each year, will document the activities that the City has conducted during the past reporting period of July 1 of the previous year through June 30 of the same year. Annual reports will be prepared and submitted by the end of September in each year, starting with the annual report for the 2010-2011 fiscal year due by the end of September 2011. Report preparation includes the following:

  Coordinate Information Transfer with City personnel
  Contacting several City departments to acquire information on the program implementation and special activities carried out through the year. We will have initial meetings with responsible personnel at each department to prepare a plan for receiving information regarding the implementation of the City's JURMP. We will stay in contact with the City's departments thereafter. Pertinent information will be acquired under this task to be used in the report.

  Review and Respond to RWQCB Comments
  If any comments on the City's JURMP Annual Report are received, we will prepare a response to those comments and include it as an attachment to the next JURMP Annual Report.

  Prepare JURMP Annual Report
  This task includes the preparation of the JURMP Annual Report in accordance with Section I of the Municipal Permit. A draft report will be prepared and submitted to the City for comments, after which a final report will be prepared. The number of hard copies and electronic copies of the final report required for submittal and for City records will be prepared and delivered to the City. The following sections will be included in the report:

- Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.
- Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, and a summary list of key achievements.
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graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared.

- Special Investigations: will include a summary of any additional progress on the clean community program and any other relevant special studies completed during 2009-2010.
- Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

- **Training and Education.** D-MAX will conduct educational workshops and/or prepare education materials at the City's request to target audiences identified in the JURMP document. An educational calendar has been prepared in each of the last several years with storm water art generated by holding a popular third grade art contest. We will coordinate with the City each year to determine if a similar approach should be used in or whether a different approach will be more beneficial. Educational content for other programs may cover a variety of topics related to storm water quality and watershed concepts listed in the JURMP and will be tailored to each specific audience. Most likely the City will focus its outreach efforts on one or two target audiences or topics; workshops and target audiences could include those listed below:

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  Public Works Staff
  The workshop will be targeted towards public works employees and will focus mainly on the practical aspects of BMP implementation. It will also address changes in public works operations required by the Municipal Permit, such as effects on channel maintenance and storm drain cleanout frequency. In the event that the City's NPDES Storm Water Compliance Inspector conducts this training, D-MAX will not provide a training session for this audience.

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  The educational workshop for construction inspectors will include general concepts listed in the JURMP and additionally cover such topics as BMP implementation and maintenance, good housekeeping measures, site inspections and inspection frequency.

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Educational Materials

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Group II Tasks

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levels 4, 5, and 6 (load reduction, change in quality of discharge, and change in receiving water quality). Additional monitoring may be required to evaluate the effectiveness of City activities in accordance with these requirements.

- **Web-Based Database Development**. The City's current NPDES program databases are in MS Access format, however the City is transitioning to the use of a web-based data management system. Since D-MAX currently maintains the databases, we propose to work with City or data management staff in transitioning to the online system and structuring the system to track the data that the City wants to have accessible online, such as industrial, commercial, construction, and SUSMP site inventories and inspection results. Using a web-based database will allow for both City and D-MAX users to access up to date data without the process of transferring MS Access files back and forth. This will help the City better comply with Municipal Permit requirements through more effective information transfer and a clearer understanding of where enforcement actions are needed.

- **TMDL Planning**. The Paleta Creek/7th Street Channel TMDL is currently under development, and TMDLs related to 303(d) listed impairments at Sweetwater River in the City of National City are proposed in the future. We will use monitoring data, inspection data, land use information, and other relevant data to prepare a strategic framework for taking actions with respect to TMDL regulations. The framework will include an assessment of sources within the watershed for each impaired water body, an assessment of potential BMPs or related management measures to address the identified sources, and methods that can be used to assess the effectiveness of implementing the BMPs. A draft framework document will be prepared and provided to the City for review. Review comments will be incorporated, after which the document will be finalized and delivered to the City.

EXHIBIT B

FEE SCHEDULE & 2011-2012 COST SUMMARY

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Group I Tasks									
Project Coordination	40	40	20					$400	$12,400
Data Management and GIS	4	20	24	16			40		$8,832
Assist in Compliance Inspection Program	12	24	70	90	400		66	$1,800	$59,030
SUSMP Implementation and Document Preparation	40	30	48	20			8	$100	$16,080
Dry Weather Analytical Monitoring and Field Screening	12	6	24	16	78	4	7	$3,295	$16,782
Follow-up Investigations	8	4	16	8	56	4	4	$2,900	$12,036
MS4 Monitoring	2	2	6		24	2	2	$1,500	$4,880
JURMP Annual Report	20	50	130	30			12	$200	$24,920
Training and Education	20	20	60	20			20	$5,000	$18,940
Watershed Urban Runoff Management Program	6	40	54	30			12	$700	$14,760
Representing the City in Various Meetings	30	50	16					$800	$12,100
Other Storm Water Services	8	8	16		20		8	$200	$5,940
Sub-Total	**202**	**294**	**484**	**230**	**578**	**10**	**179**	**$16,895**	**$206,700**
Group II Tasks									
Source Identification and Special Studies	10	24	32		120	8	16	$3,120	$21,960
Web-Based Database Development	6	40	80				20		$14,340
TMDL Planning	12	12	40						$7,000
Sub-Total	**28**	**76**	**152**	**0**	**120**	**8**	**36**	**$3,120**	**$43,300**
Overall Totals	**230**	**370**	**636**	**230**	**698**	**18**	**215**	**$20,015**	**$250,000**

*ODC for Dry Weather Monitoring includes laboratory analytical costs, and ODC for Training and Education includes outside printing of materials (e.g., calendars).

EXHIBIT B

FEE SCHEDULE & 2011-2012 COST SUMMARY

January 1, 2011

This Schedule of Fees will be adjusted periodically. The new fee schedule will apply to all existing and new work.

LABOR

Classification	Hourly Rate
Clerk*	$ 50
Word Processor*	55
Drafter*	65
Technician*	65
Senior Technician*	75
Staff Scientist/Engineer I	85
Staff Scientist/Engineer II	92
Assistant Project Scientist/Engineer	100
Project Scientist/Engineer	110
Senior Scientist/Engineer	120
Principal Scientist/Engineer	140

* Overtime (in excess of 8 hours per day) and weekend hours will be charged at 1.5 times the above rates for non-exempt personnel.

Field and hourly services will be charged portal to portal from our office, with a two-hour minimum.

Appearance as expert witnesses at court trials, mediation, arbitration hearings and depositions will be charged at $200/hour. Time spent preparing for such appearances will be charged at the above standard hourly rates.

OTHER CHARGES

Subcontracted services, such as sub consultants, outside testing, drilling, and surveyors, will be charged at cost plus 15%. Other project-specific costs, such as rentals, expendable or special supplies, special project insurance, permits and licenses, shipping, subsistence, tolls and parking, outside copying/printing, etc., will be charged at cost plus 15%. Mileage will be charged at a rate of $0.57 per mile.

Client will be responsible for any applicable taxes in addition to the fees due for Services.

EXHIBIT C
PROJECT SCHEDULE

Tasks	*JULY 2011*	*AUG 2011*	*SEP 2011*	*OCT 2011*	*NOV 2011*	*DEC 2011*	*JAN 2012*	*FEB 2012*	*MAR 2012*	*APR 2012*	*MAY 2012*	*JUN 2012*
Project Coordination												
Data Management												
Assist in Compliance Inspection Program												
Dry Weather Analytical Monitoring and Field Screening												
Follow-Up Investigations												
MS4 Monitoring												
JURMP Annual Report												
Training and Education												
Watershed Urban Runoff Management Program												
Representing the City in Various Meetings												
Other Storm Water Services												
Source Identification and Special Studies												
Web-Based Database Development												
TMDL Planning												

June 4, 2009

Mr. Malik Tamimi
Stormwater Program Administrator
City of Poway
Development Services Department
13325 Civic Center Drive
Poway, California 92064

Re: Proposal for City of Poway Stormwater Services

Dear Mr. Tamimi:

In response to your Request for Proposal (RFP) dated June 1, 2009, D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to provide the City of Poway (City) 2008-2009 Jurisdictional Urban Runoff Management Program (JURMP) annual report preparation and as needed services. This work will be conducted in accordance with the applicable requirements, including the Federal National Pollutant Discharge Elimination System (NPDES) and the San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit).

D-MAX is an environmental consulting company established in 1996. We specialize in providing storm water services to local municipalities in San Diego County. D-MAX has provided storm water program annual reporting services for a total of 23 reports for four jurisdictions in San Diego County and one in Orange County. We also recently prepared seven complete JURMP documents and sections of JURMP documents for three additional jurisdictions to comply with Municipal Permit requirements. Our qualifications for this project are summarized as follows:

- ***Poway Experience.*** Having worked with the City since 1997, D-MAX personnel have developed in-depth knowledge of the City's drainage system, businesses, municipal facilities and operations, development regulations, and overall storm water program. During this period we have built a strong rapport with City personnel. D-MAX's work with the City of Poway includes the following:
    - Preparing the City's previous and current Jurisdictional Urban Runoff Management Program (JURMP) documents
    - Preparing JURMP annual reports
    - Performing Dry Weather Monitoring Programs for the last 12 years
    - Conducting additional monitoring studies at several locations in the City
    - Performing industrial and commercial business compliance inspections
    - Conducting effectiveness studies for the City's regional BMPs (detention basins)
    - Performing document review of SUSMPs submitted to the City
    - Preparing industrial and construction SWPPPs
    - Conducting monitoring and reporting for State General Industrial Permit compliance for municipal facilities in the City
    - Providing training in storm water for the City's engineers and planers

- ***Municipal NPDES Permit Knowledge.*** D-MAX employees have a thorough understanding of the Municipal Permit requirements. We have written JURMPs for more Copermittees in the San Diego region than any other consulting firm, and we also contributed to the Copermittee comment and review process during the reissuance of the Municipal Permit. We are active members of several Copermittee workgroups, including the Fiscal, Reporting, and Assessment Workgroup, the Regional Monitoring Workgroup, the Municipal Sources Workgroup, the Land Development Workgroup, and the Industrial and Commercial Sources Workgroup.
- ***RWQCB Relationship.*** Over the years, D-MAX personnel have developed a strong relationship with the RWQCB. D-MAX has represented several cities in meetings with and audits by the RWQCB. JURMPs and JURMP annual reports that we have prepared have been viewed favorably by the RWQCB.
- ***Cost Effectiveness.*** As a relatively small firm, we maintain low overhead so we can provide our clients with some of the most highly qualified environmental professionals available at affordable rates. We are familiar with the City's program and staff, which will help us perform JURMP annual reporting and as-needed services efficiently. During the last 12 years, we have completed our projects for the City of Poway on time and within budget.
- ***Past Performance.*** D-MAX has performed numerous storm water projects for 18 Copermittees in San Diego and Orange counties. During these projects we have developed excellent working relationships with individual City personnel and have completed our projects on time and on budget. Our existing clients have been extremely satisfied with our performance on various storm water related projects.

The undersigned is the Project Manager and the main contact for the City for the services described in this proposal.

We are confident that our experience with the City's storm water program, the City's JURMP, and the Municipal Permit will enable us to provide excellent service to the City of Poway. We look forward to working with you on this interesting project. Please give us a call if you would like to discuss or have any questions regarding this proposal.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah, Ph.D., P.E.
Project Manager/Principal

1. ENGINEERING FIRM INFORMATION

1.1 INTRODUCTION

D-MAX Engineering, Inc. (D-MAX) is an environmental engineering firm with an emphasis on storm water services. D-MAX was established in 1996 and currently has 20 employees. We have performed Dry Weather Field Screening and Analytical Monitoring Programs (Dry Weather Monitoring Program) for the County of San Diego and the cities of Poway, Carlsbad, El Cajon, La Mesa, Lemon Grove, National City, Poway, San Marcos, Santee, and Vista. Additionally, we have conducted a number of wet weather sampling programs and other monitoring programs for cities throughout San Diego County.

We are planning to use EnviroMatrix Analytical, Inc. (EnviroMatrix) to conduct any laboratory tests that may be required for as-needed services. EnviroMatrix is a California-certified analytical laboratory and has been involved in many storm water projects in San Diego County.

The contact information for D-MAX and EnviroMatrix are listed below.

D-MAX contact information:	7220 Trade Street San Diego, CA 92121 (858) 586-6600 E-mail: admin@dmaxinc.com Website: www.dmaxinc.com
EnviroMatrix contact information:	4340 Viewridge Ave., Suite A San Diego, CA 92121 (858) 560-7717

1.2 KEY PERSONNEL

The personnel selected for this project are highly experienced in different aspects of storm water services, including dry weather field screening and analytical monitoring, illicit connection/illegal discharges identification, wet weather monitoring, and storm water management program development. They have been involved in BMP evaluation and development, and assisting municipalities in conducting storm water compliance inspections of businesses, municipal facilities, and construction sites.

Arsalan Dadkhah, Ph.D., P.E. will be our Project Manager for the services described in this proposal. He has over 30 years of engineering experience with an emphasis on hydrology, hydraulics, and water quality. Dr. Dadkhah has directed a multitude storm water quality studies for municipalities within San Diego and Orange counties, including a number of different storm water projects for the City of Poway. He has been Project Managers for preparing a number of JURMPs and JURMP annual reports.

Mr. John Quenzer is an Environmental Scientist with a Bachelor's degree in environmental chemistry. He recently coordinated the development of JURMPs for the City of Poway and nine other Copermittees as well as several JURMP annual reports for four cities. He has been a primary author of the last four San Diego Bay WURMP annual reports. Other recent projects include coordinating treatment control BMP and business inspection programs, database development, dry weather monitoring programs, wet weather monitoring, and

special investigations. Mr. Quenzer will be project coordinator and responsible for report preparation.

Ms. Karen Thompson is an Environmental Scientist with a Bachelor's of Science in Marine and Freshwater Biology. Her recent experience has been in coordinating and conducting storm water compliance inspection programs for industrial, commercial, and construction sites for the cities of Poway, San Diego, La Mesa, San Marcos, Vista, and National City. Ms. Thompson has also written sections of JURMPs and JURMP annual reports for the City of Poway, La Mesa, Chula Vista, Santee and El Cajon. Her responsibility for this project includes assisting in JURMP annual report preparation.

Ms. Shauna McKellar is an Environmental Scientist with a Bachelor's of Science in Environmental Toxicology. Ms. McKellar has developed treatment control BMP inventories and coordinated treatment control BMP inspection programs for the cities of Poway, San Diego, San Marcos, La Mesa, and National City. Her duties include database management, inspection form design, and field inspections. Other recent projects include technical reviews of SUSMPs and WQTRs, developing a WQTR for the City of Temecula, and writing sections of JURMPs for seven cities in San Diego County, including the City of Poway. She will be assisting in JURMP annual report preparation for this project.

Ms. Crystal Grover is an Environmental Scientist with a Master's degree in biology. She has performed Dry Weather Monitoring Programs for the cities of Poway, Chula Vista, El Cajon, La Mesa, Lemon Grove, National City, San Marcos, Santee, and the County of San Diego, acting as team lead in many of these programs. She has also conducted monitoring in Forester Creek in Santee and wet weather sampling in the cities of Poway and La Mesa., and she has written several construction SWPPPs for the City of Poway and other municipalities. Ms. Grover will be assisting in annual report preparation and any required sampling.

Manouchehr (Manoo) Dadkhah, Ph.D., Dr. Dadkhah is an Environmental Scientist with more than 20 years experience in hydrology, erosion control and watershed management. For the past 10 years, he has led the City of Poway's Dry Weather Monitoring Program and is therefore very familiar with the City's drainage patterns. He has also been involved in conducting Dry Weather Monitoring Programs and other monitoring projects for a number of other jurisdictions in San Diego County throughout the past 11 years. He will provide any required assistance in as-needed sampling, monitoring, and source identifications.

All key personnel assigned to this project have worked in several City of Poway projects and are very familiar with the City's storm water program.

2. ENGINEERING FIRM EXPERIENCE

The following is a brief description of projects similar to the subject assignment previously performed by D-MAX. Contact information for our clients on these projects can be found in the references table later in this section.

Municipal Storm Water Program Annual Reports

D-MAX has prepared JURMP annual reports to comply with storm water permits for the cities of Poway, National City, Santee, and La Mesa in San Diego County and the City of La Habra in Orange County. D-MAX is very familiar with current reporting requirements and RWQCB staff, has developed a number of methods to analyze program effectiveness, and has assisted cities with addressing comments from the San Diego and Santa Ana RWQCBs. Our storm water program annual report preparation experience is summarized in the table below.

Name	Year of Service	Amount of Most Recent Annual Report Contract
City of La Mesa	2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008	$25,667
City of National City	2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008	$24,903
City of Santee	2004/2005, 2007/2008	$19,853*
City of Poway	2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008	$1,950**
City of La Habra	2002/2003, 2003/2004, 2004/2005	$22,133

Notes
*This project involved completing most, but not all, sections of the report, and it also did not include reproduction.
**Only included preparing selection components of the report.

Jurisdictional Urban Runoff Management Programs

D-MAX has developed JURMPs for a number of jurisdictions in San Diego County both in 2002, in accordance with Order No. 2001-01, and the more recently adopted Municipal Permit. In 2007, D-MAX prepared JURMPs for Poway, Chula Vista, El Cajon, La Mesa, Santee, National City, and Oceanside. Additionally, D-MAX assisted the cities of Vista, Encinitas, and San Marcos to complete sections of the JURMP document. Most of these projects involved preparing updated inventories of dry weather monitoring stations and/or procedures.

Watershed Urban Runoff Management Programs

D-MAX represents the City of National City in the San Diego Bay WURMP Workgroup and has assisted the cities of La Mesa and National City in WURMP annual reporting for the San Diego River and San Diego Bay WURMPs. D-MAX has been listed as a primary author of the last six San Diego Bay WURMP annual reports and the 2008 WURMP update. We have also completed special investigations as watershed water quality activities for the cities of San Diego, National City, and La Mesa.

Dry Weather Monitoring Programs

We have conducted over 100 Dry Weather Field Screening and Analytical Monitoring programs during the past 13 years for several jurisdictions in San Diego County. These projects have been conducted with essentially the same approach and protocols used in the City of Poway's dry weather program. Our clients are listed below.

City of Chula Vista	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
County of San Diego	2007, 2008
City of Carlsbad	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
City of El Cajon	2002, 2003, 2004, 2005, 2006, 2007, 2008
City of La Mesa	1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
City of Lemon Grove	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
City of National City	1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
City of Poway	1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
City of San Marcos	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
City of Santee	1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
City of Vista	2002, 2003, 2008

These projects included field screening and sampling at several locations within each city in accordance with the RWQCB requirements. Field activities included conducting visual observations, performing field tests for conductivity, pH, temperature, turbidity, ammonia, nitrate, reactive phosphorus and MBAS, and collecting grab samples for laboratory analysis of dissolved metals, organophosphate pesticides, oil and grease, and indicator bacteria. A report was prepared for each program presenting our evaluation of the dry weather flow conditions and our recommendations for source identification and control.

Several of the above Dry Weather Monitoring Programs required two rounds of monitoring per dry season period. Recently trash assessments were added to the programs, and we have also been assisting cities in converting their dry weather and trash data to the County's regionally accepted data sharing format since the format was developed several years ago.

In addition to dry weather monitoring, we have also conducted additional studies of receiving water bodies in conjunction with the Dry Weather Monitoring Program for several of our clients. This involved taking water samples of receiving waters during ambient conditions and preparing reports of our findings.

City of Poway BMP Effectiveness Studies

D-MAX provided design assistance to the City of Poway for retrofitting flood control detention basins for use as regional treatment control BMPs for SUSMP compliance. Since 2004 we have also taken wet weather composite samples of runoff entering detention basins in the City, as well as outflow samples after three days of detention. The results of

inflow and outflow samples are compared to see the effect of the basins. Based on the results of the study, a paper was prepared and presented at the annual StormCon conference.

Storm Water Compliance Inspections

Throughout the past several years, D-MAX has conducted more than 14,000 storm water compliance inspections of industrial, commercial, municipal, homeowners' association, treatment control BMP, and construction sites for 14 Copermittees in San Diego and Orange Counties. As part of the inspection process, watershed-based, prioritized facility inventories are developed, inspection forms are designed, and all inspection data is entered into GIS-compatible inspection databases. During the site inspections themselves, D-MAX confirms or updates the facility contact information, records the site's watershed, ensures the facility is prioritized accurately, provides public education about storm water quality issues and downstream receiving water bodies, distributes educational materials, and evaluates the effectiveness of existing BMPs and recommends additional BMPs as needed. Our experience with storm water compliance inspections has provided us with an in-depth understanding of potential sources of various pollutants and appropriate BMPs necessary to prevent polluted discharges.

City of Santee Forester Creek Improvement Project Water Quality Monitoring

The City of Santee received a Proposition 13 Grant to help fund its Forester Creek Improvement Project. The project included creek restoration and flood control components, including widening and revegetating the creek channel. To help fulfill associated grant requirements, D-MAX prepared a sampling plan, a Quality Assurance Project Plan, a 2005 Annual Monitoring Report, and a Project Assessment and Evaluation Plan. We also conducted water quality monitoring at three sites in the creek on a monthly basis for more than three and a half years. This monitoring included a specially designed trash assessment to meet RWQCB requirements and a TDS component analysis to help the City gather more information about potential causes of the chronically elevated TDS readings in the creek. At the end of the project a final report assessing the results of the monitoring was prepared.

La Mesa Wet Weather and Additional Monitoring

D-MAX has conducted several special monitoring programs for the City of La Mesa, including wet weather monitoring to help the City gain additional data about constituents associated with Total Maximum Daily Load (TMDL) requirements for Chollas Creek and the San Diego River. The monitoring includes collecting composite samples over the course of a storm at strategic locations throughout the city during rain events. D-MAX has also conducted a study on La Mesa's creeks and channels to evaluate the quality of urban runoff leaving the City of La Mesa and a study of the spring located in La Mesa's Collier Park to determine beneficial uses.

San Diego River Water Quality Monitoring Study

As part of an overall San Diego River Watershed bacteria study being conducted by the City of San Diego, D-MAX is collecting dry and wet weather samples from targeted locations on behalf of the cities of Santee and El Cajon within those cities' jurisdictions. The program involves flow-weighted sampling at one location in each City, developing rating curves to estimate flow for the wet weather monitoring, ambient monitoring in major receiving water bodies in the cities, and dry weather monitoring and visual surveys targeted at irrigation runoff in residential areas.

City of San Marcos Old California Restaurant Row Center

The objectives of this study was to identify the sources of odor and polluted water discharging into the storm water system from the Old California Restaurant Row area and provide recommendations to enhance the quality of the non-storm water draining into the city's storm drain system. This investigation included tracing flow at the outfall upstream to identify the sources of flow, collecting flow samples and testing for several constituents to identify pollutants, conducting dye and smoke tests to identify downstream and upstream connections, and conducting visual inspections and videotaping to identify the sources of extra flow. General and site specific recommendations included preparation of public education materials, engineering plans to eliminate illicit connections and best management practices to be implemented at the site.

Storm Water Education and Training

During the past several years, D-MAX has assisted several cities by

- Developing brochures, calendars, and other educational materials for several cities. An example is the City of National City's annual storm water education calendar, which in 2009 features artwork from National City's schoolchildren. D-MAX worked with City staff and school district staff to coordinate an art contest open to all third graders in the City of National City. Students submitted drawings with a theme of protecting the City's waterways through keeping the community clean, and the winners' drawings were included as the art in the calendar.
- Conducting training seminars for municipal employees including engineering, public works, and land-use planning staff. We have also conducted presentations for private industry. Topics have included SUSMP implementation, construction BMPs and State General Construction Permit requirements, industrial and commercial BMPs and State General Industrial Permit requirements, BMPs for public works activities, and general overviews of storm water issues.

REFERENCES

The performance of D-MAX on storm water related projects in particular, can be verified by contacting our clients. The following individuals, who have used our company for similar projects, will attest to our business reputation, quality of services, and project management skills.

Name	Agency	Telephone Number	Projects
Mr. Din Daneshfar	City of National City	(619) 336-4380	JURMP Annual Reporting, JURMP Development, WURMP Reporting and Implementation, Dry Weather Monitoring Programs, Complete Storm Water Services 2004-2009, Compliance Inspections, SUSMP Review
Ms. Helen Perry	City of Santee	(619) 258-4100 ext. 117	JURMP Annual Reporting, JURMP Development, Dry Weather Monitoring Programs, Annual Reporting, Forester Creek Monitoring, Compliance Inspections

Name	Agency	Telephone Number	Projects
Mr. Hamed Hashemian	City of La Mesa	(619) 667-1153	JURMP Annual Reporting, JURMP Development, Dry Weather Monitoring Programs, Special Studies, Compliance Inspections, SUSMP Review
Mr. Khosro Aminpour	City of Chula Vista	(619) 397-6111	JURMP Development, Dry Weather Monitoring Programs
Mr. Jaime Campos	City of El Cajon	(619) 441-5554	JURMP Development, Dry Weather Monitoring Programs, Special Studies, Compliance Inspections
Mr. Paul Hartman	City of Vista	(760) 726-1340 ext. 1373	Dry Weather Monitoring Programs, Additional Creek Monitoring Study, Compliance Inspections
Mr. Jeff Sinn	City of La Habra	(562) 905-9720	Local Implementation Plan Development, Annual Reporting, Compliance Inspections, SWPPP Preparation, WQMP Review
Ms. Cora Long	City of Lemon Grove	(619) 825-3810	Dry Weather Monitoring Programs, Compliance Inspections
Ms. Elaine Lukey	City of Carlsbad	(760) 602-7582	Dry Weather Monitoring Programs, JURMP Development, Compliance Inspections
Ms. Erica Ryan	City of San Marcos	(760) 744-1050 ext. 3218	Dry Weather Monitoring Programs, Upstream Investigations, Compliance Inspections

3. SCOPE OF SERVICES

The scope of services associated with this project includes the following tasks:

I. JURMP ANNUAL REPORT

Task 1: Review and Respond to RWQCB Comments on FY 2007/2008 JURMP Annual Report

Once they become available, we will review the Regional Water Quality Control Board's (RWQCB) comments on the last JURMP Annual Report to identify areas of concern to the RWQCB. We will assist the City in preparing a response to the comments and will structure the 2008/2009 JURMP Annual Report to address the comments where applicable. We assume that any comments received will not result in major restructuring of the report or additional analysis beyond the scope of what is described in Task 3 below.

Task 2: Coordinate Information Transfer with City Personnel

We will contact several City departments to acquire information regarding the program implementation and special activities carried out during 2008/2009. Assistance from City storm water staff may be necessary in determining who should be contacted and facilitating information transfer. We will stay in contact with the applicable City staff after the initial questions are supplied to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3. We assume that this

task will mainly be conducted over the phone and through email, but we estimate that approximately three two hour meetings will also be necessary.

Task 3: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

Sections
Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.

Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, a reference to any RWQCB comments on the City's 2007/2008 JURMP Annual Report (if applicable, the response will be included as an attachment), and a summary list of key achievements.

Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's Standard Urban Storm Water Mitigation Plan (SUSMP); treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.

- A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
- An updated treatment control BMP inventory.
- The number of treatment control BMPs inspected, including a summary of inspection results and findings.
- A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.
- Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
- A listing of any projects which received a SUSMP waiver.
- A description of implementation of any SUSMP waiver mitigation program.
- A description of Hydromodification Management Plan (HMP) development collaboration and participation.
- A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
- A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.
- A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.
- The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up

actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.

Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.

- For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.
- Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
- A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.

Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.

- A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.
- Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
- Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
- Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
- Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.
- Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2008/2009.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of

trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.

- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.

Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.

- A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
- A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
- A list of inspections conducted during the fiscal year, including inspection findings.
- The City's current inventories of industrial and commercial businesses.

Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.

- A description of collaborative efforts taken to develop and implement the Regional Residential Education Program.
- A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
- Identification of high priority residential areas and BMPs or other actions taken to mitigate potential pollutant discharges from those areas in particular.

Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.

- A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
- A list of complaints and hotline calls received and how they were resolved.
- A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.

Education: will include descriptions of various educational efforts by the City. The Municipal Permit emphasizes presenting educational efforts categorized by type of target audience. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.

- A description of education efforts conducted for each target community.
- Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.
- A list of educational materials distributed, including numbers as available.

Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. This section will include descriptions of public participation activities the City has sponsored or participated in, such as cleanup events and partnerships with local environmental groups.

Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. This section is anticipated to have the same format as the fiscal analysis sections for previous annual reports have had. A new fiscal analysis framework has been developed by the Copermittees, but it is not required to be implemented for the 2008/2009 JURMP Annual Report.

Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared.

Special Investigations: Special investigations the City has conducted during the reporting period will be described here. This will include the detention basin effectiveness study we conducted for the City and any other special studies the City has completed.

Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.

Report Preparation: Draft
We will prepare one (1) hard copy of a draft JURMP Annual Report and attachments for City review. An electronic copy of the report text may also be provided if desired.

Responding to City Comments on the Draft Report
We anticipate receiving and incorporating two rounds of technical comments on the draft report from the City.

Report Preparation: Final
We will prepare and deliver two (2) hard copies and four (4) electronic copies of the final JURMP Annual Report and attachments. We will convert all electronic files, including attachments and the certification statement, to pdf format and merge them into a single pdf document to meet RWQCB paperless office requirements.

II. AS NEEDED SERVICES

D-MAX has conducted BMP effectiveness monitoring, storm water compliance inspections, SWPPP preparation, special monitoring projects, and other as-needed tasks for the City in the past. Some of our more recent projects are described in the experience section of this proposal. Some of the as-needed services we have previously provided to the City are listed below:

- Conducting monitoring and reporting for State General Industrial Permit compliance for municipal facilities in the City
- Performing industrial and commercial business compliance inspections
- Conducting additional monitoring studies at several locations in the City
- Conducting effectiveness studies for the City's regional BMPs (detention basins)
- Performing document review of SUSMPs submitted to the City
- Preparing industrial and construction SWPPPs
- Providing training in storm water for the City's engineers and planers

Due to our extensive and varied experience in providing storm water services to the City of Poway and to many other jurisdictions in San Diego County, we are able to provide a wide range of storm water related services to meet the City's needs. Our staff's familiarity with the City will allow us to provide as-needed services in the most efficient manner possible. Since we have 20 staff who work almost exclusively on storm water projects, we are also able to complete special, as-needed projects on short notice if the situation requires that.

4. COST PROPOSAL

Our proposed costs for conducting the services proposed herein are included in a separate, sealed envelope per the requirements in the RFP.

June 4, 2009
Revised: June 9, 2009

Mr. Malik Tamimi
Stormwater Program Administrator
City of Poway
Development Services Department
13325 Civic Center Drive
Poway, California 92064

Re: Cost Estimate for Performing Storm Water Services
City of Poway, California

Dear Mr. Tamimi:

Our proposed costs to complete the scope of services described in our proposal are as follows:

I. 2008/2009 JURMP Annual Report. We will perform this task on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed the amount below.

Updated June 9, 2009 **Time and materials (not to exceed $18,983)**

II. Performing As-Needed Services. Since the scope of services for this task is not fully known at the time, we propose to conduct this task on a time and material basis in accordance with the attached Schedule of Fees.

Time and materials

D-MAX Engineering, Inc.

Arsalan Dadkhah, Ph.D., P.E.
Principal

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

May 12, 2010

Mr. Malik Tamimi
Stormwater Program Administrator
City of Poway
Development Services Department
13325 Civic Center Drive
Poway, California 92064

Re: Proposal for City of Poway Stormwater Services

Dear Mr. Tamimi:

In response to your Request for Proposal (RFP), D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to perform stormwater services for the City of Poway (City). Services to be provided include completing the 2010 Dry Weather Field Screening and Analytical Monitoring Program (Dry Weather Monitoring Program), upstream pollutant source investigations, the Targeted Dry Weather MS4 Outfall Monitoring Program (MS4 Outfall Monitoring Program), and other as-needed services. This work will be conducted in accordance with the requirements of the Federal National Pollutant Discharge Elimination System (NPDES) and San Diego Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit).

D-MAX is an environmental consulting company established in 1996. We specialize in providing storm water services to local municipalities in San Diego County. D-MAX has conducted over 110 Dry Weather Field Screening and Analytical Monitoring Programs during the past 14 years for various municipalities throughout San Diego County. We have also assisted municipalities in conducting upstream investigations to identify and eliminate source(s) of pollutants. Our qualifications for this project are summarized as follows:

- ***Poway Experience.*** Having worked with the City since 1997, D-MAX personnel have developed in-depth knowledge of the City's drainage system, upstream land-uses, businesses, areas of concern, and overall storm water program. During this period we have built a strong rapport with City personnel. D-MAX's work with the City of Poway includes the following:
    - Performing Dry Weather Monitoring Programs for the last 13 years
    - Preparing the City's previous and current Jurisdictional Urban Runoff Management Program (JURMP) documents
    - Preparing JURMP annual reports
    - Conducting additional monitoring studies at several locations in the City
    - Performing industrial and commercial business compliance inspections
    - Conducting effectiveness studies for the City's regional BMPs (detention basins)
    - Performing technical reviews of Standard Urban Stormwater Mitigation Plan (SUSMP) submitted to the City
    - Preparing industrial and construction Storm Water Pollution Prevention Plan (SWPPP)

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

- Conducting monitoring and reporting for State General Industrial Permit compliance for municipal facilities in the City
- Providing training in storm water for the City's engineers and planners

- ***Dry Weather Action Levels.*** D-MAX compiled and analyzed countywide data from the 2002 Dry Weather Monitoring Programs to identify appropriate action levels for dry weather monitoring constituents. The results of this study were used to establish action levels that have been used regionally since 2003. In 2009, D-MAX completed a study for the regional Dry Weather Monitoring Workgroup to update action levels for total coliform, fecal coliform and *Enterococcus* bacteria; the updated actions levels will be used beginning this year.
- ***Municipal NPDES Permit Knowledge.*** D-MAX employees have a thorough understanding of the Municipal Permit requirements. We are active members of several Copermittee workgroups, including the Dry Weather Monitoring Workgroup. In recent years we helped 10 cities update the Dry Weather Monitoring Program portions of their JURMPs to meet Municipal Permit requirements. We also helped develop the trash assessment approach that was implemented in 2008 and gave a presentation to the Copermittees on definitions of various categories of trash amounts that are to be marked on the form.
- ***Cost Effectiveness.*** As a relatively small firm, we maintain low overhead so we can provide our clients with some of the most highly qualified environmental professionals available at affordable rates. Due to the large volume of samples collected by D-MAX countywide, we are able to negotiate discounted rates for laboratory analyses. During the last 13 years, we have completed the Dry Weather Monitoring Program for the City of Poway on time and within budget. Our familiarity with the City and common pollutant sources allows us to complete upstream investigations and as-needed services in the shortest time possible.
- ***Past Performance.*** D-MAX has performed numerous storm water projects for 18 Copermittees in San Diego and Orange counties. During these projects we have developed excellent working relationships with individual City personnel and have completed our projects on time and on budget. Our existing clients have been extremely satisfied with our performance on various storm water related projects.

The undersigned is the Project Manager and the main contact for the City for the services described in this proposal.

We are confident that our experience with the NPDES storm water program and familiarity with the Dry Weather Monitoring Program will enable us to provide excellent service to the City of Poway. We look forward to working with you on this project. Please feel free to contact us to discuss this proposal.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager/Principal

1. ENGINEERING FIRM INFORMATION

1.1 INTRODUCTION

D-MAX Engineering, Inc. (D-MAX) is an environmental engineering firm with an emphasis on storm water services. D-MAX was established in 1996 and currently has 15 employees. We have performed Dry Weather Field Screening and Analytical Monitoring Programs (Dry Weather Monitoring Program) for the County of San Diego and the cities of Poway, Carlsbad, El Cajon, La Mesa, Lemon Grove, National City, Poway, San Marcos, Santee, and Vista. Additionally, we have conducted a number of wet weather sampling programs and other monitoring programs for cities throughout San Diego County. D-MAX has sufficient General Liability Insurance and Professional Liability Insurance (Errors and Omissions) to meet the City's requirements.

For this project, we are planning to use EnviroMatrix Analytical, Inc. (EnviroMatrix) to conduct the required chemical and microbiological tests. EnviroMatrix is a California-certified analytical laboratory and has been involved in many storm water projects in San Diego County.

Both D-MAX and EnviroMatrix are located in San Diego County and are a short commute from the City of Poway.

D-MAX contact information:

7220 Trade Street, Suite 119
San Diego, CA 92121
Phone: (858) 586-6600
Fax: (858) 586-6644
E-mail: admin@dmaxinc.com

EnviroMatrix contact information:

4340 Viewridge Ave., Suite A
San Diego, CA 92121
Phone: (858) 560-7717
Fax: (858) 560-7763

1.2 KEY PERSONNEL

The personnel selected for this project are highly experienced in different aspects of storm water services, including dry weather field screening and analytical monitoring, illicit connection/illegal discharges identification, wet weather monitoring, and storm water management program development. They have been involved in BMP evaluation and development, and assisting municipalities in conducting storm water compliance inspections of businesses, municipal facilities, and construction sites.

Arsalan Dadkhah, Ph.D., P.E. will be our Project Manager for the services described in this proposal. He has over 30 years of engineering experience with an emphasis on hydrology, hydraulics, and water quality. Dr. Dadkhah has been the Project Manager for Dry Weather Monitoring Programs in the City of Poway for the last 13 years. He has directed numerous storm water quality studies for municipalities within San Diego and Orange counties, including a number of different storm water projects for the City of Poway. He has been involved with the regional Dry Weather Monitoring Workgroup since its inception, including serving as co-chair for several years.

Manouchehr (Manoo) Dadkhah, Ph.D., will be the field monitoring team leader. He is an Environmental Scientist with more than 20 years experience in hydrology, erosion control and watershed management. For the past 10 years, he has led the City of Poway's Dry Weather Monitoring Program and is therefore very familiar with the City's drainage patterns. He has also

been involved in conducting Dry Weather Monitoring Programs for a number of other jurisdictions in San Diego County throughout the past 11 years.

Mr. John Quenzer is an Environmental Scientist with a Bachelor's degree in environmental chemistry. He has participated in and helped supervise a number of Dry Weather Monitoring Programs in 10 cities and for the County of San Diego. He is an active member of the Regional Monitoring Workgroup. He managed the development of JURMPs for the City of Poway and seven other Copermittees as well as several JURMP Annual Reports. Mr. Quenzer will be responsible for data analyses and report preparation for the monitoring portions of this project.

Ms. Crystal Grover is an Environmental Scientist with a Master's degree in biology. She has performed Dry Weather Monitoring Programs for the cities of Poway, Chula Vista, El Cajon, La Mesa, Lemon Grove, National City, San Marcos, Santee, and the County of San Diego, acting as team lead in many of these programs. She has also conducted monitoring in Forester Creek in Santee and wet weather sampling in the cities of Poway and La Mesa, and she has written several construction SWPPPs for the City of Poway and other municipalities. Ms. Grover will be assisting in sampling and report preparation.

All key personnel assigned to this project have worked in several City of Poway projects and are very familiar with the City's storm water program. Resumes of key personnel are attached to this proposal.

2. ENGINEERING FIRM EXPERIENCE

The following is a brief description of projects similar to the subject assignment previously performed by D-MAX. Contact information for our clients on these projects can be found in the references table later in this section.

City of Poway Dry Weather Monitoring Programs. D-MAX has performed the City of Poway's Dry Weather Monitoring Program since 1997. We are very familiar with the City's monitoring locations, drainage system and patterns, land-uses, common sources of exceedances, and areas of concern. Additionally, D-MAX has assisted the City in conducting trash assessments of dry weather monitoring locations since 2008 and performing targeted dry weather municipal separate storm sewer system (MS4) outfall monitoring beginning last year.

Countywide Dry Weather Monitoring Programs. D-MAX has conducted over 110 dry weather monitoring programs throughout the San Diego region. Our clients include

- City of Poway (1997-2009)
- City of Carlsbad (1998-2009)
- City of Chula Vista (2000-2009)
- City of El Cajon (2002-2009)
- City of La Mesa (1996-2009)
- City of Lemon Grove (1998-2009)
- City of National City (1996-2009)
- City of San Marcos (2001-2009)
- City of Santee (1996-2009)
- City of Vista (2002-2003, 2008-2009)
- County of San Diego (2007-2009)

Dry Weather Action Level Development. D-MAX compiled and analyzed countywide 2002 Dry Weather Monitoring Program data to develop action levels for dry weather monitoring constituents. Since 2003, these action levels have been used by San Diego County Copermittees. Recently, D-MAX perform statistical analyses on 2002 through 2007 dry weather bacteria data from all San Diego County Copermittees to help develop updated action levels. Based on the results of our study and presentation, the Regional Monitoring Workgroup has updated the action levels to be used in 2010.

City of Poway BMP Effectiveness Studies. D-MAX provided design assistance to the City of Poway for retrofitting flood control detention basins for use as regional treatment control BMPs for SUSMP compliance. Since 2004 we have also taken wet weather composite samples of runoff entering detention basins in the City, as well as outflow samples after three days of detention. The results of inflow and outflow samples are compared to see the effect of the basins. Based on the results of the study, a paper was prepared and presented at the annual StormCon conference.

Jurisdictional Urban Runoff Management Programs. D-MAX has developed JURMPs for a number of jurisdictions in San Diego County both in 2002, in accordance with Order No. 2001-01, and the more recently adopted Municipal Permit. In 2007, D-MAX prepared JURMPs for Poway, Chula Vista, El Cajon, La Mesa, Santee, National City, and Oceanside. Additionally, D-MAX assisted the cities of Vista, Encinitas, and San Marcos to complete sections of the JURMP document. Most of these projects involved preparing updated inventories of dry weather monitoring stations and/or procedures.

Watershed Urban Runoff Management Programs. D-MAX represents the City of National City in the San Diego Bay WURMP Workgroup and has assisted the cities of La Mesa and National City in WURMP annual reporting for the San Diego River and San Diego Bay WURMPs. D-MAX has been listed as a primary author of the last seven San Diego Bay WURMP annual reports and the 2008 WURMP update. We have also completed special investigations as watershed water quality activities for the cities of San Diego, National City, and La Mesa.

Storm Water Compliance Inspections. Throughout the past several years, D-MAX has conducted more than 15,000 storm water compliance inspections of industrial, commercial, municipal, homeowners' association, treatment control BMP, and construction sites for 14 Copermittees in San Diego and Orange Counties. As part of the inspection process, watershed-based, prioritized facility inventories are developed, inspection forms are designed, and all inspection data is entered into GIS-compatible inspection databases. During the site inspections themselves, D-MAX confirms or updates the facility contact information, records the site's watershed, ensures the facility is prioritized accurately, provides public education about storm water quality issues and downstream receiving water bodies, distributes educational materials, and evaluates the effectiveness of existing BMPs and recommends additional BMPs as needed. Our experience with storm water compliance inspections has provided us with an in-depth understanding of potential sources of various pollutants and appropriate BMPs necessary to prevent polluted discharges.

City of Santee Forester Creek Improvement Project Water Quality Monitoring. The City of Santee received a Proposition 13 Grant to help fund its Forester Creek Improvement Project. The project included creek restoration and flood control components, including widening and revegetating the creek channel. To help fulfill associated grant requirements, D-MAX prepared a sampling plan, a Quality Assurance Project Plan, a 2005 Annual Monitoring Report, and a Project Assessment and Evaluation Plan. We also conducted water quality monitoring at three sites in the creek on a monthly basis for more than three and a half years. This monitoring

included a specially designed trash assessment to meet RWQCB requirements and a TDS component analysis to help the City gather more information about potential causes of the chronically elevated TDS readings in the creek. At the end of the project a final report assessing the results of the monitoring was prepared.

La Mesa Wet Weather and Additional Monitoring. D-MAX has conducted several special monitoring programs for the City of La Mesa, including wet weather monitoring to help the City gain additional data about constituents associated with Total Maximum Daily Load (TMDL) requirements for Chollas Creek and the San Diego River. The monitoring included collecting composite samples over the course of a storm at strategic locations throughout the city during rain events. D-MAX has also conducted a study on La Mesa's creeks and channels to evaluate the quality of urban runoff leaving the City of La Mesa and a study of the spring located in La Mesa's Collier Park to determine beneficial uses.

San Diego River Water Quality Monitoring Study. As part of an overall San Diego River Watershed bacteria study being conducted by the City of San Diego, D-MAX is collecting dry and wet weather samples from targeted locations on behalf of the cities of Santee and El Cajon within those cities' jurisdictions. The program involves flow-weighted sampling at one location in each City, developing rating curves to estimate flow for the wet weather monitoring, ambient monitoring in major receiving water bodies in the cities, and dry weather monitoring and visual surveys targeted at irrigation runoff in residential areas.

City of San Marcos Old California Restaurant Row Center. The objectives of this study was to identify the sources of odor and polluted water discharging into the storm water system from the Old California Restaurant Row area and provide recommendations to enhance the quality of the non-storm water draining into the city's storm drain system. This investigation included tracing flow at the outfall upstream to identify the sources of flow, collecting flow samples and testing for several constituents to identify pollutants, conducting dye and smoke tests to identify downstream and upstream connections, and conducting visual inspections and videotaping to identify the sources of extra flow. General and site specific recommendations included preparation of public education materials, engineering plans to eliminate illicit connections and best management practices to be implemented at the site.

Storm Water Education and Training. During the past several years, D-MAX has assisted several cities by:

- Developing brochures, calendars, and other educational materials for several cities. An example is the City of National City's annual storm water education calendar, which in 2010 features artwork from National City's schoolchildren. D-MAX worked with City staff and school district staff to coordinate an art contest open to all third graders in the City of National City. Students submitted drawings with a theme of protecting the City's waterways through keeping the community clean, and the winners' drawings were included as the art in the calendar.
- Conducting training seminars for municipal employees including engineering, public works, and land-use planning staff. We have also conducted presentations for private industry. Topics have included SUSMP implementation, construction BMPs and State General Construction Permit requirements, industrial and commercial BMPs and State General Industrial Permit requirements, BMPs for public works activities, and general overviews of storm water issues.

REFERENCES

The performance of D-MAX on storm water related projects in particular, can be verified by contacting our clients. The following individuals, who have used our company for similar projects, will attest to our business reputation, quality of services, and project management skills.

Name	Agency	Telephone Number	Projects	Amount of Most Recent Dry Weather Contract
Mr. Khosro Aminpour	City of Chula Vista	(619) 397-6111	2000-2009 Dry Weather Monitoring Programs, JURMP Development	$50,000
Mr. Jaime Campos	City of El Cajon	(619) 441-5554	2002-2009 Dry Weather Monitoring Programs, Special Studies, JURMP Development, Compliance Inspections	$36,600
Mr. Din Daneshfar	City of National City	(619) 336-4380	1996-2009 Dry Weather Monitoring Programs, Complete Storm Water Services 2004-2009; JURMP Revision, Compliance Inspections, SUSMP Review	$38,000
Mr. Steven DiDonna	County of San Diego	(858) 694-2332	2007-2009 Dry Weather Monitoring Programs	$130,400
Mr. Paul Hartman	City of Vista	(760) 726-1340 ext. 1373	2002-2003, 2008-2009 Dry Weather Monitoring Programs, Additional Creek Monitoring Study, Compliance Inspections	$36,300
Ms. Cora Long	City of Lemon Grove	(619) 825-3810	1998 – 2009 Dry Weather Monitoring Programs, Compliance Inspections	$23,200
Ms. Elaine Lukey	City of Carlsbad	(760) 602-7582	1998-2009 Dry Weather Monitoring Programs, JURMP Development, Compliance Inspections	$44,900
Ms. Helen Perry	City of Santee	(619) 258-4100 ext. 117	1996 – 2009 Dry Weather Monitoring Programs, JURMP Development, Annual Reporting, Forester Creek Monitoring, Compliance Inspections	$74,900
Ms. Erica Ryan	City of San Marcos	(760) 744-1050 ext. 3218	2001-2009 Dry Weather Monitoring Programs, Upstream Investigations, Compliance Inspections	$35,800
Mr. Hamed Hashemian	City of La Mesa	(619) 667-1153	1996 – 2009 Dry Weather Monitoring Programs, Special Studies, JURMP Development; Compliance Inspections, SUSMP Review	$34,600

3. SCOPE OF SERVICES

D-MAX will provide all personnel, equipment, and materials necessary to conduct the Dry Weather Monitoring Program in compliance with the requirements of the federal NPDES program and the Municipal Permit. Field crews will include at least two people.

We propose the following actions and techniques to maximize the efficiency of the project:

- Use the IDEXX Colilert™ and Enterolert™ for follow-up investigations to reduce analytical costs and to be able to receive results within 24 hours of sample submittal.
- Our analytical laboratory will send a courier to pick up samples from our field crew in the City at no extra charge. This will maximize the amount of work our staff can complete each day in the field.
- We have developed a data management system that can programmatically convert data into the regionally standardized data sharing formats. We will use this system to ensure high quality and save time in the conversion process.
- Our staff has completed the last 13 Dry Weather Monitoring Programs for the City. Our experience and knowledge of the City's MS4 allows us to complete routine and follow-up monitoring in the shortest amount of time possible.

Our approach to completing each of the tasks in the RFP is presented below.

I. DRY WEATHER ANALYTICAL MONITORING AND FIELD SCREENING

The City of Poway is planning to conduct the 2010 Dry Weather Field Screening and Analytical Monitoring Program in accordance with the specifications outlined in the Municipal Permit. There are 50 primary dry weather monitoring sites throughout the City. The purpose of the program is to detect and eliminate illicit connections and illegal discharges to the City's storm drain system and to gain an overall understanding of dry weather flow conditions within the City. The goals of this project include finding and eliminating IC/IDs, characterizing dry weather flows, and protecting public health.

D-MAX will provide all personnel, equipment, and materials necessary to perform dry weather field screening in compliance with the requirements of the Municipal Permit. Dry weather sampling will be completed before July 1, 2010.

To perform the fieldwork efficiently, we propose to carry out the following tasks.

Task 1 – Selection of Field Screening Sites

All field screening will be conducted in accordance with the Municipal Permit. The City has identified 50 field screening stations where data will be collected during the dry weather monitoring program. The City has also identified 27 alternate stations that will be monitored if any of the primary stations exhibit no flow or ponded water. Samples will not be taken within 72 hours of a rain event or if local hydrologic conditions indicate that storm water flow is still flowing after a rain event.

Task 2. - Field Screening

Field screening includes two major components, which are detailed below.

Task 2-1. Visual Observations: Visual observations are critical to the success of the field screening and may be the best source of information for many site visits. At each site, the visual observations will be recorded. Visual observations include looking for evidence of dry weather flows such as staining, corrosion, sediment, surrounding vegetation, algae, mosquito larvae, insects, rodents and other animals in the vicinity of the outfall. At each site, a standard dry weather field screening data and observation sheet will be completed. If no flow is

witnessed, observations regarding the site will still be recorded. We will use the most recent field data sheet prepared by the Copermittee Dry Weather Monitoring Workgroup. Photographs of each outfall will also be taken.

Task 2-2. Field Analysis: The outfalls will be checked for the presence of water. If no flowing or ponded water is observed, visual observations will be recorded, and an alternate site with ponded or flowing water will be selected. Field methods will be employed to measure flow rate. Field meters or Chemetrics field test kits will be used to test for the following parameters:

- Specific conductance
- Temperature
- pH
- Turbidity
- Surfactants (MBAS)
- Nitrate-Nitrogen (NO_3-N)
- Ammonia-Nitrogen (NH_3-N)
- Orthophosphate-Phosphorus ("Reactive Phosphorus" in the Municipal Permit)

Task 3 - Analytical Monitoring

Water samples from at least 25 percent of the sites (13 sites) where ponded or flowing water is observed will be collected and submitted to EnviroMatrix Analytical, Inc. for analysis. Sampling and analysis will be conducted in accordance with 40 CFR part 136. Samples will be analyzed for the following constituents:

- Total Hardness
- Oil and Grease
- Diazinon and Chlorpyrifos
- Cadmium (Dissolved)
- Copper (Dissolved)
- Lead (Dissolved)
- Zinc (Dissolved)
- *Enterococcus* bacteria
- Total Coliform bacteria
- Fecal Coliform bacteria

Task 4 - Data Evaluation

Upon receipt from the lab, data will be reviewed to check for any potential errors and to ensure the results are reported properly. The collected data will then be evaluated to identify possible areas of non-storm water flows throughout the City, which includes assessment of both pollutant concentrations and of flow rates in the conveyances. Data both within the current year and over the past several years of historical data will be evaluated to assess potential sources of flow and of pollutants. For example, in past years, some pollutant exceedances have been traced to specific businesses, and other have been associated with groundwater. Considering the results of the evaluation in 2010, recommendations for future actions will be made.

Task 5 – Dry Weather Data Conversion

The County of San Diego has begun compiling all the dry weather monitoring data collected by the Copermittees into one regional database. The County is requiring that each City convert its dry weather monitoring data into a standard format so that it can be easily uploaded into the

regional database. The process involves converting the data from tables designed for ease of reading and reference to more duplicative tables that are designed to allow for more efficient data analysis using the regional database. D-MAX will perform this conversion process for the City.

Task 6 – Trash Assessment

We will complete a trash assessment at all 50 primary monitoring locations identified for dry weather monitoring and any alternate sites visited. The trash assessment will be performed in accordance with the protocol developed by Copermittee Dry Weather Monitoring Workgroup and Regional Monitoring Workgroup. The results of the assessment will be incorporated in the final report. We will also enter trash assessment results into the standard reporting template spreadsheet developed by the County of San Diego and provide a copy of that completed spreadsheet to the City.

Task 7 – Source Identification/Follow-Up investigations

Based on dry weather field screening and analytical results, follow-up investigations will likely be necessary to identify and eliminate pollutant sources. To determine whether a source investigation is necessary, the following three methods will be employed, as applicable: numeric action levels, California Toxics Rule, and best professional judgment, which are described below.

Numeric Action Levels

Numeric action levels are used as the primary approach for interpreting pH, reactive phosphorus, nitrate, ammonia, surfactants (MBAS), oil and grease, diazinon, chlorpyrifos, total coliform, fecal coliform, and *Enterococcus* analytical results. If any of these constituents exceed numeric action levels, then a source investigation is recommended to the City.

California Toxics Rule

The California Toxics Rule determines the action level for dissolved metals such as cadmium, copper, lead, and zinc. The California Toxics Rule provides benchmarks for the dissolved metals concentration based on the hardness of sampled water. If the laboratory analytical results exceed the action level, then a source investigation is recommended to the City.

Best Professional Judgment

Best professional judgment is utilized as the primary approach for conductivity, temperature, and turbidity. It is the secondary approach for interpreting the results of all other analyses. Best professional judgment may indicate that results exceed action levels may be the result of natural or background factors.

Follow-up visits will be made for sites where the results of the field test and laboratory analytical results exceed an action level. If field results exceed an action level, we will follow-up within two business days of recording the test results in the field. Due to the transient nature of illegal discharges, brief upstream investigations may be performed immediately upon identifying field exceedances to identify the source of flow. If the results of the laboratory samples exceed the action levels, we will conduct follow-up pollutant source investigations within two business days of receiving the analytical results. If at any time significant contamination is detected, the City will be notified to determine the appropriate course of action.

Each follow-up source investigation will include recording visual observations at the site; measuring physical parameters such as water flow, temperature, pH, and conductivity; and collecting water samples for analysis. Our field crew will also perform visual surveys of the area and storm water drainage system upstream of the site to determine potential sources of the pollutant(s) exceeding the action level.

For the bacteria source investigation program, a more stepwise approach to upstream investigations will be used. Samples for bacteria testing will be collected at the upstream locations with flowing and ponded water where there is a possibility of exposure to sources of bacteria. The collected samples will be sent to the laboratory to be tested using the Colilert and/or Enterolert methods, as applicable based on which group(s) of bacteria were measured above the action level. These methods provide faster turn-around time than the conventional multiple tube method. After receiving the lab results, depending on the bacteria results, further investigations may be required. In such cases we will contact City staff to determine the action to be taken.

Task 8 - Preparation of a Summary Report

At the conclusion of the program, a report will be prepared to summarize the observations and the results of the study. The report will include interpretation of the field and laboratory data and test results as to the possible presence of illicit connections/illegal discharges. The report will be organized to include an introduction, background, results, conclusions, recommendations, and quality assurance/quality control (QA/QC), as well as appendices for data sheets, selected site photographs and the results of laboratory analyses. A draft copy of the report will be prepared and delivered to the City for review. The City's comments on the draft report will be incorporated into the final report. Four (4) hard copies of the final report, two (2) bound and two (2) three hole punched, and two (2) electronic copies of the report will be delivered to the City, no later than August 30, 2010. One electronic copy will include the report as a pdf file, and one electronic copy will include the report text in MS Word format and the collected data in an MS Excel file. The data in the Excel file will be in the format required by the County of San Diego, as described in Task 5 above.

We will provide the City with all original data, records of dry weather screening, laboratory analyses, digital photographs, and certified copies of all calibration, quality assurance and maintenance records. We will keep copies of all records for a minimum period of five years

QA/QC PROGRAM

We will follow the QA/QC procedures found in the City's Dry Weather Monitoring Sampling Manual, which is found in Appendix E of the City's JURMP. The QA/QC procedures are designed to provide the ongoing control and evaluation of measurement data quality throughout the course of the Dry Weather Monitoring Program, the MS4 Outfall Monitoring Program, and any other special studies or investigations to be conducted by D-MAX for the City.

II. TARGETED MS4 OUTFALL MONITORING

The purpose of the MS4 Outfall Monitoring Program is to characterize pollutant discharges from MS4 outfalls, especially in light of receiving water quality. The work will be performed in accordance with the March 2009 Final Copermittee MS4 Outfall Monitoring Workplan (MS4 Workplan) and with the requirements of the Receiving Waters and Urban Runoff Monitoring and Reporting Program dictated in the Municipal Permit.

Completing targeted dry weather MS4 outfall monitoring for the City will include making one visit to the City's MS4 outfall monitoring sites between May 1 and August 1, 2010; collecting and submitting samples for analyses of the parameters the City has selected for those sites; entering data in the standard MS4 data template spreadsheet provided by the County of San Diego; and reporting the data to the City. The City's targeted dry weather MS4 monitoring sampling sites and the constituents to be analyzed at each are listed in the table below. All the targeted MS4 monitoring program sites will already be visited during the City's standard dry weather monitoring program. The monitoring required for both programs will be completed during the same visit for these sites, which reduces labor costs.

Only one of the six sites, Site 129, is a Dry Weather Monitoring Program laboratory analytical monitoring site. At this location, data collected for bacteria and pH as part of the Dry Weather Monitoring Program will be able to be used for MS4 outfall monitoring; this testing will not have to be repeated. The table below summarizes the sites and testing for the City's MS4 Outfall Monitoring Program.

City of Poway MS4 Monitoring Sites and Analytes

Site	Latitude	Longitude	Analytes
129	33.00705	-117.05055	Bacteria*, TDS, TSS, Total Nitrogen-N, Total Phosphorus-P, Manganese, pH*, Sulfates, Chloride
136	33.01853	-117.04646	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphorus-P, Manganese, pH, Sulfates, Chloride
18A	32.96015	-117.03840	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphorus-P
19	32.95502	-117.03398	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphorus-P
21	32.95595	-117.02257	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphorus-P
105	32.94860	-117.06208	Bacteria, TDS, TSS, Total Nitrogen-N, Total Phosphorus-P

** Analysis overlaps with testing done in Dry Weather Monitoring Program.*

III. AS-NEEDED SERVICES

D-MAX has conducted BMP effectiveness monitoring, storm water compliance inspections, SWPPP preparation, special monitoring projects, and other as-needed tasks for the City in the past. Some of our more recent projects are described in the experience section of this proposal. Due to our extensive and varied experience in providing storm water services to the City of Poway and to many other jurisdictions in San Diego County, we are able to provide a wide range of storm water related services to meet the City's needs. Our staff's familiarity with the City will allow us to provide as-needed services in the most efficient manner possible. Since we have ample staff members working almost exclusively on storm water projects, we are able to complete as-needed projects on short notice if the situation requires that.

4. COST PROPOSAL

Our proposed costs for conducting the services proposed herein are included in a separate, sealed envelope per the requirements in the RFP.

ARSALAN DADKHAH

Education

Utah State University: Ph.D., Civil and Environmental Engineering (Hydrology and Water Resources), 1985
Utah State University: M.S., Civil and Environmental Engineering (Hydraulics), 1981
College of Science and Technology, Tehran, Iran: B.S., Mechanical Engineering, 1967

Registration

Civil Engineer: Utah 1985
Civil Engineer: California 1987
Civil Engineer: Arizona 1991

Professional History

D-MAX Engineering, Inc., 1996 - Present
Woodward-Clyde Consultants, 1987 - 1996
Montgomery Watson Consulting Engineers, Inc., 1984 - 1987
Tehran Regional Water Authority, 1969 – 1978

Representative Experience

Dr. Dadkhah has more than 30 years of Civil Engineering experience with an emphasis in water quality. He has managed a variety of storm water projects throughout southern California for the federal government, local municipalities, and private entities. While at D-MAX, Dr. Dadkhah has conducted many field investigations, sampling, and analysis projects simultaneously and has prepared storm water management programs for several municipalities. He has also been involved in storm water permitting projects and in preparing pollution prevention and monitoring plans for industrial facilities and construction sites to comply with NPDES Permit requirements. Throughout his career, he has consistently interfaced with California regulatory agencies and has developed a good working relationship with individual regulatory staff within the San Diego area. Recent projects include the following:

Dry Weather Monitoring Programs
Project Manager for more than 110 Dry Weather Monitoring Programs for the County of San Diego and the cities of Carlsbad, Chula Vista, El Cajon, La Mesa, Lemon Grove, National City, Poway, San Marcos, Santee, and Vista in San Diego County. Dr. Dadkhah has been involved with the regional Dry Weather Monitoring Workgroup since its inception and served as co-chair for several years.

City of Poway BMP Effectiveness Studies
Assisted the City of Poway in retrofitting flood control detention basins for use as regional treatment control BMPs for SUSMP compliance and monitoring inflow and outflow by means of wet weather composite sampling. Based on the results of the study, a paper was prepared and presented at the annual StormCon conference.

Jurisdictional Urban Runoff Management Program
Project manager for the development of JURMPs for cities of National City, La Mesa, Poway, Chula Vista, El Cajon, Oceanside, Santee, and Vista. These projects include updates to each sections of the JURMP based on the new requirements set forth in the new Municipal Permit (Order No. 2007-0001). Project Manager for developing Jurisdictional Urban Runoff Management Programs (JURMPs) for the Cities of El Cajon, La Mesa, Poway, Santee, National City and some sections of the JURMPs for both Carlsbad and San Marcos in 2002. Also managed development of Local Implementation Plans (similar to a JURMP) for the cities of La Habra and Mission Viejo.

MANOUCHEHR DADKHAH

Education

Utah State University, Ph.D., Watershed Science (Watershed Hydrology), 1979
Utah State University, M.S., Watershed Science (Soil and Water Conservation), 1975
University Of Shiraz, Iran, M.S., Agricultural Engineering, 1965

Professional Background

D-MAX Engineering, Inc., 1998- Present
Associate Professor at Tehran University, College Of Natural Resources, 1987 – 1998
Soil and Water Conservation Expert at Range and Forest Organization, 1967 – 1972

Representative Experience

Dr. Dadkhah is a Senior Environmental Scientist with more than 20 years of experience in environmental sampling, hydrology, erosion control, and watershed management. He is highly experienced in storm water projects including Dry Weather Monitoring Programs and special monitoring studies. Additionally, he has assisted in updating JURMPs for various jurisdictions based on requirements of the RWQCB Municipal Permit Order No. R9- 2007-0001 and conducted numerous Storm Water Quality Inspections. Relevant projects include:

Dry Weather Monitoring & Coastal and Lagoon Outfall Monitoring
Performing Dry Weather Monitoring Programs in the cities of Carlsbad, Chula Vista, National City, La Mesa, Lemon Grove, El Cajon, Santee, Poway, San Marcos, and Vista. Responsibilities included Dry Weather Sampling Plan, creating IC/ID detection and elimination approach, selecting dry weather sites, and leading field teams through field sampling and testing, trash assessments, and investigating upstream pollutant source investigations. He has also performed coastal and lagoon outfall monitoring for the City of Carlsbad.

Special Studies
Designing and performing special water quality monitoring projects for the cities of Carlsbad, La Mesa, San Marcos, Santee, and Poway. He has contributed to several additional studies of receiving water quality that are conducted concurrently with the Dry Weather Monitoring Program. Dr. Dadkhah performed sampling to assess the effectiveness of detention basins in the City of Poway, special investigations at Grossmont Shopping Center and Grossmont Hospital in La Mesa, and a special investigation of Old California Restaurant Row in San Marcos. He has also been involved in water quality monitoring for the Forester Creek Improvement Project in Santee, and he has managed the field sampling for an assessment of flow leaving the major drainage basins in the City of La Mesa.

Industrial Permit Compliance Services
Managing site inspection, field sampling, and data compilation for the Poway Municipal facility, Vehicle Maintenance Facility, Water Treatment Plant, and Material Handling Facility. He oversaw the sampling of authorized and unauthorized non-storm and storm water discharges. Dr. Dadkhah has prepared an Annual Comprehensive Site Compliance Evaluation and Annual Report to be submitted to the Regional Water Quality Control Board. He made onsite recommendations regarding BMP compliance of facilities and designed structural and non-structural BMPs for implementation at the sites.

Storm Water Quality Inspections
Conducted field inspections of construction, industrial, commercial, and municipal sites in various cities throughout San Diego County and La Habra in Orange County. Duties include assessing BMPs, interacting with and providing education to business owners, and developing recommendations for further action.

JOHN QUENZER

Education

University of California, San Diego, B.S., Environmental Chemistry, 2002

Professional Background

D-MAX Engineering, Inc., 2004 to Present
City of San Diego, Environmental Services Division, 2001-2002

Representative Experience

Mr. John Quenzer is a Project Scientist who has been involved in a variety of water quality projects in San Diego County. He has participated in and helped supervise Dry Weather Monitoring Programs for 11 San Diego County jurisdictions and wet weather monitoring efforts in four jurisdictions. Mr. Quenzer possesses extensive experience in data management, including database development; WURMP preparation; JURMP preparation and annual reporting, storm water compliance inspections, and storm water document review. He is a regular contributor to the San Diego Bay WURMP workgroup and has prepared a section of the annual report in each of the past several years. Relevant projects include the following.

Dry Weather Monitoring Programs
Conducting and supervising data analysis, data quality assurance, and report preparation and review. He has worked on the Dry Weather Monitoring Programs for the cities of Chula Vista, Carlsbad, El Cajon, San Marcos, Santee, Poway, National City, La Mesa, Lemon Grove, Vista, and County of San Diego. He is an active member of the Regional Monitoring Workgroup.

Additional Monitoring Programs and Special Studies
Preparing several reports for the City of Santee Forester Creek Improvement Project water quality monitoring, including a sampling plan, a Quality Assurance Project Plan, a Project Assessment and Evaluation Plan, and three Annual Monitoring Reports. These included sampling program design and QA/QC procedures, as well as analyses of collected data. Mr. Quenzer also helped design and evaluate results from special studies in the cities of Poway, La Mesa, and El Cajon.

Data Management
Designing databases and managing tasks for seven jurisdictions in San Diego County. He conducts quality control and quality assurance on water quality monitoring and compliance inspection data, including managing relevant databases. Mr. Quenzer redesigned industrial and commercial inspection databases to facilitate annual reporting. He developed and prioritized inventories of facilities based on business license listings submitted by municipalities. Mr. Quenzer has created databases tracking the receipt of inspection forms, inspection results, and most pertinent findings at each inspection. Has also developed data management systems for field sampling data, such as that collected in support of the Forester Creek Improvement Project in Santee, and developed the City of National City's SUSMP inspection database.

Project Coordinator, SUSMP Technical Reviews
Reviewing SUSMP project submittals for several jurisdictions in San Diego County, including the City of Poway. Technical reviews include consideration of hydrology, hydromodification modeling, water quality impacts, thorough analyses of proposed low impact development, source control BMP, and treatment control BMPs designs, in light of the anticipated pollutants generated and any downstream impairments to receiving waters. Recommendations and conclusions are provided to the jurisdiction at the conclusion of the review.

CRYSTAL GROVER

Education

University of California, San Diego, M.S., Biology, 2007
University of California, San Diego, B.S., Biology, 2005

Professional Background

D-MAX Engineering, Inc., 2007 to present

Representative Experience

Ms. Grover's manages monitoring and inspection data for three cities and has conducted Dry Weather Monitoring Programs for nine jurisdictions in San Diego County. She coordinates construction, industrial, and commercial inspections for the City of National City. Her recent projects include:

Dry Weather Monitoring Programs
Performing Dry Weather Monitoring Programs for the cities of Chula Vista, El Cajon, La Mesa, Lemon Grove, National City, Poway, San Marcos, Santee, and the County of San Diego, for many of which she has acted as team lead. Duties included recording visual observations, trash assessments, sampling, field analytical testing, and performing upstream investigations. Ms. Grover has also prepared the dry weather monitoring reports for the jurisdictions with which she was involved, including preparation of figures in GIS.

Additional Monitoring
Conducting wet weather monitoring programs in the cities of Poway and La Mesa. Ms. Grover has performed additional monitoring studies such as the Forester Creek Improvement Project in the City of Santee, Buena Vista Creek in the City of Vista, and elevated nitrate levels in the cities of Vista and San Marcos.

Data Management and Geographic Information System (GIS)
Developing a program to automatically transfer dry weather monitoring data into the County's data sharing format. She has developed databases to store and analyze monitoring data and inspection data. For example, the City of La Mesa's wet weather monitoring database uses collected data to calculate constituent load estimates based on constituent concentration and the depth of the rain event. Ms. Grover has also produced GIS maps for various monitoring programs, reports, and presentations for use both in GIS programs and in Google™ Earth.

Preparation of JURMPs, Annual Reports, and other Documents

Preparing sections of the JURMP Annual Report for the cities of La Mesa, Poway, and Santee. Ms. Grover has written and updated construction and industrial SWPPPs for Poway municipal projects. She reviews SUSMP and construction SWPPP reports for jurisdictions in San Diego County and provides recommendations to cities at the conclusion of these reviews.

Storm Water Quality Inspections
Conducting construction, industrial, commercial, and treatment control BMP inspections in various cities throughout San Diego County. She has also conducted numerous complaint and follow-up field inspections in these jurisdictions.

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

May 12, 2010

Mr. Malik Tamimi
Stormwater Program Administrator
City of Poway
Development Services Department
13325 Civic Center Drive
Poway, California 92064

Re: Cost Estimate for Performing Storm Water Services
City of Poway, California

Dear Mr. Tamimi:

Our proposed costs to complete the scope of services described in our proposal are as follows:

I. 2009/2010 JURMP Annual Report. We will perform this task on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed the amount below.

Time and materials (not to exceed $23,980)

A spreadsheet cost breakdown for JURMP Annual Report preparation is attached for reference.

II. Performing As-Needed Services. Since the scope of services for this task is not fully known at the time, we propose to conduct this task on a time and material basis in accordance with the attached Schedule of Fees.

Time and materials

D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Principal

7220 Trade Street ■ Suite 119 ■ San Diego, CA 92121 ■ (858) 586-6600 ■ Fax (858) 586-6644

DMAX

SCHEDULE OF FEES

January 1, 2010

This Schedule of Fees will be adjusted periodically. The new fee schedule will apply to all existing and new work.

LABOR

Classification	Hourly Rate
Clerk*	$ 50
Word Processor*	55
Drafter*	65
Technician*	65
Senior Technician*	75
Staff Scientist/Engineer	85
Assistant Project Scientist/Engineer	95
Project Scientist/Engineer	110
Senior Scientist/Engineer	120
Principal Scientist/Engineer	140

* Overtime (in excess of 8 hours per day) and weekend hours will be charged at 1.5 times the above rates for non-exempt personnel.

Field and hourly services will be charged portal to portal from our office, with a two-hour minimum.

Appearance as expert witnesses at court trials, mediation, arbitration hearings and depositions will be charged at $200/hour. Time spent preparing for such appearances will be charged at the above standard hourly rates.

OTHER CHARGES

Subcontracted services, such as sub consultants, outside testing, drilling, and surveyors, will be charged at cost plus 15%. Other project-specific costs, such as rentals, expendable or special supplies, special project insurance, permits and licenses, shipping, subsistence, tolls and parking, outside copying/printing, etc., will be charged at cost plus 15%. Mileage will be charged at a rate of $0.57 per mile.

Client will be responsible for any applicable taxes in addition to the fees due for Services.

Poway 2009/2010 JURMP Annual Report

TASKS	Project Manager	Project Scientist	Asst Project Scientist	Word Processor	ODC*	Total
		Rates ($/hr)				
	$ 140.00	$ 110.00	$ 95.00	$ 55.00		
		HOURS				
1) Respond to RWQCB 2008/09 AR Comments						
Review Information, Edit Report Contents As Needed		3				$330
					Subtotal	**$330**
2) Coordinate Information Transfer with City						
Planning/Develop List of Questions	1	1	2			$440
Contact City Personnel		4	14		$35	$1,805
Organize Information, Follow-up as Needed	2	6	14			$2,270
					Subtotal	**$4,515**
3) Prepare JURMP Annual Report						
Executive Summary		3				$330
Introduction		1.5				$165
New Development/Redevelopment	1	4	14			$1,910
Construction	1	3	14			$1,800
Municipal	1	2	16			$1,880
Industrial/Commercial	1	3	14			$1,800
Residential		1	7			$775
IDDE	1	2	12			$1,500
Education		2	10			$1,170
Public Participation		1	4			$490
Fiscal Analysis		1.5	2			$355
Analysis of Program Effectiveness	2	14	6			$2,390
Conclusions			0.5			$48
Address Comments from City	3	12	8			$2,500
Report Reproduction and Delivery (Draft & Final)		2	8	18	$52	$2,022
					Subtotal	**$19,135**
Totals	13	66	145.5	18	**Grand Total**	**$23,980**

*ODC includes mileage and materials purchased for report reproduction.

Poway 2010/2011 JURMP Annual Report

TASKS	Principal Engineer	Senior Scientist	Asst Project Scientist	Staff Sci. II	Staff Sci. I	ODC*	Total
			Rates ($/hr)				
	$140	$120	$100	$92	$85		
			HOURS				
1) Respond to RWQCB 2009/10 AR Comments							
Review Information, Edit Report Contents As Needed		3					$360
						Subtotal	**$360**
2) Coordinate Information Transfer with City							
Revise List of Questions Based on 2010 Answers		1	3				$420
Contact City Personnel		4	14			$30	$1,910
Organize Information, Follow-up as Needed	1	4	17				$2,320
						Subtotal	**$4,650**
3) Prepare JURMP Annual Report							
Executive Summary		1	2.5				$370
Introduction		1.5					$180
New Development/Redevelopment	1	4	14				$2,020
Construction	1	3	14				$1,900
Municipal	1	2	16				$1,980
Industrial/Commercial	1	3	14				$1,900
Residential			2	6			$752
IDDE	1	2	12				$1,580
Education			2	10			$1,120
Public Participation			1	4			$468
Fiscal Analysis		1.5	2				$380
Analysis of Program Effectiveness	2	6	14				$2,400
Conclusions			0.5				$50
Address Comments from City	1	8	14				$2,500
Report Reproduction and Delivery (Draft & Final)		1	4		10		$1,370
						Subtotal	**$18,970**
Totals	9	45	146	20	10	**Grand Total**	**$23,980**

*ODC includes mileage and materials purchased for report reproduction.

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

March 30, 2011
Project No. 201115W

Mr. Malik Tamimi
Stormwater Program Administrator
City of Poway
Development Services Department
13325 Civic Center Drive
Poway, California 92064

Re: Proposal to Prepare FY 2010/2011 JURMP Annual Report for the City of Poway

Dear Mr. Tamimi:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of Poway in the preparation of the fiscal year 2010/2011 JURMP Annual Report. Work will be conducted in accordance with the requirements of RWQCB Order No. R9-2007-0001 (Municipal Permit). The annual report will cover the reporting period of July 1, 2010 through June 30, 2011. Our scope of services associated with this project includes the following tasks:

SCOPE OF SERVICES

Task 1: Review and Incorporate RWQCB Comments from 2009/2010 JURMP Annual Report
D-MAX will review RWQCB comments on the 2009/2010 JURMP Annual Report and the City's storm water program and update the format and/or content of the 2010/2011 JURMP Annual Report as applicable.

Task 2: Coordinate Information Transfer with City Personnel
We will contact several City departments to acquire information regarding the program implementation and special activities carried out during the 2010/2011 fiscal year. We have prepared standard lists of questions and contacted City staff to obtain similar information in 2009/2010, which should help speed up the process for the 2010/2011 report. Assistance from City storm water staff may be necessary in determining who should be contacted and facilitating information transfer, especially in light of the aggressive timeline for submittal of the draft JURMP Annual Report. We will need to receive the information necessary to prepare the report by mid July 2011, so if possible it would be advisable to begin coordinating with City staff prior to July 1, 2011. We will stay in contact with the applicable City staff after the initial questions are supplied to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3.

Task 3: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

Sections
Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.

Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, a reference to any RWQCB comments on the City's 2009/2010 JURMP Annual Report (if applicable, the response will be included as an attachment), and a summary list of key achievements.

Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's SUSMP; treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.

- A listing of the priority development projects that were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
- An updated treatment control BMP inventory.
- The number of treatment control BMPs inspected, including a summary of inspection results and findings.
- A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.
- Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
- A listing of any projects which received a SUSMP waiver.
- A description of implementation of any SUSMP waiver mitigation program.
- A description of Hydromodification Management Plan (HMP) development collaboration and participation.
- A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
- A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.
- A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.
- The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.

Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.

- For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season,

the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.

- Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
- A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.

Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.

- A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.
- Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
- Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
- Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
- Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.
- Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2010/2011.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.

Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.

- A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
- A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
- A list of inspections conducted during the fiscal year, including inspection findings.
- The City's current inventories of industrial and commercial businesses.

Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.

- A description of collaborative efforts taken to develop and implement the Regional Residential Education Program.
- A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
- Identification of high priority residential areas and BMPs or other actions taken to mitigate potential pollutant discharges from those areas in particular.

Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.

- A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
- A list of complaints and hotline calls received and how they were resolved.
- A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.

Education: will include descriptions of various educational efforts by the City. The Municipal Permit emphasizes presenting educational efforts categorized by type of target audience. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.

- A description of education efforts conducted for each target community.
- Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.
- A list of educational materials distributed, including numbers as available.

Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. This section will include descriptions of public participation activities the City has sponsored or participated in, such as cleanup events and partnerships with local environmental groups.

Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. A new fiscal analysis framework has been developed by the Copermittees, and it will need to be implemented for the 2010/2011 JURMP Annual Report. Adapting the City's financial information to the new format will require developing a different structure for the section. We expect that City staff will provide financial information in categories that match the categories required by the new standard guidance for fiscal reporting.

Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared.

Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.

Task 4: Report Preparation: Draft
We will one (1) electronic copy of the draft JURMP Annual Report and attachments for City review. The electronic copy will include sections of the report in MS Word documents. These documents will be provided to the City no later than August 15, 2011.

Task 5: Responding to City Comments on the Draft Report
We will incorporate two rounds of comments on the draft report from City staff into the final report.

Task 6: Report Preparation: Final
D-MAX will prepare and deliver four (4) electronic copies of the final JURMP Annual Report and attachments to the City. Due to changes in RWQCB requirements, no hard copies are required for this year's submittal. We will convert all electronic files, including attachments and the certification statement, to pdf format and merge them into a single pdf document to meet RWQCB paperless office requirements. The final report will be submitted to the City no later than September 12, 2011.

SUMMARY AND COST

In recent years when assisting the City by preparing the JURMP Annual Report we have routinely done additional work beyond our budget limit without charging the City for the difference. Nonetheless, we are keeping the cost for this year's project at the same level as last year's since this year we will not be required to submit hard copies of the JURMP Annual Report. We will perform all work on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed a total of $23,980. A spreadsheet cost breakdown for JURMP Annual Report preparation is attached for reference.

Please feel free to contact us if you have any questions regarding this proposal.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

Poway 2011/2012 JURMP Annual Report

TASKS	Principal Engineer	Senior Scientist	Asst Project Scientist	Staff Sci. II	Staff Sci. I	ODC*	Total
			Rates ($/hr)				
	$140	$120	$100	$92	$85		
			HOURS				
1) Respond to 2010/11 AR Comments							
Review Information, Edit Report Contents As Needed		3					$360
						Subtotal	**$360**
2) Coordinate Information Transfer with City							
Revise List of Questions Based on 2011 Answers		1	3				$420
Contact City Personnel		4	14			$30	$1,910
Organize Information, Follow-up as Needed	1	4	17				$2,320
						Subtotal	**$4,650**
3) Prepare JURMP Annual Report							
Executive Summary		1	2.5				$370
Introduction		1.5					$180
New Development/Redevelopment	1	4	14				$2,020
Construction	1	3	14				$1,900
Municipal	1	2	16				$1,980
Industrial/Commercial	1	3	14				$1,900
Residential			2	6			$752
IDDE	1	2	12				$1,580
Education			2	10			$1,120
Public Participation			1	4			$468
Fiscal Analysis		1.5	2				$380
Analysis of Program Effectiveness	2	6	14				$2,400
Conclusions			0.5				$50
Address Comments from City	1	8	14				$2,500
Report Reproduction and Delivery (Draft & Final)		1	4		10		$1,370
						Subtotal	**$18,970**
Totals	9	45	146	20	10	**Grand Total**	**$23,980**

*ODC includes mileage and materials purchased for report reproduction.

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

July 16, 2012
Project No. 201235W

Mr. Roger Morrison
City of Poway
Development Services Department
13325 Civic Center Drive
Poway, California 92064

Re: Proposal to Prepare FY 2011/2012 JURMP Annual Report for the City of Poway

Dear Mr. Morrison:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of Poway in the preparation of the fiscal year 2011/2012 JURMP Annual Report. Work will be conducted in accordance with the requirements of RWQCB Order No. R9-2007-0001 (Municipal Permit). The annual report will cover the reporting period of July 1, 2011 through June 30, 2012. Our scope of services associated with this project includes the following tasks:

SCOPE OF SERVICES

Task 1: Review and Incorporate Comments from 2010/2011 JURMP Annual Report
D-MAX will review comments from the RWQCB or environmental groups on the 2010/2011 JURMP Annual Report and the City's storm water program and update the format and/or content of the 2011/2012 JURMP Annual Report as applicable.

Task 2: Coordinate Information Transfer with City Personnel
We will contact several City departments to acquire information regarding the program implementation and special activities carried out during the 2011/2012 fiscal year. We have prepared standard lists of questions and contacted City staff to obtain similar information in 2009/2010, which should help speed up the process for the 2011/2012 report. Assistance from City storm water staff may be necessary in determining who should be contacted and facilitating information transfer, especially in light of the aggressive timeline for submittal of the draft JURMP Annual Report. We will stay in contact with the applicable City staff after the initial questions are supplied to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 3.

Task 3: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

Sections
Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.

Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, a reference to any RWQCB or environmental group comments on the City's 2010/2011 JURMP Annual Report (if applicable, the response will be included as an attachment), and a summary list of key achievements.

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Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's SUSMP; treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key items to be included in the 2011/2012 JURMP Annual Report are listed below.

- A listing of the priority development projects that were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
- An updated treatment control BMP inventory.
- The number of treatment control BMPs inspected, including a summary of inspection results and findings.
- A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.
- Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
- A listing of any projects which received a SUSMP waiver.
- A description of implementation of any SUSMP waiver mitigation program.
- A description of Hydromodification Management Plan (HMP) development collaboration and participation.
- A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
- A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.
- A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by each of the projects, together with a description of hydrologic control measures implemented for each applicable project.
- The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.

Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key items to be included in the 2011/2012 JURMP Annual Report are listed below.

- For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.

- Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
- A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.

Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Some key items to be included in the 2011/2012 JURMP Annual Report are listed below.

- A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.
- Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
- Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
- Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
- Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.
- Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2011/2012.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.

Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key items to be included in the 2011/2012 JURMP Annual Report are listed below.

- A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
- A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
- A list of inspections conducted during the fiscal year, including inspection findings.
- The City's current inventories of industrial and commercial businesses.

Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. Some key items to be included in the 2011/2012 JURMP Annual Report are listed below.

- A description of collaborative efforts taken to develop and implement the Regional Residential Education Program.
- A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
- Identification of high priority residential areas and BMPs or other actions taken to mitigate potential pollutant discharges from those areas in particular.

Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Some key items to be included in the 2011/2012 JURMP Annual Report are listed below.

- A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
- A list of complaints and hotline calls received and how they were resolved.
- A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.

Education: will include descriptions of various educational efforts by the City. The Municipal Permit emphasizes presenting educational efforts categorized by type of target audience. Some key items to be included in the 2011/2012 JURMP Annual Report are listed below.

- A description of education efforts conducted for each target community.
- Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges.
- A list of educational materials distributed, including numbers as available.

Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. This section will include

descriptions of public participation activities the City has sponsored or participated in, such as cleanup events and partnerships with local environmental groups.

Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. We expect that City staff will provide financial information in categories that match the categories required by the new standard guidance for fiscal reporting.

Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared.

Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.

Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.

Task 4: Report Preparation: Draft
We will one (1) electronic copy of the draft JURMP Annual Report and attachments for City review. The electronic copy will include sections of the report in MS Word documents. These documents will be provided to the City no later than August 15, 2012.

Task 5: Responding to City Comments on the Draft Report
We will incorporate two rounds of comments on the draft report from City staff into the final report.

Task 6: Report Preparation: Final
D-MAX will prepare and deliver four (4) electronic copies of the final JURMP Annual Report and attachments to the City. Due to changes in RWQCB requirements, no hard copies are required for this year's submittal. We will convert all electronic files, including attachments and the certification statement, to pdf format and merge them into a single pdf document to meet RWQCB paperless office requirements. The final report will be submitted to the City no later than September 12, 2012.

SUMMARY AND COST

We will perform all work described above on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed a total of $23,980. A spreadsheet cost breakdown for JURMP Annual Report preparation is attached for reference.

Please feel free to contact us if you have any questions regarding this proposal.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

February 9, 2007

Ms. Helen M. Perry
Stormwater Program Manager
City of Santee
Department of Development Services
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: Preparation of a Revised Jurisdictional Urban Runoff Management Program Santee, California

Dear Ms. Perry,

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of Santee (City) in preparing a revised Jurisdictional Urban Runoff Management Program (JURMP). The San Diego Regional Water Quality Control Board (RWQCB) recently issued Order No. R9-2007-0001 (Municipal Permit), a municipal National Pollutant Discharge Elimination System (NPDES) permit issued to jurisdictions in the San Diego region. This new Municipal Permit replaces the old permit, RWQCB Order No. 2001-01, and the new Municipal Permit requires cities to significantly revise their JURMPs.

The revised JURMP will lay out the City's plans for the NPDES program over the next five year permit cycle. We propose to assist the City in preparation of a revised JURMP to meet new Municipal Permit requirements. We have been contacted by several cities for assistance with JURMP revisions. Because some portions of the JURMP are relatively similar across different cities, we have been able to reduce our cost to the City of Santee for services related to JURMP preparation. Our scope of services is described in more detail below.

Scope of Services

The new Municipal Permit includes a number of requirements that must be addressed in the revised JURMP. The items we propose to provide, organized in accordance with the sections of the existing JURMP, are listed below. Items which we assume other parties will complete are *italicized*.

Section 1 (Introduction)

- An update of the JURMP regulatory background, including information about the new Permit.
- Updates of land use information, MS4 information, drainage basin information (if necessary), list of 303(d) listed water bodies and associated impairments, list of Environmentally Sensitive Areas (ESA), and associated maps/figures.
- An update of discharge prohibitions and associated BMPs.
- *We assume the City will make any necessary updates to its grading ordinance, storm water ordinances, and any other relevant city ordinances.*

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Section 2 (Municipal)

- An updated list of pollution prevention measures.
- An updated municipal facilities inventory
    - Coordination with various City departments to gather and verify information.
    - Updates to any outdated portions of the narrative descriptions of the sites.
    - Addition of new sites, deletion of sites no longer present.
    - An inventory of municipal activities that are not confined to a single facility. location (e.g., power washing, street repair, etc.)
    - Inclusion of new facility and activity types, such as flood management projects and flood control devices to the inventory.
    - Types of pollutants potentially generated by each facility or activity.
    - Updated prioritization procedures and flow chart.
- An updated list of BMPs for municipal areas and activities, including updates to JURMP Appendix C.
- A description of the City's plan to assess the feasibility of retrofitting existing flood control devices for use as BMPs.
- A list of BMPs for new activities and sites, including power washing.
- A description of the City's approach to trash and litter control for special events.
- A description of how the City plans to satisfy new requirements for MS4 inspections and cleaning, including BMPs for MS4 cleaning and maintenance.
- A description of how the City plans to prevent and eliminate infiltration of seepage from sanitary sewer to MS4.
- A description of how the City plans to satisfy the new street sweeping requirements.
- A description of the City's BMPs to minimize pollution from herbicides, pesticides, and fertilizers.
- A description of the City's enforcement mechanisms and enforcement procedures for municipal activities and facilities.

Section 3 and Section 4 (Industrial/Commercial)

- The new Municipal Permit calls for one section (Industrial/Commercial) rather than separate industrial and commercial sections, so the industrial and commercial sections of the JURMP will be combined.
- Updated industrial and commercial inventories. *We assume the City will provide us with an electronic spreadsheet of businesses in the City, including at minimum business name, business address, and business Standard Industrial Classification (SIC) code.*
    - New facility types, such as building material retailers and animal facilities.
    - Types of pollutants potentially generated by each facility.
    - Approach to identifying mobile businesses.
    - Update to prioritization procedures and flow chart.
    - A reprioritization of facilities according to the new prioritization procedures. There are no longer any "mandatory" high priority facilities, so procedures to make distinctions based more directly on threat to water quality must be created.
- A description of the City's plan for notifying all businesses of new BMP requirements.
- Updated BMP requirements, including updates to BMPs in JURMP Appendix C.
- A description of which sites the City will inspect in the first year of implementation and how those sites were selected for inspection.

- A description of what process the City will use in future years to determine which sites should be inspected.
- An updated inspection form.
- An updated description of inspection procedure.
- Updated inspection frequencies for industrial and commercial sites.
- A description of how the City plans to report of industrial non-filers to the RWQCB.
- A description of the City's enforcement mechanisms and enforcement procedures for the industrial/commercial component.
- Incorporation of a mobile business regulation program jointly developed by the Copermittees. *We assume that a regional workgroup will develop guidelines for mobile business regulation programs, which will include the following topics.*
    - *BMP requirements.*
    - *Enforcement procedures.*
    - *Education and outreach, including notification of BMP standards.*
    - *Procedure for inspections.*

Section 5 (Residential)

- An updated list of high priority residential areas.
- An updated list of pollution prevention methods and a description of what steps will be taken to encourage their implementation.
- Updated BMP requirements for residential areas and activities.
- A description of what steps will be taken to require the BMPs and how the City will verify their implementation.
- A description of efforts to evaluate potential approaches for oversight of residential areas.
- An updated discussion of methods to facilitate proper disposal of household hazardous waste (HHW).
- A description of the City's enforcement mechanisms and enforcement procedures for the residential component.

Section 6 (Development Planning)

- A description of the City's approach to notify projects that have already begun initial stages of development planning of the upcoming changes to SUSMP requirements.
- A description of the storm water related provisions of the City's General Plan.
- A description of the development review process, including identification of departmental responsibilities for SUSMP implementation.
- A description of the treatment control BMP database that will be developed.
- A watershed-based inventory of treatment control BMPs. *We assume the City will provide use with a list of SUSMP projects approved to date and that the list will include at minimum the project name, project address, and the treatment control BMPs proposed for the site.*
- A description of the City's plan to verify operation and maintenance of treatment control BMPs.
    - Prioritization criteria for treatment control BMPs.
    - An inspection program for treatment control BMPs.
    - Steps through which the responsible parties for the BMPs will annually certify effective operation and maintenance.
- A description of how the City will verify that the BMPs proposed in the SUSMP have been implemented appropriately prior to occupancy of the development project.

- A description of the City's enforcement mechanisms and enforcement procedures for development projects.
- *We assume that hydromodification management planning, including interim hydromodification standards; LID BMP design guidelines; and SUSMP updates will be undertaken jointly by the Copermittees. These are not included in this scope of services.*
- *We assume the City will make any necessary updates to its General Plan and its Environmental Review Process.*

Section 7 (Construction)

- Updated BMP requirements, including updating the BMP fact sheets in JURMP Appendix C to match current California Storm Water Quality Association (CASQA) guidelines. The most recent CASQA fact sheets use standard units instead of metric units in the fact sheet figures and text.
- Describe the City's policy regarding the maximum area that may be disturbed at one time.
- A description of how the City will ensure its construction site inventory is updated on at least a monthly basis.
- Revised construction site prioritization procedures and new corresponding flow chart.
- A watershed-based construction site inventory.
- Updated construction site inspection procedures.
- Revised construction site inspection frequencies.
- A description of the procedure that will be used to ensure sites will be inspected at at least the minimum required frequency.
- A description of the City's approach to notifying the RWQCB when a stop work order or other "high level enforcement" is issued to a construction site for storm water violations.
- A description of the City's enforcement mechanisms and enforcement procedures for construction activities.
- *We assume requirements and guidelines related to the use of advanced treatment for construction sites will be developed regionally by Copermittee workgroups.*

Section 8 (Illicit Discharge Detection and Elimination)

- A description of how the City will involve municipal staff in identifying and reporting illicit connections and illegal discharges (IC/ID).
- An update map of MS4 and drainage basins. *We assume the City will provide us with electronic files (Autocad or GIS compatible) for the City's current MS4 and drainage basins.*
- A description of how inaccuracies in the MS4 map will be identified by field staff.
- A review of Dry Weather Monitoring Program sites locations as described in section B.3.a of the Receiving Waters Monitoring and Reporting Program portion of the Municipal Permit. This will include an assessment of whether laboratory analyses should be conducted at sites where they are not currently done, whether any existing sites should be relocated, and whether any new sites are necessary.
- Describe procedures for Dry Weather Monitoring Program as specified in section B.3.c and B.3.d of the Receiving Waters Monitoring and Reporting Program. Note that the Municipal Permit refers to sections B.1 through B.4 here, which is likely a typo. B.4 does not exist, and B.1 and B.2 refer to MS4 outfall monitoring and source identification monitoring, which are two new programs that will need to be

developed. *Development of MS4 outfall monitoring and source identification monitoring programs will likely be done largely through regional Copermittee efforts and is not included in the JURMP scope of work.*

- A description of procedure for investigating action level exceedances within two business day. Provisions for defining when an immediate investigation will be conducted and when no investigation at all may be necessary will be included.
- A description of the approach for responding to identified IC/IDs. The approach will include a method for distinguishing between IC/IDs that are an immediate threat to public health or the environment and those that are not. Guidelines for timelines in responding to the IC/IDs will also be included.
- A description of the City's approach to eliminate identified IC/IDs.
- A description of the City's program through which sewage spills from private laterals and failing septic systems will be reported to the City.
- A description of the approach to responding to the above spills and preventing them from entering the MS4 or contaminating soil or groundwater. This may require interdepartmental coordination.
- Updated discussions of other spill prevention and mitigation procedures.
- A description of how the City will encourage and facilitate reporting of spills and IC/IDs.
- A description of relevant enforcement mechanisms and procedures.

Section 9 (Education)

- A list of targeted audiences.
- Updated list of topics that should be covered for each targeted audience.
- A description of how development planning training will be updated to include specific topics from the Municipal Permit.
- A description of how municipal staff training will be updated to include information about plan review practices, current BMP technologies, and SUSMP requirements.
- A description of the City's program for annual training of staff who conduct industrial/commercial inspections. The program should include protocol for review of monitoring data.
- A description of potential options for educating residential, general public, and school children.
- A description of the City's approach to specifically identify and provide education for or related to the items or groups listed below. Mobile sources and various ethnic and socioeconomic groups should be considered in these programs.
    - Underserved audiences
    - High risk behaviors
    - Allowable behaviors or discharges that still have the potential to negatively impact water quality
- A description of the approximate frequency, content, and form of education to be provided to each of the various target audiences.

Section 10 (Public Participation)

- An updated description of mechanisms for encouraging public participation.
- A description of steps the City has taken to involve the public in the development of the JURMP.
- An updated list of public participation programs.

Section 11 (Effectiveness Assessment)

- A description of the steps that will be taken each year to assess the effectiveness of program implementation.
- Identification of targeted outcomes for items in categories (a), (b), and (c) below.
  - (a) Each significant jurisdictional activity or BMP to be implemented
  - (b) Implementation of each major component of the JURMP
  - (c) JURMP implementation, taken as a whole
- Identification of which of the outcome levels (1-6) developed by the Copermittees apply to each of items in categories (a), (b), and (c). This will require an evaluation of existing program data and data collection methods.
- An explanation of why any of the outcome levels (1-6) believed to not be applicable to or feasible for items in categories (a), (b), or (c) are not applicable or feasible.
- A discussion of how monitoring data will be used in the effectiveness assessment of items in categories (a), (b), or (c).
- A description of what steps will be taken to improve the City's ability to assess the effectiveness of its program, including a timeline for implementation of those steps. Targeted outcomes, assessment measures, assessment methods, and outcome levels 1-6 will be included in the discussion.
- A description of how annual effectiveness assessment results will be used to guide program implementation in future years.

Section 12 (Fiscal Analysis)

- Incorporation of regionally developed standards for fiscal analysis. *We assume that regional workgroups will develop the content for the revised fiscal analysis section.*

Section 13 (Fire Fighting)

- The fire fighting component will be moved to the Municipal Section of the JURMP.

Section Summarizing JURMP Modifications

- Section J.1.a.(3).(m) of the new Municipal Permit requires that a list of the changes made to the JURMP to comply with the new Permit and where they are located in the JURMP be submitted with the revised JURMP. This list will be prepared and included with the revised JURMP.

Coordination Meetings with the City

- This includes two D-MAX staff members each attending two meetings with City staff for discussing JURMP content.

Report Preparation (Draft)

- This includes formatting, overall review, printing and organizing the report and its various appendices, and direct costs such as paper, printing, and binding materials. One draft copy of the JURMP and its appendices will be produced for City review.

Report Preparation (Final)

- This includes responding to City comments, final review and formatting, printing and organizing the report and its various appendices, and direct costs such as paper, printing, and binding materials. Each final JURMP submitted will include a copy of the main JURMP document and a copy of each of the two separate volumes of appendices, including BMPs. Three final copies of the JURMP and its appendices will be produced and delivered to the City.

Estimated Costs

Our proposed costs for the above scope of services are summarized below. A spreadsheet with a more detailed breakdown of the hours and rates for each of the tasks is attached.

Introduction	$2,000
Municipal	$4,000
Industrial and Commercial	$5,600
Residential	$2,500
Development Planning	$5,000
Construction	$3,400
Illicit Discharge Detection and Elimination	$4,100
Education	$1,700
Public Participation	$1,150
Effectiveness Assessment	$5,600
Fiscal Analysis	$400
List of JURMP Modifications	$2,400
Coordination Meetings with the City	$1,400
Report Preparation (Draft)	$4,500
Report Preparation (Final)	$2,000
Total	**$45,750**

We have enjoyed working with the City of Santee over the past several years, and we strongly believe that our overall storm water experience and specific knowledge of the City's storm water program will allow us to provide you with excellent quality service at very competitive and affordable rates for this project. Please call me at (858) 586-6600 extension 22 with any questions regarding this proposal.

Sincerely,

D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph. D., P.E.
Project Manager

City of Santee
JURMP
Cost Breakdown

	Princpal Engineer	Project Scientist	Staff Scientist	Drafter	Word Processor	Clerk	ODC	Direct Total	Rounded Total
Rate	$130	$105	$85	$60	$55	$50			
Task									
Introduction	4	12		4				$2,020	$2,000
Municipal	4	16	20					$3,900	$4,000
Industrial and Commercial	6	20	32					$5,600	$5,600
Residential	2	8	16					$2,460	$2,500
Development Planning	4	20	28					$5,000	$5,000
Construction	4	18	12					$3,430	$3,400
Illicit Discharge Detection/Elimination	6	8	24	8				$4,140	$4,100
Education	2	4	12					$1,700	$1,700
Public Participation	2	2	8					$1,150	$1,150
Program Effectivness Assessment	8	30	16					$5,550	$5,600
Fiscal Analysis	1	2.5						$393	$400
Jurmp Modification	2	4	20					$2,380	$2,400
Coordination Meetings with City	6	6						$1,410	$1,400
Report Preparation (Draft)	6	16	8	4	16	4	$100	$4,560	$4,500
Report Preparation (Final)	2	4	4		8	4	$400	$2,060	$2,000
Total	**59**	**170.5**	**200**	**16**	**24**	**8**	**$500**	**$45,753**	**$45,750**

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

July 10, 2008
Project No. 200826W

Ms. Helen M. Perry
Storm Water Program Manager
City of Santee
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: Proposal to Prepare FY 2007/2008 JURMP Annual Report for the City of Santee

Dear Ms. Perry:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of Santee (City) in the preparation of the fiscal year 2007/2008 Jurisdictional Urban Runoff Management Program (JURMP) Annual Report. In previous years, the JURMP Annual Report was due to the Regional Water Quality Control Board (RWQCB) at the end of January, allowing seven months after the end of the fiscal year for the preparation and delivery of the report. Based on recent changes to the City's storm water permit, however, the 2007/2008 JURMP Annual Report is due to the RWQCB by the end of September 2008.

The scope of services associated with preparing the 2007/2008 JURMP Annual Report includes the following tasks:

Task 1: Coordinate Information Transfer with City Personnel
It is our understanding that City's Storm Water Program Manager will obtain the information needed to write the 2007/2008 Annual Report from other departments in the City. It is our understanding that summary spreadsheets and/or summary reports will be provided for inspections related to the development planning, construction, industrial/commercial, and municipal components of the JURMP. After receiving the initial set of information, we will work with the applicable City staff to clarify questions if necessary and ask further follow-up questions where appropriate. Pertinent information acquired under this task will be used in Task 2.

Task 2: Prepare JURMP Annual Report
This task includes the preparation of the JURMP Annual Report in accordance with both the previous and current versions of the San Diego Municipal Storm Water Permit (Order 2001-01 and Order No. R9-2007-0001, respectively). The City was required to begin implementing the requirements of Order No. R9-2007-0001 no later than March 24, 2008, but some program elements or portions of program elements may have begun operating under the new program designs earlier. Determining the dates when the new programs were implemented will be part of the information collection process in Task 1.

Because the reporting requirements for the two different orders are different, most sections of the Annual Report will need to discuss how the program element met the requirements of each permit and when the Order No. R9-2007-0001 program was fully implemented. The following components and tasks will be included in the JURMP Annual Report.

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- **Global changes**
  - Update order, titles, and content of sections and subsections to match the regionally standardized JURMP Annual Report format submitted to the RWQCB in July 2007 and the JURMP update completed in March 2008.
  - Include discussions of how each program element met the applicable requirements of both Order 2001-01 and Order No. R9-2007-0001.
- **Sections**
  - Executive Summary: will include summary of overall changes in requirements and lists of key achievements for the various elements of the City's program.
  - Introduction: will include a summary of the City's storm water program, the relevant regulatory requirements, a reference to any RWQCB comments on the City's 2006/2007 JURMP Annual Report (if applicable, the response will be included as an attachment), and a summary list of key achievements.
    - *We assume the City will prepare any required responses to comments received from the RWQCB regarding the 2006/2007 JURMP Annual Report.*
  - Development Planning: will include descriptions of the City's efforts to require BMP implementation for new development and redevelopment projects, including the City's Standard Urban Storm Water Mitigation Plan (SUSMP); treatment control BMP inventory update; treatment control BMP inspections; and treatment control BMP operation and maintenance verifications. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - A listing of the priority development projects which were allowed to implement treatment control BMPs with low removal efficiency rankings, including the feasibility analyses which were conducted to exhibit that more effective BMPs were infeasible.
    - An updated treatment control BMP inventory.
    - The number of treatment control BMPs inspected, including a summary of inspection results and findings.
    - A description of the annual verification of operation and maintenance of treatment control BMPs, including a summary of verification results and findings.
    - Confirmation that BMP verification was conducted for all priority development projects prior to occupancy, including a description of how this information was tracked.
    - A listing of any projects which received a SUSMP waiver.
    - A description of implementation of any SUSMP waiver mitigation program.
    - A description of Hydromodification Management Plan (HMP) development collaboration and participation.
    - A listing of development projects required to meet HMP requirements, including a description of hydrologic control measures implemented.
    - A listing of priority development projects not required to meet HMP requirements, including a description of why the projects were found to be exempt from the requirements.
    - A listing of development projects disturbing 50 acres or more, including information on whether Interim Hydromodification Criteria were met by

each of the projects, together with a description of hydrologic control measures implemented for each applicable project.
    - The number of violations and enforcement actions (including types) taken for development projects, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.
- Construction: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - For each construction site within each priority category (high, medium, and low), identification of the period of time (weeks) the site was active within the rainy season, the number of inspections conducted during the rainy season, and the number of inspections conducted during the dry season, and the total number of inspections conducted for all sites.
    - Confirmation that a maximum disturbed area for grading was applied to all applicable construction sites.
    - A listing of all construction sites with conditions requiring advanced treatment, together with confirmation that advanced treatment was required at such construction sites.
- Municipal: will include descriptions of the City's updated programs for activities such as street sweeping, municipal separate storm sewer system (MS4) maintenance, and fertilizer management. A description of the City's inspections of municipal facilities and activities, including any relevant enforcement action, will also be included. Order No. 2007-0001 includes a number of changes in requirements for municipal programs, many of which require significantly more detailed data than has been available in the past. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - A description of inspections and maintenance conducted for municipal treatment controls. We assume that this item refers only to non-SUSMP treatment control BMPs. Inspection and maintenance for treatment control BMPs installed as part of public SUSMP projects will be discussed in the development planning section.
    - Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.
    - Identification of the total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of the MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.
    - Identification of the total distance (miles) of open channels, the distance of open channels inspected, the distance of open channels found with anthropogenic litter, and the distance of open channels cleaned.
    - Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, by category.
    - Identification of any MS4 facility found to require inspection less than annually following two years of inspection, including justification for the

finding. Unless past data will be used to support this finding, most likely nothing can be reported on this item for 2007/2008.
    - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
    - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
    - Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.
- Industrial/Commercial: will include a description of the City's new BMP requirements and inventory management and inspection efforts, including enforcement. It will also include a discussion of the City's efforts with respect to mobile businesses. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - A description of efforts taken to notify owners / operators of stationary and mobile industrial and commercial sites / sources of BMP requirements.
    - A description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.
- Residential: will include a description of the City's education and enforcement efforts, including complaint investigations, related to residential areas. *We assume the City will prepare approximately 90 percent of this section and submit the draft to D-MAX for review and edits, particularly with respect to meeting new Municipal Permit requirements.* Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - A description of collaborative efforts taken to develop and implement the Regional Residential Education Program.
    - A description of any evaluation of methods used for oversight of residential areas and activities, as well as any findings of the evaluation.
- Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - Correction of any inaccuracies in either the MS4 map or the Dry Weather Field Screening and Analytical Stations Map.
    - A summary of changes to the Dry Weather Monitoring Program, including the addition of trash assessment and follow-up of laboratory exceedances within two business days.
- Education: will include descriptions of various educational efforts by the City. The new Municipal Permit emphasizes presenting educational efforts

categorized by type of target audience. Some key new items which must now be included in the 2007/2008 JURMP Annual Report are listed below.
    - A description of education efforts conducted for each target community
    - Descriptions of how education efforts targeted underserved target audiences, high-risk behaviors, and "allowable" behaviors and discharges
  - Public Participation: will include a description of the City's efforts to involve the public in the development and implementation of its storm water program. *We assume the City will prepare approximately 90 percent of this section and submit the draft to D-MAX for review and edits, particularly with respect to meeting new Municipal Permit requirements.* The requirements of this section are not substantially different from what was required under RWQCB Order 2001-01.
  - Fiscal Analysis: will include a summary of the funding sources for the City's storm water program and budget line items. Note that new fiscal analysis reporting requirements are being developed but are not likely to be available before January 2009. *We assume that the City will complete this section of the Annual Report.*
  - Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared. Order No. R9-2007-0001 requires a significantly more detailed assessment of program effectiveness than what had previously been required.
  - Special Investigations: will include a summary of the additional study conducted concurrently with the Dry Weather Monitoring Program and the results of water quality monitoring for the Forester Creek Study.
  - Conclusions: will include a brief conclusions section similar to what has been presented in previous annual reports.
  - Please note that any information about non-emergency fire fighting will be discussed in the municipal section, and any changes to the JURMP will be described in the relevant program component sections.
- **Report Preparation: Draft**
  - We will prepare one electronic copy of the report text for City review. An individual Word document will be prepared for each section instead of using one master file for the entire document.
- **Responding to City Comments on the Draft Report**
  - We anticipate receiving and incorporating one round of technical comments on the draft report from the City.
- **Report Preparation: Final**
  - We will prepare one electronic copy of the final JURMP Annual Report and attachments. We will provide both (1) Word documents of the main report sections and (2) a single pdf file of the overall document. Our understanding is that all electronic files, including attachments and the certification statement, must be converted to pdf format and merged into a single pdf document in order to meet RWQCB paperless office requirements.

Project Schedule and Costs for Services

We understand that the County of San Diego will need to receive the final report close to the end of September 2008. Because the reporting deadline is significantly earlier this year than it has been in previous years, we suggest beginning work as soon as possible. While not all necessary data will be available before July 1, we will be able to do initial preparation of questions and start collecting the information that is available at that point. We propose the following schedule.

- Notice to Proceed: July 16, 2008
- Deliver Draft Report to City: September 15, 2008
- Receive Review Comments from City: September 19, 2008
- Deliver Final Report to City: September 24, 2008.

We propose completing the services described in this proposal on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $19,853. Please see the attached spreadsheet for a detailed breakdown of our estimated costs.

If you have any questions regarding this proposal, please contact me at (858) 586-6600 x22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

Santee 2007/2008 JURMP Annual Report

	Project Manager	Project Scientist	Asst Project Scientist	Word Processor	ODC	Total
			Rates ($/hr)			
TASKS	$ 130.00	$ 105.00	$ 95.00	$ 55.00		
			HOURS			
1) Coordinate Information Transfer with City						
Organize Information, Follow-up as Needed	1	4	8			$1,310
					Subtotal	**$1,310**
2) Prepare JURMP Annual Report						
Executive Summary	1	3				$445
Introduction		2				$210
New Development/Redevelopment	2	4	12			$1,820
Construction	1	3	14			$1,775
Municipal	2	4	16			$2,200
Industrial/Commercial	1	4	16			$2,070
Residential		2	2			$400
IDDE	1	3	10			$1,395
Education		2	12			$1,350
Public Participation		2	2			$400
Fiscal Analysis		0	0			$0
Analysis of Program Effectiveness	4	12	8			$2,540
Special Investigations		2	4			$590
Conclusions			0.5			$48
Overall Review/Formatting	8	4		2		$1,570
Address Comments from City	1	8	8			$1,730
					Subtotal	**$18,543**
Totals	22	59	112.5	2	**Grand Total**	**$19,853**

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

June 5, 2009
Project No. 200936W

Ms. Helen M. Perry
Stormwater Program Manager
City of Santee
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: Proposal for FY 2008/2009 JURMP Annual Report Preparation Assistance City of Santee, CA

Dear Ms. Perry:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of Santee (City) in the preparation of the fiscal year 2008/2009 Jurisdictional Urban Runoff Management Program (JURMP) Annual Report. Work will be conducted in accordance with the requirements of Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit).

The scope of services associated with preparing the 2007/2008 JURMP Annual Report includes the following tasks.

Task 1: Coordinate Information Transfer with City Personnel
We will work with the City's Stormwater Program Manager to obtain the information necessary to write the sections of the JURMP Annual Report listed in Task 2. Pertinent information acquired under this task will be used in Task 2.

Task 2: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

- **Sections**
  - Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Some key items to be included in the 2008/2009 JURMP Annual Report are listed below.
    - A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
    - A list of complaints and hotline calls received and how they were resolved.
    - A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.
  - Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring

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Program data similar to what has been presented in previous annual reports will also be prepared.

- **Report Preparation: Draft**
  - We will prepare one electronic copy of the sections above for City review. An individual MS Word document will be prepared for each section.
- **Responding to City Comments on the Draft Report**
  - We anticipate receiving and incorporating one round of technical comments on the draft report from the City.
- **Report Preparation: Final**
  - Effectiveness Assessment: we will prepare one electronic copy of the final section in both MS Word and pdf format.
  - IDDE Section: we will prepare one electronic copy of the December IDDE submittal and attachments in MS Word and pdf format. The section and attachments will all be merged into one pdf document to facilitate submittal to the RWQCB.

Task 3: Review Sections of the JURMP Annual Report Prepared by the City
We will review the sections of the JURMP Annual Report that the City is preparing in-house. Our review will focus mainly on technical aspects of the report, particularly assessing compliance with Municipal Permit requirements. We anticipate receiving MS Word document versions of the sections prepared by the City and inserting our comments electronically using the track changes feature. After providing our comments, we will meet with City staff to discuss the comments. The meeting will focus on the most significant and challenging comments.

Project Schedule
We understand that the County of San Diego will need to receive the final report, except for the IDDE section, close to the end of September 2009. The IDDE section will be due in December 2009. Since the deadline for IDDE submittal to the RWQCB is December 15, we anticipate a deadline for delivery to the County of December 11 or 14. We propose the following schedule.

- Notice to Proceed: July 1, 2009
- Receive City's Sections for Review: August 26, 2009
- Deliver Effectiveness Assessment Section to City: September 9, 2009
- Deliver Comments on Sections to City: September 11, 2009
- Receive Review Comments from City: September 19, 2008
- Deliver Final Effectiveness Assessment Section to City: September 24, 2008

- Deliver Draft IDDE Section to City for Review: November 17, 2009
- Receive Review Comments from City: December 1, 2009
- Deliver Final IDDE Section to City: December 8, 2009

Costs for Services
We propose completing the services described in this proposal on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $7,916. Please see the attached spreadsheet for a detailed breakdown of our estimated costs.

If you have any questions regarding this proposal, please contact me at (858) 586-6600 x22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

Santee 2008/2009 JURMP Annual Report

	Project Manager	Project Scientist	Asst Project Scientist	Word Processor	ODC	Total
			Rates ($/hr)			
TASKS	$ 140.00	$ 110.00	$ 95.00	$ 55.00		
			HOURS			
1) Coordinate Information Transfer with City						
Organize Information, Follow-up as Needed		1	2			$300
2) Prepare JURMP Annual Report						
IDDE	1	3	10	1		$1,475
Analysis of Program Effectiveness	2.5	12	8	0.5		$2,458
3) Overall Review of Document						
Review Sections Prepared by City	2	6	24			$3,220
Meet with City Staff to Discuss Review Comments		4			$24	$464
Totals	5.5	26	44	1.5	**Grand Total**	**$7,916**

Note: ODC includes mileage

D-MAX Engineering, Inc.
Consultants in water & environmental sciences

June 29, 2010
Project No. 201041W

Ms. Helen M. Perry
Stormwater Program Manager
City of Santee
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: Proposal for FY 2009/2010 JURMP Annual Report Preparation Assistance City of Santee, CA

Dear Ms. Perry:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of Santee (City) in the preparation of the fiscal year 2009/2010 Jurisdictional Urban Runoff Management Program (JURMP) Annual Report. Work will be conducted in accordance with the requirements of Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit).

The scope of services associated with preparing the 2009/2010 JURMP Annual Report includes the following tasks.

Task 1: Coordinate Information Transfer with City Personnel
We will work with the City's Stormwater Program Manager to obtain the information necessary to write the sections of the JURMP Annual Report listed in Task 2. Pertinent information acquired under this task will be used in Task 2.

Task 2: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

- **Sections**
  - Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Some key items to be included in the 2009/2010 JURMP Annual Report are listed below.
    - A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
    - A list of complaints and hotline calls received and how they were resolved.
    - A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.
  - Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring

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Program data similar to what has been presented in previous annual reports will also be prepared.

- **Report Preparation: Draft**
  - We will prepare one electronic copy of the sections above for City review. An individual MS Word document will be prepared for each section.
- **Responding to City Comments on the Draft Report**
  - We anticipate receiving and incorporating one round of technical comments on the draft report from the City.
- **Report Preparation: Final**
  - Effectiveness Assessment: we will prepare one electronic copy of the final section in both MS Word and pdf format.
  - IDDE Section: we will prepare one electronic copy of the December IDDE submittal and attachments in MS Word and pdf format. The section and attachments will all be merged into one pdf document to facilitate submittal to the RWQCB.

Task 3: Review Sections of the JURMP Annual Report Prepared by the City
We will review the sections of the JURMP Annual Report that the City is preparing in-house. Our review will focus mainly on technical aspects of the report, particularly assessing compliance with Municipal Permit requirements. We anticipate receiving MS Word document versions of the sections prepared by the City and inserting our comments electronically using the track changes feature. After providing our comments, we will meet with City staff to discuss the comments. The meeting will focus on the most significant and challenging comments.

Project Schedule
We understand that the County of San Diego will need to receive the final report, except for the IDDE section, close to the end of September 2010. The IDDE section will be due in December 2010. Since the deadline for IDDE submittal to the RWQCB is December 15, we anticipate a deadline for delivery to the County of December 13. We propose the following schedule.

- Notice to Proceed: July 10, 2010
- Receive City's Sections for Review: August 27, 2010
- Deliver Effectiveness Assessment Section to City: September 10, 2010
- Deliver Comments on Sections to City: September 13, 2010
- Receive Review Comments from City: September 20, 2010
- Deliver Final Effectiveness Assessment Section to City: September 24, 2010

- Deliver Draft IDDE Section to City for Review: November 19, 2010
- Receive Review Comments from City: December 3, 2010
- Deliver Final IDDE Section to City: December 9, 2010

Costs for Services
We propose completing the services described in this proposal on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $7,916. Please see the attached spreadsheet for a detailed breakdown of our estimated costs.

If you have any questions regarding this proposal, please contact me at (858) 586-6600 x22.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

Santee 2009/2010 JURMP Annual Report

TASKS	Project Manager	Project Scientist	Asst Project Scientist	Word Processor	ODC	Total
			Rates ($/hr)			
	$ 140.00	$ 110.00	$ 95.00	$ 55.00		
			HOURS			
1) Coordinate Information Transfer with City						
Organize Information, Follow-up as Needed		1	2			$300
2) Prepare JURMP Annual Report						
IDDE	1	3	10	1		$1,475
Analysis of Program Effectiveness	2.5	12	8	0.5		$2,458
3) Overall Review of Document						
Review Sections Prepared by City	2	6	24			$3,220
Meet with City Staff to Discuss Review Comments		4			$24	$464
Totals	5.5	26	44	1.5	**Grand Total**	**$7,916**

Note: ODC includes mileage

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

June 30, 2011
Original Proposal: June 3, 2011
Project No. 201131W

Ms. Helen M. Perry
Stormwater Program Manager
City of Santee
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: Proposal for FY 2010/2011 JURMP Annual Report Preparation Assistance City of Santee, CA

Dear Ms. Perry:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of Santee (City) in the preparation of the fiscal year 2010/2011 Jurisdictional Urban Runoff Management Program (JURMP) Annual Report. Work will be conducted in accordance with the requirements of Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit).

The scope of services associated with preparing the 2010/2011 JURMP Annual Report includes the following tasks.

Task 1: Coordinate Information Transfer with City Personnel
We will work with the City's Stormwater Program Manager to obtain the information necessary to write the sections of the JURMP Annual Report listed in Task 2. Pertinent information acquired under this task will be used in Task 2.

Task 2: Prepare JURMP Annual Report
The following components and tasks will be included in the preparation of the JURMP Annual Report.

- **Sections**
  - Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Some key items to be included in the 2010/2011 JURMP Annual Report are listed below.
    - A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
    - A list of complaints and hotline calls received and how they were resolved.
    - A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.
  - Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring

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Program data similar to what has been presented in previous annual reports will also be prepared.

- **Report Preparation: Draft**
  - We will prepare one electronic copy of the sections above for City review. An individual MS Word document will be prepared for each section.

- **Responding to City Comments on the Draft Report**
  - We anticipate receiving and incorporating one round of technical comments on the draft report from the City.

- **Report Preparation: Final**
  - City-Prepared Sections: It is our understanding that the City will provide the following in pdf or MS Word format: annual report sections, appendices, attachments, certification, cover page, and appendix/attachment dividers.
  - D-MAX-Prepared Sections: We will prepare an electronic copy of the final Effectiveness Assessment and IDDE sections in MS Word and pdf format. In addition, we will prepare an updated table of contents.
  - Electronic Final Copy: D-MAX will prepare and deliver four (4) electronic copies of the final JURMP Annual Report and attachments to the City. Due to changes in RWQCB requirements, no hard copies are required for this year's submittal. We will convert all electronic files, including attachments and the certification statement, to pdf format and merge them into a single pdf document to meet RWQCB paperless office requirements.

Task 3: Review Sections of the JURMP Annual Report Prepared by the City
We will review the sections of the JURMP Annual Report that the City is preparing in-house. Our review will focus mainly on technical aspects of the report, particularly assessing compliance with Municipal Permit requirements. We anticipate receiving MS Word document versions of the sections prepared by the City and inserting our comments electronically using the track changes feature. After providing our comments, we will meet with City staff to discuss the comments. The meeting will focus on the most significant and challenging comments.

Task 4 (Optional): Printing and Assembling of Final JURMP Annual Report
At the City's request, D-MAX will prepare and deliver two (2) hard copies of the final JURMP Annual Report and attachments.

Project Schedule
We understand that the County of San Diego will need to receive the final report, except for the IDDE section, close to the end of September 2011. The IDDE section will be due in December 2011. Since the deadline for IDDE submittal to the RWQCB is December 15, we anticipate a deadline for delivery to the County of December 13. We propose the following schedule.

- Notice to Proceed: July 2011
- Receive City-prepared sections for review: August 26, 2011
- Deliver Effectiveness Assessment section to City: September 9, 2011
- Deliver comments on City-prepared sections to City: September 14, 2011
- Receive Effectiveness Assessment comments from City: September 21, 2011
- Receive final electronic copies of City-prepared sections: September 22, 2011
- The final report will be submitted to the City no later than September 26, 2011.

- Deliver draft IDDE section to City for review: November 18, 2011
- Receive review comments from City: December 2, 2011
- Deliver final IDDE section to City: December 9, 2011

Costs for Services
We propose completing Tasks 1, 2, and 3 on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $9,016. Please see the attached spreadsheet for a detailed breakdown of our estimated costs. Optional Task 4, report reproduction and delivery, would be provided on a time and materials basis in accordance with the attached Schedule of Fees, not to exceed $781.

Please feel free to contact us if you have any questions regarding this proposal. We look forward to working with you again on this project.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

Santee 2010/2011 JURMP Annual Report Asssitance

TASKS	Project Manager	Senior Scientist	Asst Project Scientist	Word Processor	ODC	Total
			Rates ($/hr)			
	$140	$120	$100	$55		
			HOURS			
1) Coordinate Information Transfer with City						
Organize Information, Follow-up as Needed		1	2			$320
2) Prepare JURMP Annual Report						
IDDE	1	3	10	1		$1,555
Analysis of Program Effectiveness	2.5	12	8	0.5		$2,618
3) Overall Review of Document & Finalization						
Review Sections Prepared by City	2	6	24			$3,400
Meet with City Staff to Discuss Review Comments		4			$22	$502
Preparation of Final Report Electronic Copies			2	7.5	$9	$622
Total (Tasks 1-3)	***5.5***	***26***	***46***	***9***	***$31***	***$9,016***
Optional Task:						
4) Reproduction and Delivery of Hard Copies						
Final September Submittal			2	6	$116	$646
Final IDDE December Submittal				2	$25	$135
Total (Tasks 4)			***2***	***8***	***$141***	***$781***

Note: ODC includes mileage, printing costs, and postage

D-MAX Engineering, Inc.
Consultants in Water & Environmental Sciences

May 16, 2012

Ms. Helen M. Perry
Stormwater Program Manager
City of Santee
10601 Magnolia Avenue
Santee, CA 92107-1266

Re: Proposal for FY 2011/2012 JURMP Annual Report Preparation Assistance and As-Needed Services
City of Santee, CA

Dear Ms. Perry:

D-MAX Engineering, Inc. (D-MAX) is pleased to submit this proposal to assist the City of Santee (City) in preparing the fiscal year 2011/2012 Jurisdictional Urban Runoff Management Program (JURMP) Annual Report and by providing as-needed program support services related to new requirements. Work will be conducted in accordance with the requirements of Regional Water Quality Control Board (RWQCB) Order No. R9-2007-0001 (Municipal Permit) and any other applicable water quality requirements, including the San Diego River total maximum daily load (TMDL) requirements.

Service A: 2011/2012 JURMP Annual Report

The scope of services associated with preparing the 2011/2012 JURMP Annual Report includes the following tasks.

Task 1: Coordinate Information Transfer with City Personnel

We will work with the City's Stormwater Program Manager to obtain the information necessary to write the sections of the JURMP Annual Report listed in Task 2. Pertinent information acquired under this task will be used in Task 2.

Task 2: Prepare JURMP Annual Report

The following components and tasks will be included in the preparation of the JURMP Annual Report.

- **Sections**
  - Illicit Discharge Detection and Elimination (IDDE): will include descriptions of complaint receipt and responses, mechanisms to prevent and respond to sanitary sewer spills, Dry Weather Monitoring Program results, responses to recommendations generated based on the previous year's Dry Weather Monitoring Program, and a summary of the illicit connections and illegal discharges detected in the City and how they were resolved. Some key items to be included in the 2011/2012 JURMP Annual Report are listed below.
    - A description of how sources of exceedances identified in the Dry Weather Monitoring Program were addressed.
    - A list of complaints and hotline calls received and how they were resolved.
    - A description of any significant spills or other incidents reported to the RWQCB and how they were resolved.

- Effectiveness Assessment: will include analyses of the effectiveness of the City's storm water program. The matrix presented in the City's 2008 JURMP will be used as a guideline for this section, and graphs of Dry Weather Monitoring Program data similar to what has been presented in previous annual reports will also be prepared.

- **Report Preparation: Draft**
  - We will prepare one electronic copy of the sections above for City review. An individual MS Word document will be prepared for each section.

- **Responding to City Comments on the Draft Report**
  - We anticipate receiving and incorporating one round of technical comments on the draft report from the City.

- **Report Preparation: Final**
  - City-Prepared Sections: It is our understanding that the City will provide the following in pdf or MS Word format: annual report sections, appendices, attachments, certification, cover page, and appendix/attachment dividers.
  - D-MAX-Prepared Sections: We will prepare an electronic copy of the final Effectiveness Assessment and IDDE sections in MS Word and pdf format. In addition, we will prepare an updated table of contents.
  - Electronic Final Copy: D-MAX will prepare and deliver four (4) electronic copies of the final JURMP Annual Report and attachments to the City. Due to changes in RWQCB requirements, no hard copies are required for this year's submittal. We will convert all electronic files, including attachments and the certification statement, to pdf format and merge them into a single pdf document to meet RWQCB paperless office requirements.

Task 3: Review Sections of the JURMP Annual Report Prepared by the City
We will review the sections of the JURMP Annual Report that the City is preparing in-house. Our review will focus mainly on technical aspects of the report, particularly assessing compliance with Municipal Permit requirements. We anticipate receiving MS Word document versions of the sections prepared by the City and inserting our comments electronically using the track changes feature. After providing our comments, we will meet with City staff to discuss the comments. The meeting will focus on the most significant and challenging comments.

Task 4 (Optional): Printing and Assembling of Final JURMP Annual Report
At the City's request, D-MAX will prepare and deliver two (2) hard copies of the final JURMP Annual Report and attachments.

Service A Schedule
We understand that the County of San Diego will need to receive the final report, except for the IDDE section, close to the end of September 2011. The IDDE section will be due in December 2011. Since the deadline for IDDE submittal to the RWQCB is December 15, we anticipate a deadline for delivery to the County of December 13. We propose the following schedule.

- Notice to Proceed: July 2012
- Receive City-prepared sections for review: August 27, 2012
- Deliver Effectiveness Assessment section to City: September 10, 2012
- Deliver comments on City-prepared sections to City: September 14, 2012
- Receive Effectiveness Assessment comments from City: September 21, 2012
- Receive final electronic copies of City-prepared sections: September 24, 2012
- The final report will be submitted to the City no later than September 26, 2012.

- Deliver draft IDDE section to City for review: November 19, 2012
- Receive review comments from City: December 3, 2012
- Deliver final IDDE section to City: December 10, 2012

Service B: As-Needed Support

The RWQCB has recently released a draft version of the Municipal Permit, which is scheduled to be reissued in December 2012. The current draft includes a number of substantial changes in requirements. The City is also facing TMDL requirements for the San Diego River Watershed. When requested by the City, we will help address these new requirements by providing comments on proposed requirements and plans, helping develop new required programs, and providing other related services.

Costs for Services

All services described herein will be provided on a Time and Materials basis in accordance with the fee schedule incorporated into our existing dry weather monitoring contract with the City.

Service A: 2011/2012 JURMP Annual Report*

Tasks 1, 2, and 3 ..... not to exceed $9,016
Task 4 ..... not to exceed $781

**A cost estimate spreadsheet for Service A tasks is attached.*

Service B: As-Needed Support ..... $3,000-$6,000

Please feel free to contact us if you have any questions regarding this proposal. We look forward to working with you again on this project.

Sincerely,
D-MAX Engineering, Inc.

Arsalan Dadkhah

Arsalan Dadkhah, Ph.D., P.E.
Project Manager

Santee 2011/2012 JURMP Annual Report Asssitance

TASKS	Project Manager	Senior Scientist	Asst Project Scientist	Word Processor	ODC	Total
			Rates ($/hr)			
	$140	$120	$100	$55		
			HOURS			
1) Coordinate Information Transfer with City						
Organize Information, Follow-up as Needed		1	2			$320
2) Prepare JURMP Annual Report						
IDDE	1	3	10	1		$1,555
Analysis of Program Effectiveness	2.5	12	8	0.5		$2,618
3) Overall Review of Document & Finalization						
Review Sections Prepared by City	2	6	24			$3,400
Meet with City Staff to Discuss Review Comments		4			$22	$502
Preparation of Final Report Electronic Copies			2	7.5	$9	$622
Total (Tasks 1-3)	***5.5***	***26***	***46***	***9***	***$31***	***$9,016***
Optional Task:						
4) Reproduction and Delivery of Hard Copies						
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Final IDDE December Submittal				2	$25	$135
Total (Tasks 4)			***2***	***8***	***$141***	***$781***

Note: ODC includes mileage, printing costs, and postage

DECLARATION OF SERVICE BY EMAIL

I, the undersigned, declare as follows:

I am a resident of the County of Sacramento and I am over the age of 18 years, and not a party to the within action. My place of employment is 980 Ninth Street, Suite 300, Sacramento, California 95814.

On March 29, 2024, I served the:

- **Current Mailing List dated March 28, 2024**
- **Notice of Waiver of Procedural Requirements, Extension Request Approval, and Postponement of Hearing issued March 29, 2024**
- **Claimants' Comments on the Draft Proposed Decision and Parameters and Guidelines (Volumes 1-14) filed February 20, 2024**

  San Diego Regional Water Quality Control Board Order No. R9-2007-0001, Permit CAS0108758, Parts D.3.a.(3)(b)(iii), D.5.a.(1), D.5.a.(2), D.5.b.(1)(a), D.5.b.(1)(b)(iii-vi), D.5.b.(1)(c), D.5.b.(1)(d), D.5.b.(2), D.5.b.(3), E.2.f., E.2.g., F.1., F.2., F.3., I.1., I.2., I.5., J.3.a.(3)(c)(iv)-(viii), (x)-(xv), the first sentence of L.1. as it applies to the newly mandated activities, and L.1.a.(3)-(6), 07-TC-09-R County of San Diego, Cites of Carlsbad, Del Mar, Imperial Beach, Lemon Grove, Poway, San Marcos, Santee, Solana Beach, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, San Diego, and Vista, Claimants

by making it available on the Commission's website and providing notice of how to locate it to the email addresses provided on the attached mailing list.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration was executed on March 29, 2024 at Sacramento, California.

Jill Magee

Jill Magee
Commission on State Mandates
980 Ninth Street, Suite 300
Sacramento, CA 95814
(916) 323-3562

COMMISSION ON STATE MANDATES

Mailing List

Last Updated: 3/28/24

Claim Number: 07-TC-09-R

Matter: San Diego Regional Water Quality Control Board Order No. R9-2007-0001 Permit CAS0108758 Parts D.1.d.(7)-(8), D.1.g., D.3.a.(3), D.3.a.(5), D.5, E.2.f, E.2.g, F.1, F.2, F.3, I.1, I.2, I.5, J.3.a.(3)(c)iv-viii & x-xv, and L.

Claimants: City of Carlsbad
City of Chula Vista
City of Del Mar
City of Encinitas
City of Escondido
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of Oceanside
City of Poway
City of San Diego
City of San Marcos
City of Santee
City of Solana Beach
City of Vista

TO ALL PARTIES, INTERESTED PARTIES, AND INTERESTED PERSONS:

Each commission mailing list is continuously updated as requests are received to include or remove any party or person on the mailing list. A current mailing list is provided with commission correspondence, and a copy of the current mailing list is available upon request at any time. Except as provided otherwise by commission rule, when a party or interested party files any written material with the commission concerning a claim, it shall simultaneously serve a copy of the written material on the parties and interested parties to the claim identified on the mailing list provided by the commission. (Cal. Code Regs., tit. 2, § 1181.3.)

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